

**REPORT NUMBER: SPNCAP-MGA-2019-025**

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

**AUDI AG  
2019 Audi Q8 Premium 5-Door SUV  
NHTSA No.: O20195801**

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



**Test Date: January 29, 2019**

**Final Report Date: April 16, 2019**

**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**

This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof.

If trade or manufacturers' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

Prepared by:   
Robert Schnorenberg, Project Engineer

Approved by:   
Ben Fischer, Project Engineer

Approval Date: April 16, 2019

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-2019-025	<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 2019 Audi Q8 Premium 5-Door SUV, NHTSA No.: O20195801		<b>5. Report Date</b> April 16, 2019																												
		<b>6. Performing Organization Code</b> MGA																												
<b>7. Author(s)</b> Robert Schnorenberg, Project Engineer		<b>8. Performing Organization Report No.</b> SPNCAP-MGA-2019-025																												
<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 29, 2019 to April 16, 2019																												
		<b>14. Sponsoring Agency Code</b> NRM-110																												
<b>15. Supplementary Notes</b>																														
<b>16. Abstract</b> <p>A 32.20 km/h, 75° oblique impact Side NCAP Test was conducted on the subject 2019 Audi Q8 Premium 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 29, 2019.</p> <p>The impact velocity was 32.42 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 21.9°C. The test vehicle post-test maximum crush was 373 mm at level 1. The test vehicle's performance was as follows:</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2" style="text-align: left;">Measurement Description</th> <th colspan="3">Driver ATD (SID-IIs)</th> </tr> <tr> <th>Units</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td style="text-align: left;">Head Injury Criteria (HIC<sub>36</sub>)</td> <td>N/A</td> <td>1000</td> <td>282</td> </tr> <tr> <td style="text-align: left;">Resultant Lower Spine Acceleration</td> <td>Gs</td> <td>82</td> <td>49</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>2639</td> </tr> <tr> <td style="text-align: left;">Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>38*</td> <td>24</td> </tr> <tr> <td style="text-align: left;">Maximum Abdomen Rib Deflection</td> <td>mm</td> <td>45*</td> <td>19</td> </tr> </tbody> </table> <p>*Proposed IARV</p> <p>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.</p>				Measurement Description	Driver ATD (SID-IIs)			Units	Threshold	Result	Head Injury Criteria (HIC <sub>36</sub> )	N/A	1000	282	Resultant Lower Spine Acceleration	Gs	82	49	Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2639	Maximum Thoracic Rib Deflection	mm	38*	24	Maximum Abdomen Rib Deflection	mm	45*	19
Measurement Description	Driver ATD (SID-IIs)																													
	Units	Threshold	Result																											
Head Injury Criteria (HIC <sub>36</sub> )	N/A	1000	282																											
Resultant Lower Spine Acceleration	Gs	82	49																											
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2639																											
Maximum Thoracic Rib Deflection	mm	38*	24																											
Maximum Abdomen Rib Deflection	mm	45*	19																											
<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>  138	<b>22. Price</b>																											

## TABLE OF CONTENTS

<u>Section</u>		<u>Page No.</u>
1	Test Purpose and Procedure	1
2	Summary of Test Results	2
3	Occupant and Vehicle Information	4

<u>Data Sheet No.</u>		<u>Page No.</u>
1	General Test and Vehicle Parameter Data	5
2	Seat, Seat Belt, Steering Wheel Adjustment and Fuel System Data	8
3	Dummy Longitudinal Clearance Dimensions	11
4	Dummy Lateral Clearance Dimensions	12
5	Camera and Instrumentation Data	13
6	Vehicle Accelerometer Data	14
7	Rigid Pole Load Cell Data	15
8	Post-Test Observations	16
9	Vehicle Profile Measurements	18
10	Vehicle Exterior Crush Measurements	19
11	Vehicle Damage Profile Distances	22
12	FMVSS No. 301 Static Rollover Results	23
13	Dummy/Vehicle Temperature Stabilization Data	24

### Appendix

A	Photographs	A
B	Vehicle and Dummy Response Data Plots	B
C	Dummy Configuration and Performance Verification Data	C
D	Test Equipment and Instrumentation Calibration Data	D



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

This side impact test is part of the MY 2019 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 2019 Audi Q8 Premium 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 2019 Audi Q8 Premium 5-Door SUV. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.42 km/h. The test was conducted by MGA Research Corporation in Burlington, Wisconsin on January 29, 2019. 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	282
Resultant Lower Spine Acceleration	Gs	82	49
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2639
Maximum Thoracic Rib Deflection	mm	38*	24
Maximum Abdominal Rib Deflection	mm	45*	19

\*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/Pelvis Airbag	Yes	Yes	Yes	No
Seat Belt Pretensioner	Yes	Yes	Yes	No
Seat Belt Load Limiter	Yes		Yes	
Other				

The test data can be found on the NHTSA website at [www.nhtsa.gov](http://www.nhtsa.gov)

### **GENERAL COMMENTS**

Left Floor Sill Y recorded no valid data after 22ms.

Left B-Post @ Sill Y recorded no valid data after 18ms.

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: 2019 Audi Q8 Premium 5-Door SUV  
Test Program: NCAP Side Pole Impact Test

NHTSA No. O20195801  
Test Date: 1/29/2019

**TEST VEHICLE INFORMATION AND OPTIONS**

NHTSA No.	O20195801	Traction Control System (TCS)	Yes
Model Year	2019	Auto-Leveling System	No
Make	Audi	Automatic Door Locks (ADL)	Yes
Model	Q8 Premium	Power Window Auto-Reverse	Yes
Body Style	5-Door SUV	Other Optional Feature	No
VIN	WA1AVAF14KD010029	Driver Front Airbag	Yes
Body Color	Samurai Gray Metallic	Driver Curtain Airbag	Yes
Odometer Reading (km/mi)	119 km / 74 mi	Driver Head/Torso Airbag	No
Engine Displacement (L)	3.0	Driver Torso Airbag	No
Type/No. Cylinders	6	Driver Torso/Pelvis Airbag	Yes
Engine Placement	Longitudinal	Driver Pelvis Airbag	No
Transmission Type	Automatic	Driver Knee Airbag	No
Transmission Speeds	8	Rear Pass. Curtain Airbag	Yes
Overdrive	Yes	Rear Pass. Head/Torso Airbag	No
Final Drive	AWD	Rear Pass. Torso Airbag	No
Roof Rack	No	Rear Pass. Torso/Pelvis Airbag	No
Sunroof/T-Top	Yes	Rear Pass. Pelvis Airbag	No
Running Boards	No	Driver Seat Belt Pretensioner	Yes
Tilt Steering Wheel	Yes	Rear Pass. Seat Belt Pretensioner	Yes
Power Seats	Yes	Driver Load Limiter	Yes
Anti-Lock Brakes (ABS)	Yes	Rear Pass. Load Limiter	Yes
		Other Restraint Feature	No

Does owner's manual provide instructions to turn off automatic door locks?	Yes
--	-----

**DATA FROM CERTIFICATION LABEL**

Manufactured By	AUDI AG	GVWR (kg)	2935
Date of Manufacture	10/18	GAWR Front (kg)	1510
Vehicle Type	MPV	GAWR Rear (kg)	1765

**VEHICLE SEATING AND WEIGHT CAPACITY DATA**

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	2	3		5	
Capacity Weight (VCW) (kg)				500	(A)
DSC x 68.04 kg				340	(B)
Rated Cargo and Luggage Weight (RCLW) (kg)				160	(A-B)

**VEHICLE SEAT TYPE**

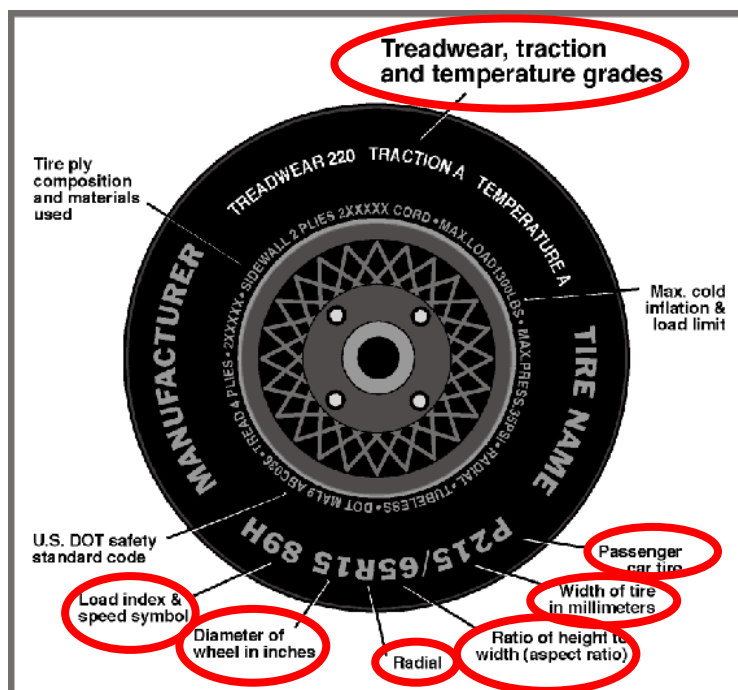
Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						Manual	Power
Front Seat	X						X
Rear or Second Row			X			w/Lever	
Third Row Seat							

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

Test Vehicle: 2019 Audi Q8 Premium 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. O20195801  
 Test Date: 1/29/2019

**VEHICLE TIRE INFORMATION**



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	340	340
Cold Pressure (kPa)	240	260
Recommended Tire Size	275/50R20	275/50R20
Tire Size on Vehicle	275/50R20	275/50R20
Tire Manufacturer	Toyo	Toyo
Tire Model	Celsius WVA	Celsius WVA
Treadwear	300	300
Traction	A	A
Temperature Grade	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Steel, 2 Polyester, 1 Nylon	2 Steel, 2 Polyester, 1 Nylon
Load Index/Speed Symbol	113H	113H
Tire Material	Rubber	Rubber
DOT Safety Code Left	CXA2 6CV 3518	CXA2 6CV 3318
DOT Safety Code Right	CXA2 6CV 3518	CXA2 6CV 3318

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

Test Vehicle: 2019 Audi Q8 Premium 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. O20195801  
 Test Date: 1/29/2019

**TEST PRESSURES**

	Units	LF	RF	LR	RR
As Delivered	kpa	138	138	90	69
Tire Placard	kpa	240	240	260	260
Owner's Manual	kpa	240	240	260	260
As Tested	kpa	240	240	260	260

**TEST VEHICLE WEIGHTS**

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	596.0	510.5		611.0	601.0		607.5	607.5	
Right	kg	649.0	481.5		631.5	574.0		651.5	559.0	
Ratio	%	55.7%	44.3%		51.4%	48.6%		51.9%	48.1%	
Totals	kg	1245.0	992.0	2237.0	1242.5	1175.0	2417.5	1259.0	1166.5	2425.5

**TARGET TEST WEIGHT CALCULATION**

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	2237.0	(A)
Actual Weight of 1 P572V ATD (SID-IIs) ATD Used	kg	52	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	136	(C)
Calculated Vehicle Target Weight (TVTW)	kg	2425.0	(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	1.6	2.0	2.2	Yes
Front Pass. Sill Angle (front-to-rear)*	deg	-1.3	-1.0	-0.8	Yes
Front Bumper Angle (left-to-right)**	deg	-0.2	-0.1	0.0	Yes
Rear Bumper Angle (left-to-right)**	deg	0.4	0.6	0.7	Yes
Vehicle CG (Aft of Front Axle)	mm	1329	1456	1441	
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	-9	2	2	

\*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)	135
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: 2019 Audi Q8 Premium 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. O20195801  
 Test Date: 1/29/2019

**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	23.4	12.4	17.9
Front Passenger Seat	23.6	12.9	18.3
Front Center Seat			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed

**SEAT HEIGHT AND ANGLE**

Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCRP Height (mm)	SCRP Height Position	SCRP Height (mm)		
				Rear-most	Mid-Fore/Aft	Forward-Most
Driver Seat	17.9	34	Max	68	68	68
			Mid	34	34	34
			Min	0	0	0
Front Passenger Seat	18.3	35	Max	70	70	70
			Mid	35	35	35
			Min	0	0	0
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: 2019 Audi Q8 Premium 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

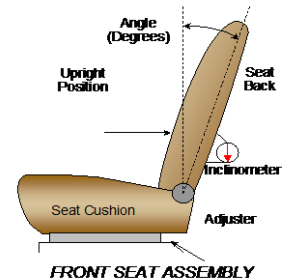
NHTSA No. O20195801  
 Test Date: 1/29/2019

**SEAT FORE/AFT POSITIONS**

Seat	Total Fore/Aft Travel		Test Position from Forward-most Position	
	mm	Detents	mm	Detent
Driver Seat	246		0	
Front Passenger Seat	246		0	
Front Center Seat				
Struck Side Rear Seat	130	14 (1 <sup>st</sup> as 1)	130	13 <sup>th</sup> (1 <sup>st</sup> as 0)
Non-Struck Side Rear Seat	130	14 (1 <sup>st</sup> as 1)	130	13 <sup>th</sup> (1 <sup>st</sup> as 0)
Rear Center Seat	130	14 (1 <sup>st</sup> as 1)	130	13 <sup>th</sup> (1 <sup>st</sup> as 0)

**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	71.0		12.9	
Front Passenger Seat	71.9		12.9	
Front Center Seat				
Struck Side Rear Seat	42.0	3 (1 <sup>st</sup> as 1)	19.0	0 <sup>th</sup> (1 <sup>st</sup> as 0)
Non-Struck Side Rear Seat	42.0	3 (1 <sup>st</sup> as 1)	19.0	0 <sup>th</sup> (1 <sup>st</sup> as 0)
Rear Center Seat	42.0	3 (1 <sup>st</sup> as 1)	19.0	0 <sup>th</sup> (1 <sup>st</sup> as 0)

Front seat back angle measured with 2' level on seat back.

**SEAT BELT ANCHORAGE ADJUSTMENT**

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

	Total # of Positions	Placed in Position #
Driver Seat	4 detents (1 <sup>st</sup> as 1)	0 <sup>th</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	5 detents (1 <sup>st</sup> as 1)	0 <sup>th</sup> (Lowermost as 0)

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

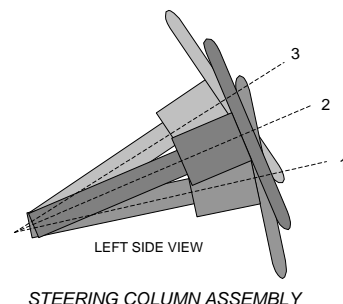
Test Vehicle: 2019 Audi Q8 Premium 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. O20195801  
 Test Date: 1/29/2019

**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.

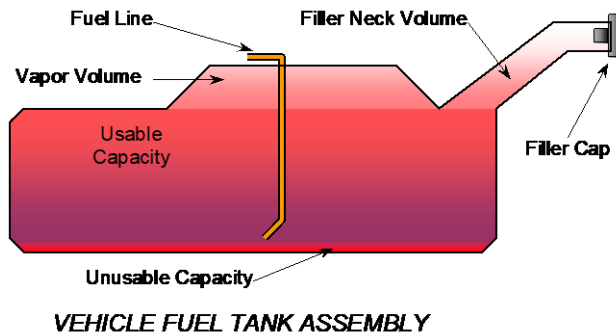
	Degrees	Fore/Aft Position (mm)
Lowermost, Position 1	70.3	195
Geometric Center, Position 2	68.2	160
Uppermost, Position 3	66.0	125
Telescoping Steering Wheel Travel		70
Test Position	68.2	160



**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 electronic fuel pump. At ignition “on” the pump will work for a short time to put pressure to the system. If the engine is started the pump works normally. The filler neck is located on the passenger’s side.



**FUEL TANK CAPACITY DATA**

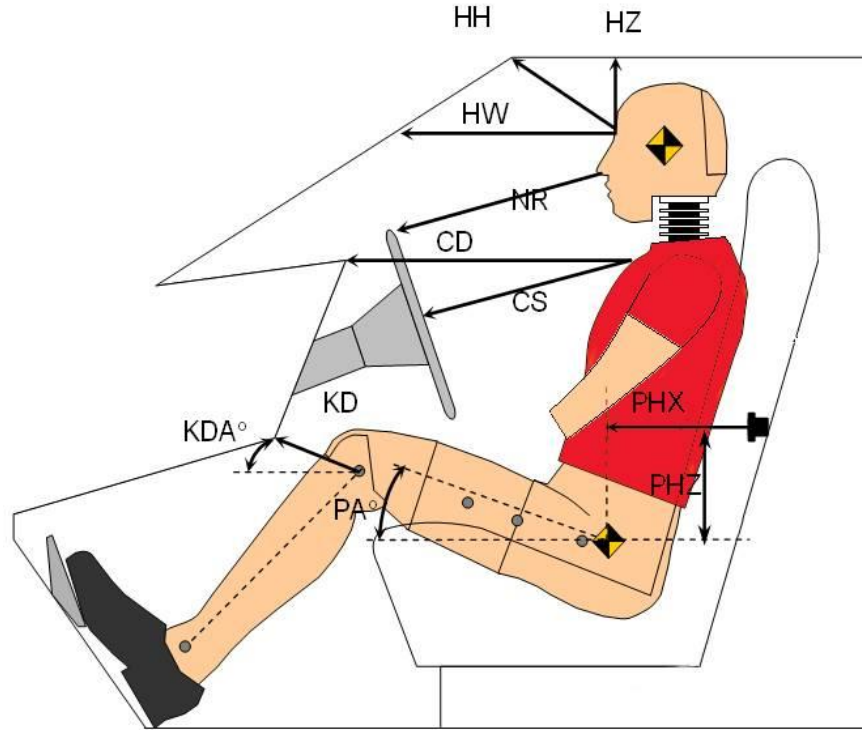
	Liters
Usable Capacity of “Standard Tank” (see Form No. 1)	84.8
Usable Capacity of “Optional Tank” (see Form No. 1)	
Usable Capacity of Standard Tank as Specified in Owner’s Manual	84.8
Usable Capacity of Optional Tank as Specified in Owner’s Manual	
93% of Usable Capacity	78.9
Actual Amount of Solvent Used	78.7
1/3 of Usable Capacity	28.3

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

**.DATA SHEET NO. 3  
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS**

Test Vehicle: 2019 Audi Q8 Premium 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. O20195801  
 Test Date: 1/29/2019



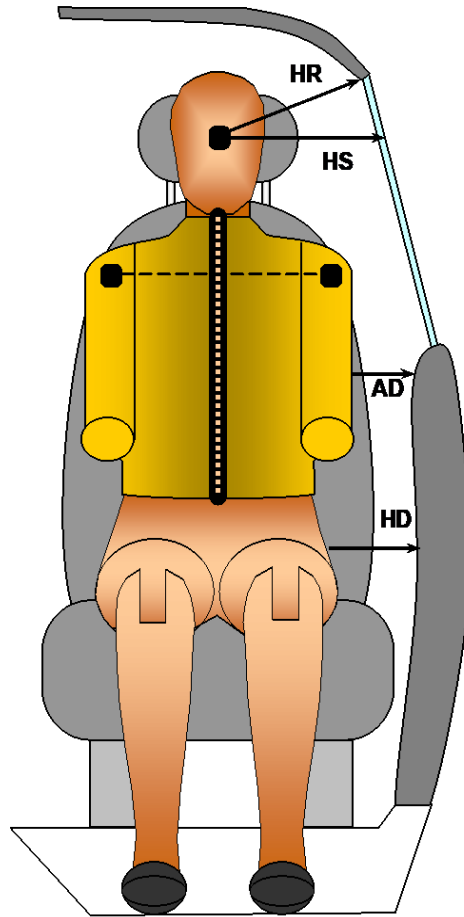
**LEFT SIDE VIEW**

Code	Measurement Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	260	
HW	Head to Windshield	574	
HZ	Head to Roof Liner	170	
NR	Nose to Rim	218	
CD	Chest to Dashboard	390	
CS	Chest to Steering Wheel	173	
KDL/KDAL°	Left Knee to Dash	116	38.8
KDR/KDAR°	Right Knee to Dash	120	36.2
PAX°	Pelvic Tilt Angle (X-Axis)		21.8
PAY°	Pelvic Tilt Angle (Y-Axis)		-0.8
PHX	Hip Point to Striker (X-Axis)	317	
PHZ	Hip Point to Striker (Z-Axis)	120	

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

Test Vehicle: 2019 Audi Q8 Premium 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. O20195801  
 Test Date: 1/29/2019



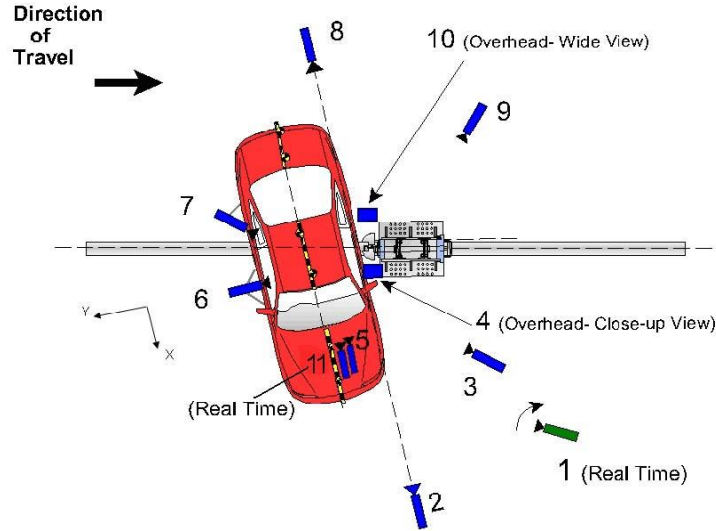
**FRONT VIEW OF DUMMY**

Code	Measurement Description	Driver
		Length (mm)
HR	Head to Side Header	248
HS	Head to Side Window	360
AD	Arm to Door	189
HD	Hip Point to Door	242

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

Test Vehicle: 2019 Audi Q8 Premium 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. O20195801  
 Test Date: 1/29/2019



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	6360	-30	-2100	25	1000
3	Impact Side 45° Forward	4500	-1660	-2100	16	1000
4	Overhead Closeup	0	0	-6670	70	1000
5	Onboard – Driver Front				16	1000
6	Onboard – Driver Side				8	1000
7	Onboard – Driver Rear				8	1000
8	Rear Ground Level	-7020	-4020	-2000	25	1000
9	Impact Side 45° Rearward	-2910	-60	-2040	16	1000
10	Overhead Wide View	-420	1000	-6650	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.

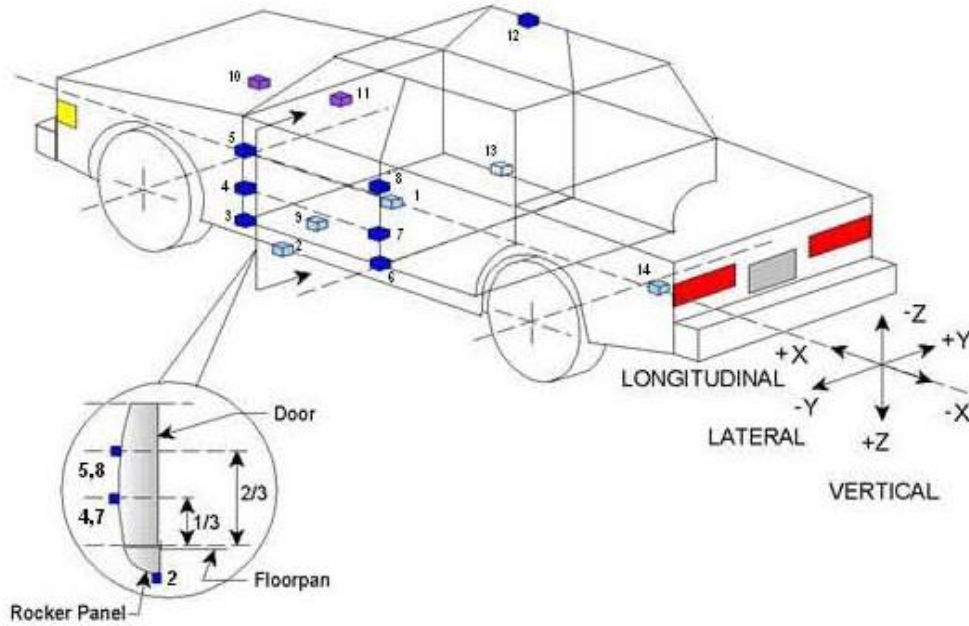
Explain why camera(s) did not operate as intended: None

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: 2019 Audi Q8 Premium 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. O20195801  
 Test Date: 1/29/2019



	Accelerometer Location			
	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2544	315	-294
2	Left Floor Sill	3200	-803	-284
3	A Pillar Sill	3476	-803	-284
4	A Pillar Low	3370	-900	-690
5	A Pillar Mid	3371	-900	-890
6	B Pillar Sill	2329	-803	-278
7	B Pillar Low			
8	B Pillar Mid			
9	Driver Seat Track	2451	-414	-421
10	Engine Top	4310	32	-1041
11	Firewall	3898	0	-1050
12	Right Roof	2784	486	-1715
13	Right Floor Sill	3230	803	-292
14	Rear Floorpan	1169	0	-707

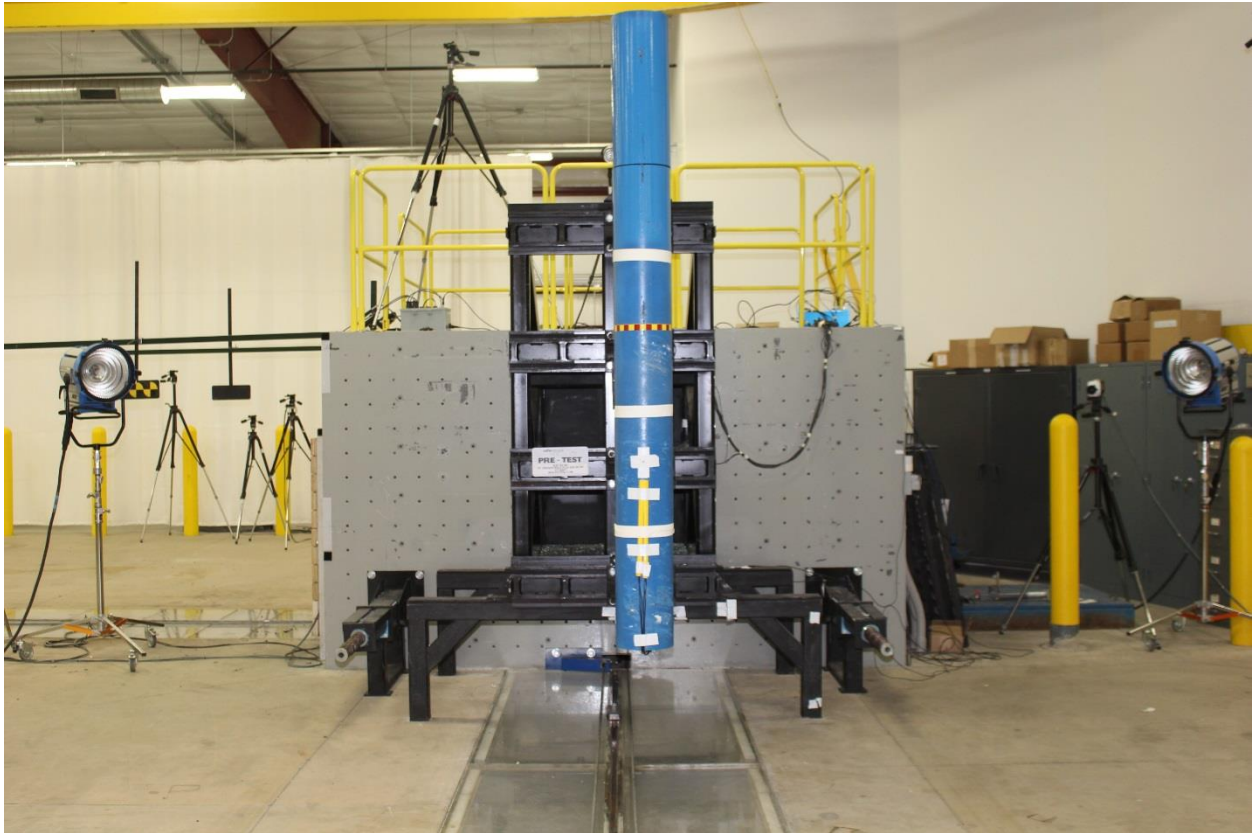
Reference:

- 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: 2019 Audi Q8 Premium 5-Door SUV  
Test Program: NCAP Side Pole Impact Test

NHTSA No. O20195801  
Test Date: 1/29/2019



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: 2019 Audi Q8 Premium 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. O20195801  
 Test Date: 1/29/2019

**TEST DUMMY INFORMATION AND CONTACT POINTS**

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



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

Test Vehicle: 2019 Audi Q8 Premium 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. O20195801  
 Test Date: 1/29/2019

**SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION**

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

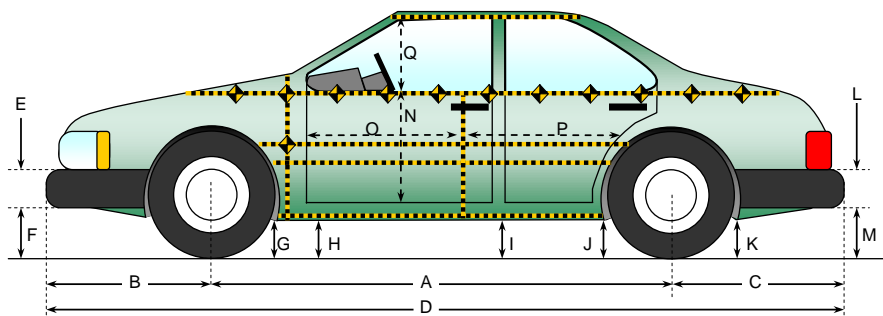
**VEHICLE SPEED, VEHICLE ANGLE AT IMPACT, AND IMPACT POINT LOCATION DATA**

Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		1219
Actual Impact Point (Aft of Front Axle)	mm		1222
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	75.3
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	32.42
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.40

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

Test Vehicle: 2019 Audi Q8 Premium 5-Door SUV  
Test Program: NCAP Side Pole Impact Test

NHTSA No. O20195801  
Test Date: 1/29/2019



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

**LEFT SIDE VIEW**

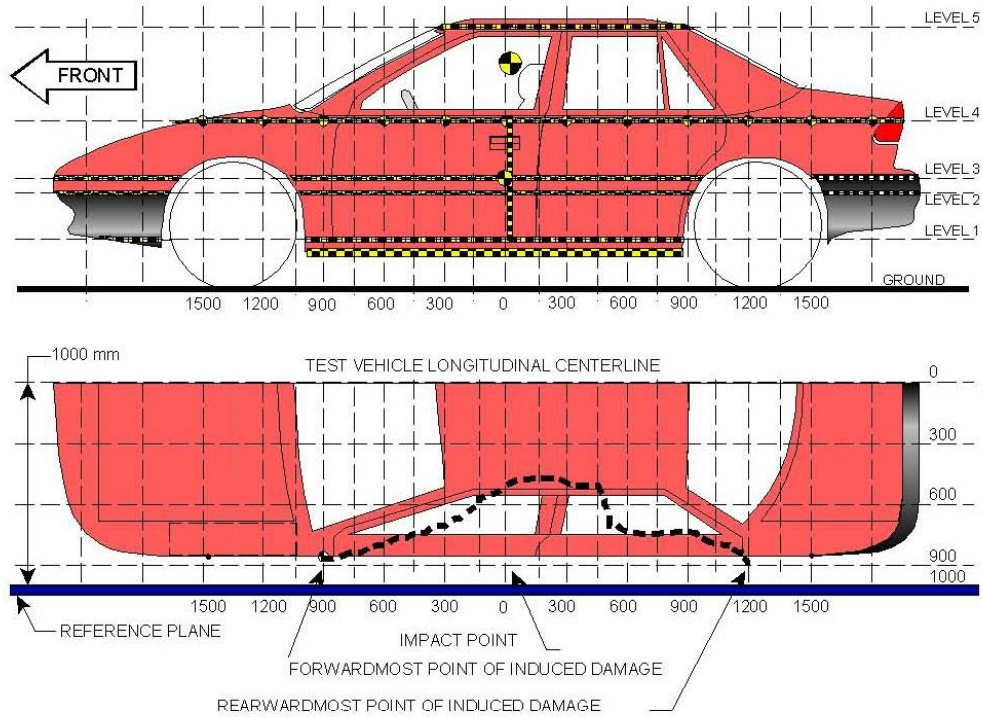
**VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION**

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2996	2910	86
B	Front Axle to FSOV	957	1037	-80
C	Rear Axle to RSOV	1022	1009	13
D	Total Vehicle Length at Centerline	4975	4956	19
E	Front Bumper Thickness	145	145	0
F	Front Bumper Bottom to Ground	307	267	40
G	Sill Height at Front Wheel Well	273	165	108
H	Sill Height at Front Door Leading Edge	259	165	94
I	Sill Height at B-Pillar	263	192	71
J1	Sill Height at Rear Wheel Well	250	209	41
J2	Pinch Weld Height at Rear Wheel Well	240	204	36
K	Sill Height Aft of Rear Wheel Well	304	226	78
L	Rear Bumper Thickness	100	100	0
M	Rear Bumper Bottom to Ground	217	264	-47
N	Sill Height to Bottom of Front Window Sill	961	913	48
O	Front Door Leading Edge to Impact CL	634	486	148
P	Rear Door Trailing Edge to Impact CL	1502	1406	96
Q	Front Window Opening	403	383	20
R	Right Side Length	3926	3933	-7
S	Left Side Length	3926	3832	94
T	Vehicle Width at B-Pillars	1996	1879	117

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

Test Vehicle: 2019 Audi Q8 Premium 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. O20195801  
 Test Date: 1/29/2019



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	516	373	75
2	Occupant Hip Point	726	362	75
3	Mid Door	757	365	75
4	Window Sill	1138	304	75
5	Window Top	1669	87	75

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

Test Vehicle: 2019 Audi Q8 Premium 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. O20195801  
 Test Date: 1/29/2019

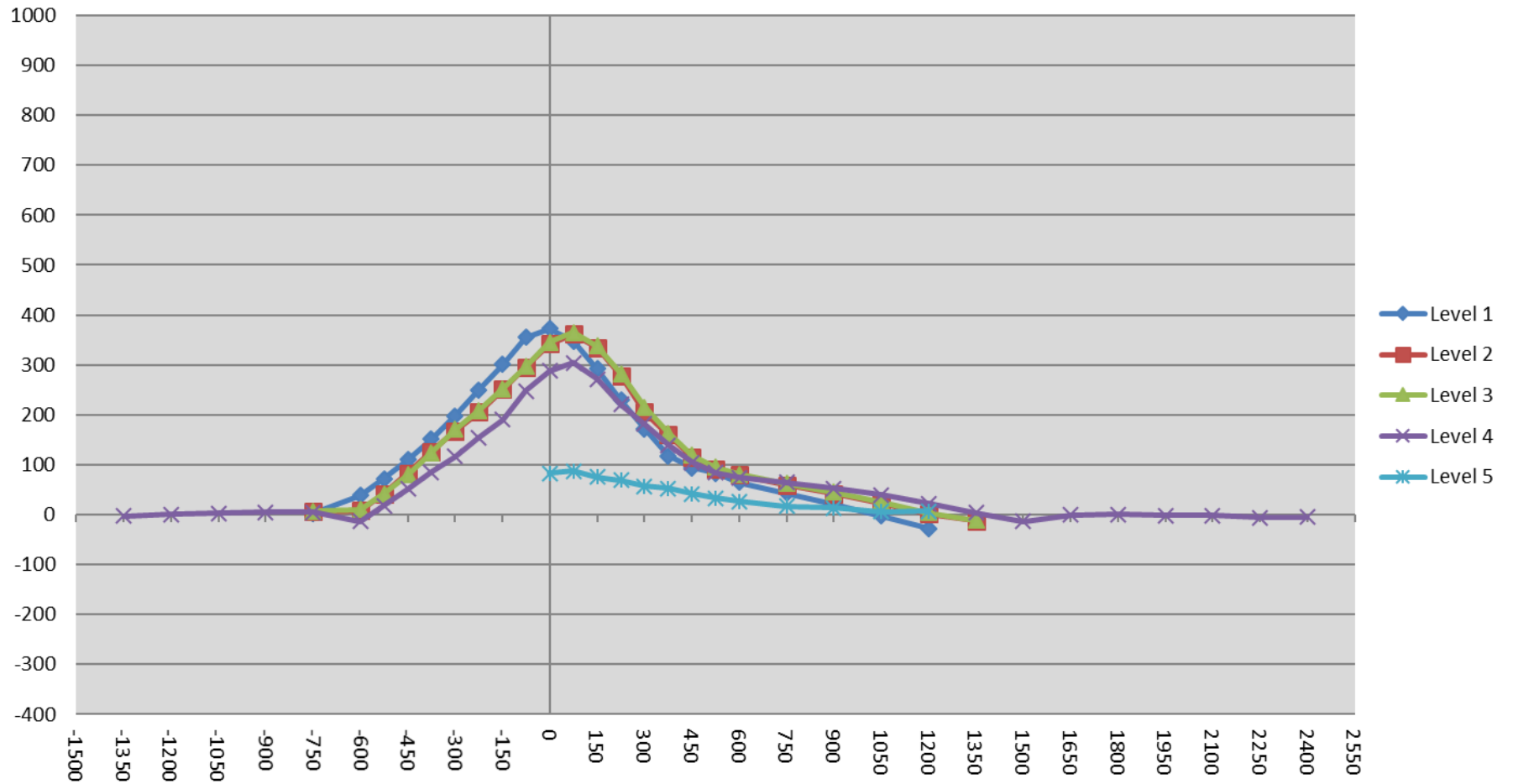
	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-2700															
-2550															
-2400															
-2250															
-2100															
-1950															
-1800															
-1650															
-1500															
-1350				307					304					-3	
-1200				283					283					0	
-1050				266					269					3	
-900				253					258					5	
-825															
-750	120	112	111	237		124	118	118	242		4	6	7	5	
-675															
-600	124	116	116	226		127	124	126	212		3	8	10	-14	
-525	125	118	117	217		163	160	159	235		38	42	42	18	
-450	125	120	119	214		197	203	199	265		72	83	80	51	
-375	122	122	122	212		232	248	246	297		110	126	124	85	
-300	118	124	123	209		269	292	294	325		151	168	171	116	
-225	114	125	124	205		312	330	333	360		198	205	209	155	
-150	110	125	124	205		360	376	376	395		250	251	252	190	
-75	107	125	124	204		408	421	421	452		301	296	297	248	
0	105	125	124	200	493	460	467	469	488	576	355	342	345	288	83
75	104	125	124	199	478	477	487	489	503	565	373	362	365	304	87
150	103	125	123	197	473	451	460	461	469	548	348	335	338	272	75
225	102	125	124	199	467	394	403	406	420	536	292	278	282	221	69
300	101	125	124	194	467	330	330	339	376	524	229	205	215	182	57
375	101	125	124	193	467	273	285	287	332	520	172	160	163	139	53
450	101	126	124	191	468	219	241	243	296	510	118	115	119	105	42
525	101	126	124	192	468	195	218	219	276	501	94	92	95	84	33
600	102	127	125	192	470	185	207	206	266	496	83	80	81	74	26
675															
750	103	129	127	193	471	167	188	189	257	488	64	59	62	64	17
825															
900	106	130	128	195	477	149	172	173	248	490	43	42	45	53	13
1050	111	125	125	197	488	132	148	150	236	494	21	23	25	39	6
1200	116	118	119	191	507	113	120	123	213	514	-3	2	4	22	7
1350	122	112	111	179		94	99	100	183		-28	-13	-11	4	
1500				173					159					-14	
1650				170					169					-1	
1800				171					171					0	
1950				182					180					-2	
2100				198					196					-2	
2250				223					217					-6	
2400				256					251					-5	
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: 2019 Audi Q8 Premium 5-Door SUV  
Test Program: NCAP Side Pole Impact Test

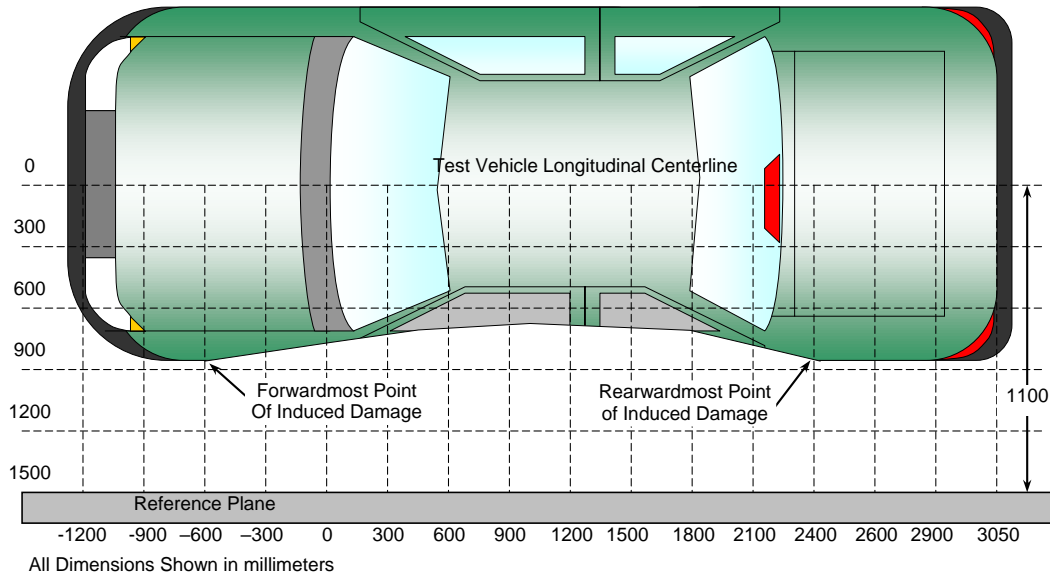
NHTSA No. O20195801  
Test Date: 1/29/2019



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

Test Vehicle: 2019 Audi Q8 Premium 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. O20195801  
 Test Date: 1/29/2019



**TOP VIEW**

**DAMAGE PROFILE DISTANCES**

DPD	Distance from Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Crush (mm)
1	465	3	124	234	110
2	245	3	124	384	260
3	25	3	124	486	362
4	-195	3	124	354	230
5	-415	3	120	224	104
6	-635	3	116	209	93

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

Test Vehicle: 2019 Audi Q8 Premium 5-Door SUV  
Test Program: NCAP Side Pole Impact Test

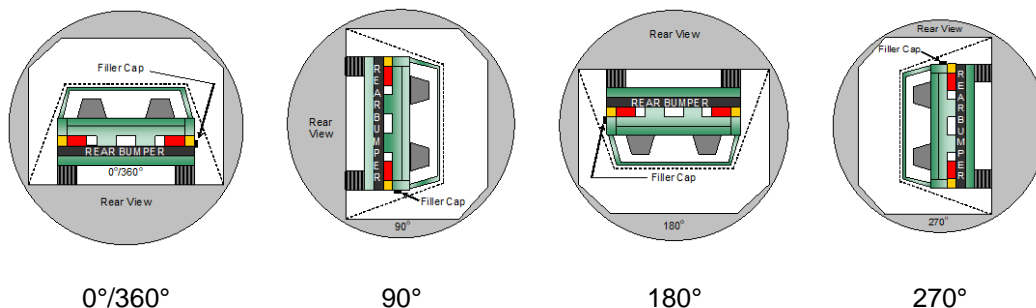
NHTSA No. O20195801  
Test Date: 1/29/2019

Test Time: 3:00 p.m.

Temperature: 21.9°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°	113	300	413
180° to 270°	112	300	412
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

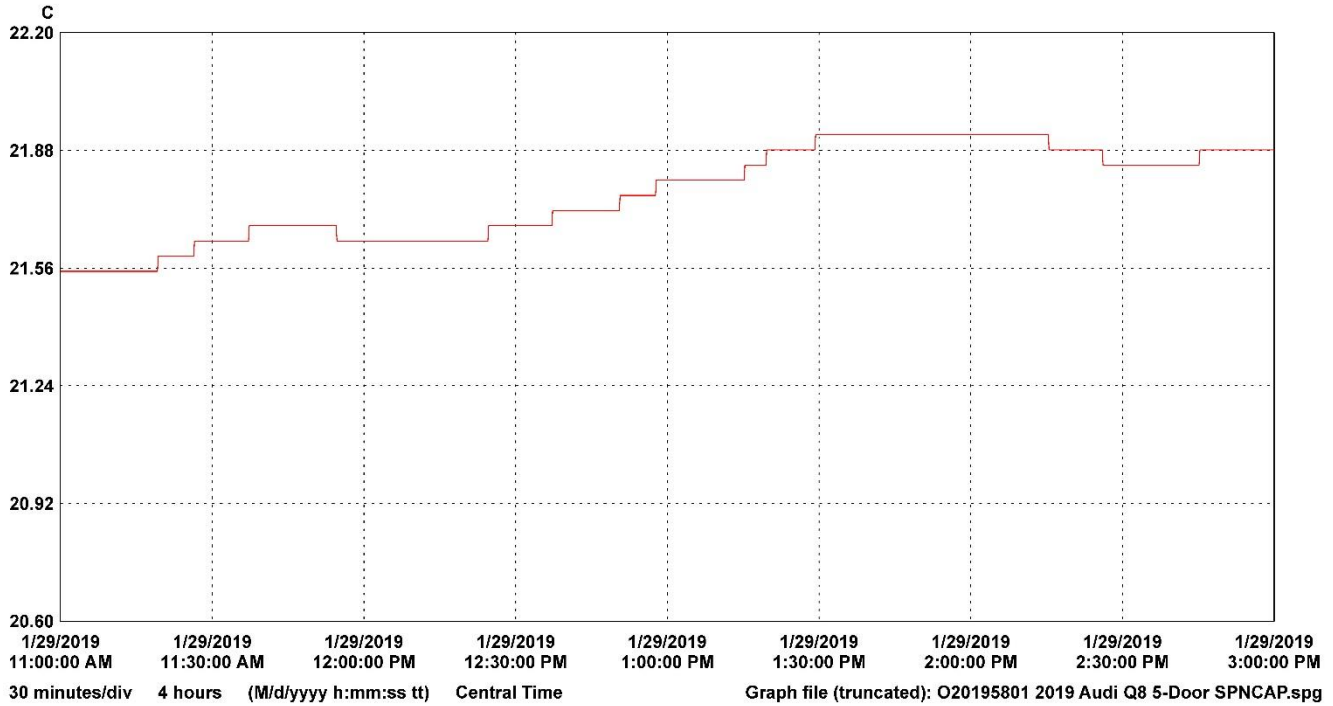
**ROLLOVER SOLVENT SPILLAGE LOCATION TABLE**

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: 2019 Audi Q8 Premium 5-Door SUV  
 Test Program: NCAP Side Pole Impact Test

NHTSA No. O20195801  
 Test Date: 1/29/2019



LN	Serial #	Description	CH	Value	Maximum	Average	Minimum	Units	CH description	Logger file
1	12102107	VSC_South_Hall	1		21.92	21.76	21.55	C	Temperature	12102107_VSC_South_Hall.spl



**APPENDIX A  
PHOTOGRAPHS**

## TABLE OF PHOTOGRAPHS

		<u>Page No.</u>
Photo No. 001	As Delivered Right Front $\frac{3}{4}$ View of Test Vehicle	A-1
Photo No. 002	As Delivered Left Rear $\frac{3}{4}$ View of Test Vehicle	A-1
Photo No. 003	Pre-Test Frontal View of Test Vehicle	A-2
Photo No. 004	Post-Test Frontal View of Test Vehicle	A-2
Photo No. 005	Pre-Test Left Front $\frac{3}{4}$ View of Test Vehicle	A-3
Photo No. 006	Post-Test Left Front $\frac{3}{4}$ View of Test Vehicle	A-3
Photo No. 007	Pre-Test Left Side View of Test Vehicle	A-4
Photo No. 008	Post-Test Left Side View of Test Vehicle	A-4
Photo No. 009	Pre-Test Left Rear $\frac{3}{4}$ View of Test Vehicle	A-5
Photo No. 010	Post-Test Left Rear $\frac{3}{4}$ View of Test Vehicle	A-5
Photo No. 011	Pre-Test Rear View of Test Vehicle	A-6
Photo No. 012	Post-Test Rear View of Test Vehicle	A-6
Photo No. 013	Pre-Test Right Side View of Test Vehicle	A-7
Photo No. 014	Post-Test Right Side View of Test Vehicle	A-7
Photo No. 015	Pre-Test Overhead View of Test Area	A-8
Photo No. 016	Post-Test Overhead View of Test Area	A-8
Photo No. 017	Pre-Test Left Side View of Pole Positioned Against Side of Vehicle	A-9
Photo No. 018	Pre-Test Right Side View of Pole Positioned Against Side of Vehicle	A-9
Photo No. 019	Pre-Test Close-Up View of Impact Point Target	A-10
Photo No. 020	Post-Test Close-Up View of Impact Point Target Showing Impact Location	A-10
Photo No. 021	Pre-Test Front Close-Up View of Dummy Head and Chest	A-11
Photo No. 022	Post-Test Front Close-Up View of Dummy	A-11
Photo No. 023	Pre-Test Left Side View of Dummy Showing Belt and Chalking	A-12
Photo No. 024	Pre-Test Left Side View of Dummy Shoulder and Door Top View	A-12
Photo No. 025	Post-Test Left Side View of Dummy Shoulder and Door Top View	A-13

		<u>Page No.</u>
Photo No. 026	Pre-Test Front View of Seat Back Prior to Dummy Positioning	A-13
Photo No. 027	Pre-Test Front Close-Up View of Dummy Head and Shoulders in Relation to Head Restraint	A-14
Photo No. 028	Pre-Test Front View of Seat Pan Prior to Dummy Positioning	A-14
Photo No. 029	Pre-Test Overhead View of Dummy Thighs on Seat Pan	A-15
Photo No. 030	Pre-Test Left Side View of Dummy's Neck Showing Position of Adjustable Neck Bracket	A-15
Photo No. 031	Pre-Test Left Side View of Dummy's Head Showing Dummy's Head is Level	A-16
Photo No. 032	Pre-Test Placement of Dummy's Feet	A-16
Photo No. 033	Pre-Test View of Belt Anchorage for Dummy	A-17
Photo No. 034	Pre-Test Left Side View of Steering Wheel	A-17
Photo No. 035	Pre-Test View of Disengaged Parking Brake	A-18
Photo No. 036	Pre-Test View of Parking Brake	A-18
Photo No. 037	Pre-Test Close-Up Left Side View of Driver Seat Track	A-19
Photo No. 038	Pre-Test Close-Up Left Side View of Driver Seat Back	A-19
Photo No. 039	Pre-Test Close-Up View of Driver Seat Back or Head Restraint	A-20
Photo No. 040	Pre-Test Dummy and Door Clearance View	A-20
Photo No. 041	Post-Test Dummy and Door Clearance View	A-21
Photo No. 042	Pre-Test Right Side View of Dummy and Front Seat of Occupant Compartment	A-21
Photo No. 043	Post-Test Right Side View of Dummy and Front Seat of Occupant Compartment	A-22
Photo No. 044	Pre-Test Inner Door Panel View	A-22
Photo No. 045	Post-Test Inner Door Panel View Showing Dummy Contact Location	A-23
Photo No. 046	Post-Test Dummy Close-Up Head Contact with Vehicle Interior View	A-23
Photo No. 047	Post-Test Dummy Close-Up Head Contact with Side Air Bag View	A-24
Photo No. 048	Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View	A-24
Photo No. 049	Post-Test Dummy Close-Up Torso Contact with Side Air Bag View	A-25

		<u>Page No.</u>
Photo No. 050	Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View	A-25
Photo No. 051	Post-Test Dummy Close-Up Pelvis Contact with Side Air Bag View	A-26
Photo No. 052	Post-Test Dummy Close-Up Knee Contact with Vehicle Interior View	A-26
Photo No. 053	Pre-Test View of Fuel Filler Cap or Fuel Filler Neck	A-27
Photo No. 054	Post-Test View of Fuel Filler Cap or Fuel Filler Neck	A-27
Photo No. 055	Close-Up View of Vehicle's Certification Label	A-28
Photo No. 056	Close-Up View of Vehicle's Tire Information Placard or Label	A-28
Photo No. 057	Pre-Test Pole Barrier Front View	A-29
Photo No. 058	Post-Test Pole Barrier Front View	A-29
Photo No. 059	Pre-Test Pole Barrier Side View	A-30
Photo No. 060	Post-Test Pole Barrier Side View	A-30
Photo No. 061	Pre-Test Ballast View	A-31
Photo No. 062	Post-Test Primary and Redundant Speed Trap Read-Out	A-31
Photo No. 063	FMVSS No. 301 Static Rollover 0 Degrees	A-32
Photo No. 064	FMVSS No. 301 Static Rollover 90 Degrees	A-32
Photo No. 065	FMVSS No. 301 Static Rollover 180 Degrees	A-33
Photo No. 066	FMVSS No. 301 Static Rollover 270 Degrees	A-33
Photo No. 067	FMVSS No. 301 Static Rollover 360 Degrees	A-34
Photo No. 068	Impact Event	A-34
Photo No. 069	Monroney Label	A-35
Photo No. 070	Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-35
Photo No. 071	Post-Test View of Shattered Vehicle Inner Door Panel	A-36



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



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





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



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





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



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



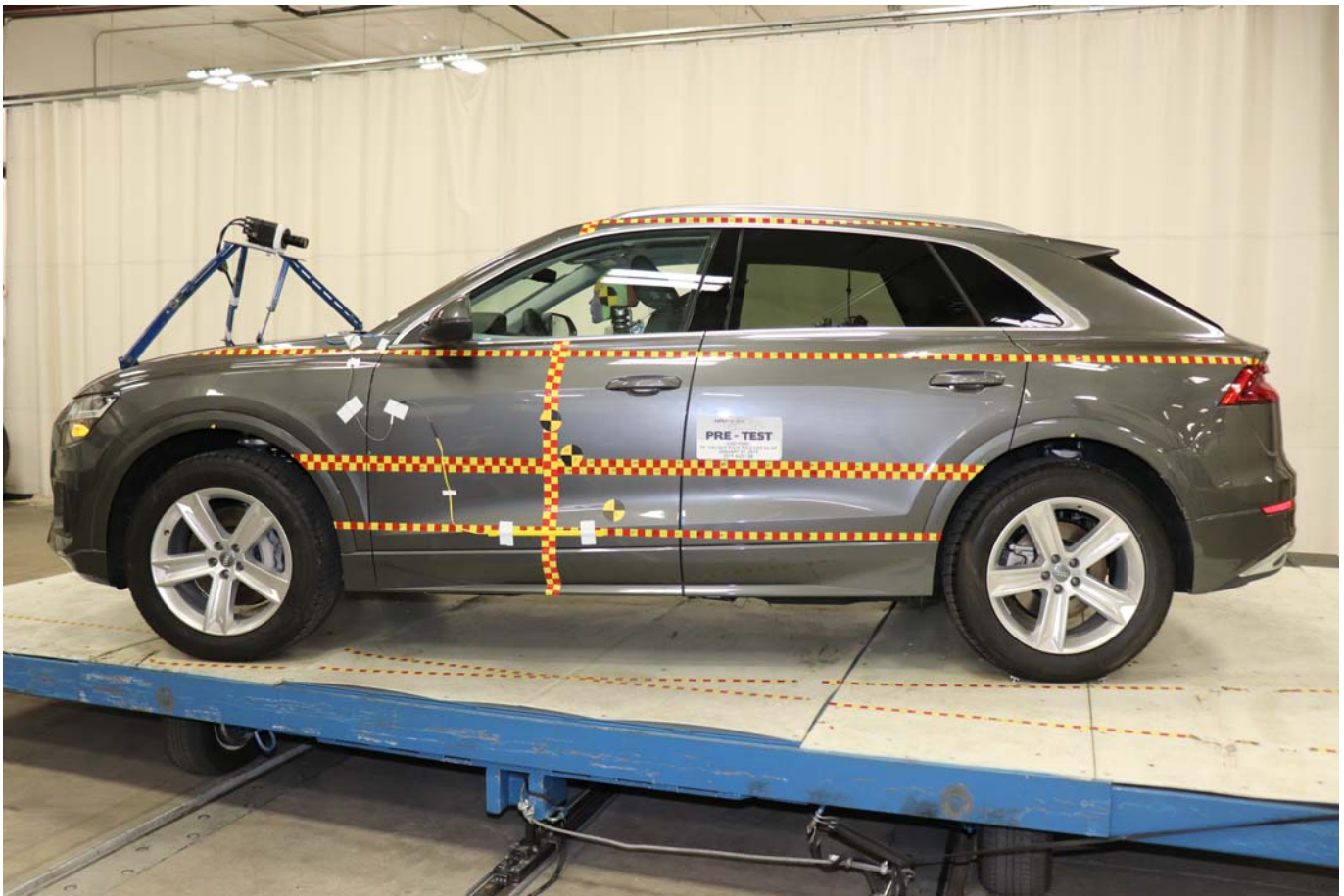


Photo No. 007 - Pre-Test Left Side View of Test Vehicle



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





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



Photo No. 010 - Post-Test Left Rear Three-Quarter 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

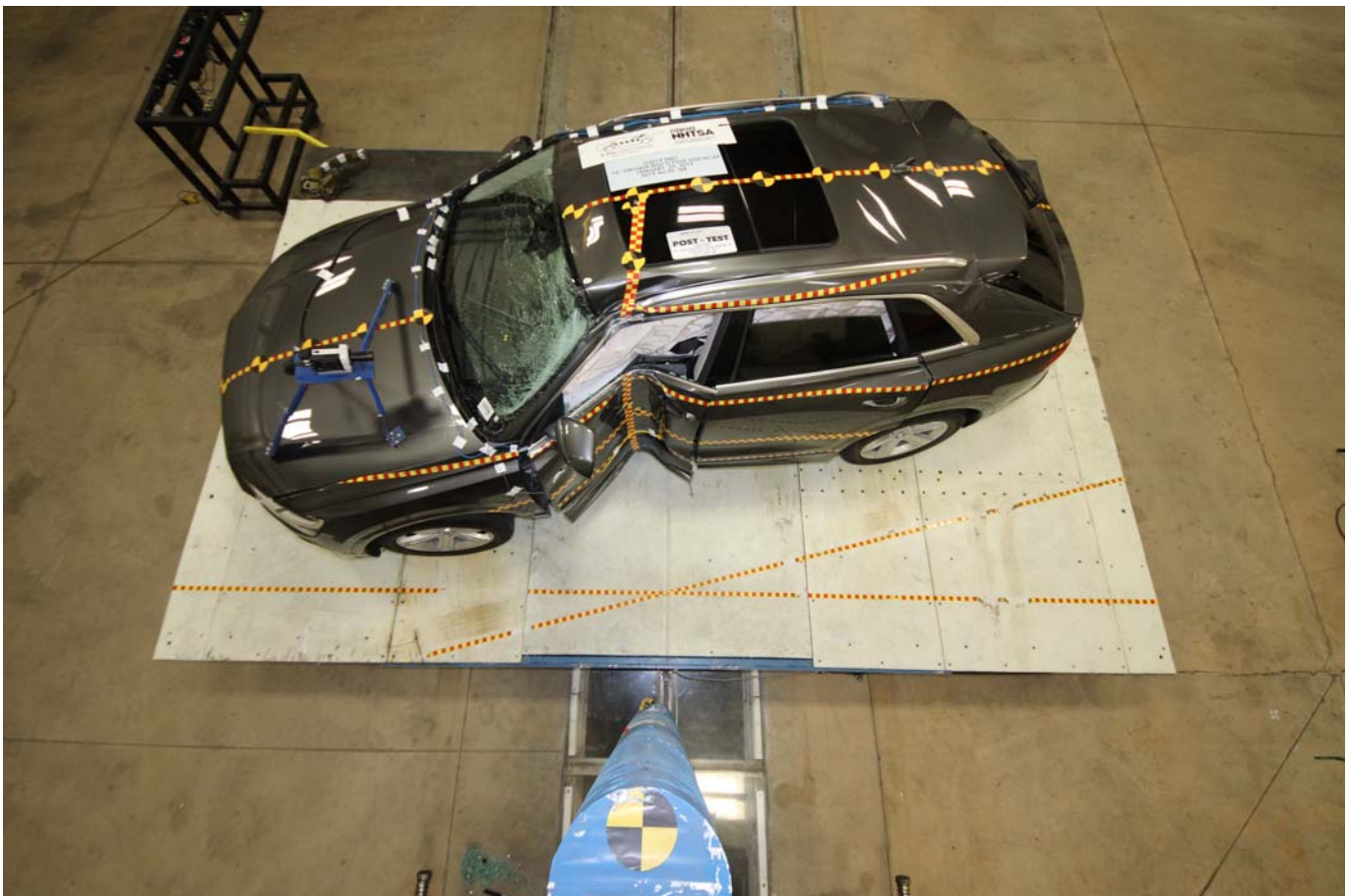


Photo No. 016 - Post-Test Overhead View of Test Area





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



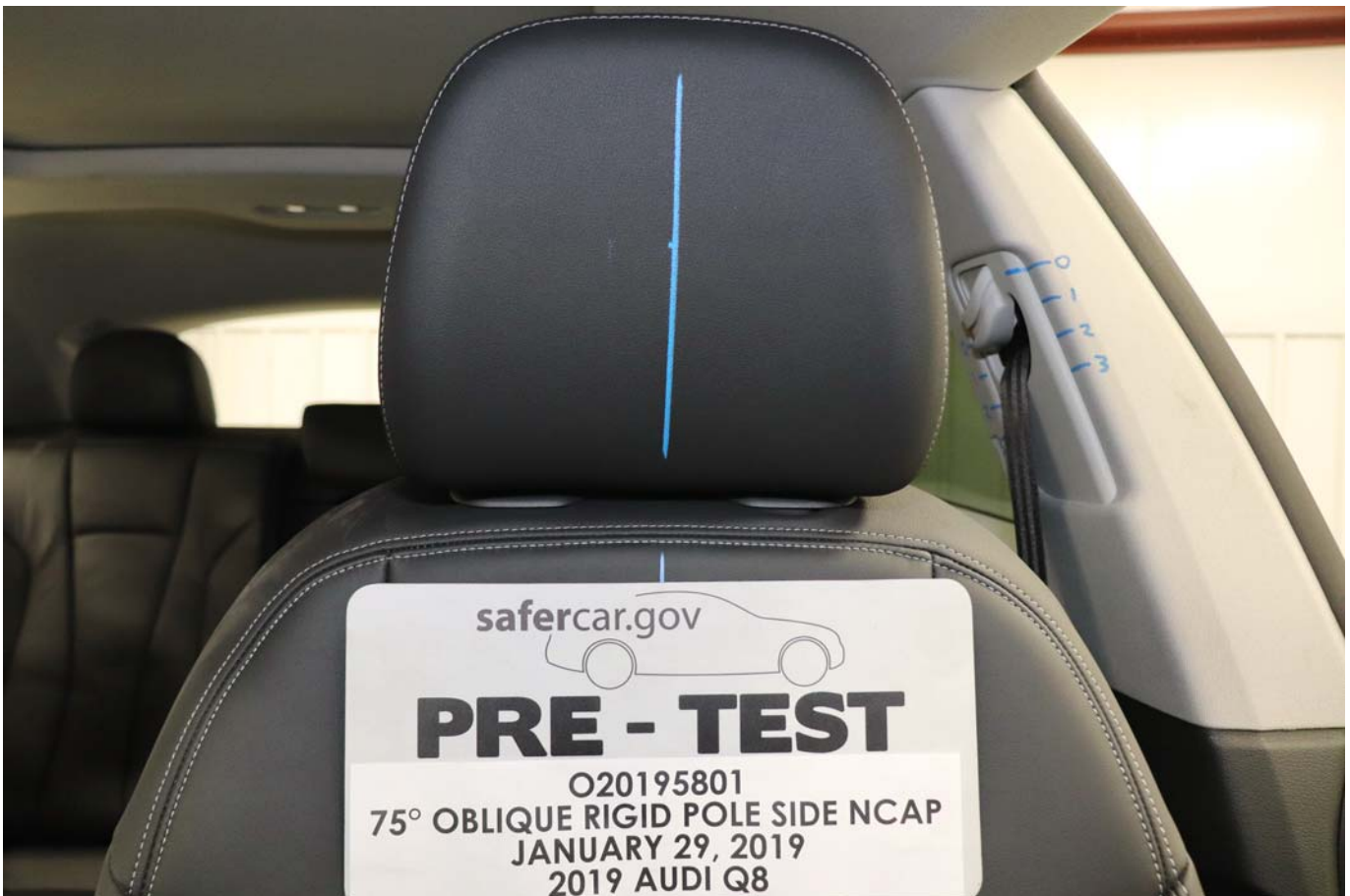
Photo No. 024 - Pre-Test Left Side View of Dummy Shoulder and Door Top View





safercar.gov  
**POST - TEST**  
O20195801  
75° OBLIQUE RIGID POLE SIDE NCAP  
JANUARY 29, 2019  
2019 AUDI Q8

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



safercar.gov  
**PRE - TEST**  
O20195801  
75° OBLIQUE RIGID POLE SIDE NCAP  
JANUARY 29, 2019  
2019 AUDI Q8

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

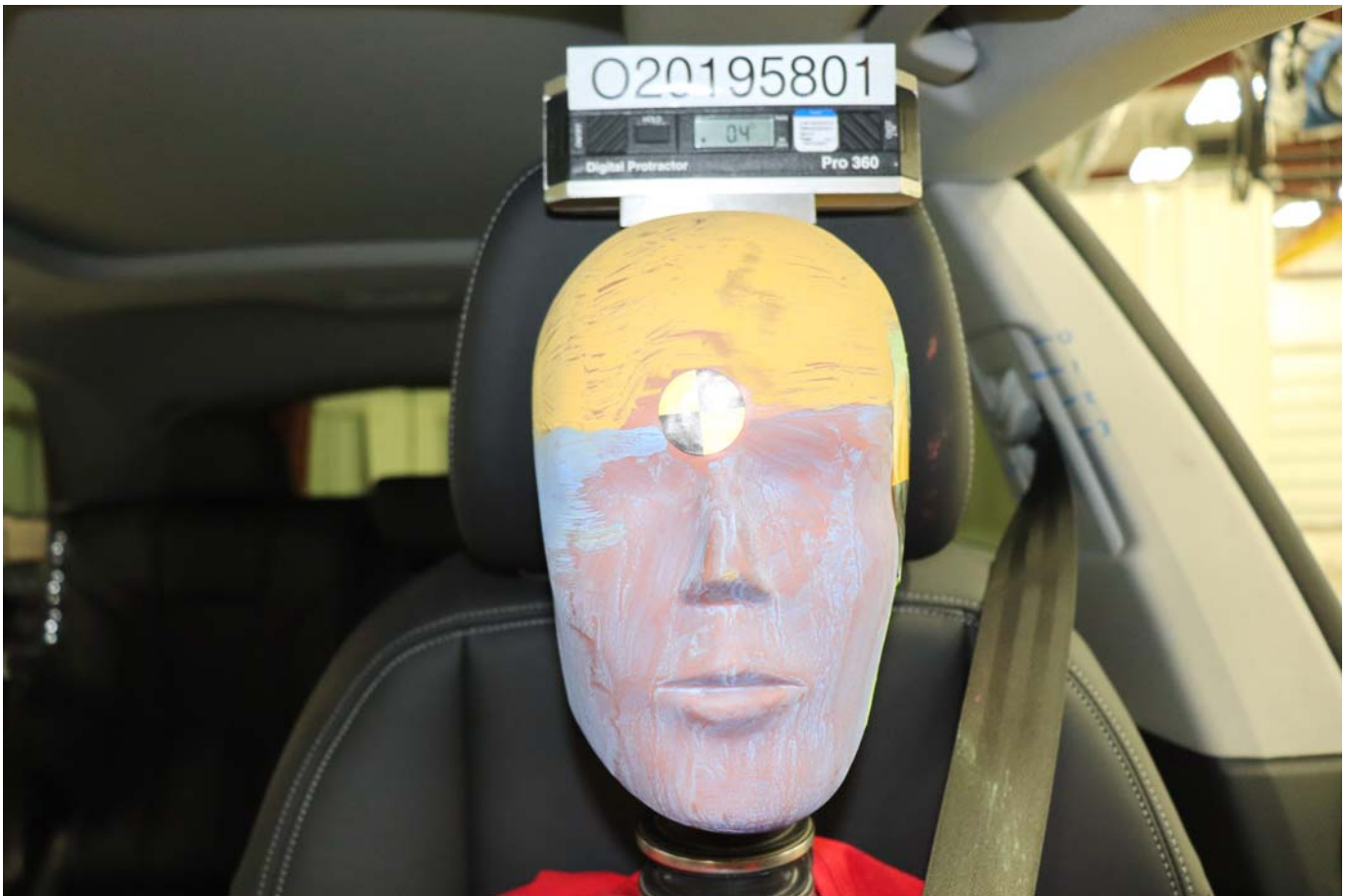


Photo No. 027 - Pre-Test Front Close-Up View of Dummy Head and Shoulders in Relation to Head Restraint



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 Neck Showing Position of Adjustable Neck Bracket



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



Photo No. 032 - Pre-Test Placement of Dummy 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



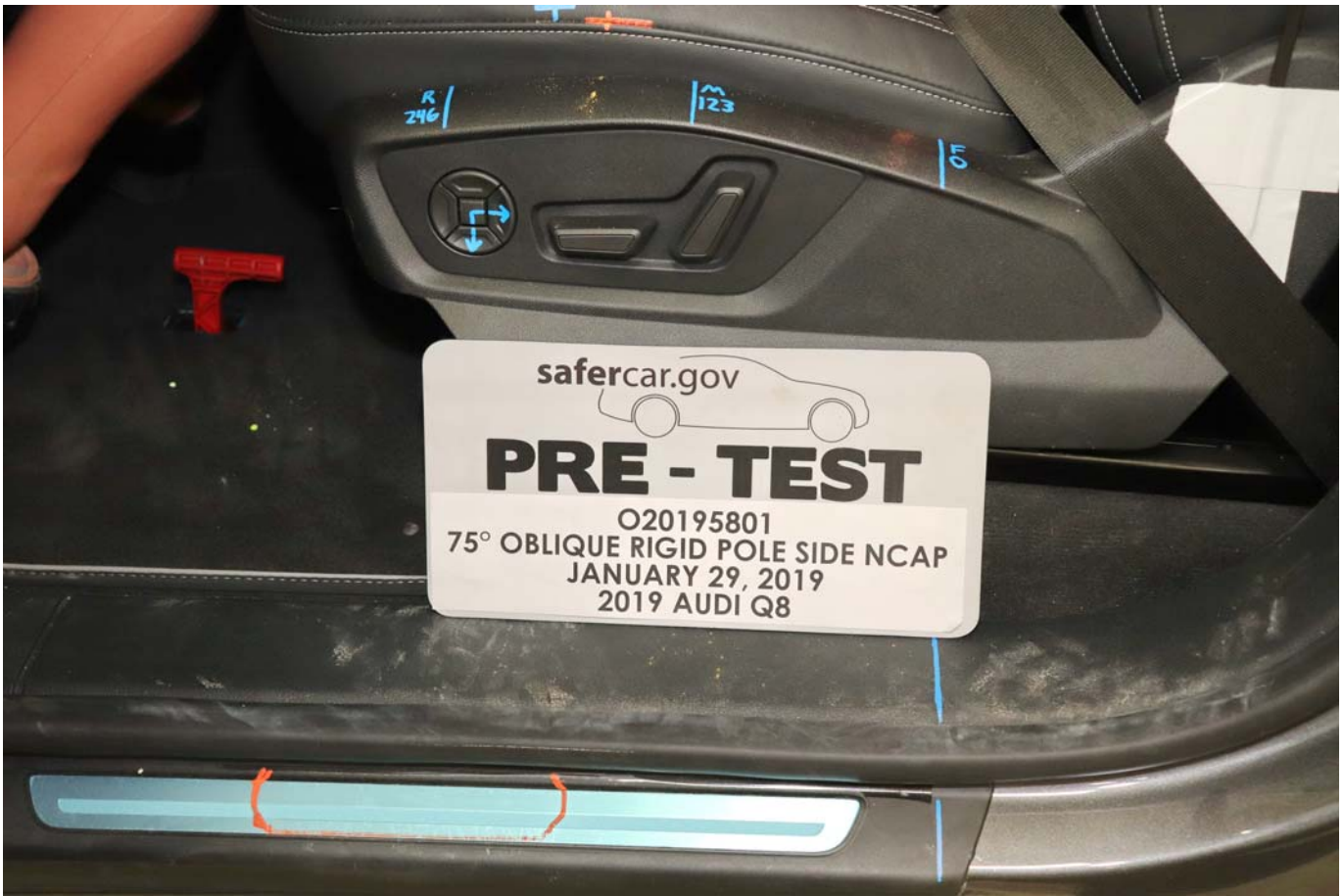


Photo No. 037 - Pre-Test Close-Up Left Side View of Driver Seat Track



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

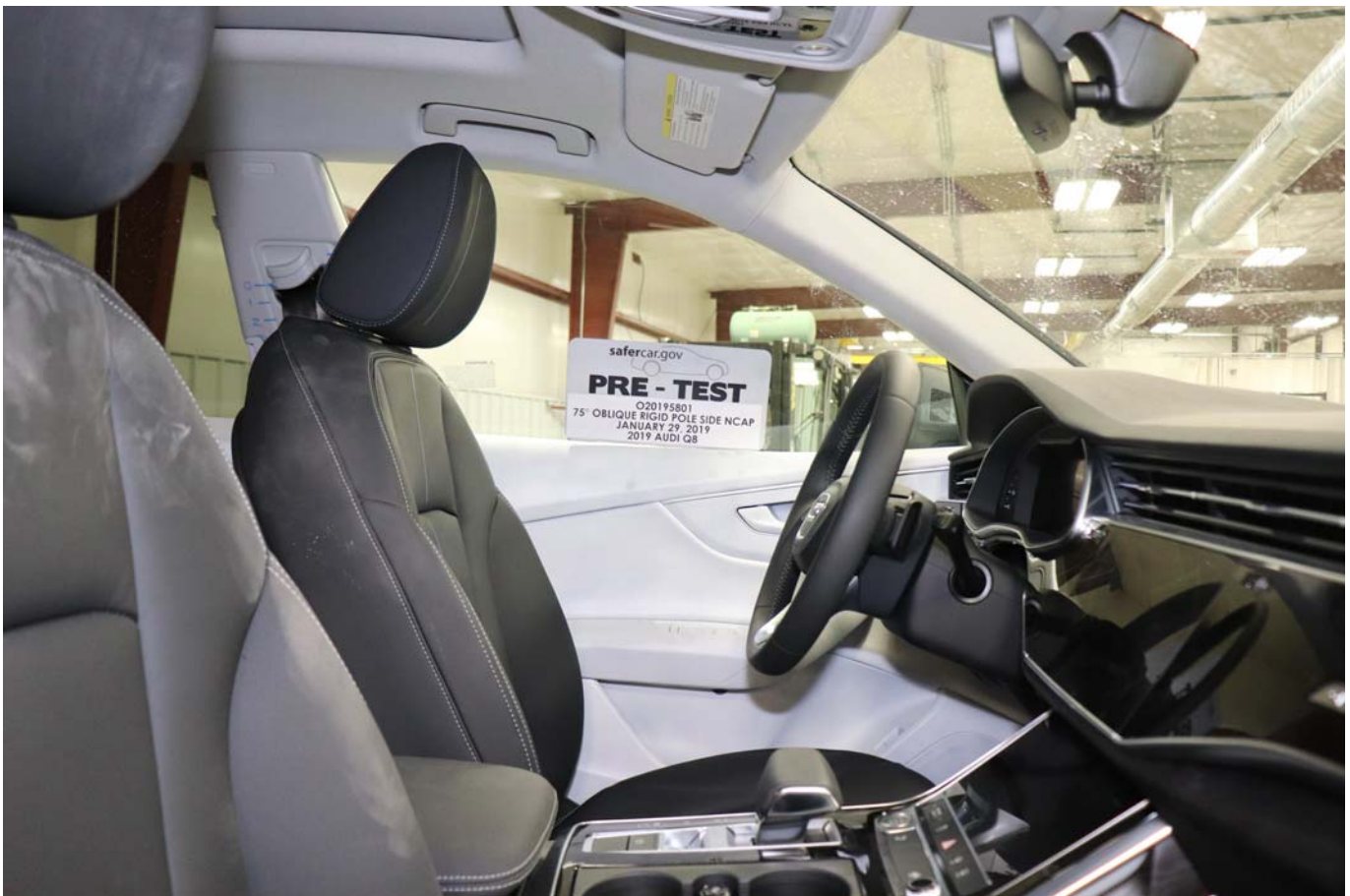


Photo No. 044 - Pre-Test Inner Door Panel View





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 Certification Label



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



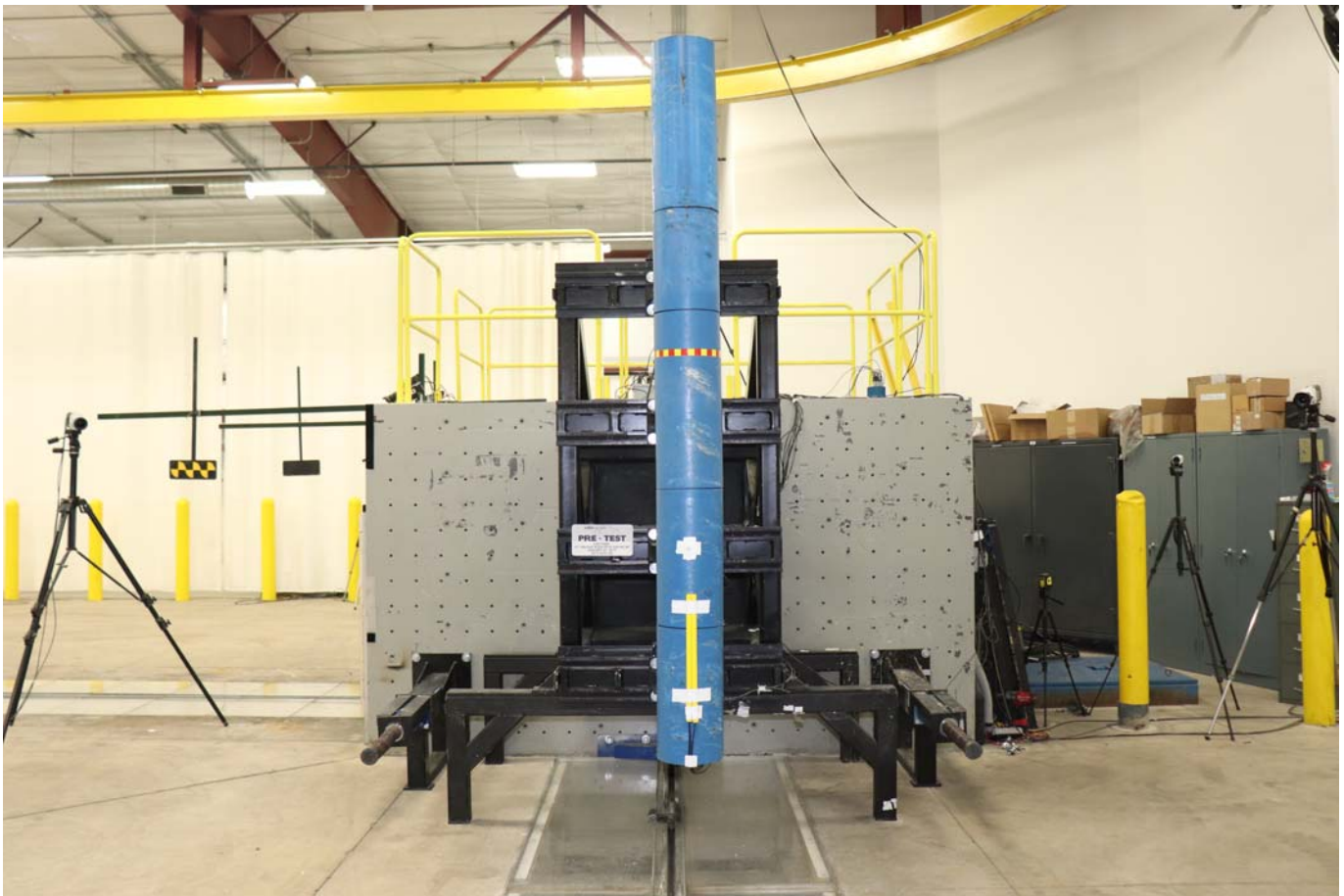


Photo No. 057 - Pre-Test Pole Barrier Front View

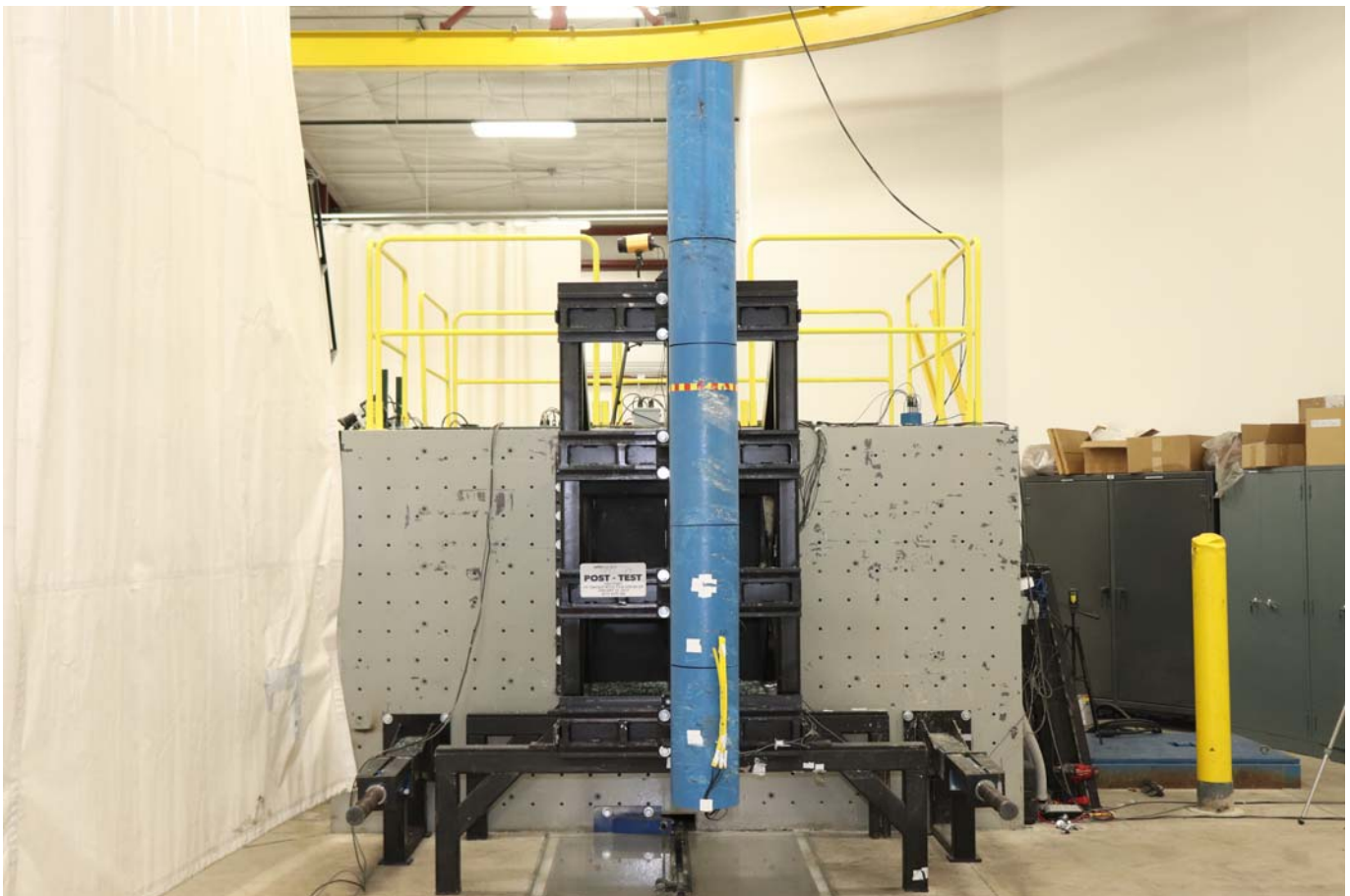


Photo No. 058 - Post-Test Pole Barrier Front View



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

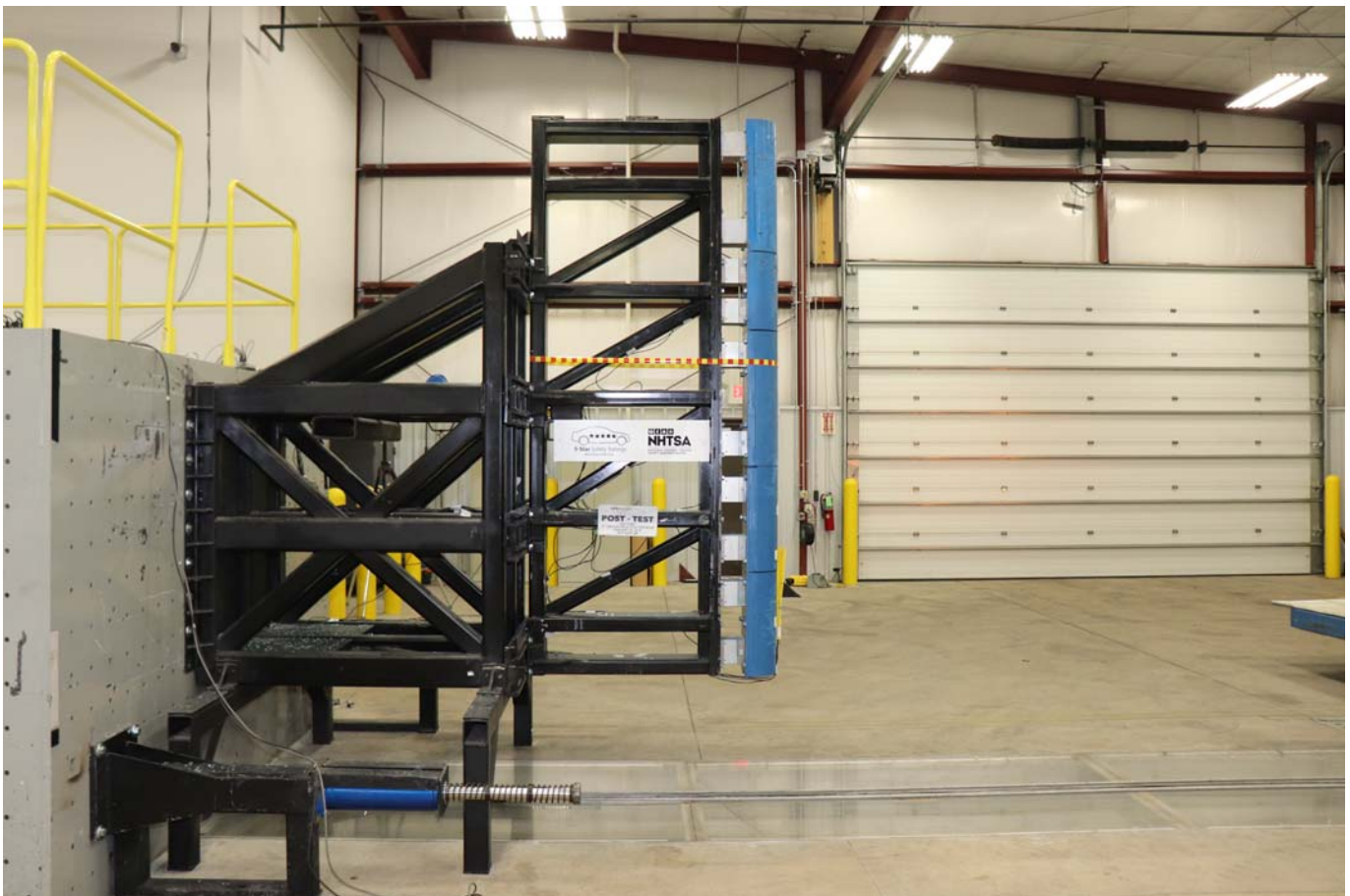


Photo No. 060 - Post-Test Pole Barrier Side View





Photo No. 061 - Pre-Test Ballast View



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





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



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





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



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





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



Photo No. 068 - Impact Event





## STANDARD EQUIPMENT (unless replaced by options)

- TECHNICAL**
- 3.0L TFSI V6 engine
  - 8-speed Tiptronic transmission
  - quattro® all-wheel drive system
  - 20" 5-spoke wheels, 275/50 all-season tires
- COMFORT/TECHNOLOGY**
- Audi advanced key w/ handsfree tailgate (open/close)
  - Audi connect® CARE (limited time subscription)
  - Audi connect® PRIME & PLUS (6 month trial)
  - Audi MMI Navigation plus with MMI touch response
  - Audi sound system
  - Audi virtual cockpit
  - Adaptive damping suspension
  - Chrome exterior window surrounds, roof rails and exhaust tips
  - Garage door opener (HomeLink®)
  - Gray Brown Fine Grain Ash natural wood inlays
  - Heated, 8-way power front seats w/ driver memory and 4-way lumbar adjustment
  - Heated exterior mirrors, power-folding with memory
  - Leather seating surfaces
  - LED headlights
  - Panoramic sunroof
  - Power tailgate
  - Power adjustable tilting & telescoping steering column
  - Preparation for mobile phone (Bluetooth®)
  - SiriusXM® All Access service (w/ 3-month trial subscription)
  - Sliding 40/20/40 split-folding 2nd row w/ adjustable recline
  - Three-zone automatic climate control
  - USB Audi music interface, AM/FM/HD radio
  - 3-spoke multifunction steering wheel, Q design w/ shift paddles
- SAFETY/CONVENIENCE**
- Advanced Airbag Protection System with 6 airbags
  - Anti-lock Braking System (ABS) w/ Brake Assist
  - Audi pre sense basic (preventative occupant protection)
  - Audi pre sense front (low speed collision assist)
  - Child safety locks in rear doors, power
  - Electronic Stabilization Control (ESC) w/ Offroad mode
  - Electronic vehicle immobilization w/ anti-theft alarm
  - LED Daytime Running Lights (DRLs)
  - LED taillights w/ dynamic turn signals
  - Lower Anchors and Tethers for Children (LATCH)
  - Rearview camera
  - Tire Pressure Monitoring System (TPMS)
- WARRANTY/MAINTENANCE**
- 4 Year/50,000 mile (whichever occurs first) New Vehicle Limited Warranty\*
  - 12 Year Limited Warranty Against Corrosion Perforation
  - 1 Year/10,000 mile (whichever occurs first) First Scheduled Maintenance Service FREE OF CHARGE
  - 4 Years Roadside Assistance coverage provided by a third party supplier
- \*Please refer to the 2019 Audi Warranty and Maintenance Booklet for complete coverage information.

## MANUFACTURER'S SUGGESTED RETAIL PRICE

2019 Audi Q8 quattro	\$67,400.00
<b>PACKAGES / OPTIONS</b>	
Samurai Gray metallic Black interior	\$595.00
Convenience package	Included
<ul style="list-style-type: none"> <li>Audi phone box with wireless charging and antenna booster</li> <li>Audi side assist, rear cross traffic, vehicle exit warning</li> <li>Audi pre sense rear</li> <li>Heated, auto-dim, power-fold exterior mirrors w/memory</li> </ul>	\$850.00
Audi Beam - Rings	\$450.00
Apple® Lightning® and USB Type-C cables	\$110.00
Audi Cargo Box	\$75.00
First Aid Kit	\$50.00
Destination Charge	\$995.00
<b>Total Price:</b>	<b>\$70,525.00</b>

Fuel, license, title fees, taxes and dealer-installed accessories are not included.

**MODEL:** 4MN5X2

**VIN:** WA1AVAF14KD010029

**DEALER:** 422A64  
AUDI MISSION VIEJO  
28451 MARGUERITE PKWY  
MISSION VIEJO, CA 92692  
Port of Entry: SAN DIEGO

**SHIP TO:** 422A64  
AUDI MISSION VIEJO  
28451 MARGUERITE PKWY  
MISSION VIEJO, CA 92692  
COMM NUM: TG0653  
Transportation Method: TRUCK

### 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.

<b>Frontal Crash</b>	<b>Driver Passenger</b>	<b>Not Rated</b>
Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.		
<b>Side Crash</b>	<b>Front Seat Rear Seat</b>	<b>Not Rated</b>
Based on the risk of injury in a side impact.		
<b>Rollover</b>		<b>Not Rated</b>
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

**EPA DOT Fuel Economy and Environment Gasoline Vehicle**

**Fuel Economy** 19 17 22 MPG  
combined city/hwy city highway

Standard Sport Utility Vehicles range from 11 to 93 MPG. The best vehicle rates 136 MPG.

**You spend \$4,750 more in fuel costs over 5 years** compared to the average new vehicle.

**Annual fuel cost \$2,350**

**Fuel Economy & Greenhouse Gas Rating** (tailpipe only) 3

**Smog Rating** (tailpipe only) 3

This vehicle emits 474 grams of CO<sub>2</sub> per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also create emissions; learn more at [fuelconomy.gov](http://fuelconomy.gov).

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 27 MPG and costs \$7,000 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$3.00 per gallon. MPG is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

**fuelconomy.gov**  
Calculate personalized estimates and compare vehicles

Smartphone QR Code

## PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS CARLINE:	FOR THIS VEHICLE:
U.S./CANADIAN PARTS CONTENT: MAJOR SOURCES OF FOREIGN PARTS CONTENT: SLOVAKIA: 39% GERMANY: 27%	1% FINAL ASSEMBLY POINT: BRATISLAVA, SLOVAKIA COUNTRY OF ORIGIN: ENGINE: HUNGARY TRANSMISSION: GERMANY

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

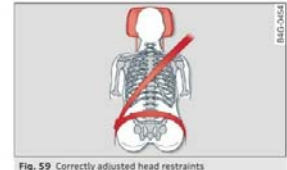
Photo No. 069 - Monroney Label

### Sitting correctly and safely

column moves upward into the park position when the ignition is switched off. After entering the vehicle, the steering column returns to the stored position once the ignition is switched on. To use entry assistance, select on the home screen: **VEHICLE > Seats > Additional seat settings > Driver seat entry assistance.**

### Head restraints

#### General information



- Make sure that:
- The upper edge of the head restraint is as even as possible with the top of your head
  - The head restraint is as close as possible to the back of your head
  - The head restraints on rear seats that are occupied are raised up at least one level

#### WARNING

There is one head restraint for each seat. All vehicle occupants must adjust the head restraint correctly before every trip. Having head restraints that are not adjusted correctly or not installed in the vehicle increases the risk of a neck injury during sudden or unexpected driving or braking maneuvers or in a collision.

Only remove the rear seat head restraints if it is necessary to install a child safety seat (page 73). Stow the removed head restraints securely, for example in the luggage compartment. Reinstall the head restraints immediately once the child safety seat has been removed. Driving without head re-

straints increases the risk of serious neck injuries.

#### Front head restraints

Applies to: vehicles with adjustable head restraints



#### Adjusting the head restraints

- To move the head restraint up, slide it until it locks into place.
- To move the head restraint down, forward\*, or back\*, press the side button and slide the head restraint in the desired direction until it locks into place.

#### Rear head restraints

Applies to: vehicles with adjustable head restraints



#### Adjusting the head restraints

- Upward: slide the head restraint upward until it latches into place.
- Downward: press the button on the head restraint base (1) (page 61) and slide the head restraint downward. Release the button and slide the head restraint farther until it locks into place.

### Sitting correctly and safely

#### Removing the head restraints

Applies to: vehicles with removable head restraints

- Move the head restraint upward all the way.
- Press the release point on the head restraint base (2) (page 61) using the mechanical key (page 34, Key set) and press the button (1). Pull the head restraint out of the backrest at the same time (page 64) in General information on page 64.

#### Installing the head restraints

Applies to: vehicles with removable head restraints

- Slide the posts on the head restraint down into the guides until the posts click into place.
- Press the button (1) and slide the head restraint all the way down. You should not be able to remove the head restraint from the backrest without pressing the button.

### Safety belts

#### General information

Each seat is equipped with a three-point safety belt. Safety belts that are worn correctly are the most effective way to reduce the risk of serious or fatal injuries in a collision. Therefore, wear your safety belt correctly and make sure that all vehicle occupants also wear their safety belts correctly when the vehicle is moving.

Even though your vehicle is equipped with an airbag system, all vehicle occupants must still always wear their safety belts. In addition to their normal protective function, safety belts also hold vehicle occupants in the correct seating position in the event of a collision so that the airbags can deploy correctly and provide additional protection. Safety belts provide protection during collisions when the airbags do not deploy or if they have already deployed.

#### WARNING

The risk of serious or fatal injury increases if the safety belt is not fastened, if it is worn incorrectly, or if it is damaged.

- All vehicle occupants, including the driver, must fasten their safety belts correctly before every trip and must always keep their

safety belts fastened during the trip, regardless of whether the seat is equipped with an airbag or not. This also applies to children that are seated in a child safety seat that is appropriate for their weight and age and that is secured with a safety belt.

- In the event a collision, vehicle occupants that are not wearing safety belts could be propelled through the vehicle interior and collide with vehicle components, such as the steering wheel, instrument panel, windshield, or doors. In some situations, vehicle occupants could also be ejected from the vehicle. Vehicle occupants in the rear seats who do not wear safety belts not only endanger themselves, but also other people in the vehicle.
- Only one person may be fastened with a safety belt at a time. Never secure more than one person, including children, with a single safety belt.
- Never allow children or infants to ride on another person's lap and be belted into the safety belt with them.
- Insert the belt buckle only in the belt latch belonging to the corresponding seat, so that the protective function is not impaired.
- To ensure the maximum protective function of the safety belts, all vehicle passengers must sit in the correct seating position (page 59).
- Check the condition of your vehicle's safety belts regularly. If you find damage to the belt webbing, the belt connections, the retractor, or the buckle, have the damaged safety belt replaced by an authorized Audi dealer or authorized Audi Service Facility.
- The safety belts must not be removed or modified in any way. Do not attempt to repair the safety belts yourself.
- Safety belts that are strained during an accident, and thus stretched, must be replaced by an authorized Audi dealer or authorized Audi Service Facility.



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.gov](http://www.NHTSA.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)

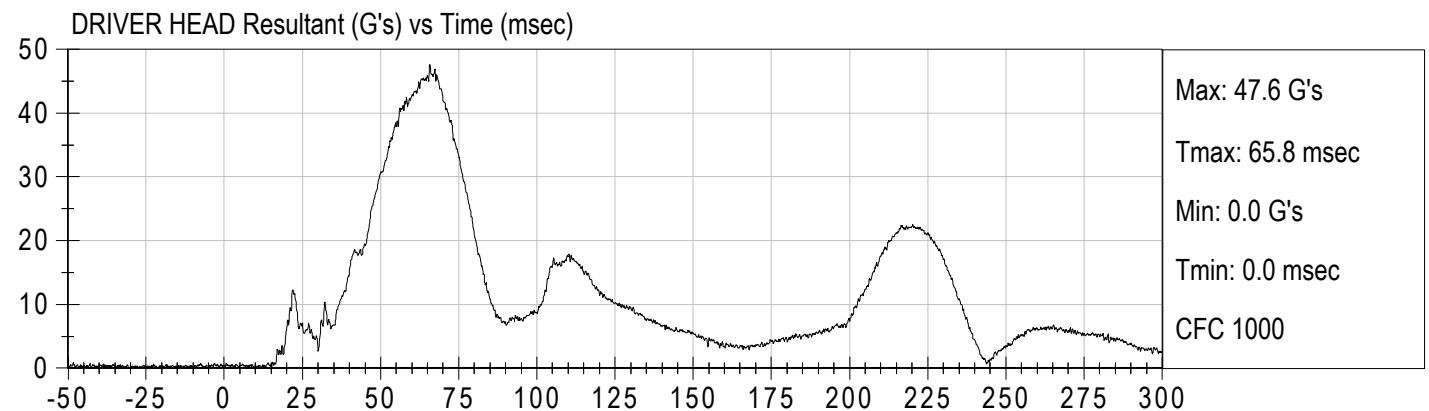
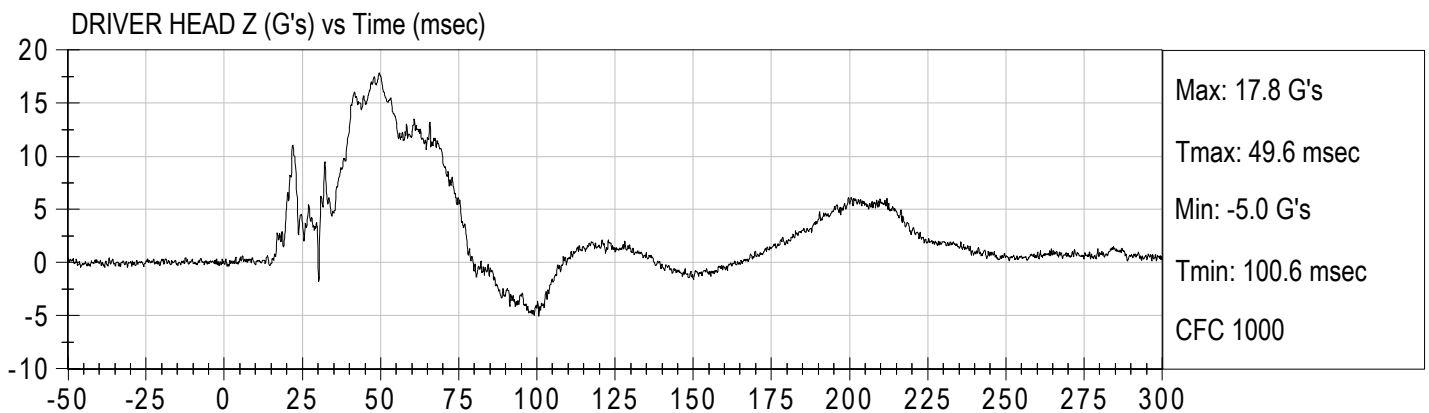
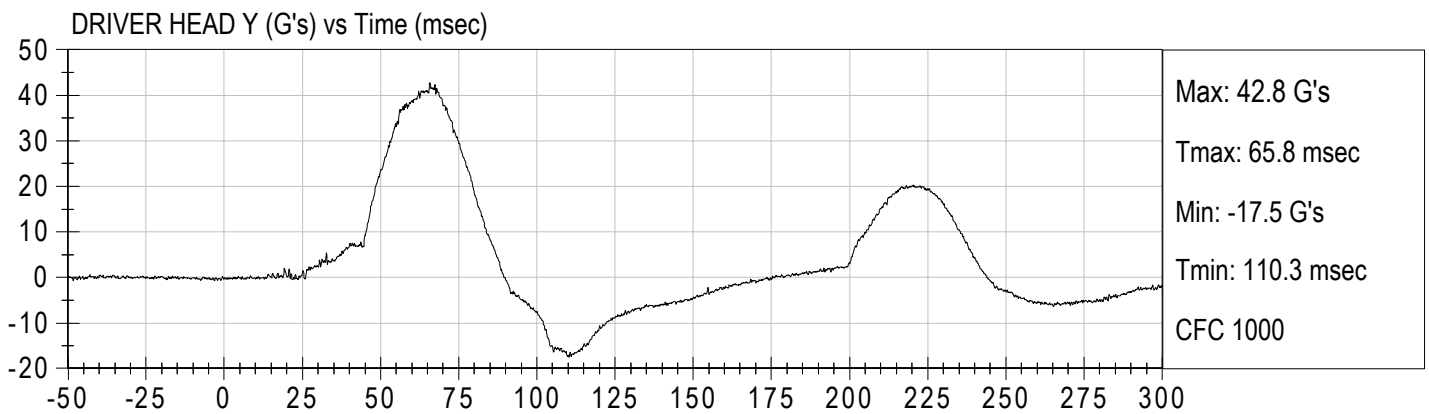
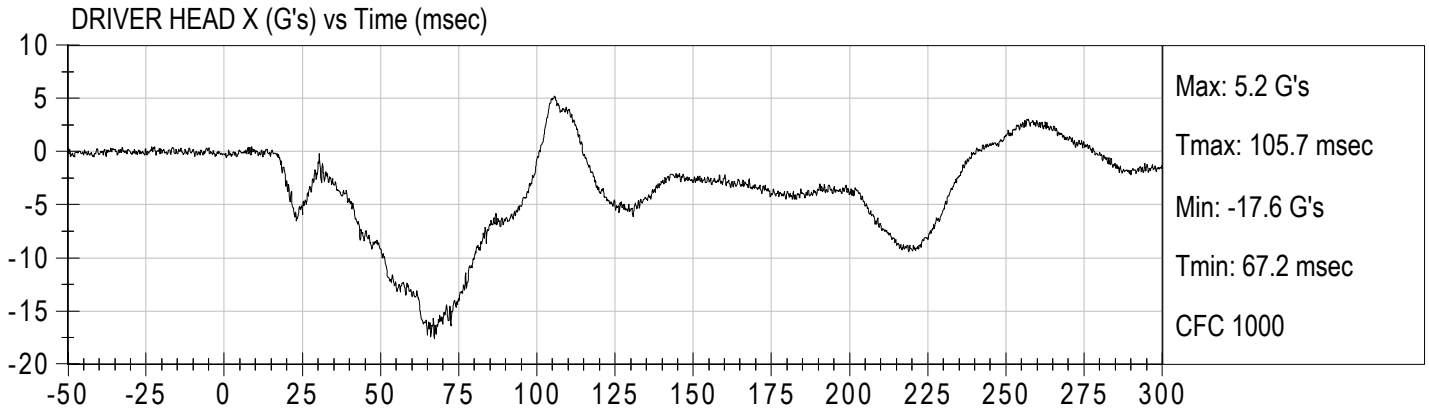
Load Cell Pole Barrier #4 Force (Y)

Load Cell Pole Barrier #5 Force (Y)

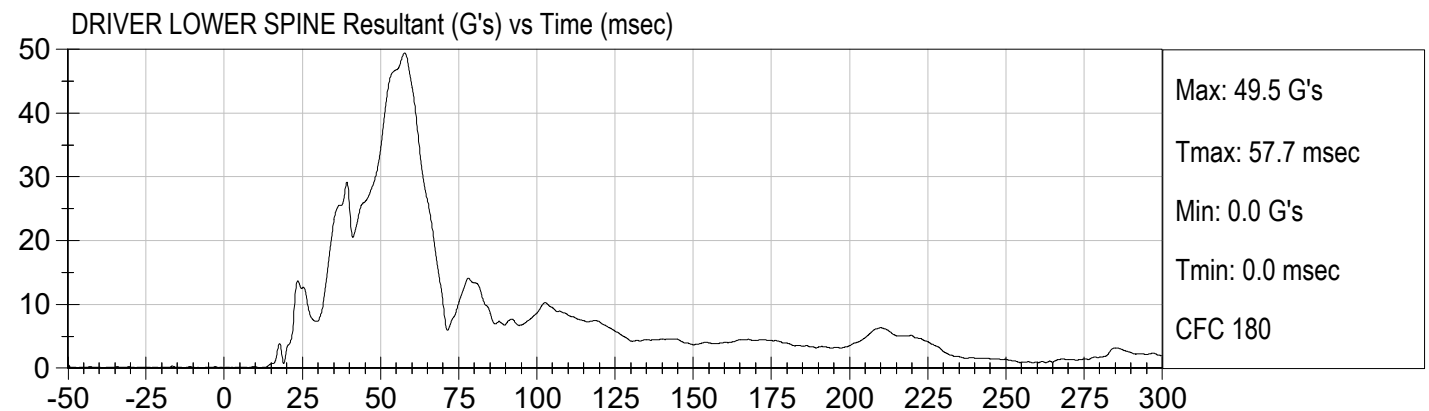
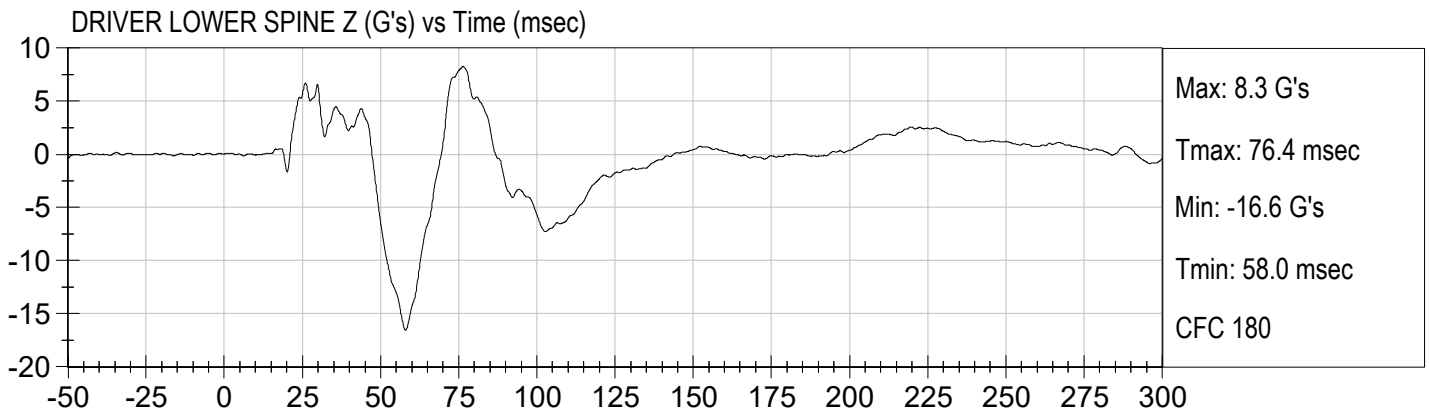
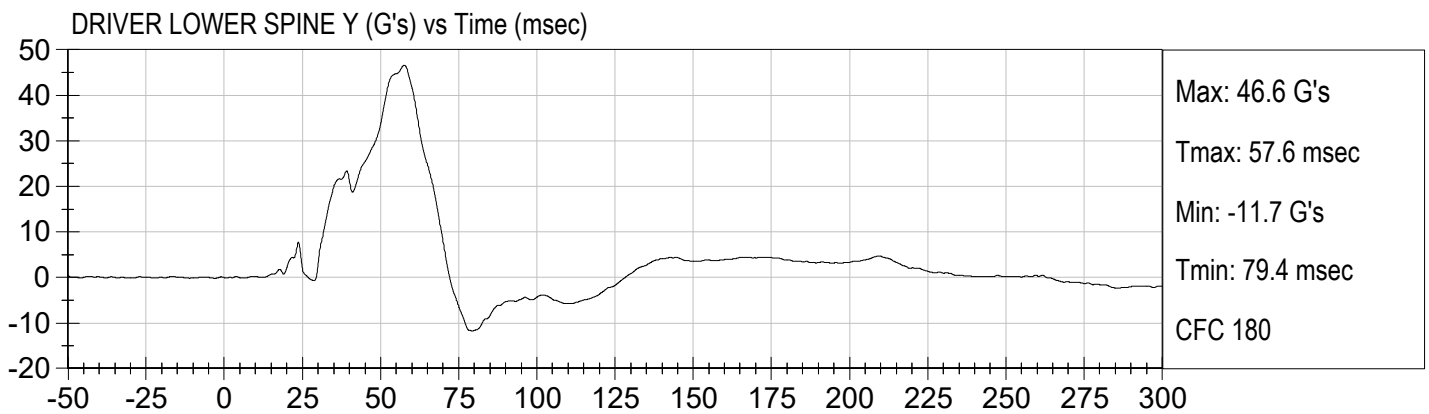
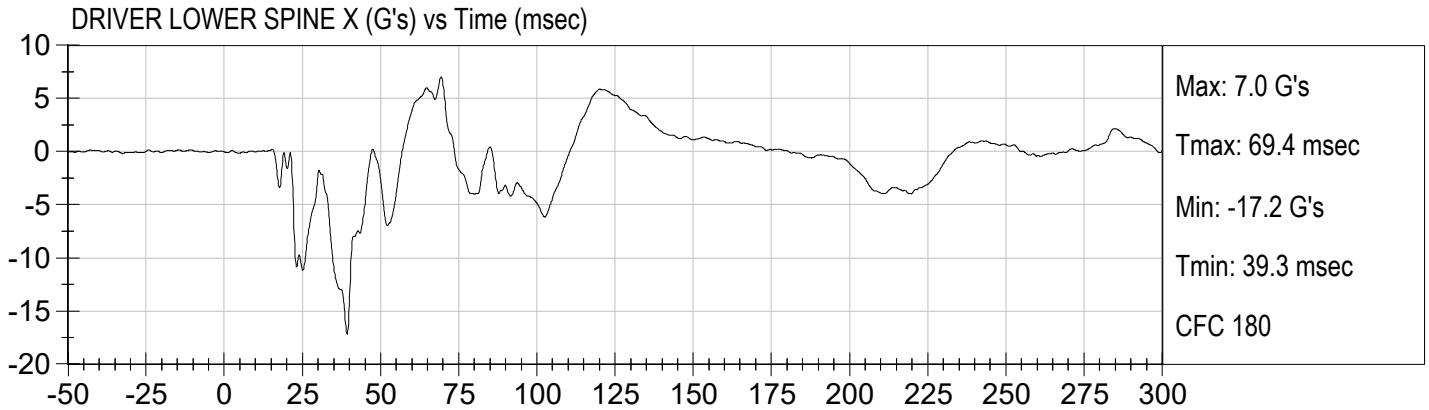
Load Cell Pole Barrier #6 Force (Y)

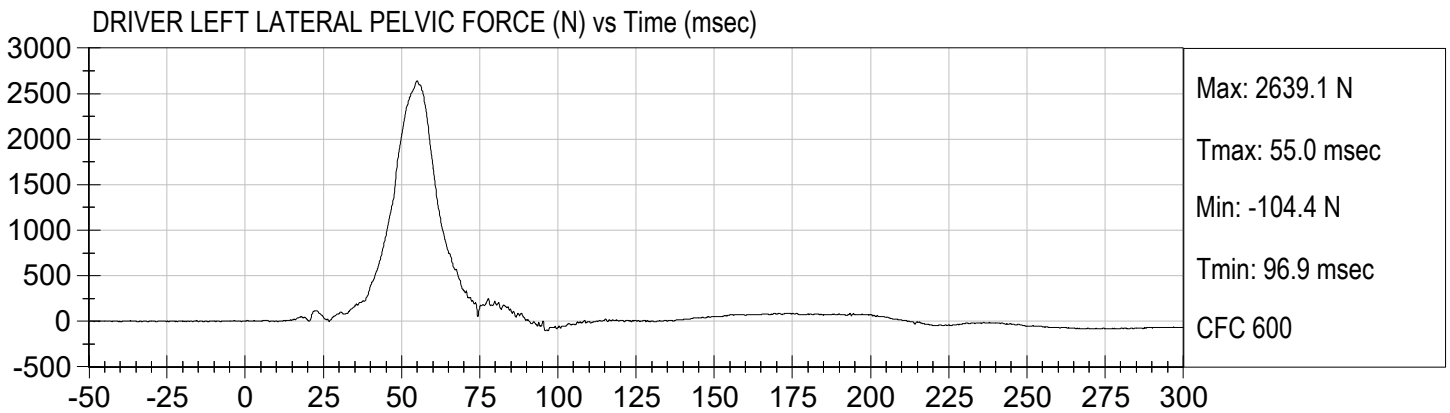
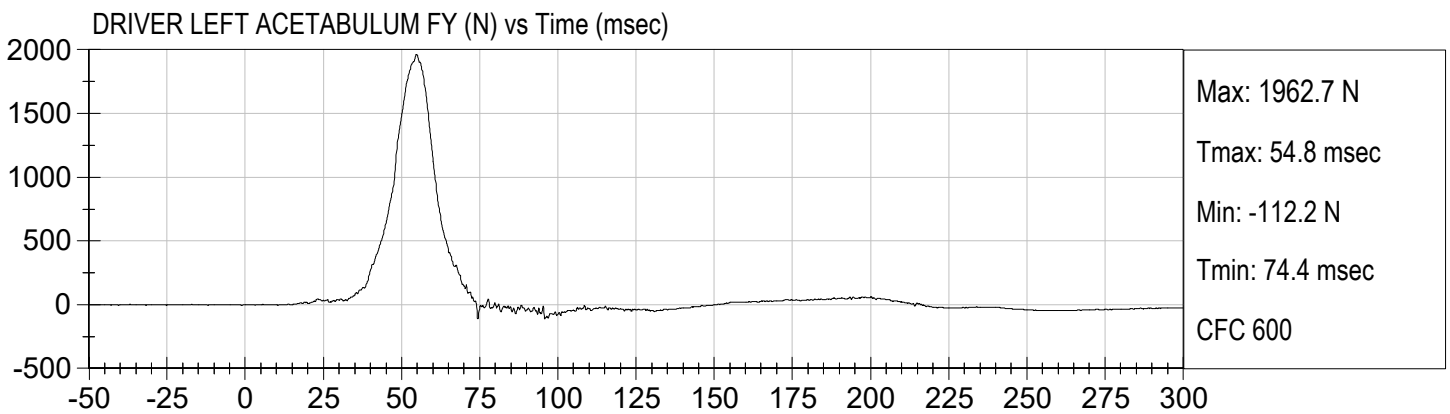
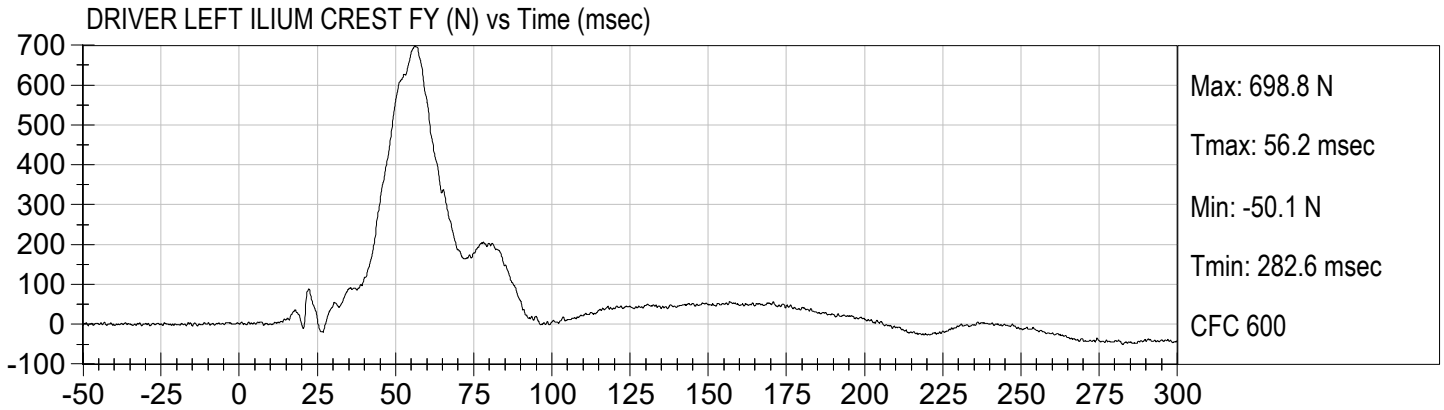
Load Cell Pole Barrier #7 Force (Y)

Load Cell Pole Barrier #8 Force (Y)









**APPENDIX C**  
**DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA**



**CALIBRATION TEST RESULTS**

**PRE-TEST**

**SID-IIS 5<sup>TH</sup> PERCENTILE FEMALE - DRIVER ATD**

**SID-IIsD External Measurements**  
**SN: 296**

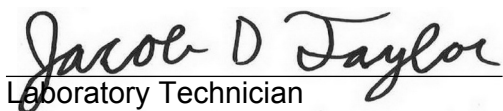
<b>No.</b>	<b>Name</b>	<b>Spec. (mm)</b>	<b>Result</b>	<b>Pass/Fail</b>
<b>A</b>	Sitting Height	772 - 788	784	Pass
<b>B</b>	Shoulder Pivot Height	437 - 453	442	Pass
<b>C</b>	H-point Height	79 - 89	83	Pass
<b>D</b>	H-point from Seatback	141 - 151	145	Pass
<b>E</b>	Shoulder Pivot from Backline	97 - 107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

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

**ATD Serial No:** 296

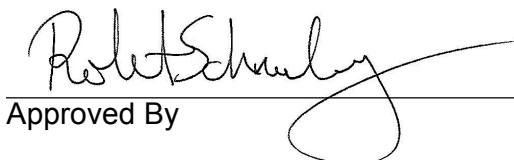
**Test ID:** D190311

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	21	Pass
Peak Resultant Acceleration	G's	115 to 137	132	Pass
Peak Longitudinal Acceleration	G's	+/- 15	7.5	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	<15%	Yes	Pass
<b>Overall Test Results</b>				<b>Pass</b>

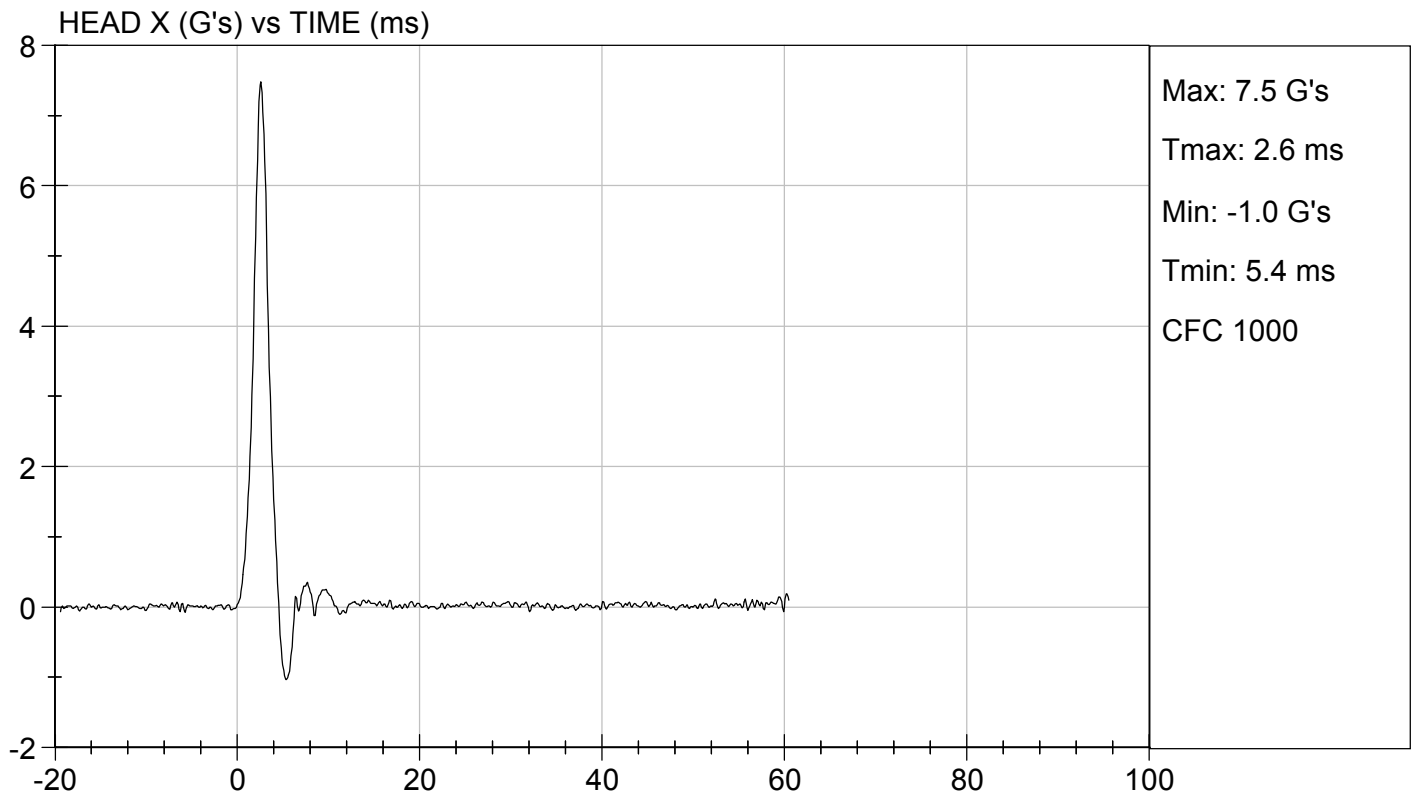
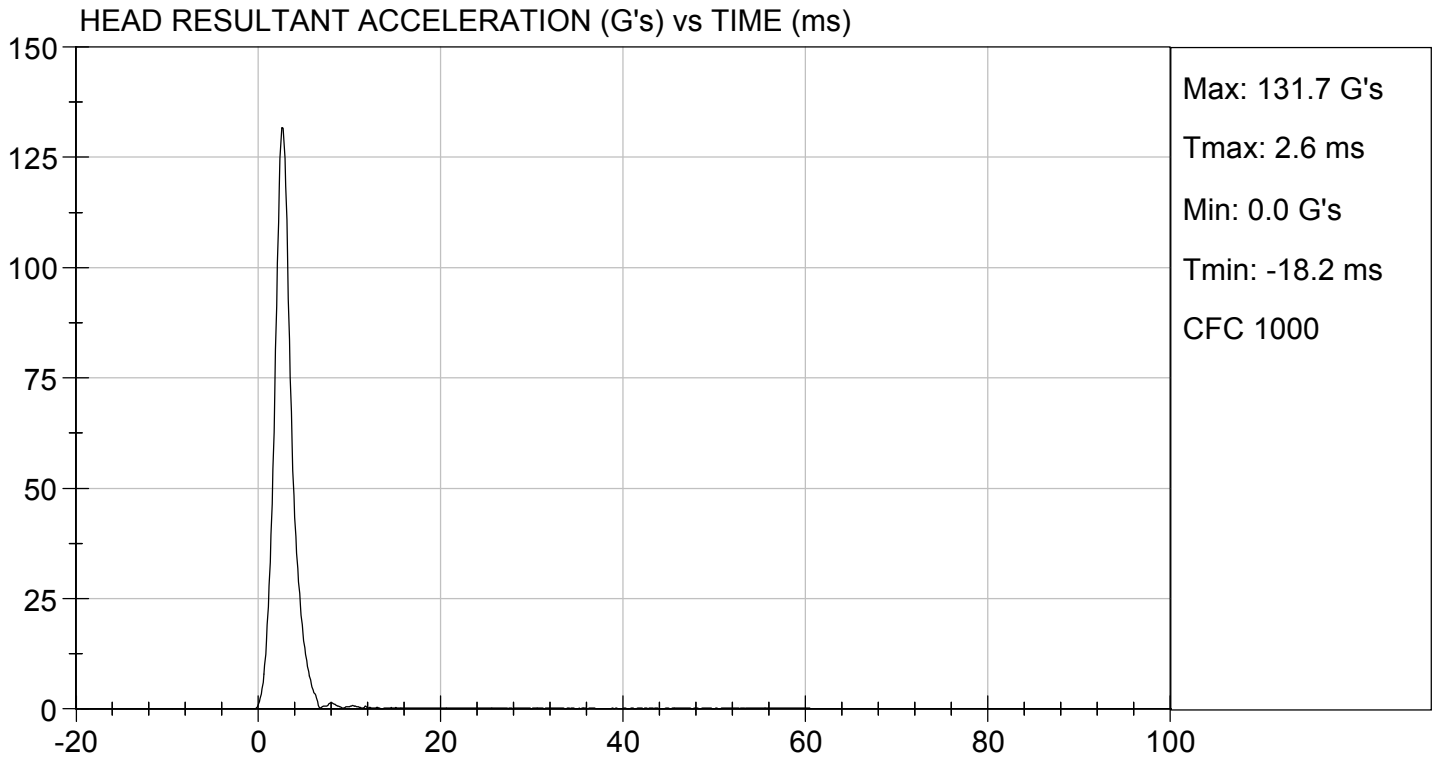
  
Laboratory Technician

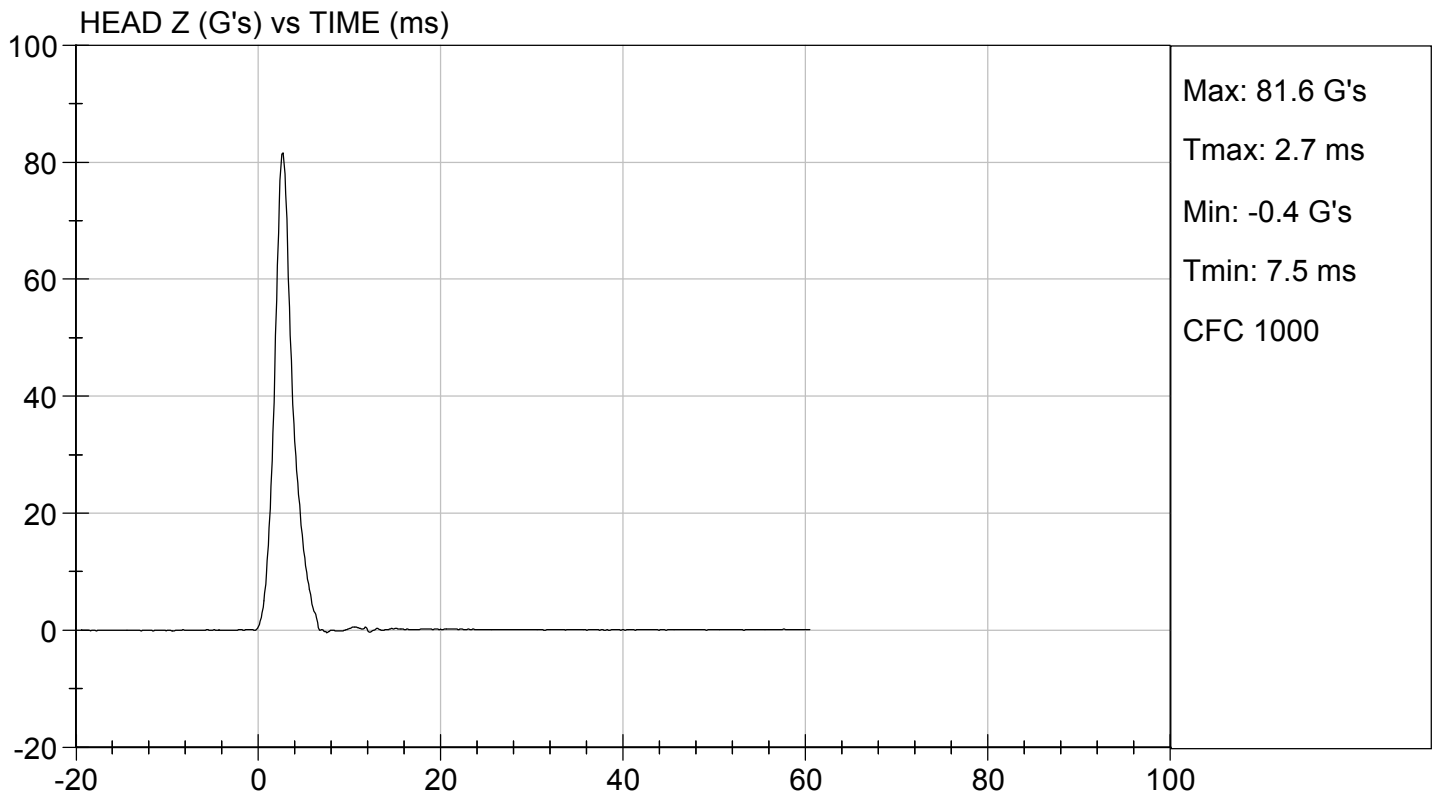
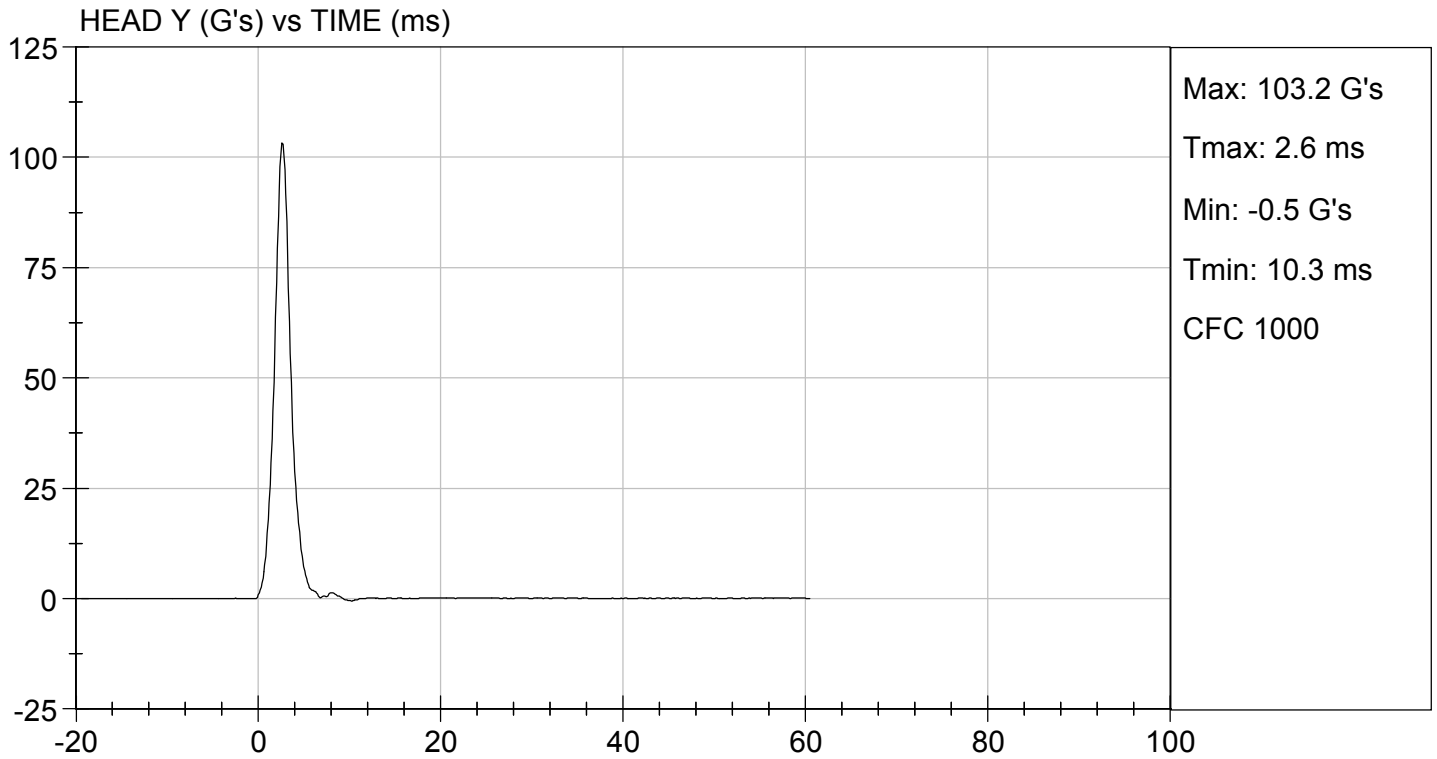
01/23/2019

Test Date

  
Approved By





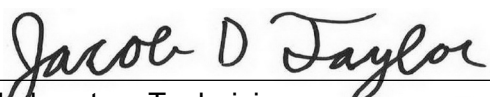


**MGA RESEARCH CORPORATION  
LATERAL NECK PENDULUM TEST  
SID-IIs BUILD LEVEL D DUMMY**

**ATD Serial No:** 296

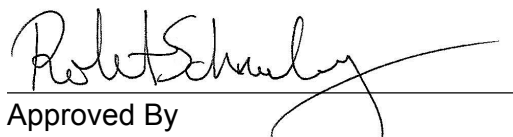
**Test I.D.:** D190312

Tested Parameter	Units	Specification	Result	Pass/Fail	
Temperature	deg C	20.6 to 22.2	21.7	Pass	
Humidity	%	10 to 70	21	Pass	
Impact Velocity	m/s	5.51 to 5.63	5.62	Pass	
Pendulum Velocity	10 ms	m/s	2.20 to 2.80	2.52	Pass
	15 ms	m/s	3.30 to 4.10	3.72	Pass
	20 ms	m/s	4.40 to 5.40	5.19	Pass
	25 ms	m/s	5.40 to 6.10	5.73	Pass
	25-100 ms	m/s	5.50 to 6.20	5.74	Pass
Maximum D-Plane Rotation	deg	71 to 81	73	Pass	
Time of Maximum D-Plane Rotation	ms	50 to 70	59	Pass	
Maximum Occipital Condyle Moment	Nm	-44 to -36	-41	Pass	
Time of Moment Decay to 0 Nm	ms	102 to 126	110	Pass	
<b>Overall Test Results</b>				<b>Pass</b>	

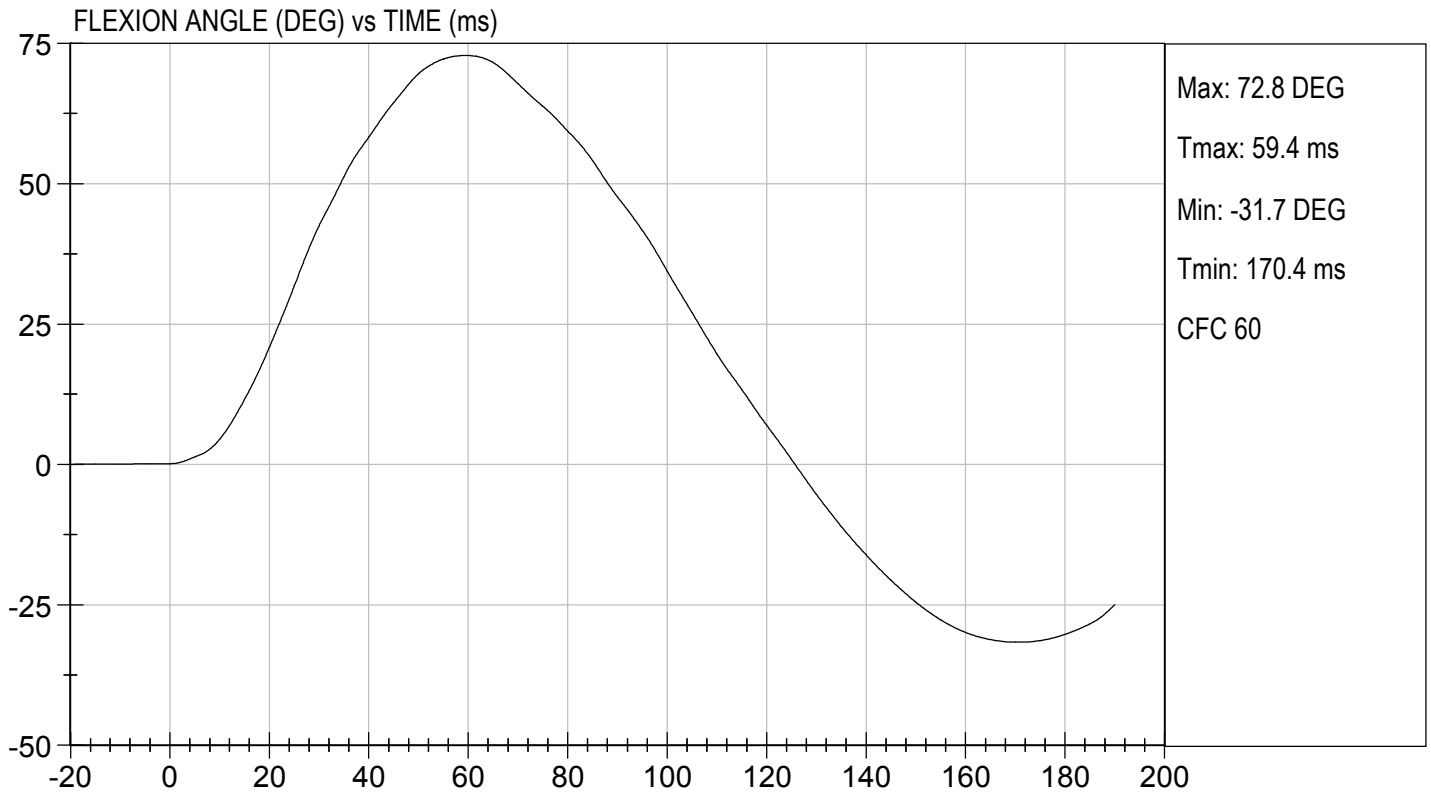
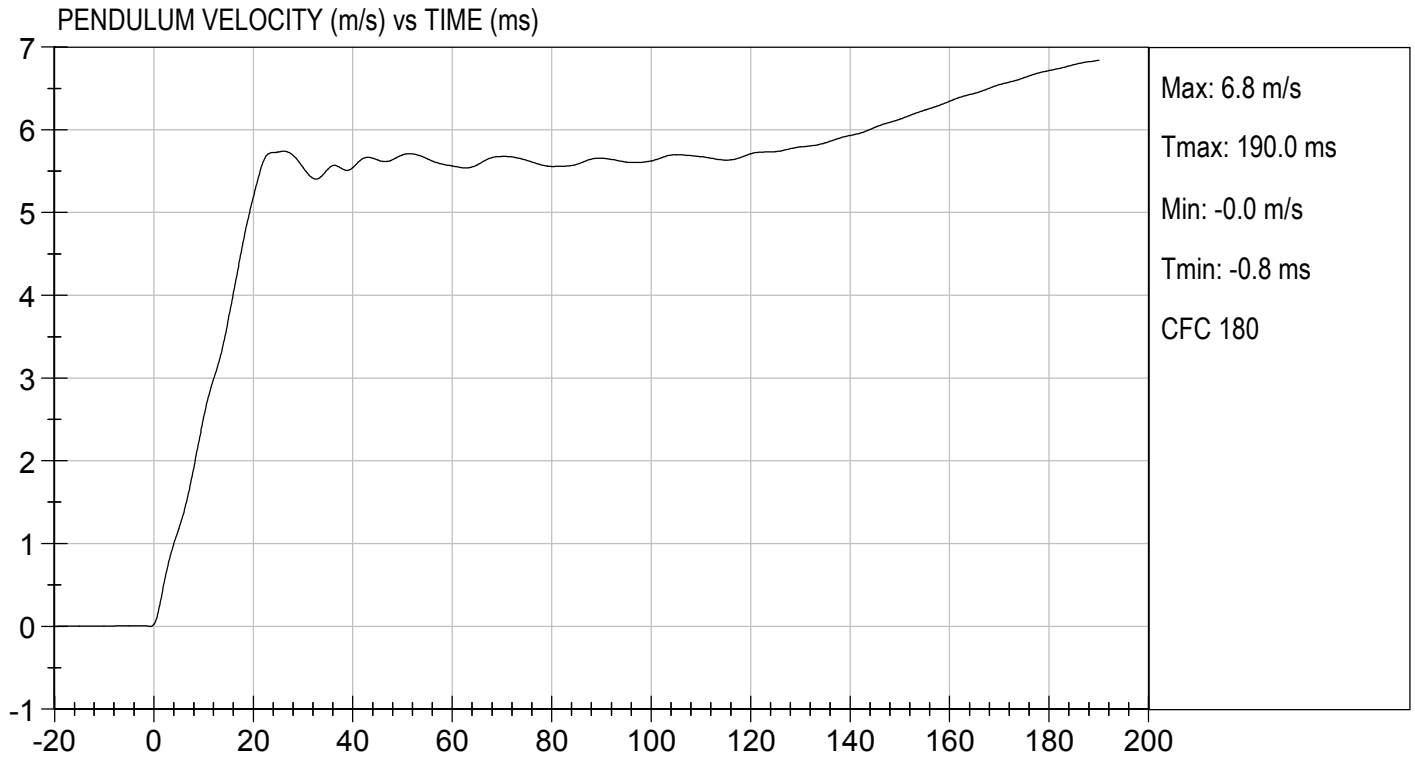
  
Laboratory Technician

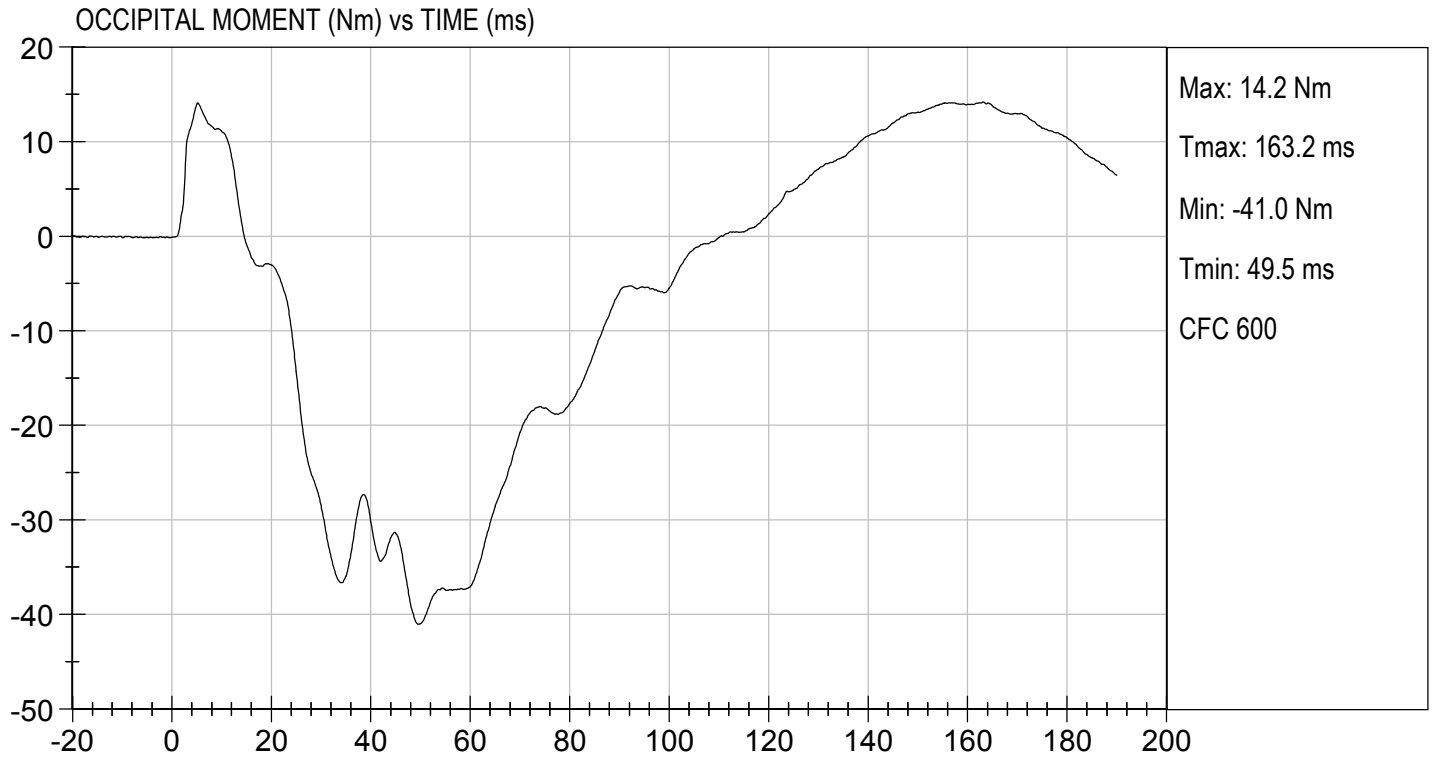
01/23/2019

Test Date

  
Approved By







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

ATD Serial No: 296

Test ID: D190313

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	20.8	Pass
Laboratory Relative Humidity	%	10 to 70	13	Pass
Impact Velocity	m/s	4.20 to 4.40	4.39	Pass
Maximum Probe Acceleration	G's	13 to 18	16	Pass
Shoulder Displacement	mm	28 to 37	29	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	21	Pass
Overall Test Results				Pass

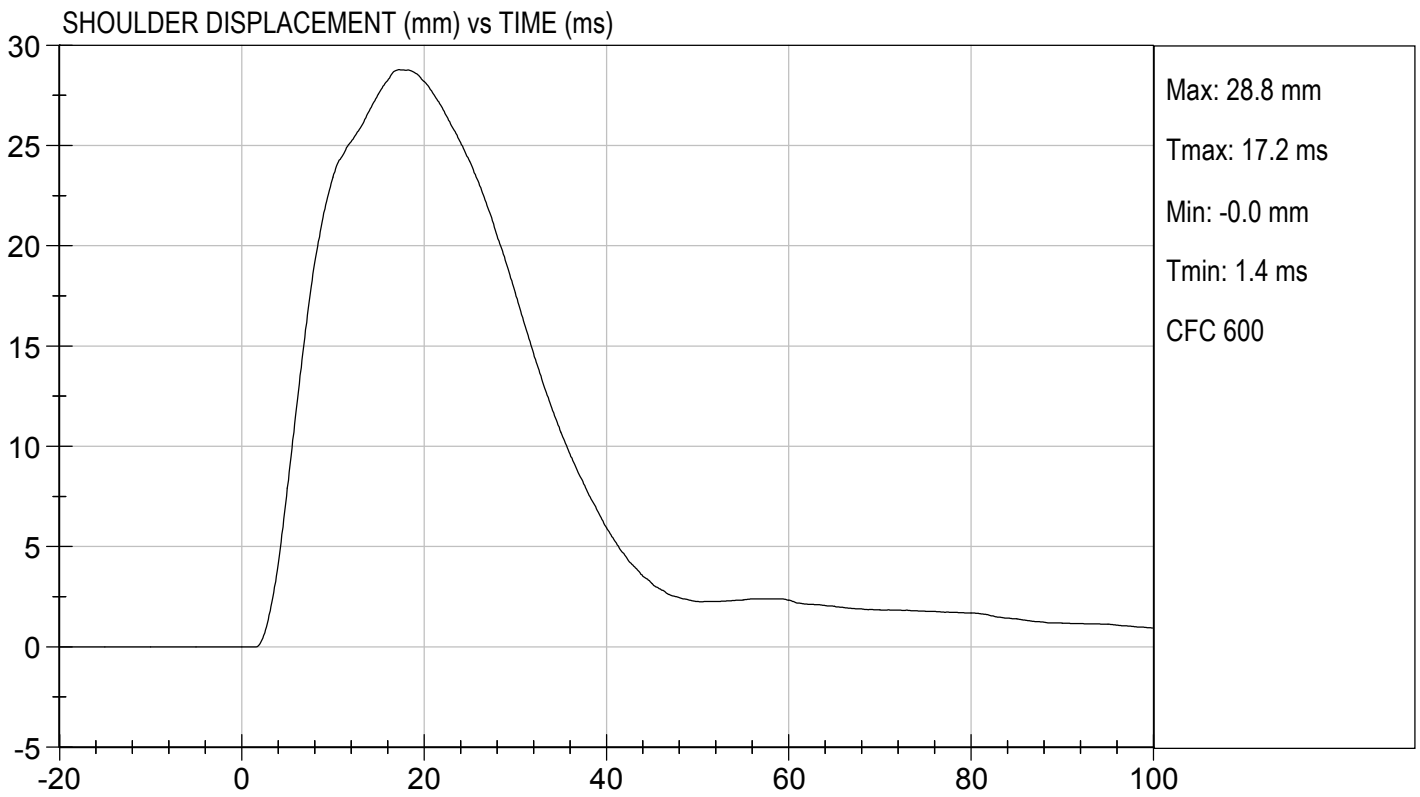
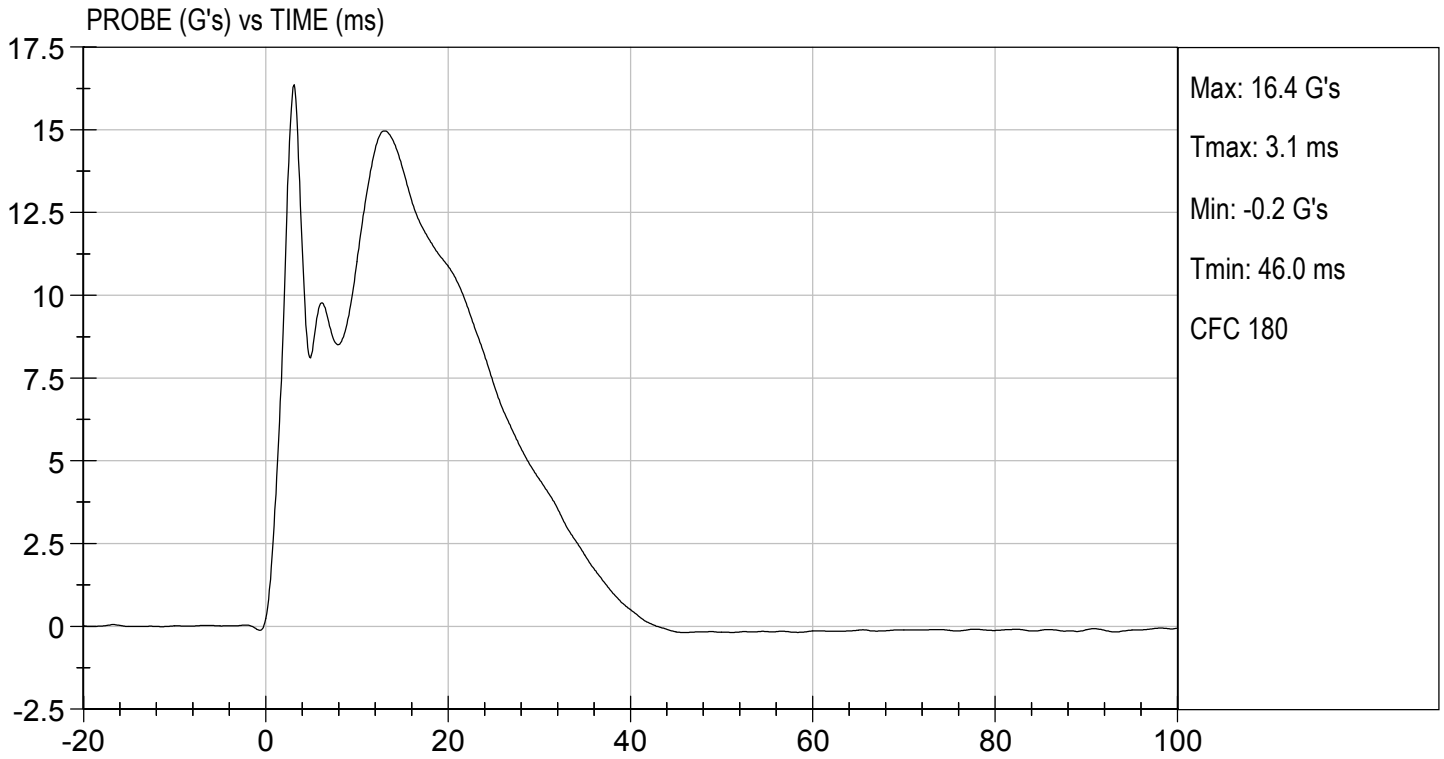
*Jacob D Taylor*  
Laboratory Technician

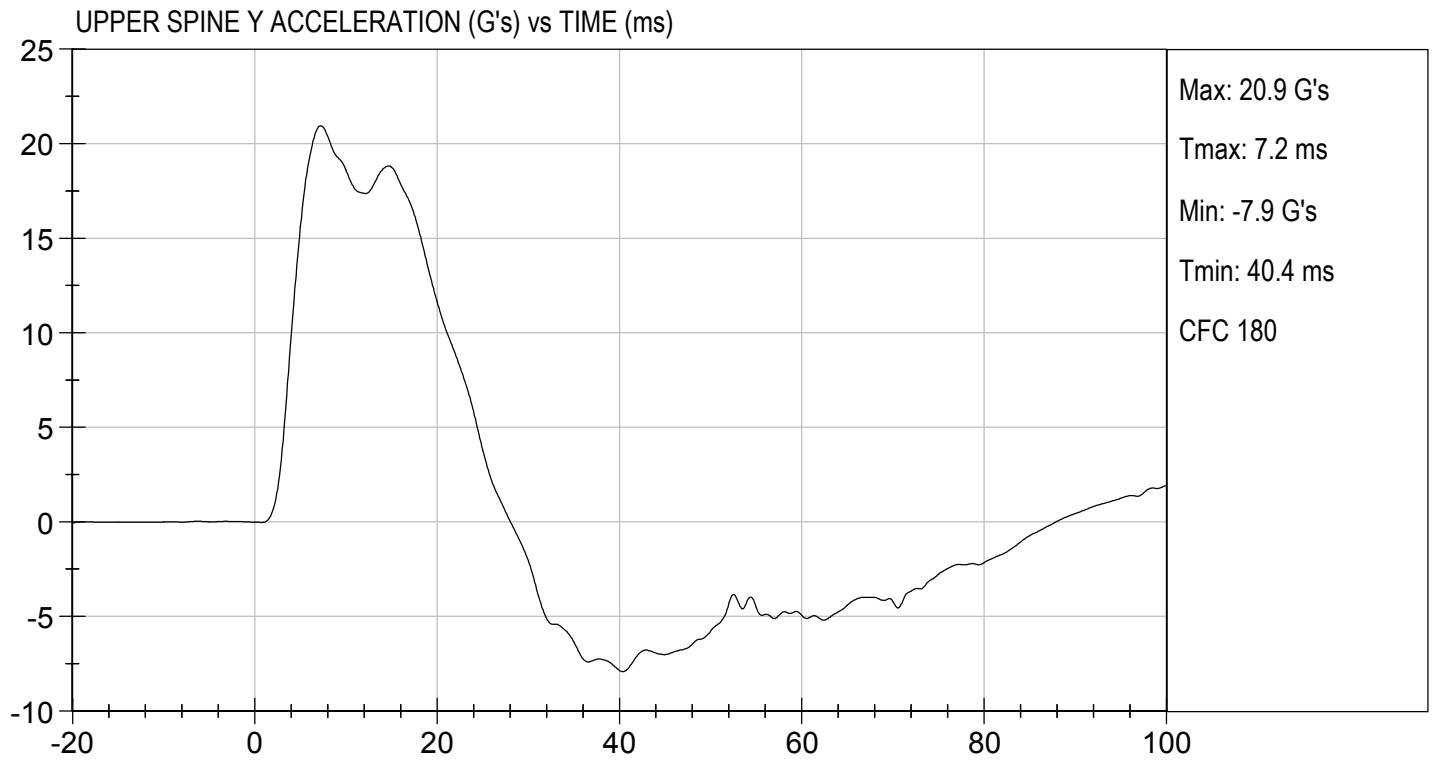
01/25/2019

Test Date

*Robert Schaub*  
Approved By







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

**ATD Serial No:** 296

**Test I.D:** D190314

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

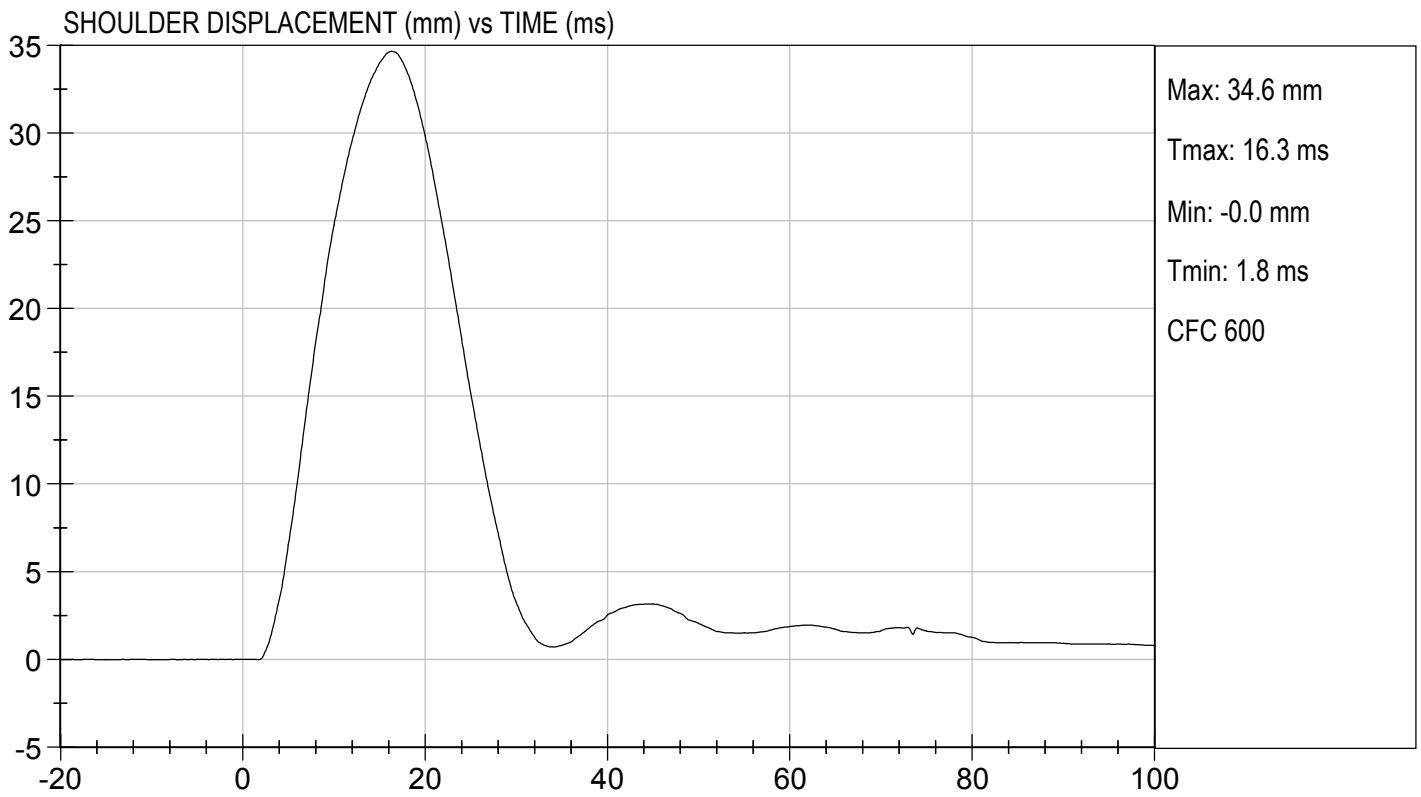
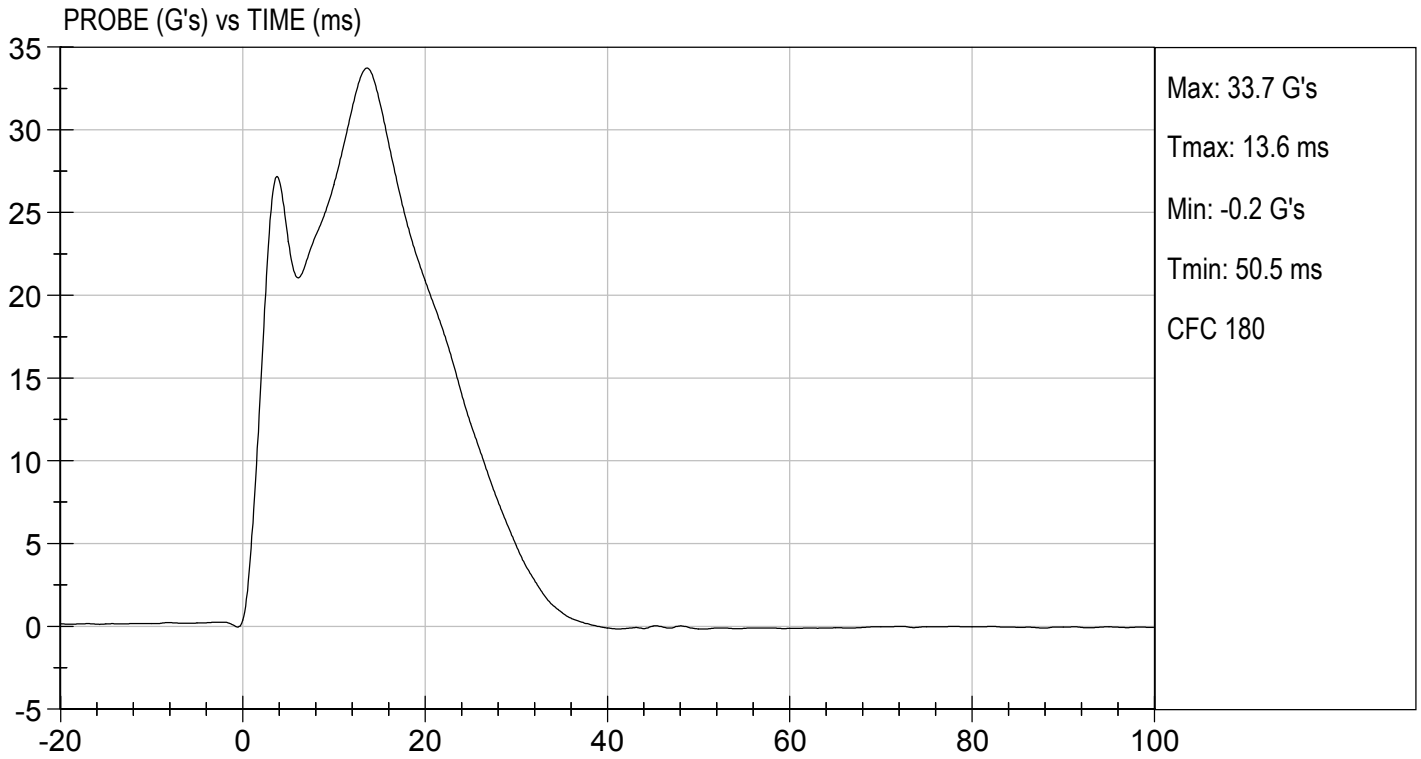
*Jacob D Taylor*  
Laboratory Technician

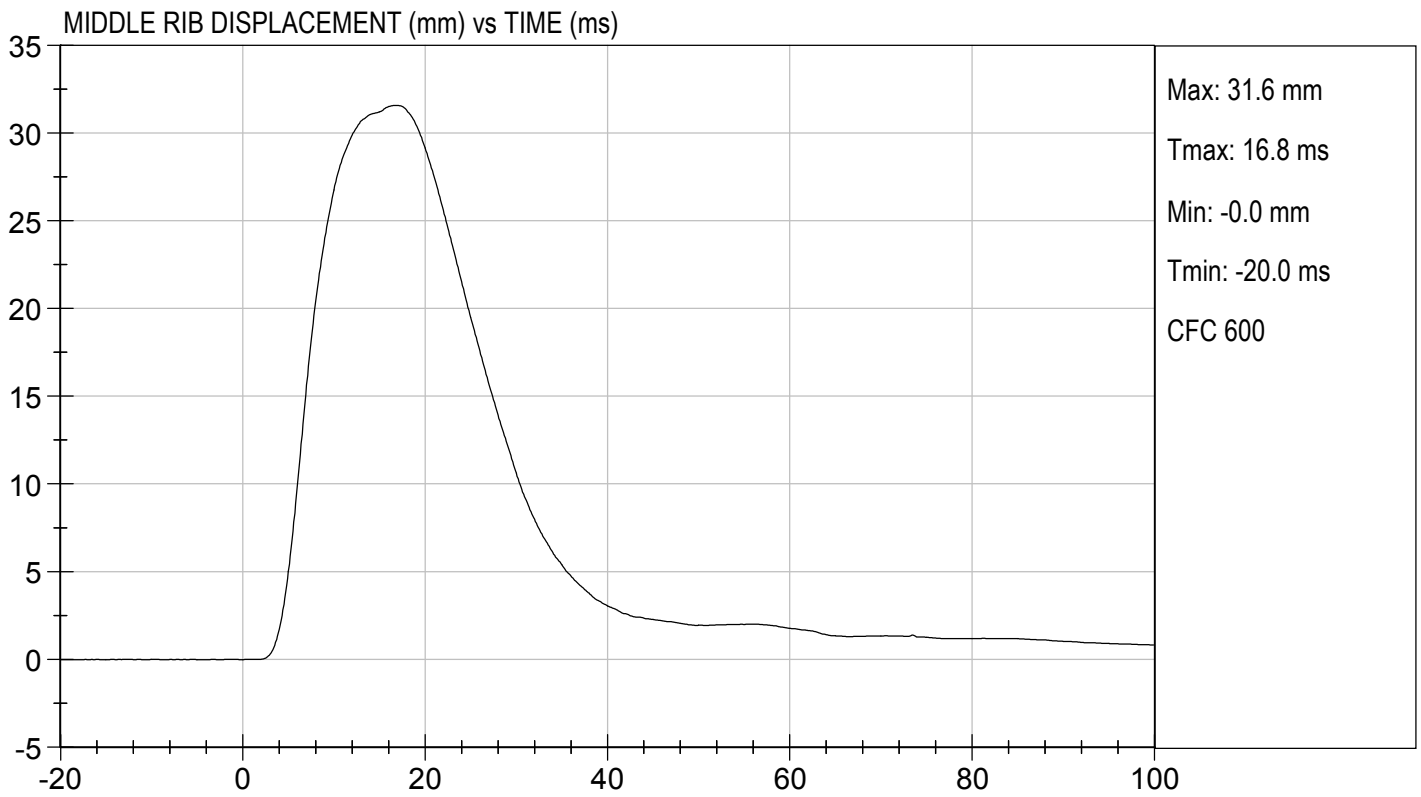
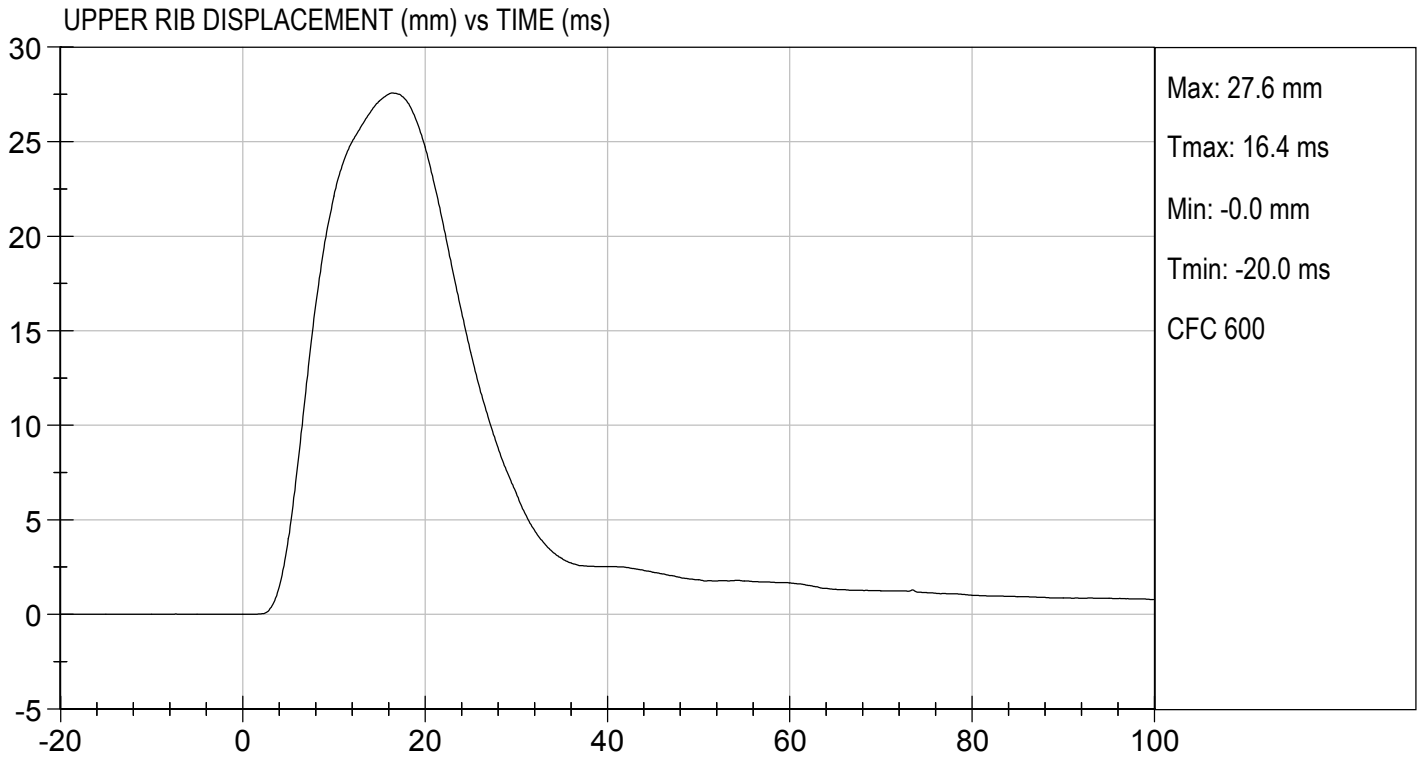
01/25/2019

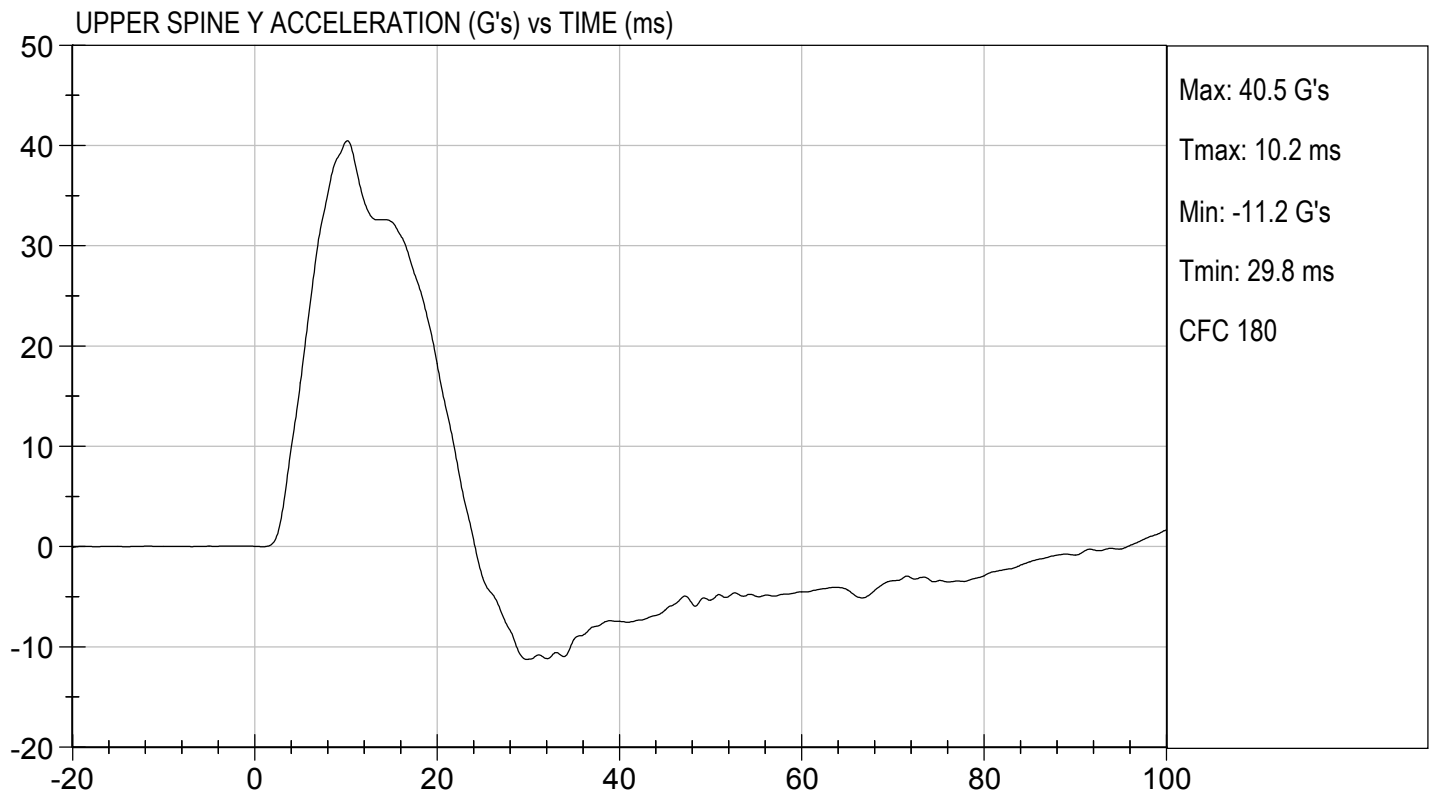
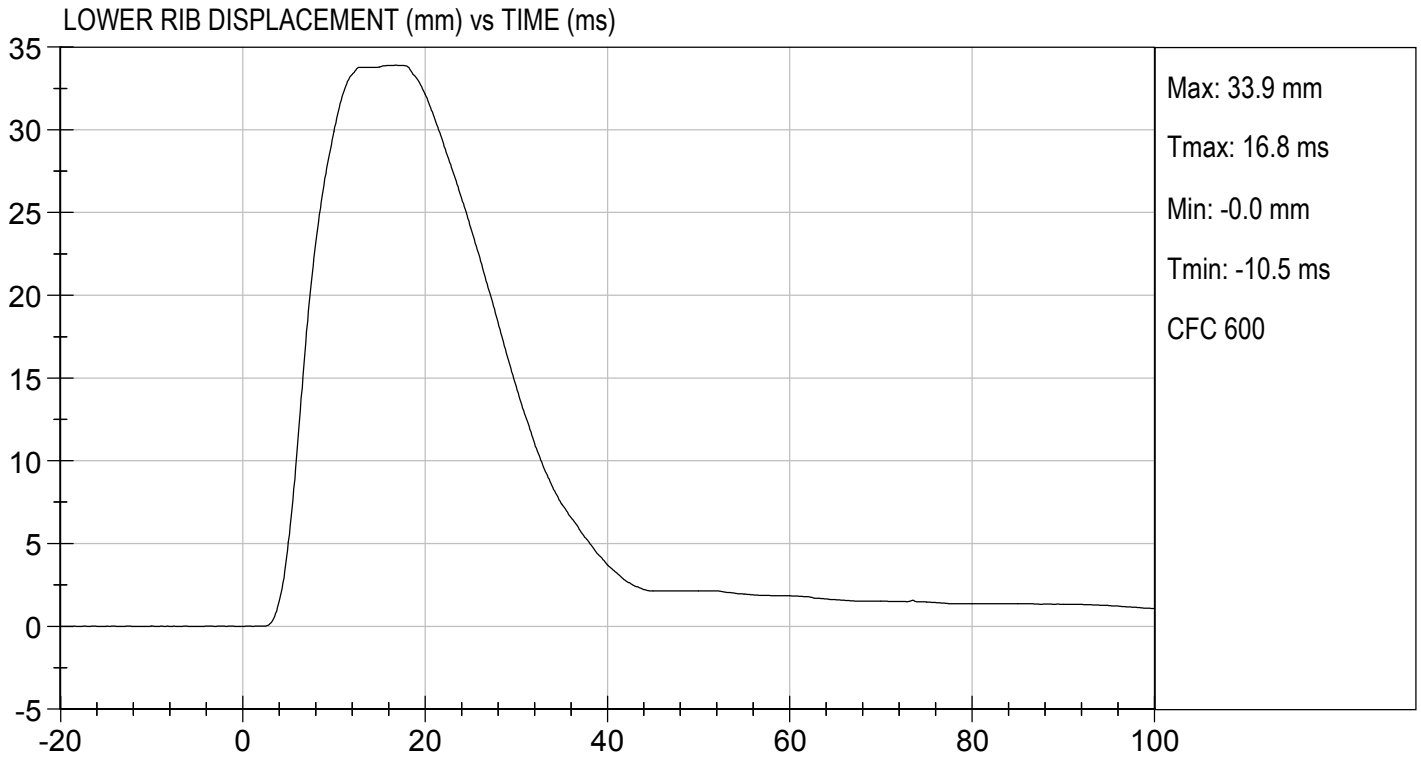
Test Date

*Robert Schaub*  
Approved By

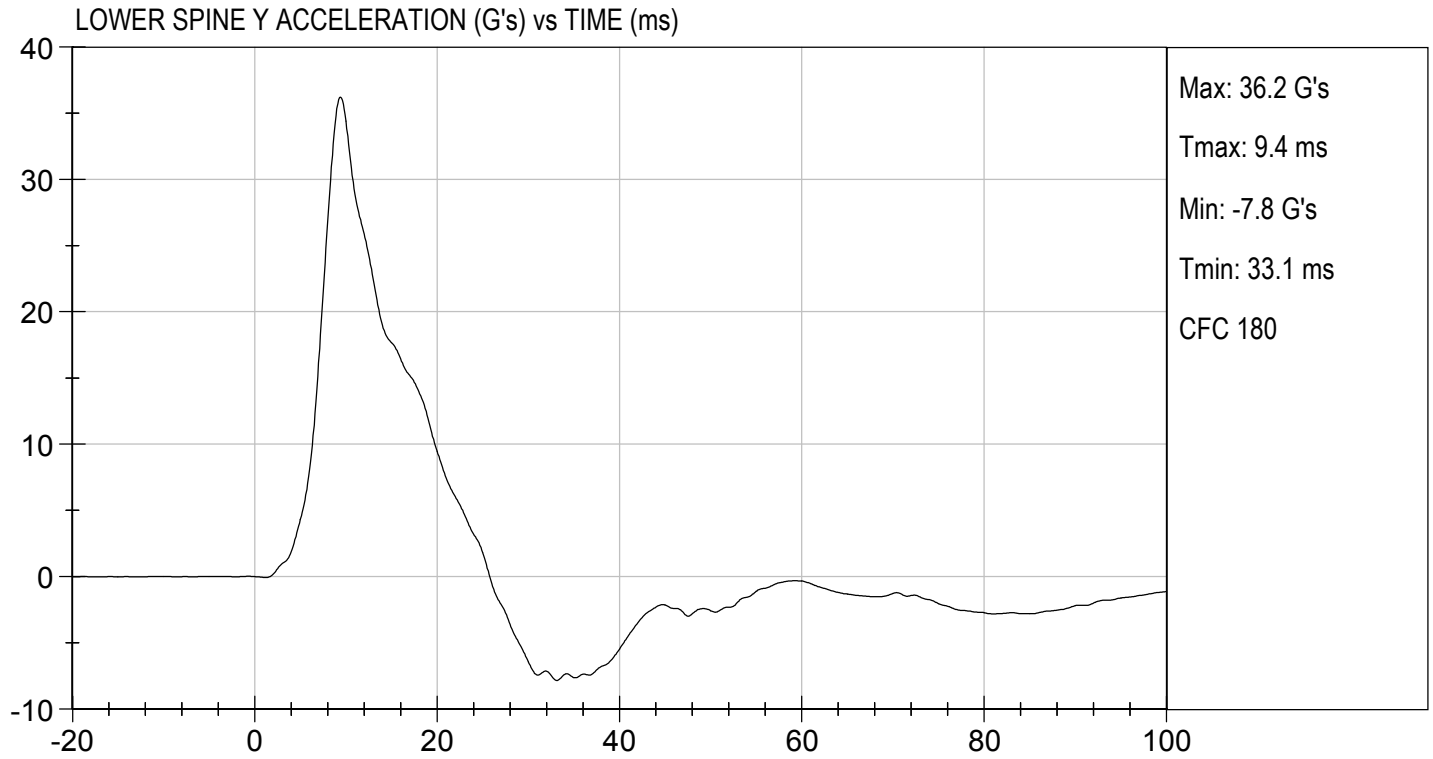










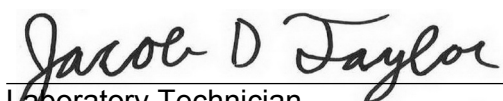


**MGA RESEARCH CORPORATION**  
**THORAX (WITHOUT ARM) IMPACT TEST**  
**SID-IIs BUILD LEVEL D DUMMY**

ATD Serial No: 296

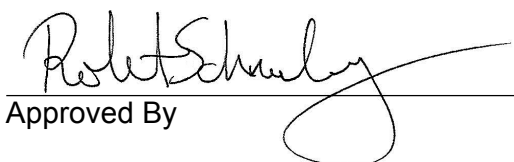
Test I.D: D190315

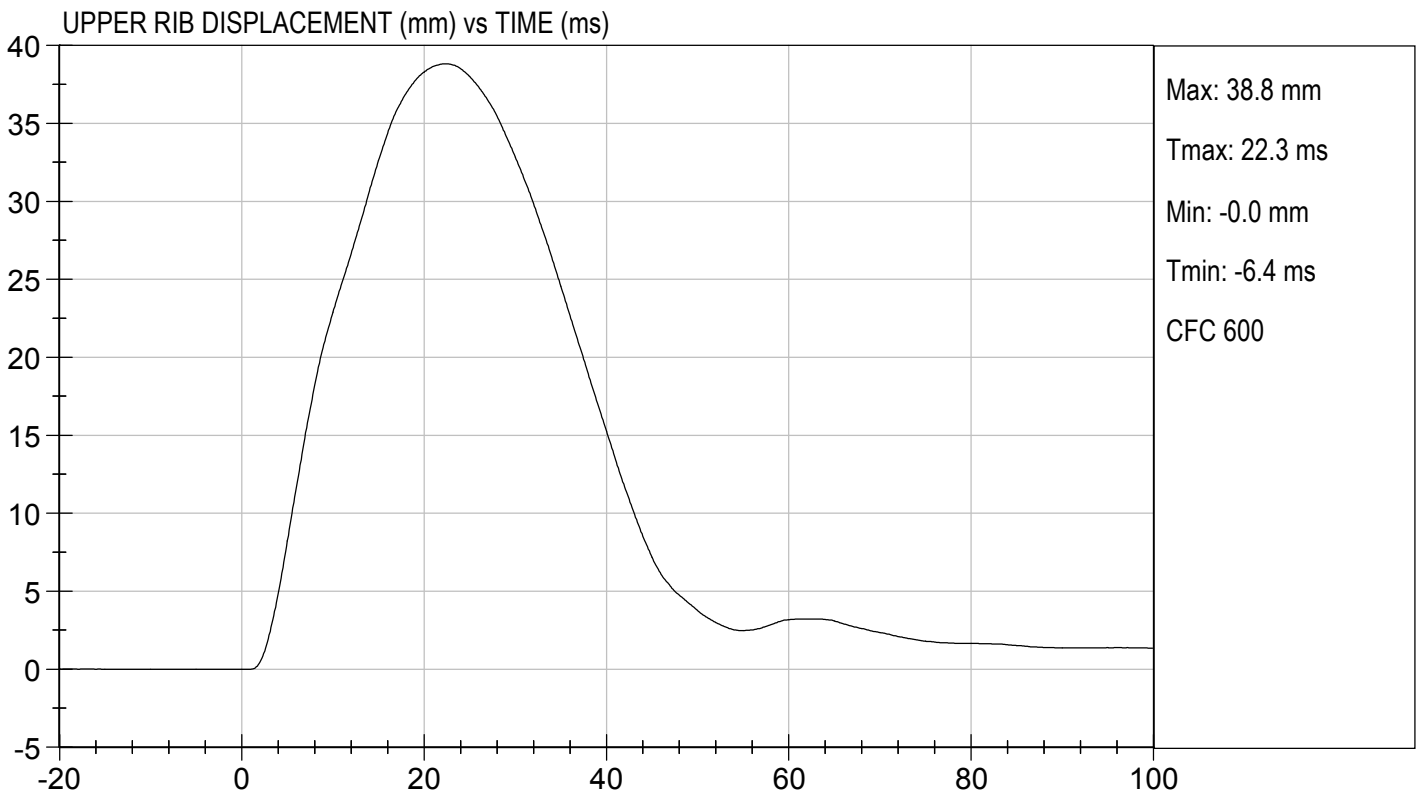
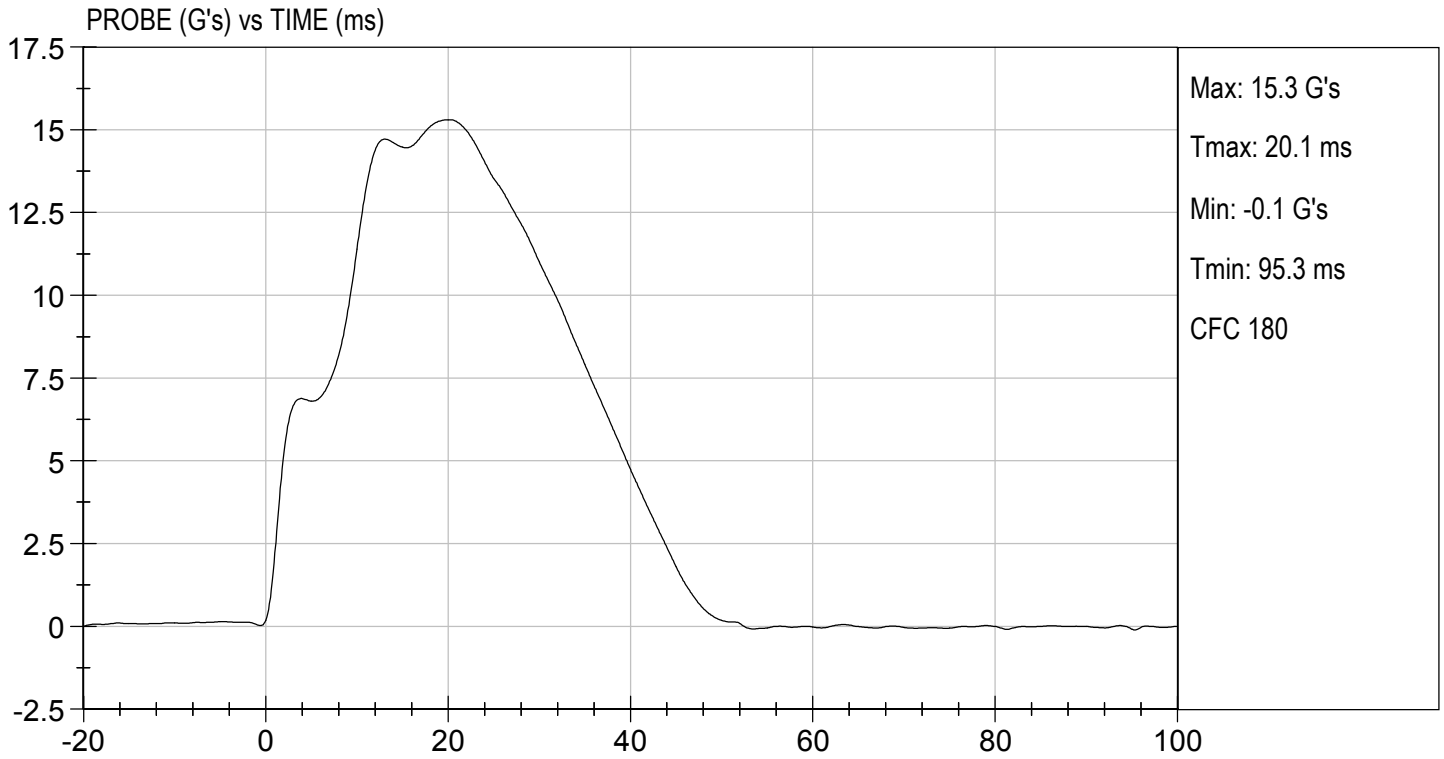
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.8	Pass
Humidity	%	10 to 70	13	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Maximum Probe Acceleration	G's	14 to 18	15	Pass
Upper Rib Displacement	mm	32 to 40	39	Pass
Middle Rib Displacement	mm	39 to 45	43	Pass
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	9	Pass
Overall Test Results				Pass

  
 Laboratory Technician

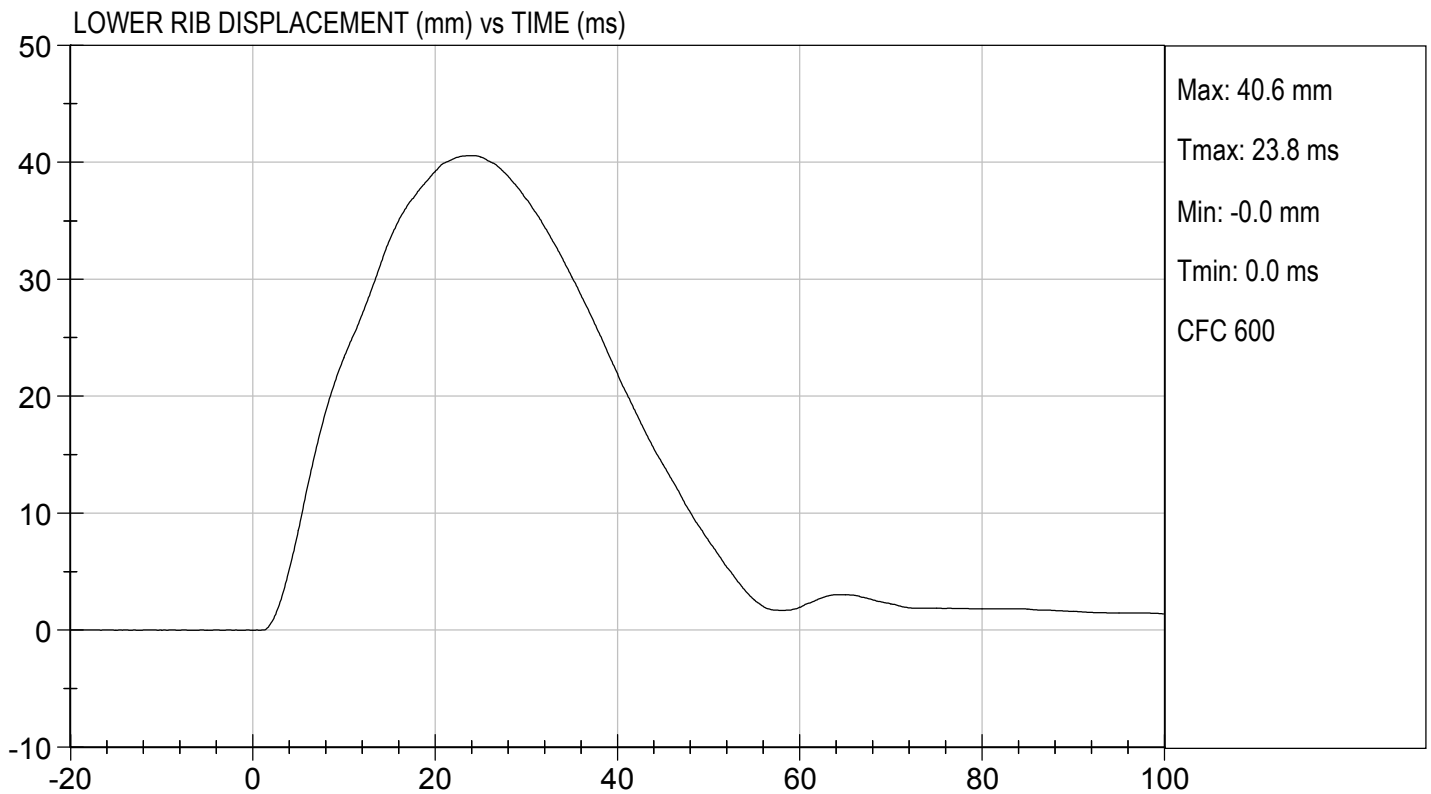
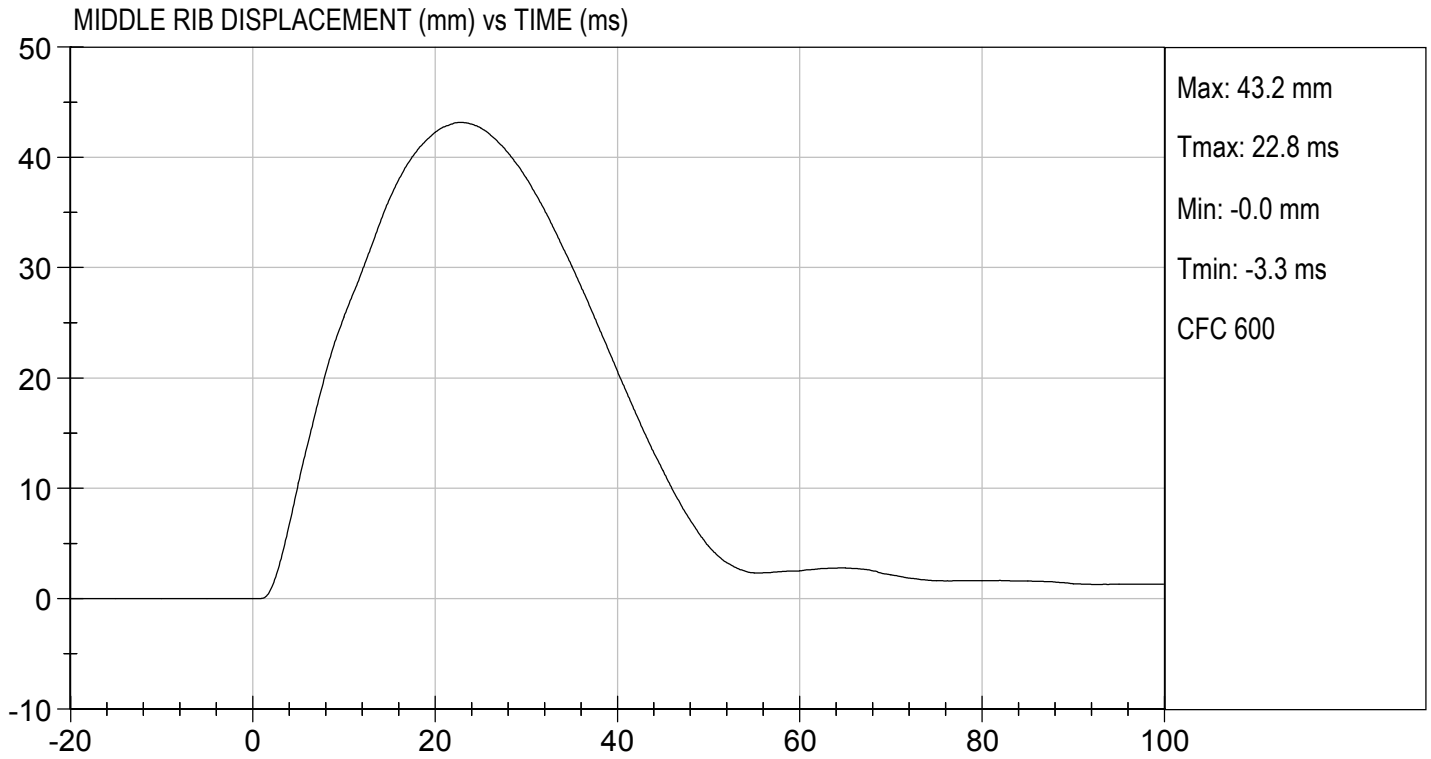
01/25/2019

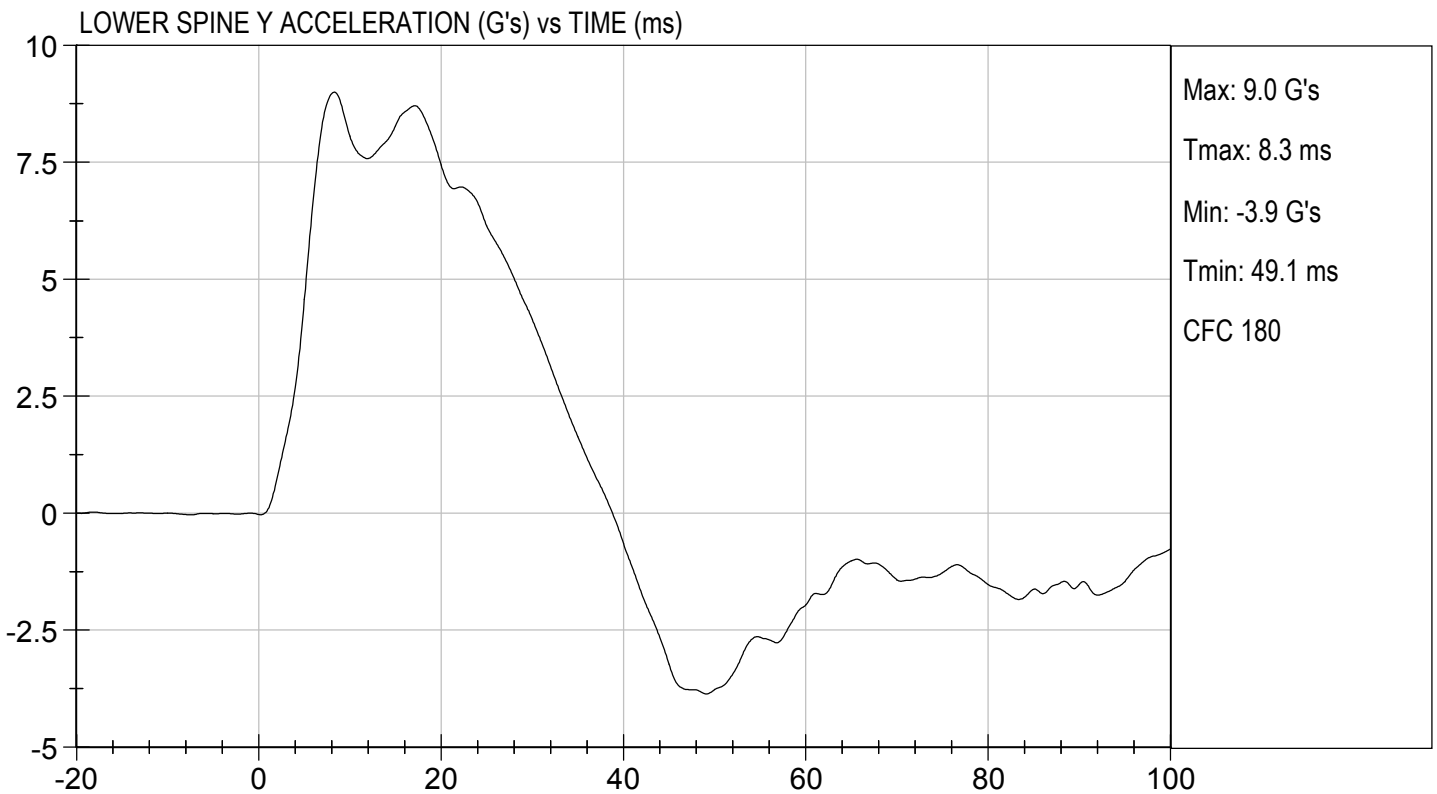
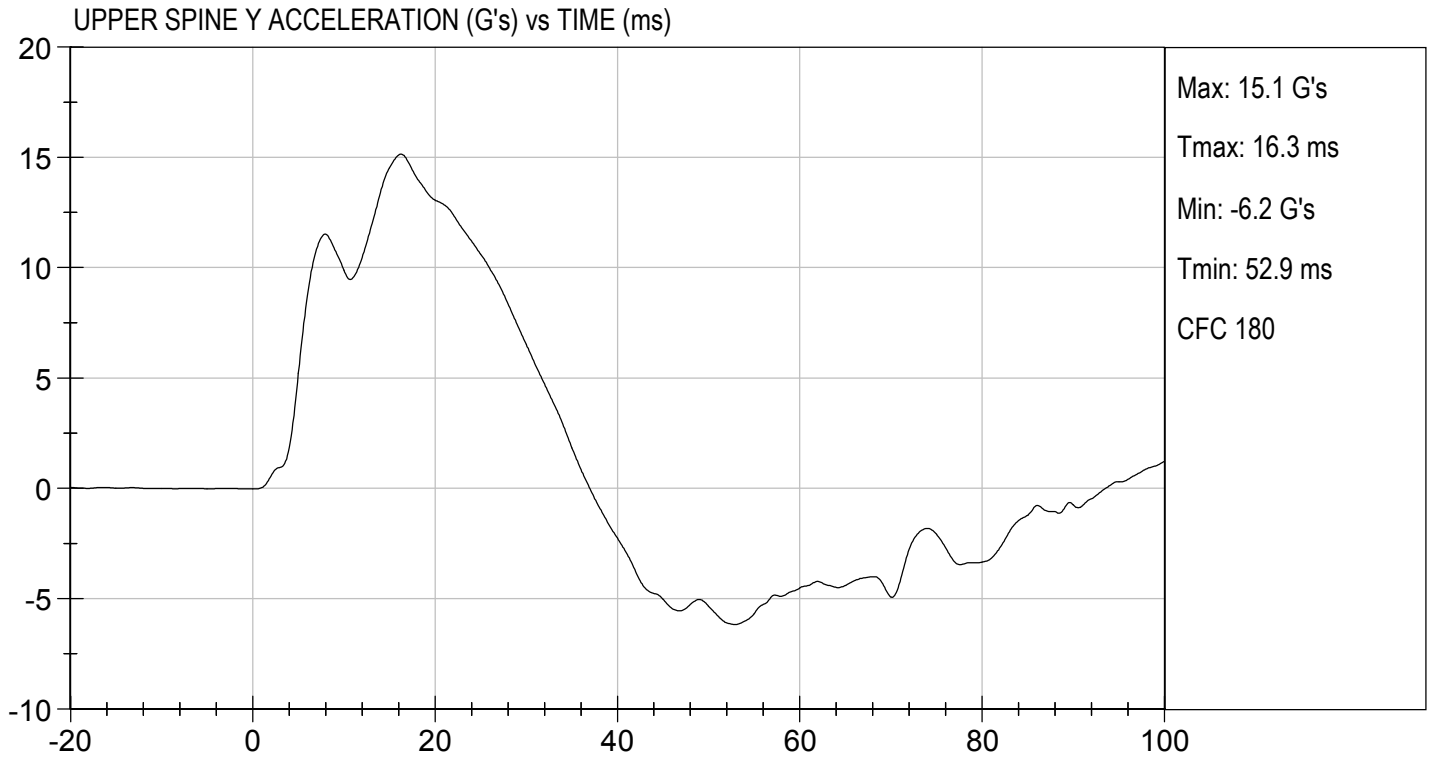
Test Date

  
 Approved By









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

ATD Serial No: 296

Test I.D: D190316

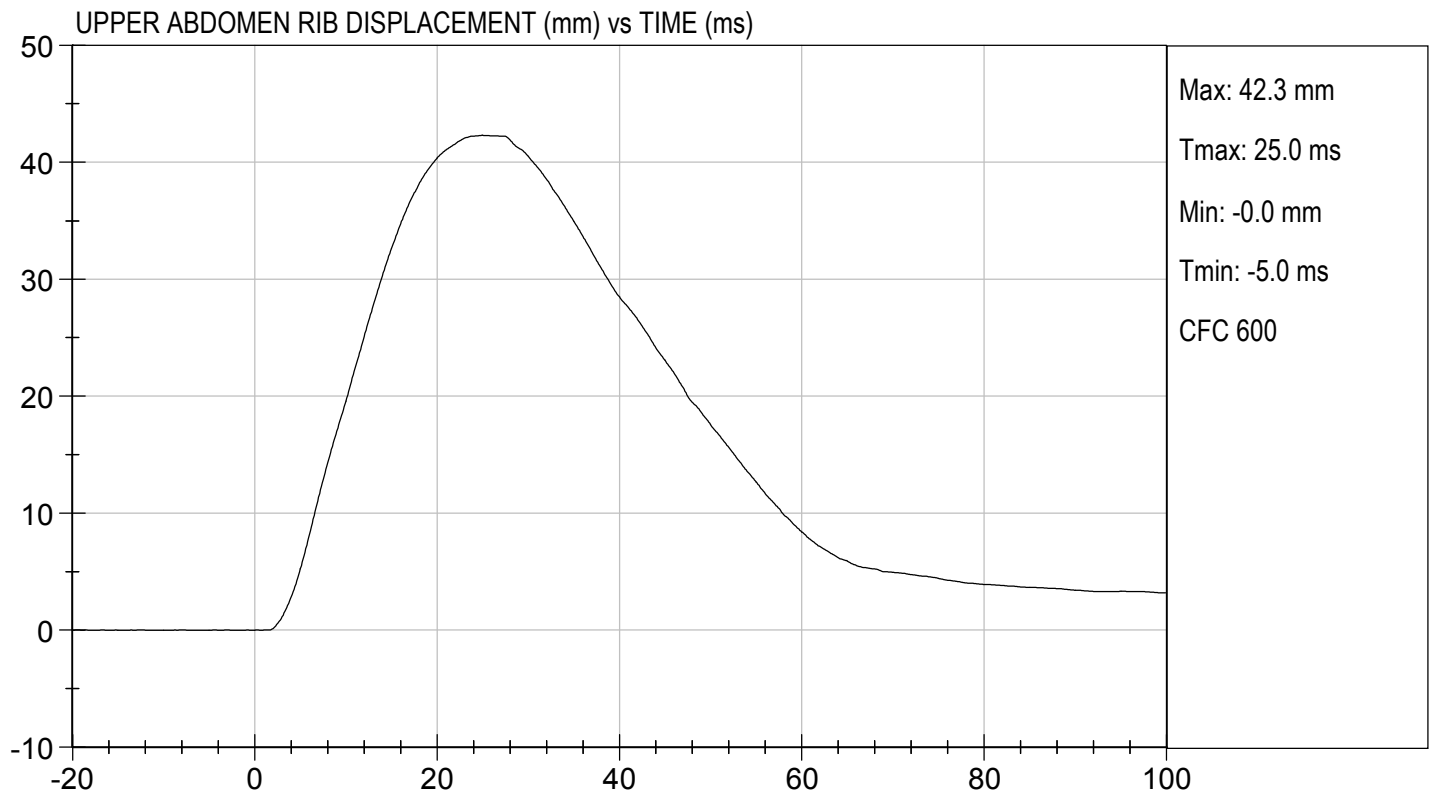
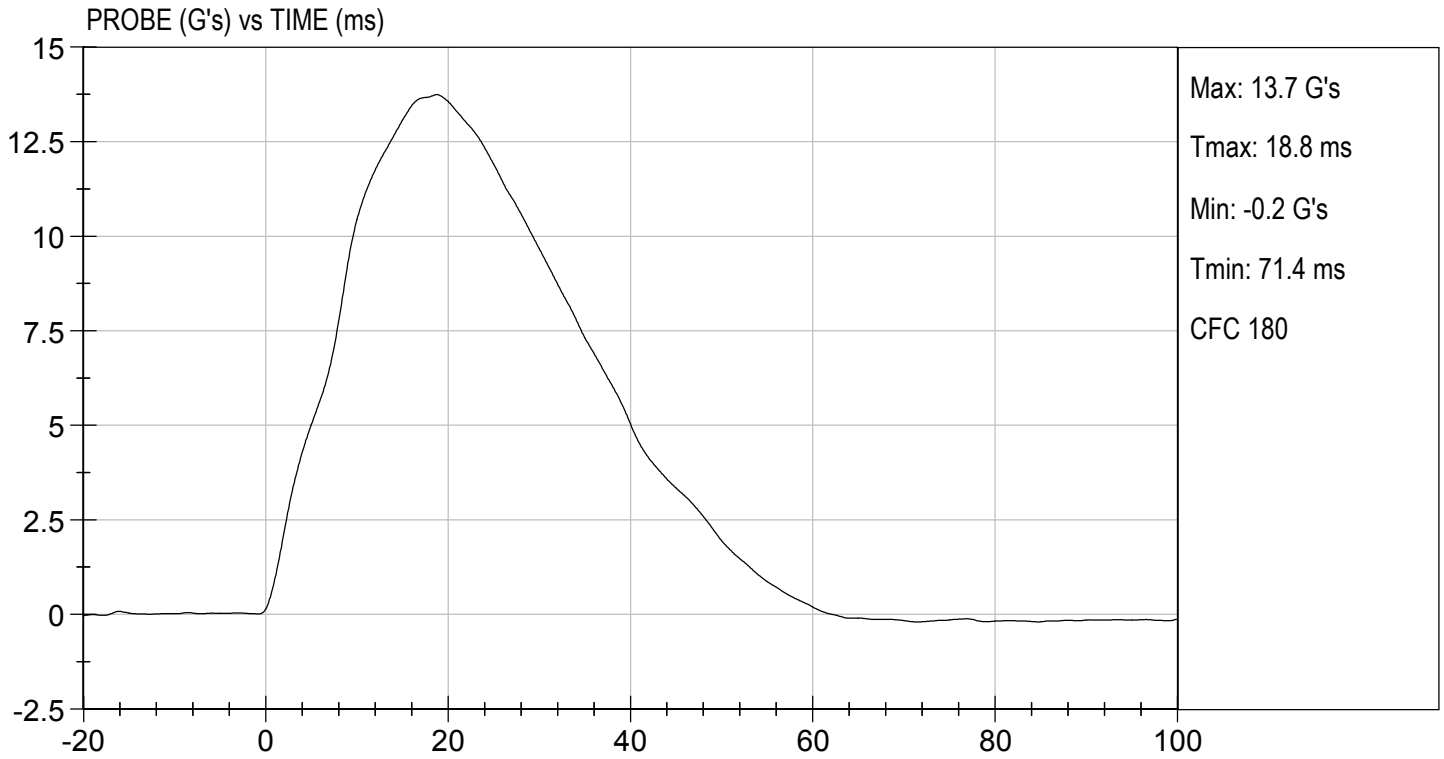
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.8	Pass
Humidity	%	10 to 70	13	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Maximum Probe Acceleration	G's	12 to 16	14	Pass
Upper Abdomen Rib Displacement	mm	36 to 47	42	Pass
Lower Abdomen Rib Displacement	mm	33 to 44	41	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	11	Pass
Overall Test Results				Pass

Jacob D Taylor  
Laboratory Technician

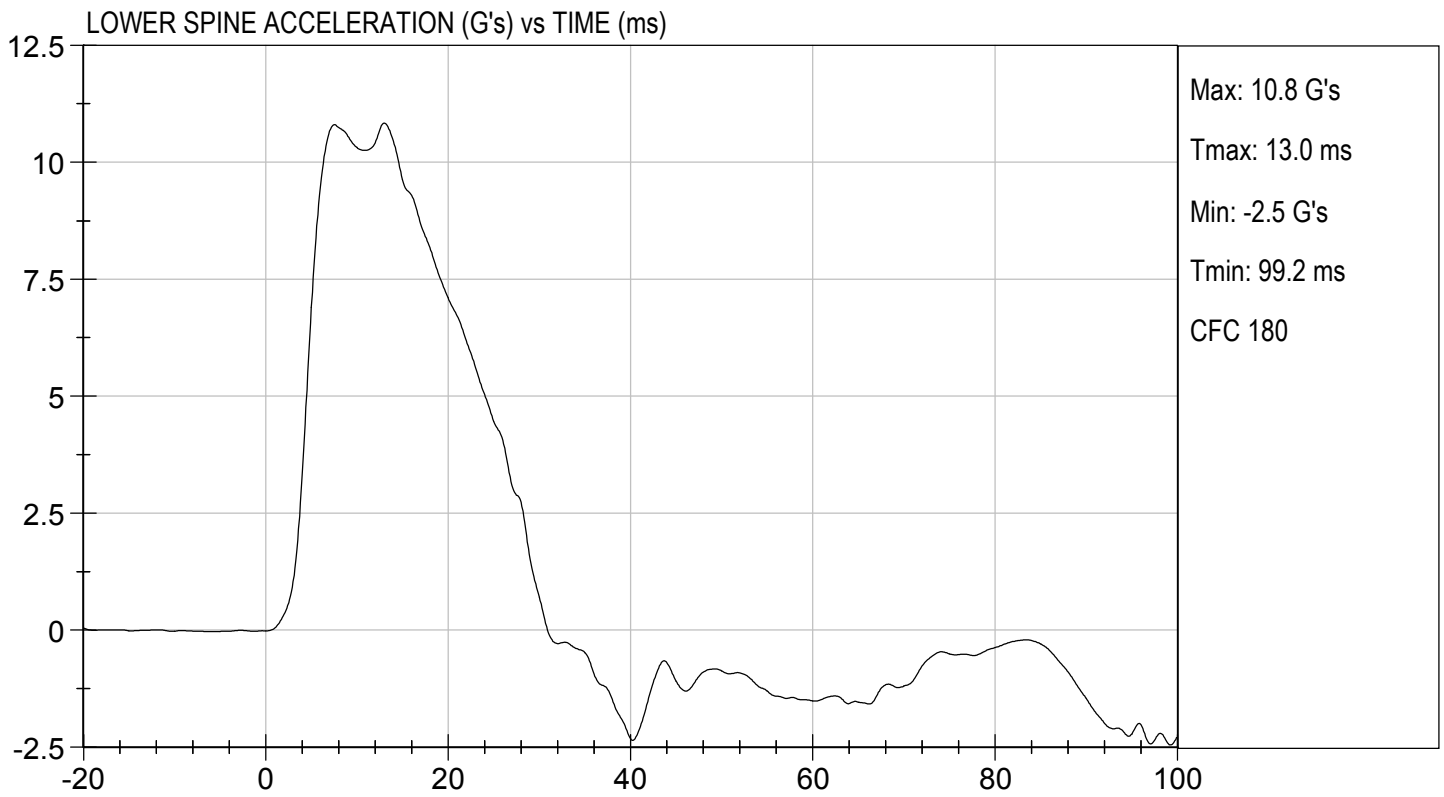
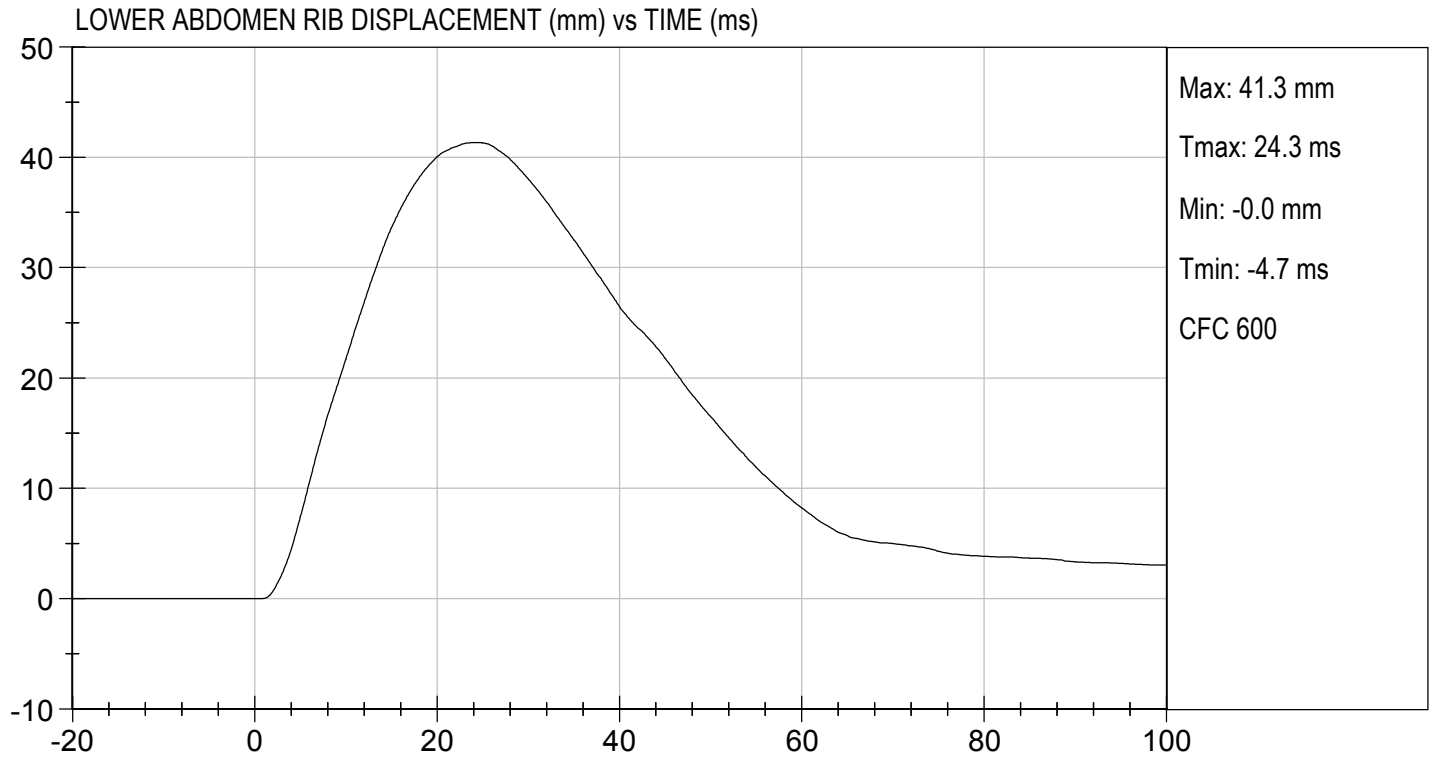
01/25/2019

Test Date

Robert Schaub  
Approved By





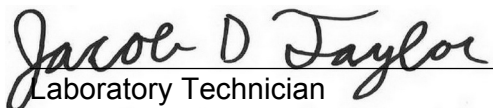


**MGA RESEARCH CORPORATION**  
**PELVIS IMPACT TEST**  
**SID-IIs BUILD LEVEL D DUMMY**

ATD Serial No: 296

Test I.D: D190317

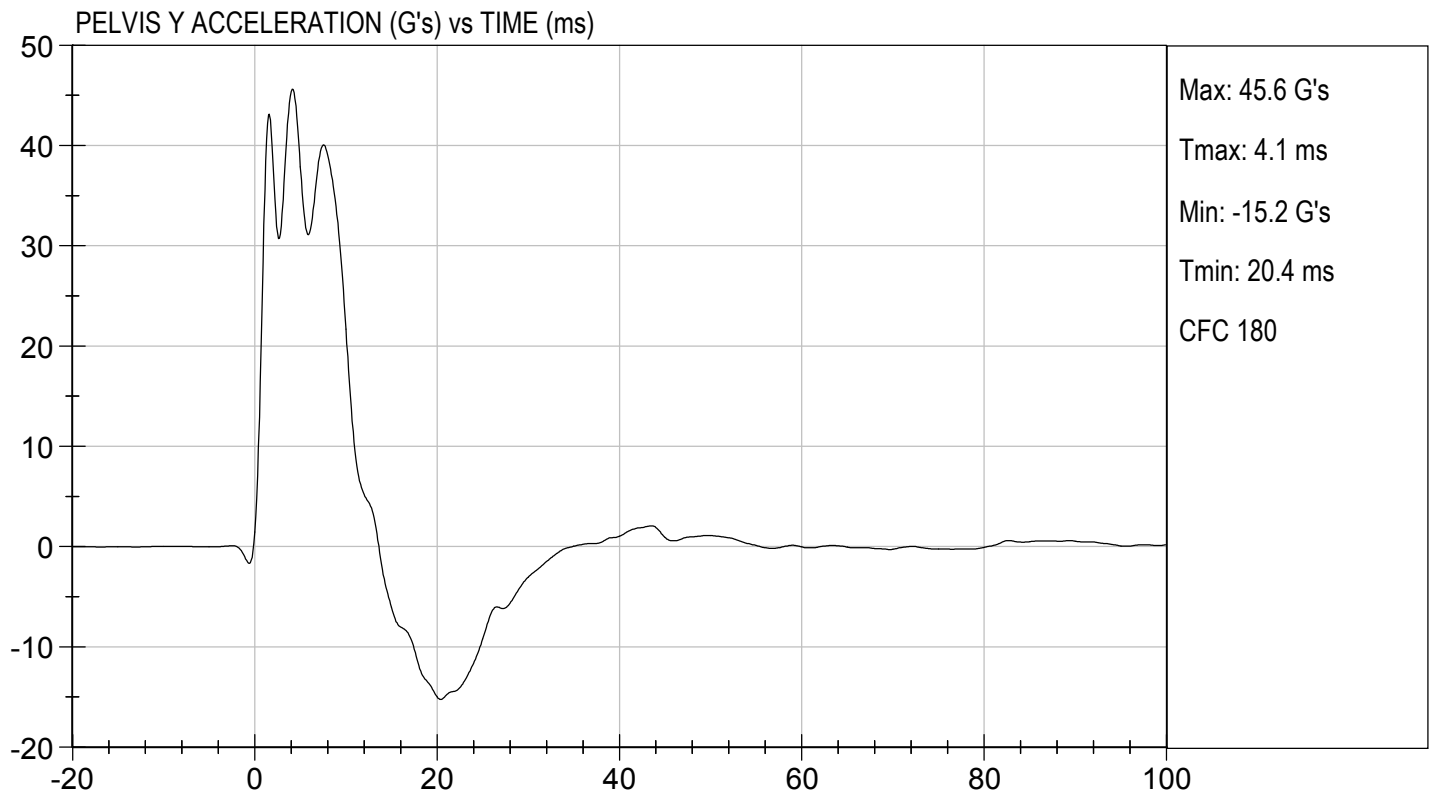
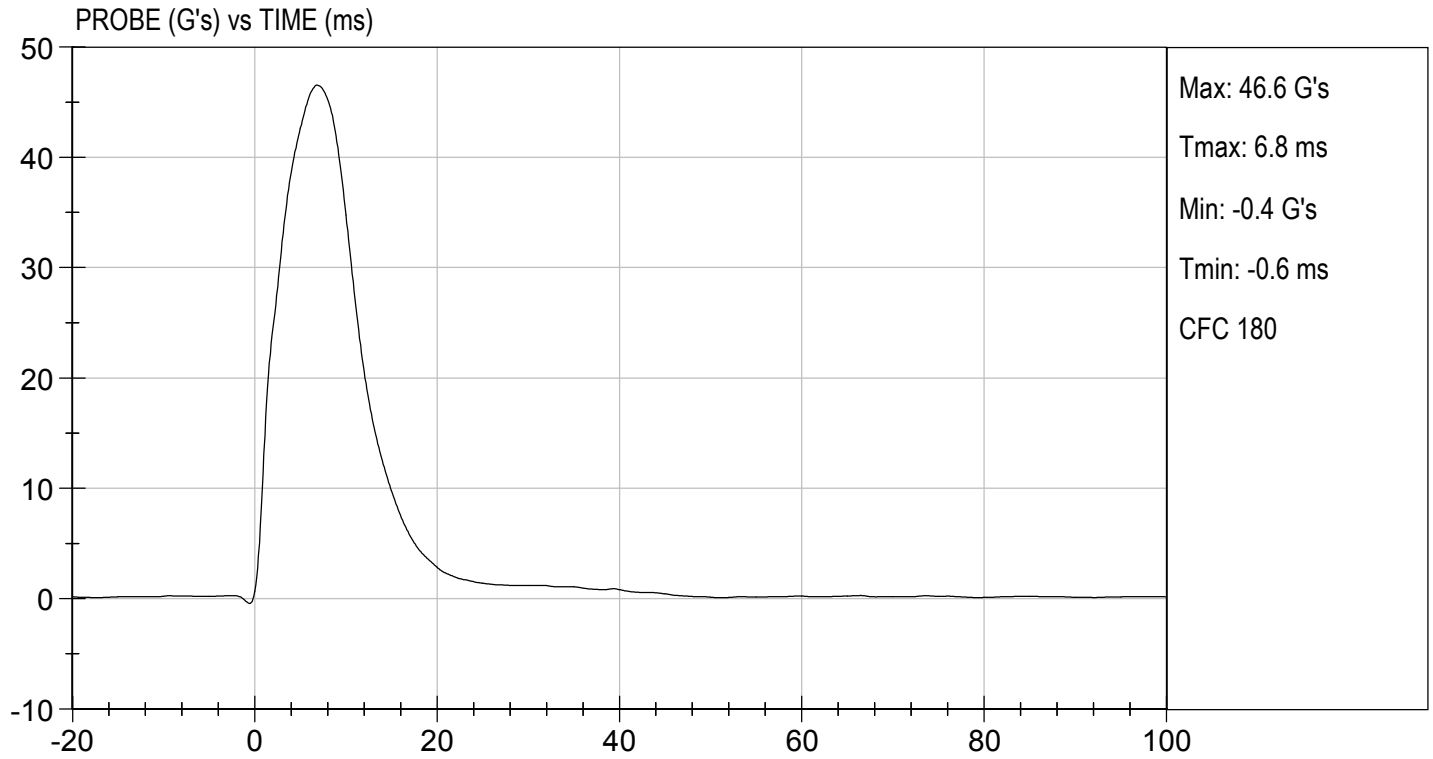
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.8	Pass
Humidity	%	10 to 70	13	Pass
Impact Velocity	m/s	6.60 to 6.80	6.60	Pass
Maximum Probe Acceleration	G's	38 to 47	47	Pass
Pelvis Y Acceleration After 6 ms	G's	34 to 42	40	Pass
Peak Acetabulum Force	N	3600 to 4300	4,180	Pass
Overall Test Results				Pass

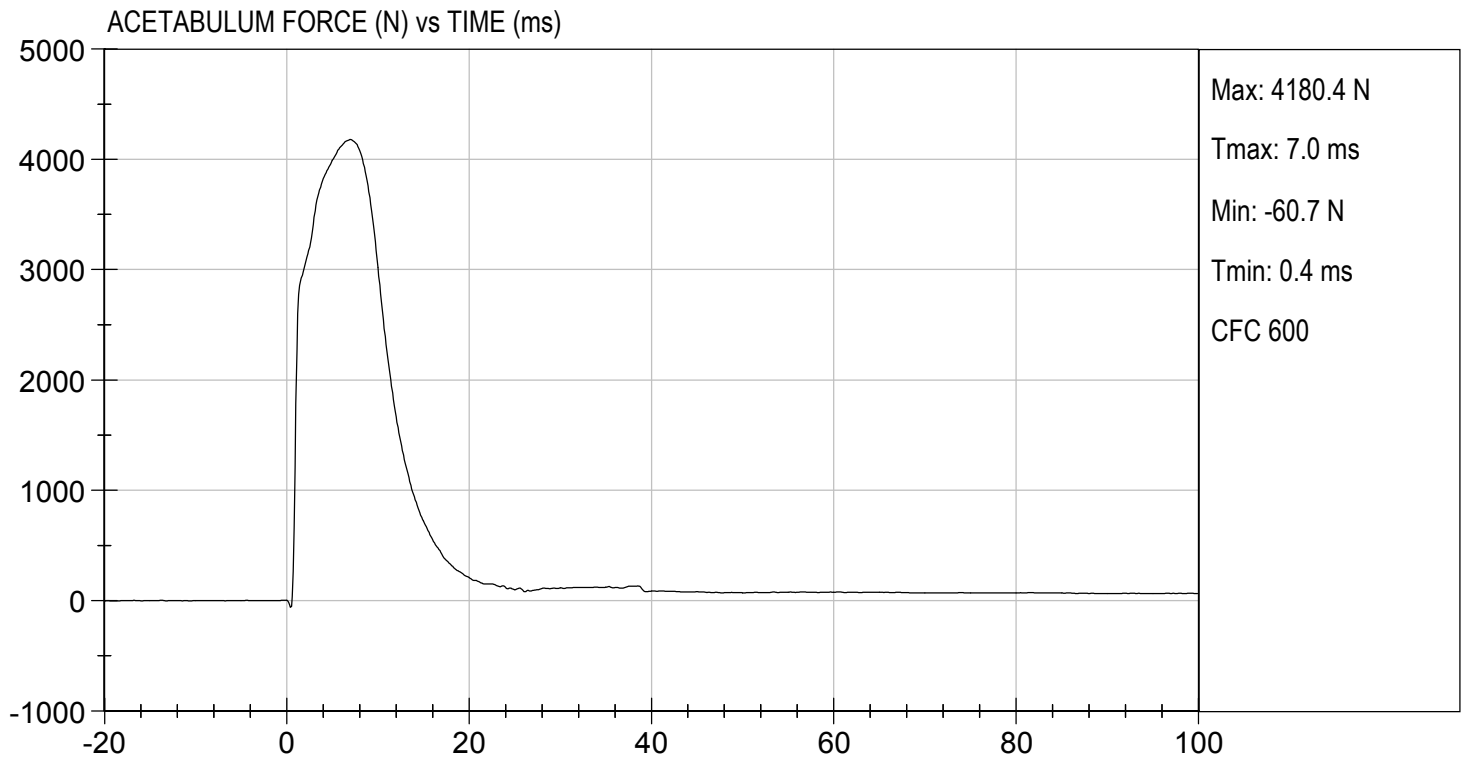
  
 Laboratory Technician

01/25/2019

Test Date

  
 Approved By







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

**ATD Serial No:** 296

**Test I.D:** D190318

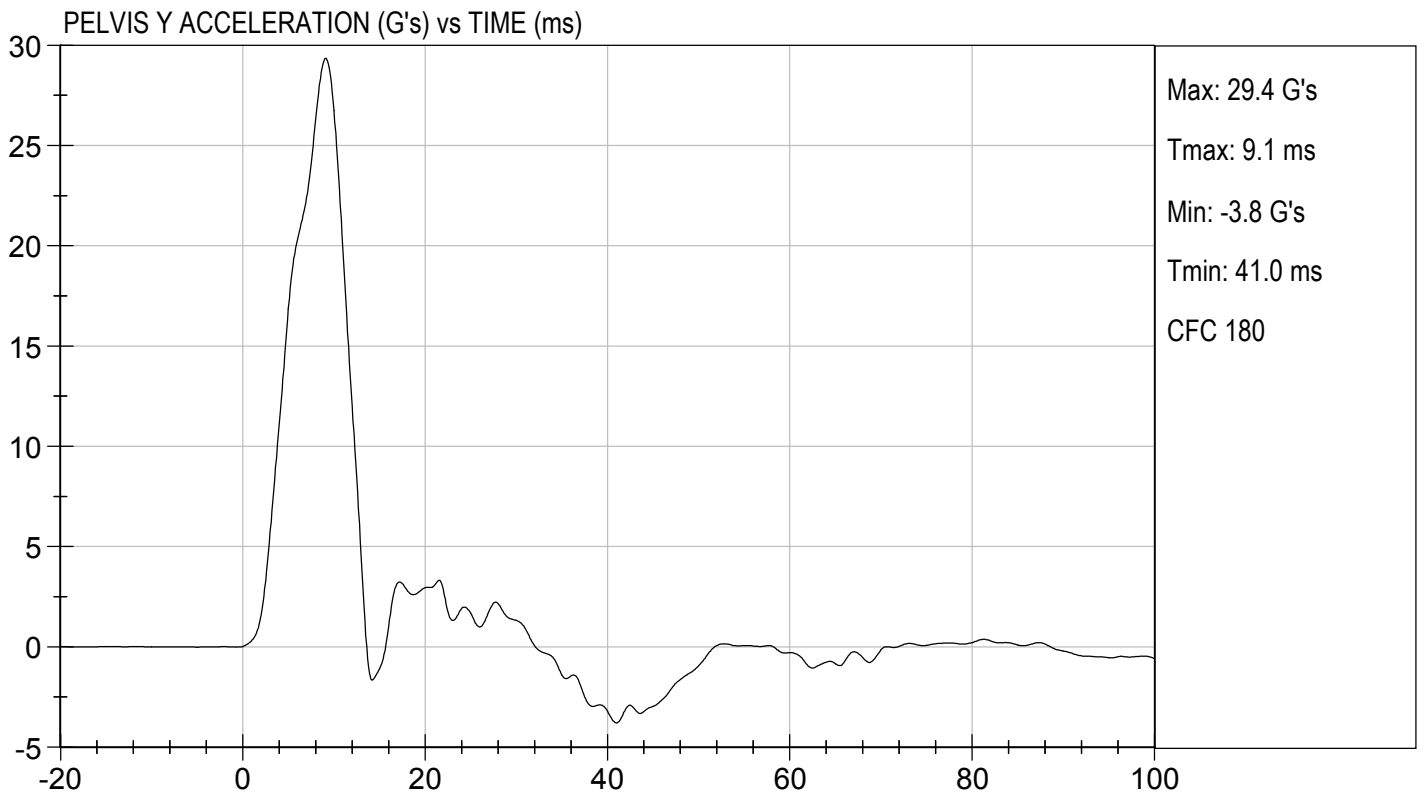
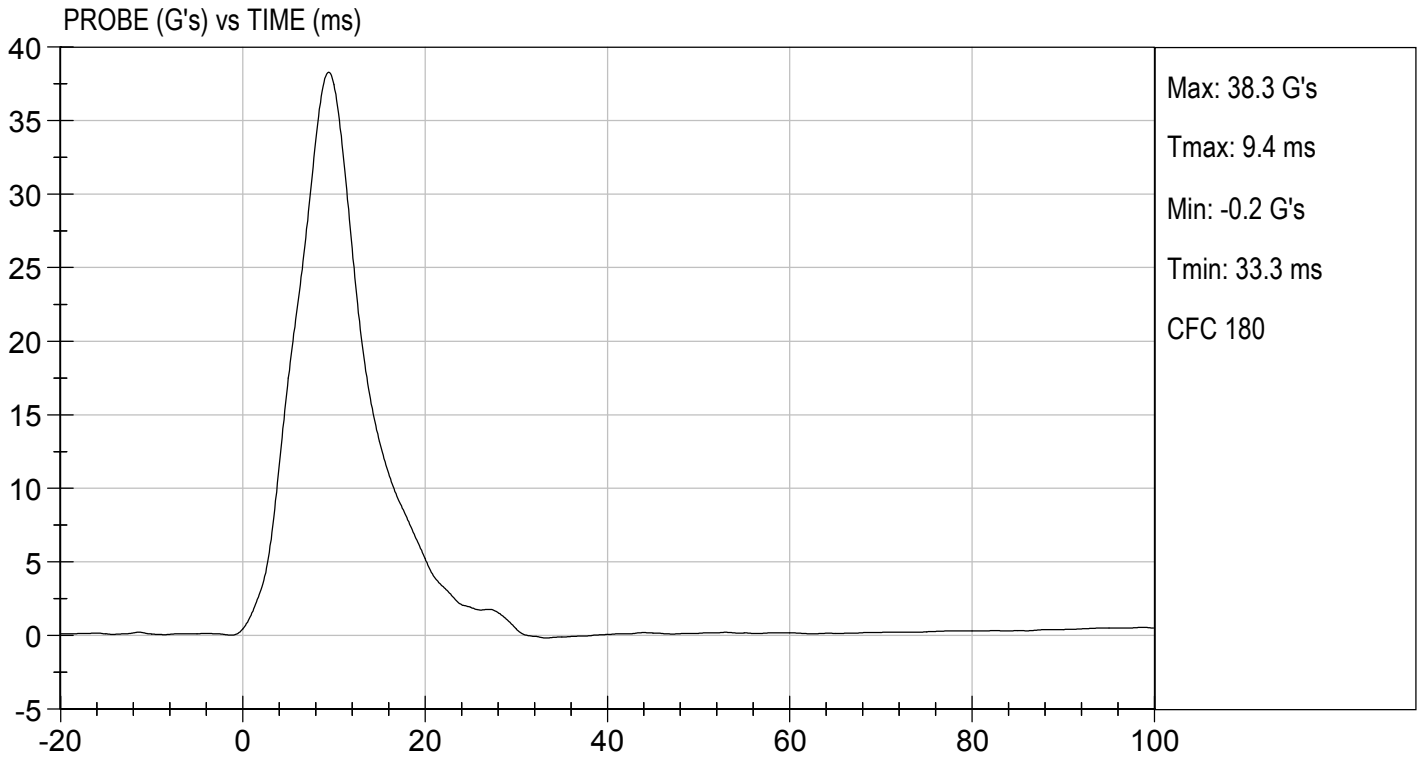
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.8	Pass
Humidity	%	10 to 70	13	Pass
Impact Velocity	m/s	4.20 to 4.40	4.40	Pass
Maximum Probe Acceleration	G's	36 to 45	38	Pass
Pelvis Y Acceleration	G's	28 to 39	29	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4,395	Pass
<b>Overall Test Results</b>				<b>Pass</b>

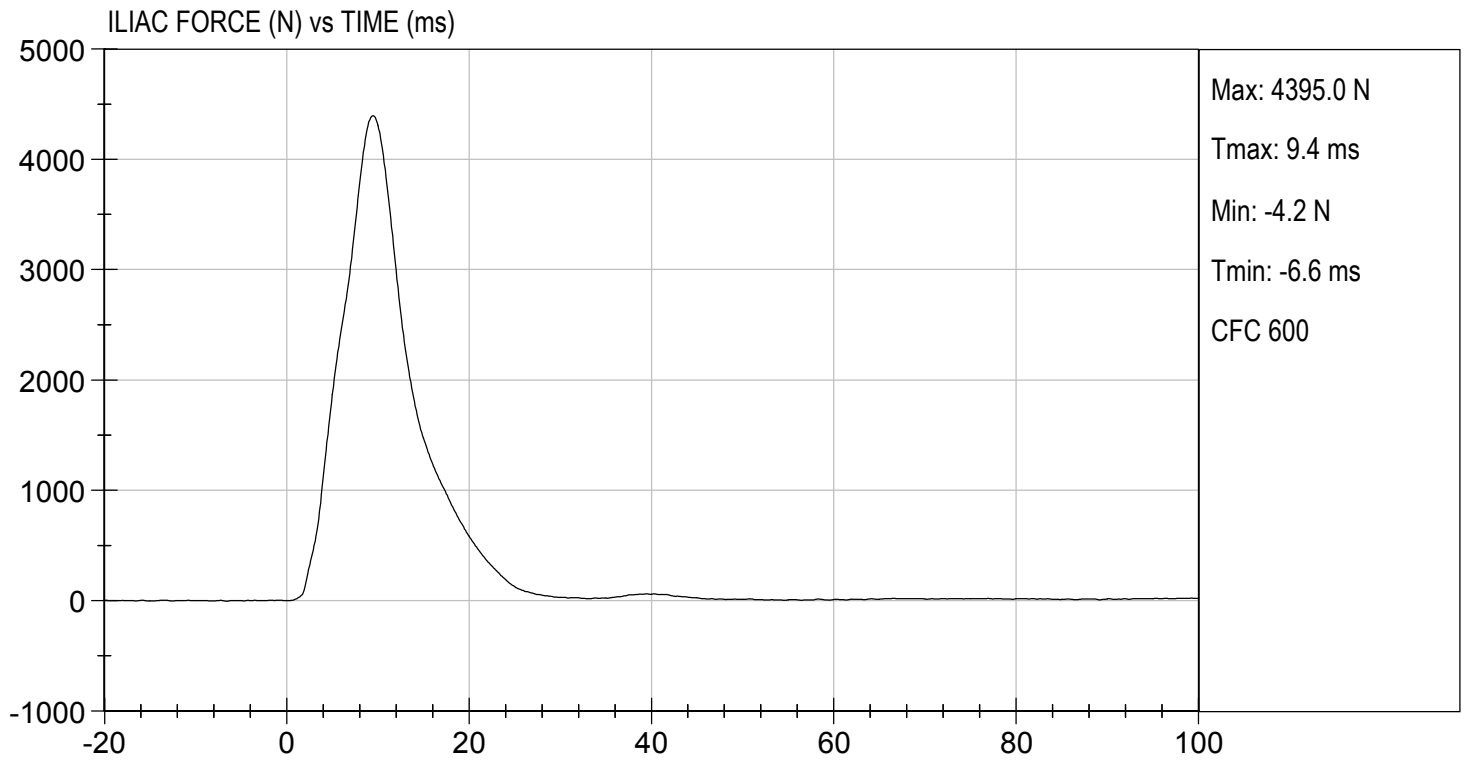
*Jacob D Taylor*  
 Laboratory Technician

01/25/2019

Test Date

*Robert Schaub*  
 Approved By





**CALIBRATION TEST RESULTS**

**POST-TEST**

**SID-IIS 5<sup>TH</sup> PERCENTILE FEMALE - DRIVER ATD**



**SID-IIsD External Measurements**  
**SN: 296**

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

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

ATD Serial No: 296

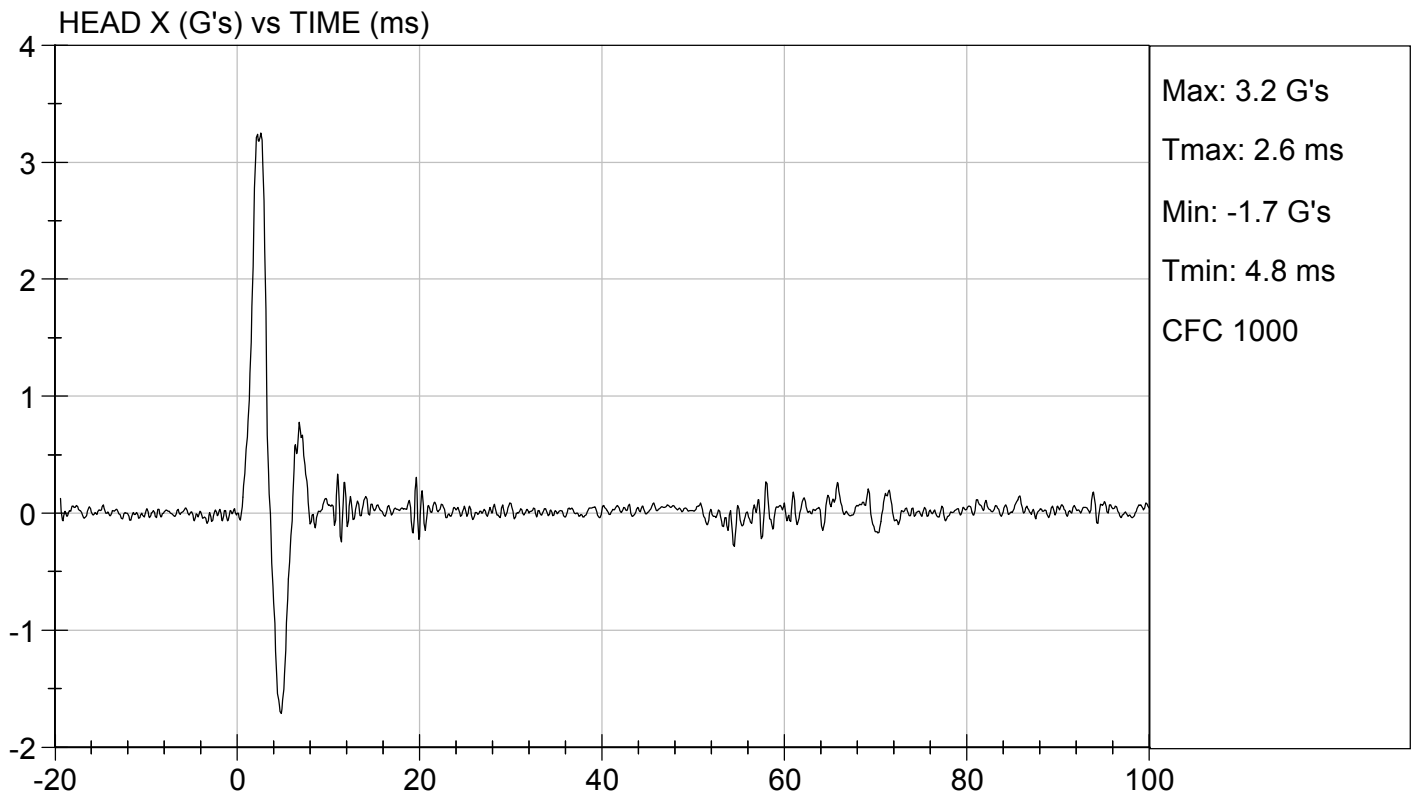
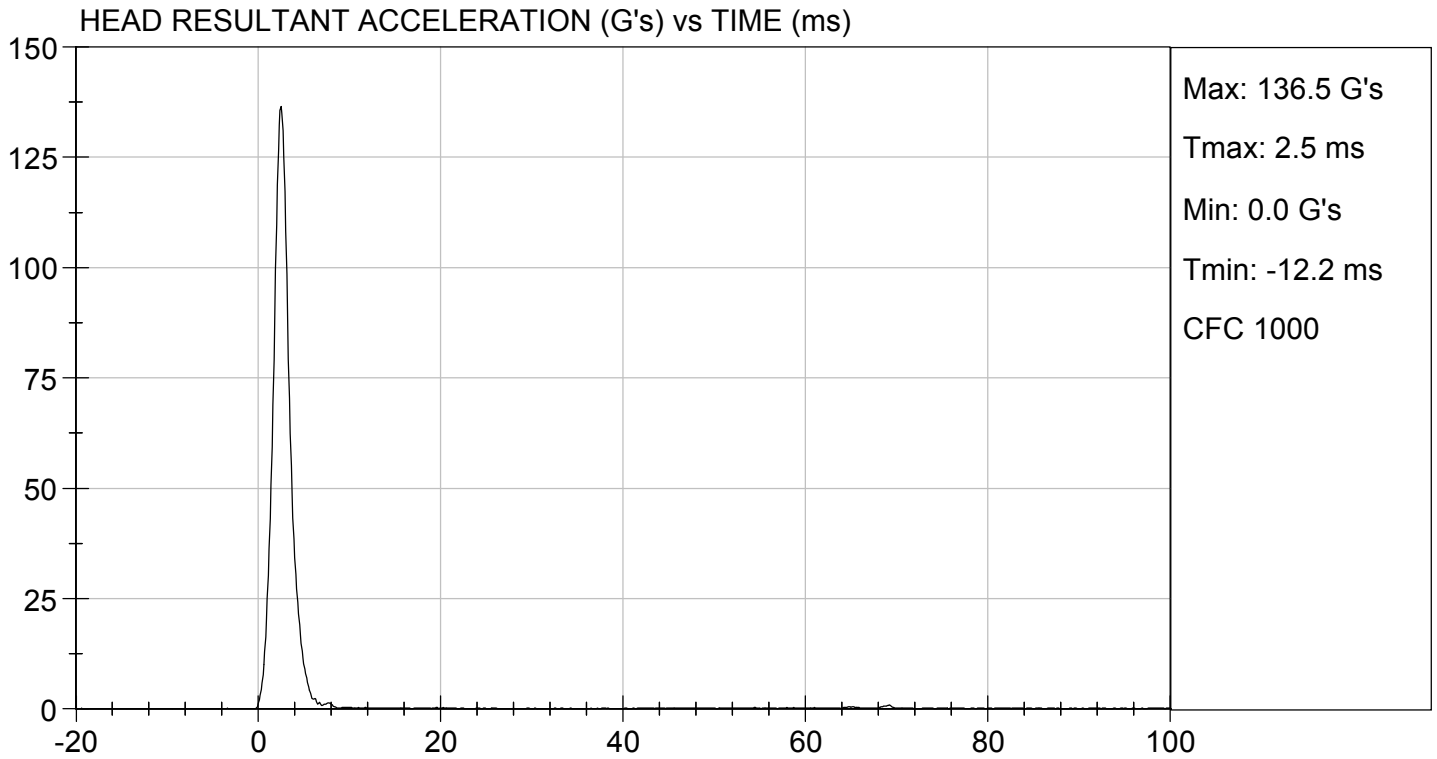
Test ID: D190401

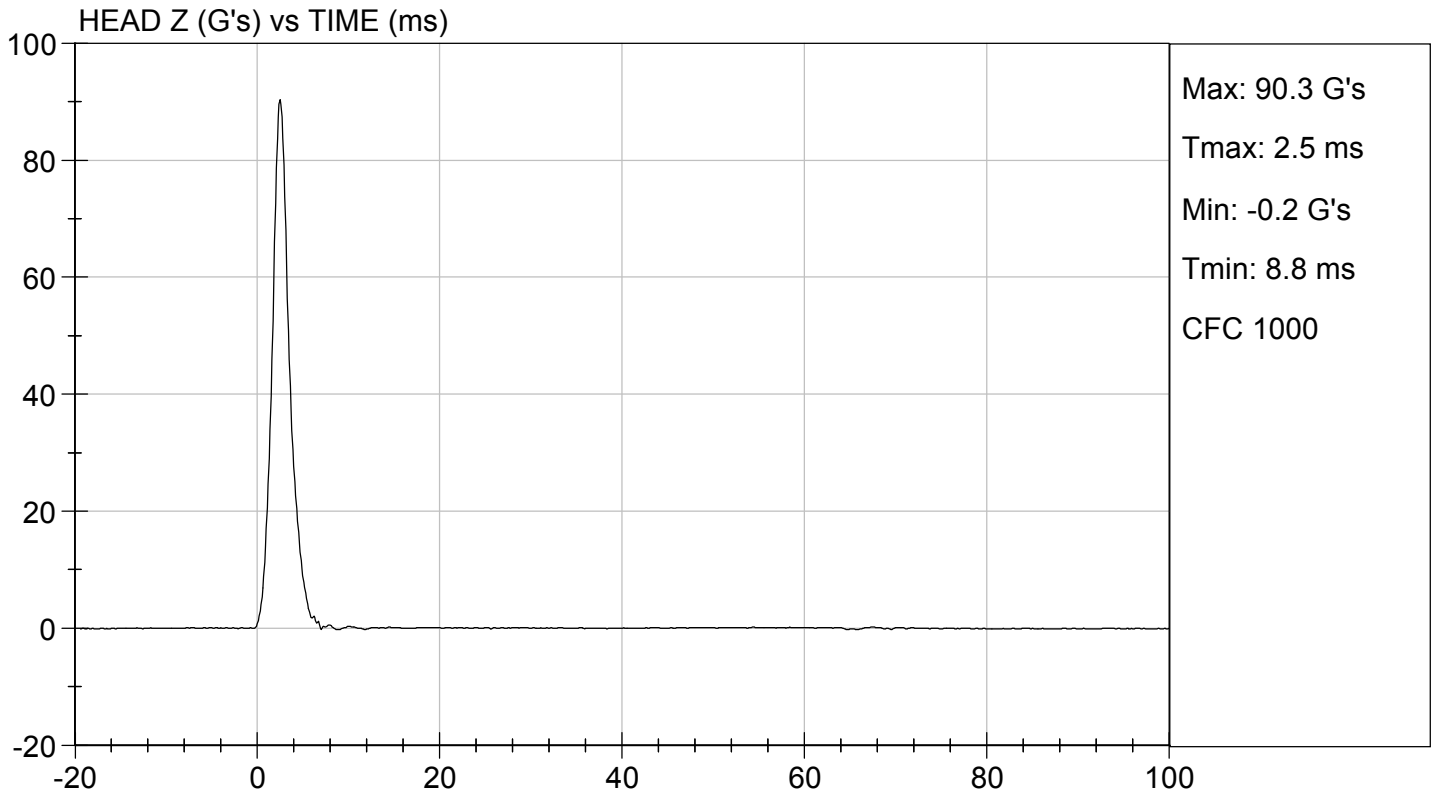
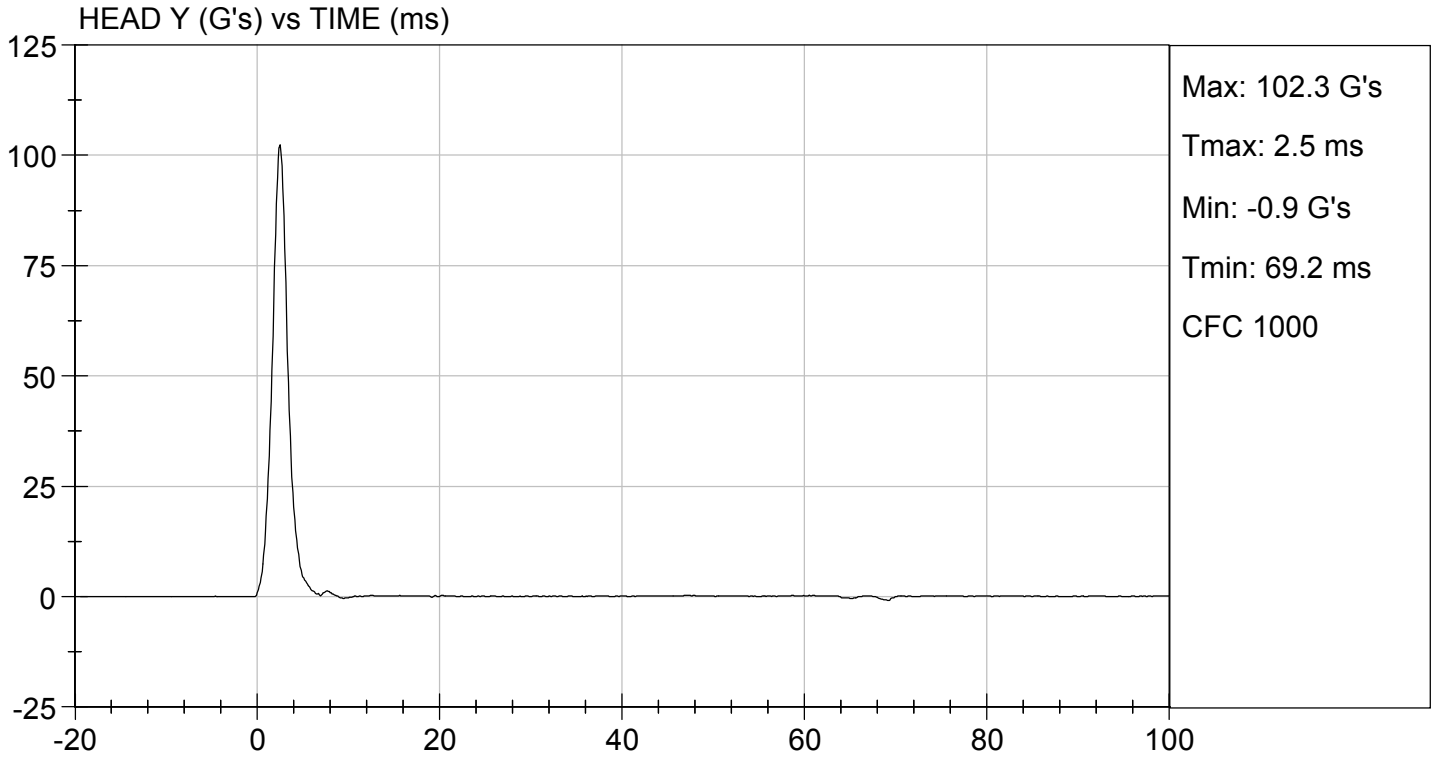
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	13	Pass
Peak Resultant Acceleration	G's	115 to 137	137	Pass
Peak Longitudinal Acceleration	G's	+/- 15	3.2	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	<15%	Yes	Pass
Overall Test Results				Pass

*Danielle Redinlaugh*  
 Laboratory Technician

01/31/2019  
 Test Date

*Robert Schuler*  
 Approved By








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

**ATD Serial No:** 296

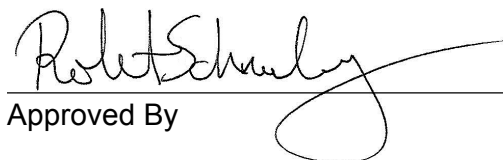
**Test I.D.:** D190402

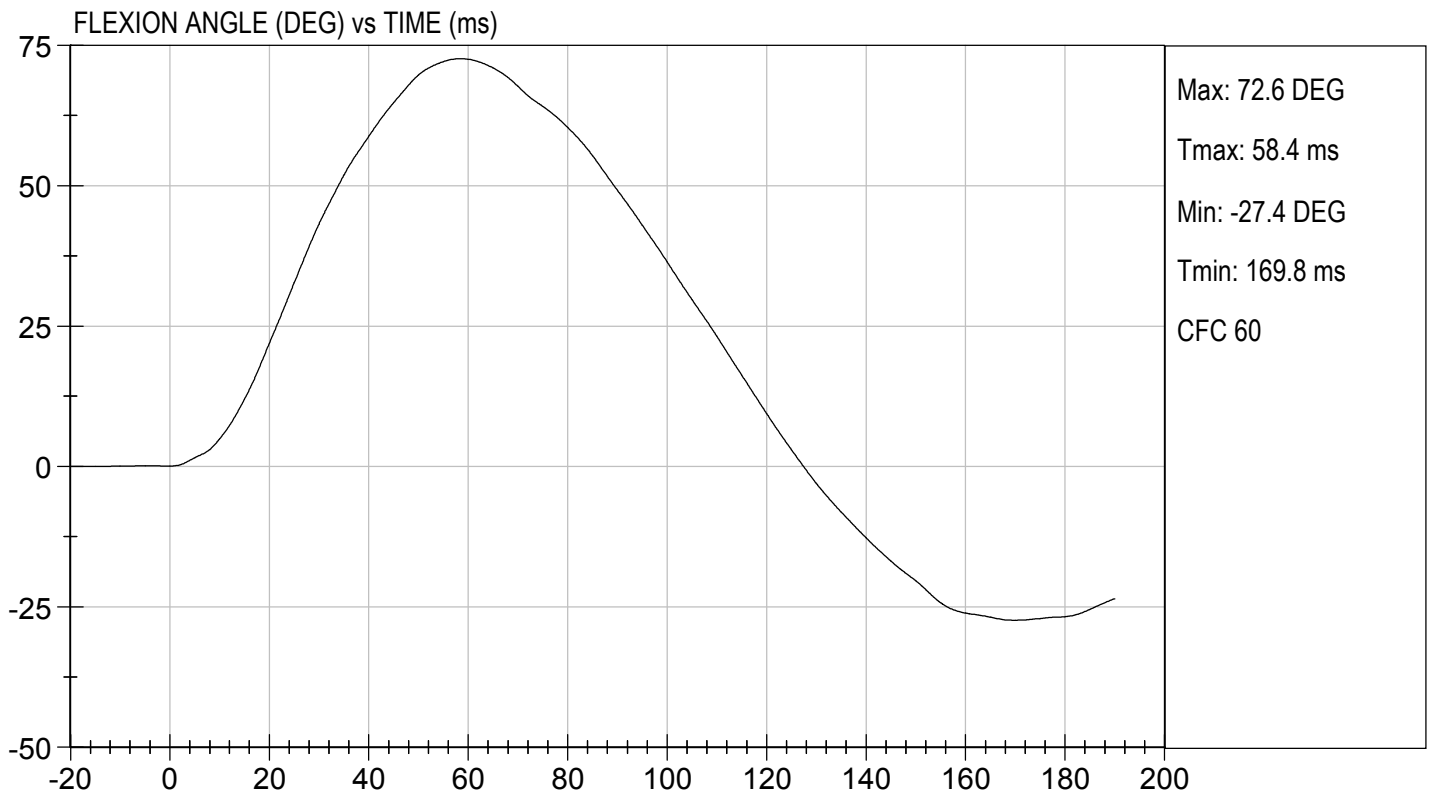
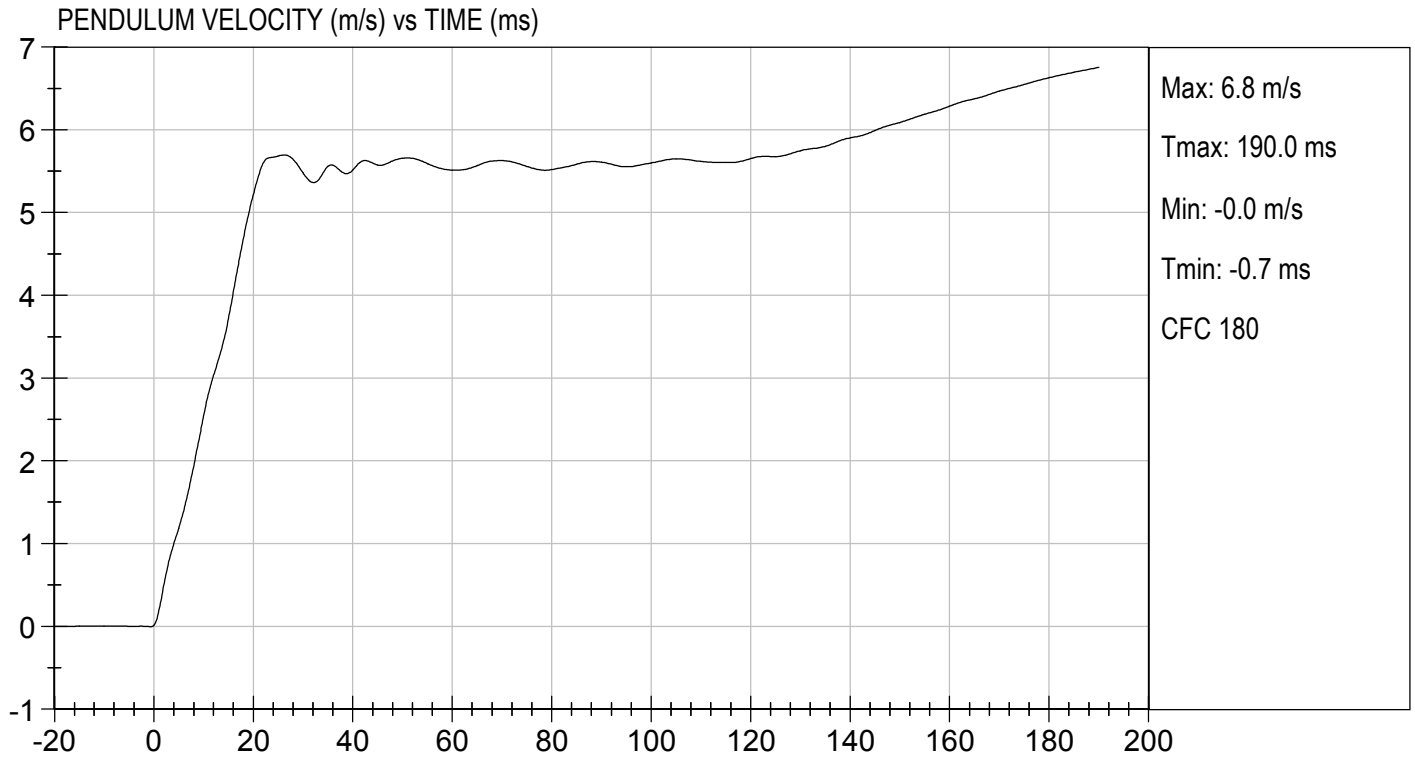
Tested Parameter	Units	Specification	Result	Pass/Fail	
Temperature	deg C	20.6 to 22.2	20.7	Pass	
Humidity	%	10 to 70	13	Pass	
Impact Velocity	m/s	5.51 to 5.63	5.61	Pass	
Pendulum Velocity	10 ms	m/s	2.20 to 2.80	2.54	Pass
	15 ms	m/s	3.30 to 4.10	3.72	Pass
	20 ms	m/s	4.40 to 5.40	5.22	Pass
	25 ms	m/s	5.40 to 6.10	5.68	Pass
	25-100 ms	m/s	5.50 to 6.20	5.70	Pass
Maximum D-Plane Rotation	deg	71 to 81	73	Pass	
Time of Maximum D-Plane Rotation	ms	50 to 70	58	Pass	
Maximum Occipital Condyle Moment	Nm	-44 to -36	-41	Pass	
Time of Moment Decay to 0 Nm	ms	102 to 126	109	Pass	
<b>Overall Test Results</b>				<b>Pass</b>	

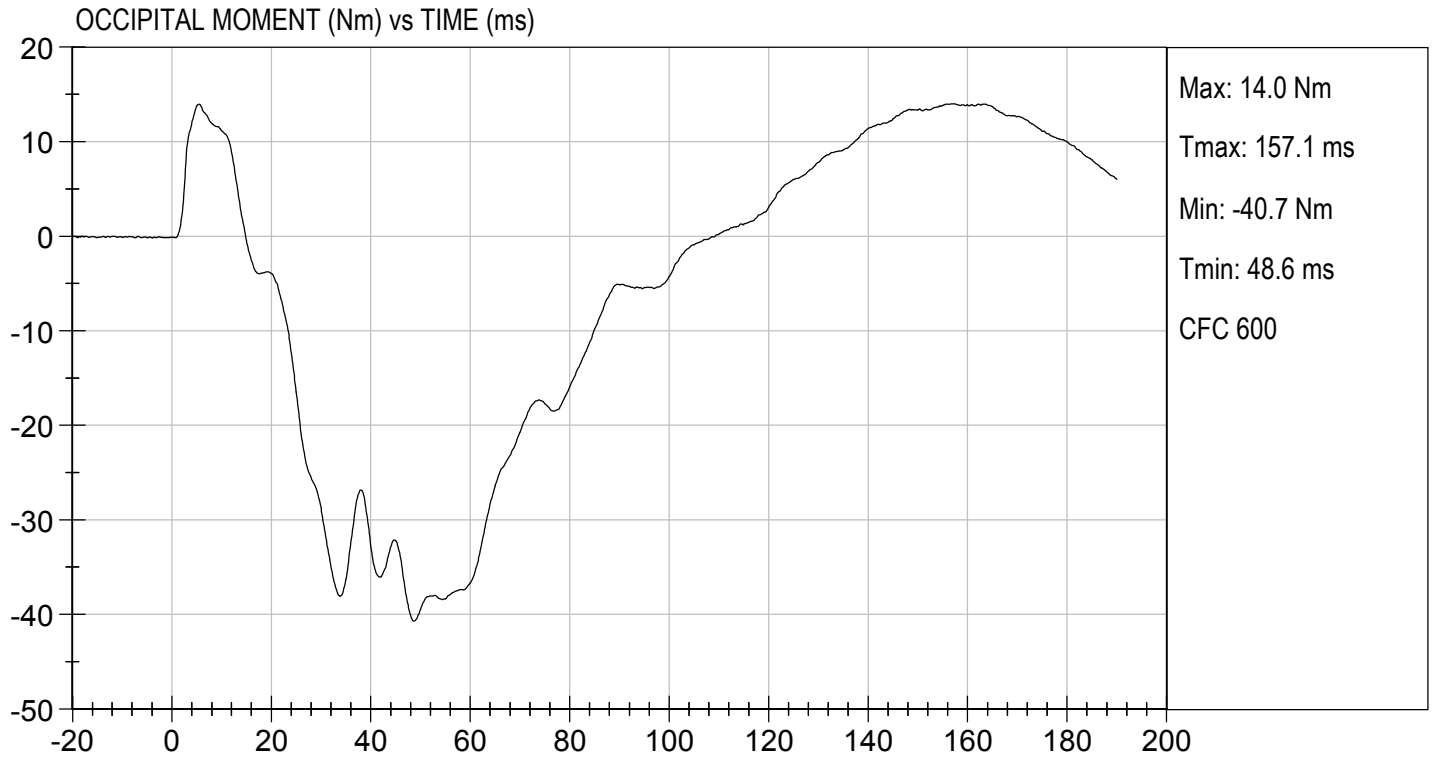
  
Laboratory Technician

01/31/2019

Test Date

  
Approved By



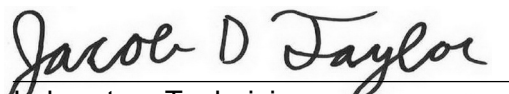


**MGA RESEARCH CORPORATION**  
**SHOULDER IMPACT TEST**  
**SID-IIs BUILD LEVEL D DUMMY**


ATD Serial No: 296

Test ID: D190403

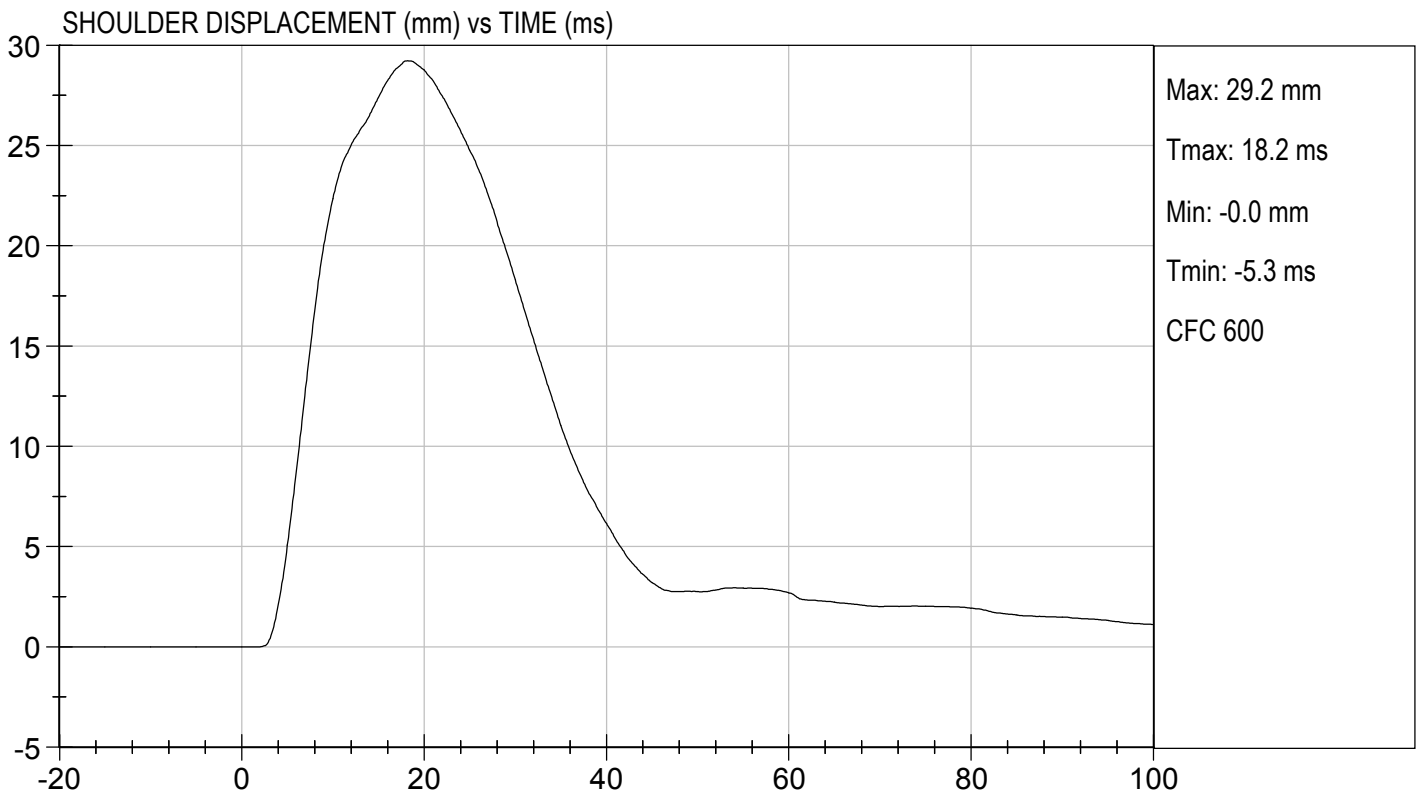
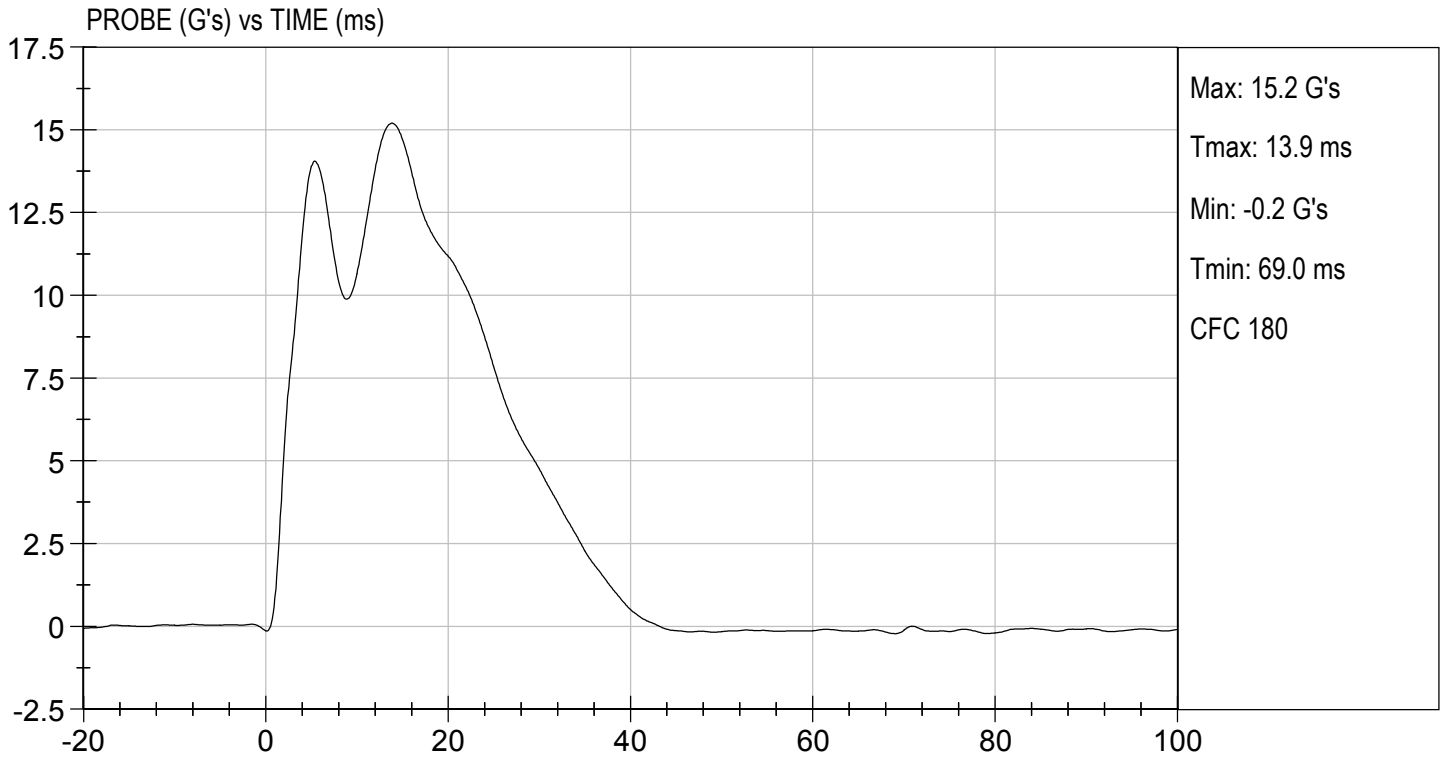
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	13	Pass
Impact Velocity	m/s	4.20 to 4.40	4.39	Pass
Maximum Probe Acceleration	G's	13 to 18	15	Pass
Shoulder Displacement	mm	28 to 37	29	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	21	Pass
Overall Test Results				Pass

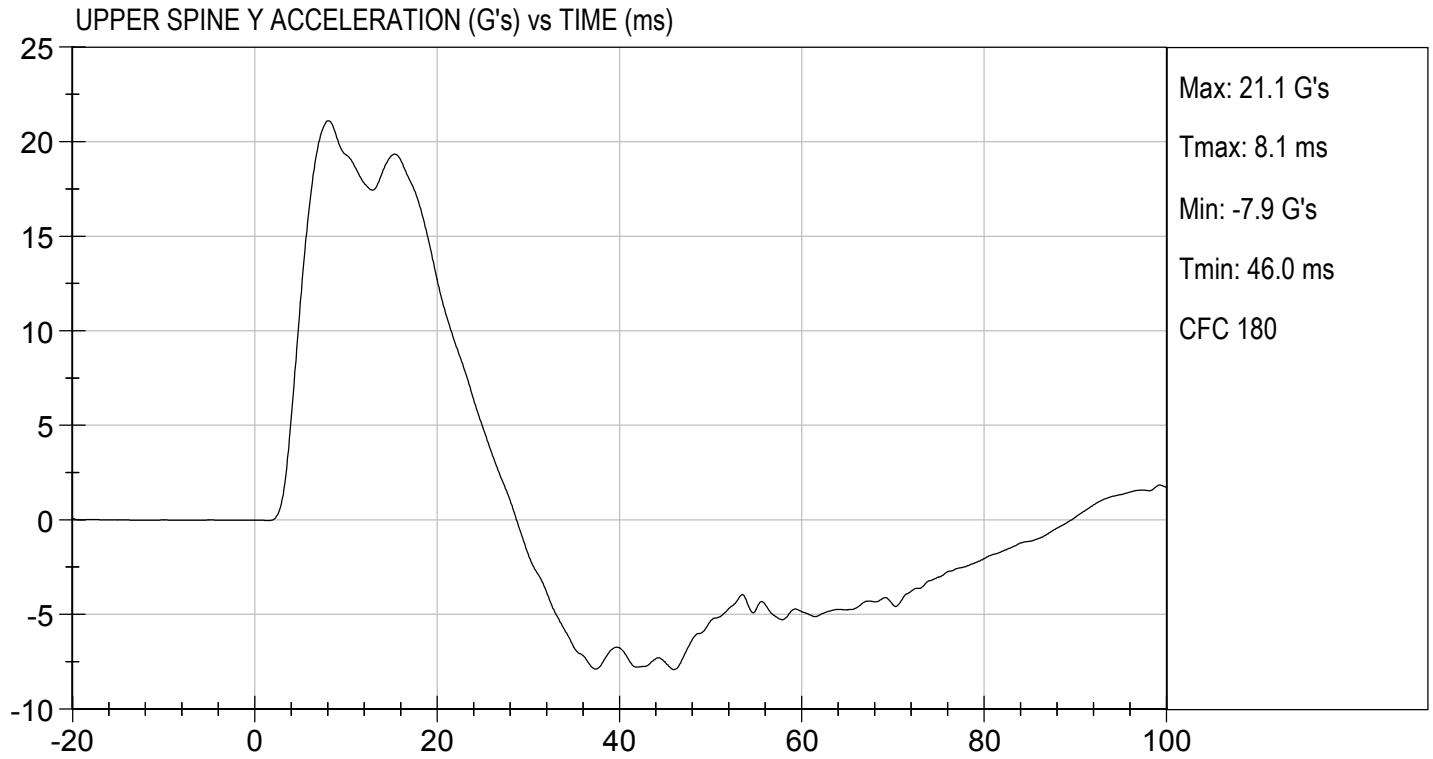
  
 Laboratory Technician

01/31/2019  
 Test Date

  
 Approved By







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

**ATD Serial No:** 296

**Test I.D.:** D190404

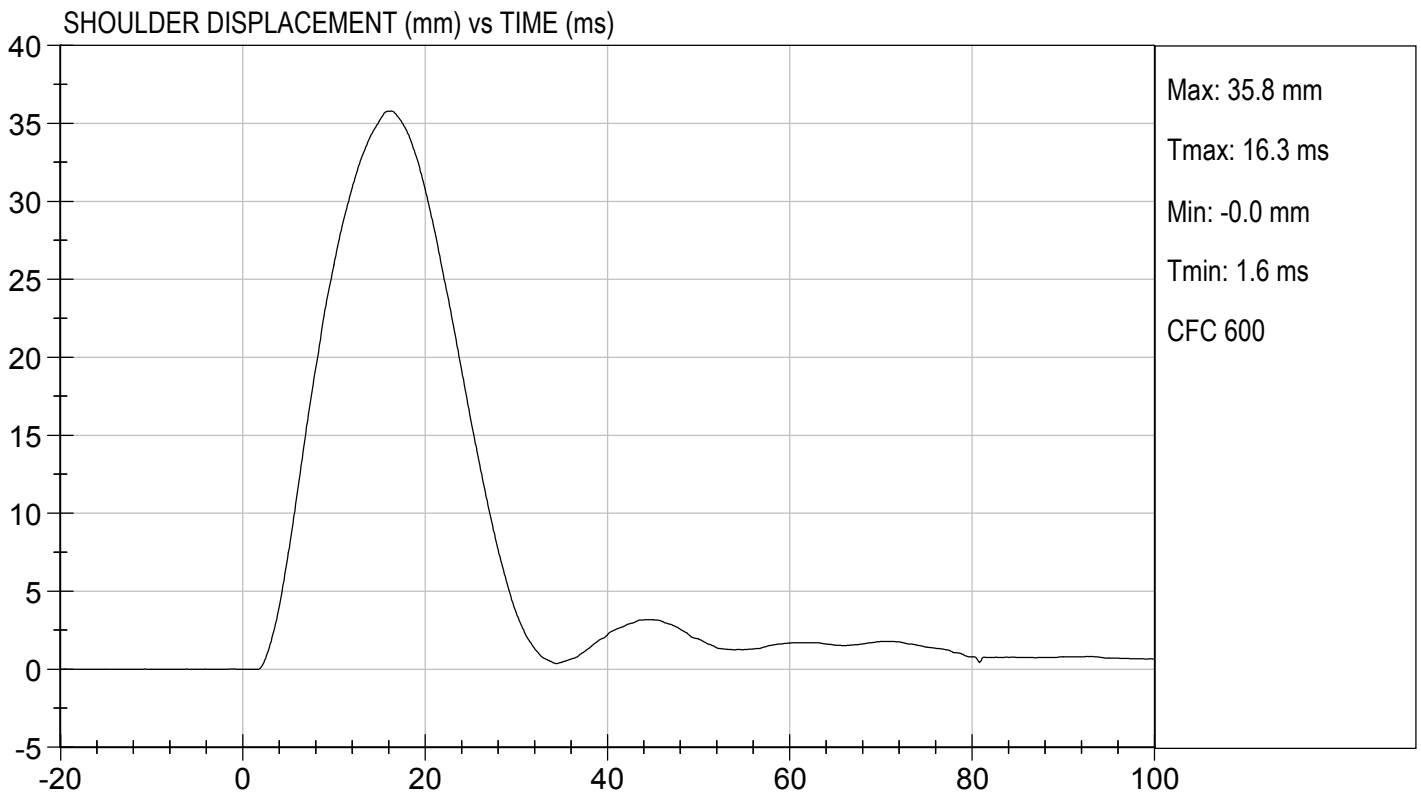
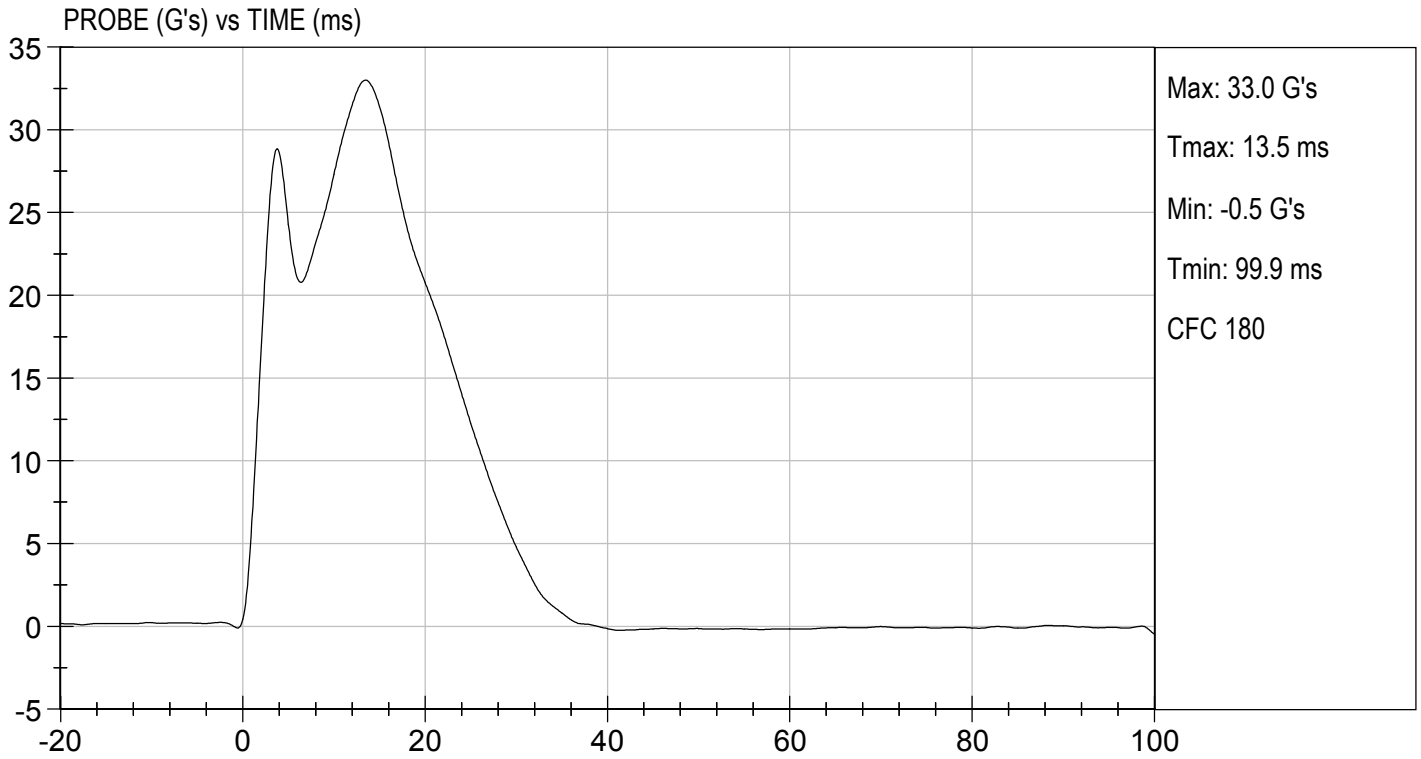
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.2	Pass
Humidity	%	10 to 70	13	Pass
Impact Velocity	m/s	6.60 to 6.80	6.77	Pass
Maximum Probe Acceleration	G's	30 to 36	33	Pass
Shoulder Displacement	mm	31 to 40	36	Pass
Upper Rib Displacement	mm	25 to 32	28	Pass
Middle 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	40	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	36	Pass
<b>Overall Test Results</b>				<b>Pass</b>

*Jacob D Taylor*  
Laboratory Technician

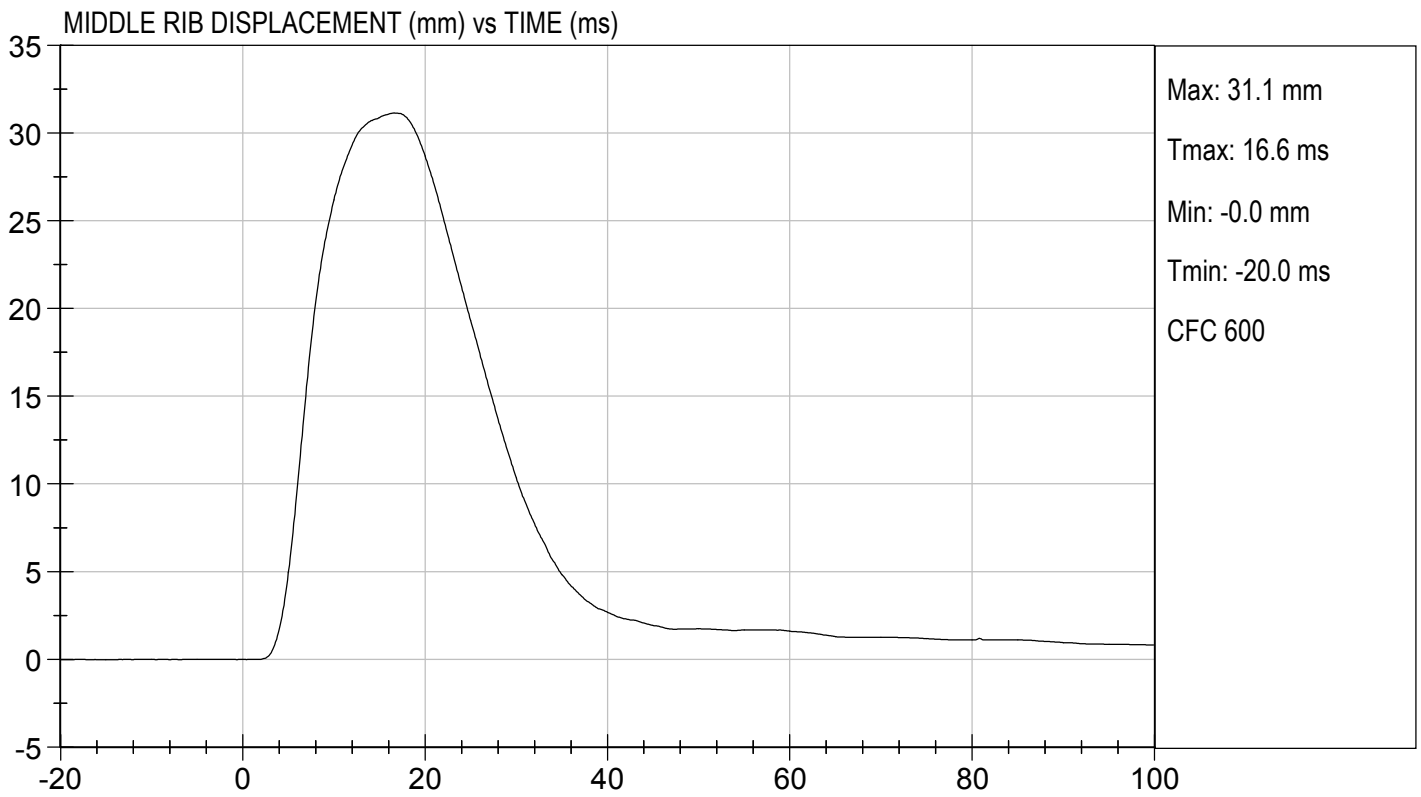
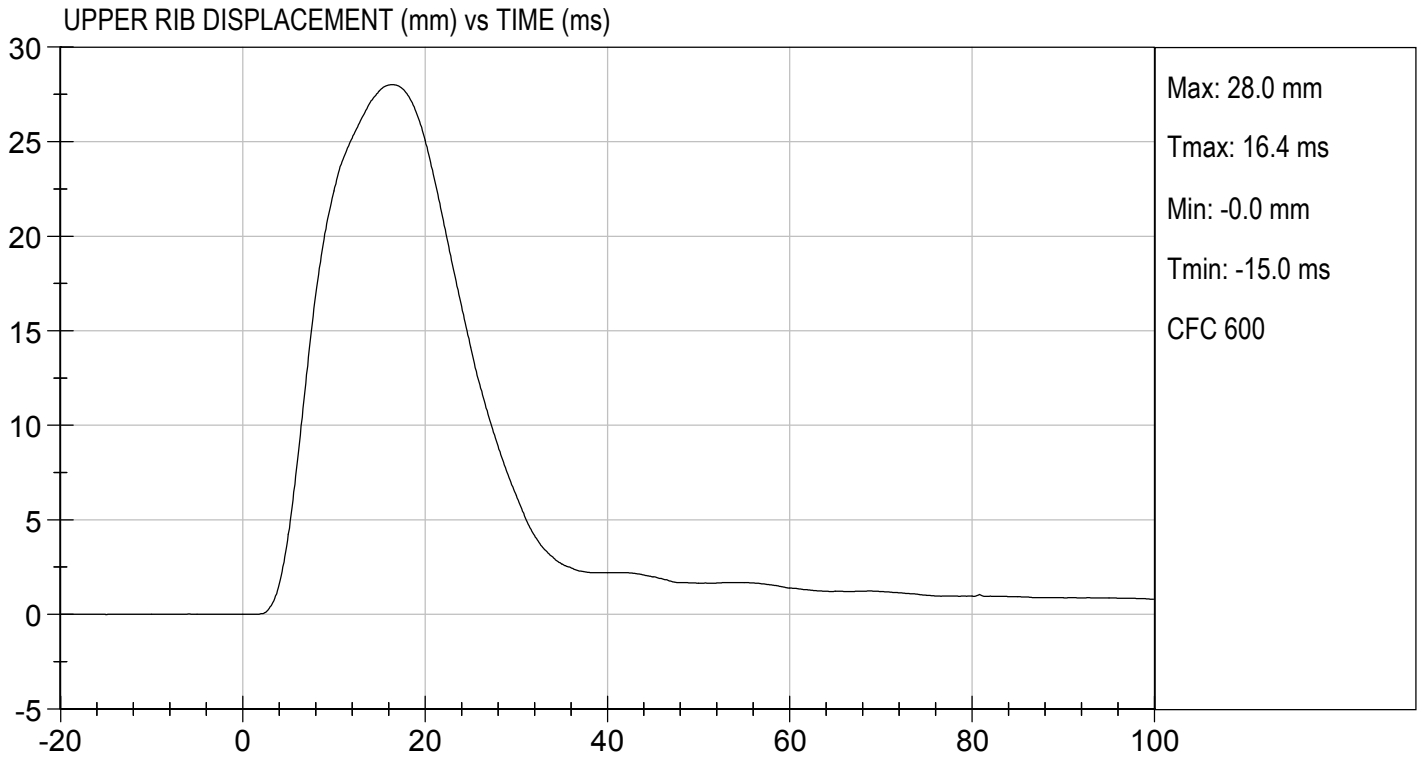
01/31/2019

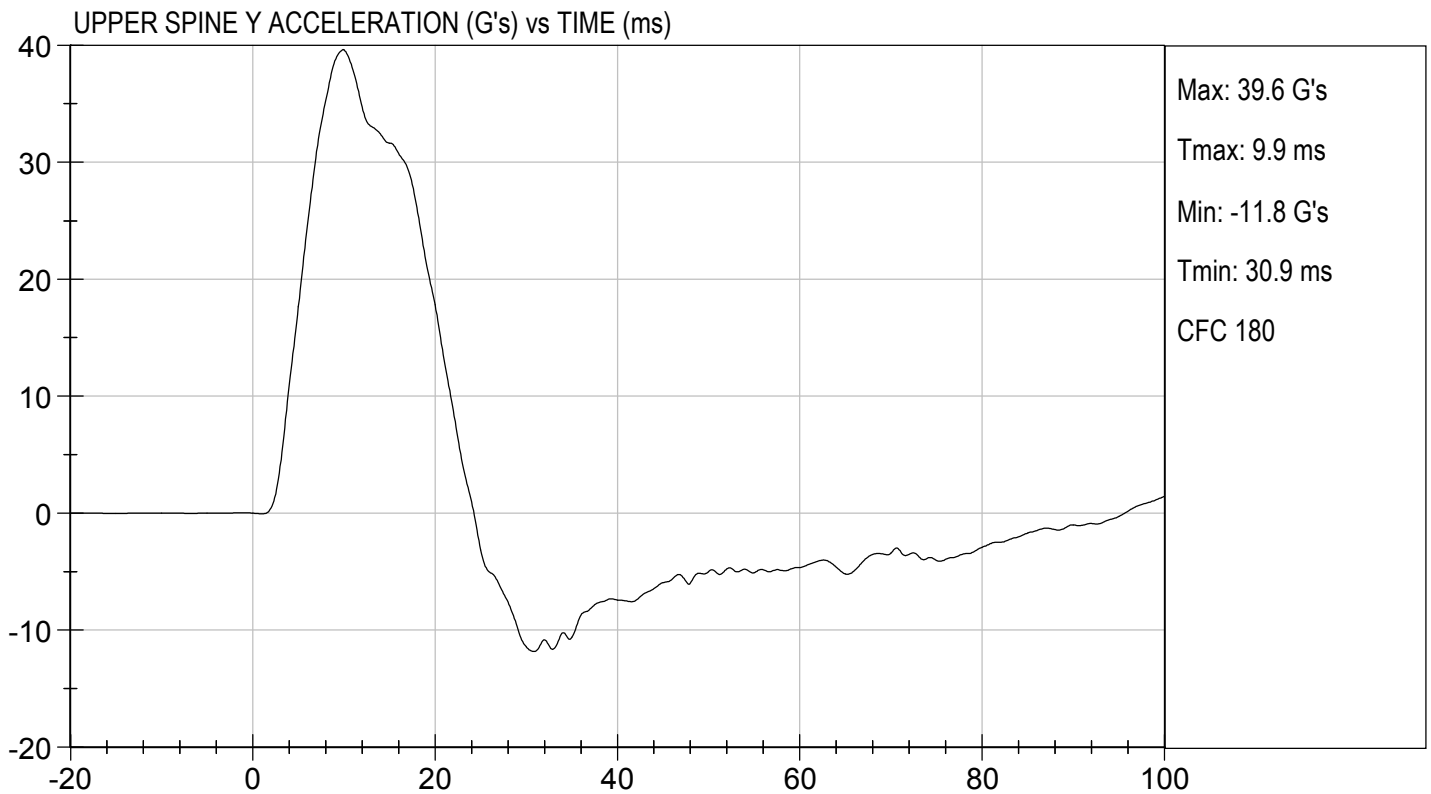
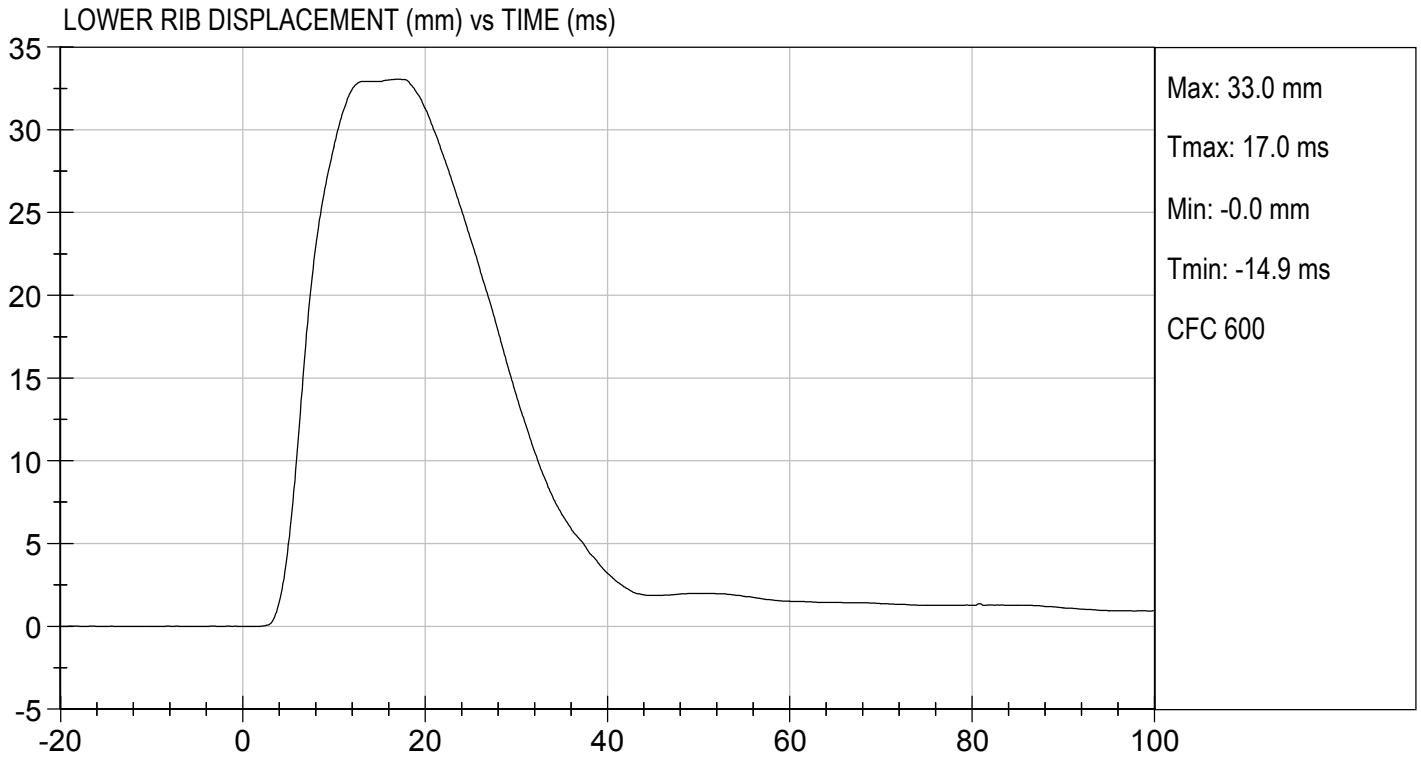
Test Date

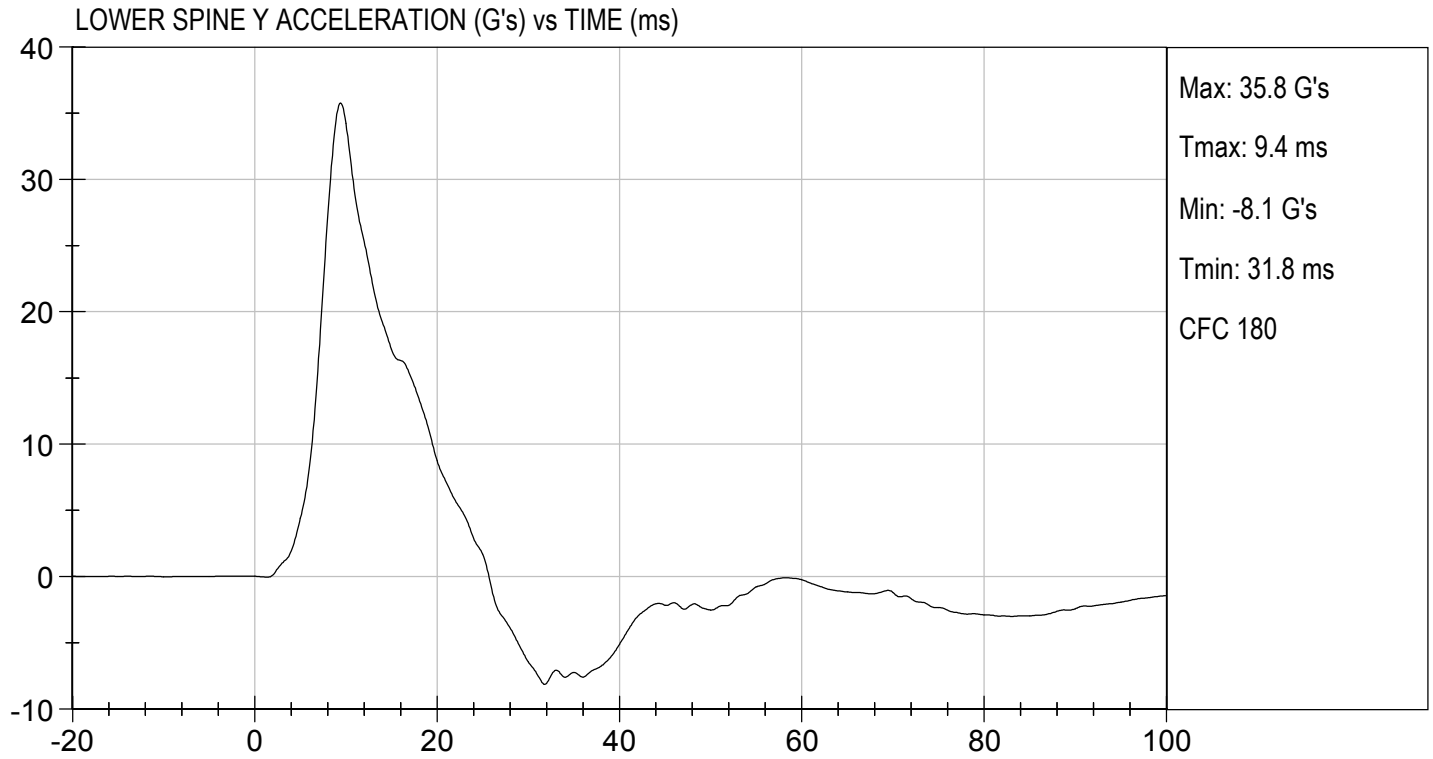
*Robert Schaub*  
Approved By











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

ATD Serial No: 296

Test I.D: D190405

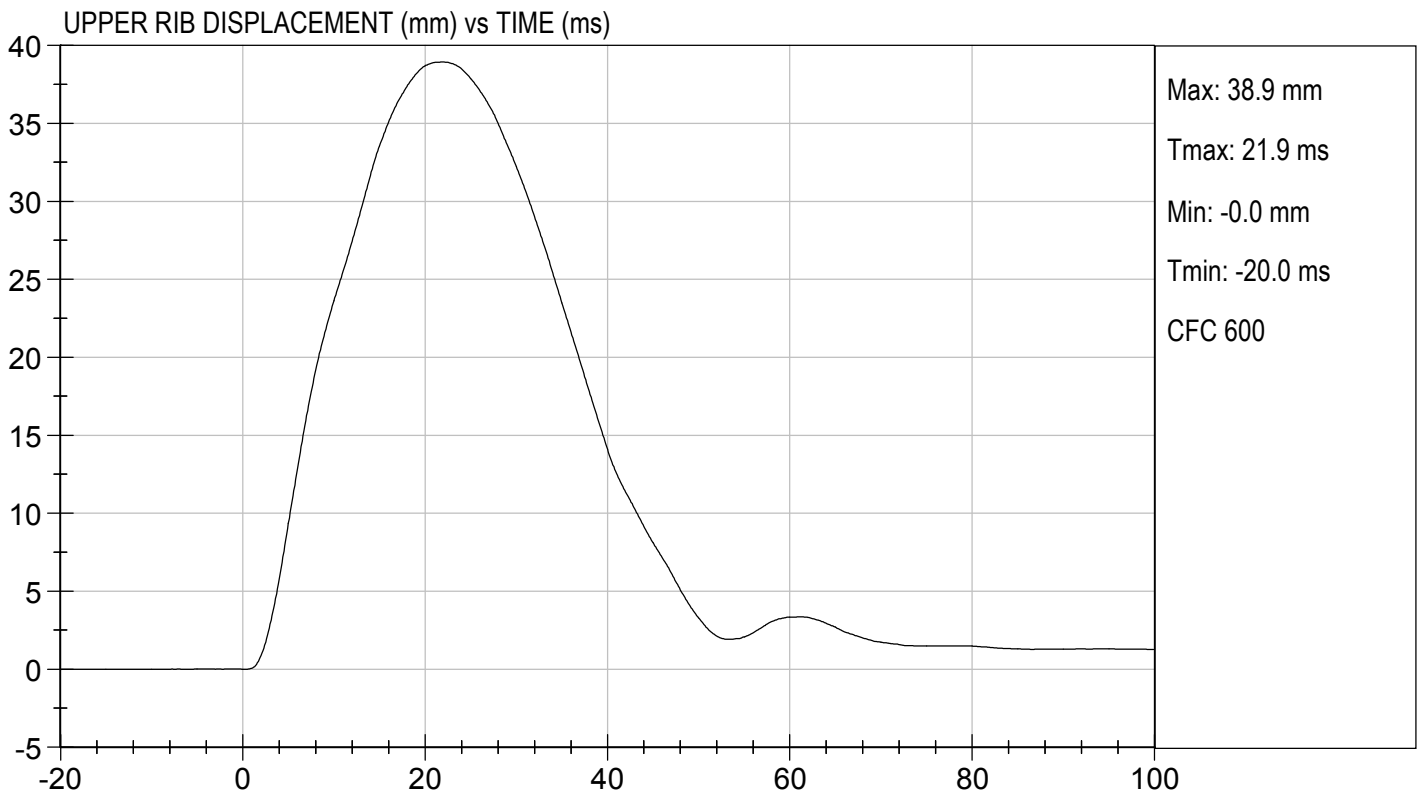
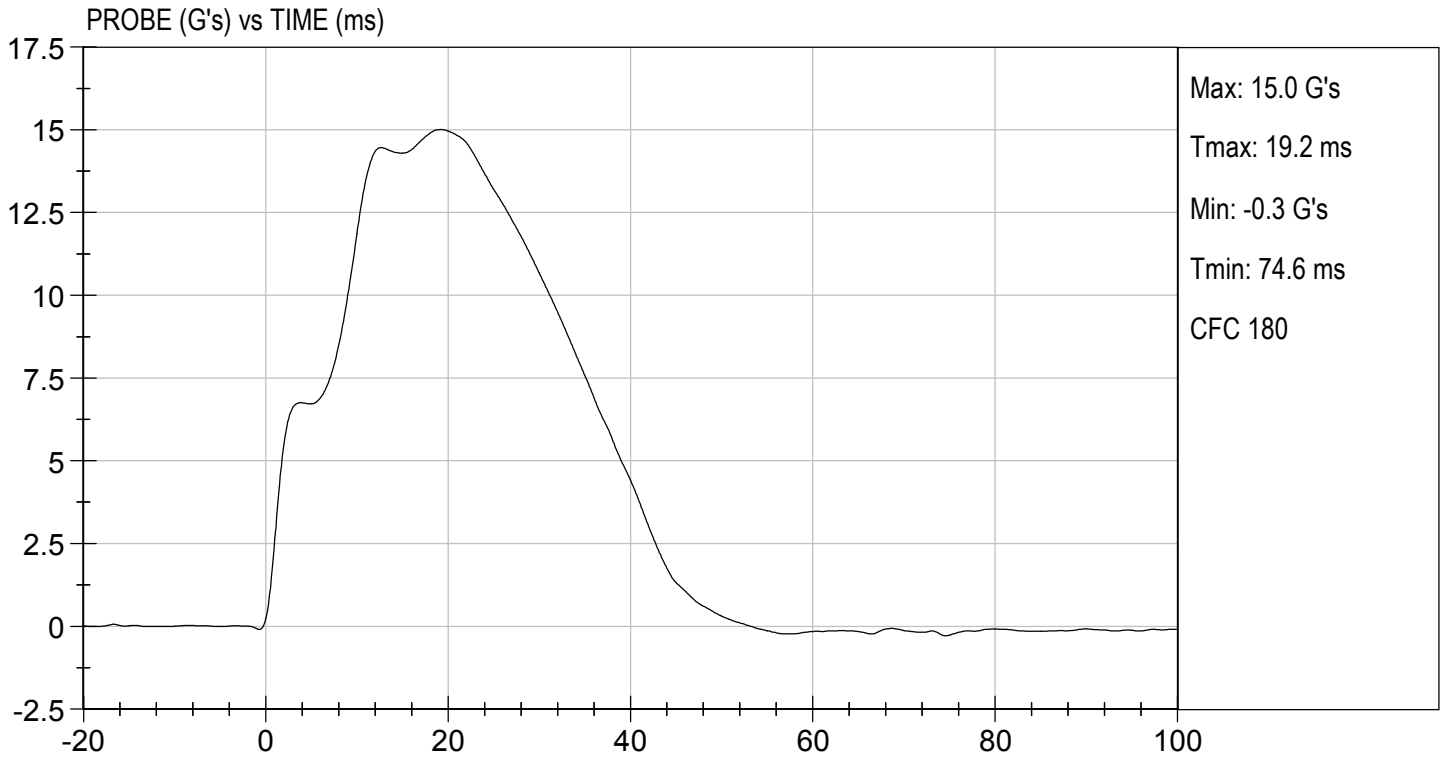
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.2	Pass
Humidity	%	10 to 70	13	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Maximum Probe Acceleration	G's	14 to 18	15	Pass
Upper Rib Displacement	mm	32 to 40	39	Pass
Middle Rib Displacement	mm	39 to 45	42	Pass
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

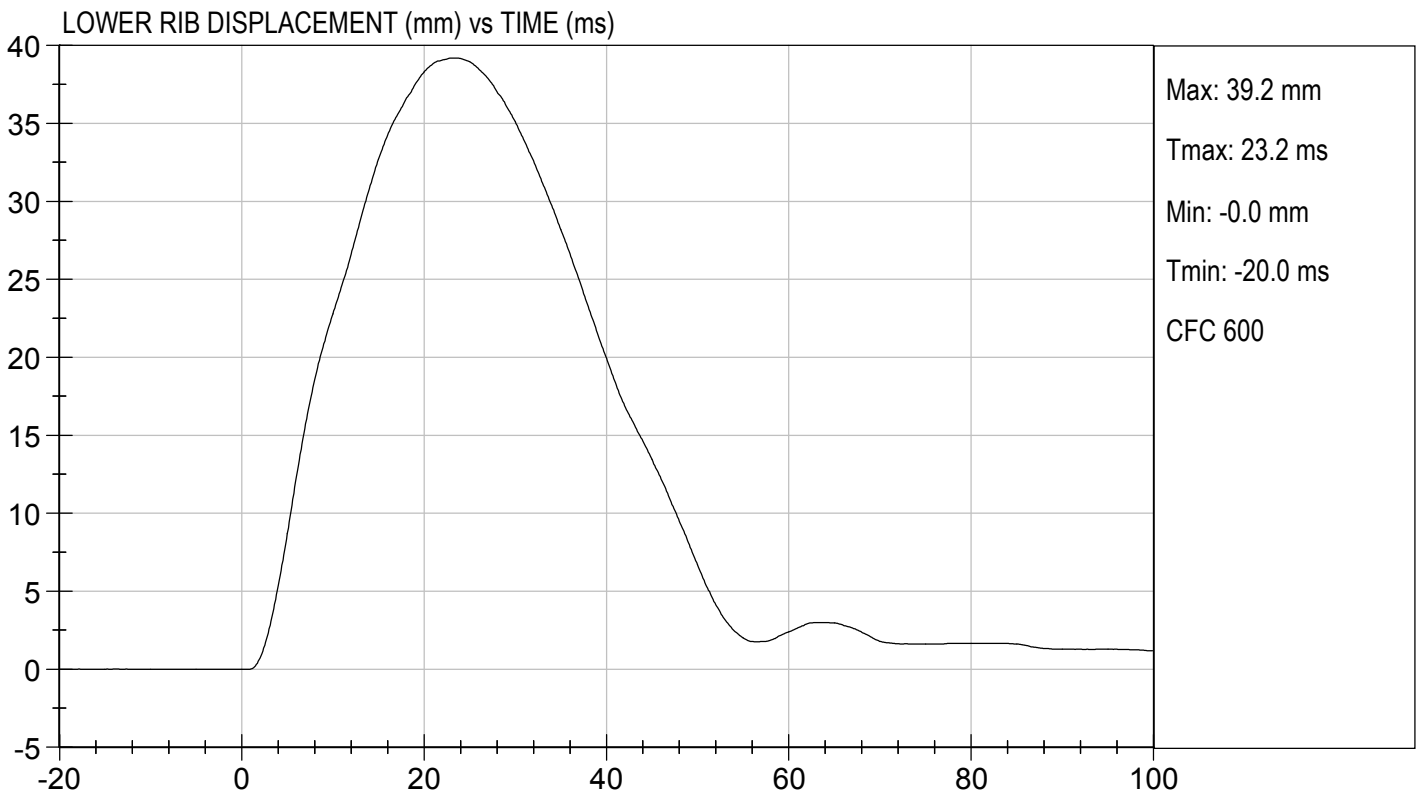
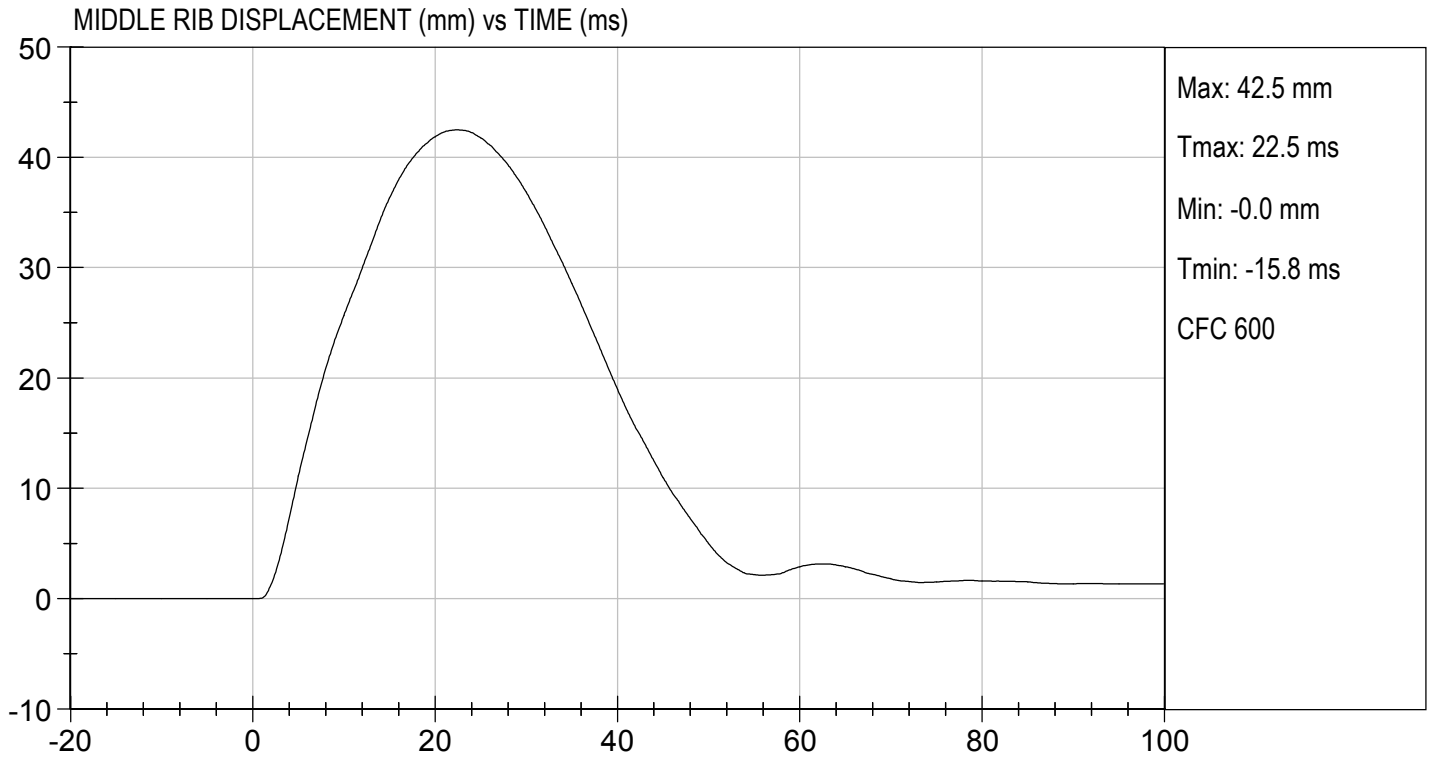
*Jacob D Taylor*  
 Laboratory Technician

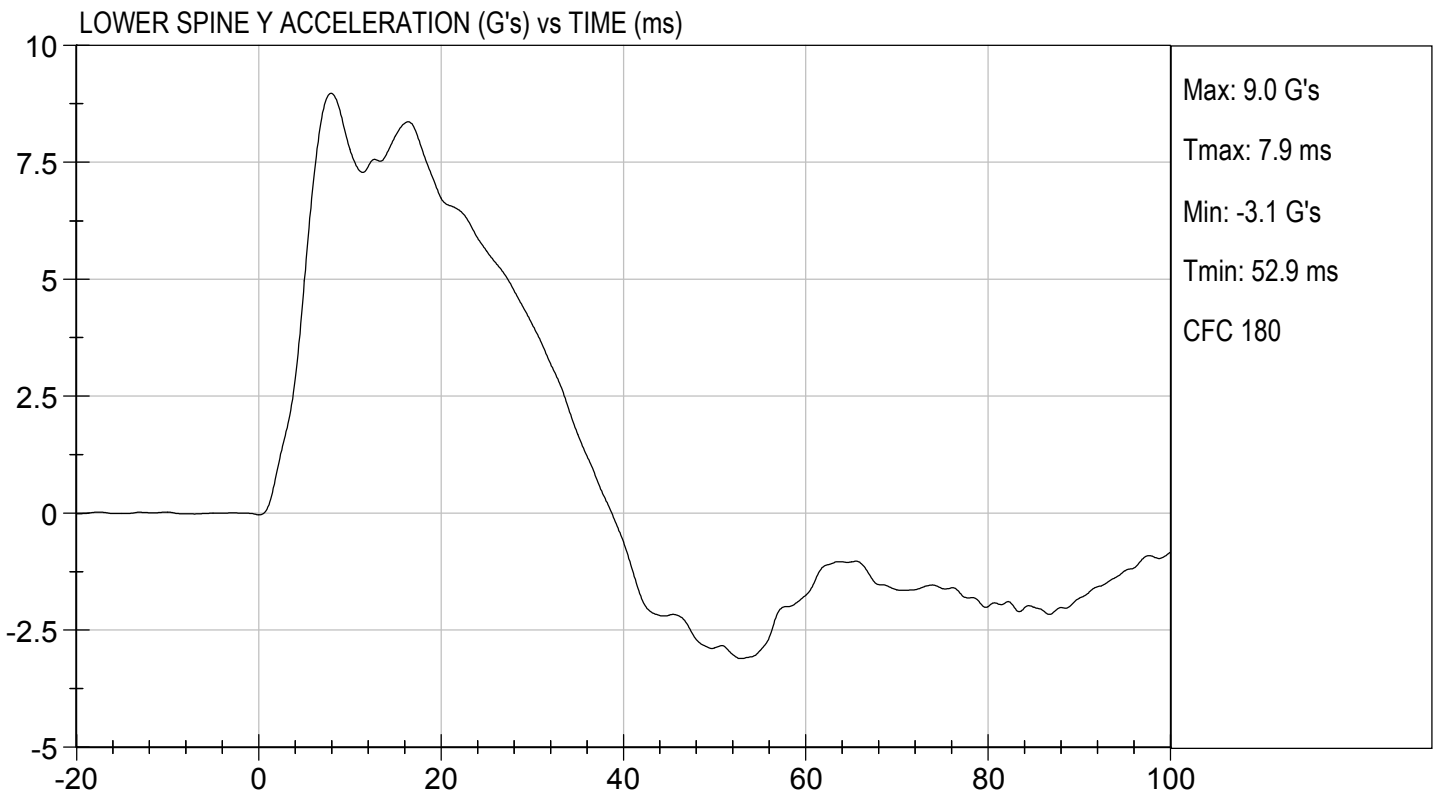
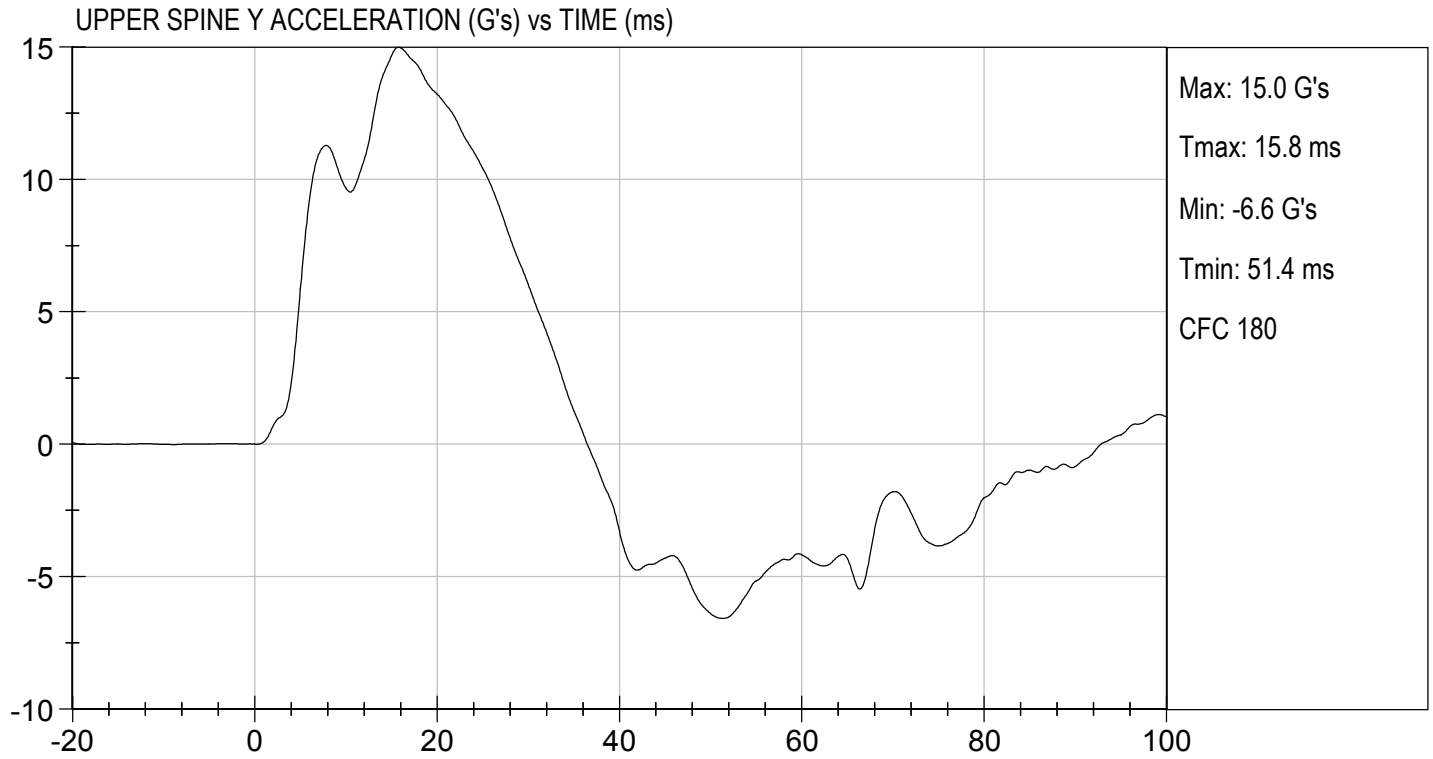
01/31/2019  
 Test Date

*Robert Schaub*  
 Approved By









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

ATD Serial No: 296

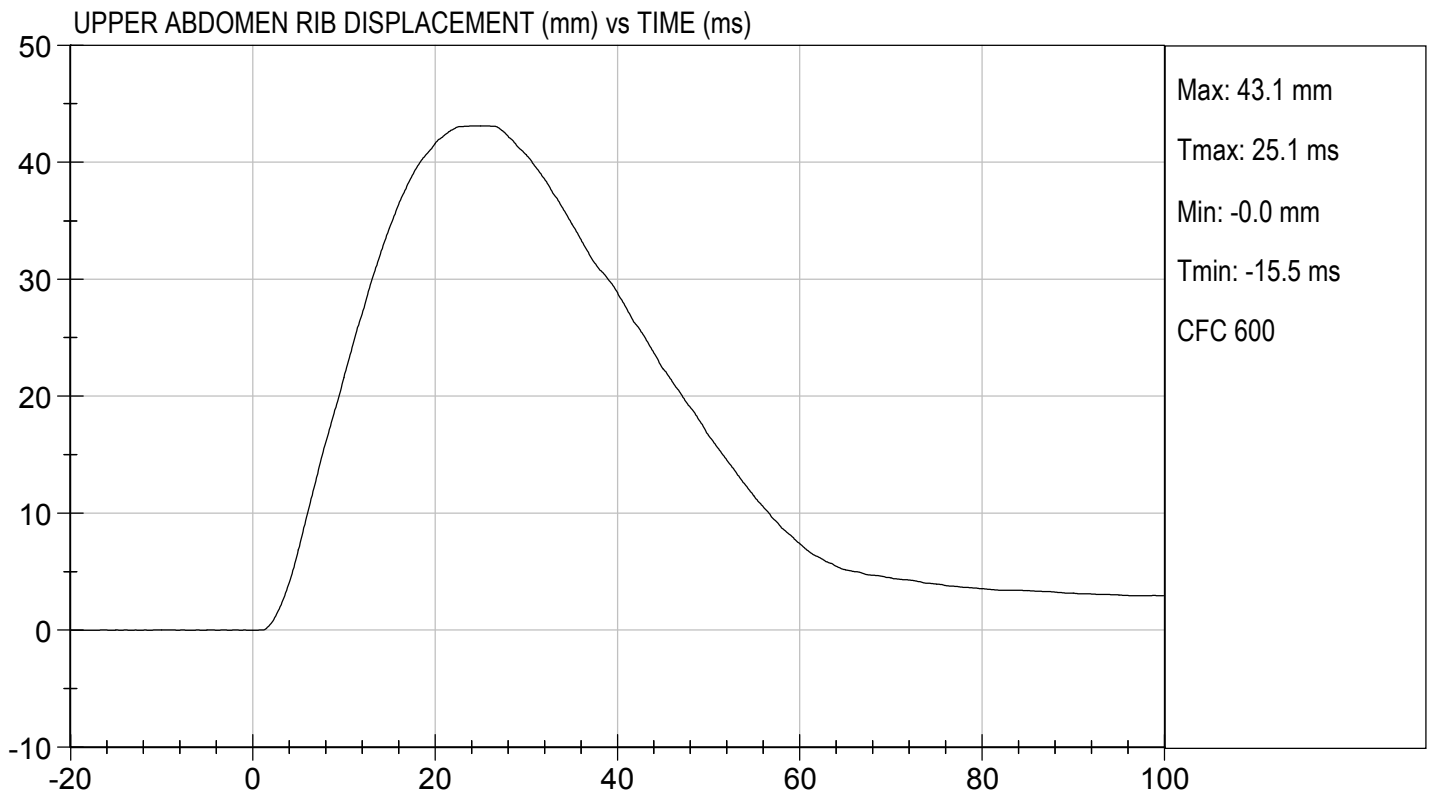
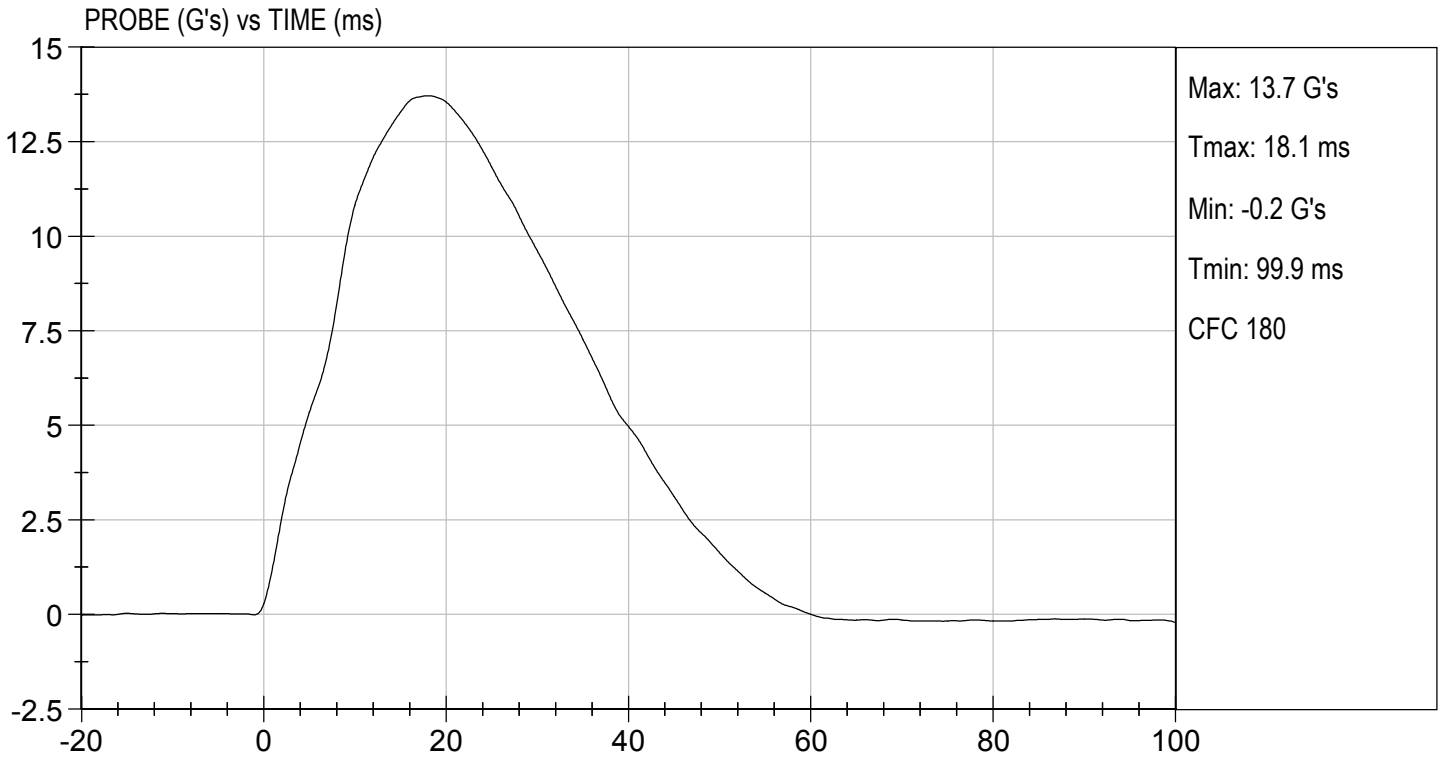
Test I.D: D190406

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.2	Pass
Humidity	%	10 to 70	13	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	43	Pass
Lower Abdomen Rib Displacement	mm	33 to 44	39	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	11	Pass
Overall Test Results				Pass

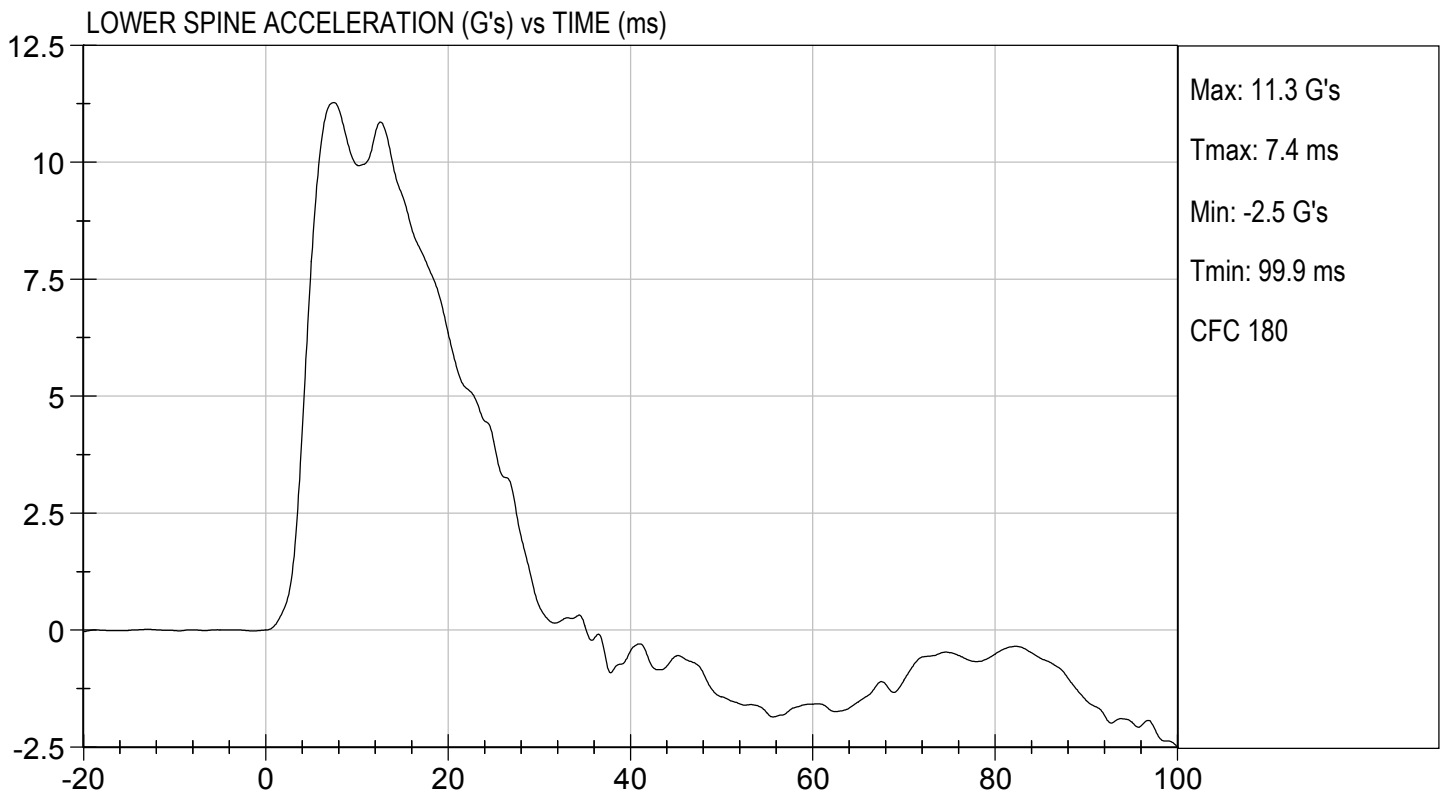
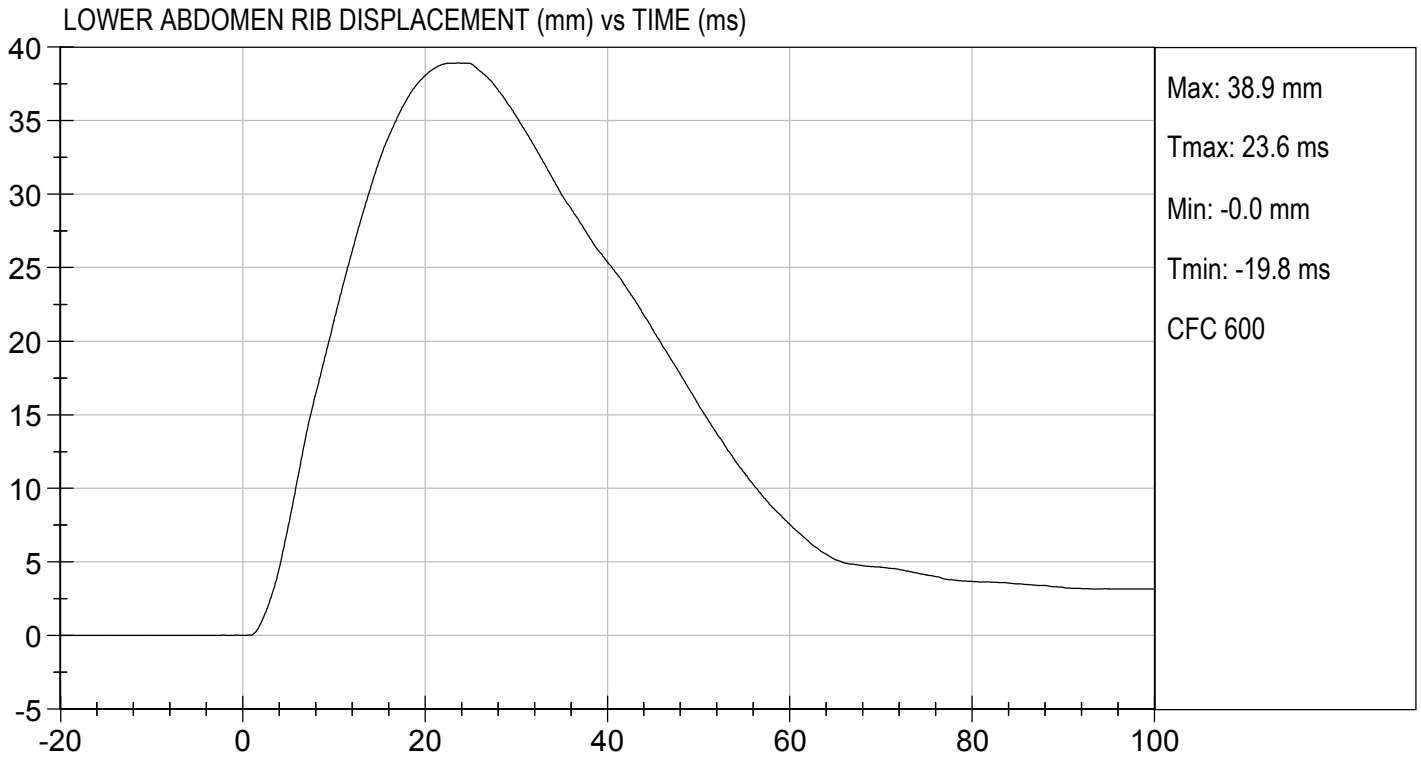
*Jacob D Taylor*  
 Laboratory Technician

01/31/2019  
 Test Date

*Robert Schaub*  
 Approved By







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

ATD Serial No: 296

Test I.D: D190407

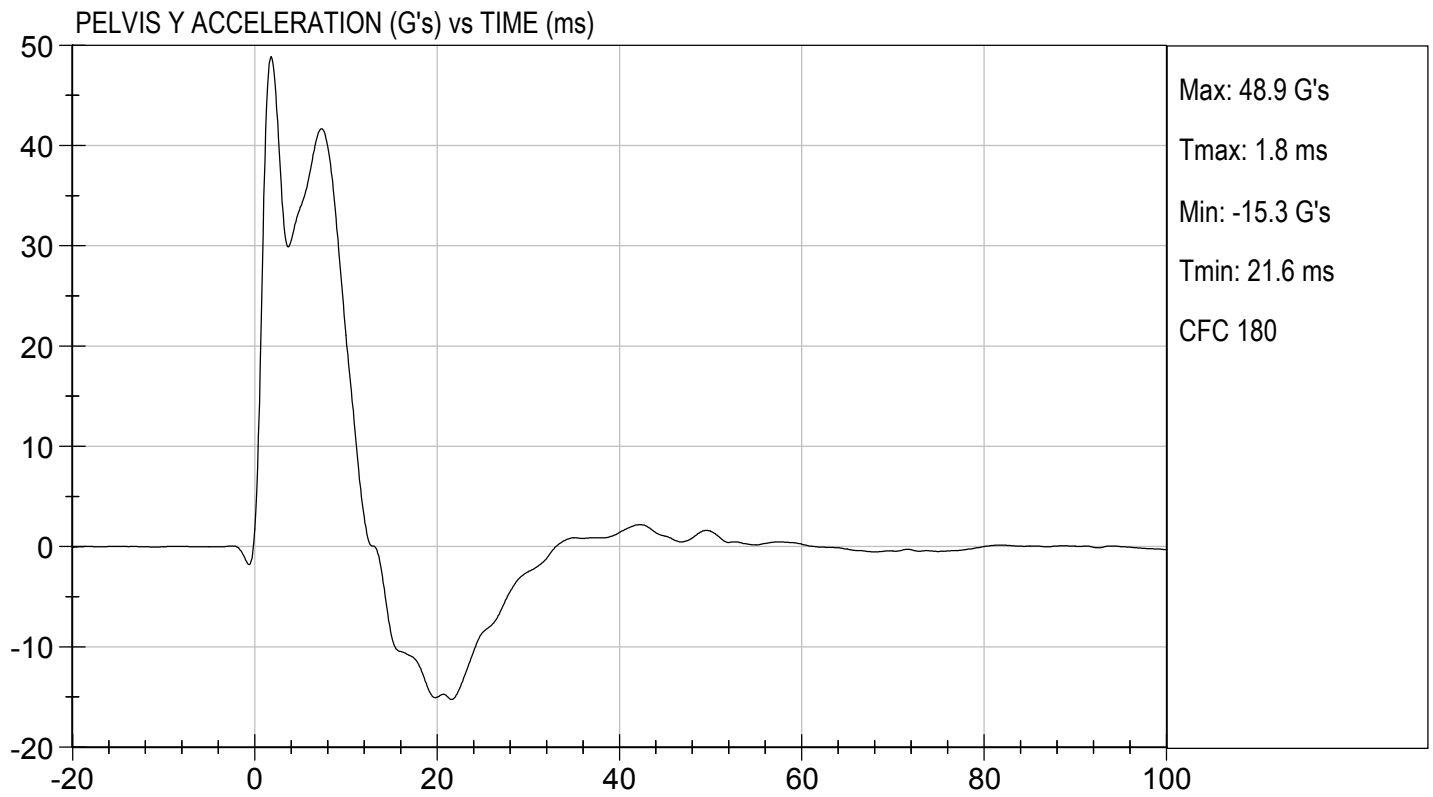
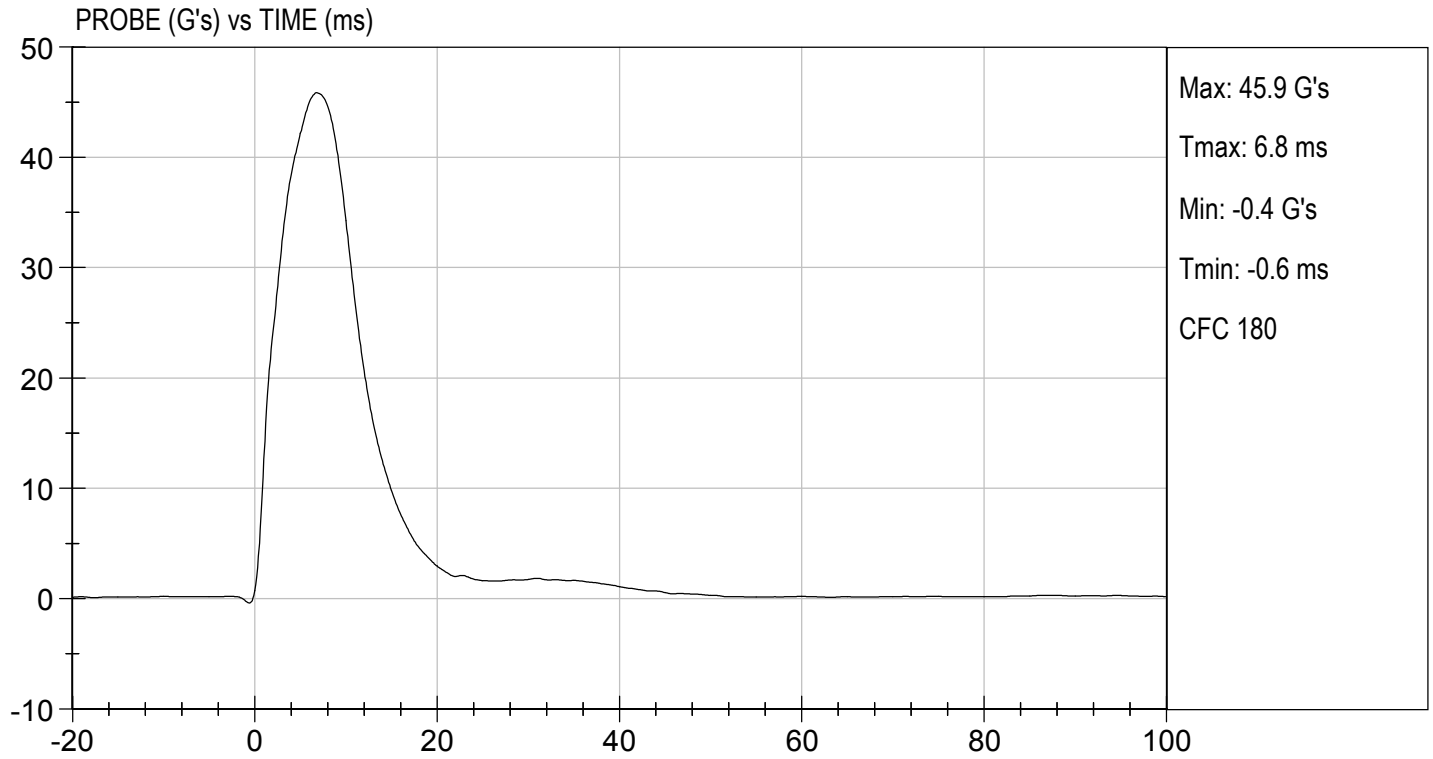
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.2	Pass
Humidity	%	10 to 70	13	Pass
Impact Velocity	m/s	6.60 to 6.80	6.60	Pass
Maximum Probe Acceleration	G's	38 to 47	46	Pass
Pelvis Y Acceleration After 6 ms	G's	34 to 42	42	Pass
Peak Acetabulum Force	N	3600 to 4300	4,097	Pass
<b>Overall Test Results</b>				<b>Pass</b>

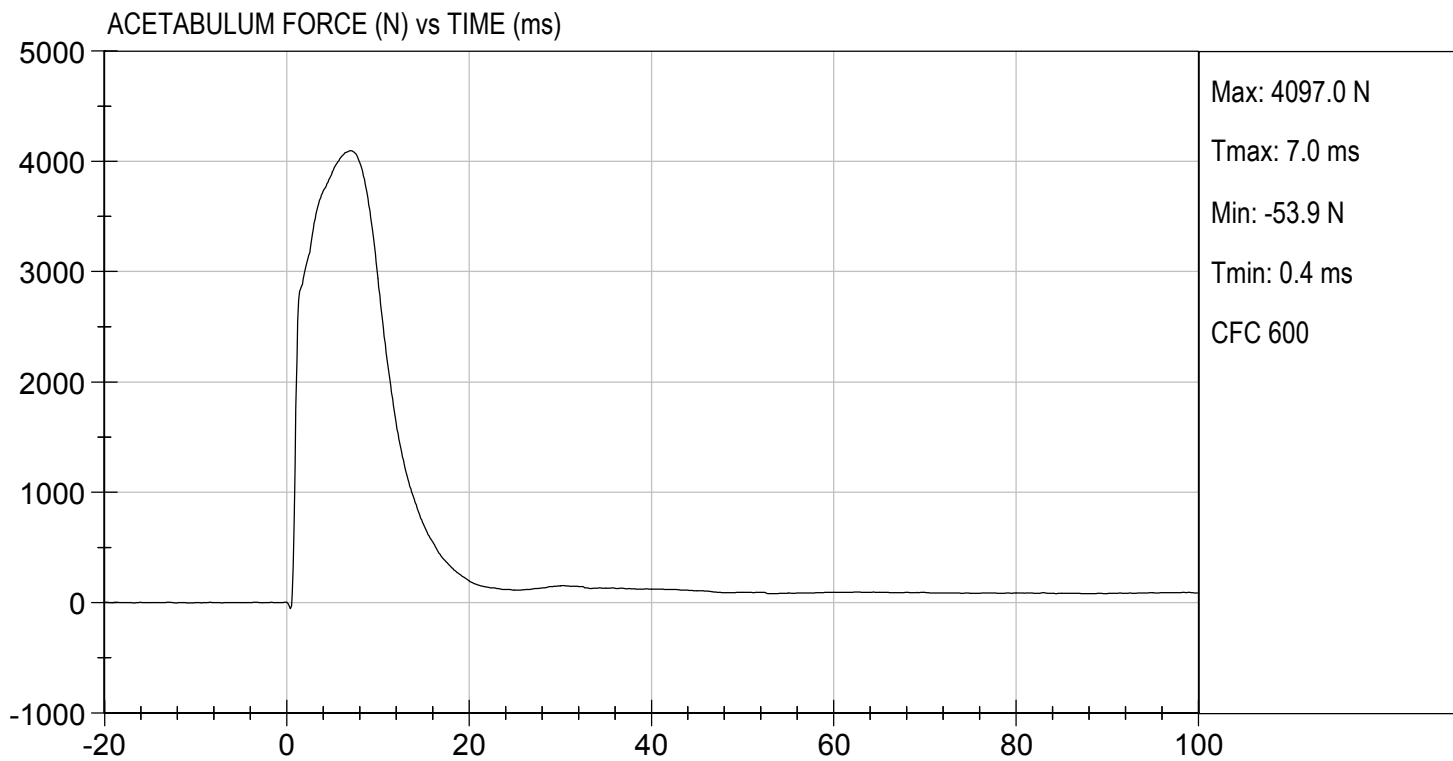
*Jacob D Taylor*  
 Laboratory Technician

01/31/2019

Test Date

*Robert Schaubert*  
 Approved By





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

ATD Serial No: 296

Test I.D: D190408

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.2	Pass
Humidity	%	10 to 70	13	Pass
Impact Velocity	m/s	4.20 to 4.40	4.39	Pass
Maximum Probe Acceleration	G's	36 to 45	38	Pass
Pelvis Y Acceleration	G's	28 to 39	30	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4,363	Pass
Overall Test Results				Pass

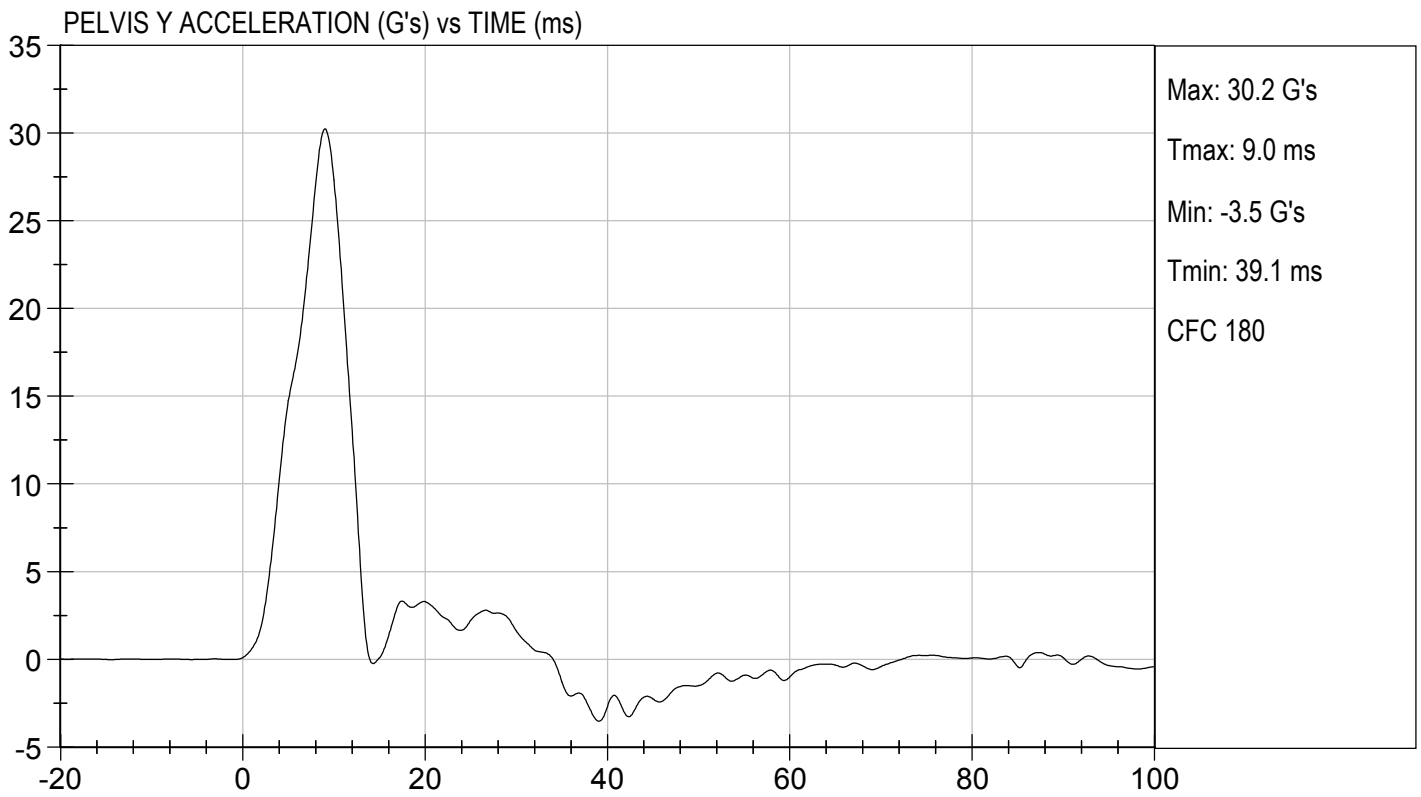
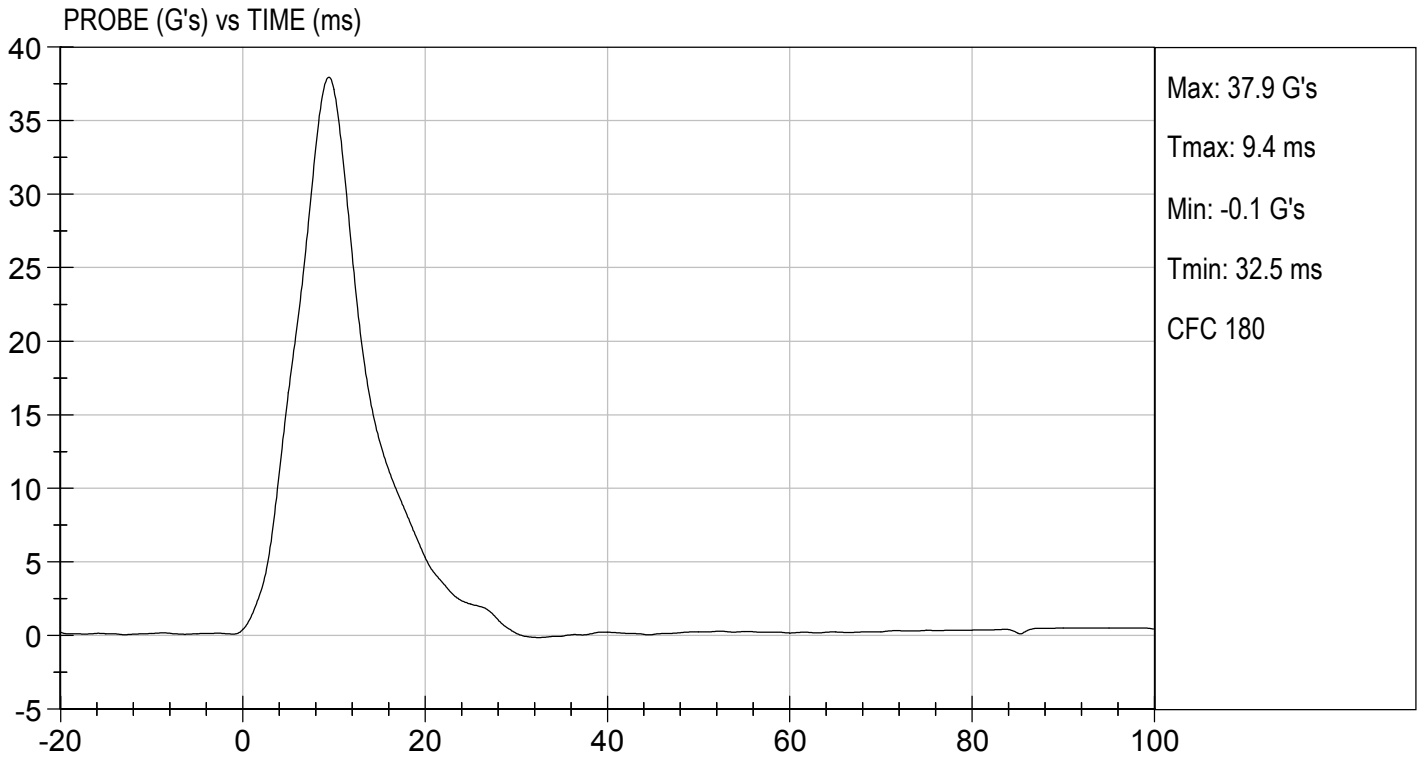
*Jacob D Taylor*  
 Laboratory Technician

01/31/2019

Test Date

*Robert Schaefer*  
 Approved By

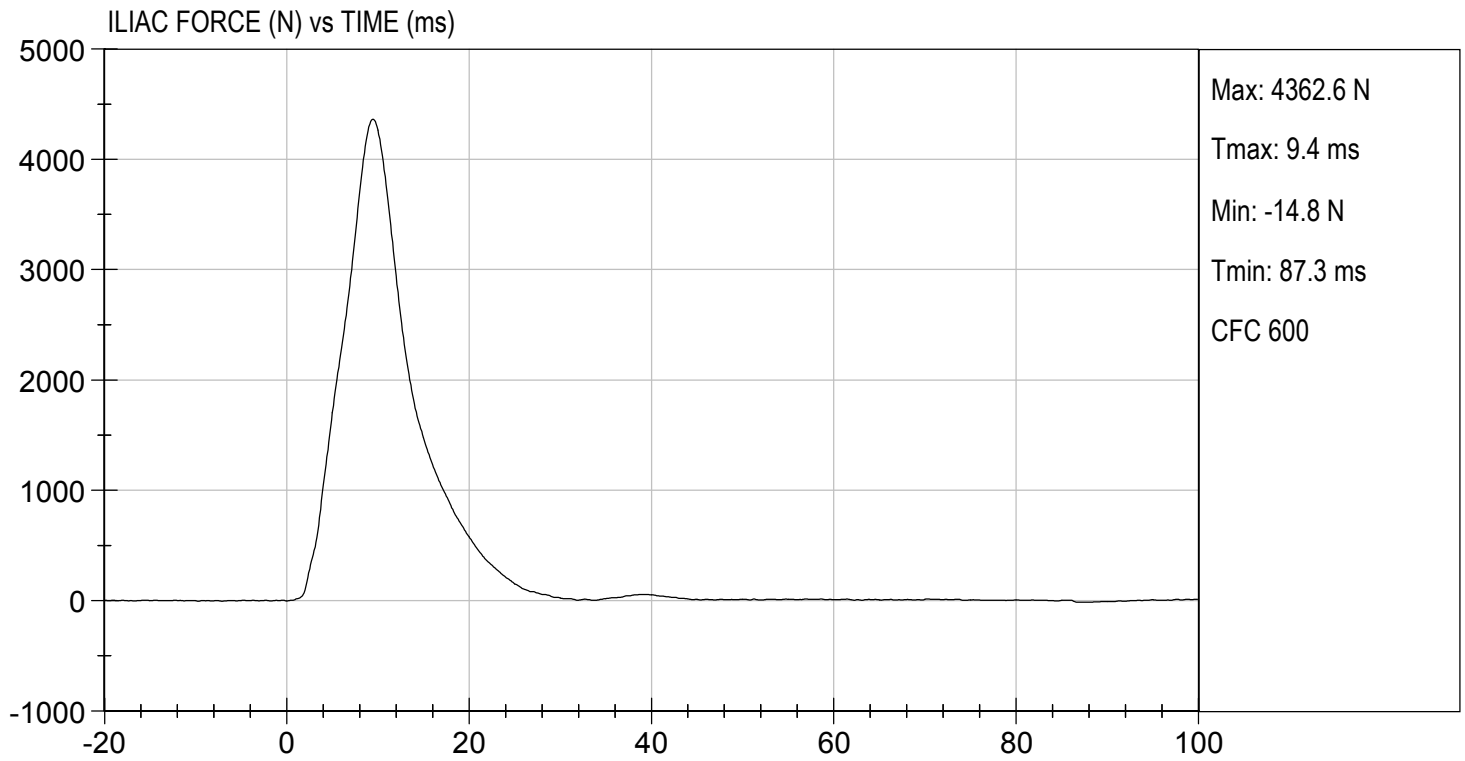






TEST DESC: ILLIAC  
VELOCITY: 14.40 ft/s, 4.39 m/s

TEST DATE: 01/31/2019  
TEST #: D190408





**SID-IIs Pelvis Plug Certification Test**

Plug S/N 12129

Test Number 6488

Report Number 6503

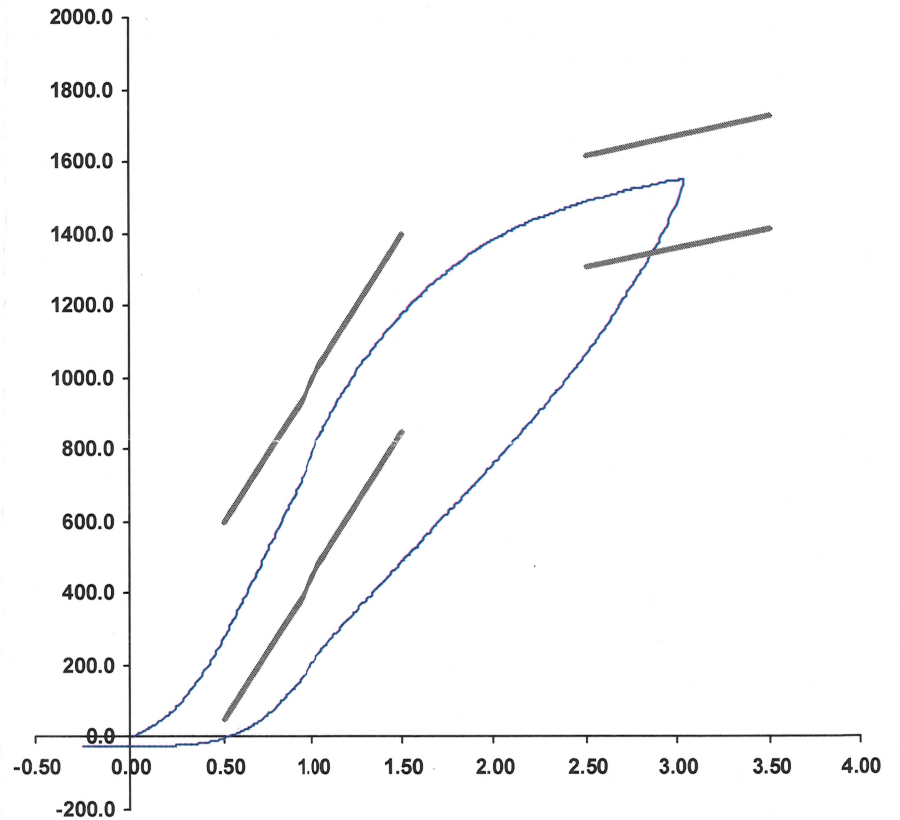
Test Date 2/28/2018 9:49:06 AM

	<u>Test Results</u>	<u>Spec Min</u>	<u>Spec Max</u>
Force @ 0.5 mm (N)	277.33	50.00	600.00
Force @ 1.5 mm (N)	1,178.42	850.00	1,400.00
Force @ 2.5 mm (N)	1,491.11	1,306.00	1,618.00
Force @ 3.0 mm (N)	1,549.81	1,361.00	1,673.00

Testing Machine STM-20 5965542  
 Load Cell S/N (F1360947), Units (LBS) 1000  
 Crosshead Speed ( mm / min ) or Rate 12.7  
 Extension or Position Measured by XHD\_100 (XHD100)

Notes:

Force (-N) vs Extension (-mm)



Operator 12123  
 Part Number 180-4450

Template No 107 28-Feb-18  
 SACO Research

By: DC Date: 2/28/18



**SID-IIs Pelvis Plug Certification Test**

Plug S/N 12115

Test Number 6473

Report Number 6488

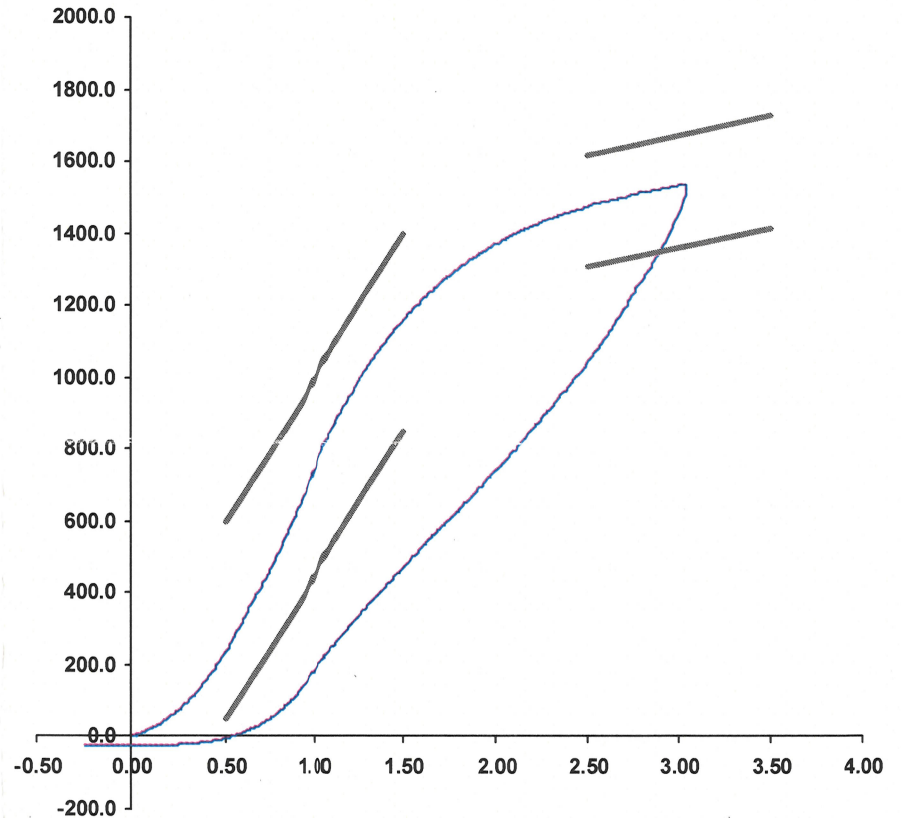
Test Date 2/27/2018 11:28:50 AM

	<u>Test Results</u>	<u>Spec Min</u>	<u>Spec Max</u>
Force @ 0.5 mm (N)	235.45	50.00	600.00
Force @ 1.5 mm (N)	1,165.47	850.00	1,400.00
Force @ 2.5 mm (N)	1,474.85	1,306.00	1,618.00
Force @ 3.0 mm (N)	1,534.56	1,361.00	1,673.00

Testing Machine STM-20 5965542  
 Load Cell S/N (FI360947), Units (LBS) 1000  
 Crosshead Speed ( mm / min ) or Rate 12.7  
 Extension or Position Measured by XHD\_100 ( XHD100)

Notes:

Force (-N) vs Extension (-mm)



Operator  
 Part Number 180-4450

Template No 107 27-Feb-18  
 SACO Research

By : DC Date : 2/27/18

**APPENDIX D**  
**TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA**



**Table 1 – Dummy Instrumentation**

			SID-IIs S/N 296			
			Serial Number	Manufacturer	Calibration Date	
Head CG Accelerometers			X	P85003	Endevco	01/07/19
			Y	P94783	Endevco	01/07/19
			Z	P94786	Endevco	01/07/19
			Xr	P94938	Endevco	01/07/19
			Yr	P96854	Endevco	01/07/19
			Zr	P97386	Endevco	01/07/19
Head Angular Rate Sensors			X	ARS7413	DTS	07/15/14
			Y	ARS7421	DTS	07/15/14
			Z	ARS7423	DTS	07/15/14
Displacement Potentiometers	Thoracic Rib	Upper	Y	G012	FTSS	01/07/19
		Middle	Y	G1163	FTSS	01/07/19
		Lower	Y	G1158	FTSS	01/07/19
	Abdominal Rib	Upper	Y	G1146	FTSS	01/07/19
		Lower	Y	G1126	FTSS	01/07/19
Lower Spine Accelerometers (T12)			X	P79418	Endevco	01/07/19
			Y	P79439	Endevco	01/07/19
			Z	P79614	Endevco	01/07/19
Acetabulum Load Cell			Y	ACG111	FTSS	04/04/18
Iliac Wing Load Cell			Y	IWG226	FTSS	04/04/18
Pelvis Plug (struck side)				12129	SACO	02/28/18
Pelvis Plug (non-struck side)				12115	SACO	02/27/18

**Table 2 – Vehicle Instrumentation**

		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	PCB1024	PCB	09/25/18
Vehicle Center of Gravity	Y	PCB1101	PCB	09/25/18
Vehicle Center of Gravity	Z	PCB1108	PCB	09/25/18
Left Floor Sill	Y	T11726	Endevco	01/23/19
A-Pillar Sill	Y	PCB1383	PCB	08/20/18
A-Pillar Low	Y	PCB1209	PCB	01/16/19
A-Pillar Mid	Y	PCB1264	PCB	01/16/19
B-Pillar Sill	Y	PCB1128	PCB	12/04/18
B-Pillar Low	Y			
B-Pillar Mid	Y			
Driver Seat	Y	PCB740	PCB	10/01/18
Engine Top	X	PCB1207	PCB	01/16/19
Engine Top	Y	PCB773	PCB	01/16/19
Firewall	Y	PCB1132	PCB	12/21/18
Right Roof	Y	PCB1053	PCB	10/01/18
Right Floor Sill	Y	PCB1313	PCB	12/28/18
Rear Floorpan	X	PCB1126	PCB	01/16/19
Rear Floorpan	Y	PCB1263	PCB	01/16/19

**Table 3 – Pole Instrumentation**

	Serial Number	Manufacturer	Calibration Date
Load Cell 1	DG6277	FTSS	07/30/18
Load Cell 2	DG6278	FTSS	07/30/18
Load Cell 3	DG6279	FTSS	07/30/18
Load Cell 4	DG6280	FTSS	07/30/18
Load Cell 5	DG6281	FTSS	07/30/18
Load Cell 6	DG6283	FTSS	07/30/18
Load Cell 7	DG6284	FTSS	07/30/18
Load Cell 8	DG6582	FTSS	07/30/18