

REPORT NUMBER: SideNCAPPole-MGA-21-010

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

**FORD MOTOR CO.
2021 Ford Transit Connect XLT Wagon LWB
NHTSA No.: M20210219**

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



Test Date: November 18, 2020

Final Report Date: March 2, 2021

FINAL REPORT

**U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Office of Crashworthiness Standards
Mail Code: NRM-100
1200 New Jersey Ave, SE
Room W43-410
Washington, DC 20590**

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Approval Date: March 2, 2021

FINAL REPORT ACCEPTANCE BY OCWS:

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

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

TECHNICAL REPORT DOCUMENTATION PAGE

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15. Supplementary Notes																													
16. Abstract A 32.20 km/h, 75° oblique impact Side NCAP Test was conducted on the subject 2021 Ford Transit Connect XLT Wagon LWB 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 the MGA Research Corporation facility in Burlington, Wisconsin on November 18, 2020. The impact velocity was 32.14 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 20.7°C. The test vehicle post-test maximum crush was 316 mm at level 4. The test vehicle's performance was as follows: <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="text-align: center;">Measurement Description</th> <th rowspan="2" style="text-align: center;">Units</th> <th colspan="2" style="text-align: center;">Driver ATD (SID-IIs)</th> </tr> <tr> <th style="text-align: center;">Threshold</th> <th style="text-align: center;">Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td></td> <td style="text-align: center;">1000</td> <td style="text-align: center;">183</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td style="text-align: center;">g</td> <td style="text-align: center;">82</td> <td style="text-align: center;">37</td> </tr> <tr> <td>Total Pelvic Force (sum of acetabular and iliac forces)</td> <td style="text-align: center;">N</td> <td style="text-align: center;">5525</td> <td style="text-align: center;">3229</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td style="text-align: center;">mm</td> <td style="text-align: center;">38*</td> <td style="text-align: center;">21</td> </tr> <tr> <td>Maximum Abdomen Rib Deflection</td> <td style="text-align: center;">mm</td> <td style="text-align: center;">45*</td> <td style="text-align: center;">23</td> </tr> </tbody> </table> <p style="text-align: center;">*Proposed IARV</p>				Measurement Description	Units	Driver ATD (SID-IIs)		Threshold	Result	Head Injury Criteria (HIC ₃₆)		1000	183	Resultant Lower Spine Acceleration	g	82	37	Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3229	Maximum Thoracic Rib Deflection	mm	38*	21	Maximum Abdomen Rib Deflection	mm	45*	23
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The two doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite door(s) did not open during the side impact event.																													
17. Key Words New Car Assessment Program (NCAP) Side Impact Pole Part 572V SID-IIs		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division 1200 New Jersey Ave, SE Washington, DC 20590																											
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SECTION 1 PURPOSE AND SUMMARY OF TEST

PURPOSE

This side pole impact test is part of the MY 2021 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 2021 Ford Transit Connect XLT Wagon LWB. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Side NCAP Pole Laboratory Test Procedure, dated March 2020.

SUMMARY

A rigid pole side impact test was conducted on a 2021 Ford Transit Connect XLT Wagon LWB. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.14 km/h. The test was conducted by MGA Research Corporation in Burlington, Wisconsin on November 18, 2020. 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 March 2020. 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
- Head Triaxial Angular Rate Sensors
- 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	Units	Driver ATD (SID-IIs)	
		Threshold	Result
Head Injury Criteria (HIC36)		1000	183
Resultant Lower Spine Acceleration	g	82	37
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3229
Maximum Thoracic Rib Deflection	mm	38*	21
Maximum Abdomen Rib Deflection	mm	45*	23

*Proposed IARV

Supplemental restraint information is given below:

Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear (Passenger) Occupant Location 4	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No		
Knee Airbag	Yes	No		
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso/Pelvis Airbag	Yes	Yes	No	
Side Torso Airbag	No		No	
Seat Belt Pretensioner	Yes	Yes	Yes	No
Seat Belt Load Limiter	Yes		Yes	
Other:	No		No	

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

GENERAL COMMENTS

Vehicle CG X recorded questionable data between 29-37 ms.
 Vehicle CG Y recorded questionable data between 29-37 ms.
 Vehicle CG Z recorded questionable data between 29-37 ms.
 Left Floor Sill Y recorded no valid data after 21 ms.
 Left B-Post @ Sill Y recorded no valid data after 11 ms.
 Left Lower B-Post Y recorded no valid data after 24 ms.
 Load Cell Pole #8 Fy recorded no valid data.

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

SECTION 2
OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

**DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2021 Ford Transit Connect XLT Wagon LWB
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210219
Test Date: 11/18/2020

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20210219	Traction Control System (TCS)	Yes
Model Year	2021	Auto-Leveling System	No
Make	Ford	Automatic Door Locks (ADL)	Yes
Model	Transit Connect XLT Wagon LWB	Power Window Auto-Reverse	Yes
Body Style	Van	Other Optional Feature	No
VIN	NM0GE9F23M1485129	Driver Front Airbag	Yes
Body Color	Diffused Silver	Driver Curtain Airbag	Yes
Odometer Reading (km/mi)	84 mi	Driver Head/Torso Airbag	No
Engine Displacement (L)	2.0 L	Driver Torso Airbag	No
Type/No. Cylinders	Inline 4	Driver Torso/Pelvis Airbag	Yes
Engine Placement	Lateral	Driver Pelvis Airbag	No
Transmission Type	Automatic	Driver Knee Airbag	Yes
Transmission Speeds	8	Rear Pass. Curtain Airbag	Yes
Overdrive	Yes	Rear Pass. Head/Torso Airbag	No
Final Drive	FWD	Rear Pass. Torso Airbag	No
Roof Rack	No	Rear Pass. Torso/Pelvis Airbag	No
Sunroof/T-Top	No	Rear Pass. Pelvis Airbag	No
Running Boards	No	Driver Seat Belt Pretensioner	Yes
Tilt Steering Wheel	Yes	Rear Pass. Seat Belt Pretensioner	Yes
Power Seats	Yes	Driver Load Limiter	Yes
Anti-Lock Brakes (ABS)	Yes	Rear Pass. Load Limiter	Yes
		Other Safety Restraint	N/A

Does owner's manual provide instruction to turn off automatic door locks?	No
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DATA FROM CERTIFICATION LABEL

Manufactured By	FORD MOTOR CO.	GVWR (kg)	2459
Date of Manufacture	07/20	GAWR Front (kg)	1271
Vehicle Type	MPV	GAWR Rear (kg)	1304

VEHICLE SEATING AND WEIGHT CAPACITY DATA

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	2	3	2	7	
Capacity Weight (VCW) (kg)				597	(A)
DSC x 68.04 kg				476	(B)
Rated Cargo and Luggage Weight (RCLW) (kg)				121	(A-B)

VEHICLE SEAT TYPE

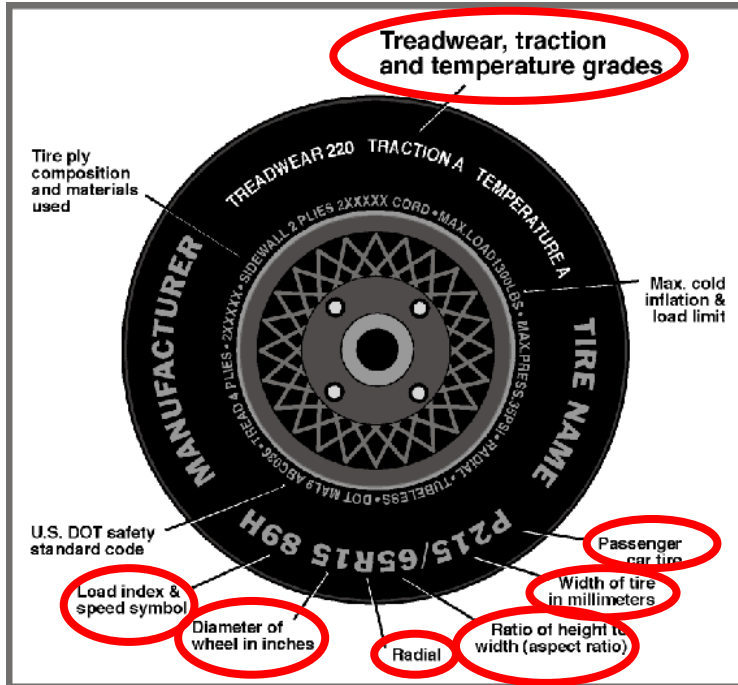
Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						w/ Lever	w/ Knob
Front Seat	X					X	
Rear or Second Row			X		X		
Third Row Seat			X		X		

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

Test Vehicle: 2021 Ford Transit Connect XLT Wagon LWB
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210219
 Test Date: 11/18/2020

VEHICLE TIRE INFORMATION



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	280	290
Recommended Tire Size	215/55R16	215/55R16
Tire Size on Vehicle	215/55R16	215/55R16
Tire Manufacturer	Continental	Continental
Tire Model	ProContact TX	ProContact TX
Treadwear	500	500
Traction	A	A
Temperature Grade	A	A
Tire Plies Sidewall	1 Rayon	1 Rayon
Tire Plies Body	1 Rayon, 2 Steel, 2 Polyamide	1 Rayon, 2 Steel, 2 Polyamide
Load Index/Speed Symbol	97H	97H
Tire Material	Rubber	Rubber
DOT Safety Code Left	6GB3 WD3V	6GB3 WD3V
DOT Safety Code Right	6GB3 WD3V	6GB3 WD3V

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

Test Vehicle: 2021 Ford Transit Connect XLT Wagon LWB
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210219
 Test Date: 11/18/2020

TEST PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	275	275	285	285
Tire Placard	kPa	280	280	290	290
Owner's Manual	kPa	285	285	290	290
As Tested	kPa	285	285	290	290

TEST AXLE VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	521.0	400.0		525.5	491.5		529.5	486.5	
Right	kg	492.5	405.5		490.0	478.0		493.0	483.0	
Ratio	%	55.7%	44.3%		51.2%	48.8%		51.3%	48.7%	
Totals	kg	1013.5	805.5	1819.0	1015.5	969.5	1985.0	1022.5	969.5	1992.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1819.0	(A)
Actual Weight of 1 P572 ATD (SID-IIs) Used	kg	52	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	121	(C)
Calculated Test Vehicle Target Weight (TVTWT)	kg	1992.0	(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-back)*	deg	-1.3	-0.7	-0.7	Yes
Front Pass. Door Sill Angle (front-to-back)*	deg	-1.3	-0.9	-0.9	Yes
Front Bumper Angle (left-to-right)**	deg	0.0	-0.1	-0.1	Yes
Rear Bumper Angle (left-to-right)**	deg	-0.3	-0.3	-0.3	Yes
Vehicle CG (Aft of Front Axle)	mm	1359	1498	1493	
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	10	19	16	

* 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 TVTWT

Component Description	Units	Weight
Weight of Ballast Added	kg	76
Components Removed: none	kg	

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

Test Vehicle: 2021 Ford Transit Connect XLT Wagon LWB
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210219
Test Date: 11/18/2020

TEST SURFACE MARKINGS

	Distance from 75° Impact Location Line (mm)
Fore 25 mm Target	900
Aft 25 mm Target	906

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

Test Vehicle: 2021 Ford Transit Connect XLT Wagon LWB
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210219
 Test Date: 11/18/2020

SEAT POSITIONING

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

SCRL ANGLE RANGE

Seat	SCRL (°)		
	Max	Min	Mid
Driver Seat	11.9	6.5	9.2
Front Passenger Seat	Fixed	Fixed	Fixed
Front Center Seat			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed

SEAT HEIGHT AND ANGLE

Seat	As-Tested SCRL Angle (Mid) (°)	As-Tested SCRP Height (mm)	SCRP Height Position	SCRP Height (mm)		
				Rear-Most	Mid	Forward-Most
Driver Seat	9.2	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Front Passenger Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Front Center Seat			Max			
			Mid			
			Min			
Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed

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

Test Vehicle: 2021 Ford Transit Connect XLT Wagon LWB
 Test Program: NCAP Side Pole Impact Test

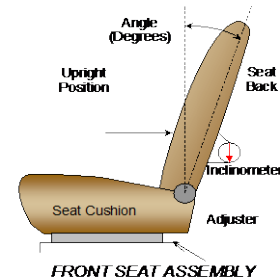
NHTSA No.: M20210219
 Test Date: 11/18/2020

SEAT FORE/AFT POSITIONS

Seat	Total Fore/Aft Travel		Test Position from Forward-Most Position	
	mm	Detents (1 st as 1)	mm	Detent (1 st as 0)
Driver Seat	228		0	
Front Passenger Seat	220	23	0	0
Front Center Seat				
Struck Side Rear Seat	Fixed		Fixed	
Non-Struck Side Rear Seat	Fixed		Fixed	
Rear Center Seat	Fixed		Fixed	

SEAT BACK ANGLE ADJUSTMENT

The driver's seat back is positioned such that the dummy's head is level. The front center and front passenger's seat backs are positioned in a similar manner as the driver's seat back. The struck-side rear passenger seat back is positioned in accordance with the information provided by the manufacturer on S1 – Vehicle Setup Information for the 5th percentile female dummy in a Side NCAP MDB test. The rear center and non-struck side rear passenger's seat back is set to match the struck-side rear seat back.



Seat	Total Seat Back Angle Range		Test Position from Vertical	
	Degrees	Detents (1 st as 1)	Degrees	Detent (1 st as 0)
Driver Seat	89.2		-2.5	
Front Passenger Seat	72.3	38	-1.5	8
Front Center Seat				
Struck Side Rear Seat	Fixed		Fixed	
Non-Struck Side Rear Seat	Fixed		Fixed	
Rear Center Seat	Fixed		Fixed	

All seat back angles measured on outboard headrest post guide.

SEAT BELT ANCHORAGE ADJUSTMENT

Seat belt anchorages are adjusted in accordance with the information provided by the manufacturer on S1 – Vehicle Setup Information.

	Total # of Positions	Placed in Position #
Driver Seat	4	0 (Uppermost as 0)

HEAD RESTRAINT ADJUSTMENT

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

	Total # of Positions	Placed in Position #
Driver Seat	3	0 (Lowest as 0) / Forward

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

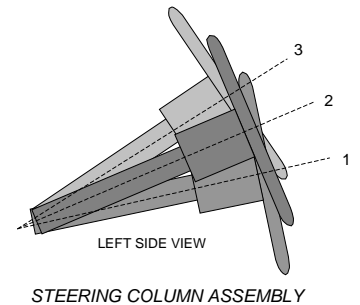
Test Vehicle: 2021 Ford Transit Connect XLT Wagon LWB
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NHTSA No.: M20210219
 Test Date: 11/18/2020

STEERING COLUMN ADJUSTMENT

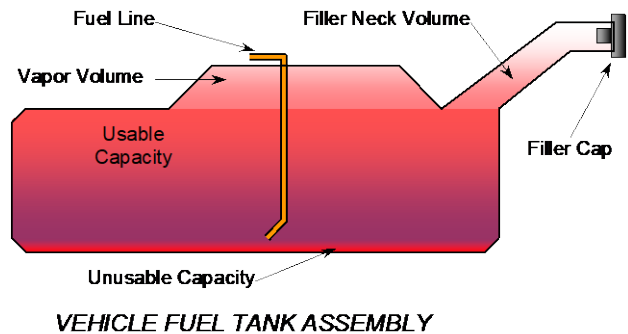
Steering wheel and column adjustments are made so that the steering wheel geometric locus is described when it moves through its full range of motion.

	Wheel Angle (°)	Fore/Aft Position (mm)
Lowermost, Position 1	59.8	
Geometric Center, Position 2	62.8	
Uppermost, Position 3	65.8	
Telescoping Steering Wheel Travel		50
Test Position	62.8	25



FUEL PUMP

The vehicle is equipped with an electronic fuel pump. The electronic fuel pump operates for a prescribed amount of time to pressurize the fuel system following the actuation of the ignition. If no attempt has been made to start the engine, the fuel pump will shut off. The fuel pump operates continuously while the engine is running. If the engine stalls, the fuel pump is deactivated. The filler neck is located on the passenger's side.



FUEL TANK CAPACITY DATA

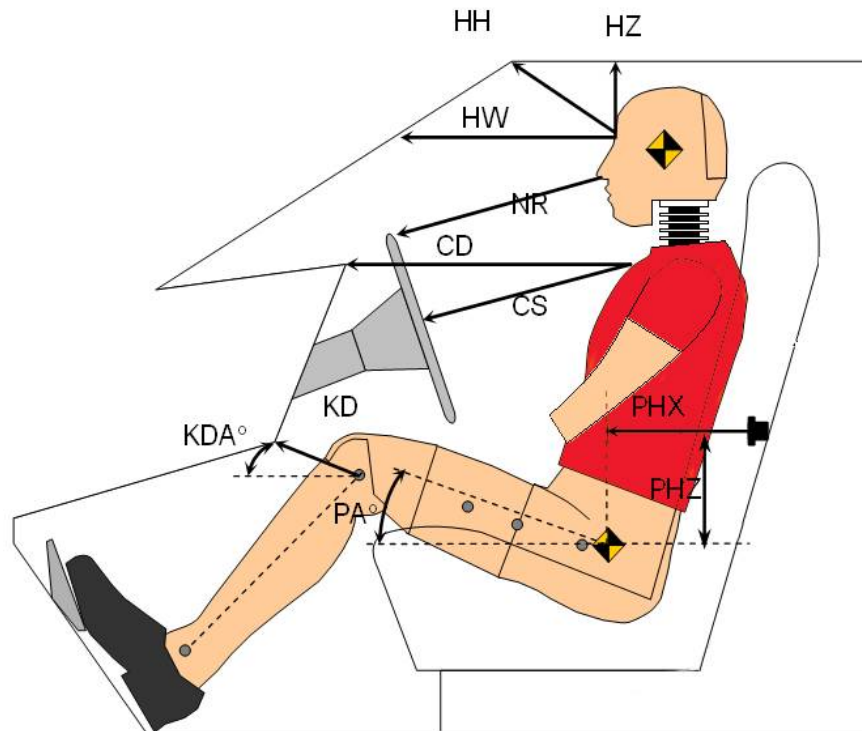
	Liters
Usable Capacity of Standard Tank (see S1 – Vehicle Setup Information)	60.0
Usable Capacity of Optional Tank (see S1 – Vehicle Setup Information)	
Usable Capacity of Standard Tank as Specified in Owner's Manual	59.8
Usable Capacity of Optional Tank as Specified in Owner's Manual	
93% of Usable Capacity	55.8
Actual Amount of Solvent Used	55.8
1/3 of Usable Capacity	20.0

Is the actual amount of solvent used in the test equal to 93% \pm 1% of the Usable Capacity stated in S1 – Vehicle Setup Information? **YES**

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

Test Vehicle: 2021 Ford Transit Connect XLT Wagon LWB
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210219
 Test Date: 11/18/2020



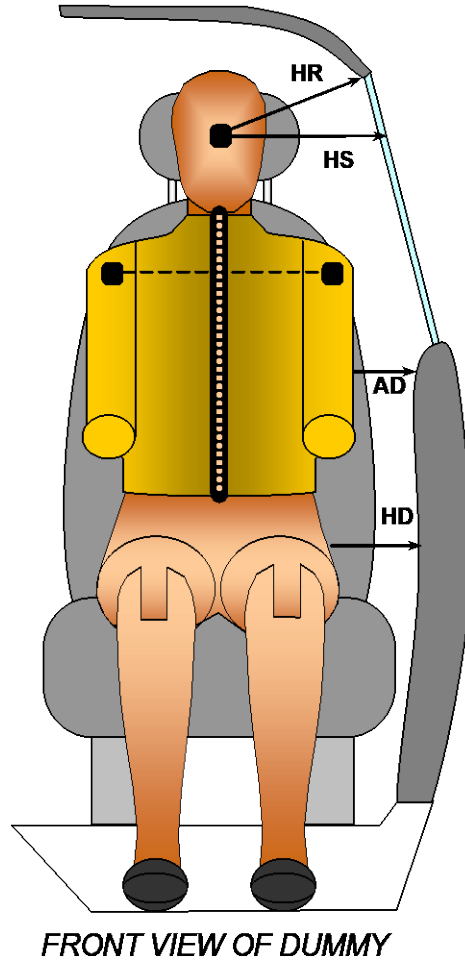
LEFT SIDE VIEW

Code	Measurement Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	486	
HW	Head to Windshield	845	
HZ	Head to Roof Liner	307	
NR	Nose to Rim/Seat Back	264	
CD	Chest to Dashboard/Seat Back	421	
CS	Chest to Steering Wheel	205	
KDL / KDAL	Left Knee to Dash/Seat Back	115	32.3
KDR / KDAL	Right Knee to Dash/Seat Back	113	33.5
PAX	Pelvic Tilt Angle X		22.0
PAY	Pelvic Tilt Angle Y		0.9
PHX	Hip Point to Striker (X-Axis)	332	
PHZ	Hip Point to Striker (Z-Axis)	53	

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

Test Vehicle: 2021 Ford Transit Connect XLT Wagon LWB
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210219
 Test Date: 11/18/2020

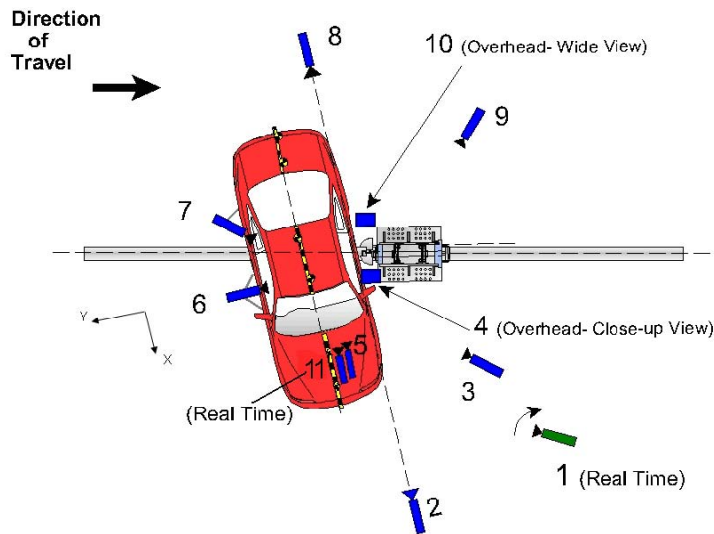


Code	Measurement Description	Driver
		Length (mm)
HR	Head to Side Header	386
HS	Head to Side Window	426
AD	Arm to Door	205
HD	Hip Point to Door	170

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

Test Vehicle: 2021 Ford Transit Connect XLT Wagon LWB
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210219
 Test Date: 11/18/2020



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

No.	Camera View	Coordinates* (mm)			Lens (mm)	Frame Rate (fps)
		X	Y	Z		
1	Real-Time Pan View					30
2	Front Ground Level	6195	-855	-2120	24	1000
3	Impact Side 45° Forward	3430	-200	-2090	12	1000
4	Overhead Closeup	75	3605	-6700	85	1000
5	Onboard – Driver Front				16	1000
6	Onboard – Driver Side				8	1000
7	Onboard – Driver Rear				8	1000
8	Rear Ground Level	-6685	-4690	-2100	24	1000
9	Impact Side 45° Rearward	-3650	-125	-2070	12	1000
10	Overhead Wide View	0	2555	-6540	12	1000
11	Real-Time Dummy Front View					30

*All measurements accurate to ±6 mm

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

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

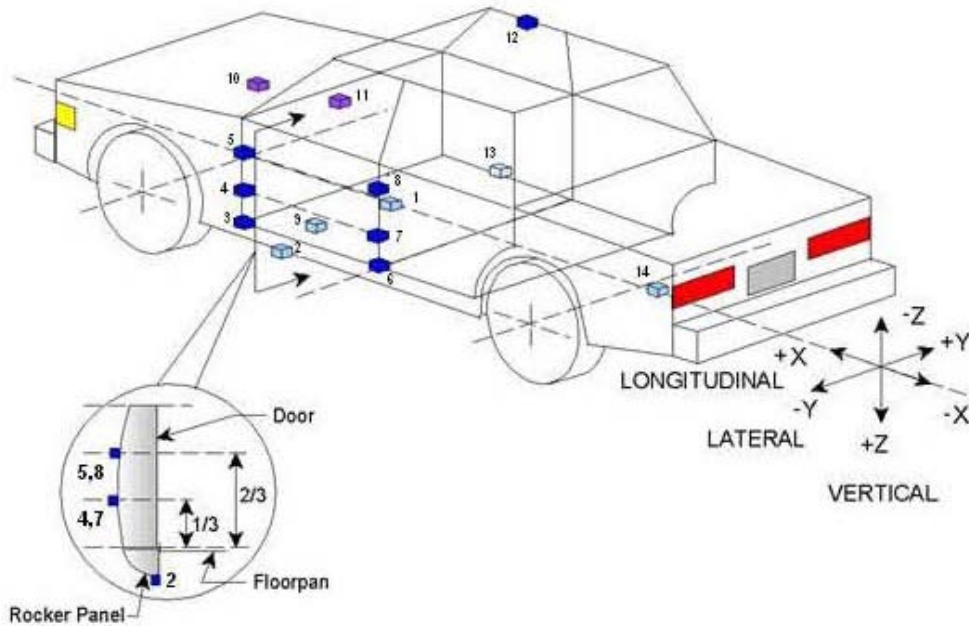
INSTRUMENTATION

	Number of Channels
Driver Dummy	19
Vehicle Structure	18
Pole Load Cells	8
Total	45

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

Test Vehicle: 2021 Ford Transit Connect XLT Wagon LWB
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210219
 Test Date: 11/18/2020



TEST VEHICLE ACCELEROMETER LOCATIONS

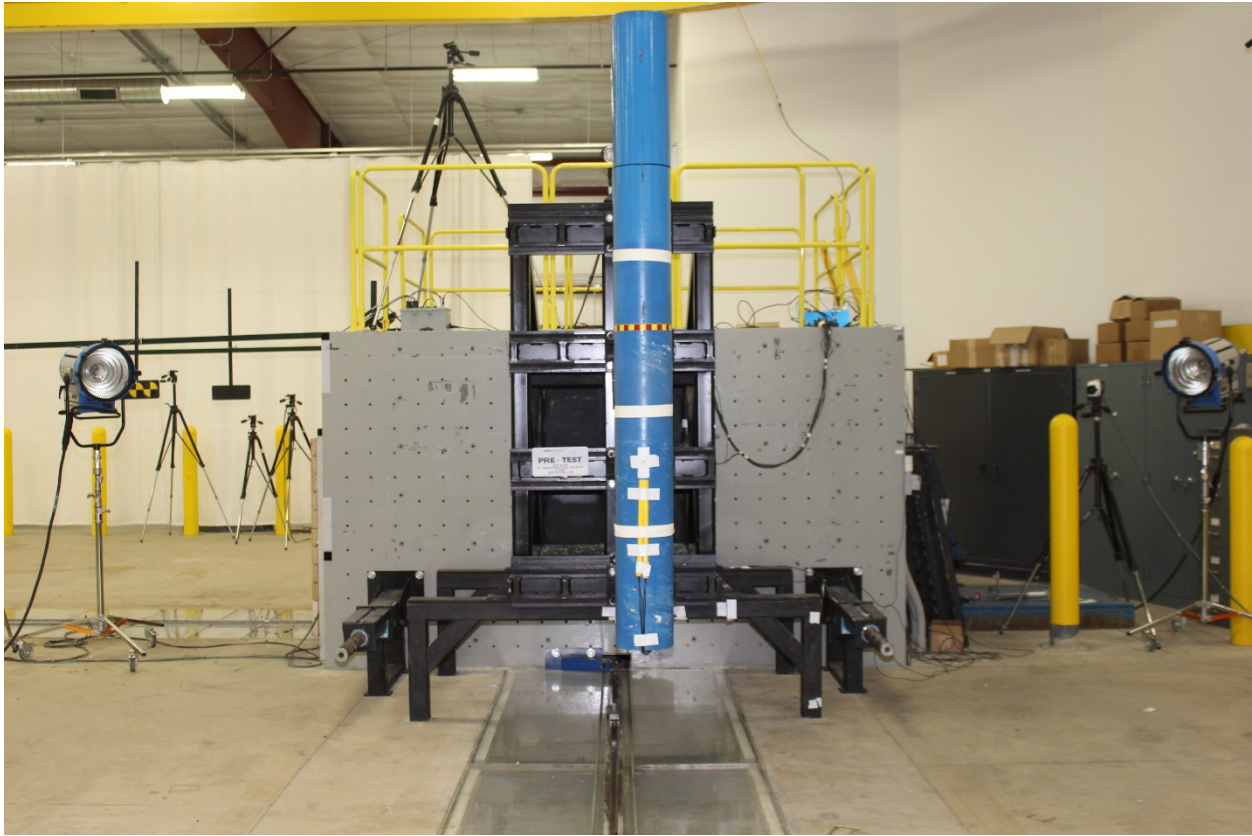
No.	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2633	165	-210
2	Left Floor Sill	3121	-700	-207
3	A Pillar Sill	3445	-700	-203
4	A Pillar Low	3420	-820	-575
5	A Pillar Mid	3413	-815	-800
6	B Pillar Sill	2382	-700	-215
7	B Pillar Low	2366	-725	-611
8	B Pillar Mid	2370	-730	-801
9	Driver Seat Track	2440	-375	-351
10	Engine Top	4139	10	-817
11	Firewall	3845	25	-865
12	Right Roof	2460	500	-1775
13	Right Floor Sill	3073	700	-206
14	Rear Floorpan	900	0	-552

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: 2021 Ford Transit Connect XLT Wagon LWB
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210219
 Test Date: 11/18/2020



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: 2021 Ford Transit Connect XLT Wagon LWB
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210219
 Test Date: 11/18/2020

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Driver Dummy (SID-IIs)
Face	Curtain Airbag
Top of Head	Curtain Airbag, Headrest
Left Side of Head	Curtain Airbag
Back of Head	Curtain Airbag, Headrest
Left Shoulder	Seatback
Upper Torso	Side Torso/Pelvis Airbag, Seatback
Lower Torso	Side Torso/Pelvis Airbag, Seatback
Left Hip	Side Torso/Pelvis Airbag, Door Panel
Left Knee	Door Panel

POST-TEST DOOR PERFORMANCE

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

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	No Separation
Windshield Damage	Broken
Side Window Damage	LF window broken
Other Notable Effects	Complete separation of windshield and roof

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

Test Vehicle: 2021 Ford Transit Connect XLT Wagon LWB
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210219
 Test Date: 11/18/2020

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

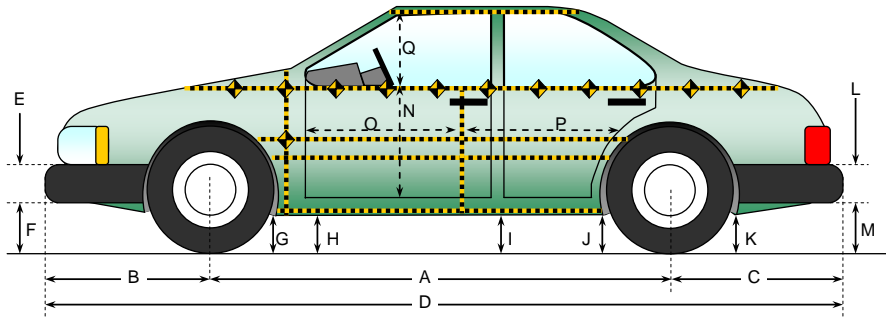
SPEED, ANGLE AT IMPACT, AND IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		1085
Actual Impact Point (Aft of Front Axle)	mm		1088
Horizontal Offset (+forward / -rearward)	mm	+/- 38 of Intended Impact Point	-3
Angle Between Vehicle's Longitudinal Centerline and Line of Forward Motion	degrees	75 +/- 3	74.8
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	32.14
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.14

DATA SHEET NO. 9
TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2021 Ford Transit Connect XLT Wagon LWB
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210219
Test Date: 11/18/2020



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

LEFT SIDE VIEW

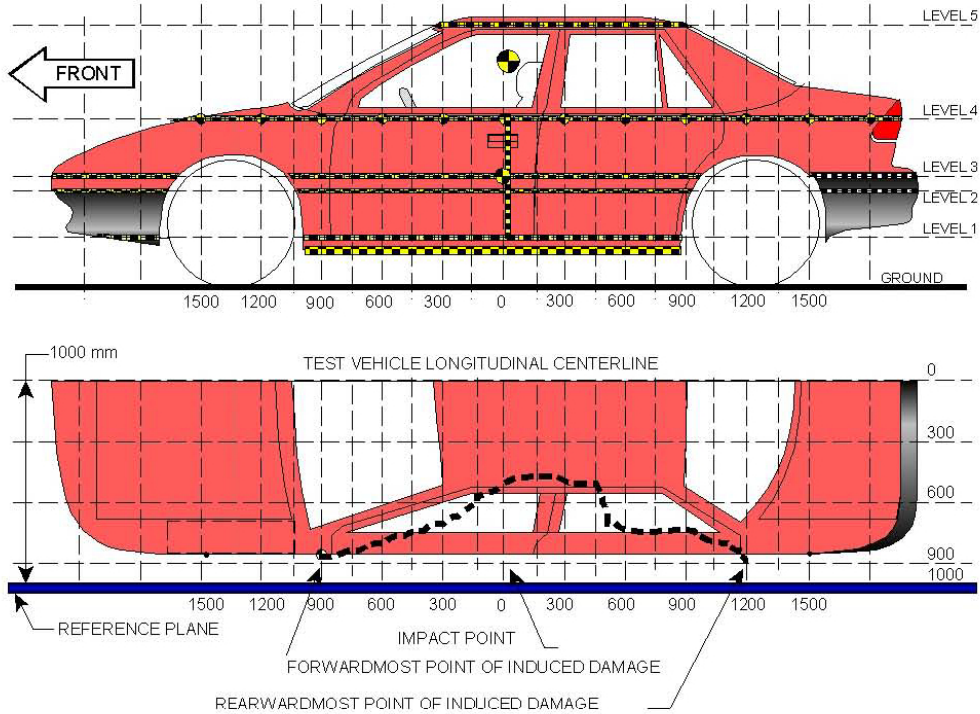
VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	3068	3000	68
B	Front Axle to FSOV	885	1038	-153
C	Rear Axle to RSOV	915	787	128
D	Total Vehicle Length at Centerline	4868	4825	43
E	Front Bumper Thickness	140	140	0
F	Front Bumper Bottom to Ground	217	232	-15
G	Sill Height at Front Wheel Well	186	179	7
H	Sill Height at Front Door Leading Edge	185	180	5
I	Sill Height at B-Pillar	194	216	-22
J1	Sill Height at Rear Wheel Well	207	210	-3
J2	Pinch Weld Height at Rear Wheel Well	203	208	-5
K	Sill Height Aft of Rear Wheel Well	244	249	-5
L	Rear Bumper Thickness	38	38	0
M	Rear Bumper Bottom to Ground	247	237	10
N	Sill Height to Bottom of Front Window Sill	768	761	7
O	Front Door Leading Edge to Impact CL	649	537	112
P	Rear Door Trailing Edge to Impact CL	1575	1522	53
Q	Front Window Opening	590	533	57
R	Right Side Length	4219	4240	-21
S	Left Side Length	4219	4100	119
T	Vehicle Width at B-Pillars	1804	1734	70
U	Front Wheel Track Width	1560		
V	Rear Wheel Track Width	1574		

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

Test Vehicle: 2021 Ford Transit Connect XLT Wagon LWB
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210219
 Test Date: 11/18/2020



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	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	319	268	75
2	Mid Door	635	309	75
3	Occupant H-Point	660	309	75
4	Window Sill	910	316	75
5	Window Top	1647	194	0

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

Test Vehicle: 2021 Ford Transit Connect XLT Wagon LWB
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210219
 Test Date: 11/18/2020

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

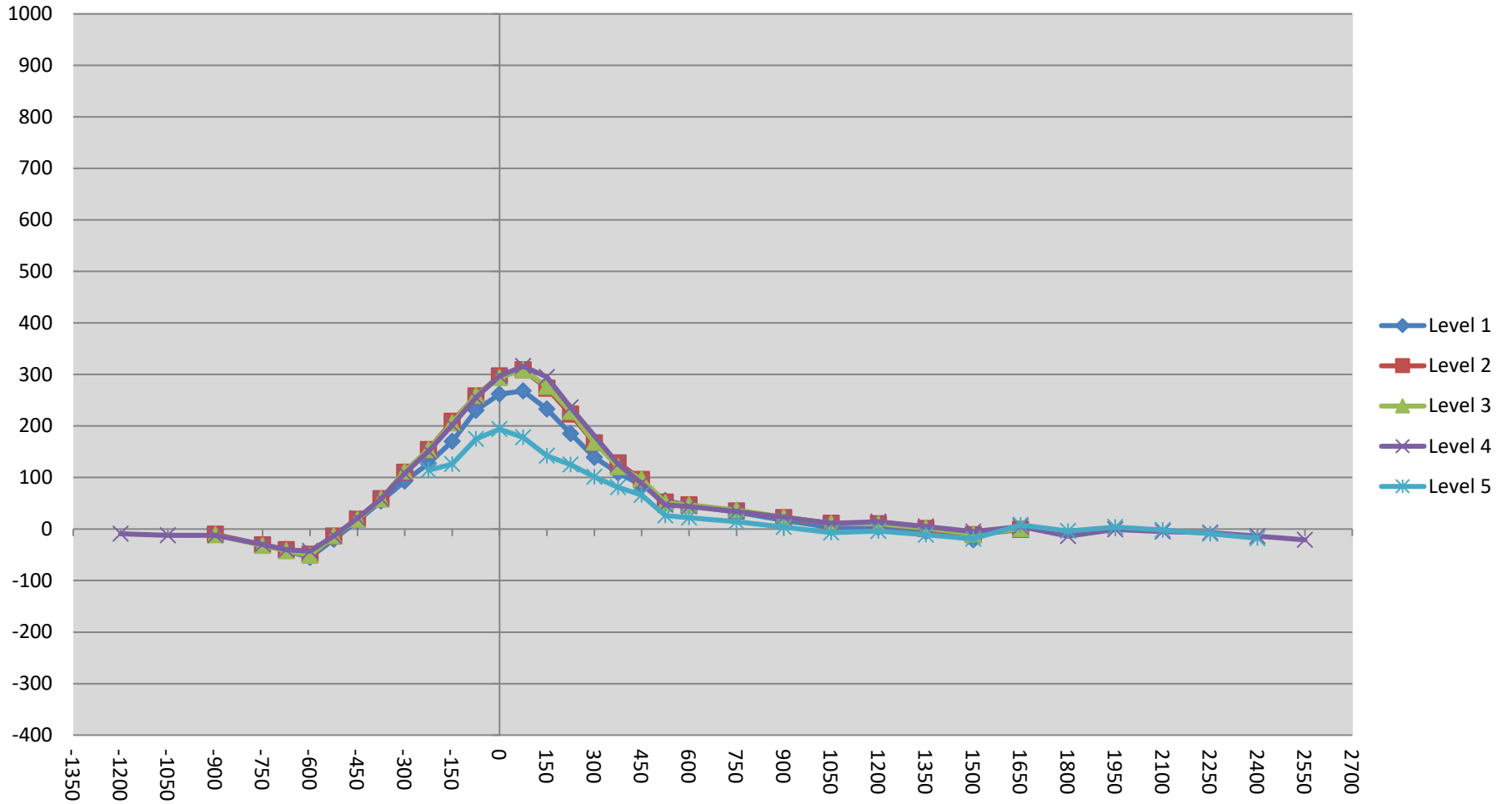
	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-2700															
-2550															
-2400															
-2250															
-2100															
-1950															
-1800															
-1650															
-1500															
-1350															
-1200				292					283					-9	
-1050				283					271					-12	
-900		188	186	266			178	175	254			-10	-11	-12	
-825															
-750		201	205	255			170	173	225			-31	-32	-30	
-675	233	214	219	252		191	174	177	212		-42	-40	-42	-40	
-600	236	222	223	246		181	173	172	203		-55	-49	-51	-43	
-525	238	221	221	241		218	207	208	228		-20	-14	-13	-13	
-450	237	219	219	237		253	238	238	258		16	19	19	21	
-375	237	218	217	233		291	277	275	292		54	59	58	59	
-300	237	216	215	230		330	326	327	338		93	110	112	108	
-225	236	215	214	225	480	363	369	368	376	594	127	154	154	151	114
-150	237	214	213	222	435	407	423	419	424	561	170	209	206	202	126
-75	237	213	213	220	415	467	471	472	475	590	230	258	259	255	175
0	237	213	213	218	405	499	510	507	515	599	262	297	294	297	194
75	237	213	212	215	400	505	522	521	531	578	268	309	309	316	178
150	237	213	212	214	398	470	486	489	509	540	233	273	277	295	142
225	237	213	212	228	393	422	436	440	464	518	185	223	228	236	125
300	238	212	212		391	377	379	380		492	139	167	168		101
375	238	213	212	208	388	347	341	333	334	469	109	128	121	126	81
450	239	213	212	210	386	324	309	309	299	452	85	96	97	89	66
525	240	212	211	210	385	295	264	262	257	411	55	52	51	47	26
600	241	212	211	213	384	287	259	258	257	406	46	47	47	44	22
675															
750	242	212	211	215	379	275	247	248	249	393	33	35	37	34	14
825															
900	243	212	211	218	375	260	234	234	241	379	17	22	23	23	4
1050	242	213	212	219	372	245	224	223	230	365	3	11	11	11	-7
1200	243	214	214	219	370	246	224	224	233	366	3	10	10	14	-4
1350	243	215	216	220	370	238	216	218	225	359	-5	1	2	5	-11
1500	243	205	208	222	368	222	194	198	217	349	-21	-11	-10	-5	-19
1650		192	193	224	366		191	194	229	374		-1	1	5	8
1800				225	367				211	363				-14	-4
1950				221	367				220	371				-1	4
2100				229	367				224	365				-5	-2
2250				240	368				233	359				-7	-9
2400				252	379				238	361				-14	-18
2550				272					251					-21	
2700															

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

Test Vehicle: 2021 Ford Transit Connect XLT Wagon LWB
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210219
Test Date: 11/18/2020

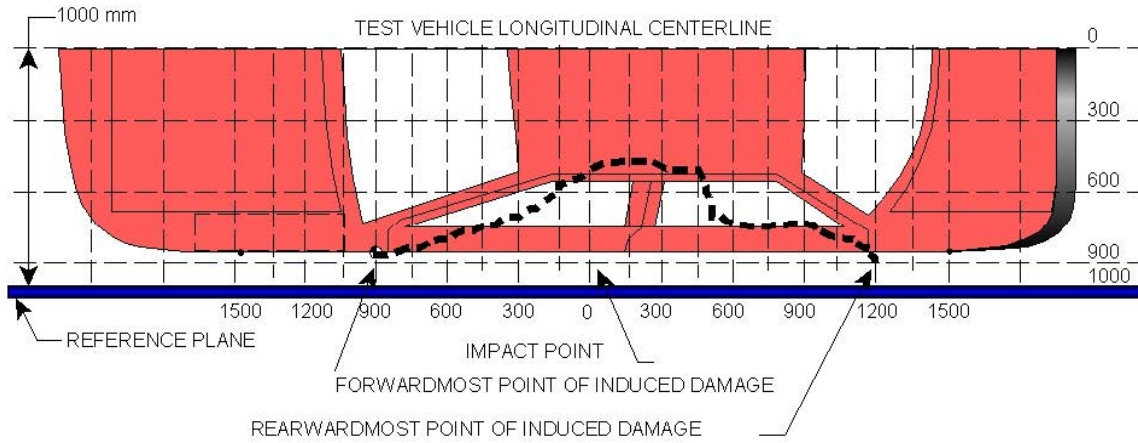
21



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

Test Vehicle: 2021 Ford Transit Connect XLT Wagon LWB
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210219
 Test Date: 11/18/2020



VEHICLE DAMAGE PROFILE DISTANCES

DPD	Distance from Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Max. Static Crush (mm)
1	455	3	212	307	95
2	234	3	212	433	221
3	13	3	213	513	300
4	-208	3	214	381	167
5	-429	3	218	251	33
6	-650	3	220	160	-60

**DATA SHEET NO. 11
FMVSS NO. 301 STATIC ROLLOVER RESULTS**

Test Vehicle: 2021 Ford Transit Connect XLT Wagon LWB
Test Program: NCAP Side Pole Impact Test

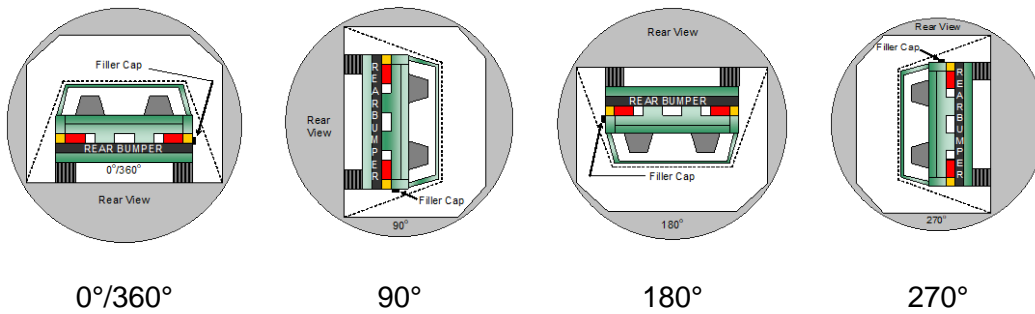
NHTSA No.: M20210219
Test Date: 11/18/2020

Test Time: 2:11 pm

Temperature: 20.7°C

- A. From impact until vehicle motion ceases: (Maximum Allowable = 1 ounce) 0.0 oz.
- B. For the 5 minute period after motion ceases: (Maximum Allowable = 5 ounces) 0.0 oz.
- C. For the following 25 minutes: (Maximum Allowable = 1 ounce / minute) None
- D. Spillage Details: None

FMVSS 301 STATIC ROLLOVER DATA



ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	111	300	411
90° to 180°	110	300	410
180° to 270°	107	300	407
270° to 360°	110	300	410

FMVSS 301 ROLLOVER SPILLAGE TABLE (UNITS IN OUNCES)

Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0° to 90°	0.0	0.0	0.0	
90° to 180°	0.0	0.0	0.0	
180° to 270°	0.0	0.0	0.0	
270° to 360°	0.0	0.0	0.0	

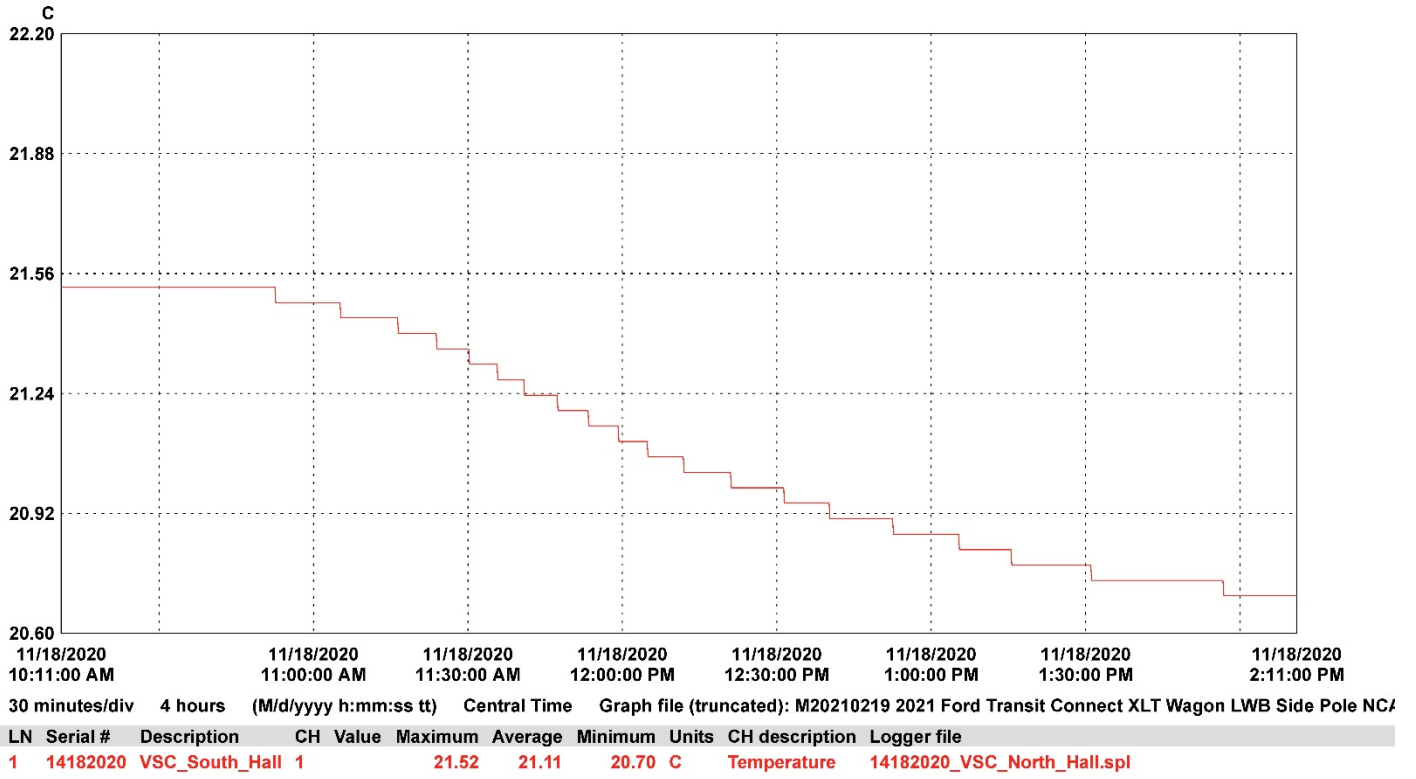
ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 12
DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION DATA

Test Vehicle: 2021 Ford Transit Connect XLT Wagon LWB
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210219
 Test Date: 11/18/2020



**APPENDIX A
PHOTOGRAPHS**

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



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

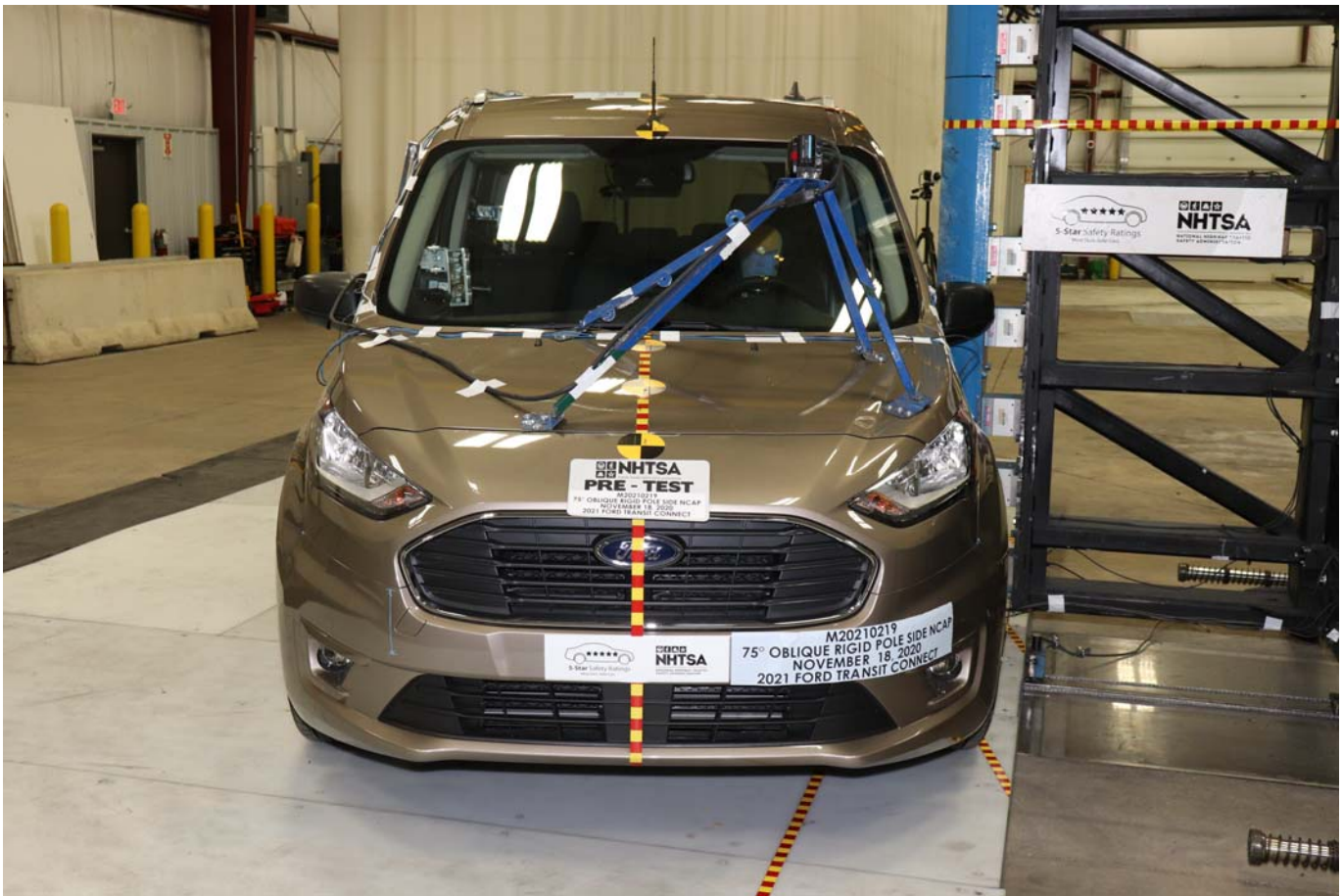


Photo No. 003 - Pre-Test Frontal View of Test Vehicle

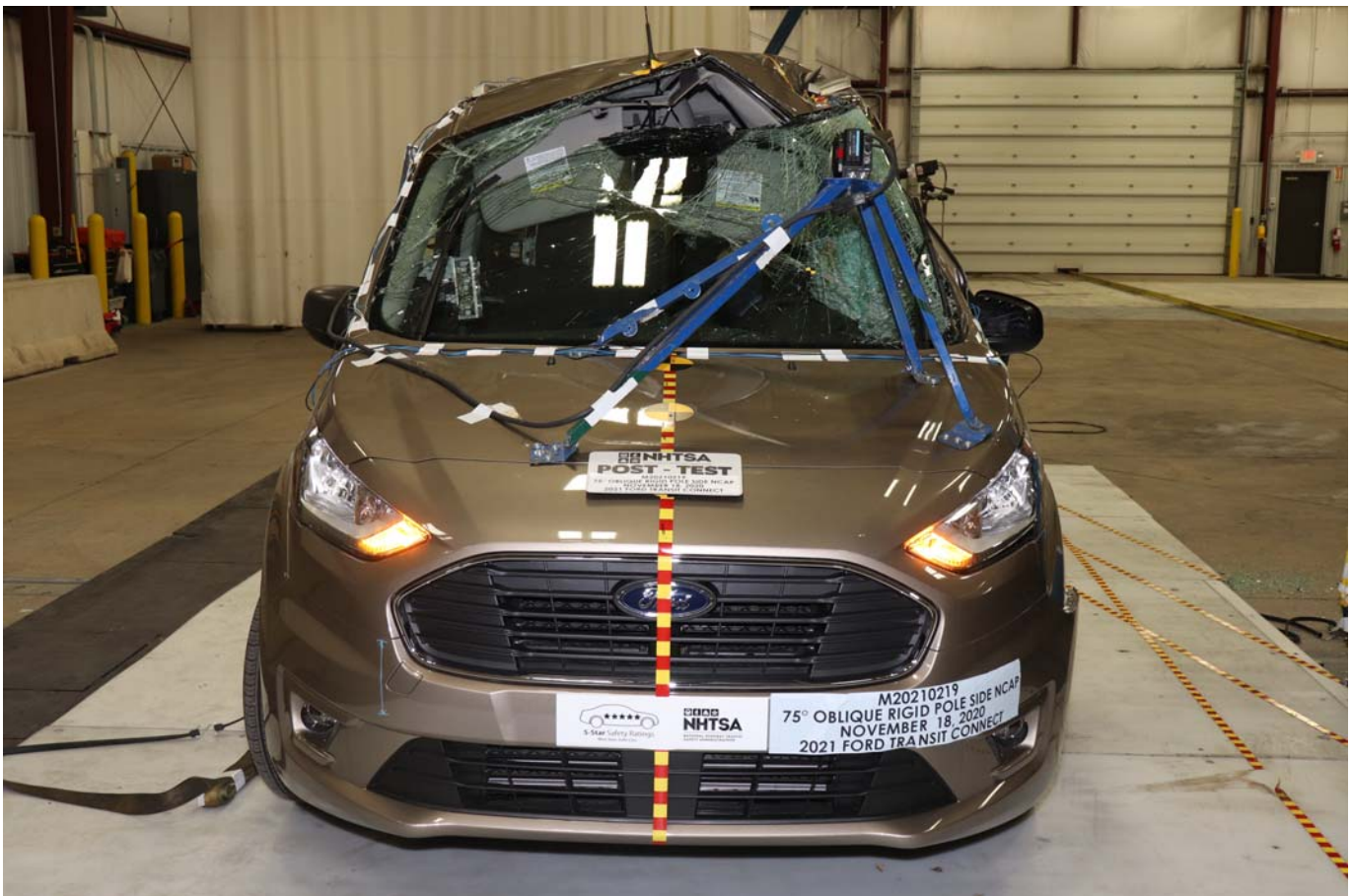


Photo No. 004 - Post-Test Frontal View of Test Vehicle

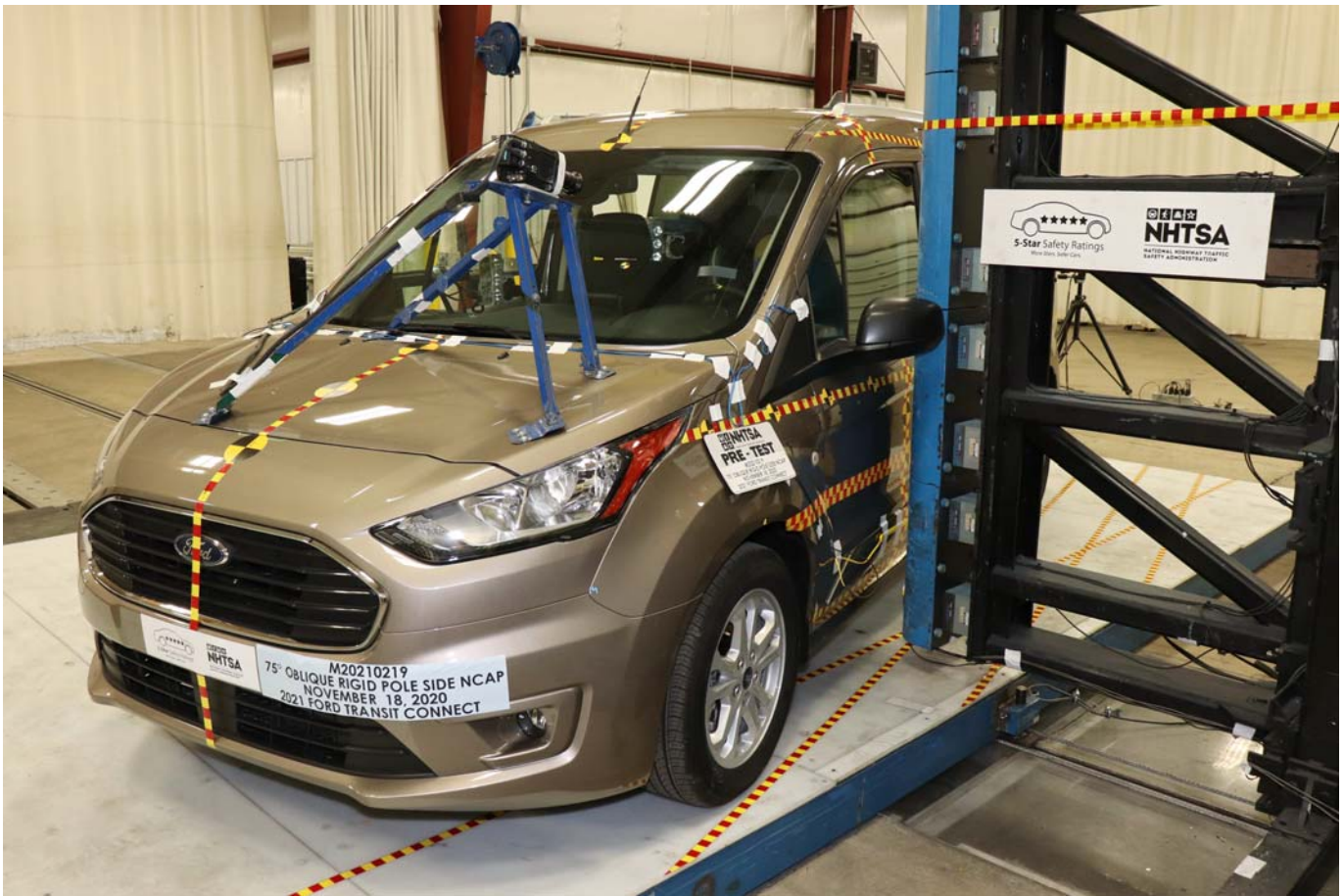


Photo No. 005 - Pre-Test Left Front Three-Quarter View of Test Vehicle

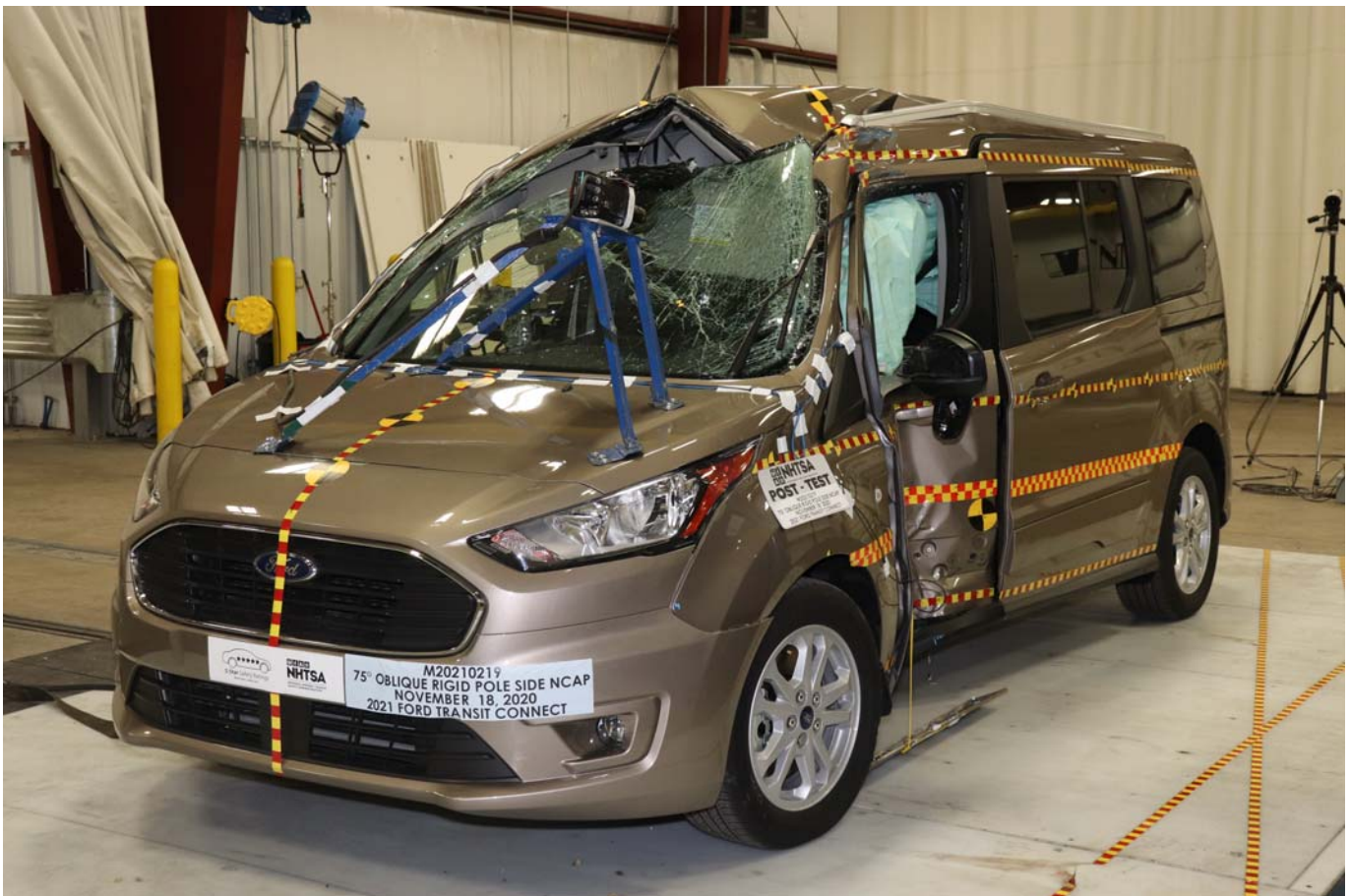


Photo No. 006 - Post-Test Left Front Three-Quarter View of Test Vehicle

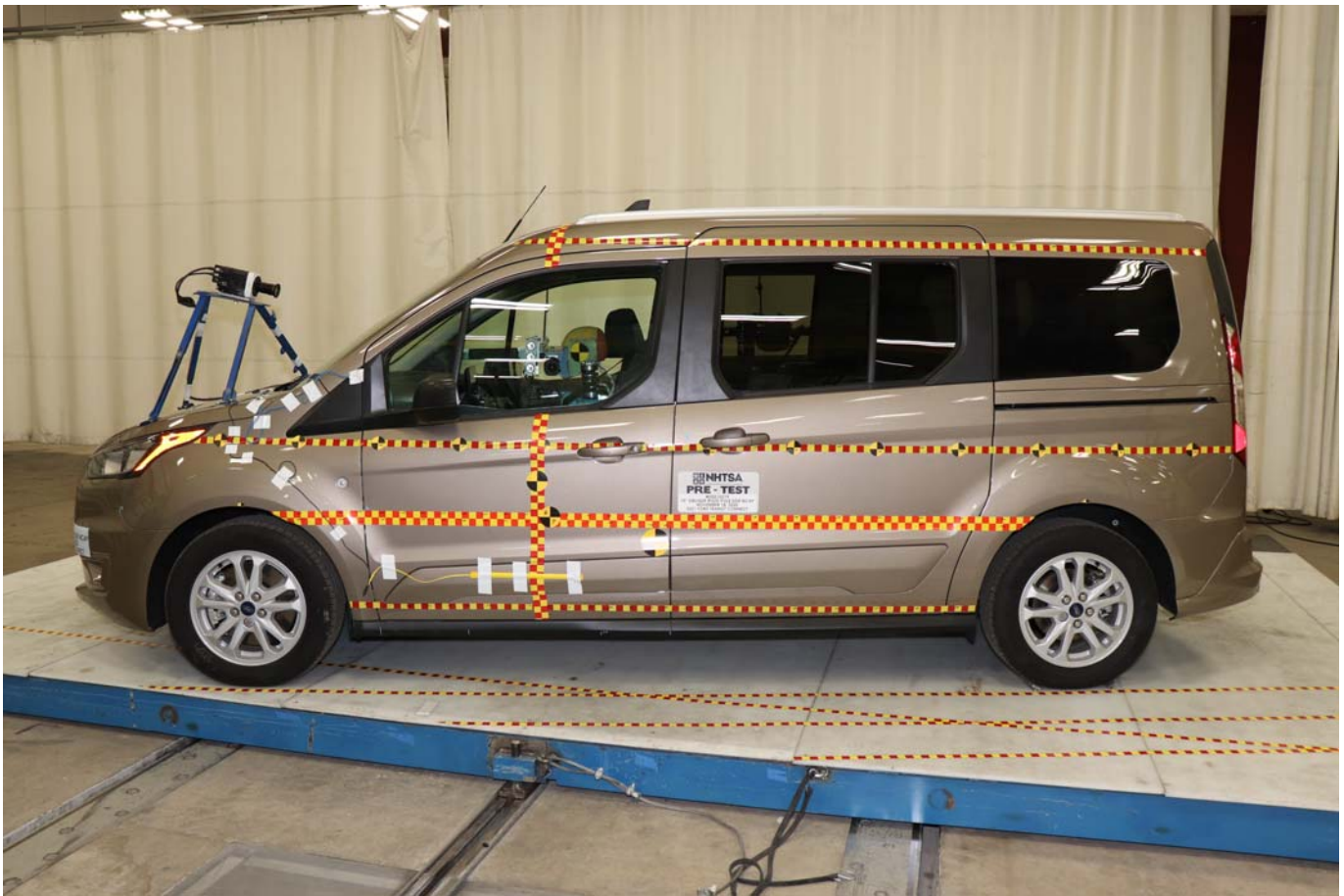


Photo No. 007 - Pre-Test Left Side View of Test Vehicle



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



Photo No. 009 - Pre-Test Left 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

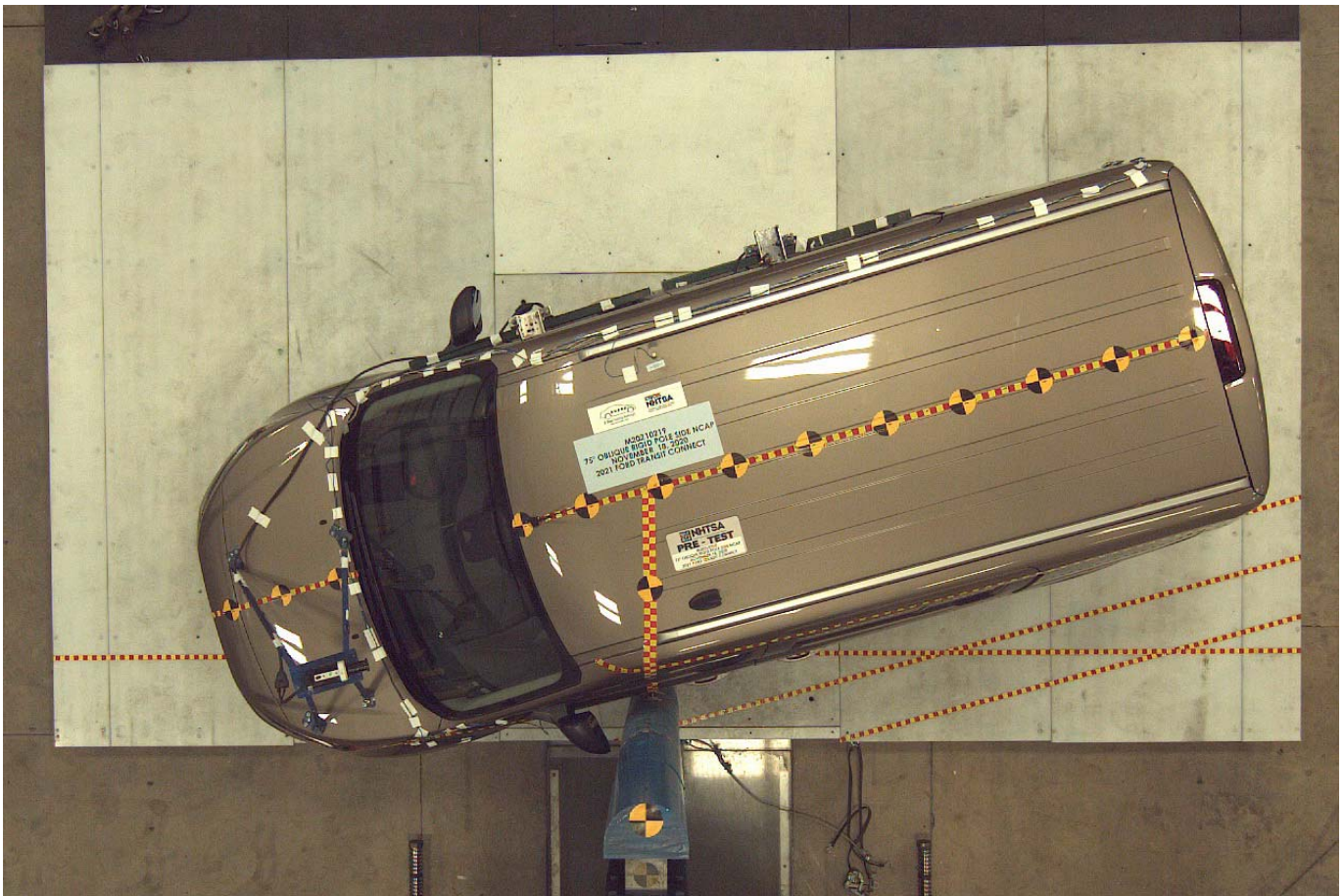


Photo No. 015 - Pre-Test Overhead View of Test Area

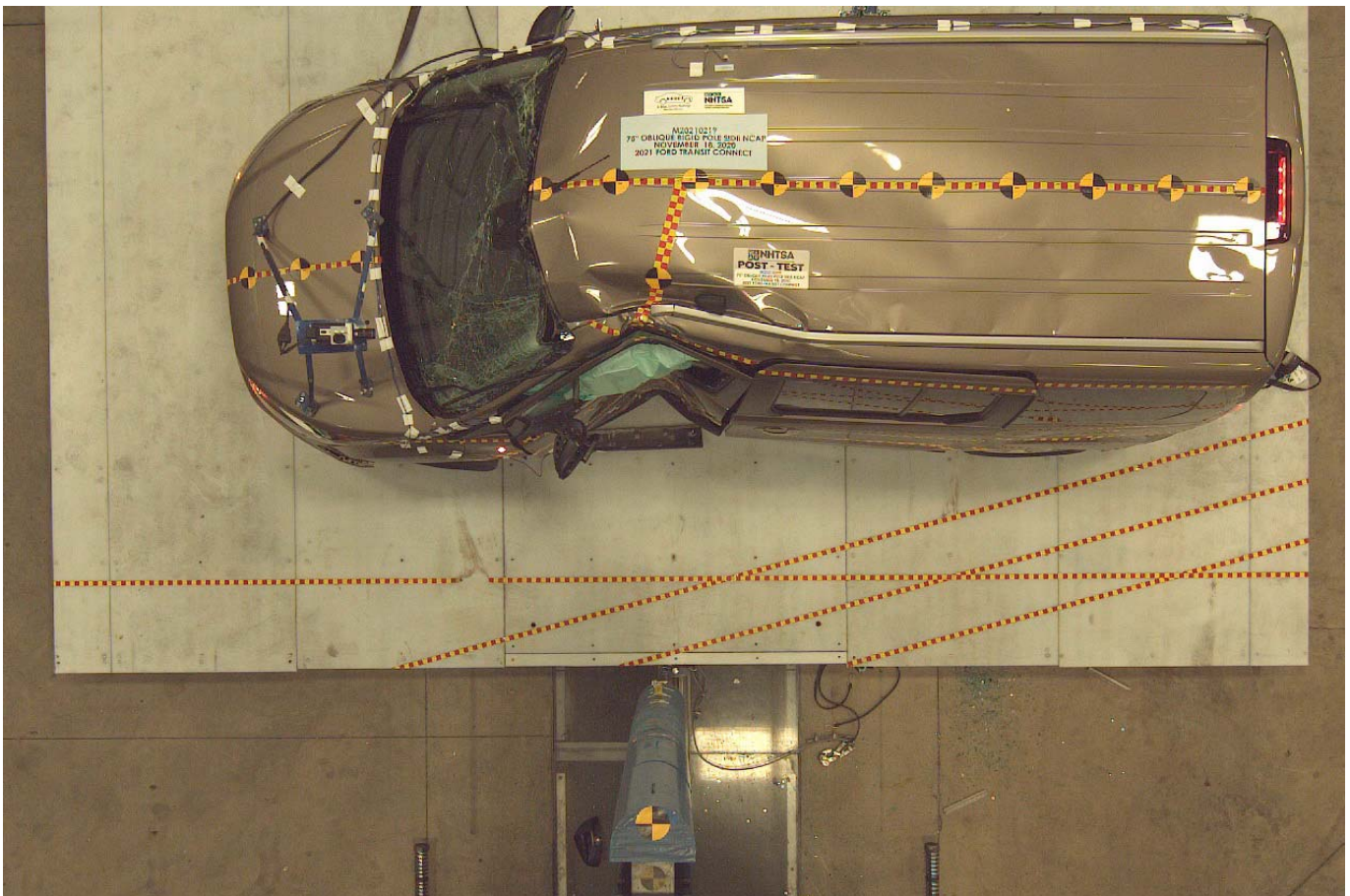


Photo No. 016 - Post-Test Overhead View of Test Area

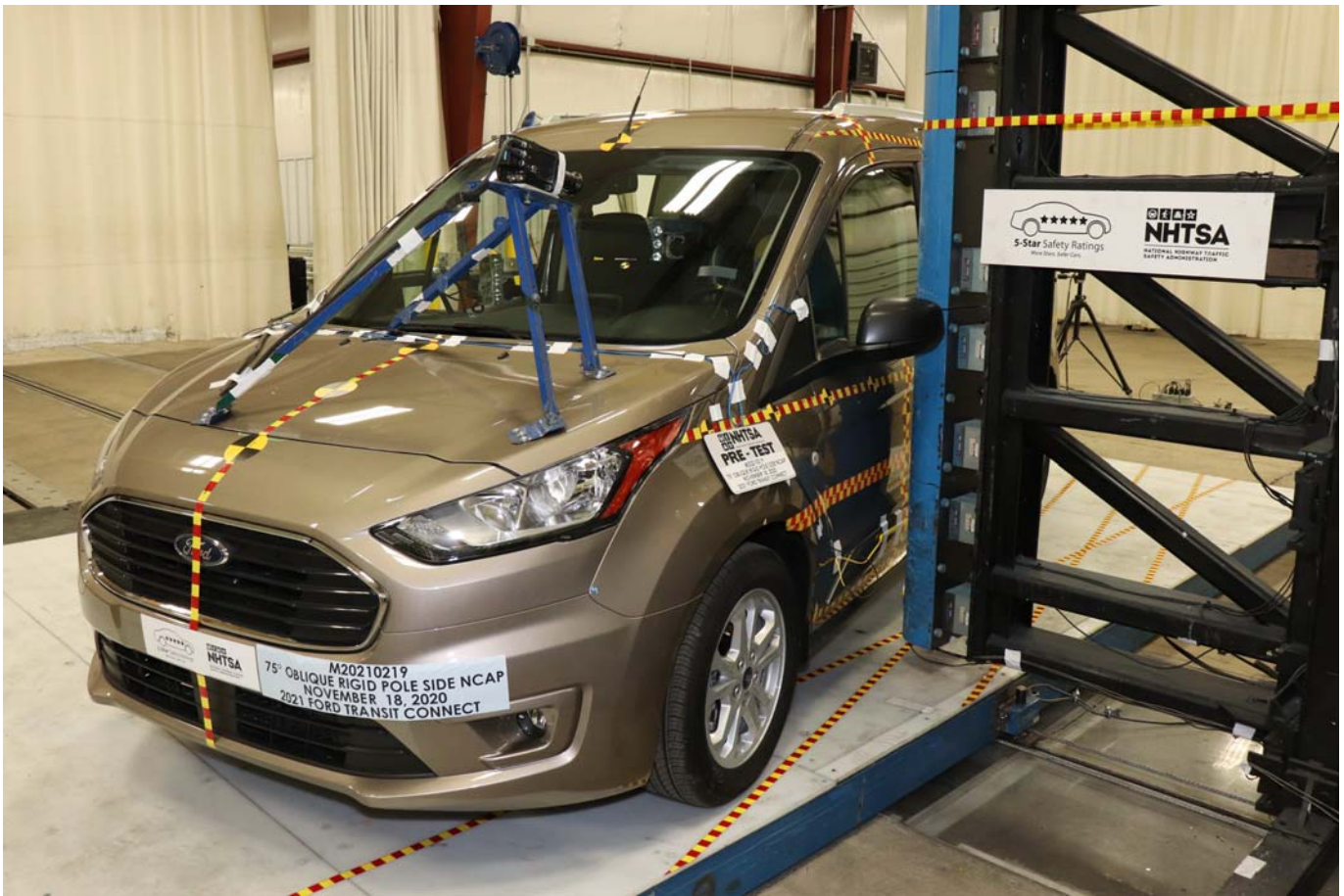


Photo No. 017 - Pre-Test Left Side View of Pole Positioned Against Side of Vehicle



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

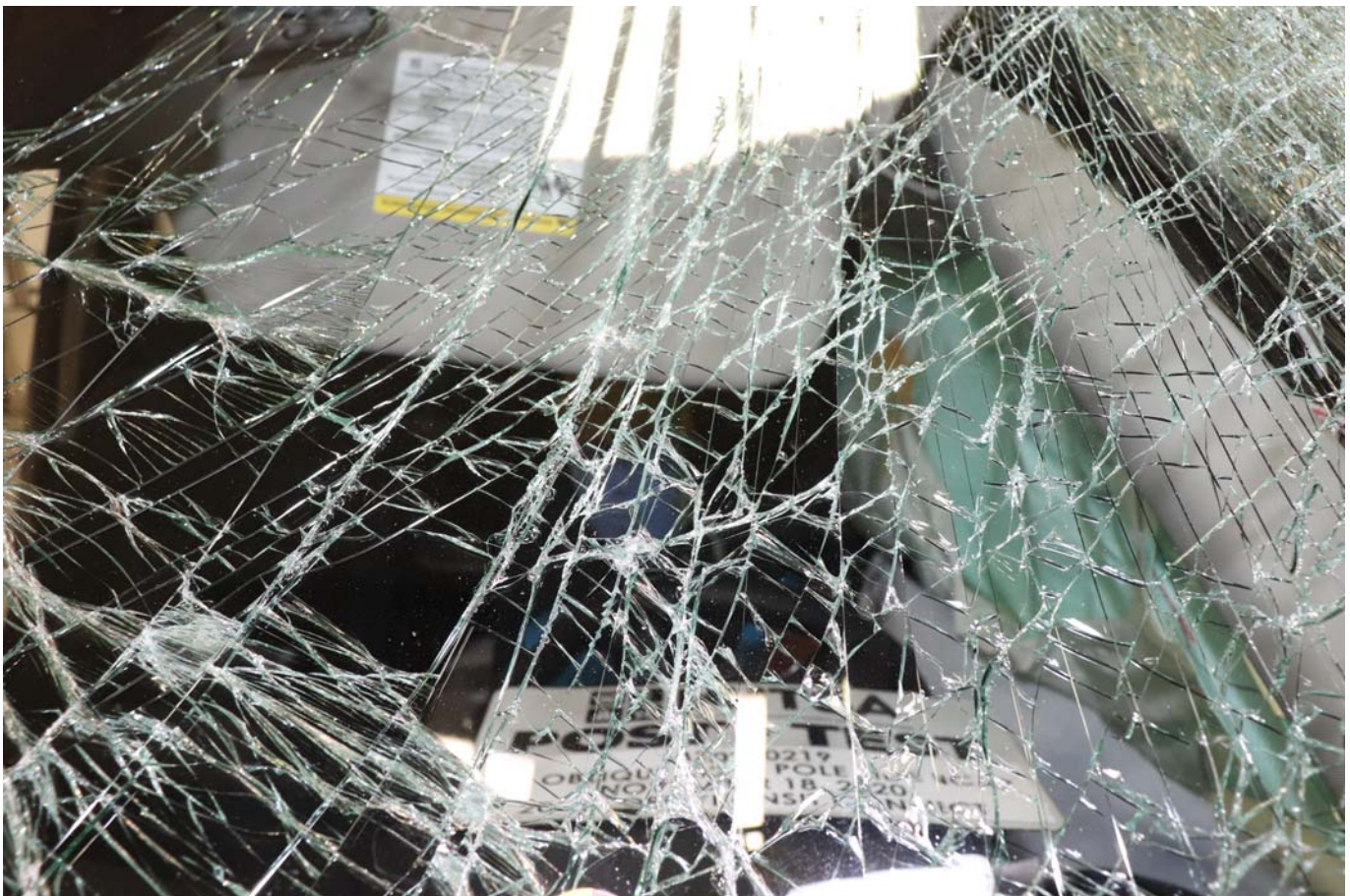


Photo No. 022 - Post-Test Front Close-Up View of Dummy



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



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



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



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



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



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



Photo No. 030 - Pre-Test Left Side View of Dummy 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

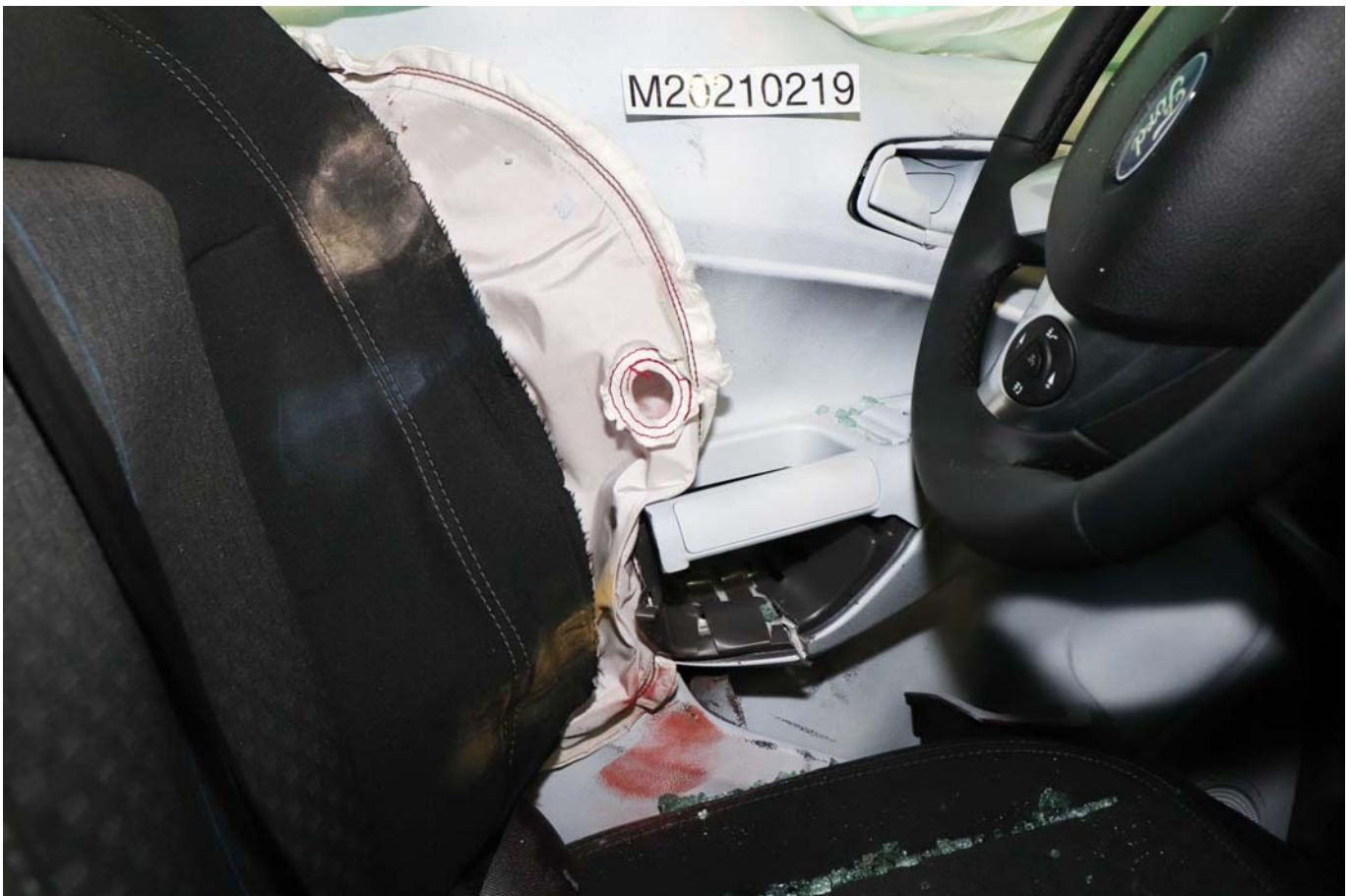


Photo No. 048 - Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View

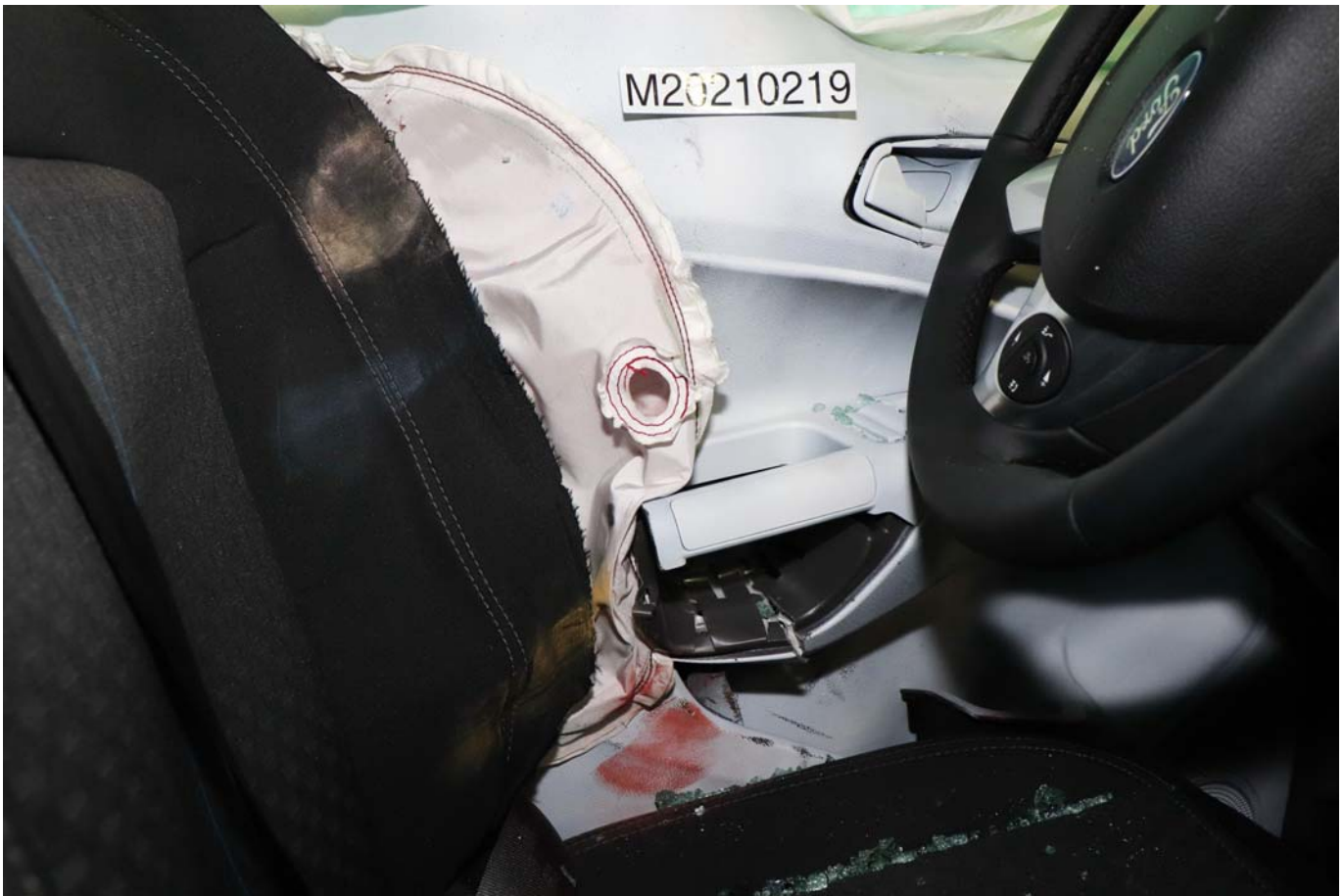


Photo No. 049 - Post-Test Dummy Close-Up Torso Contact with Side Air Bag View



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

PHOTOGRAPH NOT APPLICABLE

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



Photo No. 053 - Post-Test Right Side View of Dummy and Rear Seat of Occupant Compartment

PHOTOGRAPH NOT APPLICABLE

Photo No. 054 - Post-Test Inner Rear Passenger Torso Air Bag Deployment View



Photo No. 055 - Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



Photo No. 056 - Post-Test View of Fuel Filler Cap or Fuel Filler Neck



Photo No. 057 - Close-Up View of Vehicle Certification Label

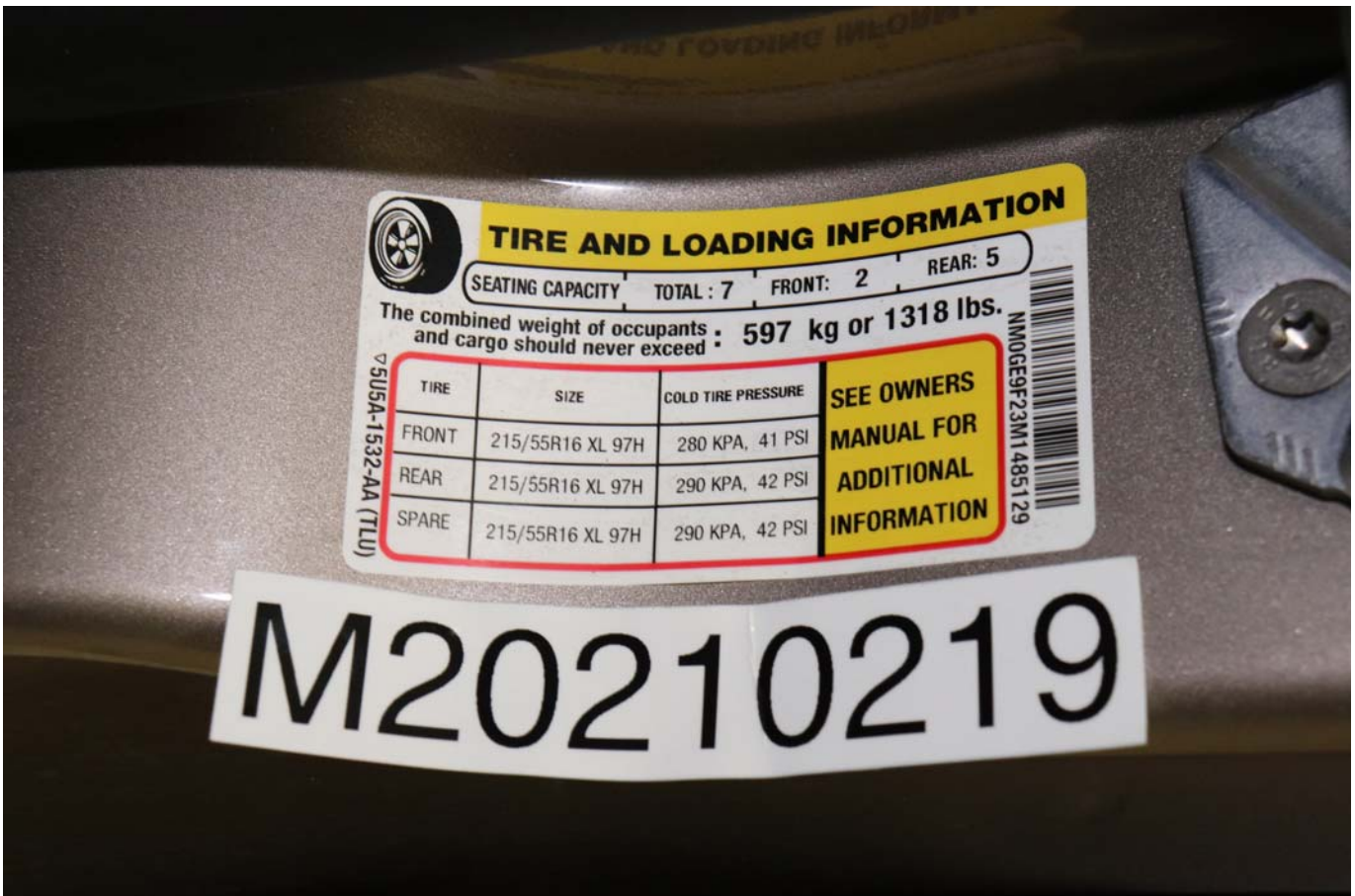


Photo No. 058 - Close-Up View of Vehicle Tire Information Placard or Label



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



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



Photo No. 061 - Pre-Test Pole Barrier Side View



Photo No. 062 - Post-Test Pole Barrier Side View



Photo No. 063 - Pre-Test Ballast View



Photo No. 064 - Post-Test Primary and Redundant Speed Trap Read-Out



Photo No. 065 - FMVSS Photo No. 301 Static Rollover 0 Degrees



Photo No. 066 - FMVSS Photo No. 301 Static Rollover 90 Degrees



Photo No. 067 - FMVSS Photo No. 301 Static Rollover 180 Degrees




Photo No. 068 - FMVSS Photo No. 301 Static Rollover 270 Degrees



Photo No. 069 - FMVSS Photo No. 301 Static Rollover 360 Degrees



Photo No. 070 - Impact Event



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VEHICLE DESCRIPTION
TRANSIT CONNECT M1 485129

2021 XL7 WAGON LWB
XL7 7 PASSENGER
2.0L GDI I4 ENGINE
8 SPD AUTO TRANSAXLE

EXTERIOR
DIFFUSED SILVER
INTERIOR
EBONY CLOTH SEATS

STANDARD EQUIPMENT INCLUDED AT NO EXTRA CHARGE

<p>EXTERIOR</p> <ul style="list-style-type: none"> • BODY SIDE MOLDINGS - BODY COLOR • BUMPERS - BODY COLOR • DOOR HANDLES - BODY COLOR • DOORS - DUAL SLIDING SIDE • LIFTGATE W/ FOX GLASS REAR • FOG LAMPS • GRILLE - 5 BAR, CHROME • HEADLAMPS - AUTO HIGH BEAM • POWER ADJ/HEATED/POWER FOLD EXTERIOR MIRRORS • WIPERS - RAIN-SENSING 	<p>INTERIOR</p> <ul style="list-style-type: none"> • 2ND AND 3RD ROW SEATS • 6-WAY POWER DRIVER/4-WAY MANUAL PASSENGER SEATS • AUTO-DIM REARVIEW MIRROR • CENTER CONSOLE W/ARMREST, STORAGE & 2 CUPHOLDERS • DUAL-ZONE ELECTRONIC AUTO CLIMATE CONTROL • FLOOR COVERING - CARPETED • OVERHEAD STORAGE SHELF • POWERPOINTS - 12V (2) • SMART CHARGING USB PORT(2) • STEERING - TILT/TELESCOPIC • WINDOWS-1-TOUCH UP/DOWN FRONT/REAR 	<p>FUNCTIONAL</p> <ul style="list-style-type: none"> • BLIS (BLIND SPOT INFO SYS) • BRAKES, 4-WHEEL DISC/ABS • FORDPASS™ CONNECT 4GWI-FI HOTSPOT TELEMATICS MODEM • FRONT WHEEL DRIVE • FUEL TANK - 15.9 GAL • HILL START ASSIST • PHONE WIRELESS CHARGING PAD • PRE-COLLISION ASSIST W/AEB • REAR VIEW CAMERA • REMOTE KEYLESS ENTRY • REVERSE SENSING SYSTEM • SYNC® 3
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SAFETY/SECURITY

- ADVANCETRAC WITH RSC
- AIRBAGS - DUAL STAGE FRONT
- AIRBAGS - FRONT SEAT MOUNTED SIDE IMPACT
- AIRBAGS - SIDE AIR CURTAINS
- EMERGENCY BRAKE ASSIST
- MYKEY
- SECURLOCK PASS ANTI THEFT
- TIRE PRESSURE MONITOR SYS

WARRANTY

- 3YR/36,000 BUMPER / BUMPER
- 5YR/60,000 POWERTRAIN
- 5YR/60,000 ROADSIDE ASSIST

Fuel Economy and Environment Gasoline Vehicle

Fuel Economy

26 MPG combined city/hwy
24 city 29 highway

3.8 gallons per 100 miles

Spec. Purpose Vehicles range from 15 to 25 MPG. The best vehicle rates 141 MPGe.

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

Annual fuel cost \$1,550

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

1 5 10 1 6 10 Best Best

This vehicle emits 344 grams CO₂ per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also create emissions. Learn more at fuelconomy.gov

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 \$7,500 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$2.70 per gallon. MPGe 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

GOVERNMENT 5-STAR SAFETY RATINGS

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

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

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

FordPass Connect™

Download the FordPass™ app and you can:

- Access Vehicle Control Features
- Remotely start, lock and unlock your vehicle
- Locate your vehicle and check approximate fuel range
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- New vehicles include a 3-month or 3GB data (whichever comes first) Wi-Fi trial.
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Ford PROTECT™

Insist on Ford Protect! The only extended service plan fully backed by Ford and honored at every Ford dealership in the U.S., Canada and Mexico. See your Ford dealer or visit www.FordOwner.com.

Whether you decide to lease or finance your vehicle, you'll find the choices that are right for you. See your dealer for details or visit www.ford.com/finance.

WARNING: Operating, servicing and maintaining a passenger vehicle, pickup truck, van, or off-road vehicle can expose you to chemicals including engine exhaust, carbon monoxide, phthalates, and lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. To minimize exposure, avoid breathing exhaust, do not idle the engine except as necessary, service your vehicle in a well-ventilated area and wear gloves or wash your hands frequently when servicing your vehicle. For more information go to www.P65Warnings.ca.gov/passenger-vehicle.

Photo No. 071 - Monroney Label

Seats

HEAD RESTRAINTS

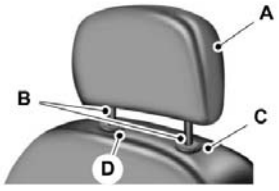
WARNING: Adjust the head restraints for all passengers before you drive your vehicle. This will help minimize the risk of neck injury in the event of a crash. Do not adjust the head restraints when your vehicle is moving.

WARNING: The head restraint is a safety device. Whenever possible it should be installed and properly adjusted when the seat is occupied. An improperly adjusted head restraint may not adequately protect an occupant during an impact from the rear.

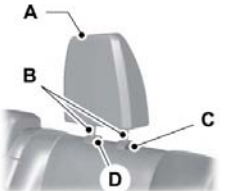
WARNING: Install the head restraint properly to help minimize the risk of neck injury in the event of a crash.

Note: Adjust the seat backrest to an upright driving position before adjusting the head restraint. Adjust the head restraint so that the top of it is level with the top of your head and as far forward as possible. Make sure that you remain comfortable. If you are extremely tall, adjust the head restraint to its highest position.

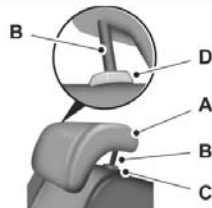
Front Seat Head Restraint



Second Row Outboard Head Restraints



Second Row Center Head Restraint and Third Row Head Restraints



The head restraints consist of:

- A Energy absorbing head restraint.
- B Steel stems.
- C Guide sleeve adjust and unlock button.
- D Guide sleeve unlock and remove button.

Adjusting the Head Restraint

Raising the Head Restraint

Pull the head restraint up.

Lowering the Head Restraint

1. Press and hold button C.
2. Push the head restraint down.

Removing the Head Restraint

1. Pull the head restraint up until it reaches its highest position.
2. Press and hold buttons C and D.
3. Pull the head restraint up.

Installing the Head Restraint

Align the steel stems into the guide sleeves and push the head restraint down until it locks.

Tilting Head Restraints (If Equipped)

The head restraints tilt for extra comfort. To tilt the head restraint, do the following:

Photo No. 072 - Head Restraint Use and Adjustment Information from Vehicle Owners Manual

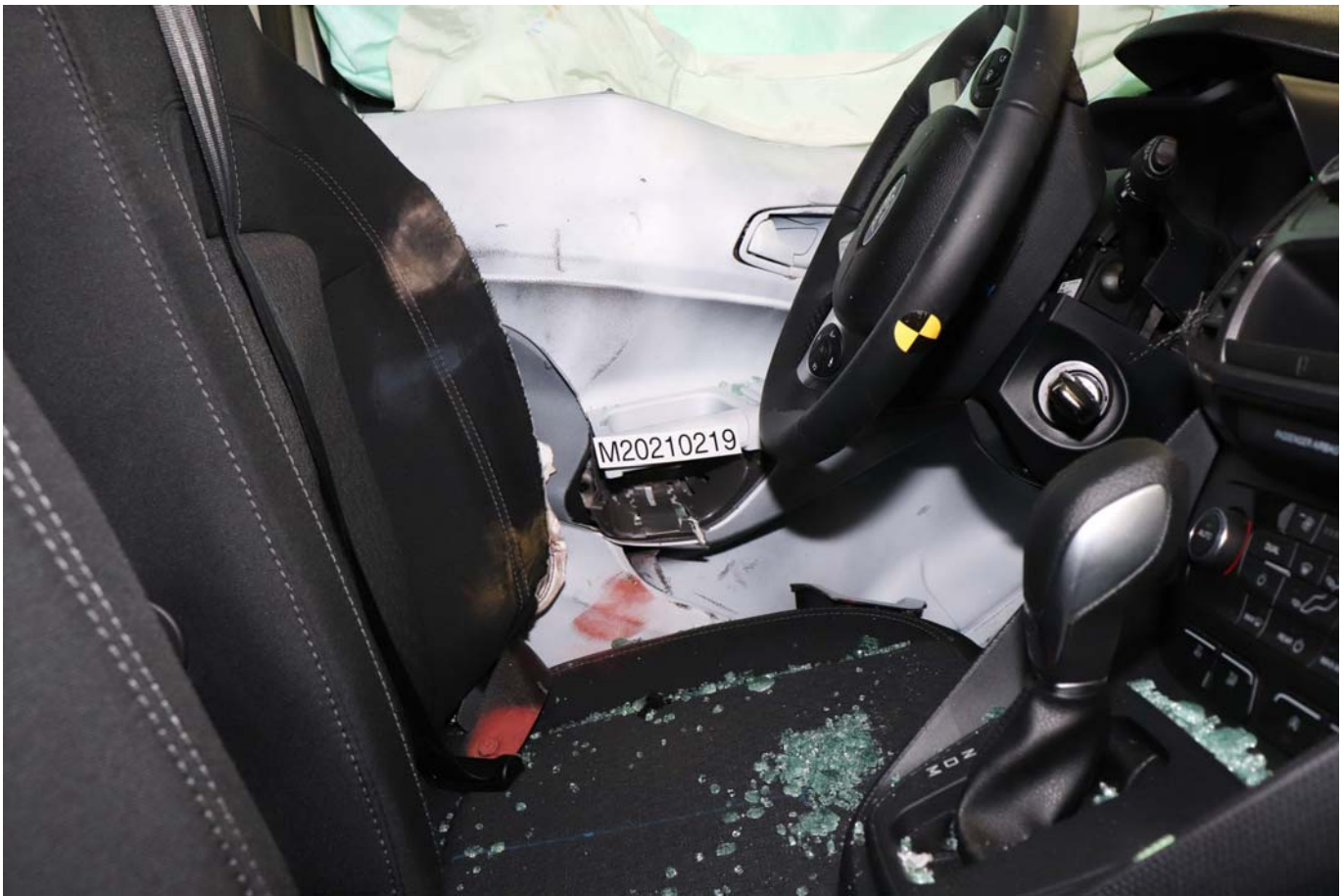


Photo No. 073 - Post-Test View of Shattered Vehicle Inner Door Panel

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

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)

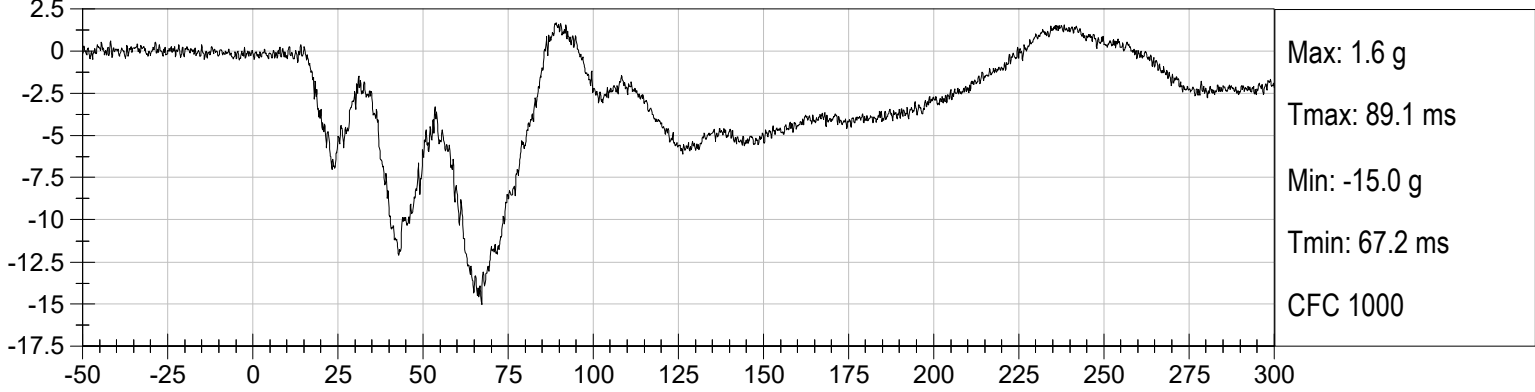
Load Cell Pole Barrier #5 Force (Y)

Load Cell Pole Barrier #6 Force (Y)

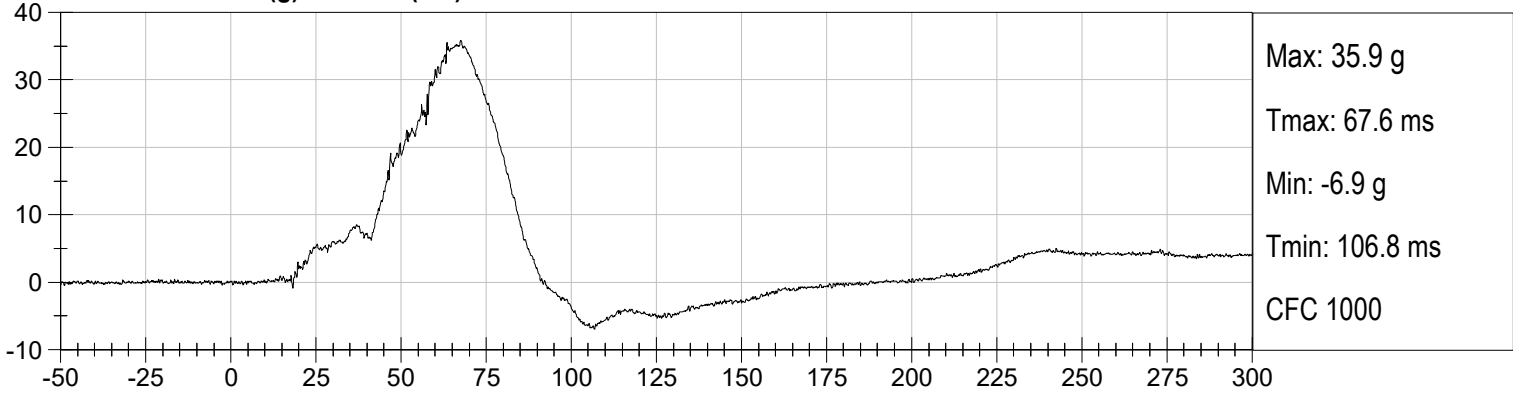
Load Cell Pole Barrier #7 Force (Y)

Load Cell Pole Barrier #8 Force (Y)

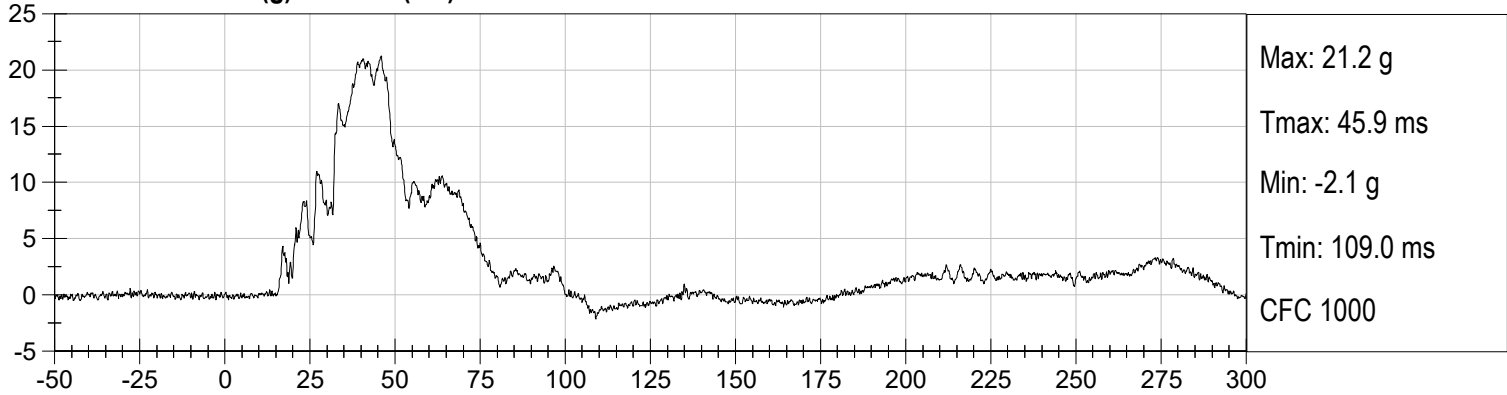
DRIVER HEAD X (g) vs Time (ms)



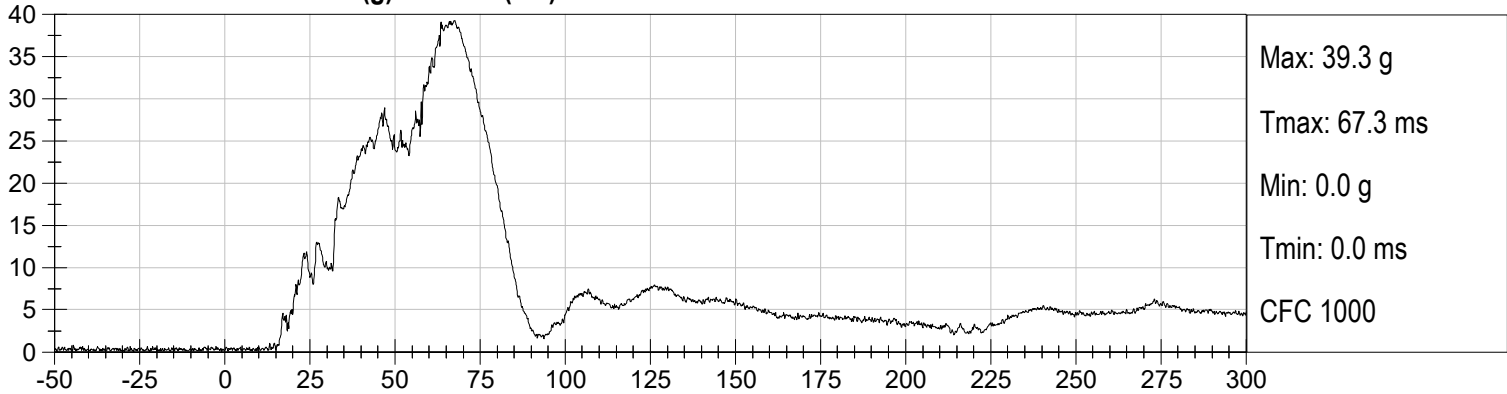
DRIVER HEAD Y (g) vs Time (ms)

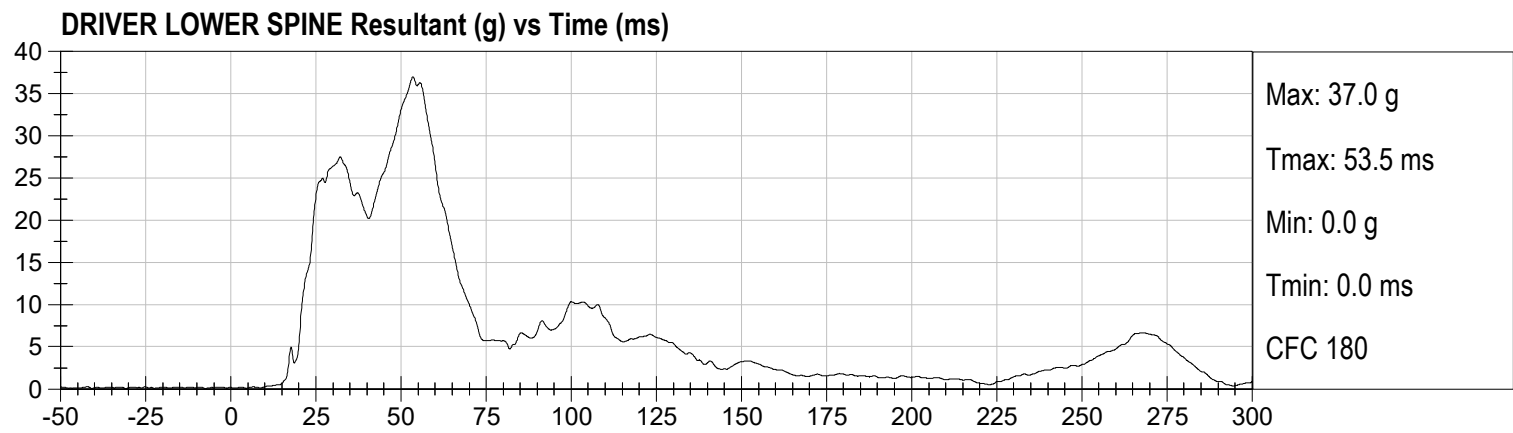
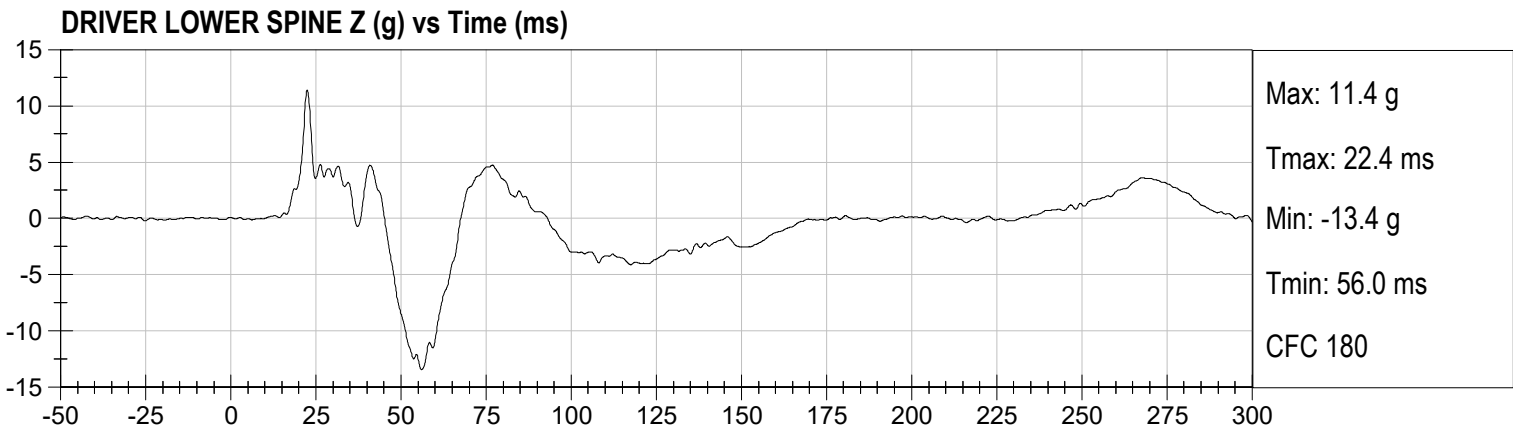
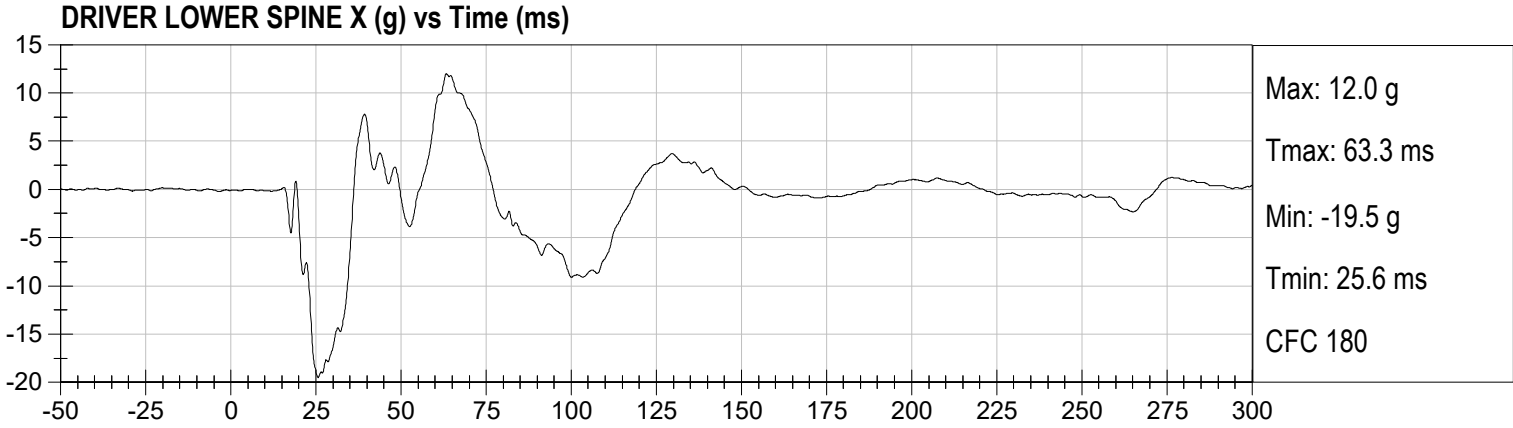


DRIVER HEAD Z (g) vs Time (ms)

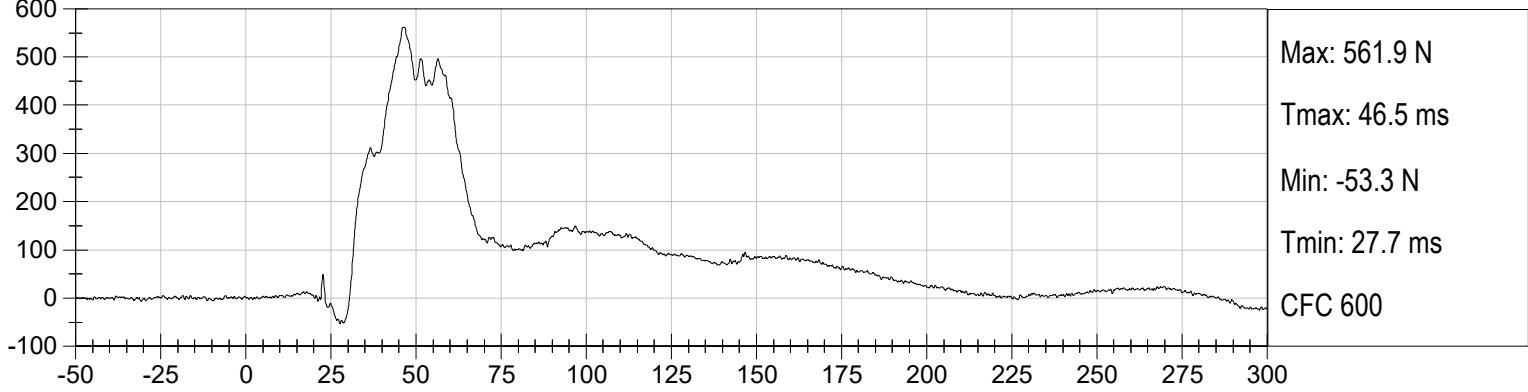


DRIVER HEAD Resultant (g) vs Time (ms)

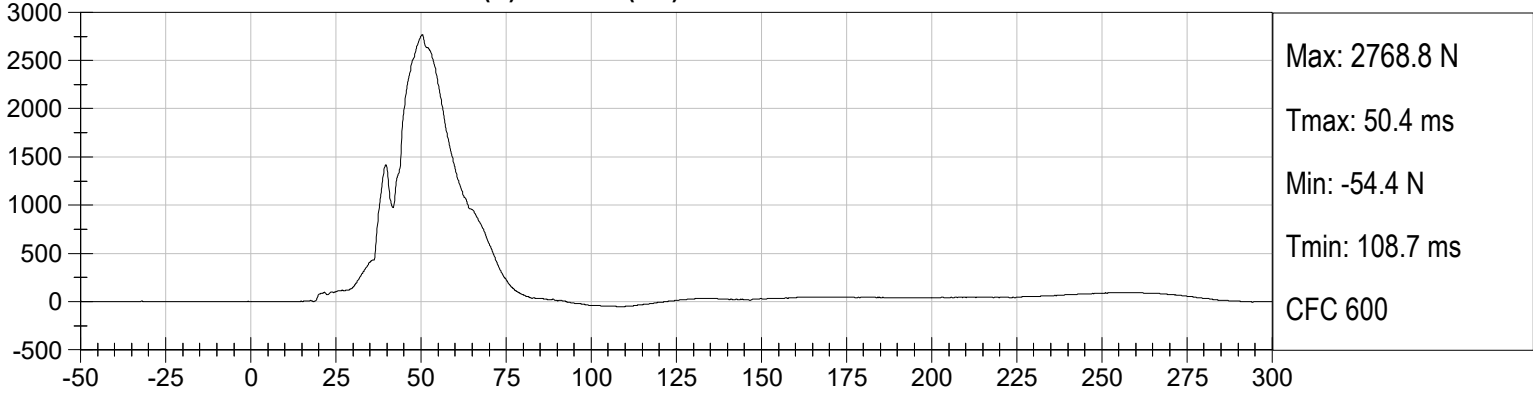




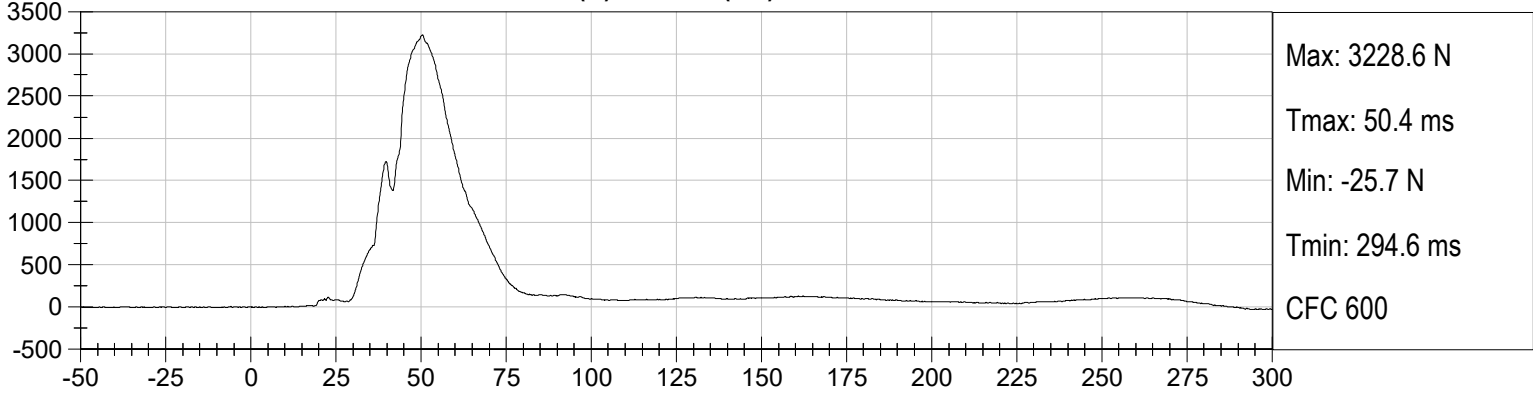
DRIVER LEFT ILIUM CREST FY (N) vs Time (ms)



DRIVER LEFT ACETABULUM FY (N) vs Time (ms)



DRIVER LEFT LATERAL PELVIC FORCE (N) vs Time (ms)



APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

CALIBRATION TEST RESULTS

PRE-TEST

SID-IIS 5TH PERCENTILE FEMALE - DRIVER ATD

SID-IIsD External Measurements
SN: 306

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

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

ATD Serial No: 306

Test ID: D202381

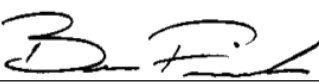
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	38	Pass
Peak Resultant Acceleration	G's	115 to 137	127	Pass
Peak Longitudinal Acceleration	G's	+/- 15	10.6	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	<15%	Yes	Pass
Overall Test Results				Pass



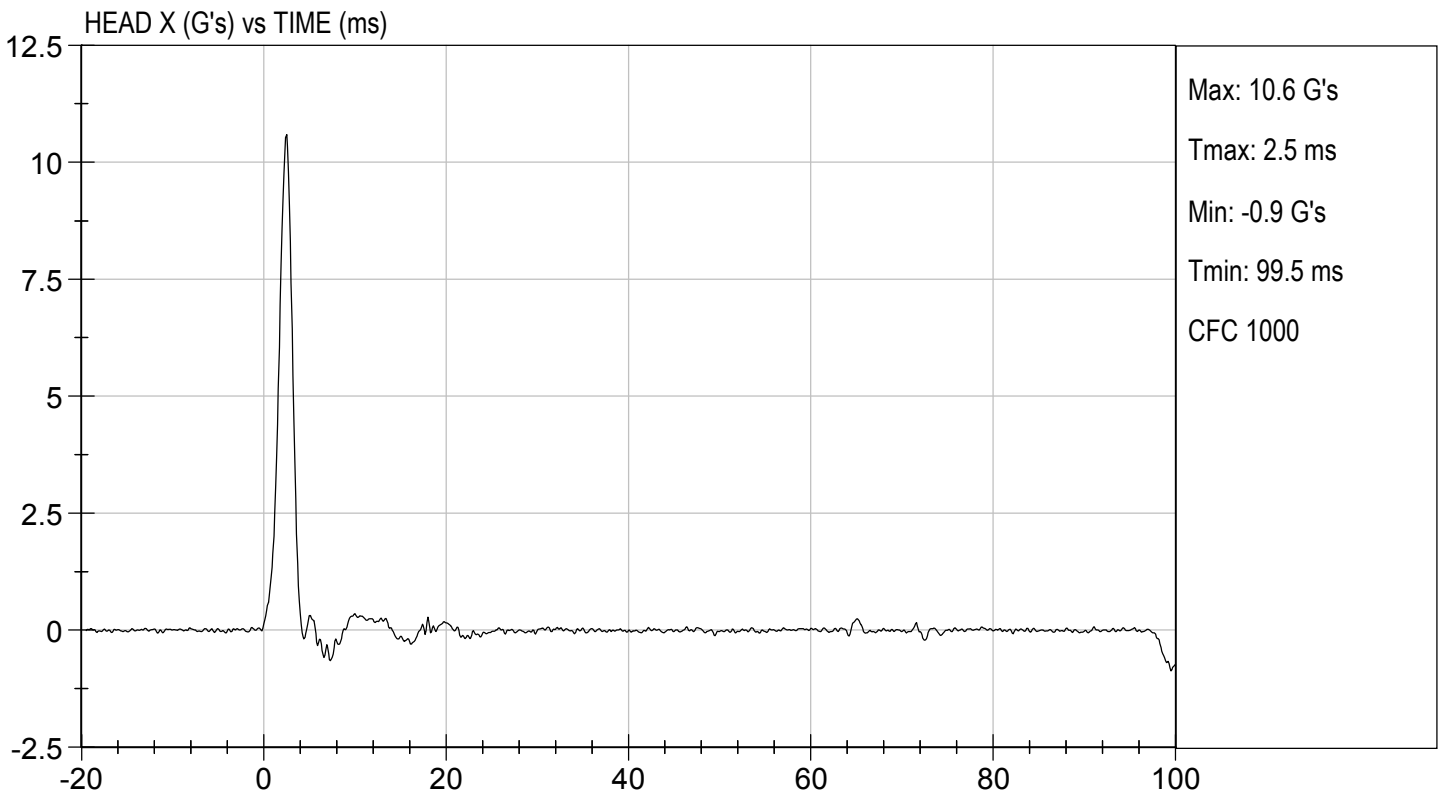
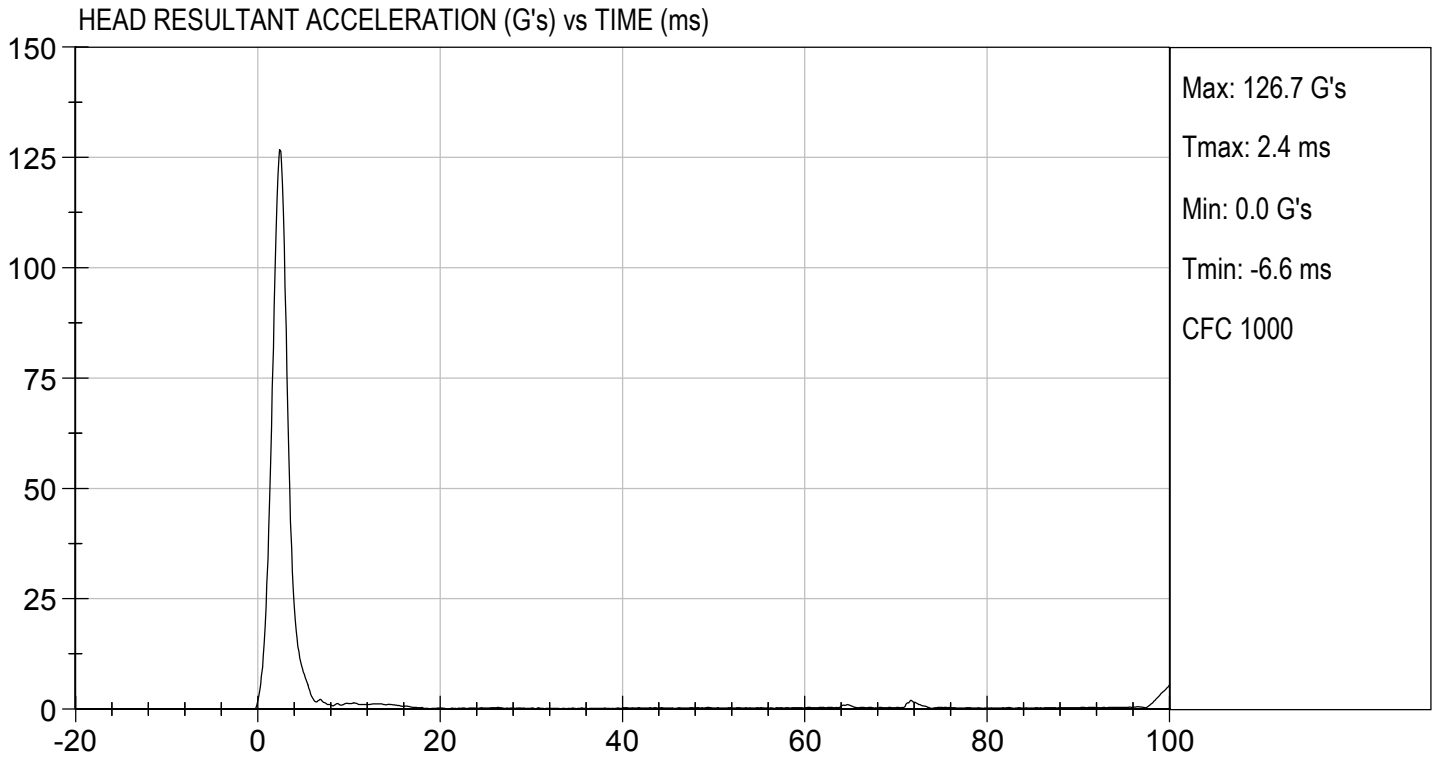
 Laboratory Technician

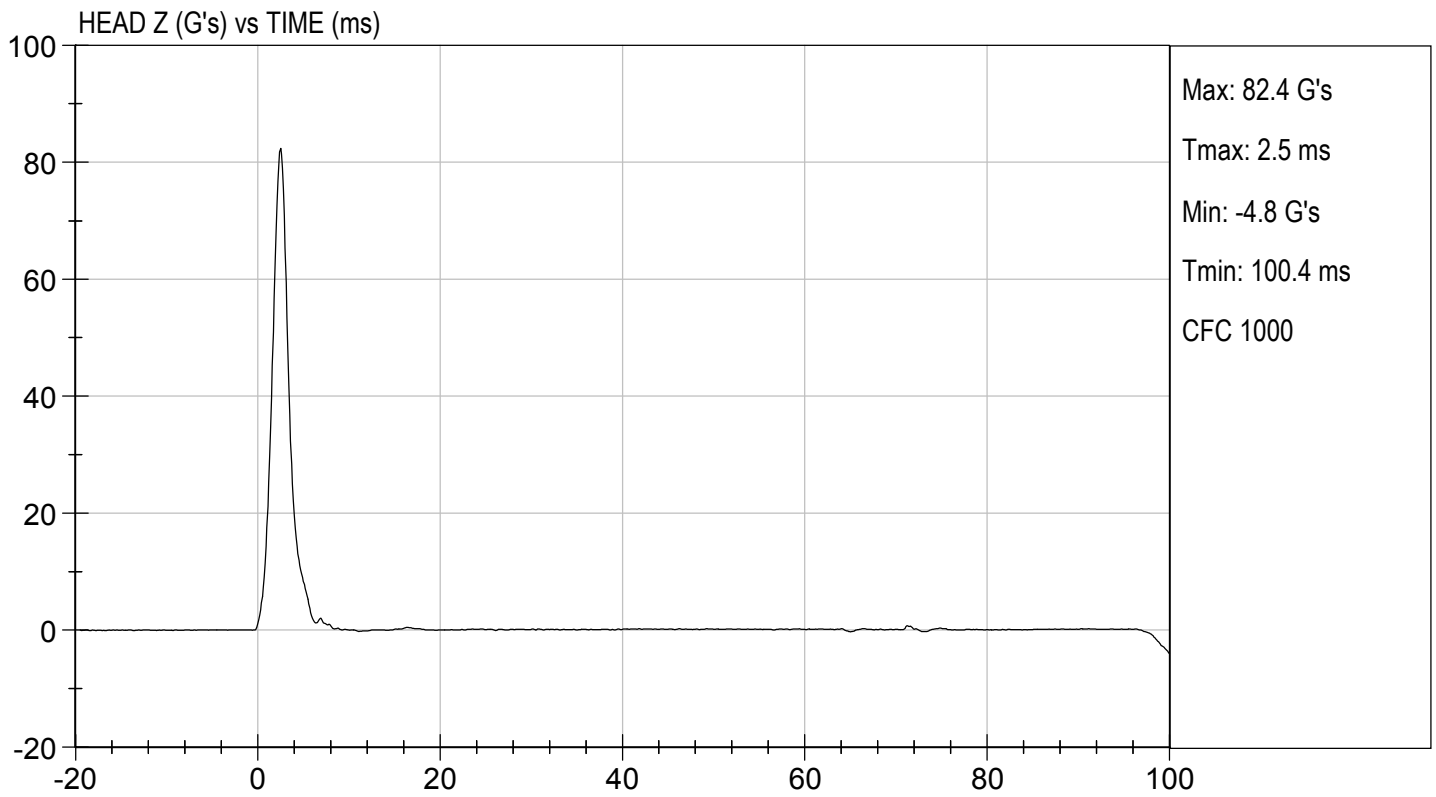
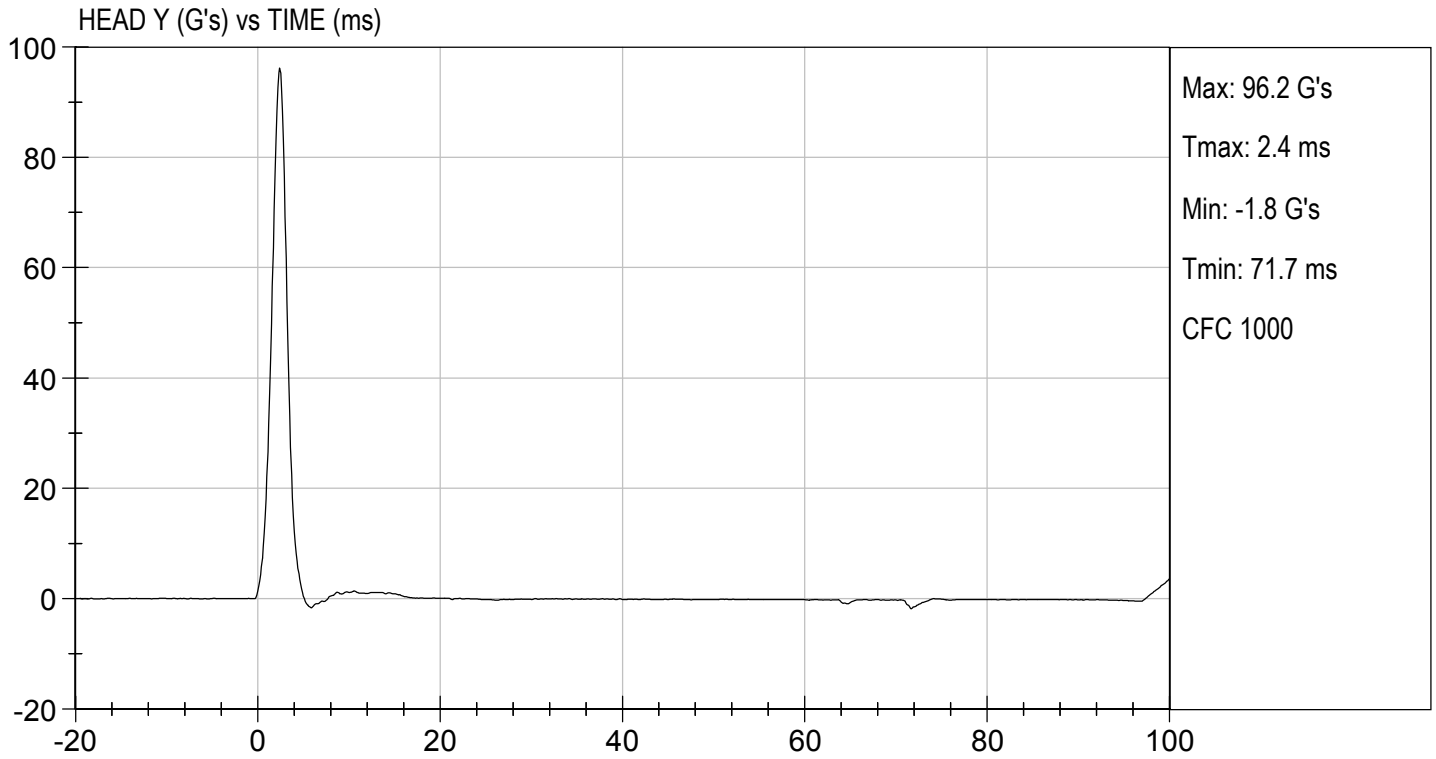
09/23/2020

 Test Date



 Approved By





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

ATD Serial No: 306

Test I.D.: D202382

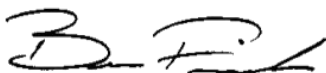
Tested Parameter	Units	Specification	Result	Pass/Fail	
Temperature	deg C	20.6 to 22.2	21.8	Pass	
Humidity	%	10 to 70	38	Pass	
Impact Velocity	m/s	5.51 to 5.63	5.58	Pass	
Pendulum Velocity	10 ms	m/s	2.20 to 2.80	2.50	Pass
	15 ms	m/s	3.30 to 4.10	3.55	Pass
	20 ms	m/s	4.40 to 5.40	4.80	Pass
	25 ms	m/s	5.40 to 6.10	5.66	Pass
	25-100 ms	m/s	5.50 to 6.20	5.66	Pass
Maximum D-Plane Rotation	deg	71 to 81	72	Pass	
Time of Maximum D-Plane Rotation	ms	50 to 70	61	Pass	
Maximum Occipital Condyle Moment	Nm	-44 to -36	-39	Pass	
Time of Moment Decay to 0 Nm	ms	102 to 126	110	Pass	
Overall Test Results				Pass	



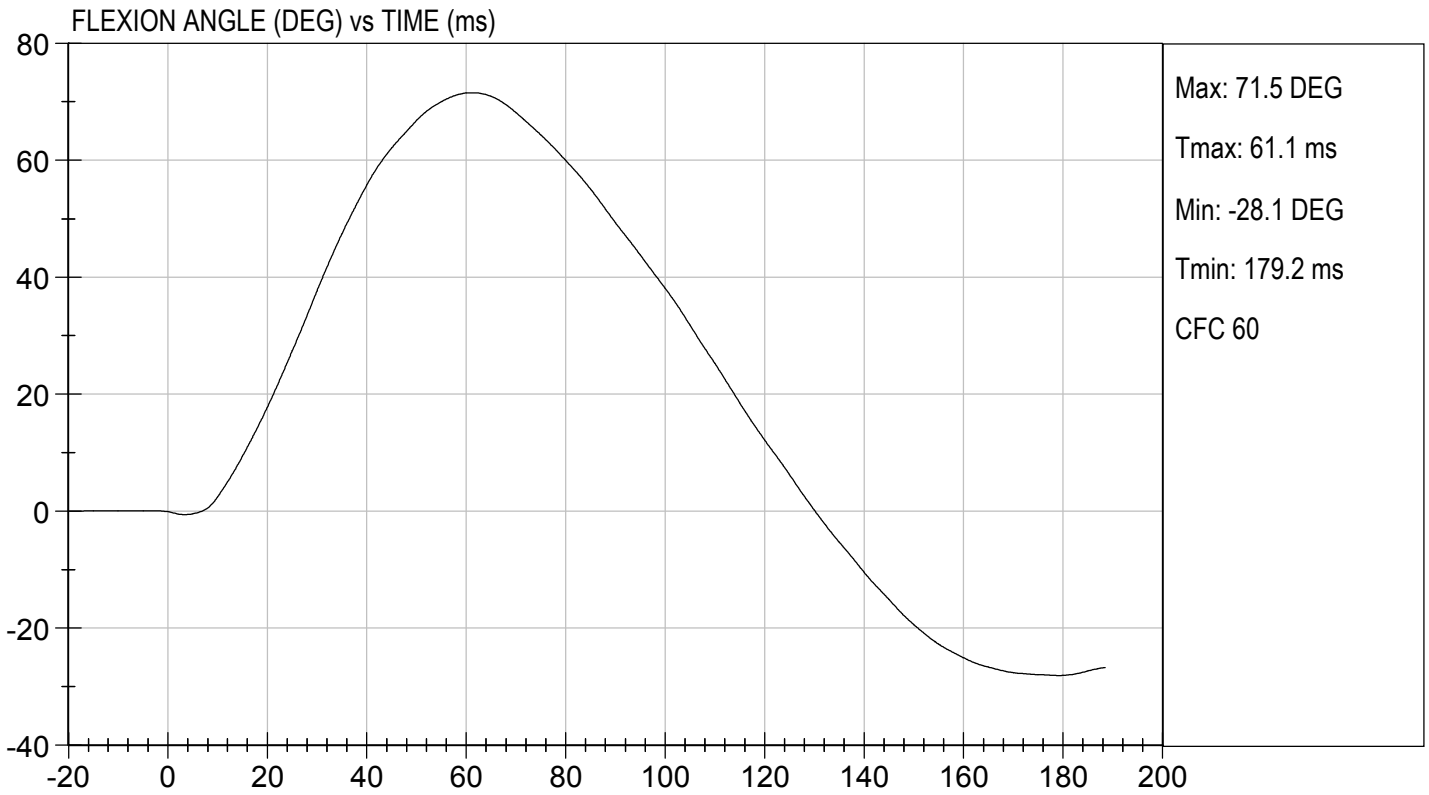
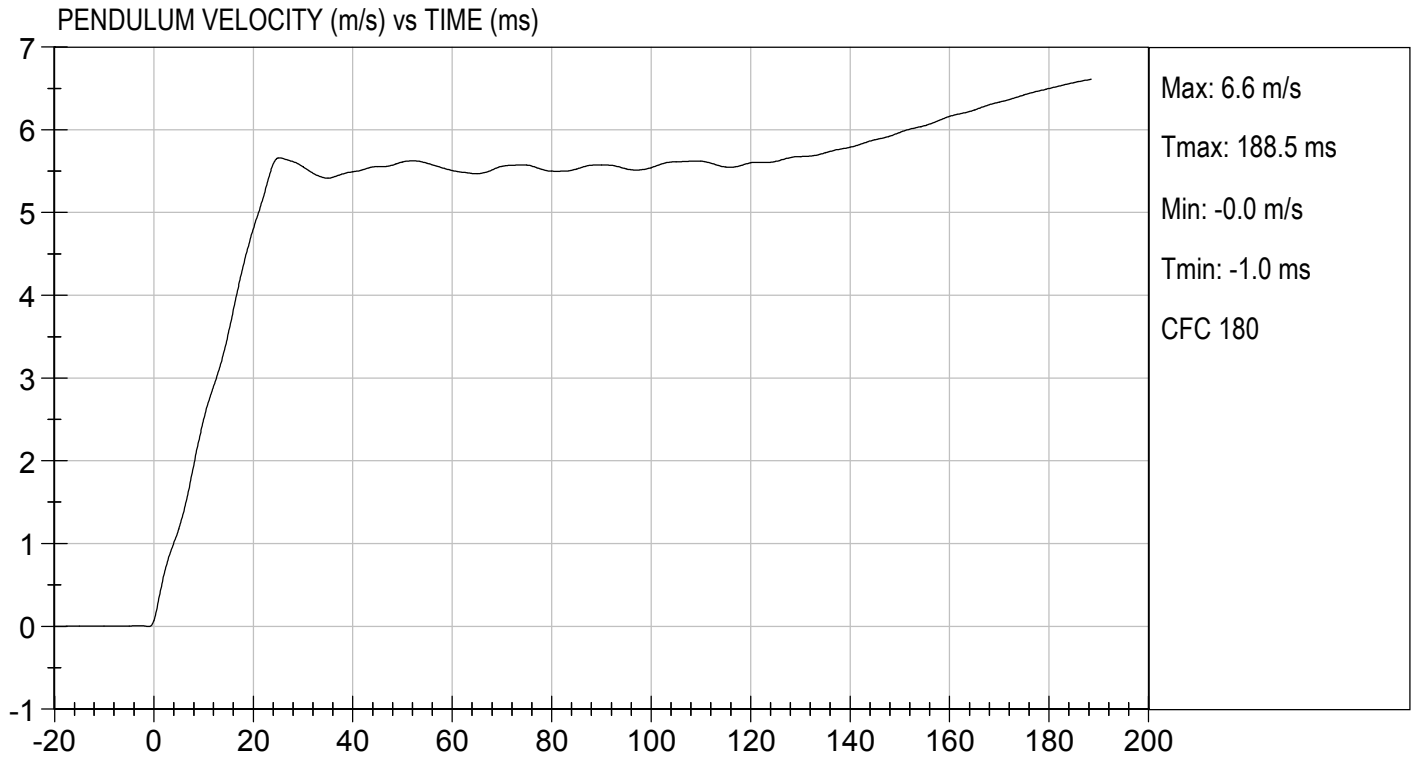
Laboratory Technician

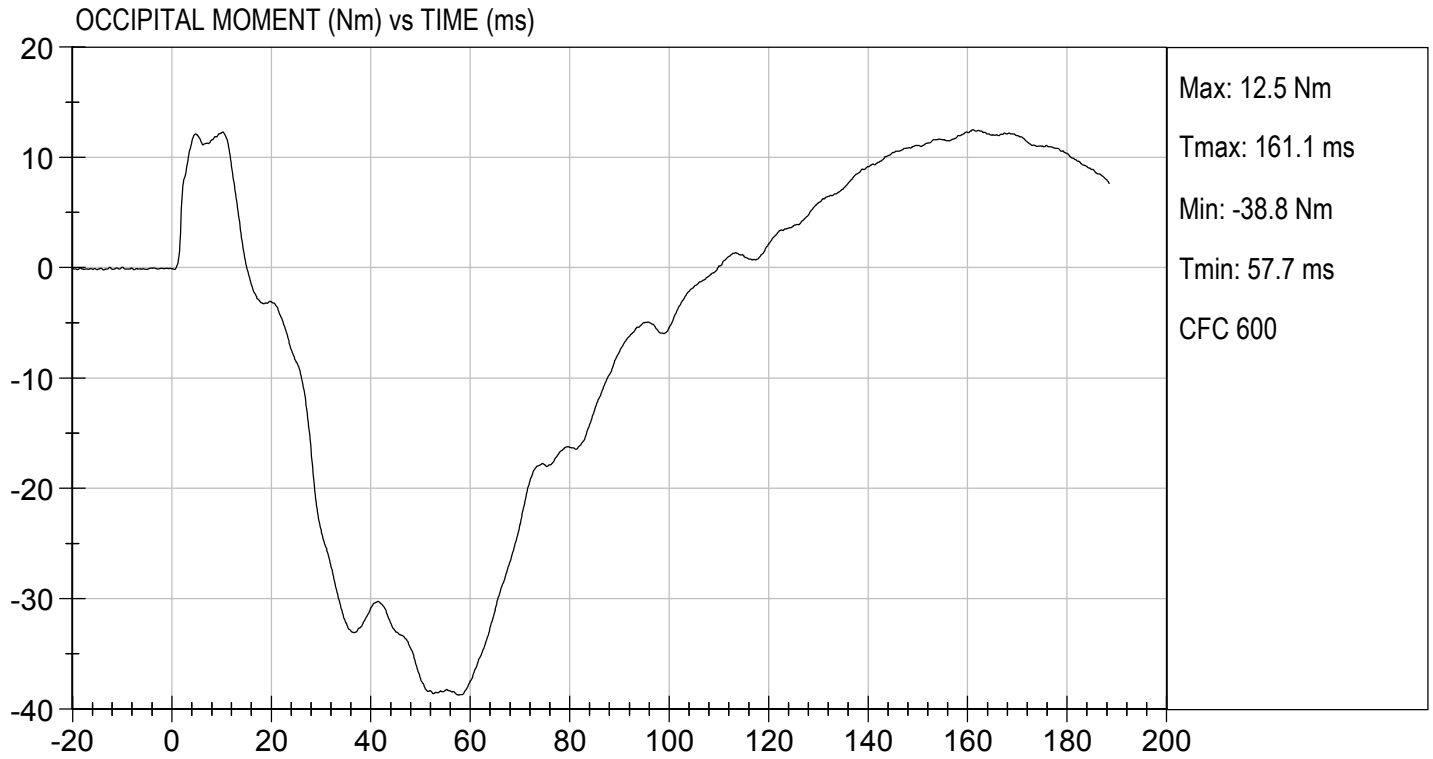
09/23/2020

Test Date



Approved By





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

ATD Serial No: 306

Test ID: D202383

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	44	Pass
Impact Velocity	m/s	4.20 to 4.40	4.30	Pass
Maximum Probe Acceleration	G's	13 to 18	14	Pass
Shoulder Displacement	mm	28 to 37	28	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	18	Pass
Overall Test Results				Pass

Gerald Guerrero

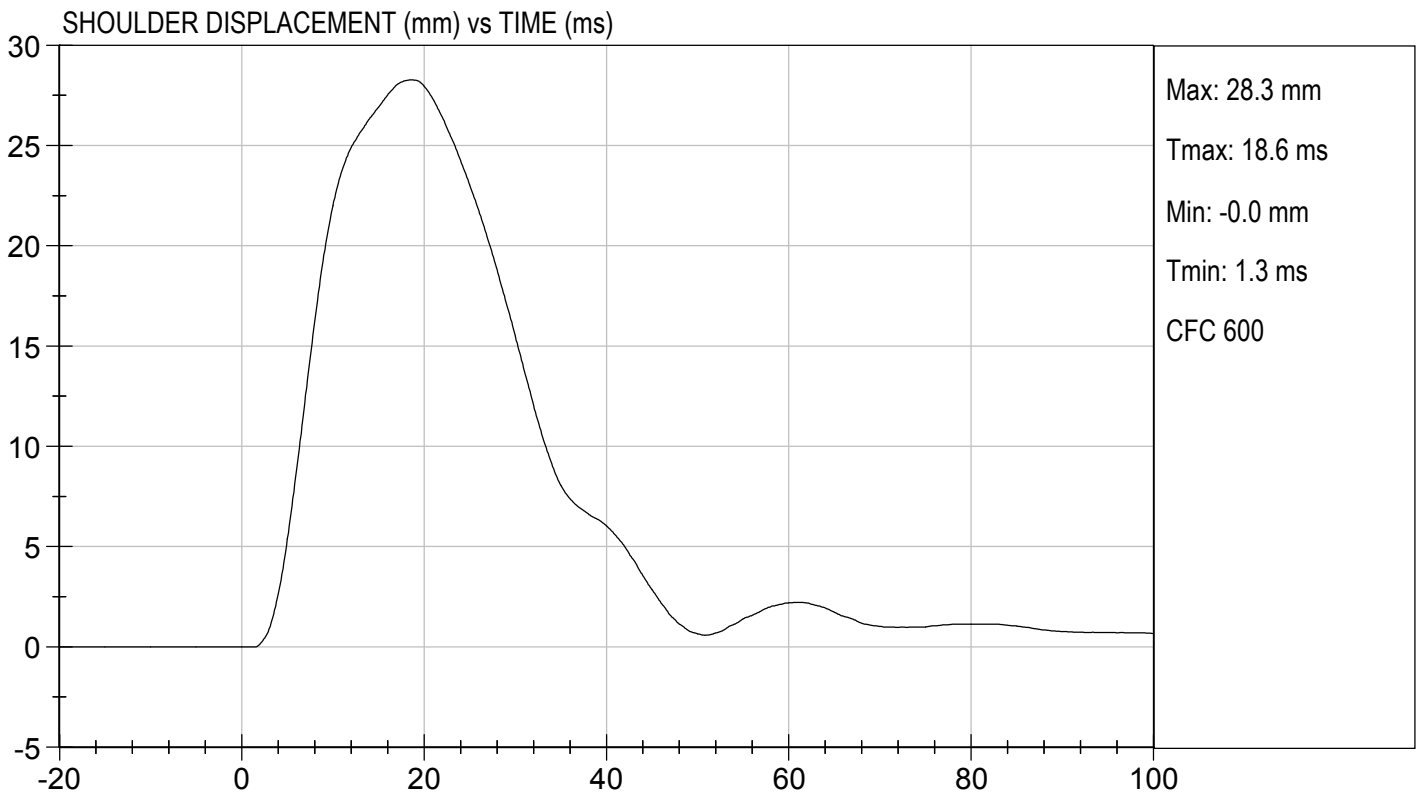
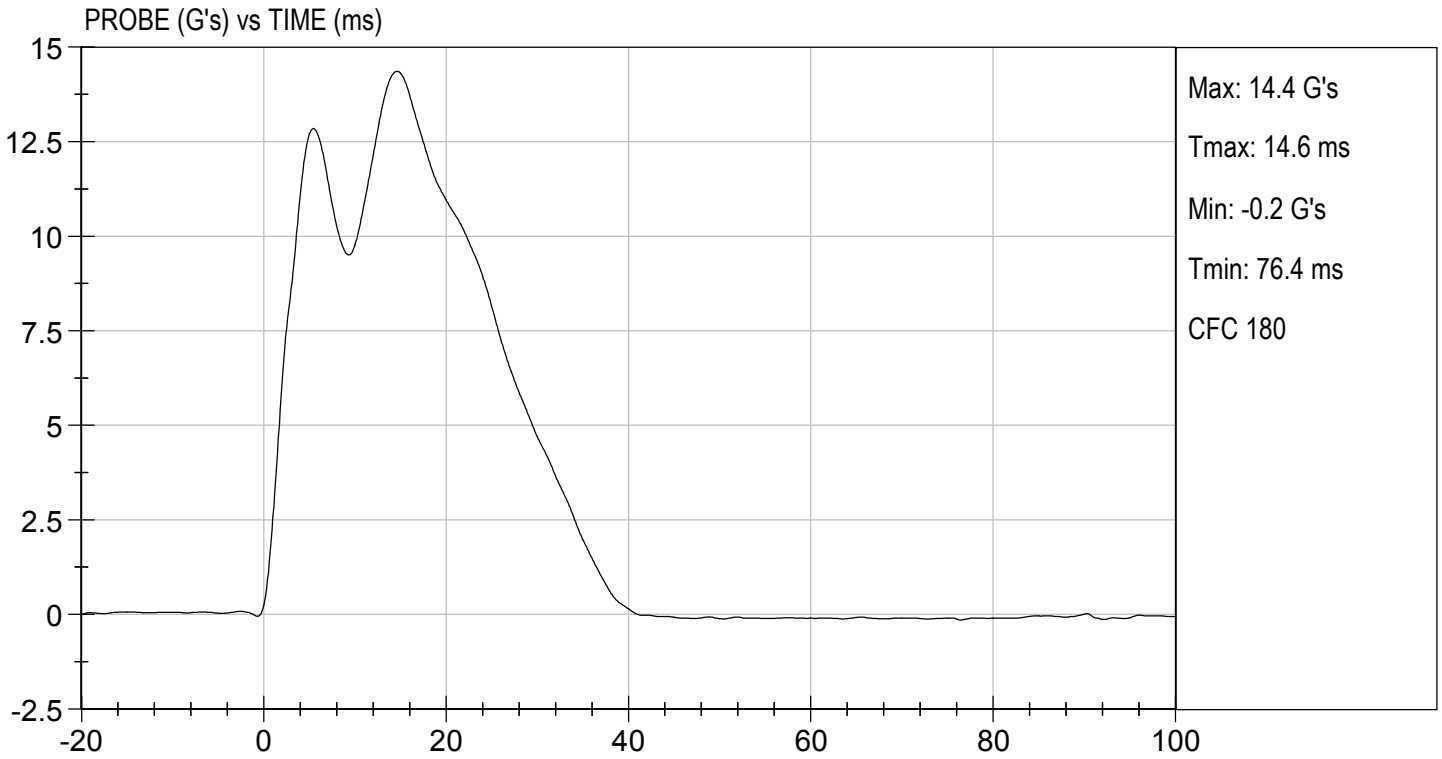
Laboratory Technician

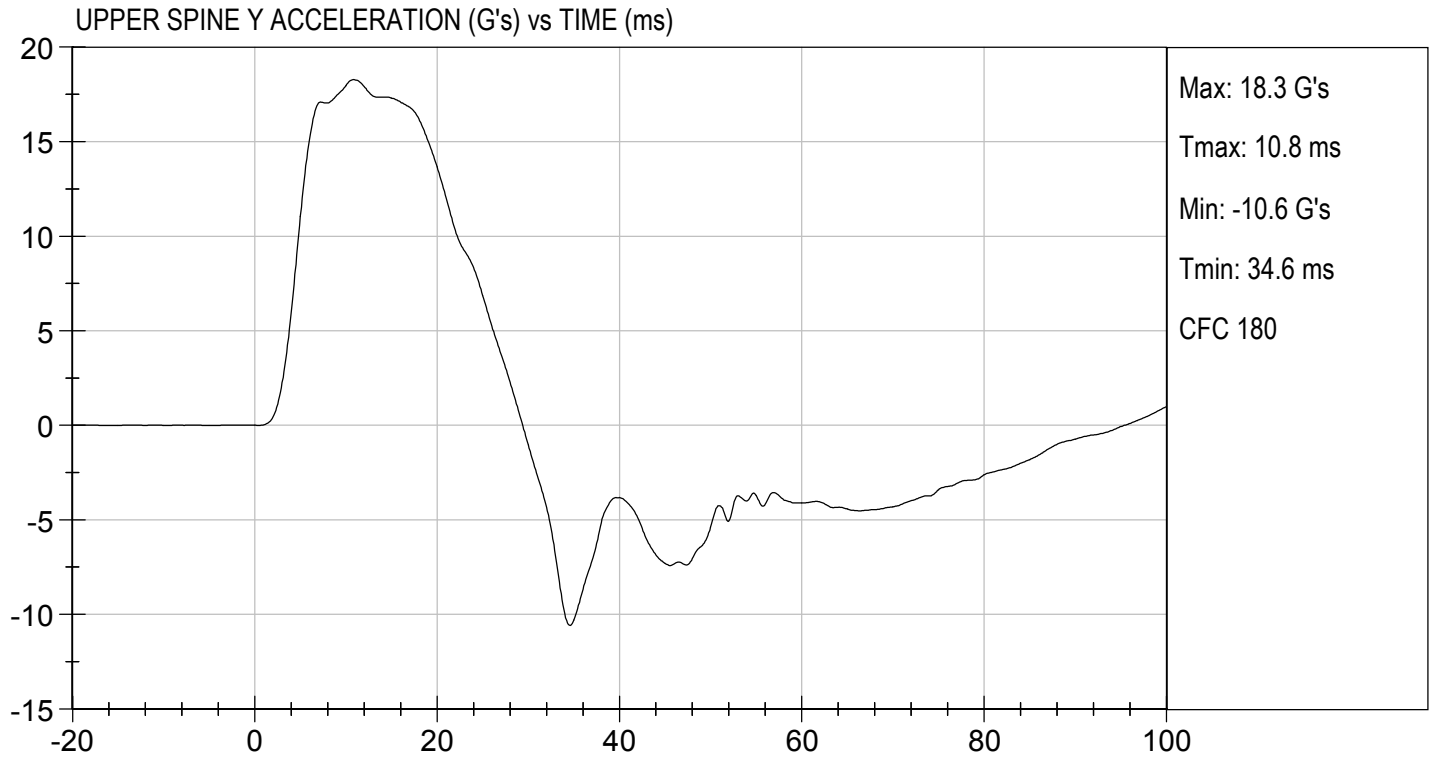
09/22/2020

Test Date

B. F. H.

Approved By





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

ATD Serial No: 306

Test I.D: D202384

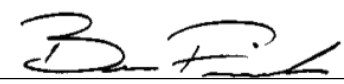
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Humidity	%	10 to 70	44	Pass
Impact Velocity	m/s	6.60 to 6.80	6.77	Pass
Maximum Probe Acceleration	G's	30 to 36	31	Pass
Shoulder Displacement	mm	31 to 40	33	Pass
Upper Rib Displacement	mm	25 to 32	27	Pass
Middle Rib Displacement	mm	30 to 36	30	Pass
Lower Rib Displacement	mm	32 to 38	32	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	40	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	30	Pass
Overall Test Results				Pass



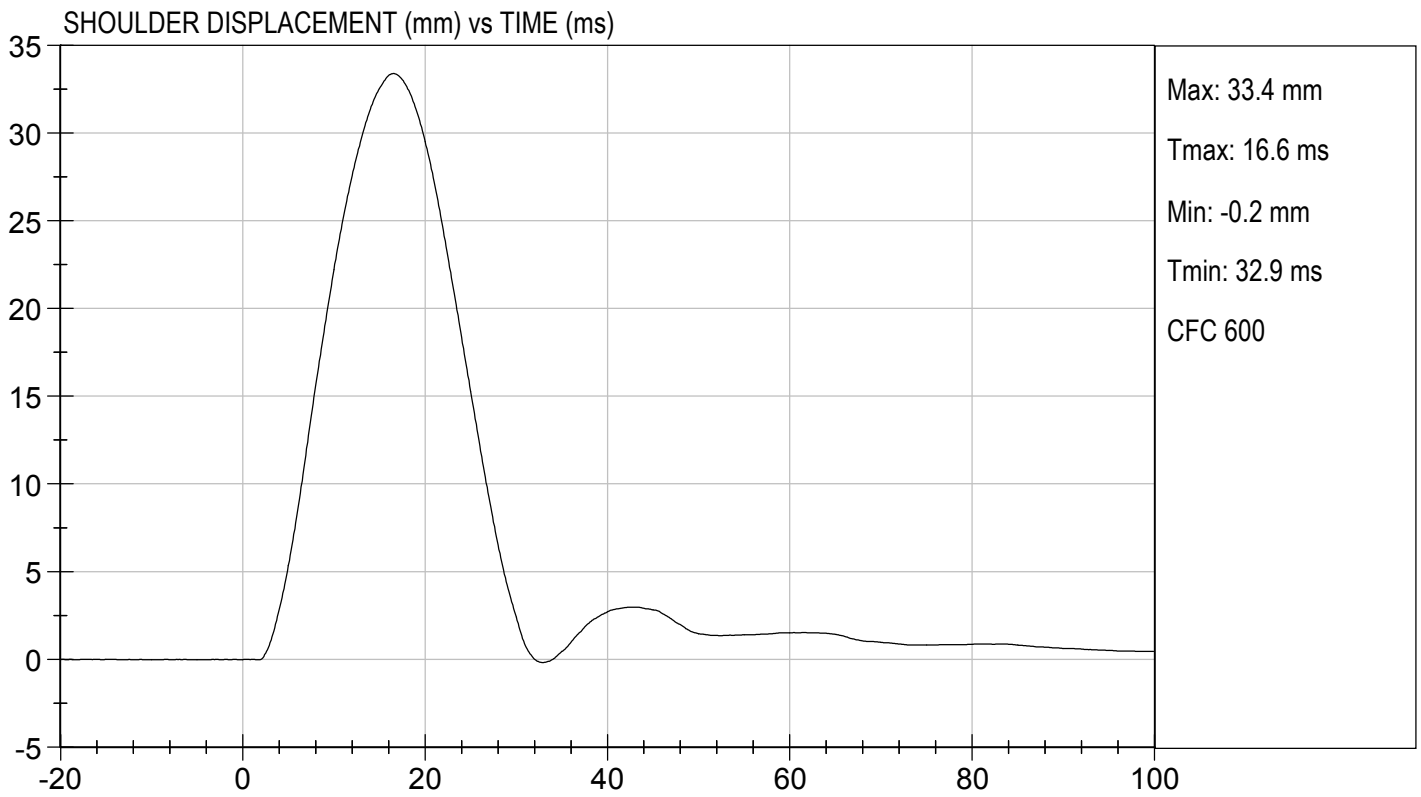
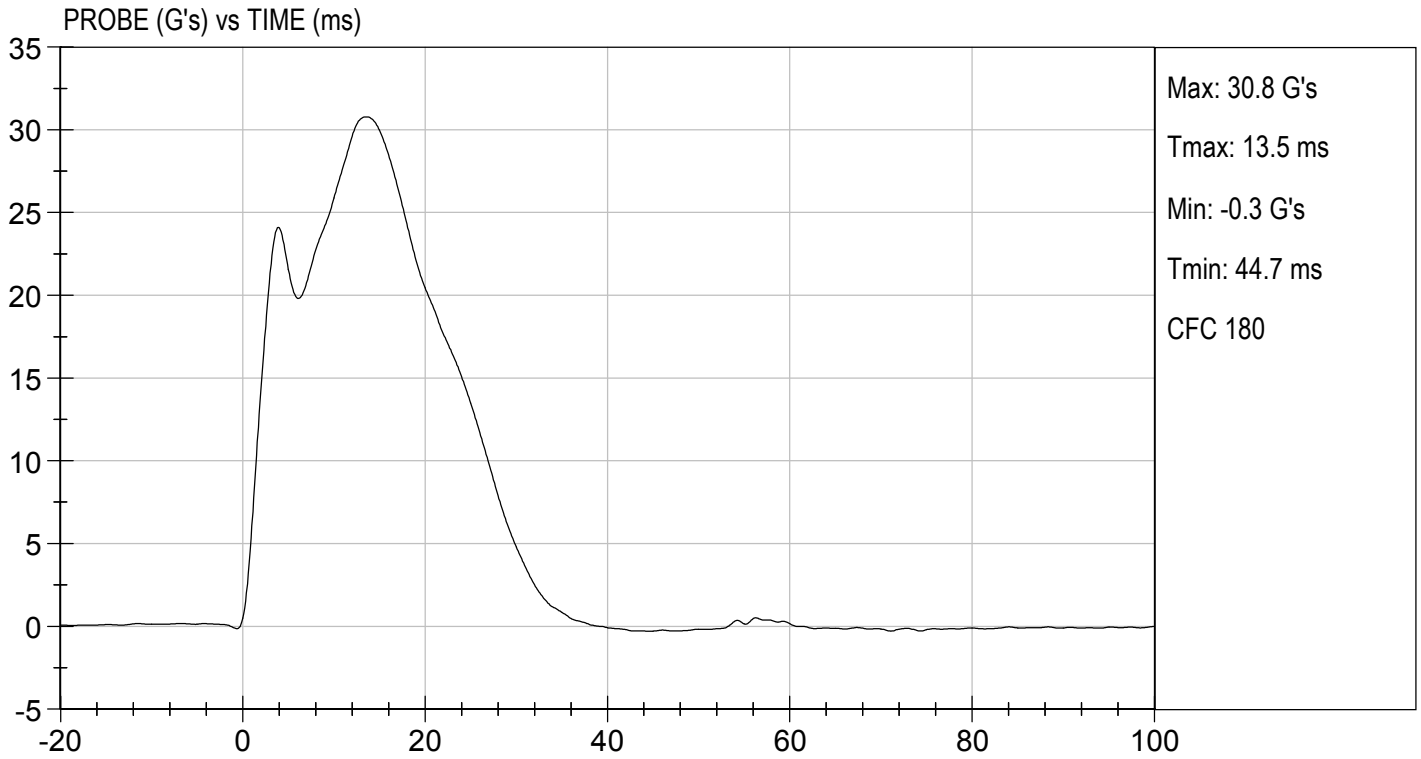
 Laboratory Technician

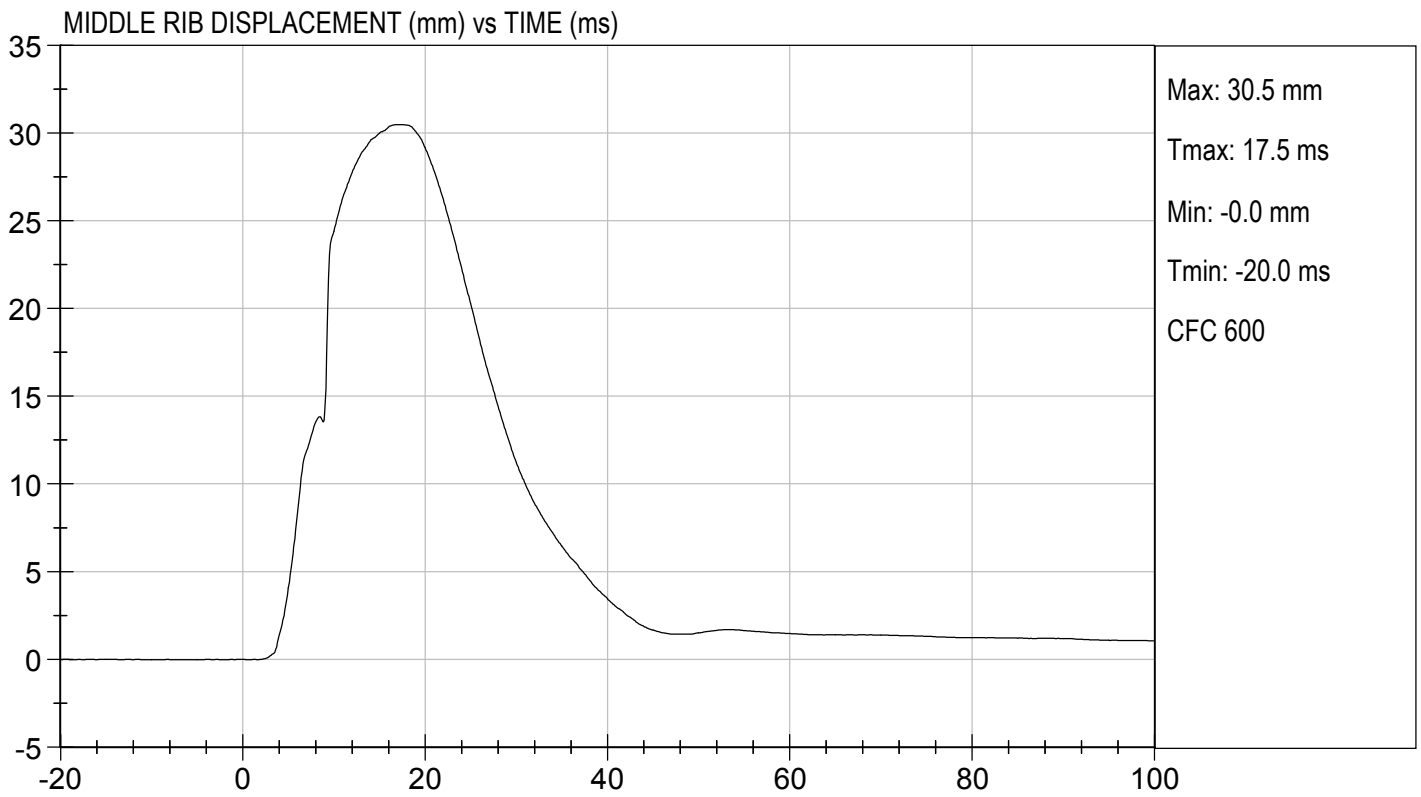
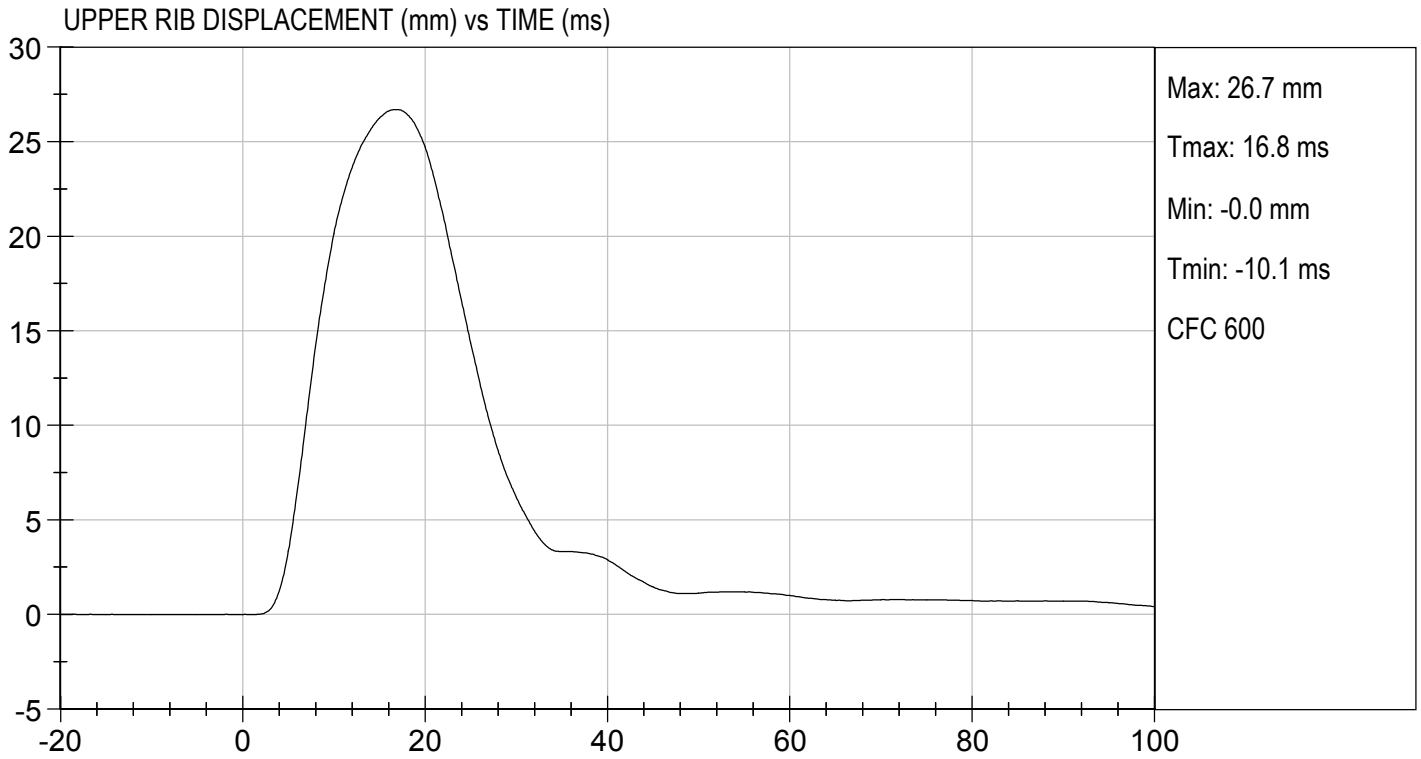
09/22/2020

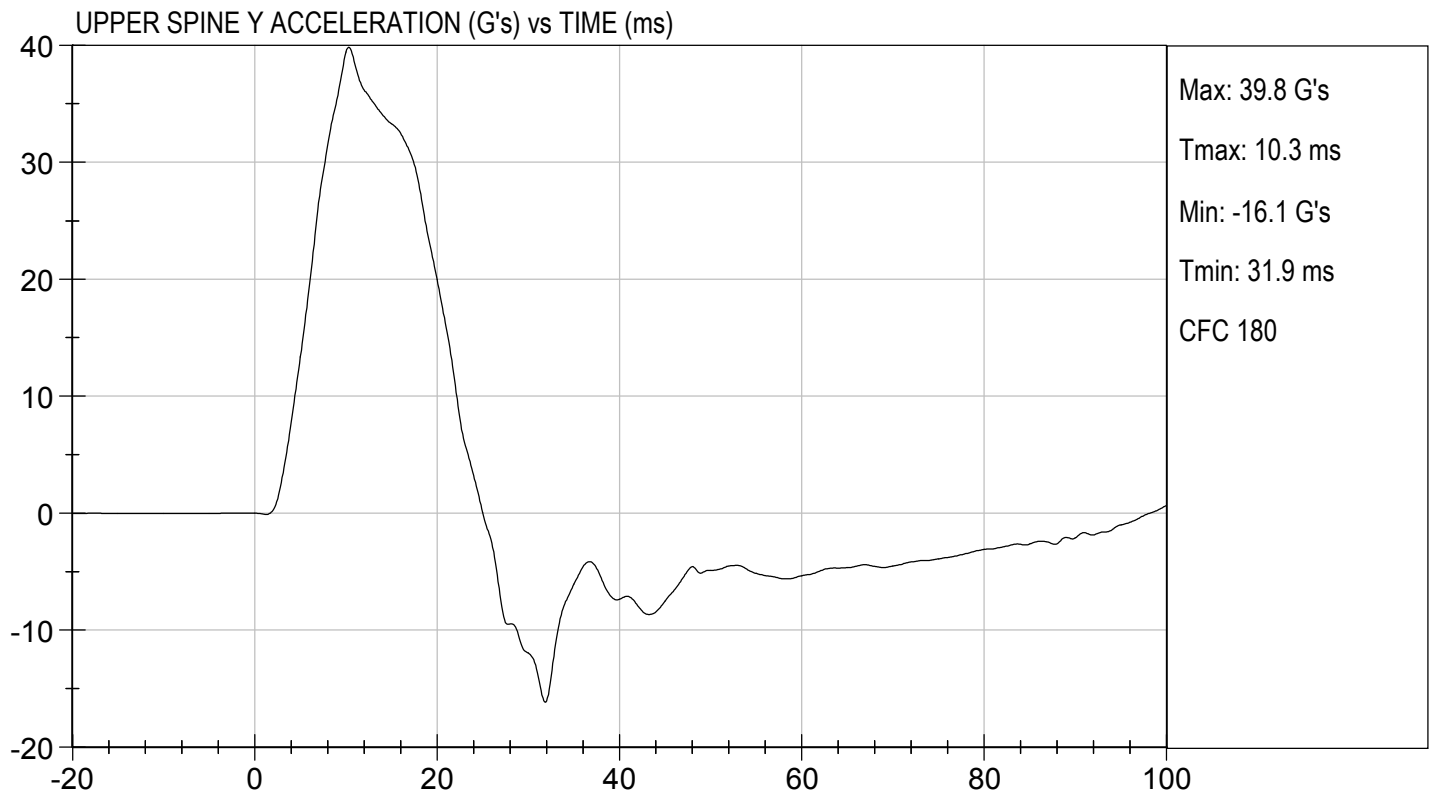
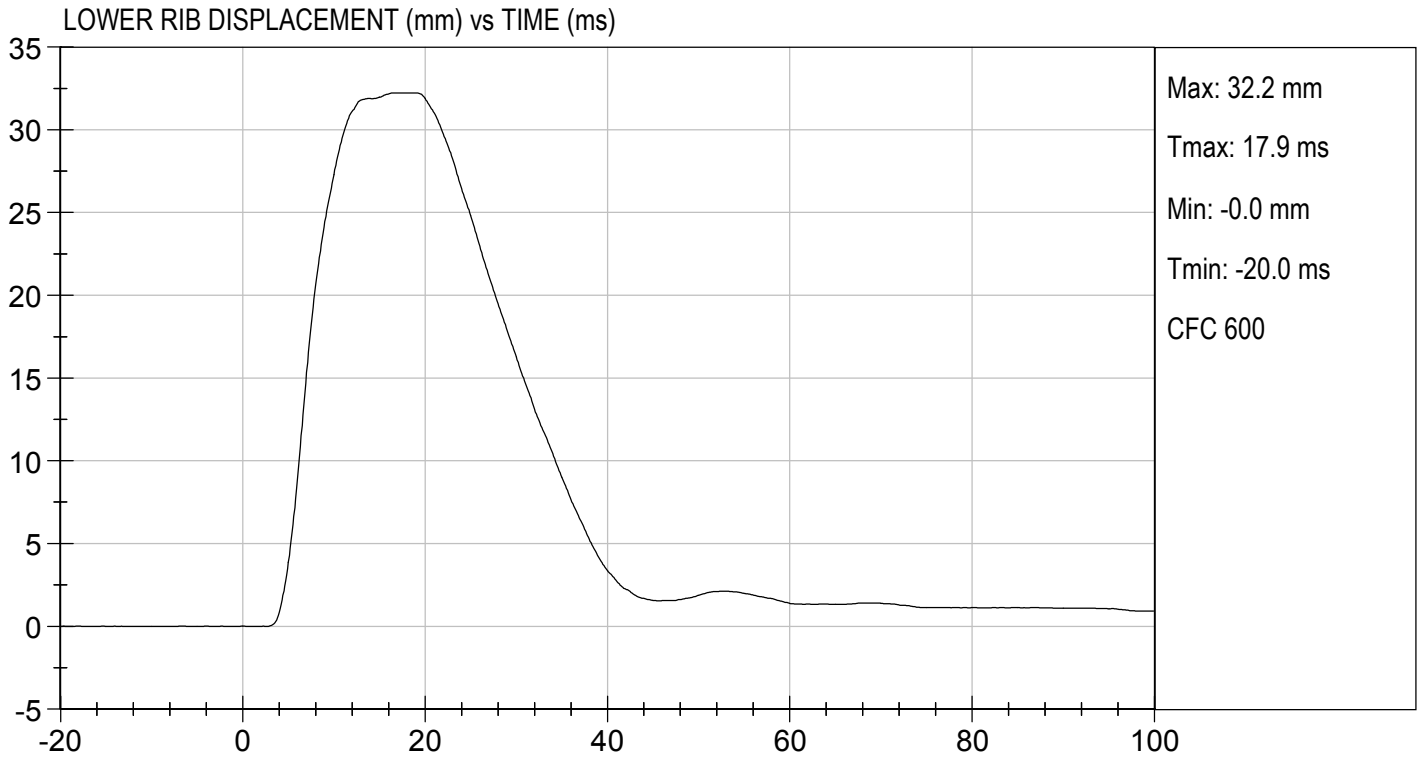
 Test Date

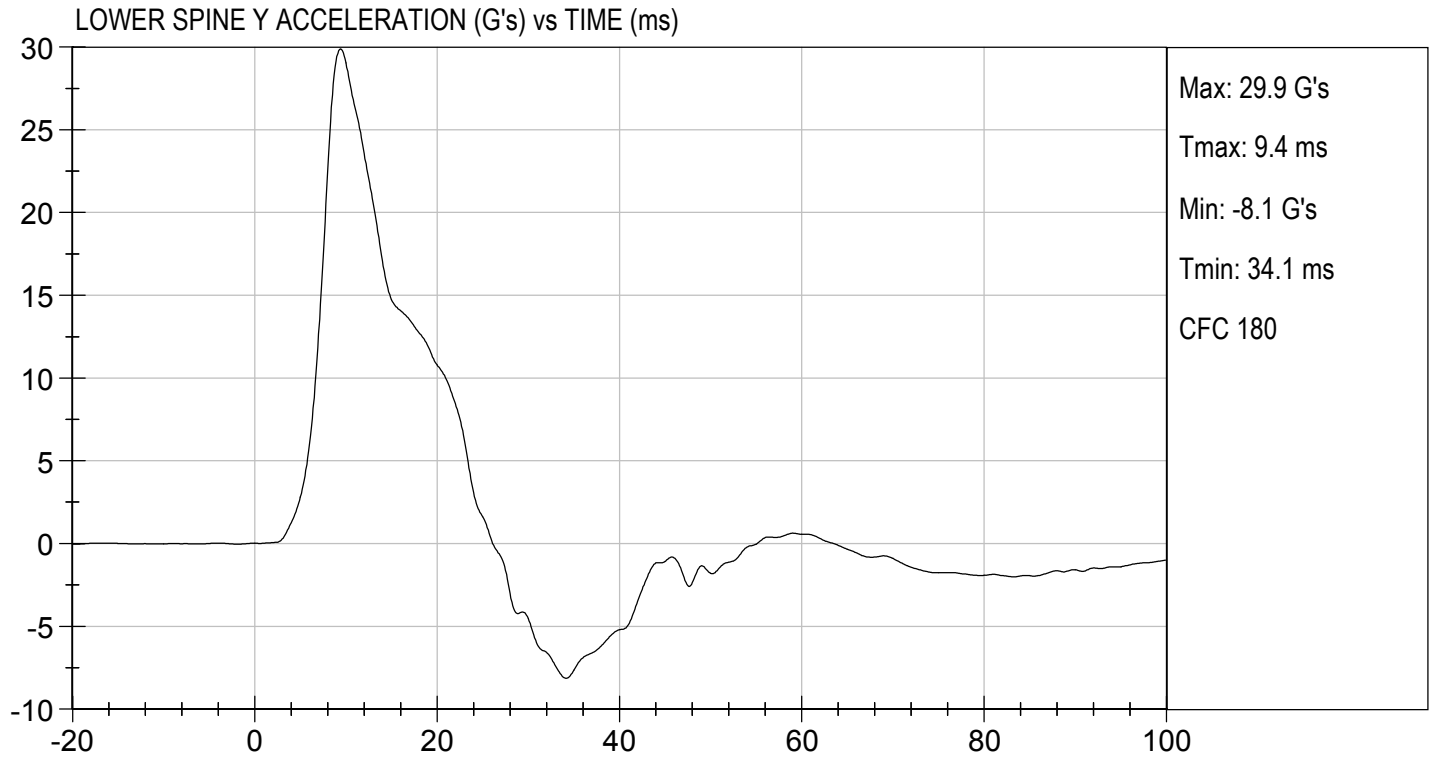


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MGA RESEARCH CORPORATION
THORAX (WITHOUT ARM) IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306

Test I.D: D202385

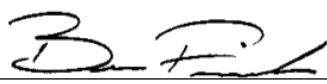
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Humidity	%	10 to 70	44	Pass
Impact Velocity	m/s	4.20 to 4.40	4.27	Pass
Maximum Probe Acceleration	G's	14 to 18	15	Pass
Upper Rib Displacement	mm	32 to 40	36	Pass
Middle Rib Displacement	mm	39 to 45	42	Pass
Lower Rib Displacement	mm	35 to 43	40	Pass
Upper Spine (T1) Y Acceleration	G's	13 to 17	16	Pass
Lower Spine (T12) Y Acceleration	G's	7 to 11	9	Pass
			Overall Test Results	Pass



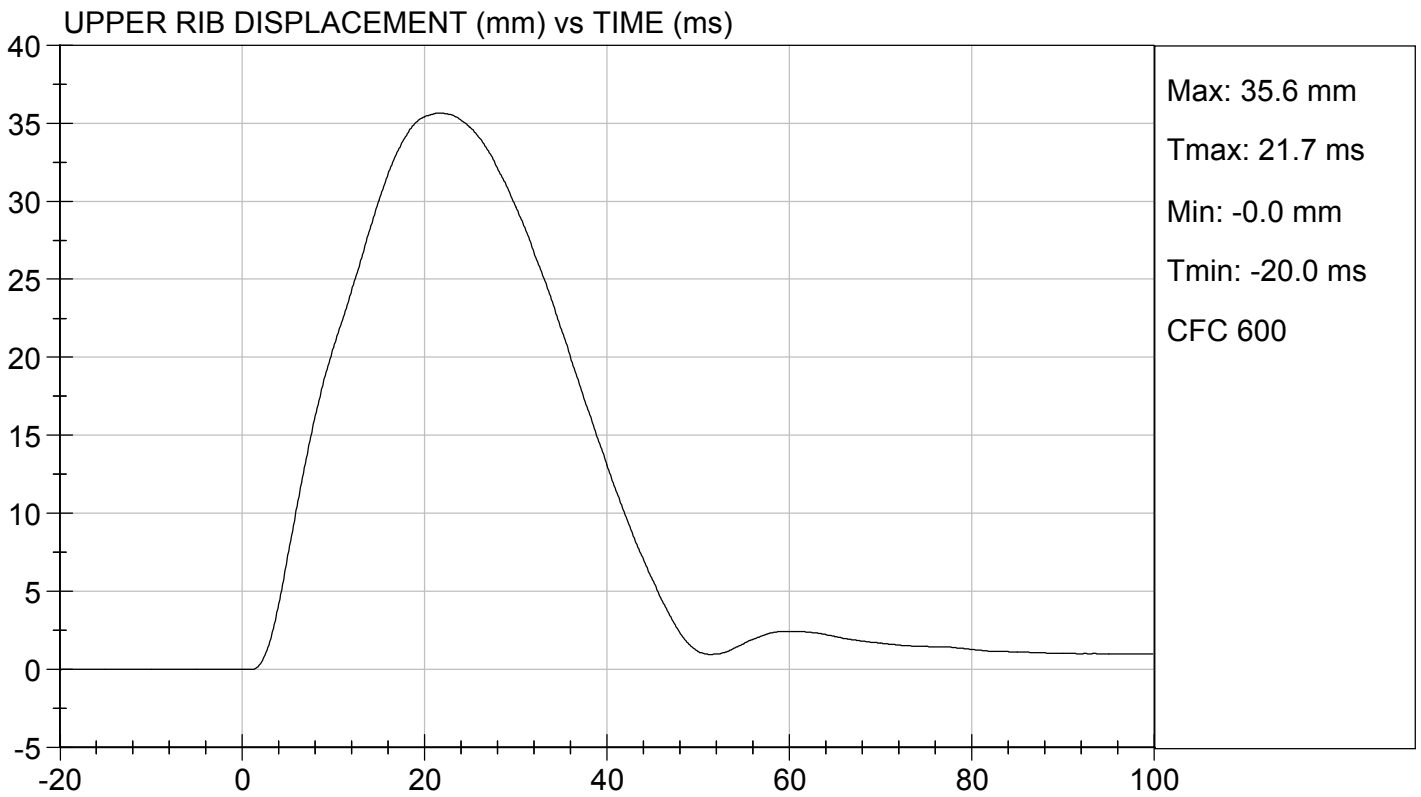
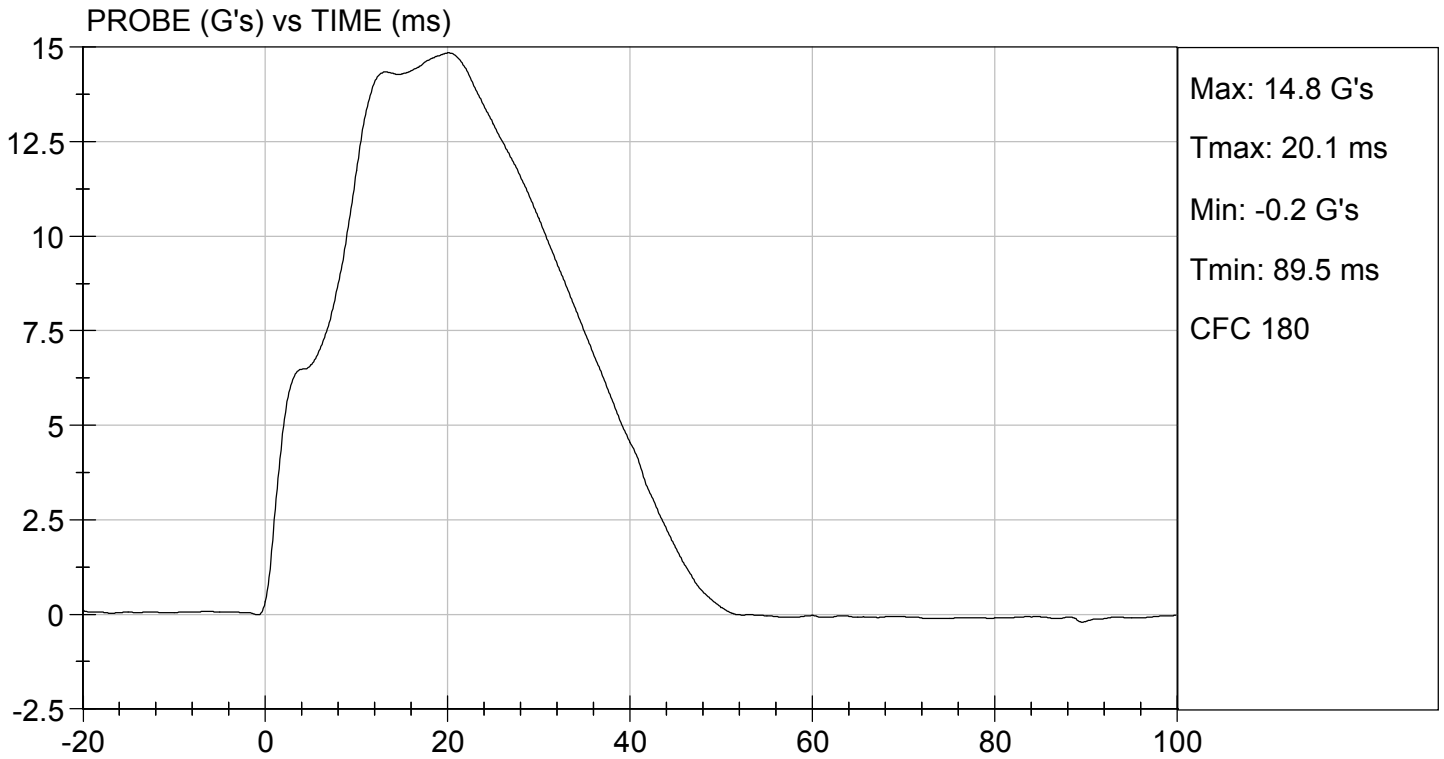
 Laboratory Technician

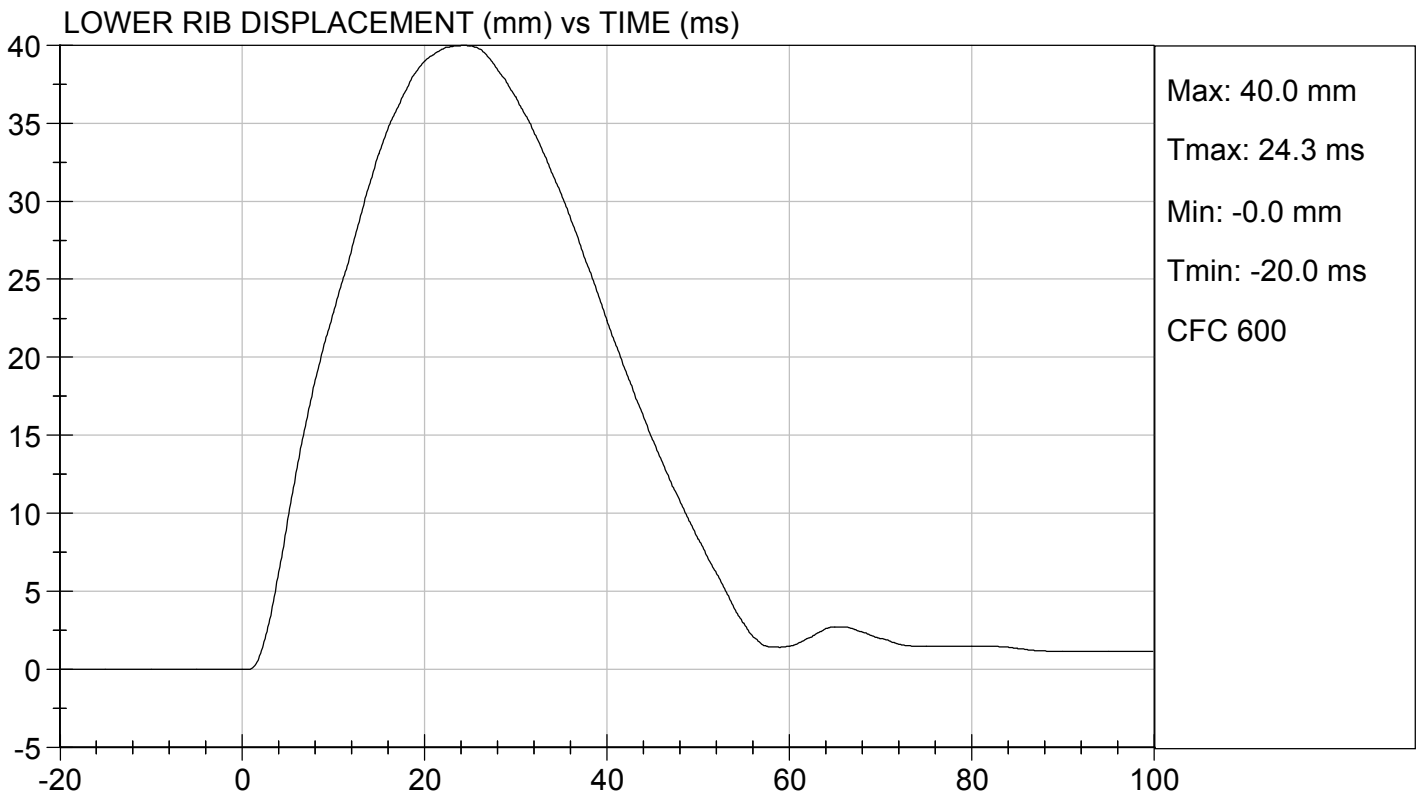
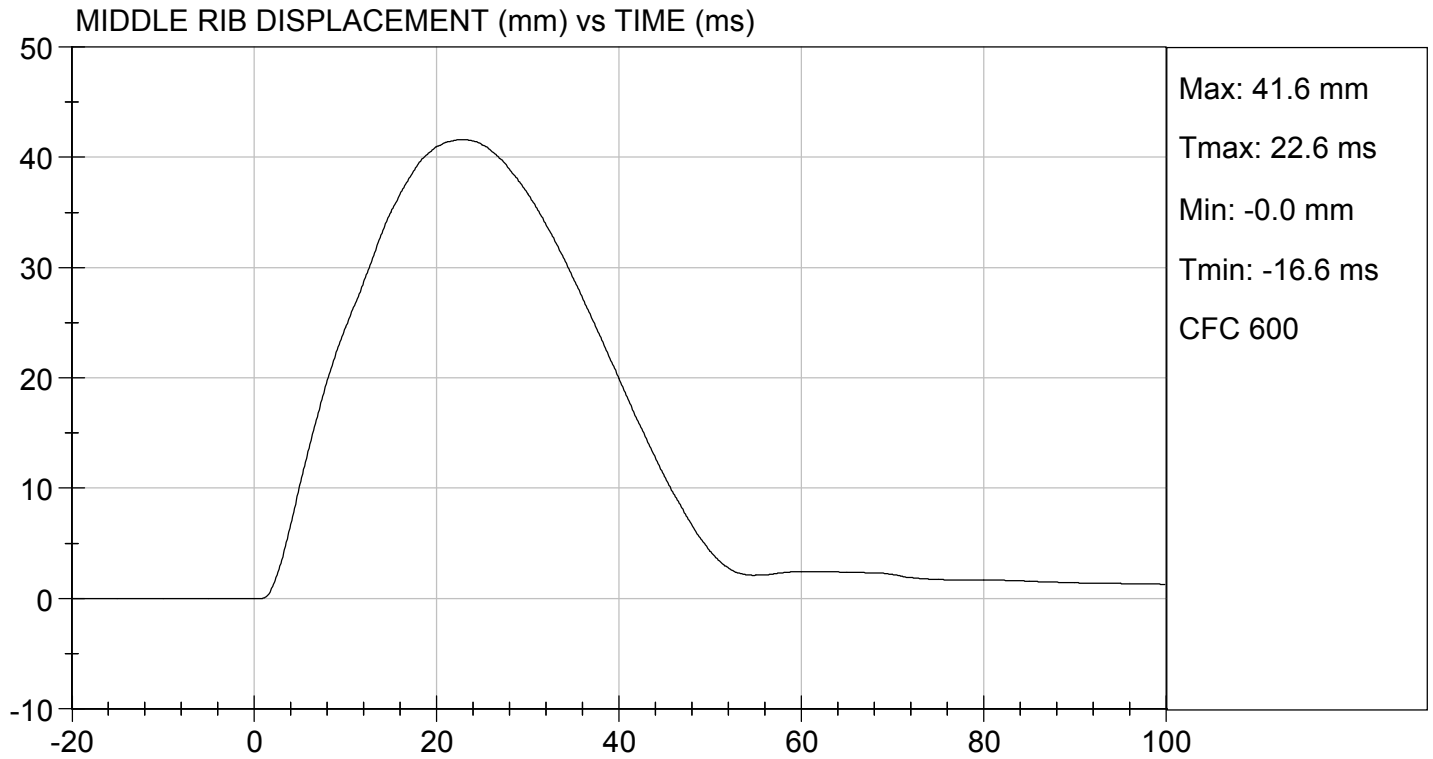
09/22/2020

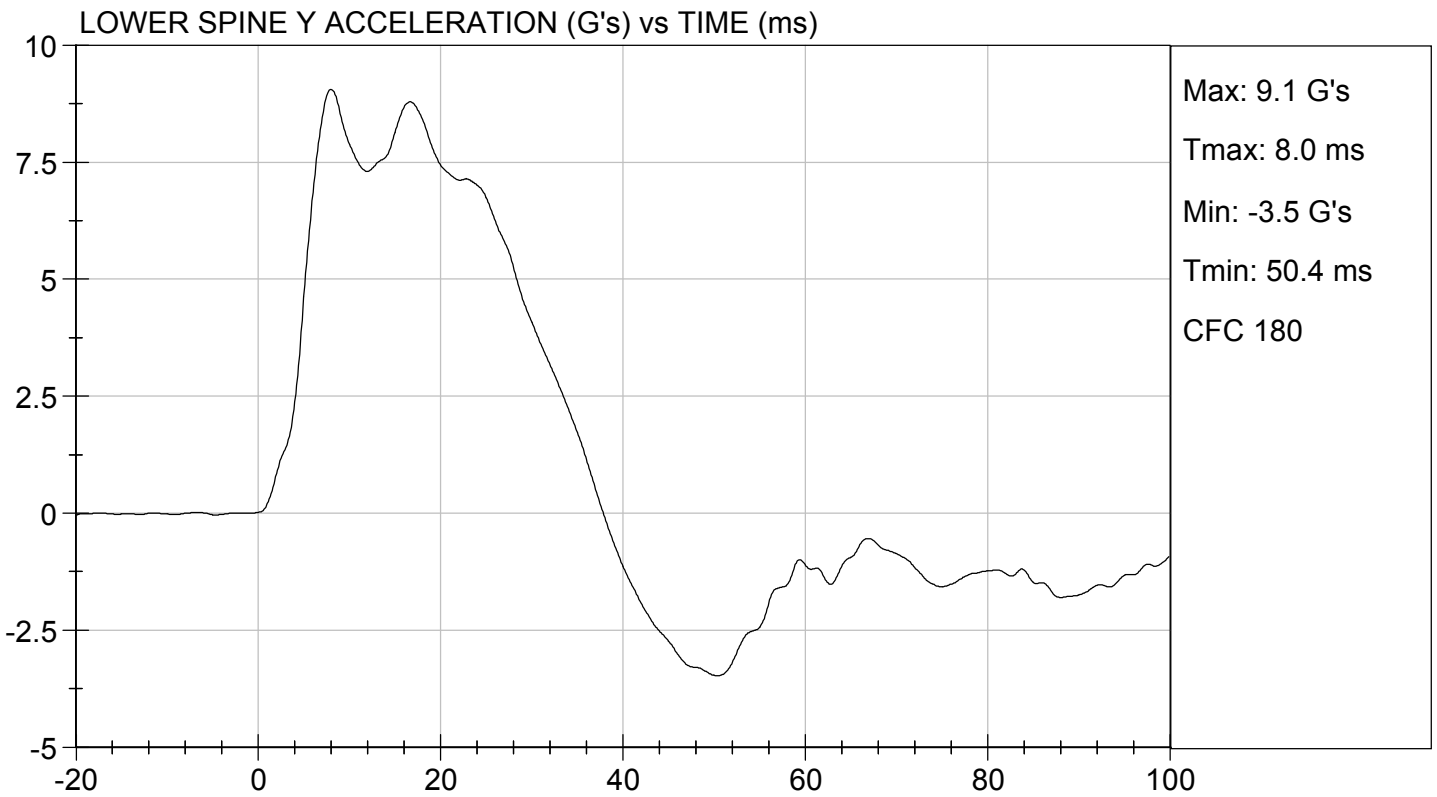
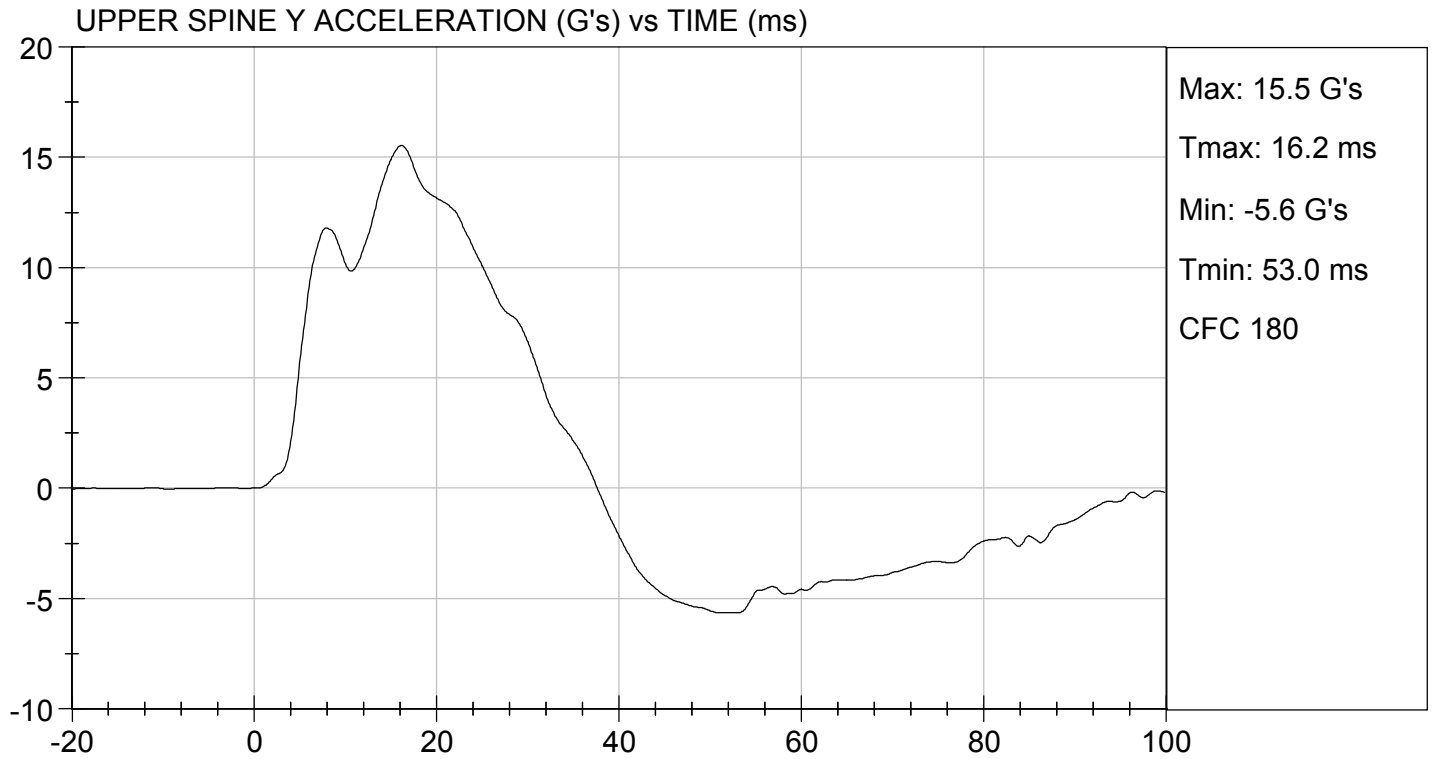
 Test Date



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

ATD Serial No: 306

Test I.D: D202386

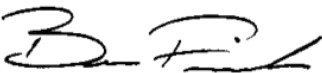
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Humidity	%	10 to 70	38	Pass
Impact Velocity	m/s	4.20 to 4.40	4.30	Pass
Maximum Probe Acceleration	G's	12 to 16	14	Pass
Upper Abdomen Rib Displacement	mm	36 to 47	43	Pass
Lower Abdomen Rib Displacement	mm	33 to 44	36	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	11	Pass
Overall Test Results				Pass



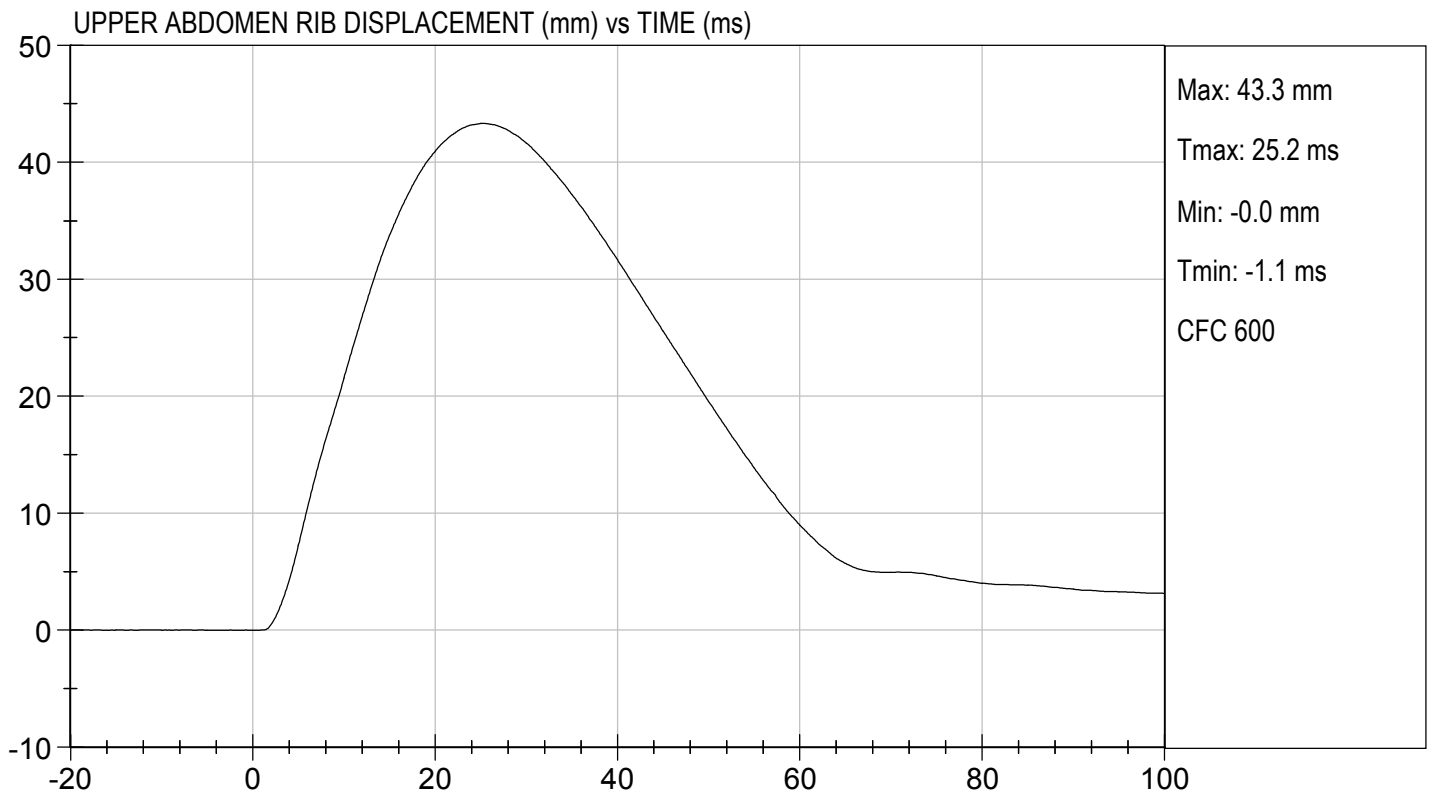
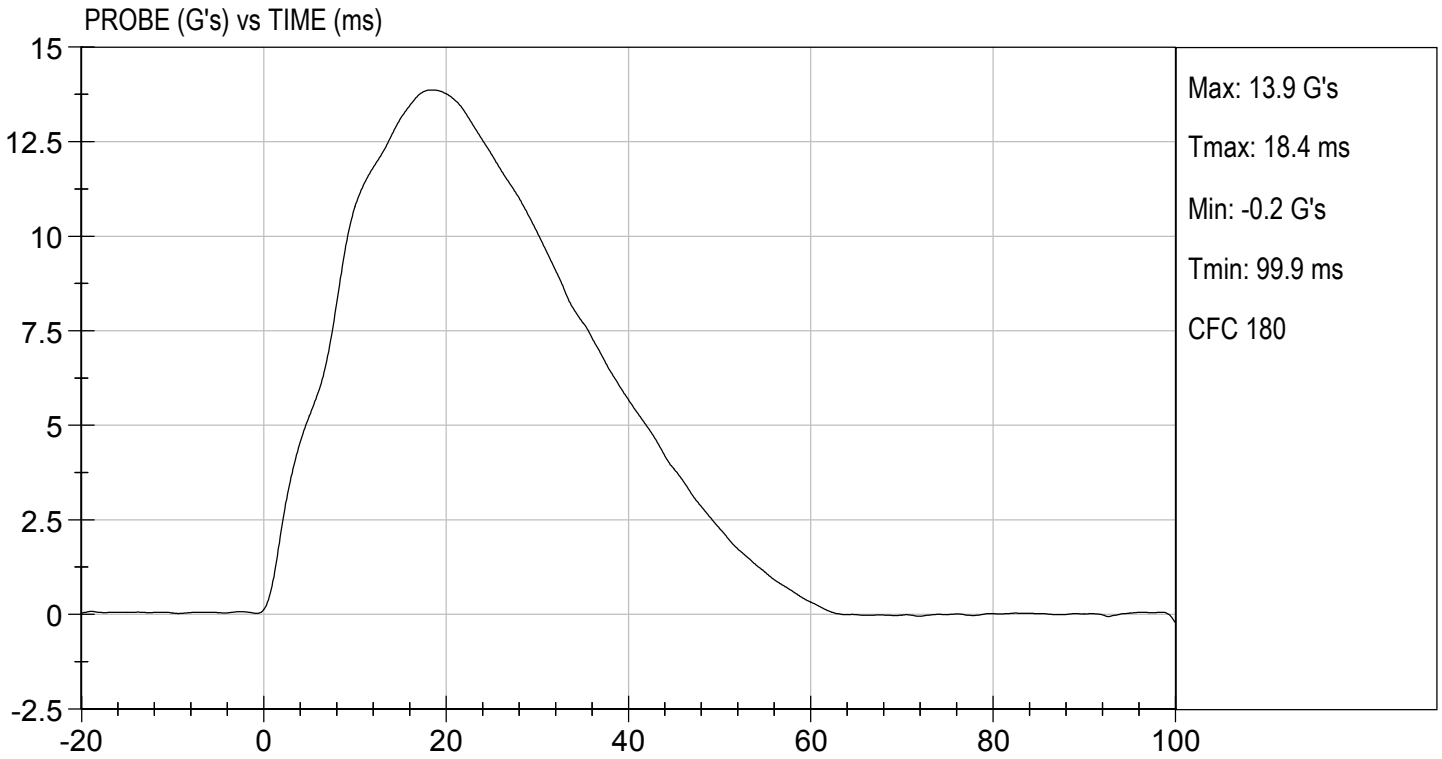
 Laboratory Technician

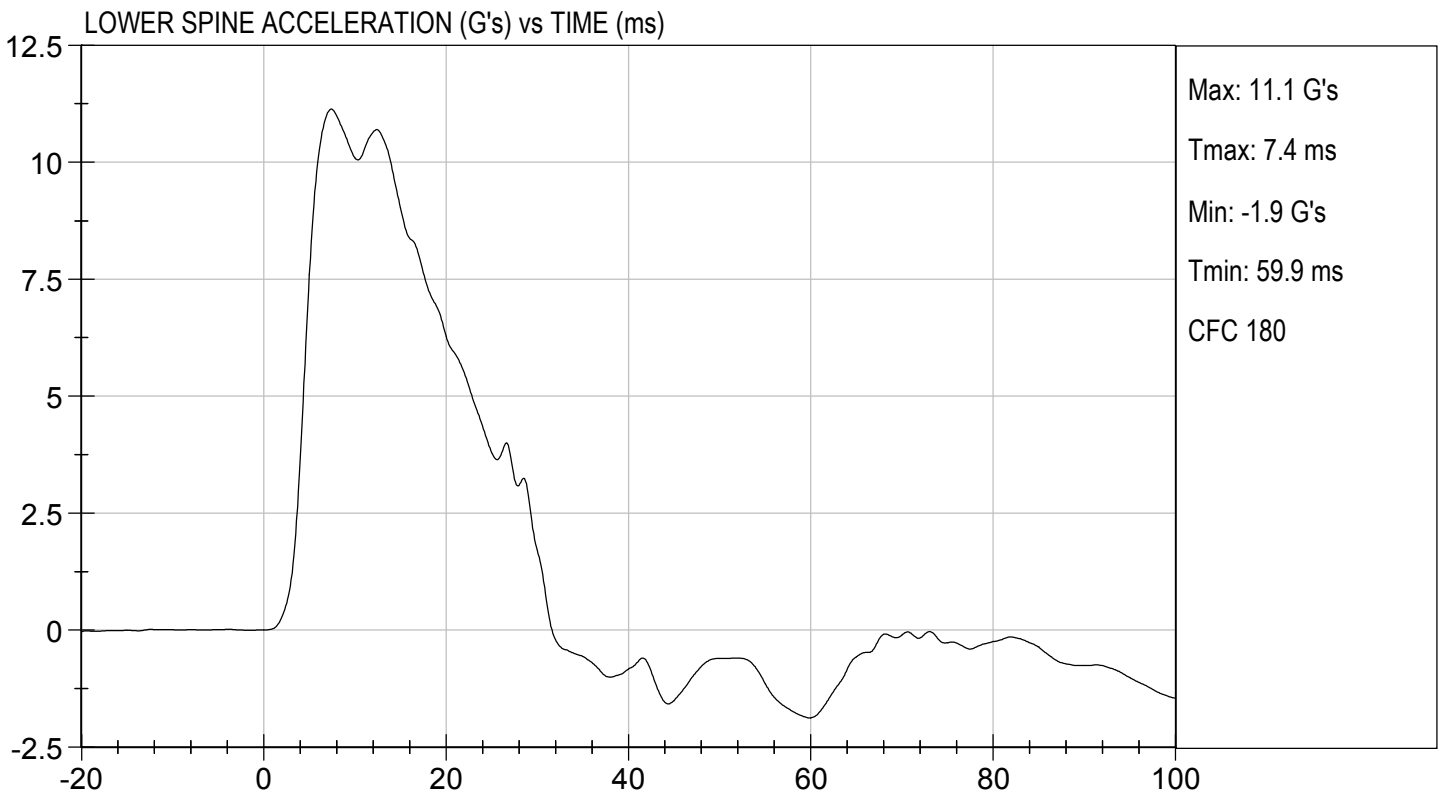
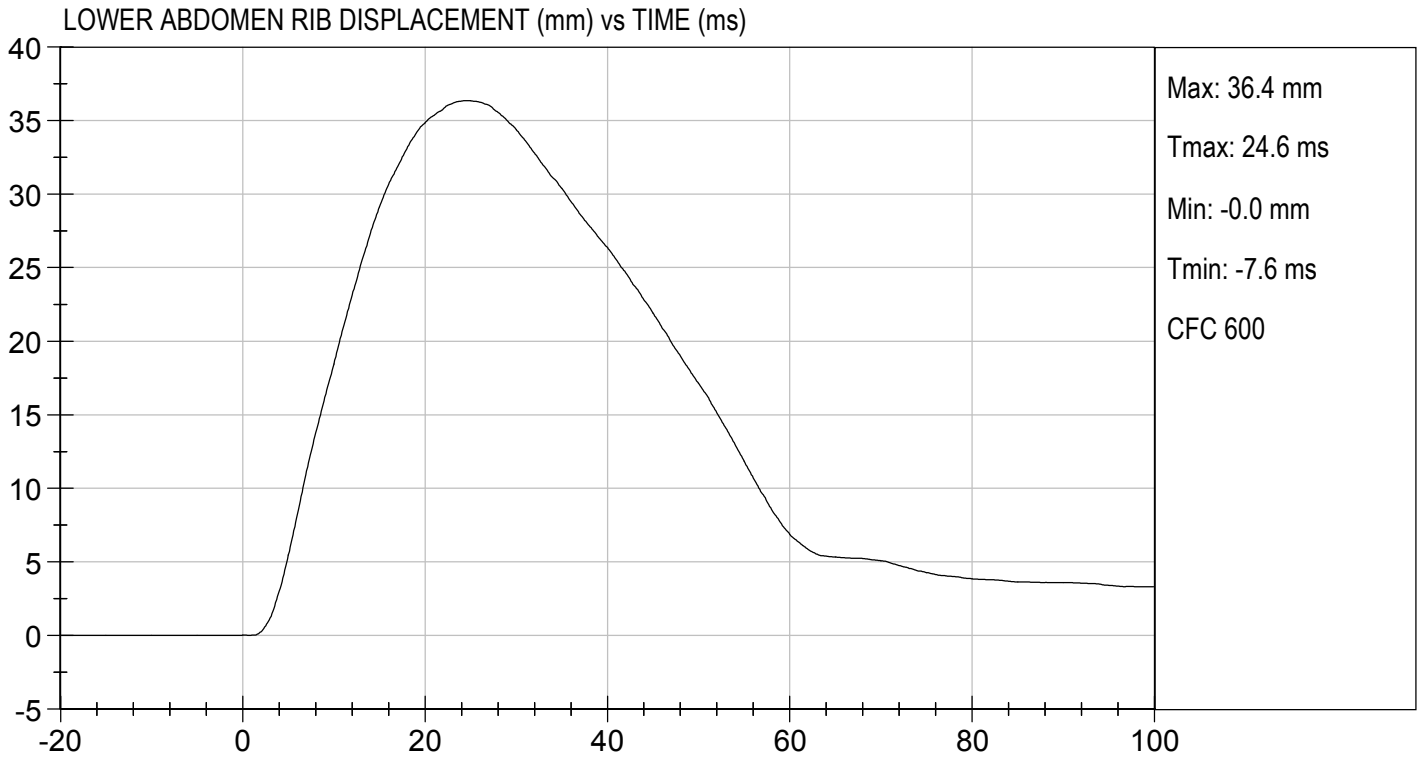
09/23/2020

 Test Date



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

ATD Serial No: 306

Test I.D: D202387

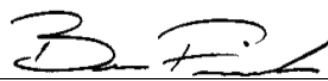
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Humidity	%	10 to 70	38	Pass
Impact Velocity	m/s	6.60 to 6.80	6.60	Pass
Maximum Probe Acceleration	G's	38 to 47	41	Pass
Pelvis Y Acceleration After 6 ms	G's	34 to 42	38	Pass
Peak Acetabulum Force	N	3600 to 4300	3,794	Pass
Overall Test Results				Pass



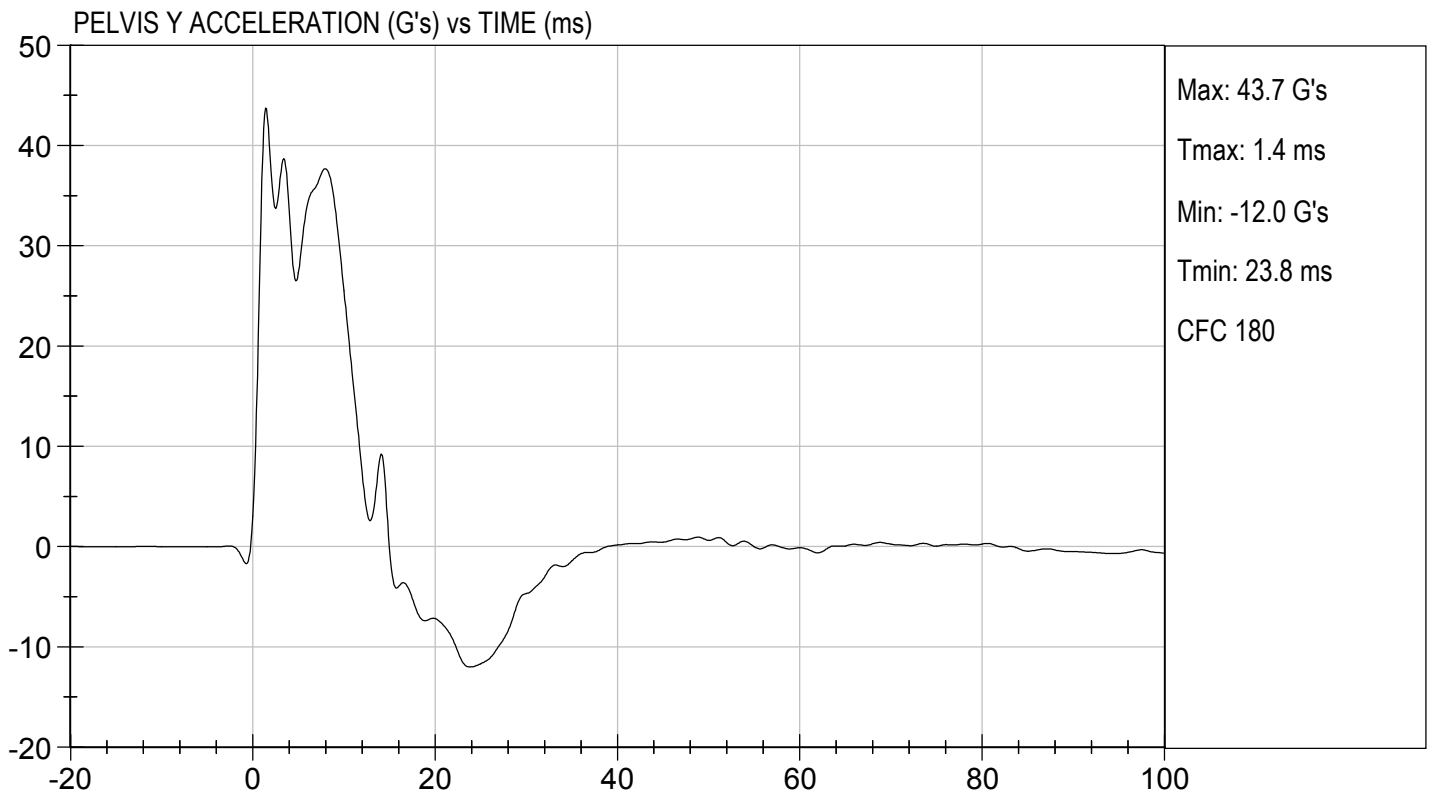
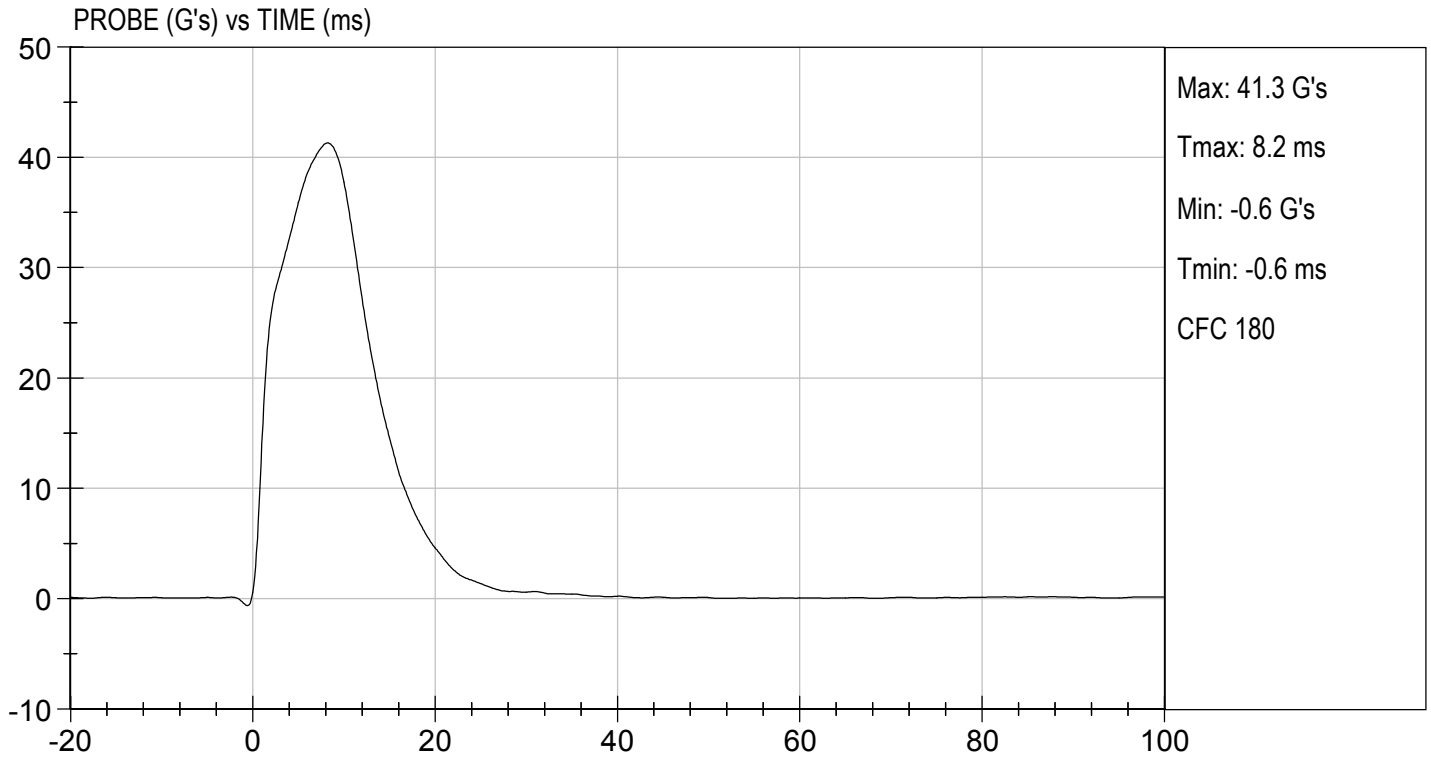
 Laboratory Technician

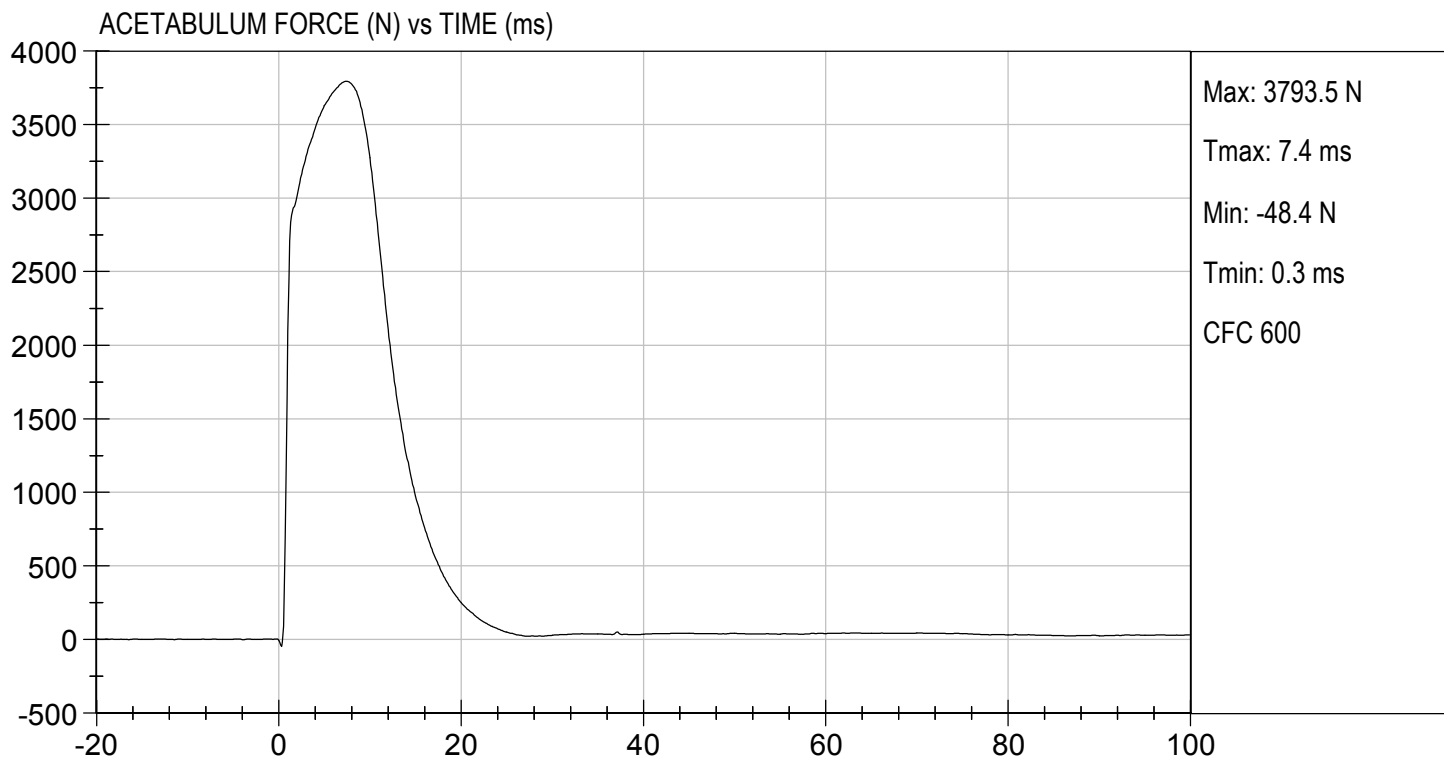
09/23/2020

 Test Date



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

ATD Serial No: 306

Test I.D: D202388

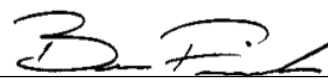
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Humidity	%	10 to 70	44	Pass
Impact Velocity	m/s	4.20 to 4.40	4.23	Pass
Maximum Probe Acceleration	G's	36 to 45	40	Pass
Pelvis Y Acceleration	G's	28 to 39	32	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4,463	Pass
Overall Test Results				Pass



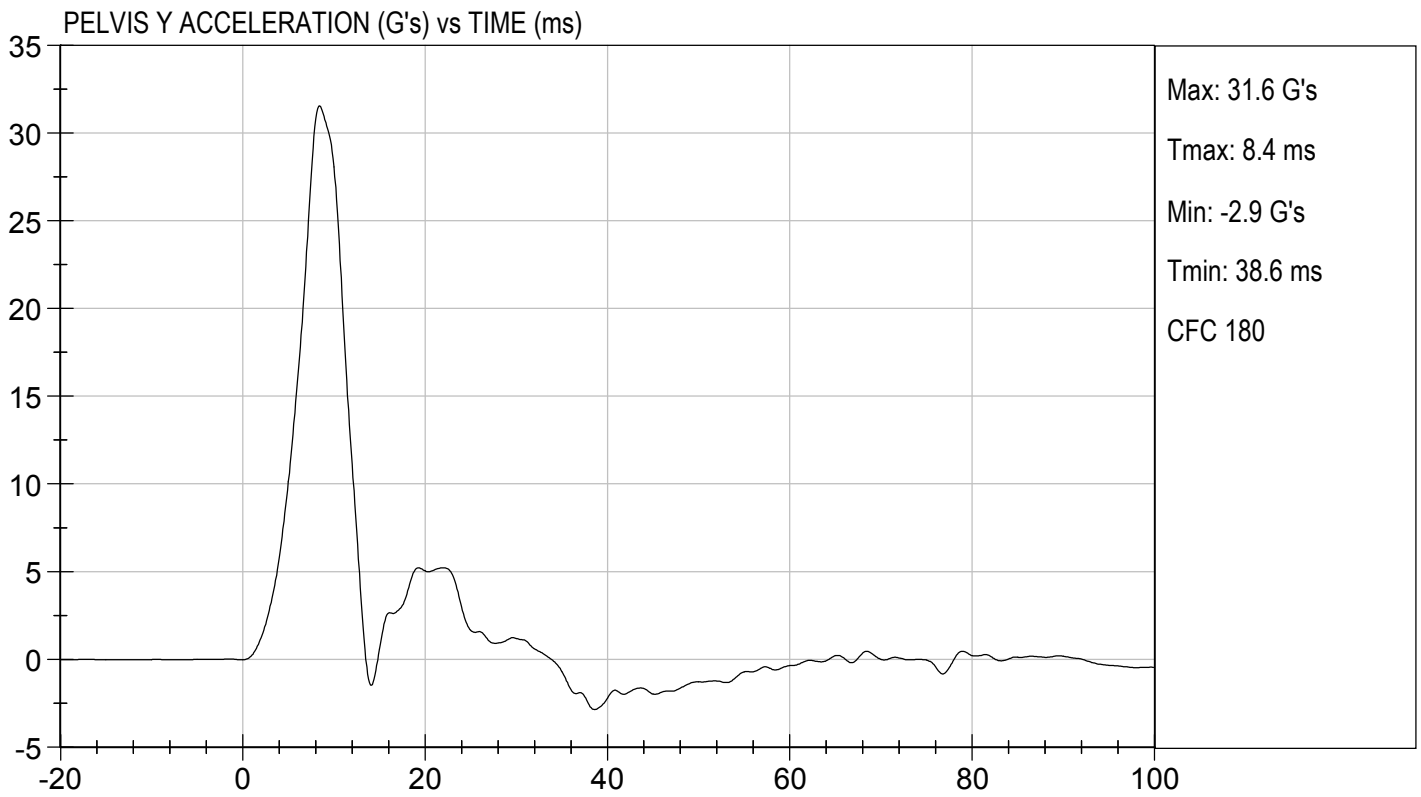
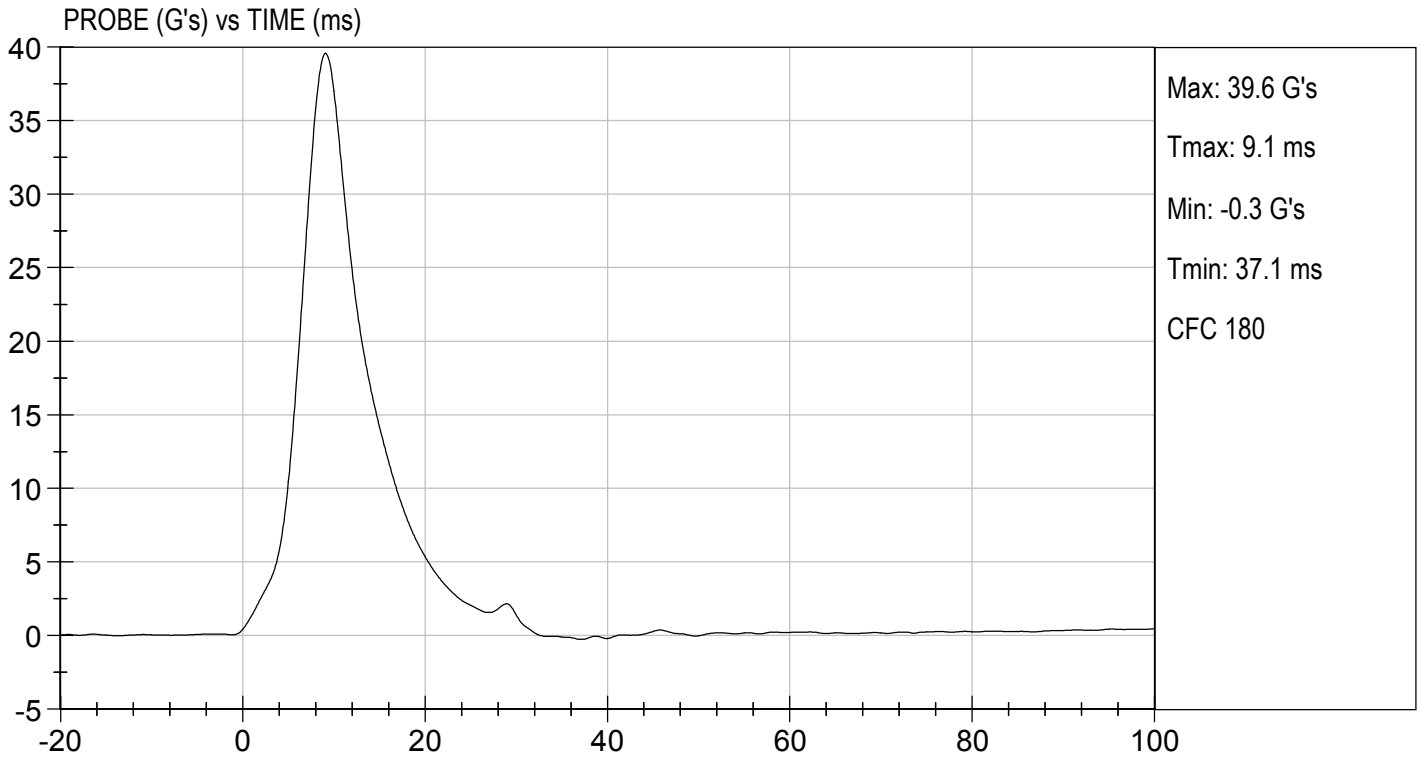
 Laboratory Technician

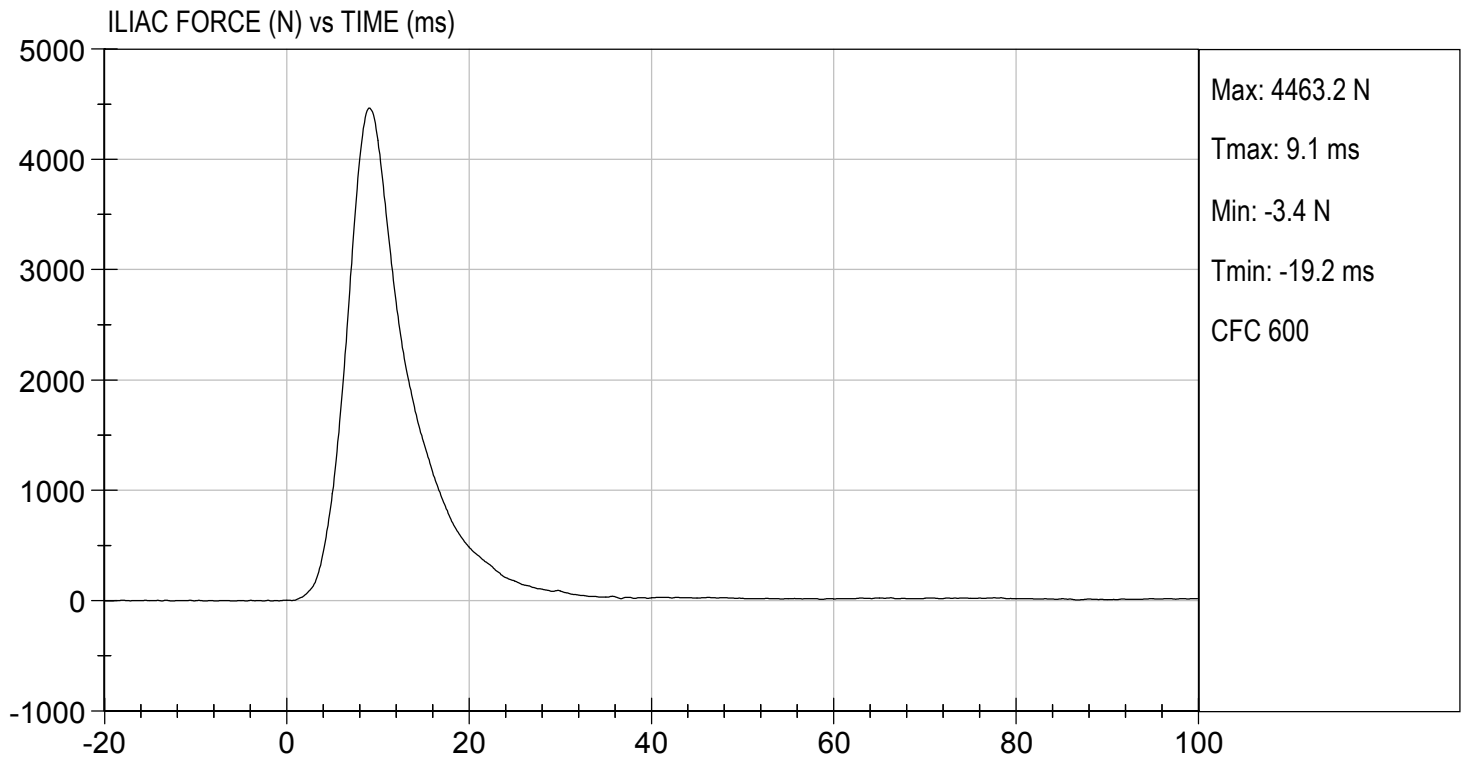
09/22/2020

 Test Date



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CALIBRATION TEST RESULTS

POST-TEST

SID-IIS 5TH PERCENTILE FEMALE - DRIVER ATD

SID-IIsD External Measurements
SN: 306

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

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

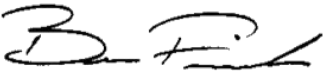
ATD Serial No: 306

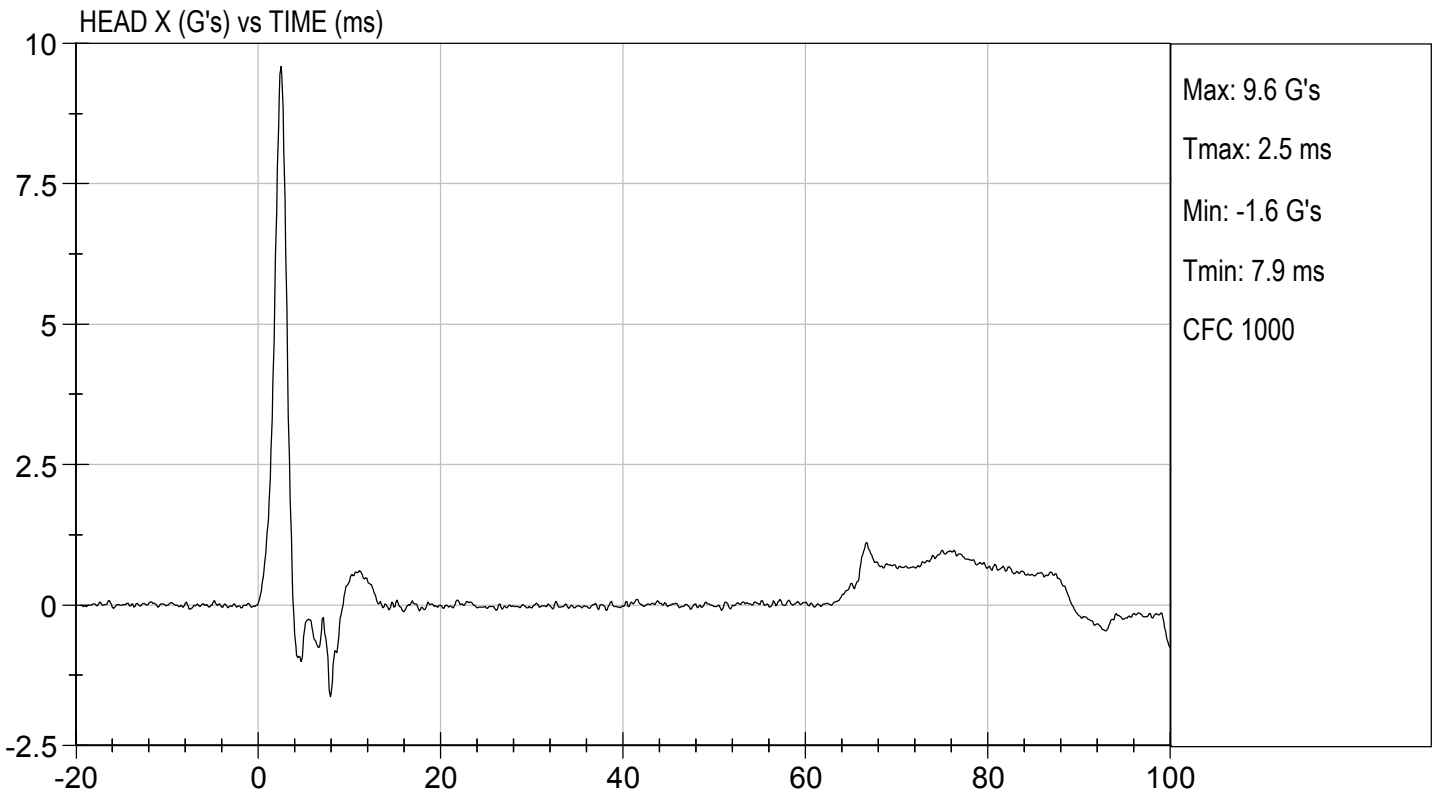
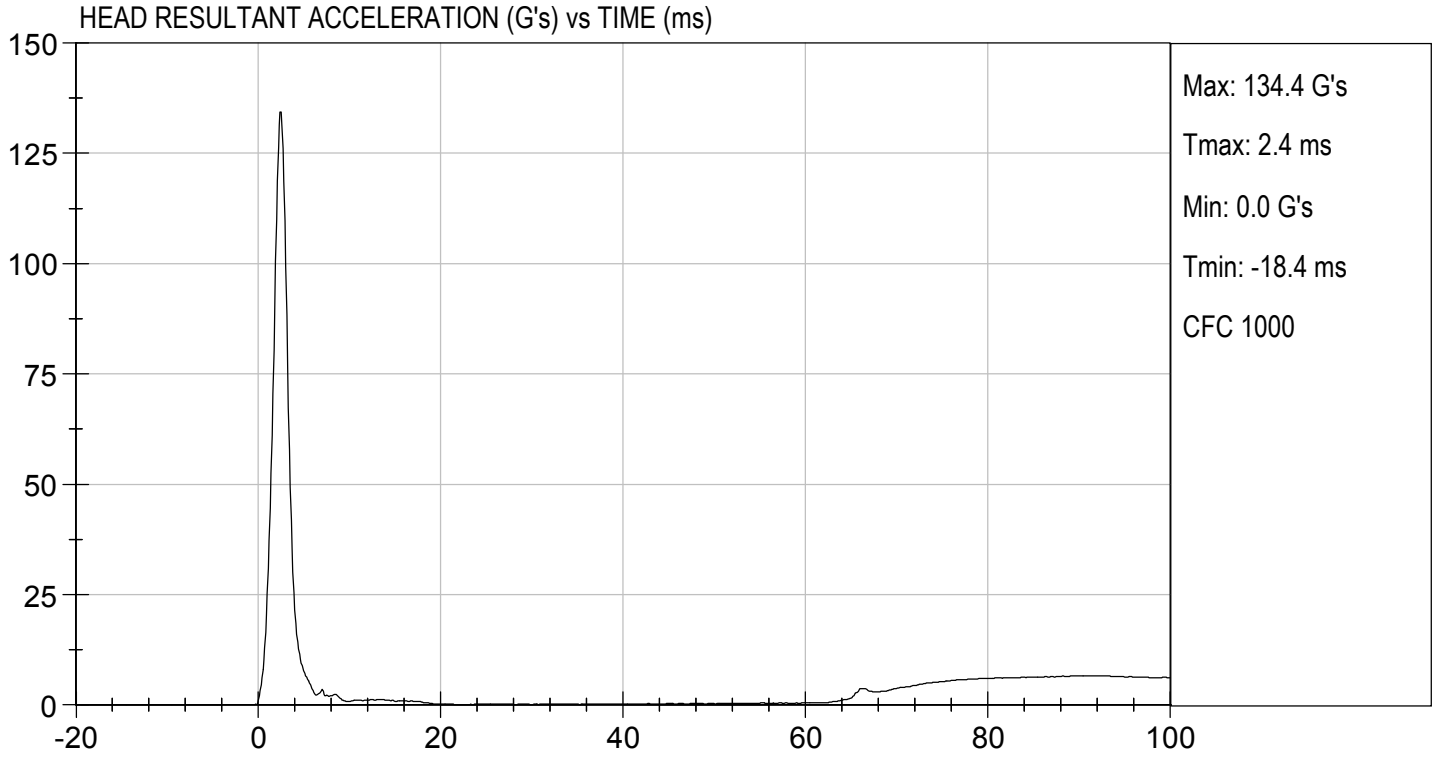
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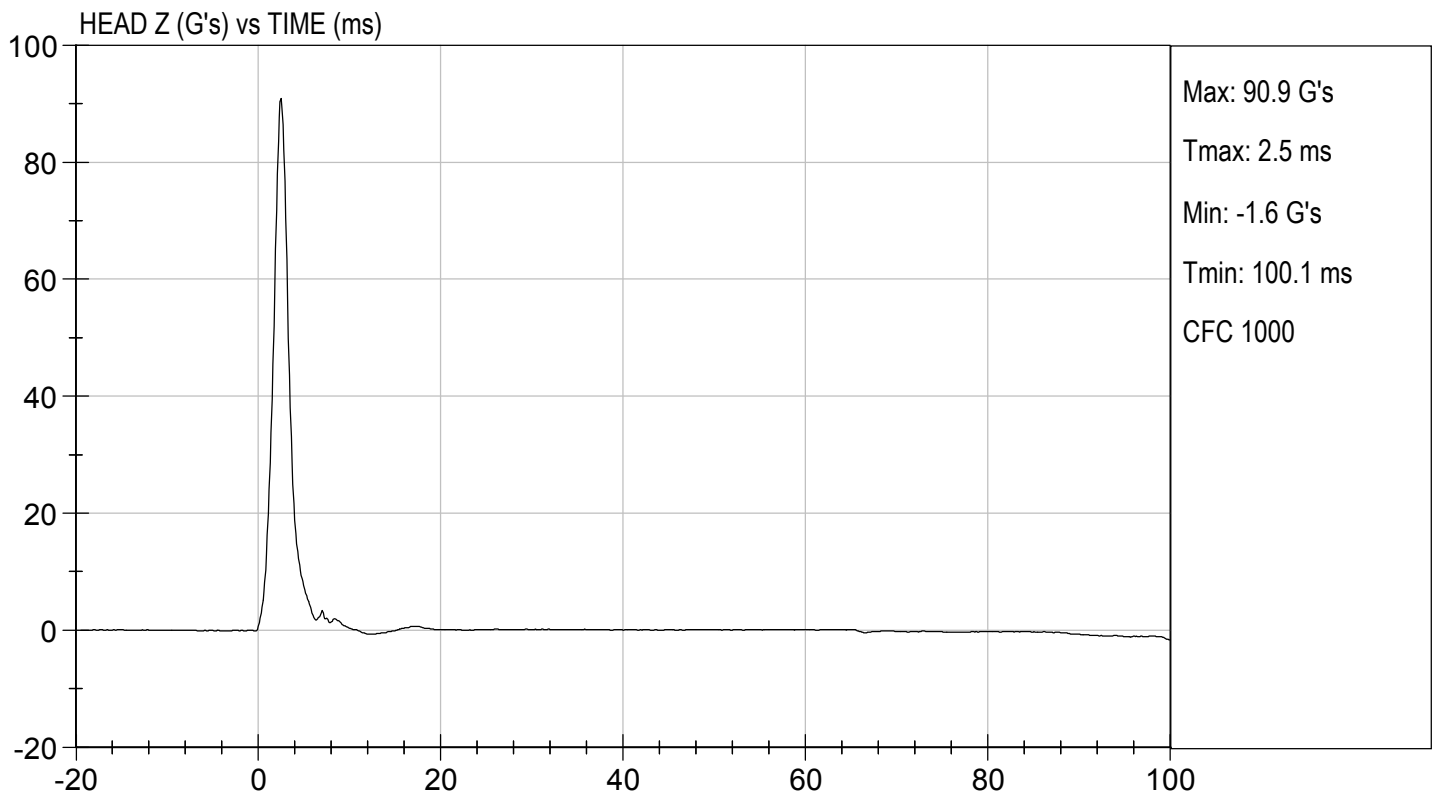
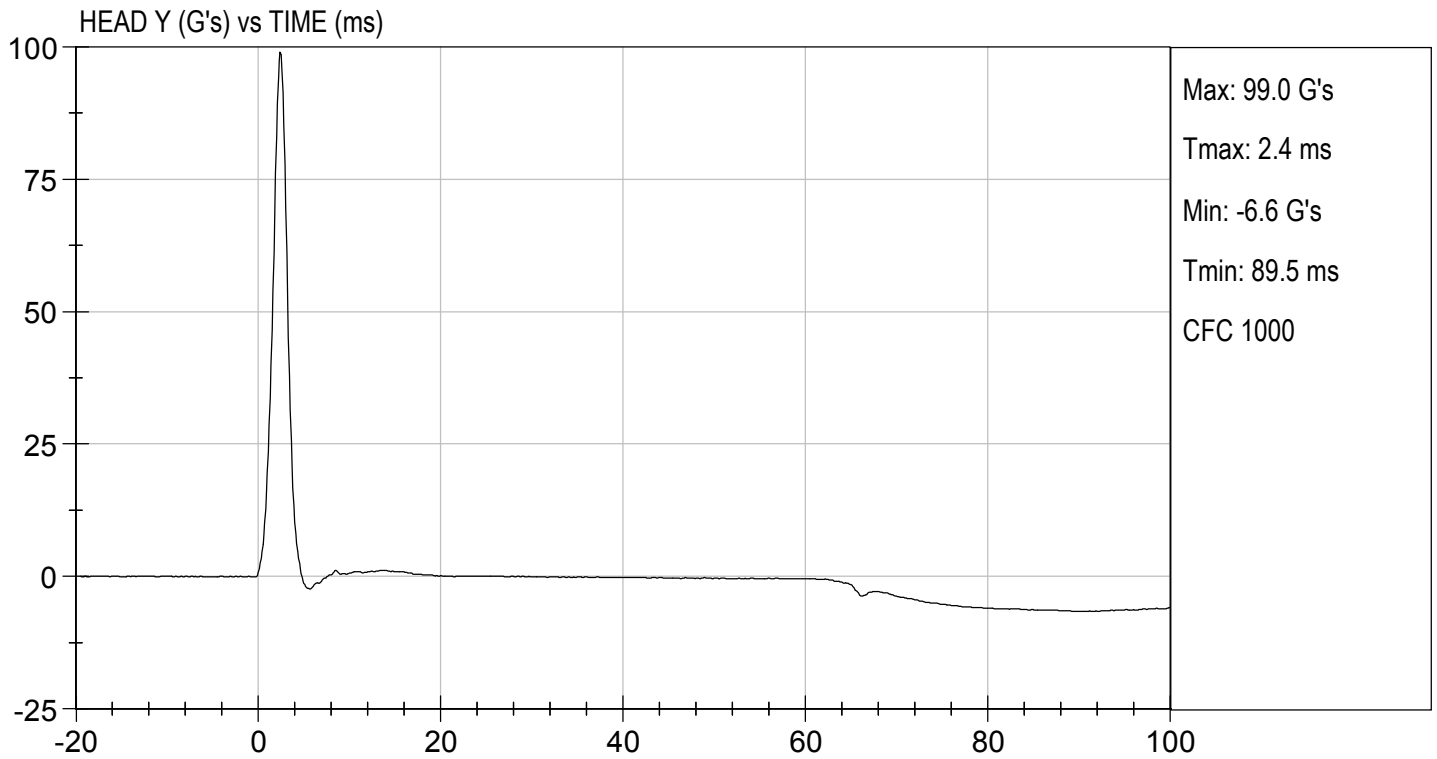
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Peak Resultant Acceleration	G's	115 to 137	134	Pass
Peak Longitudinal Acceleration	G's	+/- 15	9.6	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	<15%	Yes	Pass
Overall Test Results				Pass


 Laboratory Technician

11/19/2020
 Test Date


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

ATD Serial No: 306

Test I.D.: D203002

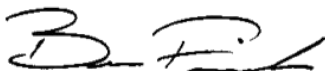
Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	21.7	Pass
Humidity		%	10 to 70	25	Pass
Impact Velocity		m/s	5.51 to 5.63	5.62	Pass
Pendulum Velocity	10 ms	m/s	2.20 to 2.80	2.80	Pass
	15 ms	m/s	3.30 to 4.10	3.94	Pass
	20 ms	m/s	4.40 to 5.40	5.24	Pass
	25 ms	m/s	5.40 to 6.10	5.57	Pass
	25-100 ms	m/s	5.50 to 6.20	5.59	Pass
Maximum D-Plane Rotation		deg	71 to 81	75	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	62	Pass
Maximum Occipital Condyle Moment		Nm	-44 to -36	-40	Pass
Time of Moment Decay to 0 Nm		ms	102 to 126	112	Pass
Overall Test Results					Pass



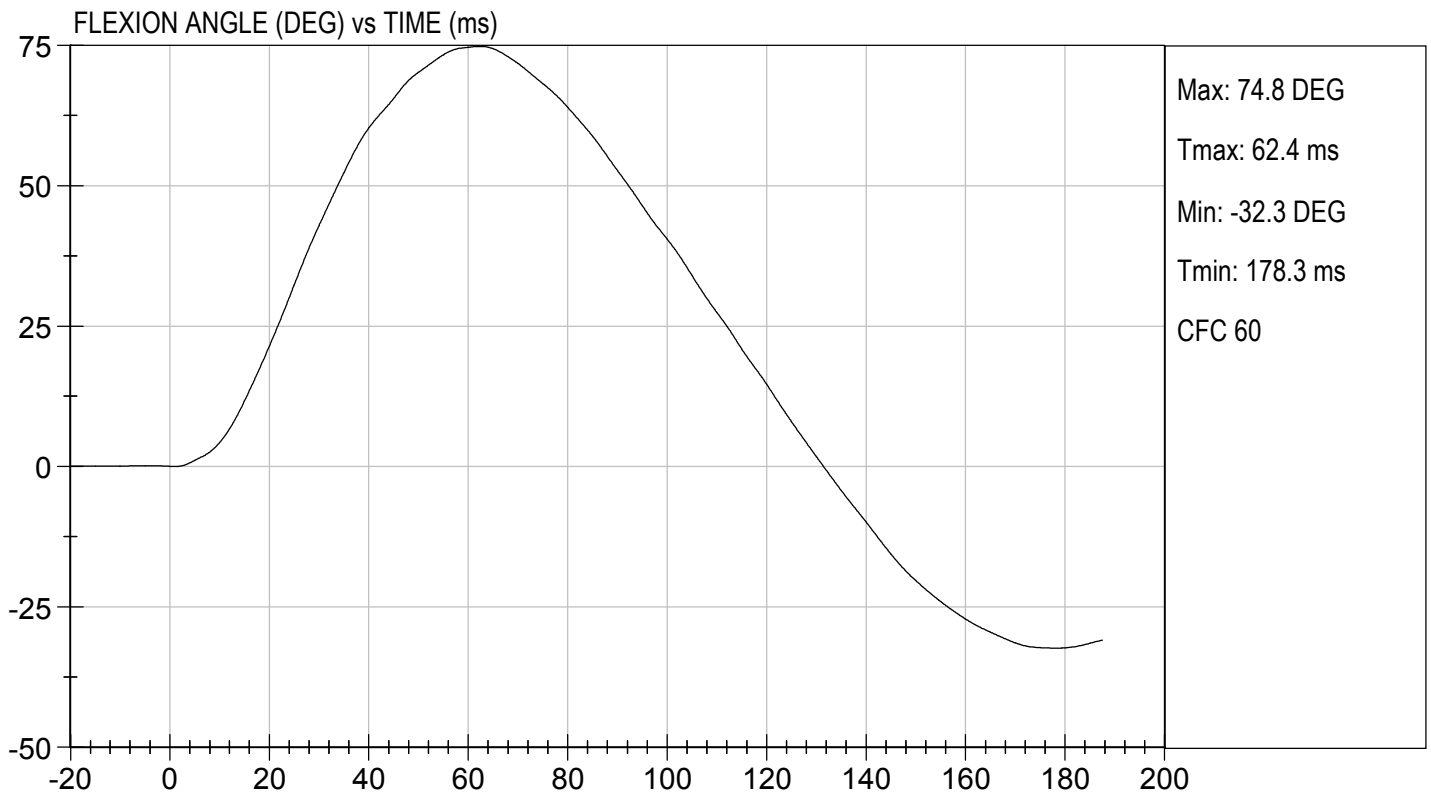
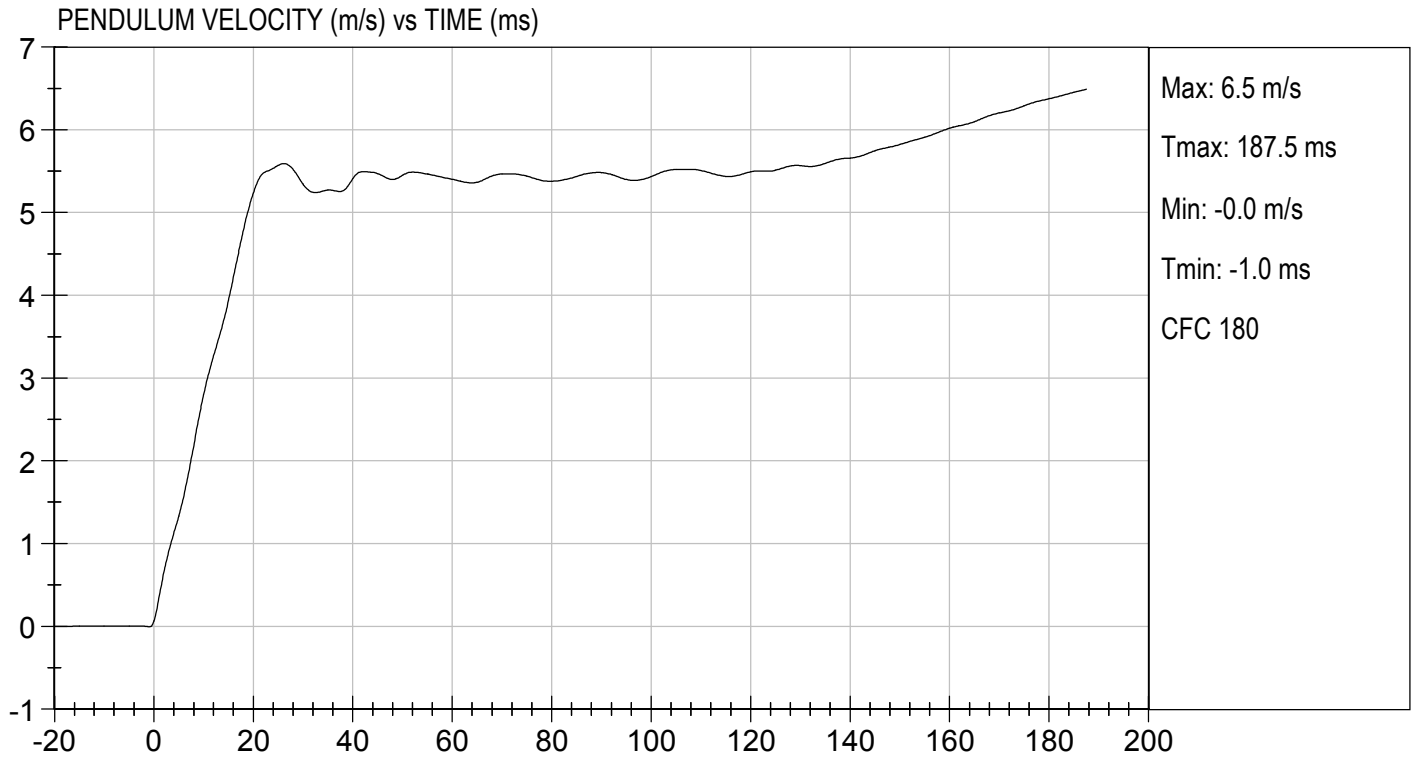
Laboratory Technician

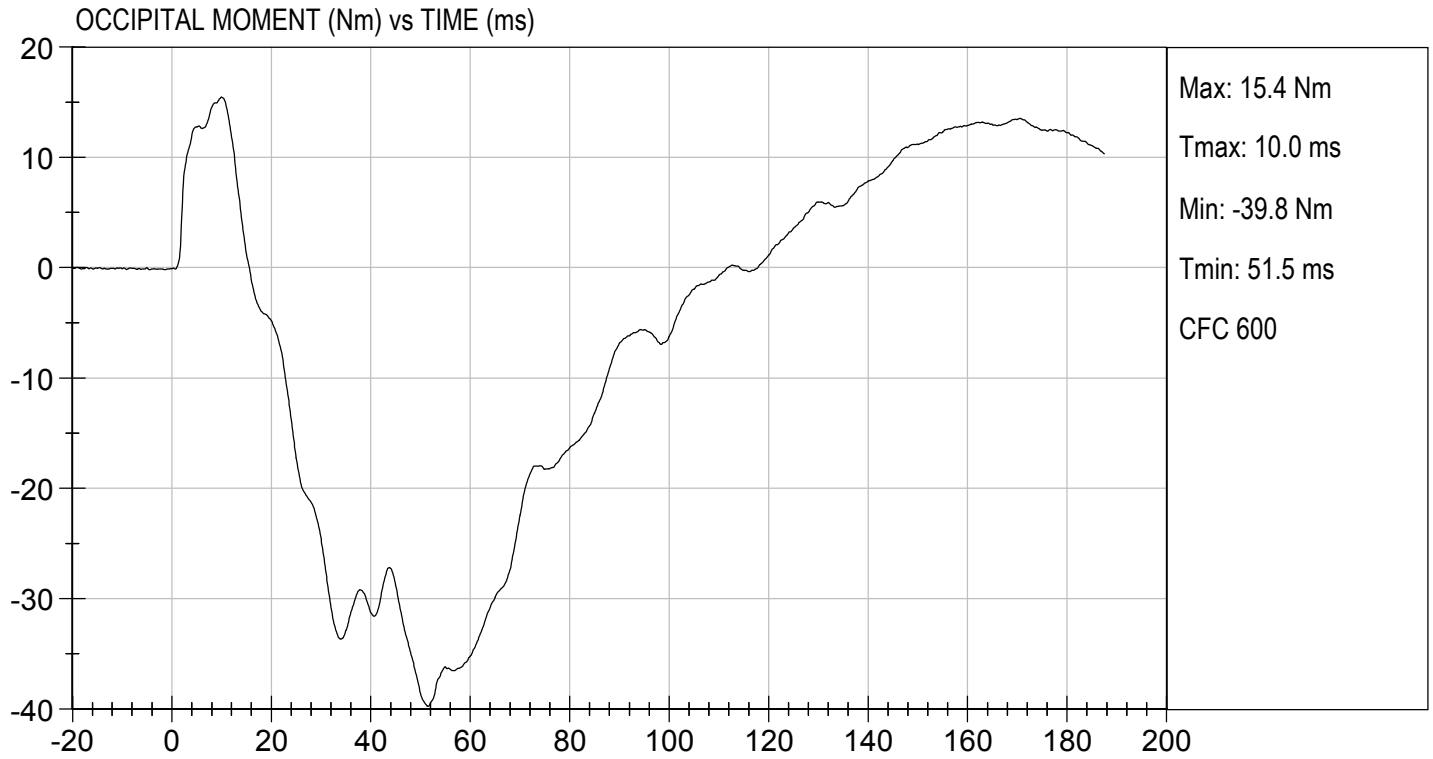
11/19/2020

Test Date



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

ATD Serial No: 306

Test ID: D203003

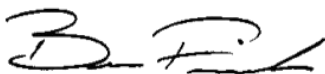
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	20.8	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Maximum Probe Acceleration	G's	13 to 18	15	Pass
Shoulder Displacement	mm	28 to 37	29	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	19	Pass
Overall Test Results				Pass



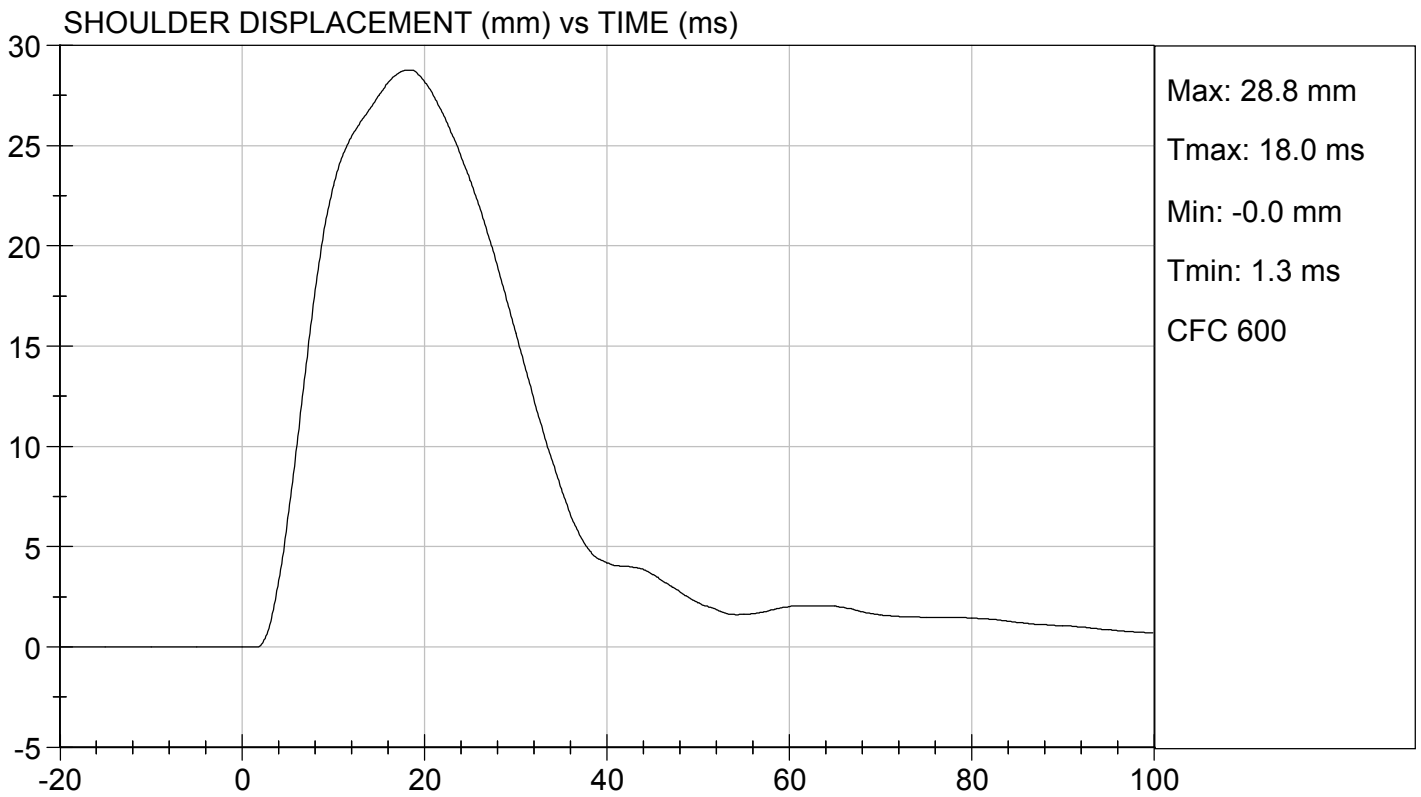
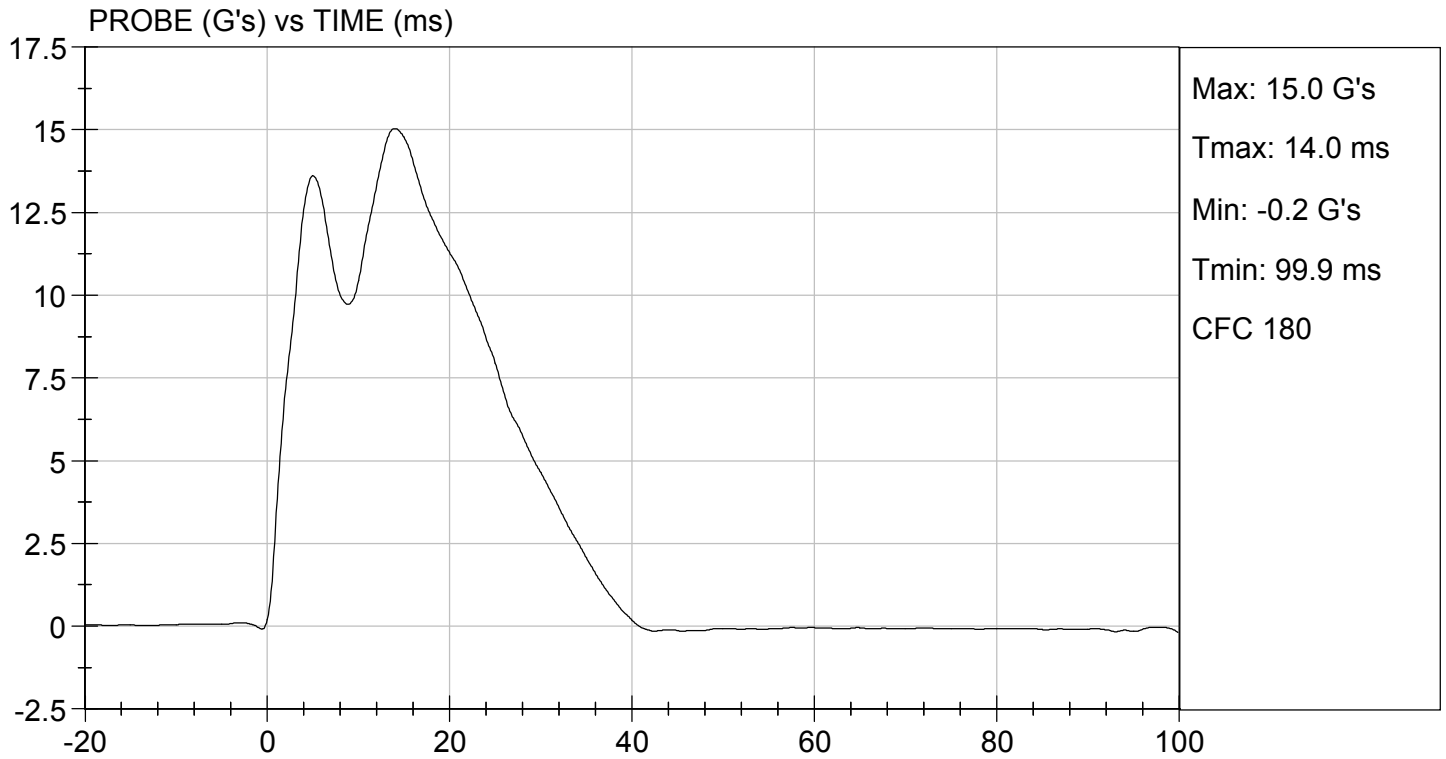
Laboratory Technician

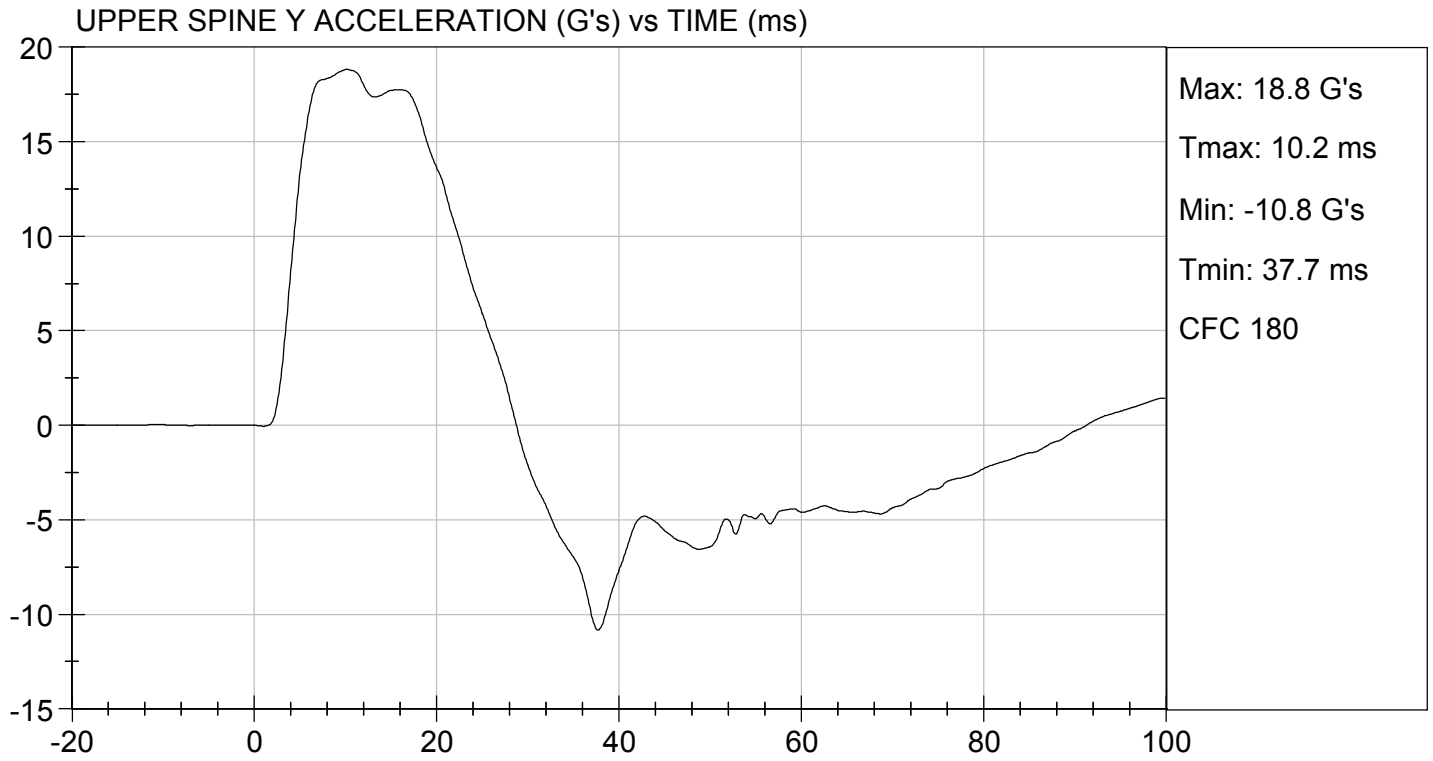
11/24/2020

Test Date



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

ATD Serial No: 306

Test I.D: D203004

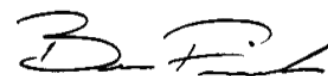
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.8	Pass
Humidity	%	10 to 70	25	Pass
Impact Velocity	m/s	6.60 to 6.80	6.77	Pass
Maximum Probe Acceleration	G's	30 to 36	33	Pass
Shoulder Displacement	mm	31 to 40	32	Pass
Upper Rib Displacement	mm	25 to 32	28	Pass
Middle Rib Displacement	mm	30 to 36	33	Pass
Lower Rib Displacement	mm	32 to 38	36	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	39	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	32	Pass
Overall Test Results				Pass



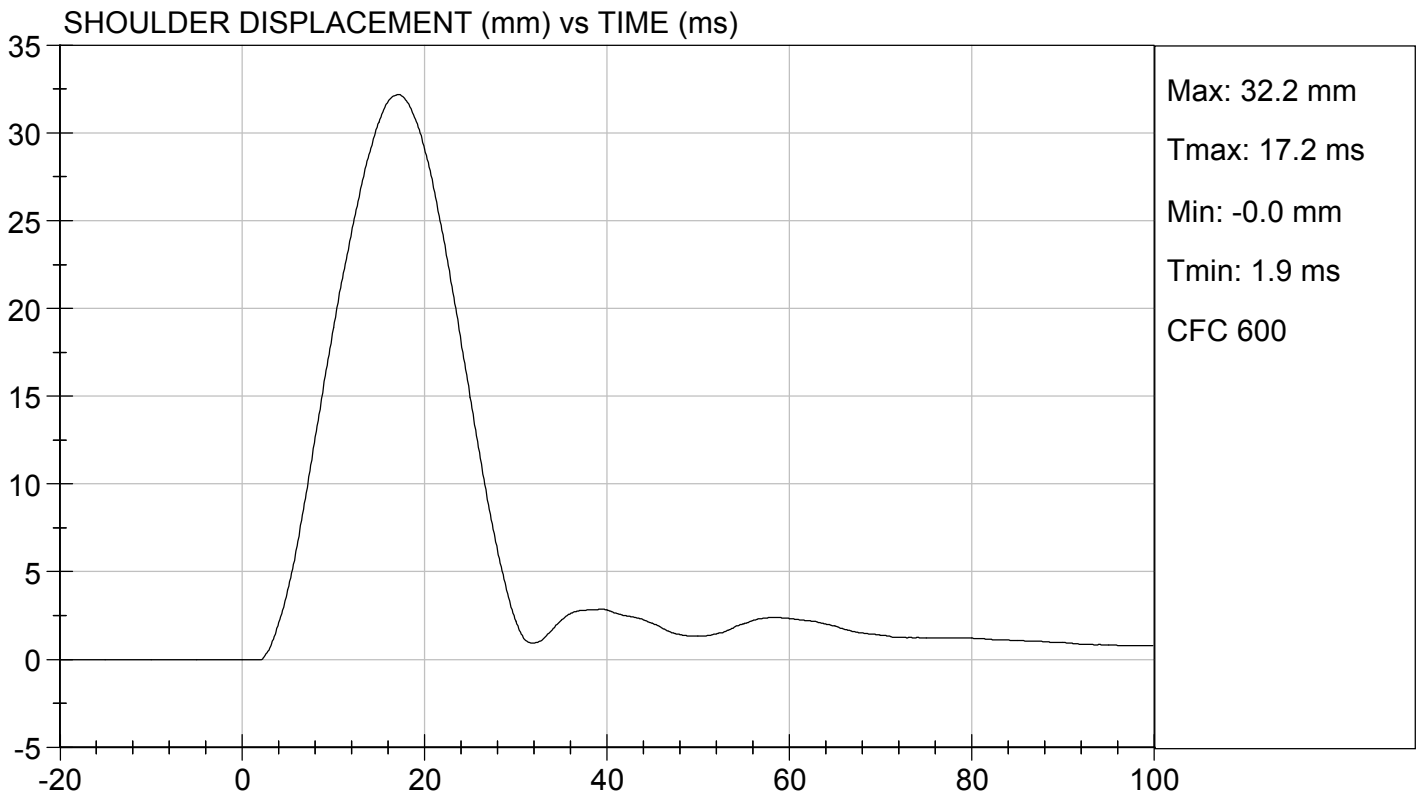
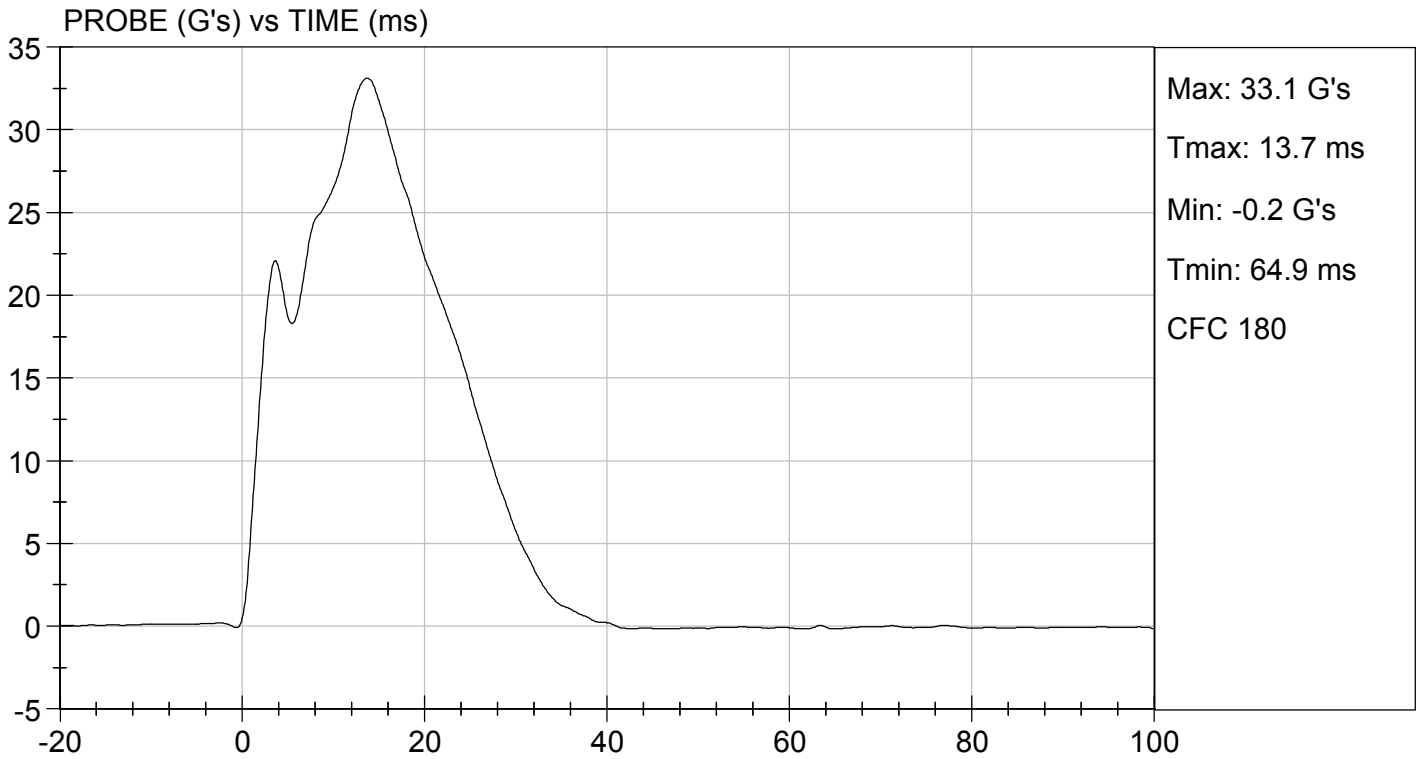
 Laboratory Technician

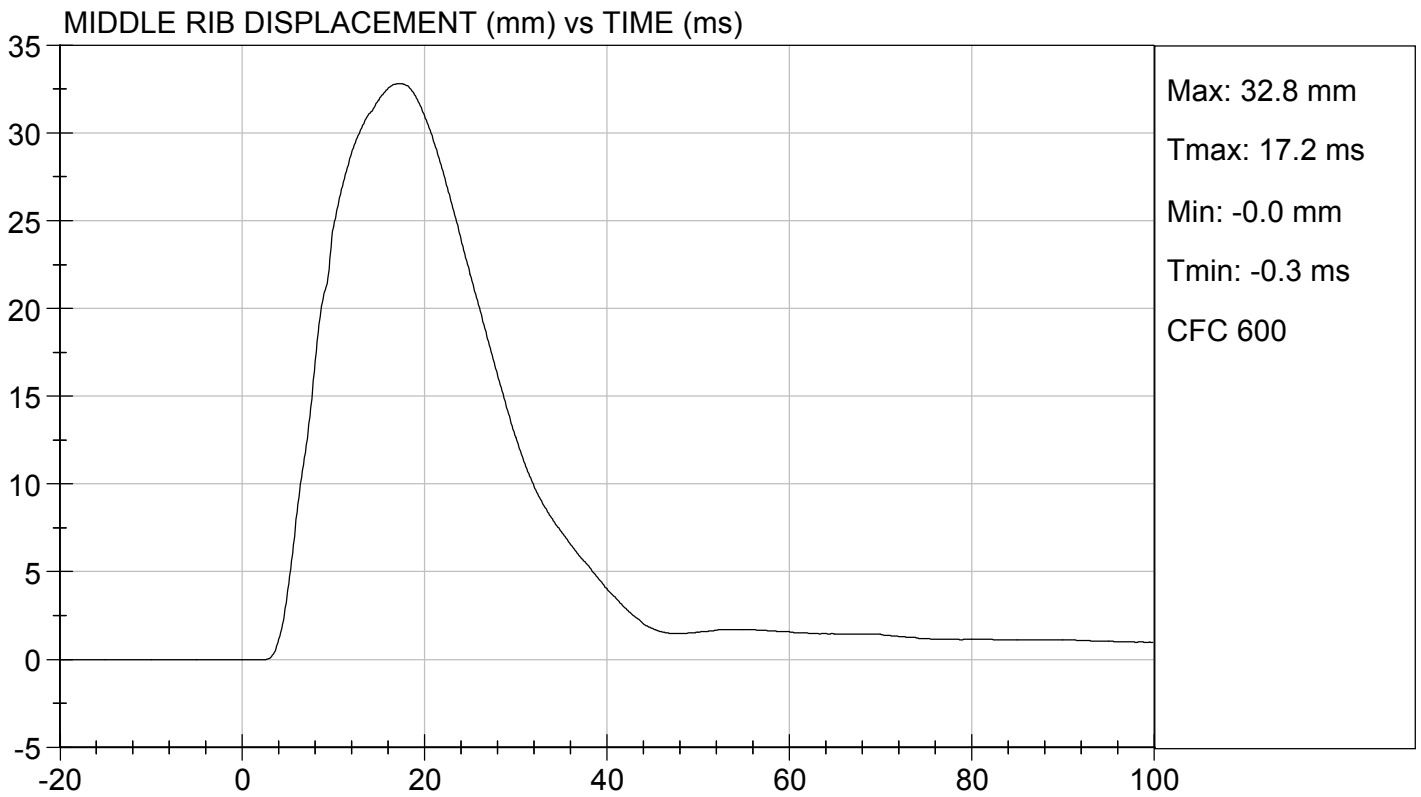
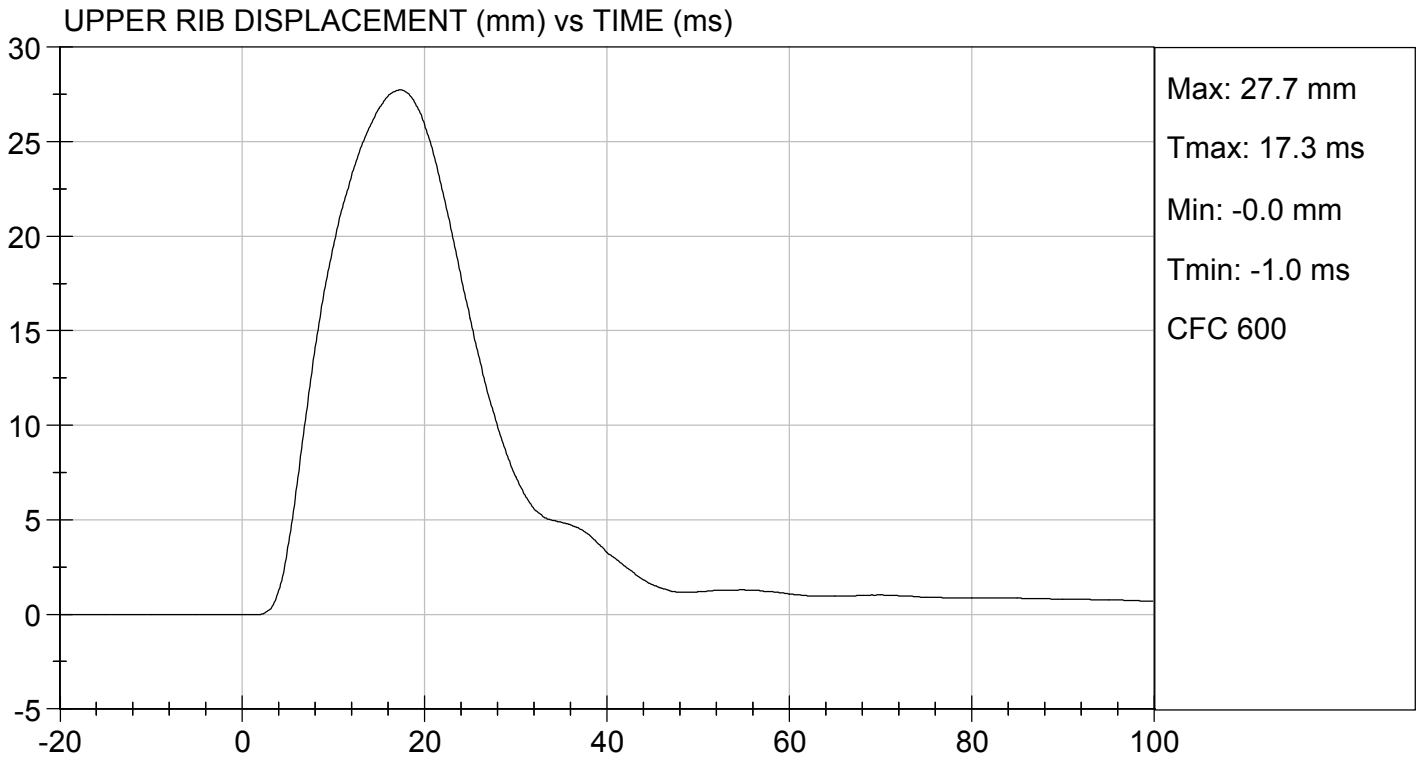
11/24/2020

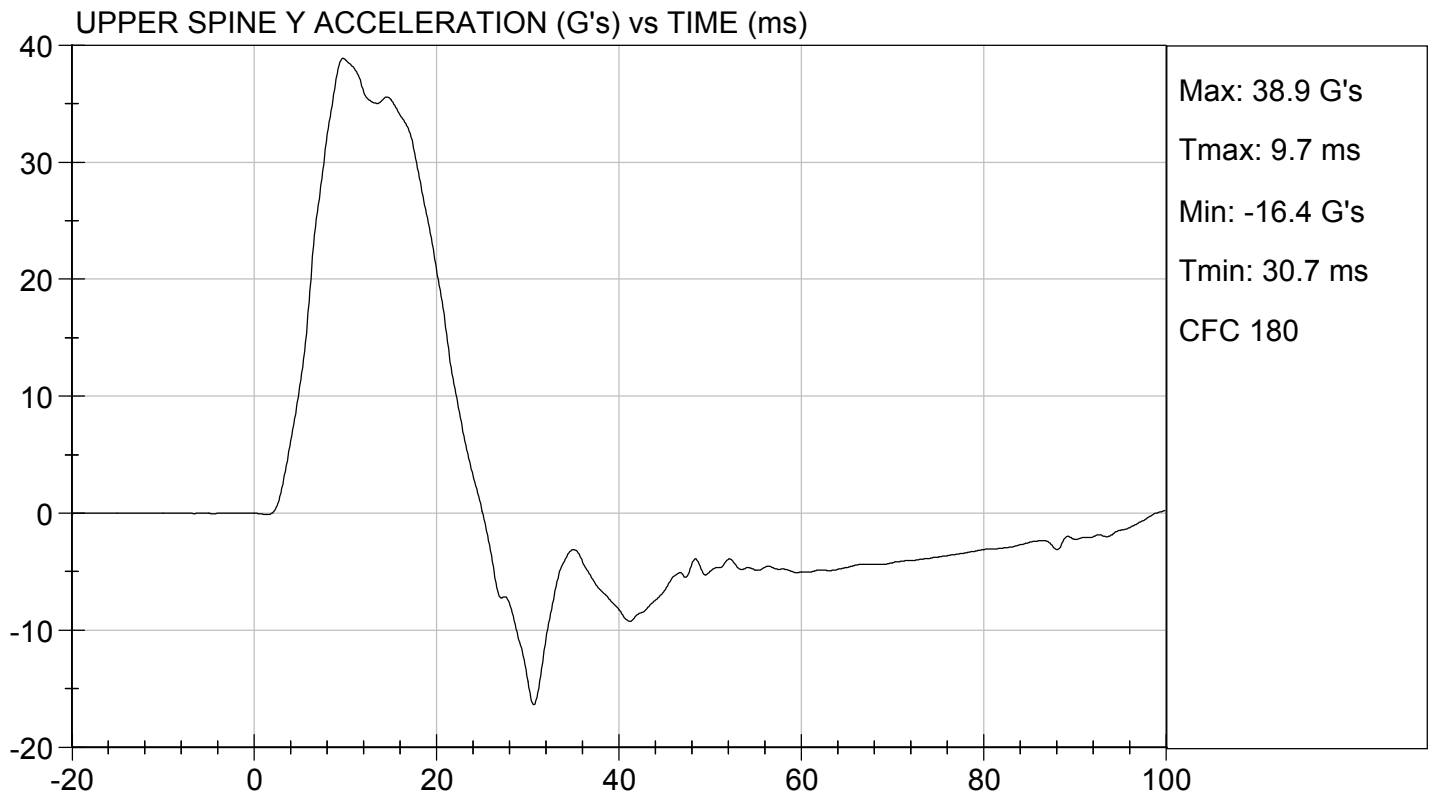
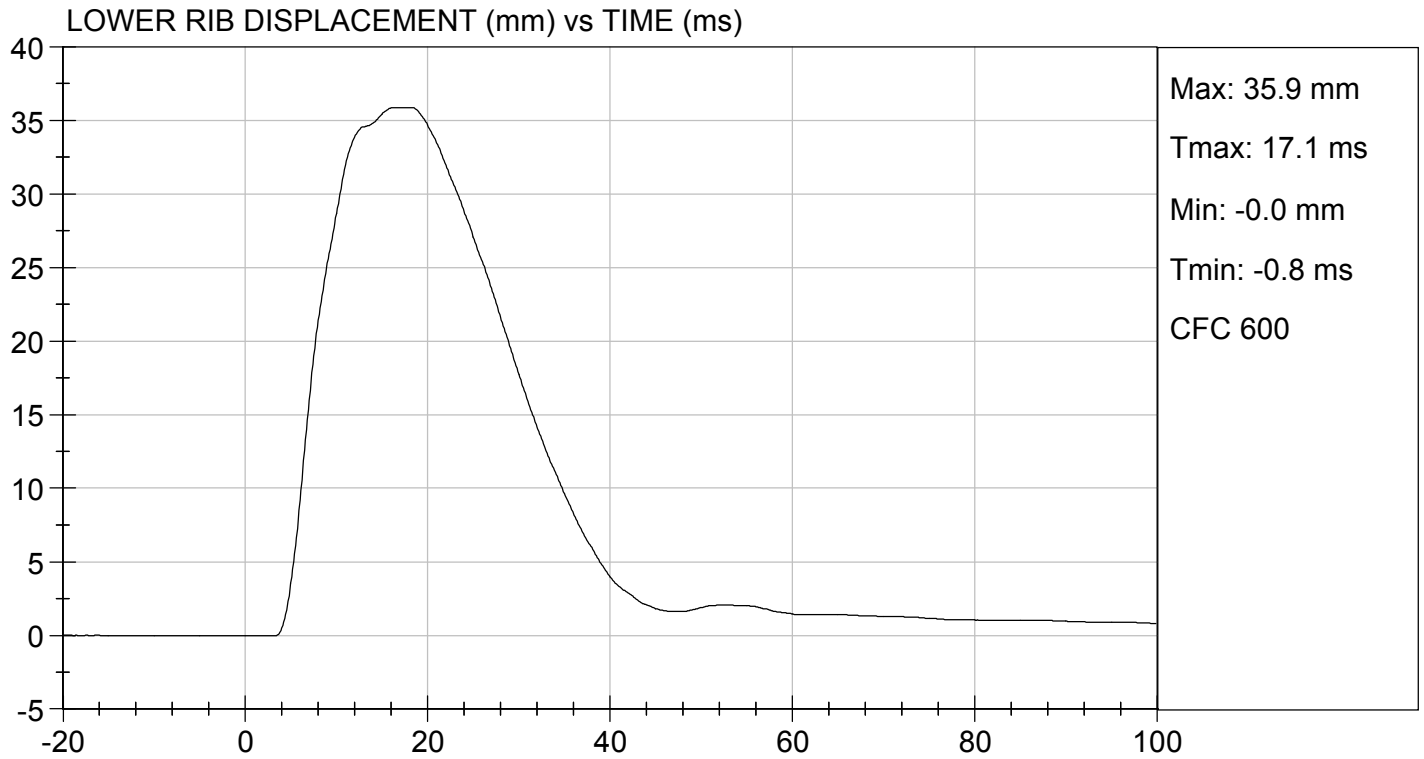
 Test Date

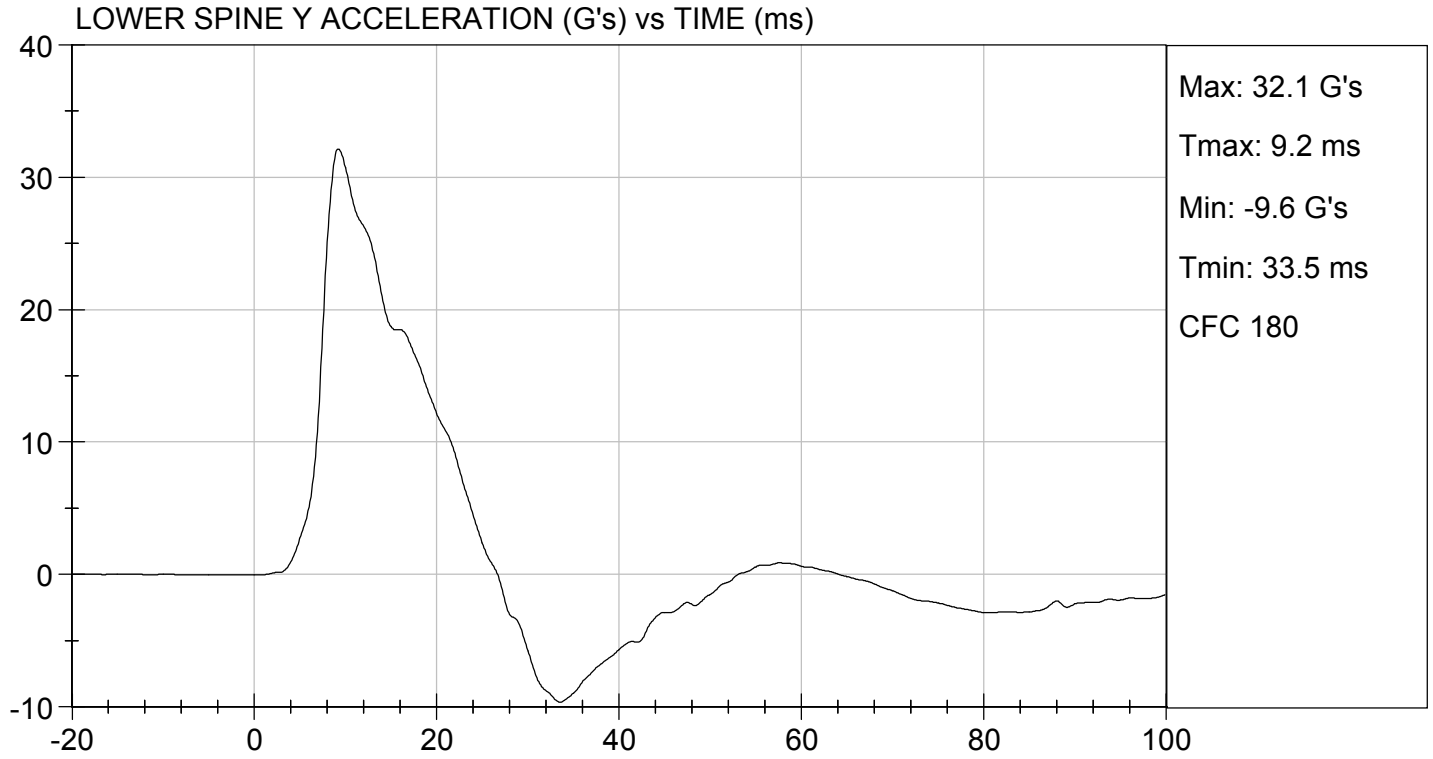


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MGA RESEARCH CORPORATION
THORAX (WITHOUT ARM) IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

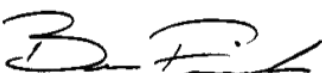
ATD Serial No: 306

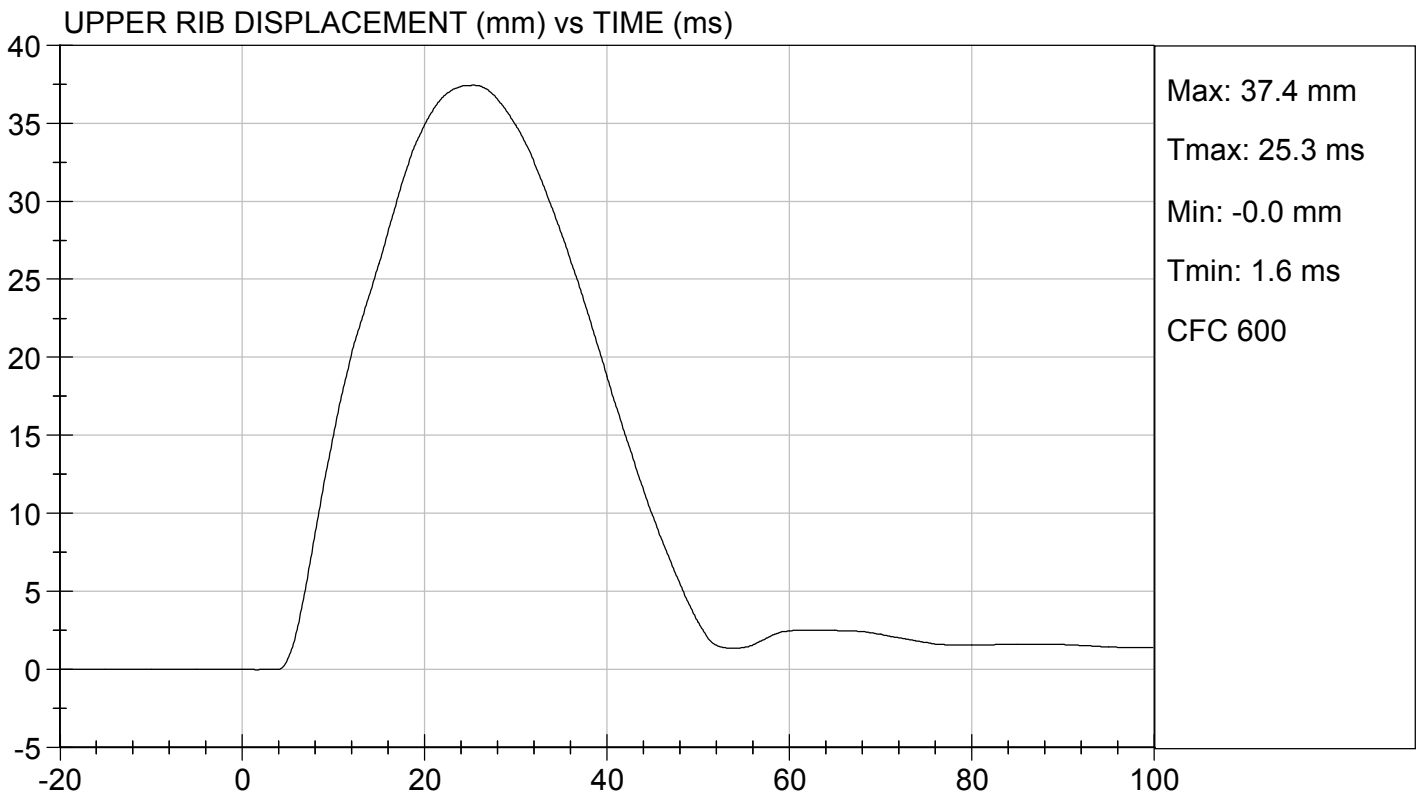
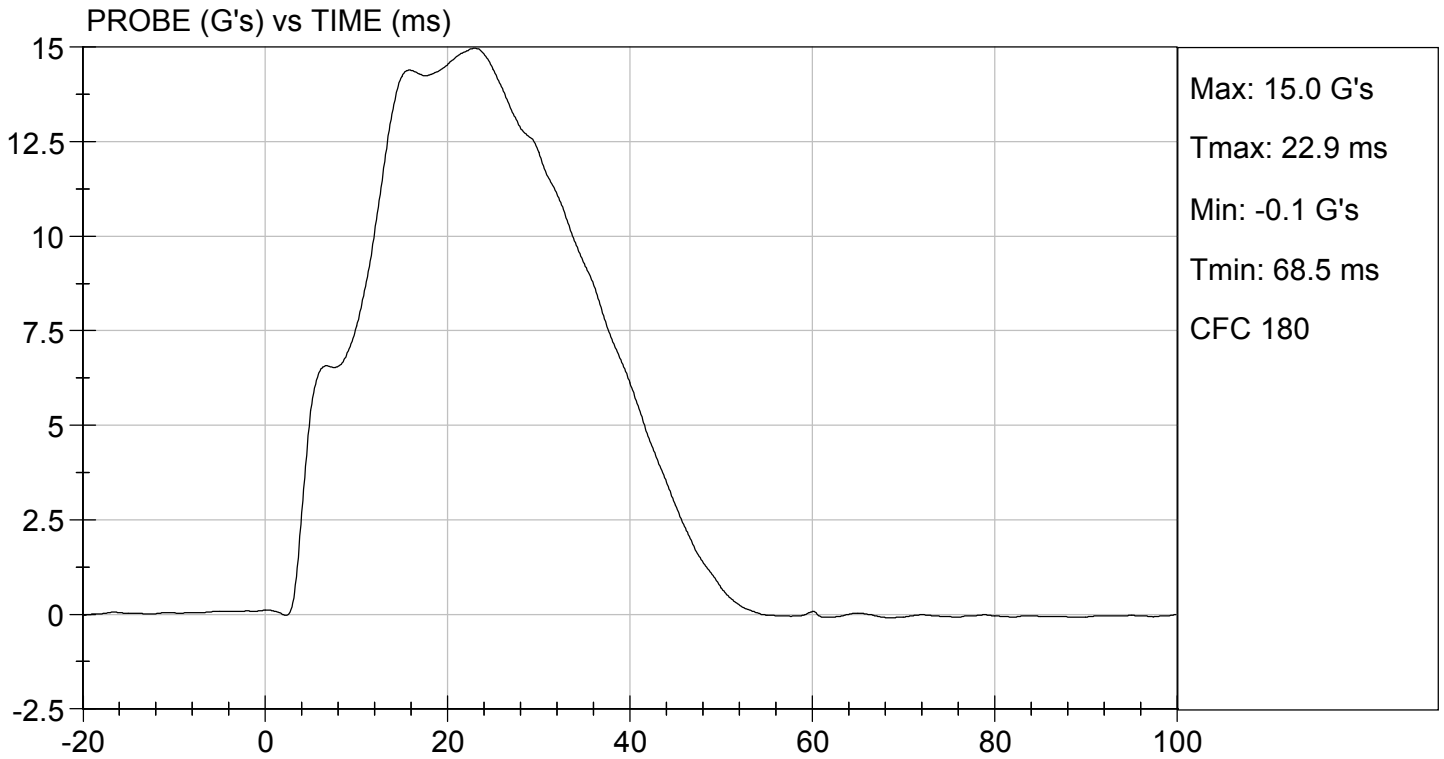
Test I.D: D203005

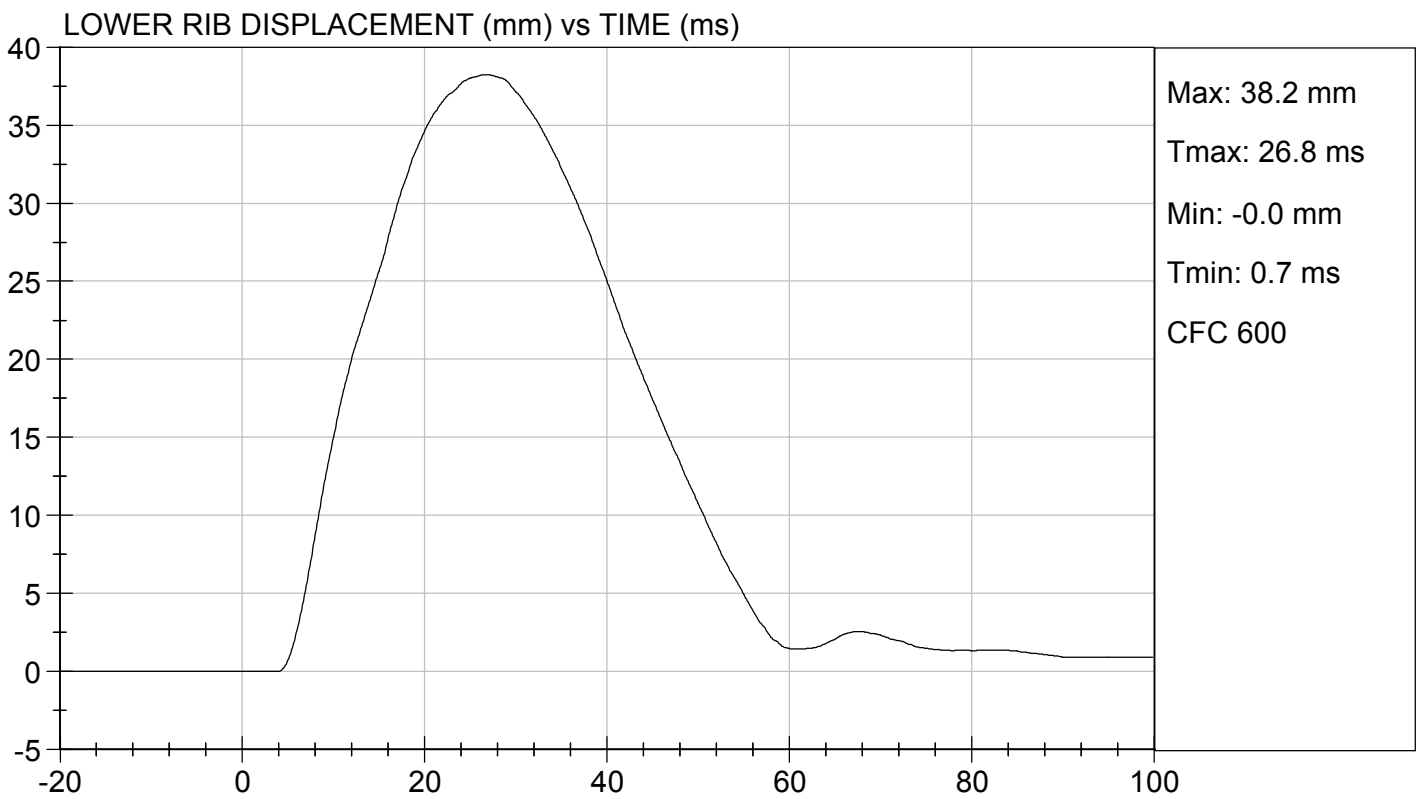
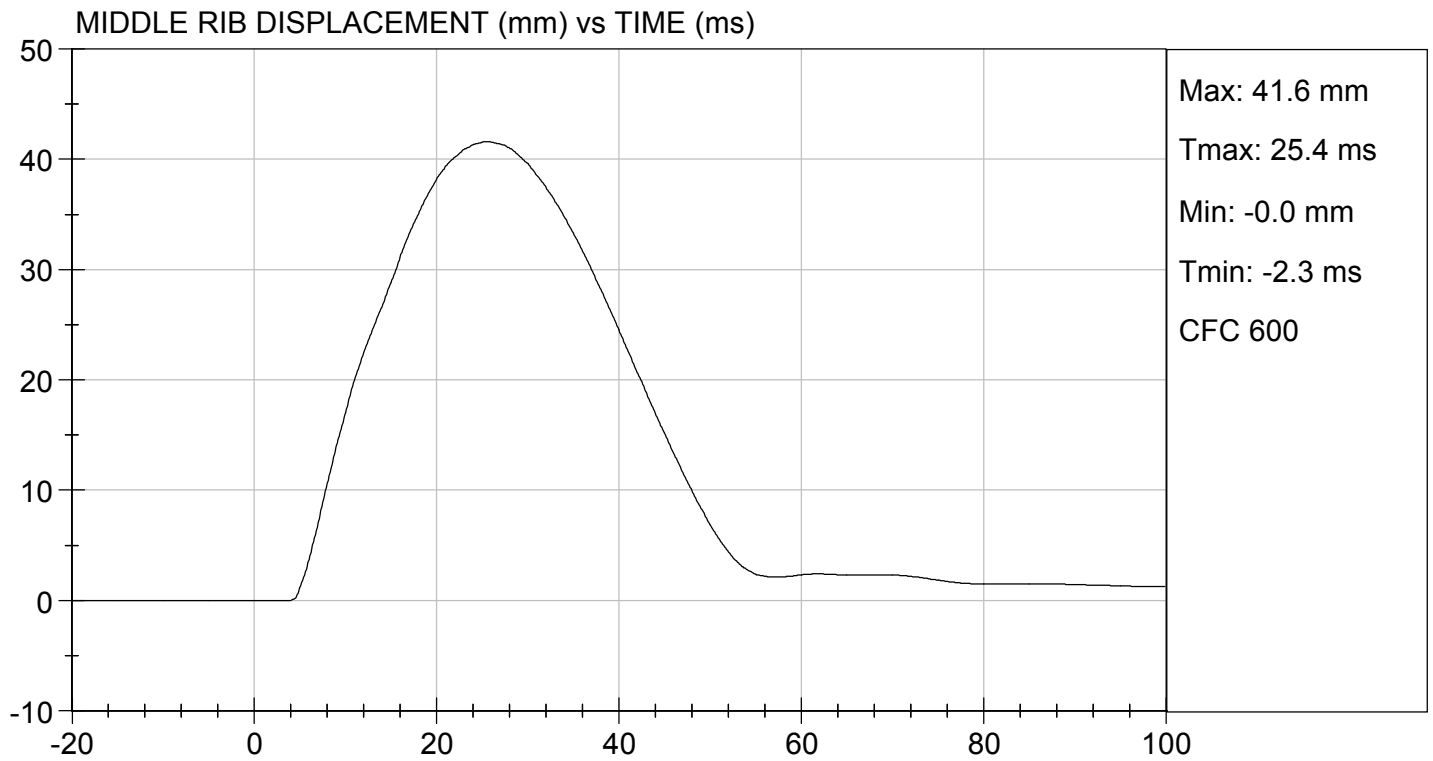
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.8	Pass
Humidity	%	10 to 70	25	Pass
Impact Velocity	m/s	4.20 to 4.40	4.23	Pass
Maximum Probe Acceleration	G's	14 to 18	15	Pass
Upper Rib Displacement	mm	32 to 40	37	Pass
Middle Rib Displacement	mm	39 to 45	42	Pass
Lower Rib Displacement	mm	35 to 43	38	Pass
Upper Spine (T1) Y Acceleration	G's	13 to 17	16	Pass
Lower Spine (T12) Y Acceleration	G's	7 to 11	9	Pass
Overall Test Results				Pass

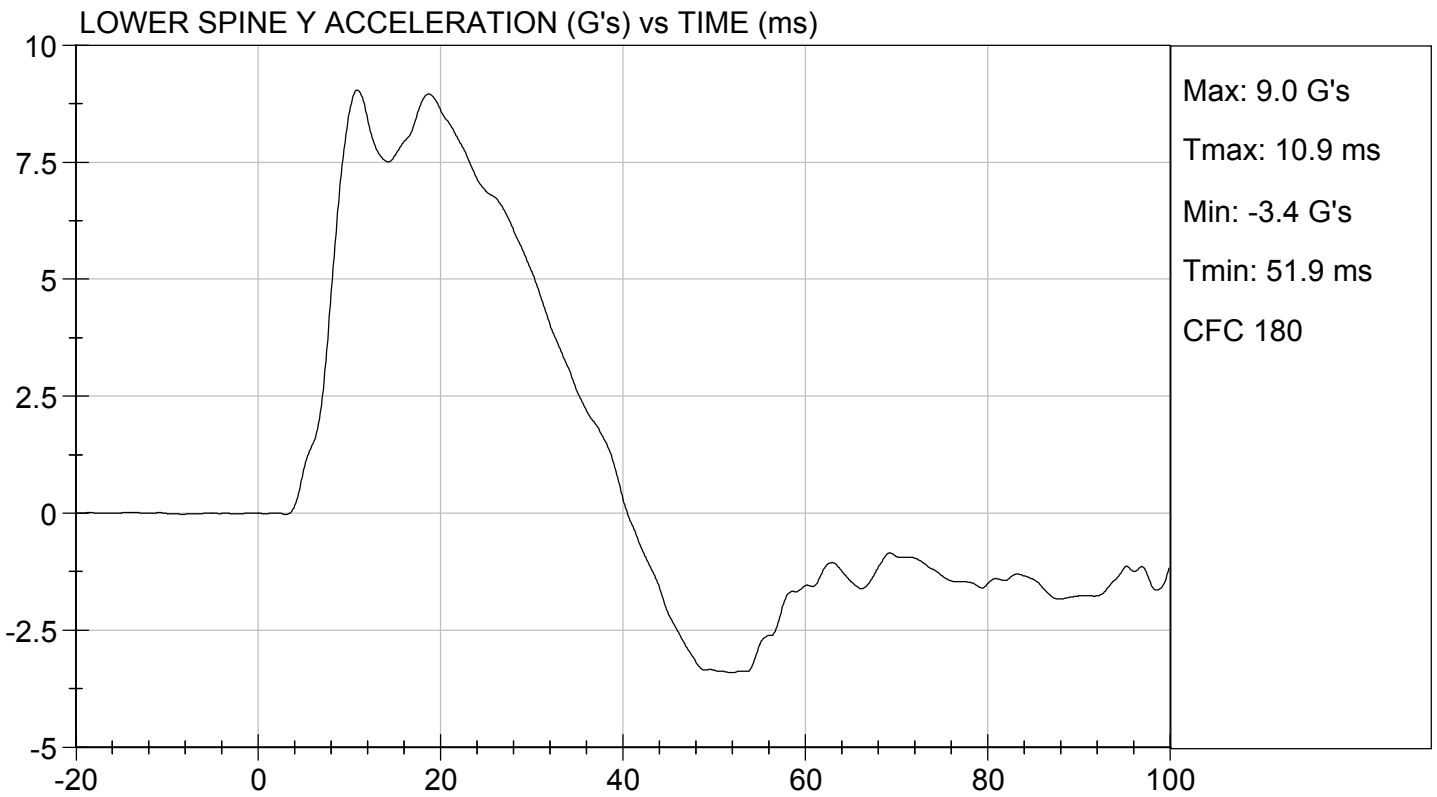
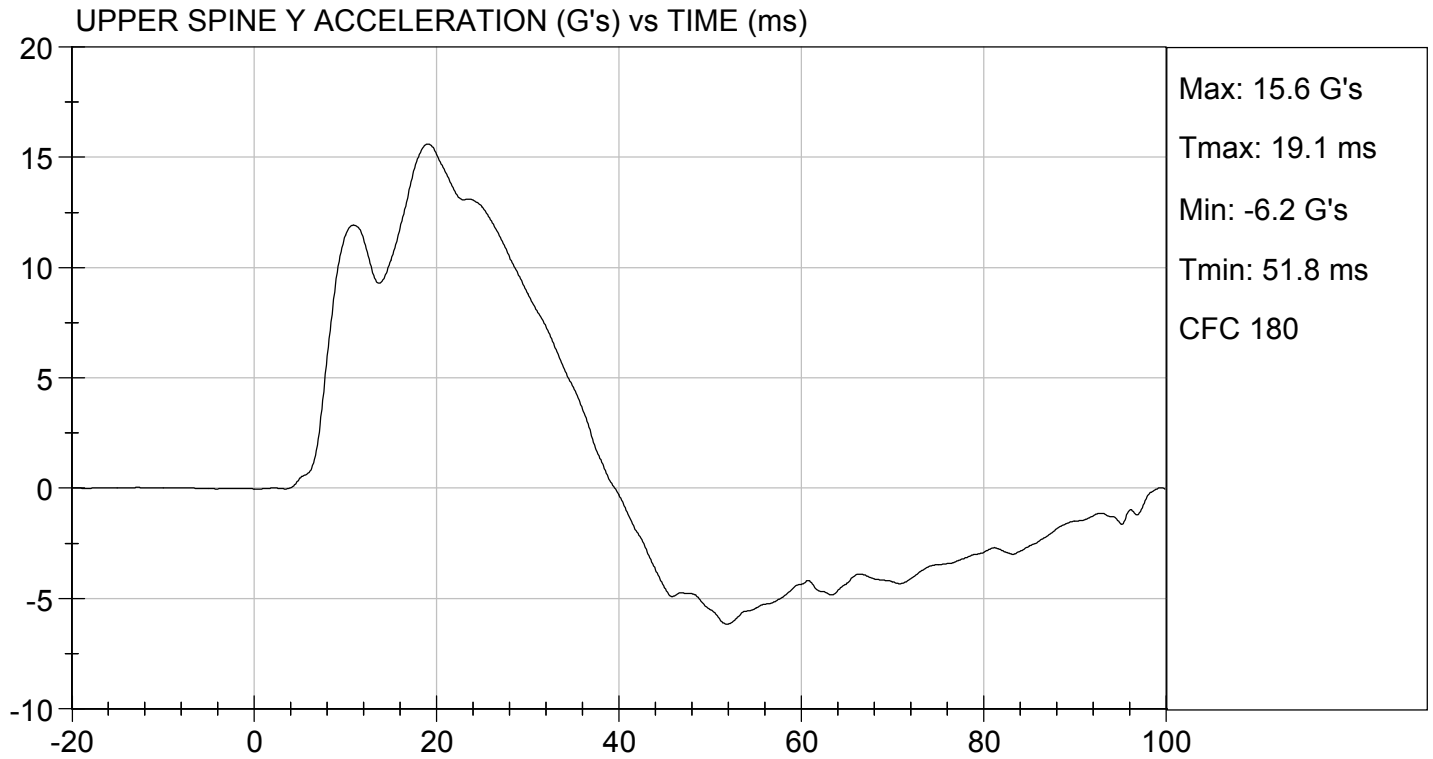

 Laboratory Technician

11/24/2020
 Test Date


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

ATD Serial No: 306

Test I.D: D203006

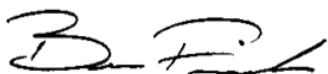
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.8	Pass
Humidity	%	10 to 70	25	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Maximum Probe Acceleration	G's	12 to 16	13	Pass
Upper Abdomen Rib Displacement	mm	36 to 47	42	Pass
Lower Abdomen Rib Displacement	mm	33 to 44	41	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	11	Pass
Overall Test Results				Pass



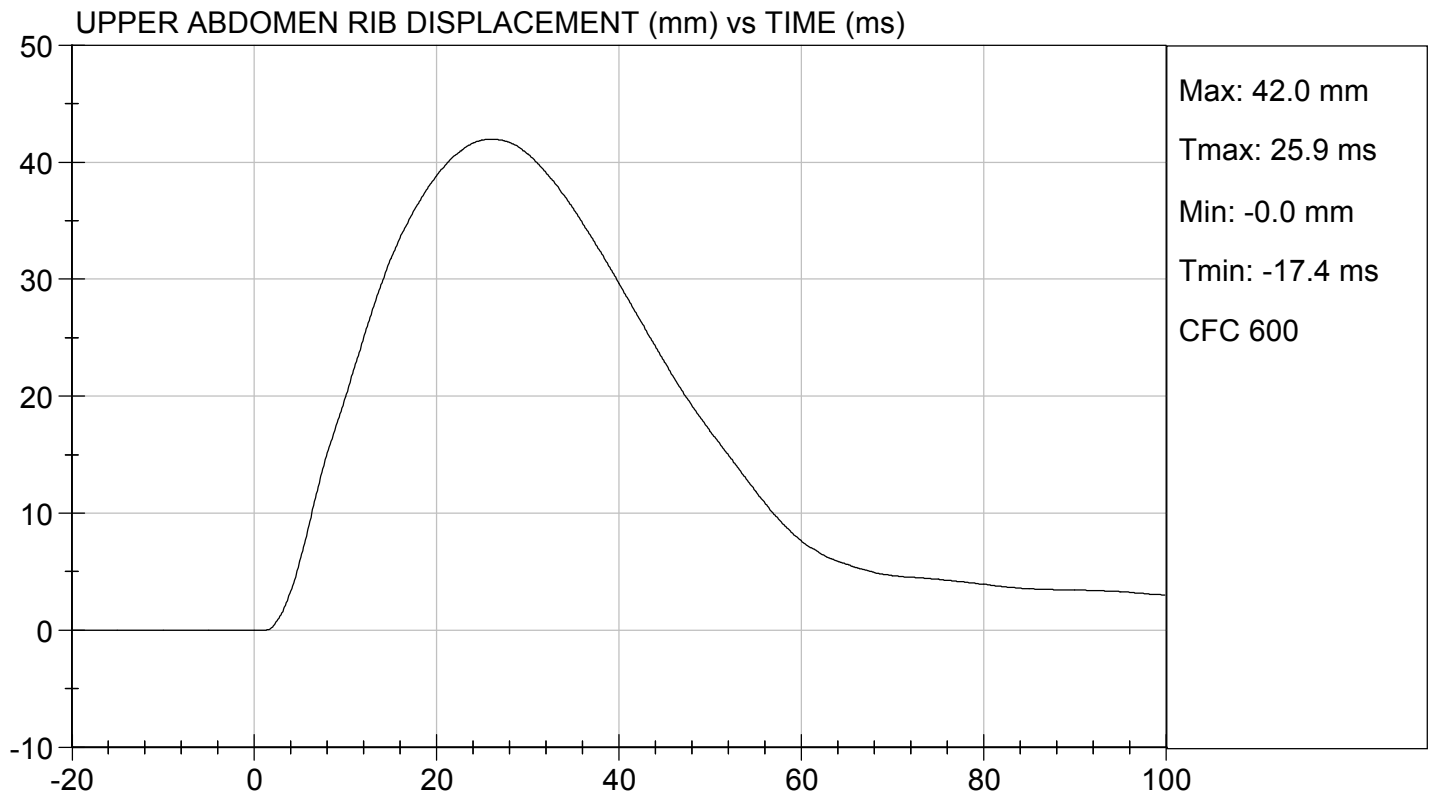
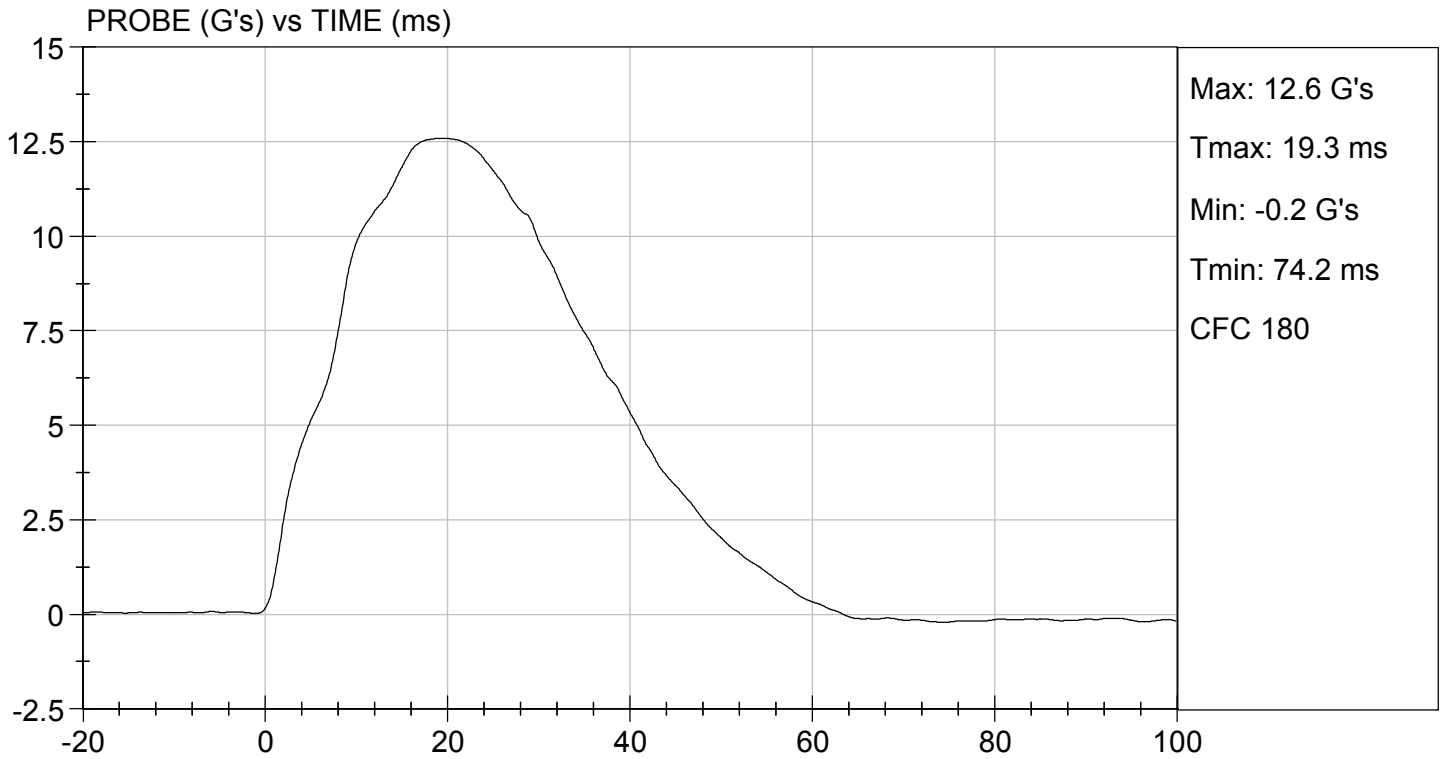
Laboratory Technician

11/24/2020

Test Date

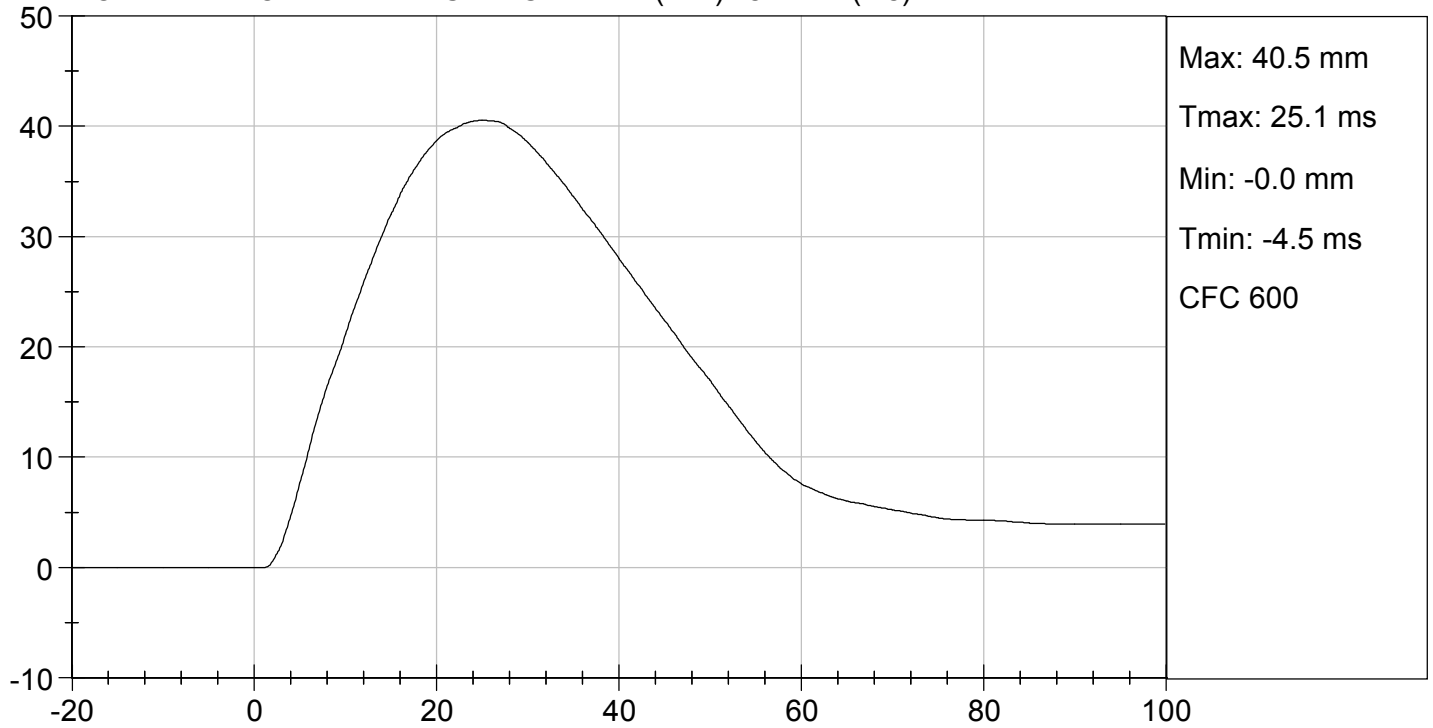


Approved By

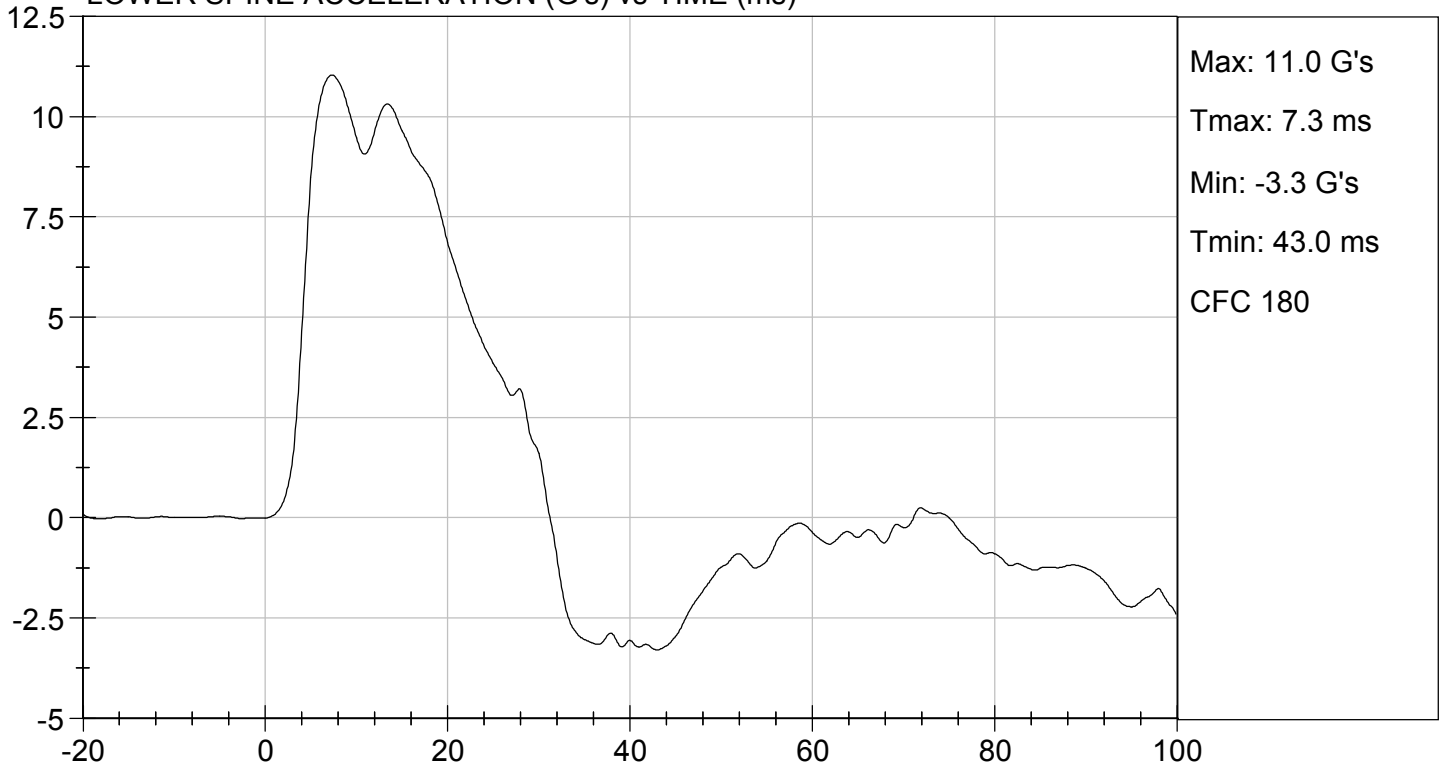




LOWER ABDOMEN RIB DISPLACEMENT (mm) vs TIME (ms)



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



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

ATD Serial No: 306

Test I.D: D203007

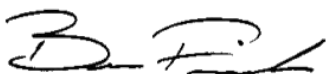
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.8	Pass
Humidity	%	10 to 70	25	Pass
Impact Velocity	m/s	6.60 to 6.80	6.60	Pass
Maximum Probe Acceleration	G's	38 to 47	42	Pass
Pelvis Y Acceleration After 6 ms	G's	34 to 42	40	Pass
Peak Acetabulum Force	N	3600 to 4300	3,850	Pass
Overall Test Results				Pass



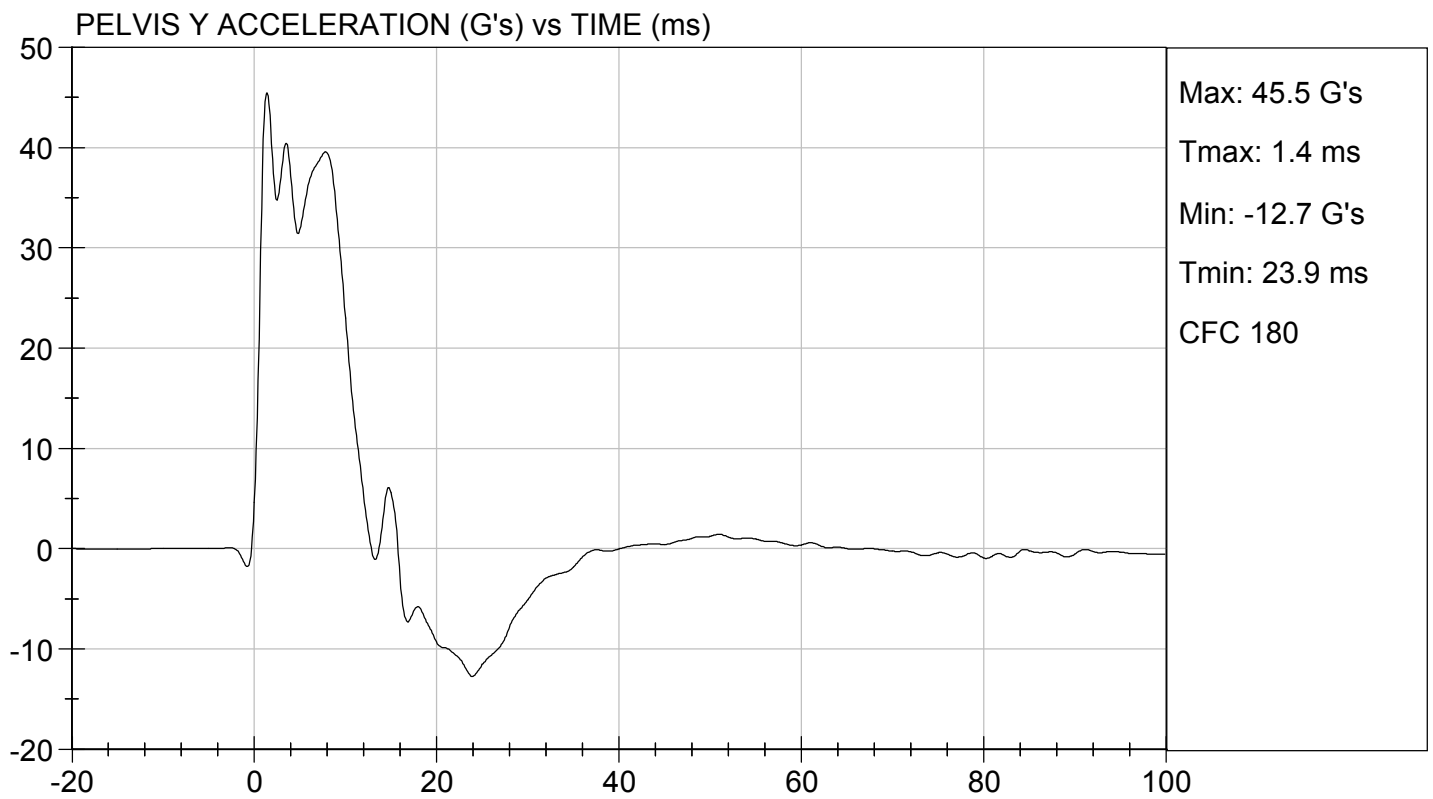
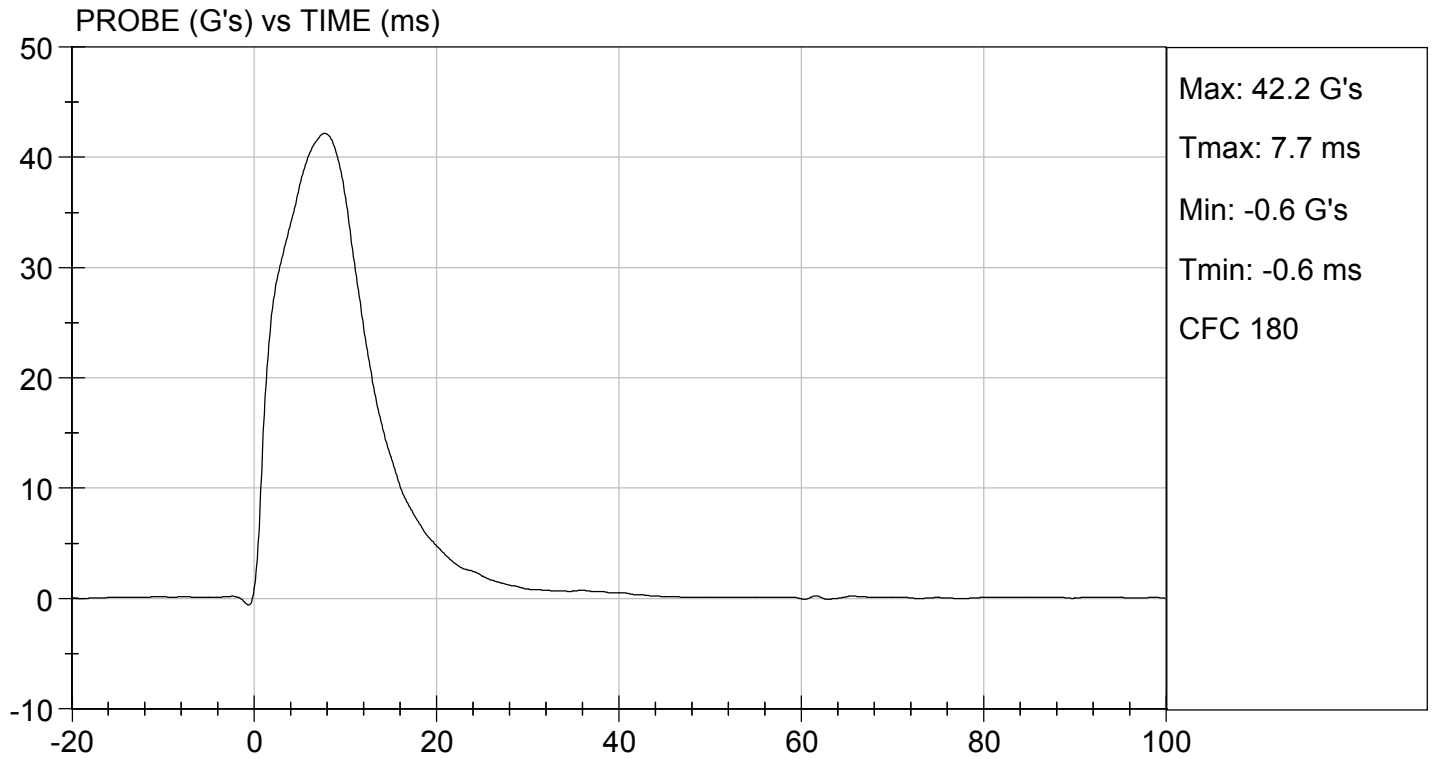
Laboratory Technician

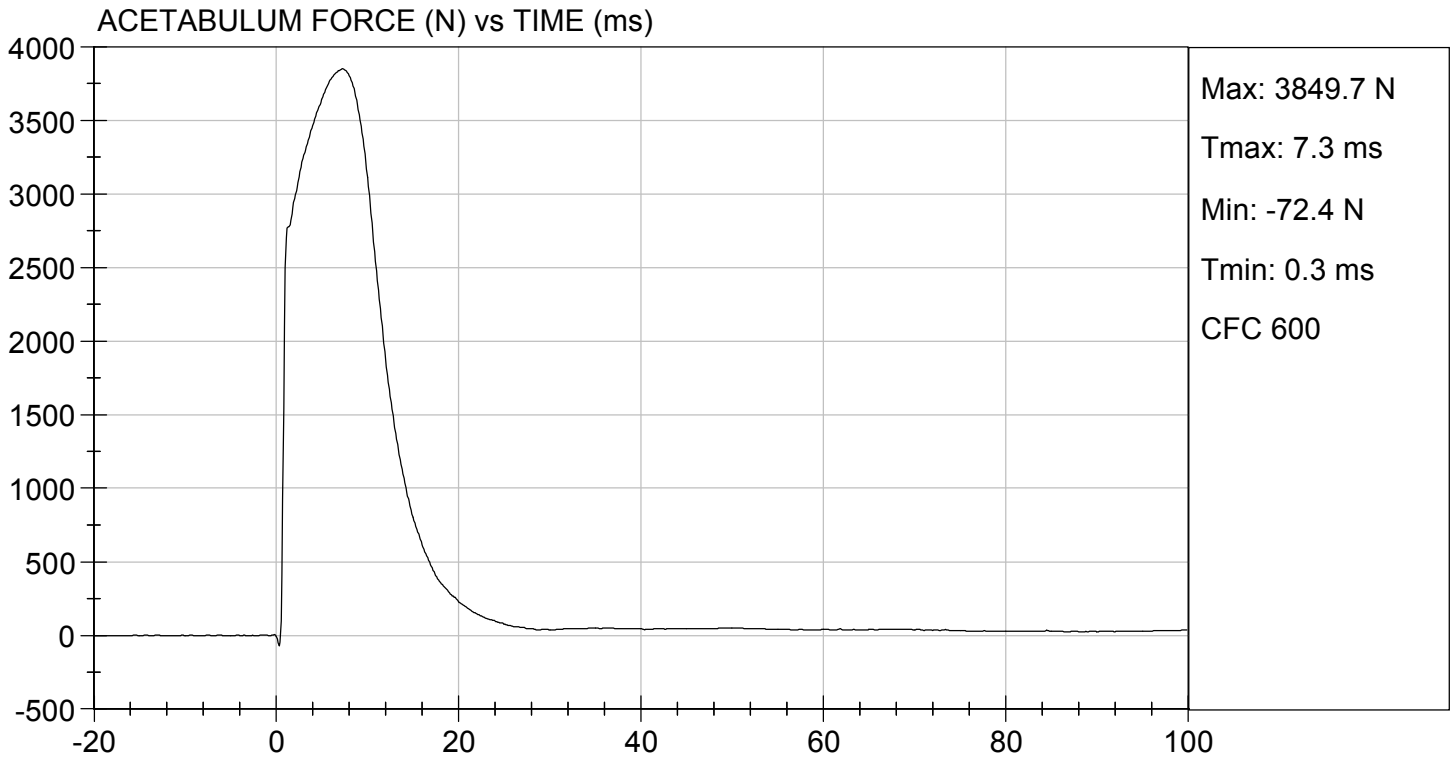
11/24/2020

Test Date



Approved By






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

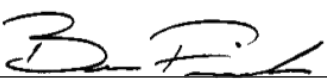
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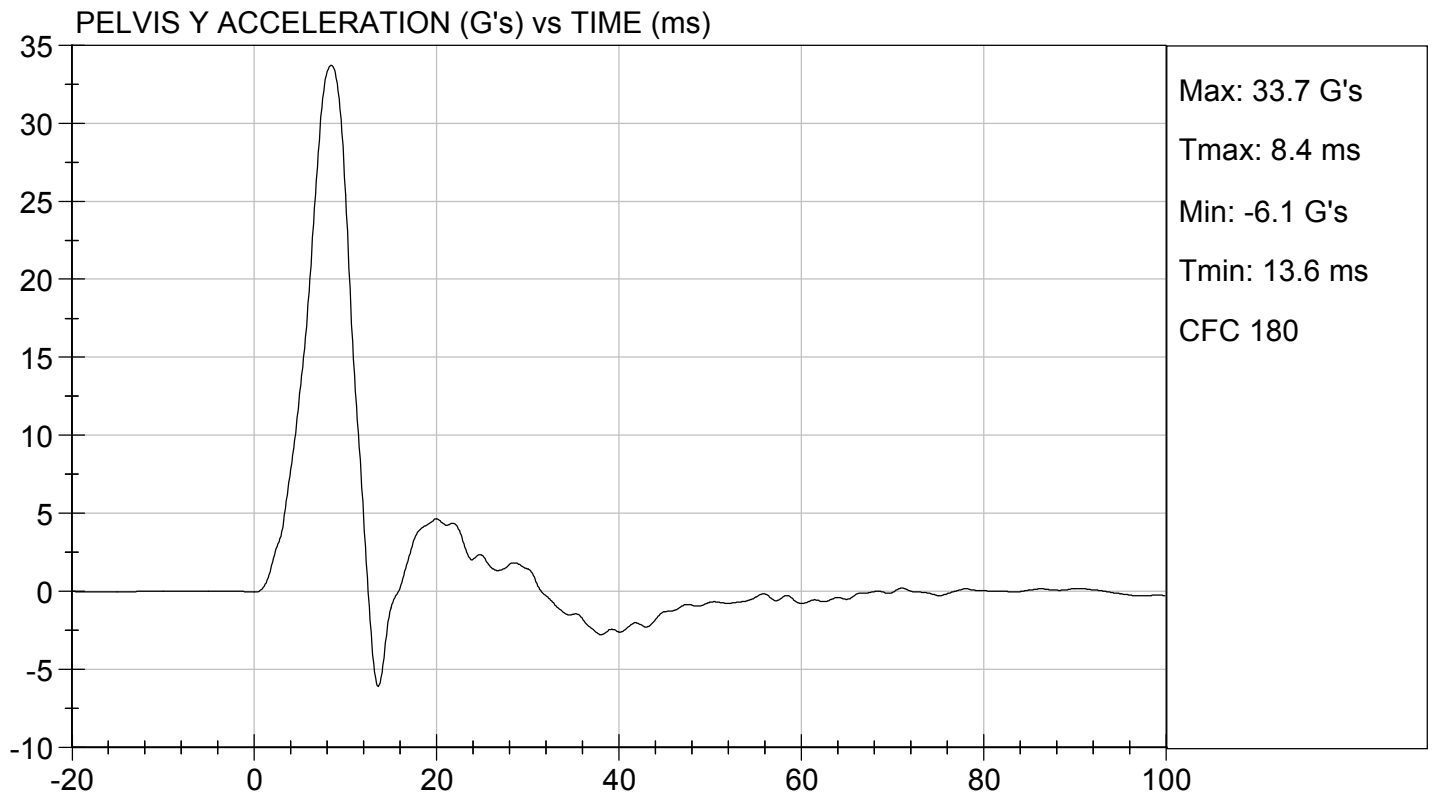
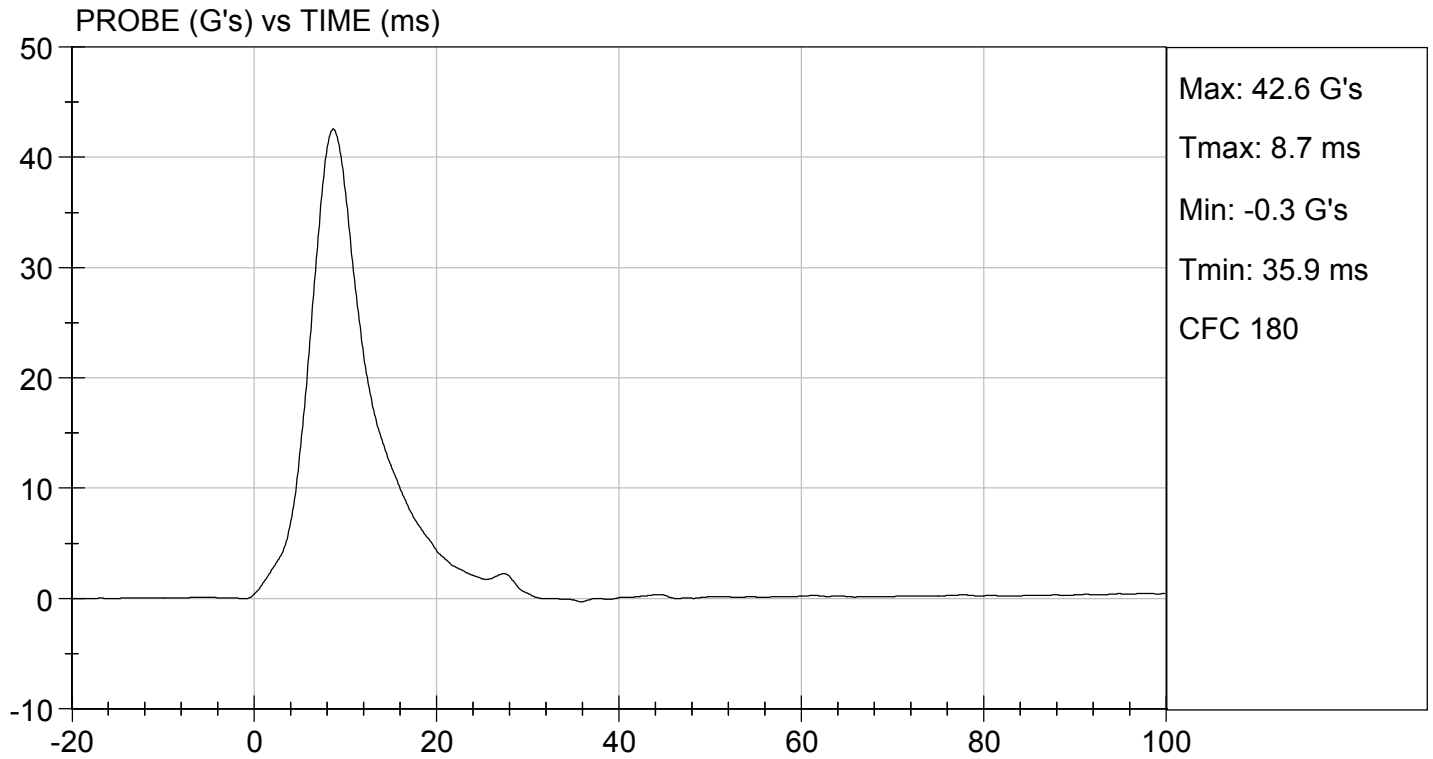
Test I.D: D203008

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.7	Pass
Humidity	%	10 to 70	25	Pass
Impact Velocity	m/s	4.20 to 4.40	4.23	Pass
Maximum Probe Acceleration	G's	36 to 45	43	Pass
Pelvis Y Acceleration	G's	28 to 39	34	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4,850	Pass
Overall Test Results				Pass


 Laboratory Technician

11/19/2020
 Test Date

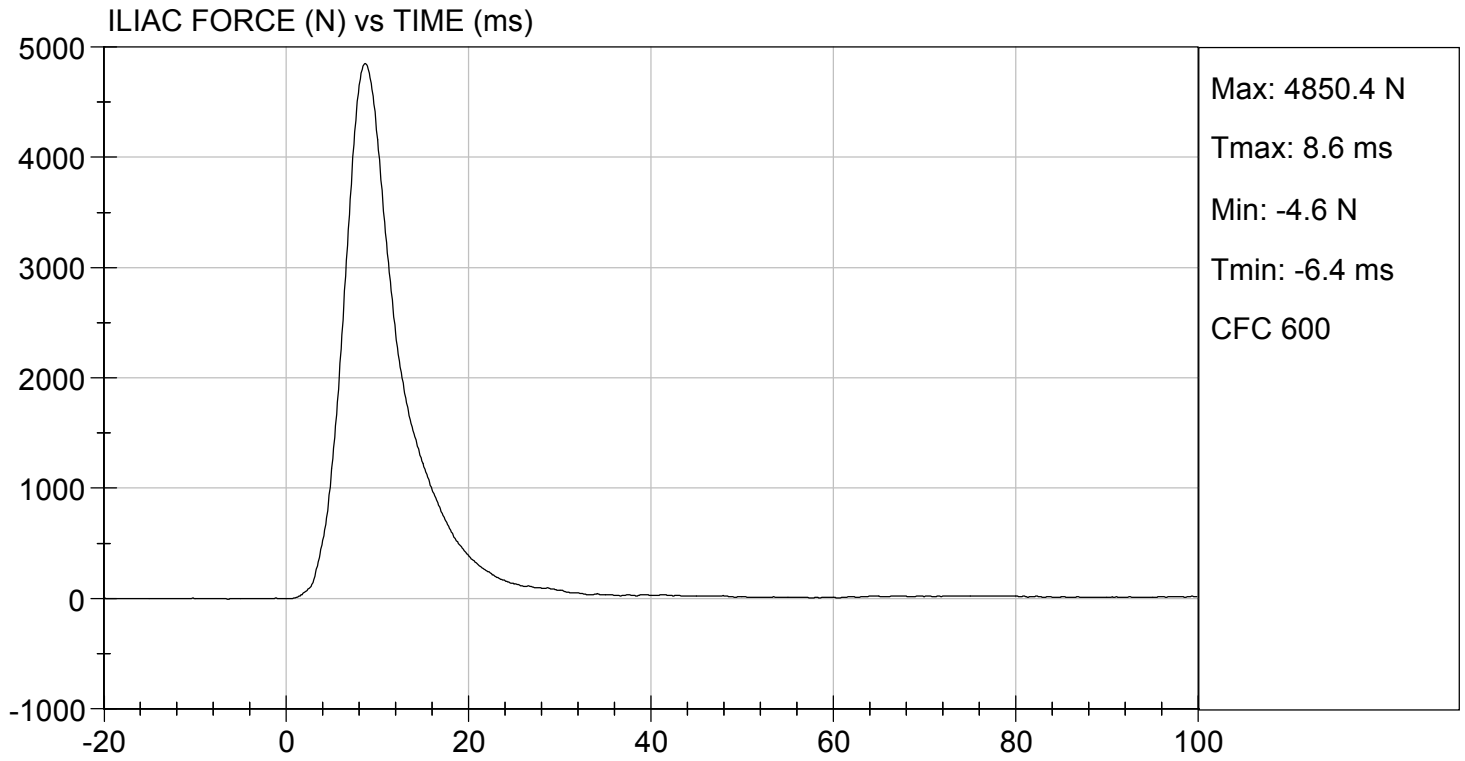

 Approved By





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

TEST DATE: 11/19/2020
TEST #: D203008





SID-IIs Pelvis Plug Certification Test

Plug S/N 13554

Test Number 11198

Report Number 11236

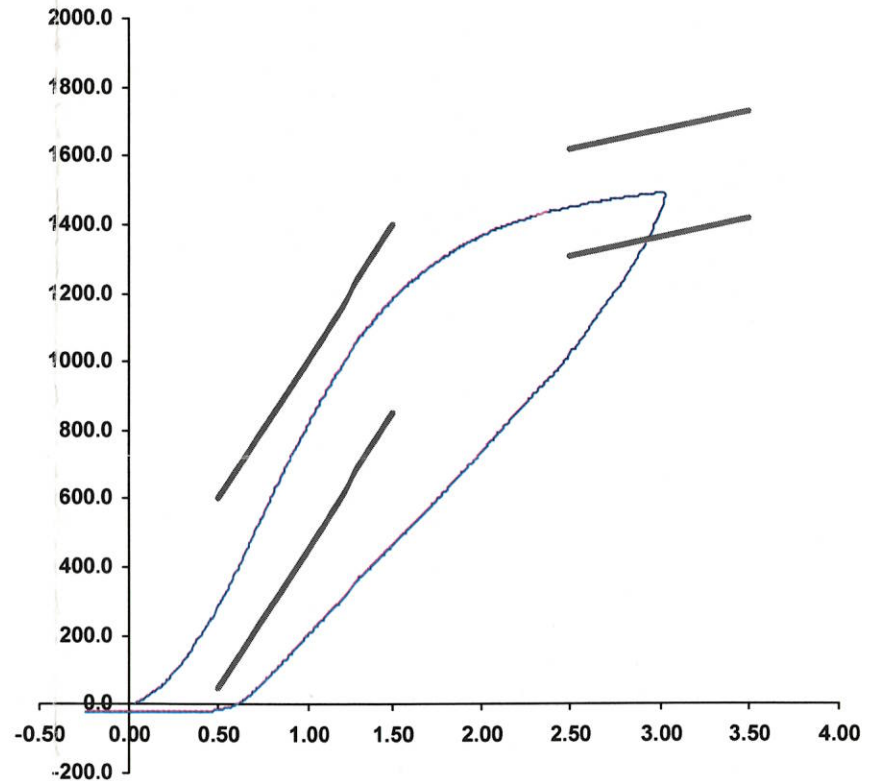
Test Date 9/23/2019 12:13:55 PM

	<u>Test Results</u>	<u>Spec Min</u>	<u>Spec Max</u>
Force @ 0.5 mm (N)	295.50	50.00	600.00
Force @ 1.5 mm (N)	1,190.48	850.00	1,400.00
Force @ 2.5 mm (N)	1,451.56	1,306.00	1,618.00
Force @ 3.0 mm (N)	1,491.72	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 23-Sep-19
 SACO Research

By: DC Date: 9/23/2019



SID-IIs Pelvis Plug Certification Test

Plug S/N 13558

Test Number 11202

Report Number 11240

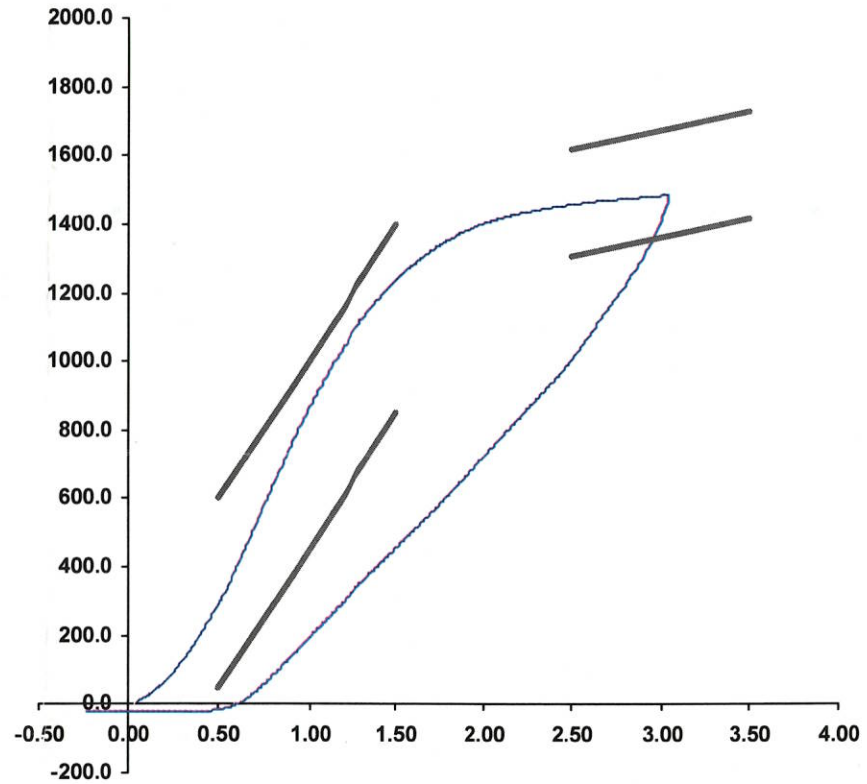
Test Date 9/23/2019 12:20:05 PM

	<u>Test Results</u>	<u>Spec Min</u>	<u>Spec Max</u>
Force @ 0.5 mm (N)	305.22	50.00	600.00
Force @ 1.5 mm (N)	1,238.68	850.00	1,400.00
Force @ 2.5 mm (N)	1,457.63	1,306.00	1,618.00
Force @ 3.0 mm (N)	1,483.94	1,361.00	1,673.00

Testing Machine STM-20 596554;
 Load Cell S/N (FI360947), Units (LBS) 1000
 Crosshead Speed (mm / min) or Rat 12.7
 Extension or Position Measured by XHD_100 (XHD100)

Notes:

Force (-N) vs Extension (-mm)



Operator

Part Number 180-4450

Template No 107 23-Sep-19
 SACO Research

By: DC Date: 9/23/2019

APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

Table 1 – Dummy Instrumentation

			SID-IIs S/N 306			
			Serial Number	Manufacturer	Calibration Date	
Head CG Accelerometers			X	P79721	Endevco	06/29/2020
			Y	P79724	Endevco	06/29/2020
			Z	P79445	Endevco	06/29/2020
			Xr	P84999	Endevco	06/29/2020
			Yr	P85000	Endevco	06/29/2020
			Zr	P85001	Endevco	06/29/2020
Head Angular Rate Sensors			X	ARS7391	DTS	08/04/2020
			Y	ARS7475	DTS	08/04/2020
			Z	ARS7516	DTS	08/04/2020
Displacement Potentiometers	Thoracic Rib	Upper	Y	G033	FTSS	06/30/2020
		Middle	Y	G1261	FTSS	06/30/2020
		Lower	Y	G1270	FTSS	06/30/2020
	Abdominal Rib	Upper	Y	G032	FTSS	06/30/2020
		Lower	Y	G1304	FTSS	06/30/2020
Lower Spine Accelerometers (T12)			X	P96332	Endevco	06/29/2020
			Y	P96335	Endevco	06/29/2020
			Z	P96341	Endevco	06/29/2020
Acetabulum Load Cell			Y	ACG4285FY	FTSS	11/27/2019
Iliac Wing Load Cell			Y	IWG3023FY	FTSS	11/27/2019
Pelvis Plug (struck side)				13554	SACO	09/23/2019
Pelvis Plug (non-struck side)				13558	SACO	09/23/2019

Table 2 – Vehicle Instrumentation

		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	PCB1426	PCB	07/17/2020
Vehicle Center of Gravity	Y	PCB1438	PCB	07/17/2020
Vehicle Center of Gravity	Z	PCB1444	PCB	07/17/2020
Left Floor Sill	Y	PCB1204	PCB	09/17/2020
A-Pillar Sill	Y	T19553	Endevco	05/29/2020
A-Pillar Low	Y	PCB1419	PCB	07/21/2020
A-Pillar Mid	Y	PCB1430	PCB	07/20/2020
B-Pillar Sill	Y	PCB1463	PCB	07/20/2020
B-Pillar Low	Y	T22727	Endevco	11/03/2020
B-Pillar Mid	Y	T22784	Endevco	11/03/2020
Driver Seat	Y	T20754	Endevco	06/02/2020
Engine Top	X	T22860	Endevco	10/22/2020
Engine Top	Y	T22881	Endevco	10/22/2020
Firewall	Y	PCB853	PCB	09/17/2020
Right Roof	Y	PCB1104	PCB	07/13/2020
Right Floor Sill	Y	T20391	Endevco	06/29/2020
Rear Floorpan	X	PCB1403	PCB	07/17/2020
Rear Floorpan	Y	PCB1394	PCB	07/17/2020

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