

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

**FORD MOTOR CO.
2021 Ford F-150 4x2 SuperCab
NHTSA No.: M20210205**

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



Test Date: May 21, 2021

Final Report Date: August 25, 2021

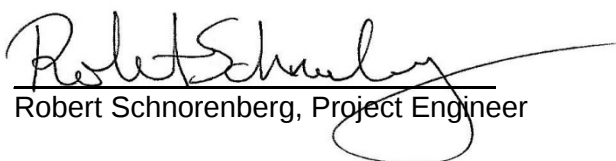
FINAL REPORT

**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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Prepared by: 
Ben Fischer, Project Manager

Approved by: 
Robert Schnorenberg, Project Engineer

Approval Date: August 25, 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

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16. Abstract A 32.20 km/h, 75° oblique impact Side NCAP Test was conducted on the subject 2021 Ford F-150 4x2 SuperCab 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 May 21, 2021. The impact velocity was 32.38 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 21.8°C. The test vehicle post-test maximum crush was 327 mm at level 3. The test vehicle's performance was as follows: <table border="1" style="width: 100%; border-collapse: collapse; margin: 10px 0;"> <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;">257</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;">39</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;">1922</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;">24</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> *Proposed IARV The two doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite door(s) did not open during the side impact event.				Measurement Description	Units	Driver ATD (SID-IIs)		Threshold	Result	Head Injury Criteria (HIC ₃₆)		1000	257	Resultant Lower Spine Acceleration	g	82	39	Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	1922	Maximum Thoracic Rib Deflection	mm	38*	24	Maximum Abdomen Rib Deflection	mm	45*	23
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17. Key Words New Car Assessment Program (NCAP) Side Impact Pole Part 572V SID-IIs		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division 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 F-150 4x2 SuperCab. 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 F-150 4x2 SuperCab. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.38 km/h. The test was conducted by MGA Research Corporation in Burlington, Wisconsin on May 21, 2021. 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	257
Resultant Lower Spine Acceleration	g	82	39
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	1922
Maximum Thoracic Rib Deflection	mm	38*	24
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 Airbag (Other)				
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes		No	
Other:	No		No	

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

GENERAL COMMENTS

Left Lower B-Post Y was not installed.

Left Mid B-Post Y was not installed.

Load Cell Pole #8 Fy recorded no valid data.

SECTION 2
OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2021 Ford F-150 4x2 SuperCab
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210205
Test Date: 5/21/2021

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20210205	Traction Control System (TCS)	Yes
Model Year	2021	Auto-Leveling System	No
Make	Ford	Automatic Door Locks (ADL)	Yes
Model	F-150 4x2 SuperCab	Power Window Auto-Reverse	Yes
Body Style	Extended Cab Pickup	Other Optional Feature	No
VIN	1FTEX1CB8MFA46974	Driver Front Airbag	Yes
Body Color	Carbonized Gray	Driver Curtain Airbag	Yes
Odometer Reading (km/mi)	422 km / 262 mi	Driver Head/Torso Airbag	No
Engine Displacement (L)	3.3 L	Driver Torso Airbag	No
Type/No. Cylinders	V6	Driver Torso/Pelvis Airbag	Yes
Engine Placement	Longitudinal	Driver Pelvis Airbag	No
Transmission Type	Automatic	Driver Knee Airbag	Yes
Transmission Speeds	10	Rear Pass. Curtain Airbag	Yes
Overdrive	Yes	Rear Pass. Head/Torso Airbag	No
Final Drive	RWD	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	Yes	Driver Seat Belt Pretensioner	Yes
Tilt Steering Wheel	Yes	Rear Pass. Seat Belt Pretensioner	No
Power Seats	No	Driver Load Limiter	Yes
Anti-Lock Brakes (ABS)	Yes	Rear Pass. Load Limiter	No
		Other Safety Restraint	N/A

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

Manufactured By	FORD MOTOR CO.	GVWR (kg)	2835
Date of Manufacture	12/20	GAWR Front (kg)	1361
Vehicle Type	Truck	GAWR Rear (kg)	1542

VEHICLE SEATING AND WEIGHT CAPACITY DATA

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	3	3		6	
Capacity Weight (VCW) (kg)				820	(A)
DSC x 68.04 kg				408	(B)
Rated Cargo and Luggage Weight (RCLW) (kg)				136	(A-B)

* Rated Cargo and Luggage Weight (RCLW) limited to maximum of 300 lbs (136 kg).

VEHICLE SEAT TYPE

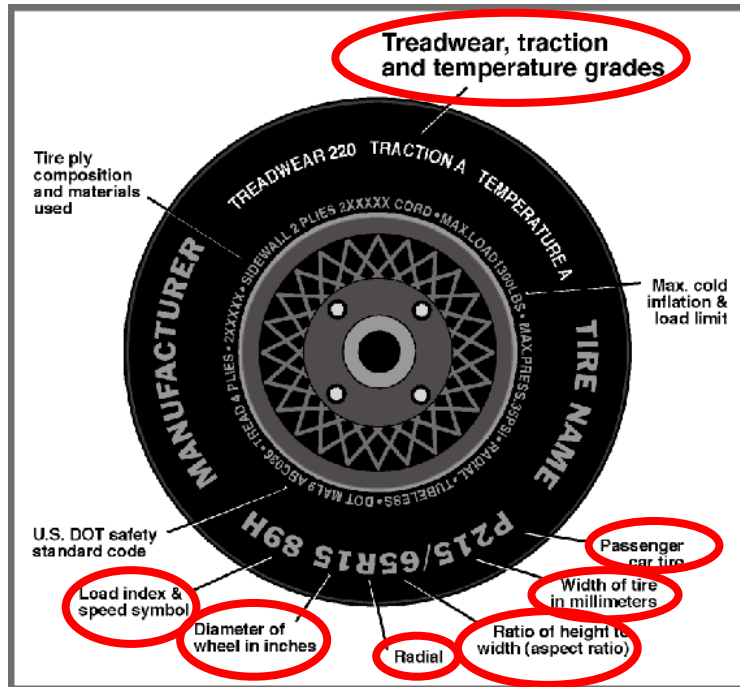
Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						w/ Lever	w/ Knob
Front Seat	X					X	
Rear or Second Row			X		X		
Third Row Seat							

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

Test Vehicle: 2021 Ford F-150 4x2 SuperCab
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210205
 Test Date: 5/21/2021

VEHICLE TIRE INFORMATION



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	250	250
Recommended Tire Size	245/70R17	245/70R17
Tire Size on Vehicle	245/70R17	245/70R17
Tire Manufacturer	Michelin	Michelin
Tire Model	Primacy LTX	Primacy LTX
Treadwear	540	540
Traction	A	A
Temperature Grade	B	B
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 1 Polyamide, 2 Steel	2 Polyester, 1 Polyamide, 2 Steel
Load Index/Speed Symbol	110T	110T
Tire Material	Rubber	Rubber
DOT Safety Code Left	M3X6 00NX 4020	M3X6 00NX 4020
DOT Safety Code Right	M3X6 00NX 4020	M3X6 00NX 4020

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

Test Vehicle: 2021 Ford F-150 4x2 SuperCab
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210205
 Test Date: 5/21/2021

TEST PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	270	270	270	270
Tire Placard	kPa	250	250	250	250
Owner's Manual	kPa	250	250	250	250
As Tested	kPa	250	250	250	250

TEST AXLE VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	590.0	429.5		610.0	509.5		600.0	530.0	
Right	kg	585.5	442.5		591.0	518.0		574.0	531.5	
Ratio	%	57.4%	42.6%		53.9%	46.1%		52.5%	47.5%	
Totals	kg	1175.5	872.0	2047.5	1201.0	1027.5	2228.5	1174.0	1061.5	2235.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	2047.5	(A)
Actual Weight of 1 P572 ATD (SID-IIs) Used	kg	52	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	136	(C)
Calculated Test Vehicle Target Weight (TVTW)	kg	2235.5	(A+B+C)

Does the measured As Tested Vehicle Weight lie within the required weight range (i.e. Calculated Test Vehicle Target Weight – 4.5 kg to 9 kg)? **YES**

TEST VEHICLE ATTITUDES AND CG

	Units	As Delivered	As Tested	Fully Loaded	Meets Requirement
Driver Door Sill Angle (front-to-back)*	deg	-0.7	-0.4	-0.4	Yes
Front Pass. Door Sill Angle (front-to-back)*	deg	-1.1	-0.8	-0.7	Yes
Front Bumper Angle (left-to-right)**	deg	-0.1	-0.1	-0.1	Yes
Rear Bumper Angle (left-to-right)**	deg	-0.2	-0.3	-0.3	Yes
Vehicle CG (Aft of Front Axle)	mm	1577	1707	1758	
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	-4	4	9	

* 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	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 F-150 4x2 SuperCab
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210205
Test Date: 5/21/2021

TEST SURFACE MARKINGS

	Distance from 75° Impact Location Line (mm)
Fore 25 mm Target	1018
Aft 25 mm Target	1024

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

Test Vehicle: 2021 Ford F-150 4x2 SuperCab
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210205
 Test Date: 5/21/2021

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	Fixed	Fixed	Fixed
Front Passenger Seat	Fixed	Fixed	Fixed
Front Center Seat	Fixed	Fixed	Fixed
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed

SEAT HEIGHT AND ANGLE

Seat	As-Tested SCRL Angle (Mid) (°)	As-Tested SCR Height (mm)	SCR Height Position	SCR Height (mm)		
				Rear-Most	Mid	Forward-Most
Driver Seat	Fixed	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	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
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 F-150 4x2 SuperCab
 Test Program: NCAP Side Pole Impact Test

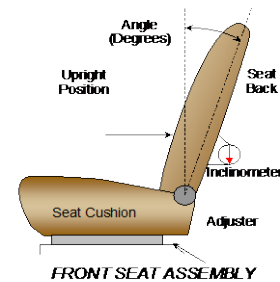
NHTSA No.: M20210205
 Test Date: 5/21/2021

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	255	38	0	0
Front Passenger Seat	240	35	0	0
Front Center Seat	Fixed	Fixed	Fixed	Fixed
Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed	Fixed

SEAT BACK ANGLE ADJUSTMENT

The driver's seat back is positioned such that the dummy's head is level. The front center and front passenger's seat backs are positioned in a similar manner as the driver's seat back. The struck-side rear passenger seat back is positioned in accordance with the information provided by the manufacturer on 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	60.4	32	-8.3	3
Front Passenger Seat	60.6	32	-8.4	3
Front Center Seat	Fixed	Fixed	Fixed	Fixed
Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed	Fixed

All seat back angles measured on outboard headrest post.

SEAT BELT ANCHORAGE ADJUSTMENT

Seat belt anchorages are adjusted in accordance with the information provided by the manufacturer on 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) / Fixed Fore-Aft

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

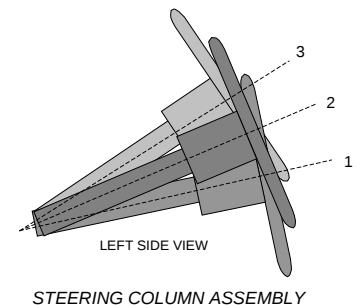
Test Vehicle: 2021 Ford F-150 4x2 SuperCab
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NHTSA No.: M20210205
 Test Date: 5/21/2021

STEERING COLUMN ADJUSTMENT

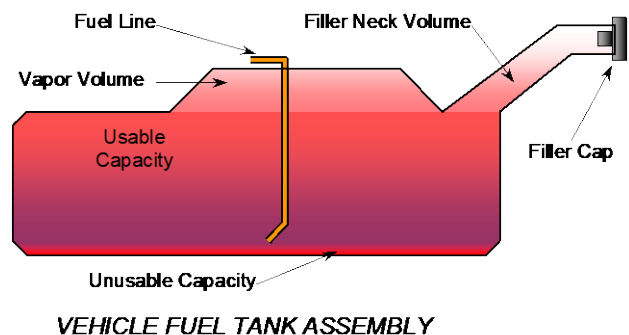
Steering wheel and column adjustments are made so that the steering wheel geometric locus is described when it moves through its full range of motion.

	Wheel Angle (°)	Fore/Aft Position (mm)
Lowermost, Position 1	71.1	
Geometric Center, Position 2	68.3	
Uppermost, Position 3	65.4	
Telescoping Steering Wheel Travel		53
Test Position	68.3	27



FUEL PUMP

The vehicle is equipped with an electronic fuel pump. The electric fuel pump operates for 3 seconds to pressurize the fuel system following the actuation of the ignition. If no attempt has been made to start the engine within 3 seconds following ignition actuation 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. Also, the fuel pump is shut-off by the restraint control module to stop fuel flow to the engine if the vehicle sustains an impact above a certain magnitude. The filler neck is located on the driver's side.



FUEL TANK CAPACITY DATA

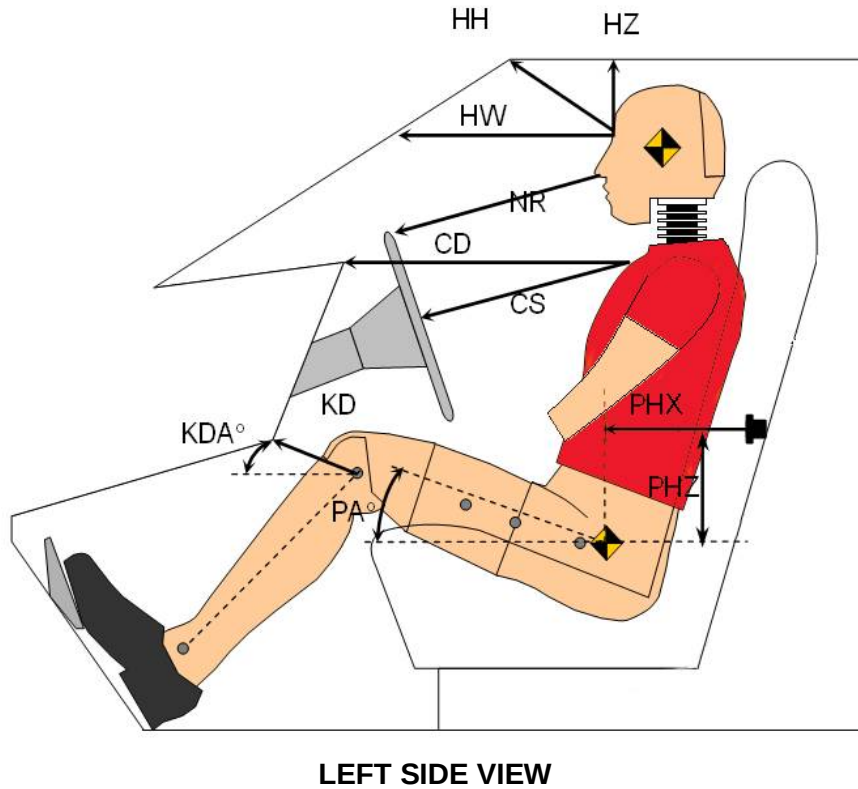
	Liters
Usable Capacity of Standard Tank (see S1 – Vehicle Setup Information)	90.5
Usable Capacity of Optional Tank (see S1 – Vehicle Setup Information)	140.4
Usable Capacity of Standard Tank as Specified in Owner's Manual	90.5
Usable Capacity of Optional Tank as Specified in Owner's Manual	140.4
93% of Usable Capacity	84.1
Actual Amount of Solvent Used	84.0
1/3 of Usable Capacity	30.2

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 F-150 4x2 SuperCab
 Test Program: NCAP Side Pole Impact Test

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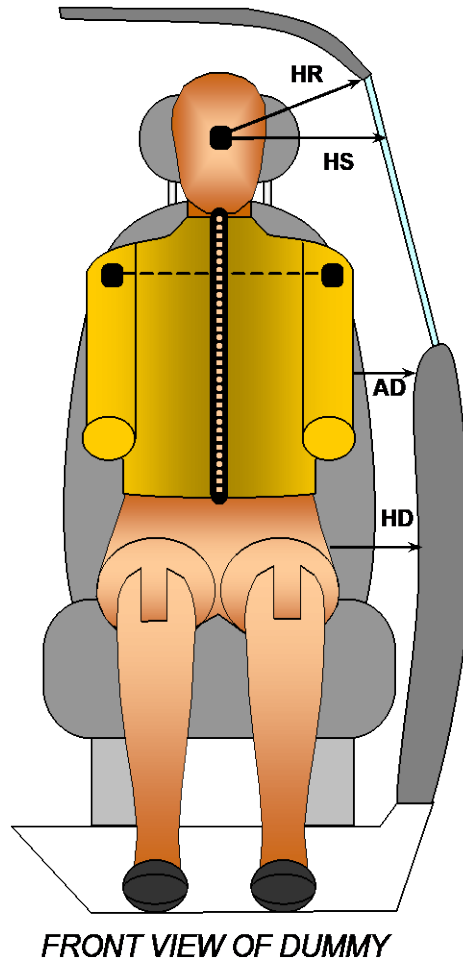


Code	Measurement Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	335	
HW	Head to Windshield	612	
HZ	Head to Roof Liner	233	
NR	Nose to Rim/Seat Back	210	
CD	Chest to Dashboard/Seat Back	439	
CS	Chest to Steering Wheel	149	
KDL / KDAL	Left Knee to Dash/Seat Back	144	22.4
KDR / KDAL	Right Knee to Dash/Seat Back	147	23.0
PAX	Pelvic Tilt Angle X		21.2
PAY	Pelvic Tilt Angle Y		-0.1
PHX	Hip Point to Striker (X-Axis)	450	
PHZ	Hip Point to Striker (Z-Axis)	60	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2021 Ford F-150 4x2 SuperCab
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210205
 Test Date: 5/21/2021

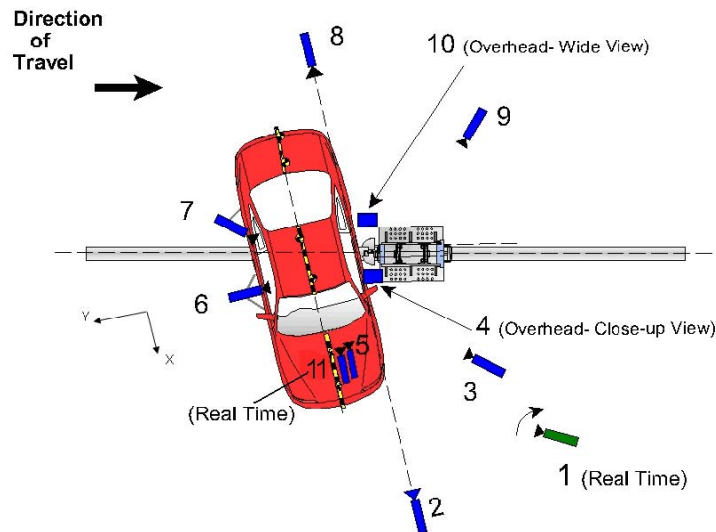


Code	Measurement Description	Driver
		Length (mm)
HR	Head to Side Header	263
HS	Head to Side Window	385
AD	Arm to Door	191
HD	Hip Point to Door	165

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2021 Ford F-150 4x2 SuperCab
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210205
Test Date: 5/21/2021



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	6730	-4070	-1790	24	1000
3	Impact Side 45° Forward	4140	-1905	-1800	12	1000
4	Overhead Closeup	0	0	-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	-7695	-50	-1805	24	1000
9	Impact Side 45° Rearward	-4490	-4305	-1770	12	1000
10	Overhead Wide View	250	880	-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

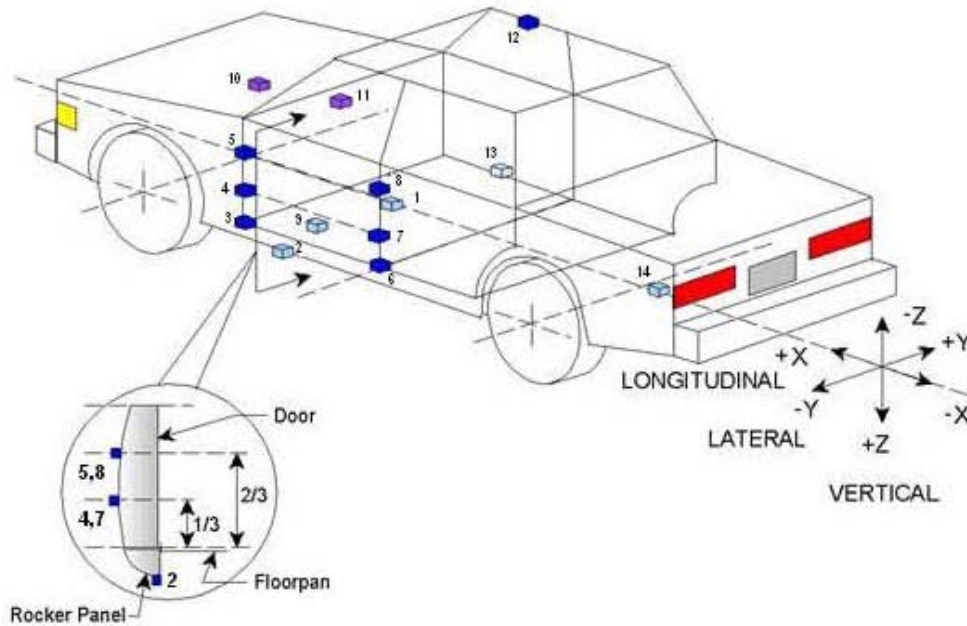
INSTRUMENTATION

	Number of Channels
Driver Dummy	19
Vehicle Structure	16
Pole Load Cells	8
Total	43

DATA SHEET NO. 6
TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2021 Ford F-150 4x2 SuperCab
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210205
Test Date: 5/21/2021



TEST VEHICLE ACCELEROMETER LOCATIONS

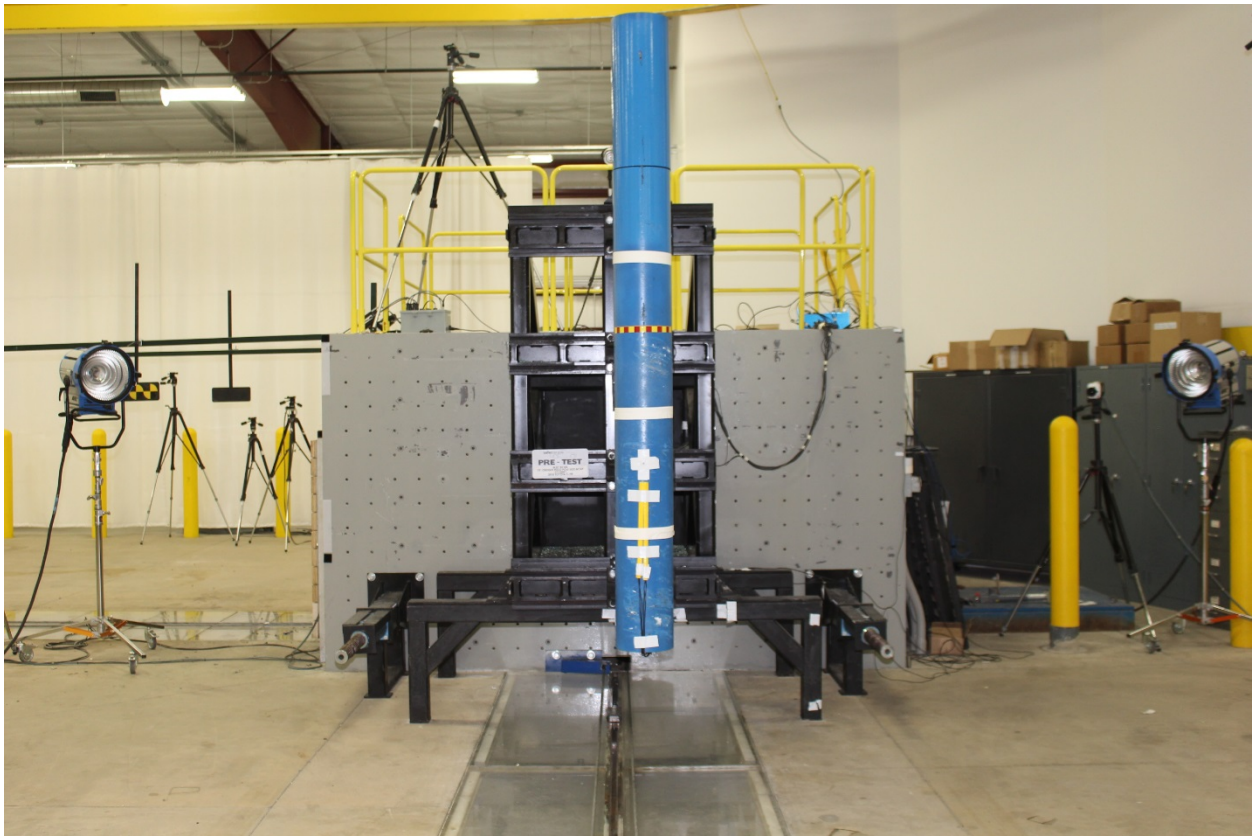
No.	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	3202	0	-584
2	Left Floor Sill	3961	-818	-372
3	A Pillar Sill	4392	-818	-365
4	A Pillar Low	4218	-890	-730
5	A Pillar Mid	4221	-891	-975
6	B Pillar Sill	3041	-818	-380
7	B Pillar Low			
8	B Pillar Mid			
9	Driver Seat Track	3294	-463	-584
10	Engine Top	4755	146	-1075
11	Firewall	4727	-24	-1199
12	Right Roof	3202	617	-1868
13	Right Floor Sill	3962	818	-370
14	Rear Floorpan	1502	0	-746

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 F-150 4x2 SuperCab
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210205
Test Date: 5/21/2021



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 F-150 4x2 SuperCab
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210205
Test Date: 5/21/2021

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Driver Dummy (SID-IIs)
Face	Curtain Airbag
Top of Head	Curtain Airbag
Left Side of Head	Curtain Airbag
Back of Head	Curtain Airbag, Headrest
Left Shoulder	Side Torso/Pelvis Airbag, Seatback
Upper Torso	Seatback
Lower Torso	Side Torso/Pelvis Airbag, Seatback
Left Hip	Side Torso/Pelvis Airbag, Seat Cushion
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	Cracked
Side Window Damage	LF window cracked
Other Notable Effect	None

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

Test Vehicle: 2021 Ford F-150 4x2 SuperCab
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210205
Test Date: 5/21/2021

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side		Struck Side	
	Driver		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)				
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes		No	
Other:	No		No	

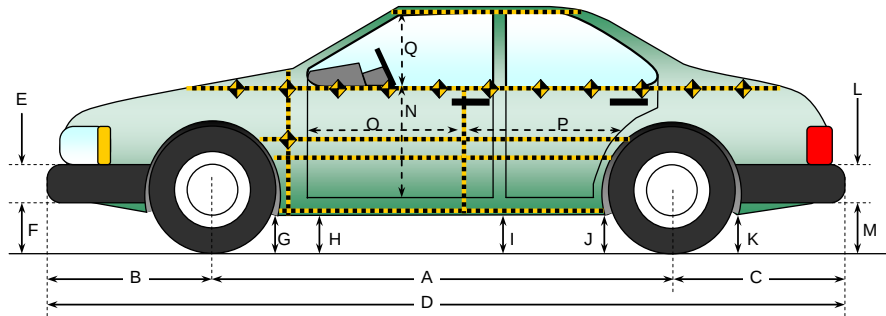
SPEED, ANGLE AT IMPACT, AND IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		1236
Actual Impact Point (Aft of Front Axle)	mm		1244
Horizontal Offset (+forward / -rearward)	mm	+/- 38 of Intended Impact Point	-8
Angle Between Vehicle's Longitudinal Centerline and Line of Forward Motion	degrees	75 +/- 3	74.9
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	32.38
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.24

DATA SHEET NO. 9
TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2021 Ford F-150 4x2 SuperCab
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210205
Test Date: 5/21/2021



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

LEFT SIDE VIEW

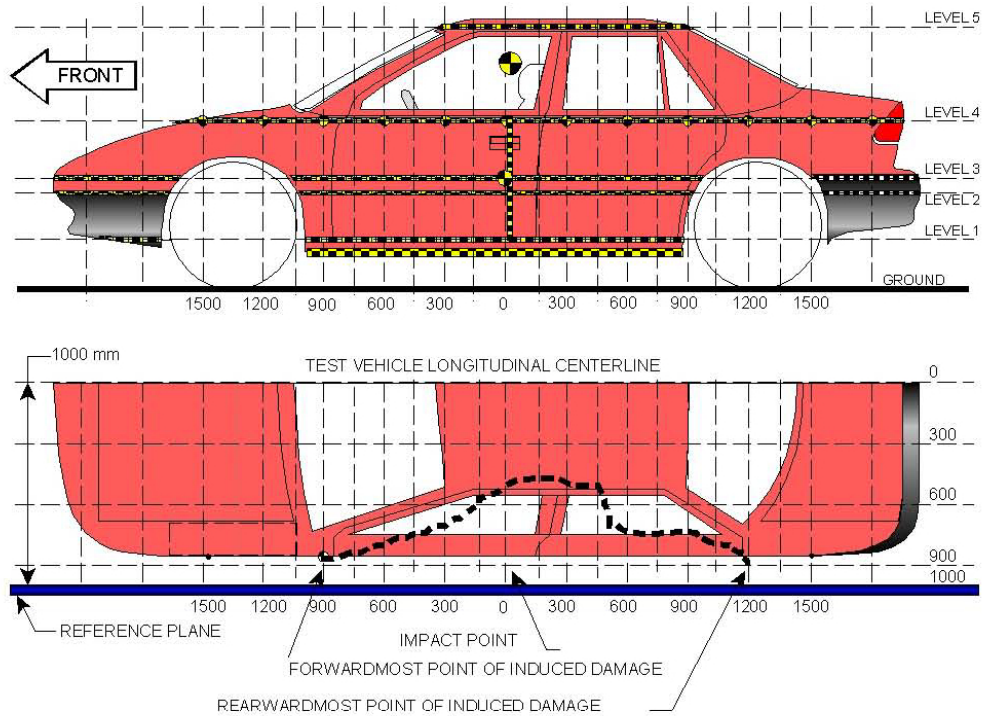
VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	3703	3646	57
B	Front Axle to FSOV	952	1010	-58
C	Rear Axle to RSOV	1229	1194	35
D	Total Vehicle Length at Centerline	5884	5850	34
E	Front Bumper Thickness	230	230	0
F	Front Bumper Bottom to Ground	292	292	0
G	Sill Height at Front Wheel Well	333	324	9
H	Sill Height at Front Door Leading Edge	235	230	5
I	Sill Height at B-Pillar	350	342	8
J1	Sill Height at Rear Wheel Well	250	385	-135
J2	Pinch Weld Height at Rear Wheel Well	365	245	120
K	Sill Height Aft of Rear Wheel Well	403	442	-39
L	Rear Bumper Thickness	157	157	0
M	Rear Bumper Bottom to Ground	362	377	-15
N	Sill Height to Bottom of Front Window Sill	883	802	81
O	Front Door Leading Edge to Impact CL	652	524	128
P	Rear Door Trailing Edge to Impact CL	1261	1196	65
Q	Front Window Opening	598	595	3
R	Right Side Length	5510	5535	-25
S	Left Side Length	5510	5379	131
T	Vehicle Width at B-Pillars	2032	1964	68
U	Front Wheel Track Width	1725		
V	Rear Wheel Track Width	1735		

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

Test Vehicle: 2021 Ford F-150 4x2 SuperCab
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210205
 Test Date: 5/21/2021



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	406	312	-75
2	Mid Door	727	320	0
3	Occupant H-Point	883	327	0
4	Window Sill	1120	301	75
5	Window Top	1760	55	75

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

Test Vehicle: 2021 Ford F-150 4x2 SuperCab
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210205
 Test Date: 5/21/2021

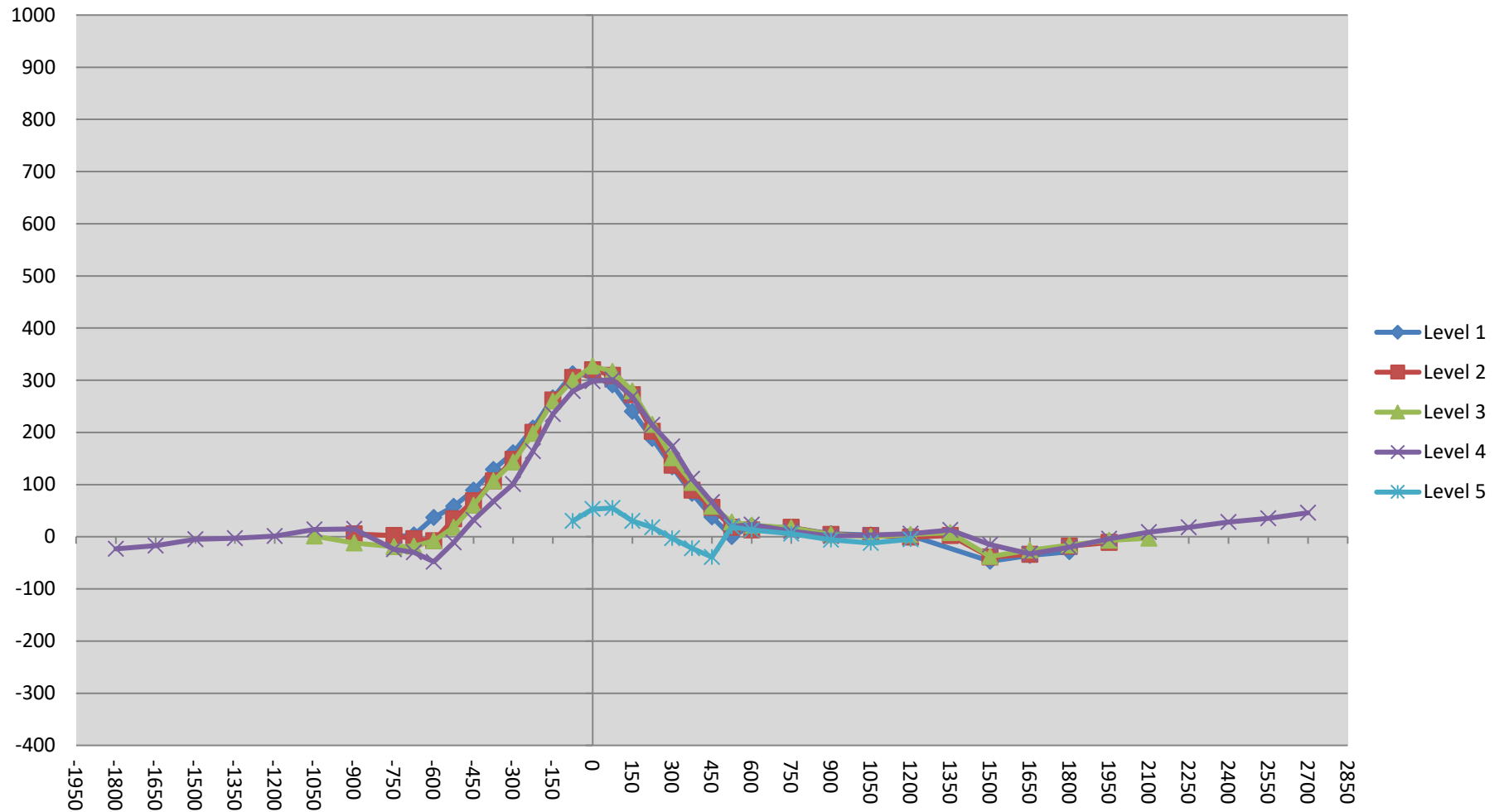
Pre-test measurements are taken when the vehicle is in the "As Tested" weight condition. Vehicle measurements forward of the vertical impact reference line are negative. The crush profile grid is established prior to the test based on an estimated impact point.

	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				230					207					-23	
-1650				198					181					-17	
-1500				175					170					-5	
-1350				160					157					-3	
-1200				146					147					1	
-1050			86	137				87	151				1	14	
-900		91	86	130			96	74	145			5	-12	15	
-825															
-750	115	94	96	120		115	96	77	96		0	2	-19	-24	
-675	124	100	101	120		127	96	83	90		3	-4	-18	-30	
-600	127	100	100	121		164	92	92	73		37	-8	-8	-48	
-525	126	103	99	121		184	137	117	110		58	34	18	-11	
-450	126	104	97	118		215	173	157	150		89	69	60	32	
-375	125	104	96	116		254	211	203	184		129	107	107	68	
-300	124	104	95	114		285	252	238	215		161	148	143	101	
-225	124	104	94	111		332	304	292	275		208	200	198	164	
-150	123	103	93	110		389	365	353	345		266	262	260	235	
-75	122	102	92	106	364	434	407	392	385	394	312	305	300	279	30
0	121	100	91	100	358	429	420	418	398	411	308	320	327	298	53
75	119	100	90	98	356	410	409	407	399	411	291	309	317	301	55
150	121	100	90	98	354	361	372	369	366	384	240	272	279	268	30
225	121	99	89	97	351	309	301	304	311	369	188	202	215	214	18
300	121	98	88	95	351	255	235	239	268	348	134	137	151	173	-3
375	121	97	87	95	350	204	186	191	206	328	83	89	104	111	-22
450	121	96	87	94	349	159	152	145	160	310	38	56	58	66	-39
525	122	95	86	93	347	122	113	114	113	366	0	18	28	20	19
600	121	95	86	94	346	142	108	108	117	359	21	13	22	23	13
675															
750	120	97	88	94	345	137	115	105	105	351	17	18	17	11	6
825															
900	123	98	88	94	347	129	102	92	95	341	6	4	4	1	-6
1050	122	98	88	94	345	125	100	88	97	333	3	2	0	3	-12
1200	124	97	88	94	350	126	96	92	100	345	2	-1	4	6	-5
1350		121	109	114			123	117	127			2	8	13	
1500	132	109	100	105		85	70	62	90		-47	-39	-38	-15	
1650	137	110	100	105		101	76	74	72		-36	-34	-26	-33	
1800	132	103	101	107		103	85	85	87		-29	-18	-16	-20	
1950		90	91	109			79	84	105			-11	-7	-4	
2100			85	110				82	119				-3	9	
2250				110					128					18	
2400				110					138					28	
2550				115					150					35	
2700				122					168					46	

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

Test Vehicle: 2021 Ford F-150 4x2 SuperCab
Test Program: NCAP Side Pole Impact Test

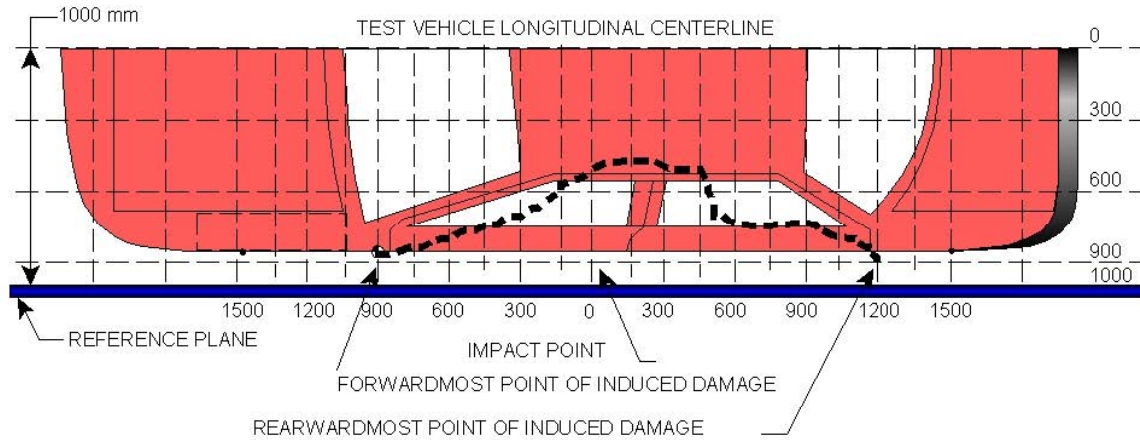
NHTSA No.: M20210205
Test Date: 5/21/2021



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

Test Vehicle: 2021 Ford F-150 4x2 SuperCab
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210205
 Test Date: 5/21/2021



VEHICLE DAMAGE PROFILE DISTANCES

DPD	Distance from Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Max. Static Crush (mm)
1	-660	3	101	72	-29
2	-414	3	97	178	81
3	-168	3	93	340	247
4	78	3	90	310	220
5	324	3	88	231	143
6	570	3	92	90	-2

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

Test Vehicle: 2021 Ford F-150 4x2 SuperCab
 Test Program: NCAP Side Pole Impact Test

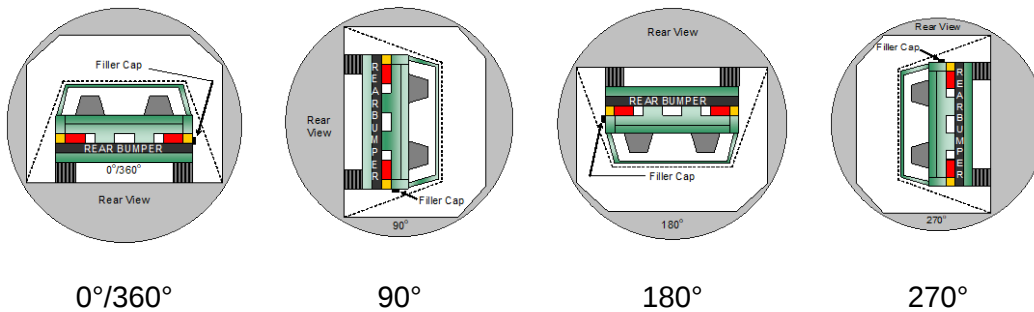
NHTSA No.: M20210205
 Test Date: 5/21/2021

Test Time: 11:14 am

Temperature: 21.8°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°	93	300	393
90° to 180°	91	300	391
180° to 270°	81	300	381
270° to 360°	87	300	387

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	

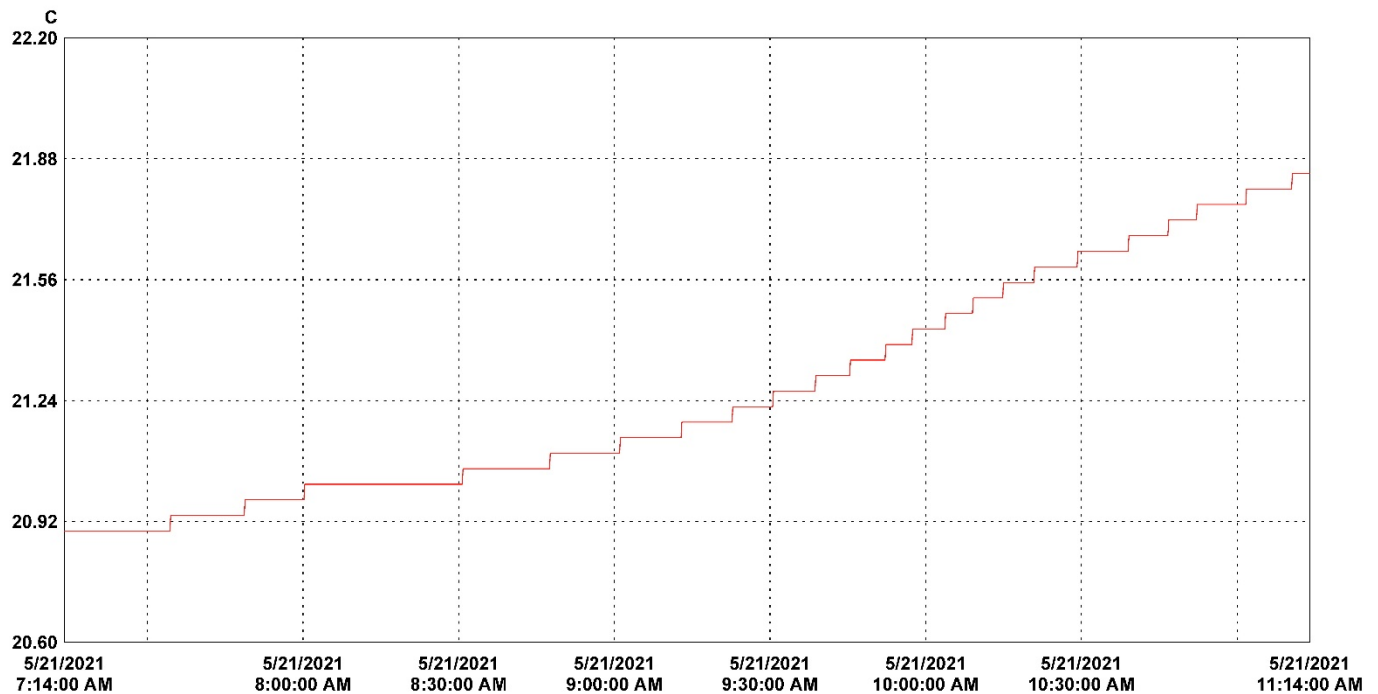
ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

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 F-150 4x2 SuperCab
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20210205
 Test Date: 5/21/2021



30 minutes/div		4 hours		(M/d/yyyy h:mm:ss tt)		Central Time		Graph file (truncated): M20210205 2021 Ford F-150 4x2 SuperCab Side NCAP Pole.spg		
LN	Serial #	Description	CH	Value	Maximum	Average	Minimum	Units	CH description	Logger file
1	12032257	VSC South Hall 1			21.84	21.26	20.89	C	Temperature	12032257_VSC South Hall.spl

APPENDIX A
PHOTOGRAPHS

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



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



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



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



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



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

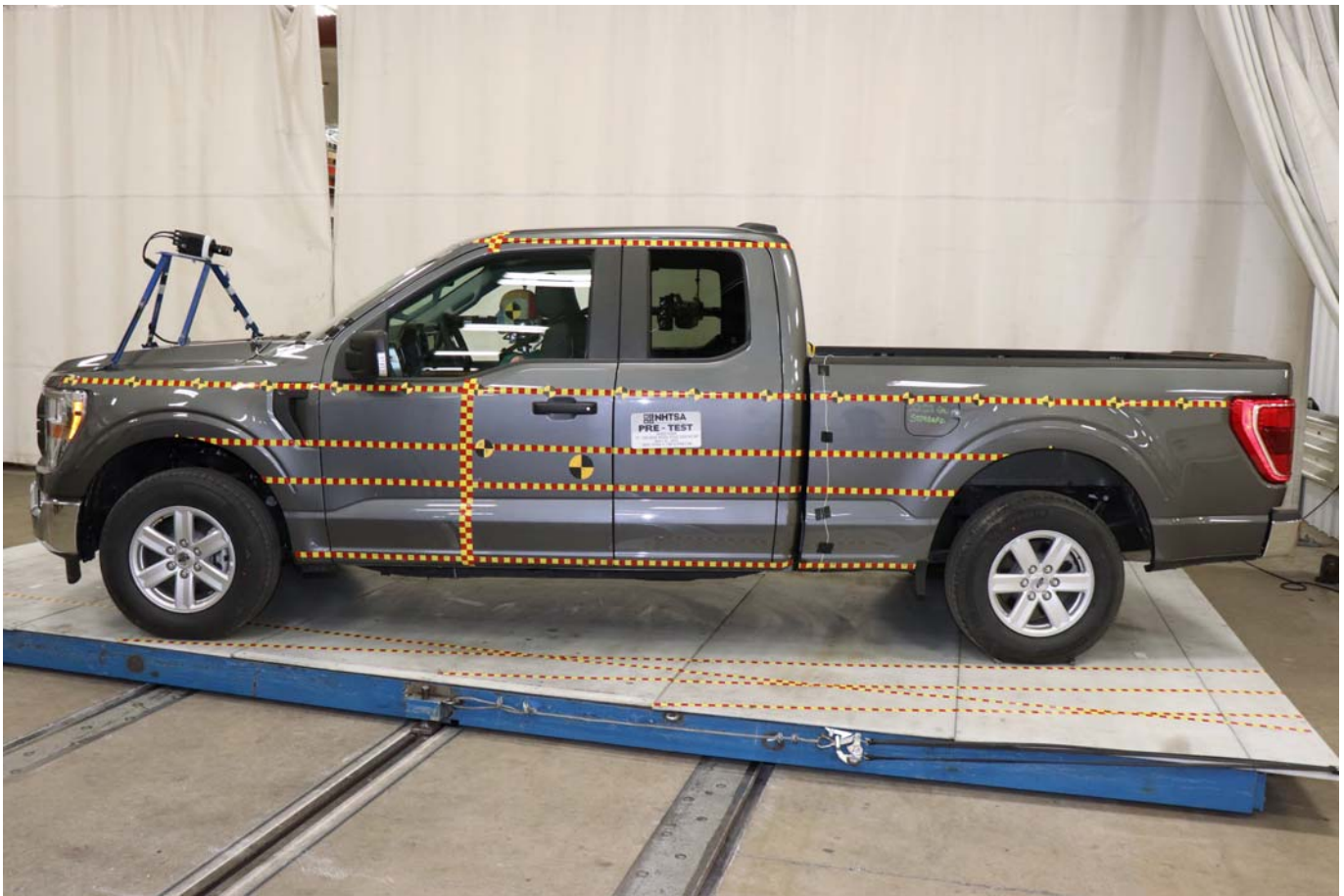


Photo No. 007 - Pre-Test Left Side View of Test Vehicle



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



Photo No. 009 - Pre-Test Left 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

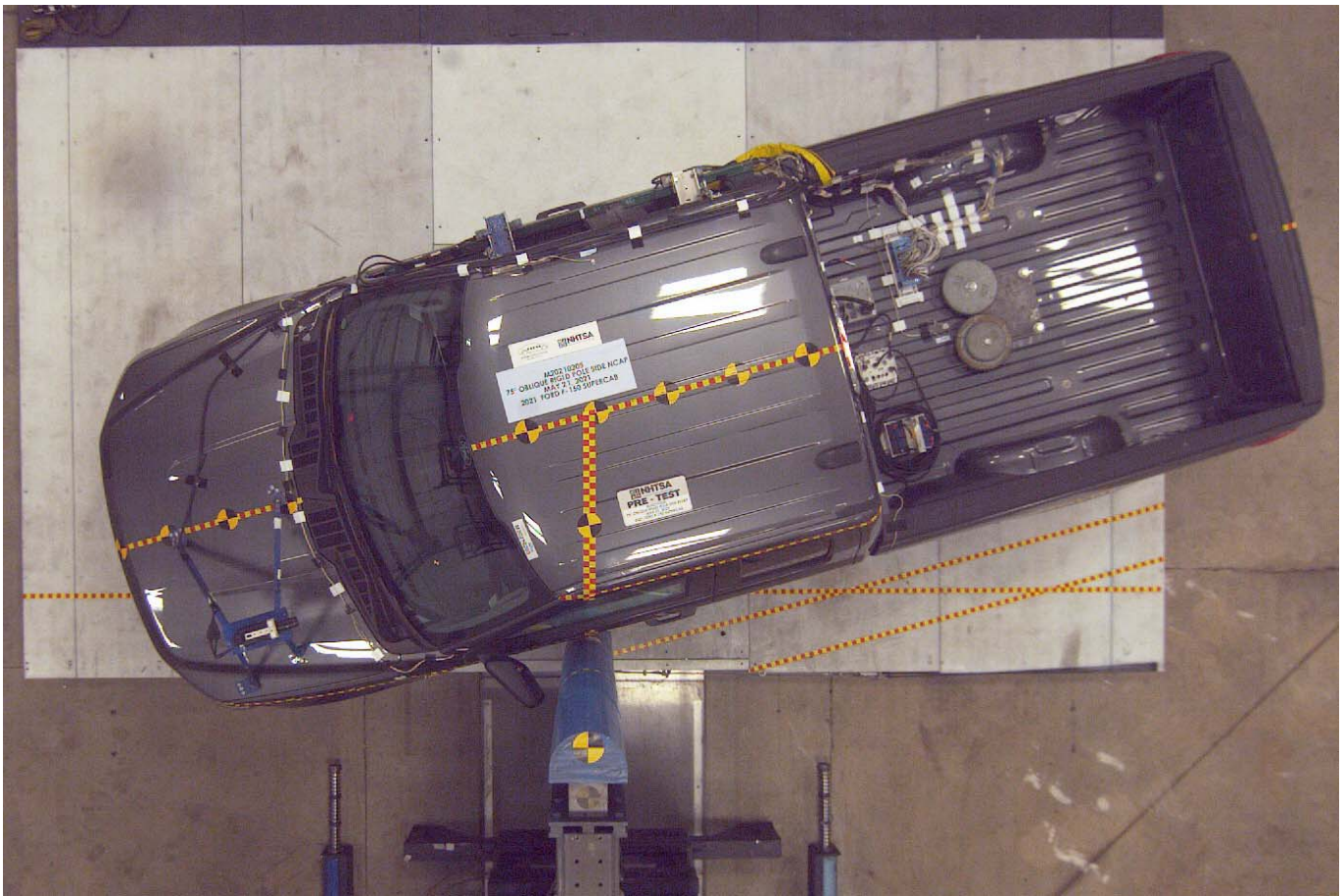


Photo No. 015 - Pre-Test Overhead View of Test Area

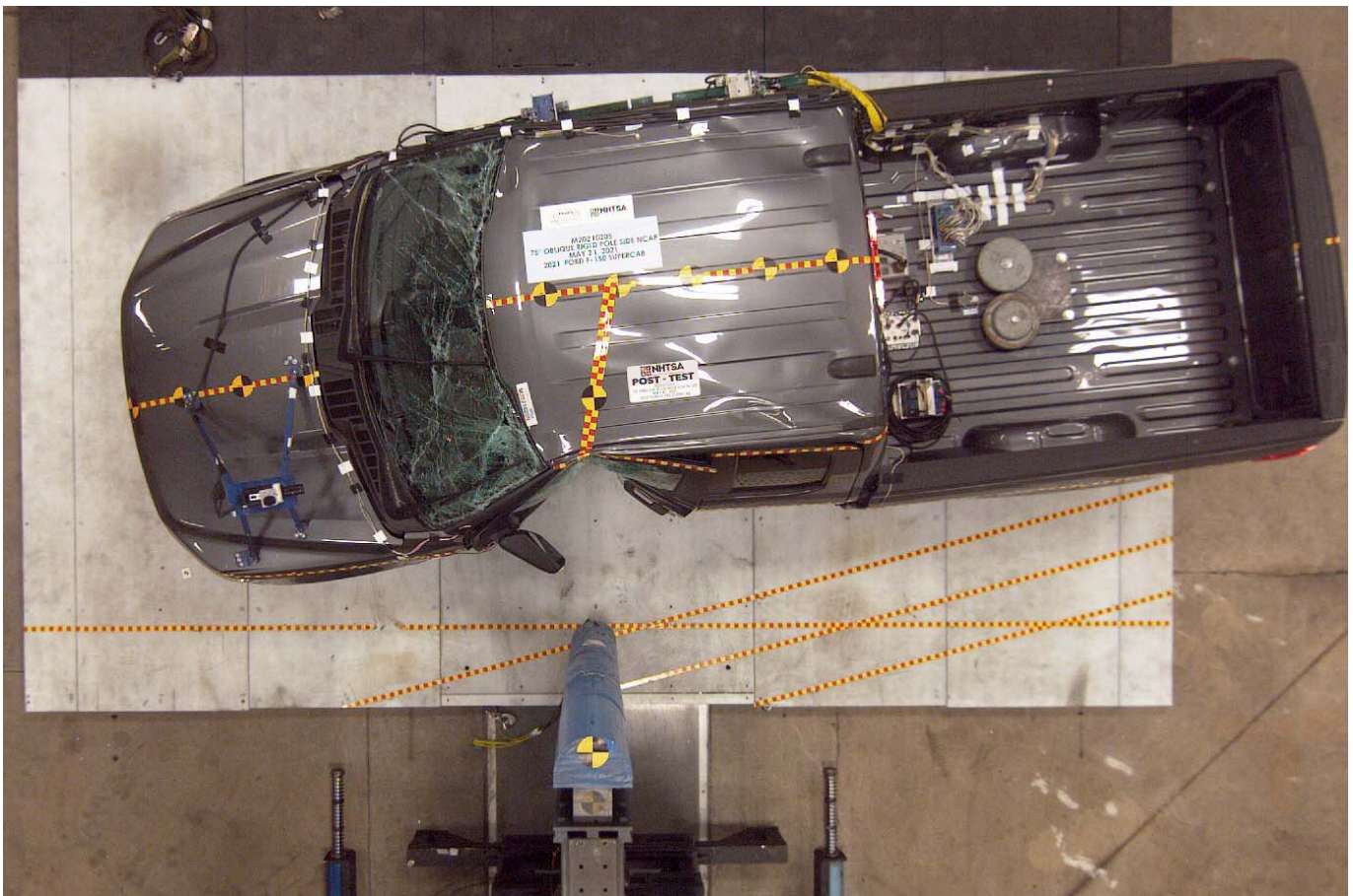


Photo No. 016 - Post-Test Overhead View of Test Area



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

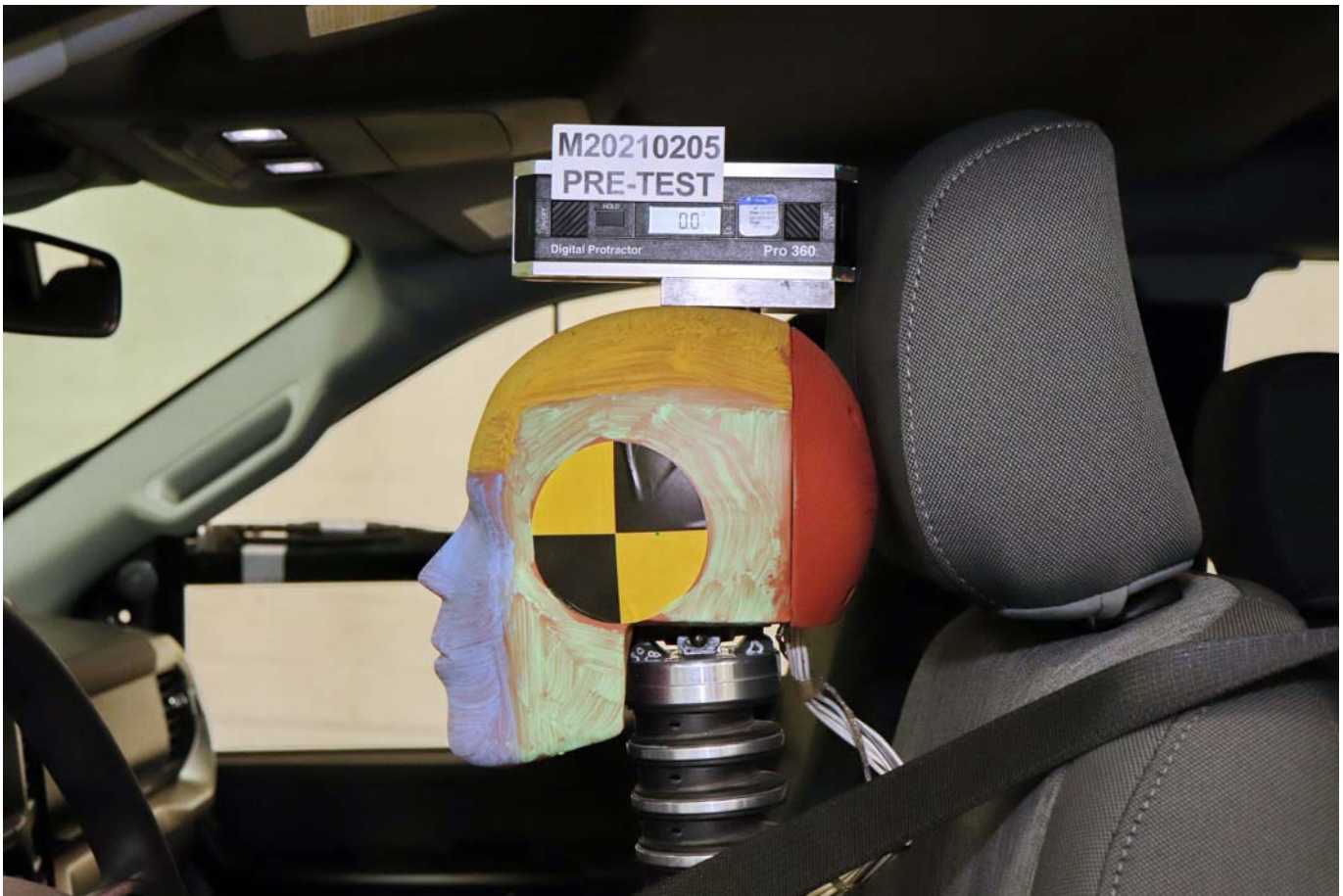


Photo No. 031 - Pre-Test Left Side View of Dummy Head Showing Dummy Head is Level



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

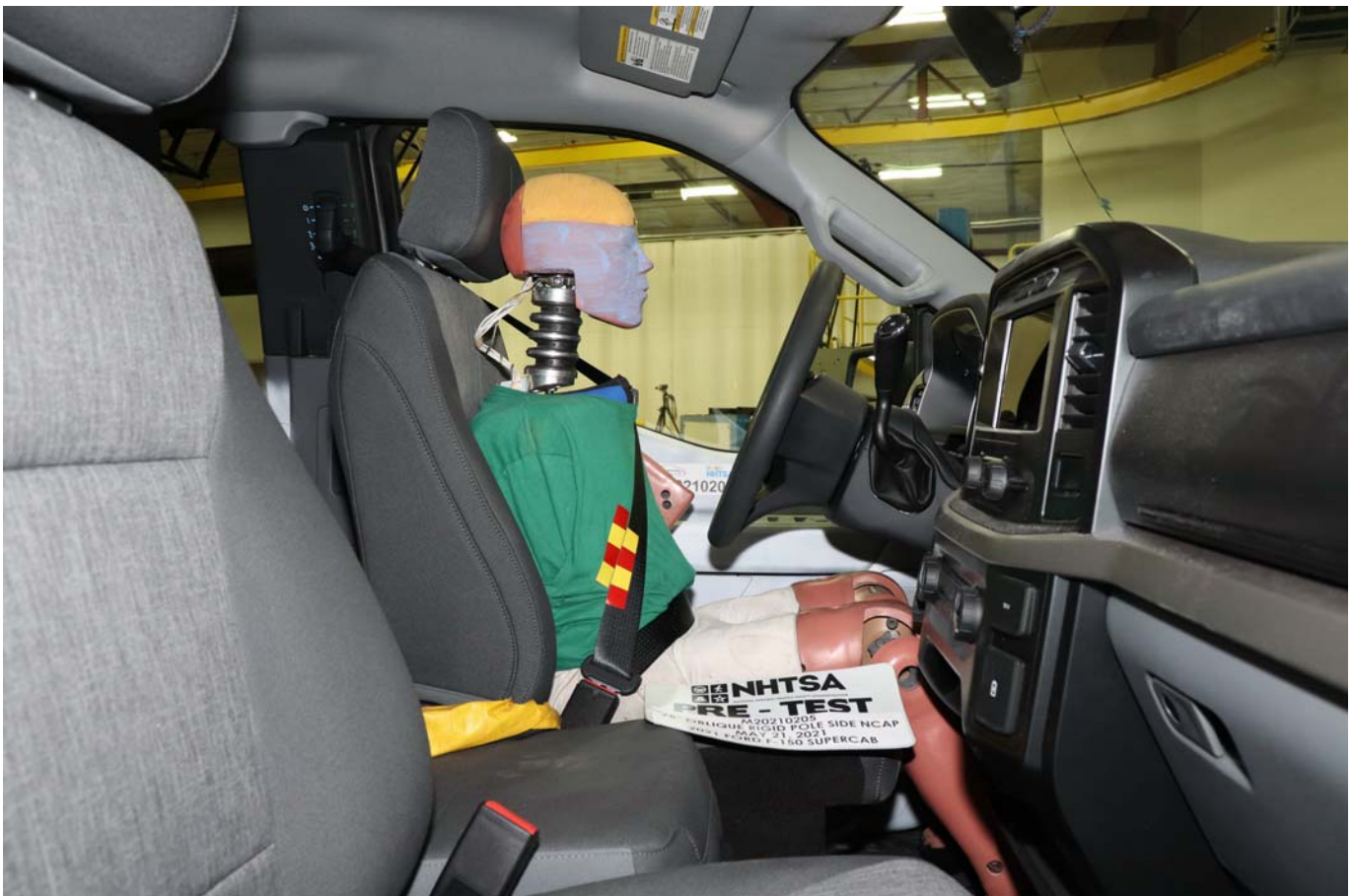


Photo No. 042 - Pre-Test Right Side View of Dummy and Front Seat of Occupant Compartment



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

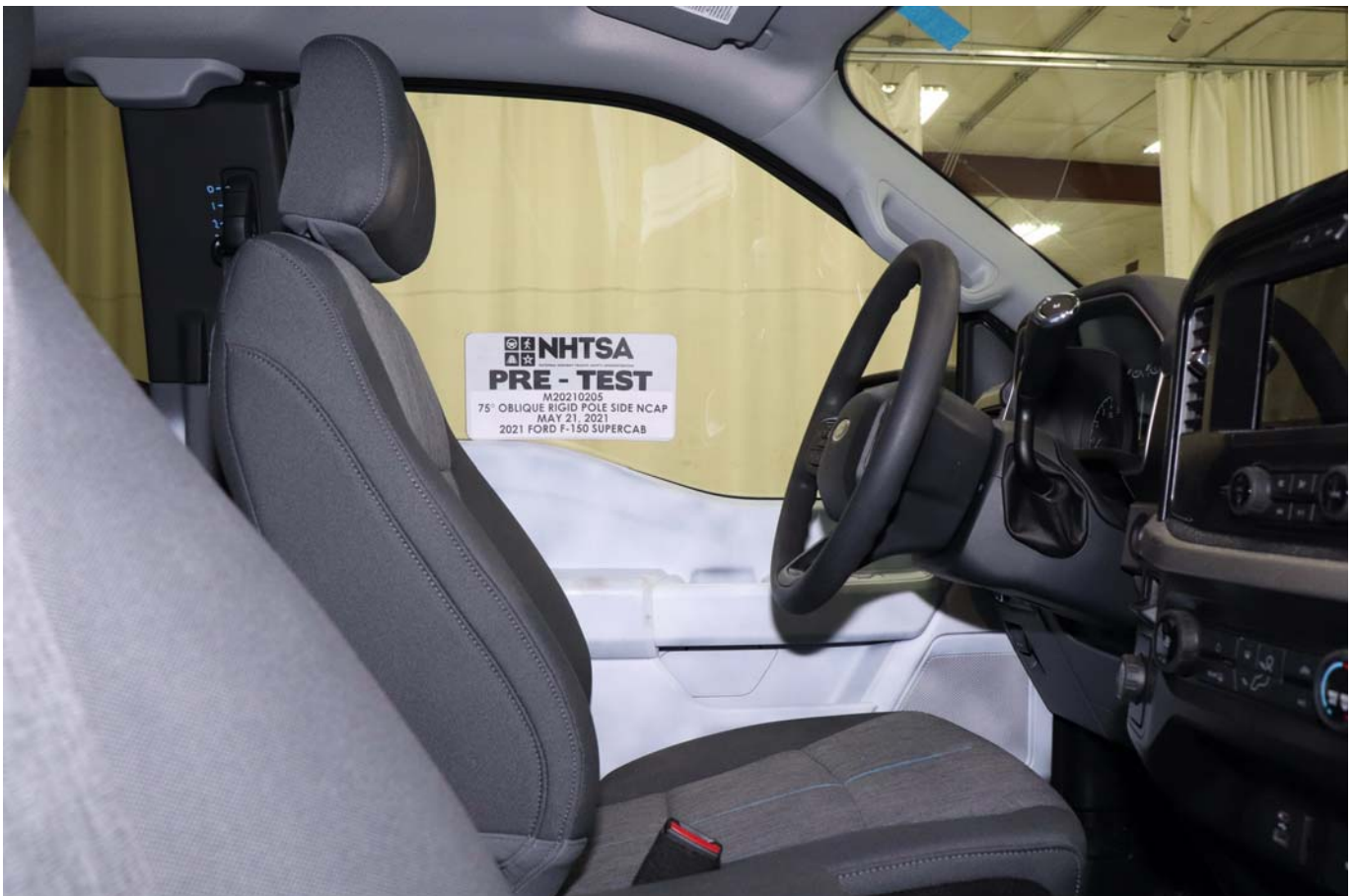


Photo No. 044 - Pre-Test Inner Door Panel View



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



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

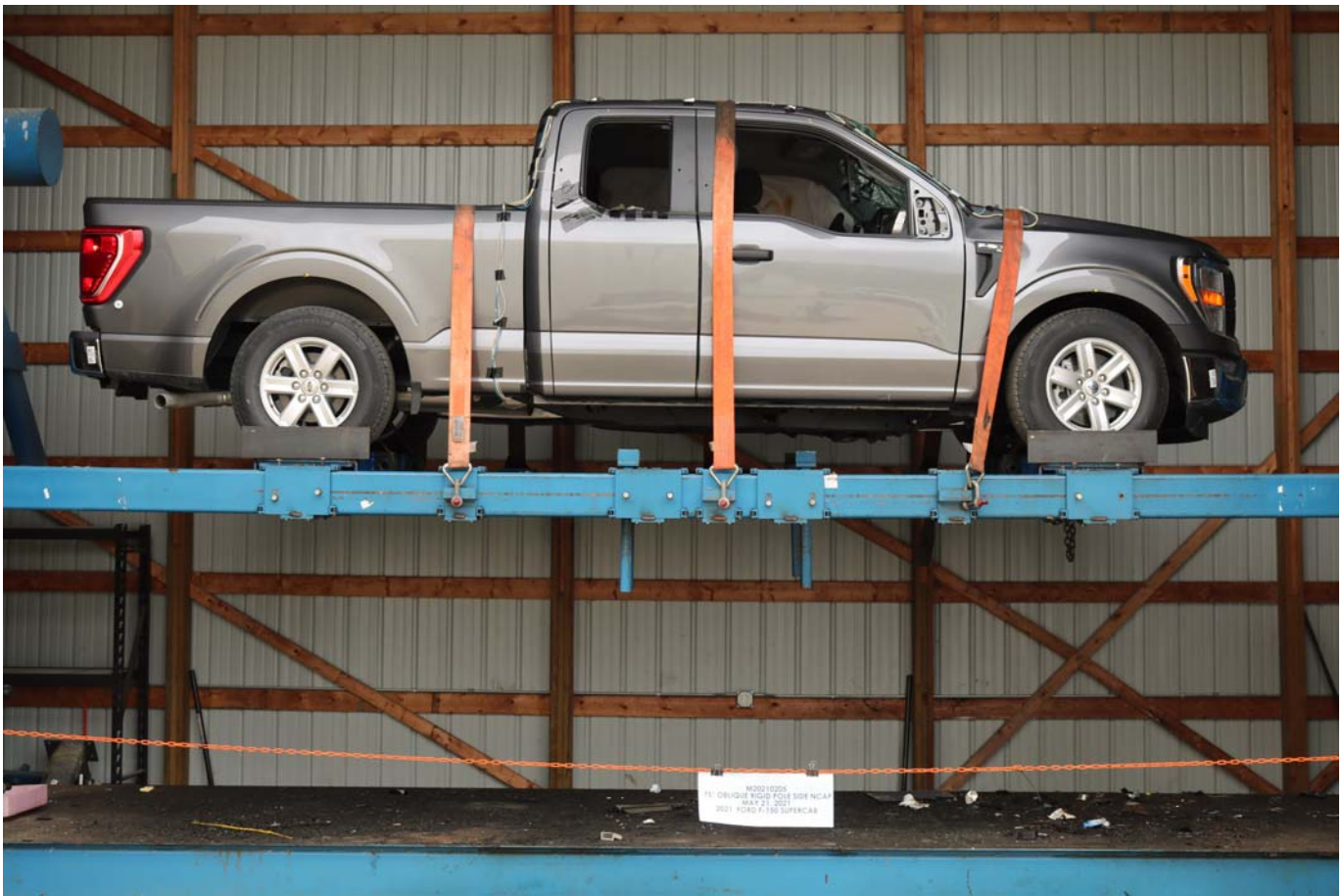


Photo No. 065 - FMVSS Photo No. 301 Static Rollover 0 Degrees

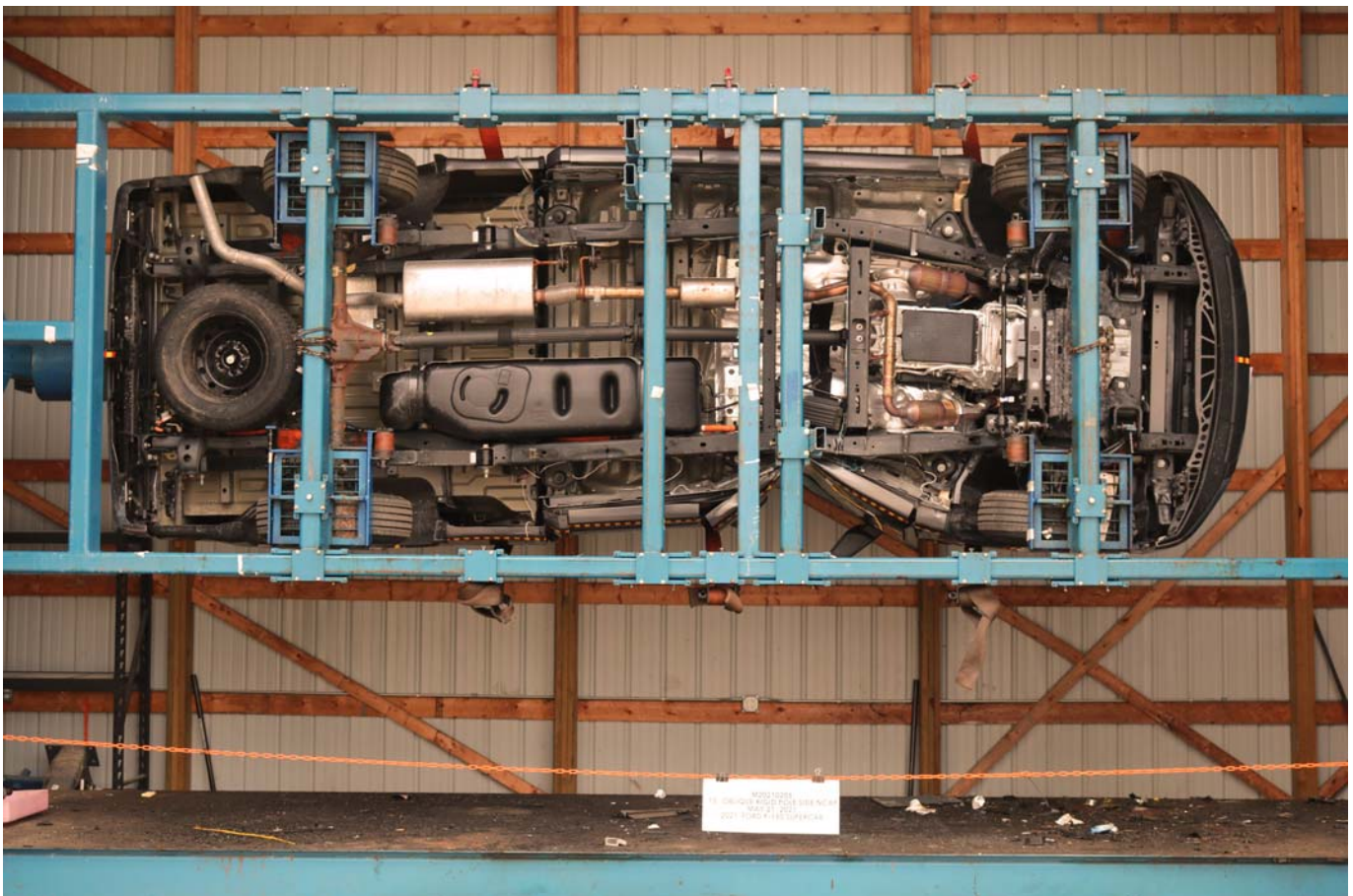


Photo No. 066 - FMVSS Photo No. 301 Static Rollover 90 Degrees



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

Go Further
ford.com

VEHICLE DESCRIPTION

F-150

2021 F-150 4X2 SUPERCAB
145" WHEELBASE
3.3L V6 PF01
ELEC TEN-SPEED AUTO W/TOW M

EXTERIOR
CARBONIZED GRAY

INTERIOR
DARK SLATE CLOTH 40/20/40

MF A46974

EPA DOT Fuel Economy and Environment

Fuel Economy

21 MPG
combined city/hwy

20 city 24 highway 4.8 gallons per 100 miles

Driving Range
Gasoline 502 miles
Ethanol (E85) 382 miles

Standard Pickup Trucks range from 14 to 27 MPG. The best vehicle rates 141 MPG. Values are based on gasoline and do not reflect performance and ratings based on E85.

You spend \$2,250
more in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost \$1,950

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

1 4 10 1 6 10 Best

This vehicle emits 424 grams CO₂ per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also creates 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. This is a dual-fueled automobile. 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 Not Rated
Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.

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

Rollover Not Rated
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

43 YEARS
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AMERICAN'S BEST SELLING TRUCK

For equipped vehicles, the FordPass Connect™ modem is active and sending vehicle data (e.g., diagnostics) to Ford. See in-vehicle Settings for connectivity options.

FordPass Connect service™ and FordPass App™ required for certain vehicle features (See App Terms for more information). Connected service and related feature functionality is subject to compatible AT&T network availability. Existing technology / cellular networks may affect functionality and availability or continued provision of some features, prohibiting them from functioning. Message and data rates may apply. See your local Ford website for our privacy policy.

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Enlist 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.

INCLUDED ON THIS VEHICLE

EQUIPMENT GROUP 101A (MSRP) 2,280.00

- XL SERIES
- XL POWER EQUIPMENT GROUP
- CRUISE CONTROL
- REVERSE SENSING SYSTEM

OPTIONAL EQUIPMENT/OTHER

245/70R 17 BSW ALL-SEASON 470.00

3.55 ELECTRONIC LOCK RR AXLE

6250R GVWR PACKAGE

FRONT LICENSE PLATE BRACKET

COLOR-COORDINATED CARPET

BLACK PLATFORM RUNNING BOARDS

50 STATE EMISSIONS

FORD CO-PILOT 360 2.0

CLASS IV TRAILER HITCH

MIRROR MAN FOLD W/POWER GLASS

PRIVACY GLASS

REAR-WINDOW DEFROSTER

TAILGATE STEP

XL CHROME APPEARANCE PACKAGE

CHROME FRONT/REAR BUMPERS

FOG LAMPS

17" SILVER PAINTED ALUMINUM

FLEX FUEL VEHICLE 100.00

PRICE INFORMATION (MSRP)

BASE PRICE \$33,025.00

TOTAL OPTIONS/OTHER \$915.00

TOTAL VEHICLE & OPTIONS/OTHER \$33,940.00

DESTINATION & DELIVERY 1,695.00

TOTAL BEFORE DISCOUNTS 40,635.00

XL HIGH DISCOUNT - 750.00

XL HIGH DISCT CHROME - 500.00

TOTAL SAVINGS - 1,250.00

SOLD TO Currie Motors Frankfort Inc 41D 431

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RAMP ONE CG59

FINAL ASSEMBLY PLANT DEARBORN

METHOD OF TRANSF. CONVOY

ITEM # 41-J561 Q/T 2

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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.

TOTAL MSRP \$39,385.00

SHIP TO (IF OTHER THAN SOLD TO)

SHIP THROUGH

This label is affixed pursuant to the Federal Automobile Information Disclosure Act. Gasoline, License, and Title Fees, State and Local taxes are not included. Dealer installed options or accessories are not included unless listed above.

LM091 N RB 2X 125 004645 12 09 20

Photo No. 071 - Monroney Label

Front Seats

- Bend your legs slightly so that you can press the pedals fully.
- Position the shoulder strap of the seatbelt over the center of your shoulder and position the lap strap tightly across your hips.

Make sure that your driving position is comfortable and that you can maintain full control of your vehicle.

MANUAL SEATS (If Equipped)

Head Restraint Components

The head restraints consist of:

A An energy absorbing head restraint.
B Two steel stems.
C Guide sleeve adjust and release button.
D Guide sleeve unlock and remove button (if equipped).

Adjusting the Head Restraint

4-Way Head Restraints

- Adjust the seat backrest to an upright driving or riding position.

WARNING: Fully adjust the head restraint before you sit in or operate your vehicle. This will help minimize the risk of neck injury in the event of a crash. Do not adjust the head restraint 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. Failure to adjust the head restraint properly could reduce its effectiveness during certain impacts.

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.

Pull the head restraint up to raise it.
To lower the head restraint:

- Press and hold the adjust and release button.
- Push the head restraint down.

To tilt the head restraint:

Front Seats

- Pivot the head restraint forward toward your head to the preferred position.

After the head restraint reaches the forward-most tilt position, pivot it forward again to release it to the rearward, untitled position.

Note: Do not attempt to force the head restraint backward after it is tilted. Instead, continue tilting it forward until the head restraint releases to the upright position.

Removing the Head Restraint

- Pull up the head restraint until it reaches the highest adjustment position.
- Press and hold the adjust and release button and the unlock and remove button.
- Pull up the head restraint.

Note: You cannot remove head restraints that have audio system speakers.

Installing the Head Restraint

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

Moving the Seat Backward and Forward

Manual Seat Adjustment

WARNING: Do not adjust the driver seat or seat backrest when your vehicle is moving. This may result in sudden seat movement, causing the loss of control of your vehicle.

Adjusting the Seat Backrest

Manual Seat Adjustment

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

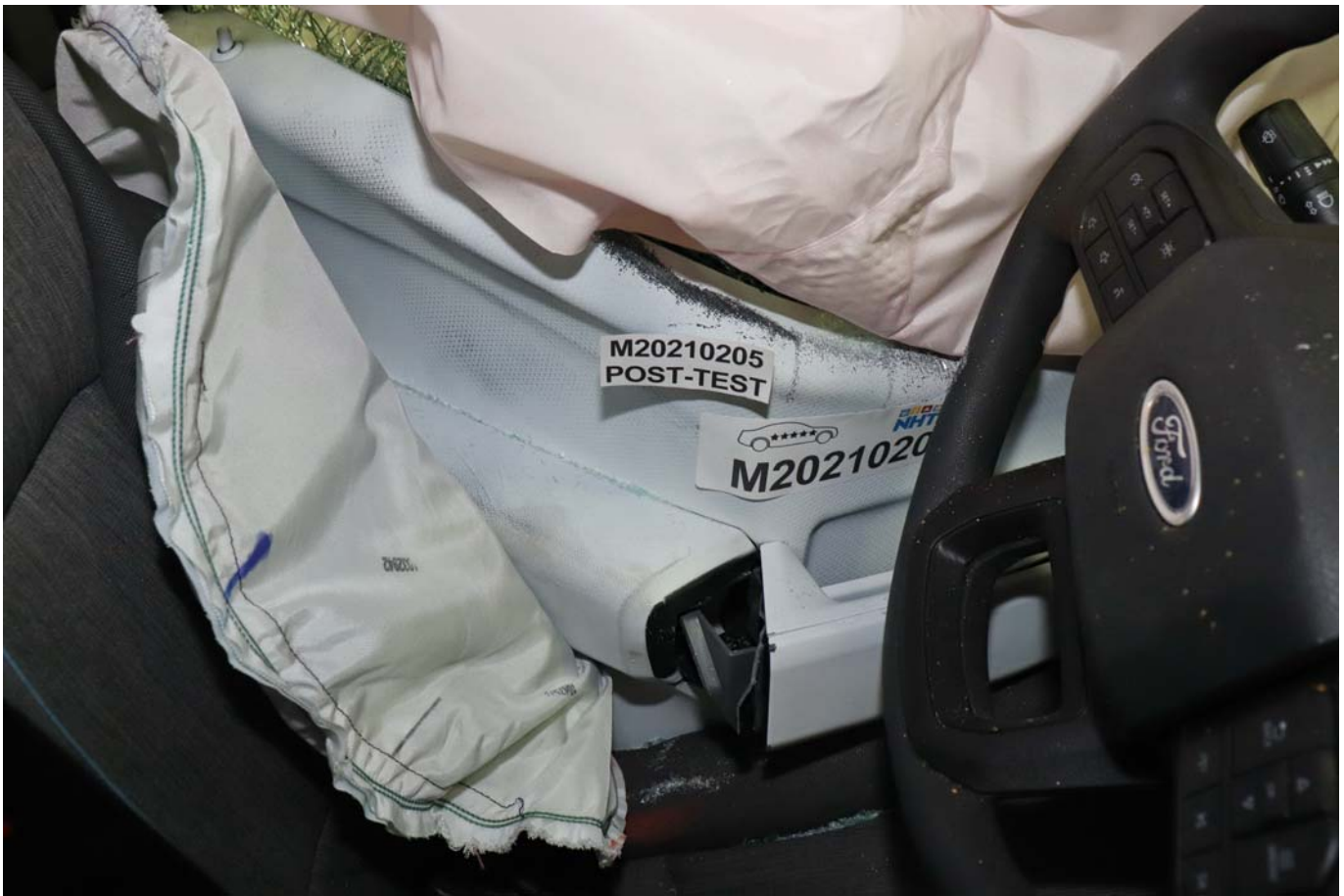


Photo No. 073 - Post-Test View of Shattered Vehicle Inner Door Panel

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)

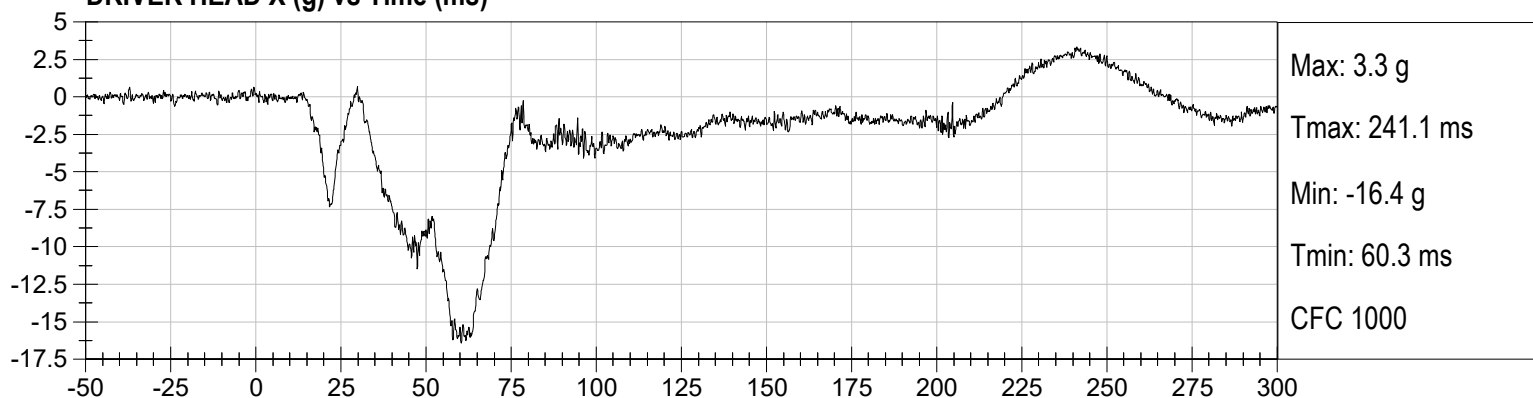
Load Cell Pole Barrier #5 Force (Y)

Load Cell Pole Barrier #6 Force (Y)

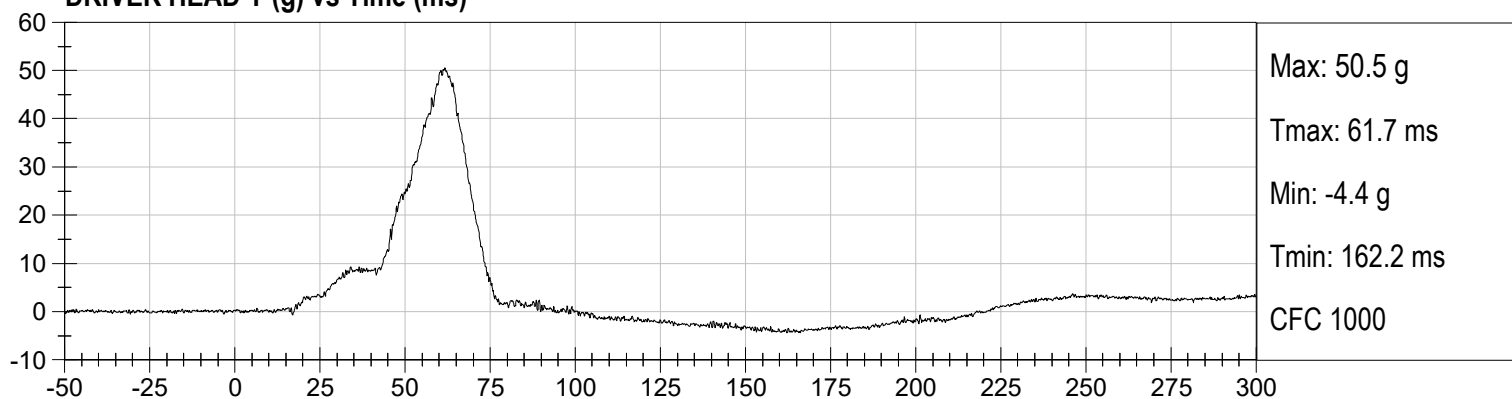
Load Cell Pole Barrier #7 Force (Y)

Load Cell Pole Barrier #8 Force (Y)

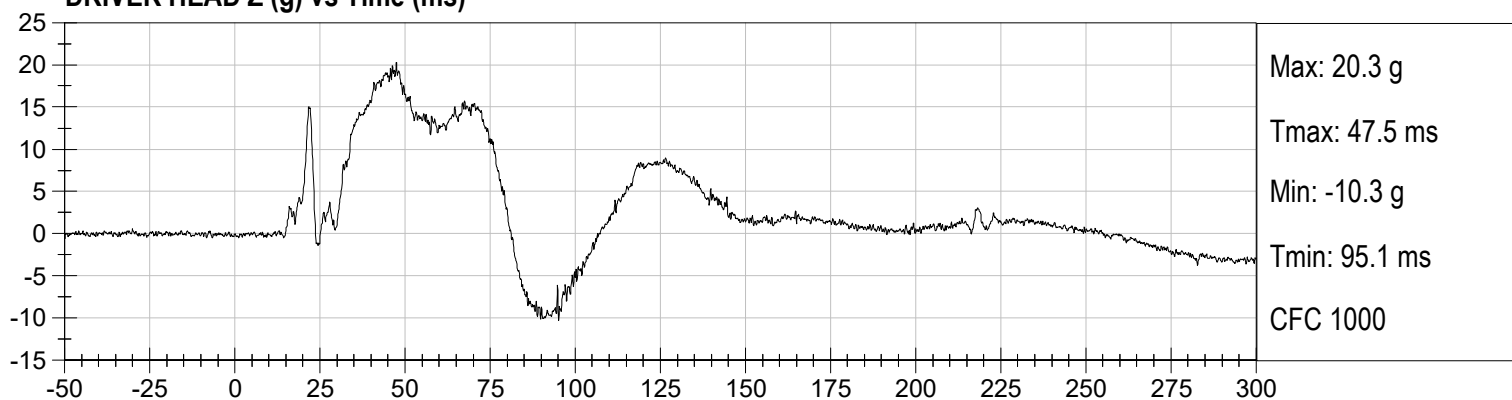
DRIVER HEAD X (g) vs Time (ms)



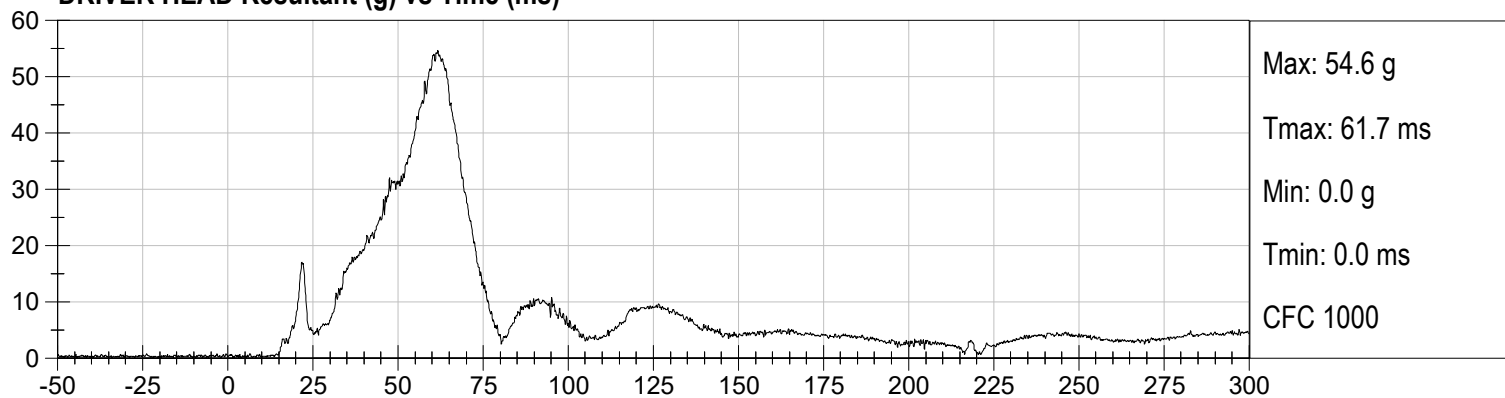
DRIVER HEAD Y (g) vs Time (ms)



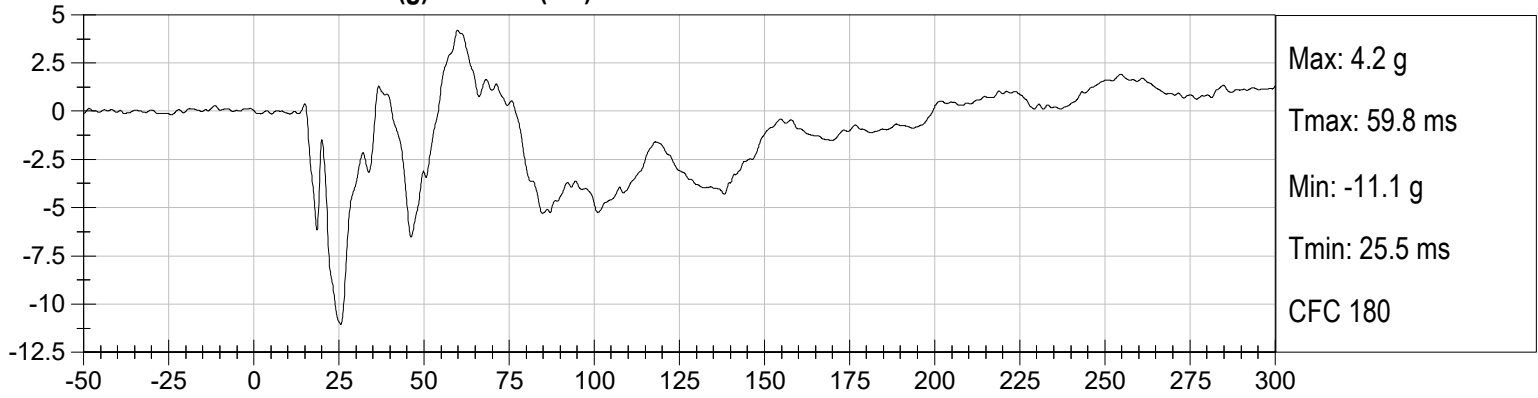
DRIVER HEAD Z (g) vs Time (ms)



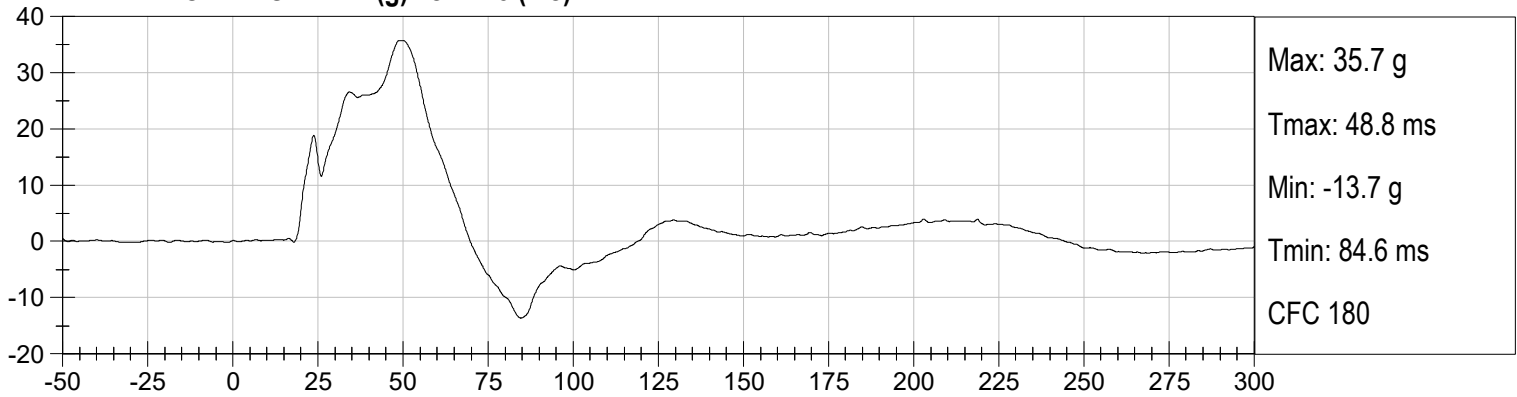
DRIVER HEAD Resultant (g) vs Time (ms)



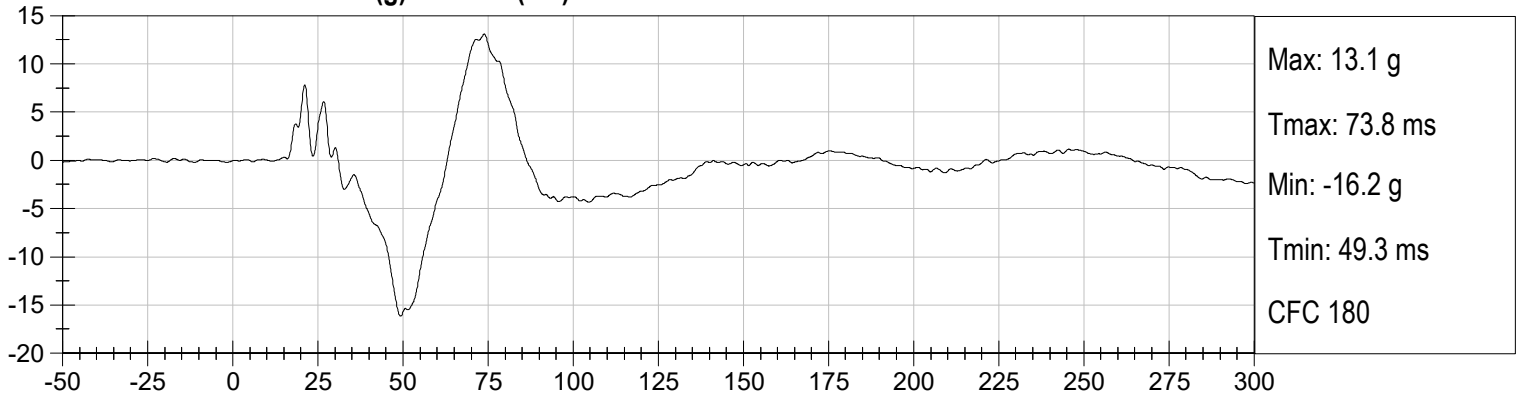
DRIVER LOWER SPINE X (g) vs Time (ms)



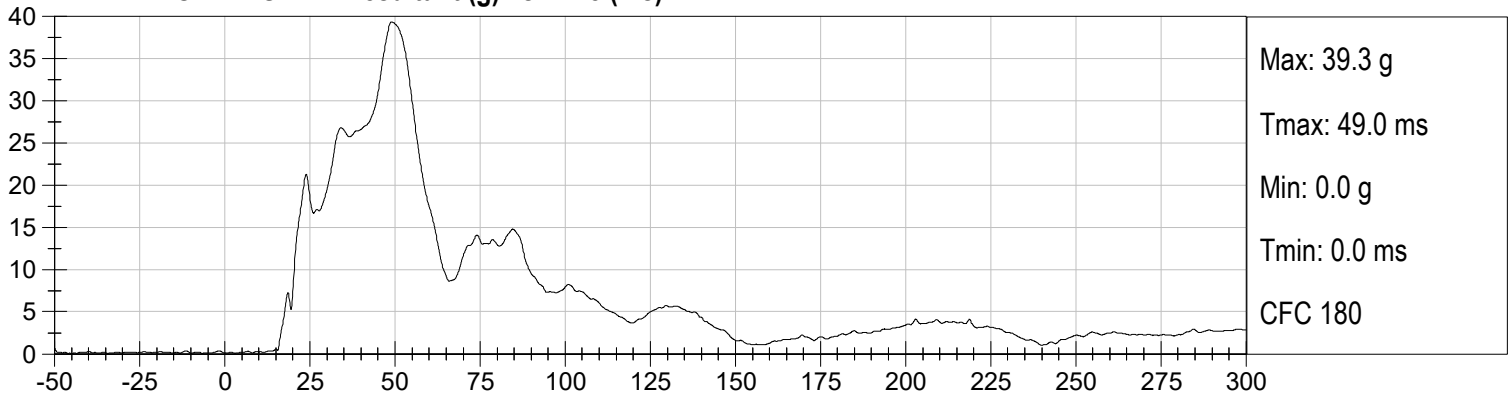
DRIVER LOWER SPINE Y (g) vs Time (ms)



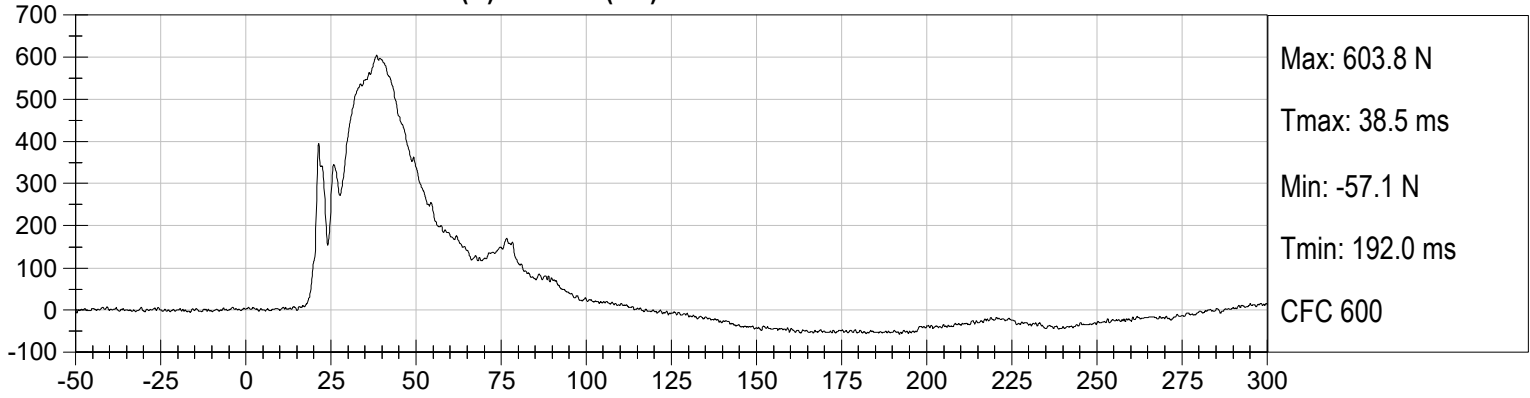
DRIVER LOWER SPINE Z (g) vs Time (ms)



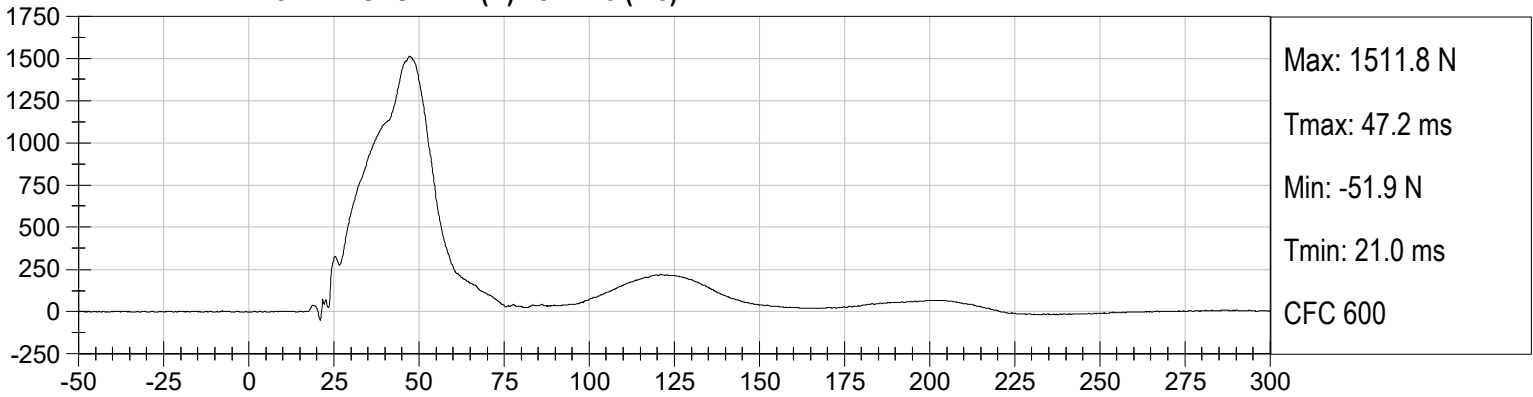
DRIVER LOWER SPINE Resultant (g) vs Time (ms)



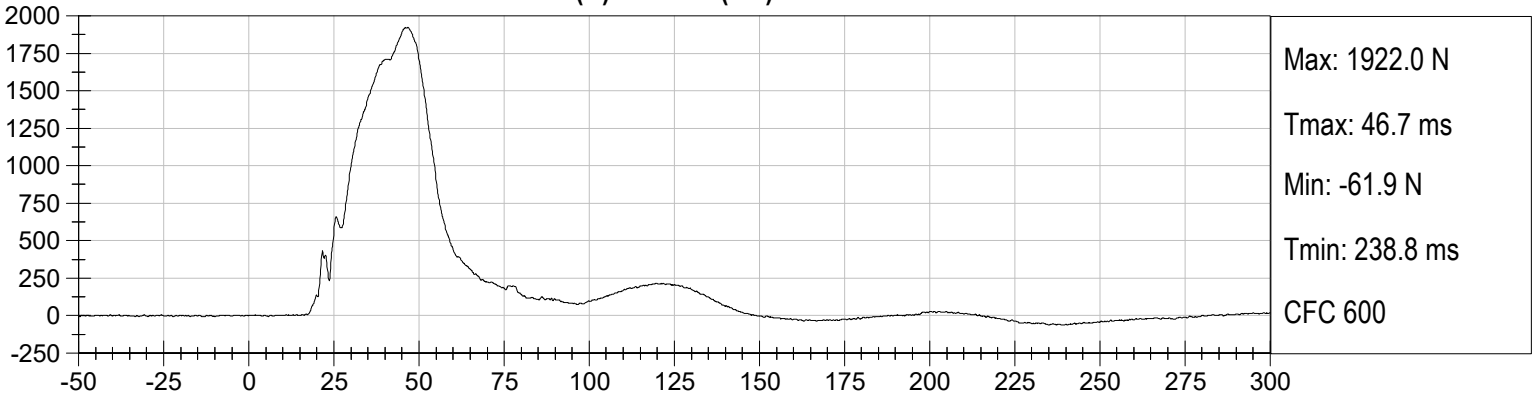
DRIVER LEFT ILIUM CREST FY (N) vs Time (ms)



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: 296

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

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HEAD DROP TEST
SID-IIs BUILD LEVEL D DUMMY

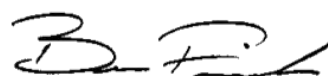
ATD Serial No: 296

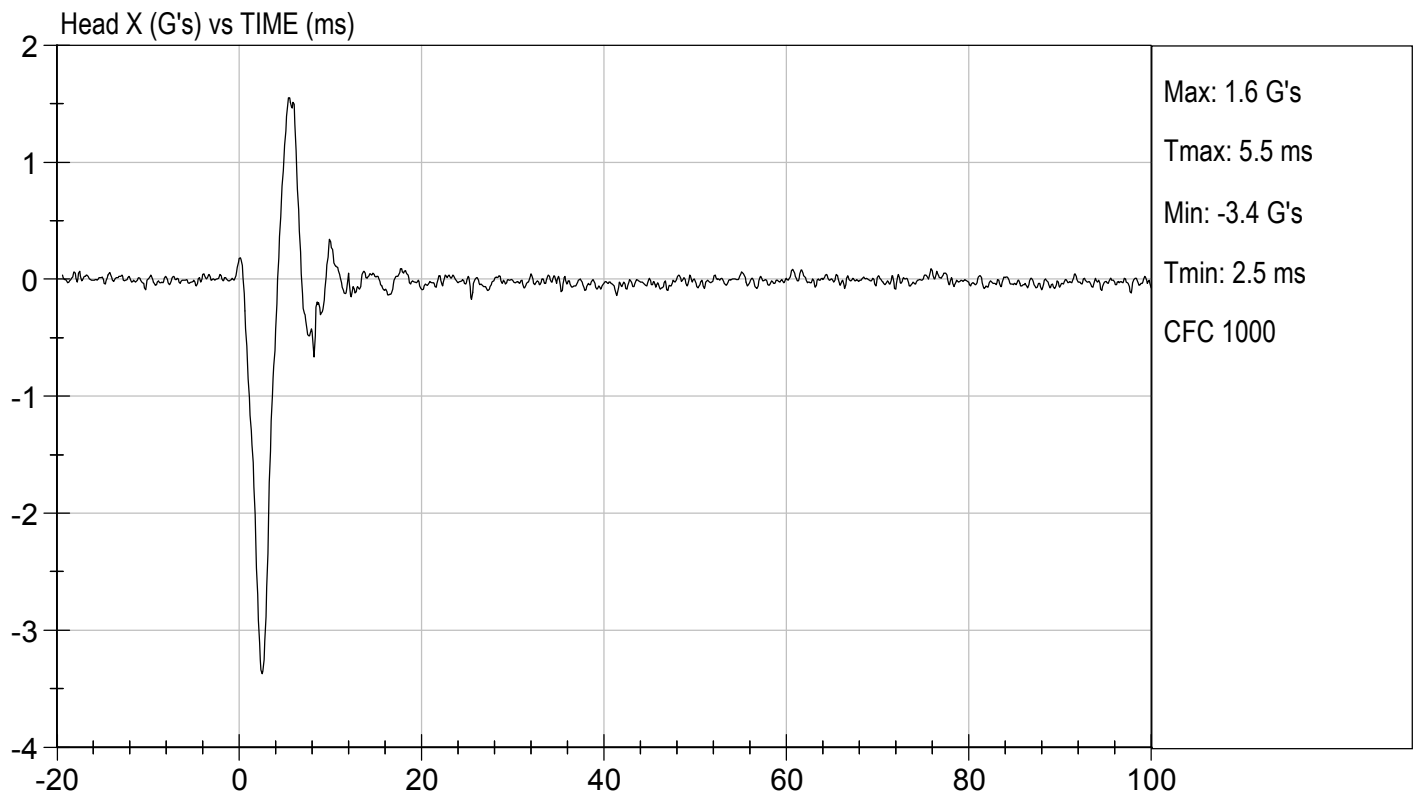
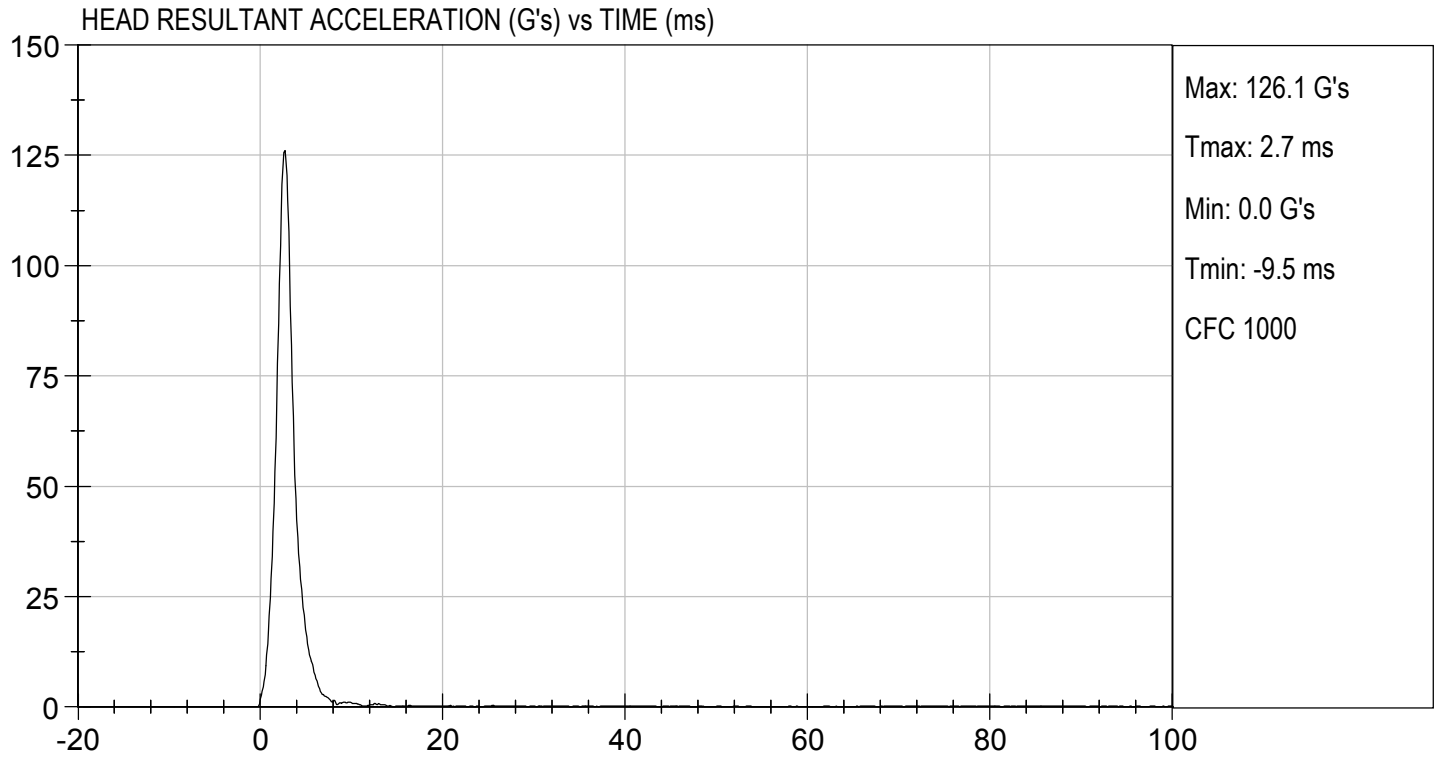
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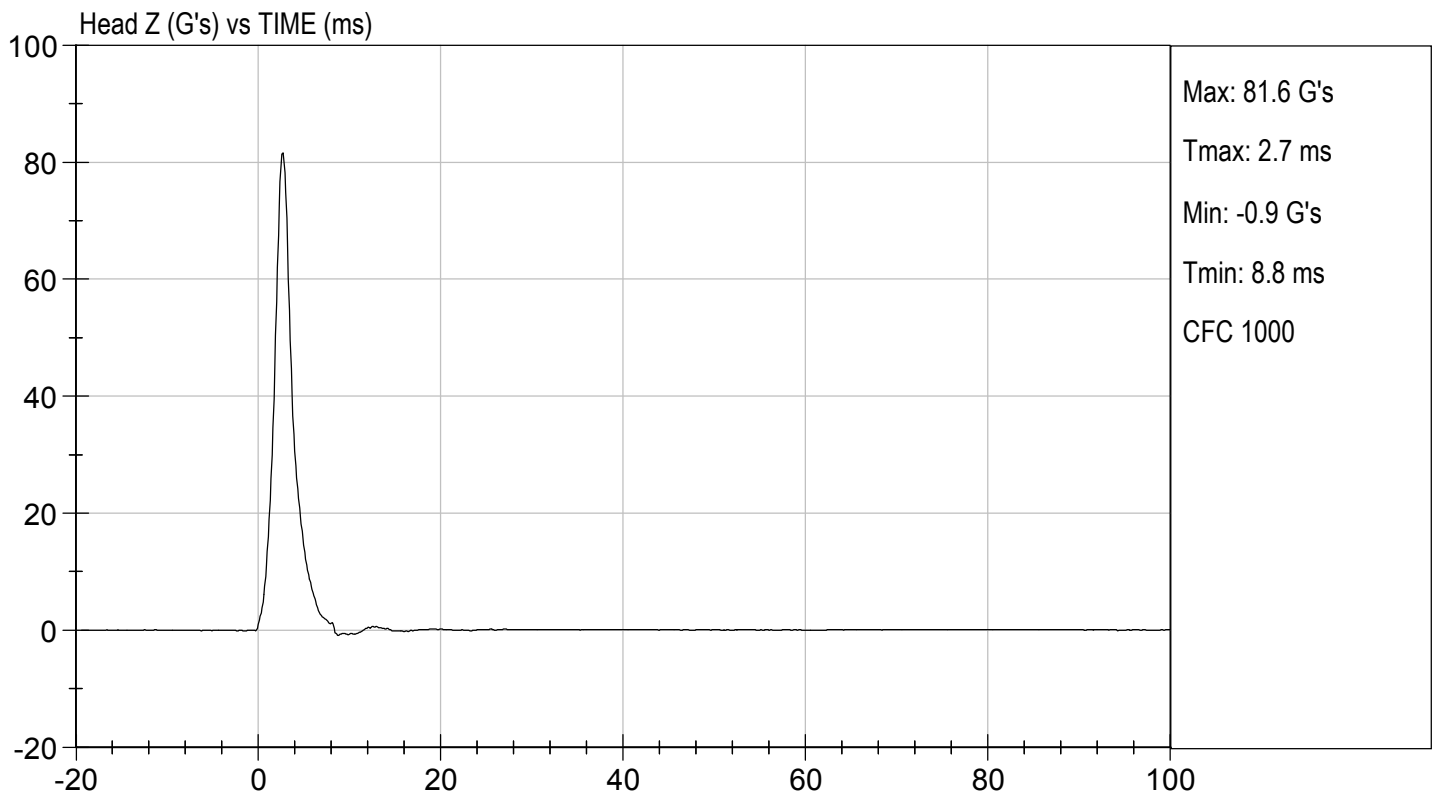
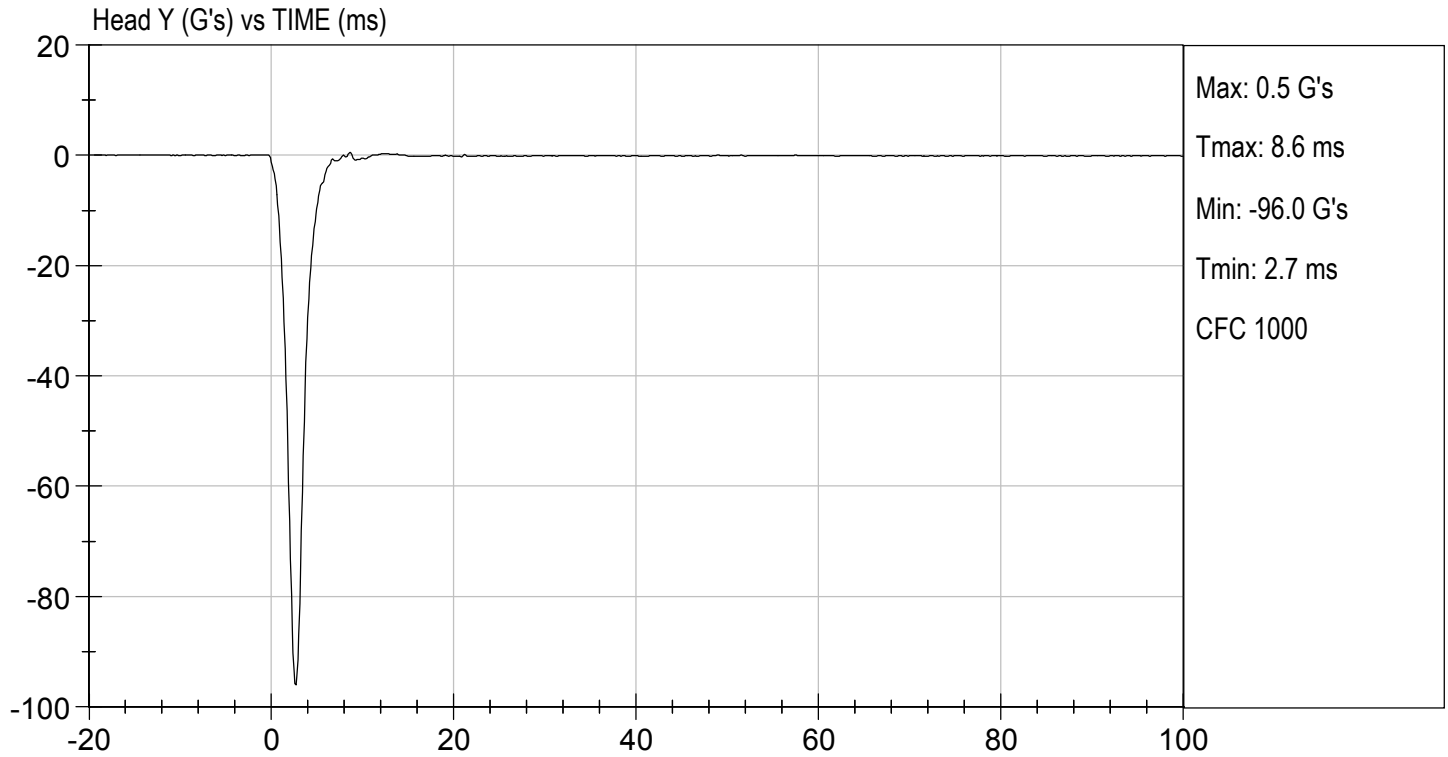
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	28	Pass
Peak Resultant Acceleration	G's	115 to 137	126	Pass
Peak Longitudinal Acceleration	G's	+/- 15	-3.4	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	<15%	Yes	Pass
			Overall Test Results	Pass


Laboratory Technician

05/14/2021
Test Date


Approved By





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

ATD Serial No: 296

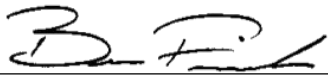
Test I.D: D211742

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	21.5	Pass
Humidity		%	10 to 70	41	Pass
Impact Velocity		m/s	5.51 to 5.63	5.58	Pass
Pendulum Velocity	10 ms	m/s	2.20 to 2.80	2.67	Pass
	15 ms	m/s	3.30 to 4.10	3.86	Pass
	20 ms	m/s	4.40 to 5.40	5.25	Pass
	25 ms	m/s	5.40 to 6.10	5.67	Pass
	25-100 ms	m/s	5.50 to 6.20	5.70	Pass
Maximum D-Plane Rotation		deg	71 to 81	74	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	63	Pass
Maximum Occipital Condyle Moment		Nm	-44 to -36	-37	Pass
Time of Moment Decay to 0 Nm		ms	102 to 126	120	Pass
Overall Test Results					Pass


 Laboratory Technician

05/18/2021

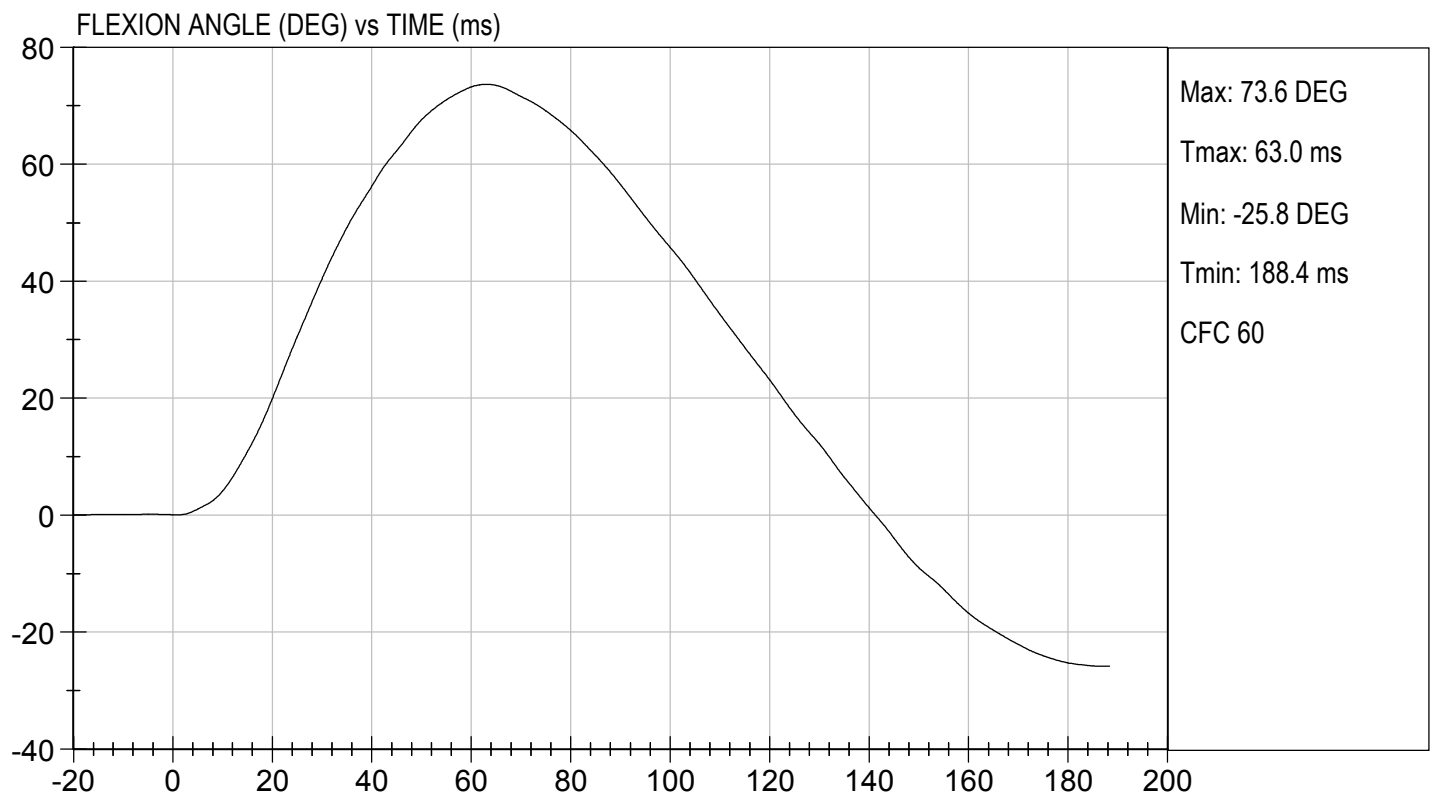
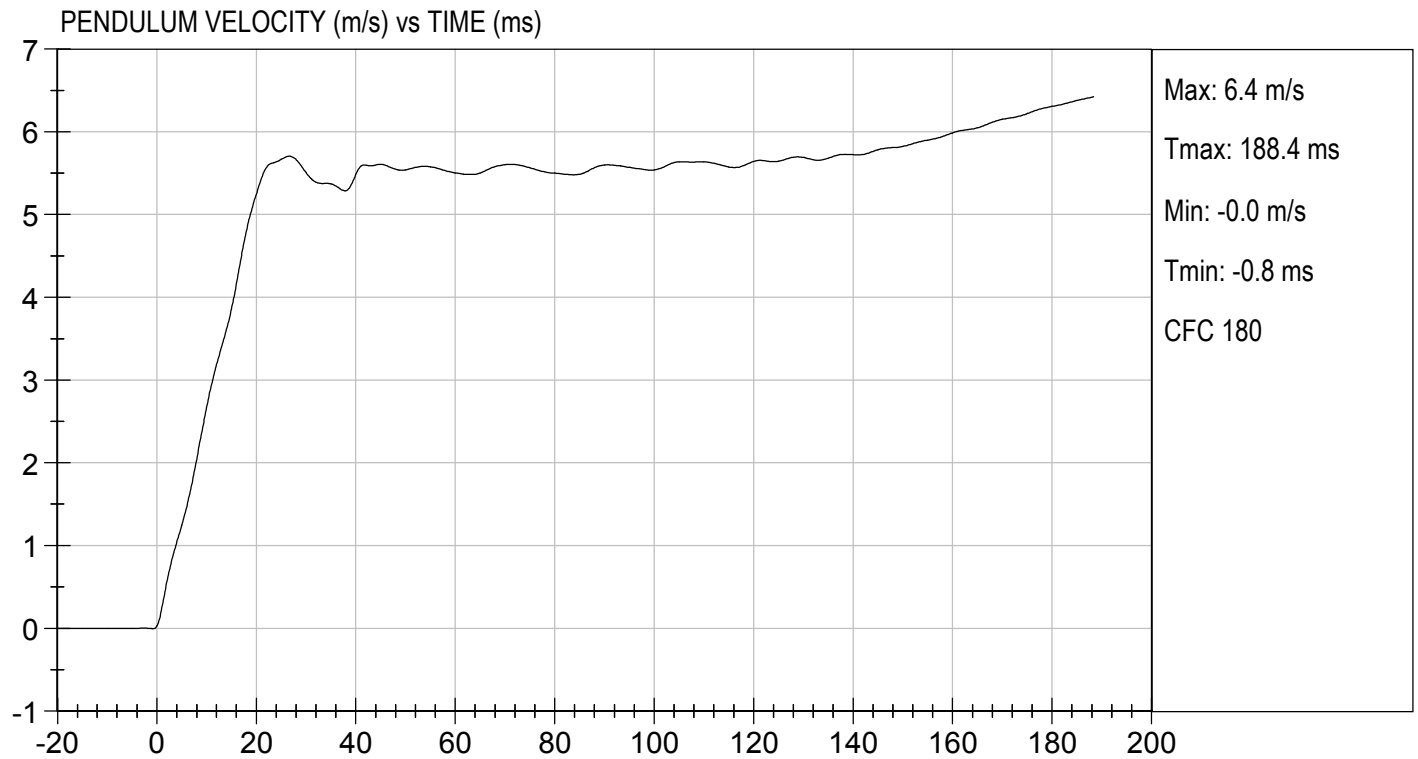
Test Date


 Approved By



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

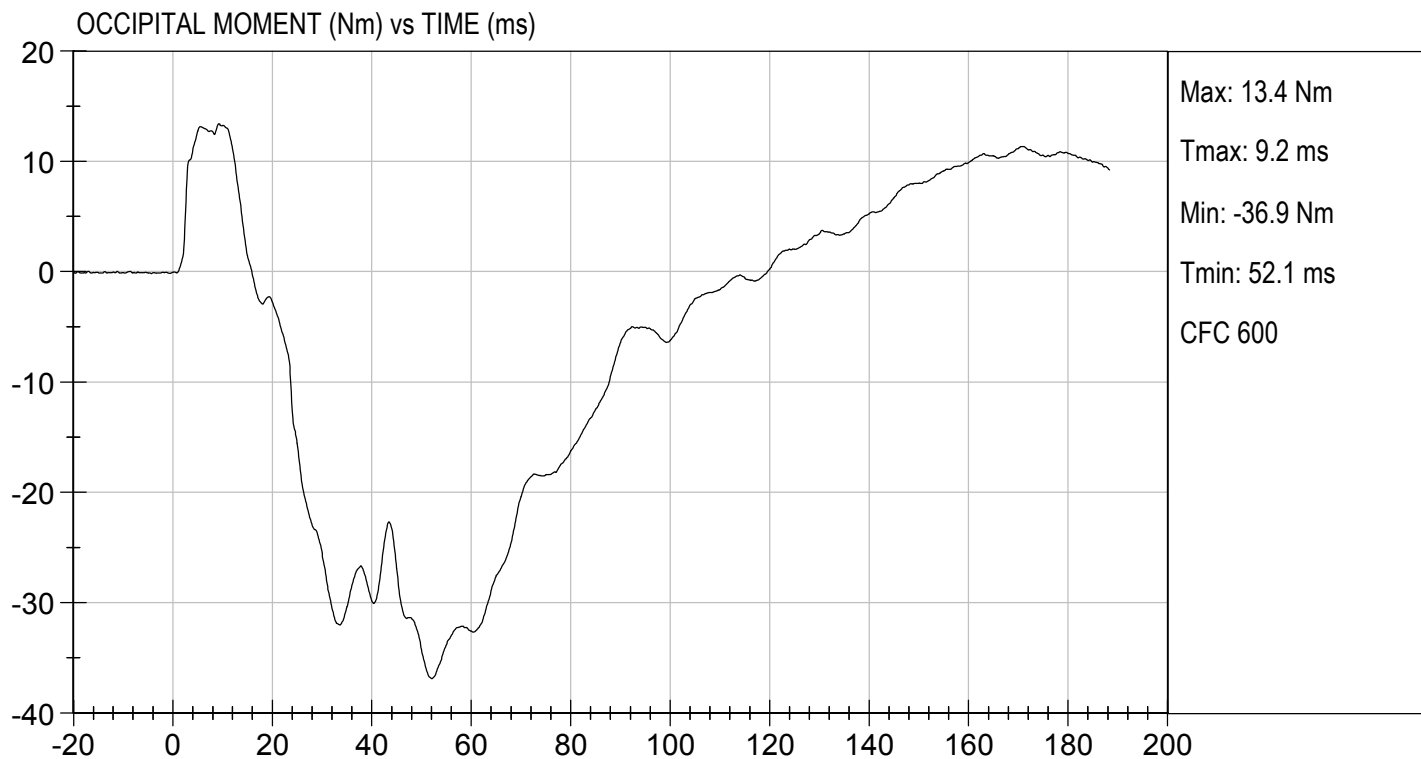
TEST DATE: 05/18/2021
TEST #: D211742





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

TEST DATE: 05/18/2021
TEST #: D211742



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SHOULDER IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

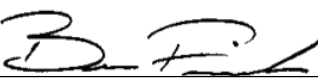
ATD Serial No: 296

Test ID: D211743

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	47	Pass
Impact Velocity	m/s	4.20 to 4.40	4.30	Pass
Maximum Probe Acceleration	G's	13 to 18	15	Pass
Shoulder Displacement	mm	28 to 37	33	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	19	Pass
Overall Test Results				Pass


Laboratory Technician

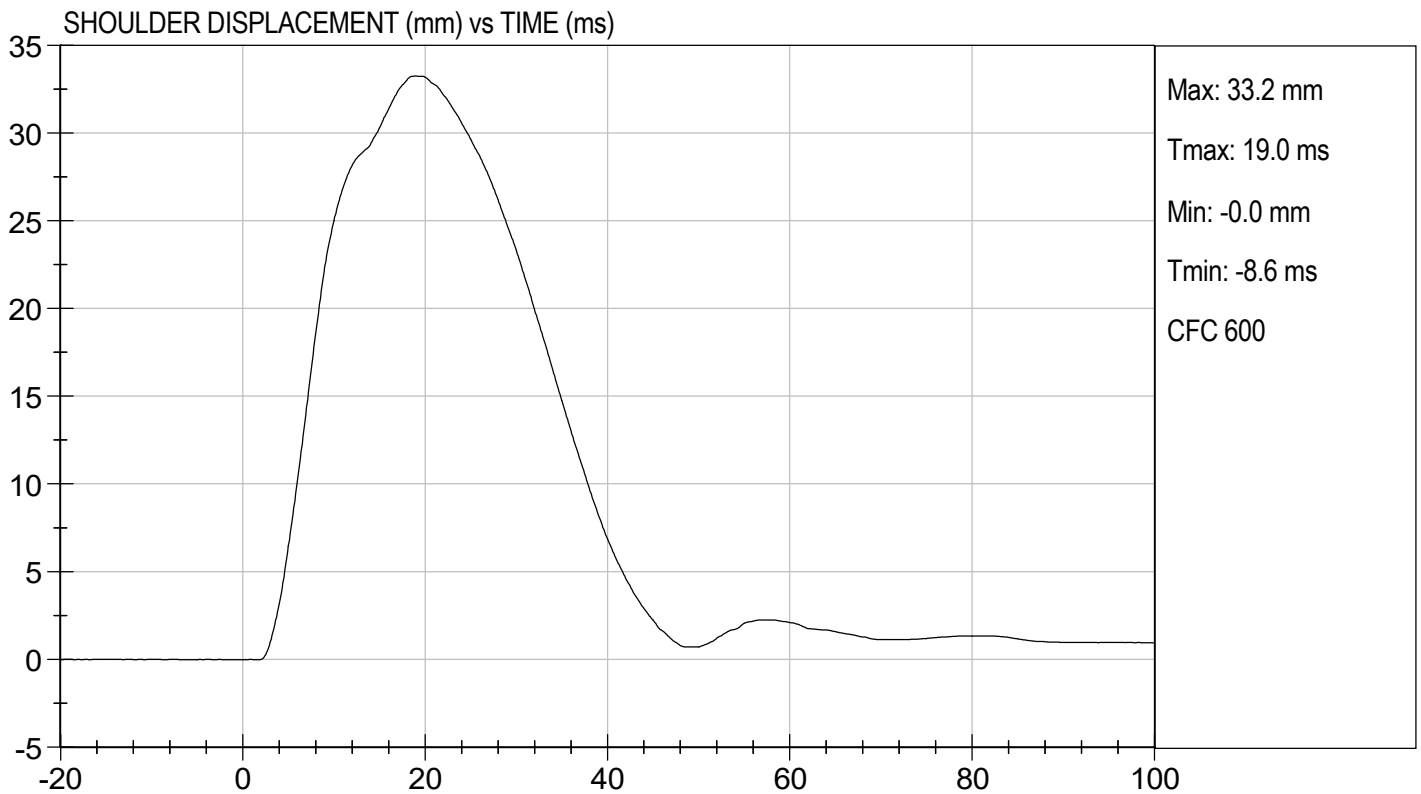
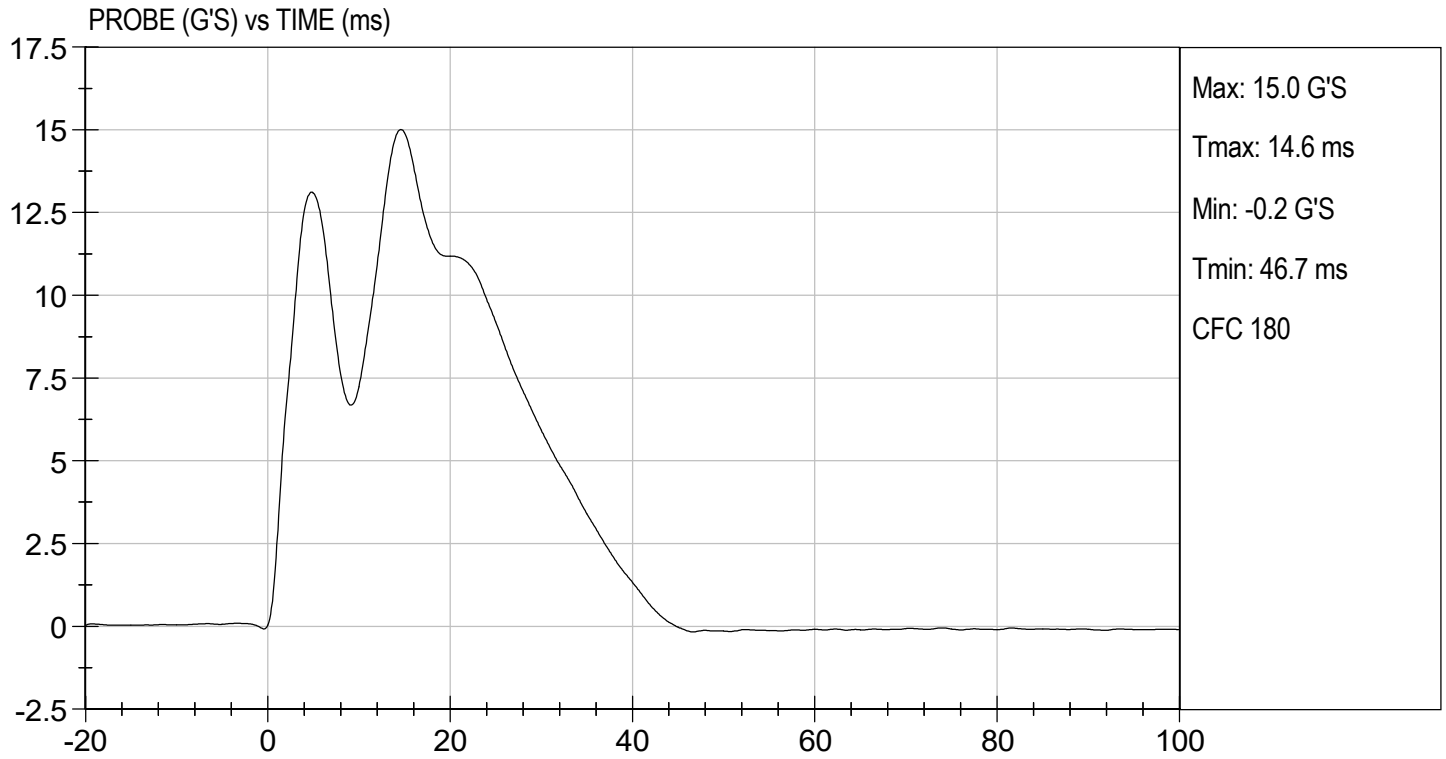
05/18/2021
Test Date


Approved By



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

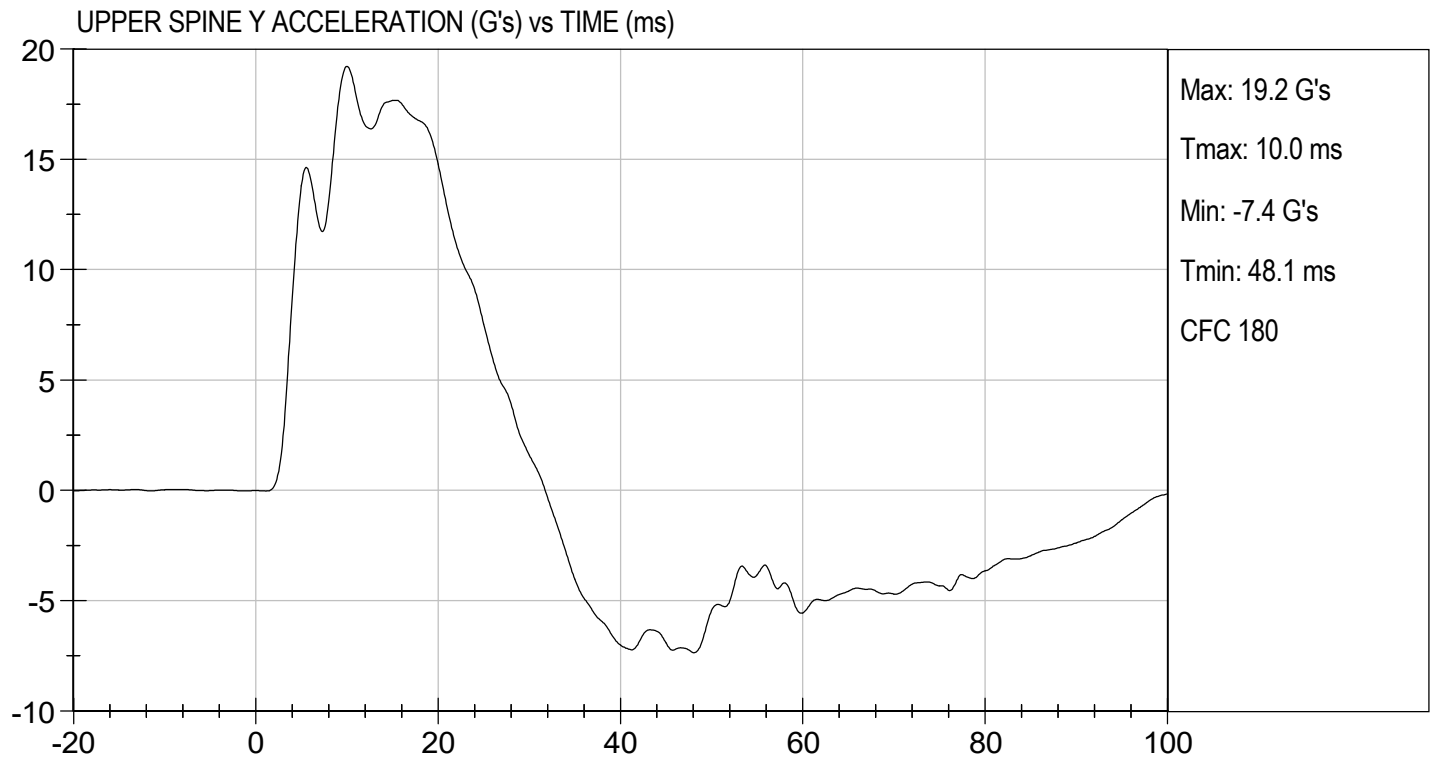
TEST DATE: 05/18/2021
TEST #: D211743





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

TEST DATE: 05/18/2021
TEST #: D211743



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

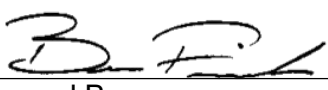
ATD Serial No: 296

Test I.D: D211744

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.4	Pass
Humidity	%	10 to 70	47	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	39	Pass
Upper Rib Displacement	mm	25 to 32	30	Pass
Middle Rib Displacement	mm	30 to 36	32	Pass
Lower Rib Displacement	mm	32 to 38	33	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	38	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	32	Pass
Overall Test Results				Pass


Laboratory Technician

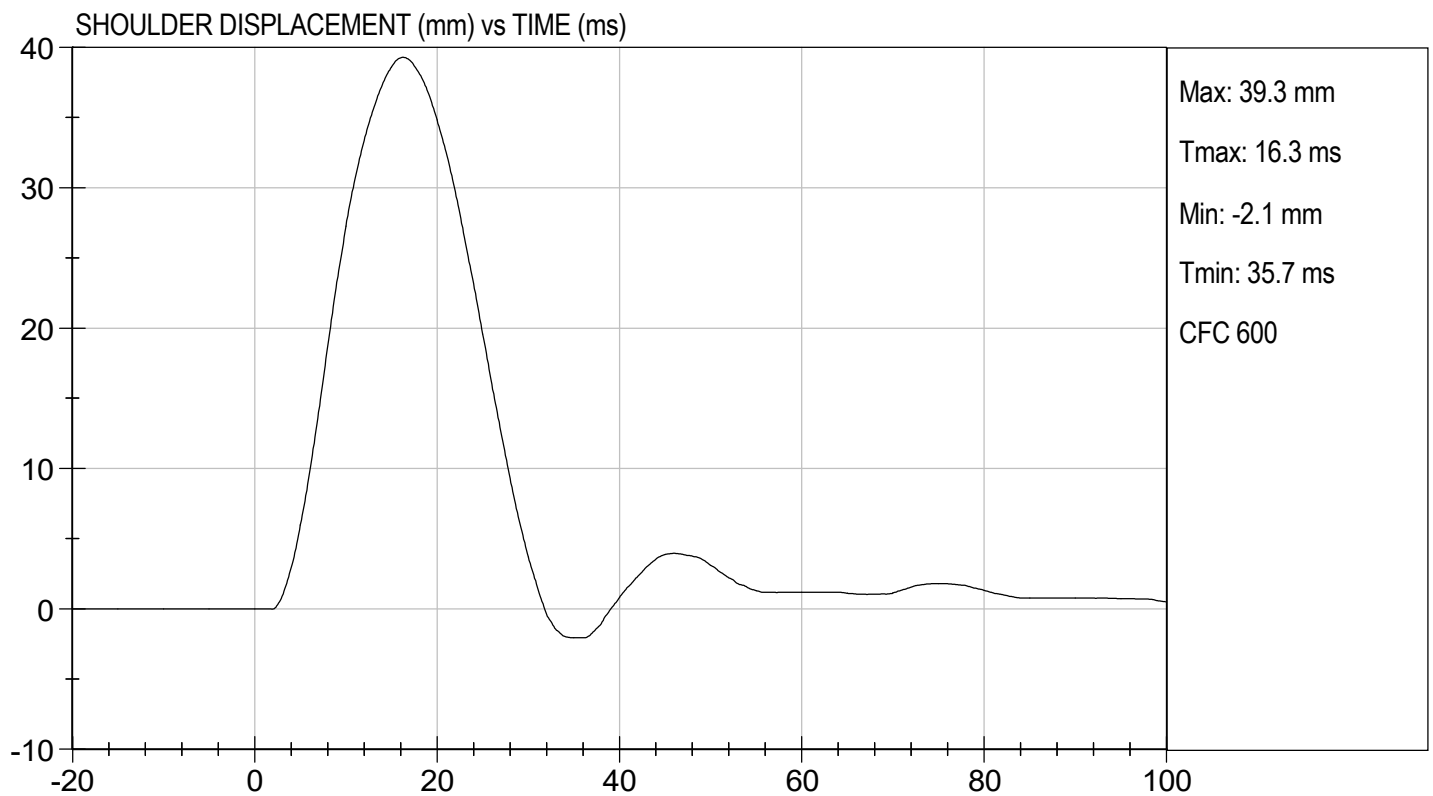
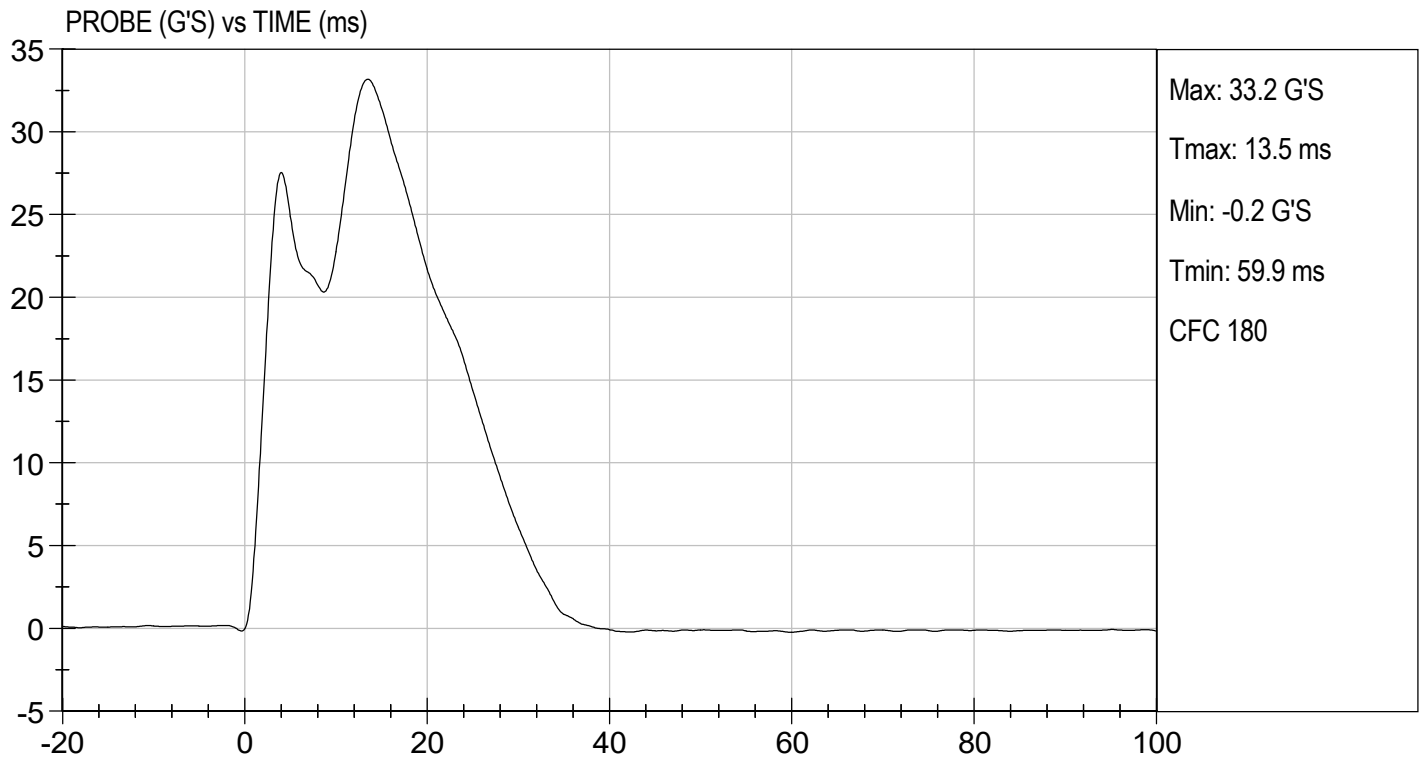
05/18/2021
Test Date


Approved By



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

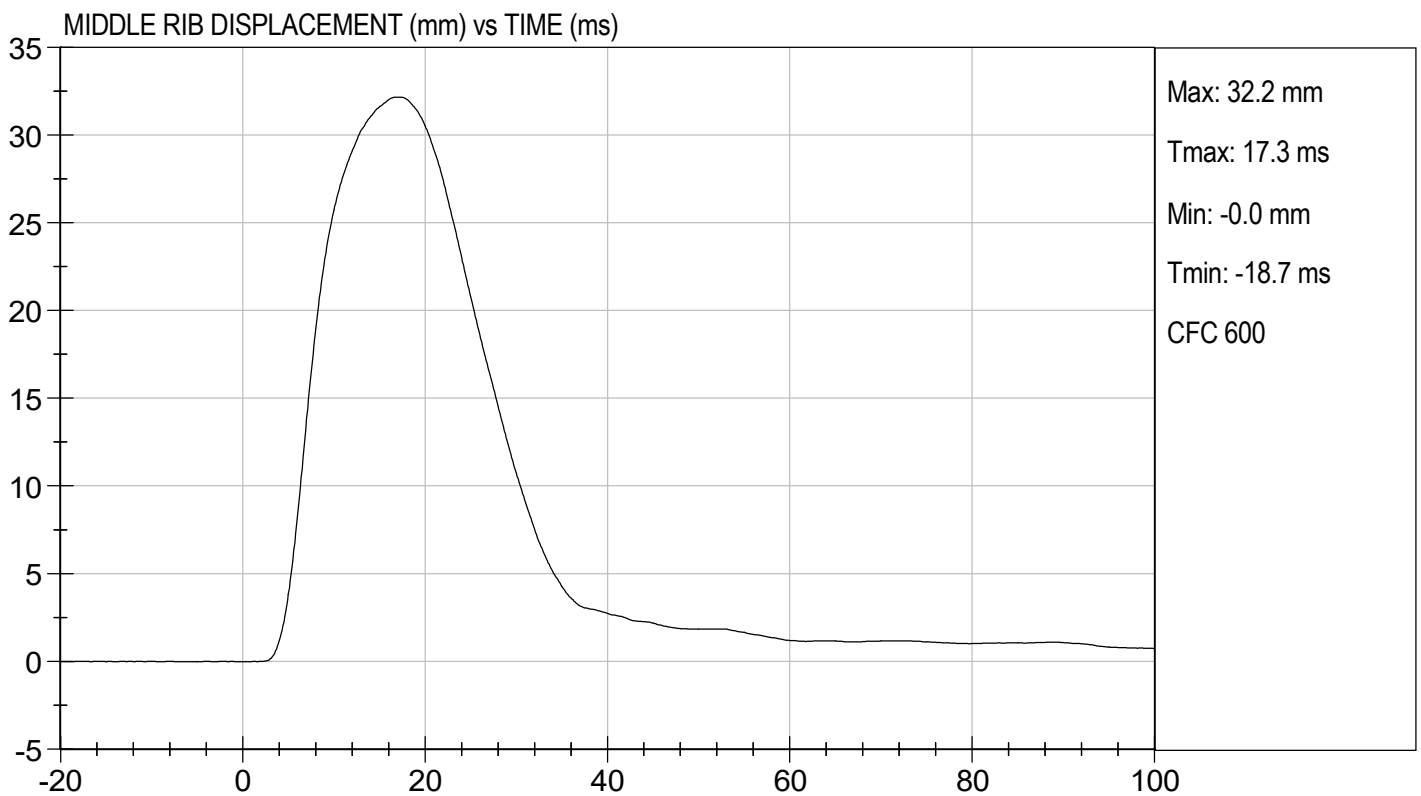
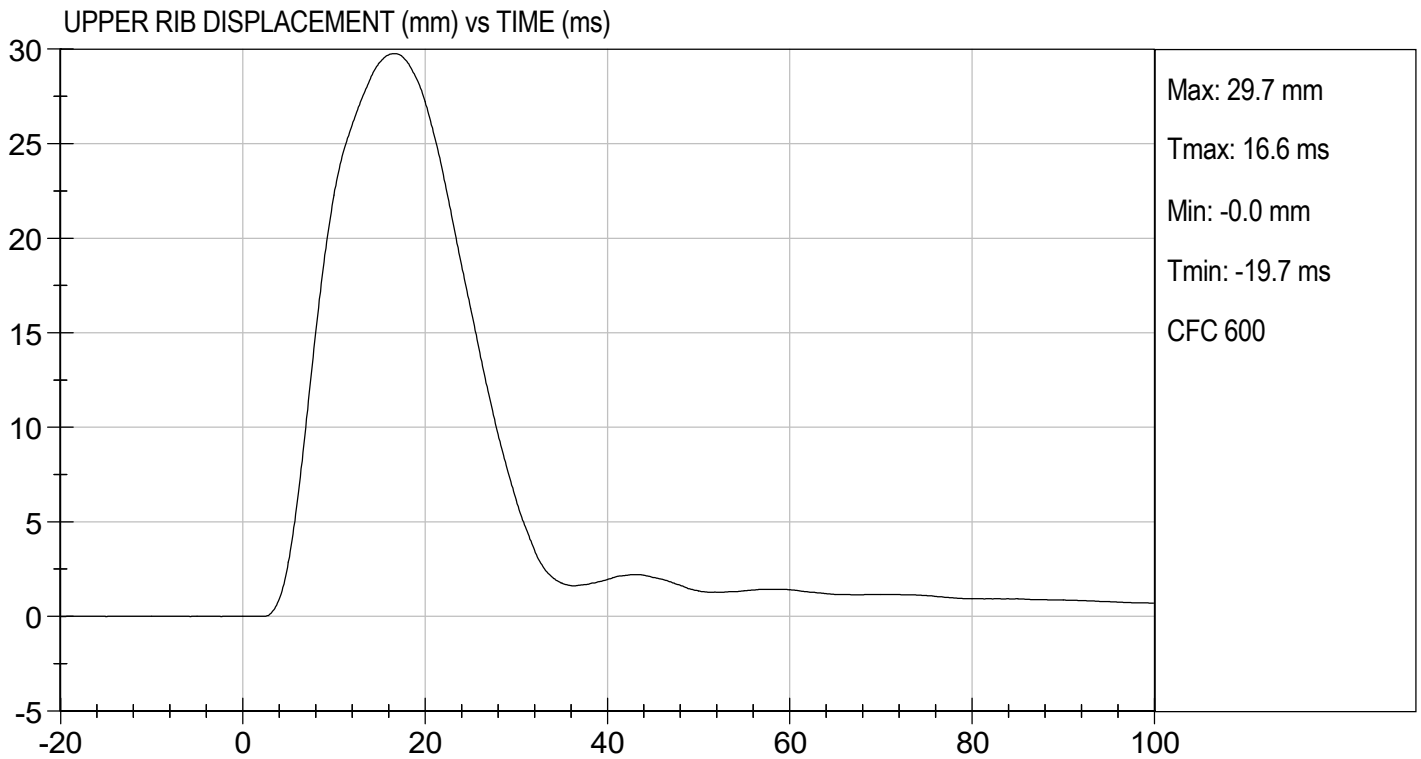
TEST DATE: 05/18/2021
TEST #: D211744





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

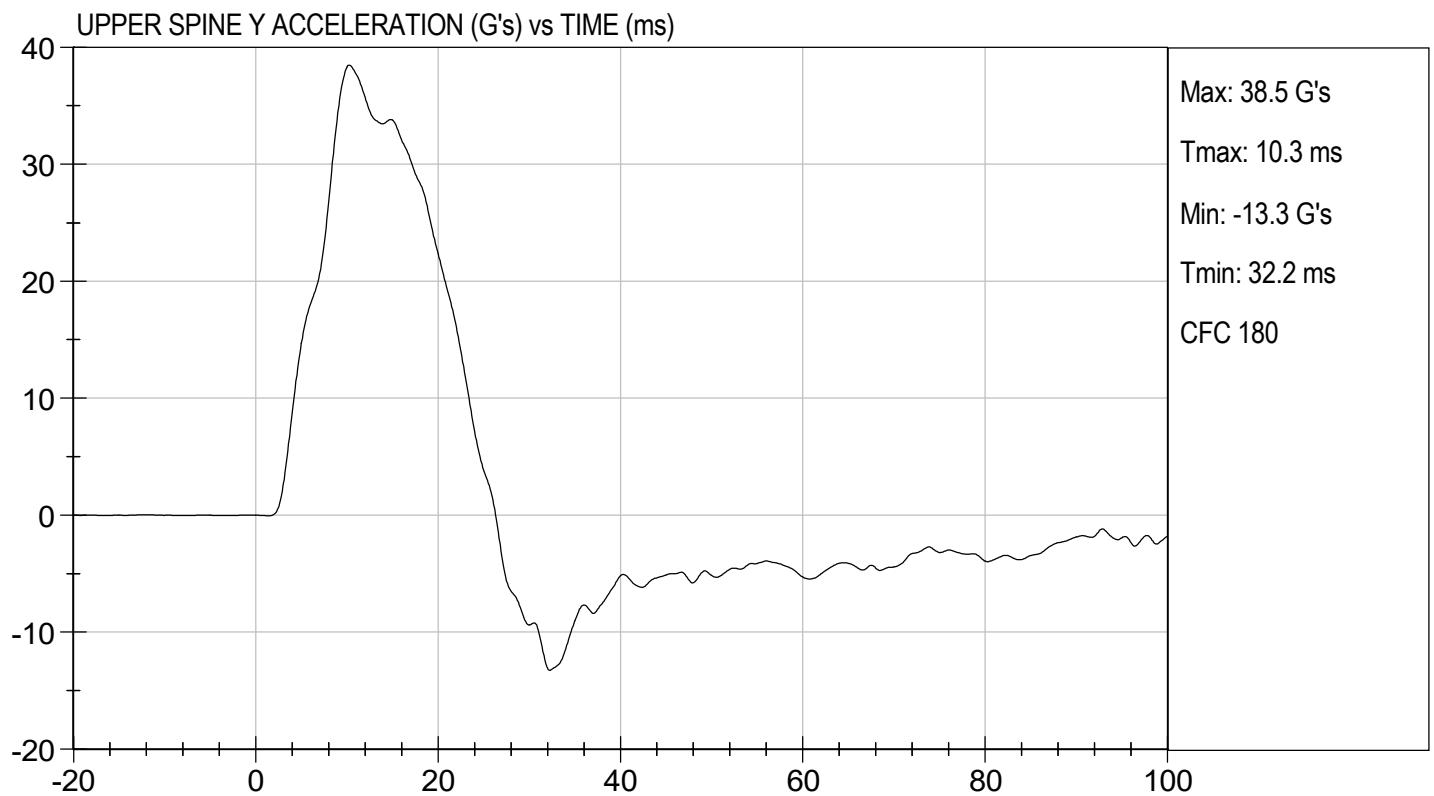
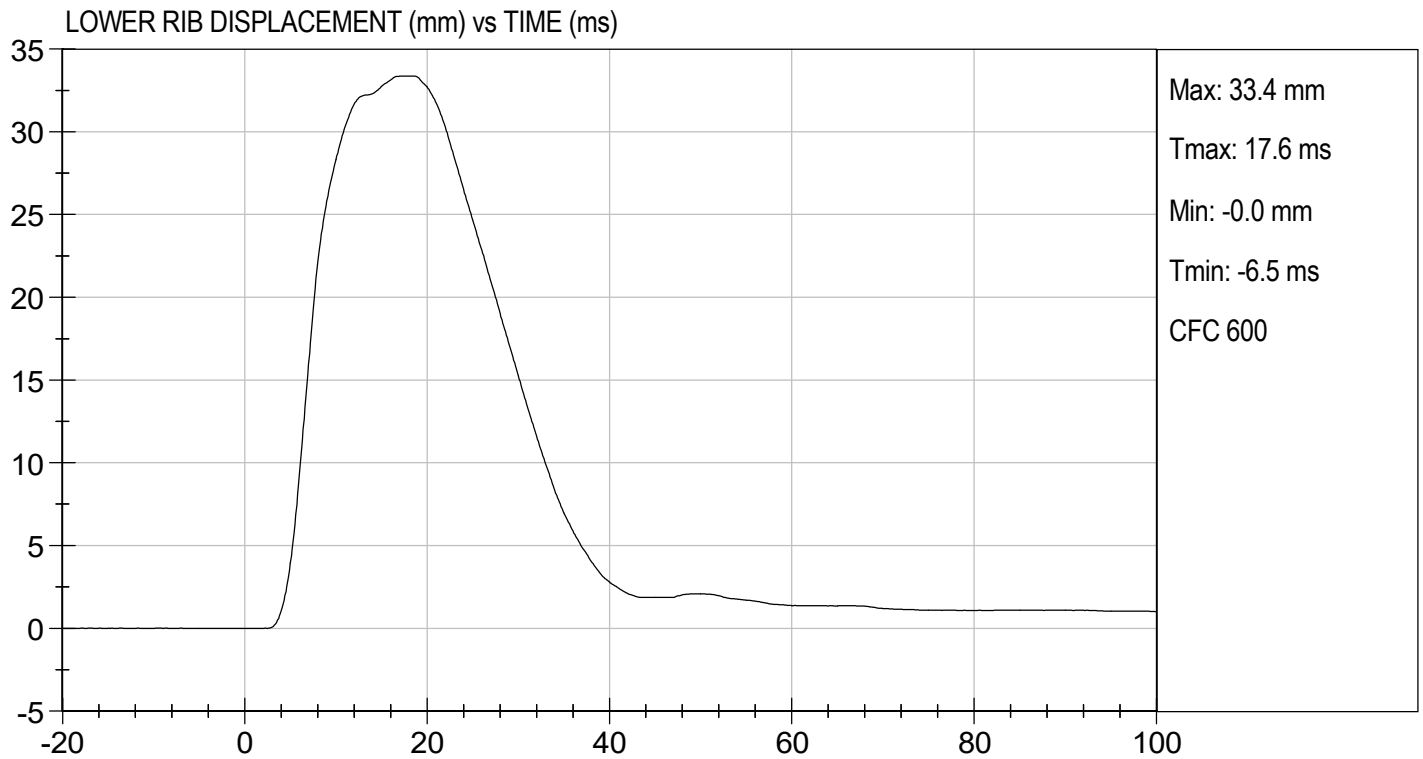
TEST DATE: 05/18/2021
TEST #: D211744





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

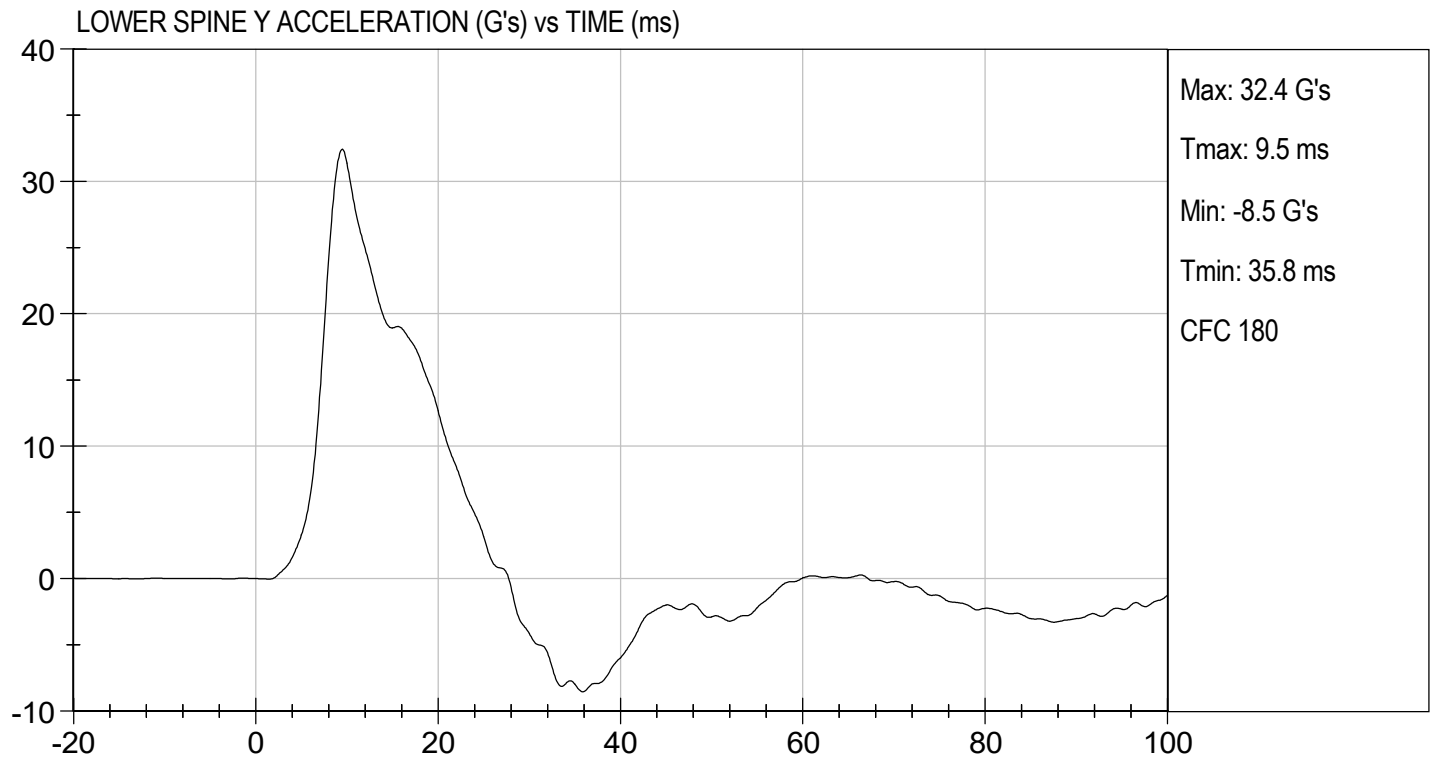
TEST DATE: 05/18/2021
TEST #: D211744





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

TEST DATE: 05/18/2021
TEST #: D211744



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

ATD Serial No: 296

Test I.D: D211745

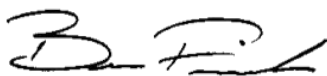
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.4	Pass
Humidity	%	10 to 70	47	Pass
Impact Velocity	m/s	4.20 to 4.40	4.30	Pass
Maximum Probe Acceleration	G's	14 to 18	15	Pass
Upper Rib Displacement	mm	32 to 40	39	Pass
Middle Rib Displacement	mm	39 to 45	43	Pass
Lower Rib Displacement	mm	35 to 43	40	Pass
Upper Spine (T1) Y Acceleration	G's	13 to 17	15	Pass
Lower Spine (T12) Y Acceleration	G's	7 to 11	9	Pass
Overall Test Results				Pass



Laboratory Technician

05/18/2021

Test Date

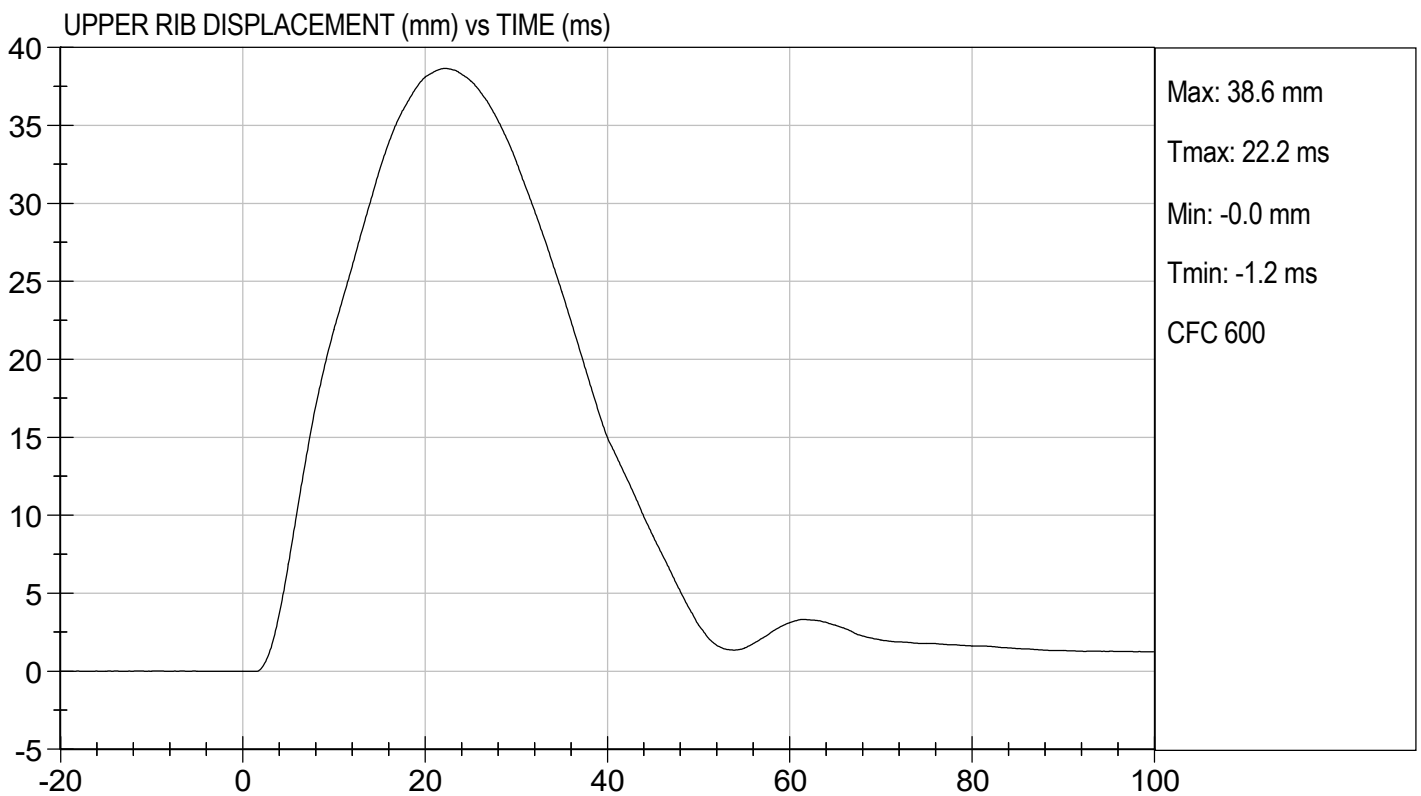
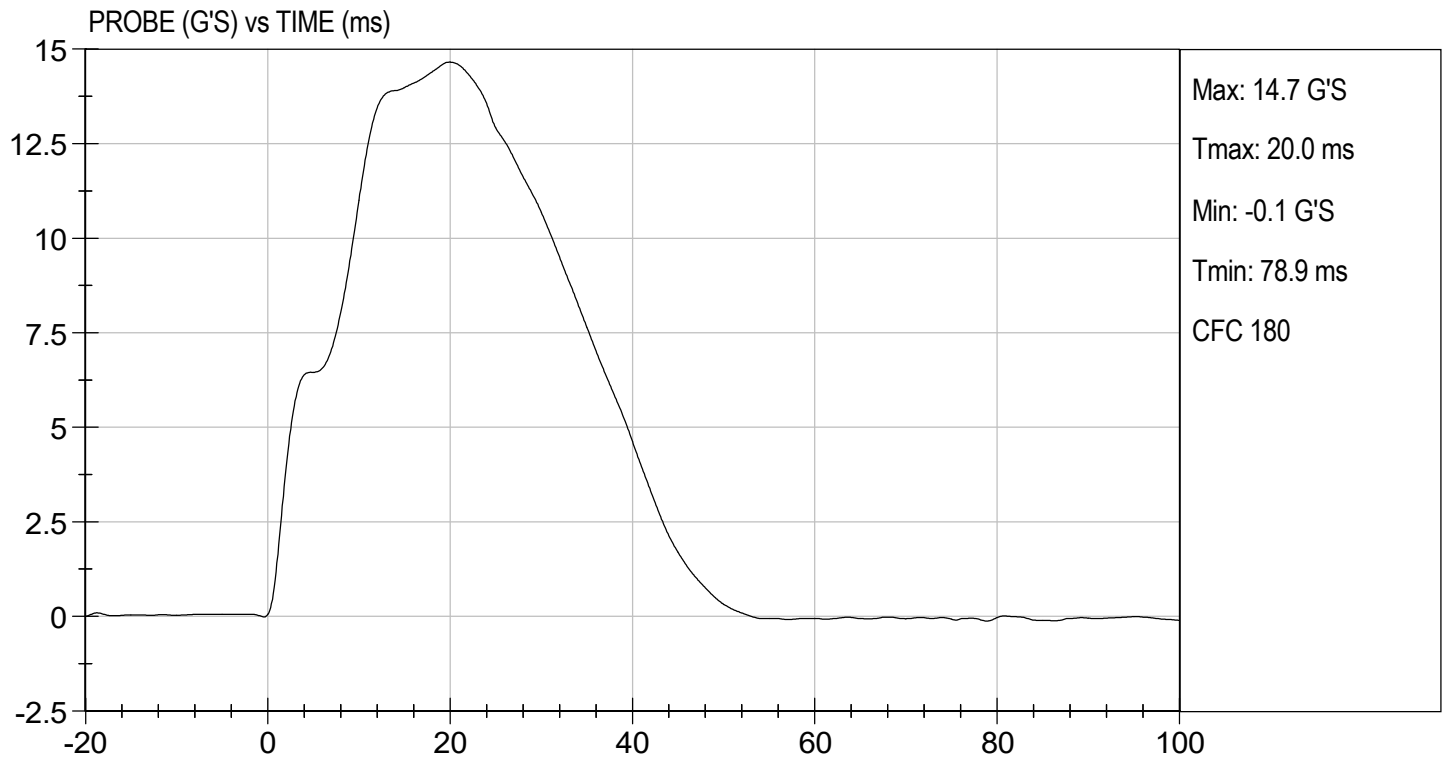


Approved By



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

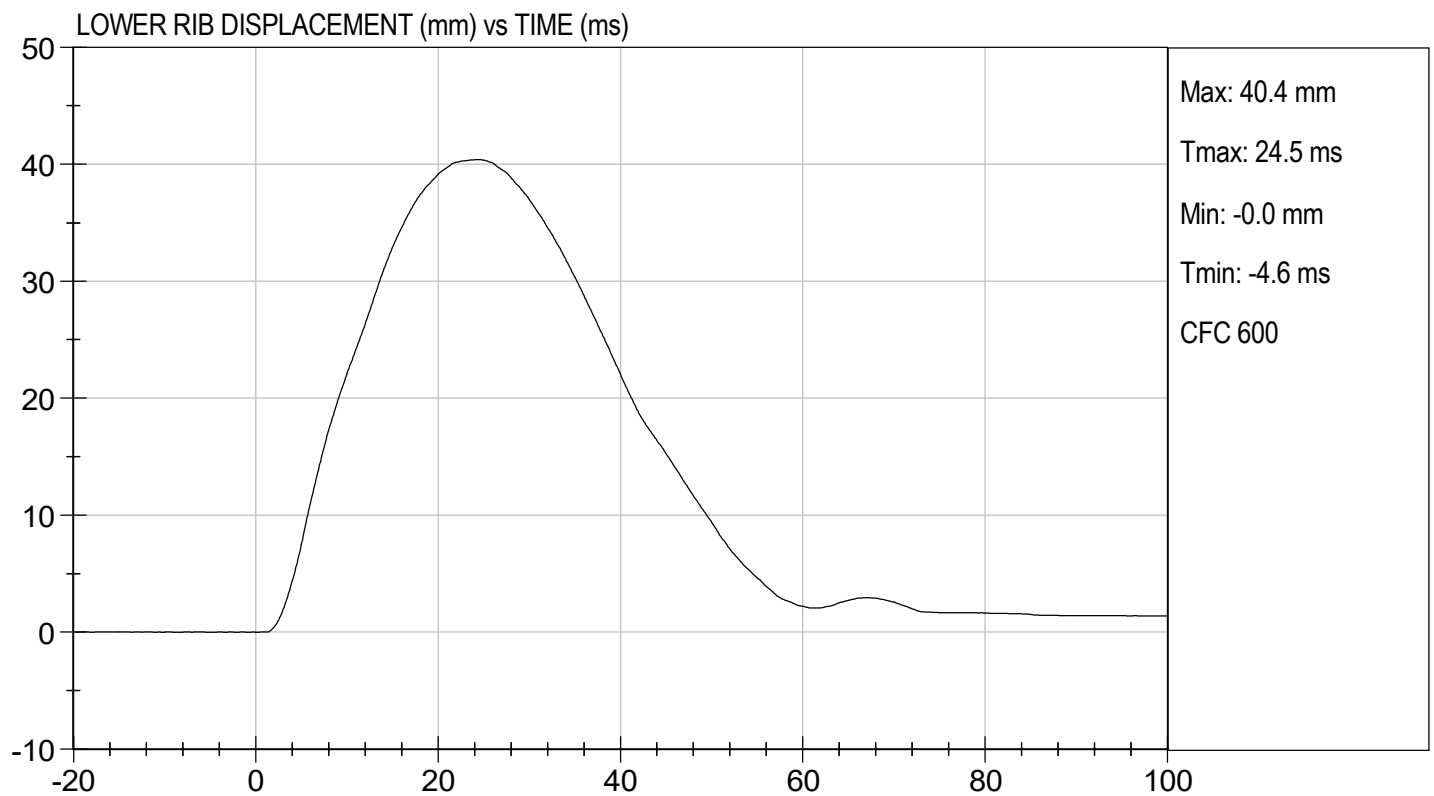
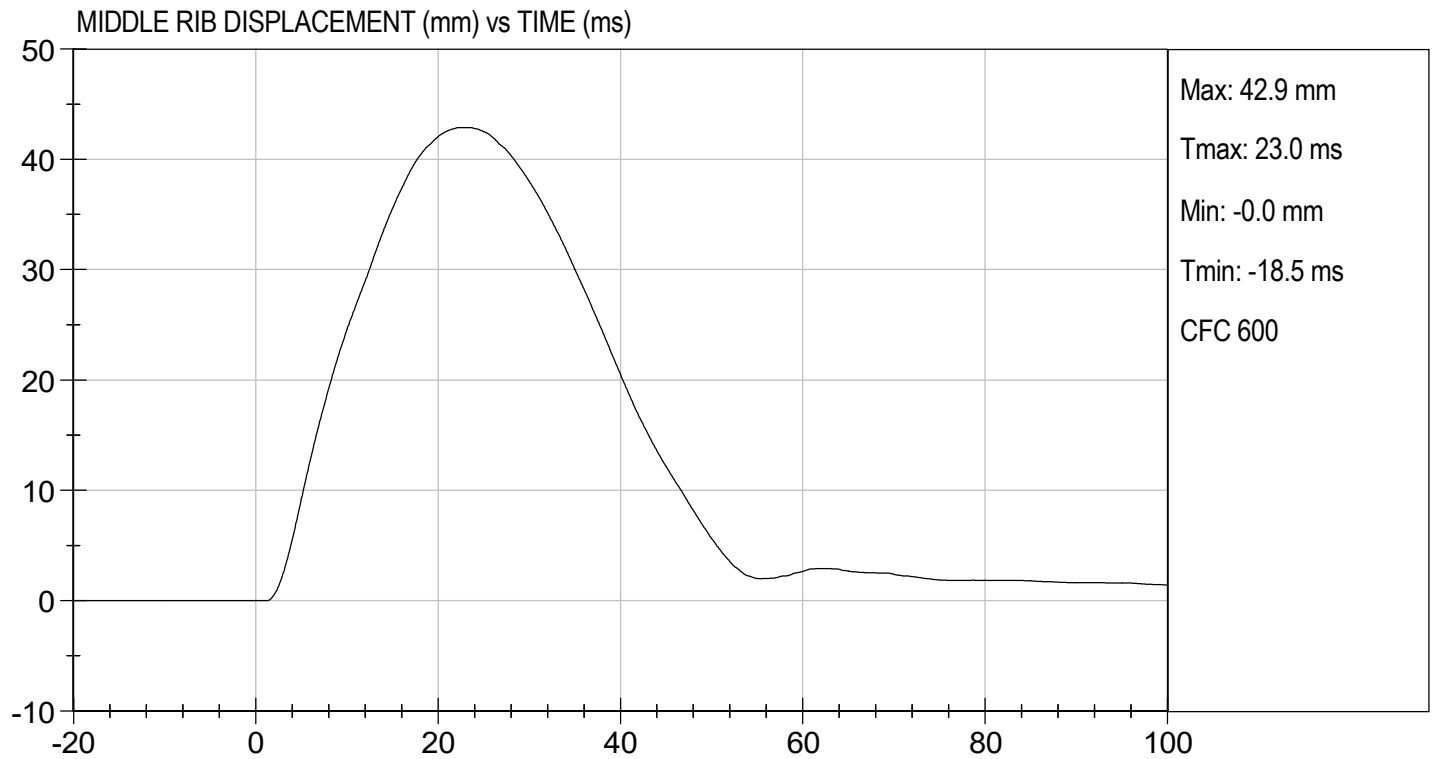
TEST DATE: 05/18/2021
TEST #: D211745





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

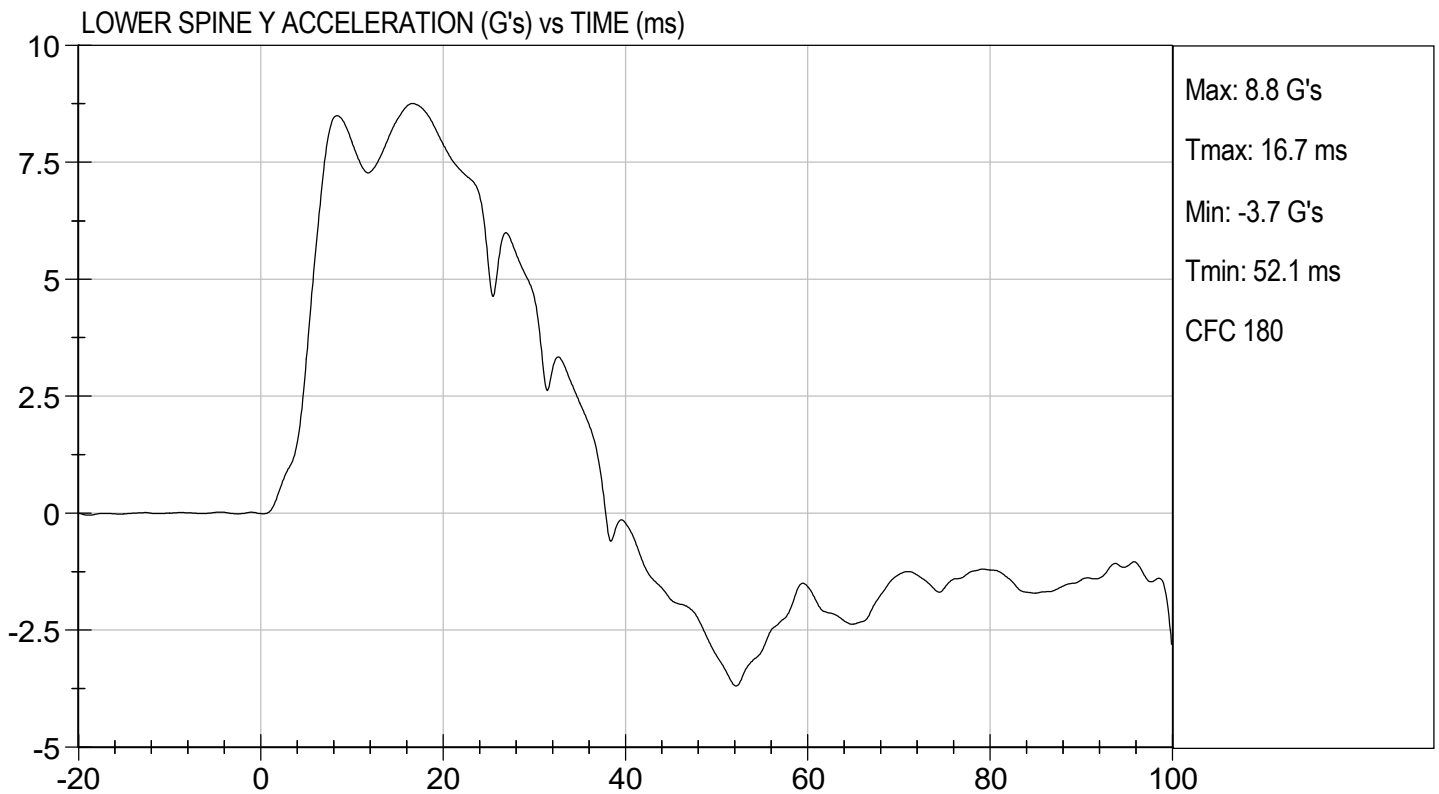
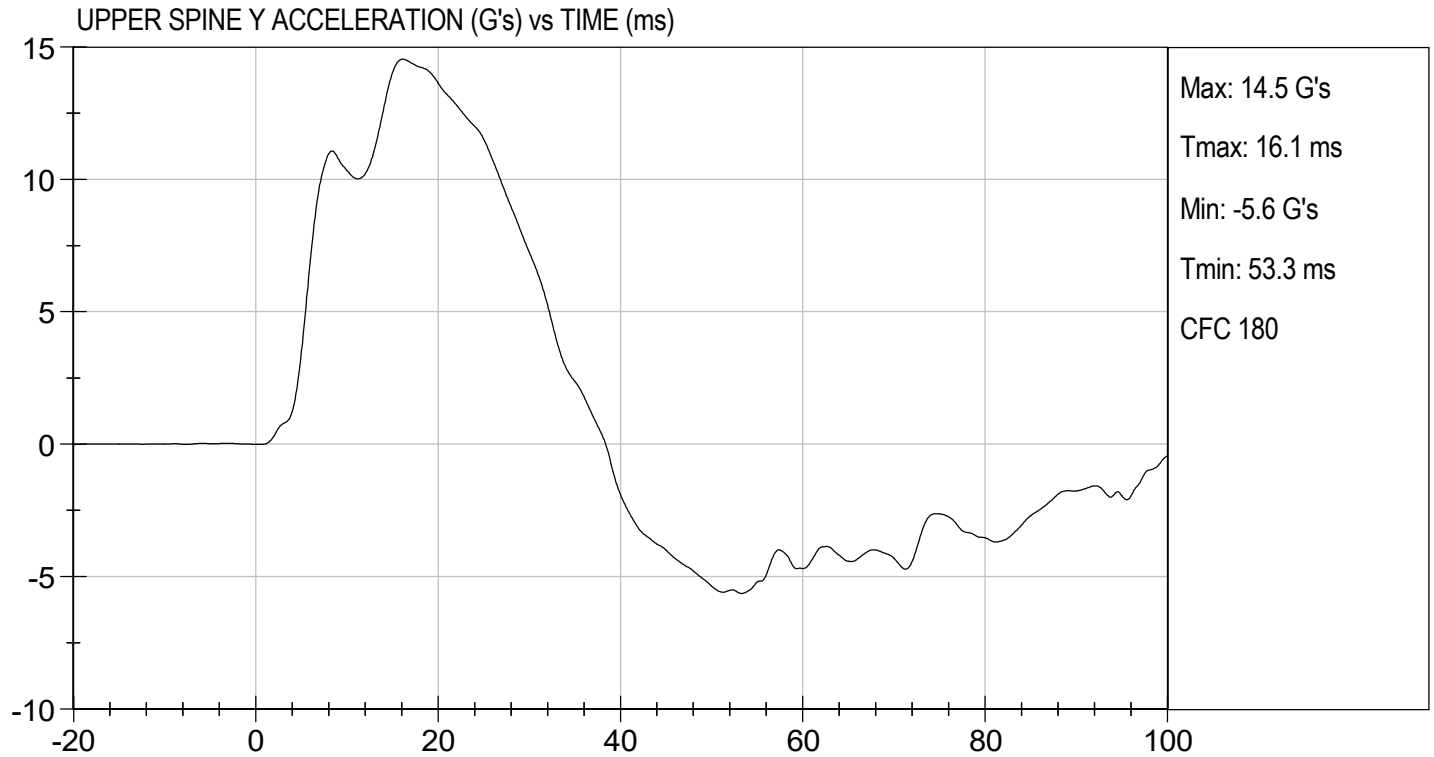
TEST DATE: 05/18/2021
TEST #: D211745





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

TEST DATE: 05/18/2021
TEST #: D211745



MGA RESEARCH CORPORATION**ABDOMINAL IMPACT TEST****SID-III BUILD LEVEL D DUMMY****ATD Serial No:** 296**Test I.D:** D211746

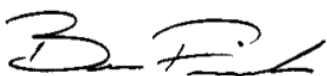
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.4	Pass
Humidity	%	10 to 70	47	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Maximum Probe Acceleration	G's	12 to 16	14	Pass
Upper Abdomen Rib Displacement	mm	36 to 47	39	Pass
Lower Abdomen Rib Displacement	mm	33 to 44	39	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	11	Pass
Overall Test Results				Pass



Laboratory Technician

05/18/2021

Test Date

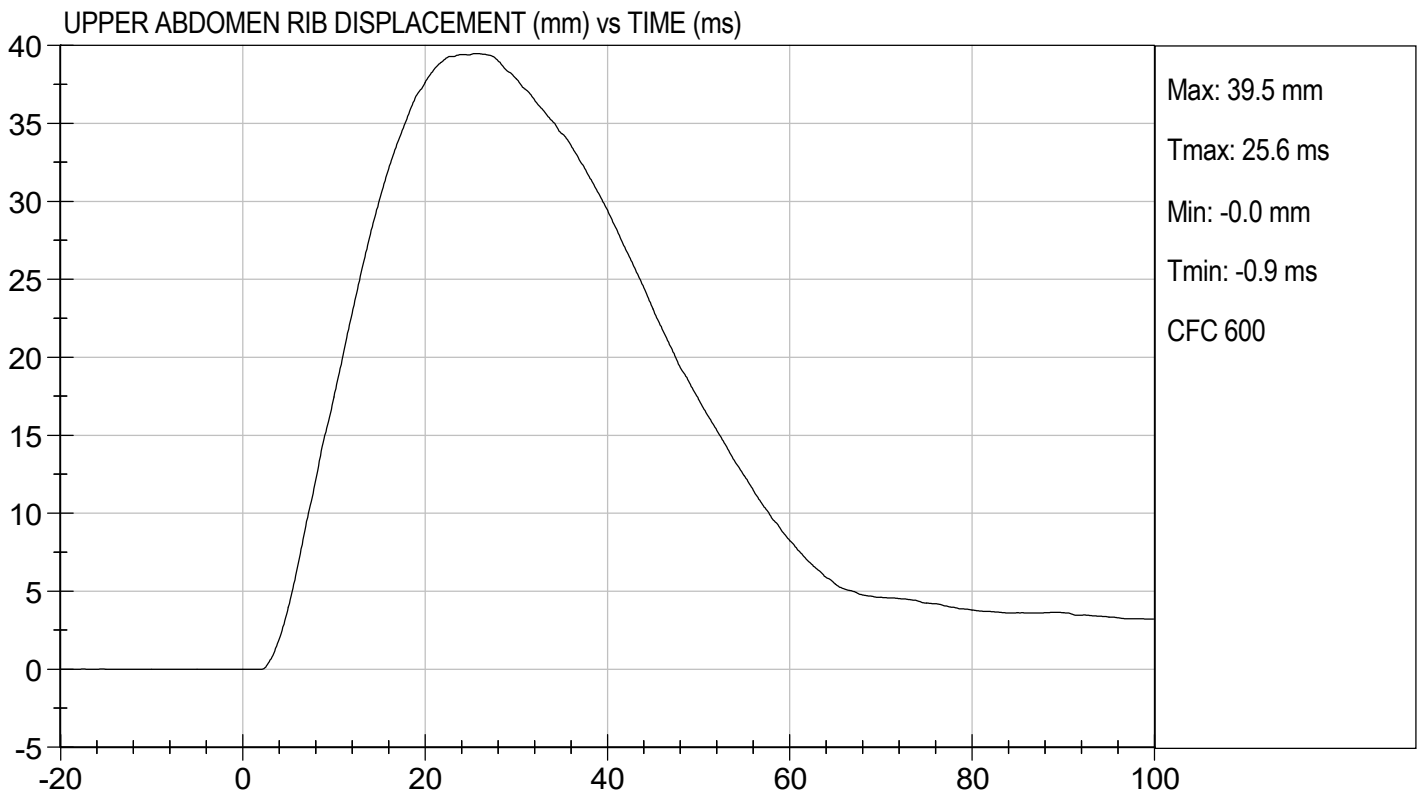
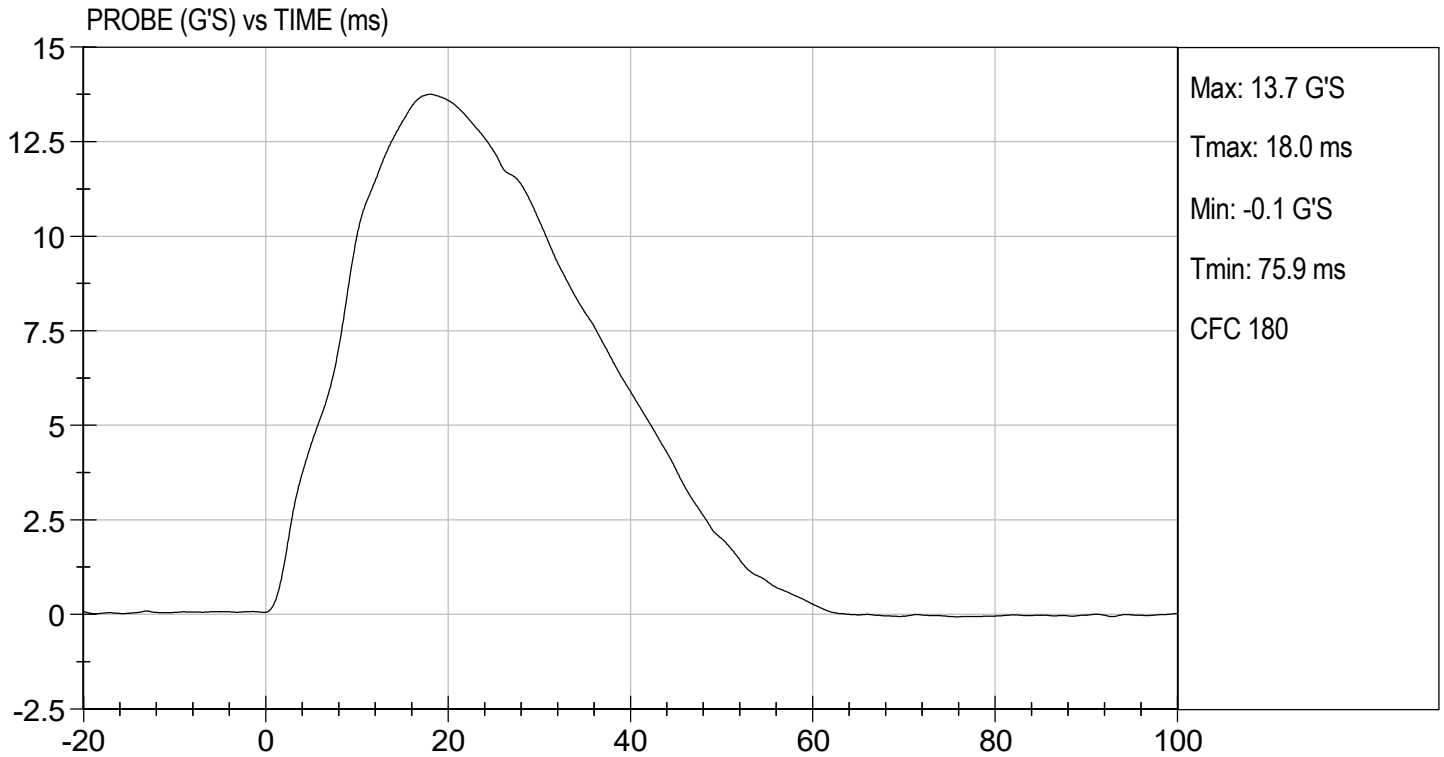


Approved By



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

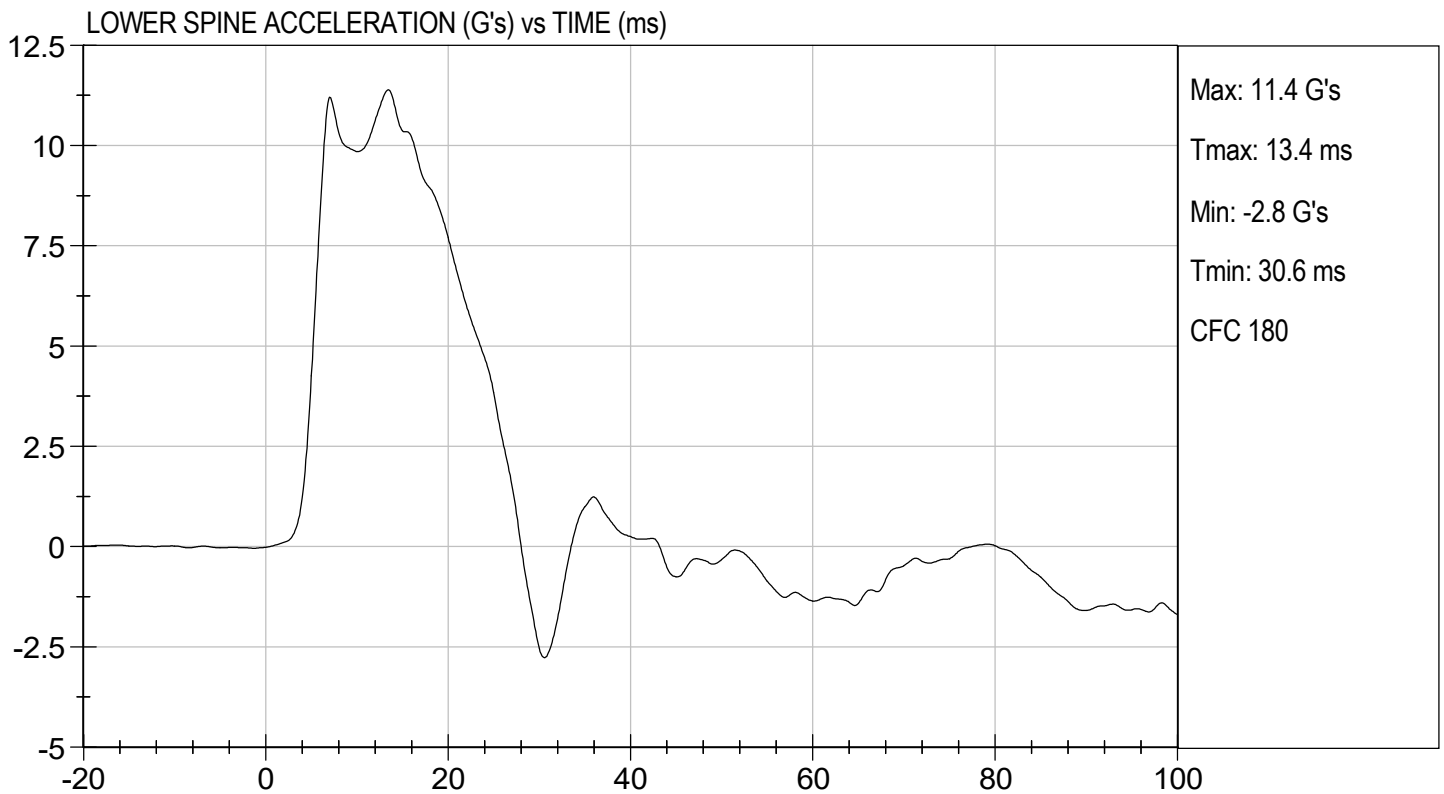
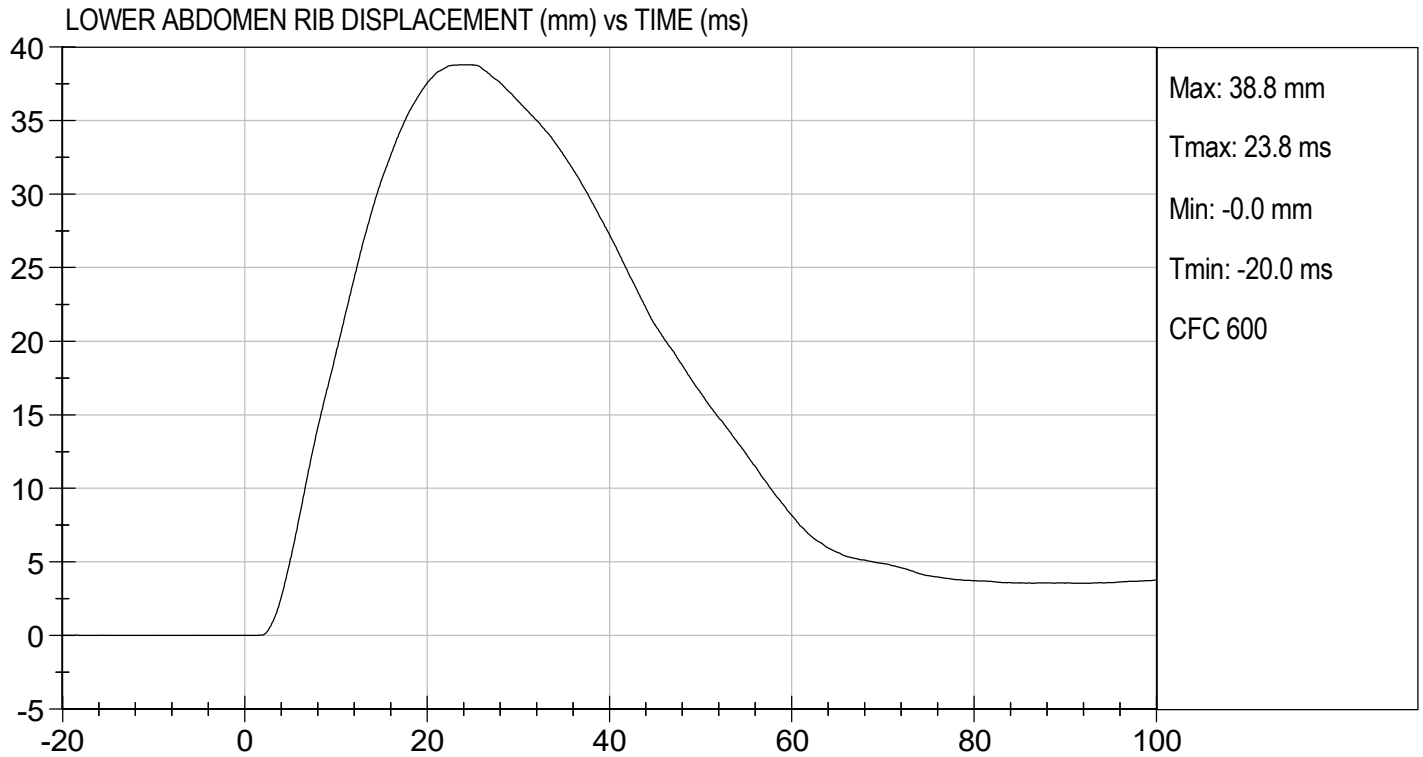
TEST DATE: 05/18/2021
TEST #: D211746





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

TEST DATE: 05/18/2021
TEST #: D211746



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D211747

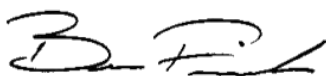
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.4	Pass
Humidity	%	10 to 70	47	Pass
Impact Velocity	m/s	6.60 to 6.80	6.60	Pass
Maximum Probe Acceleration	G's	38 to 47	41	Pass
Pelvis Y Acceleration After 6 ms	G's	34 to 42	40	Pass
Peak Acetabulum Force	N	3600 to 4300	4,040	Pass
Overall Test Results				Pass



Laboratory Technician

05/18/2021

Test Date

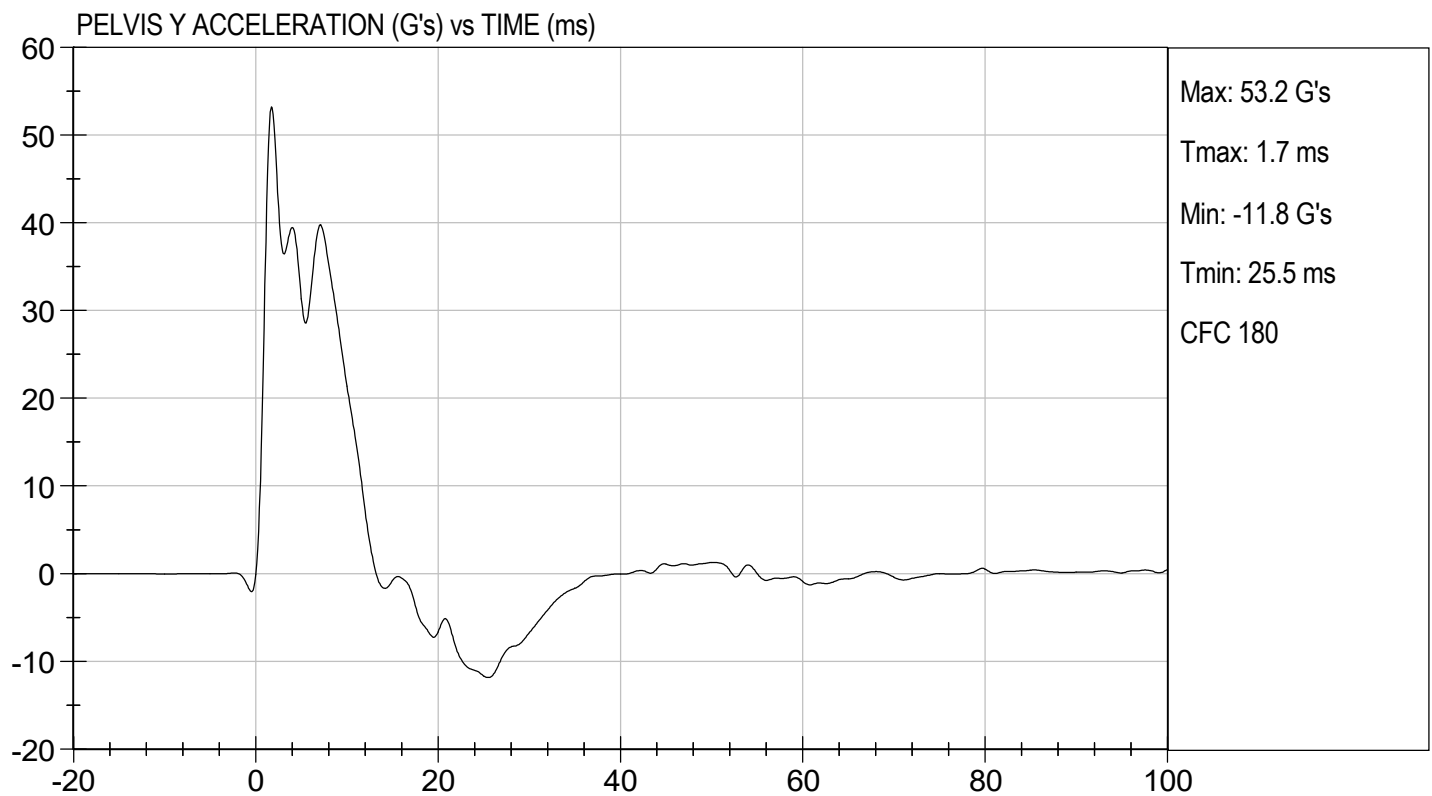
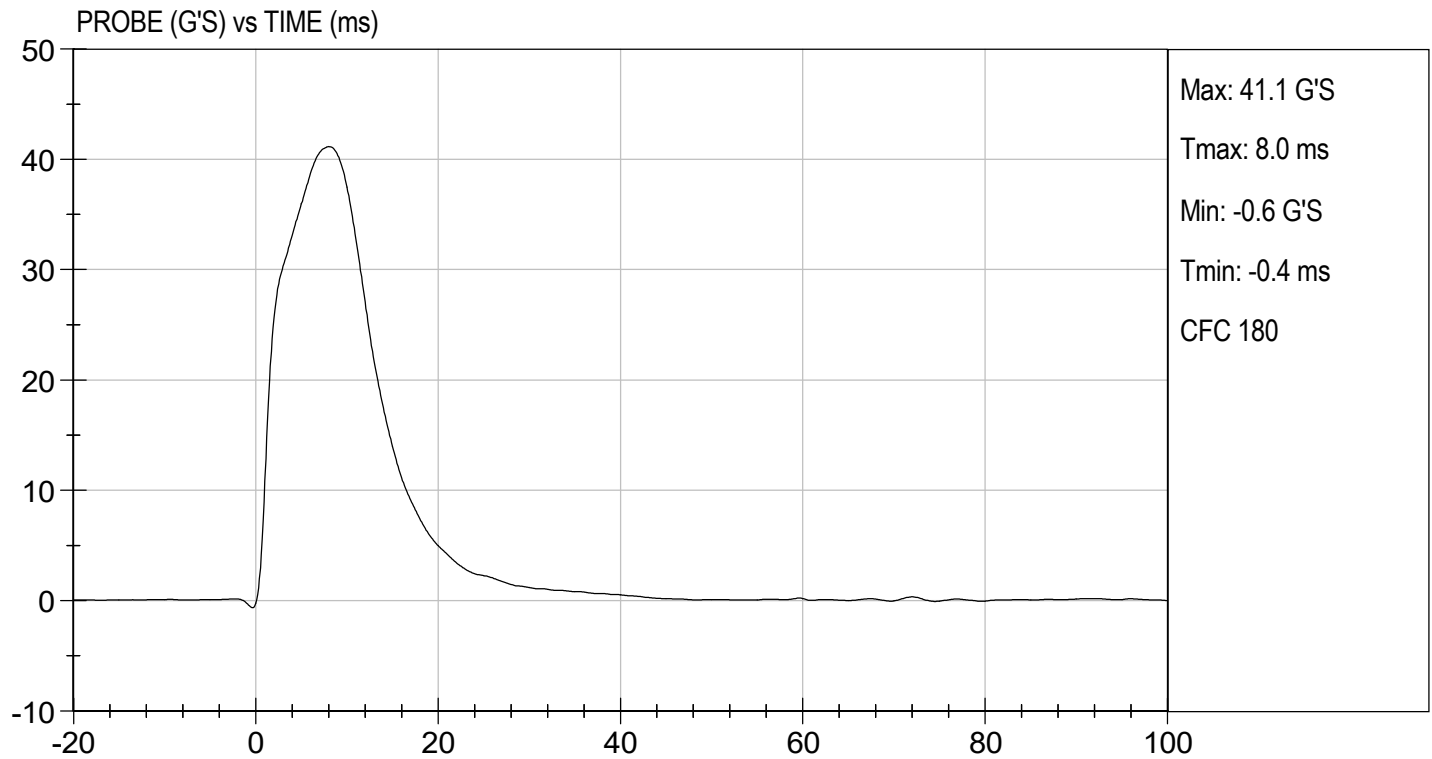


Approved By



TEST DESC: PELVIS IMPACT
VELOCITY: 21.64 ft/s, 6.60 m/s

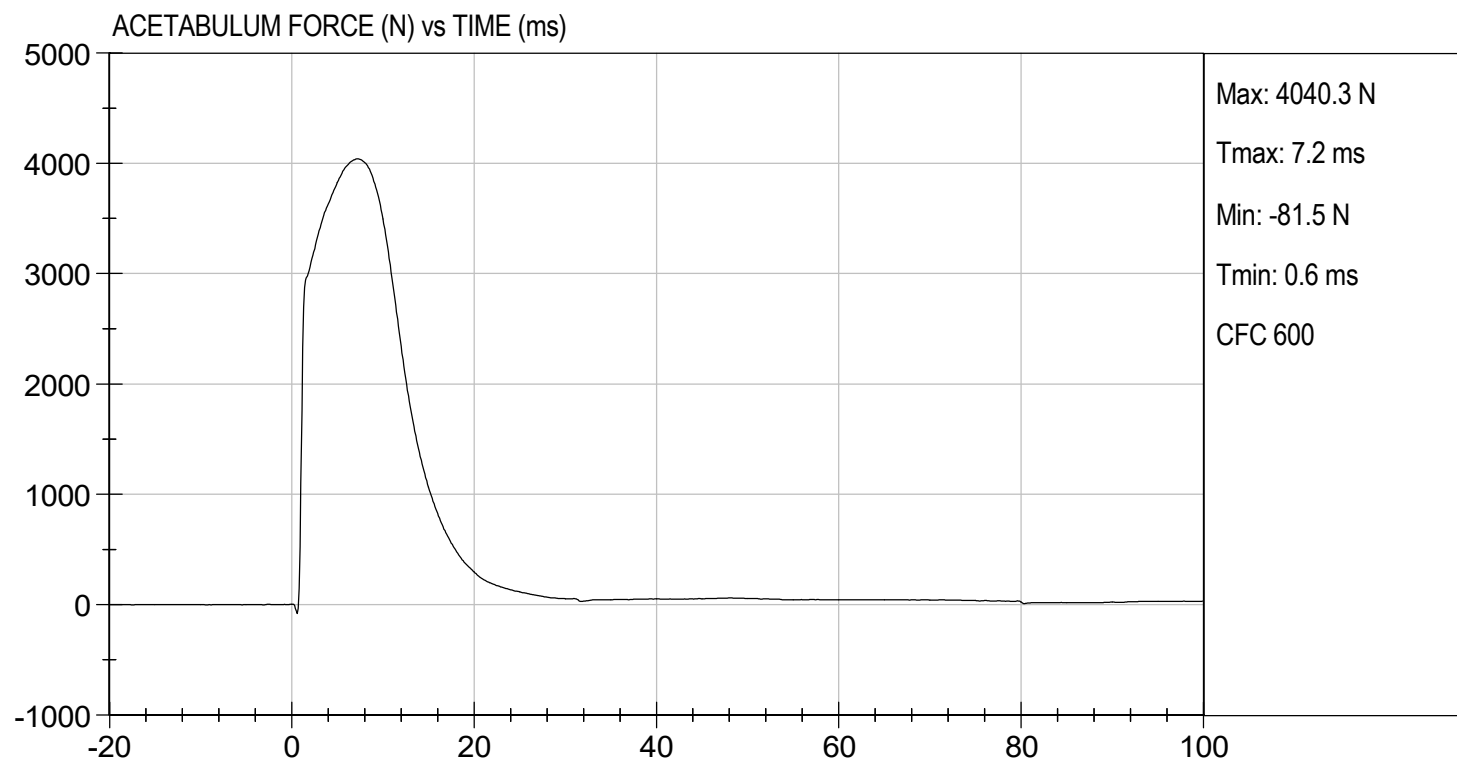
TEST DATE: 05/18/2021
TEST #: D211747





TEST DESC: PELVIS IMPACT
VELOCITY: 21.64 ft/s, 6.60 m/s

TEST DATE: 05/18/2021
TEST #: D211747



MGA RESEARCH CORPORATION

ILIAC IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D211748

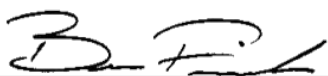
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.4	Pass
Humidity	%	10 to 70	47	Pass
Impact Velocity	m/s	4.20 to 4.40	4.20	Pass
Maximum Probe Acceleration	G's	36 to 45	39	Pass
Pelvis Y Acceleration	G's	28 to 39	31	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4,583	Pass
Overall Test Results				Pass



Laboratory Technician

05/18/2021

Test Date

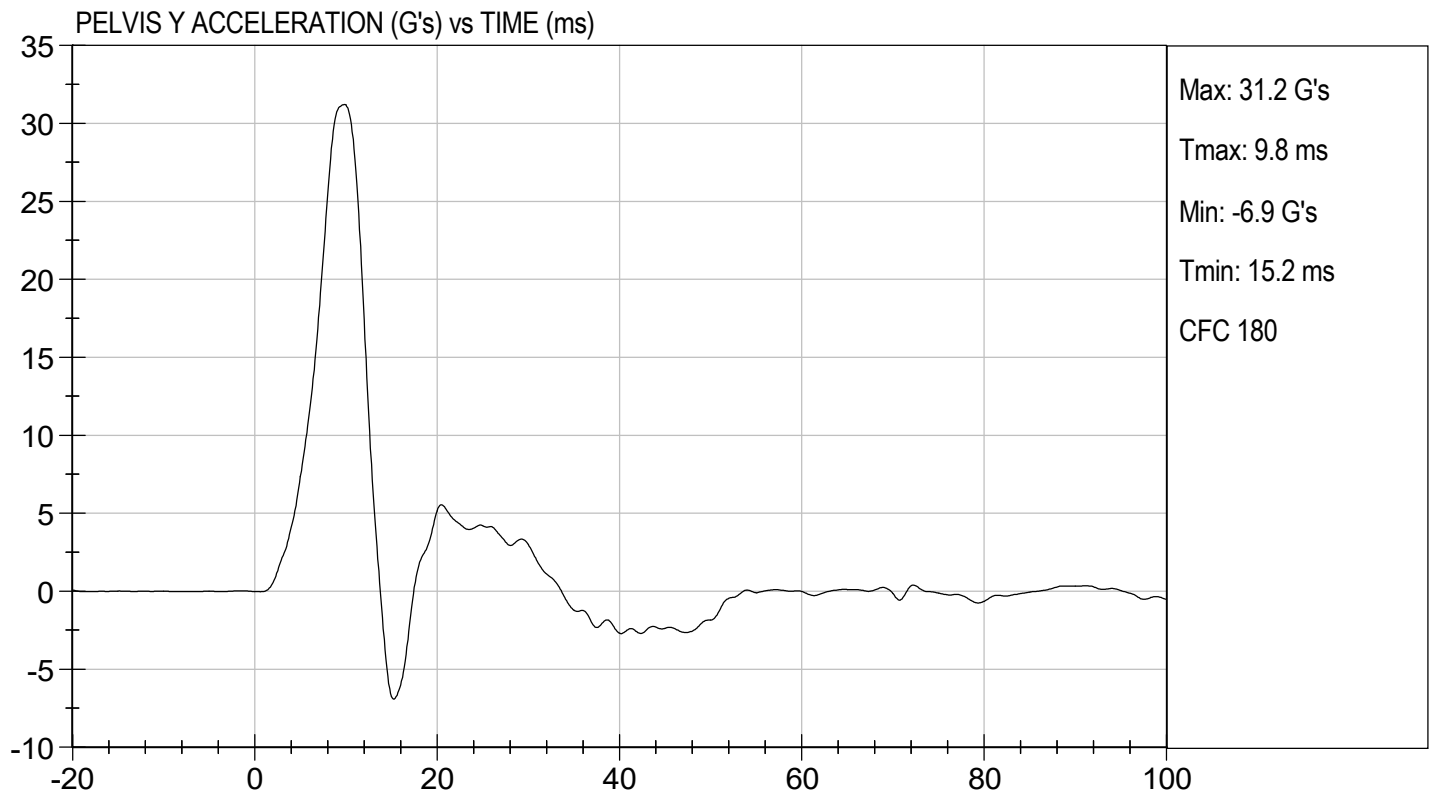
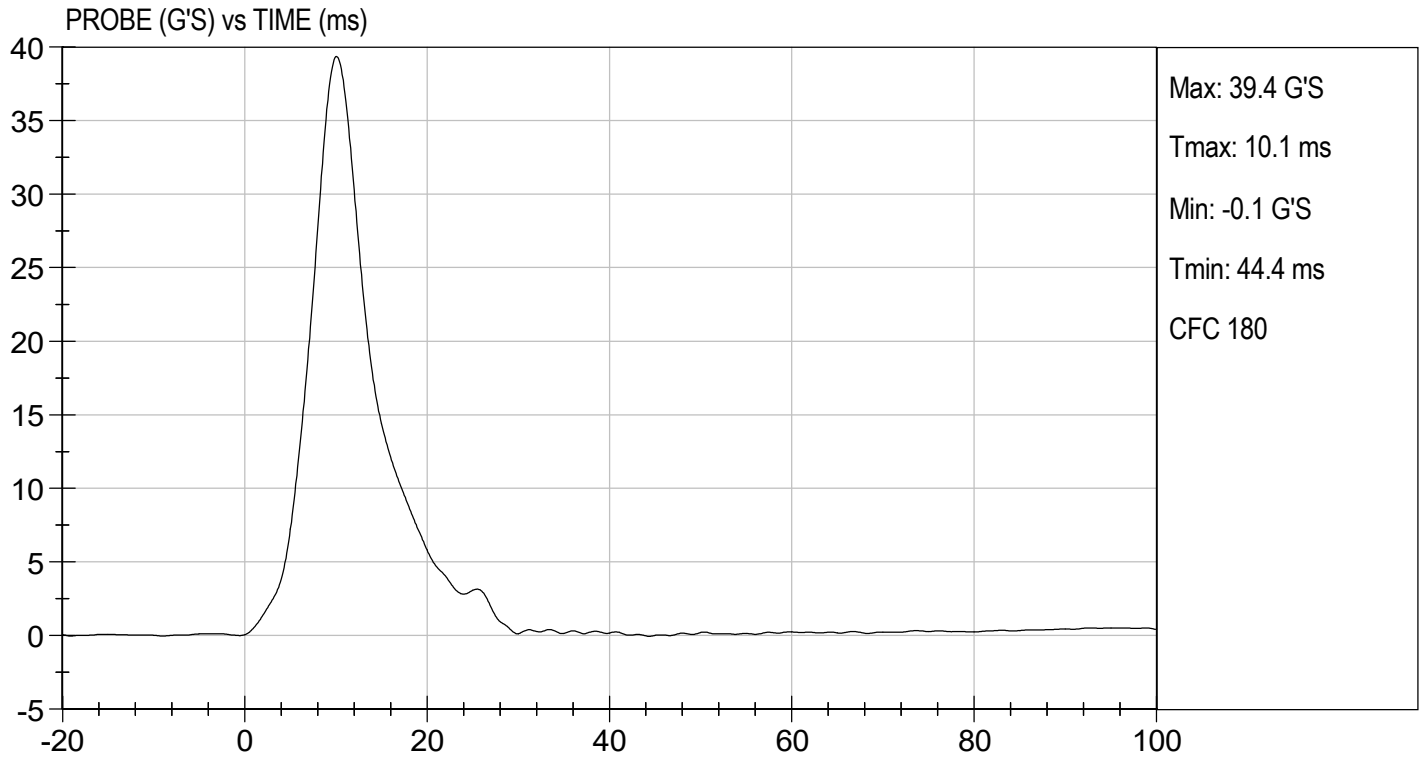


Approved By



TEST DESC: ILIAC
VELOCITY: 13.77 ft/s, 4.20 m/s

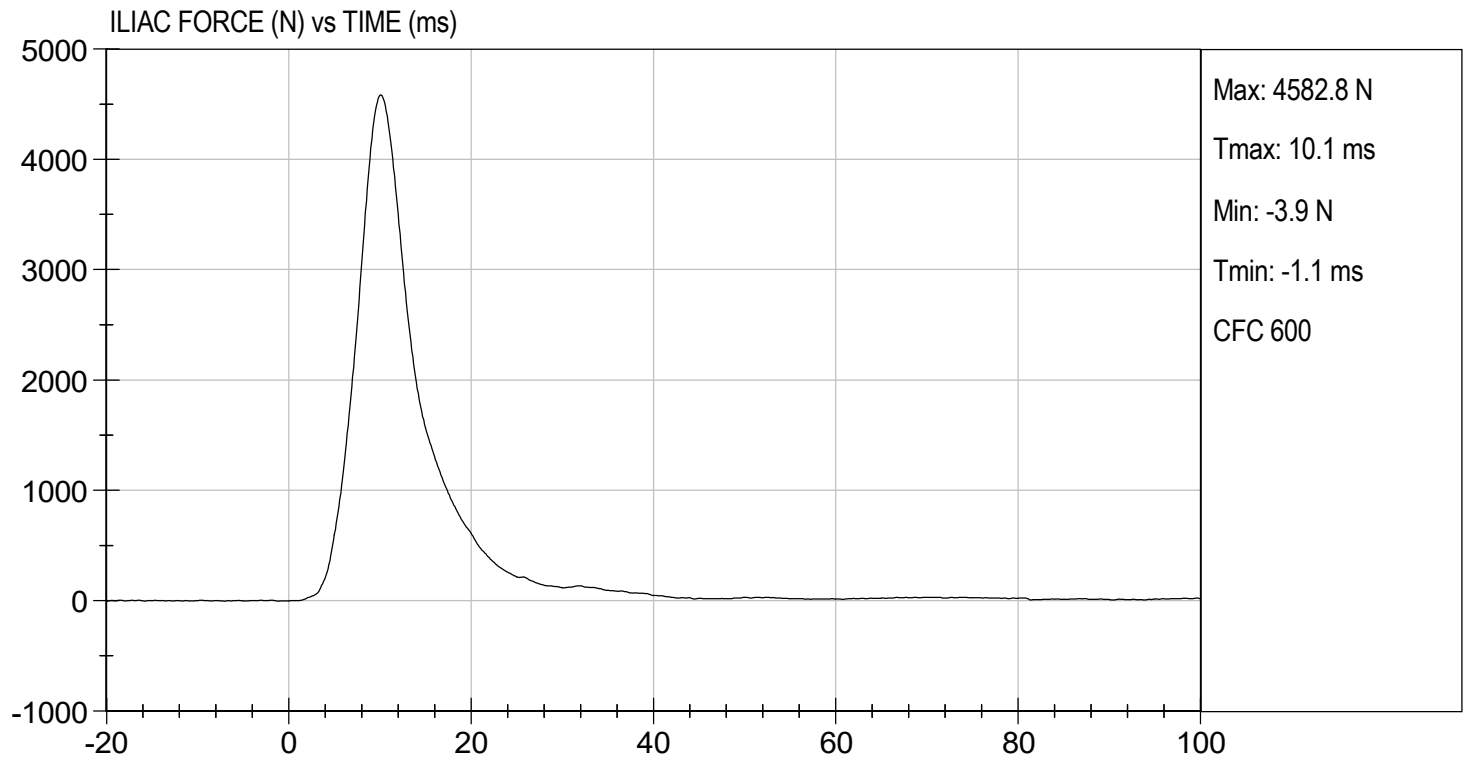
TEST DATE: 05/18/2021
TEST #: D211748





TEST DESC: ILIAC
VELOCITY: 13.77 ft/s, 4.20 m/s

TEST DATE: 05/18/2021
TEST #: D211748



CALIBRATION TEST RESULTS

POST-TEST

SID-IIS 5TH PERCENTILE FEMALE - DRIVER ATD

SID-IIsD External Measurements
SN: 296

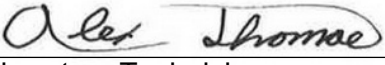
No.	Name	Spec. (mm)	Result	Pass/Fail
A	Sitting Height	772 - 788	784	Pass
B	Shoulder Pivot Height	437 - 453	442	Pass
C	H-point Height	79 - 89	83	Pass
D	H-point from Seatback	141 - 151	145	Pass
E	Shoulder Pivot from Backline	97 - 107	99	Pass
F	Thigh Clearance	119 -135	121	Pass
G	Head Breadth	140 - 148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

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

ATD Serial No: 296

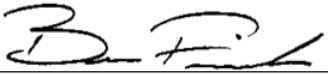
Test ID: D211811

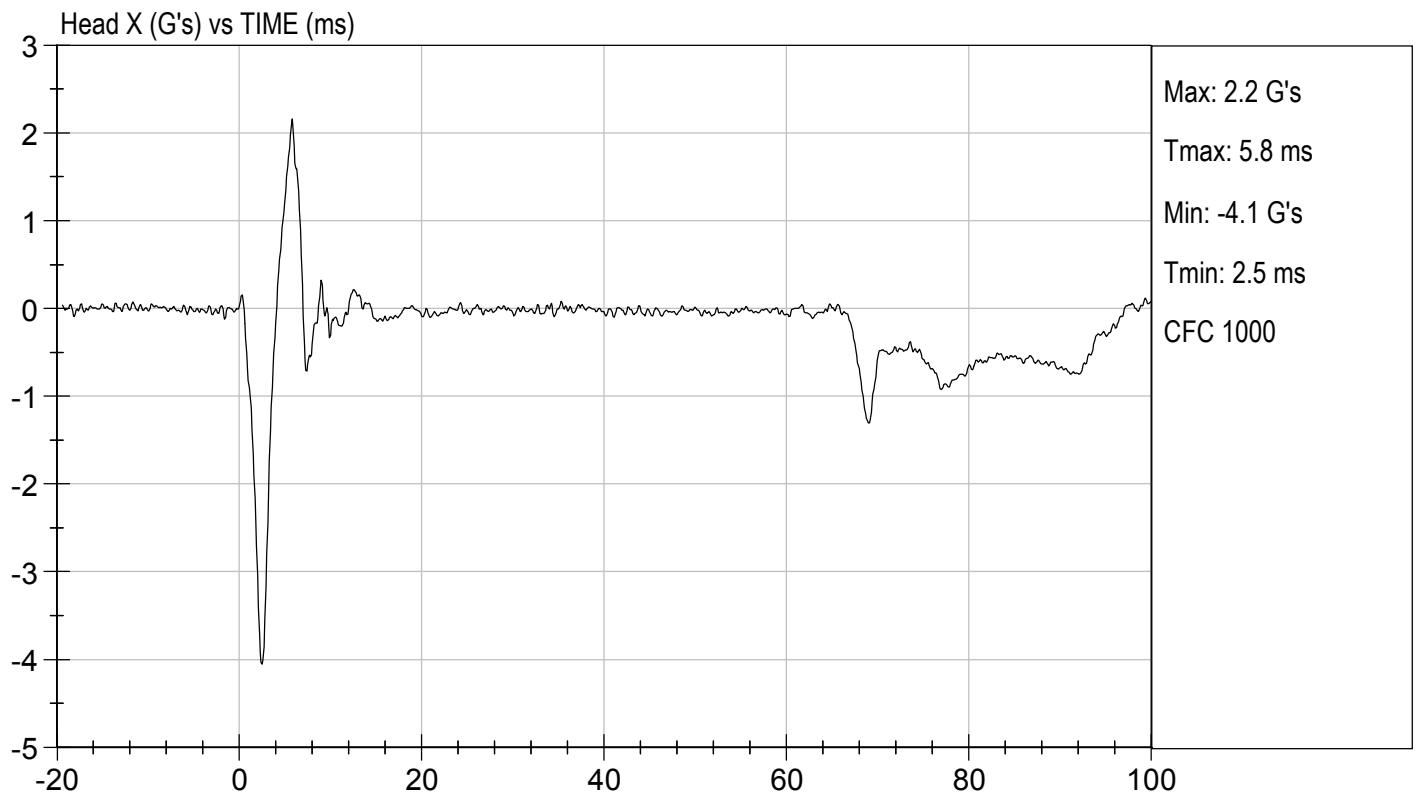
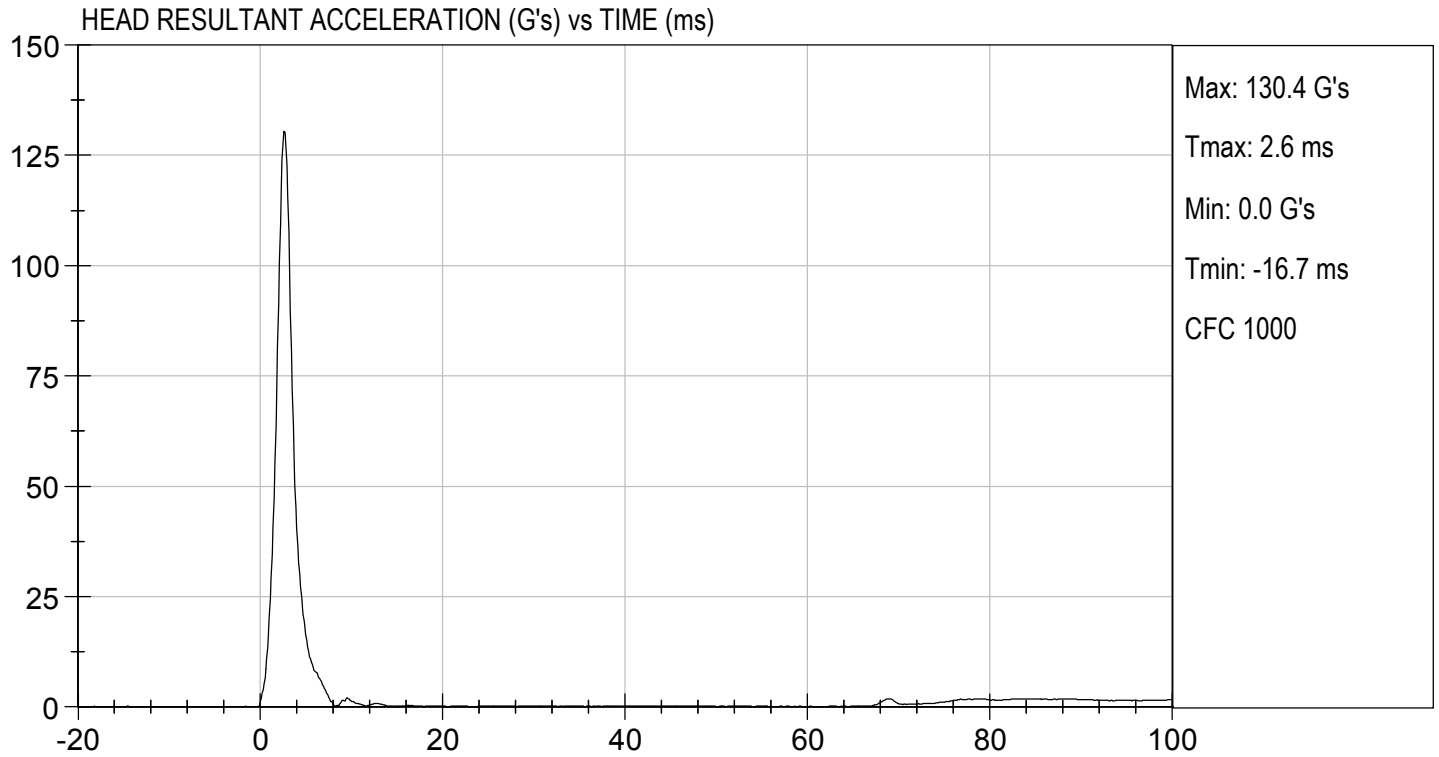
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	44	Pass
Peak Resultant Acceleration	G's	115 to 137	130	Pass
Peak Longitudinal Acceleration	G's	+/- 15	-4.1	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	<15%	Yes	Pass
Overall Test Results			Pass	

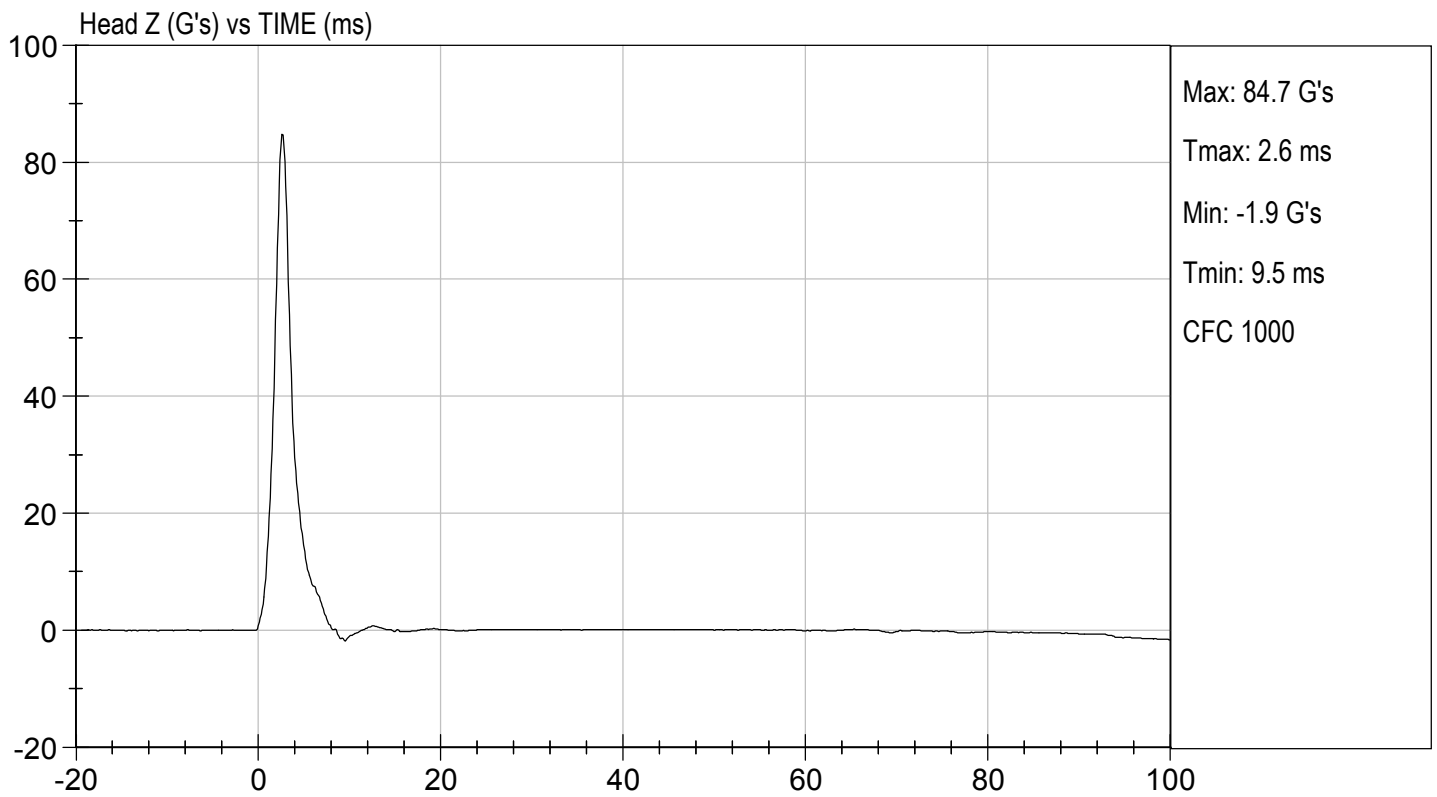
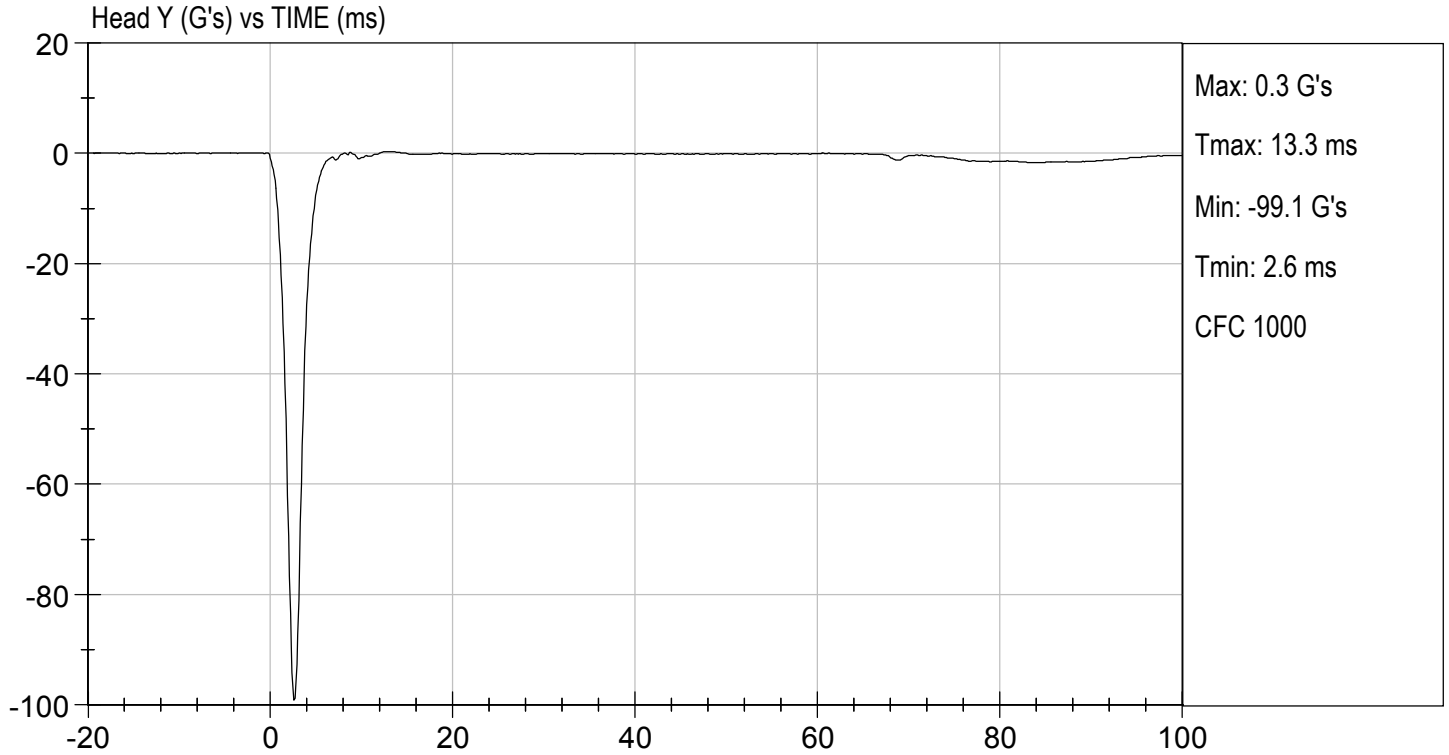

Laboratory Technician

05/25/2021

Test Date


Approved By



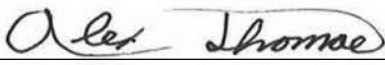


MGA RESEARCH CORPORATION
LATERAL NECK PENDULUM TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

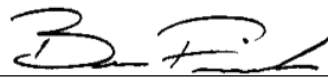
Test I.D: D211812

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	21.4	Pass
Humidity		%	10 to 70	44	Pass
Impact Velocity		m/s	5.51 to 5.63	5.62	Pass
Pendulum Velocity	10 ms	m/s	2.20 to 2.80	2.65	Pass
	15 ms	m/s	3.30 to 4.10	3.86	Pass
	20 ms	m/s	4.40 to 5.40	5.35	Pass
	25 ms	m/s	5.40 to 6.10	5.66	Pass
	25-100 ms	m/s	5.50 to 6.20	5.71	Pass
Maximum D-Plane Rotation		deg	71 to 81	77	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	66	Pass
Maximum Occipital Condyle Moment		Nm	-44 to -36	-37	Pass
Time of Moment Decay to 0 Nm		ms	102 to 126	121	Pass
Overall Test Results					Pass


 Laboratory Technician

05/25/2021

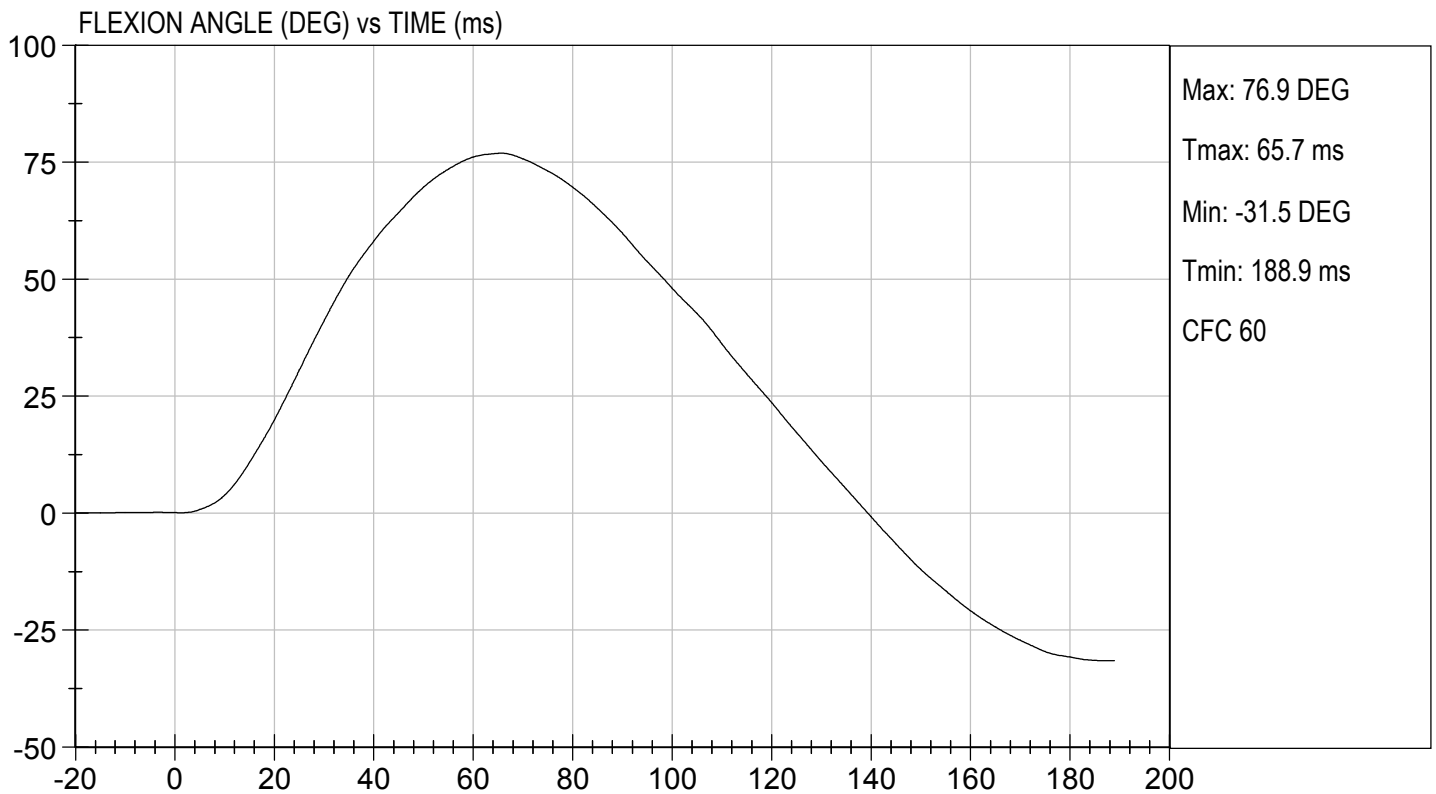
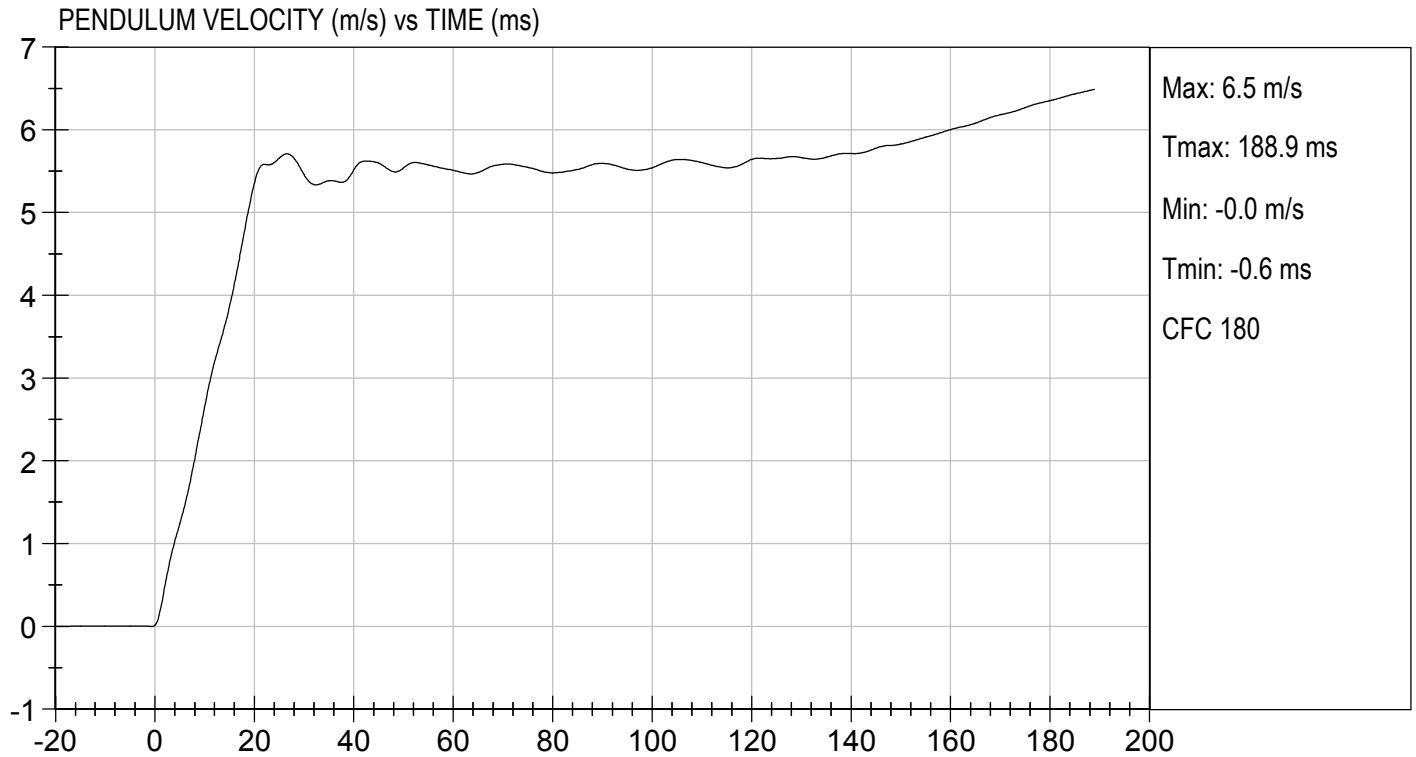
Test Date


 Approved By



TEST DESC: NECK BENDING
VELOCITY: 18.44 ft/s, 5.62 m/s

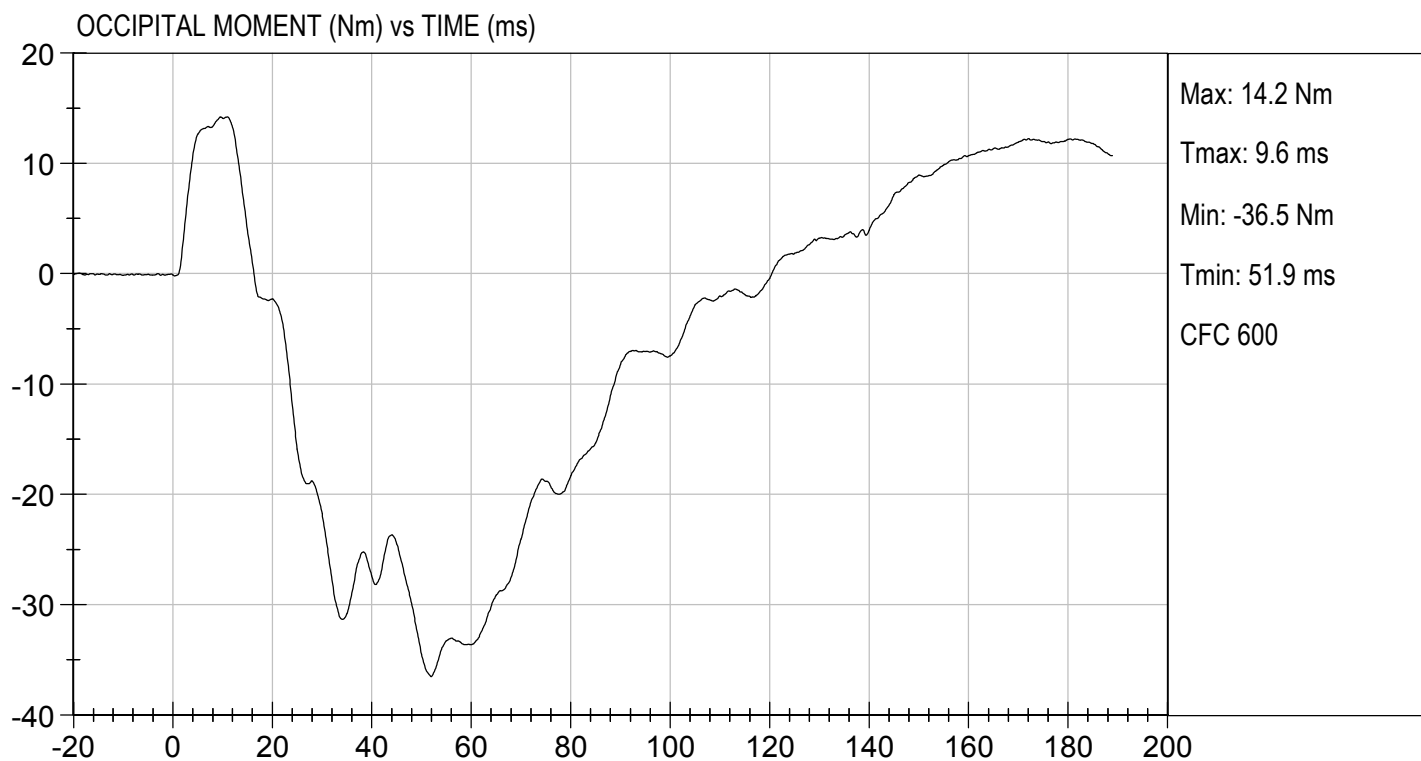
TEST DATE: 05/25/2021
TEST #: D211812





TEST DESC: NECK BENDING
VELOCITY: 18.44 ft/s, 5.62 m/s

TEST DATE: 05/25/2021
TEST #: D211812



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

ATD Serial No: 296

Test ID: D211813

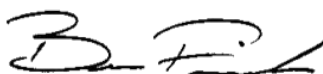
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Impact Velocity	m/s	4.20 to 4.40	4.30	Pass
Maximum Probe Acceleration	G's	13 to 18	15	Pass
Shoulder Displacement	mm	28 to 37	33	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	19	Pass
			Overall Test Results	Pass



Laboratory Technician

05/24/2021

Test Date

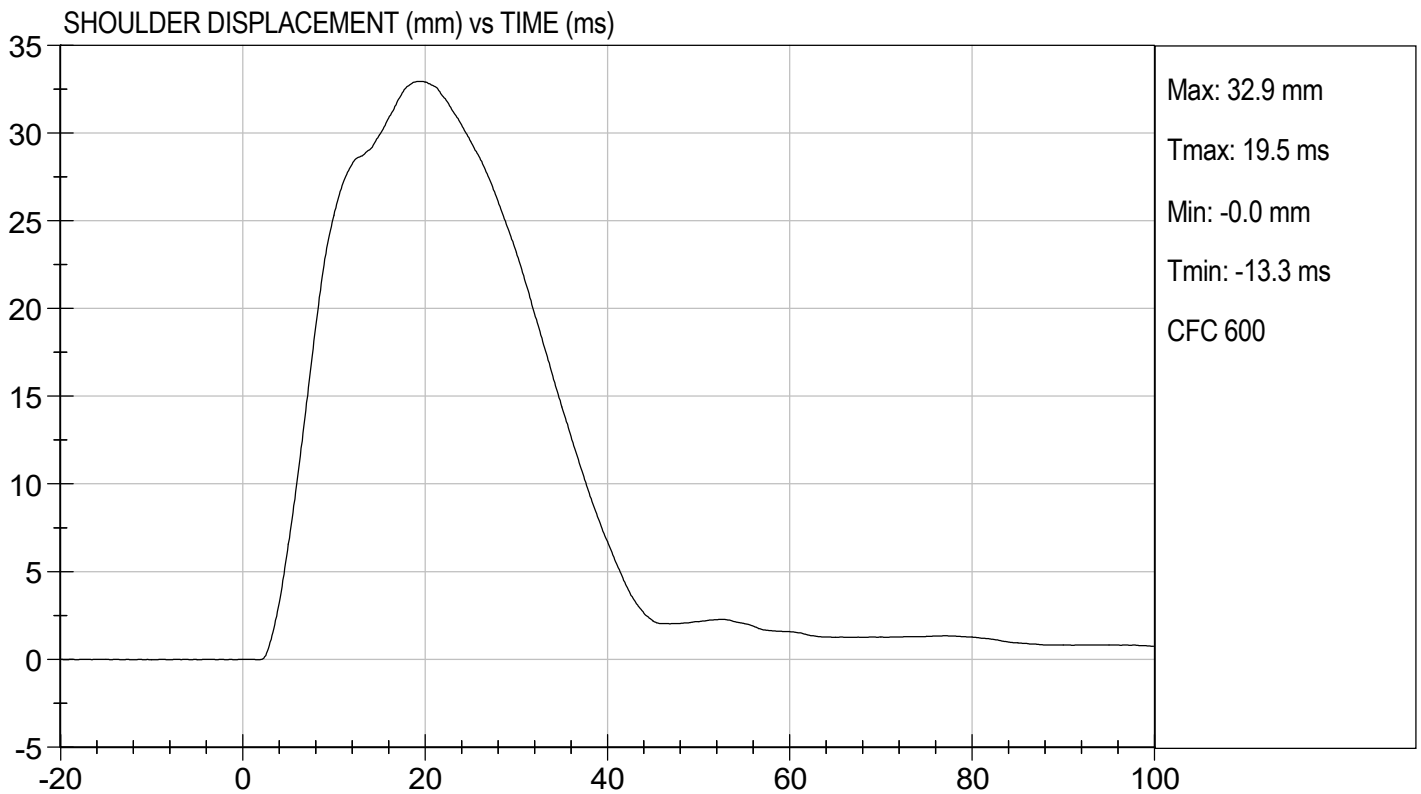
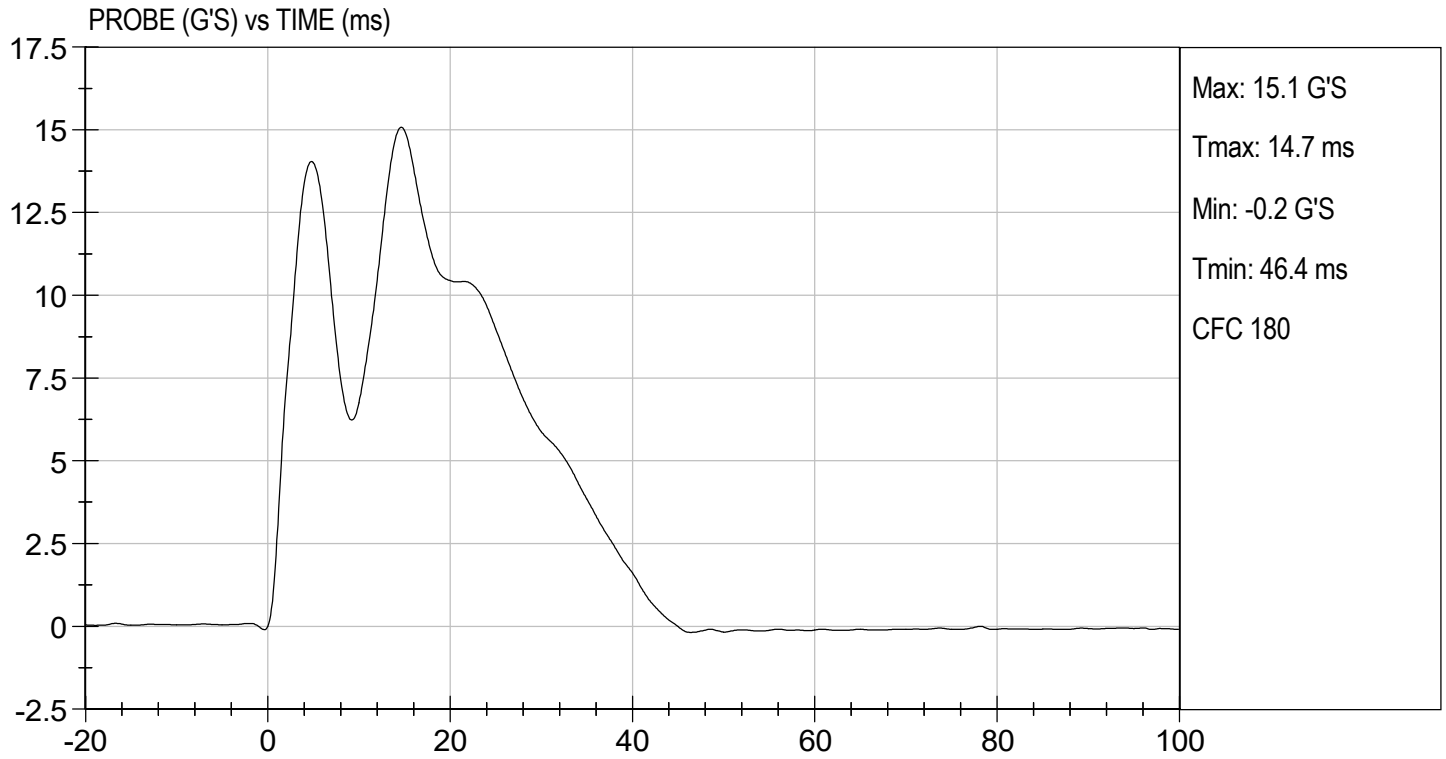


Approved By



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

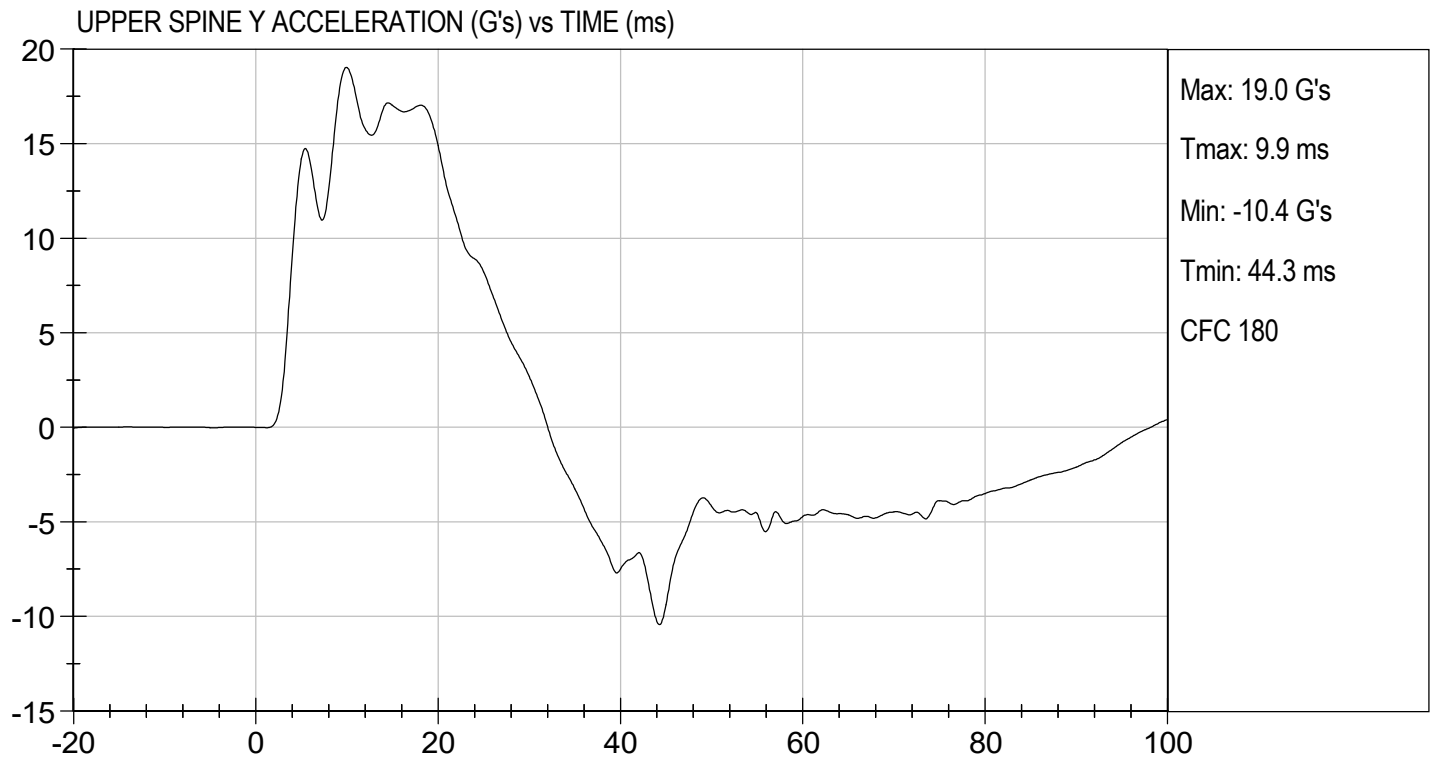
TEST DATE: 05/24/2021
TEST #: D211813





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

TEST DATE: 05/24/2021
TEST #: D211813



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

ATD Serial No: 296

Test I.D: D211814

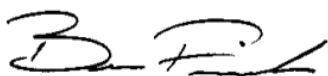
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.6	Pass
Humidity	%	10 to 70	45	Pass
Impact Velocity	m/s	6.60 to 6.80	6.77	Pass
Maximum Probe Acceleration	G's	30 to 36	33	Pass
Shoulder Displacement	mm	31 to 40	39	Pass
Upper Rib Displacement	mm	25 to 32	30	Pass
Middle Rib Displacement	mm	30 to 36	33	Pass
Lower Rib Displacement	mm	32 to 38	35	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	37	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	32	Pass
Overall Test Results				Pass



Laboratory Technician

05/24/2021

Test Date

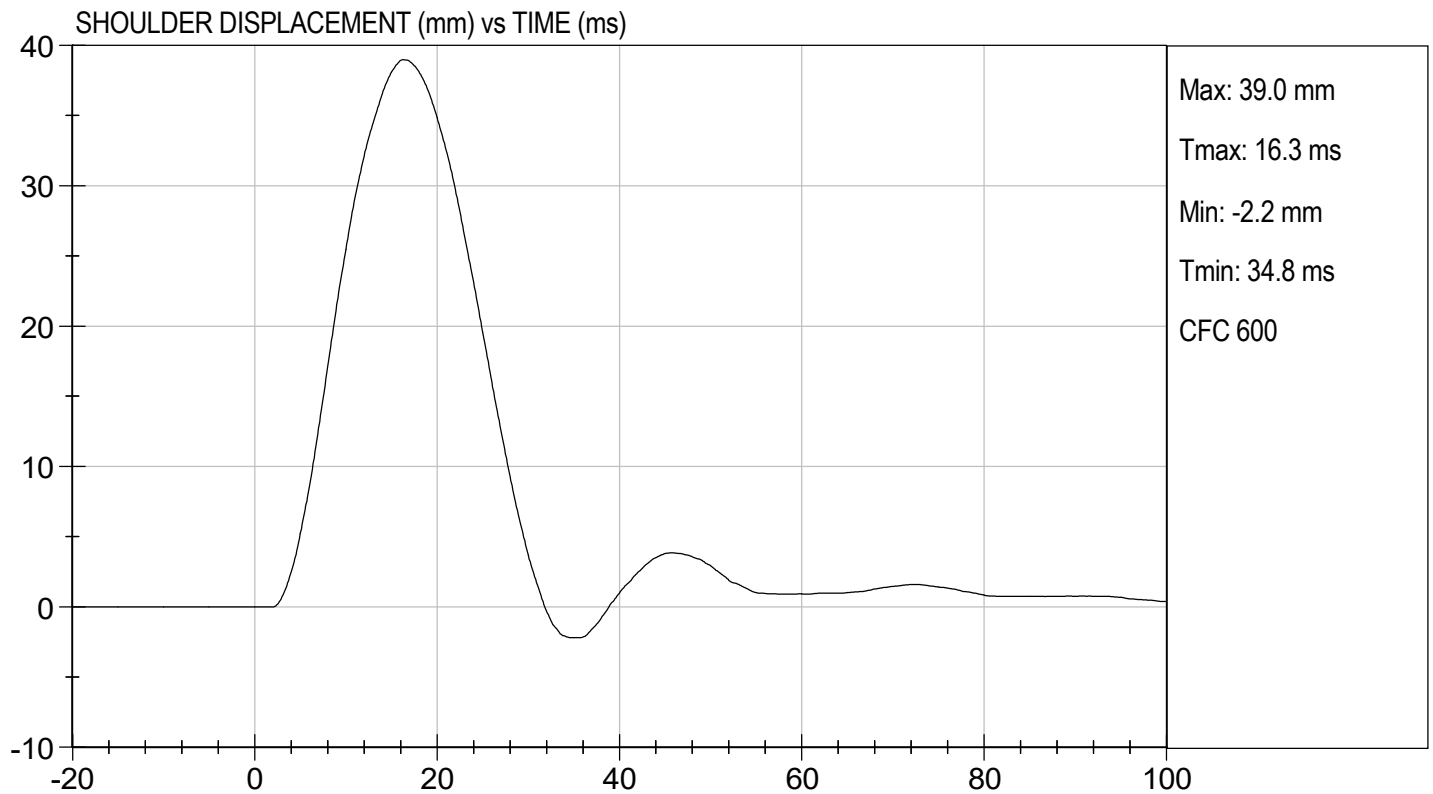
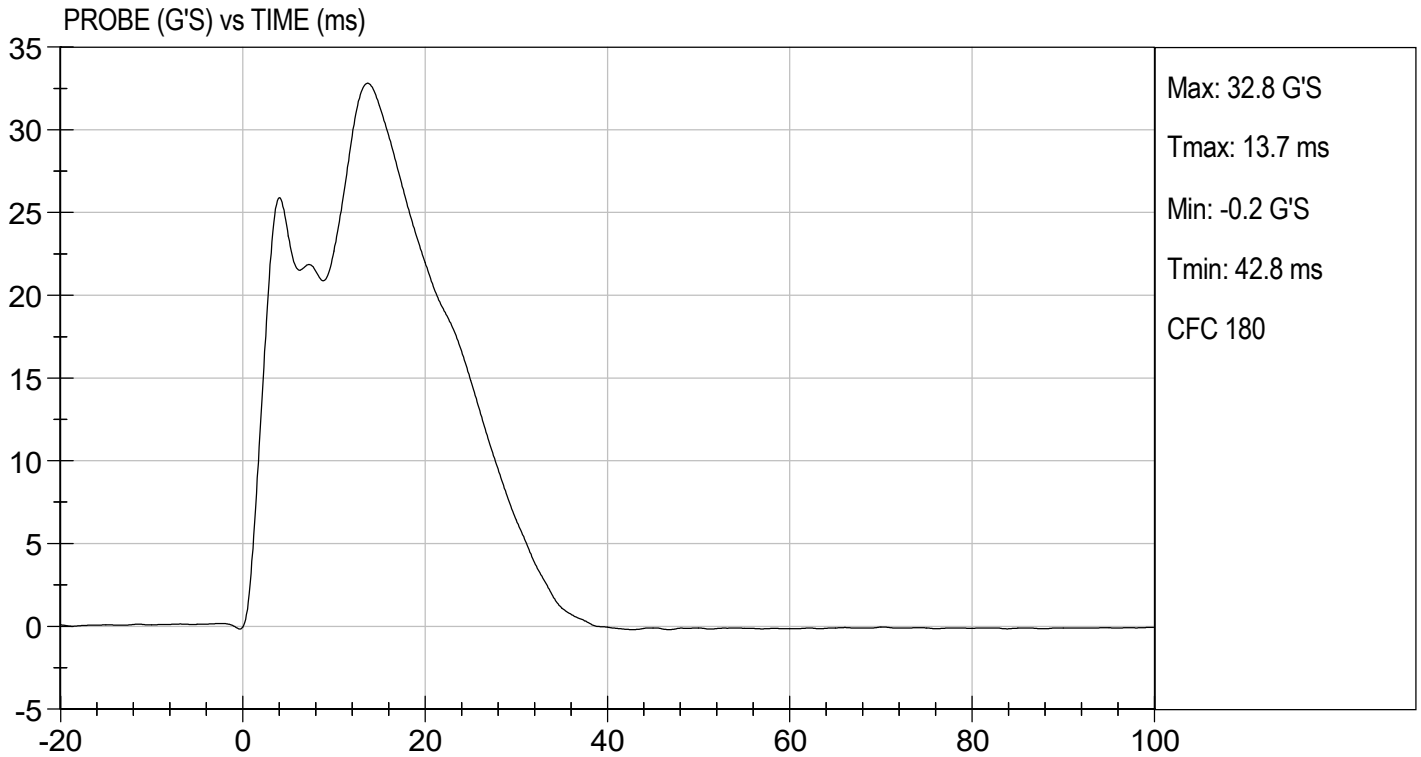


Approved By



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

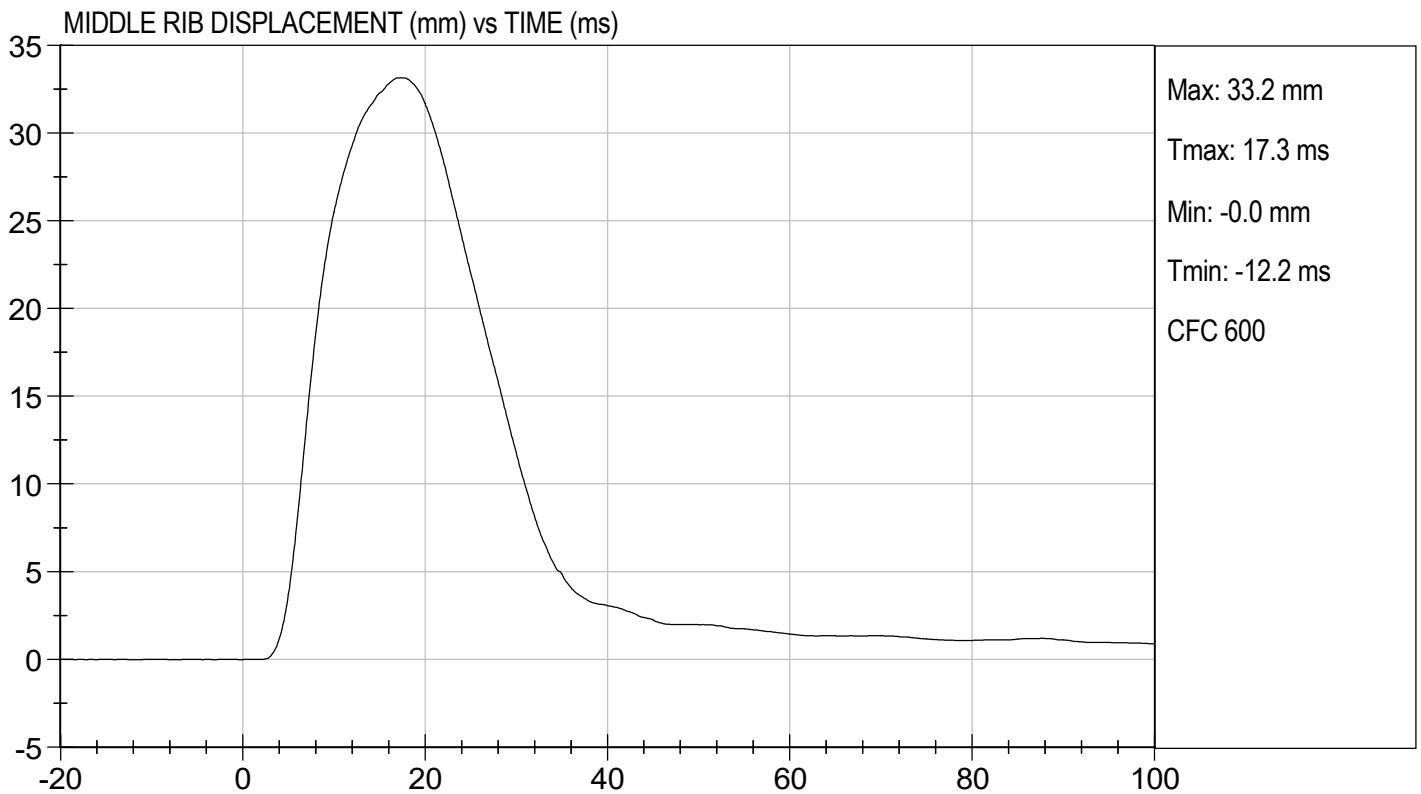
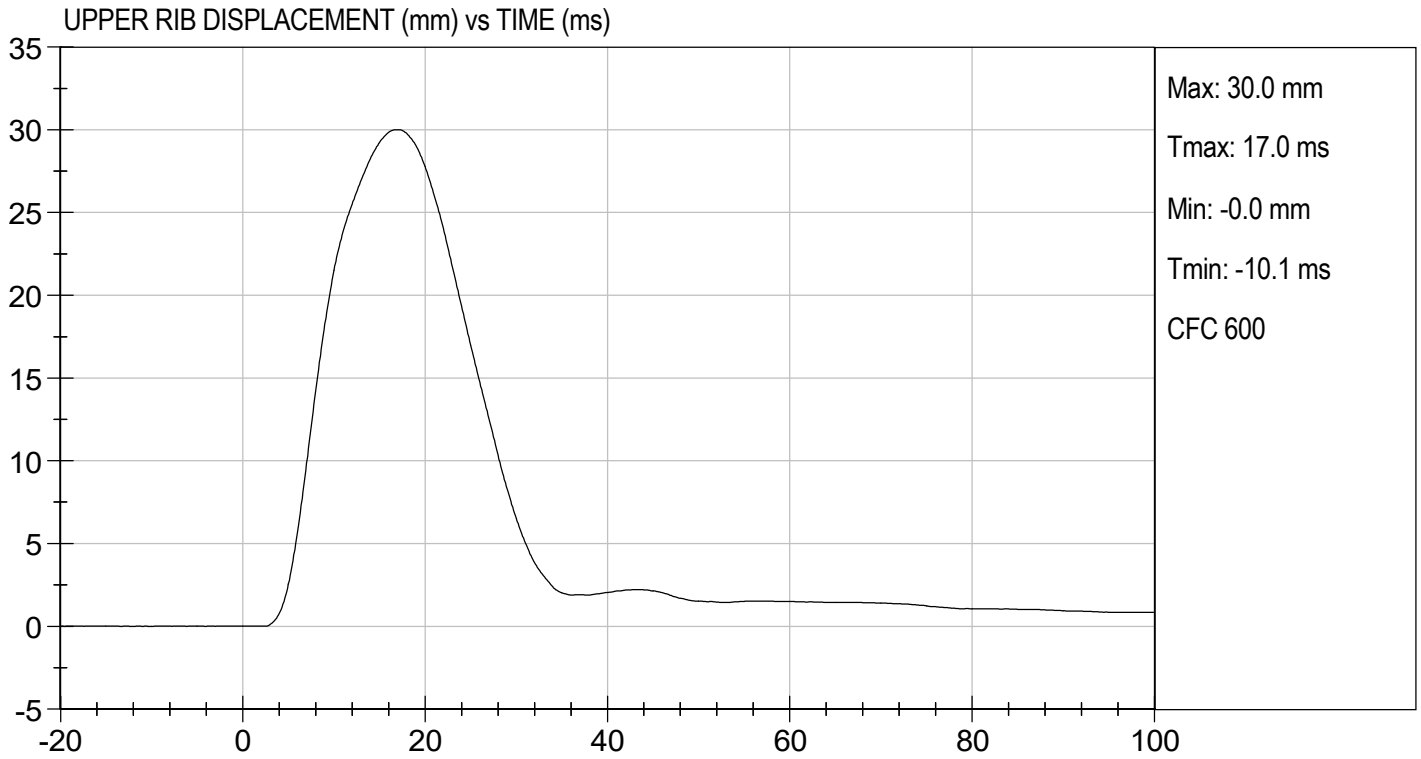
TEST DATE: 05/24/2021
TEST #: D211814





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

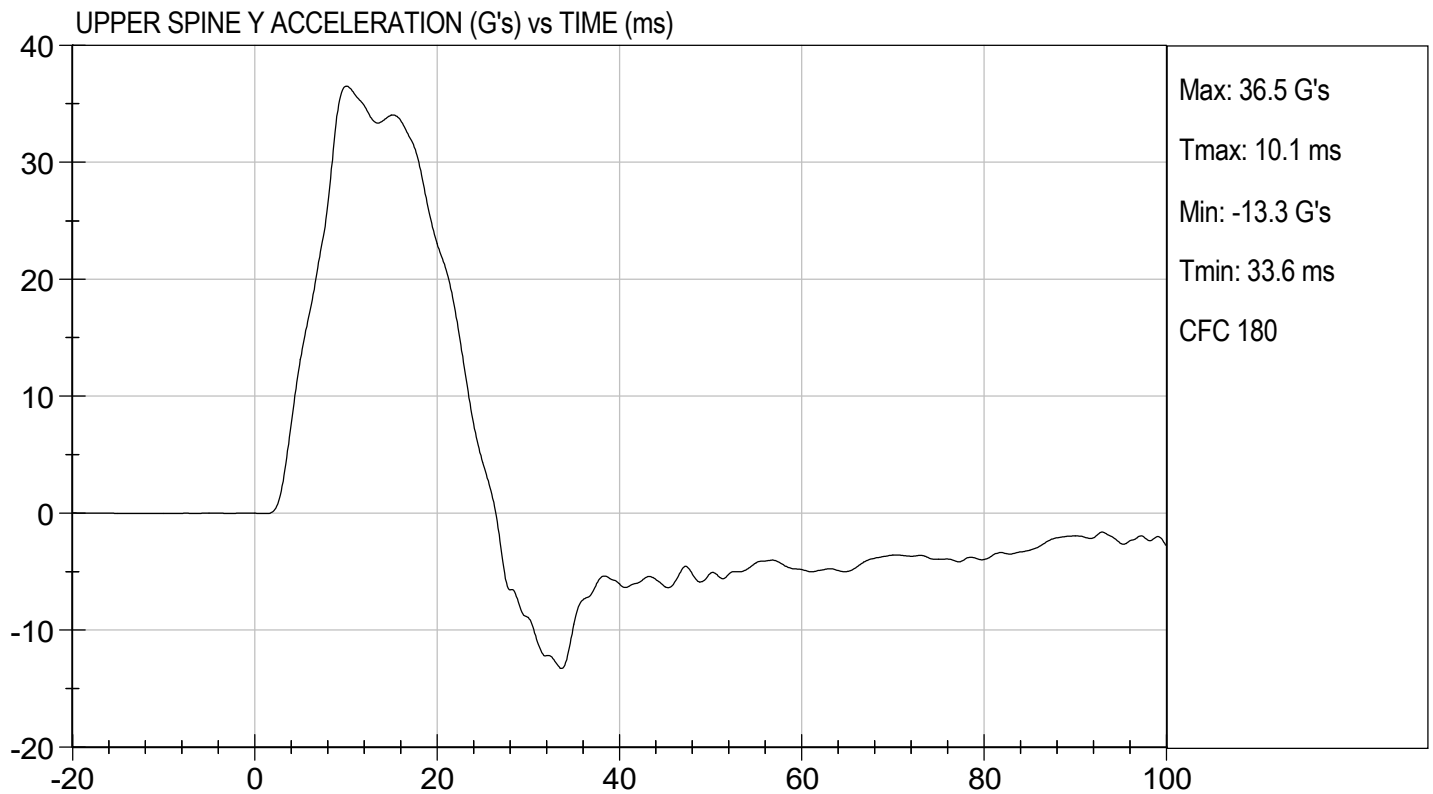
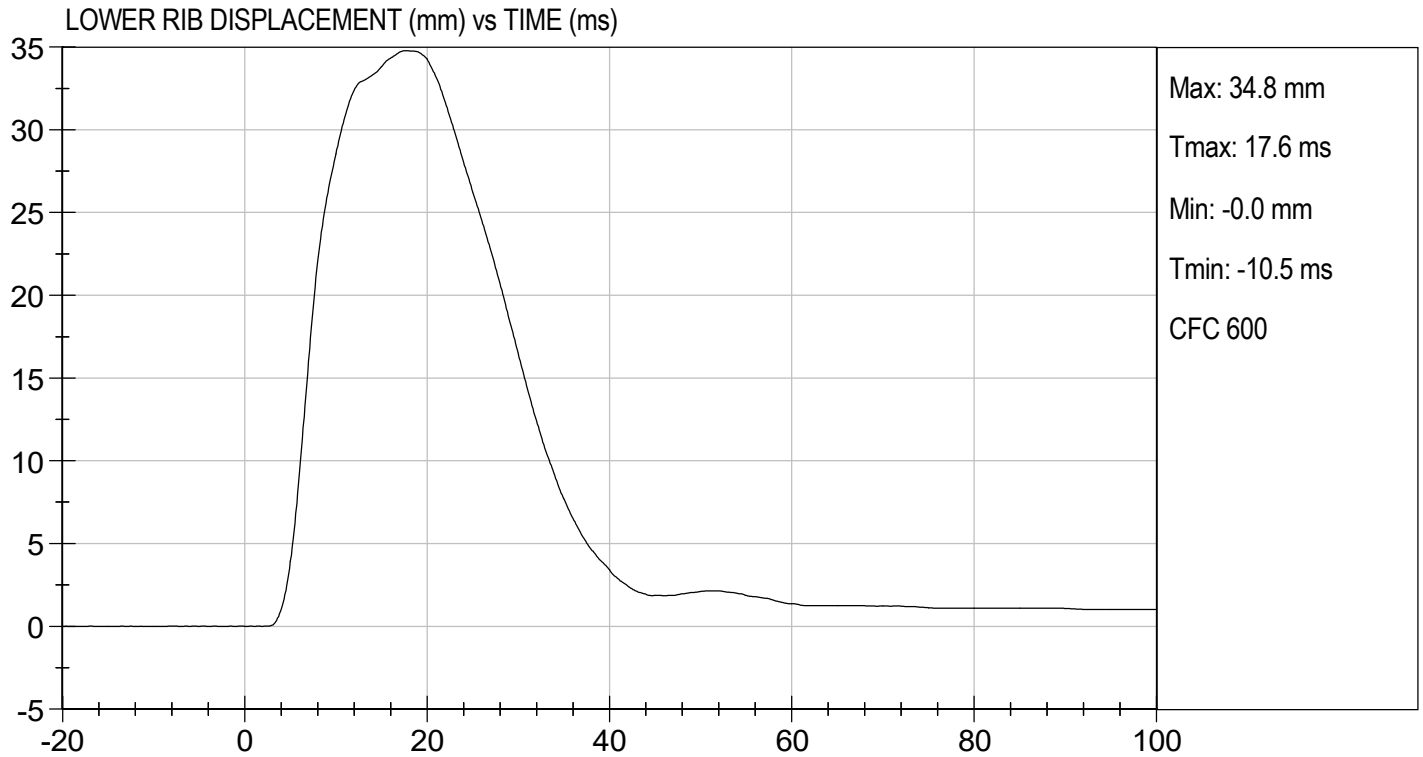
TEST DATE: 05/24/2021
TEST #: D211814





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

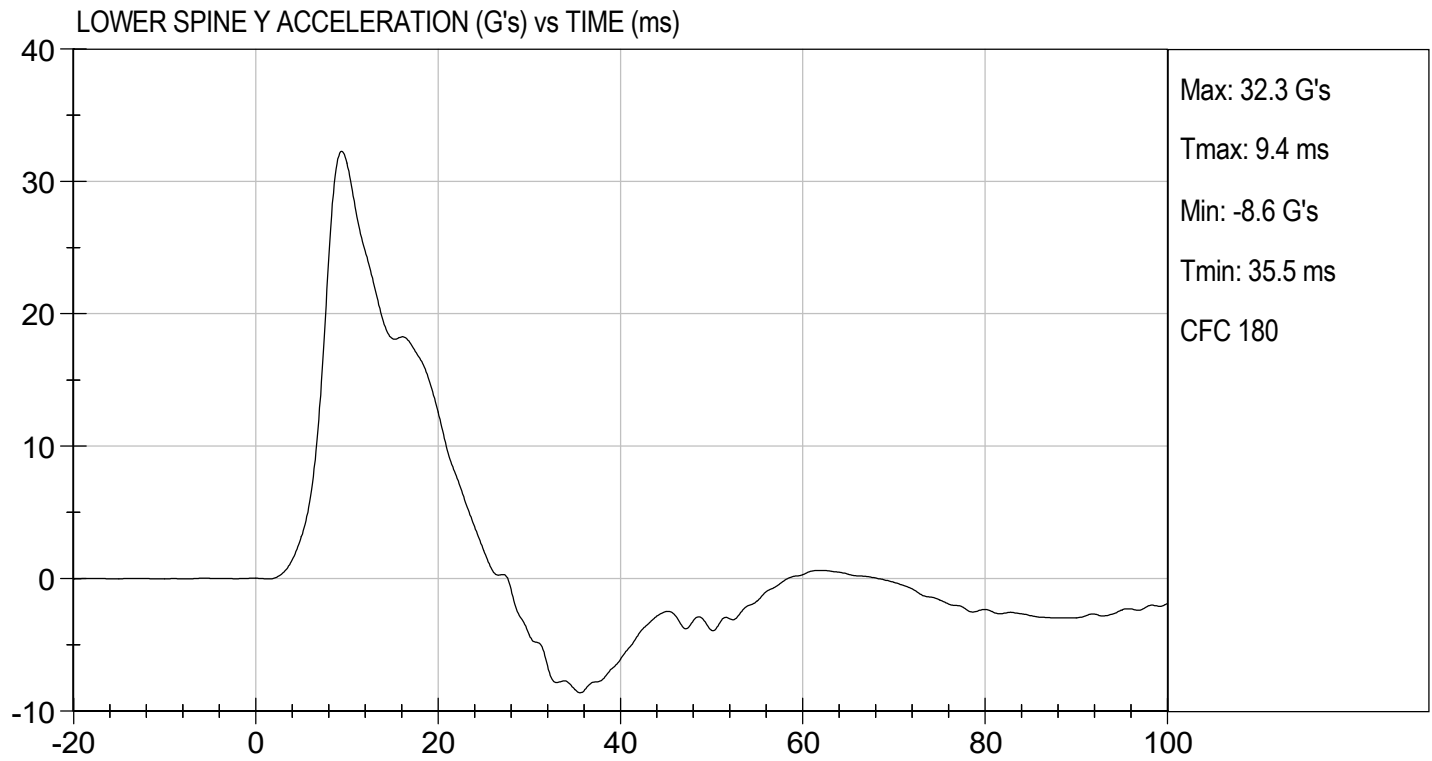
TEST DATE: 05/24/2021
TEST #: D211814





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

TEST DATE: 05/24/2021
TEST #: D211814



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

ATD Serial No: 296

Test I.D: D211815

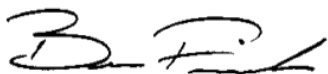
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.6	Pass
Humidity	%	10 to 70	45	Pass
Impact Velocity	m/s	4.20 to 4.40	4.30	Pass
Maximum Probe Acceleration	G's	14 to 18	15	Pass
Upper Rib Displacement	mm	32 to 40	39	Pass
Middle Rib Displacement	mm	39 to 45	44	Pass
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

05/24/2021

Test Date

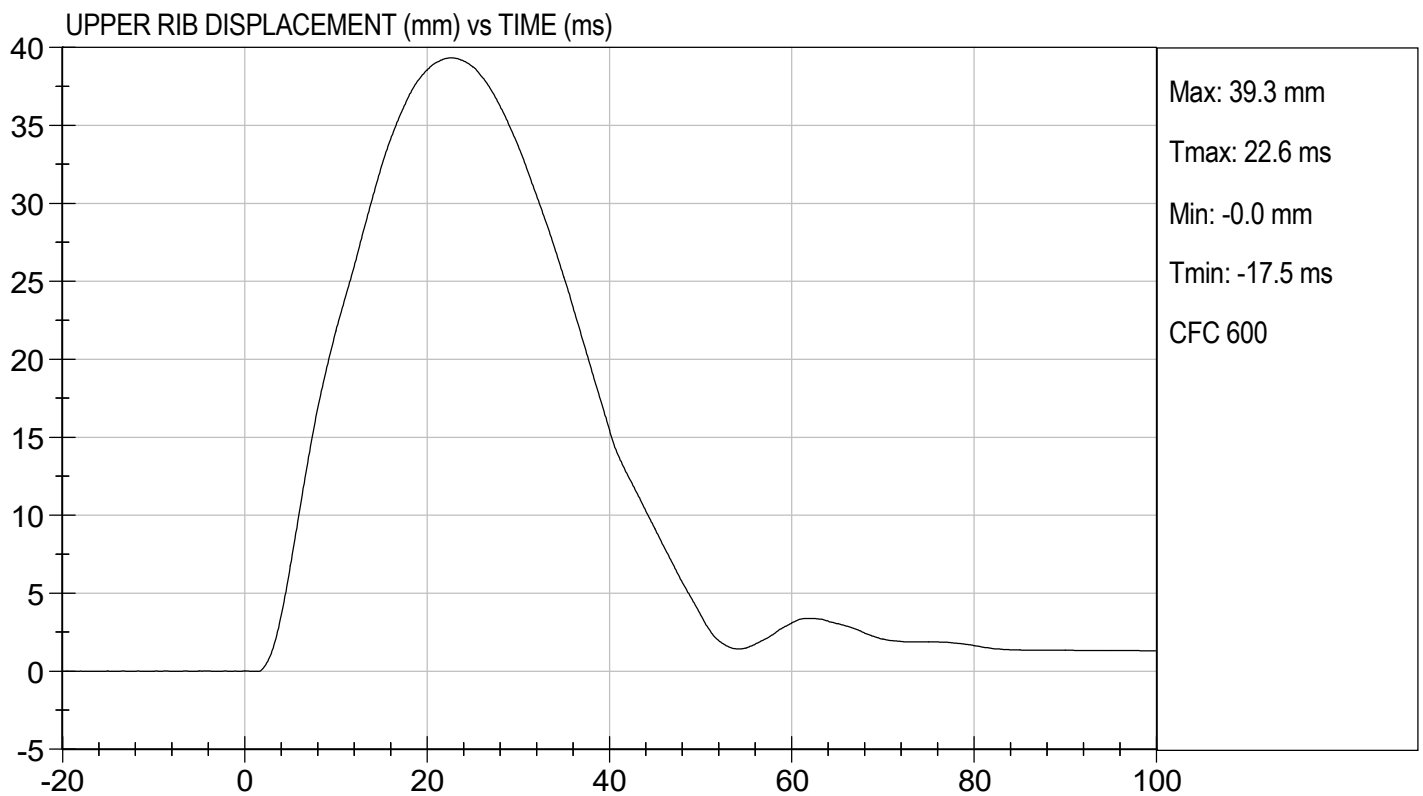
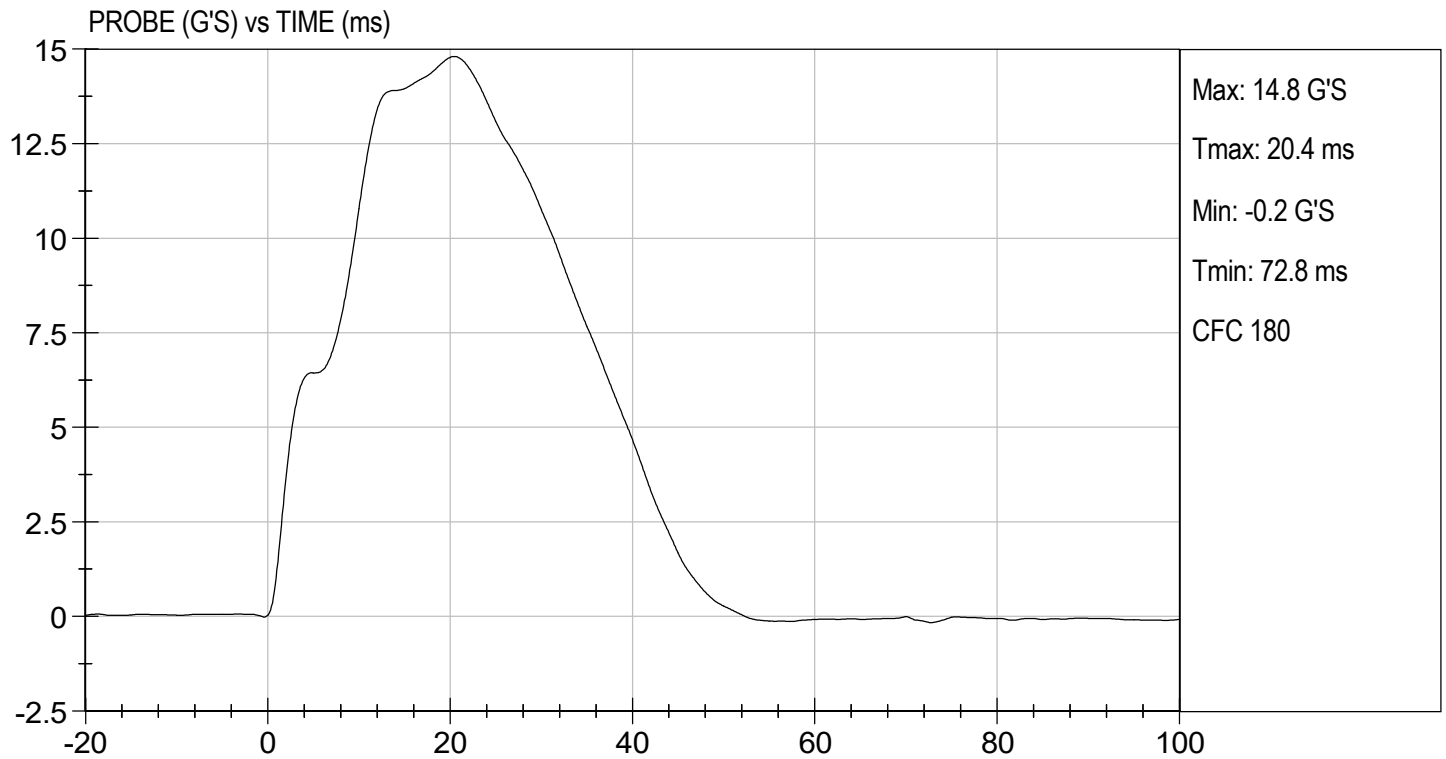


Approved By



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

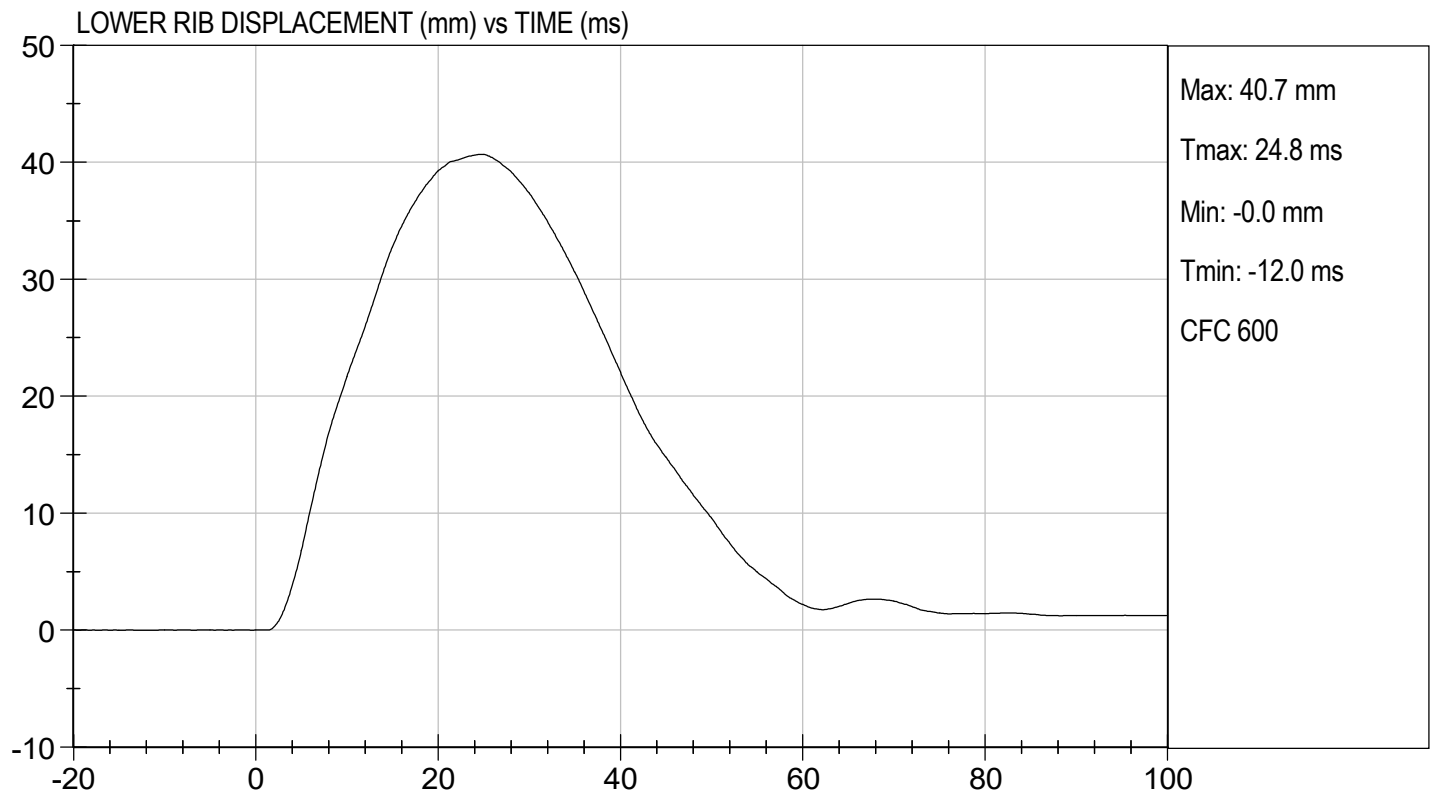
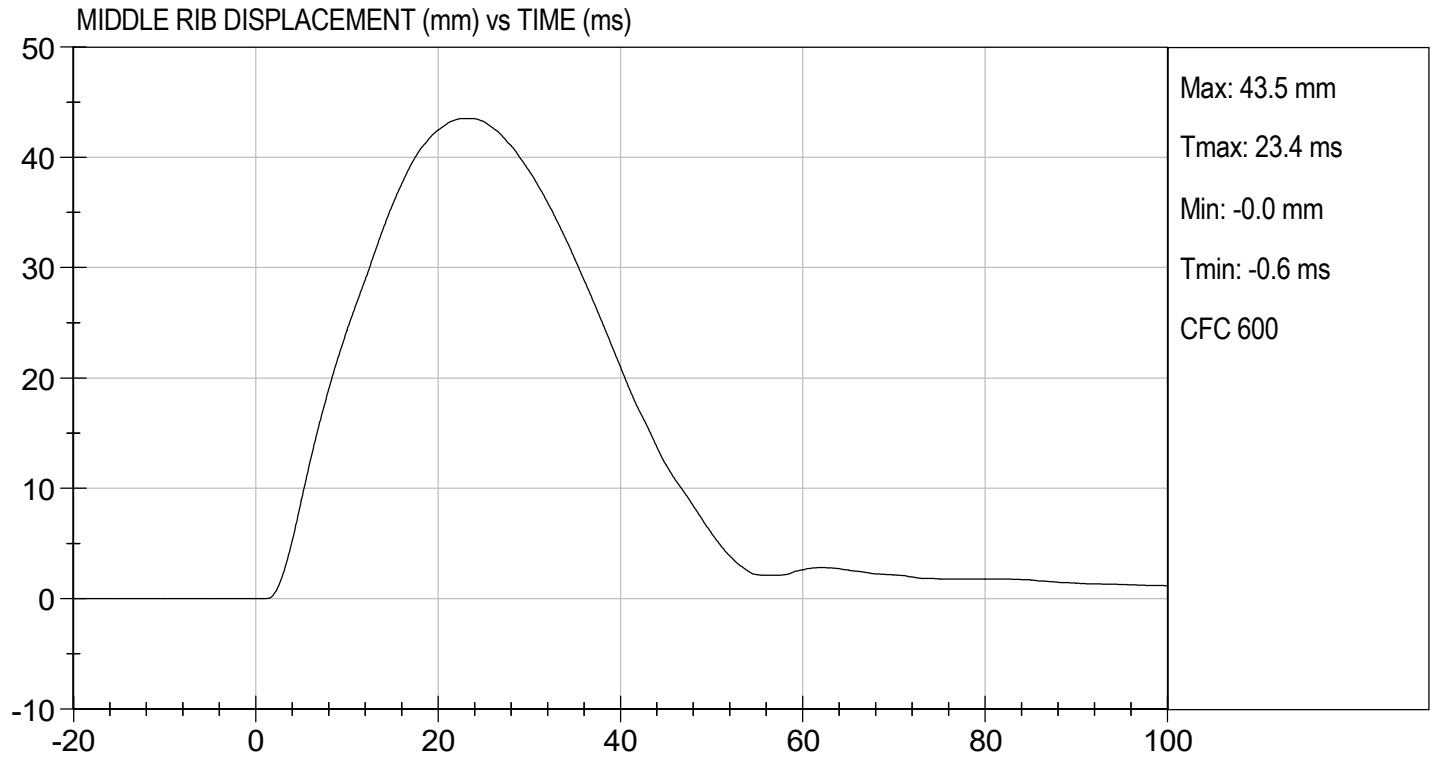
TEST DATE: 05/24/2021
TEST #: D211815





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

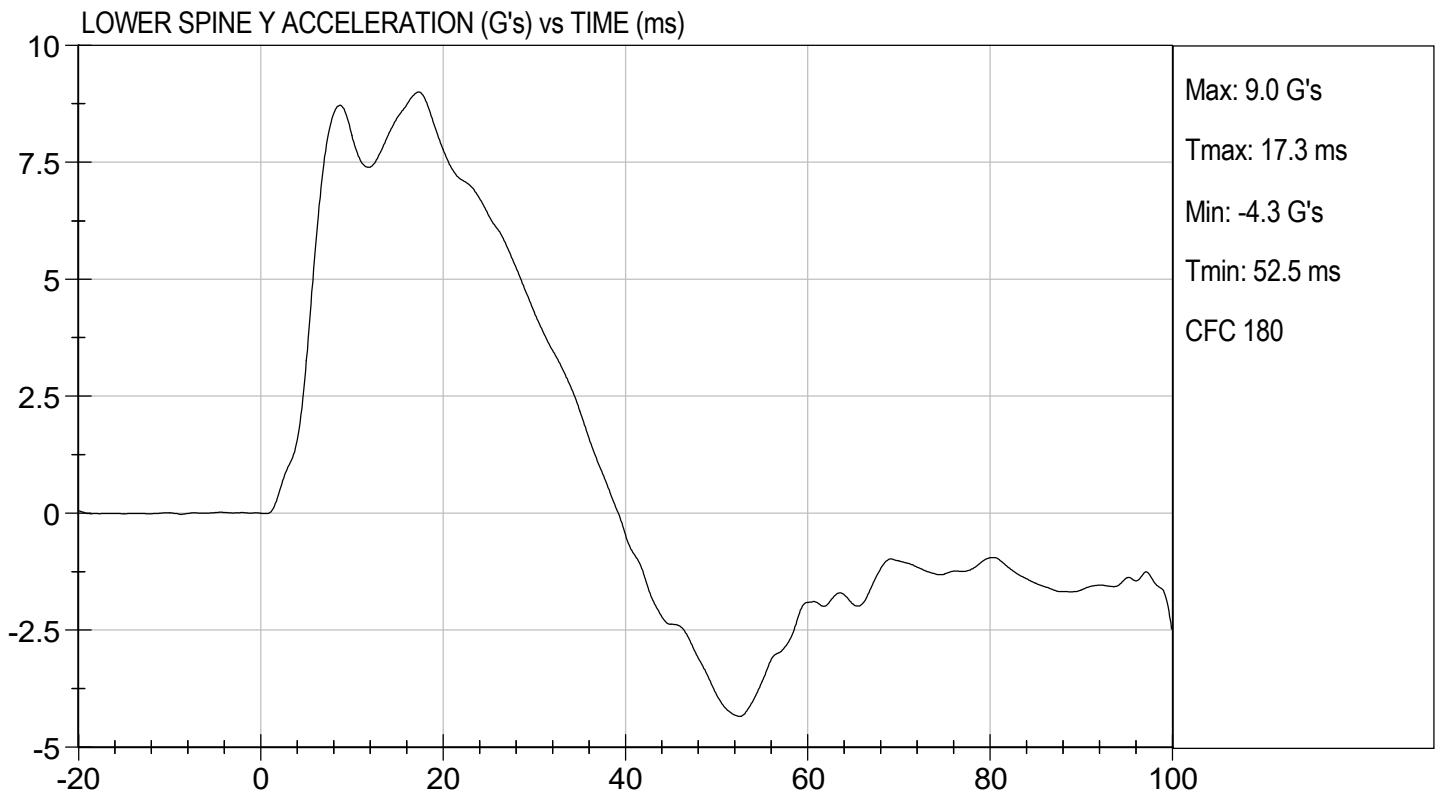
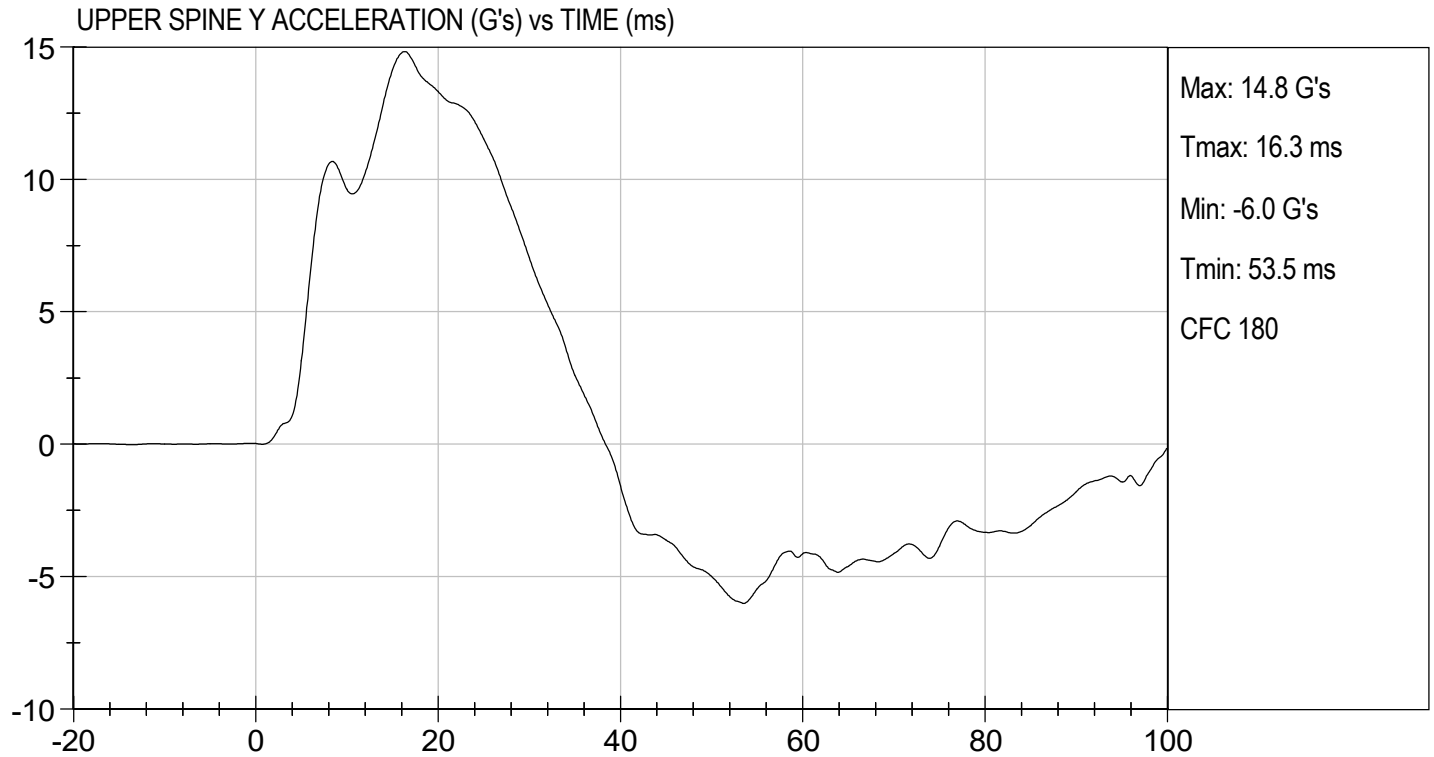
TEST DATE: 05/24/2021
TEST #: D211815





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

TEST DATE: 05/24/2021
TEST #: D211815



MGA RESEARCH CORPORATION

ABDOMINAL IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D211816

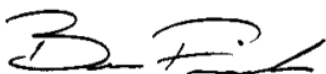
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.6	Pass
Humidity	%	10 to 70	45	Pass
Impact Velocity	m/s	4.20 to 4.40	4.38	Pass
Maximum Probe Acceleration	G's	12 to 16	13	Pass
Upper Abdomen Rib Displacement	mm	36 to 47	41	Pass
Lower Abdomen Rib Displacement	mm	33 to 44	39	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	11	Pass
Overall Test Results				Pass



Laboratory Technician

05/24/2021

Test Date

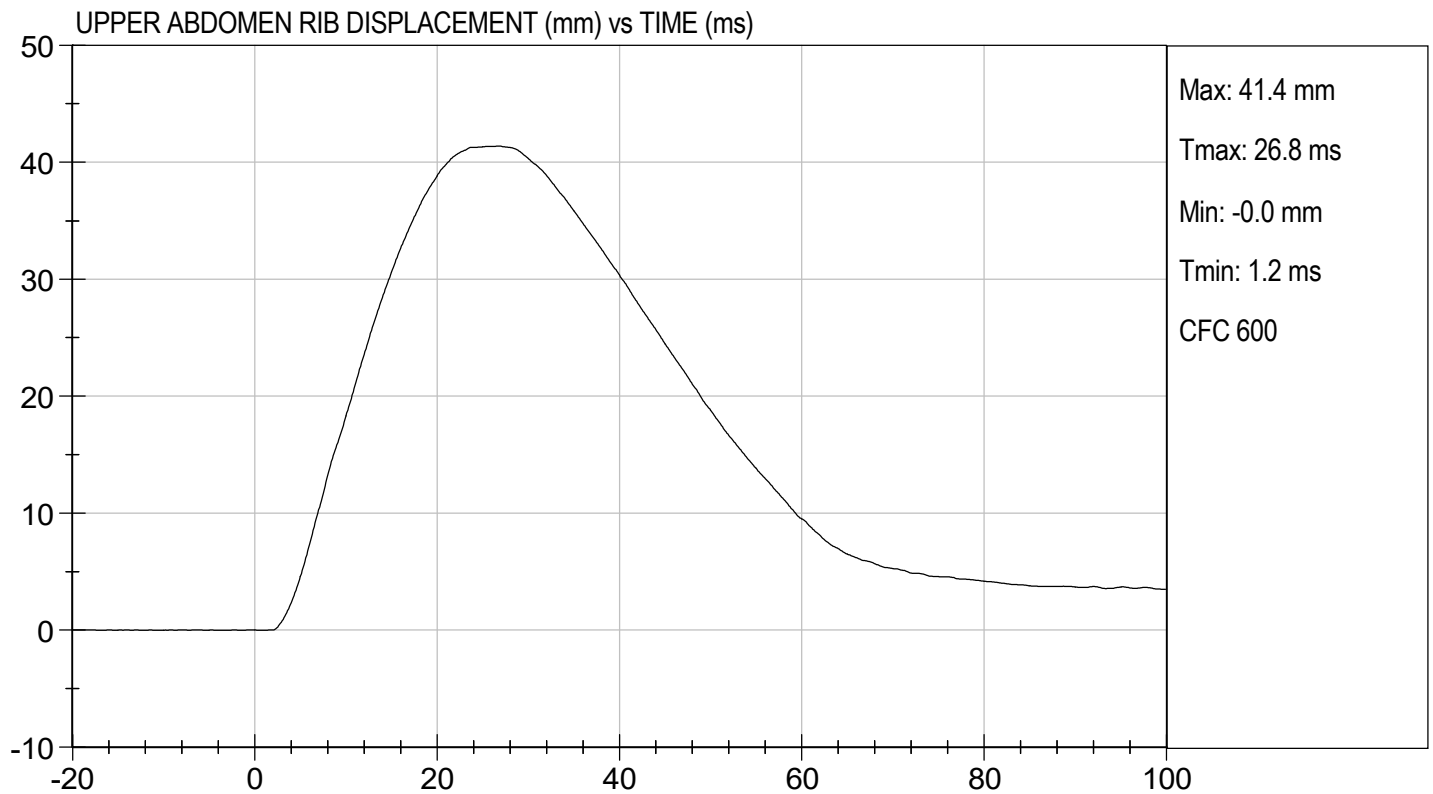
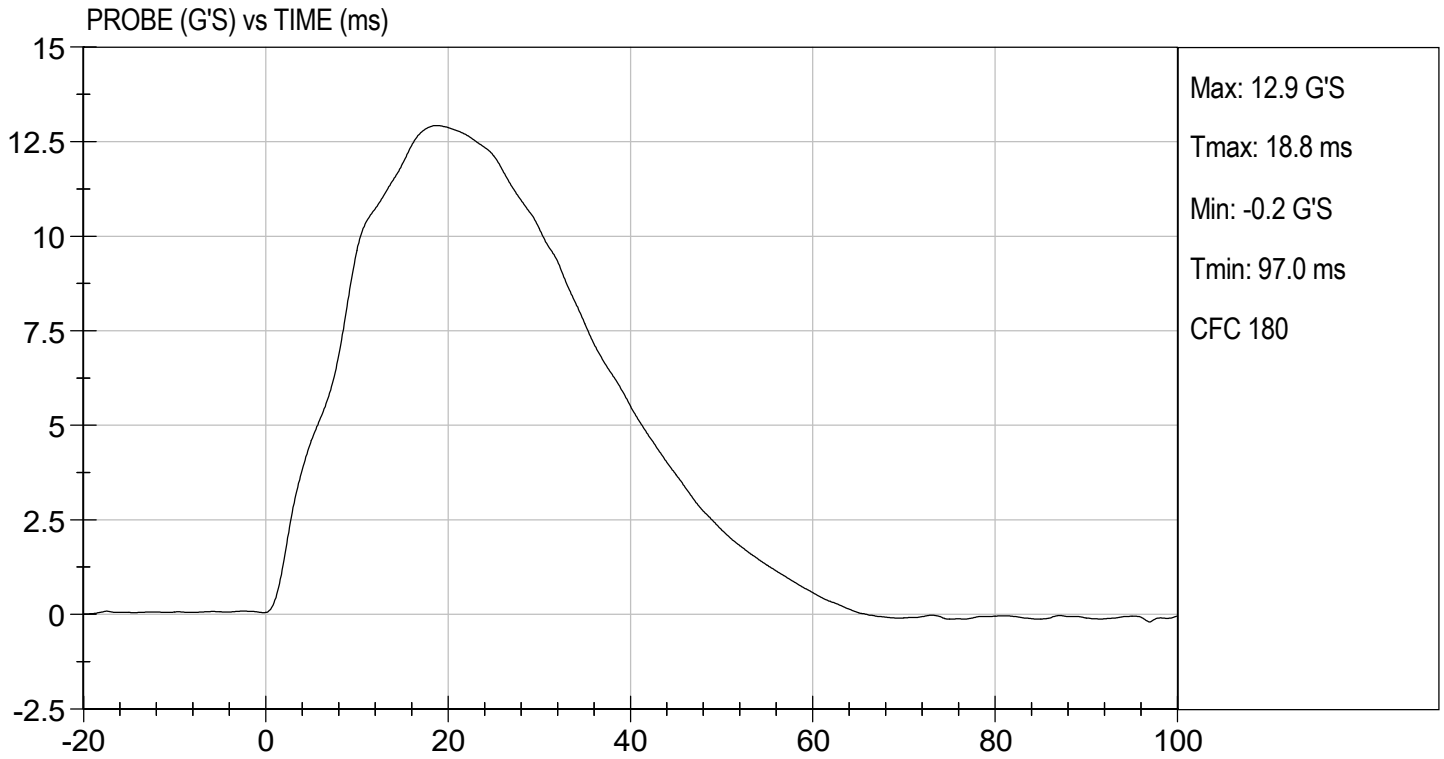


Approved By



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

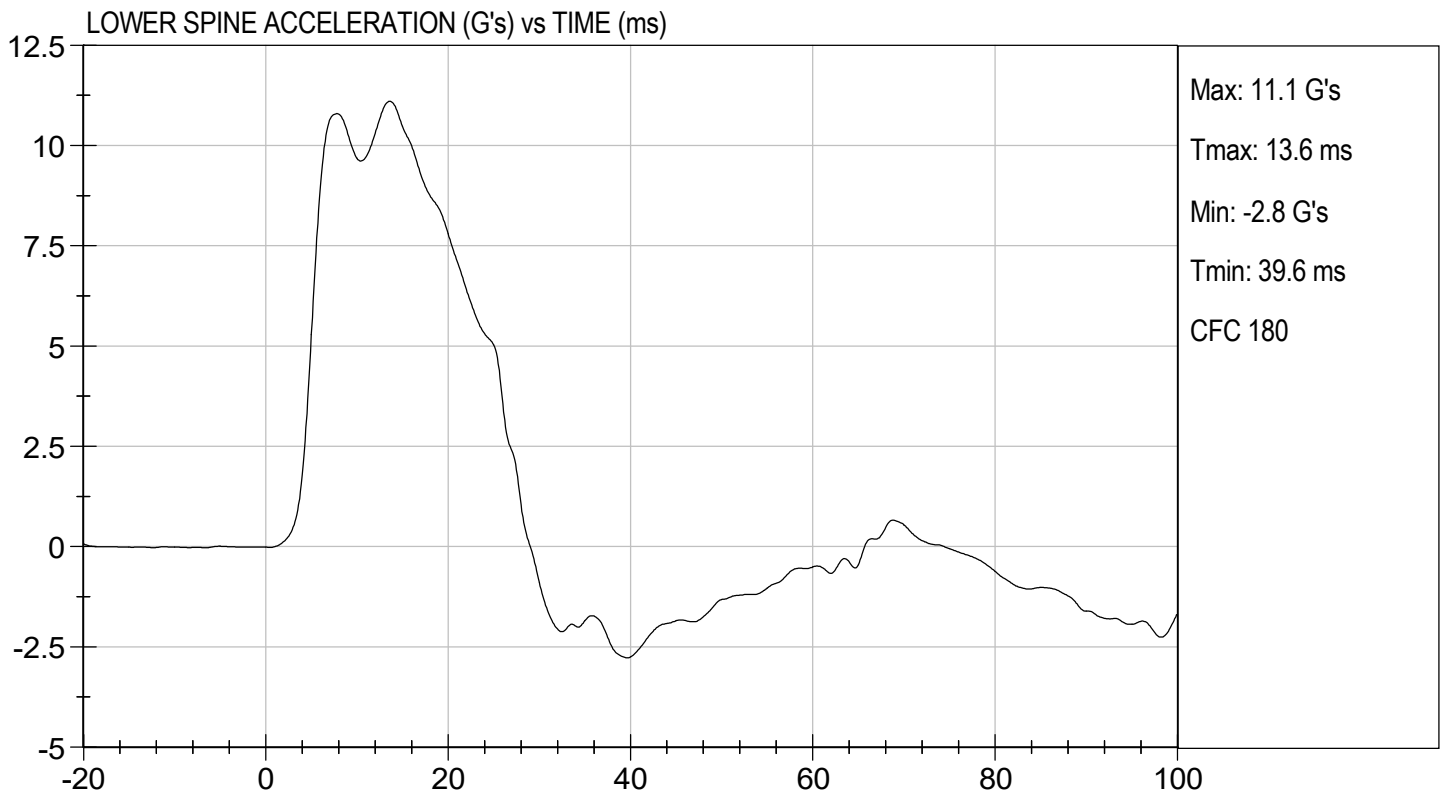
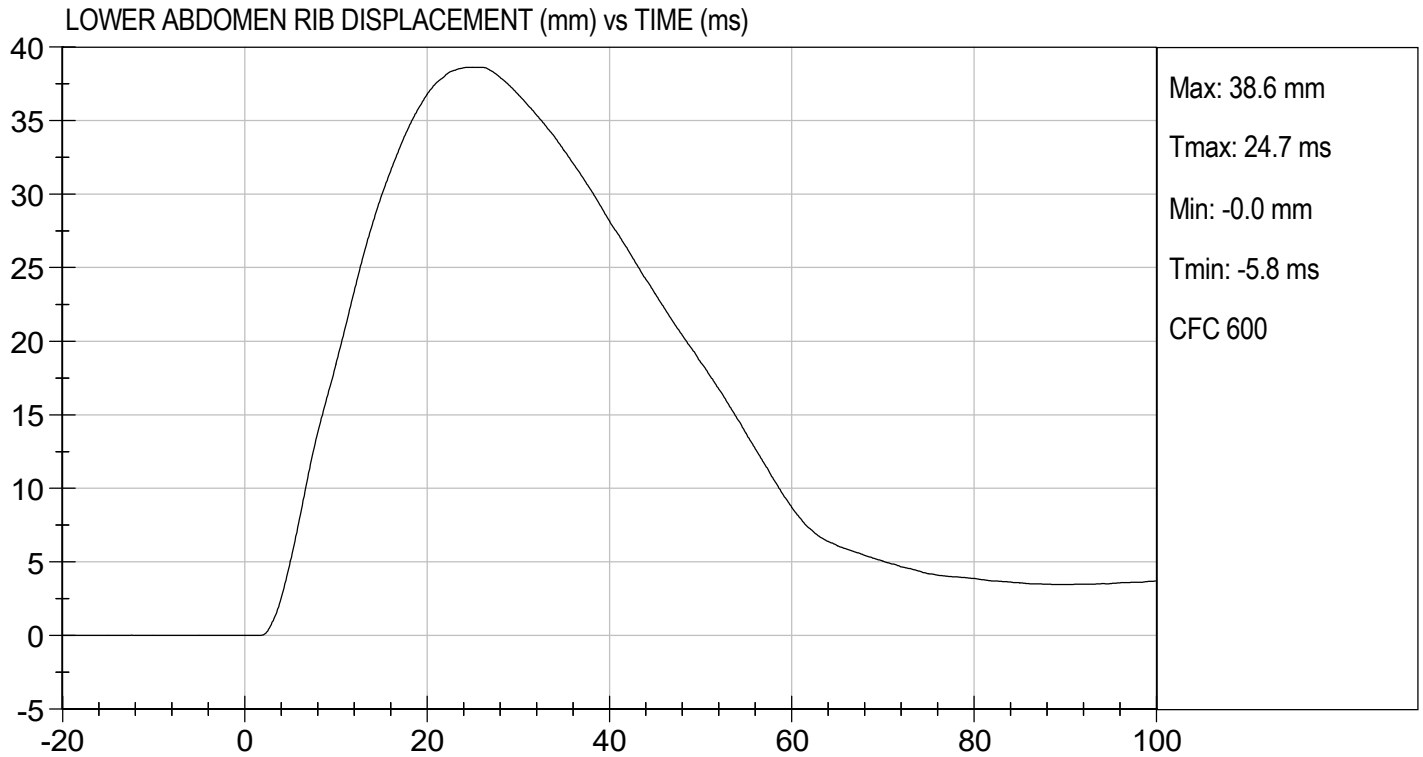
TEST DATE: 05/24/2021
TEST #: D211816





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

TEST DATE: 05/24/2021
TEST #: D211816



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

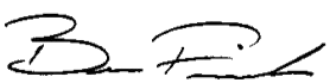
Test I.D: D211817

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.6	Pass
Humidity	%	10 to 70	45	Pass
Impact Velocity	m/s	6.60 to 6.80	6.60	Pass
Maximum Probe Acceleration	G's	38 to 47	40	Pass
Pelvis Y Acceleration After 6 ms	G's	34 to 42	38	Pass
Peak Acetabulum Force	N	3600 to 4300	3,807	Pass
Overall Test Results				Pass


Laboratory Technician

05/24/2021

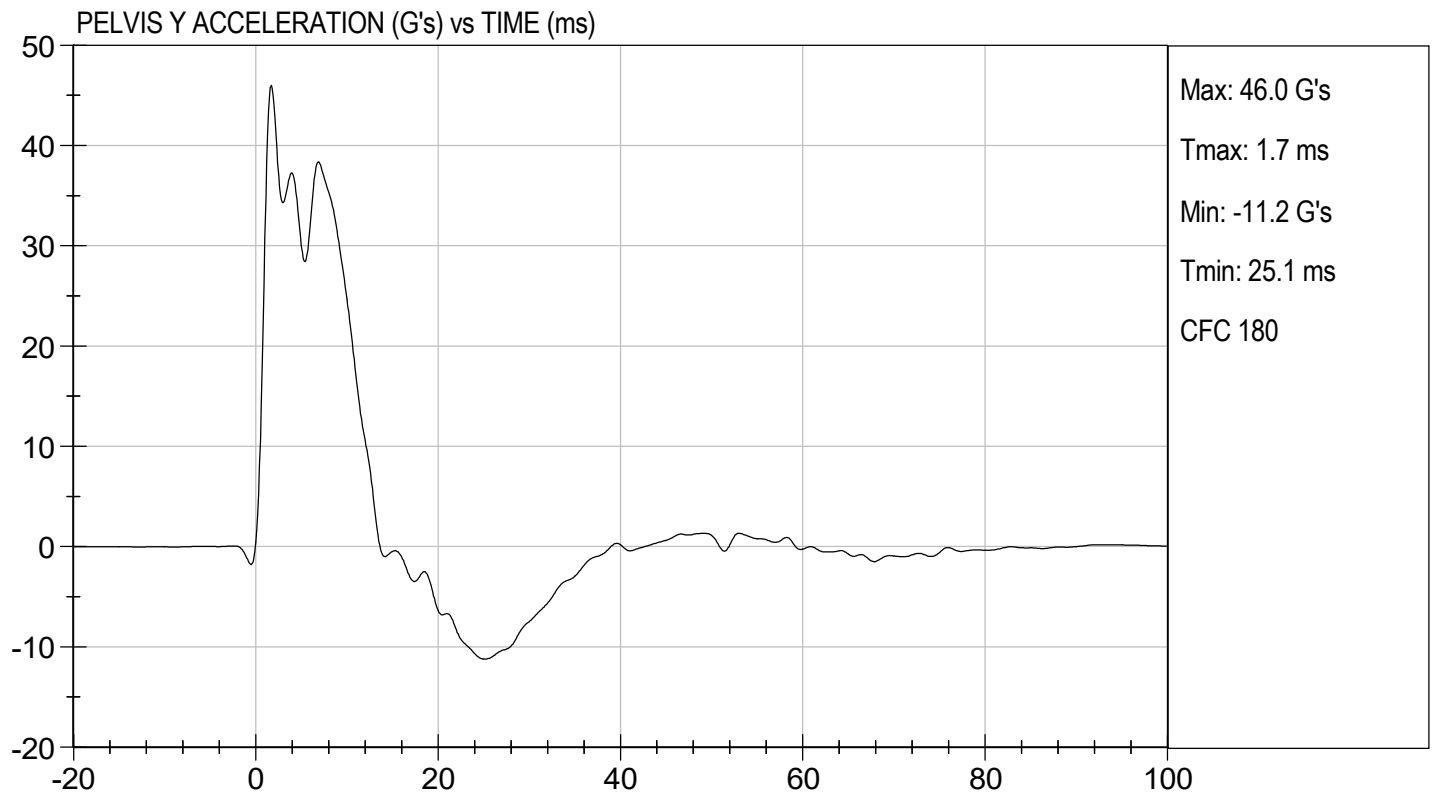
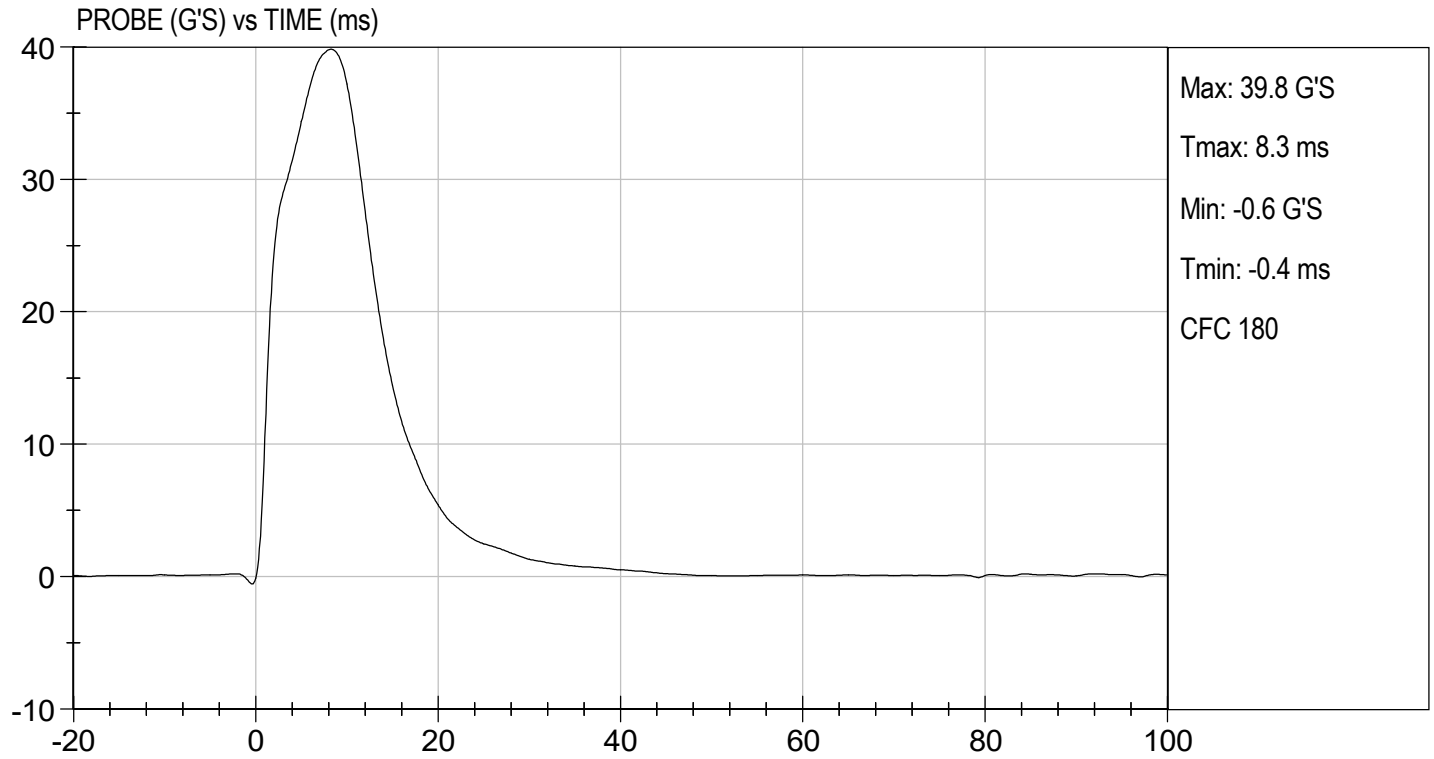
Test Date


Approved By



TEST DESC: PELVIS IMPACT
VELOCITY: 21.65 ft/s, 6.60 m/s

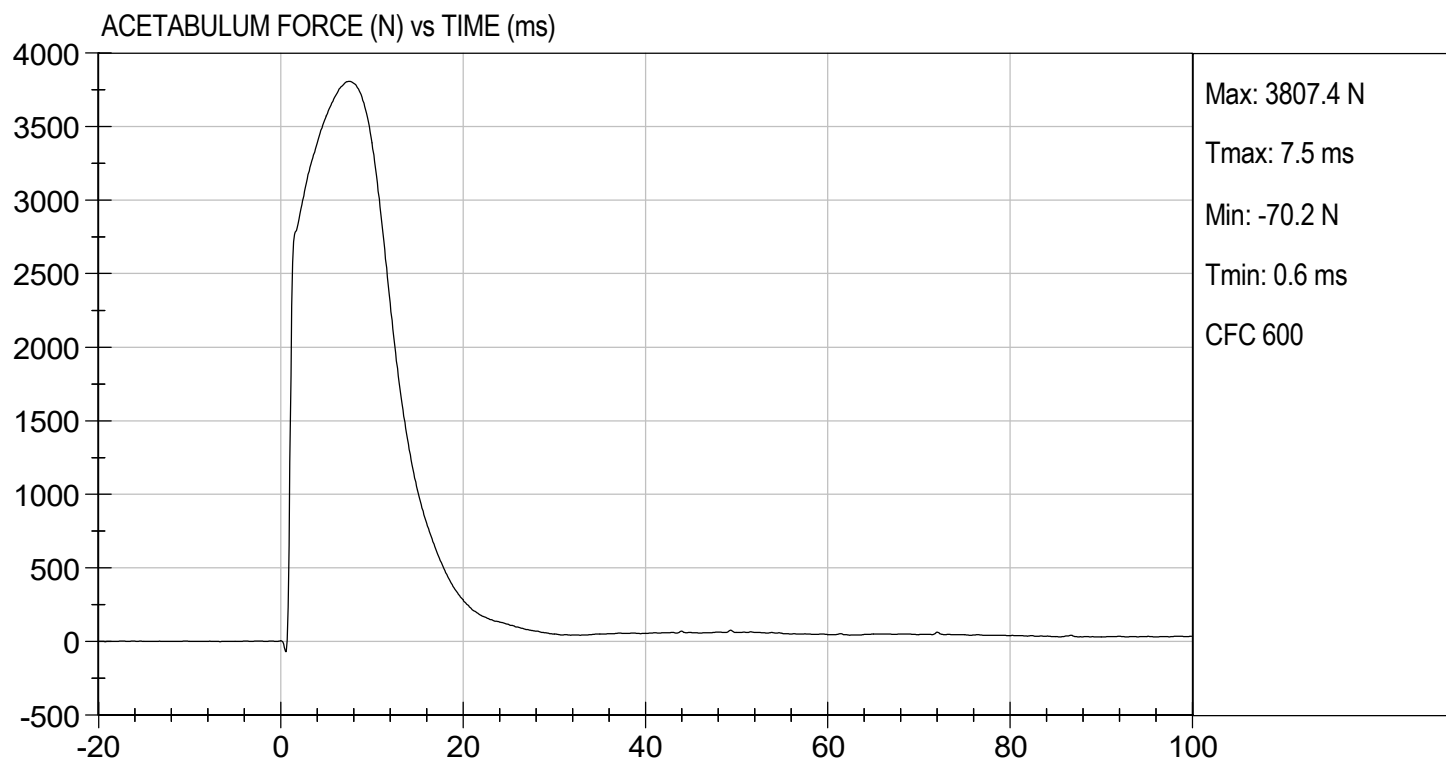
TEST DATE: 05/24/2021
TEST #: D211817





TEST DESC: PELVIS IMPACT
VELOCITY: 21.65 ft/s, 6.60 m/s

TEST DATE: 05/24/2021
TEST #: D211817



MGA RESEARCH CORPORATION

ILIAC IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D211818

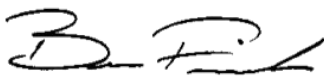
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.6	Pass
Humidity	%	10 to 70	45	Pass
Impact Velocity	m/s	4.20 to 4.40	4.23	Pass
Maximum Probe Acceleration	G's	36 to 45	39	Pass
Pelvis Y Acceleration	G's	28 to 39	30	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4,607	Pass
Overall Test Results				Pass



Laboratory Technician

05/24/2021

Test Date

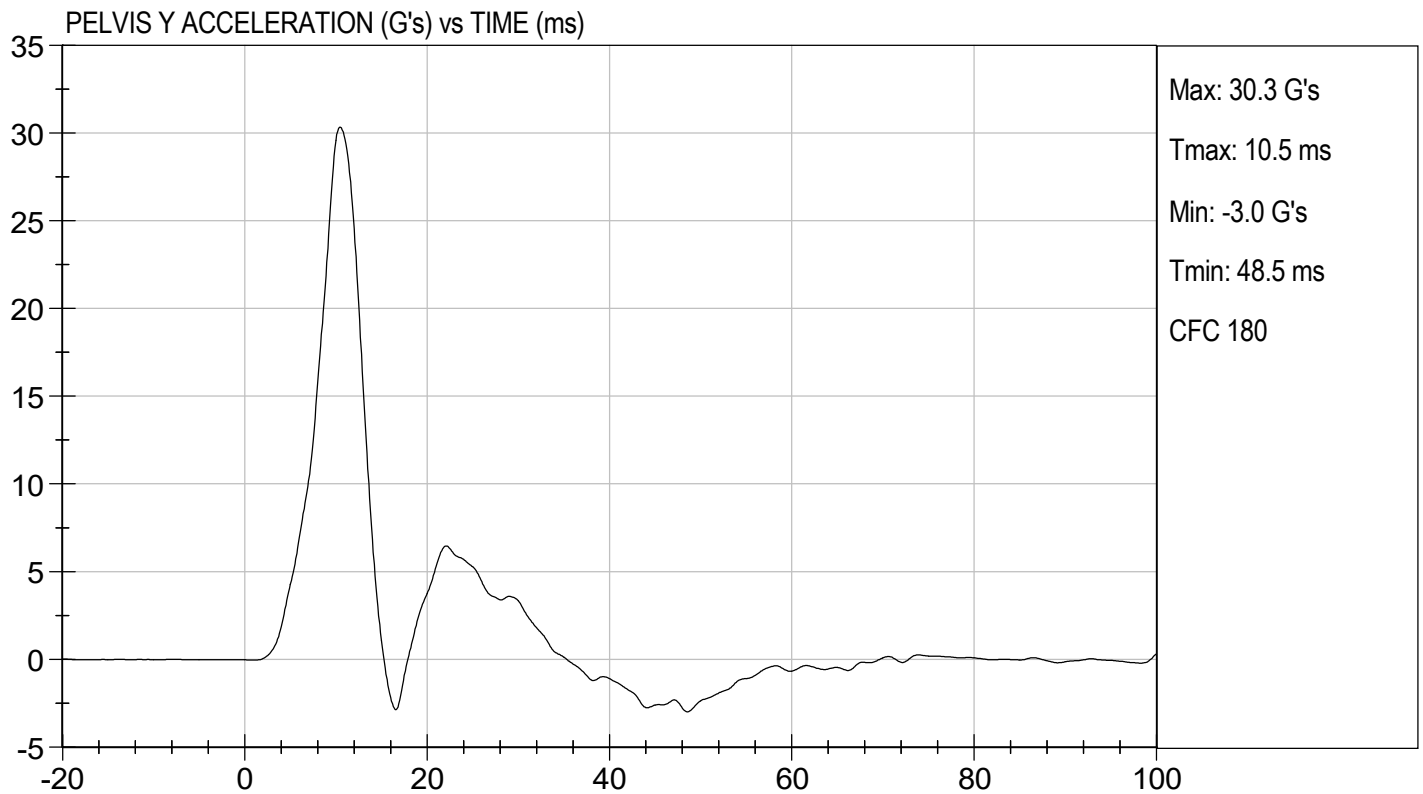
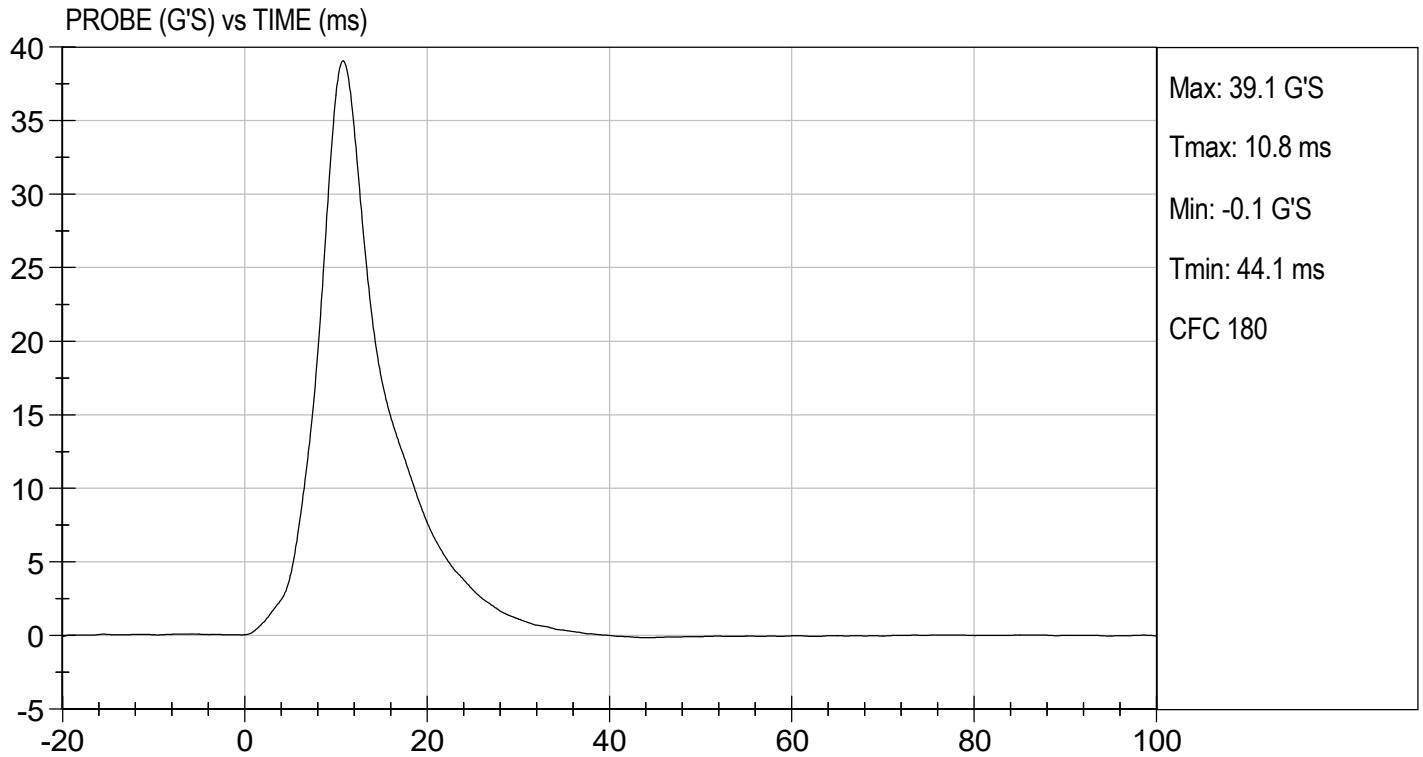


Approved By



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

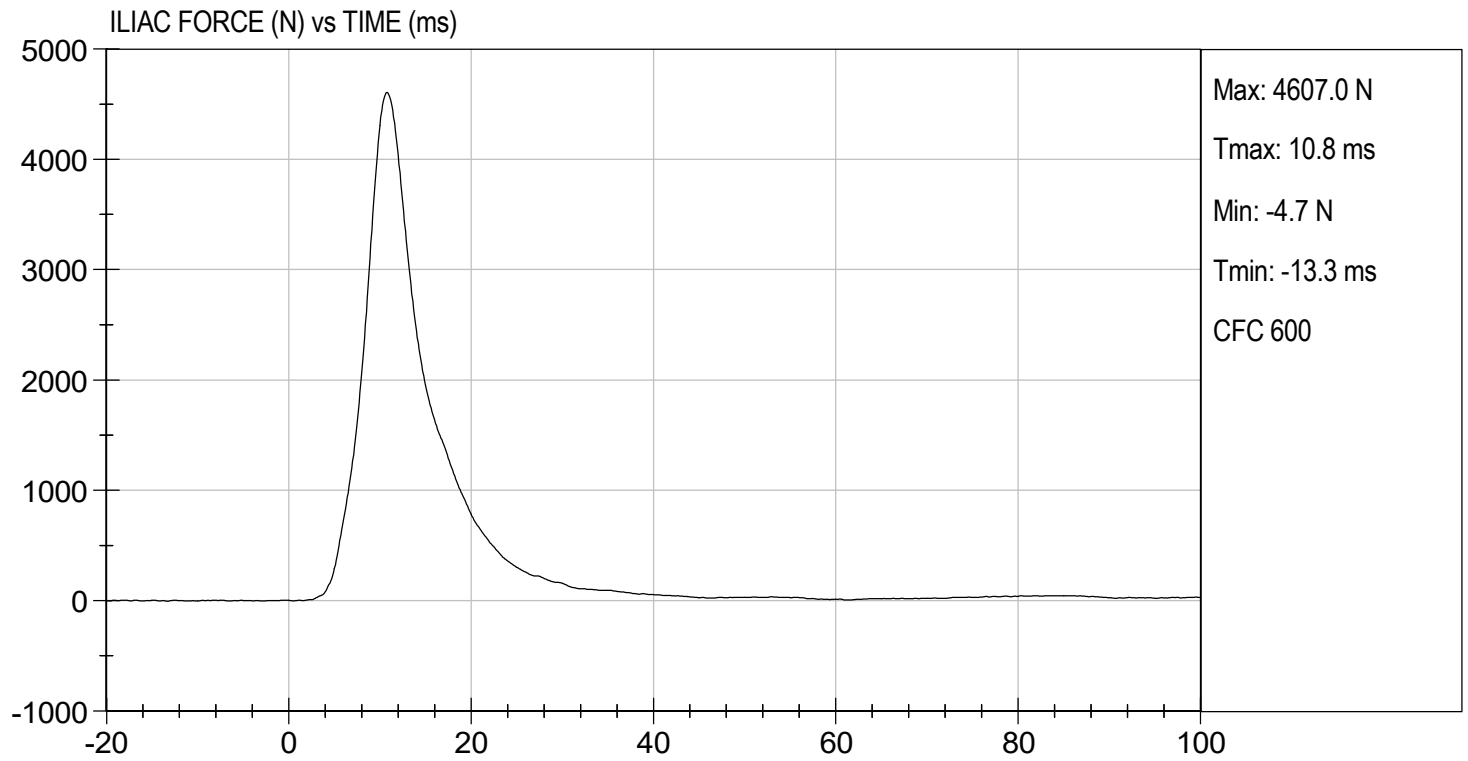
TEST DATE: 05/24/2021
TEST #: D211818





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

TEST DATE: 05/24/2021
TEST #: D211818





SID-IIs Pelvis Plug Certification Test

Plug S/N 13653

Test Number 11301

Report Number 11339

Test Date 9/26/2019 12:13:06 PM

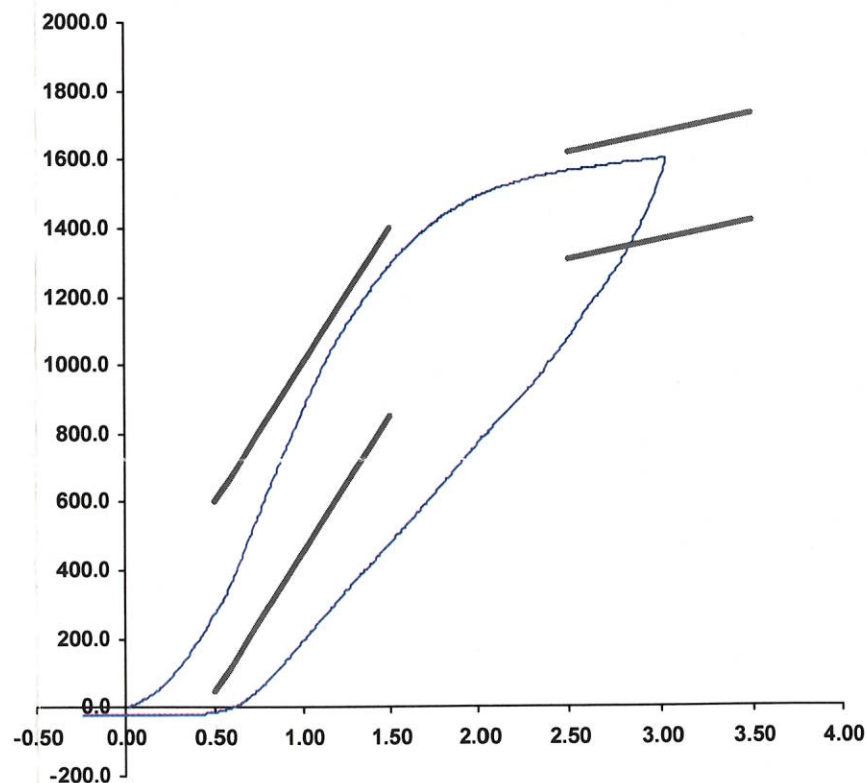
	Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	279.25	50.00	600.00
Force @ 1.5 mm (N)	1,296.96	850.00	1,400.00
Force @ 2.5 mm (N)	1,565.84	1,306.00	1,618.00
Force @ 3.0 mm (N)	1,599.79	1,361.00	1,673.00

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

26-Sep-19

SACO Research

By : DC

Date : 9/26/2019

SACO Research 41735 Elm St, #401 Murrieta, CA 92562

Tel 310-694-2082 FAX



SID-IIs Pelvis Plug Certification Test

Plug S/N 13778

Test Number 12967

Report Number 13011

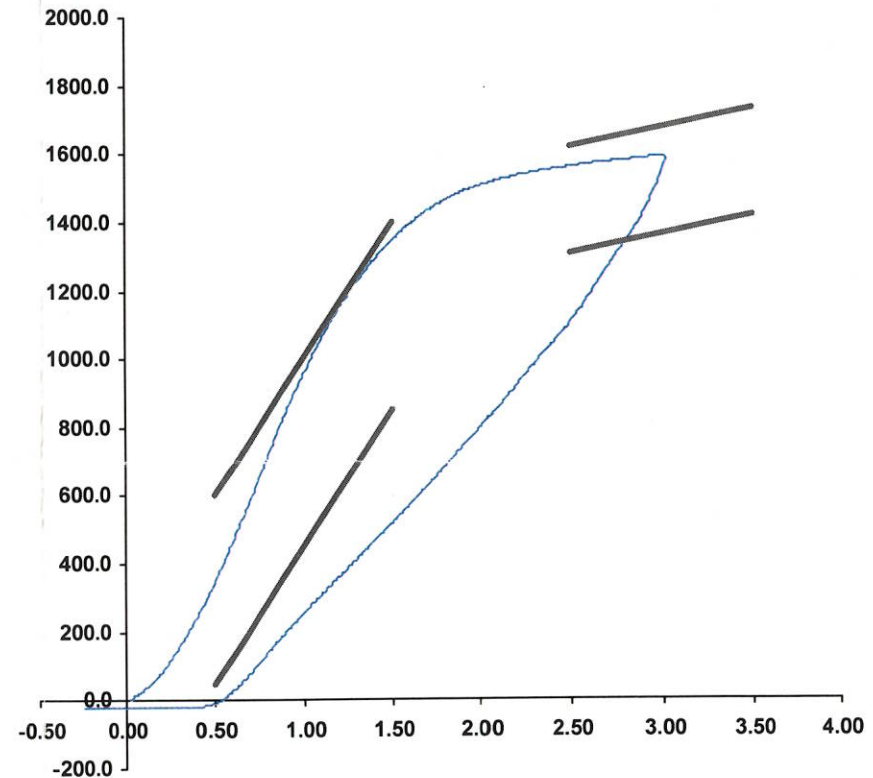
Test Date 4/7/2020 6:53:37 AM

	Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	359.93	50.00	600.00
Force @ 1.5 mm (N)	1,348.83	850.00	1,400.00
Force @ 2.5 mm (N)	1,560.17	1,306.00	1,618.00
Force @ 3.0 mm (N)	1,590.33	1,361.00	1,673.00

Testing Machine STM-20 5965542
Load Cell S/N (FI360947), Units (LBS) 1000
Preload Value (-N) 22.24
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

07-Apr-20

SACO Research

By: DC

Date: 4/7/2020

SACO Research 41735 Elm St, #401 Murrieta, CA 92562 Tel 310-694-2082 FAX

C-60

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	01/18/2021
				Y	P94783	Endevco	01/18/2021
				Z	P94786	Endevco	01/18/2021
				Xr	P94938	Endevco	01/18/2021
				Yr	P96854	Endevco	01/18/2021
				Zr	P97386	Endevco	01/18/2021
Head Angular Rate Sensors				X	ARS7325	DTS	09/14/2020
				Y	ARS7354	DTS	08/04/2020
				Z	ARS7371	DTS	09/14/2020
Displacement Potentiometers	Thoracic Rib	Upper	Y	G012	Servo	12/23/2020	
		Middle	Y	G1163	FTSS	12/23/2020	
		Lower	Y	G1158	FTSS	12/23/2020	
	Abdominal Rib	Upper	Y	G1146	FTSS	12/23/2020	
		Lower	Y	G1126	FTSS	12/23/2020	
Lower Spine Accelerometers (T12)				X	P79418	Endevco	01/18/2021
				Y	P79439	Endevco	01/18/2021
				Z	P79614	Endevco	01/18/2021
Acetabulum Load Cell				Y	ACG4285	FTSS	02/10/2021
Iliac Wing Load Cell				Y	IWG3023	FTSS	02/10/2021
Pelvis Plug (struck side)					13653	SACO	09/26/2019
Pelvis Plug (non-struck side)					13778	SACO	04/07/2020

Table 2 – Vehicle Instrumentation

		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	A360991	MSI	12/05/2020
Vehicle Center of Gravity	Y	A356214	MSI	12/14/2020
Vehicle Center of Gravity	Z	A360989	MSI	12/05/2020
Left Floor Sill	Y	PCB1337	PCB	02/09/2021
A-Pillar Sill	Y	A340678	MSI	04/19/2021
A-Pillar Low	Y	A370391	MSI	03/11/2021
A-Pillar Mid	Y	A370354	MSI	03/08/2021
B-Pillar Sill	Y	A370352	MSI	03/09/2021
B-Pillar Low	Y			
B-Pillar Mid	Y			
Driver Seat	Y	A382561	MSI	04/09/2021
Engine Top	X	PCB1432	PCB	02/17/2021
Engine Top	Y	PCB1424	PCB	07/20/2020
Firewall	Y	A337162	MSI	12/03/2020
Right Roof	Y	A340203	MSI	12/05/2020
Right Floor Sill	Y	PCB1056	PCB	11/23/2020
Rear Floorpan	X	A360972	MSI	12/12/2020
Rear Floorpan	Y	A360959	MSI	12/05/2020

Table 3 – Pole Instrumentation

	Serial Number	Manufacturer	Calibration Date
Load Cell 1	DG6277	FTSS	07/30/2018
Load Cell 2	DG6278	FTSS	07/30/2018
Load Cell 3	DG6279	FTSS	07/30/2018
Load Cell 4	DG6280	FTSS	07/30/2018
Load Cell 5	DG6281	FTSS	07/30/2018
Load Cell 6	DG6283	FTSS	07/30/2018
Load Cell 7	DG6284	FTSS	07/30/2018
Load Cell 8	DG6582	FTSS	07/30/2018