REPORT NUMBER: SideNCAPPole-MGA-22-009

NEW CAR ASSESSMENT PROGRAM (NCAP)
Side Impact Pole Test

HONDA OF CANADA MFG.
2022 Honda Civic LX 4-Door Sedan
NHTSA No.: O20225304

MGA RESEARCH CORPORATION
5000 Warren Road
Burlington, WI 53105

Test Date: January 12, 2022

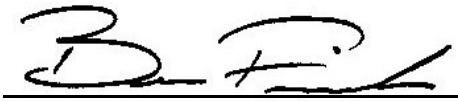
Final Report Date: March 14, 2022

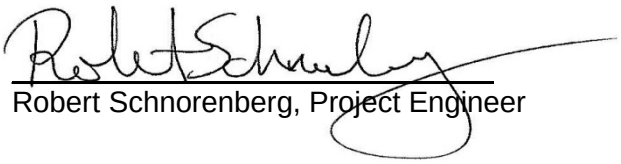
FINAL REPORT

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

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

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

Prepared by: 
Ben Fischer, Program Manager

Approved by: 
Robert Schnorenberg, Project Engineer

Approval Date: March 14, 2022

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

1. Report No. SideNCAPPole-MGA-22-009	**2. Government Accession No.**	**3. Recipient's Catalog No.**
4. Title and Subtitle Final Report of New Car Assessment Program Side Impact Pole Testing of a 2022 Honda Civic LX 4-Door Sedan NHTSA No.: O20225304		**5. Report Date** March 14, 2022 **6. Performing Organization Code** MGA
7. Author(s) Ben Fischer, Program Manager		**8. Performing Organization Report No.** SideNCAPPole-MGA-22-009
9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105		**10. Work Unit No.** **11. Contract or Grant No.** 693JJ920D000017
12. Sponsoring Agency Name and Address United States 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		**13. Type of Report and Period Covered:** Final Test Report January 12, 2022 to March 14, 2022 **14. Sponsoring Agency Code** NRM-100
15. Supplementary Notes		

16. Abstract

A 32.20 km/h, 75° oblique impact Side NCAP Test was conducted on the subject 2022 Honda Civic LX 4-Door Sedan 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 January 12, 2022.

The impact velocity was 32.25 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 21.3°C. The test vehicle post-test maximum crush was 295 mm at level 3. The test vehicle's performance was as follows:

Measurement Description	Units	Driver ATD (SID-IIs)	
		Threshold	Result
Head Injury Criteria (HIC_{36})		1000	260
Resultant Lower Spine Acceleration	g	82	51
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3580
Maximum Thoracic Rib Deflection	mm	38*	18
Maximum Abdomen Rib Deflection	mm	45*	26

*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.

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

19. Security Classification of Report Unclassified	**20. Security Classification of Page** Unclassified	**21. No. of Pages** 139	**22. Price**

TABLE OF CONTENTS

Section		Page No.
1	Purpose and Summary of Test	1
2	Occupant and Vehicle Information / Data Sheets	3

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

Appendix		
A	Photographs	A
B	Vehicle and Dummy Response Data Plots	B
C	Dummy Configuration and Performance Verification Data	C
D	Test Equipment and Instrumentation Calibration Data	D
E	Seating Procedure Worksheets and Plots	E

SECTION 1
PURPOSE AND SUMMARY OF TEST

PURPOSE

This side pole impact test is part of the MY 2022 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. 693JJ920D000017. The purpose of this test is to generate comparative side impact performance in a 2022 Honda Civic LX 4-Door Sedan. 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 2022 Honda Civic LX 4-Door Sedan. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.25 km/h. The test was conducted by MGA Research Corporation in Burlington, Wisconsin on January 12, 2022. 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	260
Resultant Lower Spine Acceleration	g	82	51
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3580
Maximum Thoracic Rib Deflection	mm	38*	18
Maximum Abdomen Rib Deflection	mm	45*	26

*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	Yes	Yes
Side Airbag (Other)				
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
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

Left Floor Sill Y recorded no valid data after 25 ms.
Left A-Post @ Sill Y recorded no valid data after 25 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: 2022 Honda Civic LX 4-Door Sedan NHTSA No.: O20225304
Test Program: NCAP Side Pole Impact Test Test Date: 1/12/2022

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	O20225304	Traction Control System (TCS)	Yes
Model Year	2022	Auto-Leveling System	No
Make	Honda	Automatic Door Locks (ADL)	Yes
Model	Civic LX	Power Window Auto-Reverse	Yes
Body Style	4-Door Sedan	Other Optional Feature	No
VIN	2HGFE2F2XNH548527	Driver Front Airbag	Yes
Body Color	Aegean Blue Metallic	Driver Curtain Airbag	Yes
Odometer Reading (km/mi)	13 km / 8 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	CVT	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	Yes
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	No	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?	Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	HONDA OF CANADA MFG.
Date of Manufacture	11/'21
Vehicle Type	Passenger Car

GVWR (kg)	1740
GAWR Front (kg)	919
GAWR Rear (kg)	825

VEHICLE SEATING AND WEIGHT CAPACITY DATA

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	2	3		5	
Capacity Weight (VCW) (kg)				385	(A)
DSC x 68.04 kg				340	(B)
Rated Cargo and Luggage Weight (RCLW) (kg)				45	(A-B)

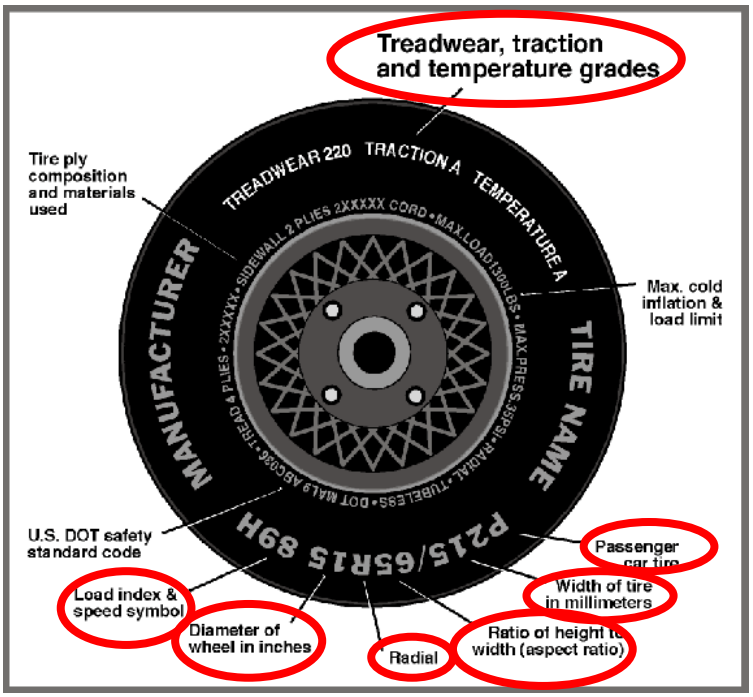
VEHICLE SEAT TYPE

Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable w/ Lever	Adjustable 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: 2022 Honda Civic LX 4-Door Sedan
Test Program: NCAP Side Pole Impact Test
NHTSA No.: O20225304
Test Date: 1/12/2022

VEHICLE TIRE INFORMATION



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	220	220
Recommended Tire Size	215/55R16	215/55R16
Tire Size on Vehicle	215/55R16	215/55R16
Tire Manufacturer	Hankook	Hankook
Tire Model	Kinergy GT	Kinergy GT
Treadwear	500	500
Traction	A	A
Temperature Grade	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Steel, 2 Polyester, 1 Nylon	2 Steel, 2 Polyester, 1 Nylon
Load Index/Speed Symbol	93H	93H
Tire Material	Rubber	Rubber
DOT Safety Code Left	T7R1 1BH 1721	T7R1 1BH 1421
DOT Safety Code Right	T7R1 1BH 2421	T7R1 1BH 1721

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

Test Vehicle: 2022 Honda Civic LX 4-Door Sedan NHTSA No.: O20225304
Test Program: NCAP Side Pole Impact Test Test Date: 1/12/2022

TEST PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	235	235	235	235
Tire Placard	kPa	220	220	220	220
Owner's Manual	kPa	220	220	220	220
As Tested	kPa	220	220	220	220

TEST AXLE VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	394.0	260.5		418.5	295.0		414.0	301.0	
Right	kg	401.0	242.5		409.5	264.0		404.0	272.5	
Ratio	%	61.2%	38.8%		59.7%	40.3%		58.8%	41.2%	
Totals	kg	795.0	503.0	1298.0	828.0	559.0	1387.0	818.0	573.5	1391.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1298.0	(A)
Actual Weight of 1 P572 ATD (SID-IIs) Used	kg	52	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	45	(C)
Calculated Test Vehicle Target Weight (TVTW)	kg	1395.0	(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	0.4	0.6	0.6	Yes
Front Pass. Door Sill Angle (front-to-back)*	deg	0.1	0.2	0.2	Yes
Front Bumper Angle (left-to-right)**	deg	-0.1	-0.3	-0.4	Yes
Rear Bumper Angle (left-to-right)**	deg	-0.1	-0.2	-0.3	Yes
Vehicle CG (Aft of Front Axle)	mm	1062	1104	1129	
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	7	22	21	

* 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	0
Components Removed: none	kg	

Test height adjustable suspension setting, if applicable:	Not Applicable

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

Test Vehicle: 2022 Honda Civic LX 4-Door Sedan NHTSA No.: O20225304
Test Program: NCAP Side Pole Impact Test Test Date: 1/12/2022

TEST SURFACE MARKINGS

	Distance from 75° Impact Location Line (mm)
Fore 25 mm Target	885
Aft 25 mm Target	899

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

Test Vehicle: 2022 Honda Civic LX 4-Door Sedan NHTSA No.: O20225304
Test Program: NCAP Side Pole Impact Test Test Date: 1/12/2022

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	26.9	20.4	23.7
Front Passenger Seat	Fixed	Fixed	Fixed
Front Center Seat			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed

SEAT HEIGHT AND ANGLE

Seat	As-Tested SCRL Angle (Mid) (°)	As-Tested SCRP Height (mm)	SCRP Height Position	SCRP Height (mm)		
				Rear-Most	Mid	Forward-Most
Driver Seat	23.7	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Front Passenger Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Front Center Seat			Max			
			Mid			
			Min			
Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed

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

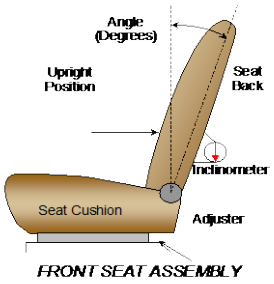
Test Vehicle: 2022 Honda Civic LX 4-Door Sedan NHTSA No.: O20225304
Test Program: NCAP Side Pole Impact Test Test Date: 1/12/2022

SEAT FORE/AFT POSITIONS

Seat	Total Fore/Aft Travel		Test Position from Forward-Most Position	
	mm	Detents (1st as 1)	mm	Detent (1st as 0)
Driver Seat	240	25	0	0
Front Passenger Seat	210	21	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 (1st as 1)	Degrees	Detent (1st as 0)
Driver Seat	58.1	30	-3.7	2
Front Passenger Seat	65.7	32	-5.2	2
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.

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	5	0 (Lowest as 0) / Fixed Fore-Aft

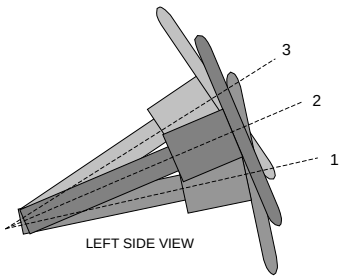
DATA SHEET NO. 2 (CONTINUED)
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

Test Vehicle: 2022 Honda Civic LX 4-Door Sedan
NHTSA No.: O20225304
Test Program: NCAP Side Pole Impact Test
Test Date: 1/12/2022

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.

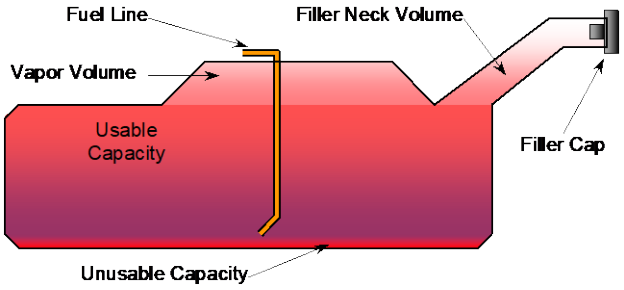
	Wheel Angle (°)	Fore/Aft Position (mm)
Lowermost, Position 1	72.9	
Geometric Center, Position 2	70.0	
Uppermost, Position 3	67.1	
Telescoping Steering Wheel Travel		40
Test Position	70.0	20



STEERING COLUMN ASSEMBLY

FUEL PUMP

The vehicle is equipped with an electronic fuel pump. The fuel pump will operate after the Engine Start/Stop switch is pushed two times and in ON (II) position. The pump will be filled for two seconds, and pressure is maintained. The filler neck is located on the driver's side.



VEHICLE FUEL TANK ASSEMBLY

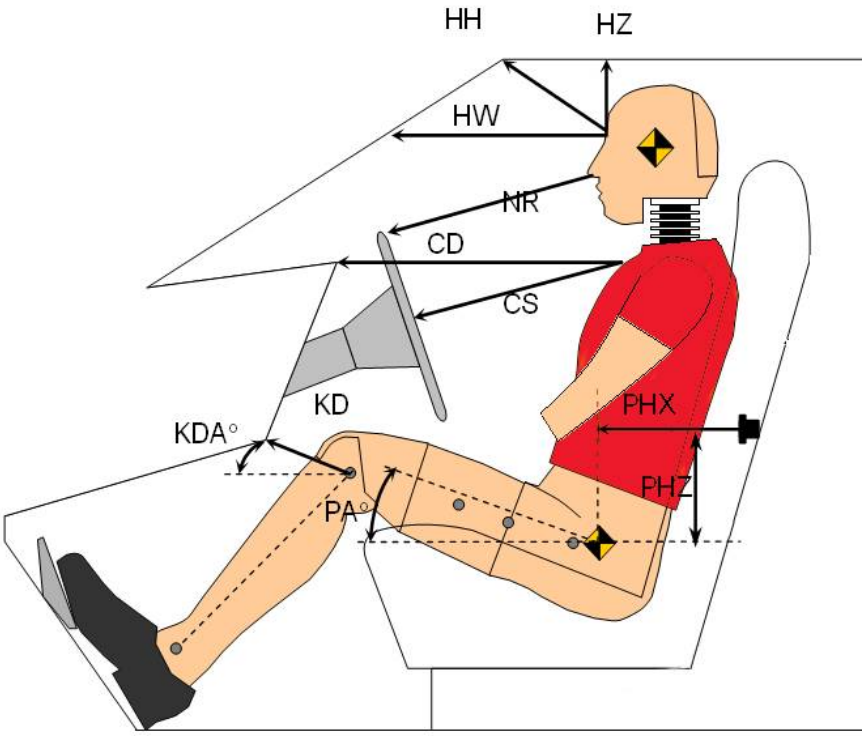
FUEL TANK CAPACITY DATA

	Liters
Usable Capacity of Standard Tank (see S1 – Vehicle Setup Information)	46.9
Usable Capacity of Optional Tank (see S1 – Vehicle Setup Information)	
Usable Capacity of Standard Tank as Specified in Owner's Manual	46.9
Usable Capacity of Optional Tank as Specified in Owner's Manual	
93% of Usable Capacity	43.7
Actual Amount of Solvent Used	43.5
1/3 of Usable Capacity	15.6

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

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2022 Honda Civic LX 4-Door Sedan
Test Program: NCAP Side Pole Impact Test
NHTSA No.: O20225304
Test Date: 1/12/2022

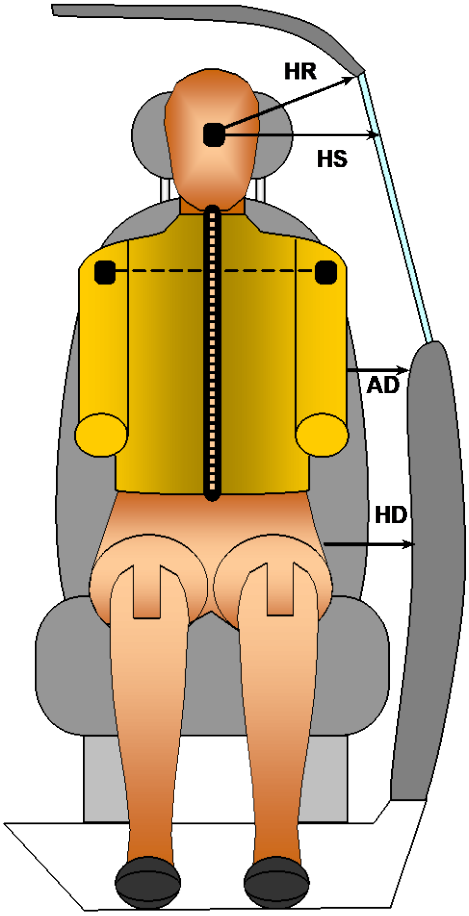


LEFT SIDE VIEW

Code	Measurement Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	260	
HW	Head to Windshield	564	
HZ	Head to Roof Liner	181	
NR	Nose to Rim/Seat Back	216	
CD	Chest to Dashboard/Seat Back	406	
CS	Chest to Steering Wheel	161	
KDL / KDAL	Left Knee to Dash/Seat Back	171	32.4
KDR / KDAL	Right Knee to Dash/Seat Back	155	33.5
PAX	Pelvic Tilt Angle X		21.5
PAY	Pelvic Tilt Angle Y		-0.5
PHX	Hip Point to Striker (X-Axis)	353	
PHZ	Hip Point to Striker (Z-Axis)	232	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2022 Honda Civic LX 4-Door Sedan
Test Program: NCAP Side Pole Impact Test
NHTSA No.: O20225304
Test Date: 1/12/2022

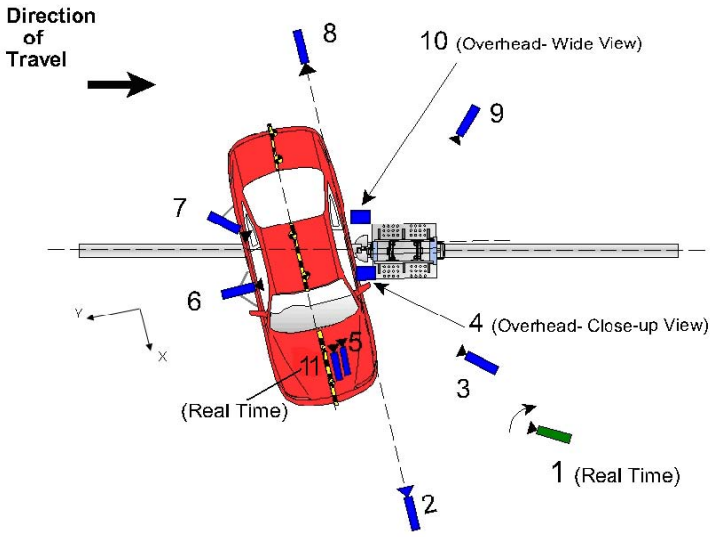


FRONT VIEW OF DUMMY

Code	Measurement Description	Driver
		Length (mm)
HR	Head to Side Header	240
HS	Head to Side Window	369
AD	Arm to Door	202
HD	Hip Point to Door	173

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2022 Honda Civic LX 4-Door Sedan NHTSA No.: O20225304
Test Program: NCAP Side Pole Impact Test Test Date: 1/12/2022



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	6220	-10	-1380	24	1000
3	Impact Side 45° Forward	4086	-1940	-1320	12	1000
4	Overhead Closeup	0	0	-6670	85	1000
5	Onboard – Driver Front				16	1000
6	Onboard – Driver Side				8	1000
7	Onboard – Driver Rear				8	1000
8	Rear Ground Level	-7350	-120	-1430	24	1000
9	Impact Side 45° Rearward	-2360	-3810	-1420	12	1000
10	Overhead Wide View	-40	740	-6650	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.

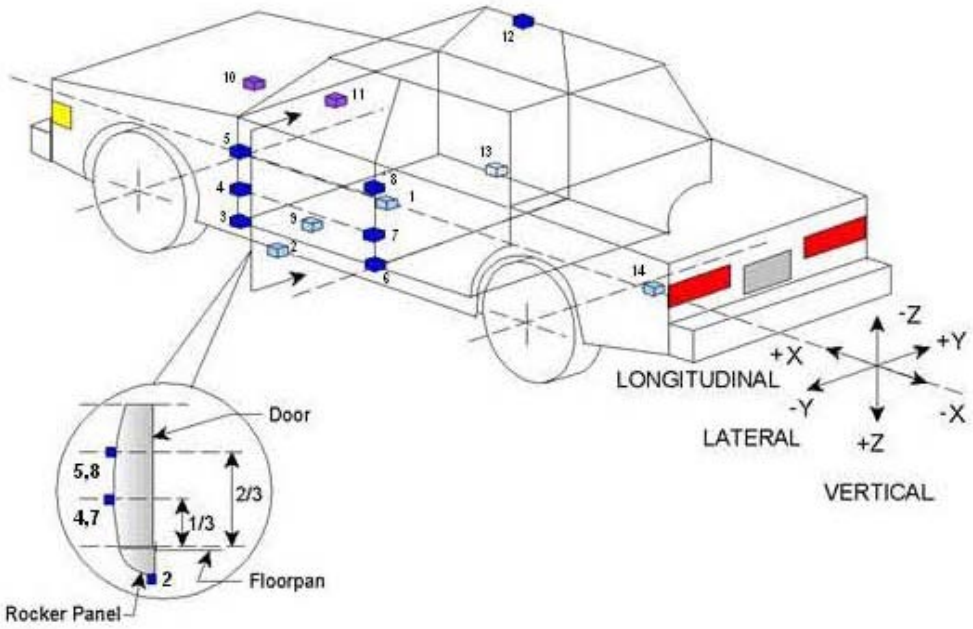
Explain why camera(s) did not operate as intended: None

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: 2022 Honda Civic LX 4-Door Sedan NHTSA No.: O20225304
Test Program: NCAP Side Pole Impact Test Test Date: 1/12/2022



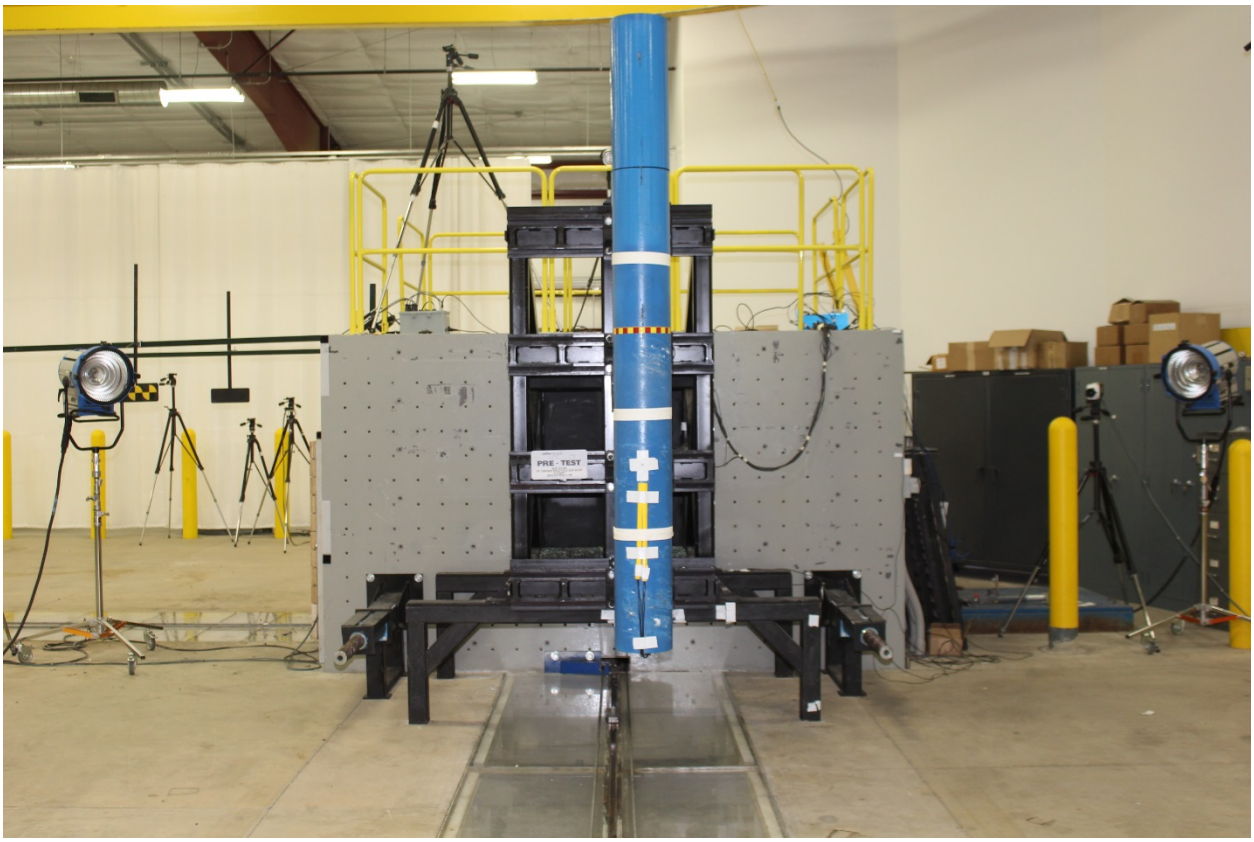
TEST VEHICLE ACCELEROMETER LOCATIONS

No.	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2598	0	-260
2	Left Floor Sill	3008	-755	-185
3	A Pillar Sill	3188	-755	-185
4	A Pillar Low	3213	-822	-534
5	A Pillar Mid	3213	-822	-764
6	B Pillar Sill	2093	-755	-175
7	B Pillar Low	2038	-712	-493
8	B Pillar Mid	2038	-712	-678
9	Driver Seat Track	2193	-372	-205
10	Engine Top	3934	53	-839
11	Firewall	3589	107	-835
12	Right Roof	2188	523	-1410
13	Right Floor Sill	3008	755	-185
14	Rear Floorpan	912	0	-499

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: 2022 Honda Civic LX 4-Door Sedan
Test Program: NCAP Side Pole Impact Test
NHTSA No.: O20225304
Test Date: 1/12/2022



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: 2022 Honda Civic LX 4-Door Sedan NHTSA No.: O20225304
Test Program: NCAP Side Pole Impact Test Test Date: 1/12/2022

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, Headrest
Back of Head	Headrest, Seatback
Left Shoulder	Side Torso/Pelvis Airbag, Seatback
Upper Torso	Seatback
Lower Torso	Side Torso/Pelvis Airbag, Seatback, Door Panel
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 broken
Other Notable Effects	None

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

Test Vehicle: 2022 Honda Civic LX 4-Door Sedan NHTSA No.: O20225304
Test Program: NCAP Side Pole Impact Test Test Date: 1/12/2022

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

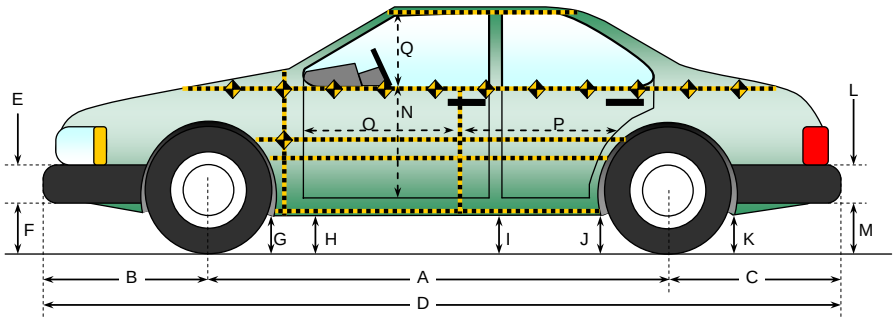
Restraint Type	Struck Side Driver		Struck Side Left Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No		
Knee Airbag	Yes	No		
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso/Pelvis Airbag	Yes	Yes	Yes	Yes
Side Airbag (Other)				
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load 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		1105
Actual Impact Point (Aft of Front Axle)	mm		1107
Horizontal Offset (+forward / -rearward)	mm	+/- 38 of Intended Impact Point	-2
Angle Between Vehicle's Longitudinal Centerline and Line of Forward Motion	degrees	75 +/- 3	75.1
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	32.25
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.24

DATA SHEET NO. 9
TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2022 Honda Civic LX 4-Door Sedan
Test Program: NCAP Side Pole Impact Test
NHTSA No.: O20225304
Test Date: 1/12/2022



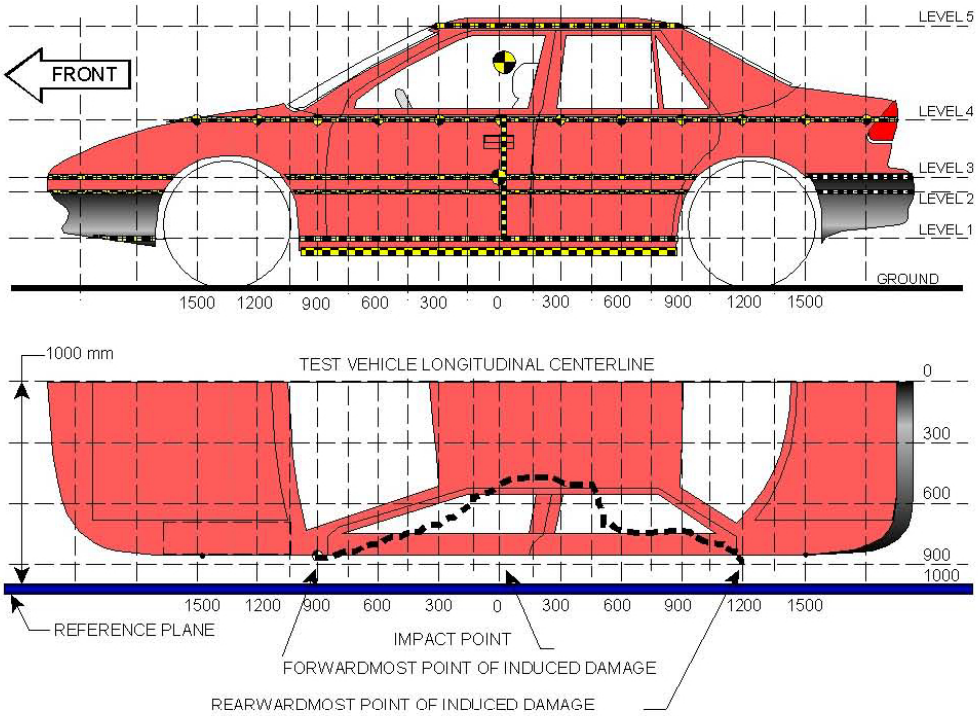
All measurements in (mm) with tolerance of ± 3 mm
LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2740	2700	40
B	Front Axle to FSOV	943	932	11
C	Rear Axle to RSOV	962	1026	-64
D	Total Vehicle Length at Centerline	4645	4658	-13
E	Front Bumper Thickness	38	38	0
F	Front Bumper Bottom to Ground	162	174	-12
G	Sill Height at Front Wheel Well	166	165	1
H	Sill Height at Front Door Leading Edge	156	153	3
I	Sill Height at B-Pillar	167	177	-10
J1	Sill Height at Rear Wheel Well	170	188	-18
J2	Pinch Weld Height at Rear Wheel Well	160	179	-19
K	Sill Height Aft of Rear Wheel Well	221	227	-6
L	Rear Bumper Thickness	45	45	0
M	Rear Bumper Bottom to Ground	259	255	4
N	Sill Height to Bottom of Front Window Sill	704	713	-9
O	Front Door Leading Edge to Impact CL	810	618	192
P	Rear Door Trailing Edge to Impact CL	1158	1322	-164
Q	Front Window Opening	419	365	54
R	Right Side Length	3607	3670	-63
S	Left Side Length	3607	3665	-58
T	Vehicle Width at B-Pillars	1796	1722	74
U	Front Wheel Track Width	1547		
V	Rear Wheel Track Width	1571		

DATA SHEET NO. 10
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2022 Honda Civic LX 4-Door Sedan NHTSA No.: O20225304
Test Program: NCAP Side Pole Impact Test Test Date: 1/12/2022



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

MAXIMUM EXTERIOR CRUSH MEAUREMENTS

Level	Measurement Description	Height Above Ground	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	275	249	0
2	Occupant H-Point	470	287	0
3	Mid Door	576	295	0
4	Window Sill	892	244	0
5	Window Top	1330	38	0

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

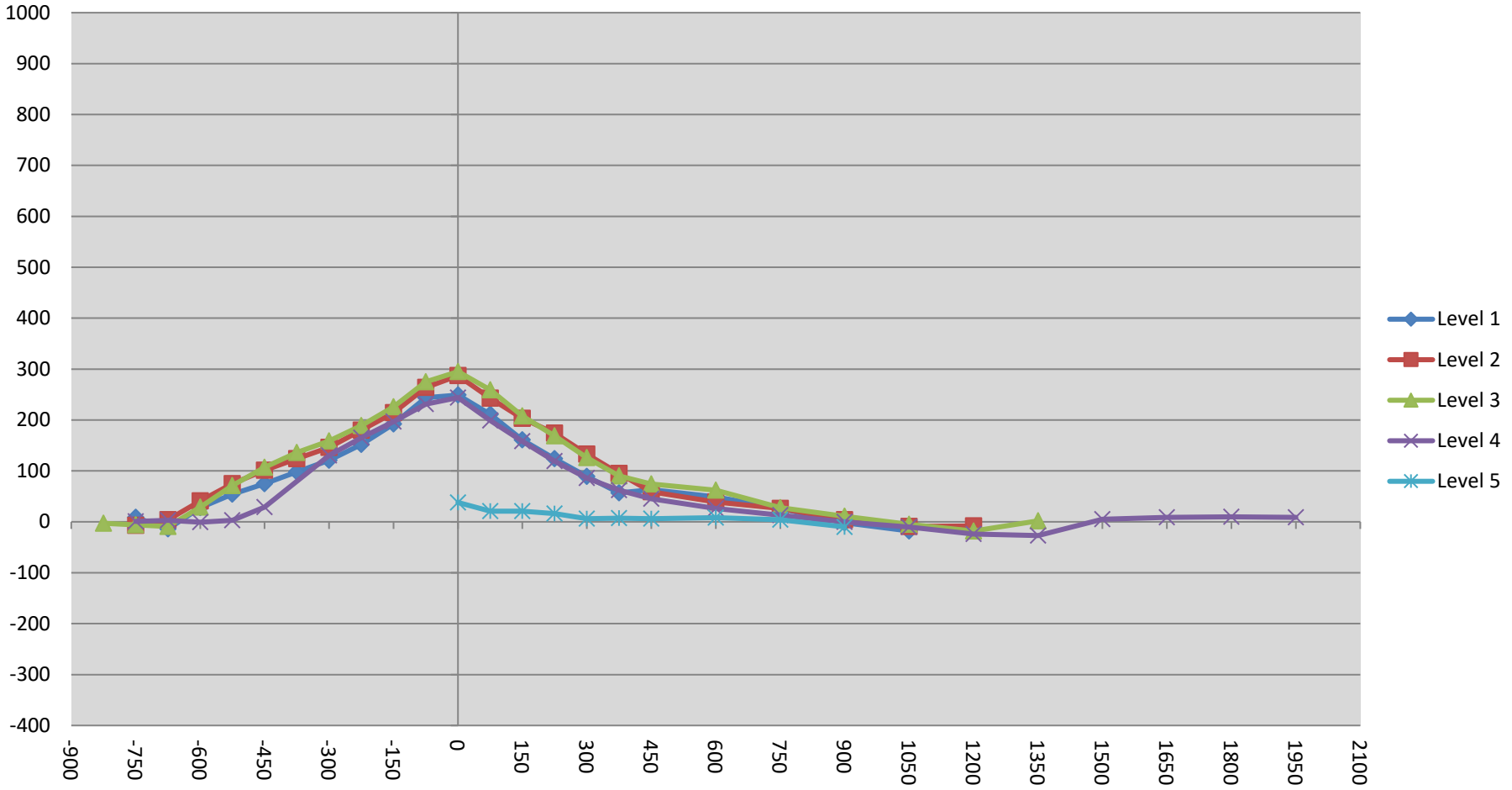
Test Vehicle: 2022 Honda Civic LX 4-Door Sedan NHTSA No.: O20225304
Test Program: NCAP Side Pole Impact Test Test Date: 1/12/2022

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															
-1050															
-900															
-825			205					202					-3		
-750	230	210	205	319		239	203	199	320		9	-7	-6	1	
-675	230	211	206	312		216	215	197	315		-14	4	-9	3	
-600	231	211	205	306		259	252	234	305		28	41	29	-1	
-525	226	210	204	305		280	285	275	308		54	75	71	3	
-450	226	210	203	300		301	211	310	329		75	1	107	29	
-375	225	209	203			323	333	339			98	124	136		
-300	224	208	203	284		345	354	362	414		121	146	159	130	
-225	223	207	202	280		375	287	391	445		152	80	189	165	
-150	222	207	200	274		414	421	426	471		192	214	226	197	
-75	221	207	200	273		465	471	475	504		244	264	275	231	
0	221	205	199	270	525	470	492	494	514	563	249	287	295	244	38
75	222	206	199	265	512	433	449	458	464	533	211	243	259	199	21
150	222	205	200	262	506	383	408	408	420	527	161	203	208	158	21
225	223	205	199	259	502	347	379	368	378	518	124	174	169	119	16
300	225	205	199	260	498	314	338	325	446	504	89	133	126	186	6
375	226	207	199	256	497	283	302	289	318	504	57	95	90	62	7
450	228	205	200	257	496	291	264	274	302	502	63	59	74	45	6
525															
600	231	206	200	255	495	280	245	262	281	503	49	39	62	26	8
675															
750	235	206	200	255	498	261	232	228	268	502	26	26	28	13	4
825															
900	241	207	200	252	522	239	211	211	252	512	-2	4	11	0	-10
1050	234	204	200	255		216	195	195	245		-18	-9	-5	-10	
1200		196	195	259			188	177	235			-8	-18	-24	
1350			192	264				194	237				2	-27	
1500				269					274					5	
1650				280					289					9	
1800				295					305					10	
1950				318					327					9	
2100															
2250															
2400															
2550															
2700															

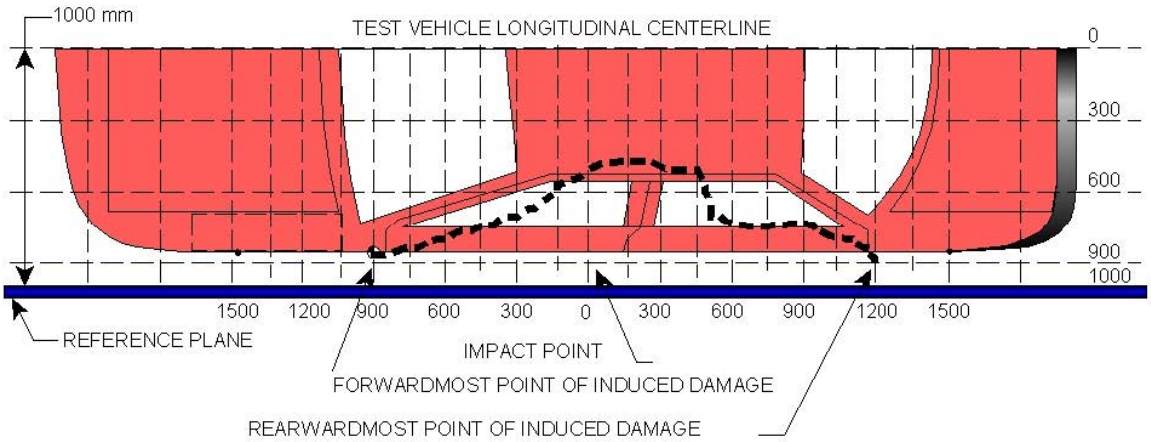
DATA SHEET NO. 10 (CONTINUED)
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2022 Honda Civic LX 4-Door Sedan
Test Program: NCAP Side Pole Impact Test
NHTSA No.: O20225304
Test Date: 1/12/2022



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

Test Vehicle: 2022 Honda Civic LX 4-Door Sedan NHTSA No.: O20225304
Test Program: NCAP Side Pole Impact Test Test Date: 1/12/2022



VEHICLE DAMAGE PROFILE DISTANCES

DPD	Distance from Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Max. Static Crush (mm)
1	450	3	200	274	74
2	220	3	199	368	169
3	-10	3	199	492	293
4	-240	3	202	386	184
5	-470	3	203	304	101
6	-700	3	206	198	-8

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

Test Vehicle: 2022 Honda Civic LX 4-Door Sedan
Test Program: NCAP Side Pole Impact Test
NHTSA No.: O20225304
Test Date: 1/12/2022

Test Time: 10:40 am
Temperature: 21.3°C

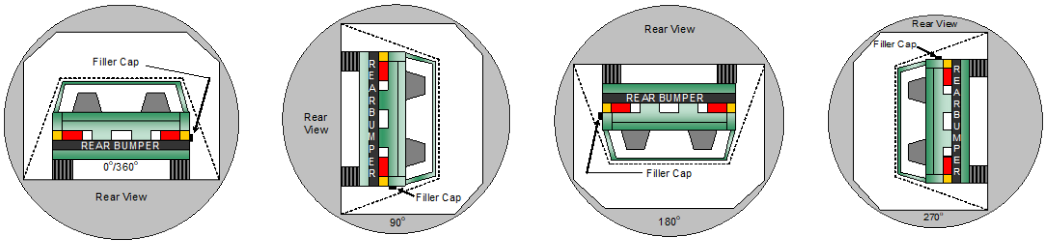
A. From impact until vehicle motion ceases: (Maximum Allowable = 1 ounce) 0.0 oz.

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



0°/360° 90° 180° 270°

ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	112	300	412
90° to 180°	111	300	411
180° to 270°	107	300	407
270° to 360°	113	300	413

FMVSS 301 ROLLOVER SPILLAGE TABLE (UNITS IN OUNCES)

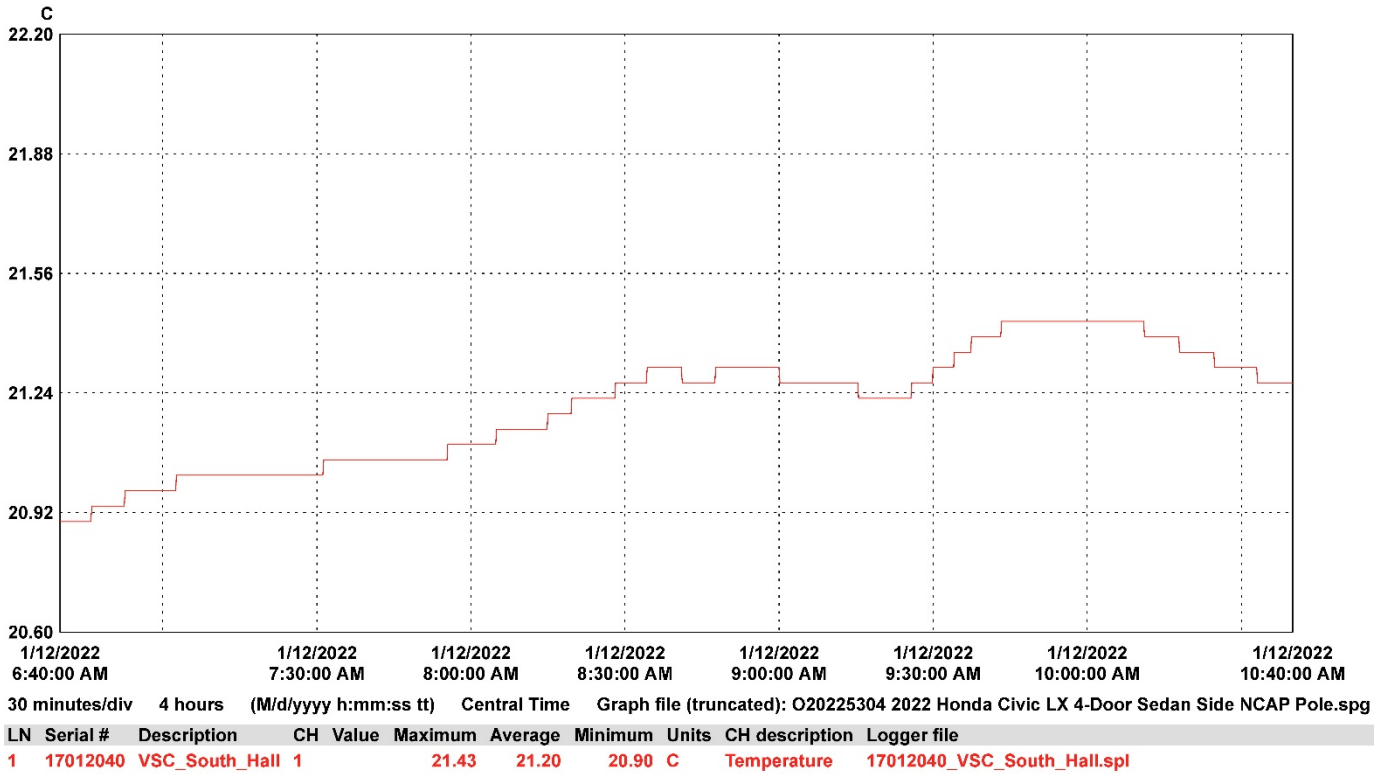
Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0° to 90°	0.0	0.0	0.0	
90° to 180°	0.0	0.0	0.0	
180° to 270°	0.0	0.0	0.0	
270° to 360°	0.0	0.0	0.0	

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: 2022 Honda Civic LX 4-Door Sedan NHTSA No.: O20225304
Test Program: NCAP Side Pole Impact Test Test Date: 1/12/2022



LN	Serial #	Description	CH	Value	Maximum	Average	Minimum	Units	CH description	Logger file
1	17012040	VSC_South_Hall	1		21.43	21.20	20.90	C	Temperature	17012040_VSC_South_Hall.spl

APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

		Page No.
Photo No. 001	As Delivered Right Front ¾ View of Test Vehicle	A-1
Photo No. 002	As Delivered Left Rear ¾ View of Test Vehicle	A-1
Photo No. 003	Pre-Test Frontal View of Test Vehicle	A-2
Photo No. 004	Post-Test Frontal View of Test Vehicle	A-2
Photo No. 005	Pre-Test Left Front ¾ View of Test Vehicle	A-3
Photo No. 006	Post-Test Left Front ¾ View of Test Vehicle	A-3
Photo No. 007	Pre-Test Left Side View of Test Vehicle	A-4
Photo No. 008	Post-Test Left Side View of Test Vehicle	A-4
Photo No. 009	Pre-Test Left Rear ¾ View of Test Vehicle	A-5
Photo No. 010	Post-Test Left Rear ¾ View of Test Vehicle	A-5
Photo No. 011	Pre-Test Rear View of Test Vehicle	A-6
Photo No. 012	Post-Test Rear View of Test Vehicle	A-6
Photo No. 013	Pre-Test Right Side View of Test Vehicle	A-7
Photo No. 014	Post-Test Right Side View of Test Vehicle	A-7
Photo No. 015	Pre-Test Overhead View of Test Area	A-8
Photo No. 016	Post-Test Overhead View of Test Area	A-8
Photo No. 017	Pre-Test Left Side View of Pole Positioned Against Side of Vehicle	A-9
Photo No. 018	Pre-Test Right Side View of Pole Positioned Against Side of Vehicle	A-9
Photo No. 019	Pre-Test Close-Up View of Impact Point Target	A-10
Photo No. 020	Post-Test Close-Up View of Impact Point Target Showing Impact Location	A-10
Photo No. 021	Pre-Test Front Close-Up View of Dummy Head and Chest	A-11
Photo No. 022	Post-Test Front Close-Up View of Dummy	A-11
Photo No. 023	Pre-Test Left Side View of Dummy Showing Belt and Chalking	A-12
Photo No. 024	Pre-Test Left Side View of Dummy Shoulder and Door Top View	A-12
Photo No. 025	Post-Test Left Side View of Dummy Shoulder and Door Top View	A-13

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

		Page No.
Photo No. 050	Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View	A-25
Photo No. 051	Post-Test Dummy Close-Up Pelvis Contact with Side Air Bag View	A-26
Photo No. 052	Post-Test Dummy Close-Up Knee Contact with Vehicle Interior View	A-26
Photo No. 053	Post-Test Right Side View of Dummy and Rear Seat of Occupant Compartment	A-27
Photo No. 054	Post-Test Inner Rear Passenger Torso Air Bag Deployment View	A-27
Photo No. 055	Pre-Test View of Fuel Filler Cap or Fuel Filler Neck	A-28
Photo No. 056	Post-Test View of Fuel Filler Cap or Fuel Filler Neck	A-28
Photo No. 057	Close-Up View of Vehicle's Certification Label	A-29
Photo No. 058	Close-Up View of Vehicle's Tire Information Placard or Label	A-29
Photo No. 059	Pre-Test Pole Barrier Front View	A-30
Photo No. 060	Post-Test Pole Barrier Front View	A-30
Photo No. 061	Pre-Test Pole Barrier Side View	A-31
Photo No. 062	Post-Test Pole Barrier Side View	A-31
Photo No. 063	Pre-Test Ballast View	A-32
Photo No. 064	Post-Test Primary and Redundant Speed Trap Read-Out	A-32
Photo No. 065	FMVSS No. 301 Static Rollover 0 Degrees	A-33
Photo No. 066	FMVSS No. 301 Static Rollover 90 Degrees	A-33
Photo No. 067	FMVSS No. 301 Static Rollover 180 Degrees	A-34
Photo No. 068	FMVSS No. 301 Static Rollover 270 Degrees	A-34
Photo No. 069	FMVSS No. 301 Static Rollover 360 Degrees	A-35
Photo No. 070	Impact Event	A-35
Photo No. 071	Monroney Label	A-36
Photo No. 072	Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-36
Photo No. 073	Post-Test View of Shattered Vehicle Inner Door Panel	A-37

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

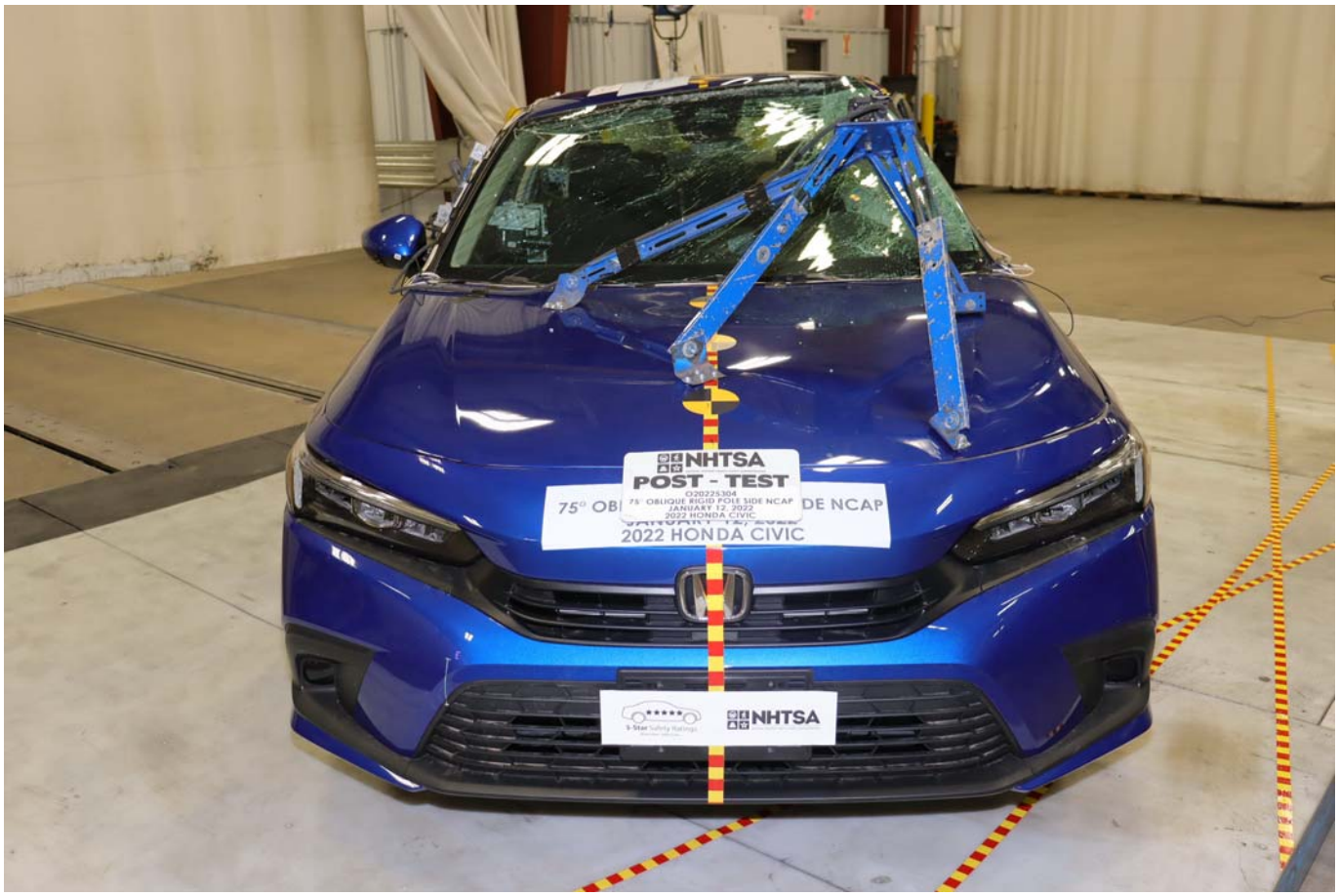


Photo No. 004 - Post-Test Frontal View of Test Vehicle

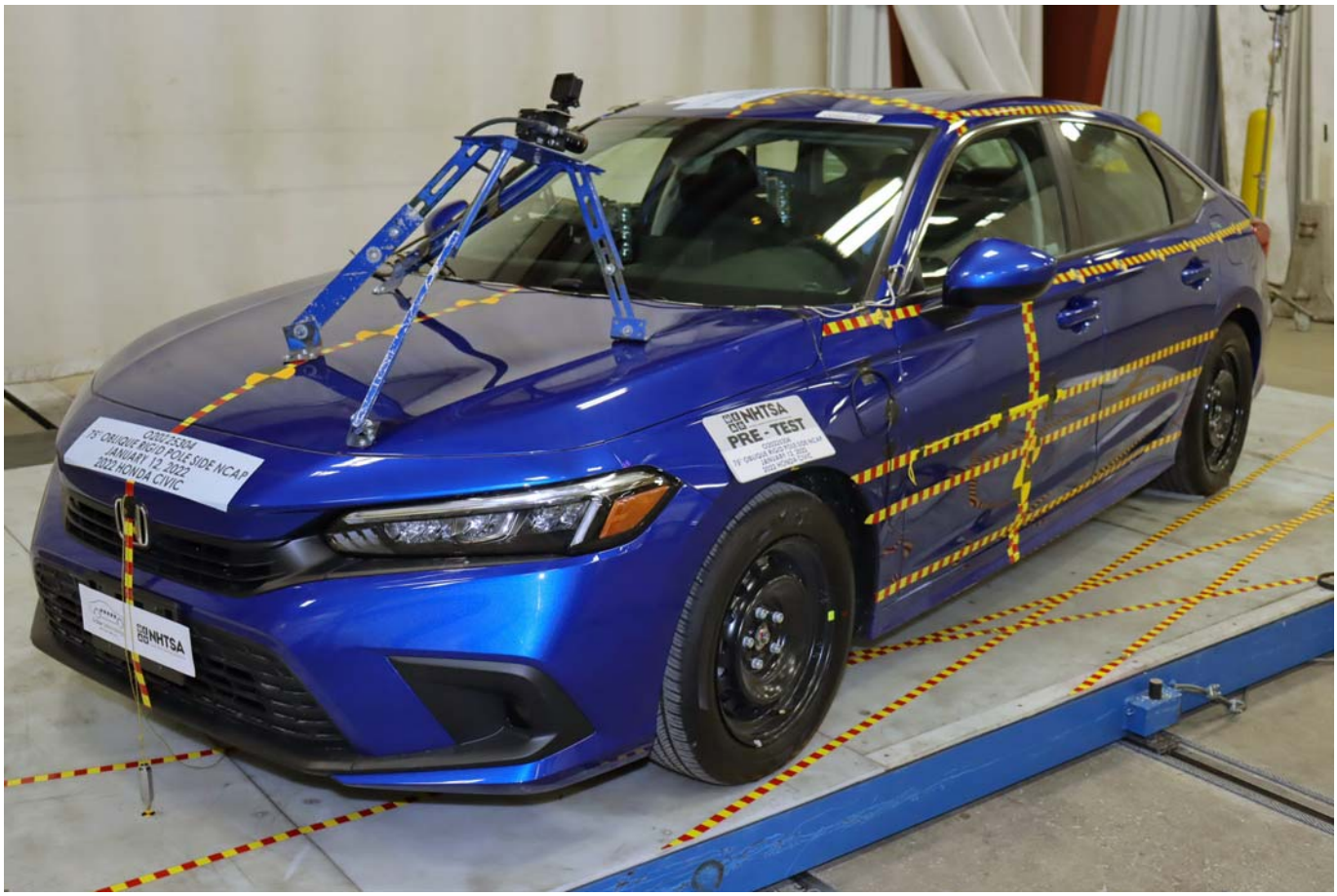


Photo No. 005 - Pre-Test Left Front Three-Quarter View of Test Vehicle

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

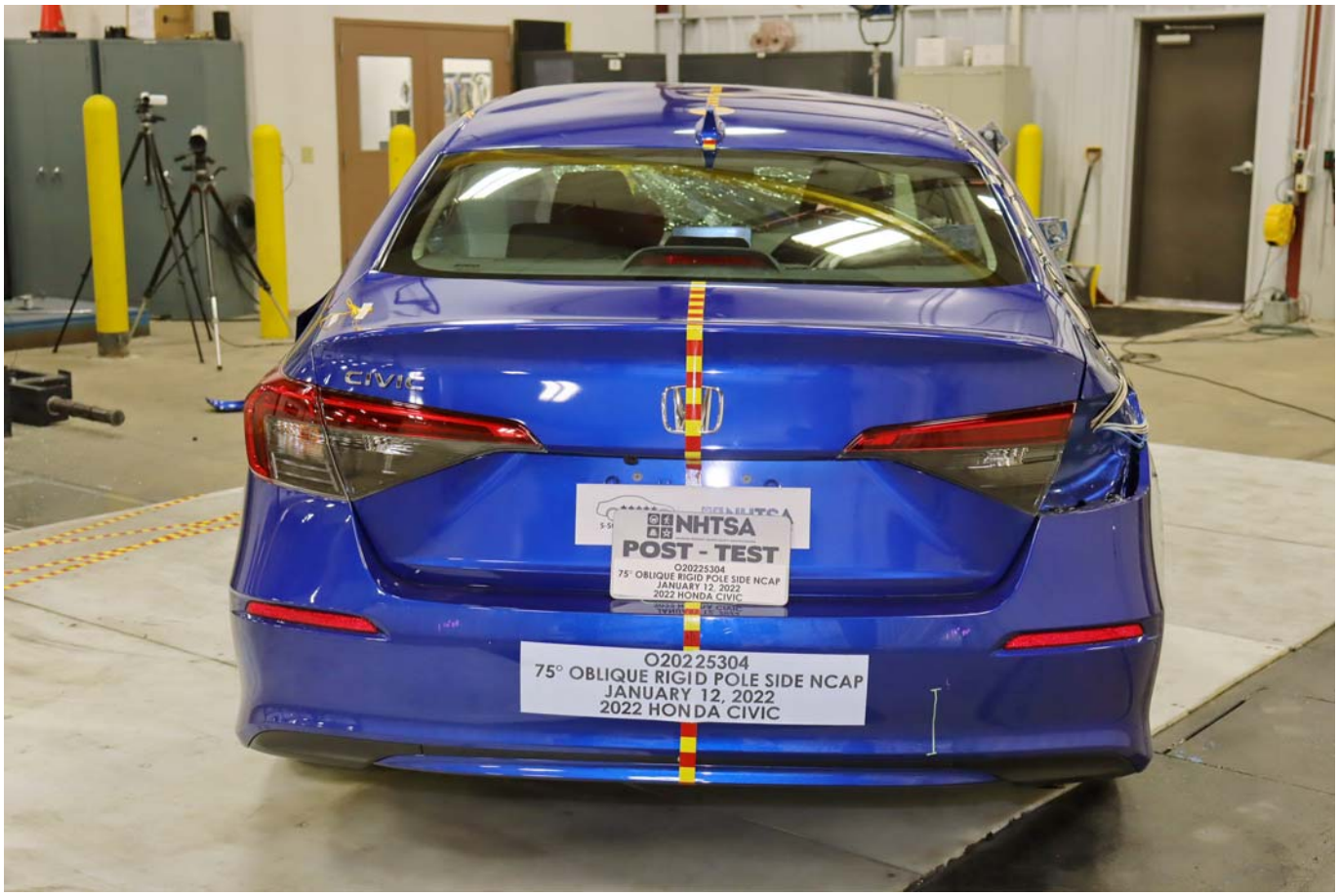


Photo No. 012 - Post-Test Rear View of Test Vehicle

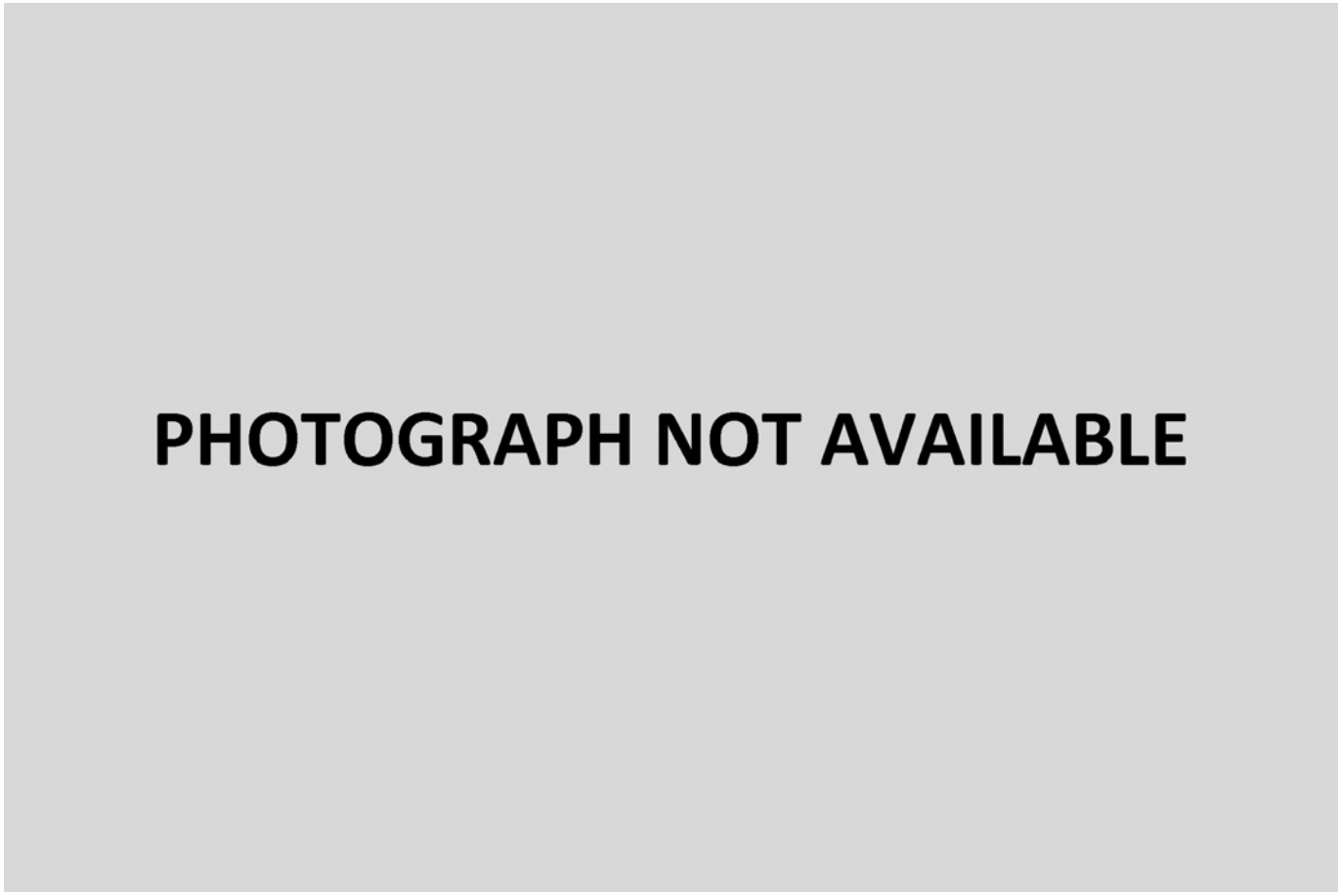


Photo No. 013 - Pre-Test Right Side View of Test Vehicle

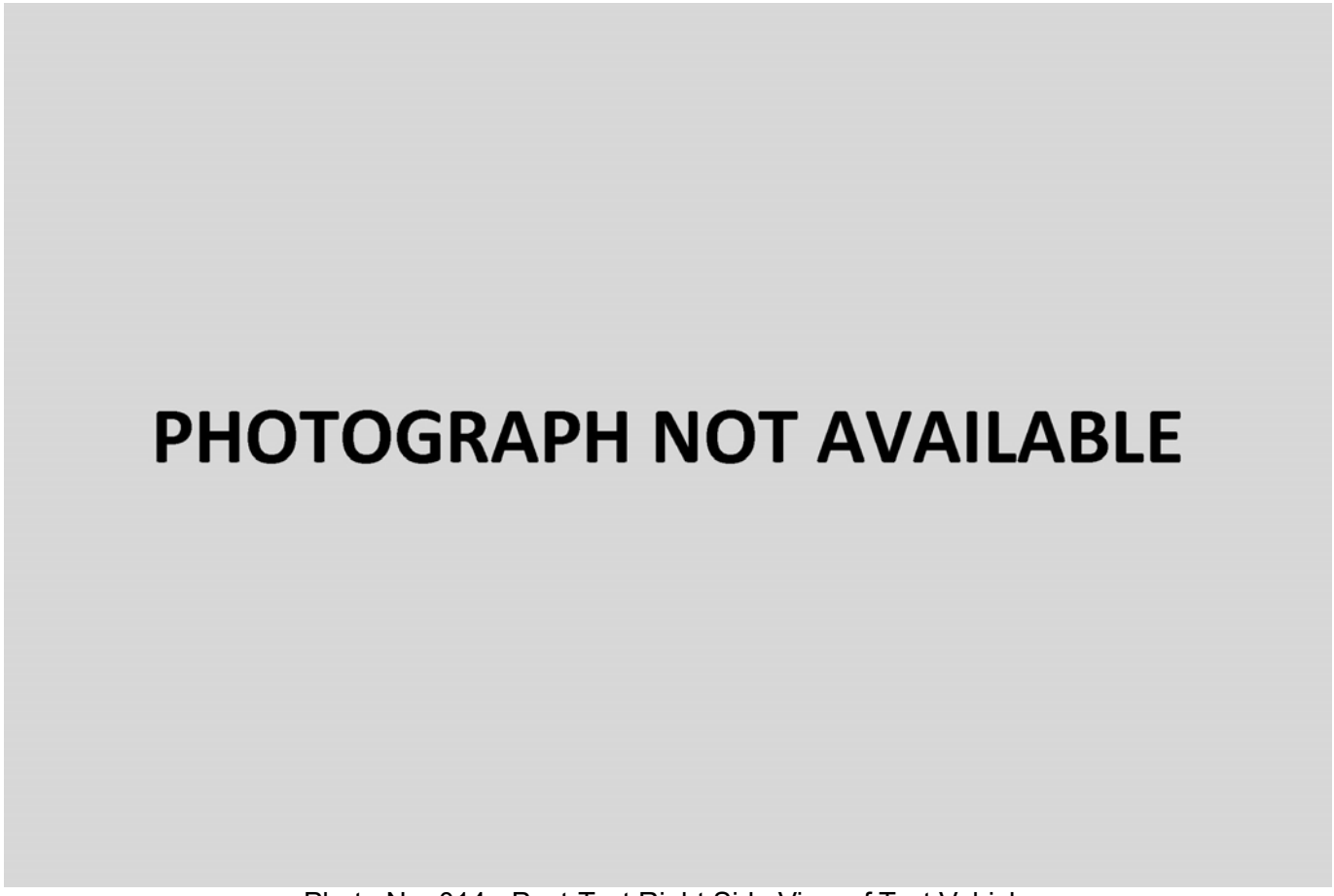


Photo No. 014 - Post-Test Right Side View of Test Vehicle

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

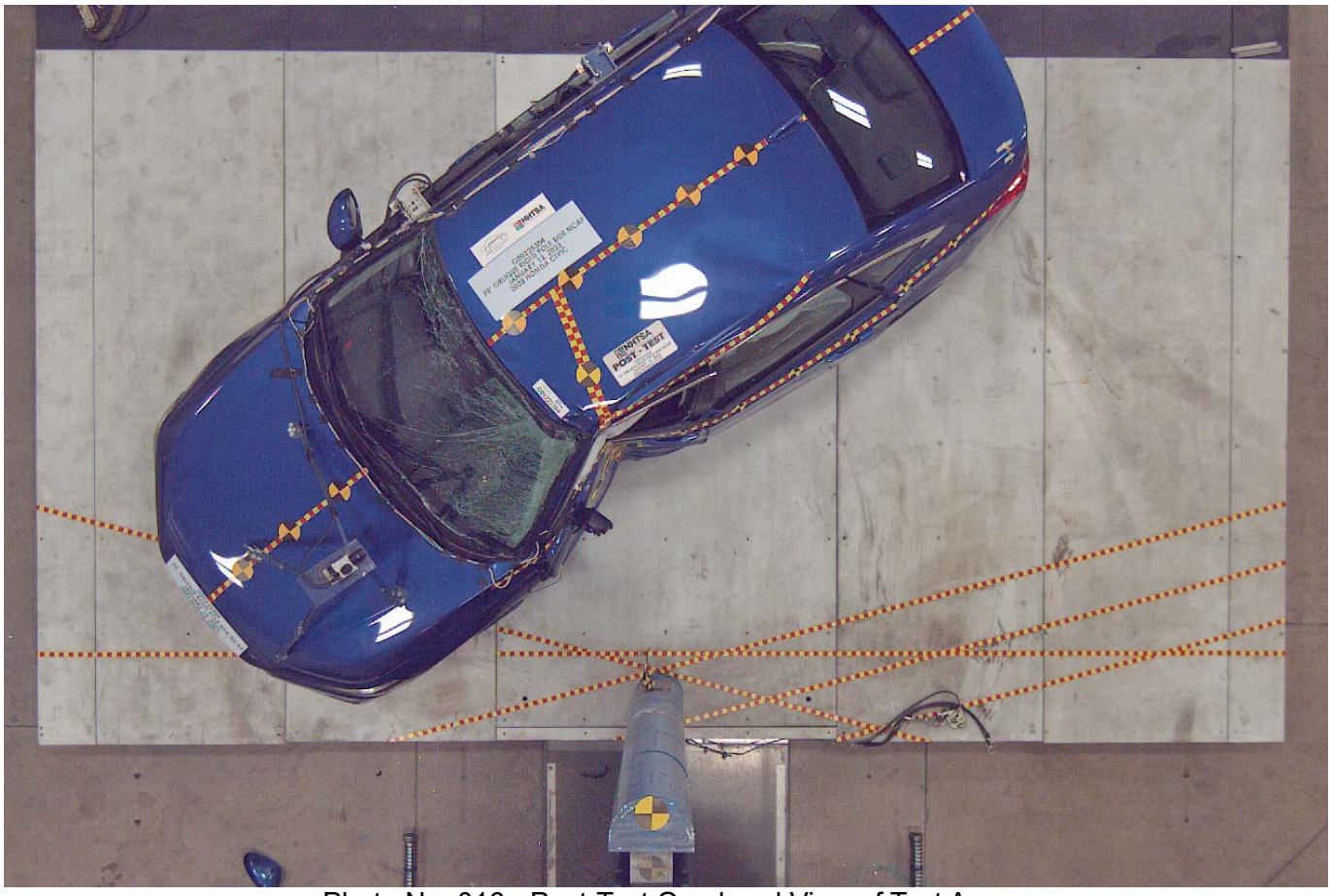


Photo No. 016 - Post-Test Overhead View of Test Area

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

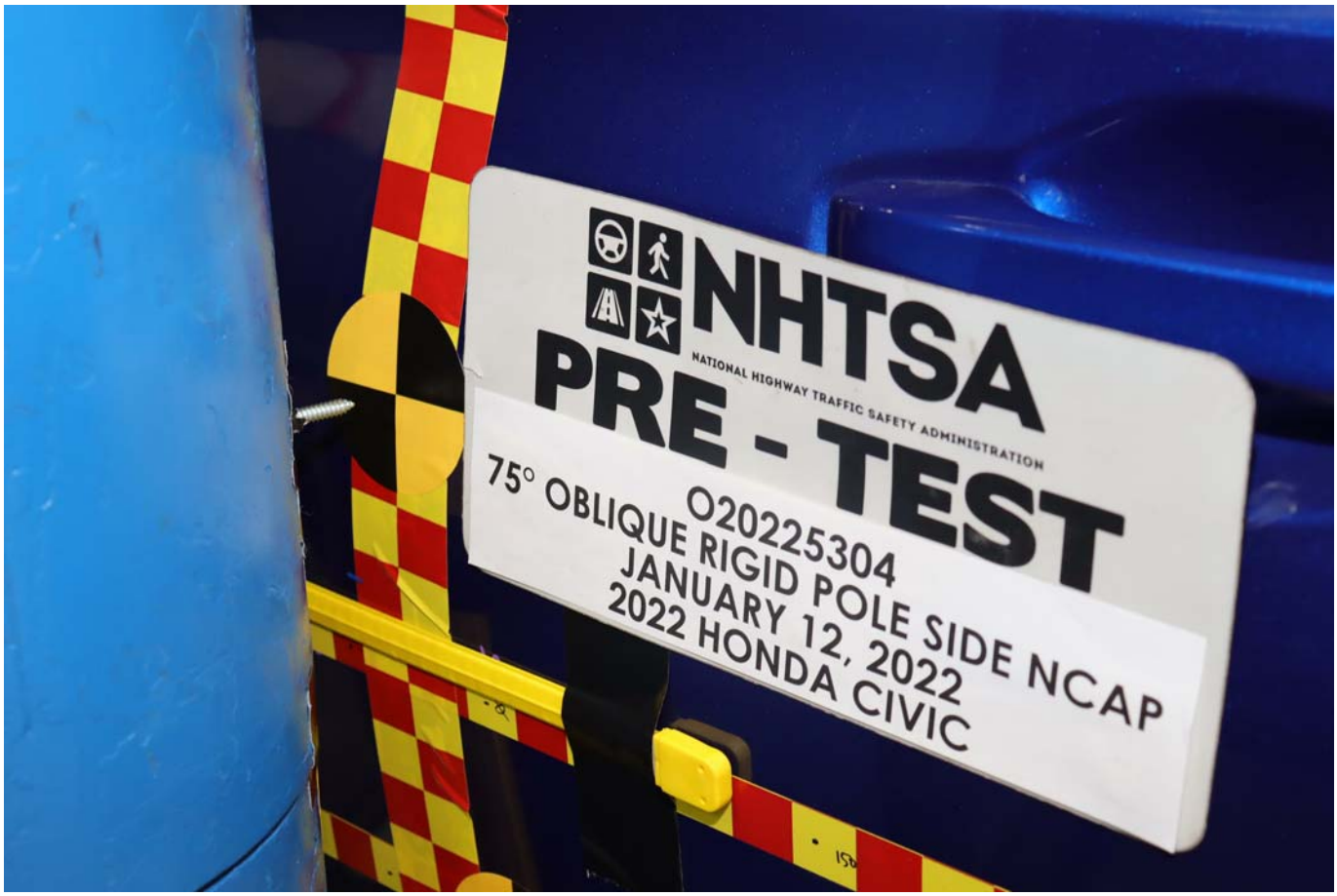


Photo No. 019 - Pre-Test Close-Up View of Impact Point Target

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

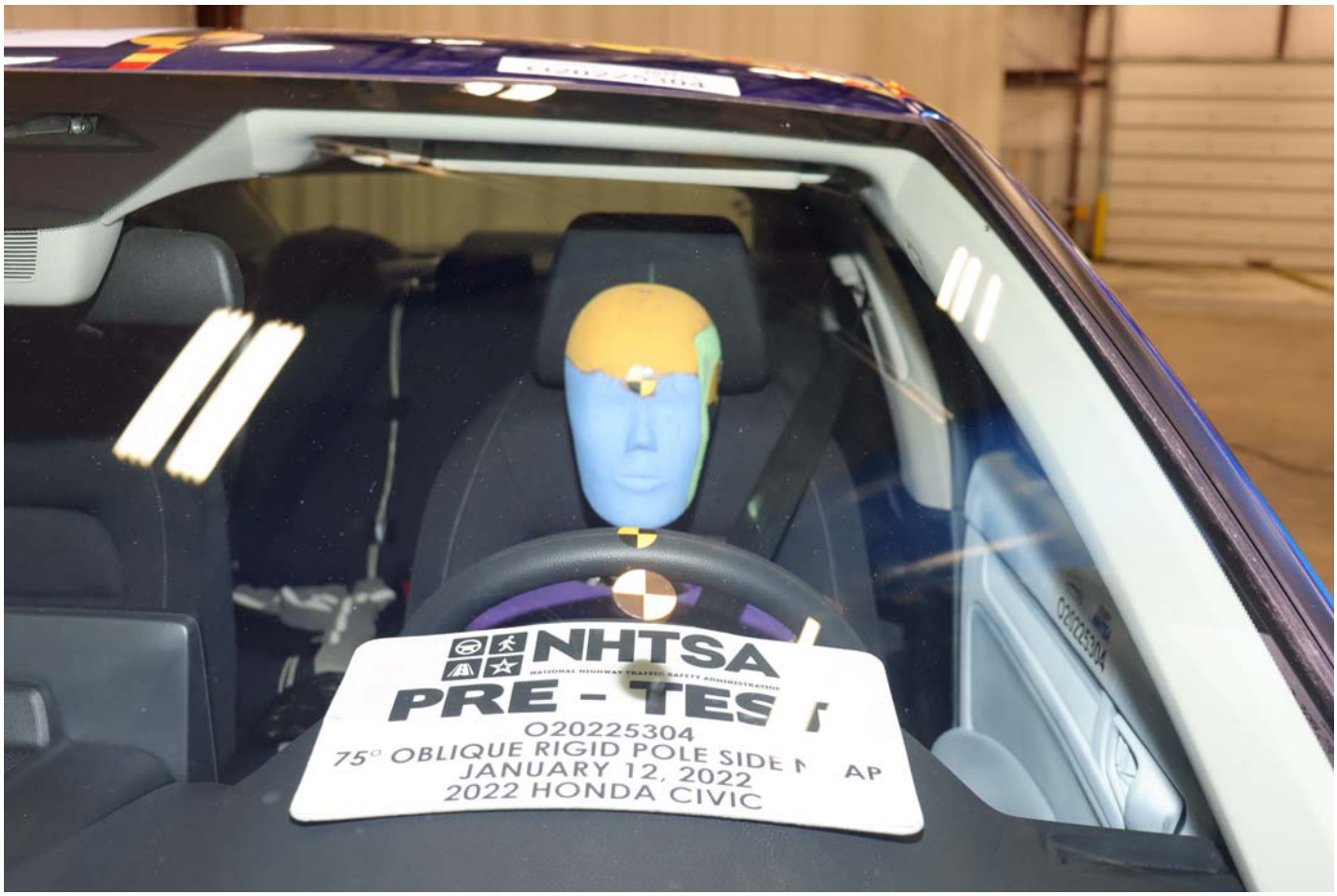


Photo No. 021 - Pre-Test Front Close-Up View of Dummy Head and Chest

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's Neck Showing Position of Adjustable Neck Bracket

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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's Certification Label

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

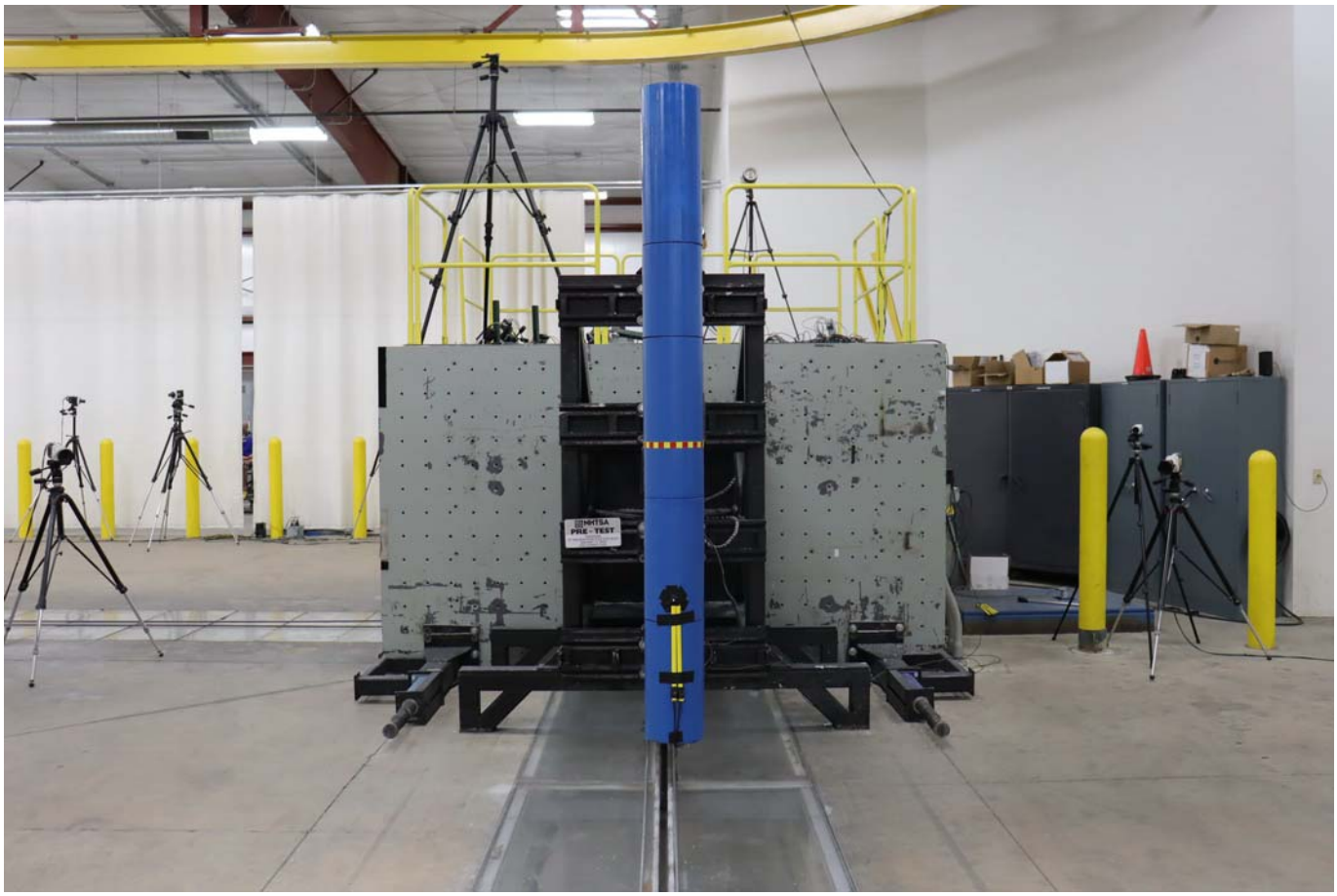


Photo No. 059 - Pre-Test Pole Barrier Front View

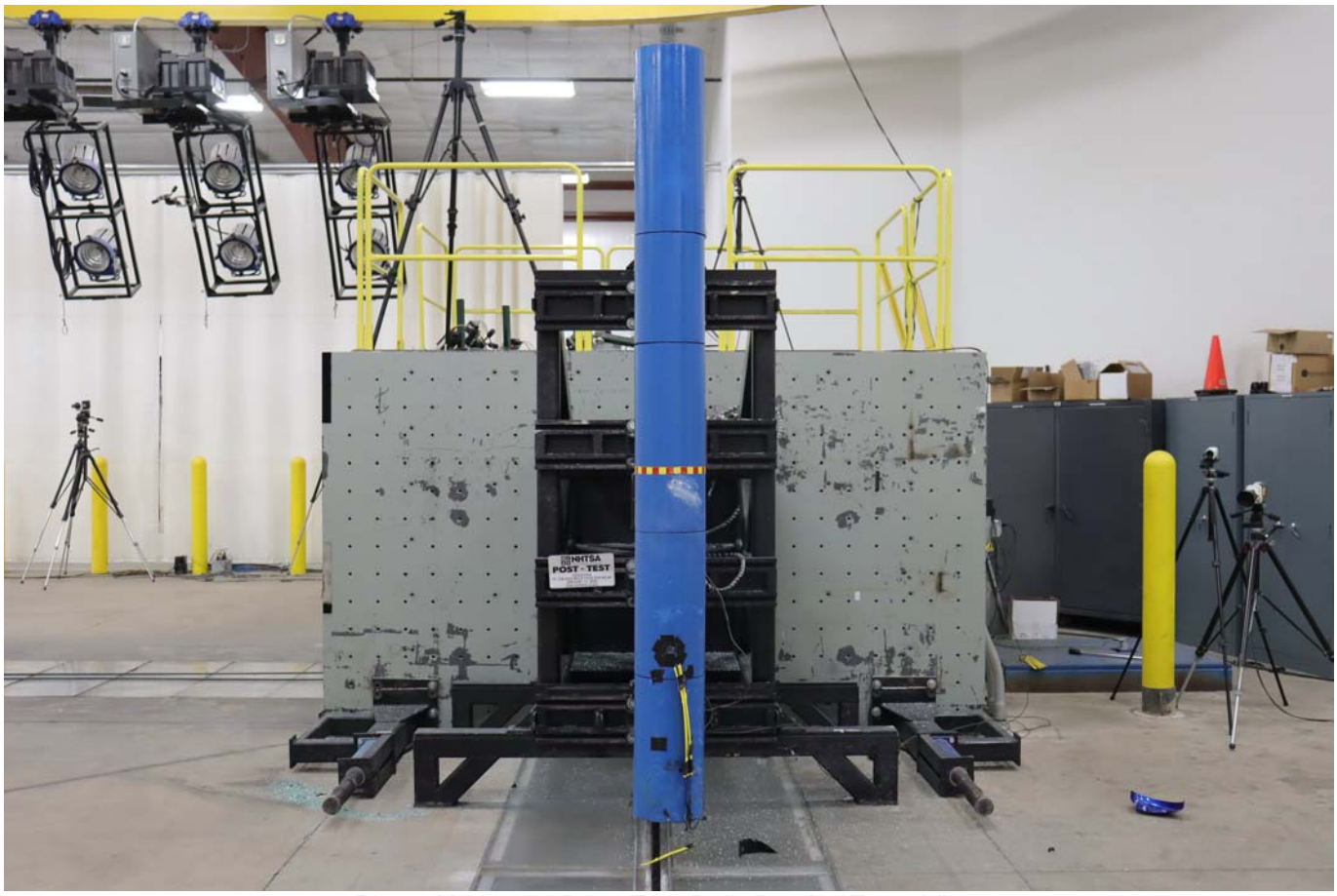


Photo No. 060 - Post-Test Pole Barrier Front View

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

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

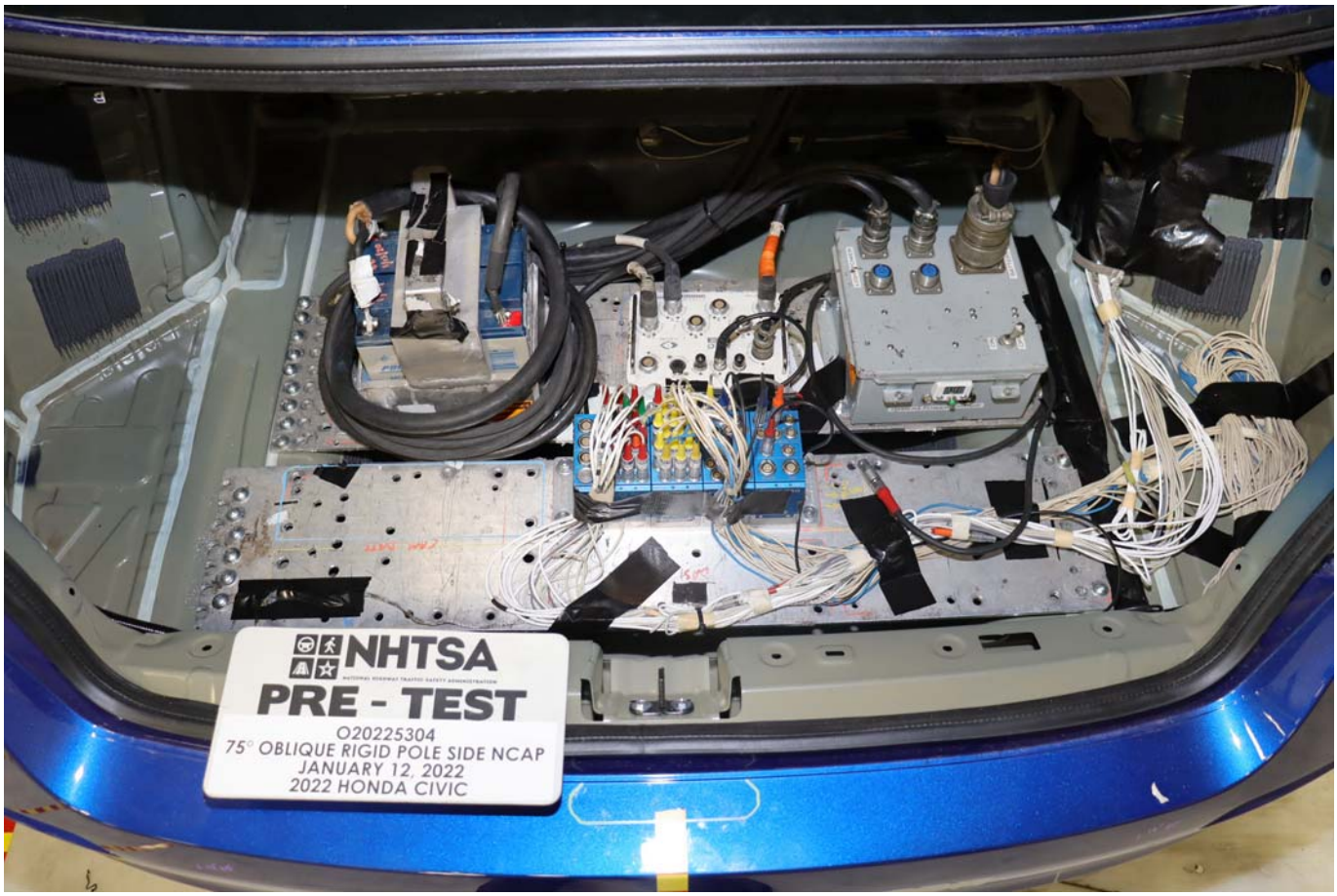


Photo No. 063 - Pre-Test Ballast View

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

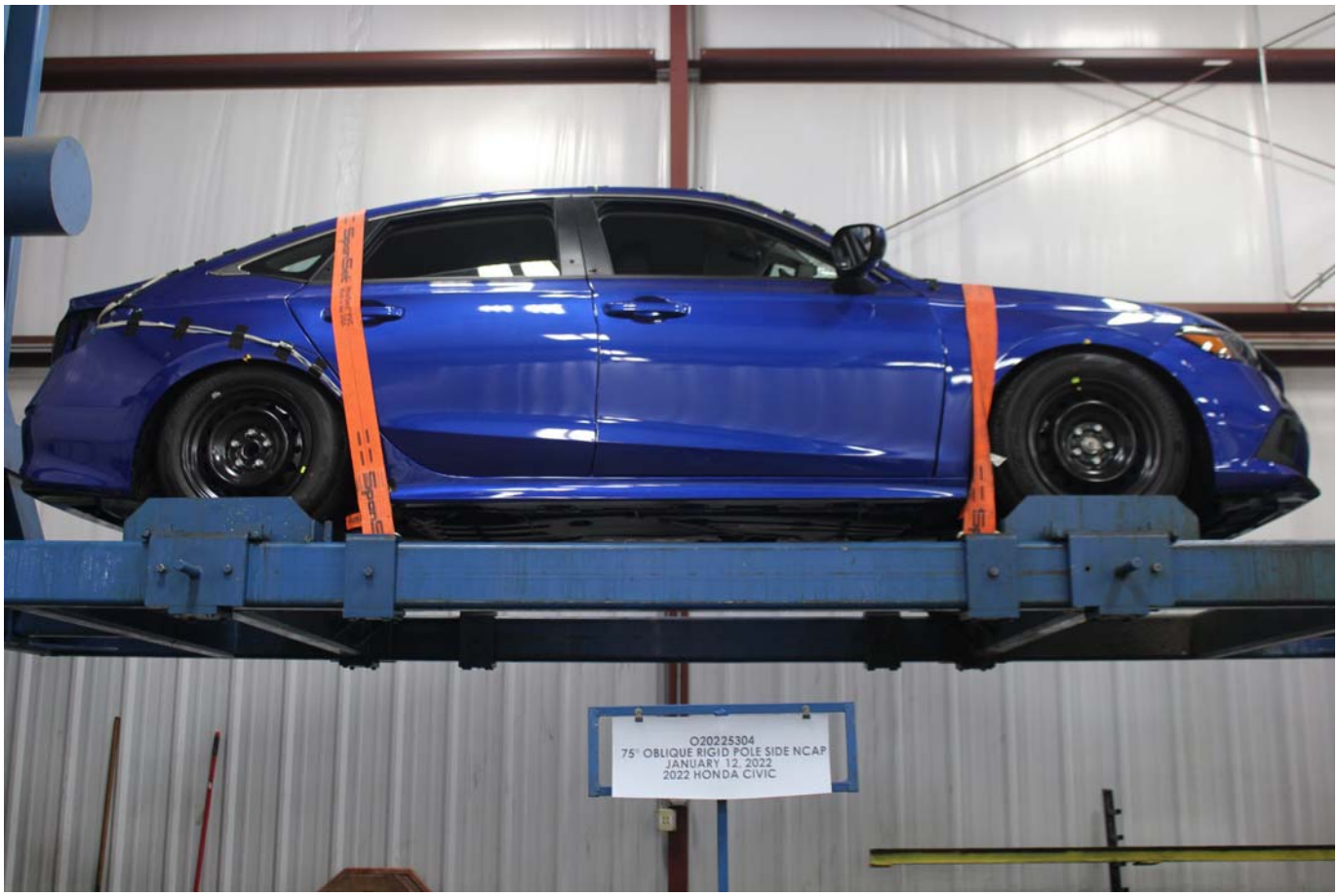


Photo No. 065 - FMVSS Photo No. 301 Static Rollover 0 Degrees

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

HONDA

2022 CIVIC 2.0L 4D LX
EXT: AEGEAN BLUE M. ENGINE NUMBER: K20C2-6171066
INT: BLACK

STANDARD EQUIPMENT AT NO EXTRA COST

* TECHNICAL FEATURES *
- 158hp 2.0-Liter 4-Cylinder Engine
- Continuously Variable Transmission (CVT)
- 4-Wheel Disc Brakes
- Front MacPherson Strut Suspension
- Rear Multi-Link Suspension
- Hill Start Assist
- Electric Power Steering

* SAFETY FEATURES *
- Driver's and Front Passenger's Airbags
- Driver's and Front Passenger's Side Airbags
- Rear Side Airbags
- Side Curtain Airbags with Rollover Sensor
- Driver's and Front Passenger's Knee Airbags
- Vehicle Stability Assist (VSA)
- Anti-Lock Braking System (ABS)
- Electronic Brake Distribution (EBD)
- Tire Pressure Monitoring System
- LED Daytime Running Lights
- LATCH System for Child Seats

* INTERIOR FEATURES *
- Audio System with 4 Speakers
- 7" Color Touchscreen with Multi-View Rear Camera
- Apple CarPlay/Android Auto Integration
- Driver Attention Monitor
- Bluetooth HandsFreeLink
- USB Audio Interface
- Push-Button Start
- Automatic Climate Control System with Air Filtration System
- Driver's Seat Height Adjustment
- Front Center Console with Armrest
- Fold-Down Rear Seatback
- Power Windows and Door Locks
- Front Auto Up/Down Windows
- Tilt & Telescopic Steering Column
- Electric Parking Brake
- 12-Volt Power Outlet
- Floor Mats

* EXTERIOR FEATURES *
- 16" Steel Wheels with Full Wheel Covers
- 215/55 R16 All-Season Tires
- Auto High-Beam
- Auto-On/Off Headlights
- Intermittent Windshield Wipers
- Power Door Mirrors
- LED Headlights & Taillights
- Capless Fuel Filler
- Remote Entry with Security System

* HONDA SENSING *
- Adaptive Cruise Control (ACC)
- Collision Mitigation Braking System (CMBS)
- Lane Keeping Assist System (LKAS)
- Road Departure Mitigation (RDM)
- Traffic Jam Assist

Manufacturer's Suggested Retail Price $21,900.00

Full Tank of Fuel No Charge

-Honda Roadside Assistance
3YR/36K Mile Warranty Term

Destination and Handling 1,015.00

TOTAL VEHICLE PRICE
(includes Pre-Delivery Service)
$22,915.00

License and title fees, state and local taxes and dealer options and accessories are not included in the manufacturer's suggested retail price.

SPORT HONDA
3110 AUTOMOBILE BLVD.
SILVER SPRING, MD 20904

VIN: 2HGFE2F2XNH548527

PORT OF ENTRY: BUFFALO
DELIVERY POINT: JERSEY
SHIP#:
ROW/SPACE: 437-015
TRANS.METHOD: L40 ANNAPOLIS JCT

ORIG. DLR: 206772
REF.NO: 42415
HN CODE: HN-0564
EMISSION: 50 STATE
CONTROL NO: 849661
DEALER: 206772

EPA DOT Fuel Economy and Environment — Gasoline Vehicle

Fuel Economy
35 MPG
combined city/hwy
31 city
40 highway
2.9 gallons per100 miles

Midsize cars range from 14 to 142 MPG.
The best vehicle rates 142 MPGe.

You save $1,500 in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost $1,000

Fuel Economy & Greenhouse Gas Rating (tailpipe only) 7 (1 Best, 10)
Smog Rating (tailpipe only) 7 (1 Best, 10)

This vehicle emits 254 grams CO^2 per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also create emissions; learn more at fueleconomy.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 $6,500 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at $2.35 per gallon. MPGe is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fueleconomy.gov
Calculate personalized estimates and compare vehicles

Smartphone QR Code ™

PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS CARLINE
U.S./Canadian Parts Content: 60 %

NOTE: Parts content does not include final assembly, distribution or other non-parts costs.

FOR THIS VEHICLE
Final Assembly Point:
ALLISTON, ONTARIO CANADA
Country of Origin: Engine:
U.S.A
Transmission:
MEXICO

GOVERNMENT 5-STAR SAFETY RATING

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

Side Crash — Front seat: Not Rated; Rear seat: 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

This vehicle is equipped with bumpers that can withstand an impact of 2.5 miles per hour with no damage to the vehicle's body and safety systems, although the bumper and related components may sustain damage. The bumper system on this vehicle conforms to the current federal bumper standard of 2.5 miles per hour.

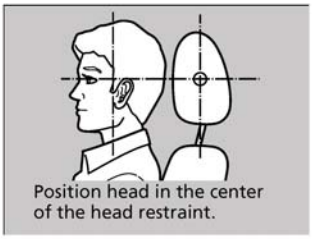
Photo No. 071 - Monroney Label

Head Restraints

Your vehicle is equipped with head restraints in all seating positions.

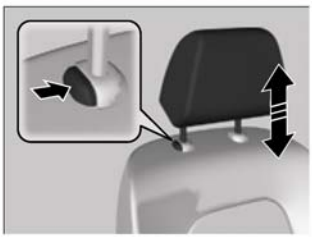
Continuously variable transmission models

Adjusting the Front Head Restraints



Position head in the center of the head restraint.

Head restraints are most effective for protection against whiplash and other rear-impact crash injuries when the center of the back of the occupant's head rests against the center of the restraint. The tops of the occupant's ears should be level with the center height of the restraint.



To raise the head restraint:
Pull it upward.
To lower the head restraint:
Push it down while pressing the release button.

Adjusting the Front Head Restraints

⚠WARNING

Improperly positioning head restraints reduces their effectiveness and increases the likelihood of serious injury in a crash.

Make sure head restraints are in place and positioned properly before driving.

In order for the head restraint system to work properly:
- Do not hang any items on the head restraints, or from the restraint legs.
- Do not place any objects between an occupant and the seat-back.
- Install each restraint in its proper location.

Photo No. 072 - Head Restraint Use and Adjustment Information from Vehicle Owner's 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

		Page No.
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)

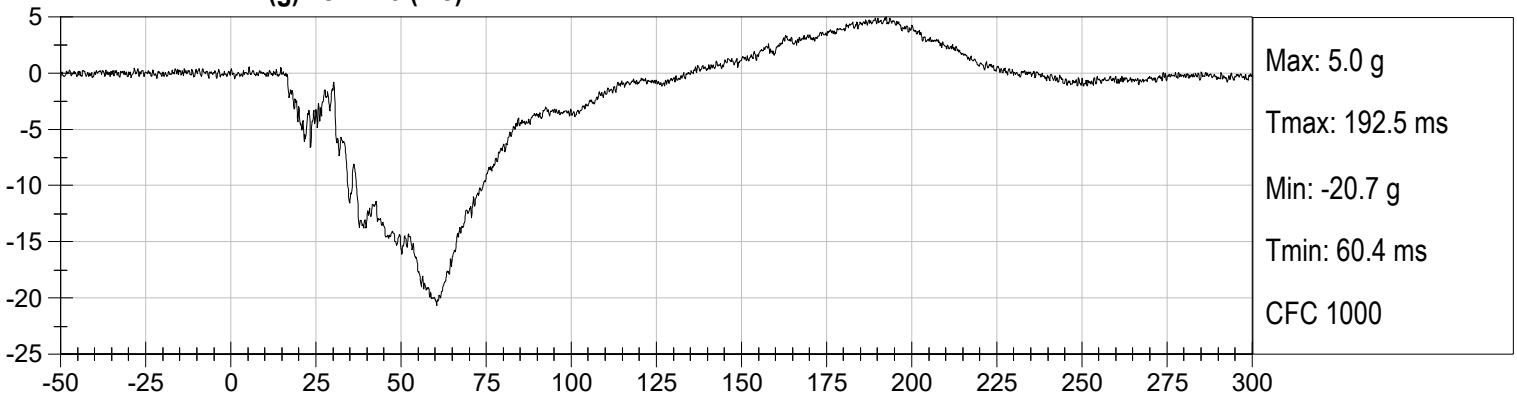
Load Cell Pole Barrier #5 Force (Y)

Load Cell Pole Barrier #6 Force (Y)

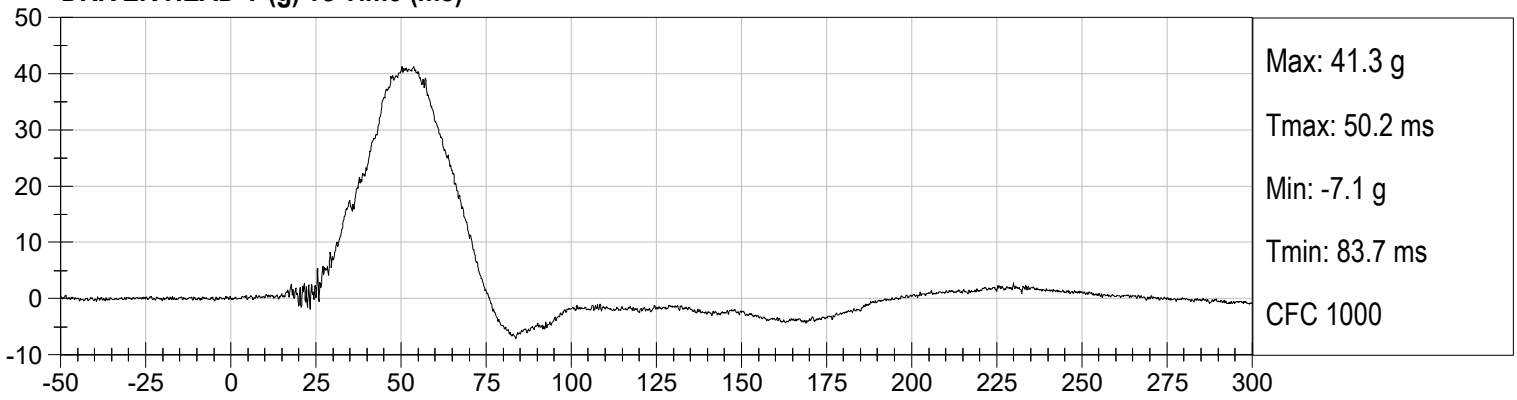
Load Cell Pole Barrier #7 Force (Y)

Load Cell Pole Barrier #8 Force (Y)

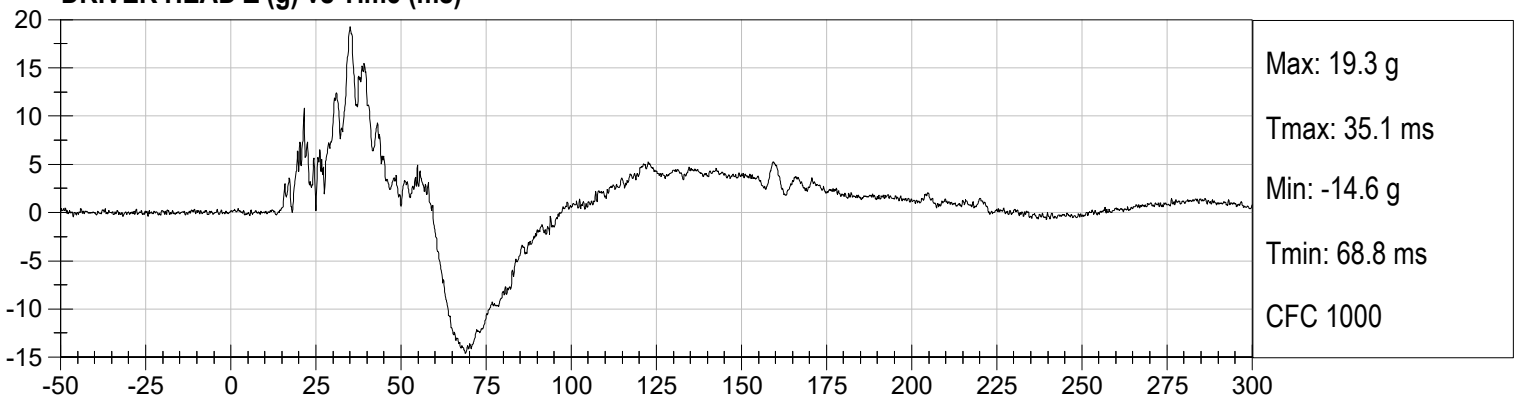
DRIVER HEAD X (g) vs Time (ms)



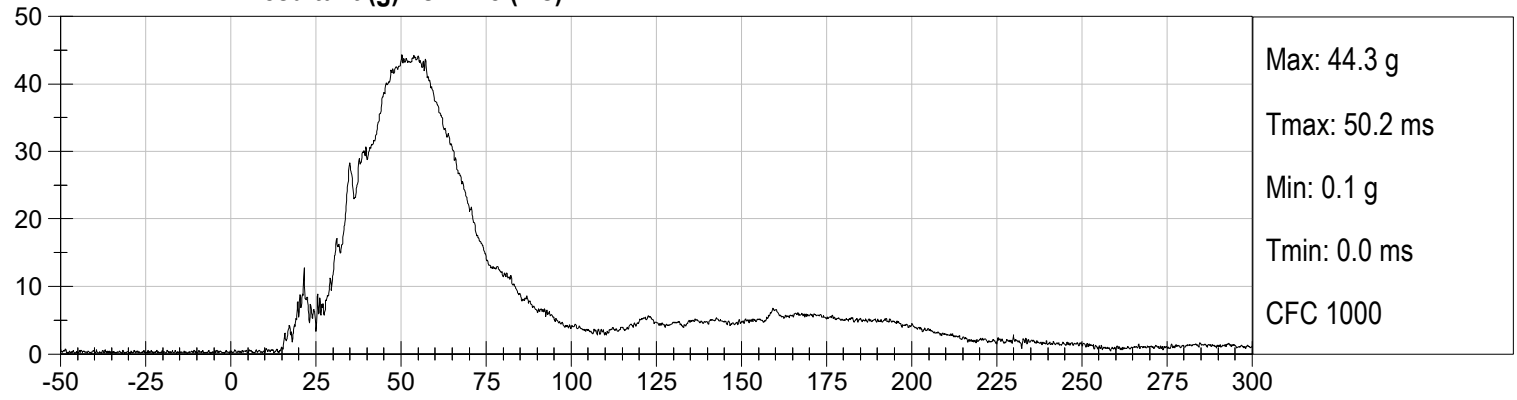
DRIVER HEAD Y (g) vs Time (ms)



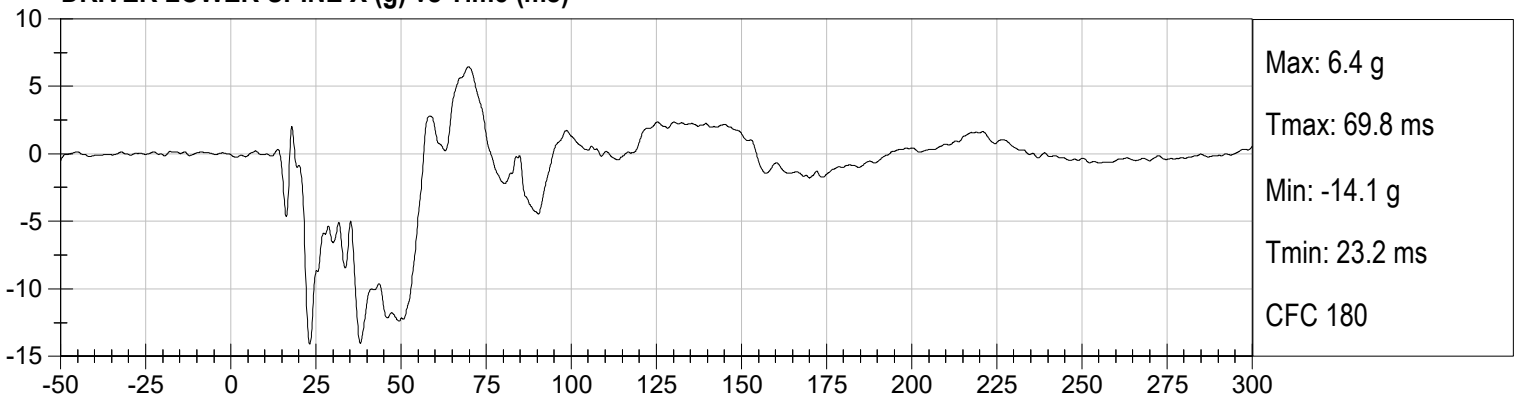
DRIVER HEAD Z (g) vs Time (ms)



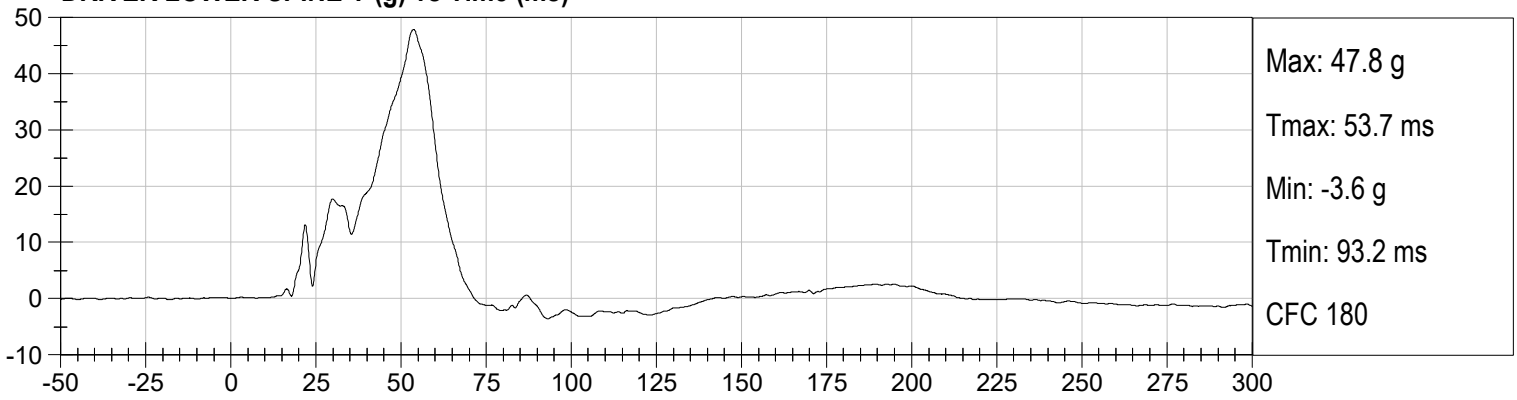
DRIVER HEAD Resultant (g) vs Time (ms)



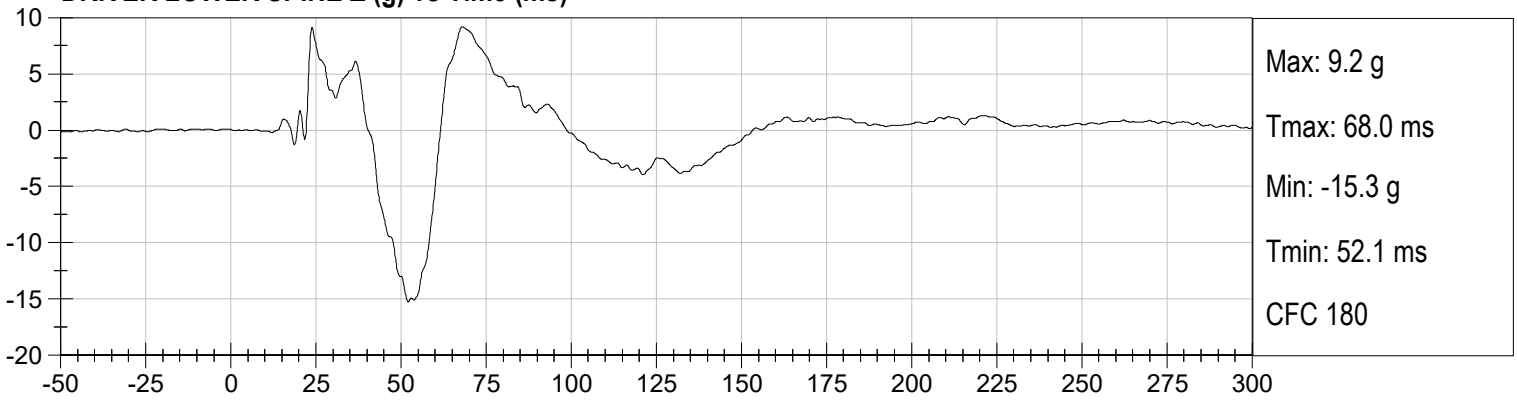
DRIVER LOWER SPINE X (g) vs Time (ms)



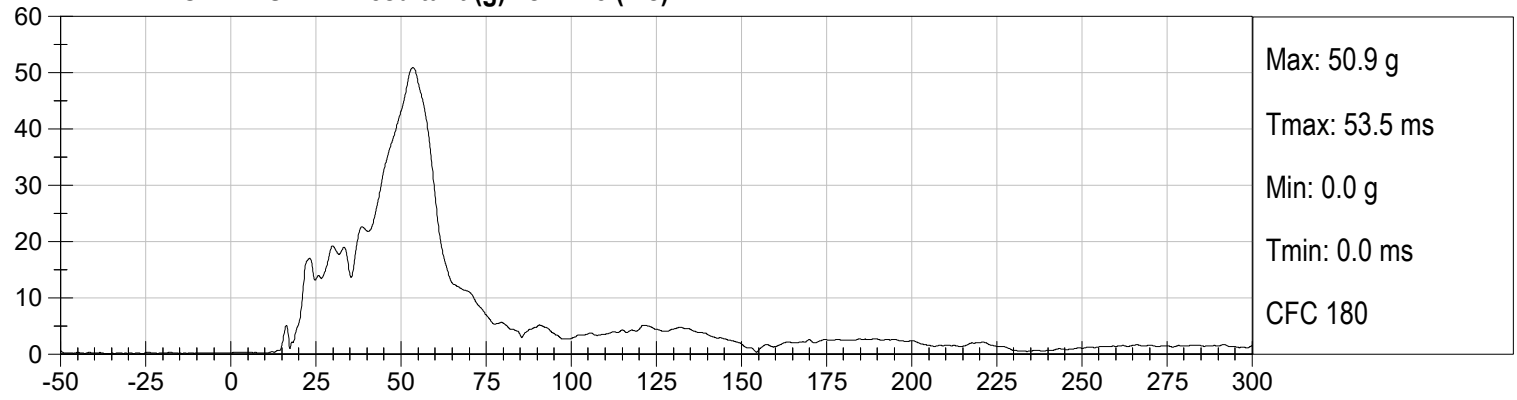
DRIVER LOWER SPINE Y (g) vs Time (ms)



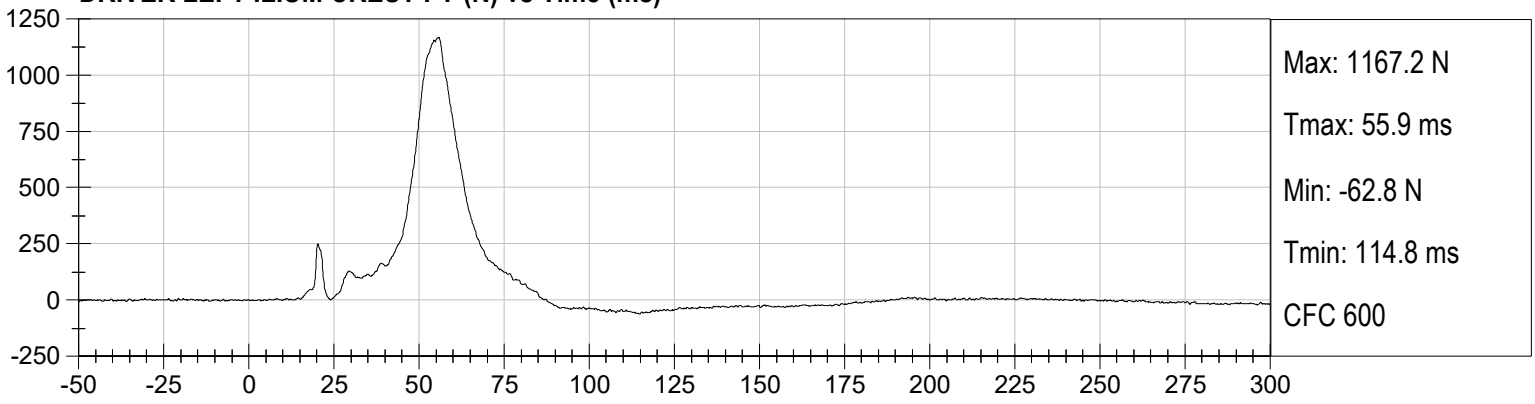
DRIVER LOWER SPINE Z (g) vs Time (ms)



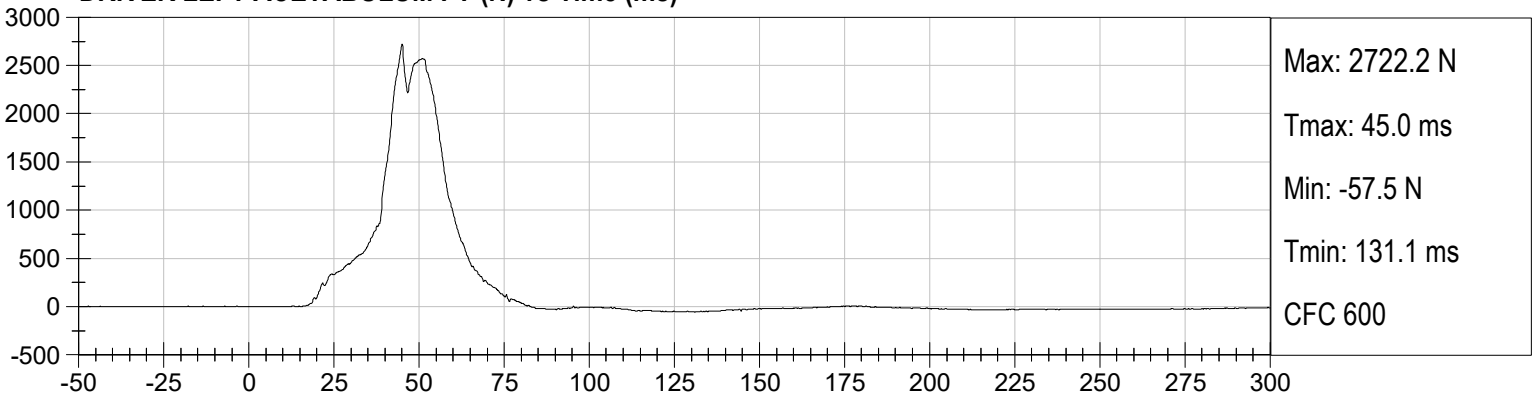
DRIVER LOWER SPINE Resultant (g) vs Time (ms)



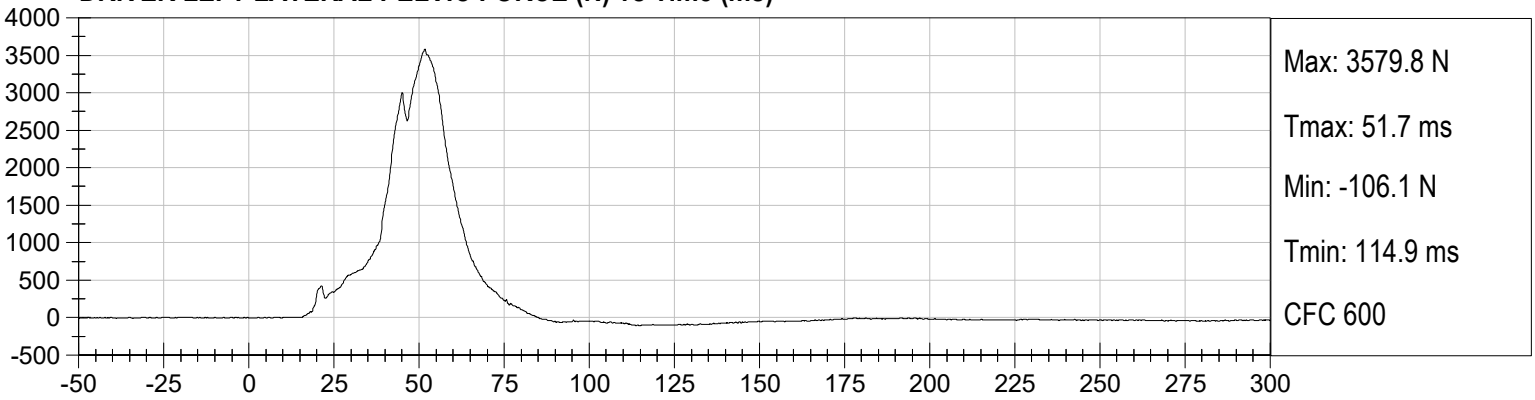
DRIVER LEFT ILIUM CREST FY (N) vs Time (ms)



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: 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:** D213661

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	25.4	Pass
Peak Resultant Acceleration	G's	115 to 137	122	Pass
Peak Longitudinal Acceleration	G's	+/- 15	-8.2	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	<15%	Yes	Pass
		Overall Test Results		Pass

Laboratory Technician

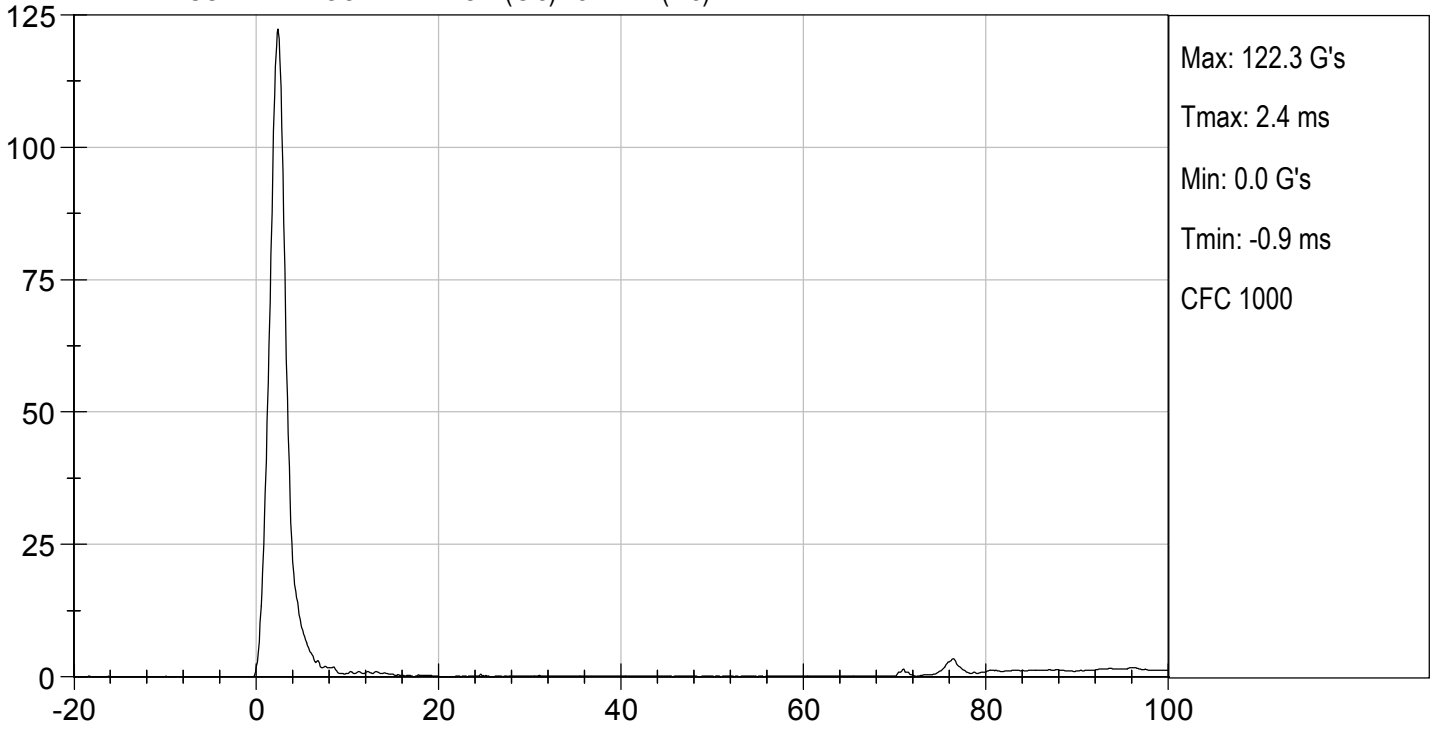
12/01/2021
Test Date

Approved By

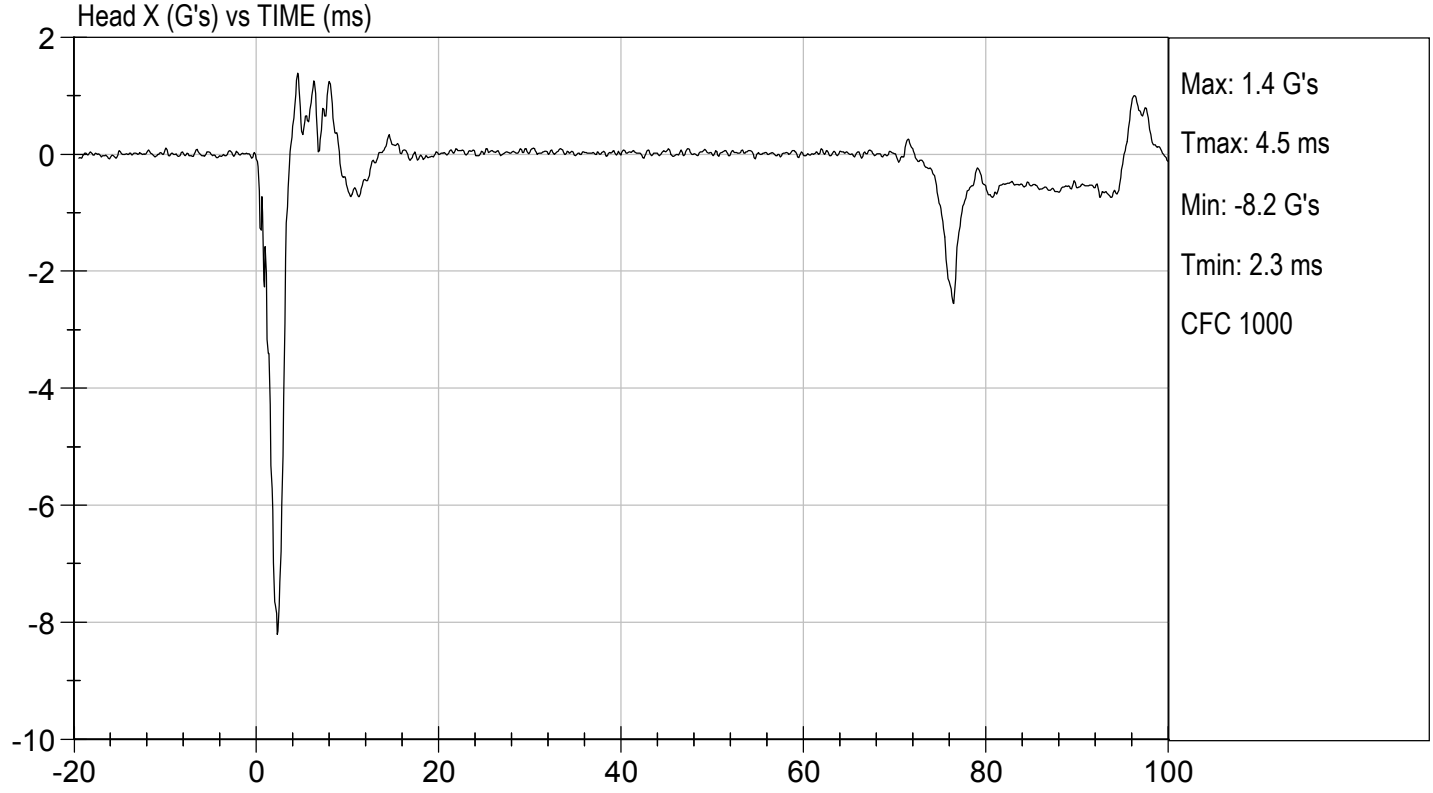
TEST DESC: HEAD DROP

TEST DATE: 12/01/2021
TEST #: D213661

HEAD RESULTANT ACCELERATION (G's) vs TIME (ms)

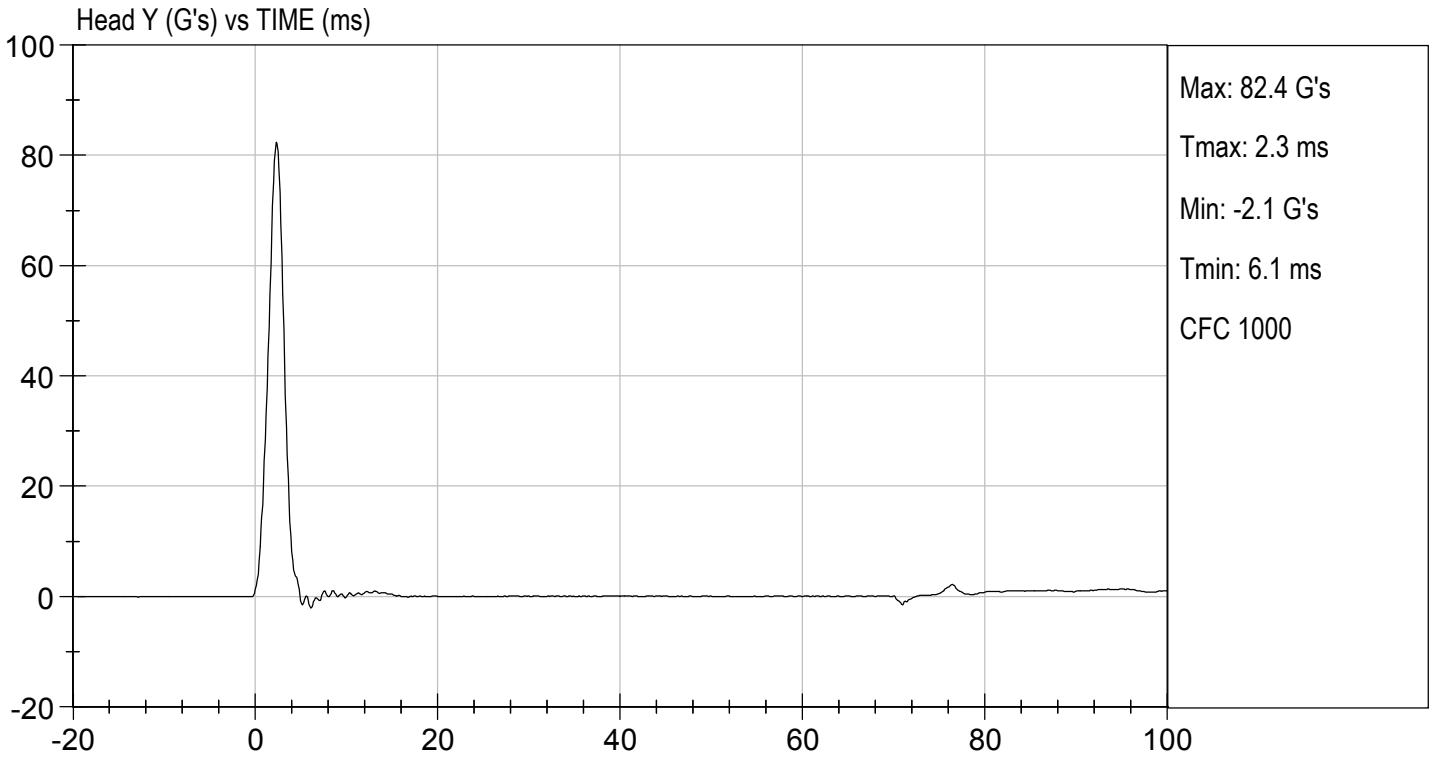


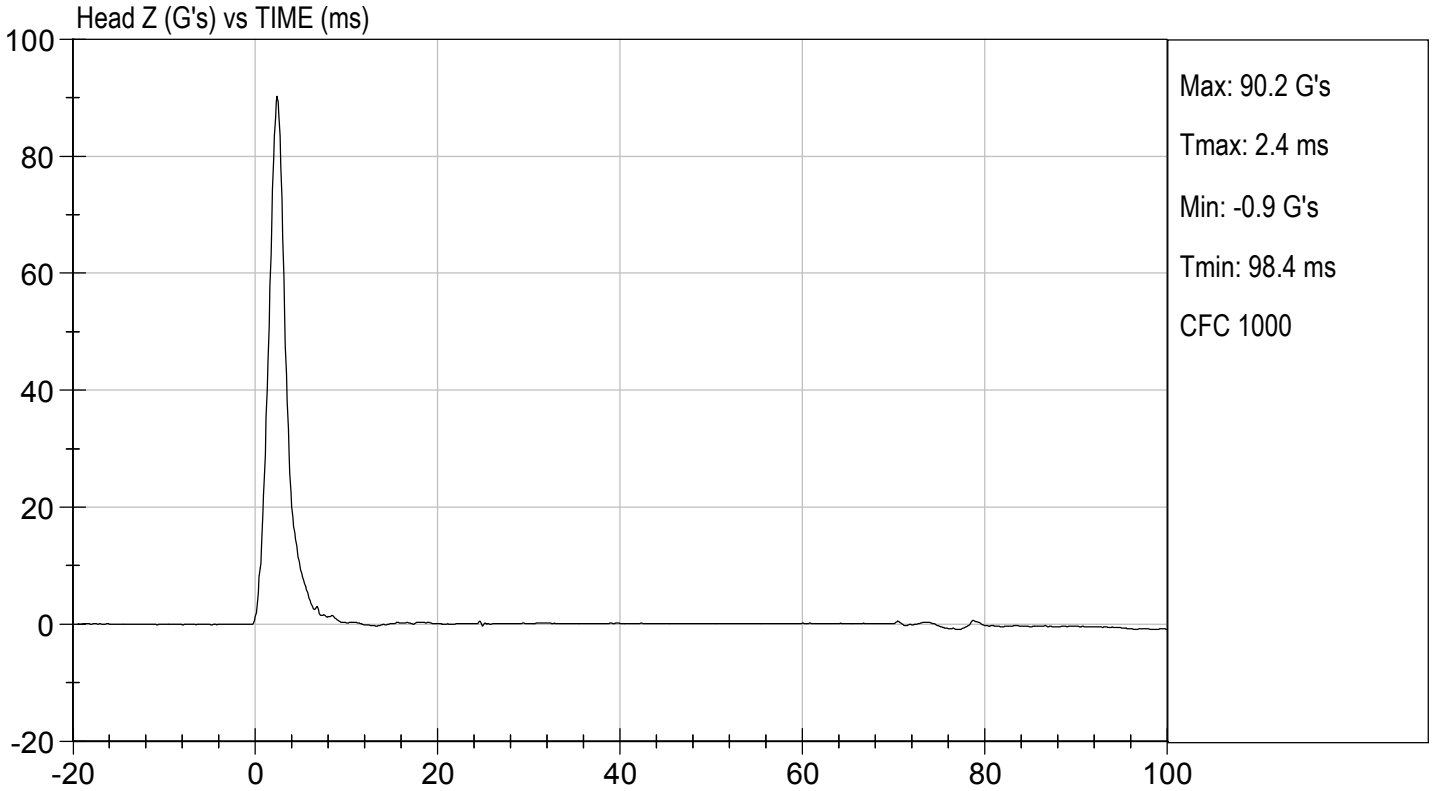
Head X (G's) vs TIME (ms)



TEST DESC: HEAD DROP

TEST DATE: 12/01/2021
TEST #: D213661





MGA RESEARCH CORPORATION

LATERAL NECK PENDULUM TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D213662

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	21.2	Pass
Humidity		%	10 to 70	30	Pass
Impact Velocity		m/s	5.51 to 5.63	5.52	Pass
Pendulum Velocity	10 ms	m/s	2.20 to 2.80	2.42	Pass
	15 ms	m/s	3.30 to 4.10	3.59	Pass
	20 ms	m/s	4.40 to 5.40	5.03	Pass
	25 ms	m/s	5.40 to 6.10	5.68	Pass
	25-100 ms	m/s	5.50 to 6.20	5.69	Pass
Maximum D-Plane Rotation		deg	71 to 81	74	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	64	Pass
Maximum Occipital Condyle Moment		Nm	-44 to -36	-36	Pass
Time of Moment Decay to 0 Nm		ms	102 to 126	120	Pass
			Overall Test Results		Pass

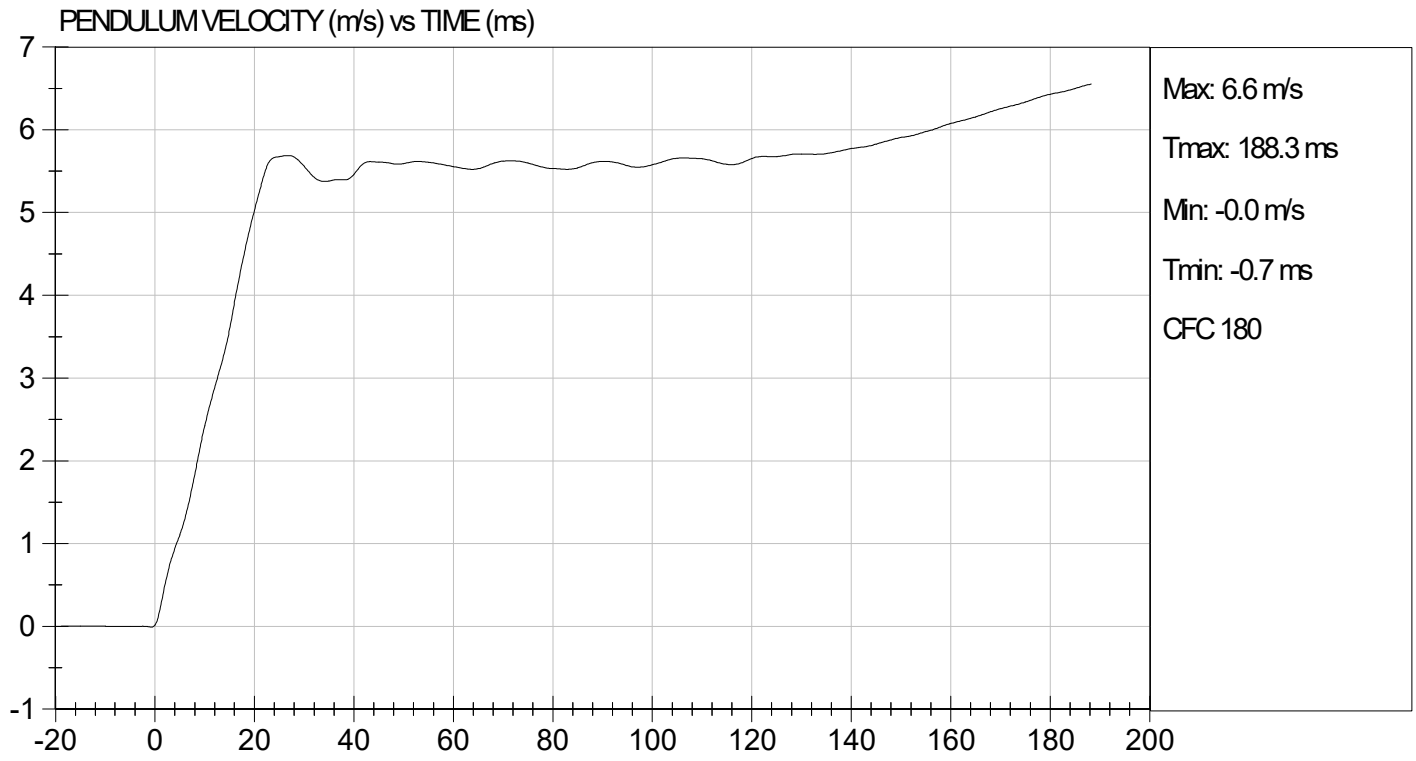
Laboratory Technician

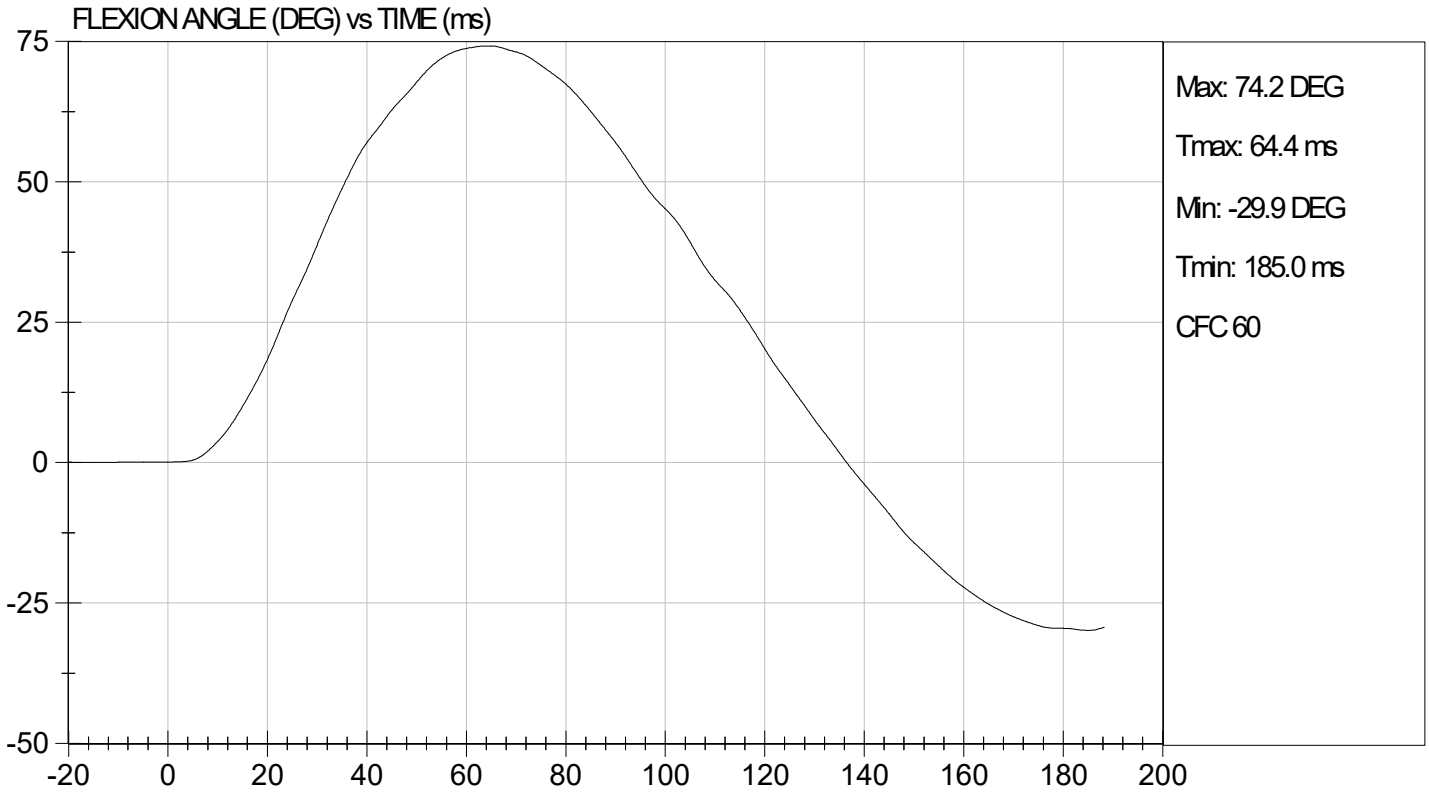
12/03/2021
Test Date

Approved By

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

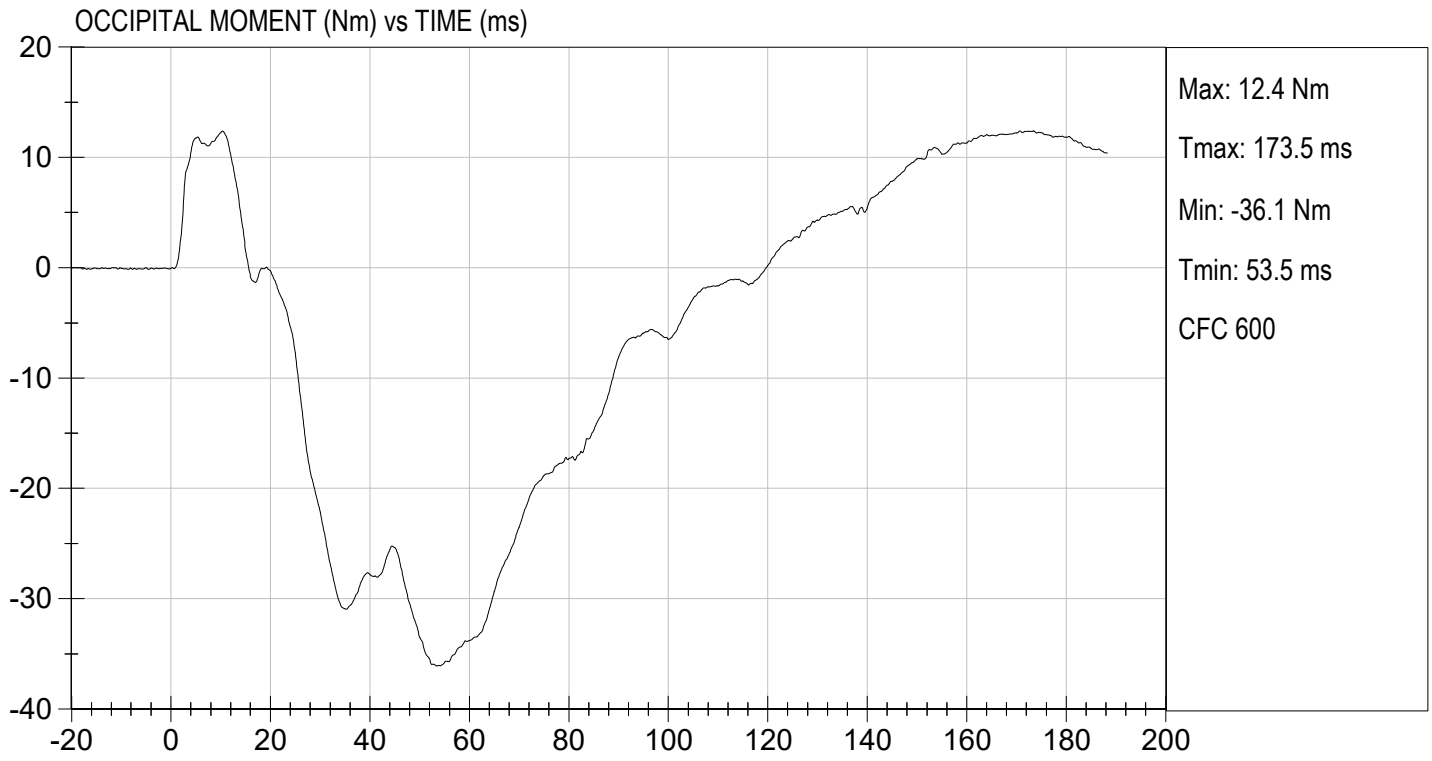
TEST DATE: 12/03/2021
TEST #: D213662





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

TEST DATE: 12/03/2021
TEST #: D213662



MGA RESEARCH CORPORATION

SHOULDER IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test ID:** D213663

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	24	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	29	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	20	Pass
		Overall Test Results		Pass

Laboratory Technician

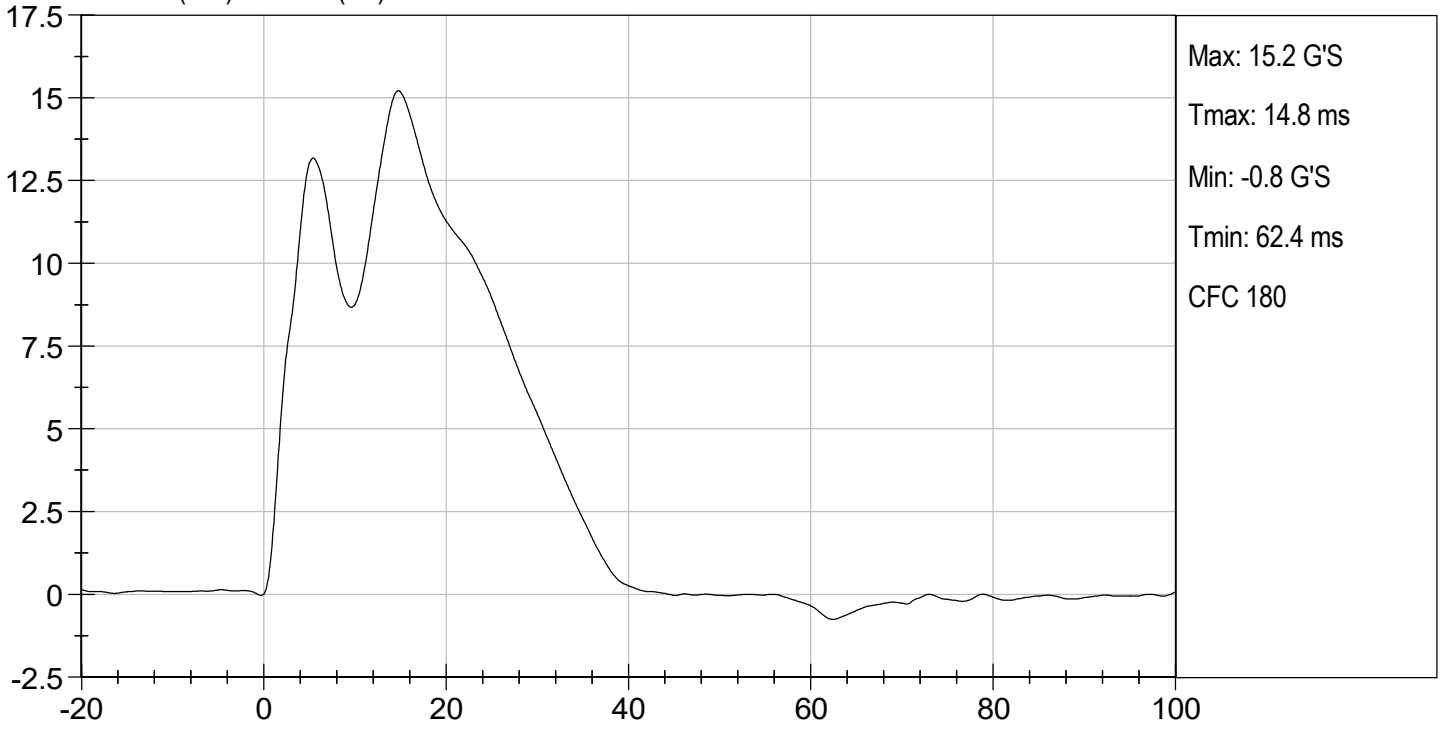
11/30/2021
Test Date

Approved By

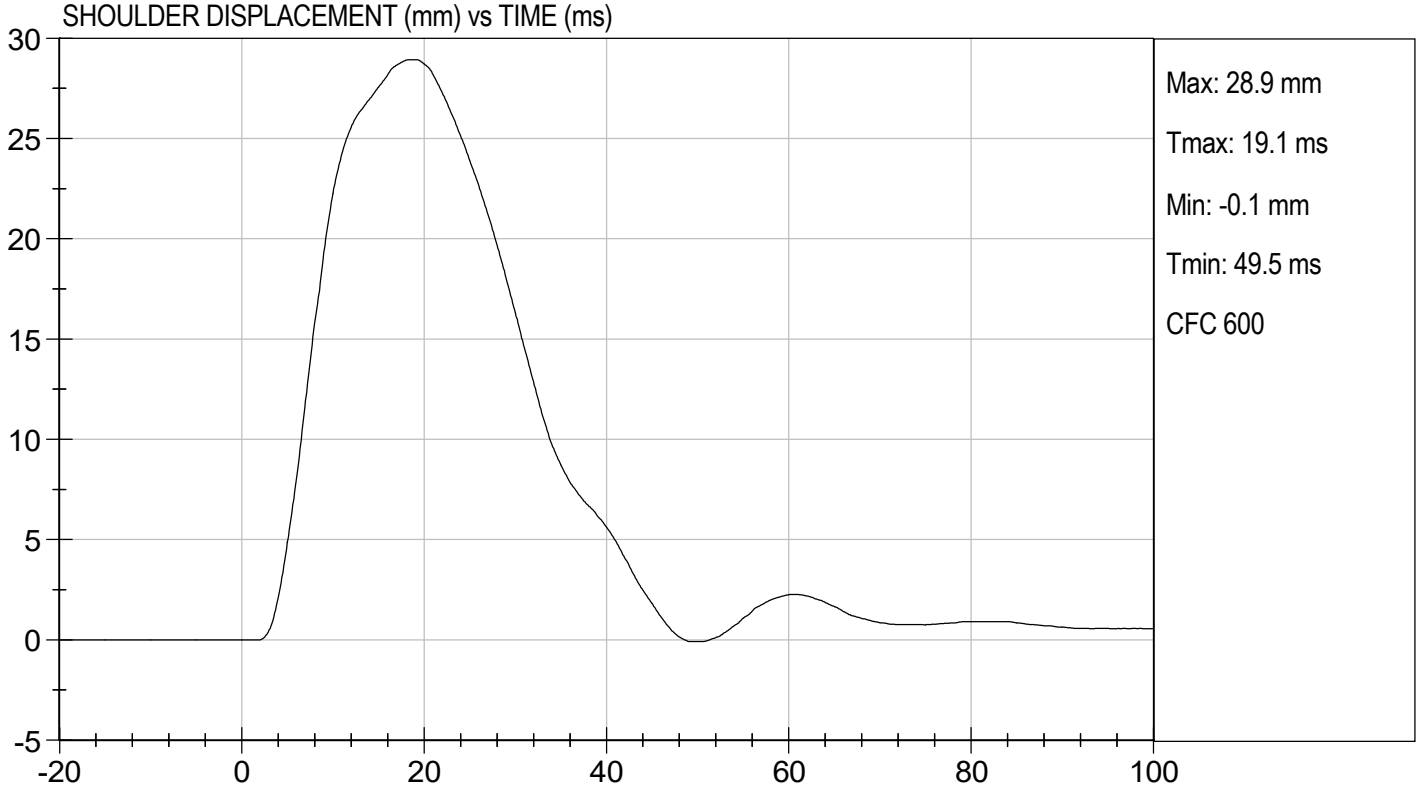
TEST DESC: SHOULDER IMPACT
VELOCITY: 14.12 ft/s, 4.30 m/s

TEST DATE: 11/30/2021
TEST #: D213663

PROBE (G'S) vs TIME (ms)

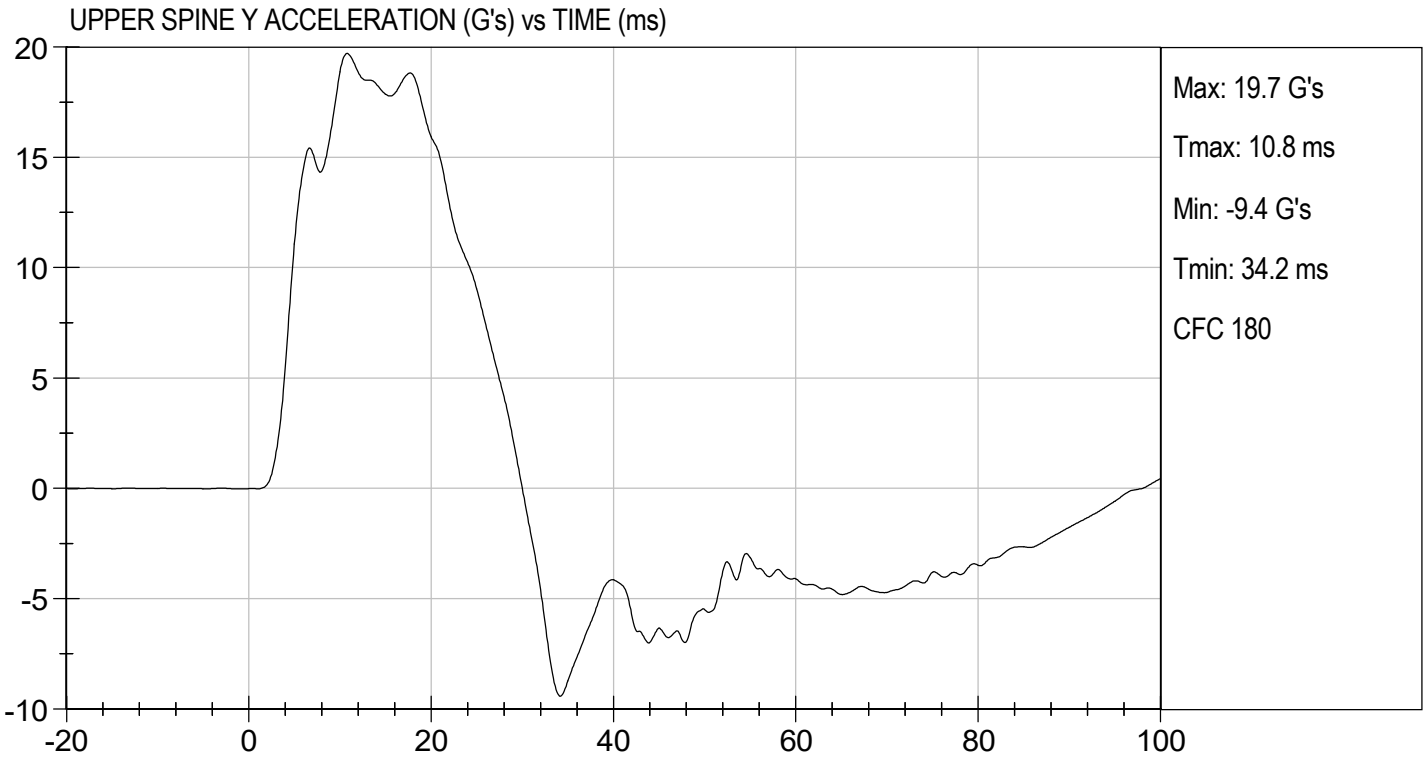


SHOULDER DISPLACEMENT (mm) vs TIME (ms)



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

TEST DATE: 11/30/2021
TEST #: D213663



MGA RESEARCH CORPORATION

THORAX (WITH ARM) IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D213664

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.3	Pass
Humidity	%	10 to 70	24	Pass
Impact Velocity	m/s	6.60 to 6.80	6.77	Pass
Maximum Probe Acceleration	G's	30 to 36	34	Pass
Shoulder Displacement	mm	31 to 40	36	Pass
Upper Rib Displacement	mm	25 to 32	29	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	39	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	33	Pass
		Overall Test Results		Pass

Laboratory Technician

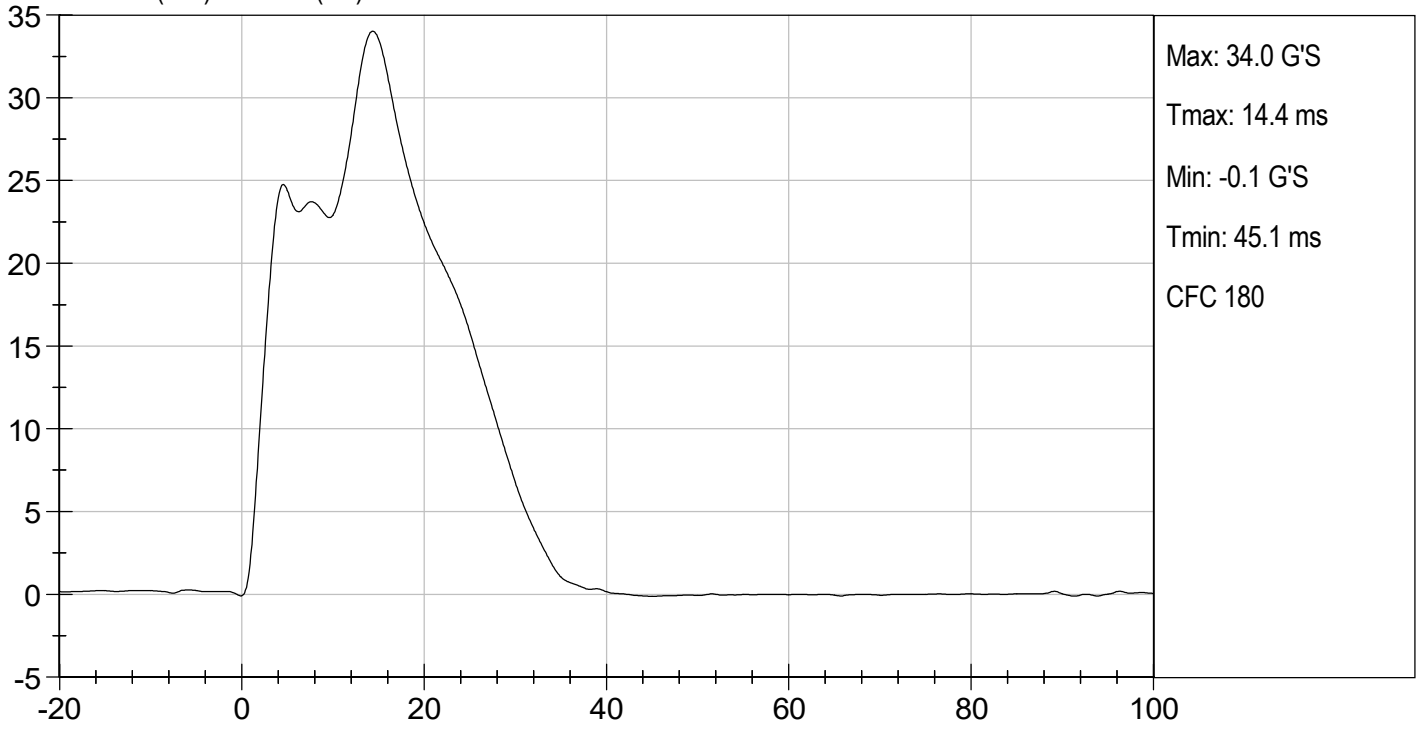
11/30/2021
Test Date

Approved By

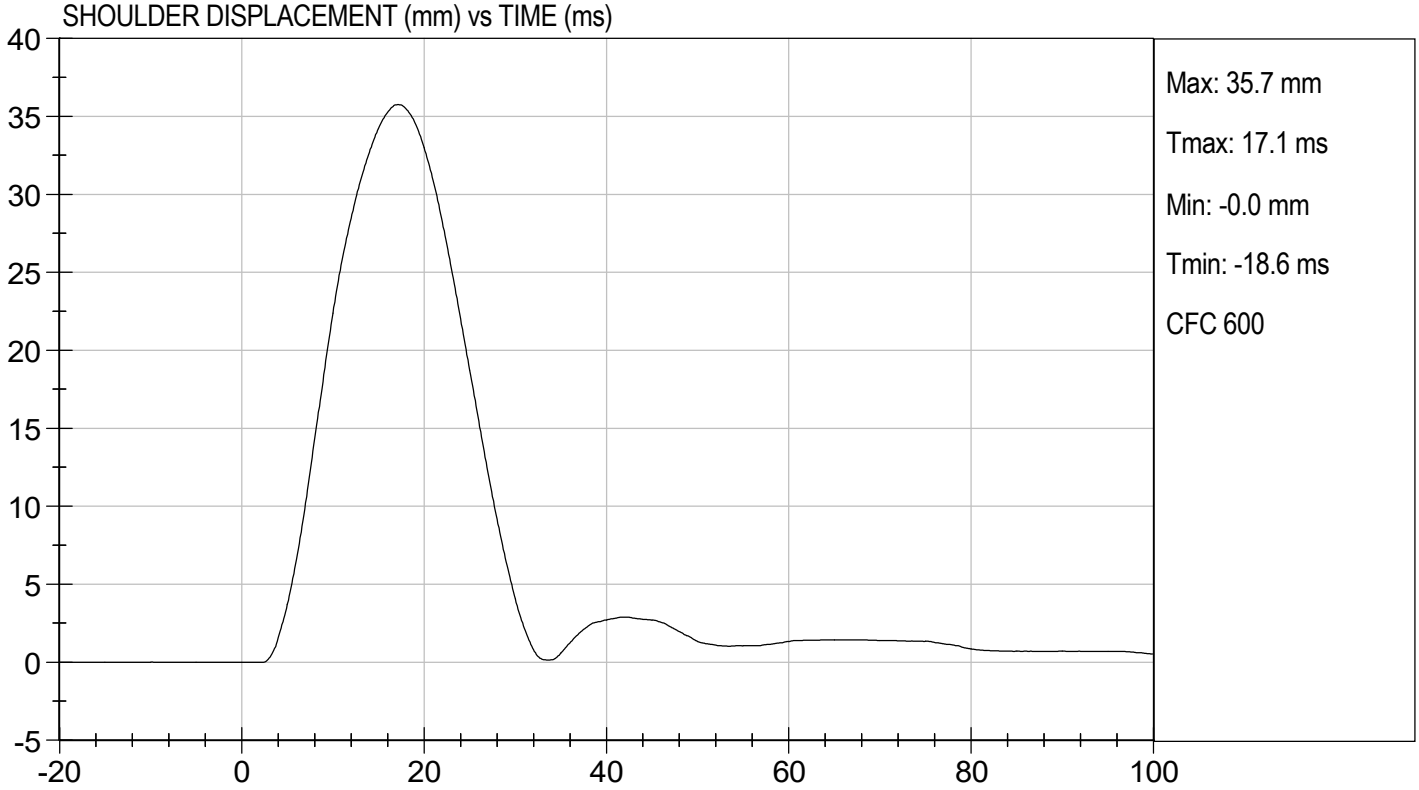
TEST DESC: THORAX IMPACT WITH ARM
VELOCITY: 22.22 ft/s, 6.77 m/s

TEST DATE: 11/30/2021
TEST #: D213664

PROBE (G'S) vs TIME (ms)



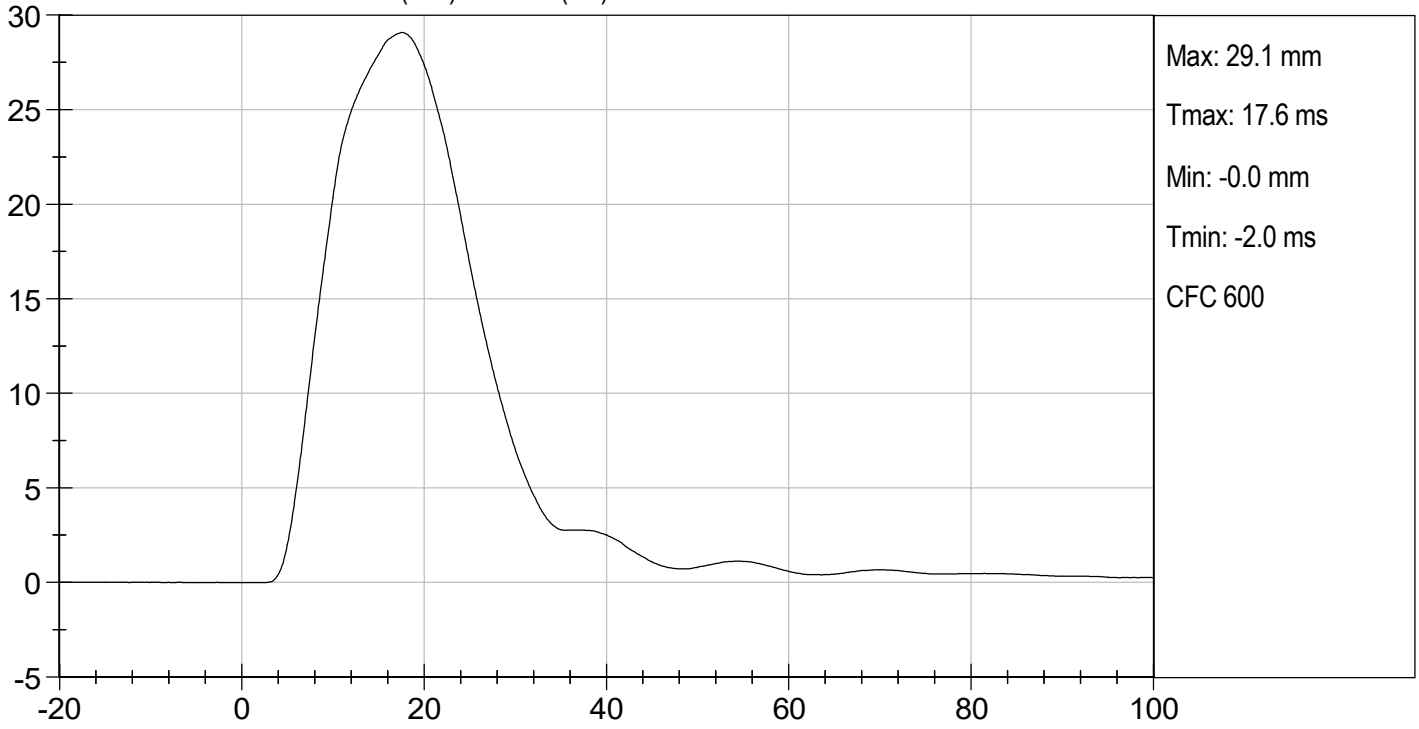
SHOULDER DISPLACEMENT (mm) vs TIME (ms)



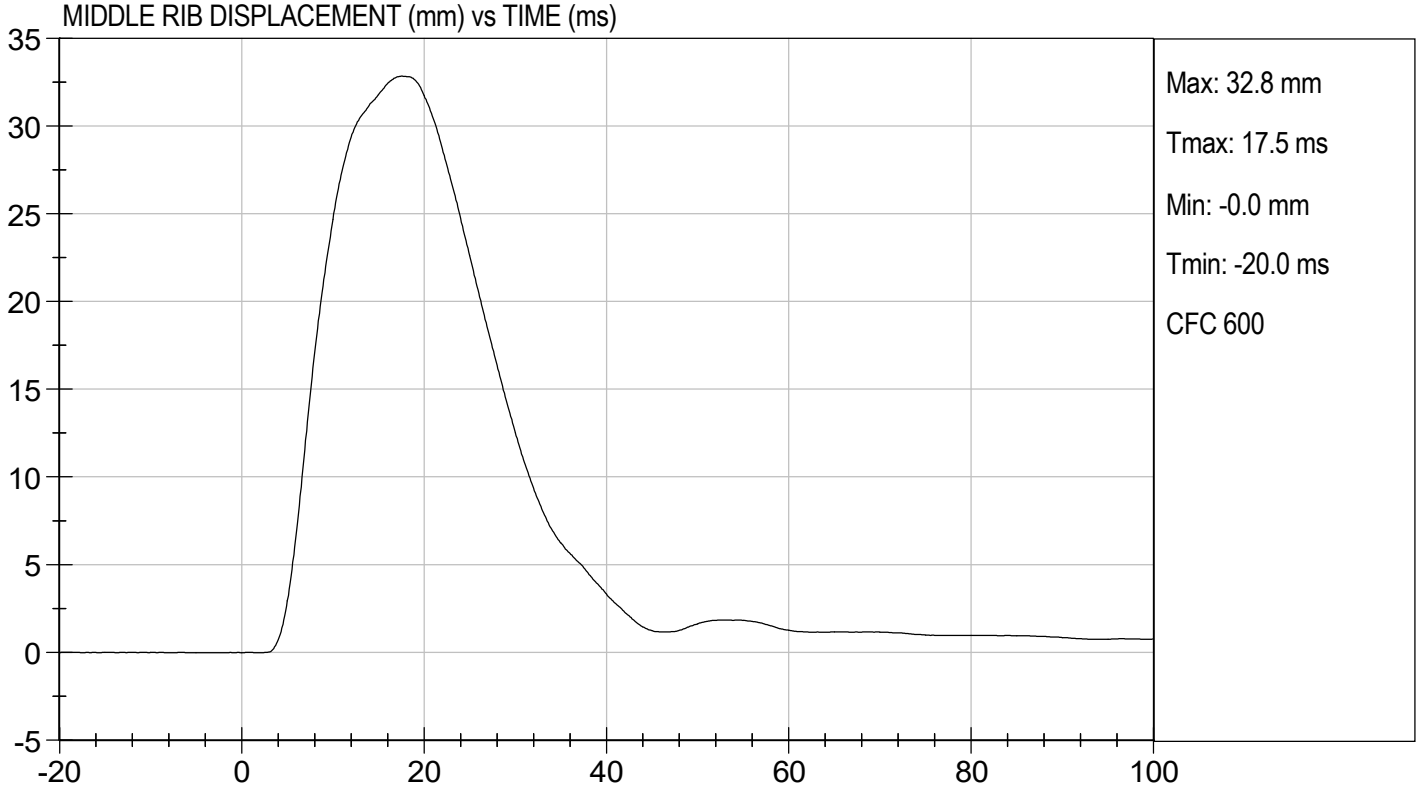
TEST DESC: THORAX IMPACT WITH ARM
VELOCITY: 22.22 ft/s, 6.77 m/s

TEST DATE: 11/30/2021
TEST #: D213664

UPPER RIB DISPLACEMENT (mm) vs TIME (ms)



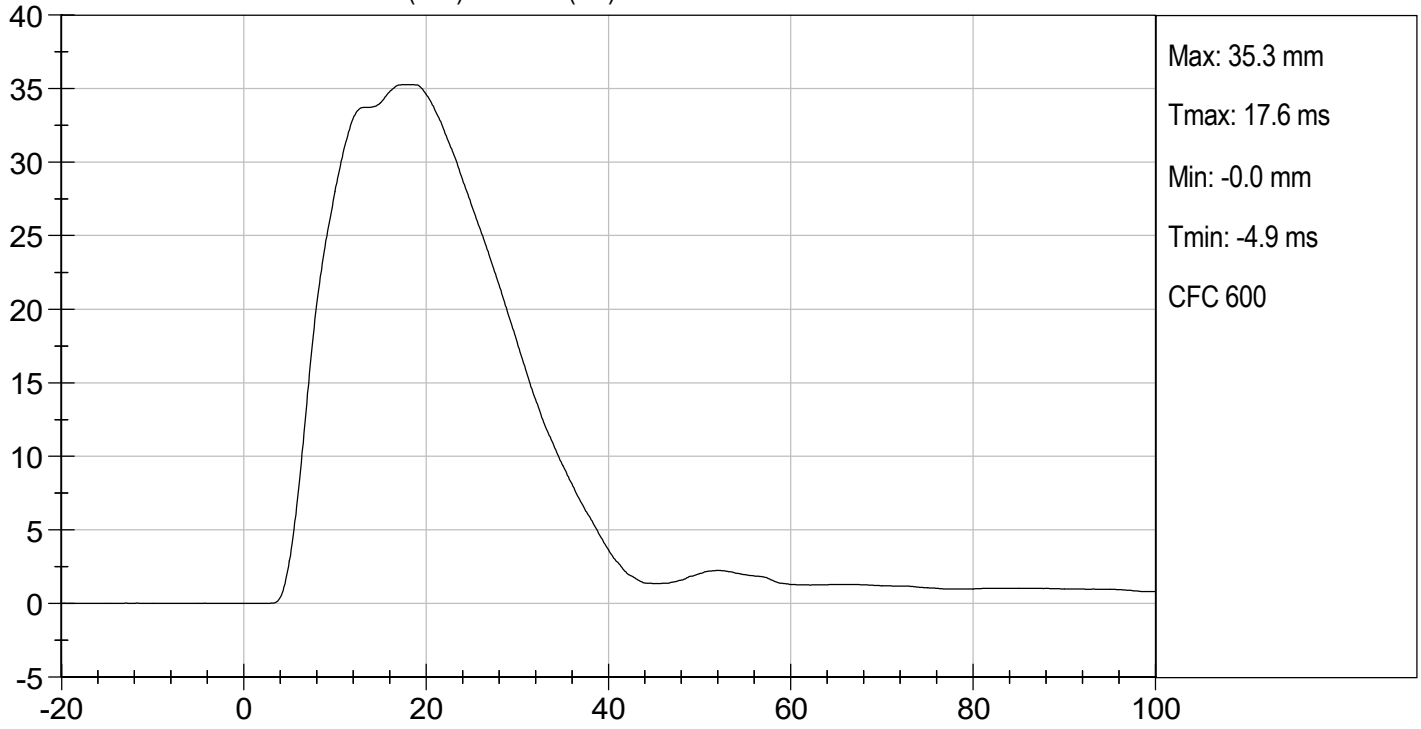
MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



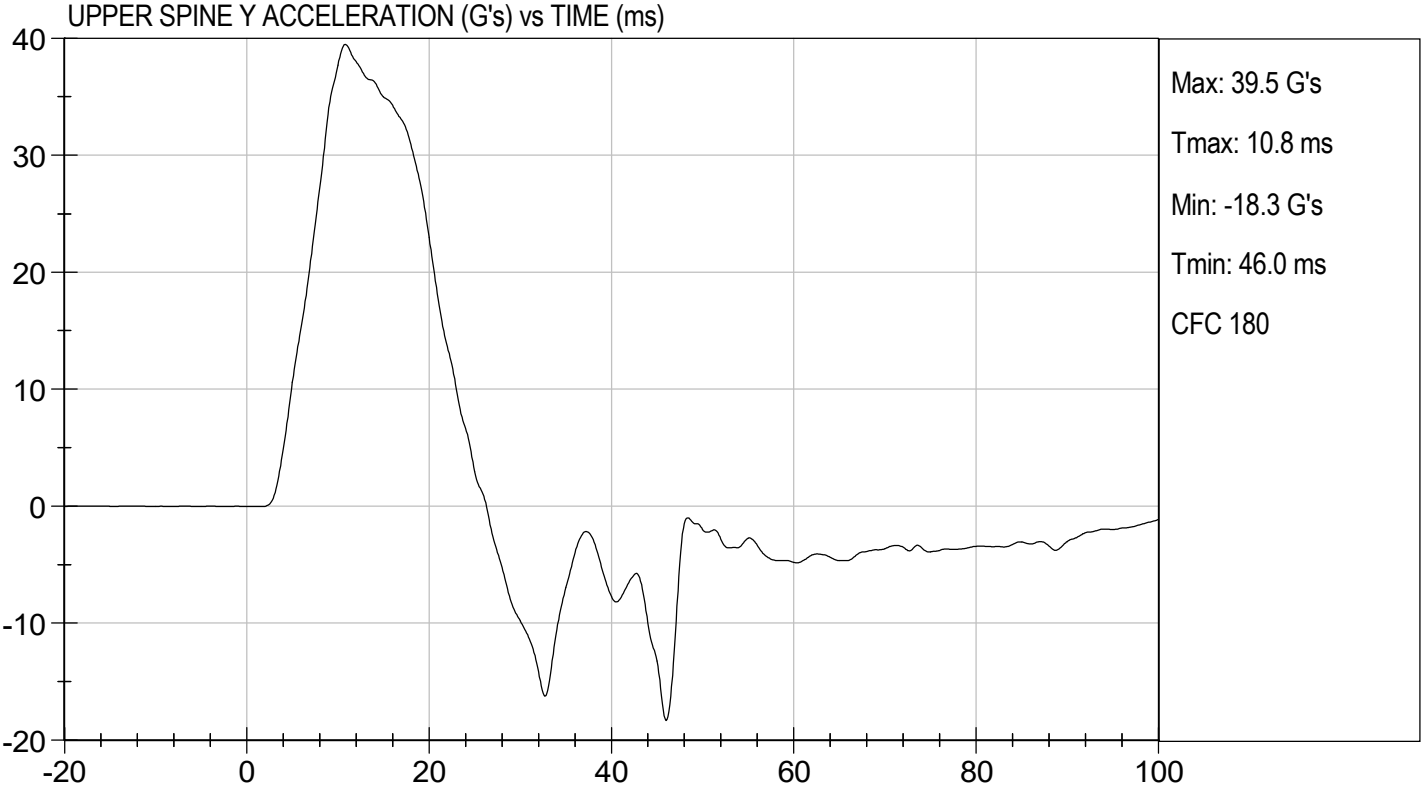
TEST DESC: THORAX IMPACT WITH ARM
VELOCITY: 22.22 ft/s, 6.77 m/s

TEST DATE: 11/30/2021
TEST #: D213664

LOWER RIB DISPLACEMENT (mm) vs TIME (ms)

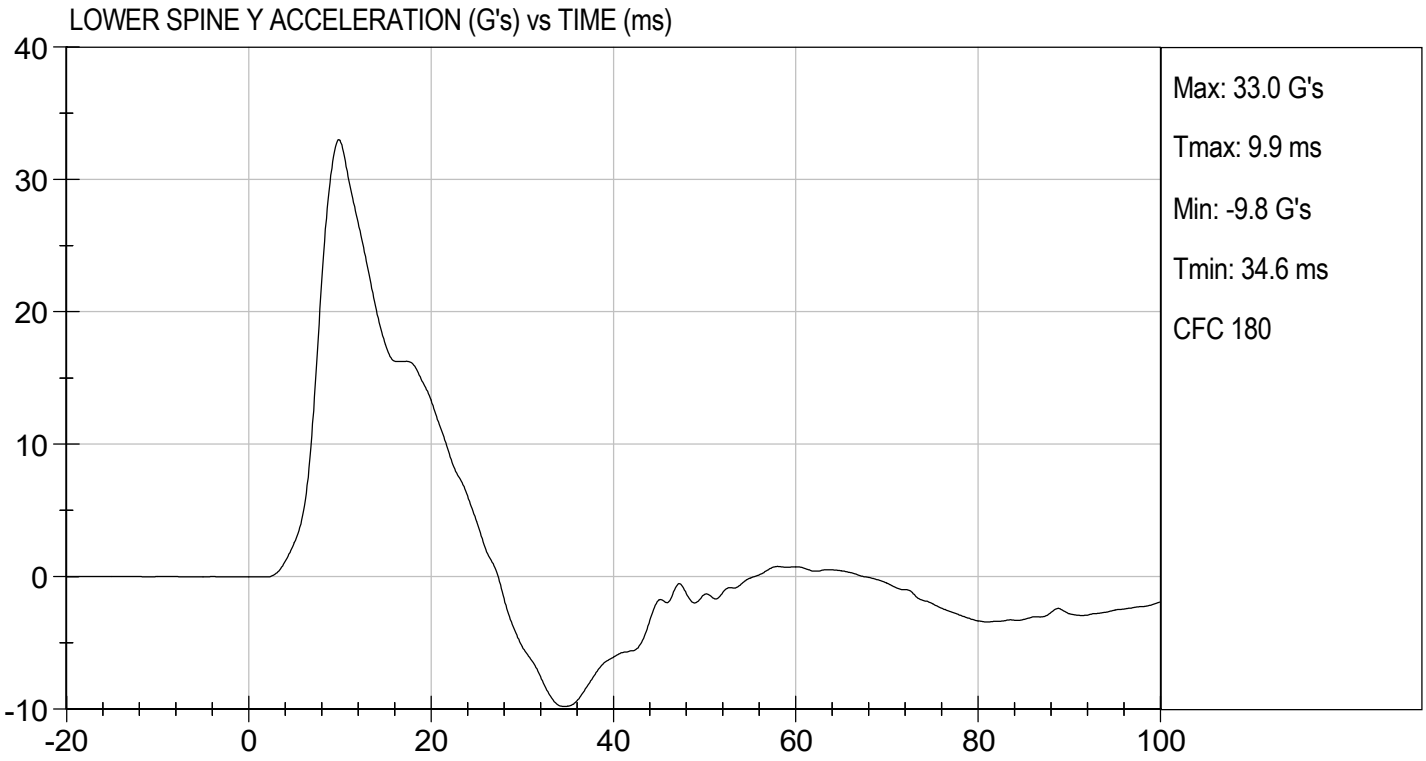


UPPER SPINE Y ACCELERATION (G's) vs TIME (ms)



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

TEST DATE: 11/30/2021
TEST #: D213664



MGA RESEARCH CORPORATION

THORAX (WITHOUT ARM) IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D213665

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.3	Pass
Humidity	%	10 to 70	24	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	37	Pass
Middle Rib Displacement	mm	39 to 45	42	Pass
Lower Rib Displacement	mm	35 to 43	40	Pass
Upper Spine (T1) Y Acceleration	G's	13 to 17	15	Pass
Lower Spine (T12) Y Acceleration	G's	7 to 11	9	Pass
		Overall Test Results		Pass

Laboratory Technician

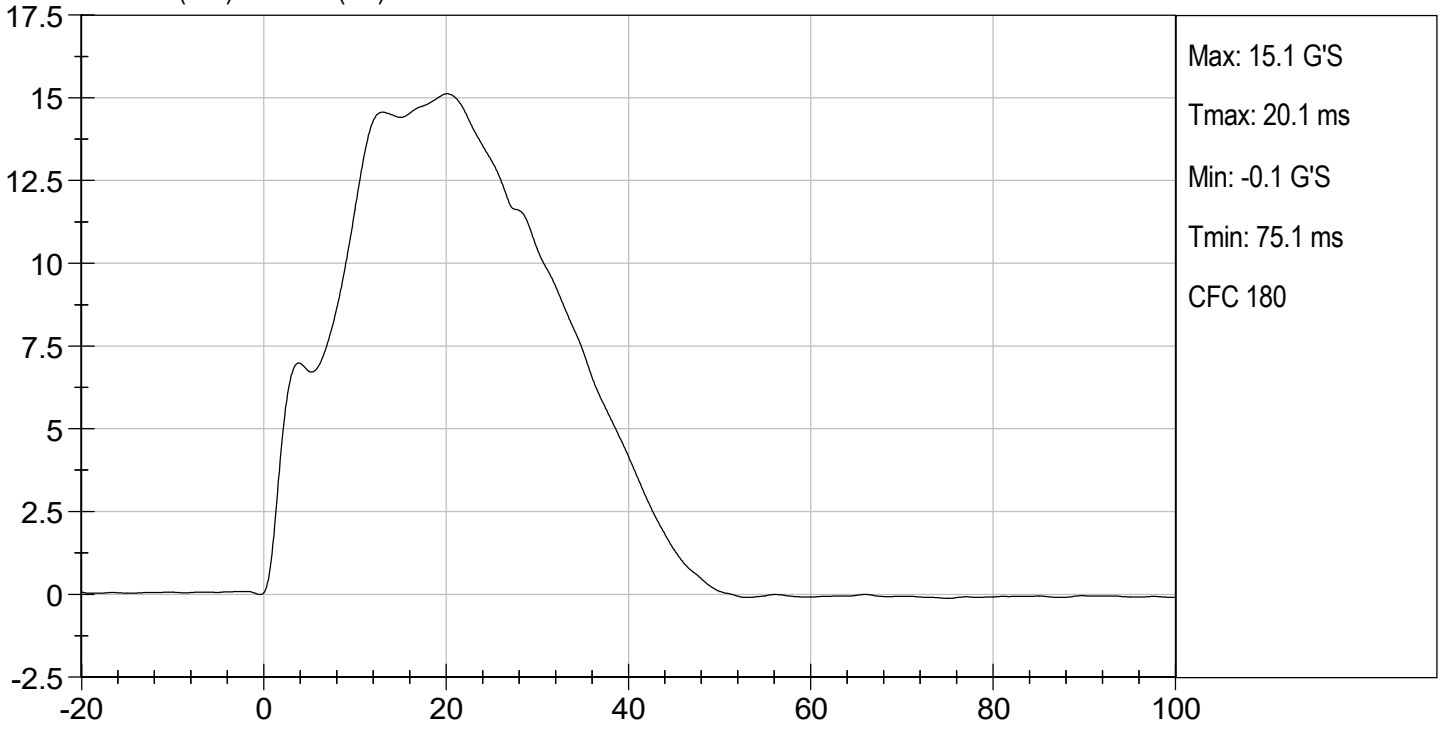
11/30/2021
Test Date

Approved By

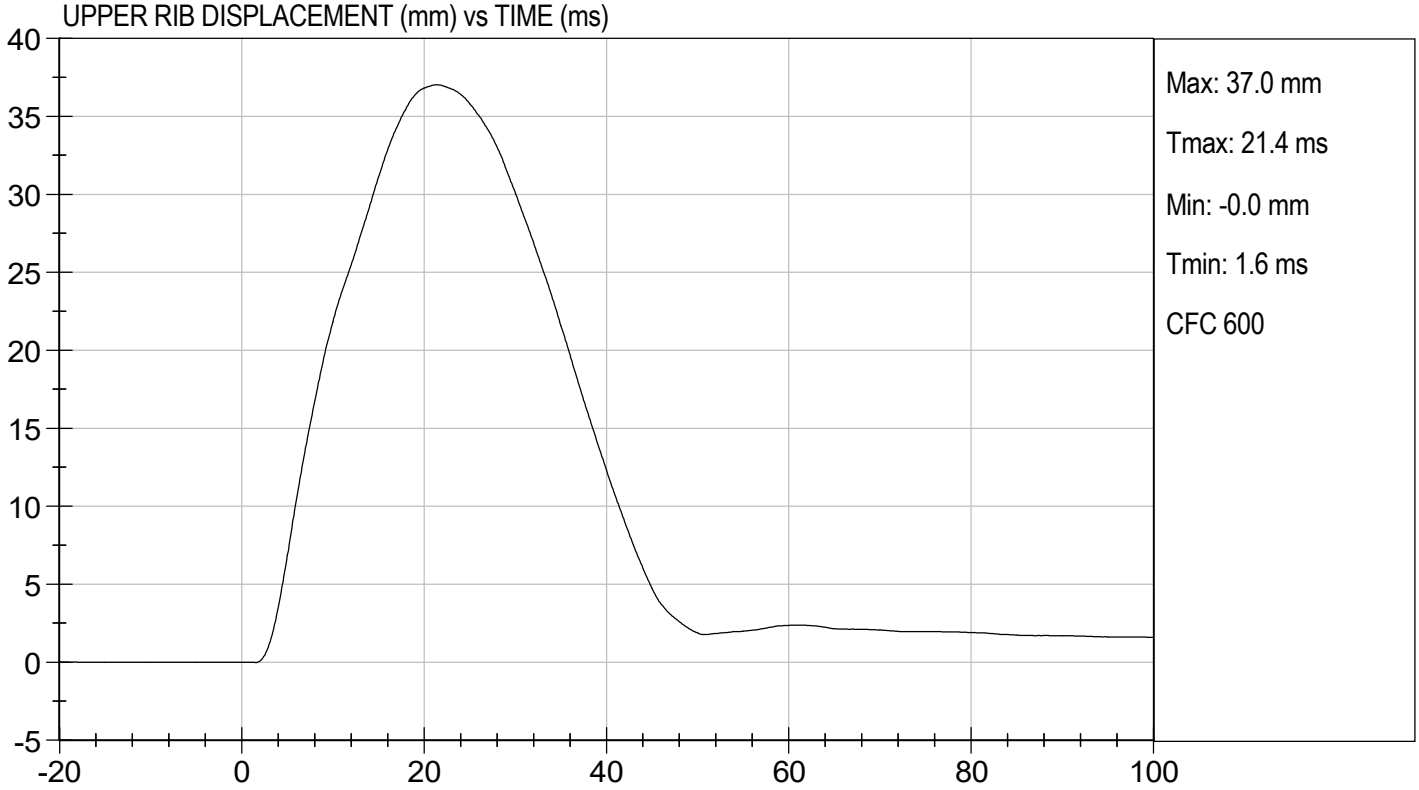
TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 14.12 ft/s, 4.30 m/s

TEST DATE: 11/30/2021
TEST #: D213665

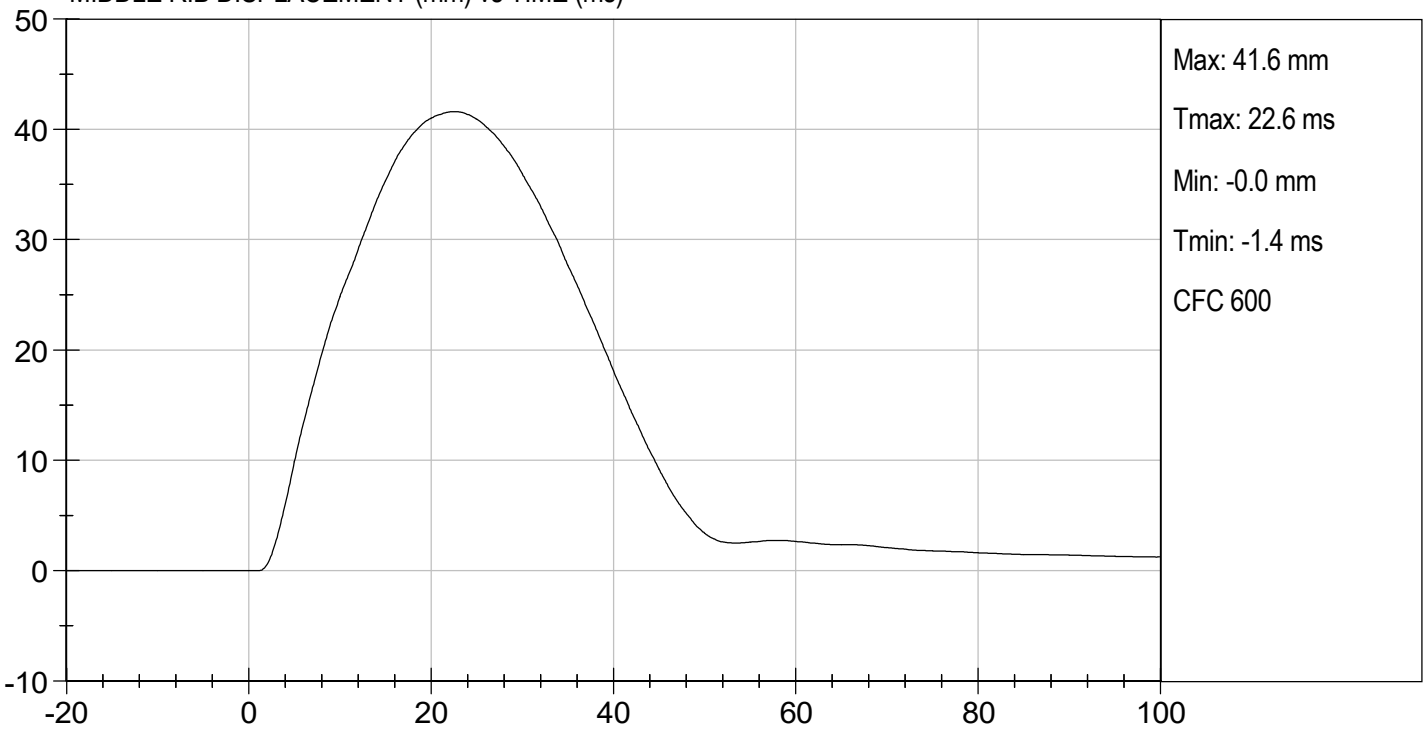
PROBE (G'S) vs TIME (ms)



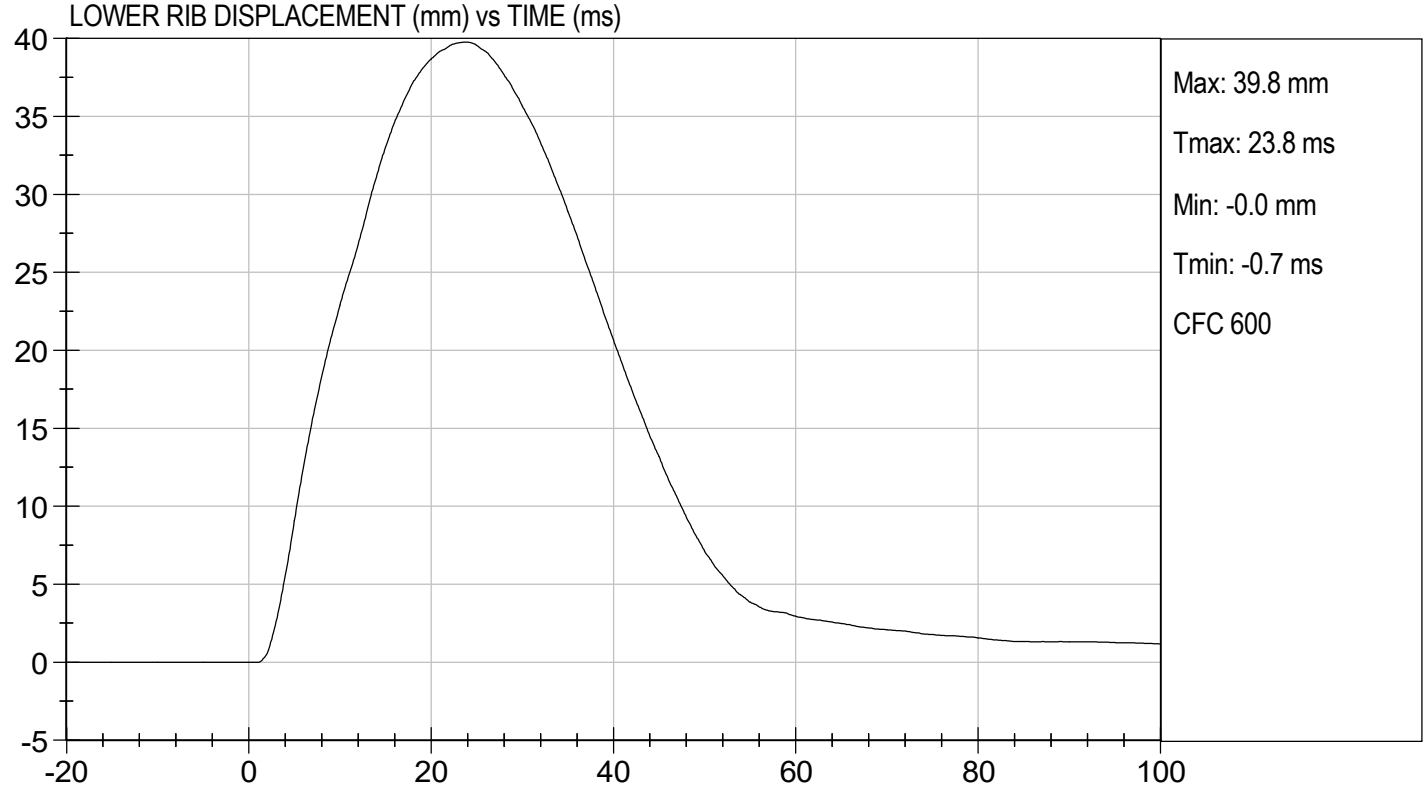
UPPER RIB DISPLACEMENT (mm) vs TIME (ms)



MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



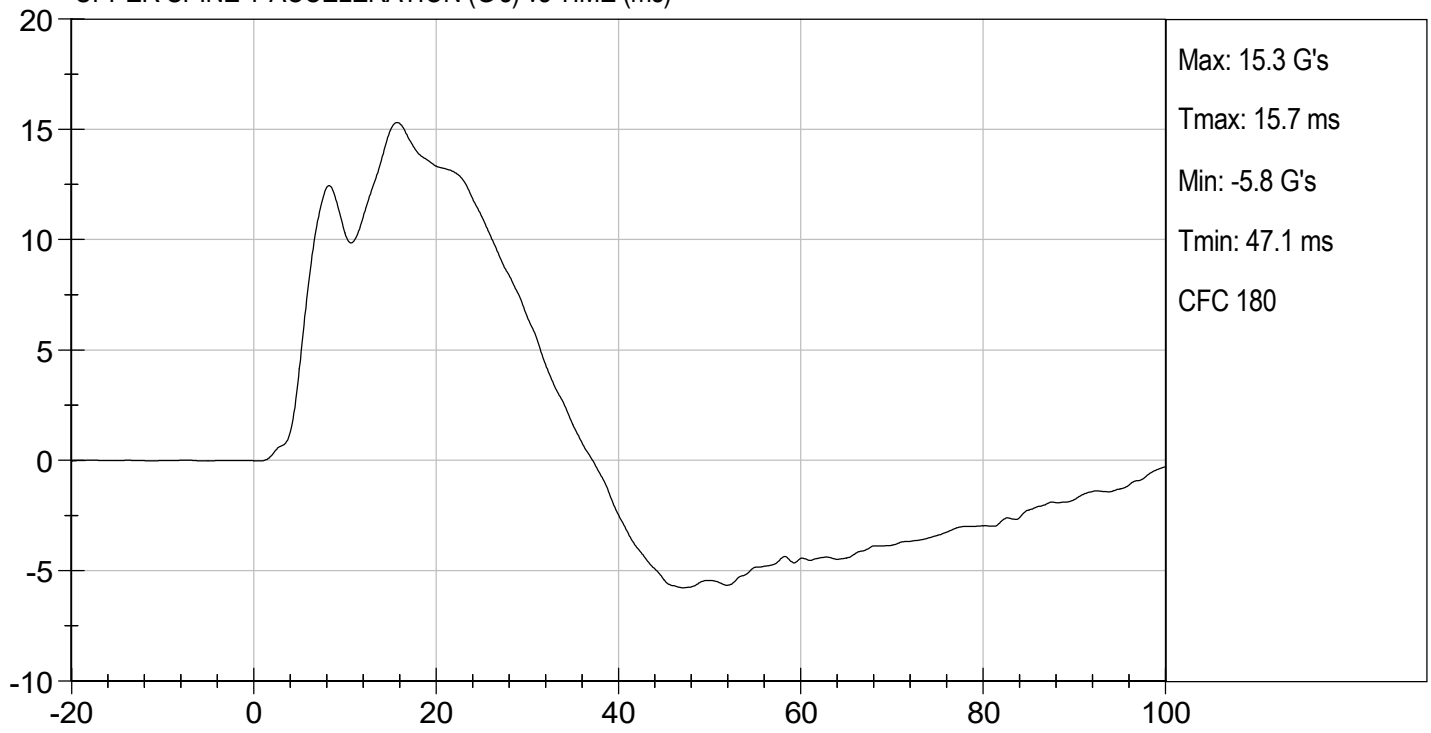
LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



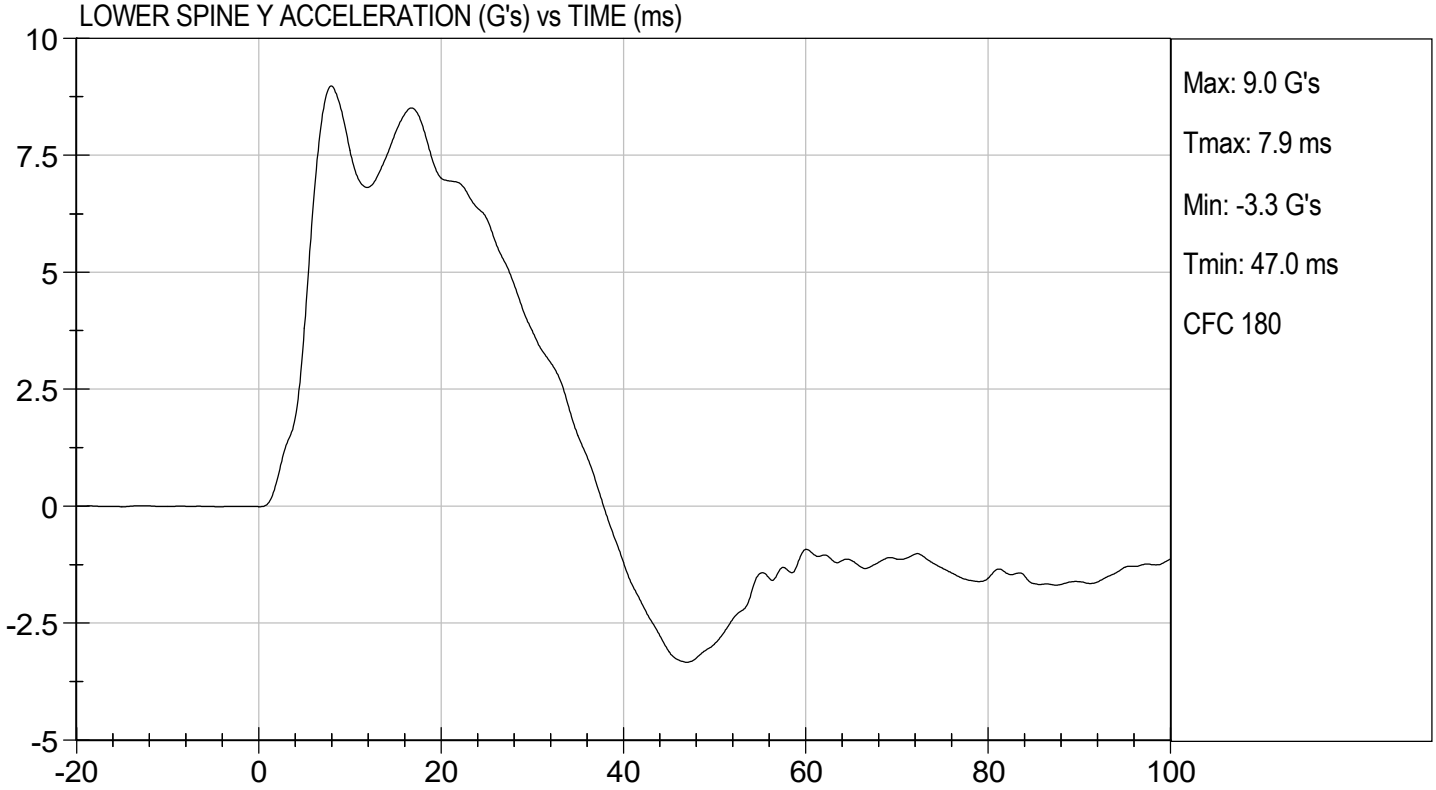
TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 14.12 ft/s, 4.30 m/s

TEST DATE: 11/30/2021
TEST #: D213665

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



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



MGA RESEARCH CORPORATION

ABDOMINAL IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D213666

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.3	Pass
Humidity	%	10 to 70	24	Pass
Impact Velocity	m/s	4.20 to 4.40	4.38	Pass
Maximum Probe Acceleration	G's	12 to 16	14	Pass
Upper Abdomen Rib Displacement	mm	36 to 47	40	Pass
Lower Abdomen Rib Displacement	mm	33 to 44	41	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	11	Pass
		Overall Test Results		Pass

Laboratory Technician

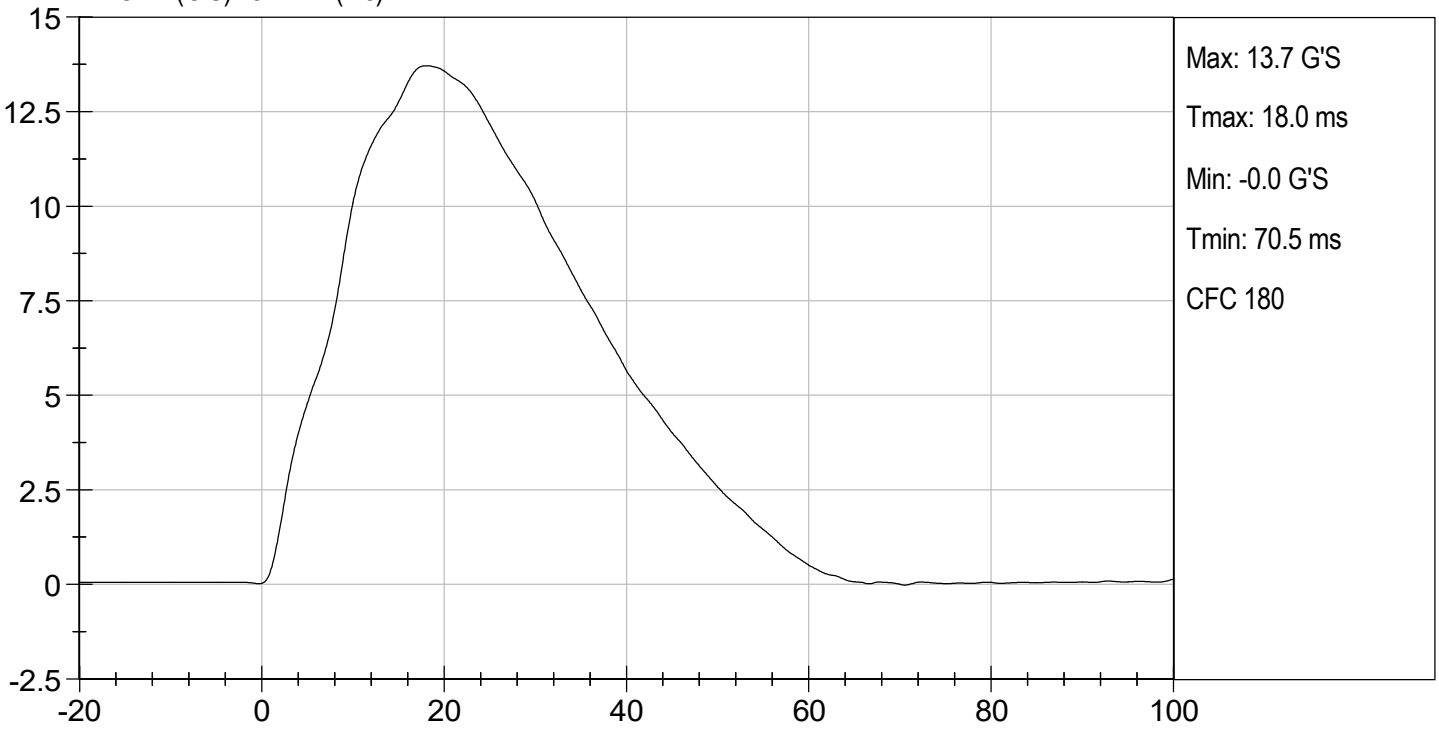
11/30/2021
Test Date

Approved By

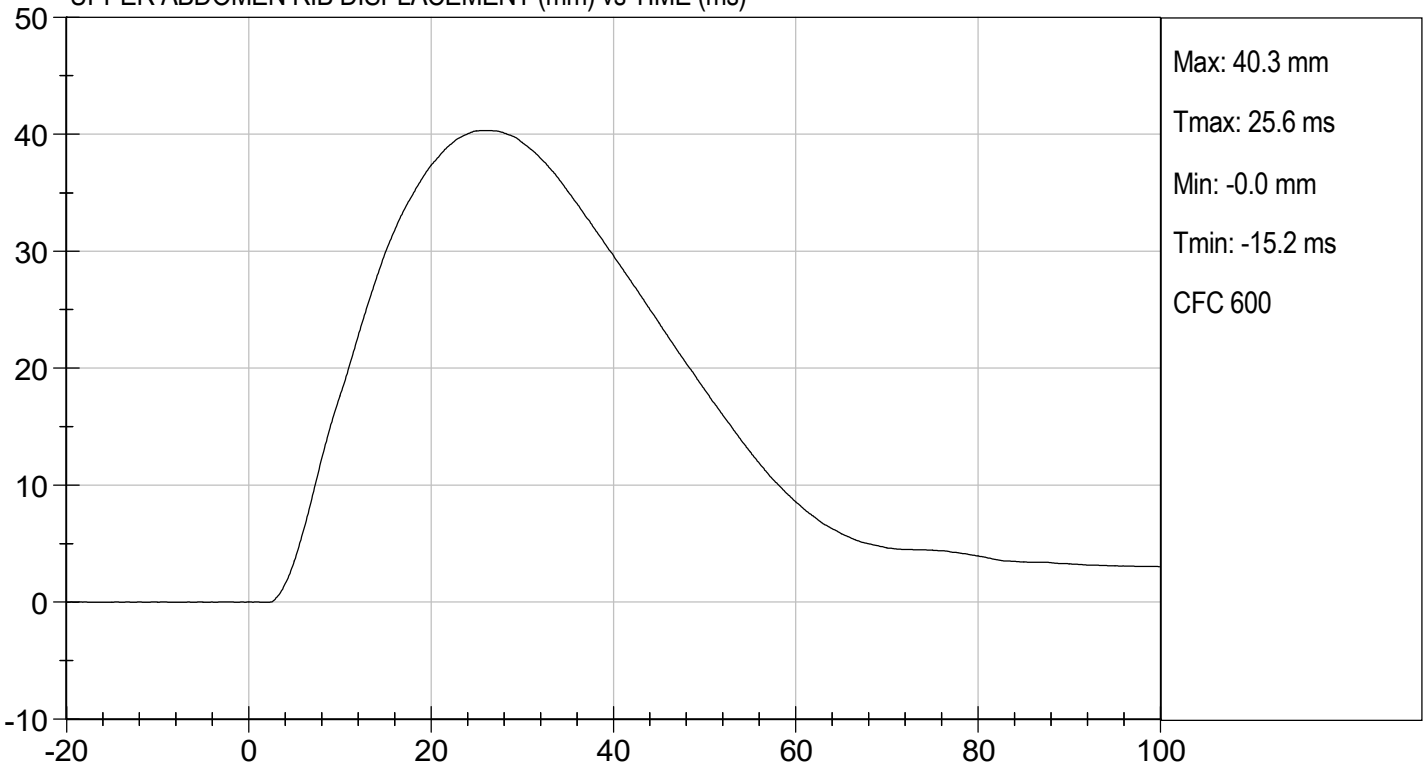
TEST DESC: ABDOMEN IMPACT
VELOCITY: 14.37 ft/s, 4.38 m/s

TEST DATE: 11/30/2021
TEST #: D213666

PROBE (G'S) vs TIME (ms)



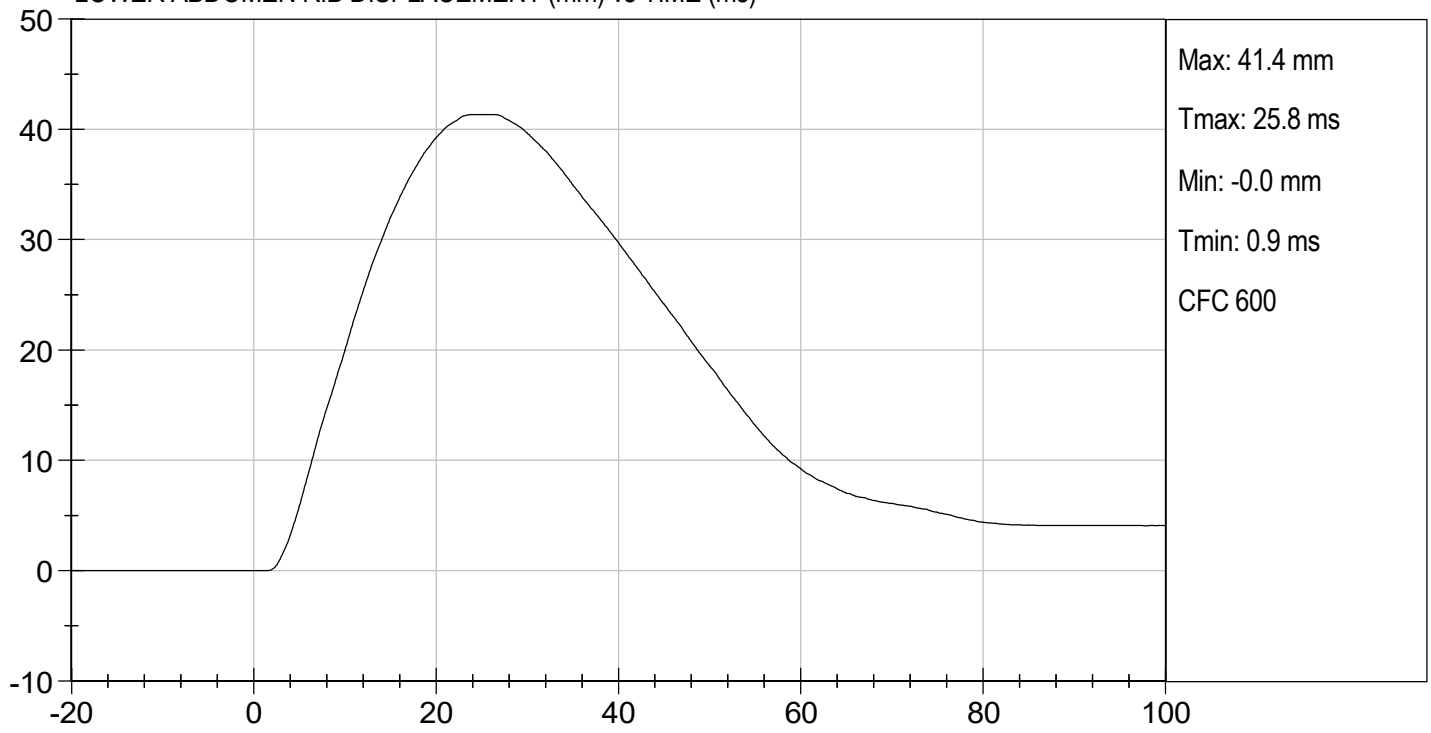
UPPER ABDOMEN RIB DISPLACEMENT (mm) vs TIME (ms)



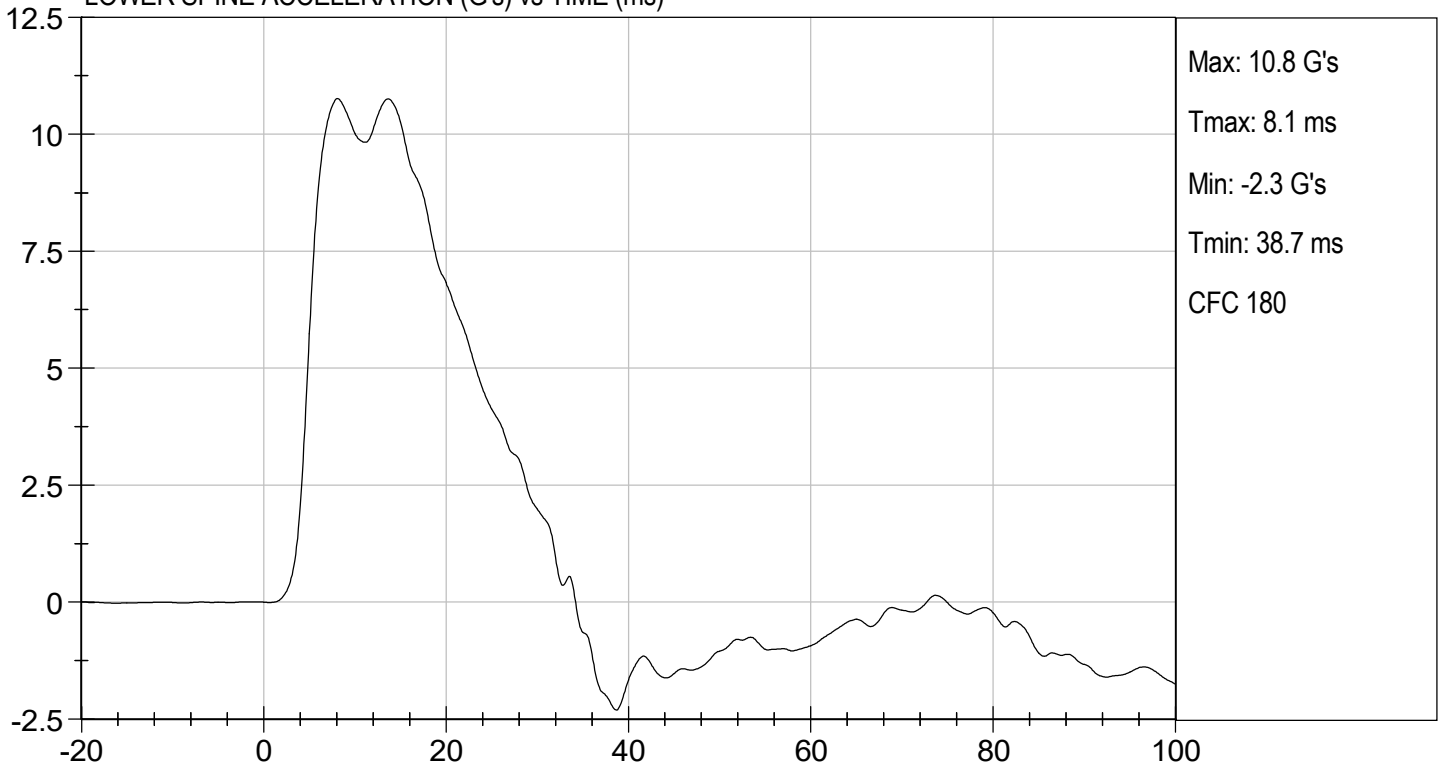
TEST DESC: ABDOMEN IMPACT
VELOCITY: 14.37 ft/s, 4.38 m/s

TEST DATE: 11/30/2021
TEST #: D213666

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:** D213667

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.3	Pass
Humidity	%	10 to 70	24	Pass
Impact Velocity	m/s	6.60 to 6.80	6.68	Pass
Maximum Probe Acceleration	G's	38 to 47	41	Pass
Pelvis Y Acceleration After 6 ms	G's	34 to 42	41	Pass
Peak Acetabulum Force	N	3600 to 4300	3,711	Pass
		Overall Test Results		Pass

Laboratory Technician

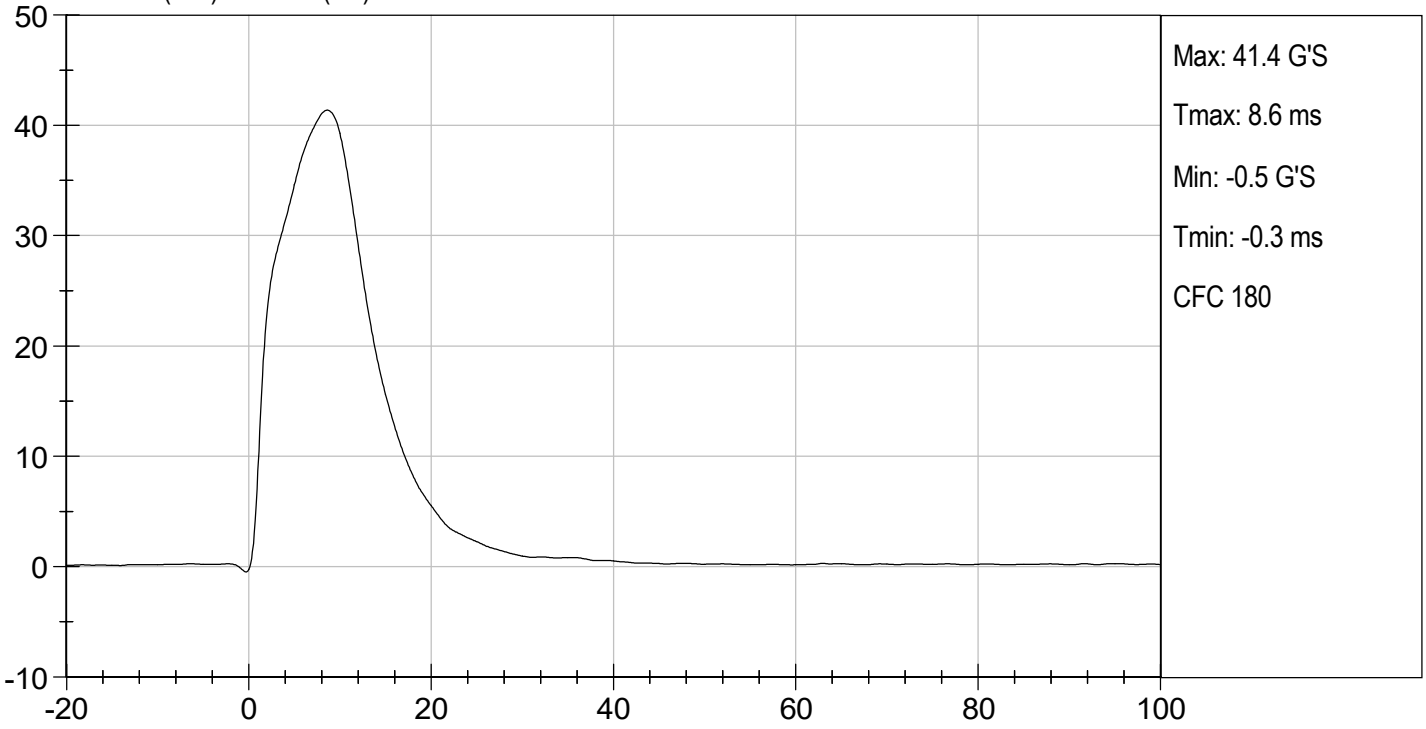
11/30/2021
Test Date

Approved By

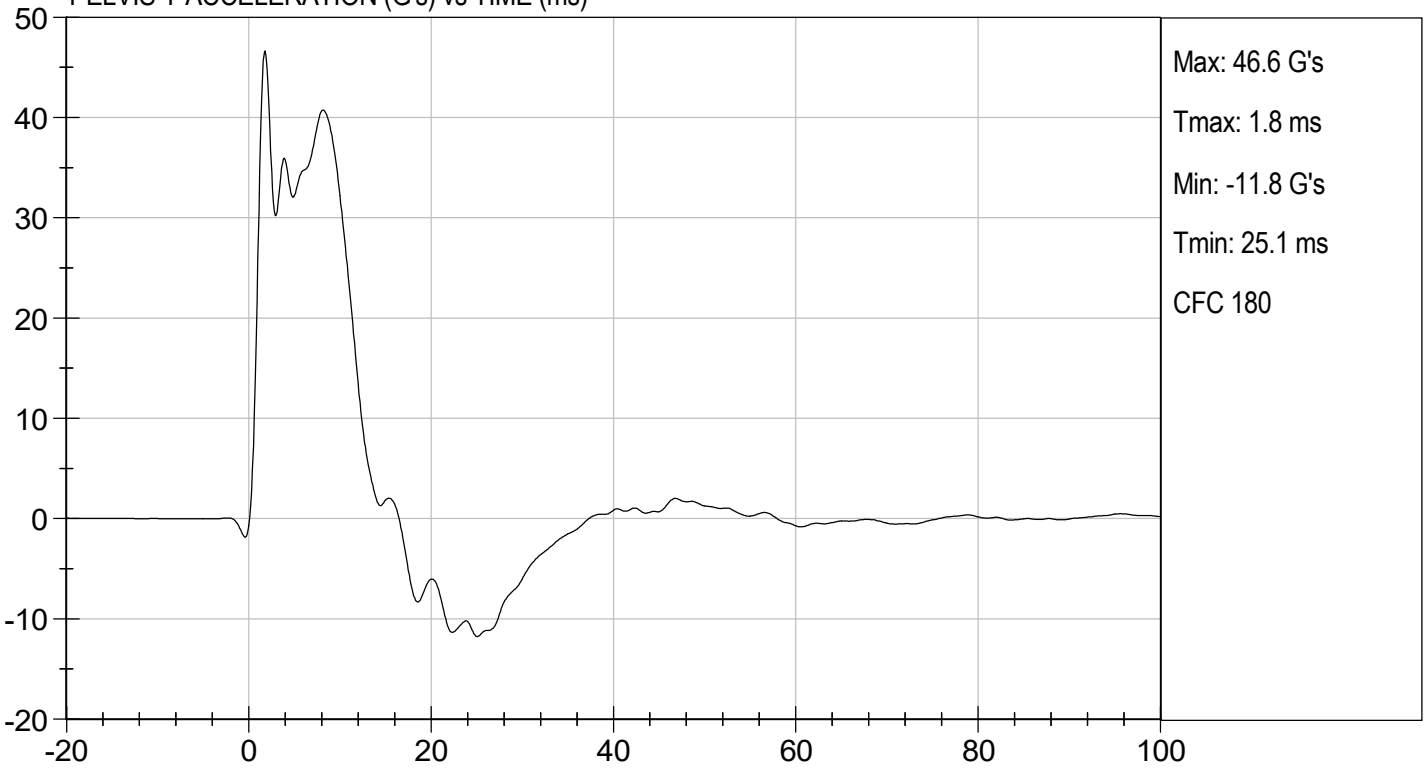
TEST DESC: PELVIS IMPACT
VELOCITY: 21.93 ft/s, 6.68 m/s

TEST DATE: 11/30/2021
TEST #: D213667

PROBE (G'S) vs TIME (ms)

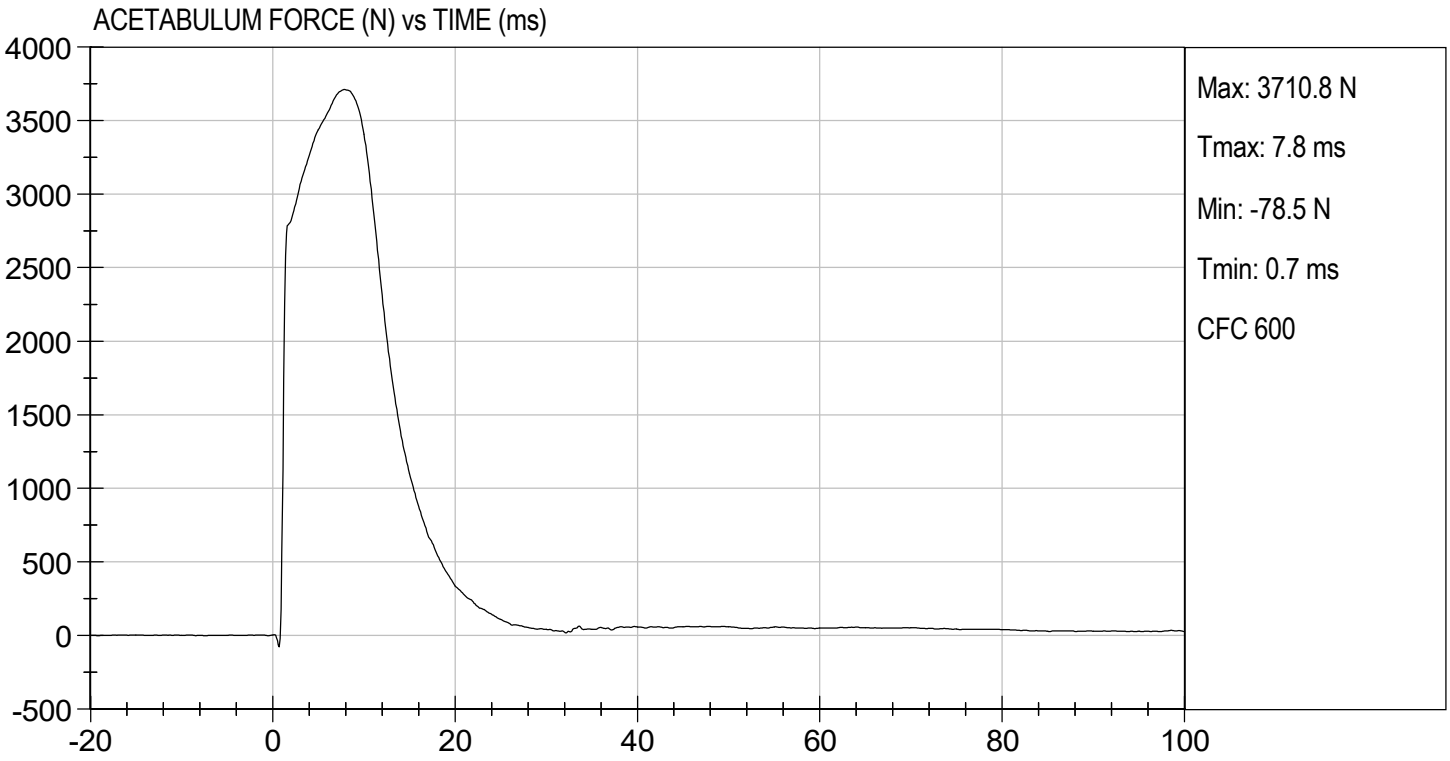


PELVIS Y ACCELERATION (G's) vs TIME (ms)



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

TEST DATE: 11/30/2021
TEST #: D213667



MGA RESEARCH CORPORATION

ILIAC IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D213668

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.6	Pass
Humidity	%	10 to 70	25.2	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	4,431	Pass
		Overall Test Results		Pass

Laboratory Technician

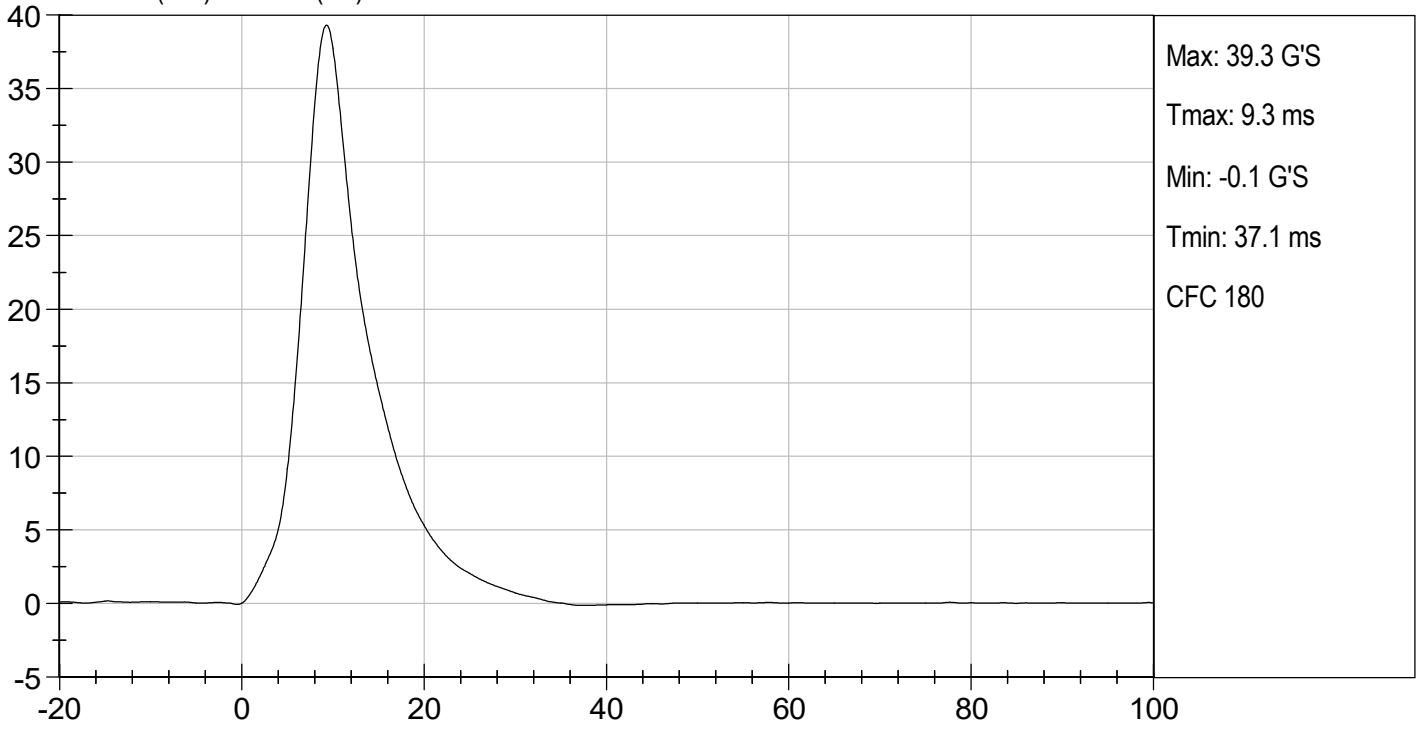
12/01/2021
Test Date

Approved By

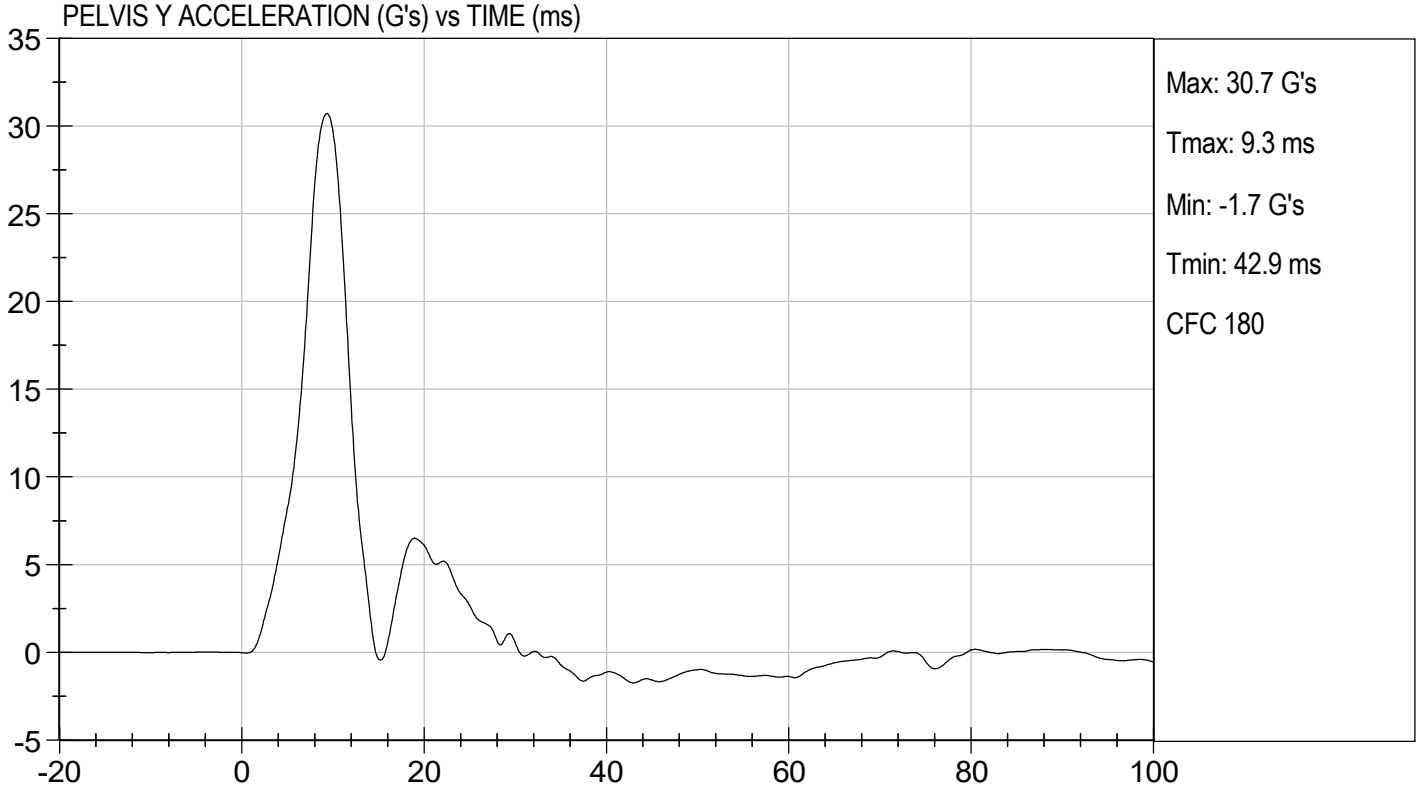
TEST DESC: ILLIAC
VELOCITY: 13.77 ft/s, 4.20 m/s

TEST DATE: 12/01/2021
TEST #: D213668

PROBE (G'S) vs TIME (ms)

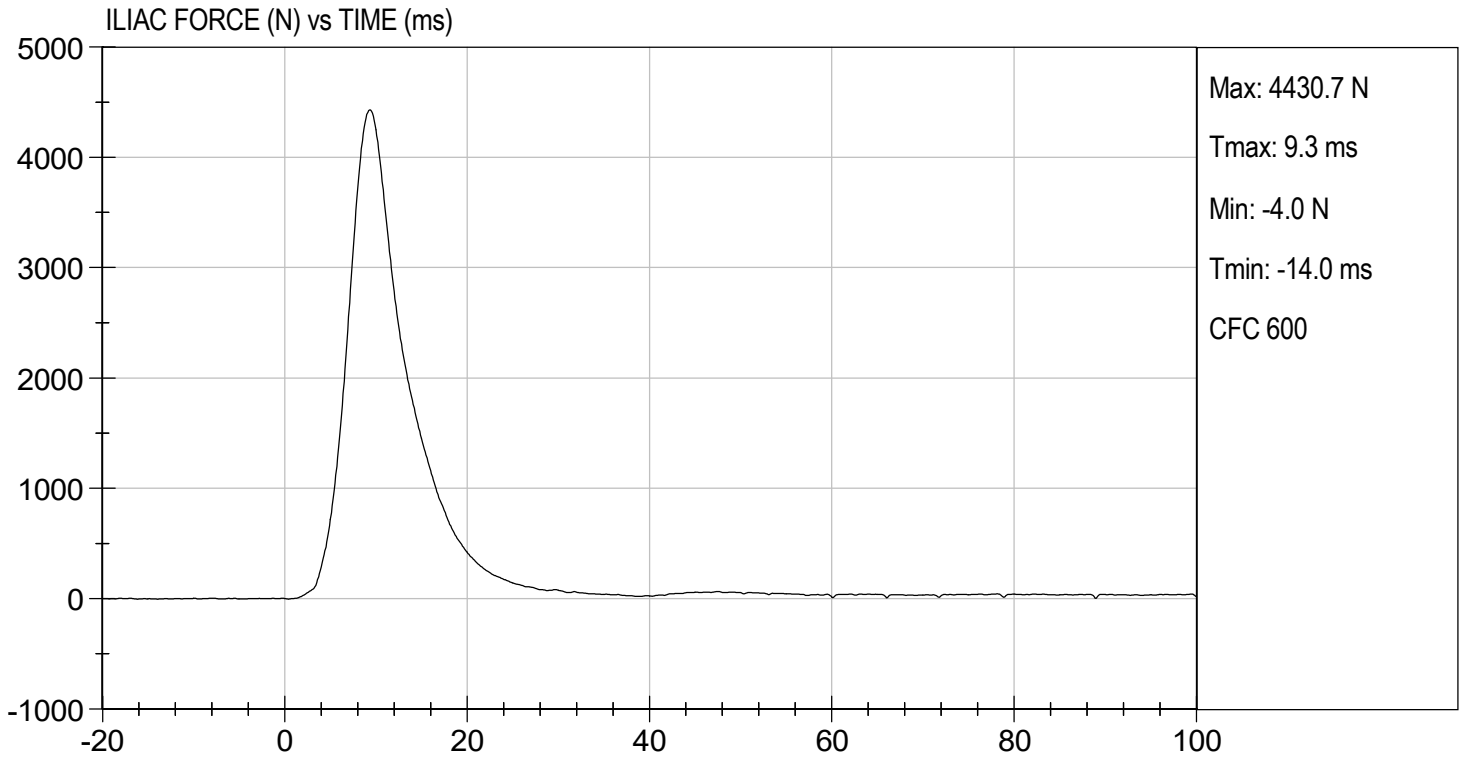


PELVIS Y ACCELERATION (G's) vs TIME (ms)



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

TEST DATE: 12/01/2021
TEST #: D213668



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 **Test ID:** D220071

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	115 to 137	130	Pass
Peak Longitudinal Acceleration	G's	+/- 15	-2.9	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	<15%	Yes	Pass
		Overall Test Results		Pass

Laboratory Technician

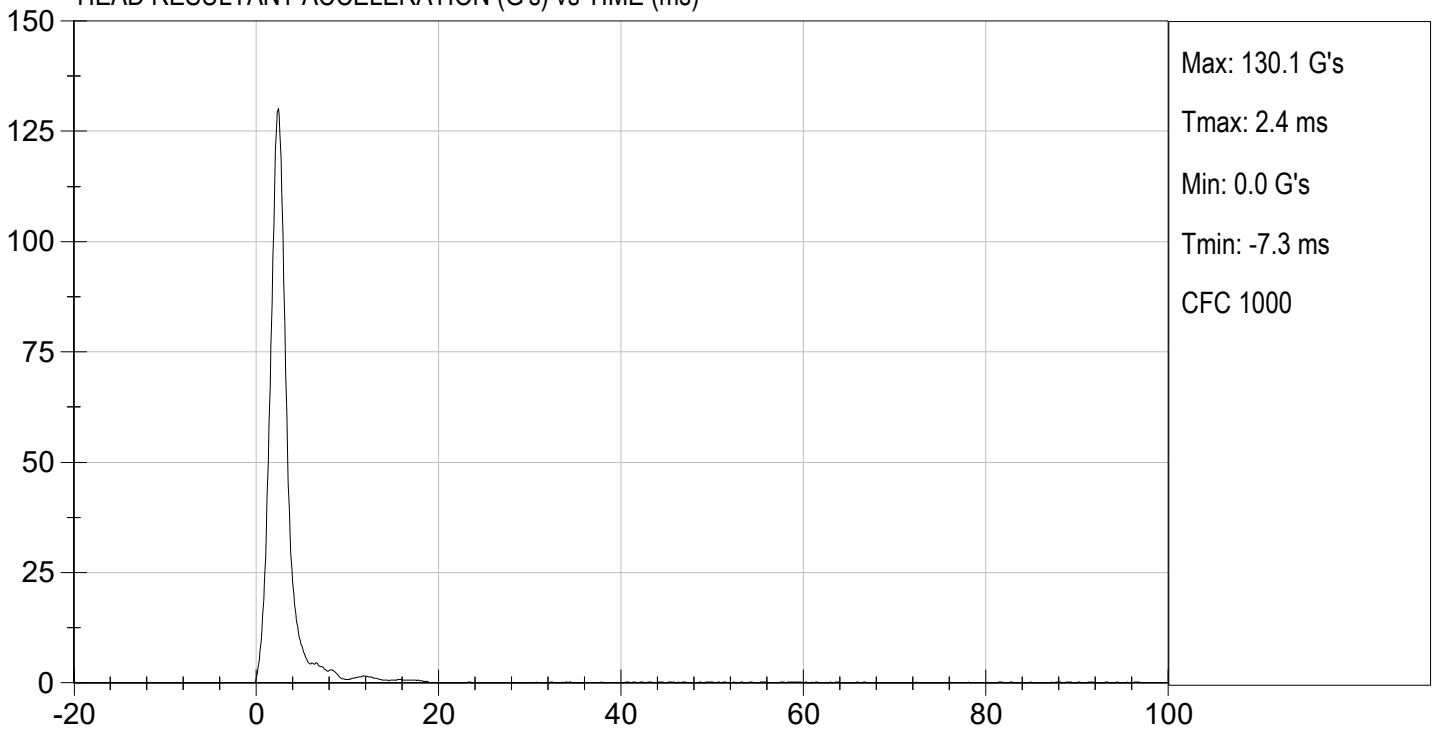
01/13/2022
Test Date

Approved By

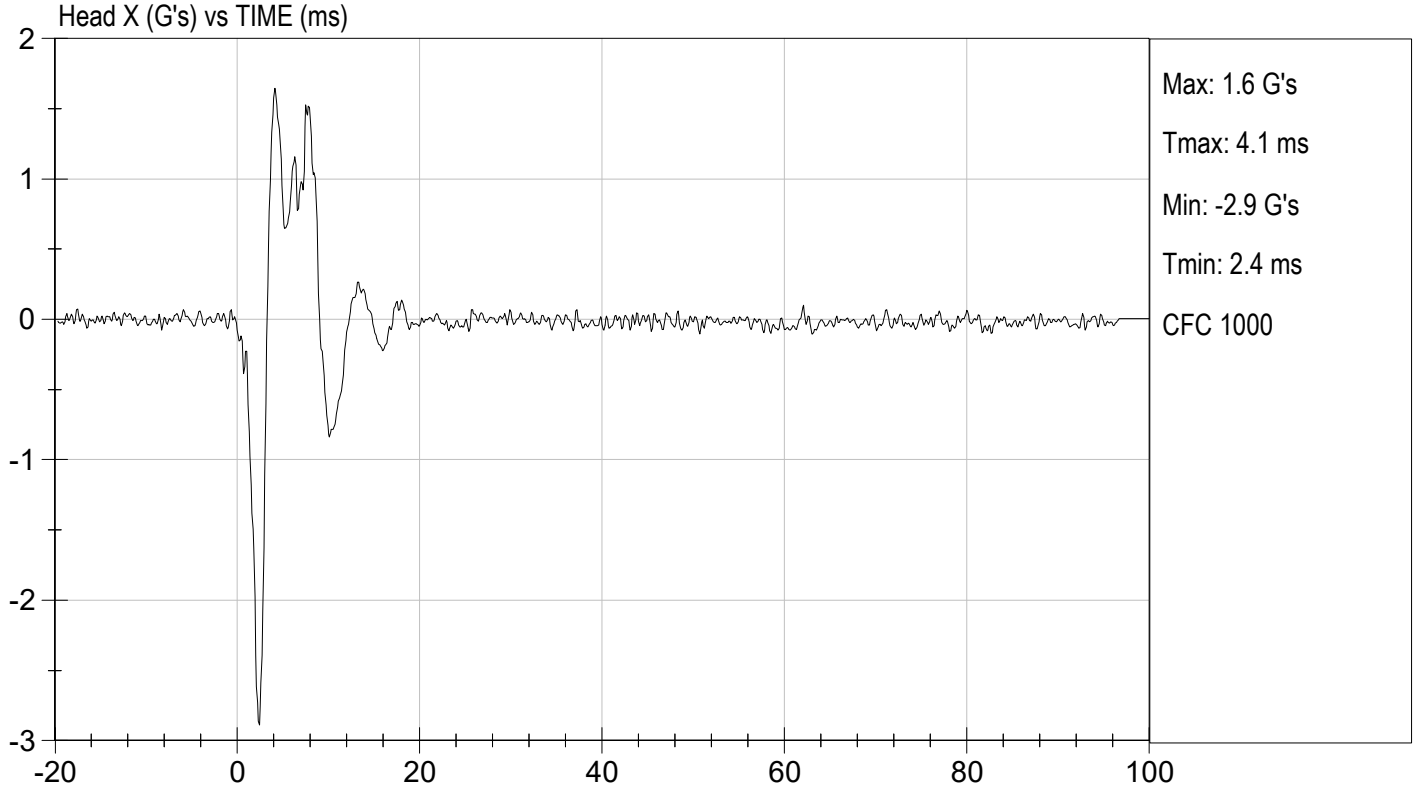
TEST DESC: HEAD DROP

TEST DATE: 01/13/2022
TEST #: D220071

HEAD RESULTANT ACCELERATION (G's) vs TIME (ms)

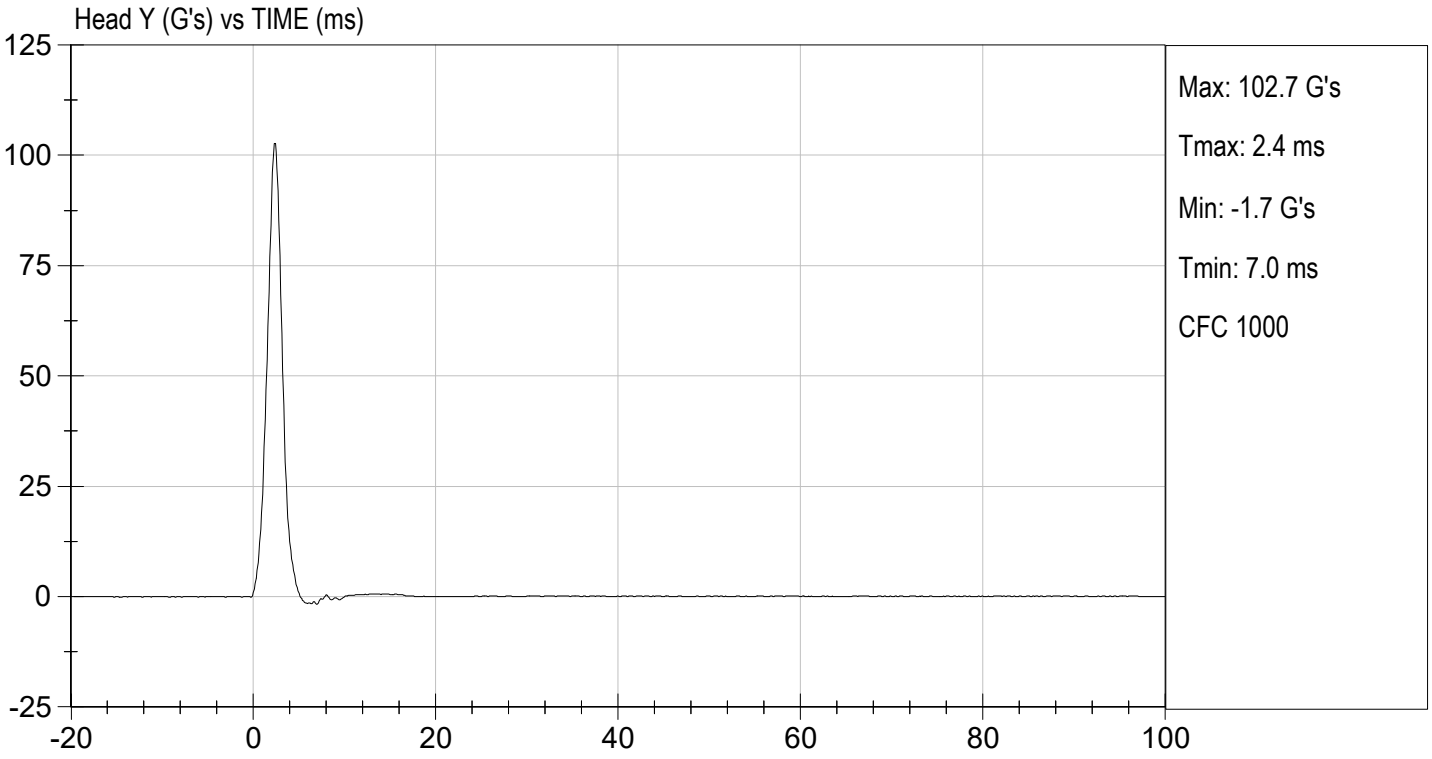


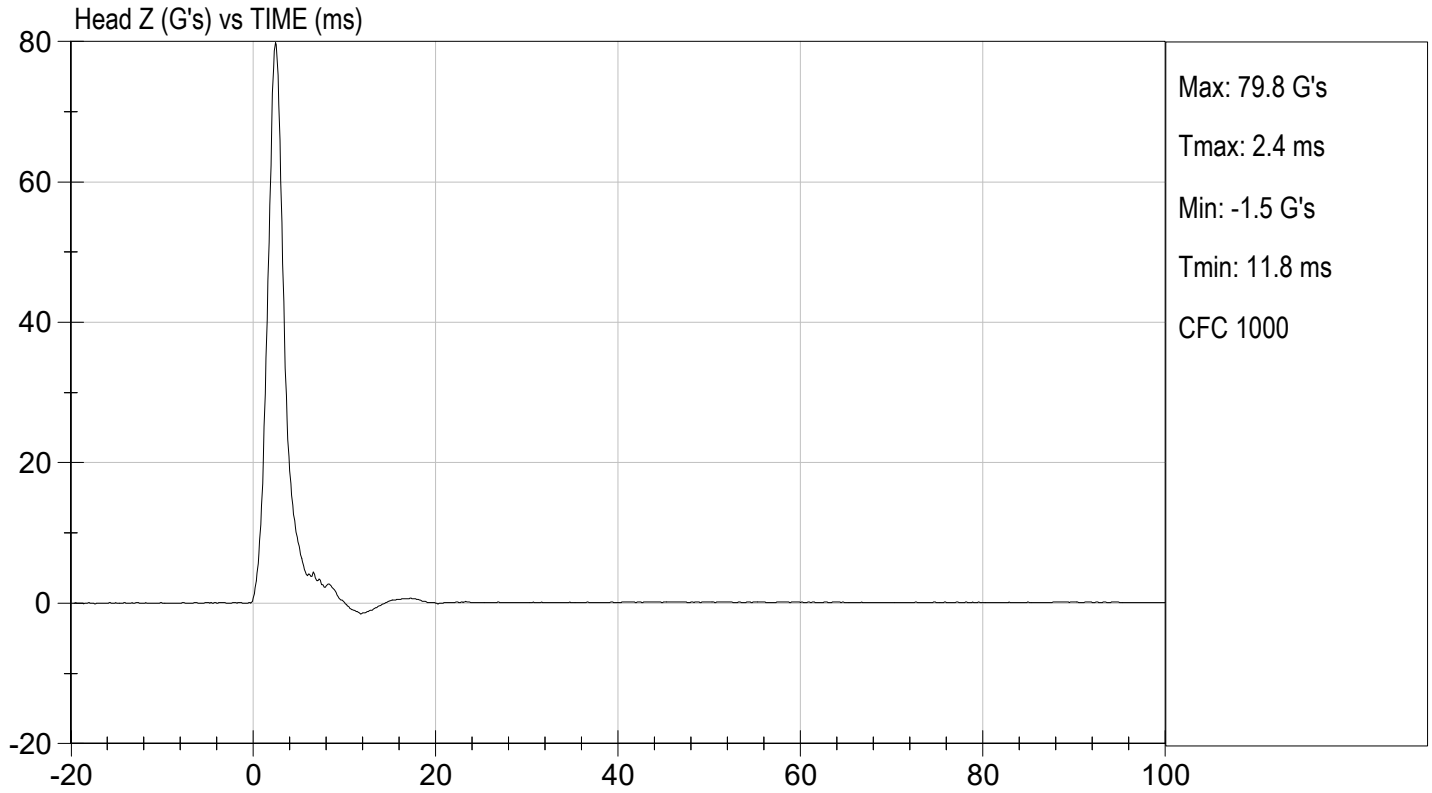
Head X (G's) vs TIME (ms)



TEST DESC: HEAD DROP

TEST DATE: 01/13/2022
TEST #: D220071





MGA RESEARCH CORPORATION

LATERAL NECK PENDULUM TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D220072

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	21.7	Pass
Humidity		%	10 to 70	31	Pass
Impact Velocity		m/s	5.51 to 5.63	5.63	Pass
Pendulum Velocity	10 ms	m/s	2.20 to 2.80	2.40	Pass
	15 ms	m/s	3.30 to 4.10	3.59	Pass
	20 ms	m/s	4.40 to 5.40	5.07	Pass
	25 ms	m/s	5.40 to 6.10	5.60	Pass
	25-100 ms	m/s	5.50 to 6.20	5.65	Pass
Maximum D-Plane Rotation		deg	71 to 81	75	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	65	Pass
Maximum Occipital Condyle Moment		Nm	-44 to -36	-39	Pass
Time of Moment Decay to 0 Nm		ms	102 to 126	122	Pass
			Overall Test Results		Pass

Laboratory Technician

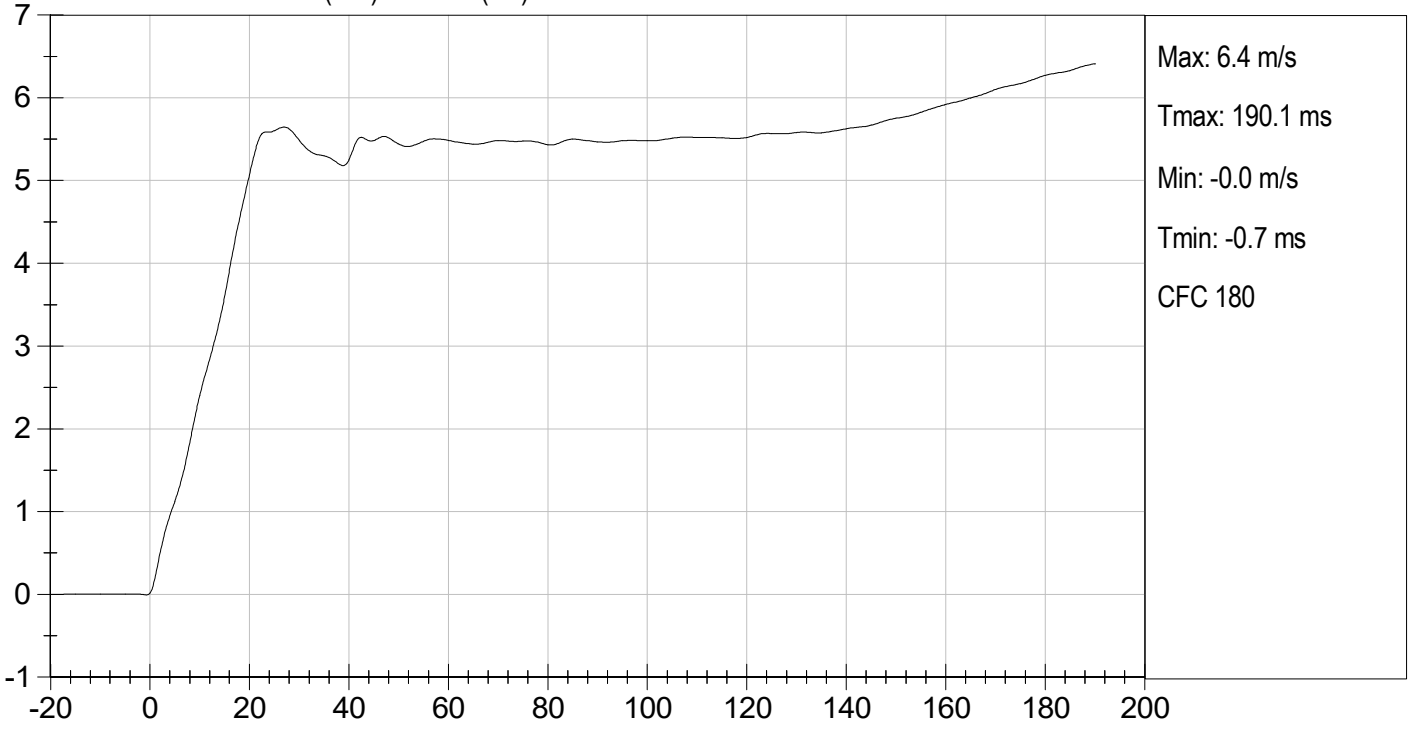
01/13/2022
Test Date

Approved By

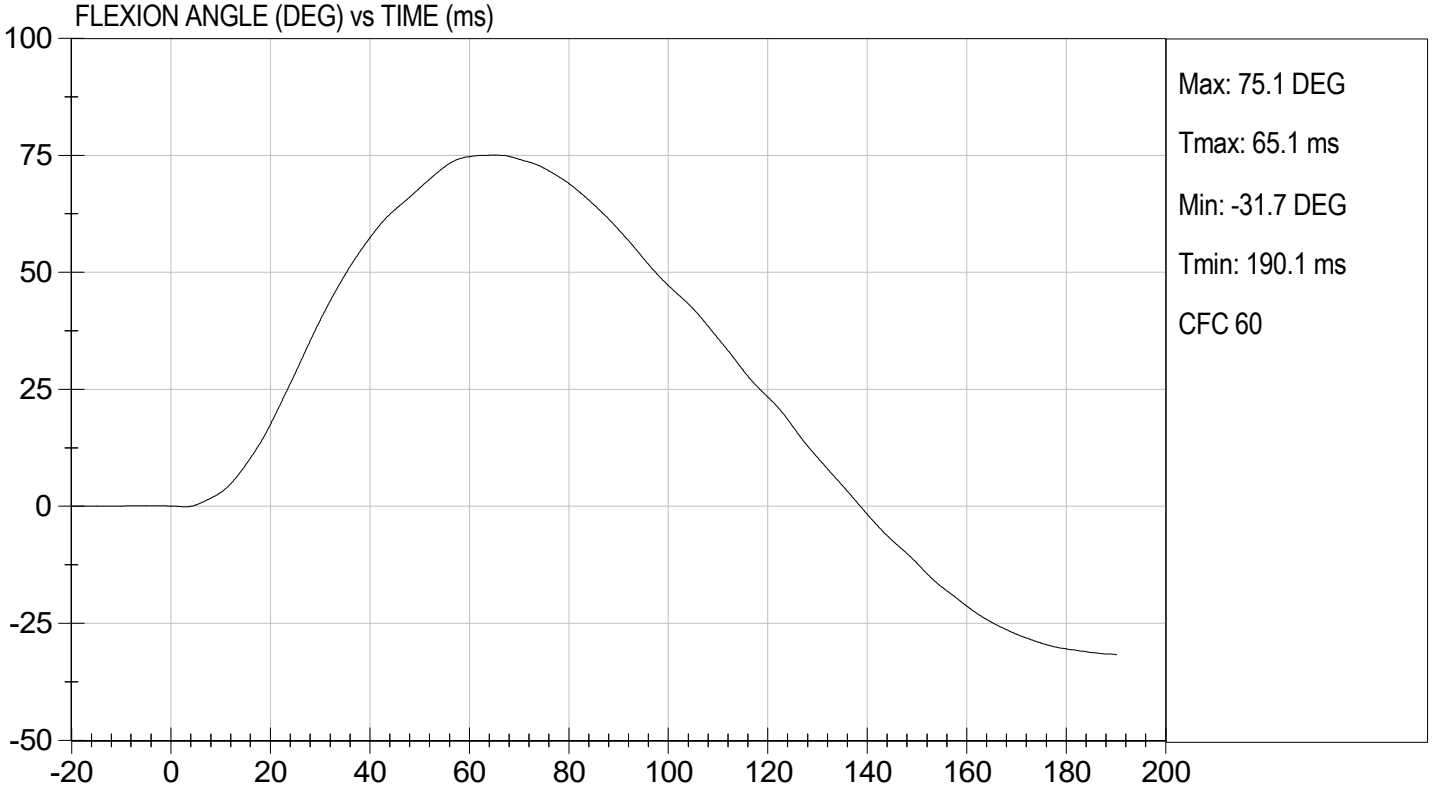
TEST DESC: NECK BENDING
VELOCITY: 18.48 ft/s, 5.63 m/s

TEST DATE: 01/13/2022
TEST #: D220072

PENDULUM VELOCITY (m/s) vs TIME (ms)

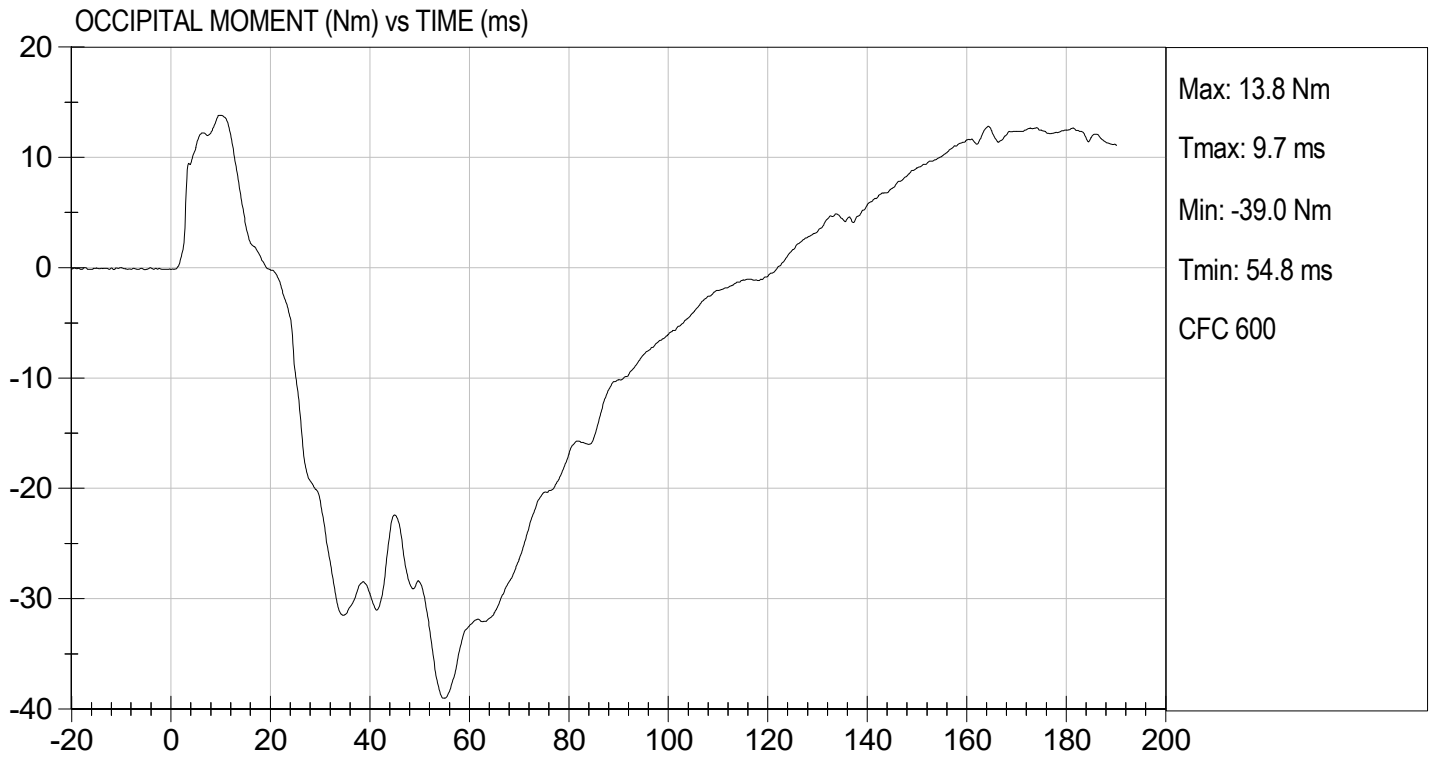


FLEXION ANGLE (DEG) vs TIME (ms)



TEST DESC: NECK BENDING
VELOCITY: 18.48 ft/s, 5.63 m/s

TEST DATE: 01/13/2022
TEST #: D220072



MGA RESEARCH CORPORATION

SHOULDER IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test ID:** D220073

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	28	Pass
Impact Velocity	m/s	4.20 to 4.40	4.27	Pass
Maximum Probe Acceleration	G's	13 to 18	15	Pass
Shoulder Displacement	mm	28 to 37	32	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	20	Pass
		Overall Test Results		Pass

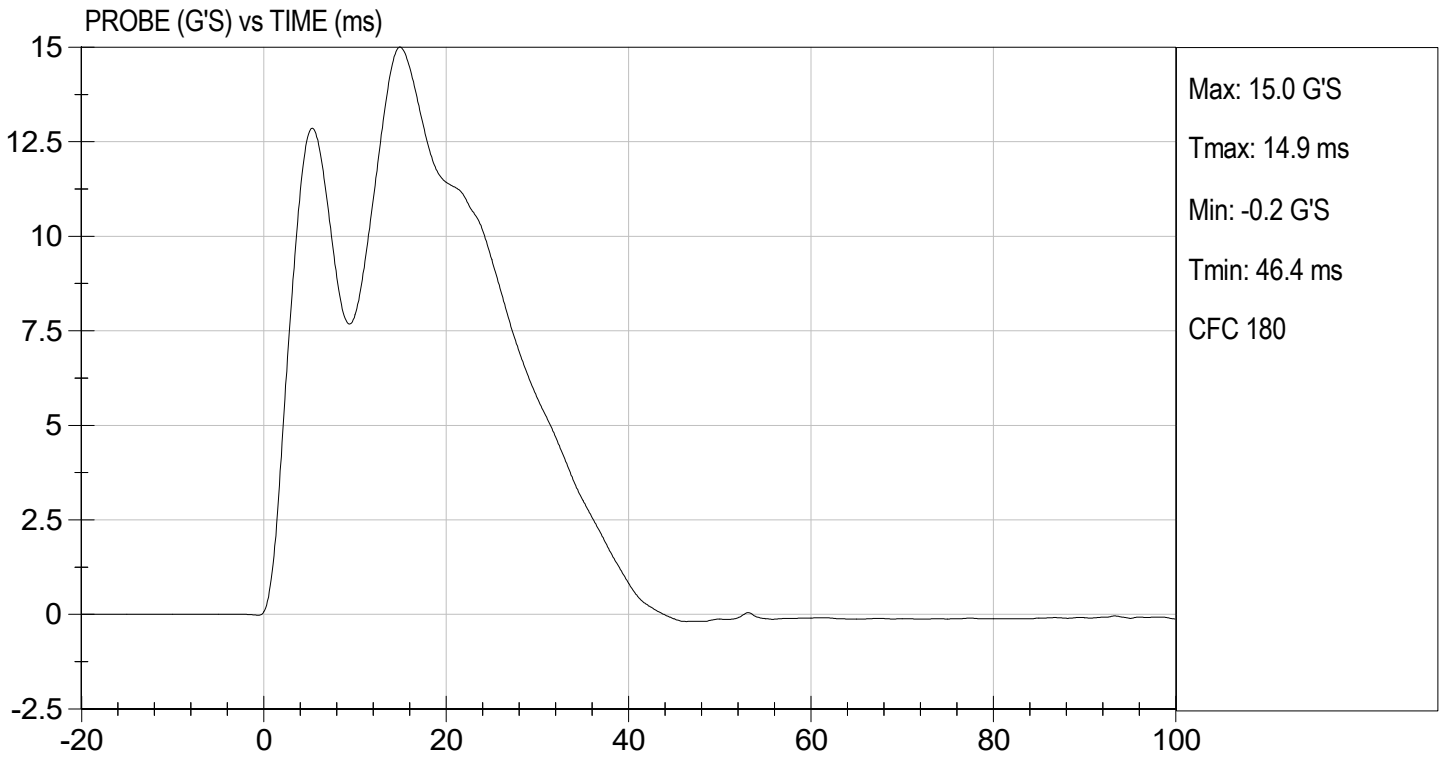
Laboratory Technician

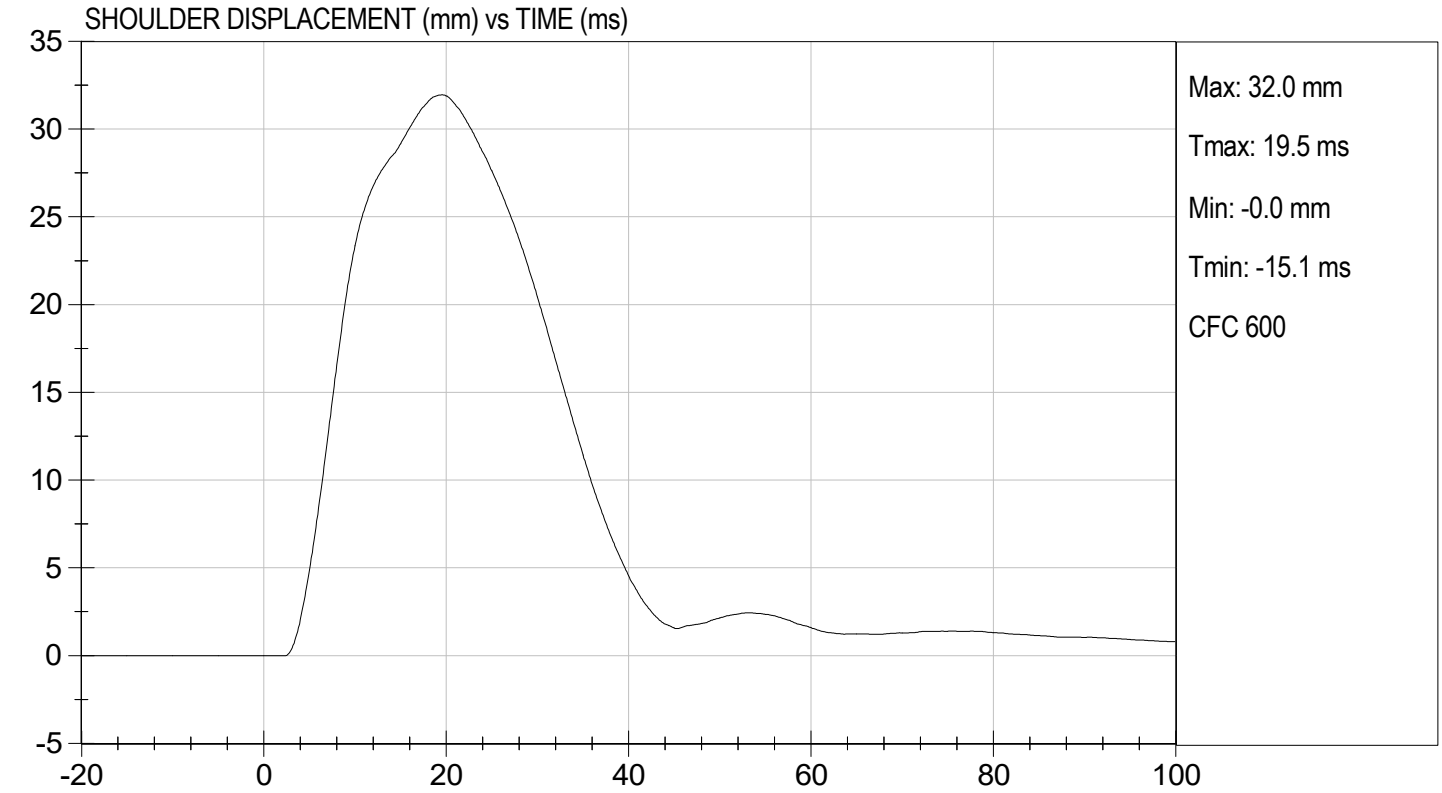
01/13/2022
Test Date

Approved By

TEST DESC: SHOULDER IMPACT
VELOCITY: 14.01 ft/s, 4.27 m/s

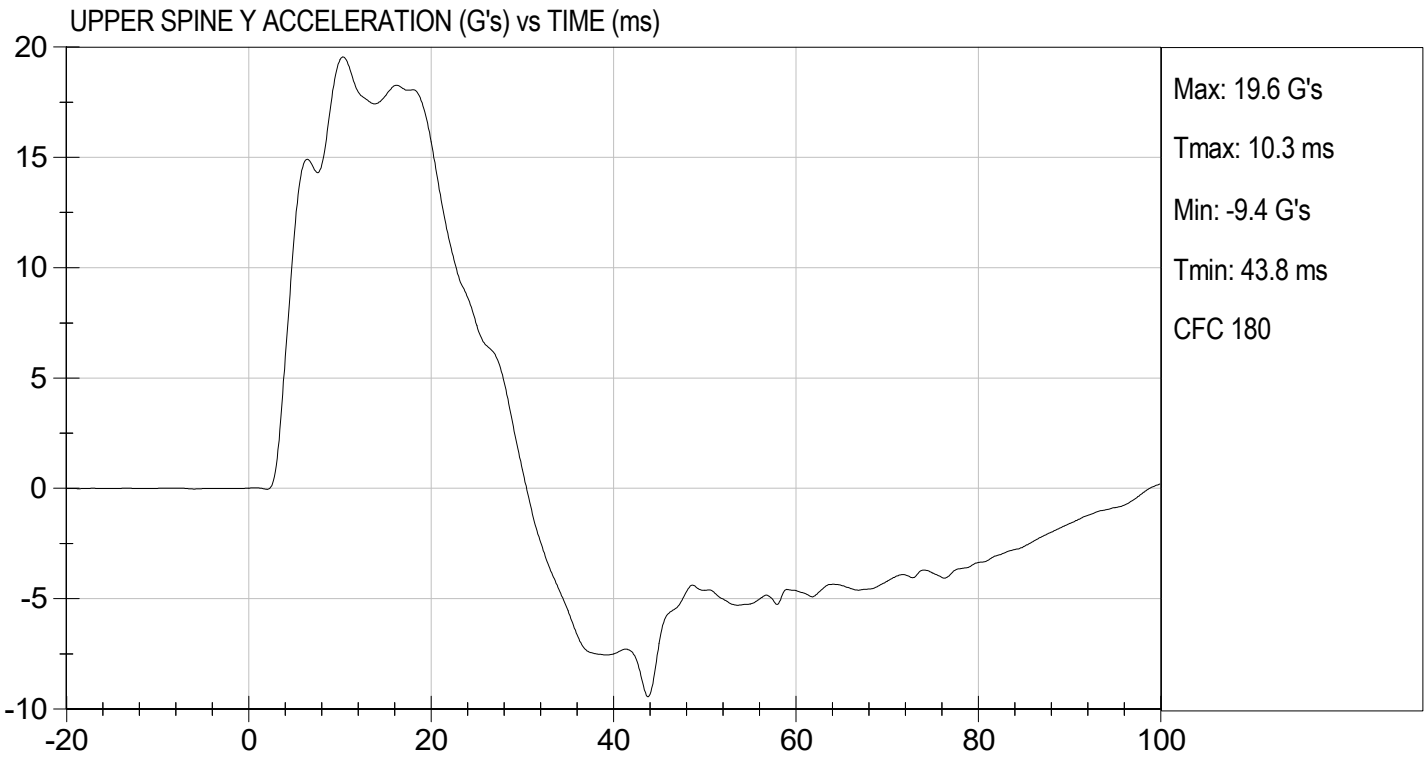
TEST DATE: 01/13/2022
TEST #: D220073





TEST DESC: SHOULDER IMPACT
VELOCITY: 14.01 ft/s, 4.27 m/s

TEST DATE: 01/13/2022
TEST #: D220073



MGA RESEARCH CORPORATION

THORAX (WITH ARM) IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D220074

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Humidity	%	10 to 70	28	Pass
Impact Velocity	m/s	6.60 to 6.80	6.68	Pass
Maximum Probe Acceleration	G's	30 to 36	33	Pass
Shoulder Displacement	mm	31 to 40	37	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	34	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	39	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	32	Pass
		Overall Test Results		Pass

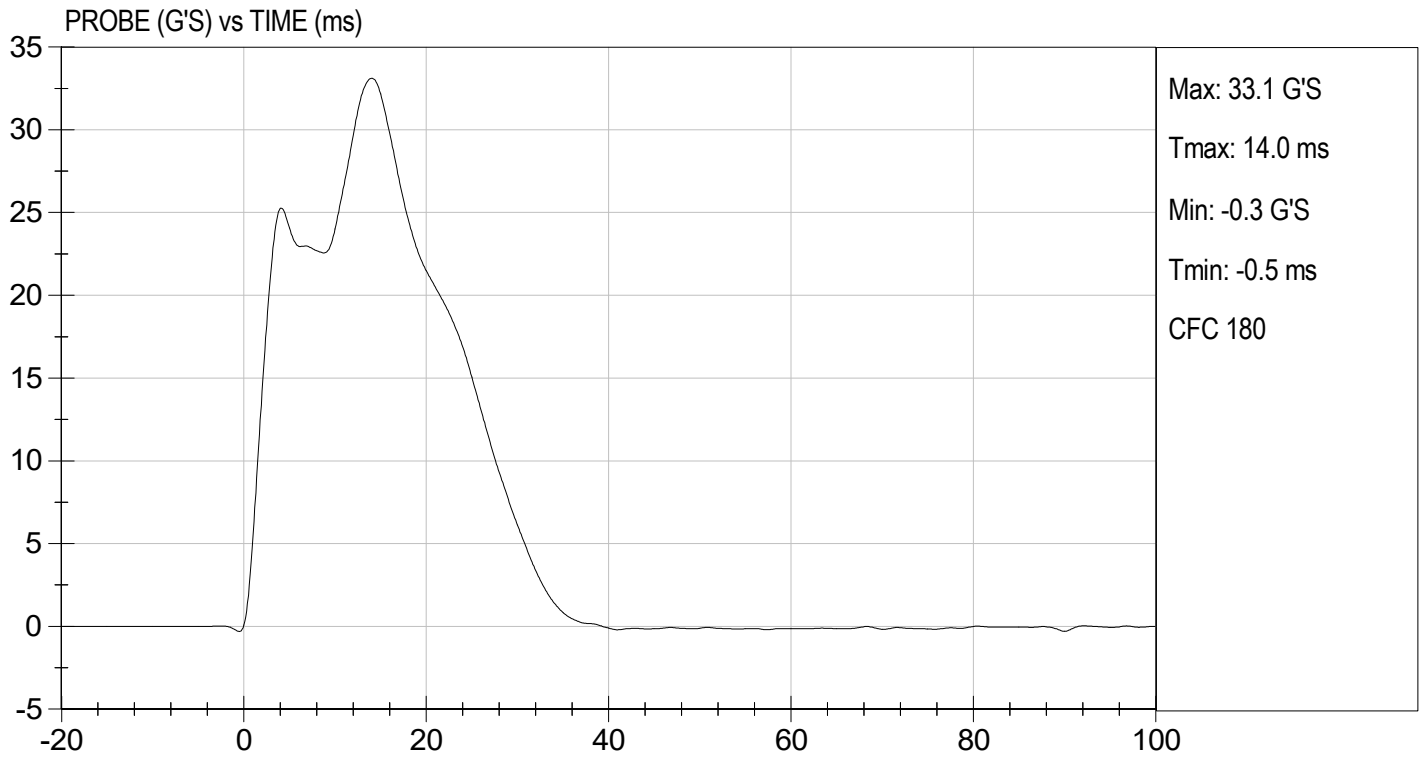
Laboratory Technician

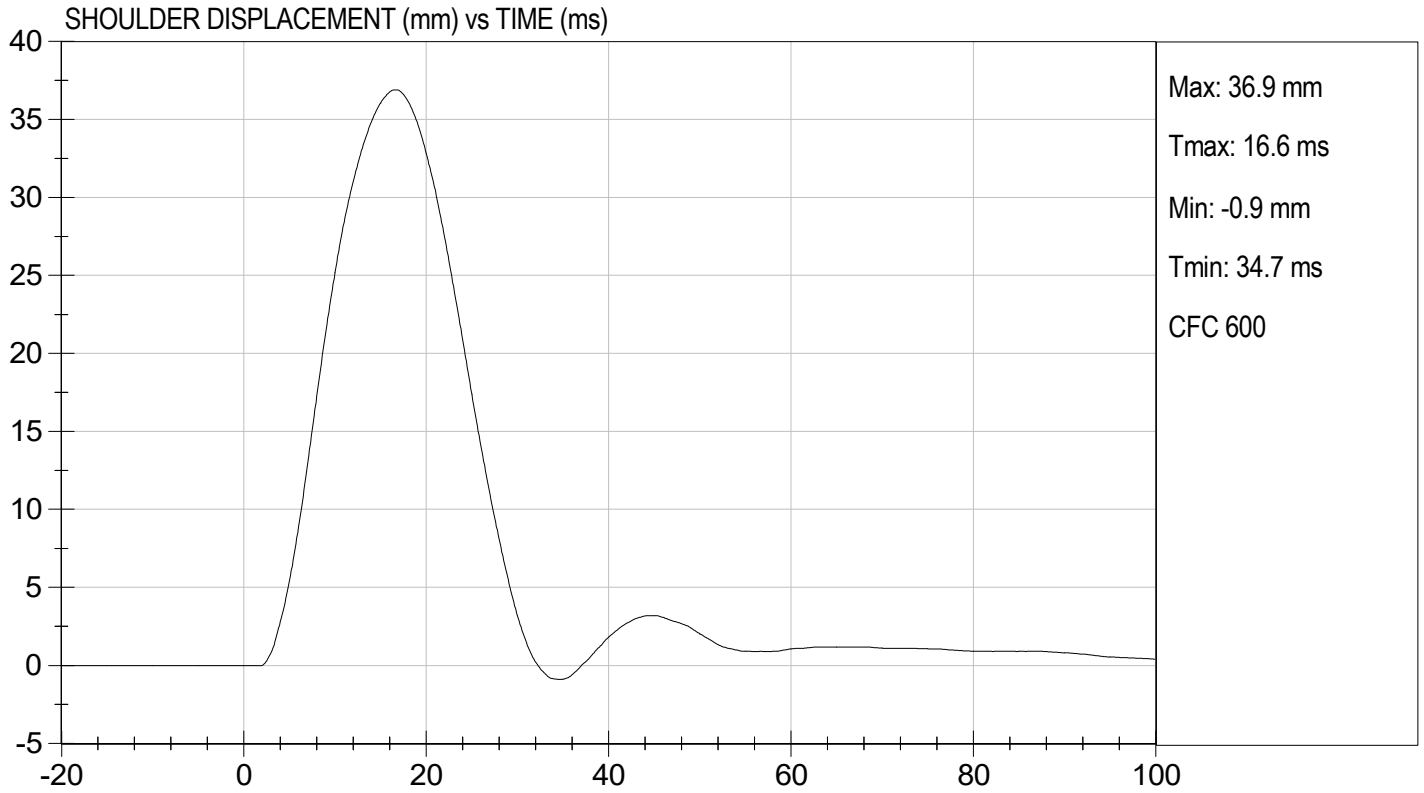
01/13/2022
Test Date

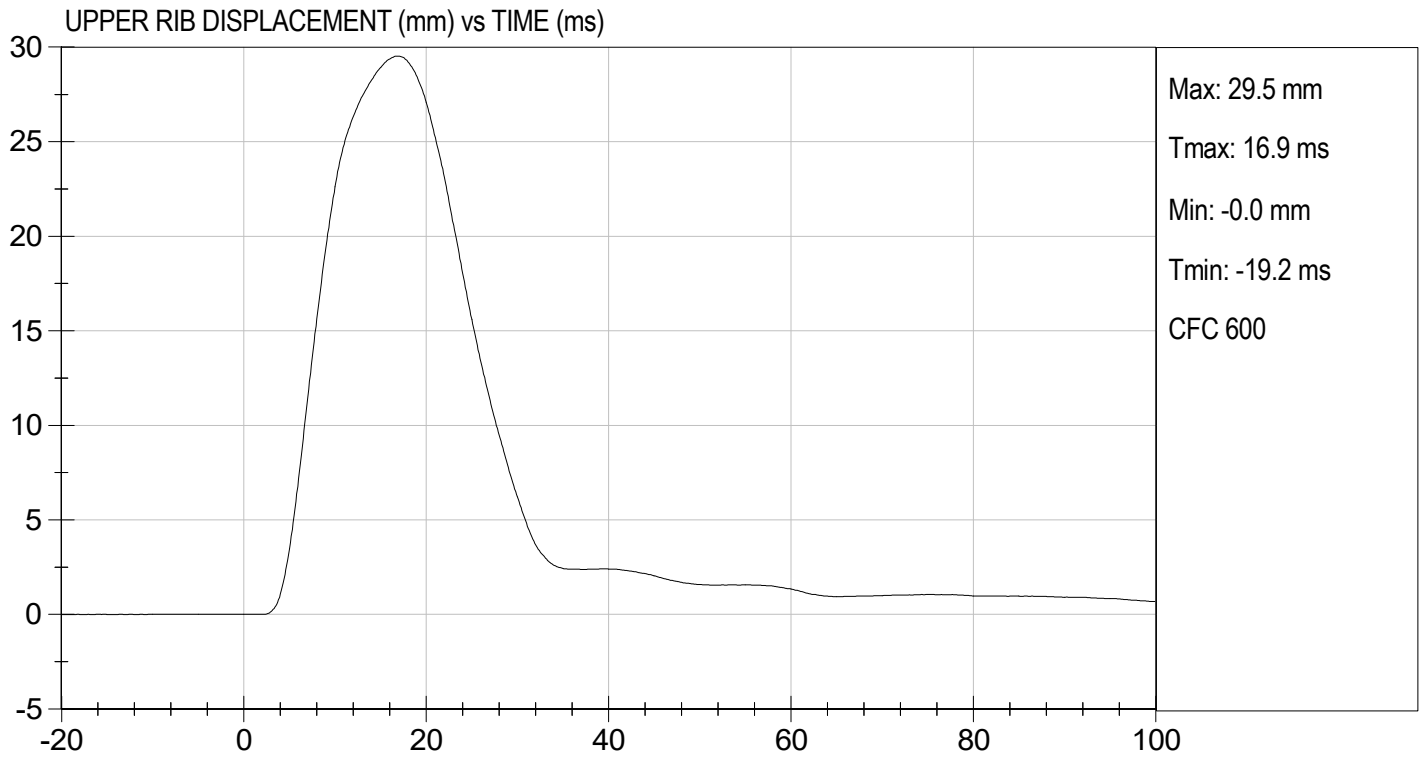
Approved By

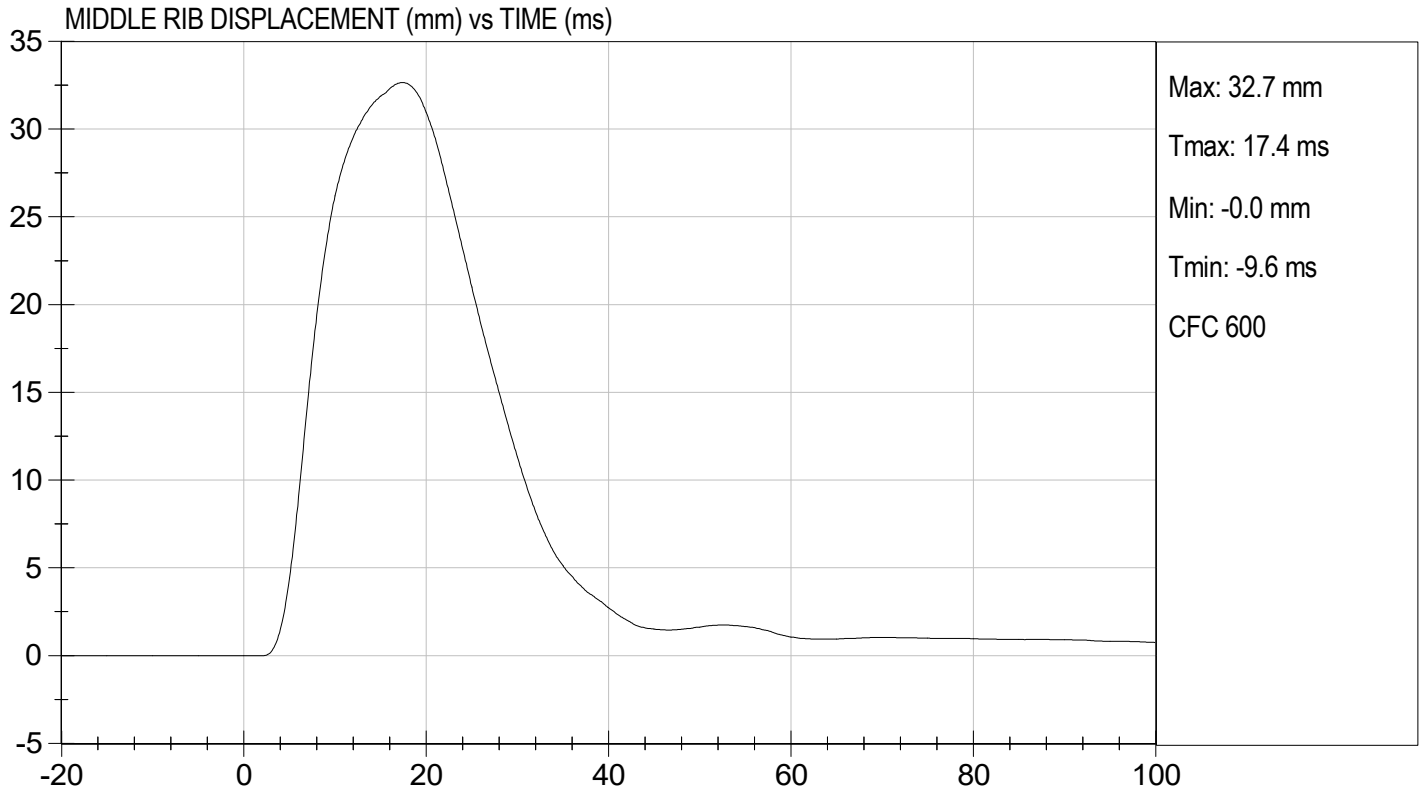
TEST DESC: THORAX IMPACT WITH ARM
VELOCITY: 21.93 ft/s, 6.68 m/s

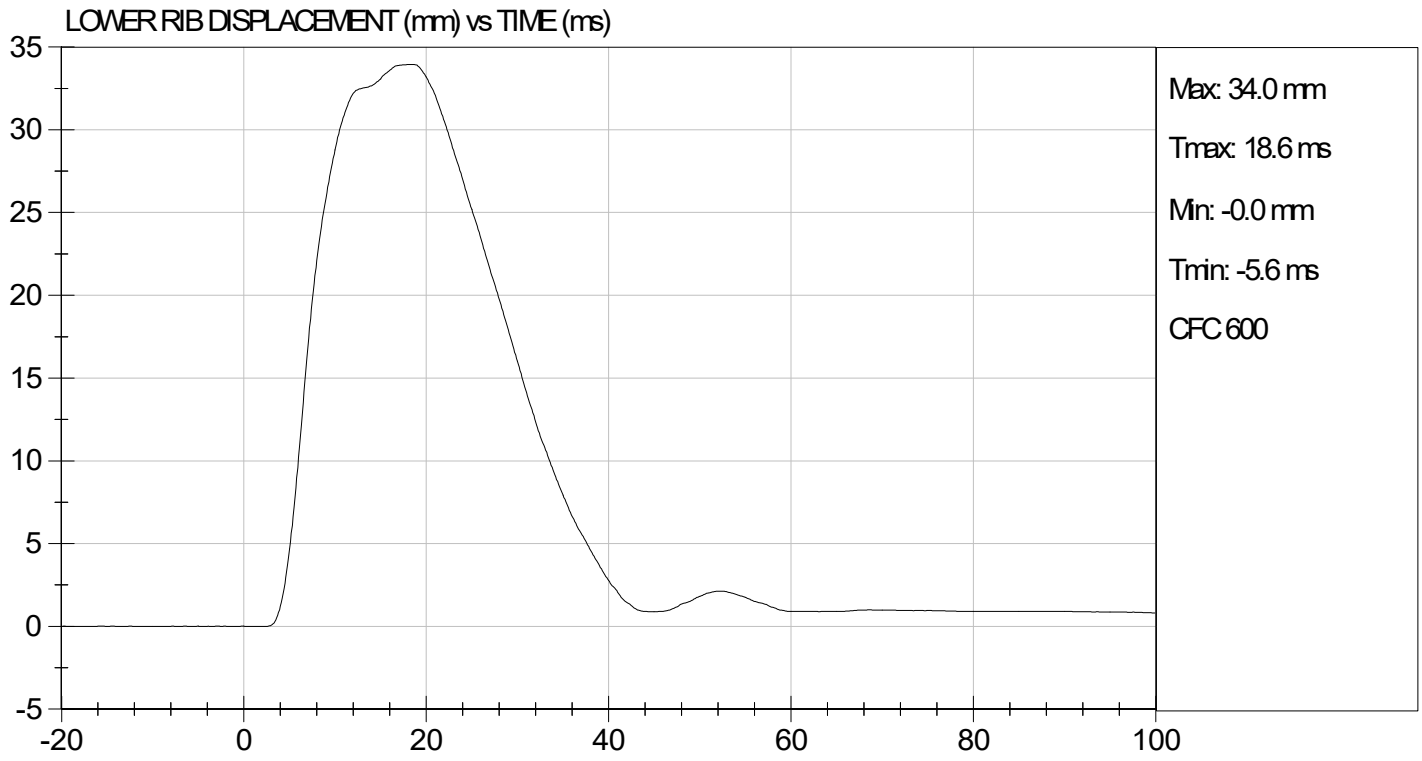
TEST DATE: 01/13/2022
TEST #: D220074

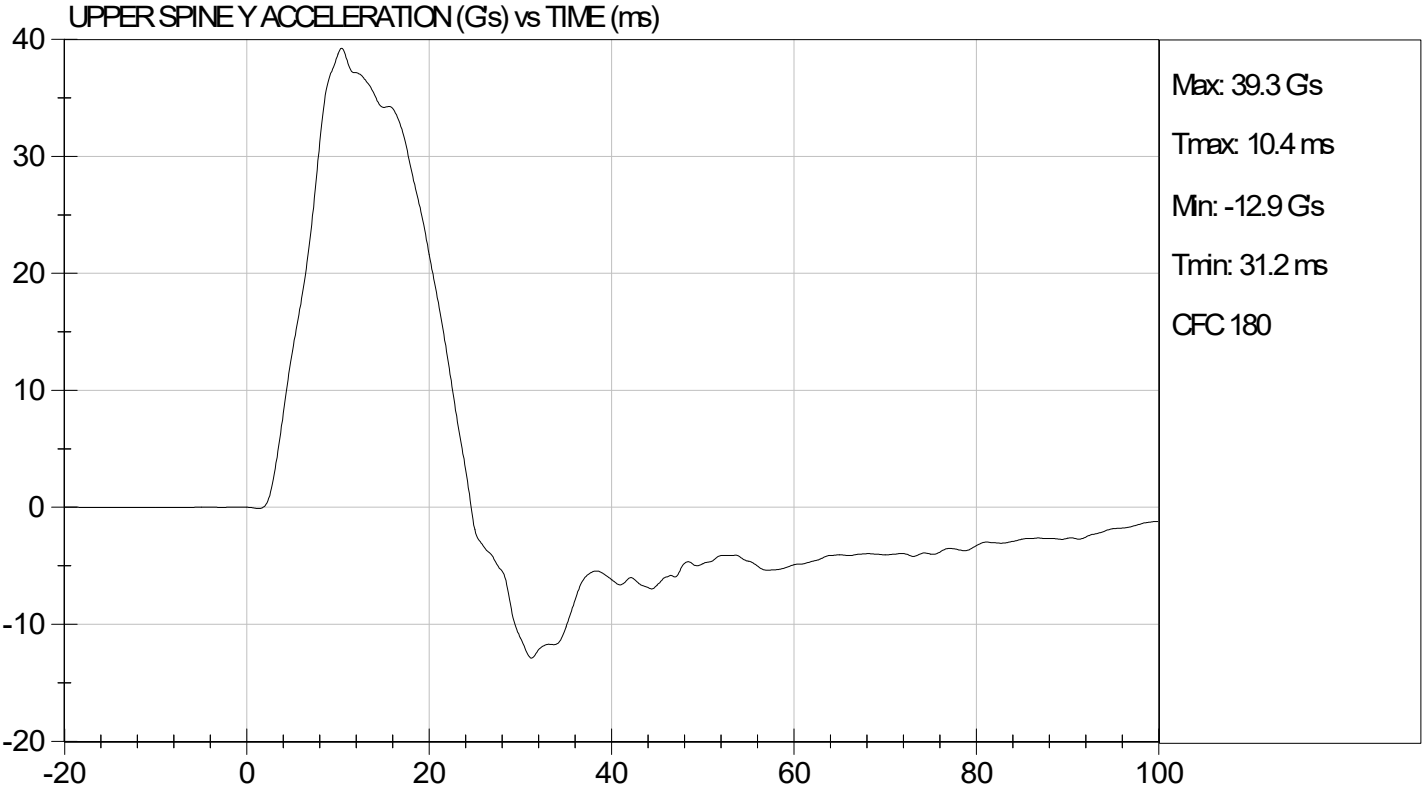





UPPER RIB DISPLACEMENT (mm) vs TIME (ms)
30
25
20
15
10
5
0
-5
-20
0
20
40
60
80
100
Max: 29.5 mm
Tmax: 16.9 ms
Min: -0.0 mm
Tmin: -19.2 ms
CFC 600

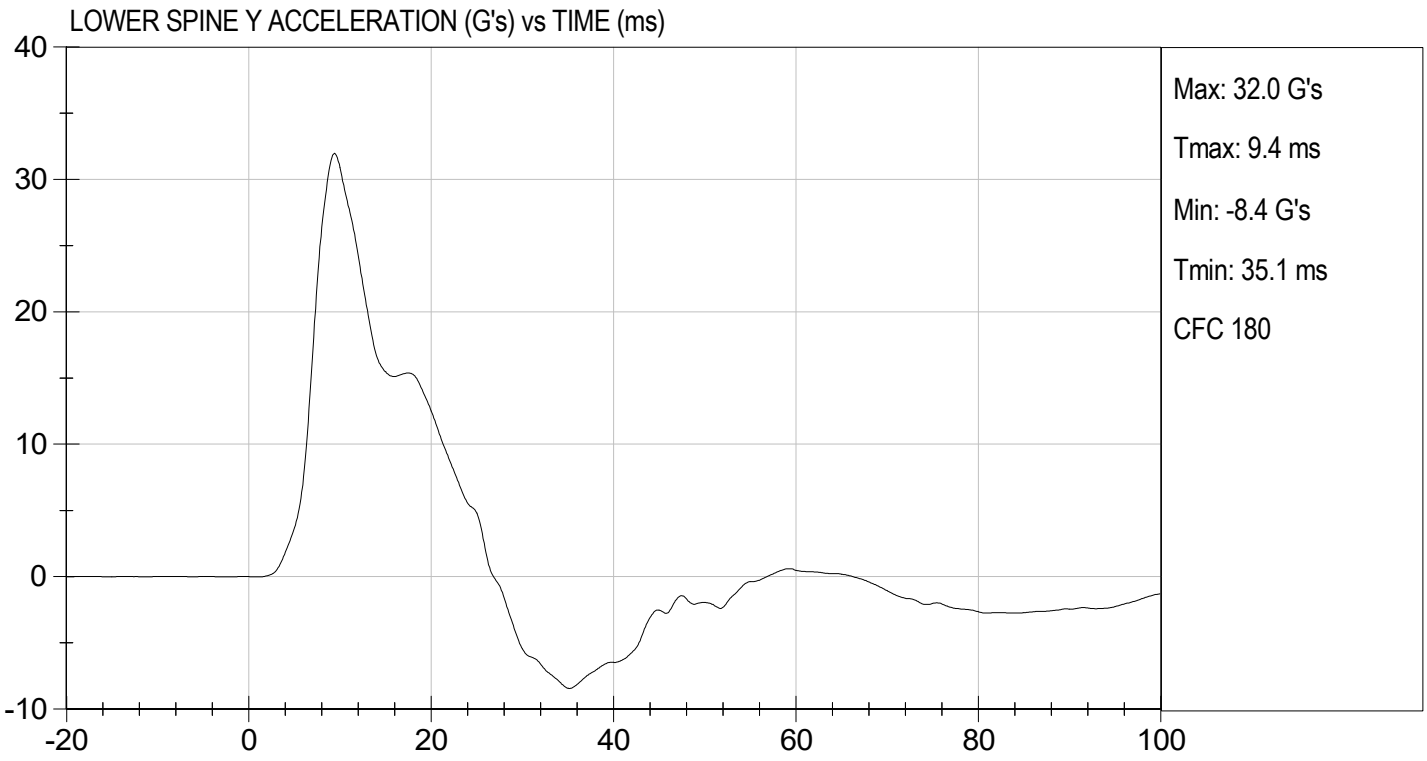

MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)
35
30
25
20
15
10
5
0
-5
-20
0
20
40
60
80
100
Max: 32.7 mm
Tmax: 17.4 ms
Min: -0.0 mm
Tmin: -9.6 ms
CFC 600


LOWER RIB DISPLACEMENT (mm) vs TIME (ms)
35
30
25
20
15
10
5
0
-5
-20
0
20
40
60
80
100
Max: 34.0 mm
Tmax: 18.6 ms
Min: -0.0 mm
Tmin: -5.6 ms
CFC 600


UPPER SPINE Y ACCELERATION (G's) vs TIME (ms)
40
30
20
10
0
-10
-20
-20
0
20
40
60
80
100
Max: 39.3 G's
Tmax: 10.4 ms
Min: -12.9 G's
Tmin: 31.2 ms
CFC 180

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

TEST DATE: 01/13/2022
TEST #: D220074



MGA RESEARCH CORPORATION

THORAX (WITHOUT ARM) IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D220075

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.7	Pass
Humidity	%	10 to 70	28	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	39	Pass
Middle Rib Displacement	mm	39 to 45	43	Pass
Lower Rib Displacement	mm	35 to 43	39	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

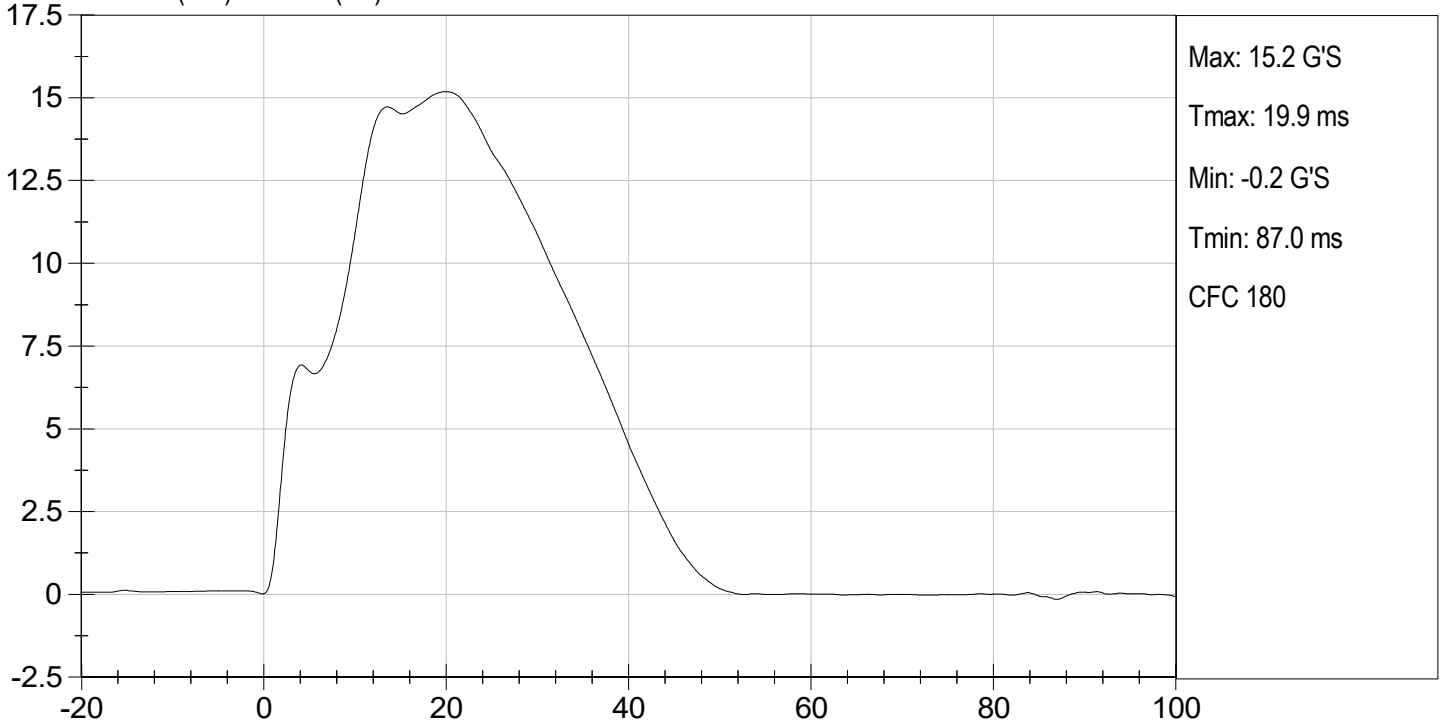
01/13/2022
Test Date

Approved By

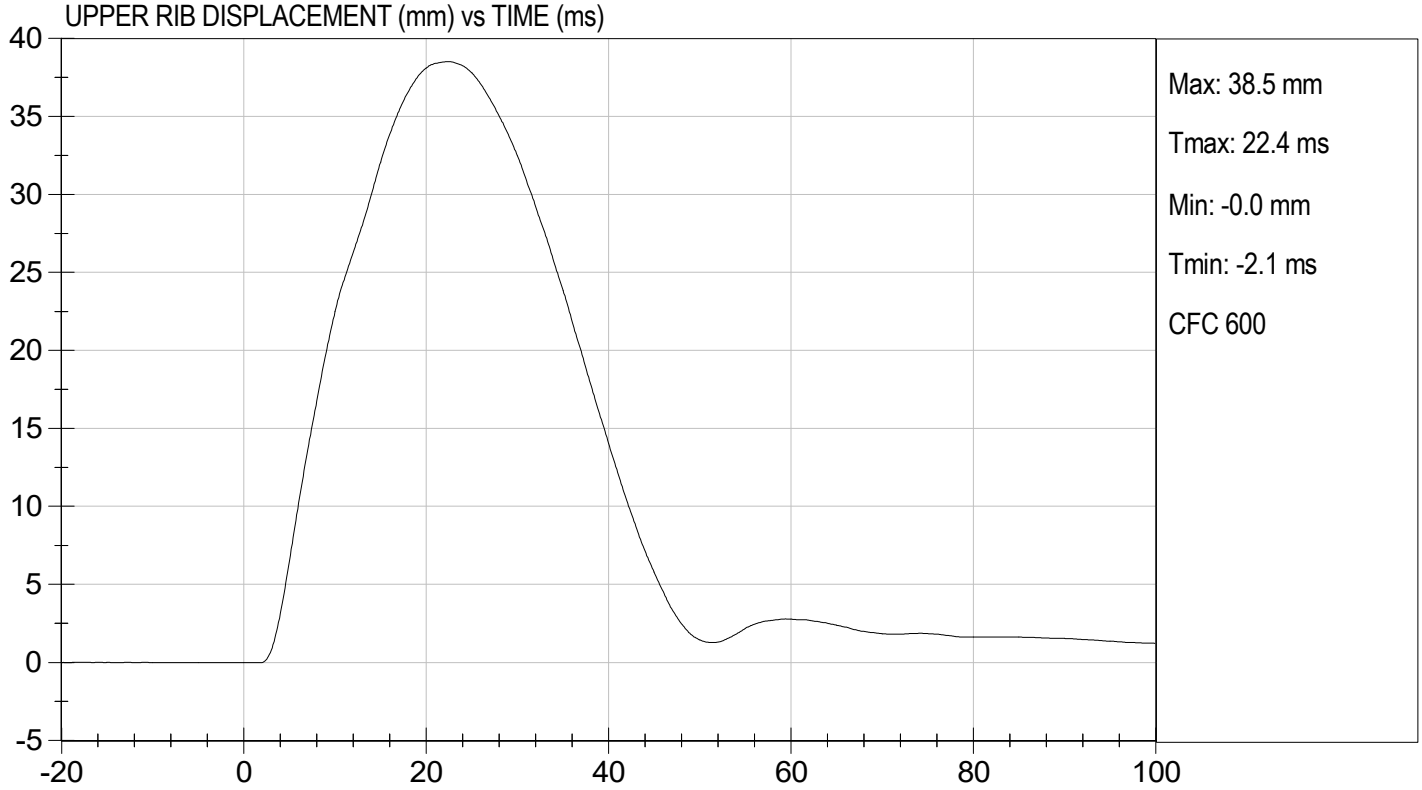
TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 14.01 ft/s, 4.27 m/s

TEST DATE: 01/13/2022
TEST #: D220075

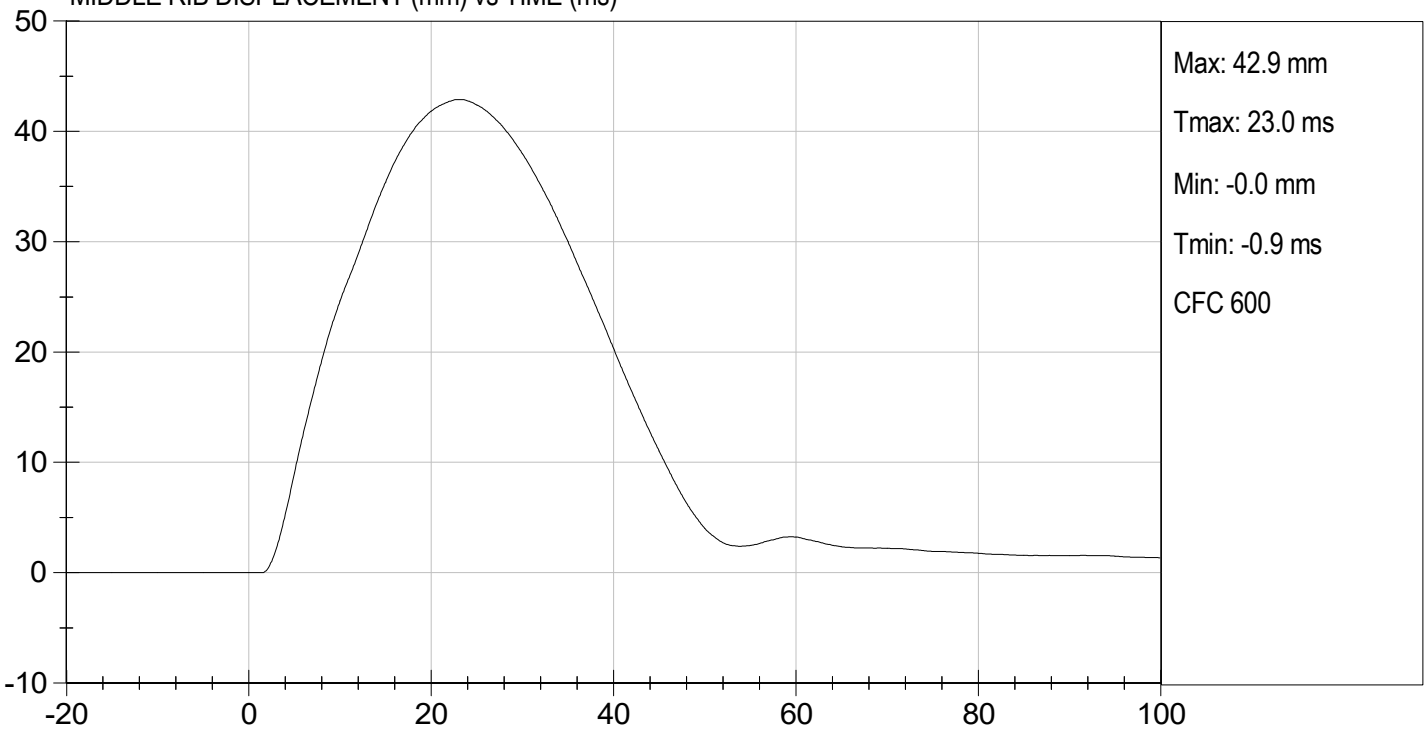
PROBE (G'S) vs TIME (ms)



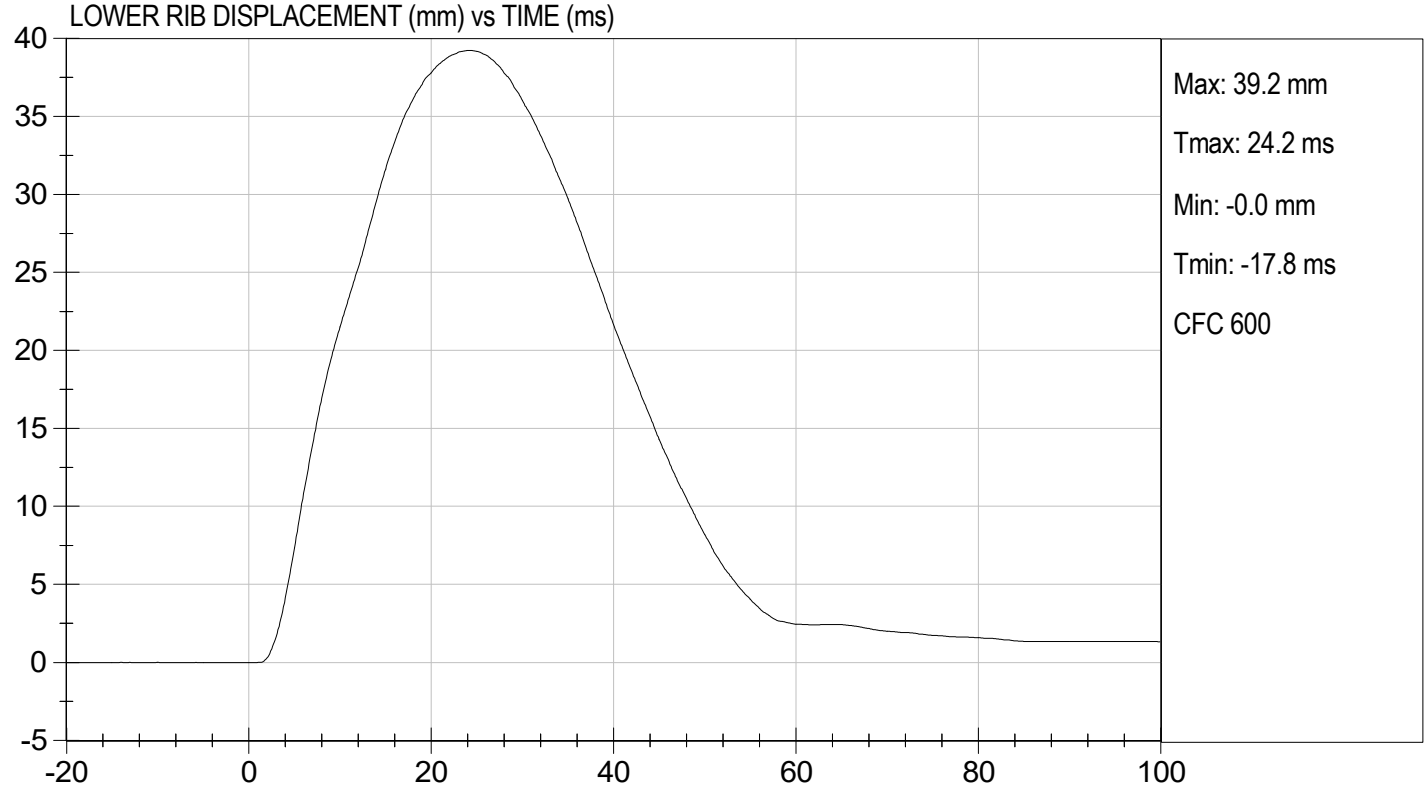
UPPER RIB DISPLACEMENT (mm) vs TIME (ms)



MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



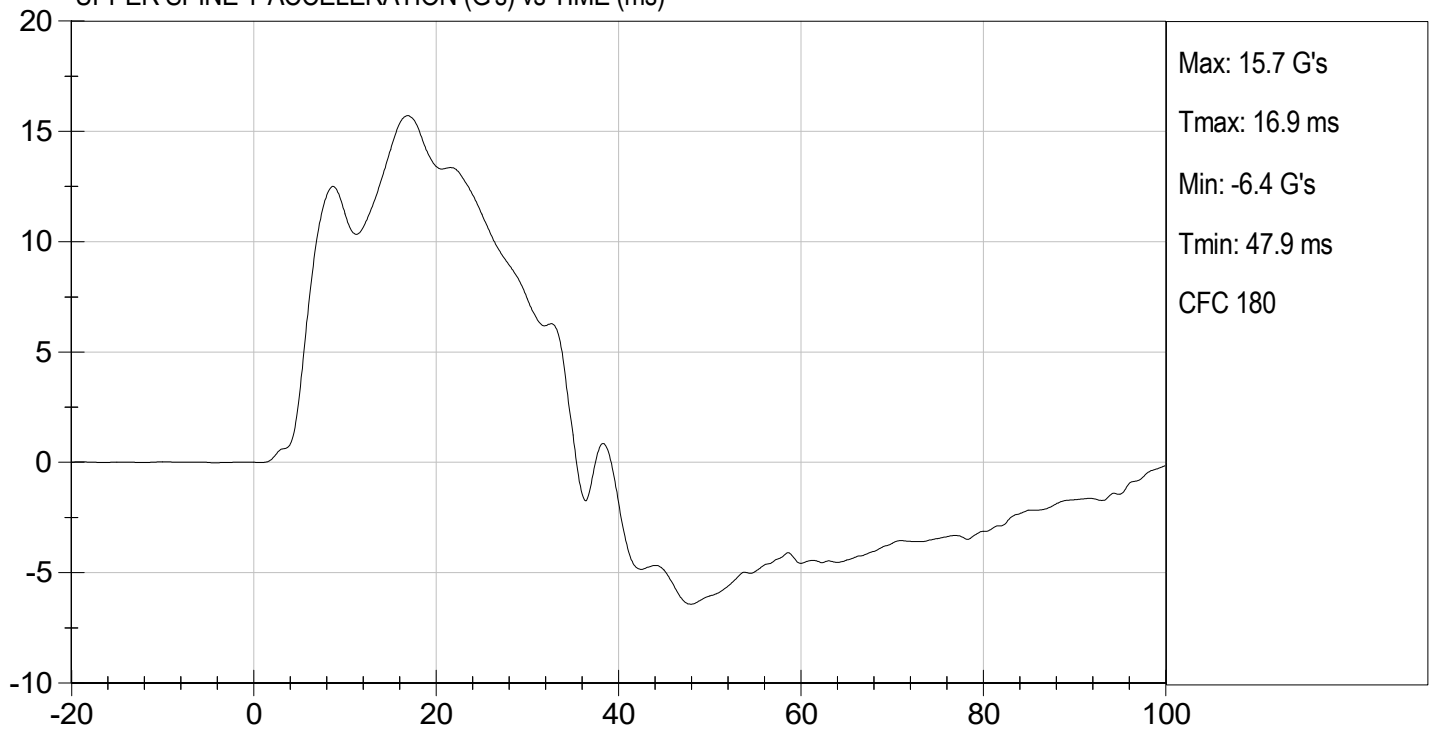
LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



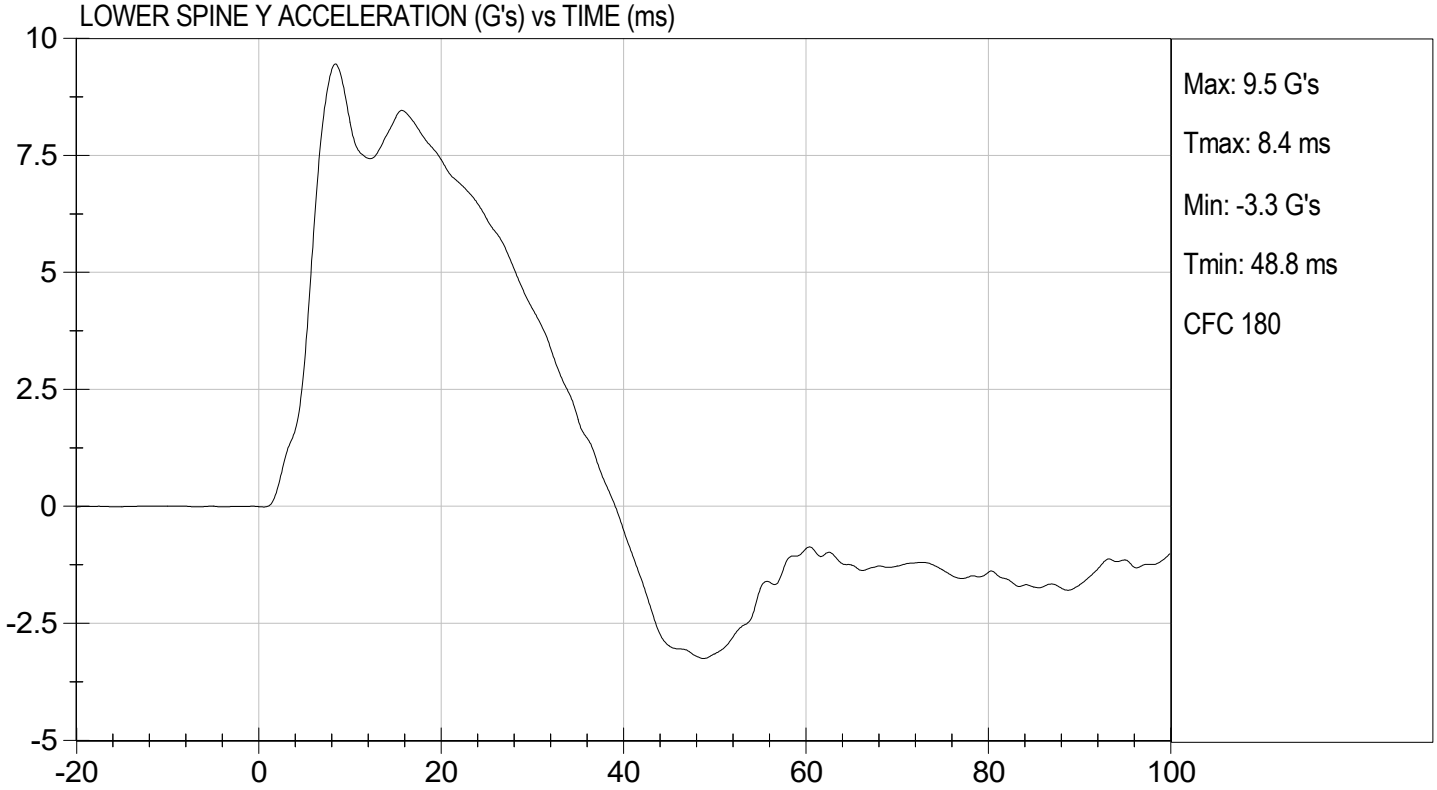
TEST DESC: THORAX IMPACT WITHOUT ARM
VELOCITY: 14.01 ft/s, 4.27 m/s

TEST DATE: 01/13/2022
TEST #: D220075

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



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



MGA RESEARCH CORPORATION

ABDOMINAL IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D220076

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Humidity	%	10 to 70	28	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	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

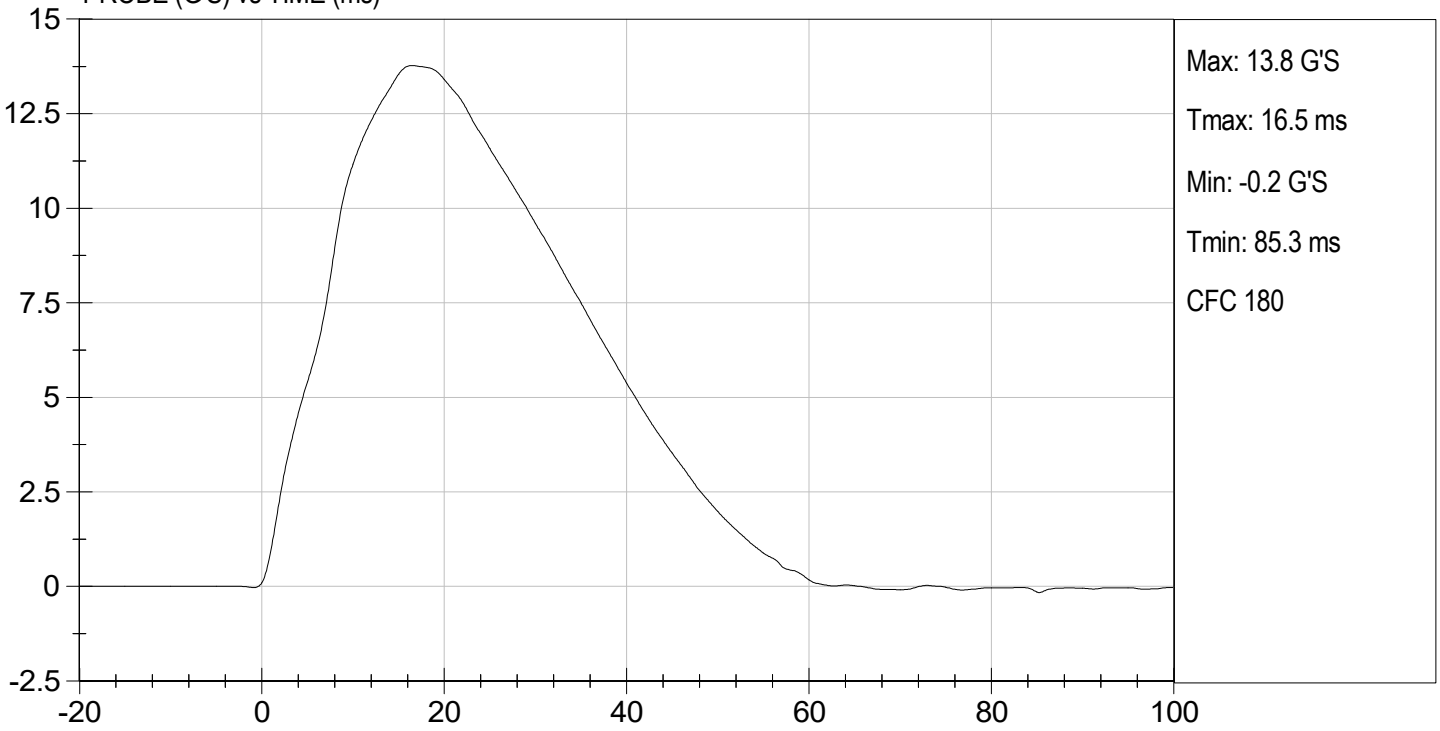
01/13/2022
Test Date

Approved By

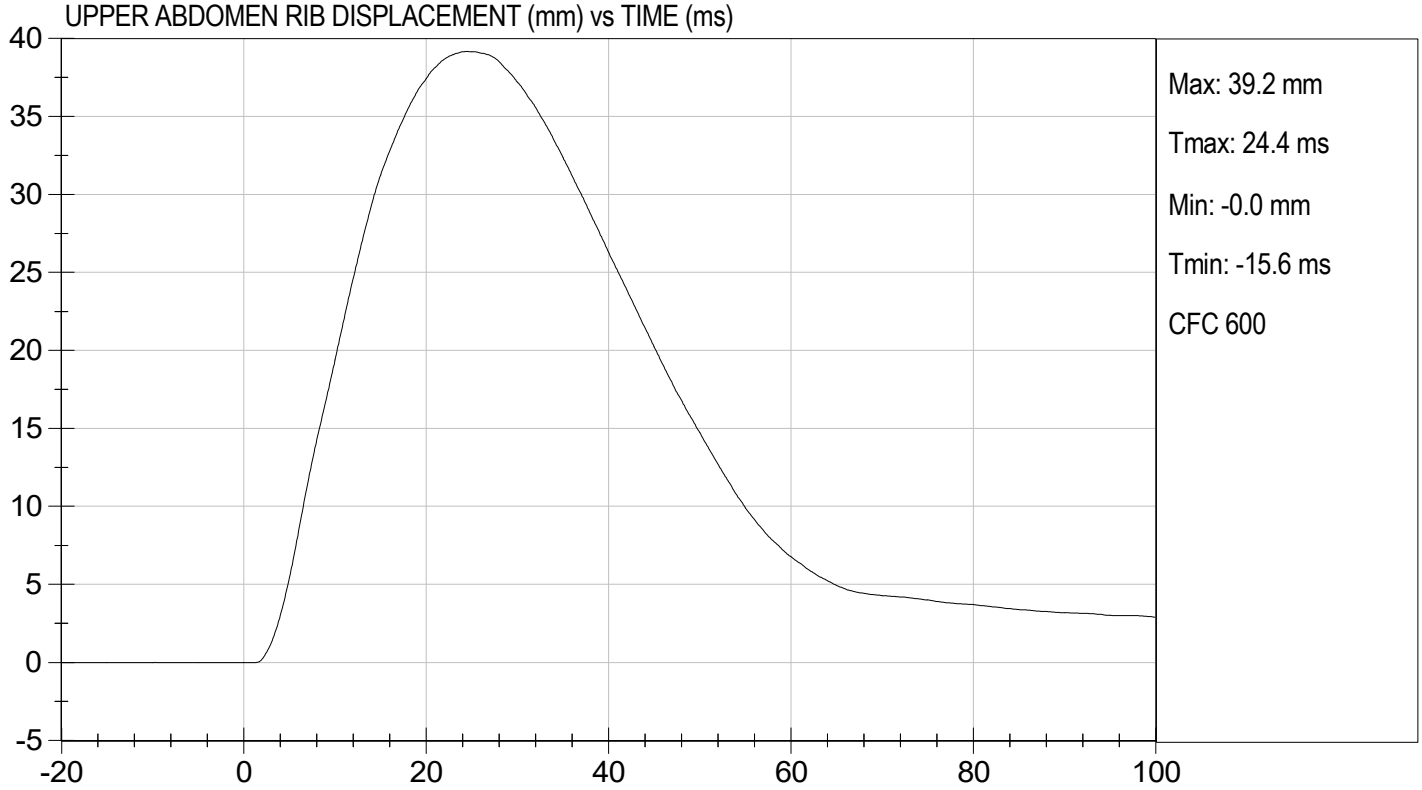
TEST DESC: ABDOMEN IMPACT
VELOCITY: 14.12 ft/s, 4.30 m/s

TEST DATE: 01/13/2022
TEST #: D220076

PROBE (G'S) vs TIME (ms)



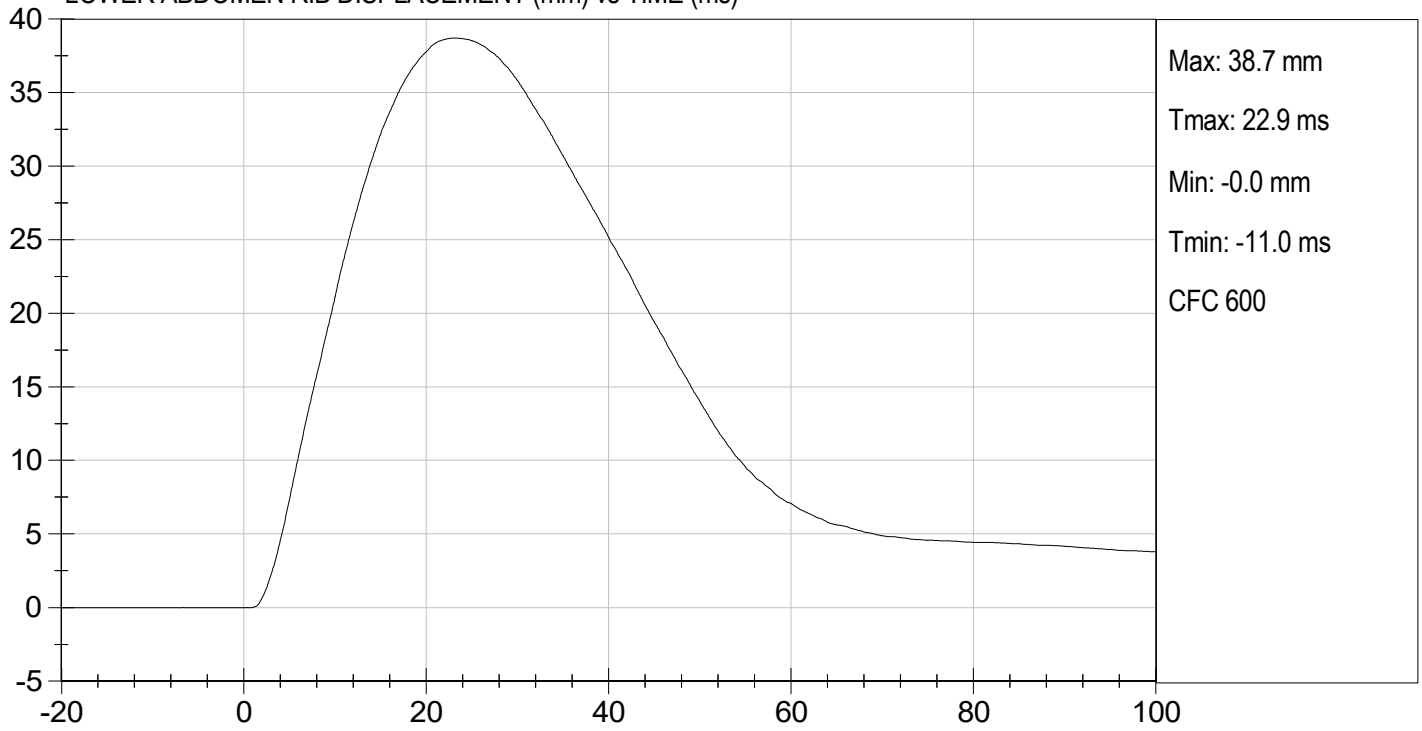
UPPER ABDOMEN RIB DISPLACEMENT (mm) vs TIME (ms)



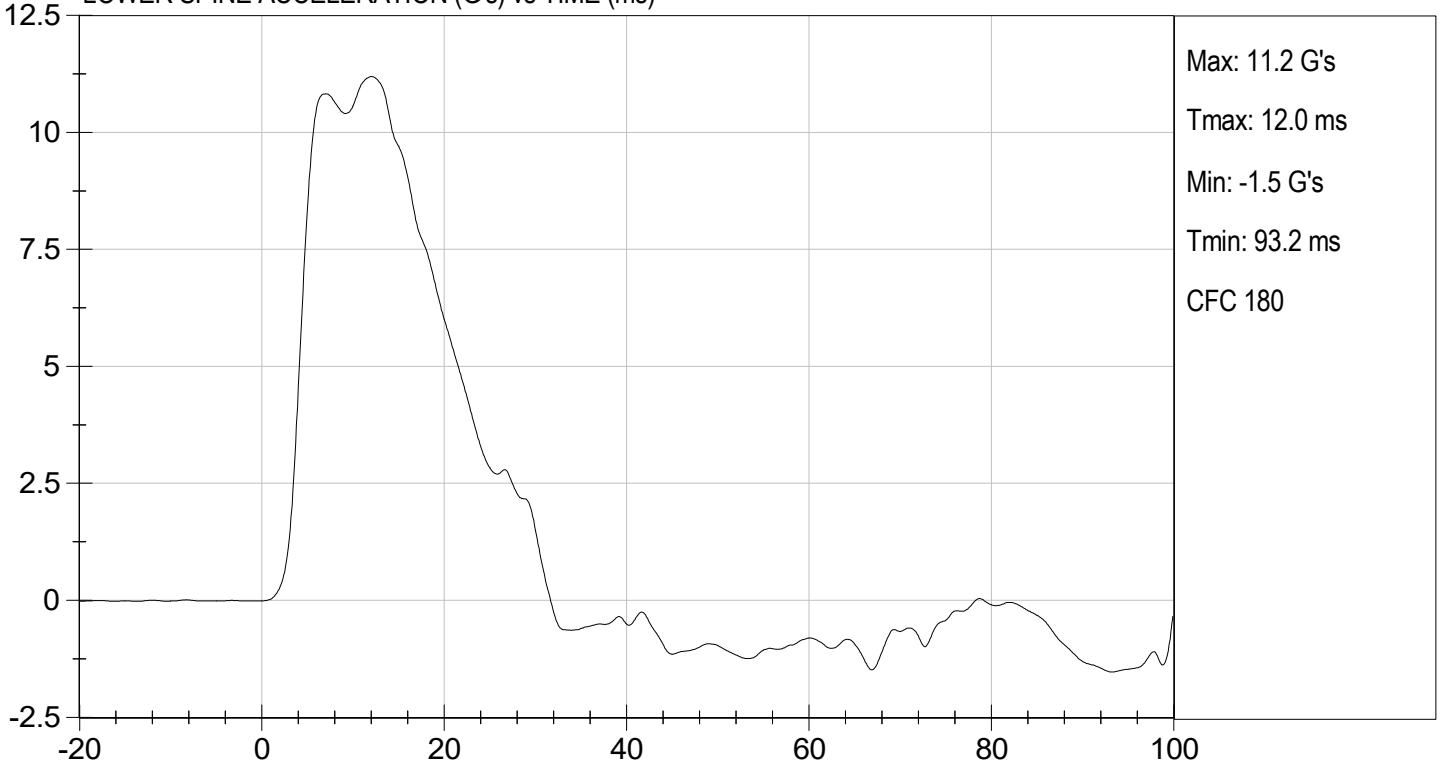
TEST DESC: ABDOMEN IMPACT
VELOCITY: 14.12 ft/s, 4.30 m/s

TEST DATE: 01/13/2022
TEST #: D220076

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

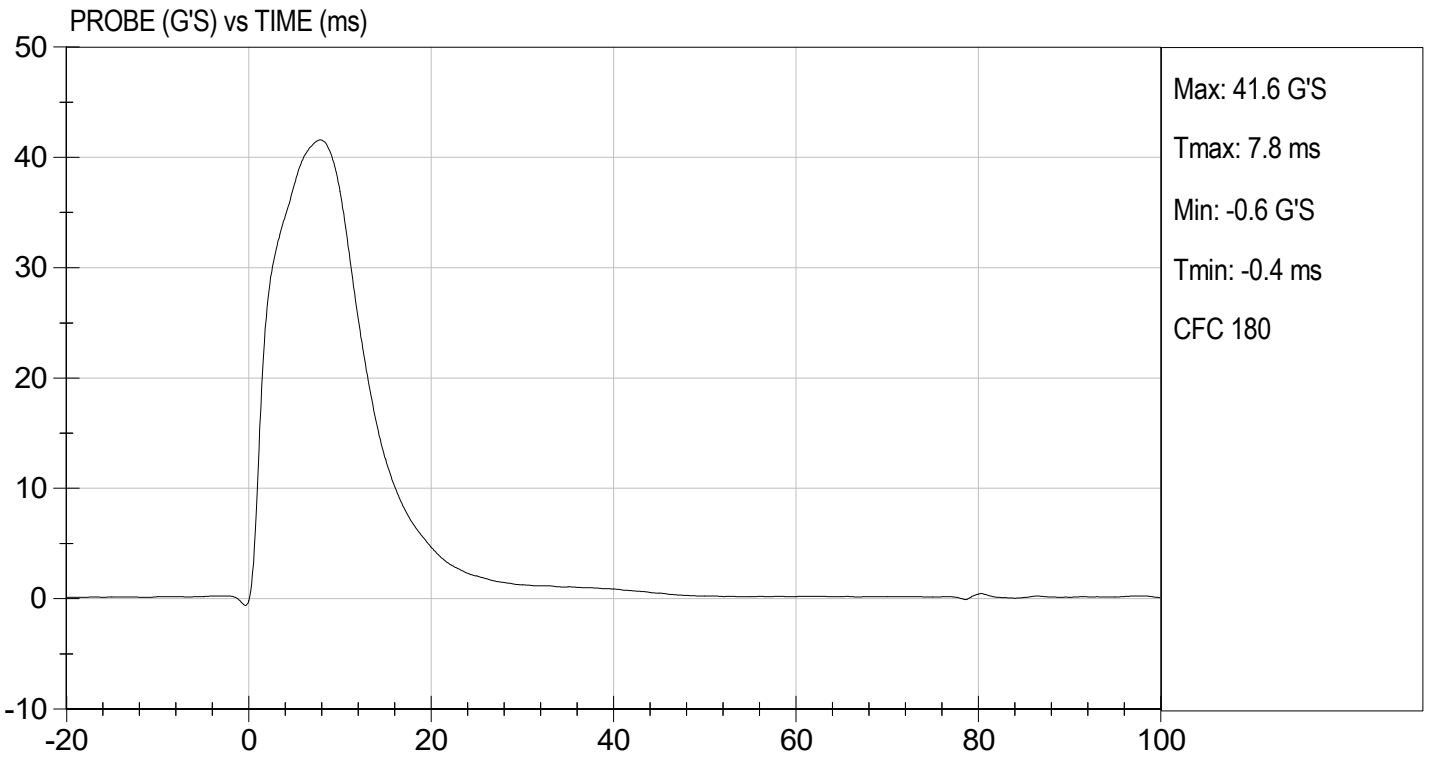
ATD Serial No: 306 **Test I.D:** D220077

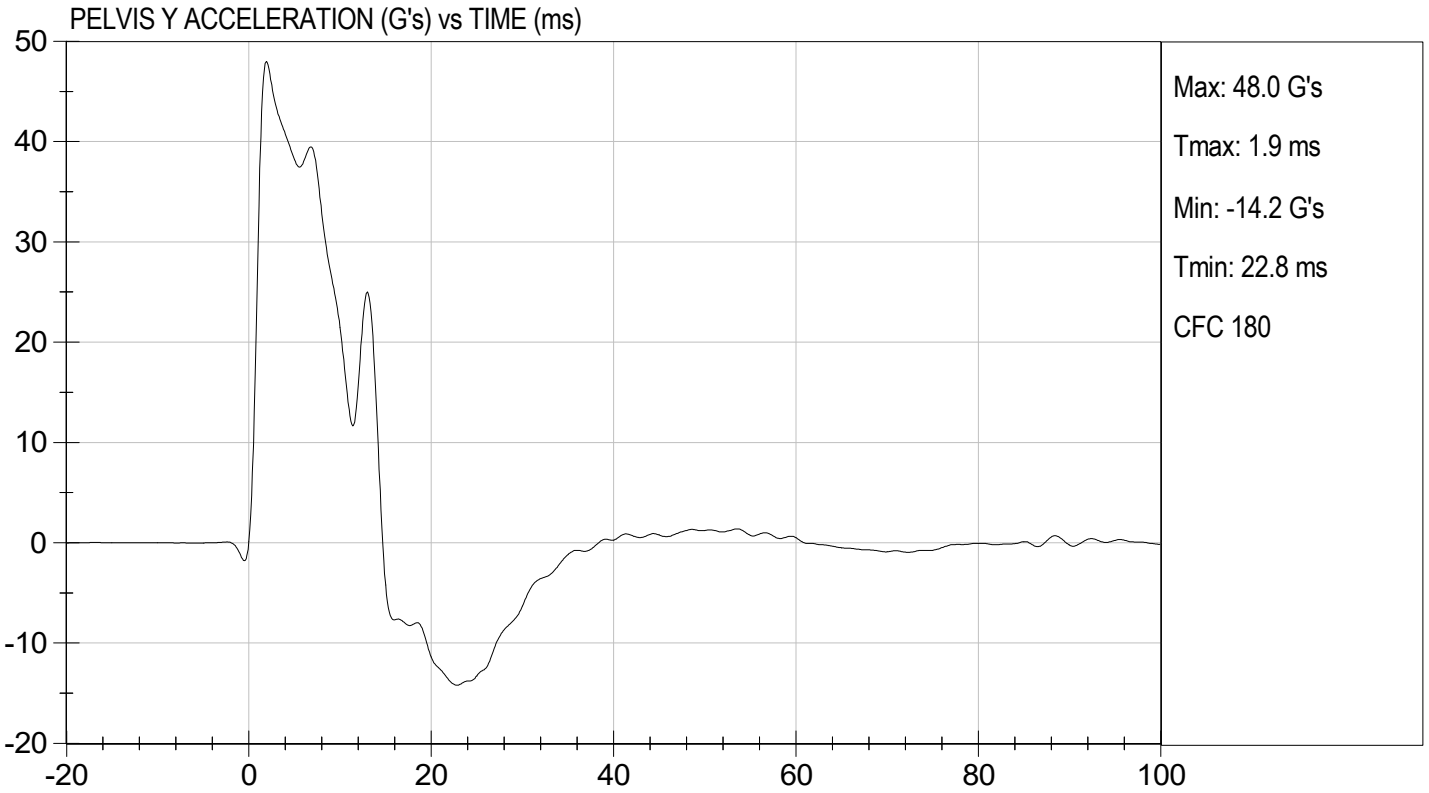
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Humidity	%	10 to 70	28	Pass
Impact Velocity	m/s	6.60 to 6.80	6.71	Pass
Maximum Probe Acceleration	G's	38 to 47	42	Pass
Pelvis Y Acceleration After 6 ms	G's	34 to 42	39	Pass
Peak Acetabulum Force	N	3600 to 4300	4,043	Pass
		Overall Test Results		Pass

Laboratory Technician

01/13/2022
Test Date

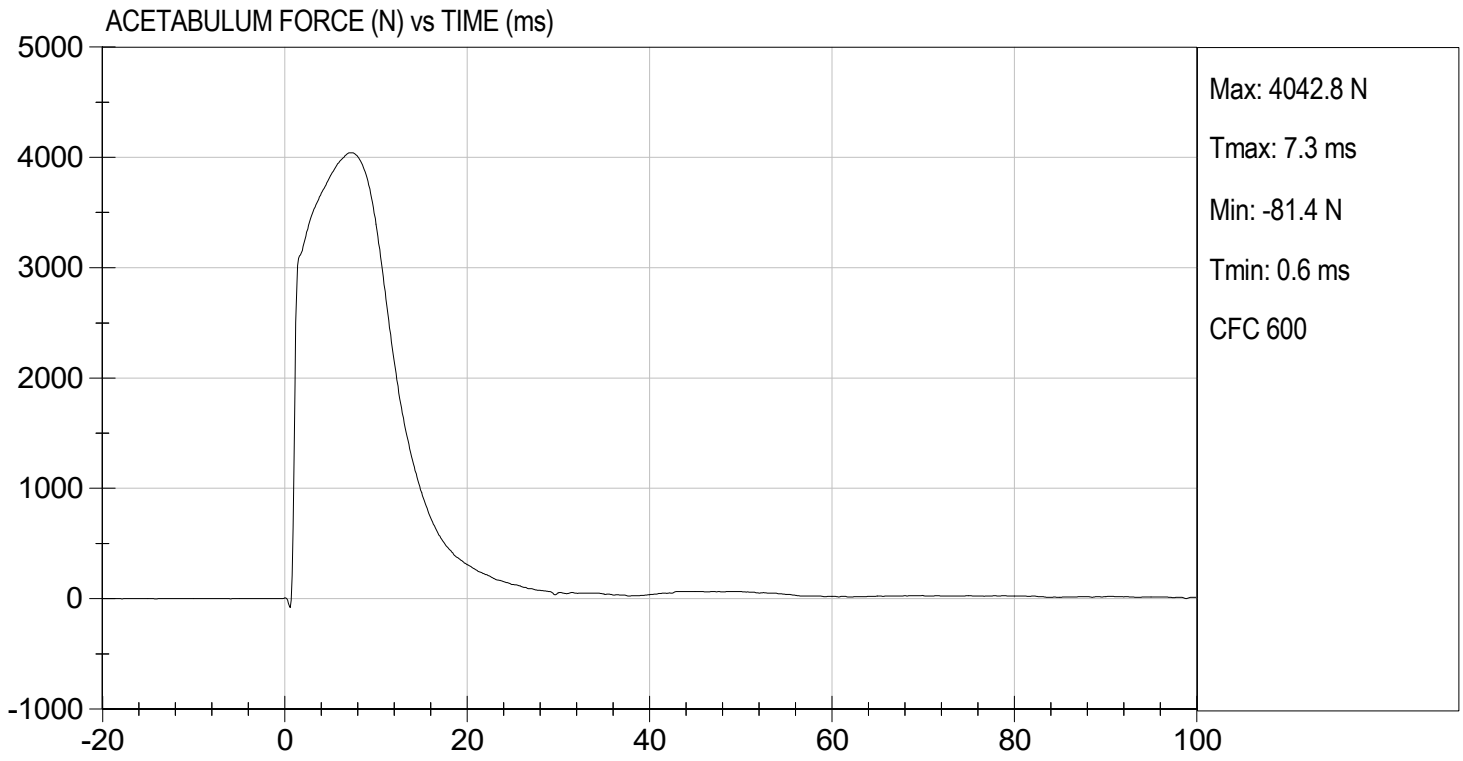
Approved By


PROBE (G'S) vs TIME (ms)
50
40
30
20
10
0
-10
-20
0
20
40
60
80
100
Max: 41.6 G'S
Tmax: 7.8 ms
Min: -0.6 G'S
Tmin: -0.4 ms
CFC 180


PELVIS Y ACCELERATION (G's) vs TIME (ms)
50
40
30
20
10
0
-10
-20
0
20
40
60
80
100
Max: 48.0 G's
Tmax: 1.9 ms
Min: -14.2 G's
Tmin: 22.8 ms
CFC 180

TEST DESC: PELVIS IMPACT
VELOCITY: 22.00 ft/s, 6.71 m/s

TEST DATE: 01/13/2022
TEST #: D220077



MGA RESEARCH CORPORATION

ILIAC IMPACT TEST

SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 306 **Test I.D:** D220078

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Humidity	%	10 to 70	29	Pass
Impact Velocity	m/s	4.20 to 4.40	4.27	Pass
Maximum Probe Acceleration	G's	36 to 45	40	Pass
Pelvis Y Acceleration	G's	28 to 39	33	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4,612	Pass
		Overall Test Results		Pass

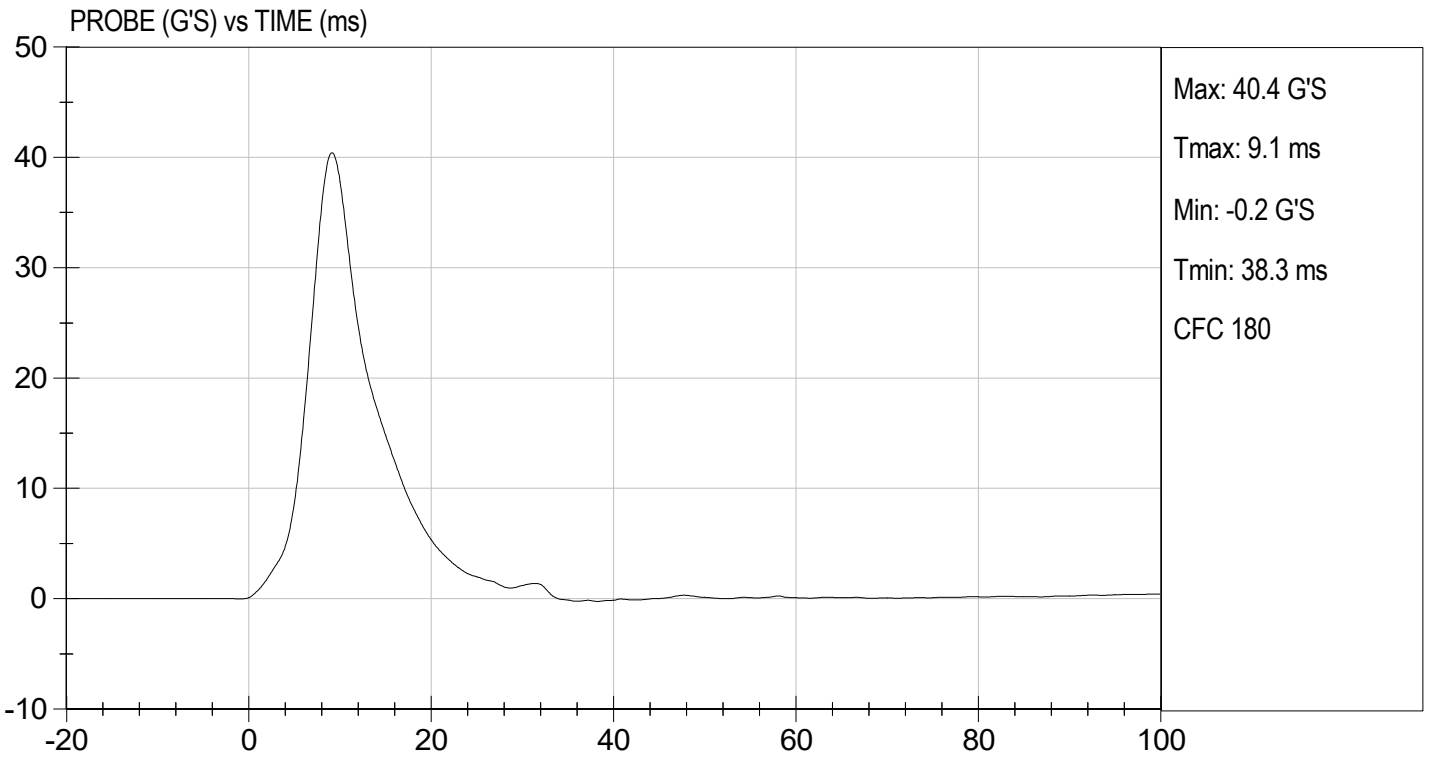
Laboratory Technician

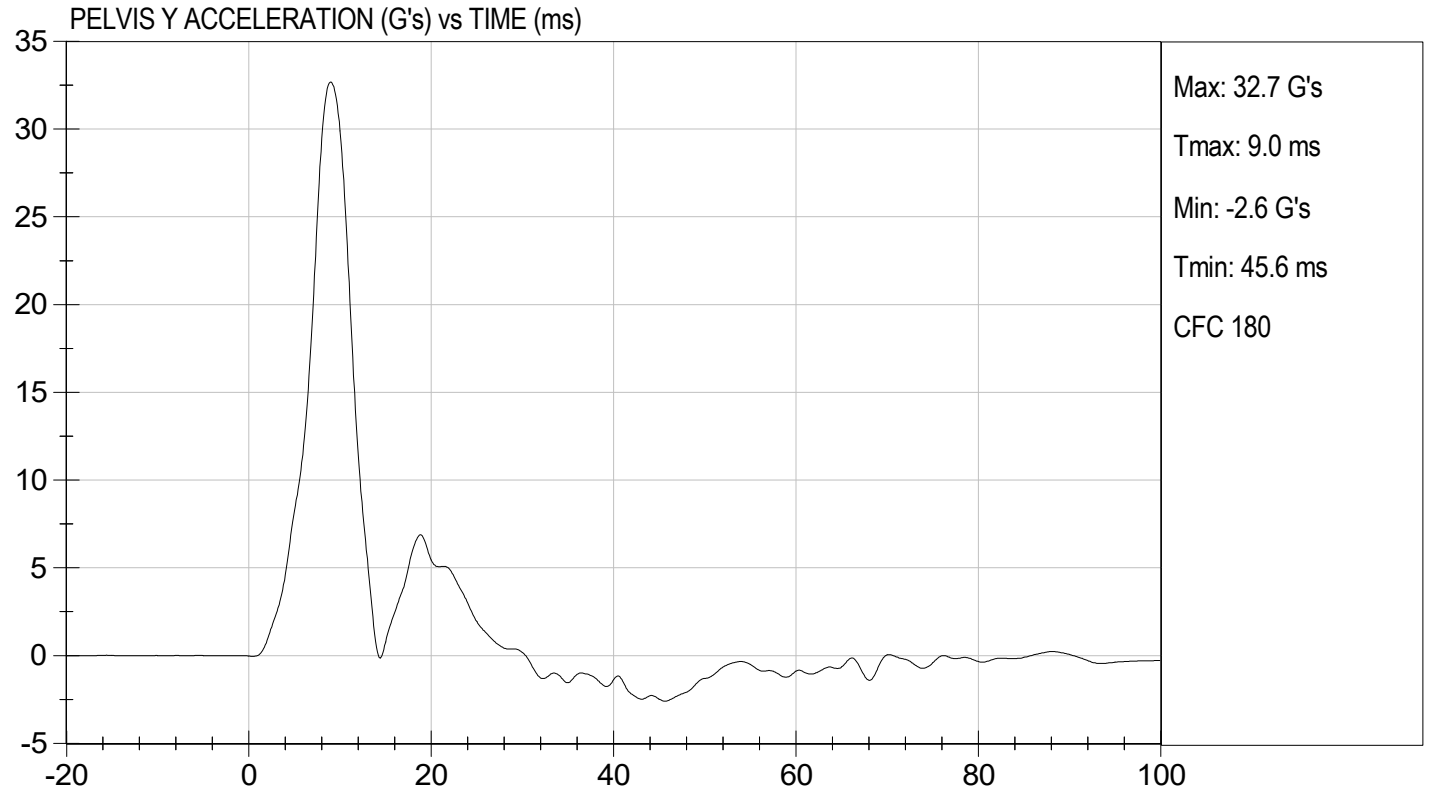
01/12/2022
Test Date

Approved By

TEST DESC: ILLIAC
VELOCITY: 14.00 ft/s, 4.27 m/s

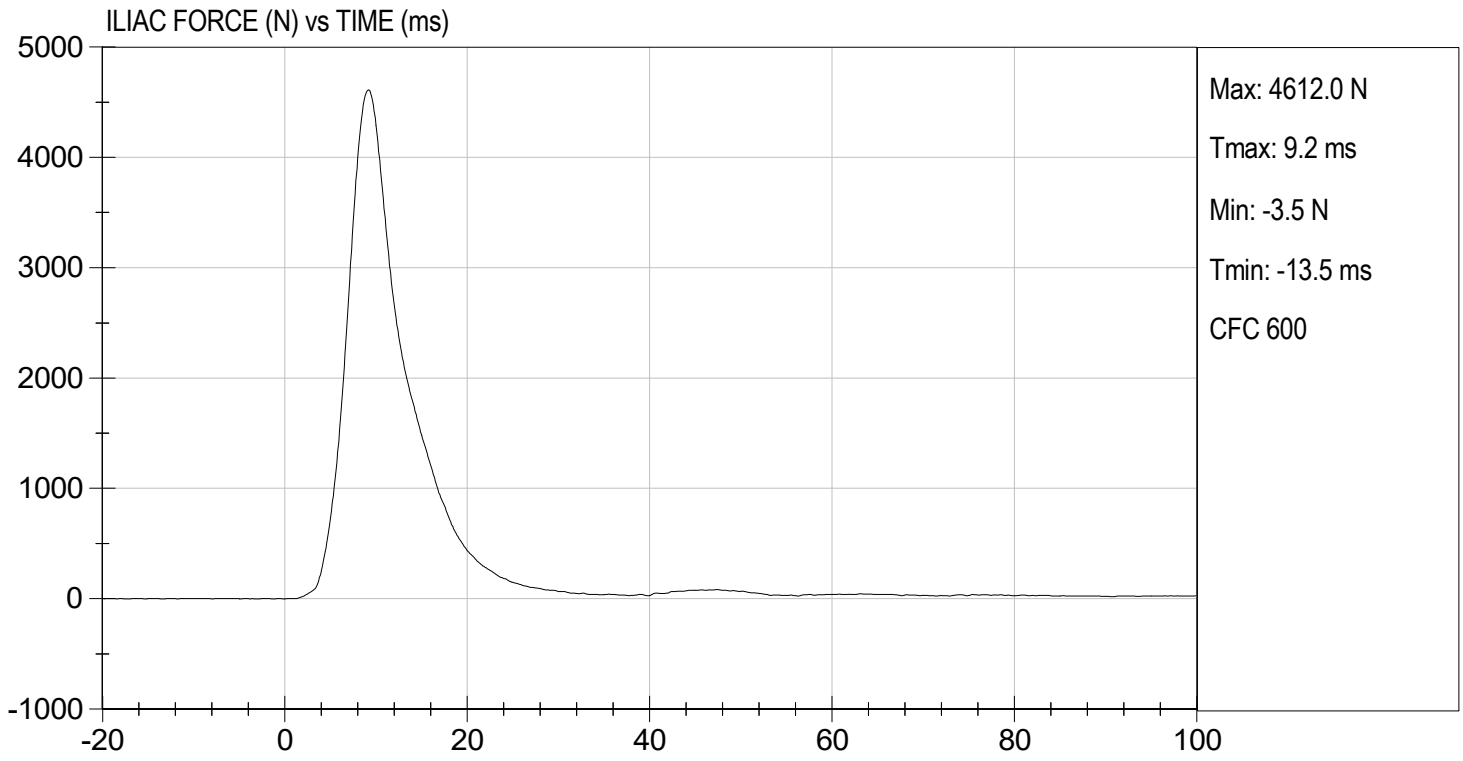
TEST DATE: 01/12/2022
TEST #: D220078





TEST DESC: ILLIAC
VELOCITY: 14.00 ft/s, 4.27 m/s

TEST DATE: 01/12/2022
TEST #: D220078



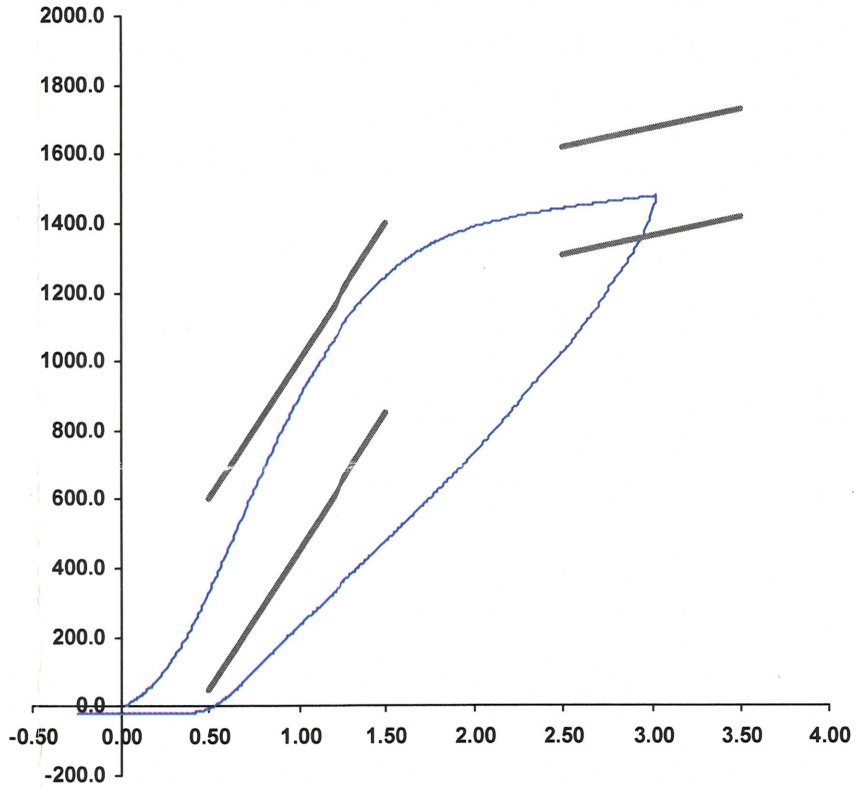
SACO RESEARCH

SID-IIs Pelvis Plug Certification Test

Plug S/N 13883
Test Number 13357
Report Number 13402
Test Date 5/20/2020 7:59:39 PM

	Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	343.15	50.00	600.00
Force @ 1.5 mm (N)	1,246.98	850.00	1,400.00
Force @ 2.5 mm (N)	1,442.66	1,306.00	1,618.00
Force @ 3.0 mm (N)	1,475.24	1,361.00	1,673.00

Force (-N) vs Extension (-mm)



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:

Operator

Part Number 180-4450

Template No 107 20-May-20
SACO Research

By : DC Date : 5/20/2020

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

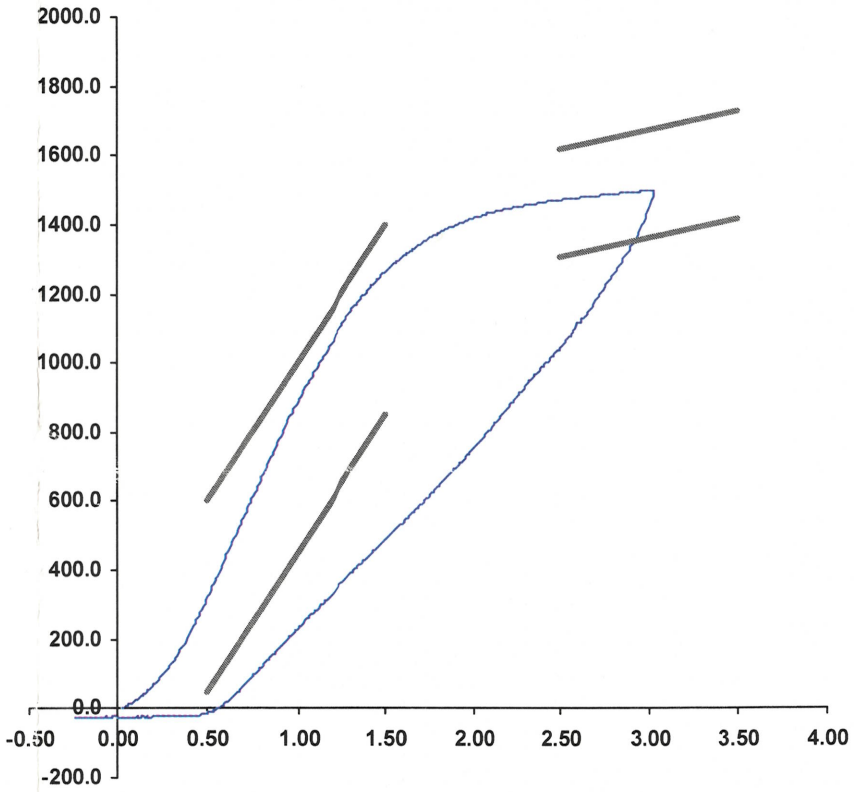
SACO RESEARCH

SID-IIs Pelvis Plug Certification Test

Plug S/N 13996
Test Number 13470
Report Number 13515
Test Date 5/22/2020 10:52:39 AM

	Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	332.42	50.00	600.00
Force @ 1.5 mm (N)	1,261.76	850.00	1,400.00
Force @ 2.5 mm (N)	1,470.84	1,306.00	1,618.00
Force @ 3.0 mm (N)	1,496.18	1,361.00	1,673.00

Force (-N) vs Extension (-mm)



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:

Operator

Part Number 180-4450

Template No 107 22-May-20
SACO Research

By : DC Date : 5-27-2020

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	P79445	Endevco	12/29/2021
			Y	P79721	Endevco	12/29/2021
			Z	P79724	Endevco	12/29/2021
			Xr	P84999	Endevco	12/29/2021
			Yr	P85000	Endevco	12/29/2021
			Zr	P85001	Endevco	12/29/2021
Head Angular Rate Sensors			X	ARS7423	DTS	03/02/2021
			Y	ARS7502	DTS	03/02/2021
			Z	ARS7566	DTS	03/02/2021
Displacement Potentiometers	Thoracic Rib	Upper	Y	G033	FTSS	12/29/2021
		Middle	Y	G2403	FTSS	12/29/2021
		Lower	Y	G1270	FTSS	12/29/2021
	Abdominal Rib	Upper	Y	G032	FTSS	12/29/2021
		Lower	Y	G1304	FTSS	12/29/2021
Lower Spine Accelerometers (T12)			X	P96335	Endevco	12/29/2021
			Y	P96341	Endevco	12/29/2021
			Z	P96332	Endevco	12/29/2021
Acetabulum Load Cell			Y	ACG259	Denton	11/11/2021
Iliac Wing Load Cell			Y	IWG286	Denton	10/21/2021
Pelvis Plug (struck side)				13883	SACO	05/20/2020
Pelvis Plug (non-struck side)				13996	SACO	05/22/2020

Table 2 – Vehicle Instrumentation

		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	PCB1169	PCB	01/05/2022
Vehicle Center of Gravity	Y	PCB1126	PCB	01/05/2022
Vehicle Center of Gravity	Z	PCB134	PCB	01/05/2022
Left Floor Sill	Y	A383796	MSI	01/05/2022
A-Pillar Sill	Y	A393845	MSI	10/22/2021
A-Pillar Low	Y	A337220	MSI	12/03/2021
A-Pillar Mid	Y	A382601	MSI	09/27/2021
B-Pillar Sill	Y	A391150	MSI	10/20/2021
B-Pillar Low	Y	A340608	MSI	01/05/2022
B-Pillar Mid	Y	A340275	MSI	01/05/2022
Driver Seat	Y	A337237	MSI	09/27/2021
Engine Top	X	A385790	MSI	01/05/2022
Engine Top	Y	A383786	MSI	01/05/2022
Firewall	Y	A377273	MSI	11/05/2021
Right Roof	Y	A383496	MSI	01/05/2022
Right Floor Sill	Y	A383088	MSI	01/05/2022
Rear Floorpan	X	A383458	MSI	01/05/2022
Rear Floorpan	Y	A381204	MSI	01/05/2022

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