REPORT NUMBER: SPNCAP-CAL-25-002

NEW CAR ASSESSMENT PROGRAM (NCAP)
SIDE IMPACT POLE TEST

Toyota Motor Corporation
2025 Toyota Land Cruiser
5 Door SUV

NHTSA No: M20255108

PREPARED BY:
CALSPAN CORPORATION
P.O. BOX 400
BUFFALO, NEW YORK 14225

May 6, 2025

FINAL REPORT

PREPARED FOR:
U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
MAIL CODE: NRM-110
1200 NEW JERSEY AVE SE
WASHINGTON, D.C. 20590

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Date: May 6, 2025

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Date: May 6, 2025

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

_____
COTR, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: _____

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7. Author(s) Alexander Rudniski, Test Engineer Vanessa Hansen, Operations Manager	***8. Performing Organization Report No.*** CAL-DOT-2025-002
9. Performing Organization Name and Address Calspan Corporation Transportation Test Operations P.O. Box 400 Buffalo, New York 14225	***10. Work Unit No.*** ***11. Contract or Grant No.*** 693JJ920D000016
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15. Supplementary Notes

16. Abstract

A 32.20 km/h (20 mph), 75° oblique impact Side NCAP Test was conducted on the subject 2025 Toyota Land Cruiser 5 Door SUV in accordance with the specifications of the Office of Crashworthiness Standards Side NCAP Pole Laboratory Test Procedure for the generation of consumer information on vehicle side pole crash protection. This test was conducted at Calspan Corporation's Transportation Test Operations facility in Buffalo, New York on March 18, 2025.

The impact velocity of the vehicle was 31.90 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle was 21°C. The target vehicle's maximum post-test static crush was 396 mm located at level 2. The test vehicle's occupant performance data is as follows:

M easurement Description	Driver ATD (SID-IIs) (Serial No.300)		
	Units	Threshold	Result
Head Injury Criteria (HIC36)		1000	332.142
Resultant Lower Spine Acceleration	G	82	41.588
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3122.613
Maximum Thoracic Rib Deflection	mm	38	23.000
Maximum Abdominal Rib Deflection	mm	45*	24.690

The two doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.

17. Key Words	***18. Distribution Statement***
New Car Assessment Program (NCAP) Side Impact Pole Part 572V SID-IIs	Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division, 1200 New Jersey Ave. SE Washington, D.C. 20590

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Form DOT F1700.7 (8-72)

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SECTION 1

TEST PURPOSE AND PROCEDURE

This side impact test was conducted as part of the MY 2025 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. 693JJ920D000016. The purpose of this test is to generate comparative side impact performance in a 2025 Toyota Land Cruiser 5 Door SUV. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Side NCAP Pole Laboratory Test Procedure, dated March 2020.

SECTION 2

SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a 2025 Toyota Land Cruiser 5 Door SUV. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 31.90 km/h. The test was conducted by Calspan Corporation's Transportation Test Operations facility in Buffalo, New York on March 18, 2025. 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. The side impact event was documented by 11 cameras. Camera locations and other pertinent camera information are included on page 3-11 in this report.

The Part 572V (SID-IIs) dummy was instrumented accordingly:

Head CG tri-axial accelerometers
Thorax upper, middle, and lower rib displacement potentiometers
Abdomen upper and lower rib displacement potentiometers
Lower spine tri-axial accelerometers
Iliac load cell
Acetabulum load cell

Appendix B contains the dummy response data. Dummy configuration and performance verification data can be found in Appendix C of this report. Appendix D identifies all serial numbers, manufacturers, and calibration dates for test equipment, dummy sensors, potentiometers, and load cells used to collect data during the test.

Injury readings for the SID-IIs dummy were recorded as follows:

INJURY READINGS

Measurement Description	Driver ATD (SID-IIs)		
	Units	IARV	Result
Head Injury Criteria (HIC36)		1000	332.142
Resultant Lower Spine Acceleration	G	82	41.588
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3122.613
Maximum Thoracic Rib Deflection	mm	38	23.000
Maximum Abdominal Rib Deflection	mm	45*	24.690

*Proposed IARV

Supplemental restraint information was recorded as follows:

SUPPLEMENTAL RESTRAINT INFORMATION

Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear (Passenger) Occupant Location 4	
	Mounted	Deployed	Mounted	Deployed
Front Airbag	Yes	No		
Knee Airbag	Yes	No		
Side Airbag 1 - Curtain	Yes	Yes	Yes	Yes
Side Airbag 2 - Torso/Pelvis Airbag	Yes	Yes	No	N/A
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	Yes
Other - Pass. Seat Cushion Airbag	No	N/A	Yes	No

GENERAL COMMENTS:

1. P1 serial number - 300

Data Anomalies:

- Left Front Sill Y Acceleration, Exceeded calibration range at 23.1 ms
- Front Seat Track Y Acceleration, Exceeded calibration range at 56.8 ms

SECTION 3

OCCUPANT AND VEHICLE INFORMATION

This section contains information reporting for the following Data Sheets:

Data Sheet No. 1 - General Test and Vehicle Parameter Data

Data Sheet No. 2 - Seat, Seat Belt, Steering Wheel Adjustment and Fuel Systems Data

Data Sheet No. 3 - Dummy Longitudinal Clearance Dimensions

Data Sheet No. 4 - Dummy Lateral Clearance Dimensions

Data Sheet No. 5 - Camera and Instrumentation Data

Data Sheet No. 6 – Test Vehicle Accelerometer Locations

Data Sheet No. 7- Rigid Pole Load Cell Data

Data Sheet No. 8 - Post-Test Observations

Data Sheet No. 9 - Test Vehicle Profile Measurements

Data Sheet No. 10 - Test Vehicle Exterior Crush Measurements

Data Sheet No. 11 - Vehicle Damage Profile Distances

Data Sheet No. 12 - FMVSS No. 301 Static Rollover Results

Data Sheet No. 13 - Dummy / Vehicle Temperature and Humidity Stabilization Data

Data Sheet No. 305-1 - General Test and Parameter Data for Indicant FMVSS No. 305 Testing

Data Sheet No. 305-2 - Pre-Impact Data for Indicant FMVSS No. 305 Testing

Data Sheet No. 305-3 - Pre-Impact Electrical Isolation Measurements and Calculations for Indicant FMVSS No. 305 Testing

Data Sheet No. 305-4 - Post-Impact Data for Indicant FMVSS No. 305 Testing

Data Sheet No. 305-5 - Static Rollover Test Data for Indicant FMVSS No. 305 Testing

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2025 Toyota Land Cruiser 5 Door SUV
NHTSA No.: M20255108
Test Program: NCAP Side Pole Impact Test
Test Date: 03/18/2025

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20255108
Model Year	2025
Make	Toyota
Model	Land Cruiser
Body Style	SUV
VIN	JTEABFAJ9SK024647
Body Color	Ice Cap
Odometer Reading (km/mi)	113 miles
Engine Displacement (L)	2.4
Type / No. Cylinders	I4
Engine Placement	Inline
Transmission Type	Automatic
Transmission Speeds	8-Speed
Overdrive	Yes
Final Drive	4 Wheel Drive
Roof Rack	No
Sunroof / T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes

Traction Control System (TCS)	Yes
Auto-Leveling System	No
Automatic Door Locks (ADL)	Yes
Power Window Auto-Reverse	Yes
Other Optional Feature	N/A
Driver Front Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	No
Driver Torso / Pelvis Airbag	Yes
Driver Pelvis Airbag	No
Driver Knee Airbag	Yes
Rear Pass. Curtain Airbag	Yes
Rear Pass. Head / Torso Airbag	No
Rear Pass. Torso Airbag	No
Rear Pass. Torso / Pelvis Airbag	No
Rear Pass. Pelvis Airbag	No
Driver Seat Belt Pretensioner	Yes
Rear Pass. Seat Belt Pretensioner	Yes
Driver Load Limiter	Yes
Rear Pass. Load Limiter	Yes
Other - Pass. Seat Cushion Airbag	Yes

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

DATA FROM CERTIFICATION LABEL

Manufactured By	Toyota Motor Corporation
Date of Manufacture	11/2024
Vehicle Type	MPV

GVWR (KG)	3050
GAWR Front (KG)	1605
GAWR Rear (KG)	1860

VEHICLE SEATING AND WEIGHT CAPACITY DATA

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	2	3	N/A	5	
Vehicle Capacity Weight (VCW) (kg)				496	(A)
DSC x 68.0 kg				340	(B)
Cargo Weight (RCLW) (kg)				136	(A-B)

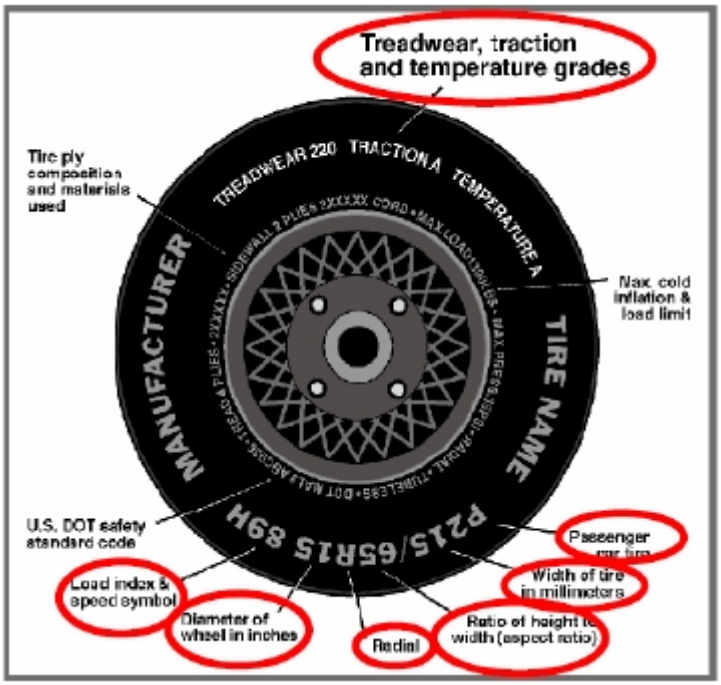
VEHICLE SEAT TYPE

Seating Location	Type Of Seat Pan				Type Of Seat Back		
	Bucket	Bench	Split Bench	Contour	Fixed	Adjustable	
						W/ Lever	W/ Knob
Front	X					X	
Rear or Second Row Seat			X			X	
Third Row seat	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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

Test Vehicle:	2025 Toyota Land Cruiser 5 Door SUV	NHTSA No.:	M20255108
Test Program:	NCAP Side Pole Impact Test	Test Date:	03/18/2025

Collected for year, make, model, & VIN, all items circled in red, tire manufacturer and tire name



VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	230	230
Recommended Tire Size	245/70R18	254/70R18
Tire Size on Vehicle	245/70R18	245/70R18
Tire Manufacturer	Yokohama	Yokohama
Tire Model	Geolander X-CV	Geolander X-CV
Treadwear	520	520
Traction	B	B
Temperature Grades	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 2 Steel, 1 Nylon	2 Polyester, 2 Steel, 1 Nylon
Load Index / Speed Symbol	110H	110H
Tire Material	Rubber	Rubber
DOT Safety Code Left	1470MYED23624	1470MYED23624
DOT Safety Code Right	1470MYED23624	1470MYED23624

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

Test Vehicle: 2025 Toyota Land Cruiser 5 Door SUV
NHTSA No.: M20255108
Test Program: NCAP Side Pole Impact Test
Test Date: 03/18/2025

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	230	230	230	230
Tire Placard	kPa	230	230	230	230
Owner's Manual	kPa	230	230	230	230
As Tested	kPa	230	230	230	230

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	613	608		636	671		626	703	
Right	kg	596	617		615	691		591	703	
Ratio	%	49.7	50.3		47.8	52.1		46.4	53.6	
Totals	kg	1209	1225	2434	1251	1362	2613	1217	1406	2623

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total As Delivered Weight (UVW)	kg	2434	(A)
Actual Weight of 1 P572V (SID-IIs) ATD Used	kg	50	(B)
Rated Cargo / Luggage Weight (RCLW)	kg	136	(C)
Calculated Vehicle Target Weight (TVTW)	kg	2620	(A+B+C)

Does the measured As Test Vehicle Weight lie within the required weight range

(i.e. Calculated Test Vehicle Target Weight – 4.5 kg to – 9 kg)? [X] **Yes** [ ] **No**

TEST VEHICLE ATTITUDES AND CG

Measurement Description	Units	As Delivered	As Tested	Fully Loaded	Meets Rqmt***
Driver Door Sill Angle (front-to-rear)*	Deg	+0.55	+0.50	-0.25	Yes
Front Passenger Sill Angle (front-to-rear)*	Deg	-0.65	-0.40	-0.25	Yes
Front Bumper-Line Angle (left-to-right)**	Deg	+0.05	+0.05	-0.15	Yes
Rear Bumper-Line Angle (left-to-right)**	Deg	0.00	-0.05	-0.15	Yes
Vehicle CG (Aft of Front Axle)	mm	1437	1489	1531	
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	3	0	11	

* 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. Indicate “Yes” or “No” for Meets Requirement”

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

Test Vehicle:	2025 Toyota Land Cruiser 5 Door SUV	NHTSA No.:	M20255108
Test Program:	NCAP Side Pole Impact Test	Test Date:	03/18/2025

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Trunk Carpeting	16
Ballast / Equipment Added	96

Test Height – Adjustable Suspension Setting, if Applicable	N/A

TEST SURFACE MARKING

	Distance from 75° Impact Location Line (mm)
Fore 25 mm target	948
Aft 25 mm target	949

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

Test Vehicle: 2025 Toyota Land Cruiser 5 Door SUV
NHTSA No.: M20255108
Test Program: NCAP Side Pole Impact Test
Test Date: 03/18/2025

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	15.0	9.7	12.4
Front Passenger Seat	15.1	9.7	12.4
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)		
				Rearmost	Mid-Fore / Aft	Forward-Most
Driver Seat	12.4	18	Max	-	-	-
			Mid	-	-	-
			Min	16	17	18
Front Passenger Seat	12.4	17	Max	-	-	-
			Mid	-	-	-
			Min	15	16	17
Front Center Seat*			Max			
			Mid			
			Min			
Struck Side Rear Seat	Fixed	Fixed	Max			
			Mid			
			Min			
Non-Struck Side Rear Seat	Fixed	Fixed	Max			
			Mid			
			Min			
Rear Center Seat*	Fixed	Fixed	Max			
			Mid			
			Min			

**If applicable*

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

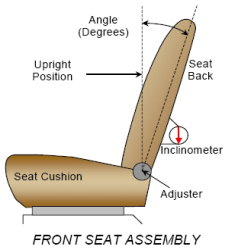
Test Vehicle: 2025 Toyota Land Cruiser 5 Door SUV
NHTSA No.: M20255108
Test Program: NCAP Side Pole Impact Test
Test Date: 03/18/2025

SEAT FORE / AFT POSITION

Seat	Total Fore / Aft Travel		Test Position from Forward most Position	
	mm	Detents*	mm	Detents*
Driver Seat	220	23 (0-22)	0	0
Front Passenger Seat	240	25 (0-24)	0	0
Front Center Seat				
Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed	Fixed

SEAT BACK ANGLE ADJUSTMENT

The driver's seat back is positioned such that the dummy's head is level. The front center and front passenger's seat backs are positioned in a similar manner as the driver's seat back. The struck-side rear passenger seat back is positioned in accordance with the information provided by the manufacturer on Form No. 1 for the 5th percentile female dummy in a Side NCAP MDB test. The rear center and non-struck side rear passenger's seat back are set to match the struck-side rear seat back.



FRONT SEAT ASSEMBLY

Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degrees	Detents*
Driver Seat	44.4	27 (0-26)	5.8	1
Front Passenger Seat	44.0	27 (0-26)	6.1	1
Front Center Seat				
Struck Side Rear Seat	22.1	15 (0-14)	5.3	0
Non-Struck Side Rear Seat	21.7	15 (0-14)	5.2	0
Rear Center Seat	21.7	15 (0-14)	5.2	0

SEAT BELT ANCHORAGE ADJUSTMENT

Seat belt anchorages are adjusted in accordance with the information provided by the manufacturer on Form No. 1. Zero is defined as the uppermost detent

Seat	Total # of Positions	Placed in Position #
Driver Seat	4 (0-3)	0

HEAD RESTRAINT ADJUSTMENT

The driver's head restraint is adjusted to the lowest and most full forward in-use position.

Seat	Total # of Positions	Placed in Position #
Driver Seat	4 (0-3)	Lowermost

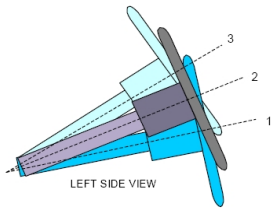
DATA SHEET NO. 2 … (CONTINUED)
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEMS DATA

Test Vehicle:	2025 Toyota Land Cruiser 5 Door SUV	NHTSA No.:	M20255108
Test Program:	NCAP Side Pole Impact Test	Test Date:	03/18/2025

STEERING COLUMN POSITIONS

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

	Degrees	Fore / Aft Position (mm)
Lowermost position No. 1	21.0	
Geometric center position No. 2	23.0	
Uppermost position No. 3	25.0	
Telescoping Steering Wheel Travel		60
Test Position	23.0	30

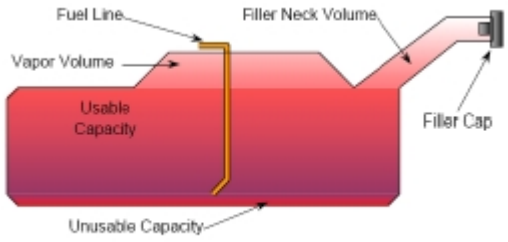


STEERING COLUMN ASSEMBLY

FUEL PUMP

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

The vehicle is equipped with an electric fuel pump. The fuel filler neck is on the left side of the vehicle. The pump creates positive pressure in the fuel lines, pushing the gasoline to the engine. See form 1 for more information.



VEHICLE FUEL TANK ASSEMBLY

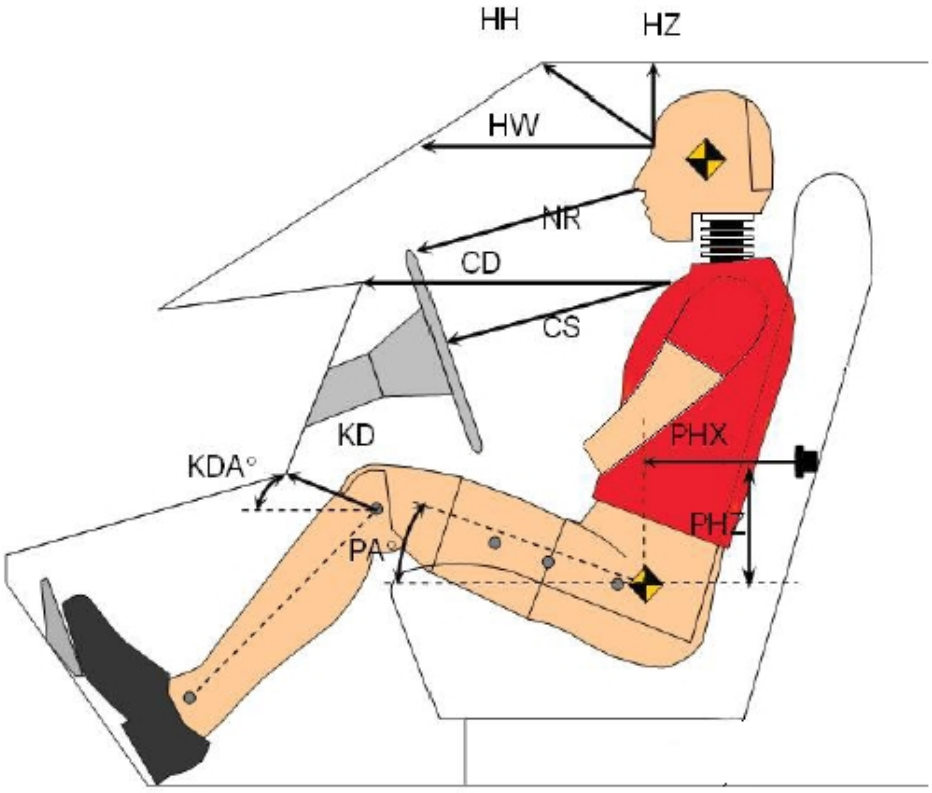
FUEL TANK CAPACITY

Description	Liters
Usable Capacity of “Standard Tank” - see Form No. 1	66.89
Usable Capacity of “Optional Tank” - see Form No. 1	N/A
Usable Capacity of “Standard Tank” - see Owner’s Manual	66.89
Usable Capacity of “Optional Tank” - see Owner’s Manual	N/A
93% of Usable Capacity	62.2
Actual Amount of Solvent Used in Test	62.2
1/3 of Usable Capacity	22.29

Is the Actual Amount of Solvent Used in the test equal to 93% ±1% of the Usable Capacity stated in Form No. 1? [X] **Yes** [ ] **No** [ ] **N/A**

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle:	2025 Toyota Land Cruiser 5 Door SUV	NHTSA No.:	M20255108
Test Program:	NCAP Side Pole Impact Test	Test Date:	03/18/2025



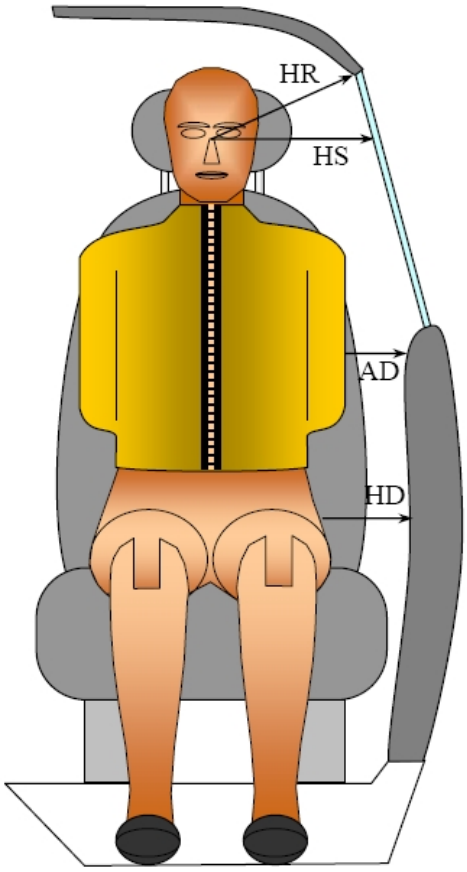
Left Side View

DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Description	Driver (Serial No. 300)	
		Length (mm)	Angle (°)
HH	Head to Header	433	
HW	Head to Windshield	590	
HZ	Head to Roof Liner	282	
NR	Nose to Rim	247	
CD	Chest to Dash	435	
CS	Chest to Steering Wheel	204	
KD(L) / KDA(L)◦	Left Knee to Dash	162	29.1
KD(R) / KDA(R)◦	Right Knee to Dash	128	27.9
PAX◦	Pelvic Tilt Angle (X-Axis)		18.15
PAY◦	Pelvic Tilt Angle (Y-Axis)		0.3
PHX	Hip Point to Striker (X-Axis)	299	
PHZ	Hip Point to Striker (Z-Axis)	120	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle:	2025 Toyota Land Cruiser 5 Door SUV	NHTSA No.:	M20255108
Test Program:	NCAP Side Pole Impact Test	Test Date:	03/18/2025



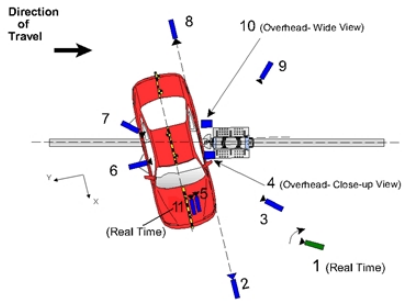
FRONT VIEW OF DUMMY

DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver – Length (Serial No. 300)
HR	Head to Side Header	mm	288
HS	Head to Side Window	mm	366
AD	Arm to Door	mm	150
HD	H-Point to Door	mm	165

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2025 Toyota Land Cruiser 5 Door SUV
NHTSA No.: M20255108
Test Program: NCAP Side Pole Impact Test
Test Date: 03/18/2025



CAMERA LOCATIONS AND DATA

No.	Camera View	Location (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-time (24 - 30 fps) pan view of impact				Zoom	60
2	Front ground level - impact view	0	8520	-1600	28	1000
3	Impact side 45º - forward pole view	-1130	5135	-1450	24	1000
4	Overhead Close-up view of impact	0	0	-9200	24	1000
5	Onboard - dummy front view				25	1000
6	Onboard - dummy side view				12.5	1000
7	Onboard - dummy rear oblique view				12.5	1000
8	Rear ground level - impact view	0	9070	-1515	28	1000
9	Impact side 45º - rearward pole view	3960	-3915	-1535	24	1000
10	Overhead wide - view of impact	0	0	-9200	16	1000
11	Real-time (24 - 30 fps) - dummy front view				Zoom	60

Notes: *Reference - From Point of Impact for X and Y; from Ground for Z*
+X = Forward of vehicle, +Y = Right of vehicle, +Z = Down
** All measurements accurate to ± 6 mm. Vehicle is at a 75º angle to the rigid pole.*

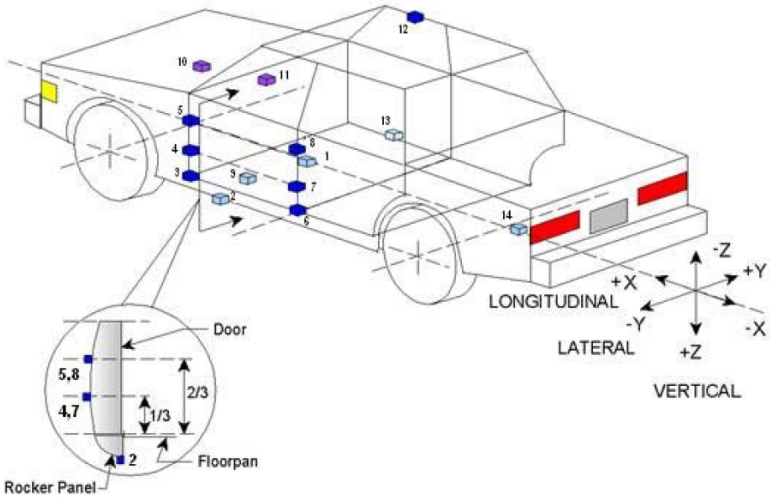
Comments: All cameras operated as intended. Camera No.7 was blocked by curtain airbag.

INSTRUMENTATION

Description	Number of Channels
Driver Dummy Channels	16
Vehicle Structure Accelerometers	18
Pole Load Cells	8
Total	42

DATA SHEET NO. 6
TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle:	2025 Toyota Land Cruiser 5 Door SUV	NHTSA No.:	M20255108
Test Program:	NCAP Side Pole Impact Test	Test Date:	03/18/2025



TEST VEHICLE ACCELEROMETER LOCATIONS

No.	Accelerometer Location	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2488	0	-203
2	Left Floor Sill	2945	-711	30
3	A-Pillar Sill	3369	-664	-5
4	A-Pillar Low	3386	-652	-195
5	A-Pillar Mid	3248	-660	-732
6	B-Pillar Sill	2346	-695	-26
7	B-Pillar Low	2348	-710	-346
8	B-Pillar Mid	2306	-710	-604
9	Seat	2589	-585	-19
10	Engine	4092	-14	-505
11	Firewall	3675	121	-560
12	Roof	2441	604	-1214
13	Right Floor Sill	2927	715	29
14	Rear Deck	1262	52	-94

Reference: *X – Rear surface of vehicle (+ forward)*
Y – Vehicle centerline (+ to right)
Z – Ground plane (+ down)

DATA SHEET NO. 7
RIGID POLE LOAD CELL DATA

Test Vehicle:	2025 Toyota Land Cruiser 5 Door SUV	NHTSA No.:	M20255108
Test Program:	NCAP Side Pole Impact Test	Test Date:	03/18/2025

POLE BARRIER



RIGID POLE LOAD CELL LOCATION

ID	Units	Height From Ground
1	mm	200
2	mm	590
3	mm	750
4	mm	1075
5	mm	1260
6	mm	1740
7	mm	1920
8	mm	2300

DATA SHEET NO. 8
POST-TEST OBSERVATIONS

Test Vehicle:	2025 Toyota Land Cruiser 5 Door SUV	NHTSA No.:	M20255108
Test Program:	NCAP Side Pole Impact Test	Test Date:	03/18/2025

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Driver Seat Dummy (SID-IIs)
Face	Curtain Airbag
Top of Head	Curtain Airbag
Left Side of Head	Curtain Airbag
Back of Head	Curtain Airbag & Head Restraint
Left Shoulder	Seatback & Torso/Pelvis Airbag
Upper Torso	Seatback
Lower Torso	Seatback & Torso/Pelvis Airbag
Left Hip	Seat Pan & Torso/Pelvis Airbag
Left Knee	Door Panel

POST-TEST DOOR PERFORMANCE

Description	Struck Side		Non-Struck Side		Rear Hatch/ Other
	Front	Rear	Front	Rear	
Remained Closed and Operational	No	No	Yes	Yes	Yes
Total Separation from Vehicle at Hinges or Latches	No	No	No	No	No
Latch or Hinge Systems Pulled Out of Their Anchorages	No	No	No	No	No
Disengaged from Latched Position	No	No	No	No	No
Latch Separated from Striker	No	No	No	No	No
Jammed Shut	Yes	Yes	No	No	No
If Door Opened at Striker, Width of Opening at Striker (mm)	0	0	0	0	0

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

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

Test Vehicle: 2025 Toyota Land Cruiser 5 Door SUV
NHTSA No.: M20255108
Test Program: NCAP Side Pole Impact Test
Test Date: 03/18/2025

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	A-Pillar & B-Pillar Buckled
Sill Separation	None
Windshield Damage	Cracked Throughout
Side Window Damage	Driver Window Shattered
Other Notable Effects	None

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side Driver		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Front Airbag	Yes	No		
Knee Airbag	Yes	No		
Side Airbag 1 - Curtain	Yes	Yes	Yes	Yes
Side Airbag 2 - Torso/Pelvis Airbag	Yes	Yes	No	N/A
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	Yes
Other - Pass. Seat Cushion Airbag	No	N/A	Yes	No

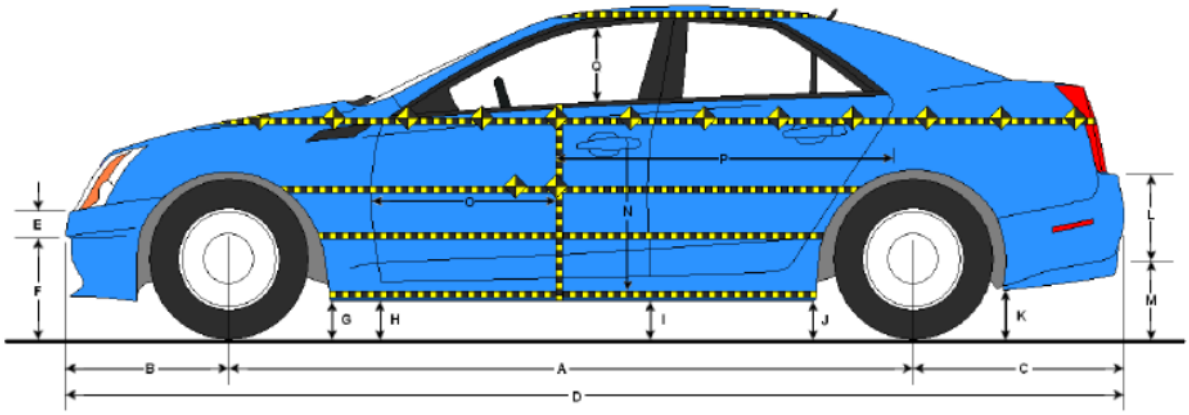
VEHICLE SPEED, VEHICLE ANGLE AT IMPACT AND IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vertical Impact Ref Line - Aft of Front Axle, Intended Impact Pt	mm		1247
Actual Impact Point - Aft of Front Axle	mm		1249
Horizontal Offset (+ forward / - rearward)	mm	+/- 38*	-2
Angle Between Vehicle's Longitudinal Centerline and Line of Forward Motion	deg	75 +/- 3	75
Trap No. 1 Velocity - Primary	kph	31.4 to 33.0	31.90
Trap No. 2 Velocity - Redundant	kph	31.4 to 33.0	31.90

*Of Intended Impact Point

DATA SHEET NO. 9
TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2025 Toyota Land Cruiser 5 Door SUV
NHTSA No.: M20255108
Test Program: NCAP Side Pole Impact Test
Test Date: 03/18/2025



LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

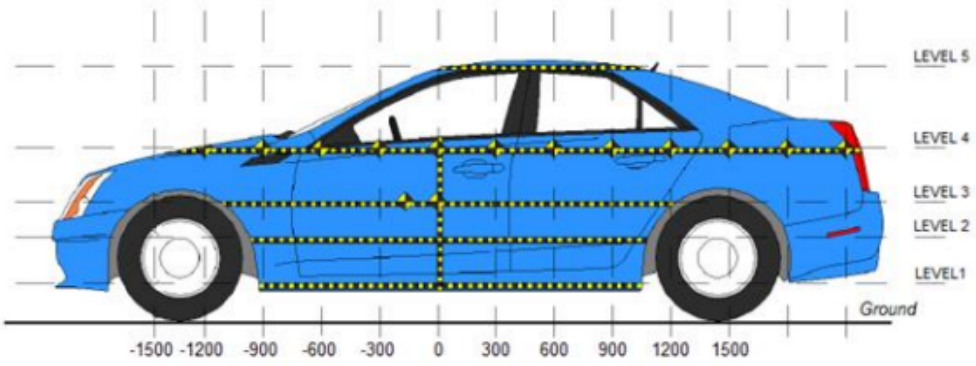
No.	Measurement Description	Pre-Test	Post-Test	Change
A	Vehicle Wheelbase	2856	2819	-37
B	Front Axle to FSOV	930	977	47
C	Rear Axle to RSOV	1196	1139	-57
D	Total Vehicle Length at Centerline	4981	4935	-46
E	Front Bumper Thickness	110	110	0
F	Front Bumper Bottom to Ground	690	709	19
G	Sill Height at Front Wheel Well	372	385	13
H	Sill Height at Front Door Leading Edge	374	390	16
I	Sill Height at B Pillar	381	391	10
J1	Sill Height at Rear Wheel Well	371	405	34
J2	Pinch Weld Height at Rear Wheel Well	383	412	29
K	Sill Height Aft of Rear Wheel Well	394	428	34
L	Rear Bumper Thickness	110	110	0
M	Rear Bumper Bottom to Ground	563	581	18
N	Sill Height to Window Bottom Sill	783	783	0
O	Front Door Leading Edge to Impact CL	607	507	-100
P	Rear Door Trailing Edge to Impact CL	1434	1332	-102
Q	Front Window Opening	453	461	8
R	Right Side Length	4866	4853	-13
S	Left Side Length	4864	4802	-62
T	Vehicle Width at B-Pillars	1887	1763	-124
U	Front Wheel Track width	1645	1645	0
V	Rear Wheel Track Width	1645	1645	0

* All measurements in mm with tolerance of ± 3mm

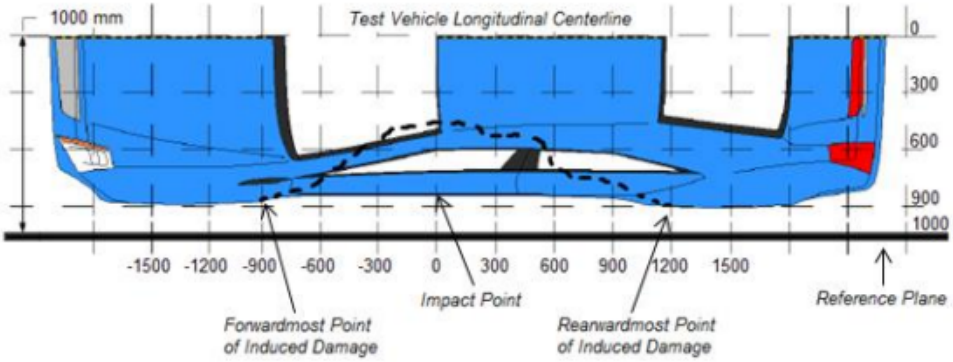
DATA SHEET NO.10
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle:	2025 Toyota Land Cruiser 5 Door SUV	NHTSA No.:	M20255108
Test Program:	NCAP Side Pole Impact Test	Test Date:	03/18/2025

MAXIMUM EXTERIOR CRUSH MEASUREMENTS



Left Side View



Overhead View

Level	Measurement Description	Units	Height Above Ground	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	mm	511	332	0
2	Occupant H-Point	mm	879	396	0
3	Mid-Door	mm	935	394	0
4	Window Sill	mm	1205	326	0
5	Window Top	mm	1775	175	0

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

DATA SHEET NO.10 … (CONTINUED)
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2025 Toyota Land Cruiser 5 Door SUV NHTSA No.: M20255108
Test Program: NCAP Side Pole Impact Test Test Date: 03/18/2025

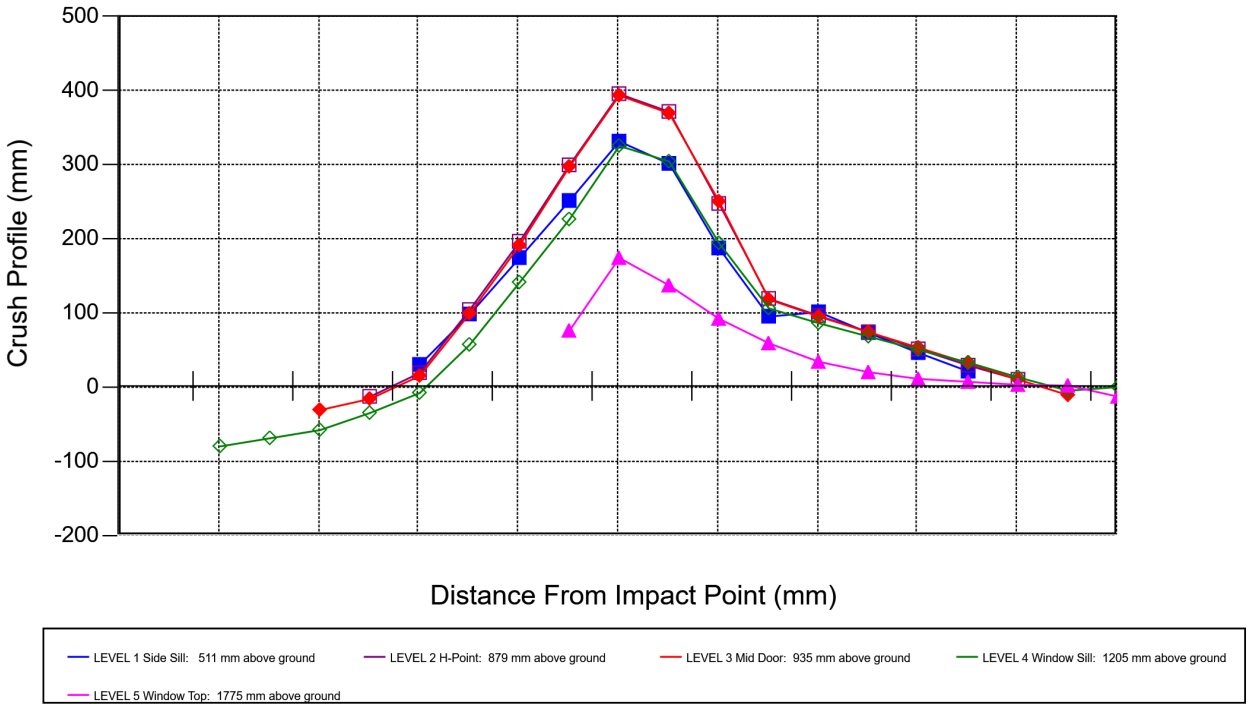
EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

	Pre-Test					Post-Test					Crush				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-1500															
-1350															
-1200				789					868					-79	
-1050				800					868					-68	
-900			969	814				999	871				-30	-57	
-750		947	926	824			959	941	858			-12	-15	-34	
-600	925	926	922	837		894	906	906	844		31	20	16	-7	
-450	907	930	926	849		808	825	826	791		99	105	100	58	
-300	899	933	930	856		724	736	738	714		175	197	192	142	
-150	896	935	933	864	653	644	635	635	637	576	252	300	298	227	77
0	895	937	935	871	672	563	541	541	545	497	332	396	394	326	175
150	895	939	936	876	685	593	567	566	571	547	302	372	370	305	138
300	894	940	938	882	693	706	692	687	687	600	188	248	251	195	93
450	894	941	939	887	698	798	821	820	780	638	96	120	119	107	60
600	894	941	939	891	700	792	844	843	804	665	102	97	96	87	35
750	895	941	939	893	702	821	866	864	824	681	74	75	75	69	21
900	901	940	938	896	702	854	888	884	845	690	47	52	54	51	12
1050	917	945	939	899	702	895	915	906	865	694	22	30	33	34	8
1200		968	957	901	701		957	946	887	697		11	11	14	4
1350			971	901	699			981	905	696			-10	-4	3
1500				901	682				900	694				1	-12

NOTE: *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. The final distance from impact is determined after the final dummy positioning and the pole is aligned with the center of gravity of the dummy's head.*

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

Test Vehicle:	2025 Toyota Land Cruiser 5 Door SUV	NHTSA No.:	M20255108
Test Program:	NCAP Side Pole Impact Test	Test Date:	03/18/2025

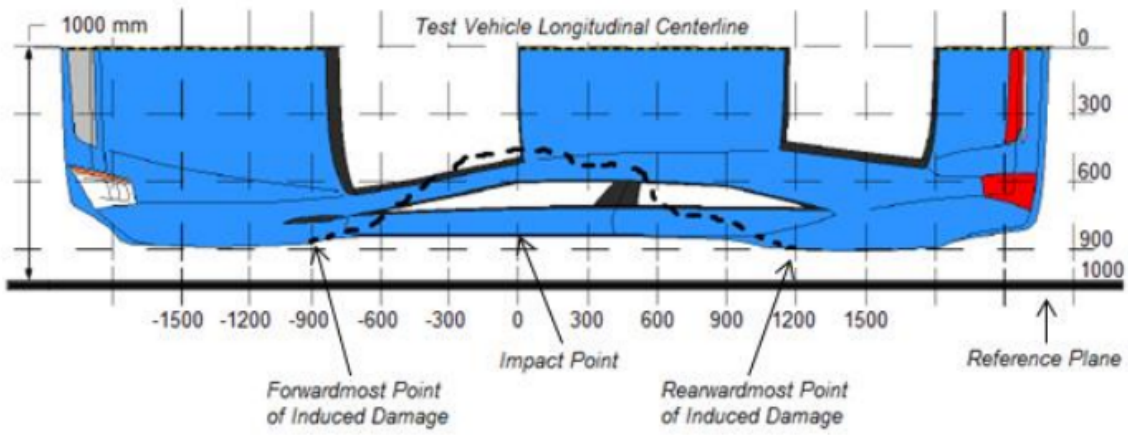


Vehicle Exterior Crush Measurements - Visual Representation

DATA SHEET NO.11
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle:	2025 Toyota Land Cruiser 5 Door SUV	NHTSA No.:	M20255108
Test Program:	NCAP Side Pole Impact Test	Test Date:	03/18/2025

For guidance regarding damage profile distance measurements, please refer to the latest version of the *NHTSA Test Reference Guide, Volume 1: Vehicle Tests.*



Overhead View

VEHICLE DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point (mm)	Level	Post-Test (mm)	Pre-Test (mm)	Crush (mm)
1	-900	3	1	31	-30
2	-450	3	174	74	100
3	0	3	459	65	394
4	450	3	180	61	119
5	900	3	116	62	54
6	1350	3	19	29	-10

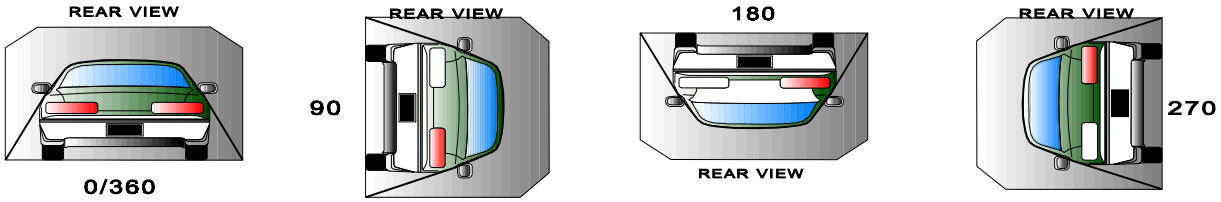
DATA SHEET NO.12
FMVSS NO.301 STATIC ROLLOVER RESULTS

Test Vehicle:	2025 Toyota Land Cruiser 5 Door SUV	NHTSA No.:	M20255108
Test Program:	NCAP Side Pole Impact Test	Test Date:	03/18/2025

Test Time: 11:57 AM Temperature: 21 °C

A. From impact until vehicle motion ceases: 0 oz
(Maximum allowable is 1 oz.)
B. For the 5-minute period after motion ceases: 0 oz
(Maximum allowable is 5 oz.)
C. For the following 25 minutes: 0 oz
(Maximum allowable is 1 oz.)

D. Spillage Detail: No Spillage



ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	71	300	371
90° to 180°	70	300	370
180° to 270°	69	300	369
270° to 360°	67	300	367

FMVSS 301 SPILLAGE TABLE

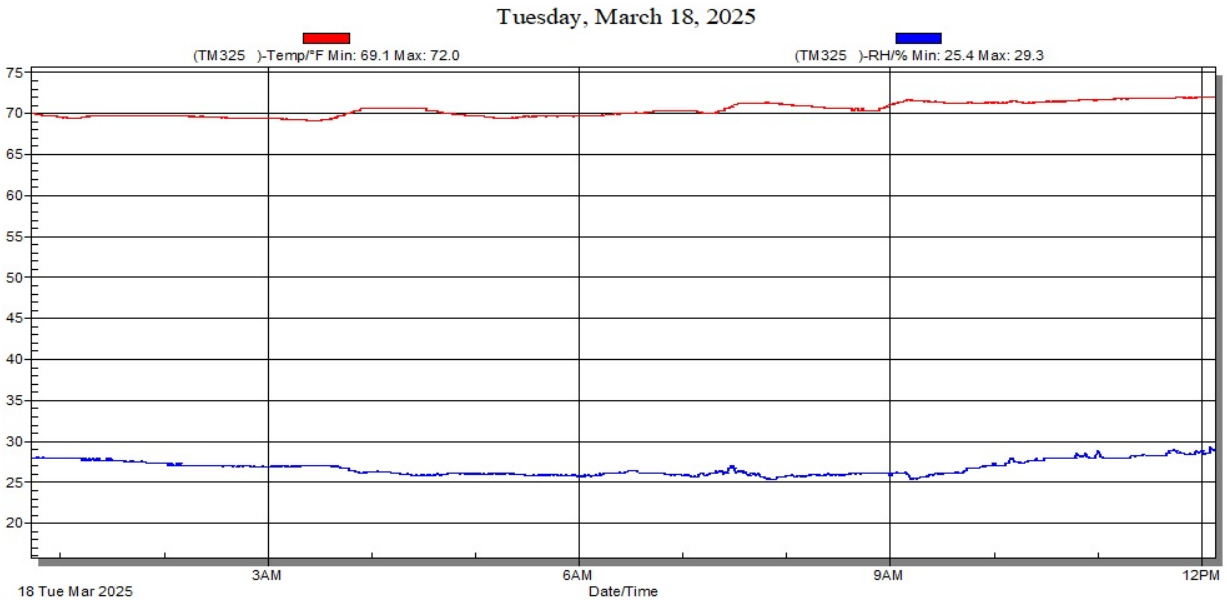
Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0° to 90°	0	0	0	
90° to 180°	0	0	0	
180° to 270°	0	0	0	
270° to 360°	0	0	0	

SOLVENT SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0° to 90°	No Spillage
90° to 180°	No Spillage
180° to 270°	No Spillage
270° to 360°	No Spillage

DATA SHEET NO. 13
DUMMY / VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION DATA

Test Vehicle:	2025 Toyota Land Cruiser 5 Door SUV	NHTSA No.:	M20255108
Test Program:	NCAP Side Pole Impact Test	Test Date:	03/18/2025



Temperature and Humidity Stabilization Chart/Data for Dummies and Test Vehicle

DATA SHEET NO. 305-1
GENERAL TEST AND VEHICLE PARAMETER DATA FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle:	2025 Toyota Land Cruiser 5 Door SUV	NHTSA No.:	M20255108
Test Program:	NCAP Side Pole Impact Test	Test Date:	03/18/2025

ELECTRIC VEHICLE PROPULSION SYSTEM

Measured Parameter	Value
Type of Electric Vehicle (Electric/Gas-Electric Hybrid/Fuel Cell-Electric Hybrid)	Gas-Electric Hybrid
Propulsion Battery Type	Nickel Metal Hydride
Nominal Voltage (Volts)	288
Is this Vehicle equipped with an Automatic Propulsion Battery Disconnect?	Yes
Physical Location of Automatic Propulsion Battery Disconnect, if applicable	Inside Battery
Auxiliary Battery Type	LN3

PROPULSION BATTERY SYSTEM DATA (COTR SUPPLIED)

Measured Parameter	Value
Electrolyte Fluid Type	KOH
Electrolyte Fluid Specific Gravity	1.26 g/cm3
Electrolyte Fluid Kinematic Viscosity (centistokes)	1.8 cSt
Electrolyte Fluid Color	Clear
Propulsion Battery Coolant Type, Color and Specific Gravity (if applicable)	Air Cooled
Location of Battery Modules (Inside or Outside of Passenger Compartment?)	Inside Passenger Compartment

PROPULSION BATTERY STATE OF CHARGE

Measured Parameter	Units	Value
For all battery types: Voltage Range corresponding to **useable energy** of the battery:		
Minimum State of Charge	V	
Maximum State of Charge	V	
95% of Maximum	V	
Test Voltage *	V	
For batteries that are rechargeable ONLY by an energy source on the vehicle: Voltage range corresponding to **useable energy** of the battery:		
Minimum State of Charge	V	240
Maximum State of Charge	V	400
95% of Maximum	V	380
Test Voltage *	V	320.7

* *For all battery types-No less than 95% of Maximum Operating Voltage; for batteries that are rechargeable ONLY by an energy source on the vehicle-maximum practicable state of charge within normal operating range.*

DATA SHEET NO. 305-2
PRE-IMPACT DATA FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle:	2025 Toyota Land Cruiser 5 Door SUV	NHTSA No.:	M20255108
Test Program:	NCAP Side Pole Impact Test	Test Date:	03/18/2025

VEHICLE CHASSIS GROUND PT(S) LOCATION(S) & PROPULSION BATTERY SYSTEM

Measured Parameter	Value
Details of Vehicle Chassis Ground Points & Locations	Ground point was located on our vehicle plate in the trunk area
Details of Propulsion Battery Components	Battery is located inside the trunk area under the deck board assembly

DATA SHEET NO. 305-3
PRE-IMPACT ELECTRICAL ISOLATION MEASUREMENTS AND CALCULATIONS FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle:	2025 Toyota Land Cruiser 5 Door SUV	NHTSA No.:	M20255108
Test Program:	NCAP Side Pole Impact Test	Test Date:	03/18/2025

VOLTMETER INFORMATION

Measured Parameter	Units	Value
Make & Model		Fluke 1587
Serial No.		51800115
Internal Impedance Value	MΩ	10
Resolution	V	0.001
Last Calibration Date		6/20/2024

NOTES:

- *The voltmeter used in this test shall measure DC values and have an internal impedance of at least 10 M Ω*
- *An oscilloscope meeting the above requirements may need to be used to adequately measure voltage in some vehicles.*

PROPULSION BATTERY VOLTAGE, RESISTANCE & ELECTRICAL ISOLATION MEASUREMENTS & CALCULATIONS

Measured Parameter	Symbol	Units	Value
Normal operating voltage range specified by the manufacturer	V_b	V	240 - 400
Propulsion Battery Voltage: (ready to drive position)	V_b	V	320.7
Propulsion Battery to Vehicle Chassis	V_1	V	256.0
Propulsion Battery to Vehicle Chassis	V_2	V	252.0
Propulsion Battery to Vehicle Chassis Across Known Resistor	R_o	Ω	200,000
Propulsion Battery to Vehicle Chassis with R_o installed	V_1'	V	2.6
Propulsion Battery to Vehicle Chassis with R_o installed	V_2'	V	4.5
$_{i1}= R_o*(1+V_2/V_1)*[(V_1-V_1')/V_1']$	R_{i1}	Ω	38,680,048
$R_{i2}= R_o*(1+V_1/V_2)*[(V_2-V_2')/V_2']$	R_{i2}	Ω	22,174,603
Lesser value of R_{i1} and R_{i2}	R_i	Ω	22,174,603
Electrical Isolation Value (Minimum E.I. Value is 500 Ω/V)	R_i/V_b	Ω/V	69,144

Is the Electrical Isolation Value ≥ 500 Ω/V (Yes/No)? [X] Yes [ ] No (Fail)

NOTES:

- *The measurement shall be made with the propulsion battery connected to the vehicle propulsion system, and the vehicle in the "ready-to-drive" (propulsion motor(s) activated) position.*
- *If the voltage measurement is not at the voltage or within the normal operating voltage range specified by the manufacturer, the battery must be charged.*
- *The known resistance Ro (in Ohms) should be approximately 500 times the nominal operating voltage of the vehicle (in volts) per SAE J1766*

If measured voltage is zero and results in a division by zero, record "Zero Volts." This "zero voltage" condition is considered as being compliant

DATA SHEET NO. 305-4
POST-IMPACT DATA FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle:	2025 Toyota Land Cruiser 5 Door SUV	NHTSA No.:	M20255108
Test Program:	NCAP Side Pole Impact Test	Test Date:	03/18/2025

VOLTMETER INFORMATION

Measured Parameter	Units	Value
Make & Model		Fluke 1587
Serial No.		49210189
Internal Impedance Value	MΩ	10
Resolution	V	0.001
Last Calibration Date		04/06/2024

NOTES:

- *The voltmeter used in this test shall measure DC values and have an internal impedance of at least 10 M Ω*
- *An oscilloscope meeting the above requirements may need to be used to adequately measure voltage in some vehicles.*

ELECTRICAL ISOLATION MEASUREMENTS & IMPACT CALCULATIONS

Parameter	Value	Units		Value		Value	
V_b =	305.8	V	Time:	2	Minutes	9	Seconds
V_1 =	137.0	V	Time:	2	Minutes	17	Seconds
V_2 =	180.0	V	Time:	2	Minutes	20	Seconds
R_o =	200,000	Ω					
V_1' =	9.0	V	Time:	2	Minutes	25	Seconds
V_2' =	12.0	V	Time:	2	Minutes	31	Seconds
R_{i1} =	6,581,671	Ω	Time:	2	Minutes	25	Seconds
R_{i2} =	4,931,111	Ω	Time:	2	Minutes	31	Seconds
R_i =	4,931,111	Ω/V	Time:	2	Minutes	31	Seconds
R_i/V_b =	16,125	Ω/V	Time:	2	Minutes	31	Seconds

Is the Electrical Isolation Value ≥ 500 Ω/V (Yes/No)?	X	Yes		No (Fail)

NOTES:

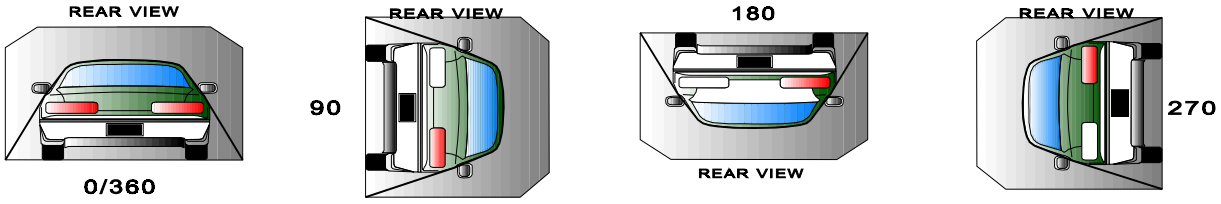
- *R_{i1}= R_o*(1+V_2/V_1)*[(V_1-V_1')/V_1'], R_{i2}= R_o*(1+V_1/V_2)*[(V_2-V_2')/V_2'], R_i = Lesser value of R_{i1} and R_{i2}*
- *If measured voltage is zero and results in a division by zero, record "Zero Volts." This "zero voltage" condition is considered as being compliant*
- *Minimum Electrical Isolation Value is 500 Ω/V*

PROPULSION BATTERY SYSTEM COMPONENTS

Measured Parameter	Comments	Passed	Failed
Propulsion Battery Module movement within the passenger compartment	None	X	
Intrusion of an outside Propulsion Battery Component into the passenger compartment	None	X	
Is propulsion battery electrolyte spillage visible in the passenger compartment?	None	X	

DATA SHEET NO. 305-5
STATIC ROLLOVER TEST DATA FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle: 2025 Toyota Land Cruiser 5 Door SUV
Test Program: NCAP Side Pole Impact Test
NHTSA No.: M20255108
Test Date: 03/18/2025



Rear View

DETERMINATION OF PROPULSION BATTERY ELECTROLYTE COLLECTION TIME PERIOD

Rollover Stage	Rotation Time (spec. 1 -3 min)		FMVSS 301 Hold Time	Total Time		Next Whole Minute Interval
	Minutes	Seconds	Minutes	Minutes	Seconds	Minutes
0° to 90°	1	11	5	6	11	7
90° to 180°	1	10	5	6	10	7
180° to 270°	1	9	5	6	9	7
270° to 360°	1	7	5	6	7	7

ACTUAL TEST VEHICLE PROPULSION BATTERY ELECTROLYTE SPILLAGE

Rollover Stage	Propulsion Battery Electrolyte Spillage	Units	Spillage Location
0° to 90°	0	Liters	No Spillage
90° to 180°	0	Liters	No Spillage
180° to 270°	0	Liters	No Spillage
270° to 360°	0	Liters	No Spillage
Total Spillage	0	Liters	No Spillage

** FMVSS 305 Requirements: Maximum allowable propulsion battery electrolyte spillage is **5.0 Liters***

Is the total spillage of propulsion battery electrolyte greater than 5.0 Liters? [ ] Yes (Fail) [X] No

Is propulsion battery electrolyte spillage visible in the passenger compartment? [ ] Yes (Fail) [X] No

VOLTMETER INFORMATION

Measured Parameter	Units	Value
Make & Model		Fluke 1587
Serial No.		49210189
Internal Impedance Value	MΩ	10
Resolution	V	0.001
Last Calibration Date		04/06/2024

NOTES:

- *The voltmeter used in this test shall measure DC values and have an internal impedance of at least 10 M Ω*
- *An oscilloscope meeting the above requirements may need to be used to adequately measure voltage in some vehicles.*

DATA SHEET NO. 305-5
STATIC ROLLOVER TEST DATA FOR INDICANT FMVSS NO. 305 TESTING (CONT'D)

Test Vehicle: 2025 Toyota Land Cruiser 5 Door SUV NHTSA No.: M20255108
Test Program: NCAP Side Pole Impact Test Test Date: 03/18/2025

ELECTRICAL ISOLATION MEASUREMENTS & CALCULATIONS

Parameter	Rollover Stage	Value	Units	R_o=200,000Ω	Minutes	Seconds
V_b =	90°	310.7	V	Time:	2	40
	180°	310.7	V		9	15
	270°	310.7	V		15	35
	360°	310.0	V		21	49
V_1 =	90°	141.0	V	Time:	2	47
	180°	151.0	V		9	30
	270°	151.0	V		15	44
	360°	150.0	V		21	53
V_2 =	90°	162.0	V	Time:	3	3
	180°	169.0	V		9	34
	270°	156.0	V		15	49
	360°	163.0	V		21	57
V_1' =	90°	6.9	V	Time:	3	3
	180°	35.0	V		9	38
	270°	22.0	V		15	54
	360°	32.0	V		22	1
V_2' =	90°	17.5	V	Time:	3	9
	180°	26.0	V		9	43
	270°	23.2	V		16	0
	360°	26.0	V		22	5
R_{i1} =	90°	8,352,821	Ω	Time:	3	3
	180°	1,404,730	Ω		9	38
	270°	2,384,287	Ω		15	54
	360°	1,538,917	Ω		22	1
R_{i2} =	90°	3,088,783	Ω	Time:	3	9
	180°	2,082,840	Ω		9	43
	270°	2,252,962	Ω		16	0
	360°	2,023,643	Ω		22	5
R_i =	90°	3,088,783	Ω	Time:	3	9
	180°	1,404,730	Ω		9	38
	270°	2,252,962	Ω		16	0
	360°	1,538,917	Ω		22	1
R_i/V_b =	90°	9,941	Ω/V	Time:	3	9
	180°	4,521	Ω/V		9	38
	270°	7,251	Ω/V		16	0
	360°	4,964	Ω/V		22	1

Is the Electrical Isolation Value ≥ 500 Ω/V (Yes/No)? [X] Yes [ ] No (Fail)

APPENDIX A

PHOTOGRAPHS

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Figure A-1: As Delivered Right Front ¾ View of Test Vehicle



Figure A-2: As Delivered Left Rear ¾ View of Test Vehicle



Figure A-3: Pre-Test Frontal View of Test Vehicle



Figure A-4: Post-Test Frontal View of Test Vehicle



Figure A-5: Pre-Test Left Front ¾ View of Test Vehicle



Figure A-6: Post-Test Left Front ¾ View of Test Vehicle



Figure A-7: Pre-Test Left Side View of Test Vehicle



Figure A-8: Post-Test Left Side View of Test Vehicle



Figure A-9: Pre-Test Left Rear ¾ View of Test Vehicle



Figure A-10: Post-Test Left Rear ¾ View of Test Vehicle

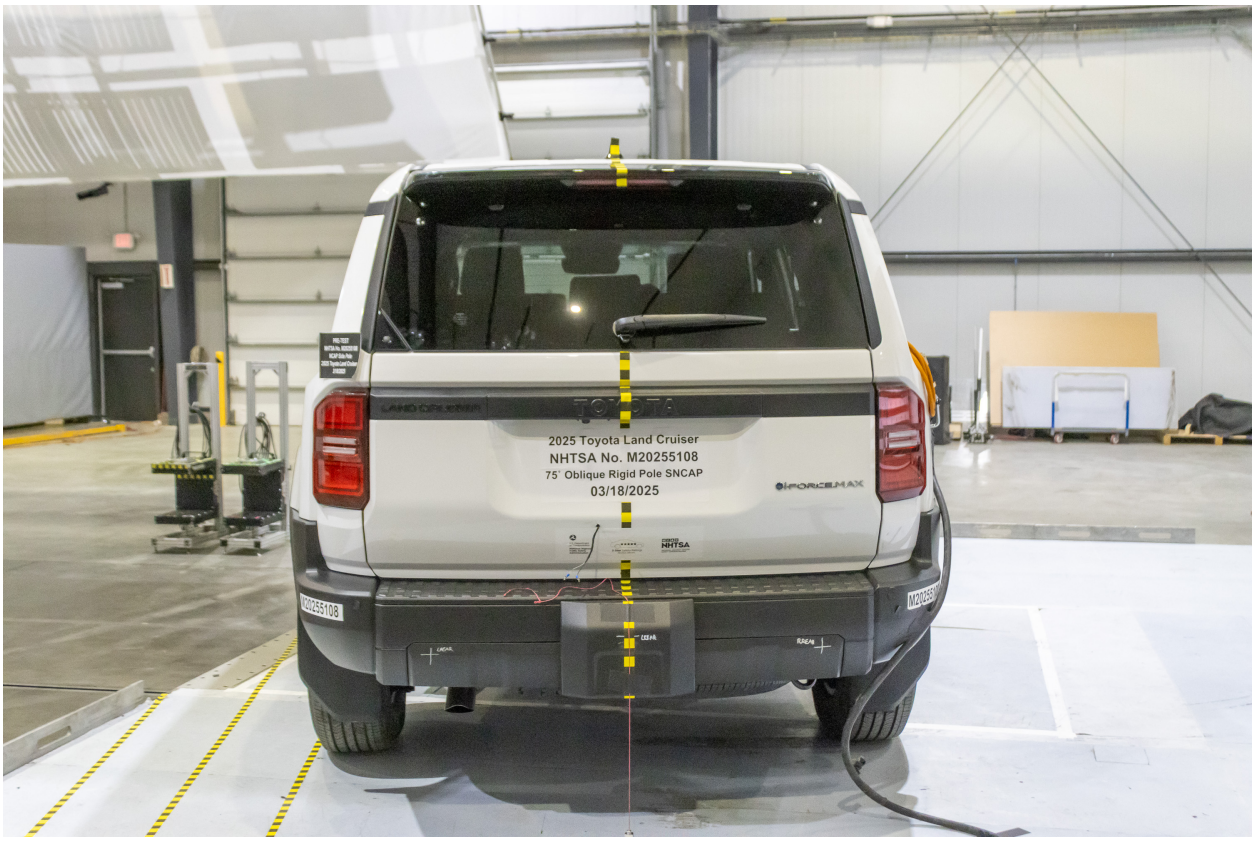


Figure A-11: Pre-Test Rear View of Test Vehicle



Figure A-12: Post-Test Rear View of Test Vehicle



Figure A-13: Pre-Test Right Side View of Test Vehicle



Figure A-14: Post-Test Right Side View of Test Vehicle



Figure A-15: Pre-Test Overhead View of Test Area

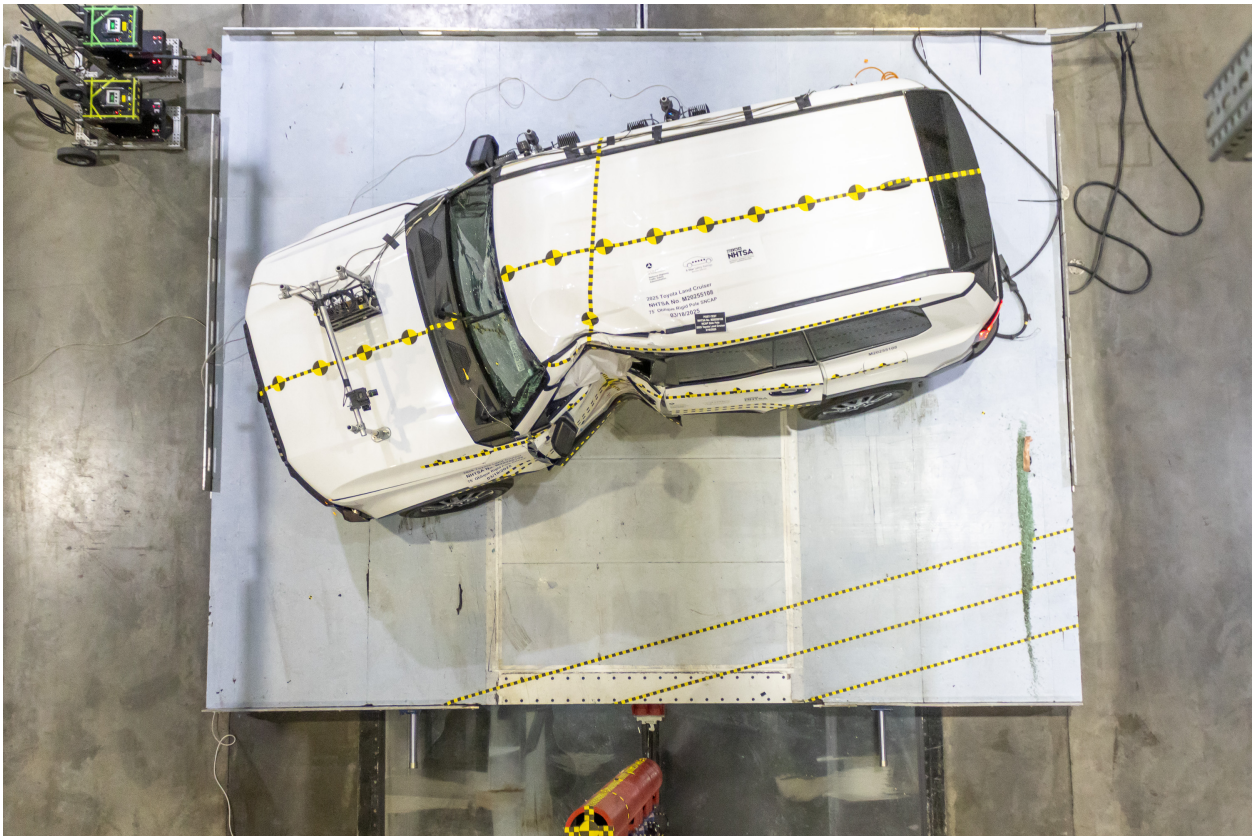


Figure A-16: Post-Test Overhead View of Test Area



Figure A-17: Pre-Test Left Side View of Pole Positioned Against Side of Vehicle



Figure A-18: Pre-Test Right Side View of Pole Positioned Against Side of Vehicle



Figure A-19: Pre-Test Close-Up View of Impact Point Target



Figure A-20: Post-Test Close-Up View of Impact Point Target Showing Impact Location



Figure A-21: Pre-Test Front Close-Up View of Dummy Head and Chest



Figure A-22: Post-Test Front Close-Up View of Dummy



Figure A-23: Pre-Test Left Side View of Dummy Showing Belt and Chalking



Figure A-24: Pre-Test Left Side View of Dummy Shoulder and Door Top View



Figure A-25: Post-Test Left Side View of Dummy Shoulder and Door Top View



Figure A-26: Pre-Test Frontal View of Seat Back Prior to Dummy Positioning

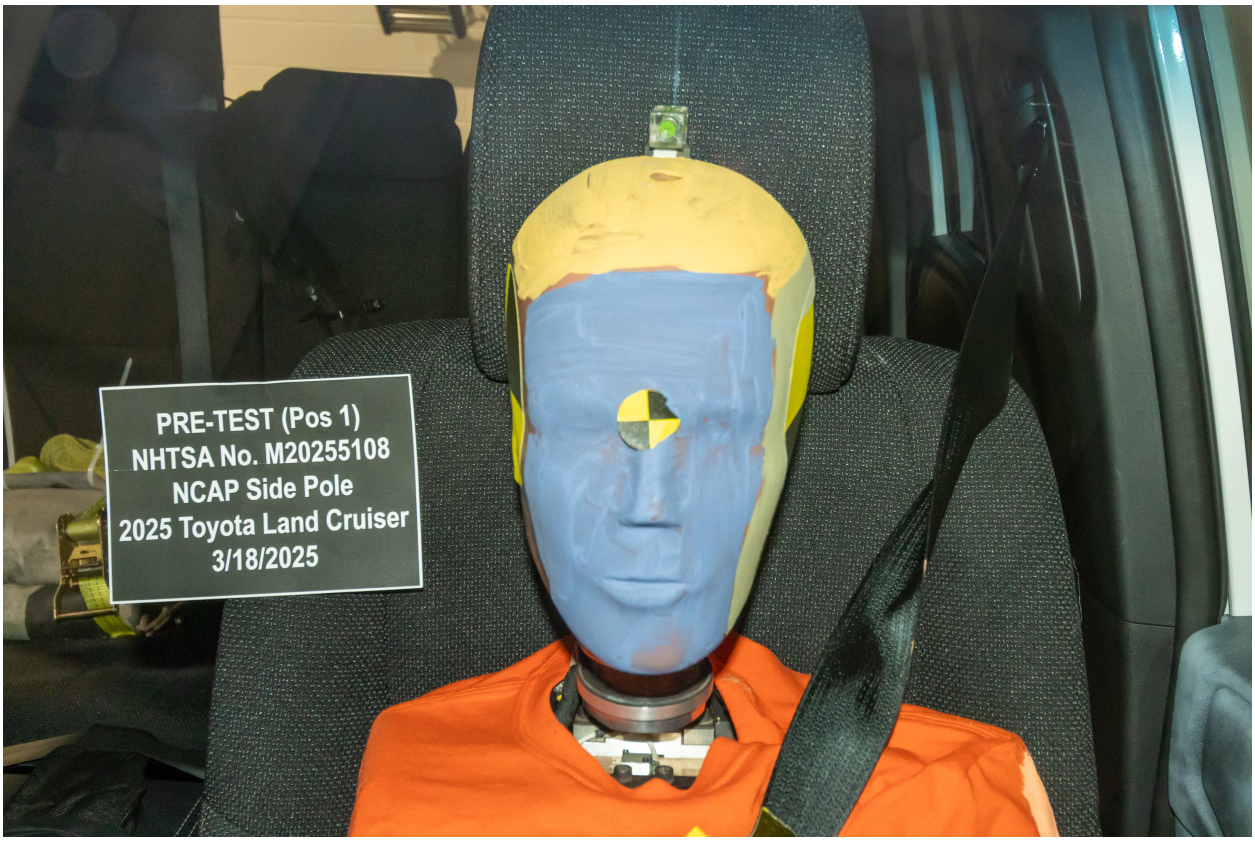


Figure A-27: Pre-Test Frontal Close-Up View of Dummy Head / Shoulders in Relation to Head Restraint



Figure A-28: Pre-Test Frontal View of Seat Pan Prior to Dummy Positioning



Figure A-29: Pre-Test Overhead View of Dummy Thighs on Seat Pan

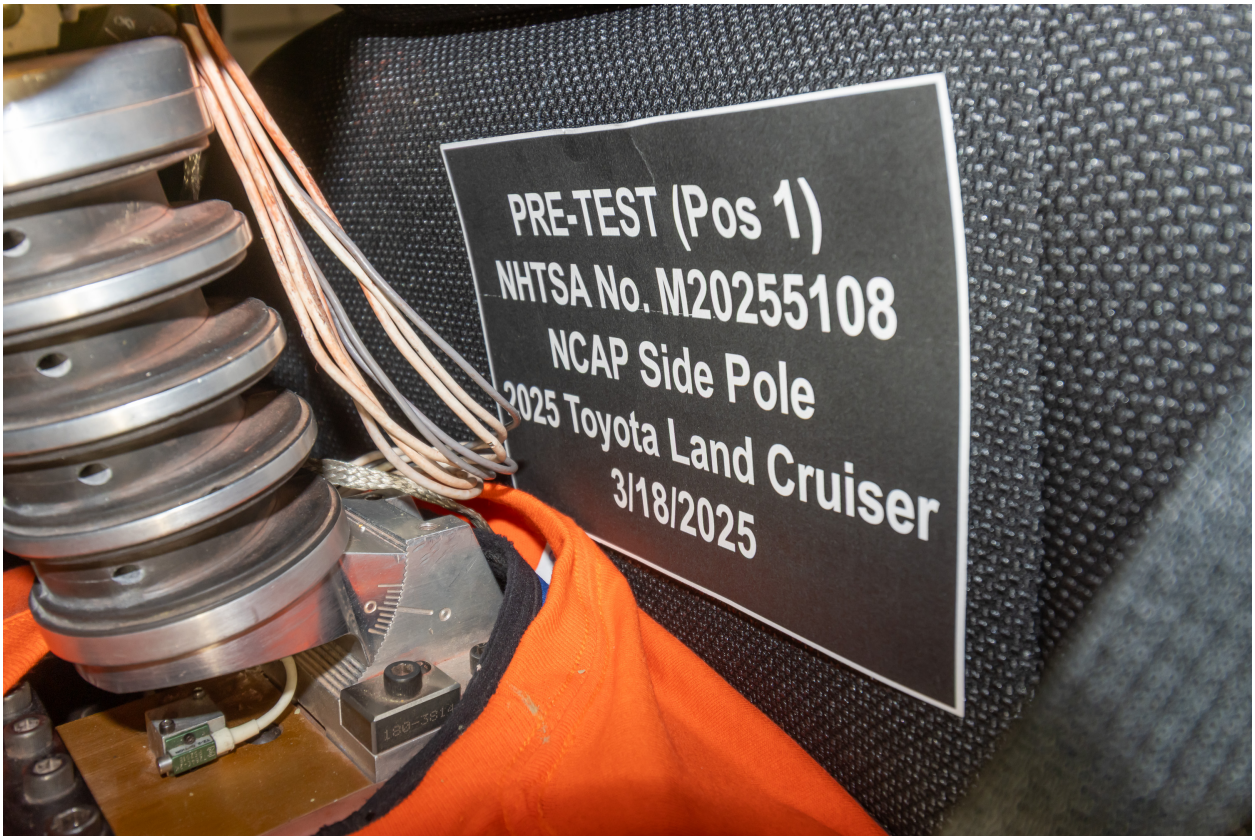


Figure A-30: Pre-Test Left Side View of Dummy's Neck Showing Position of Adjustable Neck Bracket



Figure A-31: Pre-Test Left Side View of Dummy's Head Showing Dummy's Head is Level



Figure A-32: Pre-Test Placement of Dummy's Feet



Figure A-33: Pre-Test View of Belt Anchorage for Dummy



Figure A-34: Pre-Test Left Side View of Steering Wheel



Figure A-35: Pre-Test View of Disengaged Parking Brake



Figure A-36: Pre-Test View of Parking Brake

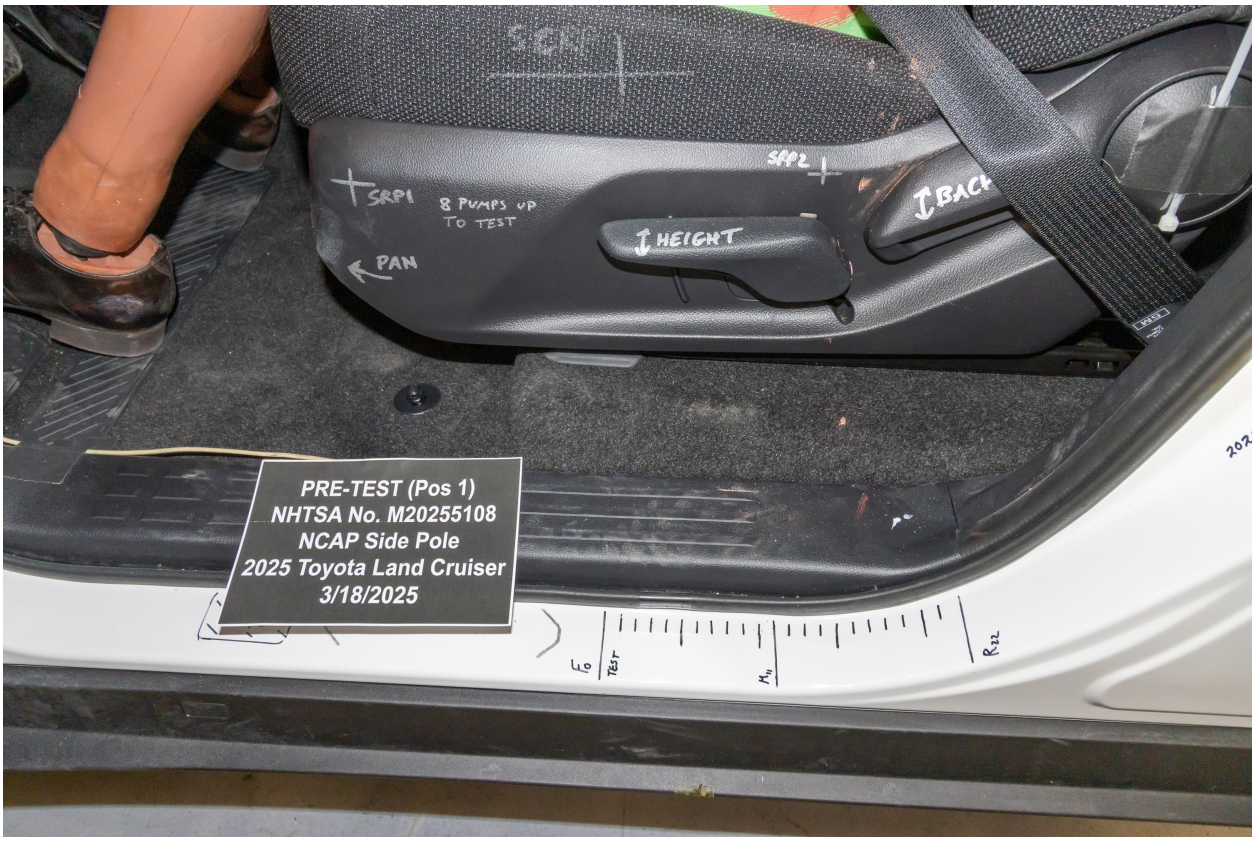


Figure A-37: Pre-Test Close-Up Left Side View of Driver Seat Track

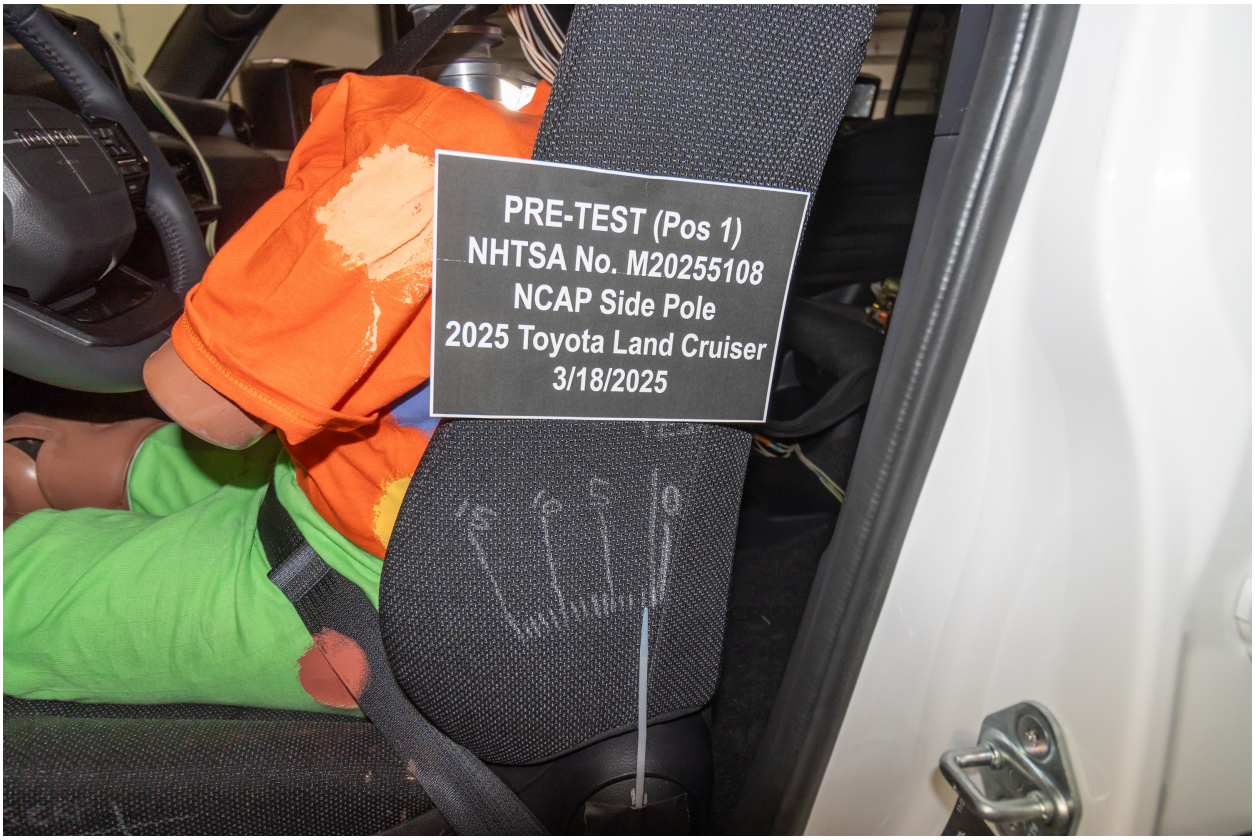


Figure A-38: Pre-Test Close-Up Left Side View of Driver Seat Back



Figure A-39: Pre-Test Close-Up View of Driver Seat Back or Head Restraint



Figure A-40: Pre-Test Dummy and Door Clearance View



Figure A-41: Post-Test Dummy and Door Clearance View



Figure A-42: Pre-Test Right Side View of Dummy and Front Seat of Occupant Compartment



Figure A-43: Post-Test Right Side View of Dummy and Front Seat of Occupant Compartment



Figure A-44: Pre-Test Inner Door Panel View



Figure A-45: Post-Test Inner Door Panel View Showing Dummy Contact Location



Figure A-46: Post-Test Dummy Close-Up Head Contact with Vehicle Interior View



Figure A-47: Post-Test Dummy Close-Up Head Contact with Side Airbag View



Figure A-48: Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View



Figure A-49: Post-Test Dummy Close-Up Torso Contact with Side Airbag View



Figure A-50: Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View



Figure A-51: Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View



Figure A-52: Post-Test Dummy Close-Up Knee Contact with Vehicle Interior View



Figure A-53: Pre-Test Right Side View of Dummy and Rear Seat of Occupant Compartment



Figure A-54: Post-Test Inner Rear Passenger Torso Air Bag Deployment View



Figure A-55: Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



Figure A-56: Post-Test View of Fuel Filler Cap or Fuel Filler Neck

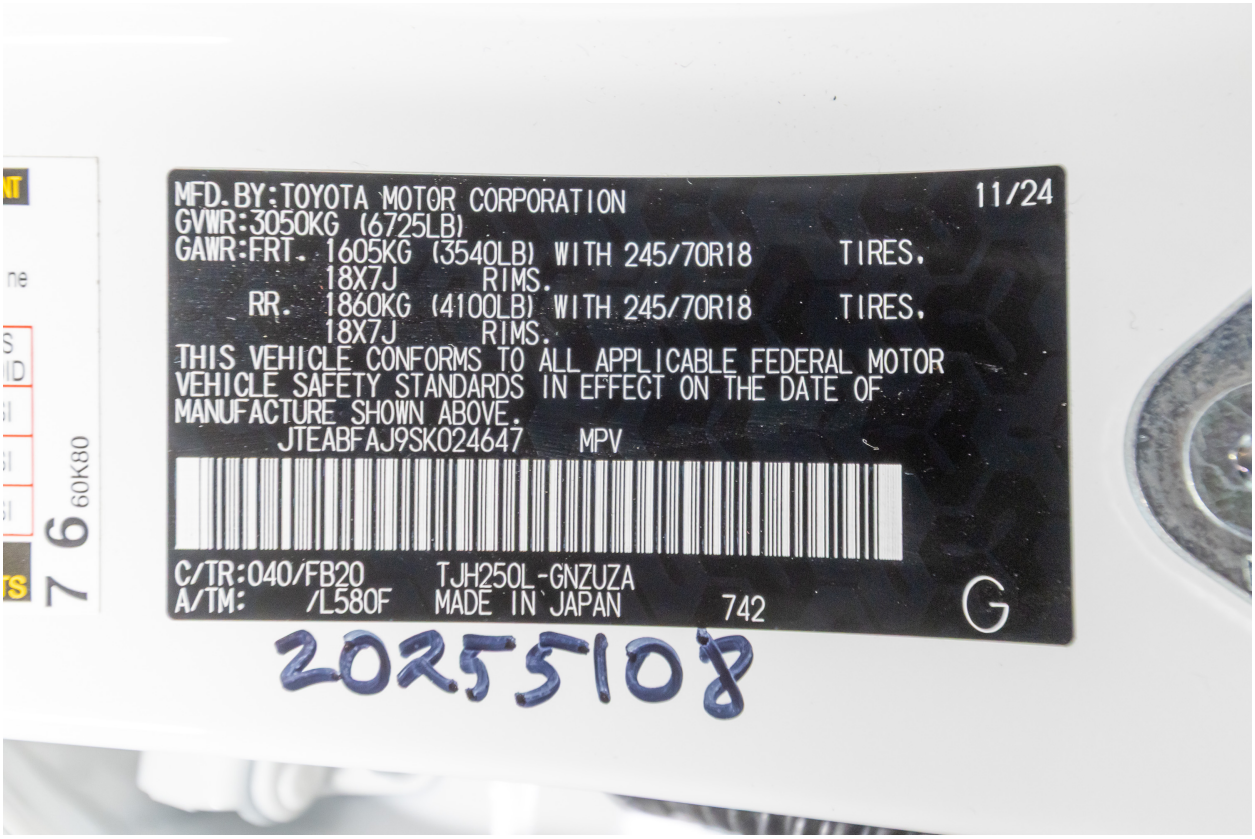


Figure A-57: Close-Up View of Vehicle's Certification Label



Figure A-58: Close-Up View of Vehicle's Tire Information Placard or Label

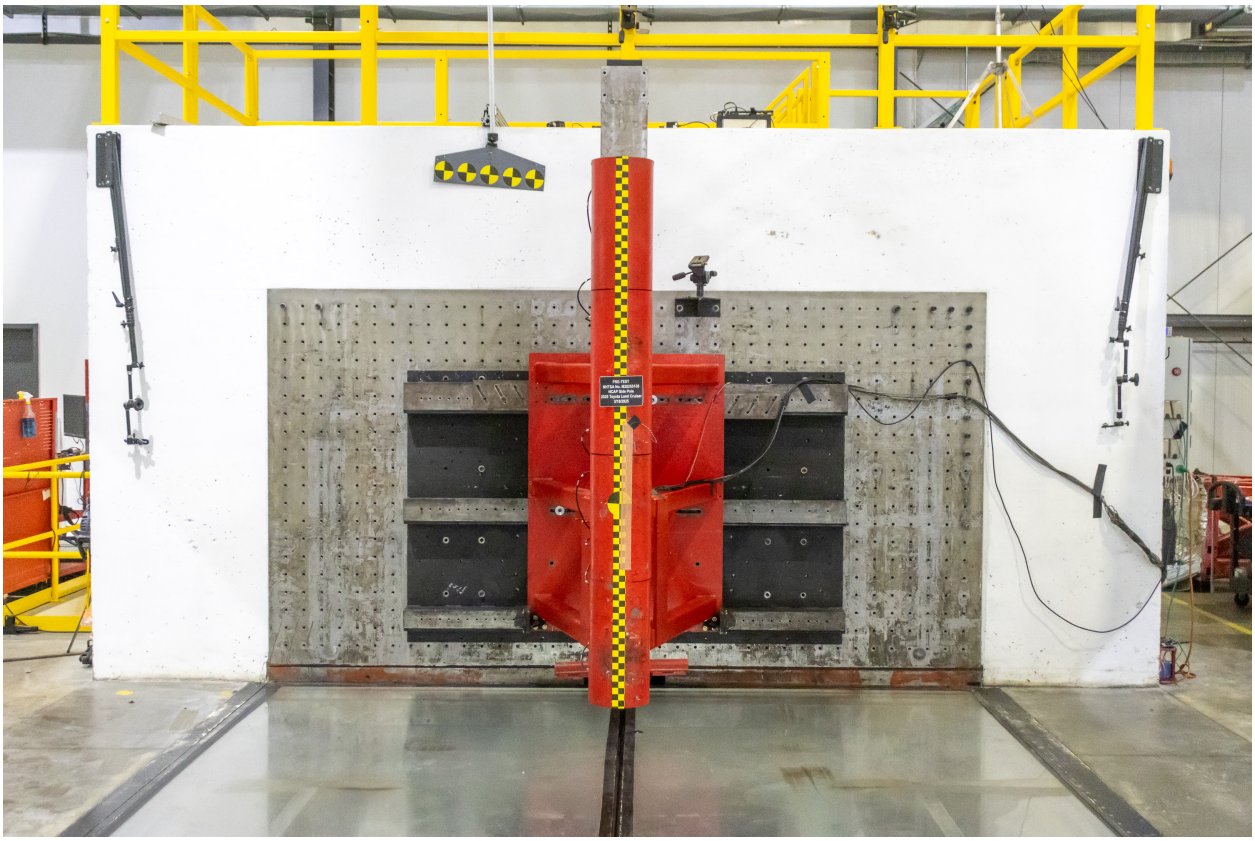


Figure A-59: Pre-Test Pole Barrier Front View

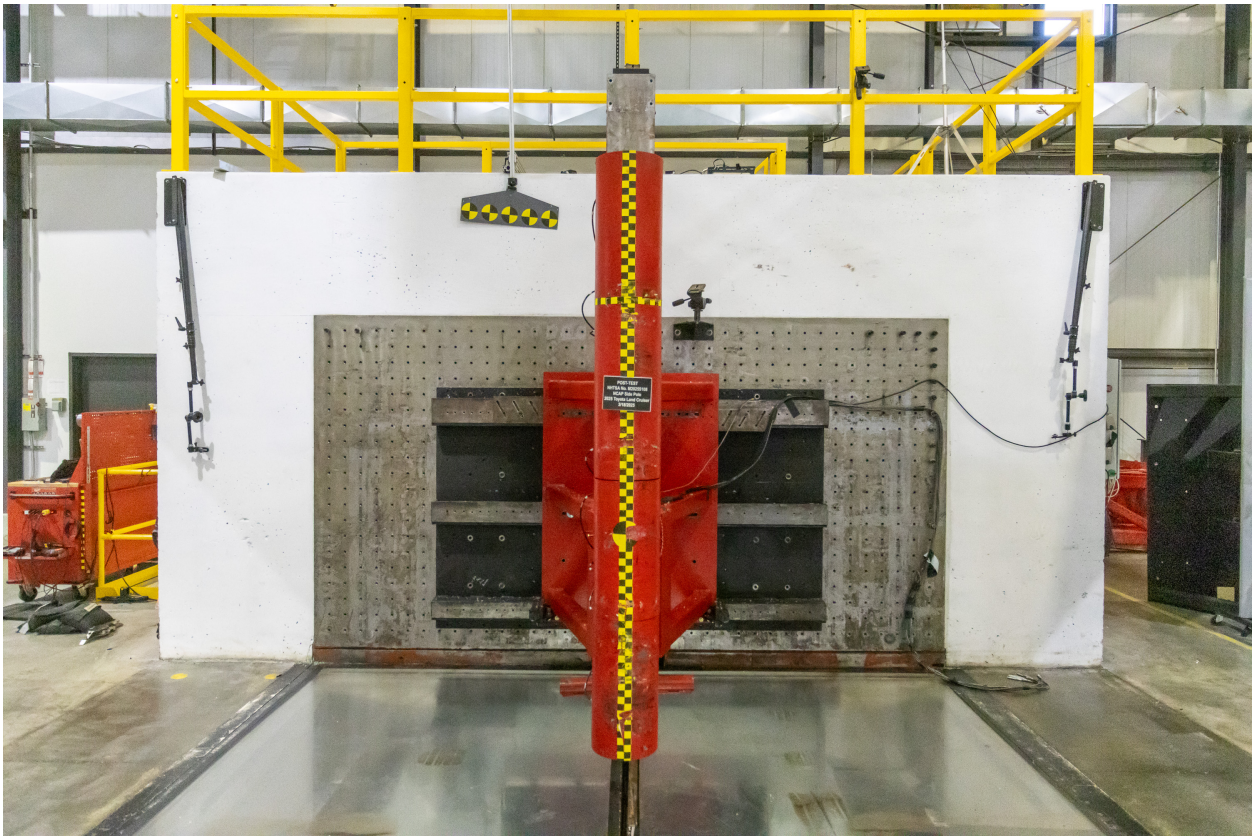


Figure A-60: Post-Test Pole Barrier Front View

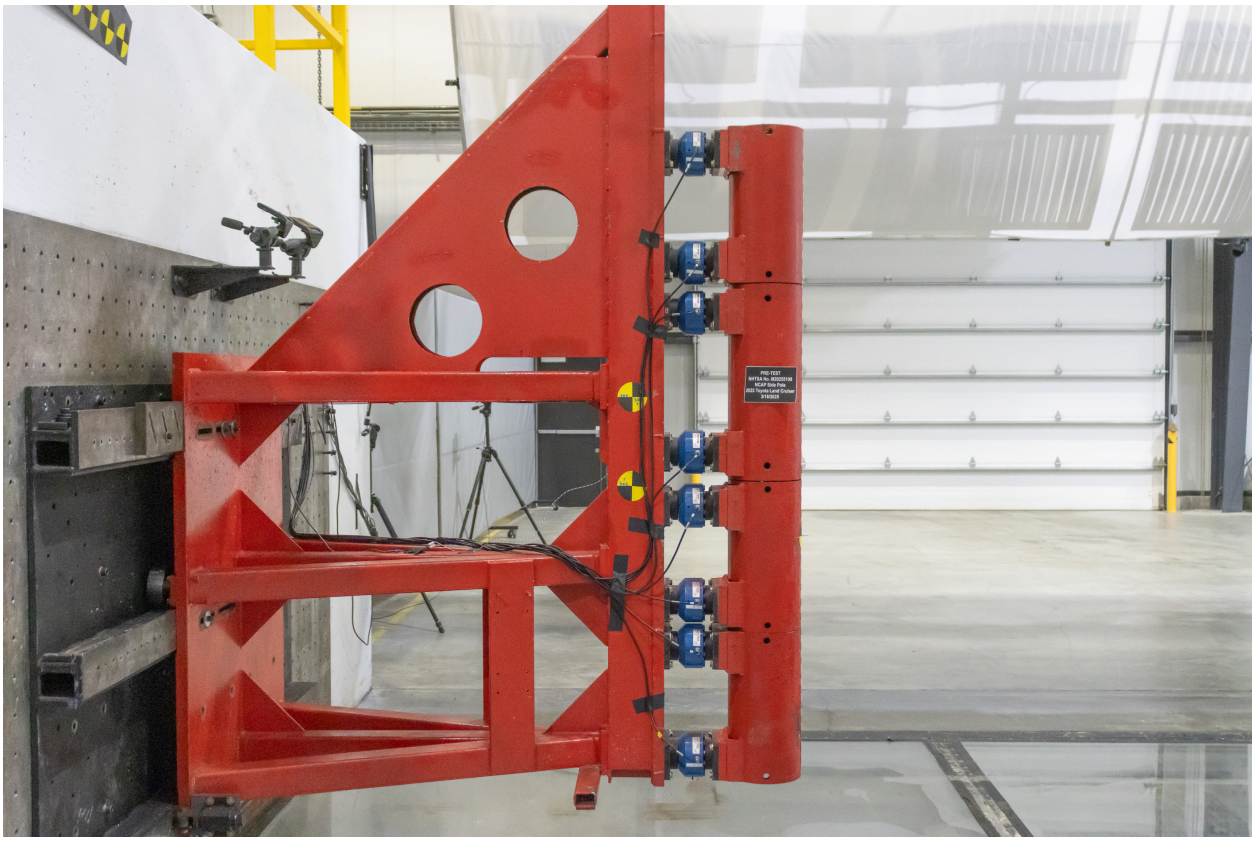


Figure A-61: Pre-Test Pole Barrier Side View

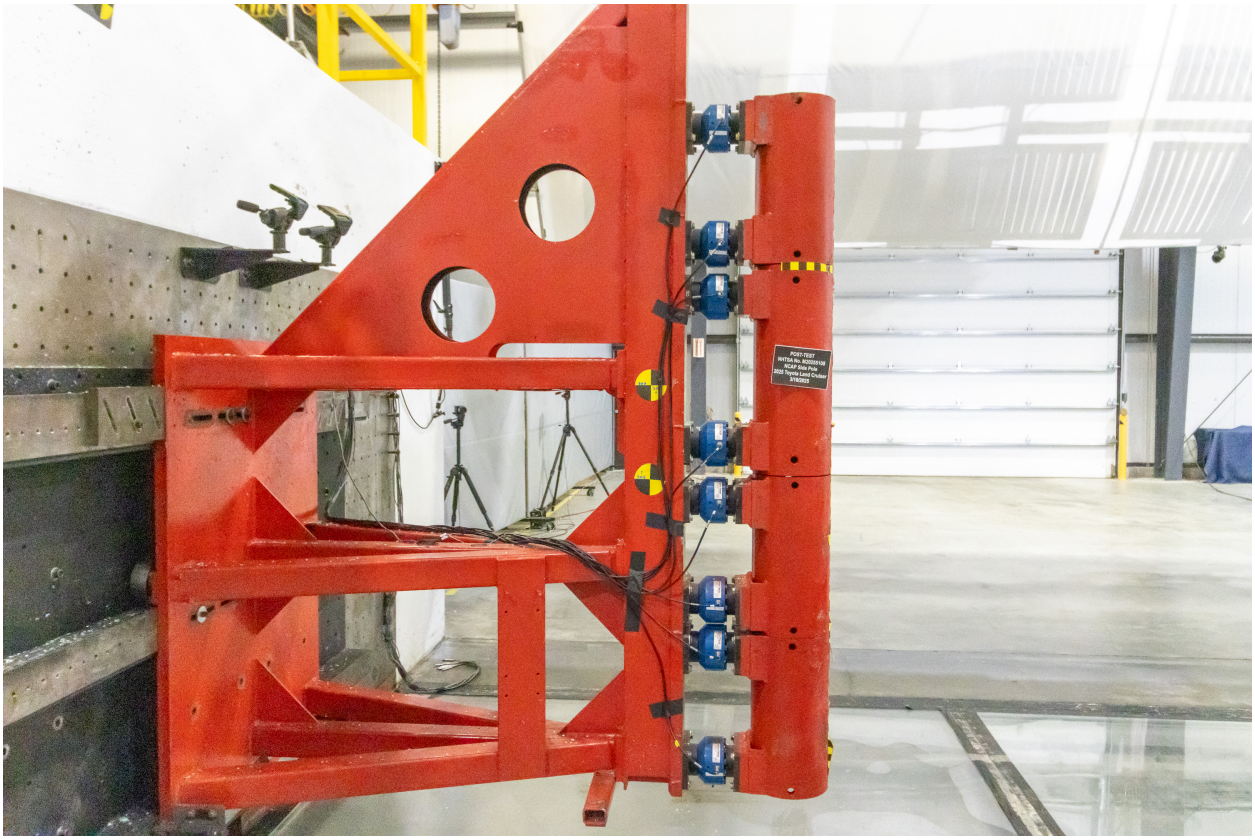


Figure A-62: Post-Test Pole Barrier Side View

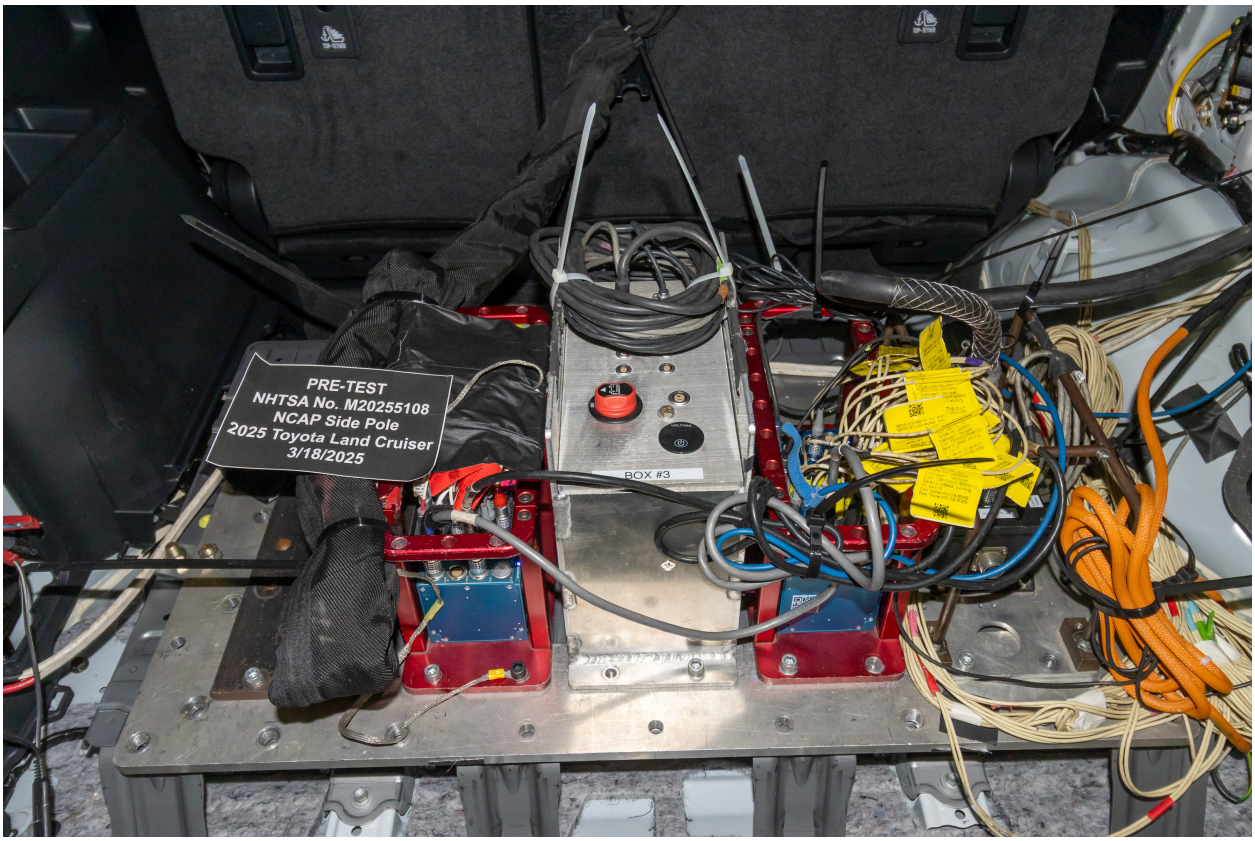


Figure A-63: Pre-Test Ballast View



Figure A-64: Post-Test Primary and Redundant Speed Trap Read-Out



Figure A-65: FMVSS No. 301 Static Rollover 0 Degrees

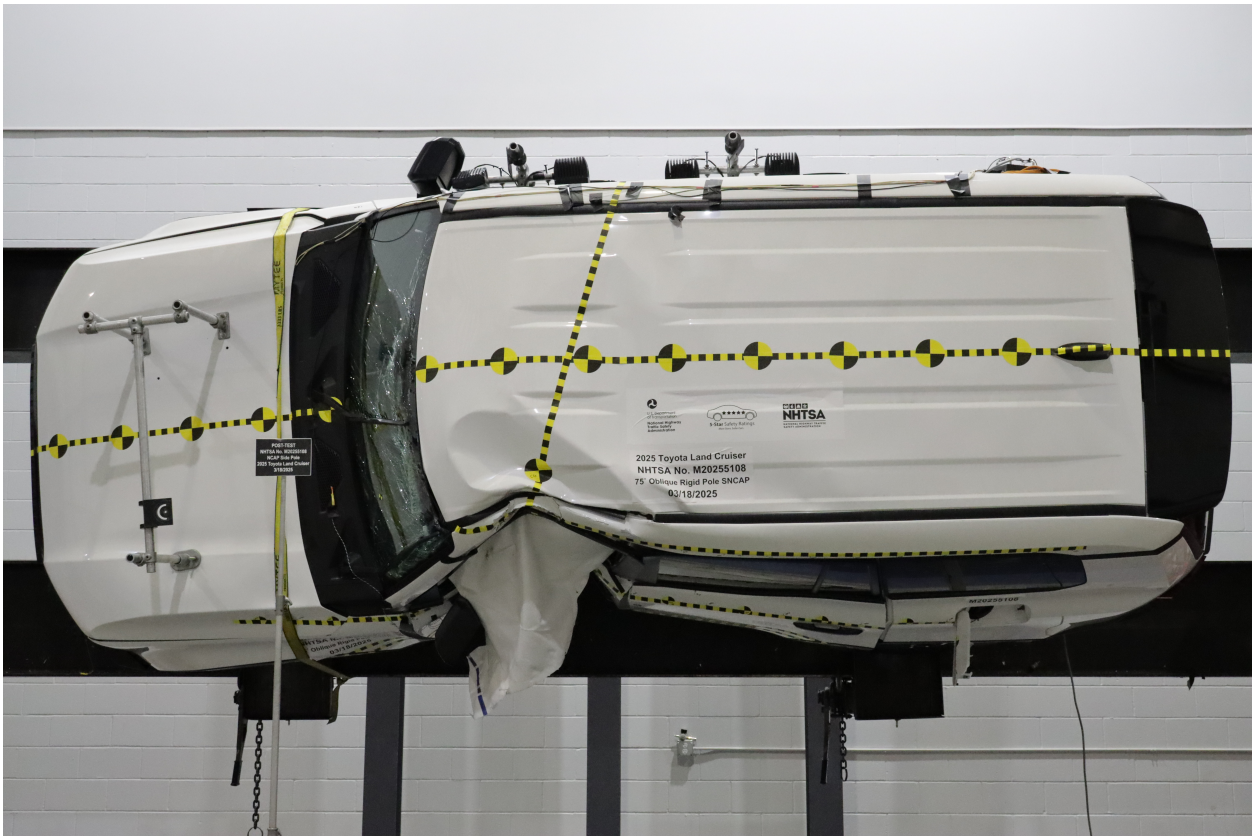


Figure A-66: FMVSS No. 301 Static Rollover 90 Degrees

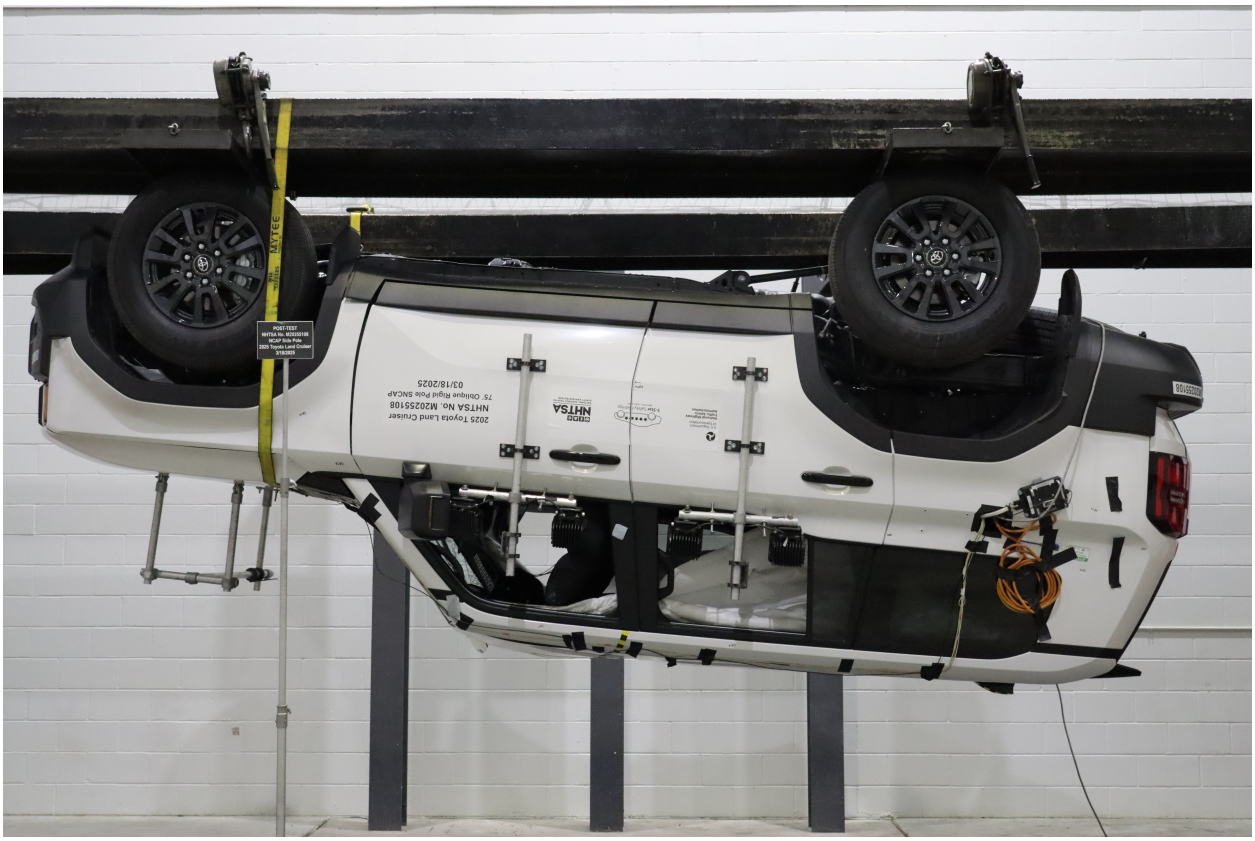


Figure A-67: FMVSS No. 301 Static Rollover 180 Degrees

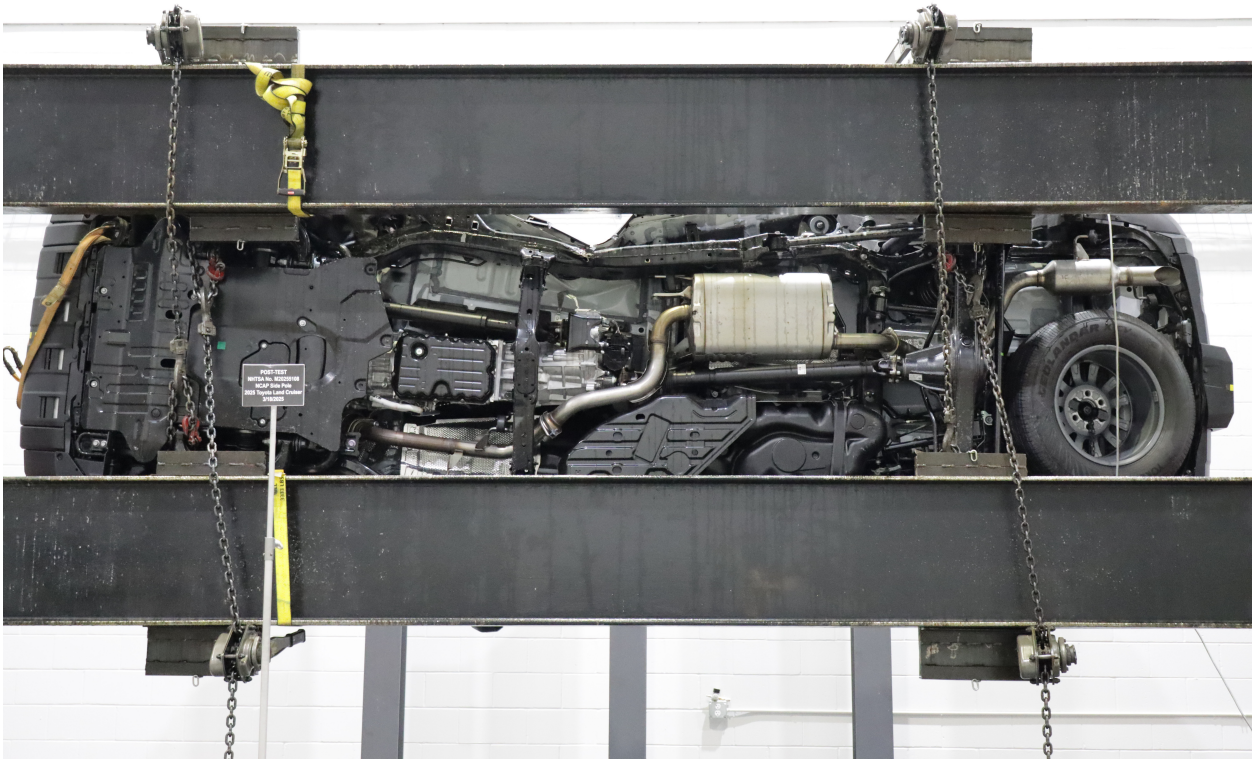


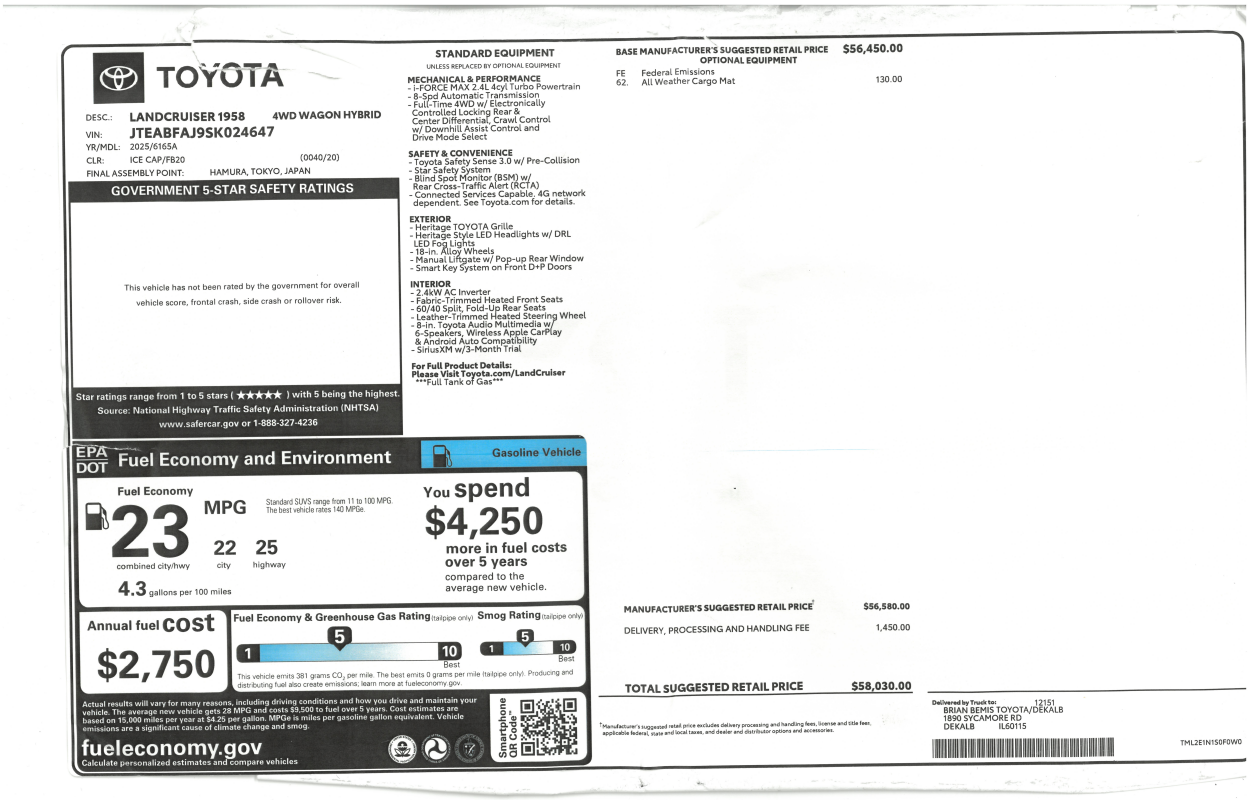
Figure A-68: FMVSS No. 301 Static Rollover 270 Degrees



Figure A-69: FMVSS No. 301 Static Rollover 360 Degrees



Figure A-70: Impact Event



TOYOTA

DESC.: LANDCRUISER 1958 4WD WAGON HYBRID
VIN: JTEABFAJ9SK024647
YR/MDL: 2025/6165A
CLR: ICE CAP/FB20 (0040/20)
FINAL ASSEMBLY POINT: HAMURA, TOKYO, JAPAN

GOVERNMENT 5-STAR SAFETY RATINGS

This vehicle has not been rated by the government for overall vehicle score, frontal crash, side crash or rollover risk.

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

STANDARD EQUIPMENT
UNLESS REPLACED BY OPTIONAL EQUIPMENT

MECHANICAL & PERFORMANCE
- i-FORCE MAX 2.4L 4cyl Turbo Powertrain
- 8-Spd Automatic Transmission
- Full-Time 4WD w/ Electronically Controlled Locking Rear & Center Differential, Crawl Control w/ Downhill Assist Control and Drive Mode Select

SAFETY & CONVENIENCE
- Toyota Safety Sense 3.0 w/ Pre-Collision
- Star Safety System
- Blind Spot Monitor (BSM) w/ Rear Cross-Traffic Alert (RCTA)
- Connected Services Capable, 4G network dependent. See Toyota.com for details.

EXTERIOR
- Heritage TOYOTA Grille
- Heritage Style LED Headlights w/ DRL
- LED Fog Lights
- 18-in. Alloy Wheels
- Manual Liftgate w/ Pop-up Rear Window
- Smart Key System on Front D+P Doors

INTERIOR
- 2.4kW AC Inverter
- Fabric-Trimmed Heated Front Seats
- 60/40 Split, Fold-Up Rear Seats
- Leather-Trimmed Heated Steering Wheel
- 8-in. Toyota Audio Multimedia w/ 6-Speakers, Wireless Apple CarPlay & Android Auto Compatibility
- SiriusXM w/3-Month Trial

For Full Product Details:
Please Visit Toyota.com/LandCruiser
Full Tank of Gas

BASE MANUFACTURER'S SUGGESTED RETAIL PRICE $56,450.00
OPTIONAL EQUIPMENT
FE Federal Emissions 130.00
62. All Weather Cargo Mat

EPA DOT Fuel Economy and Environment — Gasoline Vehicle

Fuel Economy
23 MPG
combined city/hwy
22 city 25 highway
4.3 gallons per 100 miles
Standard SUVs range from 11 to 100 MPG. The best vehicle rates 140 MPGe.

You Spend $4,250 more in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost $2,750

Fuel Economy & Greenhouse Gas Rating (tailpipe only) 1 5 10 Best
Smog Rating (tailpipe only) 1 5 10 Best
This vehicle emits 381 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 28 MPG and costs $9,500 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at $4.25 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™

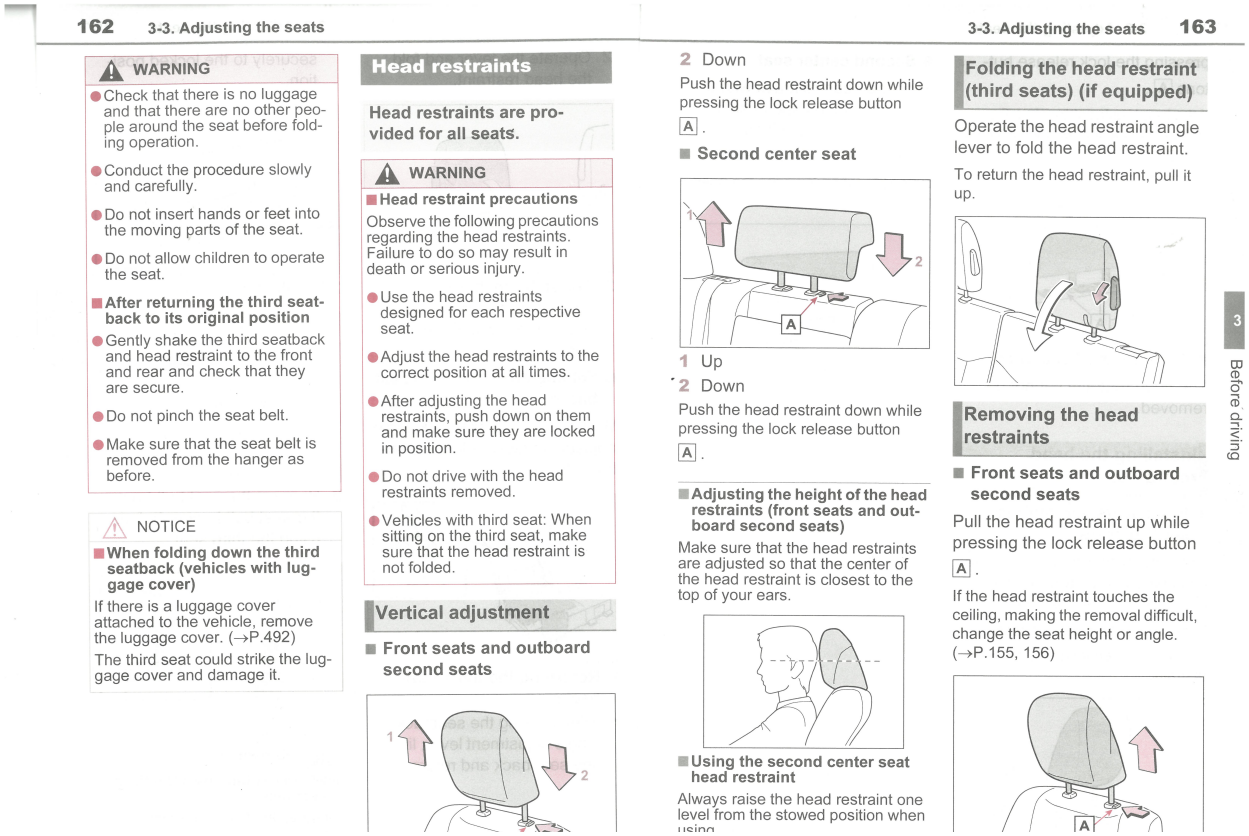
MANUFACTURER'S SUGGESTED RETAIL PRICE $56,580.00
DELIVERY, PROCESSING AND HANDLING FEE 1,450.00
TOTAL SUGGESTED RETAIL PRICE $58,030.00

†Manufacturer's suggested retail price excludes delivery processing and handling fees, license and title fees, applicable federal, state and local taxes, and dealer and distributor options and accessories.

Delivered by Truck to: 12151
BRIAN BEMIS TOYOTA/DEKALB
1890 SYCAMORE RD
DEKALB IL60115

TML2E1N150F0W0

Figure A-71: Monroney Label



WARNING

- Check that there is no luggage and that there are no other people around the seat before folding operation.
- Conduct the procedure slowly and carefully.
- Do not insert hands or feet into the moving parts of the seat.
- Do not allow children to operate the seat.

■ After returning the third seatback to its original position

- Gently shake the third seatback and head restraint to the front and rear and check that they are secure.
- Do not pinch the seat belt.
- Make sure that the seat belt is removed from the hanger as before.

NOTICE

■ When folding down the third seatback (vehicles with luggage cover)

If there is a luggage cover attached to the vehicle, remove the luggage cover. (→P.492)

The third seat could strike the luggage cover and damage it.

Head restraints

Head restraints are provided for all seats.

WARNING

■ Head restraint precautions

Observe the following precautions regarding the head restraints. Failure to do so may result in death or serious injury.

- Use the head restraints designed for each respective seat.
- Adjust the head restraints to the correct position at all times.
- After adjusting the head restraints, push down on them and make sure they are locked in position.
- Do not drive with the head restraints removed.
- Vehicles with third seat: When sitting on the third seat, make sure that the head restraint is not folded.

Vertical adjustment

■ Front seats and outboard second seats

2 Down

Push the head restraint down while pressing the lock release button A.

■ Second center seat

1 Up
2 Down

Push the head restraint down while pressing the lock release button A.

■ Adjusting the height of the head restraints (front seats and outboard second seats)

Make sure that the head restraints are adjusted so that the center of the head restraint is closest to the top of your ears.

■ Using the second center seat head restraint

Always raise the head restraint one level from the stowed position when using

Folding the head restraint (third seats) (if equipped)

Operate the head restraint angle lever to fold the head restraint.

To return the head restraint, pull it up.

Removing the head restraints

■ Front seats and outboard second seats

Pull the head restraint up while pressing the lock release button A.

If the head restraint touches the ceiling, making the removal difficult, change the seat height or angle. (→P.155, 156)

3 Before driving

Figure A-72: Head Restraint Use and Adjustment Information from Vehicle Owner's Manual



Figure A-73: Post-Test View of Shattered Vehicle Inner Door Panel



Figure 305-1: Auxiliary Power Module Warning Label

Photo Not Applicable

Figure 305-2: Power Inverter Warning Label



Figure 305-3 First Responder Warning Label



Figure 305-4: First Responder Warning Label Location

Photo Not Applicable

Figure 305-5: Other Vehicle Label Related to Electric Propulsion System



Figure 305-6: Manual High Voltage Service Disconnect in Place



Figure 305-7: Manual High Voltage Service Disconnect Removed (Show Plug)



Figure 305-8: Manual High Voltage Service Disconnect Removed Location

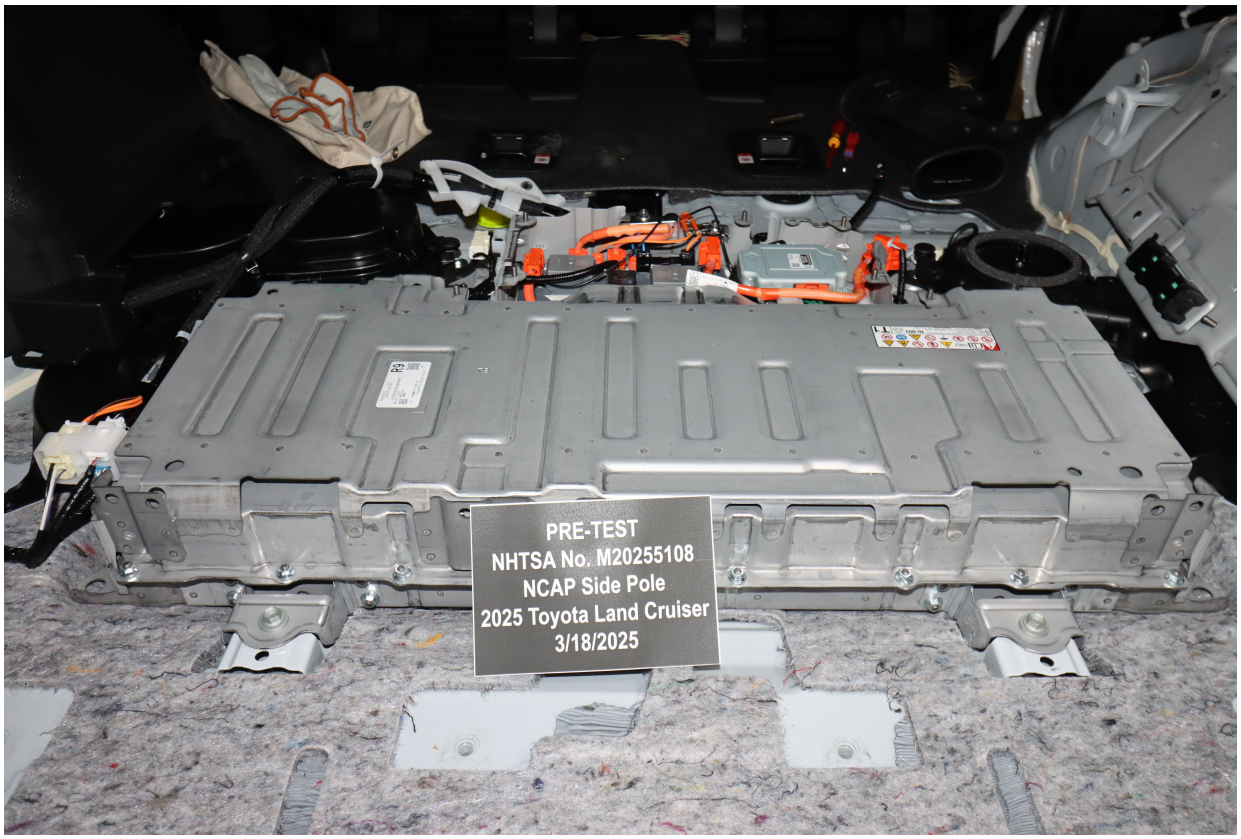


Figure 305-9: Pre-Impact View of Propulsion Battery



Figure 305-10: Post-Impact Front View of Propulsion Battery



Figure 305-11: Post-Impact Rear View of Propulsion Battery (if any part of it is visible)



Figure 305-12: Pre-Impact View of Battery Box(s) or Container(s) Which Holds Individual Battery Modules



Figure 305-13: Post-Impact View of Battery Box(s) or Container(s) Which Holds Individual Battery Modules

Figure 305-14: Pre-Impact View of Propulsion Battery Module(s)

Photo Not Applicable

Figure 305-15: Post-Impact View of Propulsion Battery Module(s)



Figure 305-16: Pre-Impact View of Electric Propulsion Drive



Figure 305-17: Post-Impact View of Electric Propulsion Drive

Photo Not Applicable

Figure 305-18: Pre-Impact View of High Voltage Interconnects



Figure 305-19: Pre-Impact View of Propulsion Battery Venting System

Photo Not Applicable

Figure 305-20: Pre-Impact View of Other Visible Electric Propulsion Components



Figure 305-21: Pre-Impact View of Ground Lead Attached



Figure 305-22: Pre-Impact View of High Voltage Leads Attached



Figure 305-23: Pre-Impact Close Up View of High Voltage Leads Attached



Figure 305-24: Pre-Impact View of Installed Test Interface Port



Figure 305-25: Post-Impact View of Installed Test Interface Port

Photo Not Applicable

Figure 305-26: Pre-Impact View of Other Test Devices

Photo Not Applicable

Figure 305-27: Post-Impact View of Other Test Devices

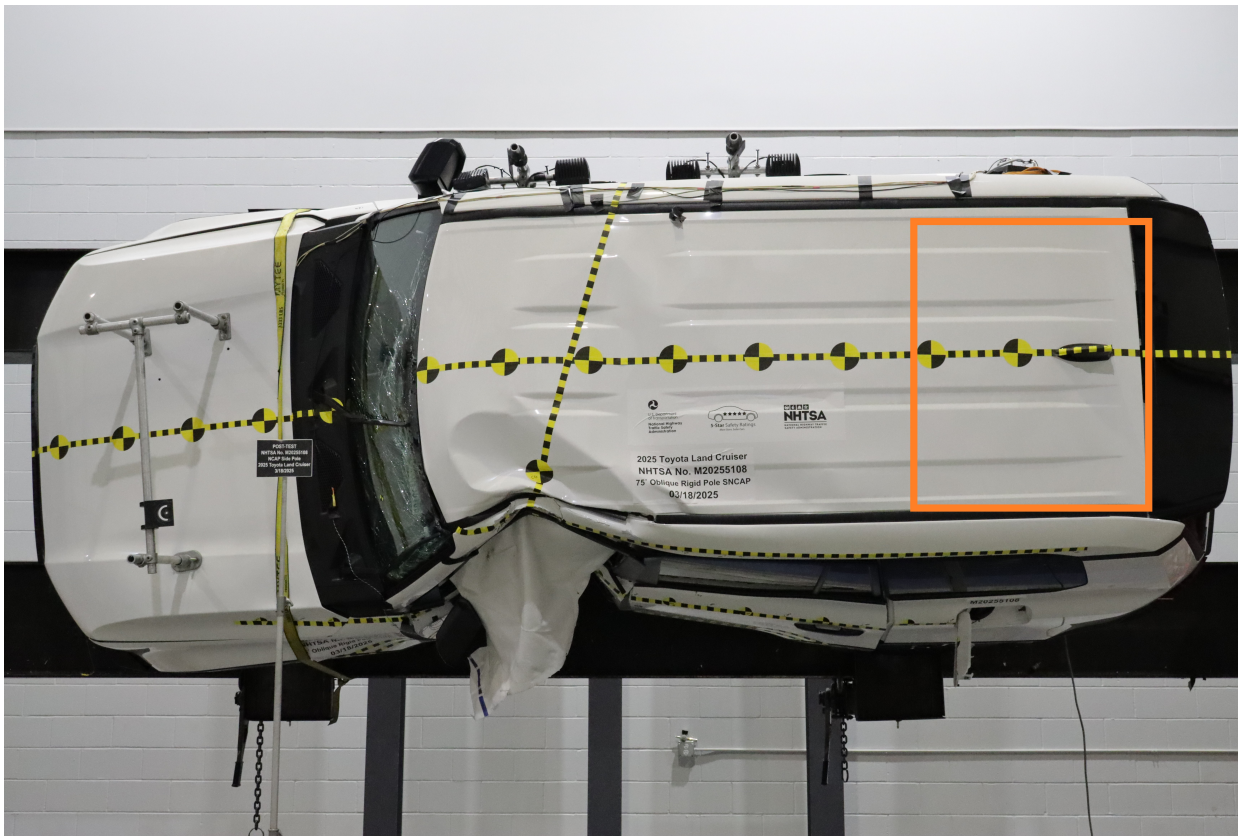


Figure 305-28: FMVSS No. 305 Static Rollover 90 Degrees

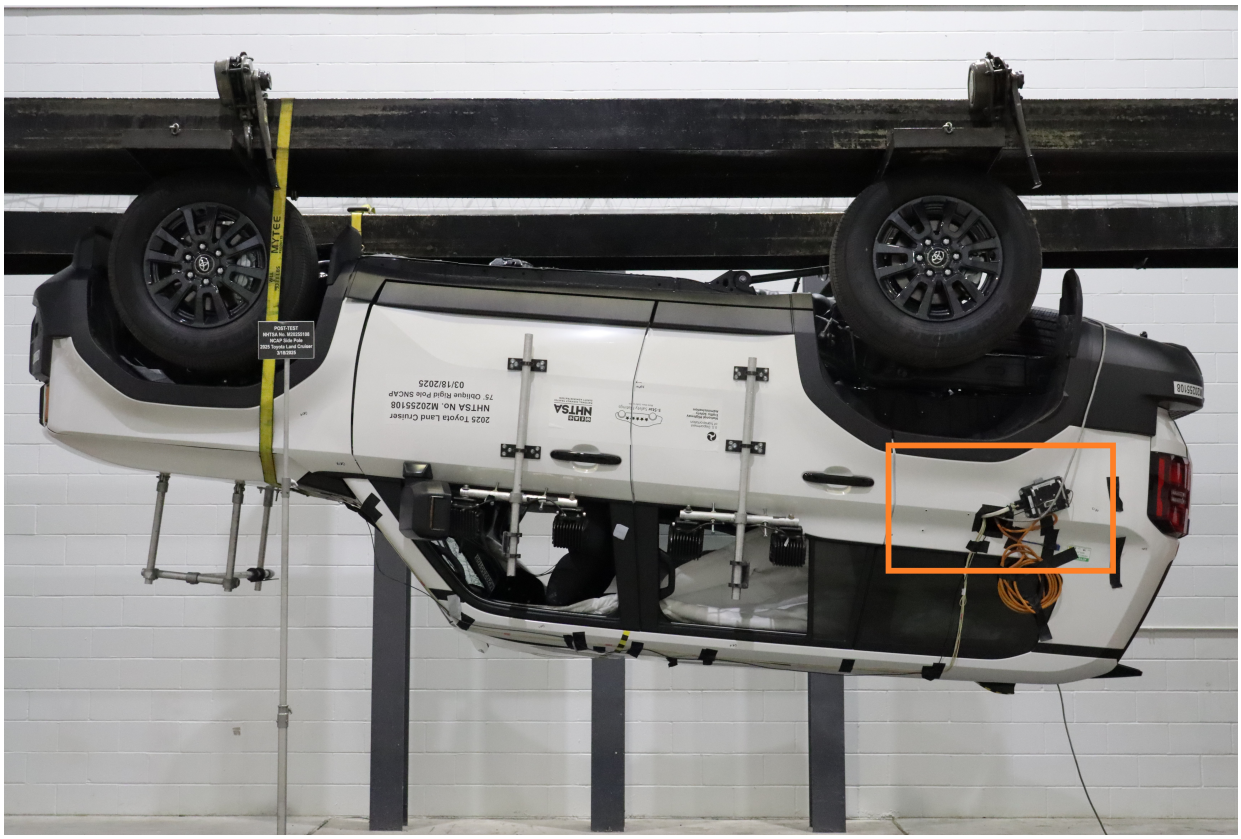


Figure 305-29: FMVSS No. 305 Static Rollover 180 Degrees

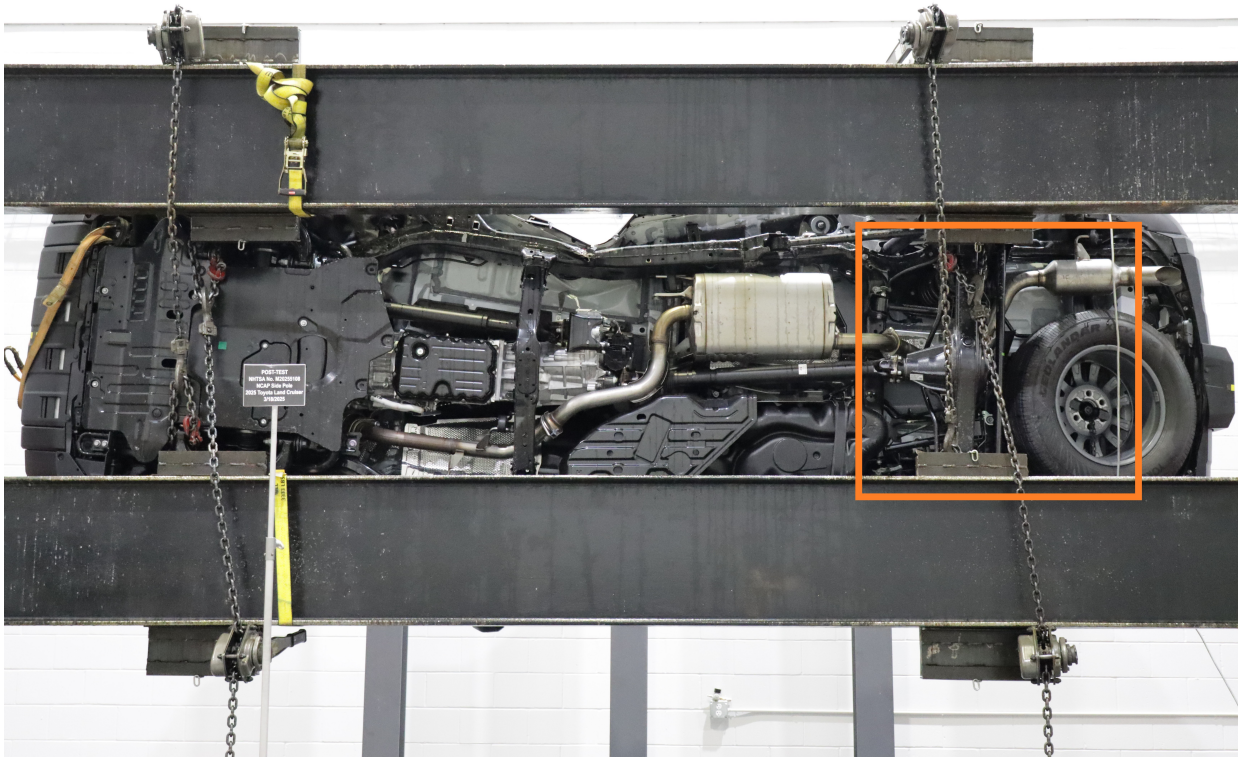


Figure 305-30: FMVSS No. 305 Static Rollover 270 Degrees



Figure 305-31: FMVSS No. 305 Static Rollover 360 Degrees



Figure 305-32: Pre-Impact View of the Vehicle Passenger Compartment Adjacent to Propulsion Battery



Figure 305-33: Post-Impact View of the Vehicle Passenger Compartment Adjacent to Propulsion Battery

Photo Not Applicable

Figure 305-34: Post-Impact Propulsion Battery System Mounting and-or Intrusion Failure(s)



Figure 305-35: Post-Impact View of Battery Component Intrusion (if applicable)

Figure 305-36: Post-Impact View of Battery Module Movement or Retention Loss (if applicable)



Figure 305-37: Post-Impact View of Propulsion Battery Electrolyte Spillage Location (if applicable)

Figure 305-38: Post-Impact View of Propulsion Battery Electrolyte Spillage Location (after rollover)



Figure 305-39: Pre-Impact Charging Port View

Figure 305-38: Post-Impact Charging Port View

APPENDIX B
VEHICLE AND DUMMY RESPONSE DATA TRACES

Table of Data Plots
Driver Dummy Instrumentation Plots

Fig.	Description	Page
Plot 1	Driver Head Acceleration (X) Primary vs. Time	B-4
Plot 2	Driver Head Acceleration (Y) Primary vs. Time	B-4
Plot 3	Driver Head Acceleration (Z) Primary vs. Time	B-4
Plot 4	Driver Head Resultant Primary vs. Time	B-4
Plot 5	Driver Lower Spine T12 Acceleration (X) vs. Time	B-5
Plot 6	Driver Lower Spine T12 Acceleration (Y) vs. Time	B-5
Plot 7	Driver Lower Spine T12 Acceleration (Z) vs. Time	B-5
Plot 8	Driver Lower Spine T12 Resultant Acceleration vs. Time	B-5
Plot 9	Driver Iliac Wing Force on Impact Side (Y) vs. Time	B-6
Plot 10	Driver Acetabulum Force on Impact Side (Y) vs. Time	B-6
Plot 11	Driver Total Pelvis Force on Impact Side (Y) vs. Time	B-6

The following additional dummy and vehicle response data can be found in the R&D section of the NHTSA website at www.NHTSA.gov

Additional Driver Dummy Instrumentation Data

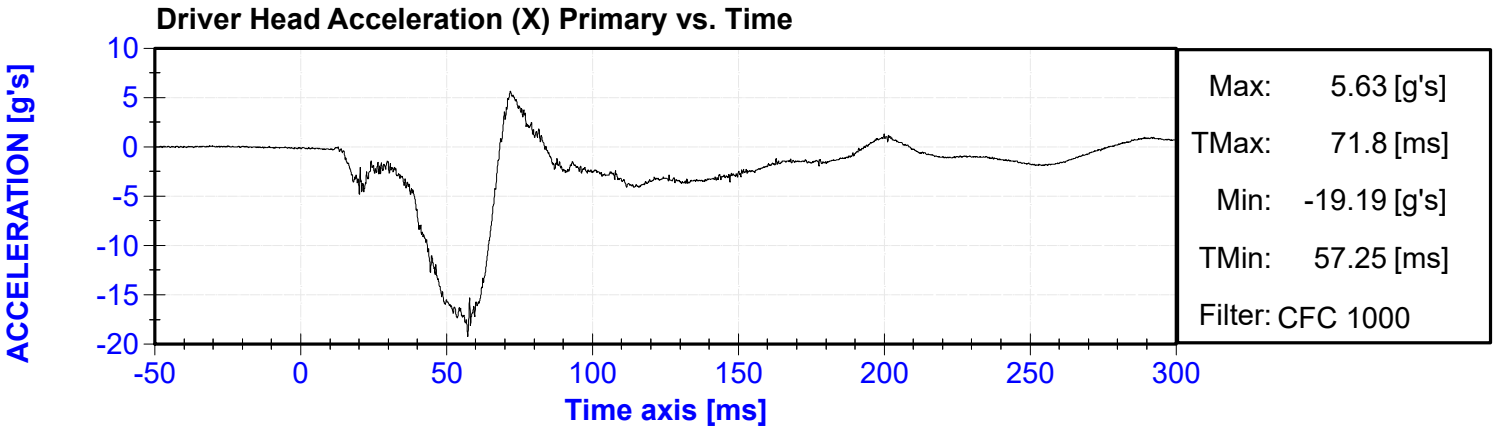
Driver Head Acceleration Redundant (X)
Driver Head Acceleration Redundant (Y)
Driver Head Acceleration Redundant (Z)
Driver Upper Thorax Rib Deflection (Y)
Driver Middle Thorax Rib Deflection (Y)
Driver Lower Thorax Rib Deflection (Y)
Driver Upper Abdomen Rib Deflection (Y)
Driver Lower Abdomen Rib Deflection (Y)

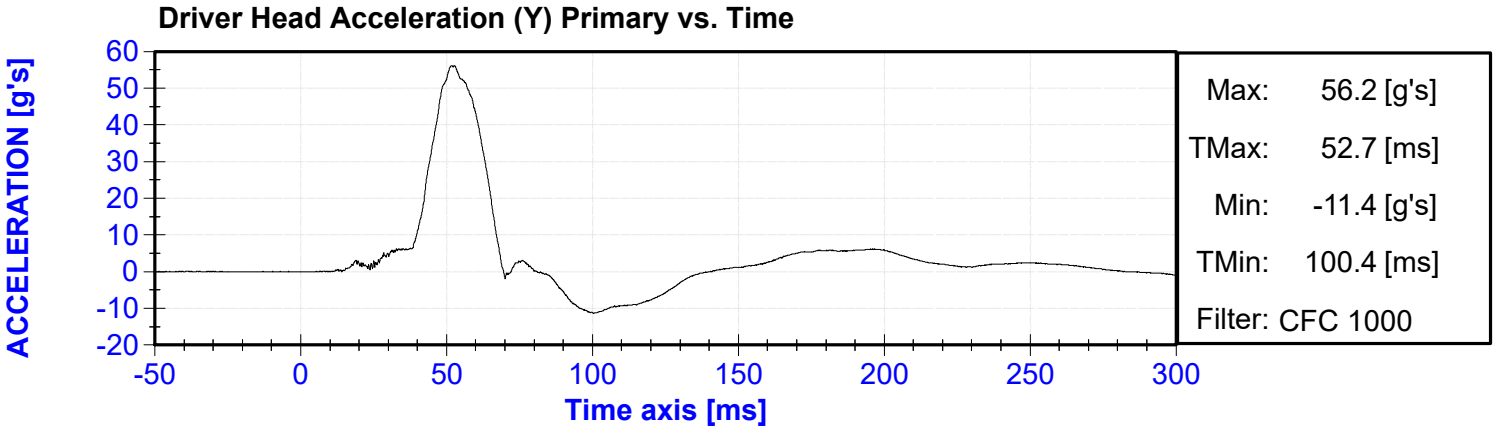
Vehicle Instrumentation Data

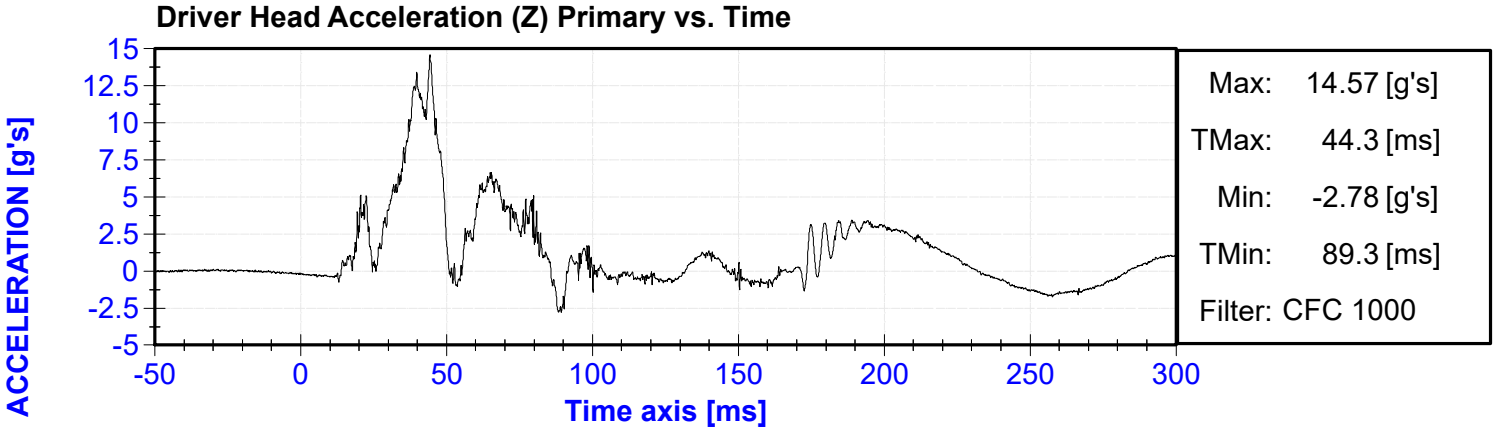
Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
Left Floor Sill Acceleration (Y)
Left A-Pillar Sill Acceleration (Y)
Left Lower A-Pillar Acceleration (Y)
Left Mid A-Pillar Acceleration (Y)
Left B-Pillar Sill Acceleration (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)

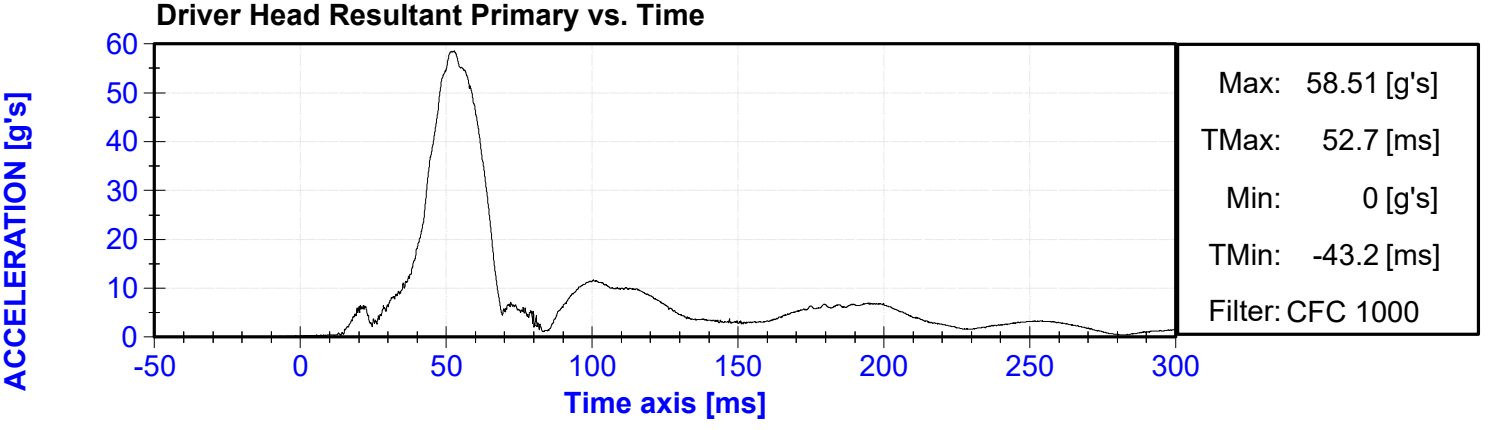
Pole Instrumentation Data

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)

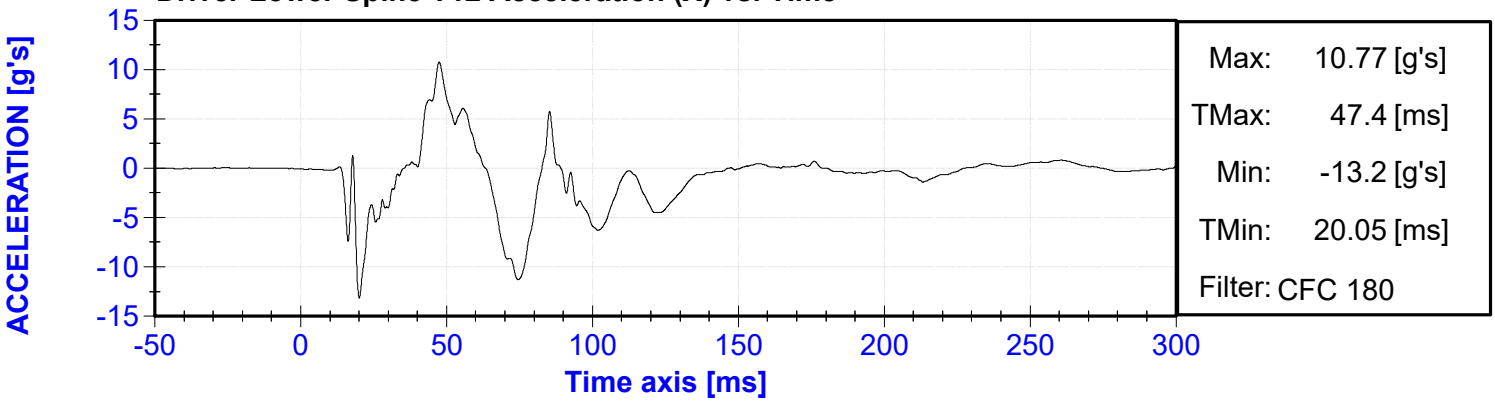

Driver Head Acceleration (X) Primary vs. Time
ACCELERATION [g's]
Time axis [ms]
Max: 5.63 [g's]
TMax: 71.8 [ms]
Min: -19.19 [g's]
TMin: 57.25 [ms]
Filter: CFC 1000


Driver Head Acceleration (Y) Primary vs. Time
ACCELERATION [g's]
Time axis [ms]
Max: 56.2 [g's]
TMax: 52.7 [ms]
Min: -11.4 [g's]
TMin: 100.4 [ms]
Filter: CFC 1000

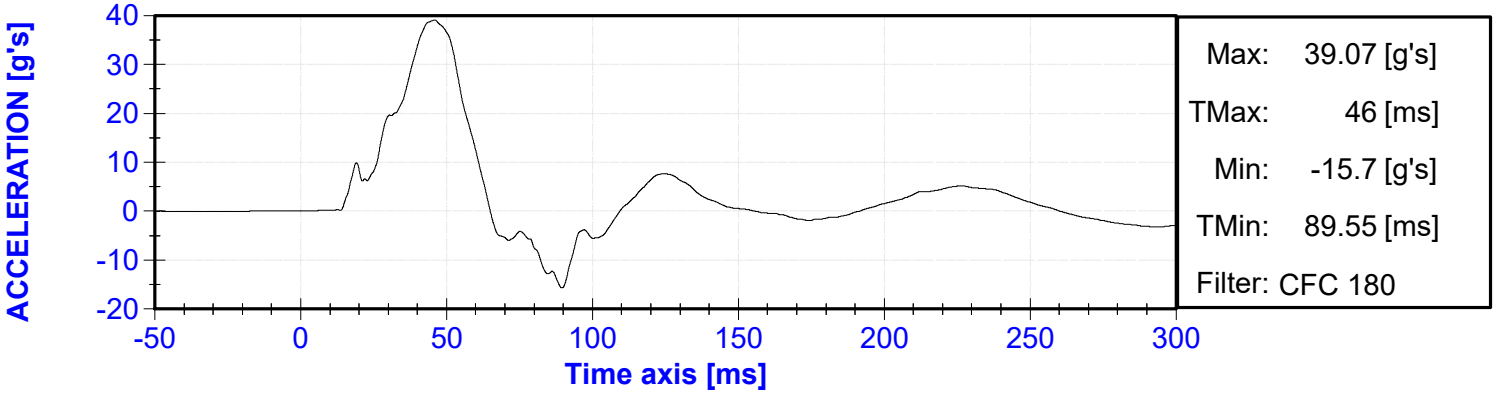

Driver Head Acceleration (Z) Primary vs. Time
ACCELERATION [g's]
Time axis [ms]
Max: 14.57 [g's]
TMax: 44.3 [ms]
Min: -2.78 [g's]
TMin: 89.3 [ms]
Filter: CFC 1000


Driver Head Resultant Primary vs. Time
ACCELERATION [g's]
Time axis [ms]
Max: 58.51 [g's]
TMax: 52.7 [ms]
Min: 0 [g's]
TMin: -43.2 [ms]
Filter: CFC 1000

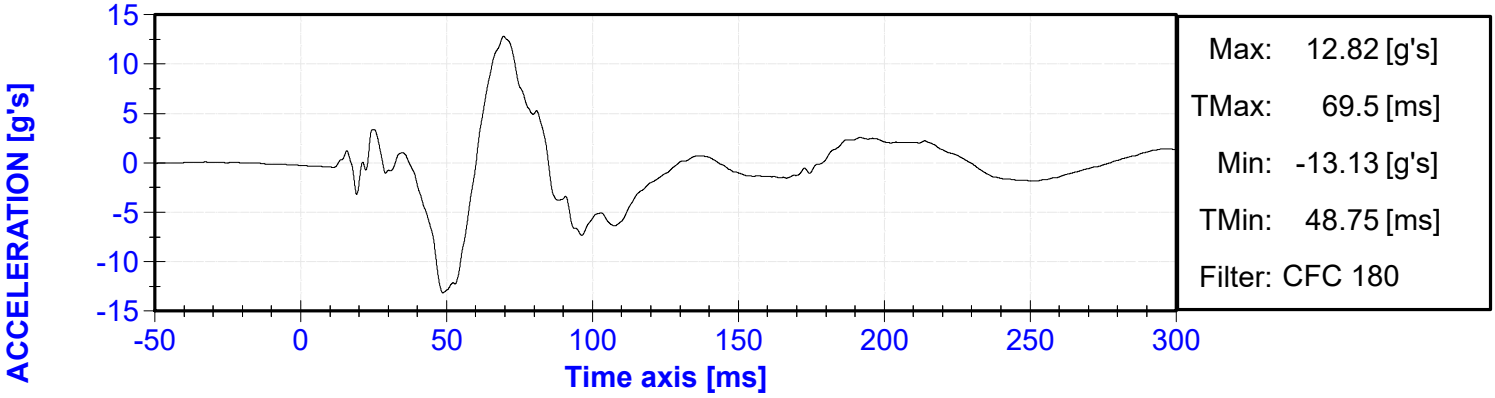
Driver Lower Spine T12 Acceleration (X) vs. Time



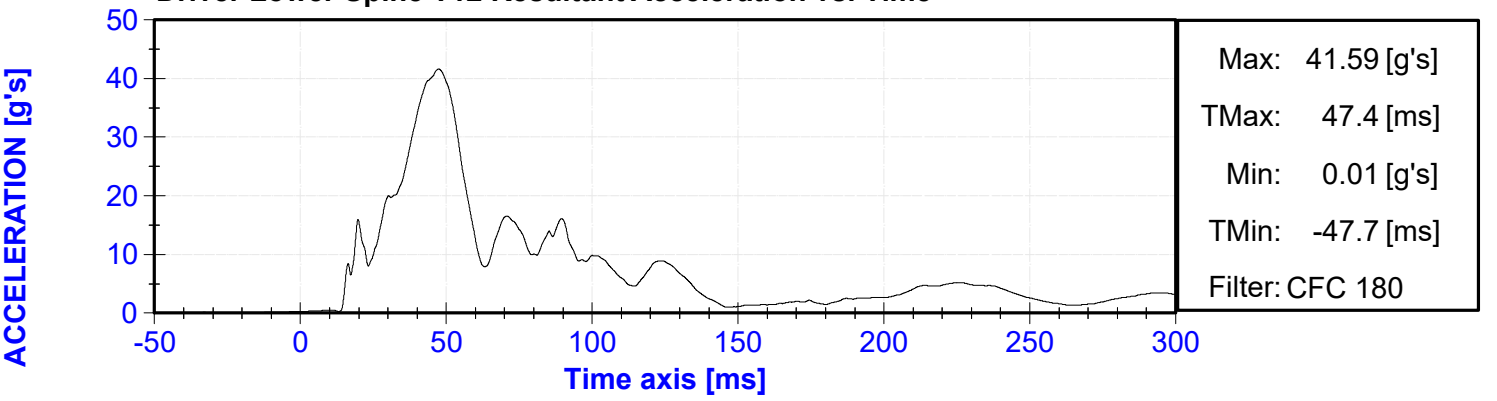
Driver Lower Spine T12 Acceleration (Y) vs. Time

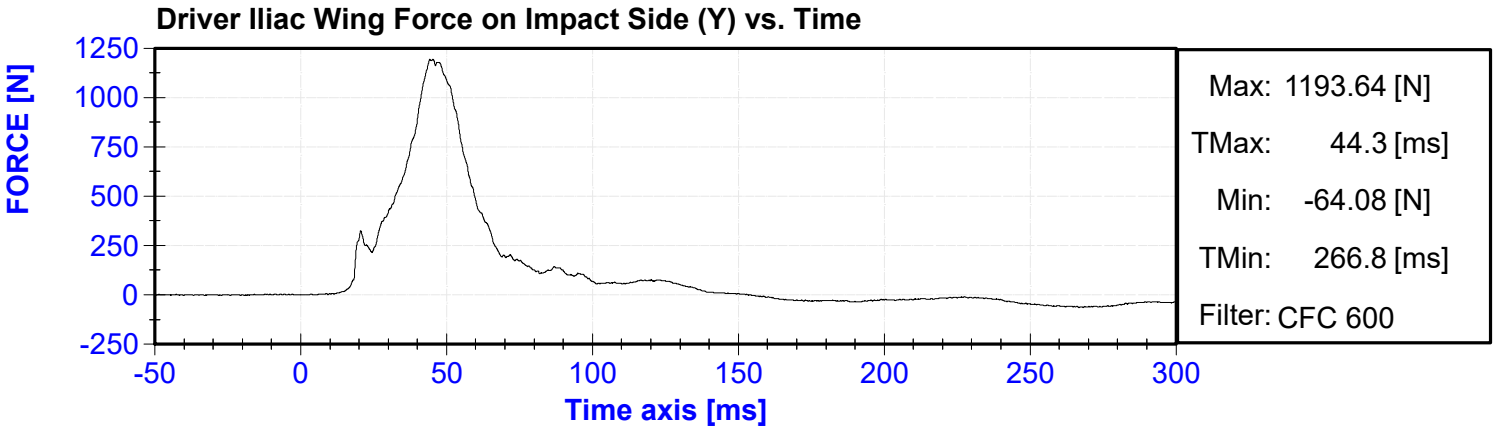


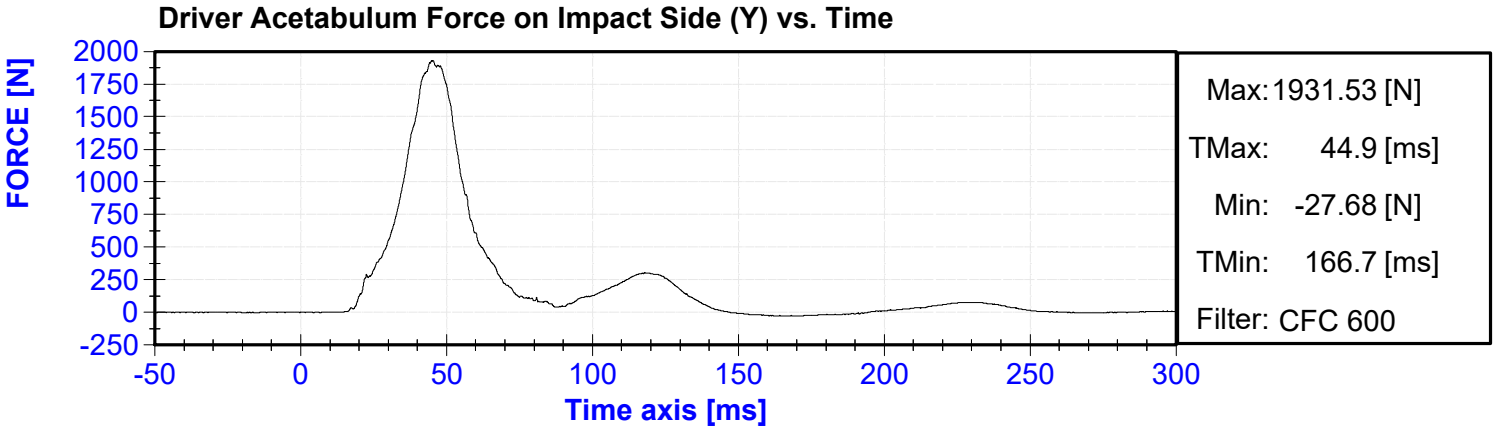
Driver Lower Spine T12 Acceleration (Z) vs. Time

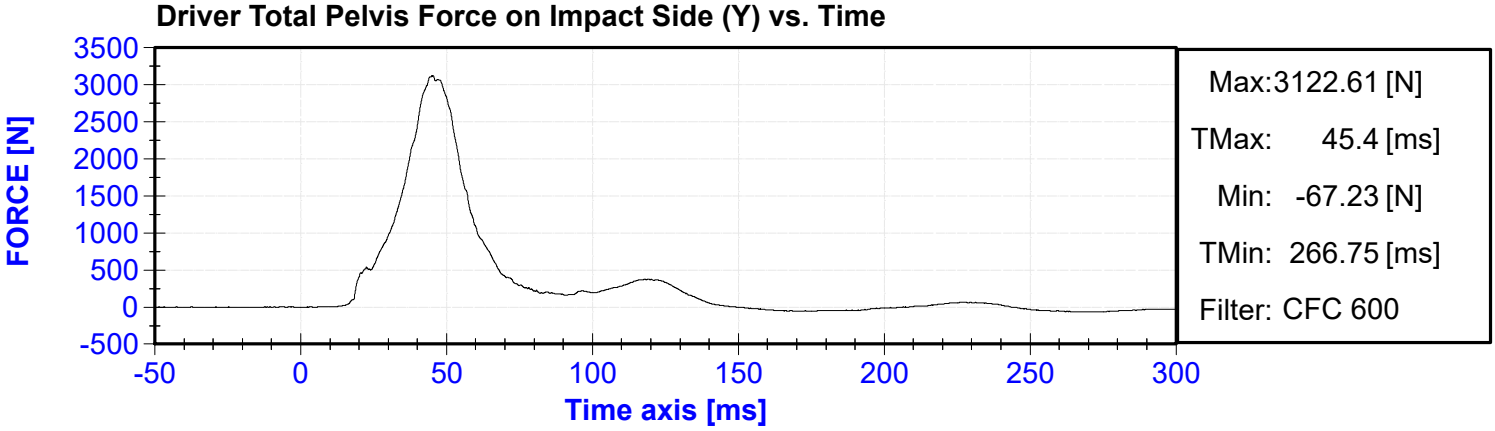


Driver Lower Spine T12 Resultant Acceleration vs. Time




Driver Iliac Wing Force on Impact Side (Y) vs. Time
FORCE [N]
1250
1000
750
500
250
0
-250
-50
0
50
100
150
200
250
300
Time axis [ms]
Max: 1193.64 [N]
TMax: 44.3 [ms]
Min: -64.08 [N]
TMin: 266.8 [ms]
Filter: CFC 600


Driver Acetabulum Force on Impact Side (Y) vs. Time
FORCE [N]
2000
1750
1500
1250
1000
750
500
250
0
-250
-50
0
50
100
150
200
250
300
Time axis [ms]
Max: 1931.53 [N]
TMax: 44.9 [ms]
Min: -27.68 [N]
TMin: 166.7 [ms]
Filter: CFC 600


Driver Total Pelvis Force on Impact Side (Y) vs. Time
FORCE [N]
3500
3000
2500
2000
1500
1000
500
0
-500
-50
0
50
100
150
200
250
300
Time axis [ms]
Max: 3122.61 [N]
TMax: 45.4 [ms]
Min: -67.23 [N]
TMin: 266.75 [ms]
Filter: CFC 600

APPENDIX C

DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

CALIBRATION TEST RESULTS

PRE-TEST

SID-IIS 5TH PERCENTILE FEMALE - DRIVER ATD

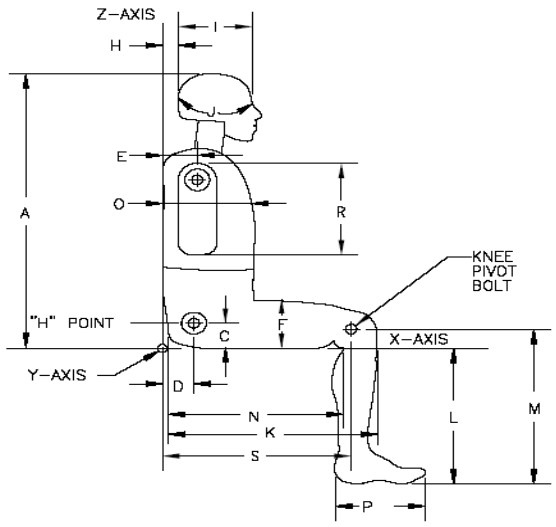
SERIAL NO:300

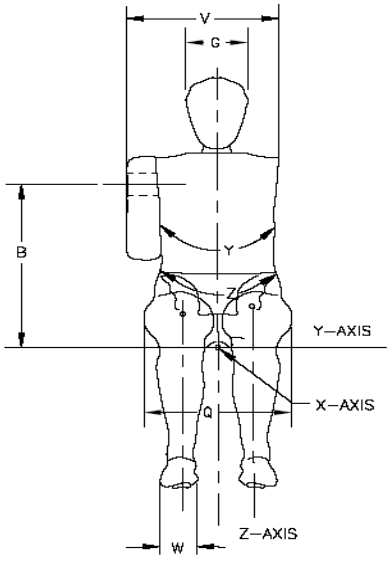
(CONFIGURED FOR LEFT SIDE IMPACT)

External Measurements - SID-IIs

Technician: J. Rios Date: 2/11/2025

Dummy Serial Number: 300





Symbol	Description	Specification (mm)		Result (mm)	Pass/Fail
A	Sitting Height	772	788	779	Pass
B	Shoulder Pivot Height	437	453	435	Pass
C	H-point Height	79	89	81	Pass
D	H-point from seatback	141	151	142	Pass
E	Shoulder Pivot from Backline	97	107	100	Pass
F	Thigh Clearance	119	135	122	Pass
G	Head Breadth	140	148	144	Pass
H	Head Back from Backline	40	46	43	Pass
I	Head Depth	178	188	185	Pass
J	Head Circumference	541	551	546	Pass
K	Buttock to Knee Length	514	540	531	Pass
L	Popliteal Height	343	369	354	Pass
M	Knee Pivot to floor height	392	409	401	Pass
N	Buttock Popliteal Length	416	442	430	Pass
O	Chest Depth w/o jacket	195	211	200	Pass
P	Foot Length	216	232	223	Pass
Q	Hip Breadth (w/pelvic plugs)	313	323	318	Pass
R	Arm Length	249	259	252	Pass
S	Knee Joint to seatback	477	493	484	Pass
V	Shoulder Width	341	357	349	Pass
W	Foot Width	78	94	80	Pass
Y	Chest Circumference w/jacket	851	881	869	Pass
Z	Waist Circumference	761	791	773	Pass

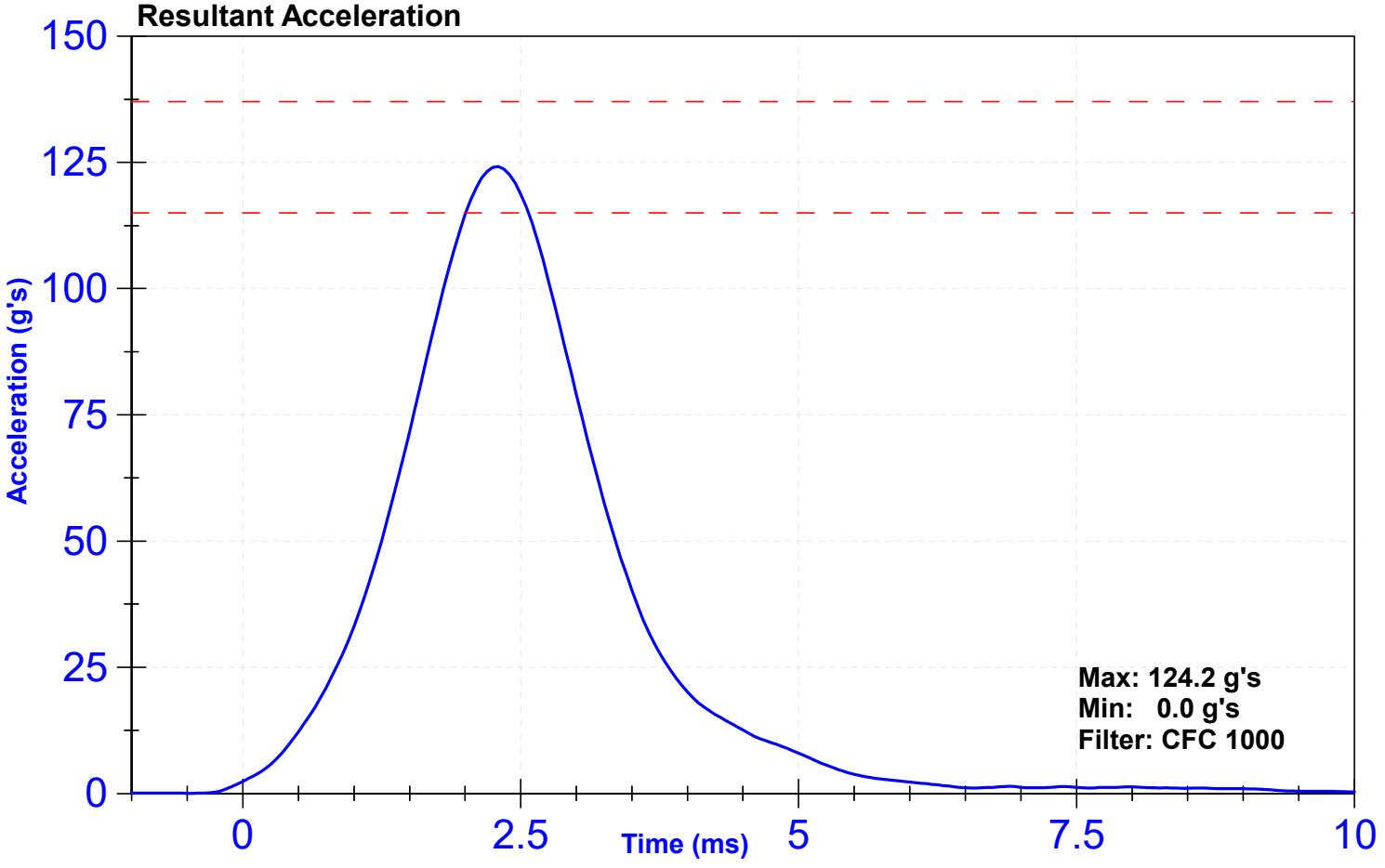
ATD Manufacturer	FTSS	Test Technician	J. Rios
ATD Serial Number	300	Laboratory Supervisor	J. Kinderman

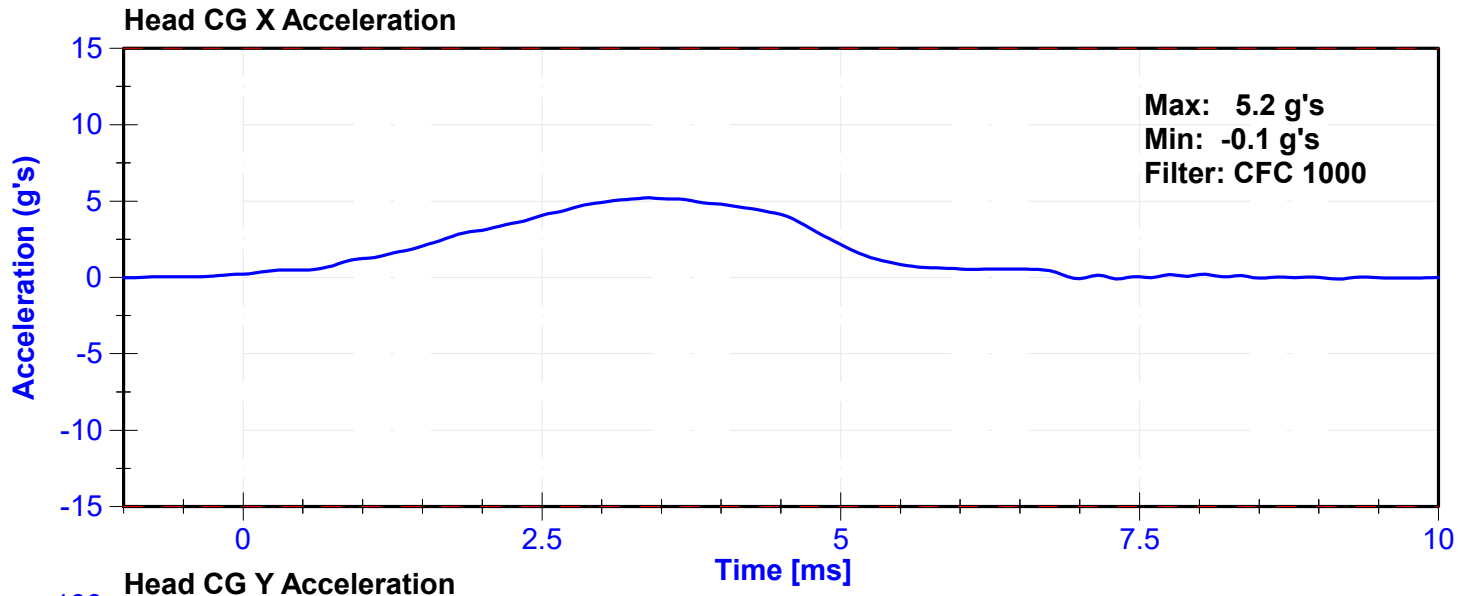
Results

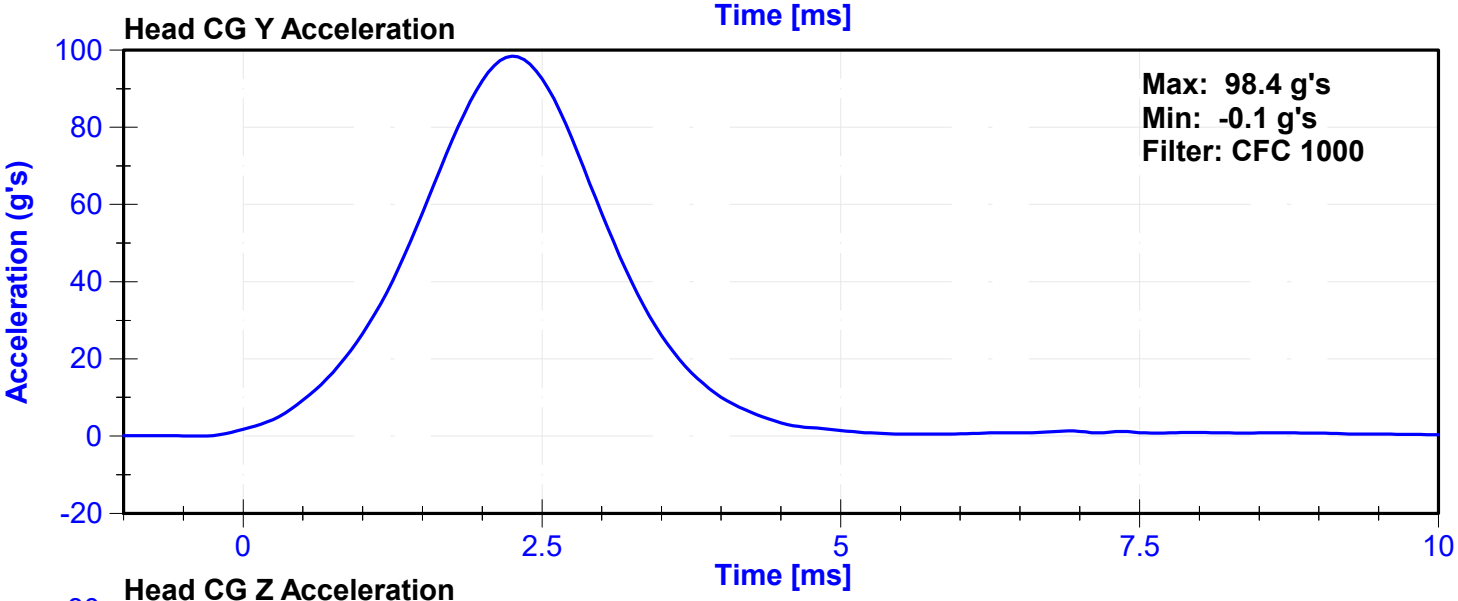
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	ºC	20.8	Pass
Humidity	10	70	%	18	Pass
Resultant Acceleration	115	137	g's	124.2	Pass
Oscillation	0	15	%	1.1	Pass
Fore-Aft Acceleration	-15	15	g's	5.2	Pass

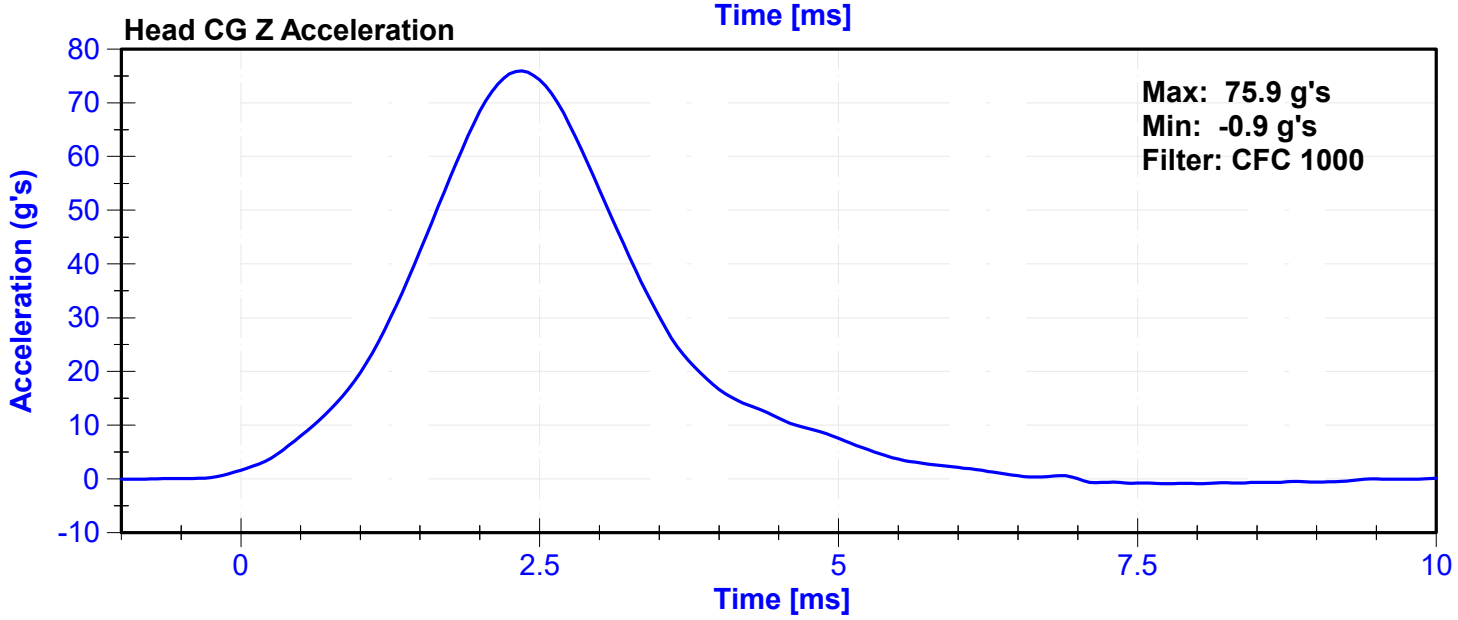
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibratio Date	Calibratio Due Date
X Accelerometer	Endevco	P59018	10/17/2024	4/15/2025
Y Accelerometer	Endevco	P79189	10/17/2024	4/15/2025
Z Accelerometer	Endevco	P79587	10/17/2024	4/15/2025




Head CG X Acceleration
Max: 5.2 g's
Min: -0.1 g's
Filter: CFC 1000
Acceleration (g's)
Time [ms]


Head CG Y Acceleration
Max: 98.4 g's
Min: -0.1 g's
Filter: CFC 1000
Acceleration (g's)
Time [ms]


Head CG Z Acceleration
Max: 75.9 g's
Min: -0.9 g's
Filter: CFC 1000
Acceleration (g's)
Time [ms]

ATD Manufacturer	Humanetics	Test Technician	J. Rios
ATD Serial Number	300	Laboratory Supervisor	J. Kinderman

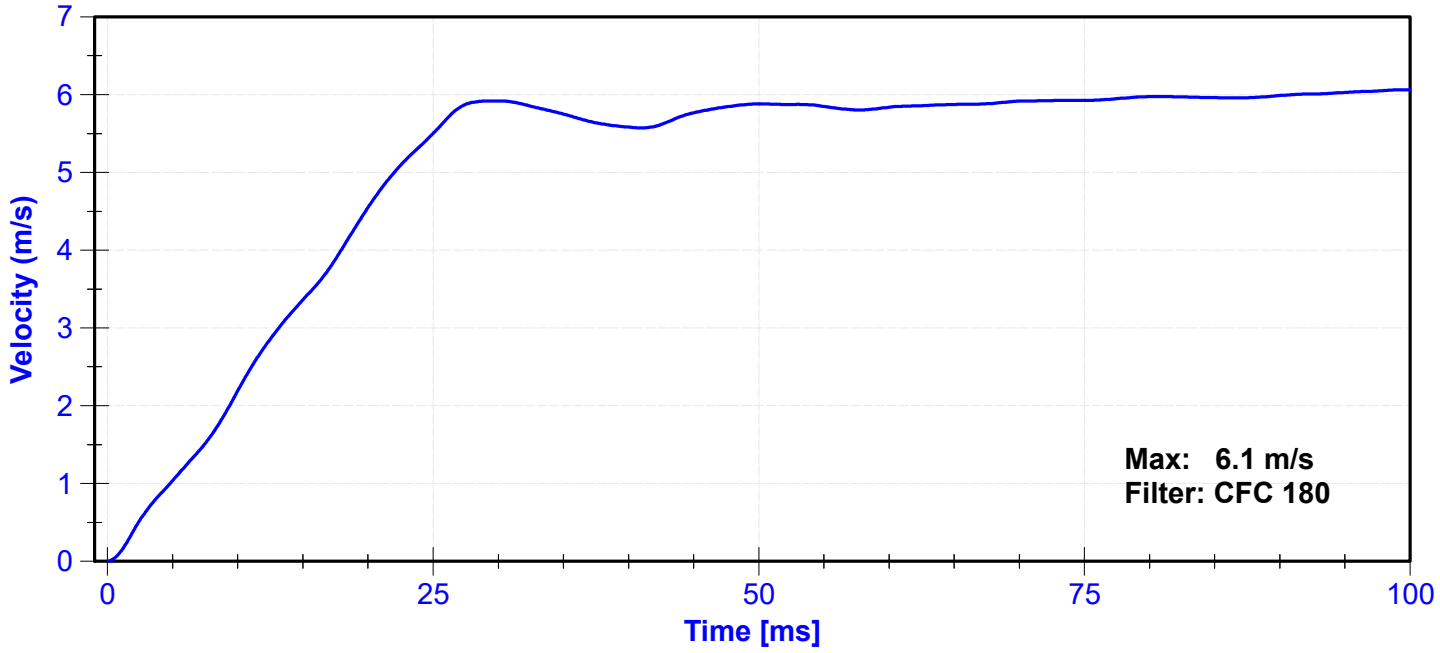
Results

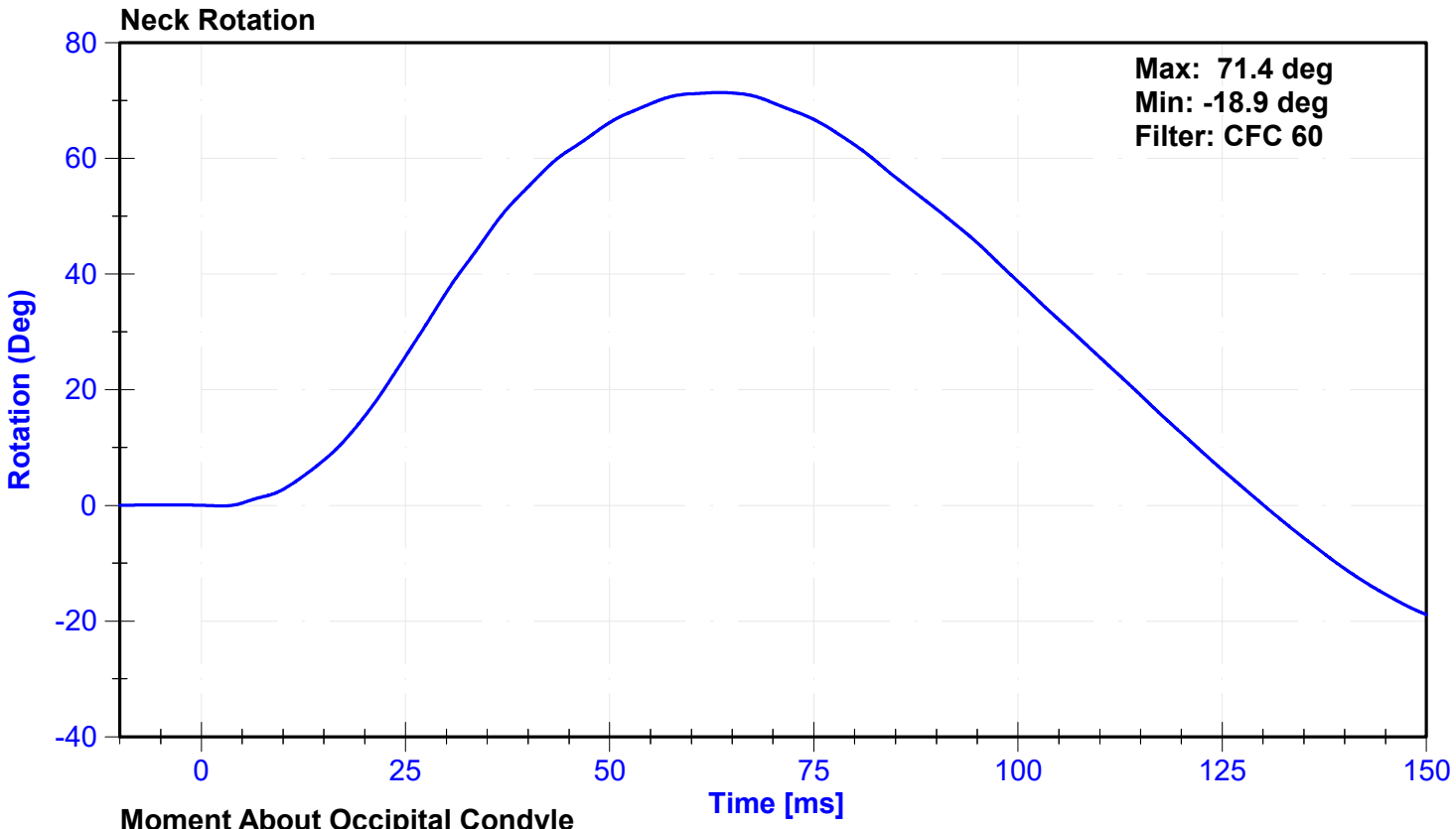
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	ºC	20.8	Pass
Humidity	10	70	%	18	Pass
Velocity	5.51	5.63	m/s	5.579	Pass
Pendulum Impulse at 10ms	2.2	2.8	m/s	2.20	Pass
Pendulum Impulse at 15ms	3.3	4.1	m/s	3.36	Pass
Pendulum Impulse at 20ms	4.4	5.4	m/s	4.55	Pass
Pendulum Impulse at 25ms	5.4	6.1	m/s	5.50	Pass
Pendulum Impulse from 25 to 100ms	5.5	6.2	m/s	6.06	Pass
Neck Rotation	71	81	deg	71.4	Pass
Time at Maximum Rotation	50	70	ms	63.4	Pass
Moment about the OC	36	44	Nm	40.6	Pass
Moment Decay to 0 Nm	102	126	ms	114.4	Pass

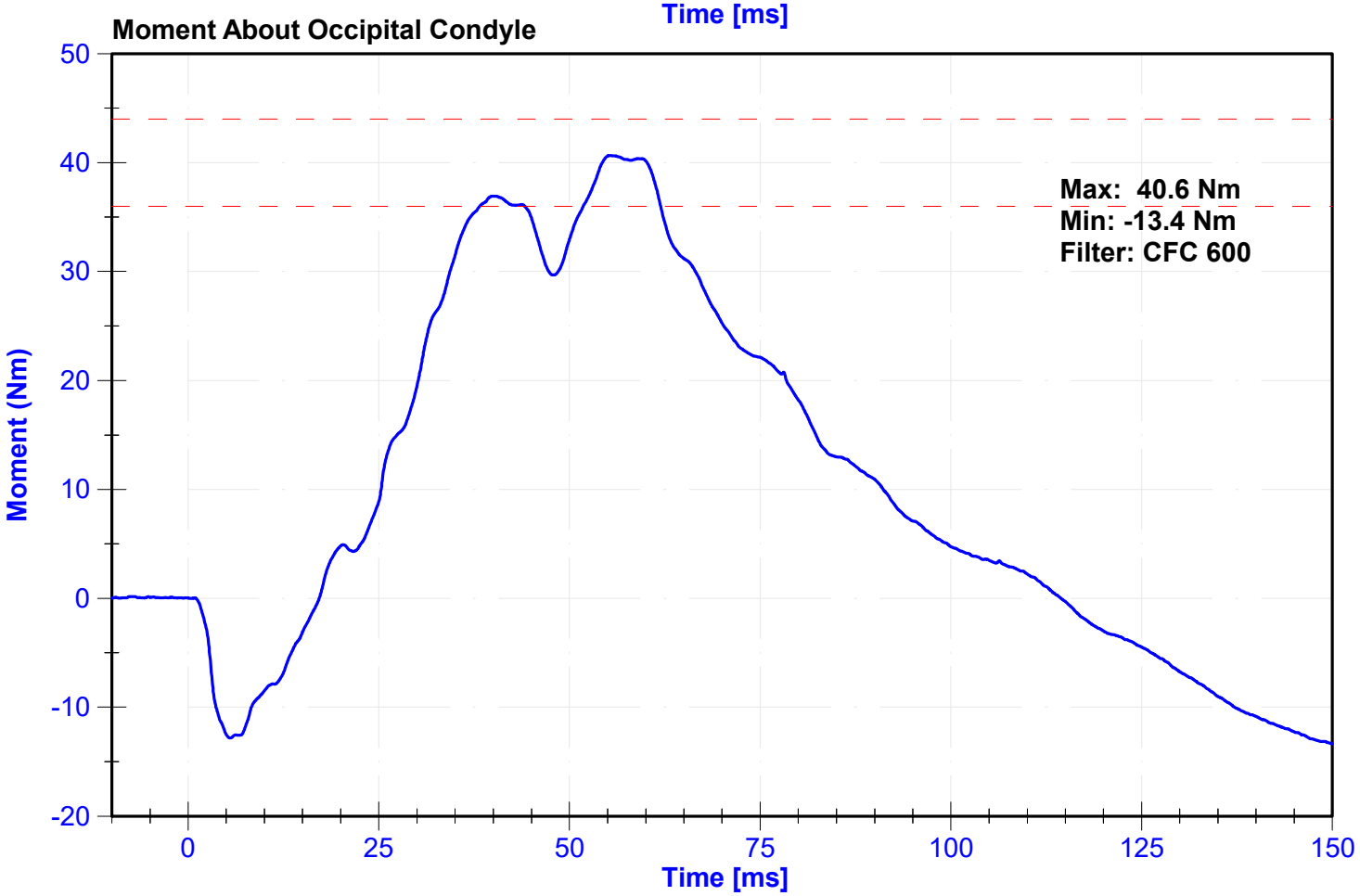
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	7231C-750	10/17/2024	4/15/2025
Pendulum Potentiometer	Servo	4961	9/23/2024	9/23/2025
Condyle Potentiometer	Servo	DS185	9/23/2024	9/23/2025
Upper Neck Load Cell	Kistler	M555A6CFM_1935H01700-F2Y	2/13/2024	2/12/2025

Pendulum Impulse




Neck Rotation
Max: 71.4 deg
Min: -18.9 deg
Filter: CFC 60
Rotation (Deg)
80
60
40
20
0
-20
-40
0
25
50
75
100
125
150
Time [ms]


Moment About Occipital Condyle
Max: 40.6 Nm
Min: -13.4 Nm
Filter: CFC 600
Moment (Nm)
50
40
30
20
10
0
-10
-20
0
25
50
75
100
125
150
Time [ms]

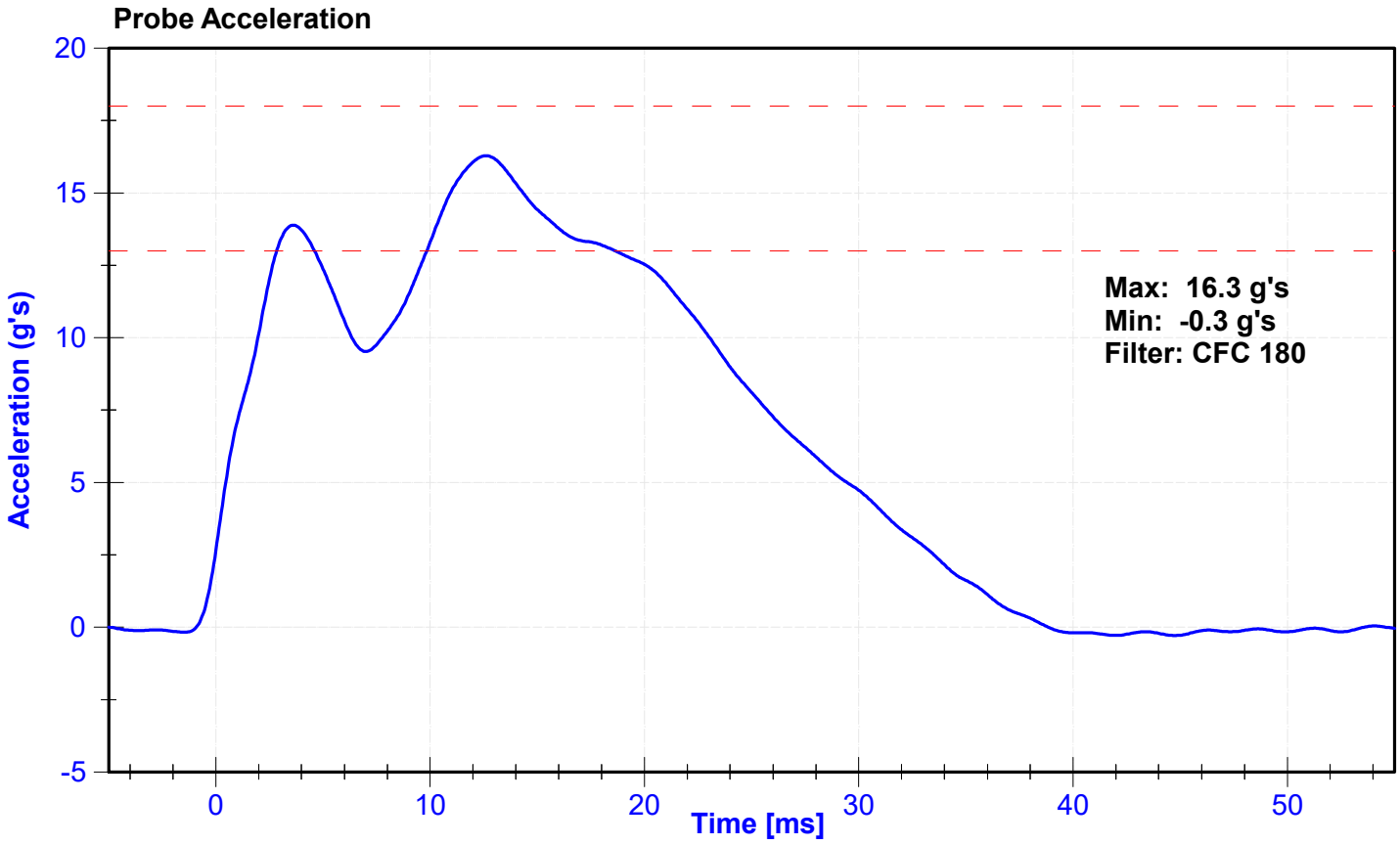
ATD Manufacturer	FTSS	Test Technician	J. Rios
ATD Serial Number	300	Laboratory Supervisor	J. Kinderman

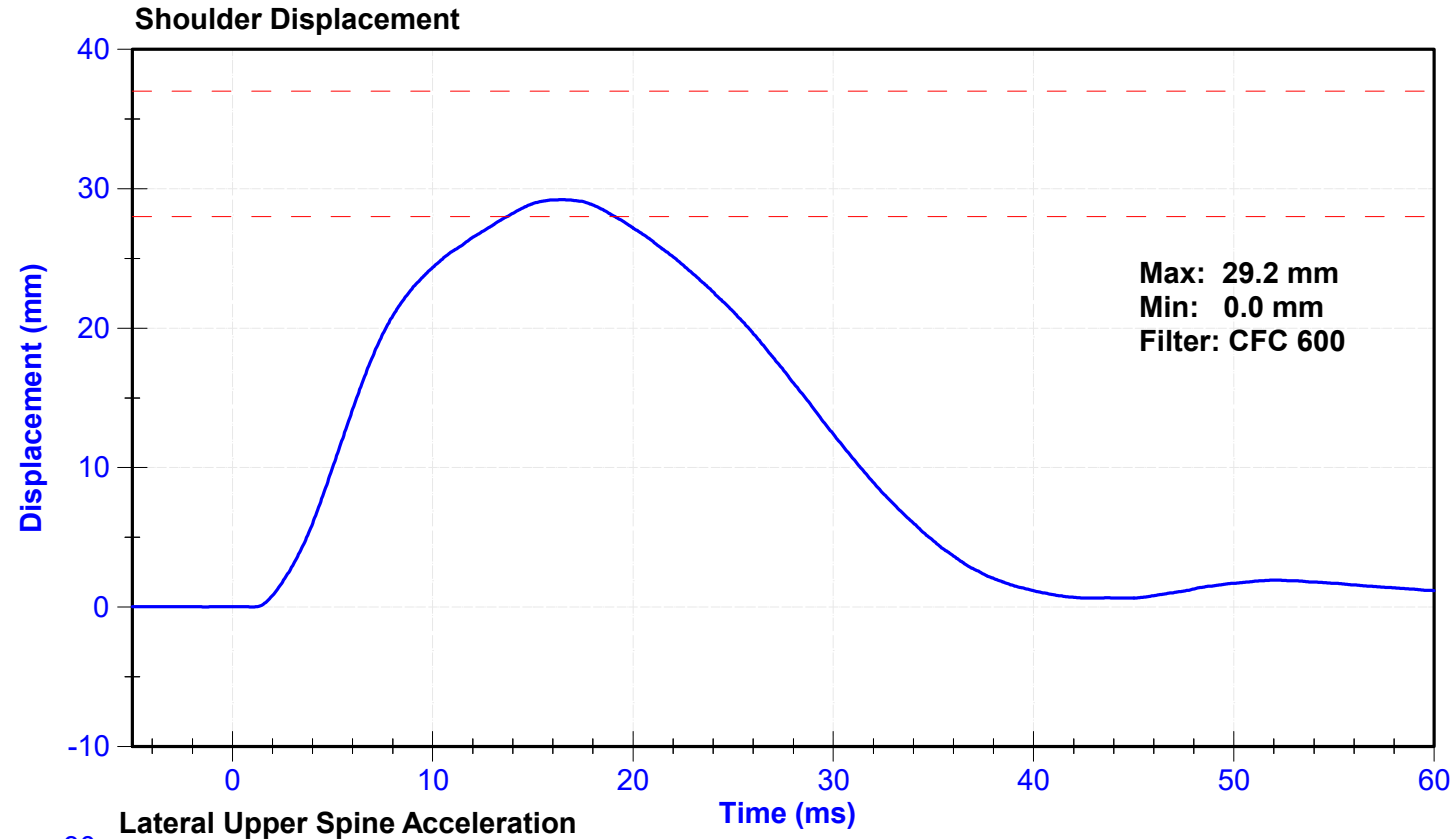
Results

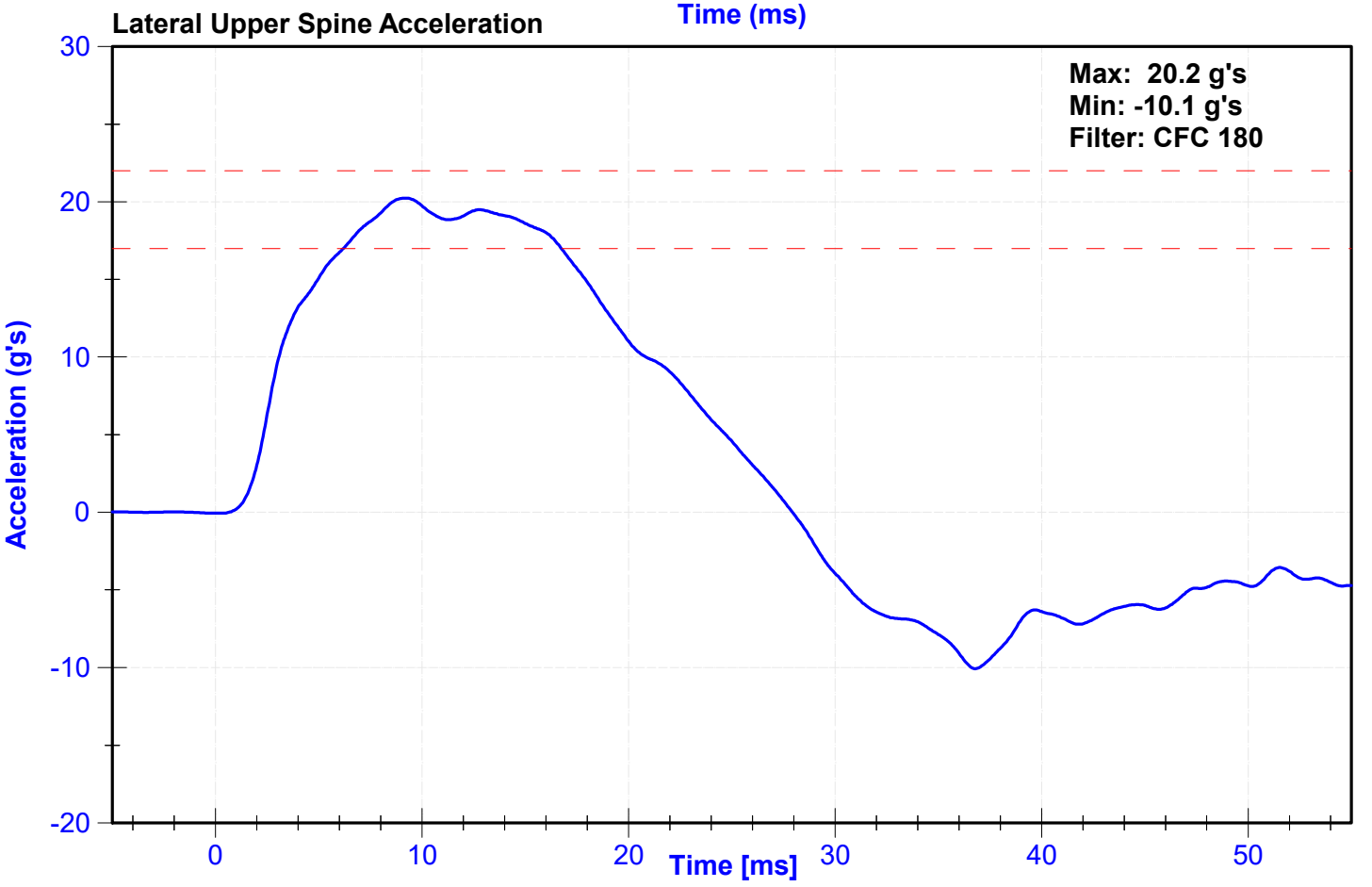
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	ºC	20.7	Pass
Humidity	10	70	%	19	Pass
Velocity	4.2	4.4	m/s	4.28	Pass
Probe Acceleration	13	18	g's	16.3	Pass
Shoulder Deflection	28	37	mm	29.2	Pass
Lateral Upper Spine Acceleration	17	22	g's	20.2	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18566	11/26/2024	5/25/2025
Shoulder Potentiometer	Servo	053GFE	10/16/2024	4/16/2025
Upper Spine Y Accelerometer	Endevco	P52018	11/25/2024	5/24/2025




Shoulder Displacement
Displacement (mm)
Time (ms)
Max: 29.2 mm
Min: 0.0 mm
Filter: CFC 600


Lateral Upper Spine Acceleration
Acceleration (g's)
Time [ms]
Max: 20.2 g's
Min: -10.1 g's
Filter: CFC 180

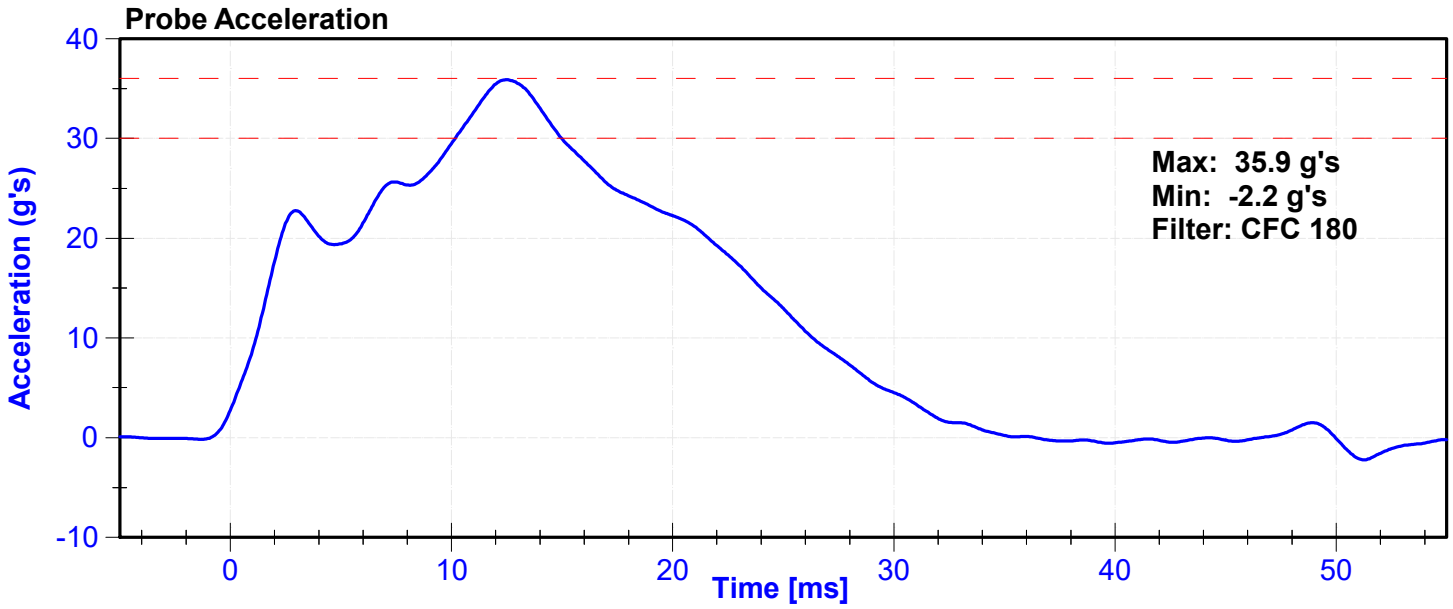
ATD Manufacturer	FTSS	Test Technician	J. Rios
ATD Serial Number	300	Laboratory Supervisor	J. Kinderman

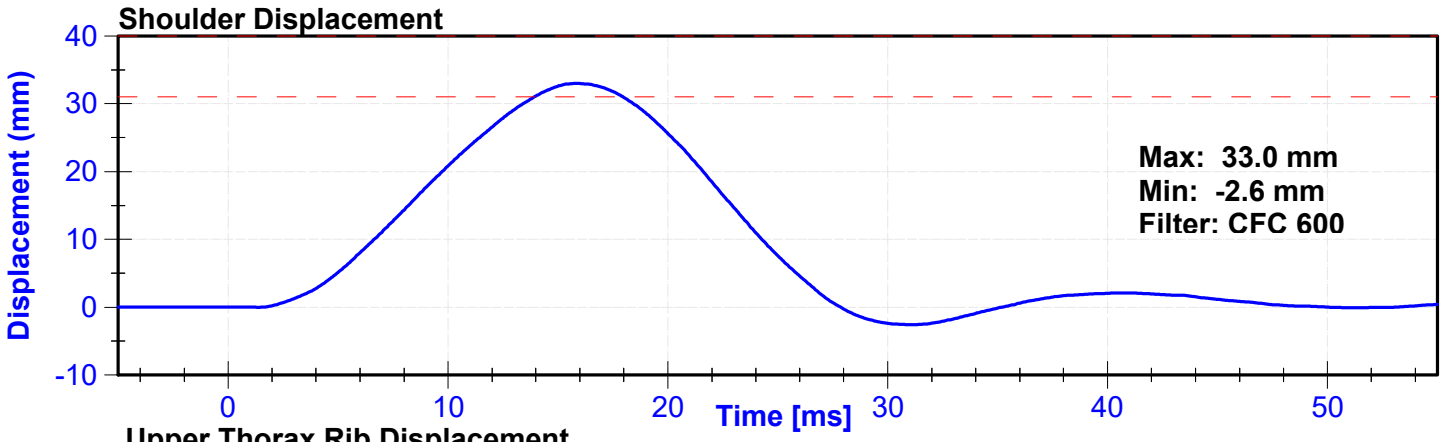
Results

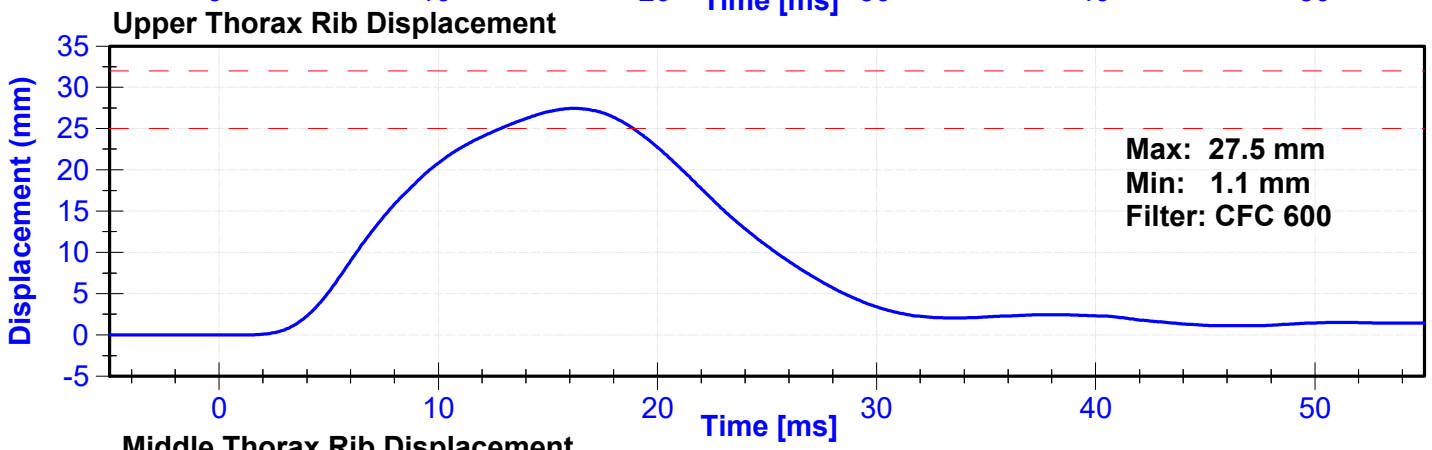
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	ºC	20.7	Pass
Humidity	10	70	%	19	Pass
Velocity	6.6	6.8	m/s	6.70	Pass
Probe Acceleration after 5 ms	30	36	g's	35.9	Pass
Lateral Upper Spine Acceleration	34	43	g's	37.0	Pass
Lateral Lower Spine Acceleration	29	37	g's	35.9	Pass
Shoulder Deflection	31	40	mm	33.0	Pass
Upper Thorax Rib Deflection	25	32	mm	27.5	Pass
Mid Thorax Rib Deflection	30	36	mm	31.4	Pass
Lower Thorax Rib Deflection	32	38	mm	33.2	Pass

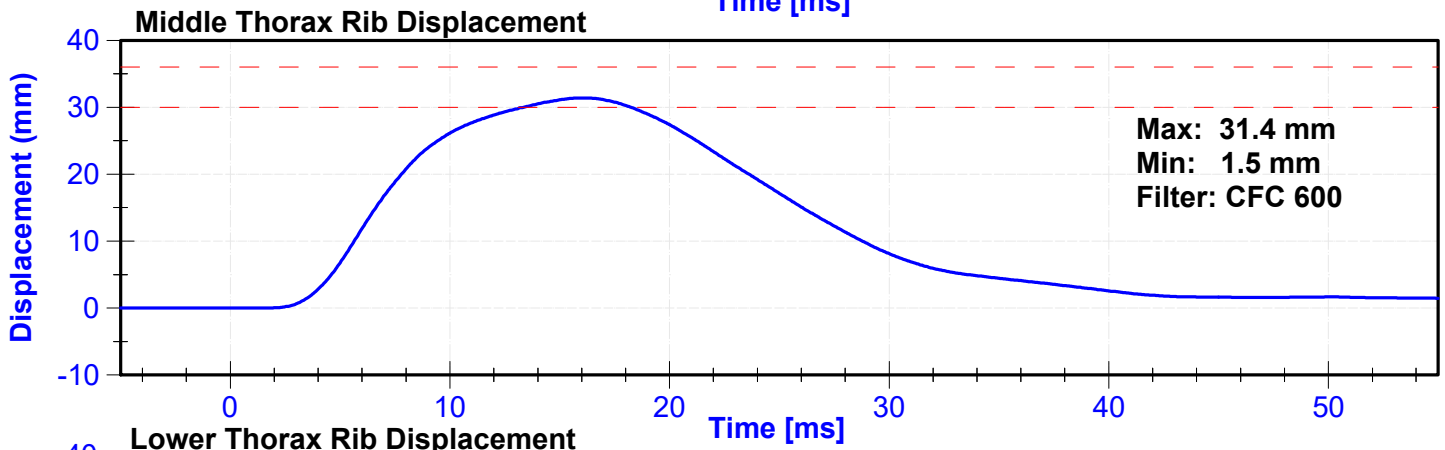
Transducer Calibrations

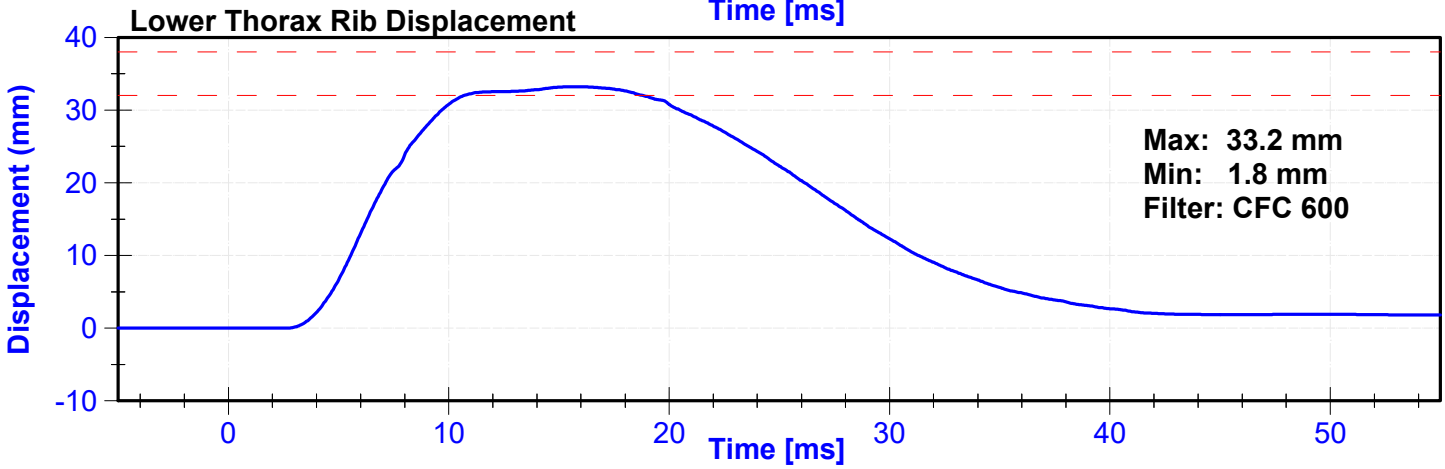
Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18566	11/26/2024	5/25/2025
Upper Spine T1 Y Accelerometer	Endevco	P52018	11/25/2024	5/24/2025
Upper Spine T12 Y Accelerometer	Endevco	P52071	10/17/2024	4/15/2025
Shoulder Potentiometer	Servo	053GFE	10/16/2024	4/16/2025
Upper Thorax Rib Potentiometer	Servo	2316GFE	10/16/2024	4/16/2025
Middle Thorax Rib Potentiometer	Servo	085GFE	10/16/2024	4/16/2025
Lower Thorax Rib Potentiometer	Servo	1156GFE	10/16/2024	4/16/2025

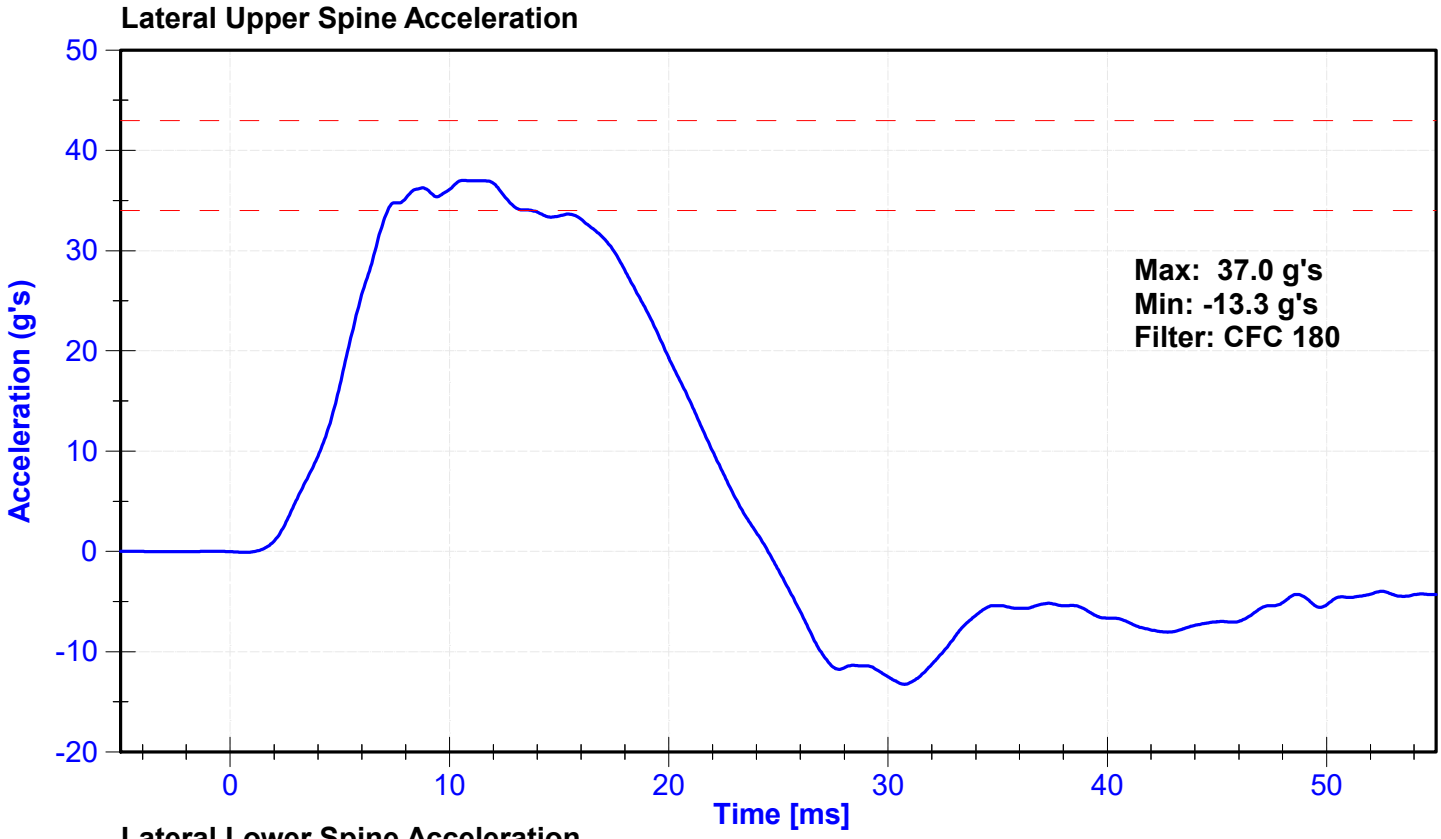


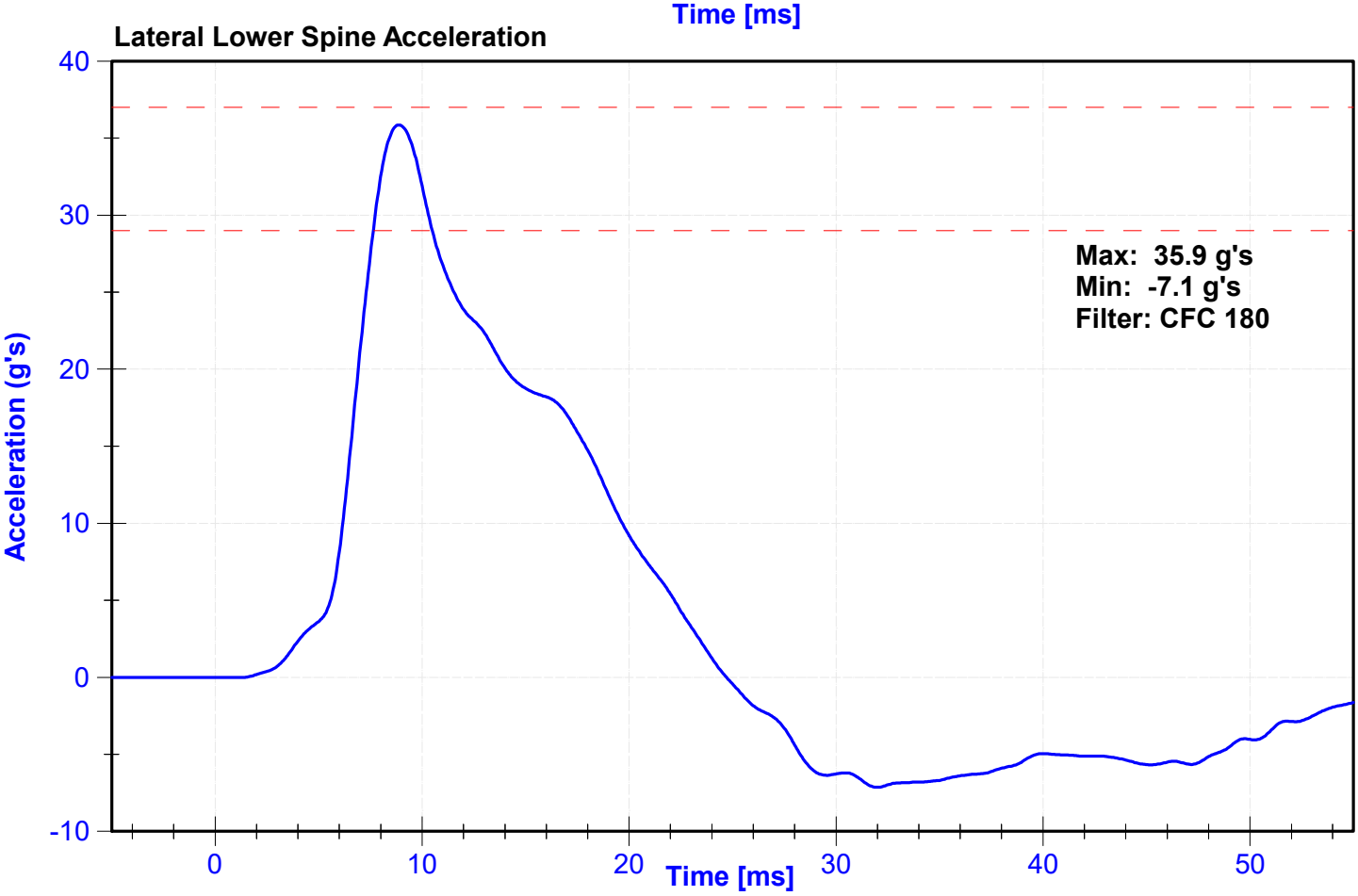

Shoulder Displacement
Displacement (mm)
Time [ms]
Max: 33.0 mm
Min: -2.6 mm
Filter: CFC 600


Upper Thorax Rib Displacement
Displacement (mm)
Time [ms]
Max: 27.5 mm
Min: 1.1 mm
Filter: CFC 600


Middle Thorax Rib Displacement
Displacement (mm)
Time [ms]
Max: 31.4 mm
Min: 1.5 mm
Filter: CFC 600


Lower Thorax Rib Displacement
Displacement (mm)
Time [ms]
Max: 33.2 mm
Min: 1.8 mm
Filter: CFC 600


Lateral Upper Spine Acceleration
Acceleration (g's)
Time [ms]
Max: 37.0 g's
Min: -13.3 g's
Filter: CFC 180


Lateral Lower Spine Acceleration
Acceleration (g's)
Time [ms]
Max: 35.9 g's
Min: -7.1 g's
Filter: CFC 180

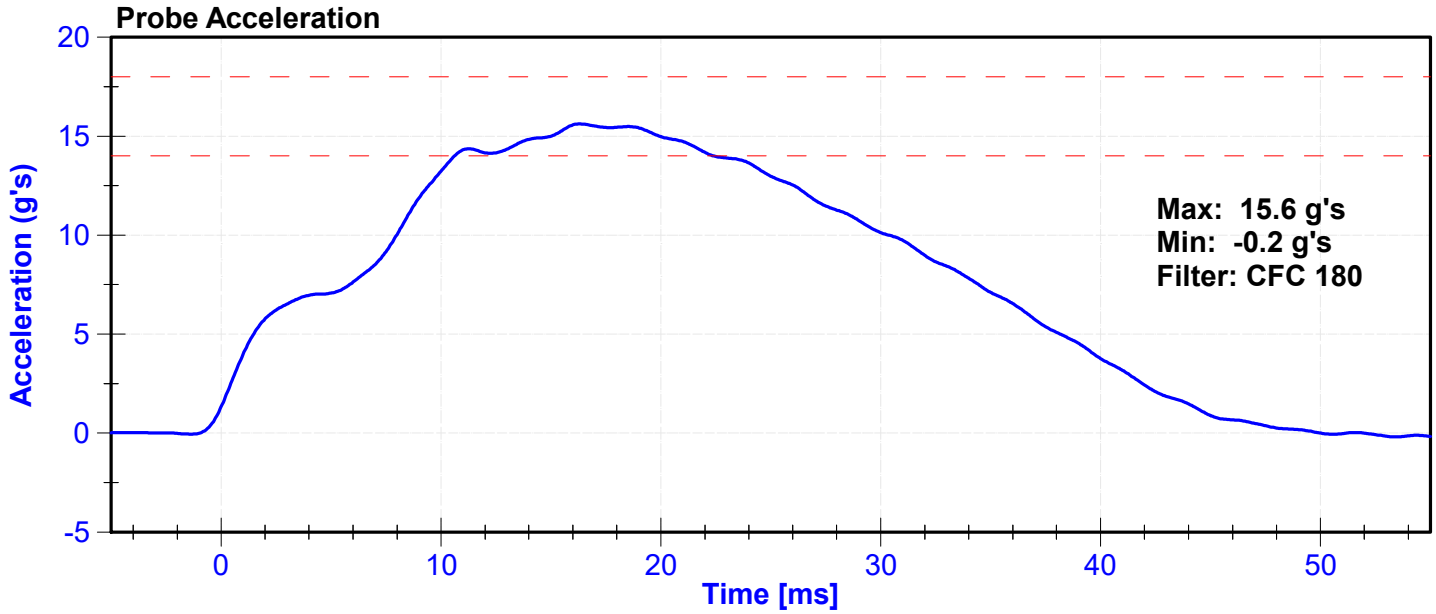
ATD Manufacturer	FTSS	Test Technician	J. Rios
ATD Serial Number	300	Laboratory Supervisor	J. Kinderman

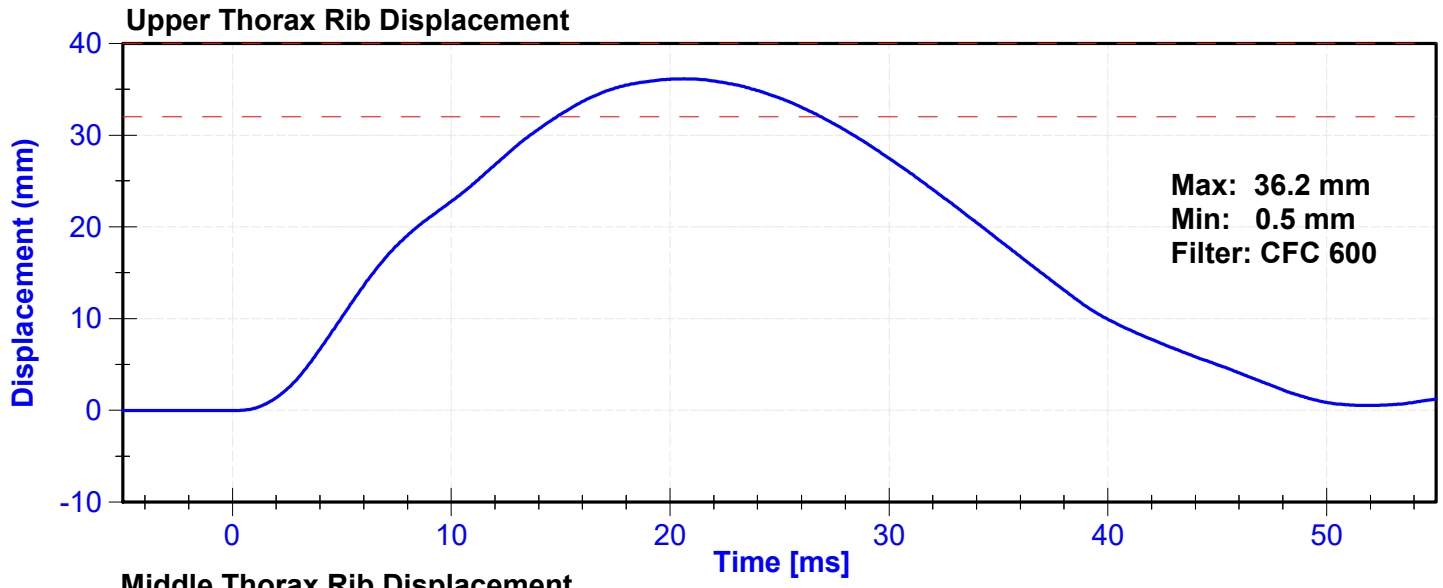
Results

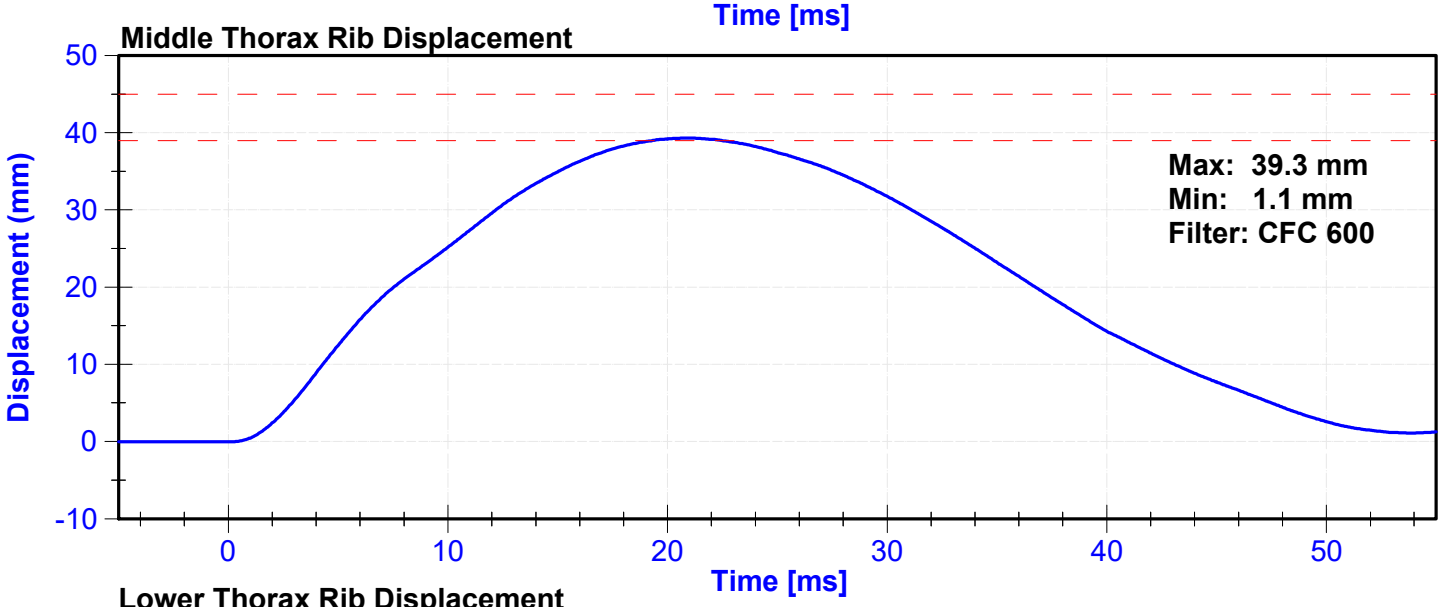
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	ºC	20.7	Pass
Humidity	10	70	%	19	Pass
Velocity	4.2	4.4	m/s	4.28	Pass
Probe Acceleration	14	18	g's	15.6	Pass
Lateral Upper Spine Acceleration	13	17	g's	14.6	Pass
Lateral Lower Spine Acceleration	7	11	g's	8.9	Pass
Upper Thorax Rib Deflection	32	40	mm	36.2	Pass
Middle Thorax Rib Deflection	39	45	mm	39.3	Pass
Lower Thorax Rib Deflection	35	43	mm	35.4	Pass

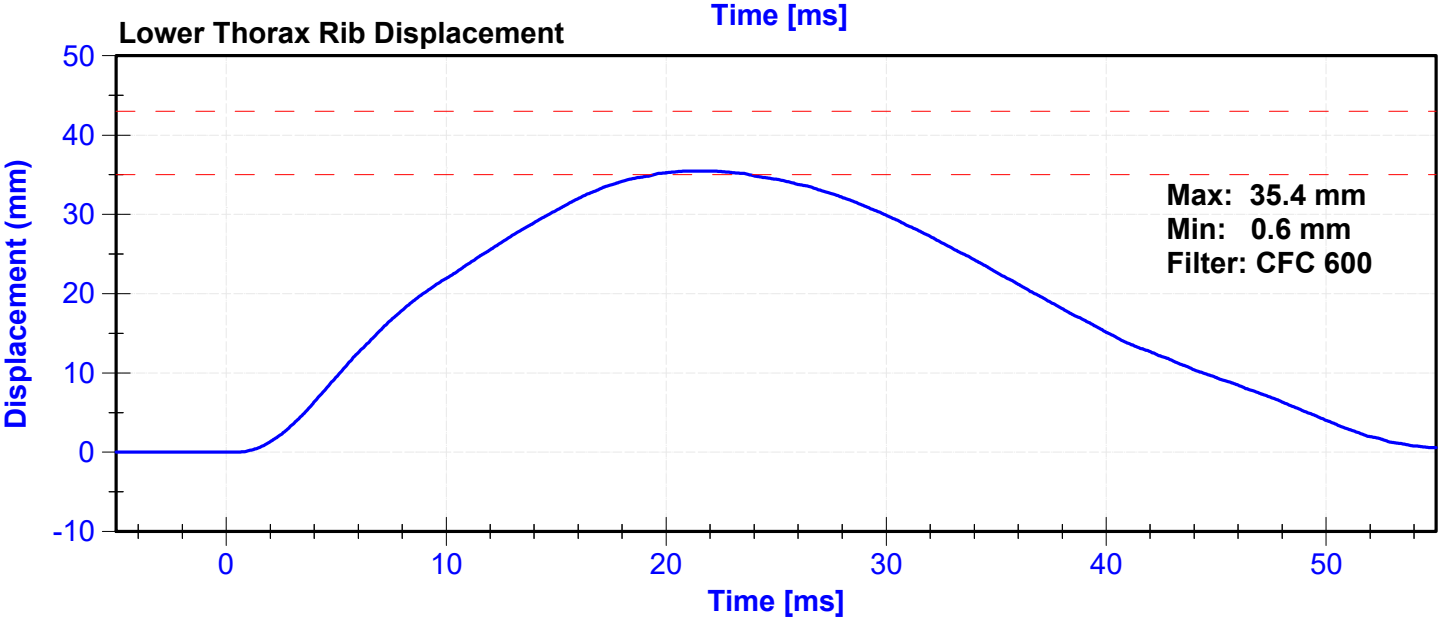
Transducer Calibrations

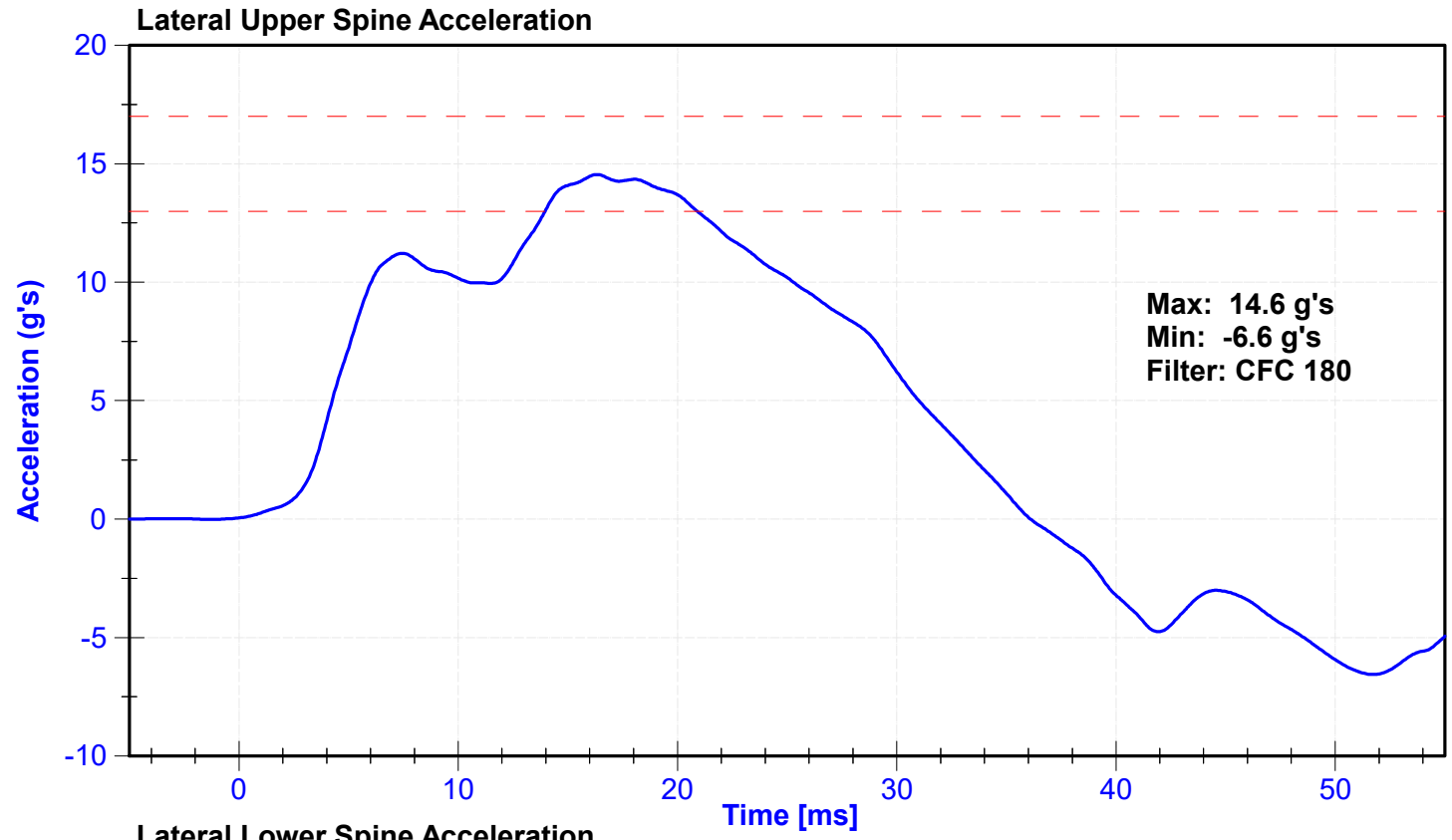
Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18566	11/26/2024	5/25/2025
Upper Spine Y Accelerometer	Endevco	P52018	11/25/2024	5/24/2025
Lower Spine Y Accelerometer	Endevco	P52071	10/17/2024	4/15/2025
Upper Thorax Rib Potentiometer	Servo	2316GFE	10/16/2024	4/16/2025
Middle Thorax Rib Potentiometer	Servo	085GFE	10/16/2024	4/16/2025
Lower Thorax Rib Potentiometer	Servo	1156GFE	10/16/2024	4/16/2025

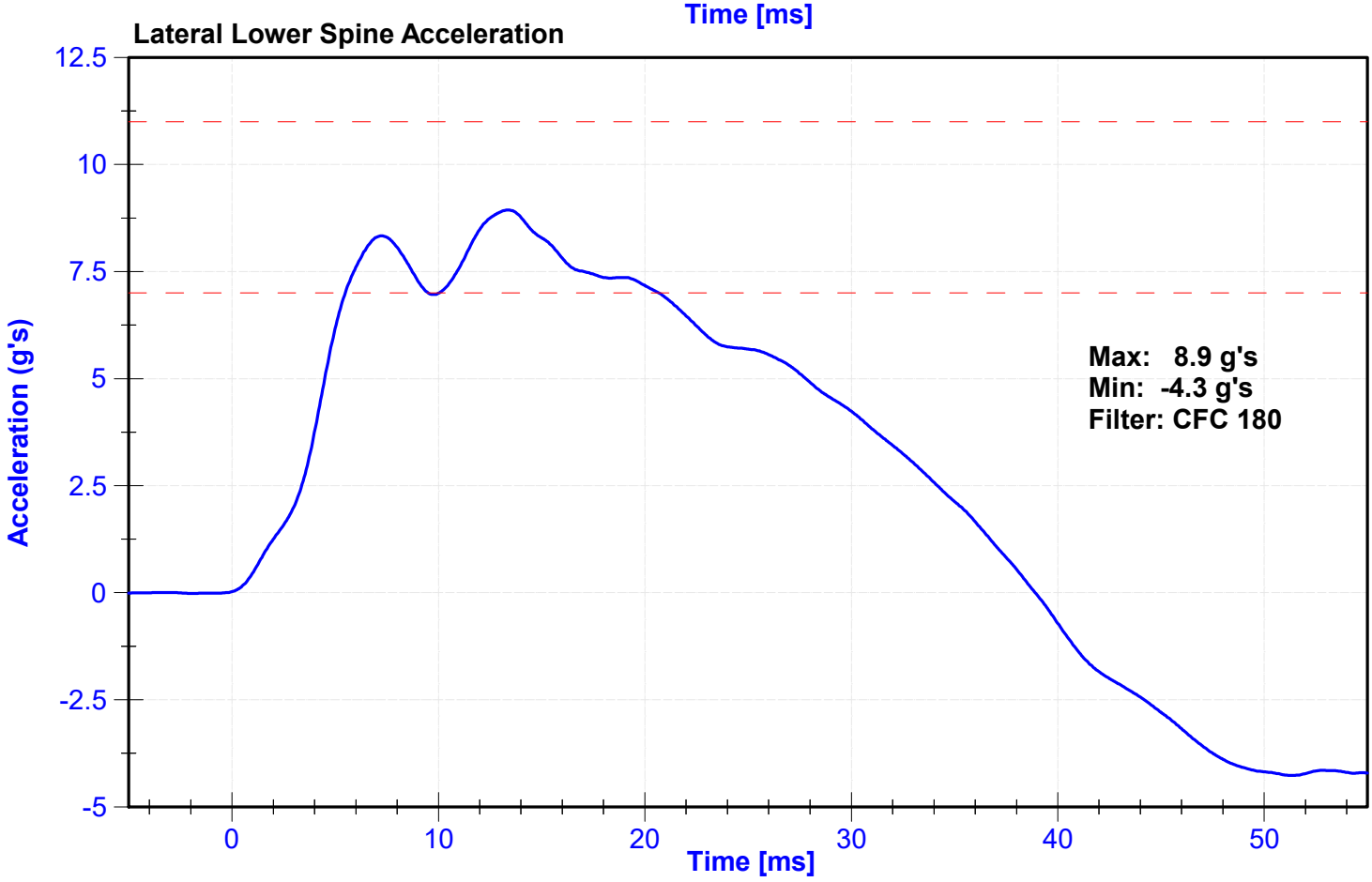



Upper Thorax Rib Displacement
Displacement (mm)
Time [ms]
Max: 36.2 mm
Min: 0.5 mm
Filter: CFC 600


Middle Thorax Rib Displacement
Displacement (mm)
Time [ms]
Max: 39.3 mm
Min: 1.1 mm
Filter: CFC 600


Lower Thorax Rib Displacement
Displacement (mm)
Time [ms]
Max: 35.4 mm
Min: 0.6 mm
Filter: CFC 600


Lateral Upper Spine Acceleration
Acceleration (g's)
Time [ms]
Max: 14.6 g's
Min: -6.6 g's
Filter: CFC 180


Lateral Lower Spine Acceleration
Acceleration (g's)
Time [ms]
Max: 8.9 g's
Min: -4.3 g's
Filter: CFC 180

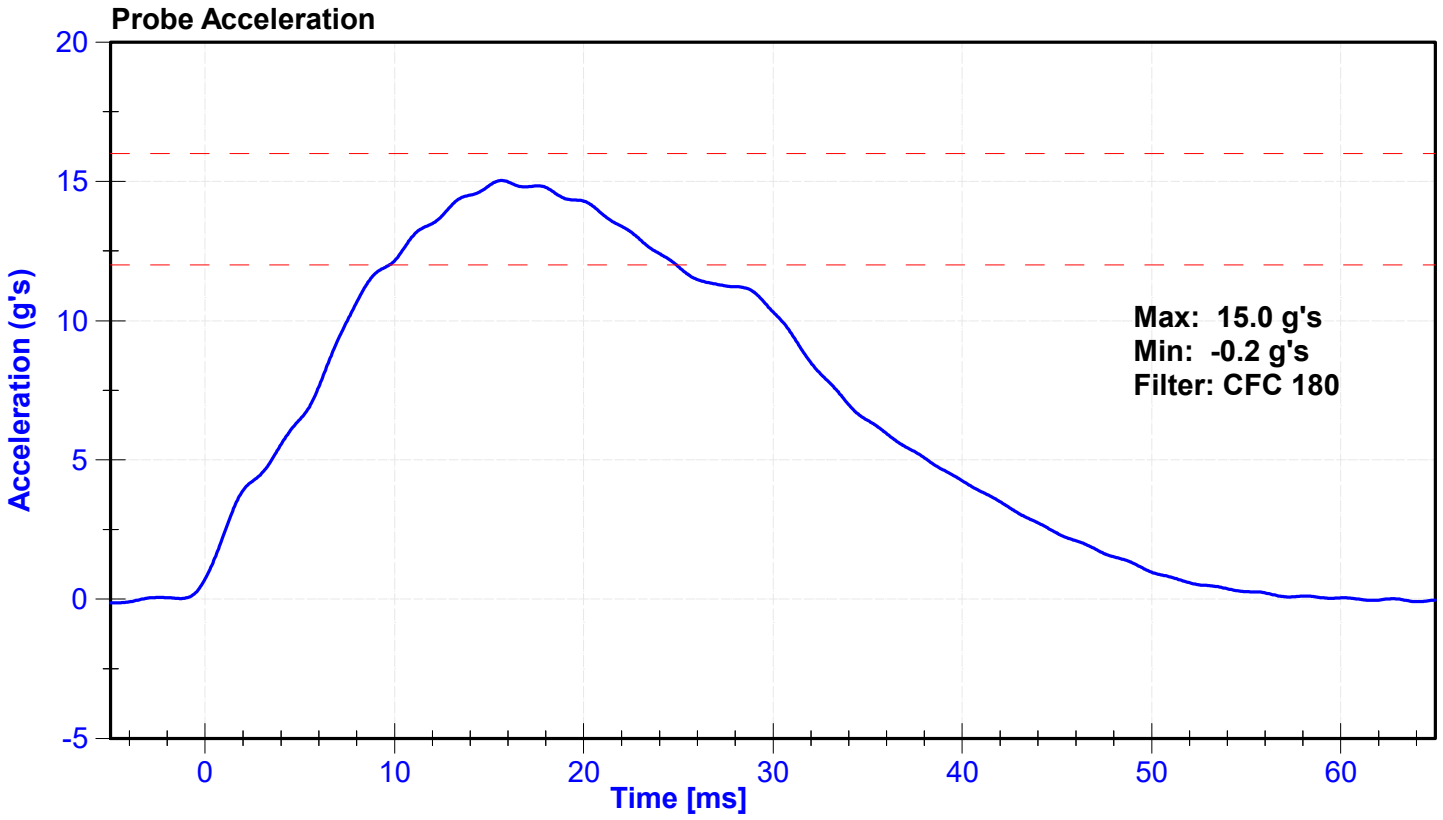
ATD Manufacturer	FTSS	Test Technician	J. Rios
ATD Serial Number	300	Laboratory Supervisor	J. Kinderman

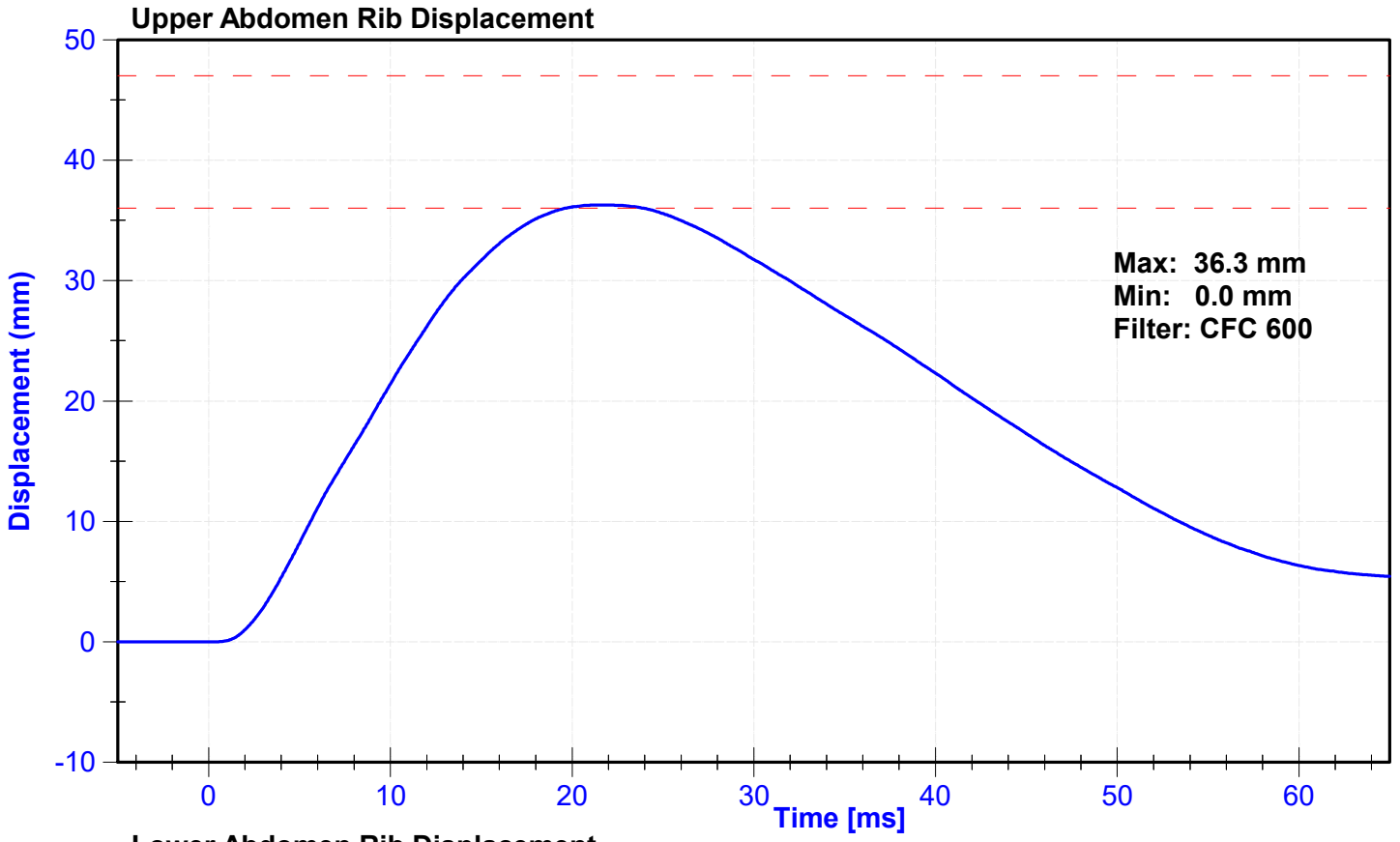
Results

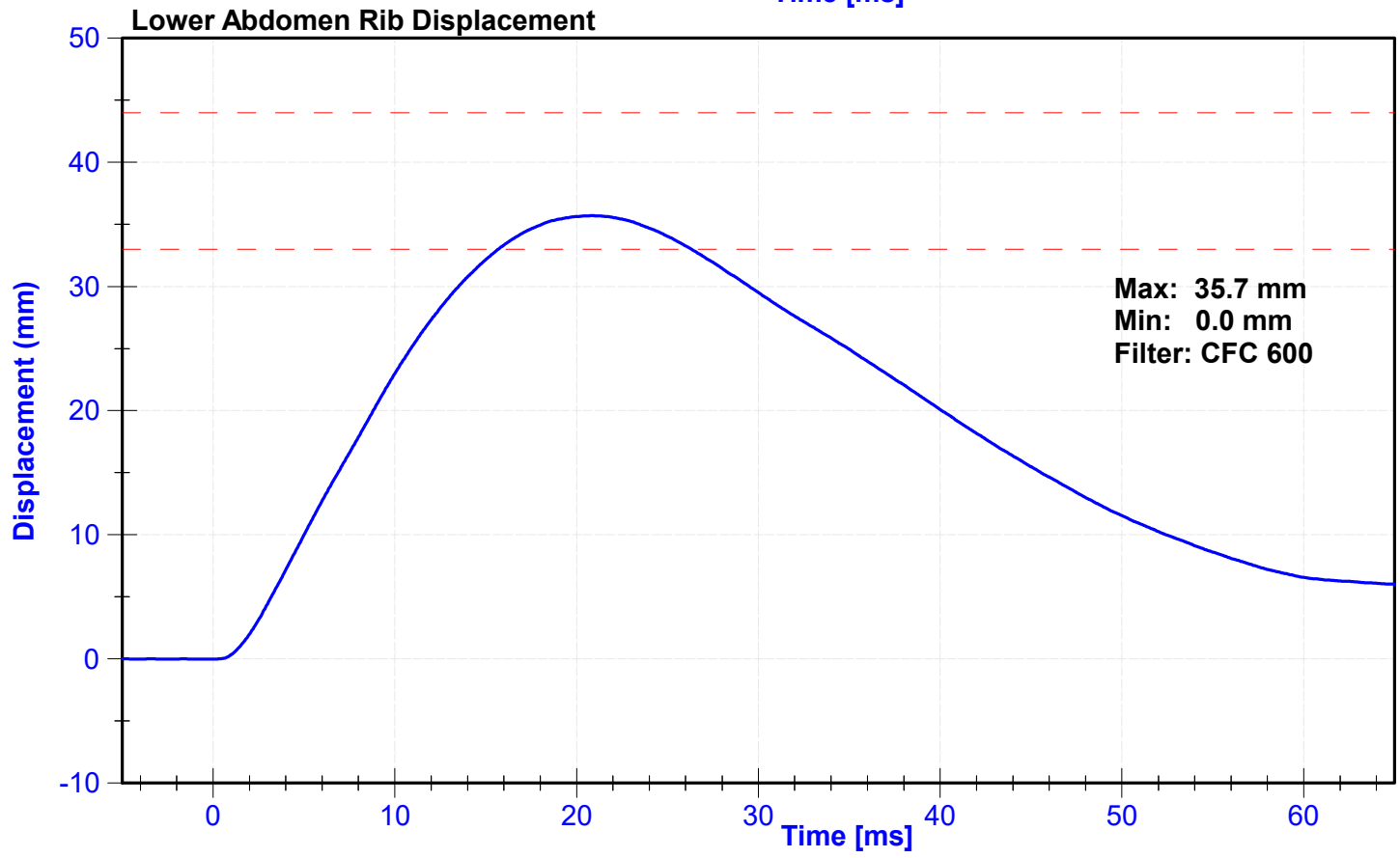
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	ºC	20.7	Pass
Humidity	10	70	%	19	Pass
Velocity	4.2	4.4	m/s	4.30	Pass
Probe Acceleration	12	16	g's	15.0	Pass
Lateral Lower Spine Acceleration	9	14	g's	12.5	Pass
Upper Abdomen Rib Deflection	36	47	mm	36.3	Pass
Lower Abdomen Rib Deflection	33	44	mm	35.7	Pass

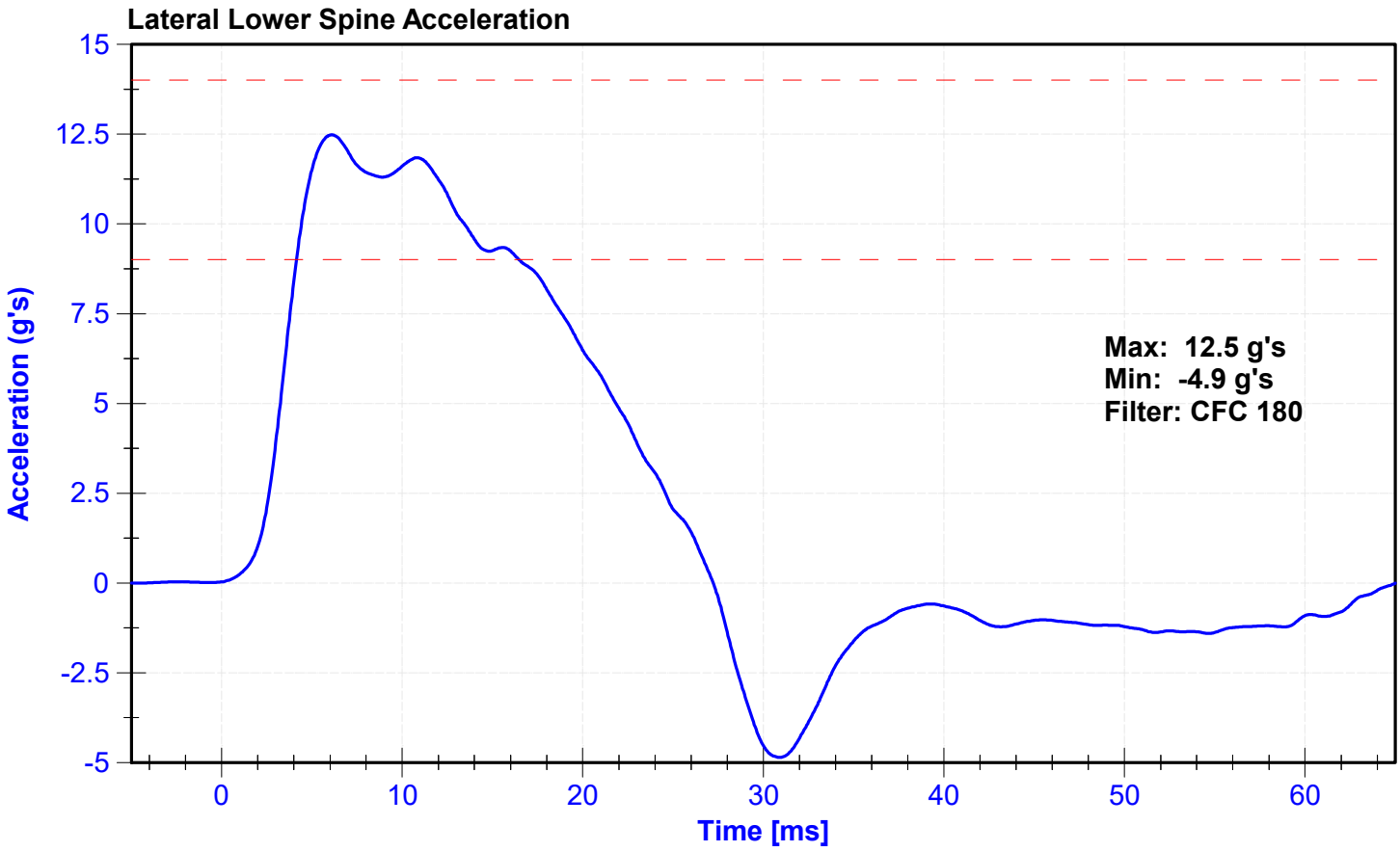
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accelerometer	Endevco	18566	11/26/2024	5/25/2025
Lower Spine Y Accelerometer	Endevco	P52071	10/17/2024	4/15/2025
Upper Abdomen Rib Potentiometer	Servo	074GFE	10/16/2024	4/16/2025
Lower Abdomen Rib Potentiometer	Servo	075GFE	10/16/2024	4/16/2025




Upper Abdomen Rib Displacement
Displacement (mm)
Time [ms]
Max: 36.3 mm
Min: 0.0 mm
Filter: CFC 600


Lower Abdomen Rib Displacement
Displacement (mm)
Time [ms]
Max: 35.7 mm
Min: 0.0 mm
Filter: CFC 600


Lateral Lower Spine Acceleration
Acceleration (g's)
15
12.5
10
7.5
5
2.5
0
-2.5
-5
0
10
20
30
40
50
60
Time [ms]
Max: 12.5 g's
Min: -4.9 g's
Filter: CFC 180

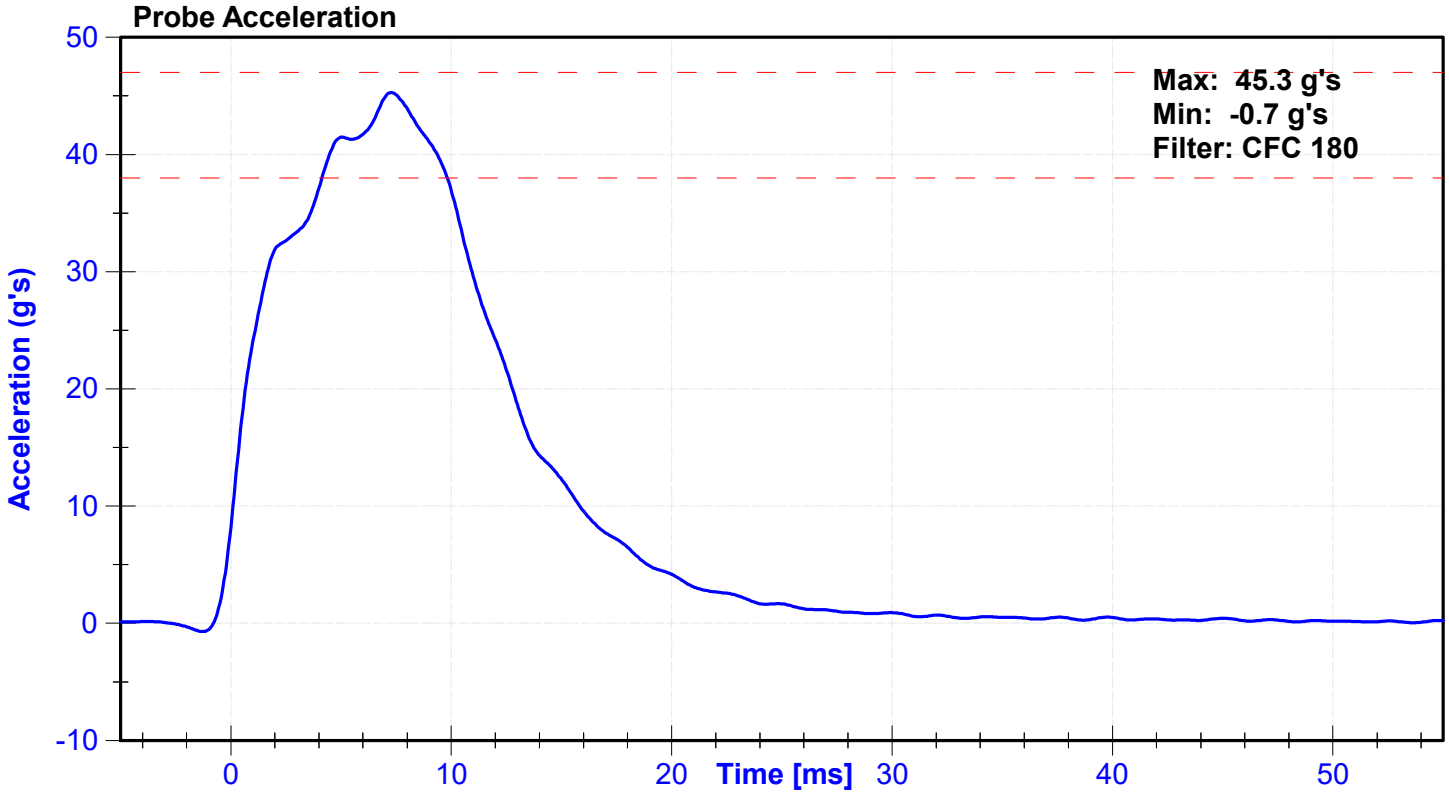
ATD Manufacturer	FTSS	Test Technician	J. Rios
ATD Serial Number	300	Laboratory Supervisor	J. Kinderman

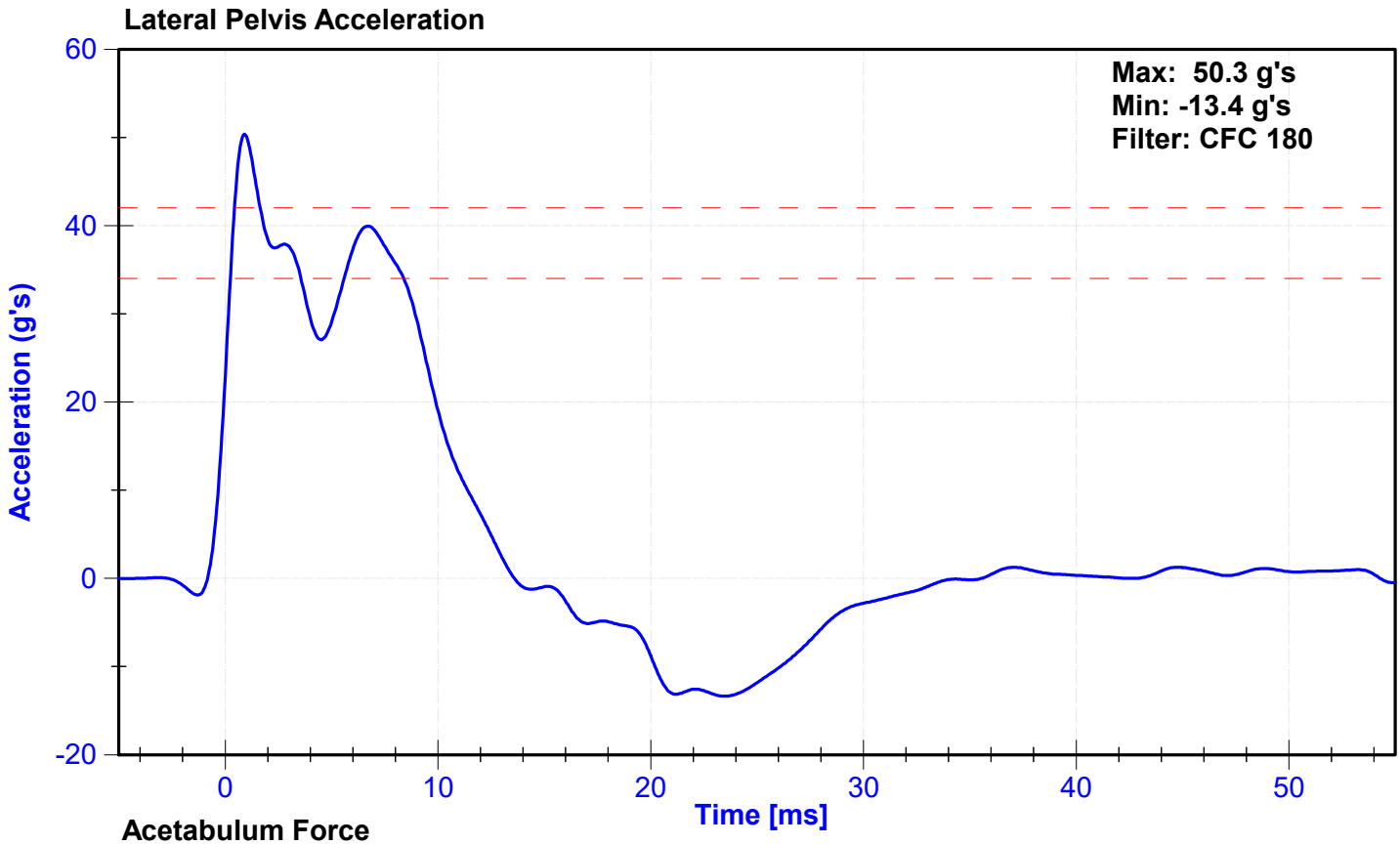
Results

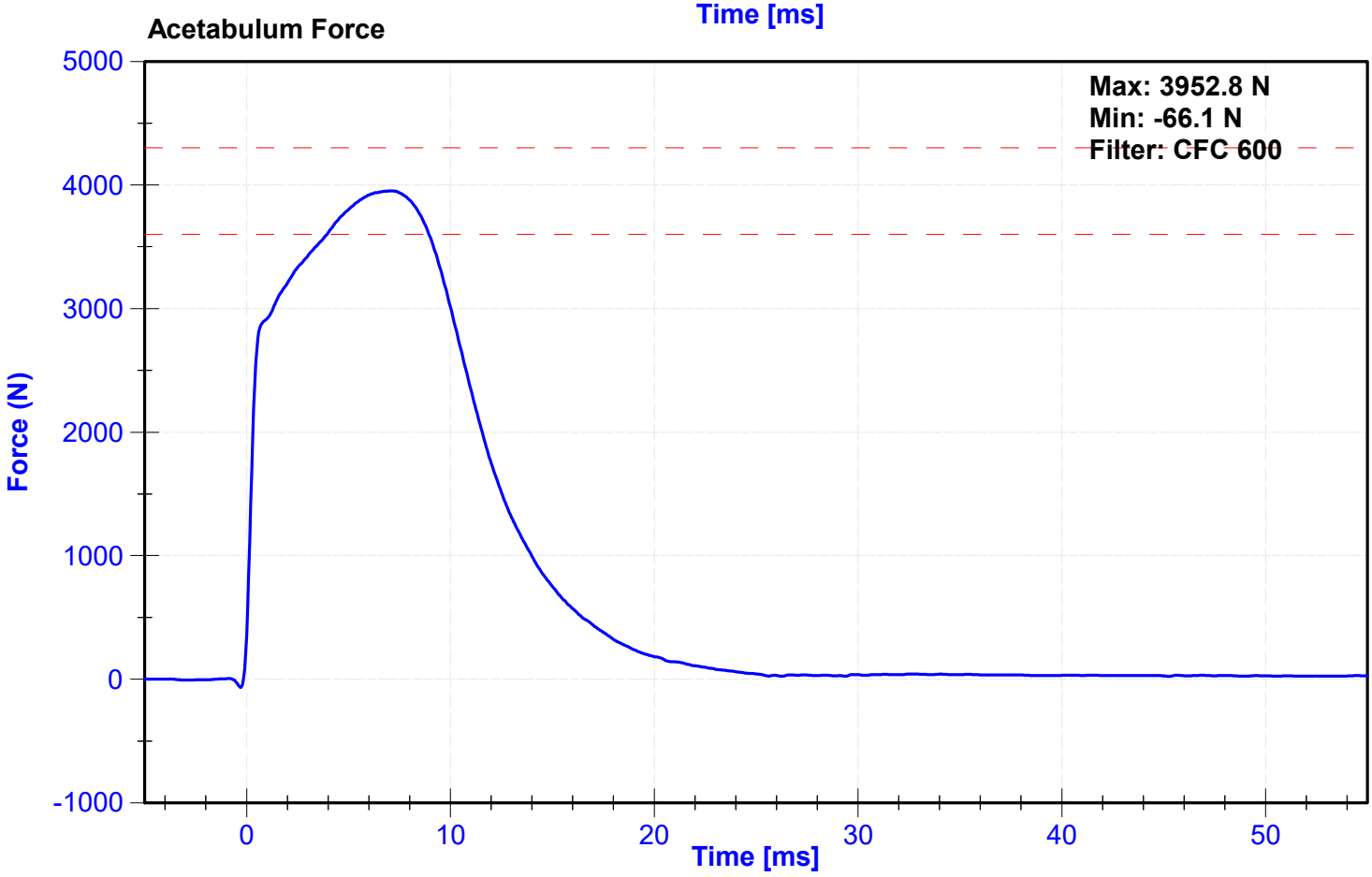
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	ºC	20.7	Pass
Humidity	10	70	%	19	Pass
Velocity	6.6	6.8	m/s	6.67	Pass
Probe Acceleration	38	47	g's	45.3	Pass
Lateral Pelvis Acceleration after 6ms	34	42	g's	39.9	Pass
Acetabulum Force	3600	4300	N	3952.8	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18566	11/26/2024	5/25/2025
Pelvis Y Accelerometer	Endevco	P51731	10/17/2024	4/15/2025
Acetabulum Load Cell	Denton	275-FY	10/28/2024	10/28/2025
Certification Plug	SACO			N/A
Crash Test Plug	SACO			N/A




Lateral Pelvis Acceleration
Max: 50.3 g's
Min: -13.4 g's
Filter: CFC 180
Acceleration (g's)
60
40
20
0
-20
0
10
20
30
40
50
Time [ms]


Acetabulum Force
Max: 3952.8 N
Min: -66.1 N
Filter: CFC 600
Force (N)
5000
4000
3000
2000
1000
0
-1000
0
10
20
30
40
50
Time [ms]

SACO RESEARCH

SID-IIs Pelvis Plug Certification Test

Plug S/N 16708
Test Number 23508
Report Number 23565
Test Date 7/22/2022 11:37:03 AM

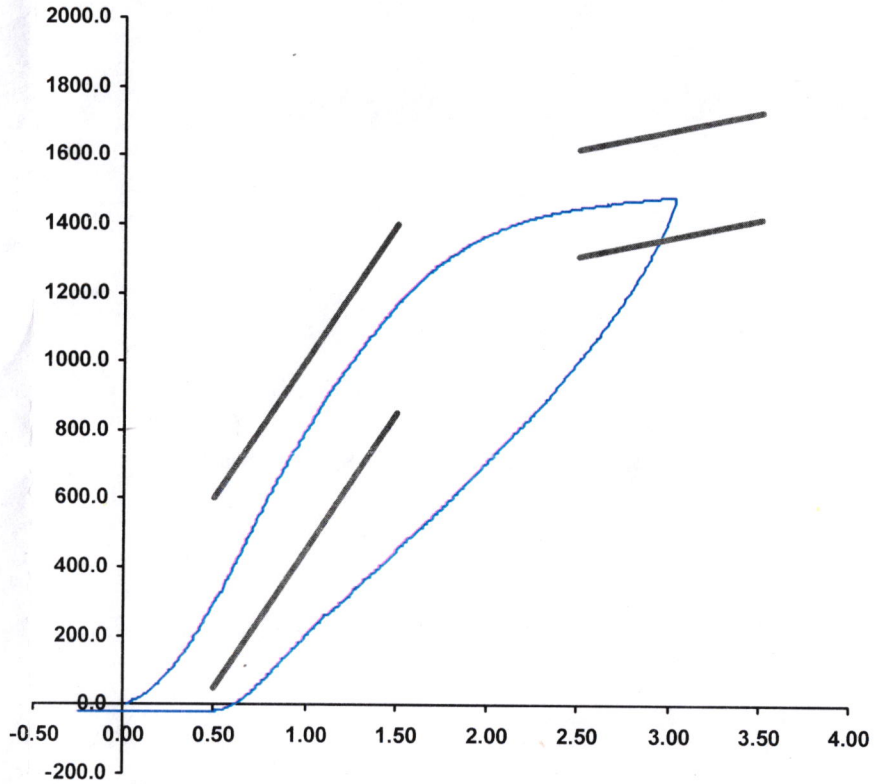
	Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	302	50	600
Force @ 1.5 mm (N)	1,167	850	1,400
Force @ 2.5 mm (N)	1,448	1,306	1,618
Force @ 3.0 mm (N)	1,480	1,361	1,673

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:
Cert Plug 300 2-12-25

Force (-N) vs Extension (-mm)



Operator

Part Number 180-4450

Template No 107 22-Jul-22
SACO Research

By : DC Date : 7/22/22

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

C-20

SACO RESEARCH

SID-IIs Pelvis Plug Certification Test

Plug S/N 16709
Test Number 23509
Report Number 23566
Test Date 7/22/2022 11:40:09 AM

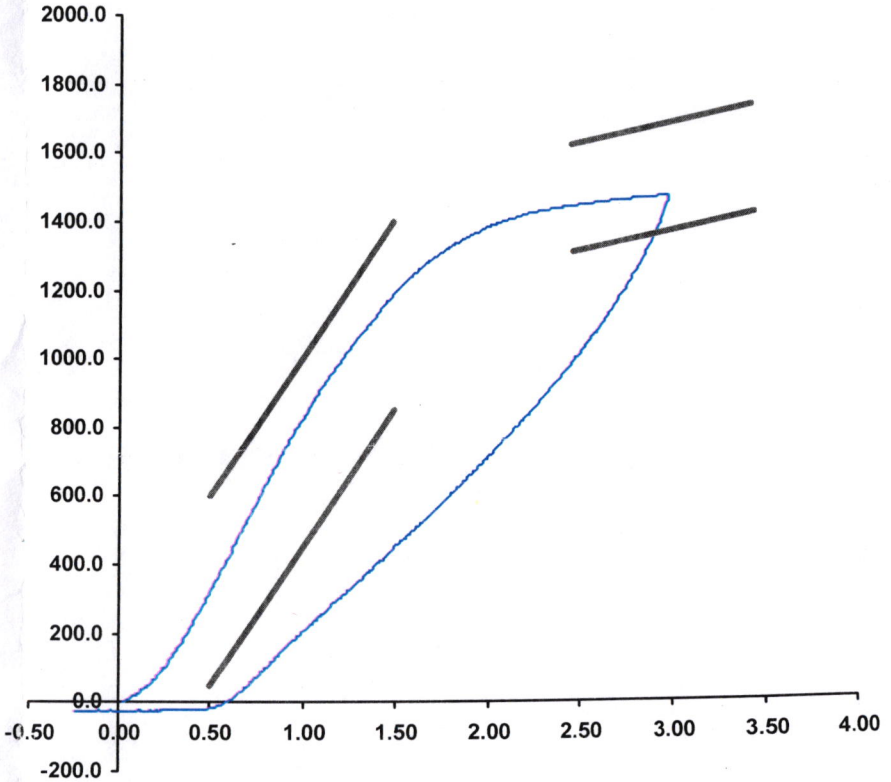
	Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	330	50	600
Force @ 1.5 mm (N)	1,185	850	1,400
Force @ 2.5 mm (N)	1,441	1,306	1,618
Force @ 3.0 mm (N)	1,467	1,361	1,673

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:
IMPACT 300 2-12-25

Force (-N) vs Extension (-mm)



Operator

Part Number 180-4450

Template No 107 22-Jul-22
SACO Research

By : DC Date : 7/22/22

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

C-21

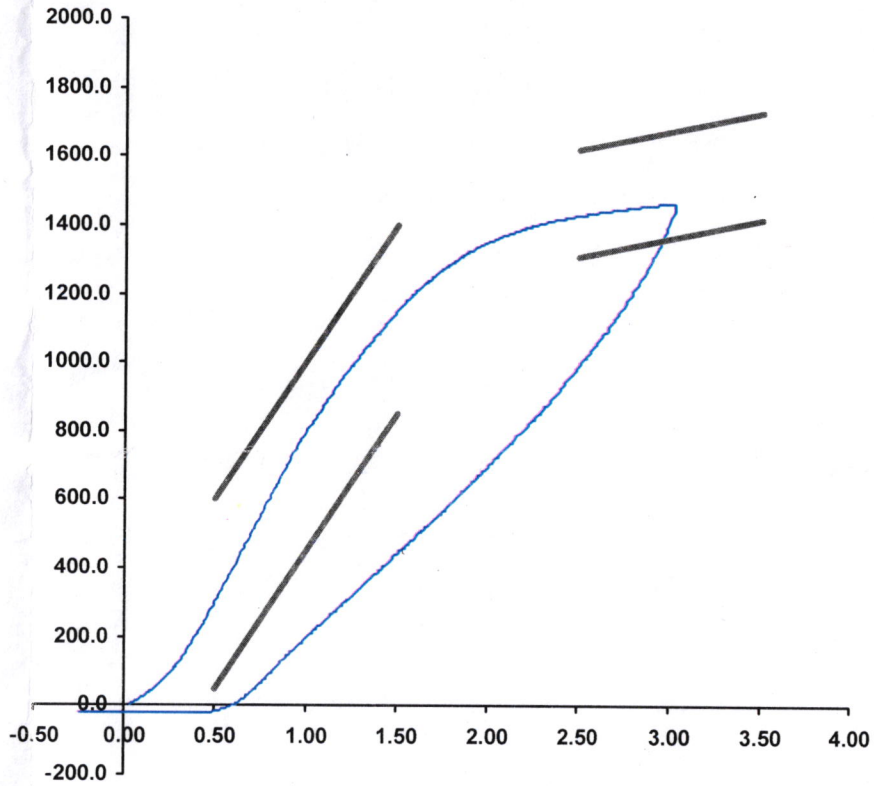
SACO RESEARCH

SID-IIs Pelvis Plug Certification Test

Plug S/N 16724
Test Number 23524
Report Number 23581
Test Date 7/22/2022 12:34:48 PM

	Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	307	50	600
Force @ 1.5 mm (N)	1,149	850	1,400
Force @ 2.5 mm (N)	1,429	1,306	1,618
Force @ 3.0 mm (N)	1,465	1,361	1,673

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:
NON IMPACT 300 2-12-25

Operator

Part Number 180-4450

Template No 107 22-Jul-22
SACO Research

By : DC Date : 7/22/22

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

C-22

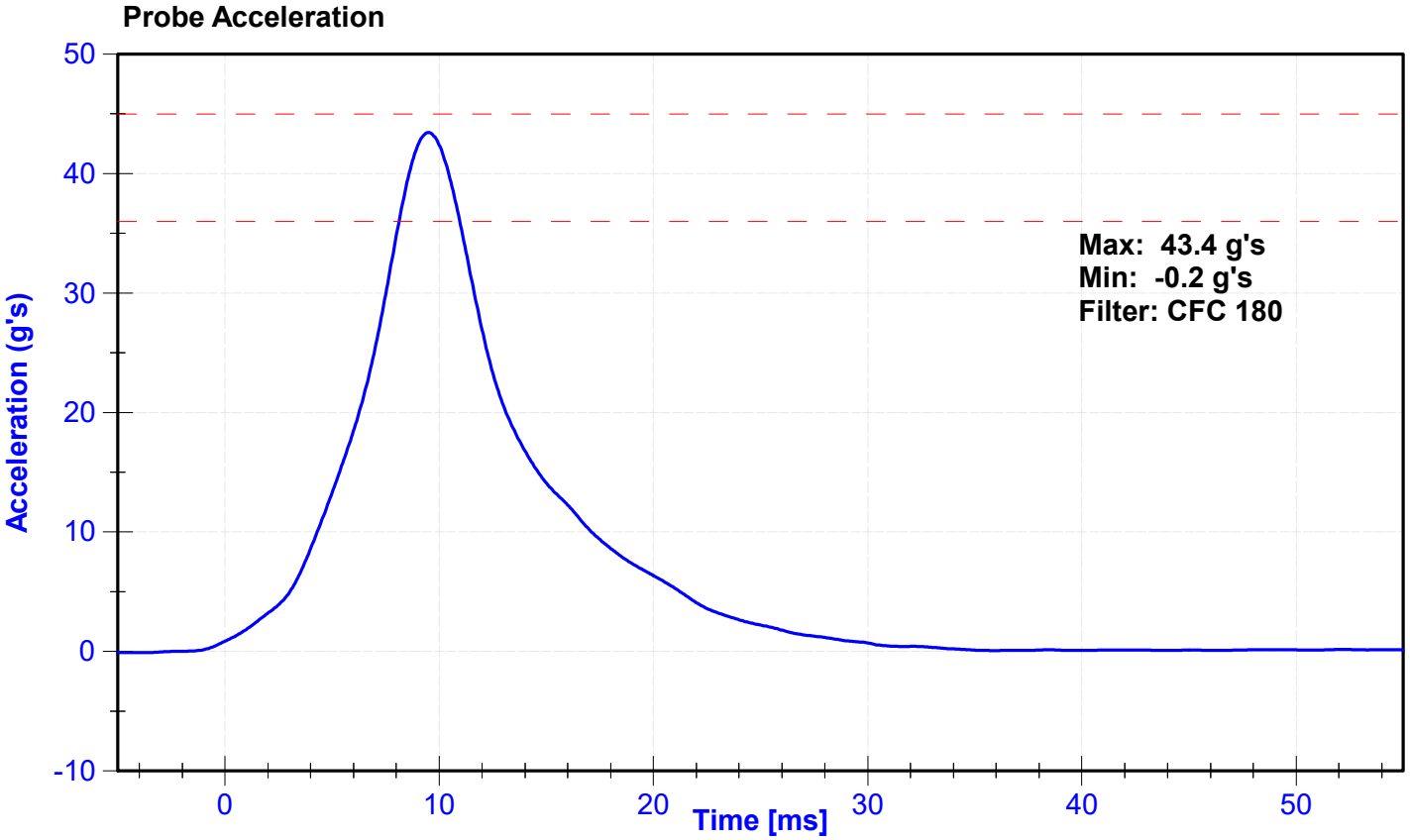
ATD Manufacturer	FTSS	Test Technician	J. Rios
ATD Serial Number	300	Laboratory Supervisor	J. Kinderman

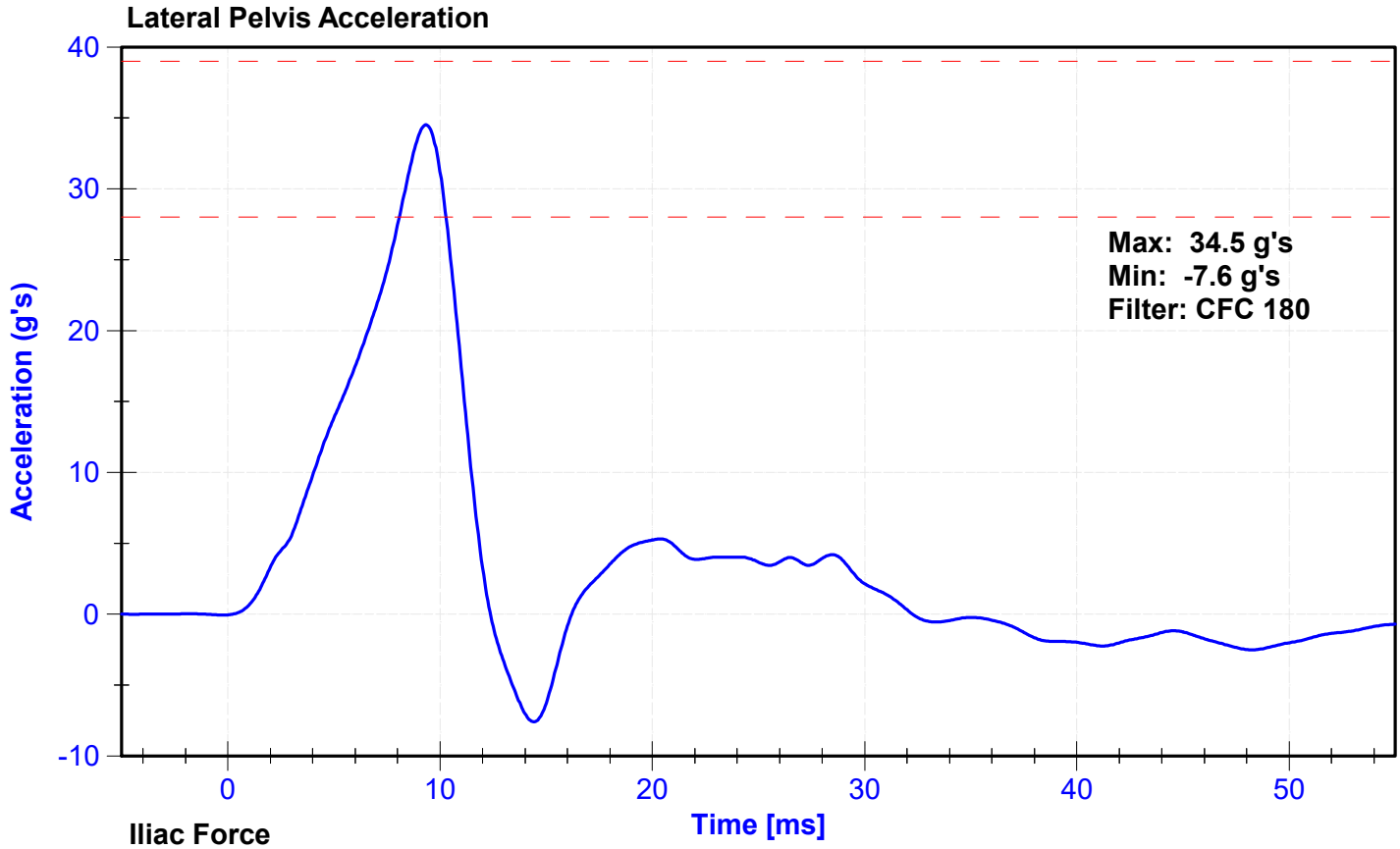
Results

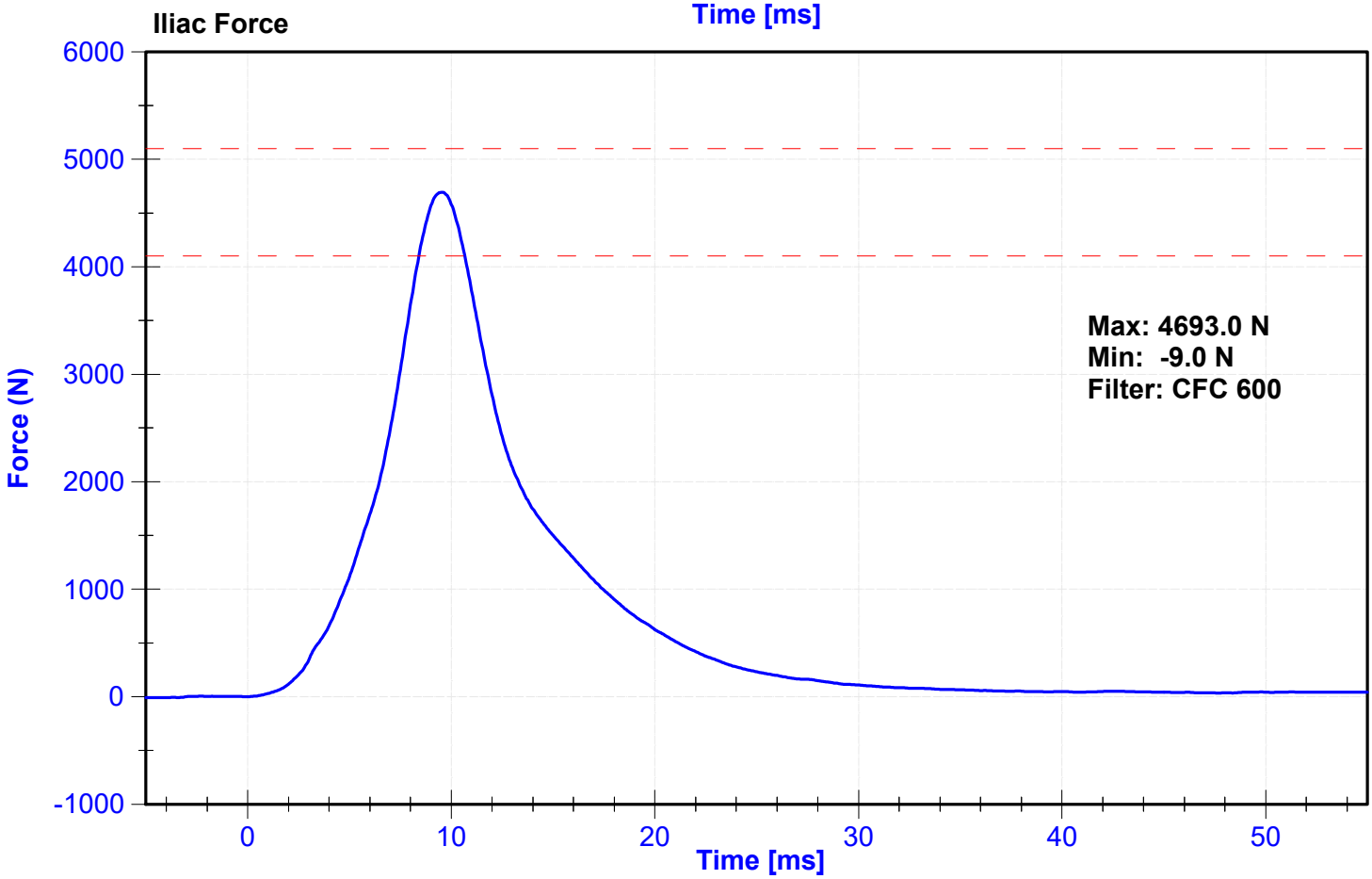
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	ºC	20.7	Pass
Humidity	10	70	%	19	Pass
Velocity	4.2	4.4	m/s	4.27	Pass
Probe Acceleration	36	45	g's	43.4	Pass
Lateral Pelvis Acceleration	28	39	g's	34.5	Pass
Iliac Force	4100	5100	N	4693.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18566	11/26/2024	5/25/2025
Pelvis Y Accelerometer	Endevco	P51731	10/17/2024	4/15/2025
Iliac Load Cell	Denton	279-FY	10/28/2024	10/28/2025




Lateral Pelvis Acceleration
Acceleration (g's)
40
30
20
10
0
-10
0
10
20
30
40
50
Time [ms]
Max: 34.5 g's
Min: -7.6 g's
Filter: CFC 180


Iliac Force
Force (N)
6000
5000
4000
3000
2000
1000
0
-1000
0
10
20
30
40
50
Time [ms]
Max: 4693.0 N
Min: -9.0 N
Filter: CFC 600

CALIBRATION TEST RESULTS

POST-TEST

SID-IIS 5TH PERCENTILE FEMALE - DRIVER ATD

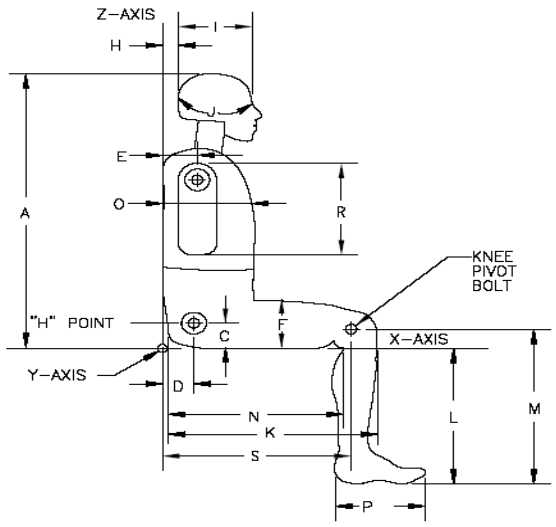
SERIAL NO:300

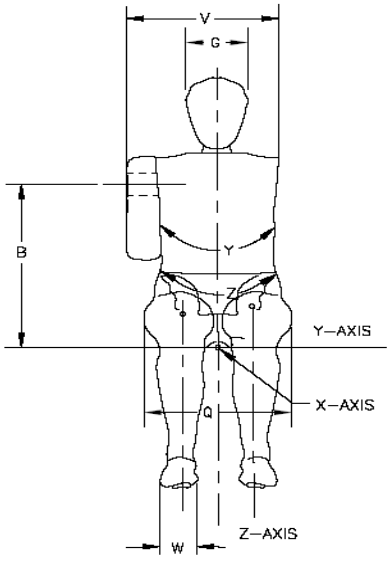
(CONFIGURED FOR LEFT SIDE IMPACT)

External Measurements - SID-IIs

Technician: J. Rios Date: 3/24/2025

Dummy Serial Number: 300





Symbol	Description	Specification (mm)		Result (mm)	Pass/Fail
A	Sitting Height	772	788	781	Pass
B	Shoulder Pivot Height	437	453	442	Pass
C	H-point Height	79	89	81	Pass
D	H-point from seatback	141	151	147	Pass
E	Shoulder Pivot from Backline	97	107	103	Pass
F	Thigh Clearance	119	135	131	Pass
G	Head Breadth	140	148	145	Pass
H	Head Back from Backline	40	46	43	Pass
I	Head Depth	178	188	184	Pass
J	Head Circumference	541	551	548	Pass
K	Buttock to Knee Length	514	540	528	Pass
L	Popliteal Height	343	369	359	Pass
M	Knee Pivot to floor height	392	409	402	Pass
N	Buttock Popliteal Length	416	442	434	Pass
O	Chest Depth w/o jacket	195	211	202	Pass
P	Foot Length	216	232	223	Pass
Q	Hip Breadth (w/pelvic plugs)	313	323	318	Pass
R	Arm Length	249	259	252	Pass
S	Knee Joint to seatback	477	493	481	Pass
V	Shoulder Width	341	357	350	Pass
W	Foot Width	78	94	82	Pass
Y	Chest Circumference w/jacket	851	881	872	Pass
Z	Waist Circumference	761	791	773	Pass

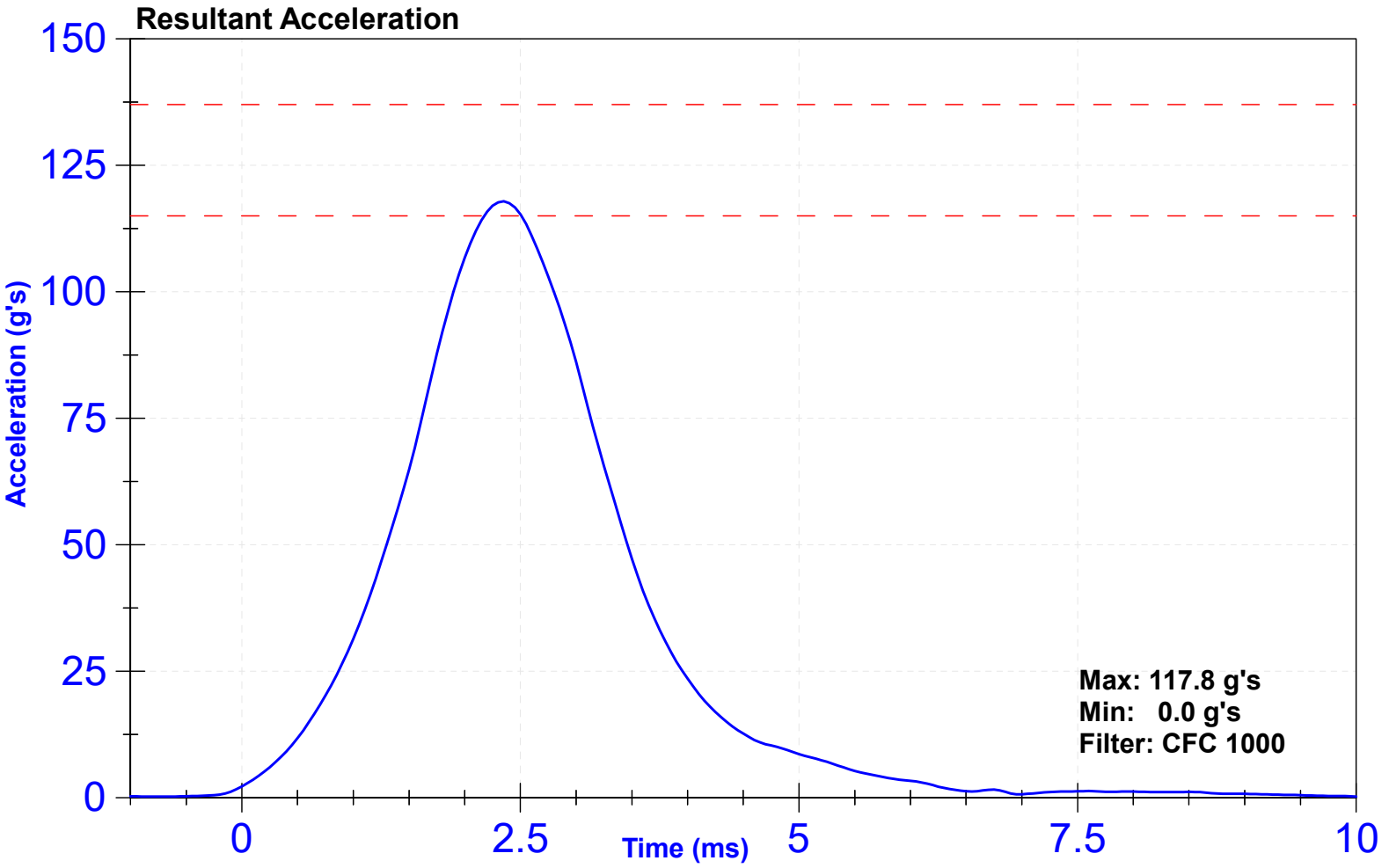
ATD Manufacturer	FTSS	Test Technician	J. Miller
ATD Serial Number	300	Laboratory Supervisor	J. Kinderman

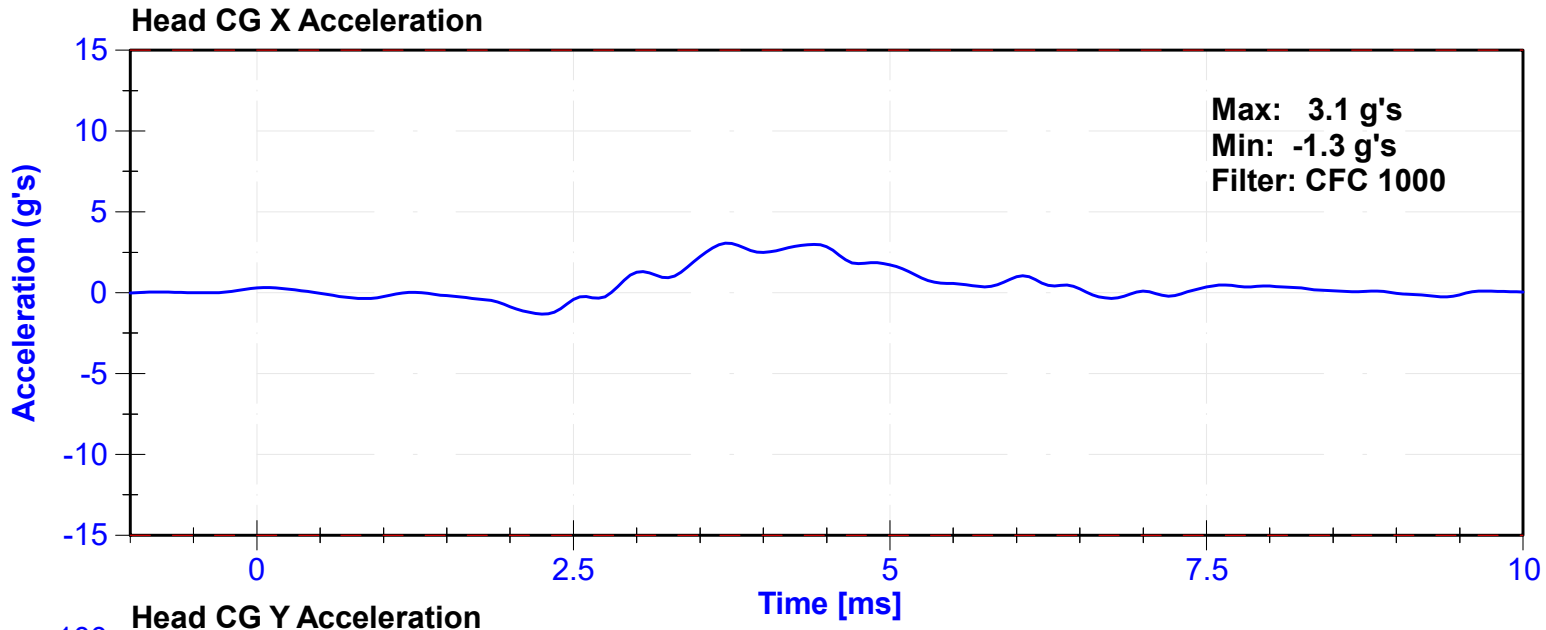
Results

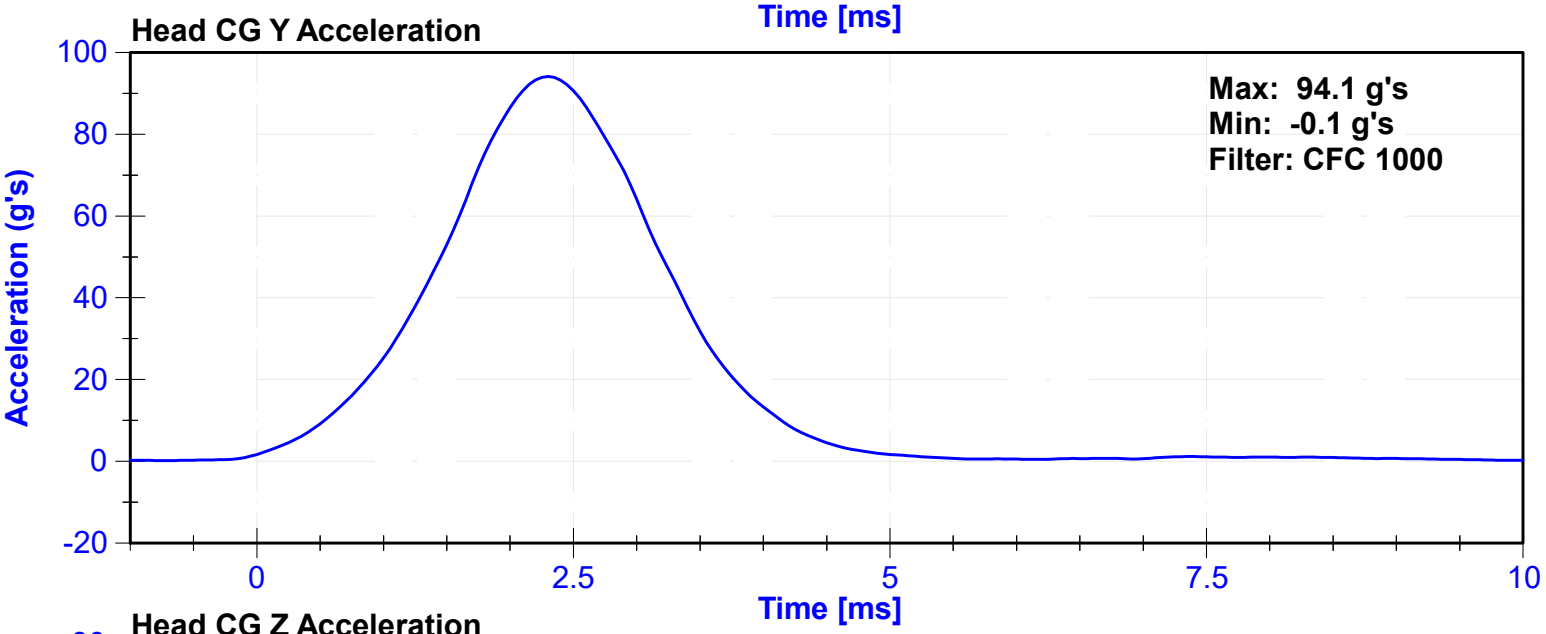
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	ºC	20.8	Pass
Humidity	10	70	%	22	Pass
Resultant Acceleration	115	137	g's	117.8	Pass
Oscillation	0	15	%	1.3	Pass
Fore-Aft Acceleration	-15	15	g's	3.1	Pass

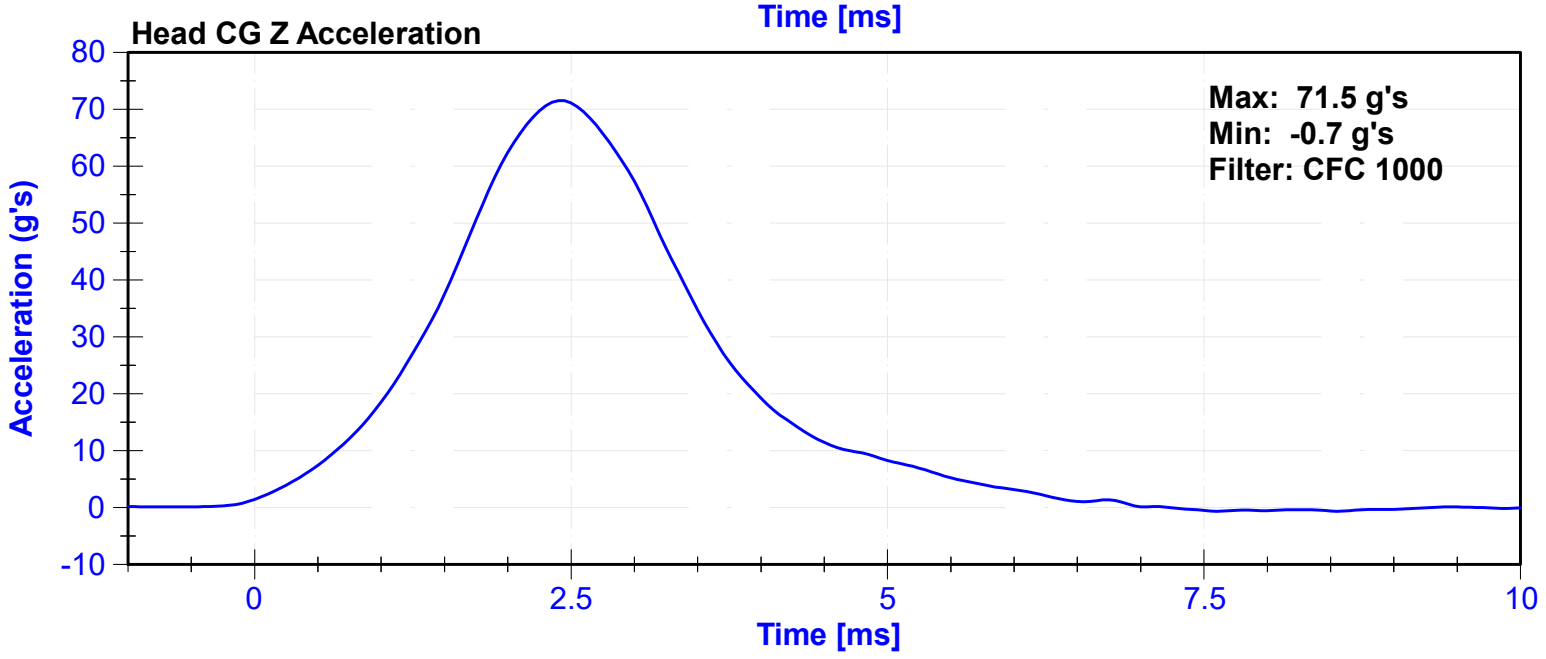
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibratio Date	Calibratio Due Date
X Accelerometer	Endevco	P59018	10/17/2024	4/15/2025
Y Accelerometer	Endevco	P79189	10/17/2024	4/15/2025
Z Accelerometer	Endevco	P79587	10/17/2024	4/15/2025




Head CG X Acceleration
Max: 3.1 g's
Min: -1.3 g's
Filter: CFC 1000
Acceleration (g's)
15
10
5
0
-5
-10
-15
0
2.5
5
7.5
10
Time [ms]


Head CG Y Acceleration
Max: 94.1 g's
Min: -0.1 g's
Filter: CFC 1000
Acceleration (g's)
100
80
60
40
20
0
-20
0
2.5
5
7.5
10
Time [ms]


Head CG Z Acceleration
Max: 71.5 g's
Min: -0.7 g's
Filter: CFC 1000
Acceleration (g's)
80
70
60
50
40
30
20
10
0
-10
0
2.5
5
7.5
10
Time [ms]

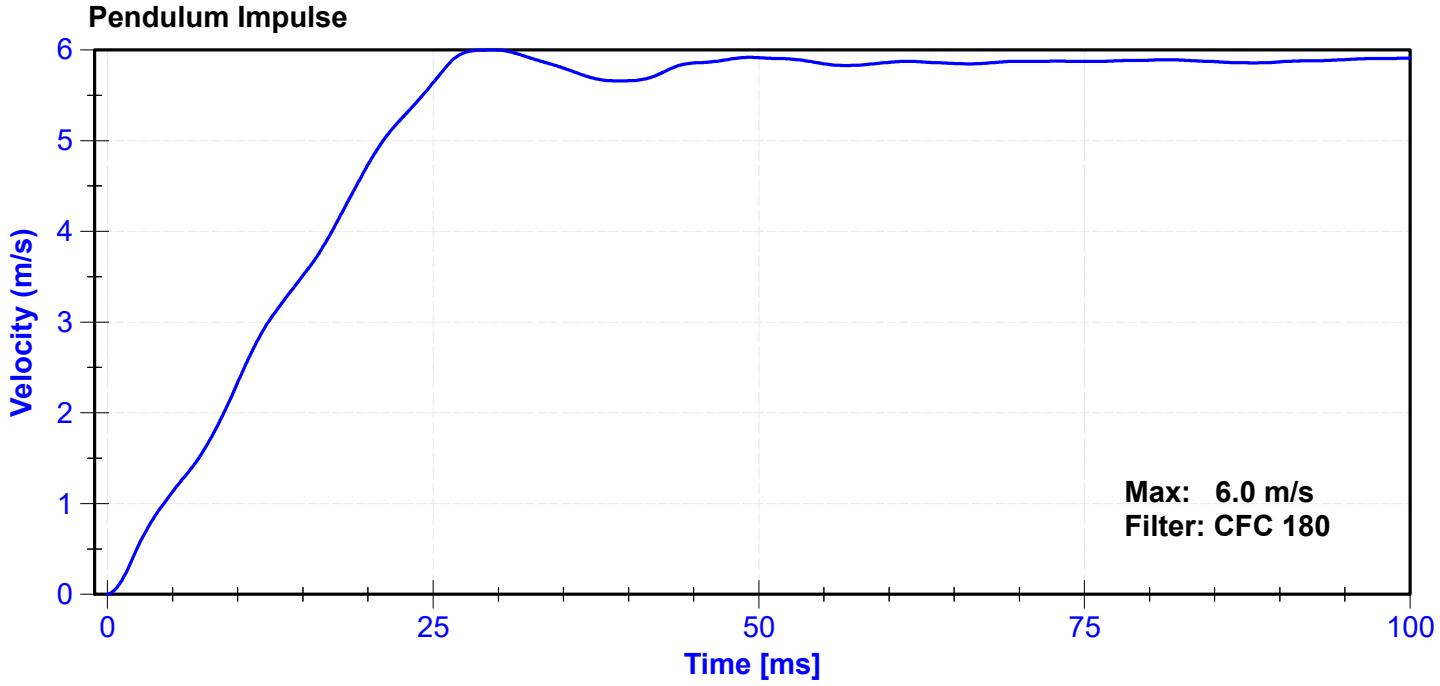
ATD Manufacturer	Humanetics	Test Technician	J. Rios
ATD Serial Number	300	Laboratory Supervisor	J. Kinderman

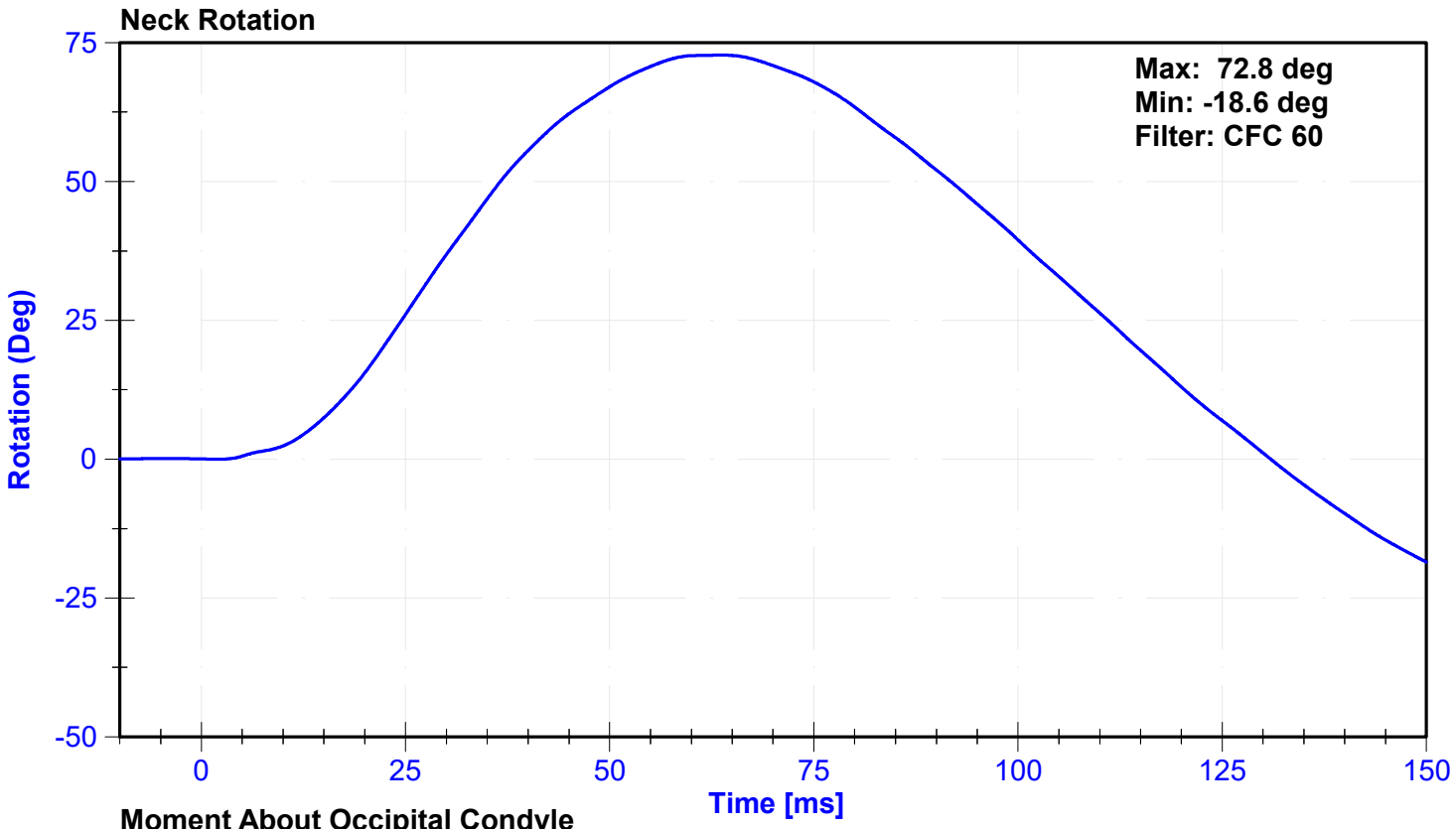
Results

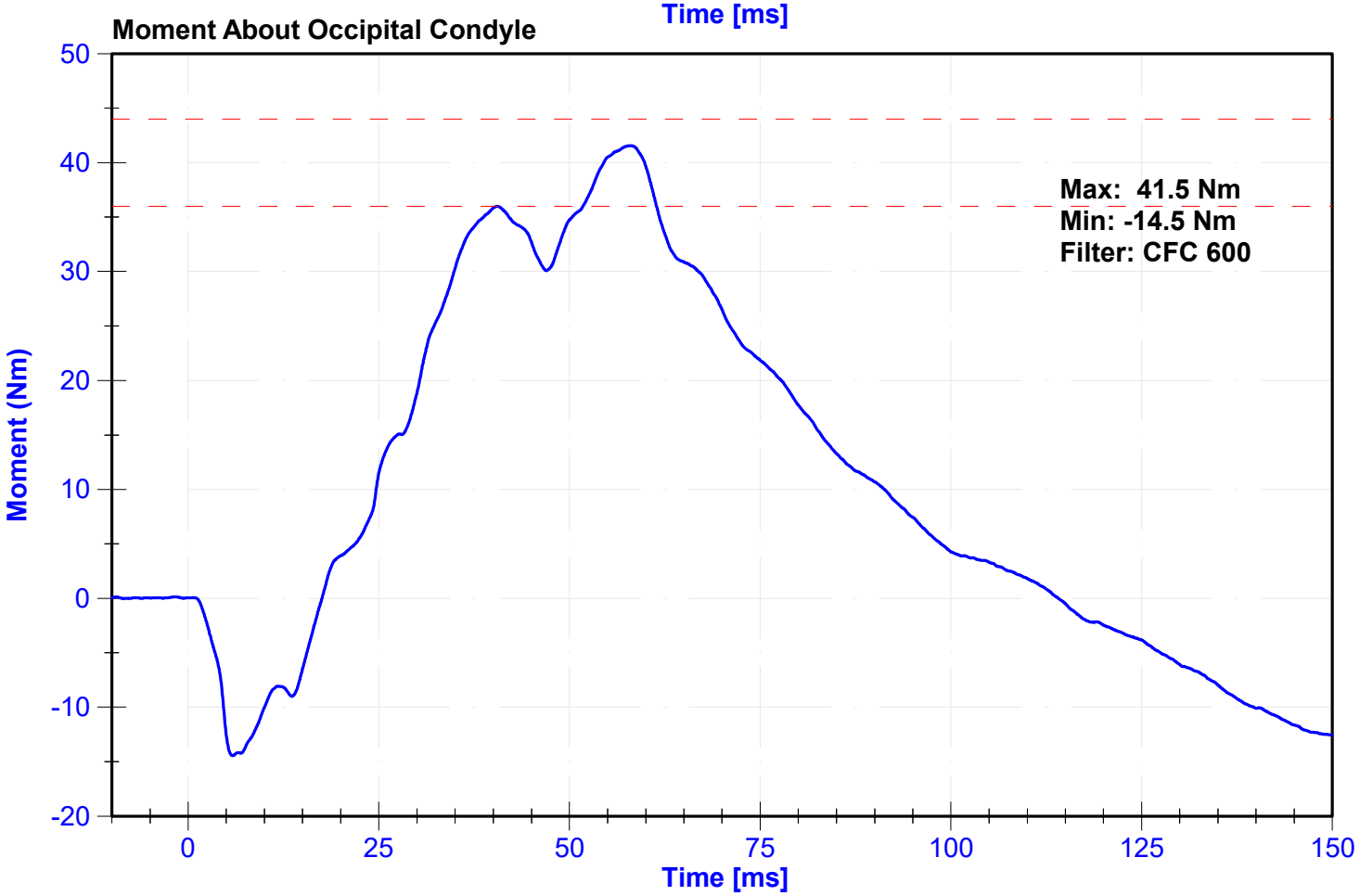
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	ºC	20.8	Pass
Humidity	10	70	%	24	Pass
Velocity	5.51	5.63	m/s	5.580	Pass
Pendulum Impulse at 10ms	2.2	2.8	m/s	2.34	Pass
Pendulum Impulse at 15ms	3.3	4.1	m/s	3.51	Pass
Pendulum Impulse at 20ms	4.4	5.4	m/s	4.74	Pass
Pendulum Impulse at 25ms	5.4	6.1	m/s	5.64	Pass
Pendulum Impulse from 25 to 100ms	5.5	6.2	m/s	6.00	Pass
Neck Rotation	71	81	deg	72.8	Pass
Time at Maximum Rotation	50	70	ms	63.8	Pass
Moment about the OC	36	44	Nm	41.5	Pass
Moment Decay to 0 Nm	102	126	ms	114.1	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	7231C-750	10/17/2024	4/15/2025
Pendulum Potentiometer	Servo	4961	9/23/2024	9/23/2025
Condyle Potentiometer	Servo	DS185	9/23/2024	9/23/2025
Upper Neck Load Cell	Denton	1716A_2187-FY	2/25/2025	2/25/2026




Neck Rotation
Max: 72.8 deg
Min: -18.6 deg
Filter: CFC 60
Rotation (Deg)
75
50
25
0
-25
-50
0
25
50
75
100
125
150
Time [ms]


Moment About Occipital Condyle
Max: 41.5 Nm
Min: -14.5 Nm
Filter: CFC 600
Moment (Nm)
50
40
30
20
10
0
-10
-20
0
25
50
75
100
125
150
Time [ms]

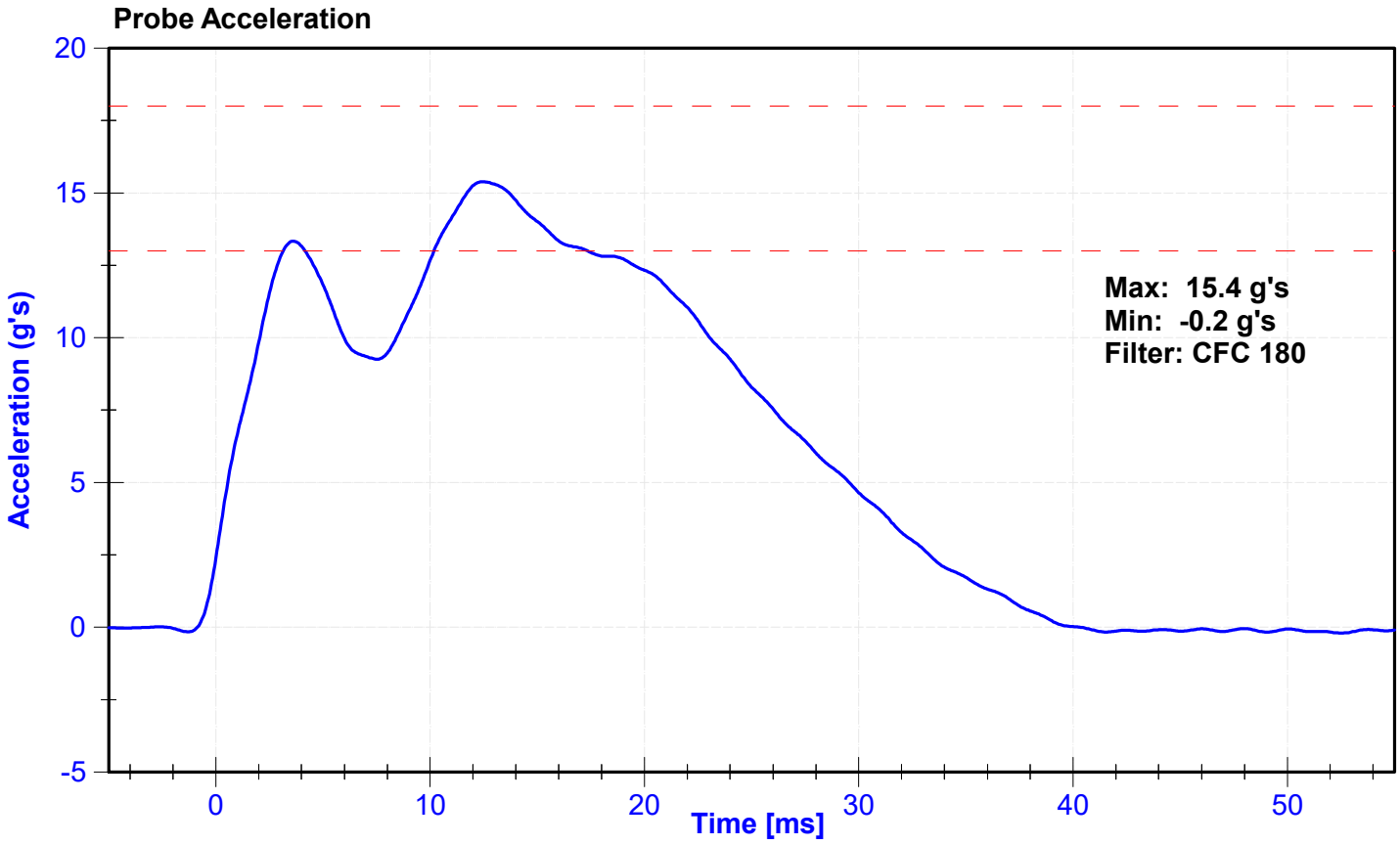
ATD Manufacturer	FTSS	Test Technician	J. Rios
ATD Serial Number	300	Laboratory Supervisor	J. Kinderman

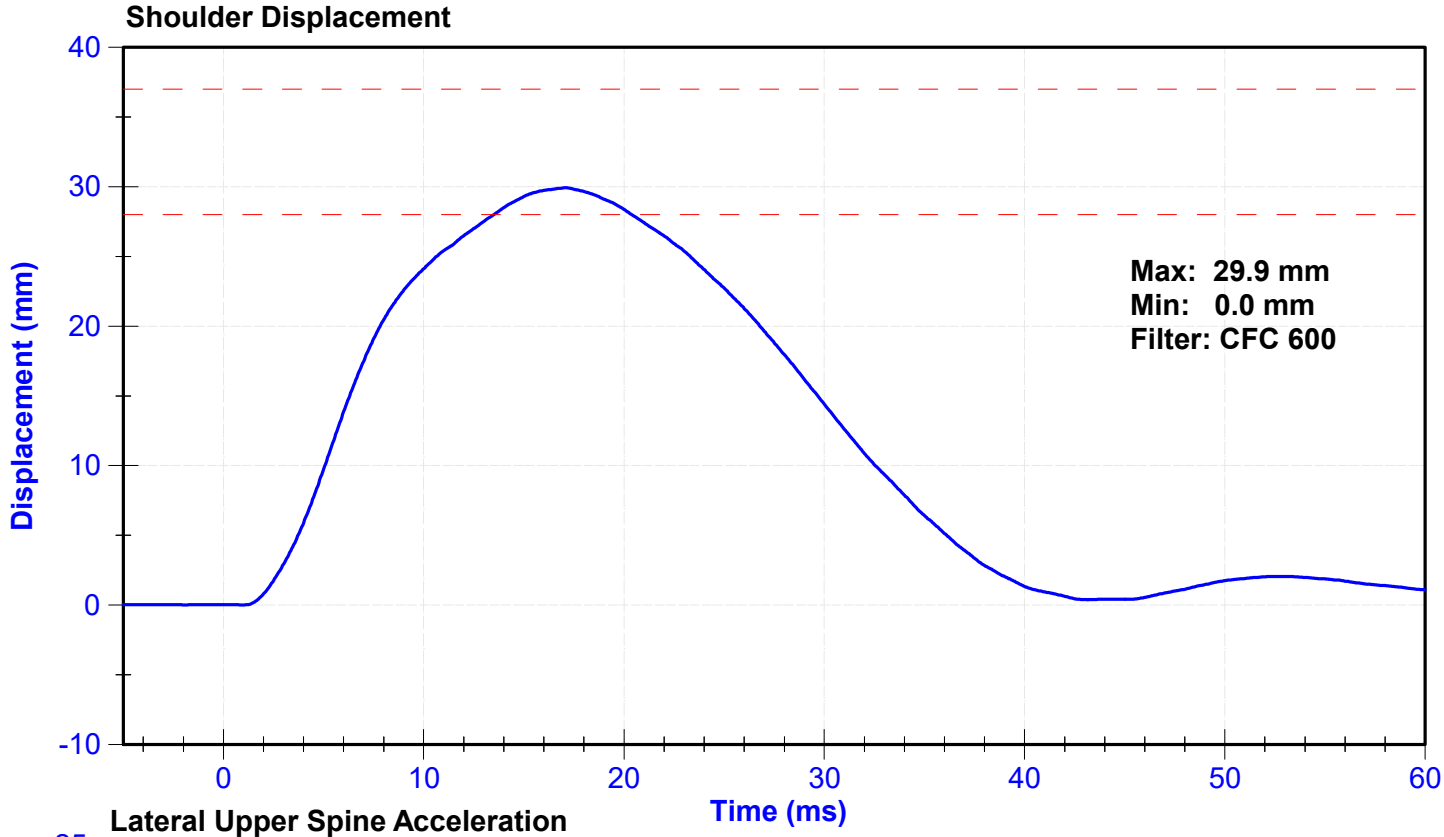
Results

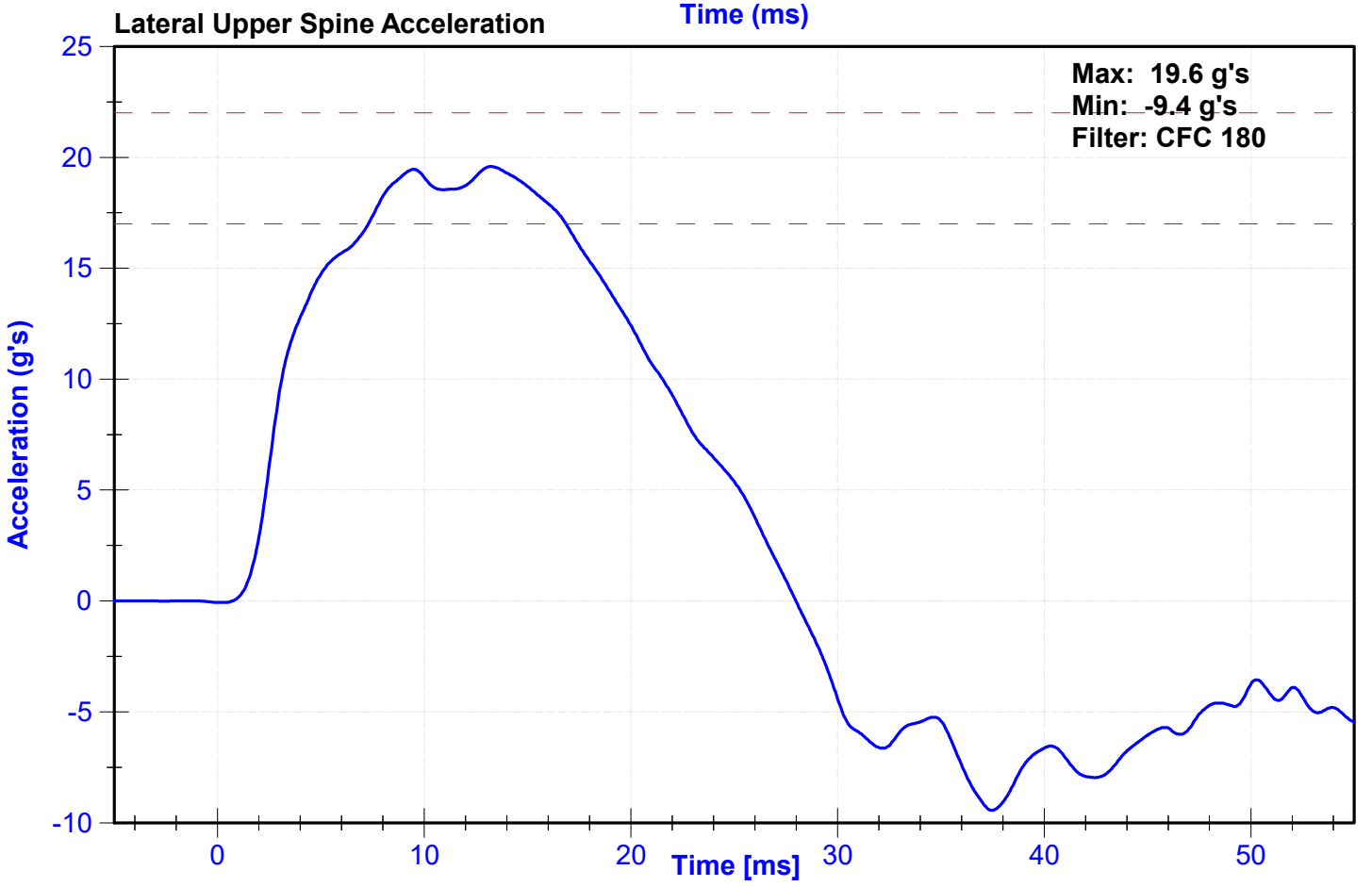
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	ºC	20.7	Pass
Humidity	10	70	%	28	Pass
Velocity	4.2	4.4	m/s	4.27	Pass
Probe Acceleration	13	18	g's	15.4	Pass
Shoulder Deflection	28	37	mm	29.9	Pass
Lateral Upper Spine Acceleration	17	22	g's	19.6	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25962	2/15/2025	8/14/2025
Shoulder Potentiometer	Servo	053GFE	10/16/2024	4/16/2025
Upper Spine Y Accelerometer	Endevco	P52018	11/25/2024	5/24/2025




Shoulder Displacement
Displacement (mm)
Time (ms)
Max: 29.9 mm
Min: 0.0 mm
Filter: CFC 600


Lateral Upper Spine Acceleration
Acceleration (g's)
Time [ms]
Max: 19.6 g's
Min: -9.4 g's
Filter: CFC 180

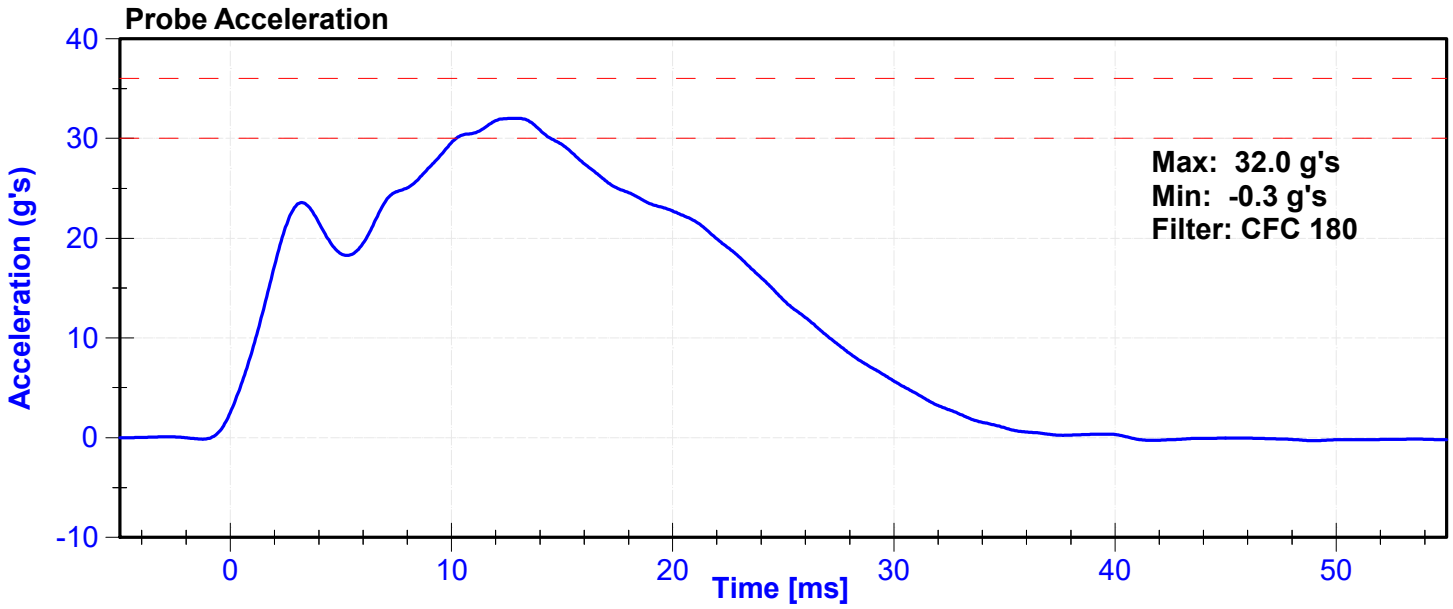
ATD Manufacturer	FTSS	Test Technician	J. Rios
ATD Serial Number	300	Laboratory Supervisor	J. Kinderman

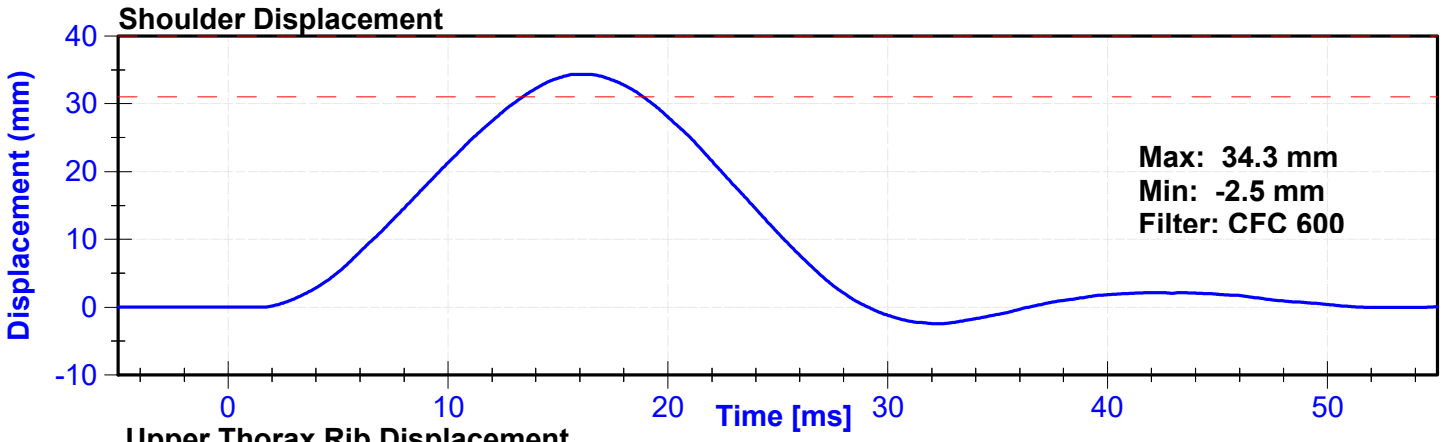
Results

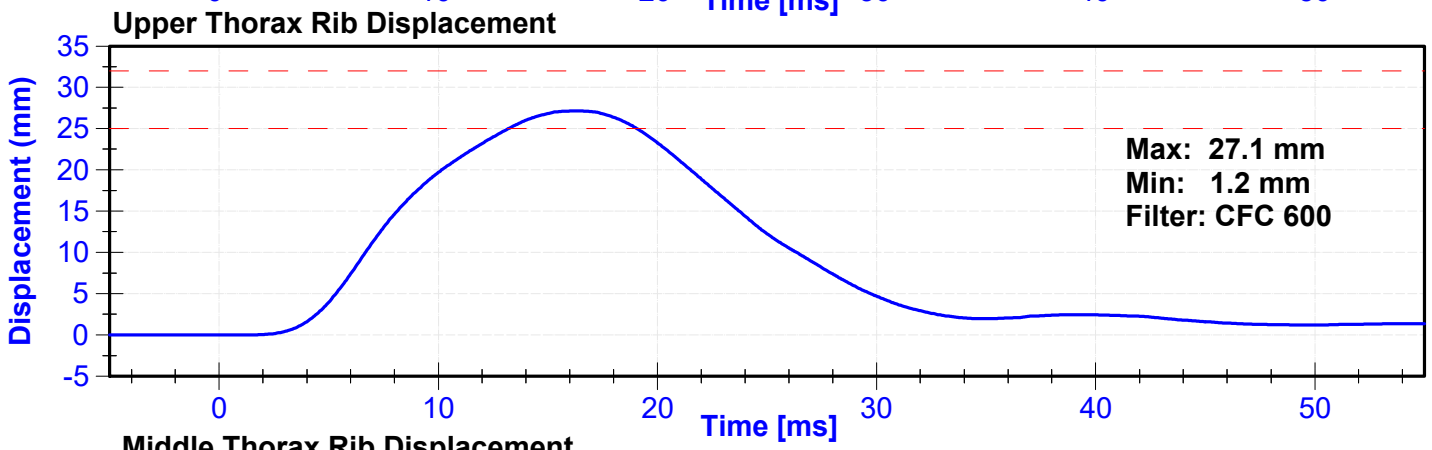
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	ºC	20.7	Pass
Humidity	10	70	%	28	Pass
Velocity	6.6	6.8	m/s	6.67	Pass
Probe Acceleration after 5 ms	30	36	g's	32.0	Pass
Lateral Upper Spine Acceleration	34	43	g's	36.3	Pass
Lateral Lower Spine Acceleration	29	37	g's	33.2	Pass
Shoulder Deflection	31	40	mm	34.3	Pass
Upper Thorax Rib Deflection	25	32	mm	27.1	Pass
Mid Thorax Rib Deflection	30	36	mm	30.3	Pass
Lower Thorax Rib Deflection	32	38	mm	32.2	Pass

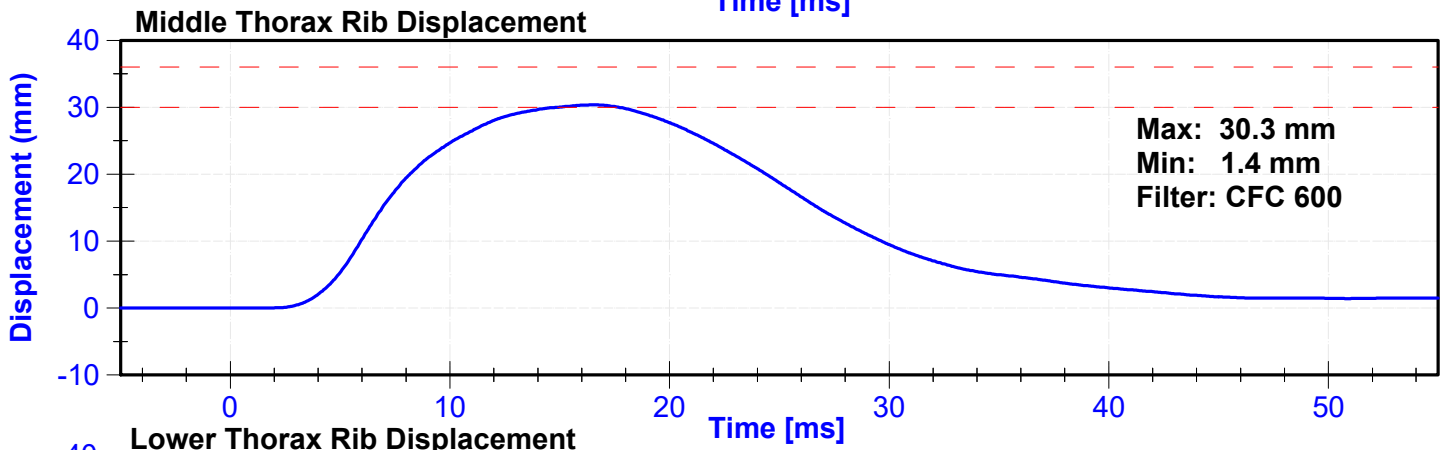
Transducer Calibrations

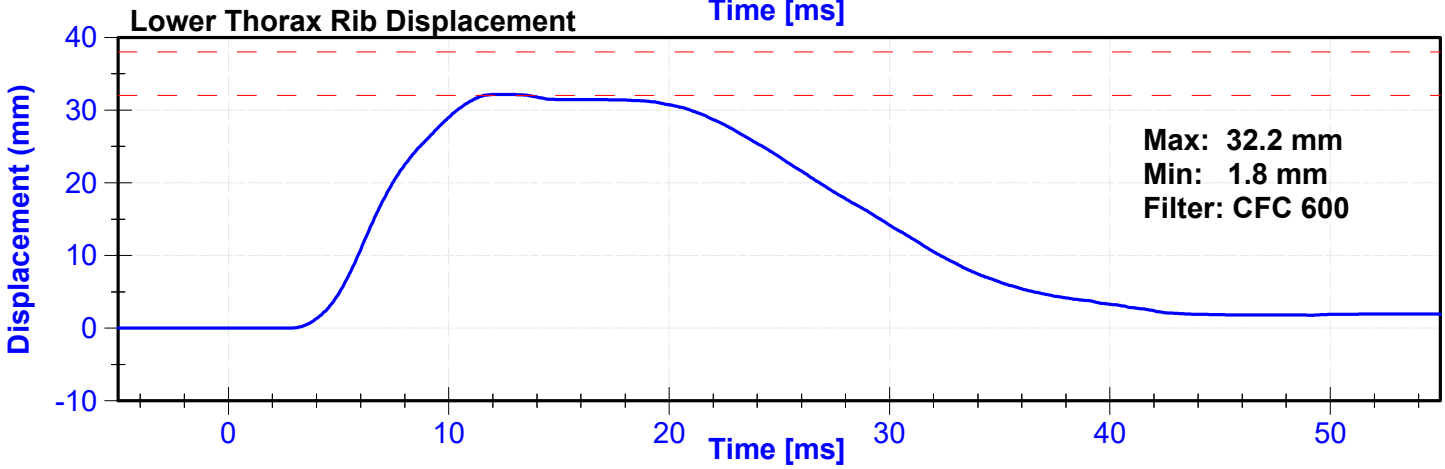
Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25962	2/15/2025	8/14/2025
Upper Spine T1 Y Accelerometer	Endevco	P52018	11/25/2024	5/24/2025
Upper Spine T12 Y Accelerometer	Endevco	P52071	10/17/2024	4/15/2025
Shoulder Potentiometer	Servo	053GFE	10/16/2024	4/16/2025
Upper Thorax Rib Potentiometer	Servo	2316GFE	10/16/2024	4/16/2025
Middle Thorax Rib Potentiometer	Servo	085GFE	10/16/2024	4/16/2025
Lower Thorax Rib Potentiometer	Servo	1156GFE	10/16/2024	4/16/2025

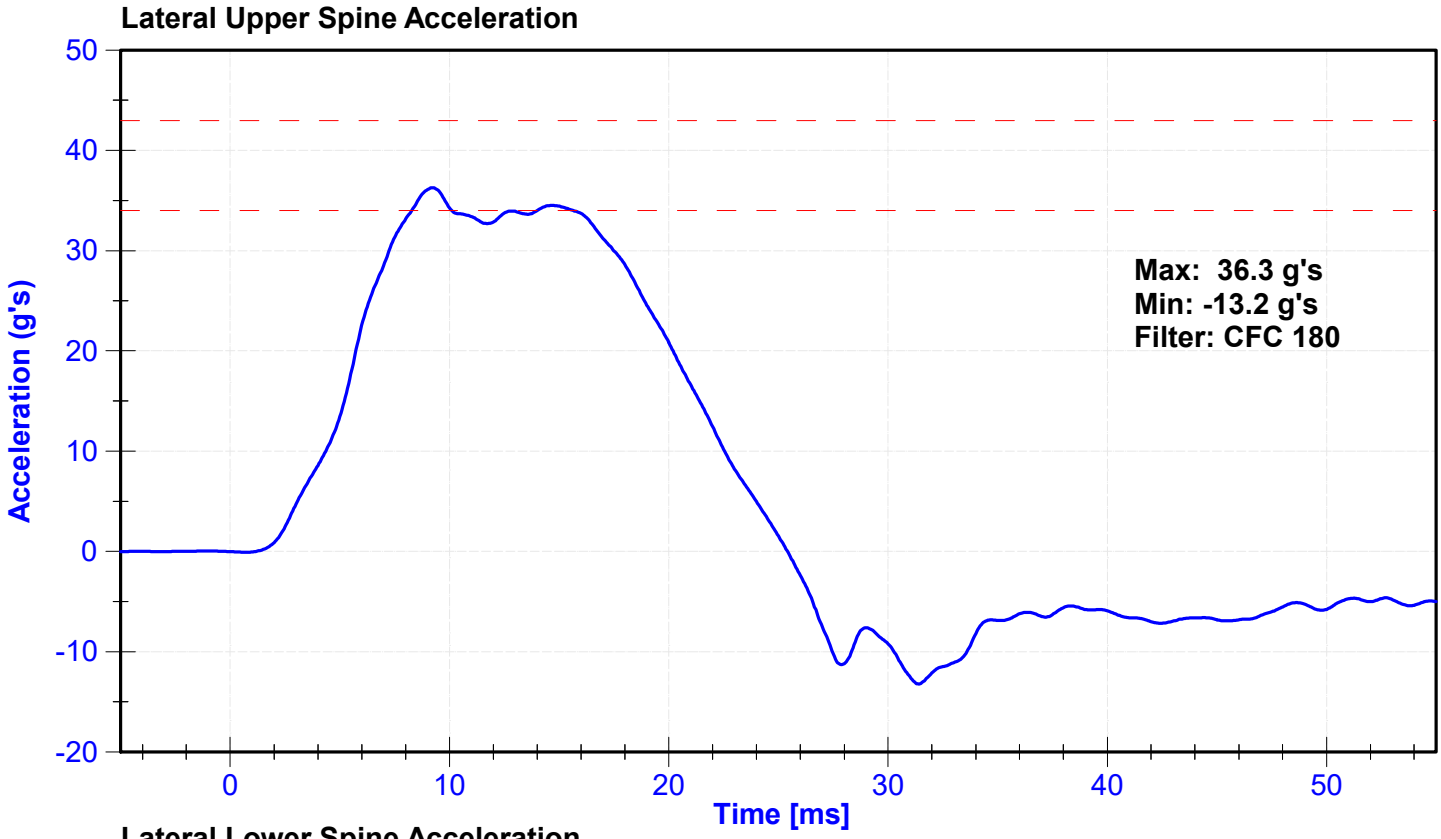


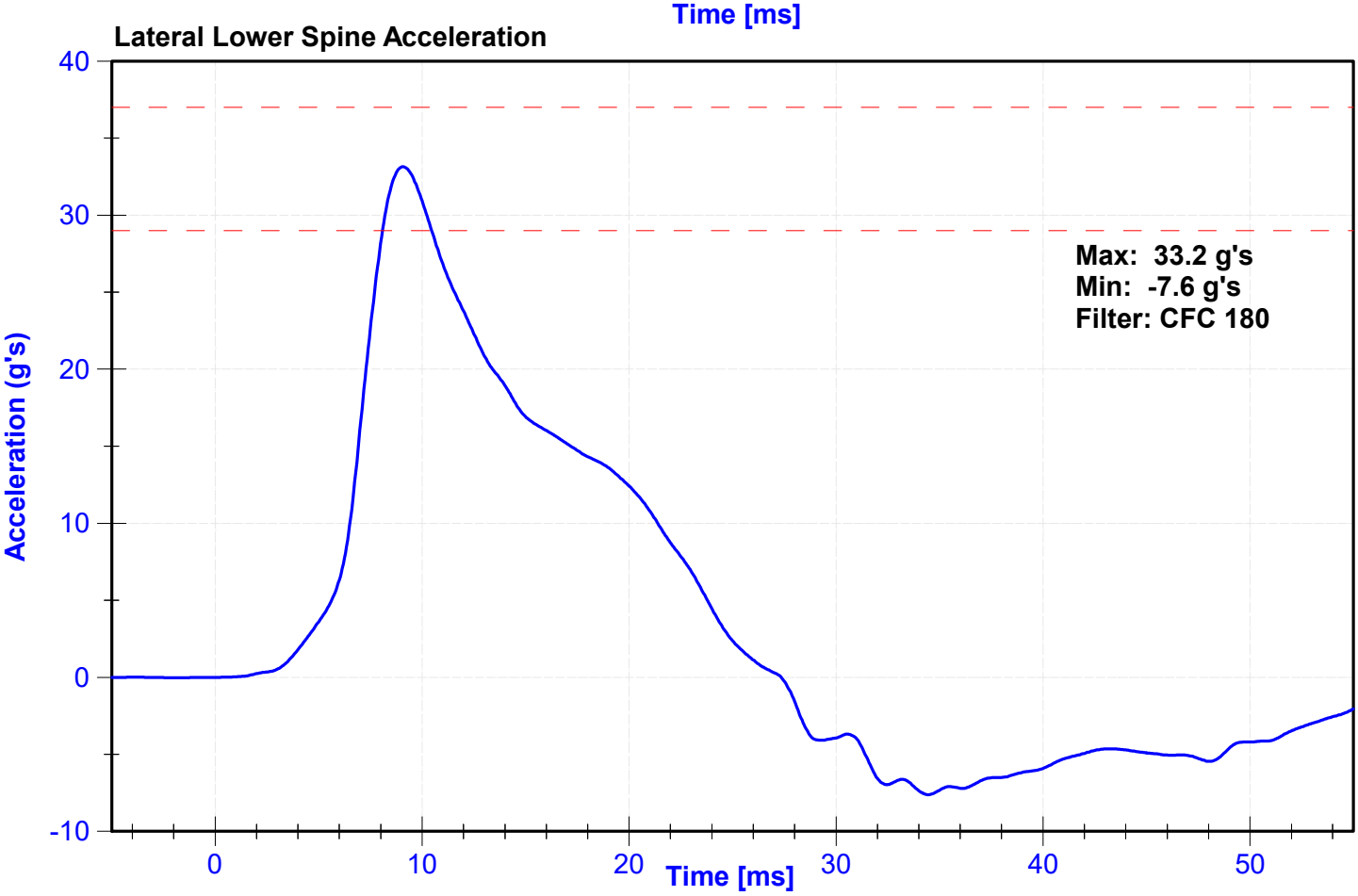

Shoulder Displacement
Displacement (mm)
Time [ms]
Max: 34.3 mm
Min: -2.5 mm
Filter: CFC 600


Upper Thorax Rib Displacement
Displacement (mm)
Time [ms]
Max: 27.1 mm
Min: 1.2 mm
Filter: CFC 600


Middle Thorax Rib Displacement
Displacement (mm)
Time [ms]
Max: 30.3 mm
Min: 1.4 mm
Filter: CFC 600


Lower Thorax Rib Displacement
Displacement (mm)
Time [ms]
Max: 32.2 mm
Min: 1.8 mm
Filter: CFC 600


Lateral Upper Spine Acceleration
Acceleration (g's)
Time [ms]
Max: 36.3 g's
Min: -13.2 g's
Filter: CFC 180


Lateral Lower Spine Acceleration
Acceleration (g's)
Time [ms]
Max: 33.2 g's
Min: -7.6 g's
Filter: CFC 180

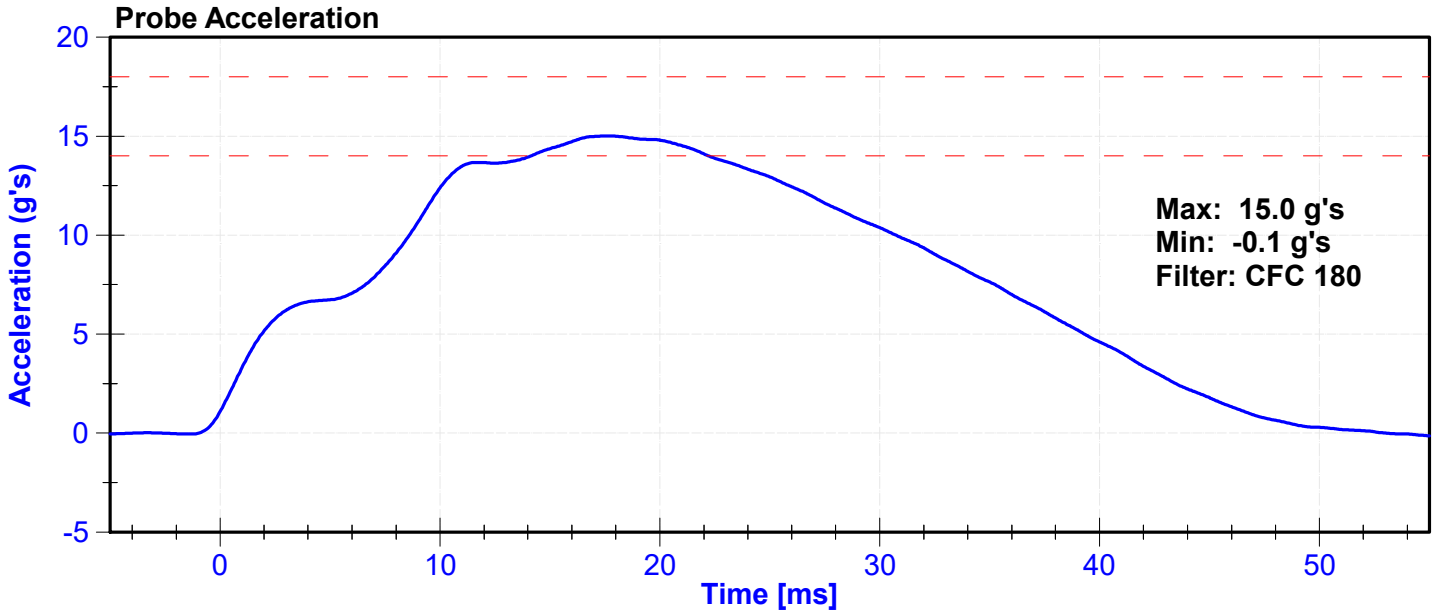
ATD Manufacturer	FTSS	Test Technician	J. Rios
ATD Serial Number	300	Laboratory Supervisor	J. Kinderman

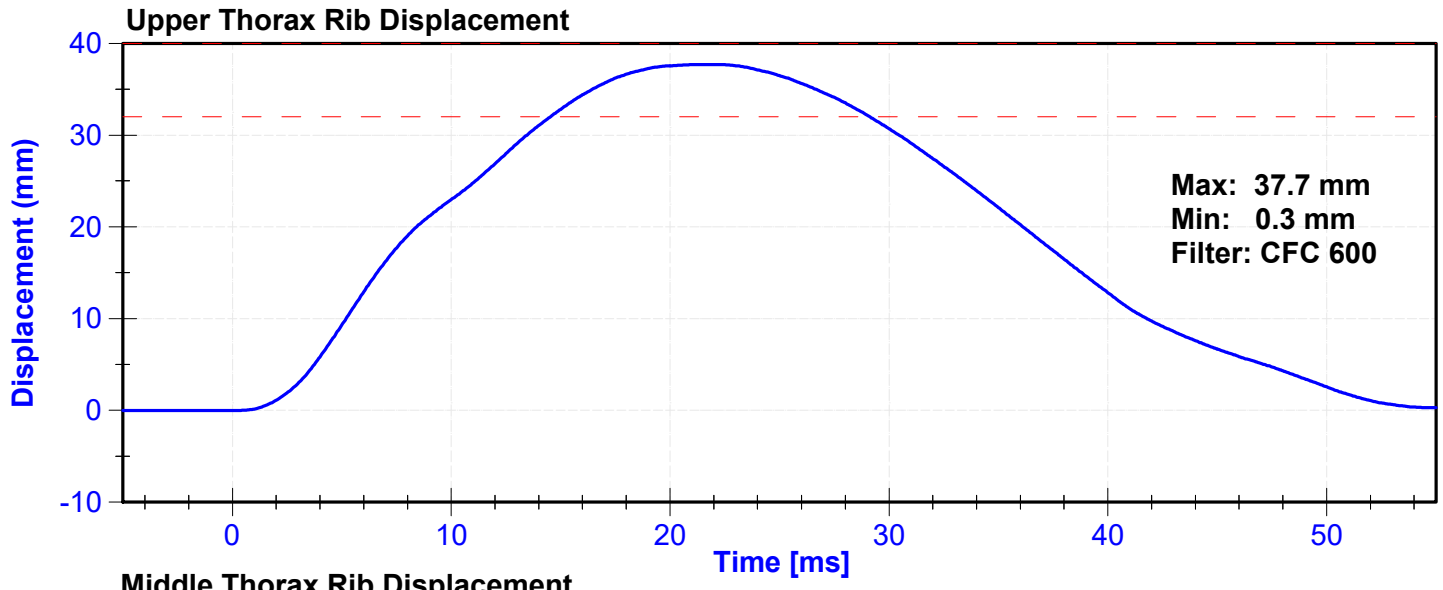
Results

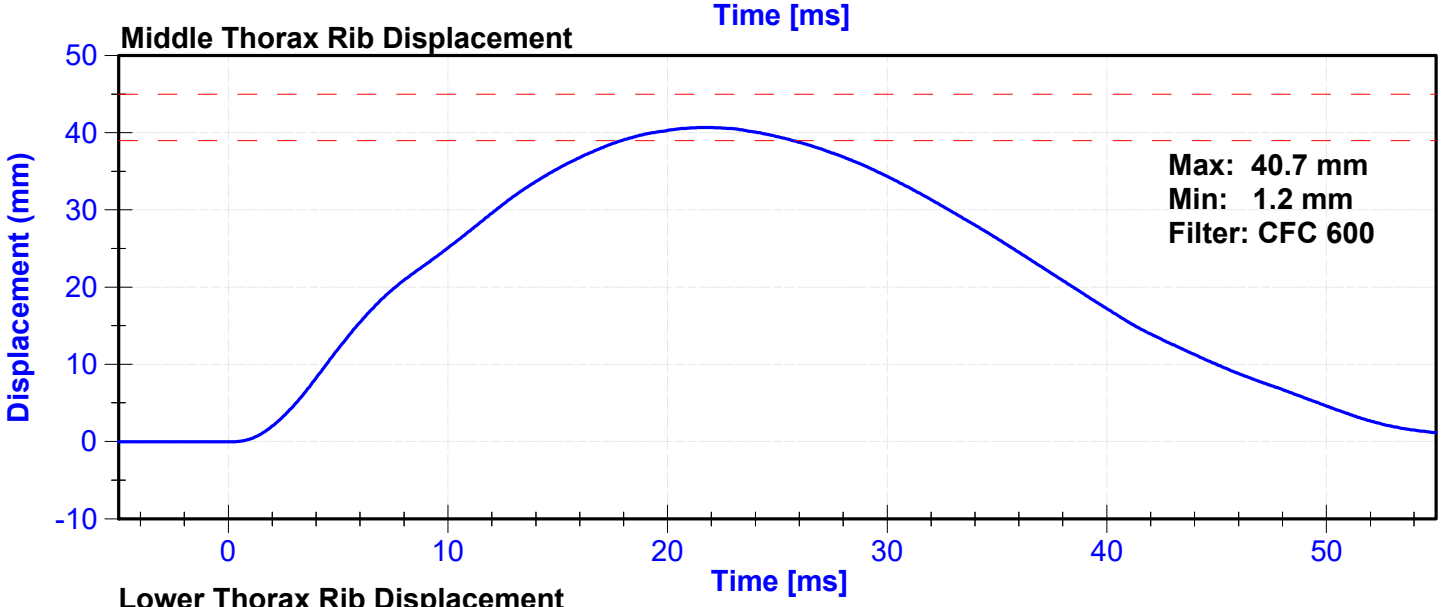
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	ºC	20.7	Pass
Humidity	10	70	%	28	Pass
Velocity	4.2	4.4	m/s	4.27	Pass
Probe Acceleration	14	18	g's	15.0	Pass
Lateral Upper Spine Acceleration	13	17	g's	13.9	Pass
Lateral Lower Spine Acceleration	7	11	g's	8.4	Pass
Upper Thorax Rib Deflection	32	40	mm	37.7	Pass
Middle Thorax Rib Deflection	39	45	mm	40.7	Pass
Lower Thorax Rib Deflection	35	43	mm	36.1	Pass

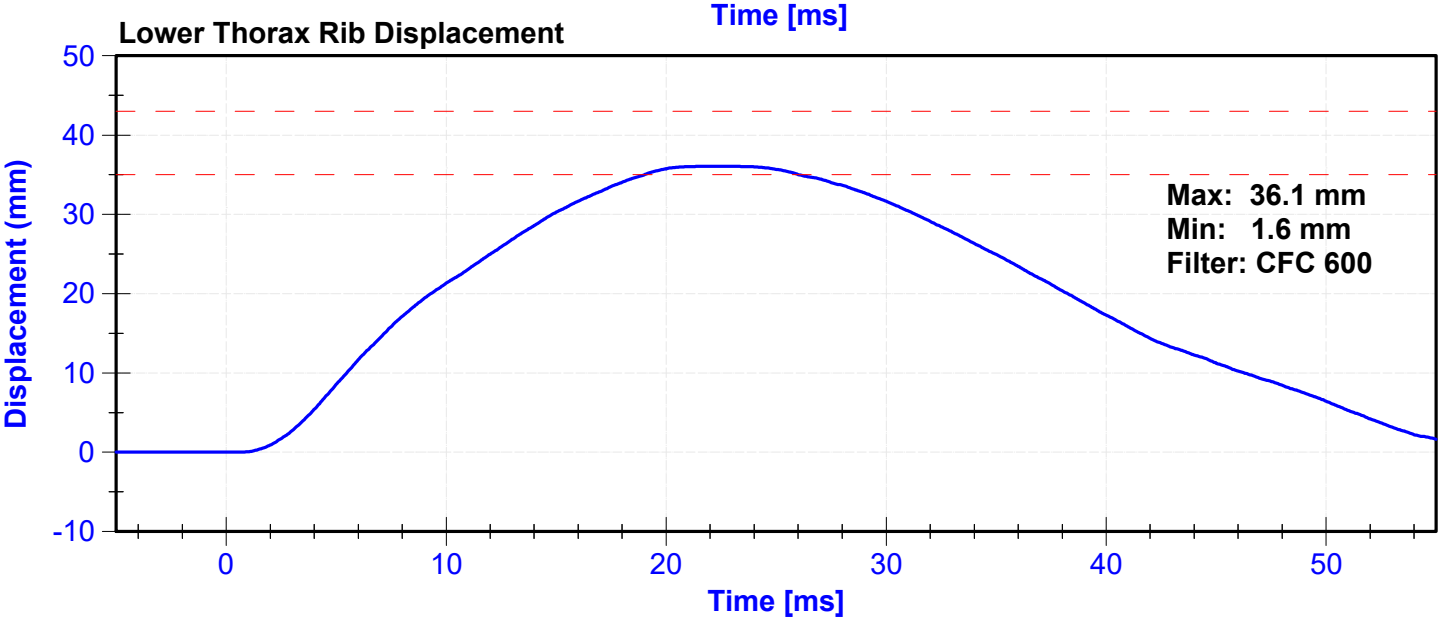
Transducer Calibrations

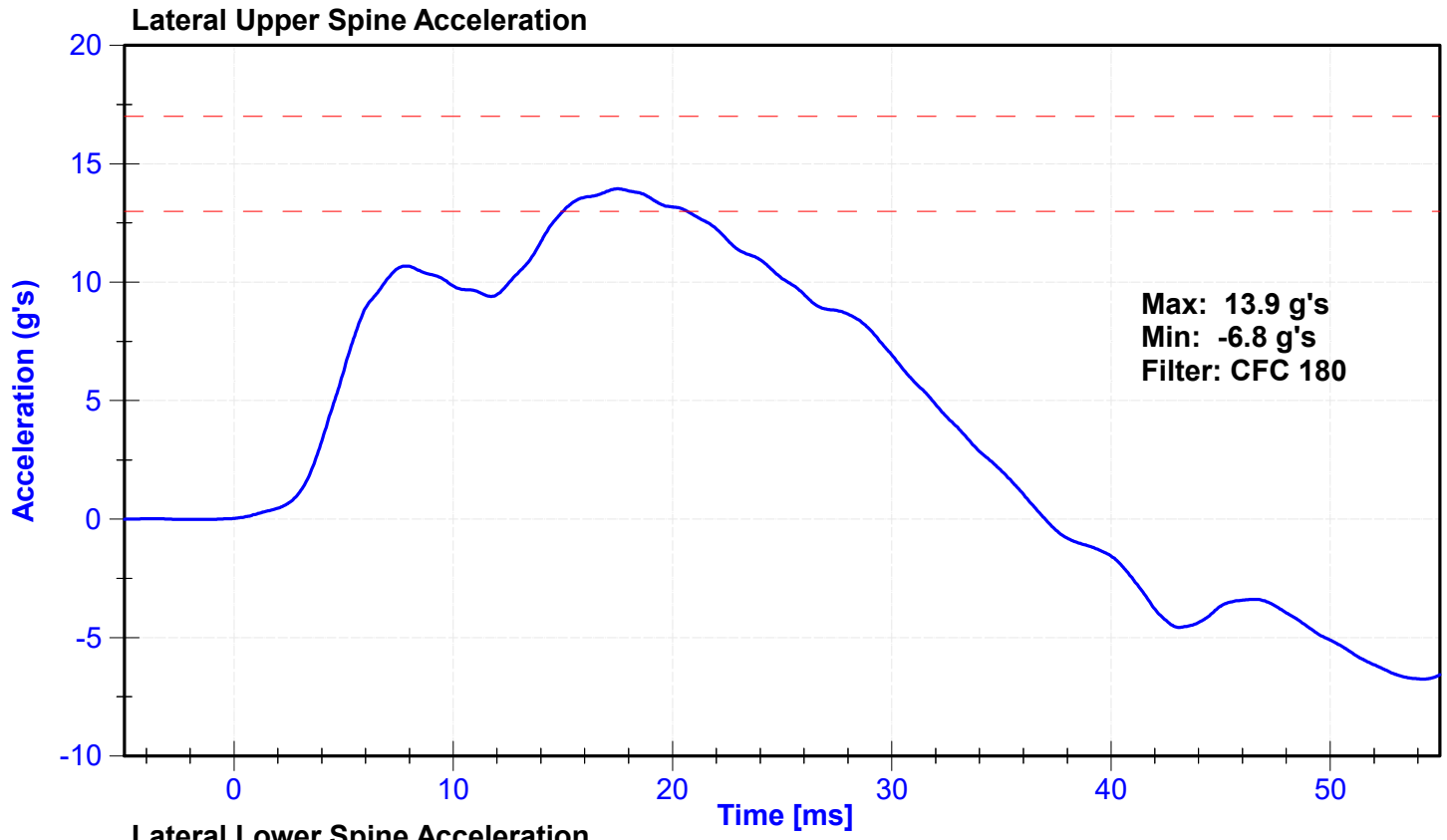
Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25962	2/15/2025	8/14/2025
Upper Spine Y Accelerometer	Endevco	P52018	11/25/2024	5/24/2025
Lower Spine Y Accelerometer	Endevco	P52071	10/17/2024	4/15/2025
Upper Thorax Rib Potentiometer	Servo	2316GFE	10/16/2024	4/16/2025
Middle Thorax Rib Potentiometer	Servo	085GFE	10/16/2024	4/16/2025
Lower Thorax Rib Potentiometer	Servo	1156GFE	10/16/2024	4/16/2025

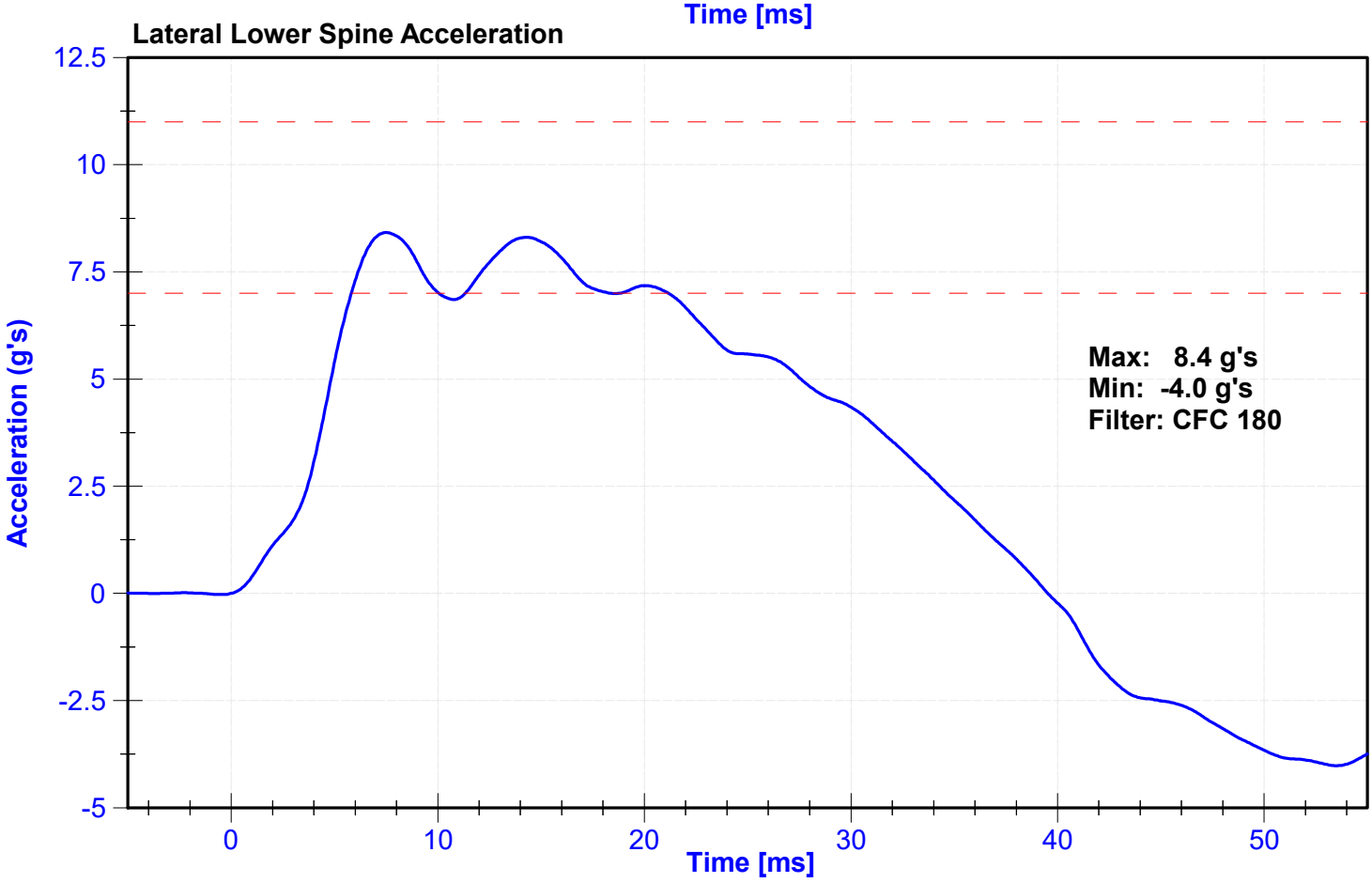



Upper Thorax Rib Displacement
Displacement (mm)
Time [ms]
Max: 37.7 mm
Min: 0.3 mm
Filter: CFC 600


Middle Thorax Rib Displacement
Displacement (mm)
Time [ms]
Max: 40.7 mm
Min: 1.2 mm
Filter: CFC 600


Lower Thorax Rib Displacement
Displacement (mm)
Time [ms]
Max: 36.1 mm
Min: 1.6 mm
Filter: CFC 600


Lateral Upper Spine Acceleration
Acceleration (g's)
20
15
10
5
0
-5
-10
0
10
20
30
40
50
Time [ms]
Max: 13.9 g's
Min: -6.8 g's
Filter: CFC 180


Lateral Lower Spine Acceleration
Acceleration (g's)
12.5
10
7.5
5
2.5
0
-2.5
-5
0
10
20
30
40
50
Time [ms]
Max: 8.4 g's
Min: -4.0 g's
Filter: CFC 180

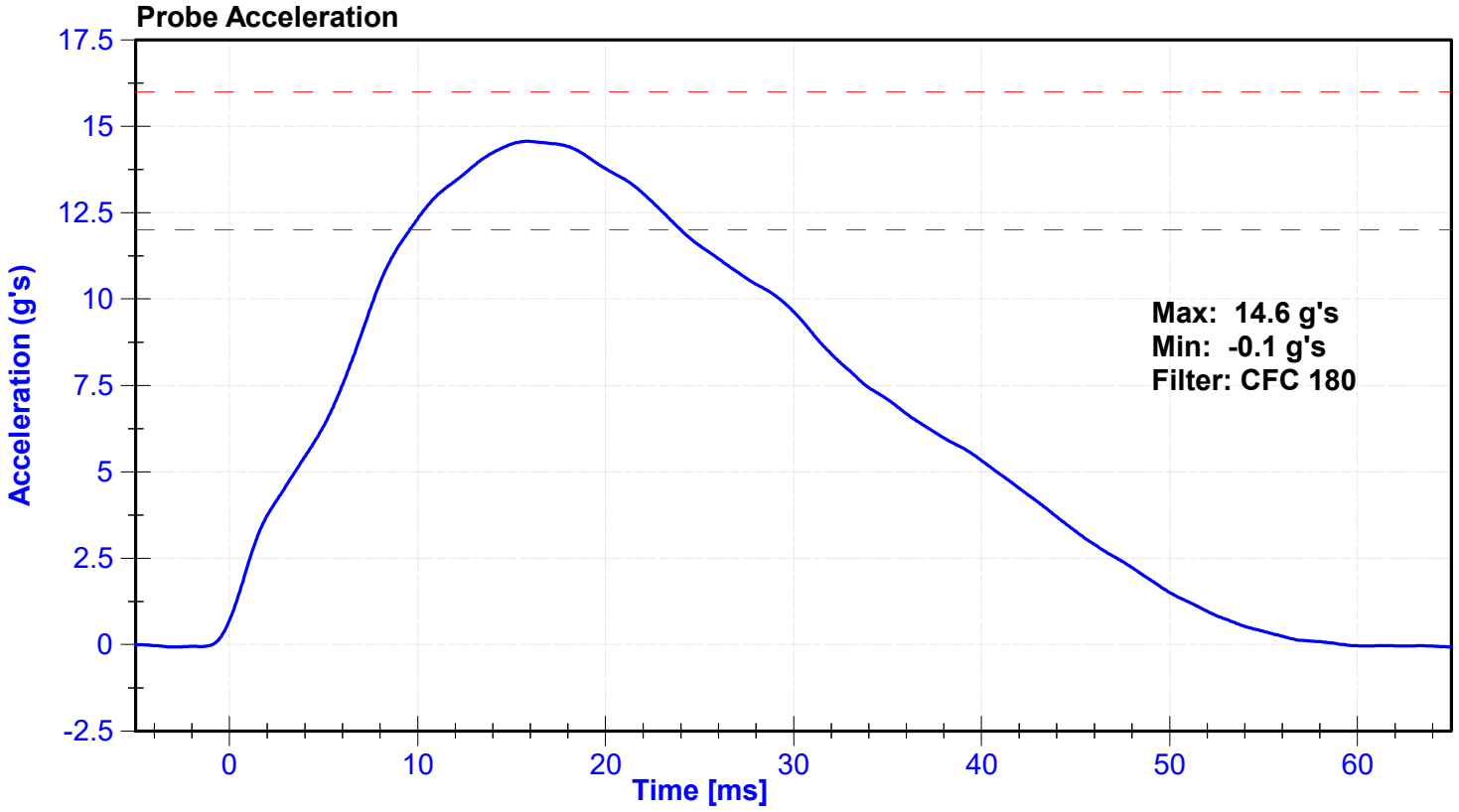
ATD Manufacturer	FTSS	Test Technician	J. Rios
ATD Serial Number	300	Laboratory Supervisor	J. Kinderman

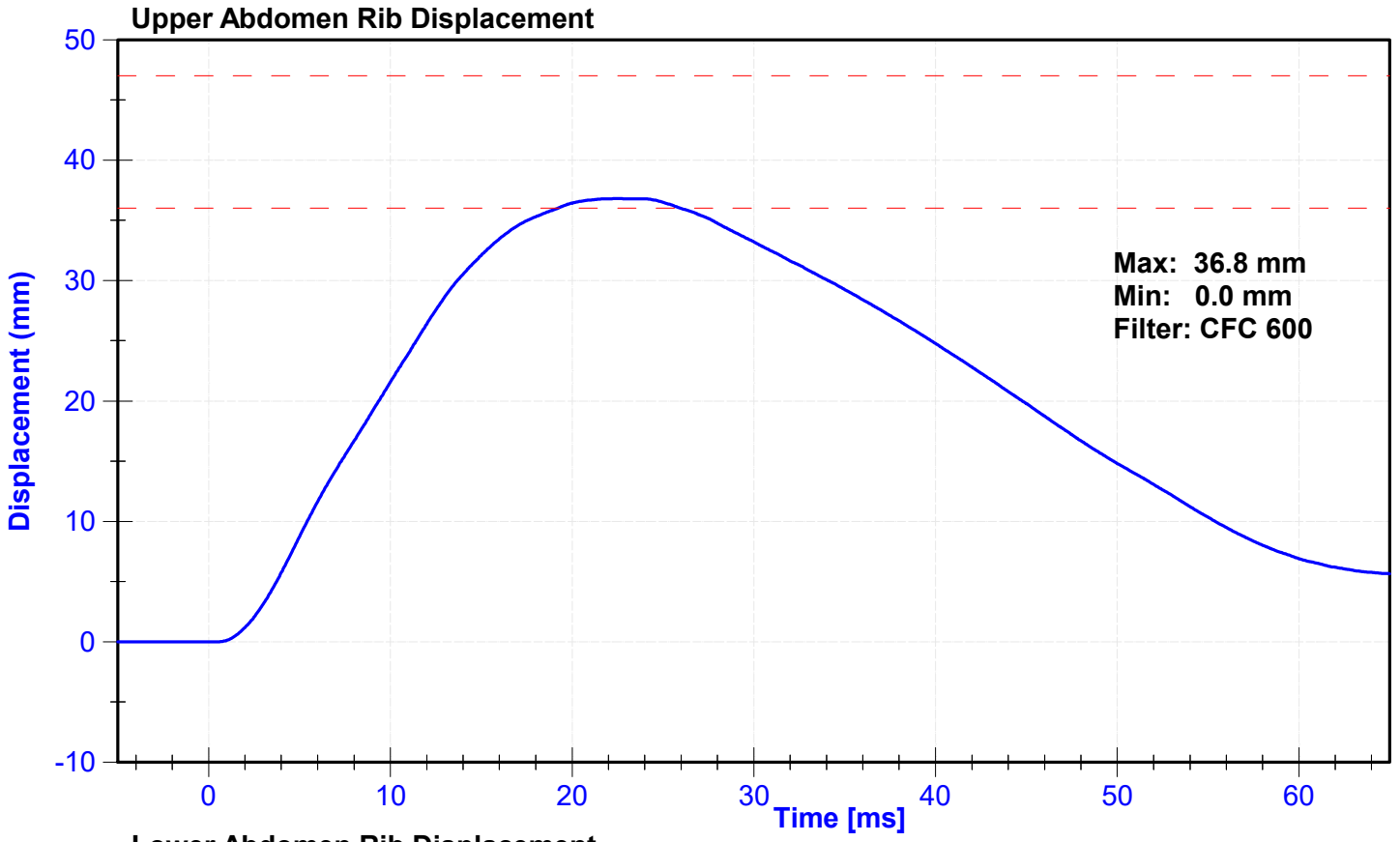
Results

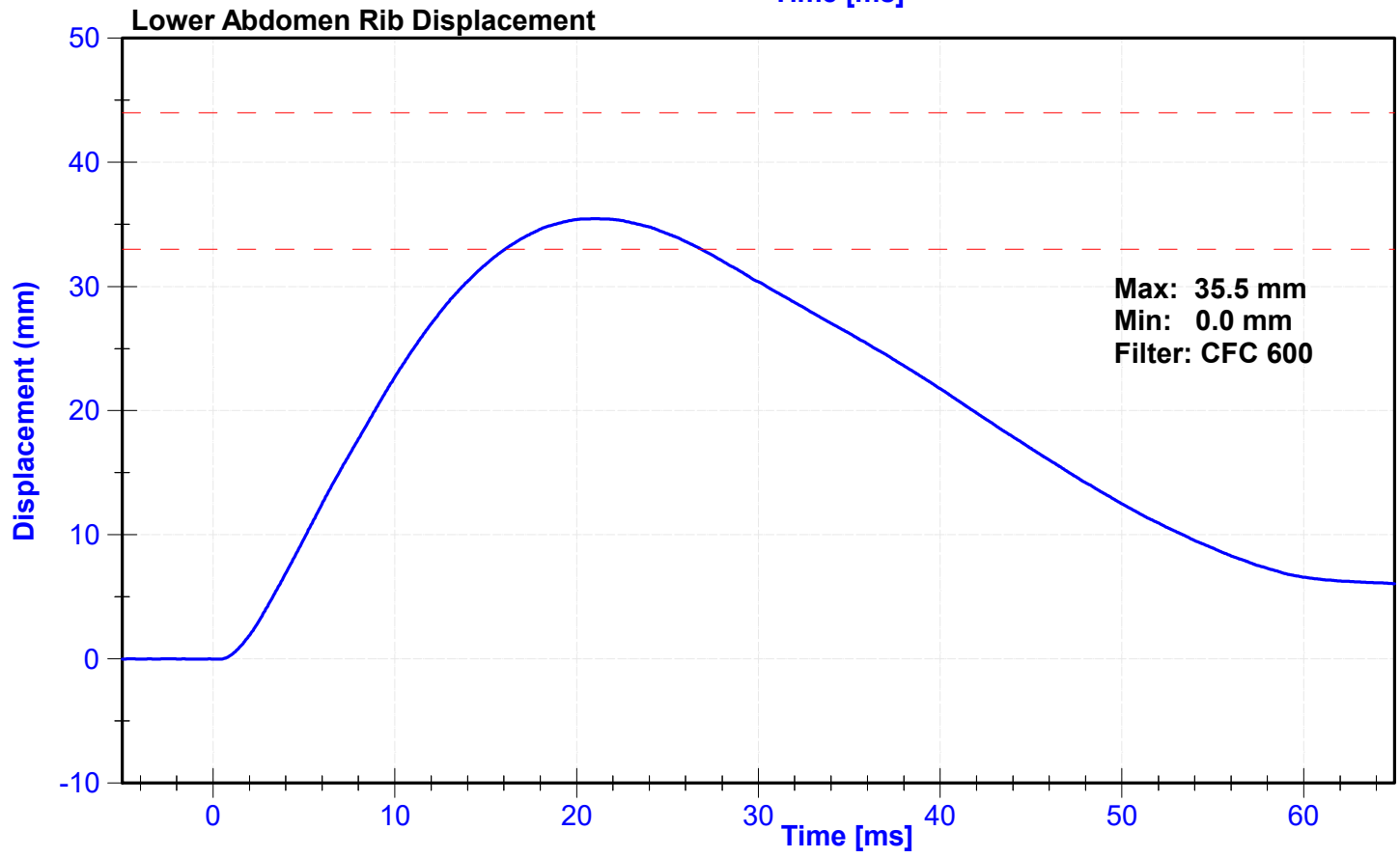
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	ºC	20.7	Pass
Humidity	10	70	%	28	Pass
Velocity	4.2	4.4	m/s	4.29	Pass
Probe Acceleration	12	16	g's	14.6	Pass
Lateral Lower Spine Acceleration	9	14	g's	11.6	Pass
Upper Abdomen Rib Deflection	36	47	mm	36.8	Pass
Lower Abdomen Rib Deflection	33	44	mm	35.5	Pass

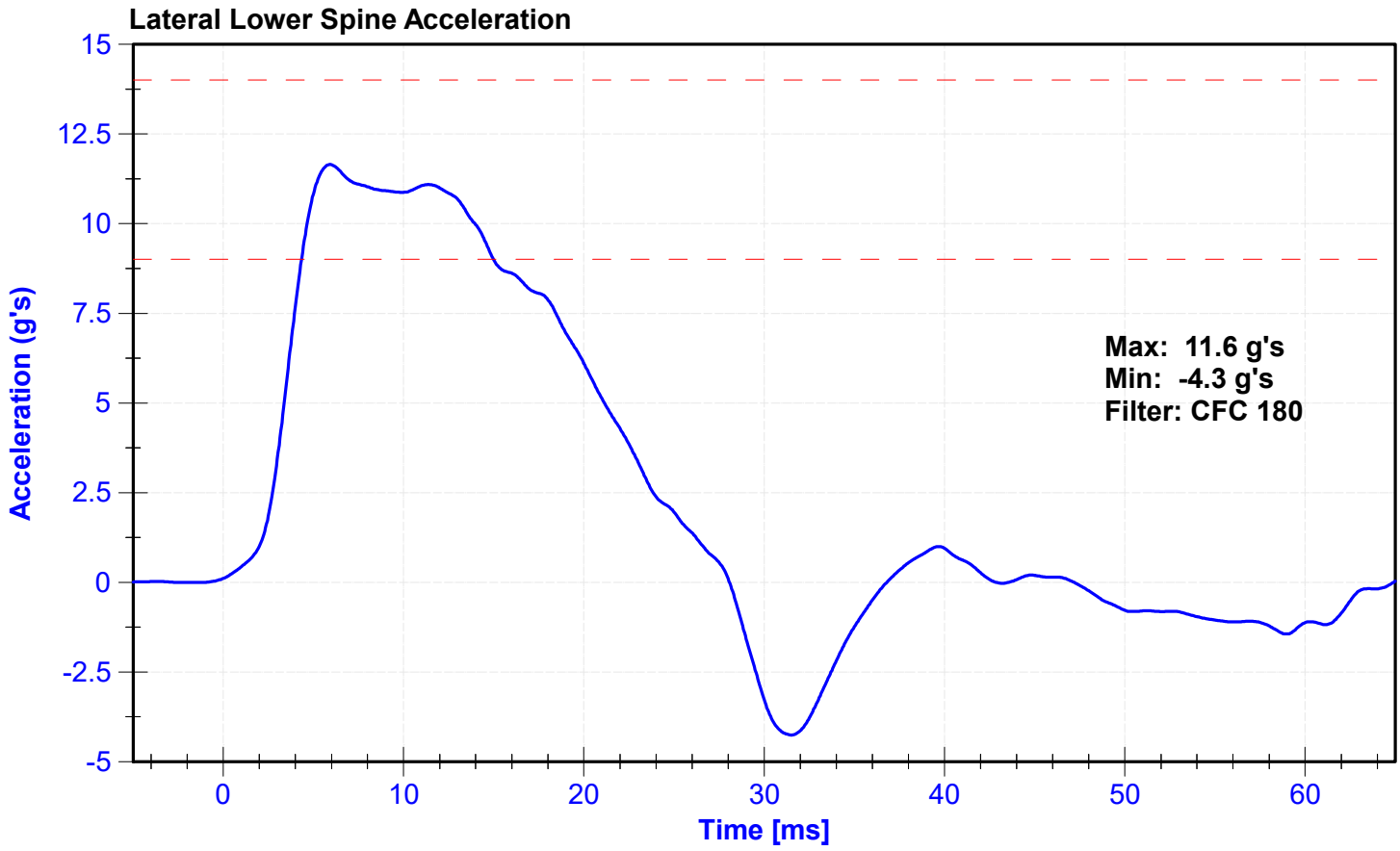
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accelerometer	Endevco	T25962	2/15/2025	8/14/2025
Lower Spine Y Accelerometer	Endevco	P52071	10/17/2024	4/15/2025
Upper Abdomen Rib Potentiometer	Servo	074GFE	10/16/2024	4/16/2025
Lower Abdomen Rib Potentiometer	Servo	075GFE	10/16/2024	4/16/2025




Upper Abdomen Rib Displacement
Displacement (mm)
Time [ms]
Max: 36.8 mm
Min: 0.0 mm
Filter: CFC 600


Lower Abdomen Rib Displacement
Displacement (mm)
Time [ms]
Max: 35.5 mm
Min: 0.0 mm
Filter: CFC 600


Lateral Lower Spine Acceleration
Acceleration (g's)
15
12.5
10
7.5
5
2.5
0
-2.5
-5
0
10
20
30
40
50
60
Time [ms]
Max: 11.6 g's
Min: -4.3 g's
Filter: CFC 180

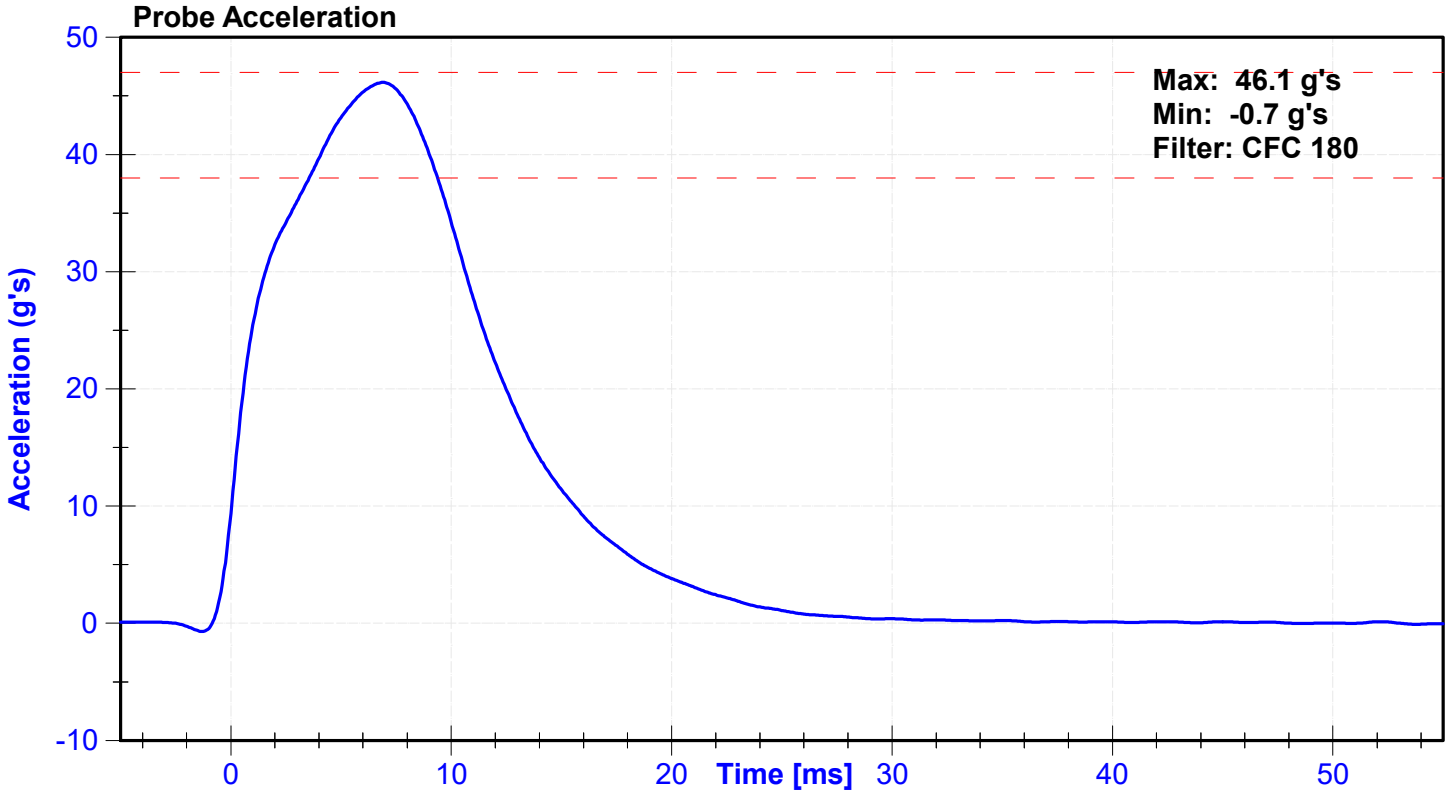
ATD Manufacturer	FTSS	Test Technician	J. Rios
ATD Serial Number	300	Laboratory Supervisor	J. Kinderman

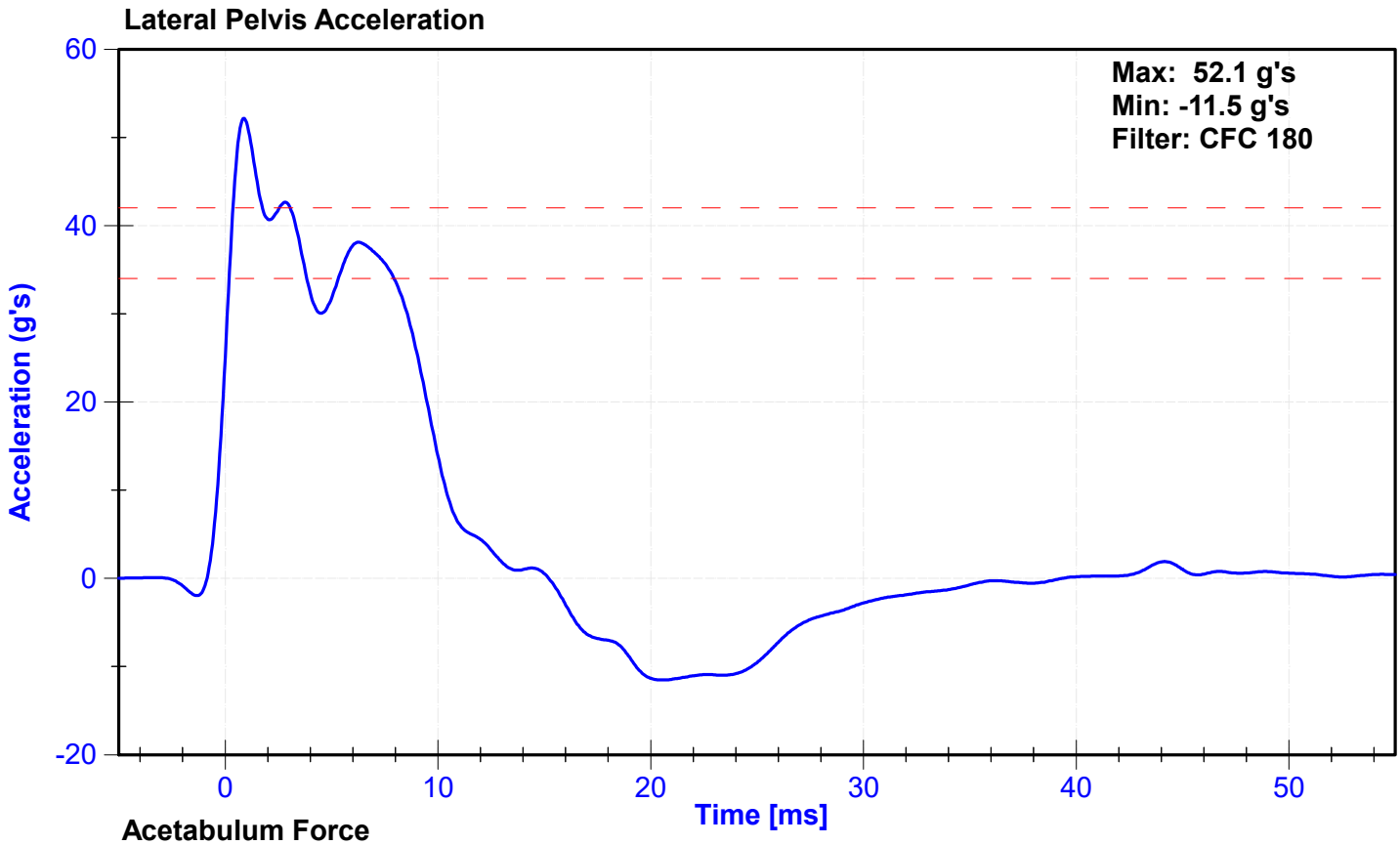
Results

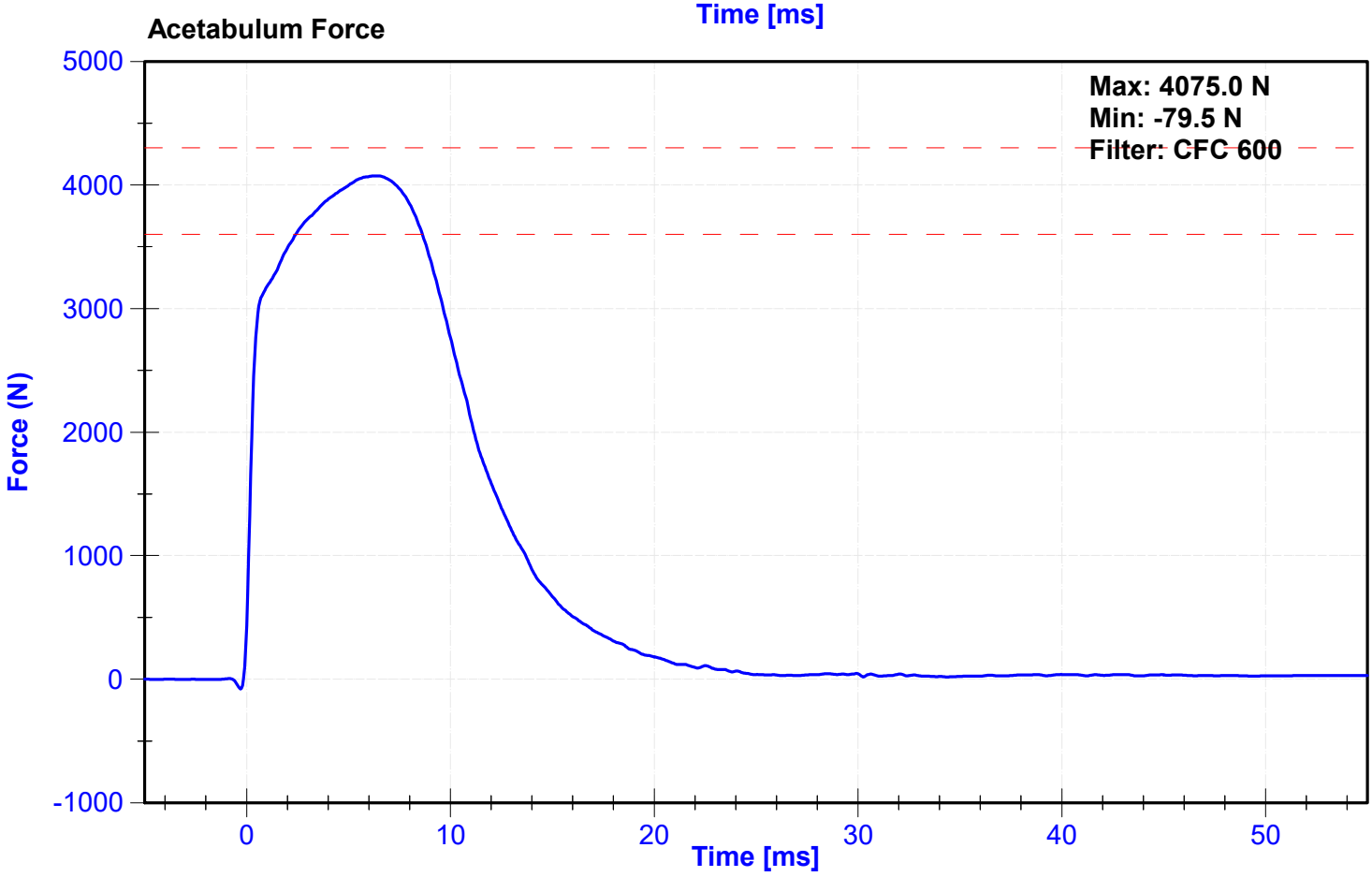
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	ºC	20.7	Pass
Humidity	10	70	%	28	Pass
Velocity	6.6	6.8	m/s	6.67	Pass
Probe Acceleration	38	47	g's	46.1	Pass
Lateral Pelvis Acceleration after 6ms	34	42	g's	38.1	Pass
Acetabulum Force	3600	4300	N	4075.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25962	2/15/2025	8/14/2025
Pelvis Y Accelerometer	Endevco	P51731	10/17/2024	4/15/2025
Acetabulum Load Cell	Denton	275-FY	10/28/2024	10/28/2025
Certification Plug	SACO			N/A
Crash Test Plug	SACO			N/A




Lateral Pelvis Acceleration
Max: 52.1 g's
Min: -11.5 g's
Filter: CFC 180
Acceleration (g's)
60
40
20
0
-20
0
10
20
30
40
50
Time [ms]


Acetabulum Force
Max: 4075.0 N
Min: -79.5 N
Filter: CFC 600
Force (N)
5000
4000
3000
2000
1000
0
-1000
0
10
20
30
40
50
Time [ms]

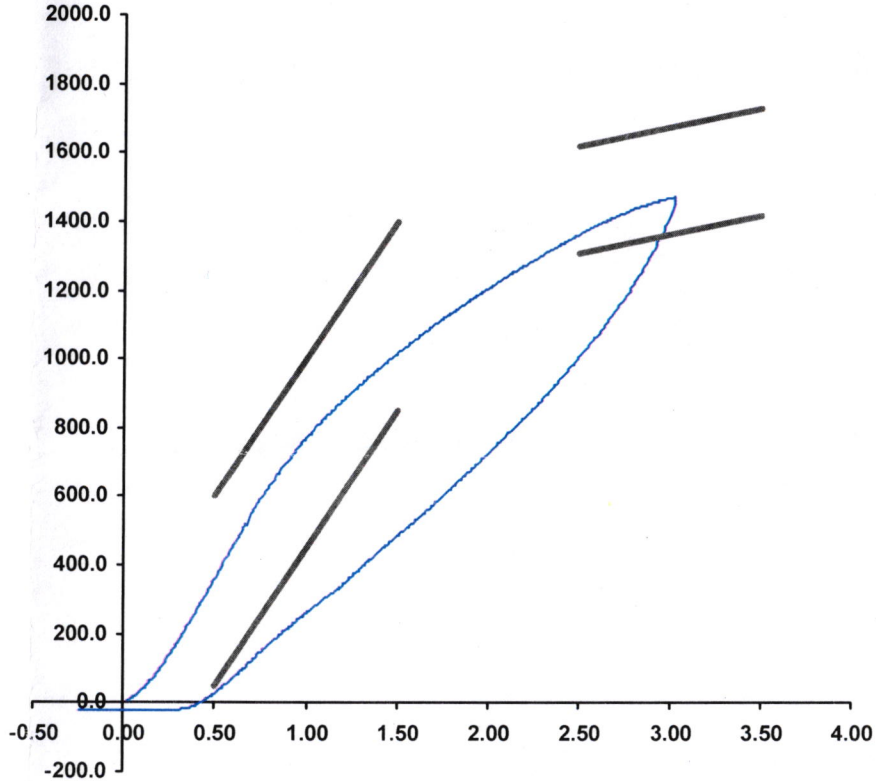
SACO RESEARCH

SID-IIs Pelvis Plug Certification Test

Plug S/N 16824
Test Number 23635
Report Number 23692
Test Date 7/25/2022 10:01:25 AM

	Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	368	50	600
Force @ 1.5 mm (N)	1,018	850	1,400
Force @ 2.5 mm (N)	1,367	1,306	1,618
Force @ 3.0 mm (N)	1,469	1,361	1,673

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:
Cert Plug 300 3-24-25

Operator

Part Number 180-4450

Template No 107 25-Jul-22
SACO Research

By : DC Date : 7/25/22

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

C-44

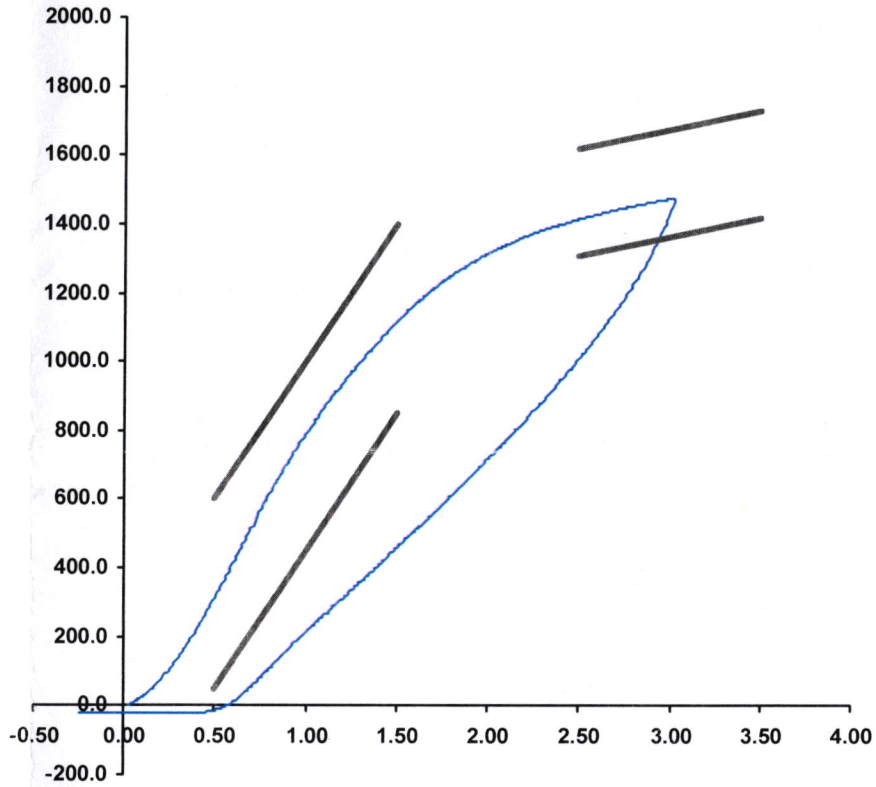
SACO RESEARCH

SID-IIs Pelvis Plug Certification Test

Plug S/N 16818
Test Number 23629
Report Number 23686
Test Date 7/25/2022 9:38:29 AM

	Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	315	50	600
Force @ 1.5 mm (N)	1,118	850	1,400
Force @ 2.5 mm (N)	1,415	1,306	1,618
Force @ 3.0 mm (N)	1,473	1,361	1,673

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:
IMPACT PLUG 300 3-24-25

Operator

Part Number 180-4450

Template No 107 25-Jul-22
SACO Research

By : DC Date : 7/25/22

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

C-45

SACO RESEARCH

SID-IIs Pelvis Plug Certification Test

Plug S/N 16828
Test Number 23639
Report Number 23696
Test Date 7/25/2022 10:09:36 AM

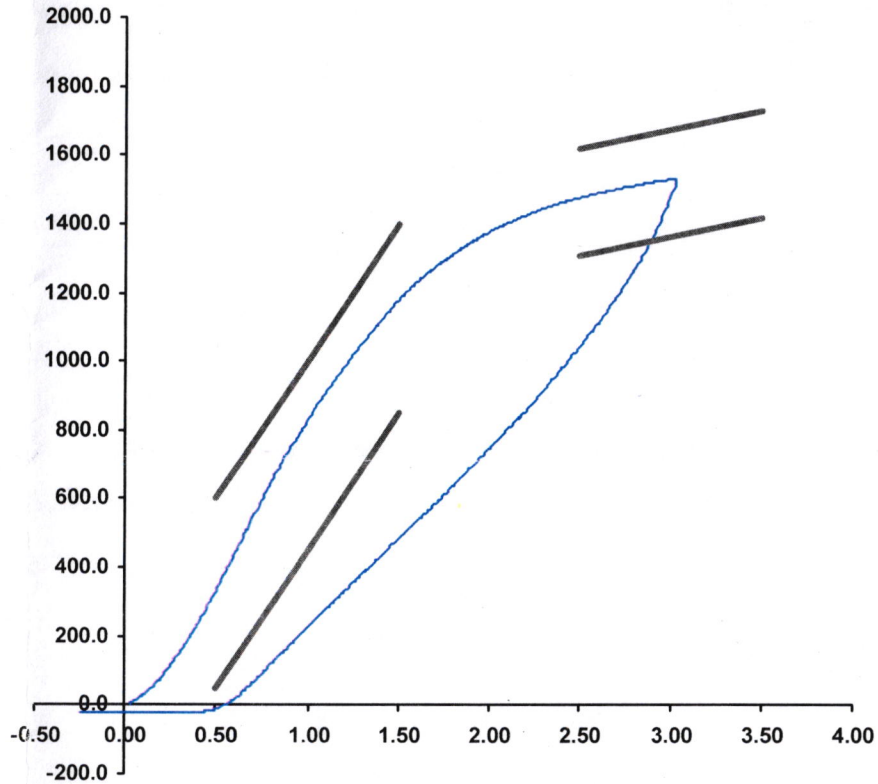
	Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	333	50	600
Force @ 1.5 mm (N)	1,181	850	1,400
Force @ 2.5 mm (N)	1,478	1,306	1,618
Force @ 3.0 mm (N)	1,533	1,361	1,673

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:
NON IMPACT 300 3-24-25

Force (-N) vs Extension (-mm)



Operator

Part Number 180-4450

Template No 107 25-Jul-22
SACO Research

By : DC Date : 7/25/22

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

C-46

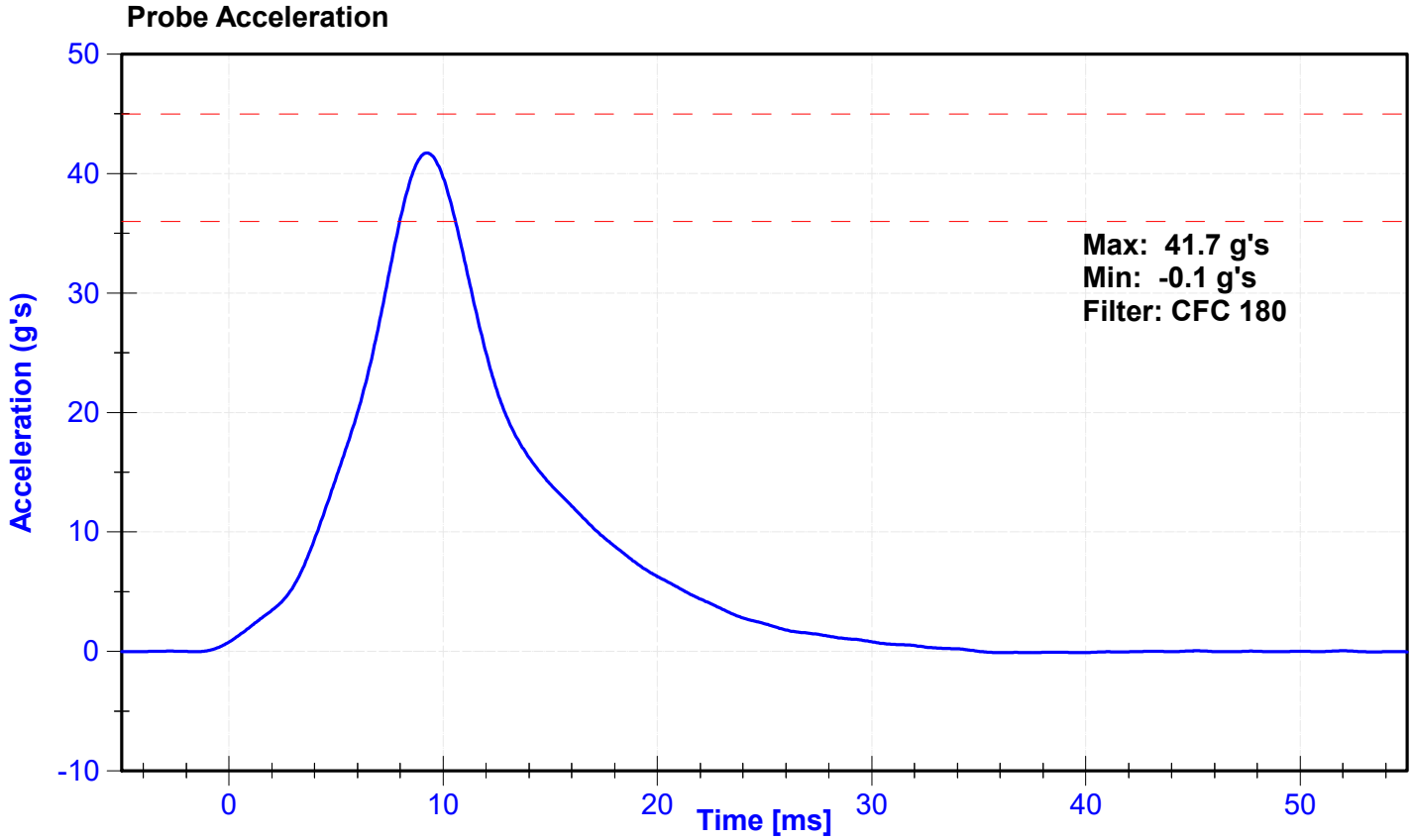
ATD Manufacturer	FTSS	Test Technician	J. Rios
ATD Serial Number	300	Laboratory Supervisor	J. Kinderman

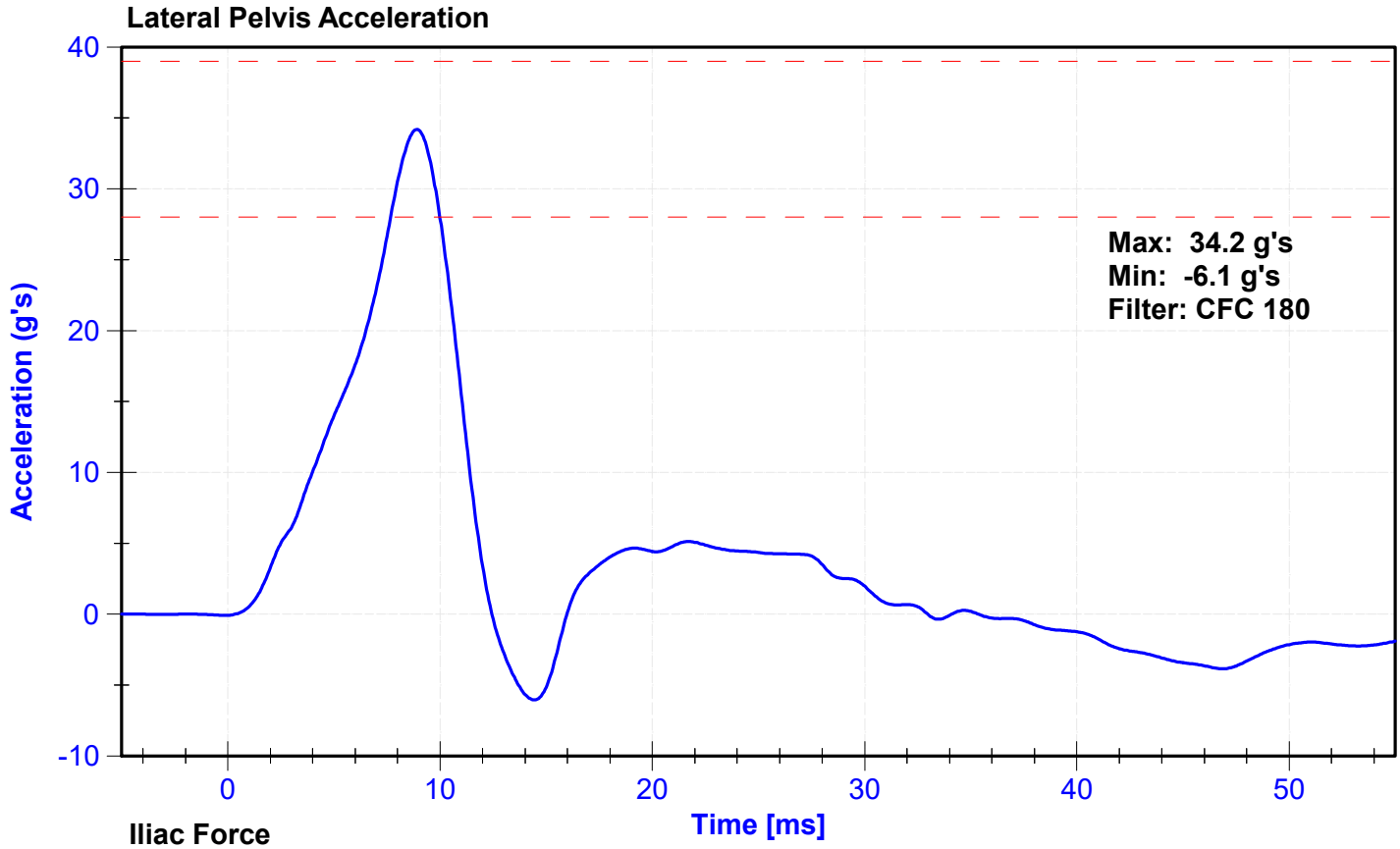
Results

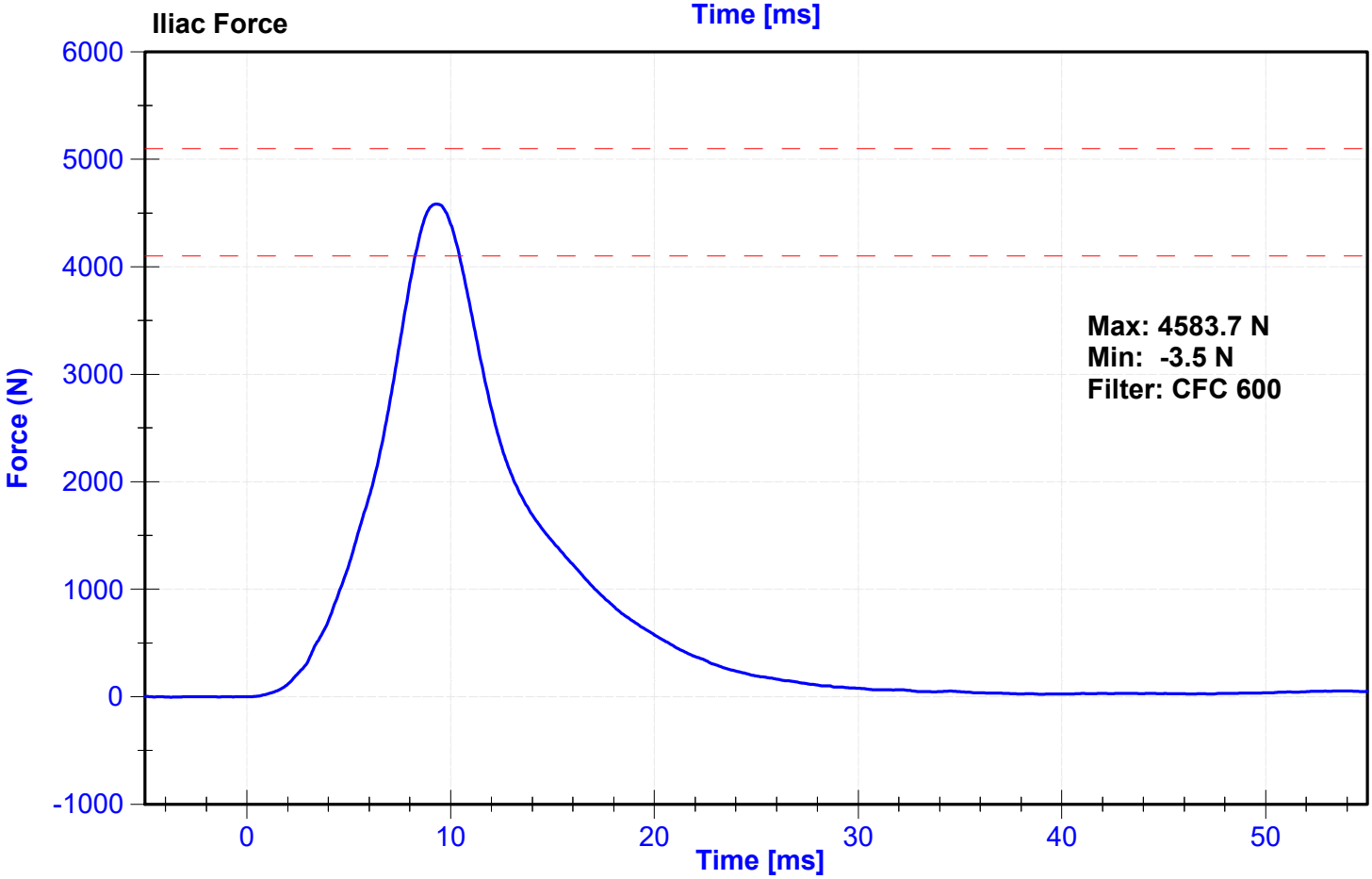
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	ºC	20.7	Pass
Humidity	10	70	%	28	Pass
Velocity	4.2	4.4	m/s	4.28	Pass
Probe Acceleration	36	45	g's	41.7	Pass
Lateral Pelvis Acceleration	28	39	g's	34.2	Pass
Iliac Force	4100	5100	N	4583.7	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25962	2/15/2025	8/14/2025
Pelvis Y Accelerometer	Endevco	P51731	10/17/2024	4/15/2025
Iliac Load Cell	Denton	279-FY	10/28/2024	10/28/2025




Lateral Pelvis Acceleration
Acceleration (g's)
40
30
20
10
0
-10
0
10
20
30
40
50
Time [ms]
Max: 34.2 g's
Min: -6.1 g's
Filter: CFC 180


Iliac Force
Force (N)
6000
5000
4000
3000
2000
1000
0
-1000
0
10
20
30
40
50
Time [ms]
Max: 4583.7 N
Min: -3.5 N
Filter: CFC 600

APPENDIX D

TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

Table 1 – Dummy Instrumentation (SID-IIs)

				SID-IIs S/N: 300		
				Serial Number	**Manufacturer**	**Calibration Date**
Head Accelerometers			X	P59018	Endevco	10/17/2024
			Y	P79189	Endevco	10/17/2024
			Z	P79587	Endevco	10/17/2024
Head Accelerometers - Redundant			X	P49182	Endevco	11/25/2024
			Y	P58986	Endevco	10/17/2024
			Z	P52025	Endevco	10/17/2024
Displacement Potentiometer	Shoulder		Y			
	Thoracic Rib	Upper	Y	2316GFE	Servo	10/16/2024
		Middle	Y	085GFE	Servo	10/16/2024
		Lower	Y	1156GFE	Servo	10/16/2024
	Abdominal Rib	Upper	Y	074GFE	Servo	10/16/2024
		Lower	Y	075GFE	Servo	10/16/2024
Lower Spine Accelerometers (T12)			X	P64003	Endevco	10/17/2024
			Y	P52071	Endevco	10/17/2024
			Z	P17283	Endevco	10/17/2024
Acetabulum Load Cell			Y	275-FY	Denton	10/28/2024
Lilac Wing Load Cell			Y	279-FY	Denton	10/28/2024
Pelvis Plug (Struck Side)				16709	SACO	07/22/2022
Pelvis Plug (Non-Struck Side)				16724	SACO	07/22/2022

Table 2 – Vehicle Instrumentation

Vehicle Instrumentation		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	A350949	Measurement Specialties	12/16/2024
Vehicle Center of Gravity	Y	G25278	Endevco	12/16/2024
Vehicle Center of Gravity	Z	G25392	Endevco	12/16/2024
Left Floor Sill	Y	G23450	Endevco	11/26/2024
A-Pillar Sill	Y	G23424	Endevco	01/13/2025
A-Pillar Low	Y	A372824	Measurement Specialties	02/20/2025
A-Pillar Mid	Y	G25280	Endevco	02/18/2025
B-Pillar Sill	Y	A315932	Measurement Specialties	02/20/2025
B-Pillar Low	Y	A254666	Measurement Specialties	01/27/2025
B-Pillar Mid	Y	G25992	Endevco	01/13/2025
Driver Seat	Y	G23828	Endevco	02/12/2025
Engine Top	X	G22641	Endevco	12/17/2024
Engine Top	Y	G24971	Endevco	12/17/2024
Firewall	Y	G24629	Endevco	11/26/2024
Right Roof	Y	G22773	Endevco	11/20/2024
Right Floor Sill	Y	A372807	Measurement Specialties	11/16/2024
Rear Floorpan	X	G23829	Endevco	11/01/2024
Rear Floorpan	Y	A374252	Measurement Specialties	11/04/2024

Table 3 – Pole Instrumentation

Pole Instrumentation	Serial Number	Manufacturer	Calibration Date
Load Cell 1	1220AF-1277329-F0	Interface	06/21/2024
Load Cell 2	1220AF-BLACKLC	Interface	06/21/2024
Load Cell 3	1220AF-1117025-F0	Interface	06/21/2024
Load Cell 4	1220AF-1130989-F0	Interface	06/21/2024
Load Cell 5	1220AF-1281288-F0	Interface	06/21/2024
Load Cell 6	1220AF-1281285-F0	Interface	06/21/2024
Load Cell 7	1220AF-1117035-F0	Interface	06/21/2024
Load Cell 8	1220AF-1117011-F0	Interface	06/21/2024