

REPORT NUMBER: 214D-CAL-24-002

**NEW CAR ASSESSMENT PROGRAM (NCAP)
SIDE IMPACT POLE TEST**

**Hyundai Motor Company
2024 Genesis GV60
5 Door SUV**

NHTSA No: O20244209

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



November 6, 2024

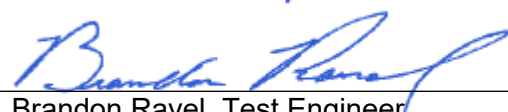
FINAL REPORT

**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**

This final test report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, in response to Contract Number 693JJ920D000016.

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Date: November 6, 2024

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

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

Date: _____

TECHNICAL REPORT DOCUMENTATION PAGE

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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 2024 Genesis GV60 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 January 8, 2024. The impact velocity of the vehicle was 32.02 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 215 mm located at level 3. The test vehicle's occupant performance data is as follows:																																
<table border="1"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th colspan="3">Driver ATD (SID-IIs) (Serial No.DG8012)</th> </tr> <tr> <th>Units</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC36)</td> <td></td> <td>1000</td> <td>293.752</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td>G</td> <td>82</td> <td>48.571</td> </tr> <tr> <td>Total Pelvic Force (sum of acetabular and iliac forces)</td> <td>N</td> <td>5525</td> <td>2851.992</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>38</td> <td>22.532</td> </tr> <tr> <td>Maximum Abdominal Rib Deflection</td> <td>mm</td> <td>45*</td> <td>23.964</td> </tr> </tbody> </table>						Measurement Description	Driver ATD (SID-IIs) (Serial No.DG8012)			Units	Threshold	Result	Head Injury Criteria (HIC36)		1000	293.752	Resultant Lower Spine Acceleration	G	82	48.571	Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2851.992	Maximum Thoracic Rib Deflection	mm	38	22.532	Maximum Abdominal Rib Deflection	mm	45*	23.964
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The two doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.																																
17. Key Words New Car Assessment Program (NCAP) Side Impact Pole Part 572V SID-IIs				18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division, 1200 New Jersey Ave. SE Washington, D.C. 20590																												
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SECTION 1

TEST PURPOSE AND PROCEDURE

This side impact test was conducted as part of the MY 2024 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 2024 Genesis GV60 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 2024 Genesis GV60 5 Door SUV. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.02 km/h. The test was conducted by Calspan Corporation's Transportation Test Operations facility in Buffalo, New York on January 8, 2024. 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	293.752
Resultant Lower Spine Acceleration	G	82	48.571
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2851.992
Maximum Thoracic Rib Deflection	mm	38	22.532
Maximum Abdominal Rib Deflection	mm	45*	23.964

*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	Yes	Yes
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	Yes
Other - Center Airbag	Yes	Yes	No	N/A

GENERAL COMMENTS:

1. P1 serial number - DG8012

Data Anomalies:

- Left Sill A-Pillar Y Acceleration, Exceeded calibration range at 46.7 ms
- Left Lower A-Pillar Y Acceleration, Exceeded calibration range at 46.4 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 - Vehicle Accelerometer Data

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: 2024 Genesis GV60 5 Door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: O20244209
 Test Date: 01/08/2024

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	O20244209	Traction Control System (TCS)	Yes
Model Year	2024	Auto-Leveling System	No
Make	Genesis	Automatic Door Locks (ADL)	Yes
Model	GV60	Power Window Auto-Reverse	Yes
Body Style	SUV	Other Optional Feature	N/A
VIN	KMUKB4SA3RU022707	Driver Front Airbag	Yes
Body Color	Black	Driver Curtain Airbag	Yes
Odometer Reading (km/mi)	103 miles	Driver Head/Torso Airbag	No
Engine Displacement (L)	N/A	Driver Torso Airbag	No
Type / No. Cylinders	EV	Driver Torso / Pelvis Airbag	Yes
Engine Placement	N/A	Driver Pelvis Airbag	No
Transmission Type	Automatic	Driver Knee Airbag	Yes
Transmission Speeds	Direct Drive	Rear Pass. Curtain Airbag	Yes
Overdrive	Yes	Rear Pass. Head / Torso Airbag	No
Final Drive	Rear Wheel Drive	Rear Pass. Torso Airbag	No
Roof Rack	No	Rear Pass. Torso / Pelvis Airbag	Yes
Sunroof / T-Top	Yes	Rear Pass. Pelvis Airbag	No
Running Boards	No	Driver Seat Belt Pretensioner	Yes
Tilt Steering Wheel	Yes	Rear Pass. Seat Belt Pretensioner	Yes
Power Seats	Yes	Driver Load Limiter	Yes
Anti-Lock Brakes (ABS)	Yes	Rear Pass. Load Limiter	Yes
		Driver Front Center Side Airbag	Yes

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

No

DATA FROM CERTIFICATION LABEL

Manufactured By	Hyundai Motor Company	GVWR	2475
Date of Manufacture	OCT/2023	GAWR Front	1265
Vehicle Type	MPV	GAWR Rear	1420

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)				390	(A)
DSC x 68.0 kg				340	(B)
Cargo Weight (RCLW) (kg)				50	(A-B)

VEHICLE SEAT TYPE

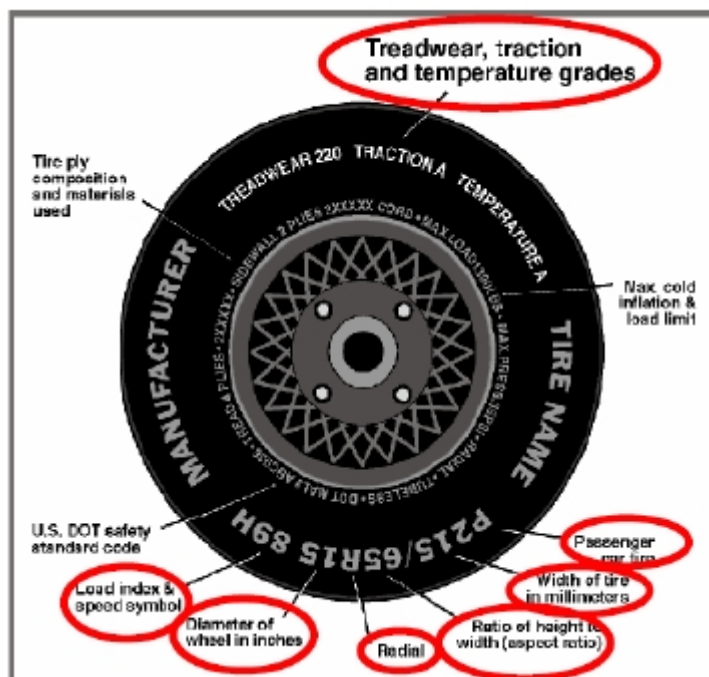
Seating Location	Type Of Seat Pan				Type Of Seat Back		
	Bucket	Bench	Split Bench	Contour	Fixed	Adjustable	
						W/ Lever	W/ Knob
Front	X						X
Rear or Second Row Seat			X			X	
Third Row seat	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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

Test Vehicle: 2024 Genesis GV60 5 Door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: O20244209
 Test Date: 01/08/2024

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)	250	260
Recommended Tire Size	235/55 R19	235/55 R19
Tire Size on Vehicle	235/55 R19	235/55 R19
Tire Manufacturer	Michelin	Michelin
Tire Model	Primacy	Primacy
Treadwear	540	540
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 2 Steel, 1 Polyamide	2 Polyester, 2 Steel, 1 Polyamide
Load Index / Speed Symbol	101 H	101 H
Tire Material	Rubber	Rubber
DOT Safety Code Left	1B98FOBLX2423	1B98FOBLX2523
DOT Safety Code Right	1B98FOBLX2323	1B98FOBLX2423

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

Test Vehicle: 2024 Genesis GV60 5 Door SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No.: O20244209
Test Date: 01/08/2024

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	271	271	286	280
Tire Placard	kPa	250	250	260	260
Owner's Manual	kPa	250	250	260	260
As Tested	kPa	250	250	260	260

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	489	536		503	566		509	574	
Right	kg	476	537		508	555		487	569	
Ratio	%	47.3	52.7		47.4	52.6		46.6	53.4	
Totals	kg	965	1073	2038	1011	1121	2132	996	1143	2139

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total As Delivered Weight (UVW)	kg	2038	(A)
Actual Weight of 1 P572V (SID-IIs) ATD Used	kg	50	(B)
Rated Cargo / Luggage Weight (RCLW)	kg	50	(C)
Calculated Vehicle Target Weight (TVTW)	kg	2138	(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)? 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	+0.10	-0.15	-0.30	Yes
Front Passenger Sill Angle (front-to-rear)*	Deg	-0.35	-0.40	-0.45	Yes
Front Bumper-Line Angle (left-to-right)**	Deg	-0.20	-0.35	-0.45	Yes
Rear Bumper-Line Angle (left-to-right)**	Deg	-0.10	-0.10	-0.15	Yes
Vehicle CG (Aft of Front Axle)	mm	1528	1526	1551	
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	5	2	10	

* 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: 2024 Genesis GV60 5 Door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: O20244209
 Test Date: 01/08/2024

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Trunk Carpeting	16
Jack	4
Rear Speaker	2
Kits	3
Charger	2
Passenger Rear Window	3
Ballast / Equipment Added	0

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

TEST SURFACE MARKING

	Distance from 75° Impact Location Line (mm)
Fore 25 mm target	976
Aft 25 mm target	977

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

Test Vehicle: 2024 Genesis GV60 5 Door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: O20244209
 Test Date: 01/08/2024

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	25.6	13.85	19.73
Front Passenger Seat	25.15	13.65	19.4
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	19.73	43	Max	57	63	70
			Mid	32	38	43
			Min	7	12	17
Front Passenger Seat	19.4	43	Max	60	64	68
			Mid	34	38	43
			Min	8	13	18
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: 2024 Genesis GV60 5 Door SUV
 Test Program: NCAP Side Pole Impact Test

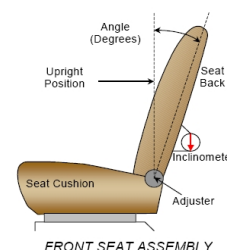
NHTSA No.: O20244209
 Test Date: 01/08/2024

SEAT FORE / AFT POSITION

Seat	Total Fore / Aft Travel		Test Position from Forward most Position	
	mm	Detents*	mm	Detents*
Driver Seat	260	Power	0	Power
Front Passenger Seat	255	Power	0	Power
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.



Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degrees	Detents*
Driver Seat	63.5	Power	3.95	Power
Front Passenger Seat	63.0	Power	3.95	Power
Front Center Seat				
Struck Side Rear Seat	29.8	16 (0-15)	4.7	0
Non-Struck Side Rear Seat	29.8	16 (0-15)	5.0	0
Rear Center Seat	29.8	16 (0-15)	4.7	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	3 (0-2)	Lowermost & Full Forward

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

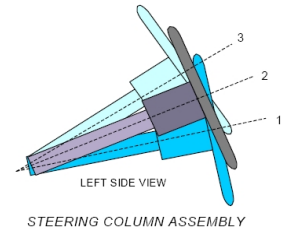
Test Vehicle: 2024 Genesis GV60 5 Door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: O20244209
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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.

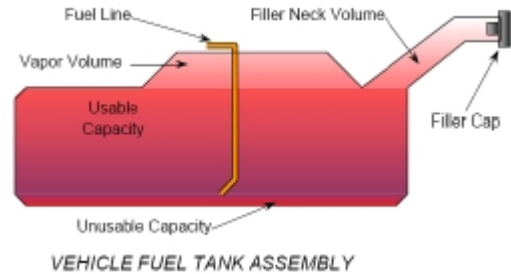
	Degrees	Fore / Aft Position (mm)
Lowermost position No. 1	20.65	
Geometric center position No. 2	23.15	
Uppermost position No. 3	25.65	
Telescoping Steering Wheel Travel		50
Test Position	23.15	25



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 charge port. The charge port is on the right rear of the vehicle.



FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank" - see Form No. 1	N/A
Usable Capacity of "Optional Tank" - see Form No. 1	N/A
Usable Capacity of "Standard Tank" - see Owner's Manual	N/A
Usable Capacity of "Optional Tank" - see Owner's Manual	N/A
93% of Usable Capacity	N/A
Actual Amount of Solvent Used in Test	Electric Vehicle
1/3 of Usable Capacity	N/A

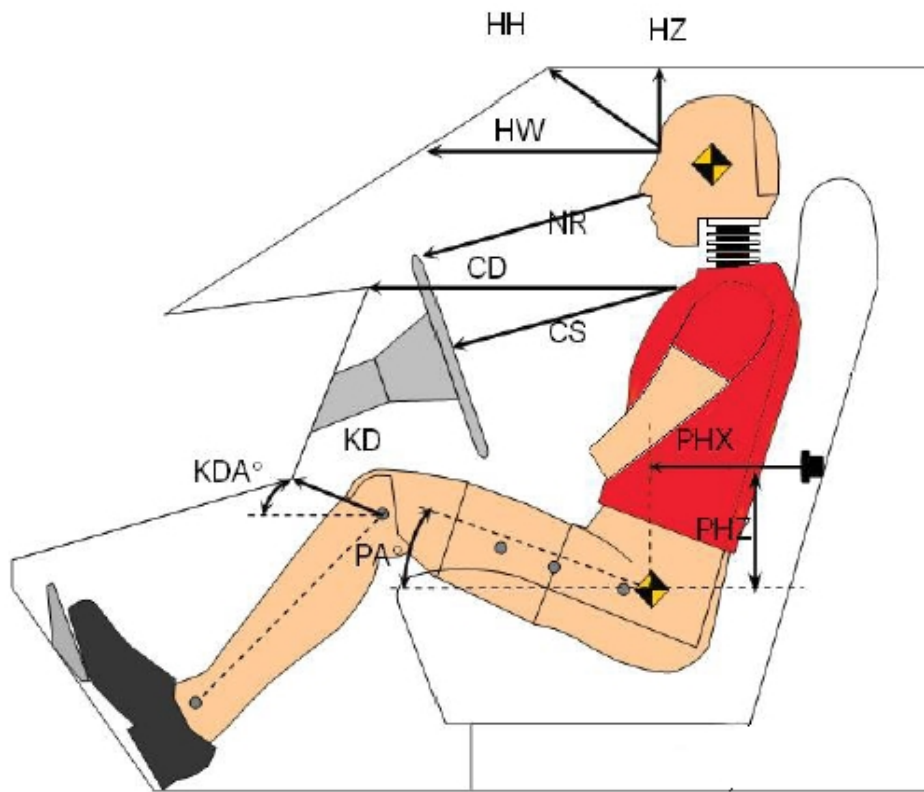
Is the Actual Amount of Solvent Used in the test equal to 93% ±1% of the Usable

Capacity stated in Form No. 1? Yes No N/A

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2024 Genesis GV60 5 Door SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No.: O20244209
Test Date: 01/08/2024



Left Side View

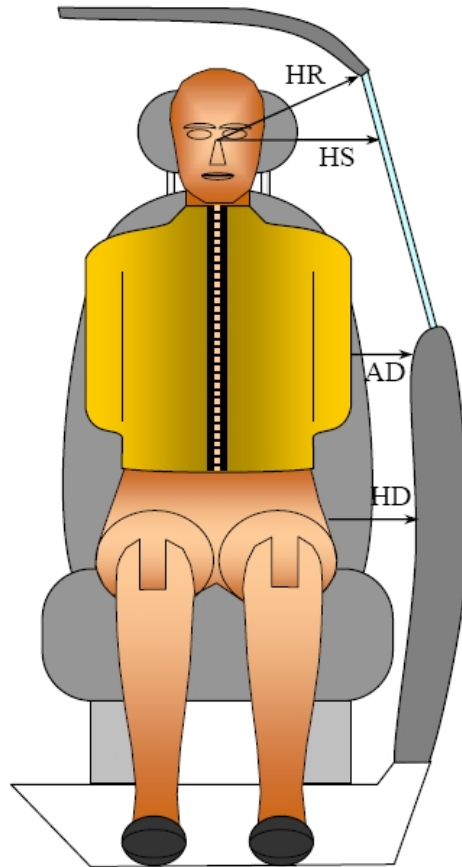
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Description	Driver (Serial No. DG8012)	
		Length (mm)	Angle (°)
HH	Head to Header	308	
HW	Head to Windshield	624	
HZ	Head to Roof Liner	215	
NR	Nose to Rim	245	
CD	Chest to Dash	460	
CS	Chest to Steering Wheel	184	
KD(L) / KDA(L)°	Left Knee to Dash	142	
KD(R) / KDA(R)°	Right Knee to Dash	113	
PAX°	Pelvic Tilt Angle (X-Axis)		20.6
PAY°	Pelvic Tilt Angle (Y-Axis)		0.1
PHX	Hip Point to Striker (X-Axis)	335	
PHZ	Hip Point to Striker (Z-Axis)	191	

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

Test Vehicle: 2024 Genesis GV60 5 Door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: O20244209
 Test Date: 01/08/2024



FRONT VIEW OF DUMMY

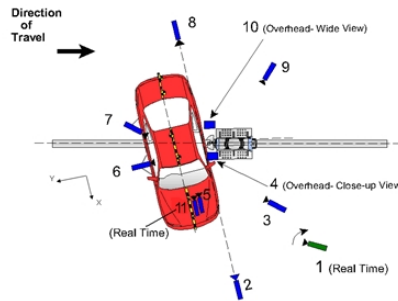
DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver – Length (Serial No. DG8012)
HR	Head to Side Header	mm	313
HS	Head to Side Window	mm	393
AD	Arm to Door	mm	211
HD	H-Point to Door	mm	210

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

Test Vehicle: 2024 Genesis GV60 5 Door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: O20244209
 Test Date: 01/08/2024



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	0	-9375	28	1000
3	Impact side 45° - forward pole view	6784	0	-1363	24	1000
4	Overhead Close-up view of impact	4731	-700	-1487	12.5	1000
5	Onboard - dummy front view					1000
6	Onboard - dummy side view					1000
7	Onboard - dummy rear oblique view					1000
8	Rear ground level - impact view	-7976	0	-1397	28	1000
9	Impact side 45° - rearward pole view	-4175	-3683	-1405	24	1000
10	Overhead wide - view of impact	0	0	-9375	12.5	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 75° angle to the rigid pole.

Comments: All cameras operated as intended.

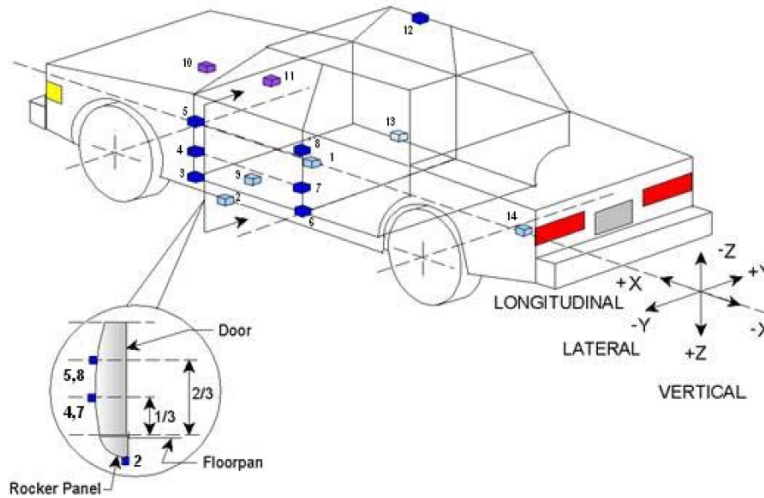
INSTRUMENTATION

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: 2024 Genesis GV60 5 Door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: O20244209
 Test Date: 01/08/2024



TEST VEHICLE ACCELEROMETER LOCATIONS

No.	Accelerometer Location	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	1787	-1	372
2	Left Floor Sill	2819	-659	318
3	A-Pillar Sill	3113	-650	305
4	A-Pillar Low	3195	-648	102
5	A-Pillar Mid	3024	-669	-350
6	B-Pillar Sill	2036	-660	292
7	B-Pillar Low	2066	-663	9
8	B-Pillar Mid	2030	-671	-295
9	Seat	2249	-577	328
10	Engine	3720	-117	117
11	Firewall	3384	349	-37
12	Roof	2122	602	-847
13	Right Floor Sill	2797	665	314
14	Rear Deck	448	-10	118

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: 2024 Genesis GV60 5 Door SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No.: O20244209
Test Date: 01/08/2024

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: 2024 Genesis GV60 5 Door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: O20244209
 Test Date: 01/08/2024

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 & Headrest
Left Shoulder	Seatback & Torso/Pelvis Airbag
Upper Torso	Seatback
Lower Torso	Seatback
Left Hip	Seat Pan & Torso/Pelvis Airbag
Left Knee	Driver Door

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)	N/A	N/A	N/A	N/A	N/A

POST-TEST SEAT PERFORMANCE

Description	Struck Side		Non-Struck Side	
	Front	Rear	Front	Rear
Seat Movement Along Seat Track	No	No	No	No
Seat Disengagement from Floor Pan	No	No	No	No
Seat Back Movement from Initial Position	Yes	No	No	No
Seat Back Collapse	No	No	No	No

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

Test Vehicle: 2024 Genesis GV60 5 Door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: O20244209
 Test Date: 01/08/2024

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	A-Pillar Buckled
Sill Separation	None
Windshield Damage	Cracked throughout
Side Window Damage	Driver window cracked throughout
Other Notable Effects	Seatback reclined after impact event

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	Yes	Yes
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	Yes
Other - Center Airbag	Yes	Yes	No	N/A

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

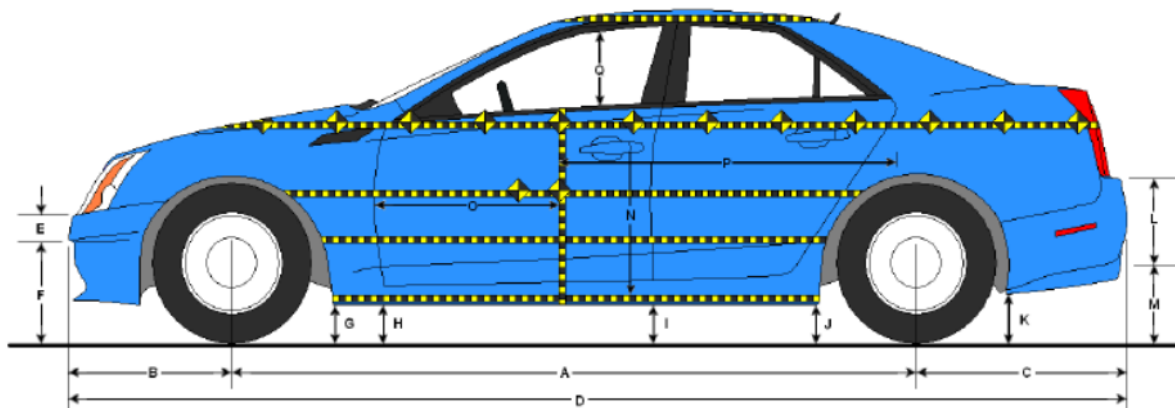
Measured Parameter	Units	Tolerance	Value
Vertical Impact Ref Line - Aft of Front Axle, Intended Impact Pt	mm		1188
Actual Impact Point - Aft of Front Axle	mm		1192
Horizontal Offset (+ forward / - rearward)	mm	+/- 38*	-4
Angle Between Vehicle's Longitudinal Centerline and Line of Forward Motion	deg	75 +/- 3	75
Trap No. 1 Velocity - Primary	kph	31.4 to 33.0	32.02
Trap No. 2 Velocity - Redundant	kph	31.4 to 33.0	32.02

*Of Intended Impact Point

DATA SHEET NO. 9
TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2024 Genesis GV60 5 Door SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No.: O20244209
Test Date: 01/08/2024



LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

No.	Measurement Description	Pre-Test	Post-Test	Change
A	Vehicle Wheelbase	2902	2885	-17
B	Front Axle to FSOV	834	829	-5
C	Rear Axle to RSOV	781	775	-6
D	Total Vehicle Length at Centerline	4517	4489	-28
E	Front Bumper Thickness	480	480	0
F	Front Bumper Bottom to Ground	235	240	5
G	Sill Height at Front Wheel Well	171	170	-1
H	Sill Height at Front Door Leading Edge	178	178	0
I	Sill Height at B Pillar	198	138	-60
J1	Sill Height at Rear Wheel Well	197	204	7
J2	Pinch Weld Height at Rear Wheel Well	194	190	-4
K	Sill Height Aft of Rear Wheel Well	254	255	1
L	Rear Bumper Thickness	255	255	0
M	Rear Bumper Bottom to Ground	400	402	2
N	Sill Height to Window Bottom Sill	837	834	-3
O	Front Door Leading Edge to Impact CL	654	629	-25
P	Rear Door Trailing Edge to Impact CL	1478	1448	-30
Q	Front Window Opening	405	415	10
R	Right Side Length	4436	4434	-2
S	Left Side Length	4436	4419	-17
T	Vehicle Width at B-Pillars	1829	1797	-32
U	Front Wheel Track width	1641	1640	-1
V	Rear Wheel Track Width	1645	1640	-5

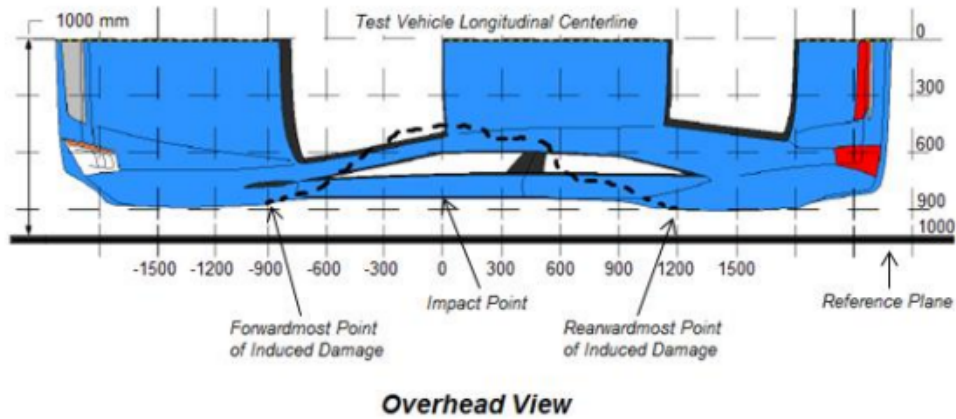
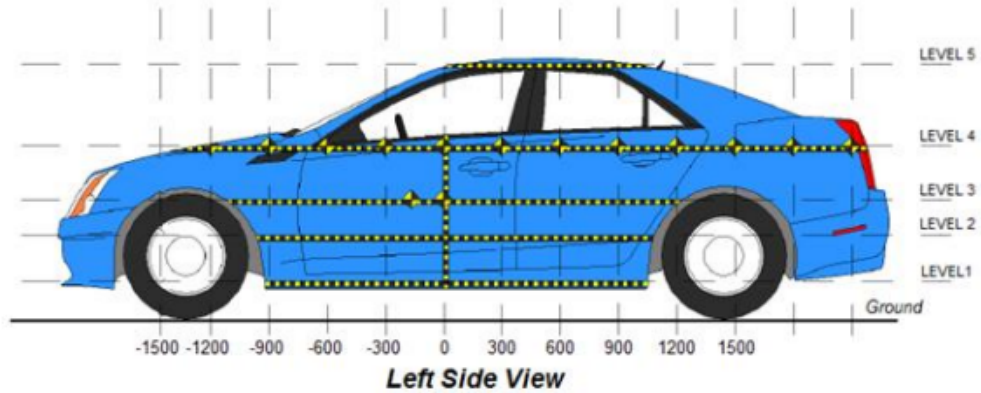
* All measurements in mm with tolerance of ± 3 mm

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

Test Vehicle: 2024 Genesis GV60 5 Door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: O20244209
 Test Date: 01/08/2024

MAXIMUM EXTERIOR CRUSH MEASUREMENTS



Level	Measurement Description	Units	Height Above Ground	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	mm	310	123	0
2	Occupant H-Point	mm	626	207	0
3	Mid-Door	mm	708	215	0
4	Window Sill	mm	1024	168	0
5	Window Top	mm	1498	32	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)
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2024 Genesis GV60 5 Door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: O20244209
 Test Date: 01/08/2024

EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

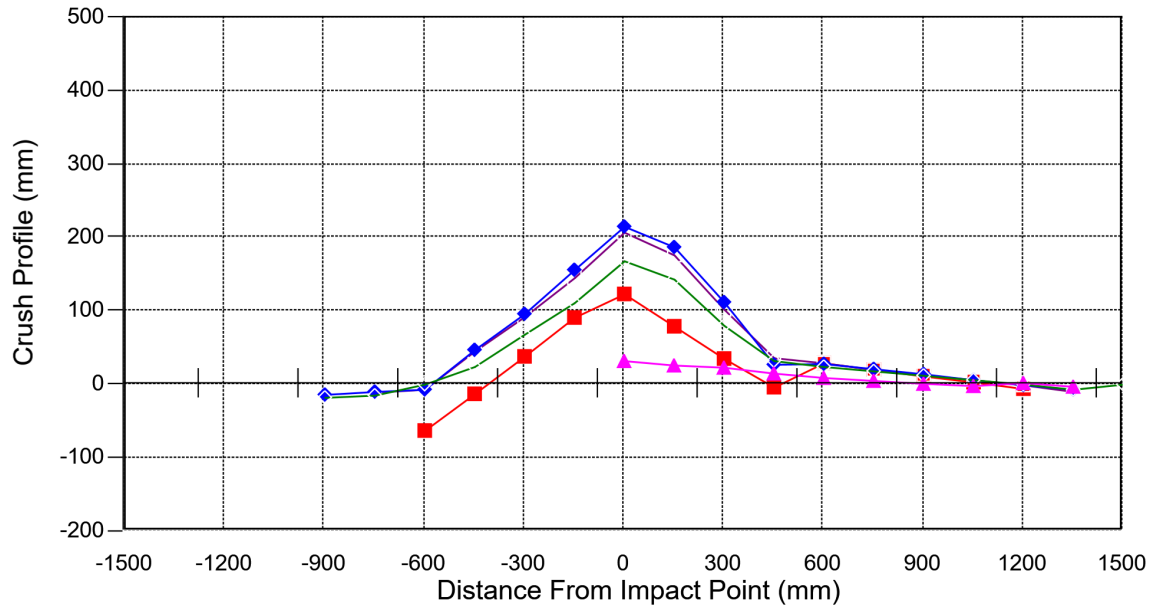
	Pre-Test					Post-Test					Crush				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-1500															
-1350															
-1200															
-1050															
-900			944	824				958	842				-14	-18	
-750		940	937	827			951	947	842			-11	-10	-15	
-600	895	923	924	835		958	930	931	835		-63	-7	-7	0	
-450	891	916	919	856		904	871	872	832		-13	45	47	24	
-300	892	912	917	847		854	820	821	779		38	92	96	68	
-150	895	910	915	850		804	765	759	739		91	145	156	111	
0	897	908	914	855	634	774	701	699	687	602	123	207	215	168	32
150	901	907	912	858	651	822	731	725	715	625	79	176	187	143	26
300	900	906	911	860	655	865	804	799	780	632	35	102	112	80	23
450	900	904	910	860	653	904	868	883	828	638	-4	36	27	32	15
600	898	903	908	859	649	869	874	880	835	640	29	29	28	24	9
750	898	904	909	858	644	878	884	888	840	639	20	20	21	18	5
900	901	910	913	859	634	890	897	899	847	633	11	13	14	12	1
1050	906	920	921	866	617	903	914	915	860	619	3	6	6	6	-2
1200	915	935	933	879	581	921	936	934	879	579	-6	-1	-1	0	2
1350		943	938	894	538		953	945	901	541		-10	-7	-7	-3
1500				906					906					0	

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: 2024 Genesis GV60 5 Door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: O20244209
 Test Date: 01/08/2024



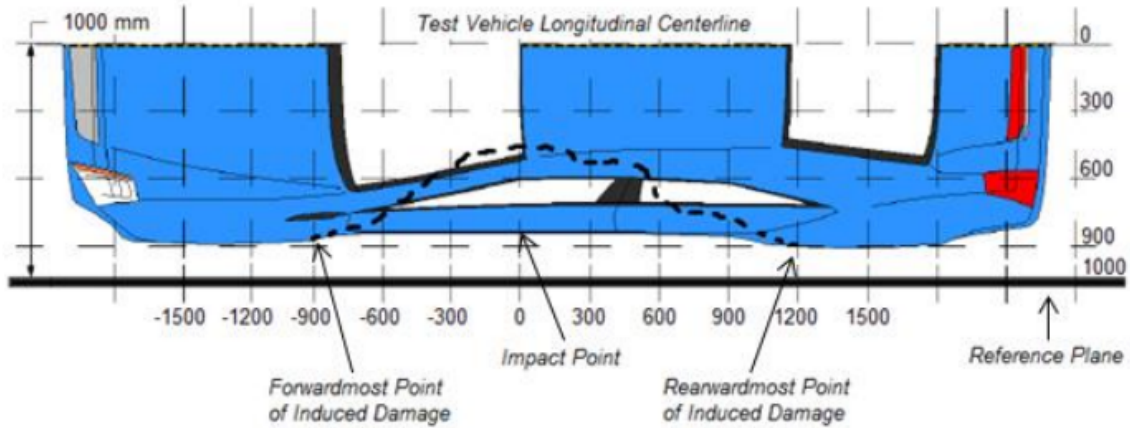
Vehicle Exterior Crush Measurements - Visual Representation

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

Test Vehicle: 2024 Genesis GV60 5 Door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: O20244209
 Test Date: 01/08/2024

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	42	56	-14
2	-450	3	128	81	47
3	0	3	301	86	215
4	450	3	117	90	27
5	900	3	101	87	14
6	1350	3	55	62	-7

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

Test Vehicle: 2024 Genesis GV60 5 Door SUV
 Test Program: NCAP Side Pole Impact Test

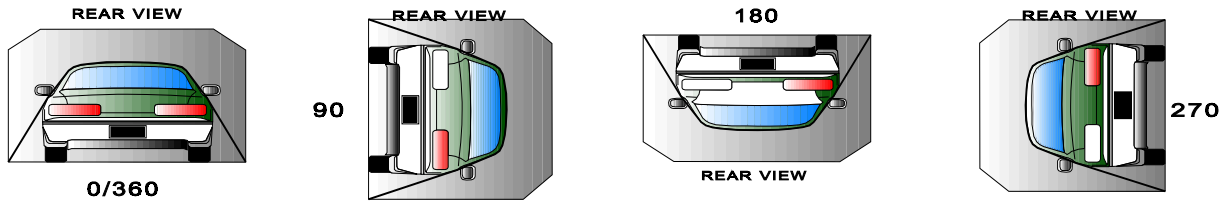
NHTSA No.: O20244209
 Test Date: 01/08/2024

Test Time: 9:54 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: _____ Electric Vehicle _____



ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°			
90° to 180°			
180° to 270°			
270° to 360°			

FMVSS 301 SPILLAGE TABLE

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

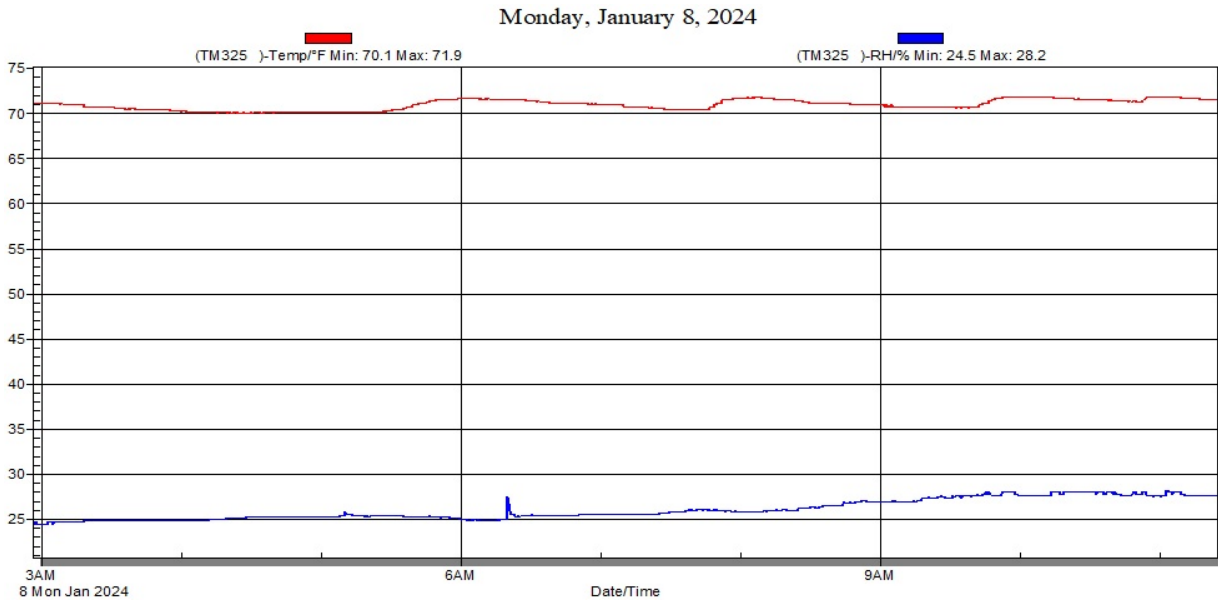
SOLVENT SPILLAGE LOCATION TABLE

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

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

Test Vehicle: 2024 Genesis GV60 5 Door SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No.: O20244209
Test Date: 01/08/2024



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: 2024 Genesis GV60 5 Door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: O20244209
 Test Date: 01/08/2024

ELECTRIC VEHICLE PROPULSION SYSTEM

Measured Parameter	Value
Type of Electric Vehicle (Electric/Gas-Electric Hybrid/Fuel Cell-Electric Hybrid)	Electric
Propulsion Battery Type	Lithium-ion Polymer Battery
Nominal Voltage (Volts)	697
Is this Vehicle equipped with an Automatic Propulsion Battery Disconnect?	Yes
Physical Location of Automatic Propulsion Battery Disconnect, if applicable	Inside of Propulsion Battery (Rear Side)
Auxiliary Battery Type	Lead-Acid Battery

PROPULSION BATTERY SYSTEM DATA (COTR SUPPLIED)

Measured Parameter	Value
Electrolyte Fluid Type	Liquid Solution, LiPF ₆ , Carbonate Solvent
Electrolyte Fluid Specific Gravity	1.19 g/cm ³
Electrolyte Fluid Kinematic Viscosity (centistokes)	2~3 cP @ 25°
Electrolyte Fluid Color	Transparent & Pale Yellow
Propulsion Battery Coolant Type, Color and Specific Gravity (if applicable)	Applied (Water-cooled type)
Location of Battery Modules (Inside or Outside of Passenger Compartment?)	Outside Passenger Compartment

PROPULSION BATTERY STATE OF CHARGE

Measured Parameter	Units	Value
<i>For all battery types:</i>		
Voltage Range corresponding to useable energy of the battery:		
Minimum State of Charge	V	480
Maximum State of Charge	V	826
95% of Maximum	V	784.7
Test Voltage *	V	789
<i>For batteries that are rechargeable ONLY by an energy source on the vehicle:</i>		
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 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: 2024 Genesis GV60 5 Door SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No.: O20244209
Test Date: 01/08/2024

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

Measured Parameter	Value
Details of Vehicle Chassis Ground Points & Locations	Ground point is located on vehicle body. There was no direction per OEM provided.
Details of Propulsion Battery Components	No details provided by OEM

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

Test Vehicle: 2024 Genesis GV60 5 Door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: O20244209
 Test Date: 01/08/2024

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 MΩ
- 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	480-826
Propulsion Battery Voltage: (ready to drive position)	V _b	V	789.0
Propulsion Battery to Vehicle Chassis	V ₁	V	574.0
Propulsion Battery to Vehicle Chassis	V ₂	V	464.0
Propulsion Battery to Vehicle Chassis Across Known Resistor	R _o	Ω	404,900
Propulsion Battery to Vehicle Chassis with R _o installed	V ₁ '	V	99.4
Propulsion Battery to Vehicle Chassis with R _o installed	V ₂ '	V	99.7
$R_{i1} = R_o * (1 + V_2/V_1) * [(V_1 - V_1')/V_1']$	R _{i1}	Ω	3,496,025
$R_{i2} = R_o * (1 + V_1/V_2) * [(V_2 - V_2')/V_2']$	R _{i2}	Ω	3,309,719
Lesser value of R _{i1} and R _{i2}	R _i	Ω	3,309,719
Electrical Isolation Value (Minimum E.I. Value is 500 Ω/V)	R _i /V _b	Ω/V	4,195

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 R_o (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: 2024 Genesis GV60 5 Door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: O20244209
 Test Date: 01/08/2024

VOLTMETER INFORMATION

Measured Parameter	Units	Value
Make & Model		Fluke 1587
Serial No.		51800115
Internal Impedance Value	MΩ	10
Resolution	V	0.001
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 MΩ
- 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 =	13.9	V	Time:	1	Minutes	45	Seconds
V ₁ =	2.8	V	Time:	1	Minutes	56	Seconds
V ₂ =	9.4	V	Time:	2	Minutes	8	Seconds
R _o =	404,900	Ω					
V ₁ ' =	0.1	V	Time:	2	Minutes	17	Seconds
V ₂ ' =	0.2	V	Time:	2	Minutes	22	Seconds
R _{i1} =	47,633,593	Ω	Time:	1	Minutes	17	Seconds
R _{i2} =	24,173,391	Ω	Time:	2	Minutes	22	Seconds
R _i =	24,173,391	Ω/V	Time:	2	Minutes	22	Seconds
R _i /V _b =	1,739,093	Ω/V	Time:	2	Minutes	22	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

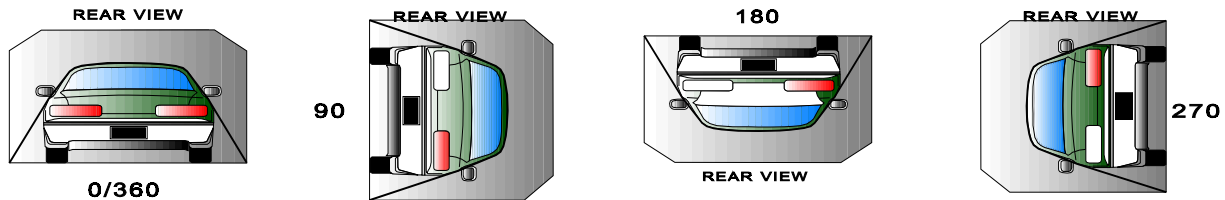
PROPULSION BATTERY SYSTEM COMPONENTS

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: 2024 Genesis GV60 5 Door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: O20244209
 Test Date: 01/08/2024



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	Seconds	
0° to 90°	1	16	5	6	16	7
90° to 180°	1	9	5	6	9	7
180° to 270°	1	9	5	6	9	7
270° to 360°	1	4	5	6	4	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) No
 Is propulsion battery electrolyte spillage visible in the passenger compartment? Yes (Fail) No

VOLTMETER INFORMATION

Measured Parameter	Units	Value
Make & Model		Fluke 1587
Serial No.		51800115
Internal Impedance Value	MΩ	10
Resolution	V	0.001
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 MΩ
- 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: 2024 Genesis GV60 5 Door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: O20244209
 Test Date: 01/08/2024

ELECTRICAL ISOLATION MEASUREMENTS & CALCULATIONS

Parameter	Rollover Stage	Value	Units	R _o =404,900	Minutes	Seconds
V _b =	90°	13.9	V	Time:	1	10
	180°	13.9	V		13	40
	270°	13.9	V		19	18
	360°	13.9	V		26	20
V ₁ =	90°	2.2	V	Time:	1	26
	180°	2.4	V		13	49
	270°	2.6	V		19	23
	360°	2.4	V		26	33
V ₂ =	90°	8.3	V	Time:	1	37
	180°	6.2	V		14	10
	270°	7.5	V		19	29
	360°	7.6	V		26	44
V ₁ ' =	90°	0.0	V	Time:	1	48
	180°	0.0	V		14	26
	270°	0.0	V		19	47
	360°	0.0	V		27	10
V ₂ ' =	90°	0.1	V	Time:	2	17
	180°	0.1	V		14	38
	270°	0.1	V		19	57
	360°	0.1	V		27	24
R _{i1} =	90°	Zero Volts	Ω	Time:	1	48
	180°	Zero Volts	Ω		14	26
	270°	Zero Volts	Ω		19	47
	360°	Zero Volts	Ω		27	10
R _{i2} =	90°	42,002,277	Ω	Time:	2	17
	180°	34,259,765	Ω		14	38
	270°	40,349,635	Ω		19	57
	360°	39,957,237	Ω		27	24
R _i =	90°	42,002,277	Ω	Time:	1	48
	180°	34,259,765	Ω		14	26
	270°	40,349,635	Ω		19	57
	360°	39,957,237	Ω		27	24
R _i /V _b =	90°	3,021,747	Ω/V	Time:	1	48
	180°	2,464,731	Ω/V		14	26
	270°	2,902,851	Ω/V		19	57
	360°	2,874,621	Ω/V		27	24

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

X

Yes

No (Fail)

APPENDIX A
PHOTOGRAPHS

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O20244209

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



O20244209

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 $\frac{3}{4}$ View of Test Vehicle



Figure A-6: Post-Test Left Front $\frac{3}{4}$ View of Test Vehicle



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

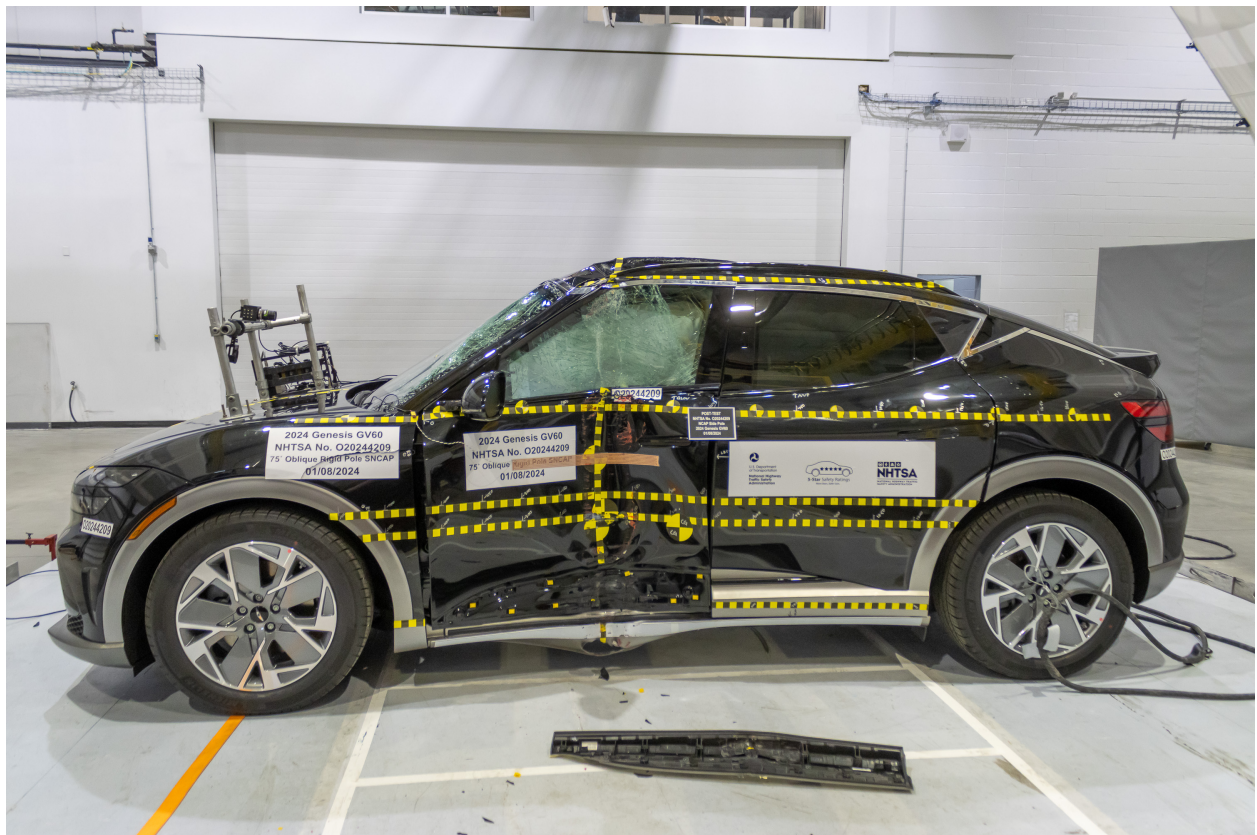


Figure A-8: Post-Test Left Side View of Test Vehicle



Figure A-9: Pre-Test Left Rear $\frac{3}{4}$ View of Test Vehicle



Figure A-10: Post-Test Left Rear $\frac{3}{4}$ 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

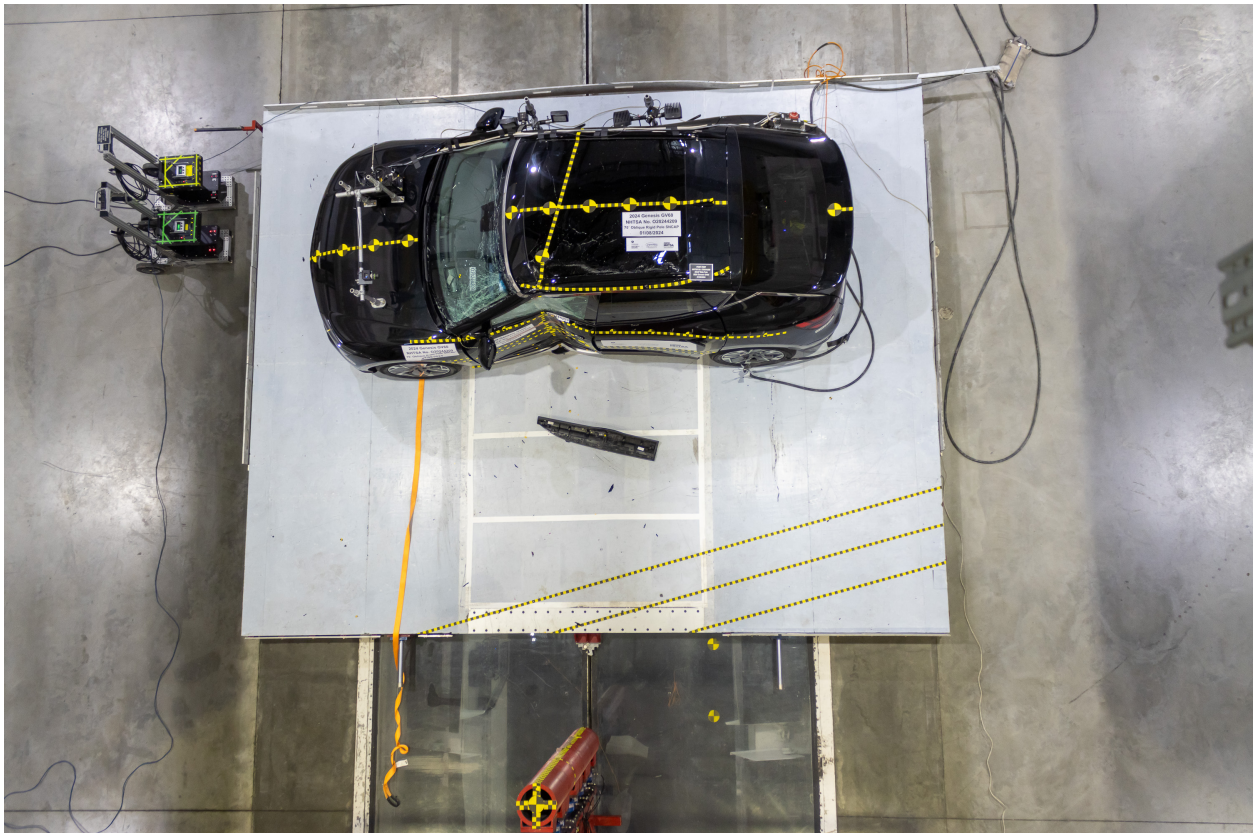


Figure A-16: Post-Test Overhead View of Test Area

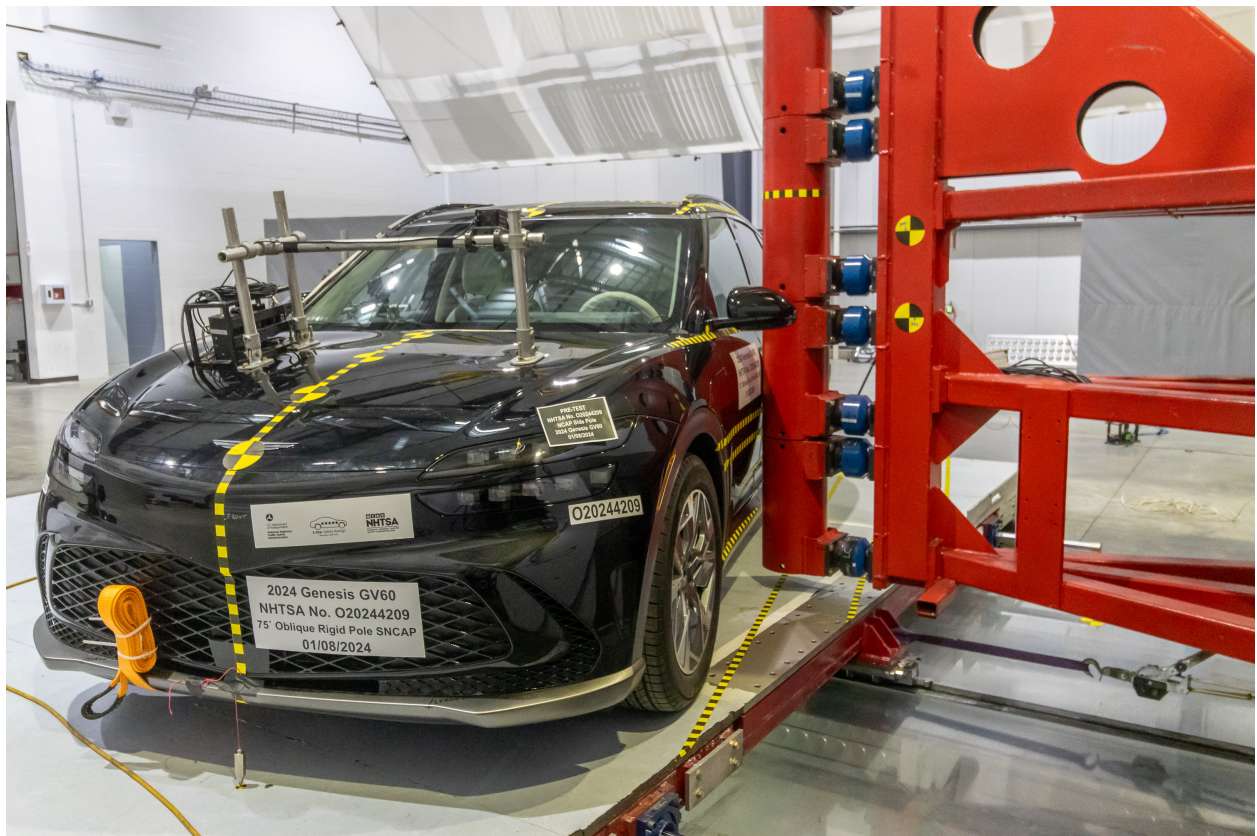


Figure A-17: Pre-Test Left Side View of Pole Positioned Against Side of Vehicle



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

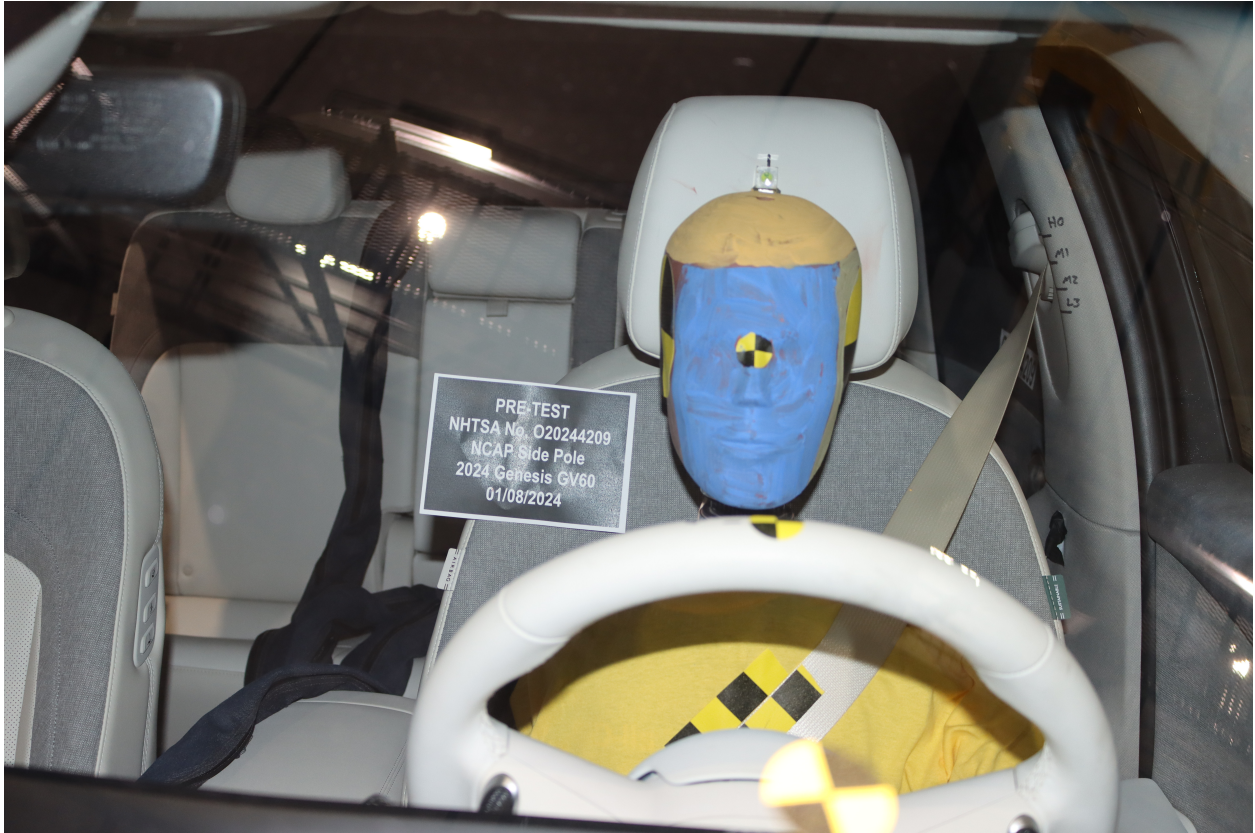


Figure A-21: Pre-Test Front Close-Up View of Dummy Head and Chest



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

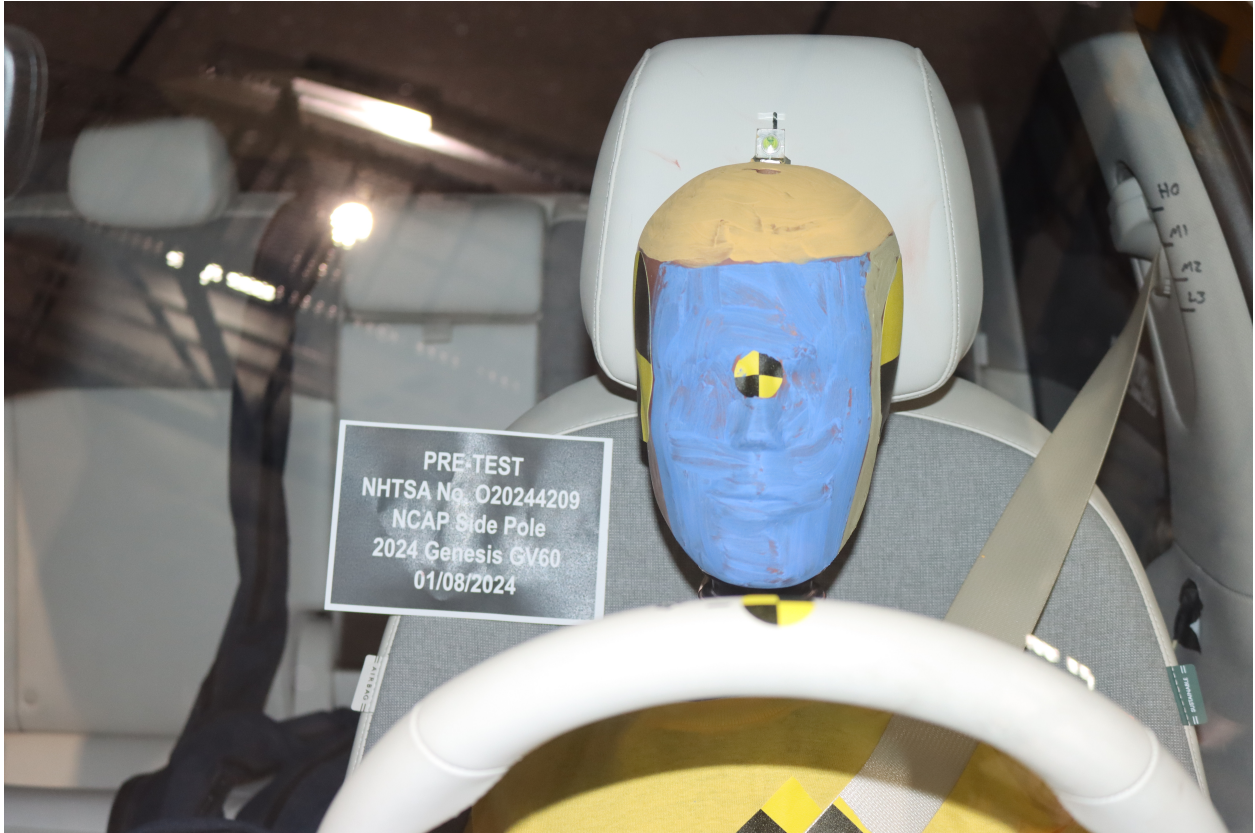


Figure A-27: Pre-Test Frontal Close-Up View of Dummy Head / Shoulders in Relation to Head Restraint

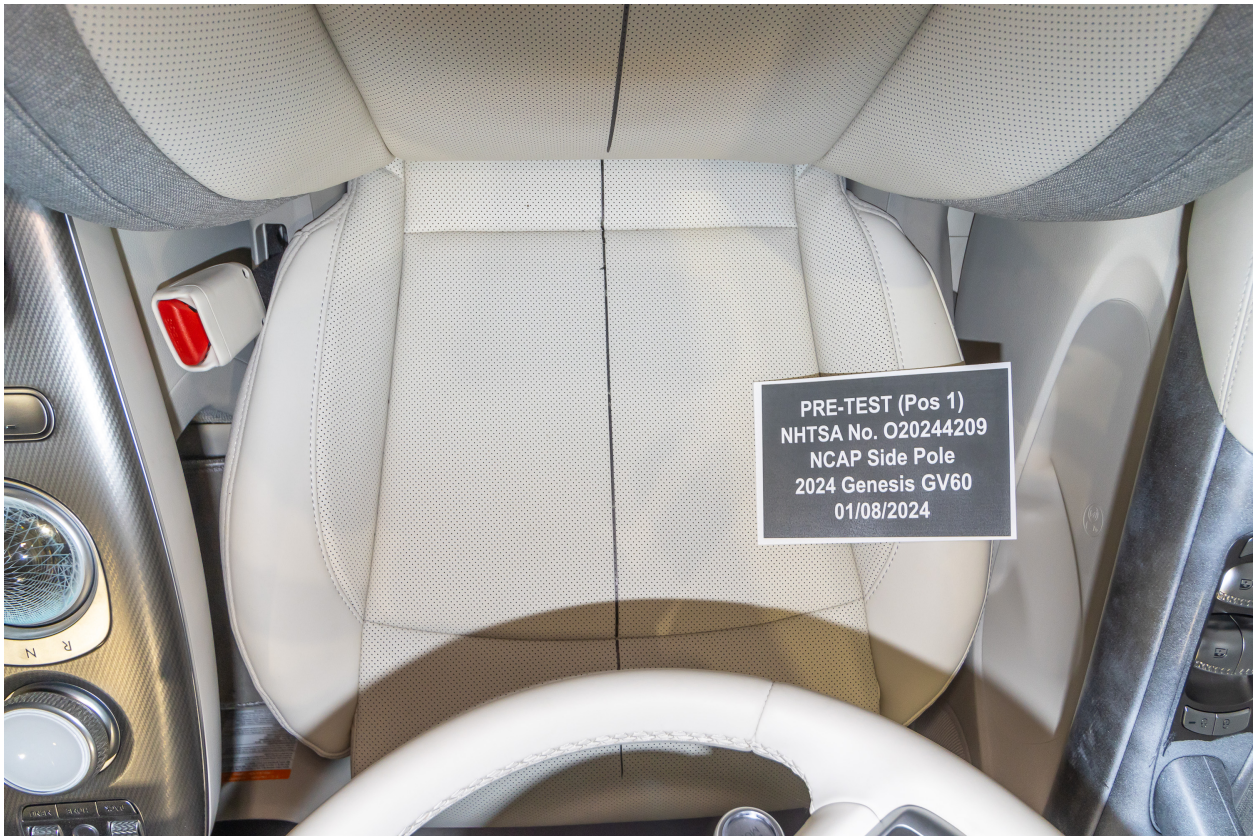


Figure A-28: Pre-Test Frontal View of Seat Pan Prior to Dummy Positioning



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 Charging Port



Figure A-56: Post-Test Charging Port



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

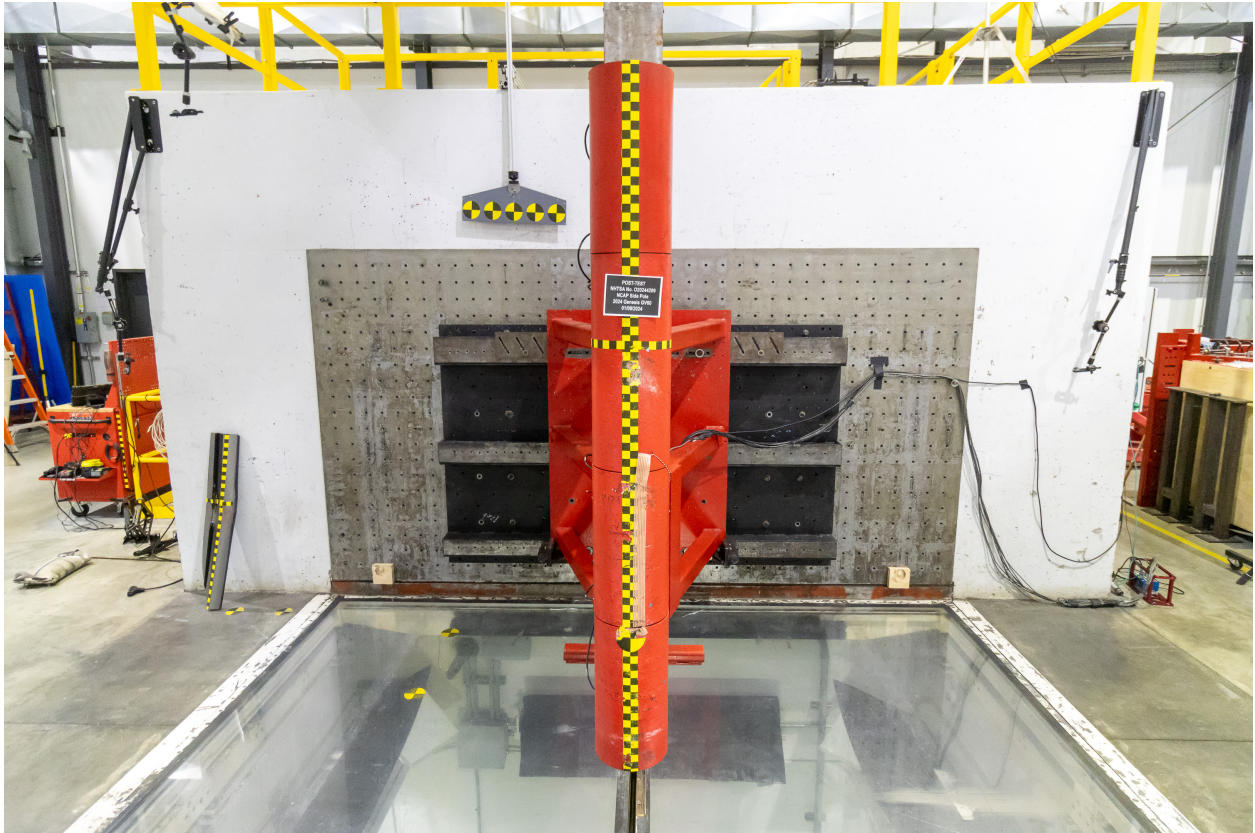


Figure A-60: Post-Test Pole Barrier Front View

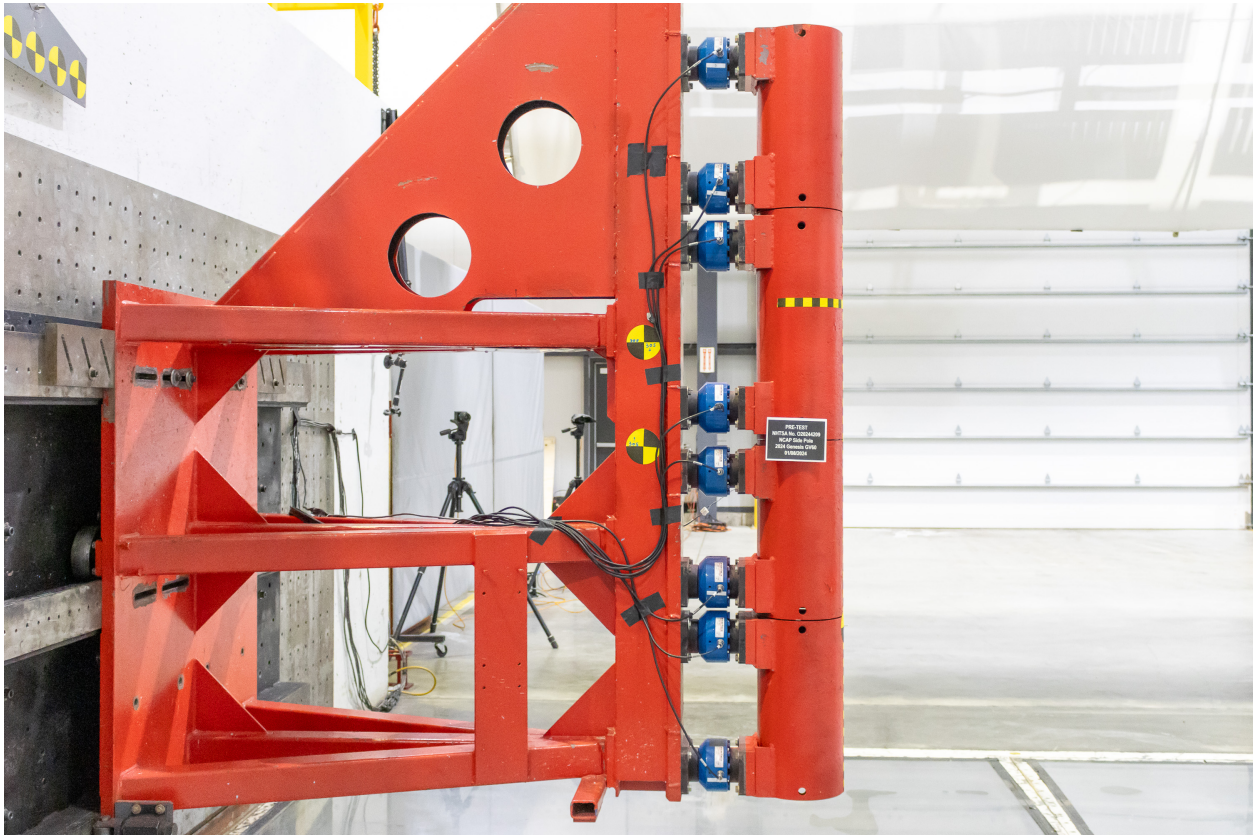


Figure A-61: Pre-Test Pole Barrier Side View



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

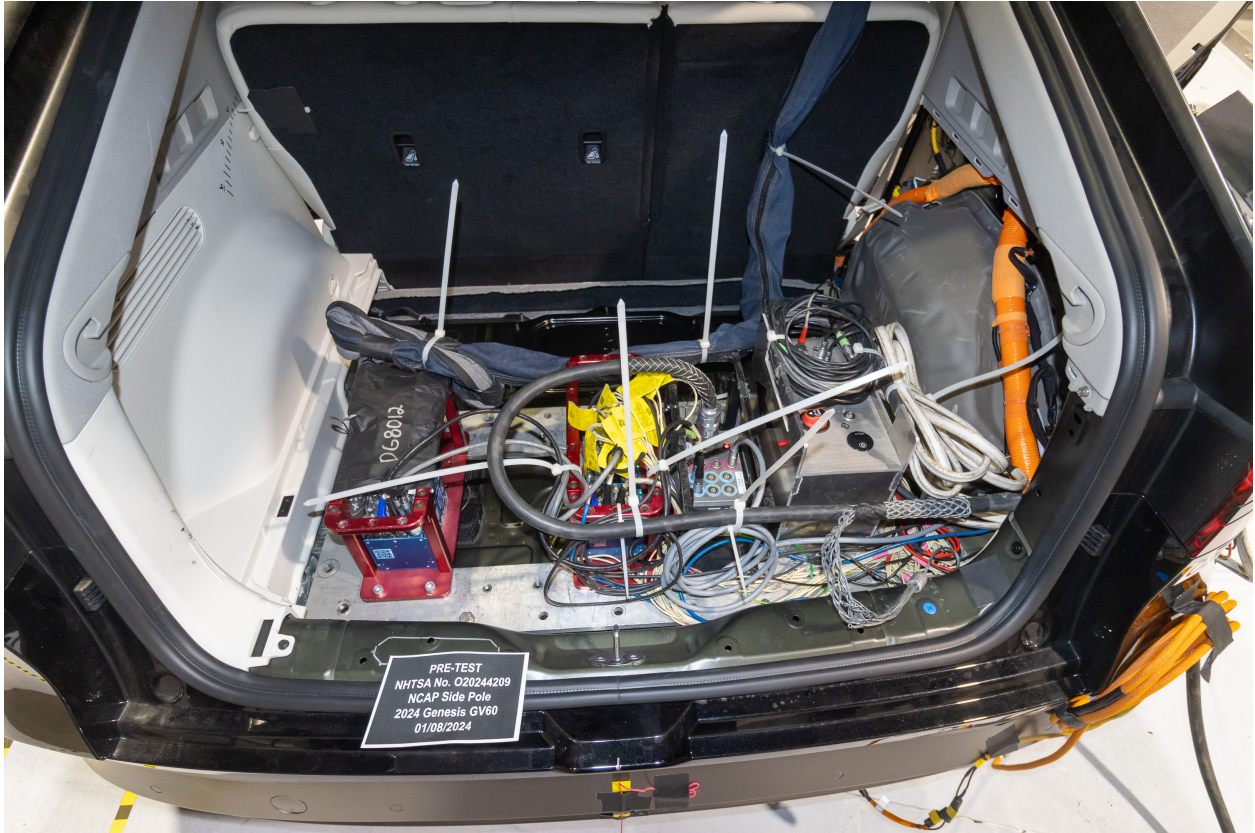


Figure A-63: Pre-Test Ballast View



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

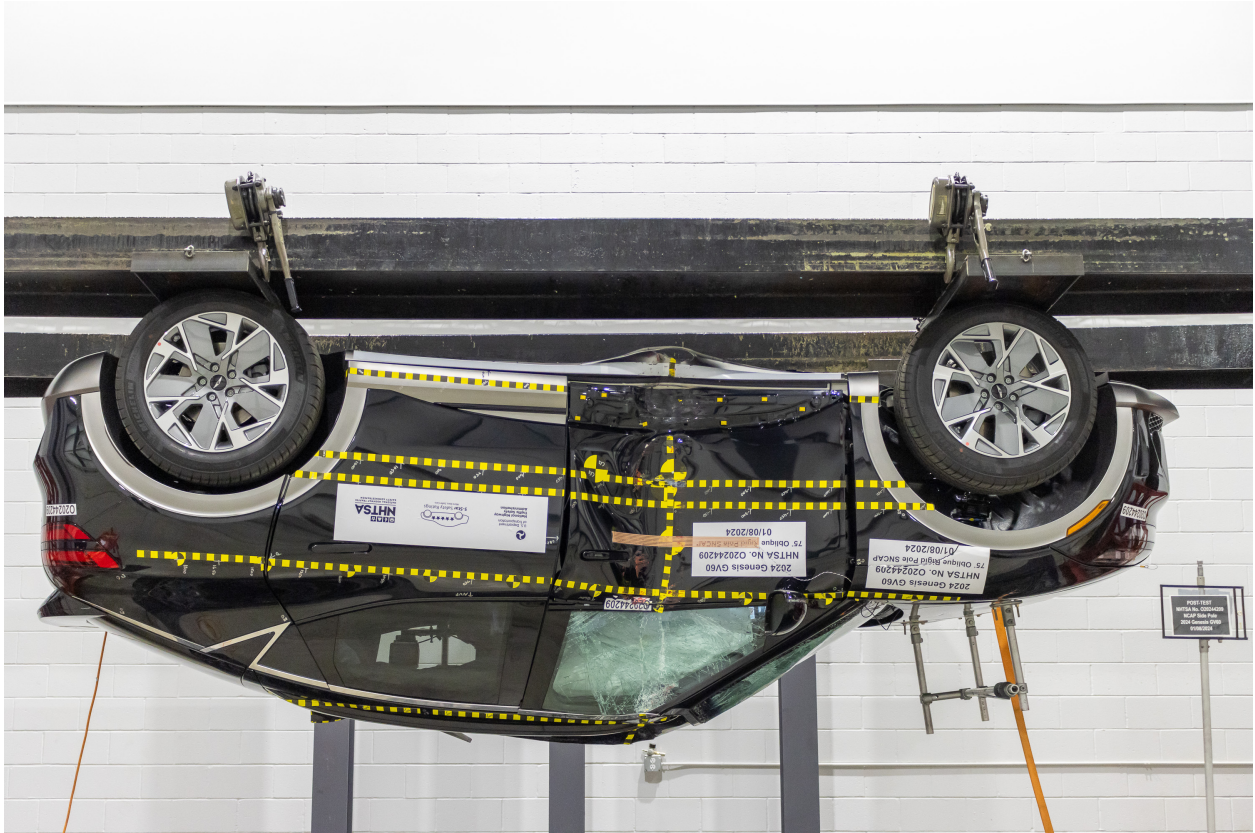


Figure A-67: FMVSS No. 301 Static Rollover 180 Degrees

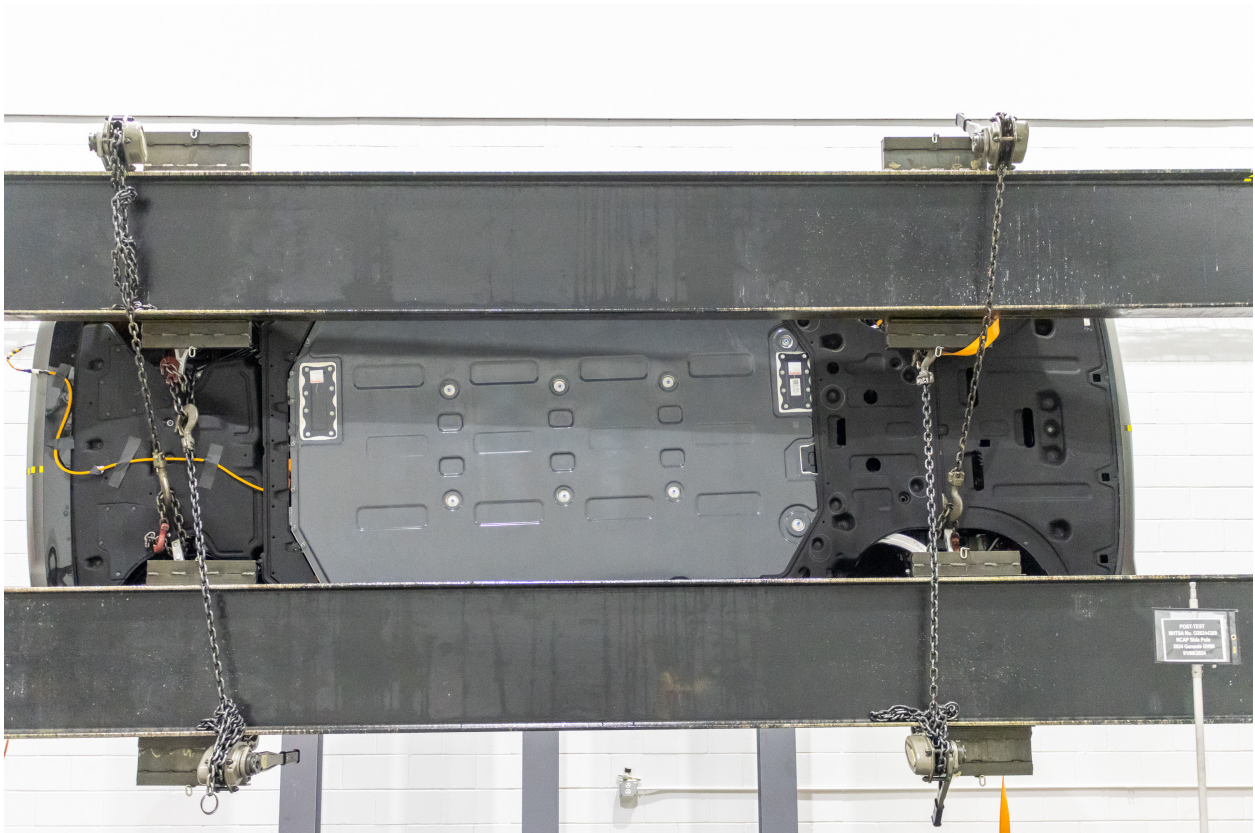


Figure A-68: FMVSS No. 301 Static Rollover 270 Degrees



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



Figure A-70: Impact Event

2024 GV60 STANDARD RWD

THE GENESIS EXPERIENCE

- 3 Yr / 36K Complimentary Maintenance*
- 3 Yr / 36K Complimentary Service Valet*
- 3 Yr Complimentary Map Care*
- Complimentary Genesis Connected Services*
- * Exclusions may apply, see retailer for details

STANDARD FEATURES:

ADVANCED SAFETY TECHNOLOGY

- Forward Collision Avoidance-Assist
- Lane Keeping Assist
- Lane Following Assist
- Driver Attention Warning
- Blind-Spot Collision-Avoidance Assist
- Rear Cross-Traffic Collision-Avoidance Assist
- Parking Distance Warning
- Safe Exit Assist

POWERTRAIN TECHNOLOGY

- 168kW Rear Electric Motors
- 77 kWh Battery

EXTERIOR

- 19-inch Alloy Wheels
- Vision Roof w/ Power Shade
- Power Hands-Free Smart Liftgate w/ Auto Open
- High Beam Assist

COMFORT & CONVENIENCE

- Leatherette Seating Surfaces
- Power Front Seats with 4-Way Power Lumbar
- Driver's Seat with Power Cushion Extension
- Heated Front Seats
- Cargo Cover
- Smart Cruise Control
- Intelligent Speed Limit Assist
- Highway Driving Assist
- Head-Up Display
- 12.3" Digital Instrument Cluster
- Power Telescoping Steering Wheel
- Dual Zone Climate Control
- Electrochromic Inside Mirror w/ HomeLink*
- Adjustable Interior Ambient Lighting

COMFORT & CONVENIENCE (cont.)

- Aluminum Door Sill Plates
- Acoustic Laminated Front Side Windows
- Passenger Walk-in Device
- Proximity Key w/ Push Button Start
- USB Port/12V Port

MULTIMEDIA & TECHNOLOGY

- 12.3" Navigation System w/AM/FM/HD Radio*
- SiriusXM® Radio w/ 90-day trial subscription; Not Available in AK & HI
- Android Auto® & Apple CarPlay (TM)
- Genesis Connected Services
- Wireless Device Charger
- Fingerprint Authentication
- Face Connect

Additional Standard Features

- Carpeted Floor Mats
- Full Battery Charge

GENESIS WARRANTY

- 5-year/60,000-mile New Vehicle Warranty*
- 10-year/100,000-mile Powertrain Warranty*
- 10-year/100,000-mile Electric Vehicle System Warranty*
- 7-year/unlimited-mile Anti-perforation Warranty*
- Limited warranties, see dealer for details

Manufacturer's Suggested Retail Price: \$52,000.00

ADDED FEATURES:

- *W/ BLACK(PH3) Paint \$575.00
- Accessories
- *Cargo Net \$50.00
- *Reversible Cargo Tray \$160.00
- **Roadside Emergency Kit \$75.00
- **Tire Aid Kit \$45.00
- **Wheel Locks \$85.00

SOLD TO: W1706
GENESIS OF MADISON
1800 W. BELTLINE HWY
MADISON WI 53713

SHIPPED TO: W1706

VIN: KMJK84SARU022707	ENGINE: EM1P9R2081D	EXTERIOR COLOR: VW BLACK	INTERIOR/SEAT COLOR: ASH GRAY/GLACIER
MODEL: W0402REZ	PORT OF ENTRY: TC	TRANSPORT: TRUCK	ACCESSORY WEIGHT: 15 lbs./7 kgs.

EMISSIONS:
This vehicle meets emissions requirements in all 50 states and is a CARB certified Zero Emission

Inland Freight & Handling: \$1,195.00

TOTAL PRICE: \$54,185.00

304 A 3004TLIBER

Fuel Economy and Environment Electric Vehicle

Fuel Economy

112 MPGe Large Cars range from 14 to 140 MPGe. The best vehicle rates 140 MPGe.

combined city highway
125 99 30
MPGe per 100 miles

Driving Range
When fully charged, vehicle can travel about **294 miles**

Charge Time: 7.2 hours (240V)

You Save \$6,250 in fuel costs over 5 years compared to the average new vehicle.

Annual fuel Cost \$700

Fuel Economy & Greenhouse Gas Rating (tailpipe only) **10** Best

Smog Rating (tailpipe only) **10** Best

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 \$5,750 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$0.35 per kWh for MPGe to miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fuel economy.gov
Calculate personalized estimates and compare vehicles

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.

Source: National Highway Traffic Safety Administration (NHTSA).
www.safercar.gov or 1-888-327-4236

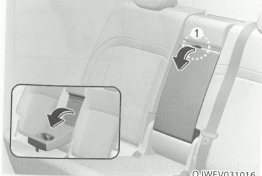
PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS COUNTRY: U.S./CANADIAN PARTS CONTENT: 1 %
MAJOR SOURCES OF FOREIGN PARTS CONTENT: KOREA: 90 %
FOR THIS VEHICLE: FINAL ASSEMBLY POINT: ULSAN, KOREA
COUNTRY OF ORIGIN:

ENGINE: KOREA TRANSMISSION: KOREA
Note: Parts content does not include final assembly, distribution, or other non-parts costs.

Figure A-71: Monroney Label

Armrest



The armrest is located in the center of the rear seat.

Grab the handle (1) on the upper end of the arm rest. Then, pull down the handle to use the arm rest.

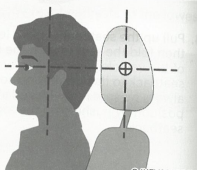
NOTICE
Do not put any items on the rear center seat. Those items may get damaged, when the arm rest is pulled down.

Headrest

The vehicle's front and rear seats have adjustable headrests. The headrests provide comfort for passengers, but more importantly they are designed to help protect passengers from whiplash and other neck and spinal injuries during an accident, especially in a rear impact collision.


WARNING
To help reduce the risk of serious injury or death in an accident, take the following precautions when adjusting your headrests:

- Always properly adjust the headrests for all passengers BEFORE starting the vehicle.
- NEVER let anyone ride in a seat with the headrest removed or reversed.



- Adjust the headrests so the middle of the headrest is at the same height as the height of the top of the eyes.
- NEVER adjust the headrest position of the driver's seat when the vehicle is in motion.
- Adjust the headrest as close to the passenger's head as possible. Do not use a seat cushion that holds the body away from the seatback.
- Make sure the headrest locks into position after adjusting it.

WARNING

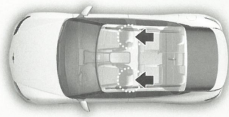


When sitting on the rear seat, do not adjust the height of the headrest to the lowest position.

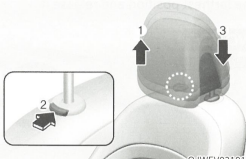
CAUTION
When there is no occupant in the rear seats, adjust the height of the headrest to the lowest position. The rear seat headrest can reduce the visibility of the rear area.

NOTICE
To prevent damage, NEVER hit or pull on the headrests.

Front seat headrests



The driver's and front passenger's seats are equipped with adjustable headrests for the passengers safety and comfort.



Adjusting the height up and down

To raise the headrest:

1. Pull it up to the desired position (1).

To lower the headrest:

1. Push and hold the release button (2) on the headrest support.
2. Lower the headrest to the desired position (3).

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

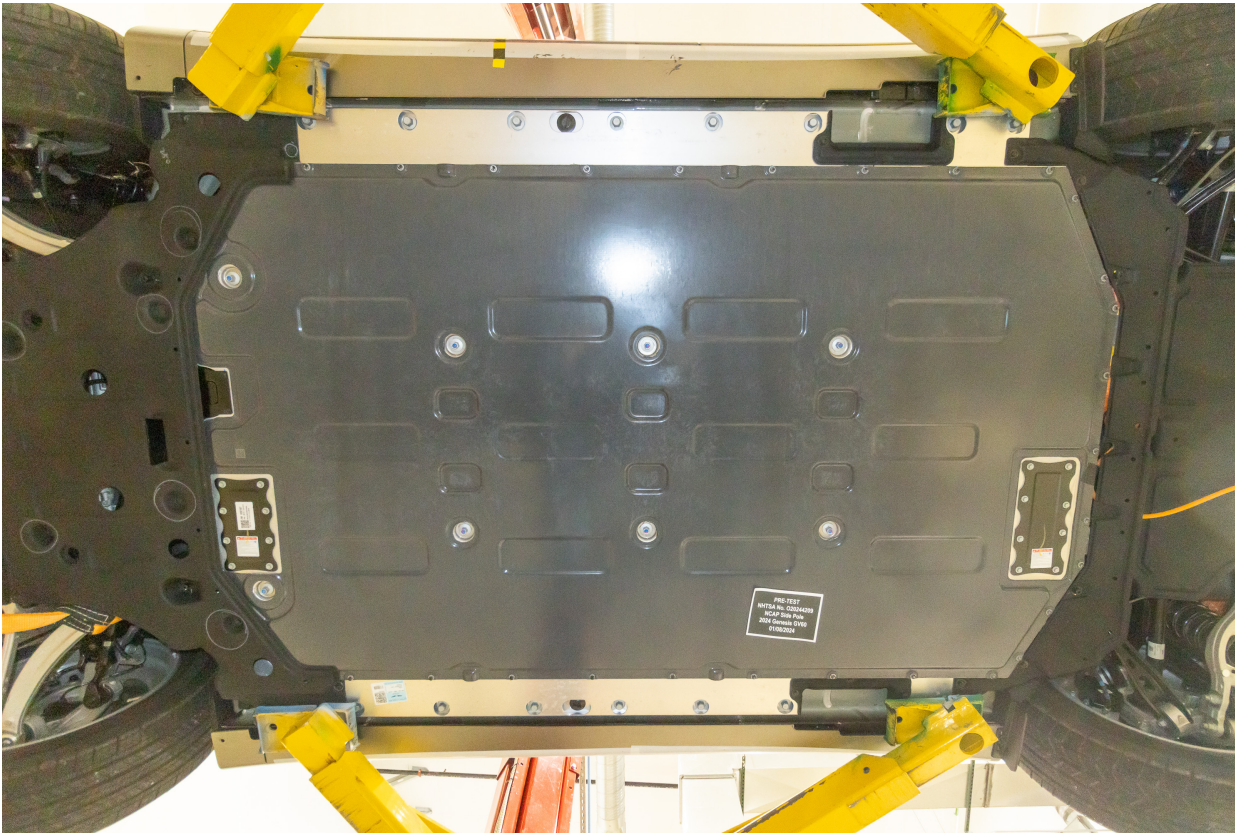


Figure 305-9: Pre-Impact View of Propulsion Battery



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)

Photo Not Applicable

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

Photo Not Applicable

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

Photo Not Applicable

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)

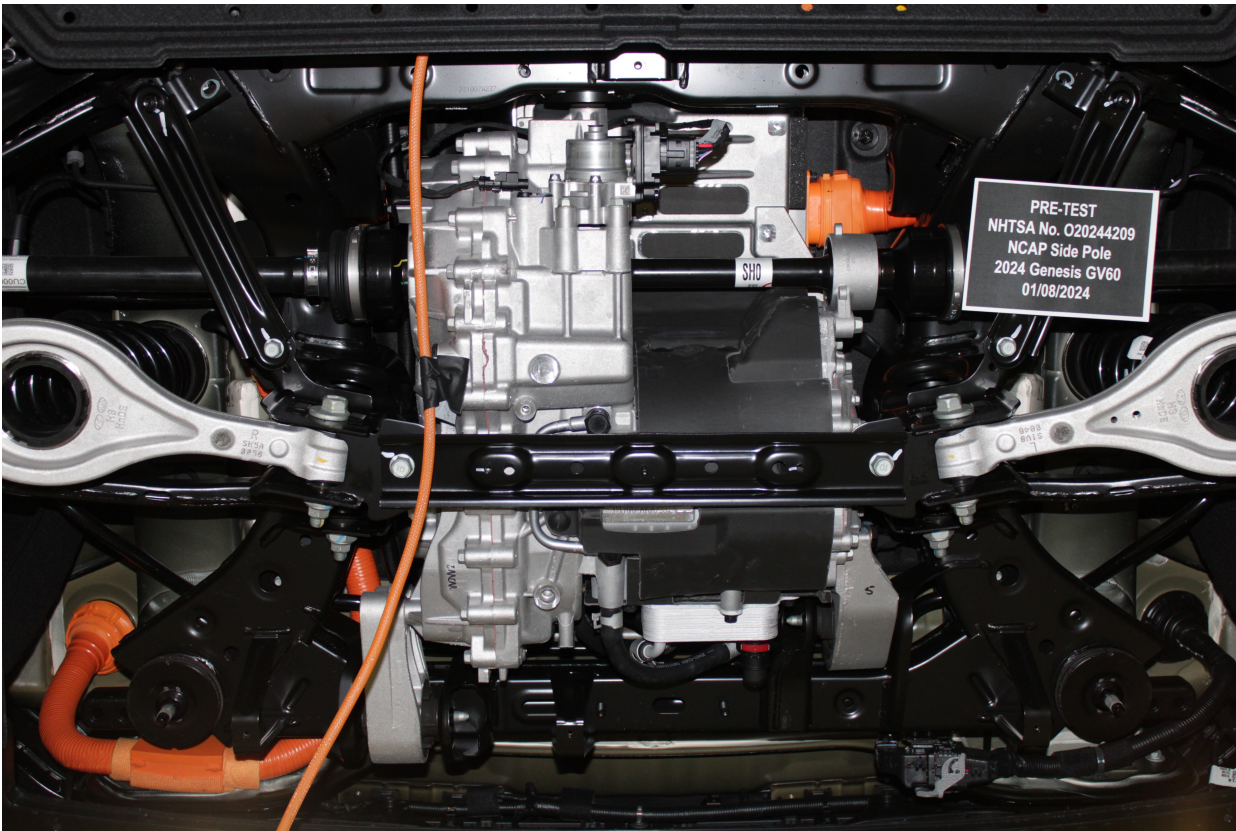


Figure 305-16: Pre-Impact View of Electric Propulsion Drive

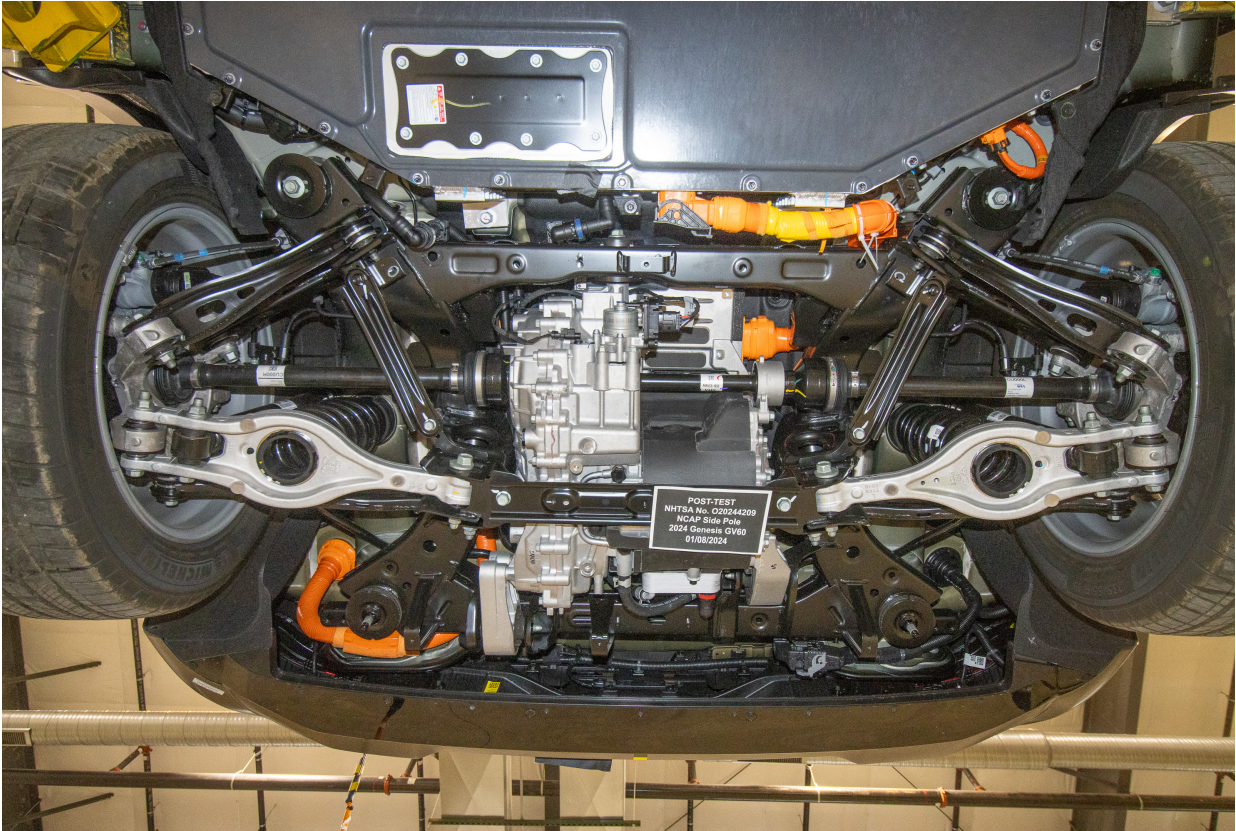


Figure 305-17: Post-Impact View of Electric Propulsion Drive



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

Photo Not Applicable

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



PRE-TEST
NHTSA No. O20244209
NCAP Side Pole
2024 Genesis GV60
01/08/2024

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



PRE-TEST
NHTSA No. O20244209
NCAP Side Pole
2024 Genesis GV60
01/08/2024

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

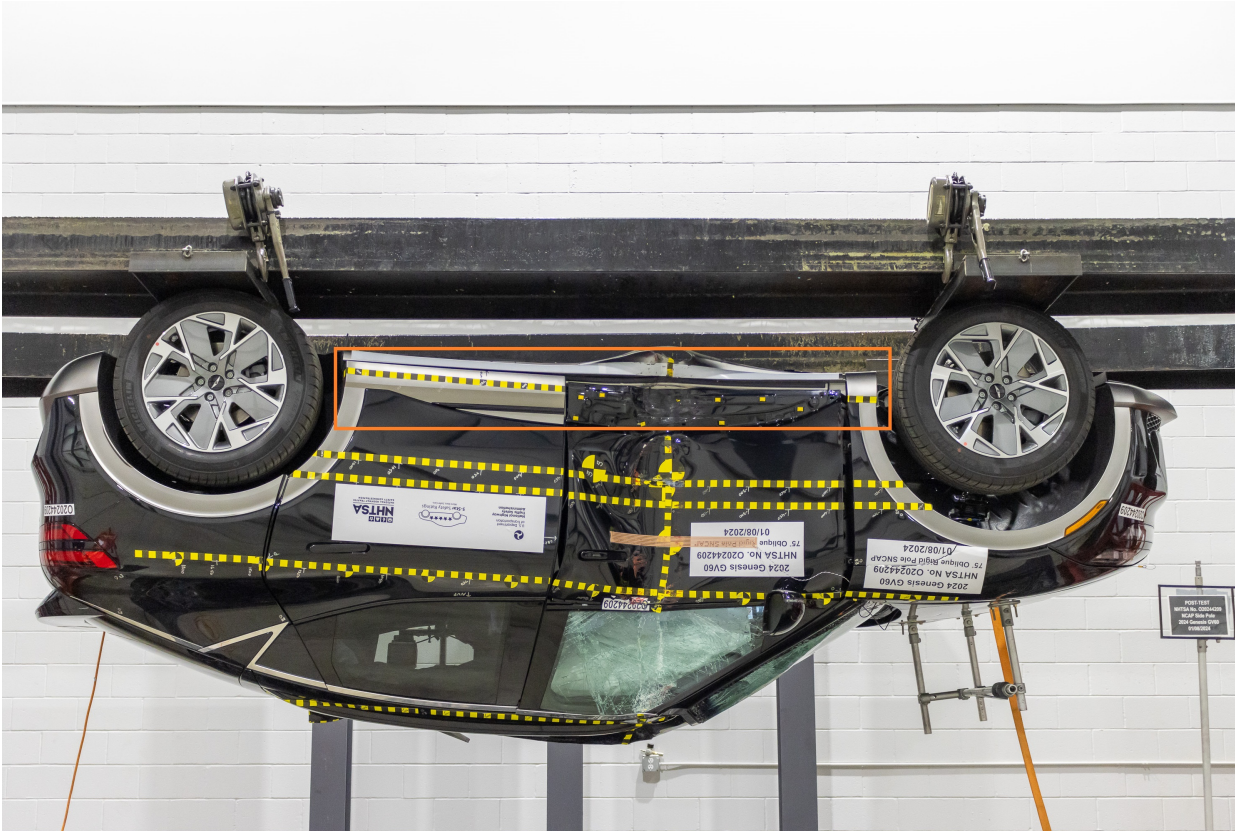


Figure 305-29: FMVSS No. 305 Static Rollover 180 Degrees

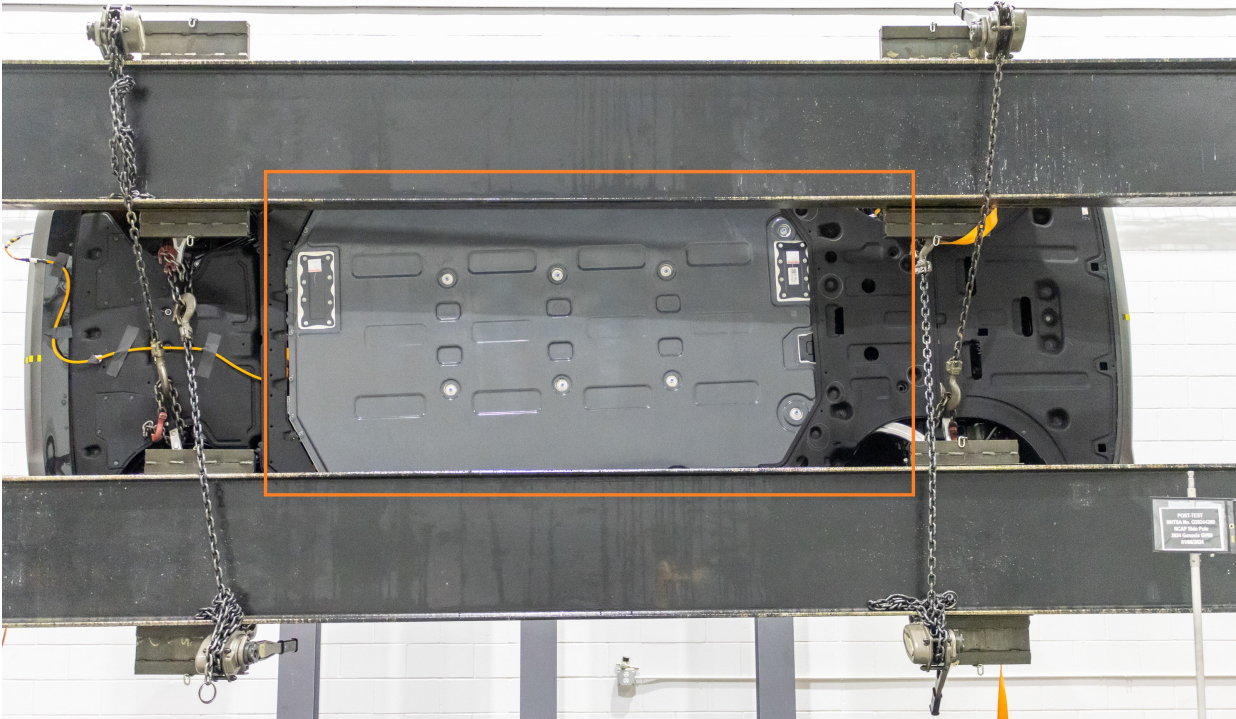


Figure 305-30: FMVSS No. 305 Static Rollover 270 Degrees



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)

Photo Not Applicable

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

Photo Not Applicable

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

Photo Not Applicable

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

Photo Not Applicable

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

Photo Not Applicable

Figure 305-39: Pre-Impact Charging Port View

Photo Not Applicable

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

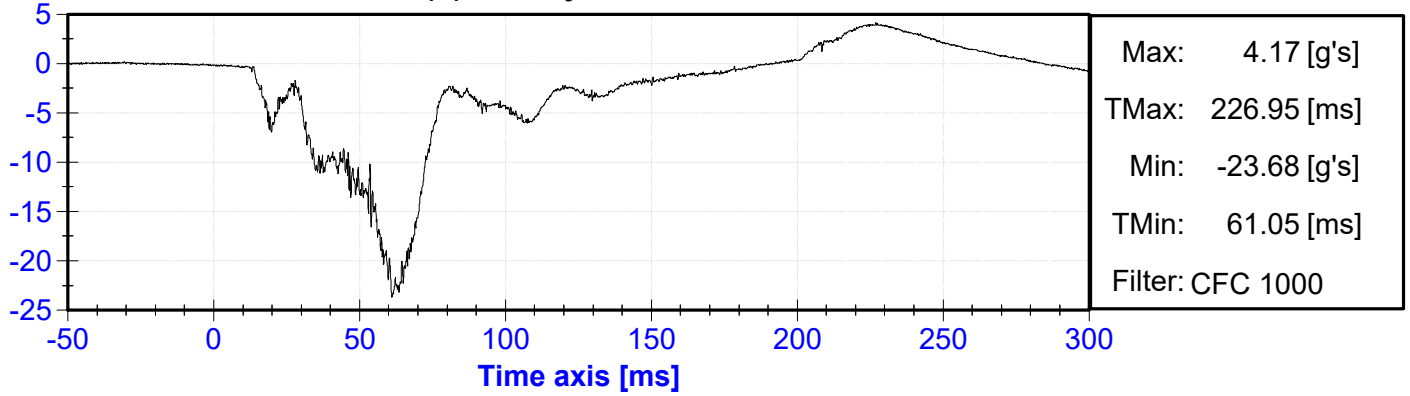
Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
Left Floor Sill Acceleration (Y)
Left A-Pillar Sill Acceleration (Y)
Left Lower A-Pillar Acceleration (Y)
Left Mid A-Pillar Acceleration (Y)
Left B-Pillar Sill Acceleration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

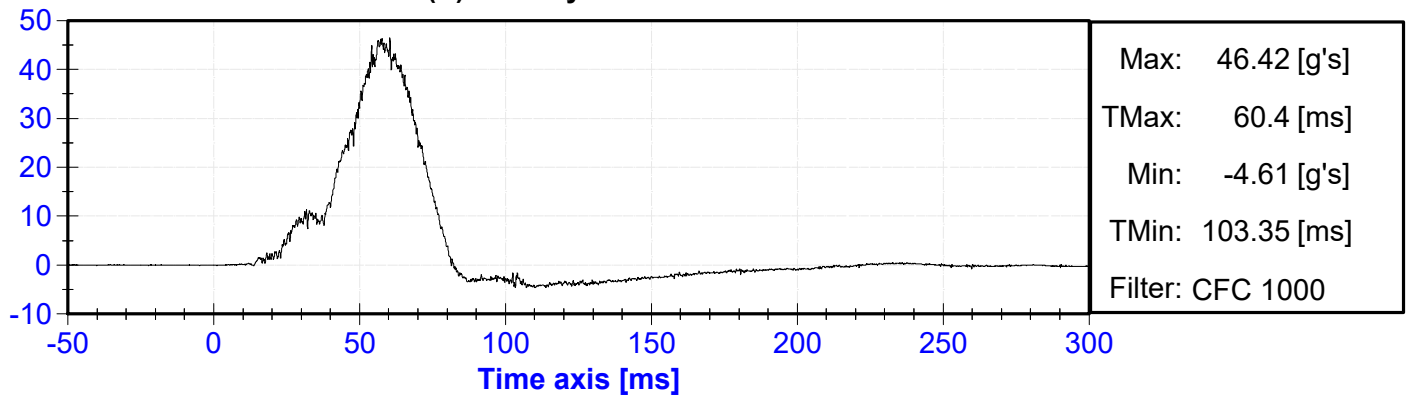
ACCELERATION [g's]

Driver Head Acceleration (X) Primary vs. Time



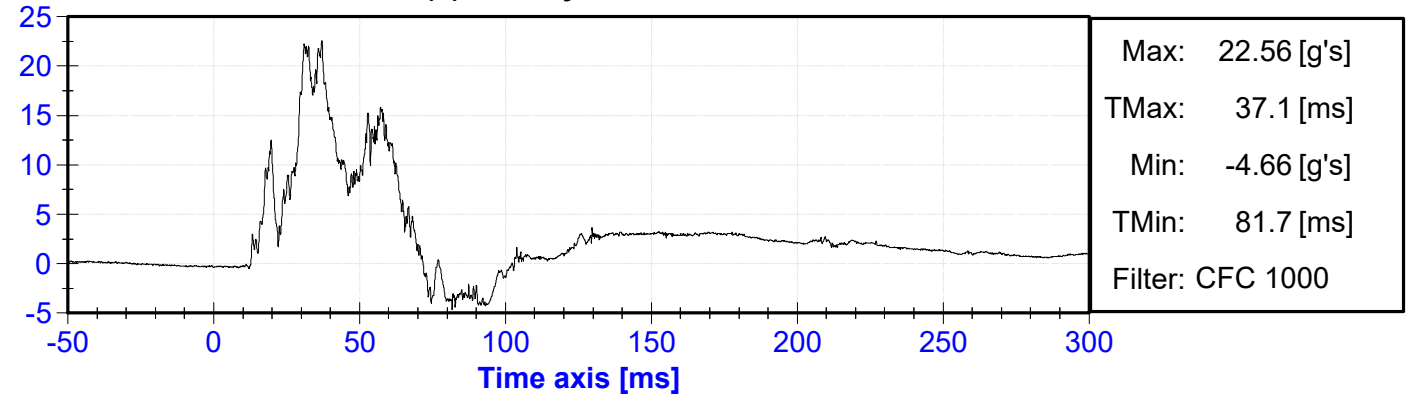
ACCELERATION [g's]

Driver Head Acceleration (Y) Primary vs. Time



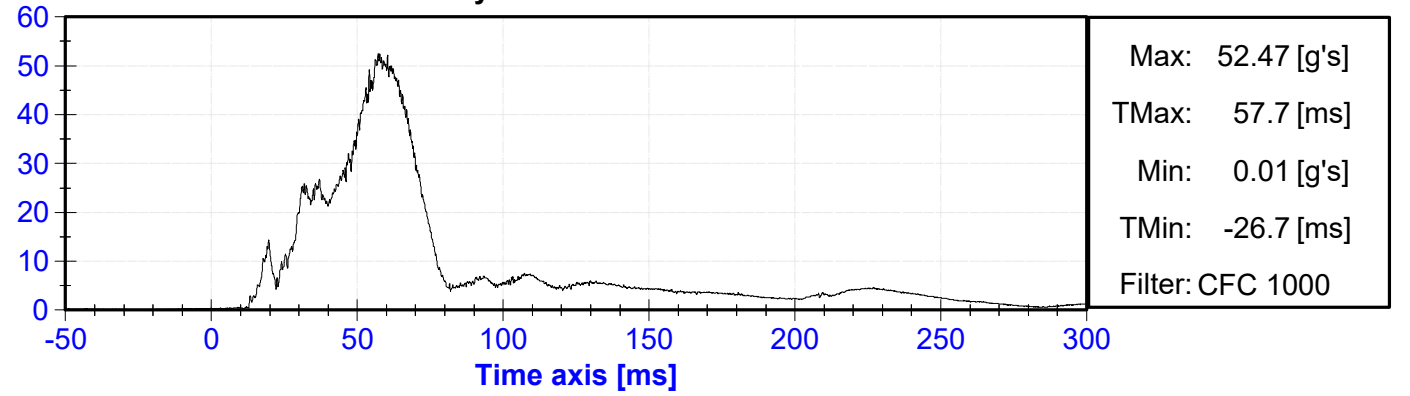
ACCELERATION [g's]

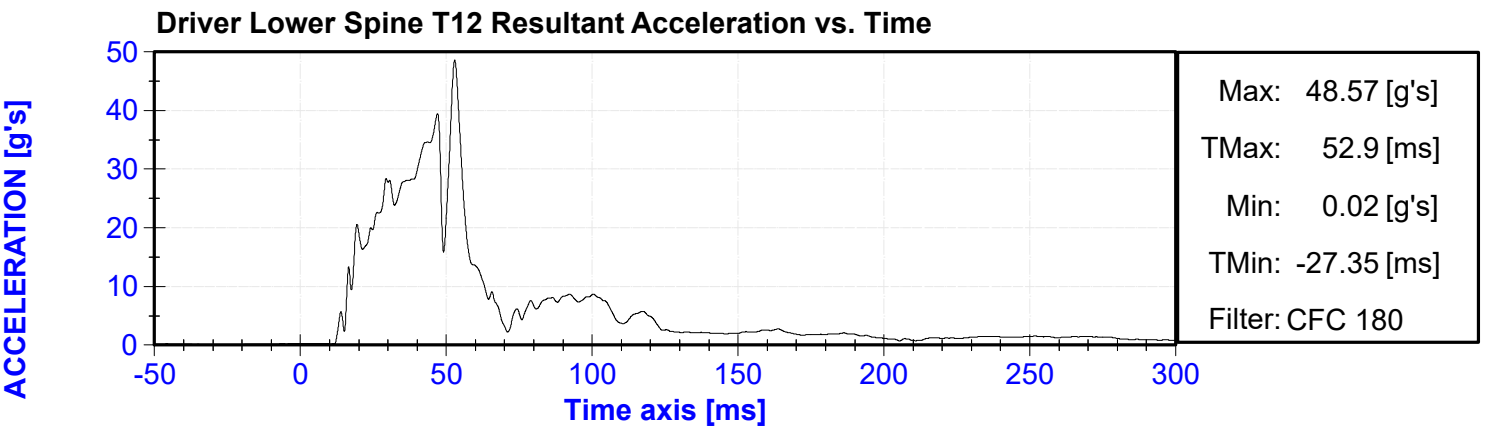
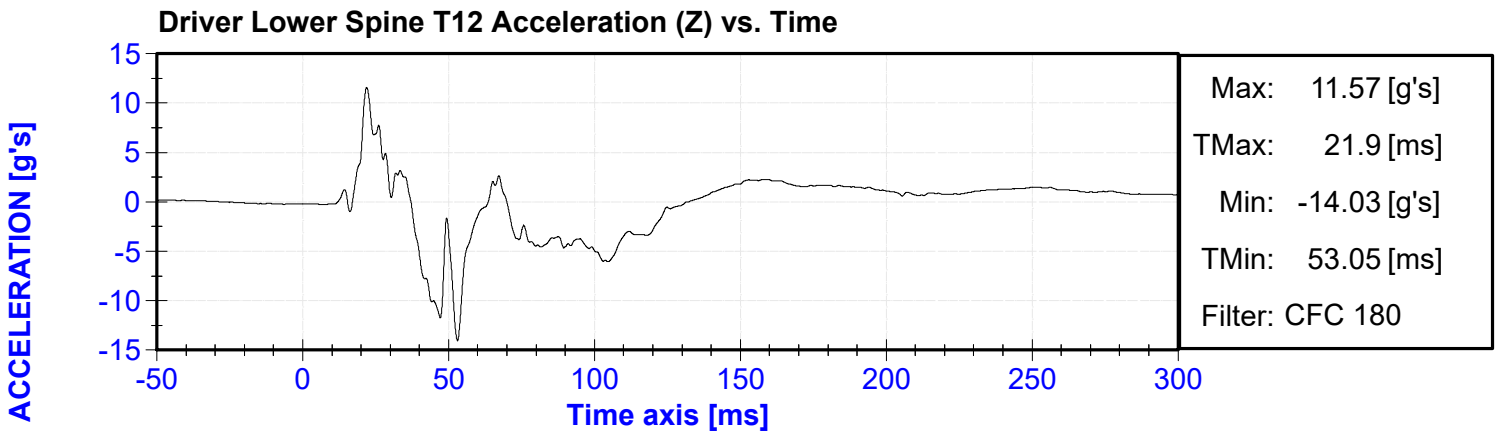
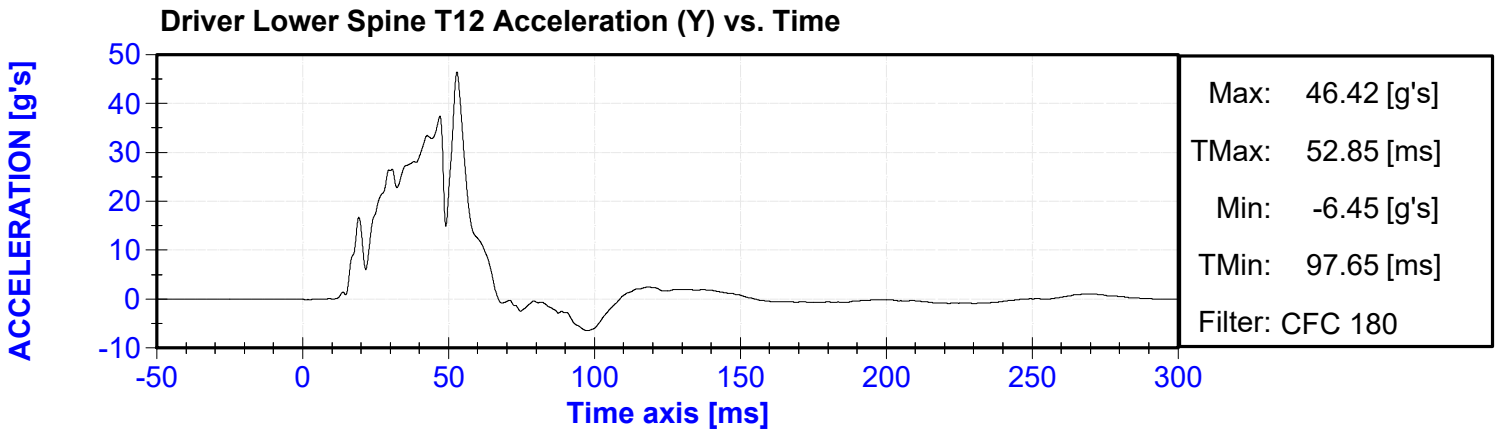
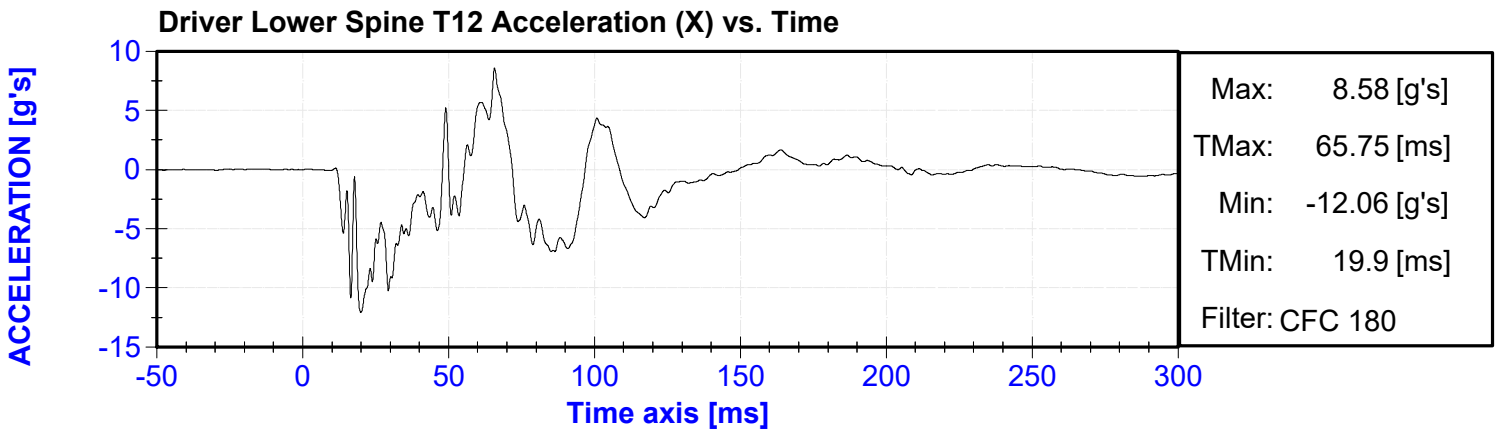
Driver Head Acceleration (Z) Primary vs. Time

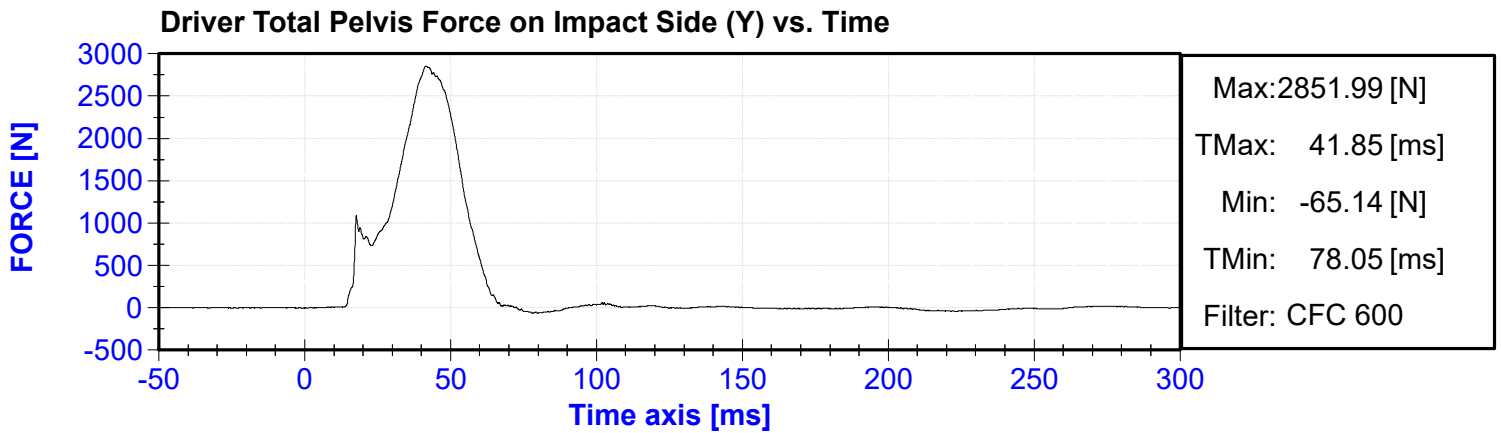
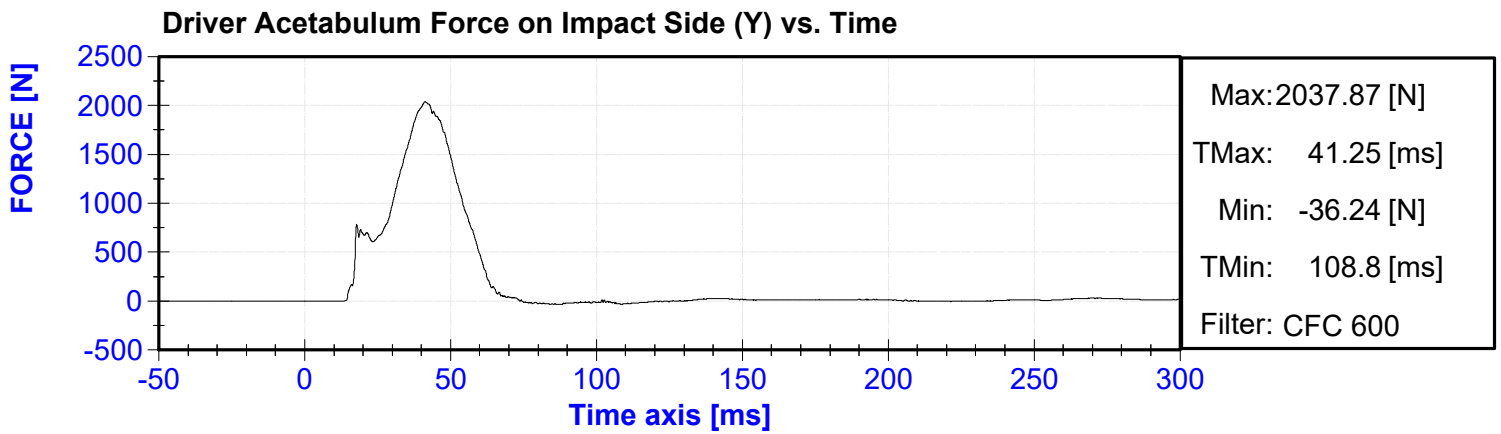
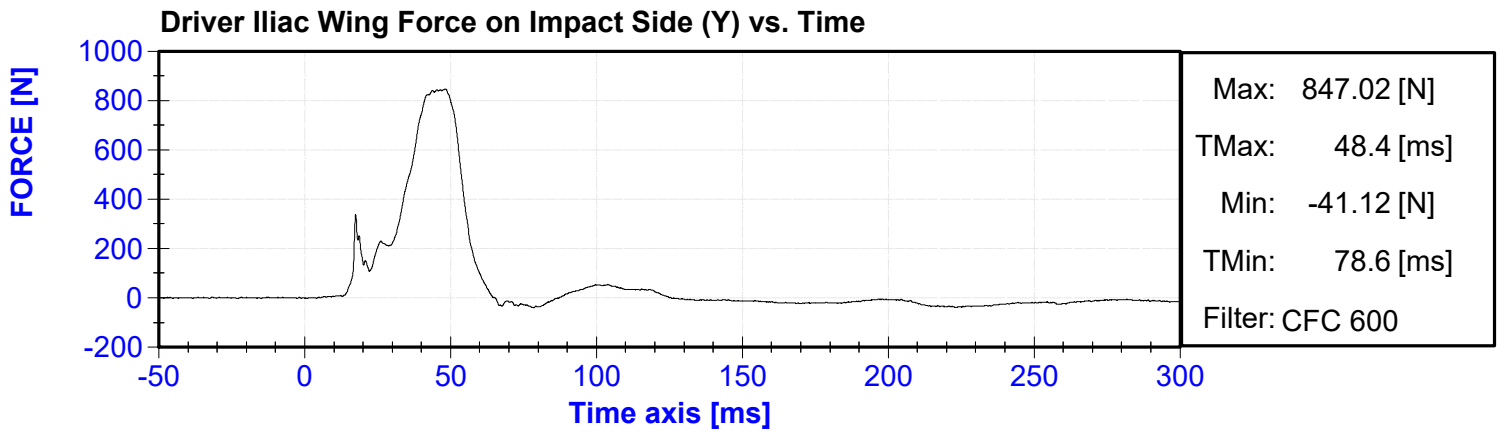


ACCELERATION [g's]

Driver Head Resultant Primary vs. Time







APPENDIX C

DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

CALIBRATION TEST RESULTS

PRE-TEST

SID-IIS 5TH PERCENTILE FEMALE - DRIVER ATD

SERIAL NO:DG8012

(CONFIGURED FOR LEFT SIDE IMPACT)

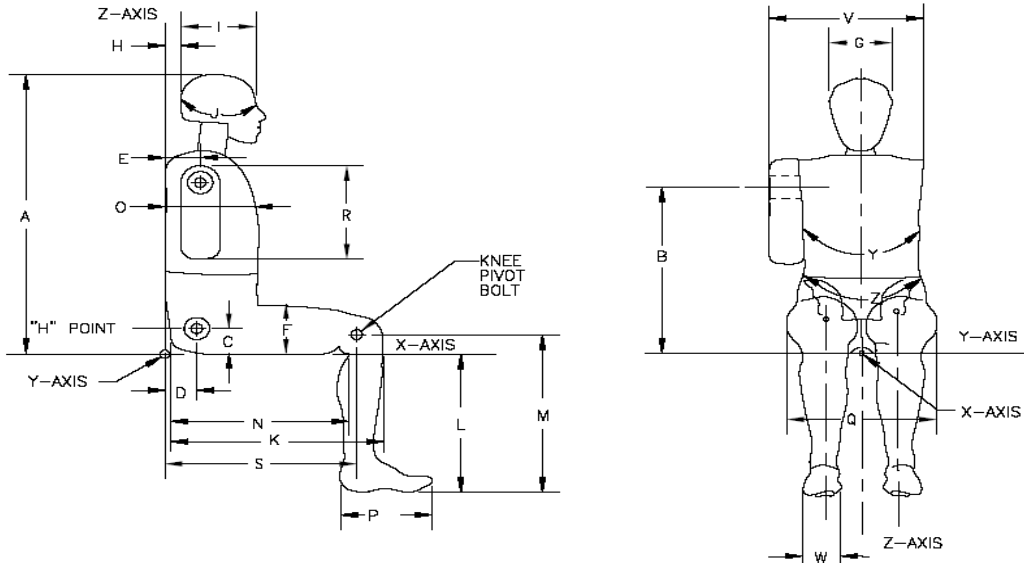


External Measurements - SID-IIs

Technician: K. Brogan

Date: 12/05/2023

Dummy Serial Number: DG8012



Symbol	Description	Specification (mm)		Result (mm)	Pass/Fail
A	Sitting Height	772	788	781	Pass
B	Shoulder Pivot Height	437	453	447	Pass
C	H-point Height	79	89	83	Pass
D	H-point from seatback	141	151	145	Pass
E	Shoulder Pivot from Backline	97	107	104	Pass
F	Thigh Clearance	119	135	129	Pass
G	Head Breadth	140	148	144	Pass
H	Head Back from Backline	40	46	44	Pass
I	Head Depth	178	188	183	Pass
J	Head Circumference	541	551	545	Pass
K	Buttock to Knee Length	514	540	530	Pass
L	Popliteal Height	343	369	361	Pass
M	Knee Pivot to floor height	392	409	399	Pass
N	Buttock Popliteal Length	416	442	437	Pass
O	Chest Depth w/o jacket	195	211	204	Pass
P	Foot Length	216	232	220	Pass
Q	Hip Breadth (w/pelvic plugs)	313	323	318	Pass
R	Arm Length	249	259	254	Pass
S	Knee Joint to seatback	477	493	485	Pass
V	Shoulder Width	341	357	352	Pass
W	Foot Width	78	94	85	Pass
Y	Chest Circumference w/jacket	851	881	869	Pass
Z	Waist Circumference	761	791	779	Pass

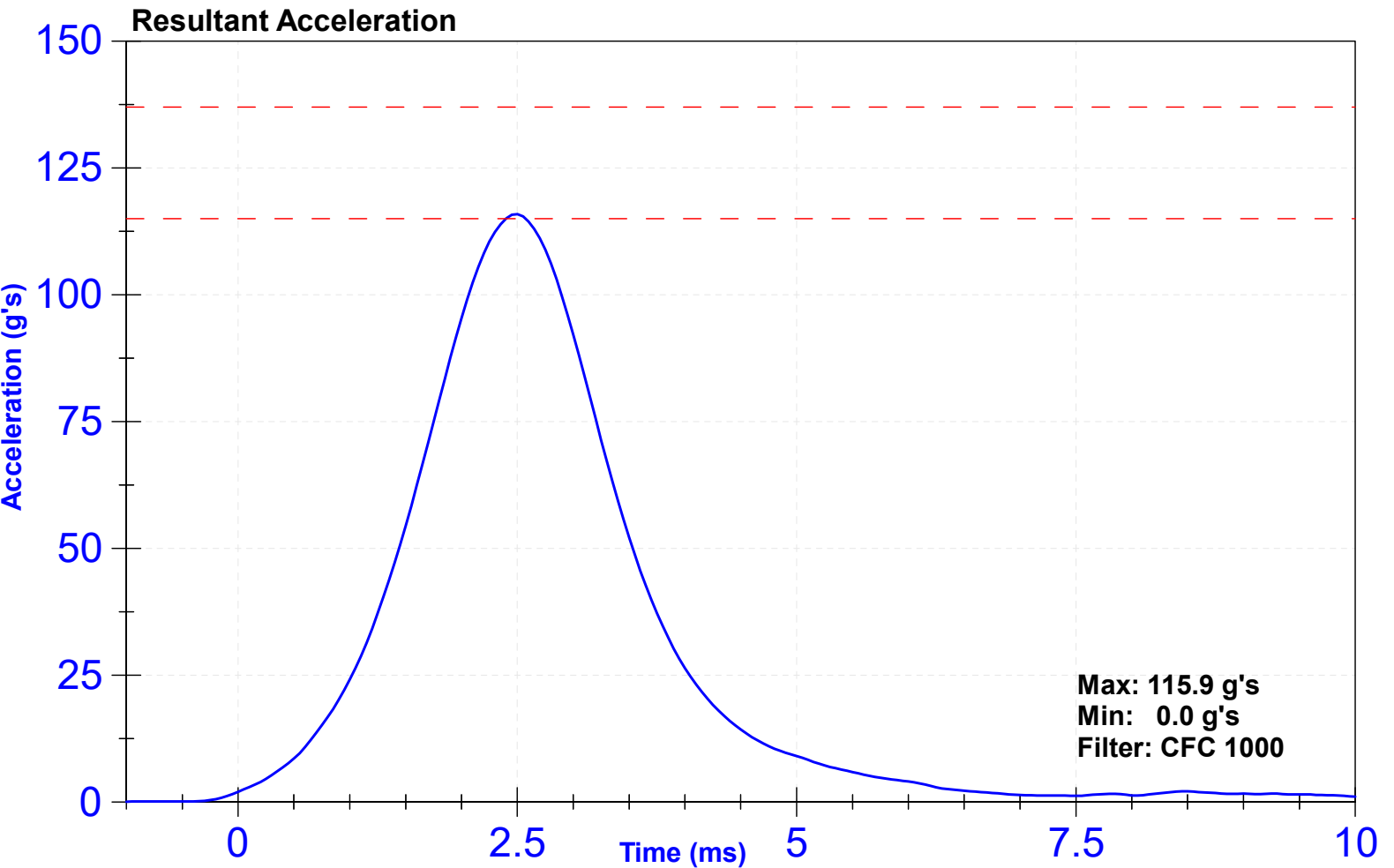
ATD Manufacturer	FTSS	Test Technician	J. Rios
ATD Serial Number	DG8012	Laboratory Supervisor	C. Mantell

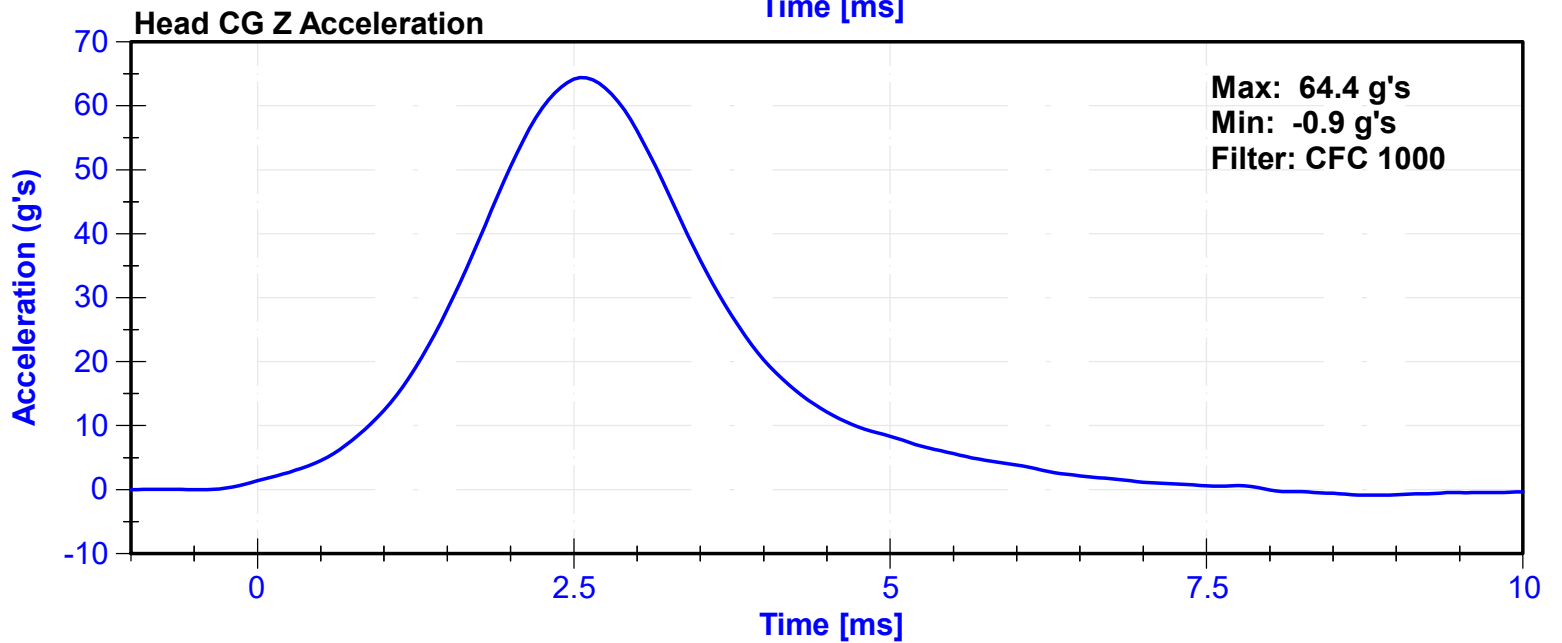
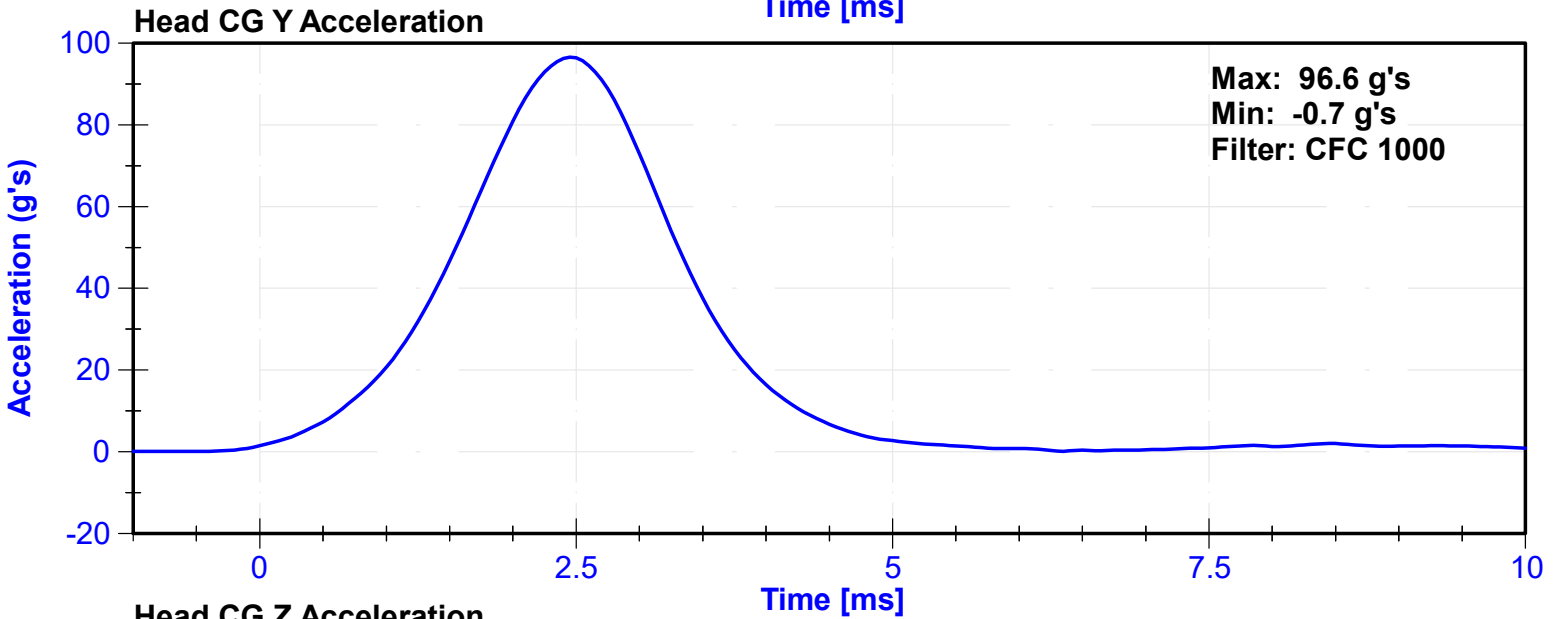
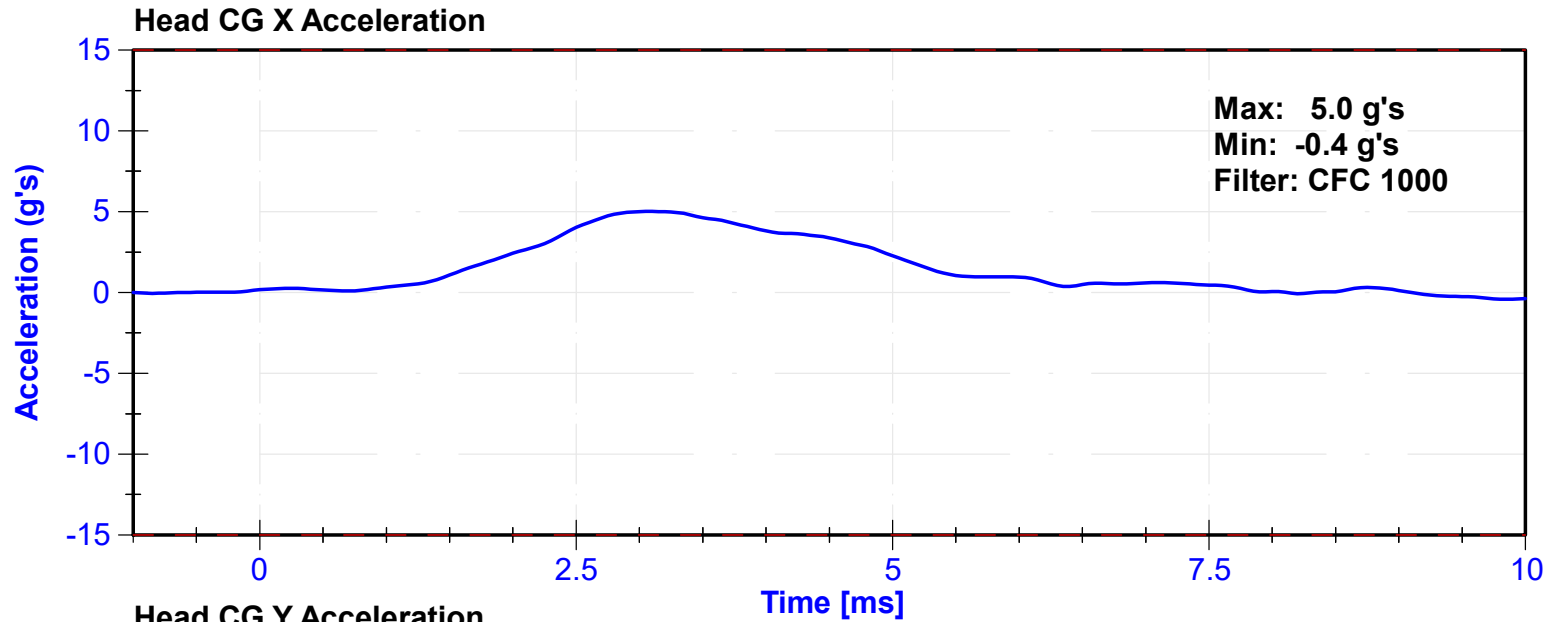
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.9	Pass
Humidity	10	70	%	20	Pass
Resultant Acceleration	115	137	g's	115.9	Pass
Oscillation	0	15	%	1.8	Pass
Fore-Aft Acceleration	-15	15	g's	5.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibratio Date	Calibratio Due Date
X Accelerometer	Endevco	P74788	11/16/2023	5/14/2024
Y Accelerometer	Endevco	P51668	11/16/2023	5/14/2024
Z Accelerometer	Endevco	P83319	11/16/2023	5/14/2024





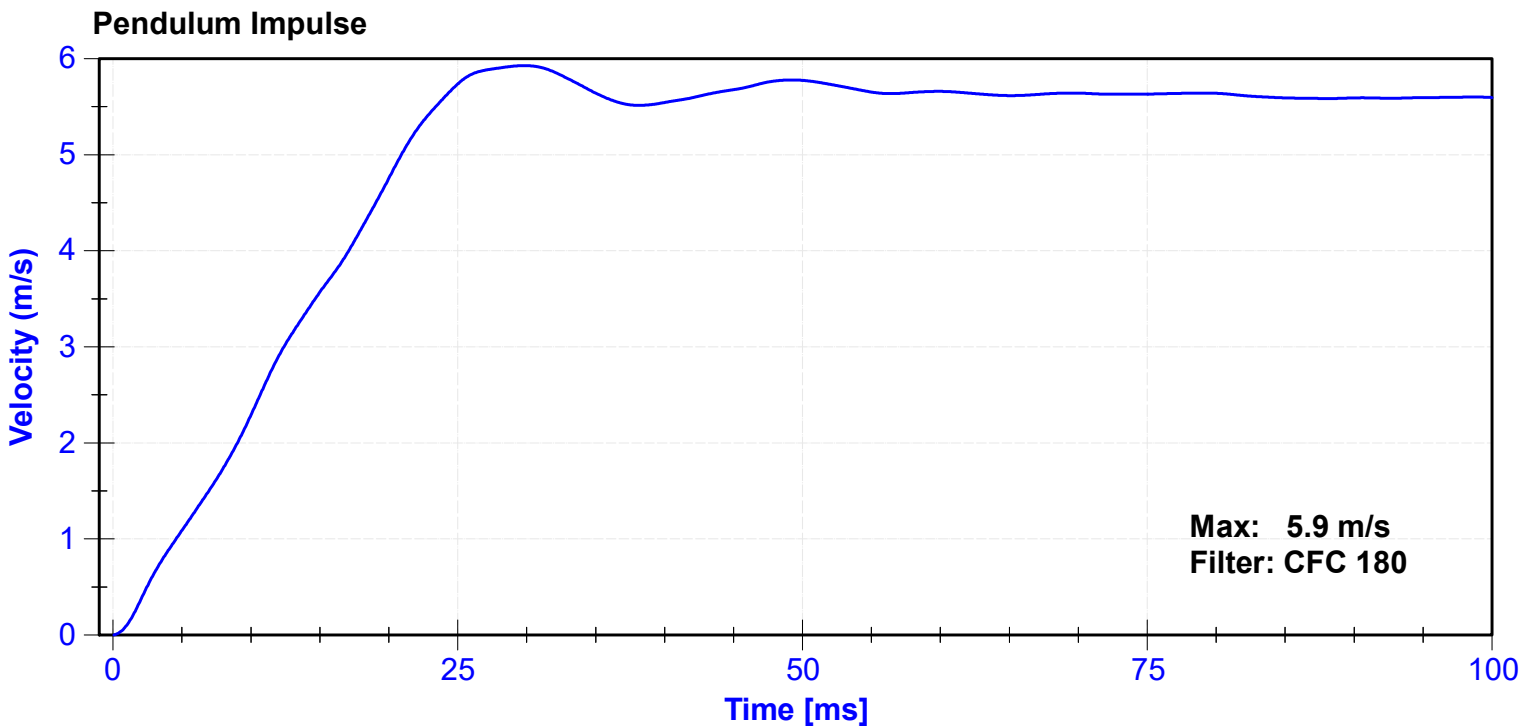
ATD Manufacturer	FTSS	Test Technician	J. Rios
ATD Serial Number	DG8012	Laboratory Supervisor	C. Mantell

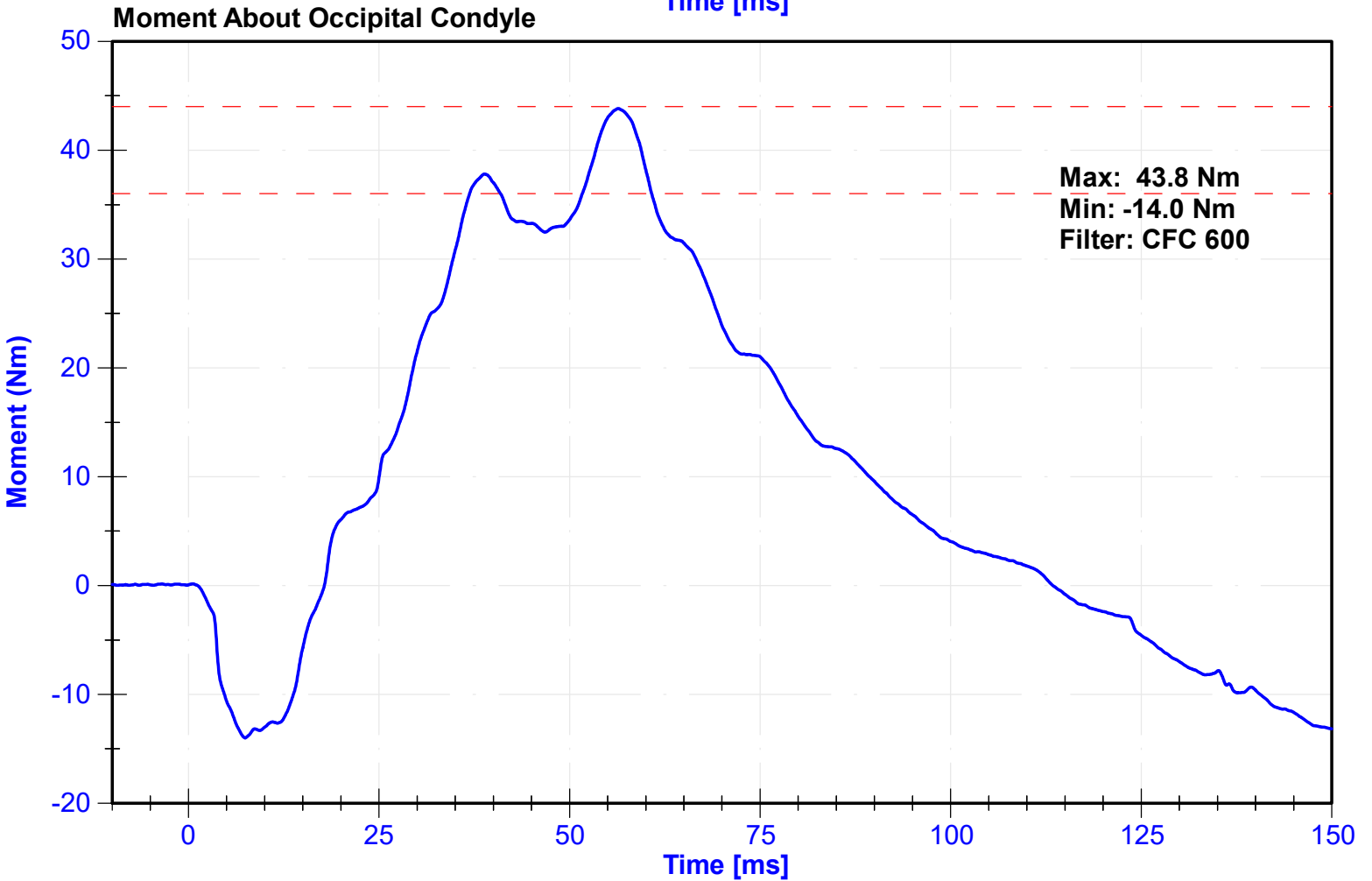
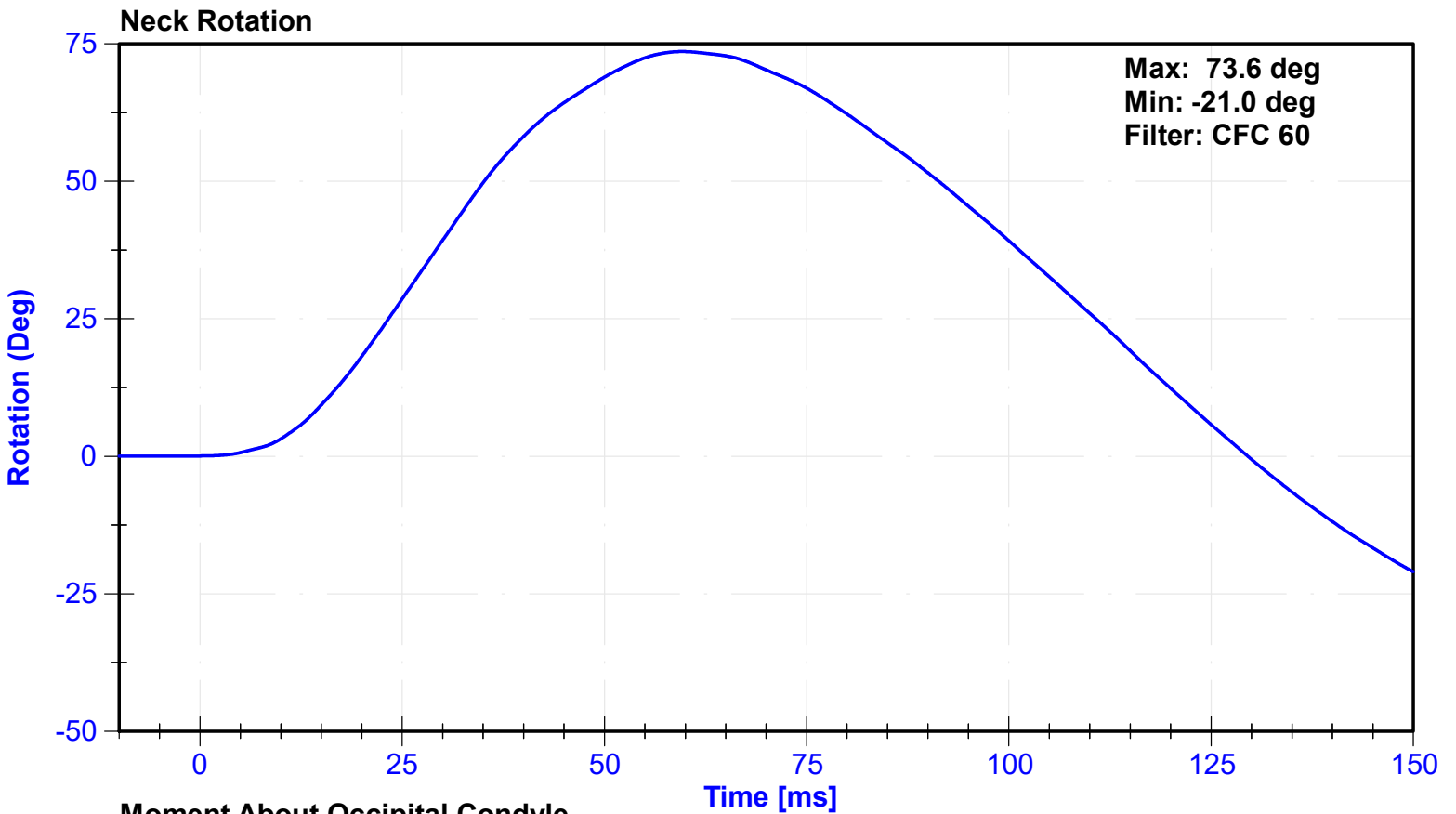
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.9	Pass
Humidity	10	70	%	20	Pass
Velocity	5.51	5.63	m/s	5.526	Pass
Pendulum Impulse at 10ms	2.2	2.8	m/s	2.29	Pass
Pendulum Impulse at 15ms	3.3	4.1	m/s	3.57	Pass
Pendulum Impulse at 20ms	4.4	5.4	m/s	4.75	Pass
Pendulum Impulse at 25ms	5.4	6.1	m/s	5.74	Pass
Pendulum Impulse from 25 to 100ms	5.5	6.2	m/s	5.93	Pass
Neck Rotation	71	81	deg	73.6	Pass
Time at Maximum Rotation	50	70	ms	59.6	Pass
Moment about the OC	36	44	Nm	43.8	Pass
Moment Decay to 0 Nm	102	126	ms	113.4	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	7231C-750	10/31/2023	4/28/2024
Pendulum Potentiometer	Servo	4961	10/2/2023	10/1/2024
Condyle Potentiometer	Servo	DS185	10/2/2023	10/1/2024
Upper Neck Load Cell	Denton	1716ATF_2184-FY	5/18/2023	5/17/2024





ATD Manufacturer	FTSS	Test Technician	J. Rios
ATD Serial Number	DG8012	Laboratory Supervisor	C. Mantell

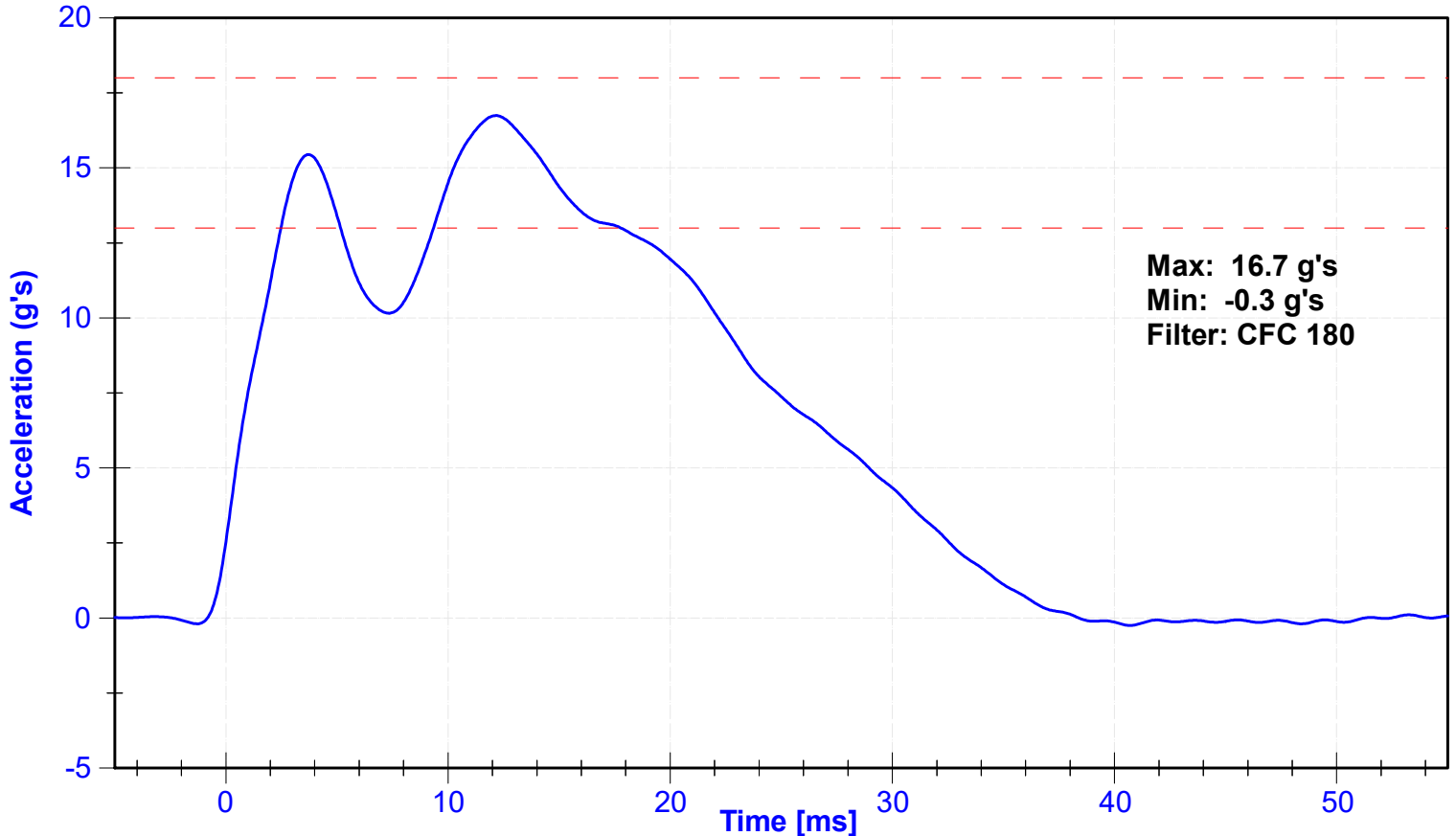
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.1	Pass
Humidity	10	70	%	40	Pass
Velocity	4.2	4.4	m/s	4.32	Pass
Probe Acceleration	13	18	g's	16.7	Pass
Shoulder Deflection	28	37	mm	28.0	Pass
Lateral Upper Spine Acceleration	17	22	g's	21.5	Pass

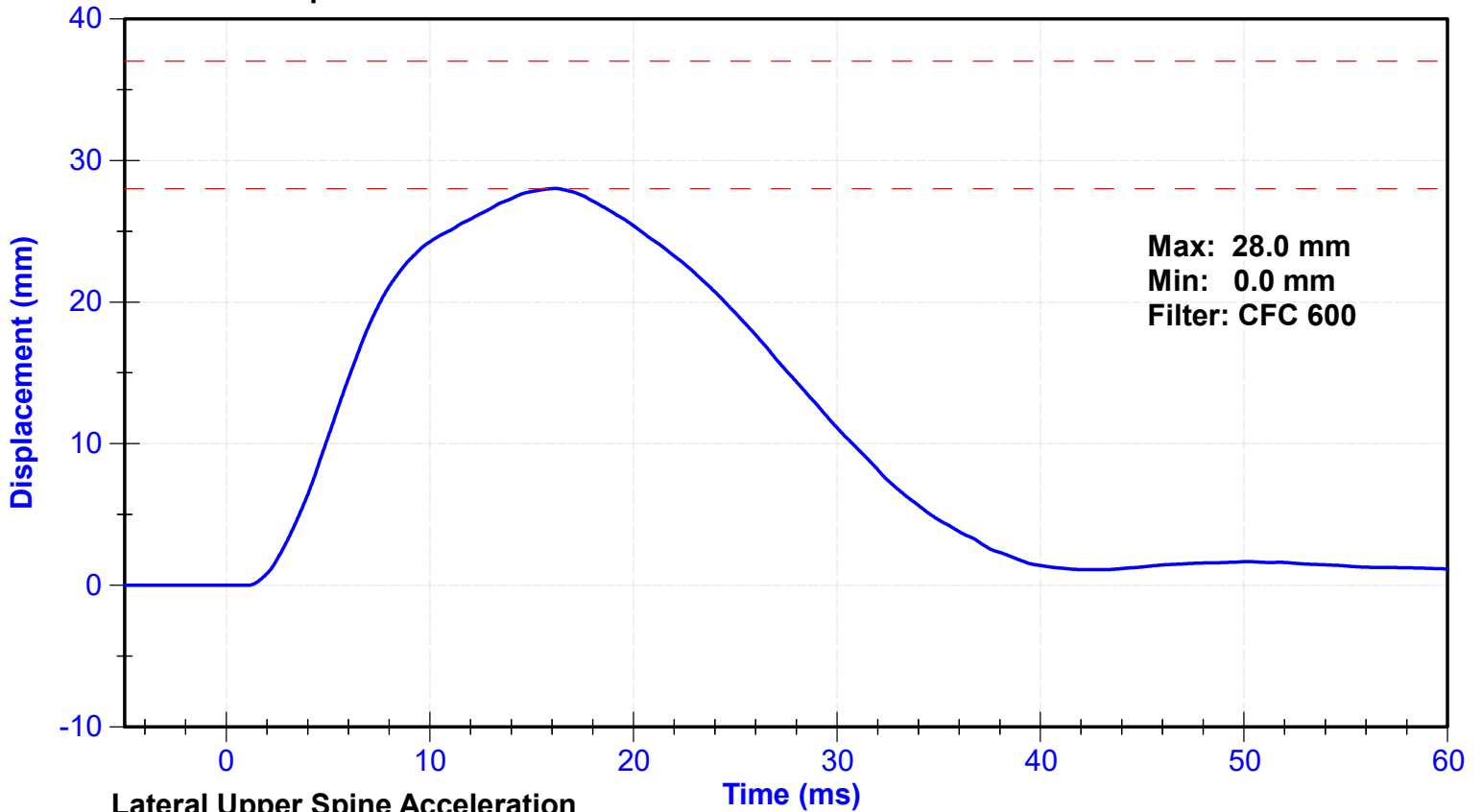
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18587	11/20/2023	5/18/2024
Shoulder Potentiometer	Servo	1274GFE	11/17/2023	5/17/2024
Upper Spine Y Accelerometer	Endevco	P64148	11/16/2023	5/14/2024

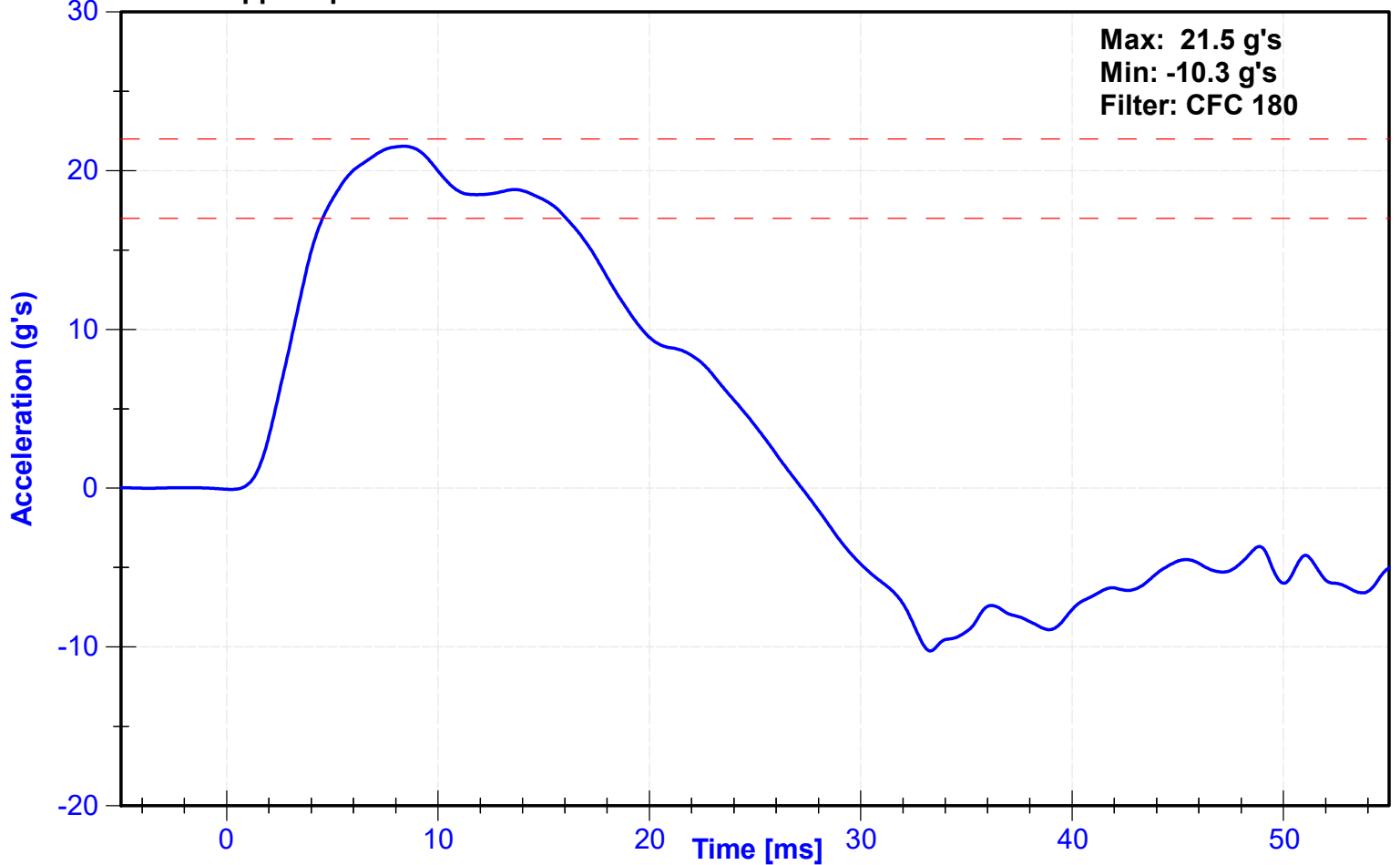
Probe Acceleration



Shoulder Displacement



Lateral Upper Spine Acceleration



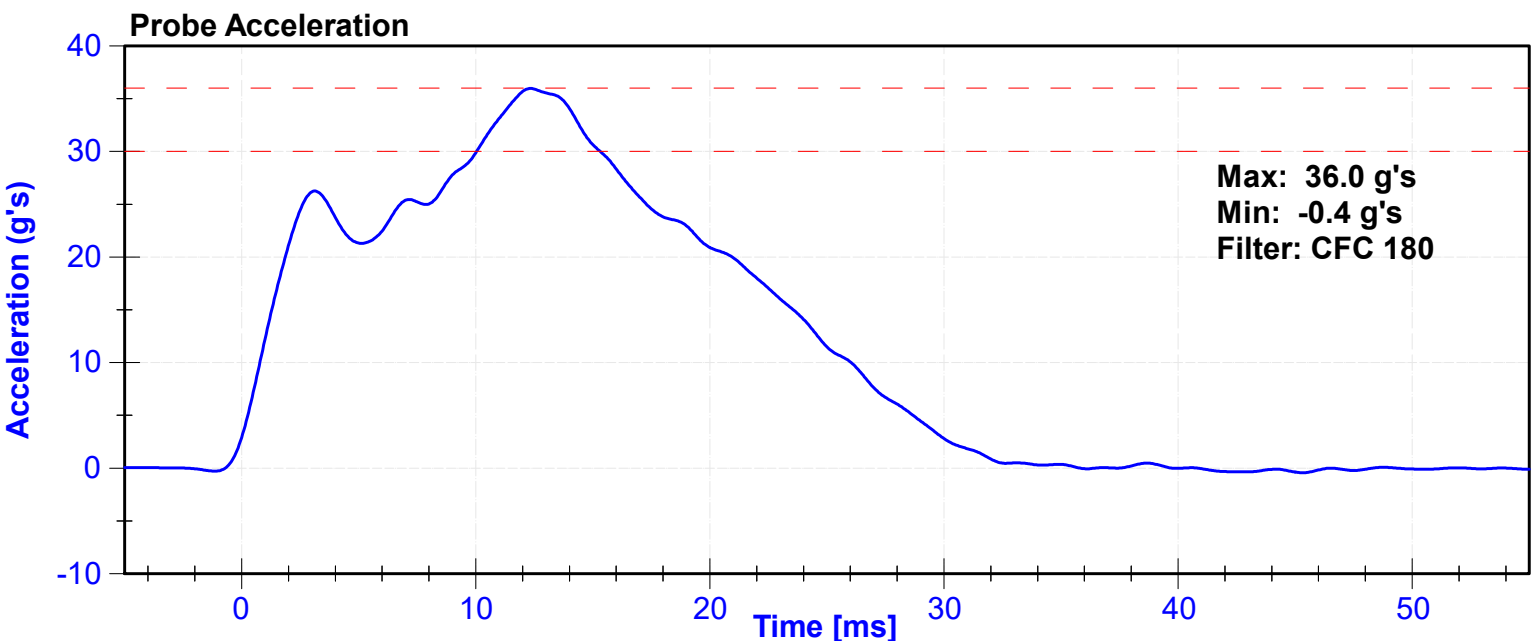
ATD Manufacturer	FTSS	Test Technician	J. Rios
ATD Serial Number	DG8012	Laboratory Supervisor	C. Mantell

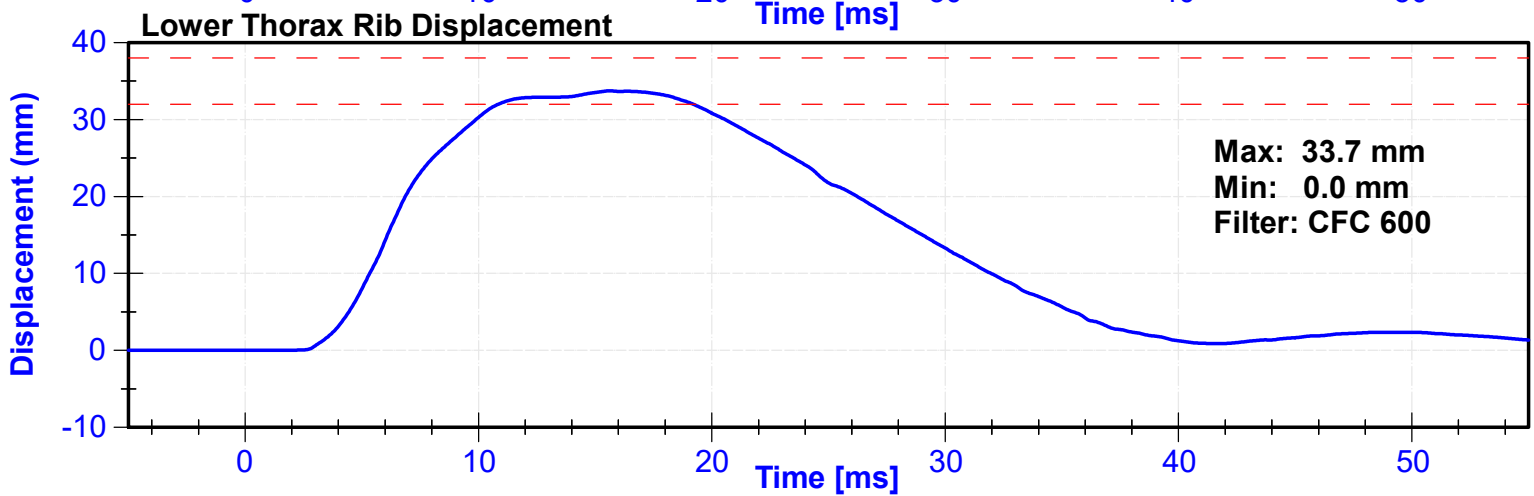
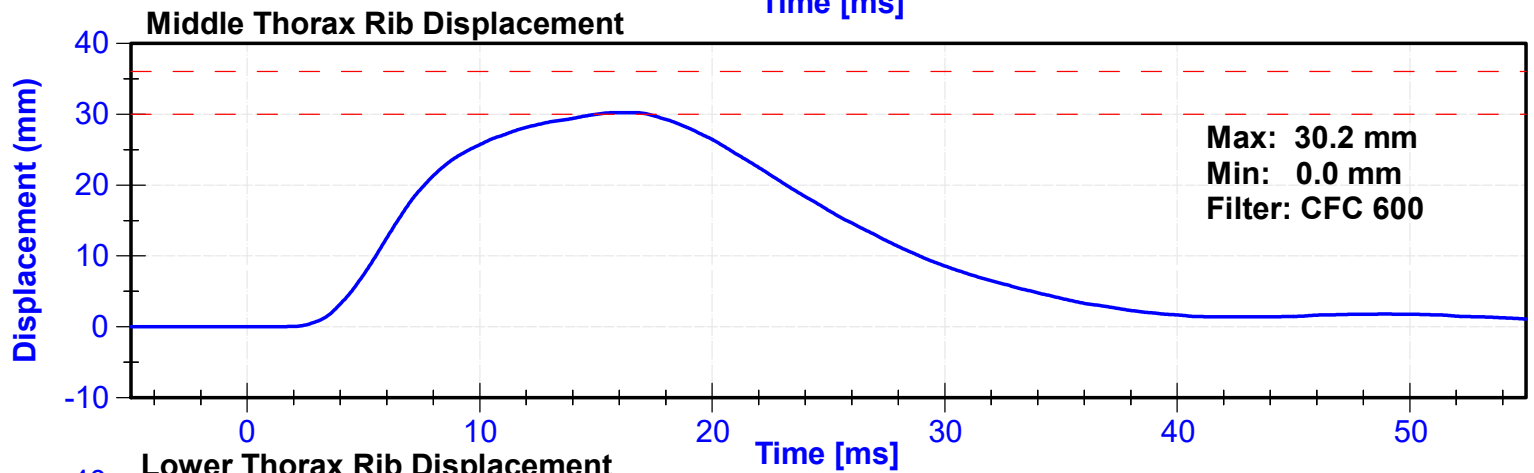
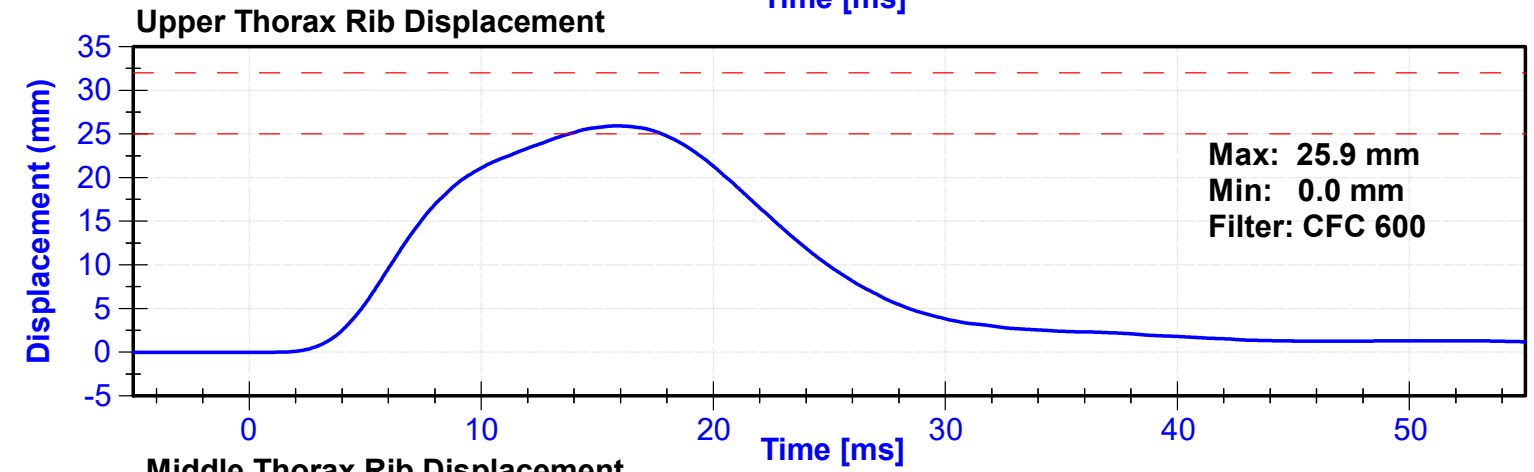
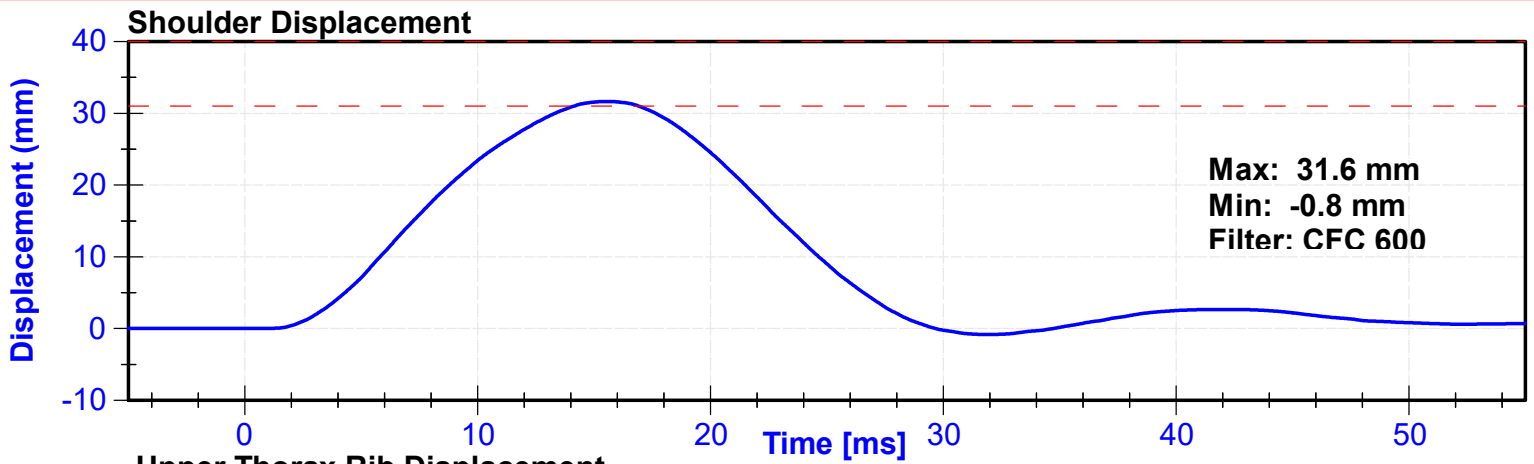
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.1	Pass
Humidity	10	70	%	40	Pass
Velocity	6.6	6.8	m/s	6.71	Pass
Probe Acceleration after 5 ms	30	36	g's	36.0	Pass
Lateral Upper Spine Acceleration	34	43	g's	39.7	Pass
Lateral Lower Spine Acceleration	29	37	g's	33.9	Pass
Shoulder Deflection	31	40	mm	31.6	Pass
Upper Thorax Rib Deflection	25	32	mm	25.9	Pass
Mid Thorax Rib Deflection	30	36	mm	30.2	Pass
Lower Thorax Rib Deflection	32	38	mm	33.7	Pass

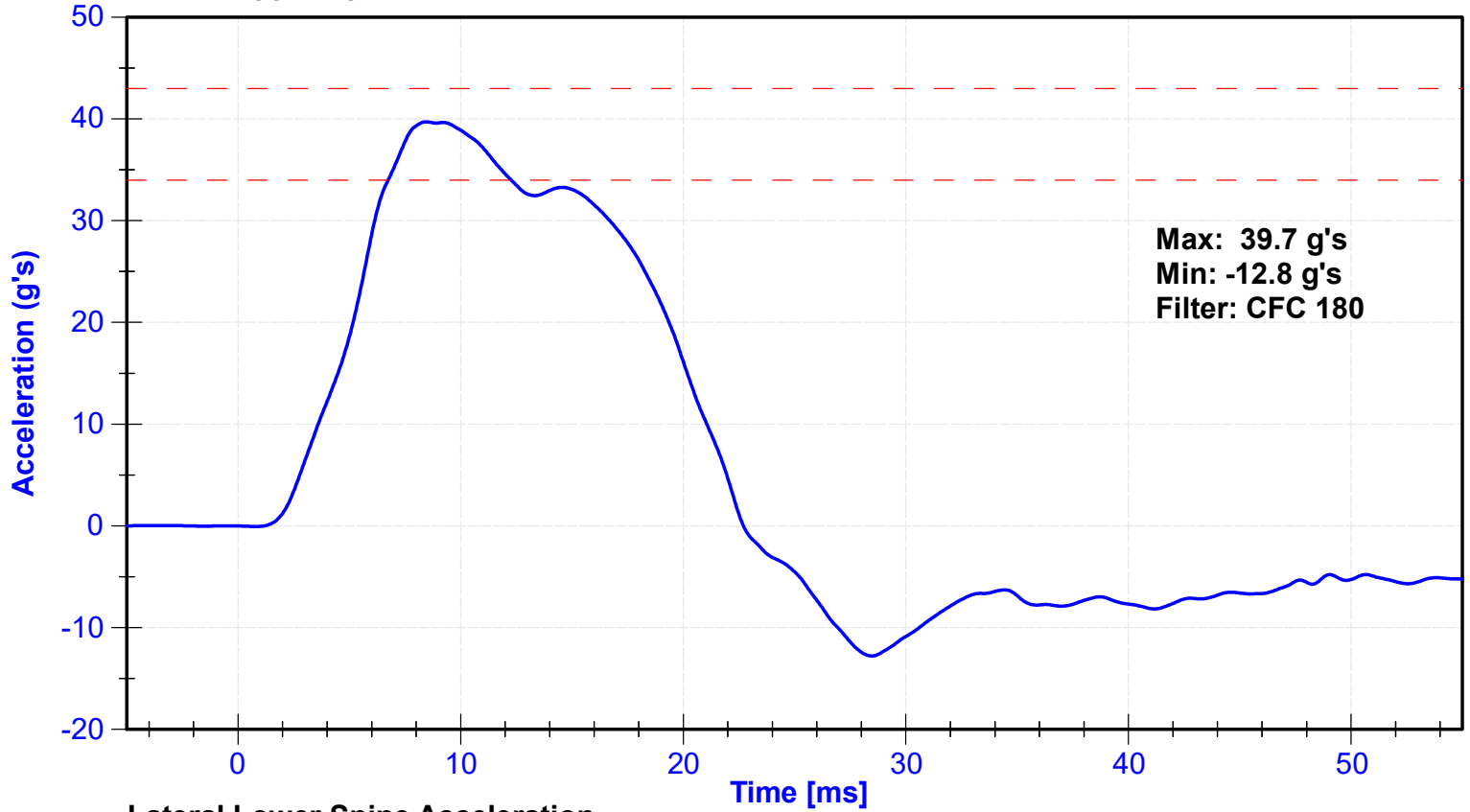
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18587	11/20/2023	5/18/2024
Upper Spine T1 Y Accelerometer	Endevco	P64148	11/16/2023	5/14/2024
Upper Spine T12 Y Accelerometer	Endevco	P51327	11/16/2023	5/14/2024
Shoulder Potentiometer	Servo	1274GFE	11/17/2023	5/17/2024
Upper Thorax Rib Potentiometer	Servo	1199GFE	11/17/2023	5/17/2024
Middle Thorax Rib Potentiometer	Servo	1246GFE	11/17/2023	5/17/2024
Lower Thorax Rib Potentiometer	Servo	011GFE	11/17/2023	5/17/2024

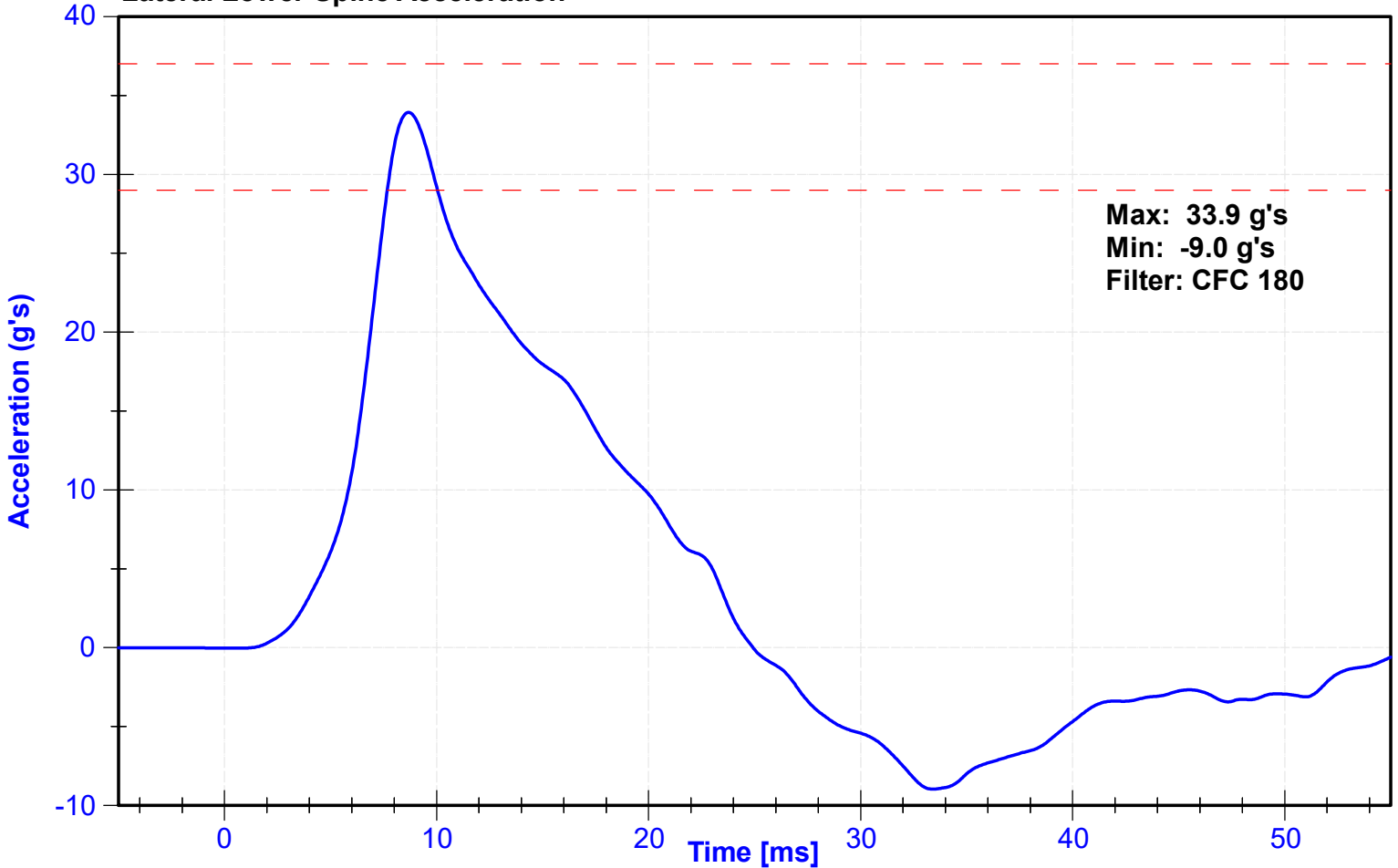




Lateral Upper Spine Acceleration



Lateral Lower Spine Acceleration



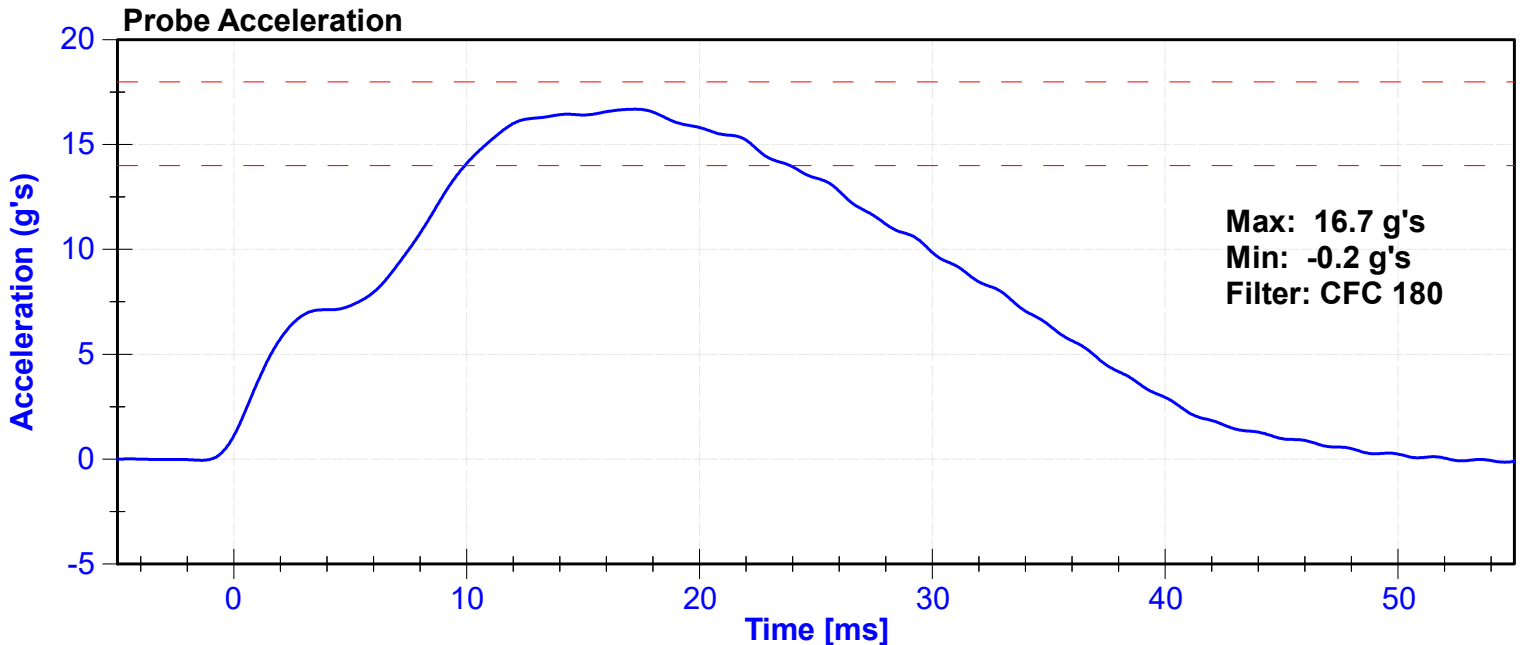
ATD Manufacturer	FTSS	Test Technician	J. Rios
ATD Serial Number	DG8012	Laboratory Supervisor	C. Mantell

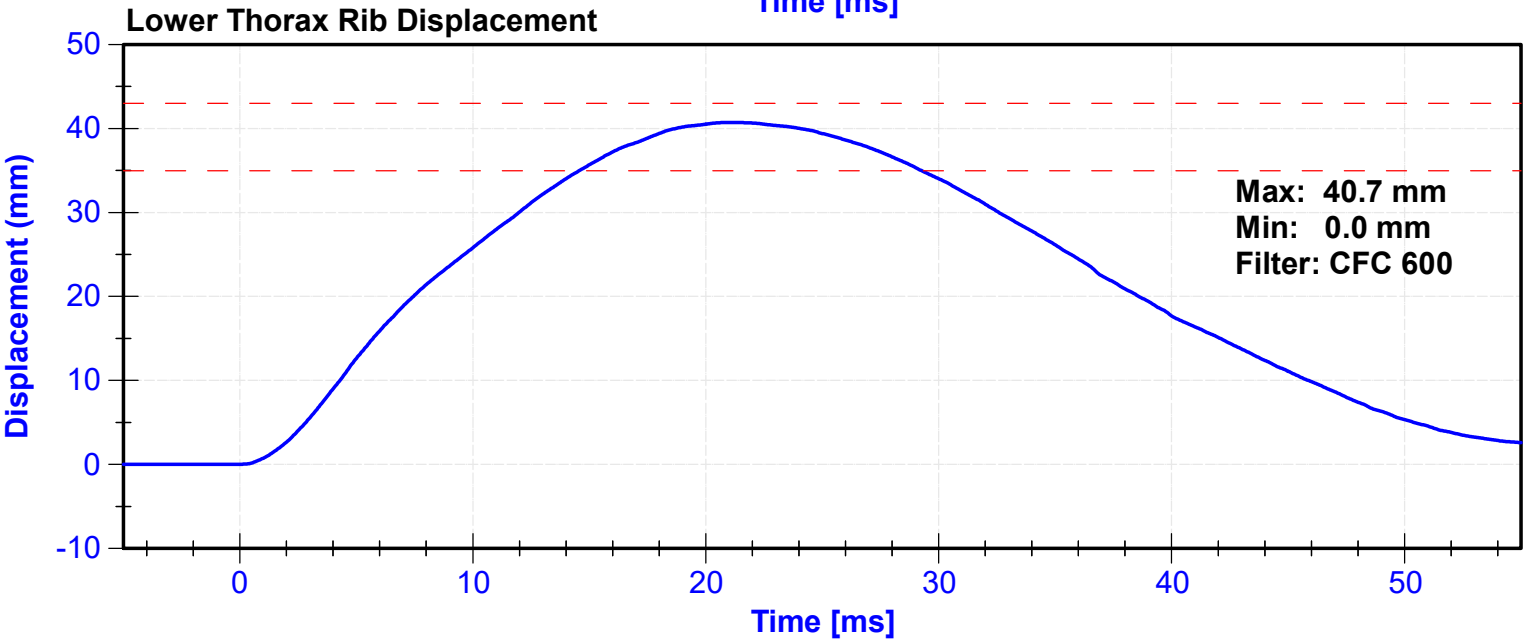
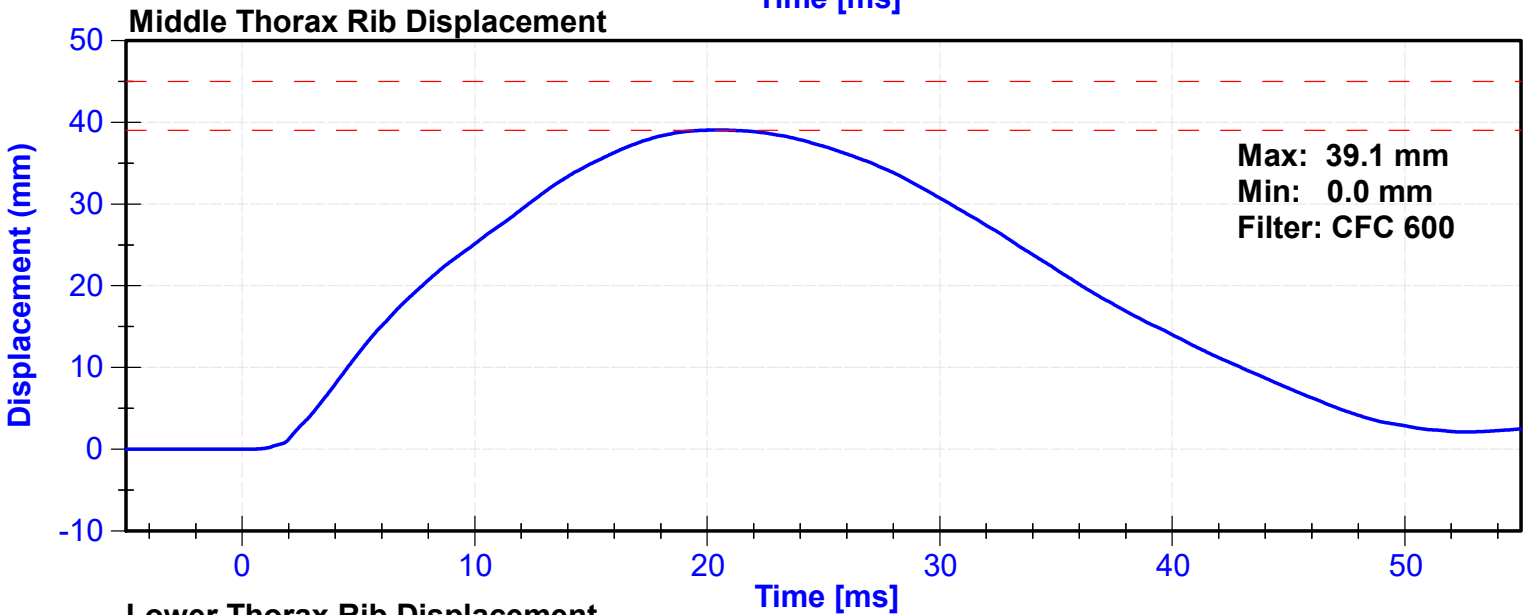
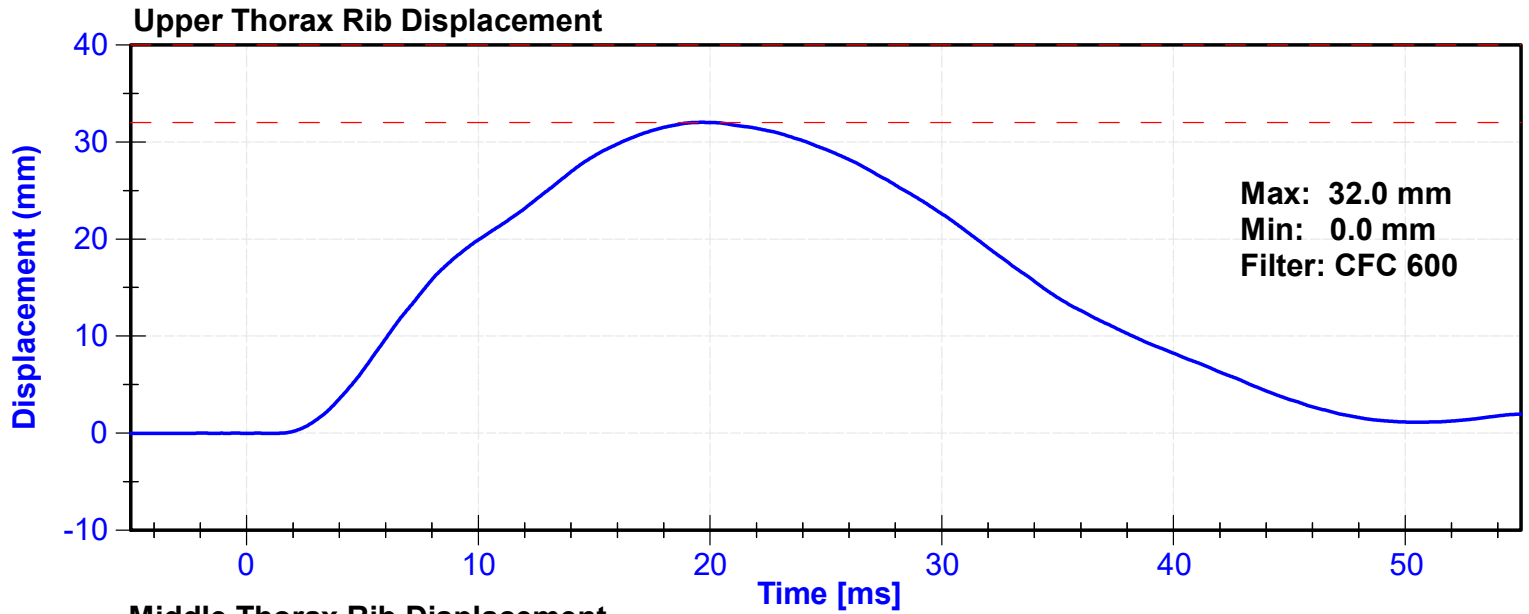
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.1	Pass
Humidity	10	70	%	40	Pass
Velocity	4.2	4.4	m/s	4.34	Pass
Probe Acceleration	14	18	g's	16.7	Pass
Lateral Upper Spine Acceleration	13	17	g's	15.7	Pass
Lateral Lower Spine Acceleration	7	11	g's	8.7	Pass
Upper Thorax Rib Deflection	32	40	mm	32.0	Pass
Middle Thorax Rib Deflection	39	45	mm	39.1	Pass
Lower Thorax Rib Deflection	35	43	mm	40.7	Pass

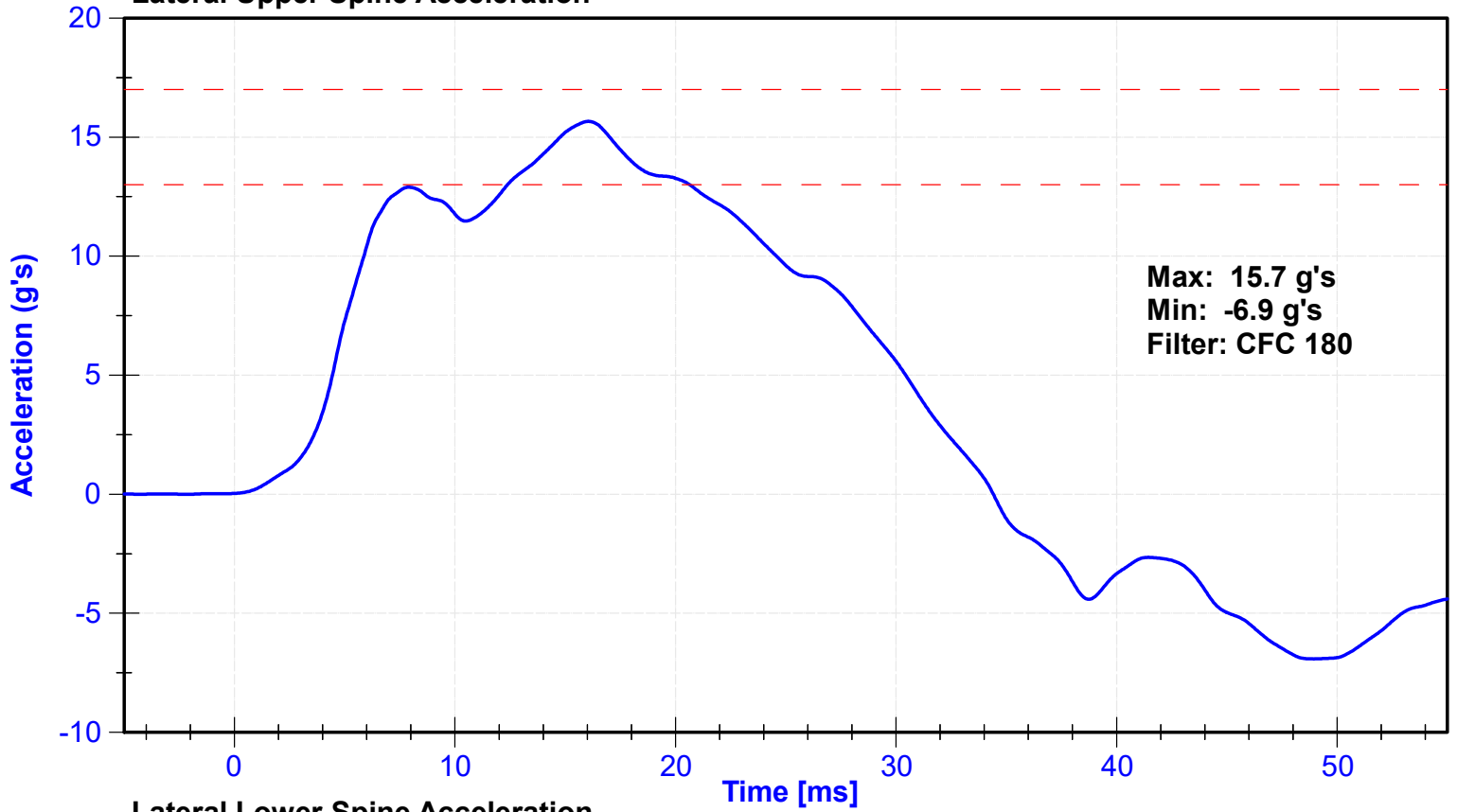
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18587	11/20/2023	5/18/2024
Upper Spine Y Accelerometer	Endevco	P64148	11/16/2023	5/14/2024
Lower Spine Y Accelerometer	Endevco	P51327	11/16/2023	5/14/2024
Upper Thorax Rib Potentiometer	Servo	1199GFE	11/17/2023	5/17/2024
Middle Thorax Rib Potentiometer	Servo	1246GFE	11/17/2023	5/17/2024
Lower Thorax Rib Potentiometer	Servo	011GFE	11/17/2023	5/17/2024

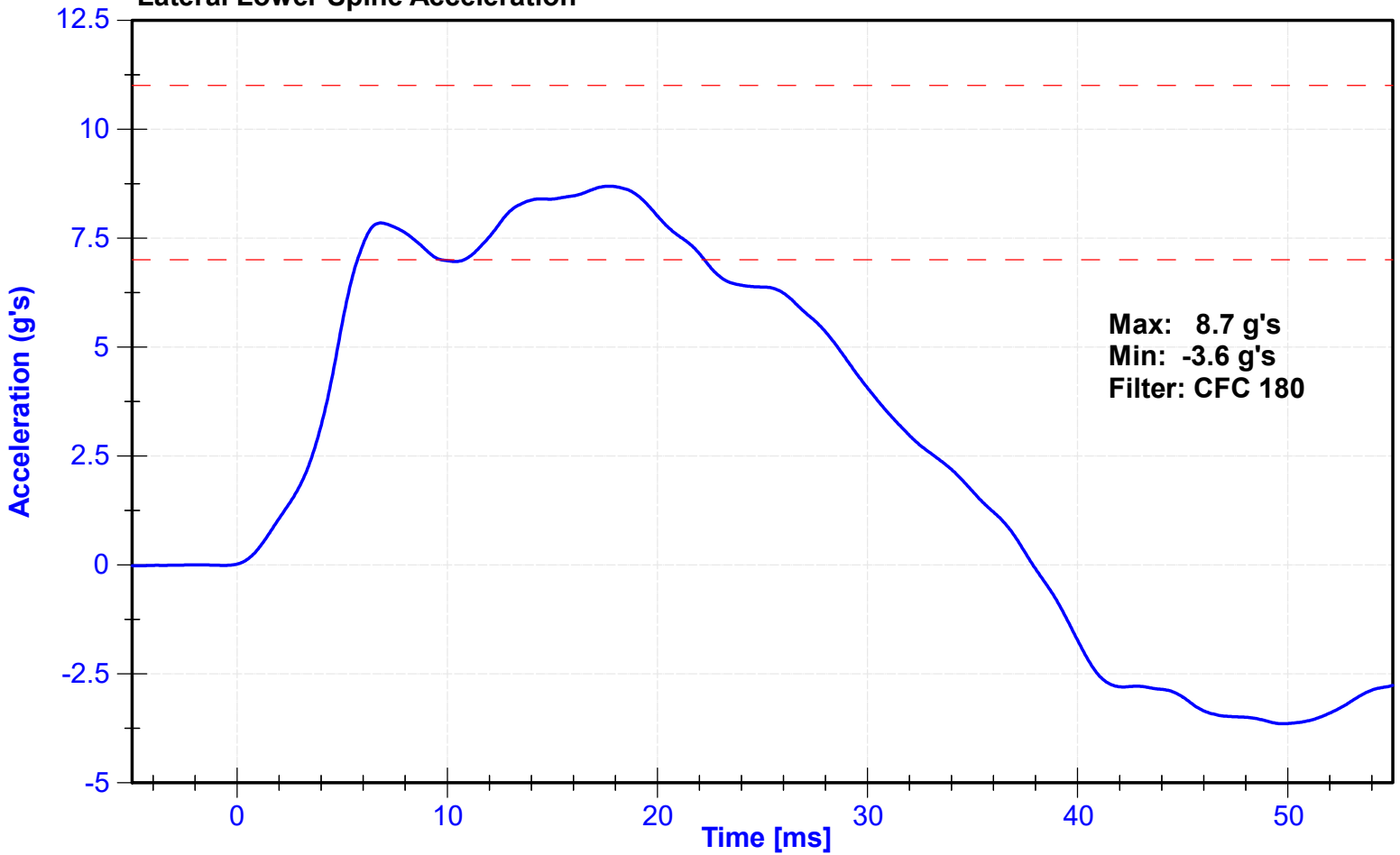




Lateral Upper Spine Acceleration



Lateral Lower Spine Acceleration



ATD Manufacturer	FTSS	Test Technician	J. Rios
ATD Serial Number	DG8012	Laboratory Supervisor	C. Mantell

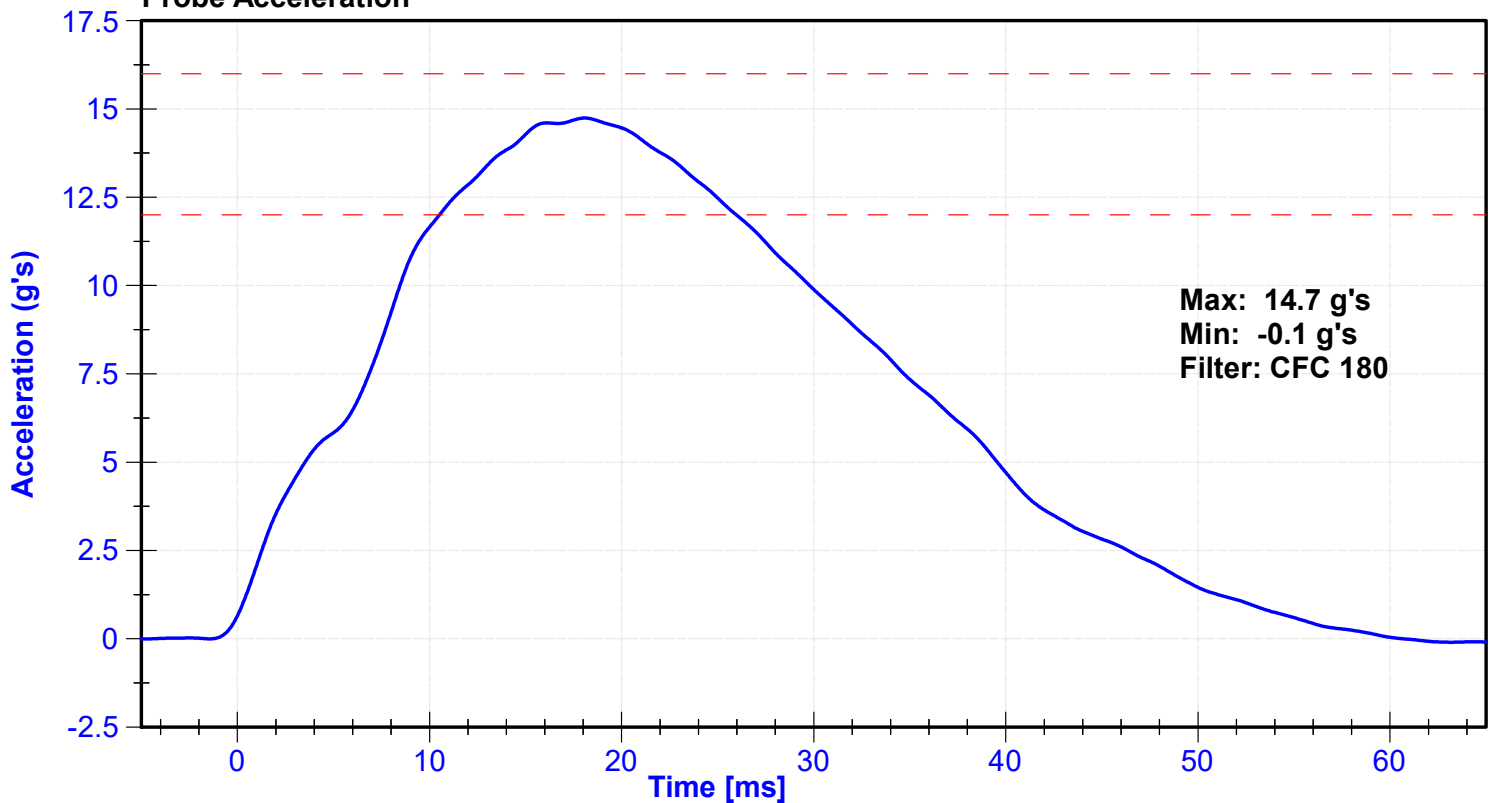
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.1	Pass
Humidity	10	70	%	40	Pass
Velocity	4.2	4.4	m/s	4.30	Pass
Probe Acceleration	12	16	g's	14.7	Pass
Lateral Lower Spine Acceleration	9	14	g's	10.3	Pass
Upper Abdomen Rib Deflection	36	47	mm	42.1	Pass
Lower Abdomen Rib Deflection	33	44	mm	40.9	Pass

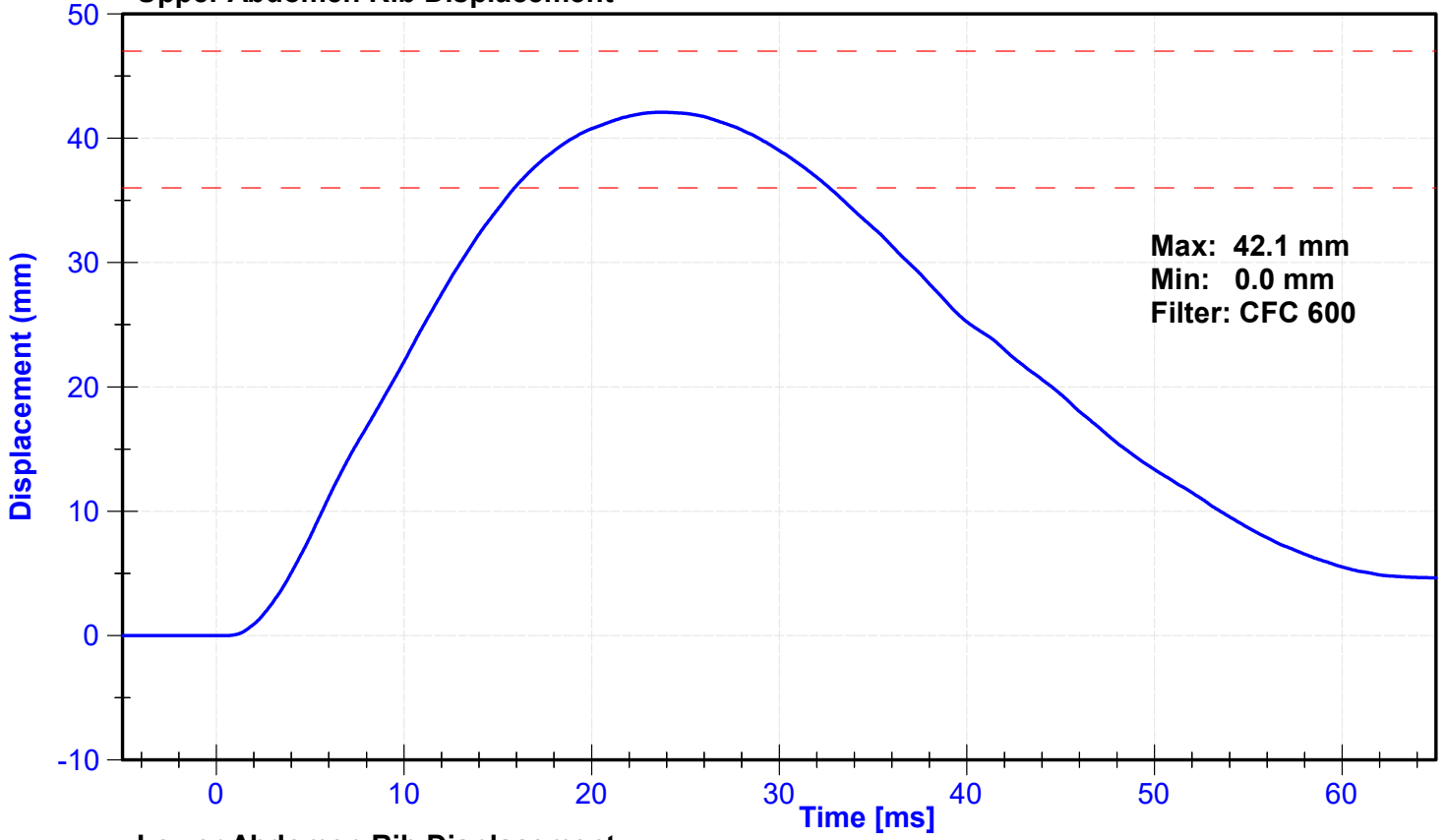
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accelerometer	Endevco	18587	11/20/2023	5/18/2024
Lower Spine Y Accelerometer	Endevco	P51327	11/16/2023	5/14/2024
Upper Abdomen Rib Potentiometer	Servo	008GFE	11/17/2023	5/17/2024
Lower Abdomen Rib Potentiometer	Servo	046	11/17/2023	5/17/2024

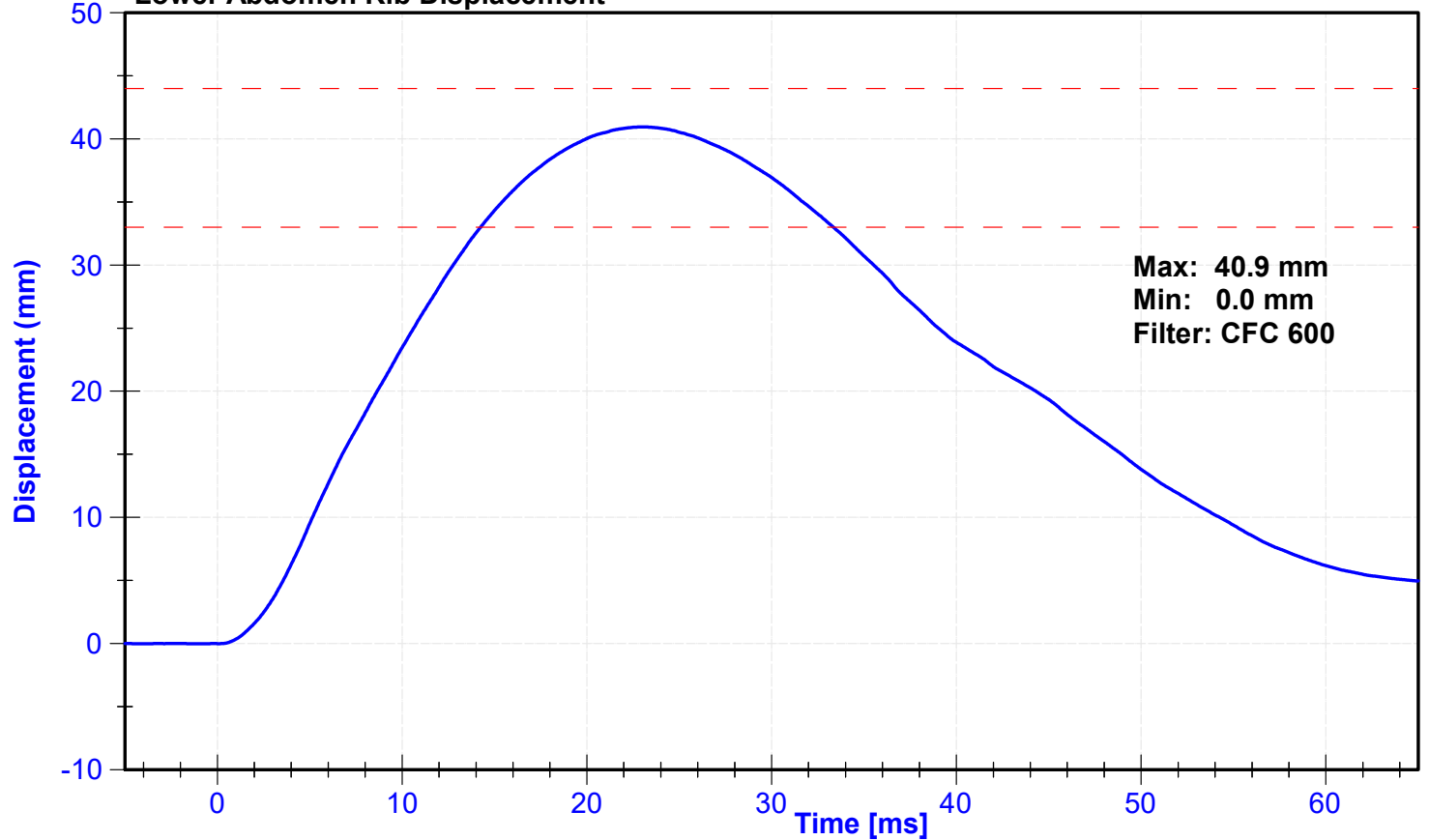
Probe Acceleration



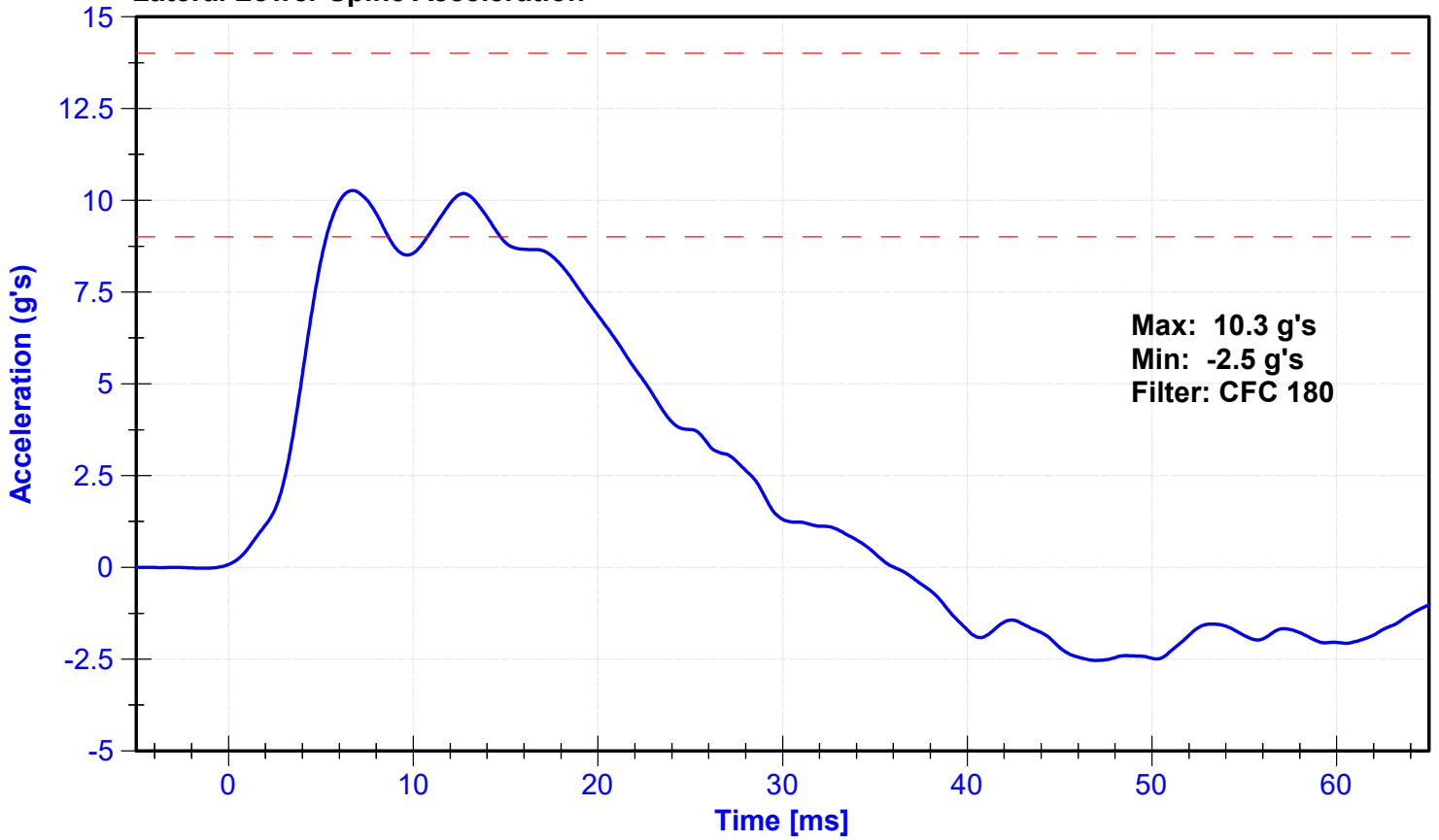
Upper Abdomen Rib Displacement



Lower Abdomen Rib Displacement



Lateral Lower Spine Acceleration



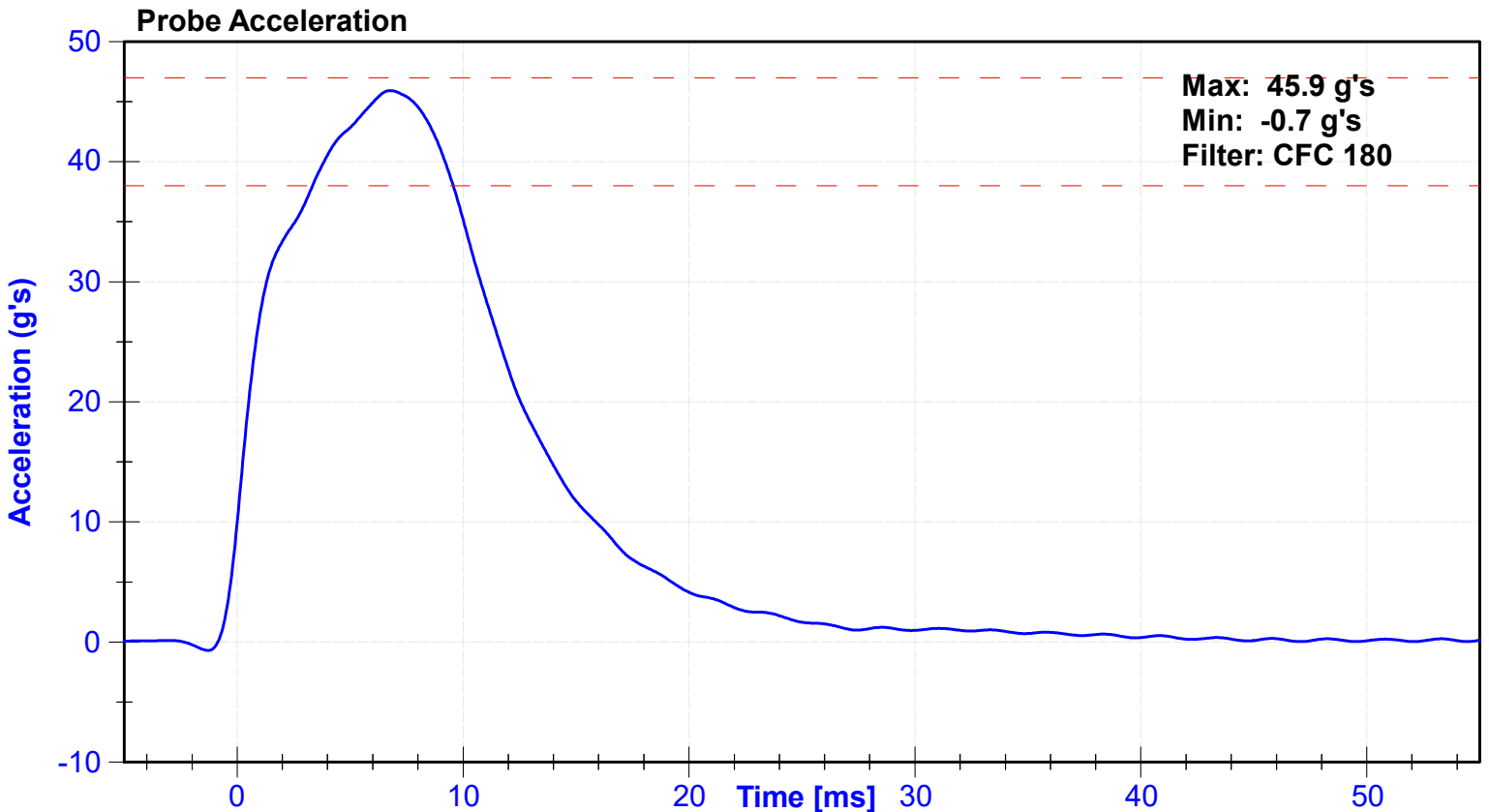
ATD Manufacturer	FTSS	Test Technician	J. Rios
ATD Serial Number	DG8012	Laboratory Supervisor	C. Mantell

Results

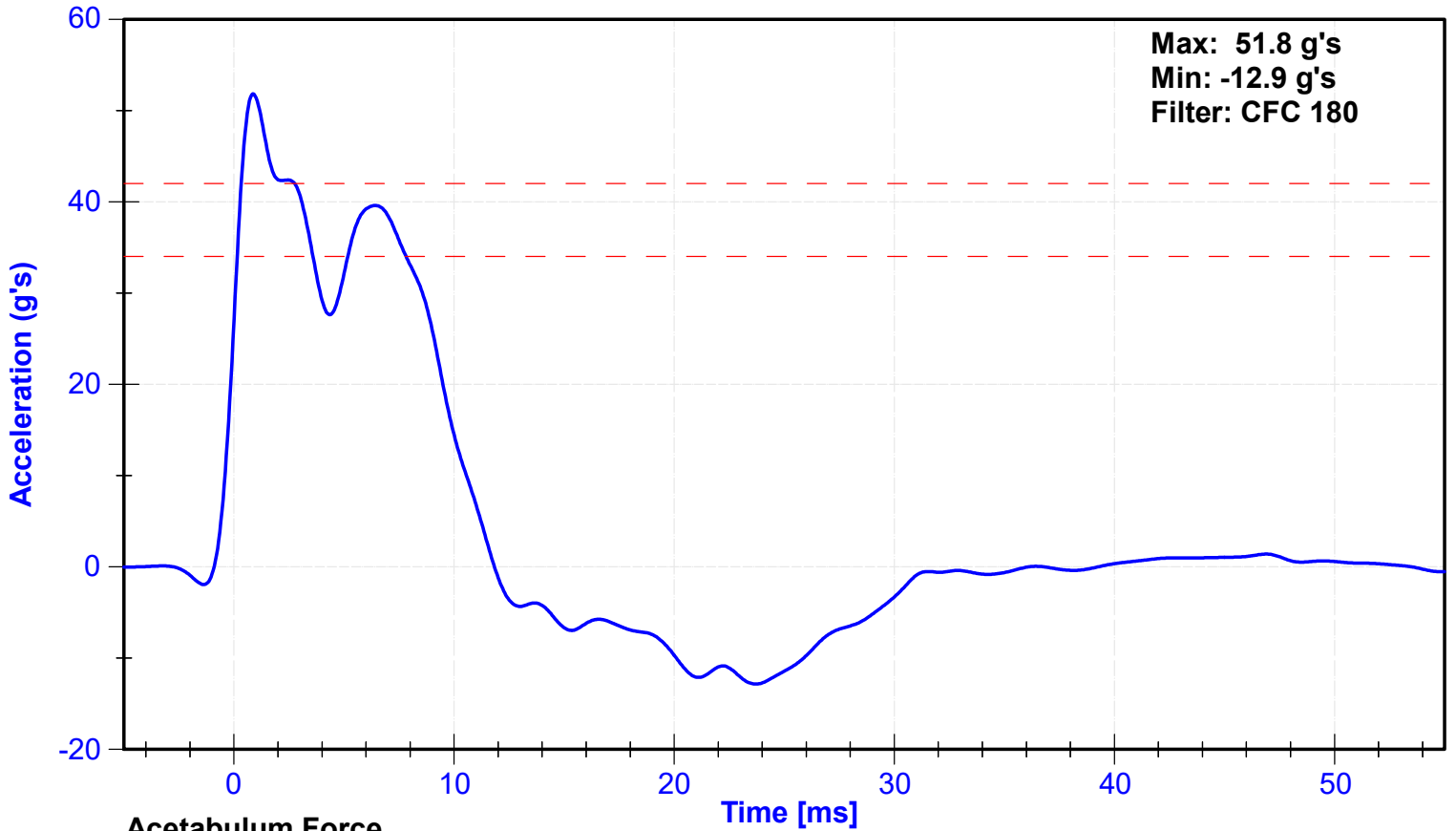
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.1	Pass
Humidity	10	70	%	40	Pass
Velocity	6.6	6.8	m/s	6.63	Pass
Probe Acceleration	38	47	g's	45.9	Pass
Lateral Pelvis Acceleration after 6ms	34	42	g's	39.6	Pass
Acetabulum Force	3600	4300	N	4159.1	Pass

Transducer Calibrations

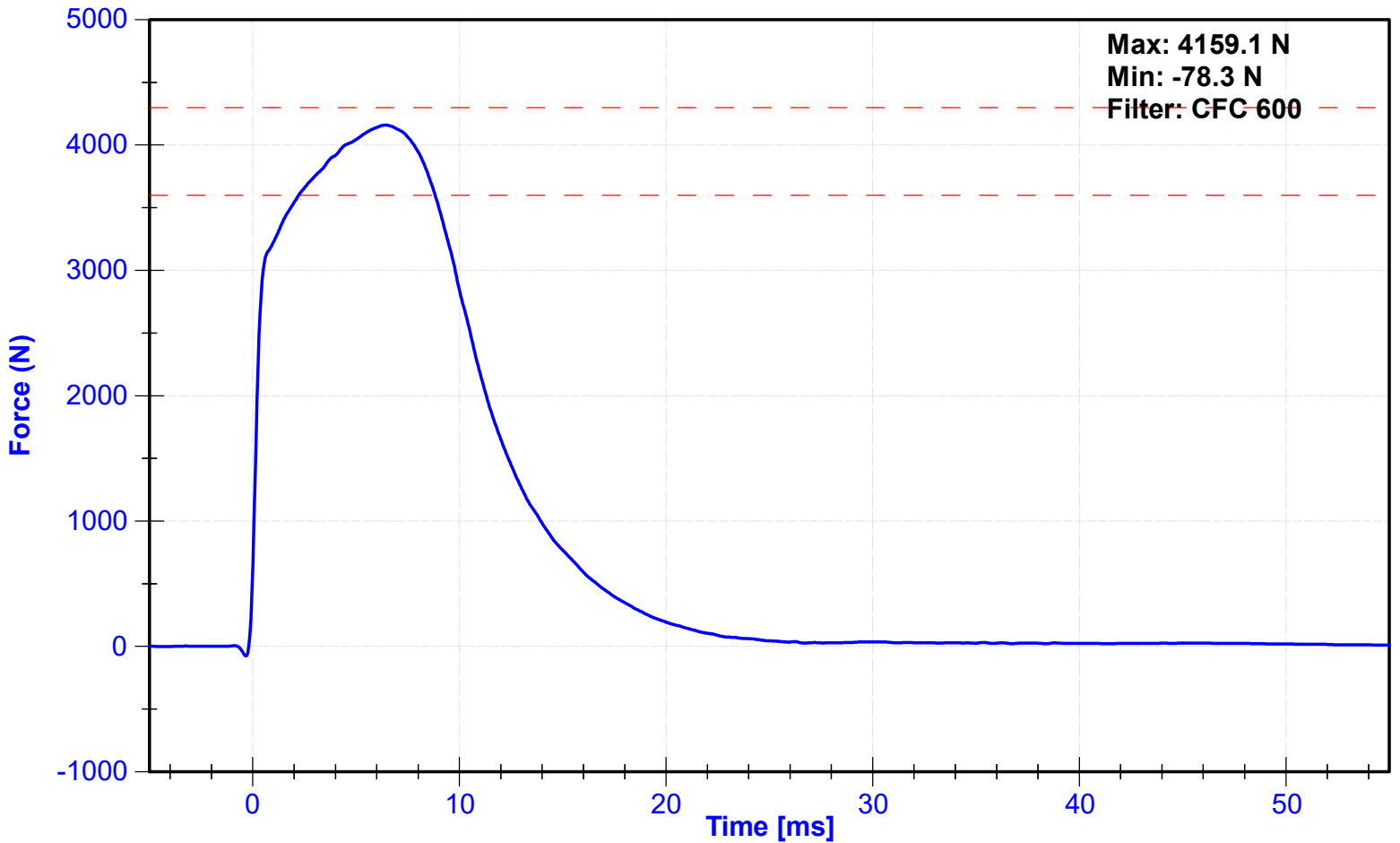
Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18587	11/20/2023	5/18/2024
Pelvis Y Accelerometer	Endevco	P50078	11/16/2023	5/14/2024
Acetabulum Load Cell	Denton	270-FY	9/11/2023	9/10/2024
Certification Plug	SACO			N/A
Crash Test Plug	SACO			N/A



Lateral Pelvis Acceleration



Acetabulum Force



1205-23



Certification
kit

SID-IIs Pelvis Plug Certification Test

Plug S/N 16542

Test Number 23326

Report Number 23383

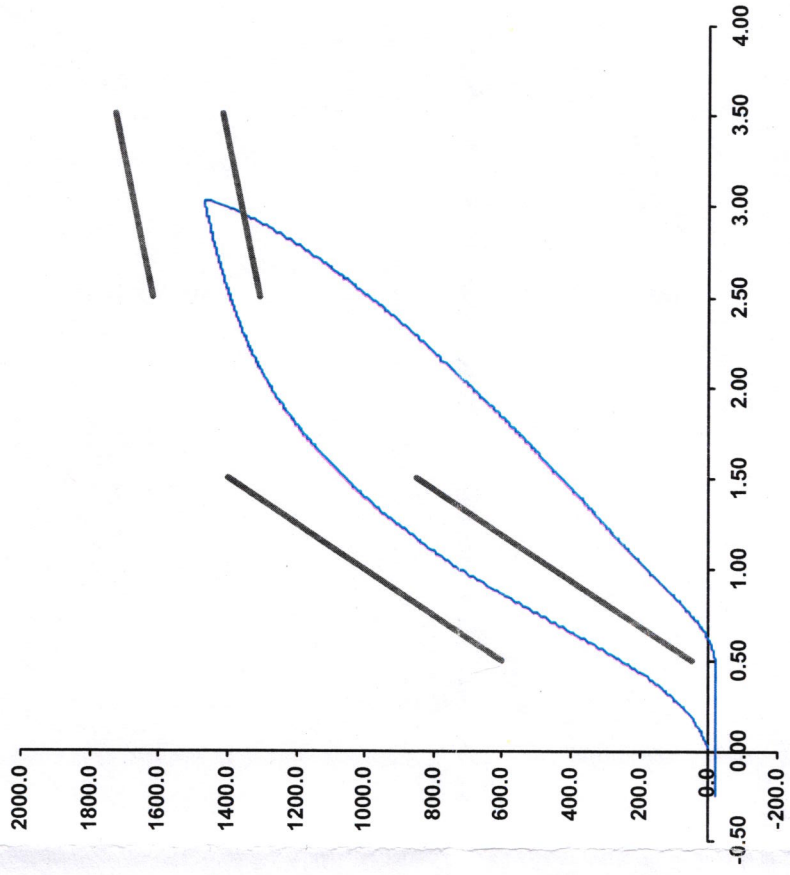
Test Date 7/15/2022 9:07:34 AM

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

Testing Machine STM-20 5965542
 Load Cell S/N (F1360947), Units (LBS) 1000
 Crosshead Speed (mm / min) or Rate 12.7
 Extension or Position Measured by XHD_100 (XHD100)

Notes:

Force (-N) vs Extension (-mm)



Operator _____

Part Number 180-4450

Template No 107 15-Jul-22

SACO Research

By: *[Signature]* Date: 7/15/22



DG8012 Crash Impact

SID-IIs Pelvis Plug Certification Test

Plug S/N 15802

Test Number 20702

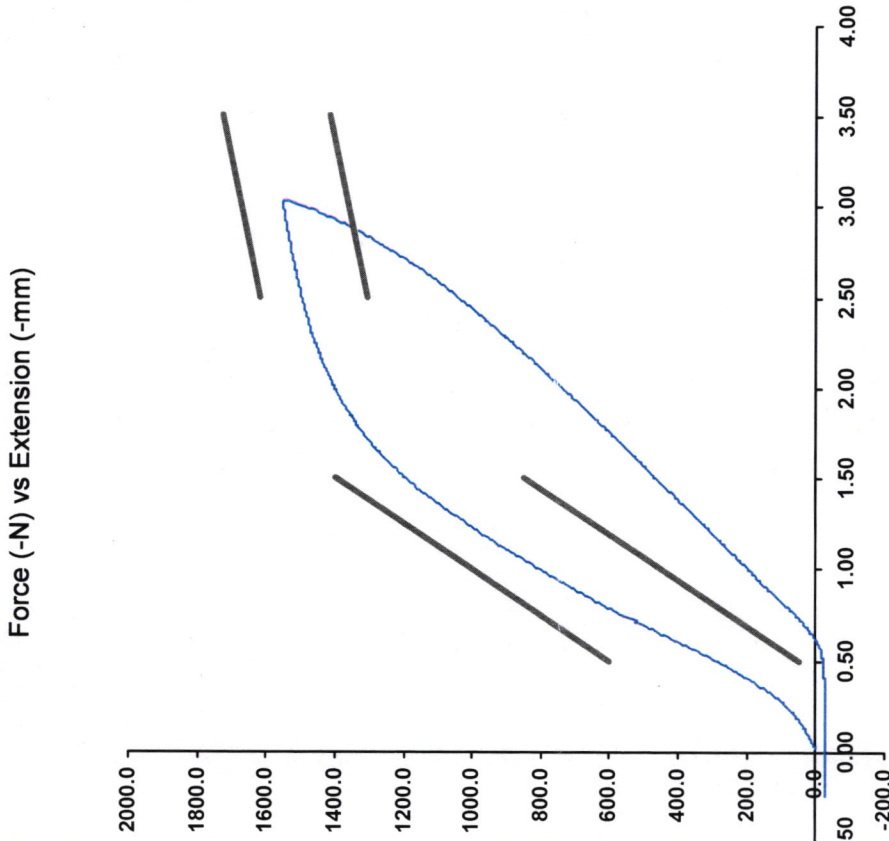
Report Number 20756

Test Date 10/15/2021 8:57:25 AM

Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	50	600
Force @ 1.5 mm (N)	850	1,400
Force @ 2.5 mm (N)	1,306	1,618
Force @ 3.0 mm (N)	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:



Operator
 Part Number 180-4450

Template No 107 15-Oct-21
 SACO Research

By: DC Date: 10/15/21



DG8012 Crash Non-Impact

SID-IIs Pelvis Plug Certification Test

Plug S/N 16394

Test Number 22961

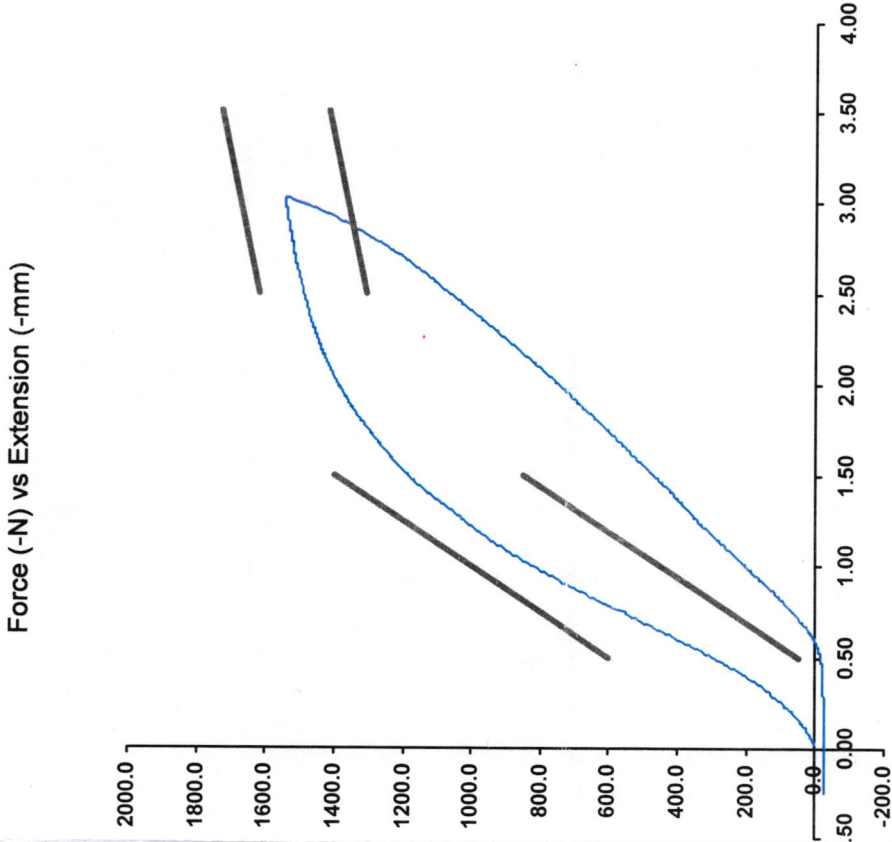
Report Number 23019

Test Date 5/20/2022 4:01:33 PM

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

Testing Machine STM-20 5965542
 Load Cell S/N (F1360947), Units (LBS) 1000
 Crosshead Speed (mm / min) or Rate 12.7
 Extension or Position Measured by XHD_100 (XHD100)

Notes:



Operator _____

Part Number 180-4450

Template No 107 20-May-22

SACO Research

By: DC

Date: 5/20/2022

ATD Manufacturer	FTSS	Test Technician	J. Rios
ATD Serial Number	DG8012	Laboratory Supervisor	C. Mantell

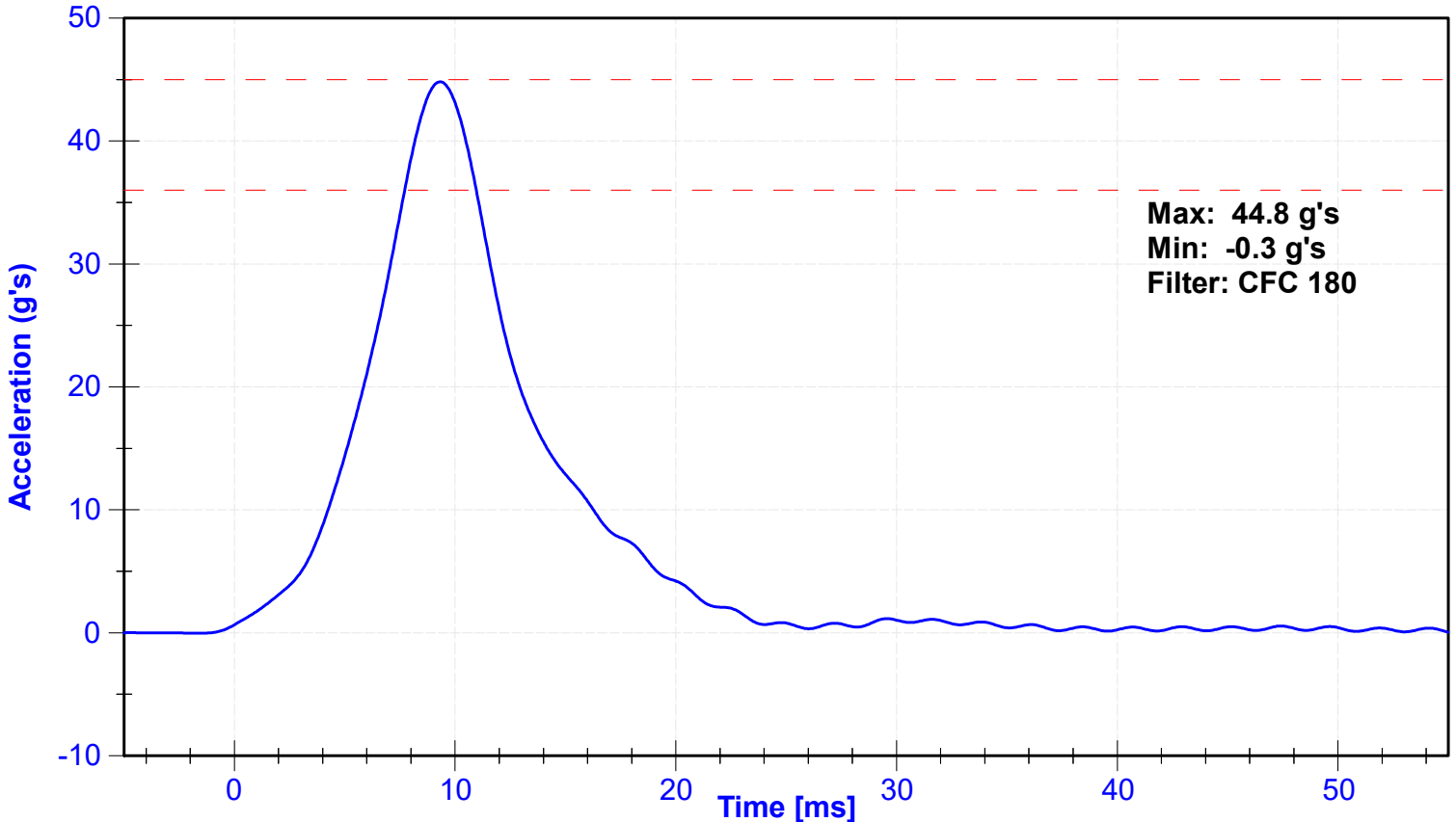
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.1	Pass
Humidity	10	70	%	40	Pass
Velocity	4.2	4.4	m/s	4.23	Pass
Probe Acceleration	36	45	g's	44.8	Pass
Lateral Pelvis Acceleration	28	39	g's	31.7	Pass
Iliac Force	4100	5100	N	4735.7	Pass

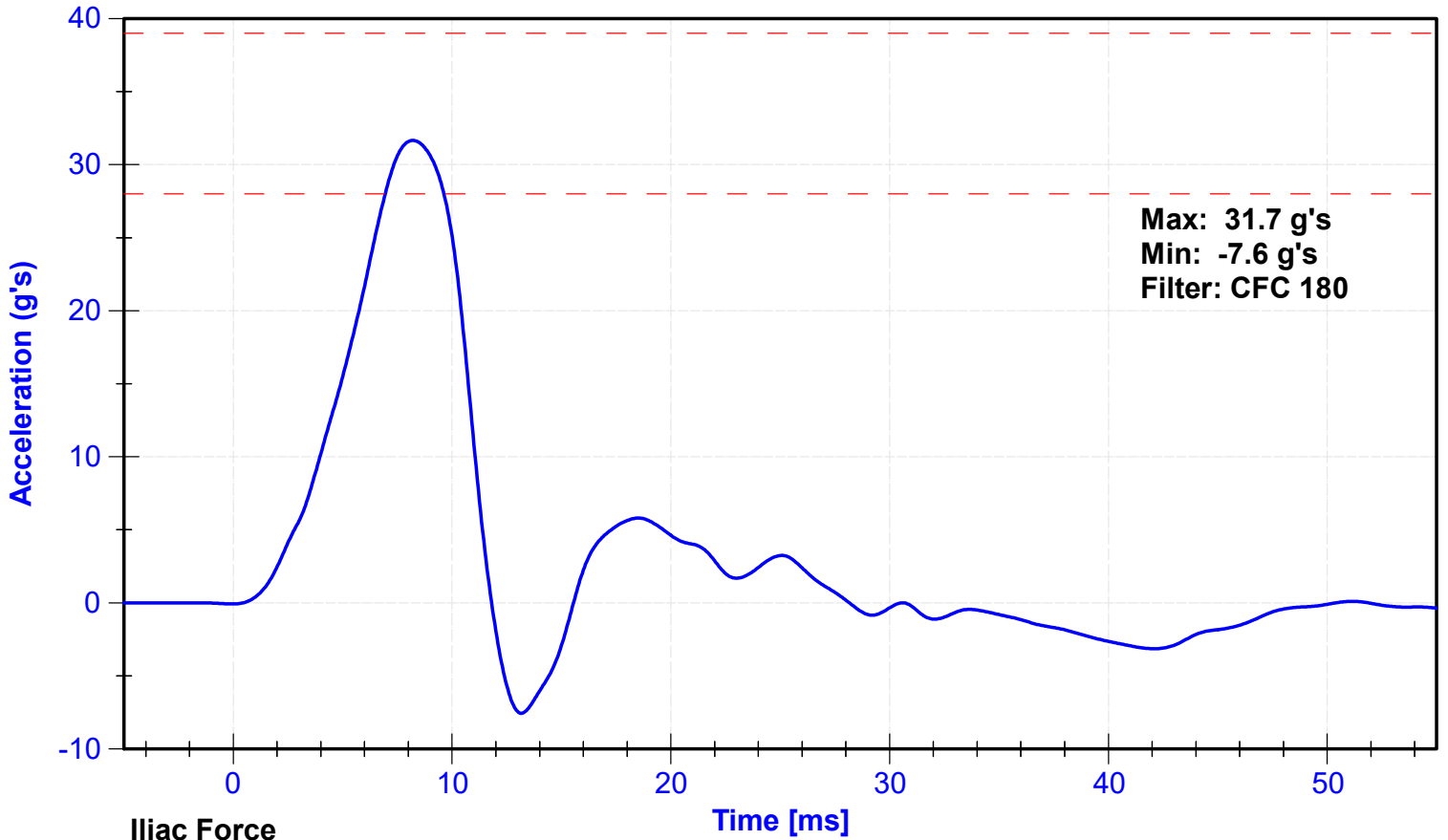
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18587	11/20/2023	5/18/2024
Pelvis Y Accelerometer	Endevco	P50078	11/16/2023	5/14/2024
Iliac Load Cell	Denton	280-FY	9/11/2023	9/10/2024

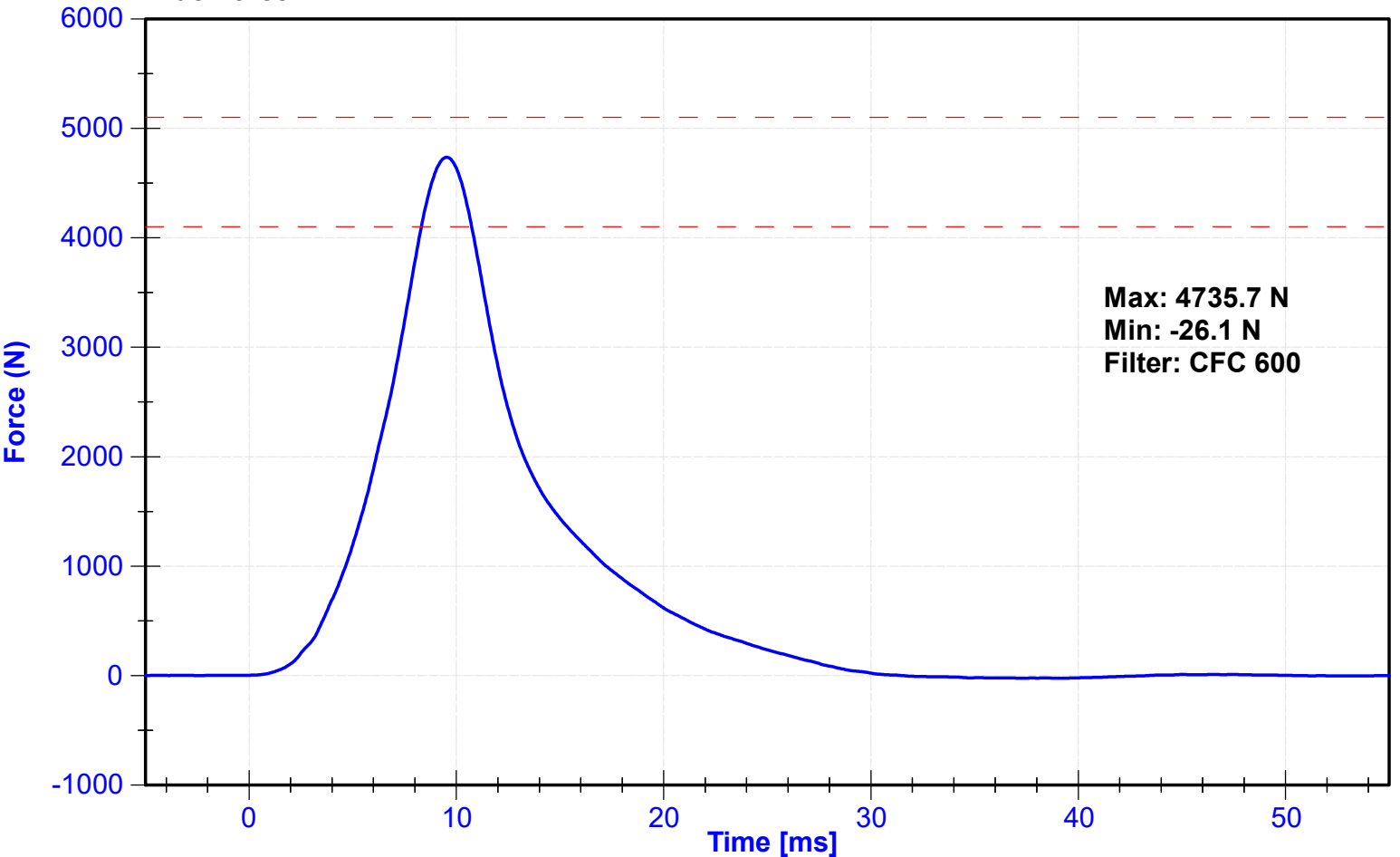
Probe Acceleration



Lateral Pelvis Acceleration



Iliac Force



CALIBRATION TEST RESULTS

POST-TEST

SID-IIS 5TH PERCENTILE FEMALE - DRIVER ATD

SERIAL NO:DG8012

(CONFIGURED FOR LEFT SIDE IMPACT)

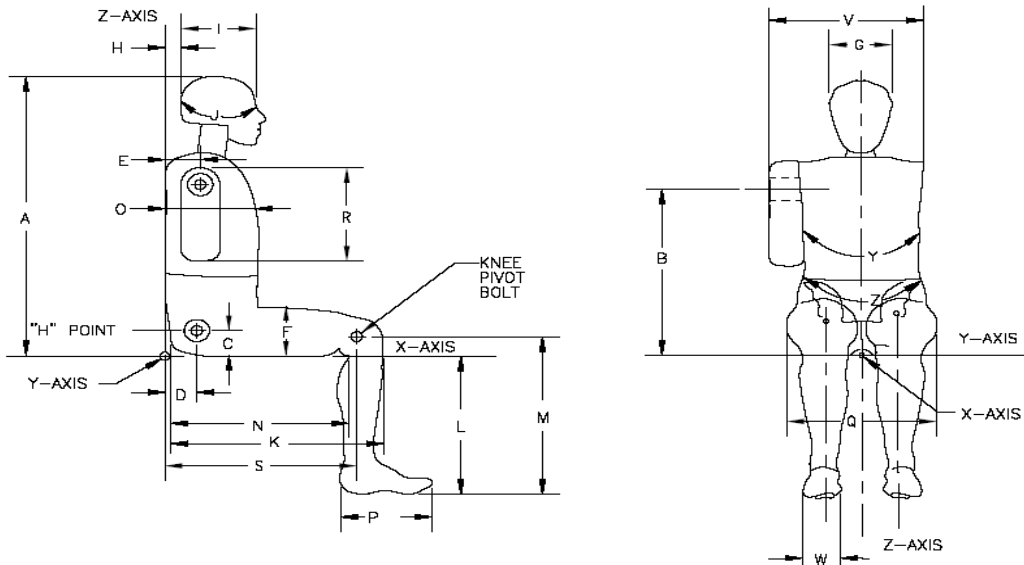


External Measurements - SID-IIs

Technician: K. Brogan

Date: 01/10/2024

Dummy Serial Number: DG8012



Symbol	Description	Specification (mm)		Result (mm)	Pass/Fail
A	Sitting Height	772	788	782	Pass
B	Shoulder Pivot Height	437	453	447	Pass
C	H-point Height	79	89	84	Pass
D	H-point from seatback	141	151	145	Pass
E	Shoulder Pivot from Backline	97	107	105	Pass
F	Thigh Clearance	119	135	129	Pass
G	Head Breadth	140	148	143	Pass
H	Head Back from Backline	40	46	44	Pass
I	Head Depth	178	188	183	Pass
J	Head Circumference	541	551	545	Pass
K	Buttock to Knee Length	514	540	530	Pass
L	Popliteal Height	343	369	362	Pass
M	Knee Pivot to floor height	392	409	399	Pass
N	Buttock Popliteal Length	416	442	438	Pass
O	Chest Depth w/o jacket	195	211	204	Pass
P	Foot Length	216	232	220	Pass
Q	Hip Breadth (w/pelvic plugs)	313	323	319	Pass
R	Arm Length	249	259	254	Pass
S	Knee Joint to seatback	477	493	485	Pass
V	Shoulder Width	341	357	353	Pass
W	Foot Width	78	94	85	Pass
Y	Chest Circumference w/jacket	851	881	869	Pass
Z	Waist Circumference	761	791	780	Pass

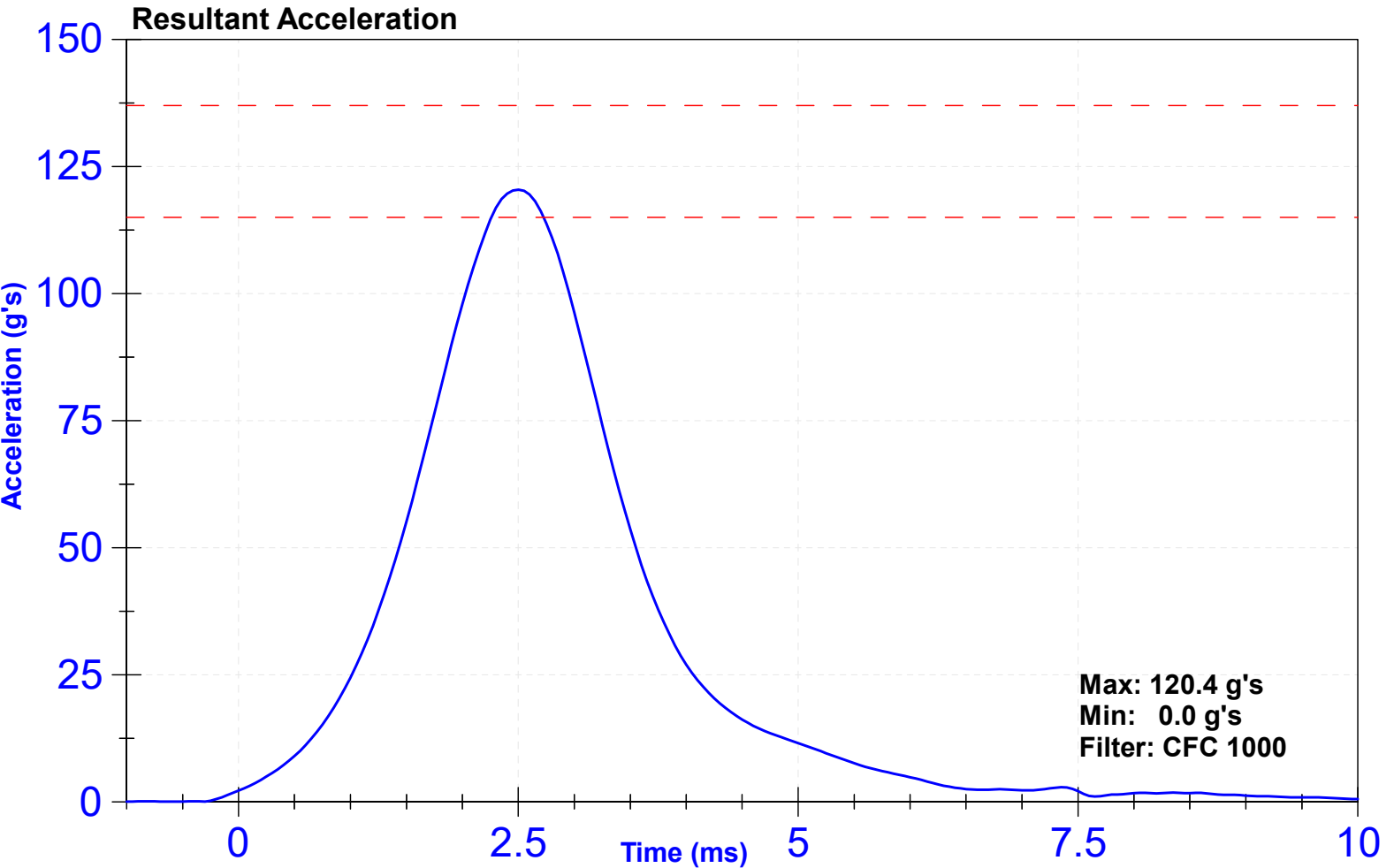
ATD Manufacturer	FTSS	Test Technician	D. Sakona
ATD Serial Number	DG8012	Laboratory Supervisor	C. Mantell

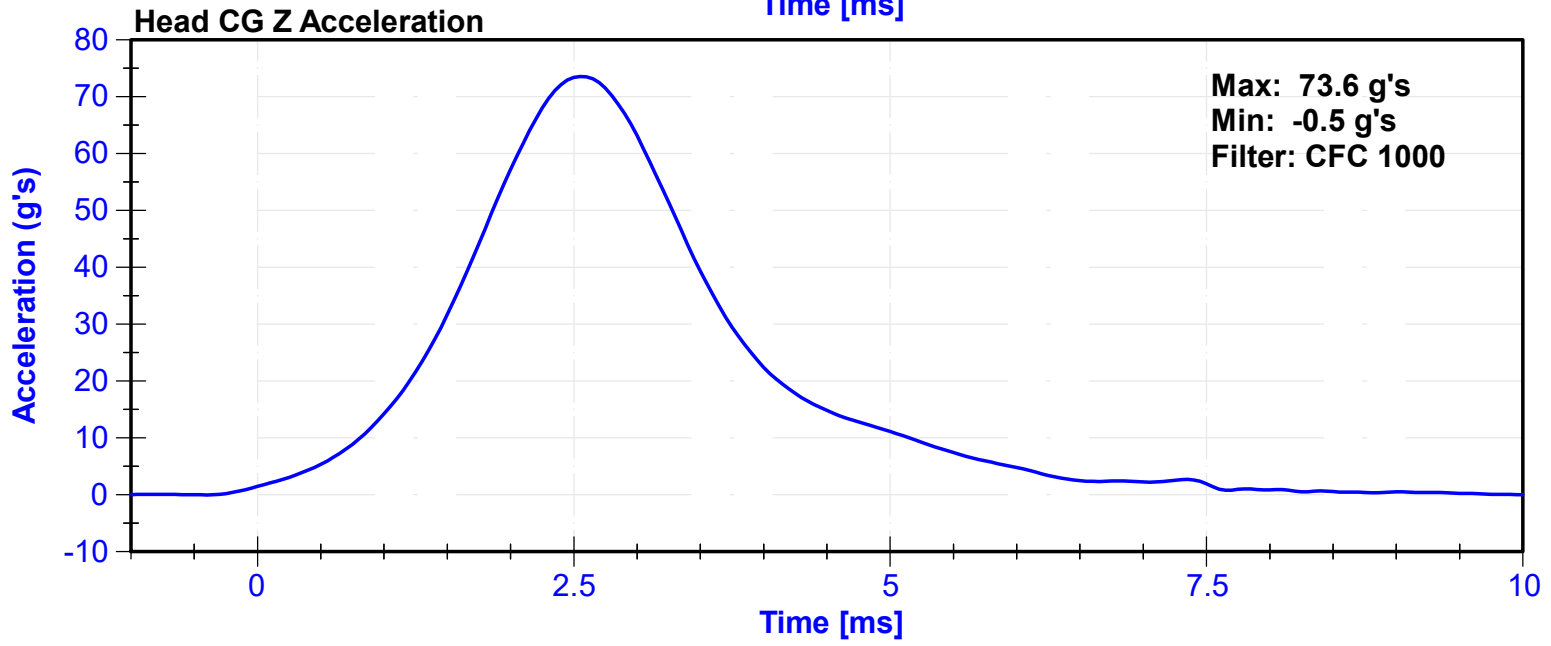
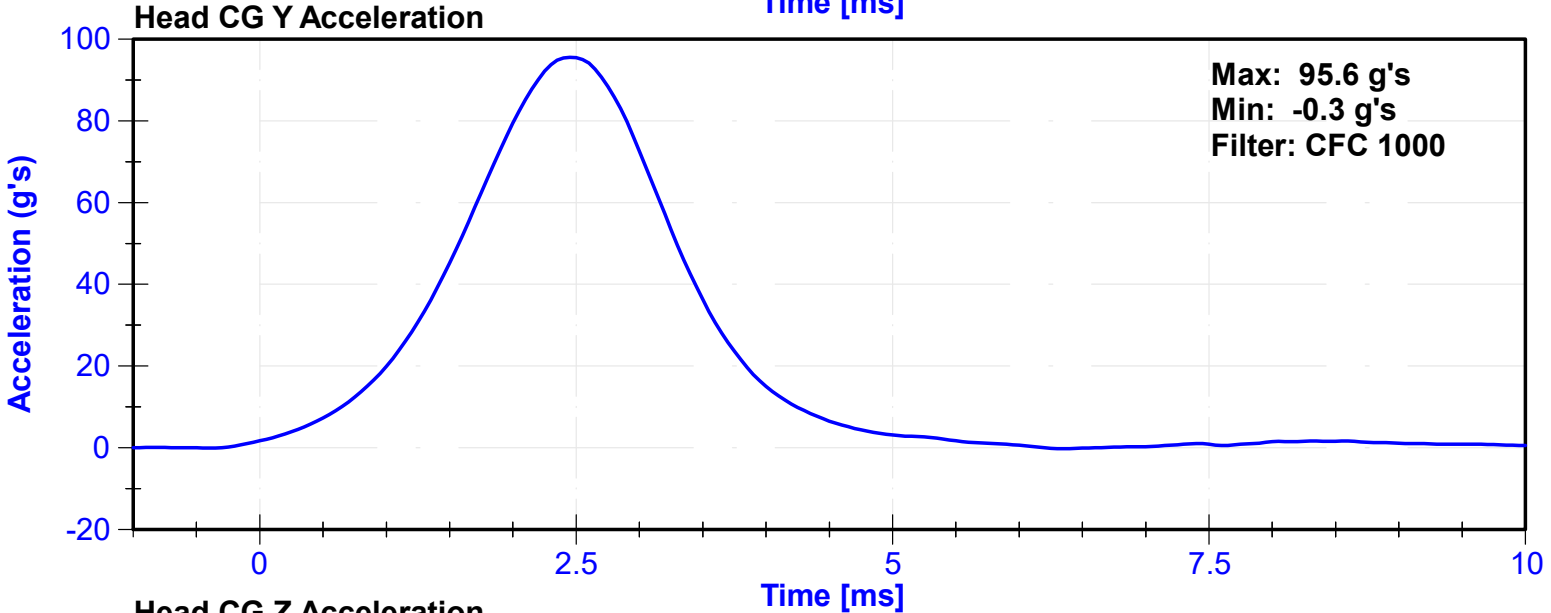
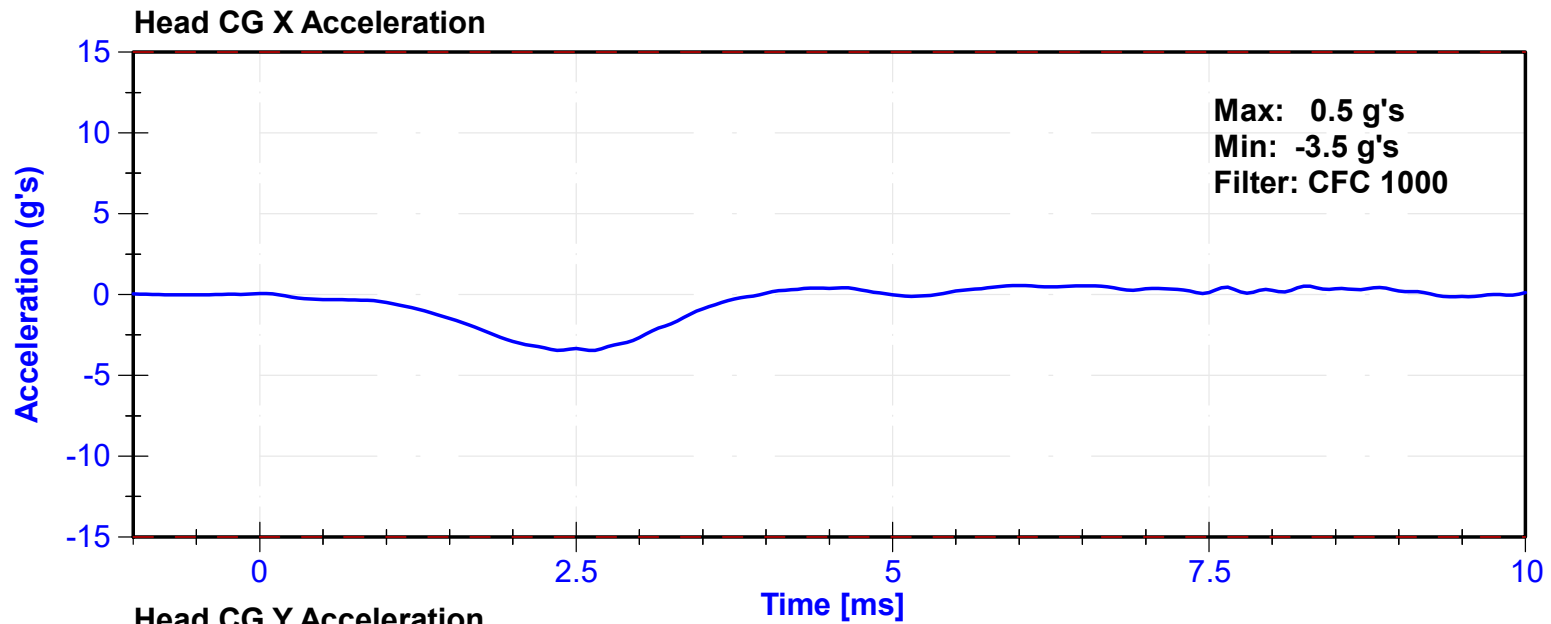
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.9	Pass
Humidity	10	70	%	24	Pass
Resultant Acceleration	115	137	g's	120.4	Pass
Oscillation	0	15	%	2.3	Pass
Fore-Aft Acceleration	-15	15	g's	-3.5	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibratio Date	Calibratio Due Date
X Accelerometer	Endevco	P74788	11/16/2023	5/14/2024
Y Accelerometer	Endevco	P51668	11/16/2023	5/14/2024
Z Accelerometer	Endevco	P83319	11/16/2023	5/14/2024





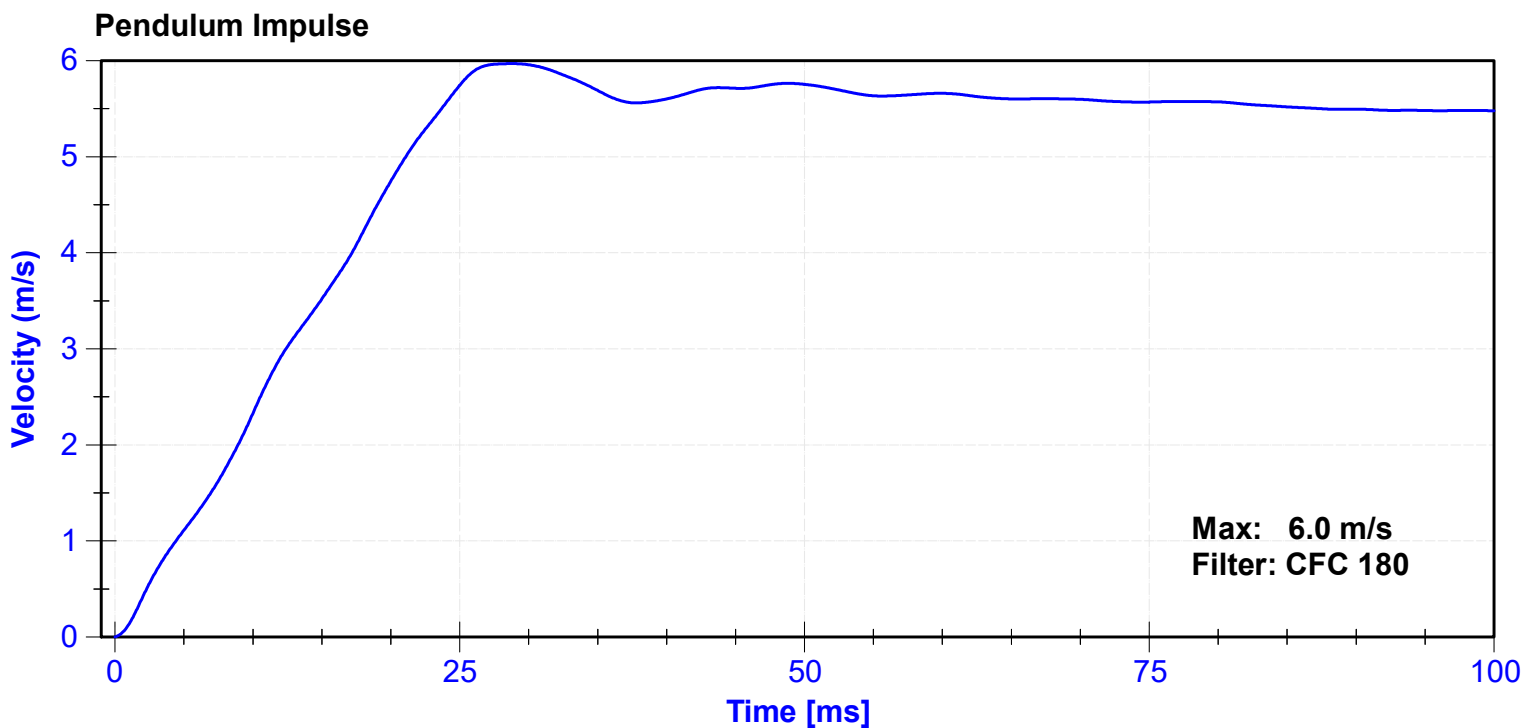
ATD Manufacturer	FTSS	Test Technician	D. Sakona
ATD Serial Number	DG8012	Laboratory Supervisor	C. Mantell

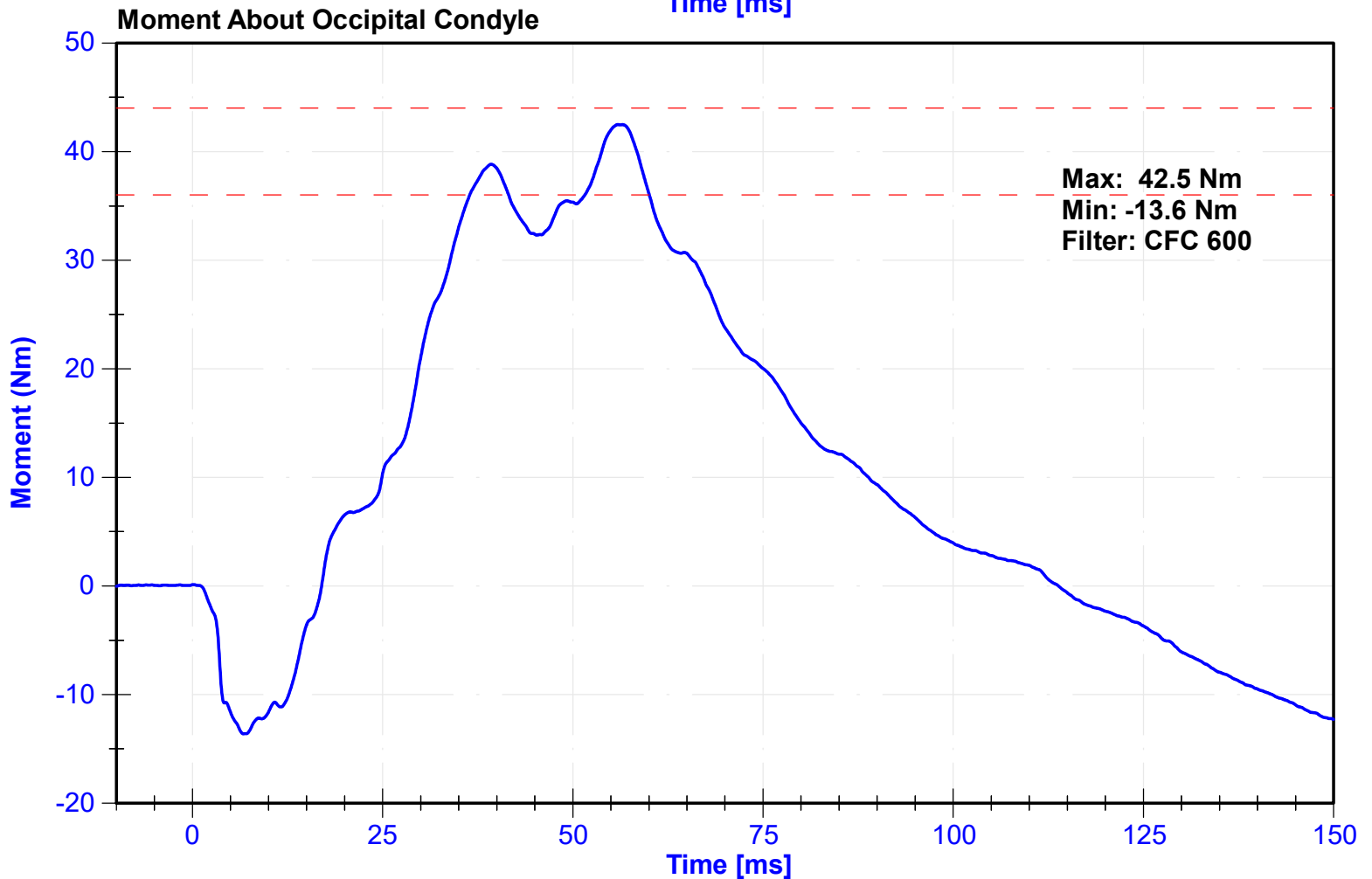
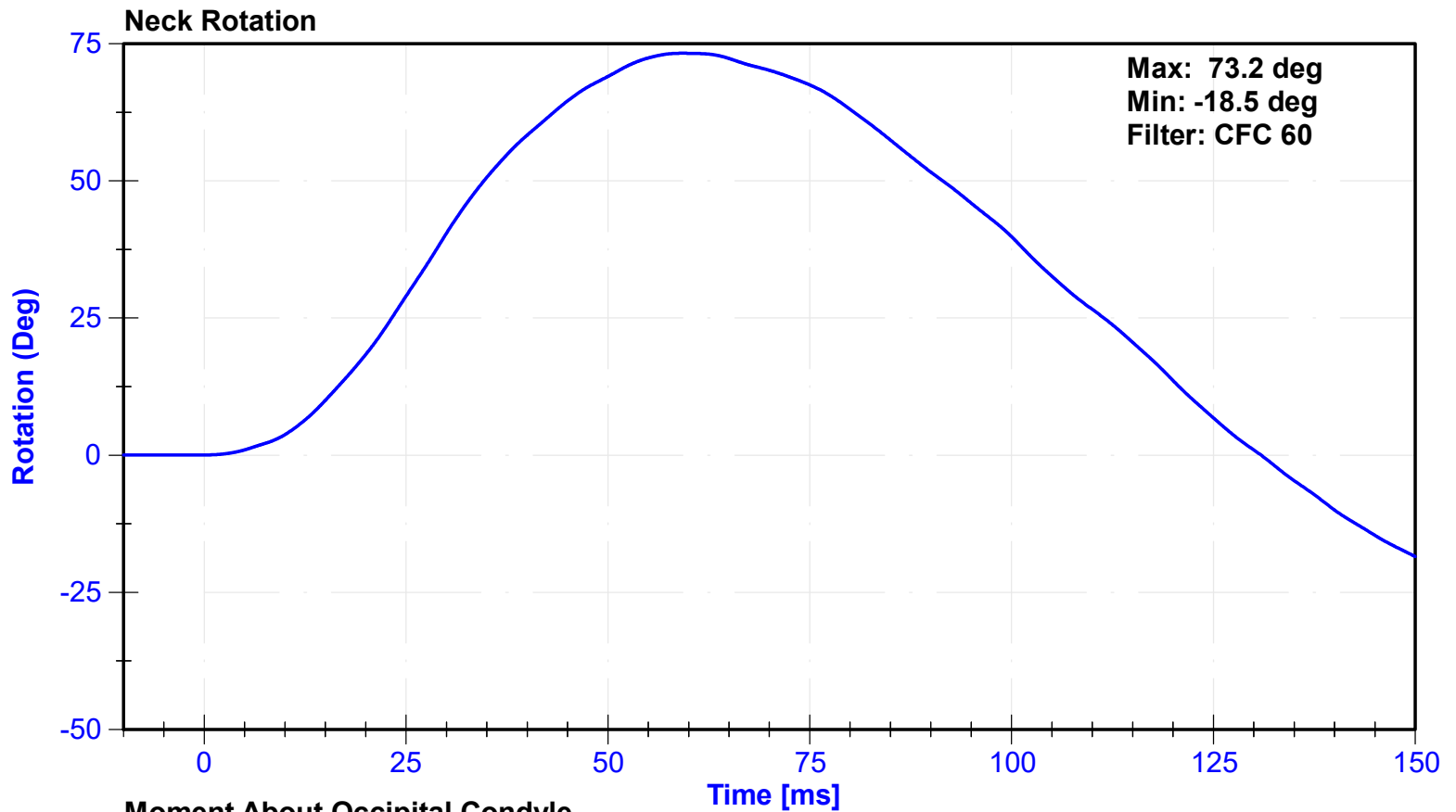
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.9	Pass
Humidity	10	70	%	28	Pass
Velocity	5.51	5.63	m/s	5.603	Pass
Pendulum Impulse at 10ms	2.2	2.8	m/s	2.33	Pass
Pendulum Impulse at 15ms	3.3	4.1	m/s	3.52	Pass
Pendulum Impulse at 20ms	4.4	5.4	m/s	4.75	Pass
Pendulum Impulse at 25ms	5.4	6.1	m/s	5.74	Pass
Pendulum Impulse from 25 to 100ms	5.5	6.2	m/s	5.97	Pass
Neck Rotation	71	81	deg	73.2	Pass
Time at Maximum Rotation	50	70	ms	59.2	Pass
Moment about the OC	36	44	Nm	42.5	Pass
Moment Decay to 0 Nm	102	126	ms	113.9	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	7231C-750	10/31/2023	4/28/2024
Pendulum Potentiometer	Servo	4961	10/2/2023	10/1/2024
Condyle Potentiometer	Servo	DS185	10/2/2023	10/1/2024
Upper Neck Load Cell	Denton	1716ATF_2184-FY	5/18/2023	5/17/2024





ATD Manufacturer	FTSS	Test Technician	D. Sakona
ATD Serial Number	DG8012	Laboratory Supervisor	C. Mantell

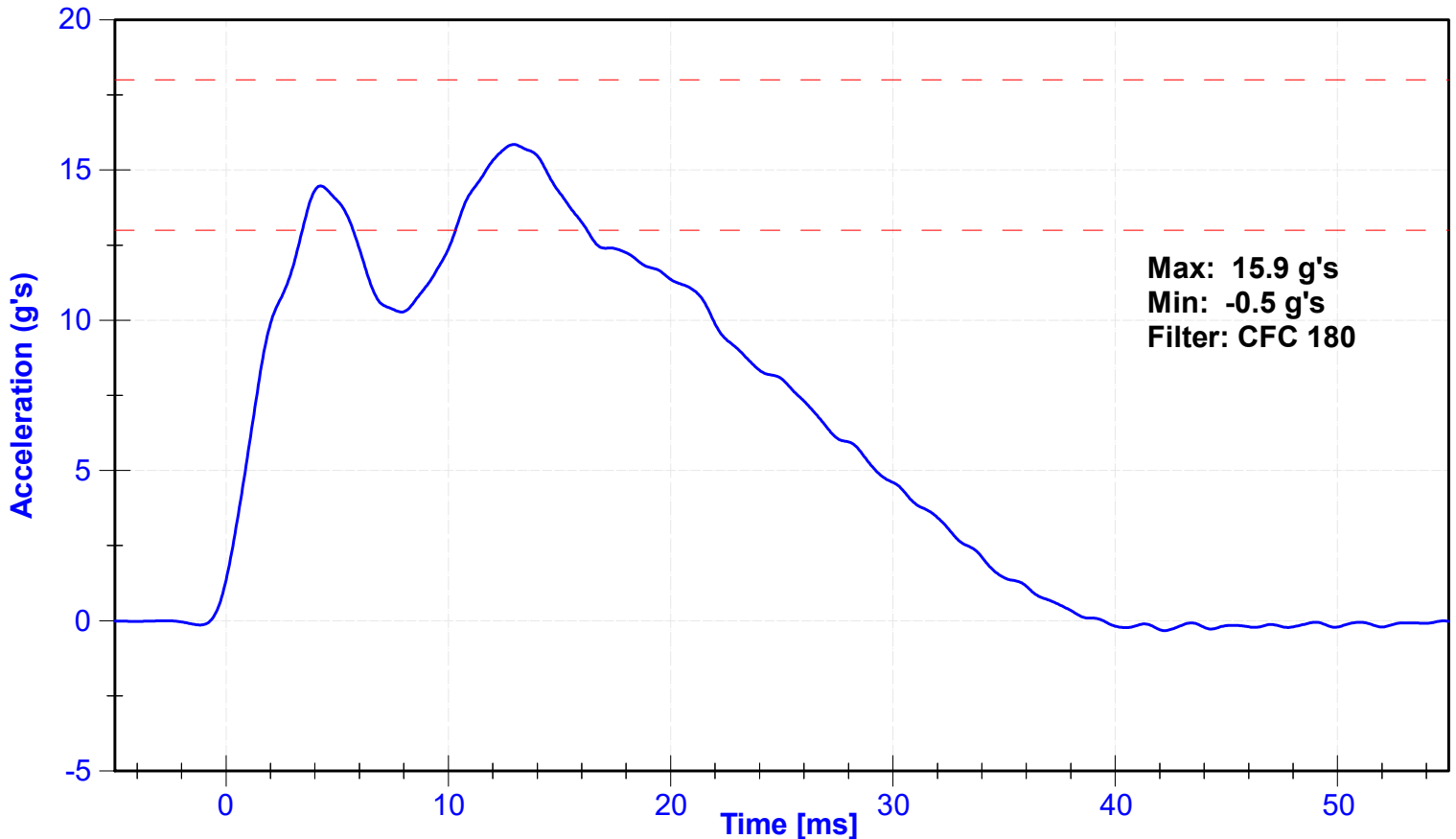
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.9	Pass
Humidity	10	70	%	28	Pass
Velocity	4.2	4.4	m/s	4.29	Pass
Probe Acceleration	13	18	g's	15.9	Pass
Shoulder Deflection	28	37	mm	28.1	Pass
Lateral Upper Spine Acceleration	17	22	g's	20.0	Pass

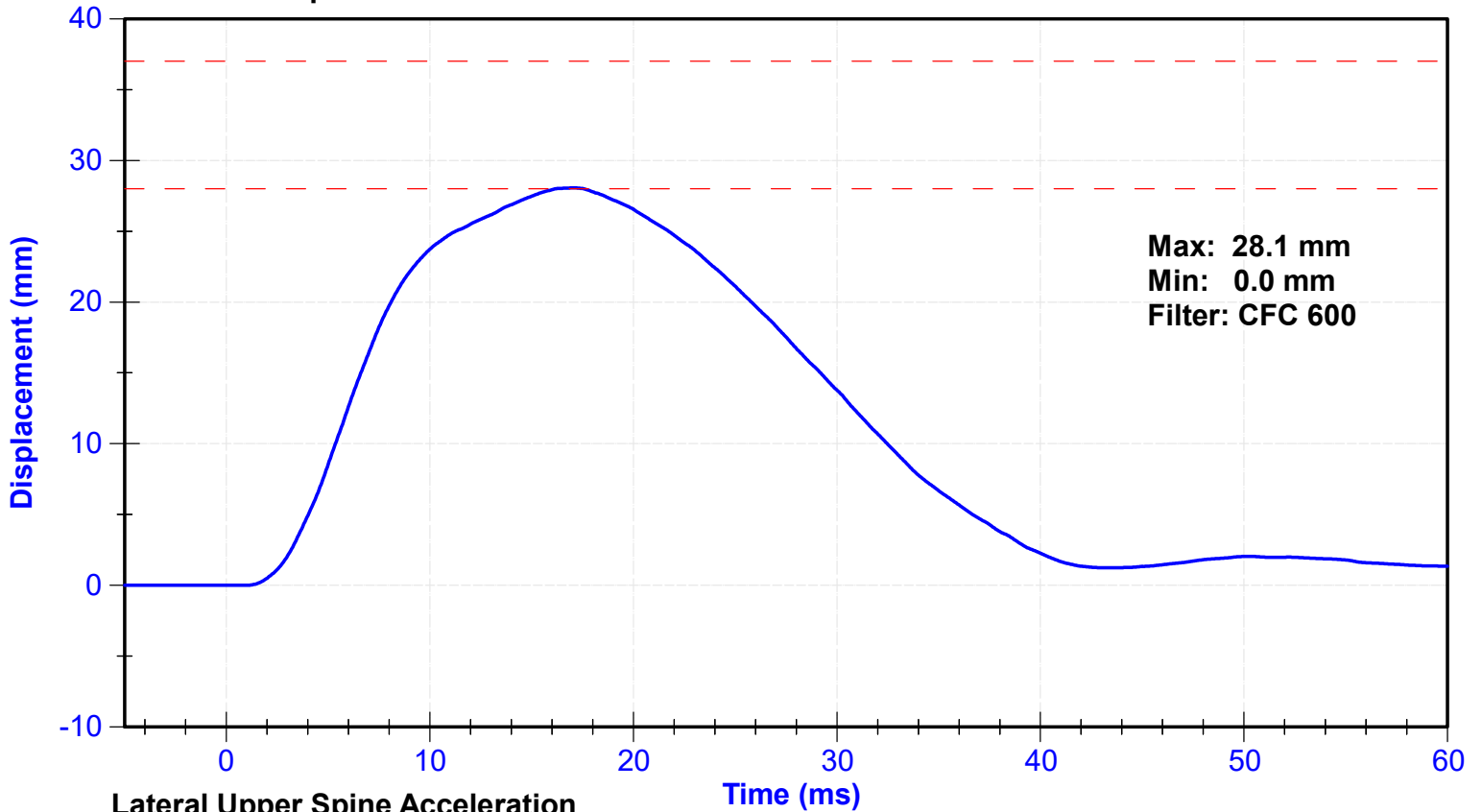
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18619	9/29/2023	3/27/2024
Shoulder Potentiometer	Servo	1274GFE	11/17/2023	5/17/2024
Upper Spine Y Accelerometer	Endevco	P64148	11/16/2023	5/14/2024

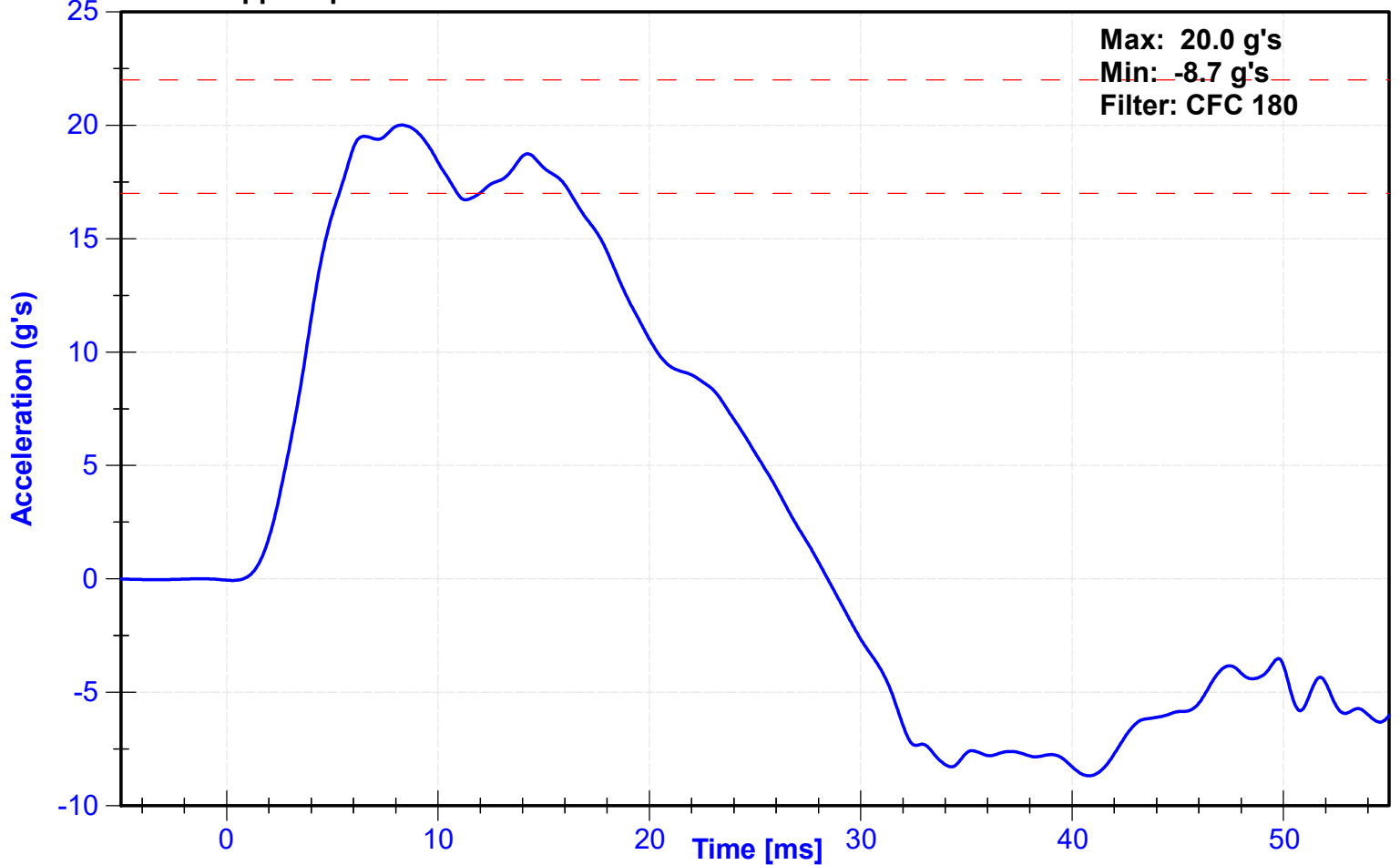
Probe Acceleration



Shoulder Displacement



Lateral Upper Spine Acceleration



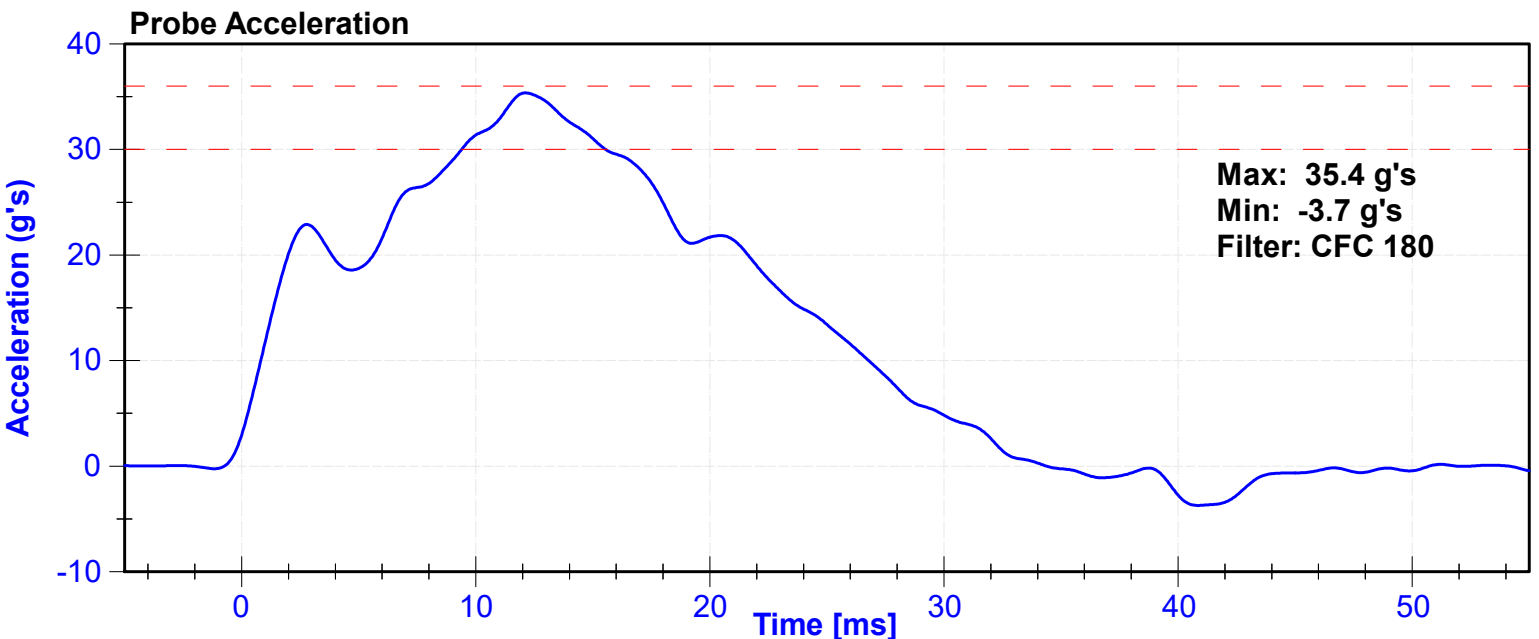
ATD Manufacturer	FTSS	Test Technician	D. Sakona
ATD Serial Number	DG8012	Laboratory Supervisor	C. Mantell

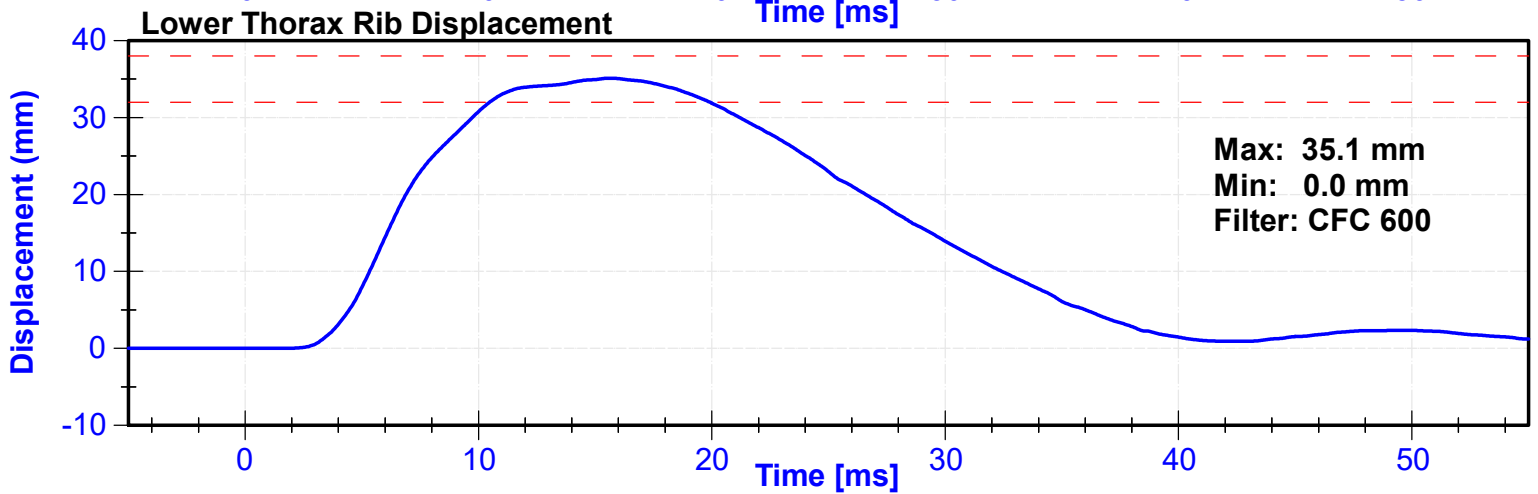
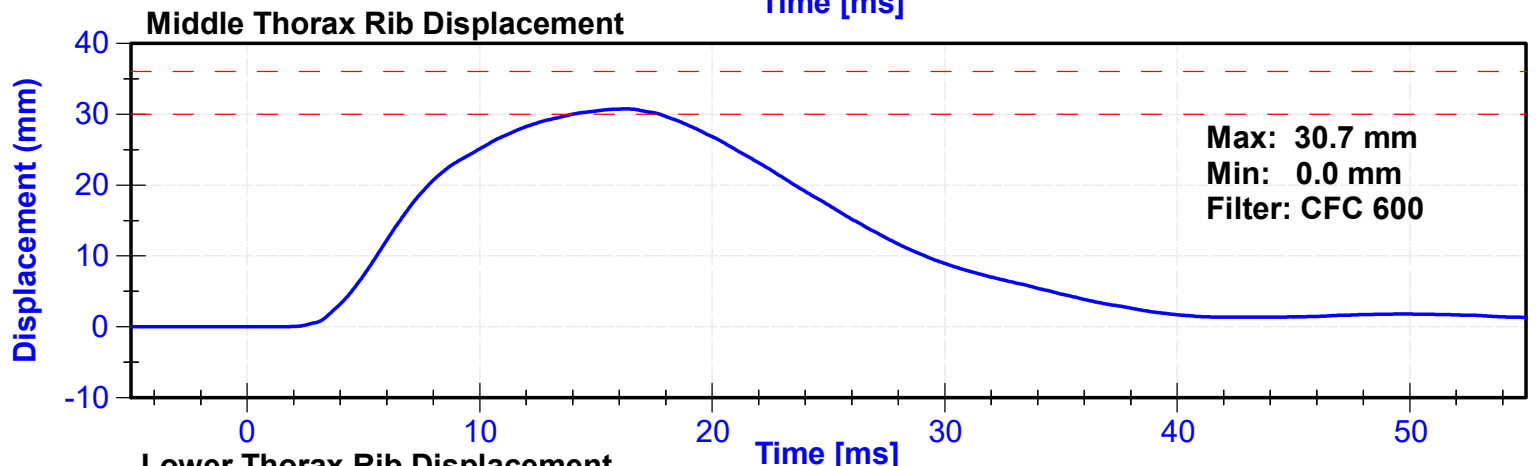
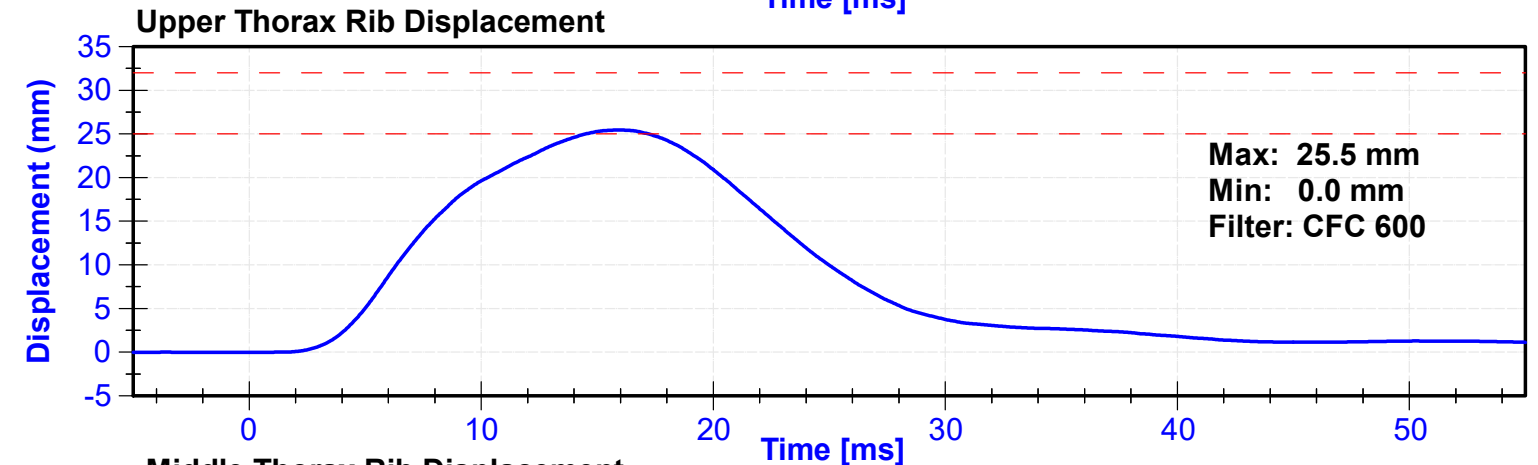
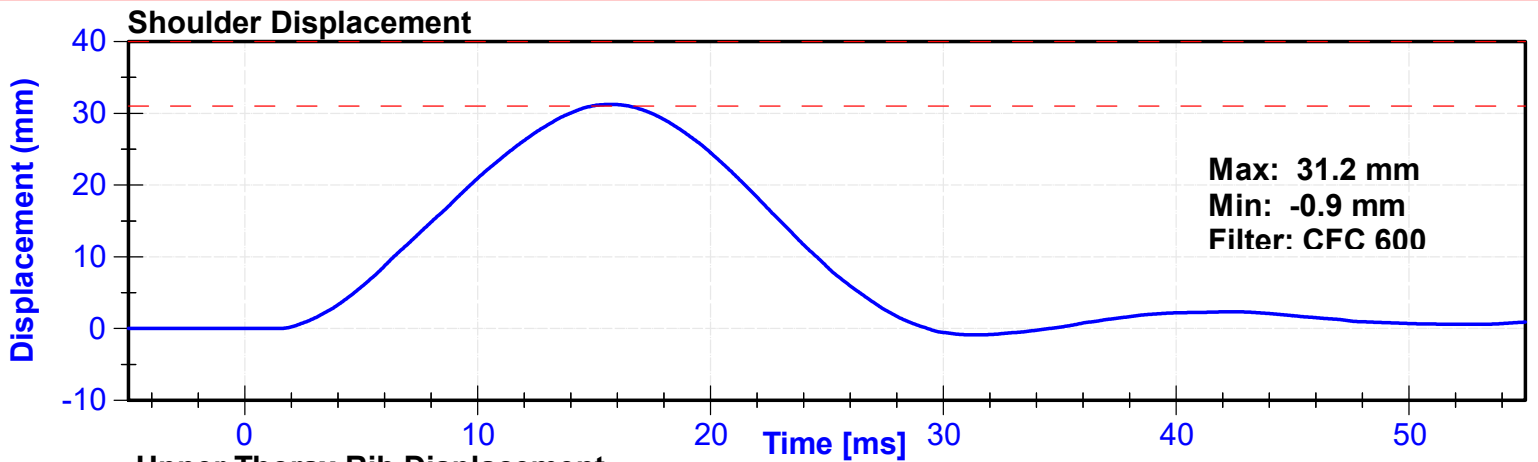
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.9	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	35.4	Pass
Lateral Upper Spine Acceleration	34	43	g's	38.5	Pass
Lateral Lower Spine Acceleration	29	37	g's	32.1	Pass
Shoulder Deflection	31	40	mm	31.2	Pass
Upper Thorax Rib Deflection	25	32	mm	25.5	Pass
Mid Thorax Rib Deflection	30	36	mm	30.7	Pass
Lower Thorax Rib Deflection	32	38	mm	35.1	Pass

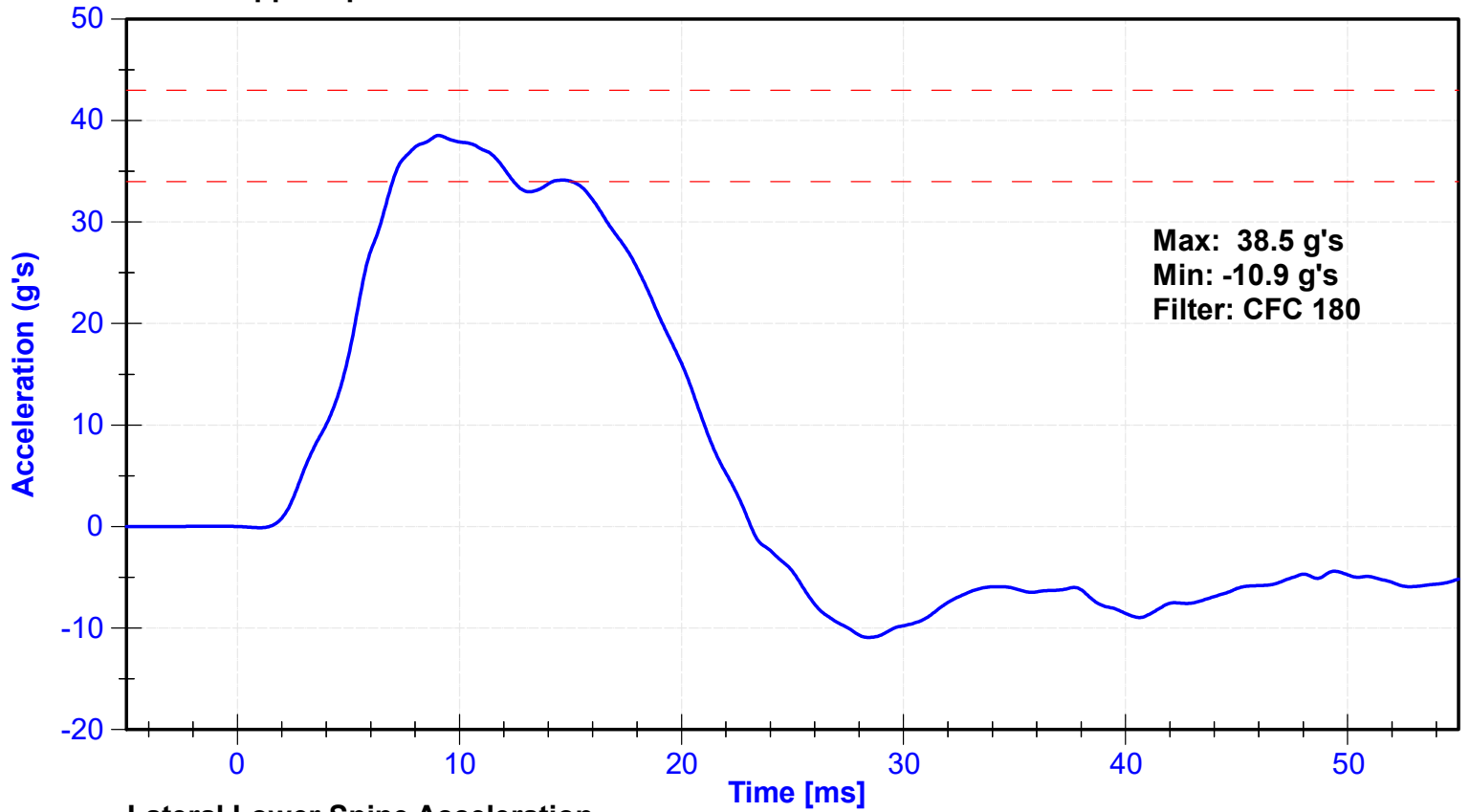
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18619	9/29/2023	3/27/2024
Upper Spine T1 Y Accelerometer	Endevco	P64148	11/16/2023	5/14/2024
Upper Spine T12 Y Accelerometer	Endevco	P51327	11/16/2023	5/14/2024
Shoulder Potentiometer	Servo	1274GFE	11/17/2023	5/17/2024
Upper Thorax Rib Potentiometer	Servo	1199GFE	11/17/2023	5/17/2024
Middle Thorax Rib Potentiometer	Servo	1246GFE	11/17/2023	5/17/2024
Lower Thorax Rib Potentiometer	Servo	011GFE	11/17/2023	5/17/2024

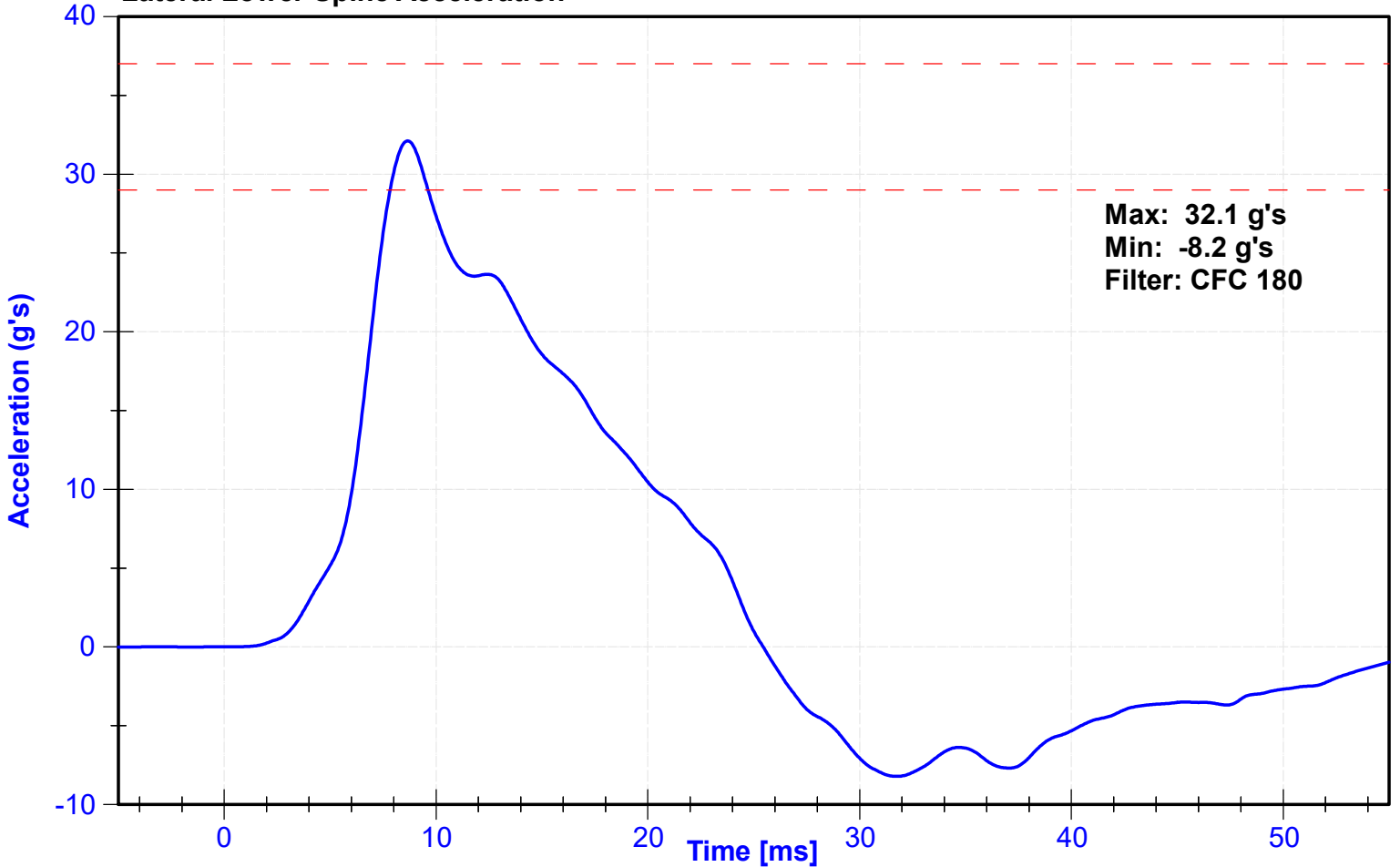




Lateral Upper Spine Acceleration



Lateral Lower Spine Acceleration



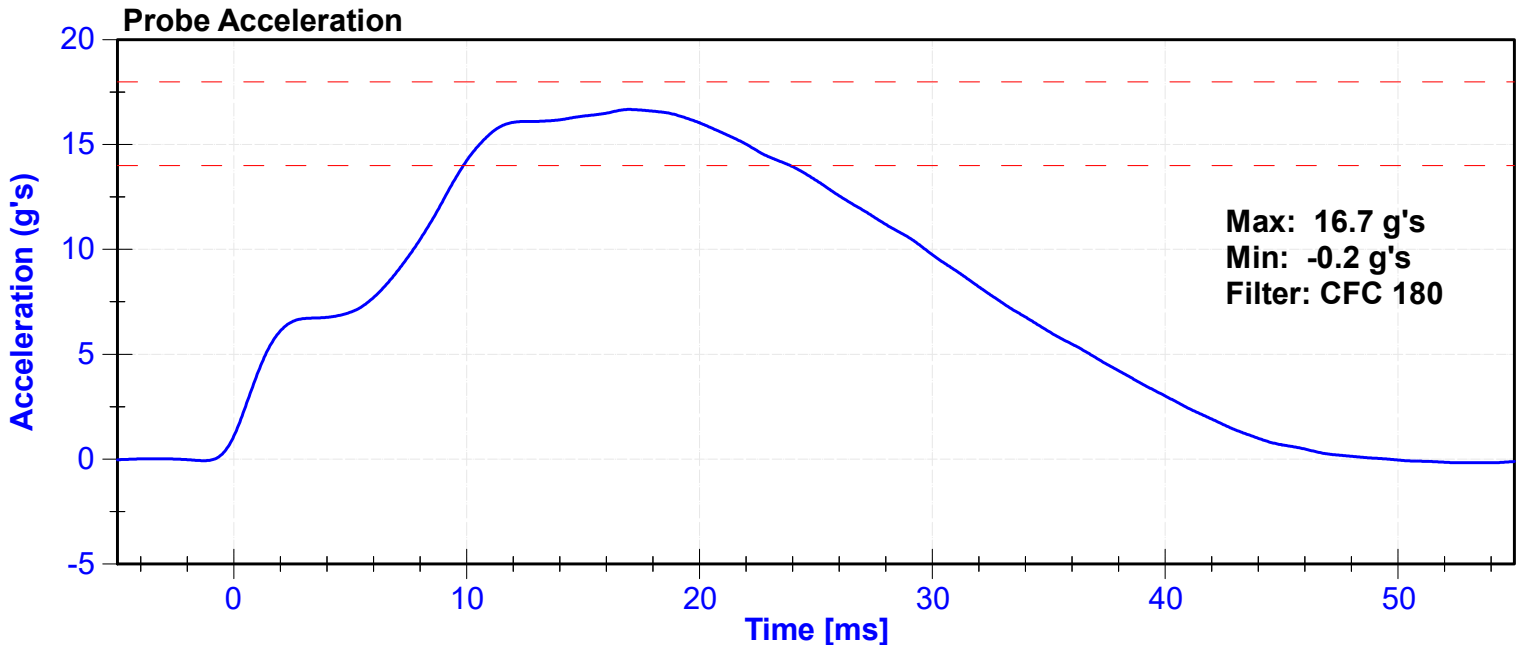
ATD Manufacturer	FTSS	Test Technician	D. Sakona
ATD Serial Number	DG8012	Laboratory Supervisor	C. Mantell

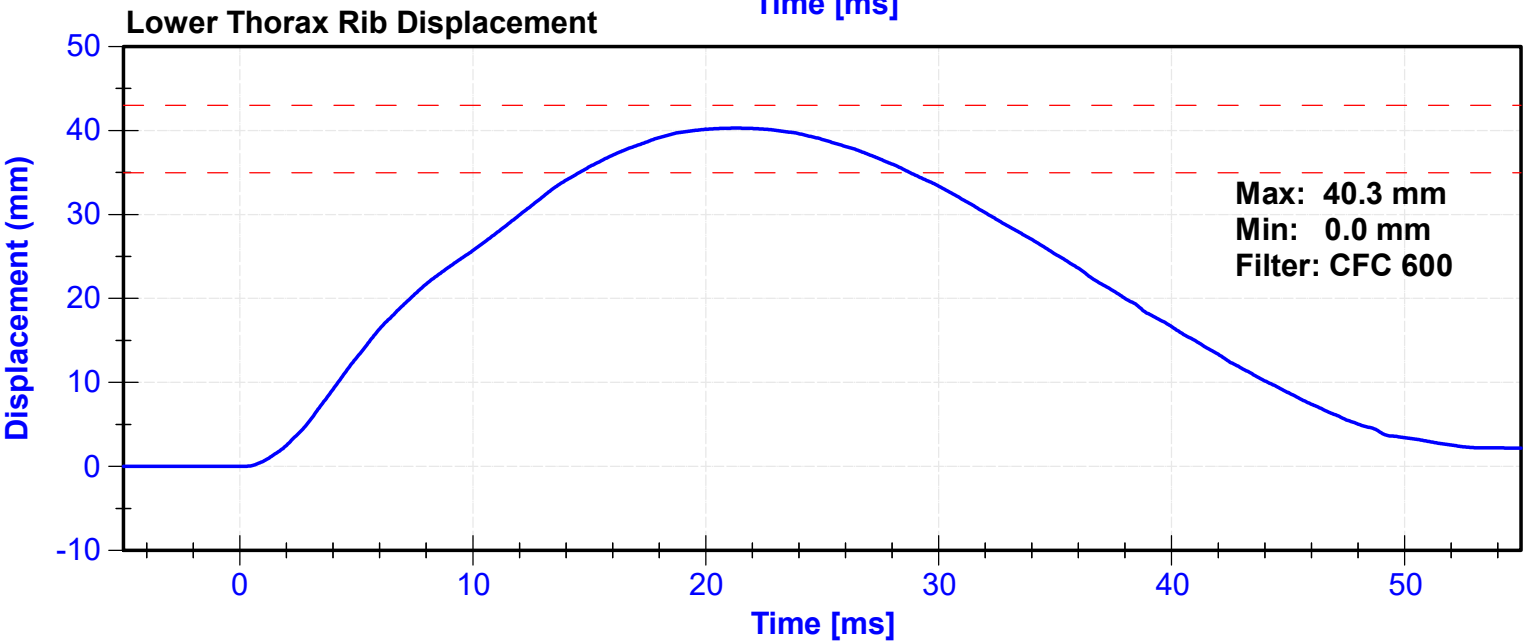
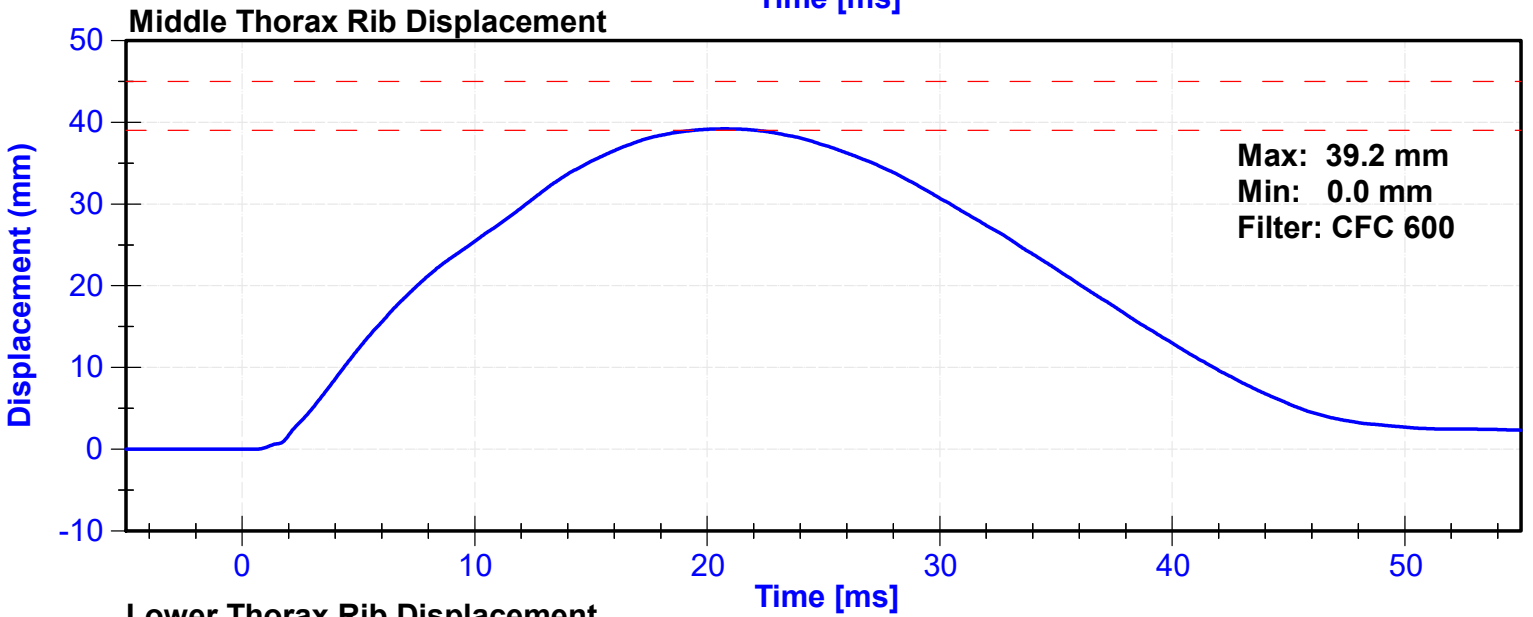
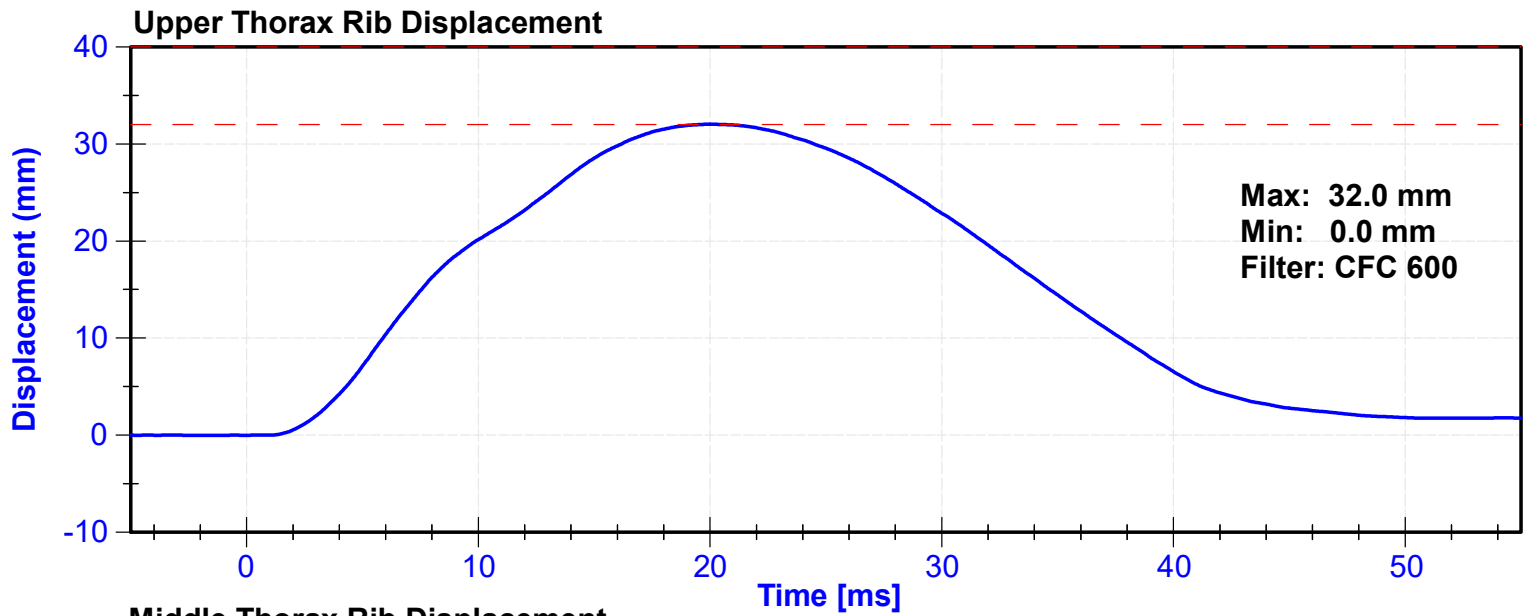
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.9	Pass
Humidity	10	70	%	28	Pass
Velocity	4.2	4.4	m/s	4.29	Pass
Probe Acceleration	14	18	g's	16.7	Pass
Lateral Upper Spine Acceleration	13	17	g's	15.3	Pass
Lateral Lower Spine Acceleration	7	11	g's	9.8	Pass
Upper Thorax Rib Deflection	32	40	mm	32.0	Pass
Middle Thorax Rib Deflection	39	45	mm	39.2	Pass
Lower Thorax Rib Deflection	35	43	mm	40.3	Pass

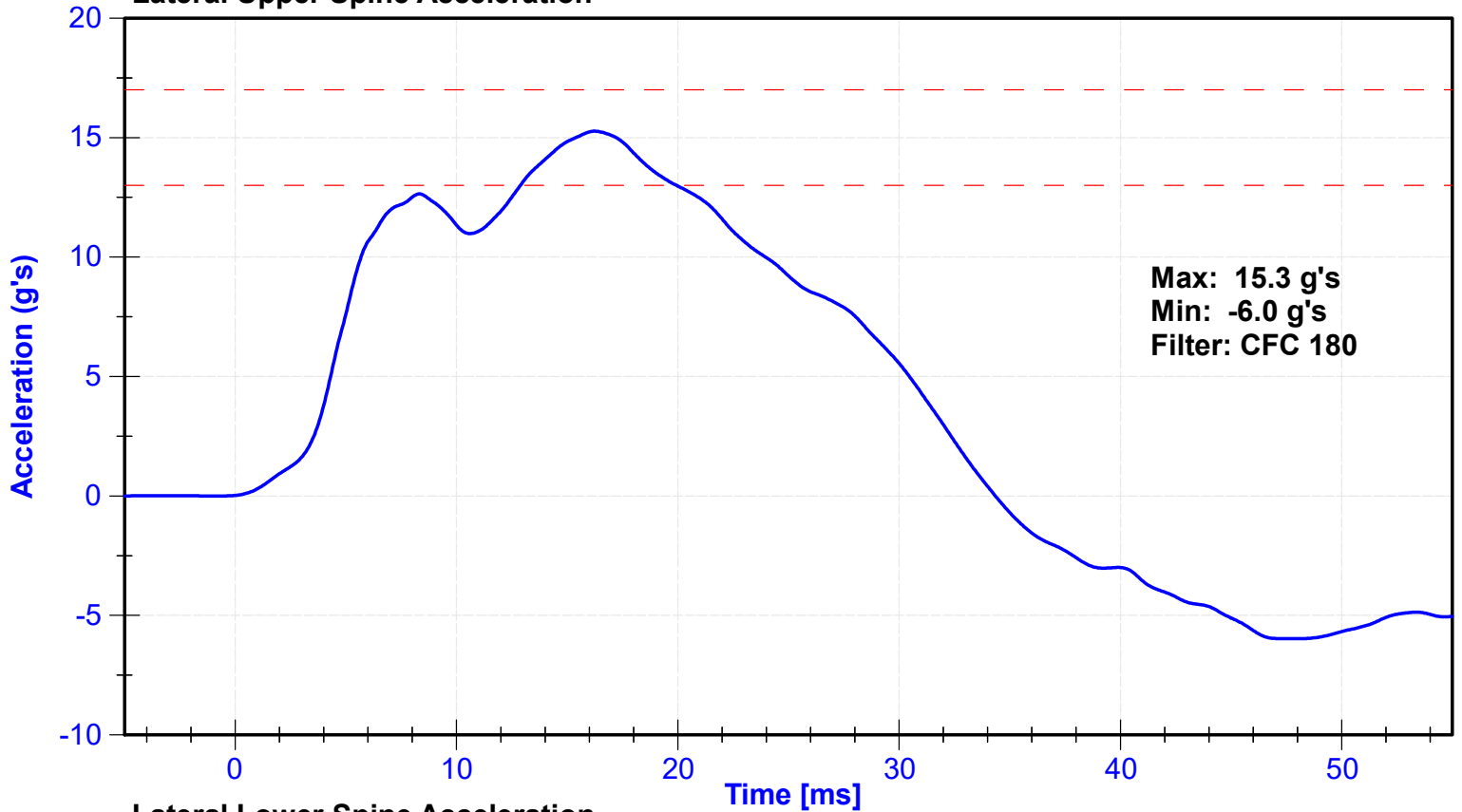
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18619	9/29/2023	3/27/2024
Upper Spine Y Accelerometer	Endevco	P64148	11/16/2023	5/14/2024
Lower Spine Y Accelerometer	Endevco	P51327	11/16/2023	5/14/2024
Upper Thorax Rib Potentiometer	Servo	1199GFE	11/17/2023	5/17/2024
Middle Thorax Rib Potentiometer	Servo	1246GFE	11/17/2023	5/17/2024
Lower Thorax Rib Potentiometer	Servo	011GFE	11/17/2023	5/17/2024

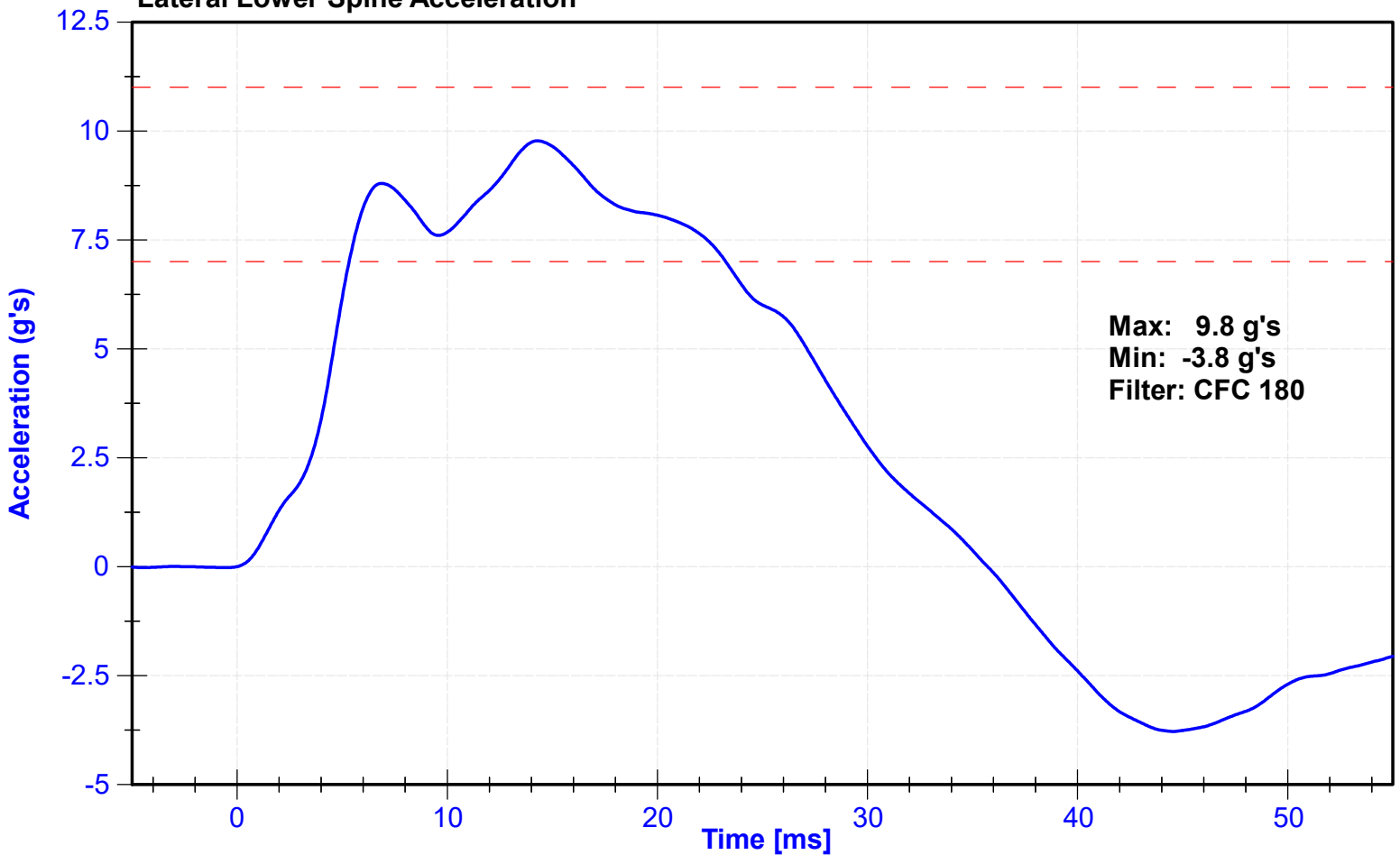




Lateral Upper Spine Acceleration



Lateral Lower Spine Acceleration



ATD Manufacturer	FTSS	Test Technician	D. Sakona
ATD Serial Number	DG8012	Laboratory Supervisor	C. Mantell

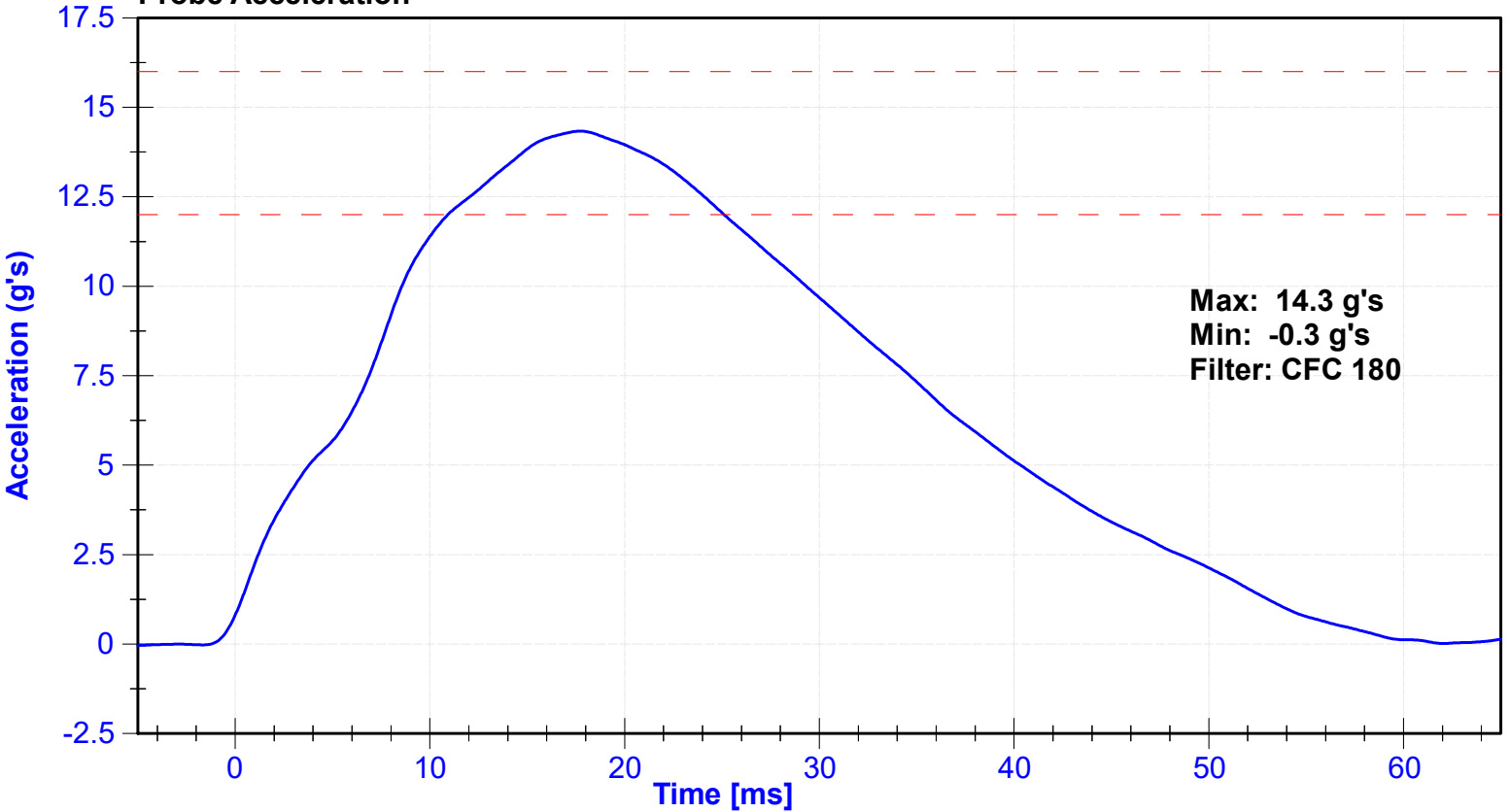
Results

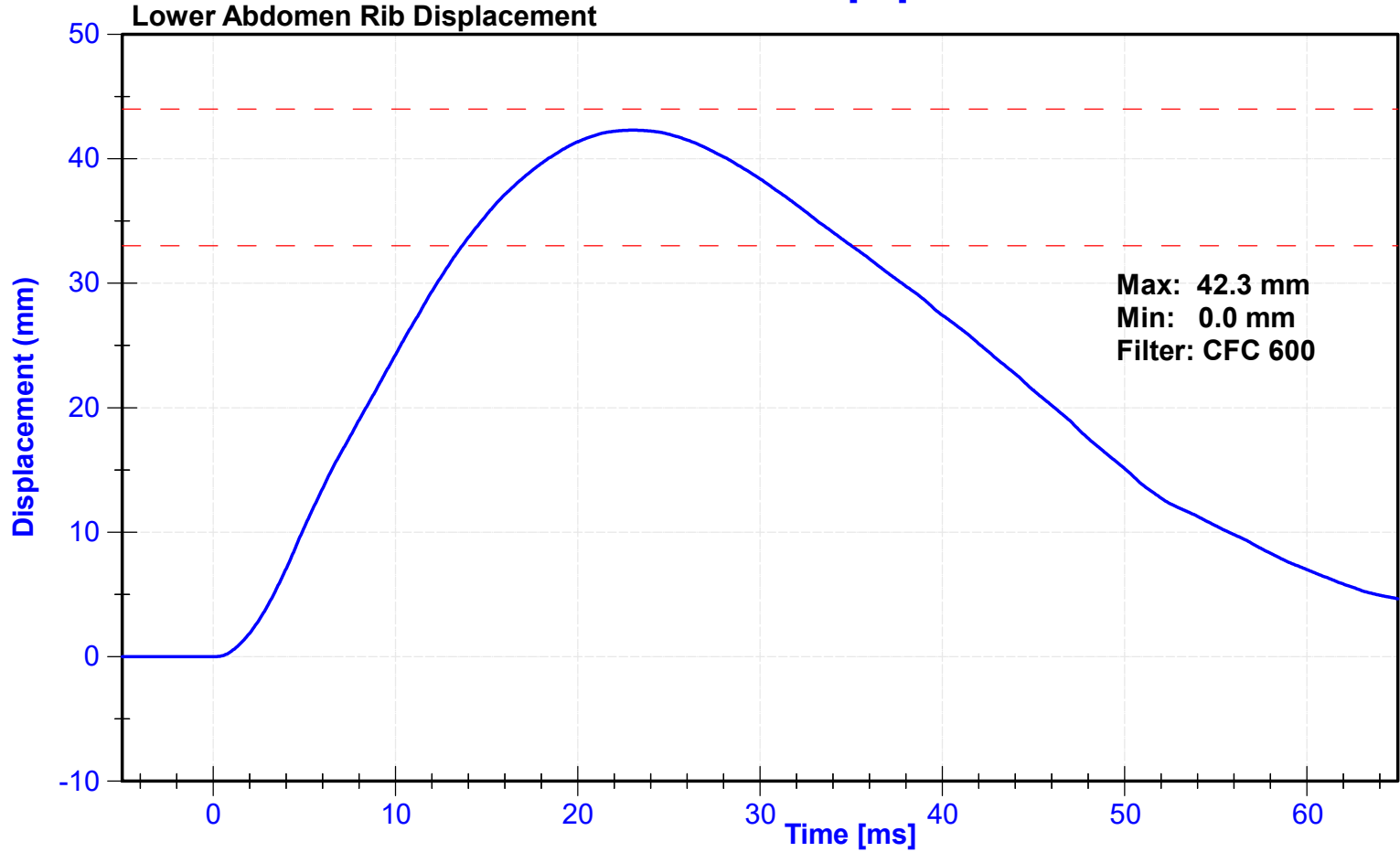
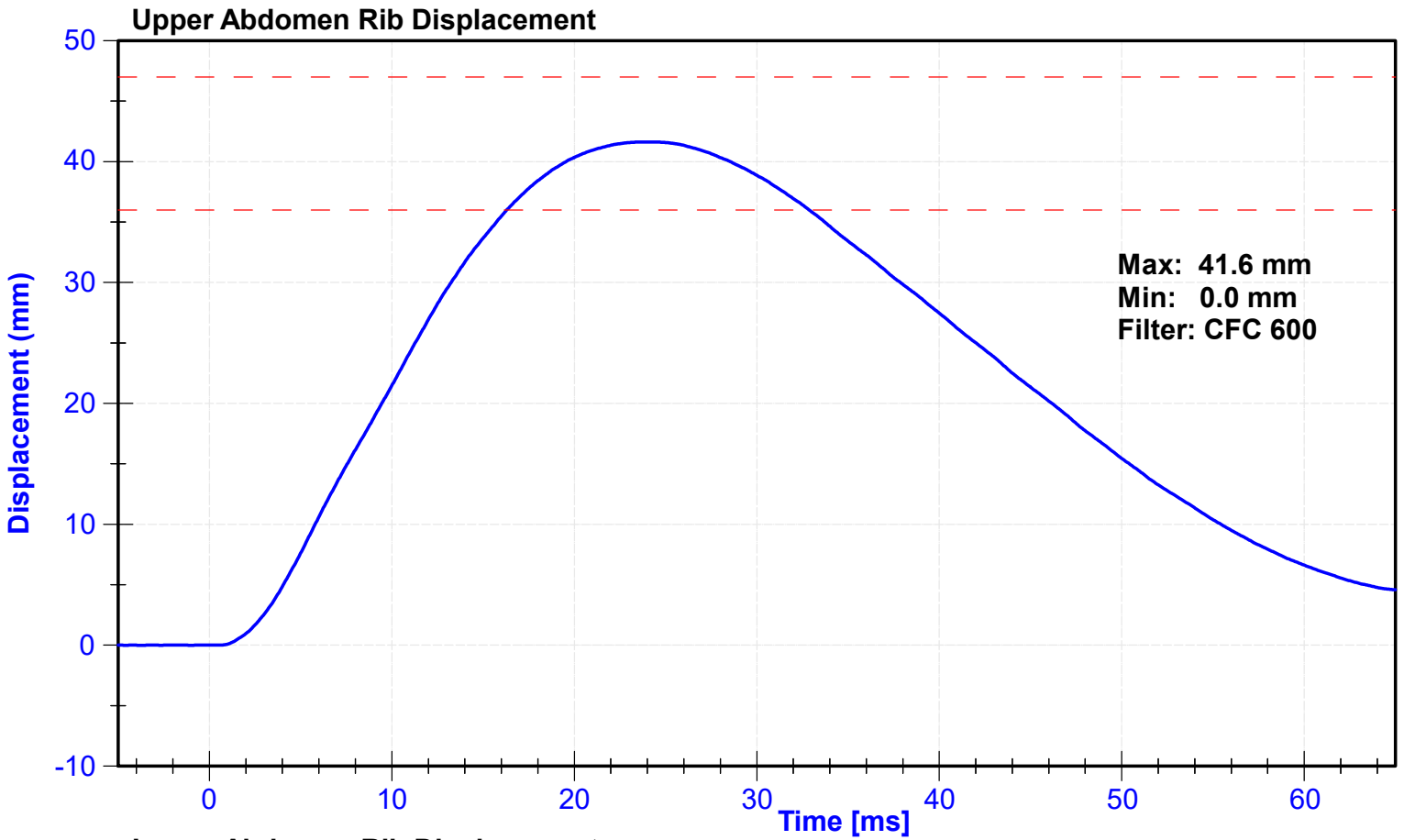
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.9	Pass
Humidity	10	70	%	28	Pass
Velocity	4.2	4.4	m/s	4.29	Pass
Probe Acceleration	12	16	g's	14.3	Pass
Lateral Lower Spine Acceleration	9	14	g's	10.6	Pass
Upper Abdomen Rib Deflection	36	47	mm	41.6	Pass
Lower Abdomen Rib Deflection	33	44	mm	42.3	Pass

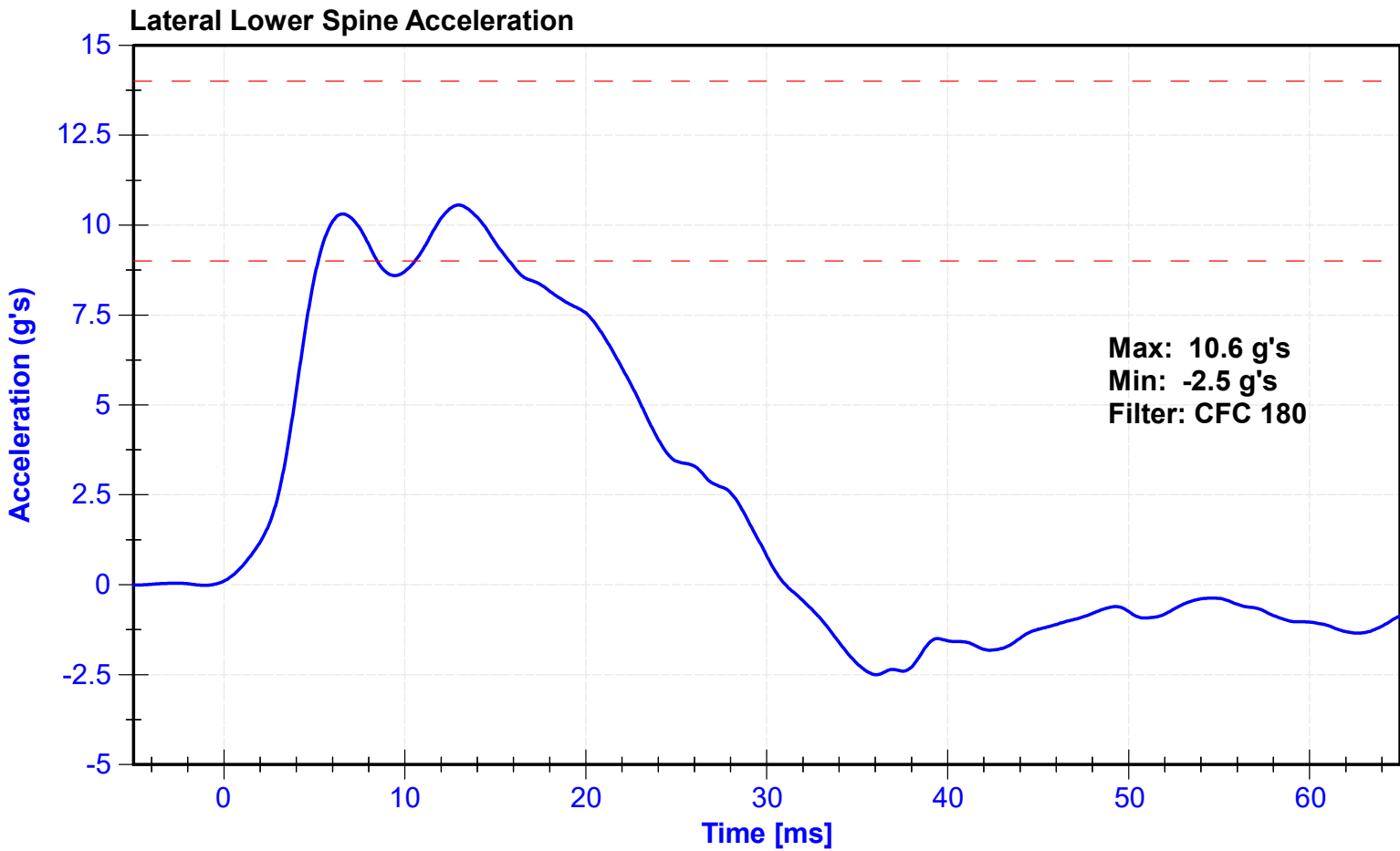
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accelerometer	Endevco	18619	9/29/2023	3/27/2024
Lower Spine Y Accelerometer	Endevco	P51327	11/16/2023	5/14/2024
Upper Abdomen Rib Potentiometer	Servo	008GFE	11/17/2023	5/17/2024
Lower Abdomen Rib Potentiometer	Servo	046	11/17/2023	5/17/2024

Probe Acceleration







ATD Manufacturer	FTSS	Test Technician	D. Sakona
ATD Serial Number	DG8012	Laboratory Supervisor	C. Mantell

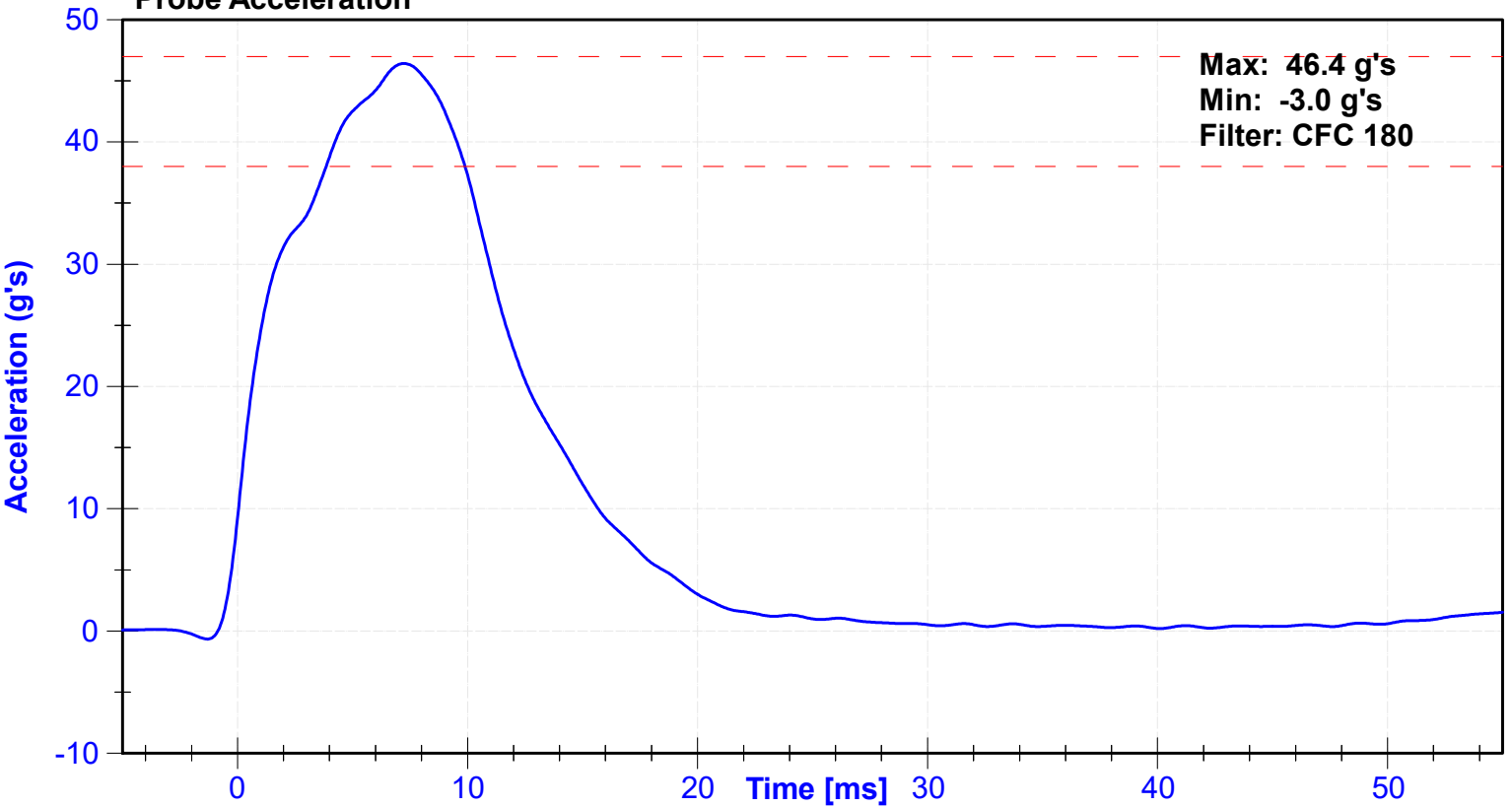
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.9	Pass
Humidity	10	70	%	28	Pass
Velocity	6.6	6.8	m/s	6.67	Pass
Probe Acceleration	38	47	g's	46.4	Pass
Lateral Pelvis Acceleration after 6ms	34	42	g's	38.6	Pass
Acetabulum Force	3600	4300	N	4011.1	Pass

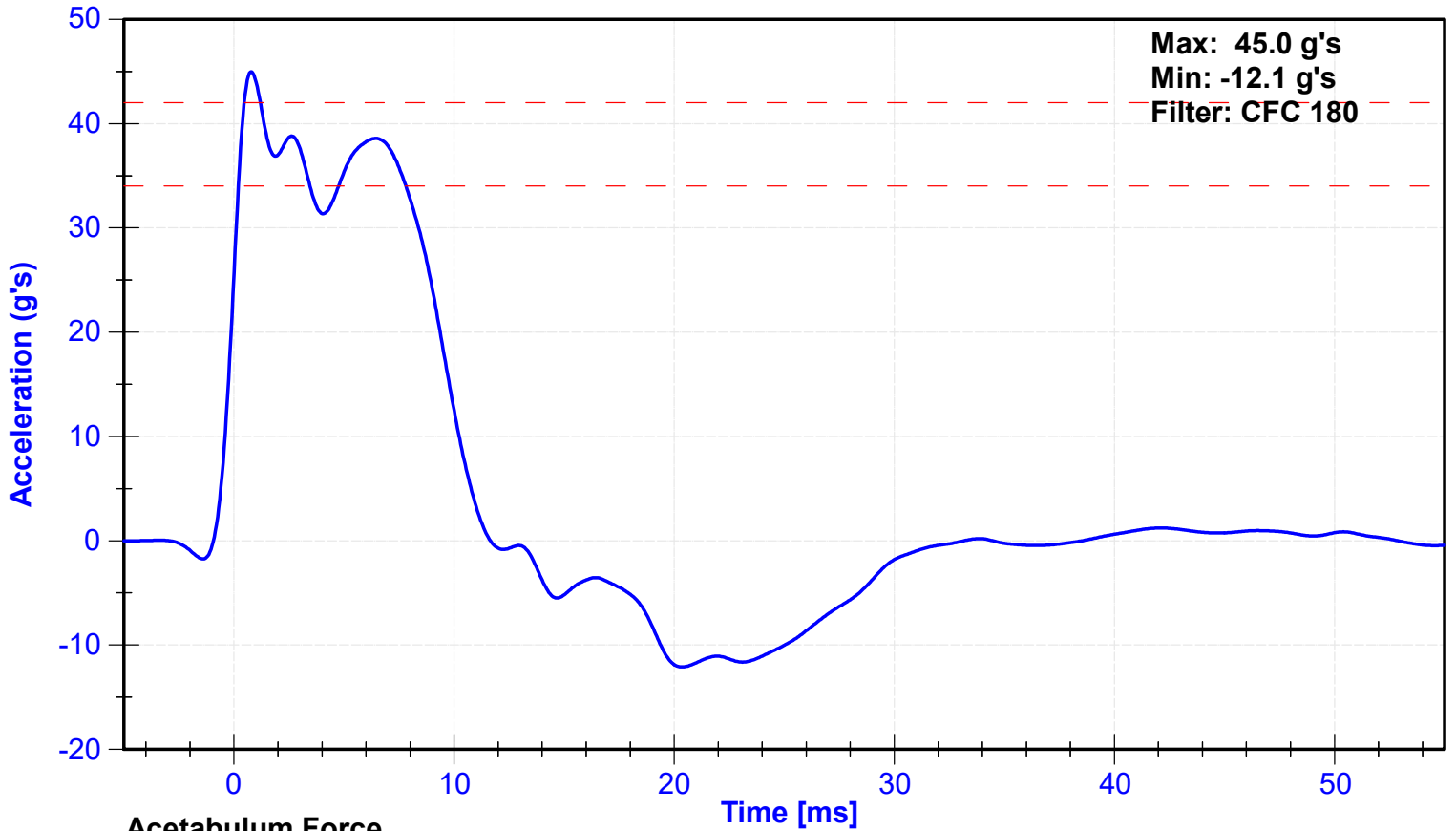
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18619	9/29/2023	3/27/2024
Pelvis Y Accelerometer	Endevco	P50078	11/16/2023	5/14/2024
Acetabulum Load Cell	Denton	270-FY	9/11/2023	9/10/2024
Certification Plug	SACO			N/A
Crash Test Plug	SACO			N/A

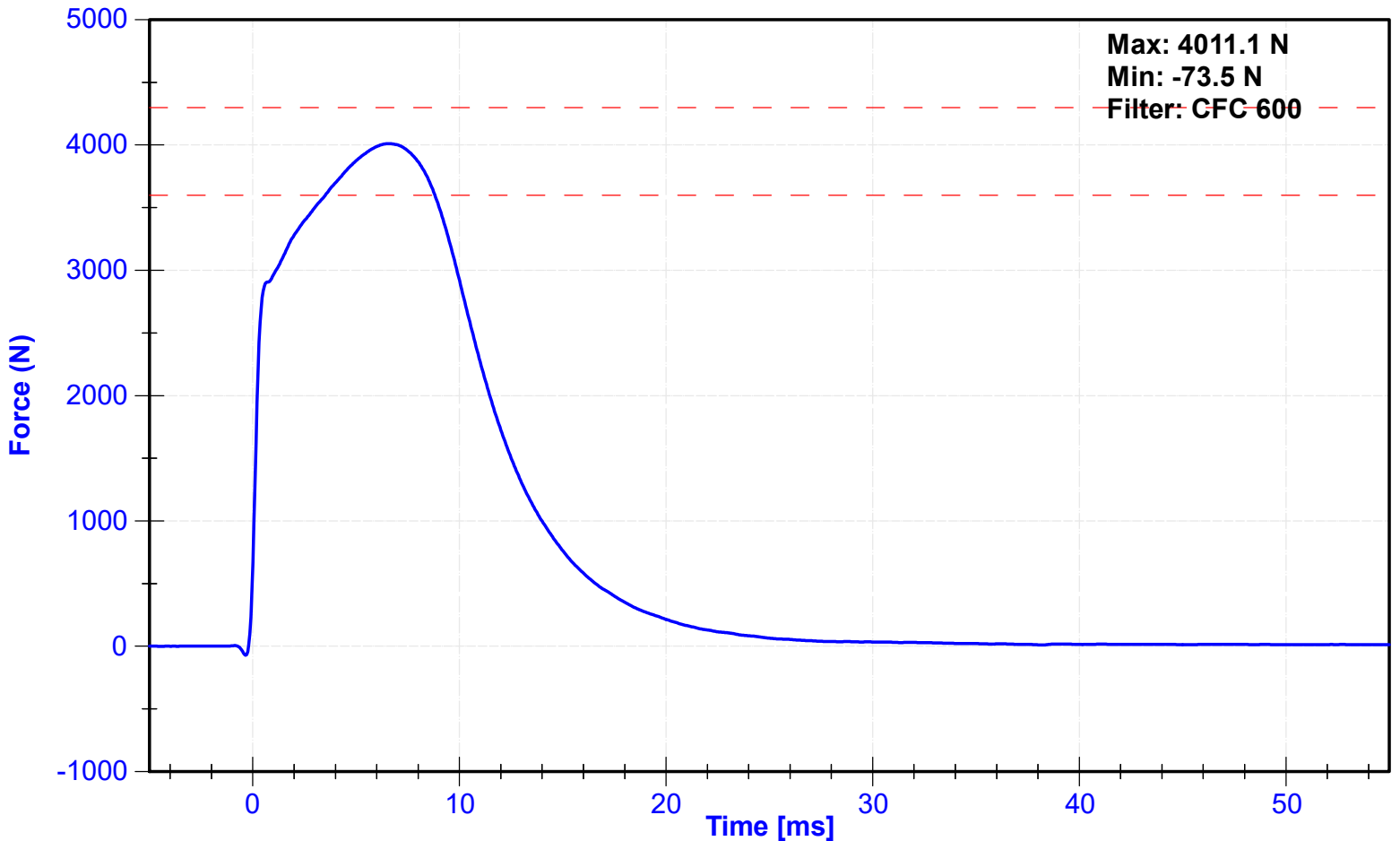
Probe Acceleration



Lateral Pelvis Acceleration



Acetabulum Force





Cert
5/12/24

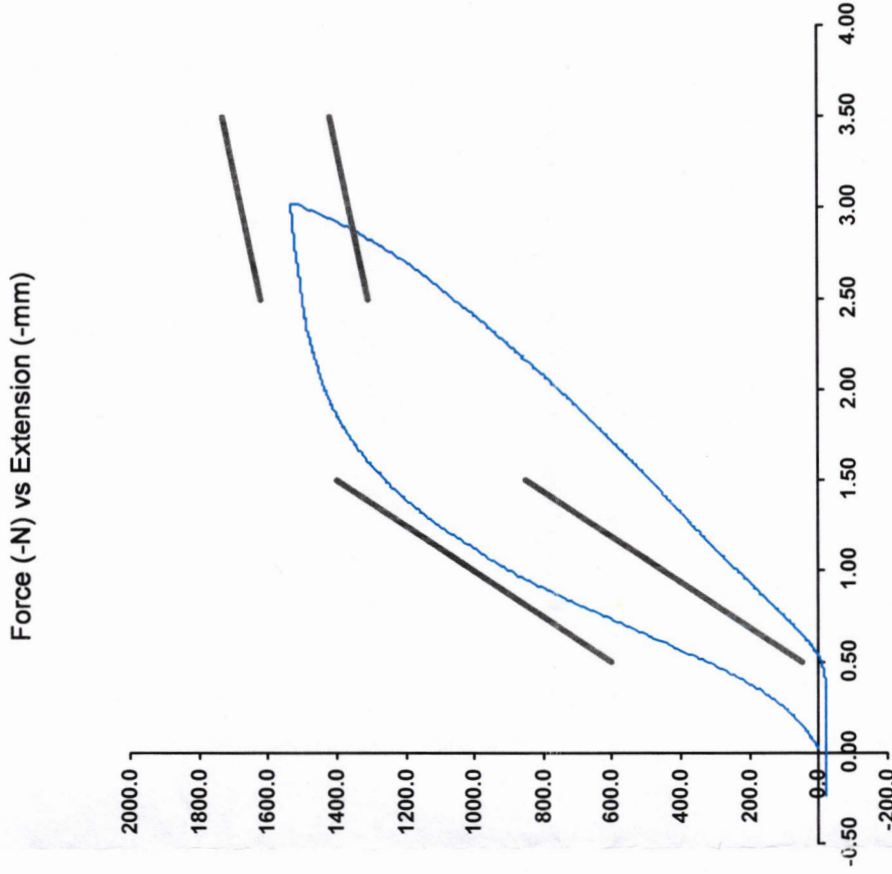
SID-IIs Pelvis Plug Certification Test

Plug S/N 16441
Test Number 23010
Report Number 23068
Test Date 5/23/2022 11:39:59 AM

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

Testing Machine STM-20 5965542
 Load Cell S/N (F1360947), Units (LBS) 1000
 Crosshead Speed (mm / min) or Rate 12.7
 Extension or Position Measured by XHD_100 (XHD100)

Notes:



Operator _____
 Part Number 180-4450

Template No 107 23-May-22
 SACCO Research

By: DC Date: 5/23/2022
 SACCO Research 41735 Elm St, #401 Murrieta, CA 92562 Tel 310-694-2082 Fax



Impact
1/10/24

SID-IIs Pelvis Plug Certification Test

Plug S/N 16320

Test Number 22886

Report Number 22943

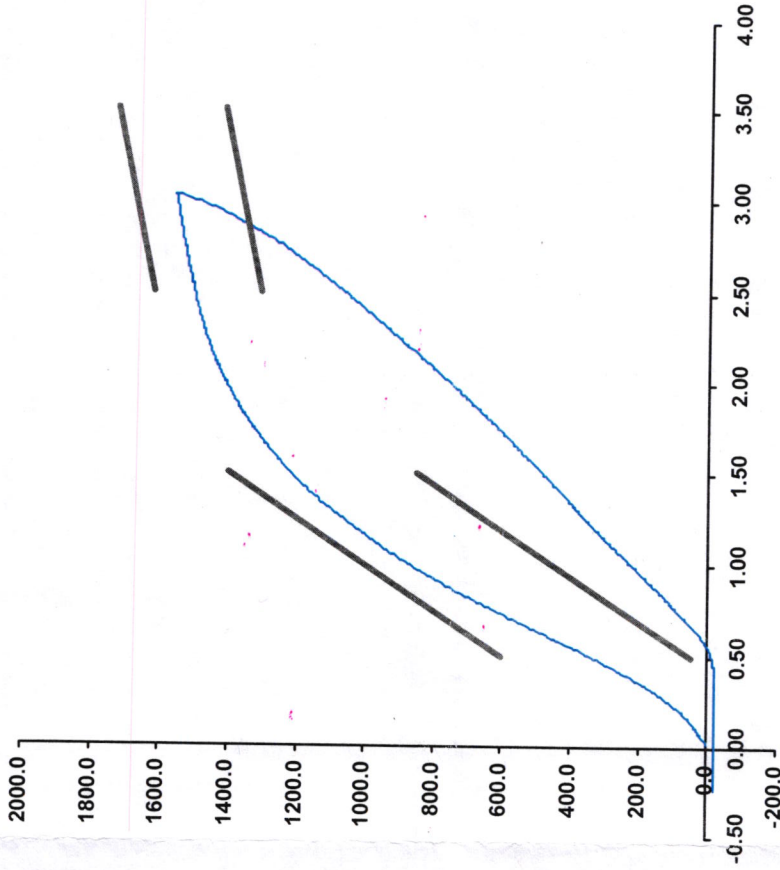
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Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	50	600
Force @ 1.5 mm (N)	850	1,400
Force @ 2.5 mm (N)	1,306	1,618
Force @ 3.0 mm (N)	1,361	1,673

Testing Machine STM-20 5965542
 Load Cell S/N (F1360947), Units (LBS) 1000
 Crosshead Speed (mm / min) or Rate 12.7
 Extension or Position Measured by XHD_100 (XHD100)

Notes:

Force (-N) vs Extension (-mm)



Operator
 Part Number 180-4450

Template No 107 20-May-22

SACO Research

By: DC Date: 5/20/2022



Non Impact
1/10/24

SID-IIs Pelvis Plug Certification Test

Plug S/N 16457

Test Number 23026

Report Number 23084

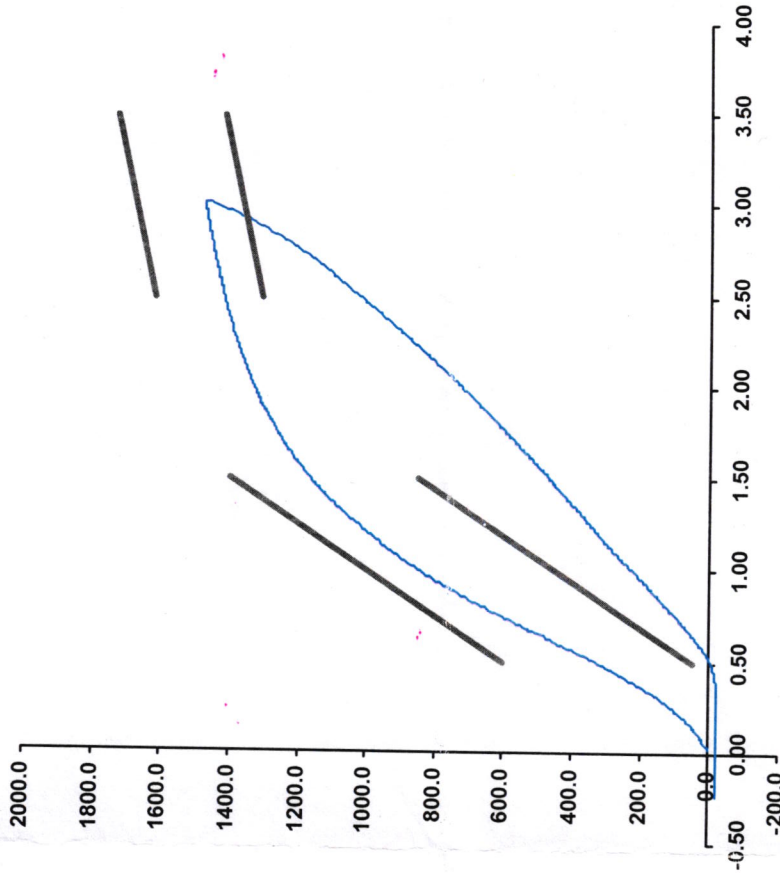
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Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	50	600
Force @ 1.5 mm (N)	850	1,400
Force @ 2.5 mm (N)	1,306	1,618
Force @ 3.0 mm (N)	1,361	1,673

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:

Force (-N) vs Extension (-mm)



Operator _____

Part Number 180-4450

Template No 107 23-May-22

SACCO Research

By: DC Date: 5/23/2022

ATD Manufacturer	FTSS	Test Technician	D. Sakona
ATD Serial Number	DG8012	Laboratory Supervisor	C. Mantell

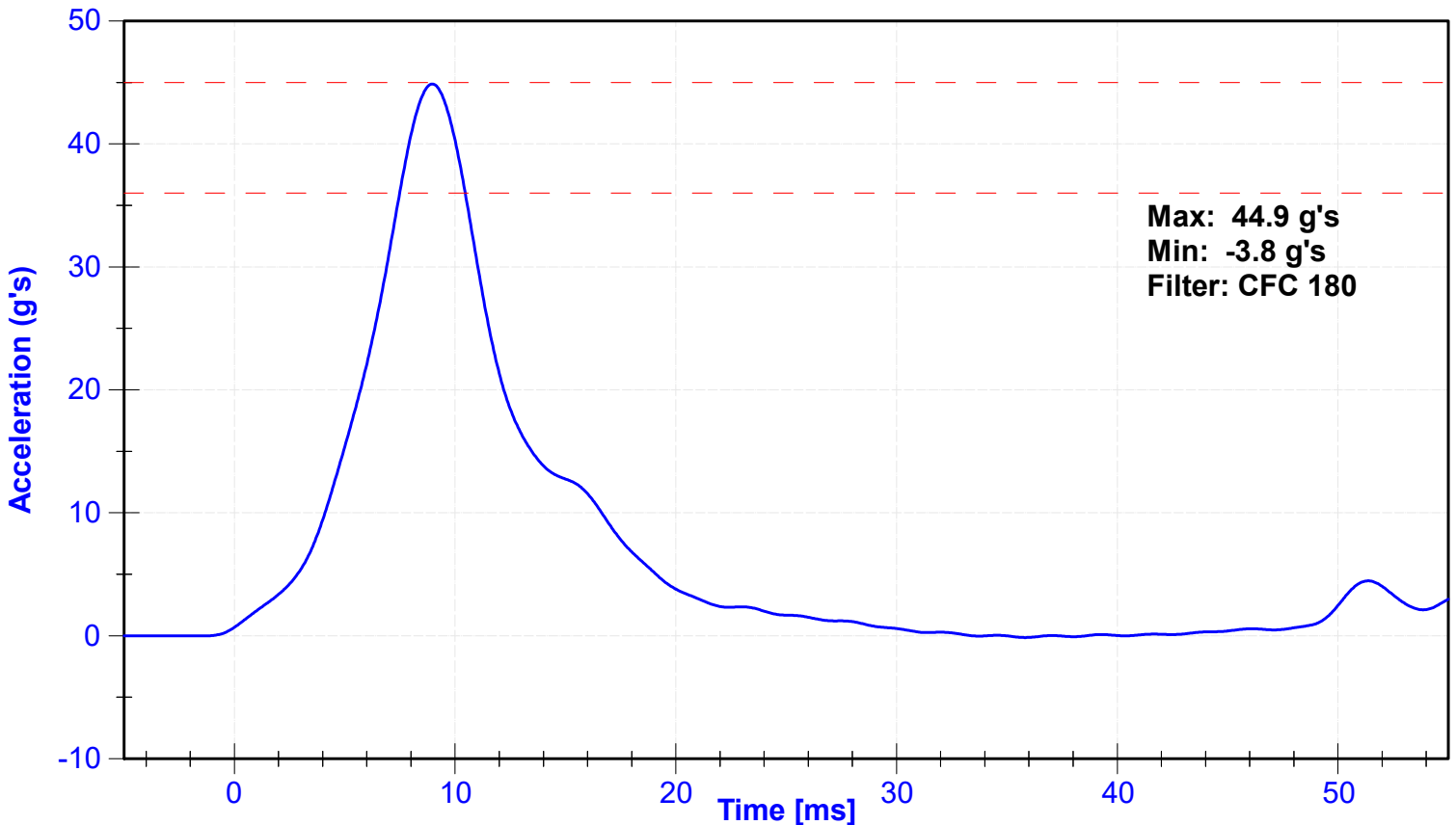
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.9	Pass
Humidity	10	70	%	28	Pass
Velocity	4.2	4.4	m/s	4.28	Pass
Probe Acceleration	36	45	g's	44.9	Pass
Lateral Pelvis Acceleration	28	39	g's	35.2	Pass
Iliac Force	4100	5100	N	4943.3	Pass

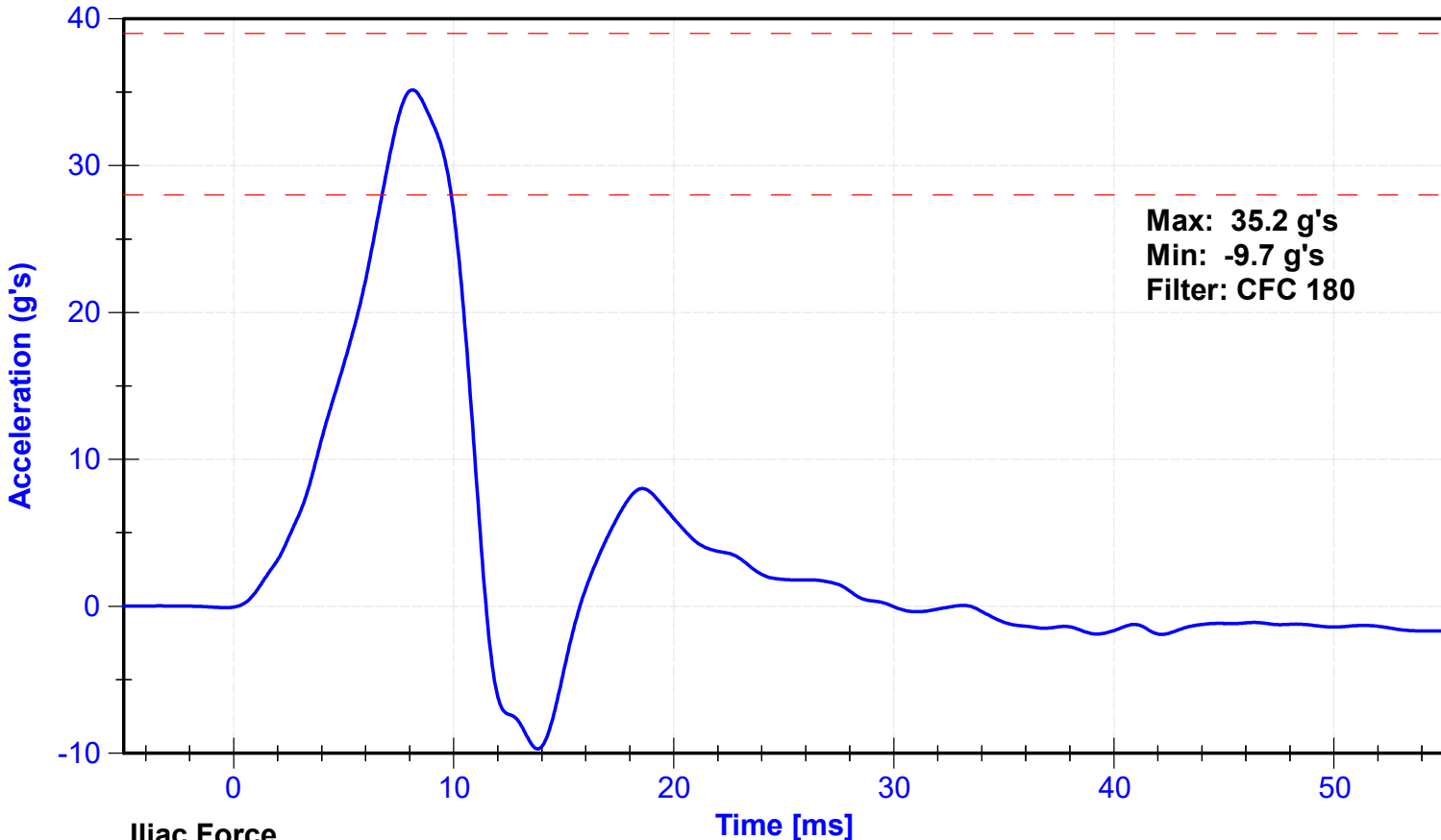
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18619	9/29/2023	3/27/2024
Pelvis Y Accelerometer	Endevco	P50078	11/16/2023	5/14/2024
Iliac Load Cell	Denton	280-FY	9/11/2023	9/10/2024

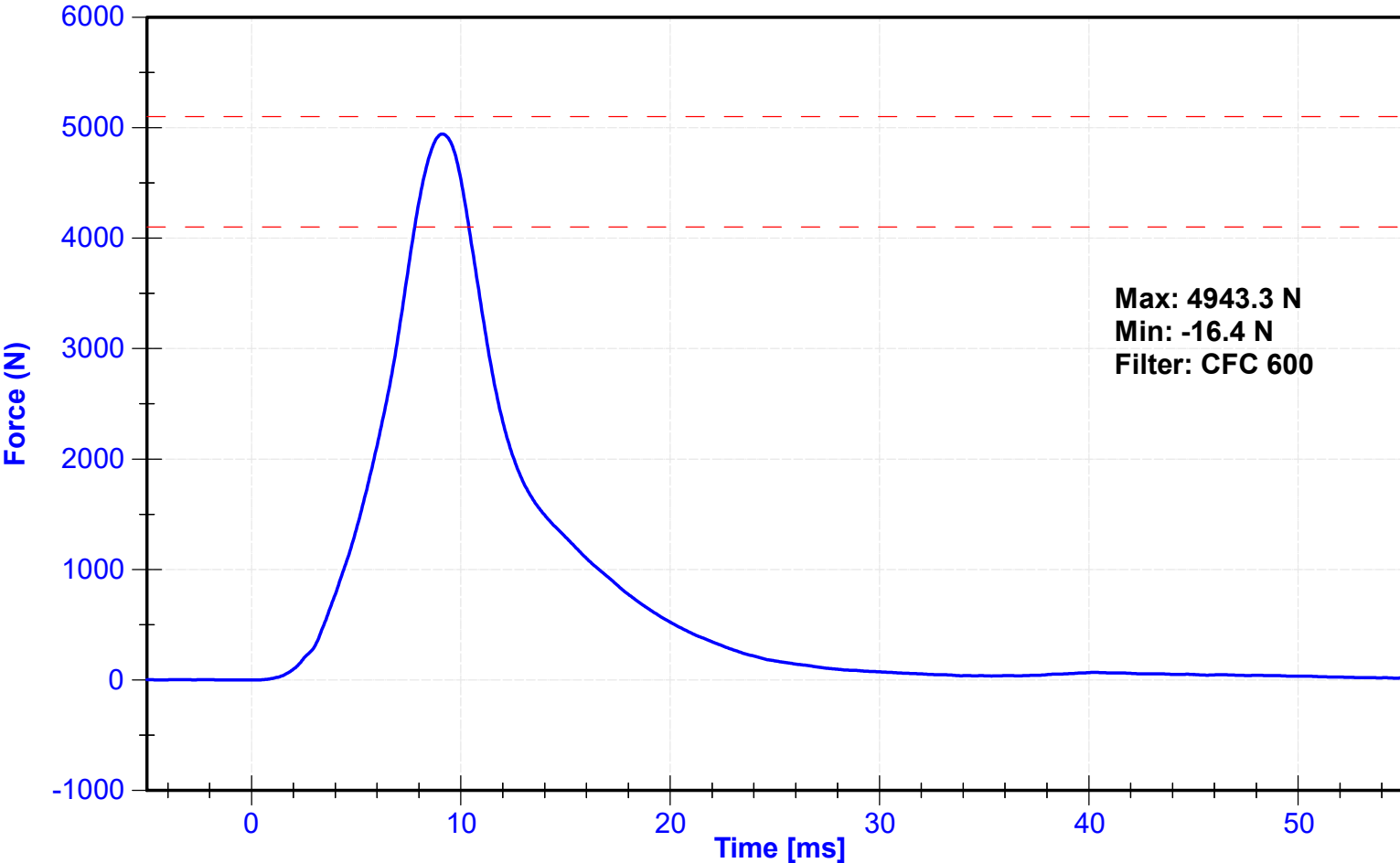
Probe Acceleration



Lateral Pelvis Acceleration



Iliac Force



APPENDIX D

TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

Table 1 – Dummy Instrumentation (SID-IIs)

			SID-IIs S/N: DG8012			
			Serial Number	Manufacturer	Calibration Date	
Head Accelerometers	X		P74788	Endevco	11/16/2023	
	Y		P52155	Endevco	11/16/2023	
	Z		P83319	Endevco	11/16/2023	
Head Accelerometers - Redundant	X		P80334	Endevco	11/16/2023	
	Y		P51668	Endevco	11/16/2023	
	Z		P83322	Endevco	11/16/2023	
Displacement Potentiometer	Shoulder		Y			
	Thoracic Rib	Upper	Y	1199GFE	Servo	11/17/2023
		Middle	Y	1246GFE	Servo	11/17/2023
		Lower	Y	011GFE	Servo	11/17/2023
	Abdominal Rib	Upper	Y	008GFE	Servo	11/17/2023
		Lower	Y	046	Servo	11/17/2023
Lower Spine Accelerometers (T12)	X		P71272	Endevco	11/16/2023	
	Y		P51327	Endevco	11/16/2023	
	Z		P52067	Endevco	11/16/2023	
Acetabulum Load Cell		Y	270-FY	Denton	09/11/2023	
Lilac Wing Load Cell		Y	280-FY	Denton	09/11/2023	
Pelvis Plug (Struck Side)			15802	SACO	10/15/2021	
Pelvis Plug (Non-Struck Side)			16394	SACO	05/20/2022	

Table 2 – Vehicle Instrumentation

Vehicle Instrumentation		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	A374277	Measurement Specialties	09/09/2023
Vehicle Center of Gravity	Y	A374297	Measurement Specialties	09/09/2023
Vehicle Center of Gravity	Z	A374283	Measurement Specialties	09/09/2023
Left Floor Sill	Y	G22913	Endevco	08/11/2023
A-Pillar Sill	Y	A373202	Measurement Specialties	12/11/2023
A-Pillar Low	Y	G24195	Endevco	09/05/2023
A-Pillar Mid	Y	A400747	Measurement Specialties	12/11/2023
B-Pillar Sill	Y	A399958	Measurement Specialties	09/16/2023
B-Pillar Low	Y	A372808	Measurement Specialties	10/03/2023
B-Pillar Mid	Y	G22234	Endevco	10/14/2023
Driver Seat	Y	A400735	Measurement Specialties	12/08/2023
Engine Top	X	G22682	Endevco	10/12/2023
Engine Top	Y	G23633	Endevco	10/25/2023
Firewall	Y	G23677	Endevco	10/30/2023
Right Roof	Y	A396637	Measurement Specialties	12/08/2023
Right Floor Sill	Y	A374254	Measurement Specialties	10/24/2023
Rear Floorpan	X	A405549	Measurement Specialties	09/16/2023
Rear Floorpan	Y	G22440	Endevco	09/27/2023

Table 3 – Pole Instrumentation

Pole Instrumentation	Serial Number	Manufacturer	Calibration Date
Load Cell 1	1220AF-1277329-F0	Interface	07/18/2023
Load Cell 2	1220AF-1117017-F0	Interface	07/18/2023
Load Cell 3	1220AF-1117025-F0	Interface	07/18/2023
Load Cell 4	1220AF-1130989-F0	Interface	07/18/2023
Load Cell 5	1220AF-1281288-F0	Interface	07/18/2023
Load Cell 6	1220AF-1281285-F0	Interface	07/18/2023
Load Cell 7	1220AF-1117035-F0	Interface	07/18/2023
Load Cell 8	1220AF-1117011-F0	Interface	07/18/2023