

REPORT NUMBER: SINCAP-CAL-25-005

**NEW CAR ASSESSMENT PROGRAM (NCAP)
MOVING DEFORMABLE BARRIER SIDE IMPACT TEST**

**Ford Motor Co.
2025 Ford Expedition
5 Door SUV**

NHTSA No: M20250203

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



April 14, 2026

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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Vanessa Hansen, Operations Manager

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

1. Report No. SINCAP-CAL-25-005		2. Government Accession No.		3. Recipient's Catalog No.																																																							
4. Title and Subtitle Final Report of New Car Assessment Program Side Impact MDB Testing of a 2025 Ford Expedition 5 Door SUV NHTSA No.: M20250203				5. Report Date April 14, 2026																																																							
				6. Performing Organization Code CAL																																																							
7. Author(s) Alex Rudniski, Test Engineer Vanessa Hansen, Operations Manager				8. Performing Organization Report No. CAL-DOT-2025-005																																																							
9. Performing Organization Name and Address Calspan Corporation Transportation Test Operations P.O. Box 400 Buffalo, New York 14225				10. Work Unit No.																																																							
				11. Contract or Grant No. 693JJ920D000016																																																							
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards (NRM-110) 1200 New Jersey Ave., SE Washington, D.C. 20590				13. Type of Report and Period Covered: Final Test Report July 14, 2025 - April 14, 2026																																																							
				14. Sponsoring Agency Code NRM-110																																																							
15. Supplementary Notes																																																											
16. Abstract A 55/28, (61.90kph / 38.5 mph), 90° Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2025 Ford Expedition 5 Door SUV in accordance with the specifications of the Office of Crashworthiness Standards Side NCAP MDB Test Procedure for the generation of consumer information on vehicle side crash protection. This test was conducted at Calspan Corporation's Transportation Test Operations facility in Buffalo, New York on July 14, 2025. The impact velocity of the Moving Deformable Barrier (MDB) was 62.15 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 151 mm located at level 1. 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 (ES-2re)</th> </tr> <tr> <th>Units</th> <th>IARV</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC36)</td> <td></td> <td>1000</td> <td>14.991</td> </tr> <tr> <td>Maximum Thorax Rib Deflection</td> <td>mm</td> <td>44</td> <td>12.999</td> </tr> <tr> <td>Total Abdominal Force</td> <td>N</td> <td>2500</td> <td>466.247</td> </tr> <tr> <td>Pubic Symphysis Force</td> <td>N</td> <td>6000</td> <td>692.286</td> </tr> <tr> <td>Lower Spine (T12) Resultant Acceleration</td> <td>G</td> <td>82*</td> <td>16.971</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th colspan="3">Passenger ATD (SID-IIs)</th> </tr> <tr> <th>Units</th> <th>IARV</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC36)</td> <td></td> <td>1000</td> <td>73.463</td> </tr> <tr> <td>Maximum Thorax Rib Deflection</td> <td>mm</td> <td>38*</td> <td>3.920</td> </tr> <tr> <td>Lower Spine (T12) Resultant Acceleration</td> <td>G</td> <td>82</td> <td>27.574</td> </tr> <tr> <td>Total Pelvic Force (sum of acetabular and iliac forces)</td> <td>N</td> <td>5525</td> <td>1745.354</td> </tr> <tr> <td>Maximum Abdominal Rib Deflection</td> <td>mm</td> <td>45*</td> <td>11.794</td> </tr> </tbody> </table> *Proposed IARV The two doors on the struck side of vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.						Measurement Description	Driver ATD (ES-2re)			Units	IARV	Result	Head Injury Criteria (HIC36)		1000	14.991	Maximum Thorax Rib Deflection	mm	44	12.999	Total Abdominal Force	N	2500	466.247	Pubic Symphysis Force	N	6000	692.286	Lower Spine (T12) Resultant Acceleration	G	82*	16.971	Measurement Description	Passenger ATD (SID-IIs)			Units	IARV	Result	Head Injury Criteria (HIC36)		1000	73.463	Maximum Thorax Rib Deflection	mm	38*	3.920	Lower Spine (T12) Resultant Acceleration	G	82	27.574	Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	1745.354	Maximum Abdominal Rib Deflection	mm	45*	11.794
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19. Security Class. (of this report) UNCLASSIFIED		20. Security Class. (of this page) UNCLASSIFIED		21. No. of Pages 196																																																							
22. Price																																																											

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SECTION 1

TEST PURPOSE AND PROCEDURE

This moving deformable barrier side impact test is part of the MY 2025 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract number 693JJ920D000016. The purpose of this test is to generate comparative side impact performance in a 2025 Ford Expedition 5 Door SUV. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated March 2020.

SECTION 2

SUMMARY OF TEST RESULTS

A 2025 Ford Expedition 5 Door SUV was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 62.15 km/h. The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by the Calspan Corporation's Transportation Test Operations Center in Buffalo, New York on July 14, 2025. Pre-test and post-test photographs of the test vehicle, the MDB and the dummies (ES-2re and SID-IIs) are included in this report.

Dummies were placed in the driver and left rear designated seating positions according to instructions specified in the OCWS Side Impact Laboratory Test Procedure, dated March 2020. The side impact event was documented by 9 high-speed and 2 real-time cameras. Camera locations are included in this report.

The Dummies were instrumented in the following manner:

DRIVER ATD (ES-2re)

Primary and redundant head CG tri-axial accelerometers

Chest upper rib, middle rib, and lower rib y-axis displacement potentiometers

Abdomen forward, middle, and rear y-axis load cells

Lower spine (T12) tri-axial accelerometers

Pubic symphysis y-axis load cell

PASSENGER ATD (SID-IIs)

Primary and redundant head CG tri-axial accelerometers

Chest upper rib, middle rib, and lower rib y-axis displacement potentiometers

Abdomen upper rib and lower rib y-axis displacement potentiometers

Lower spine (T12) tri-axial accelerometers

Acetabulum and iliac wing y-axis load cells

Appendix B contains the vehicle and dummy response data. Dummy configuration and performance verification data can be found in APPENDIX C of this report. Appendix D of this report contains the test equipment and instrumentation calibration data.

DUMMY INJURY VALUES

Measurement Description	Driver ATD (ES-2re)		
	Units	IARV	Result
Head Injury Criteria (HIC36)		1000	14.991
Maximum Thorax Rib Deflection	mm	44	12.999
Total Abdominal Force	N	2500	466.247
Pubic Symphysis Force	N	6000	692.286
Lower Spine (T12) Resultant Acceleration	G	82*	16.971

Measurement Description	Passenger ATD (SID-IIs)		
	Units	IARV	Result
Head Injury Criteria (HIC36)		1000	73.463
Maximum Thorax Rib Deflection	mm	38*	3.920
Lower Spine (T12) Resultant Acceleration	G	82	27.574
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	1745.354
Maximum Abdominal Rib Deflection	mm	45*	11.794

*Proposed IARV

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	No	N/A		
Side Airbag 1 - Curtain	Yes	Yes	Yes	Yes
Side Airbag 2 - Torso/Pelvis Airbag	Yes	Yes	No	N/A
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	Yes
Other				

GENERAL COMMENTS:

1. P1 serial number - F033
2. P4 serial number - DG8012

Data Anomalies:

The following channel was questionable for:

- Left Front Sill Y Acceleration, Exceeded calibration range at 12 ms 18.6 ms
- Left B-Pillar Lower Y Acceleration, Exceeded calibration range at 24.3 ms
- Left B-Pillar Middle Y Acceleration, Exceeded calibration range at 15.7 ms

SECTION 3
OCCUPANT AND VEHICLE INFORMATION

This section contains information reporting for the following Data Sheets:

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

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

Data Sheet No. 3 - Dummy Longitudinal Clearance Dimensions

Data Sheet No. 4 - Dummy Lateral Clearance Dimensions

Data Sheet No. 5 - Camera and Instrumentation Data

Data Sheet No. 6 - Test Vehicle Accelerometer Locations

Data Sheet No. 7- MDB Accelerometer Locations

Data Sheet No. 8 - Post-Test Observations

Data Sheet No. 9 - MDB Summary of Results

Data Sheet No. 10 - Test Vehicle Profile Measurements

Data Sheet No. 11 - Test Vehicle Exterior Crush Measurements

Data Sheet No. 12 - MDB Exterior Static Crush Measurements

Data Sheet No. 13 - Vehicle and MDB Damage Profile Distances

Data Sheet No. 14 - FMVSS No. 301 Static Rollover Results

Data Sheet No. 15 - Dummy / Vehicle Temperature and Humidity Stabilization Data

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2025 Ford Expedition 5 Door SUV

NHTSA No.: M20250203

Test Program: NCAP Side MDB Impact Test

Test Date: 07/14/2025

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20250203	Traction Control System (TCS)	Yes
Model Year	2025	Auto-Leveling System	No
Make	Ford	Automatic Door Locks (ADL)	Yes
Model	Expedition	Power Window Auto-Reverse	Yes
Body Style	SUV	Other Optional Feature	N/A
VIN	1FMJU1H81SEA19618	Driver Front Airbag	Yes
Body Color	Oxford White	Driver Curtain Airbag	Yes
Odometer Reading (km/mi)	14 mi	Driver Head/Torso Airbag	No
Engine Displacement (L)	3.5	Driver Torso Airbag	No
Type / No. Cylinders	V6	Driver Torso / Pelvis Airbag	Yes
Engine Placement	Inline	Driver Pelvis Airbag	No
Transmission Type	Automatic	Driver Knee Airbag	No
Transmission Speeds	10-Speed	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	No
Sunroof / T-Top	Yes	Rear Pass. Pelvis Airbag	No
Running Boards	Yes	Driver Seat Belt Pretensioner	Yes
Tilt Steering Wheel	Yes	Rear Pass. Seat Belt Pretensioner	Yes
Power Seats	Yes	Driver Load Limiter	Yes
Anti-Lock Brakes (ABS)	Yes	Rear Pass. Load Limiter	Yes
		Other Safety Restraint	N/A

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

Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Ford Motor Co.	GVWR (KG)	3345
Date of Manufacture	04/25	GAWR Front (KG)	1440
Vehicle Type	MPV	GAWR Rear (KG)	2059

VEHICLE SEATING AND WEIGHT CAPACITY DATA

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	2	2	3	7	
Vehicle Capacity Weight (VCW) (kg)				616	(A)
DSC x 68.0 kg				476	(B)
Cargo Weight (RCLW) (kg)				136	(A-B)

VEHICLE SEAT TYPE

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

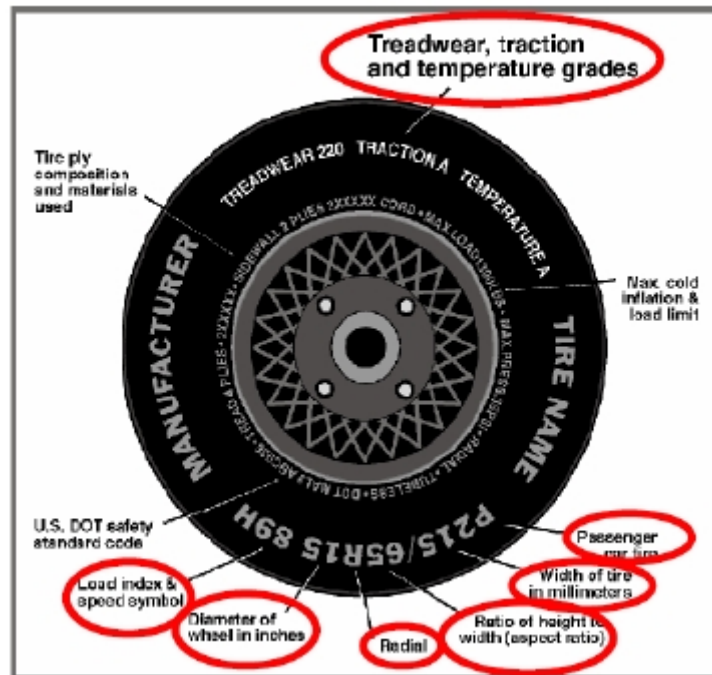
DATA SHEET NO. 1 ... (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2025 Ford Expedition 5 Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20250203
 Test Date: 07/14/2025

VEHICLE TIRE INFORMATION

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



TIRE SIDEWALL INFORMATION

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	250	250
Recommended Tire Size	275/60R20	275/60R20
Tire Size on Vehicle	275/60R20	275/60R20
Tire Manufacturer	Goodyear	Goodyear
Tire Model	Wrangler	Wrangler
Treadwear	680	680
Traction	A	A
Temperature Grades	B	B
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 2 Steel	2 Polyester, 2 Steel
Load Index / Speed Symbol	115H	115H
Tire Material	Rubber	Rubber
DOT Safety Code Left	14BW0JA6R1125	14BW0JA6R1125
DOT Safety Code Right	14BW0JA6R1125	14BW0JA6R1125

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

Test Vehicle: 2025 Ford Expedition 5 Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20250203
 Test Date: 07/14/2025

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	256	254	249	247
Tire Placard	kPa	250	250	250	250
Owner's Manual	kPa	250	250	250	250
As Tested	kPa	250	250	250	250

MDB TIRE SPECIFICATIONS

	Units	Requirements	LF	RF	LR	RR
Tire Size		P205/75R15	P205/75R15	P205/75R15	P205/75R15	P205/75R15
Tire Pressure	kPa	200 ± 21	207	207	207	207

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	577	658		633	750		615	793	
Right	kg	622	621		634	719		627	712	
Ratio	%	48.4	51.6		46.3	53.7		45.2	54.8	
Totals	kg	1199	1279	2478	1267	1469	2736	1242	1505	2747

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total As Delivered Weight (UVW)	kg	2478	(A)
Actual Weight of 2 P572V (ES-2re and SID-IIs) ATDs Used	kg	127	(B)
Rated Cargo / Luggage Weight (RCLW)	kg	136	(C)
Calculated Vehicle Target Weight (TVTW)	kg	2741	(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 Tested	Fully Loaded	Meets Rqmt***
LF	mm	910	914	Yes
RF	mm	919	923	Yes
RR	mm	940	939	Yes
LR	mm	934	931	Yes
Vehicle CG (Aft of Front Axle)	mm	1673	1707	
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	+10	+21	

***The "As Tested" vehicle attitude measurements must be equal to or within ± 10mm of the "Fully Loaded" vehicle attitude measurements at each wheel well. Indicate "Yes" or "No" for "Meets Requirements".

Test height adjustable suspension setting, if applicable:

N/A

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

Test Vehicle: 2025 Ford Expedition 5 Door SUV	NHTSA No.: M20250203
Test Program: NCAP Side MDB Impact Test	Test Date: 07/14/2025

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Third Row Seats	39
Truck carpeting & Plastics	10
Ballast / Equipment Added	150

TEST SURFACE MARKINGS

	Distance from 63° Impact Location Line (mm)
Fore 25 mm target	1030
Aft 25 mm target	1030
Pre-Impact Angle Line	235

Parallel Track Target	X Location (mm)	Y Location (mm)
A	0	0
B	2955	1555
C	2955	3355
D	0	3000

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

Test Vehicle: 2025 Ford Expedition 5 Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20250203
 Test Date: 07/14/2025

SEAT POSITIONING

The driver's seat, front center seat (if applicable), and right front passenger's seat should be set to the mid-track, lowest, 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	22.25	13.1	17.67
Front Passenger Seat	17.35	12.7	15.0
Front Center Seat			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat	N/A	N/A	N/A

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	17.67	5.9	Max	53.2	58.9	64.7
			Mid	27.8	32.4	36.95
			Min	2.5	5.9	9.2
Front Passenger Seat	15.0	14.0	Max	-	-	-
			Mid	-	-	-
			Min	10.4	14.0	17.3
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*	N/A	N/A	Max			
			Mid			
			Min			

**If applicable*

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

Test Vehicle: 2025 Ford Expedition 5 Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20250203
 Test Date: 07/14/2025

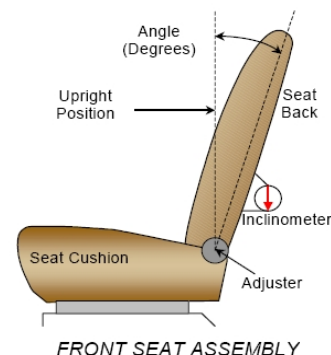
SEAT FORE / AFT POSITION

Seat	Total Fore / Aft Travel		Test Position from Forward most Position	
	mm	Detents*	mm	Detents*
Driver Seat	252	Power	126	Power
Front Passenger Seat	252	Power	126	Power
Front Center Seat				
Struck Side Rear Seat	220	23 (0-22)	220	22
Non-Struck Side Rear Seat	220	23 (0-22)	220	22
Rear Center Seat	N/A	N/A	N/A	N/A

*if applicable

SEAT BACK ANGLE ADJUSTMENT

The driver's seat back is positioned to the manufacturer's designated design angle. 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 seat back is positioned such that the dummy's head is level. The rear center and non-struck side rear outboard seat backs are positioned in a similar manner as the struck-side rear seat back.



Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degrees	Detents*
Driver Seat	72.0	Power	2.9	Power
Front Passenger Seat	72.0	Power	2.9	Power
Front Center Seat				
Struck Side Rear Seat	20.0	11 (0-10)	7.1	0
Non-Struck Side Rear Seat	20.0	11 (0-10)	7.1	0
Rear Center Seat	N/A	N/A	N/A	N/A

*if applicable

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

Test Vehicle: 2025 Ford Expedition 5 Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20250203
 Test Date: 07/14/2025

SEAT BELT ANCHORAGE ADJUSTMENT

Seat belt anchorages are adjusted in accordance with the information provided by the manufacturer on Form No. 1. For this test zero is defined as the uppermost position.

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

HEAD RESTRAINT ADJUSTMENT

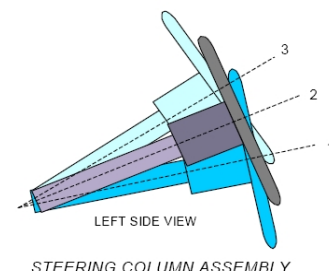
The driver's head restraint is adjusted to the highest and most full forward in-use position. The struck-side rear passenger's head restraint is adjusted to the lowest and most full forward in-use position.

Seat	Total # of Positions	Placed in Position #
Driver Seat	3 (0-2)	Uppermost & Forwardmost
Rear Seat	Fixed	Fixed

STEERING COLUMN ADJUSTMENT

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.

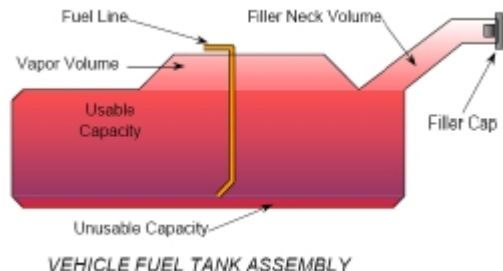
	Degrees	Fore / Aft Position (mm)
Lowermost - Position No. 1	18.9	
Geometric center - Position No. 2	22.2	
Uppermost - Position No. 3	25.6	
Telescoping Steering Wheel Travel		65
Test Position	22.2	37.5



FUEL PUMP

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

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



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

Test Vehicle: 2025 Ford Expedition 5 Door SUV
Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20250203
Test Date: 07/14/2025

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	93.5
Usable Capacity of "Optional Tank" (see Form No. 1)	N/A
Usable Capacity of "Standard Tank" (see Owner's Manual)	89.3
Usable Capacity of "Optional Tank" (see Owner's Manual)	N/A
93% of Usable Capacity	87.0
Actual Amount of Solvent Used in Test	87.0
1/3 of Usable Capacity	31.2

Is the Actual Amount of Solvent Used in the test equal to 93% $\pm$ 1% of the Usable

Capacity stated in Form No. 1? ☒ **Yes** ☐ **No**

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

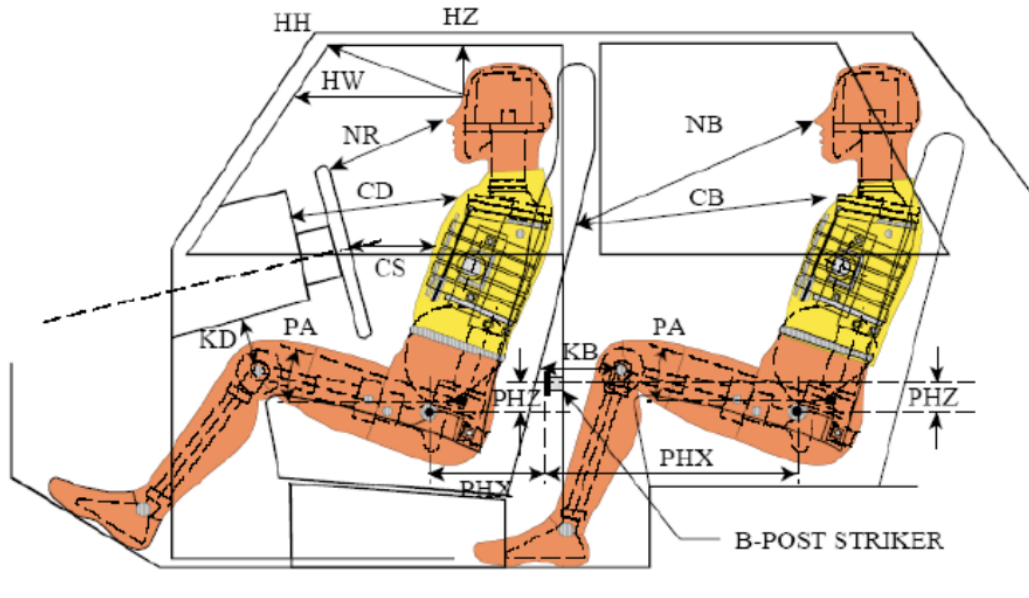
Test Vehicle: 2025 Ford Expedition 5 Door SUV

NHTSA No.: M20250203

Test Program: NCAP Side MDB Impact Test

Test Date: 07/14/2025

DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION



LEFT SIDE VIEW

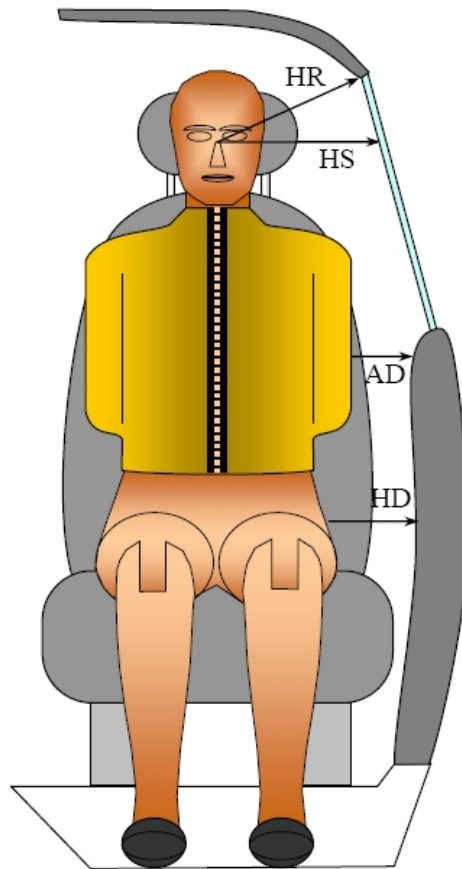
NOTE: 2-DOOR VEHICLE SHOWN.
 REAR DUMMY PHX & PHZ
 MEASUREMENTS FOR A 4-DOOR
 VEHICLE WOULD USE THE C-POST
 STRIKER AS A REFERENCE POINT

Driver Code	Pass. Code	Description	Driver (Serial No. F033)		Left Rear Passenger (Serial No. DG8012)	
			Length (mm)	Angle (°)	Length (mm)	Angle (°)
HH		Header to Header	518			
HW		Header to Windshield	776			
HZ	HZ	Head to Roof Liner	193		263	
NR	NB	Nose to Rim/Seat Back	450		655	
CD	CB	Chest to Dash/Seat Back	655		654	
CS		Chest to Steering Wheel	380			
KD(L)/KDA(L)°	KB(L)/KBA(L)°	Left Knee to Dash/Seat Back	185	29.5	377	33.9
KD(R)/KDA(R)°	KB(R)/KBA(R)°	Right Knee to Dash/Seat Back	162	30.4	372	37.4
PAX°	PAX°	Pelvic Tilt Angle X		22.0		23.8
	PAY°	Pelvic Tilt Angle Y				0.2
PHX	PHX	Hip Point to Striker (X-Axis)	231		274	
PHZ	PHZ	Hip Point to Striker (Z-Axis)	81		69	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2025 Ford Expedition 5 Door SUV
Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20250203
Test Date: 07/14/2025



FRONT VIEW OF DUMMY

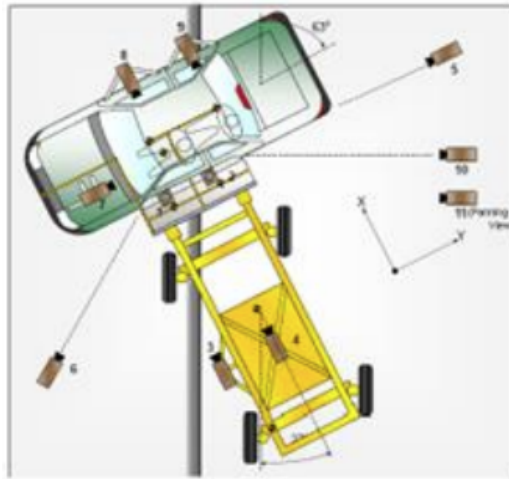
DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver (Serial No. F033)	Left Rear Passenger (Serial No. DG8012)
HR	Head to Side Header	mm	217	280
HS	Head to Side Window	mm	343	275
AD	Arm to Door	mm	93	92
HD	Hip Point to Door	mm	160	180

DATA SHEET NO. 5 CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2025 Ford Expedition 5 Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20250203
 Test Date: 07/14/2025



CAMERA LOCATIONS AND DATA

No.	Camera View	Location (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Overhead Overall	0	-825	-8390	12.5	1000
2	Overhead Close-up	0	0	-8360	25	1000
3	Left Impact Point (MDB)	-1470	0	-847	25	1000
4	Side Overall (MDB)	-1140	878	-1587	8	1000
5	Rear	0	10275	-1340	28	1000
6	Left Front	-3260	-6635	-1325	24	1000
7	Driver Front (OB)				25	1000
8	Driver Side (OB)				12.5	1000
9	Passenger Side (OB)				12.5	1000
10	Real-time Left Rear				Zoom	60
11	Real-time In Run				Zoom	60

Notes: *Reference: Impact Point projected to Ground*
+X = To Front of MDB, +Y = To Right of MDB, +Z = Down
** All measurements accurate to ± 6 mm.*

If applicable, explain why camera(s) did not operate as intended: All cameras operated as intended.

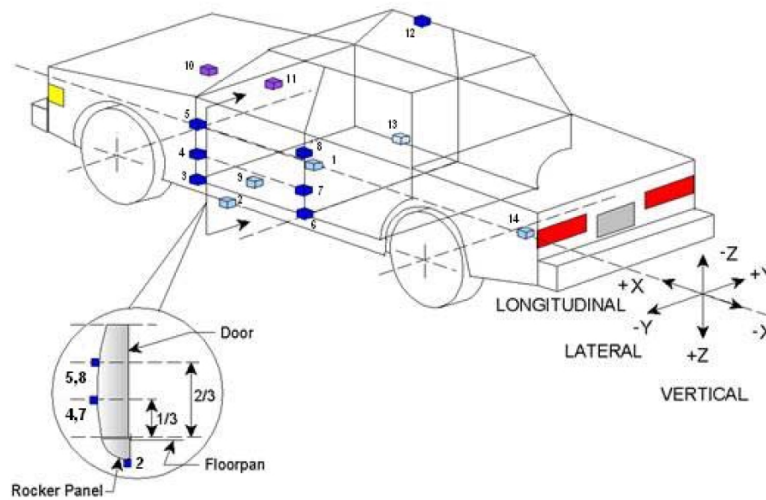
INSTRUMENTATION

Driver Dummy Channels	16
Passenger Dummy Channels	16
Vehicle Structure Accelerometers	23
MDB Accelerometers	7
Total	62

DATA SHEET NO. 6 TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2025 Ford Expedition 5 Door SUV
Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20250203
Test Date: 07/14/2025



TEST VEHICLE ACCELEROMETER LOCATIONS

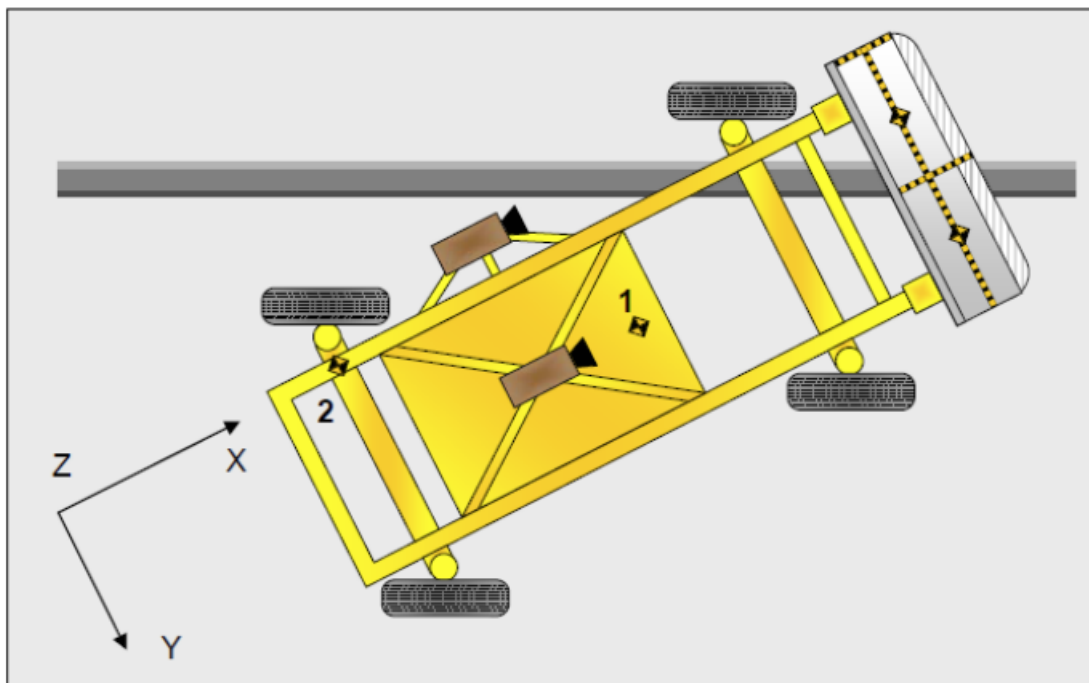
No.	Accelerometer Location	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2846	-12	-153
2	Right Sill at Front Seat	3134	768	101
3	Right Sill at Rear Seat	2270	808	93
4	Left Sill at Front Door	3169	-764	100
5	Left Sill at Rear Door	2187	-775	81
6	A-Post Lower	3648	-769	-155
7	A-Post Middle	3669	-738	-712
8	B-Post Lower	2540	-754	-205
9	B-Post Middle	2504	-755	-609
10	Front Seat Track	2888	-634	-3
11	Rear Seat Structure	2019	-586	-19
12	Rt. Rear Occ. Compartment	2354	455	60
13	Engine Block	4328	40	-418
14	Rear Above Axle	1018	46	-99

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

DATA SHEET NO. 7 **MDB ACCELEROMETER LOCATIONS**

Test Vehicle: 2025 Ford Expedition 5 Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20250203
 Test Date: 07/14/2025



MDB ACCELEROMETER LOCATIONS

No.	Accelerometer Location	Coordinates (mm)		
		X	Y	Z
1	MDB CG	1859	0	-330
2	MDB Rear	386	-660	-660

Reference: X – Face of MDB (+forward)
 Y – MDB centerline (+ to right)
 Z – Ground plane (+down)

Width between left and right contact switches (mm):

1495

**DATA SHEET NO. 8
POST-TEST OBSERVATIONS**

Test Vehicle: 2025 Ford Expedition 5 Door SUV
Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20250203
Test Date: 07/14/2025

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat Dummy (ES-2re)	Rear Seat Dummy (SID-IIs)
Face	Curtain Airbag	Curtain Airbag
Top of Head	Curtain Airbag & Side Header	Curtain Airbag
Left Side of Head	Curtain Airbag	Curtain Airbag
Back of Head	Curtain Airbag, Side Header & Headrest	Curtain Airbag & Headrest
Left Shoulder	Curtain Airbag, Torso/Pelvis Airbag & Door Trim	Door Trim
Upper Torso	Seatback & Torso/Pelvis Airbag	Door Trim
Lower Torso	Seatback & Torso/Pelvis Airbag	Door Trim
Left Hip	Seat Pan & Torso/Pelvis Airbag	Door Trim & Seat Pan
Left Knee	Door Trim	Door Trim

POST-TEST DOOR PERFORMANCE

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

POST-TEST SEAT PERFORMANCE

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

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	B-Pillar & C-Pillar Buckled
Sill Separation	70 mm in impact zone
Windshield Damage	None
Side Window Damage	None
Other Notable Effects	Vehicle rolled over after impact

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

Test Vehicle: 2025 Ford Expedition 5 Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20250203
 Test Date: 07/14/2025

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vehicle Wheel Base	mm		3116
Vertical Impact Reference Line (Aft of Front Axle - Intended Impact Point)	mm		508
Actual Impact Point (Aft of Frontal Axle)	mm		499
Horizontal Offset (+ forward / - rearward)	mm	+/- 50 of Intended Impact Point	+9
Vertical Offset (+ down / - up)	mm	+/- 20 of Intended Impact Point	-3

DATA SHEET NO. 9
MDB SUMMARY OF RESULTS

Test Vehicle: 2025 Ford Expedition 5 Door SUV
Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20250203
Test Date: 07/14/2025

MDB SPECIFICATIONS

Measurement Description	Length (mm)
Overall Width of Framework Carriage	1250
Overall Length Including Honeycomb Frame	4120
Wheelbase of Framework Carriage	2591
CG Location of Front Axle	1122

MDB WEIGHTS

	Units	Front Axle	Rear Axle	Total
Left	kg	396	291.5	687.5
Right	kg	377.5	301	678.5
Ratio	%	56.6	43.4	100
Totals	kg	773.5	592.5	1366

SPEED AND ANGLE AT IMPACT DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.10 to 62.70	62.15
Trap No. 2 Velocity (Redundant)	km/h	61.10 to 62.70	62.16
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	90.0
MDB Forward Line of Motion to Target Vehicle CL	degrees	62.5 to 63.5	63.0
MDB Crabbed angle to MDB Forward Line of Motion	degrees	26.0 to 28.0	27.0

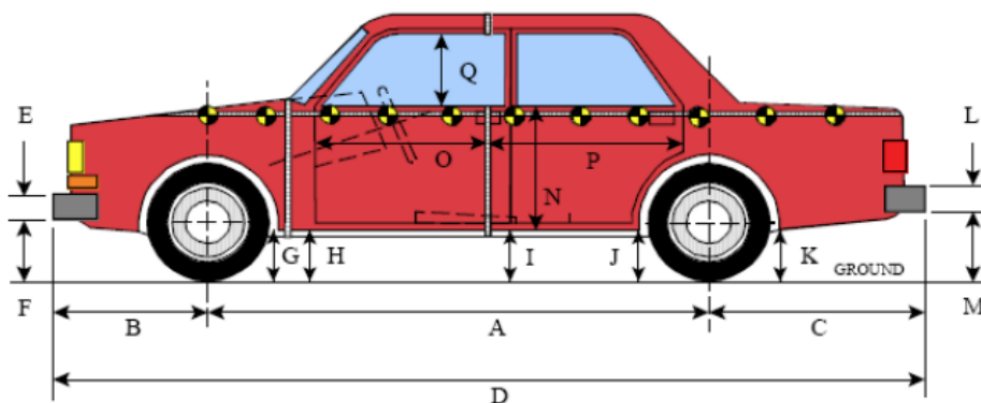
MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE

Vertical Location			From Centerline		Maximum Crush (mm)
Row	Description	Height (mm)	Distance (mm)	Direction	
A	Center of Bumper	432	800	Right	244
B	Top of Bumper	533	800	Right	240
C	Mid-Level	686	800	Right	196
D	Top of Stack	813	400	Right	221

DATA SHEET NO. 10
TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2025 Ford Expedition 5 Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20250203
 Test Date: 07/14/2025



LEFT SIDE VIEW
 All MEASUREMENTS IN (mm) WITH TOLERANCE OF ± 3 mm

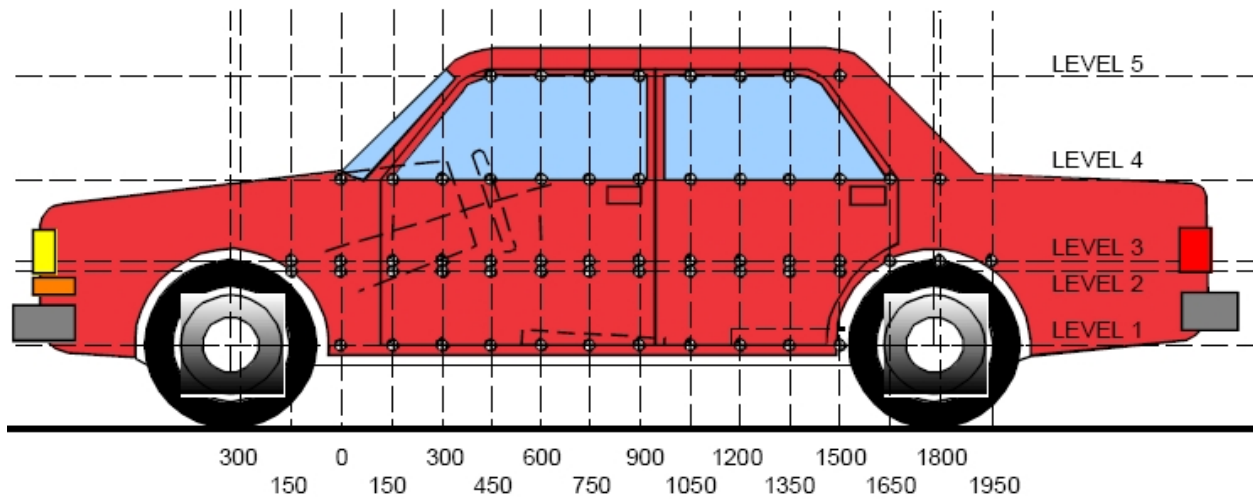
VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code.	Measurement Description	Pre-Test	Post-Test	Change
A	Wheelbase	3116	3098	-18
B	Front Axle to FSOV	970	980	10
C	Rear Axle to RSOV	1242	1248	6
D	Total Length at Centerline	5327	5326	-1
E	Front Bumper Thickness	170	170	0
F	Front Bumper Bottom to Ground	524	535	11
G	Sill Height at Front Wheel Well	295	265	-30
H	Sill Height at Front Door Leading Edge	297	262	-35
I	Sill Height at B Pillar	324	280	-44
J1	Sill Height at Rear Wheel Well	335	283	-52
J2	Pinch Weld Height at Rear Wheel Well	410	363	-47
K	Sill Height Aft of Rear Wheel Well	379	373	-6
L	Rear Bumper Thickness	180	180	0
M	Rear Bumper Bottom to Ground	501	482	-19
N	Sill Height to Bottom of Front Window Sill	880	864	-16
O	Front Door Leading Edge to Impact CL	712	713	1
P	Rear Door Trailing Edge to Impact CL	1613	1595	-18
Q	Front Window Opening	513	515	2
R	Right Side Length	5277	5276	-1
S	Left Side Length	5277	5266	-11
T	Maximum Vehicle Width	2087	1974	-113
U	Front Wheel Track Width	1728	1729	1
V	Rear Wheel Track Width	1715	1737	22

DATA SHEET NO.11
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2025 Ford Expedition 5 Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20250203
 Test Date: 07/14/2025



LEFT SIDE VIEW

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Measurement Description	Units	Height Above Ground	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	mm	524	151	1350
2	Driver H-Point	mm	895	116	900
3	Mid-Door	mm	840	130	900
4	Window Sill	mm	1257	44	1350
5	Window Top	mm	1816	5	2250

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.11 ... (CONTINUED)
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2025 Ford Expedition 5 Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20250203
 Test Date: 07/14/2025

EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

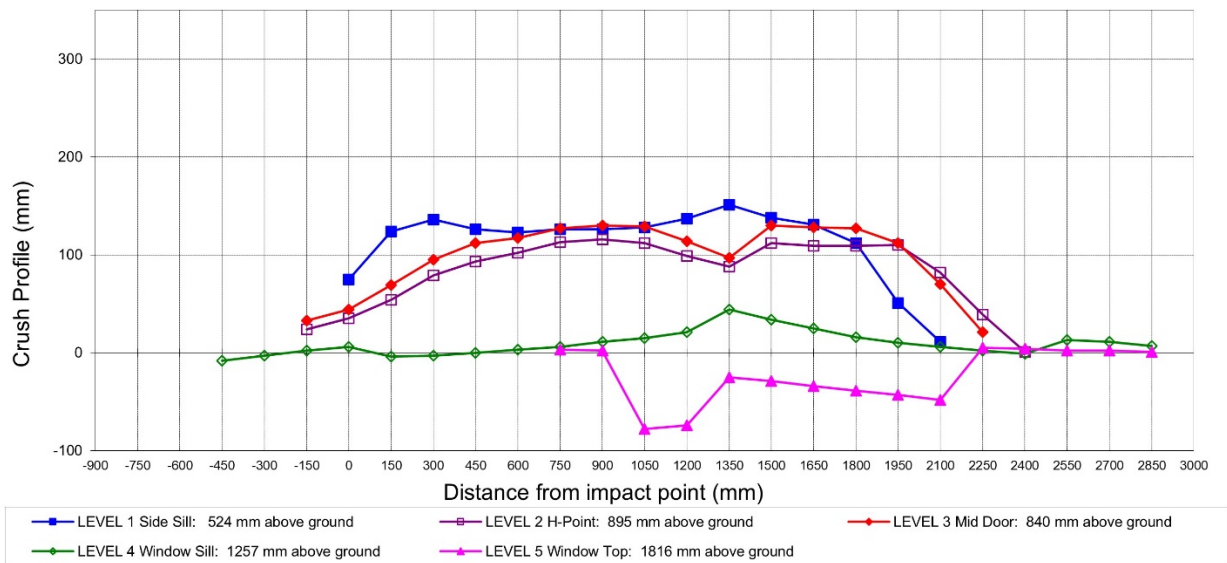
	Pre-Test					Post-Test					Crush				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900															
-750															
-600															
-450				897					905					-8	
-300				905					908					-3	
-150		1014	1015	913			990	982	911			24	33	2	
0	997	1006	1006	921		922	971	963	915		75	35	43	6	
150	989	1005	1003	929		865	951	934	933		124	54	69	-4	
300	990	1007	1004	937		854	928	909	940		136	79	95	-3	
450	991	1009	1006	942		865	916	894	942		126	93	112	0	
600	992	1010	1007	947		869	908	890	944		123	102	117	3	
750	993	1011	1008	951	727	867	898	881	945	724	126	113	127	6	3
900	993	1012	1008	956	737	867	896	878	945	735	126	116	130	11	2
1050	992	1012	1008	959	738	864	900	879	944	816	128	112	129	15	-78
1200	991	1013	1009	962	744	854	914	895	941	818	137	99	114	21	-74
1350	990	1013	1009	965	746	839	925	912	921	771	151	88	97	44	-25
1500	987	1011	1007	967	748	849	899	877	933	777	138	112	130	34	-29
1650	984	1010	1004	968	749	853	901	876	943	783	131	109	128	25	-34
1800	981	1008	1003	970	749	869	899	876	954	788	112	109	127	16	-39
1950	978	1007	1004	969	750	927	897	892	959	793	51	110	112	10	-43
2100	977	1011	1010	968	749	966	929	940	962	797	11	82	70	6	-48
2250		1016	1014	966	749		977	993	964	744		39	21	2	5
2400		1014		964	737		1013		965	733		1		-1	4
2550				962	733				949	731				13	2
2700				958	730				947	728				11	2
2850				952	726				945	725				7	1
3000															

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.11 ... (CONTINUED) **TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS**

Test Vehicle: 2025 Ford Expedition 5 Door SUV
 Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20250203
 Test Date: 07/14/2025

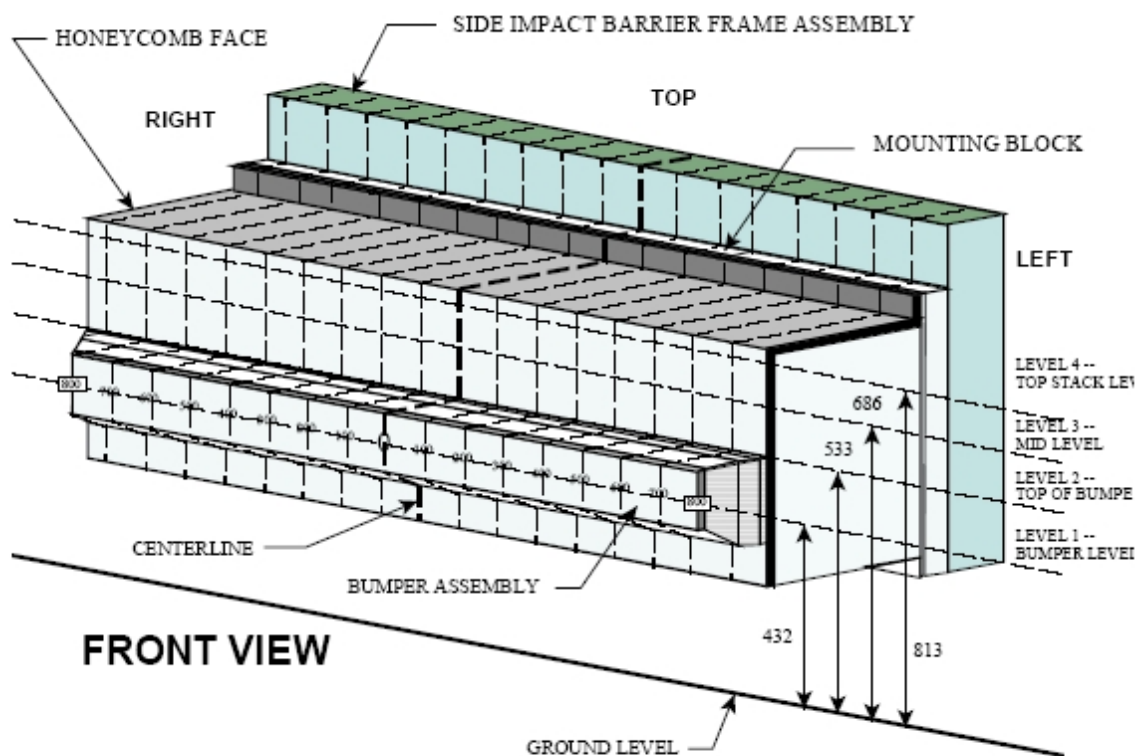


Vehicle Exterior Crush Measurements - Visual Representation

DATA SHEET NO.12 MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2025 Ford Expedition 5 Door SUV
Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20250203
Test Date: 07/14/2025



NOTE: Dimensions are shown in millimeters, mm

DEFORMABLE BARRIER STATIC CRUSH

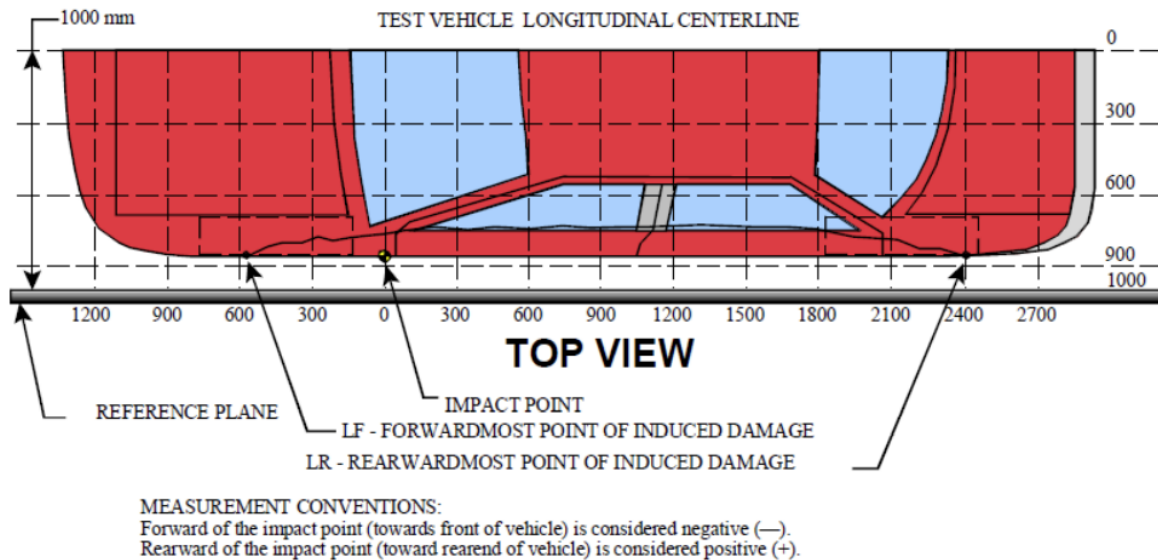
Stack Level	Distance Right of Center								C/L	Distance Left of Center							
	800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
1	244	239	228	219	216	209	204	204	193	179	169	163	159	155	155	160	166
2	240	233	226	220	215	212	197	188	179	169	159	153	148	145	144	144	156
3	196	177	169	167	165	165	148	133	121	107	96	88	85	85	112	141	168
4	208	191	177	191	221	197	171	154	140	130	133	133	129	120	137	167	205

DATA SHEET NO.13 VEHICLE AND MDB DAMAGE PROFILE DISTANCE

Test Vehicle: 2025 Ford Expedition 5 Door SUV
Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20250203
Test Date: 07/14/2025

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



VEHICLE DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point (mm)	Level	Post-Test (mm)	Pre-Test (mm)	Crush (mm)
1	-150	3	18	-15	33
2	330	3	94	-4	98
3	810	3	120	-8	128
4	1290	3	95	-9	104
5	1770	3	124	-3	127
6	2250	3	7	-14	21

MDB DAMAGE PROFILE DISTANCES

DPD	Distance From Center of MDB	Level	Post-Test (mm)	Pre-Test (mm)	Crush (mm)
1	800 mm left of center	1	339	505	-166
2	480 mm left of center	1	358	514	-156
3	160 mm left of center	1	341	514	-173
4	160 mm right of center	1	309	513	-204
5	480 mm right of center	1	295	513	-218
6	800 mm right of center	1	257	501	-244

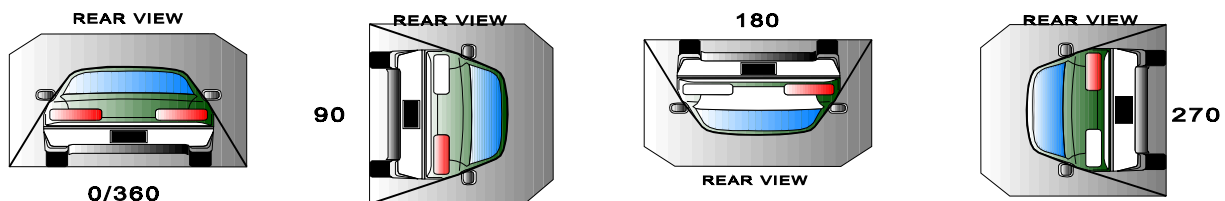
DATA SHEET NO.14
FMVSS NO.301 STATIC ROLLOVER RESULTS

Test Vehicle: 2025 Ford Expedition 5 Door SUV NHTSA No.: M20250203
 Test Program: NCAP Side MDB Impact Test Test Date: 07/14/2025

Test Time: 11:33 AM Temperature: 21.0 °C

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

D. Spillage Detail: No Spillage



ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	63	300	363
90° to 180°	66	300	366
180° to 270°	68	300	368
270° to 360°	65	300	365

FMVSS 301 SPILLAGE TABLE

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

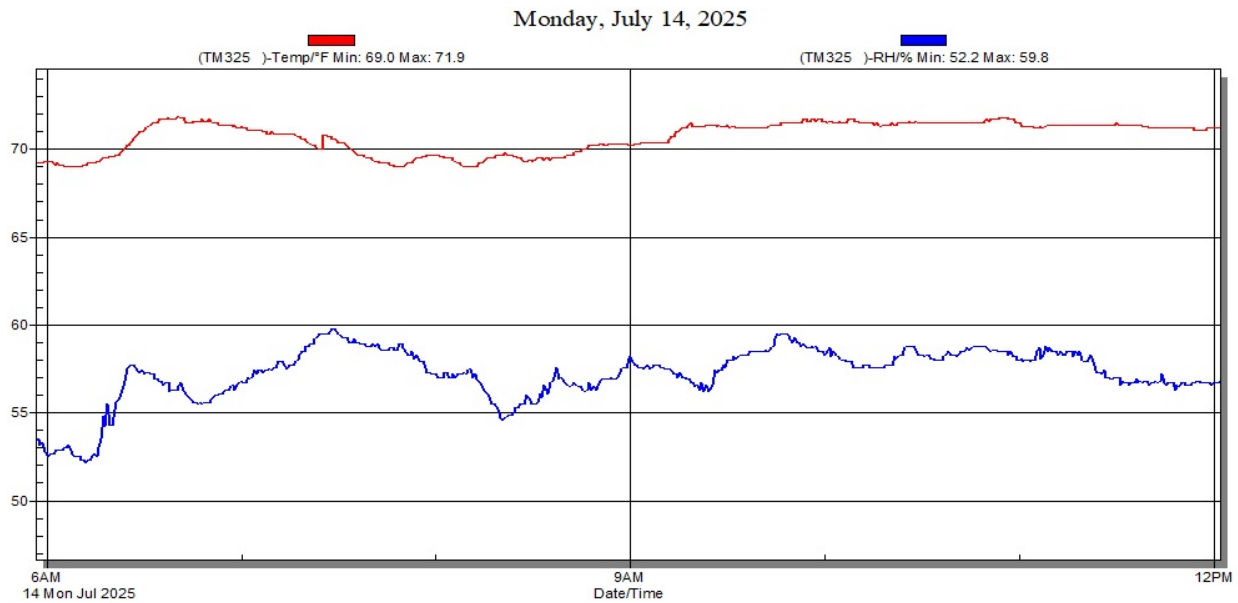
SOLVENT SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0° to 90°	None
90° to 180°	None
180° to 270°	None
270° to 360°	None

DATA SHEET NO. 15
DUMMY / VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION DATA

Test Vehicle: 2025 Ford Expedition 5 Door SUV
Test Program: NCAP Side MDB Impact Test

NHTSA No.: M20250203
Test Date: 07/14/2025



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

APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

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2	As-Delivered Left Rear 3/4 View of Test Vehicle	A-5
3	Pre-Test Frontal View of Test Vehicle	A-6
4	Post-Test Frontal View of Test Vehicle	A-6
5	Pre-Test Left Front ¾ View of Test Vehicle	A-7
6	Post-Test Left Front ¾ View of Test Vehicle	A-7
7	Pre-Test Left Side View of Test Vehicle	A-8
8	Post-Test Left Side View of Test Vehicle	A-8
9	Pre-Test Left Rear ¾ View of Test Vehicle	A-9
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11	Pre-Test Rear View of Test Vehicle	A-10
12	Post-Test Rear View of Test Vehicle	A-10
13	Pre-Test Right Side View of Test Vehicle	A-11
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15	Pre-Test Overhead View of Test Area	A-12
16	Post-Test Overhead View of Test Area	A-12
17	Pre-Test Left Side View of MDB Positioned Against Side of Test Vehicle	A-13
18	Pre-Test Right Side View of MDB Positioned Against Side of Test Vehicle	A-13
19	Pre-Test Close-Up View of Impact Point Target	A-14
20	Post-Test Close-up View of Impact Point Target	A-14
21	Pre-Test Left Front Door Latch Close-Up	A-15
22	Post-Test Left Front Door Latch Close-Up	A-15
23	Pre-Test Left Rear Door Latch Close-Up	A-16
24	Post-Test Left Rear Door Latch Close-Up	A-16
25	Pre-Test Front Close-up View of Driver Dummy	A-17
26	Post-Test Front Close-up View of Driver Dummy	A-17
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Figure A-1: As Delivered Right Front $\frac{3}{4}$ View of Test Vehicle



Figure A-2: As Delivered Left Rear $\frac{3}{4}$ 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

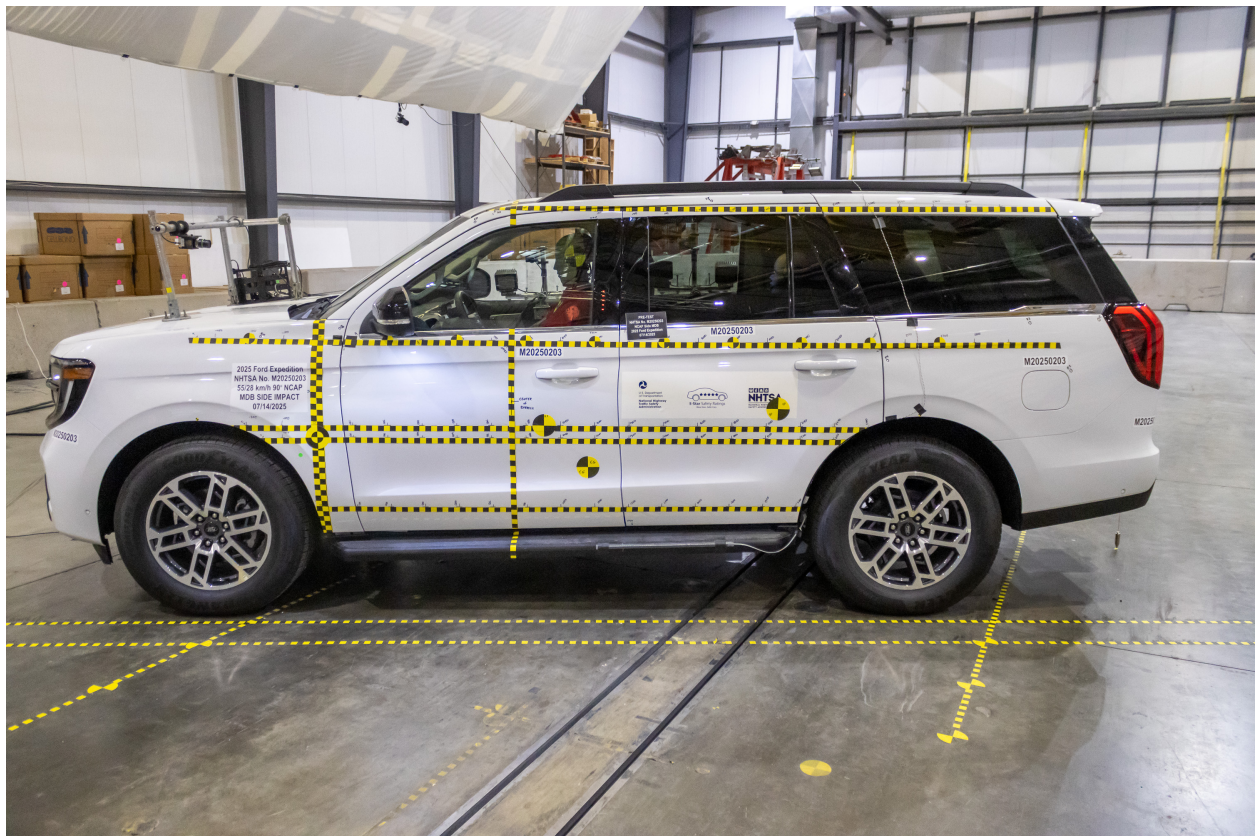


Figure A-7: Pre-Test Left Side View of Test Vehicle



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

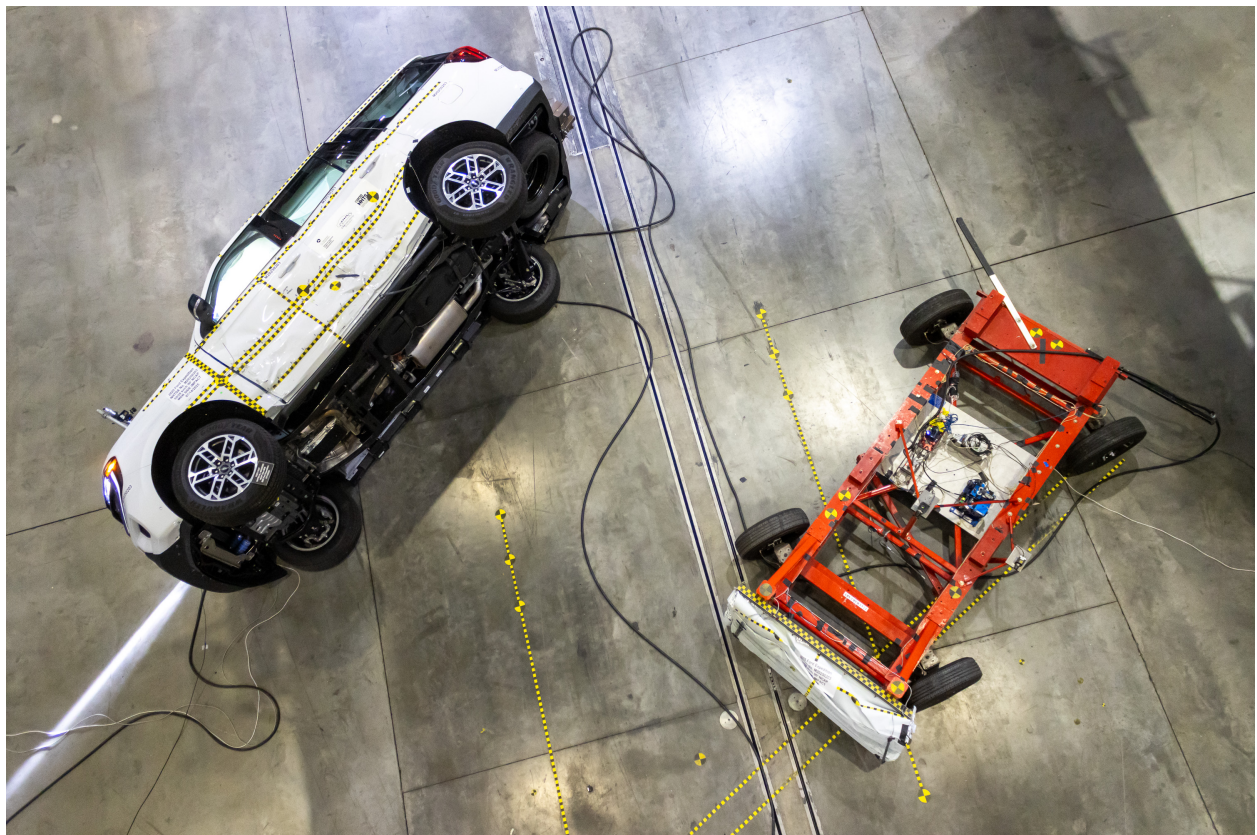


Figure A-16: Post-Test Overhead View of Test Area



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



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



Figure A-21: Pre-Test Left Front Door Latch Close-Up



Figure A-22: Post-Test Left Front Door Latch Close-Up



Figure A-23: Pre-Test Left Rear Door Latch Close-Up



Figure A-24: Post-Test Left Rear Door Latch Close-Up



Figure A-25: Pre-Test Front Close-up View of Driver Dummy



Figure A-26: Post-Test Front Close-up View of Driver Dummy



Figure A-27: Pre-Test Left Side View of Driver Dummy Showing Belt and Chalking



Figure A-28: Pre-Test Left Side View of Driver Dummy Shoulder and Door Top View



Figure A-29: Post-Test Left Side View of Driver Dummy Shoulder and Door Top View



Figure A-30: Pre-Test Frontal View of Driver Seat Back Prior to Dummy Positioning



Figure A-31: Pre-Test Frontal View of Driver Dummy Head and Shoulders in Relation to Head Restraint



Figure A-32: Pre-Test Frontal View of Driver Seat Pan Prior to Dummy Positioning



Figure A-33: Pre-Test Overhead View of Driver Dummy Thighs on Seat Pan



Figure A-34: Pre-Test Placement of Driver Dummy's Feet



Figure A-35: Pre-Test View of Belt Anchorage for Driver Dummy



Figure A-36: Pre-Test Left Side View of Steering Wheel



Figure A-37: View of Disengaged Parking Brake

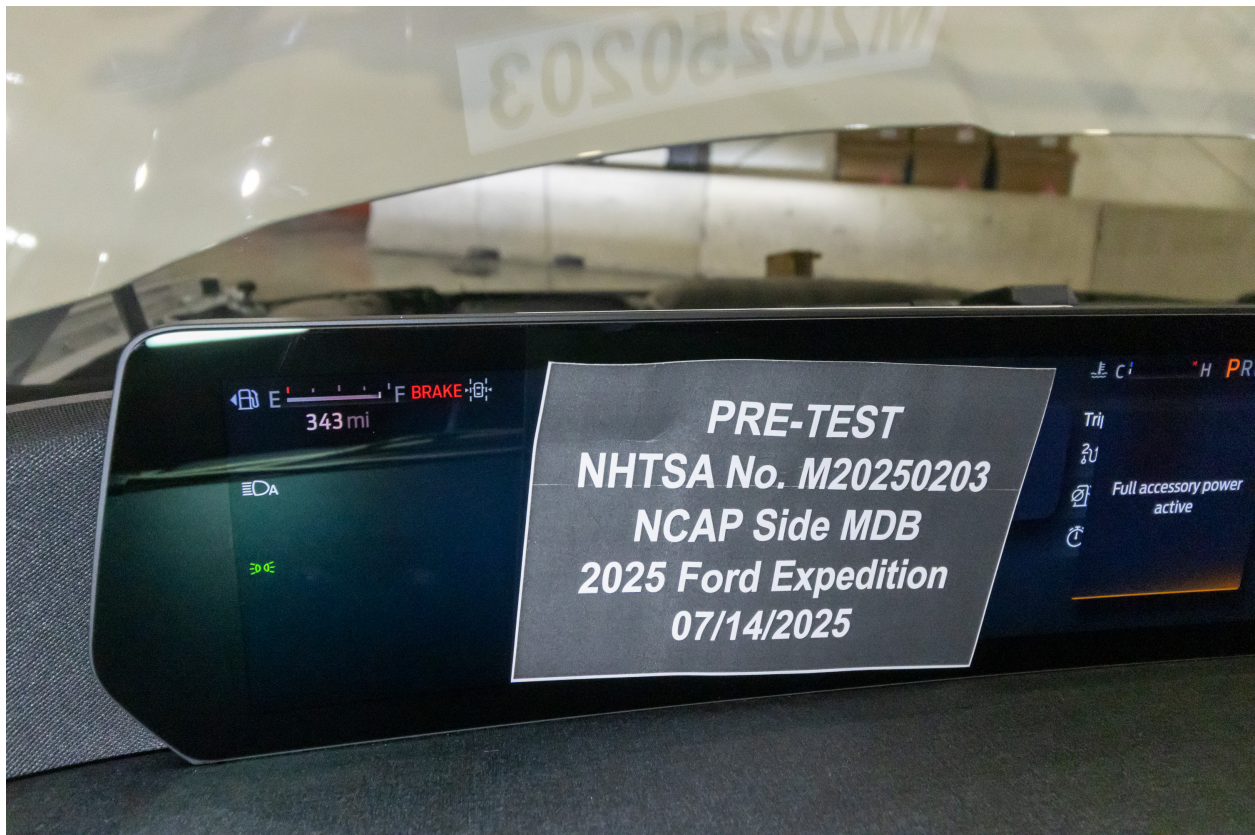


Figure A-38: Pre-Test View of Parking Brake

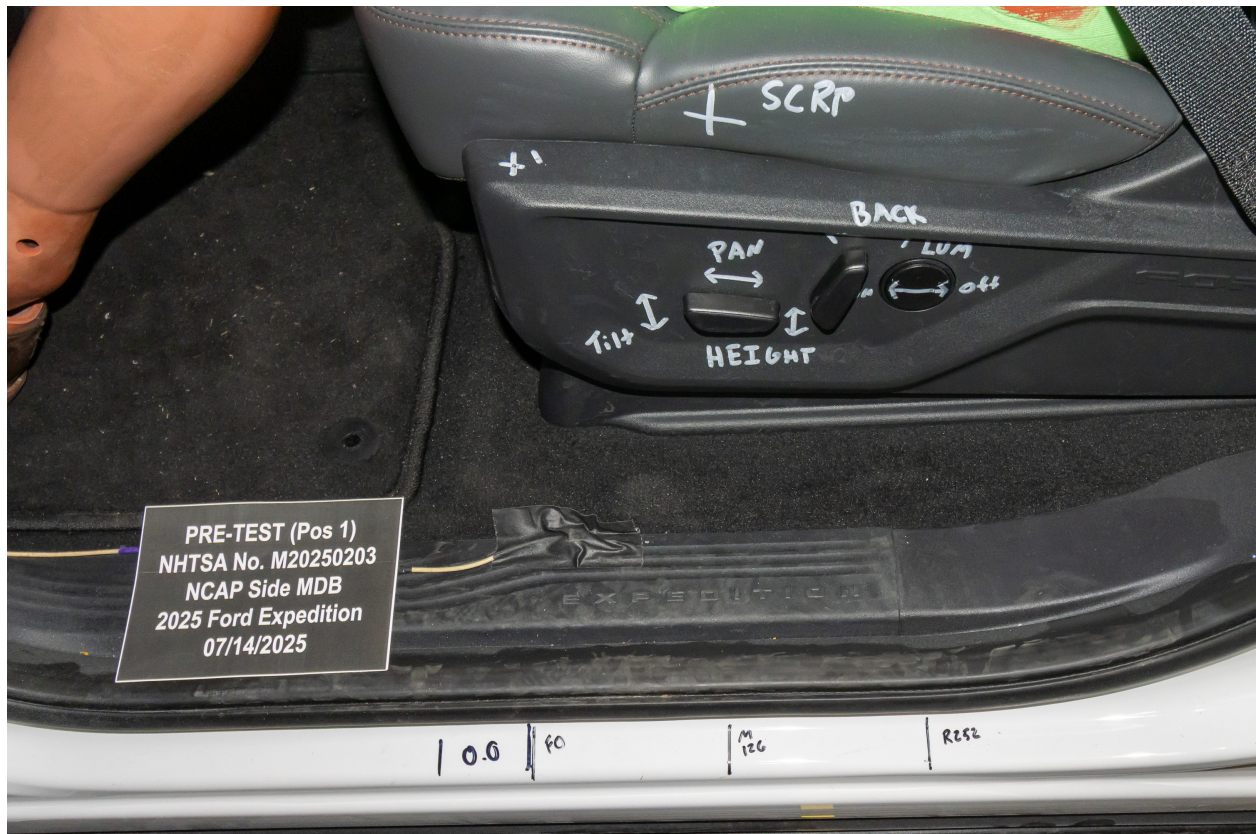


Figure A-39: Pre-Test Close-Up Left Side View of Driver Seat Track



Figure A-40: Pre-Test Close-Up Left Side View of Driver Seat Back



Figure A-41: Pre-Test Close-Up View of Driver Seat Back or Head Restraint



Figure A-42: Pre-Test Driver Dummy and Door Clearance View



Figure A-43: Post-Test Driver Dummy and Door Clearance View



Figure A-44: Pre-Test Right Side View of Driver Dummy and Front Seat of Occupant Compartment



Figure A-45: Post-Test Right Side View of Driver Dummy and Front Seat of Occupant Compartment



Figure A-46: Pre-Test Driver Inner Door Panel View



Figure A-47: Post-Test Driver Inner Door Panel View



Figure A-48: Post-Test Driver Dummy Close-Up Head Contact with Vehicle View



Figure A-49: Post-Test Driver Dummy Close-Up Head Contact with Side Air bag View



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



POST-TEST (Pos 1)
NHTSA No. M20250203
NCAP Side MDB
2025 Ford Expedition
07/14/2025

Figure A-51: Post-Test Driver Dummy Close-Up Torso Contact with Side Air bag View



POST-TEST (Pos 1)
NHTSA No. M20250203
NCAP Side MDB
2025 Ford Expedition
07/14/2025

Figure A-52: Post-Test Driver Dummy Close-Up Pelvis Contact View



Figure A-53: Post-Test Driver Dummy Close-Up Pelvis Contact with Side Air bag View



Figure A-54: Post-Test Driver Dummy Close-Up Knee Contact View



Figure A-55: Pre-Test Left Side View of Rear Passenger Dummy Showing Belt and Chalking



Figure A-56: Pre-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View



Figure A-57: Post-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View



Figure A-58: Pre-Test Frontal View of Rear Passenger Seat Back Prior to Dummy Positioning



Figure A-59: Pre-Test Frontal View of Rear Passenger Dummy Head and Shoulders in Relation to Head Restraint



Figure A-60: Pre-Test Overhead View of Rear Passenger Seat Pan Prior to Dummy Positioning



Figure A-61: Pre-Test Overhead View of Rear Passenger Dummy Thighs on Seat Pan

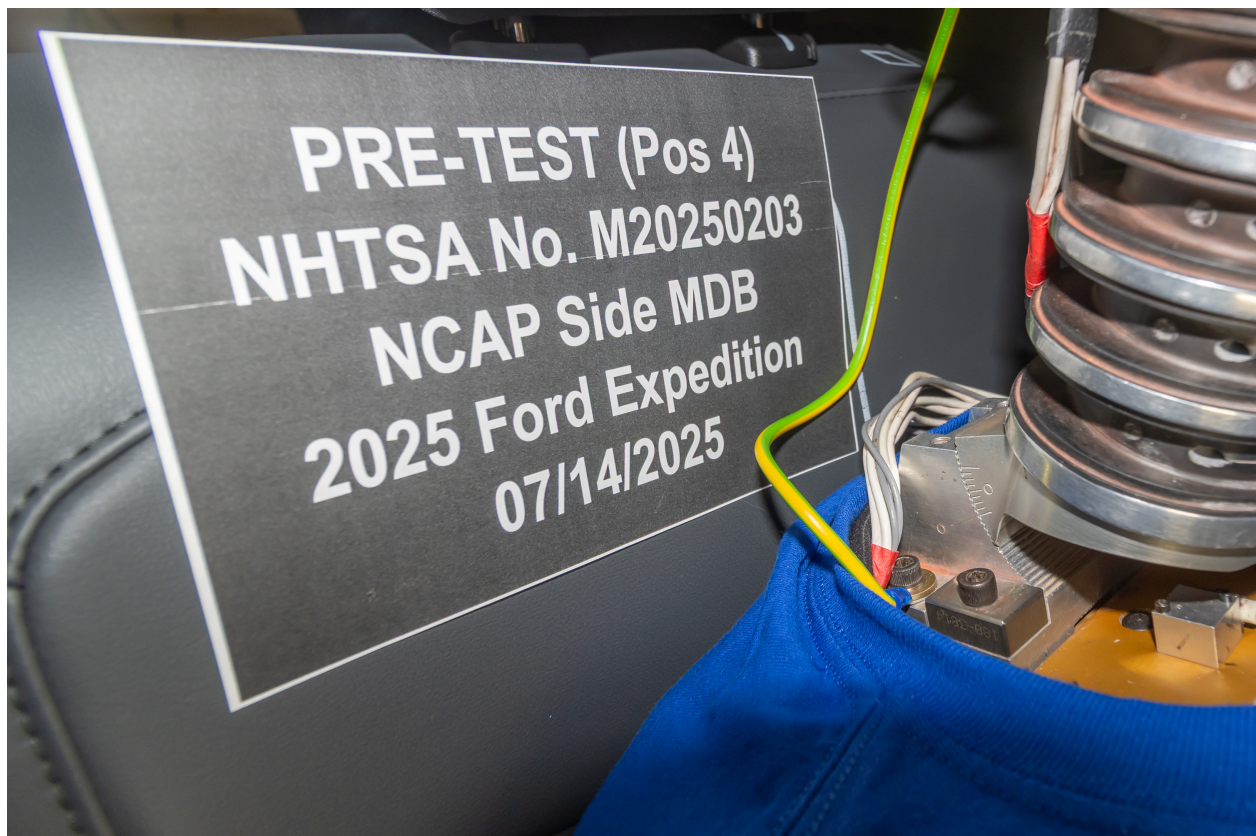


Figure A-62: Pre-Test View of Rear Passenger Dummy's Neck Showing Position of Adjustable Neck Bracket



Figure A-63: Pre-Test View of Rear Passenger Dummy's Head Showing Dummy's Head is Level



Figure A-64: Pre-Test Placement of Rear Passenger Dummy's Feet



Figure A-65: Pre-Test View of Belt Anchorage for Rear Passenger Dummy



Figure A-66: Pre-Test Close-Up Left Side View of Rear Passenger Seat Track



Figure A-67: Pre-test Close-Up Left Side View of Rear Passenger Seat Back



Figure A-68: Pre-Test Close-Up View of Rear Passenger Seat Back or Head Restraint



Figure A-69: Pre-Test Rear Passenger Dummy and Door Clearance View



Figure A-70: Post-Test Rear Passenger Dummy and Door Clearance View



Figure A-71: Pre-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment



Figure A-72: Post-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment



Figure A-73: Pre-Test Rear Passenger Inner Door Panel View



Figure A-74: Post-Test Rear Passenger Inner Door Panel View Showing Rear Passenger Dummy Contact Locations



Figure A-75: Post-Test Rear Passenger Dummy Close-Up Head Contact with Vehicle View



Figure A-76: Post-Test Rear Passenger Dummy Close-Up Head Contact with Side Air bag View



Figure A-77: Post-Test Rear Passenger Dummy Close-Up Torso Contact with Vehicle Interior View

Photo Not Applicable

Figure A-78: Post-Test Rear Passenger Dummy Close-Up Torso Contact with Side Air bag View



Figure A-79: Post-Test Rear Passenger Dummy Close-Up Pelvis Contact View

Photo Not Applicable

Figure A-80: Post-Test Rear Passenger Dummy Close-Up Pelvis Contact with Side Air bag View



Figure A-81: Post-Test Rear Passenger Dummy Close-Up Knee Contact View



Figure A-82: Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



Figure A-83: Post-Test View of Fuel Filler Cap or Fuel Filler Neck



Figure A-84: Pre-Test Front View of MDB Impactor Face



Figure A-85: Post-Test Front View of MDB Impactor Face



Figure A-86: Pre-Test Top View of MDB Impactor Face



Figure A-87: Post-Test Top View of MDB Impactor Face



Figure A-88: Pre-Test Left Side View of MDB Impactor Face



Figure A-89: Post-Test Left Side View of MDB Impactor Face



Figure A-90: Pre-Test Right Side View of MDB Impactor Face



Figure A-91: Post-Test Right Side View of MDB Impactor Face

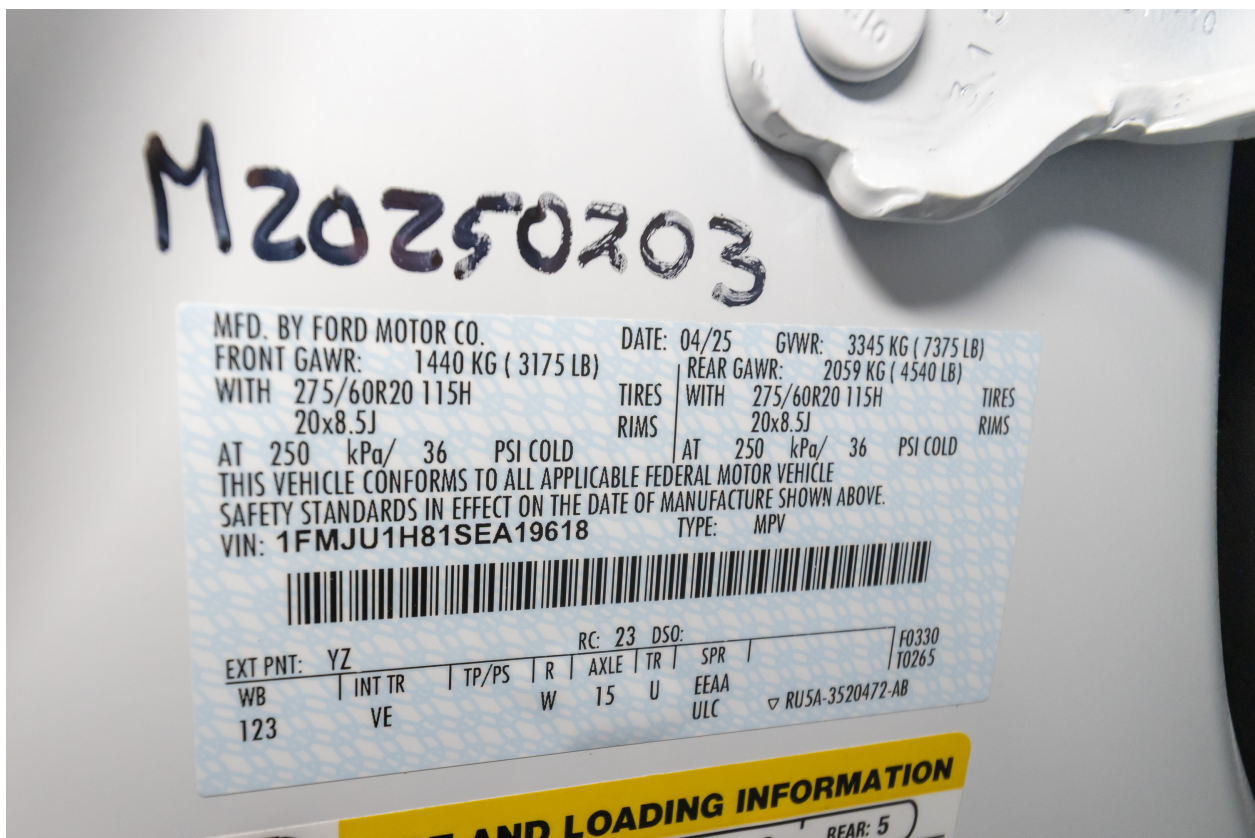


Figure A-92: Close-Up View of Vehicle's Certification Label



Figure A-93: Close-Up View of Vehicle's Tire Information Placard or Label



Figure A-94: Pre-Test Ballast View



Figure A-95: Post-Test Primary and Redundant Speed Trap Read-Out



Figure A-96: FMVSS No. 301 Static Rollover 0 Degrees

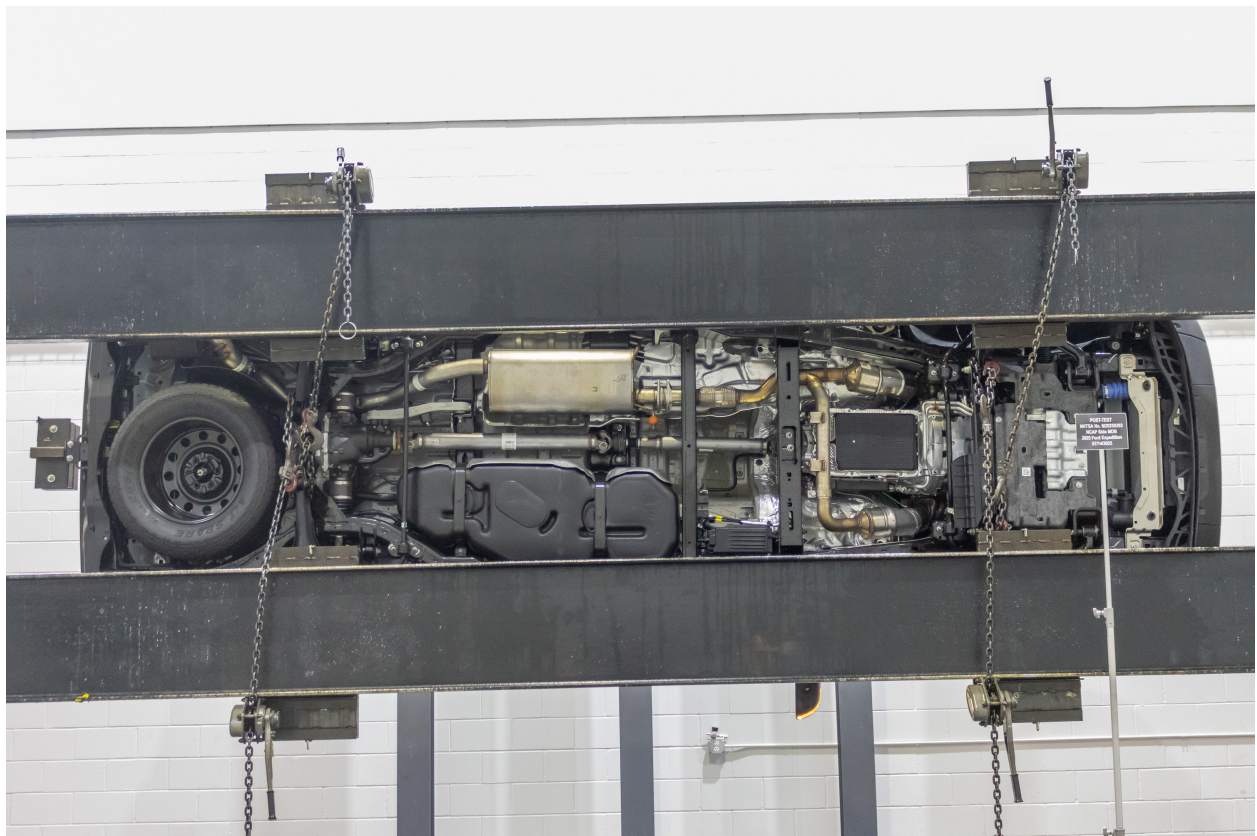


Figure A-97: FMVSS No. 301 Static Rollover 90 Degrees



Figure A-98: FMVSS No. 301 Static Rollover 180 Degrees



Figure A-99: FMVSS No. 301 Static Rollover 270 Degrees



Figure A-100: FMVSS No. 301 Static Rollover 360 Degrees



Figure A-101: Impact Event

VEHICLE DESCRIPTION		SE A19618		EPA DOT Fuel Economy and Environment	
EXPEDITION 2025 EXPED ACTIVE 4X2 ACTIVE 7-PASSENGER 3.0L ECOBOOST V6 ENGINE 10SPD AUTO TRANS W/SLCTSHFT		EXTERIOR OXFORD WHITE INTERIOR DARK GRAY ACTIVEX		Gasoline Vehicle Fuel Economy 19 MPG combined city/hwy 16 city 24 highway 5.3 gallons per 100 miles You spend \$4,250 more in fuel costs over 5 years compared to the average new vehicle.	
STANDARD EQUIPMENT INCLUDED AT NO EXTRA CHARGE					
EXTERIOR • DOOR HANDLES - BODY COLOR • EASY FUEL/CAPLESS FILLER • FORD SPLIT GATE • HEADLAMPS-LED REFLECTOR • PRIVACY GLASS - REAR DOORS • REAR INT WIPER/WASH/SPRINT • ROOF-RACK SIDE RAILS-BLACK • RUNNING BOARDS - FIXED • TAIL LAMPS - LED • TRAILER SWAY CONTROL • TRAILER TOW PREP PACK		INTERIOR • 11 TOUCH UP/DOWN DRIP/PASS WIN • AUTO-DIM REARVIEW MIRROR • CARDO MANAGEMENT SYSTEM • CENTER CONSOLE WARMREST • DUAL ILLUM VIS VANTY MIRR • POWERFOLD 3RD ROW SEAT • ROTARY GEAR SHIFT DIAL • STEERING/TILT/TELESCOPE, CRUISE & AUDIO CONTROLS • TRI-ZONE AUTO CLIMATE CTRL		FUNCTIONAL • 4-WHEEL, INDEPENDENT SUSP. • 24" PANO DISPLAY - IP • 13.2" CENTER TOUCH SCREEN • AM/FM/MP3, 8 SPEAKERS • HILL START ASSIST • PUSH-BUTTON START • SELECTABLE DRIVE MODES • SIRIUSXM9 W/360L-NA AKAH	
INCLUDED ON THIS VEHICLE EQUIPMENT GROUP 202A 30" CARBONZ GRAY BR MCH AL FORD CO-PILOT360 ACTIVE 2.0 P275/60R20 ABS BSW TIRES BLUECRUISE EQUIP. 90 DAY TRIAL CONNECT PKG. 1YR INCL. FRONT LICENSE PLATE BRACKET		OPTIONAL EQUIPMENT/OTHER NO CHARGE		PRICE INFORMATION BASE PRICE \$62,000.00 TOTAL OPTIONS/OTHER 4,215.00 TOTAL VEHICLE & OPTIONS/OTHER 66,215.00 DESTINATION & DELIVERY 1,985.00	
WARRANTY • 3YR/36,000 BUMPER / BUMPER • 5YR/60,000 POWERTRAIN • 5YR/60,000 ROADSIDE ASSIST		SAFETY/SECURITY • ADVANCE TRAC™ WITH RSCB • AIRBAGS - DUAL STAGE FRONT • AIRBAGS - SAFETY CANOPY® • AIRBAGS - SIDE IMPACT • INDV TIRE PRESS MONIT SYS • LATCH CHILD SAFETY SYSTEM • PERIMETER ALARM • PERSONAL SAFETY SYSTEM™ • REAR OCCUPANT ALERT • SECURILOCK® ANTI-THEFT SYS • SOS POST-CRASH ALERT SYS™		Annual fuel cost \$2,750 Fuel Economy & Greenhouse Gas Rating 1 4 10 1 6 10 Best Best The vehicle emits 412 grams CO ₂ per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also create emissions; learn more at fueleconomy.gov.	
SOLD TO Tracy Langston Ford, LLC 3264 Tom Austin Hwy Springfield TN 37172		RAMP ONE CA1K		FINAL ASSEMBLY PLANT KENTUCKY	
RAMP TWO		METHOD OF TRANSFER CONVOY		ITEM # 23-3333 CRT 2	
SC253 N RB 2X 520 000137 03 25 25		Whether you decide to lease or finance your vehicle, you'll find the choices that are right for you. See your dealer for details or visit www.ford.com/finance.		WARNING: Operating, servicing and maintaining a passenger vehicle, pickup truck, van, or off-road vehicle can expose you to chemicals including engine exhaust, carbon monoxide, phthalates, and lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. To minimize exposure, avoid breathing exhaust; do not idle the engine except as necessary; service your vehicle in a well-ventilated area and wear gloves or wash your hands frequently when servicing your vehicle. For more information go to www.P65Warnings.ca.gov/passenger-vehicle.	

Figure A-102: Monroney Label

ADJUSTING THE HEAD RESTRAINT

- WARNING:** Fully adjust the head restraint before you sit in or operate your vehicle. This will help minimize the risk of neck injury in the event of a crash. Do not adjust the head restraint when your vehicle is moving.
- WARNING:** The head restraint is a safety device. Whenever possible it should be installed and properly adjusted when the seat is occupied. Failure to adjust the head restraint properly could reduce its effectiveness during certain impacts.
- WARNING:** Adjust the head restraints for all passengers before you drive your vehicle. This will help minimize the risk of neck injury in the event of a crash. Do not adjust the head restraints when your vehicle is moving.

To raise the head restraint, pull the head restraint up.

To lower the head restraint:

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

To tilt the head restraint:



1. Adjust the seat backrest to an upright driving or riding position.
2. Pivot the head restraint forward toward your head to the preferred position.

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

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

Figure A-103: Driver Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

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Rear Seats

The head restraints consist of:

- A trimmed energy absorbing foam and structure.
- A fold button, if equipped.

ADJUSTING THE HEAD RESTRAINT

WARNING: Fully adjust the head restraint before you sit in or operate your vehicle. This will help minimize the risk of neck injury in the event of a crash. Do not adjust the head restraint when your vehicle is moving.

WARNING: The head restraint is a safety device. Whenever possible it should be installed and properly adjusted when the seat is occupied. Failure to adjust the head restraint properly could reduce its effectiveness during certain impacts.

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

For the second and third row center head restraint, pull the head restraint up to raise it.

To lower the head restraint:

1. Press and hold the guide sleeve adjust and release button.
2. Push the head restraint down.

To fold the third row outermost head restraints:

1. Press the fold button.
2. Pull the head restraint up to place it back to the upright position.

REMOVING THE HEAD RESTRAINT

For the second row outermost head restraints:

1. Pull the head restraint up until it reaches its highest position.
2. Press and hold the guide sleeve unlock and remove button.
3. Pull the head restraint up.

The third row outermost head restraints are fixed and cannot be removed.

For the second and third row center head restraints:

1. Pull the head restraint up until it reaches its highest position.
2. Press and hold guide sleeve adjust and release button and the guide sleeve unlock and remove button.
3. Pull the head restraint up.

INSTALLING THE HEAD RESTRAINT

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

MOVING THE SEAT BACKWARD AND FORWARD

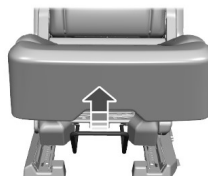


Figure A-104: Left Rear Passenger Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

APPENDIX B

VEHICLE AND DUMMY RESPONSE DATA TRACES

Table of Data Plots

Driver Dummy Instrumentation Plots

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Plot 1	Driver Head Acceleration (X) Primary vs. Time	B-5
Plot 2	Driver Head Acceleration (Y) Primary vs. Time	B-5
Plot 3	Driver Head Acceleration (Z) Primary vs. Time	B-5
Plot 4	Driver Head Resultant Acceleration Primary vs. Time	B-5
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Plot 6	Driver Middle Thorax Rib Deflection (Y) vs. Time	B-6
Plot 7	Driver Lower Thorax Rib Deflection (Y) vs. Time	B-6
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Plot 13	Driver Pubic Symphysis Force (Y) vs. Time	B-8
Plot 14	Passenger Head Acceleration (X) vs. Time Primary	B-8
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Plot 16	Passenger Head Acceleration (Z) vs. Time Primary	B-8
Plot 17	Passenger Head Resultant Acceleration Primary vs. Time	B-9
Plot 18	Passenger Lower Spine T12 Acceleration (X) vs. Time	B-9
Plot 19	Passenger Lower Spine T12 Acceleration (Y) vs. Time	B-9
Plot 20	Passenger Lower Spine T12 Acceleration (Z) vs. Time	B-9
Plot 21	Passenger Lower Spine T12 Resultant Acceleration vs. Time	B-10
Plot 22	Passenger Iliac Force on Impact Side (Y) vs. Time	B-10
Plot 23	Passenger Acetabulum Force on Impact Side (Y) vs. Time	B-10
Plot 24	Passenger Total Pelvic Force on Impact Side (Y) vs. Time	B-10

The following additional dummy and vehicle response data can be obtained from the Research and Development section of the NHTSA website. The website can be found at www.NHTSA.gov

Additional Driver & Passenger Dummy Instrumentation Data

Driver Lower Spine T12 Acceleration (X)
Driver Lower Spine T12 Acceleration (Y)
Driver Lower Spine T12 Acceleration (Z)
Passenger Upper Thorax Rib Deflection (Y)
Passenger Middle Thorax Rib Deflection (Y)
Passenger Lower Thorax Rib Deflection (Y)
Passenger Upper Abdomen Rib Deflection (Y)
Passenger Lower Abdomen Rib Deflection (Y)
Driver Head Acceleration Redundant (X)
Driver Head Acceleration Redundant (Y)
Driver Head Acceleration Redundant (Z)
Passenger Head Acceleration Redundant (X)
Passenger Head Acceleration Redundant (Y)
Passenger Head Acceleration Redundant (Z)

Vehicle Instrumentation Data

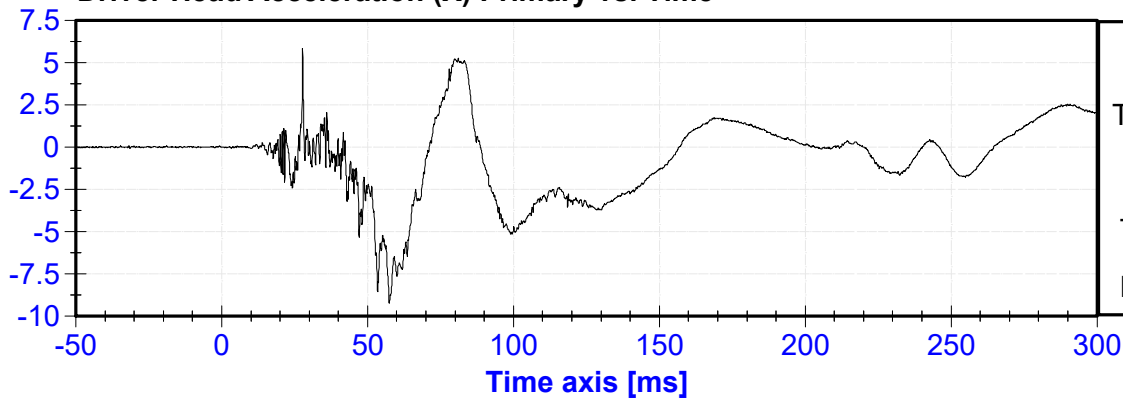
Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
Right Side Sill at Front Seat Acceleration (X)
Right Side Sill at Front Seat Acceleration (Y)
Right Side Sill at Front Seat Acceleration (Z)
Right Side Sill at Rear Seat Acceleration (X)
Right Side Sill at Rear Seat Acceleration (Y)
Right Side Sill at Rear Seat Acceleration (Z)
Left Side Sill at Front Seat Acceleration (Y)
Left Side Sill at Rear Seat Acceleration (Y)
Lower A-Post Acceleration (Y)
Middle A-Post Acceleration (Y)
Lower B-Post Acceleration (Y)
Middle B-Post Acceleration (Y)
Front Seat Track Acceleration (Y)
Rear Seat Structure Acceleration (Y)
Right Rear Occupant Compartment Acceleration (Y)
Engine Block (X)
Engine Block (Y)
Rear Floorpan Above Axle Acceleration (X)
Rear Floorpan Above Axle Acceleration (Y)
Rear Floorpan Above Axle Acceleration (Z)

MDB Instrumentation Data

MDB Center of Gravity Acceleration (X)
MDB Center of Gravity Acceleration (Y)
MDB Center of Gravity Acceleration (Z)
MDB Rear Acceleration (X)
MDB Rear Acceleration (Y)
Left MDB Contact Switch
Right MDB Contact Switch

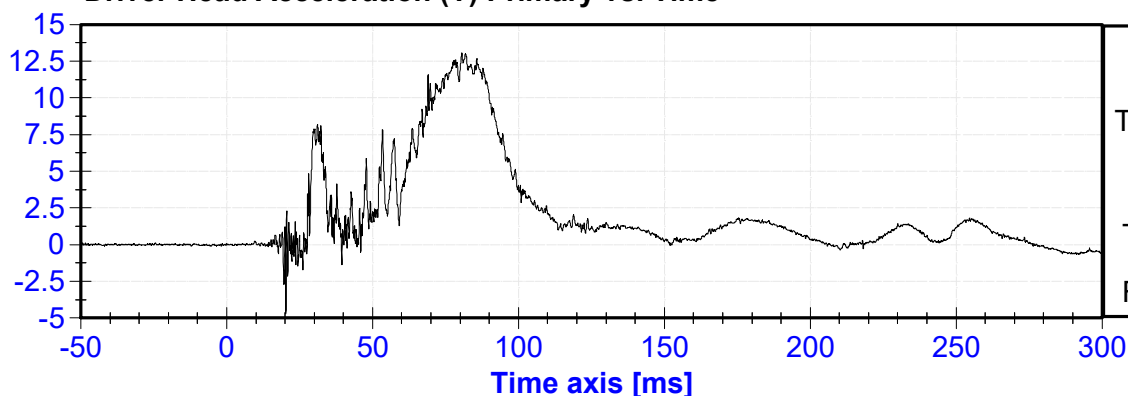
ACCELERATION [g's]

Driver Head Acceleration (X) Primary vs. Time



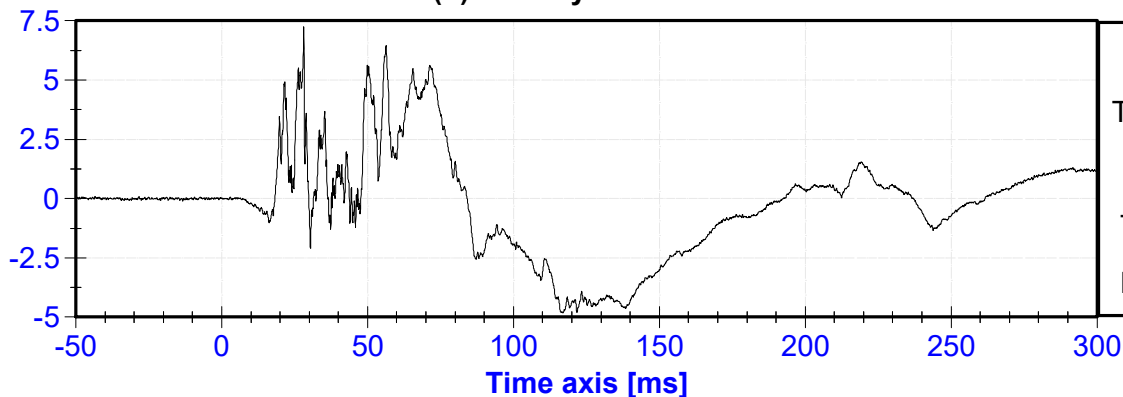
ACCELERATION [g's]

Driver Head Acceleration (Y) Primary vs. Time



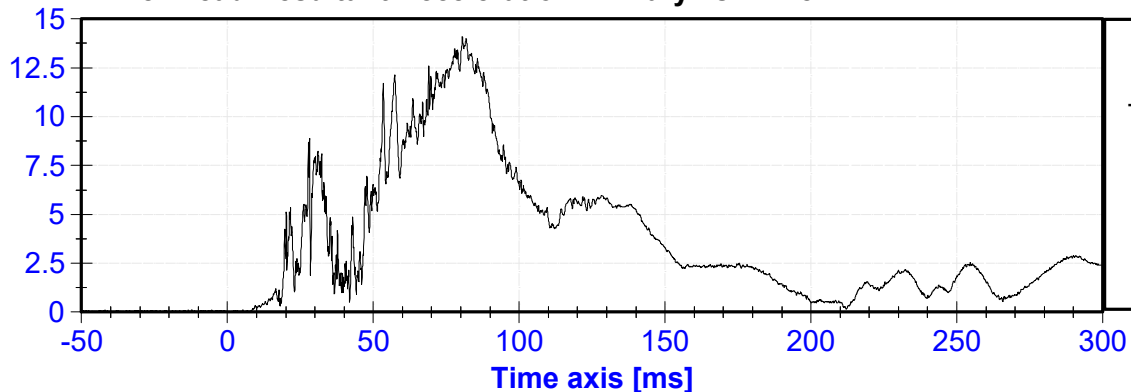
ACCELERATION [g's]

Driver Head Acceleration (Z) Primary vs. Time



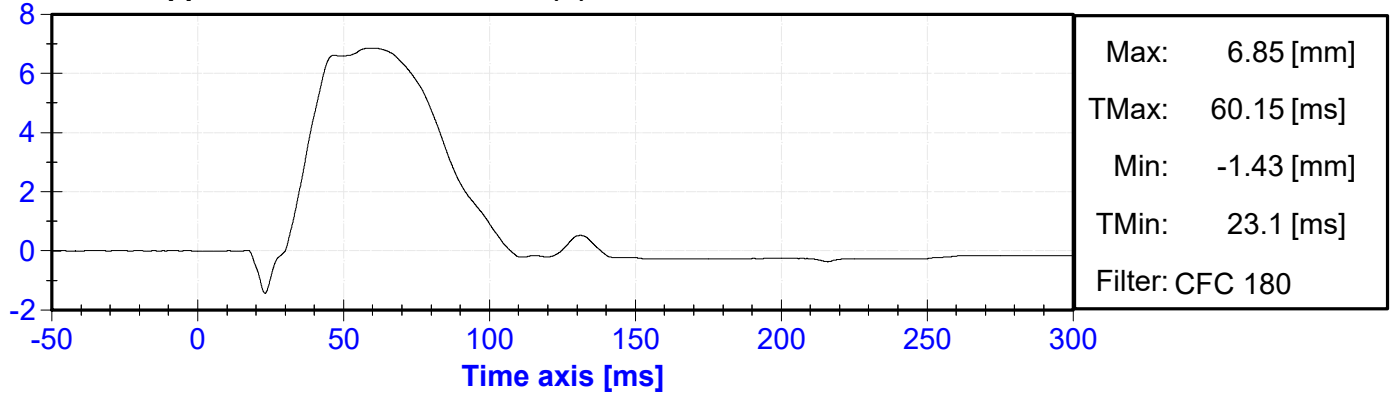
ACCELERATION [g's]

Driver Head Resultant Acceleration Primary vs. Time



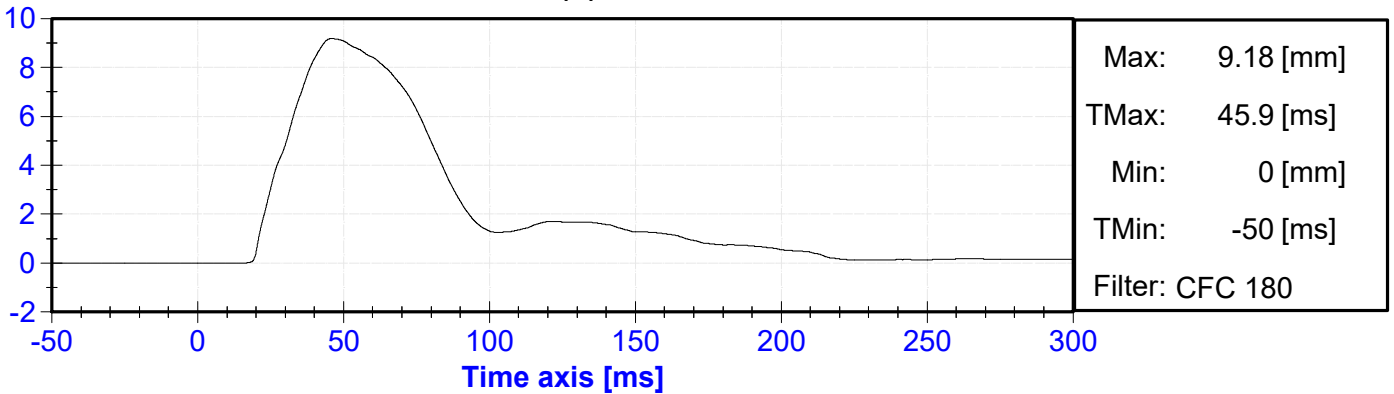
DISPLACEMENT [mm]

Driver Upper Thorax Rib Deflection (Y) vs. Time



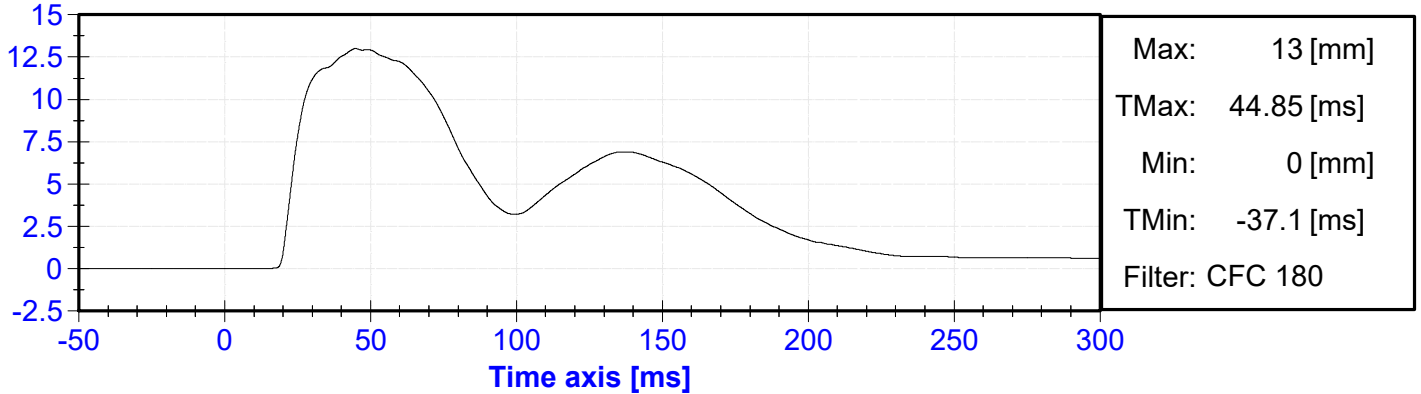
DISPLACEMENT [mm]

Driver Middle Thorax Rib Deflection (Y) vs. Time



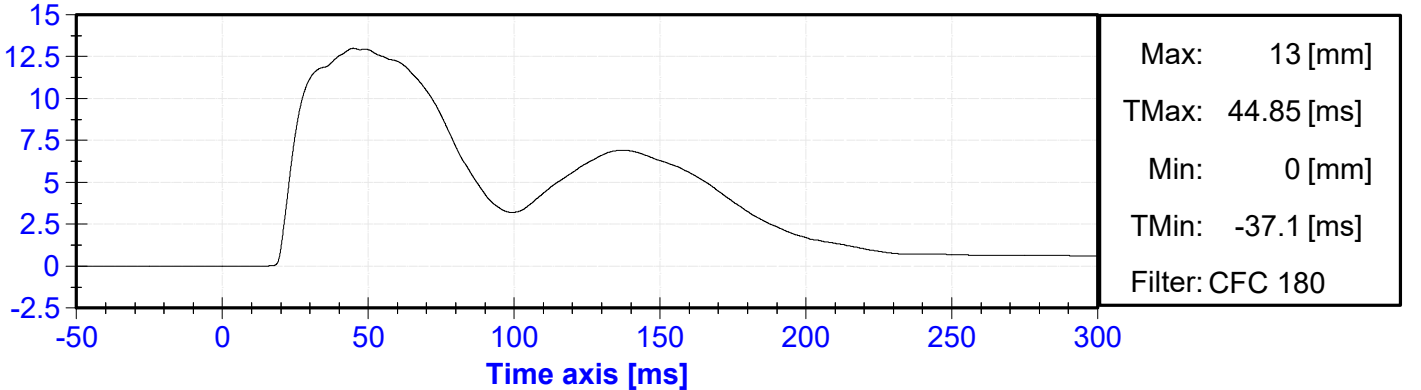
DISPLACEMENT [mm]

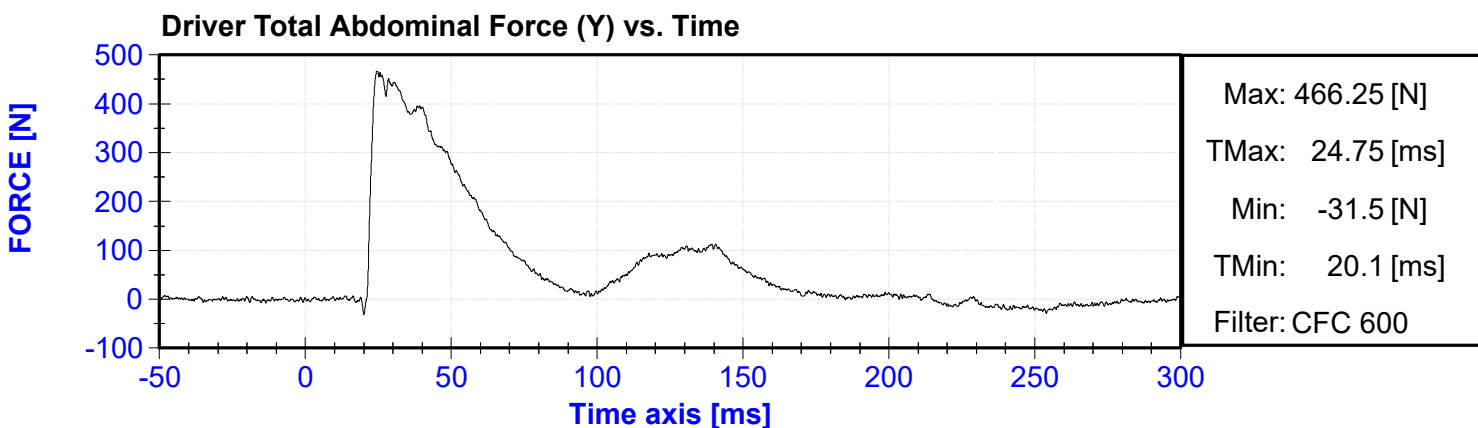
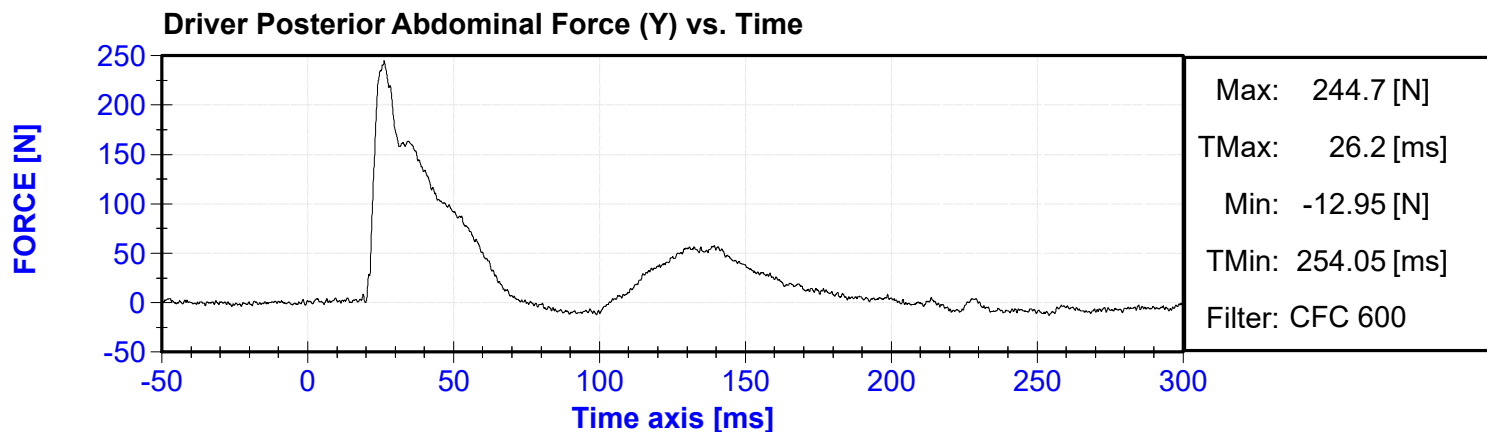
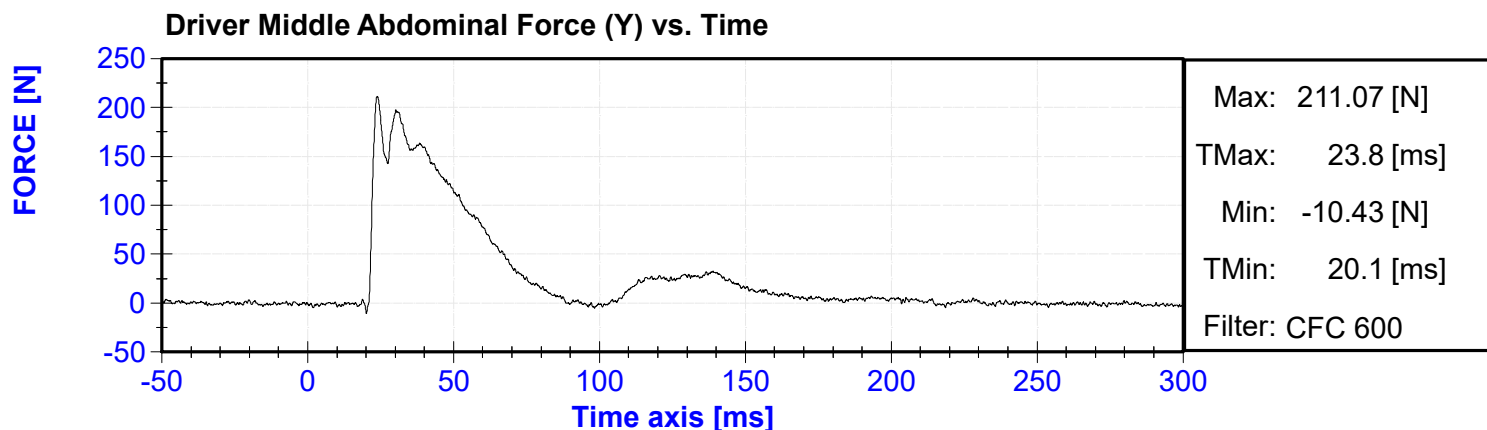
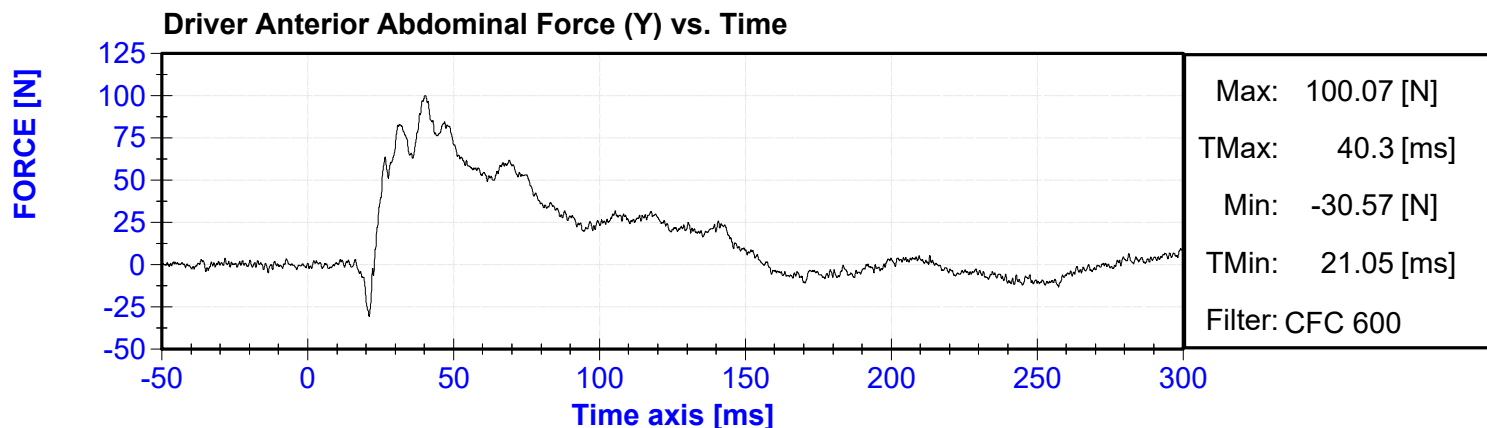
Driver Lower Thorax Rib Deflection (Y) vs. Time



DISPLACEMENT [mm]

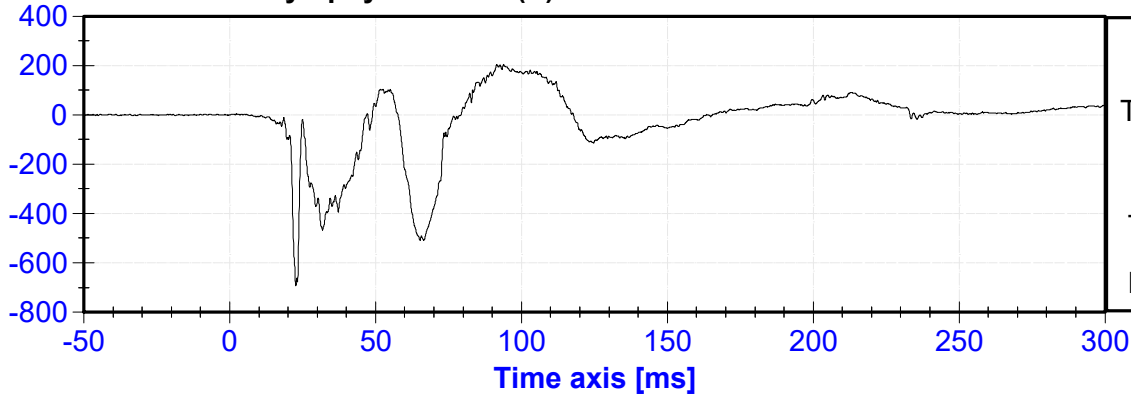
Driver Thorax Rib Deflection Maximum vs. Time





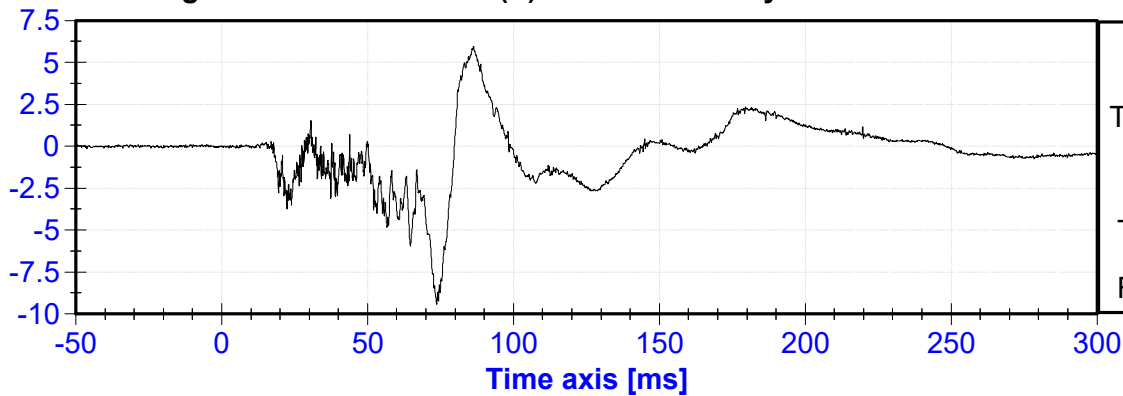
FORCE [N]

Driver Pubic Symphysis Force (Y) vs. Time



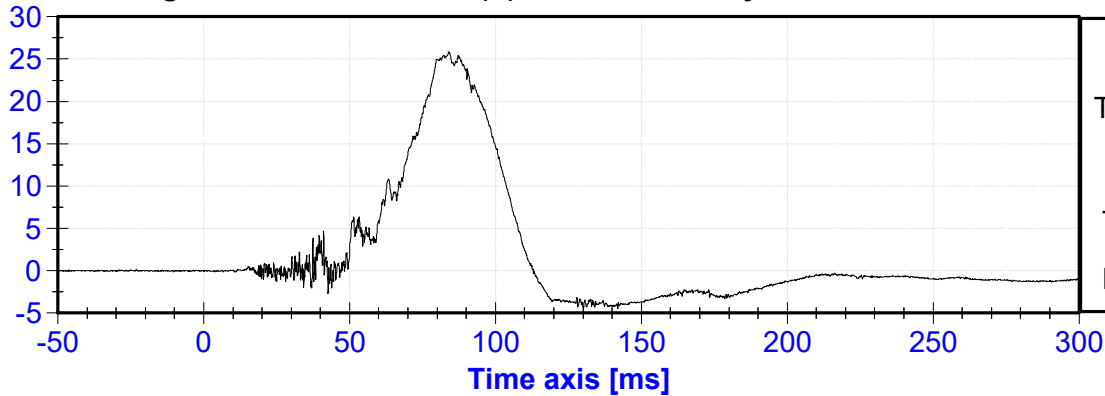
ACCELERATION [g's]

Passenger Head Acceleration (X) vs. Time Primary



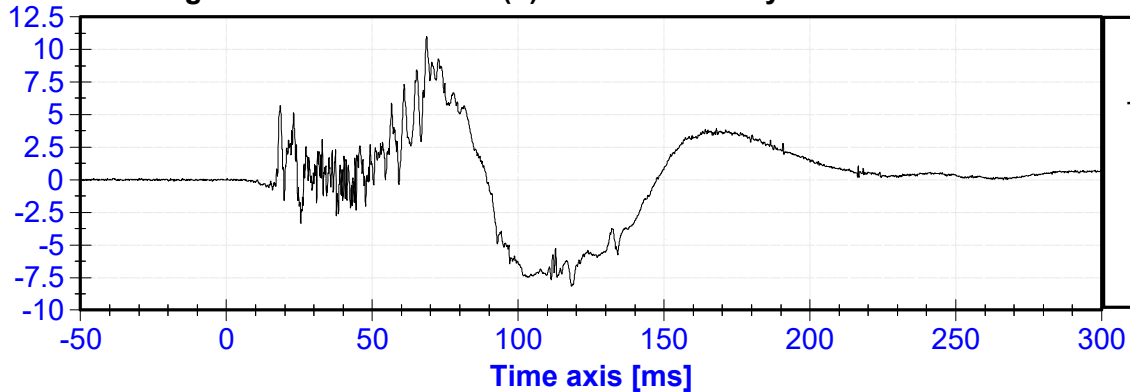
ACCELERATION [g's]

Passenger Head Acceleration (Y) vs. Time Primary



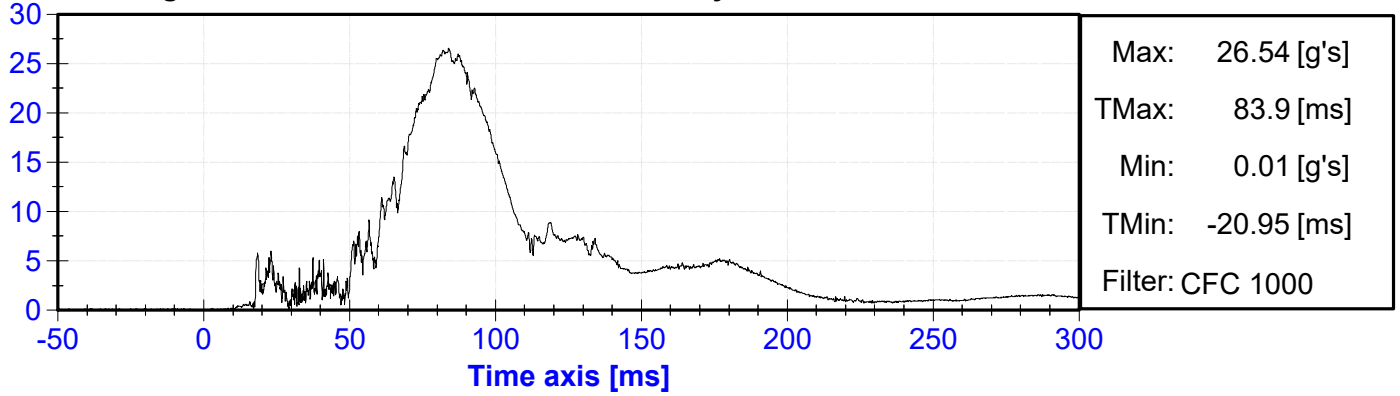
ACCELERATION [g's]

Passenger Head Acceleration (Z) vs. Time Primary



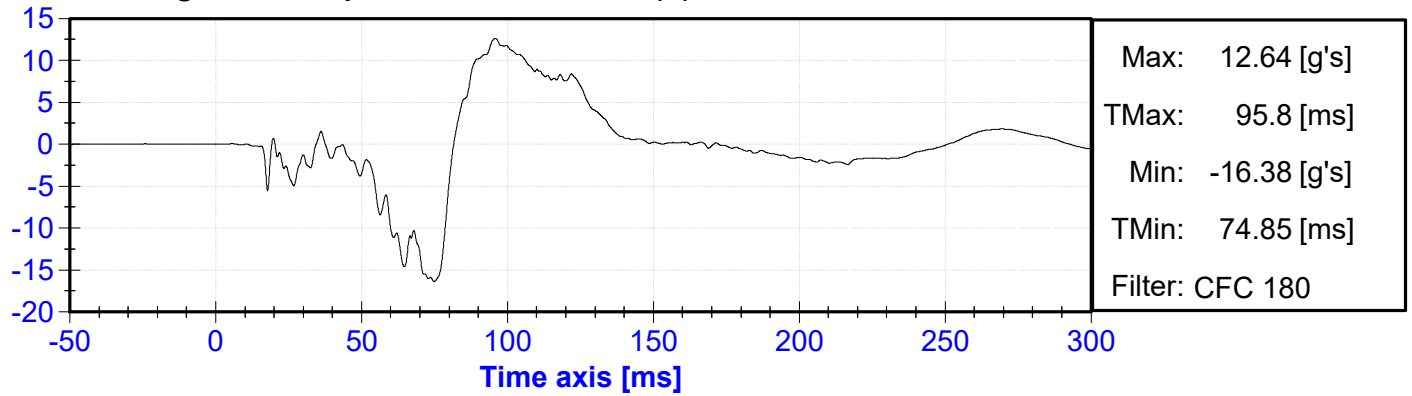
ACCELERATION [g's]

Passenger Head Resultant Acceleration Primary vs. Time



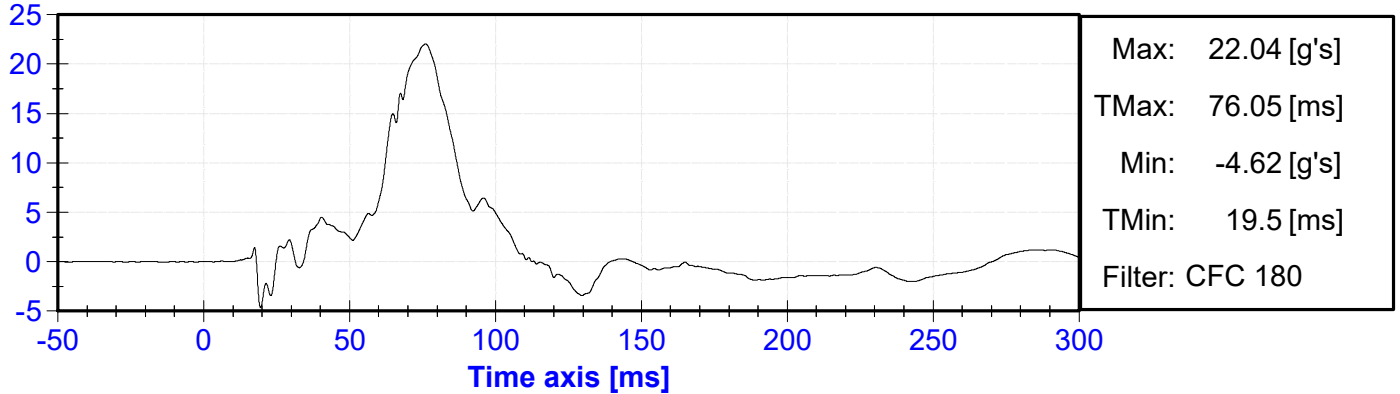
ACCELERATION [g's]

Passenger Lower Spine T12 Acceleration (X) vs. Time



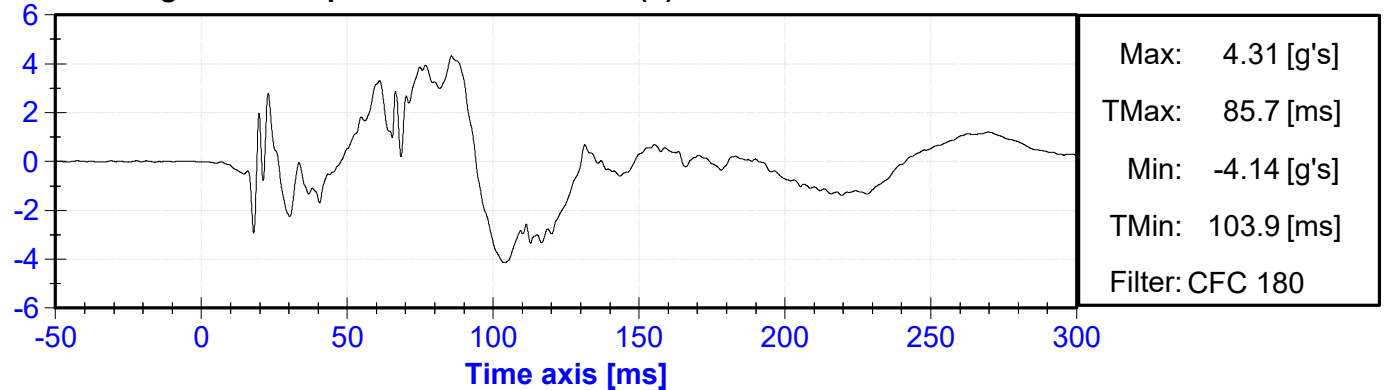
ACCELERATION [g's]

Passenger Lower Spine T12 Acceleration (Y) vs. Time

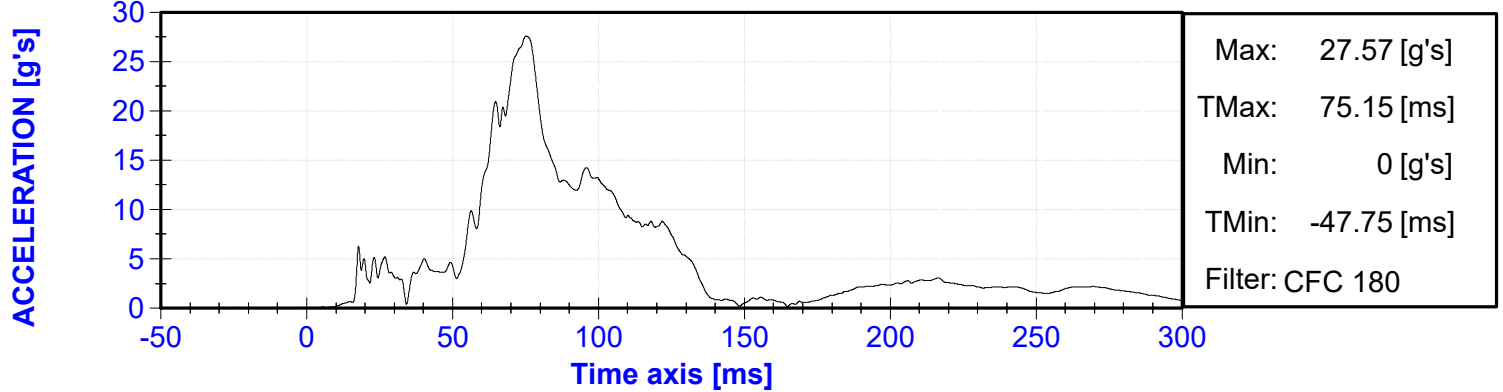


ACCELERATION [g's]

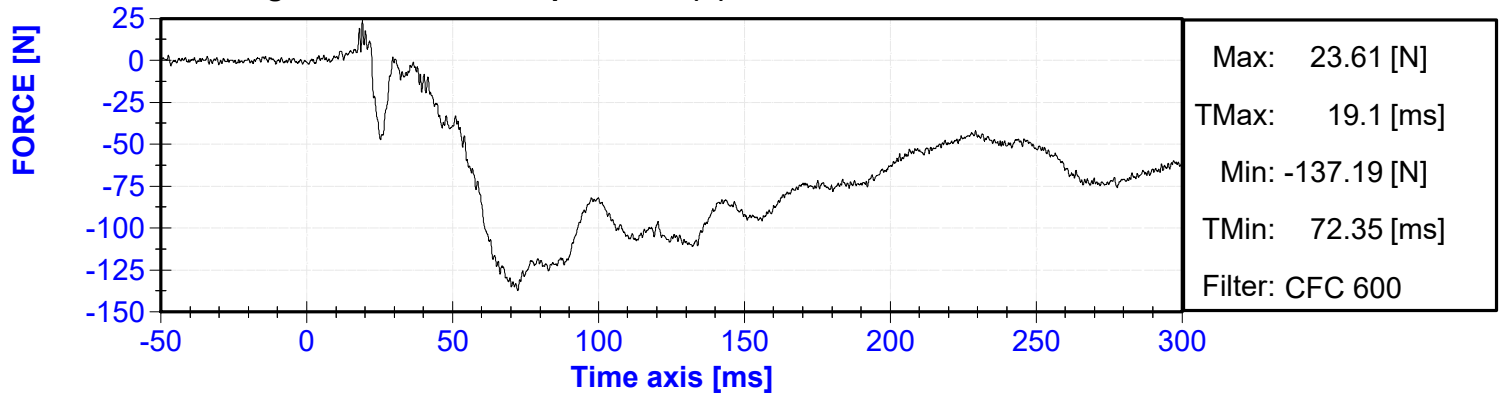
Passenger Lower Spine T12 Acceleration (Z) vs. Time



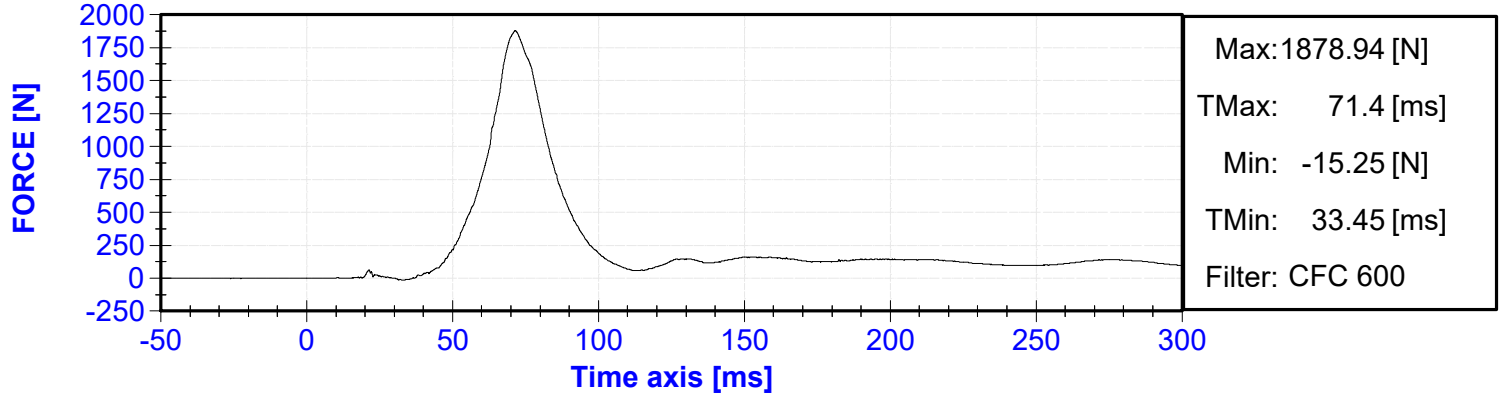
Passenger Lower Spine T12 Resultant Acceleration vs. Time



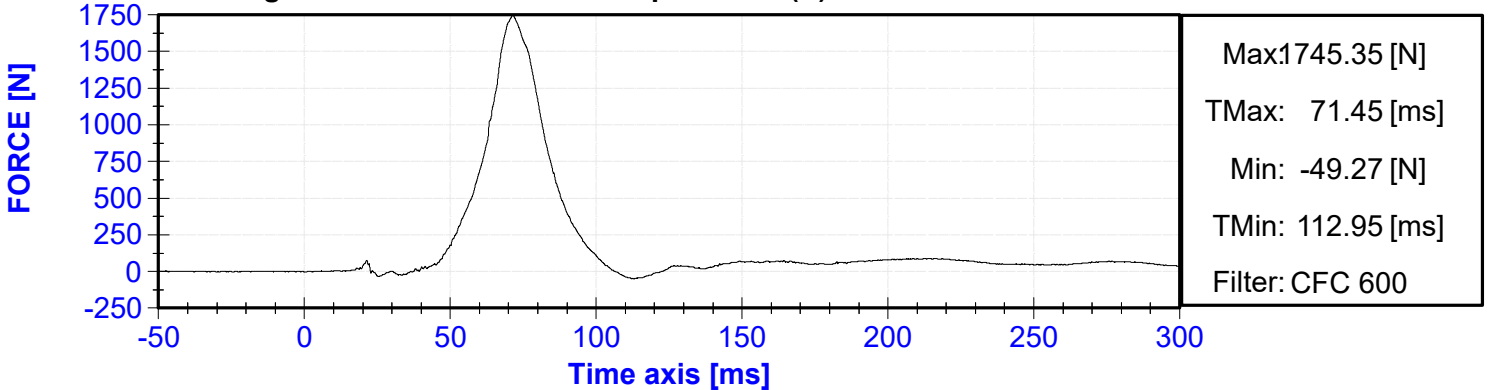
Passenger Iliac Force on Impact Side (Y) vs. Time



Passenger Acetabulum Force on Impact Side (Y) vs. Time



Passenger Total Pelvic Force on Impact Side (Y) vs. Time



APPENDIX C

DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

CALIBRATION TEST RESULTS

PRE-TEST

EUROSID 2 (ES-2RE) MALE – DRIVER ATD

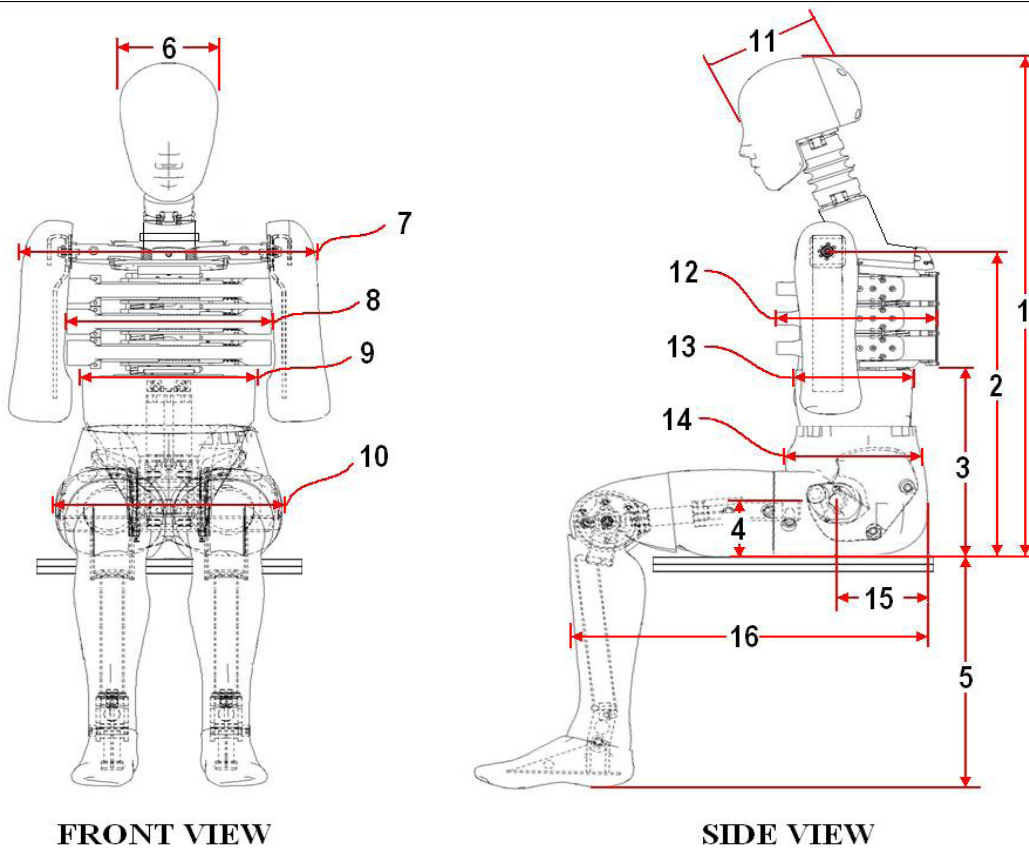
SERIAL NO:F033

(CONFIGURED FOR LEFT SIDE IMPACT)

Technician: J. Rios

Date: 07/10/2025

Dummy Serial Number: F033



FRONT VIEW

SIDE VIEW

Dim. No.	Description	Specification (mm)		Result (mm)	Pass/Fail
1	Sitting Height	900	918	908	Pass
2	Seat to Shoulder Joint	558	572	562	Pass
3	Seat to Lower Face of Thoracic Spine Box	346	356	350	Pass
4	Seat to Hip Joint (center of bolt)	97	103	101	Pass
5	Sole to Seat, Sitting	333	451	412	Pass
6	Head Width	152	158	155	Pass
7	Shoulder/Arm Width	461	479	469	Pass
8	Thorax Width	322	332	326	Pass
9	Abdomen Width	273	287	283	Pass
10	Pelvis Lap Width	359	373	364	Pass
11	Head Depth	196	206	201	Pass
12	Thorax Depth	262	272	267	Pass
13	Abdomen Depth	194	204	196	Pass
14	Pelvis Depth	235	245	241	Pass
15	Back of Buttocks to Hip Joint (center of bolt)	150	160	155	Pass
16	Back of Buttocks to Front Knee	597	615	609	Pass

ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	F033	Laboratory Supervisor	J. Kinderman

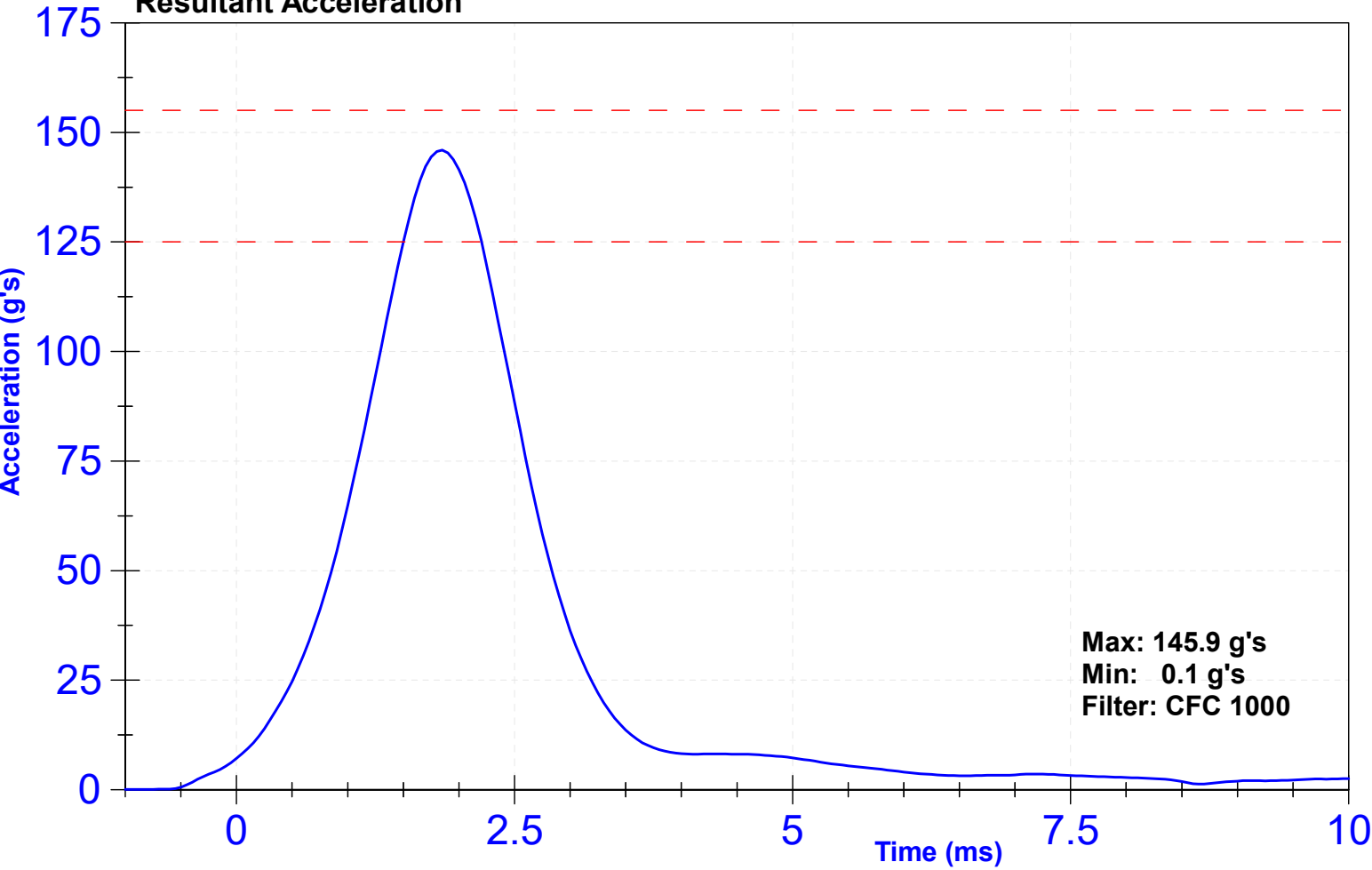
Results

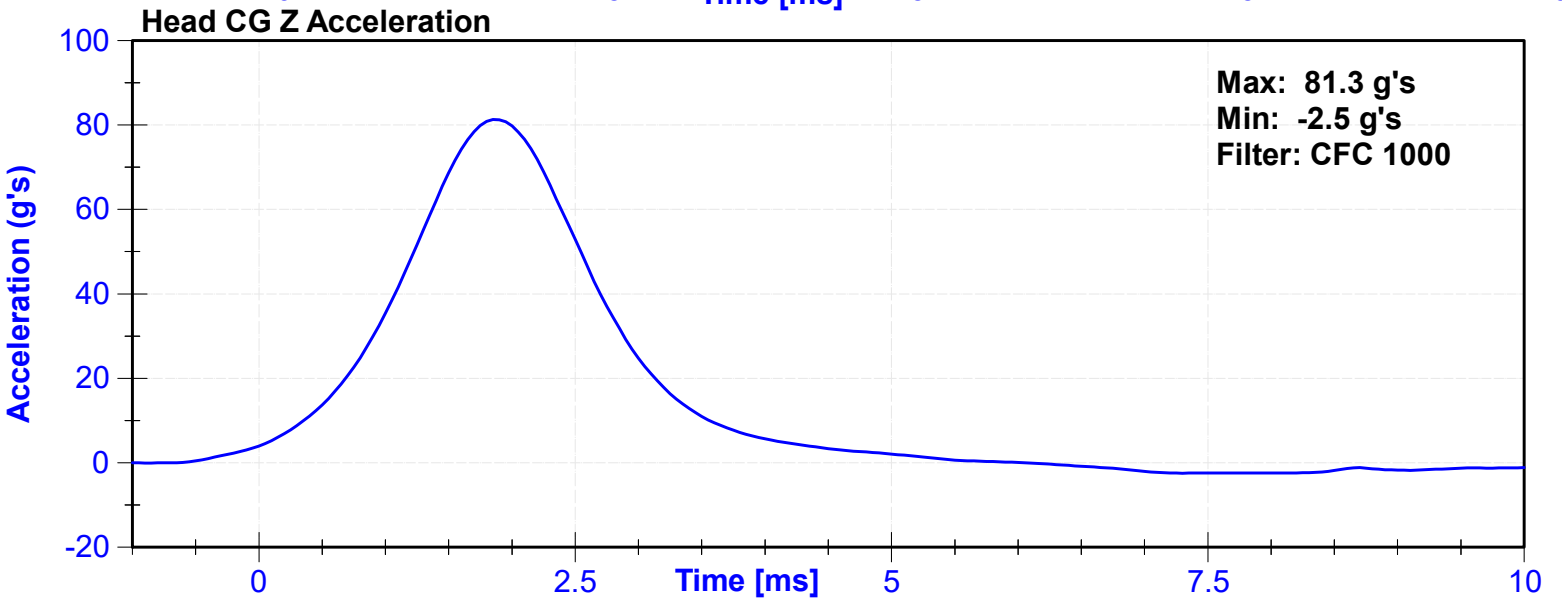
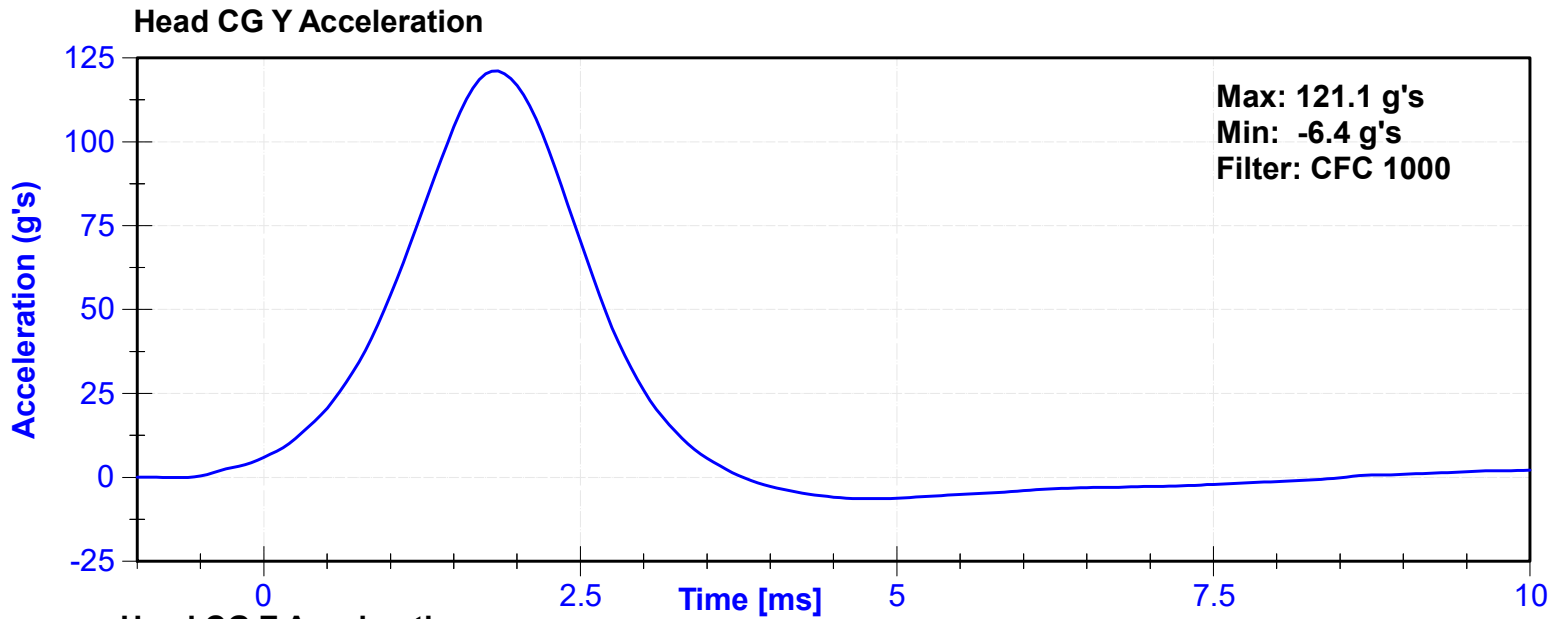
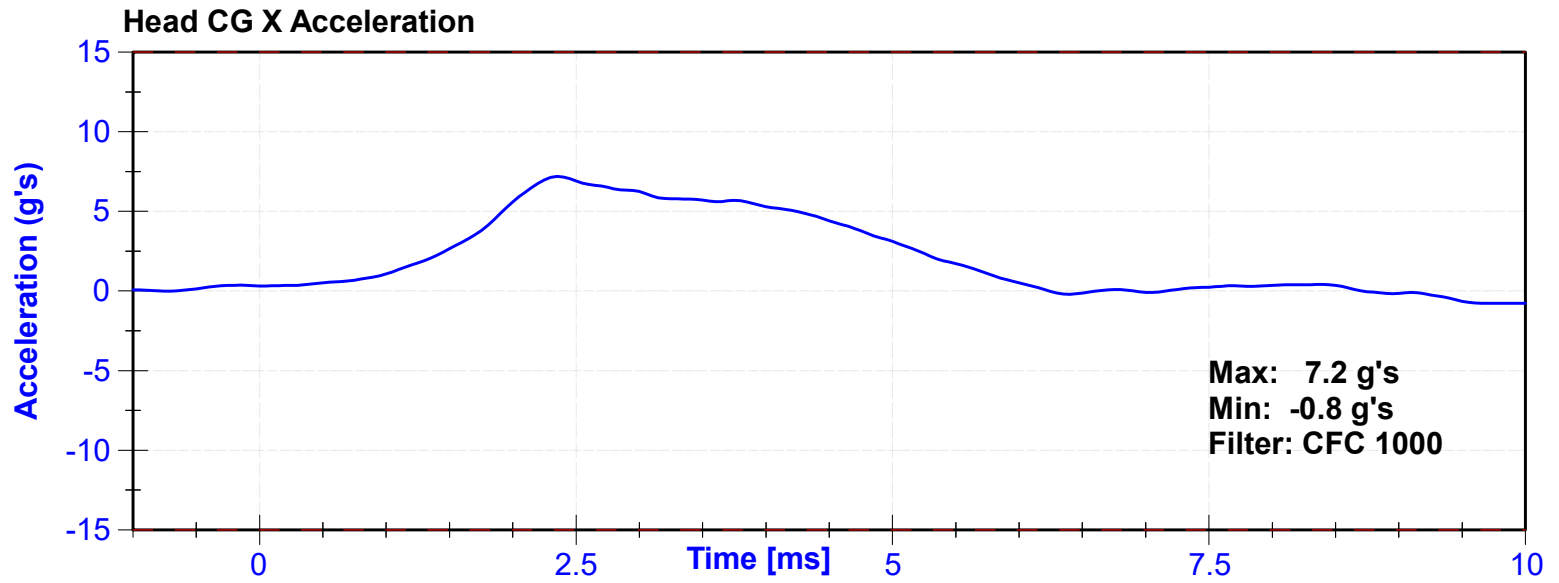
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	51	Pass
Resultant Acceleration	125	155	g's	145.9	Pass
Oscillation	0	15	%	5.60	Pass
Fore-Aft Acceleration	-15	15	g's	7.2	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
X Accelerometer	Endevco	P63861	7/1/2025	12/28/2025
Y Accelerometer	Endevco	P49216	7/1/2025	12/28/2025
Z Accelerometer	Endevco	P51303	7/1/2025	12/28/2025

Resultant Acceleration





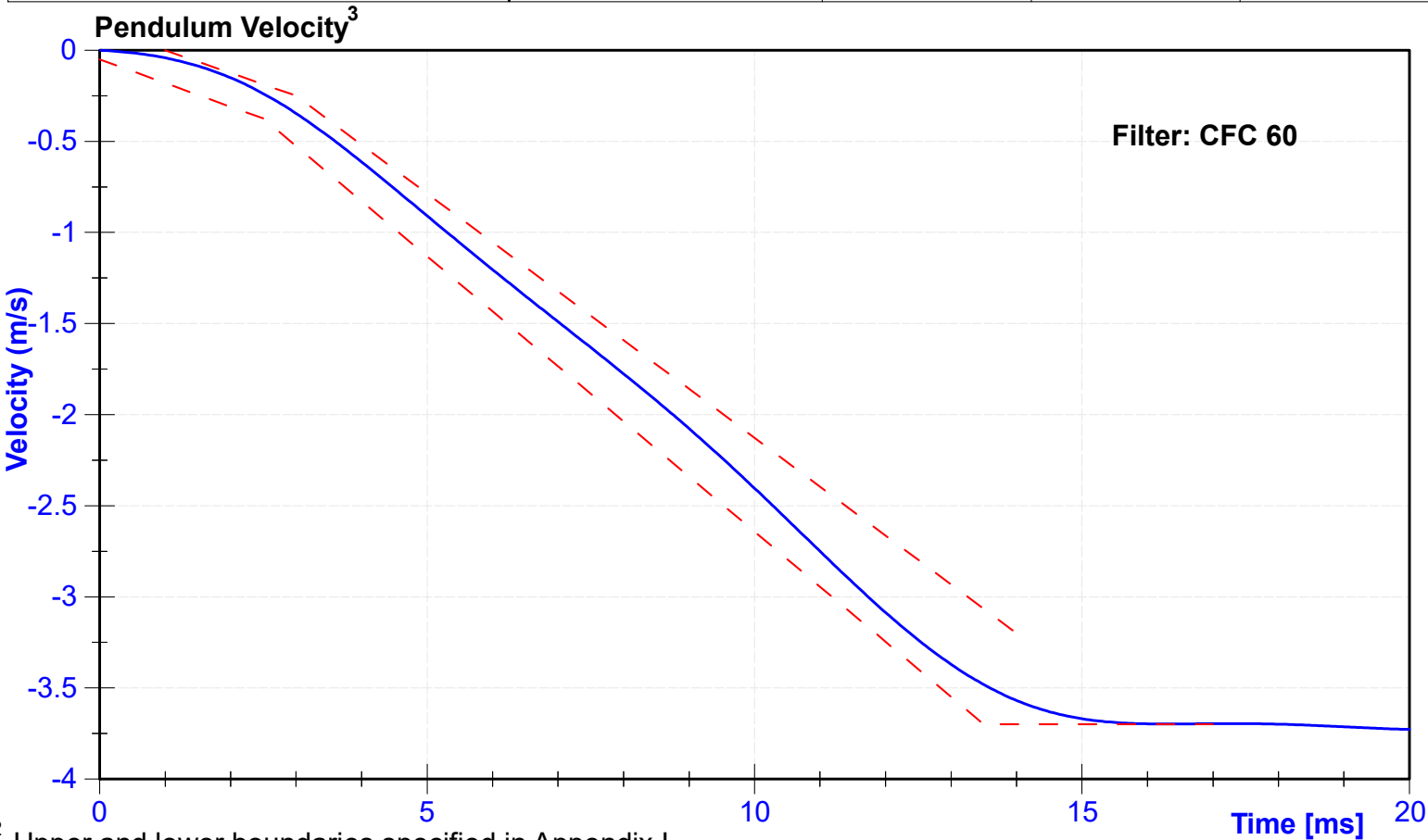
ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	F033	Laboratory Supervisor	J. Kinderman

Results

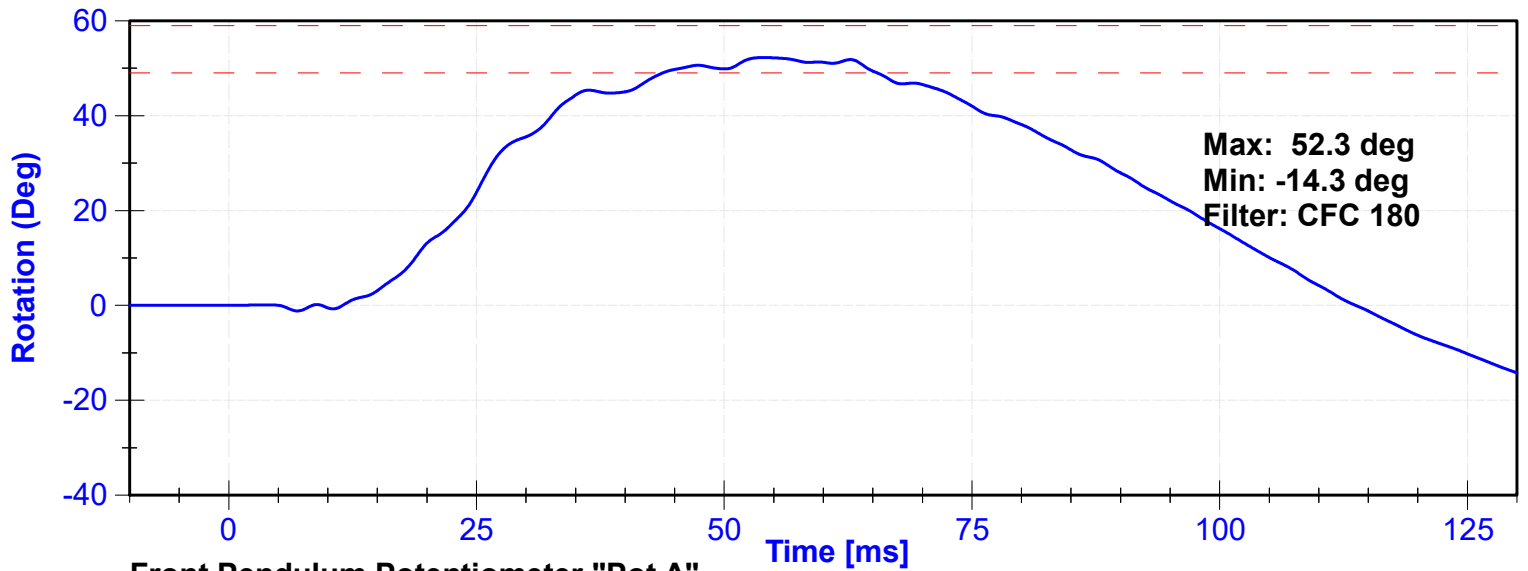
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	51	Pass
Velocity	3.3	3.5	m/s	3.49	Pass
Lateral Neck Rotation	49	59	deg	52.3	Pass
Time at Maximum Rotation	54	66	ms	54.0	Pass
Time of Rotation Decay from Maximum	53	88	ms	59.8	Pass
Pendulum Velocity Overall Corridor	Lower Boundary ¹	Upper Boundary ²	m/s	See Plot ³	Pass

Transducer Calibrations

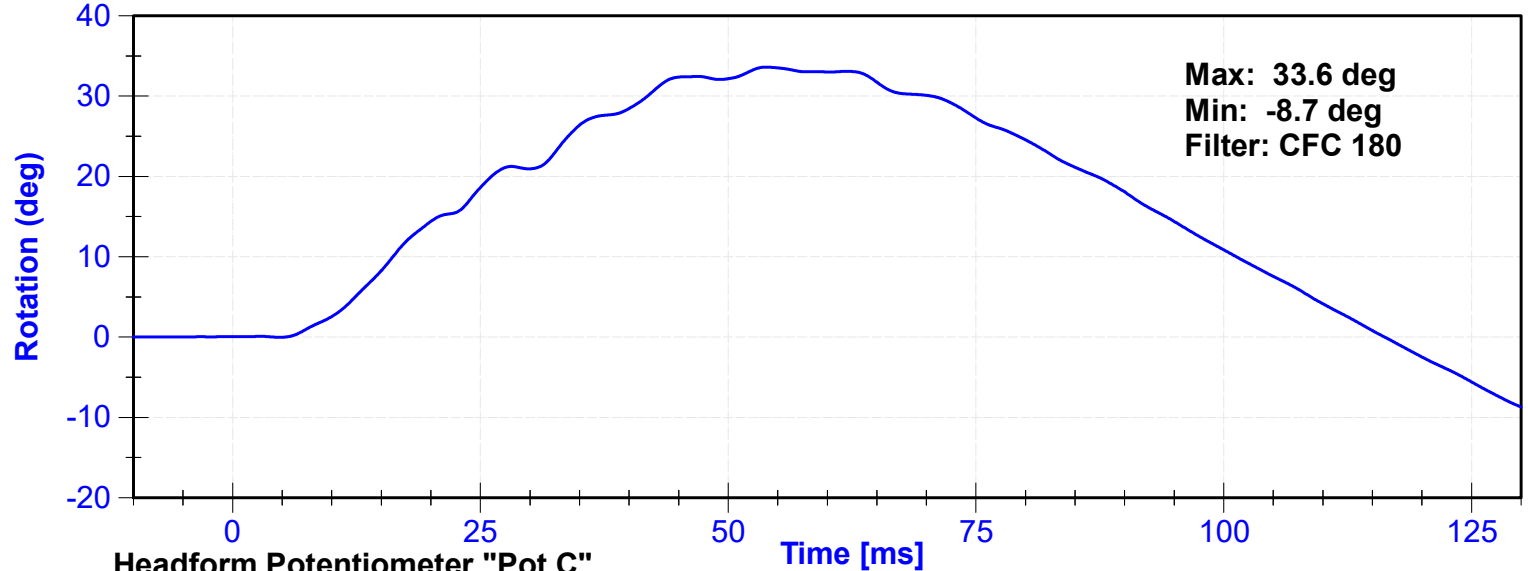
Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	C16646	10/17/2024	10/17/2025
Front Pendulum Potentiometer	Sfernice	2247	9/13/2024	9/13/2025
Headform Potentiometer	Sfernice	095	9/13/2024	9/13/2025



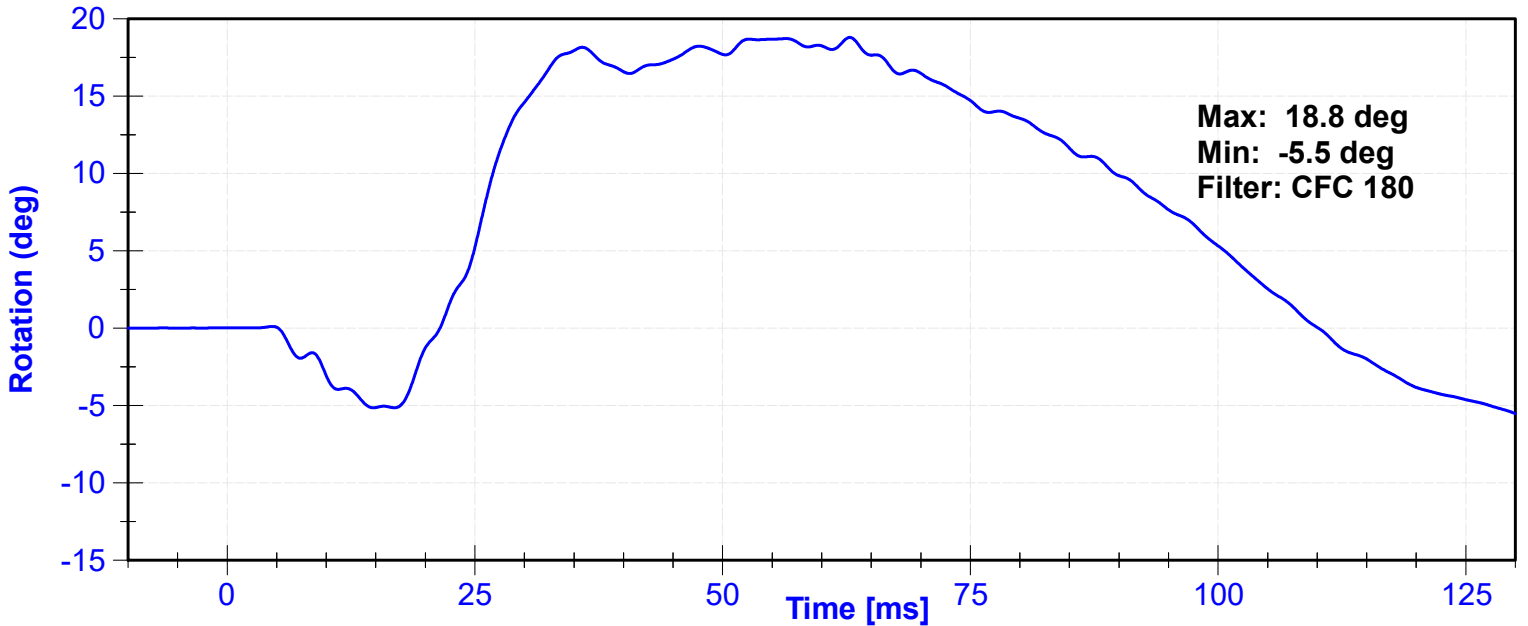
Neck Rotation



Front Pendulum Potentiometer "Pot A"



Headform Potentiometer "Pot C"



Appendix I

² Upper Boundary Corridor		¹ Lower Boundary Corridor	
Time (ms)	Velocity (m/s)	Time (ms)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.0	-0.25	2.5	-0.375
14.0	-3.20	13.5	-3.7
		17.0	-3.7

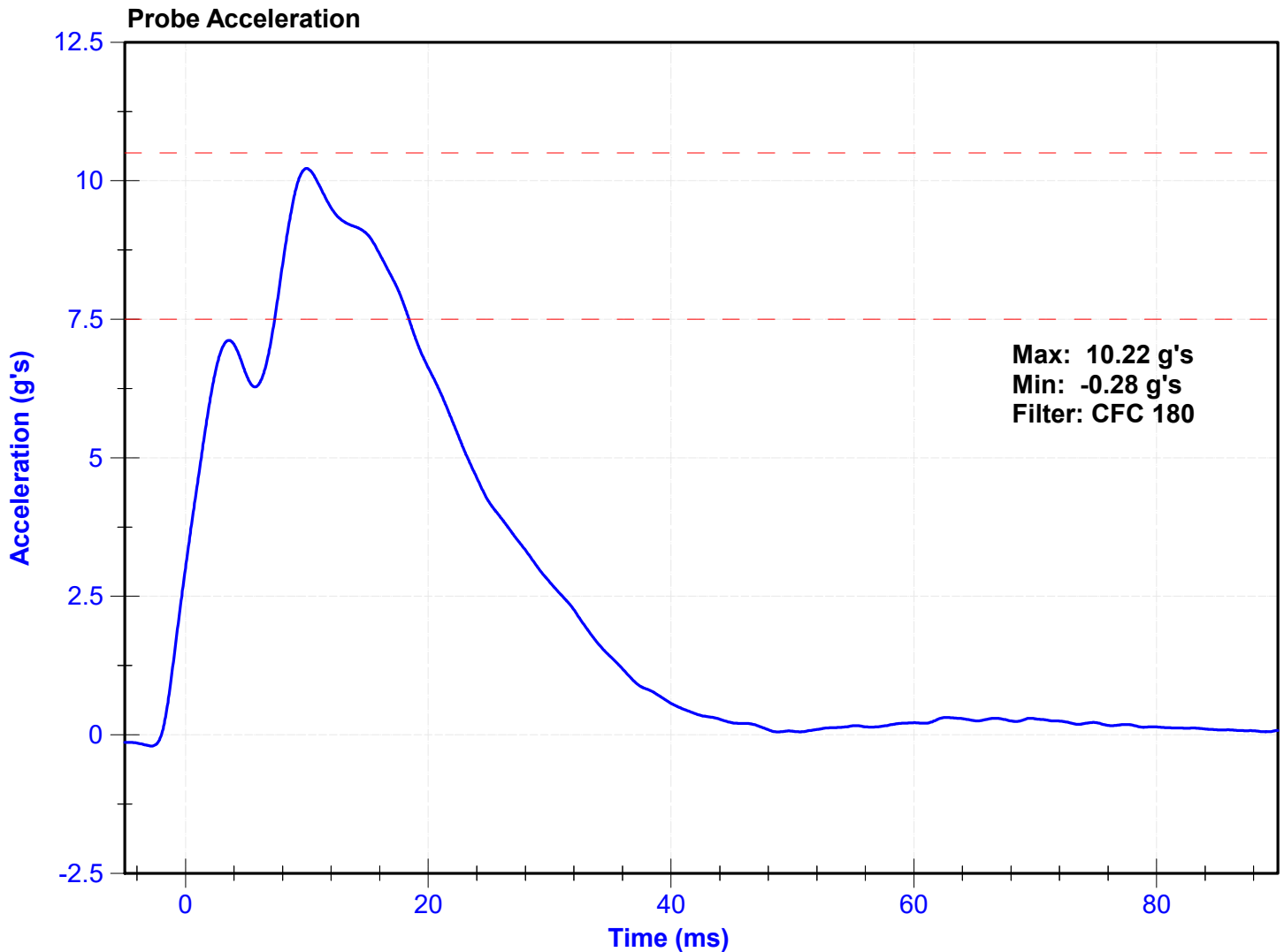
ATD Manufacturer	FTSS	Test Technician	W. Brokx
ATD Serial Number	F033	Laboratory Supervisor	J. Kinderman

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	52	Pass
Velocity	4.2	4.4	m/s	4.27	Pass
Probe Acceleration	7.5	10.5	g's	10.22	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accelerometer	Endevco	18566	5/7/2025	11/3/2025



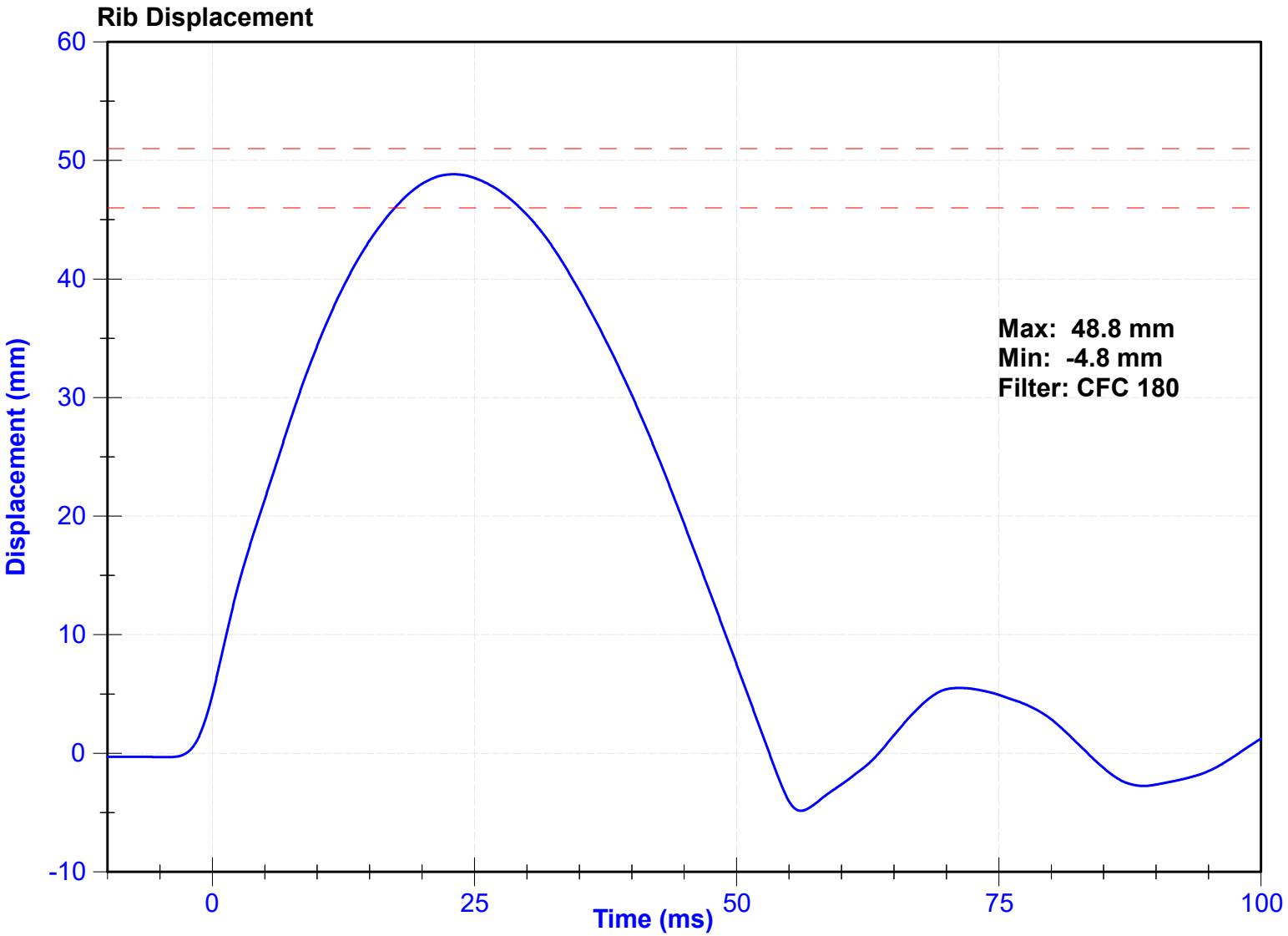
ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	F033	Laboratory Supervisor	J. Kinderman

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	52	Pass
Rib Displacement	46	51	mm	48.8	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	179GFE	7/1/2025	12/30/2025



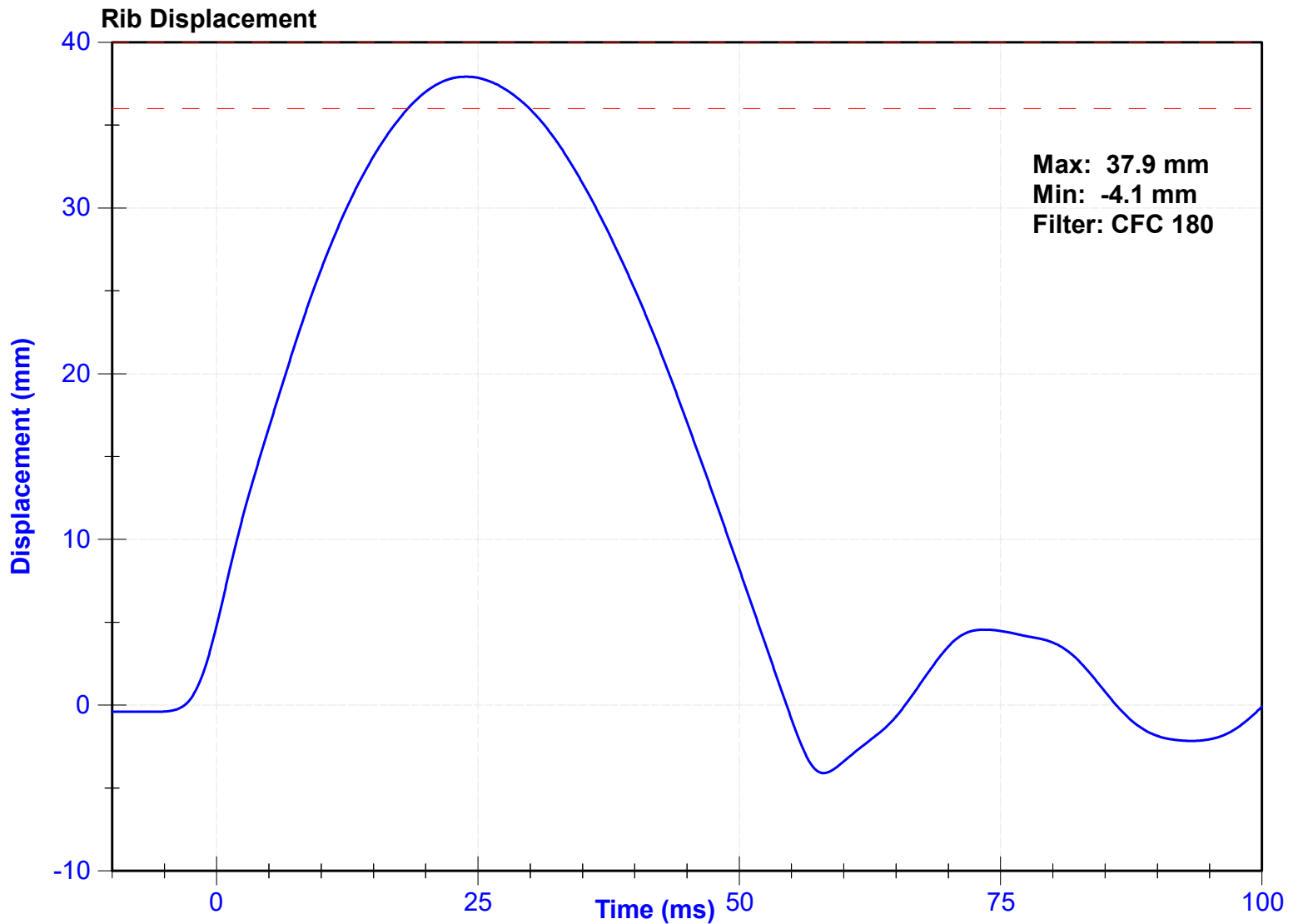
ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	F033	Laboratory Supervisor	J. Kinderman

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	52	Pass
Rib Displacement	36	40	mm	37.9	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	179GFE	7/1/2025	12/30/2025



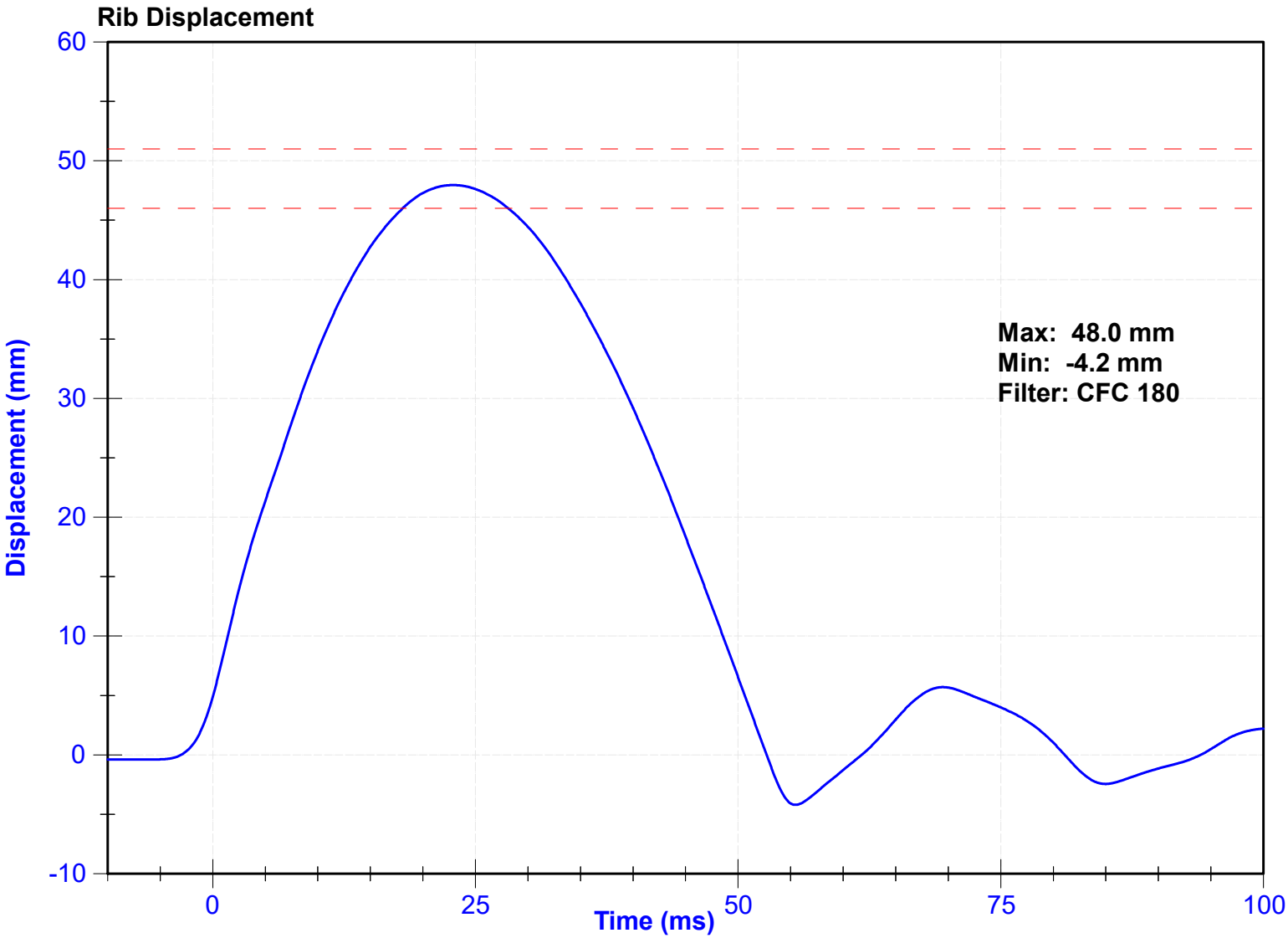
ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	F033	Laboratory Supervisor	J. Kinderman

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	52	Pass
Rib Displacement	46	51	mm	48.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	185GFE	7/1/2025	12/30/2025



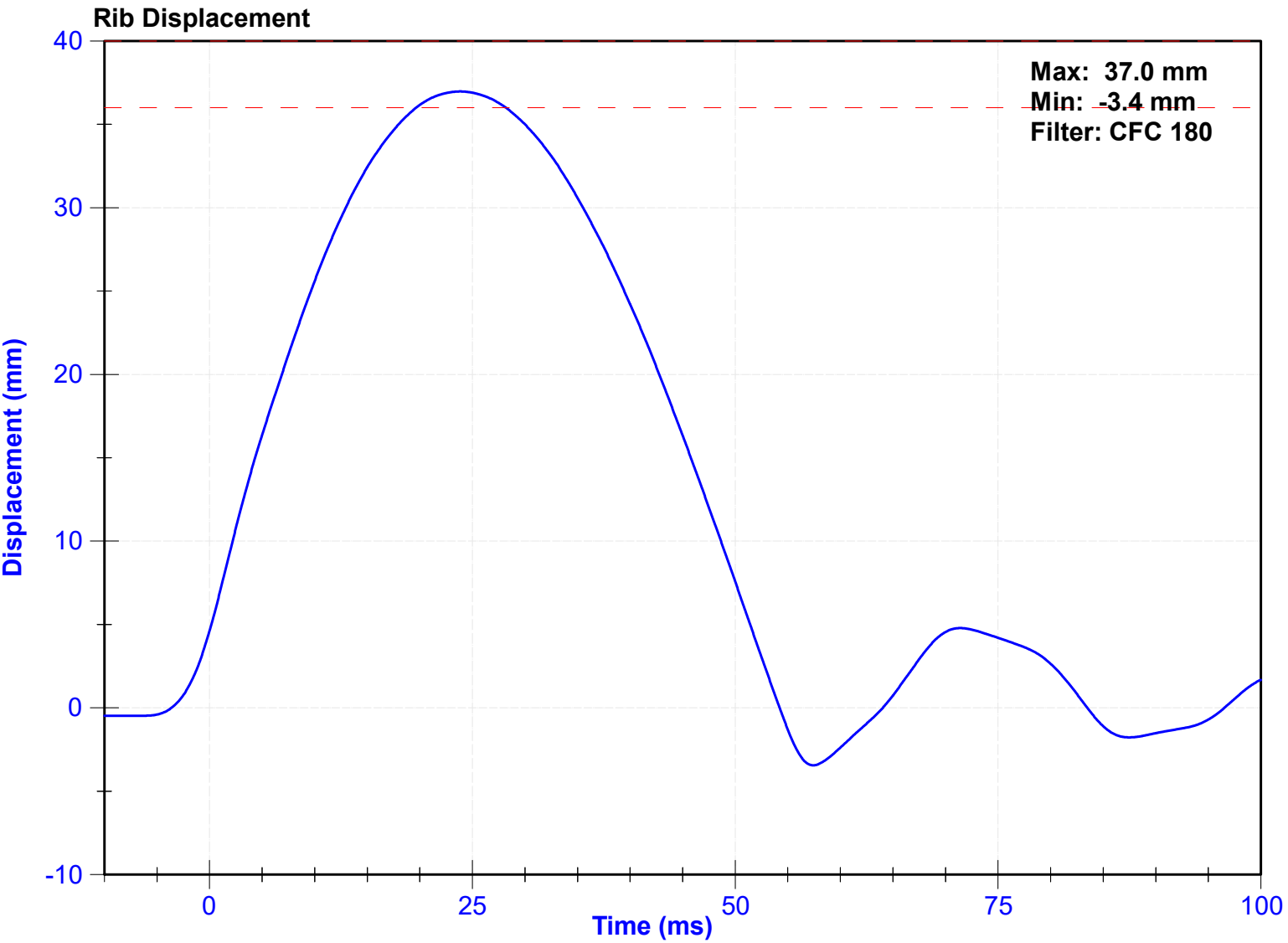
ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	F033	Laboratory Supervisor	J. Kinderman

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	52	Pass
Rib Displacement	36	40	mm	37.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	185GFE	7/1/2025	12/30/2025



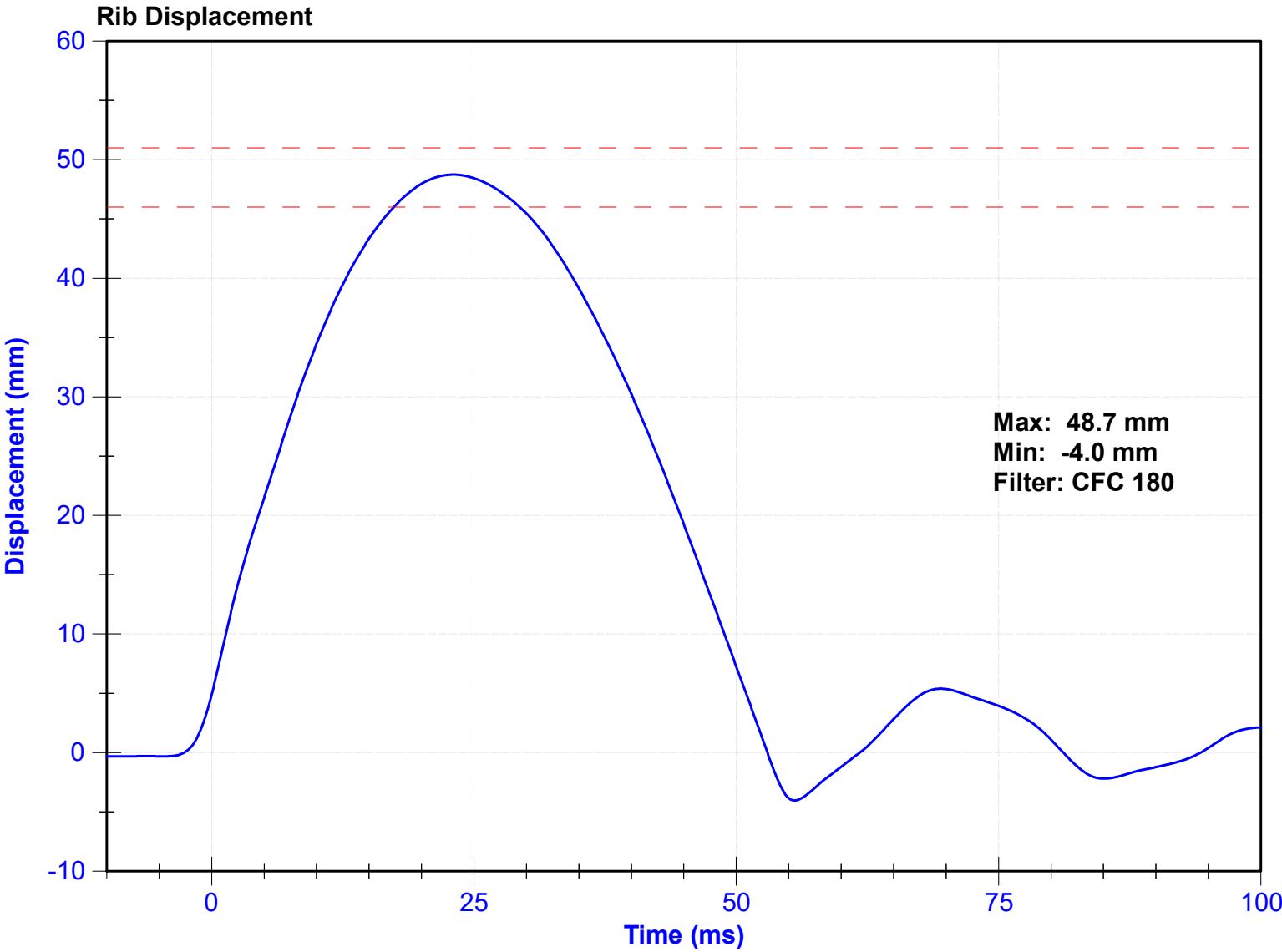
ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	F033	Laboratory Supervisor	J. Kinderman

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	52	Pass
Rib Displacement	46	51	mm	48.7	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	184GFE	7/1/2025	12/30/2025



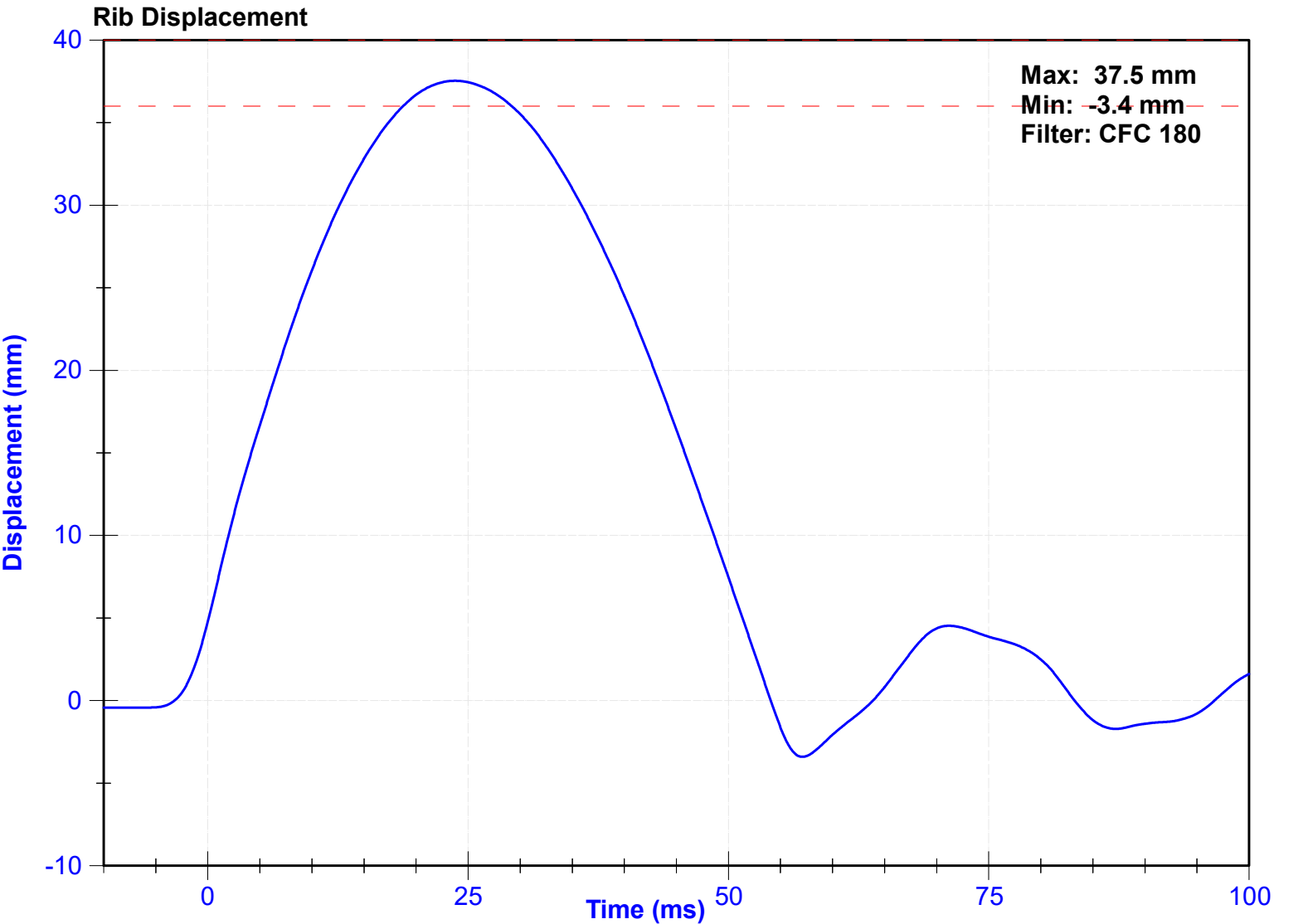
ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	F033	Laboratory Supervisor	J. Kinderman

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	52	Pass
Rib Displacement	36	40	mm	37.5	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	184GFE	7/1/2025	12/30/2025



ATD Manufacturer	FTSS	Test Technician	W. Brokx
ATD Serial Number	F033	Laboratory Supervisor	J. Kinderman

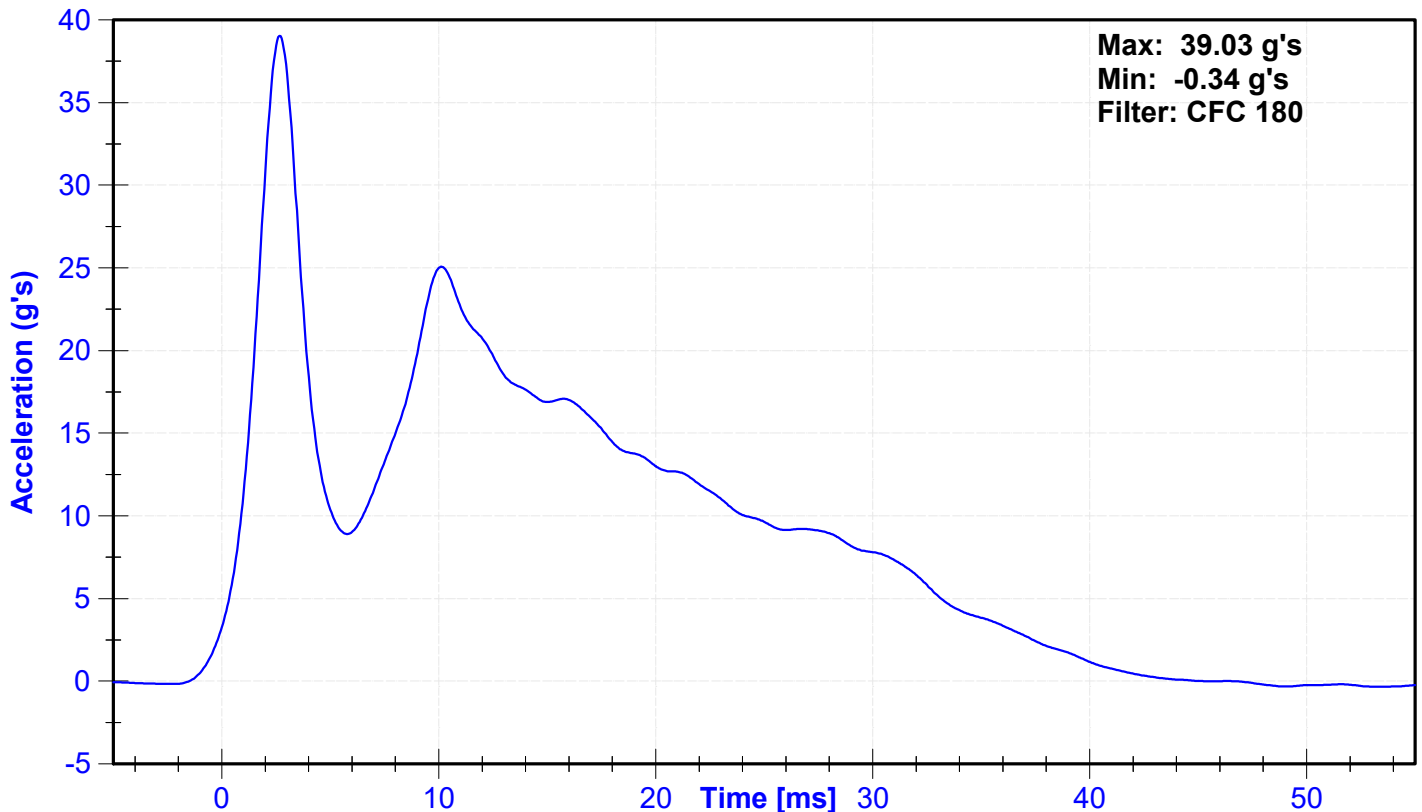
Results

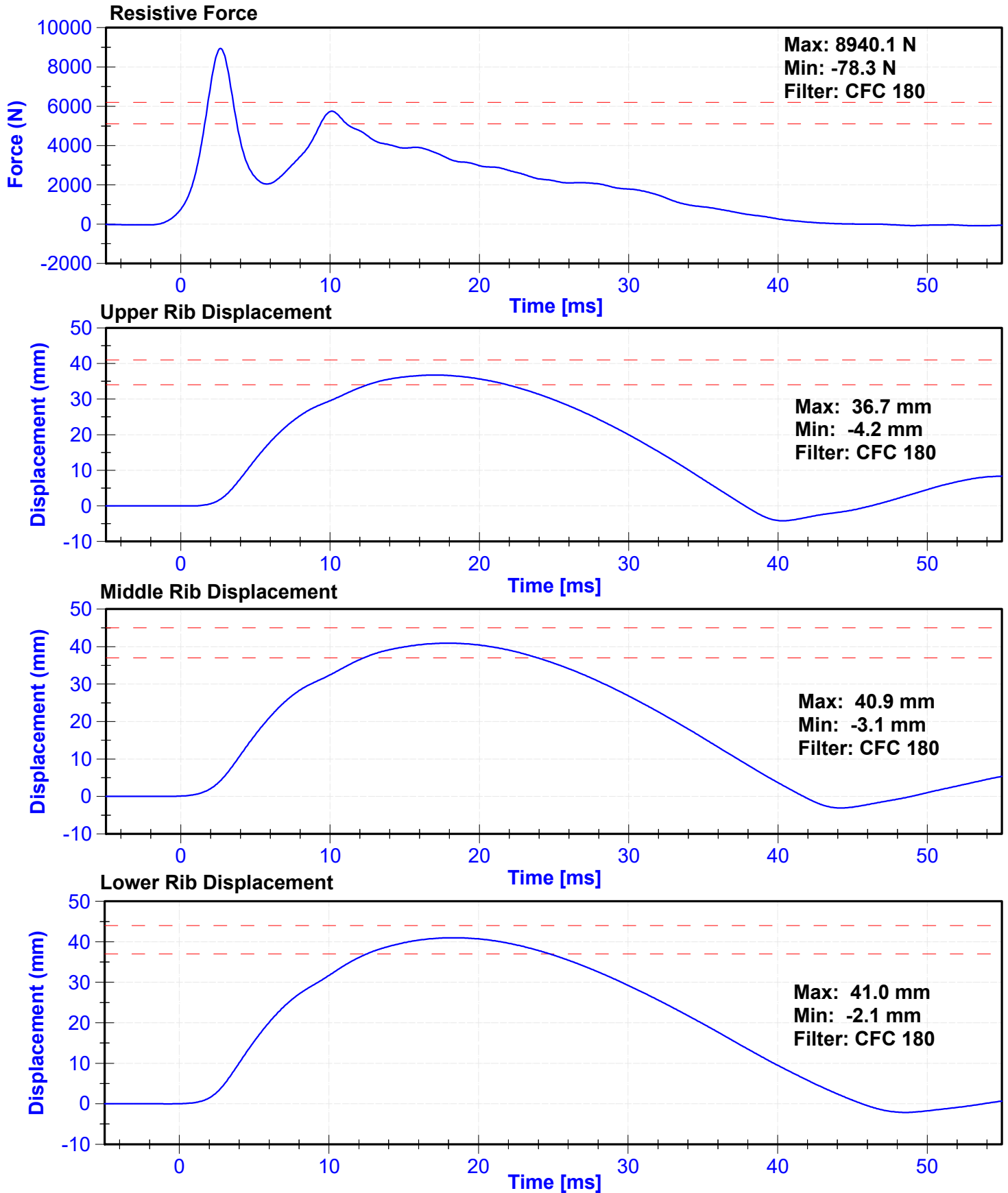
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	52	Pass
Velocity	5.4	5.6	m/s	5.46	Pass
Resistive Force after 6ms	5100	6200	N	5743.9	Pass
Upper Thorax Rib Deflection	34	41	mm	36.7	Pass
Mid Thorax Rib Deflection	37	45	mm	40.9	Pass
Lower Thorax Rib Deflection	37	44	mm	41.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accelerometer	Endevco	18566	5/7/2025	11/3/2025
Upper Thorax Rib Potentiometer	Honeywell	179GFE	7/1/2025	12/30/2025
Middle Thorax Rib Potentiometer	Honeywell	185GFE	7/1/2025	12/30/2025
Lower Thorax Rib Potentiometer	Honeywell	184GFE	7/1/2025	12/30/2025

Probe Acceleration





ATD Manufacturer	FTSS	Test Technician	W. Brokx
ATD Serial Number	F033	Laboratory Supervisor	J. Kinderman

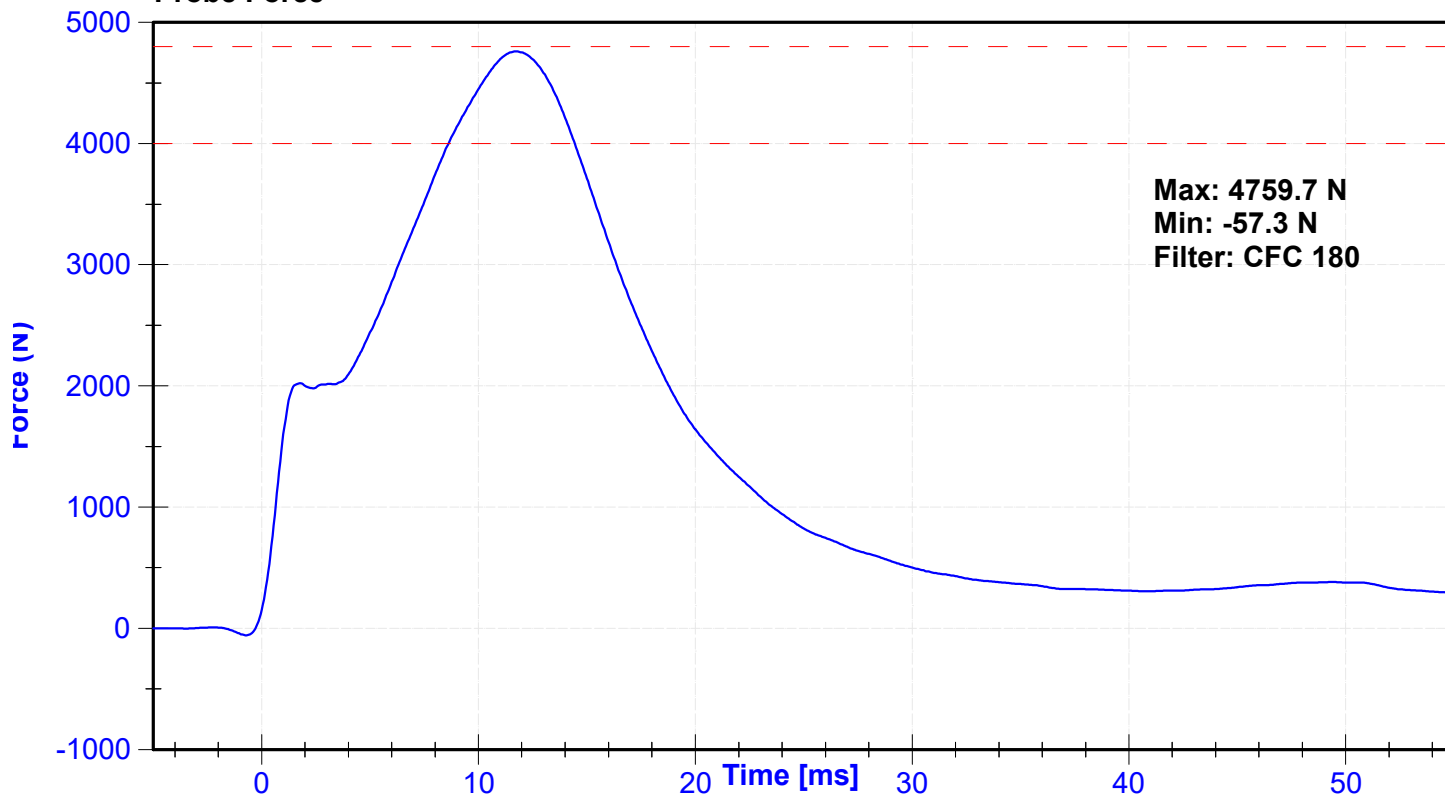
Results

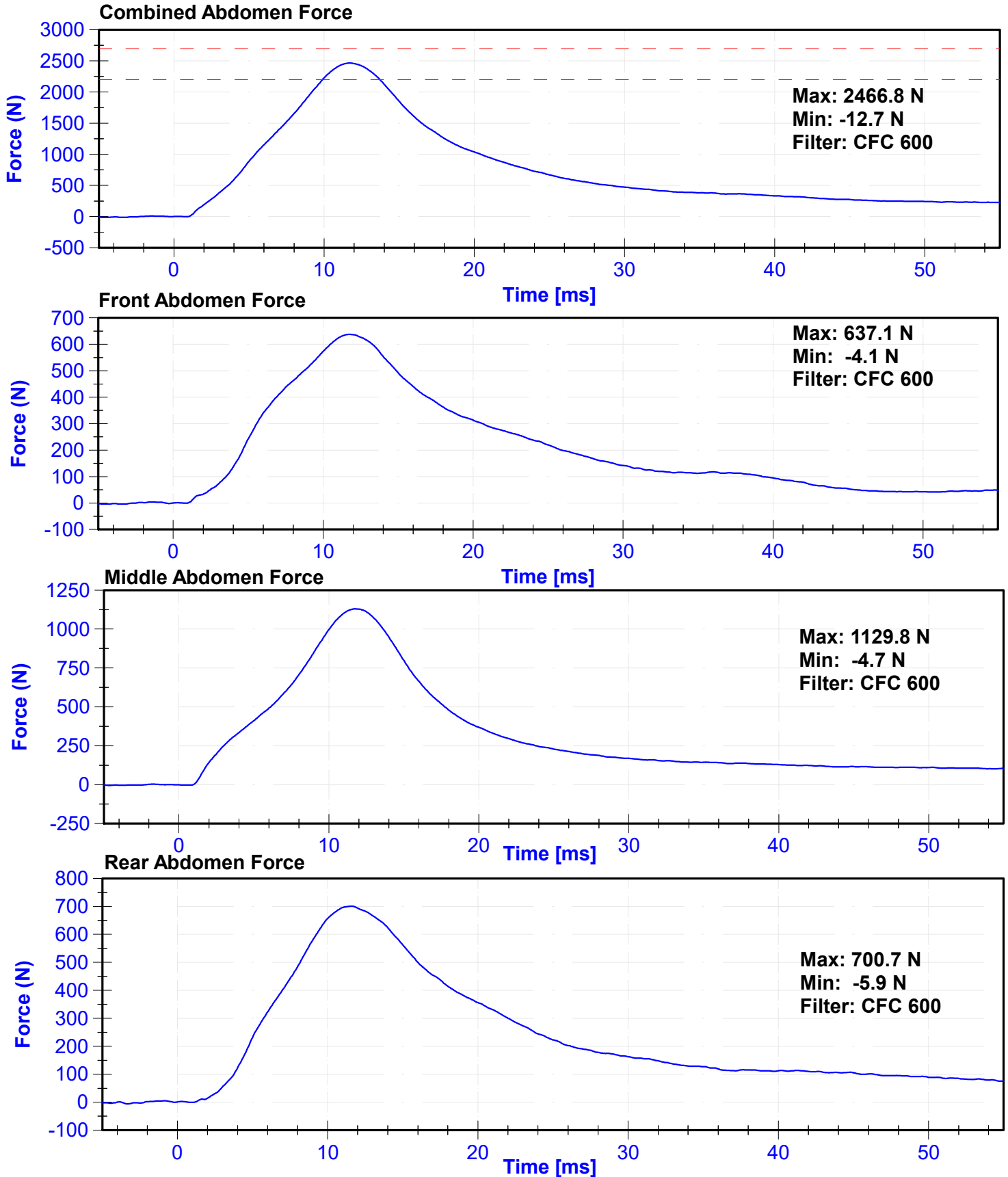
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	52	Pass
Velocity	3.9	4.1	m/s	4.00	Pass
Combined Abdomen Force	2200	2700	N	2466.8	Pass
Time at Peak Abdomen Force	10.0	12.3	ms	11.70	Pass
Resistive Probe Force	4000	4800	N	4759.7	Pass
Time at Peak Resistive Force	10.6	13.0	ms	11.75	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18566	5/7/2025	11/3/2025
Front Abdomen Load Cell	Denton	1523	10/28/2024	10/28/2025
Middle Abdomen Load Cell	Denton	1524	10/28/2024	10/28/2025
Rear Abdomen Load Cell	Denton	1530	10/28/2024	10/28/2025

Probe Force





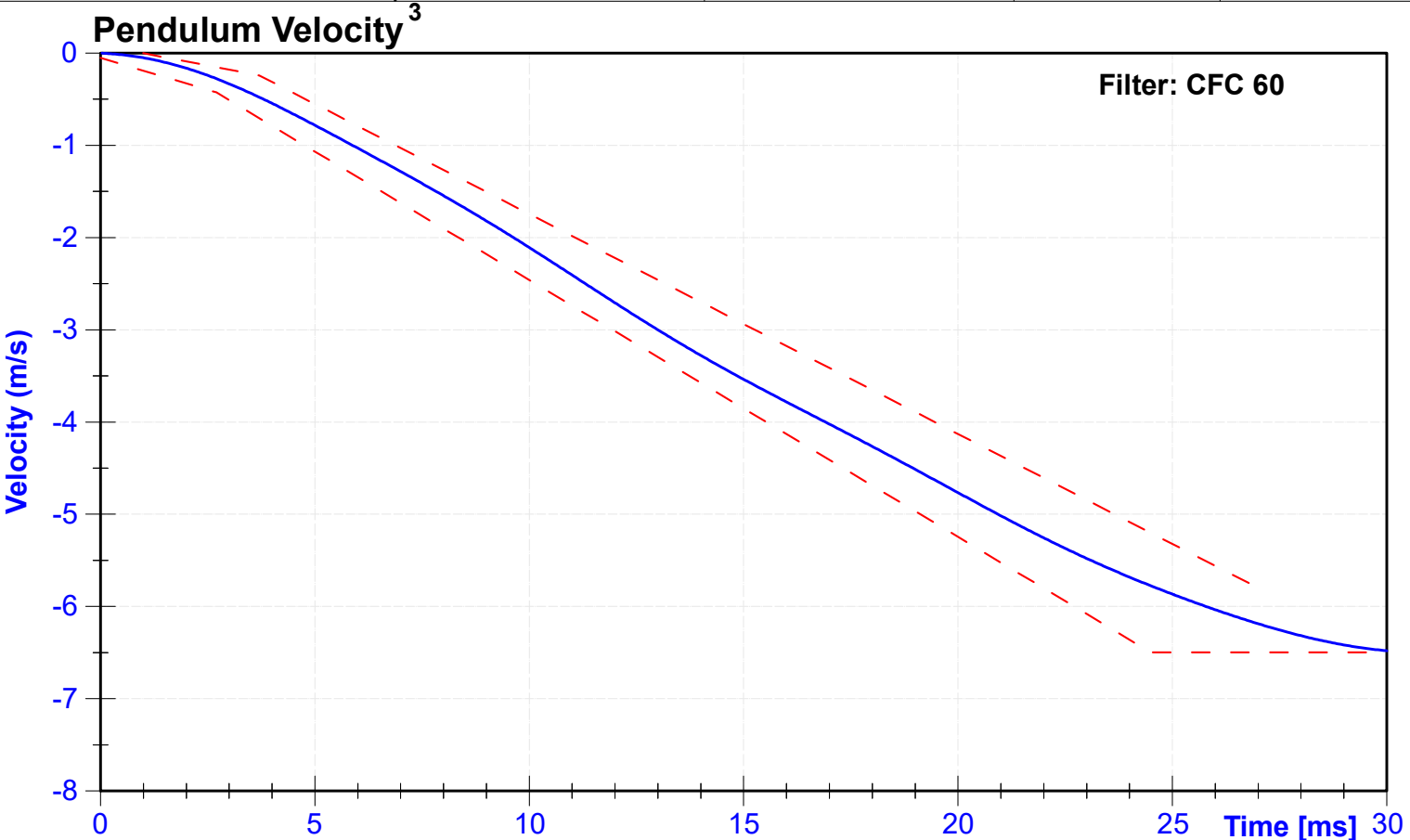
ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	F033	Laboratory Supervisor	J. Kinderman

Results

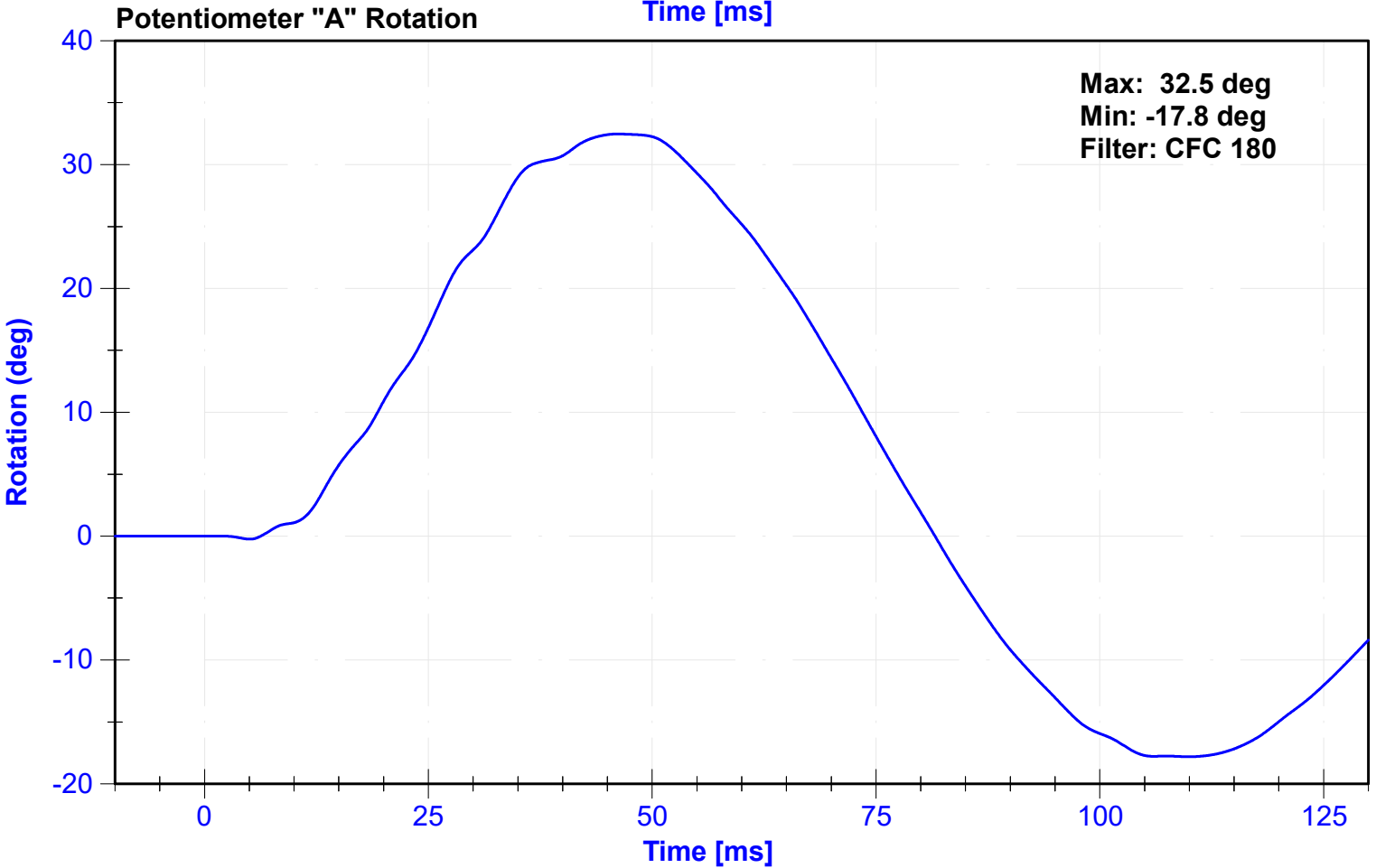
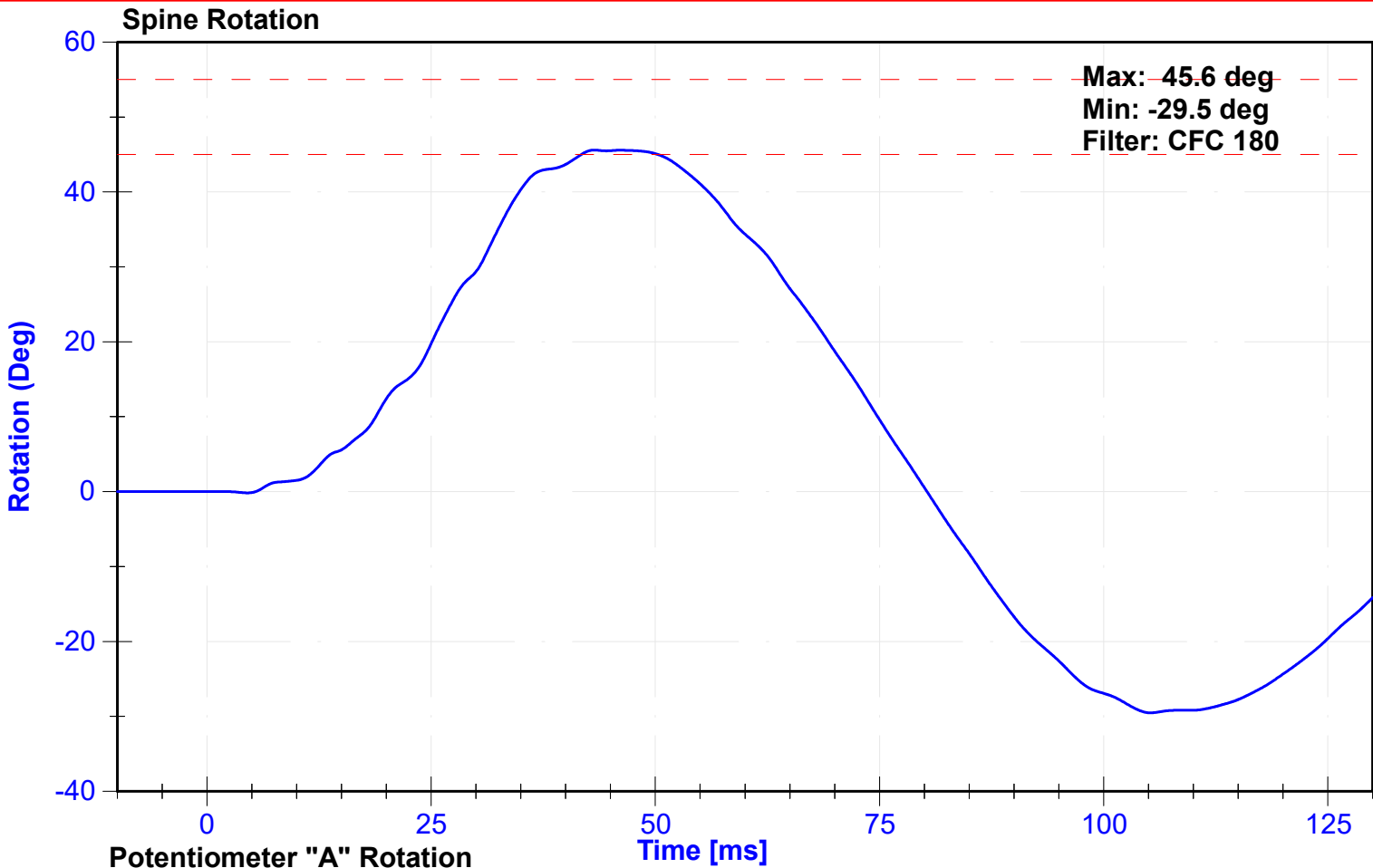
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	51	Pass
Velocity	5.95	6.15	m/s	6.142	Pass
Lateral Spine Rotation	45	55	deg	45.6	Pass
Time at Maximum Rotation	39	53	ms	43.2	Pass
Time of Decay to Zero Degrees	37	57	ms	37.1	Pass
Pendulum Velocity Overall Corridor	Lower Boundary ¹	Upper Boundary ²	m/s	See Plot ³	Pass

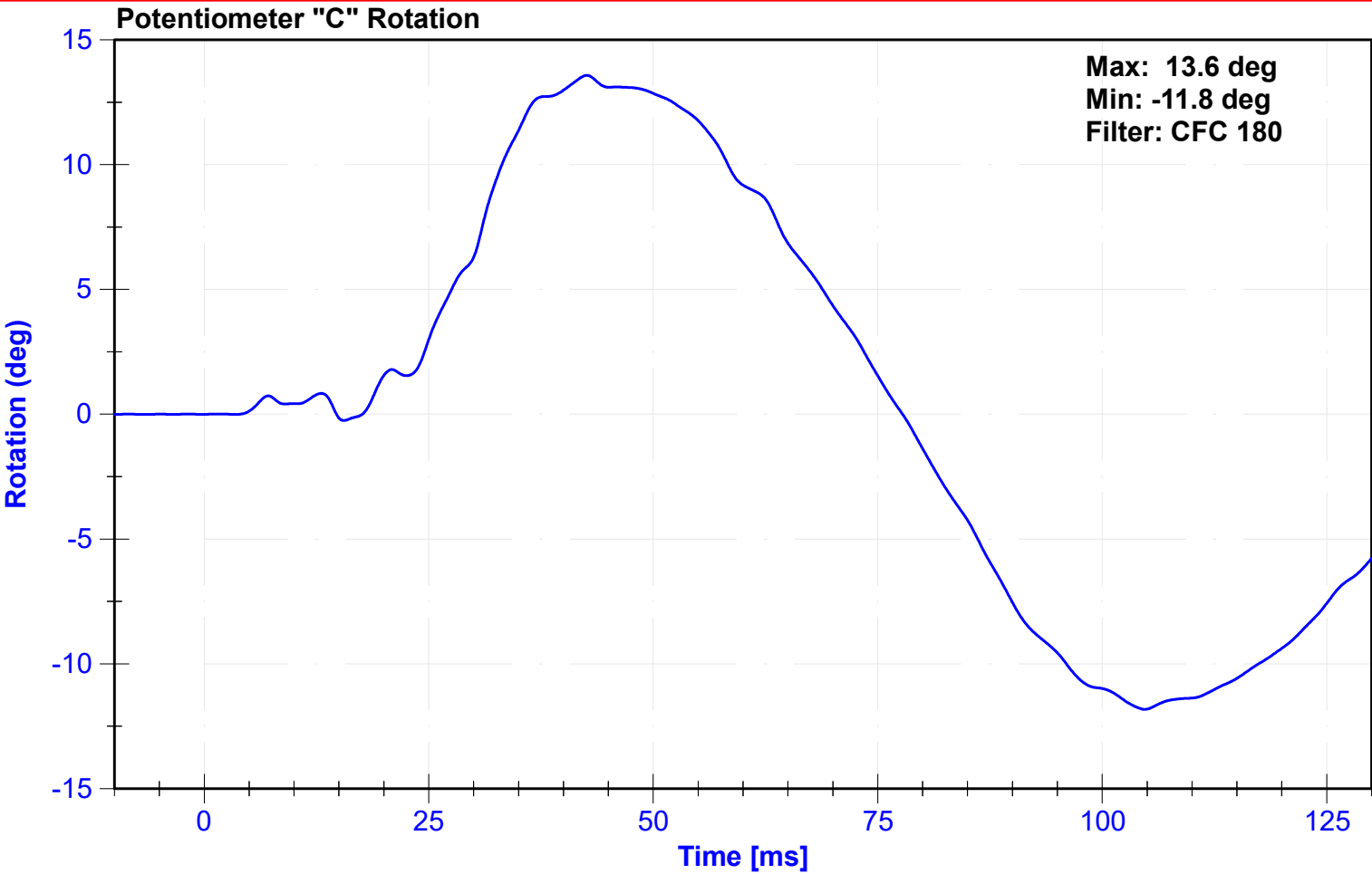
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	C16646	10/17/2024	10/17/2025
Pendulum "A" Potentiometer	Sfernice	2247	9/13/2024	9/13/2025
Condyle "B" Potentiometer	Sfernice	095	9/13/2024	9/13/2025



^{1,2} Upper and lower boundaries specified in Appendix I C-20





Appendix I

² Upper Boundary Corridor		¹ Lower Boundary Corridor	
Time (ms)	Velocity (m/s)	Time (ms)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.7	-0.24	2.7	-0.425
27.0	-5.80	24.5	-6.5
		30.0	-6.5

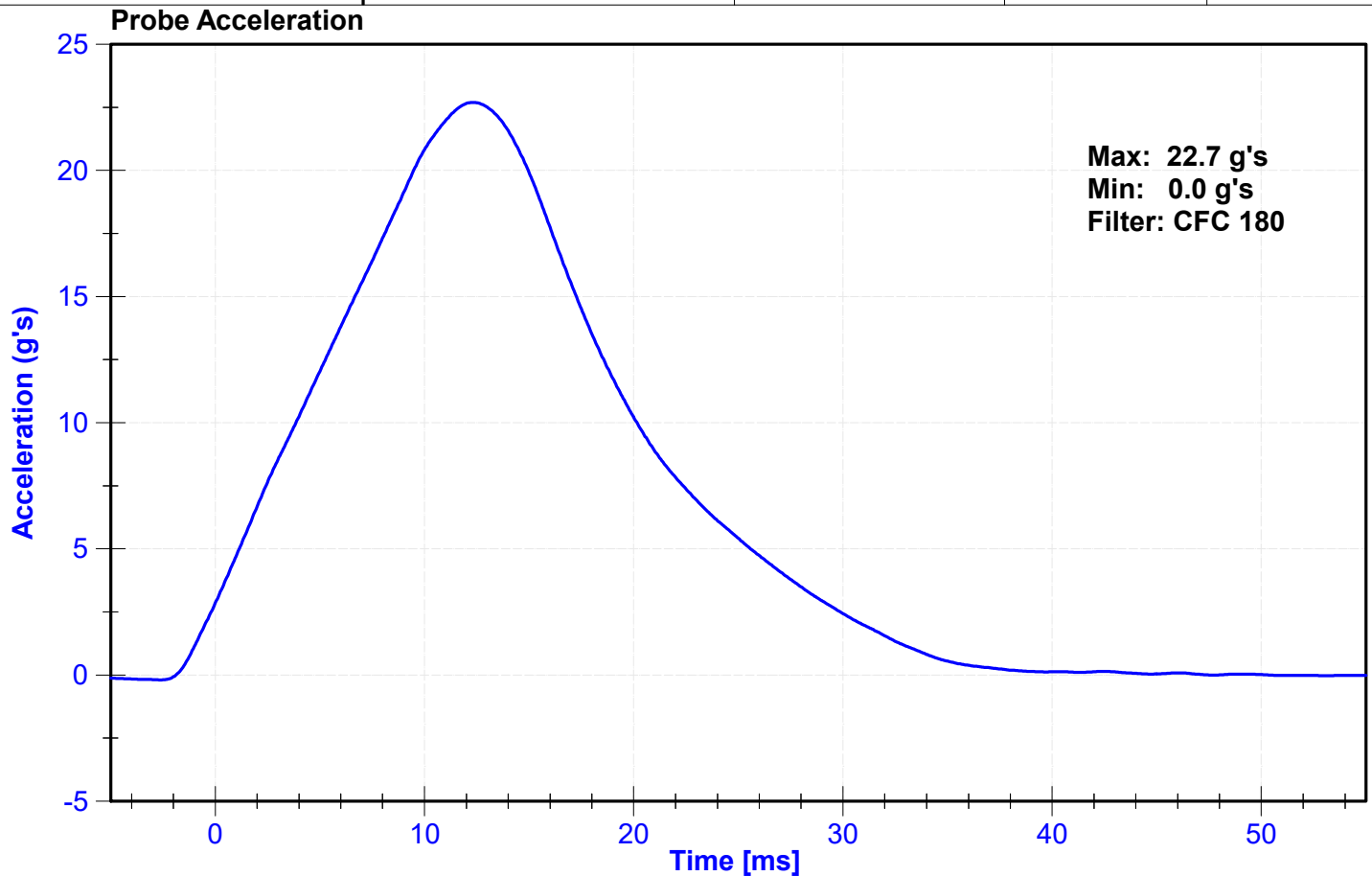
ATD Manufacturer	FTSS	Test Technician	W. Brokx
ATD Serial Number	F033	Laboratory Supervisor	J. Kinderman

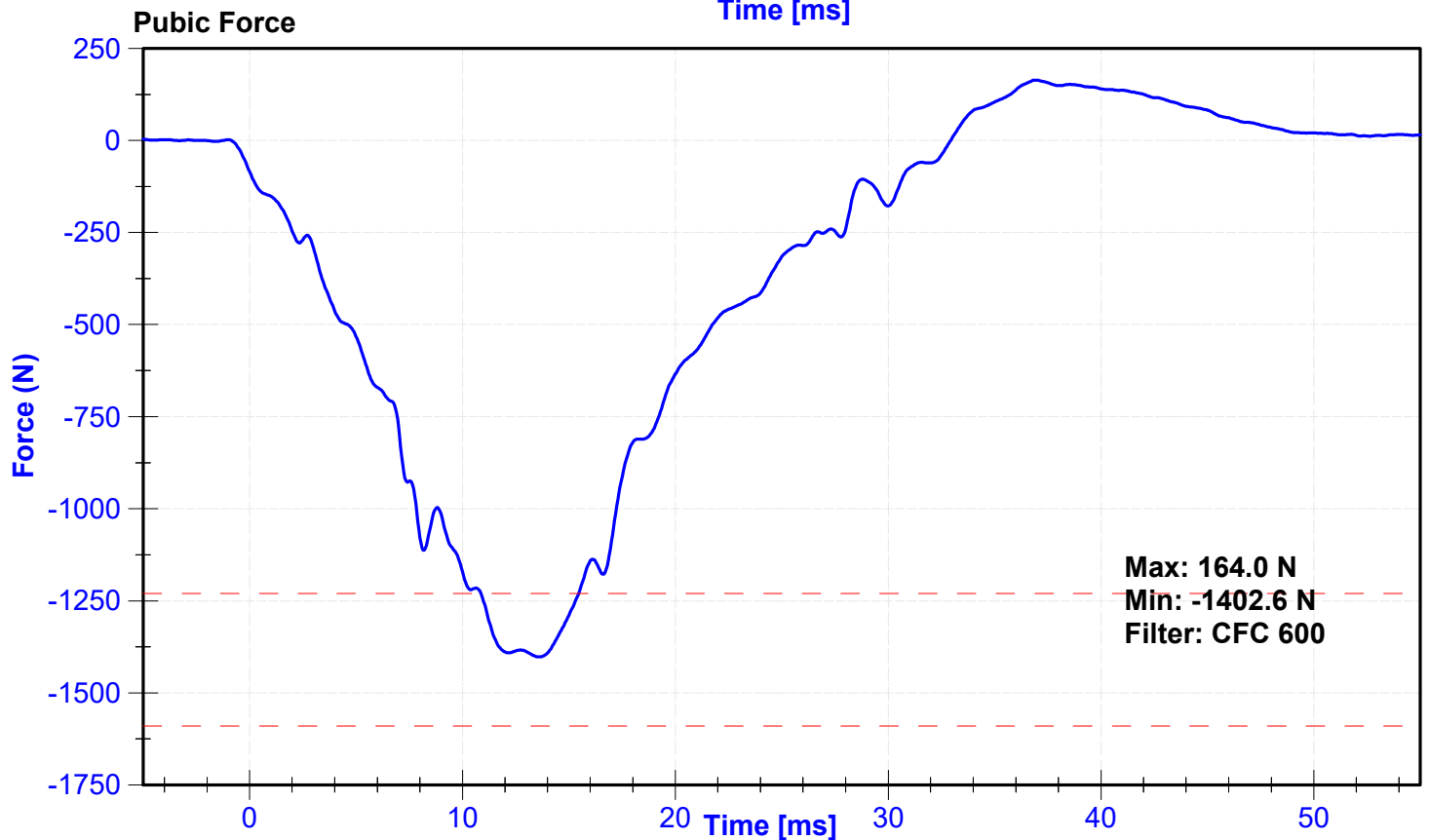
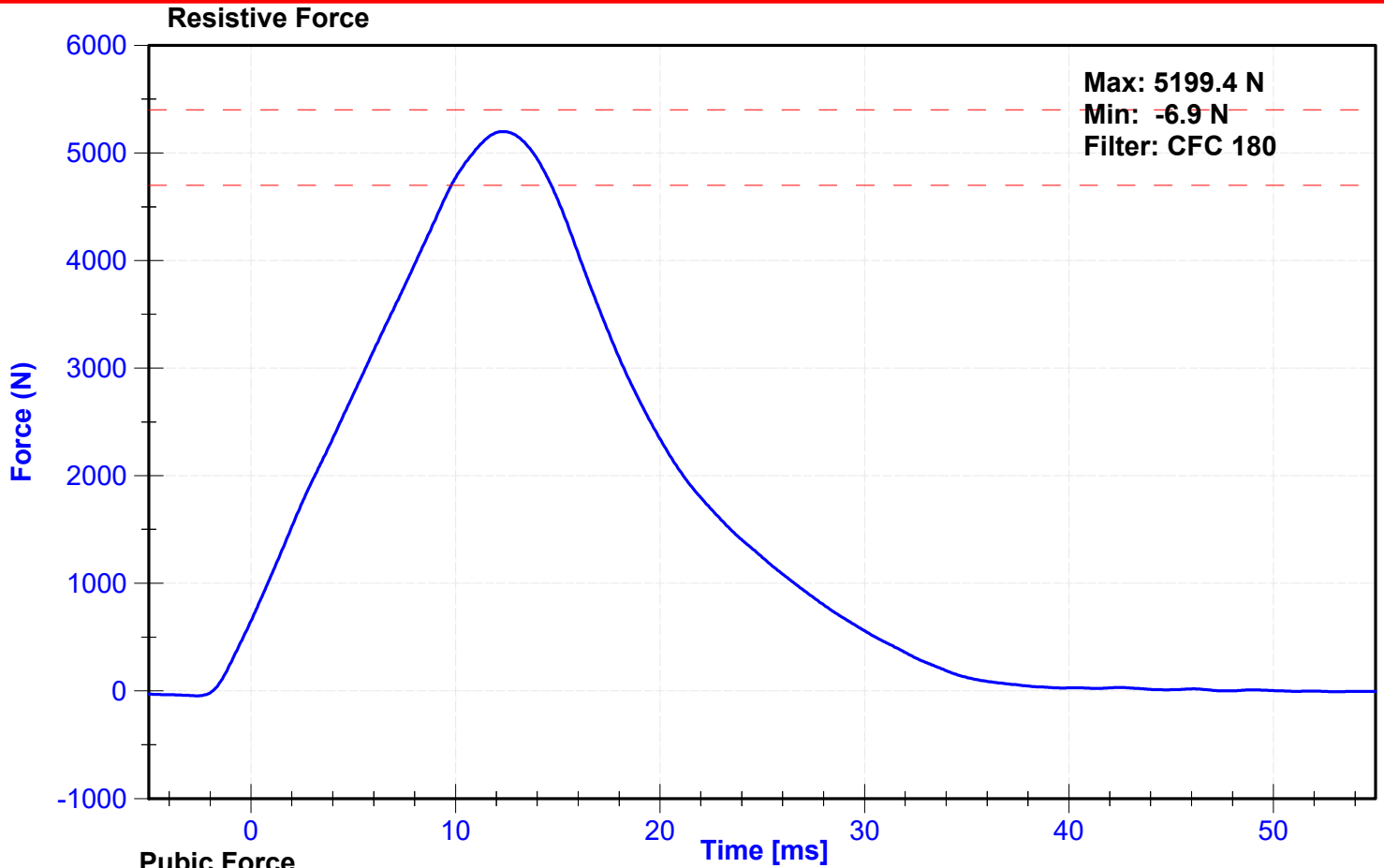
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	52	Pass
Velocity	4.2	4.4	m/s	4.36	Pass
Resistive Force	4700	5400	N	5199.4	Pass
Time at Peak Resistive Force	11.8	16.1	ms	12.35	Pass
Pubic Force	-1590	-1230	N	-1402.6	Pass
Time at Peak Pubic Force	12.2	17.0	ms	13.60	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18566	5/7/2025	11/3/2025
Pubic Load Cell	Denton	458-FY	10/28/2024	10/28/2025





CALIBRATION TEST RESULTS

PRE-TEST

SID-IIS 5TH PERCENTILE FEMALE – PASSENGER ATD

SERIAL NO:DG8012

(CONFIGURED FOR LEFT SIDE IMPACT)

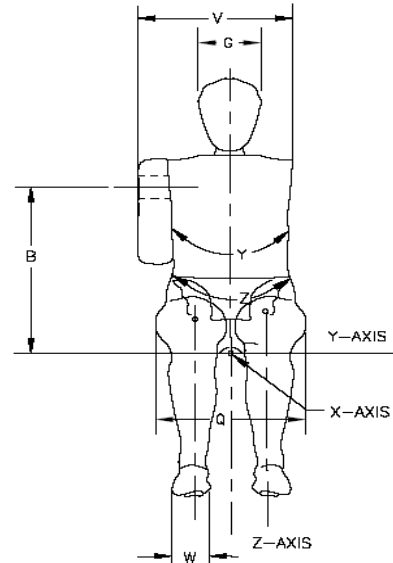
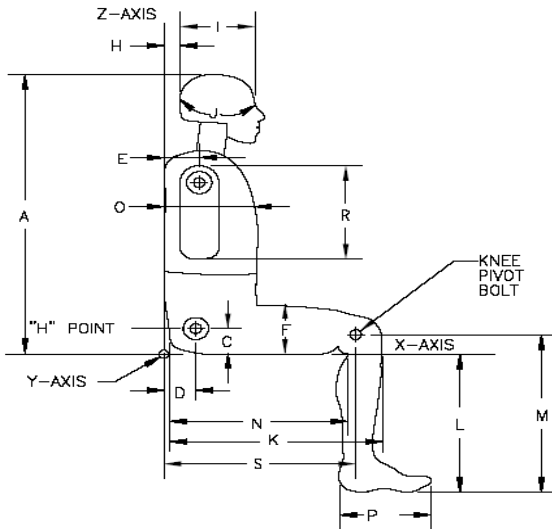


External Measurements - SID-IIs

Technician: **J. Rios**

Date: **07/09/2025**

Dummy Serial Number: **DG8012**



Symbol	Description	Specification (mm)		Result (mm)	Pass/Fail
A	Sitting Height	772	788	784	Pass
B	Shoulder Pivot Height	437	453	445	Pass
C	H-point Height	79	89	85	Pass
D	H-point from seatback	141	151	145	Pass
E	Shoulder Pivot from Backline	97	107	104	Pass
F	Thigh Clearance	119	135	123	Pass
G	Head Breadth	140	148	142	Pass
H	Head Back from Backline	40	46	42	Pass
I	Head Depth	178	188	184	Pass
J	Head Circumference	541	551	548	Pass
K	Buttock to Knee Length	514	540	524	Pass
L	Popliteal Height	343	369	354	Pass
M	Knee Pivot to floor height	392	409	398	Pass
N	Buttock Popliteal Length	416	442	431	Pass
O	Chest Depth w/o jacket	195	211	206	Pass
P	Foot Length	216	232	225	Pass
Q	Hip Breadth (w/pelvic plugs)	313	323	320	Pass
R	Arm Length	249	259	256	Pass
S	Knee Joint to seatback	477	493	481	Pass
V	Shoulder Width	341	357	353	Pass
W	Foot Width	78	94	85	Pass
Y	Chest Circumference w/jacket	851	881	875	Pass
Z	Waist Circumference	761	791	783	Pass

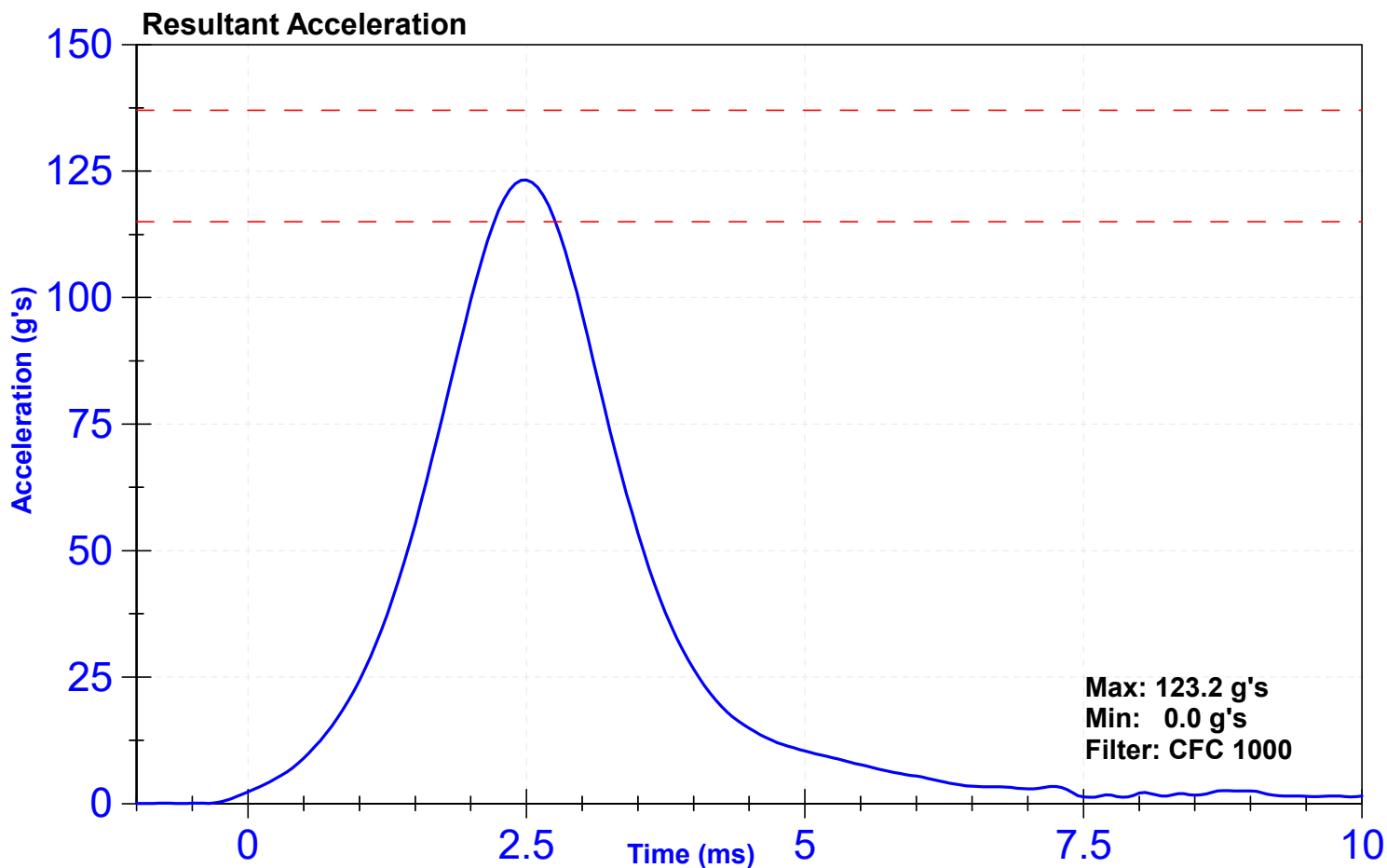
ATD Manufacturer	FTSS	Test Technician	W. Brokx
ATD Serial Number	DG8012	Laboratory Supervisor	J. Kinderman

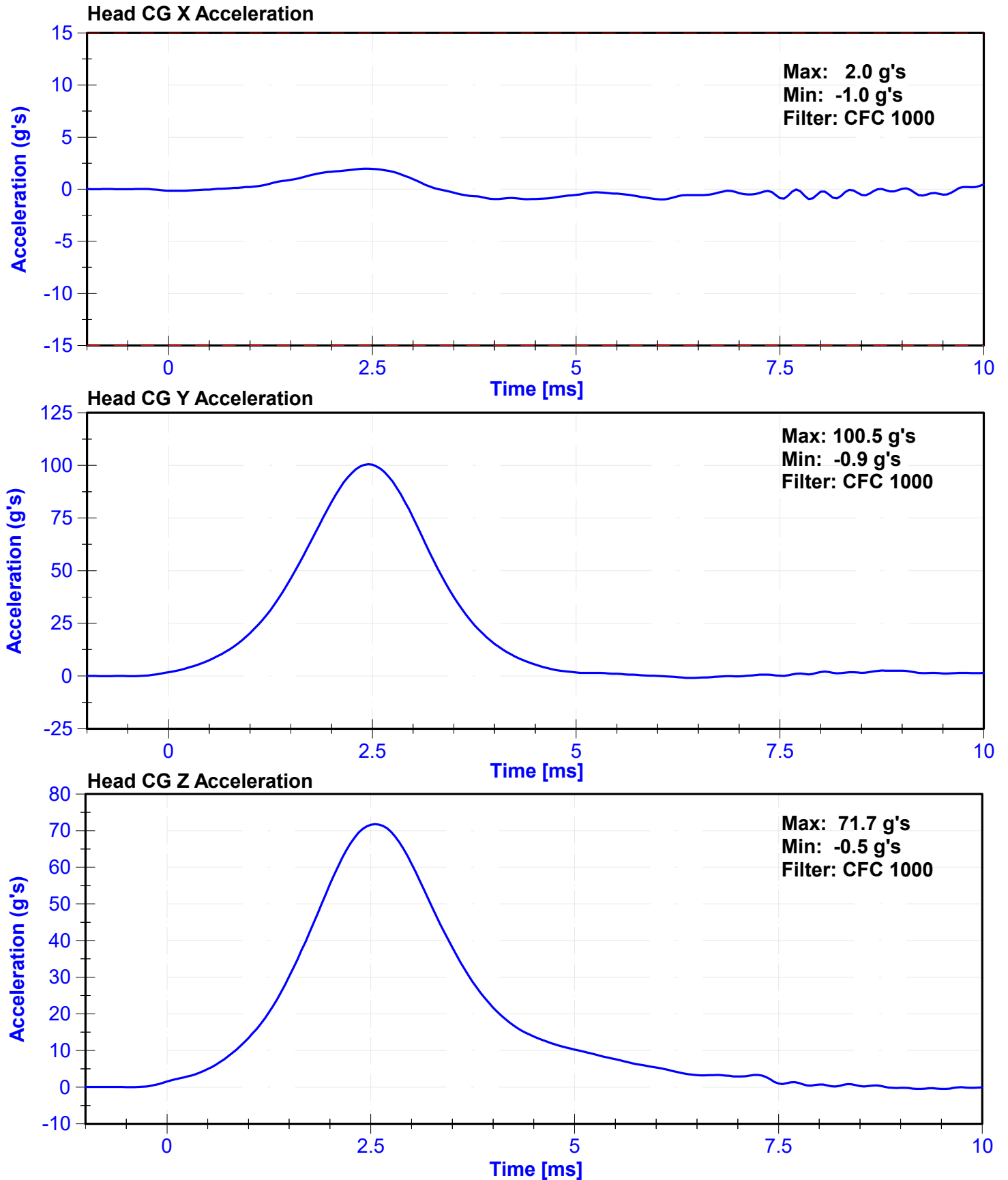
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	51	Pass
Resultant Acceleration	115	137	g's	123.2	Pass
Oscillation	0	15	%	2.7	Pass
Fore-Aft Acceleration	-15	15	g's	2.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibratio Date	Calibratio Due Date
X Accelerometer	Endevco	T21184	7/2/2025	12/29/2025
Y Accelerometer	Endevco	T31030	7/2/2025	12/29/2025
Z Accelerometer	Endevco	P83319	7/2/2025	12/29/2025





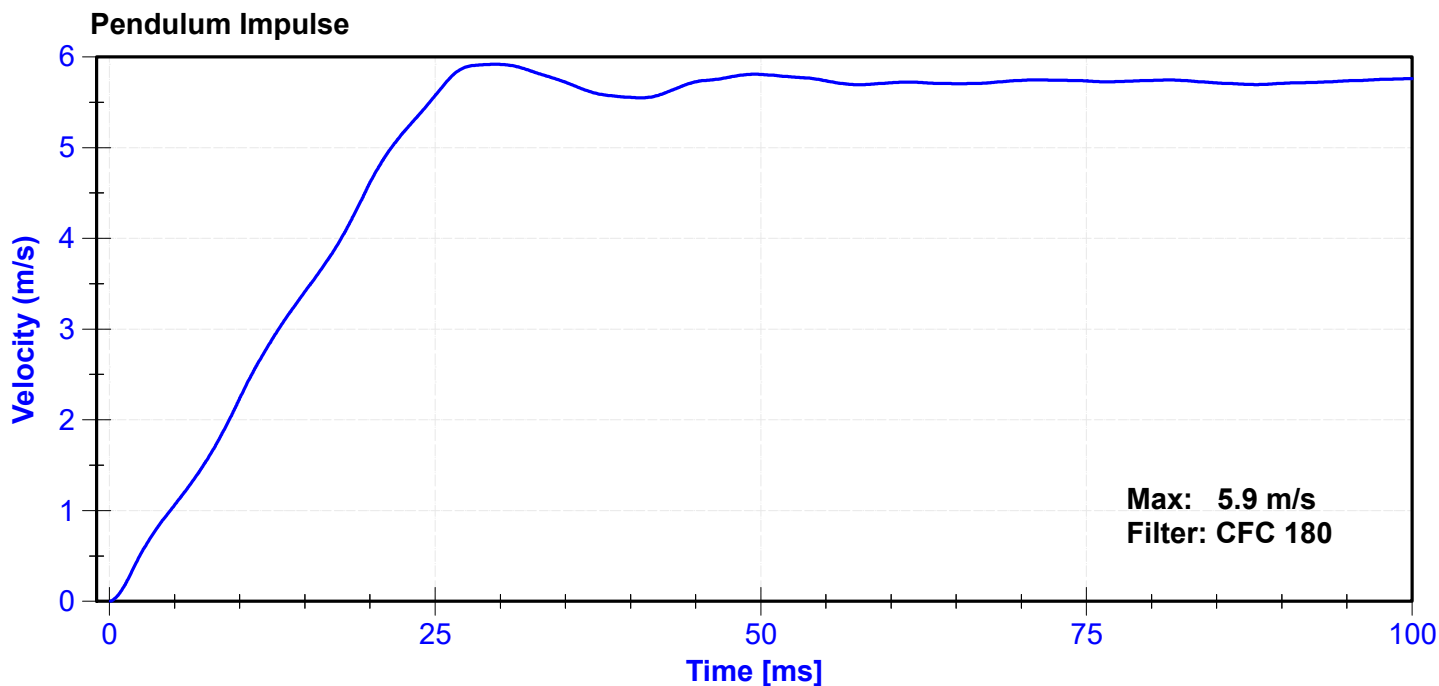
ATD Manufacturer	FTSS	Test Technician	W. Brokx
ATD Serial Number	DG8012	Laboratory Supervisor	J. Kinderman

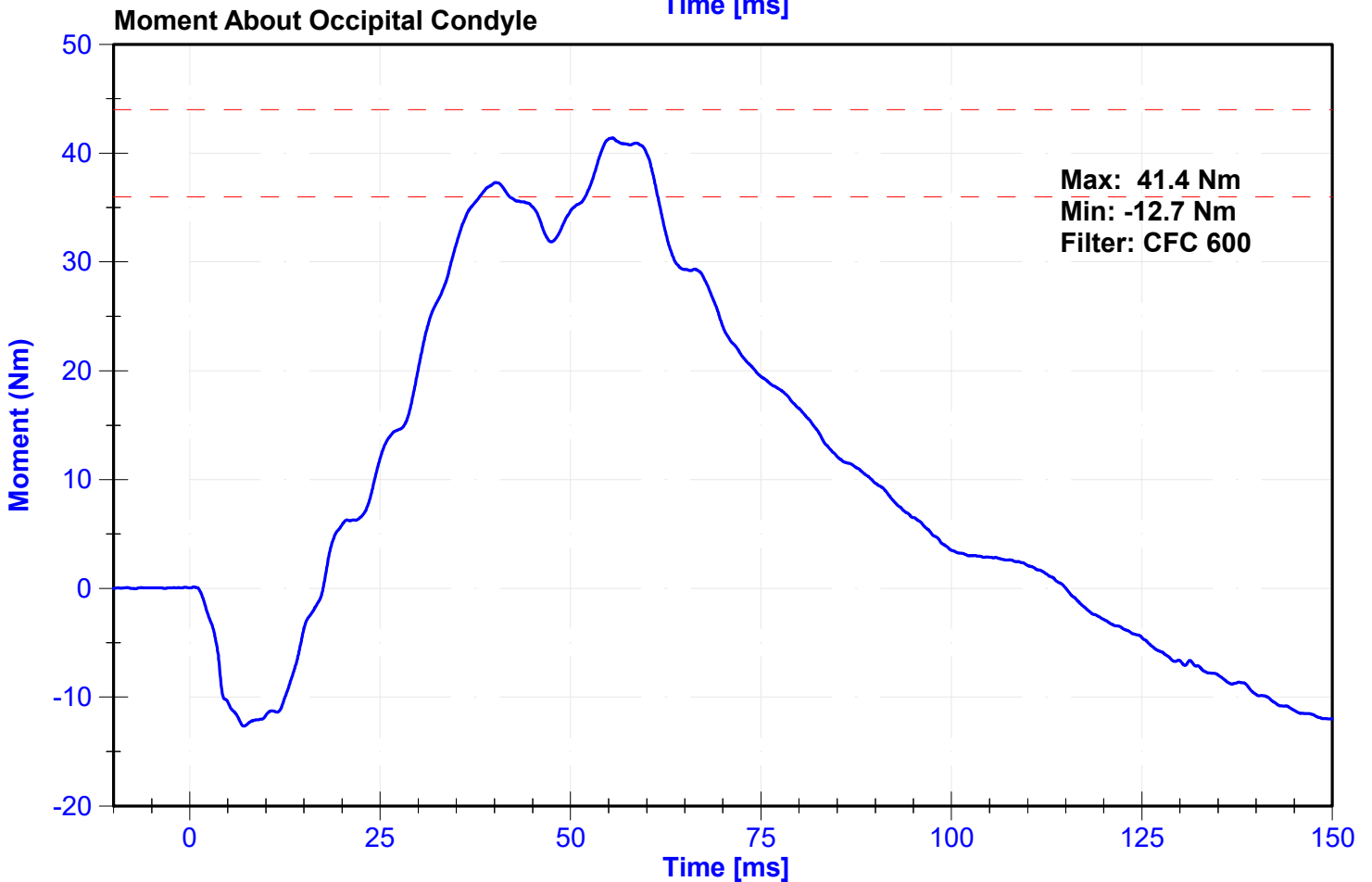
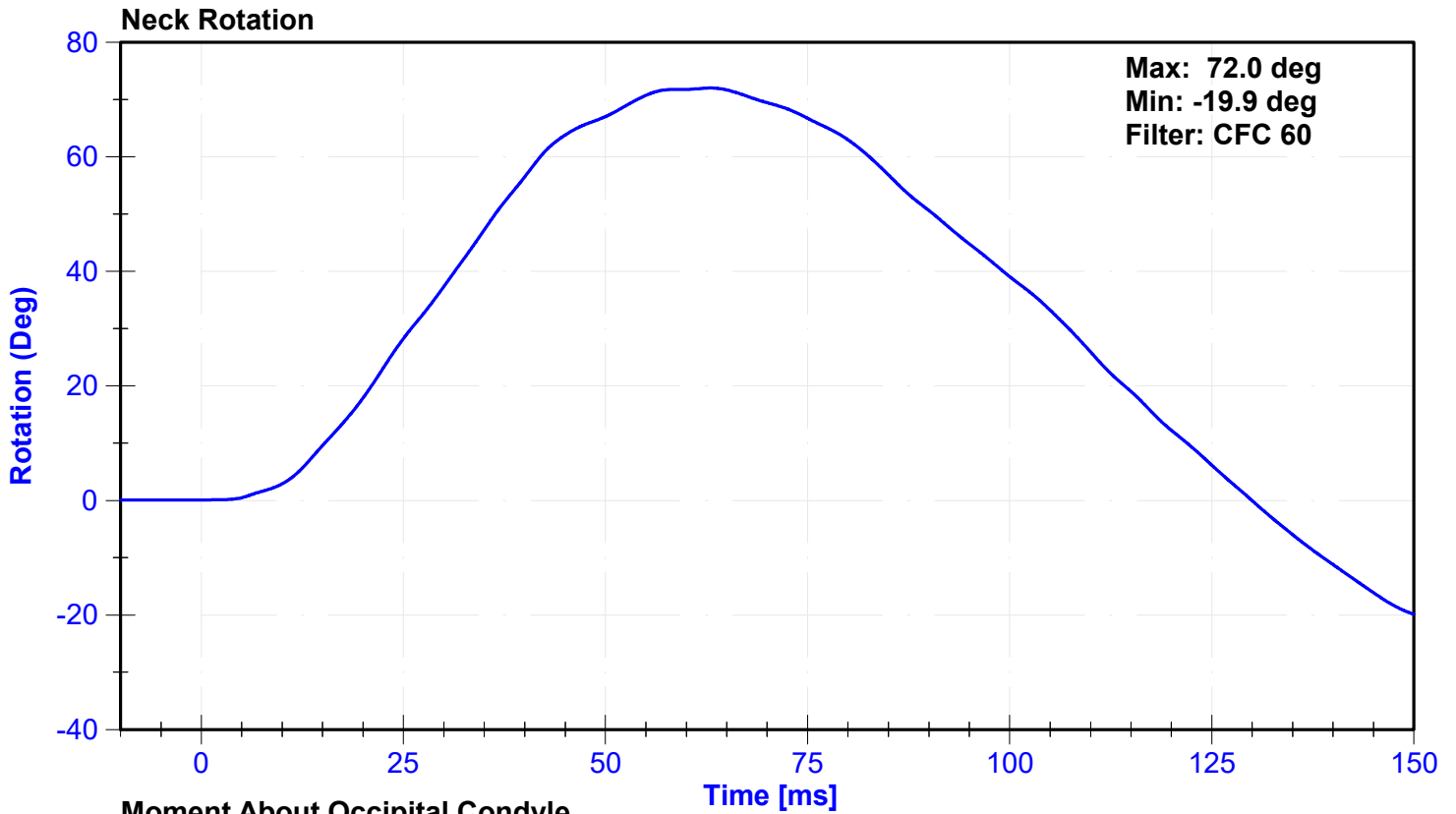
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.1	Pass
Humidity	10	70	%	52	Pass
Velocity	5.51	5.63	m/s	5.514	Pass
Pendulum Impulse at 10ms	2.2	2.8	m/s	2.24	Pass
Pendulum Impulse at 15ms	3.3	4.1	m/s	3.41	Pass
Pendulum Impulse at 20ms	4.4	5.4	m/s	4.62	Pass
Pendulum Impulse at 25ms	5.4	6.1	m/s	5.57	Pass
Pendulum Impulse from 25 to 100ms	5.5	6.2	m/s	5.92	Pass
Neck Rotation	71	81	deg	72.0	Pass
Time at Maximum Rotation	50	70	ms	63.0	Pass
Moment about the OC	36	44	Nm	41.4	Pass
Moment Decay to 0 Nm	102	126	ms	115.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	7231C-750	10/17/2024	10/17/2025
Pendulum Potentiometer	Servo	4961	9/23/2024	9/23/2025
Condyle Potentiometer	Servo	DS185	9/23/2024	9/23/2025
Upper Neck Load Cell	Kistler	M555A6CFM_1935H01698-F1	4/17/2025	4/17/2026





ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	DG8012	Laboratory Supervisor	J. Kinderman

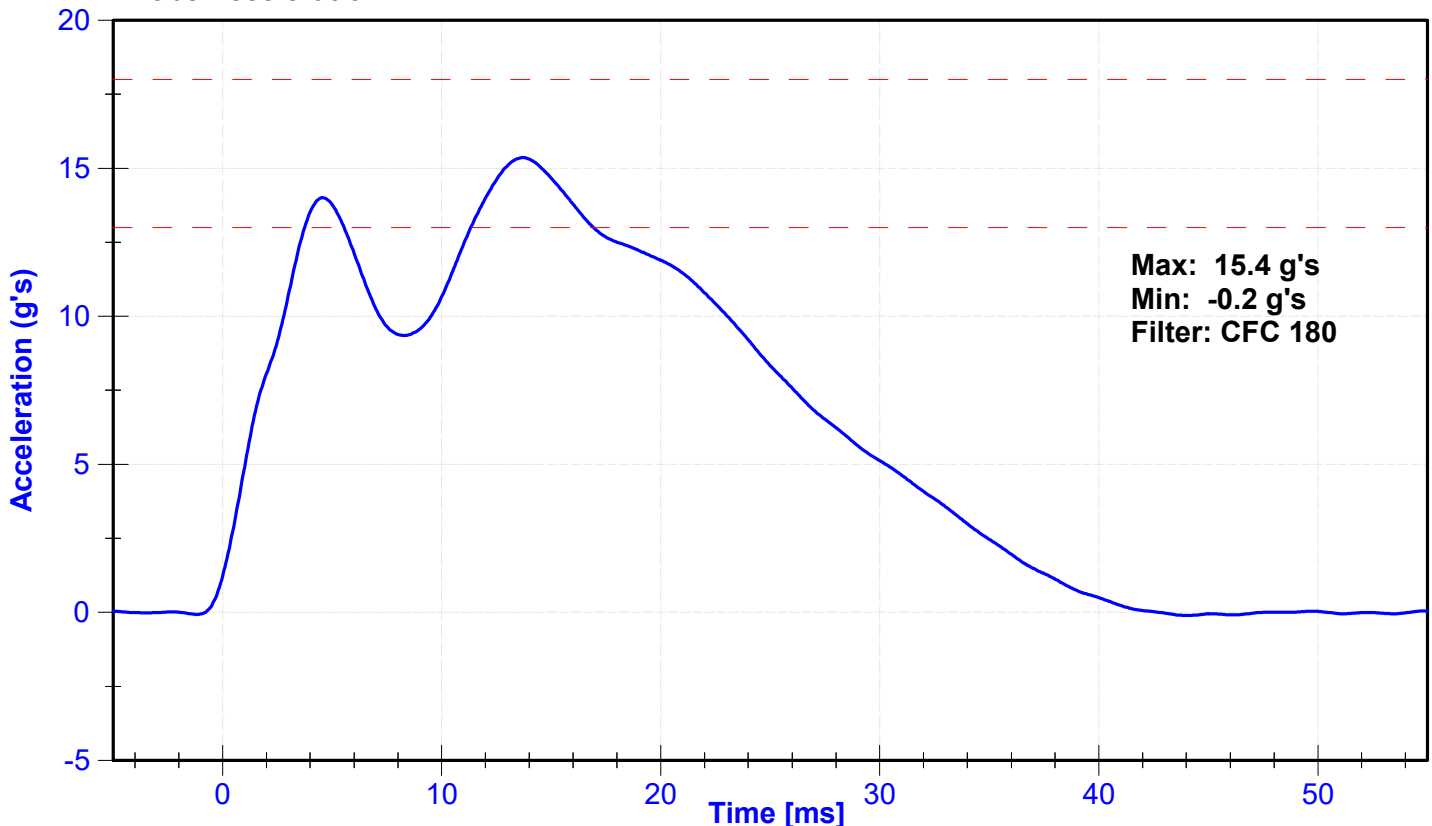
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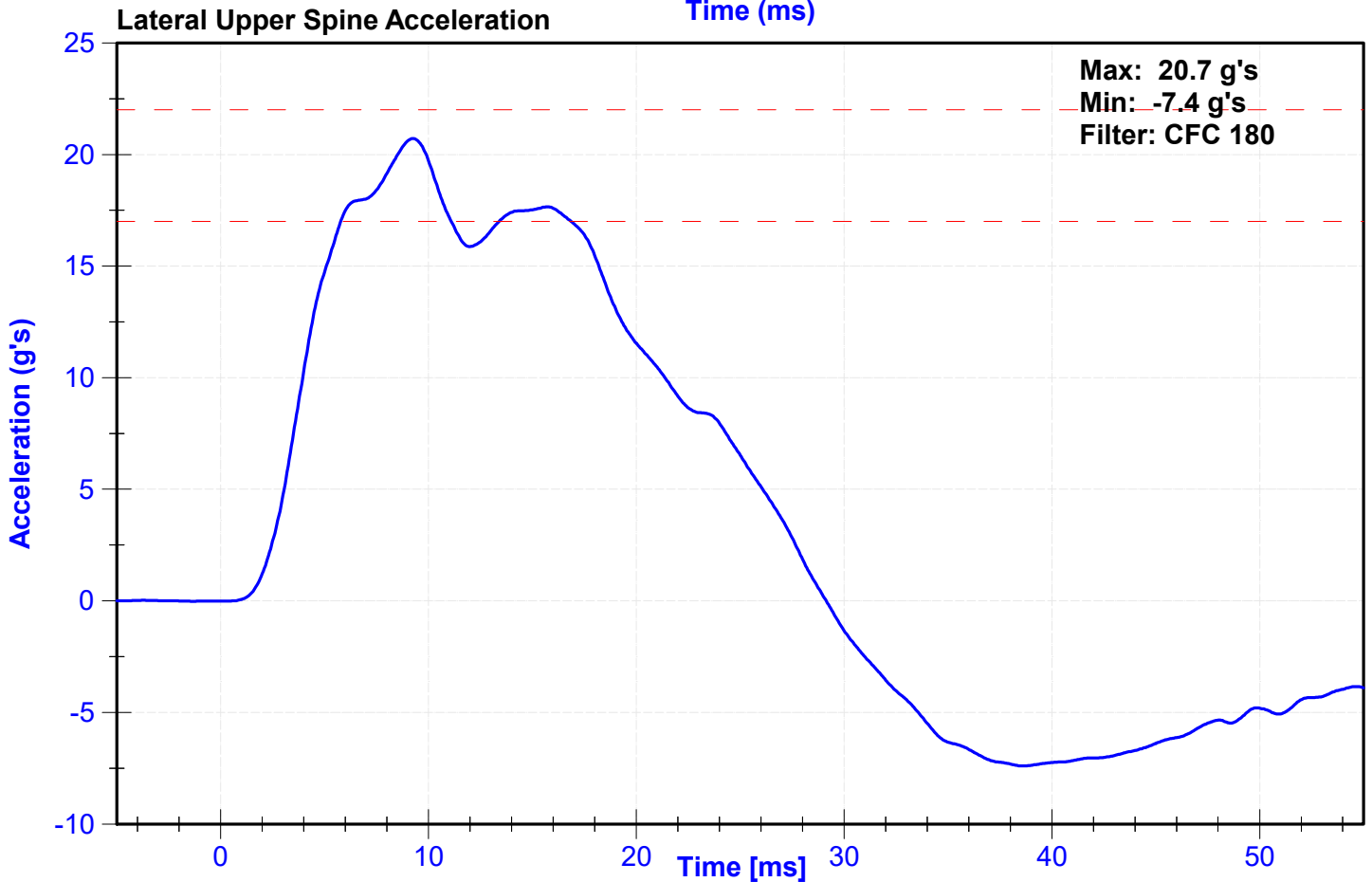
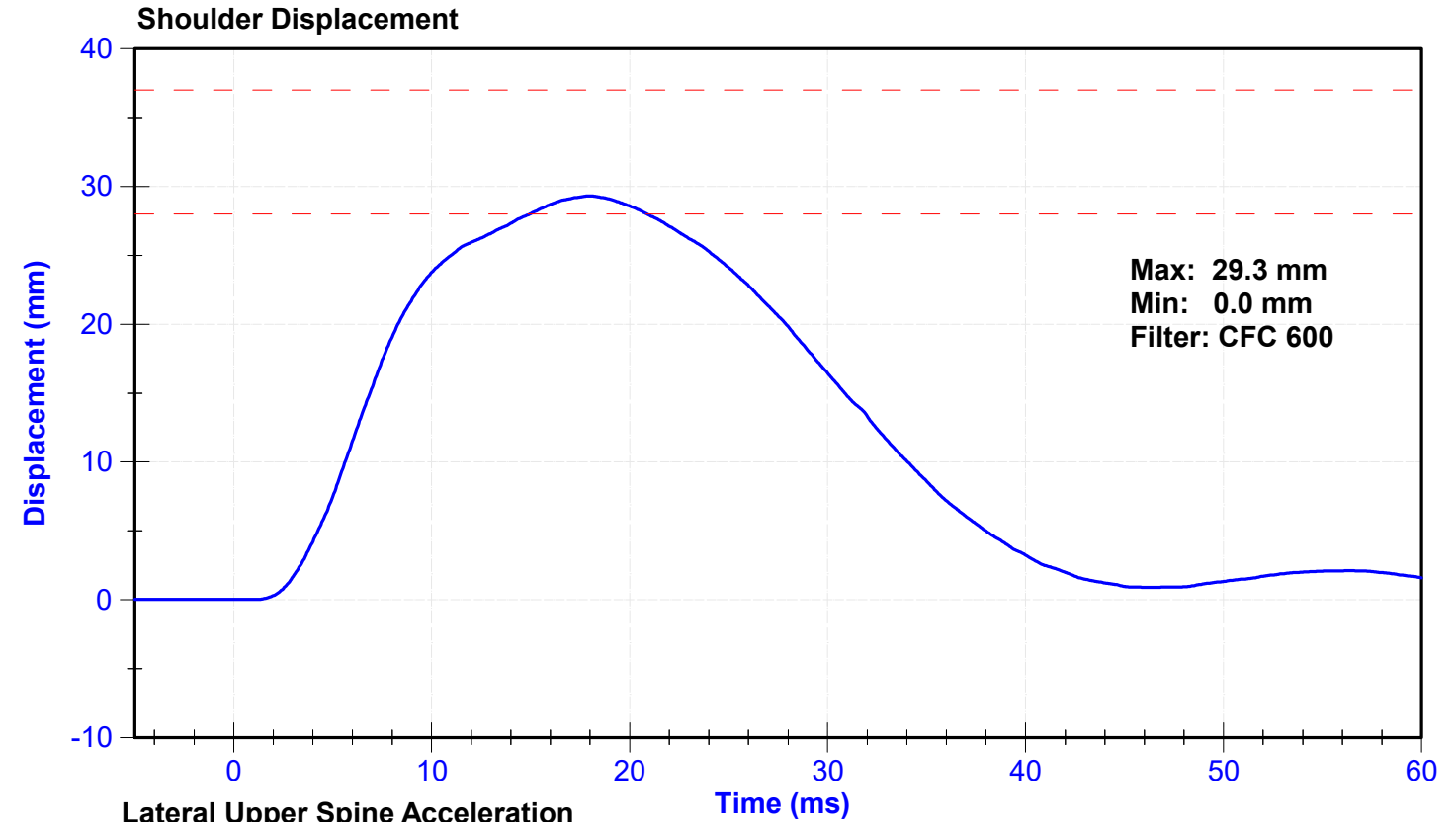
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	51	Pass
Velocity	4.2	4.4	m/s	4.33	Pass
Probe Acceleration	13	18	g's	15.4	Pass
Shoulder Deflection	28	37	mm	29.3	Pass
Lateral Upper Spine Acceleration	17	22	g's	20.7	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18566	5/7/2025	11/3/2025
Shoulder Potentiometer	Servo	1274GFE	7/8/2025	1/6/2026
Upper Spine Y Accelerometer	Endevco	P64148	7/2/2025	12/29/2025

Probe Acceleration





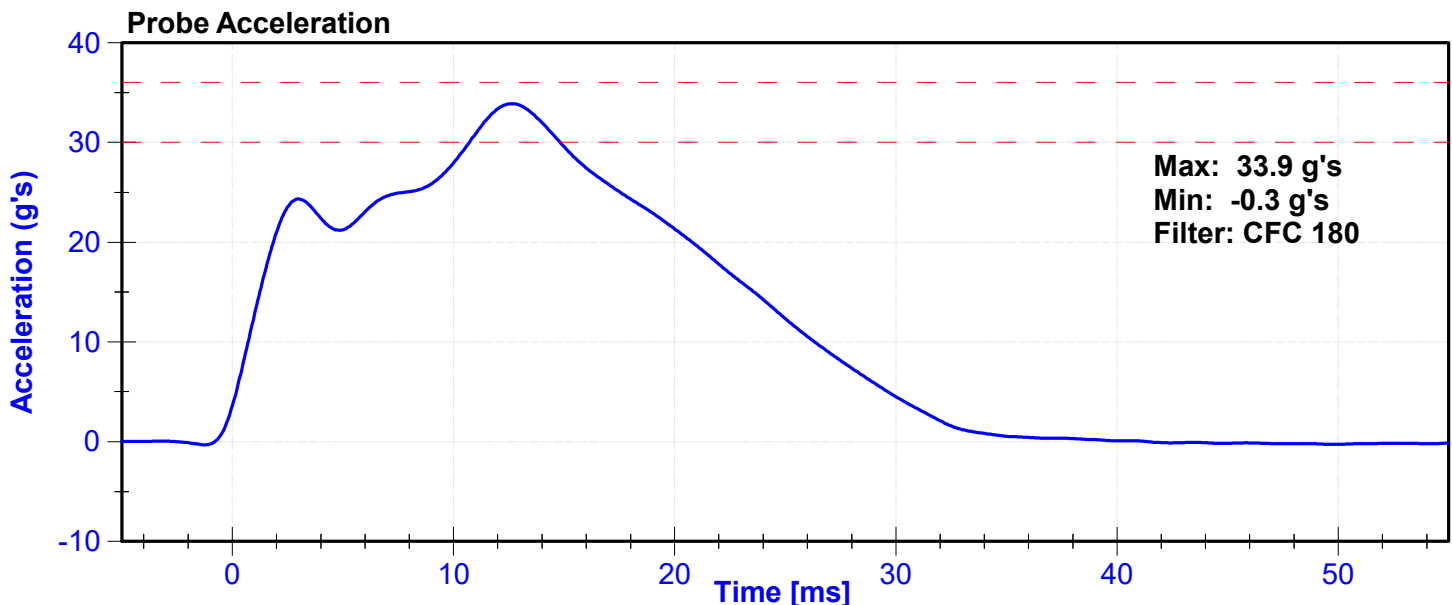
ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	DG8012	Laboratory Supervisor	J. Kinderman

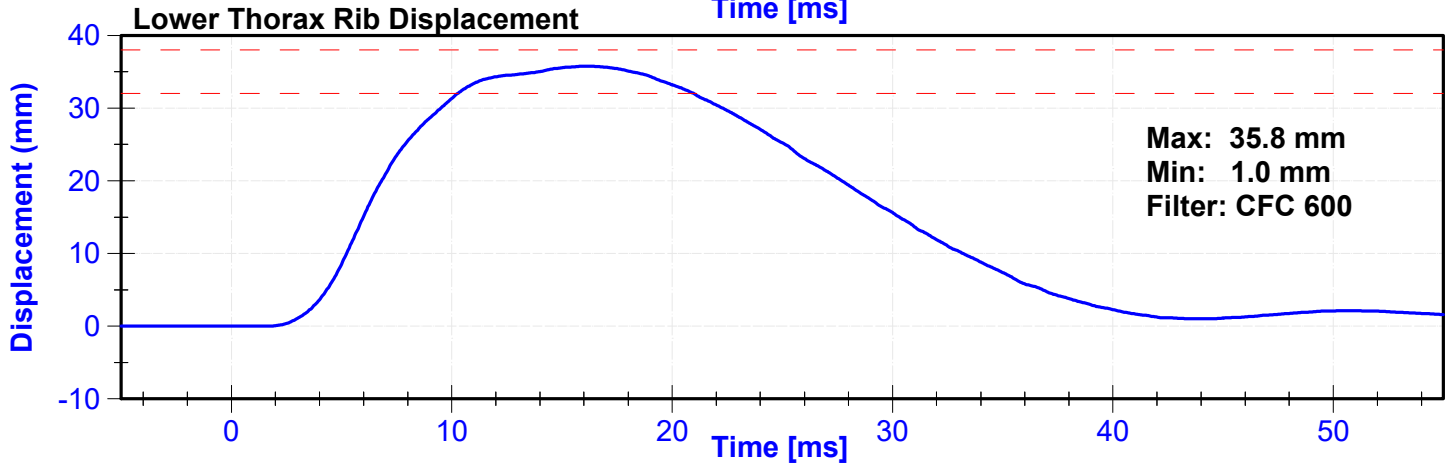
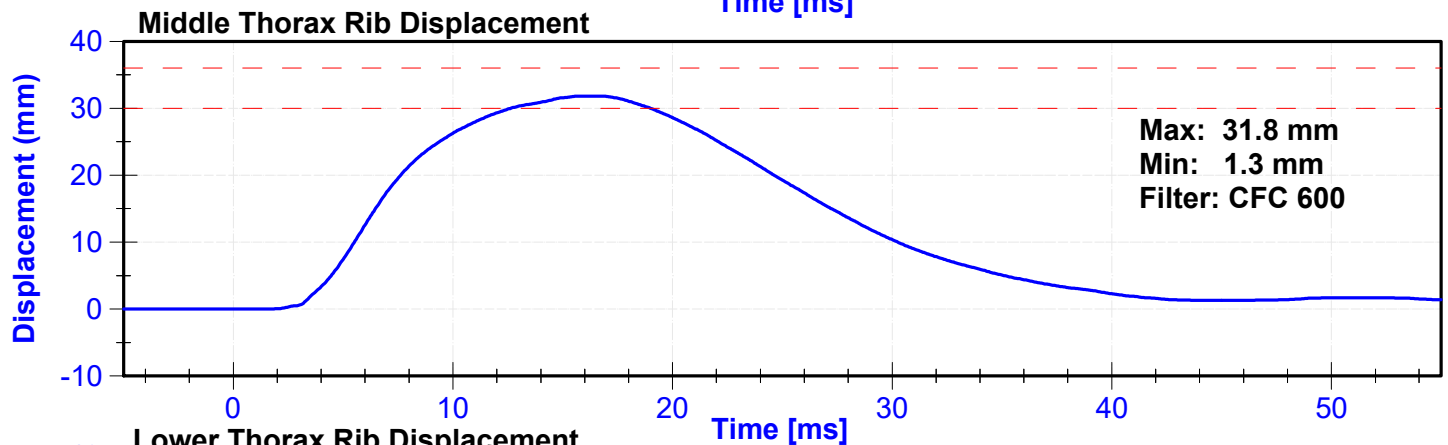
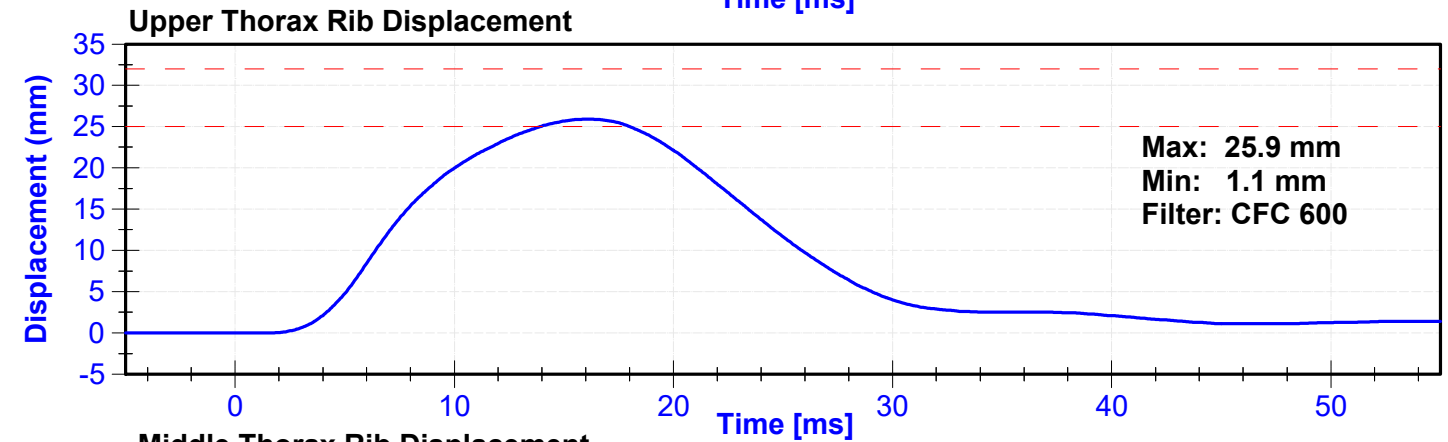
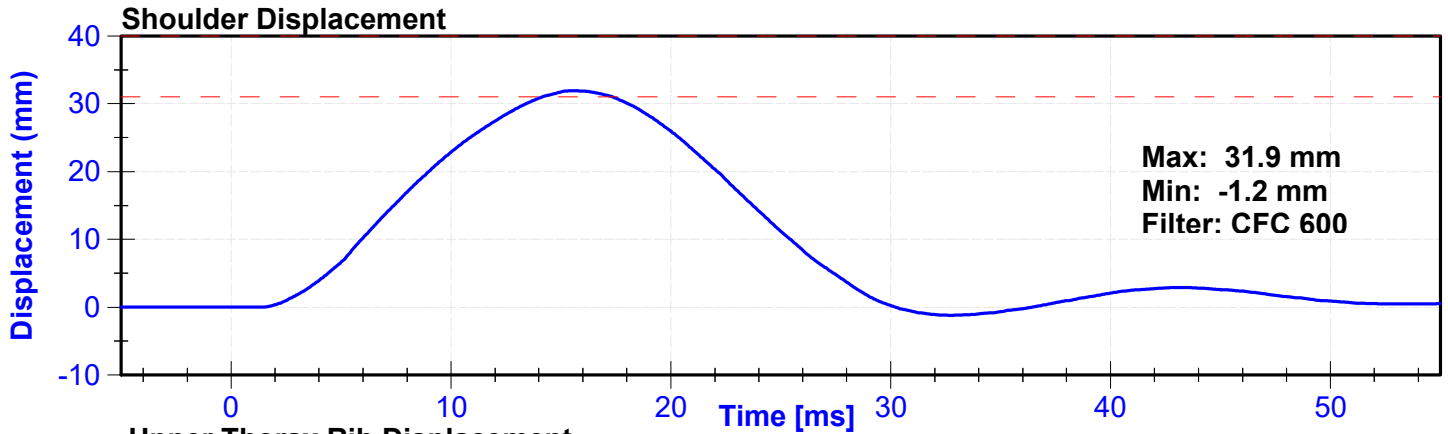
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	51	Pass
Velocity	6.6	6.8	m/s	6.68	Pass
Probe Acceleration after 5 ms	30	36	g's	33.9	Pass
Lateral Upper Spine Acceleration	34	43	g's	37.9	Pass
Lateral Lower Spine Acceleration	29	37	g's	32.0	Pass
Shoulder Deflection	31	40	mm	31.9	Pass
Upper Thorax Rib Deflection	25	32	mm	25.9	Pass
Mid Thorax Rib Deflection	30	36	mm	31.8	Pass
Lower Thorax Rib Deflection	32	38	mm	35.8	Pass

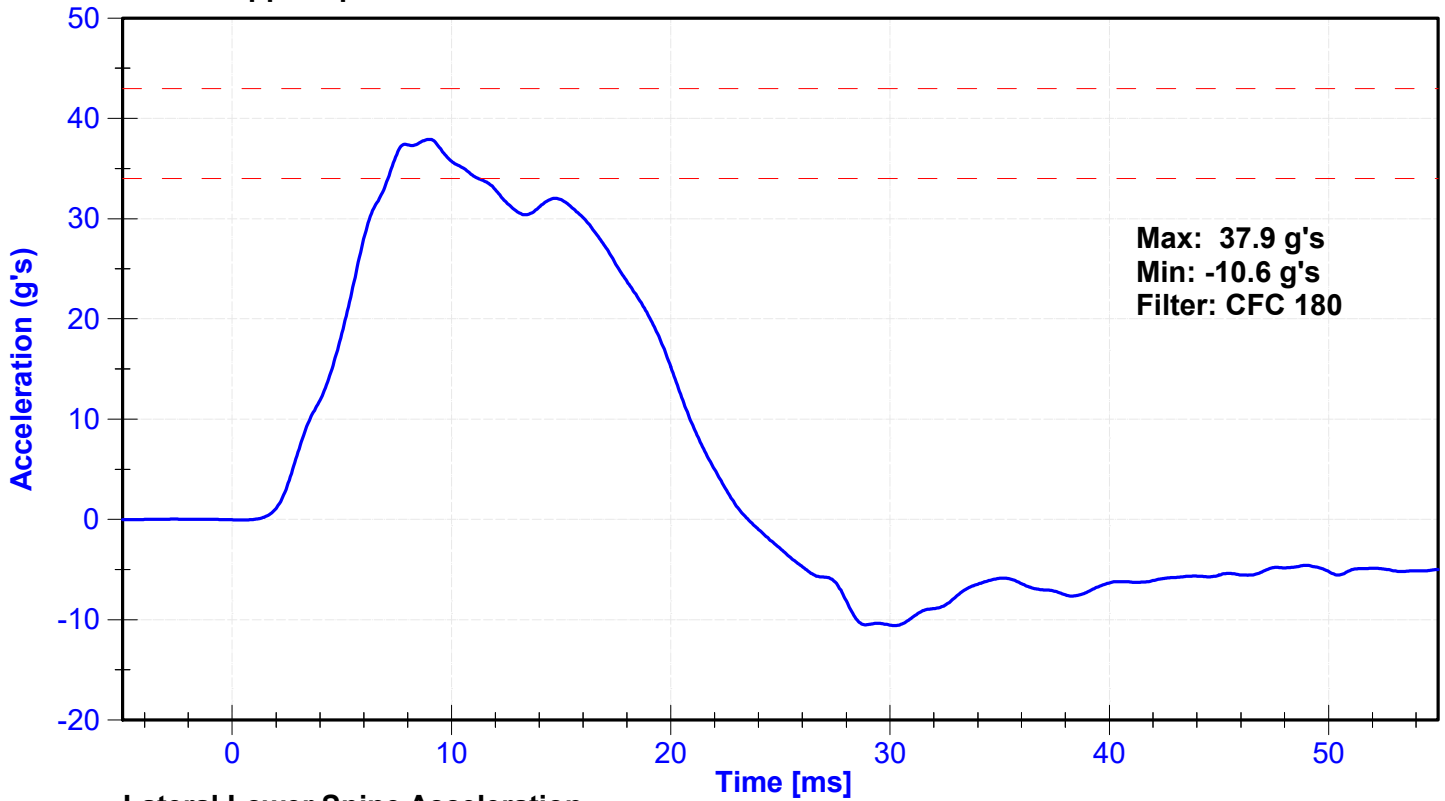
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18566	5/7/2025	11/3/2025
Upper Spine T1 Y Accelerometer	Endevco	P64148	7/2/2025	12/29/2025
Upper Spine T12 Y Accelerometer	Endevco	P58883	7/2/2025	12/29/2025
Shoulder Potentiometer	Servo	1274GFE	7/8/2025	1/6/2026
Upper Thorax Rib Potentiometer	Servo	1199GFE	7/8/2025	1/6/2026
Middle Thorax Rib Potentiometer	Servo	1246GFE	7/8/2025	1/6/2026
Lower Thorax Rib Potentiometer	Servo	011GFE	7/8/2025	1/6/2026

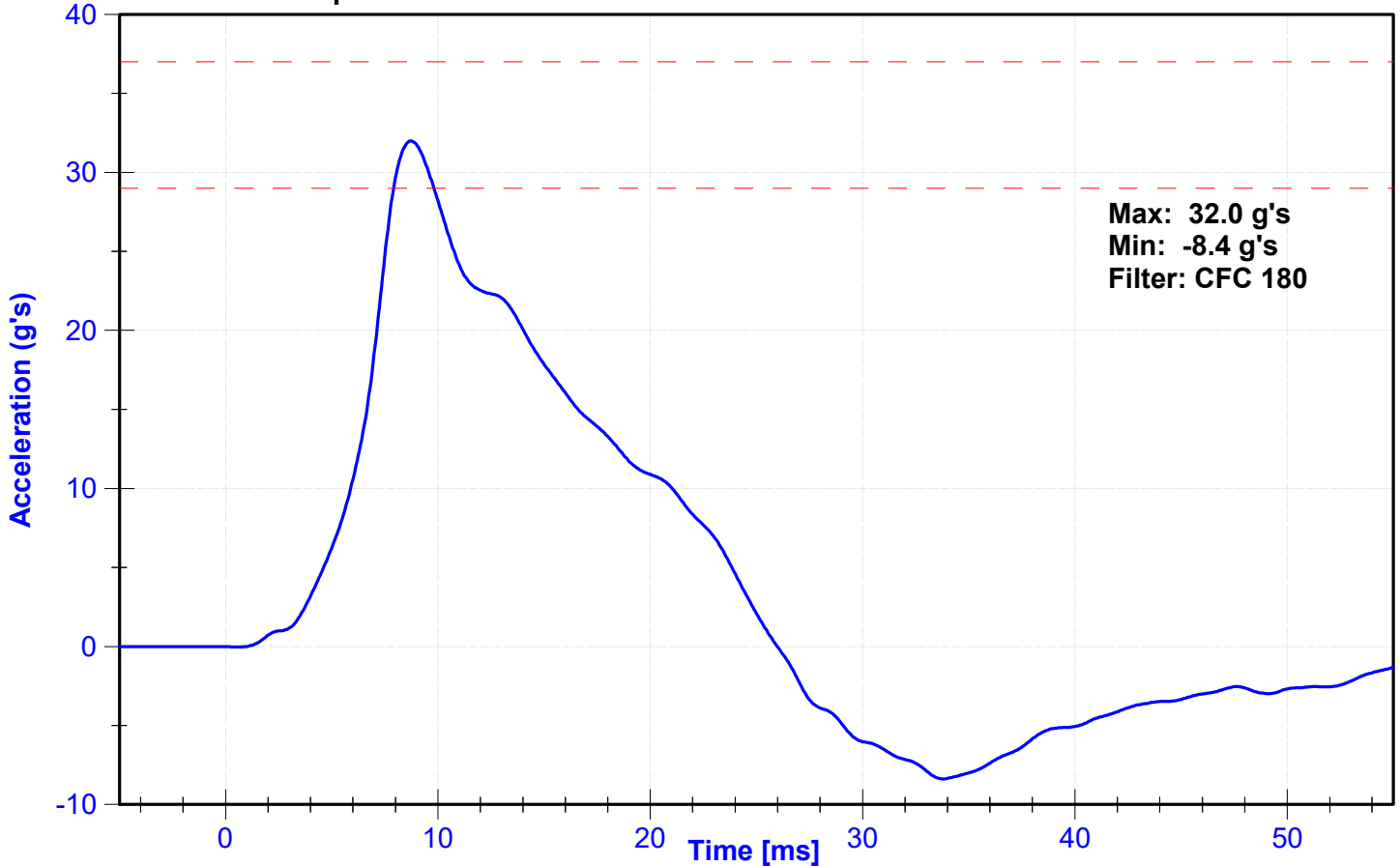




Lateral Upper Spine Acceleration



Lateral Lower Spine Acceleration



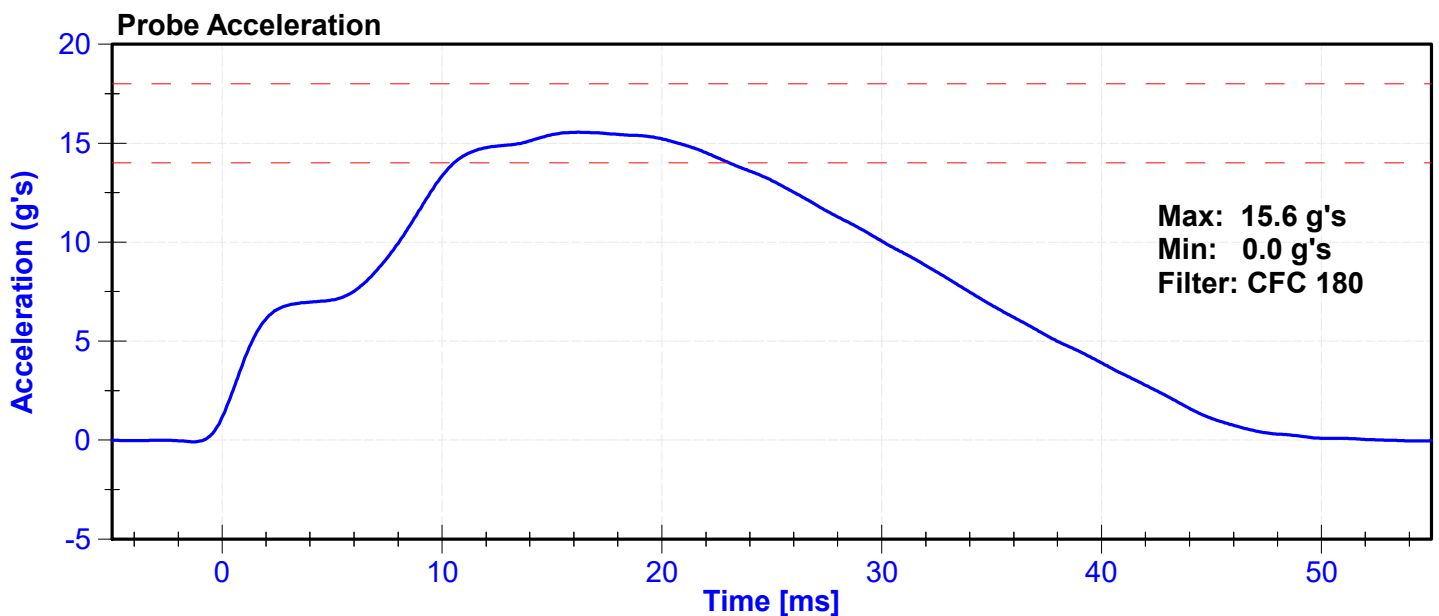
ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	DG8012	Laboratory Supervisor	J. Kinderman

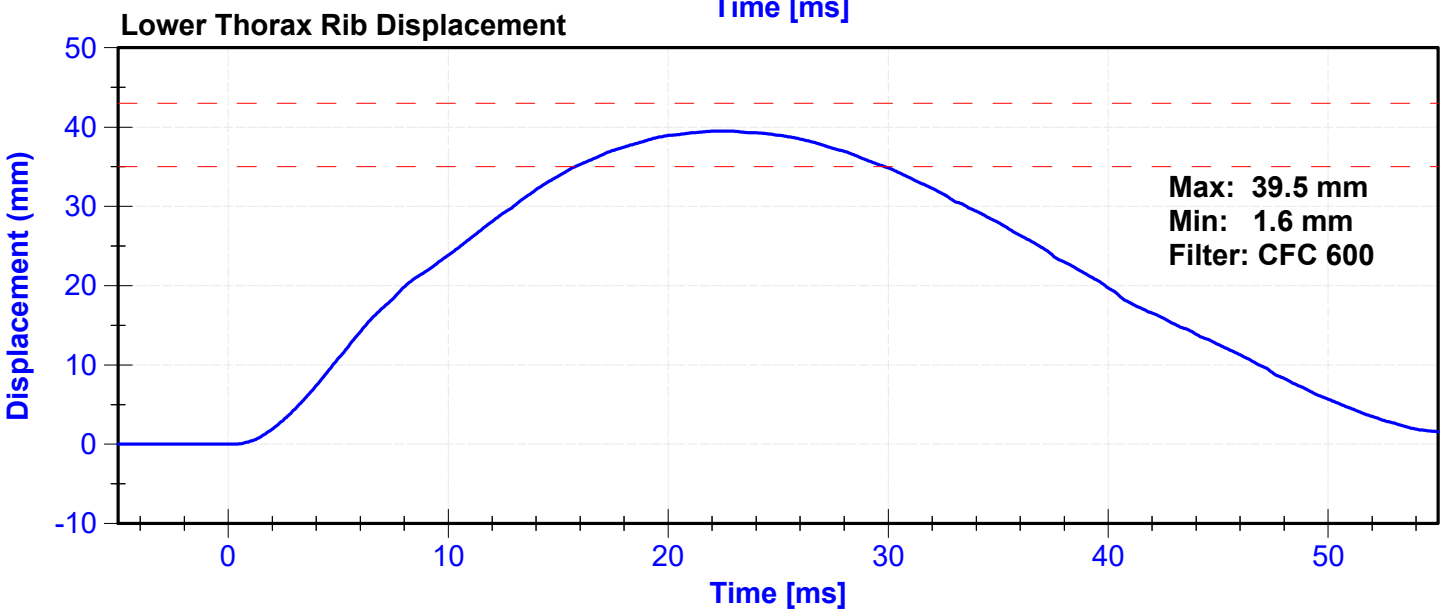
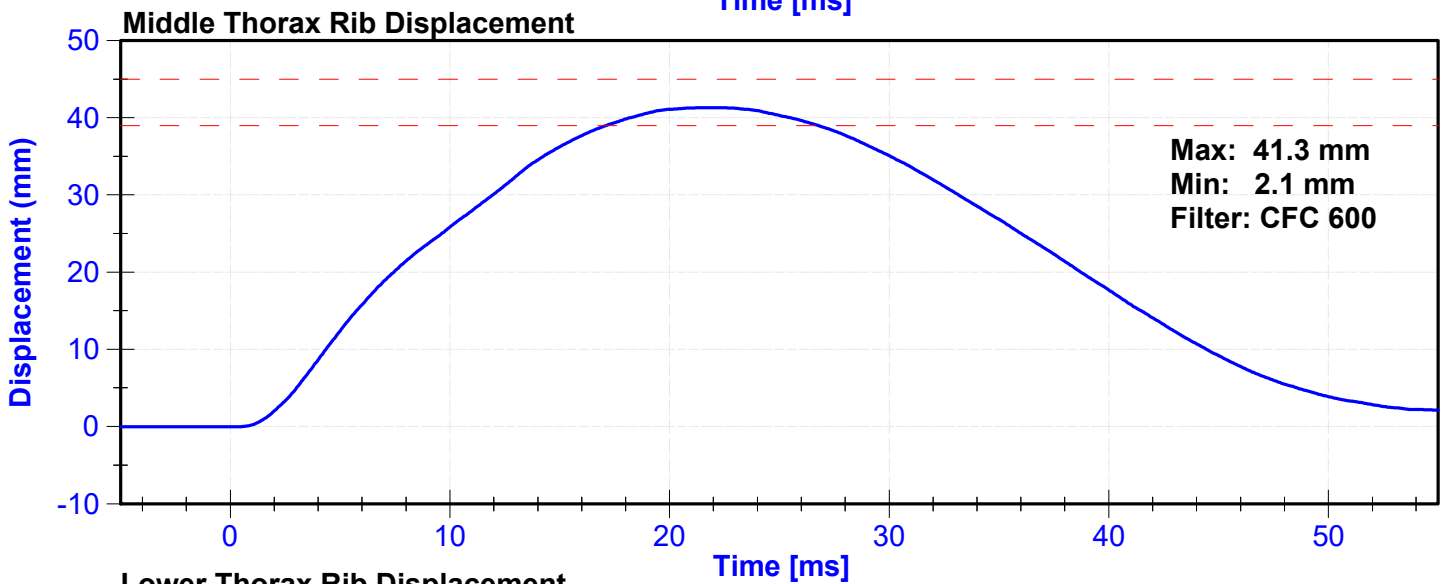
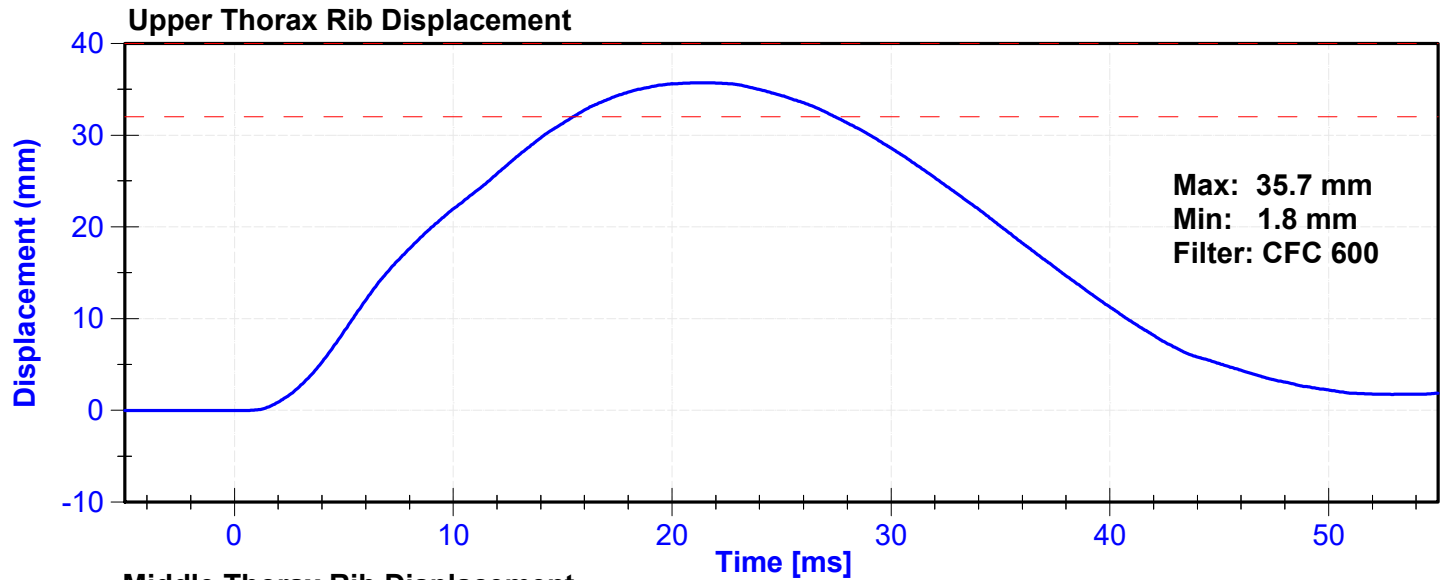
Results

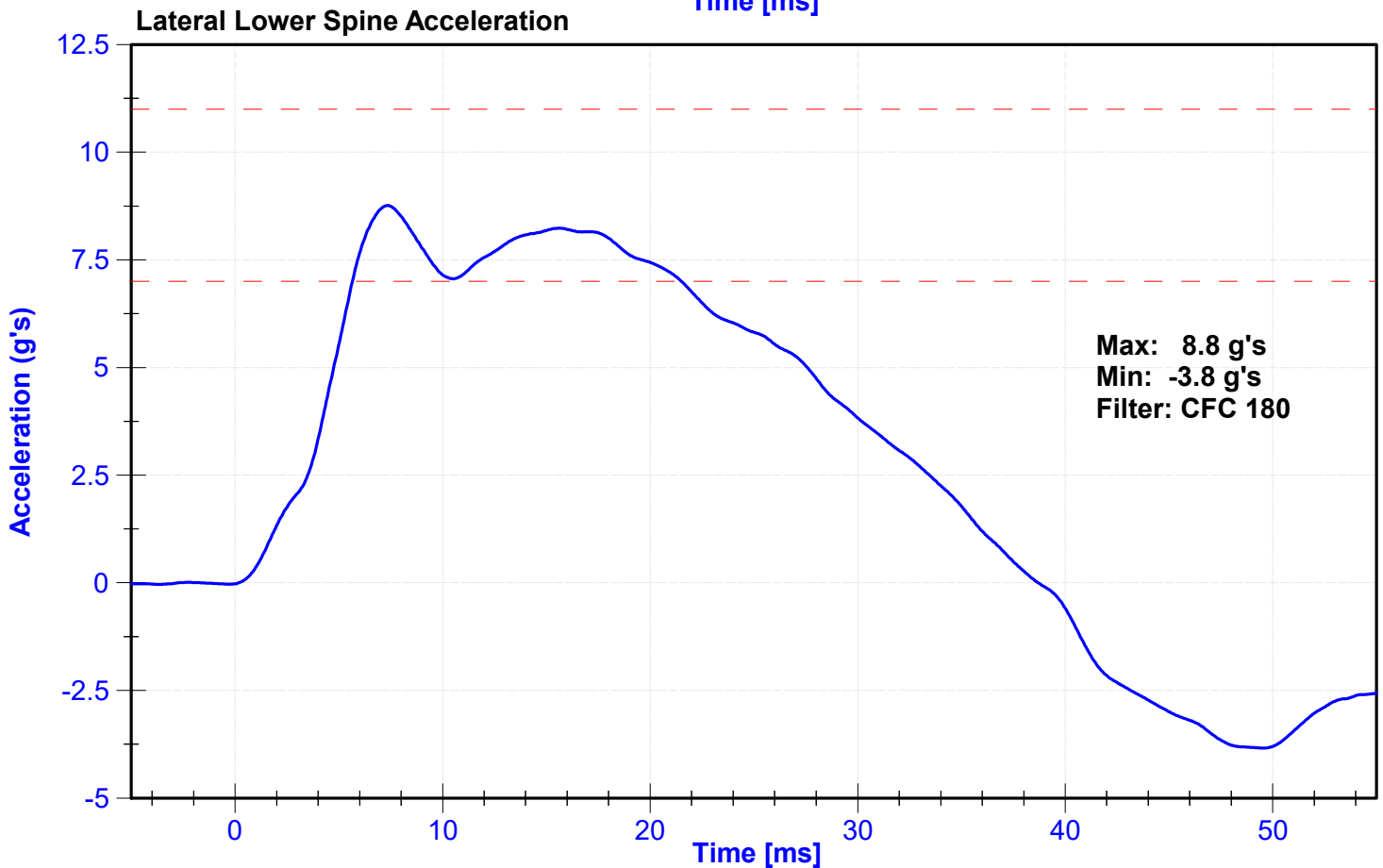
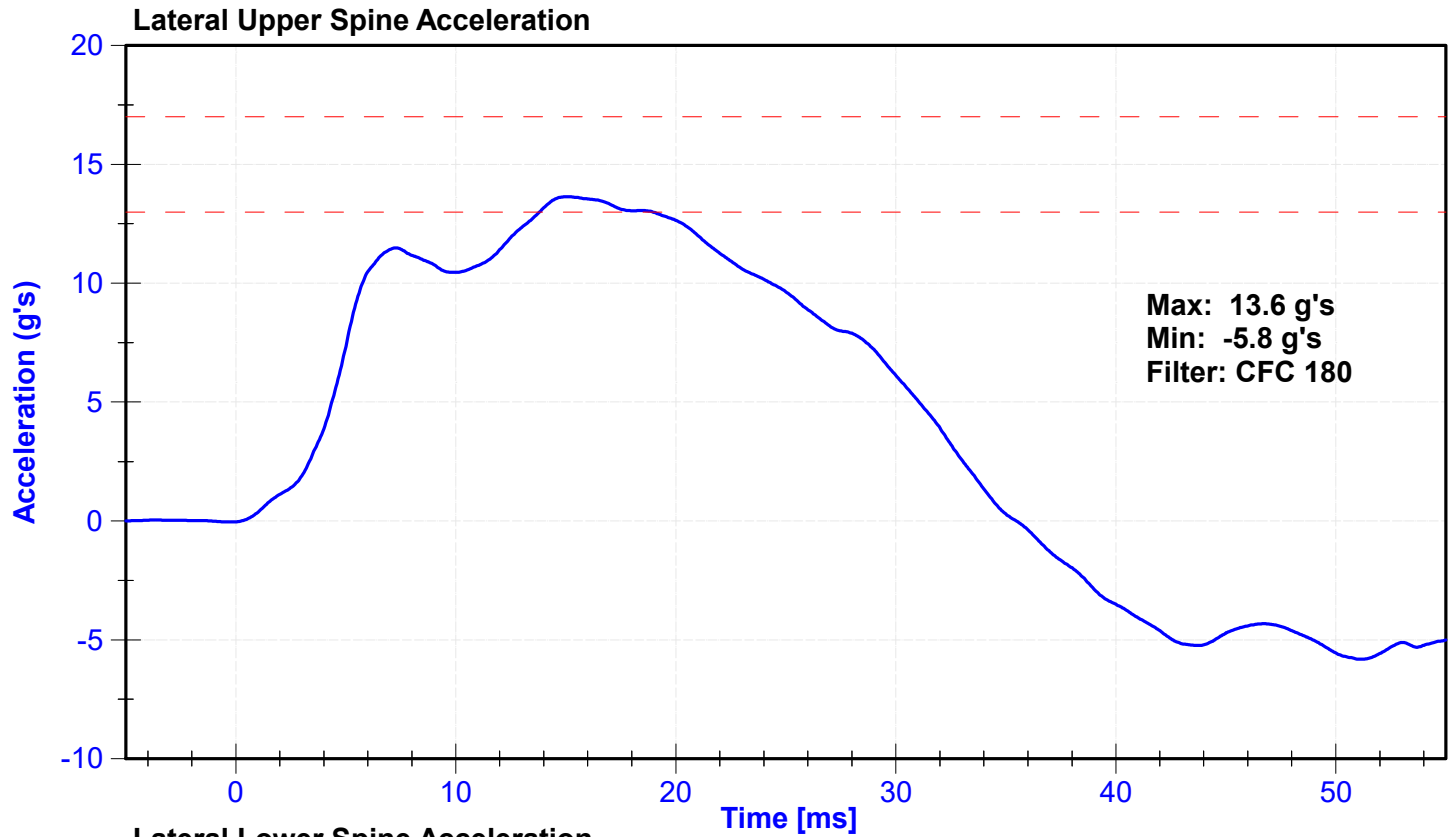
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	51	Pass
Velocity	4.2	4.4	m/s	4.26	Pass
Probe Acceleration	14	18	g's	15.6	Pass
Lateral Upper Spine Acceleration	13	17	g's	13.6	Pass
Lateral Lower Spine Acceleration	7	11	g's	8.8	Pass
Upper Thorax Rib Deflection	32	40	mm	35.7	Pass
Middle Thorax Rib Deflection	39	45	mm	41.3	Pass
Lower Thorax Rib Deflection	35	43	mm	39.5	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18566	5/7/2025	11/3/2025
Upper Spine Y Accelerometer	Endevco	P64148	7/2/2025	12/29/2025
Lower Spine Y Accelerometer	Endevco	P58883	7/2/2025	12/29/2025
Upper Thorax Rib Potentiometer	Servo	1199GFE	7/8/2025	1/6/2026
Middle Thorax Rib Potentiometer	Servo	1246GFE	7/8/2025	1/6/2026
Lower Thorax Rib Potentiometer	Servo	011GFE	7/8/2025	1/6/2026







ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	DG8012	Laboratory Supervisor	J. Kinderman

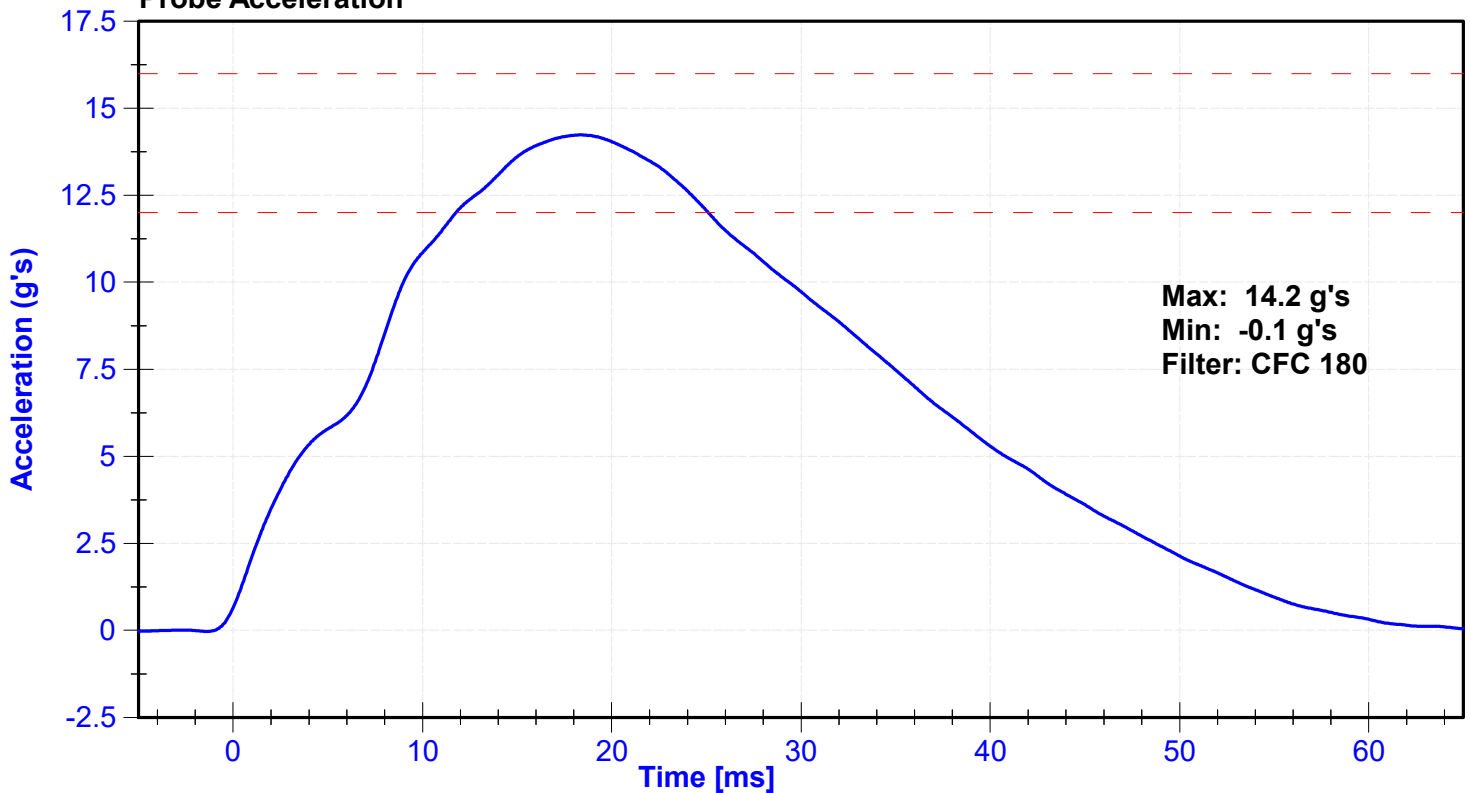
Results

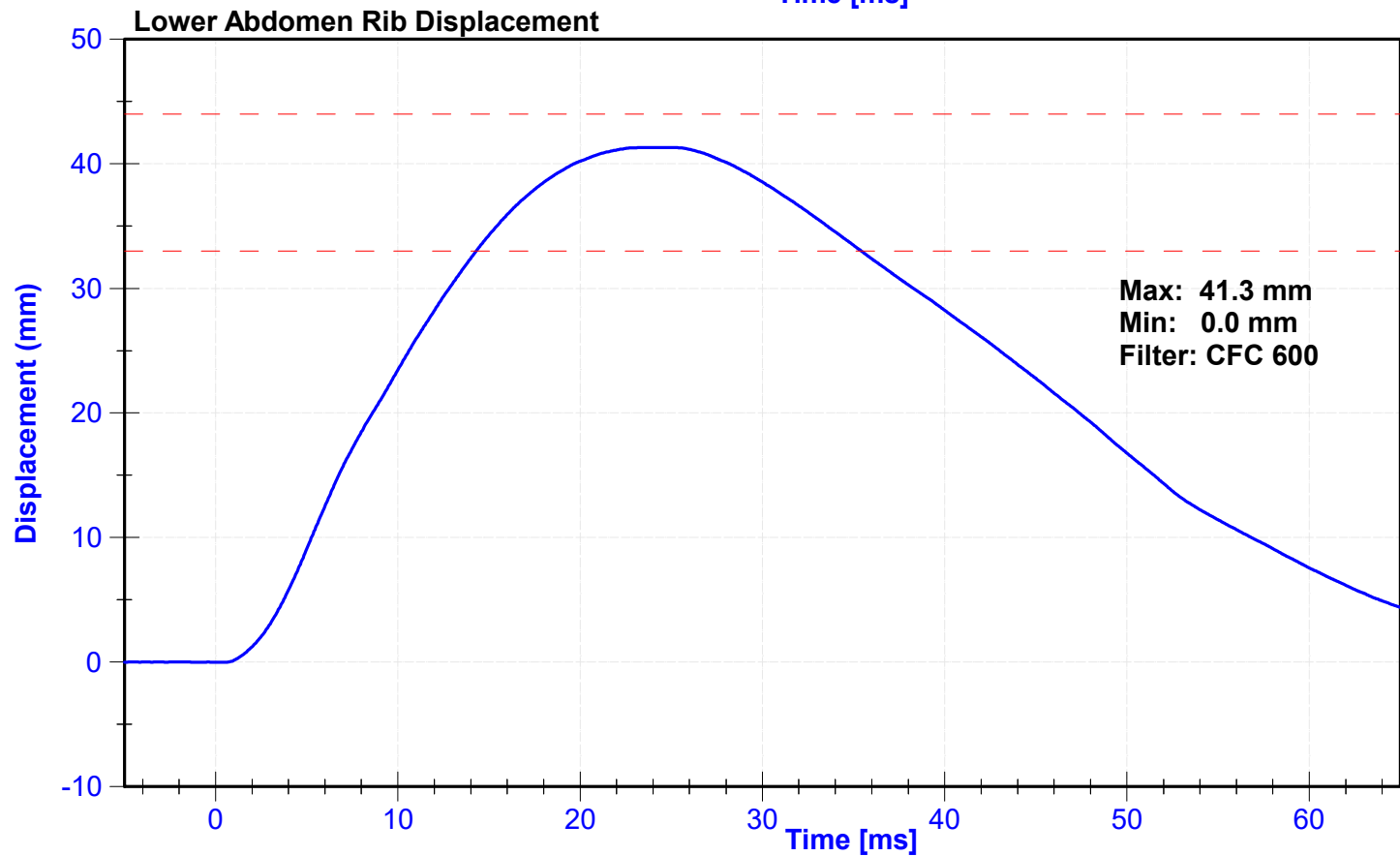
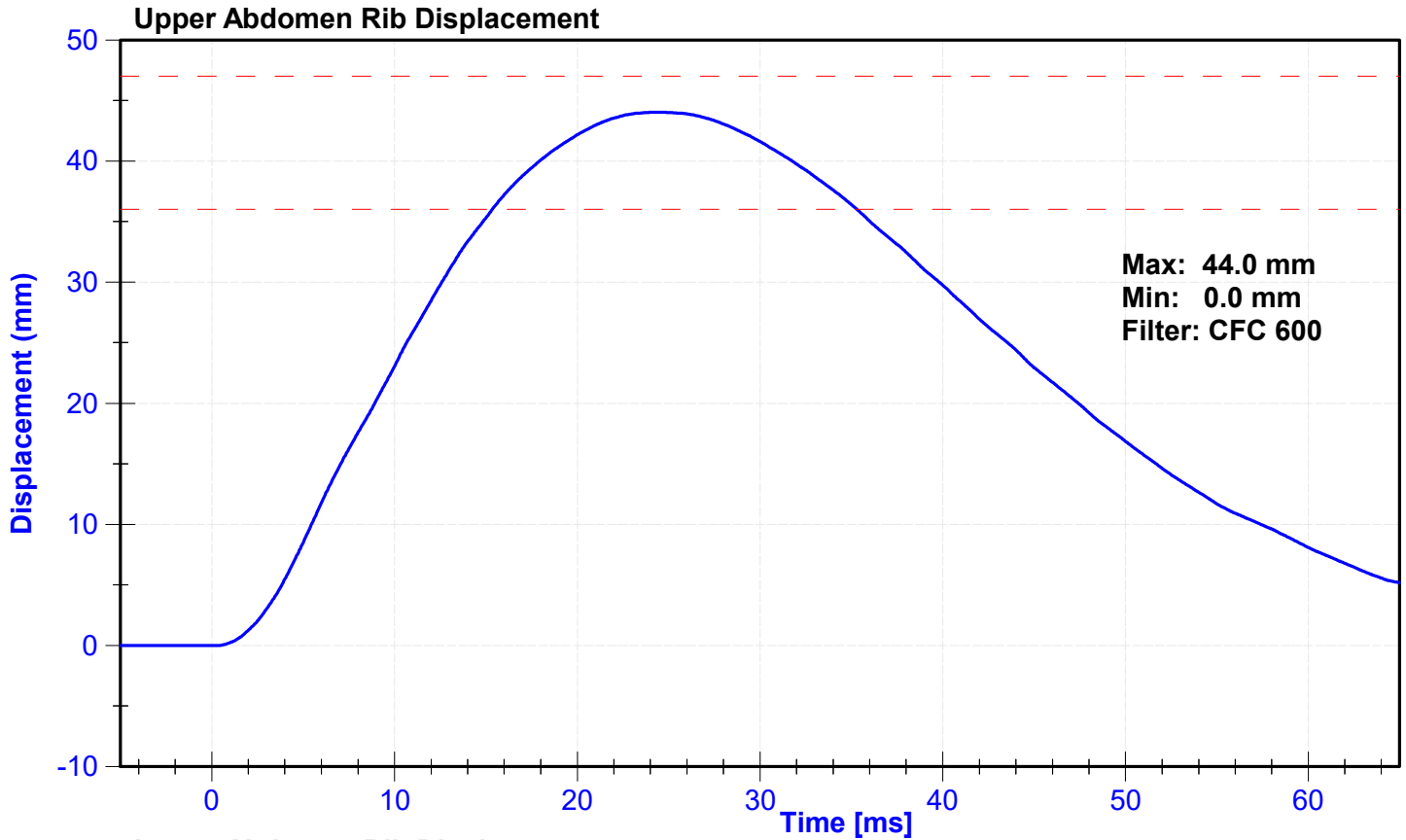
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	51	Pass
Velocity	4.2	4.4	m/s	4.27	Pass
Probe Acceleration	12	16	g's	14.2	Pass
Lateral Lower Spine Acceleration	9	14	g's	10.6	Pass
Upper Abdomen Rib Deflection	36	47	mm	44.0	Pass
Lower Abdomen Rib Deflection	33	44	mm	41.3	Pass

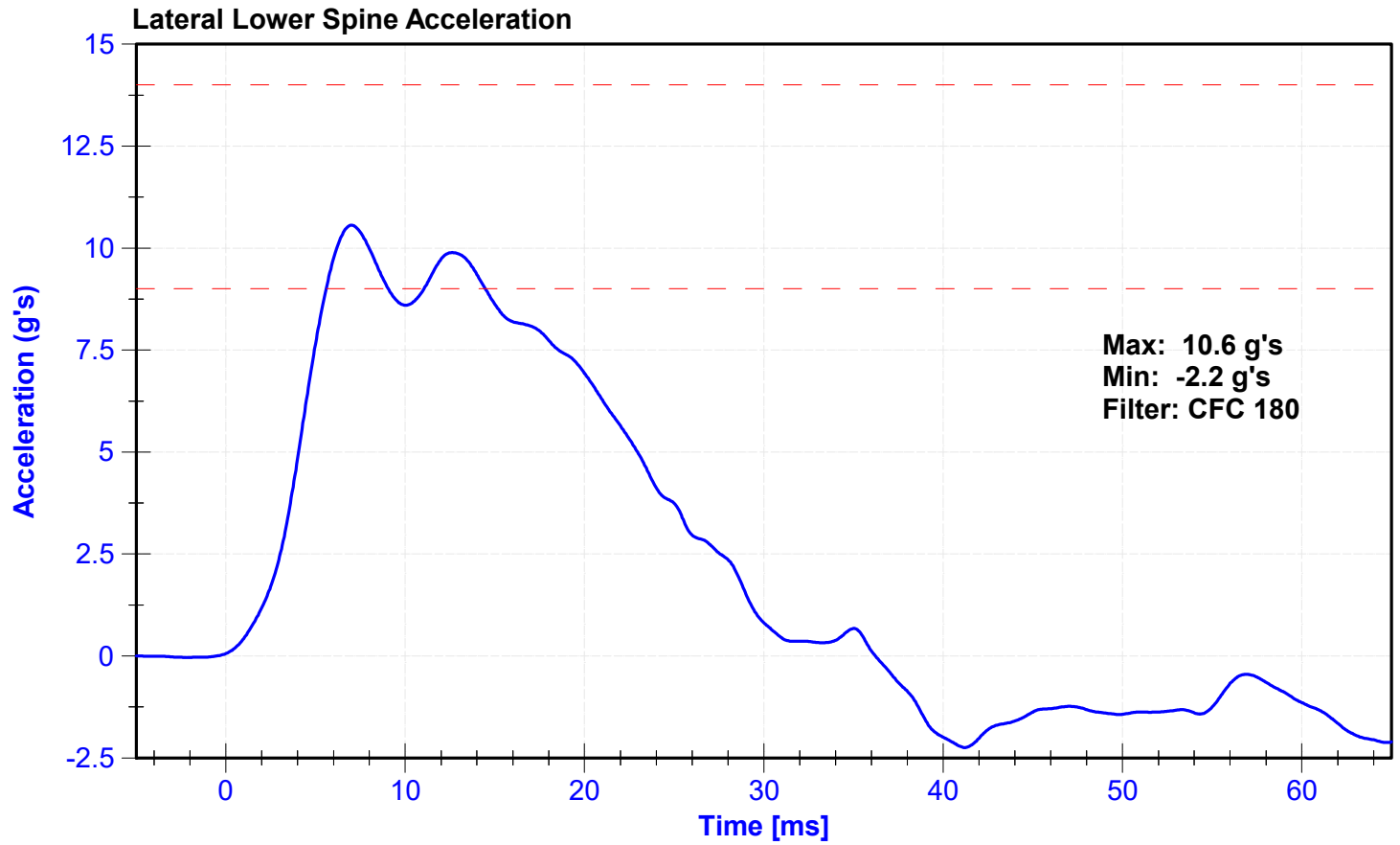
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accelerometer	Endevco	18566	5/7/2025	11/3/2025
Lower Spine Y Accelerometer	Endevco	P58883	7/2/2025	12/29/2025
Upper Abdomen Rib Potentiometer	Servo	008GFE	7/8/2025	1/6/2026
Lower Abdomen Rib Potentiometer	Servo	046GFE	7/8/2025	1/6/2026

Probe Acceleration







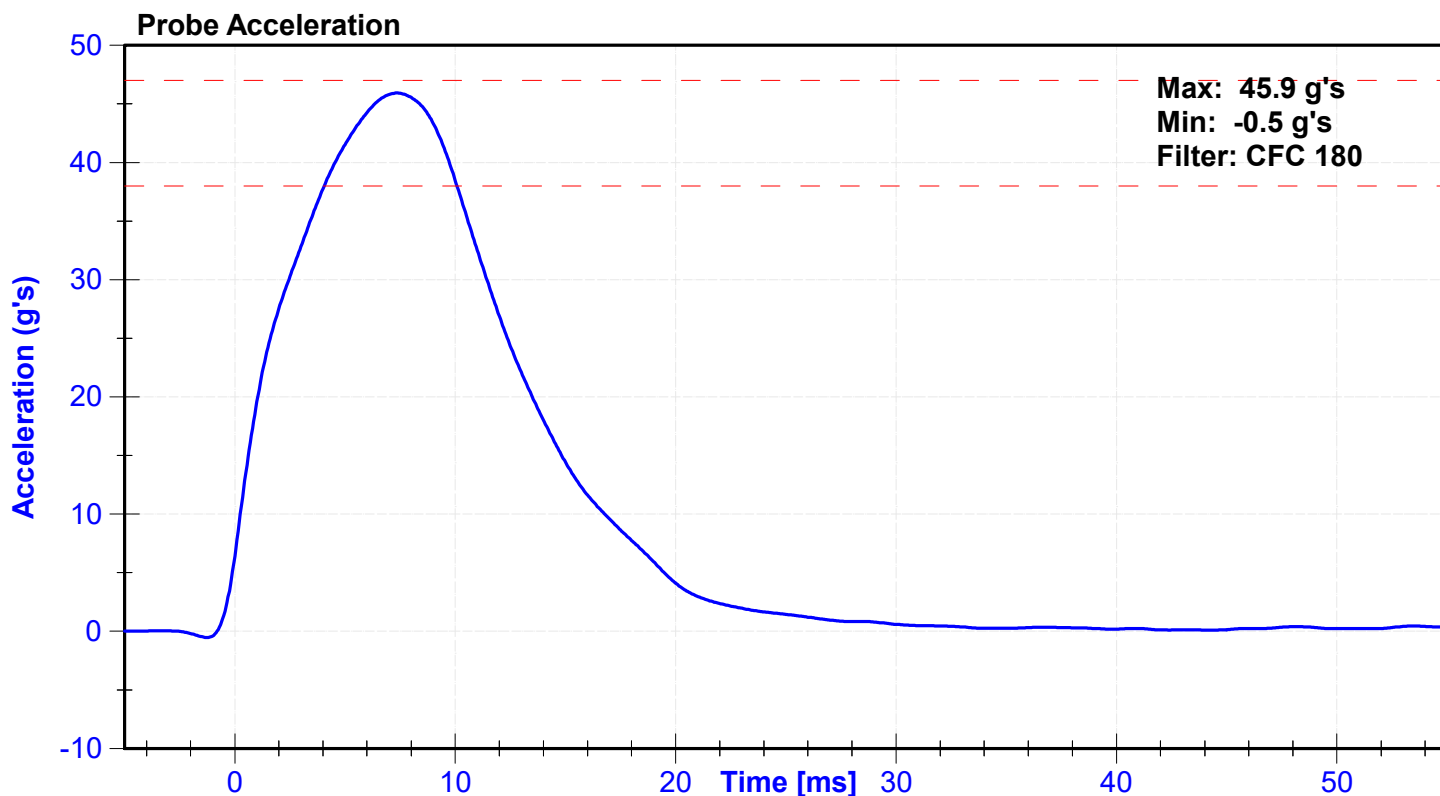
ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	DG8012	Laboratory Supervisor	J. Kinderman

Results

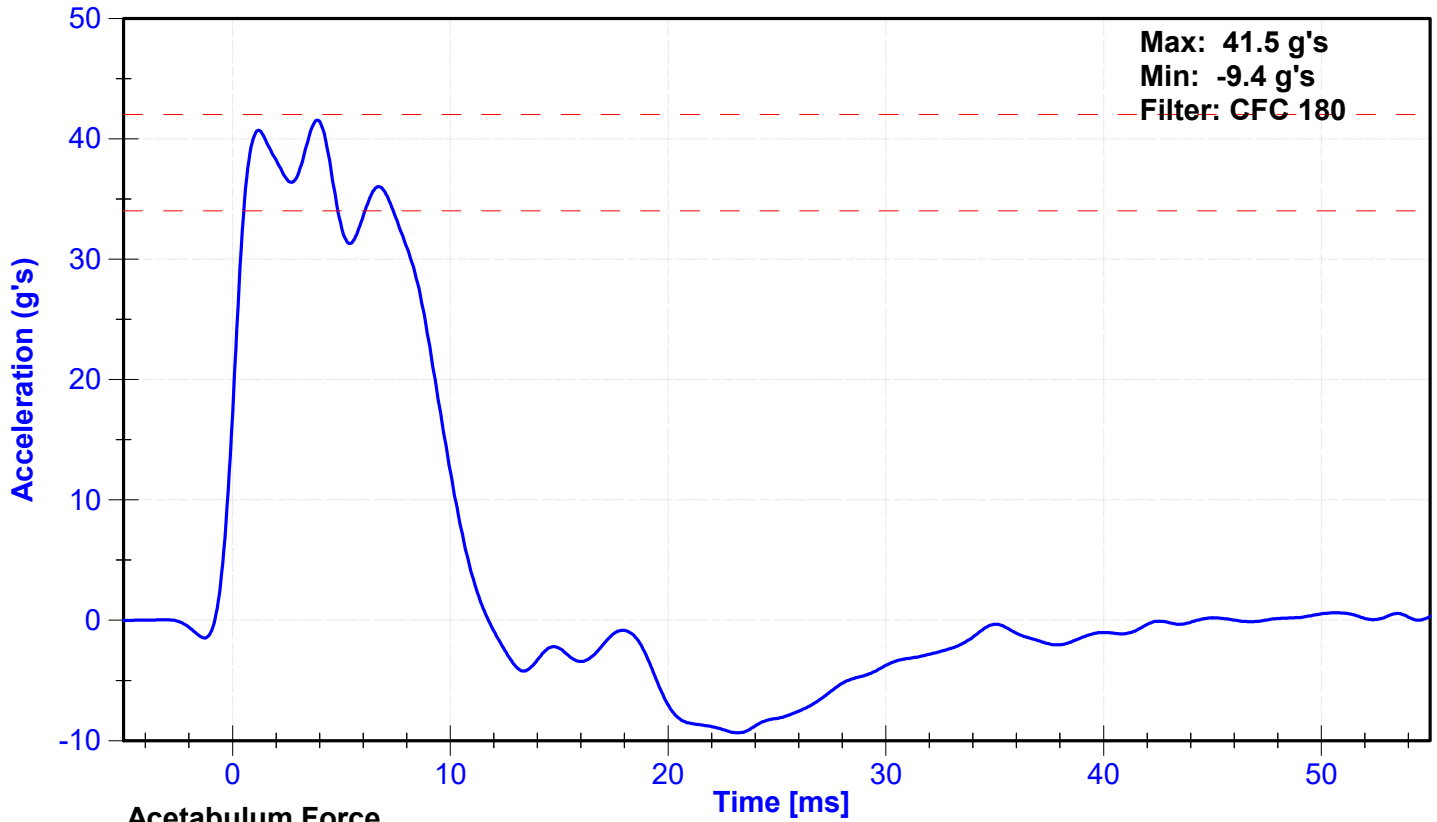
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	51	Pass
Velocity	6.6	6.8	m/s	6.69	Pass
Probe Acceleration	38	47	g's	45.9	Pass
Lateral Pelvis Acceleration after 6ms	34	42	g's	36.0	Pass
Acetabulum Force	3600	4300	N	4056.0	Pass

Transducer Calibrations

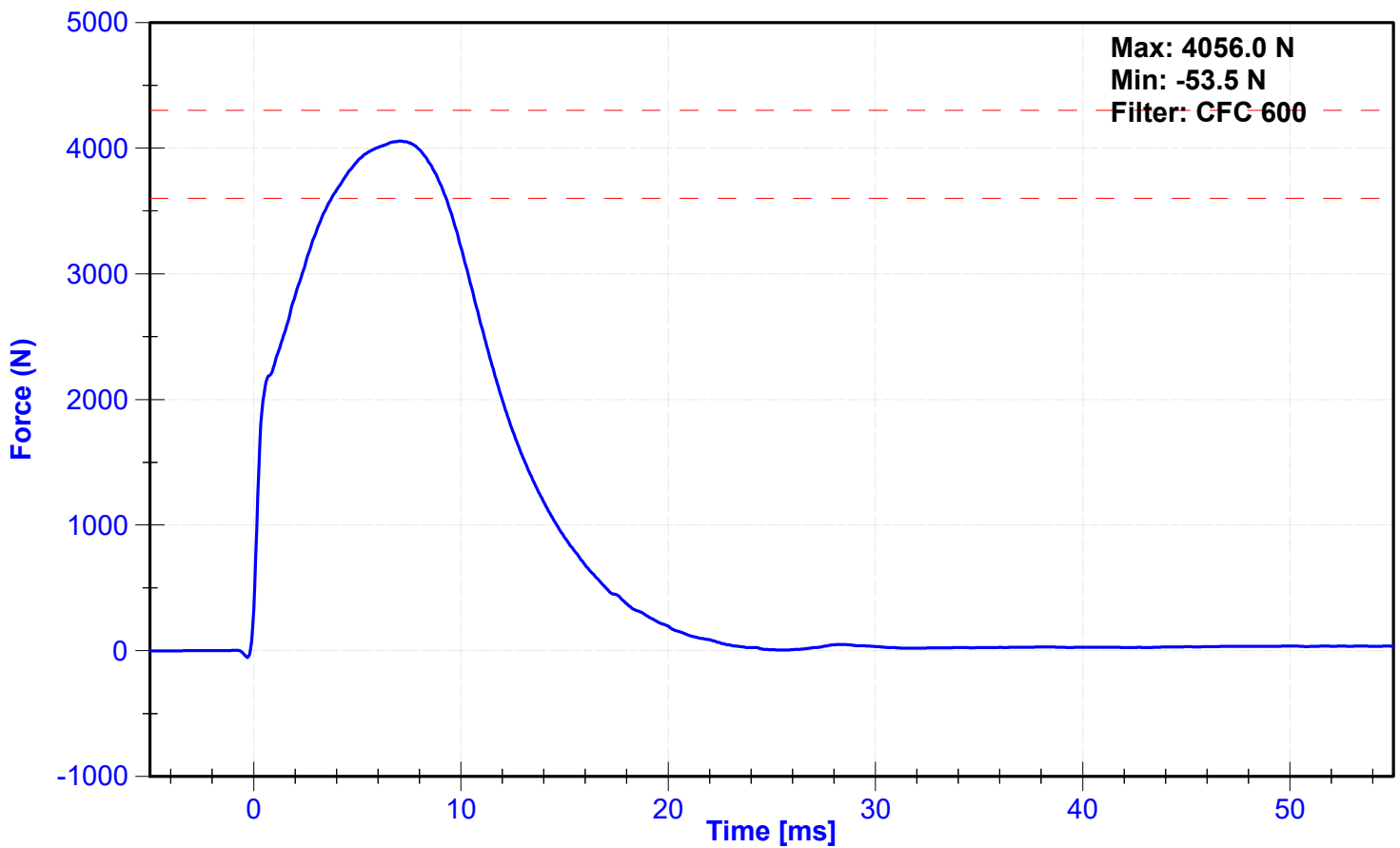
Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18566	5/7/2025	11/3/2025
Pelvis Y Accelerometer	Endevco	T20860	7/2/2025	12/29/2025
Acetabulum Load Cell	Denton	270-FY	9/16/2024	9/16/2025
Certification Plug	SACO			N/A
Crash Test Plug	SACO			N/A



Lateral Pelvis Acceleration



Acetabulum Force





SID-ILs Pelvis Plug Certification Test

Plug S/N 16875

Test Number 23712

Report Number 23769

Test Date 8/1/2022 10:58:33 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: CRT 7/19/2025 -WB

1098012

Operator

Part Number 180-4450

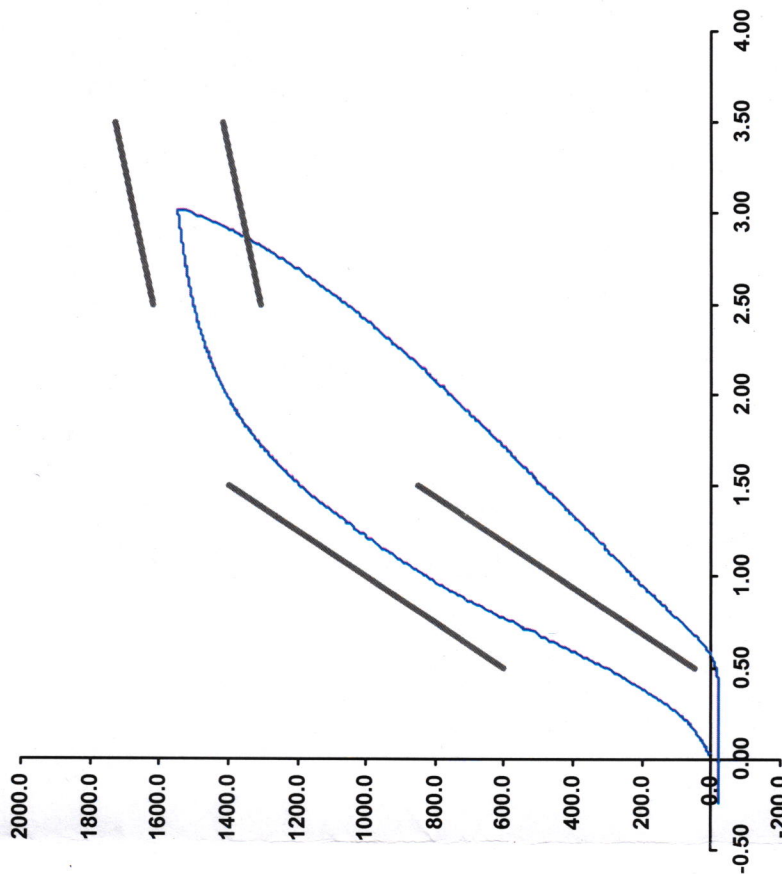
Template No 107 01-Aug-22

SACO Research

By: DC Date: 8/1/22

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

Force (-N) vs Extension (-mm)





SID-ILs Pelvis Plug Certification Test

Plug S/N 16835

Test Number 23670

Report Number 23727

Test Date 8/1/2022 8:43:51 AM

	Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	334	50	600
Force @ 1.5 mm (N)	1,213	850	1,400
Force @ 2.5 mm (N)	1,495	1,306	1,618
Force @ 3.0 mm (N)	1,534	1,361	1,673

Testing Machine STM-20 5965542

Load Cell S/N (FI360947), Units (LBS) 1000

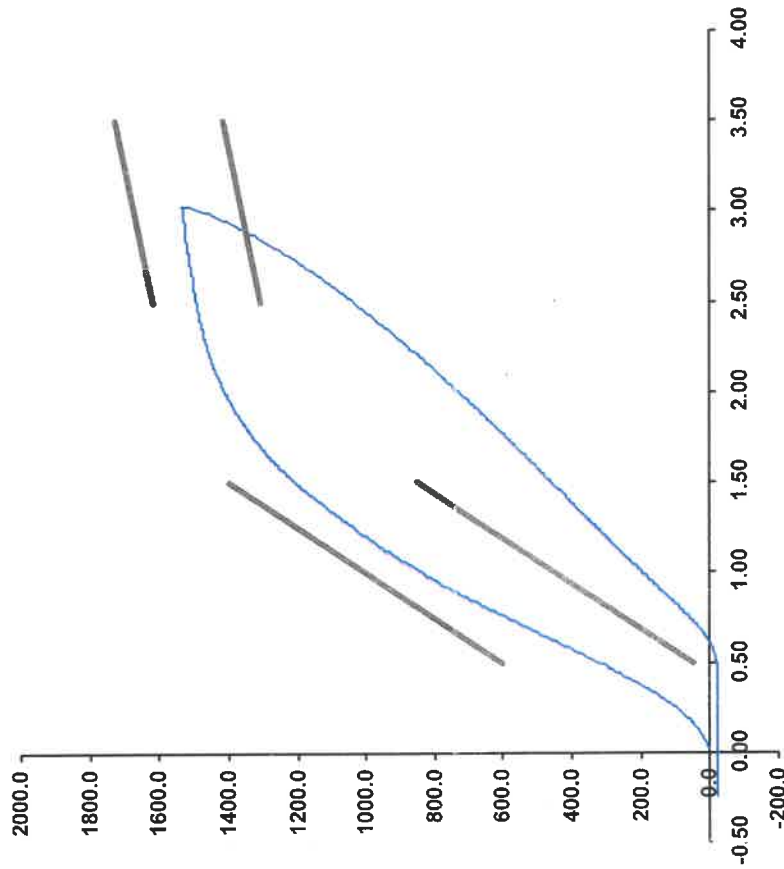
Crosshead Speed (mm / min) or Rate 12.7

Extension or Position Measured by XHD_100 (XHD100)

Notes:

DG 8012 Impact 4-7-25

Force (-N) vs Extension (-mm)



Operator

Part Number 180-4450

Template No 107 01-Aug-22

SACO Research

By: DC Date: 8/1/22

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



SID-ILs Pelvis Plug Certification Test

Plug S/N 16837

Test Number 23672

Report Number 23729

Test Date 8/1/2022 9:00:44 AM

Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	307	600
Force @ 1.5 mm (N)	1,155	1,400
Force @ 2.5 mm (N)	1,456	1,618
Force @ 3.0 mm (N)	1,502	1,673

Testing Machine STM-20 5965542

Load Cell S/N (F1360947), Units (LBS) 1000

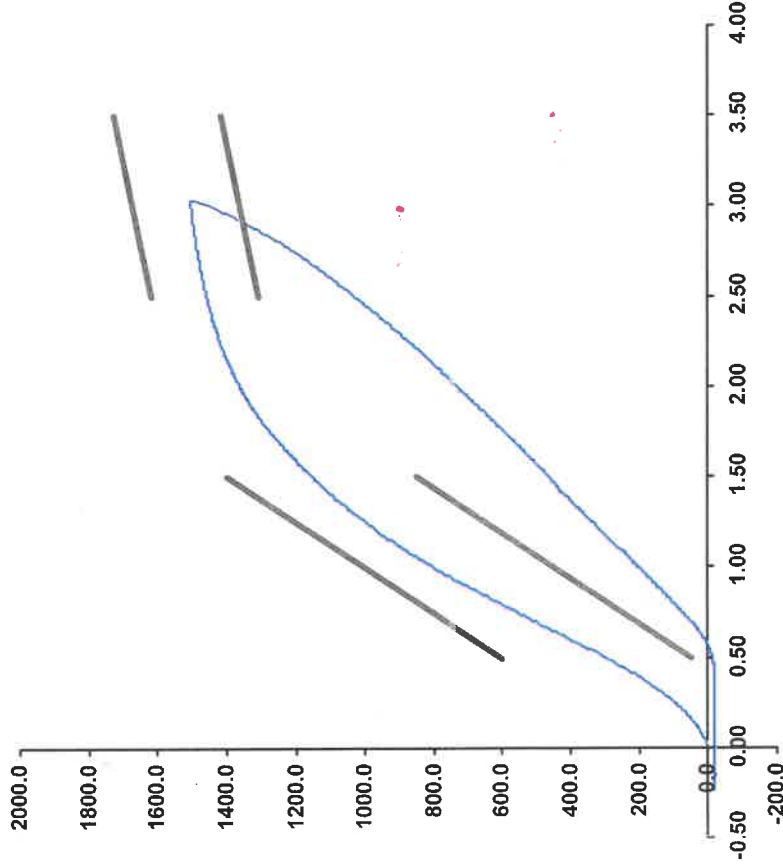
Crosshead Speed (mm / min) or Rate 12.7

Extension or Position Measured by XHD_100 (XHD100)

Notes:

DB 8012 Non-Impact 4-7-25

Force (-N) vs Extension (-mm)



Operator

Part Number 180-4450

Template No 107 01-Aug-22

SACO Research

By : DC Date : 8/1/22

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

ATD Manufacturer	FTSS	Test Technician	W. Brokx
ATD Serial Number	DG8012	Laboratory Supervisor	J. Kinderman

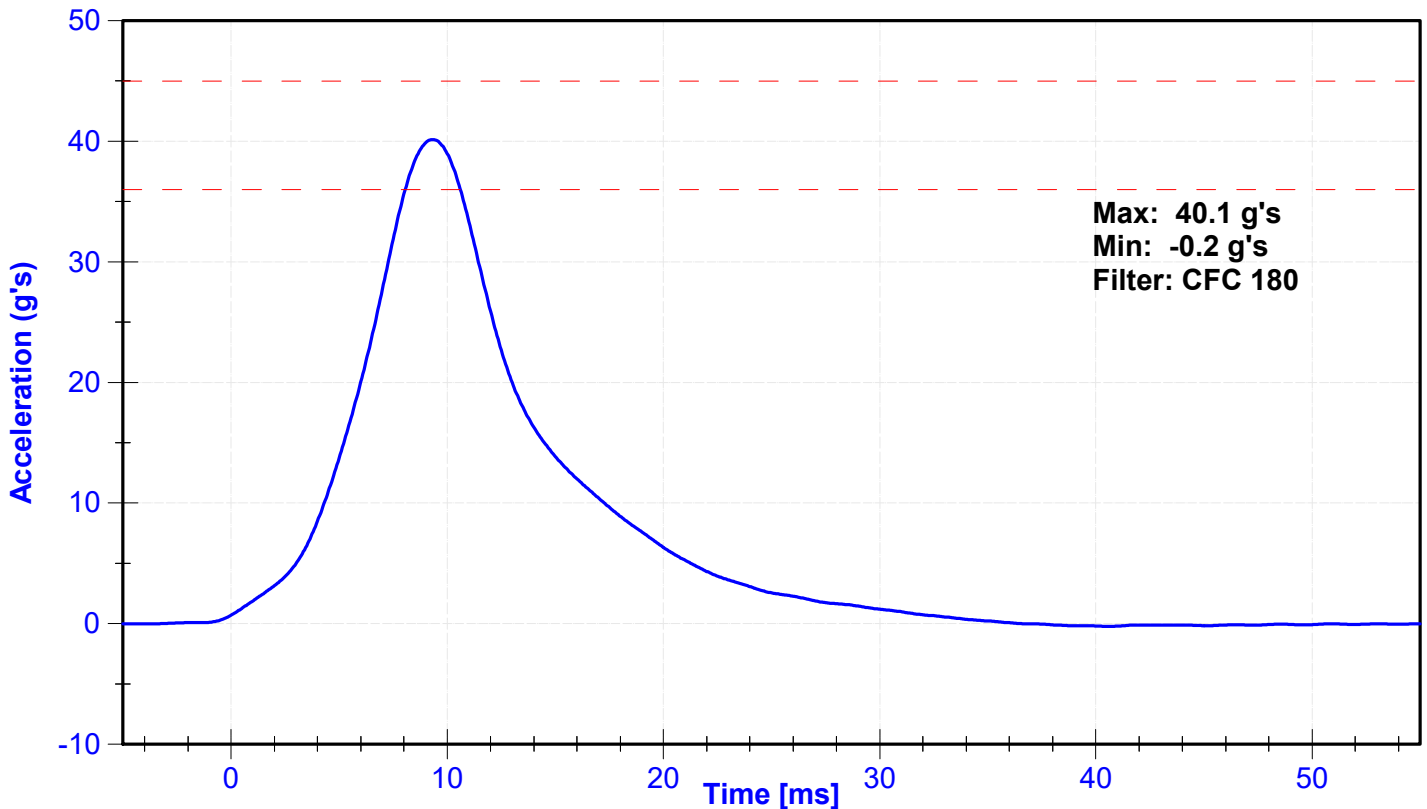
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	51	Pass
Velocity	4.2	4.4	m/s	4.23	Pass
Probe Acceleration	36	45	g's	40.1	Pass
Lateral Pelvis Acceleration	28	39	g's	32.3	Pass
Iliac Force	4100	5100	N	4501.7	Pass

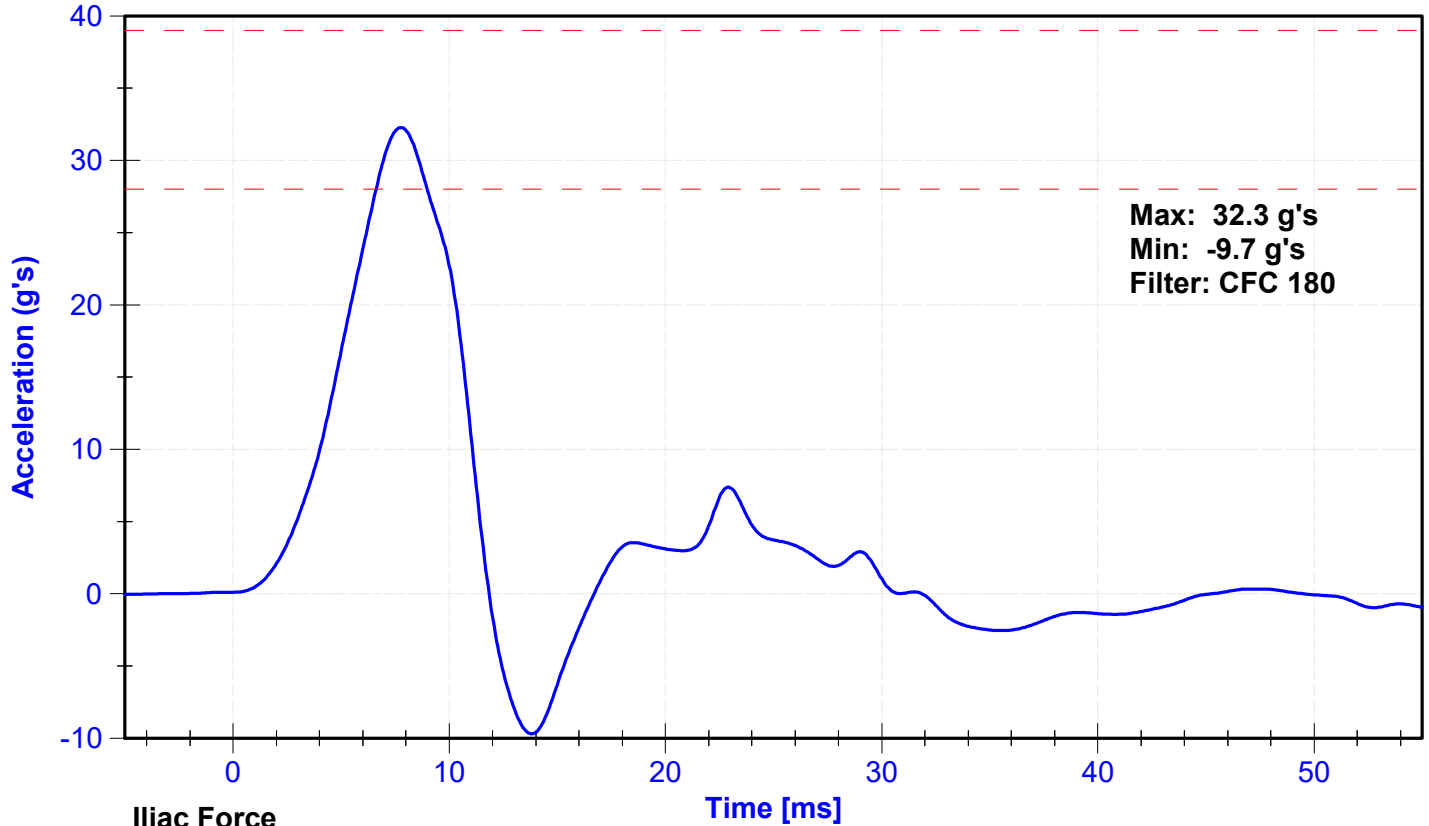
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18566	5/7/2025	11/3/2025
Pelvis Y Accelerometer	Endevco	T20860	7/2/2025	12/29/2025
Iliac Load Cell	Denton	321	9/16/2024	9/16/2025

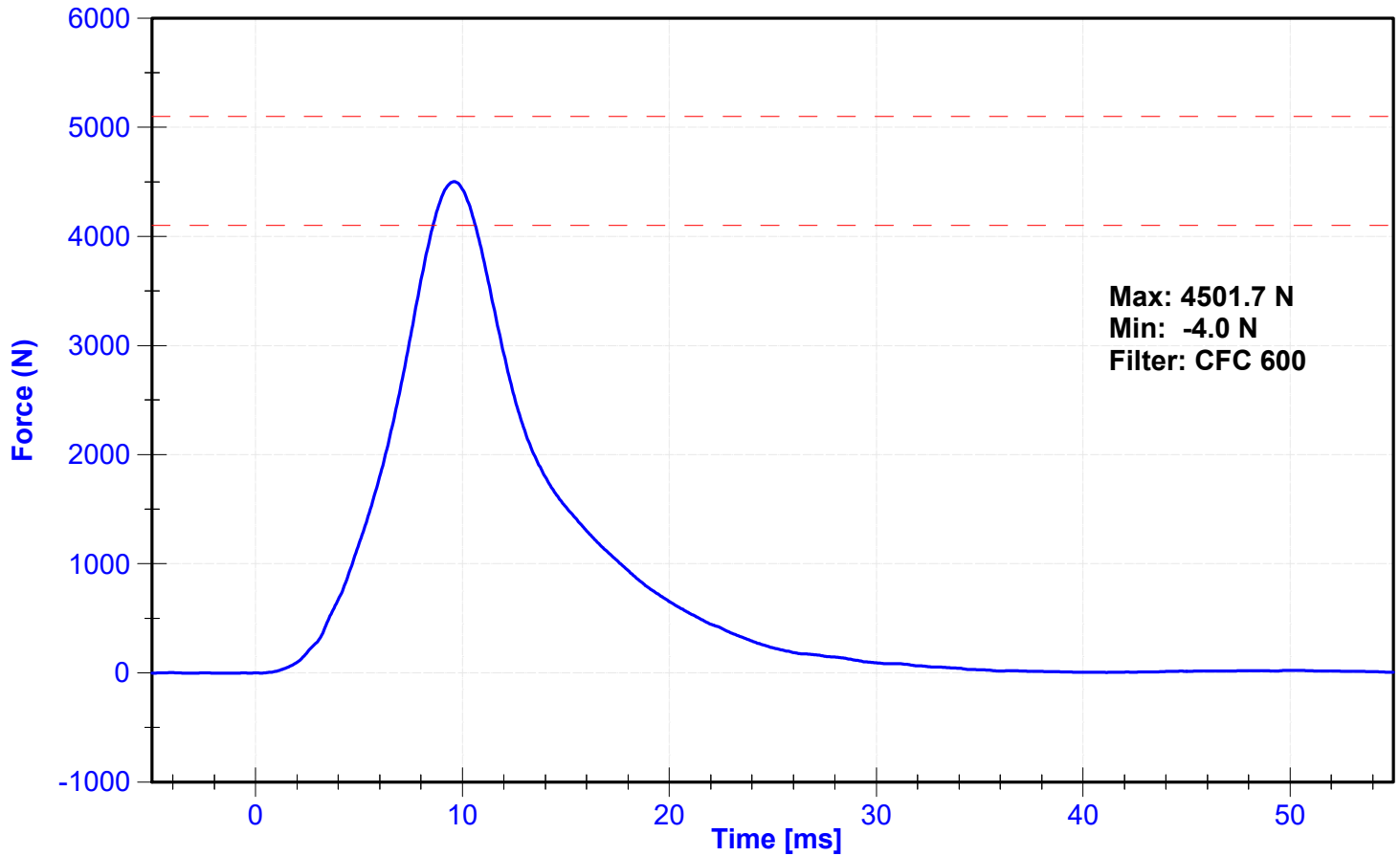
Probe Acceleration



Lateral Pelvis Acceleration



Iliac Force



CALIBRATION TEST RESULTS

POST-TEST

EUROSID 2 (ES-2RE) MALE – DRIVER ATD

SERIAL NO:F033

(CONFIGURED FOR LEFT SIDE IMPACT)

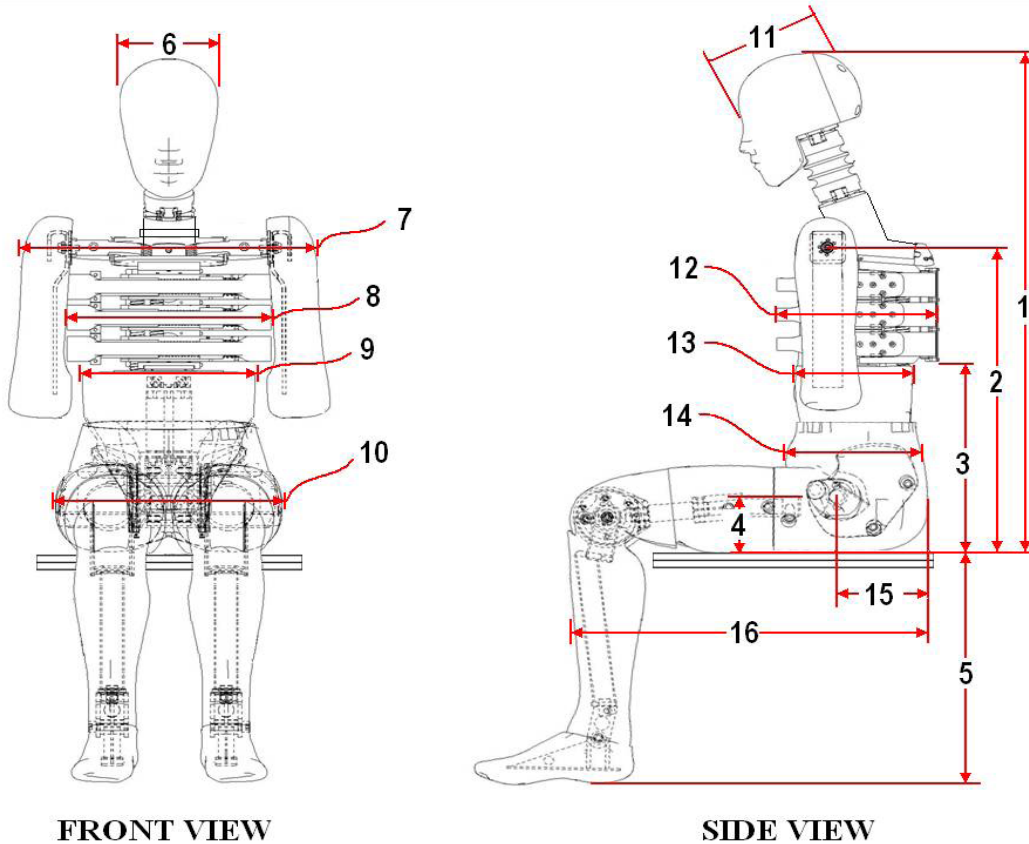


External Measurements - EuroSID-2re

Technician: J. Rios

Date: 07/16/2025

Dummy Serial Number: F033



FRONT VIEW

SIDE VIEW

Dim. No.	Description	Specification (mm)		Result (mm)	Pass/Fail
1	Sitting Height	900	918	903	Pass
2	Seat to Shoulder Joint	558	572	563	Pass
3	Seat to Lower Face of Thoracic Spine Box	346	356	354	Pass
4	Seat to Hip Joint (center of bolt)	97	103	102	Pass
5	Sole to Seat, Sitting	333	451	394	Pass
6	Head Width	152	158	155	Pass
7	Shoulder/Arm Width	461	479	469	Pass
8	Thorax Width	322	332	327	Pass
9	Abdomen Width	273	287	281	Pass
10	Pelvis Lap Width	359	373	364	Pass
11	Head Depth	196	206	202	Pass
12	Thorax Depth	262	272	267	Pass
13	Abdomen Depth	194	204	198	Pass
14	Pelvis Depth	235	245	240	Pass
15	Back of Buttocks to Hip Joint (center of bolt)	150	160	154	Pass
16	Back of Buttocks to Front Knee	597	615	602	Pass

ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	F033	Laboratory Supervisor	J. Kinderman

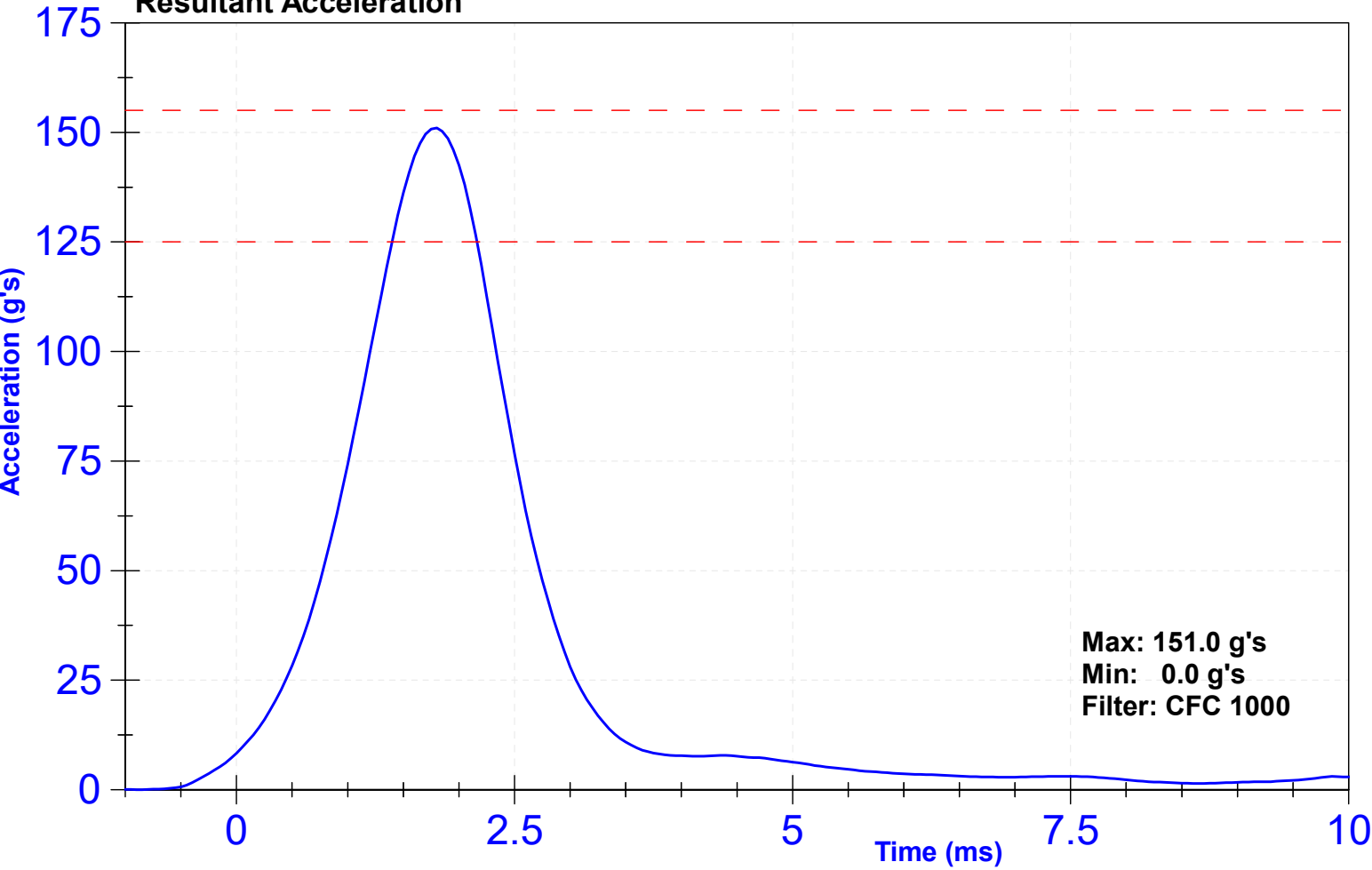
Results

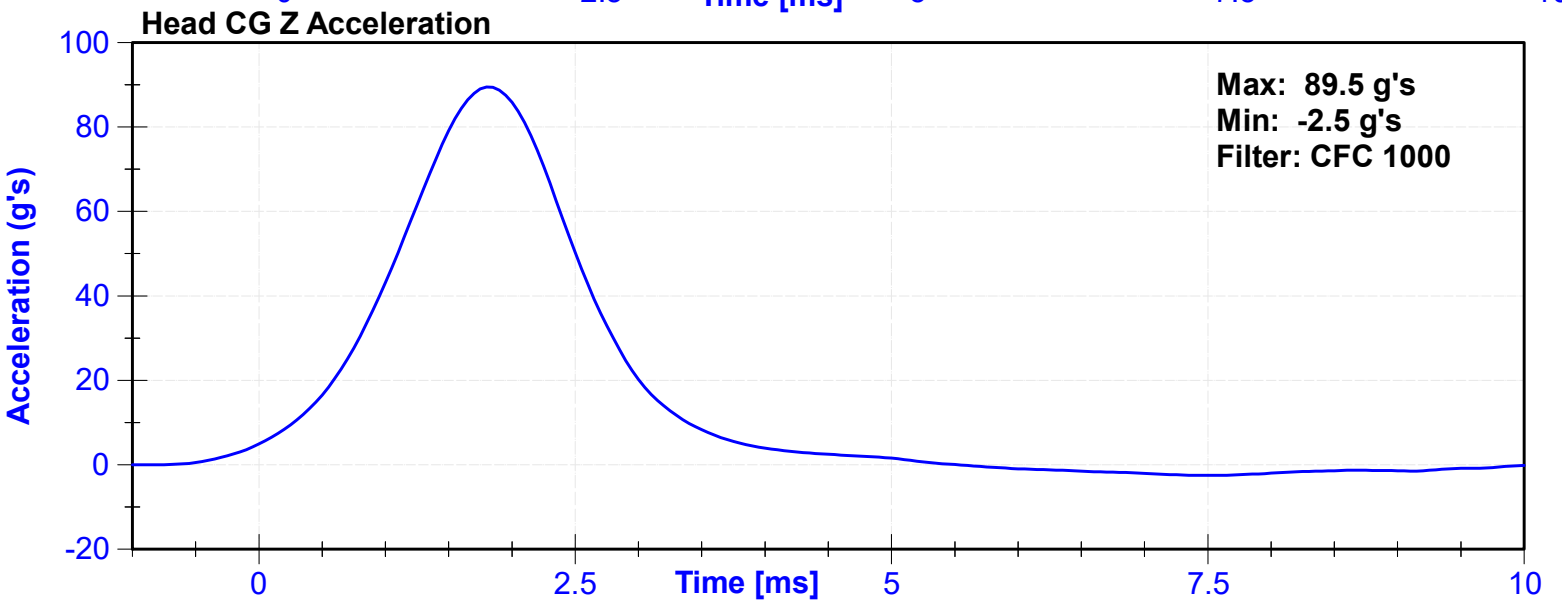
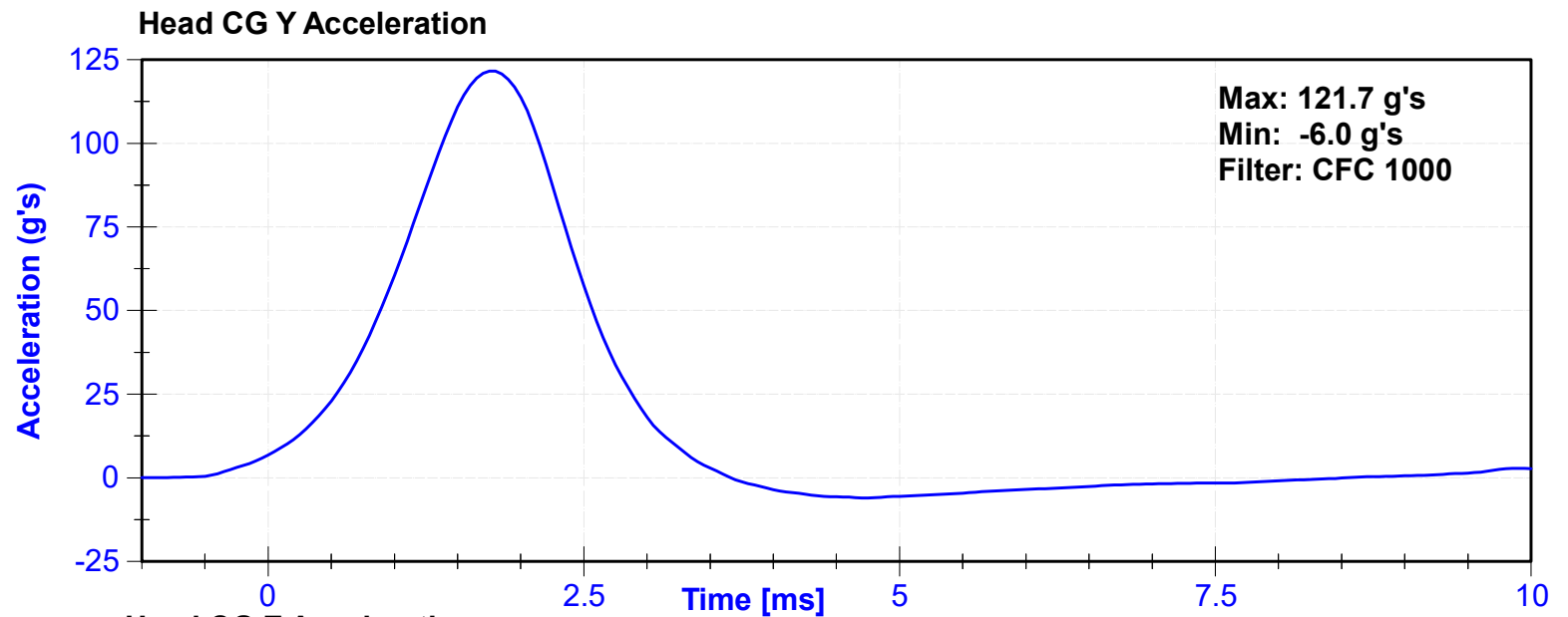
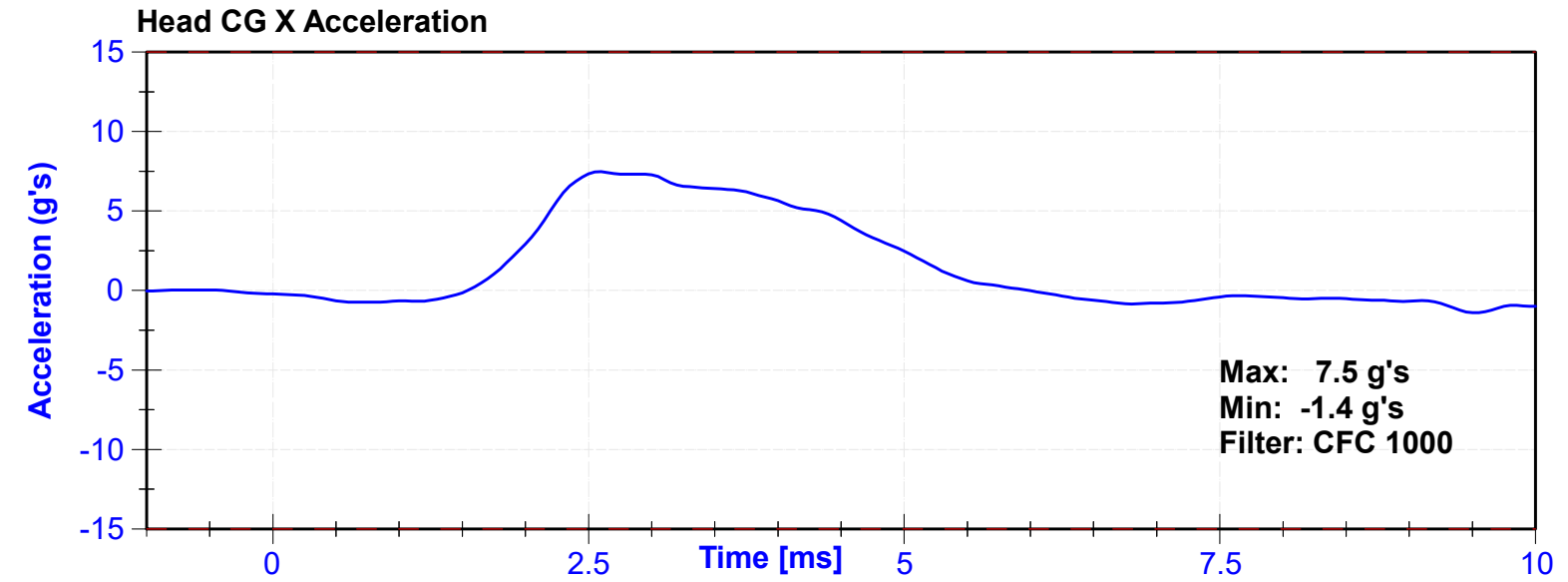
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.1	Pass
Humidity	10	70	%	54	Pass
Resultant Acceleration	125	155	g's	151.0	Pass
Oscillation	0	15	%	5.20	Pass
Fore-Aft Acceleration	-15	15	g's	7.5	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
X Accelerometer	Endevco	P63861	7/1/2025	12/28/2025
Y Accelerometer	Endevco	P49216	7/1/2025	12/28/2025
Z Accelerometer	Endevco	P51303	7/1/2025	12/28/2025

Resultant Acceleration





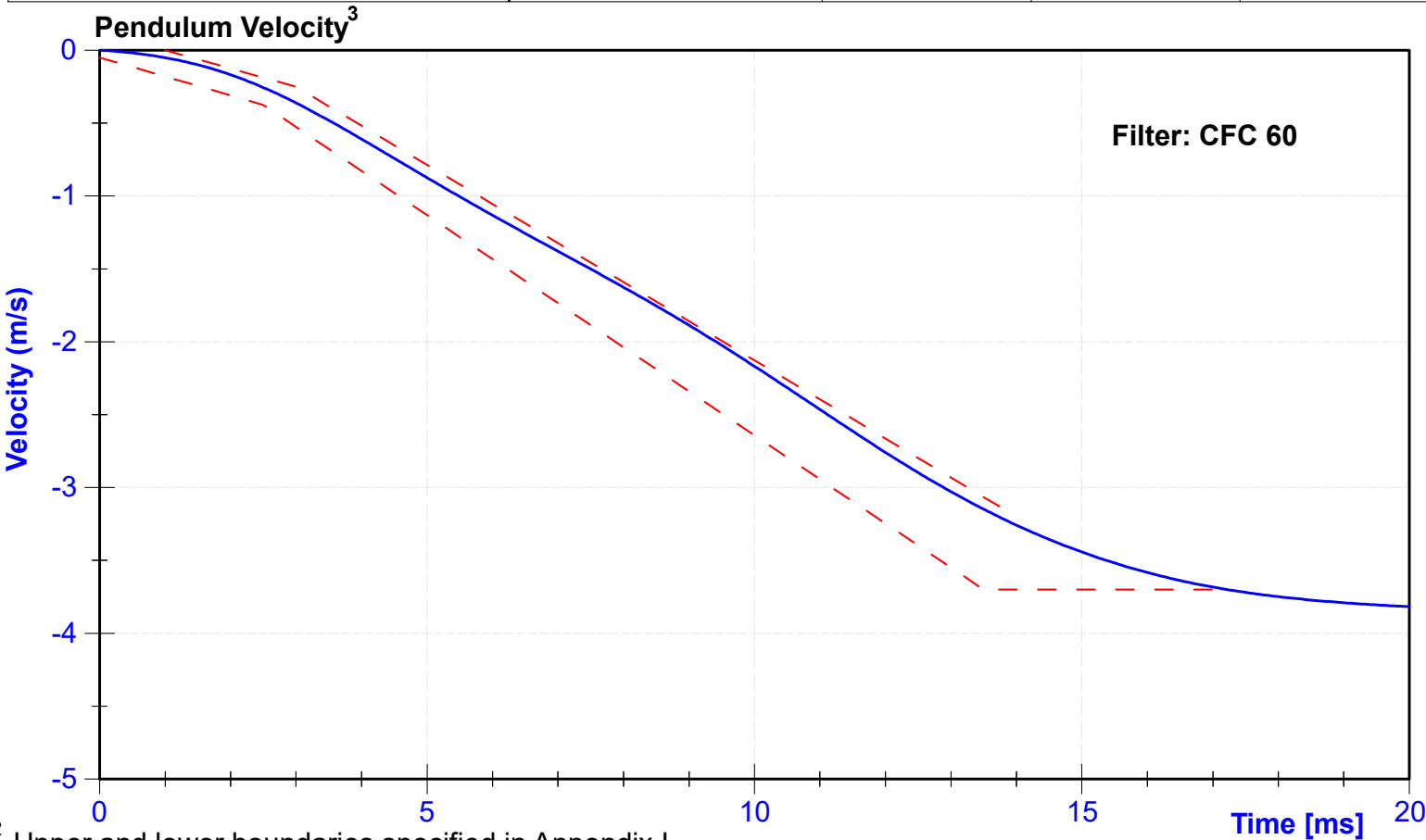
ATD Manufacturer	Denton	Test Technician	Z. Nyhart
ATD Serial Number	F033	Laboratory Supervisor	J. Kinderman

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	52	Pass
Velocity	3.3	3.5	m/s	3.49	Pass
Lateral Neck Rotation	49	59	deg	52.8	Pass
Time at Maximum Rotation	54	66	ms	56.2	Pass
Time of Rotation Decay from Maximum	53	88	ms	59.6	Pass
Pendulum Velocity Overall Corridor	Lower Boundary ¹	Upper Boundary ²	m/s	See Plot ³	Pass

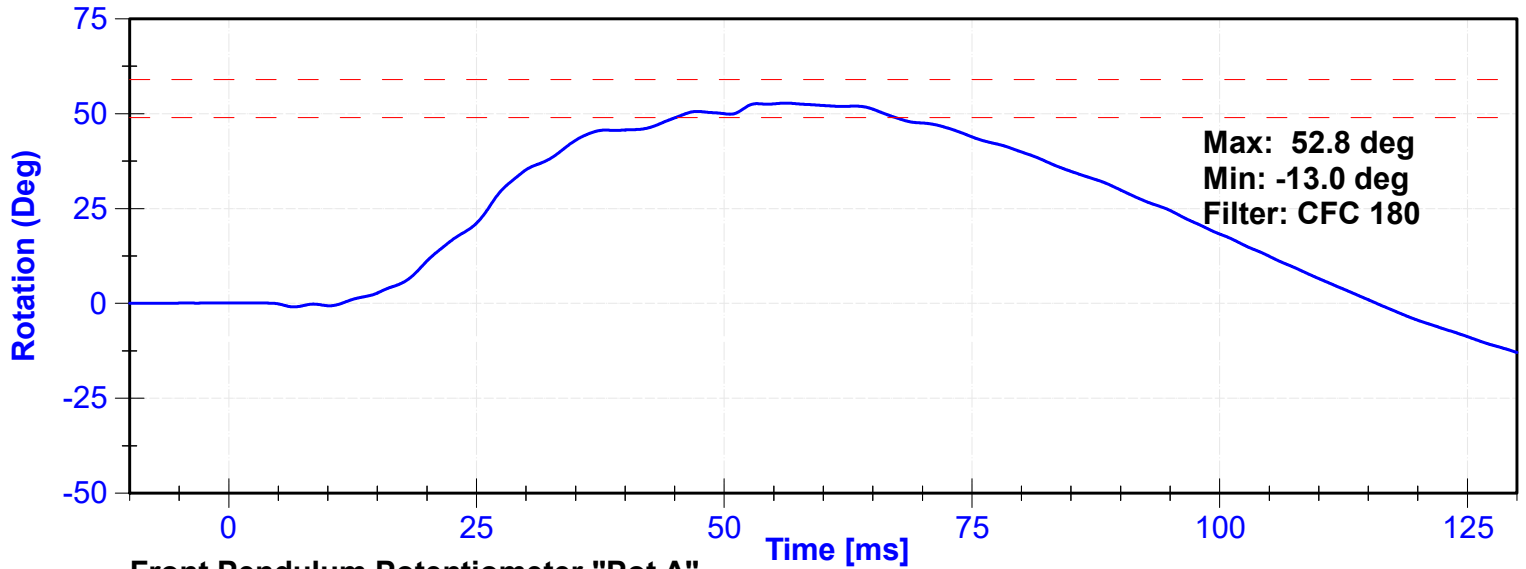
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	C16646	10/17/2024	10/17/2025
Front Pendulum Potentiometer	Sfernice	2247	9/13/2024	9/13/2025
Headform Potentiometer	Sfernice	095	9/13/2024	9/13/2025

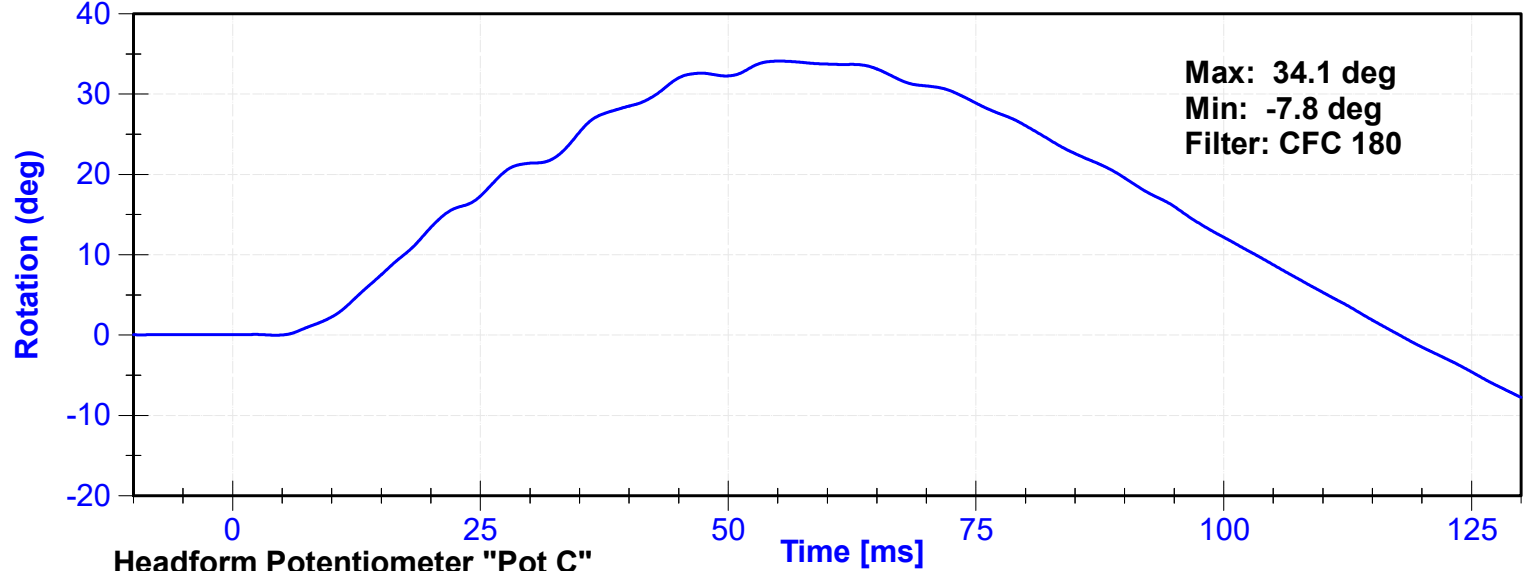


^{1,2} Upper and lower boundaries specified in Appendix I

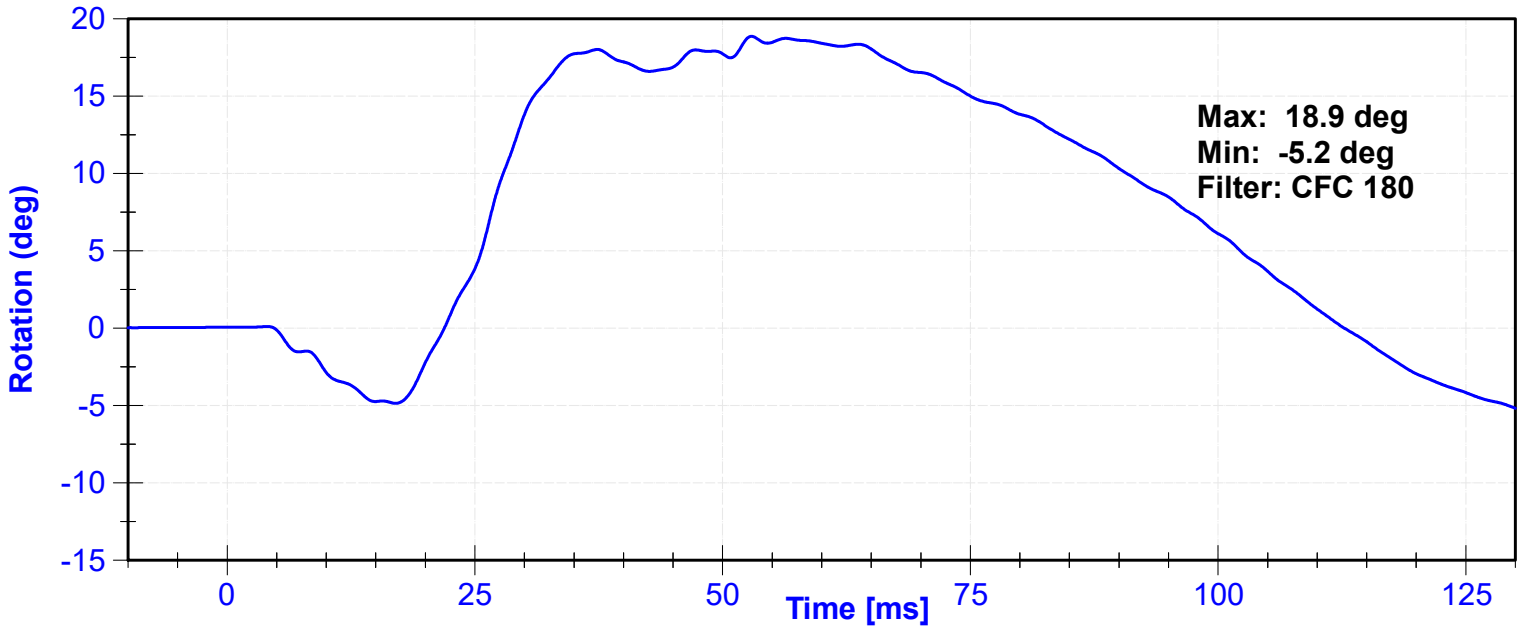
Neck Rotation



Front Pendulum Potentiometer "Pot A"



Headform Potentiometer "Pot C"



Appendix I

² Upper Boundary Corridor		¹ Lower Boundary Corridor	
Time (ms)	Velocity (m/s)	Time (ms)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.0	-0.25	2.5	-0.375
14.0	-3.20	13.5	-3.7
		17.0	-3.7

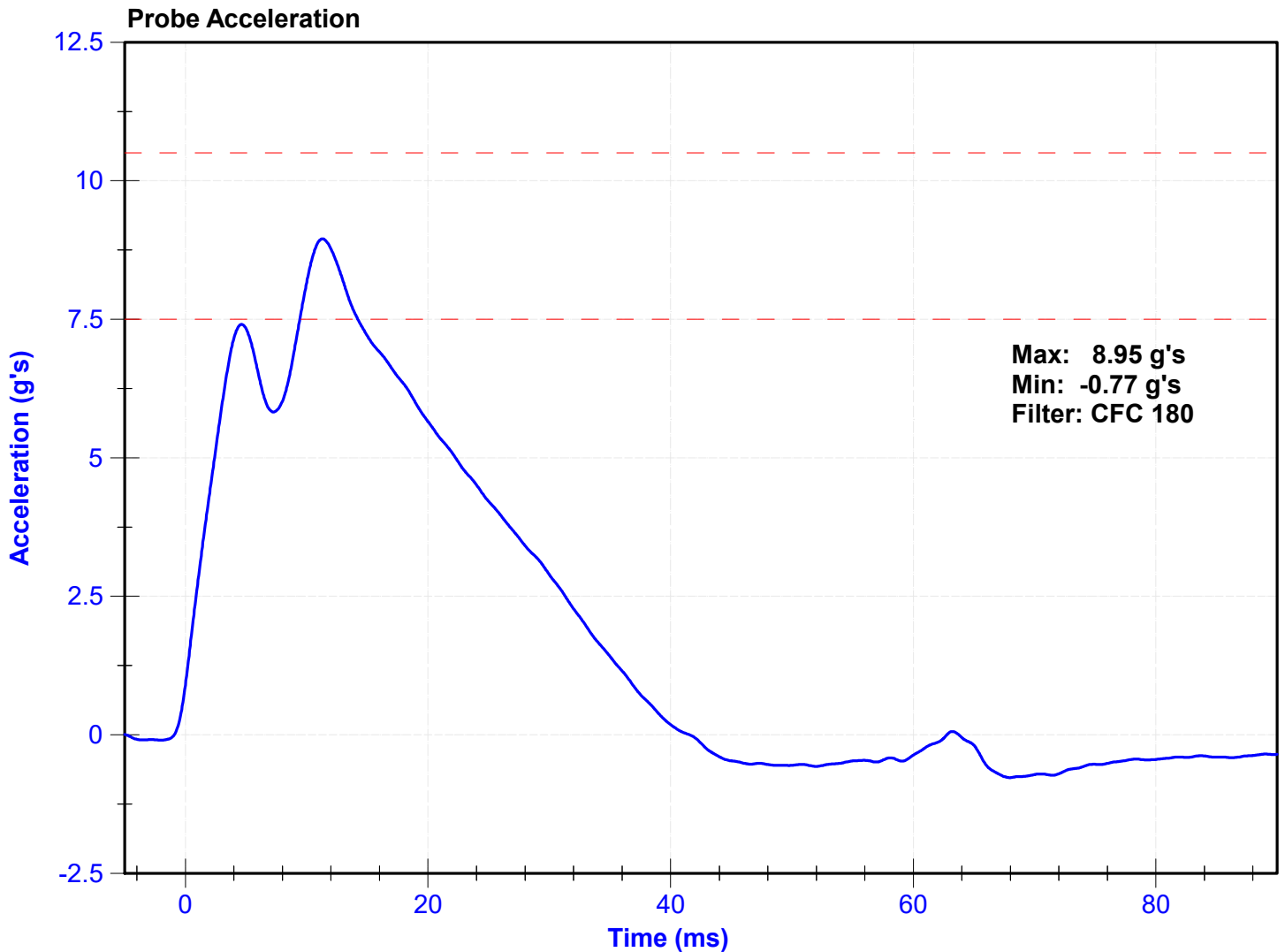
ATD Manufacturer	FTSS	Test Technician	J. Kinderman
ATD Serial Number	F033	Laboratory Supervisor	J. Kinderman

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	52	Pass
Velocity	4.2	4.4	m/s	4.26	Pass
Probe Acceleration	7.5	10.5	g's	8.95	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accelerometer	Endevco	18566	5/7/2025	11/3/2025



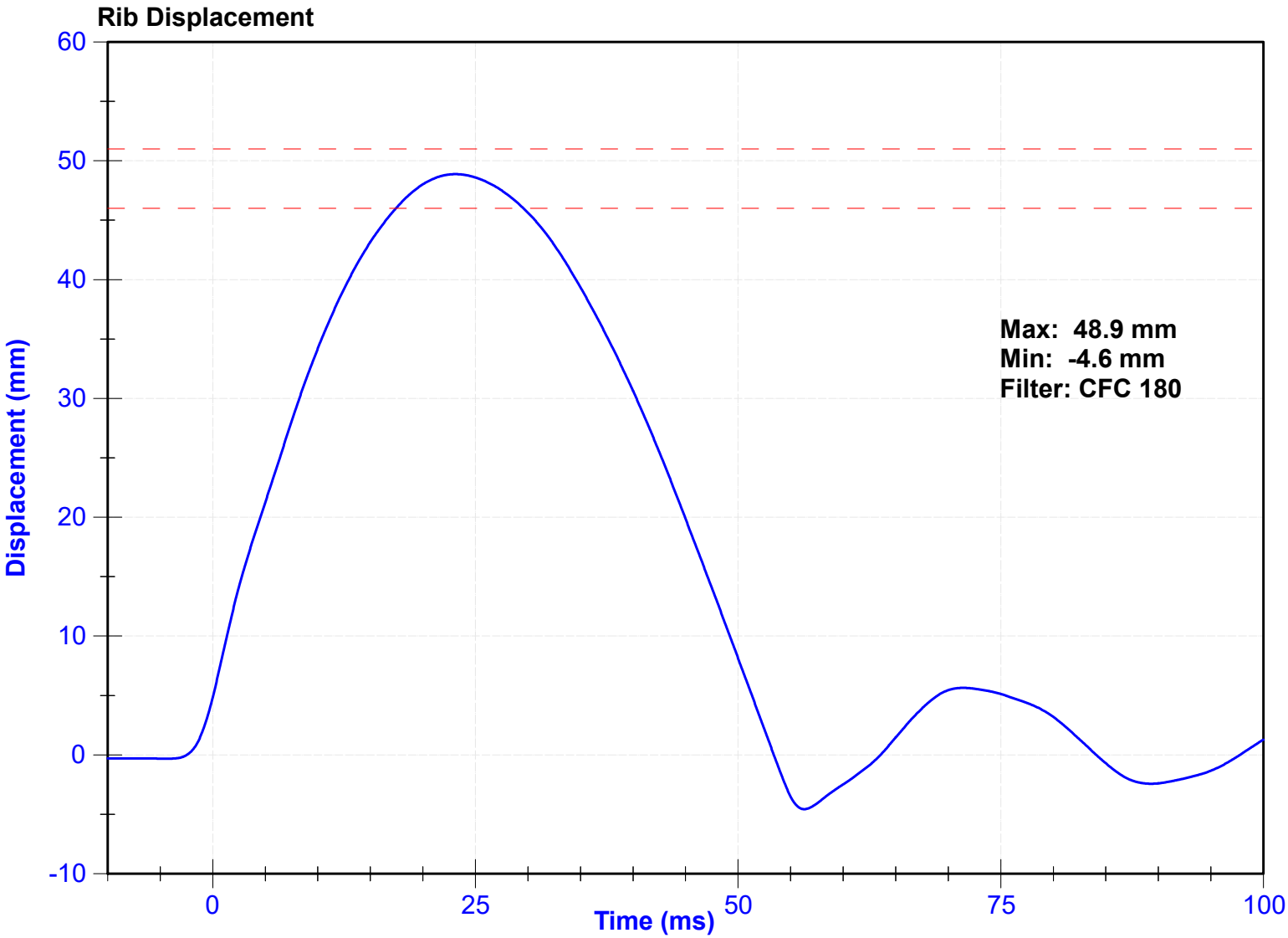
ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	F033	Laboratory Supervisor	J. Kinderman

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.1	Pass
Humidity	10	70	%	54	Pass
Rib Displacement	46	51	mm	48.9	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	179GFE	7/1/2025	12/30/2025



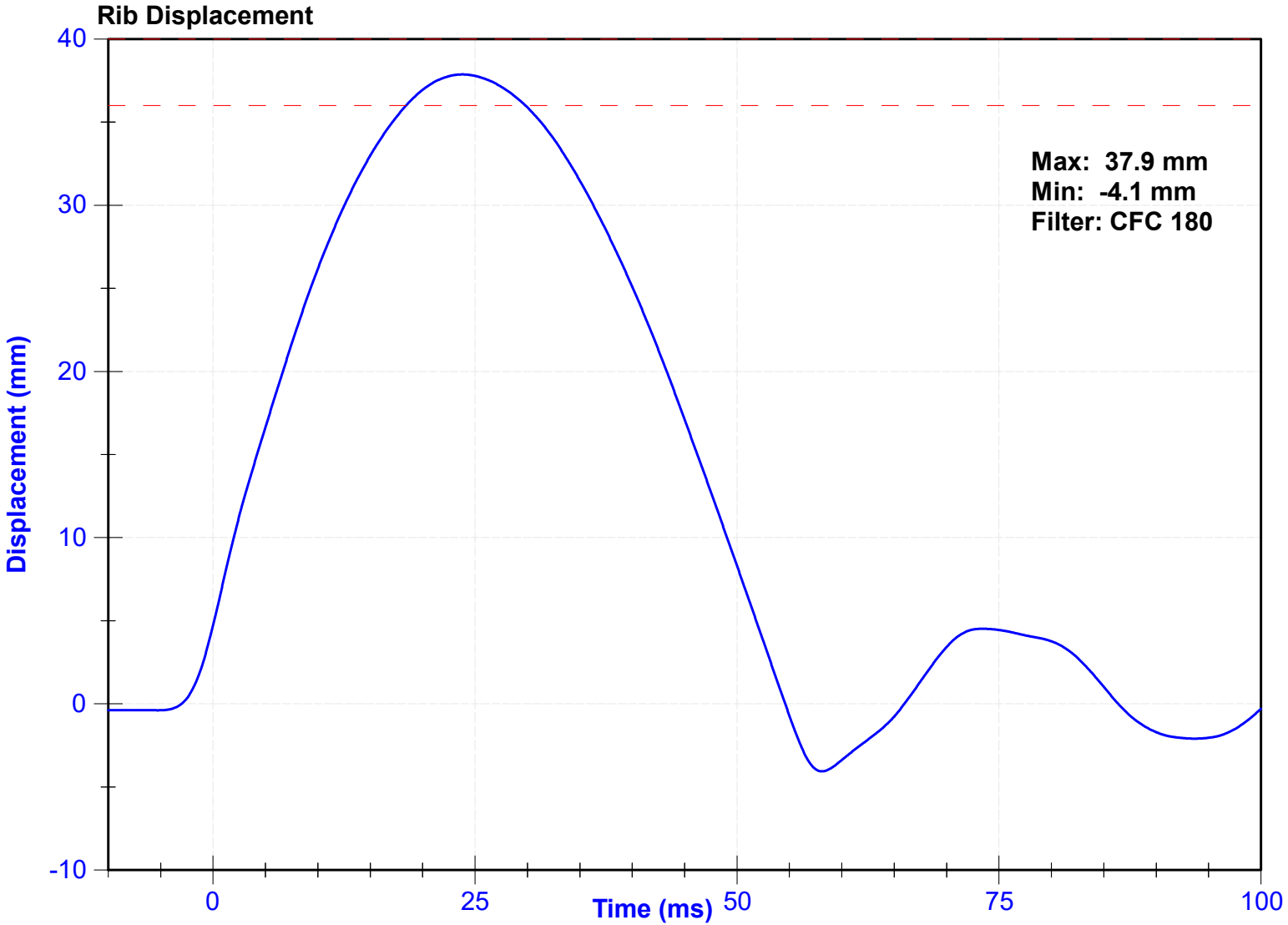
ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	F033	Laboratory Supervisor	J. Kinderman

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.1	Pass
Humidity	10	70	%	54	Pass
Rib Displacement	36	40	mm	37.9	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	179GFE	7/1/2025	12/30/2025



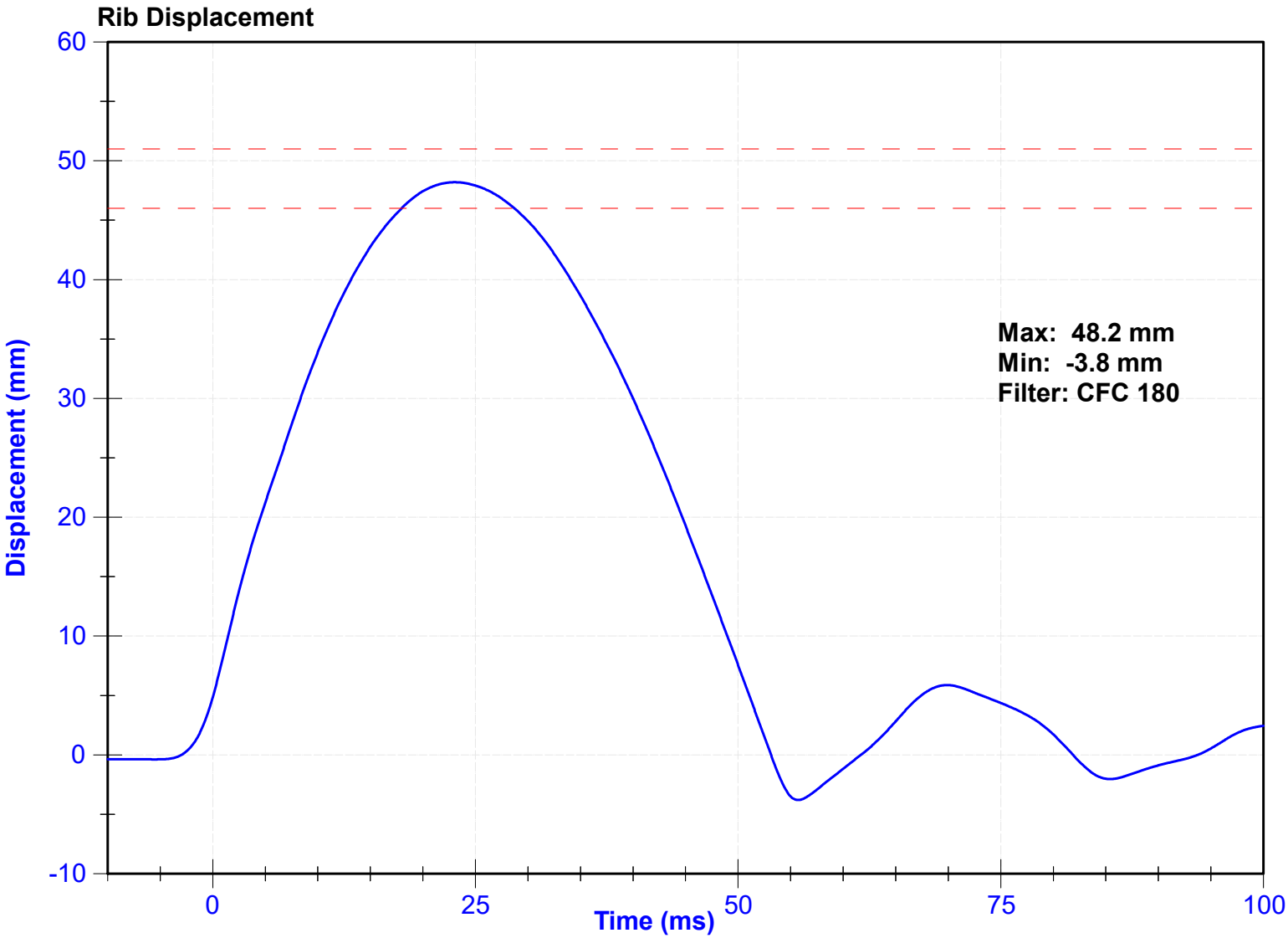
ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	F033	Laboratory Supervisor	J. Kinderman

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.1	Pass
Humidity	10	70	%	54	Pass
Rib Displacement	46	51	mm	48.2	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	185GFE	7/1/2025	12/30/2025



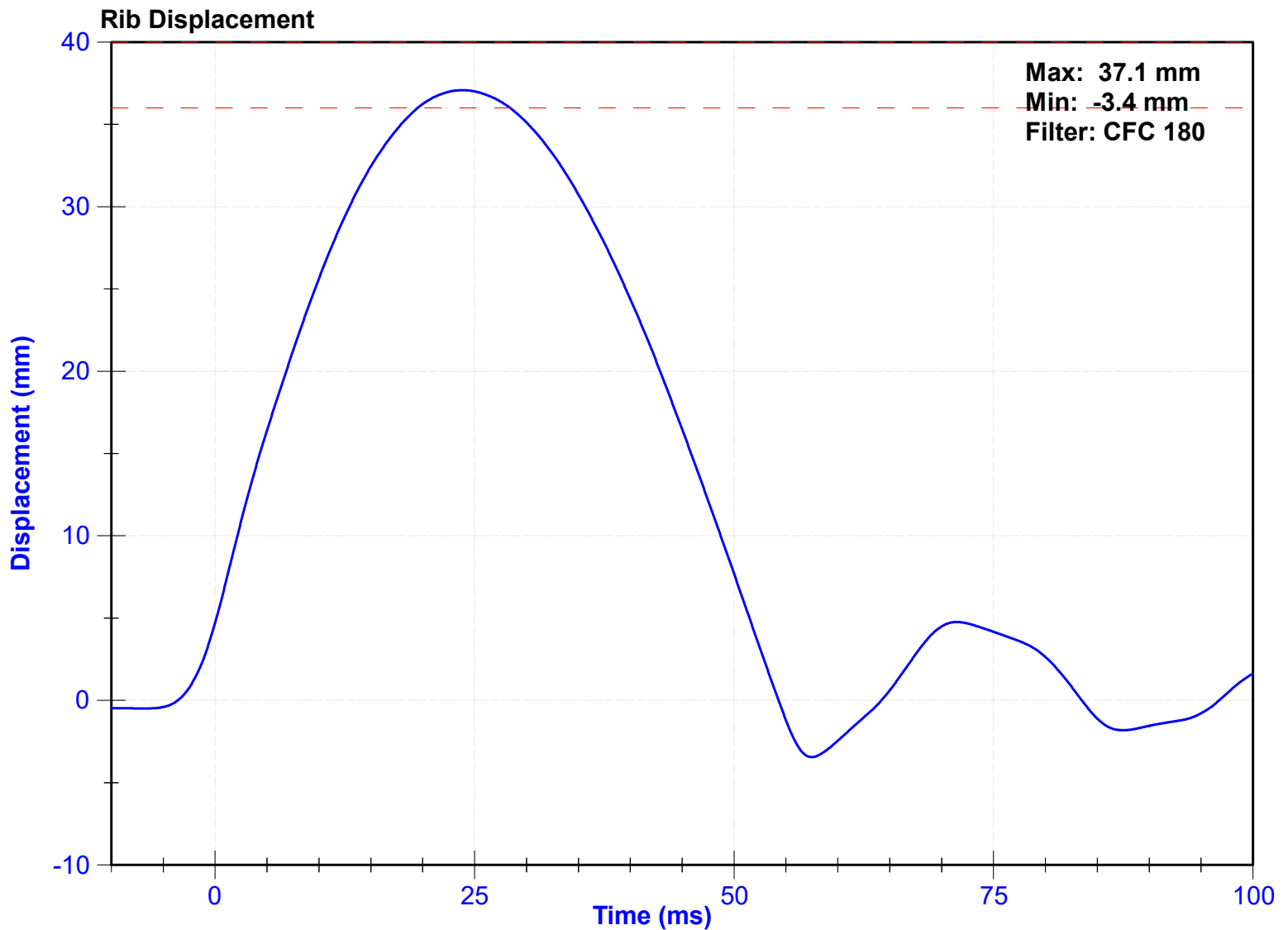
ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	F033	Laboratory Supervisor	J. Kinderman

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.1	Pass
Humidity	10	70	%	54	Pass
Rib Displacement	36	40	mm	37.1	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	185GFE	7/1/2025	12/30/2025



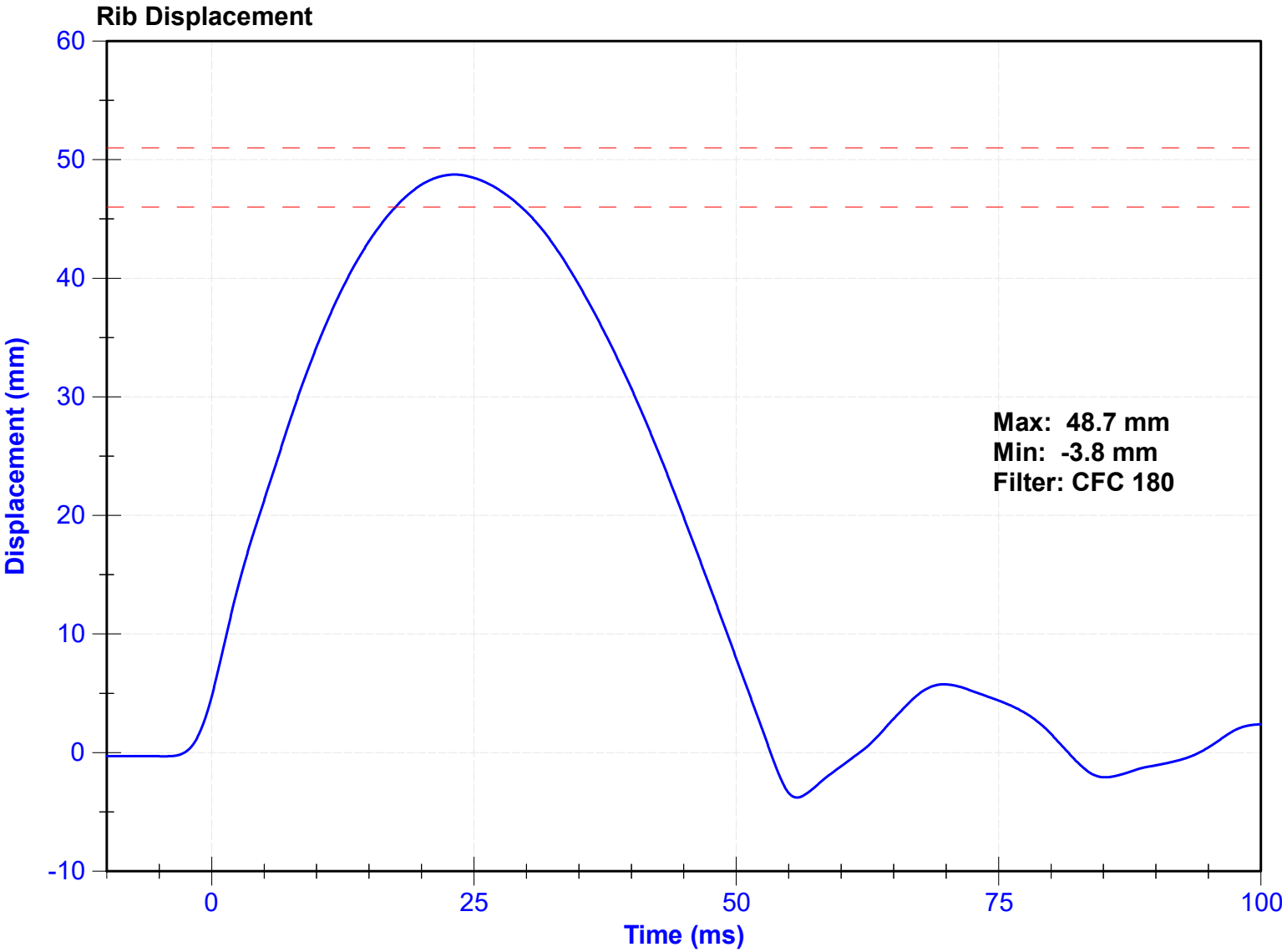
ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	F033	Laboratory Supervisor	J. Kinderman

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.1	Pass
Humidity	10	70	%	54	Pass
Rib Displacement	46	51	mm	48.7	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	184GFE	7/1/2025	12/30/2025



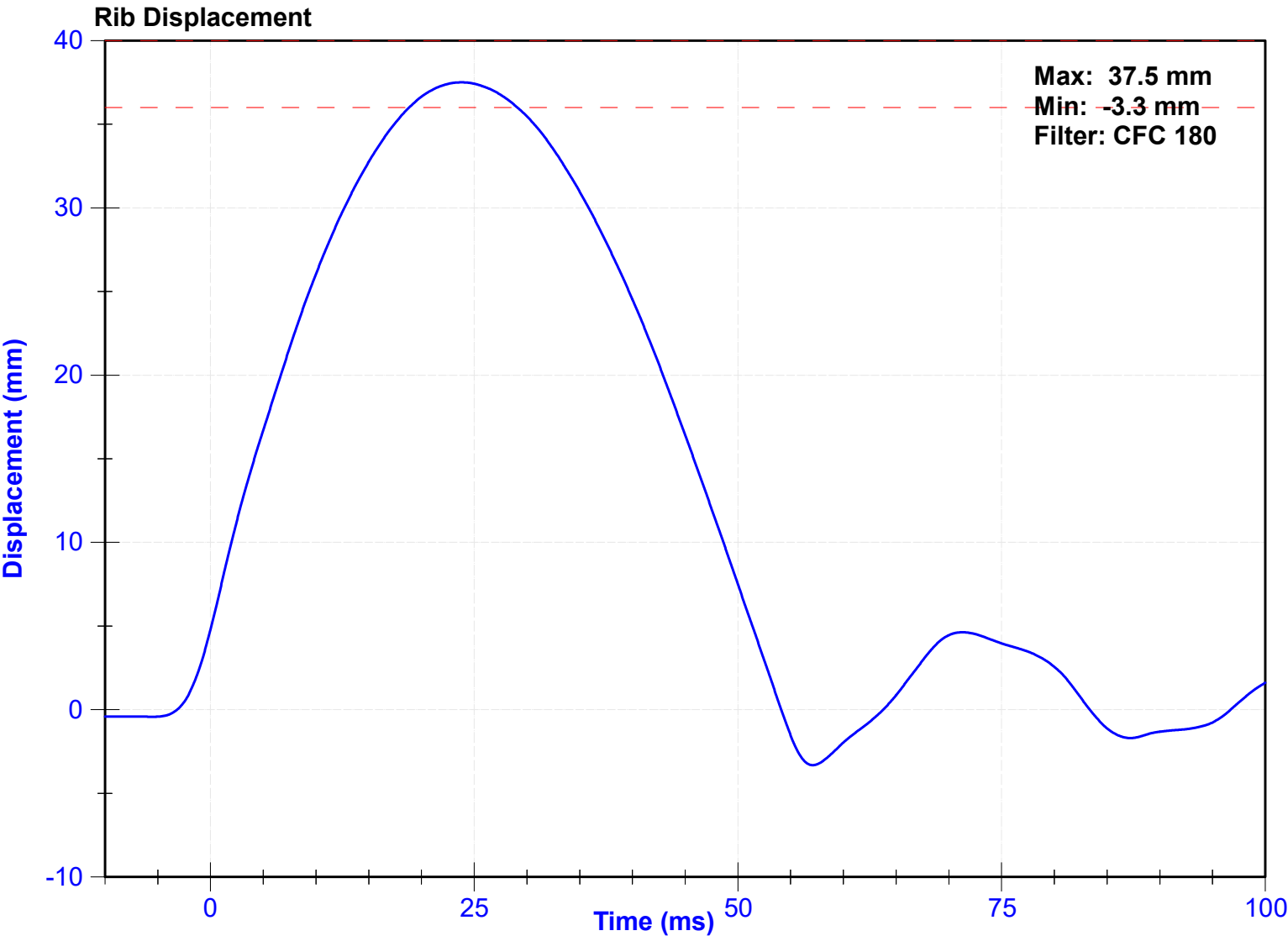
ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	F033	Laboratory Supervisor	J. Kinderman

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.1	Pass
Humidity	10	70	%	54	Pass
Rib Displacement	36	40	mm	37.5	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Rib Potentiometer	Honeywell	184GFE	7/1/2025	12/30/2025



ATD Manufacturer	FTSS	Test Technician	J. Kinderman
ATD Serial Number	F033	Laboratory Supervisor	J. Kinderman

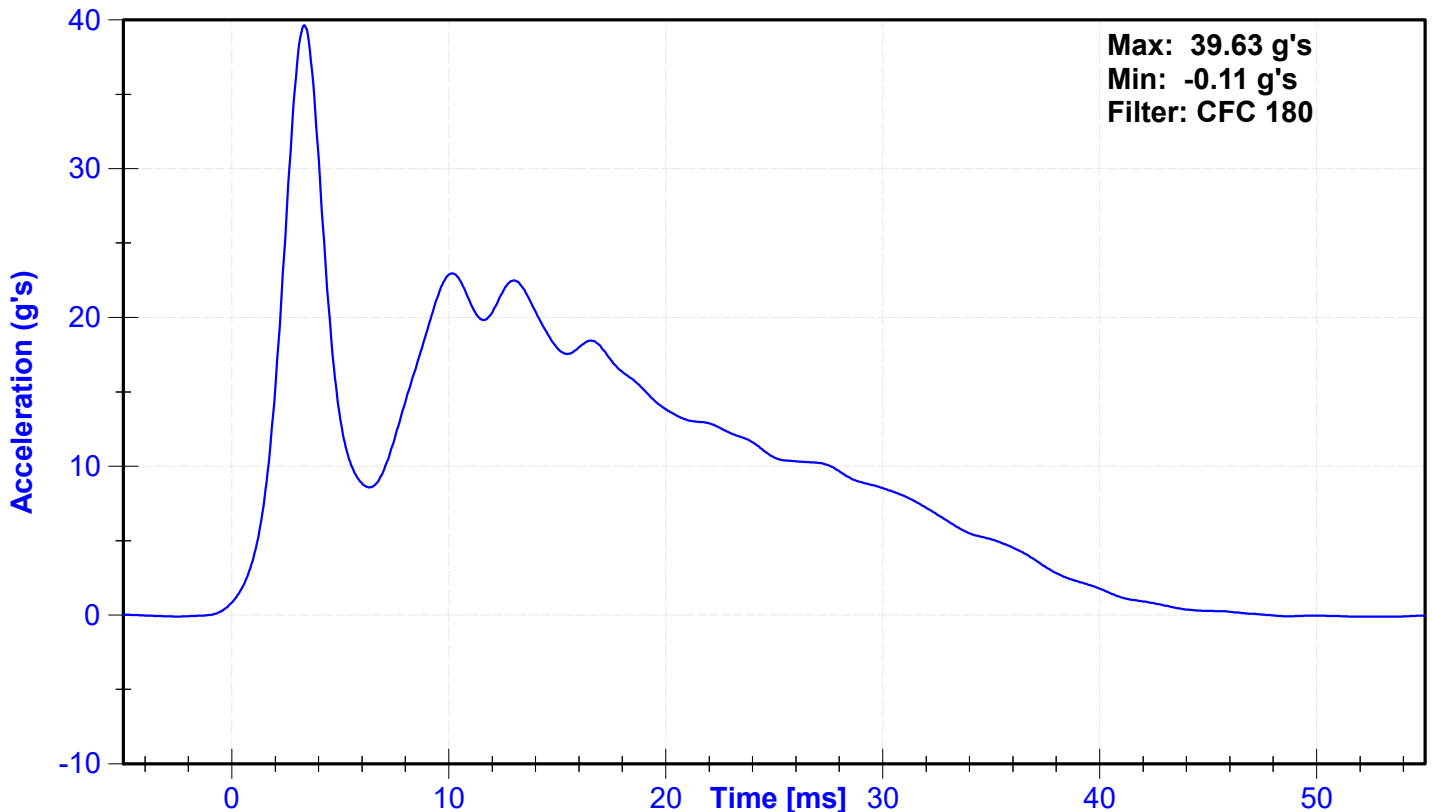
Results

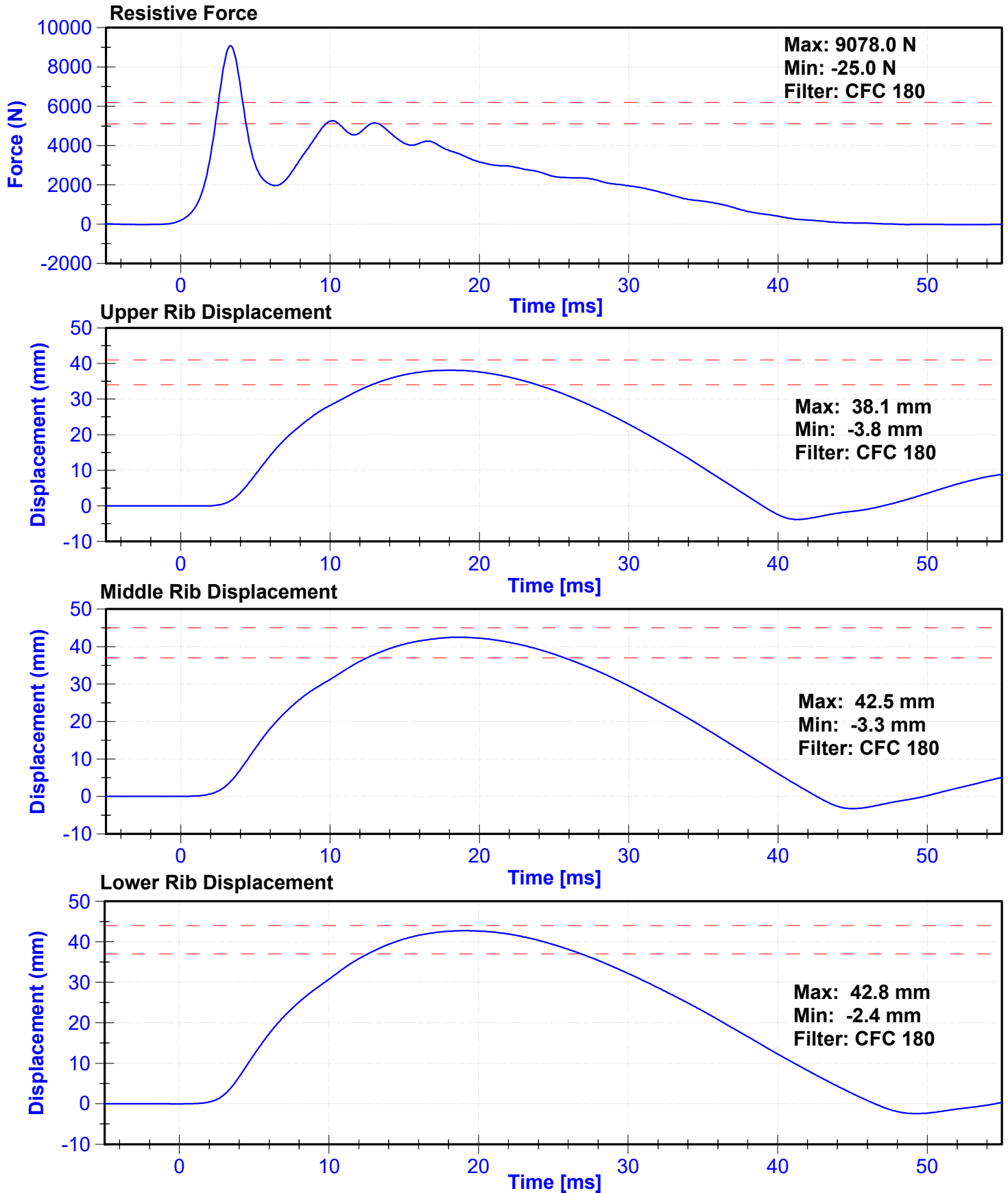
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	52	Pass
Velocity	5.4	5.6	m/s	5.50	Pass
Resistive Force after 6ms	5100	6200	N	5260.6	Pass
Upper Thorax Rib Deflection	34	41	mm	38.1	Pass
Mid Thorax Rib Deflection	37	45	mm	42.5	Pass
Lower Thorax Rib Deflection	37	44	mm	42.8	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accelerometer	Endevco	18566	5/7/2025	11/3/2025
Upper Thorax Rib Potentiometer	Honeywell	179GFE	7/1/2025	12/30/2025
Middle Thorax Rib Potentiometer	Honeywell	185GFE	7/1/2025	12/30/2025
Lower Thorax Rib Potentiometer	Honeywell	184GFE	7/1/2025	12/30/2025

Probe Acceleration





ATD Manufacturer	FTSS	Test Technician	J. Kinderman
ATD Serial Number	F033	Laboratory Supervisor	J. Kinderman

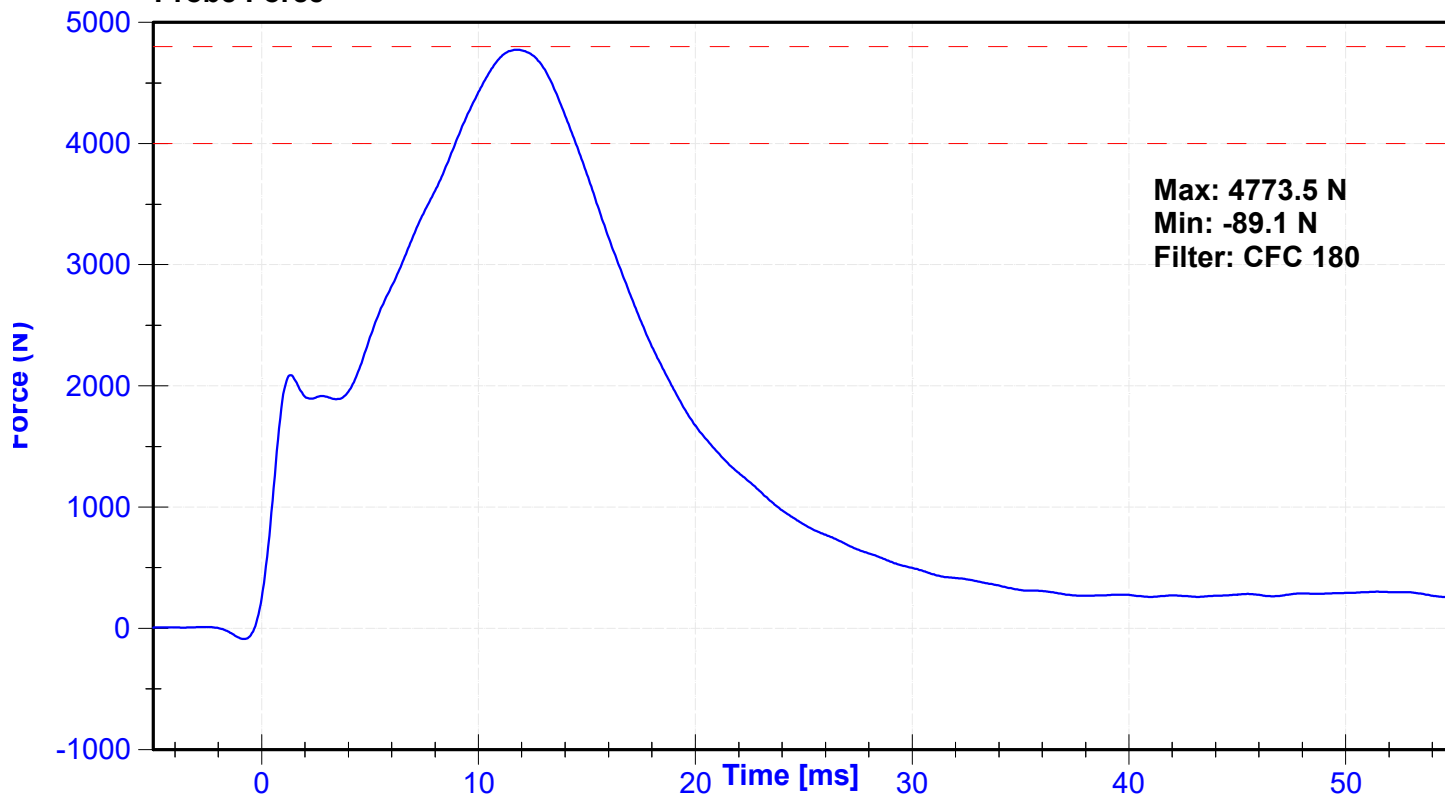
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	52	Pass
Velocity	3.9	4.1	m/s	4.02	Pass
Combined Abdomen Force	2200	2700	N	2549.6	Pass
Time at Peak Abdomen Force	10.0	12.3	ms	11.90	Pass
Resistive Probe Force	4000	4800	N	4773.5	Pass
Time at Peak Resistive Force	10.6	13.0	ms	11.75	Pass

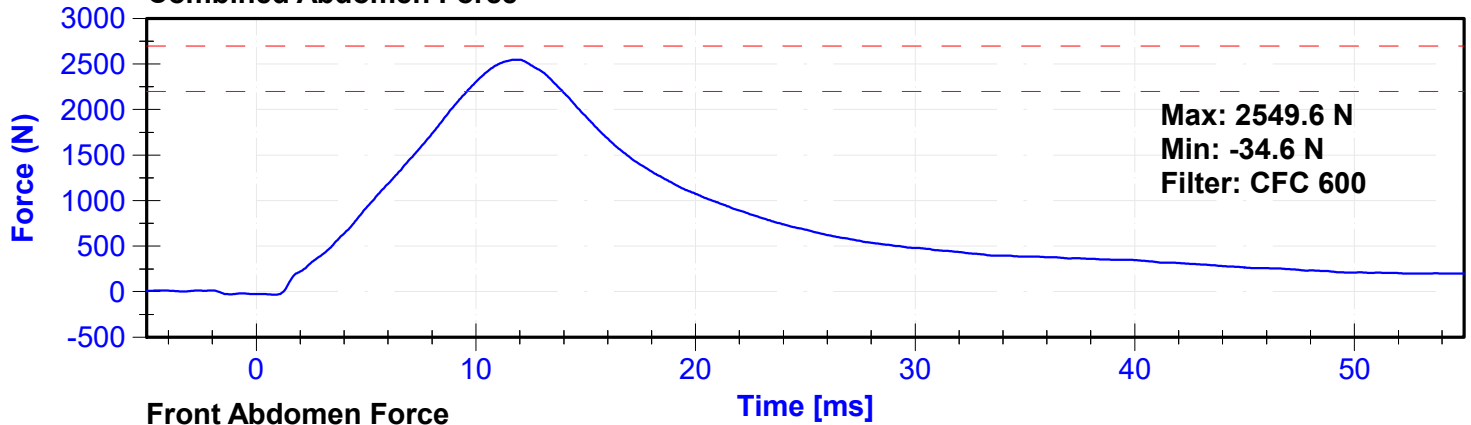
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18566	5/7/2025	11/3/2025
Front Abdomen Load Cell	Denton	1523	10/28/2024	10/28/2025
Middle Abdomen Load Cell	Denton	1524	10/28/2024	10/28/2025
Rear Abdomen Load Cell	Denton	1530	10/28/2024	10/28/2025

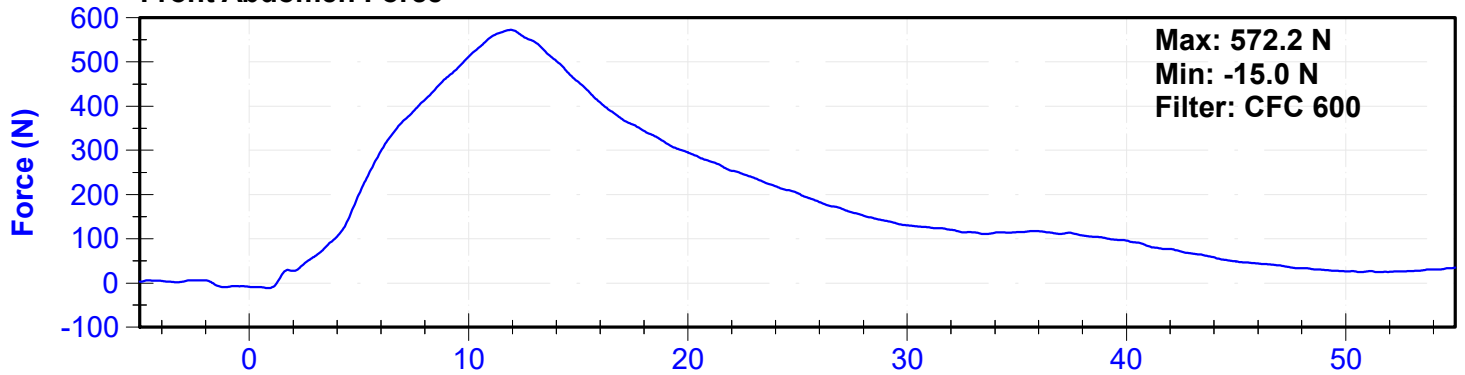
Probe Force



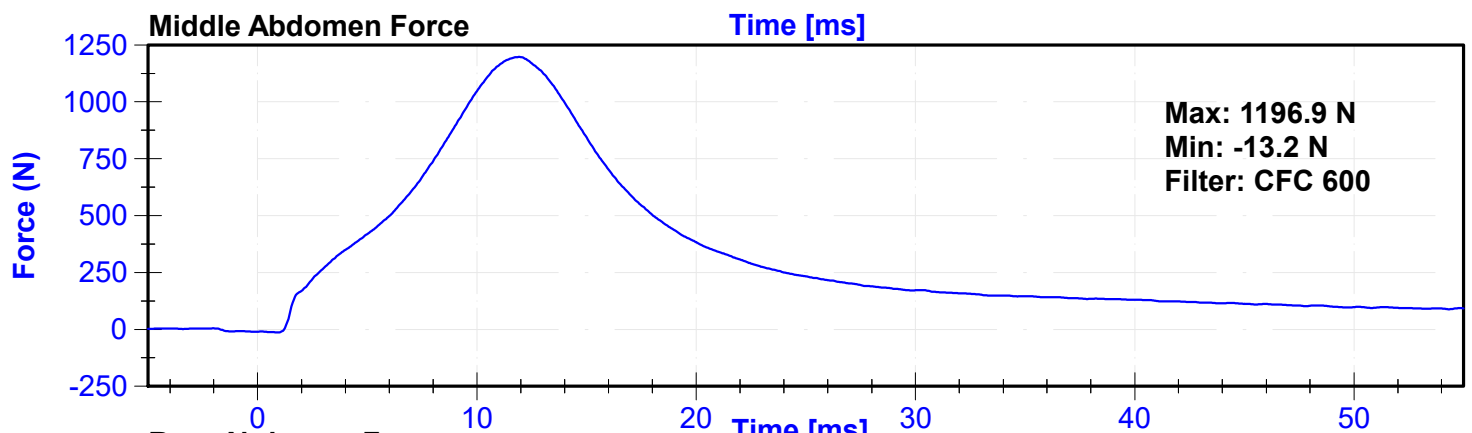
Combined Abdomen Force



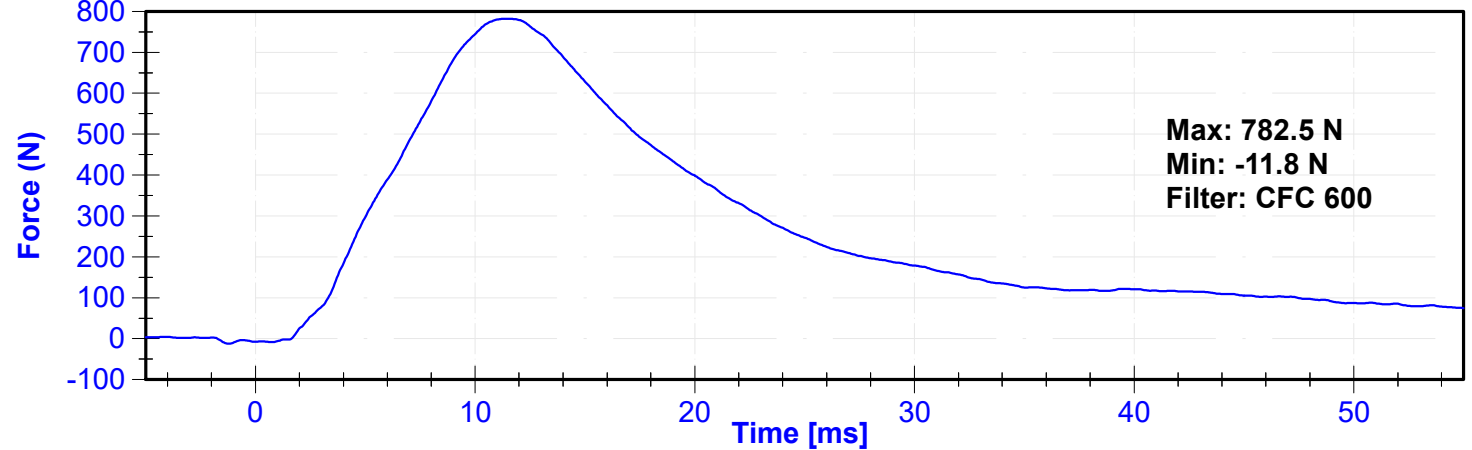
Front Abdomen Force



Middle Abdomen Force



Rear Abdomen Force



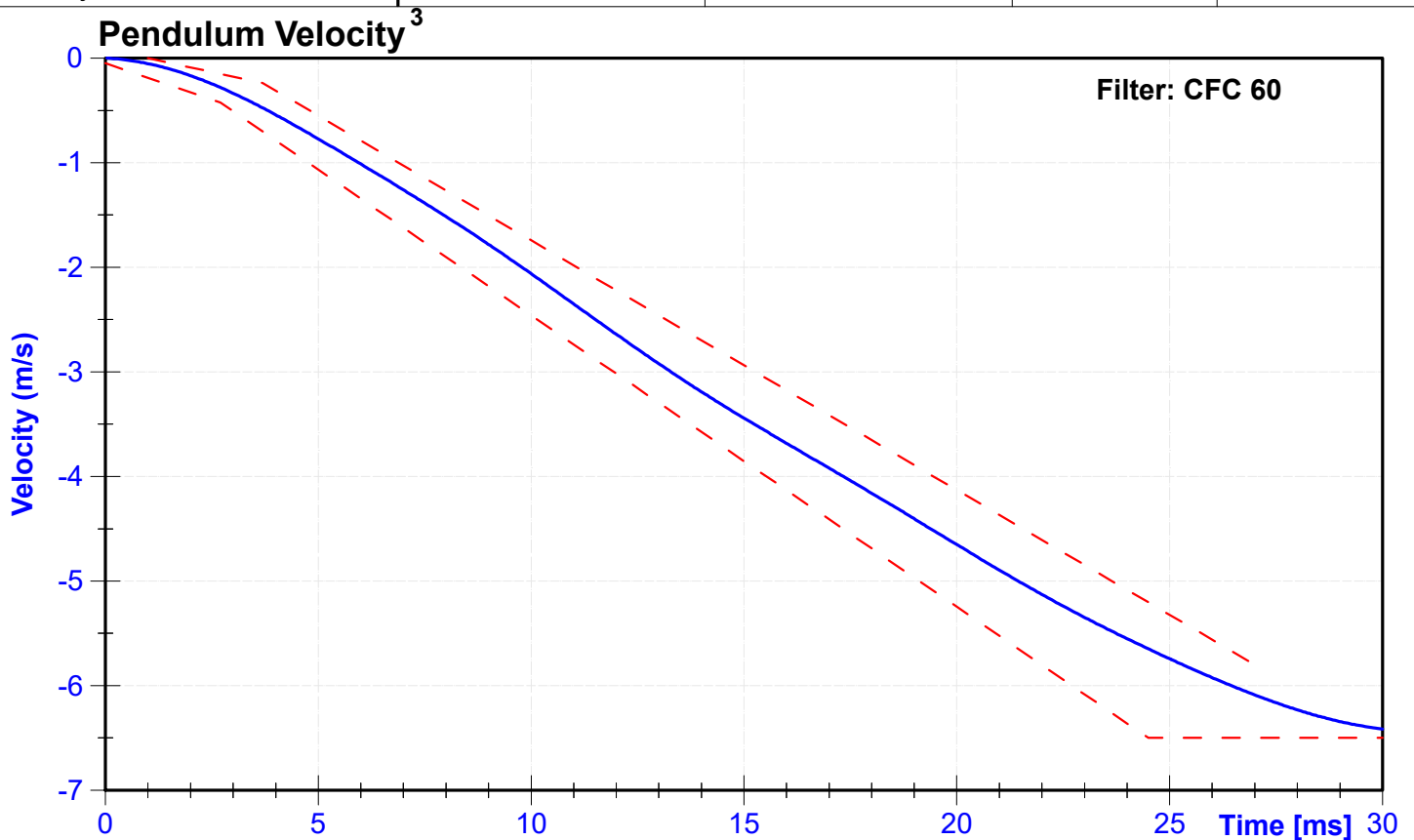
ATD Manufacturer	FTSS	Test Technician	J. Kinderman
ATD Serial Number	F033	Laboratory Supervisor	J. Kinderman

Results

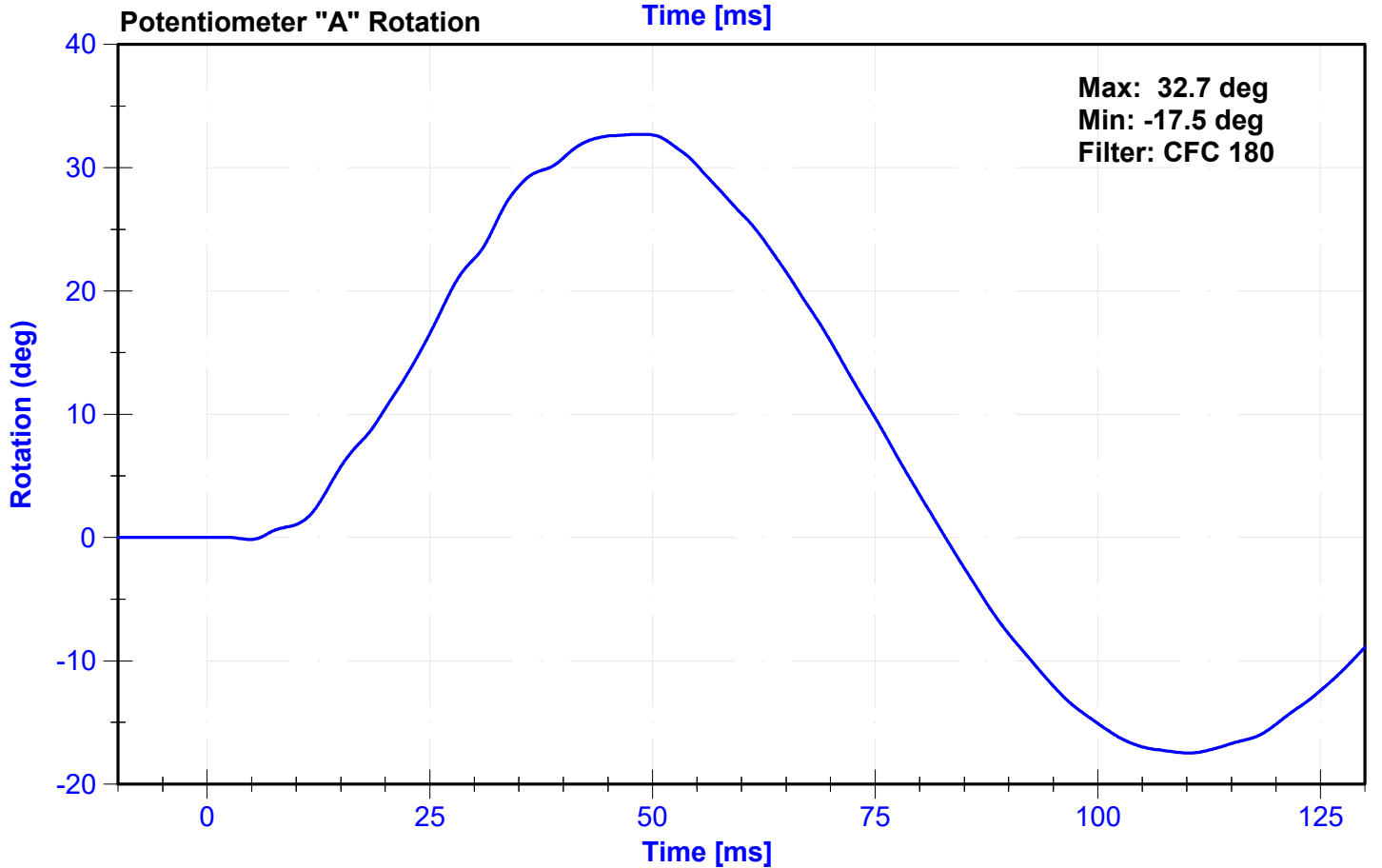
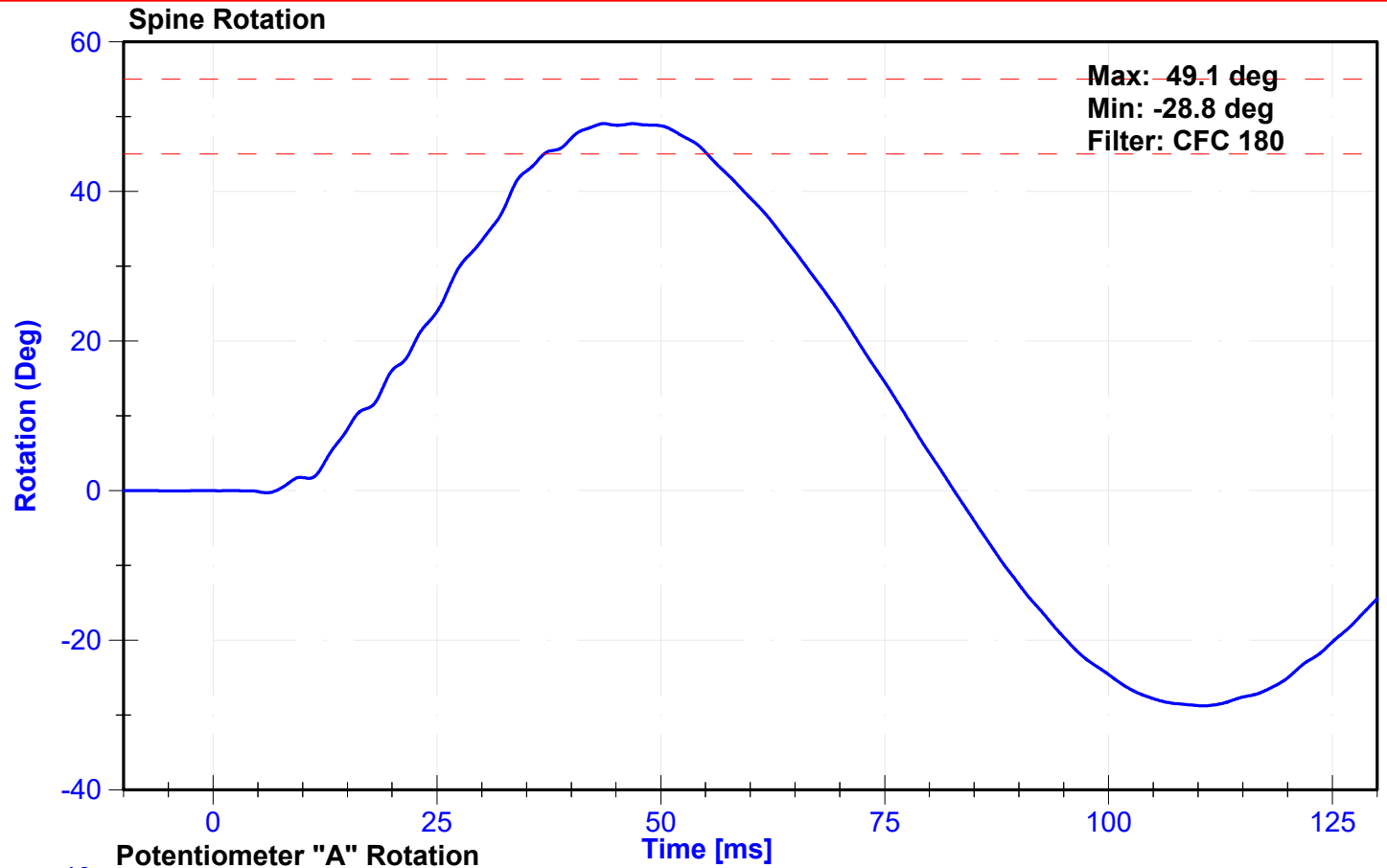
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	52	Pass
Velocity	5.95	6.15	m/s	6.137	Pass
Lateral Spine Rotation	45	55	deg	49.1	Pass
Time at Maximum Rotation	39	53	ms	43.6	Pass
Time of Decay to Zero Degrees	37	57	ms	39.2	Pass
Pendulum Velocity Overall Corridor	Lower Boundary ¹	Upper Boundary ²	m/s	See Plot ³	Pass

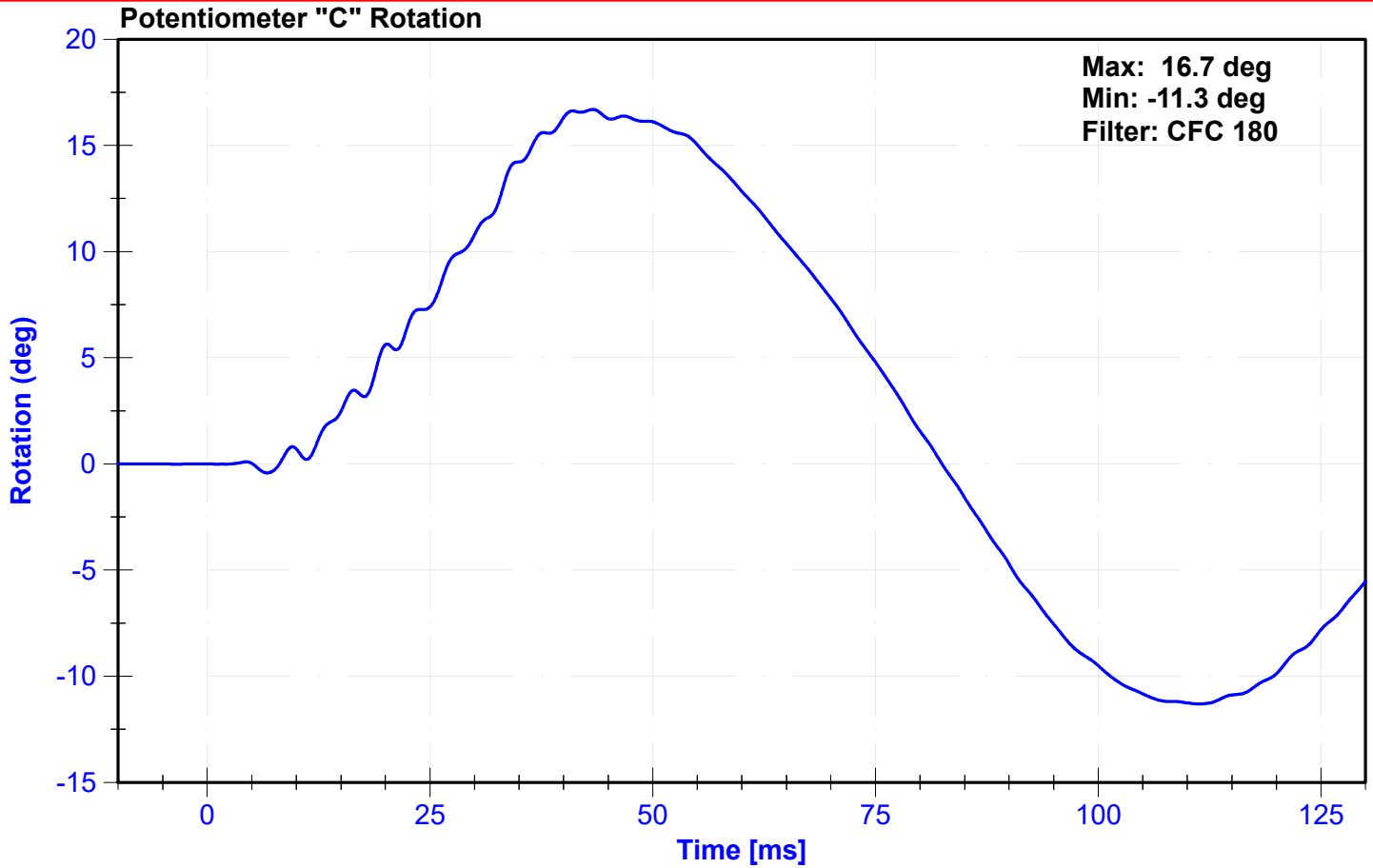
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	C16646	10/17/2024	10/17/2025
Pendulum "A" Potentiometer	Sfernice	2247	9/13/2024	9/13/2025
Condyle "B" Potentiometer	Sfernice	095	9/13/2024	9/13/2025



^{1,2} Upper and lower boundaries specified in Appendix I





Appendix I

² Upper Boundary Corridor		¹ Lower Boundary Corridor	
Time (ms)	Velocity (m/s)	Time (ms)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.7	-0.24	2.7	-0.425
27.0	-5.80	24.5	-6.5
		30.0	-6.5

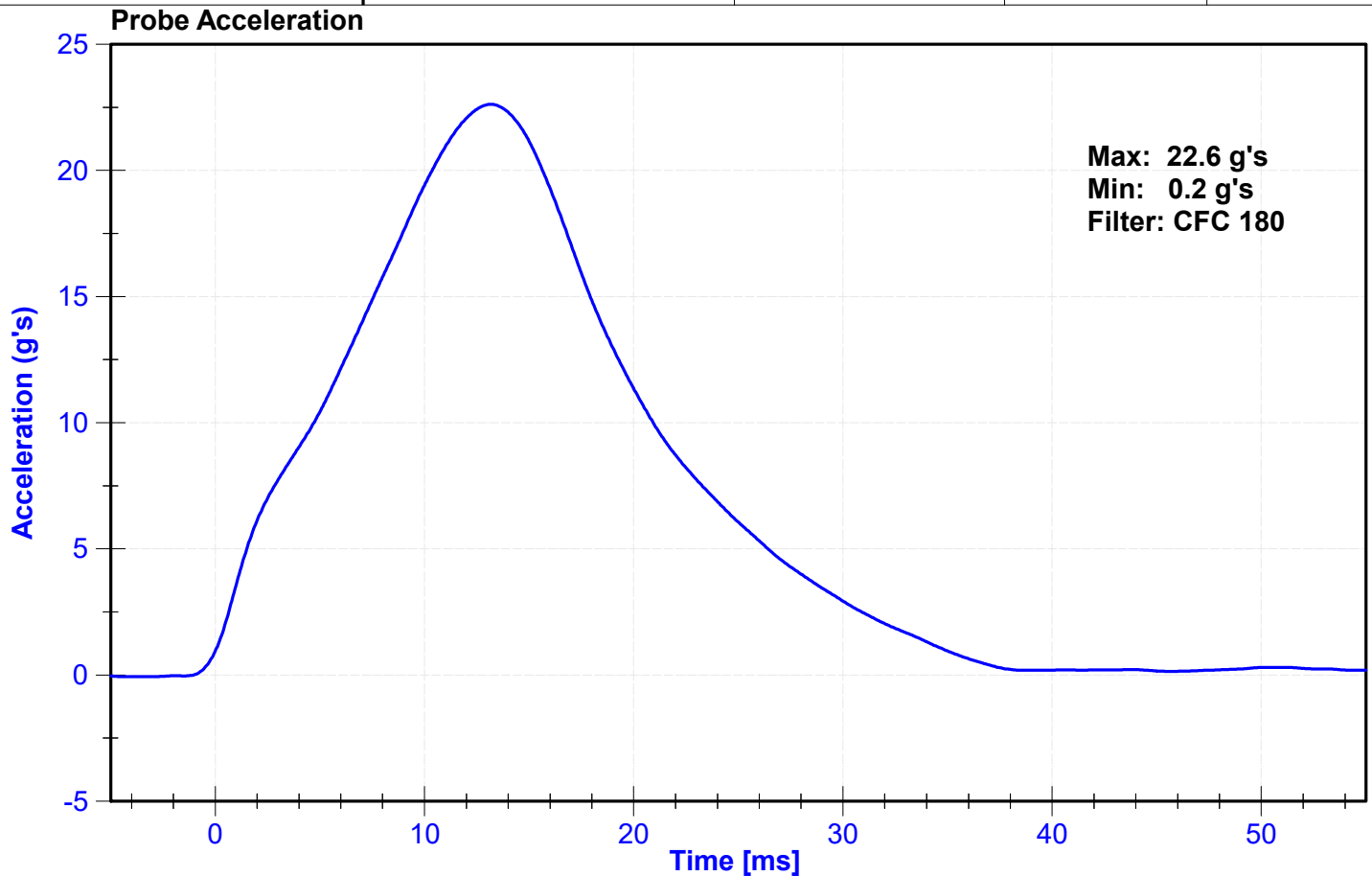
ATD Manufacturer	FTSS	Test Technician	J. Kinderman
ATD Serial Number	F033	Laboratory Supervisor	J. Kinderman

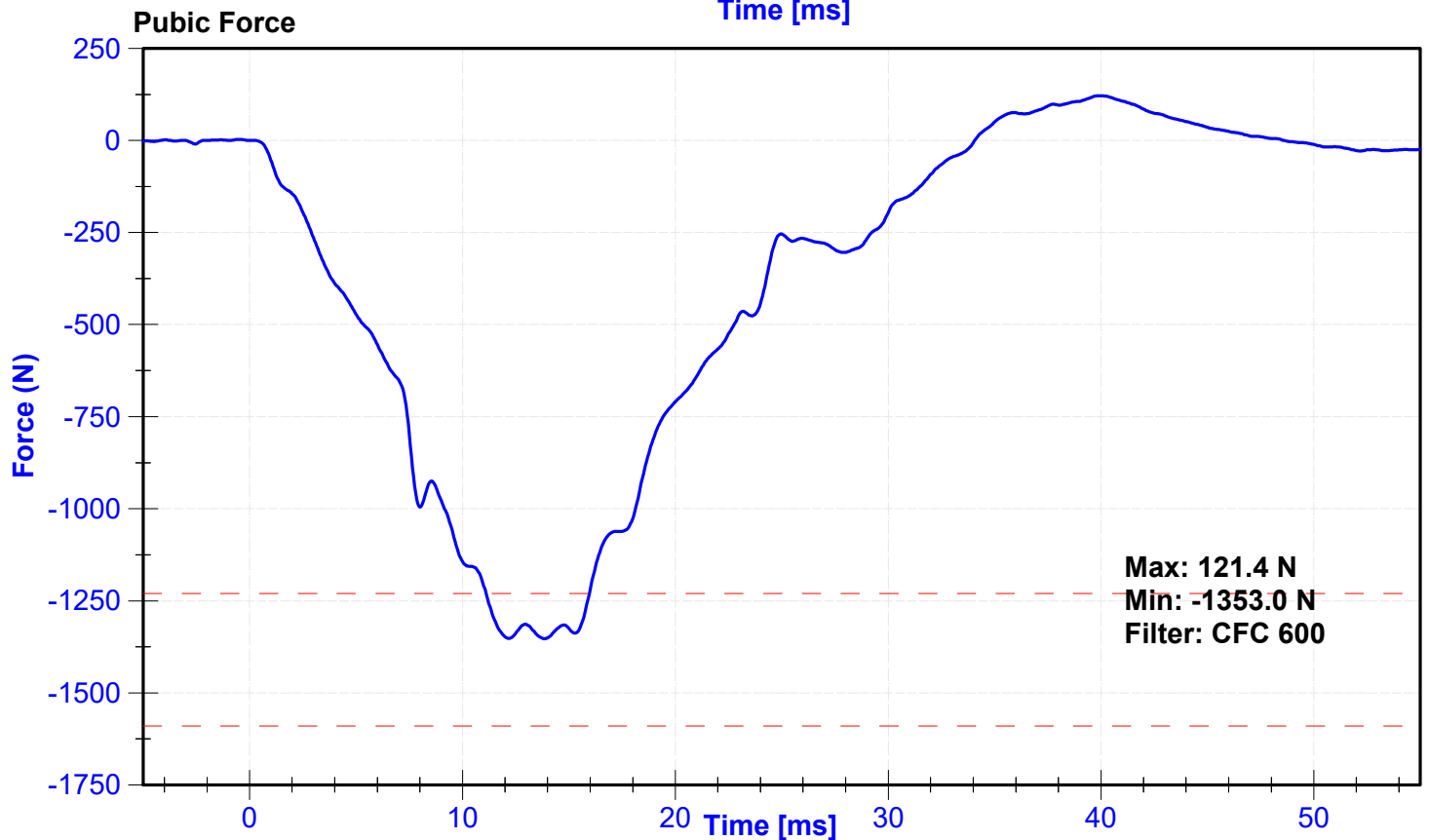
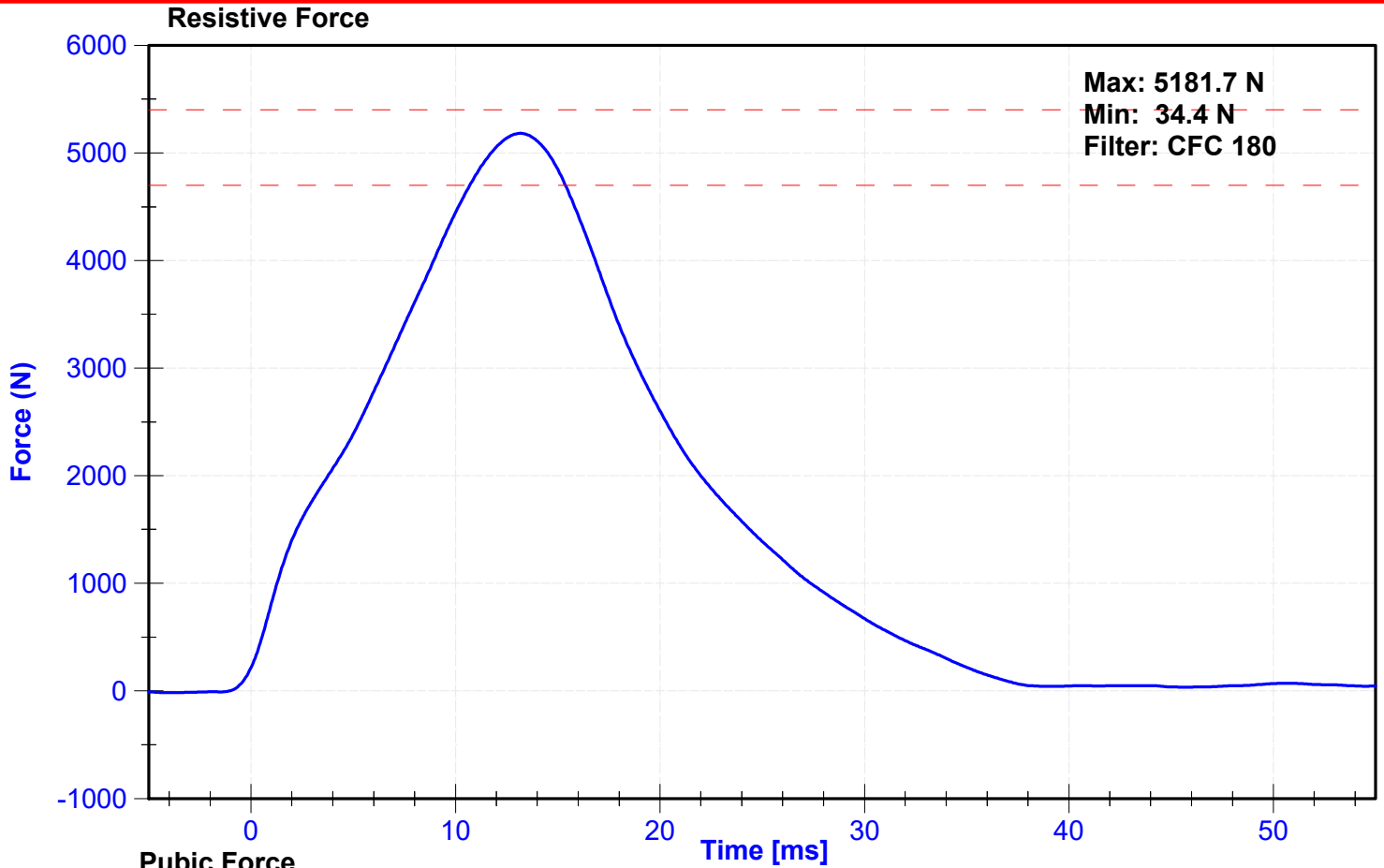
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	52	Pass
Velocity	4.2	4.4	m/s	4.28	Pass
Resistive Force	4700	5400	N	5181.7	Pass
Time at Peak Resistive Force	11.8	16.1	ms	13.15	Pass
Pubic Force	-1590	-1230	N	-1353.0	Pass
Time at Peak Pubic Force	12.2	17.0	ms	13.85	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18566	5/7/2025	11/3/2025
Pubic Load Cell	Denton	458-FY	10/28/2024	10/28/2025





CALIBRATION TEST RESULTS

POST-TEST

SID-IIS 5TH PERCENTILE FEMALE – PASSENGER ATD

SERIAL NO:DG8012

(CONFIGURED FOR LEFT SIDE IMPACT)

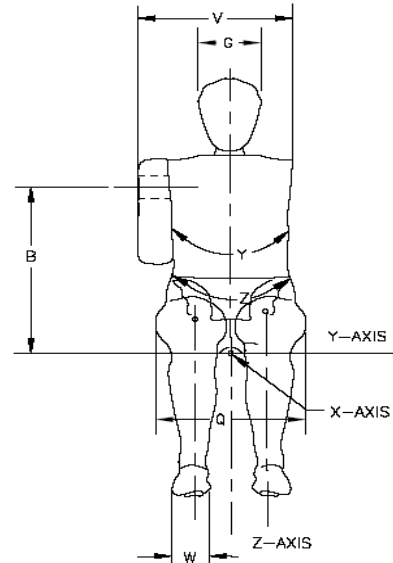
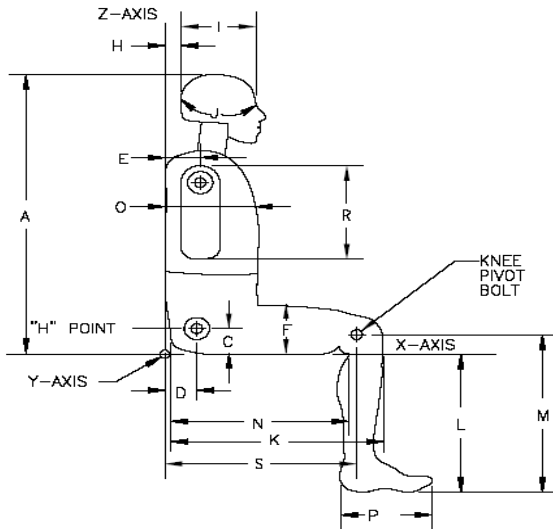


External Measurements - SID-IIs

Technician: **J. Rios**

Date: **07/15/2025**

Dummy Serial Number: **DG8012**



Symbol	Description	Specification (mm)		Result (mm)	Pass/Fail
A	Sitting Height	772	788	780	Pass
B	Shoulder Pivot Height	437	453	441	Pass
C	H-point Height	79	89	82	Pass
D	H-point from seatback	141	151	144	Pass
E	Shoulder Pivot from Backline	97	107	102	Pass
F	Thigh Clearance	119	135	128	Pass
G	Head Breadth	140	148	143	Pass
H	Head Back from Backline	40	46	43	Pass
I	Head Depth	178	188	185	Pass
J	Head Circumference	541	551	548	Pass
K	Buttock to Knee Length	514	540	524	Pass
L	Popliteal Height	343	369	348	Pass
M	Knee Pivot to floor height	392	409	401	Pass
N	Buttock Popliteal Length	416	442	432	Pass
O	Chest Depth w/o jacket	195	211	202	Pass
P	Foot Length	216	232	224	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	481	Pass
V	Shoulder Width	341	357	353	Pass
W	Foot Width	78	94	81	Pass
Y	Chest Circumference w/jacket	851	881	868	Pass
Z	Waist Circumference	761	791	787	Pass

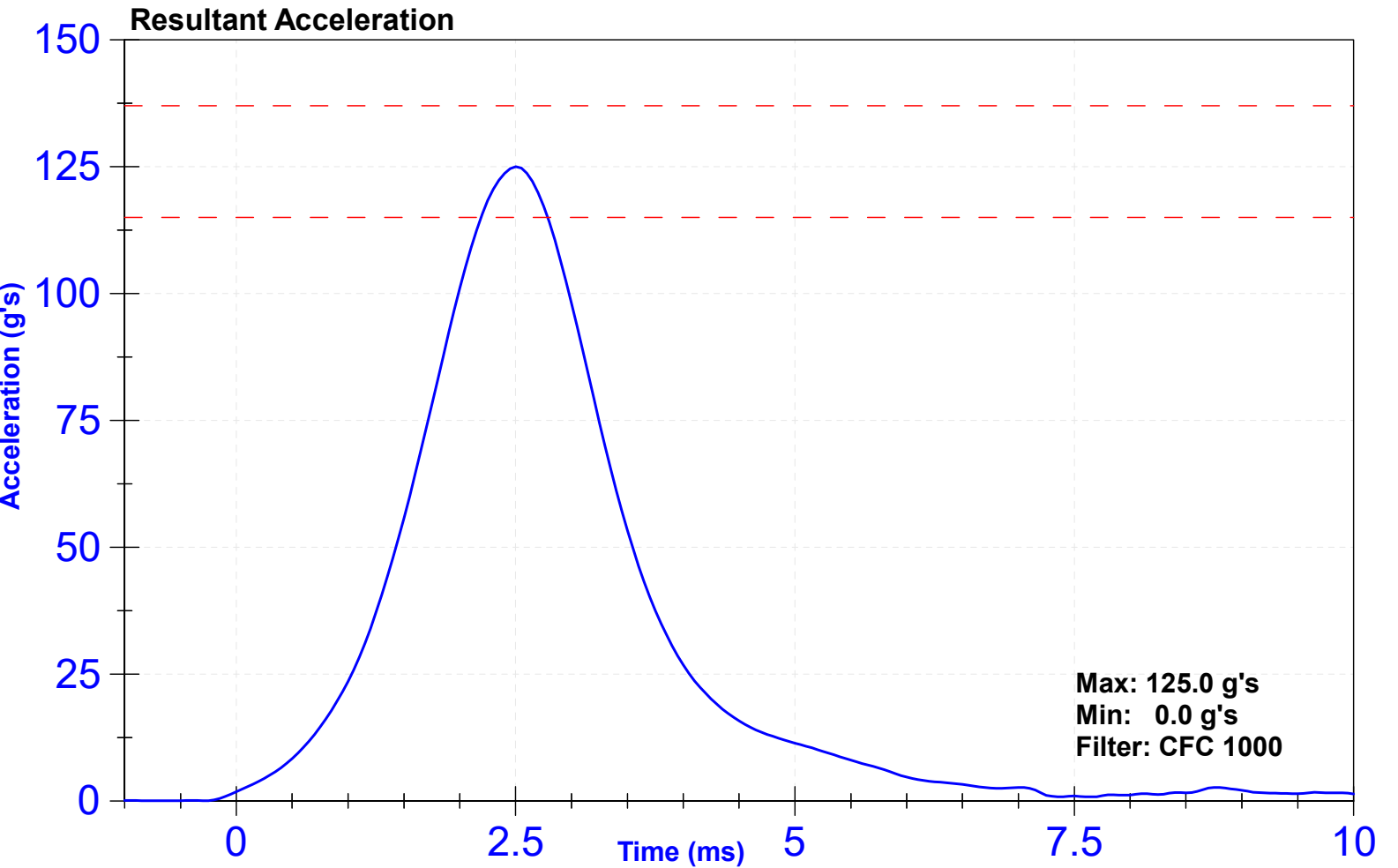
ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	DG8012	Laboratory Supervisor	J. Kinderman

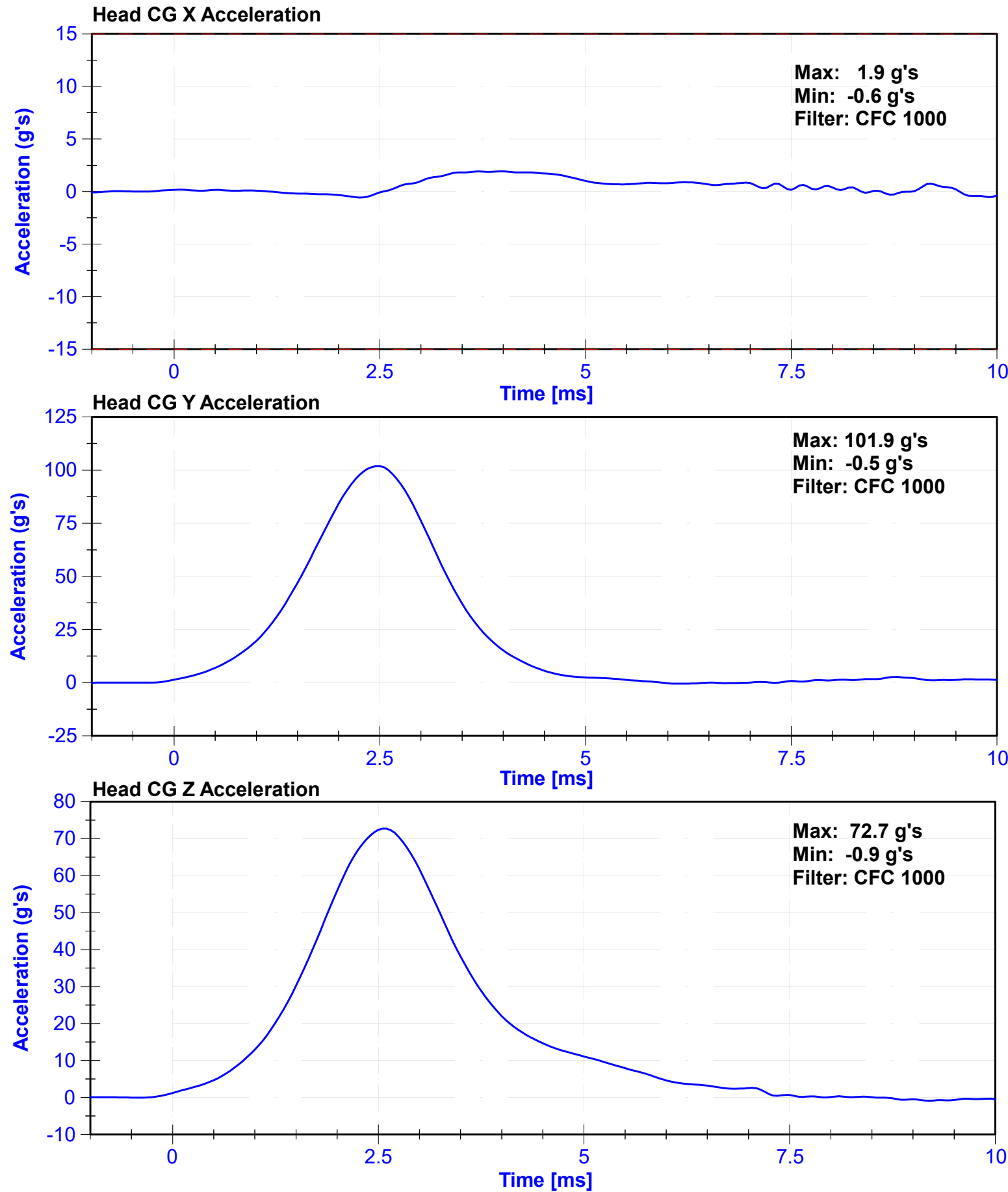
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	55	Pass
Resultant Acceleration	115	137	g's	125.0	Pass
Oscillation	0	15	%	2.1	Pass
Fore-Aft Acceleration	-15	15	g's	1.9	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibratio Date	Calibratio Due Date
X Accelerometer	Endevco	T21184	7/2/2025	12/29/2025
Y Accelerometer	Endevco	T31030	7/2/2025	12/29/2025
Z Accelerometer	Endevco	P83319	7/2/2025	12/29/2025





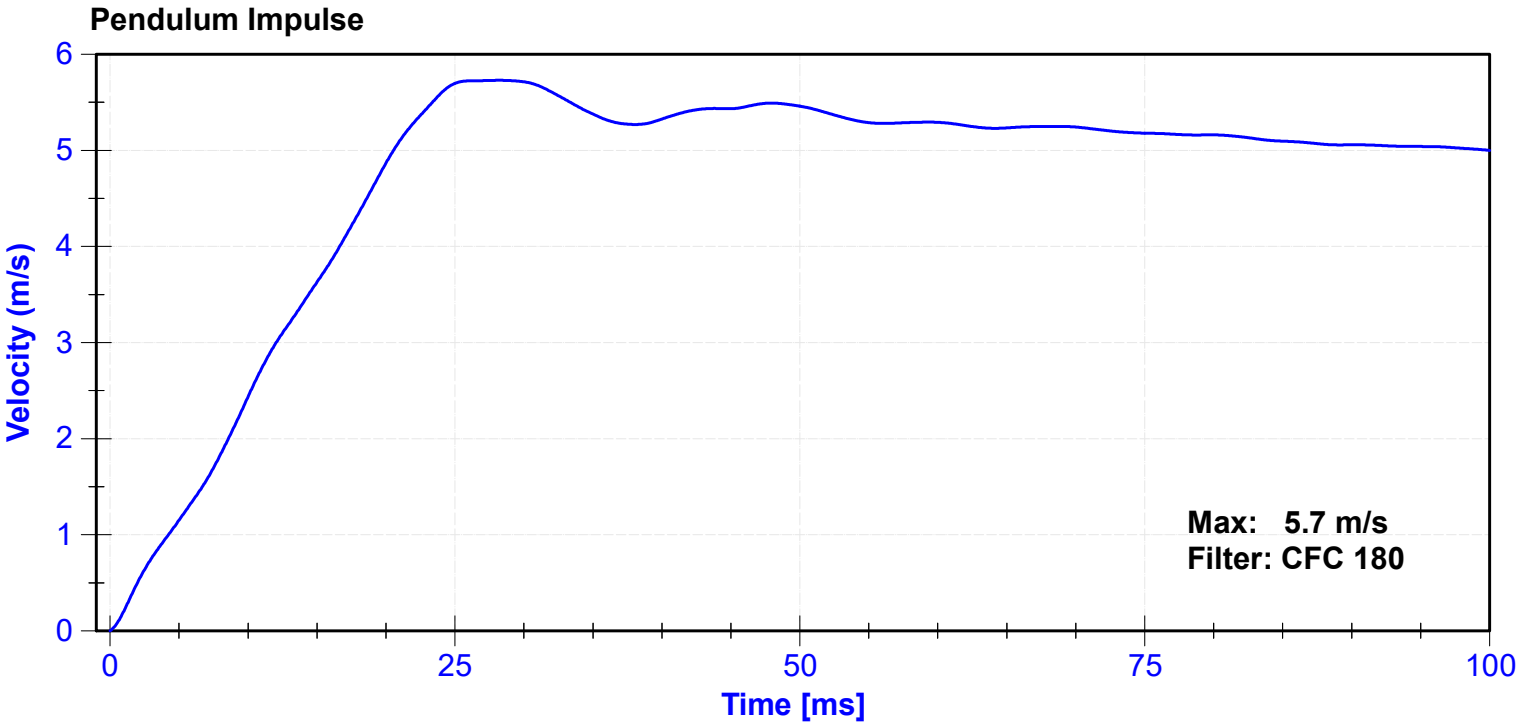
ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	DG8012	Laboratory Supervisor	J. Kinderman

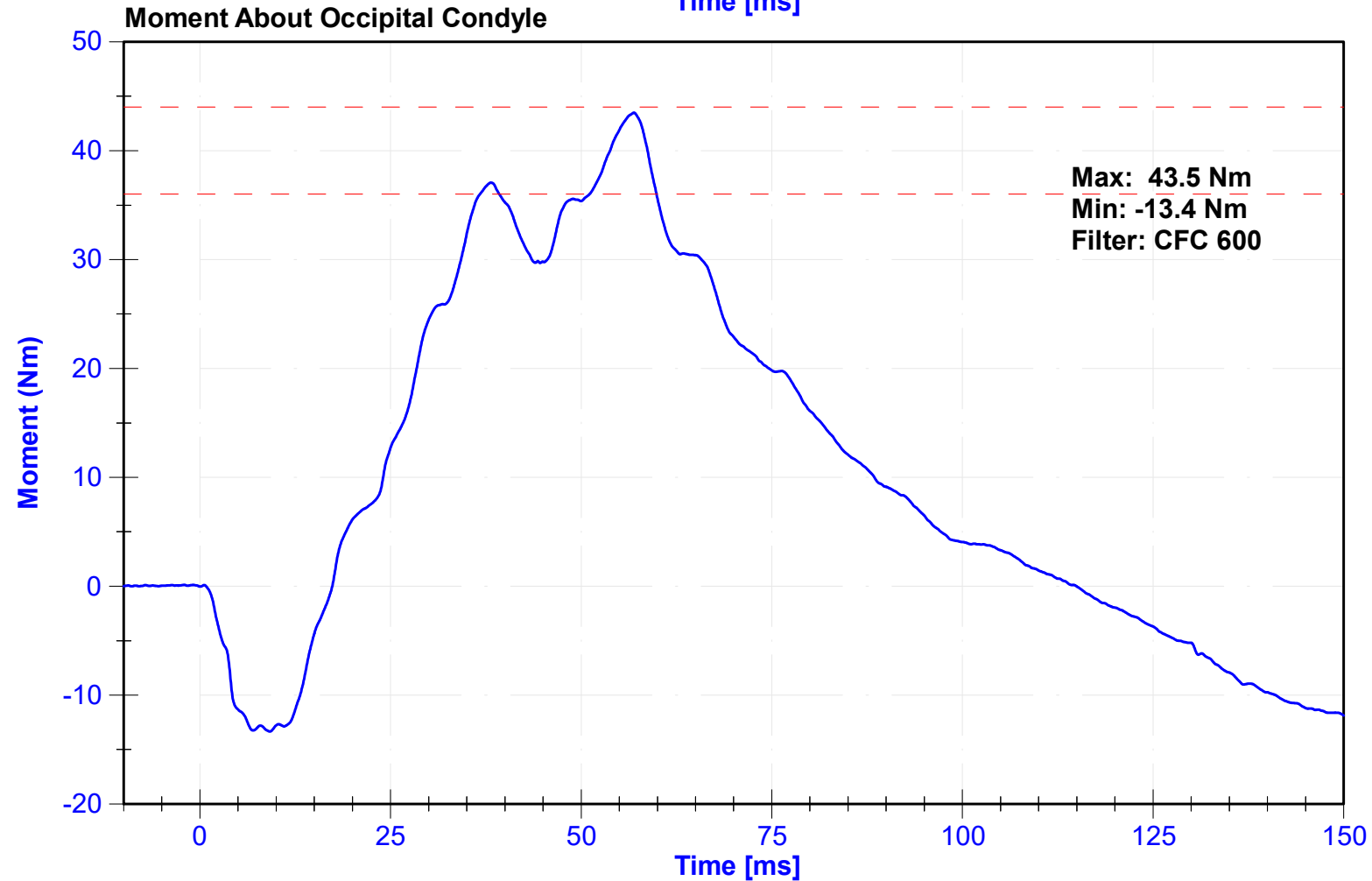
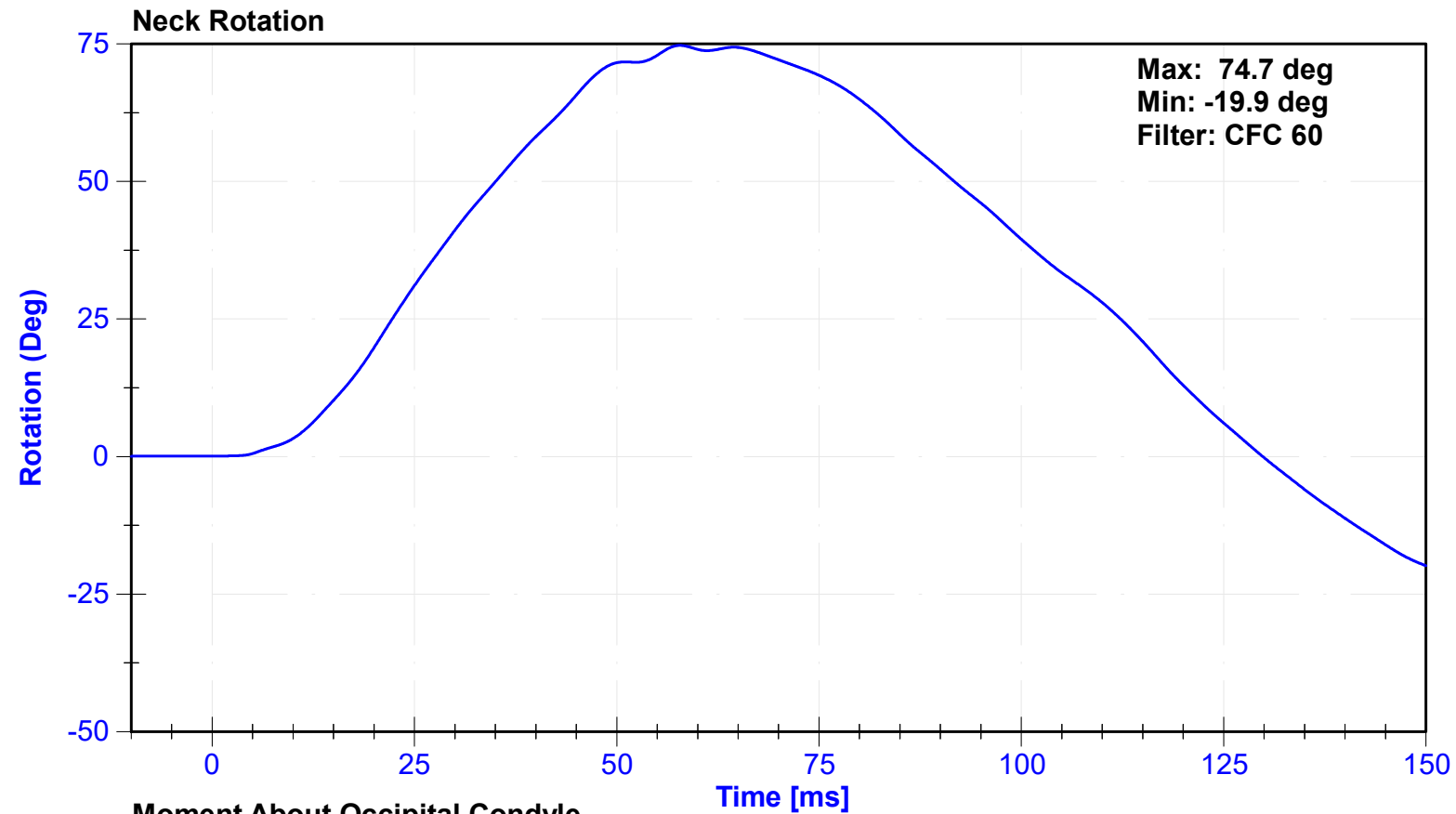
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	55	Pass
Velocity	5.51	5.63	m/s	5.522	Pass
Pendulum Impulse at 10ms	2.2	2.8	m/s	2.44	Pass
Pendulum Impulse at 15ms	3.3	4.1	m/s	3.63	Pass
Pendulum Impulse at 20ms	4.4	5.4	m/s	4.87	Pass
Pendulum Impulse at 25ms	5.4	6.1	m/s	5.70	Pass
Pendulum Impulse from 25 to 100ms	5.5	6.2	m/s	5.73	Pass
Neck Rotation	71	81	deg	74.7	Pass
Time at Maximum Rotation	50	70	ms	57.8	Pass
Moment about the OC	36	44	Nm	43.5	Pass
Moment Decay to 0 Nm	102	126	ms	115.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	7231C-750	10/17/2024	10/17/2025
Pendulum Potentiometer	Servo	4961	9/23/2024	9/23/2025
Condyle Potentiometer	Servo	DS185	9/23/2024	9/23/2025
Upper Neck Load Cell	Kistler	M555A6CFM_1935H01698-F4	4/17/2025	4/17/2026





ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	DG8012	Laboratory Supervisor	J. Kinderman

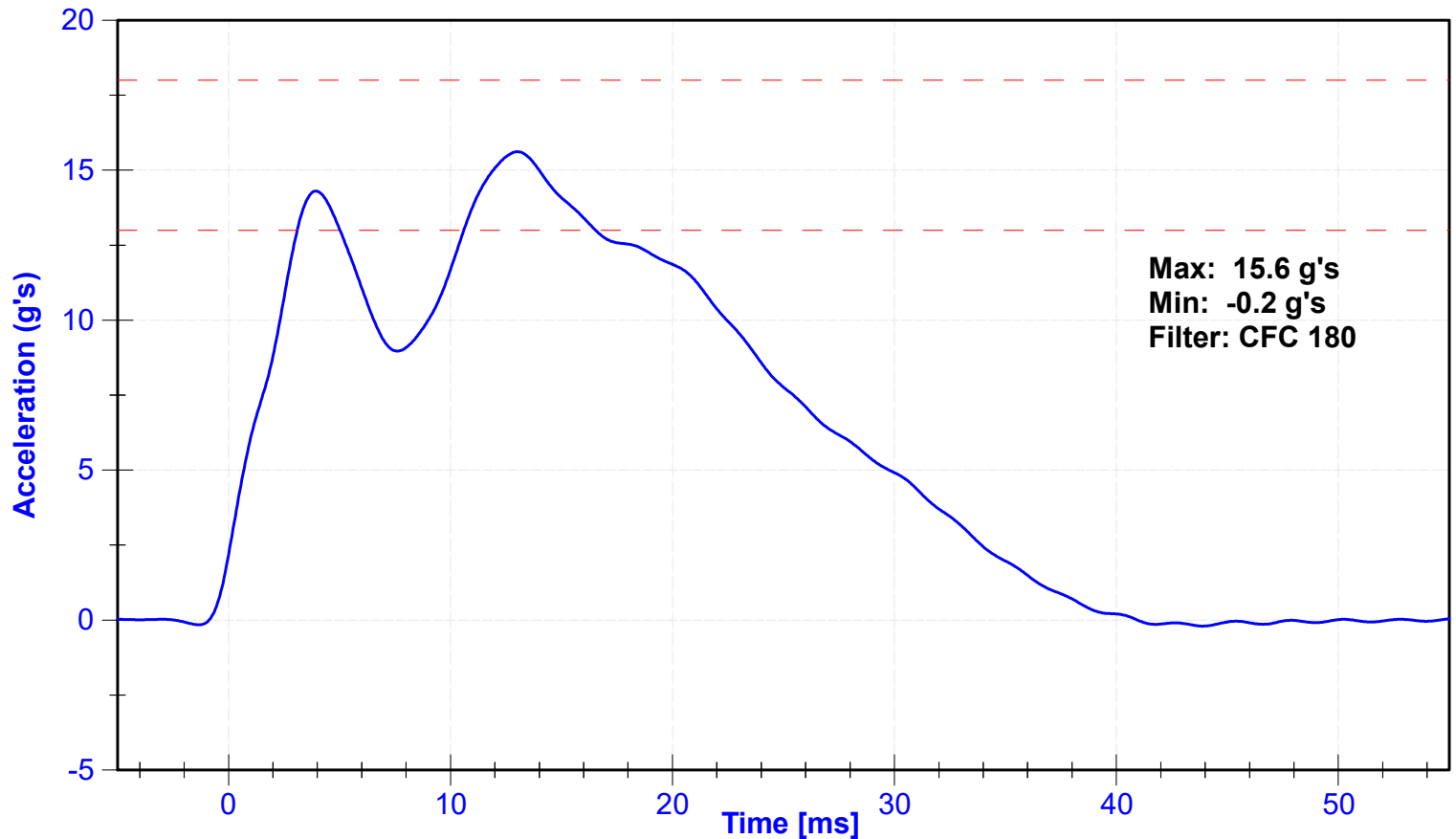
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	55	Pass
Velocity	4.2	4.4	m/s	4.27	Pass
Probe Acceleration	13	18	g's	15.6	Pass
Shoulder Deflection	28	37	mm	29.1	Pass
Lateral Upper Spine Acceleration	17	22	g's	20.8	Pass

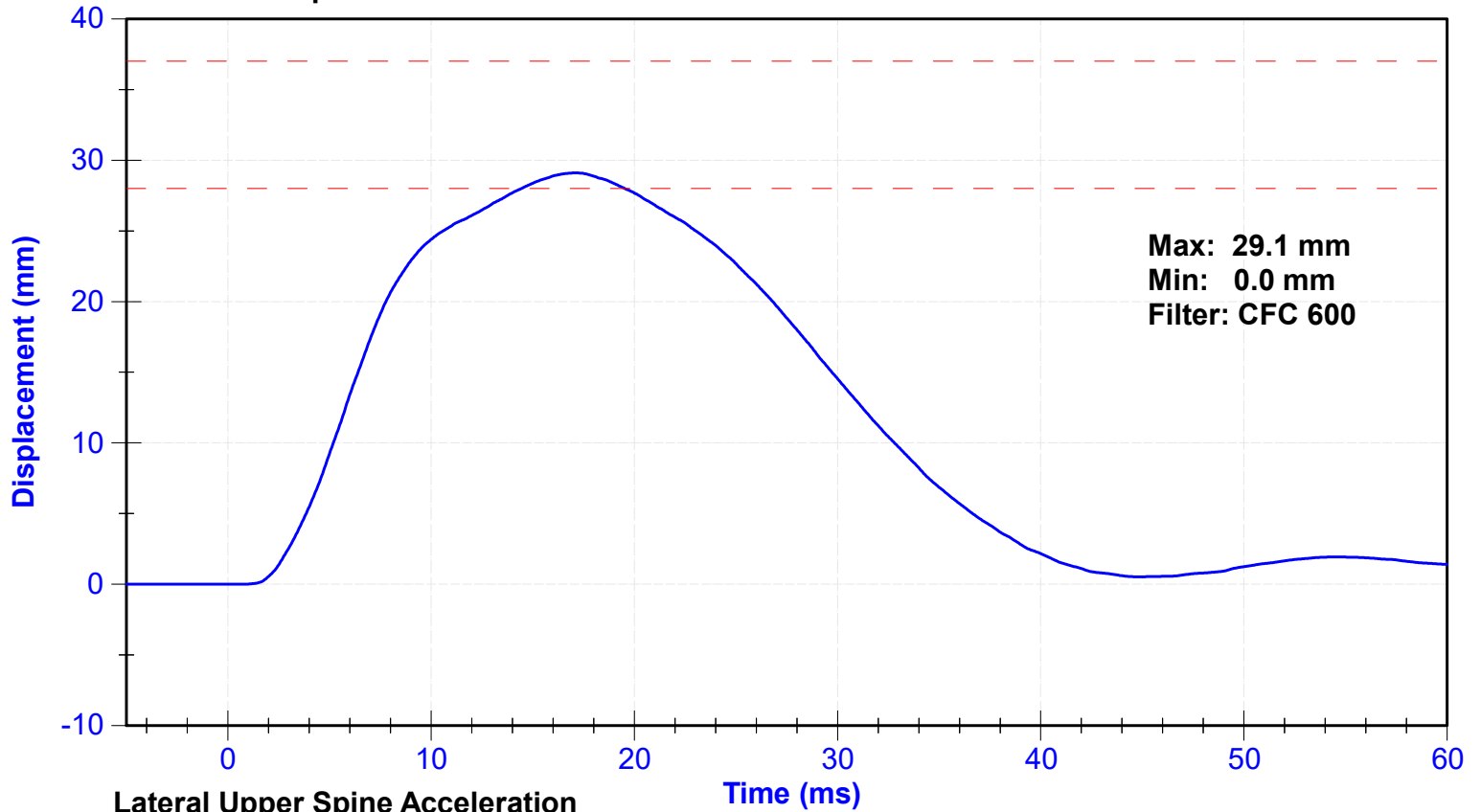
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18566	5/7/2025	11/3/2025
Shoulder Potentiometer	Servo	1274GFE	7/8/2025	1/6/2026
Upper Spine Y Accelerometer	Endevco	P64148	7/2/2025	12/29/2025

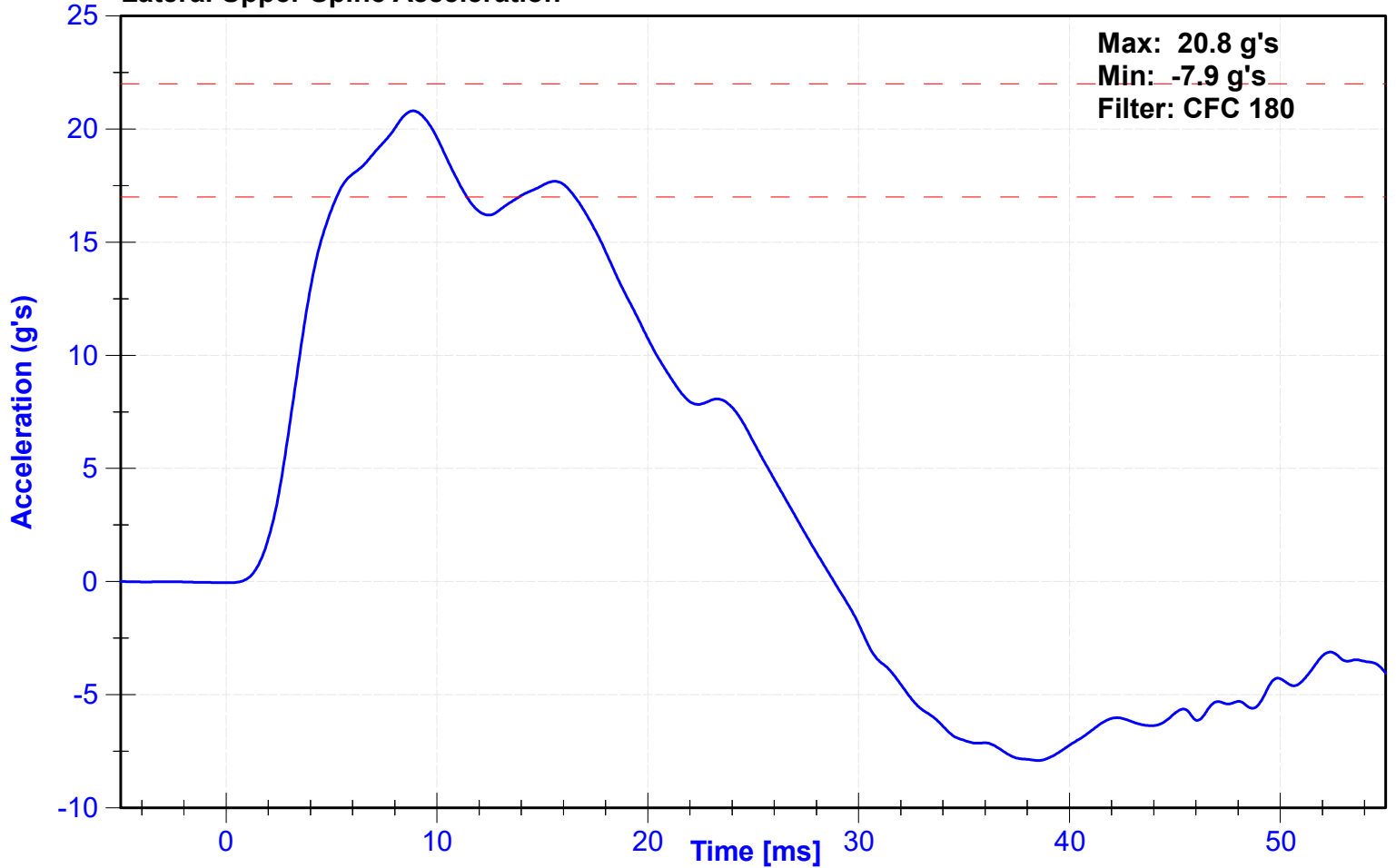
Probe Acceleration



Shoulder Displacement



Lateral Upper Spine Acceleration



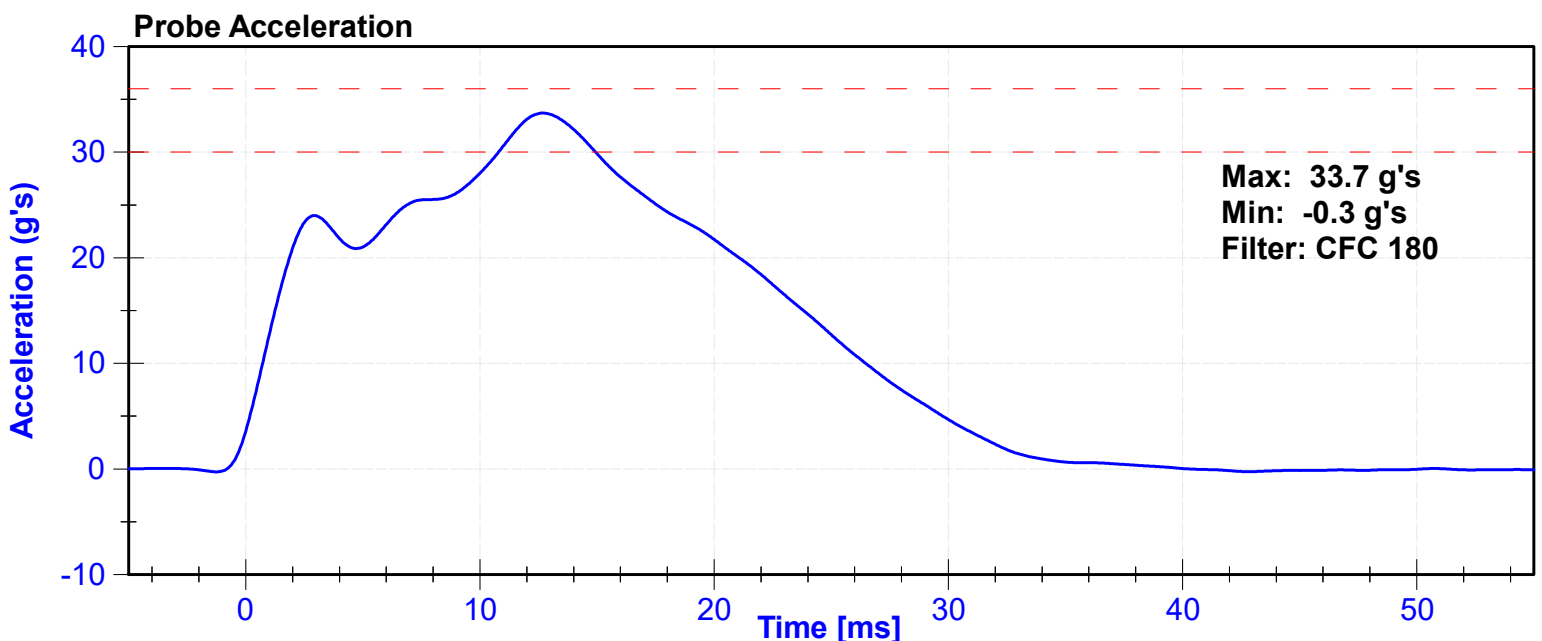
ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	DG8012	Laboratory Supervisor	J. Kinderman

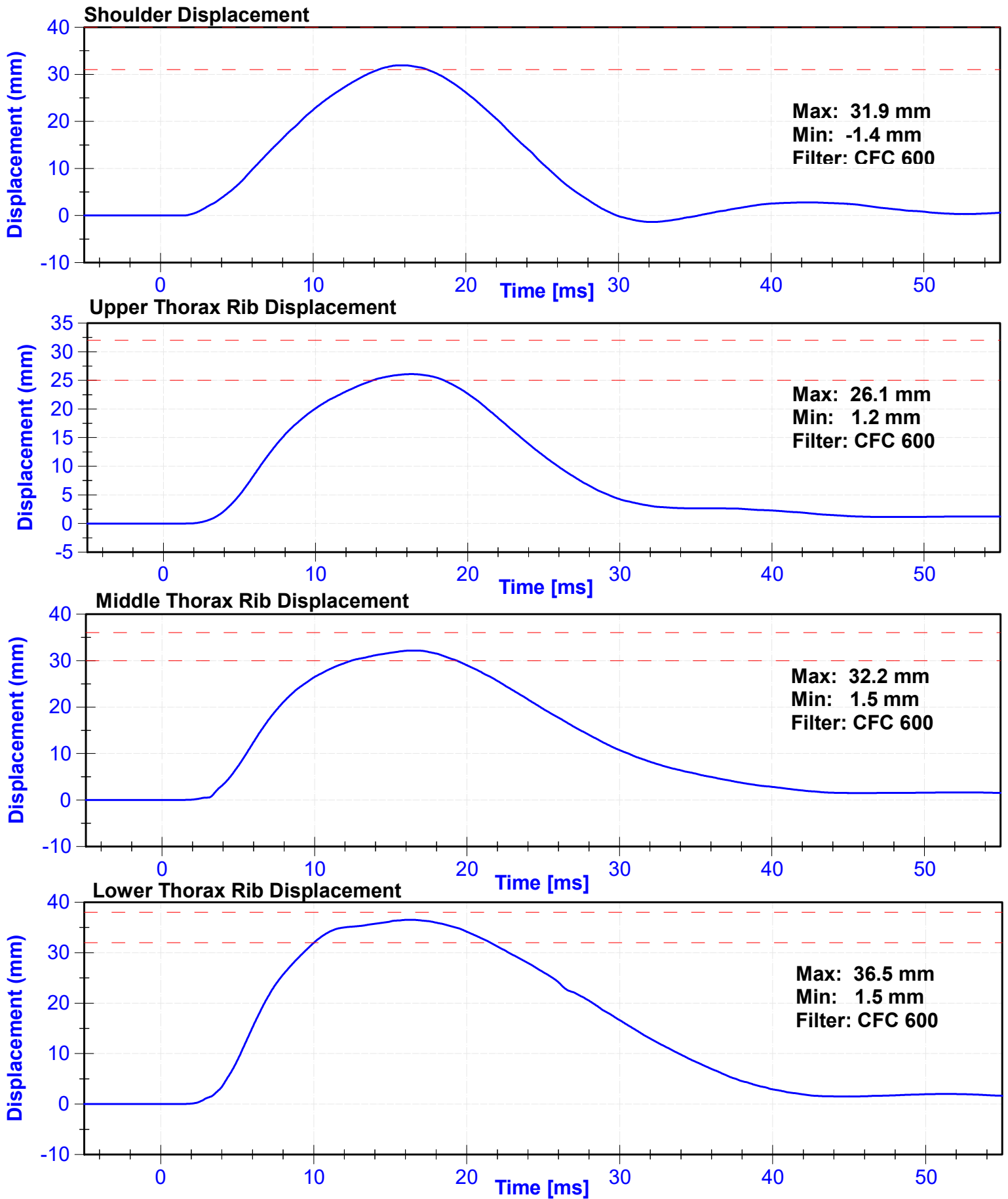
Results

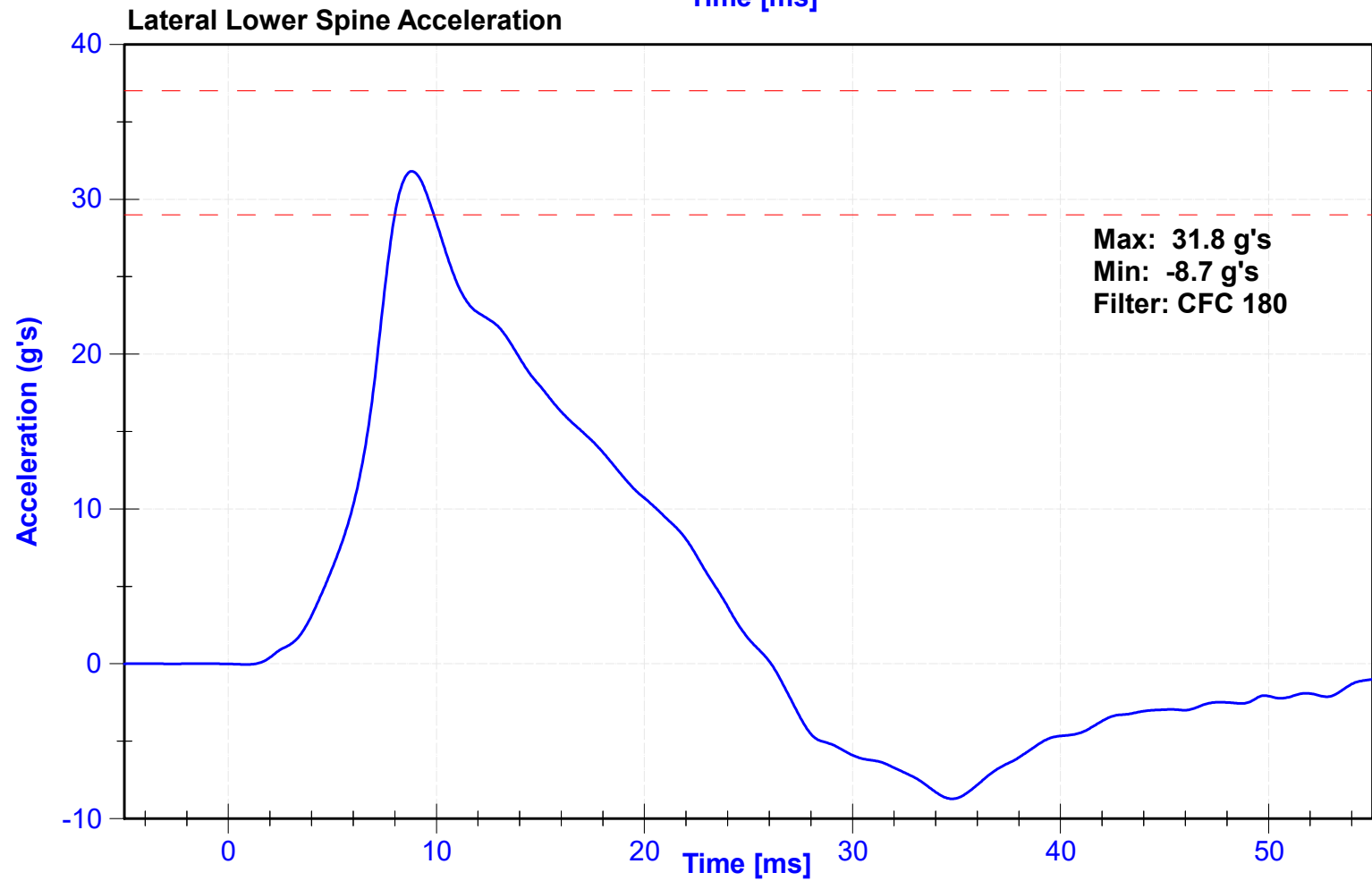
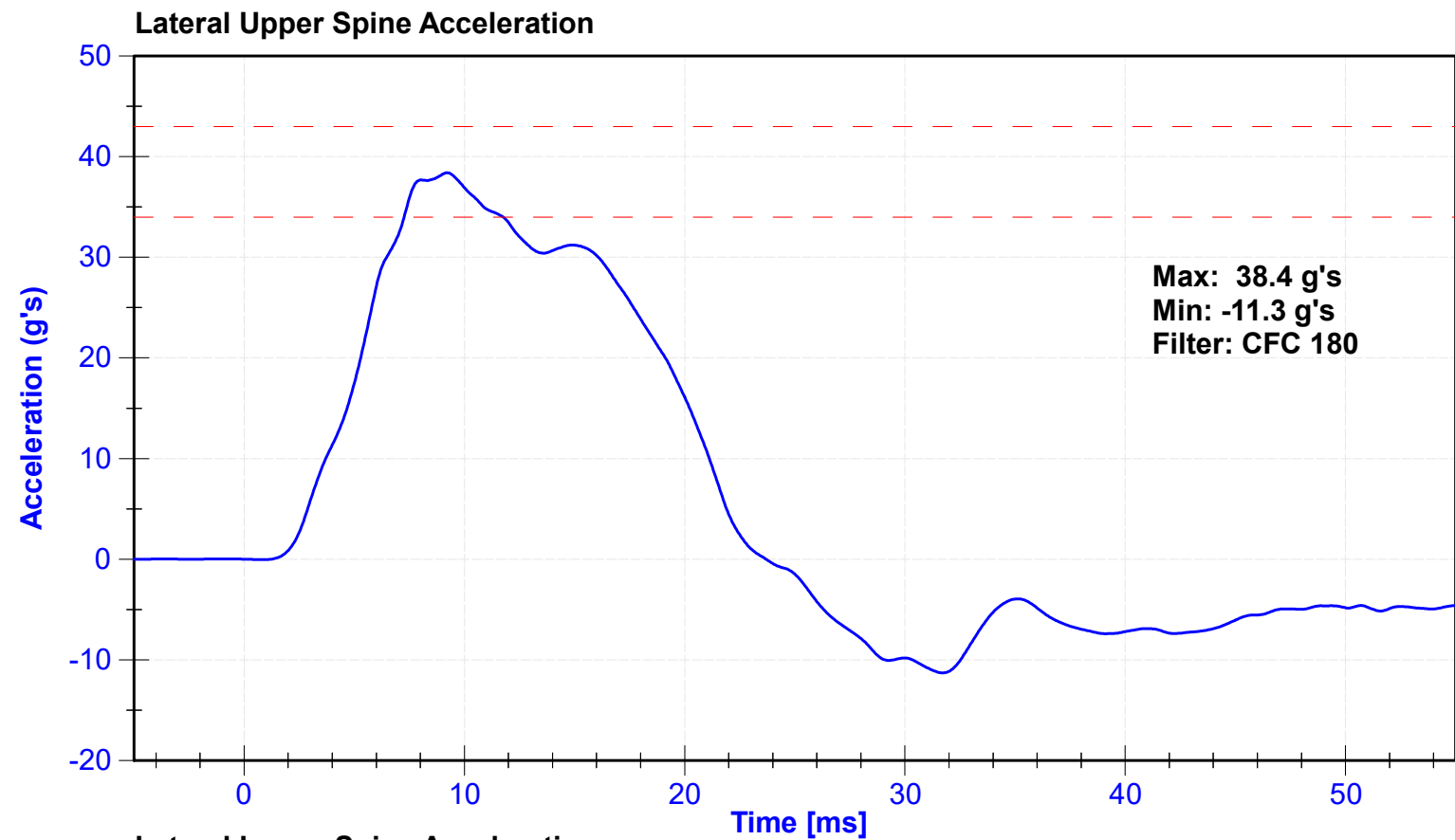
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	55	Pass
Velocity	6.6	6.8	m/s	6.68	Pass
Probe Acceleration after 5 ms	30	36	g's	33.7	Pass
Lateral Upper Spine Acceleration	34	43	g's	38.4	Pass
Lateral Lower Spine Acceleration	29	37	g's	31.8	Pass
Shoulder Deflection	31	40	mm	31.9	Pass
Upper Thorax Rib Deflection	25	32	mm	26.1	Pass
Mid Thorax Rib Deflection	30	36	mm	32.2	Pass
Lower Thorax Rib Deflection	32	38	mm	36.5	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18566	5/7/2025	11/3/2025
Upper Spine T1 Y Accelerometer	Endevco	P64148	7/2/2025	12/29/2025
Upper Spine T12 Y Accelerometer	Endevco	P58883	7/2/2025	12/29/2025
Shoulder Potentiometer	Servo	1274GFE	7/8/2025	1/6/2026
Upper Thorax Rib Potentiometer	Servo	1199GFE	7/8/2025	1/6/2026
Middle Thorax Rib Potentiometer	Servo	1246GFE	7/8/2025	1/6/2026
Lower Thorax Rib Potentiometer	Servo	011GFE	7/8/2025	1/6/2026







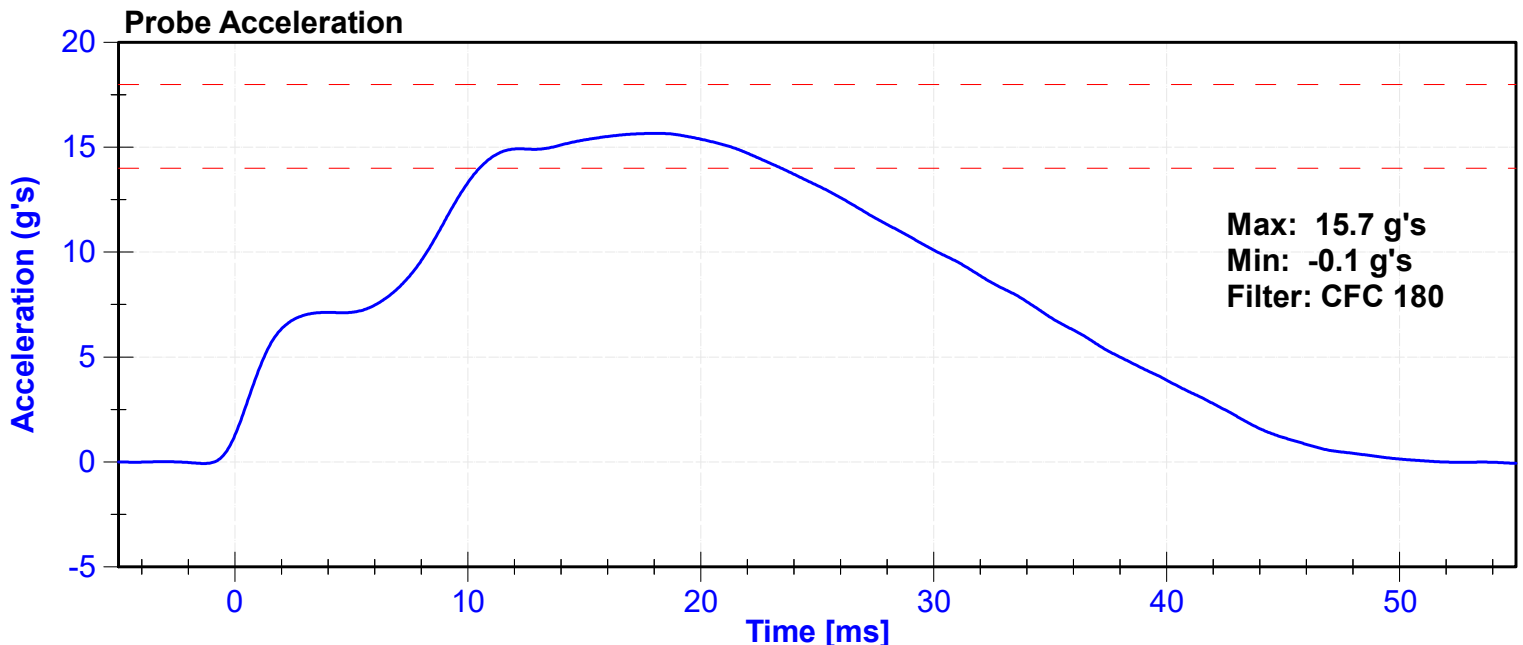
ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	DG8012	Laboratory Supervisor	J. Kinderman

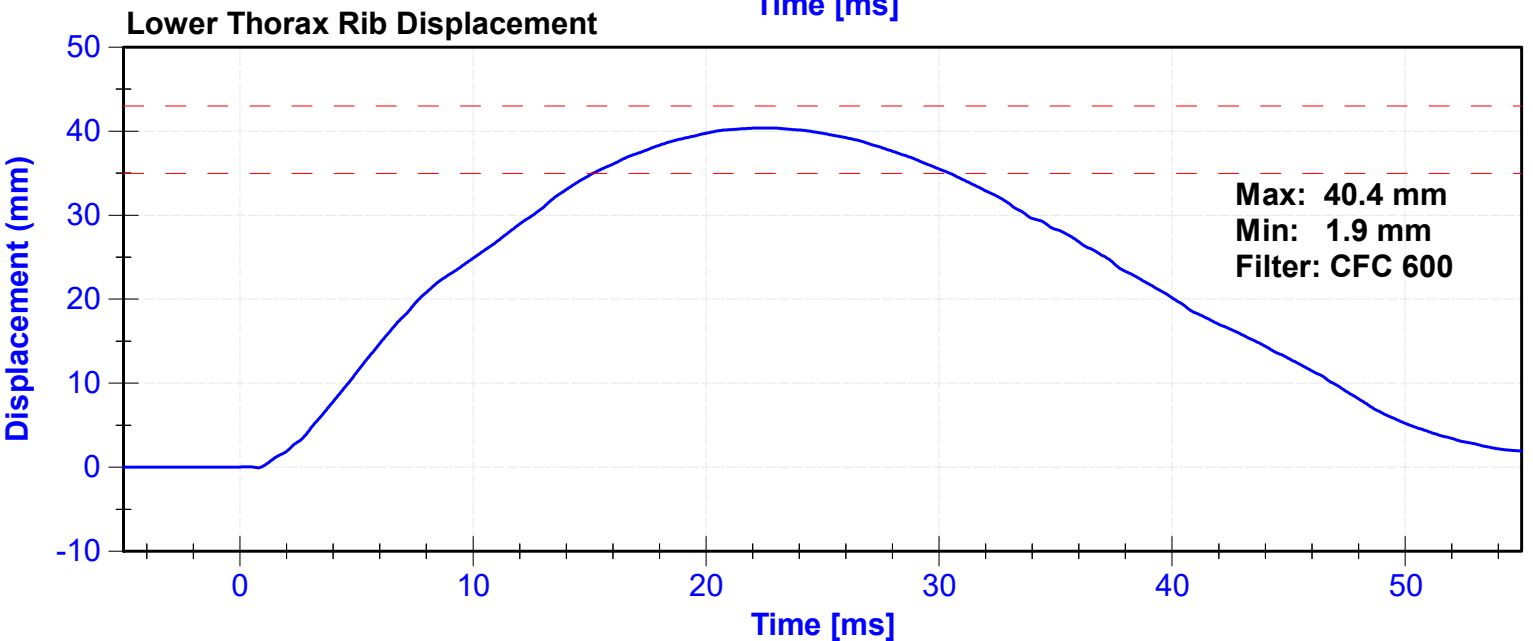
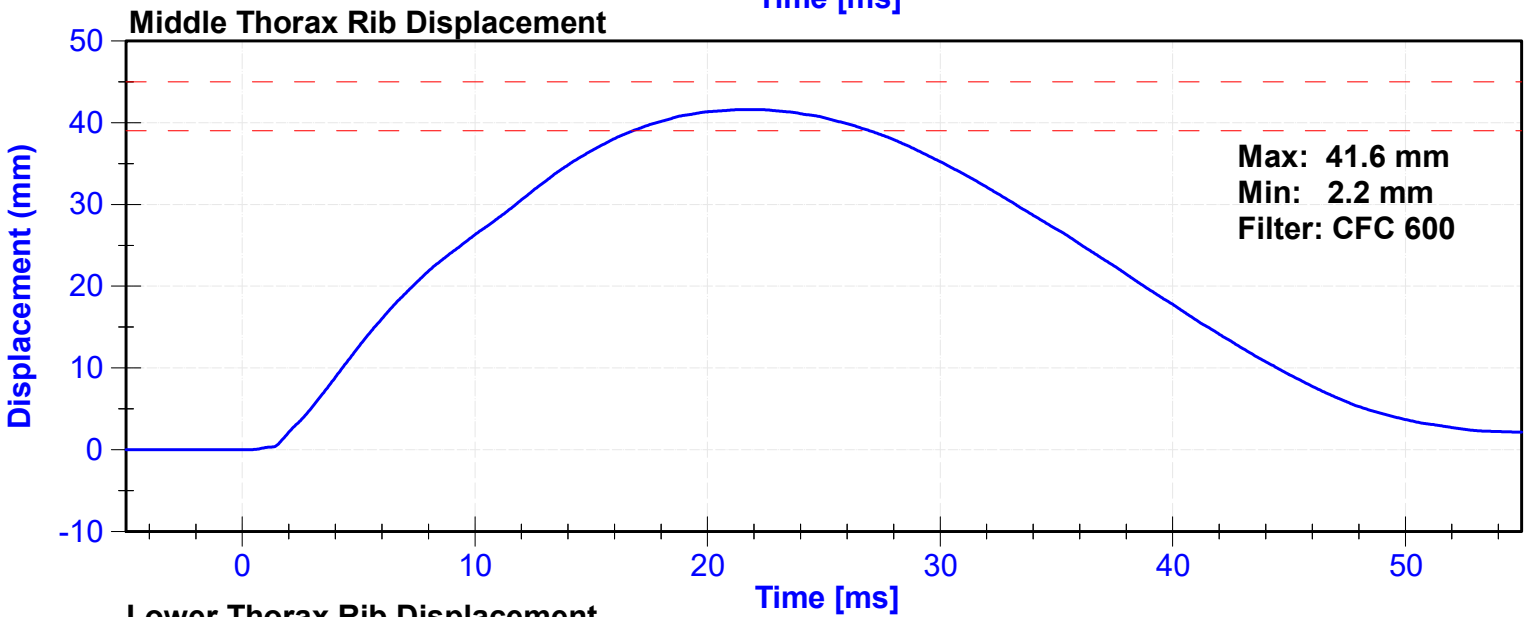
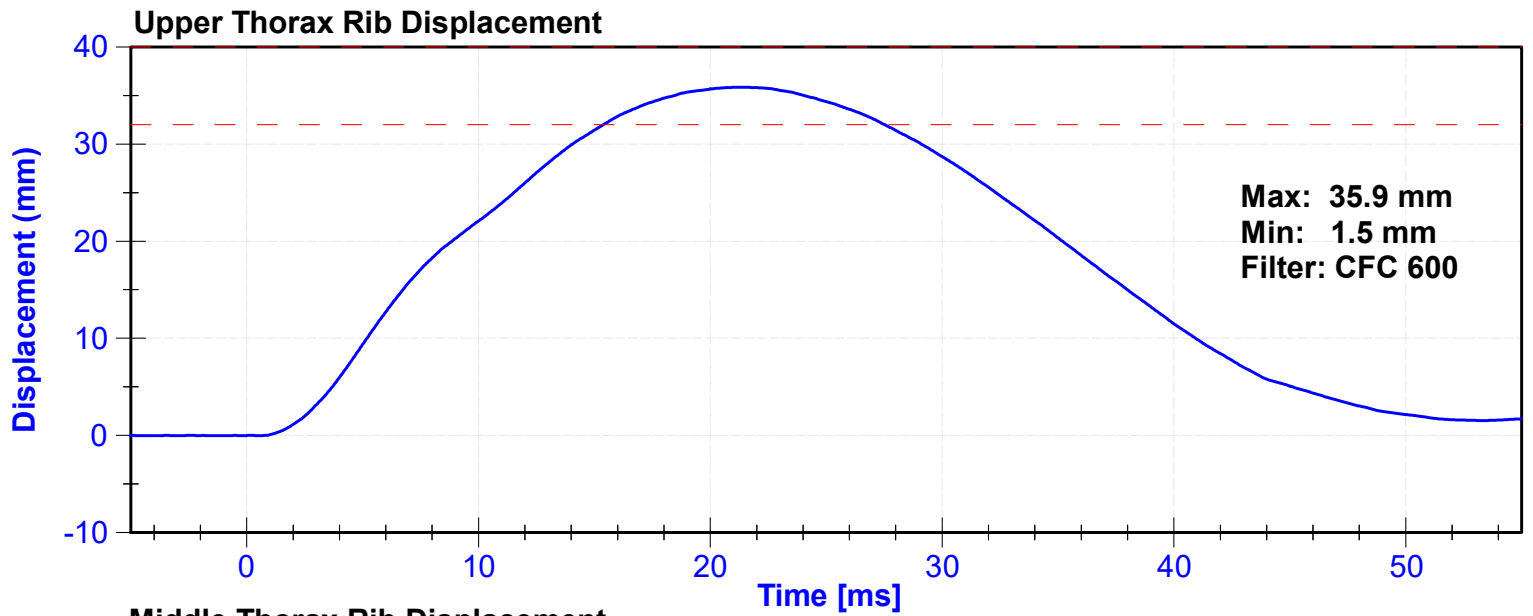
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	55	Pass
Velocity	4.2	4.4	m/s	4.27	Pass
Probe Acceleration	14	18	g's	15.7	Pass
Lateral Upper Spine Acceleration	13	17	g's	13.6	Pass
Lateral Lower Spine Acceleration	7	11	g's	8.8	Pass
Upper Thorax Rib Deflection	32	40	mm	35.9	Pass
Middle Thorax Rib Deflection	39	45	mm	41.6	Pass
Lower Thorax Rib Deflection	35	43	mm	40.4	Pass

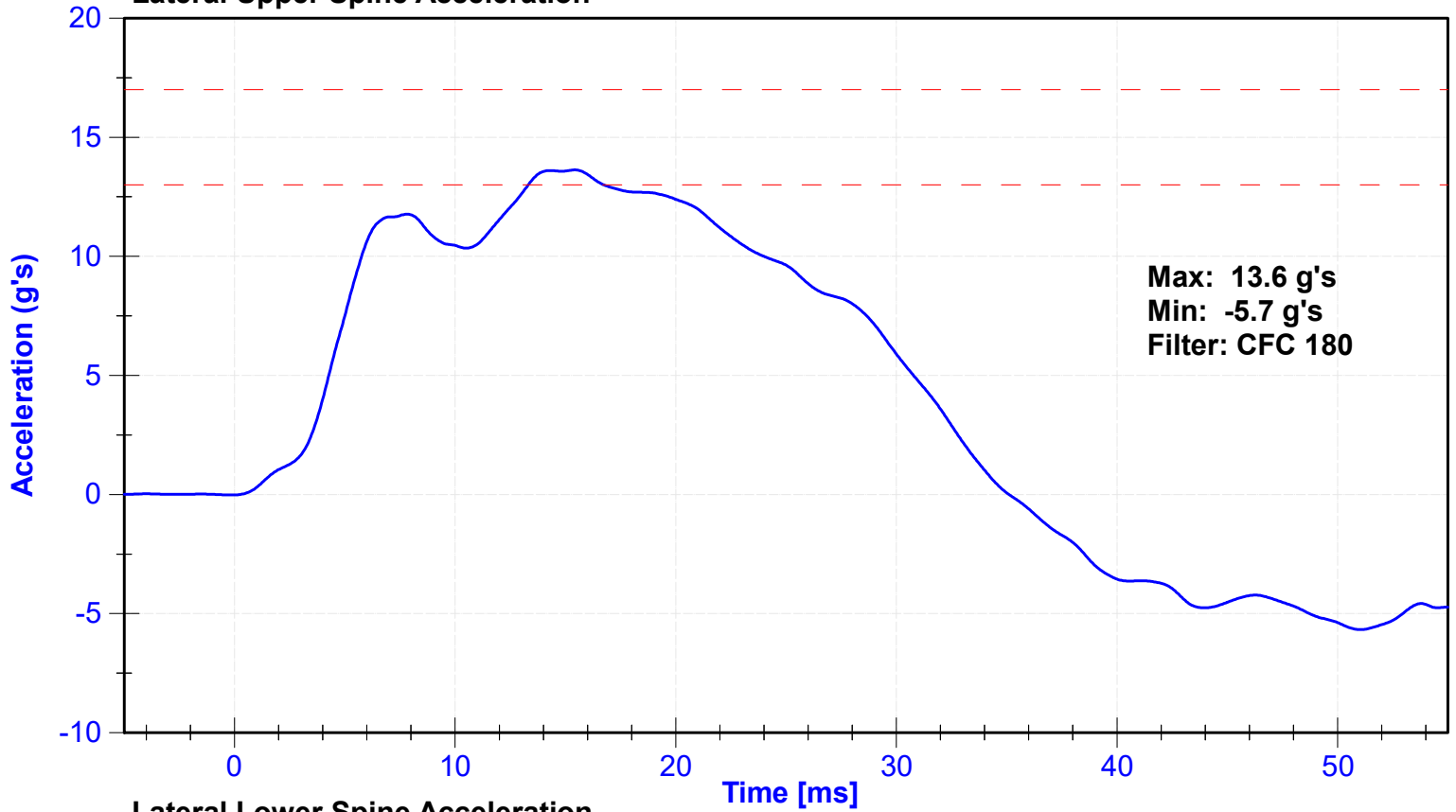
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18566	5/7/2025	11/3/2025
Upper Spine Y Accelerometer	Endevco	P64148	7/2/2025	12/29/2025
Lower Spine Y Accelerometer	Endevco	P58883	7/2/2025	12/29/2025
Upper Thorax Rib Potentiometer	Servo	1199GFE	7/8/2025	1/6/2026
Middle Thorax Rib Potentiometer	Servo	1246GFE	7/8/2025	1/6/2026
Lower Thorax Rib Potentiometer	Servo	011GFE	7/8/2025	1/6/2026

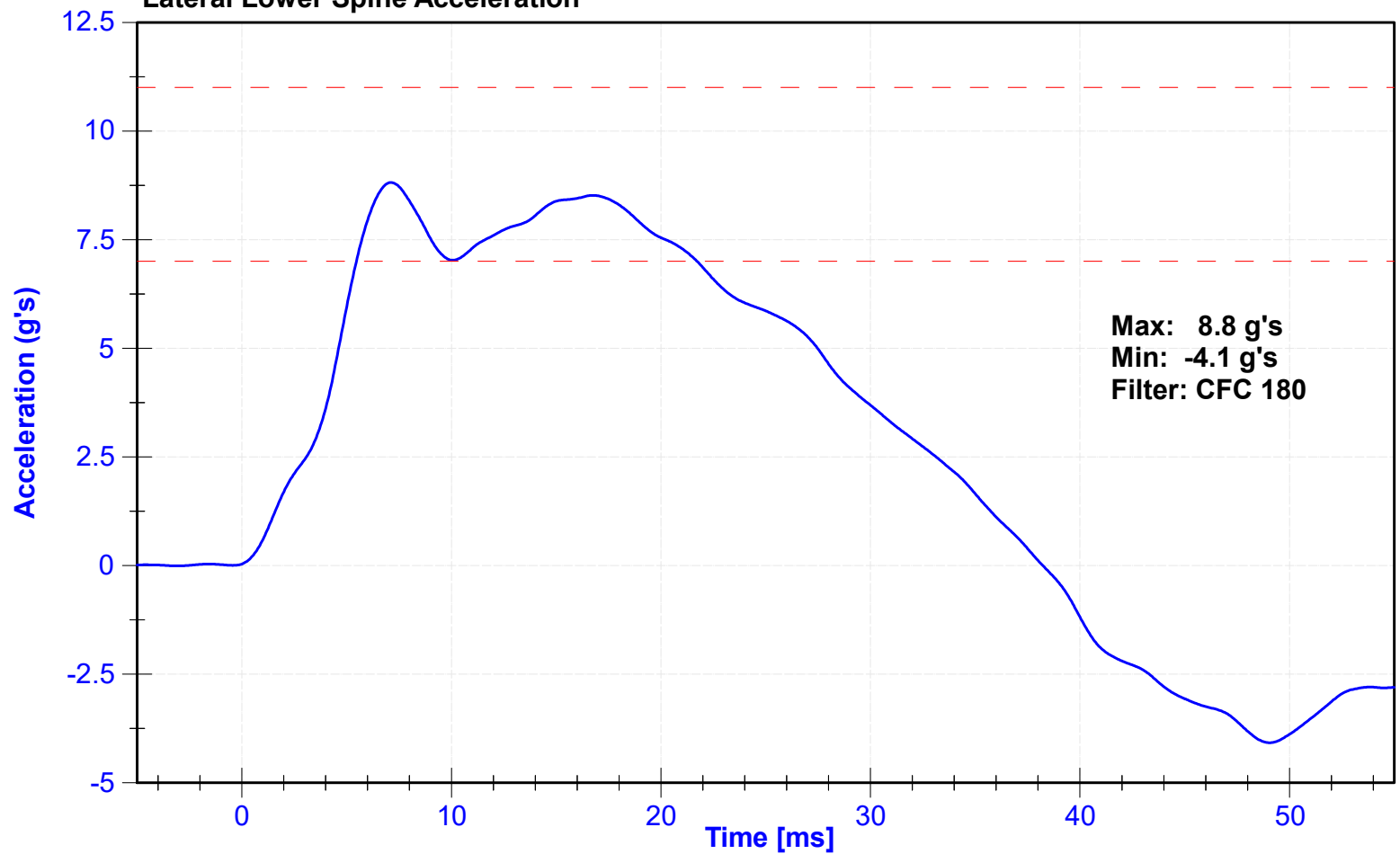




Lateral Upper Spine Acceleration



Lateral Lower Spine Acceleration



ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	DG8012	Laboratory Supervisor	J. Kinderman

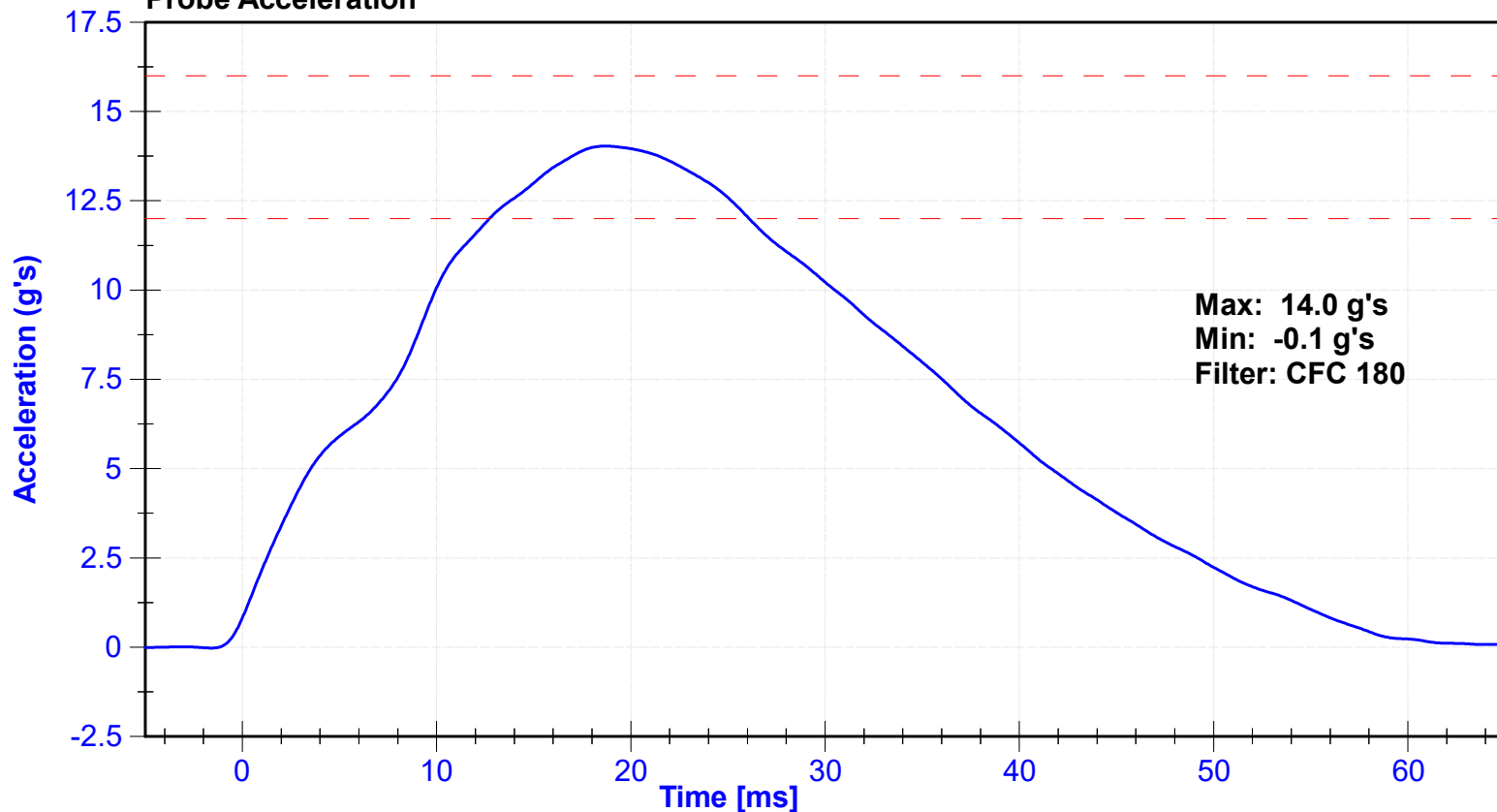
Results

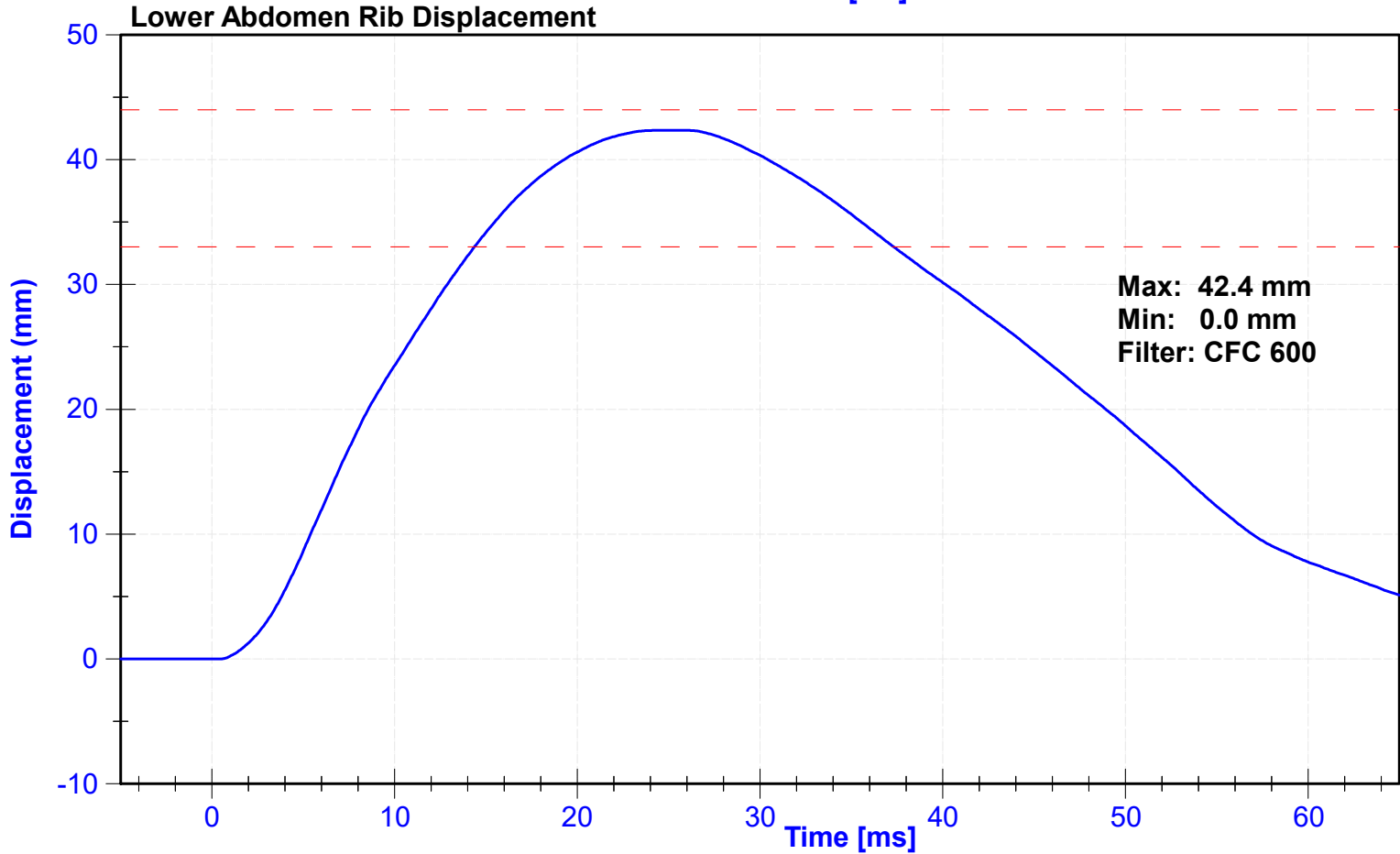
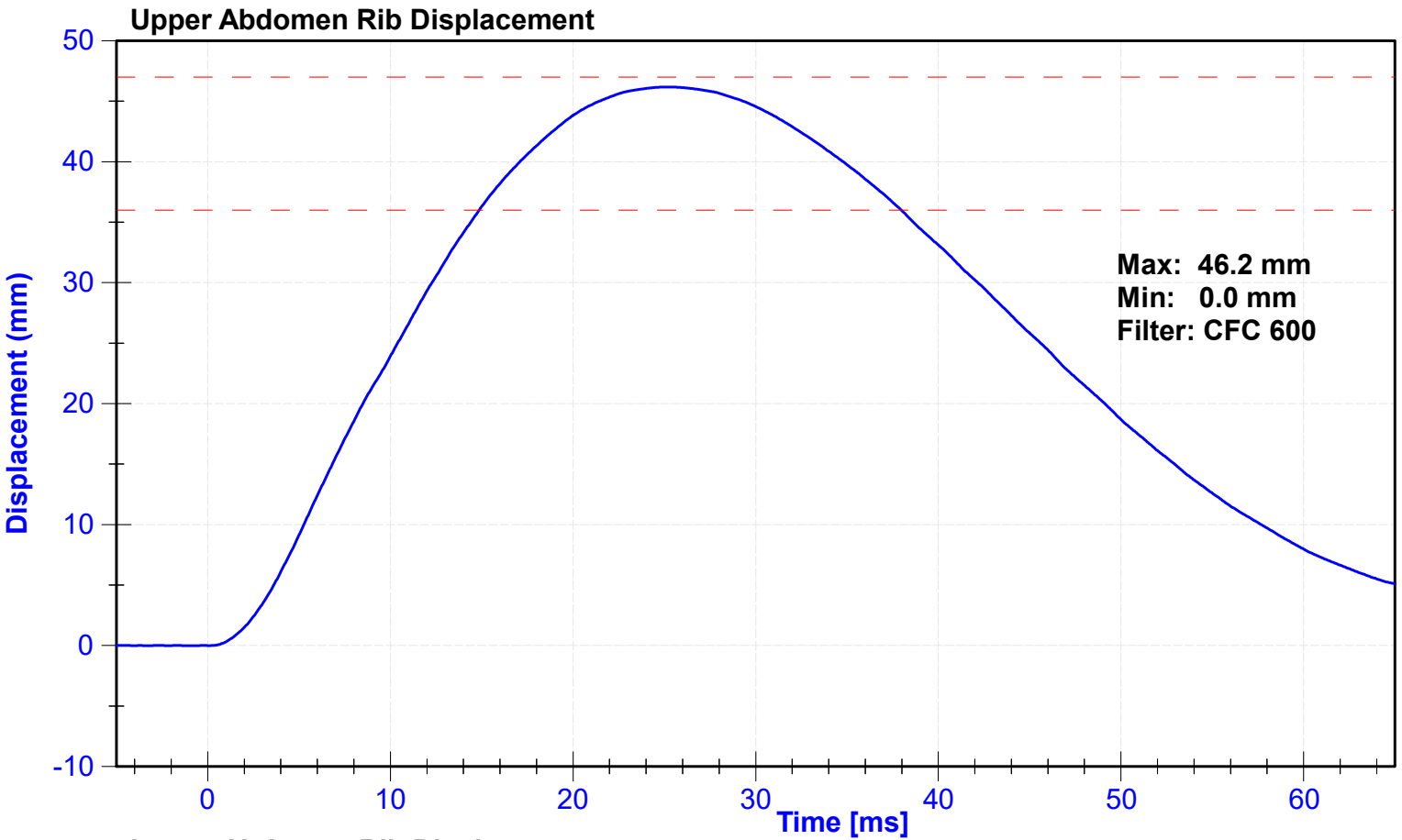
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	55	Pass
Velocity	4.2	4.4	m/s	4.24	Pass
Probe Acceleration	12	16	g's	14.0	Pass
Lateral Lower Spine Acceleration	9	14	g's	10.3	Pass
Upper Abdomen Rib Deflection	36	47	mm	46.2	Pass
Lower Abdomen Rib Deflection	33	44	mm	42.4	Pass

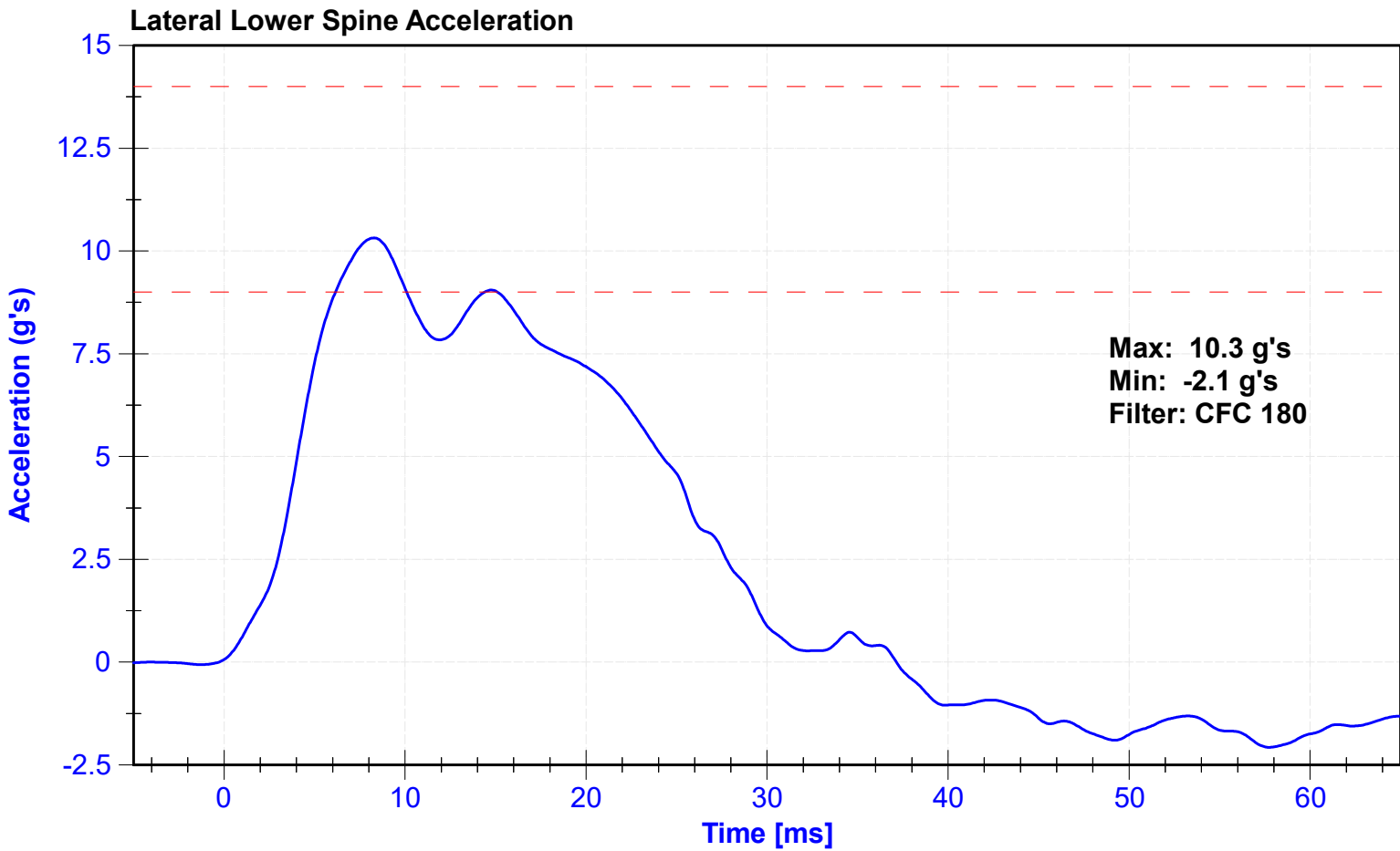
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accelerometer	Endevco	18566	5/7/2025	11/3/2025
Lower Spine Y Accelerometer	Endevco	P58883	7/2/2025	12/29/2025
Upper Abdomen Rib Potentiometer	Servo	008GFE	7/8/2025	1/6/2026
Lower Abdomen Rib Potentiometer	Servo	046GFE	7/8/2025	1/6/2026

Probe Acceleration







ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	DG8012	Laboratory Supervisor	J. Kinderman

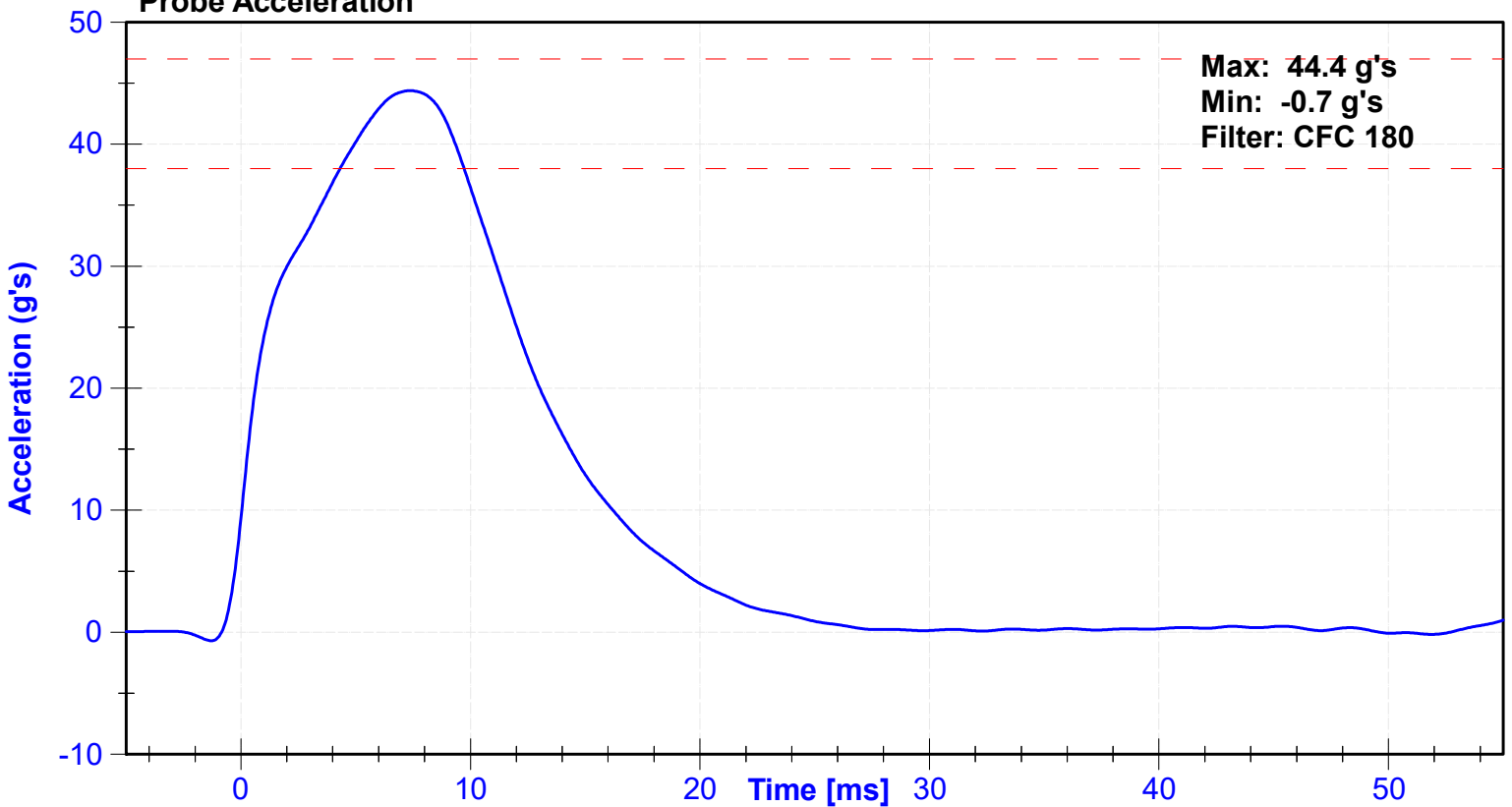
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	55	Pass
Velocity	6.6	6.8	m/s	6.68	Pass
Probe Acceleration	38	47	g's	44.4	Pass
Lateral Pelvis Acceleration after 6ms	34	42	g's	35.2	Pass
Acetabulum Force	3600	4300	N	3983.8	Pass

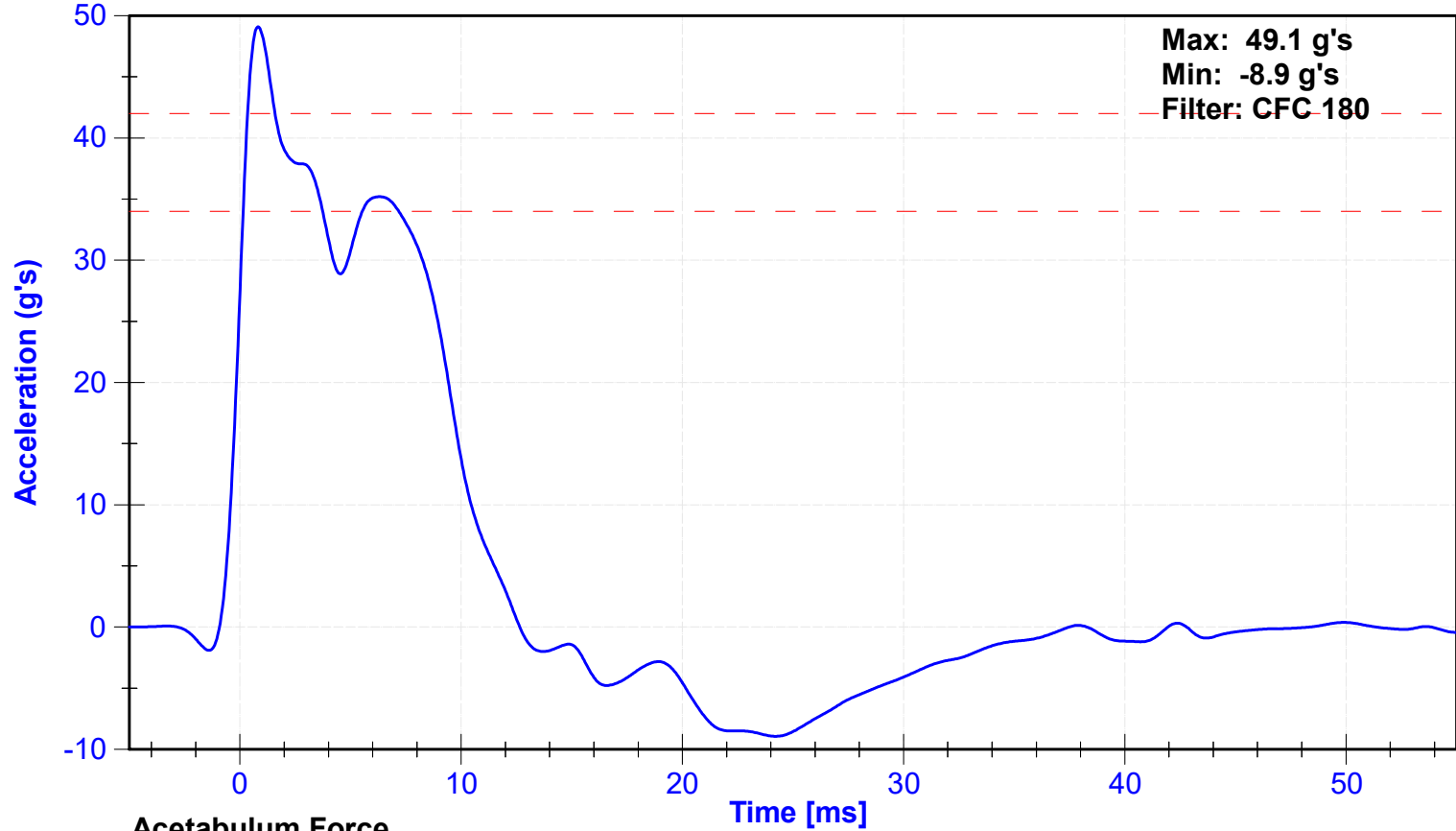
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18566	5/7/2025	11/3/2025
Pelvis Y Accelerometer	Endevco	T20860	7/2/2025	12/29/2025
Acetabulum Load Cell	Denton	270-FY	9/16/2024	9/16/2025
Certification Plug	SACO			N/A
Crash Test Plug	SACO			N/A

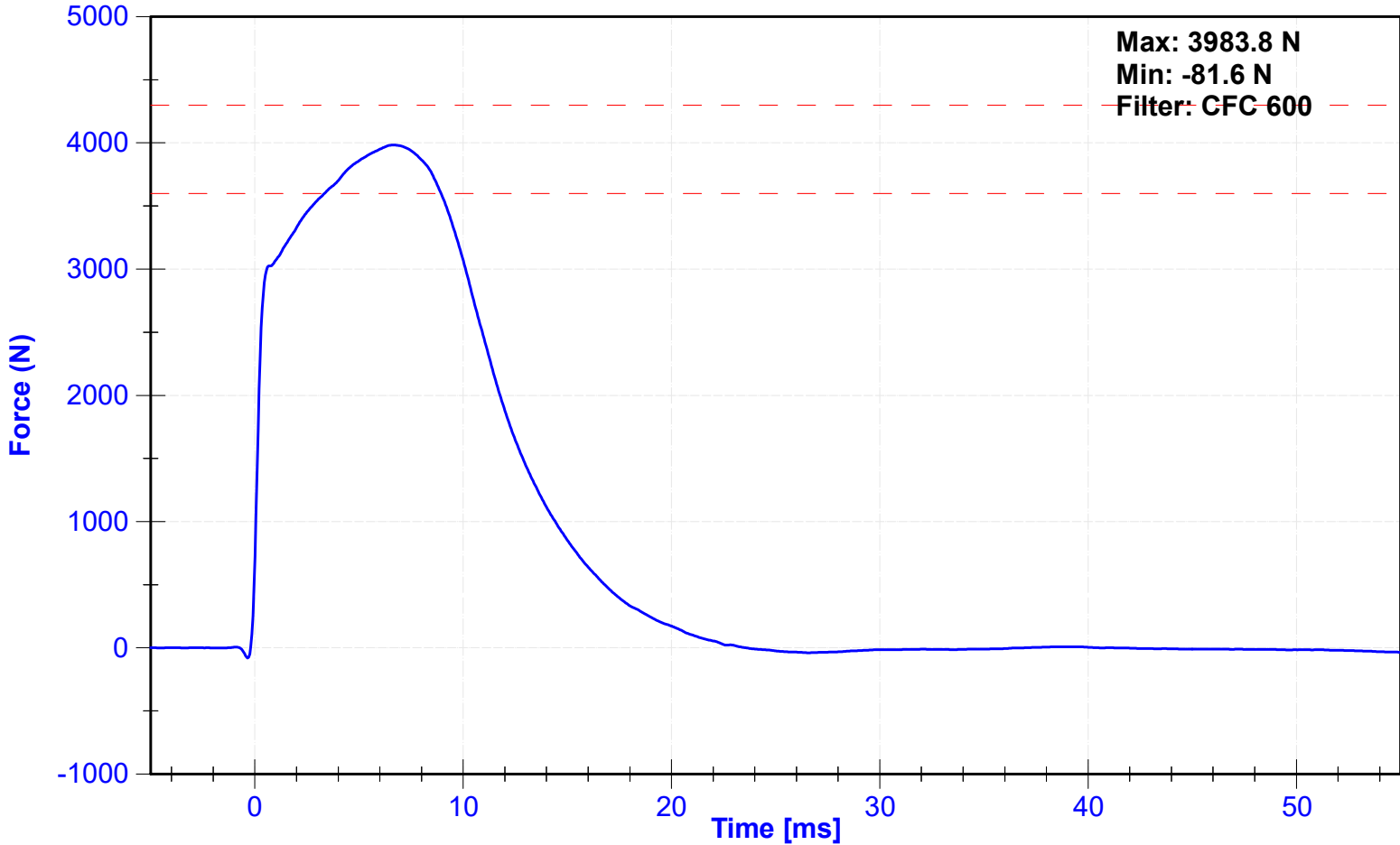
Probe Acceleration



Lateral Pelvis Acceleration



Acetabulum Force





SID-IIs Pelvis Plug Certification Test

Plug S/N 16873

Test Number 23710

Report Number 23767

Test Date 8/1/2022 10:50:53 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

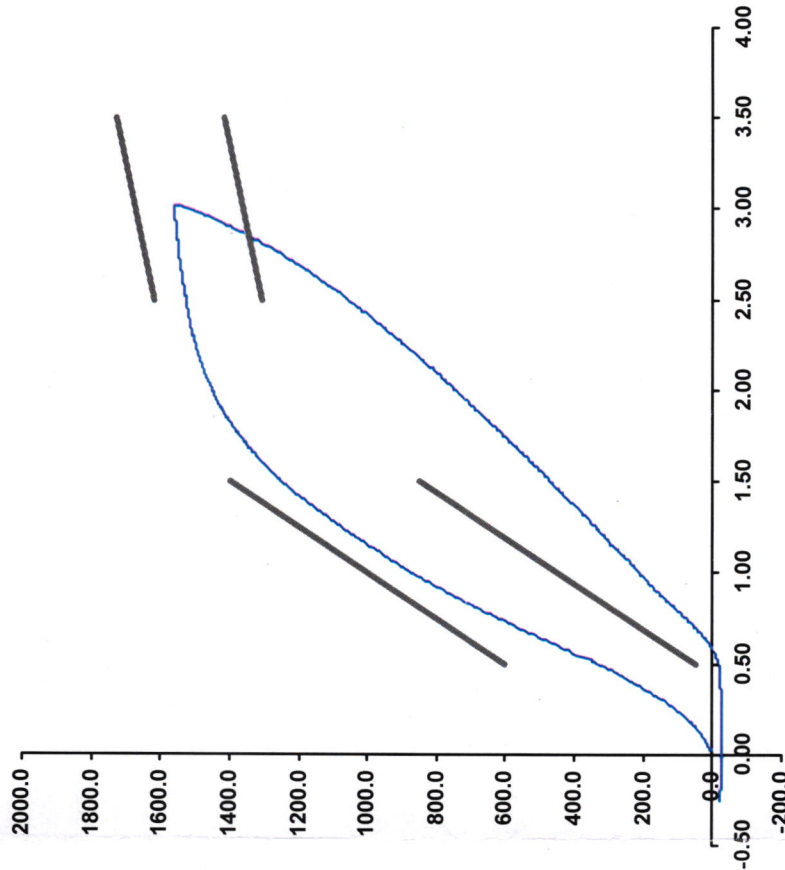
Crosshead Speed (mm / min) or Rate 12.7

Extension or Position Measured by XHD_100 (XHD100)

Notes:

Impact DG801Z 7.15.25

Force (-N) vs Extension (-mm)



Operator

Part Number 180-4450

Template No 107 01-Aug-22

SACO Research

By: DC Date: 8/1/22

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



SID-IIs Pelvis Plug Certification Test

Plug S/N 16869

Test Number 23705

Report Number 23762

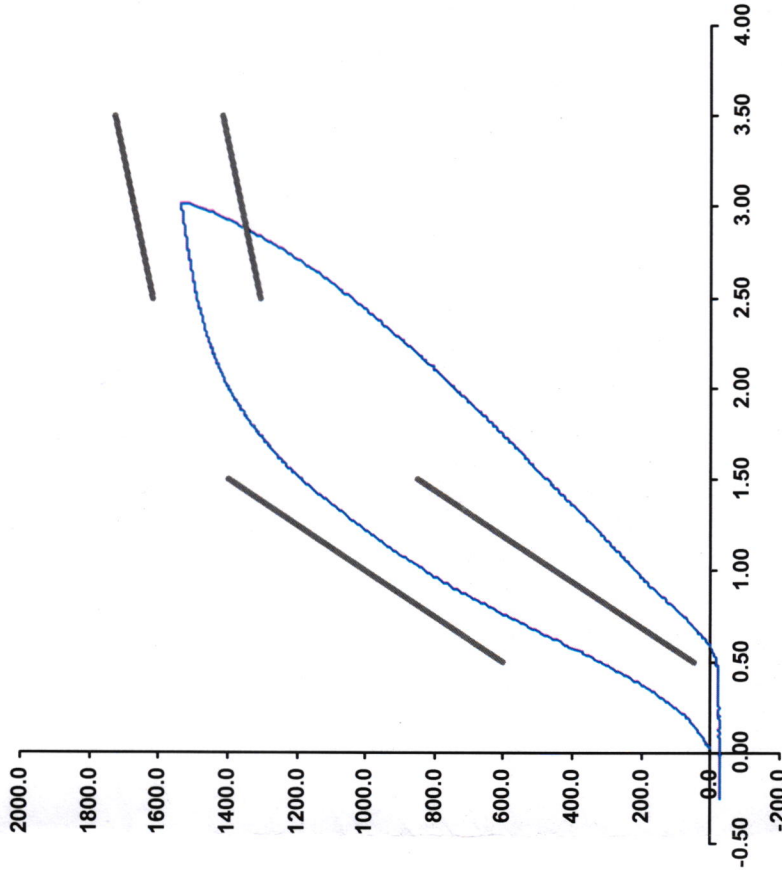
Test Date 8/1/2022 10:38:18 AM

Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	320	600
Force @ 1.5 mm (N)	1,183	1,400
Force @ 2.5 mm (N)	1,490	1,618
Force @ 3.0 mm (N)	1,538	1,673

Testing Machine STM-20 5965542
Load Cell S/N (FI360947), Units (LBS) 1000
Crosshead Speed (mm / min) or Rate 12.7
Extension or Position Measured by XHD_100 (XHD100)

Notes:
Non-Impact DG8012 7.15.25

Force (-N) vs Extension (-mm)



Operator
Part Number 180-4450

Template No 107 01-Aug-22
SACO Research

By: DC Date: 8/1/22
SACO Research 41735 Elm St, #401 Murrieta, CA 92562 Tel 310-694-2082 FAX



SID-IIs Pelvis Plug Certification Test

Plug S/N 16878

Test Number 23724

Report Number 23781

Test Date 8/2/2022 1:36:41 PM

Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	306	600
Force @ 1.5 mm (N)	1,169	1,400
Force @ 2.5 mm (N)	1,492	1,618
Force @ 3.0 mm (N)	1,544	1,673

Testing Machine STM-20 5965542

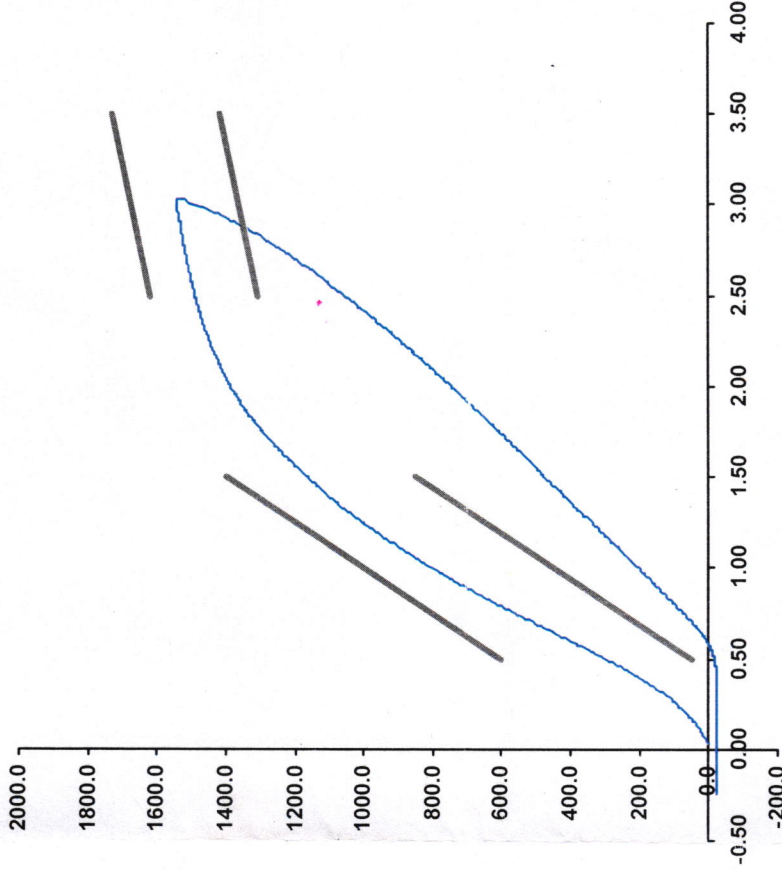
Load Cell S/N (F1360947), Units (LBS) 1000

Crosshead Speed (mm / min) or Rate 12.7

Extension or Position Measured by XHD_100 (XHD100)

Notes: Cert DG8012 7.15.25

Force (-N) vs Extension (-mm)



Operator

Part Number 180-4450

Template No 107 02-Aug-22

SACO Research

By: *DC* Date: 8/2/22

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

ATD Manufacturer	FTSS	Test Technician	Z. Nyhart
ATD Serial Number	DG8012	Laboratory Supervisor	J. Kinderman

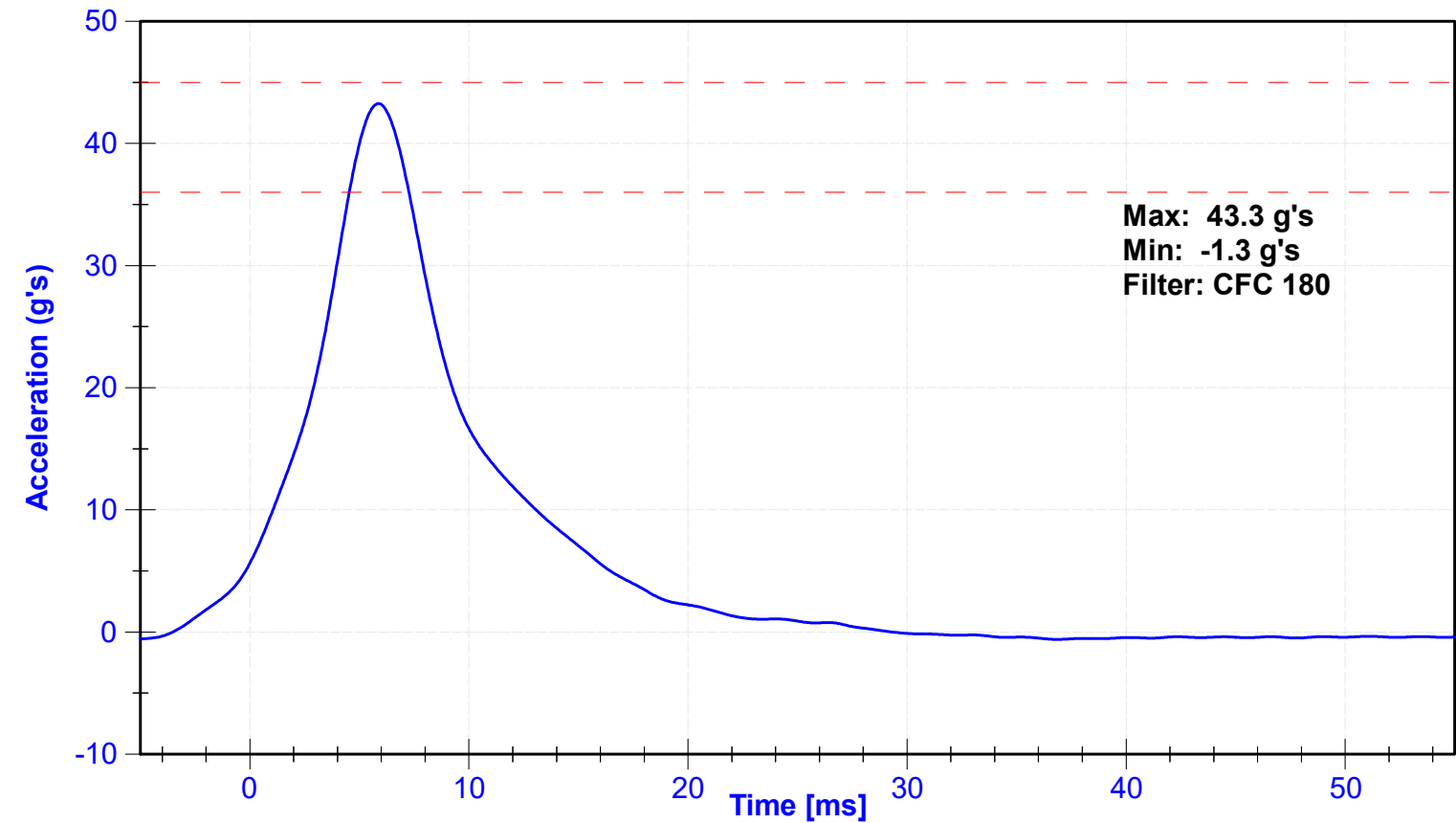
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	55	Pass
Velocity	4.2	4.4	m/s	4.21	Pass
Probe Acceleration	36	45	g's	43.3	Pass
Lateral Pelvis Acceleration	28	39	g's	33.8	Pass
Iliac Force	4100	5100	N	4994.6	Pass

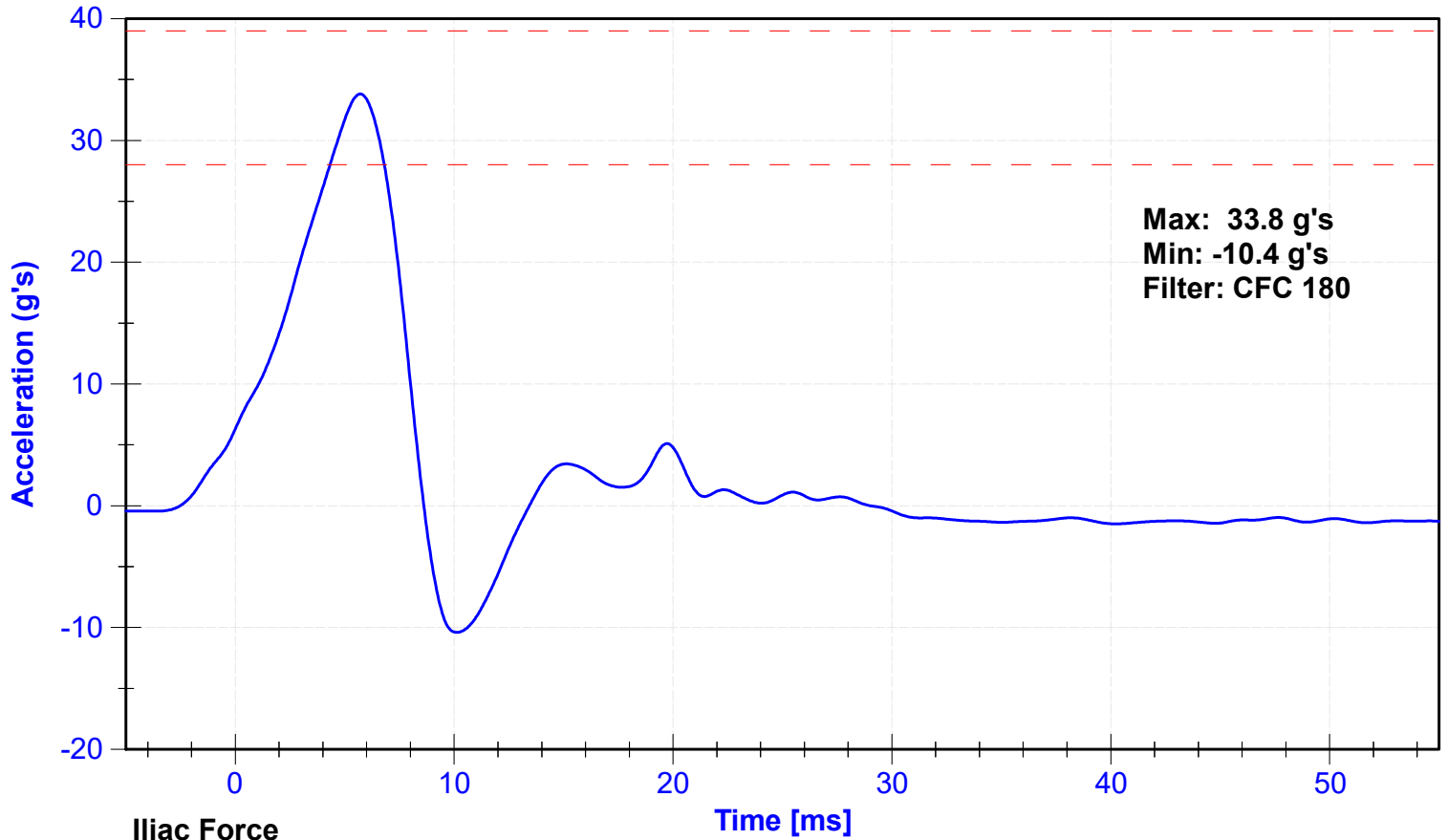
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	18566	5/7/2025	11/3/2025
Pelvis Y Accelerometer	Endevco	T20860	7/2/2025	12/29/2025
Iliac Load Cell	Denton	321	9/16/2024	9/16/2025

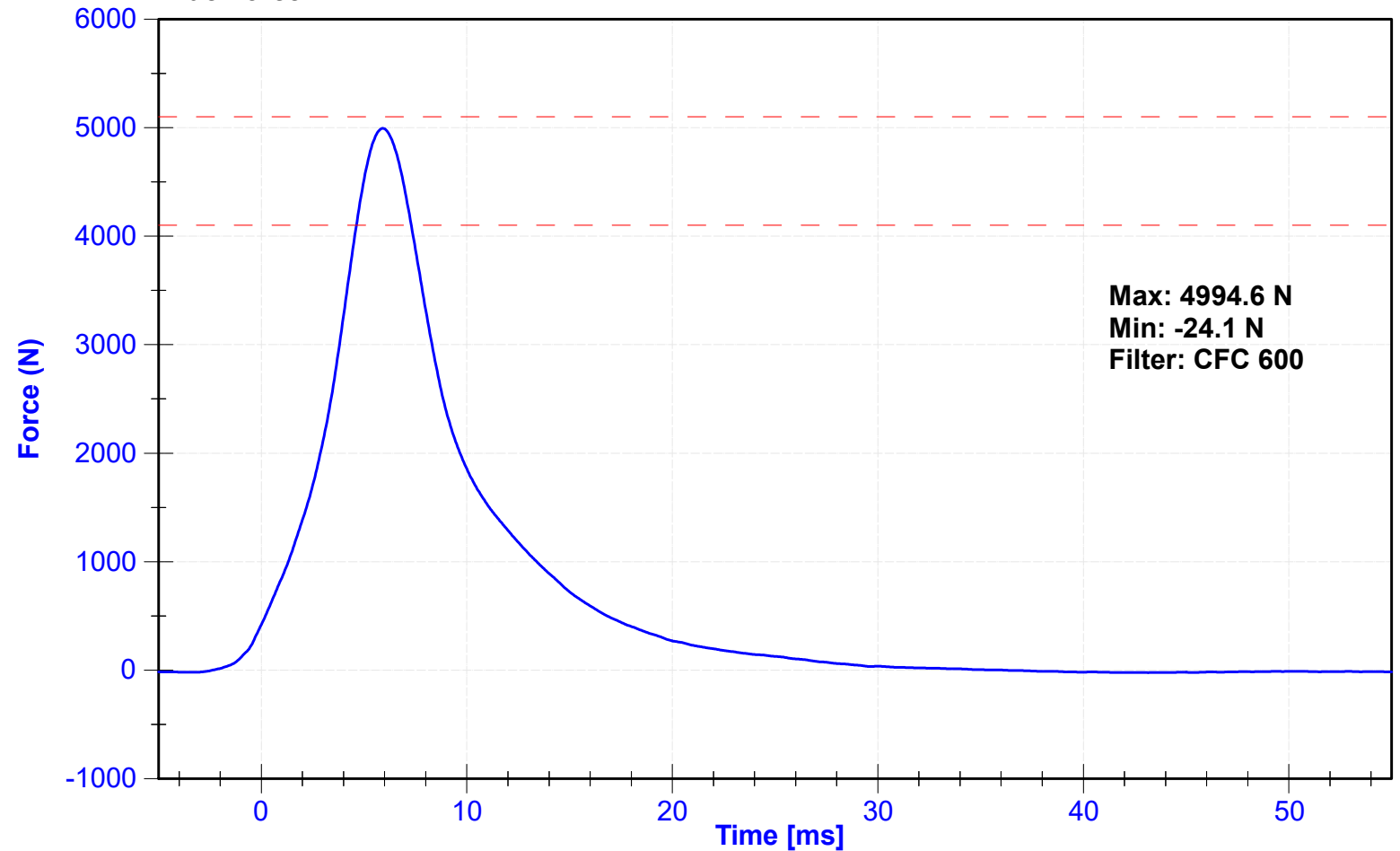
Probe Acceleration



Lateral Pelvis Acceleration



Iliac Force



APPENDIX D

TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

TABLE 1 – Dummy Instrumentation (ES-2re)

			ES-2re S/N F033		
			Serial Number	Manufacturer	Calibration Date
Head Accelerometers	Primary	X	P63861	Endevco	07/01/2025
		Y	P49216	Endevco	07/01/2025
		Z	P51303	Endevco	07/01/2025
	Redundant	X	P58868	Endevco	07/01/2025
		Y	P59020	Endevco	07/01/2025
		Z	P52132	Endevco	07/01/2025
Thorax Rib Displacement Potentiometers	Upper	Y	179GFE	Honeywell	07/01/2025
	Middle	Y	185GFE	Honeywell	07/01/2025
	Lower	Y	184GFE	Honeywell	07/01/2025
Abdomen Load Cells	Forward	Y	1523	Denton	10/28/2024
	Middle	Y	1524	Denton	10/28/2024
	Rear	Y	1530	Denton	10/28/2024
Lower Spine Accelerometers (T12)		X	P35790	Endevco	07/01/2025
		Y	T31029	Endevco	07/01/2025
		Z	P52033	Endevco	07/01/2025
Pubic Symphysis Load Cell		Y	458-FY	Denton	10/28/2024

TABLE 2 – Dummy Instrumentation (SID-IIs)

				SID-IIs S/N DG8012		
				Serial Number	Manufacturer	Calibration Date
Head Accelerometers		Primary	X	T21184	Endevco	07/02/2025
			Y	T31030	Endevco	07/02/2025
			Z	P83319	Endevco	07/02/2025
		Redundant	X	T21354	Endevco	07/02/2025
			Y	P12566	Endevco	07/02/2025
			Z	P83322	Endevco	07/02/2025
Displacement Potentiometers	Thoracic Rib	Upper	Y	1199GFE	Servo	07/08/2025
		Middle	Y	1246GFE	Servo	07/08/2025
		Lower	Y	011GFE	Servo	07/08/2025
	Abdominal Rib	Upper	Y	008GFE	Servo	07/08/2025
		Lower	Y	046GFE	Servo	07/08/2025
Lower Spine Accelerometers (T12)			X	P71272	Endevco	07/02/2025
			Y	P58883	Endevco	07/02/2025
			Z	T30065	Endevco	07/02/2025
Acetabulum Load Cell			Y	270-FY	Denton	09/16/2024
Iliac Wing Load Cell			Y	321	Denton	09/16/2024
Pelvis Plug (struck side)				16835	SACO	08/01/2022
Pelvis Plug (non-struck side)				16837	SACO	08/01/2022

TABLE 3 – Vehicle Instrumentation

Vehicle Instrumentation			Serial Number	Manufacturer	Calibration Date
1	Vehicle Center of Gravity	X	G26650	Endevco	03/12/2025
	Vehicle Center of Gravity	Y	G26664	Endevco	03/11/2025
	Vehicle Center of Gravity	Z	G26667	Endevco	03/11/2025
2	Right Sill at Front Seat	X	G26990	Endevco	05/13/2025
	Right Sill at Front Seat	Y	G26991	Endevco	05/13/2025
	Right Sill at Front Seat	Z	G27000	Endevco	05/13/2025
3	Right Sill at Rear Seat	X	A315883	Measurement Specialties	05/14/2025
	Right Sill at Rear Seat	Y	A370956	Measurement Specialties	05/14/2025
	Right Sill at Rear Seat	Z	A370958	Measurement Specialties	05/14/2025
4	Left Sill at Front Door	Y	G22193	Endevco	04/29/2025
5	Left Sill at Rear Door	Y	G22622	Endevco	10/31/2024
6	Left A-Post Lower	Y	G22807	Endevco	06/23/2025
7	Left A-Post Middle	Y	G25848	Endevco	06/24/2025
8	Left B-Post Lower	Y	A374351	Measurement Specialties	06/23/2025
9	Left B-Post Middle	Y	A374367	Measurement Specialties	06/23/2025
10	Front Seat Track	Y	G24234	Endevco	06/24/2025
11	Rear Seat Track or Structure	Y	G22431	Endevco	06/24/2025
12	Right Rear Occ. Compartment	Y	A431244	Measurement Specialties	02/18/2025
13	Engine Block	X	G23464	Endevco	05/19/2025
	Engine Block	Y	A315986	Measurement Specialties	05/16/2025
14	Rear Floorpan Above Axle	X	A350923	Measurement Specialties	05/15/2025
	Rear Floorpan Above Axle	Y	A370891	Measurement Specialties	05/15/2025
	Rear Floorpan Above Axle	Z	A413610	Measurement Specialties	05/15/2025

TABLE 4 – MDB Instrumentation

MDB Instrumentation		Serial Number	Manufacturer	Calibration Date
MDB Center of Gravity	X	A413590	Measurement Specialties	06/23/2025
MDB Center of Gravity	Y	G24322	Endevco	06/23/2025
MDB Center of Gravity	Z	G25374	Endevco	12/14/2024
Left Frame at Rear Axle Centerline	X	A315988	Measurement Specialties	02/18/2025
Left Frame at Rear Axle Centerline	Y	G25272	Endevco	06/23/2025