

REPORT NUMBER: SPNCAP-CAL-22-002

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

**Nissan Motor CO. LTD
2022 Nissan Pathfinder
SUV**

NHTSA No: M20225206

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



April 7, 2023

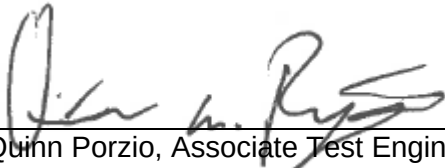
FINAL REPORT

**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**

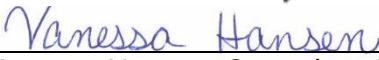
This final test report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, in response to Contract Number 693JJ920D000016.

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

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

Prepared by: 
Quinn Porzio, Associate Test Engineer

Date: April 7, 2023

Approved by: 
Vanessa Hansen, Operations Manager

Date: April 7, 2023

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. SideNCAPPole-CAL-22-002	2. Government Accession No.	3. Recipient's Catalog No.																												
4. Title and Subtitle Final Report of New Car Assessment Program Side Impact Pole Testing of 2022 Nissan Pathfinder four door SUV NHTSA No.: M20225206		5. Report Date April 7, 2023																												
		6. Performing Organization Code CAL																												
7. Author(s) Quinn Porzio, Associate Test Engineer Vanessa Hansen, Operations Manager		8. Performing Organization Report No. CAL-DOT-2022-002																												
9. Performing Organization Name and Address Calspan Corporation Transportation Test Operation 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, May 17, 2022 - April 7, 2023																												
		14. Sponsoring Agency Code NRM-100																												
15. Supplementary Notes																														
16. Abstract A 32.20 km/h (20 mph), 75° oblique impact Side NCAP Test was conducted on the subject 2022 Nissan Pathfinder SUV in accordance with the specifications of the Office of Crashworthiness Standards Side NCAP Pole Laboratory Test Procedure for the generation of consumer information on vehicle side pole crash protection. This test was conducted at Calspan Corporation's Transportation Test Operations facility in Buffalo, New York on May 17, 2022. The impact velocity of the vehicle was 32.24 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle was 21.4°C. The target vehicle's maximum post-test static crush was 350 mm located at level 3. The test vehicle's occupant performance data is as follows: <table border="1"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th colspan="3">Driver ATD (SID-IIs) (Serial No. 300)</th> </tr> <tr> <th>Units</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td></td> <td>1000</td> <td>234.133</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td>G</td> <td>82</td> <td>37.150</td> </tr> <tr> <td>Total Pelvic Force (sum of acetabular and iliac forces)</td> <td>N</td> <td>5525</td> <td>2073.154</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>38</td> <td>19.576</td> </tr> <tr> <td>Maximum Abdomen Rib Deflection</td> <td>mm</td> <td>45</td> <td>16.807</td> </tr> </tbody> </table> The two doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.				Measurement Description	Driver ATD (SID-IIs) (Serial No. 300)			Units	Threshold	Result	Head Injury Criteria (HIC ₃₆)		1000	234.133	Resultant Lower Spine Acceleration	G	82	37.150	Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2073.154	Maximum Thoracic Rib Deflection	mm	38	19.576	Maximum Abdomen Rib Deflection	mm	45	16.807
Measurement Description	Driver ATD (SID-IIs) (Serial No. 300)																													
	Units	Threshold	Result																											
Head Injury Criteria (HIC ₃₆)		1000	234.133																											
Resultant Lower Spine Acceleration	G	82	37.150																											
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2073.154																											
Maximum Thoracic Rib Deflection	mm	38	19.576																											
Maximum Abdomen Rib Deflection	mm	45	16.807																											
17. Key Words New Car Assessment Program (NCAP) Side Impact Pole Part 572V SID-IIs		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division, 1200 New Jersey Ave. SE Washington, D.C. 20590																												
19. Security Class. (of this report) UNCLASSIFIED	20. Security Class. (of this page) UNCLASSIFIED	21. No. of Pages 126	22. Price																											

TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
1	Test Purpose and Procedure	1-1
2	Summary of Test Results	2-1
3	Occupant and Vehicle Information	3-1
<u>Data Sheet</u>		<u>Page</u>
1	General Test and Vehicle Parameter Data	3-2
2	Seat, Seat Belt, Steering Wheel Adjustment and Fuel Systems Data	3-6
3	Dummy Longitudinal Clearance Dimensions	3-9
4	Dummy Lateral Clearance Dimensions	3-10
5	Camera and instrumentation Data	3-11
6	Vehicle Accelerometer Data	3-12
7	Rigid Pole Load Cell Data	3-13
8	Post-Test Observations	3-14
9	Test Vehicle Profile Measurements	3-16
10	Test Vehicle Exterior Crush Measurements	3-17
11	Vehicle Damage Profile Distances	3-20
12	FMVSS No. 301 Static Rollover Results	3-21
13	Dummy / Vehicle Temperature and Humidity Stabilization Data	3-22
<u>Appendix</u>		<u>Page</u>
A	Photographs	A-1
B	Vehicle and Dummy Response Data Plots	B-1
C	Dummy Configuration and Performance Verification Data	C-1
D	Test Equipment and Instrumentation Calibration Data	D-1

SECTION 1

TEST PURPOSE AND PROCEDURE

This side impact test was conducted as part of the MY 2022 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. 693JJ920D000016. The purpose of this test is to generate comparative side impact performance in a 2022 Nissan Pathfinder SUV. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Side NCAP Pole Laboratory Test Procedure, dated March 2020.

SECTION 2

SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a 2022 Nissan Pathfinder four door SUV. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.24 km/h. The test was conducted by Calspan Corporation's Transportation Test Operations facility in Buffalo, New York on May 17, 2022. Pre-test and post-test photographs of the test vehicle and side impact dummy (SID-IIs) are included in Appendix A of this report.

One Part 572V (SID-IIs) dummy was placed in the driver designated seating position according to instructions specified in the OCWS Side NCAP Pole Laboratory Test Procedure, dated March 2020. The side impact event was documented by 11 cameras. Camera locations and other pertinent camera information are included on page 3-11 in this report.

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

Head CG tri-axial accelerometers

Thorax upper, middle, and lower rib displacement potentiometers

Abdomen upper and lower rib displacement potentiometers

Lower spine tri-axial accelerometers

Iliac load cell

Acetabulum load cell

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

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

INJURY READINGS

Measurement Description	Driver ATD (SID-IIs)		
	Units	IARV	Result
Head Injury Criteria (HIC ₃₆)		1000	234.133
Resultant Lower Spine Acceleration	g	82	37.150
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2073.154
Maximum Thoracic Rib Deflection	mm	38*	19.576
Maximum Abdominal Rib Deflection	mm	45*	16.807

*Proposed IARV

Supplemental restraint information was recorded as follows:

SUPPLEMENTAL RESTRAINT INFORMATION

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

GENERAL COMMENTS:

1. P1 serial number – 300

Data Anomalies:

- Left Middle A-Pillar Y Acceleration, Exceeded calibration range at 27.4 ms
- Left Sill B-Pillar Y Acceleration, Exceeded calibration range at 58.9 ms

SECTION 3

OCCUPANT AND VEHICLE INFORMATION

This section contains information reporting for the following Data Sheets:

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

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

Data Sheet No. 3 – Dummy Longitudinal Clearance Dimensions

Data Sheet No. 4 – Dummy Lateral Clearance Dimensions

Data Sheet No. 5 – Camera and instrumentation Data

Data Sheet No. 6 – Vehicle Accelerometer Data

Data Sheet No. 7 – Rigid Pole Load Cell Data

Data Sheet No. 8 – Post-Test Observations

Data Sheet No. 9 – Test Vehicle Profile Measurements

Data Sheet No. 10 – Test Vehicle Exterior Crush Measurements

Data Sheet No. 11 – Vehicle Damage Profile Distances

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

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

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2022 Nissan Pathfinder four door SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20225206
Test Date: 05/17/2022

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20225206	Traction Control System (TCS)	Yes
Model Year	2022	Auto-Leveling System	No
Make	Nissan	Automatic Door Locks (ADL)	Yes
Model	Pathfinder	Power Window Auto-Reverse	No
Body Style	SUV	Other Optional Feature	-
VIN	5N1DR3BA7NC238556	Driver Front Airbag	Yes
Body Color	Red	Driver Curtain Airbag	Yes
Odometer Reading (km/mi)	18 miles	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	Transverse	Driver Pelvis Airbag	No
Transmission Type	Automatic	Driver Knee Airbag	Yes
Transmission Speeds	9-Speed	Rear Pass. Curtain Airbag	Yes
Overdrive	Yes	Rear Pass. Head / Torso Airbag	No
Final Drive	Front Wheel Drive	Rear Pass. Torso Airbag	No
Roof Rack	Yes	Rear Pass. Torso / Pelvis Airbag	Yes
Sunroof / T-Top	No	Rear Pass. Pelvis Airbag	No
Running Boards	No	Driver Seat Belt Pretensioner	Yes
Tilt Steering Wheel	Yes	Rear Pass. Seat Belt Pretensioner	Yes
Power Seats	Yes	Driver Load Limiter	Yes
Anti-Lock Brakes (ABS)	Yes	Rear Pass. Load Limiter	Yes
		Other Safety Restraint	-

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

No

DATA FROM CERTIFICATION LABEL

Manufactured By	Nissan Motor Co. LTD	GVWR (kg)	2676
Date of Manufacture	02/22	GAWR Front (kg)	1335
Vehicle Type	MPV	GAWR Rear (kg)	1530

VEHICLE SEATING AND WEIGHT CAPACITY DATA

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	2	3	3	8	
Capacity Weight (VCW) (kg)				589	(A)
DSC X 68.04 kg				544.32	(B)
Cargo Weight (RCLW) (kg)				44.68	(A-B)

VEHICLE SEAT TYPE

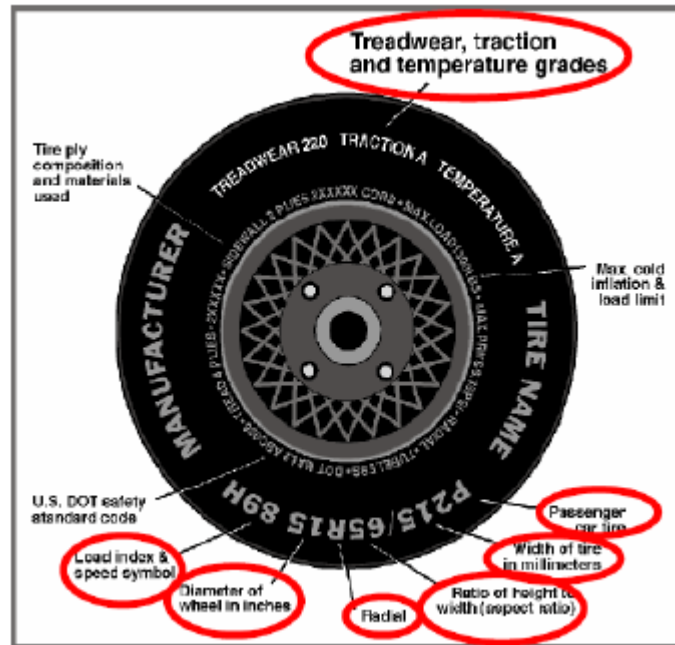
Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
Front Seat	X					W/ Lever	W/ Knob
Rear or Second Row Seat			X			X	
Third Row seat		X			X		

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

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20225206
 Test Date: 05/17/2022

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



VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	230	230
Recommended Tire Size	255/60R18	255/60R18
Tire Size on Vehicle	255/60R18	255/60R18
Tire Manufacturer	KUMHO	KUMHO
Tire Model	CRUGEN	CRUGEN
Treadwear	640	640
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Steel, 2 Polyester, 1 Nylon	2 Steel, 2 Polyester, 1 Nylon
Load Index/Speed Symbol	108H	108H
Tire Material	Rubber	Rubber
DOT Safety Code Left	000F0YA8E4621	000F0YA8E4621
DOT Safety Code Right	000F0YA8E4621	000F0YA8E4621

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

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20225206
 Test Date: 05/17/2022

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	310	315	294	323
Tire Placard	kPa	230	230	230	230
Owner's Manual	kPa	230	230	230	230
As Tested	kPa	230	230	230	230

TEST VEHICLE AXLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	568	436		588	459		590	474	
Right	kg	543	425		565	448		550	454	
Ratio	%	56.3	43.7		55.9	44.1		55.1	44.9	
Totals	kg	1111	861	1972	1153	907	2060	1140	928	2068

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total As Delivered Weight (UVW)	kg	1972	(A)
Actual Weight of 1 P572V (SID-IIs) ATD Used	kg	50	(B)
Rated Cargo / Luggage Weight (RCLW)	kg	44.68	(C)
Calculated Vehicle Target Weight (TVTW)	kg	2066.68	(A+B+C)

Does the measured As Test Vehicle Weight lie within the required weight range
 (i.e. Calculated Test Vehicle Target Weight – 4.5 kg to – 9 kg)? ☒ Yes ☐ No

TEST VEHICLE ATTITUDES AND CG

Measurement Description	Units	As Delivered	As Tested	Fully Loaded	Meets Rqmt***
Driver Door Sill Angle (front-to-rear)*	Deg	-0.05	-0.15	-0.65	Yes
Front Passenger Sill Angle (front-to-rear)*	Deg	-0.25	-0.15	0.35	Yes
Front Bumper-Line Angle (left-to-right)**	Deg	0.05	0.00	-0.30	Yes
Rear Bumper-Line Angle (left-to-right)**	Deg	-0.45	-0.30	-0.20	Yes
Vehicle CG (Aft of Front Axle)	mm	1264	1274	1299	
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	16	14	25	

* ND = Nose Down (-), NU = Nose Up (+)

** LD = Left Down (-), LU = Left Up (+)

*** The "As Tested" vehicle attitude measurements must be equal to or between the "As Delivered" and "Fully Loaded" vehicle attitude measurements. Indicate "Yes" or "No" for Meets Requirement

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

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20225206
 Test Date: 05/17/2022

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Trunk Carpeting	8
Jack	4
Tail Light	2
Ballast / Equipment Added	7

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

Test Surface Markings

	Distance from 75° Impact Location Line (mm)
Fore 25 mm target	977
Aft 25 mm target	975

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

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20225206
 Test Date: 05/17/2022

SEAT POSITIONING

The driver's seat, front center seat (if applicable), and right front passenger's seat should be set to the forward-most, mid-height, mid-angle position. The struck-side rear passenger's seat, rear center seat, and non-struck side rear passenger's seats should be set to the rear-most, lowest, mid-angle position.

SCRL ANGLE RANGE

Seat	SCRL (°)		
	Max	Min	Mid
Driver Seat	17.8	11.0	14.4
Front Passenger Seat	Not Adjustable		
Front Center Seat			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCRP Height (mm)	SCRP Height Position	SCRP Height (mm)		
				Rearmost	Mid-Fore / Aft	Forward- Most
Driver Seat	14.4	52	Max	59	71	82
			Mid	29.5	40	52
			Min	0	13	24
Front Passenger Seat	Not Adjustable		Max	-	-	-
			Mid	-	-	-
			Min	-	-	-
Front Center Seat			Max	-	-	-
			Mid	-	-	-
			Min	-	-	-
Struck Side Rear Seat	Fixed	Fixed	Max	-	-	-
			Mid	-	-	-
			Min	-	-	-
Non-Struck Side Rear Seat	Fixed	Fixed	Max	-	-	-
			Mid	-	-	-
			Min	-	-	-
Rear Center Seat	Fixed	Fixed	Max	-	-	-
			Mid	-	-	-
			Min	-	-	-

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

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Side Pole Impact Test

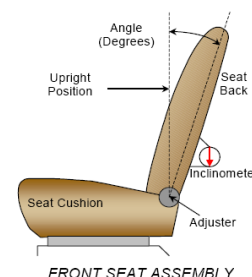
NHTSA No.: M20225206
 Test Date: 05/17/2022

SEAT FORE / AFT POSITION

Seat	Total Fore / Aft Travel		Test Position from Forward most Position	
	mm	Detents*	mm	Detents*
Driver Seat	260	Power	0	Power
Front Passenger Seat	260	27 (0-26)	0	0
Front Center Seat				
Struck Side Rear Seat	140	15 (0-14)	140	14
Non-Struck Side Rear Seat	140	15 (0-14)	140	14
Rear Center Seat	140	15 (0-14)	140	14

SEAT BACK ANGLE ADJUSTMENT

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



Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degrees	Detents*
Driver Seat w/Seated Dummy	83	Power	2.4	Power
Front Passenger Seat	74.3	41 (0- 40)	2.4	6
Front Center Seat				
Struck Side Rear Seat	19.9	11 (0-10)	21.8	6
Non-Struck Side Rear Seat	19.9	11 (0-10)	21.8	6
Rear Center Seat	19.9	11 (0-10)	21.8	6

SEAT BELT ANCHORAGE ADJUSTMENT

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

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

HEAD RESTRAINT ADJUSTMENT

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

Seat	Total # of Positions	Placed in Position #
Driver Seat	3	Lowest

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

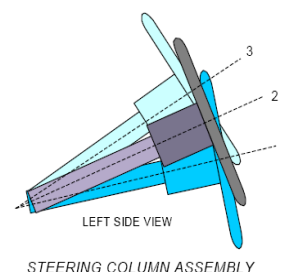
Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20225206
 Test Date: 05/17/2022

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.

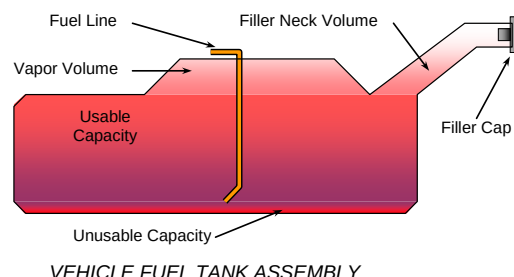
	Degrees	Fore / Aft Position (mm)
Lowermost – Position 1	21.5	
Geometric Center – Position 2	24.9	
Uppermost – Position 3	27.4	
Telescoping Steering Wheel Travel		45
Test Position	24.9	22.5



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.



FUEL TANK CAPACITY DATA

Description	Liters
Usable Capacity of "Standard Tank" - see Form No. 1	70
Usable Capacity of "Optional Tank" - see Form No. 1	N/A
Usable Capacity of "Standard Tank" - see Owner's Manual	70
Usable Capacity of "Optional Tank" - see Owner's Manual	N/A
93% of Usable Capacity	65.1
Actual Amount of Solvent Used in Test	65.1
1/3 of Usable Capacity	23.1

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

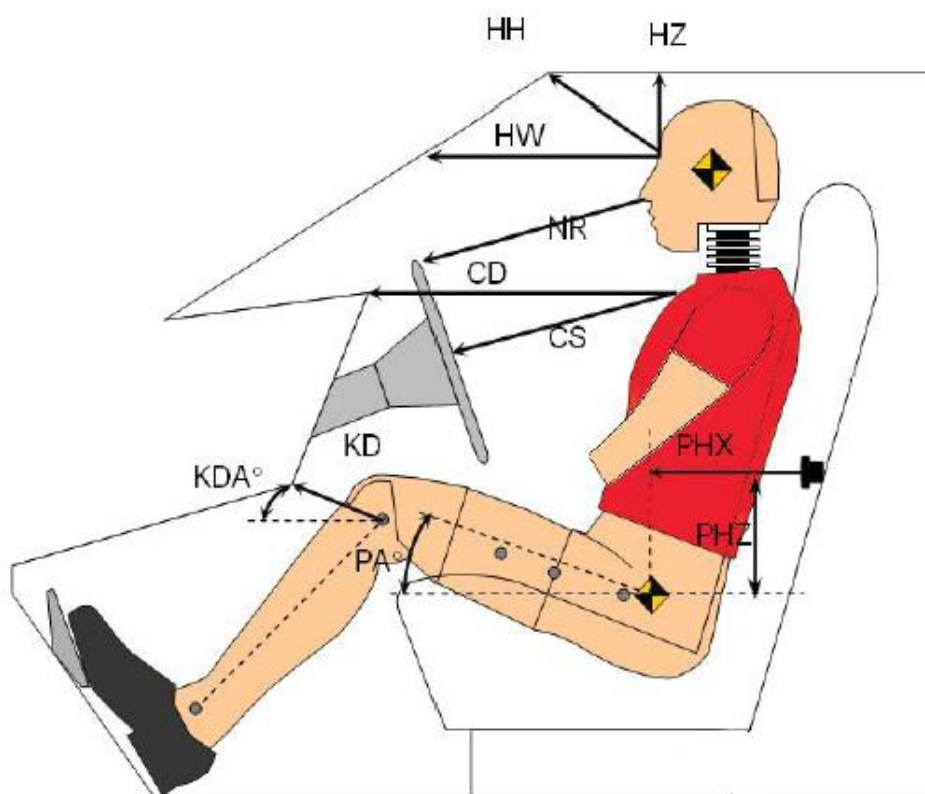


No

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20225206
 Test Date: 05/17/2022



Left Side View

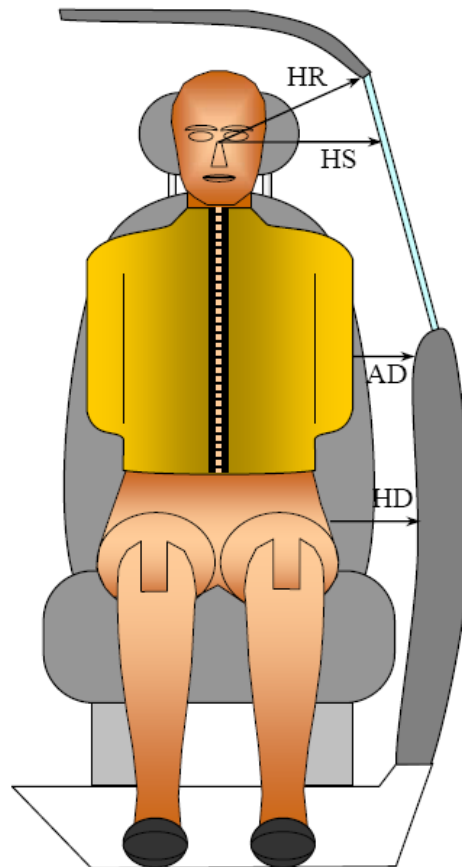
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Description	Driver (Serial No. 300)	
		Length (mm)	Angle (°)
HH	Head to Header	278	
HW	Head to Windshield	620	
HZ	Head to Roof Liner	230	
NR	Nose to Rim	234	
CD	Chest to Dash	405	
CS	Chest to Steering Wheel	164	
KD(L) / KDA(L)°	Left Knee to Dash	78	27.2
KD(R) / KDA(R)°	Right Knee to Dash	75	28.2
PAX°	Pelvic Tilt Angle (X-Axis)		0.3
PAY°	Pelvic Tilt Angle (Y-Axis)		21.1
PHX	Hip Point to Striker (X-Axis)	402	
PHZ	Hip Point to Striker (Z-Axis)	114	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20225206
 Test Date: 05/17/2022



FRONT VIEW OF DUMMY

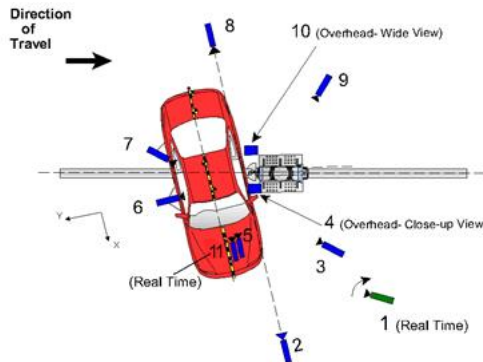
DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver - Length (Serial No. 300)
HR	Head To Side Header	mm	343
HS	Head to Side Window	mm	402
AD	Arm to Door	mm	185
HD	Hip Point to Door	mm	220

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2022 Nissan Pathfinder four door SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20225206
Test Date: 05/17/2022



CAMERA LOCATIONS AND DATA

No.	Camera View	Coordinates (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X	Y	Z		
1	Real-time (24 - 30 fps) pan view of impact				Zoom	60
2	Front ground level - impact view	7341	0	-1585	28	1000
3	Impact side 45° - forward pole view	6012	-1654	-1482	24	1000
4	Overhead Close-up view of impact	0	451	-9345	12.5	1000
5	Onboard - dummy front view				25	1000
6	Onboard - dummy side view				12.5	1000
7	Onboard - dummy rear oblique view				12.5	1000
8	Rear ground level - impact view	-9268	0	-1642	28	1000
9	Impact side 45° - rearward pole view	-6699	-4625	-1656	24	1000
10	Overhead wide - view of impact	0	451	-9345	28	1000
11	Real-time (24 - 30 fps) - dummy front view				Zoom	60

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

Comments: Camera 11 did not record video

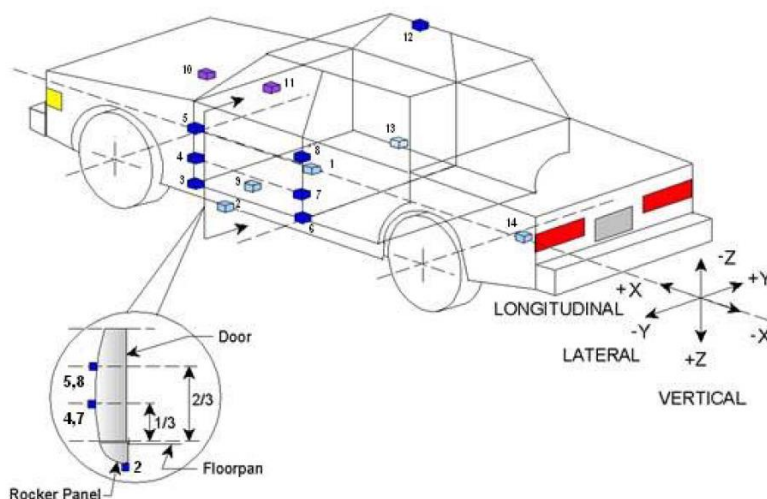
INSTRUMENTATION

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

DATA SHEET NO. 6 VEHICLE ACCELEROMETER DATA

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20225206
 Test Date: 05/17/2022



TEST VEHICLE ACCELEROMETER LOCATIONS

No.	Accelerometer Location	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2417	-42	251
2	Left Floor Sill	3103	-712	226
3	A-Pillar Sill	3348	-707	242
4	A-Pillar Low	3554	-653	30
5	A-Pillar Mid	3390	-691	-523
6	B-Pillar Sill	2264	-719	210
7	B-Pillar Low	2401	-732	-118
8	B-Pillar Mid	2329	-700	-503
9	Driver Seat Track	2630	-571	185
10	Engine Top	4078	122	-298
11	Firewall	3790	282	-201
12	Right Roof	2622	660	-1014
13	Right Floor Sill	3111	716	216
14	Rear Floorpan	694	258	113

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

DATA SHEET NO. 7
RIGID POLE LOAD CELL DATA

Test Vehicle: 2022 Nissan Pathfinder four door SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20225206
Test Date: 05/17/2022

POLE BARRIER



RIGID POLE LOAD CELL LOCATIONS

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

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

Test Vehicle: 2022 Nissan Pathfinder four door SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20225206
Test Date: 05/17/2022

TEST DUMMY INFORMATION AND CONTACT POINTS

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

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

Test Vehicle: 2022 Nissan Pathfinder four door SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20225206
Test Date: 05/17/2022

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	Buckled on upper A-Pillar
Sill Separation	Slight separation by A-Pillar
Windshield Damage	Shattered on driver side, Separation from A-Pillar
Side Window Damage	Driver window has cracks throughout
Other Notable Effects	None

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

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

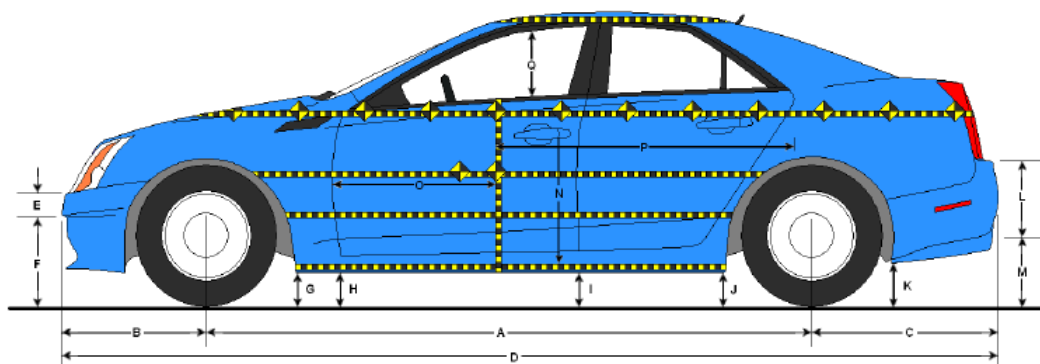
Measured Parameter	Units	Tolerance	Value
Vertical Impact Ref Line - Aft of Front Axle, Intended Impact Pt	mm		1106
Actual Impact Point - Aft of Front Axle	mm		1104
Horizontal Offset (+ forward / - rearward)	mm	+/- 38 *	2
Angle Between Vehicle's Longitudinal Centerline and Line of Forward Motion	deg	75 +/- 3	75
Trap No. 1 Velocity - Primary	kph	31.4 to 33.0	32.24
Trap No. 2 Velocity - Redundant	kph	31.4 to 33.0	32.25

* Of Intended Impact Point

DATA SHEET NO. 9
TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2022 Nissan Pathfinder four door SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20225206
Test Date: 05/17/2022



LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

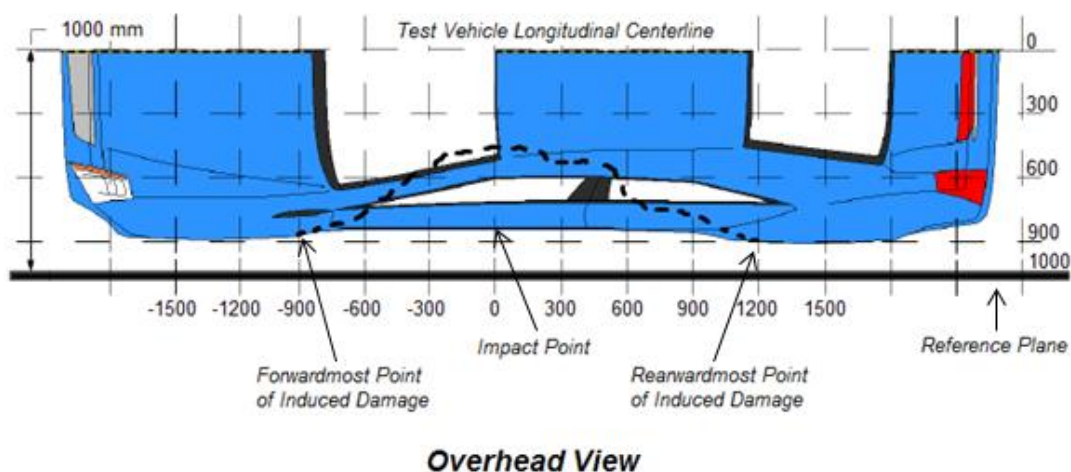
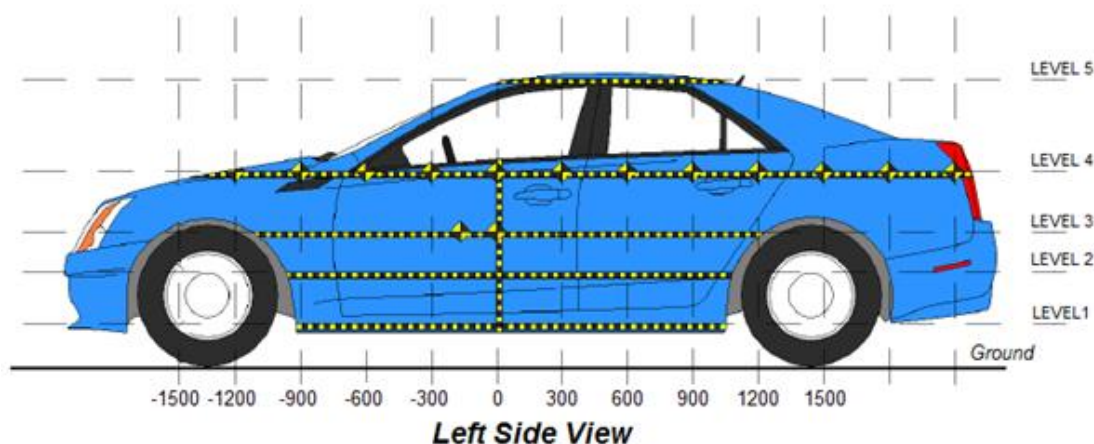
Code	Description	Pre-Test	Post-Test	Difference
A	Vehicle Wheelbase	2894	2821	73
B	Front Axle to FSOV	984	1027	-43
C	Rear Axle to RSOV	1127	1127	0
D	Total Length at Centerline	5005	4975	30
E	Front Bumper Thickness	342	342	0
F	Front Bumper Bottom to Ground	290	302	-12
G	Sill Height at Front Wheel Well	314	315	-1
H	Sill Height at Front Door Leading Edge	314	315	-1
I	Sill Height at B-Pillar	313	340	-27
J1	Sill Height at Rear Wheel Well	310	342	-32
J2	Pinch Weld Height at Rear Wheel Well	291	319	-28
K	Sill Height Aft of Rear Wheel Well	282	293	-11
L	Rear Bumper Thickness	266	226	40
M	Rear Bumper Bottom to Ground	467	456	11
N	Sill Height to Bottom of Front Window Sill	913	916	-3
O	Front Door Leading Edge to Impact CL	587	515	72
P	Rear Door Trailing Edge to Impact CL	1671	1606	65
Q	Front Window Opening	458	454	4
R	Right Side Length	4947	4944	3
S	Left Side Length	4948	4893	55
T	Vehicle Width at B-Pillars	1950	1874	76
U	Front Wheel Track Width	1694	1693	-1
V	Rear Wheel Track Width	1705	1698	7

* All measurements in mm with tolerance of ± 3 mm

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

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20225206
 Test Date: 05/17/2022



MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Measurement Description	Units	Height Above Ground	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	mm	334	309	0
2	Occupant Hip Point	mm	758	347	0
3	Mid - Door	mm	826	350	0
4	Window Sill	mm	1170	255	0
5	Window Top	mm	1673	78	150

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

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

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20225206
 Test Date: 05/17/2022

EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

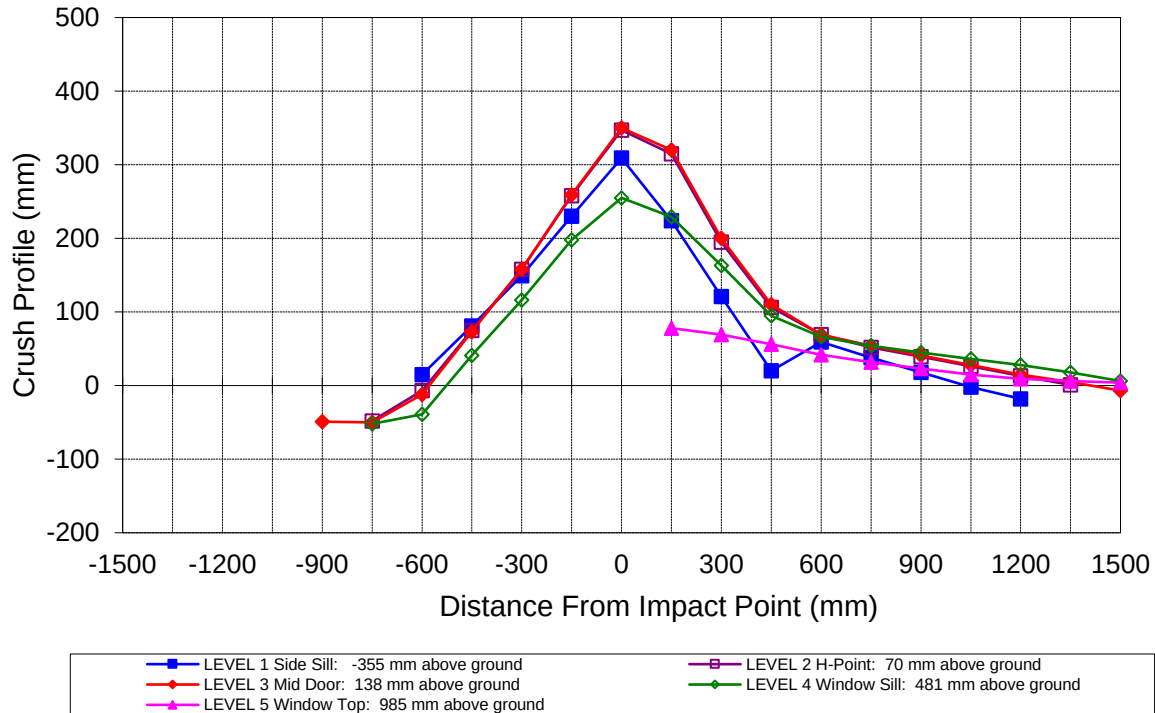
	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-1500															
-1350															
-1200															
-1050															
-900			989					1038					-49		
-750		986	971	862			1034	1021	914			-48	-50	-52	
-600	934	976	977	866		919	983	989	905		15	-7	-12	-39	
-450	936	970	972	867		855	895	899	826		81	75	73	41	
-300	940	968	973	870		791	810	815	754		149	158	158	116	
-150	945	971	976	875		715	713	717	677		230	258	259	198	
0	947	973	977	879		638	626	627	624		309	347	350	255	
150	946	974	976	883	661	722	659	656	654	583	224	315	320	229	78
300	946	973	975	886	671	825	778	775	723	602	121	195	200	163	69
450	944	972	973	888	674	924	866	863	793	618	20	106	110	95	56
600	941	968	969	889	675	882	899	900	823	633	59	69	69	66	42
750	940	963	964	890	675	902	911	910	836	643	38	52	54	54	32
900	936	957	958	889	674	918	918	917	844	651	18	39	41	45	23
1050	933	958	956	887	673	935	932	928	851	658	-2	26	28	36	15
1200	934	972	969	894	670	952	959	954	866	661	-18	13	15	28	9
1350		980	973	926	666		979	968	908	660		1	5	18	6
1500		--	990	941	660			997	935	656			-7	6	4

NOTE: Pre-test measurements are taken when the vehicle is in the "As Tested" weight condition. Vehicle measurements forward of the vertical impact reference line are negative. The crush profile grid is established prior to the test based on an estimated impact point. The final distance from impact is determined after the final dummy positioning and the pole is aligned with the center of gravity of the dummy's head.

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

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20225206
 Test Date: 05/17/2022



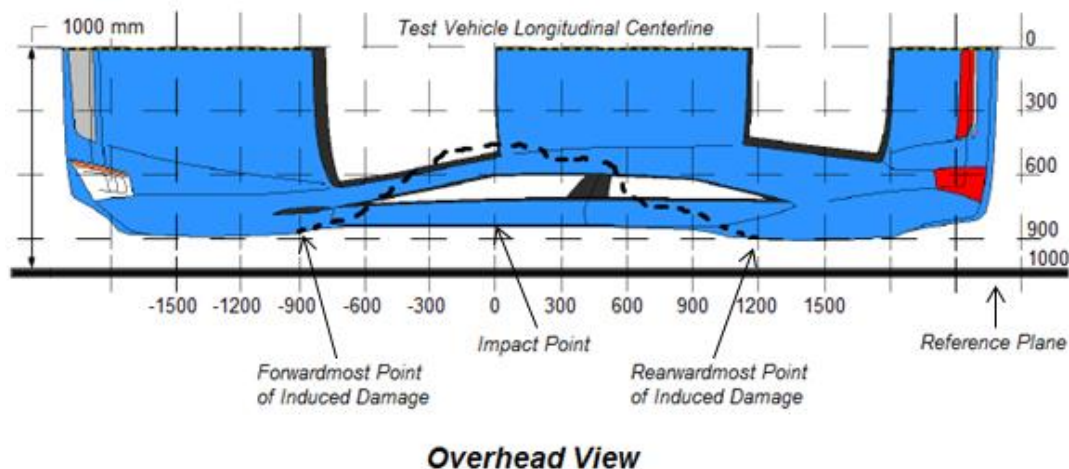
Vehicle Exterior Crush Measurements - Visual Representation

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

Test Vehicle: 2022 Nissan Pathfinder four door SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20225206
 Test Date: 05/17/2022

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	-900	3	-38	11	-49
2	-420	3	118	28	90
3	60	3	361	23	338
4	540	3	115	29	86
5	1020	3	74	44	30
6	1500	3	3	10	-7

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

Test Vehicle: <u>2022 Nissan Pathfinder four door SUV</u>	NHTSA No.: <u>M20225206</u>
Test Program: <u>NCAP Side MDB Impact Test</u>	Test Date: <u>05/17/2022</u>
Test Time: <u>9:44 AM</u>	Temperature: <u>21° C</u>

- 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./minute)
- D. Spillage Details: No Spillage Occurred

FMVSS NO. 301 STATIC ROLLOVER DATA



ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	65	300	365
90° to 180°	64	300	364
180° to 270°	64	300	364
270° to 360°	70	300	370

FMVSS NO. 301 ROLLOVER 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	

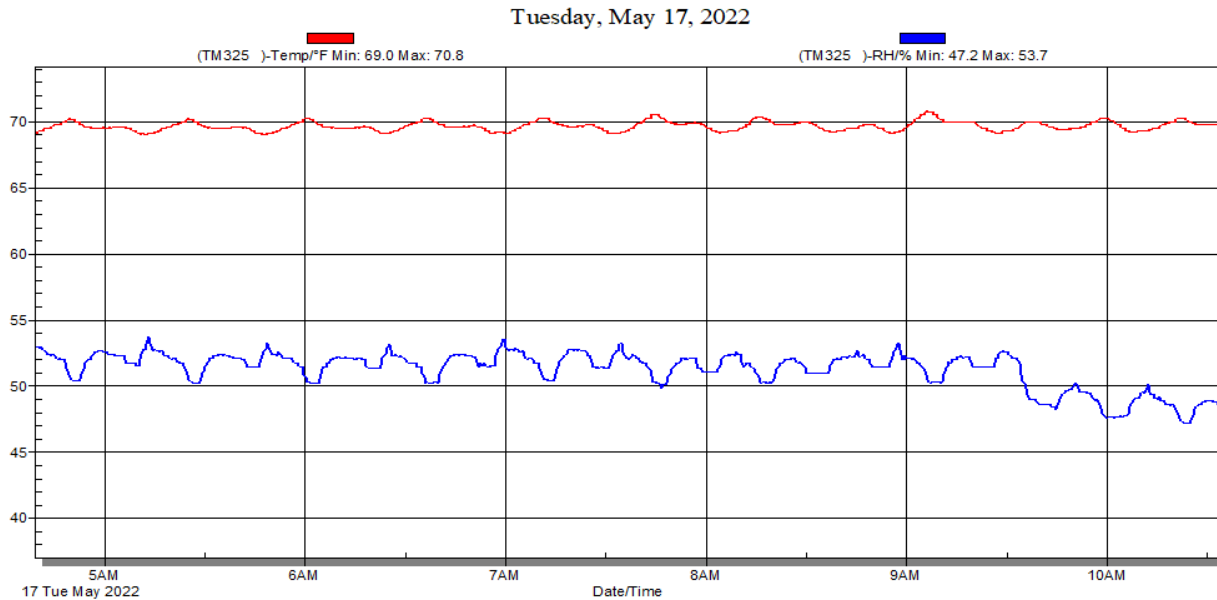
ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

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

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

Test Vehicle: 2022 Nissan Pathfinder four door SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20225206
Test Date: 05/17/2022



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

APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

Fig.	Description	Page
1	As Delivered Right Front $\frac{3}{4}$ View of Test Vehicle	A-4
2	As Delivered Left Rear $\frac{3}{4}$ View of Test Vehicle	A-4
3	Pre-Test Frontal View of Test Vehicle	A-5
4	Post-Test Frontal View of Test Vehicle	A-5
5	Pre-Test Left Front $\frac{3}{4}$ View of Test Vehicle	A-6
6	Post-Test Left Front $\frac{3}{4}$ View of Test Vehicle	A-6
7	Pre-Test Left Side View of Test Vehicle	A-7
8	Post-Test Left Side View of Test Vehicle	A-7
9	Pre-Test Left Rear $\frac{3}{4}$ View of Test Vehicle	A-8
10	Post-Test Left Rear $\frac{3}{4}$ View of Test Vehicle	A-8
11	Pre-Test Rear View of Test Vehicle	A-9
12	Post-Test Rear View of Test Vehicle	A-9
13	Pre-Test Right Side View of Test Vehicle	A-10
14	Post-Test Right Side View of Test Vehicle	A-10
15	Pre-Test Overhead View of Test Area	A-11
16	Post-Test Overhead View of Test Area	A-11
17	Pre-Test Left Side View of Pole Positioned Against Side of Vehicle	A-12
18	Pre-Test Right Side View of Pole Positioned Against Side of Vehicle	A-12
19	Pre-Test Close-Up View of Impact Point Target	A-13
20	Post-Test Close-Up View of Impact Point Target Showing Impact Location	A-13
21	Pre-Test Front Close-Up View of Dummy Head and Chest	A-14
22	Post-Test Front Close-Up View of Dummy	A-14
23	Pre-Test Left Side View of Dummy Showing Belt and Chalking	A-15
24	Pre-Test Left Side View of Dummy Shoulder and Door Top View	A-15
25	Post-Test Left Side View of Dummy Shoulder and Door Top View	A-16
26	Pre-Test Frontal View of Seat Back Prior to Dummy Positioning	A-16
27	Pre-Test Frontal Close-Up View of Dummy Head / Shoulders in Relation to Head Restraint	A-17
28	Pre-Test Frontal View of Seat Pan Prior to Dummy Positioning	A-17
29	Pre-Test Overhead View of Dummy Thighs on Seat Pan	A-18
30	Pre-Test Left Side View of Dummy's Neck Showing Position of Adjustable Neck Bracket	A-18
31	Pre-Test Left Side View of Dummy's Head Showing Dummy's Head is Level	A-19
32	Pre-Test Placement of Dummy's Feet	A-19
33	Pre-Test View of Belt Anchorage for Dummy	A-20
34	Pre-Test Left Side View of Steering Wheel	A-20
35	Pre-Test View of Disengaged Parking Brake	A-21

Fig.	Description	Page
36	Pre-Test View of Parking Brake	A-21
37	Pre-Test Close-Up Left Side View of Driver Seat Track	A-22
38	Pre-Test Close-Up Left Side View of Driver Seat Back	A-22
39	Pre-Test Close-Up View of Driver Seat Back or Head Restraint	A-23
40	Pre-Test Dummy and Door Clearance View	A-23
41	Post-Test Dummy and Door Clearance View	A-24
42	Pre-Test Right Side View of Dummy and Front Seat of Occupant Compartment	A-24
43	Post-Test Right Side View of Dummy and Front Seat of Occupant Compartment	A-25
44	Pre-Test Inner Door Panel View	A-25
45	Post-Test Inner Door Panel View Showing Dummy Contact Location	A-26
46	Post-Test Dummy Close-Up Head Contact with Vehicle Interior View	A-26
47	Post-Test Dummy Close-Up Head Contact with Side Airbag View	A-27
48	Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View	A-27
49	Post-Test Dummy Close-Up Torso Contact with Side Airbag View	A-28
50	Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View	A-28
51	Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View	A-29
52	Post-Test Dummy Close-Up Knee Contact with Vehicle Interior View	A-29
53	Pre-Test Right Side View of Dummy and Rear Seat of Occupant Compartment	A-30
54	Post-Test Inner Rear Passenger Torso air Bag Deployment View	A-30
55	Pre-Test View of Fuel Filler Cap or Fuel Filler Neck	A-31
56	Post-Test View of Fuel Filler Cap or Fuel Filler Neck	A-31
57	Close-Up View of Vehicle's Certification Label	A-32
58	Close-Up View of Vehicle's Tire Information Placard or Label	A-32
59	Pre-Test Pole Barrier Front View	A-33
60	Post-Test Pole Barrier Front View	A-33
61	Pre-Test Pole Barrier Side View	A-34
62	Post-Test Pole Barrier Side View	A-34
63	Pre-Test Ballast View	A-35
64	Post-Test Primary and Redundant Speed Trap Read-Out	A-35
65	FMVSS No. 301 Static Rollover 0 Degrees	A-36
66	FMVSS No. 301 Static Rollover 90 Degrees	A-36
67	FMVSS No. 301 Static Rollover 180 Degrees	A-37
68	FMVSS No. 301 Static Rollover 270 Degrees	A-37
69	FMVSS No. 301 Static Rollover 360 Degrees	A-38
70	Impact Event	A-38
71	Monroney Label	A-39
72	Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-39
73	Post-Test View of Shattered Vehicle Inner Door Panel	A-40



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

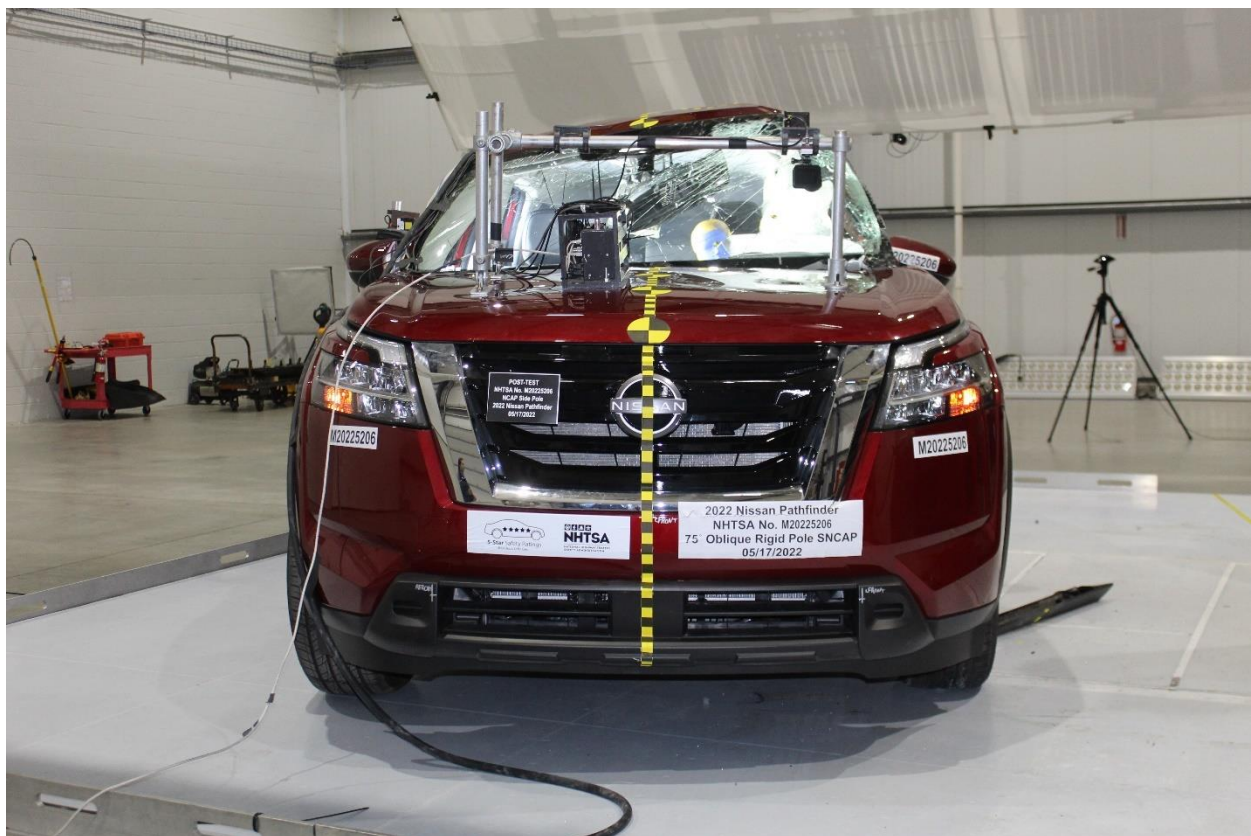


Figure A-4: Post-Test Frontal View of Test Vehicle



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

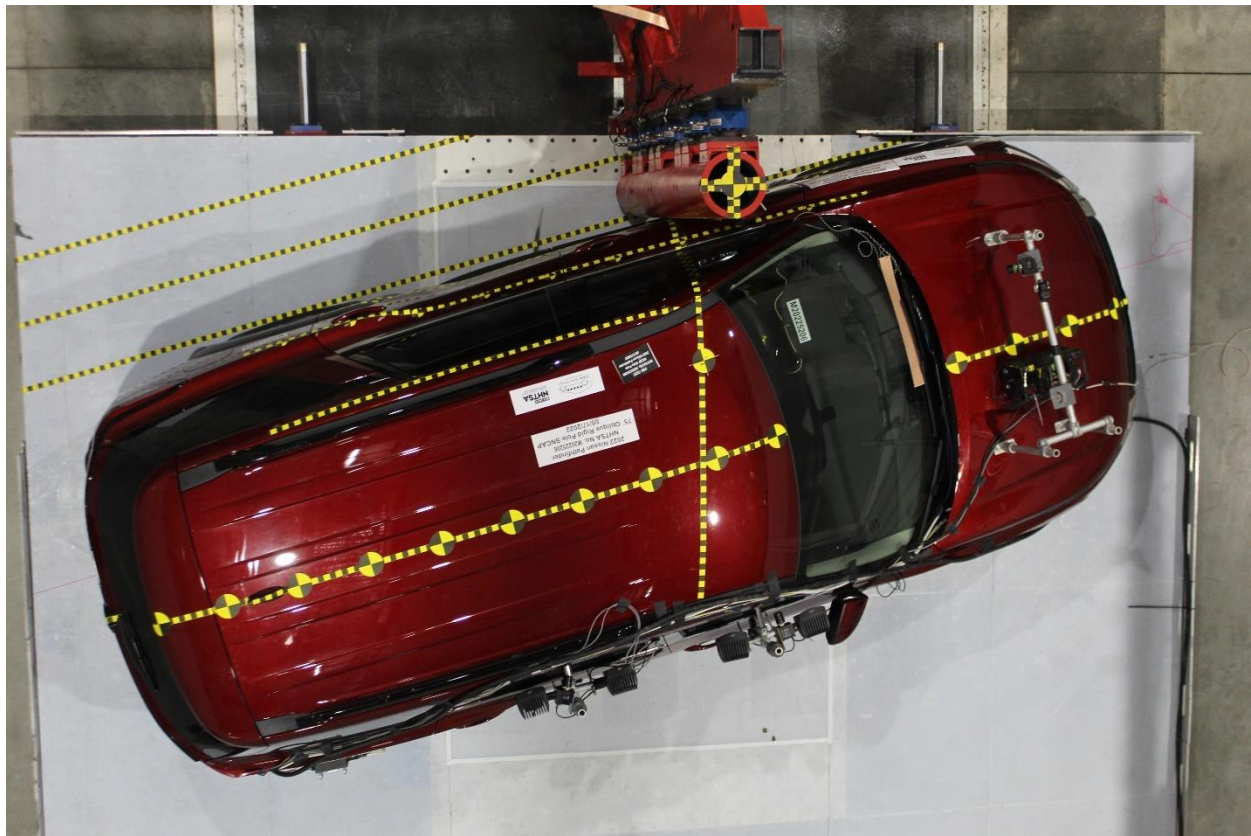


Figure A-15: Pre-Test Overhead View of Test Area

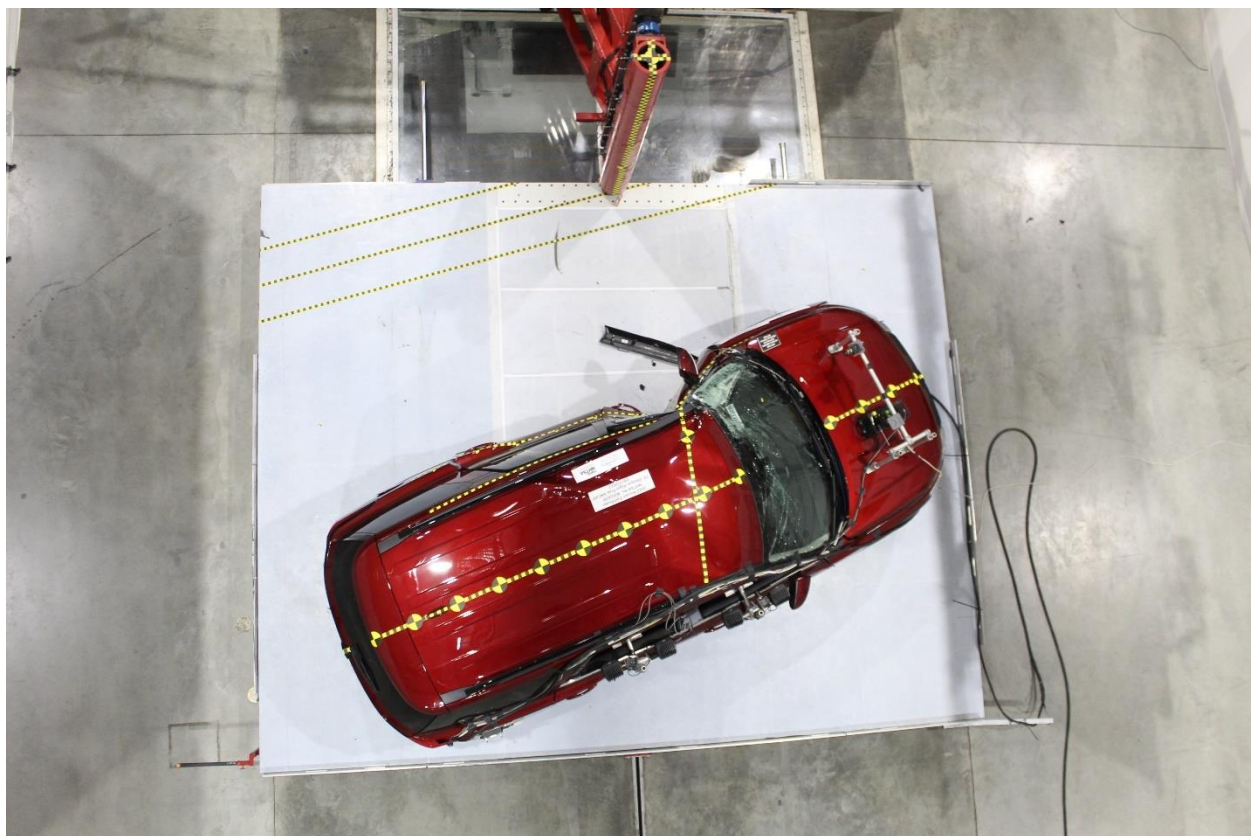


Figure A-16: Post-Test Overhead View of Test Area



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



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



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



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



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



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



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

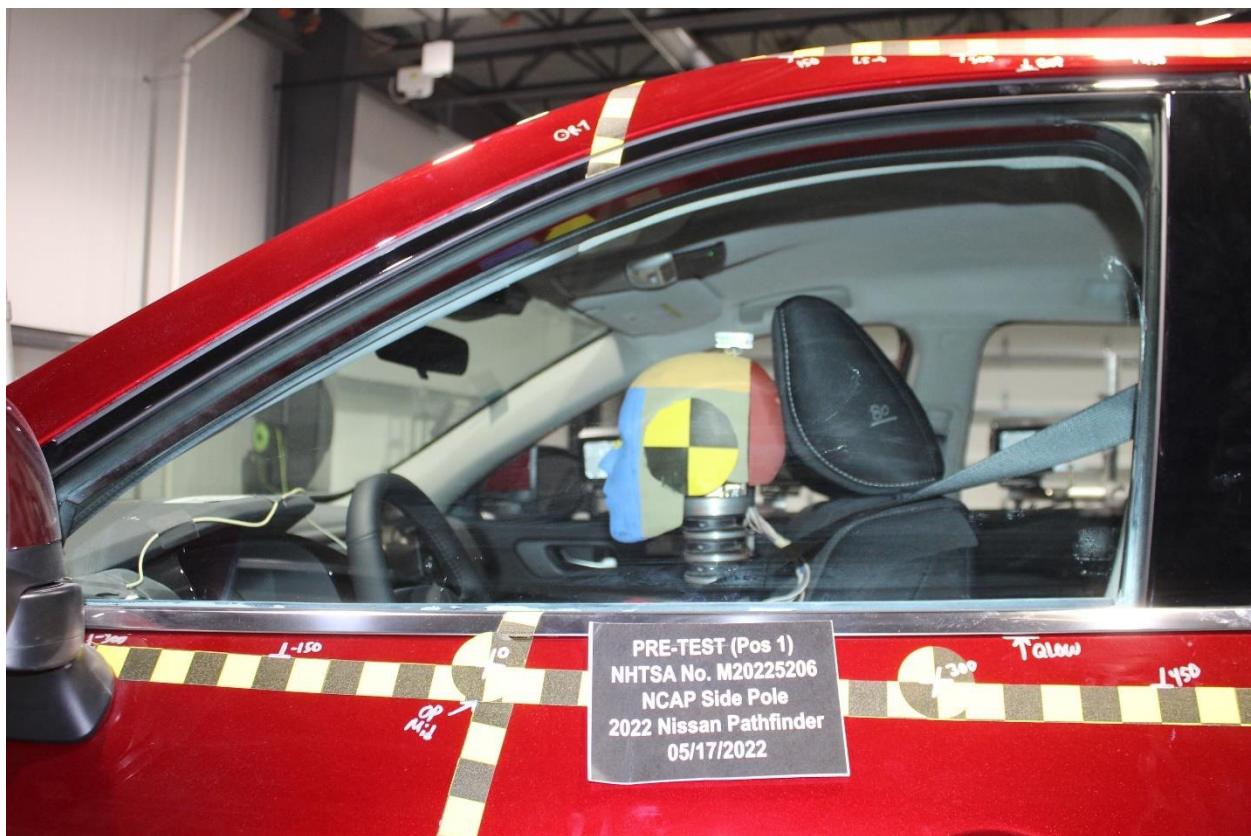


Figure A-24: Pre-Test Left Side View of Dummy Shoulder and Door Top View

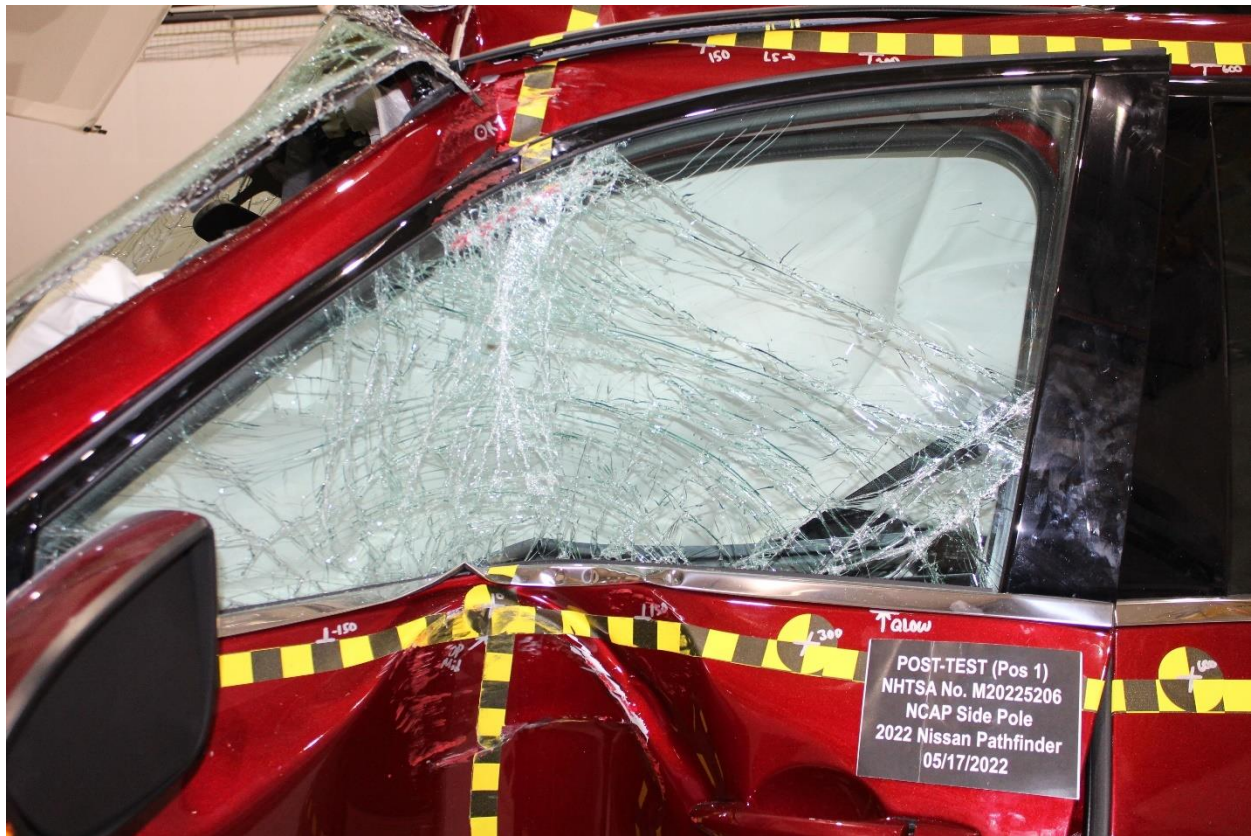


Figure A-25: Post-Test Left Side View of Dummy Shoulder and Door Top View



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



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



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



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



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



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



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

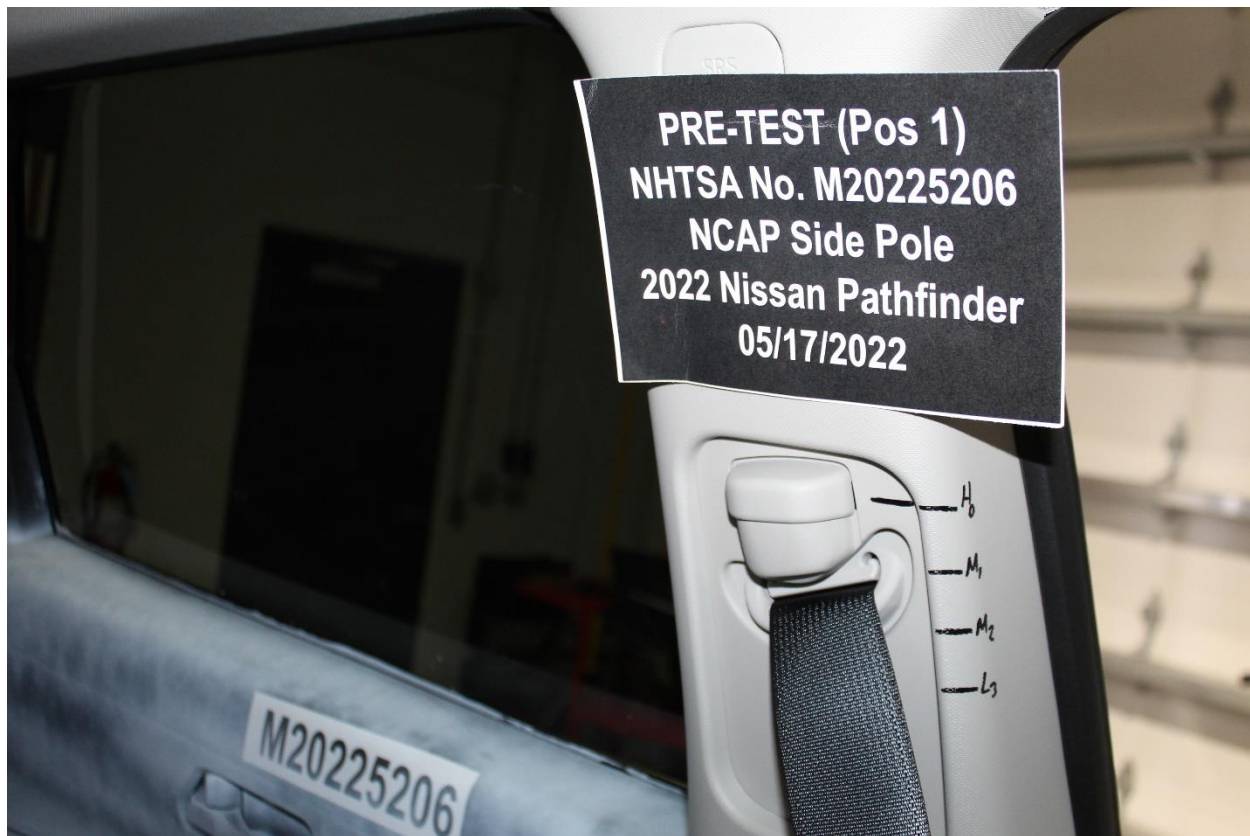


Figure A-33: Pre-Test View of Belt Anchorage for Dummy



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



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



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



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



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



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



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

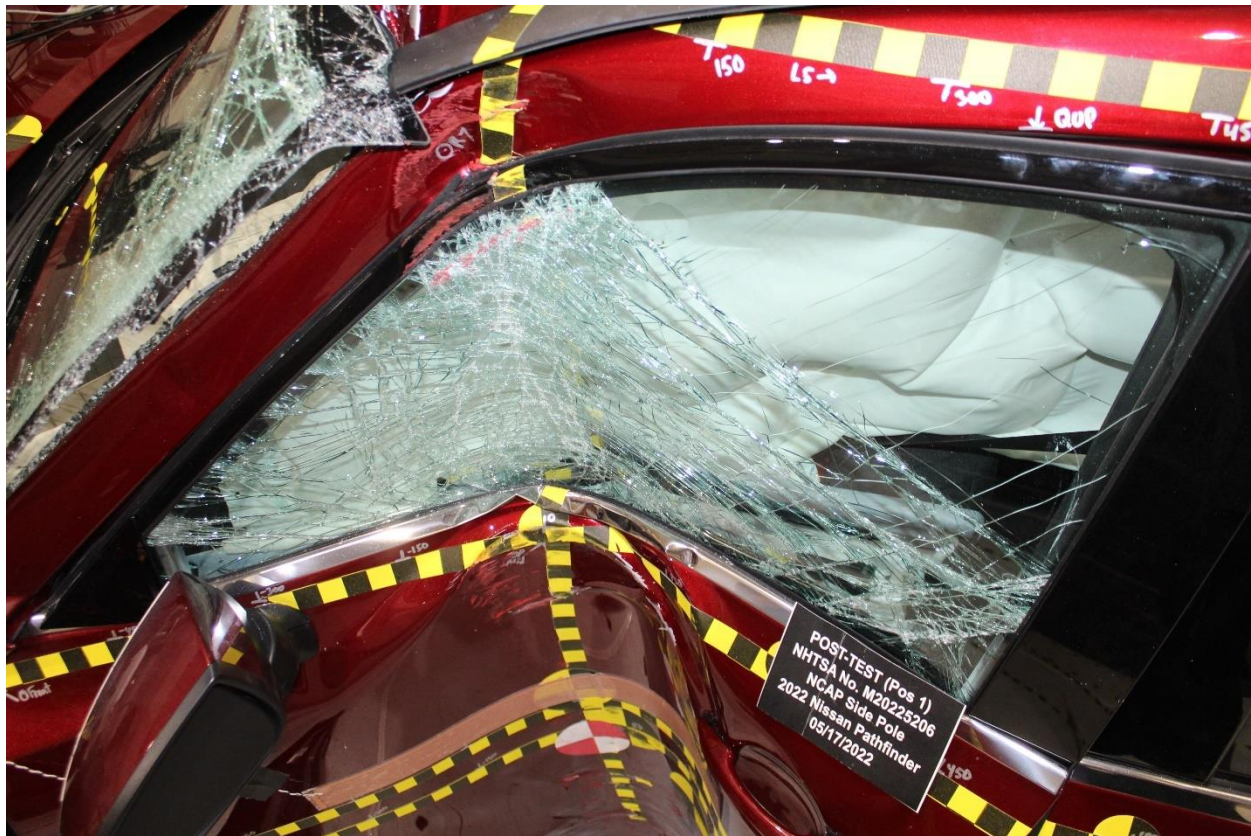


Figure A-41: Post-Test Dummy and Door Clearance View

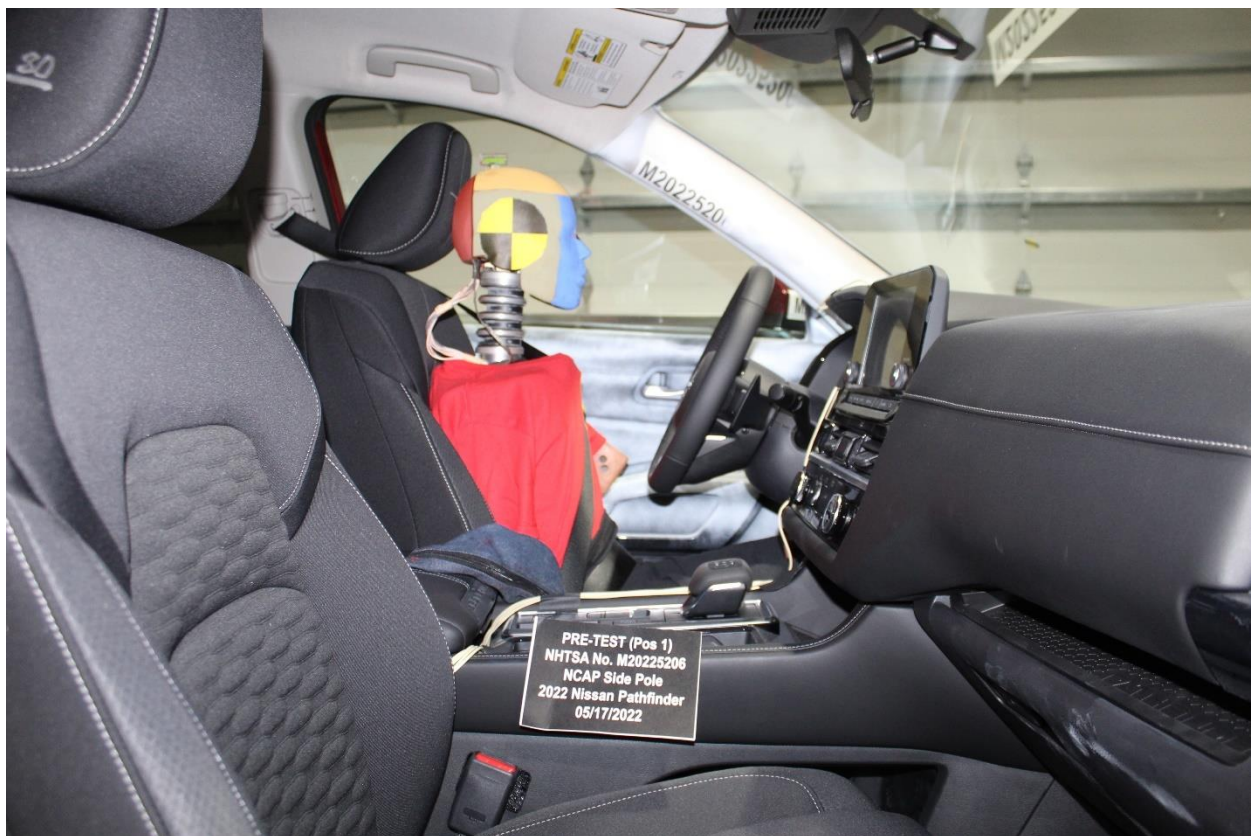


Figure A-42: Pre-Test Right Side View of Dummy and Front Seat of Occupant Compartment



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



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



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



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



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

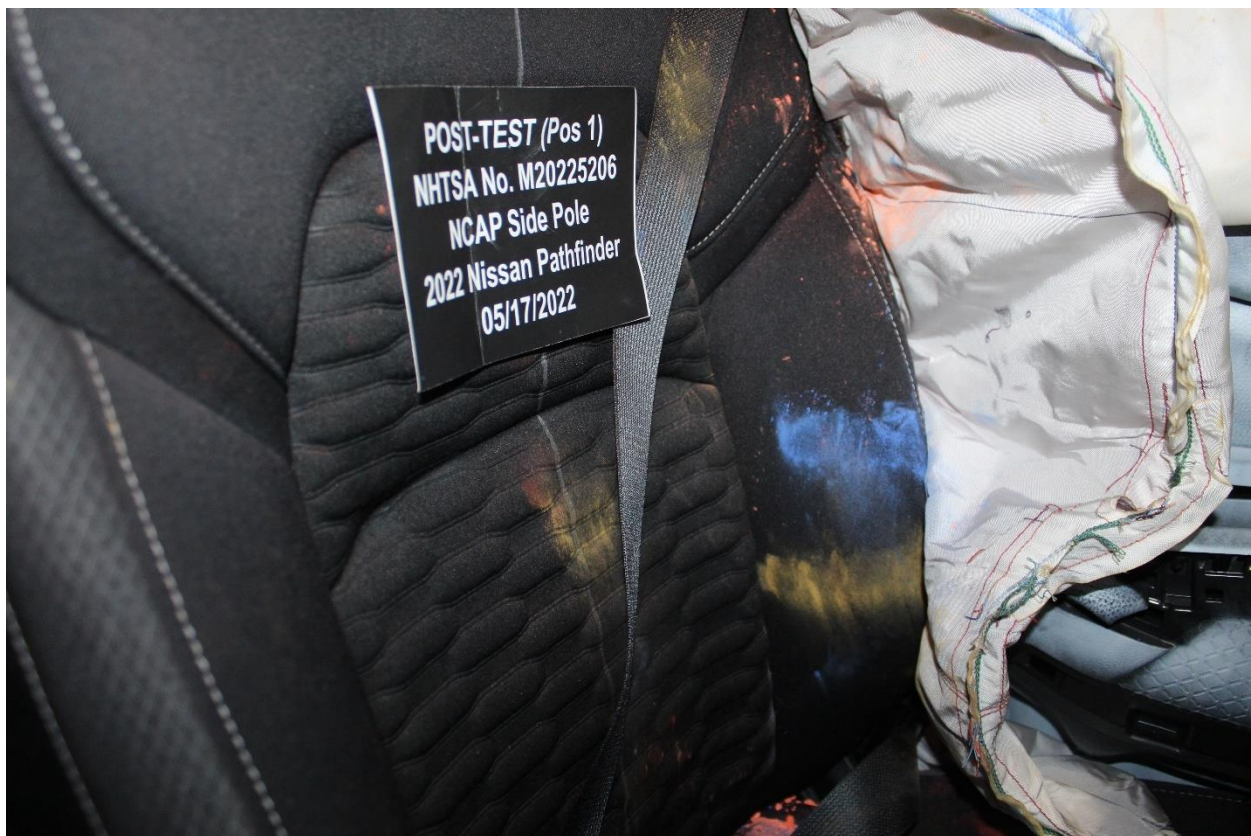


Figure A-48: Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View



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



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

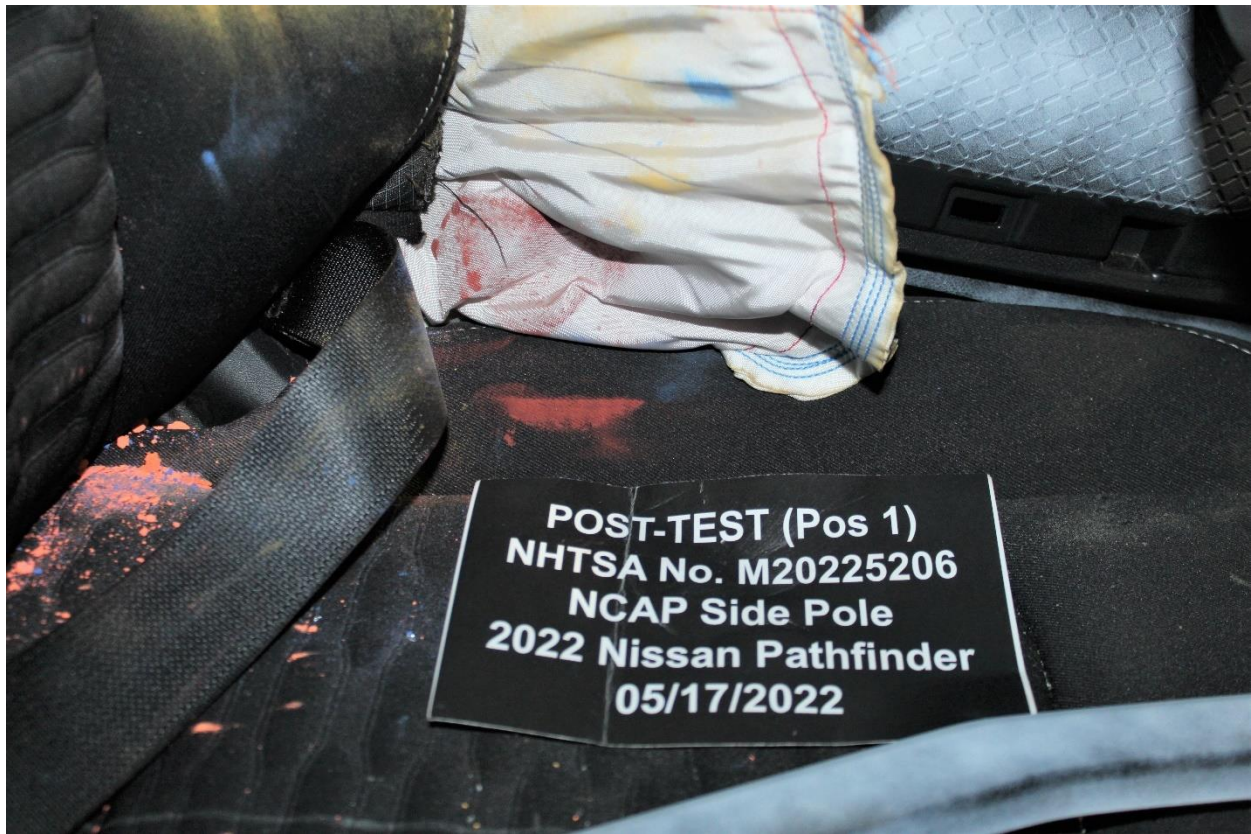


Figure A-51: Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View



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



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



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



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



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



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



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

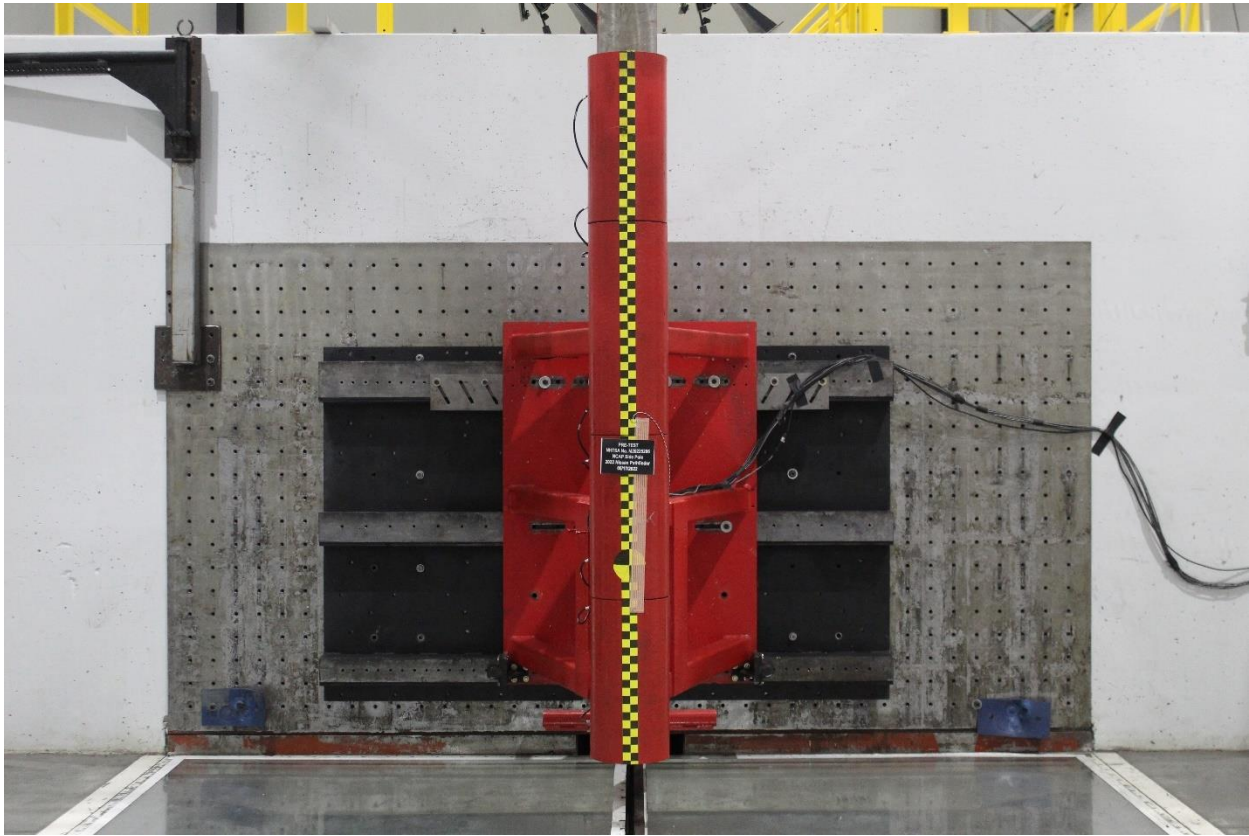


Figure A-59: Pre-Test Pole Barrier Front View

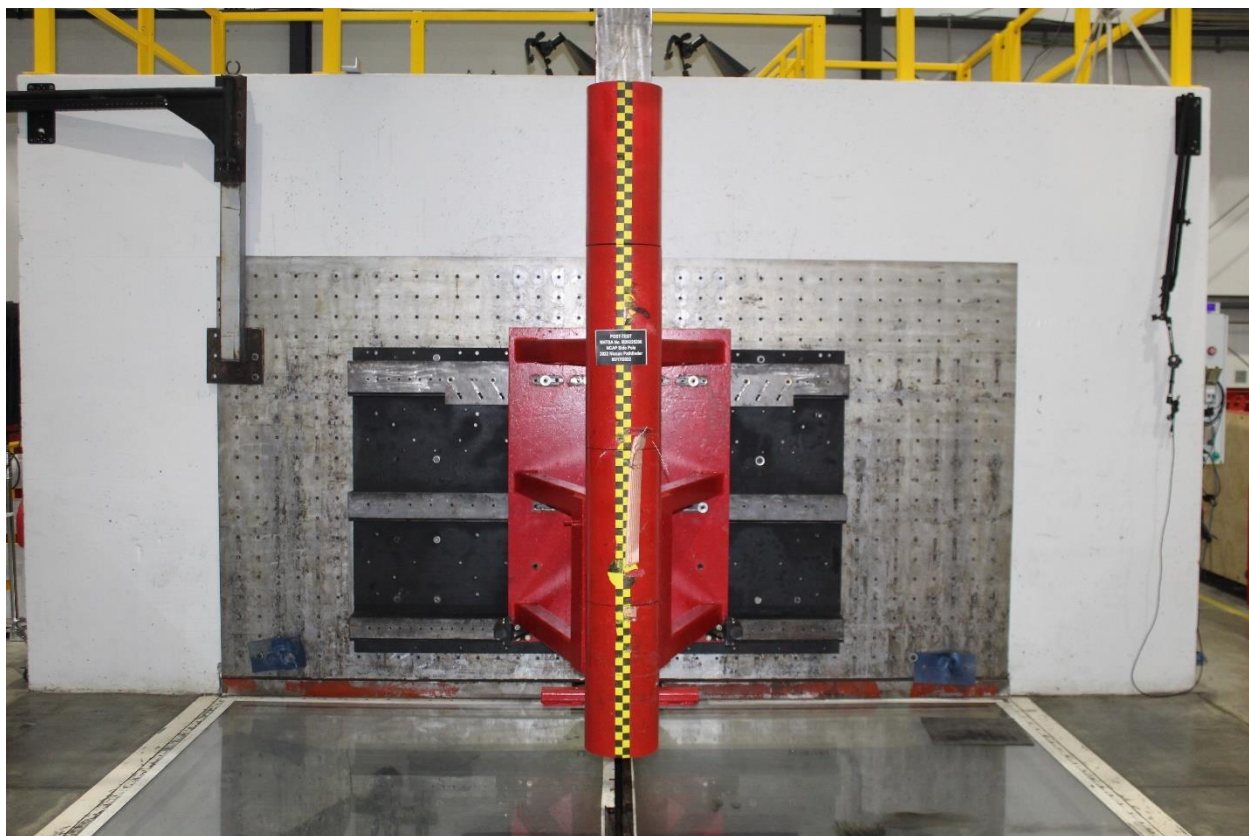


Figure A-60: Post-Test Pole Barrier Front View

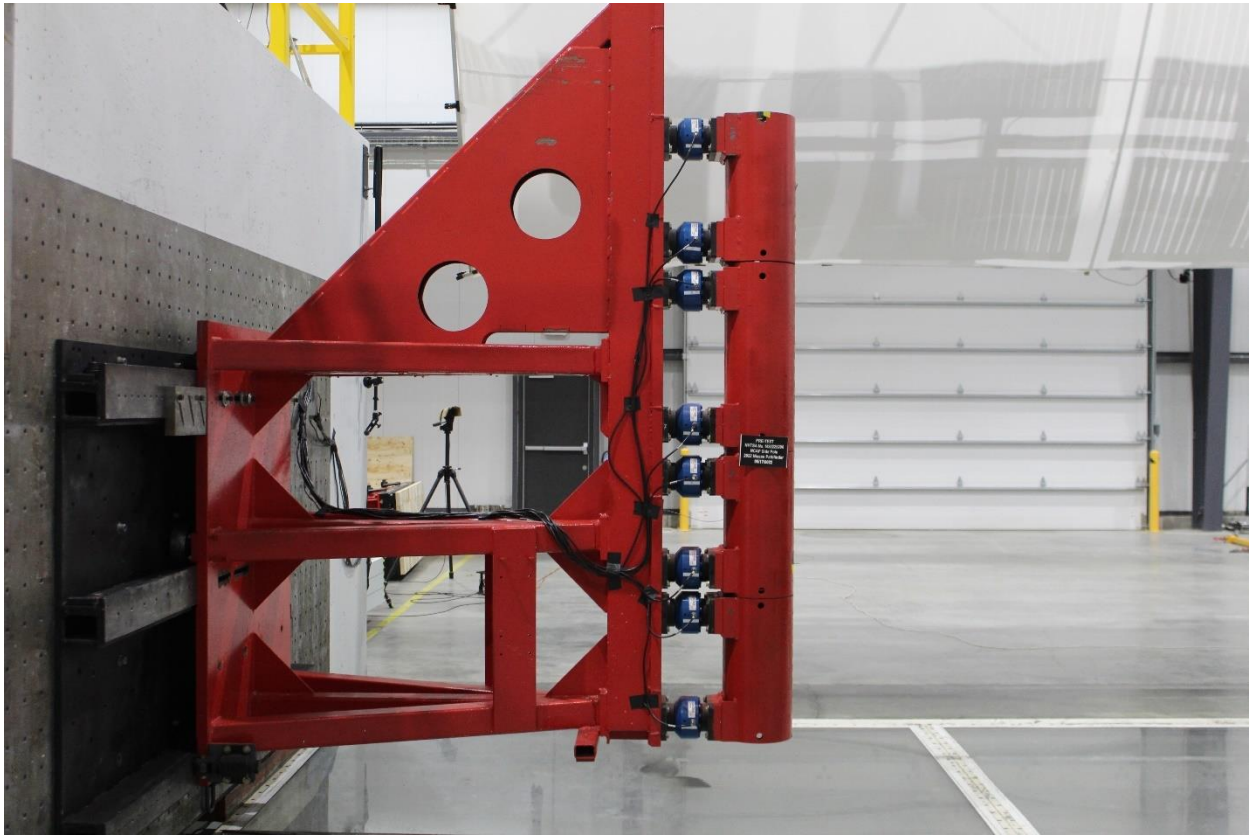


Figure A-61: Pre-Test Pole Barrier Side View

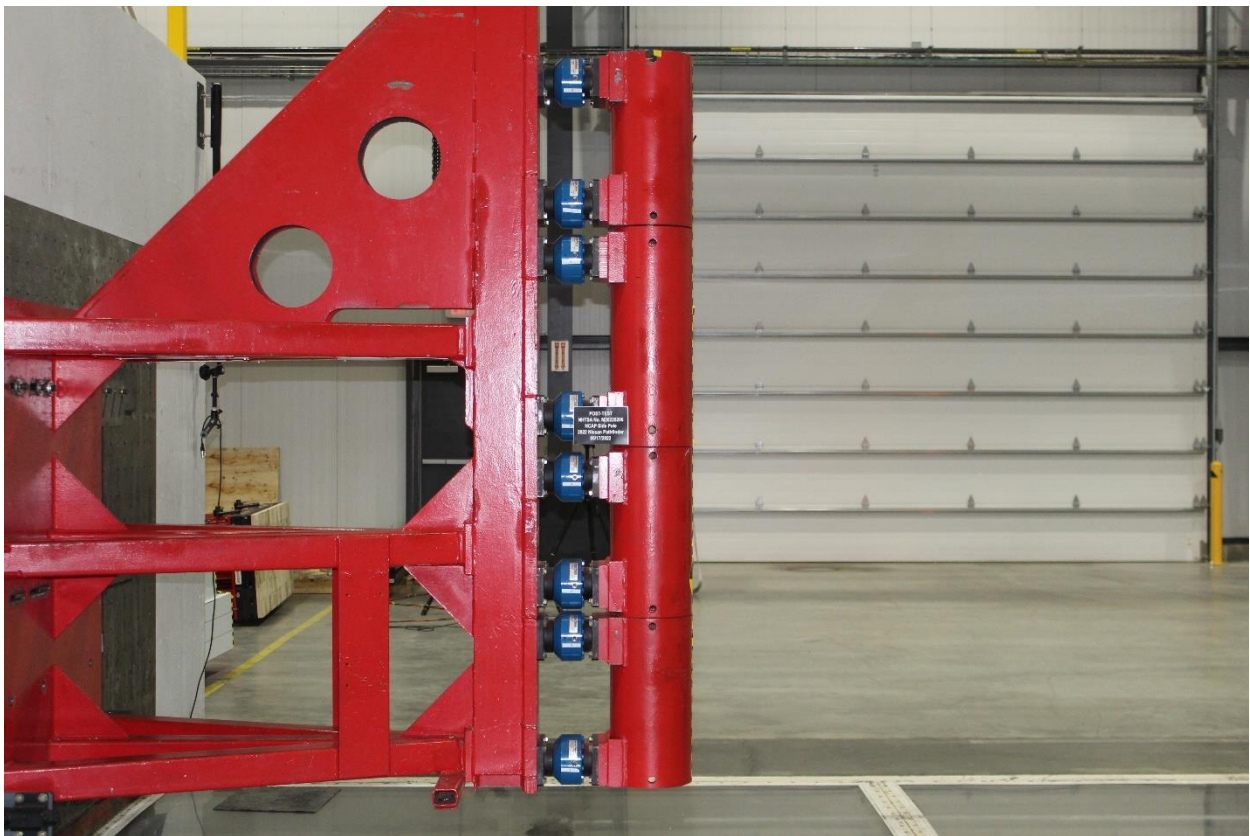


Figure A-62: Post-Test Pole Barrier Side View



Figure A-63: Pre-Test Ballast View



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



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

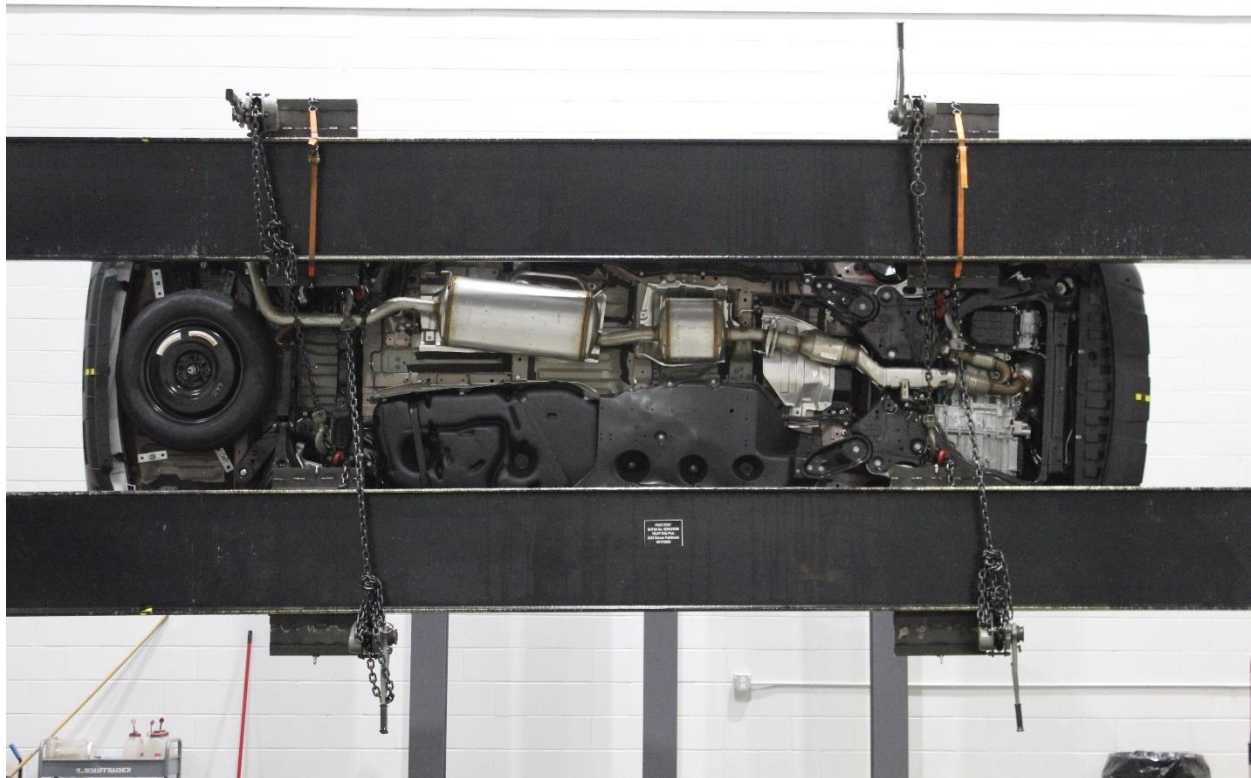


Figure A-66: FMVSS No. 301 Static Rollover 90 Degrees



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



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



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



Figure A-70: Impact Event

2022 NISSAN PATHFINDER SV 2WD

Scan QR code for general model information & options

Manufacturer's Suggested Retail Base Price: \$36,670.00

Options Included by Manufacturer:

- Splash Guards: 190.00
- Cross Bars: 390.00
- Carpeted Floor Mats: Bench Seat: 255.00
- Premium Paint: 395.00

DESTINATION CHARGES: 1,225.00

Total: \$39,125.00

Standard Equipment Included at No Extra Charge:

MECHANICAL & PERFORMANCE

- 3.5L DCHC 24-Valve V6-Cylinder Engine
- 284 hp, 250 lb-ft torque
- 9-Speed Automatic Transmission
- Manual Mode with Paddle Shifters
- Electronic Parking Brake with Auto-hold
- Front and Rear Disc Brakes
- 18" Painted Alloy Wheels
- Temporary Spare Tire
- Drive Mode Selector
- Idle Stop/Start

SAFETY & SECURITY

- Nissan Advanced Air Bag System (AARS)
- Front & Rear-occupant Seat-mounted Side-impact & Roof-mounted Curtain Supplemental Air Bags
- Driver and Front-passenger Supplemental Knee Air Bags
- Lower Anchors and Tethers for Children (LATCH)
- Stable Assist (SA)
- Automatic Emergency Braking (AEB) with Pedestrian Detection
- Blind Spot Warning (BSW)
- Rear Cross Traffic Alert (RCTA)
- Lane Departure Warning (LDW)
- High Beam Assist (HBA)
- Rear Automatic Braking (RAB)
- Intelligent Lane Intervention (I-LI)
- Blind Spot Intervention (BSI)
- Intelligent Forward Collision Warning (IF-CW)

COMFORT & CONVENIENCE

- 10-way Power Driver Seat with 2-way Power Lumbar Support
- 4-way Manual Front Passenger Seat
- 60/40 Split Folding & Reclining 2nd-row Seat with Remote-fold
- NissanConnect® Services powered by SiriusXM®
- Apple CarPlay®
- Android Auto™
- SiriusXM® Radio
- 8" Color Touch-screen Display
- Wi-Fi Hotspot*
- 7" Advanced Drive-Assist Display
- Rear Air Vents
- Tri-zone Automatic Temperature Control

COMFORT & CONVENIENCE CONT.

- Nissan Intelligent Key® with 2-door Request Switch & Push Button Ignition
- Remote Engine Start System with Intelligent Climate Control
- Power Windows with Auto-up/down
- Cloth Seats
- Quick Comfort™ Heated Front Seats
- Leather-wrapped Steering Wheel
- 2 Rear Charge Only USB Connection Ports
- Under Luggage Floor Storage
- Rear Sonar System
- ProPILOT Assist
- Intelligent Cruise Control (ICC) with Full Speed Range and Hold

EXTERIOR

- Intelligent Auto Headlights
- LED Low and High Beam Headlights
- LED Daytime Running Lights
- LED Tail Lamps
- Dual Power Heated Outside Mirrors with LED Turn Signal Indicators
- Rear Privacy Glass
- Roof Rails

*For more information, see dealer, owner's manual, or www.NissanUSA.com/connect4legal
**Optional Equipment Replaces Standard Where Applicable

Fuel Economy and Environment

Fuel Economy

23 MPG
combined city/hwy

21 city
26 highway

4.3 gallons per 100 miles

Annual fuel Cost

\$1,550

Fuel Economy & Greenhouse Gas Rating (EPA est.) Smog Rating (EPA est.)

5 (Best)

You spend \$1,250 more in fuel costs over 5 years compared to the average new vehicle.

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 27 MPG and costs \$6,500 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$2.35 per gallon. MPGe is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

GOVERNMENT 5-STAR SAFETY RATINGS

Overall Vehicle Score Not Rated

Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight.

Frontal Crash	Driver Passenger	Not Rated
Based on the risk of injury in a frontal impact.	Based on the risk of injury in a frontal impact.	
Side Crash	Front seat	Rear seat
Based on the risk of injury in a side impact.	Not Rated	Not Rated
Rollover	Not Rated	
Based on the risk of rollover in a single-vehicle crash.		

Star ratings range from 1 to 5 stars (*****), with 5 being the highest. Source: National Highway Traffic Safety Administration (NHTSA) www.safercar.gov or 1-888-327-4236

Parts Content Information for Vehicles in this Carline: U.S./CANADIAN PARTS CONTENT: 50%

NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION, OR OTHER NON-PARTS COSTS.

FOR THIS VEHICLE: FINAL ASSEMBLY: SMYRNA, TN, USA COUNTRY OF ORIGIN: ENGINE: US TRANSMISSION: US

Security+Plus Extended Protection Plan

The only service agreement backed by Nissan Extended Services North America! Ask your dealer for details, or call 1-800-NISSAN-1 for more information.

Dealer: EMPIRE NISSAN 1377 KETTERING LOOP (ONTARIO, CA 91761)

VIN: 5N1DR38A7C228056
MODEL: 2517 2505N6 NBL-G
EXT: 7 (2208)06030009

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

*Transmission Method TRUCK

20220218224045A51920

Figure A-71: Monroney Label

Type A (if so equipped)

LRS2303

Type B (if so equipped)

LRS3393

ADJUST

For adjustable head restraint/headrest

Adjust the head restraint/headrest so the center is level with the center of your ears. If your ear position is still higher than the recommended alignment, place the head restraint/headrest at the highest position.

WRS0134

INSTALL

- Align the head restraint/headrest stalks with the holes in the seat. Make sure that the head restraint/headrest is facing the correct direction. The stalk with the notch (notches) ① must be installed in the hole with the lock knob ②.
- Push and hold the lock knob and push the head restraint/headrest down.
- Properly adjust the head restraint/headrest before an occupant uses the seating position.

1-16 **Safety—Seats, seat belts and supplemental restraint system**

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



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

APPENDIX B
VEHICLE & DUMMY RESPONSE DATA TRACES

Table of Data Plots

Driver Dummy Instrumentation Plots

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

Additional Driver Dummy Instrumentation Data

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

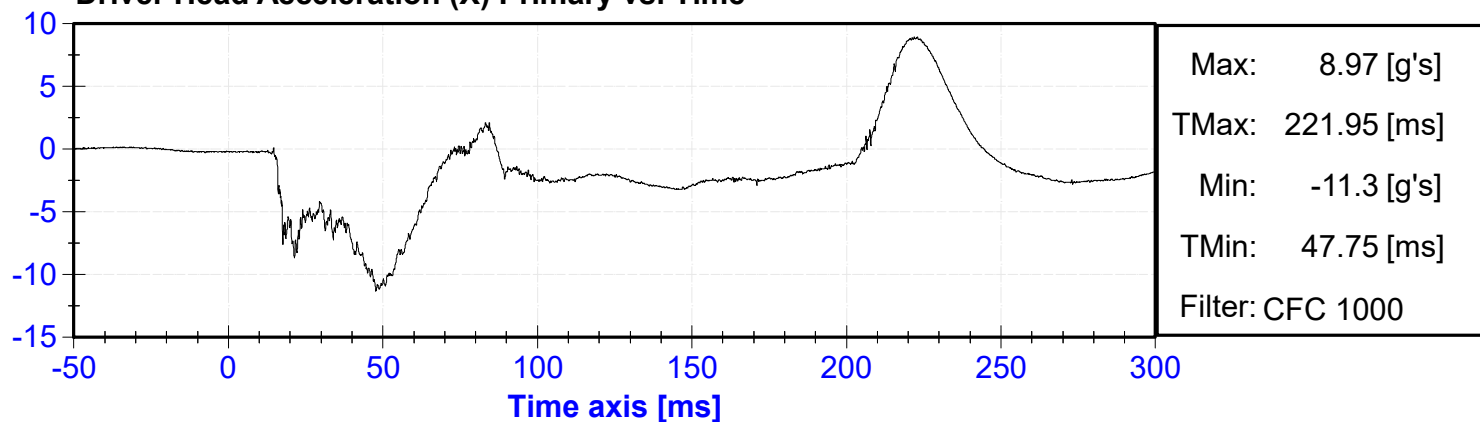
Vehicle Instrumentation Data

Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
Left Floor Sill Acceleration (Y)
Left A-Pillar Sill Acceleration (Y)
Left Lower A-Pillar Acceleration (Y)
Left Mid A-Pillar Acceleration (Y)
Left B-Pillar Sill Acceleration (Y)
Left Lower B-Pillar Acceleration (Y)
Left Mid B-Pillar Acceleration (Y)
Driver Seat Track at Dummy Hip Point Acceleration (Y)
Engine Top Acceleration (X)
Engine Top Acceleration (Y)
Firewall Center Acceleration (Y)
Right Roof at Vertical Impact Reference Line Acceleration (Y)
Right Sill at Vertical Impact Reference Line Acceleration (Y)
Rear Floorpan Behind Rear Axle at Centerline Acceleration (X)
Rear Floorpan Behind Rear Axle at Centerline Acceleration (Y)

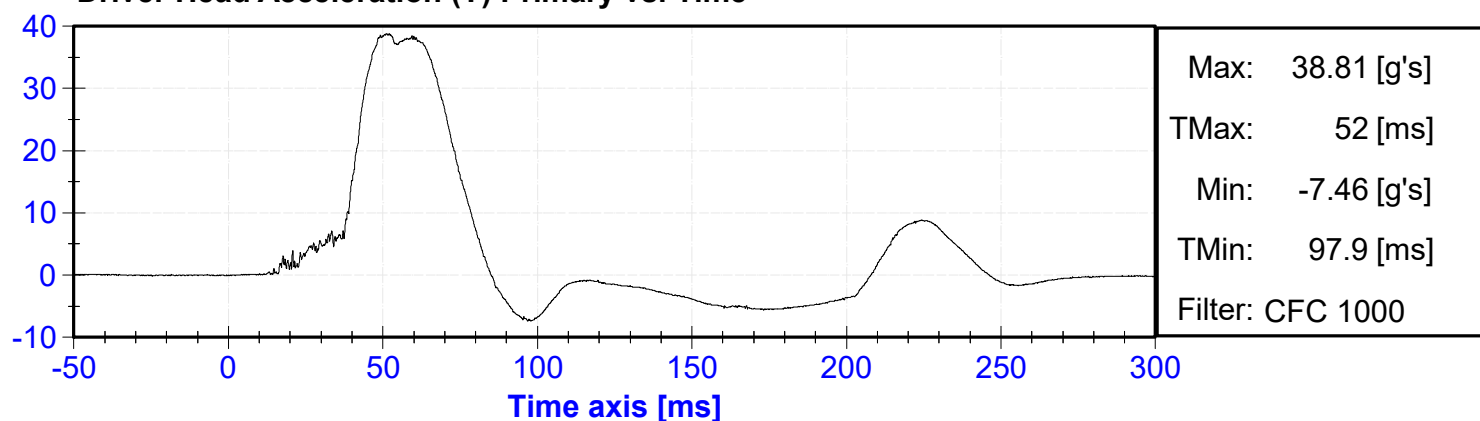
Pole Instrumentation Data

Load Cell Pole Barrier #1 Force (Y)
Load Cell Pole Barrier #2 Force (Y)
Load Cell Pole Barrier #3 Force (Y)
Load Cell Pole Barrier #4 Force (Y)
Load Cell Pole Barrier #5 Force (Y)
Load Cell Pole Barrier #6 Force (Y)
Load Cell Pole Barrier #7 Force (Y)
Load Cell Pole Barrier #8 Force (Y)

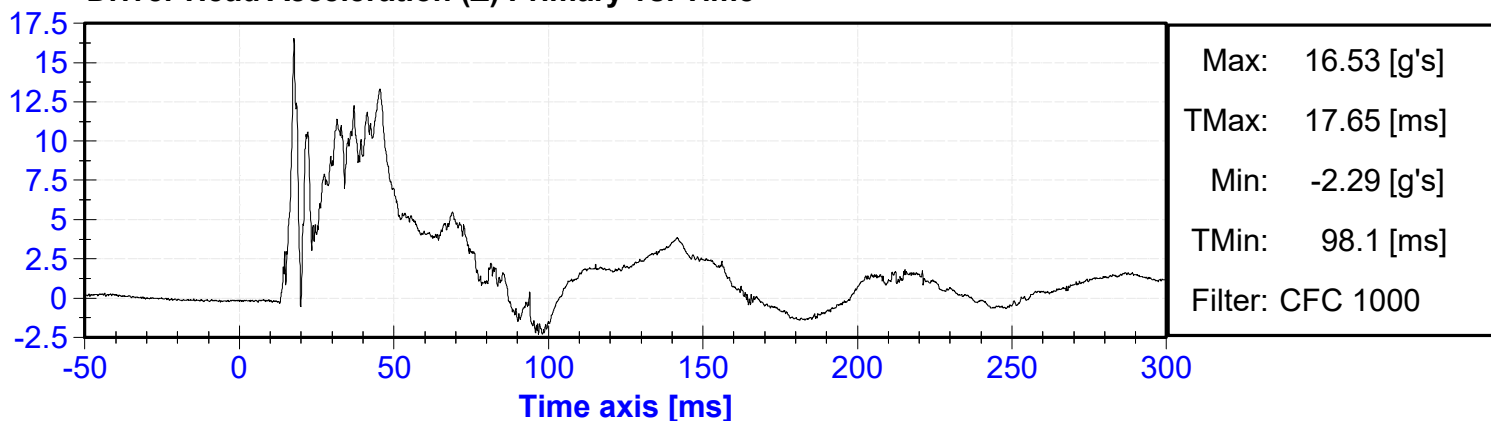
Driver Head Acceleration (X) Primary vs. Time



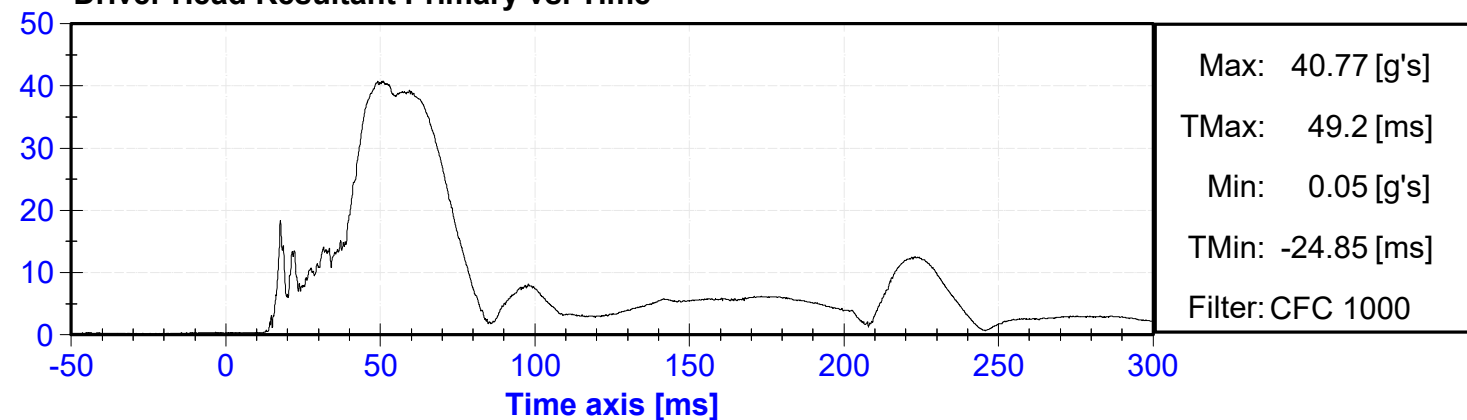
Driver Head Acceleration (Y) Primary vs. Time



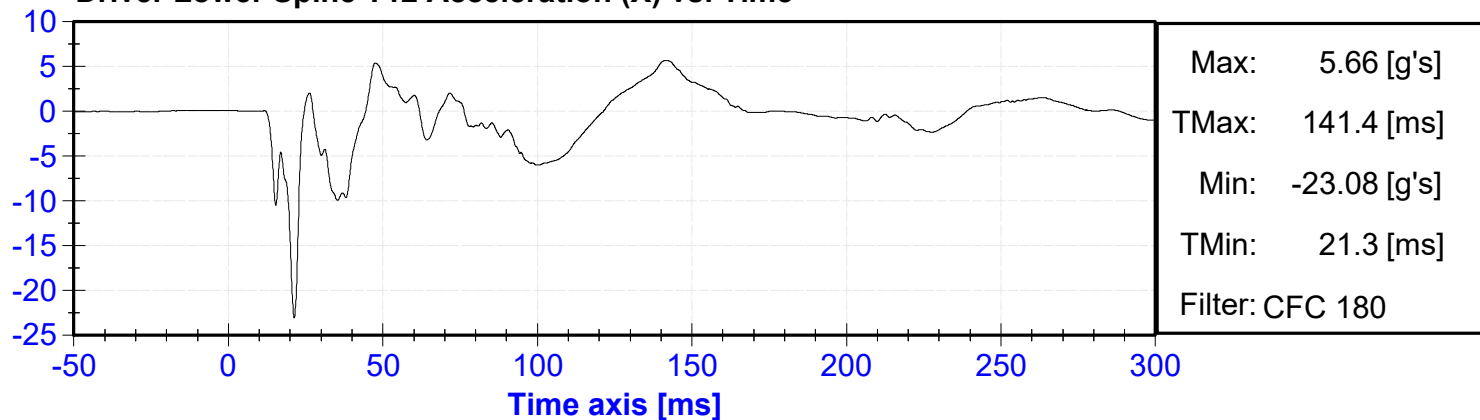
Driver Head Acceleration (Z) Primary vs. Time



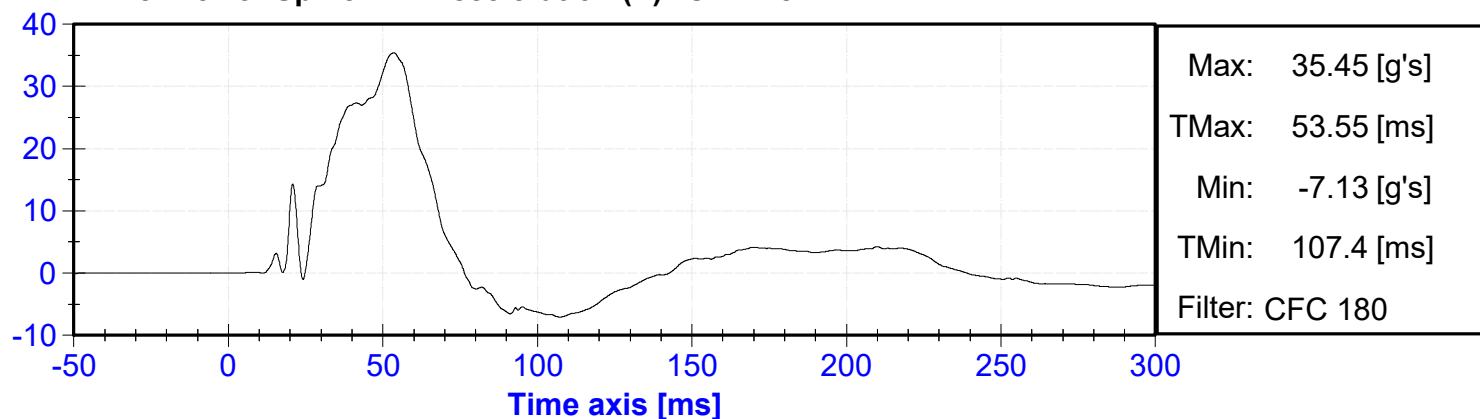
Driver Head Resultant Primary vs. Time



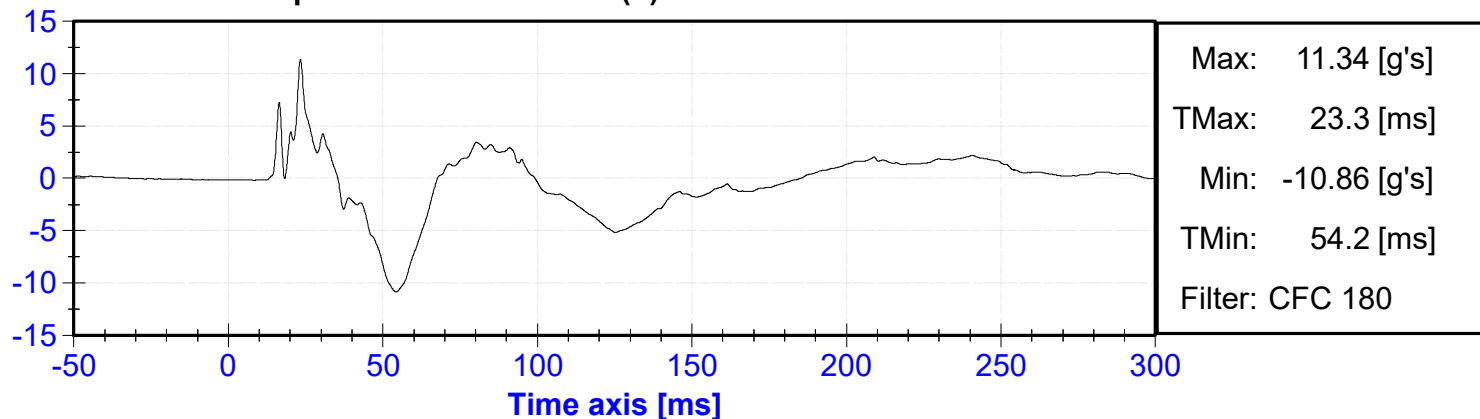
Driver Lower Spine T12 Acceleration (X) vs. Time



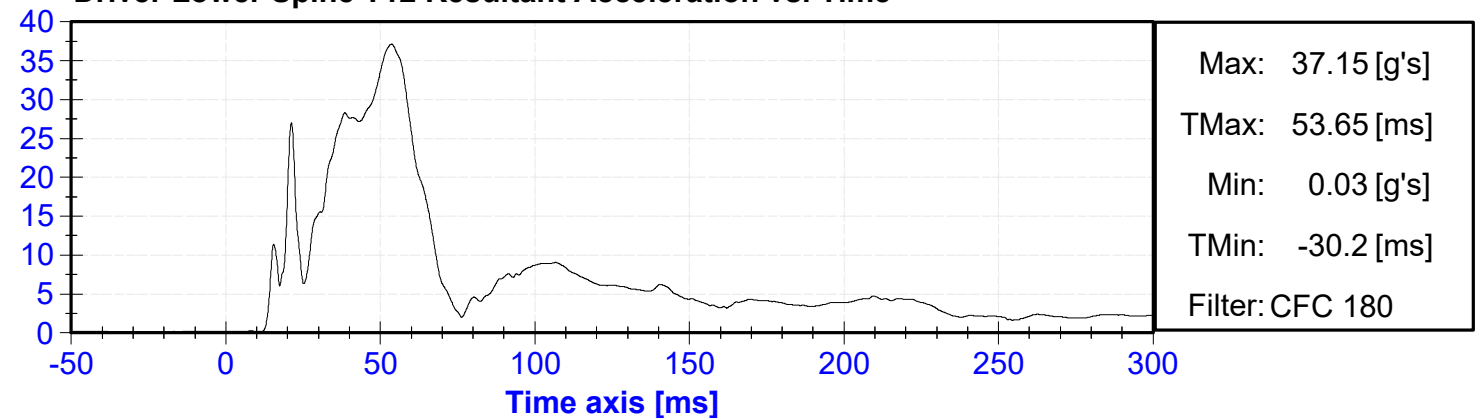
Driver Lower Spine T12 Acceleration (Y) vs. Time



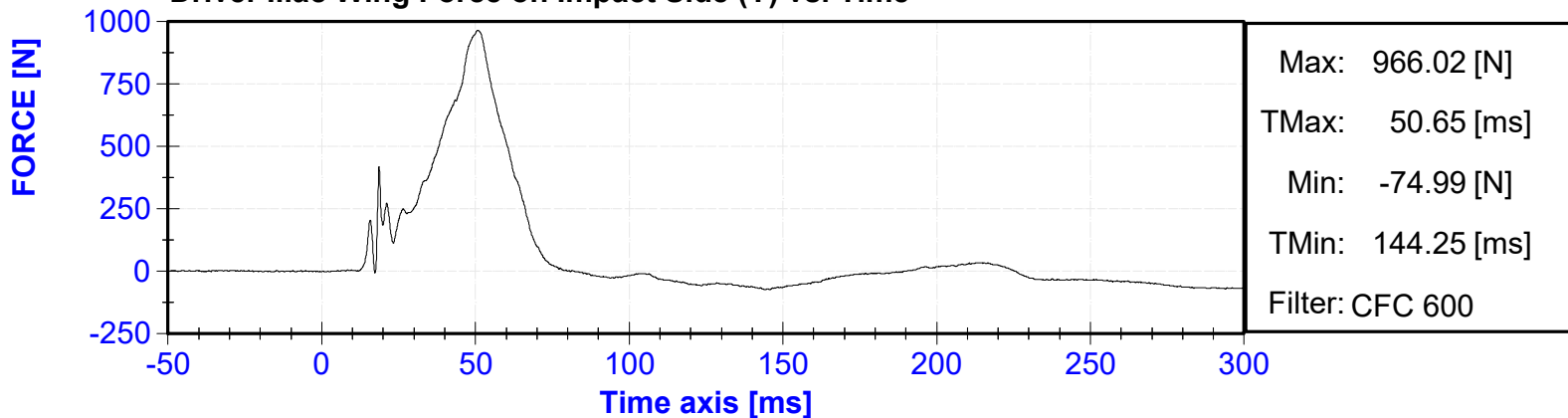
Driver Lower Spine T12 Acceleration (Z) vs. Time



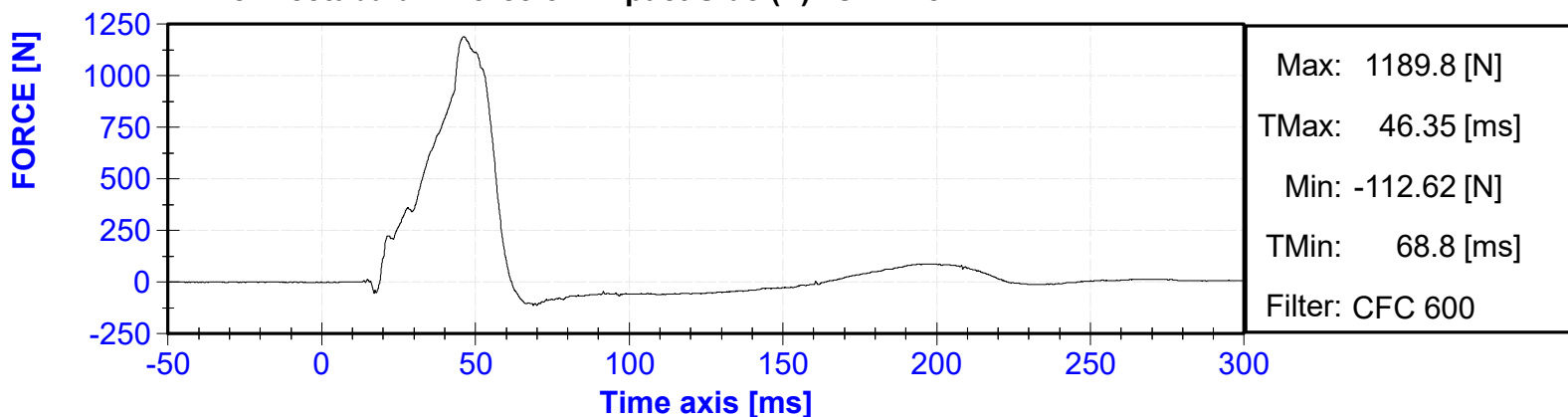
Driver Lower Spine T12 Resultant Acceleration vs. Time



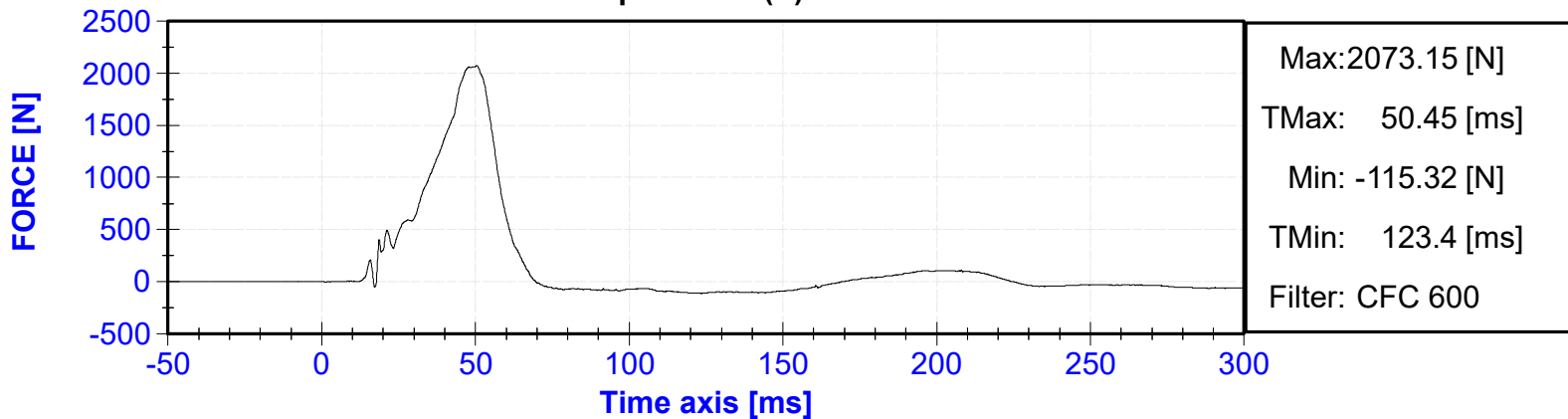
Driver Iliac Wing Force on Impact Side (Y) vs. Time



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



Driver Total Pelvis Force on Impact Side (Y) vs. Time



APPENDIX C

DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

CALIBRATION TEST RESULTS

PRE-TEST

SID-IIS 5TH PERCENTILE FEMALE - DRIVER ATD

SERIAL NO: 300

(CONFIGURED FOR LEFT SIDE IMPACT)

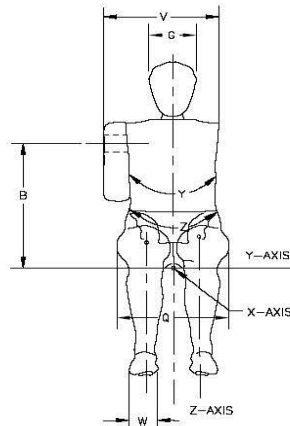
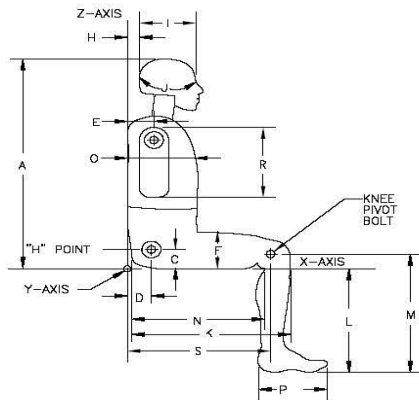


External Measurements - SID-IIs

Technician: J.Pericak

Date: 04/01/2022

Dummy Serial Number: 300



Symbol	Description	Specification (mm)		Result (mm)	Pass/Fail
A	Sitting Height	772	788	782	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	105	Pass
F	Thigh Clearance	119	135	125	Pass
G	Head Breadth	140	148	146	Pass
H	Head Back from Backline	40	46	42	Pass
I	Head Depth	178	188	185	Pass
J	Head Circumference	541	551	545	Pass
K	Buttock to Knee Length	514	540	525	Pass
L	Popliteal Height	343	369	362	Pass
M	Knee Pivot to floor height	392	409	400	Pass
N	Buttock Popliteal Length	416	442	431	Pass
O	Chest Depth w/o jacket	195	211	202	Pass
P	Foot Length	216	232	221	Pass
Q	Hip Breadth (w/pelvic plugs)	313	323	315	Pass
R	Arm Length	249	259	250	Pass
S	Knee Joint to seatback	477	493	487	Pass
V	Shoulder Width	341	357	350	Pass
W	Foot Width	78	94	86	Pass
Y	Chest Circumference w/jacket	851	881	879	Pass
Z	Waist Circumference	761	791	775	Pass

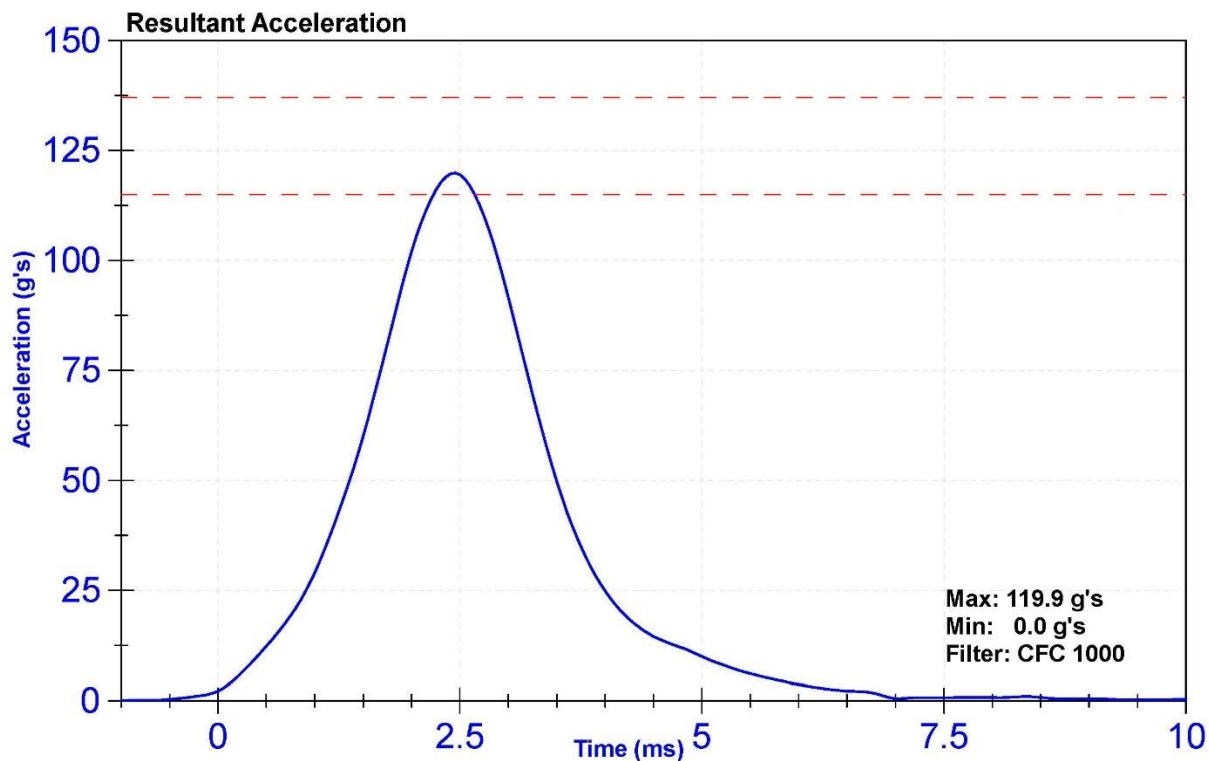
ATD Manufacturer	FTSS	Test Technician	D.Reinhard
ATD Serial Number	300	Laboratory Supervisor	K. Brogan

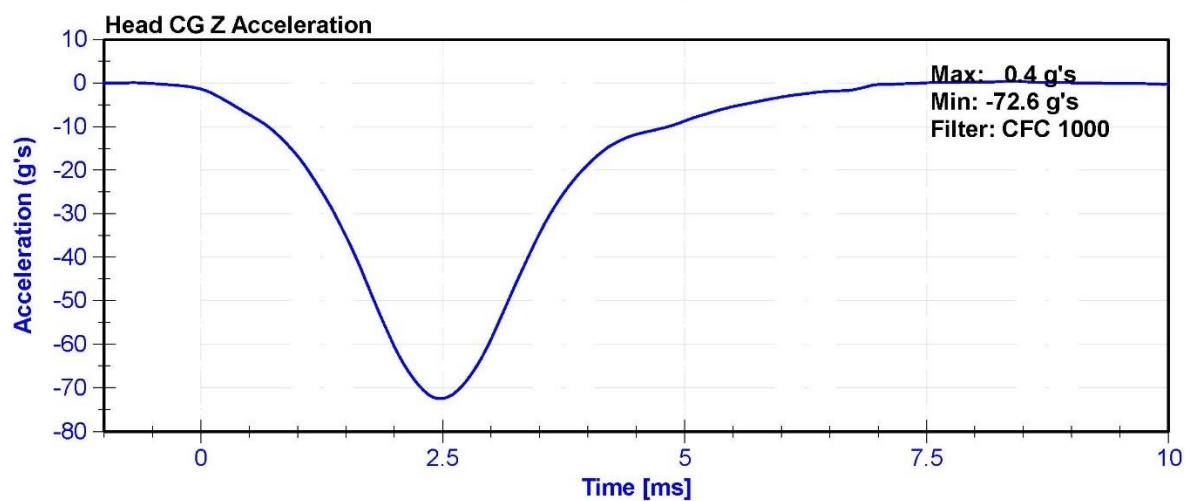
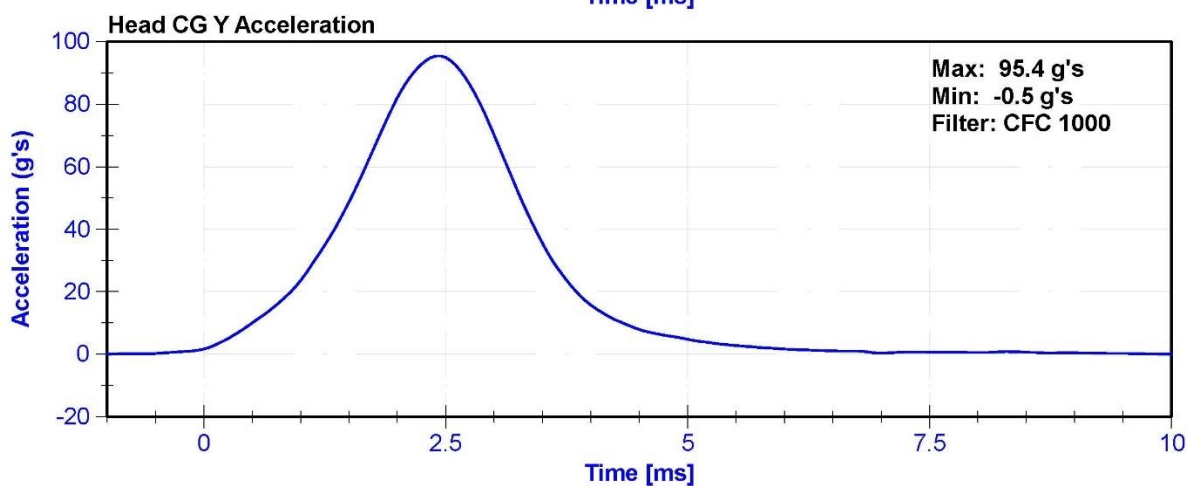
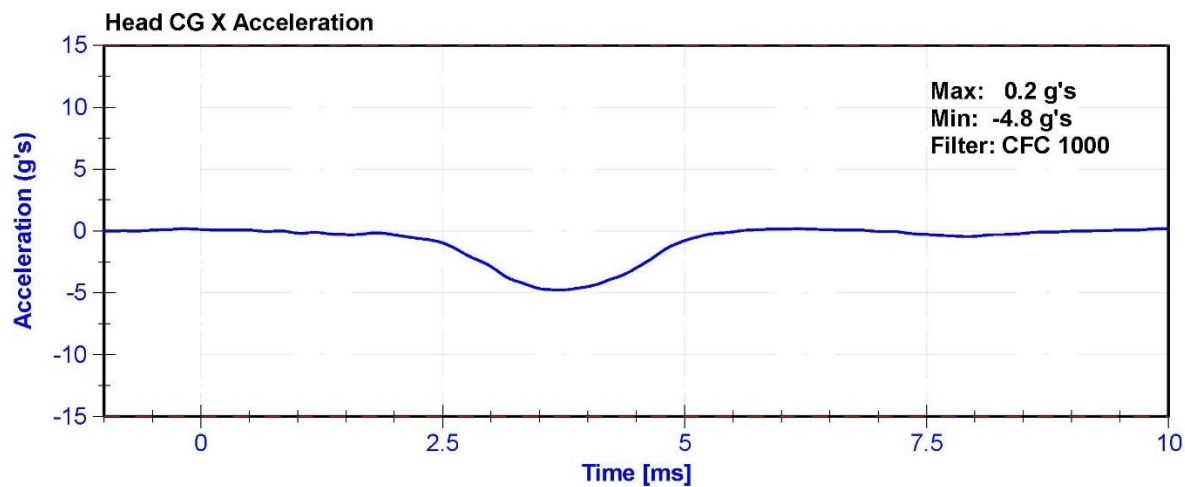
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.6	Pass
Humidity	10	70	%	31	Pass
Resultant Acceleration	115	137	g's	119.9	Pass
Oscillation	0	15	%	0.8	Pass
Fore-Aft Acceleration	-15	15	g's	-4.8	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
X Accelerometer	Endevco	P59018	11/19/2021	5/18/2022
Y Accelerometer	Endevco	P79189	11/19/2021	5/18/2022
Z Accelerometer	Endevco	P58777	11/19/2021	5/18/2022





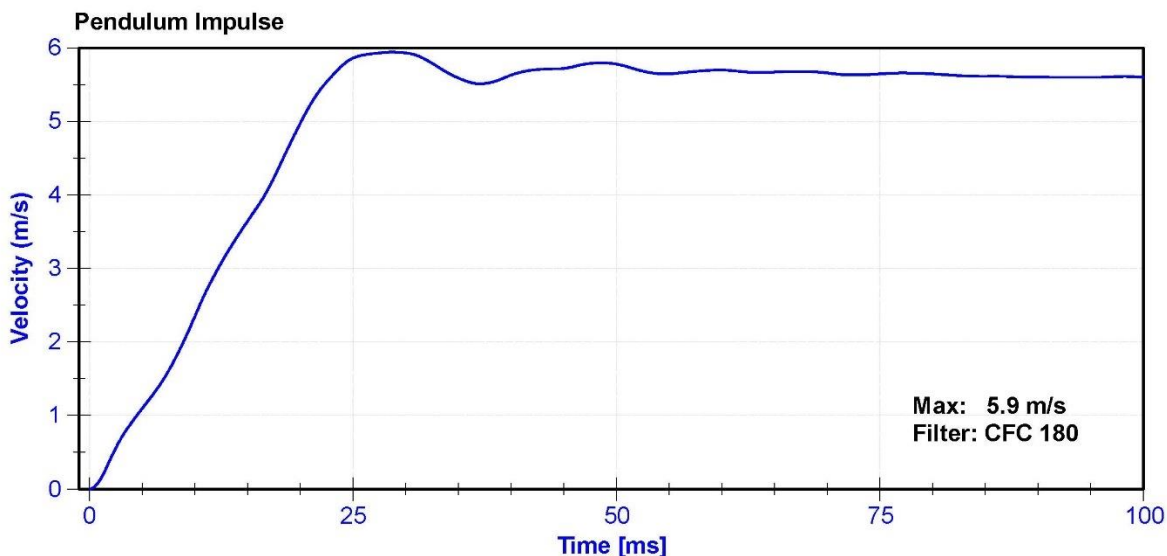
ATD Manufacturer	FTSS	Test Technician	T. Roseman
ATD Serial Number	300	Laboratory Supervisor	K. Brogan

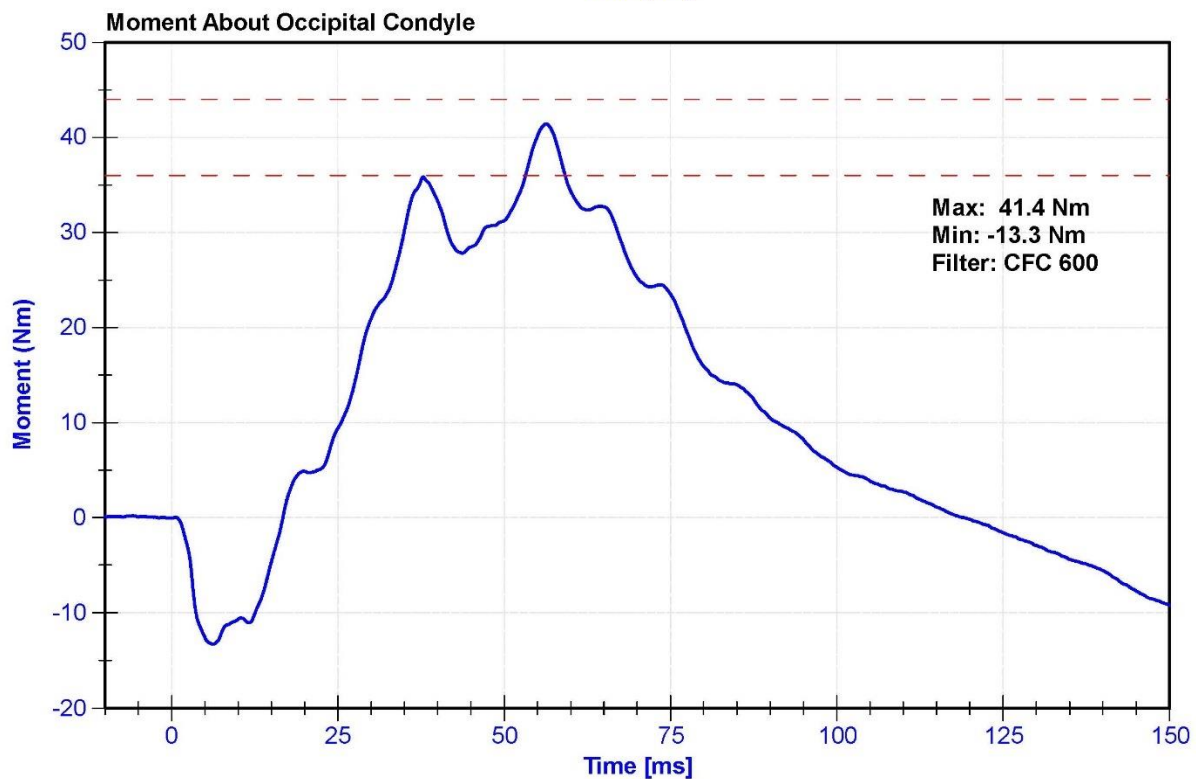
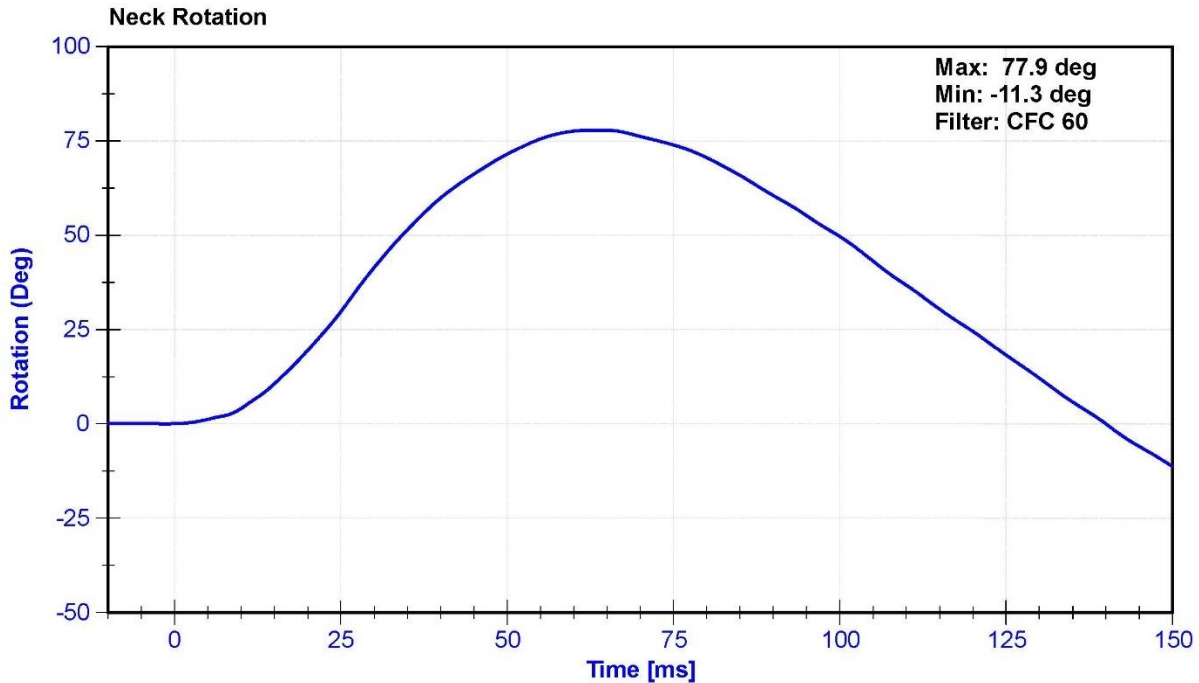
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.8	Pass
Humidity	10	70	%	24.6	Pass
Velocity	5.51	5.63	m/s	5.571	Pass
Pendulum Impulse at 10ms	2.2	2.8	m/s	2.35	Pass
Pendulum Impulse at 15ms	3.3	4.1	m/s	3.65	Pass
Pendulum Impulse at 20ms	4.4	5.4	m/s	4.98	Pass
Pendulum Impulse at 25ms	5.4	6.1	m/s	5.86	Pass
Pendulum Impulse from 25 to 100ms	5.5	6.2	m/s	5.94	Pass
Neck Rotation	71	81	deg	77.9	Pass
Time at Maximum Rotation	50	70	ms	63.9	Pass
Moment about the OC	36	44	Nm	41.4	Pass
Moment Decay to 0 Nm	102	126	ms	119.2	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	7231CT	10/28/2021	10/28/2022
Pendulum Potentiometer	Servo	4961	2/23/2022	2/23/2023
Condyle Potentiometer	Servo	DS185	11/12/2021	11/12/2022
Upper Neck Load Cell	Denton	1037-FY	06/29/2021	06/29/2022





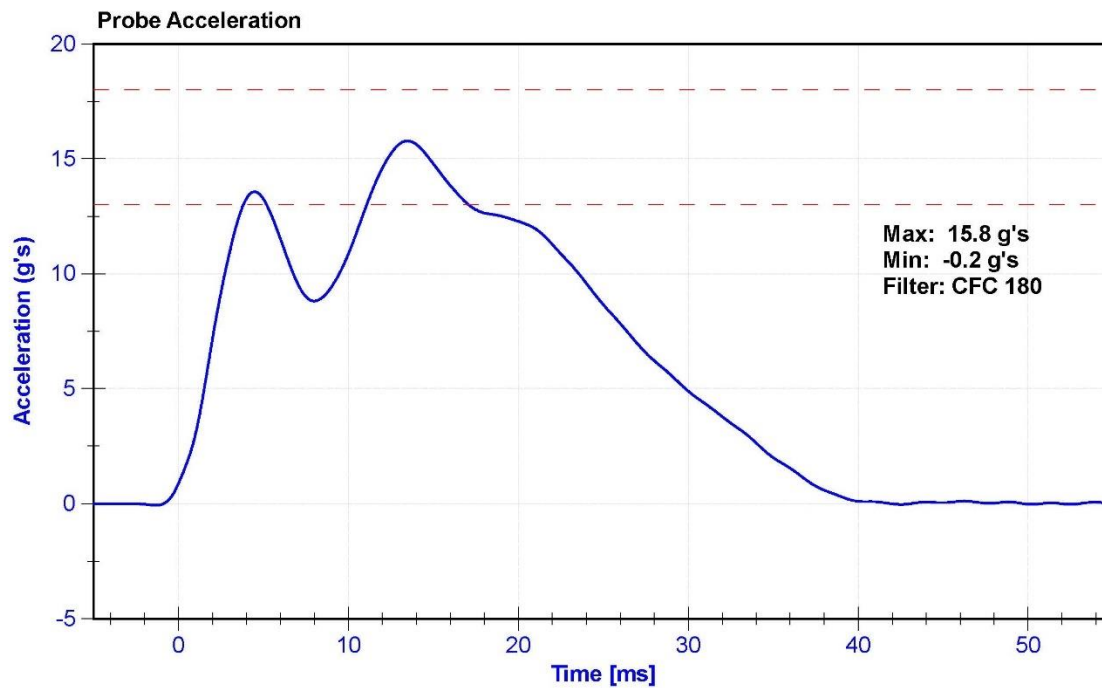
ATD Manufacturer	FTSS	Test Technician	D. Reinhard
ATD Serial Number	300	Laboratory Supervisor	K. Brogan

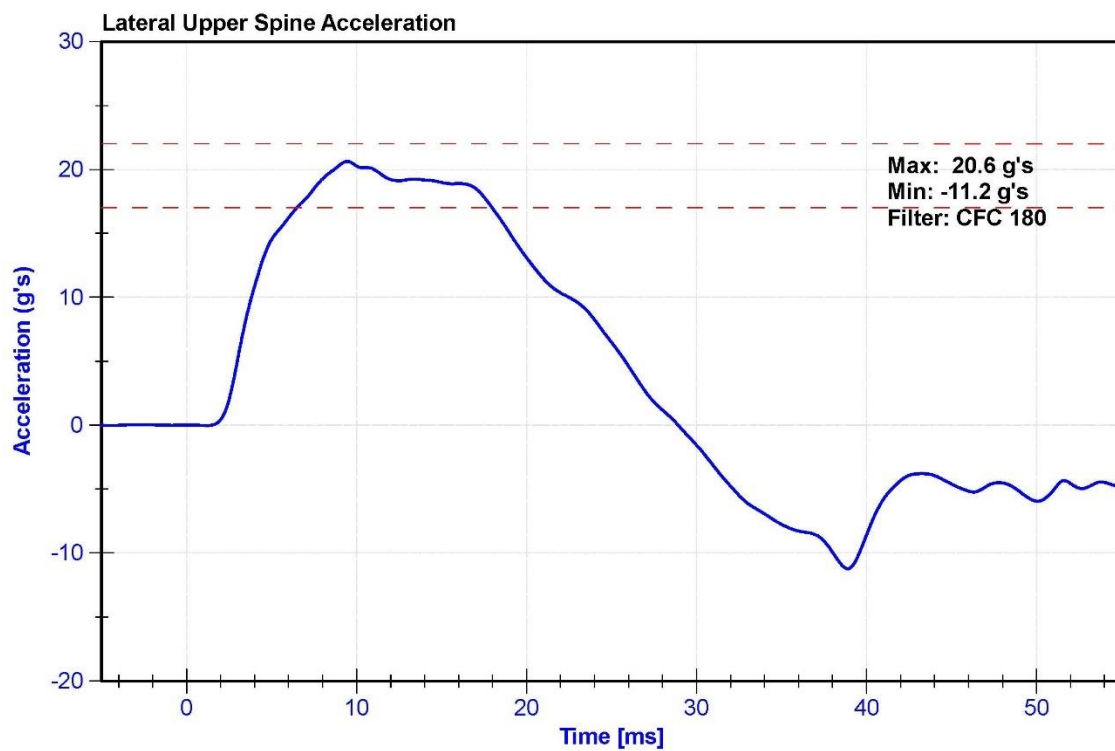
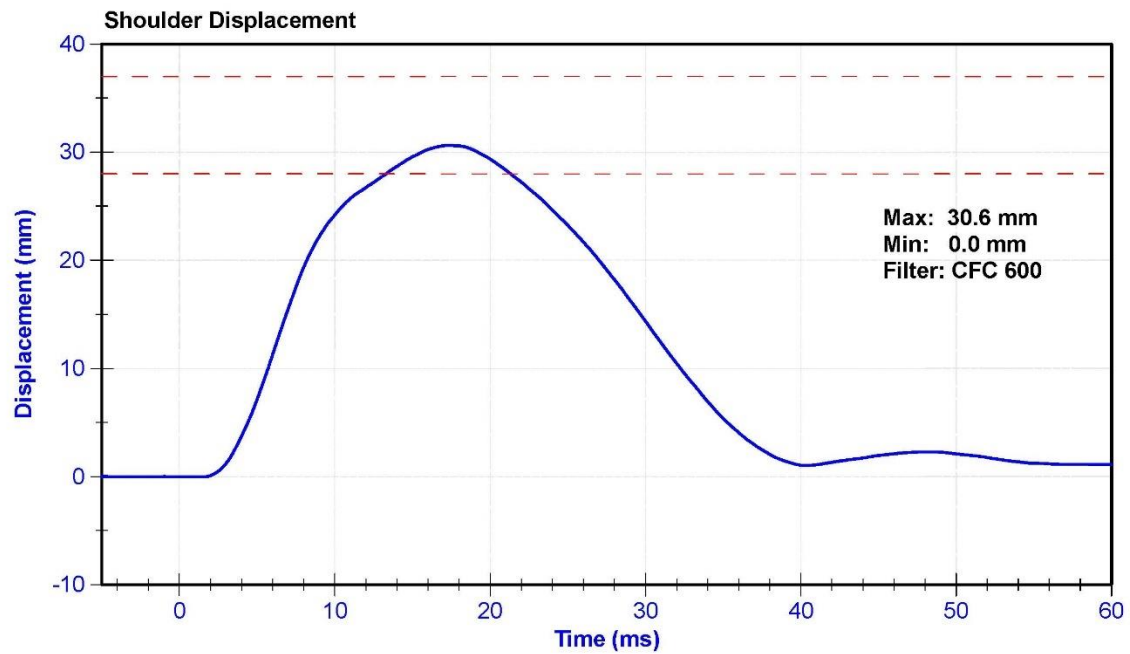
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.1	Pass
Humidity	10	70	%	39	Pass
Velocity	4.2	4.4	m/s	4.32	Pass
Probe Acceleration	13	18	g's	15.8	Pass
Shoulder Deflection	28	37	mm	30.6	Pass
Lateral Upper Spine Acceleration	17	22	g's	20.6	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25885	10/25/2021	4/23/2022
Shoulder Potentiometer	Servo	053GFE	11/22/2021	5/23/2022
Upper Spine Y Accelerometer	Endevco	T20880	11/19/2021	5/18/2022





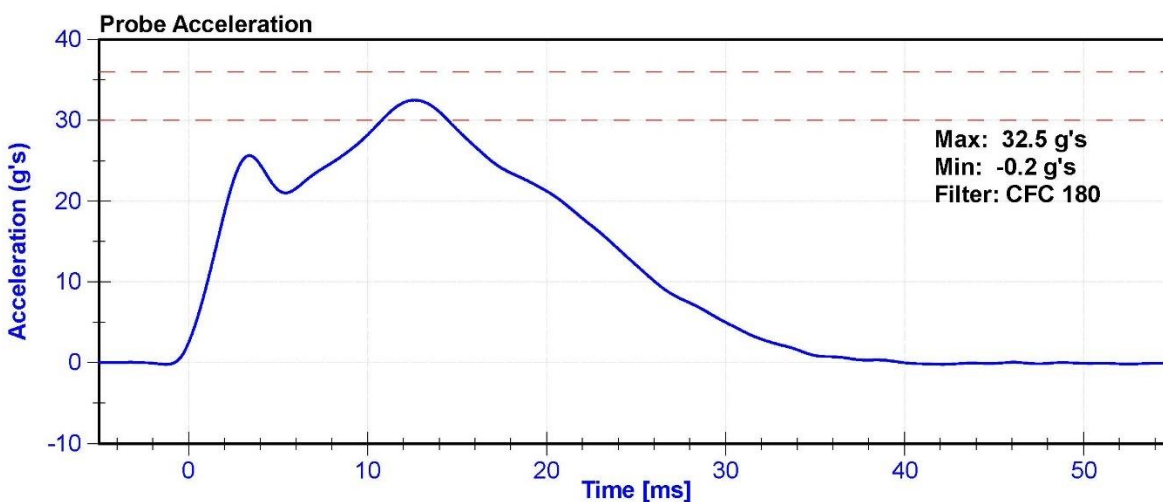
ATD Manufacturer	FTSS	Test Technician	D.Reinhard
ATD Serial Number	300	Laboratory Supervisor	K. Brogan

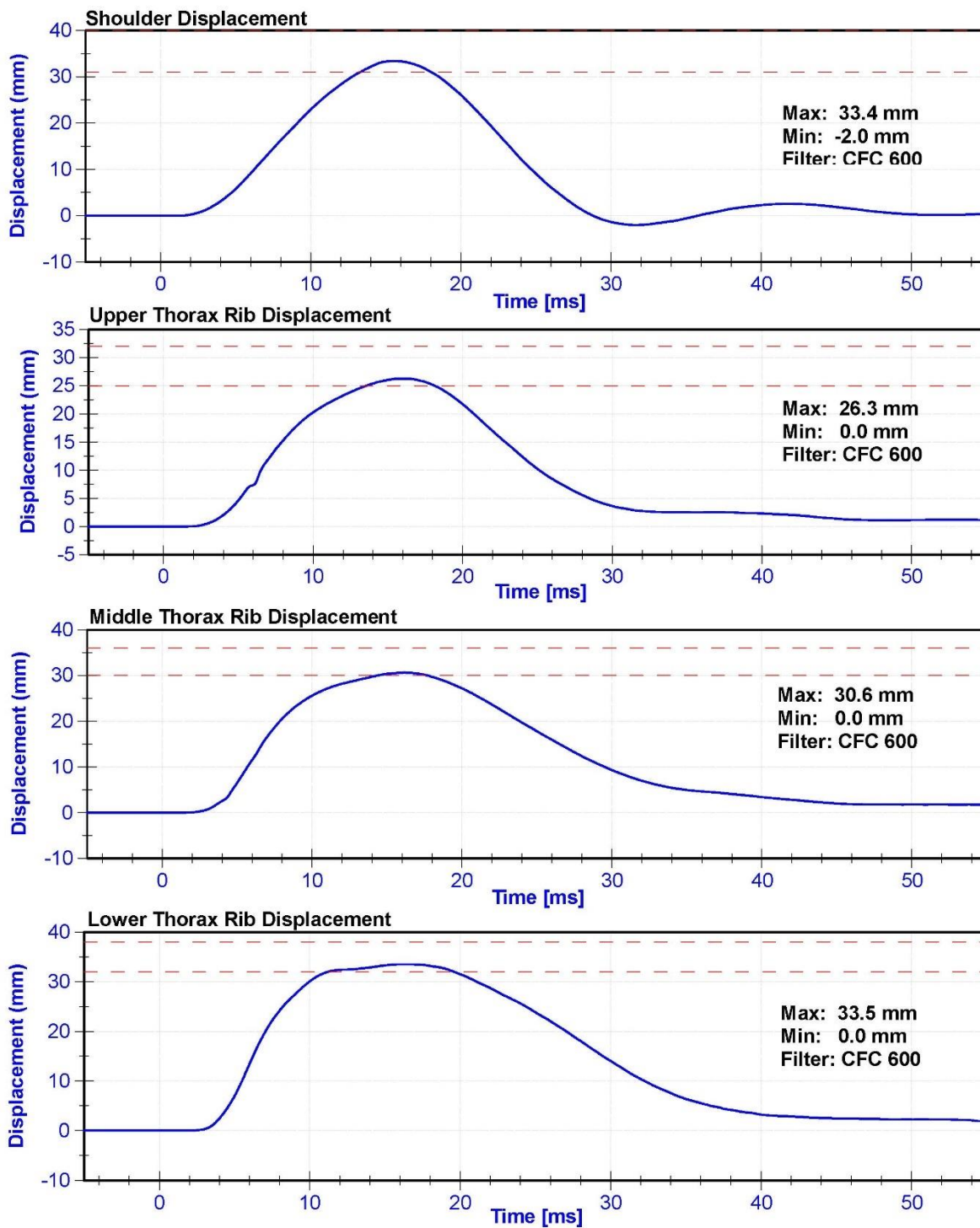
Results

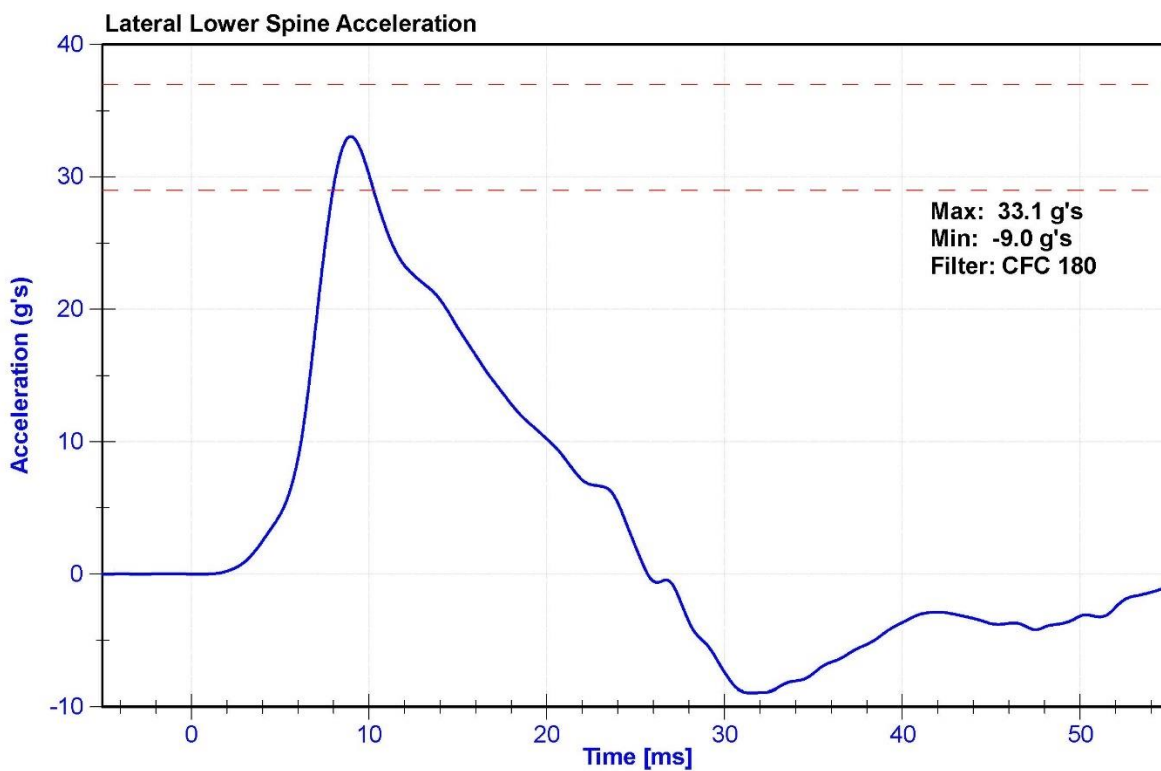
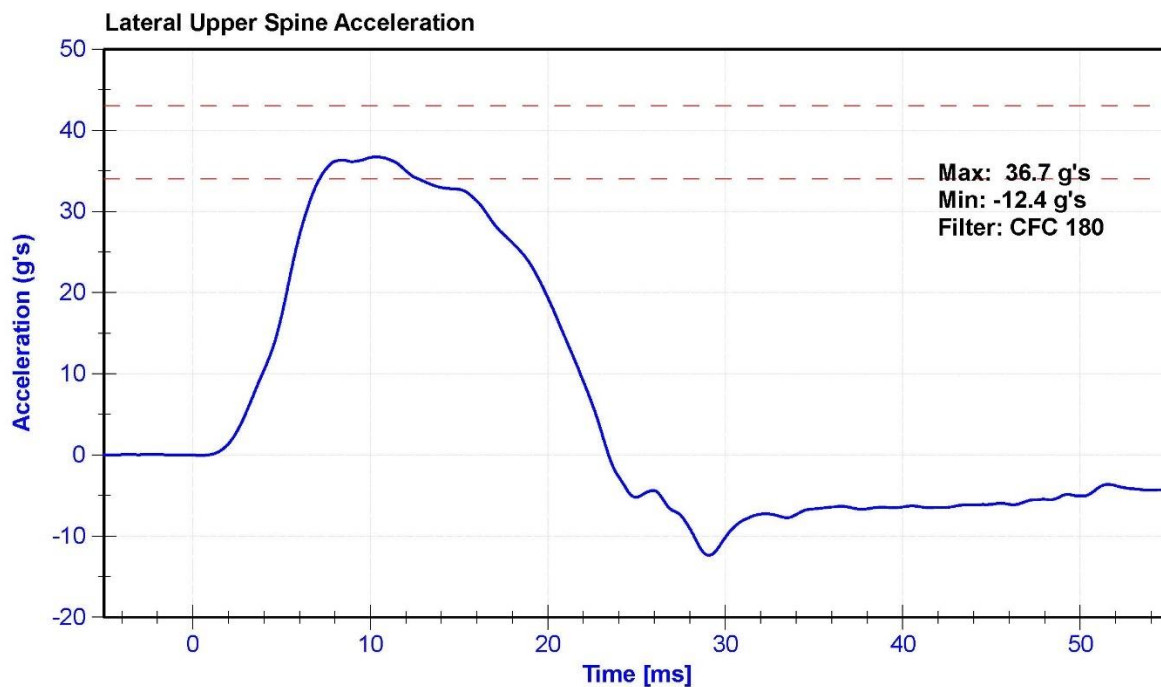
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.4	Pass
Humidity	10	70	%	49	Pass
Velocity	6.6	6.8	m/s	6.68	Pass
Probe Acceleration after 5 ms	30	36	g's	32.5	Pass
Lateral Upper Spine Acceleration	34	43	g's	36.7	Pass
Lateral Lower Spine Acceleration	29	37	g's	33.1	Pass
Shoulder Deflection	31	40	mm	33.4	Pass
Upper Thorax Rib Deflection	25	32	mm	26.3	Pass
Mid Thorax Rib Deflection	30	36	mm	30.6	Pass
Lower Thorax Rib Deflection	32	38	mm	33.5	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25885	10/25/2021	4/23/2022
Upper Spine T1 Y Accelerometer	Endevco	T20880	11/19/2021	5/18/2022
Upper Spine T12 Y Accelerometer	Endevco	P52071	11/19/2021	5/18/2022
Shoulder Potentiometer	Servo	053GFE	11/22/2021	5/23/2022
Upper Thorax Rib Potentiometer	Servo	451GFE	11/22/2021	5/23/2022
Middle Thorax Rib Potentiometer	Servo	040GFE	11/22/2021	5/23/2022
Lower Thorax Rib Potentiometer	Servo	1156GFE	11/22/2021	5/23/2022







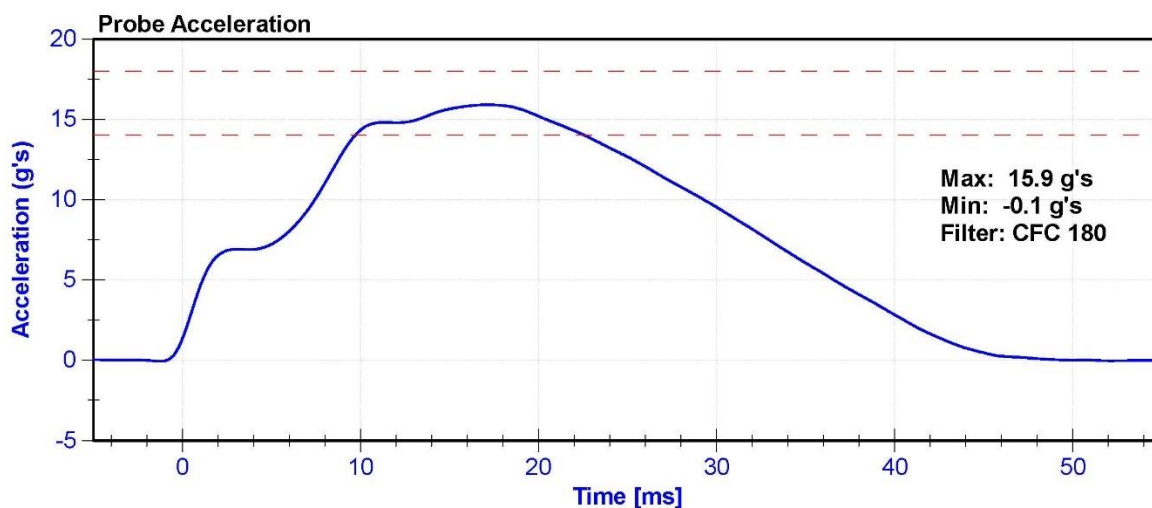
ATD Manufacturer	FTSS	Test Technician	D.Reinhard
ATD Serial Number	300	Laboratory Supervisor	K. Brogan

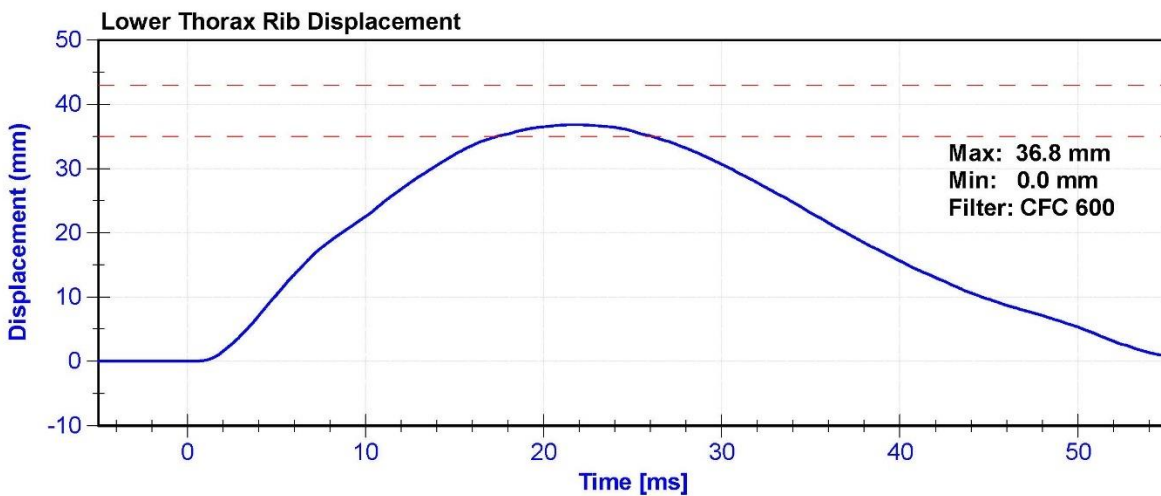
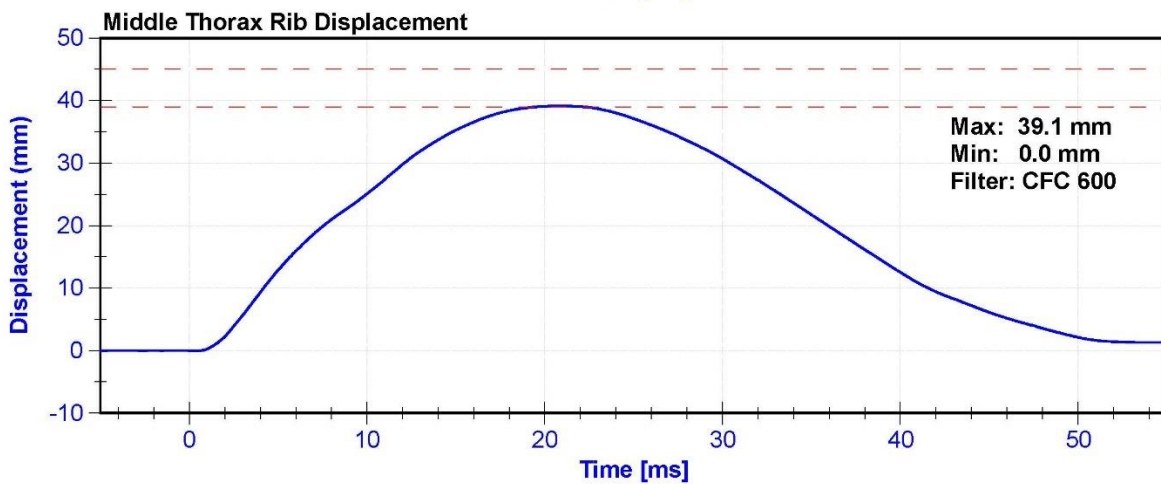
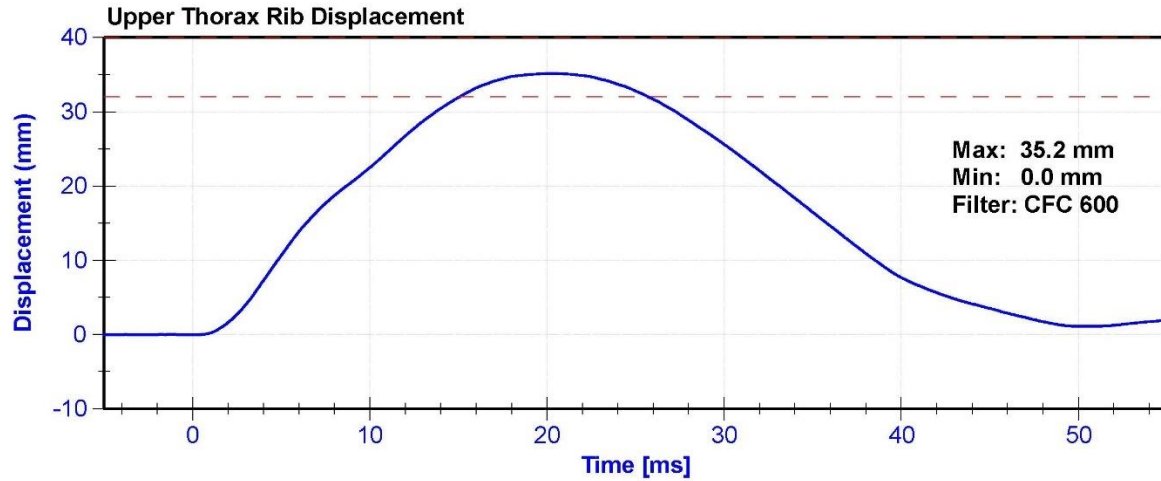
Results

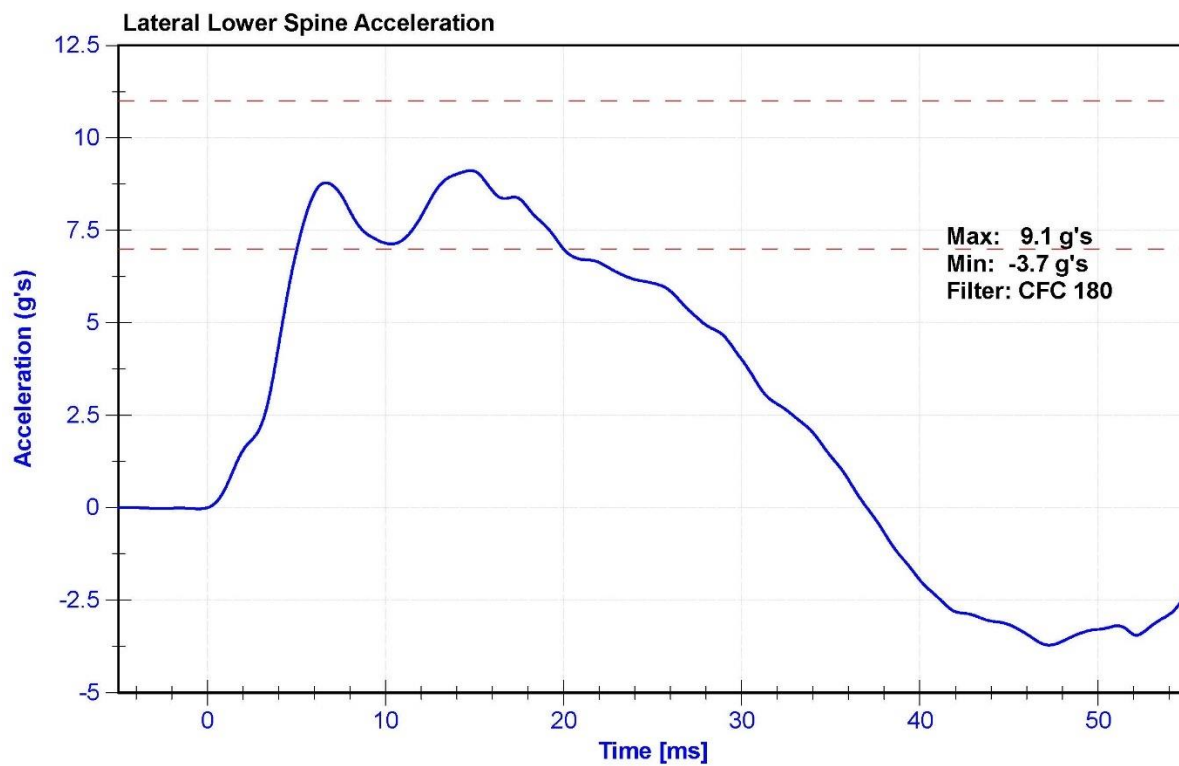
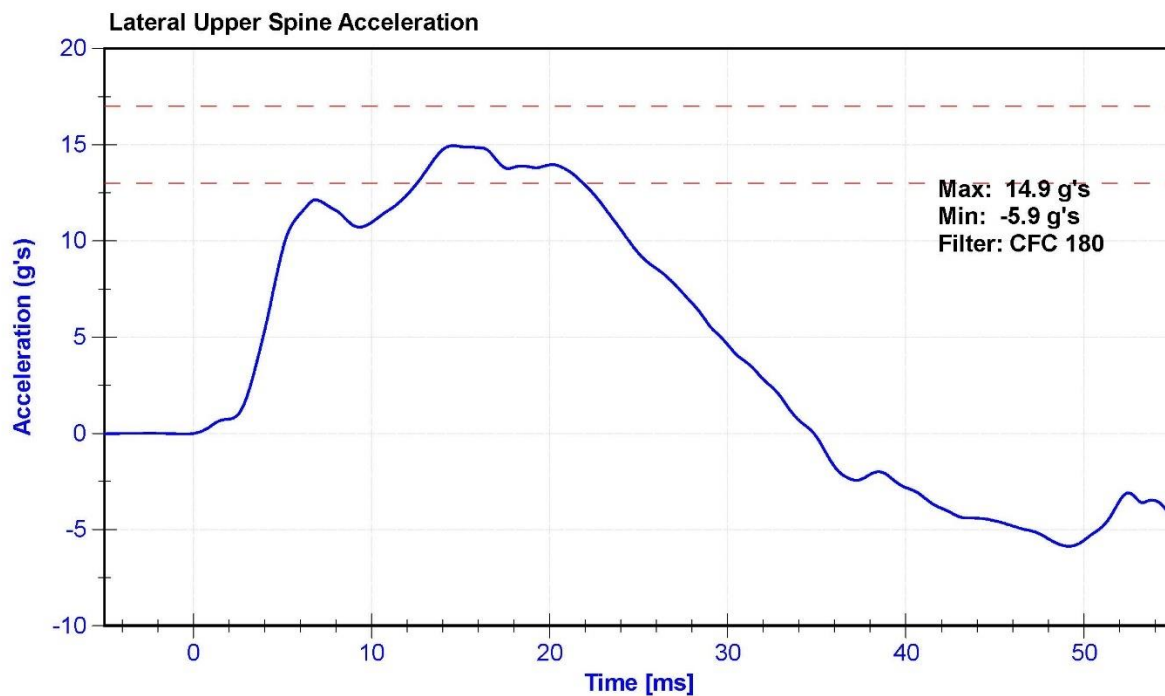
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.4	Pass
Humidity	10	70	%	49	Pass
Velocity	4.2	4.4	m/s	4.35	Pass
Probe Acceleration	14	18	g's	15.9	Pass
Lateral Upper Spine Acceleration	13	17	g's	14.9	Pass
Lateral Lower Spine Acceleration	7	11	g's	9.1	Pass
Upper Thorax Rib Deflection	32	40	mm	35.2	Pass
Middle Thorax Rib Deflection	39	45	mm	39.1	Pass
Lower Thorax Rib Deflection	35	43	mm	36.8	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25885	10/25/2021	4/23/2022
Upper Spine Y Accelerometer	Endevco	T20880	11/19/2021	5/18/2022
Lower Spine Y Accelerometer	Endevco	P52071	11/19/2021	5/18/2022
Upper Thorax Rib Potentiometer	Servo	451GFE	11/22/2021	5/23/2022
Middle Thorax Rib Potentiometer	Servo	040GFE	11/22/2021	5/23/2022
Lower Thorax Rib Potentiometer	Servo	1156GFE	11/22/2021	5/23/2022







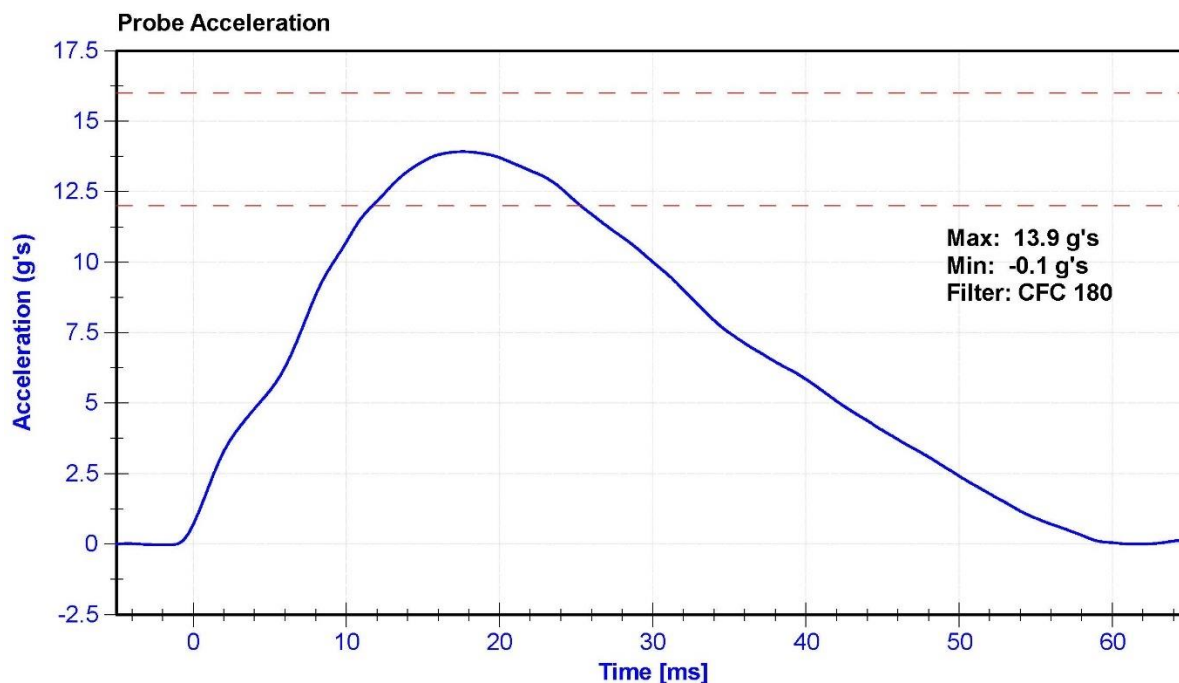
ATD Manufacturer	FTSS	Test Technician	D.Reinhard
ATD Serial Number	300	Laboratory Supervisor	K. Brogan

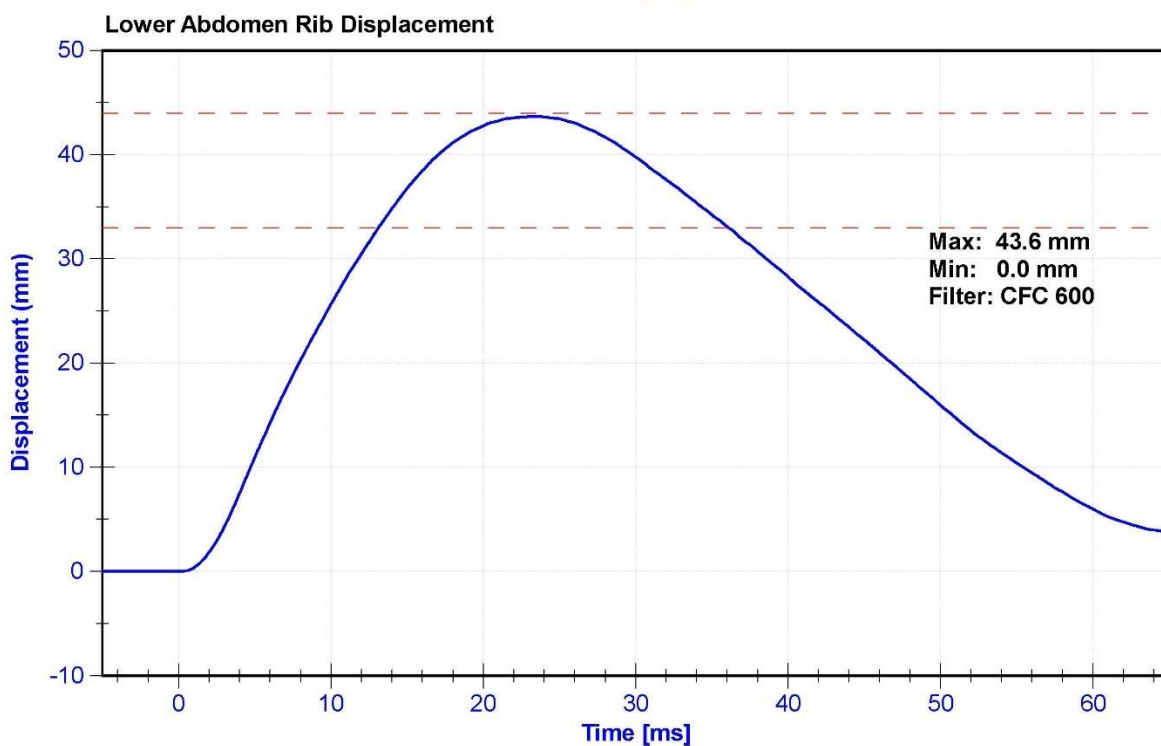
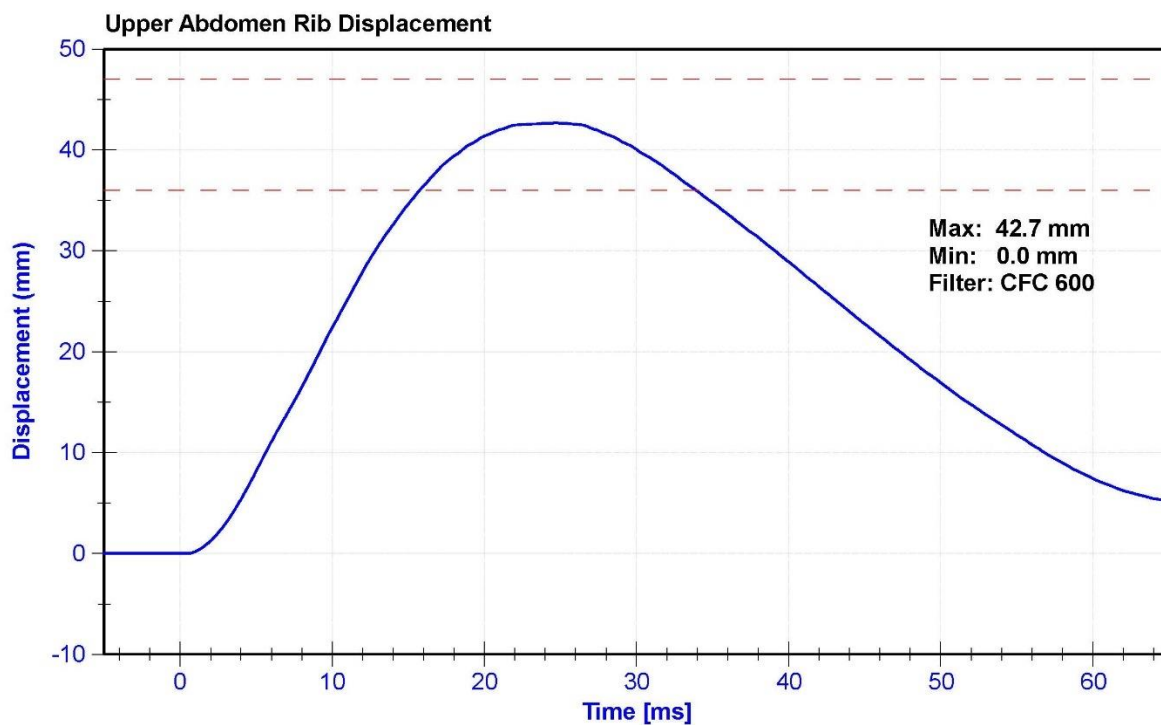
Results

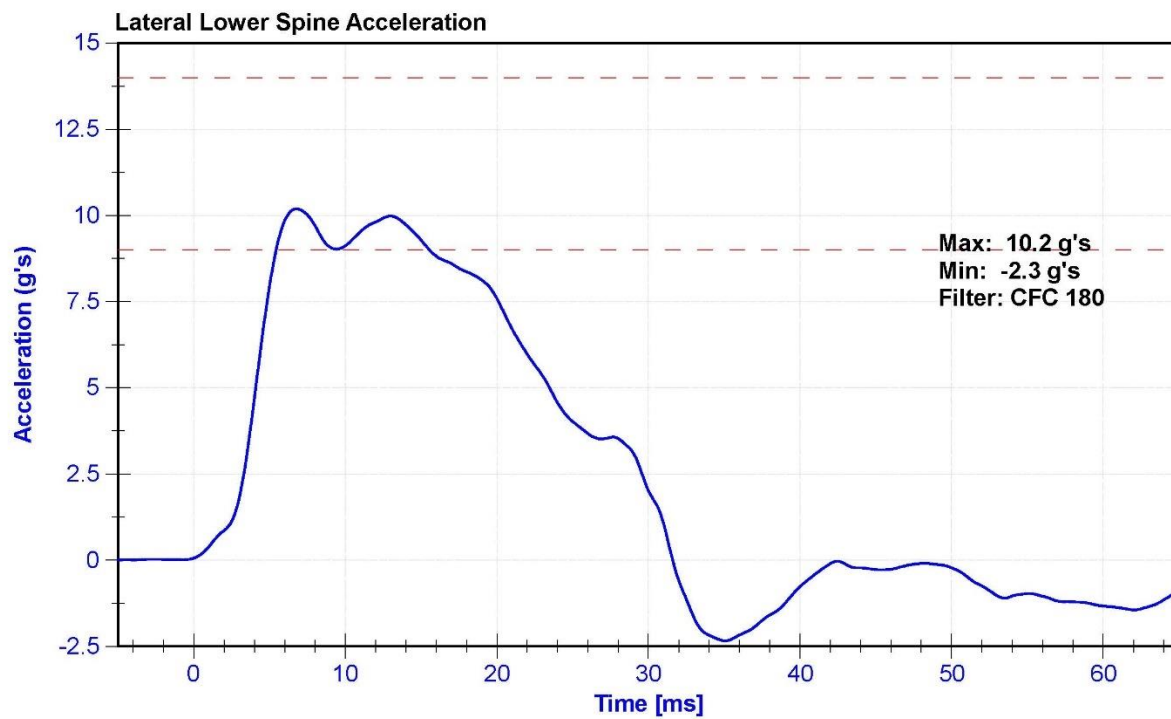
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.4	Pass
Humidity	10	70	%	49	Pass
Velocity	4.2	4.4	m/s	4.35	Pass
Probe Acceleration	12	16	g's	13.9	Pass
Lateral Lower Spine Acceleration	9	14	g's	10.2	Pass
Upper Abdomen Rib Deflection	36	47	mm	42.7	Pass
Lower Abdomen Rib Deflection	33	44	mm	43.6	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accelerometer	Endevco	T25885	10/25/2021	4/23/2022
Lower Spine Y Accelerometer	Endevco	P52071	11/19/2021	5/18/2022
Upper Abdomen Rib Potentiometer	Servo	307GFE	11/22/2021	5/23/2022
Lower Abdomen Rib Potentiometer	Servo	308GFE	11/22/2021	5/23/2022







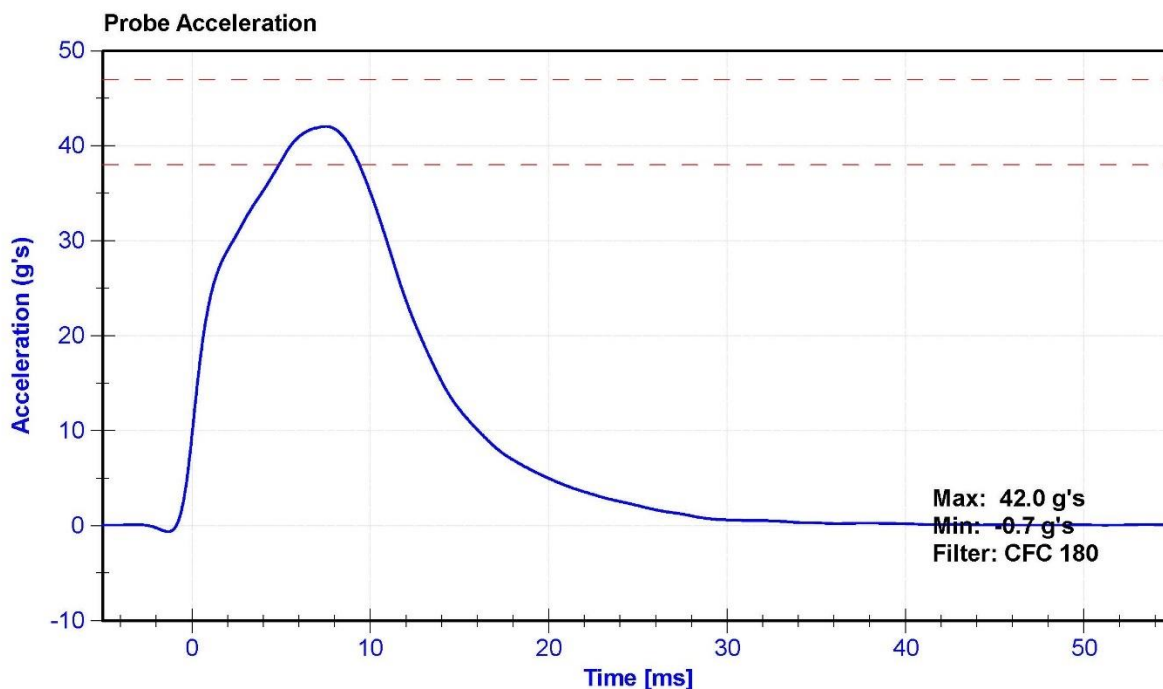
ATD Manufacturer	FTSS	Test Technician	D.Reinhard
ATD Serial Number	300	Laboratory Supervisor	K. Brogan

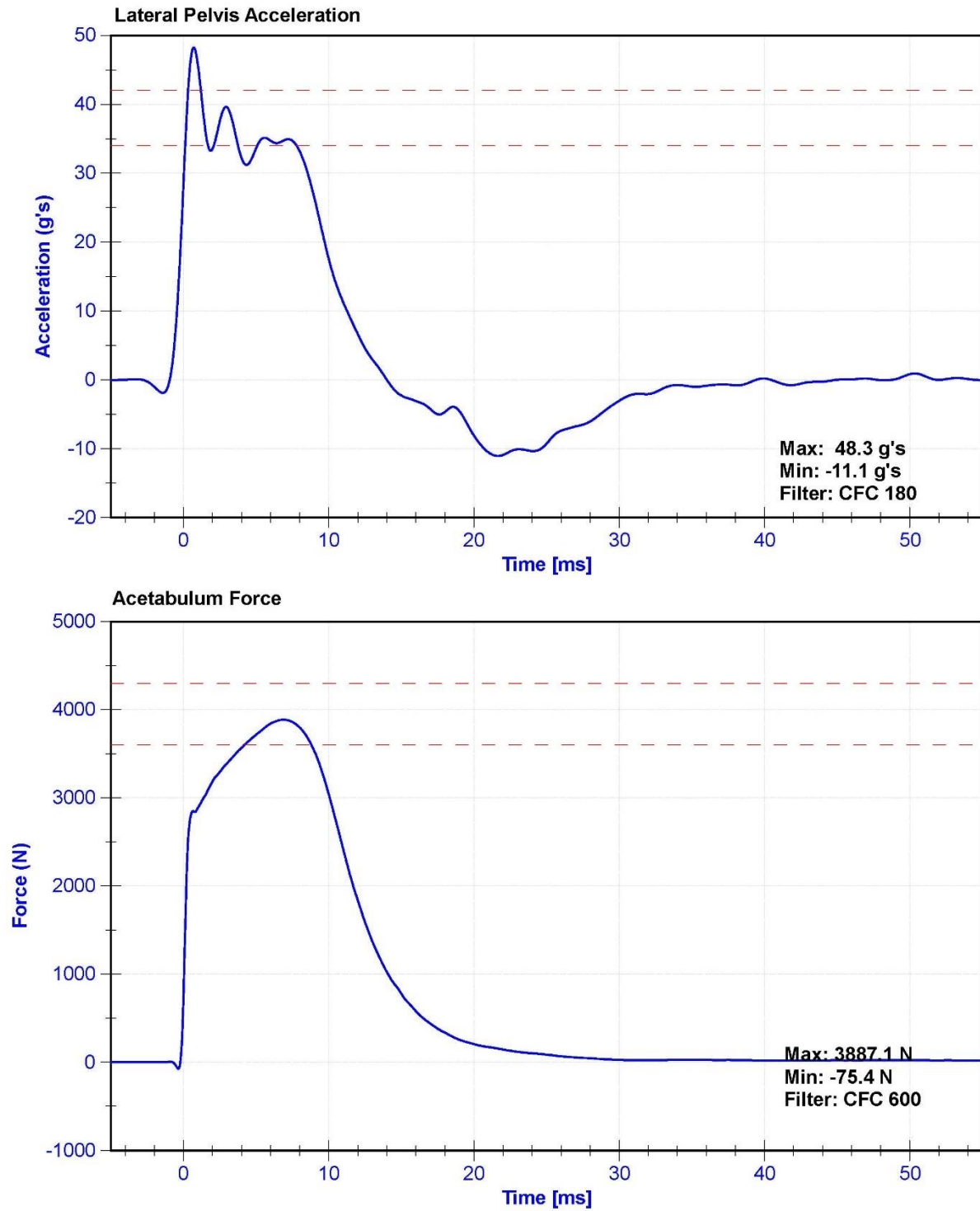
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.2	Pass
Humidity	10	70	%	39	Pass
Velocity	6.6	6.8	m/s	6.62	Pass
Probe Acceleration	38	47	g's	42.0	Pass
Lateral Pelvis Acceleration after 6ms	34	42	g's	34.9	Pass
Acetabulum Force	3600	4300	N	3887.1	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25885	10/25/2021	4/23/2022
Pelvis Y Accelerometer	Endevco	P51731	11/19/2021	5/18/2022
Acetabulum Load Cell	Denton	275-FY	9/14/2021	9/14/2022
Certification Plug	SACO			N/A
Crash Test Plug	SACO			N/A







3/31/22
300
Cert 1

SID-Ils Pelvis Plug Certification Test

Plug S/N 13907

Test Number 13381

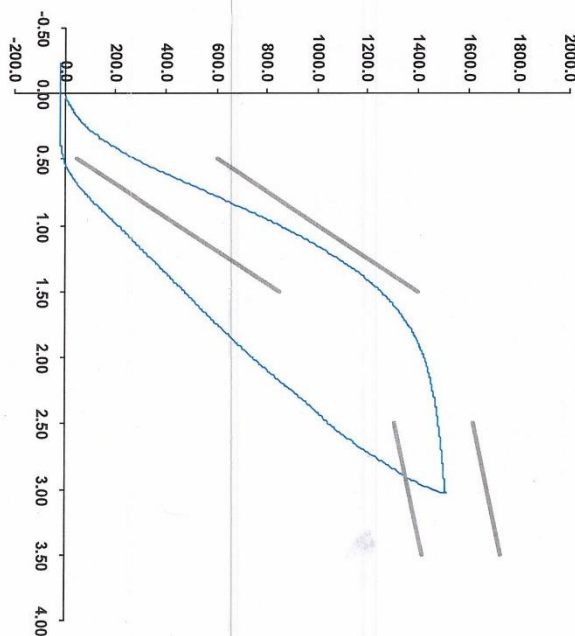
Report Number 13426

Test Date 5/20/2020 8:38:20 PM

Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	285	600
Force @ 1.5 mm (N)	1,255	1,400
Force @ 2.5 mm (N)	1,482	1,618
Force @ 3.0 mm (N)	1,511	1,673

Testing Machine STM-20 596542
Load Cell S/N (F1360947), Units (LBS) 1000
Preload Value (-N) 22.24
Crosshead Speed (mm / min) or Rate 12.7
Extension or Position Measured by XHD_100 (XHD100)

Notes:



Operator

Part Number 180-4450

Template No 107 08-Jul-21
SACO Research

By: _____ Date: _____

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



SID-IIS Pelvis Plug Certification Test

Plug S/N 14088

Test Number 13562

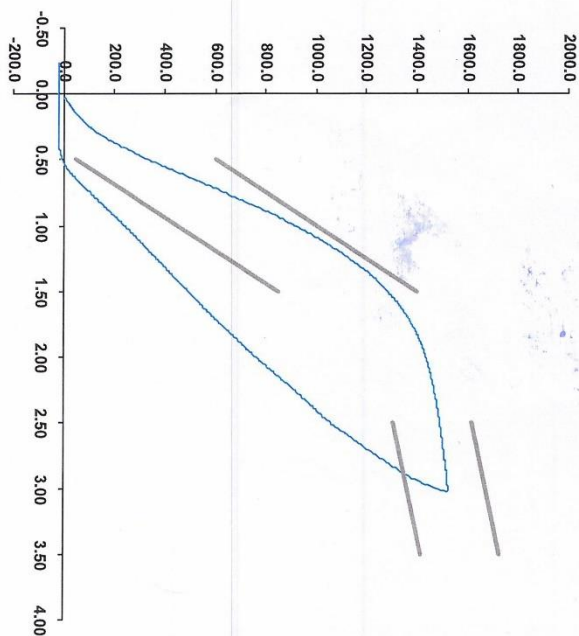
Report Number 13607

Test Date 5/25/2020 12:07:40 PM

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

Testing Machine STM-20 596542
Load Cell S/N (F1360947), Units (LBS) 1000
Crosshead Speed (mm / min) or Rate 12.7
Extension or Position Measured by XHD_100 (XHD100)

Notes:



Operator 14061

Part Number 180-4450

Template No 107 08-Jul-21
SACO Research

By: _____ Date: _____

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

3/31/22
300
Crash (Impact Side)



SID-IIs Pelvis Plug Certification Test

Plug S/N 13097

Test Number 10417

Report Number 10452

Test Date 7/30/2019 4:48:01 PM

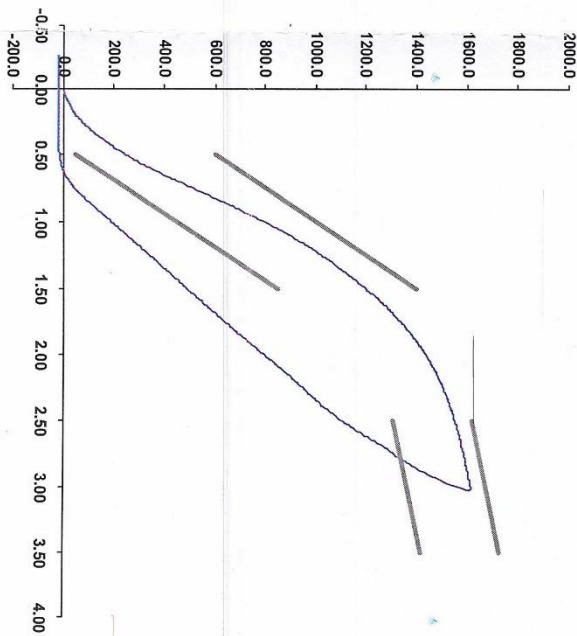
Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	256.48	50.00
Force @ 1.5 mm (N)	1,200.73	850.00
Force @ 2.5 mm (N)	1,554.07	1,306.00
Force @ 3.0 mm (N)	1,616.46	1,361.00

Testing Machine STM-20 5965542
Load Cell S/N (F1360947), Units (LBS) 1000

Crosshead Speed (mm/min) or Rate 12.7
Extension or Position Measured by XHD_100 (XHD100)

Notes:

Force (-N) vs Extension (-mm)



Operator

Part Number 180-4450

Template No 107 30-Jul-19
SACO Research

By: DC Date: 7/30/2019

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

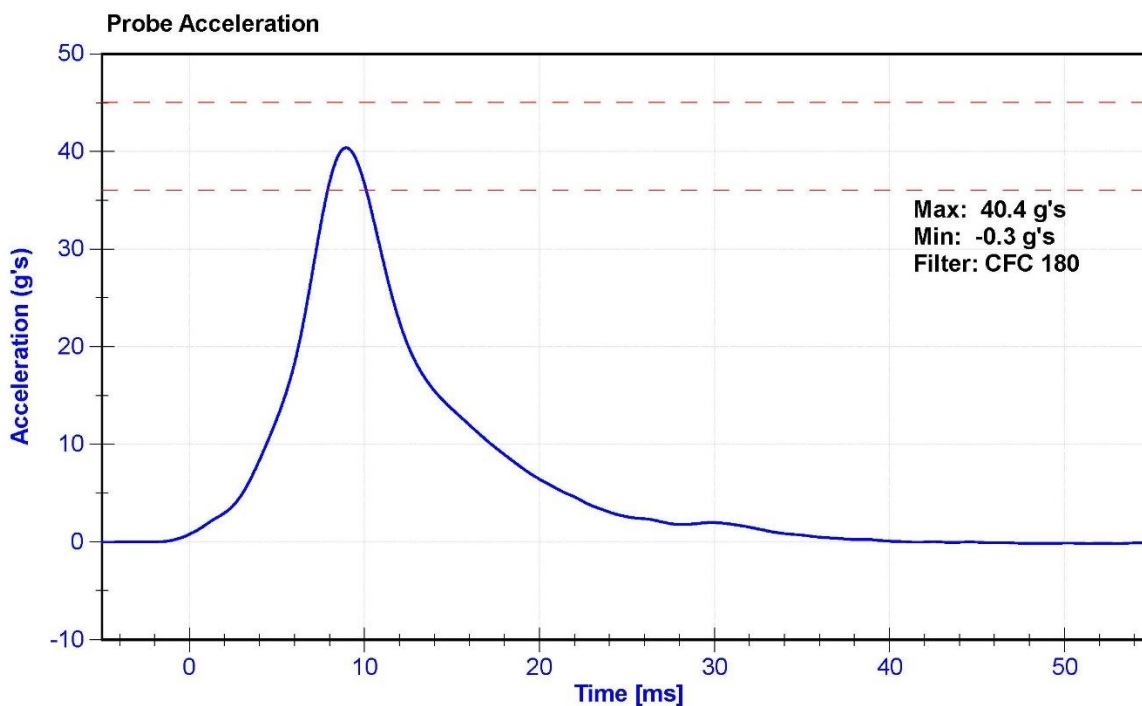
ATD Manufacturer	FTSS	Test Technician	D.Reinhard
ATD Serial Number	300	Laboratory Supervisor	K. Brogan

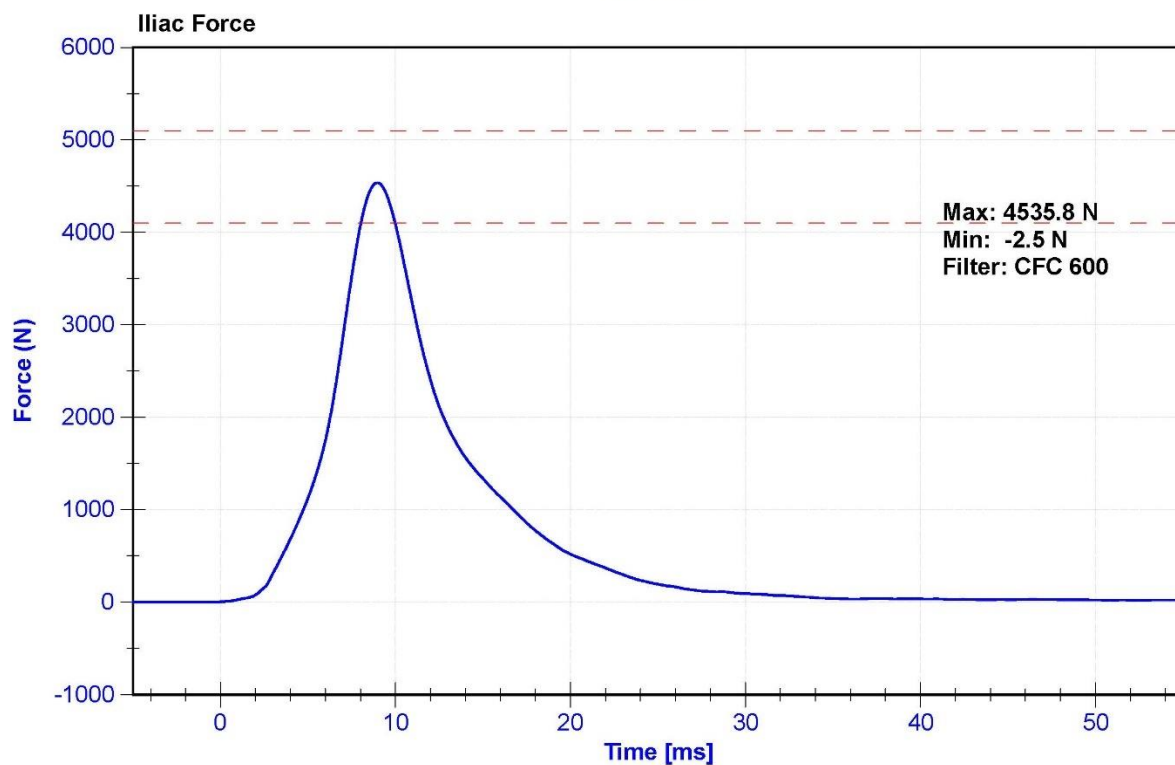
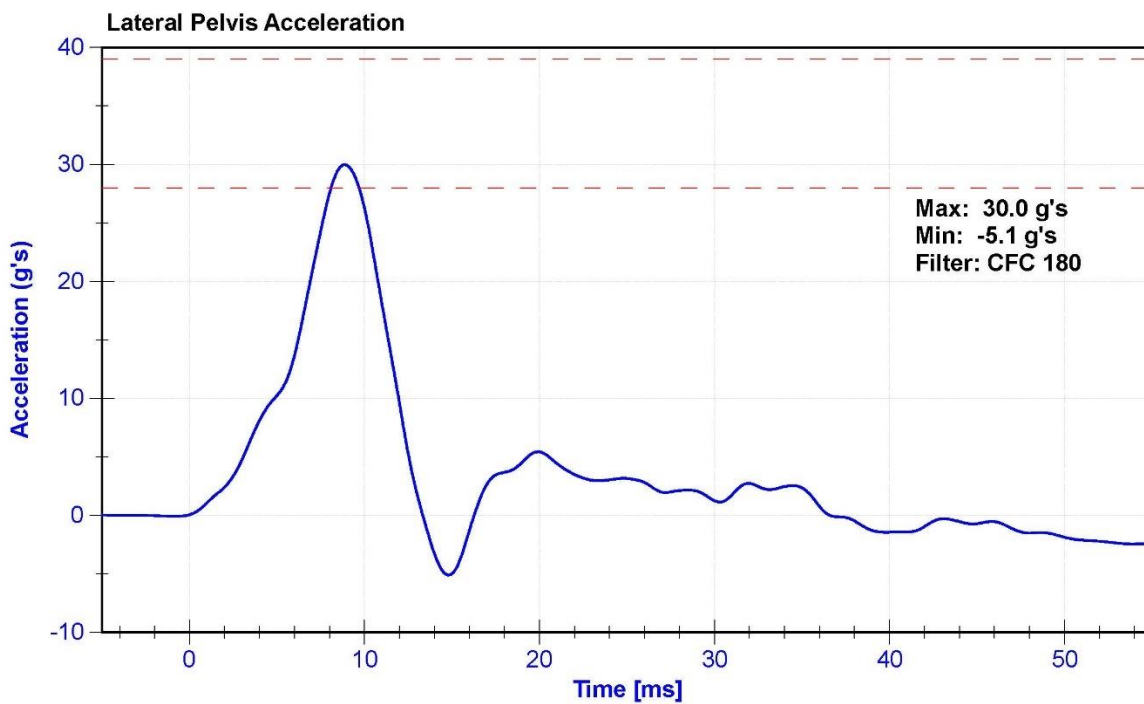
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.9	Pass
Humidity	10	70	%	39	Pass
Velocity	4.2	4.4	m/s	4.26	Pass
Probe Acceleration	36	45	g's	40.4	Pass
Lateral Pelvis Acceleration	28	39	g's	30.0	Pass
Iliac Force	4100	5100	N	4535.8	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	T25885	10/25/2021	4/23/2022
Pelvis Y Accelerometer	Endevco	P51731	11/19/2021	5/18/2022
Iliac Load Cell	Denton	279-FY	9/14/2021	9/14/2022





CALIBRATION TEST RESULTS

POST-TEST

SID-IIS 5TH PERCENTILE FEMALE - DRIVER ATD

SERIAL NO: 300

(CONFIGURED FOR LEFT SIDE IMPACT)

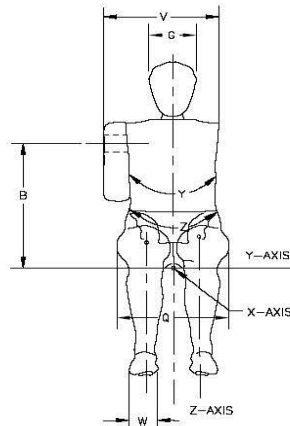
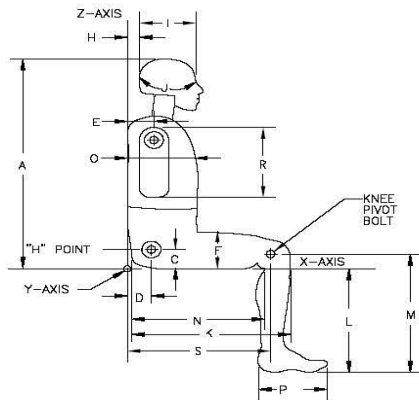


External Measurements - SID-IIs

Technician: K. Brogan

Date: 05/23/2022

Dummy Serial Number: 300



Symbol	Description	Specification (mm)		Result (mm)	Pass/Fail
A	Sitting Height	772	788	780	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	102	Pass
F	Thigh Clearance	119	135	125	Pass
G	Head Breadth	140	148	145	Pass
H	Head Back from Backline	40	46	42	Pass
I	Head Depth	178	188	185	Pass
J	Head Circumference	541	551	545	Pass
K	Buttock to Knee Length	514	540	525	Pass
L	Popliteal Height	343	369	362	Pass
M	Knee Pivot to floor height	392	409	400	Pass
N	Buttock Popliteal Length	416	442	430	Pass
O	Chest Depth w/o jacket	195	211	202	Pass
P	Foot Length	216	232	221	Pass
Q	Hip Breadth (w/pelvic plugs)	313	323	315	Pass
R	Arm Length	249	259	250	Pass
S	Knee Joint to seatback	477	493	486	Pass
V	Shoulder Width	341	357	350	Pass
W	Foot Width	78	94	86	Pass
Y	Chest Circumference w/jacket	851	881	879	Pass
Z	Waist Circumference	761	791	775	Pass

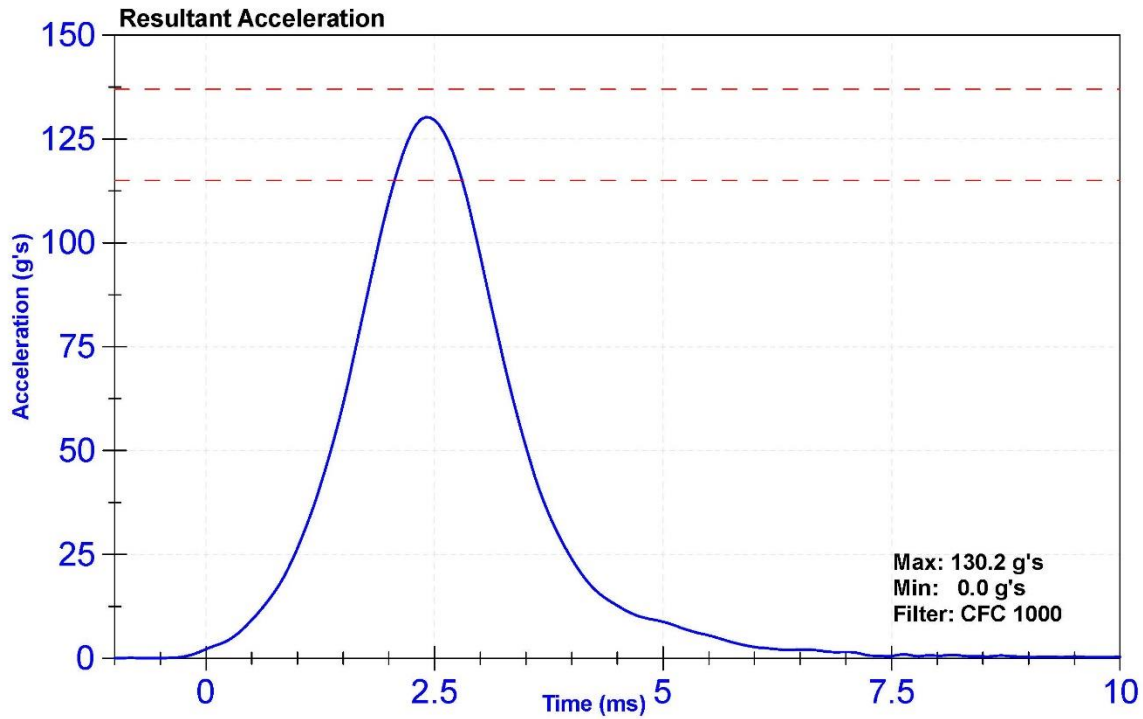
ATD Manufacturer	FTSS	Test Technician	B. Kirchner
ATD Serial Number	300	Laboratory Supervisor	K. Brogan

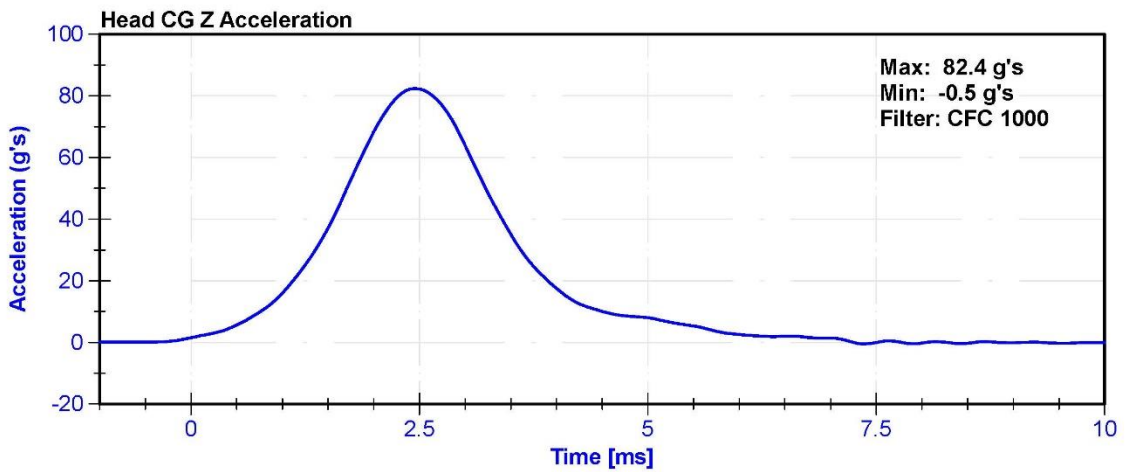
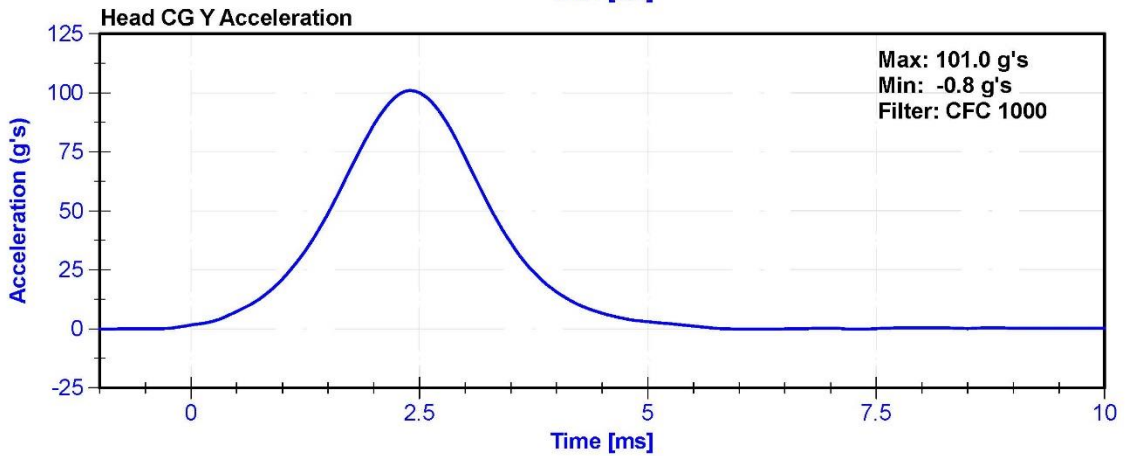
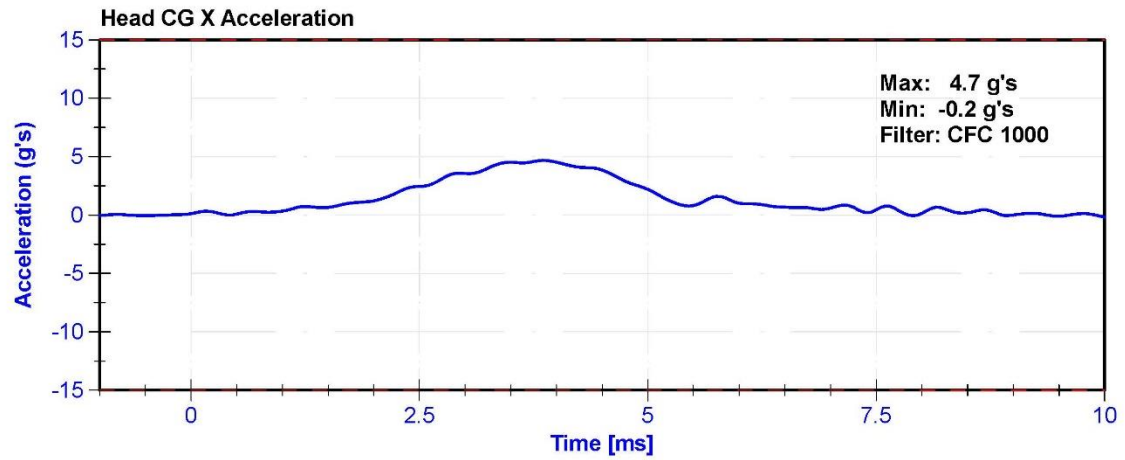
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.2	Pass
Humidity	10	70	%	35.4	Pass
Resultant Acceleration	115	137	g's	130.2	Pass
Oscillation	0	15	%	1.6	Pass
Fore-Aft Acceleration	-15	15	g's	4.7	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibratio Date	Calibratio Due Date
X Accelerometer	Endevco	P59018	5/17/2022	11/13/2022
Y Accelerometer	Endevco	P79189	5/17/2022	11/13/2022
Z Accelerometer	Endevco	P58777	5/17/2022	11/13/2022





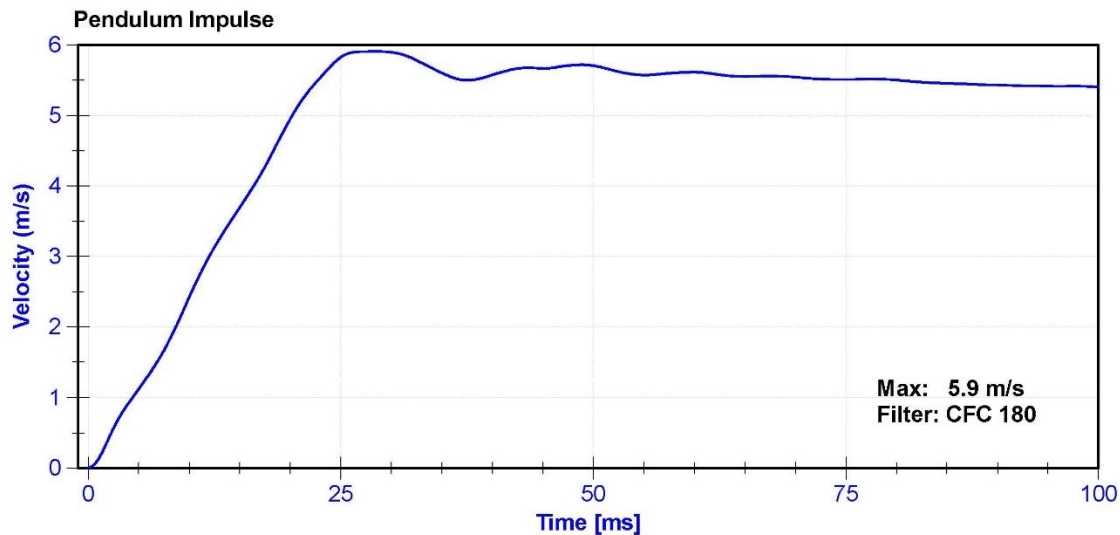
ATD Manufacturer	FTSS	Test Technician	S. Vacanti
ATD Serial Number	300	Laboratory Supervisor	K. Brogan

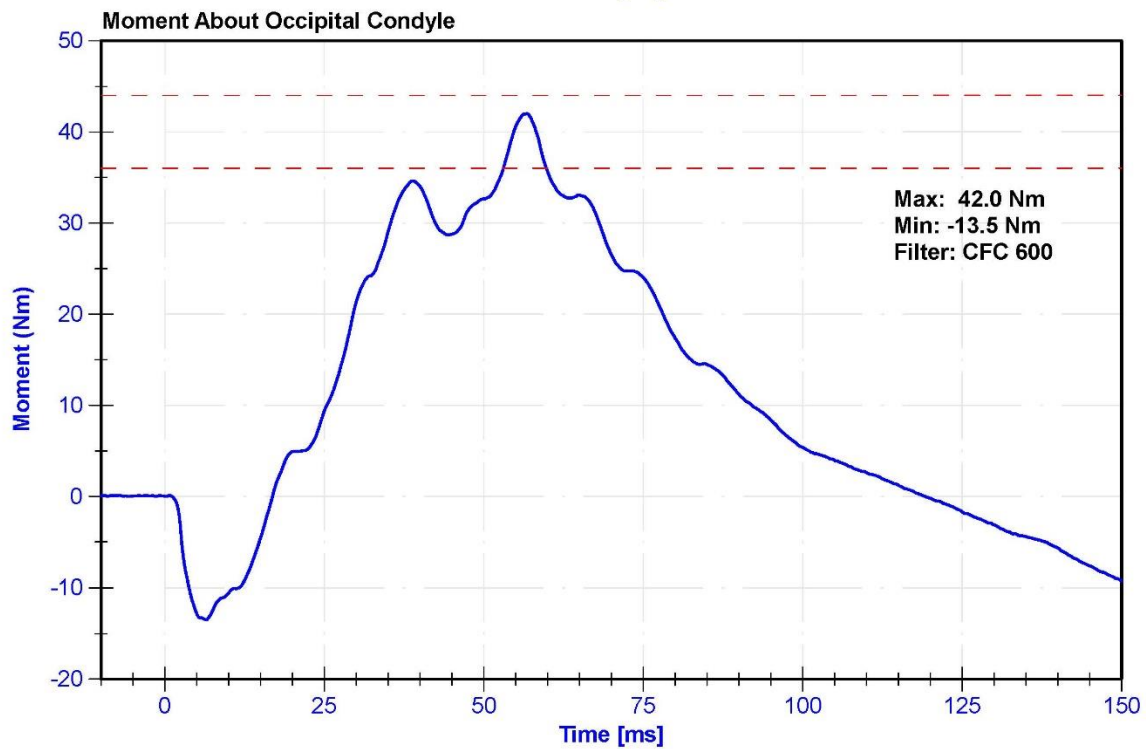
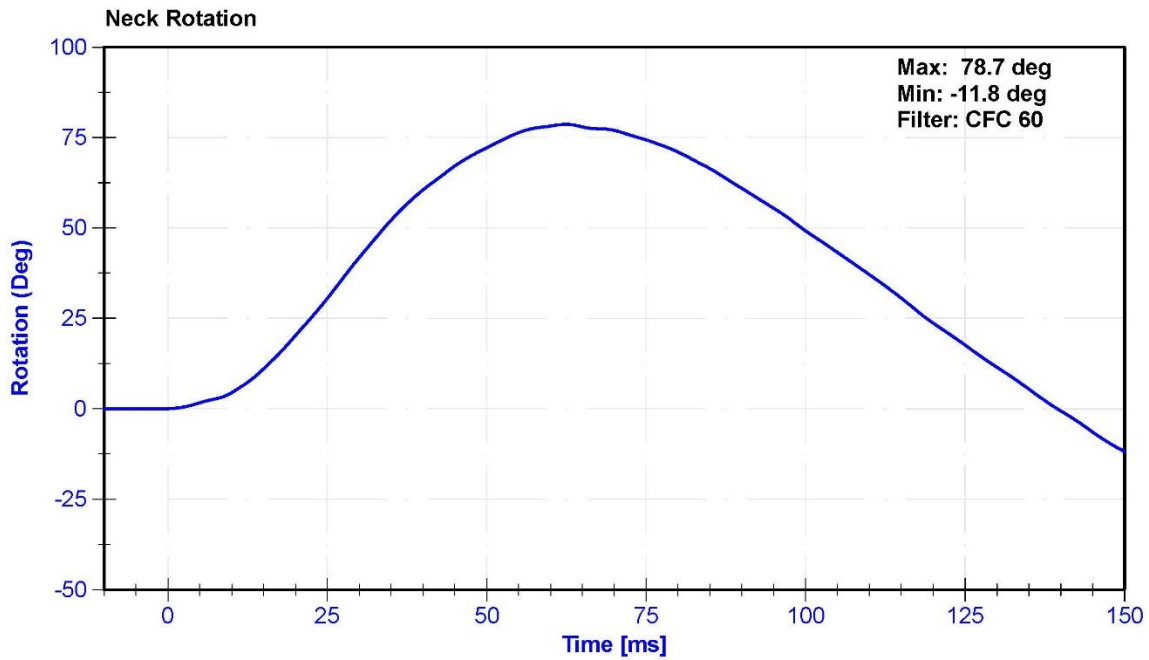
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.5	Pass
Humidity	10	70	%	36.5	Pass
Velocity	5.51	5.63	m/s	5.572	Pass
Pendulum Impulse at 10ms	2.2	2.8	m/s	2.42	Pass
Pendulum Impulse at 15ms	3.3	4.1	m/s	3.69	Pass
Pendulum Impulse at 20ms	4.4	5.4	m/s	4.95	Pass
Pendulum Impulse at 25ms	5.4	6.1	m/s	5.83	Pass
Pendulum Impulse from 25 to 100ms	5.5	6.2	m/s	5.91	Pass
Neck Rotation	71	81	deg	78.7	Pass
Time at Maximum Rotation	50	70	ms	62.4	Pass
Moment about the OC	36	44	Nm	42.0	Pass
Moment Decay to 0 Nm	102	126	ms	119.2	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	7231CT	10/28/2021	10/28/2022
Pendulum Potentiometer	Servo	4961	2/23/2022	2/23/2023
Condyle Potentiometer	Servo	DS185	11/12/2021	11/12/2022
Upper Neck Load Cell	Denton	1716A-1037-FY	6/29/2021	6/29/2022





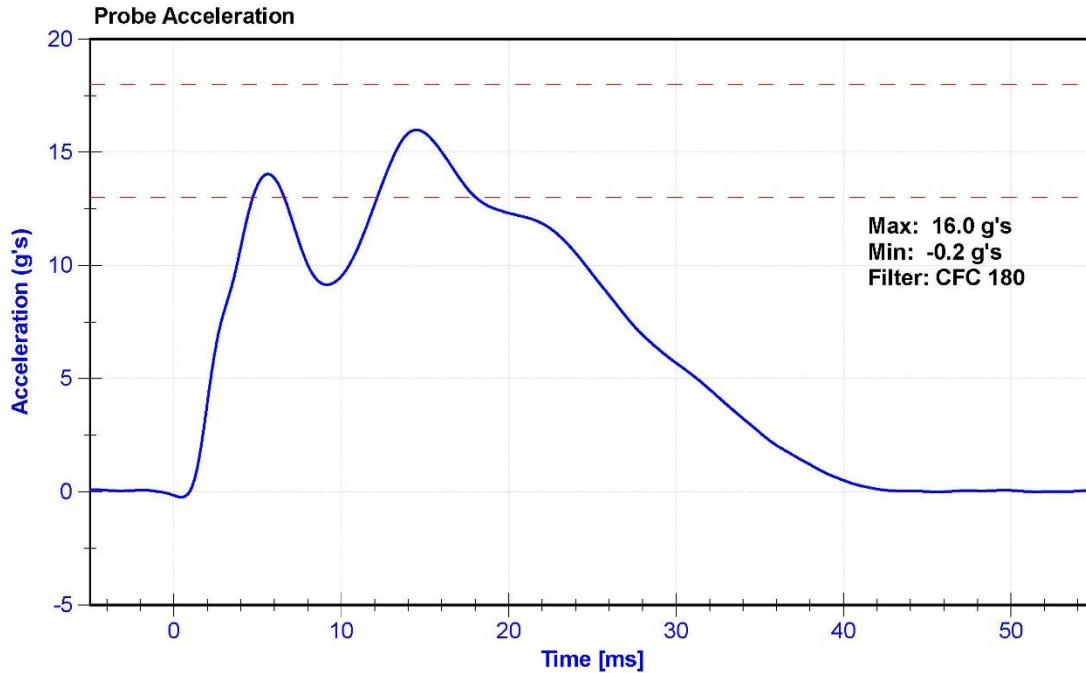
ATD Manufacturer	FTSS	Test Technician	B. Kirchner
ATD Serial Number	300	Laboratory Supervisor	K. Brogan

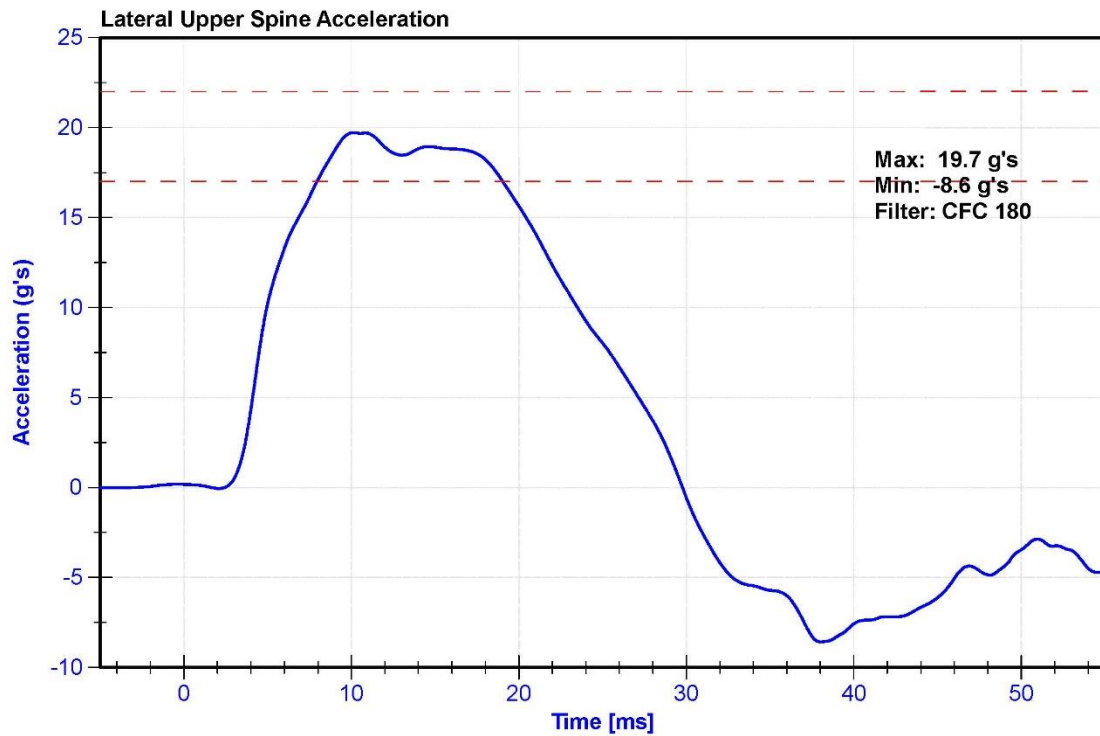
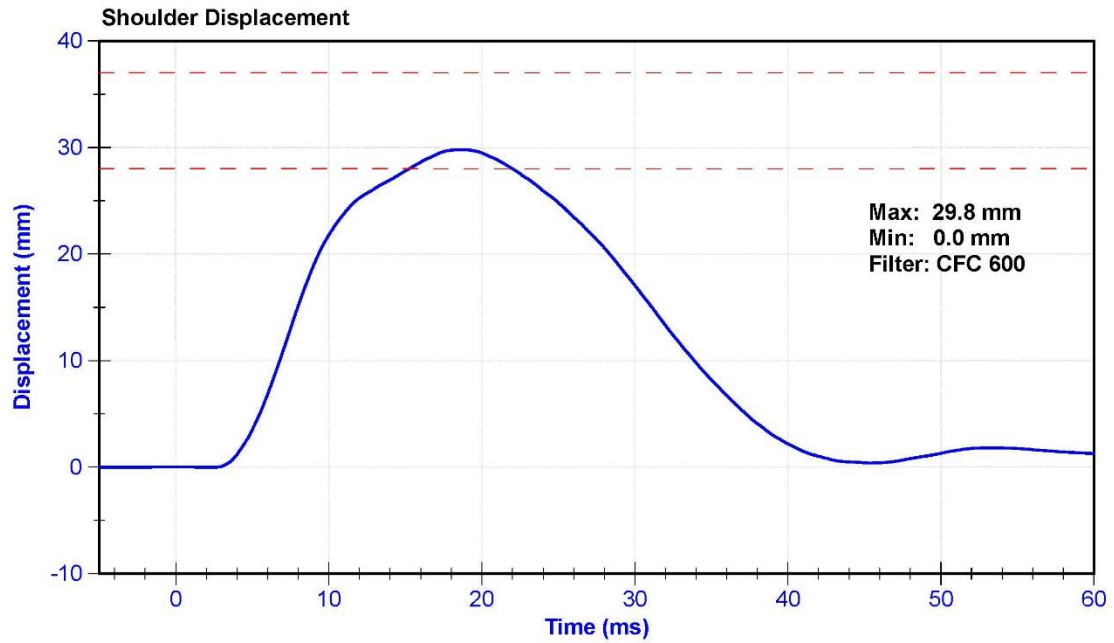
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.4	Pass
Humidity	10	70	%	51.2	Pass
Velocity	4.2	4.4	m/s	4.33	Pass
Probe Acceleration	13	18	g's	16.0	Pass
Shoulder Deflection	28	37	mm	29.8	Pass
Lateral Upper Spine Acceleration	17	22	g's	19.7	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	P51736	10/25/2021	10/25/2022
Shoulder Potentiometer	Servo	053GFE	5/18/2022	11/16/2022
Upper Spine Y Accelerometer	Endevco	T20880	5/17/2022	11/13/2022





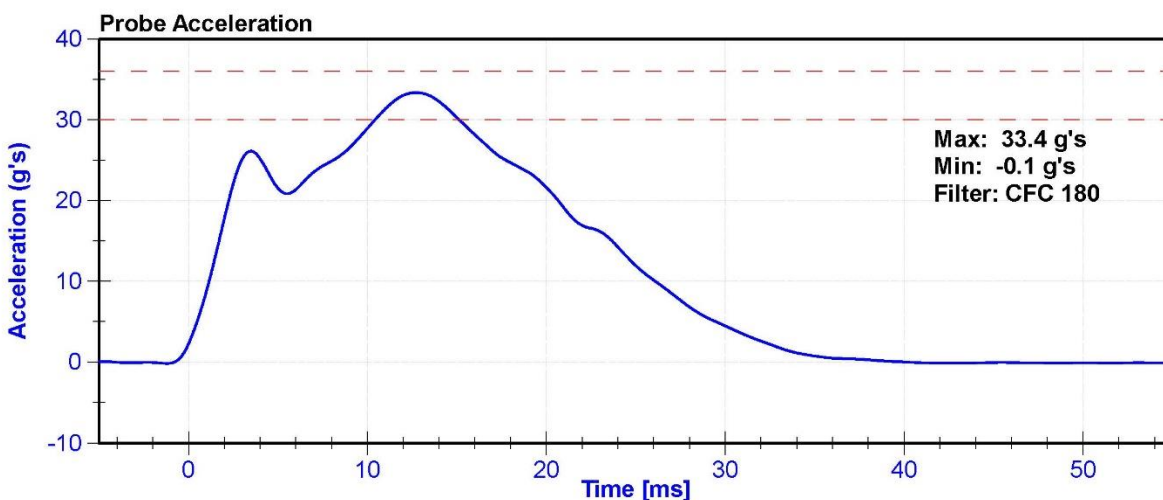
ATD Manufacturer	FTSS	Test Technician	B. Kirchner
ATD Serial Number	300	Laboratory Supervisor	K. Brogan

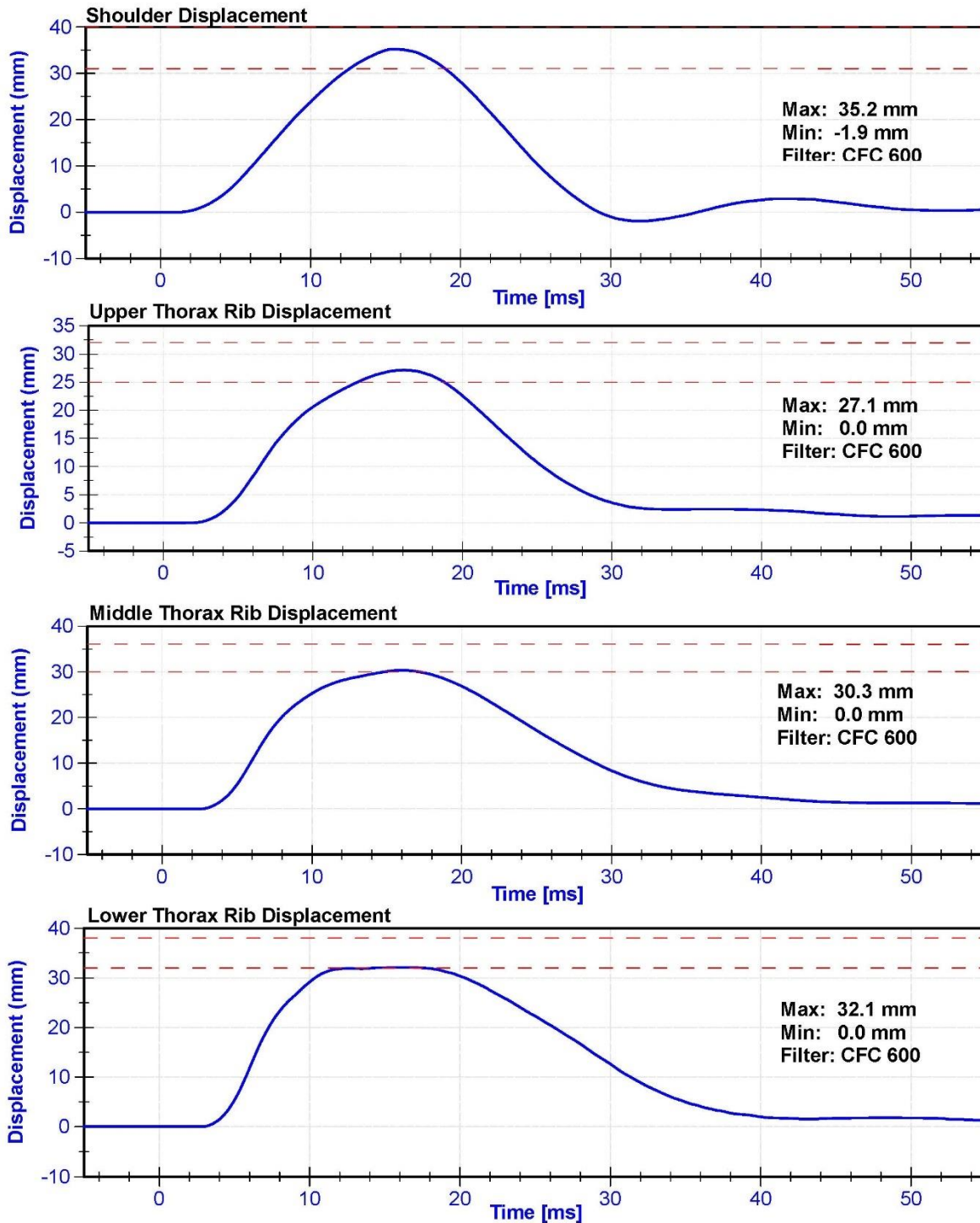
Results

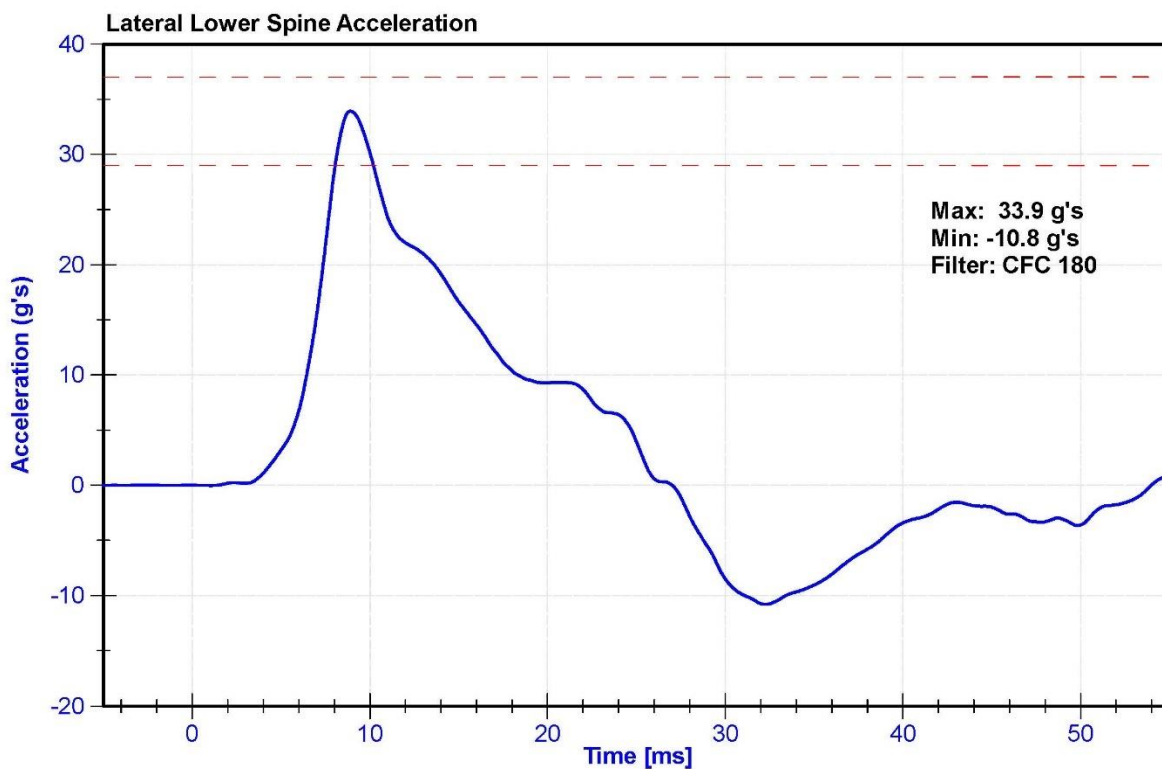
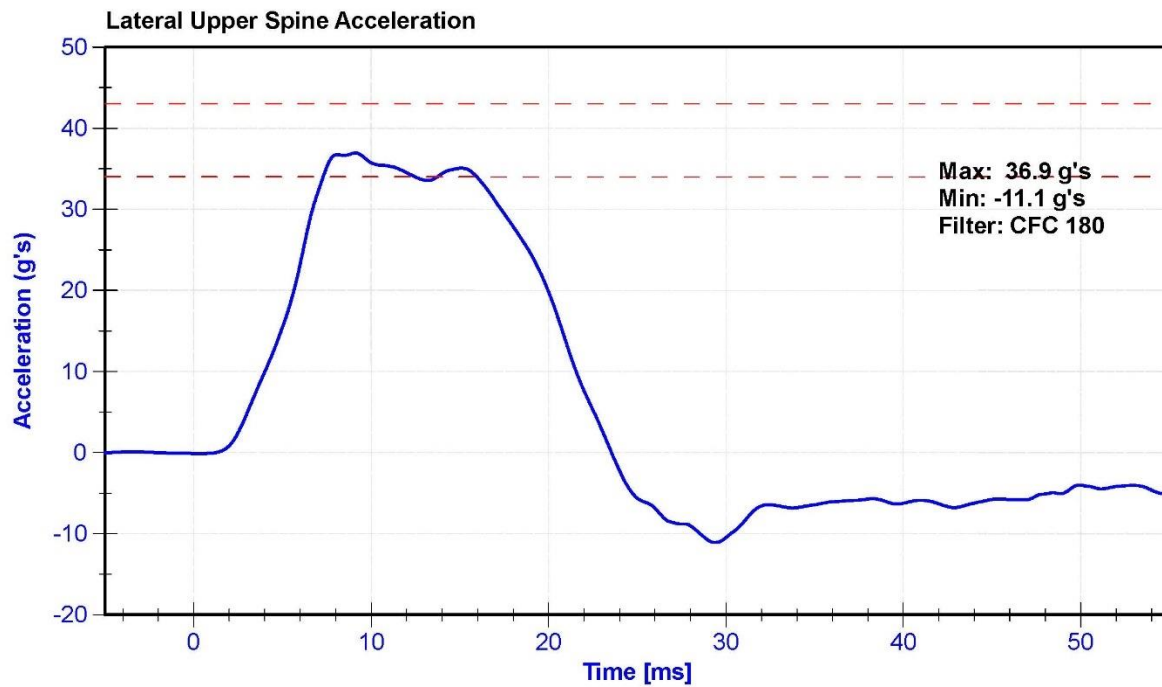
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.4	Pass
Humidity	10	70	%	51.2	Pass
Velocity	6.6	6.8	m/s	6.74	Pass
Probe Acceleration after 5 ms	30	36	g's	33.4	Pass
Lateral Upper Spine Acceleration	34	43	g's	36.9	Pass
Lateral Lower Spine Acceleration	29	37	g's	33.9	Pass
Shoulder Deflection	31	40	mm	35.2	Pass
Upper Thorax Rib Deflection	25	32	mm	27.1	Pass
Mid Thorax Rib Deflection	30	36	mm	30.3	Pass
Lower Thorax Rib Deflection	32	38	mm	32.1	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	P51736	10/25/2021	10/25/2022
Upper Spine T1 Y Accelerometer	Endevco	T20880	5/17/2022	11/13/2022
Upper Spine T12 Y Accelerometer	Endevco	P52071	5/17/2022	11/13/2022
Shoulder Potentiometer	Servo	053GFE	5/18/2022	11/16/2022
Upper Thorax Rib Potentiometer	Servo	451GFE	5/18/2022	11/16/2022
Middle Thorax Rib Potentiometer	Servo	040GFE	5/18/2022	11/16/2022
Lower Thorax Rib Potentiometer	Servo	1156GFE	5/18/2022	11/16/2022







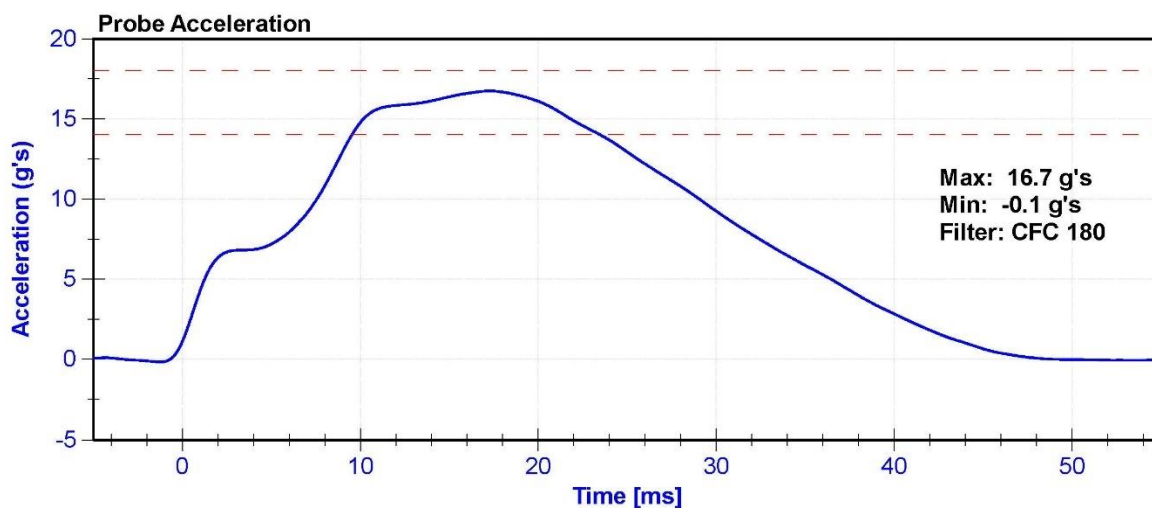
ATD Manufacturer	FTSS	Test Technician	B. Kirchner
ATD Serial Number	300	Laboratory Supervisor	K. Brogan

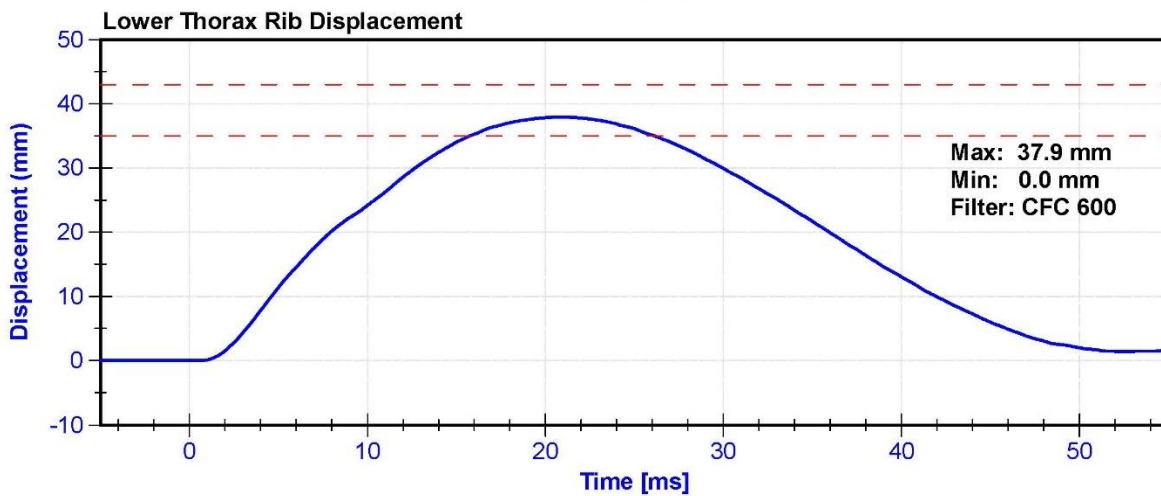
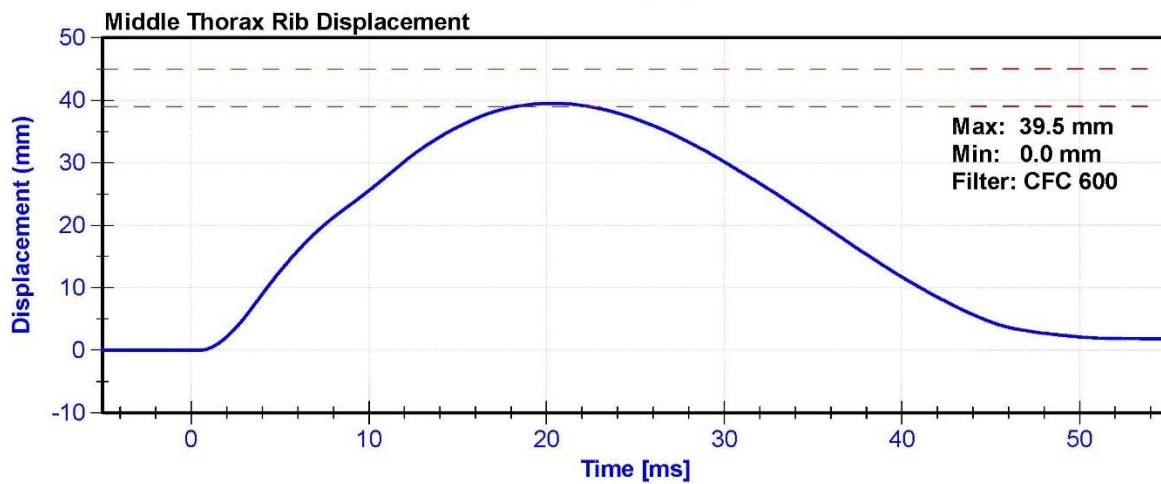
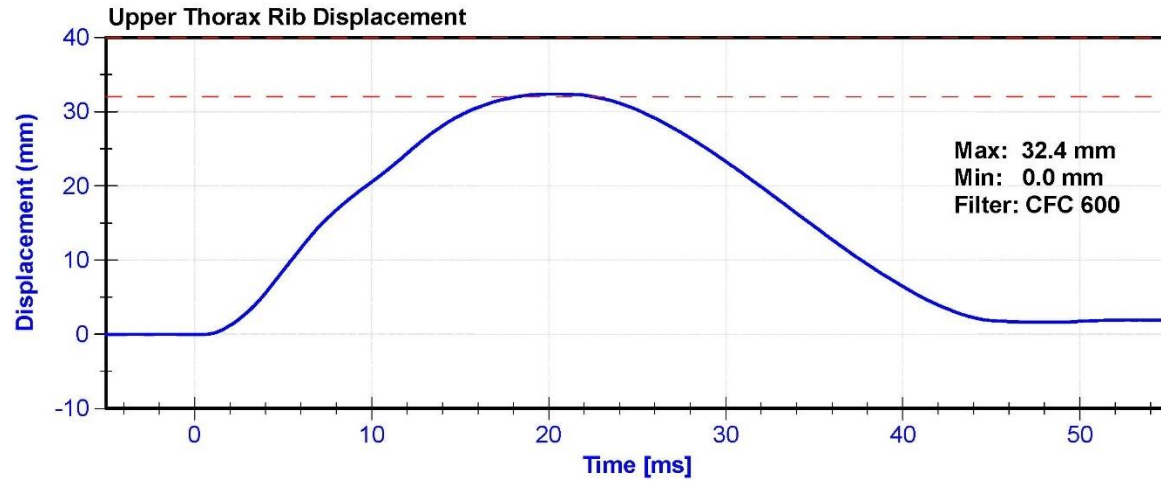
Results

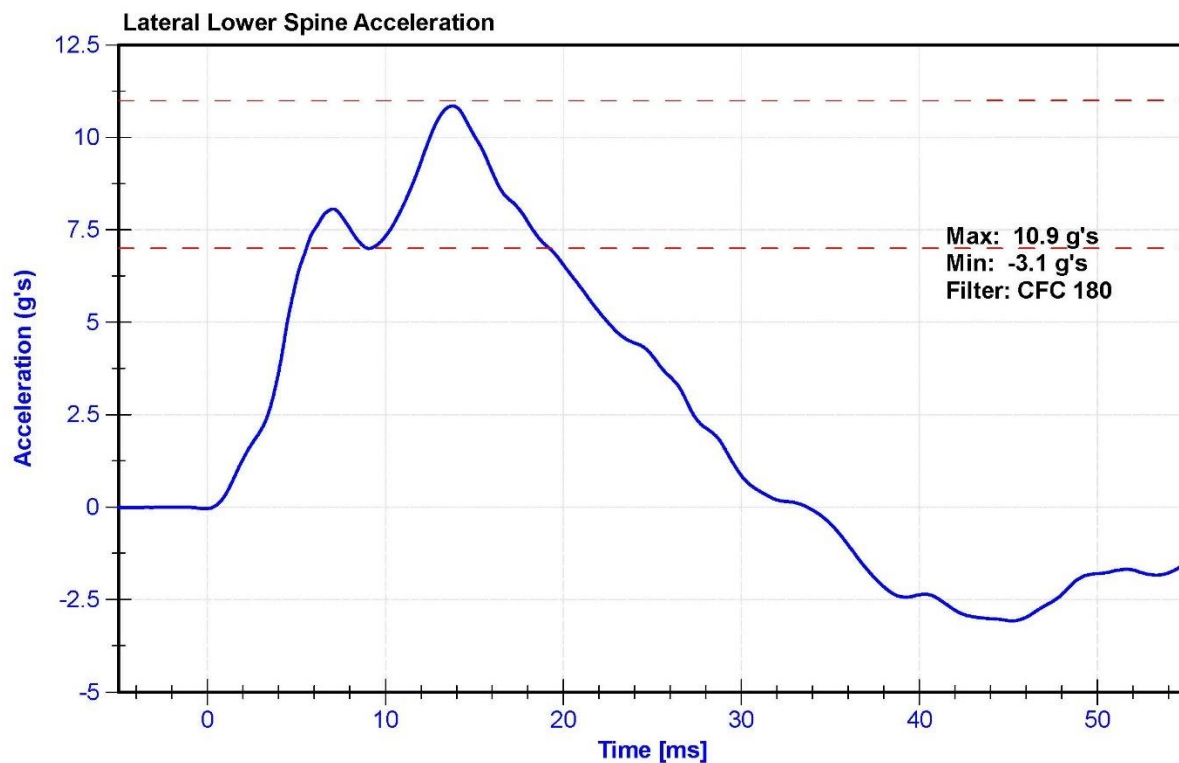
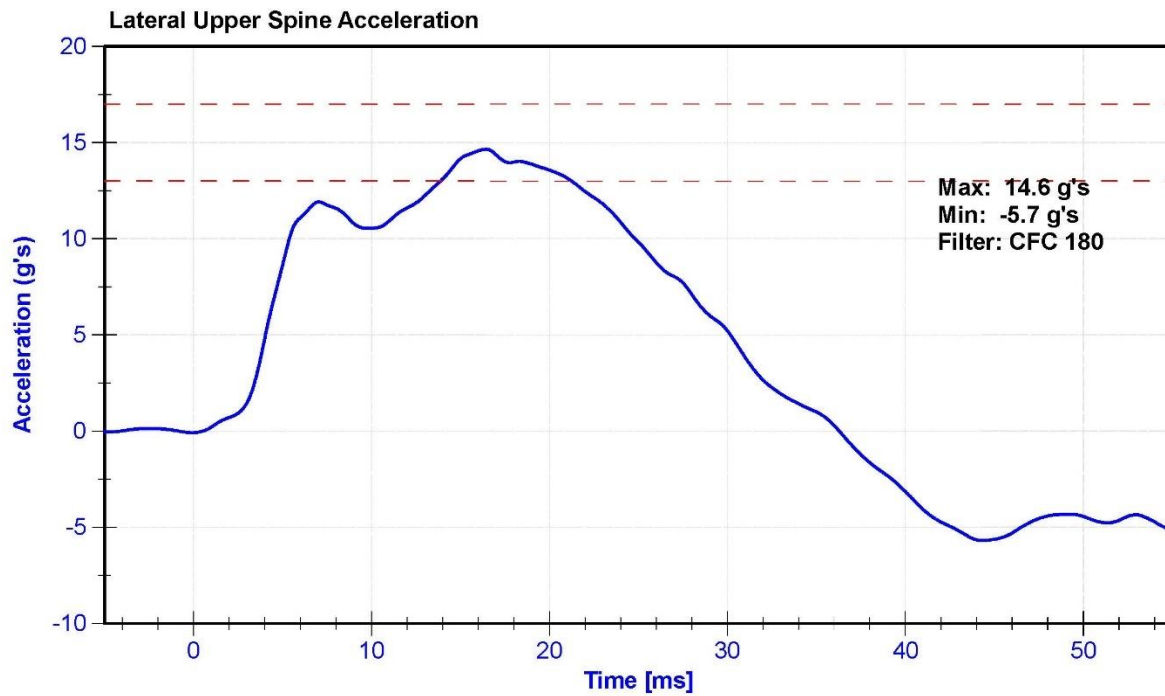
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.4	Pass
Humidity	10	70	%	51.2	Pass
Velocity	4.2	4.4	m/s	4.37	Pass
Probe Acceleration	14	18	g's	16.7	Pass
Lateral Upper Spine Acceleration	13	17	g's	14.6	Pass
Lateral Lower Spine Acceleration	7	11	g's	10.9	Pass
Upper Thorax Rib Deflection	32	40	mm	32.4	Pass
Middle Thorax Rib Deflection	39	45	mm	39.5	Pass
Lower Thorax Rib Deflection	35	43	mm	37.9	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	P51736	10/25/2021	10/25/2022
Upper Spine Y Accelerometer	Endevco	T20880	5/17/2022	11/13/2022
Lower Spine Y Accelerometer	Endevco	P52071	5/17/2022	11/13/2022
Upper Thorax Rib Potentiometer	Servo	451GFE	5/18/2022	11/16/2022
Middle Thorax Rib Potentiometer	Servo	040GFE	5/18/2022	11/16/2022
Lower Thorax Rib Potentiometer	Servo	1156GFE	5/18/2022	11/16/2022







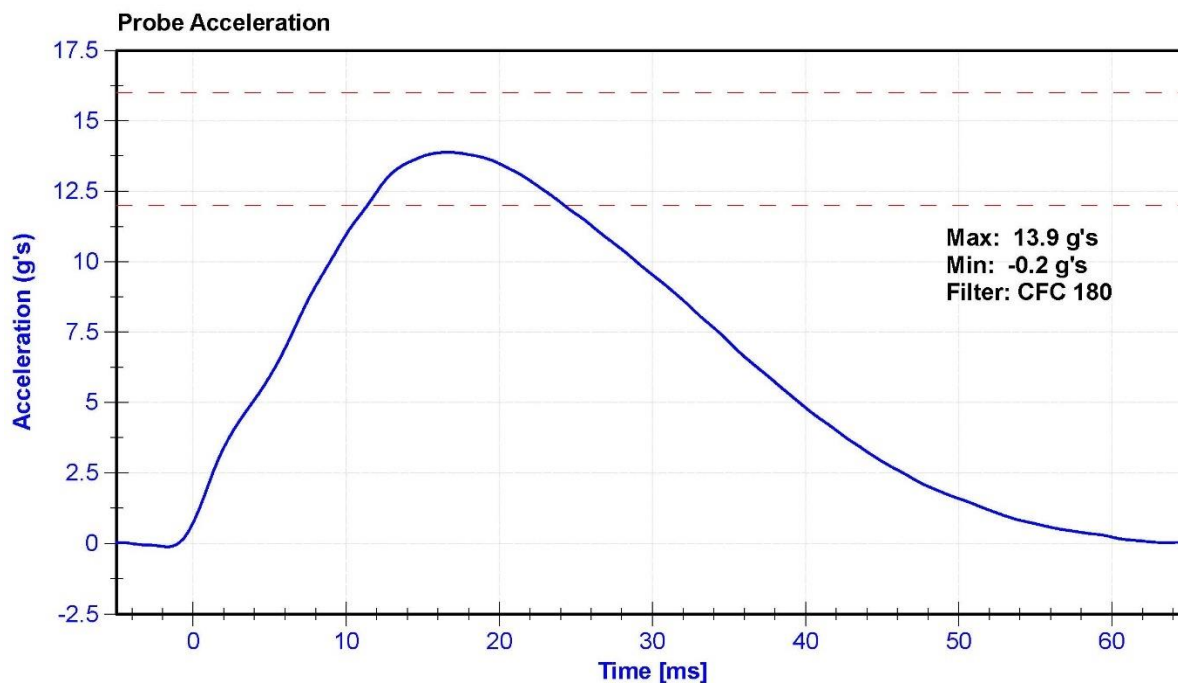
ATD Manufacturer	FTSS	Test Technician	C. Mantell
ATD Serial Number	300	Laboratory Supervisor	K. Brogan

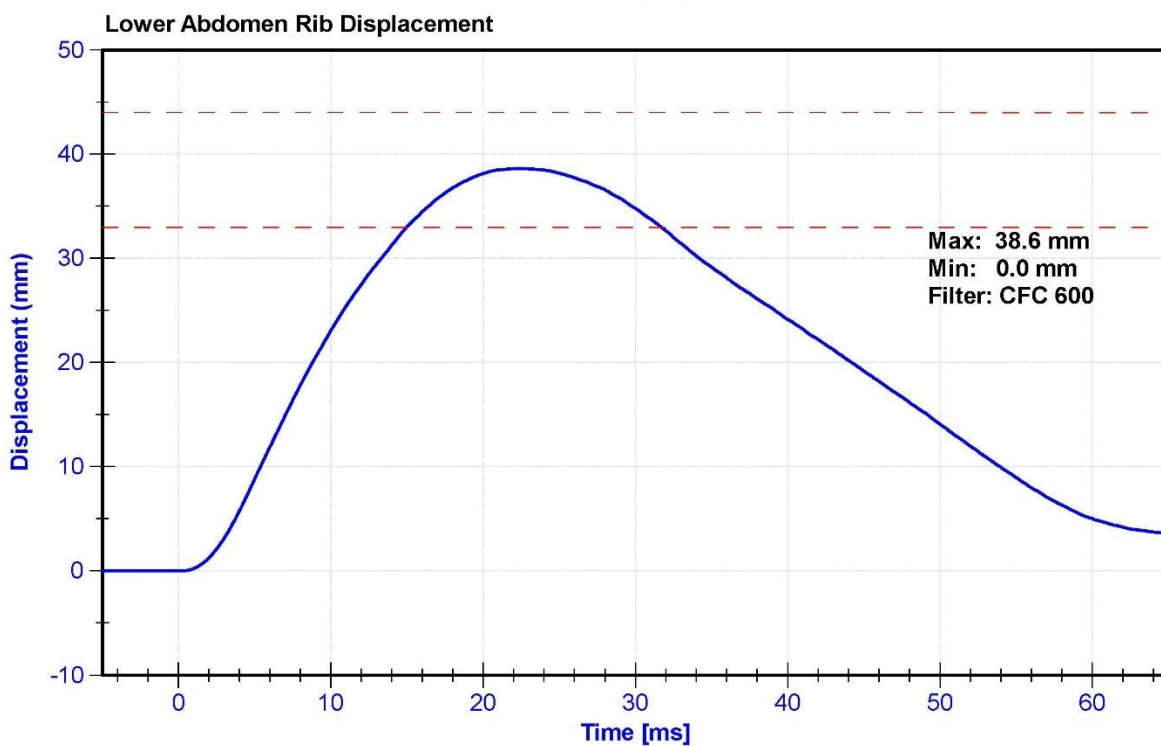
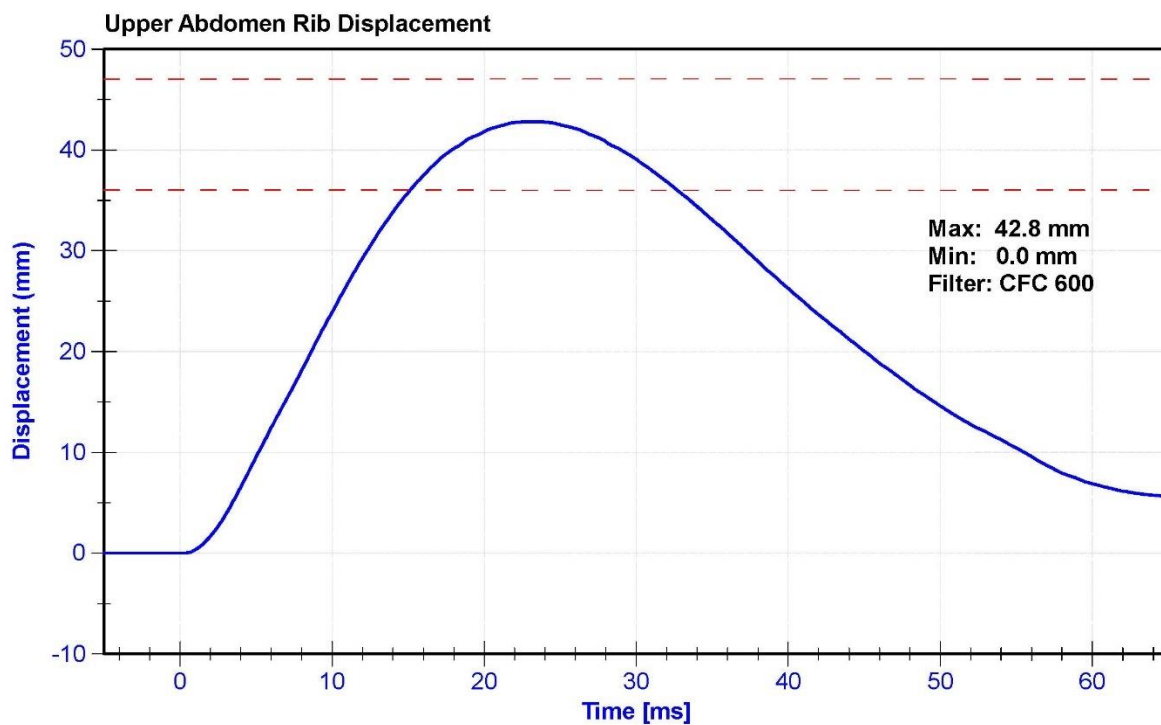
Results

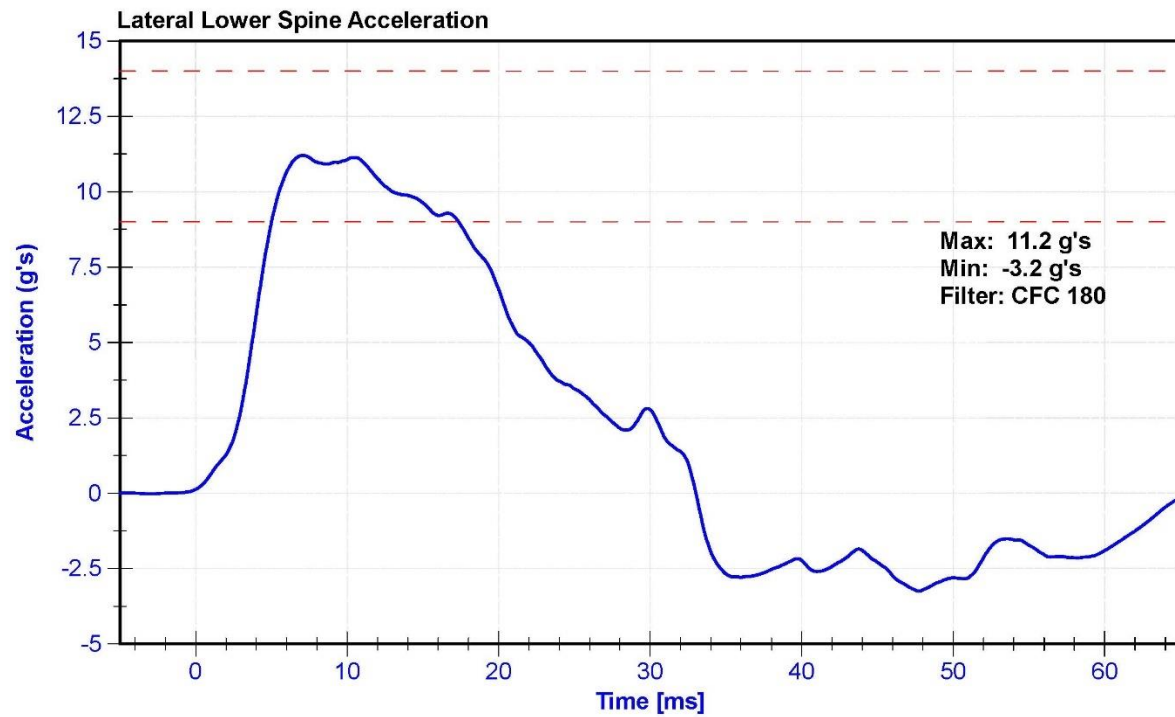
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.2	Pass
Humidity	10	70	%	51.3	Pass
Velocity	4.2	4.4	m/s	4.30	Pass
Probe Acceleration	12	16	g's	13.9	Pass
Lateral Lower Spine Acceleration	9	14	g's	11.2	Pass
Upper Abdomen Rib Deflection	36	47	mm	42.8	Pass
Lower Abdomen Rib Deflection	33	44	mm	38.6	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accelerometer	Endevco	P51736	10/25/2021	10/25/2022
Lower Spine Y Accelerometer	Endevco	P52071	5/17/2022	11/13/2022
Upper Abdomen Rib Potentiometer	Servo	307GFE	5/20/2022	11/18/2022
Lower Abdomen Rib Potentiometer	Servo	308GFE	5/18/2022	11/16/2022







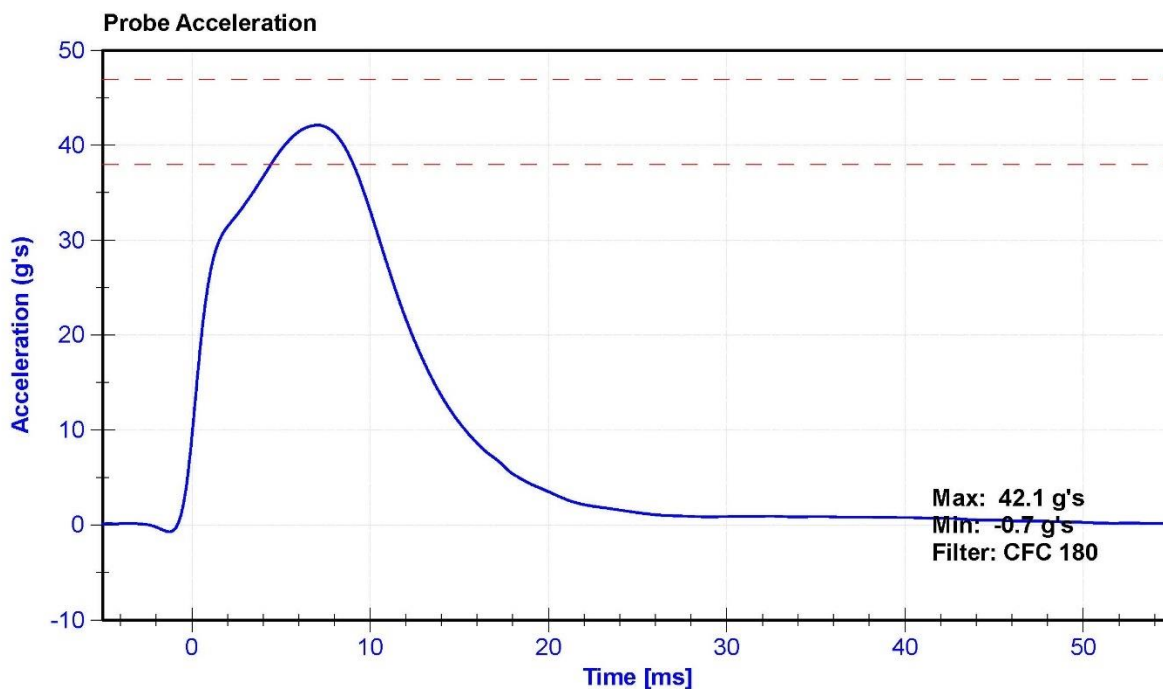
ATD Manufacturer	FTSS	Test Technician	C. Mantell
ATD Serial Number	300	Laboratory Supervisor	K. Brogan

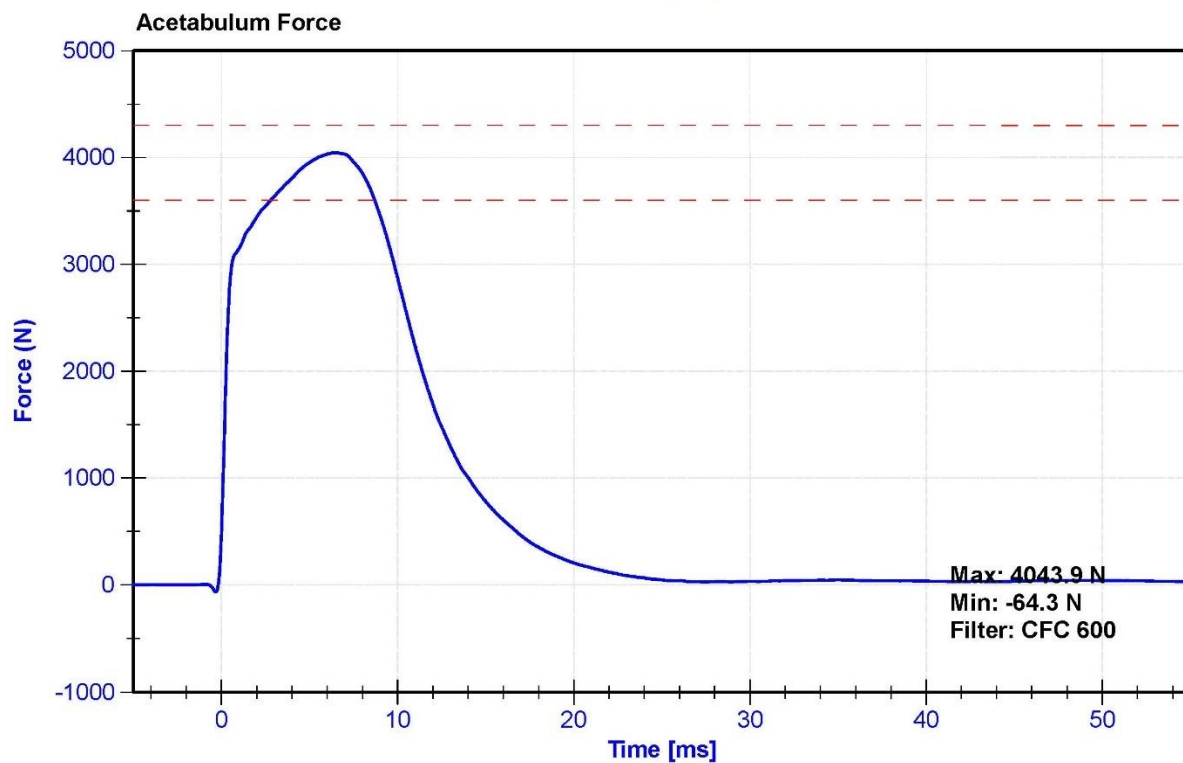
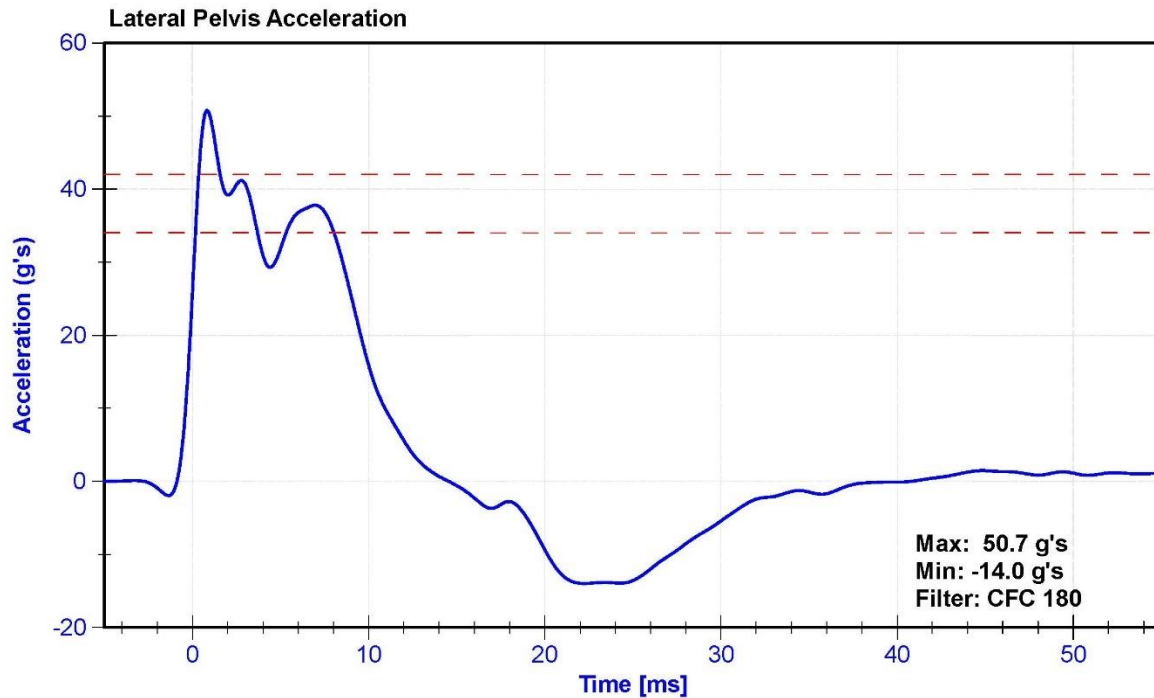
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.6	Pass
Humidity	10	70	%	51.9	Pass
Velocity	6.6	6.8	m/s	6.60	Pass
Probe Acceleration	38	47	g's	42.1	Pass
Lateral Pelvis Acceleration after 6ms	34	42	g's	37.8	Pass
Acetabulum Force	3600	4300	N	4043.9	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	P51736	10/25/2021	10/25/2022
Pelvis Y Accelerometer	Endevco	P51731	5/17/2022	11/13/2022
Acetabulum Load Cell	Denton	275-FY	9/14/2021	9/14/2022
Certification Plug	SACO			N/A
Crash Test Plug	SACO			N/A







CERTIFICATION

SID-11s Pelvis Plug Certification Test

Plug S/N 13067

Test Number 10387

Report Number 10422

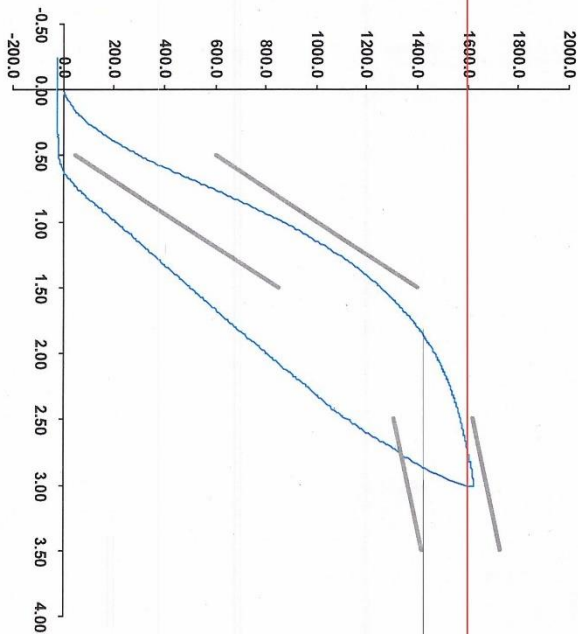
Test Date 7/30/2019 2:48:19 PM

Force (-N) vs Extension (-mm)

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

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

Notes:



Operator

Part Number 180-4450

Template No 107 08-Jul-21

SACO Research

By: _____ Date: _____

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



CRASH Impact SIDB
5/23/2022

SID-Ils Pelvis Plug Certification Test

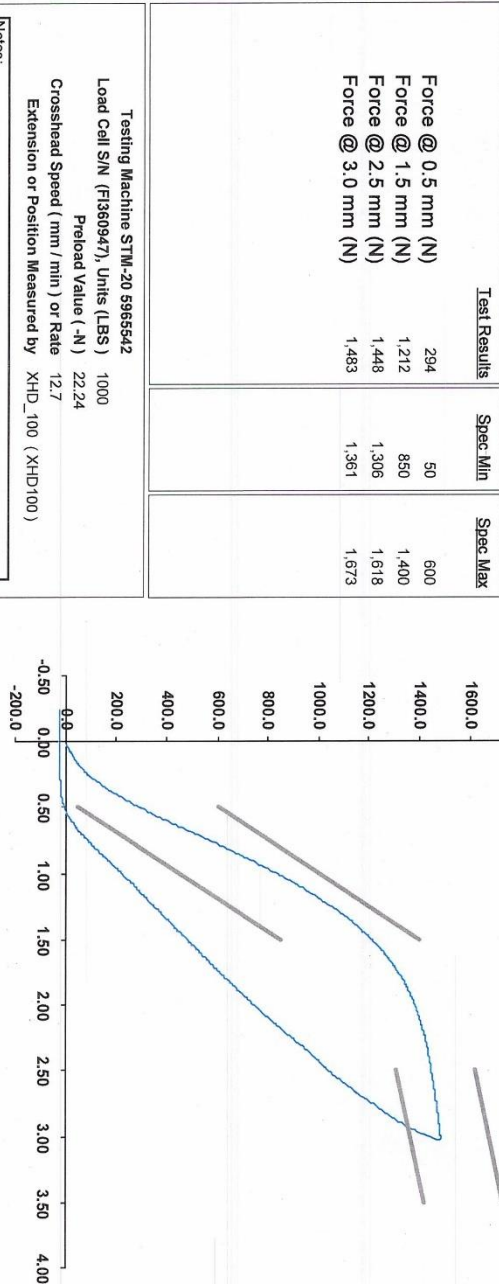
Plug S/N 13904

Test Number 13378

Report Number 13423

Test Date 5/20/2020 8:33:19 PM

Force (-N) vs Extension (-mm)



Operator _____

Part Number 180-4450

Template No 107 08-Jul-21

SACO Research

By: _____ Date: _____

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



SID-IIS Pelvis Plug Certification Test

Plug S/N 13101
Test Number 10421
Report Number 10456
Test Date 7/30/2019 4:53:55 PM

Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	278.90	50.00
Force @ 1.5 mm (N)	1,260.84	600.00
Force @ 2.5 mm (N)	1,605.72	1,400.00
Force @ 3.0 mm (N)	1,660.67	1,618.00
	1,361.00	1,673.00

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)

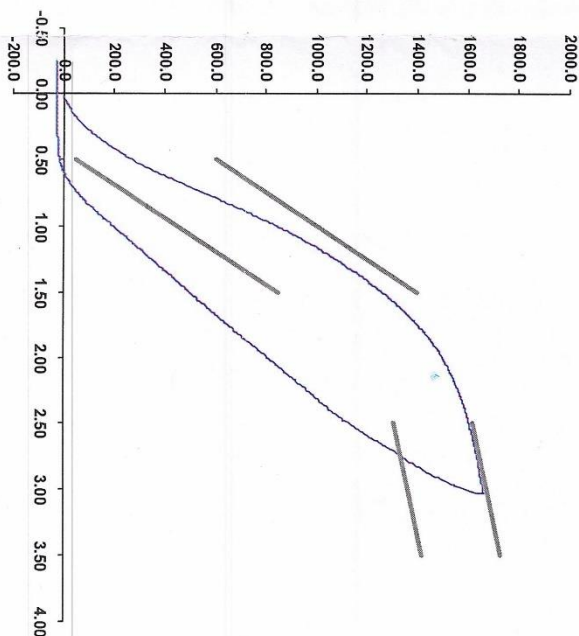
Notes:

Template No 107 30-Jul-19
SACO Research

By: DX Date: 7/30/2019
SACO Research 41735 Elm St, #401 Murrieta, CA 92562 Tel 310-694-2082 FAX

Operator

Part Number 180-4450



300
NON-IMPACT
5/23/2022

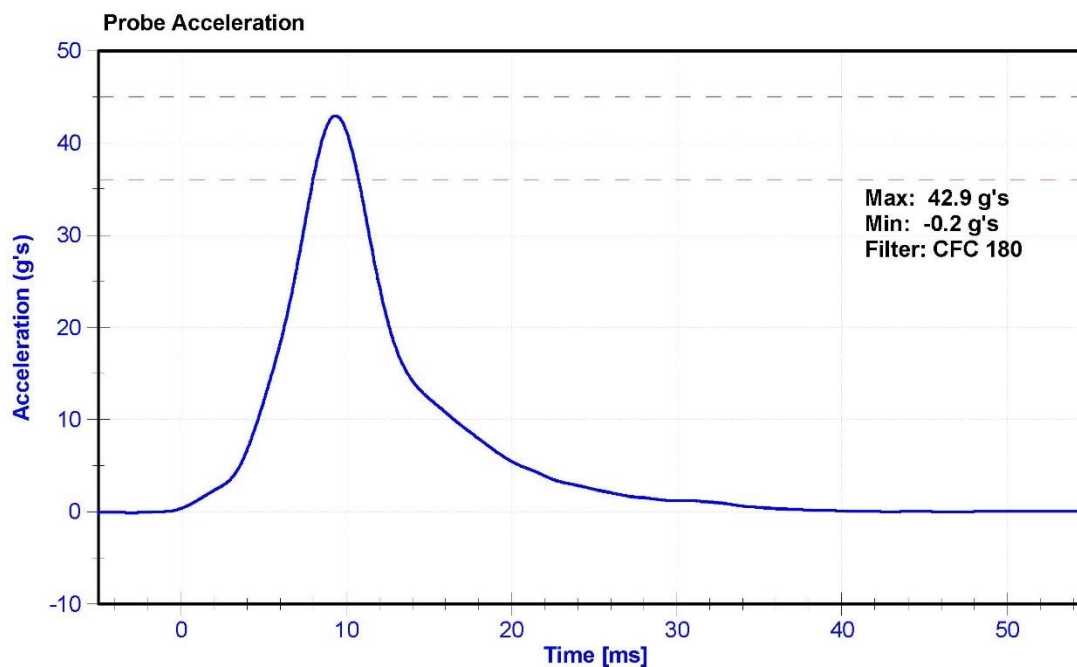
ATD Manufacturer	FTSS	Test Technician	C. Mantell
ATD Serial Number	300	Laboratory Supervisor	K. Brogan

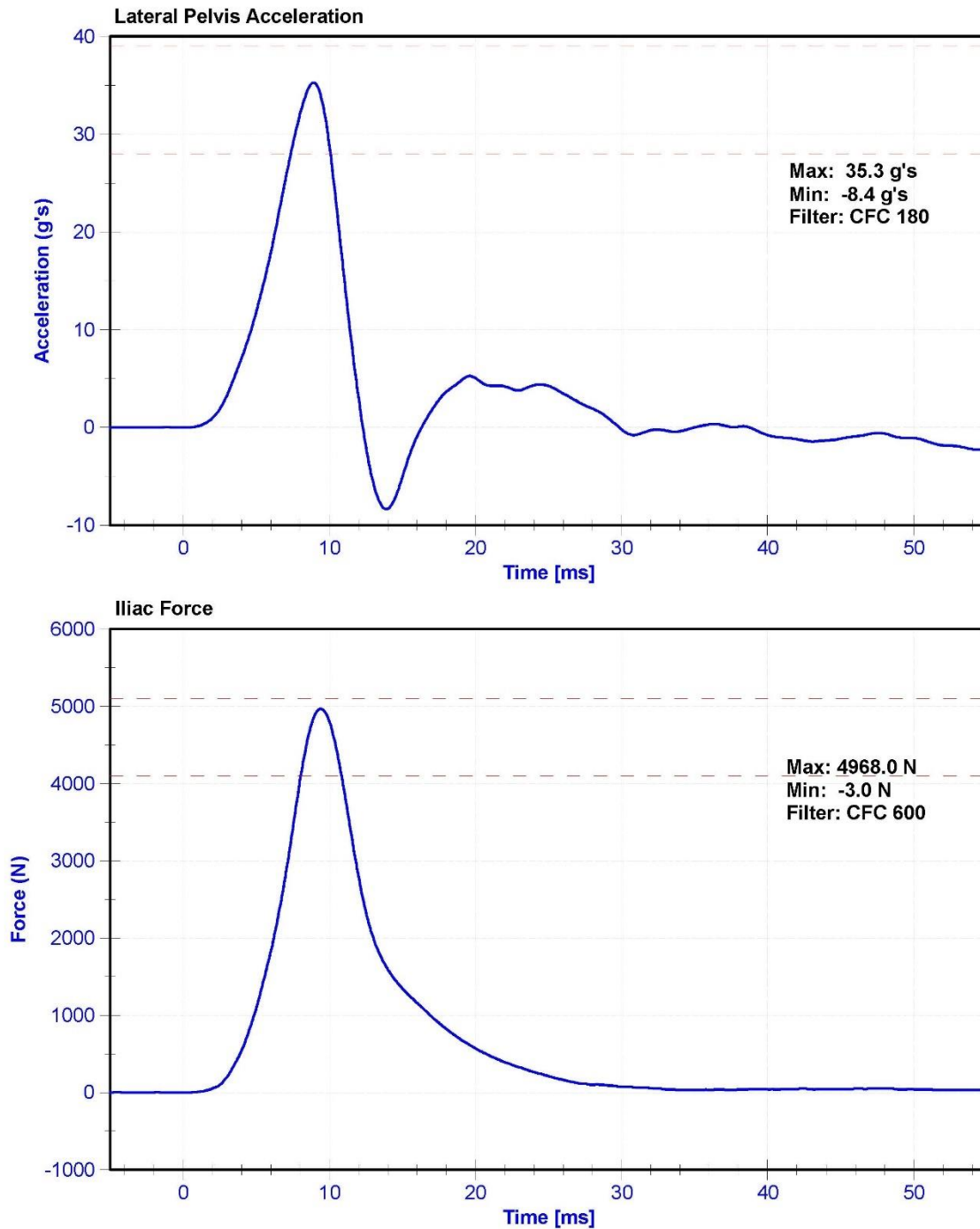
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.6	Pass
Humidity	10	70	%	51.9	Pass
Velocity	4.2	4.4	m/s	4.26	Pass
Probe Acceleration	36	45	g's	42.9	Pass
Lateral Pelvis Acceleration	28	39	g's	35.3	Pass
Iliac Force	4100	5100	N	4968.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	Endevco	P51736	10/25/2021	10/25/2022
Pelvis Y Accelerometer	Endevco	P51731	5/17/2022	11/13/2022
Iliac Load Cell	Denton	279-FY	9/14/2021	9/14/2022





APPENDIX D

TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

Table 1 – Dummy Instrumentation (SID-IIs)

			SID-IIs S/N: 300			
			Serial Number	Manufacturer	Calibration Date	
Head Accelerometers			X	P59018	Endevco	11/19/2021
			Y	P79189	Endevco	11/19/2021
			Z	P58777	Endevco	11/19/2021
Head Accelerometers - Redundant			X	P68057	Endevco	11/19/2021
			Y	P58986	Endevco	11/19/2021
			Z	P52025	Endevco	11/19/2021
Displacement Potentiometer	Shoulder		Y			
	Thoracic Rib	Upper	Y	451GFE	Servo	11/22/2021
		Middle	Y	040GFE	Servo	11/22/2021
		Lower	Y	1156GFE	Servo	11/22/2021
	Abdominal Rib	Upper	Y	307GFE	Servo	11/22/2021
		Lower	Y	308GFE	Servo	11/22/2021
Lower Spine Accelerometers (T12)			X	P64003	Endevco	11/19/2021
			Y	P52071	Endevco	11/19/2021
			Z	P17283	Endevco	11/19/2021
Acetabulum Load Cell			Y	275-FY	Denton	9/14/2021
Lilac Wing Load Cell			Y	279-FY	Denton	9/14/2021
Pelvis Plug (Struck Side)				14088	SACO	5/25/2020
Pelvis Plug (Non-Struck Side)				13097	SACO	7/30/2019

Table 2 – Vehicle Instrumentation

Vehicle Instrumentation		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	A315082	Measurement Specialties	3/9/2022
Vehicle Center of Gravity	Y	A374270	Measurement Specialties	3/9/2022
Vehicle Center of Gravity	Z	A374367	Measurement Specialties	3/9/2022
Left Floor Sill	Y	A399991	Measurement Specialties	4/22/2022
A-Pillar Sill	Y	A405618	Measurement Specialties	1/20/2022
A-Pillar Low	Y	A405620	Measurement Specialties	1/20/2022
A-Pillar Mid	Y	A405570	Measurement Specialties	3/24/2022
B-Pillar Sill	Y	A405543	Measurement Specialties	4/22/2022
B-Pillar Low	Y	A281030	Measurement Specialties	4/22/2022
B-Pillar Mid	Y	A280211	Measurement Specialties	3/25/2022
Driver Seat	Y	A372875	Measurement Specialties	4/25/2022
Engine Top	X	A352360	Measurement Specialties	5/4/2022
Engine Top	Y	A399936	Measurement Specialties	5/4/2022
Firewall	Y	A400766	Measurement Specialties	2/4/2022
Right Roof	Y	A374254	Measurement Specialties	12/29/2021
Right Floor Sill	Y	A374342	Measurement Specialties	3/31/2022
Rear Floorpan	X	A350928	Measurement Specialties	4/20/2022
Rear Floorpan	Y	A374275	Measurement Specialties	4/20/2022

Table 3 – Pole Instrumentation

Pole Instrumentation	Serial Number	Manufacturer	Calibration Date
Load Cell 1	1220AF-1117023-F0	Interface	8/5/2021
Load Cell 2	1220AF-1117006-F0	Interface	8/5/2021
Load Cell 3	1220AF-1117025-F0	Interface	7/28/2021
Load Cell 4	1220AF-1117019-F0	Interface	8/2/2021
Load Cell 5	1220AF-1117011-F0	Interface	8/2/2021
Load Cell 6	1220AF-1117017-F0	Interface	8/2/2021
Load Cell 7	1220AF-1117035-F0	Interface	8/2/2021
Load Cell 8	1220AF-1057559-F0	Interface	8/2/2021