

REPORT NUMBER: SPNCAP-CAL-17-003

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

**Mazda Motor Manufacturing de Mexico S.A. de C.V.
2017 Toyota Yaris iA
Four Door Sedan**

NHTSA No: M20175108

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



December 22, 2016

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, ROOM W43-410
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 DTNH22-14-D-00352.

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: Vanessa Hansen
Vanessa Hansen, Senior Test Engineer

Date: December 22, 2016

Approved by: Edward Dutton
Edward Dutton, Operations Manager
Transportation Test Operations

Date: December 22, 2016

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. SPNCAP-CAL-17-003	2. Government Accession No.	3. Recipient's Catalog No.																												
4. Title and Subtitle Final Report of New Car Assessment Program Side Impact Pole Testing of a 2017 Toyota Yaris iA four door sedan NHTSA No.: M20175108		5. Report Date December 22, 2016																												
		6. Performing Organization Code CAL																												
7. Author(s) Vanessa Hansen, Senior Test Engineer Edward Dutton, Operations Manager		8. Performing Organization Report No. CAL-DOT-2017-003																												
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. DTNH22-14-D-00352																												
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, Room W43-410 Washington, D.C. 20590		13. Type of Report and Period Covered: Final Test Report, November 8, 2016 - December 22, 2016																												
		14. Sponsoring Agency Code NRM-110																												
15. Supplementary Notes																														
16. Abstract A 32.20 km/h (20 mph), 75° oblique impact Side NCAP Test was conducted on the subject 2017 Toyota Yaris iA four door sedan in accordance with the specifications of the Office of Crashworthiness Standards Side NCAP Pole Laboratory Test Procedure for the generation of consumer information on vehicle side pole crash protection. This test was conducted at Calspan Corporation's Transportation Test Operations facility in Buffalo, New York on November 8, 2016. The impact velocity of the vehicle was 32.47 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle was 21°C. The target vehicle's maximum post-test static crush was 287 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>184.848</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td>G</td> <td>82</td> <td>34.594</td> </tr> <tr> <td>Total Pelvic Force (sum of acetabular and iliac forces)</td> <td>N</td> <td>5525</td> <td>2931.738</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>38</td> <td>15.599</td> </tr> <tr> <td>Maximum Abdomen Rib Deflection</td> <td>mm</td> <td>45</td> <td>14.765</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	184.848	Resultant Lower Spine Acceleration	G	82	34.594	Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2931.738	Maximum Thoracic Rib Deflection	mm	38	15.599	Maximum Abdomen Rib Deflection	mm	45	14.765
Measurement Description	Driver ATD (SID-IIs) (Serial No. 300)																													
	Units	Threshold	Result																											
Head Injury Criteria (HIC ₃₆)		1000	184.848																											
Resultant Lower Spine Acceleration	G	82	34.594																											
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2931.738																											
Maximum Thoracic Rib Deflection	mm	38	15.599																											
Maximum Abdomen Rib Deflection	mm	45	14.765																											
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, NPO-411 1200 New Jersey Ave. SE Washington, D.C. 20590 e-mail: tis@nhtsa.dot.gov FAX: 202-493-2833																												
19. Security Class. (of this report) UNCLASSIFIED	20. Security Class. (of this page) UNCLASSIFIED	21. No. of Pages 124	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 2017 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-14-D-00352. The purpose of this test is to generate comparative side impact performance in a 2017 Toyota Yaris iA four door sedan. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Side NCAP Pole Laboratory Test Procedure, dated October 2015.

SECTION 2

SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a 2017 Toyota Yaris iA four door sedan. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.47 km/h. The test was conducted by Calspan Corporation's Transportation Test Operations facility in Buffalo, New York on November 8, 2016. 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 October 2015. 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	184.848
Resultant Lower Spine Acceleration	g	82	34.594
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2931.738
Maximum Thoracic Rib Deflection	mm	38*	15.599
Maximum Abdominal Rib Deflection	mm	45*	14.765

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

GENERAL COMMENTS:

1. P1 serial number – 300

Data Anomalies:

- Rear Floor Pan Y Acceleration, questionable spike at 17ms

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: 2017 Toyota Yaris iA four door sedan
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20175108
Test Date: 11/8/2016

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20175108
Model Year	2017
Make	Toyota
Model	Yaris iA
Body Style	Four Door Sedan
VIN	3MYDLBYV2HY150179
Body Color	Red
Odometer Reading (km/mi)	22.5 km / 14 mi
Engine Displacement (L)	1.5
Type / No. Cylinders	I4
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	6-Speed
Overdrive	Yes
Final Drive	Front Wheel Drive
Roof Rack	No
Sunroof / T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes

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

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

Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Mazda Motor Manufacturing de Mexico S.A. de C.V.
Date of Manufacture	08/16
Vehicle Type	Passenger

GVWR (kg)	1539
GAWR Front (kg)	814
GAWR Rear (kg)	738

VEHICLE SEATING AND WEIGHT CAPACITY DATA

Measured Parameter	Front	Rear	Third	Total
Designated Seating Capacity (DSC)	2	3	-	5
Capacity Weight (VCW) (kg)				385
DSC X 68.04 kg				340.2
Cargo Weight (RCLW) (kg)				44.8

(A)

(B)

(A-B)

VEHICLE SEAT TYPE

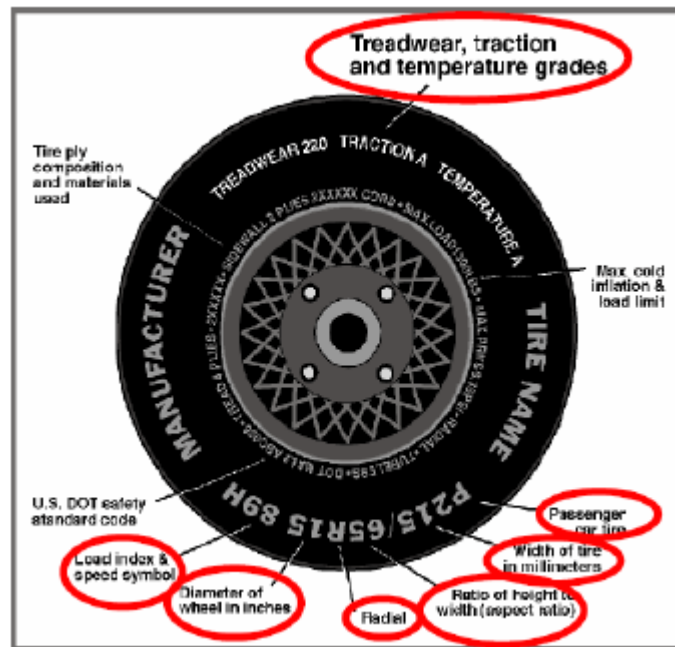
Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						W/ Lever	W/ Knob
Front Seat	X					X	
Rear or Second Row Seat		X			X		
Third Row seat							

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

Test Vehicle: 2017 Toyota Yaris iA four door sedan
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20175108
 Test Date: 11/8/2016

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



VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	250	230
Recommended Tire Size	P185/60R16	P185/60R16
Tire Size on Vehicle	P185/60R16	P185/60R16
Tire Manufacturer	Toyo	Toyo
Tire Model	Proxes A27	Proxes A27
Treadwear	240	240
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	1 Polyester	1 Polyester
Tire Plies Body	2 Steel, 1 Polyester, 1 Nylon	2 Steel, 1 Polyester, 1 Nylon
Load Index/Speed Symbol	86H	86H
Tire Material	Rubber	Rubber
DOT Safety Code Left	N3ELV572316	N3ELV572316
DOT Safety Code Right	N3ELV572316	N3ELV572316

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

Test Vehicle: 2017 Toyota Yaris iA four door sedan
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20175108
 Test Date: 11/8/2016

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	303	309	304	305
Tire Placard	kPa	250	250	230	230
Owner's Manual	kPa	250	250	230	230
As Tested	kPa	250	250	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	345	219		358	255		362	264	
Right	kg	320	218		335	237		323	252	
Ratio	%	60	40		58	42		57	43	
Totals	kg	665	437	1102	693	492	1185	685	516	1201

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total As Delivered Weight (UVW)	kg	1102	(A)
Actual Weight of 1 P572V (SID-IIs) ATD Used	kg	44.12	(B)
Rated Cargo / Luggage Weight (RCLW)	kg	44.8	(C)
Calculated Vehicle Target Weight (TVTW)	kg	1190.92	(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	0.5	-0.3	-0.5	Yes
Front Passenger Sill Angle (front-to-rear)*	Deg	-0.8	-0.1	0.1	Yes
Front Bumper-Line Angle (left-to-right)**	Deg	-1.8	-1.4	-1.4	Yes
Rear Bumper-Line Angle (left-to-right)**	Deg	0.5	0.2	0.1	Yes
Vehicle CG (Aft of Front Axle)	mm	1018	1065	1102	
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	+17	+25	+31	

* 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: 2017 Toyota Yaris iA four door sedan
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20175108
 Test Date: 11/8/2016

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Trunk Carpeting	4
Spare Tire	10
Jack	3
Tail Lights	2
Front Bumper Cover	6
Right Front Head Lamp	2
Passenger Windows and door parts	9
Ballast / Equipment Added	0

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

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

Test Vehicle: 2017 Toyota Yaris iA four door sedan
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20175108
 Test Date: 11/8/2016

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	16.8	13.5	15.15
Front Passenger Seat	Not Adjustable		
Front Center Seat	N/A	N/A	N/A
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	15.1	31	Max	32	40	47
			Mid	16	24	31
			Min	0	8	15
Front Passenger Seat	Not Adjustable		Max	-	-	-
			Mid	-	-	-
			Min	-	-	-
Front Center Seat	N/A	N/A	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: 2017 Toyota Yaris iA four door sedan
 Test Program: NCAP Side Pole Impact Test

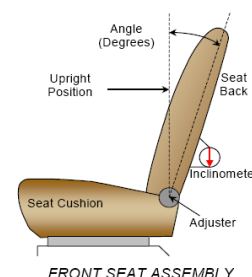
NHTSA No.: M20175108
 Test Date: 11/8/2016

SEAT FORE / AFT POSITION

Seat	Total Fore / Aft Travel		Test Position from Forwardmost Position	
	mm	Detents*	mm	Detents*
Driver Seat	260	27 (0-26)	0	0
Front Passenger Seat	260	27 (0-26)	0	0
Front Center Seat	N/A	N/A	N/A	N/A
Struck Side Rear Seat	FIXED	FIXED	FIXED	FIXED
Non-Struck Side Rear Seat	FIXED	FIXED	FIXED	FIXED
Rear Center Seat	FIXED	FIXED	FIXED	FIXED

SEAT BACK ANGLE ADJUSTMENT

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



Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degrees	Detents*
Driver Seat w/Seated Dummy	-9.7 to 56	N/A	-5.7	N/A
Front Passenger Seat	-9.3 to 59.5	N/A	-5.3	N/A
Front Center Seat	N/A	N/A	N/A	N/A
Struck Side Rear Seat	FIXED	FIXED	FIXED	FIXED
Non-Struck Side Rear Seat	FIXED	FIXED	FIXED	FIXED
Rear Center Seat	FIXED	FIXED	FIXED	FIXED

SEAT 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	3	0 – Uppermost

HEAD RESTRAINT ADJUSTMENT

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

Seat	Total # of Positions	Placed in Position #
Driver Seat	4	4 - Lowest

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

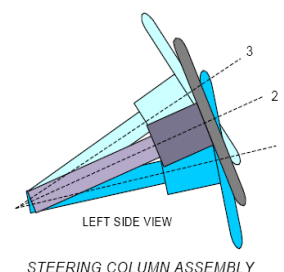
Test Vehicle: 2017 Toyota Yaris iA four door sedan
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20175108
 Test Date: 11/8/2016

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.

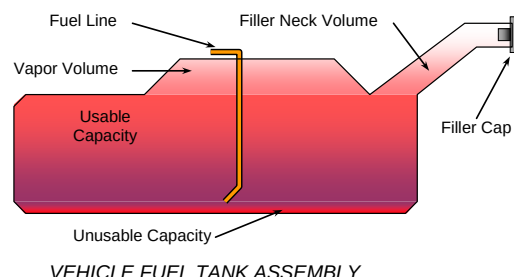
		Degrees	Fore / Aft Position (mm)
Lowermost	– Position 1	22.1	
Geometric Center	– Position 2	24.45	
Uppermost	– Position 3	26.8	
Telescoping Steering Wheel Travel			50
Test Position		24.2	25



FUEL PUMP

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

The vehicle is equipped with an electric 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	44
Usable Capacity of "Optional Tank" - see Form No. 1	N/A
Usable Capacity of "Standard Tank" - see Owner's Manual	44
Usable Capacity of "Optional Tank" - see Owner's Manual	N/A
93% of Usable Capacity	40.92
Actual Amount of Solvent Used in Test	40.92
1/3 of Usable Capacity	14.6

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

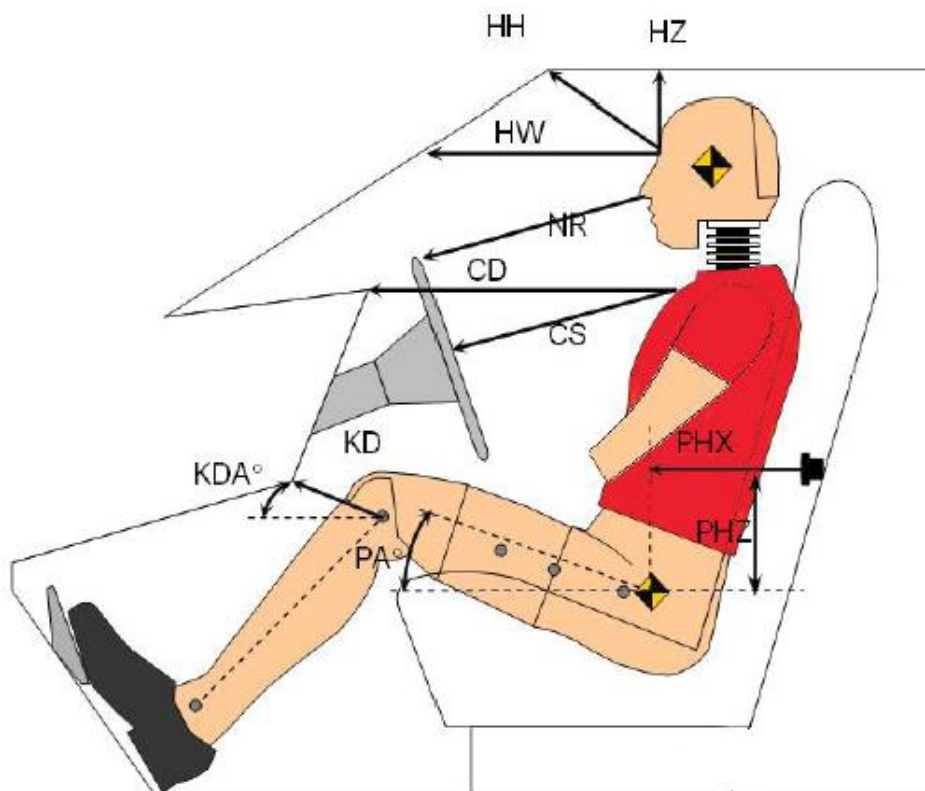


No

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2017 Toyota Yaris iA four door sedan
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20175108
 Test Date: 11/8/2016



Left Side View

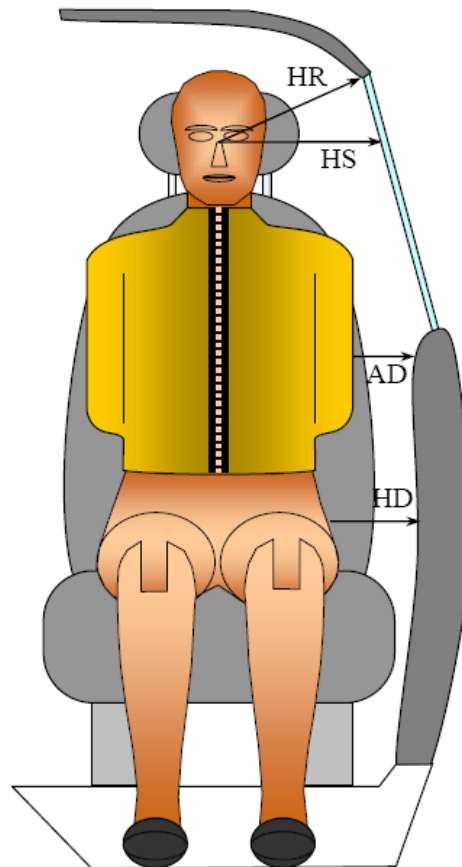
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Description	Driver (Serial No. 300)	
		Length (mm)	Angle (°)
HH	Head to Header	243	
HW	Head to Windshield	560	
HZ	Head to Roof Liner	178	
NR	Nose to Rim	215	
CD	Chest to Dash	385	
CS	Chest to Steering Wheel	145	
KD(L) / KDA(L)°	Left Knee to Dash	92	35.1
KD(R) / KDA(R)°	Right Knee to Dash	96	34.2
PAX°	Pelvic Tilt Angle (X-Axis)		19.8
PAY°	Pelvic Tilt Angle (Y-Axis)		0.2
PHX	Hip Point to Striker (X-Axis)	314	
PHZ	Hip Point to Striker (Z-Axis)	168	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2017 Toyota Yaris iA four door sedan
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20175108
Test Date: 11/8/2016



FRONT VIEW OF DUMMY

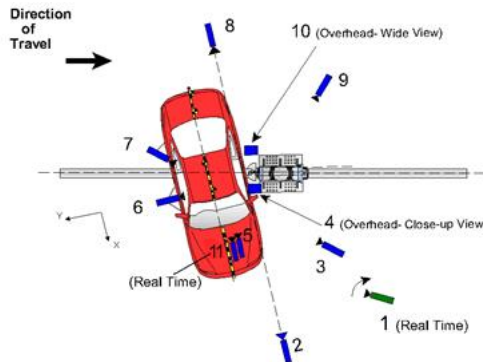
DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver - Length (Serial No. 300)
HR	Head To Side Header	mm	218
HS	Head to Side Window	mm	332
AD	Arm to Door	mm	150
HD	Hip Point to Door	mm	155

DATA SHEET NO. 5 CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2017 Toyota Yaris iA four door sedan
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20175108
Test Date: 11/8/2016



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	6735	0	-1200	24	1000
3	Impact side 45° - forward pole view	5048	-2012	-1870	24	1000
4	Overhead Close-up view of impact	0	0	-5203	28	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	-7237	0	-1150	24	1000
9	Impact side 45° - rearward pole view	-2648	-4022	-1888	24	1000
10	Overhead wide - view of impact	-80	305	-5203	14	1000
11	Real-time (24 - 30 fps) - dummy front view				Zoom	60

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

Comments: All cameras operated as intended.

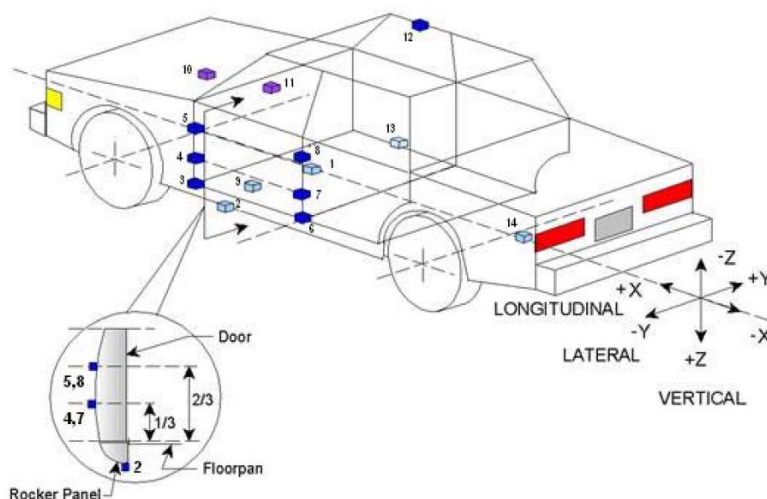
INSTRUMENTATION

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

DATA SHEET NO. 6 VEHICLE ACCELEROMETER DATA

Test Vehicle: 2017 Toyota Yaris iA four door sedan
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20175108
 Test Date: 11/8/2016



TEST VEHICLE ACCELEROMETER LOCATIONS

No.	Accelerometer Location	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2560	98	-279
2	Left Floor Sill	2563	-623	-368
3	A-Pillar Sill	2908	-624	-322
4	A-Pillar Low	2997	-617	-73
5	A-Pillar Mid	2888	-589	371
6	B-Pillar Sill	2010	-699	-314
7	B-Pillar Low	1966	-690	-30
8	B-Pillar Mid	1915	-678	221
9	Driver Seat Track	2490	-398	-232
10	Engine Top	3620	133	98
11	Firewall	3232	-56	63
12	Right Roof	2030	479	798
13	Right Floor Sill	2575	624	-366
14	Rear Floorpan	1075	118	-159

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: 2017 Toyota Yaris iA four door sedan
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20175108
Test Date: 11/8/2016

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: 2017 Toyota Yaris iA four door sedan
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20175108
 Test Date: 11/8/2016

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Driver Seat Dummy (SID-IIs)
Face	Curtain Airbag
Top of Head	Side Headliner & Curtain Airbag
Left Side of Head	Curtain Airbag
Back of Head	Headrest
Left Shoulder	Torso/Pelvis Airbag
Upper Torso	Seatback
Lower Torso	Seatback
Left Hip	Torso/Pelvis Airbag & Seatpan
Left Knee	Driver's Door

POST-TEST DOOR PERFORMANCE

Description	Struck Side		Non-Struck Side		Rear Hatch/ Other
	Front	Rear	Front	Rear	
Remained Closed and Operational	No	No	Yes	Yes	Yes
Total Separation from Vehicle at Hinges or Latches	No	No	No	No	No
Latch or Hinge Systems Pulled Out of Their Anchorages	No	No	No	No	No
Disengaged from Latched Position	No	No	No	No	No
Latch Separated from Striker	No	No	No	No	No
Jammed Shut	Yes	Yes	No	No	No
If Door Opened at Striker, Width of Opening at Striker (mm)	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: 2017 Toyota Yaris iA four door sedan
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20175108
Test Date: 11/8/2016

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	A-Pillar Buckled
Sill Separation	None
Windshield Damage	Cracks throughout with separation along driver's A-Pillar
Side Window Damage	Driver's window shattered
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	No	N/A		
Side Airbag 1 - Curtain	Yes	Yes	Yes	Yes
Side Airbag 2 – Torso/Pelvis	Yes	Yes	No	N/A
Seat Belt Pretensioner	Yes	Yes	No	N/A
Seat Belt Load Limiter	Yes	Yes	No	N/A
Other				

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

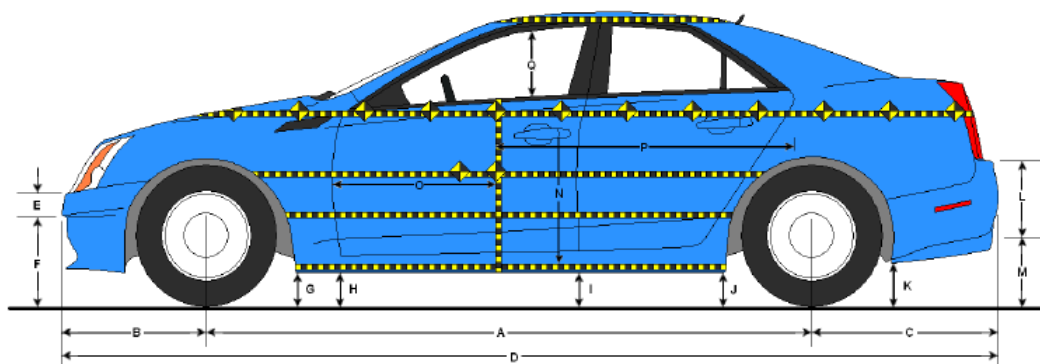
Measured Parameter	Units	Tolerance	Value
Vertical Impact Ref Line - Aft of Front Axle, Intended Impact Pt	mm		1118
Actual Impact Point - Aft of Front Axle	mm		1116
Horizontal Offset (+ forward / - rearward)	mm	+/- 38 *	+2
Angle Between Vehicle's Longitudinal Centerline and Line of Forward Motion	deg	75 +/- 3	75.0
Trap No. 1 Velocity - Primary	kph	31.4 to 33.0	32.47
Trap No. 2 Velocity - Redundant	kph	31.4 to 33.0	32.47

* Of Intended Impact Point

DATA SHEET NO. 9
TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2017 Toyota Yaris iA four door sedan
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20175108
 Test Date: 11/8/2016



LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

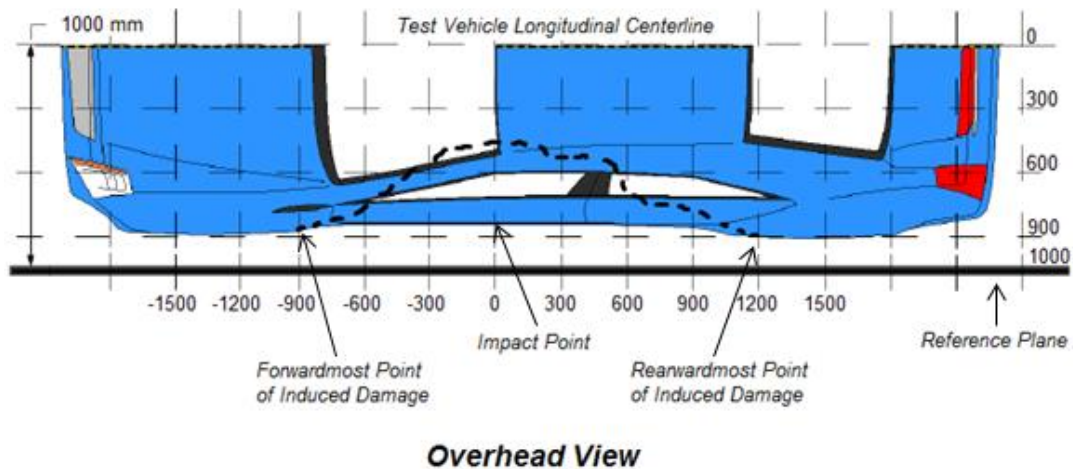
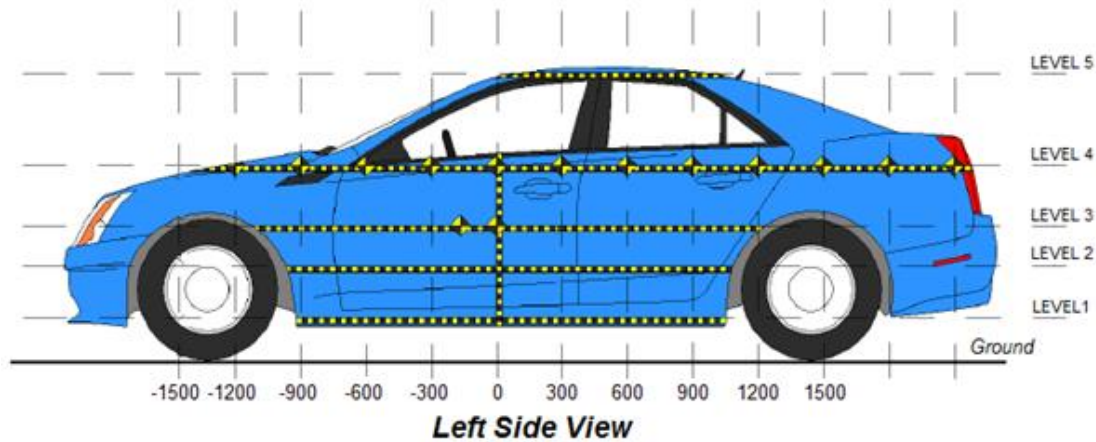
Code	Description	Pre-Test	Post-Test	Difference
A	Vehicle Wheelbase	2566	2515	51
B	Front Axle to FSOV	854	871	-17
C	Rear Axle to RSOV	942	982	-39
D	Total Length at Centerline	4362	4367	-6
E	Front Bumper Thickness	125	125	0
F	Front Bumper Bottom to Ground	410	420	-10
G	Sill Height at Front Wheel Well	200	188	12
H	Sill Height at Front Door Leading Edge	207	199	8
I	Sill Height at B-Pillar	209	226	-17
J1	Sill Height at Rear Wheel Well	212	203	9
J2	Pinch Weld Height at Rear Wheel Well	183	190	-7
K	Sill Height Aft of Rear Wheel Well	268	248	20
L	Rear Bumper Thickness	170	170	0
M	Rear Bumper Bottom to Ground	491	475	16
N	Sill Height to Bottom of Front Window Sill	735	739	-4
O	Front Door Leading Edge to Impact CL	634	583	50
P	Rear Door Trailing Edge to Impact CL	1364	1310	54
Q	Front Window Opening	411	400	11
R	Right Side Length	4201	4212	-11
S	Left Side Length	4201	4172	29
T	Vehicle Width at B-Pillars	1693	1601	92

* All measurements in mm with tolerance of $\pm 3\text{mm}$

DATA SHEET NO. 10
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2017 Toyota Yaris iA four door sedan
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20175108
 Test Date: 11/8/2016



MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Measurement Description	Units	Height Above Ground	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	mm	242	223	0
2	Occupant Hip Point	mm	561	277	0
3	Mid - Door	mm	648	287	0
4	Window Sill	mm	927	245	0
5	Window Top	mm	1424	66	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: 2017 Toyota Yaris iA four door sedan
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20175108
 Test Date: 11/8/2016

EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

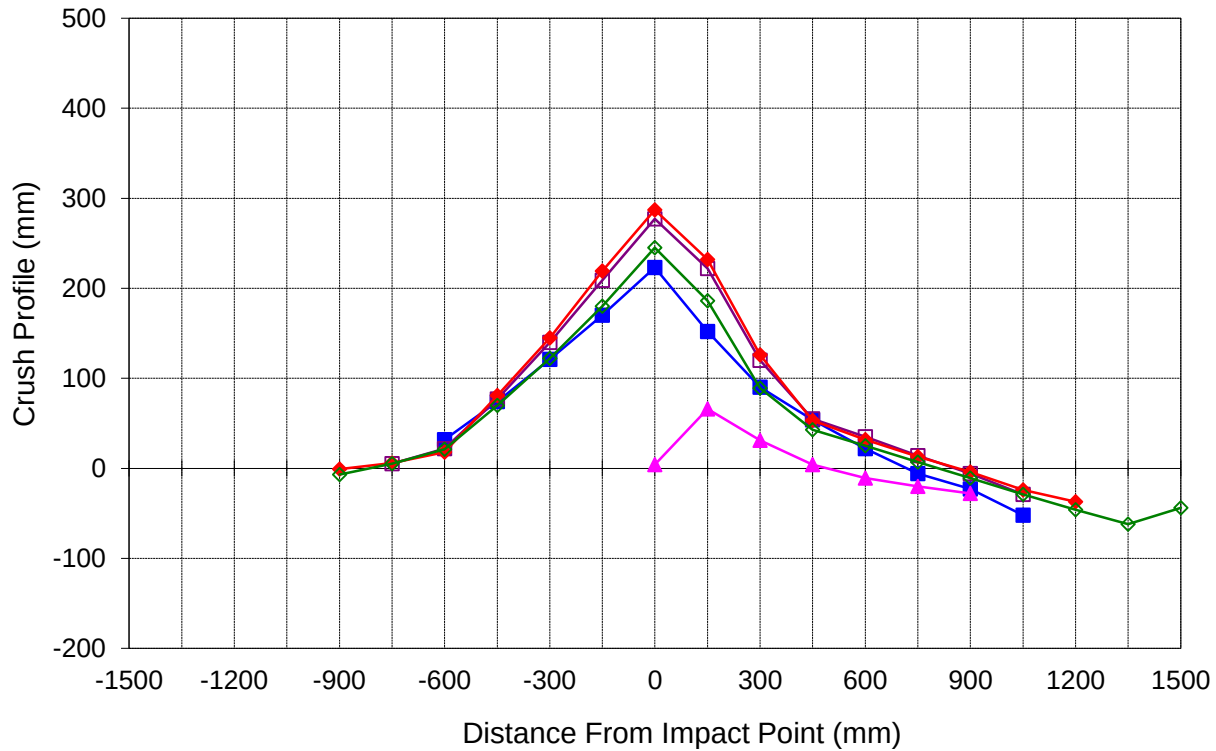
	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-1500															
-1350															
-1200															
-1050															
-900			847	731				848	738				-1	-7	
-750		846	842	750			841	836	745			5	6	5	
-600	807	845	844	763		775	823	826	742		32	22	18	21	
-450	803	845	847	773		729	768	766	703		74	77	81	70	
-300	801	845	848	779		680	705	703	657		121	140	145	122	
-150	800	844	849	785		630	635	630	605		170	209	219	180	
0	800	843	848	791	437	577	566	561	546	433	223	277	287	245	4
150	800	841	847	794	549	648	619	615	608	483	152	222	232	186	66
300	799	839	844	797	561	709	719	718	708	530	90	120	126	89	31
450	799	836	842	800	563	745	781	789	757	559	54	55	53	43	4
600	801	833	838	800	561	779	798	806	775	572	22	35	32	25	-11
750	805	832	836	800	554	811	818	823	793	574	-6	14	13	7	-20
900	811	835	836	800	539	834	841	840	811	567	-23	-6	-4	-11	-28
1050	820	847	842	799		872	876	866	828		-52	-29	-24	-29	
1200			851	781				888	827				-37	-46	
1350				793					855					-62	
1500				784					828					-44	

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: 2017 Toyota Yaris iA four door sedan
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20175108
 Test Date: 11/8/2016



LEVEL 1 Side Sill: -412 mm above ground	LEVEL 2 H-Point: -92 mm above ground
LEVEL 3 Mid Door: -6 mm above ground	LEVEL 4 Window Sill: 274 mm above ground
LEVEL 5 Window Top: 771 mm above ground	

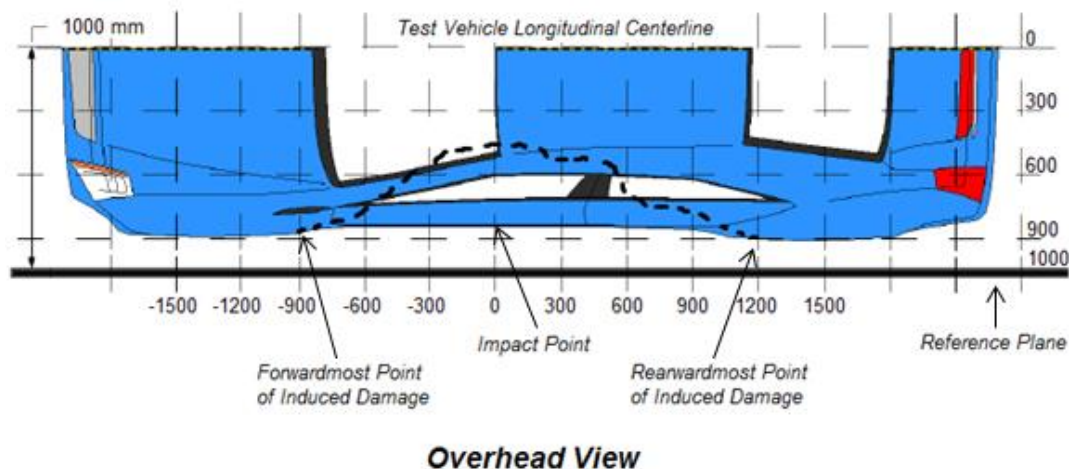
Vehicle Exterior Crush Measurements - Visual Representation

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

Test Vehicle: 2017 Toyota Yaris iA four door sedan
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20175108
 Test Date: 11/8/2016

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	152	153	-1
2	-480	3	222	154	68
3	-60	3	411	152	259
4	360	3	254	157	97
5	780	3	174	164	10
6	1200	3	112	149	-37

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

Test Vehicle: <u>2017 Toyota Yaris iA four door sedan</u>	NHTSA No.: <u>M20175108</u>
Test Program: <u>NCAP Side MDB Impact Test</u>	Test Date: <u>11/8/2016</u>
Test Time: <u>11:22 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°	72	300	372
90° to 180°	62	300	362
180° to 270°	62	300	362
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	0
90° to 180°	0	0	0	0
180° to 270°	0	0	0	0
270° to 360°	0	0	0	0

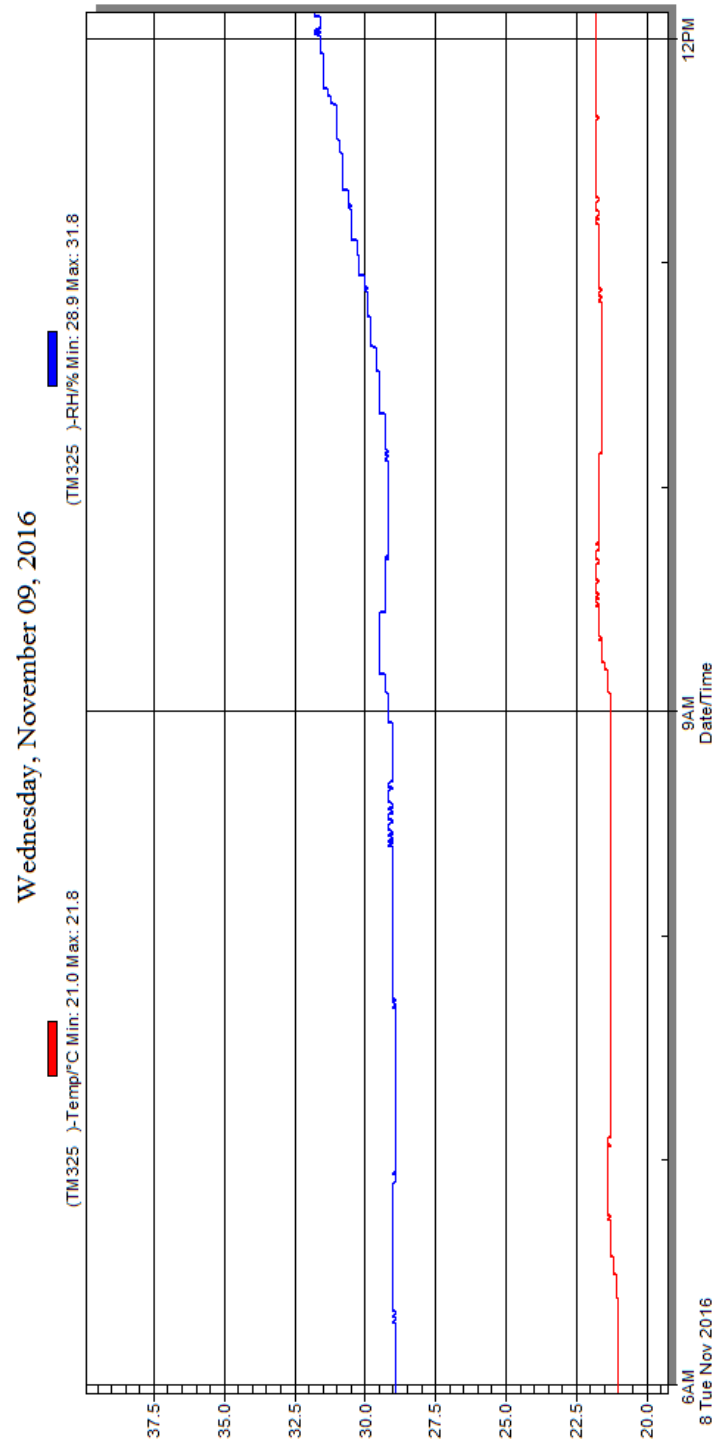
ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

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

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

Test Vehicle: 2017 Toyota Yaris iA four door sedan
 Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20175108
 Test Date: 11/8/2016



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 View of Fuel Filler Cap or Fuel Filler Neck	A-30
54	Post-Test View of Fuel Filler Cap or Fuel Filler Neck	A-30
55	Close-Up View of Vehicle's Certification Label	A-31
55a	Close-Up View of Reduced Load Capacity Label	A-31
56	Close-Up View of Vehicle's Tire Information Placard or Label	A-32
57	Pre-Test Pole Barrier Front View	A-32
58	Post-Test Pole Barrier Front View	A-33
59	Pre-Test Pole Barrier Side View	A-33
60	Post-Test Pole Barrier Side View	A-34
61	Pre-Test Ballast View	A-34
62	Post-Test Primary and Redundant Speed Trap Read-Out	A-35
63	FMVSS No. 301 Static Rollover 0 Degrees	A-35
64	FMVSS No. 301 Static Rollover 90 Degrees	A-36
65	FMVSS No. 301 Static Rollover 180 Degrees	A-36
66	FMVSS No. 301 Static Rollover 270 Degrees	A-37
67	FMVSS No. 301 Static Rollover 360 Degrees	A-37
68	Impact Event	A-38
69	Monroney Label	A-38
70	Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-39
71	Post-Test View of Shattered Vehicle Inner Door Panel	A-39



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

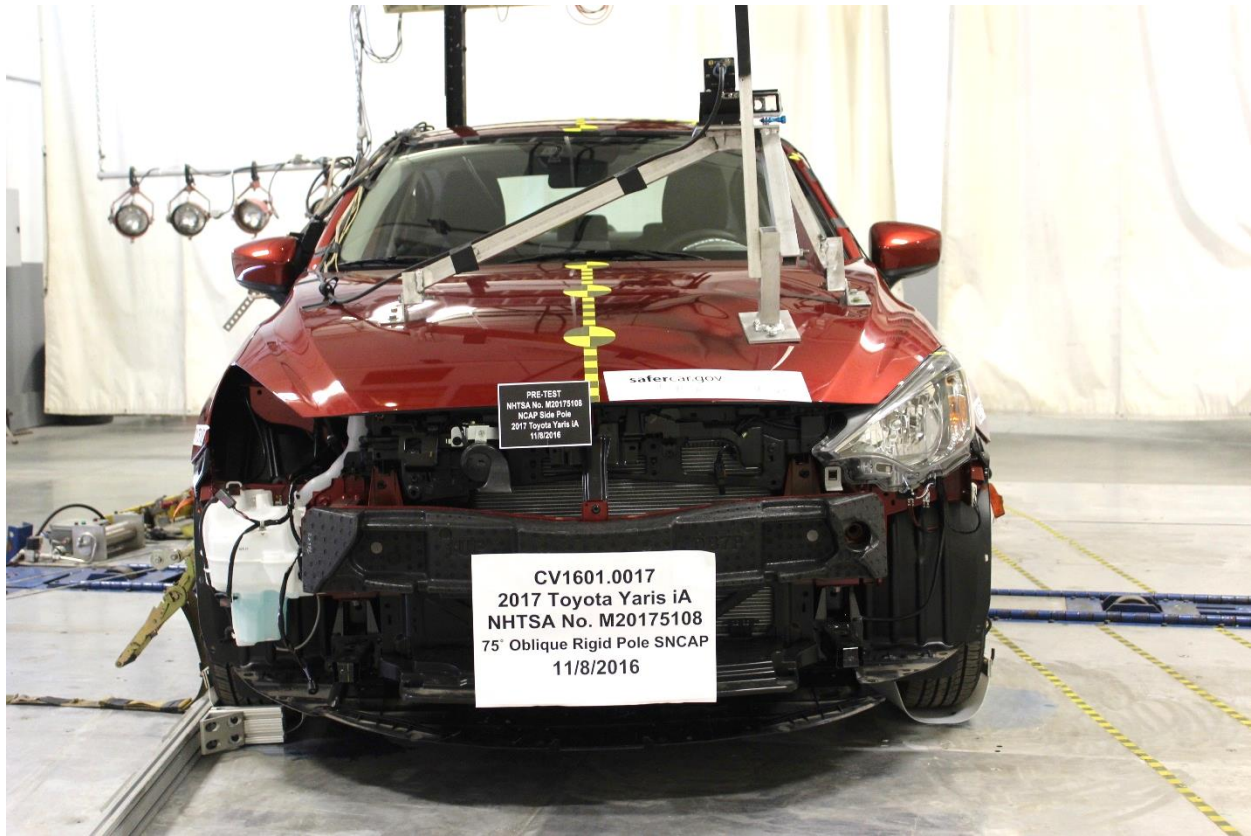


Figure A-3: Pre-Test Frontal View of Test Vehicle

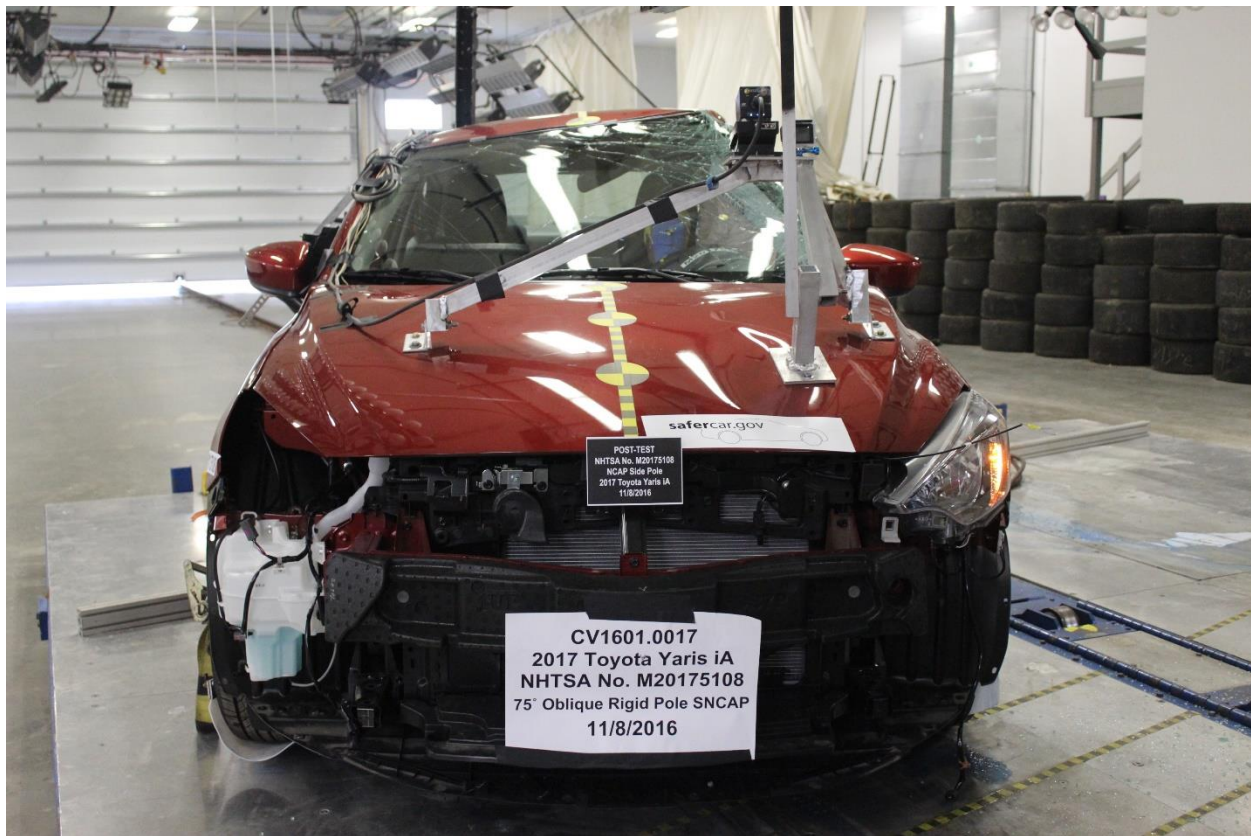


Figure A-4: Post-Test Frontal View of Test Vehicle



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

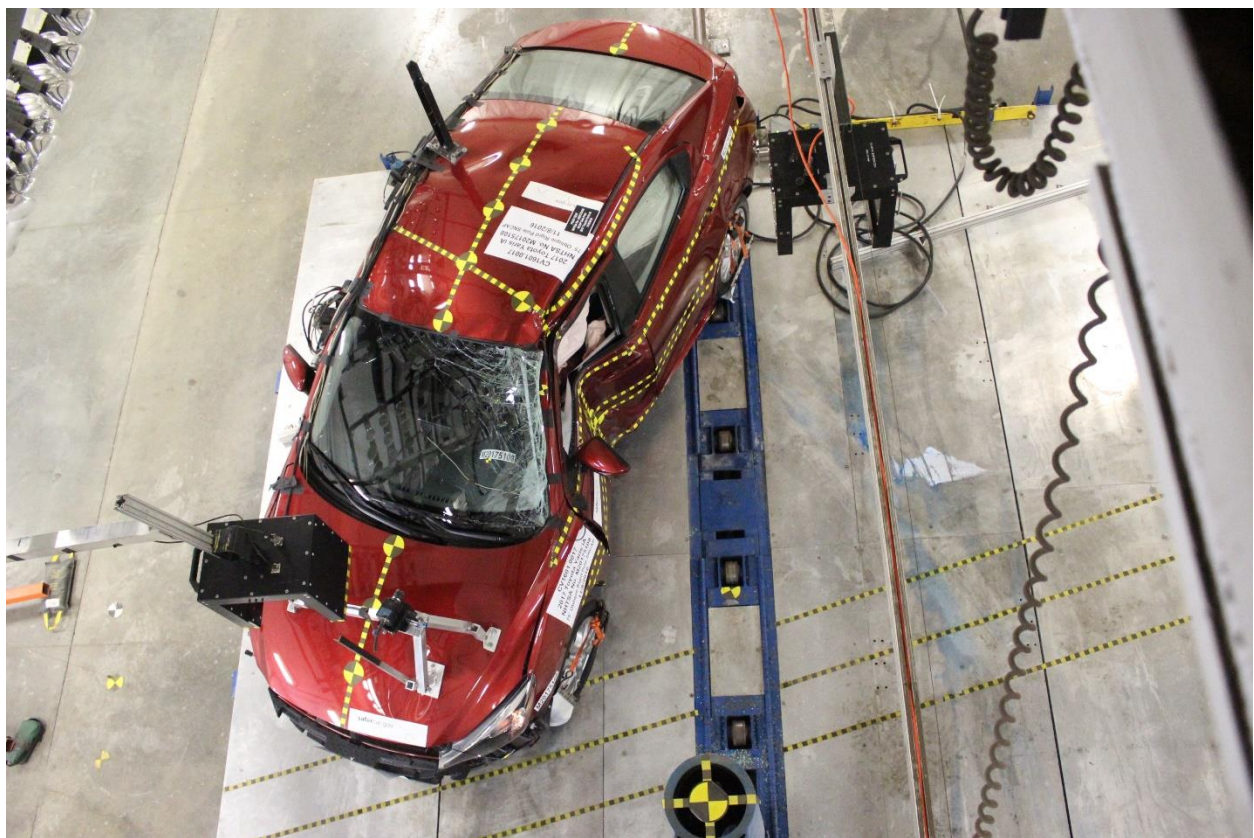


Figure A-16: Post-Test Overhead View of Test Area



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

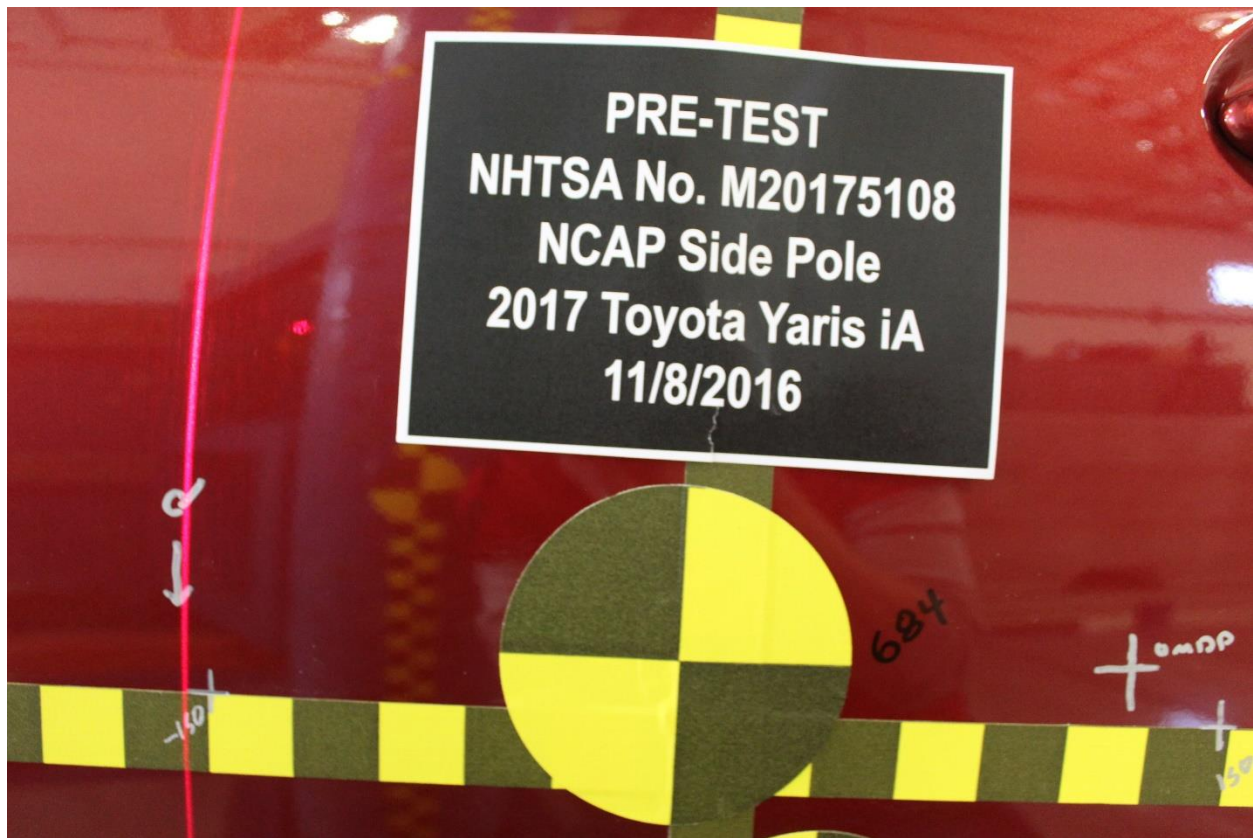


Figure A-19: Pre-Test Close-Up View of Impact Point Target



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

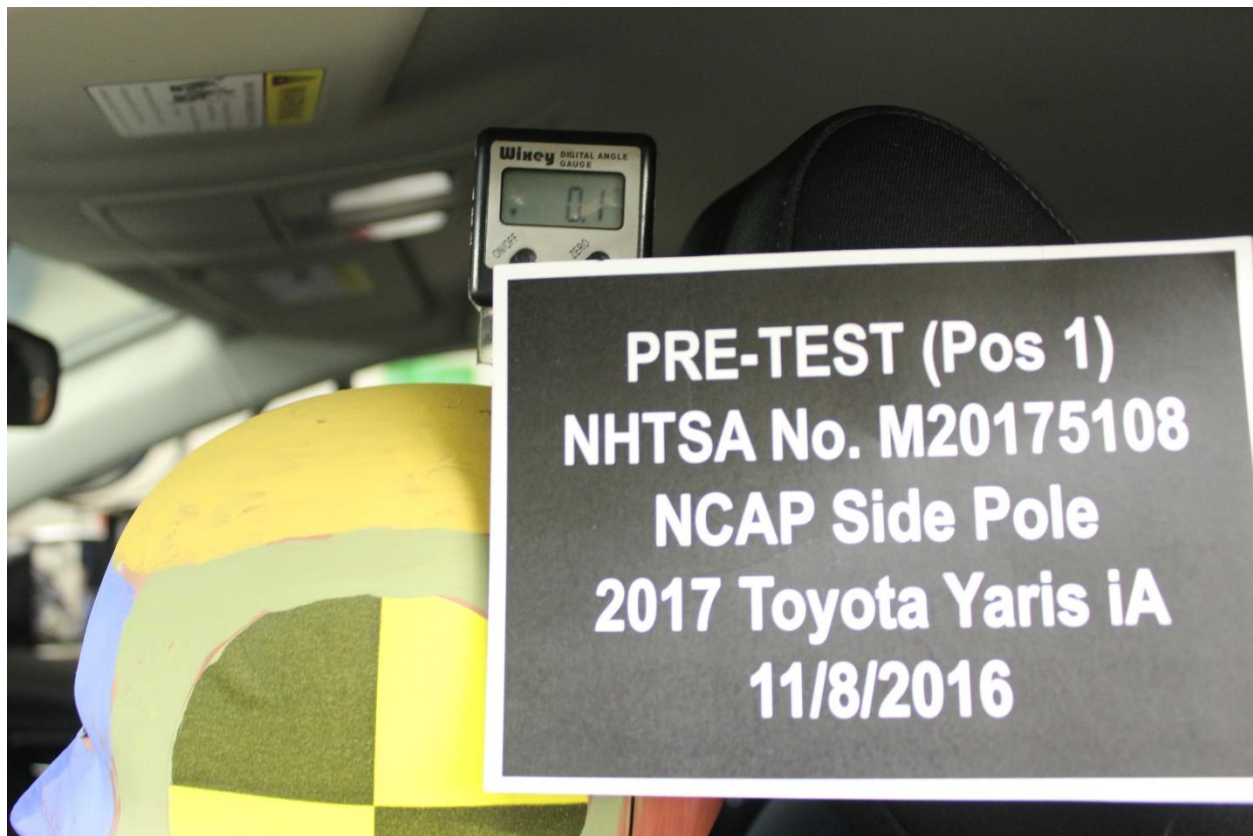


Figure A-31: Pre-Test Left Side View of Dummy's Head Showing Dummy's Head is Level



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

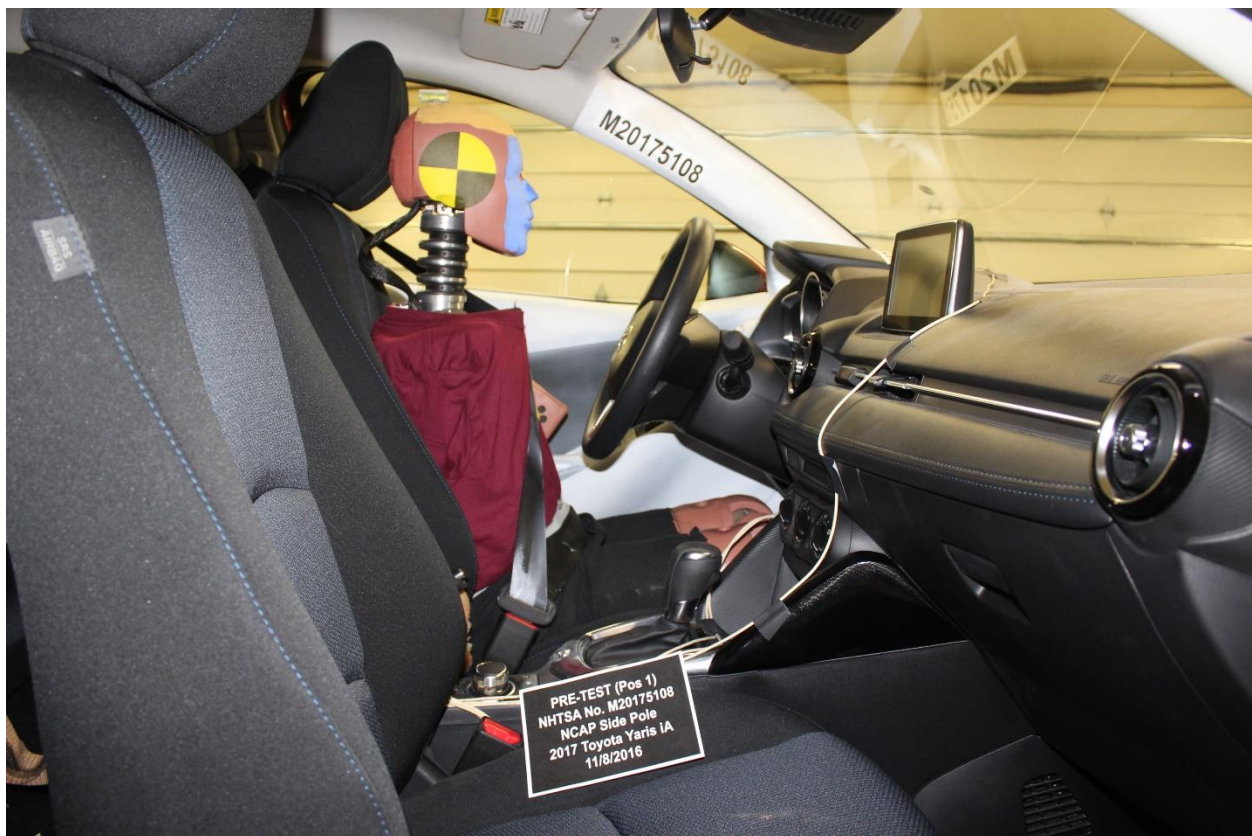


Figure A-42: Pre-Test Right Side View of Dummy and Front Seat of Occupant Compartment

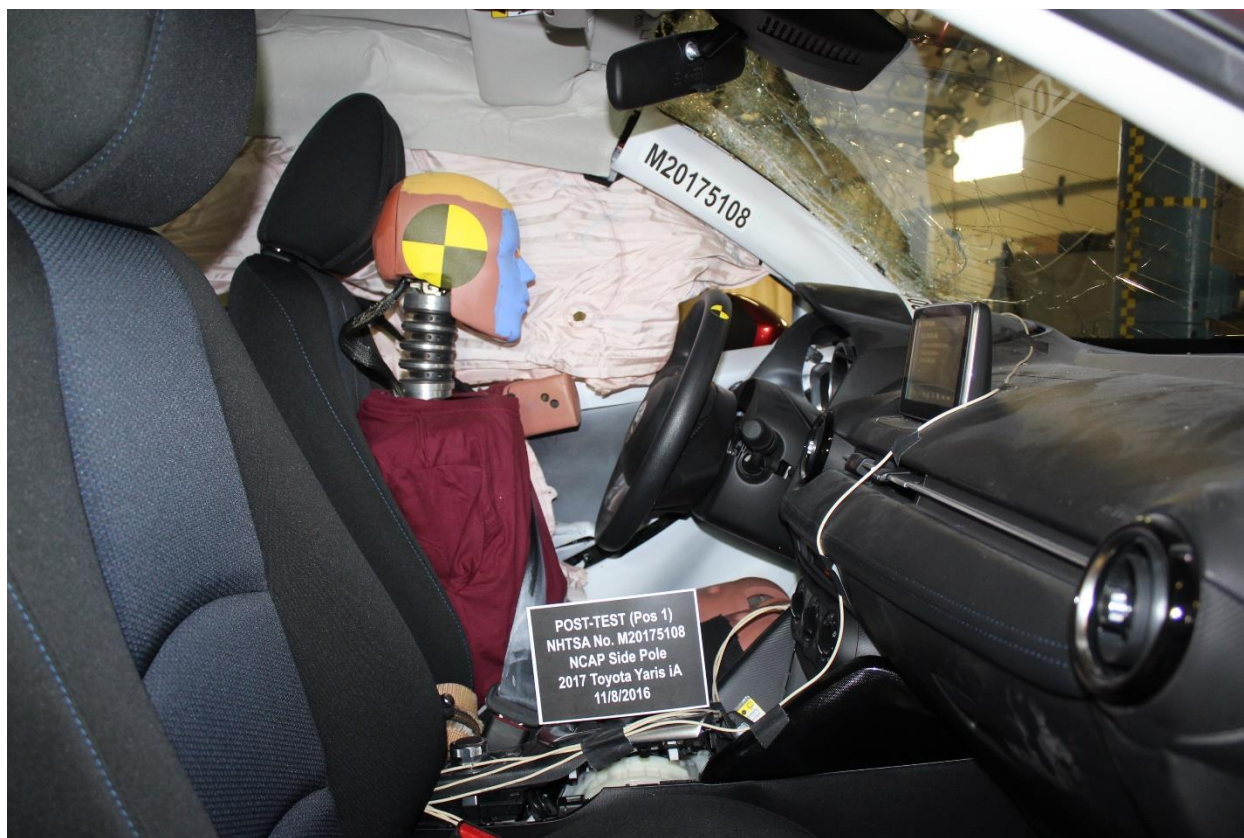


Figure A-43: Post-Test Right Side View of Dummy and Front Seat of Occupant Compartment



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

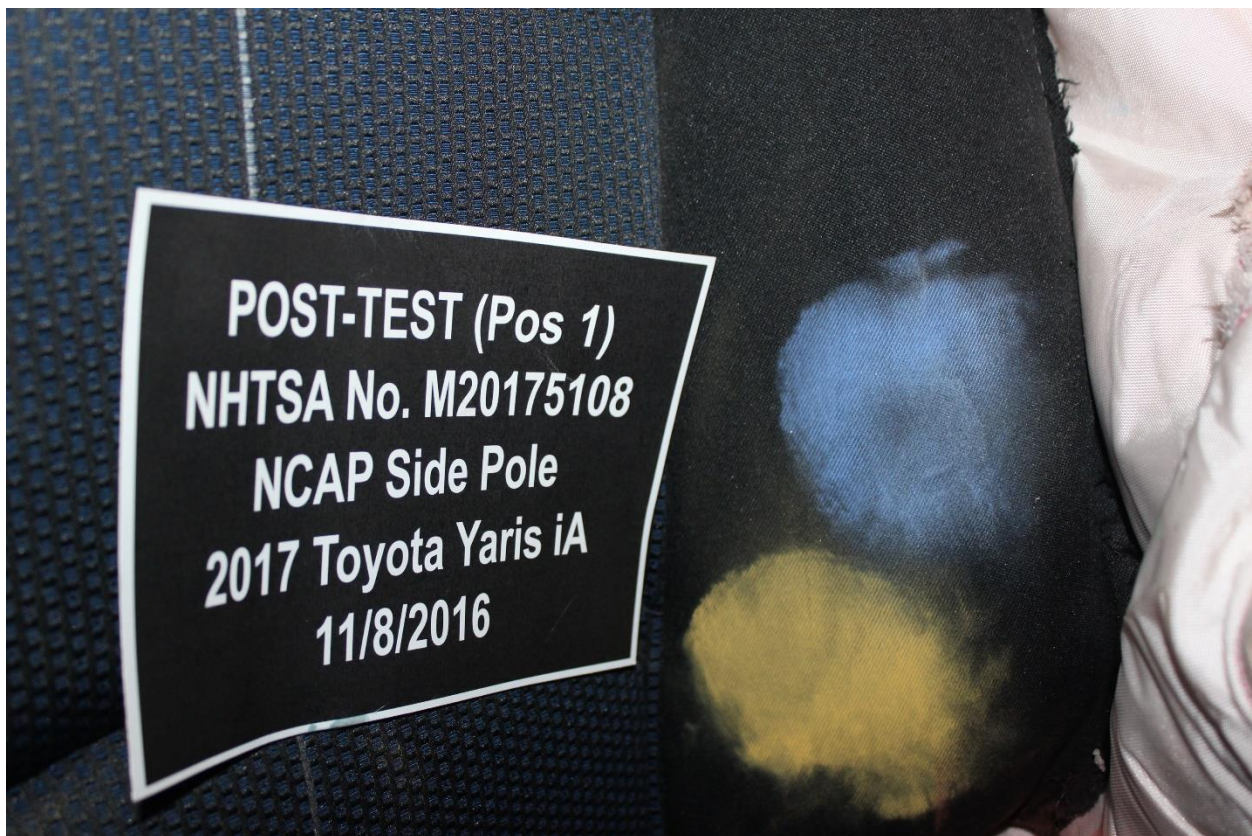


Figure A-48: Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View



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

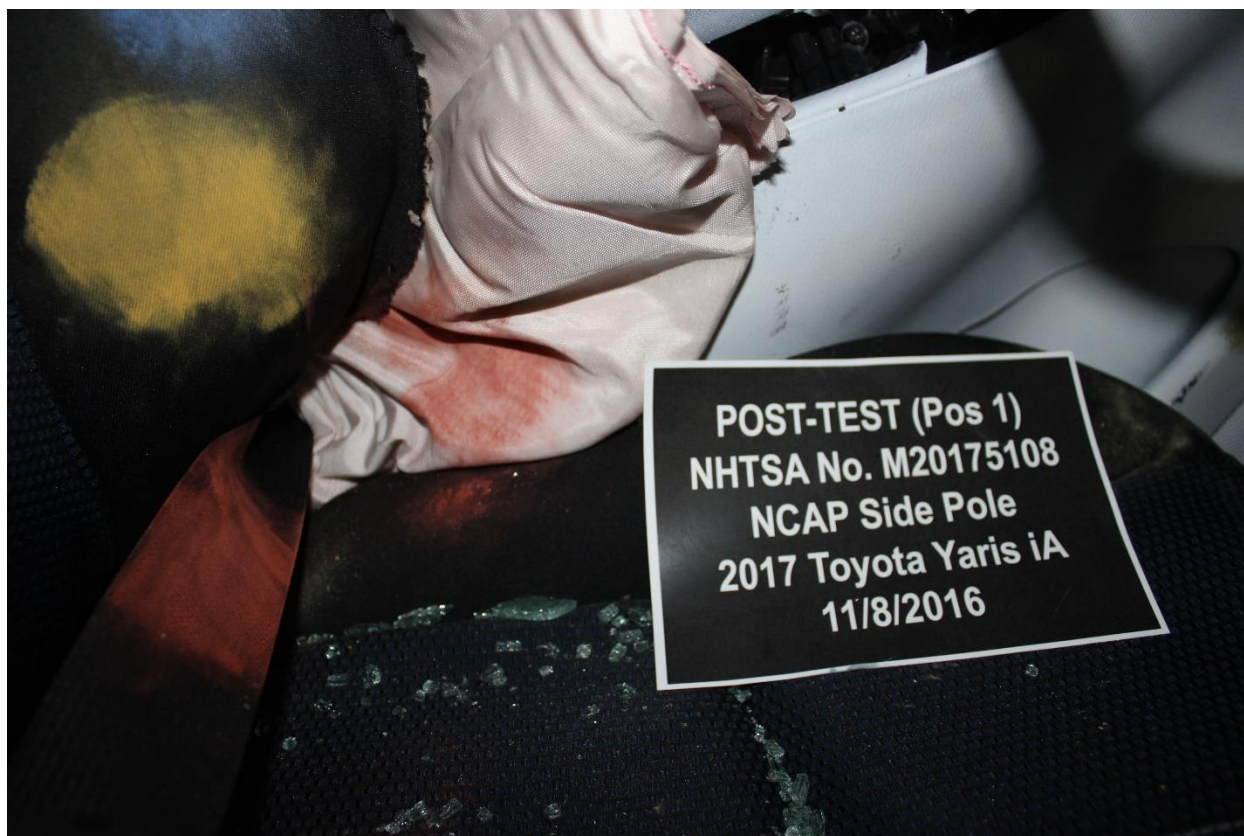


Figure A-51: Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View



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



Figure A-53: Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



Figure A-54: Post-Test View of Fuel Filler Cap or Fuel Filler Neck

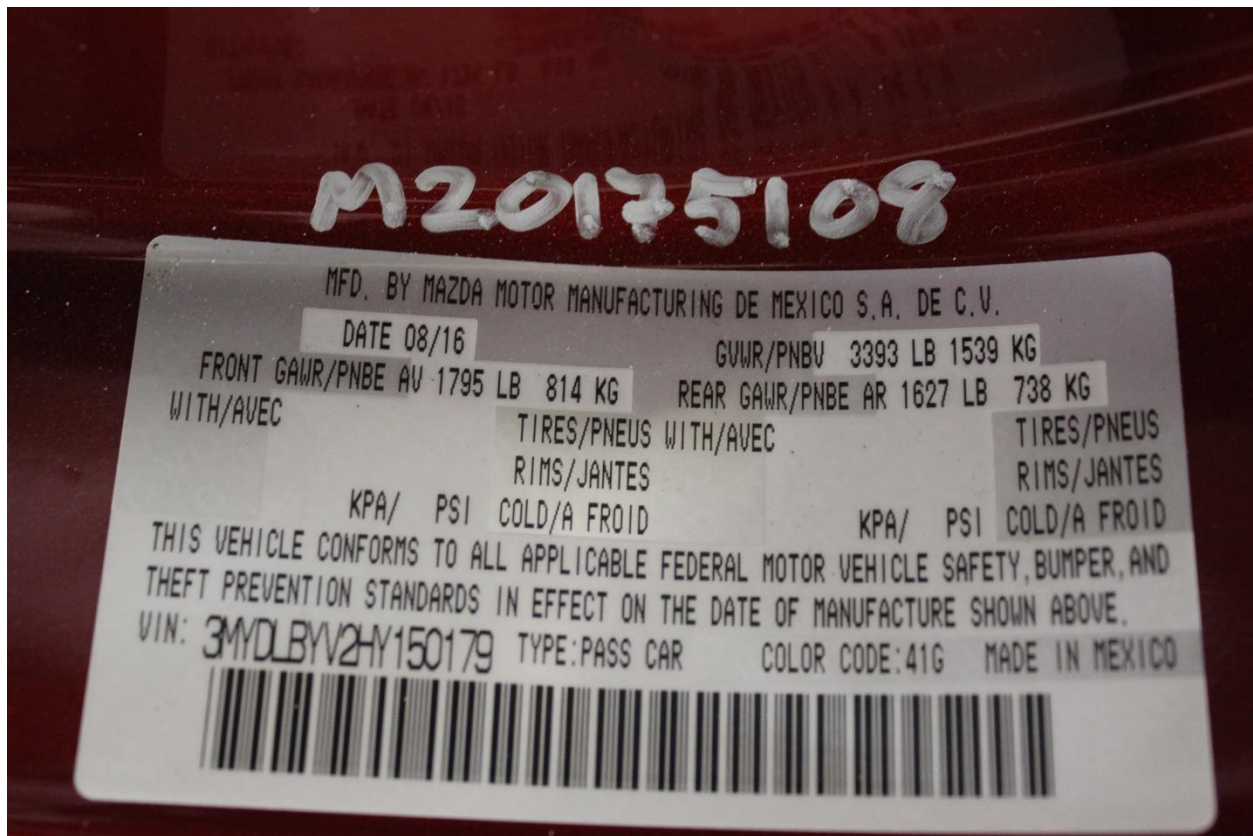


Figure A-55: Close-Up View of Vehicle's Certification Label



Figure A-55a: Close-Up View of Reduced Load Capacity Label



Figure A-56: Close-Up View of Vehicle's Tire Information Placard or Label

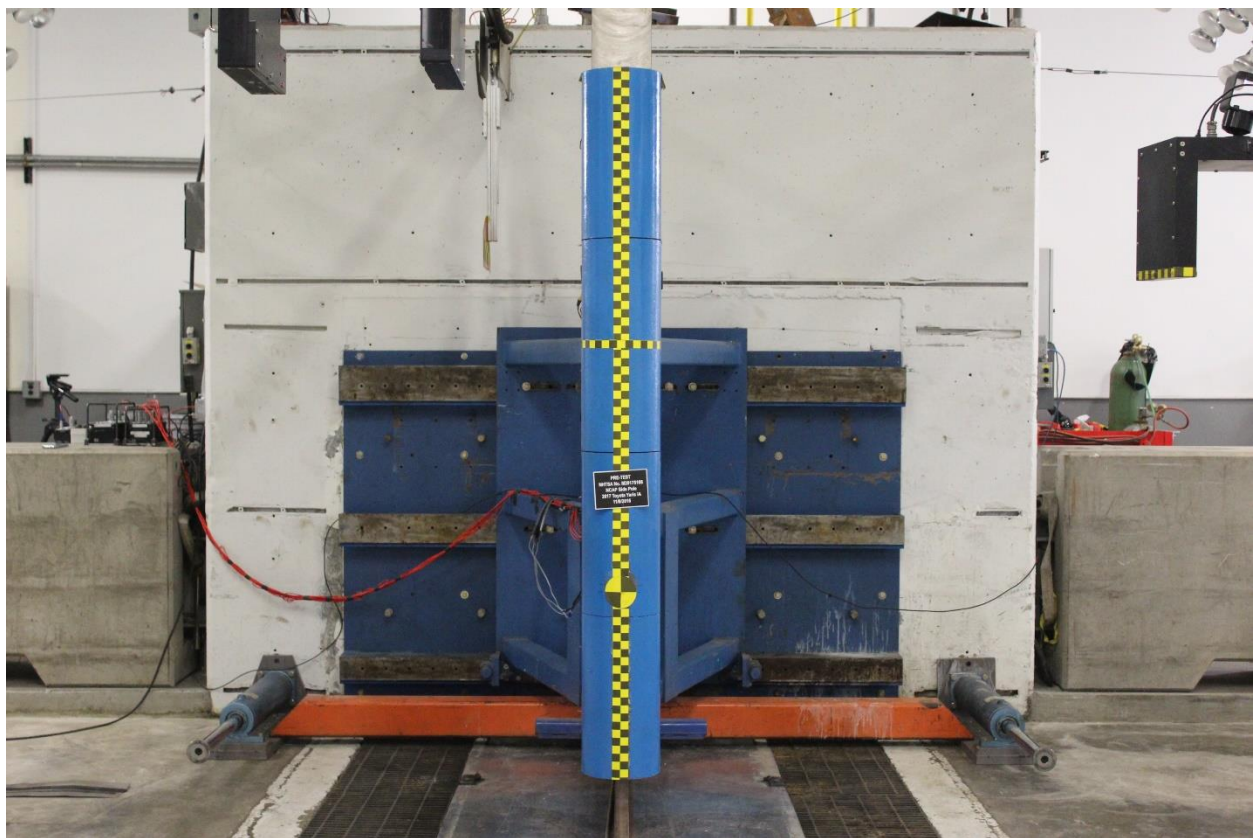


Figure A-57: Pre-Test Pole Barrier Front View

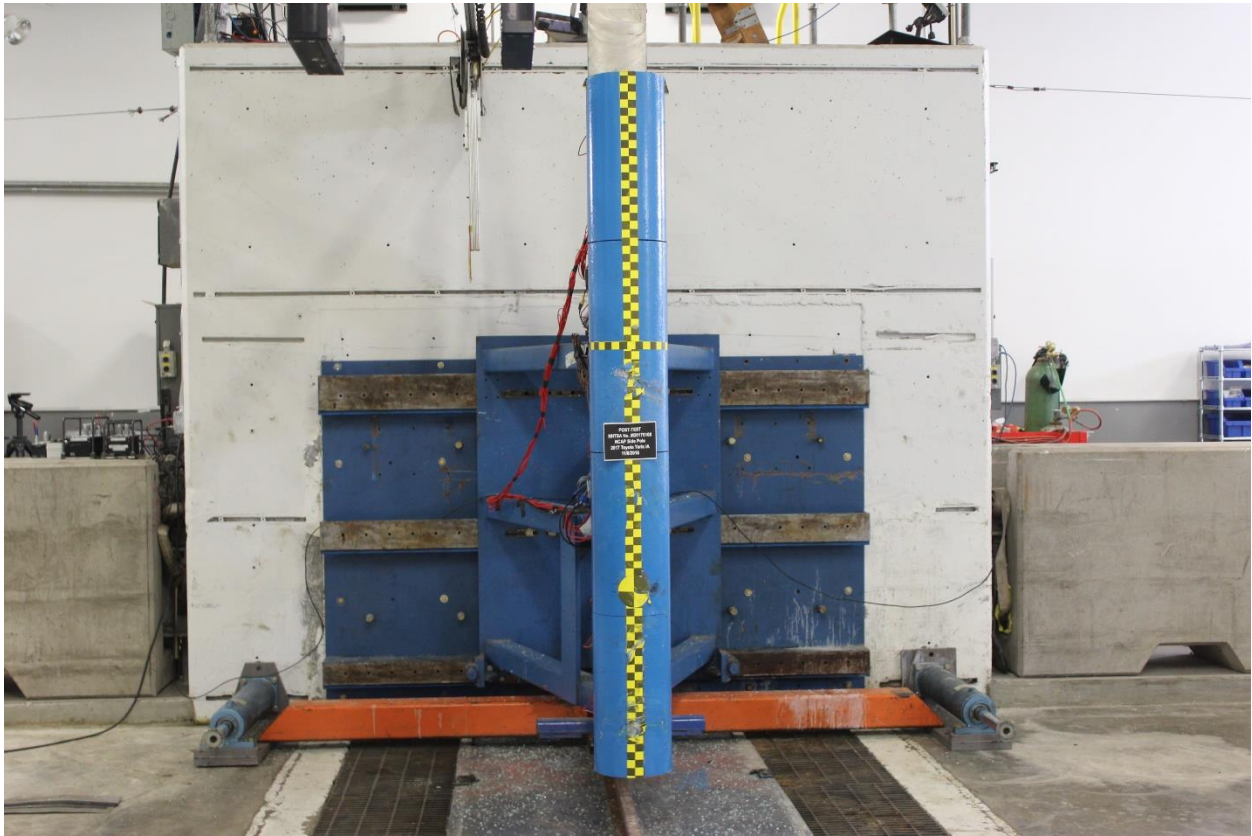


Figure A-58: Post-Test Pole Barrier Front View

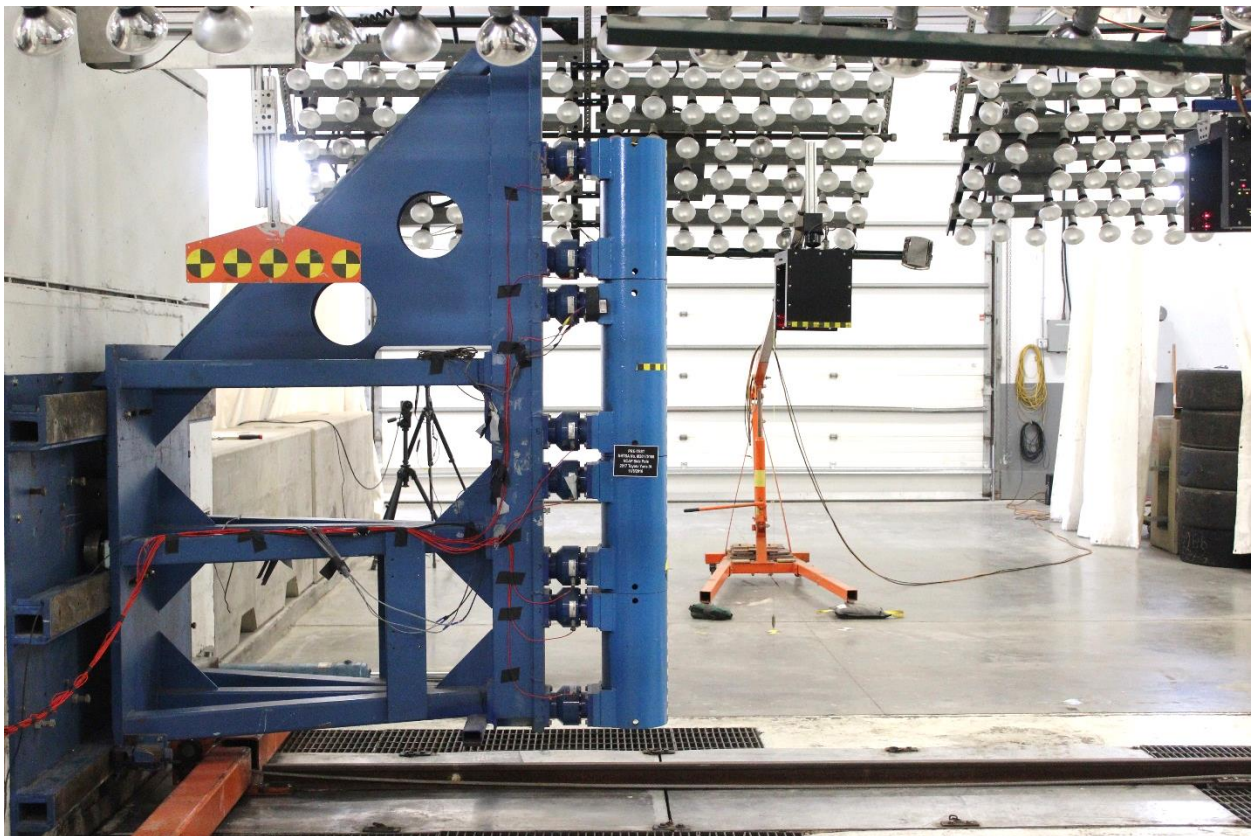


Figure A-59: Pre-Test Pole Barrier Side View

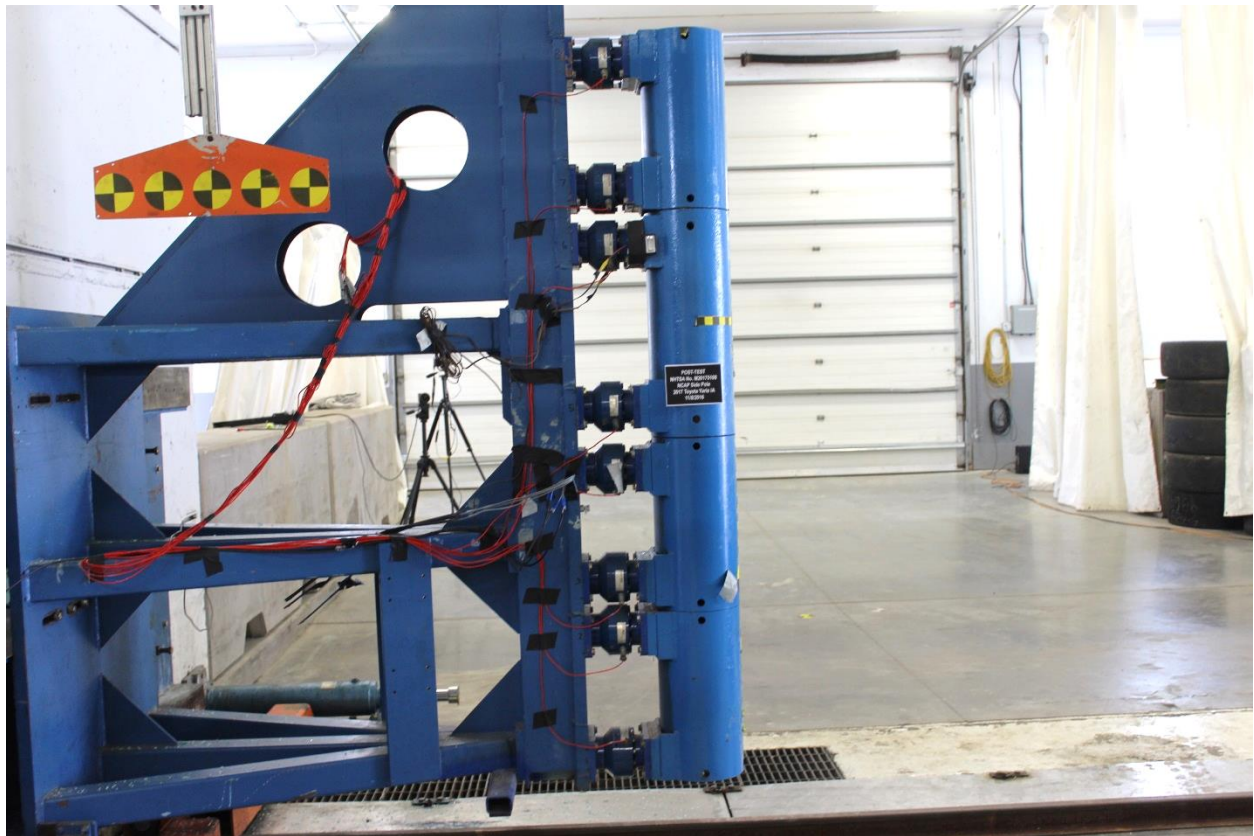


Figure A-60: Post-Test Pole Barrier Side View



Figure A-61: Pre-Test Ballast View



Figure A-62: Post-Test Primary and Redundant Speed Trap Read-Out



Figure A-63: FMVSS No. 301 Static Rollover 0 Degrees



Figure A-64: FMVSS No. 301 Static Rollover 90 Degrees



Figure A-65: FMVSS No. 301 Static Rollover 180 Degrees



Figure A-66: FMVSS No. 301 Static Rollover 270 Degrees



Figure A-67: FMVSS No. 301 Static Rollover 360 Degrees

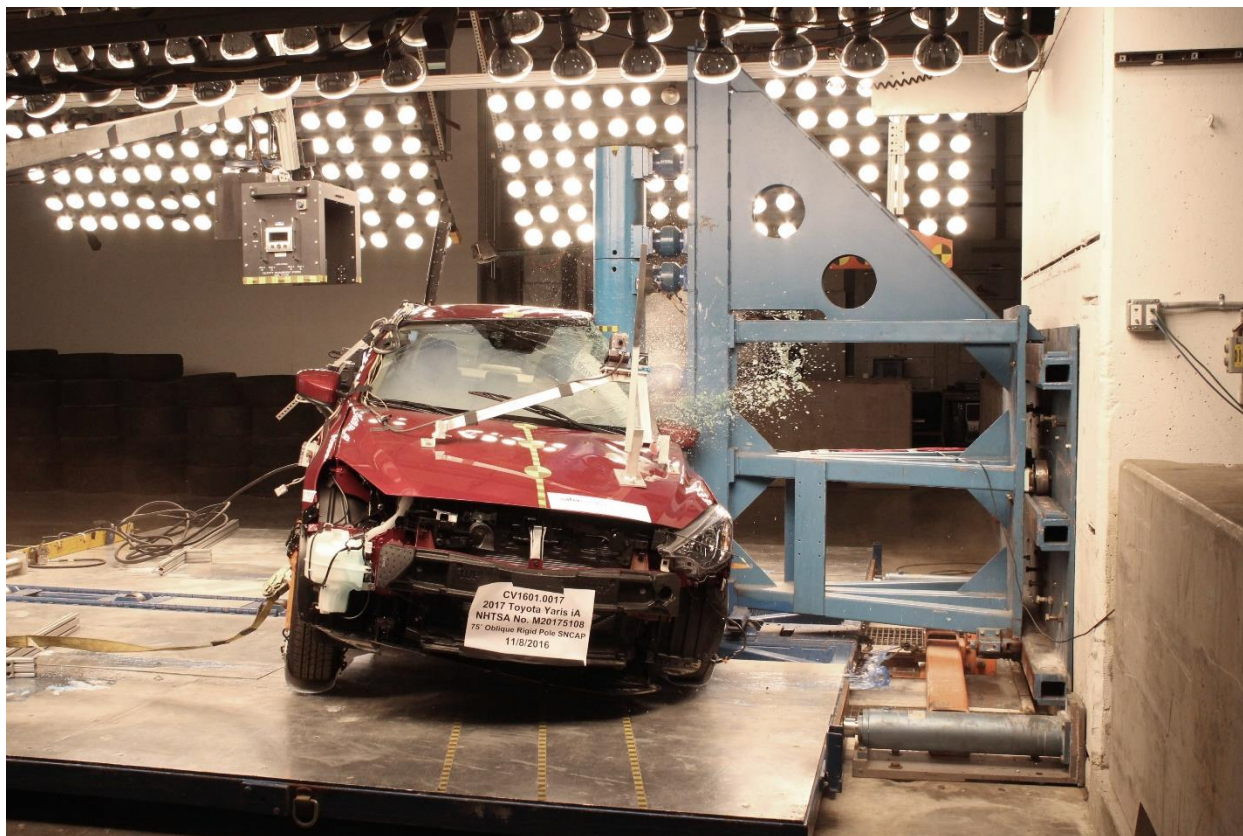


Figure A-68: Impact Event

TOYOTA
Let's Go Places

DESC: **YARIS IA** 4-DOOR SEDAN
VIN: **3MYDLBYV2HY150179**
YR/MO: 2017/03/0A
CLR: PULSE/AZ70 (041G/70)
FINAL ASSEMBLY POINT: SALAMANCA, MEXICO

GOVERNMENT 5-STAR SAFETY RATINGS

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

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

STANDARD EQUIPMENT

MECHANICAL AND PERFORMANCE

- 1.5L 4-Cyl DOHC 16-Valve 106HP
- 6-Speed Automatic Transmission
- Sport Drive Mode
- Front WH Driver Direct Injection System
- Ind MacPherson Strut Front Suspension
- Torsion Beam Rear Suspension
- 16" Alloy Wheels with 165/60R16 Tires

SAFETY AND CONVENIENCE

- Low Speed Pre-Collision System
- Dynamic Stability Control (DSC), Trac Control Syst (TCS), Anti-Lock Brake Syst (ABS), Electronic Brake Force Dist (EBD), Brake Assist (BA)
- Dr & Fr Infltr Std Airbag Syst, Dr & Fr Infltr Side Mounted Side Airbags, Fr & Rr Side Curtain Airbags
- LATCH Lower Anchor & Tether for Children
- Integrated Rear-View Backup Camera Syst
- Tire Pressure Monitoring System (TPMS)

EXTERIOR

- Halogen Headlights & Daytime Running Lts
- Var Intermittent Front Windshield Wipers
- Color-Keyed Power Exterior Mirrors w/LED Turn Signal Ind; Chrome-Tipped Exhaust

INTERIOR

- Fabric-Trimmed 6-Way Adj. Drivers Seat
- 6-Way Adjustable Front Passenger Seat
- 7" Color Touch-Screen Display Audio
- Multi-Function Commander Controls
- AM/FM/HD Radio w/Spkrs, AUX, 2 USB Ports w/iPod Connect, Hands-Free Phone & Music Streaming via Bluetooth, Voice Recon, Connected Service Suite w/Pandora, Aha & Stitcher Audio
- Remote Keyless Entry w/Push Button Start
- Cruise Control
- Pwr Door Locks, Pwr Windows w/Dr Side One-Touch Auto Up/Down w/Lam Protection
- 110V Telescopic Steer WH w/Audio Cntrls
- Speedometer & Digital Technometer
- Air Conditioning, Rear Window Defogger
- 60/40 Split Fold-Flat Rear Seats
- **Full Tank of Gas**

MANUFACTURER'S SUGGESTED RETAIL PRICE \$17,050.00

OPTIONAL EQUIPMENT

FE 50 State Emissions

EPA DOT Fuel Economy and Environment

Fuel Economy

35 MPG (combined city/hwy)
32 city
40 highway

You save \$1,750 in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost \$1,050

Fuel Economy & Greenhouse Gas Rating (better = up) **8** (out of 10)

Smog Rating (better = up) **6** (out of 10)

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 26 MPG and costs \$7,000 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$2.45 per gallon. MPG is miles per gallon (city/combined). Vehicle emissions are a significant cause of climate change and smog.

fuel economy.gov
Calculate personalized estimates and compare vehicles

Gasoline Vehicle

DELIVERY PROCESSING AND HANDLING FEE \$65.00

TOTAL \$17,915.00

The New Vehicle Limited Warranty provides 3-year/36,000-mile basic coverage, 5-year/60,000-mile powertrain coverage, plus 24-hour roadside assistance coverage. See Warranty and Maintenance Guide for details. An extended service contract may be available for the vehicle. See dealer for details. MSRP does not include destination charge, dealer prep, delivery, handling, taxes, license and title fees, applicable options, and other items. Dealer and distributor installed options and accessories are not included in the manufacturer's suggested retail price.

Delivered by Truck for 3106B
NORTH TOWN TOYOTA
1155 MILLERSPORT HIGHWAY
AMHERST NY 14226

ToyotaCare, which covers normal factory scheduled maintenance for two years or 25,000 miles, whichever occurs first, is included as part of the sales price of the vehicle for qualifying buyers. See participating dealer for eligibility and coverage details.

Figure A-69: Monroney Label

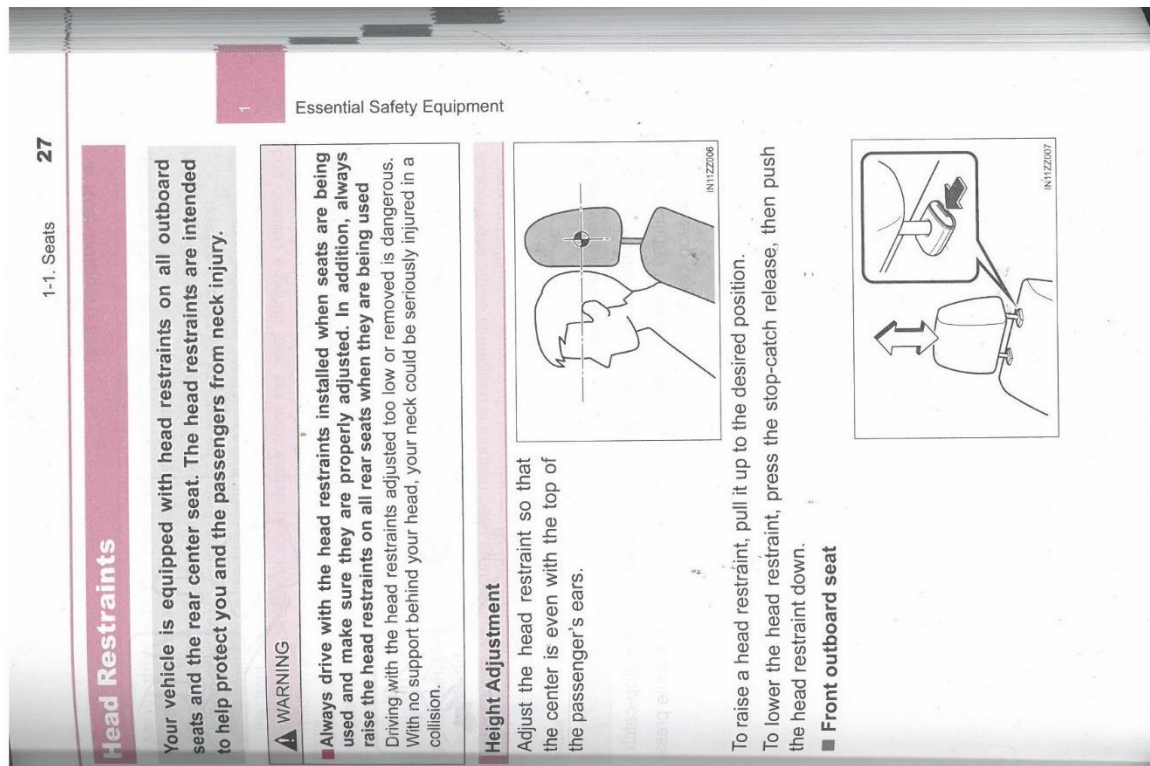


Figure A-70: Head Restraint Use and Adjustment Information from Vehicle Owner's Manual



Figure A-71: Post-Test View of Shattered Vehicle Inner Door Panel (if applicable)

APPENDIX B

VEHICLE AND DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS

Driver Dummy Instrumentation Plots

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

The following additional data for this test can be obtained from the Research and Development section of the NHTSA website. The website can be found at www.NHTSA.dot.gov.

Additional Driver Dummy Instrumentation Data

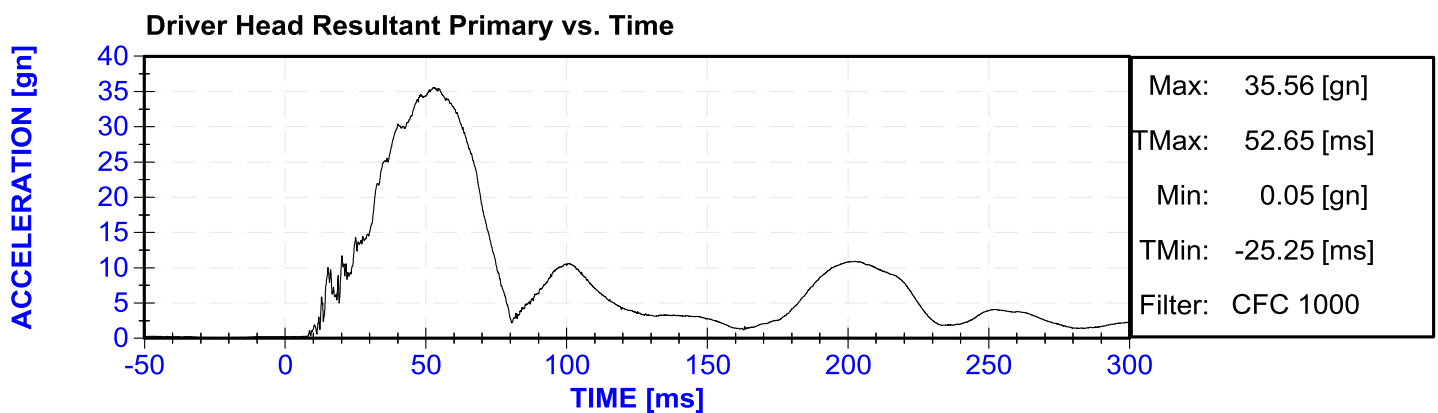
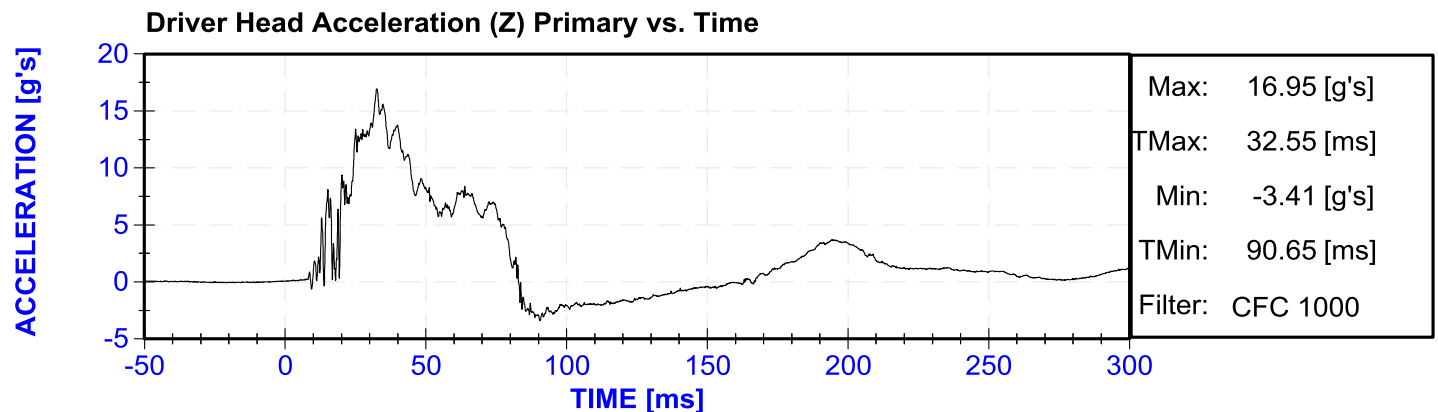
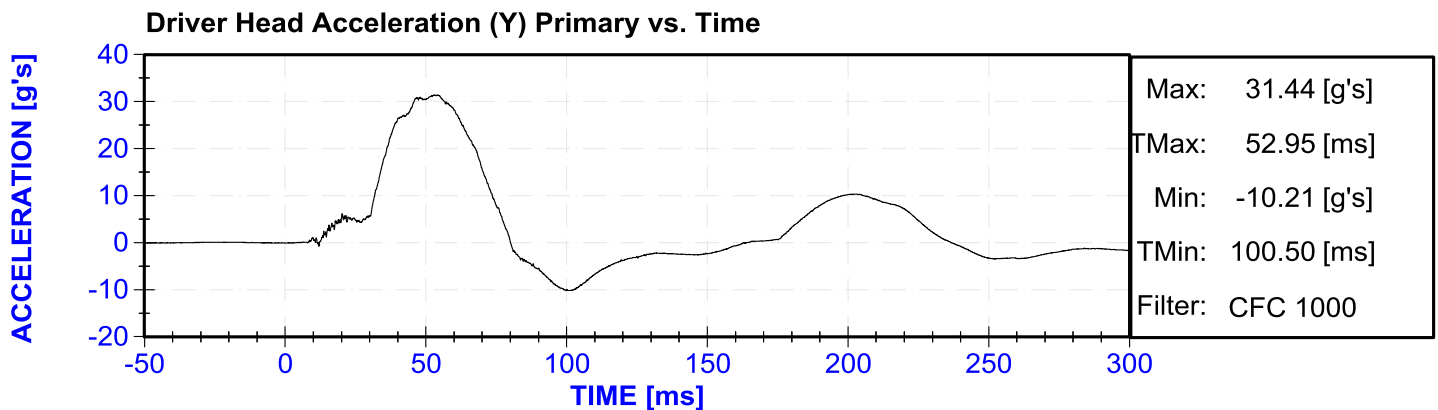
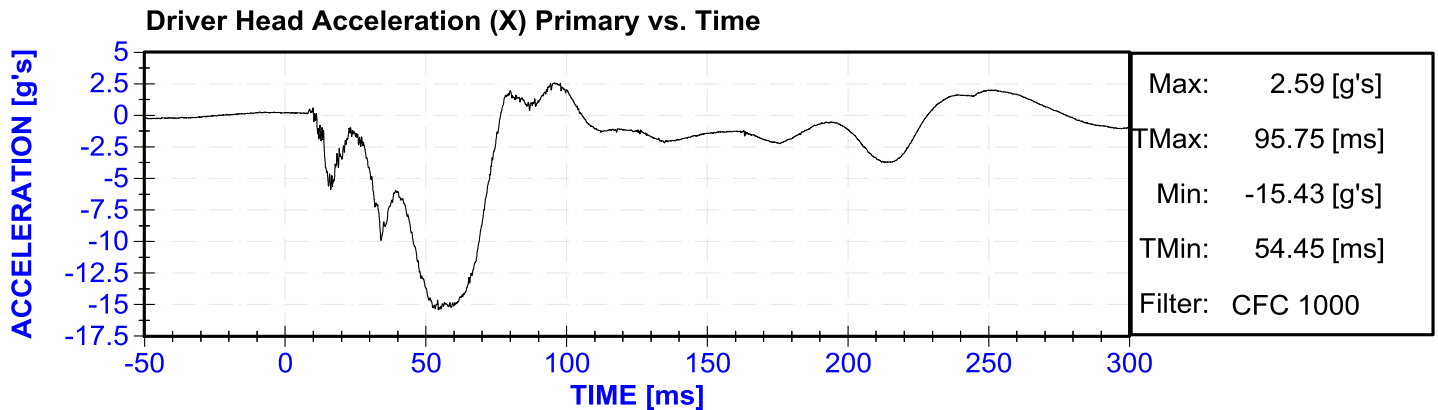
Driver Head Acceleration Redundant (X)
Driver Head Acceleration Redundant (Y)
Driver Head Acceleration Redundant (Z)
Driver Upper Thorax Rib Deflection (Y)
Driver Middle Thorax Rib Deflection (Y)
Driver Lower Thorax Rib Deflection (Y)
Driver Upper Abdomen Rib Deflection (Y)
Driver Lower Abdomen Rib Deflection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

Vehicle Instrumentation Data

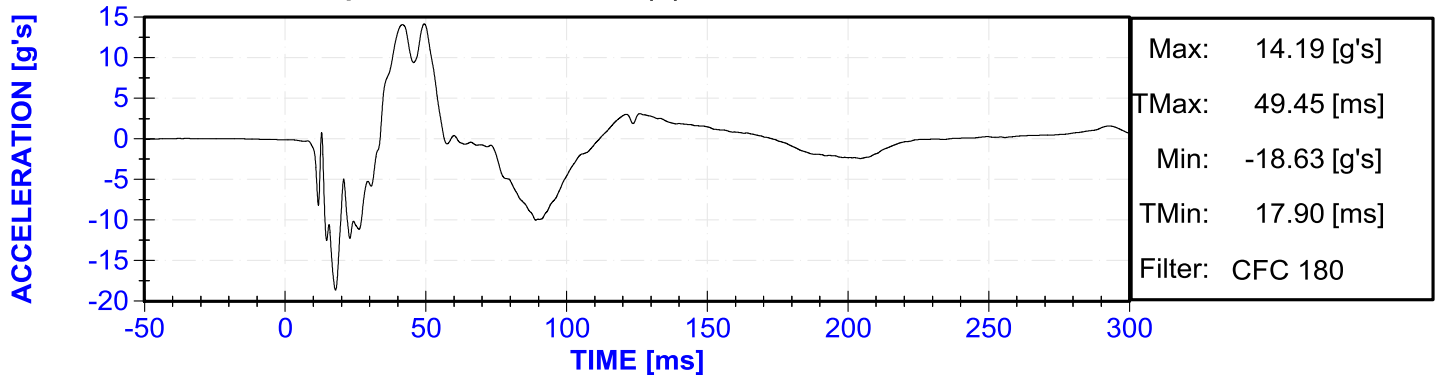
Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
Left Floor Sill Acceleration (Y)
Left A-Pillar Sill Acceleration (Y)
Left Lower A-Pillar Acceleration (Y)
Left Mid A-Pillar Acceleration (Y)
Left B-Pillar Sill Acceleration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

Pole Instrumentation Data

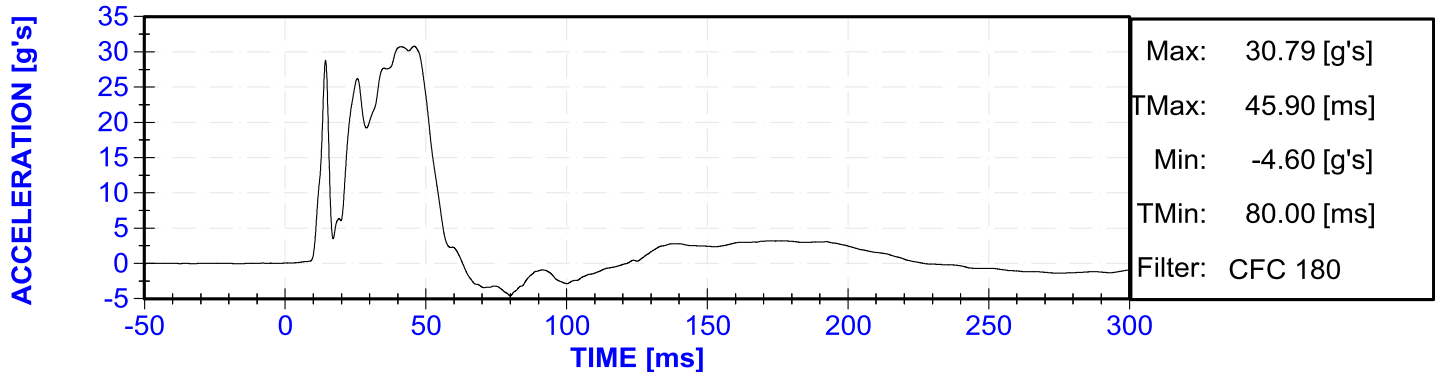
Load Cell Pole Barrier #1 Force (Y)
Load Cell Pole Barrier #2 Force (Y)
Load Cell Pole Barrier #3 Force (Y)
Load Cell Pole Barrier #4 Force (Y)
Load Cell Pole Barrier #5 Force (Y)
Load Cell Pole Barrier #6 Force (Y)
Load Cell Pole Barrier #7 Force (Y)
Load Cell Pole Barrier #8 Force (Y)



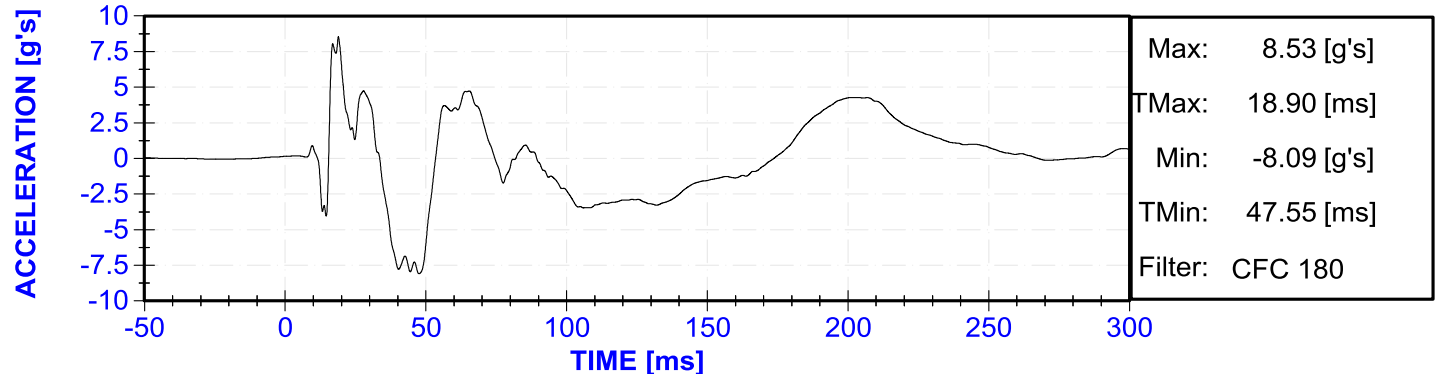
Driver Lower Spine T12 Acceleration (X) vs. Time



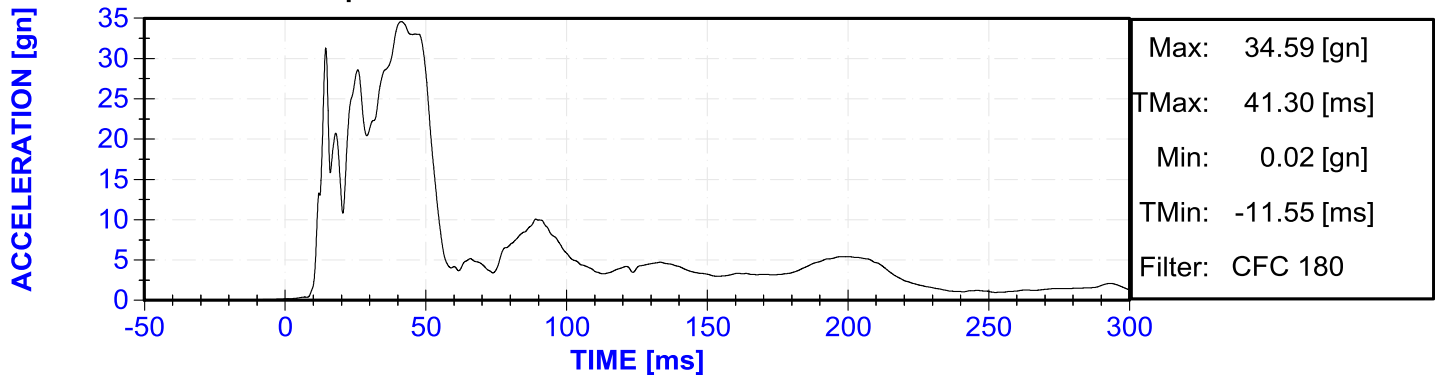
Driver Lower Spine T12 Acceleration (Y) vs. Time



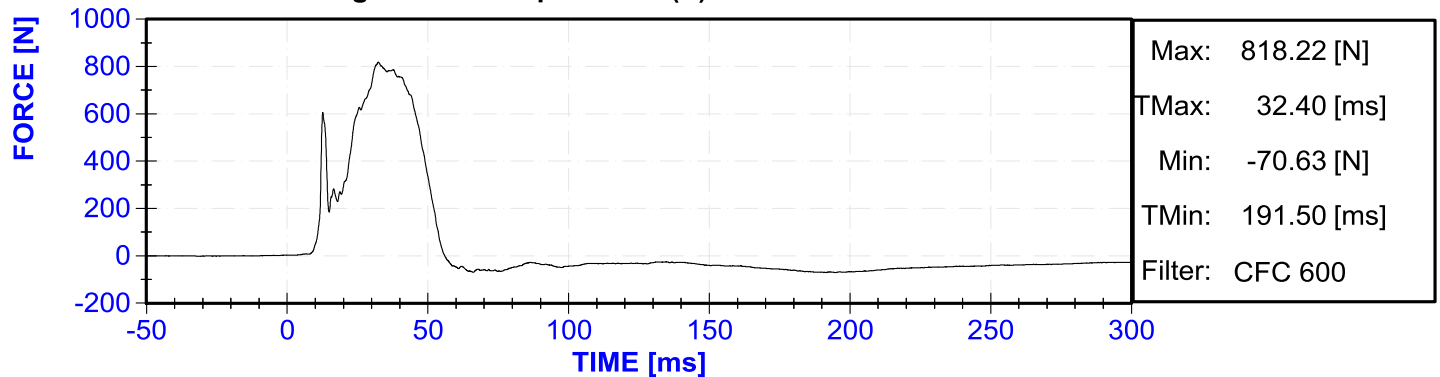
Driver Lower Spine T12 Acceleration (Z) vs. Time



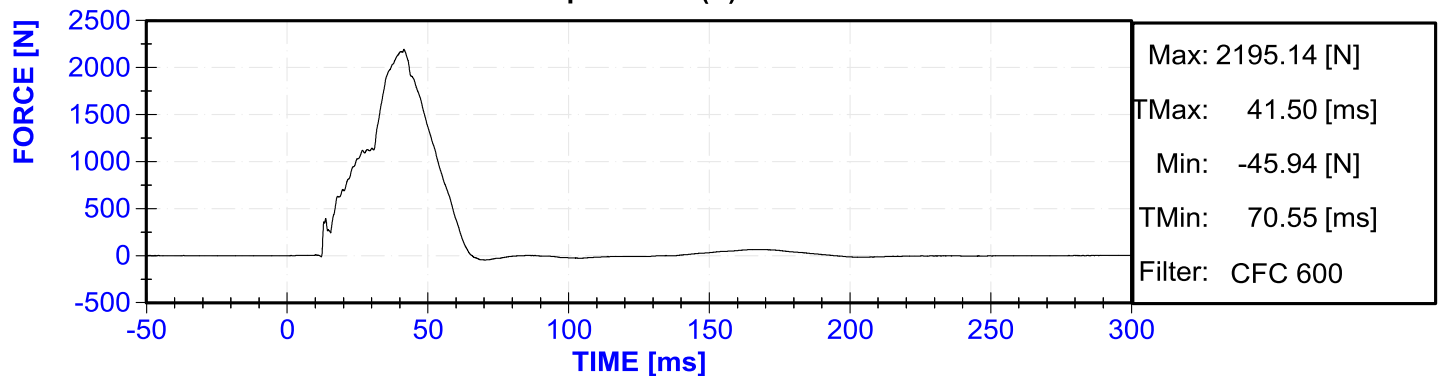
Driver Lower Spine T12 Resultant Acceleration vs. Time



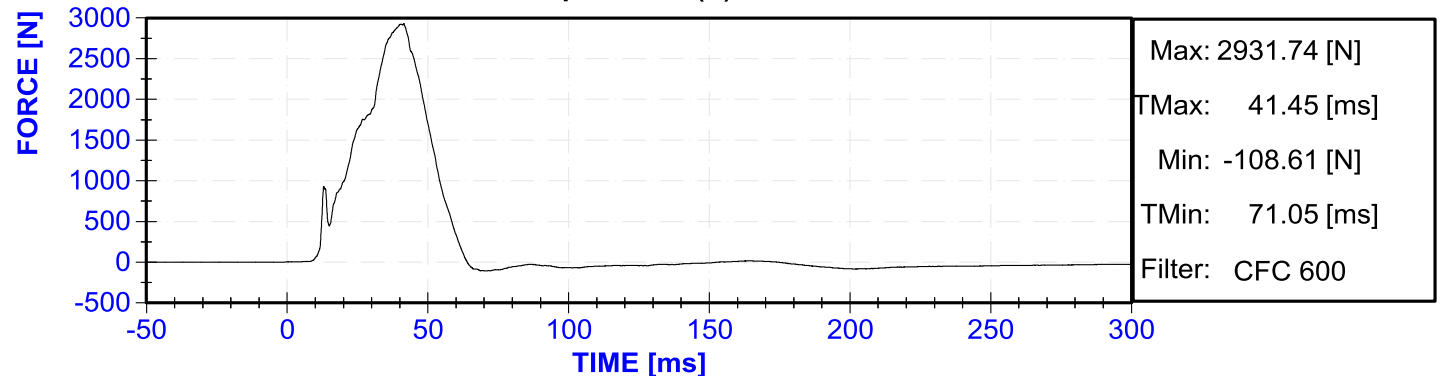
Driver Iliac Wing Force on Impact Side (Y) vs. Time



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)

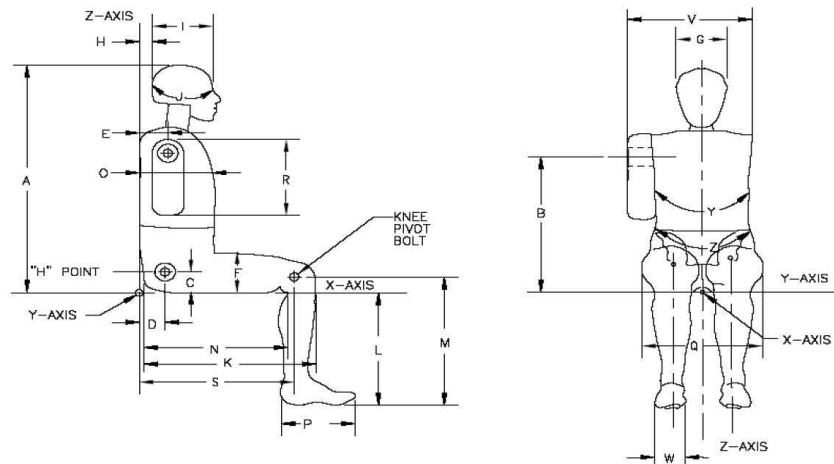


External Measurements - SID-IIs

Technician: M. Geesey

Date: 10/11/2016

Dummy Serial Number: 300



Symbol	Description	Specification (mm)		Result (mm)	Pass/Fail
A	Sitting Height	772	788	781	Pass
B	Shoulder Pivot Height	437	453	448	Pass
C	H-point Height	79	89	86	Pass
D	H-point from seatback	141	151	147	Pass
E	Shoulder Pivot from Backline	97	107	103	Pass
F	Thigh Clearance	119	135	123	Pass
G	Head Breadth	140	148	143	Pass
H	Head Back from Backline	40	46	43	Pass
I	Head Depth	178	188	183	Pass
J	Head Circumference	541	551	548	Pass
K	Buttock to Knee Length	514	540	537	Pass
L	Popliteal Height	343	369	356	Pass
M	Knee Pivot to floor height	392	409	403	Pass
N	Buttock Popliteal Length	416	442	437	Pass
O	Chest Depth w/o jacket	195	211	205	Pass
P	Foot Length	216	232	220	Pass
Q	Hip Breadth (w/pelvic plugs)	313	323	318	Pass
R	Arm Length	249	259	252	Pass
S	Knee Joint to seatback	477	493	485	Pass
V	Shoulder Width	341	357	347	Pass
W	Foot Width	78	94	82	Pass
Y	Chest Circumference w/jacket	851	881	870	Pass
Z	Waist Circumference	761	791	770	Pass

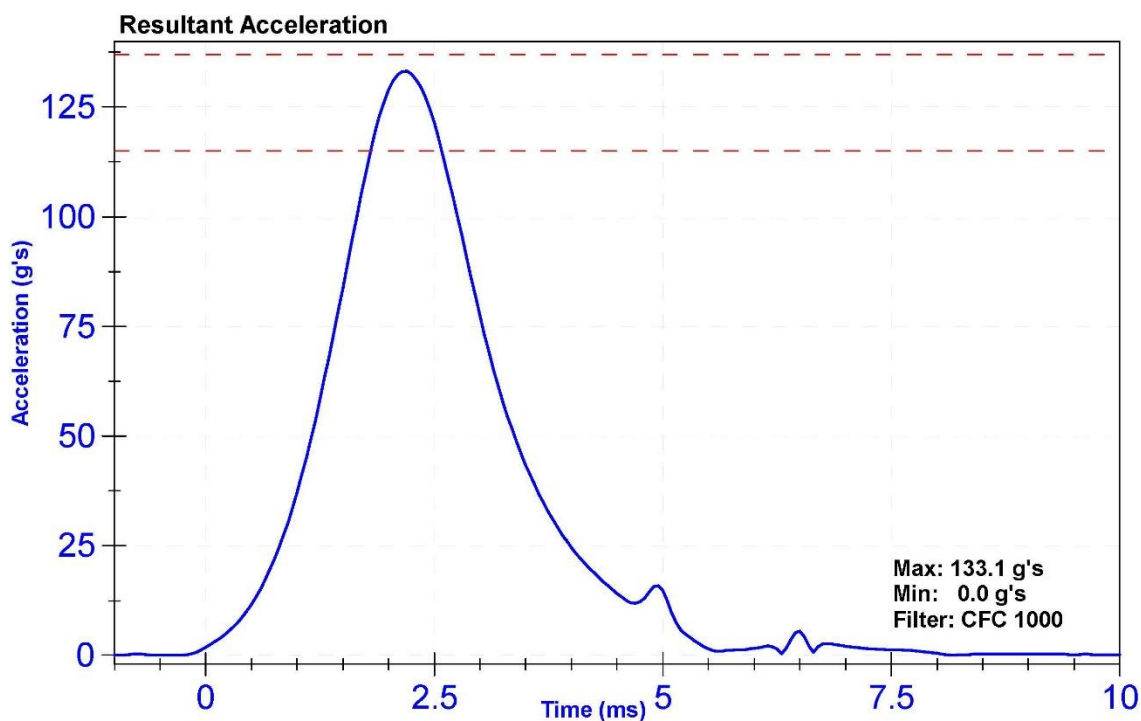
ATD Manufacturer	FTSS	Test Technician	M. Geesey
ATD Serial Number	300	Laboratory Supervisor	M. Goehle

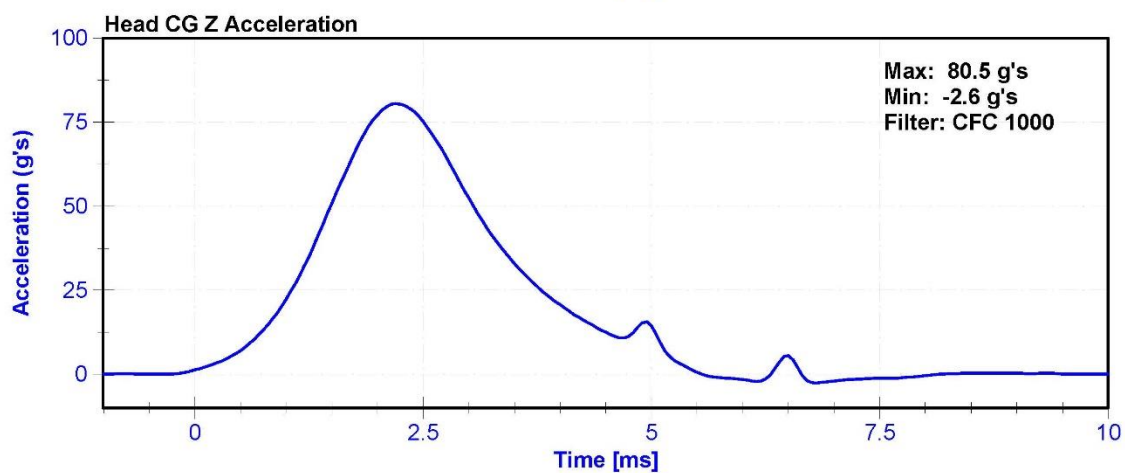
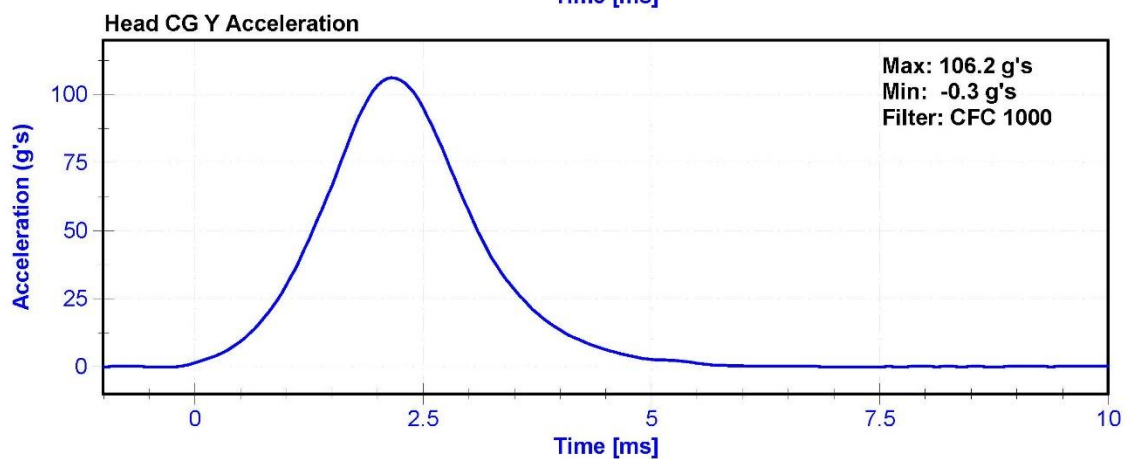
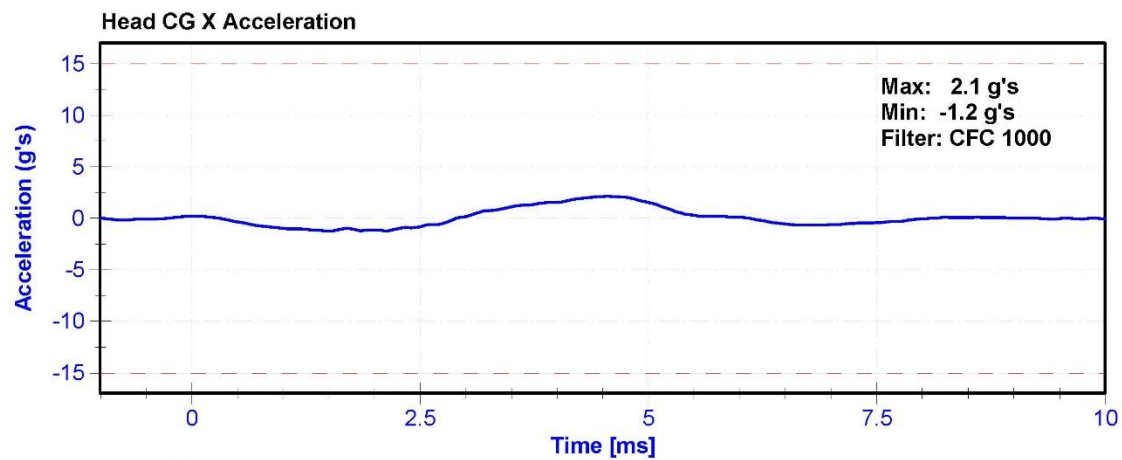
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.6	Pass
Humidity	10	70	%	33.4	Pass
Resultant Acceleration	115	137	g's	133.1	Pass
Oscillation	0	15	%	11.	Pass
Fore-Aft Acceleration	-15	15	g's	2.1	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
X Accelerometer	ENDEVCO 7264CT	AC-P58777	6/16/2016	12/15/2016
Y Accelerometer	ENDEVCO 7264CT	AC-P59018	6/16/2016	12/15/2016
Z Accelerometer	ENDEVCO 7264CT	AC-P68608	6/16/2016	12/15/2016





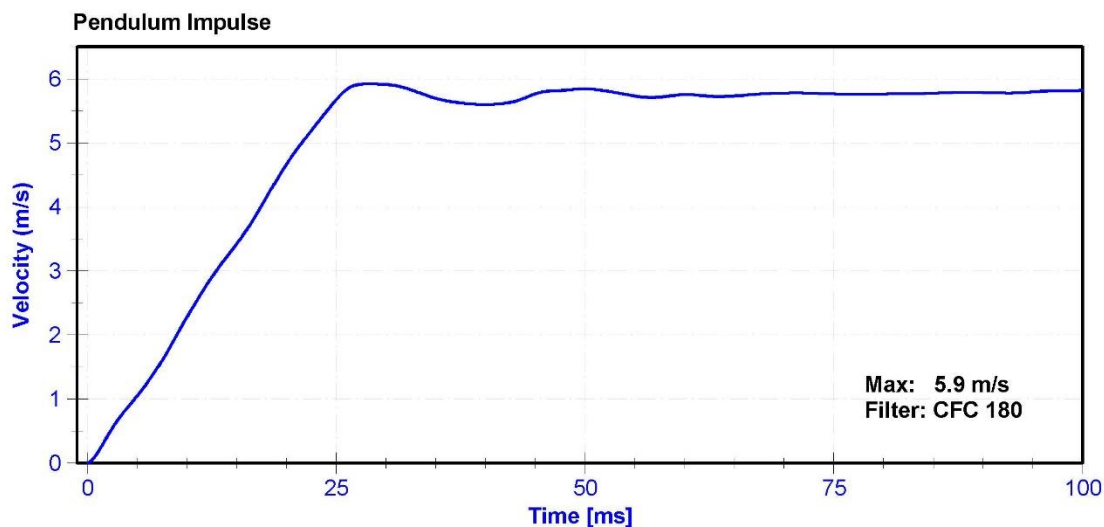
ATD Manufacturer	FTSS	Test Technician	M. Geesey
ATD Serial Number	300	Laboratory Supervisor	M. Goehle

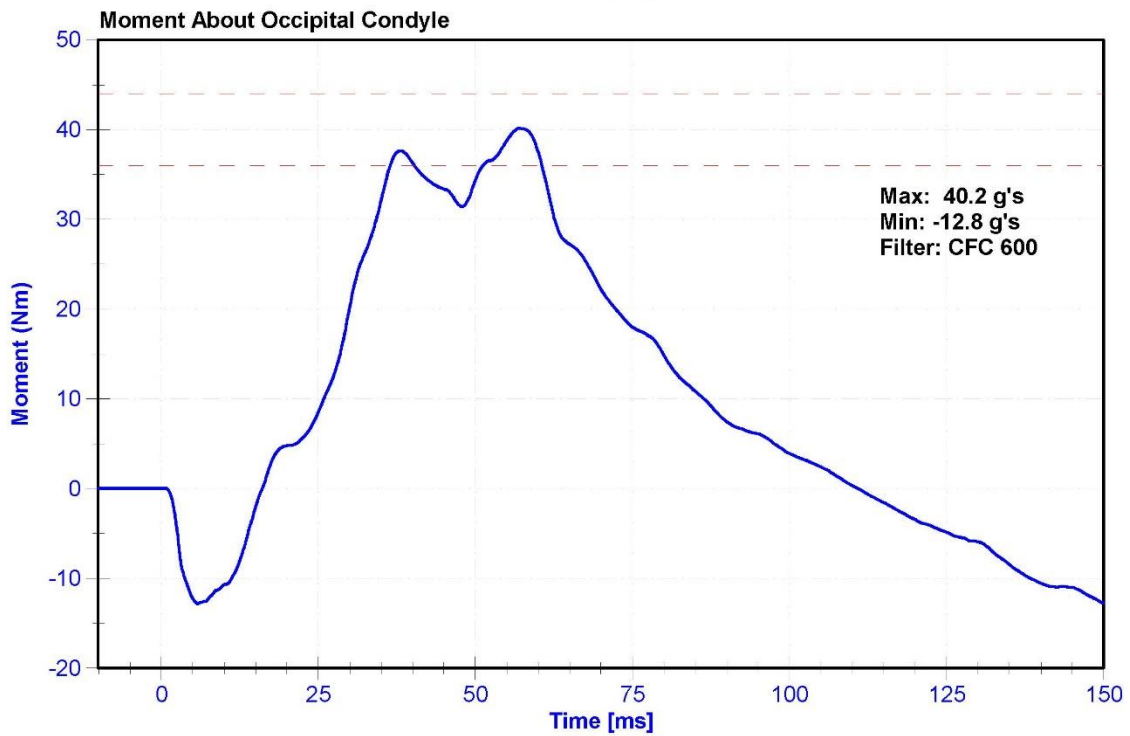
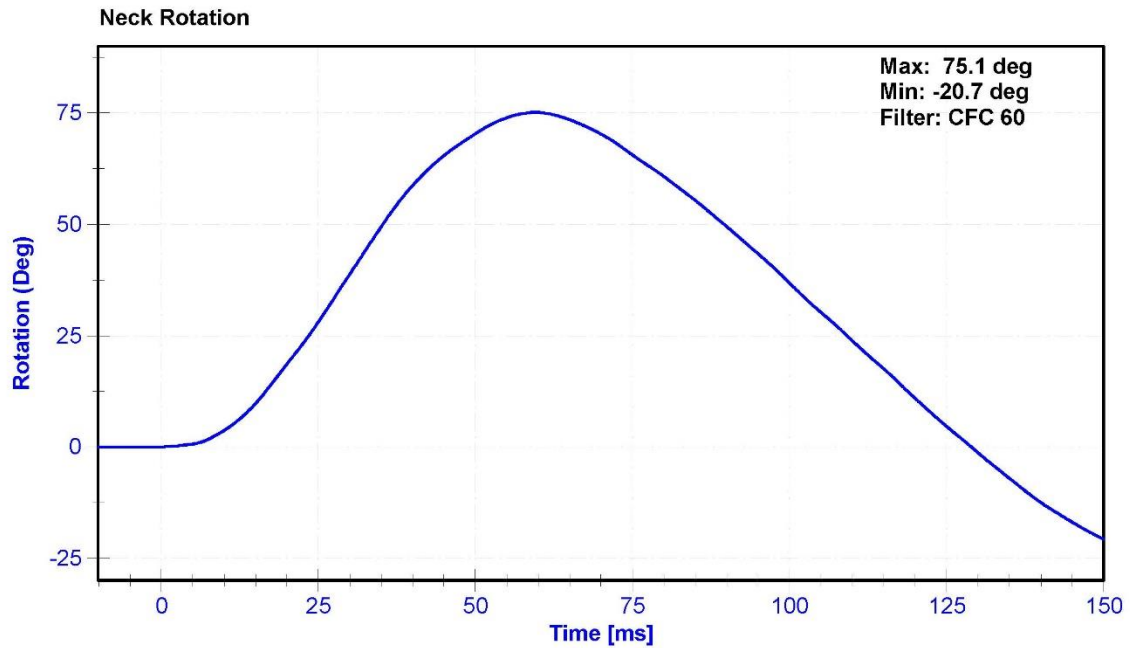
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21	Pass
Humidity	10	70	%	33.4	Pass
Velocity	5.51	5.63	m/s	5.620	Pass
Pendulum Impulse at 10ms	2.2	2.8	m/s	2.28	Pass
Pendulum Impulse at 15ms	3.3	4.1	m/s	3.42	Pass
Pendulum Impulse at 20ms	4.4	5.4	m/s	4.67	Pass
Pendulum Impulse at 25ms	5.4	6.1	m/s	5.67	Pass
Pendulum Impulse from 25 to 100ms	5.5	6.2	m/s	5.92	Pass
Neck Rotation	71	81	deg	75.1	Pass
Time at Maximum Rotation	50	70	ms	59.5	Pass
Moment about the OC	36	44	Nm	40.2	Pass
Moment Decay to 0 Nm	102	126	ms	110.9	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-AH5F3	5/10/2016	5/10/2017
Pendulum Potentiometer	Denton 78051-342	DS-184Pend	10/24/2015	10/23/2016
Condyle Potentiometer	Denton 78051-342	DS-185Pend	10/25/2015	10/24/2016
Upper Neck Load Cell	DENTON 1716A	LC-1629Fy	5/24/2016	5/24/2017





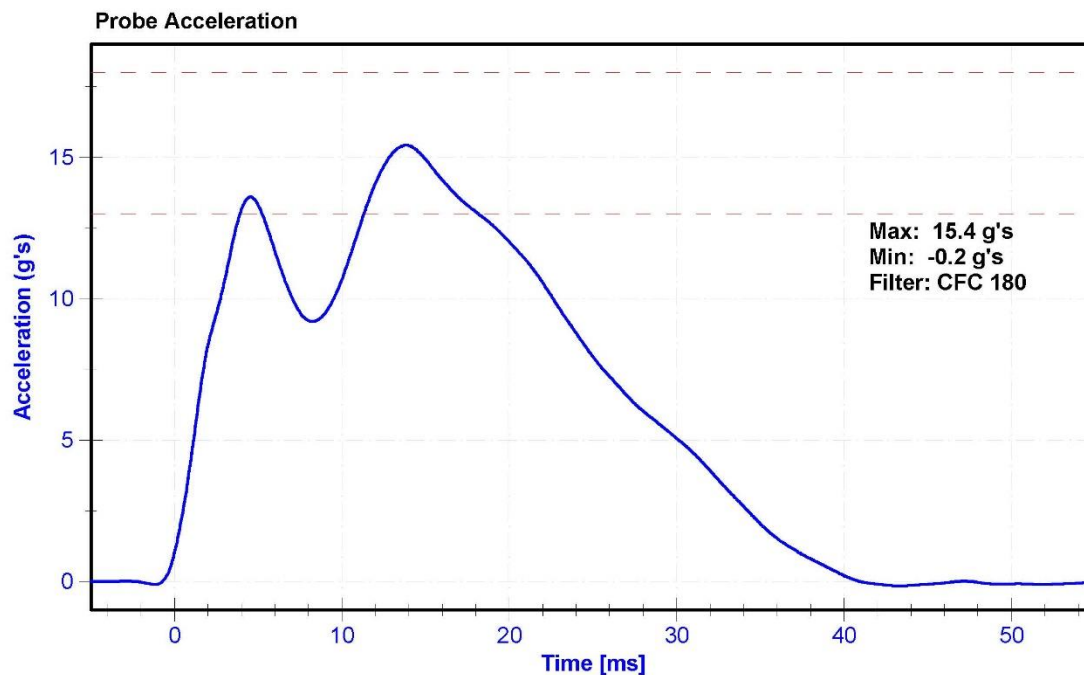
ATD Manufacturer	FTSS	Test Technician	M. Geesey
ATD Serial Number	300	Laboratory Supervisor	M. Goehle

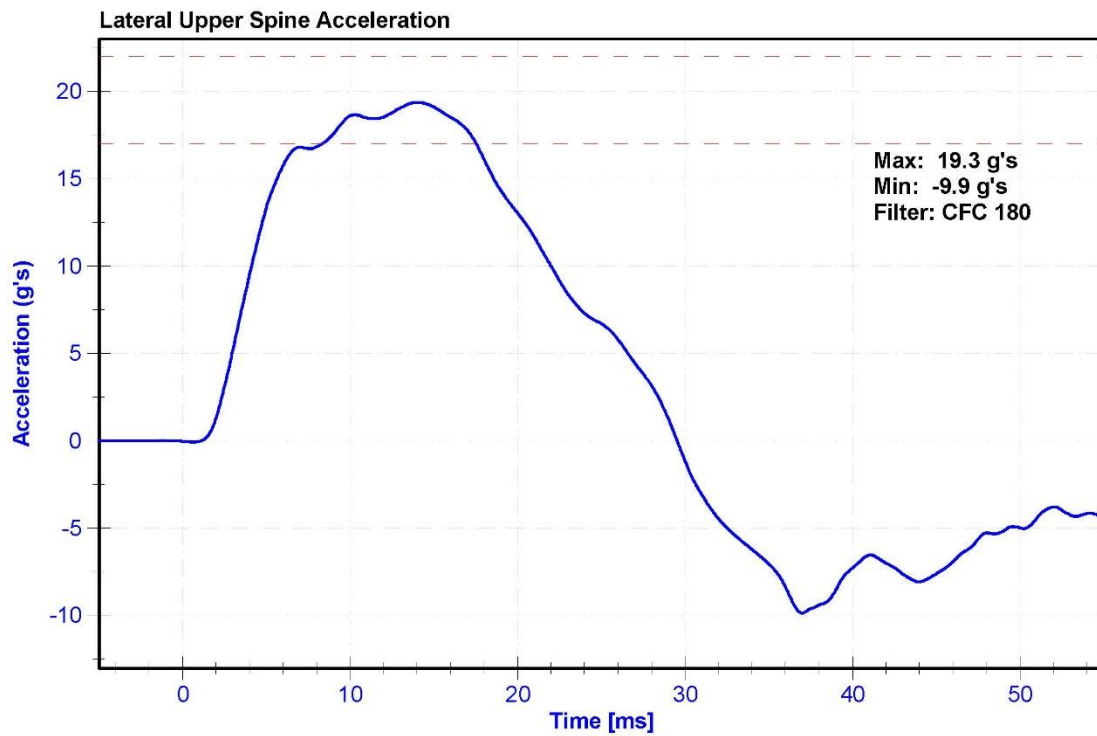
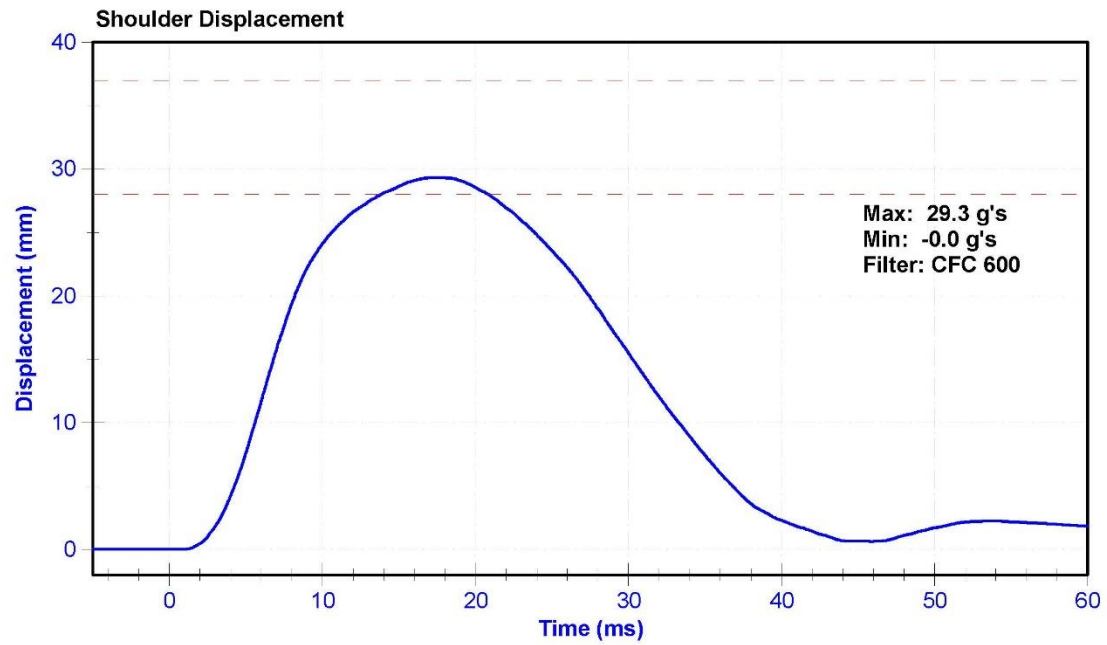
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.7	Pass
Humidity	10	70	%	32.6	Pass
Velocity	4.2	4.4	m/s	4.29	Pass
Probe Acceleration	13	18	g's	15.4	Pass
Shoulder Deflection	28	37	mm	29.3	Pass
Lateral Upper Spine Acceleration	17	22	g's	19.3	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7264CT	AC-P16593	4/1/2016	4/1/2017
Shoulder Potentiometer	Servo 08TC1-3725	DS-1063GFE	6/16/2016	6/16/2017
Upper Spine Y Accelerometer	ENDEVCO 7264	AC-P51915	6/16/2016	12/15/2016





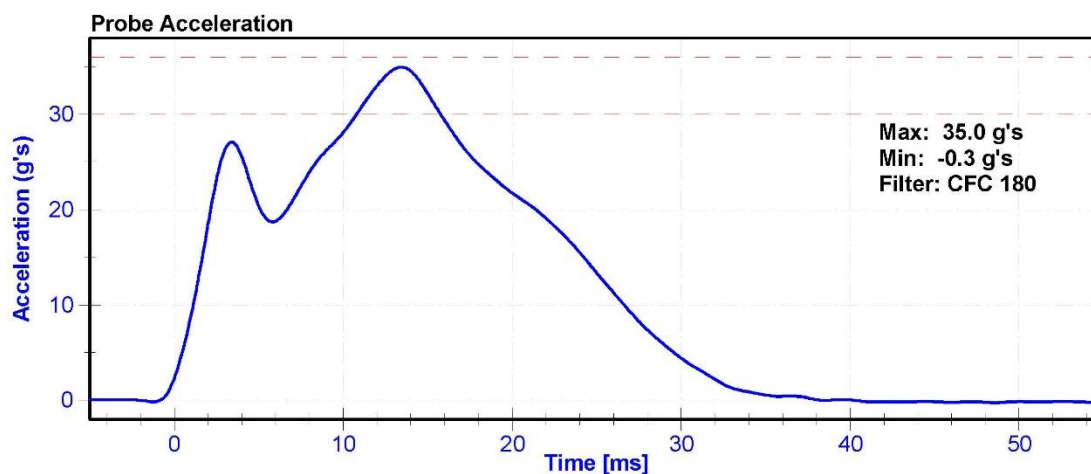
ATD Manufacturer	FTSS	Test Technician	M. Geesey
ATD Serial Number	300	Laboratory Supervisor	M. Goehle

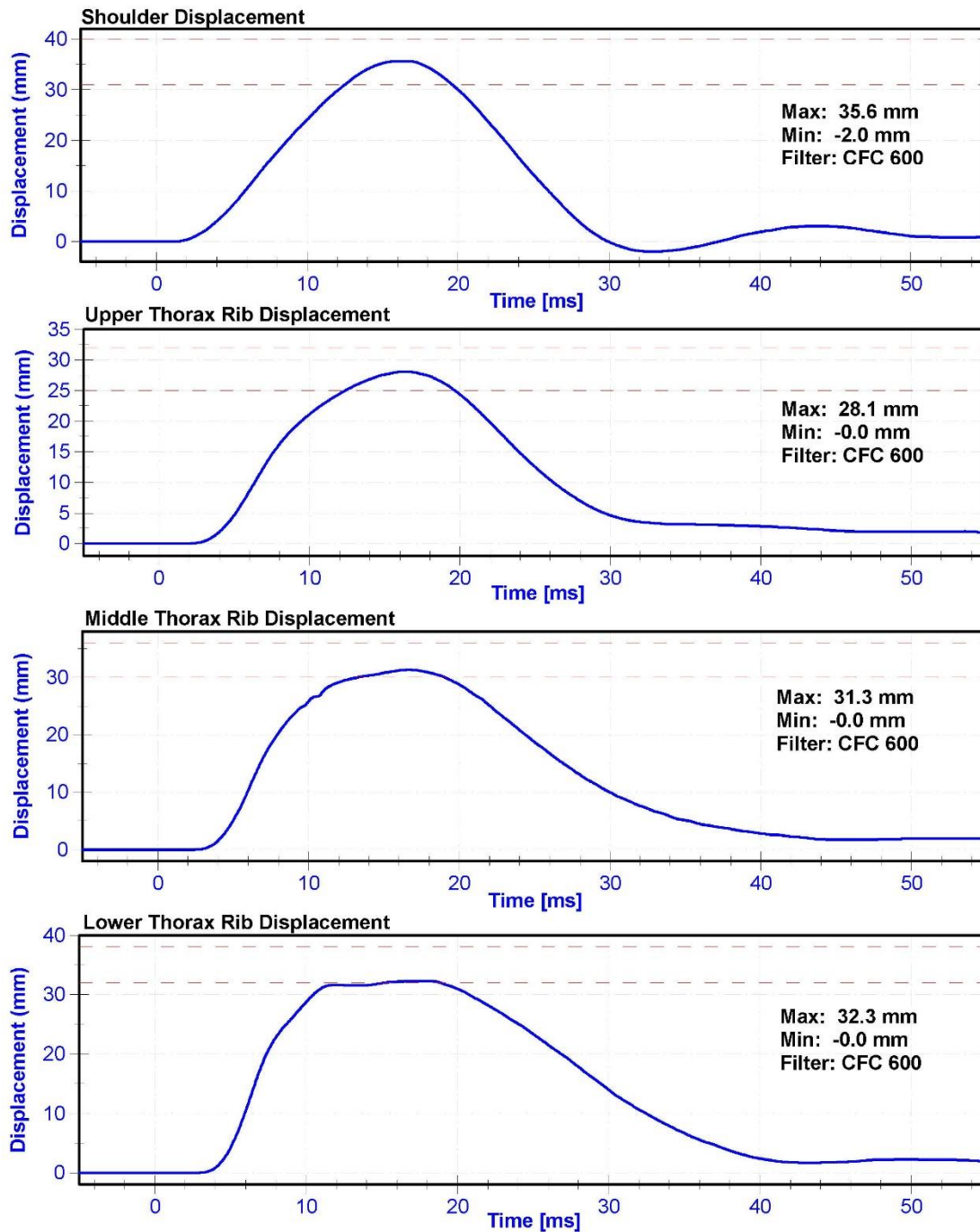
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.1	Pass
Humidity	10	70	%	33.4	Pass
Velocity	6.6	6.8	m/s	6.76	Pass
Probe Acceleration after 5 ms	30	36	g's	35.0	Pass
Lateral Upper Spine Acceleration	34	43	g's	37.0	Pass
Lateral Lower Spine Acceleration	29	37	g's	36.6	Pass
Shoulder Deflection	31	40	mm	35.6	Pass
Upper Thorax Rib Deflection	25	32	mm	28.1	Pass
Mid Thorax Rib Deflection	30	36	mm	31.3	Pass
Lower Thorax Rib Deflection	32	38	mm	32.3	Pass

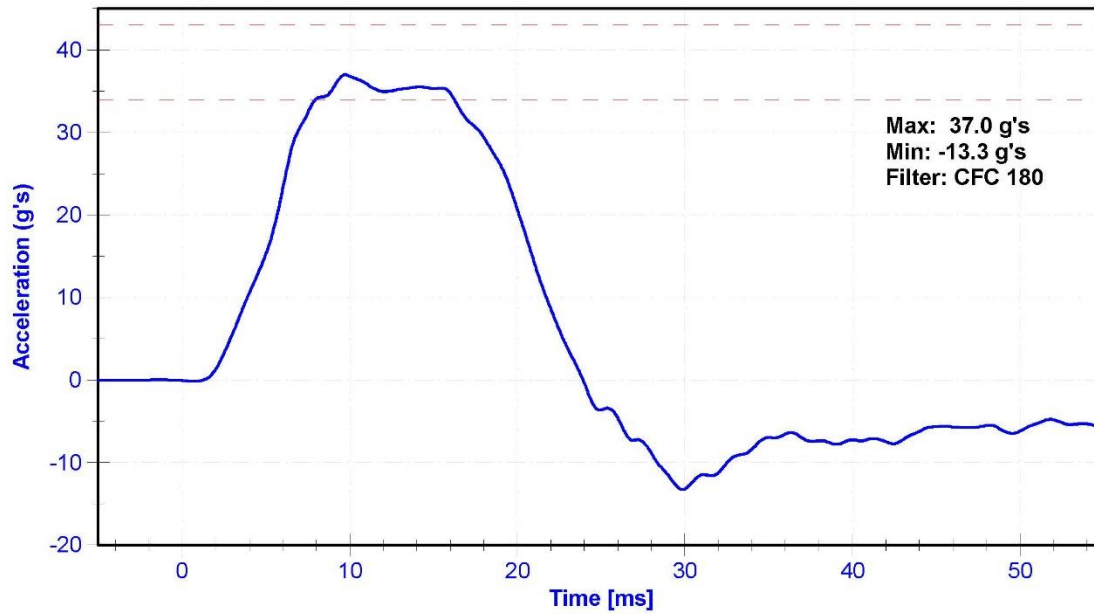
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7264CT	AC-P16593	4/1/2016	4/1/2017
Upper Spine T1 Y Accelerometer	ENDEVCO 7264	AC-P51915	6/16/2016	12/15/2016
Upper Spine T12 Y Accelerometer	ENDEVCO 7264	AC-P64147	6/16/2016	12/15/2016
Shoulder Potentiometer	Servo 08TC1-3725	DS-1063GFE	6/16/2016	6/16/2017
Upper Thorax Rib Potentiometer	Servo 08CT1-3725	DS-451GFE	6/16/2016	6/16/2017
Middle Thorax Rib Potentiometer	Servo 08TC1-3725	DS-1151GFE	6/16/2016	6/16/2017
Lower Thorax Rib Potentiometer	Servo 08TC1-3725	DS-1156GFE	6/16/2016	6/16/2017

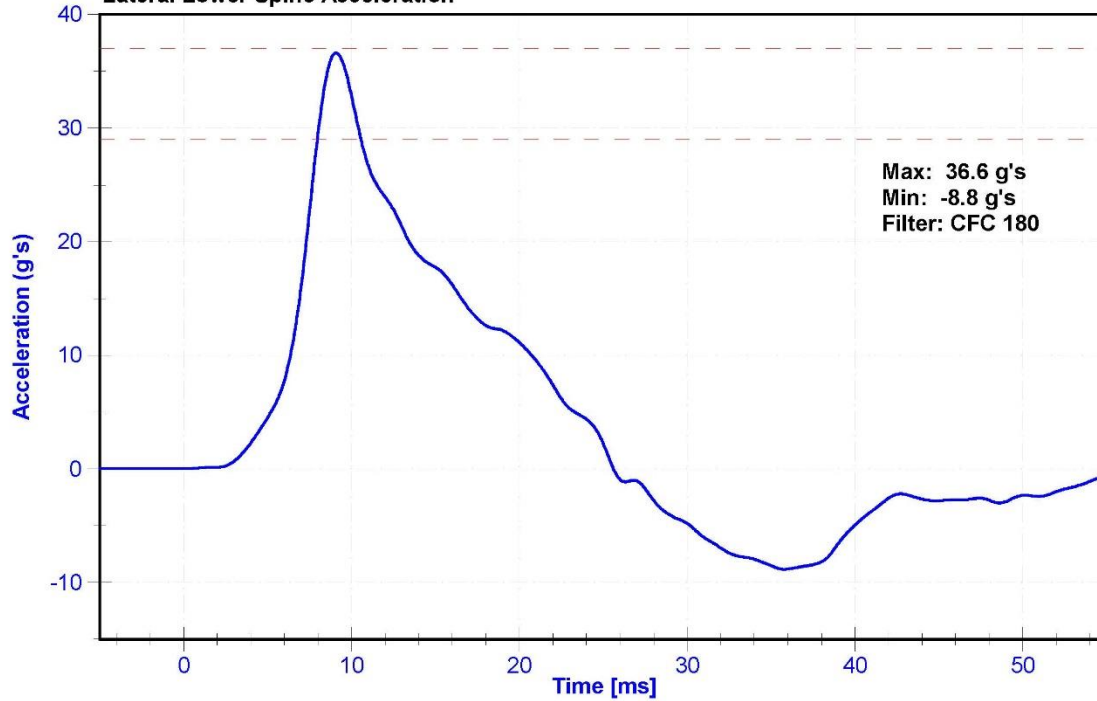




Lateral Upper Spine Acceleration



Lateral Lower Spine Acceleration



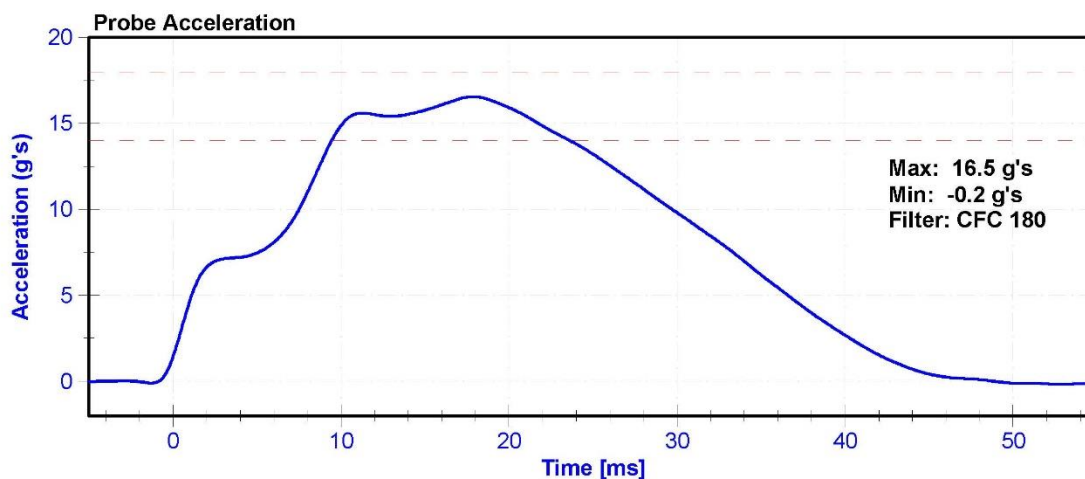
ATD Manufacturer	FTSS	Test Technician	M. Geesey
ATD Serial Number	300	Laboratory Supervisor	M. Goehle

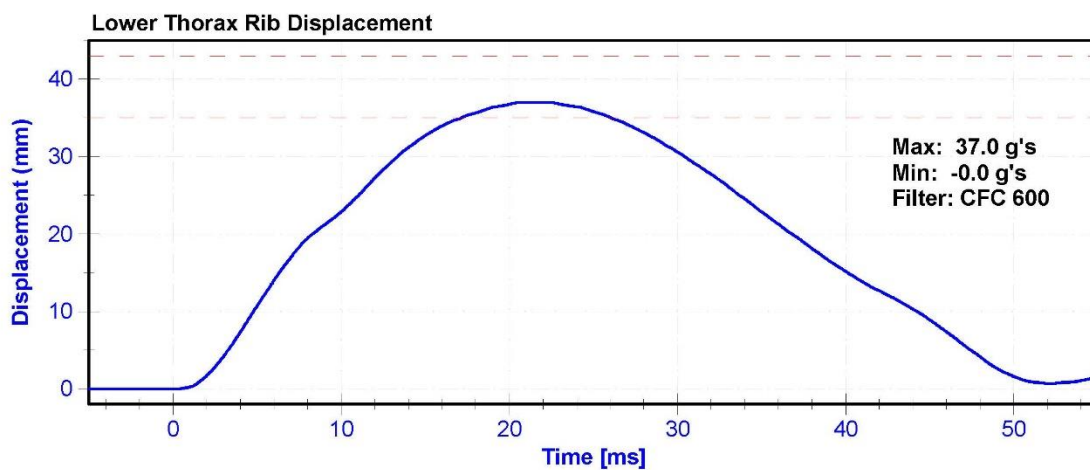
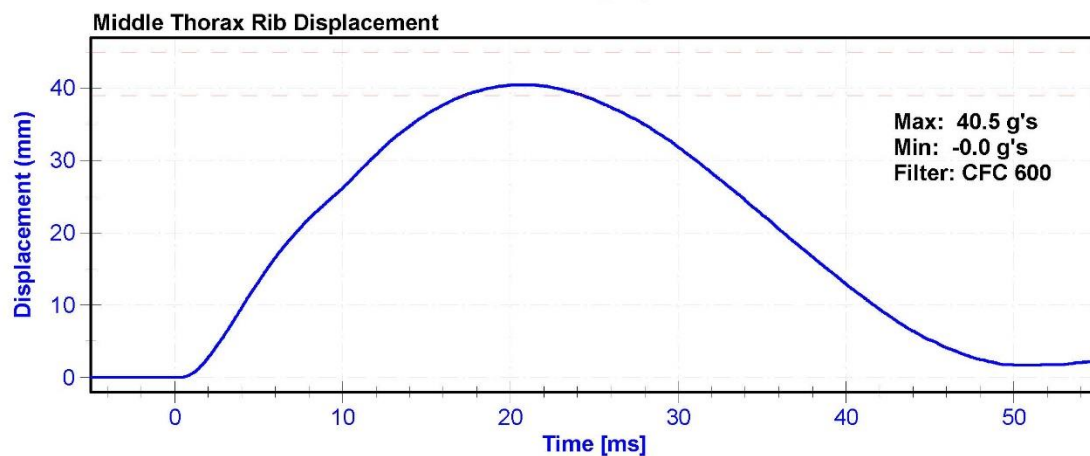
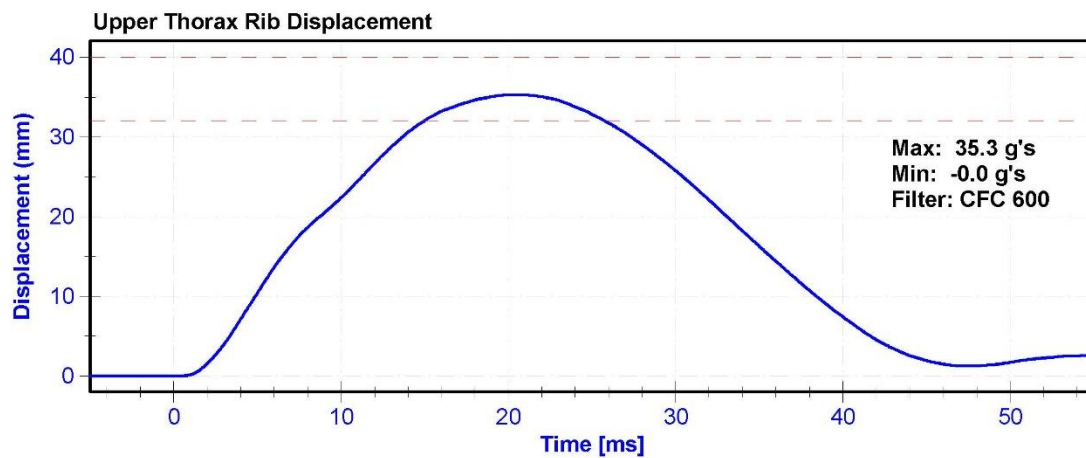
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.9	Pass
Humidity	10	70	%	30	Pass
Velocity	4.2	4.4	m/s	4.29	Pass
Probe Acceleration	14	18	g's	16.5	Pass
Lateral Upper Spine Acceleration	13	17	g's	15.9	Pass
Lateral Lower Spine Acceleration	7	11	g's	9.7	Pass
Upper Thorax Rib Deflection	32	40	mm	35.3	Pass
Middle Thorax Rib Deflection	39	45	mm	40.5	Pass
Lower Thorax Rib Deflection	35	43	mm	37.0	Pass

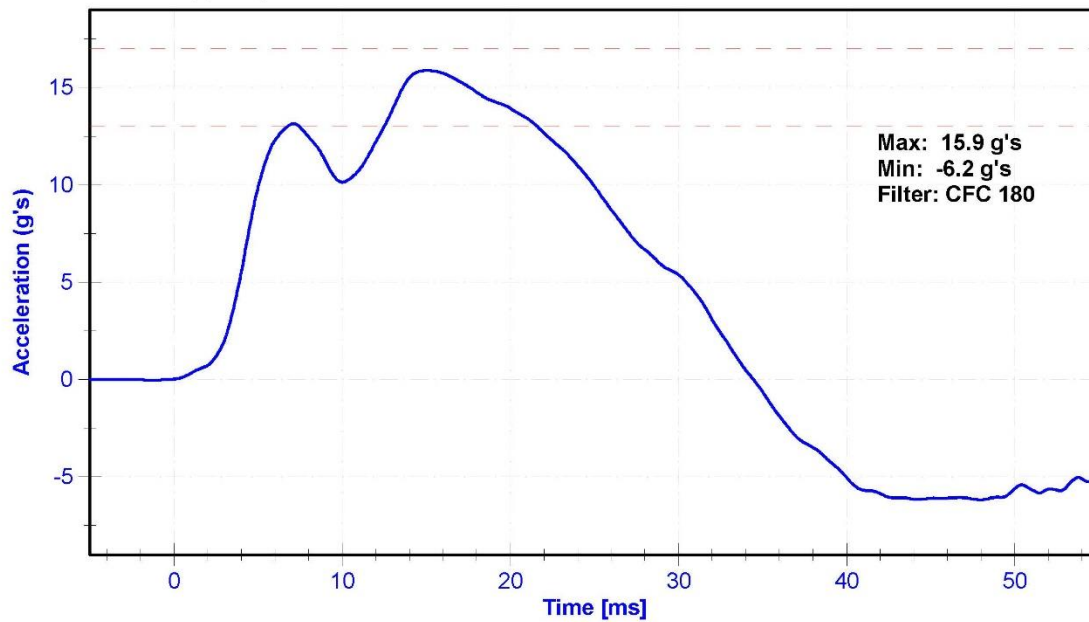
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7264CT	AC-P16593	4/1/2016	4/1/2017
Upper Spine Y Accelerometer	ENDEVCO 7264	AC-P51915	6/16/2016	12/15/2016
Lower Spine Y Accelerometer	ENDEVCO 7264	AC-P64147	6/16/2016	12/15/2016
Upper Thorax Rib Potentiometer	Servo 08CT1-3725	DS-451GFE	6/16/2016	6/16/2017
Middle Thorax Rib Potentiometer	Servo 08TC1-3725	DS-1151GFE	6/16/2016	6/16/2017
Lower Thorax Rib Potentiometer	Servo 08TC1-3725	DS-1156GFE	6/16/2016	6/16/2017

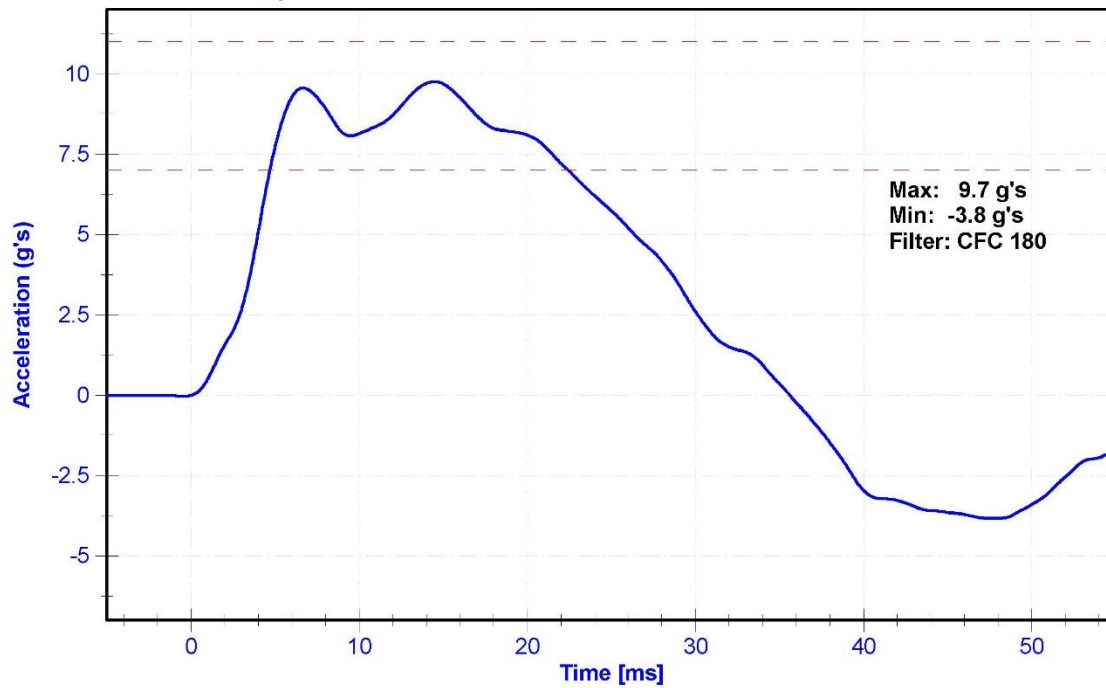




Lateral Upper Spine Acceleration



Lateral Lower Spine Acceleration



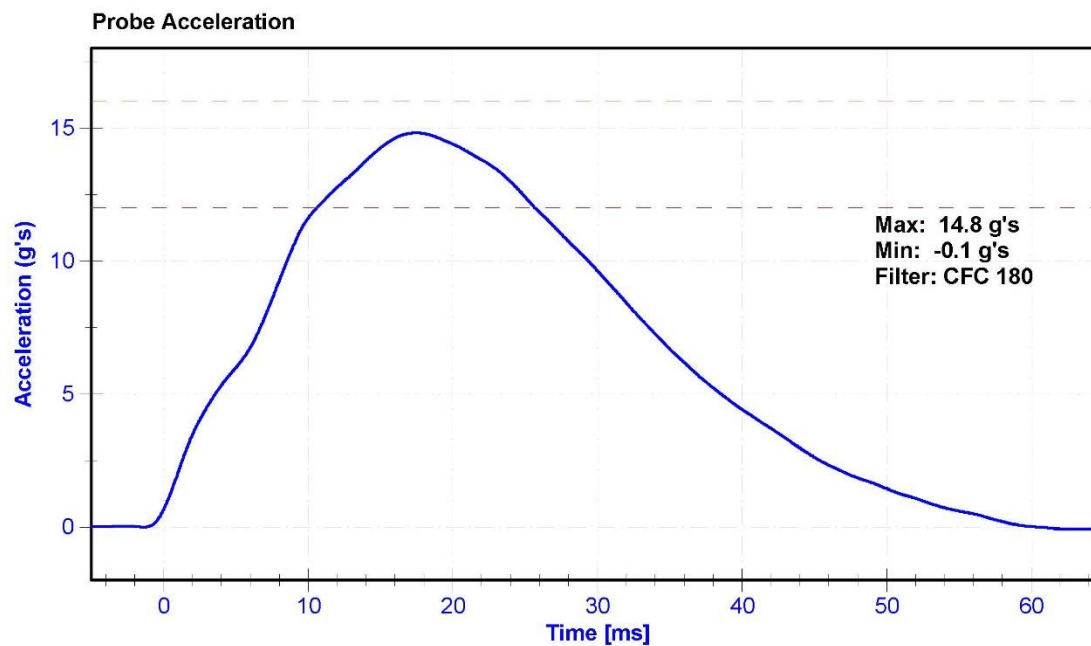
ATD Manufacturer	FTSS	Test Technician	M. Geesey
ATD Serial Number	300	Laboratory Supervisor	M. Goehle

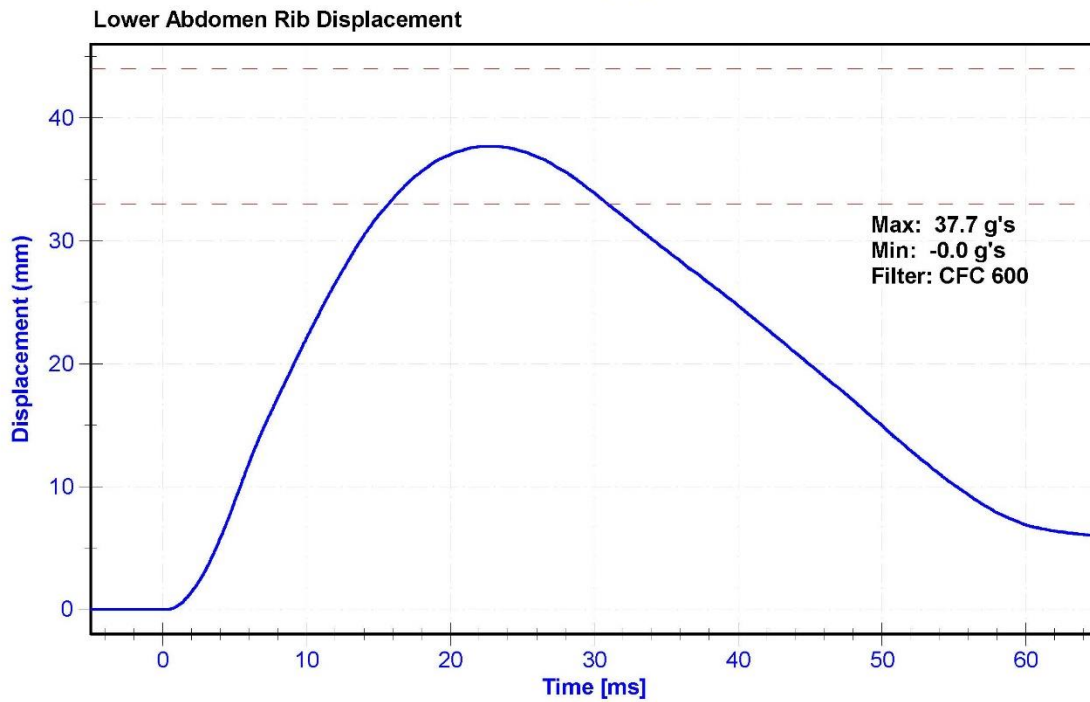
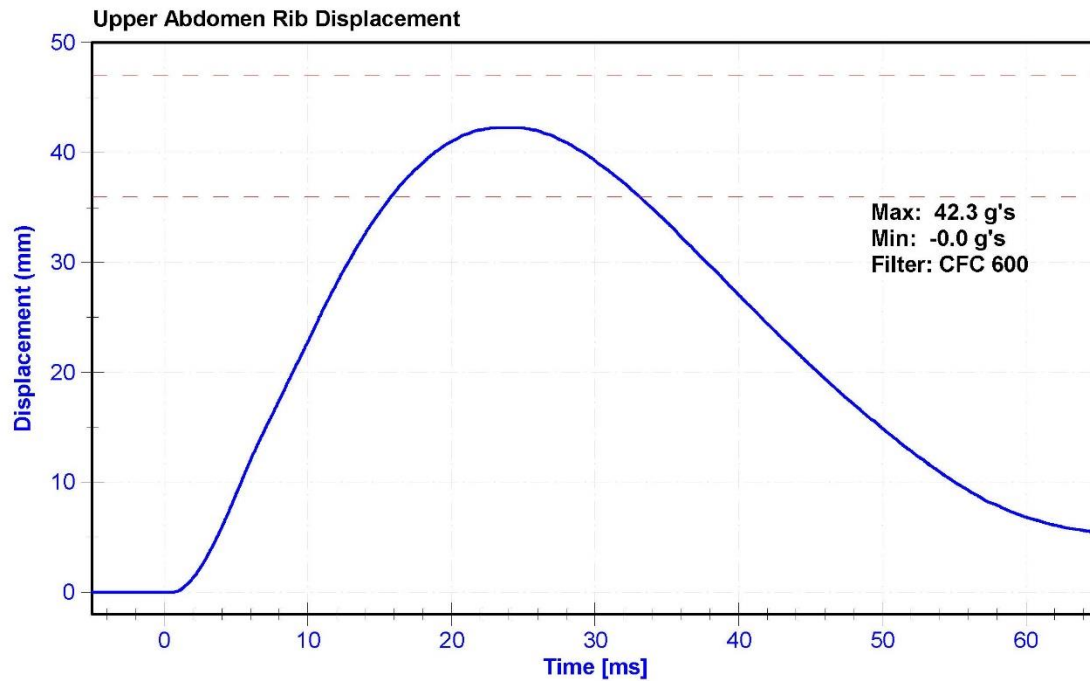
Results

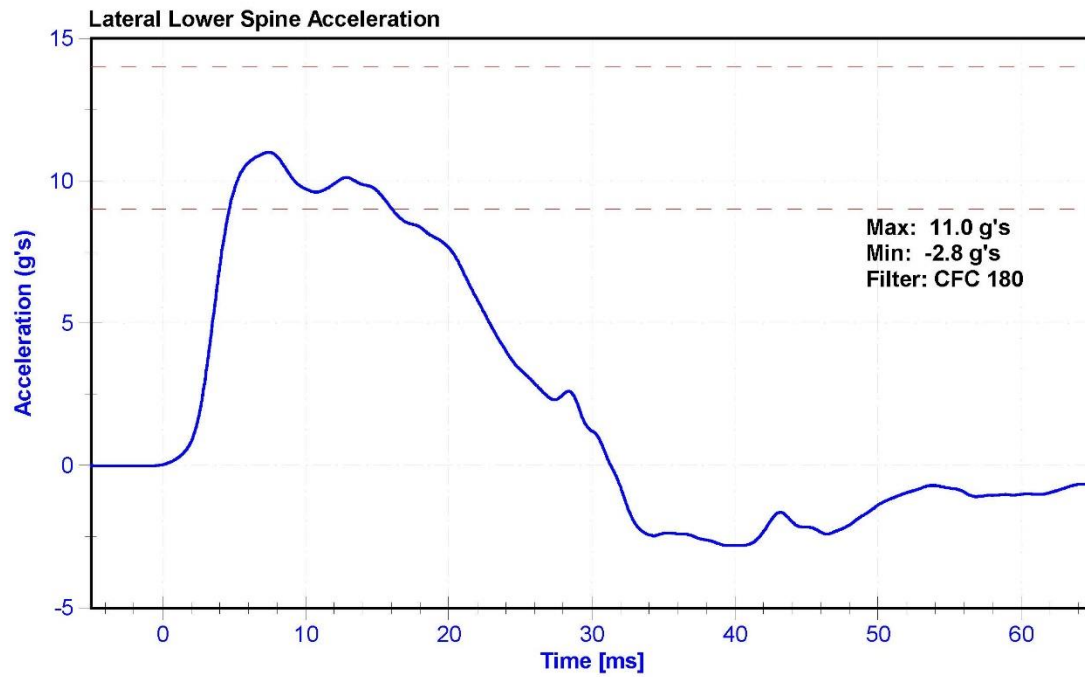
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.5	Pass
Humidity	10	70	%	32.5	Pass
Velocity	4.2	4.4	m/s	4.30	Pass
Probe Acceleration	12	16	g's	14.8	Pass
Lateral Lower Spine Acceleration	9	14	g's	11.0	Pass
Upper Abdomen Rib Deflection	36	47	mm	42.3	Pass
Lower Abdomen Rib Deflection	33	44	mm	37.7	Pass

Transducer Calibrations

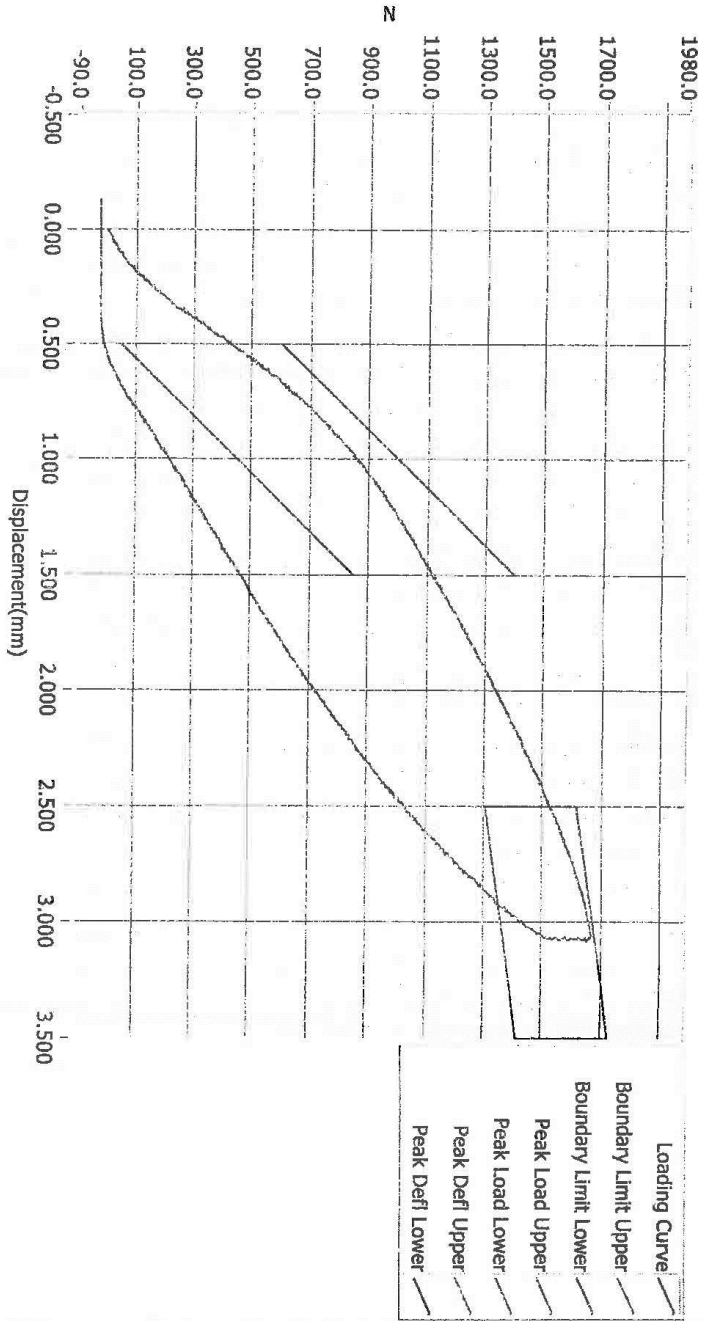
Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accelerometer	ENDEVCO 7264CT	AC-P16593	4/1/2016	4/1/2017
Lower Spine Y Accelerometer	ENDEVCO 7264	AC-P64147	6/16/2016	12/15/2016
Upper Abdomen Rib Potentiometer	Servo 08CT1-3725	DS-308GFE	6/16/2016	6/16/2017
Lower Abdomen Rib Potentiometer	Servo 08CT1-3725	DS-307GFE	6/16/2016	6/16/2017







Resultant Data - SIDIIs Plug Compression



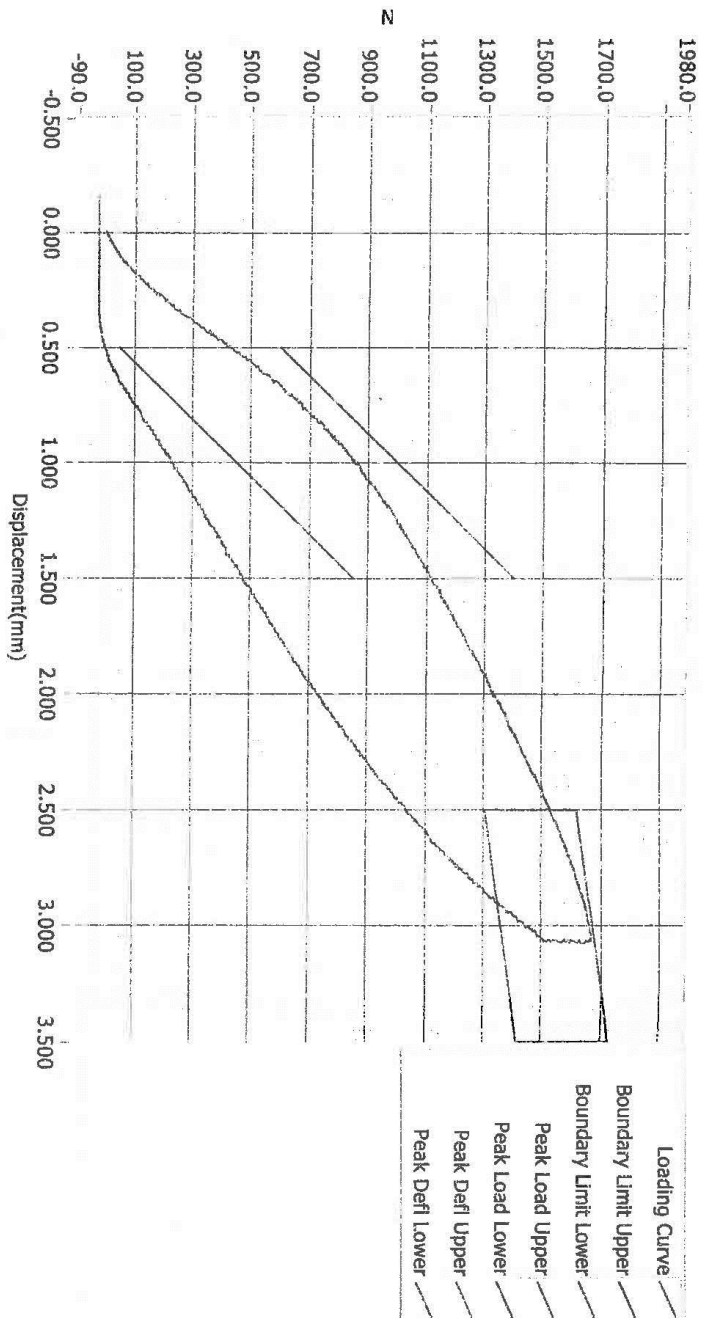
ATD Calibration Lab
 CERTIFICATION
 1660 N
 101116 MKG

Test ID: 79605
 Part Serial Number: 11/5/2014
 Cert ID: N/A
 ATD Serial Number: SIDIIs
 ATD Type: SIDIIs

Current Date : 11/5/2014

Current Time : 22:17:00

Resultant Data - SIDIIs Plug Compression



ATD Calibration Lab

CRASH
16.60N
10/11/16 MKG

Test ID

Part Serial Number

Test Date

Test Time

79630

11/5/2014

11:29 PM

Cert ID

ATD Serial Number

ATD Type

SIDIIs

N/A

Current Date : 11/5/2014

Current Time : 23:31:34

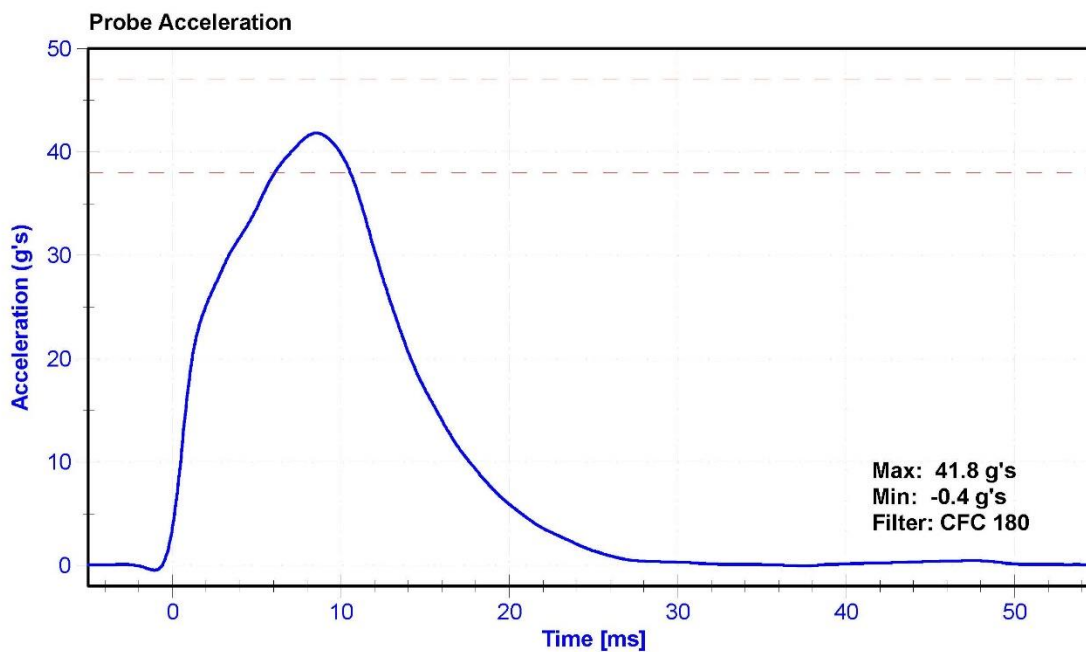
ATD Manufacturer	FTSS	Test Technician	M. Geesey
ATD Serial Number	300	Laboratory Supervisor	M. Goehle

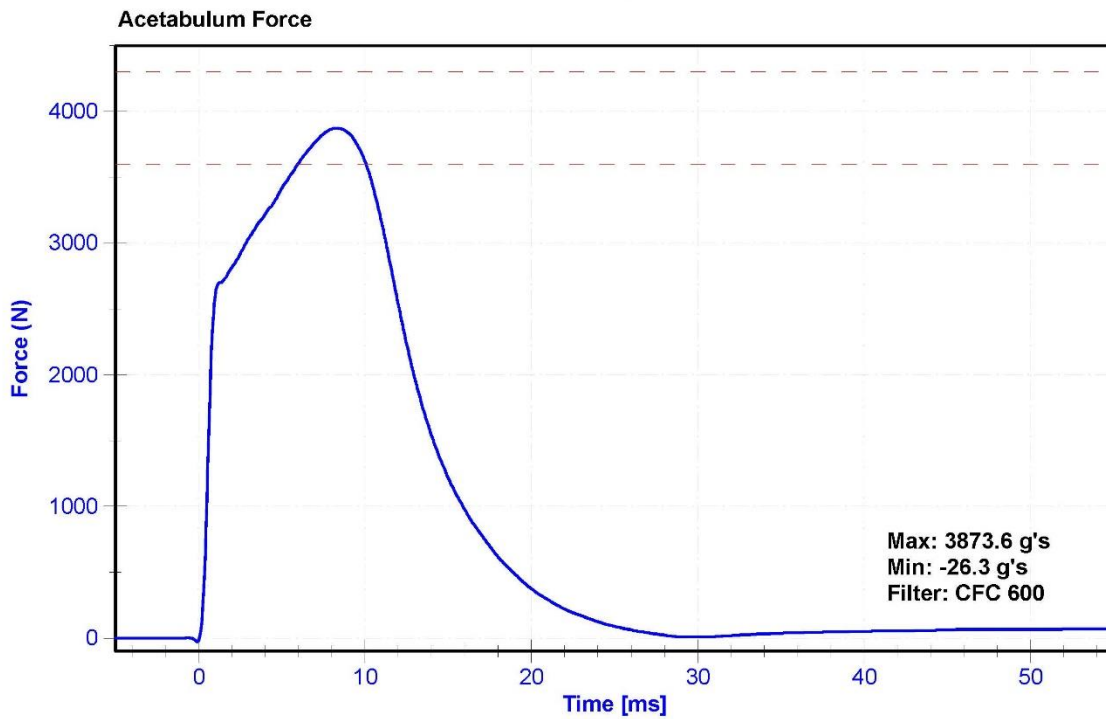
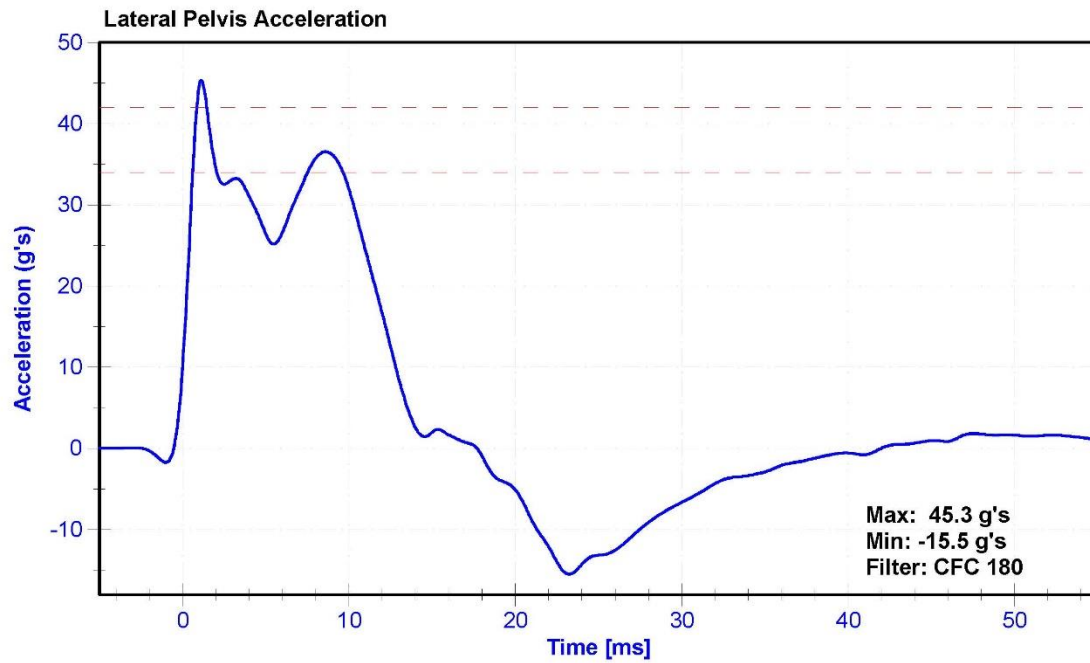
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.8	Pass
Humidity	10	70	%	33.6	Pass
Velocity	6.6	6.8	m/s	6.64	Pass
Probe Acceleration	38	47	g's	41.8	Pass
Lateral Pelvis Acceleration after 6ms	34	42	g's	36.5	Pass
Acetabulum Force	3600	4300	N	3873.6	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7264CT	AC-P16593	4/1/2016	4/1/2017
Pelvis Y Accelerometer	ENDEVCO 7264CT	AC-P35797	6/16/2016	12/15/2016
Acetabulum Load Cell	DENTON 3249J	LC-275Fy	5/24/2016	5/24/2017
Certification Plug	Humanetics	79605	11/05/2014	N/A
Crash Test Plug	Humanetics	79630	11/05/2014	N/A





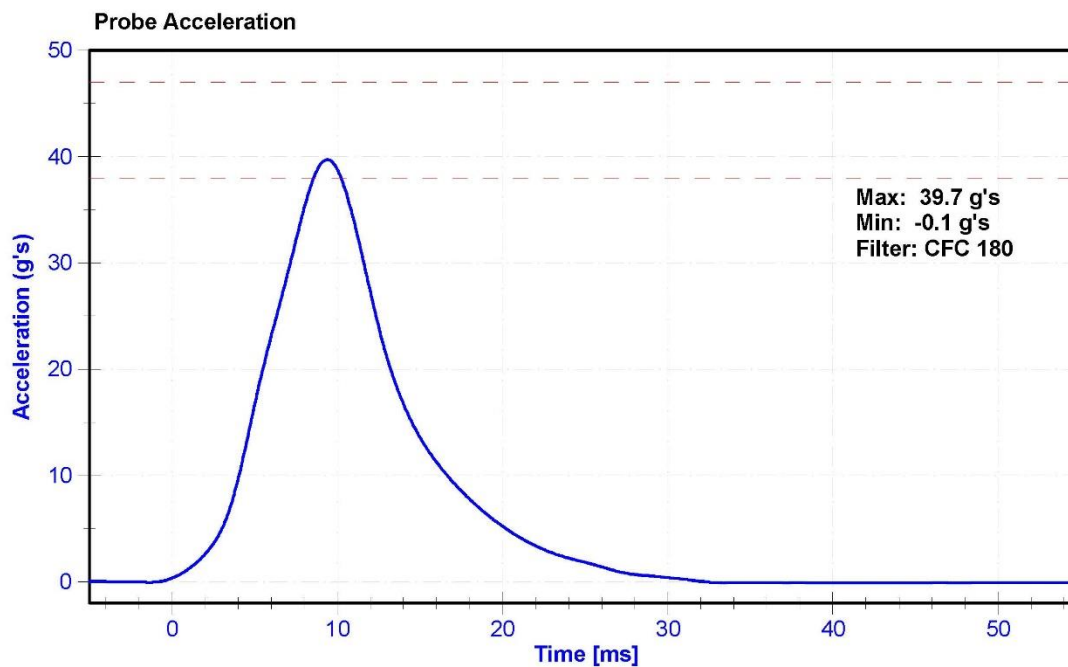
ATD Manufacturer	FTSS	Test Technician	M. Geesey
ATD Serial Number	300	Laboratory Supervisor	M. Goehle

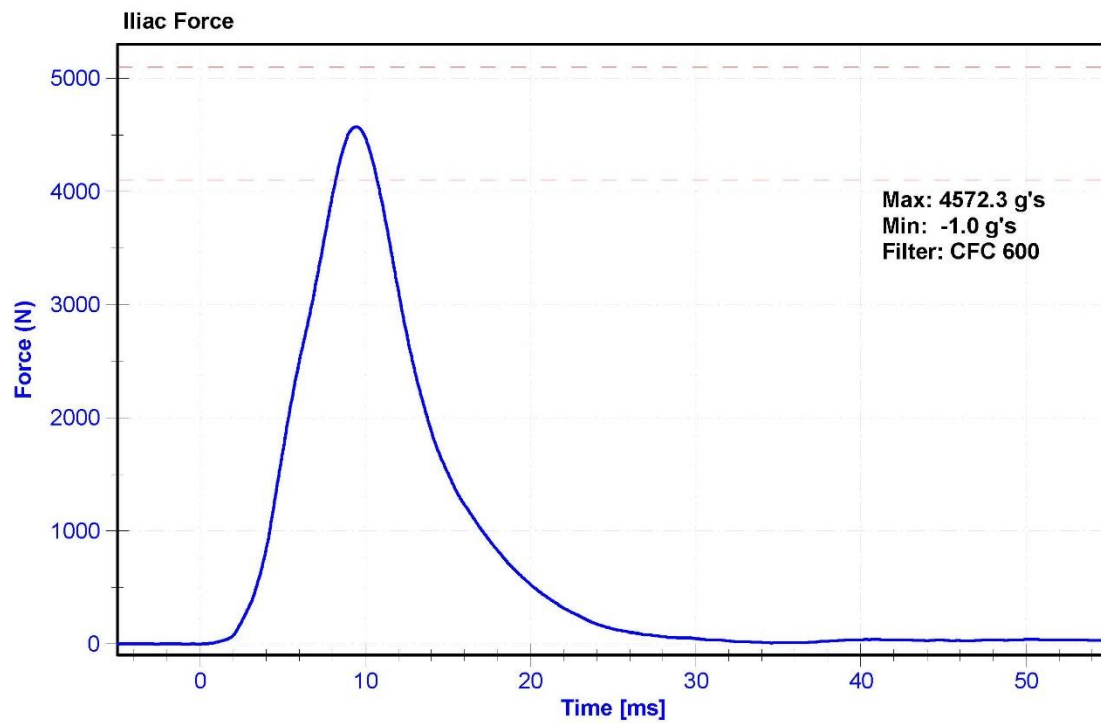
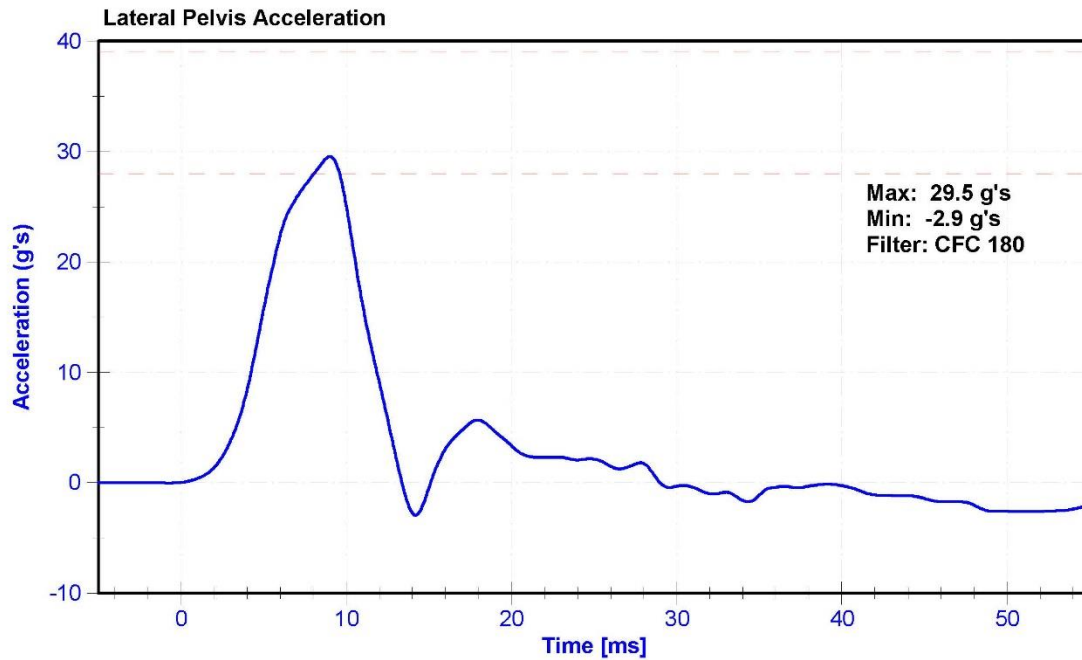
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.8	Pass
Humidity	10	70	%	34.0	Pass
Velocity	4.2	4.4	m/s	4.27	Pass
Probe Acceleration	36	45	g's	39.7	Pass
Lateral Pelvis Acceleration	28	39	g's	29.5	Pass
Iliac Force	4100	5100	N	4572.3	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7264CT	AC-P16593	4/1/2016	4/1/2017
Pelvis Y Accelerometer	ENDEVCO 7264CT	AC-P35797	6/16/2016	12/15/2016
Iliac Load Cell	DENTON 3228J	LC-279Fy	5/24/2016	5/24/2017





CALIBRATION TEST RESULTS

POST-TEST

SID-IIS 5TH PERCENTILE FEMALE - DRIVER ATD

SERIAL NO: 300

(CONFIGURED FOR LEFT SIDE IMPACT)

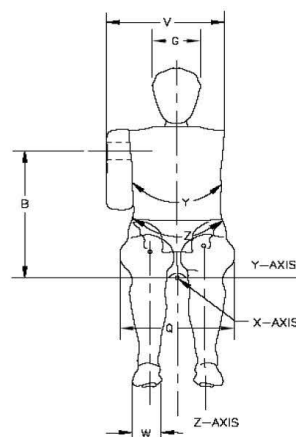
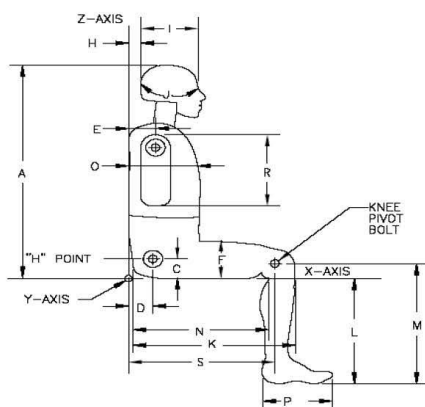


External Measurements - SID-IIs

Technician: M. Geesey

Date: 11/8/2016

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	448	Pass
C	H-point Height	79	89	86	Pass
D	H-point from seatback	141	151	146	Pass
E	Shoulder Pivot from Backline	97	107	104	Pass
F	Thigh Clearance	119	135	124	Pass
G	Head Breadth	140	148	144	Pass
H	Head Back from Backline	40	46	43	Pass
I	Head Depth	178	188	183	Pass
J	Head Circumference	541	551	546	Pass
K	Buttock to Knee Length	514	540	535	Pass
L	Popliteal Height	343	369	357	Pass
M	Knee Pivot to floor height	392	409	402	Pass
N	Buttock Popliteal Length	416	442	437	Pass
O	Chest Depth w/o jacket	195	211	205	Pass
P	Foot Length	216	232	220	Pass
Q	Hip Breadth (w/pelvic plugs)	313	323	319	Pass
R	Arm Length	249	259	251	Pass
S	Knee Joint to seatback	477	493	485	Pass
V	Shoulder Width	341	357	348	Pass
W	Foot Width	78	94	83	Pass
Y	Chest Circumference w/jacket	851	881	870	Pass
Z	Waist Circumference	761	791	771	Pass

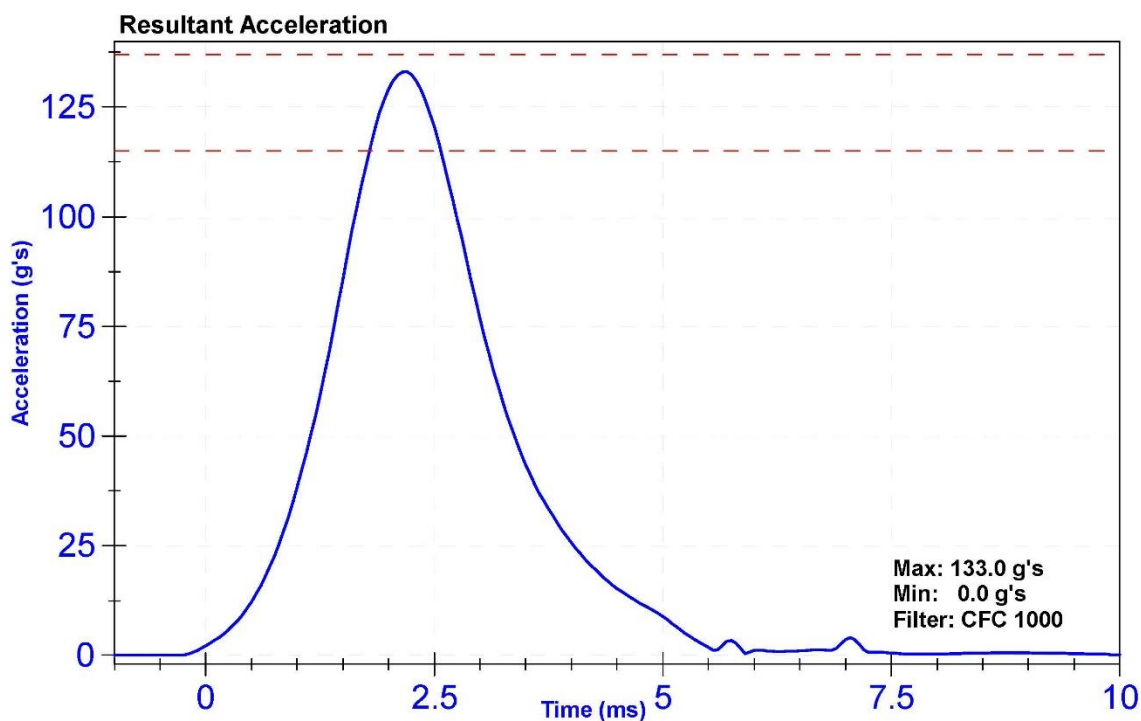
ATD Manufacturer	FTSS	Test Technician	M. Geesey
ATD Serial Number	300	Laboratory Supervisor	M. Goehle

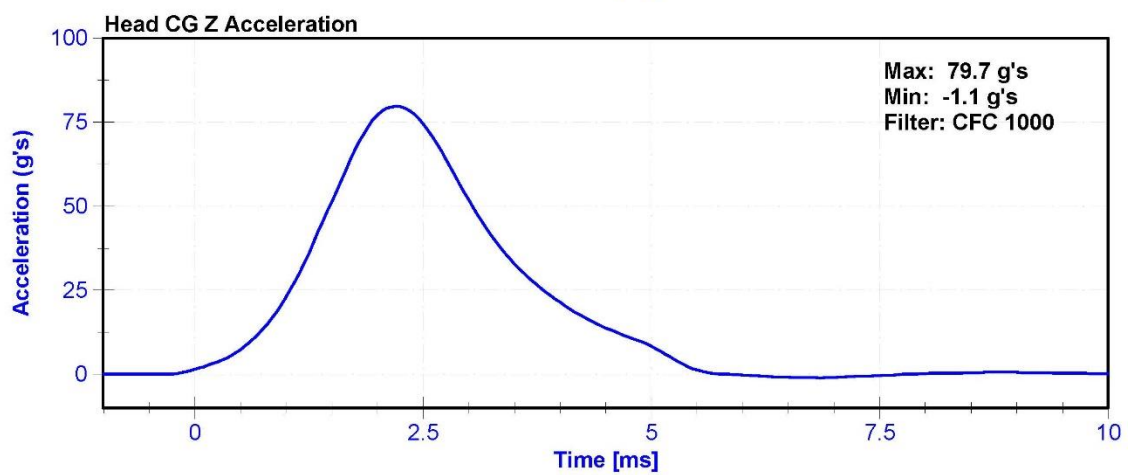
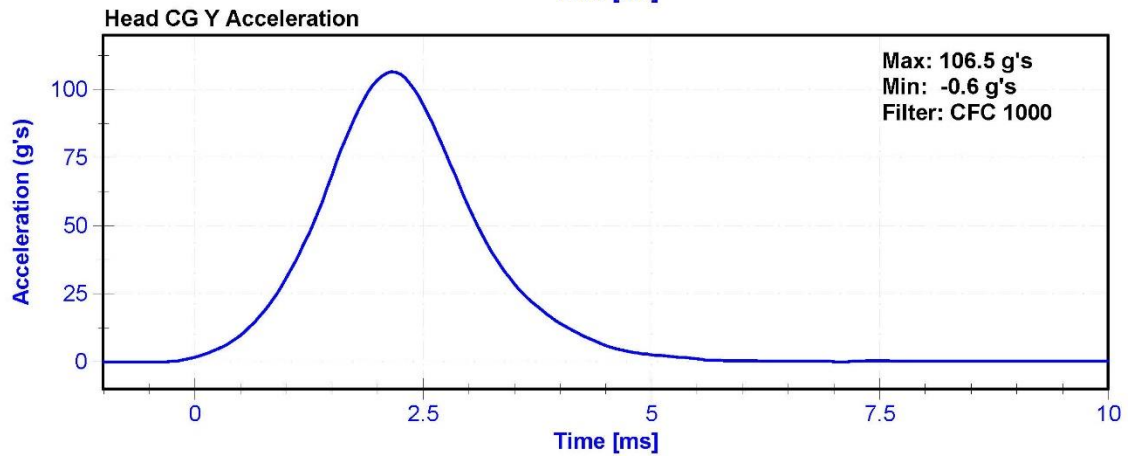
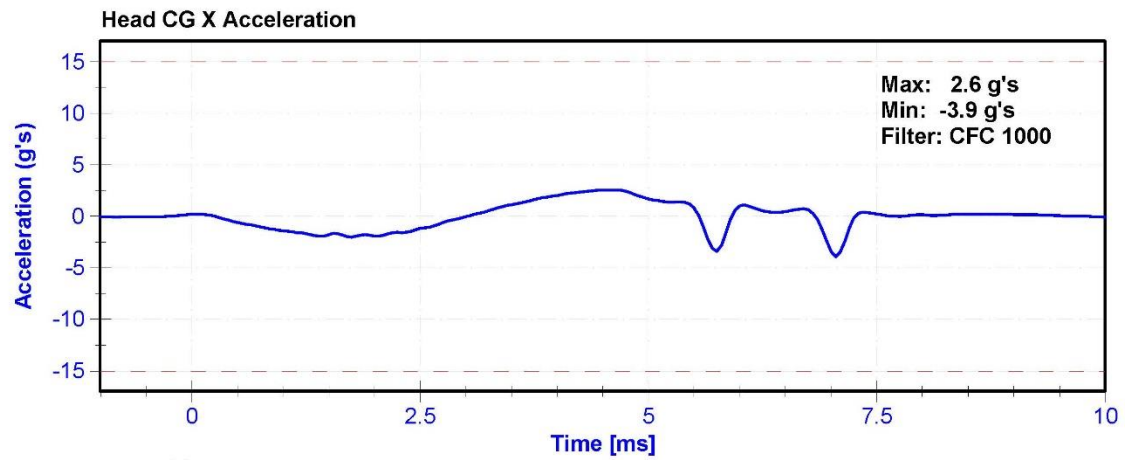
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.4	Pass
Humidity	10	70	%	40.4	Pass
Resultant Acceleration	115	137	g's	133.0	Pass
Oscillation	0	15	%	3.0	Pass
Fore-Aft Acceleration	-15	15	g's	-3.9	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
X Accelerometer	ENDEVCO 7264CT	AC-P58777	6/16/2016	12/15/2016
Y Accelerometer	ENDEVCO 7264CT	AC-P59018	6/16/2016	12/15/2016
Z Accelerometer	ENDEVCO 7264CT	AC-P68608	6/16/2016	12/15/2016





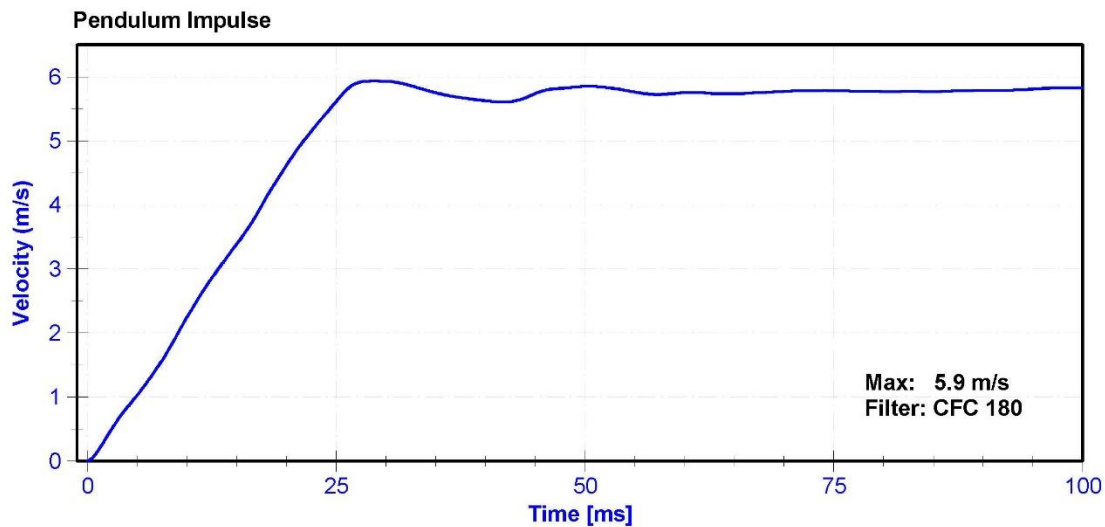
ATD Manufacturer	FTSS	Test Technician	M. Geesey
ATD Serial Number	300	Laboratory Supervisor	M. Goehle

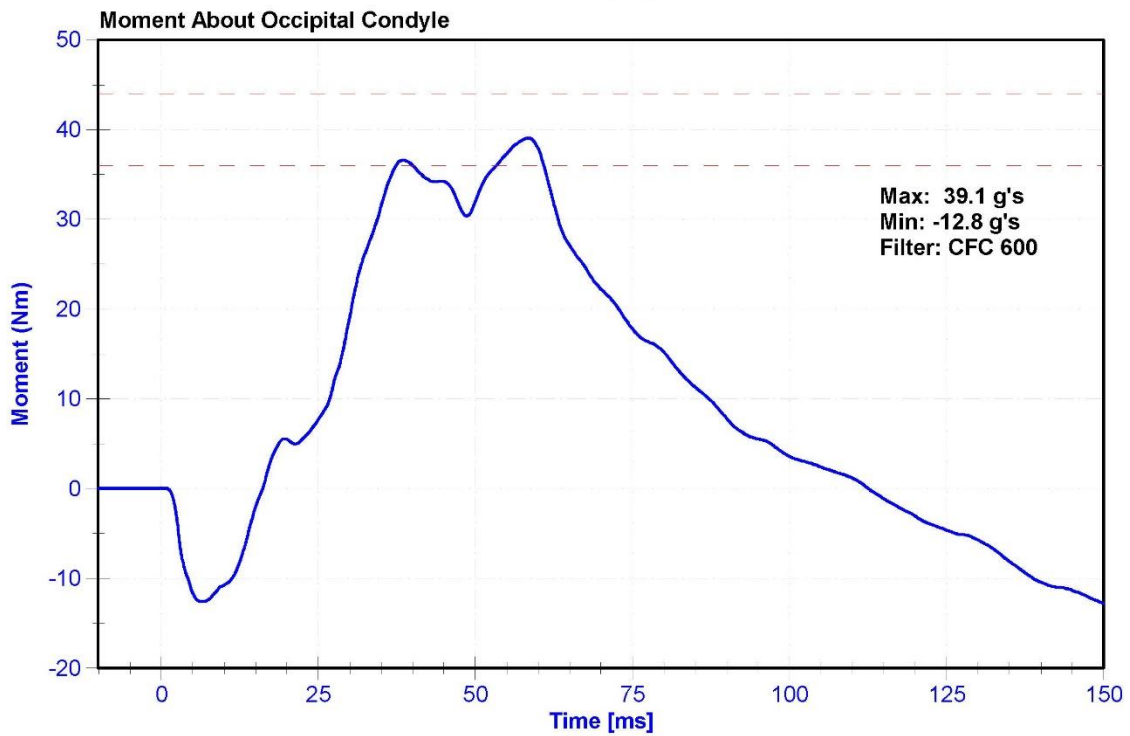
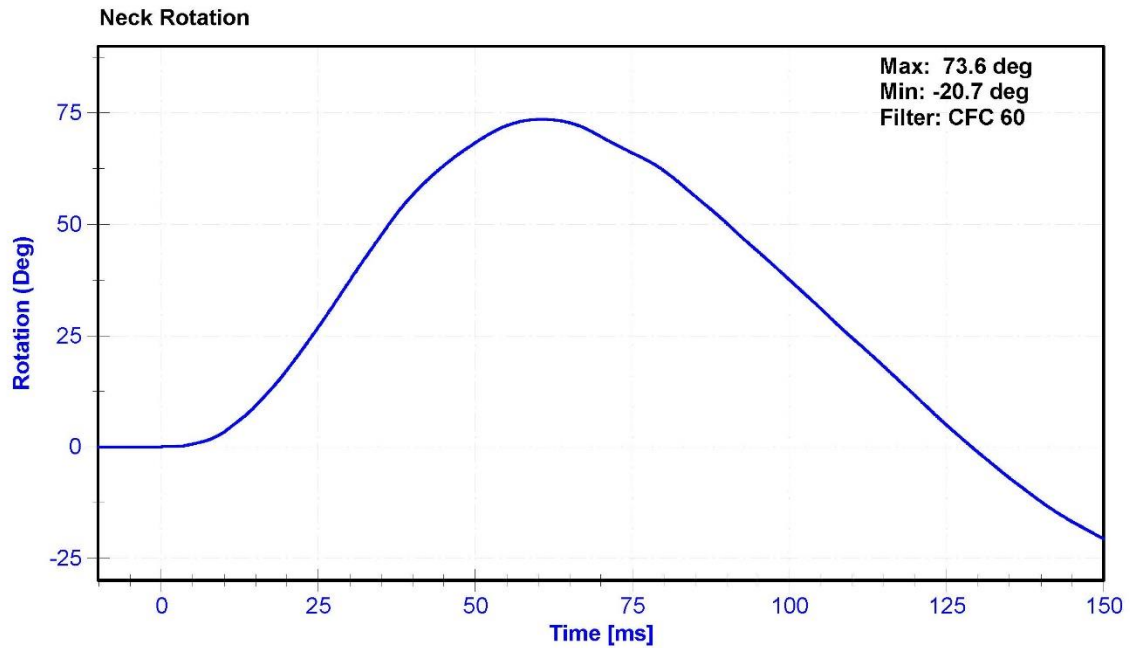
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.3	Pass
Humidity	10	70	%	42.7	Pass
Velocity	5.51	5.63	m/s	5.620	Pass
Pendulum Impulse at 10ms	2.2	2.8	m/s	2.25	Pass
Pendulum Impulse at 15ms	3.3	4.1	m/s	3.39	Pass
Pendulum Impulse at 20ms	4.4	5.4	m/s	4.62	Pass
Pendulum Impulse at 25ms	5.4	6.1	m/s	5.62	Pass
Pendulum Impulse from 25 to 100ms	5.5	6.2	m/s	5.93	Pass
Neck Rotation	71	81	deg	73.6	Pass
Time at Maximum Rotation	50	70	ms	60.6	Pass
Moment about the OC	36	44	Nm	39.1	Pass
Moment Decay to 0 Nm	102	126	ms	112.6	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-AH5F3	5/10/2016	5/10/2017
Pendulum Potentiometer	Denton 78051-342	DS-184Pend	10/12/2016	10/12/2017
Condyle Potentiometer	Denton 78051-342	DS-185Pend	10/12/2016	10/12/2017
Upper Neck Load Cell	Denton 1716A	LC-440Fy	5/24/2016	5/24/2017





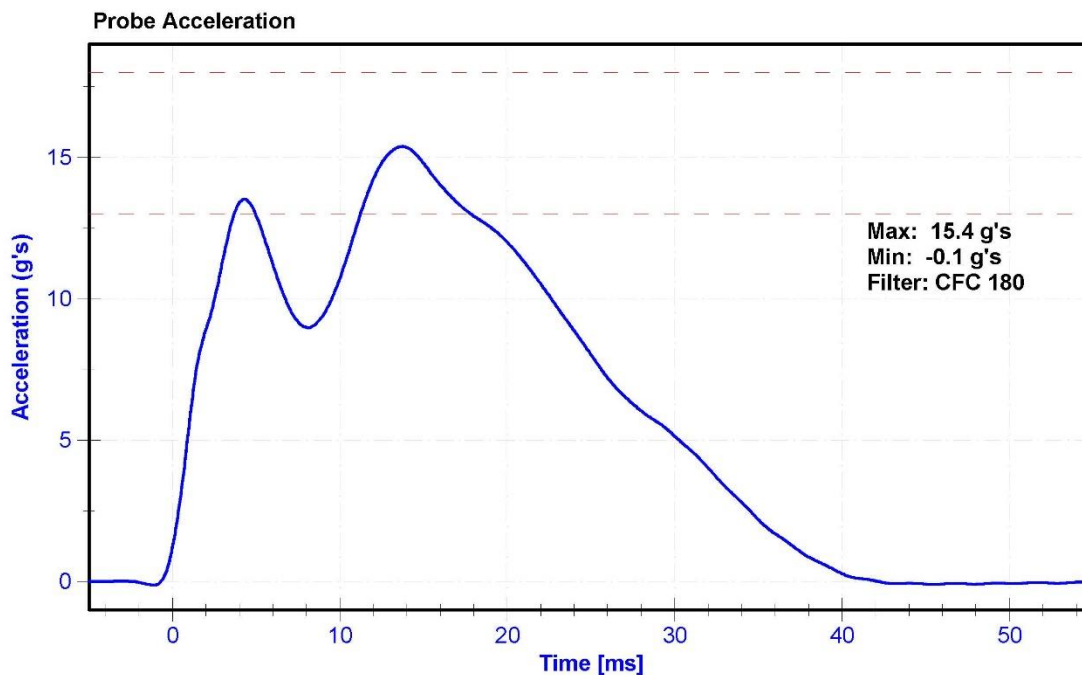
ATD Manufacturer	FTSS	Test Technician	M. Geesey
ATD Serial Number	300	Laboratory Supervisor	M. Goehle

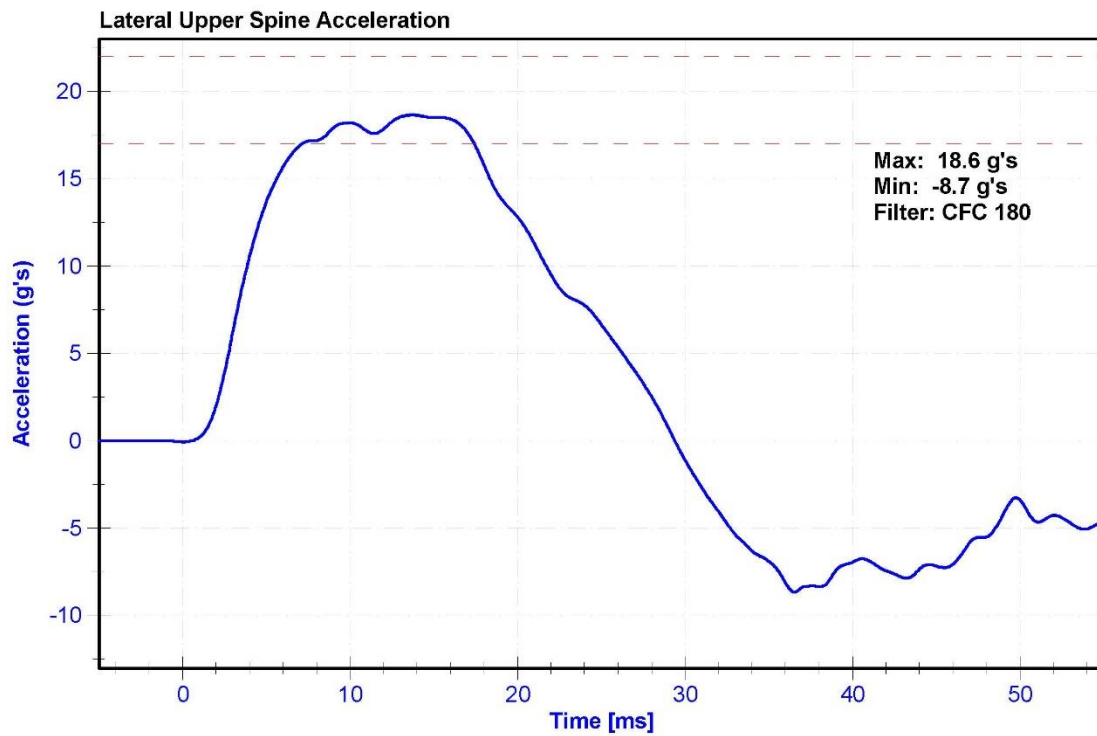
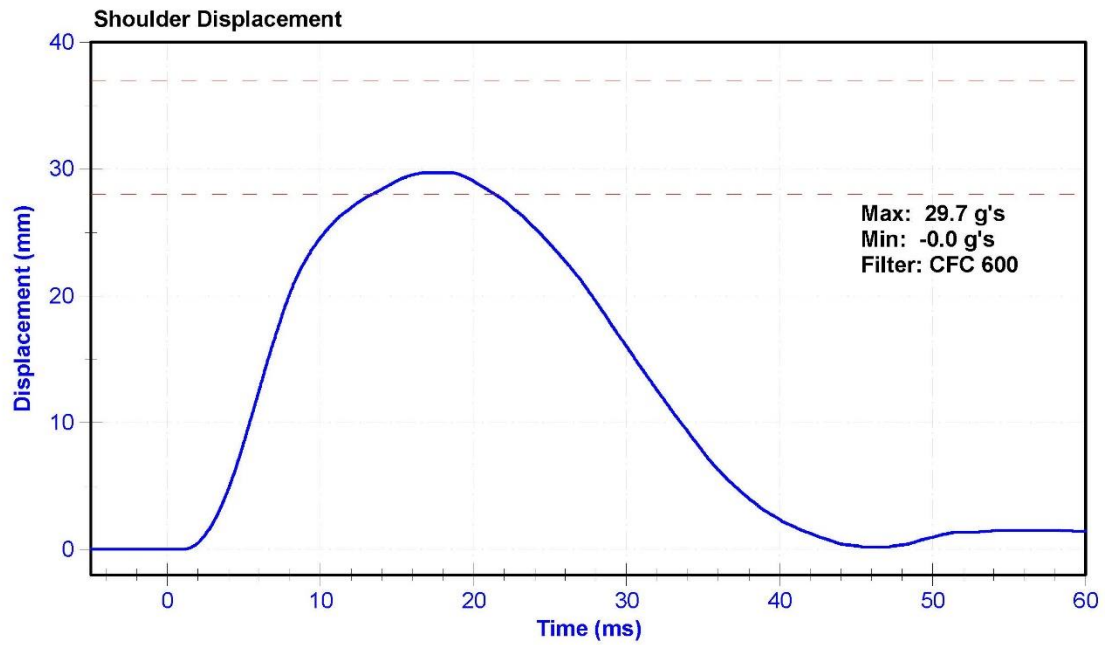
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.6	Pass
Humidity	10	70	%	36.1	Pass
Velocity	4.2	4.4	m/s	4.29	Pass
Probe Acceleration	13	18	g's	15.4	Pass
Shoulder Deflection	28	37	mm	29.7	Pass
Lateral Upper Spine Acceleration	17	22	g's	18.6	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7264CT	AC-P21393	5/27/2016	11/25/2016
Shoulder Potentiometer	Servo 08TC1-3725	DS-1063GFE	6/16/2016	6/16/2017
Upper Spine Y Accelerometer	ENDEVCO 7264	AC-P51915	6/16/2016	12/15/2016





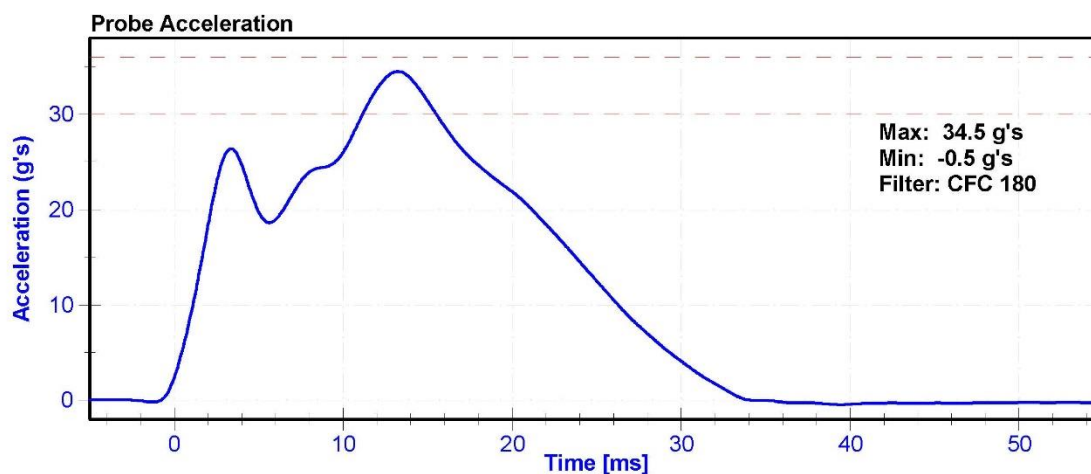
ATD Manufacturer	FTSS	Test Technician	M. Geesey
ATD Serial Number	300	Laboratory Supervisor	M. Goehle

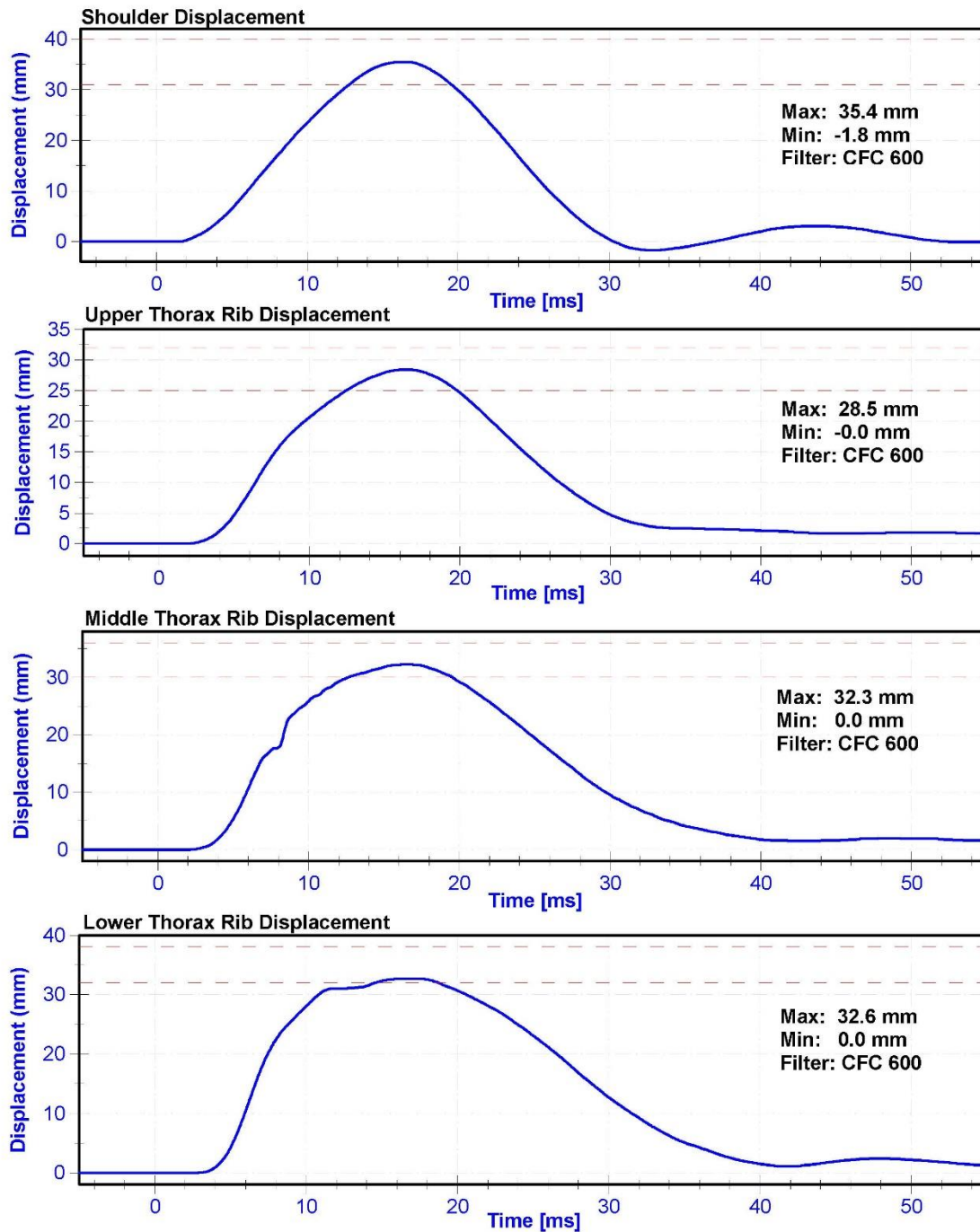
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.7	Pass
Humidity	10	70	%	35.6	Pass
Velocity	6.6	6.8	m/s	6.76	Pass
Probe Acceleration after 5 ms	30	36	g's	34.5	Pass
Lateral Upper Spine Acceleration	34	43	g's	36.9	Pass
Lateral Lower Spine Acceleration	29	37	g's	34.8	Pass
Shoulder Deflection	31	40	mm	35.4	Pass
Upper Thorax Rib Deflection	25	32	mm	28.5	Pass
Mid Thorax Rib Deflection	30	36	mm	32.3	Pass
Lower Thorax Rib Deflection	32	38	mm	32.6	Pass

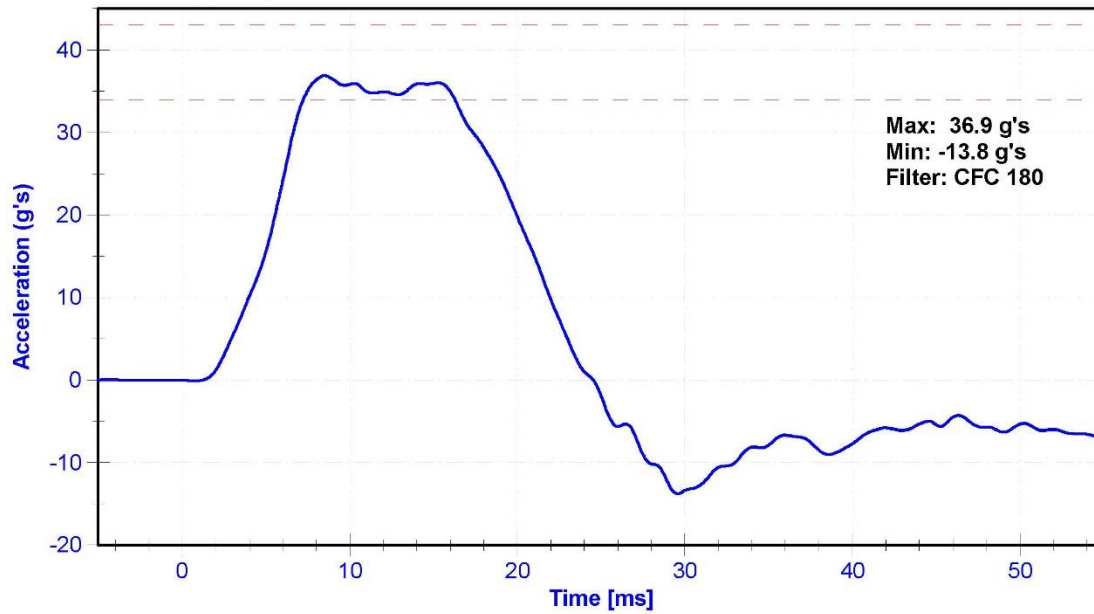
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7264CT	AC-P21393	5/27/2016	11/25/2016
Upper Spine T1 Y Accelerometer	ENDEVCO 7264	AC-P51915	6/16/2016	12/15/2016
Upper Spine T12 Y Accelerometer	ENDEVCO 7264	AC-P64147	6/16/2016	12/15/2016
Shoulder Potentiometer	Servo 08TC1-3725	DS-1063GFE	6/16/2016	6/16/2017
Upper Thorax Rib Potentiometer	Servo 08TC1-3725	DS-451GFE	6/16/2016	6/16/2017
Middle Thorax Rib Potentiometer	Servo 08TC1-3725	DS-1151GFE	6/16/2016	6/16/2017
Lower Thorax Rib Potentiometer	Servo 08TC1-3725	DS-1156GFE	6/16/2016	6/16/2017

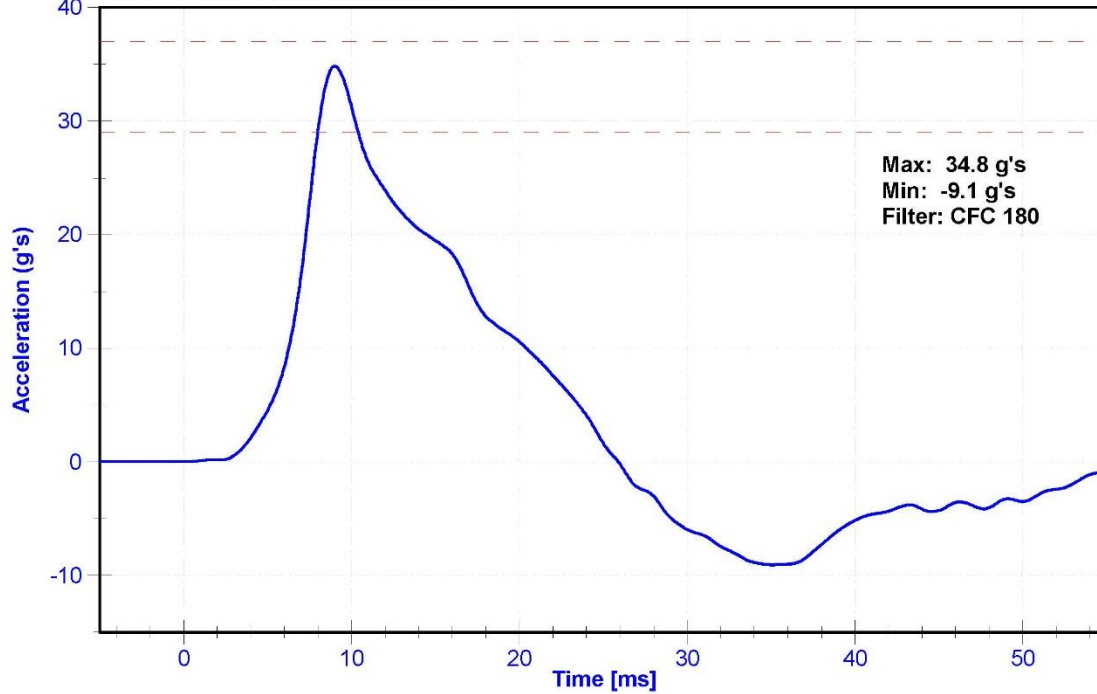




Lateral Upper Spine Acceleration



Lateral Lower Spine Acceleration



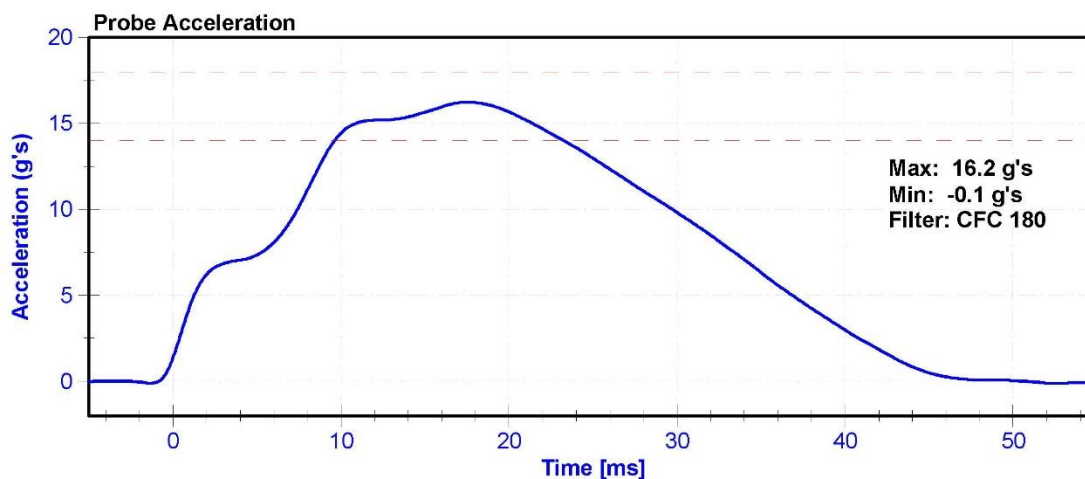
ATD Manufacturer	FTSS	Test Technician	M. Geesey
ATD Serial Number	300	Laboratory Supervisor	M. Goehle

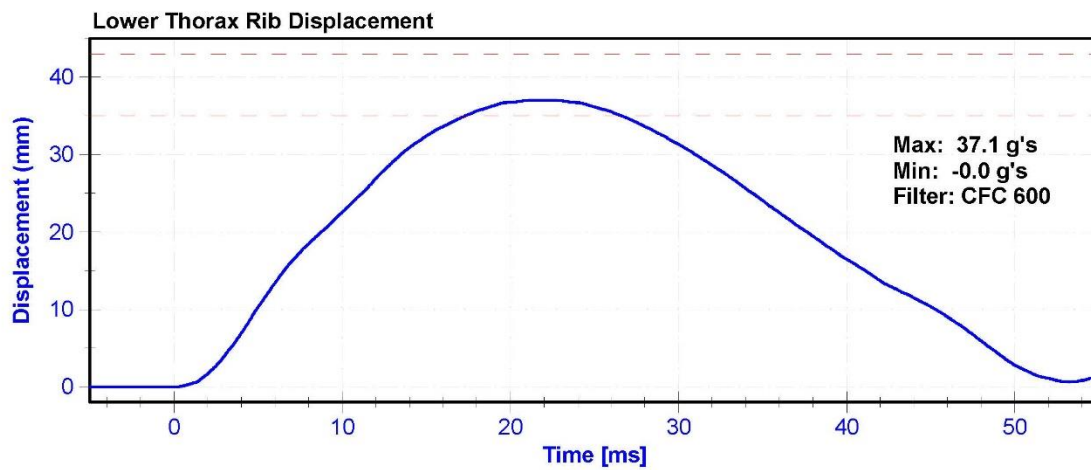
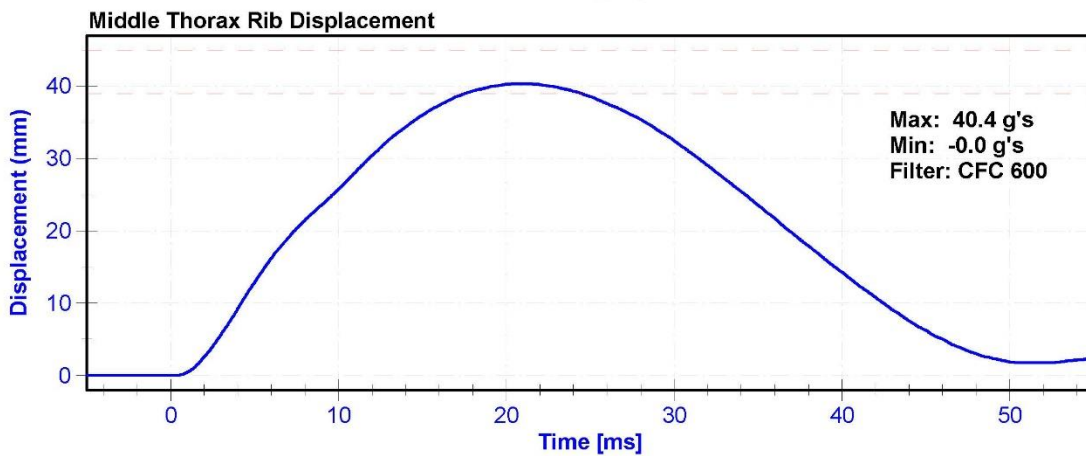
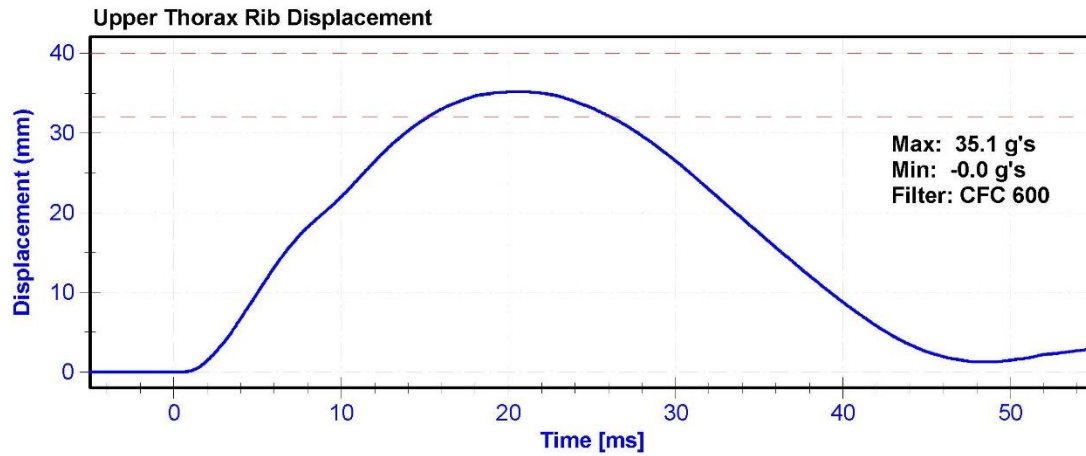
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.6	Pass
Humidity	10	70	%	36.8	Pass
Velocity	4.2	4.4	m/s	4.28	Pass
Probe Acceleration	14	18	g's	16.2	Pass
Lateral Upper Spine Acceleration	13	17	g's	15.4	Pass
Lateral Lower Spine Acceleration	7	11	g's	9.4	Pass
Upper Thorax Rib Deflection	32	40	mm	35.1	Pass
Middle Thorax Rib Deflection	39	45	mm	40.4	Pass
Lower Thorax Rib Deflection	35	43	mm	37.1	Pass

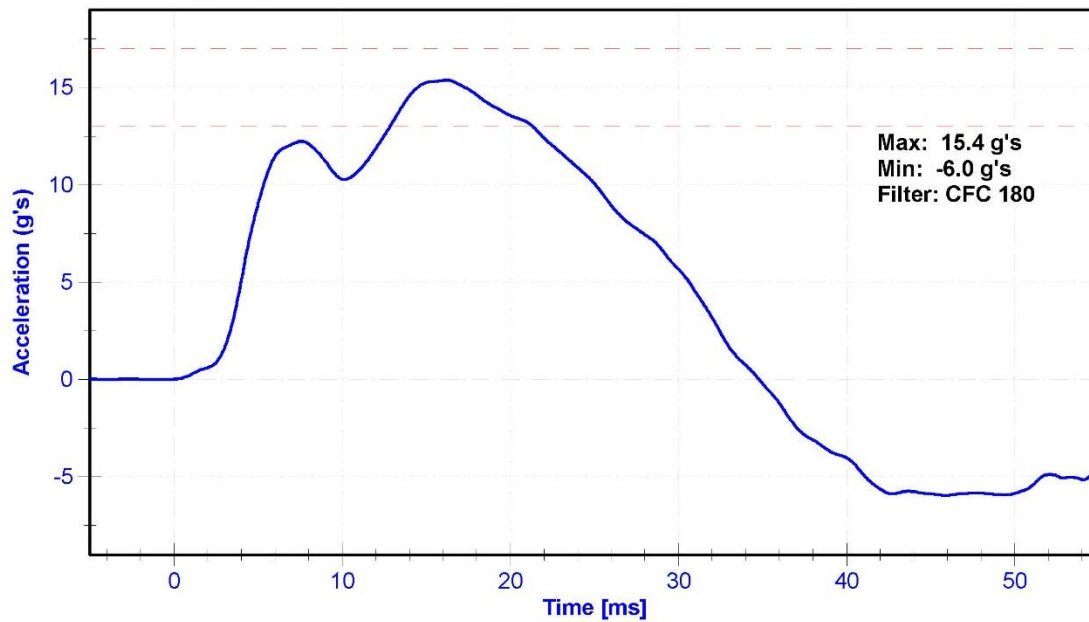
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7264CT	AC-P21393	5/27/2016	11/25/2016
Upper Spine Y Accelerometer	ENDEVCO 7264	AC-P51915	6/16/2016	12/15/2016
Lower Spine Y Accelerometer	ENDEVCO 7264	AC-P64147	6/16/2016	12/15/2016
Upper Thorax Rib Potentiometer	Servo 08CT1-3725	DS-451GFE	6/16/2016	6/16/2017
Middle Thorax Rib Potentiometer	Servo 08TC1-3725	DS-1151GFE	6/16/2016	6/16/2017
Lower Thorax Rib Potentiometer	Servo 08TC1-3725	DS-1156GFE	6/16/2016	6/16/2017

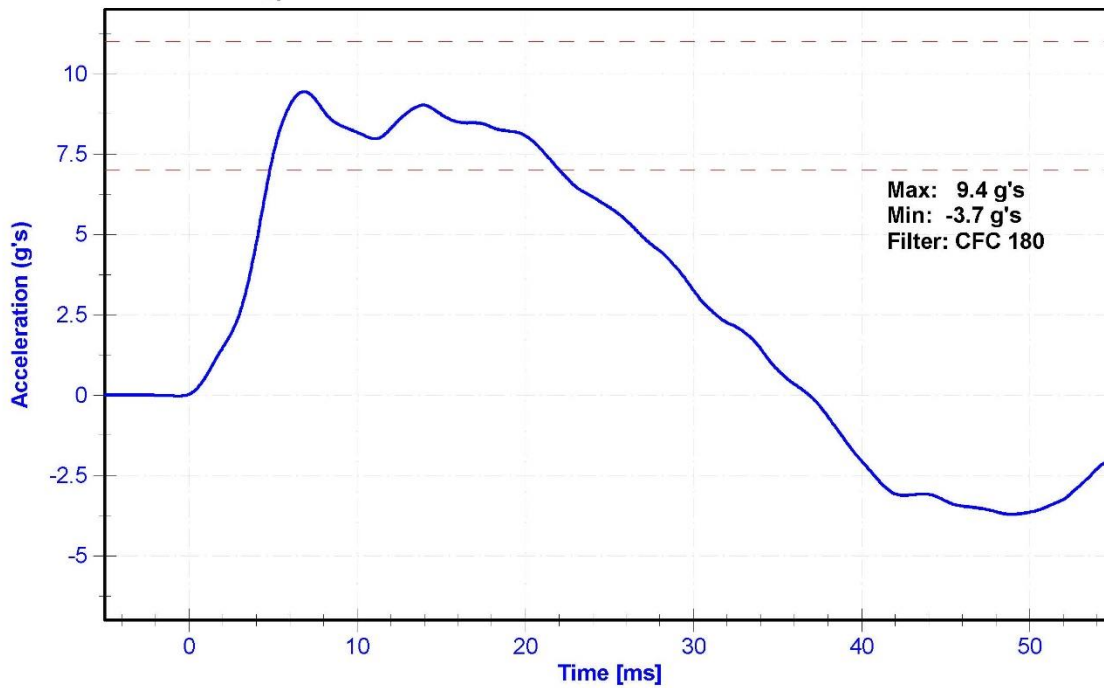




Lateral Upper Spine Acceleration



Lateral Lower Spine Acceleration



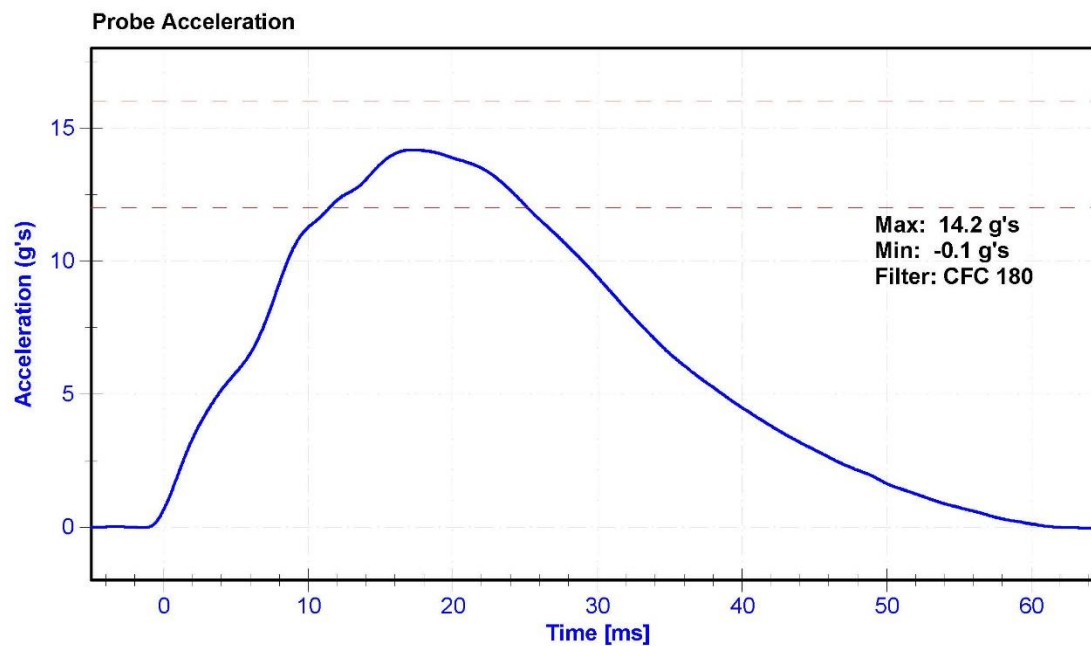
ATD Manufacturer	FTSS	Test Technician	M. Geesey
ATD Serial Number	300	Laboratory Supervisor	M. Goehle

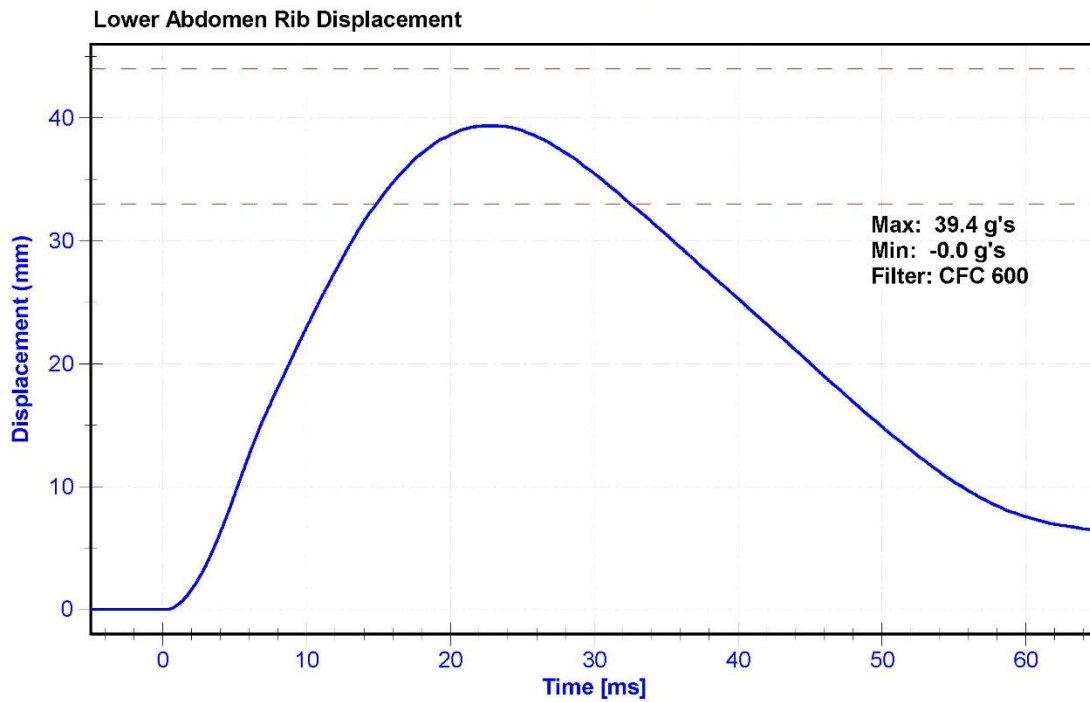
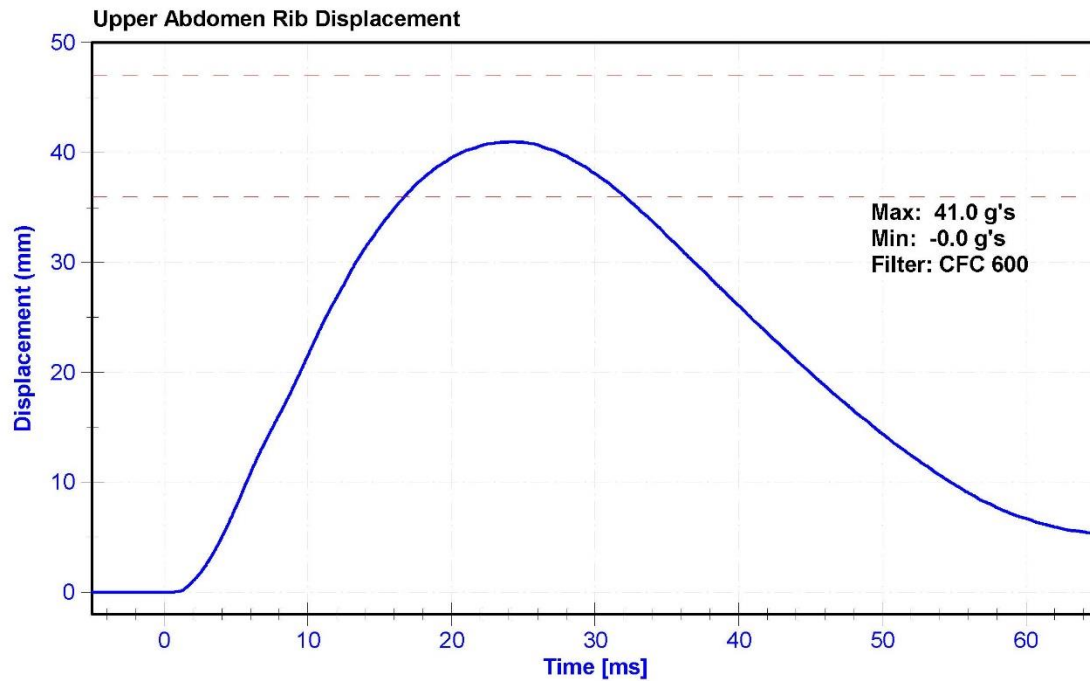
Results

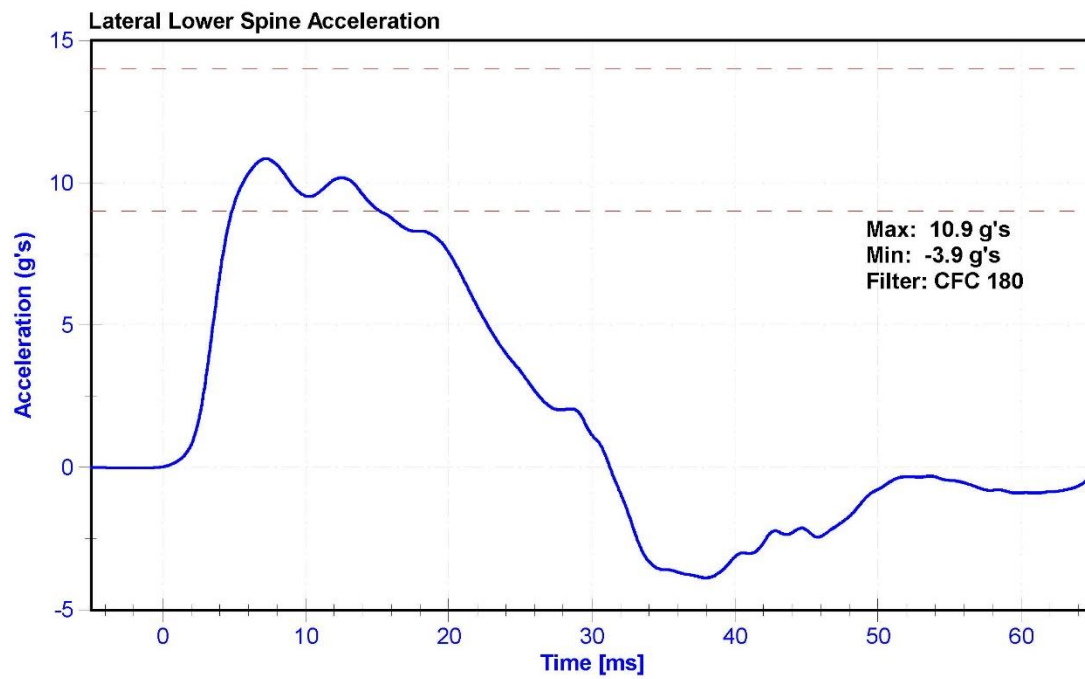
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.7	Pass
Humidity	10	70	%	35.1	Pass
Velocity	4.2	4.4	m/s	4.28	Pass
Probe Acceleration	12	16	g's	14.2	Pass
Lateral Lower Spine Acceleration	9	14	g's	10.9	Pass
Upper Abdomen Rib Deflection	36	47	mm	41.0	Pass
Lower Abdomen Rib Deflection	33	44	mm	39.4	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accelerometer	ENDEVCO 7264CT	AC-P21393	5/27/2016	11/25/2016
Lower Spine Y Accelerometer	ENDEVCO 7264	AC-P64147	6/16/2016	12/15/2016
Upper Abdomen Rib Potentiometer	Servo 08CT1-3725	DS-308GFE	6/16/2016	6/16/2017
Lower Abdomen Rib Potentiometer	Servo 08CT1-3725	DS-307GFE	6/16/2016	6/16/2017







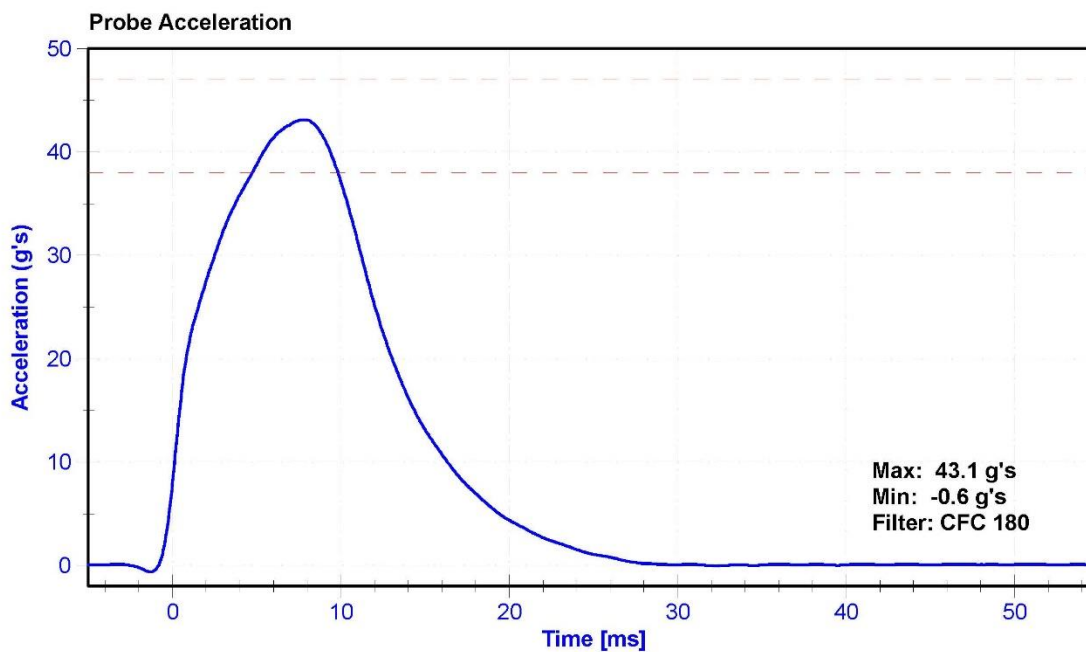
ATD Manufacturer	FTSS	Test Technician	M. Geesey
ATD Serial Number	300	Laboratory Supervisor	M. Goehle

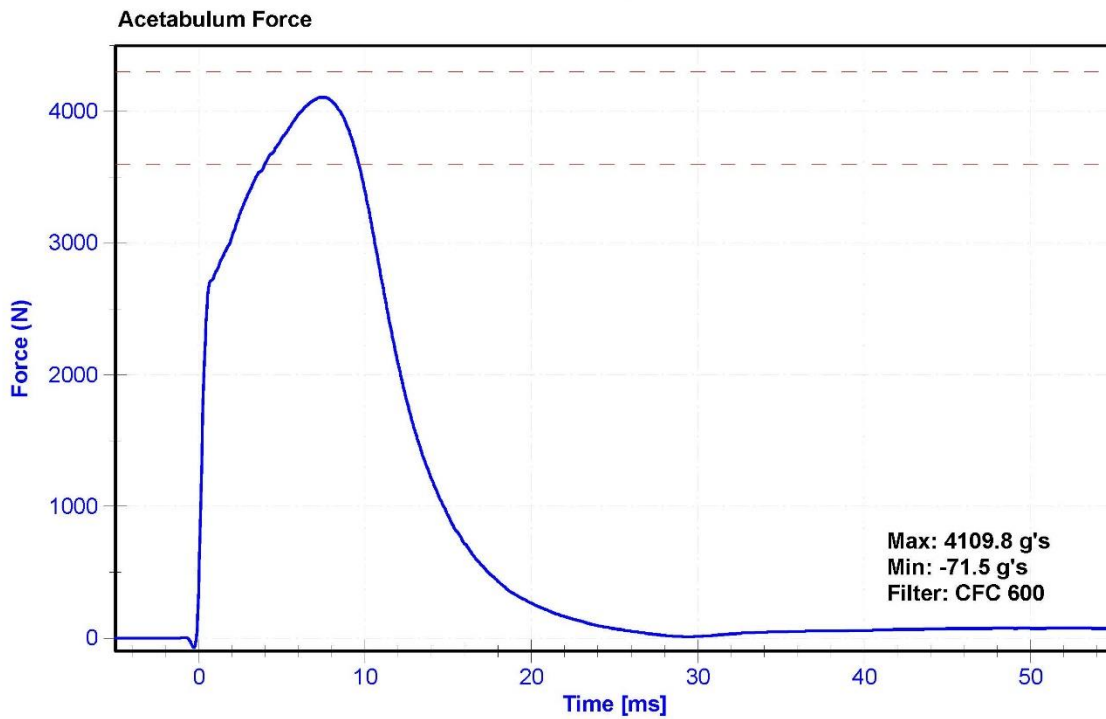
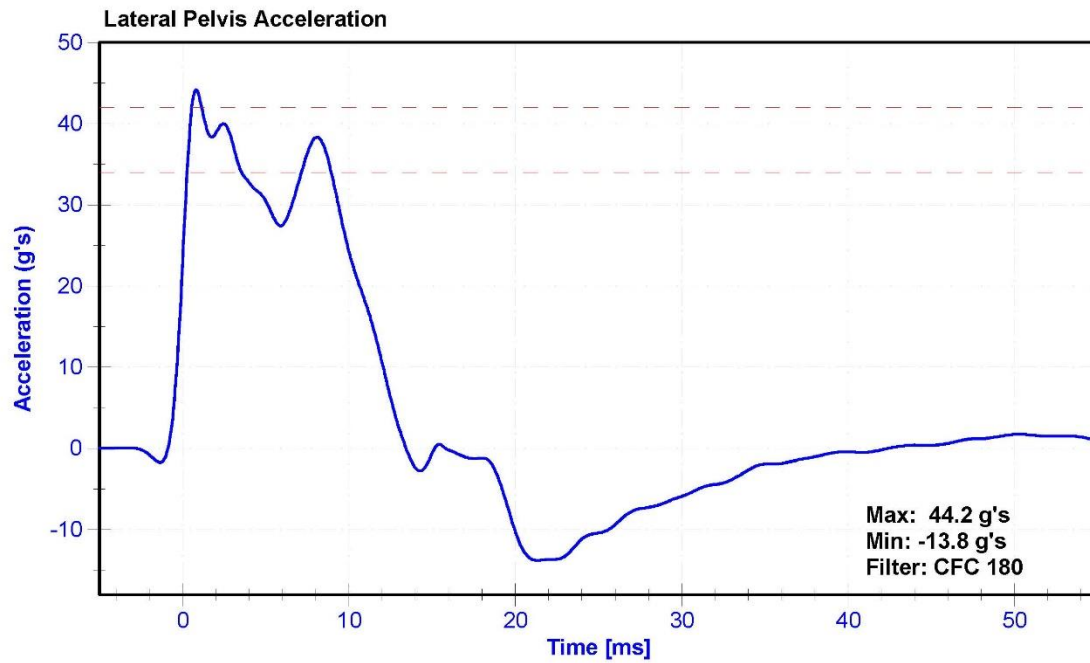
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.3	Pass
Humidity	10	70	%	38.3	Pass
Velocity	6.6	6.8	m/s	6.66	Pass
Probe Acceleration	38	47	g's	43.1	Pass
Lateral Pelvis Acceleration after 6ms	34	42	g's	38.3	Pass
Acetabulum Force	3600	4300	N	4109.8	Pass

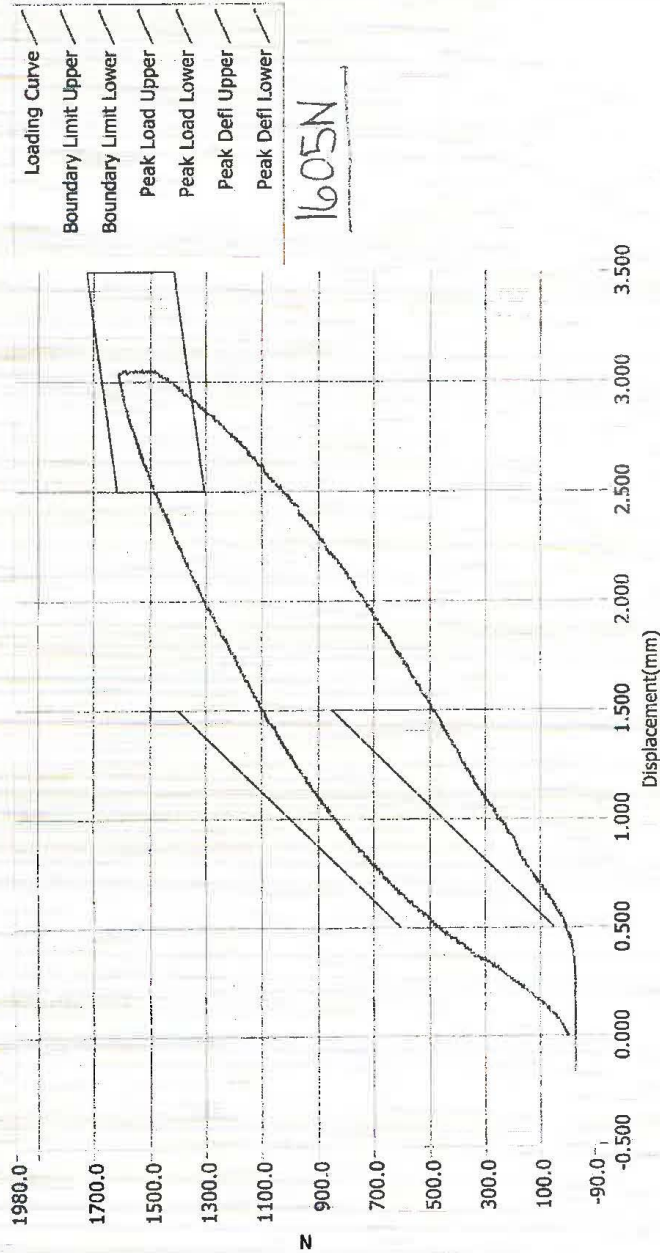
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7264CT	AC-P21393	5/27/2016	11/25/2016
Pelvis Y Accelerometer	ENDEVCO 7264CT	AC-P35797	6/16/2016	12/15/2016
Acetabulum Load Cell	DENTON 3249J	LC-275Fy	5/24/2016	5/24/2017
Certification Plug	Humanetics	71005	12/13/2013	N/A
Crash Test Plug	Humanetics	88017	07/22/2015	N/A





Resultant Data - SIDIIs Plug Compression



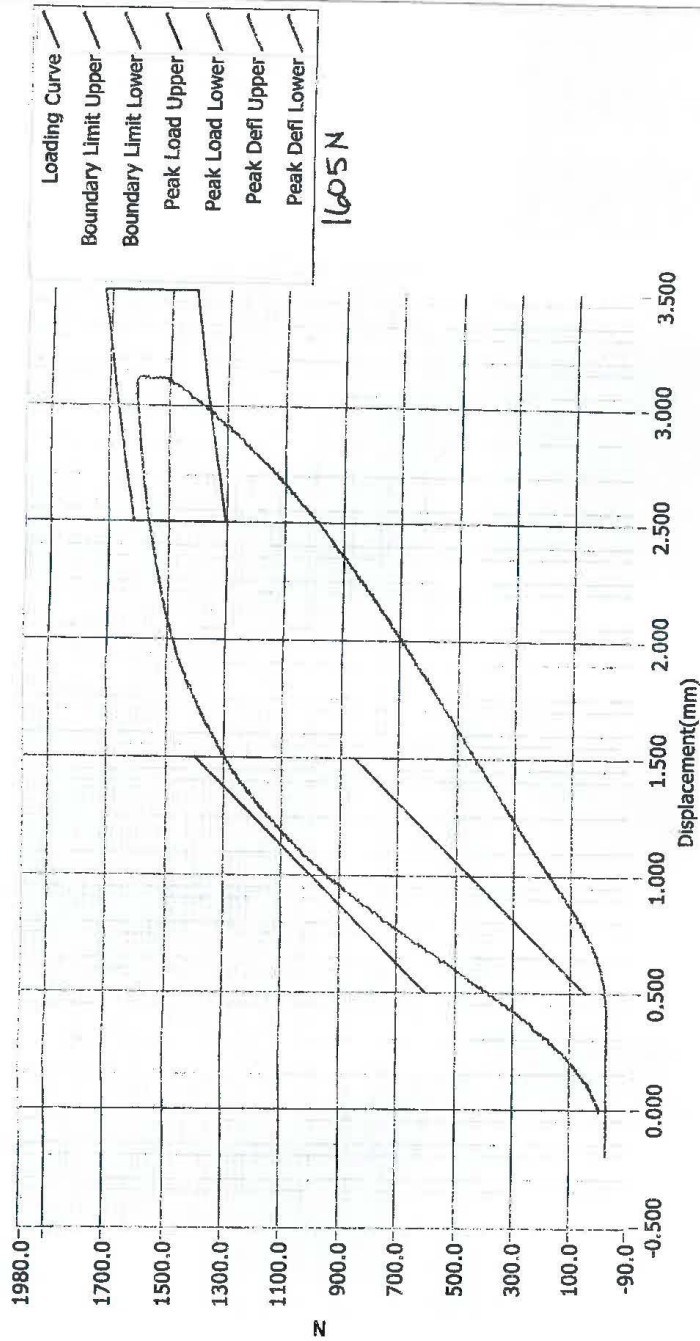
ATD Calibration Lab

CERTIFICATION
11/19/16
MKG

Test ID	Part Serial Number	Test Date	Test Time
	71005	12/13/2013	11:19 PM
Cert ID	ATD Serial Number	ATD Type	SIDIIs
	N/A		

Current Date : 12/13/2013 Current Time : 23:20:30

Resultant Data - SIDIIs Plug Compression



ATD Calibration Lab

CRAIG
11/11/16
MKC

Test ID

Part Serial Number

Test Date

Test Time

88017

7/22/2015

4:12 PM

Cert ID

ATD Serial Number

ATD Type

SIDIIs

N/A

Current Date : 7/22/2015

Current Time : 16:13:14

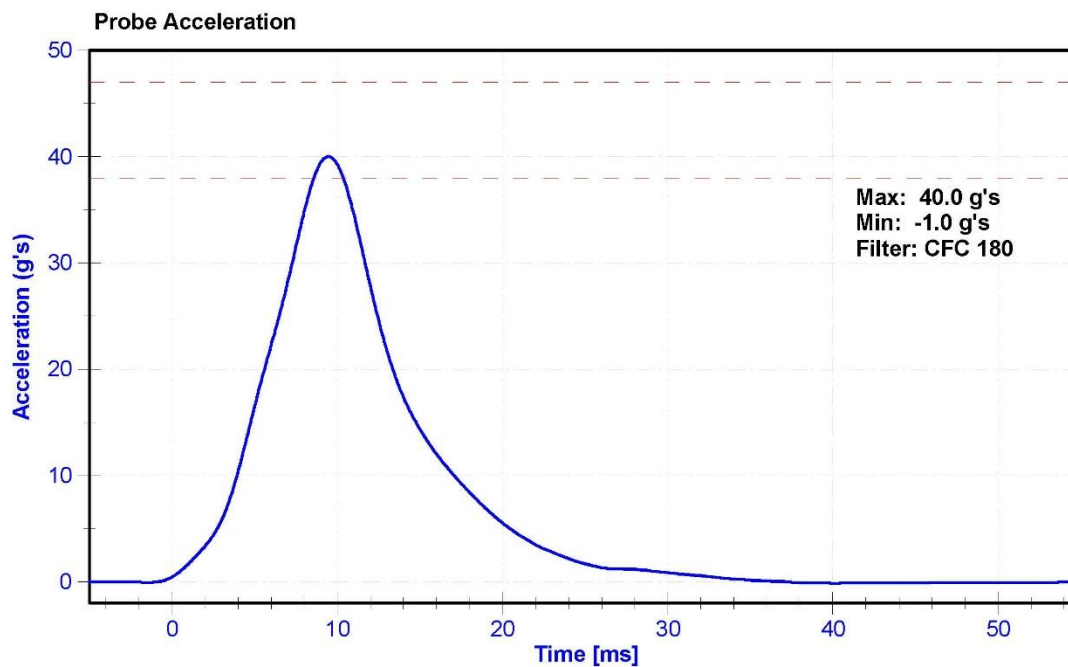
ATD Manufacturer	FTSS	Test Technician	M. Geesey
ATD Serial Number	300	Laboratory Supervisor	M. Goehle

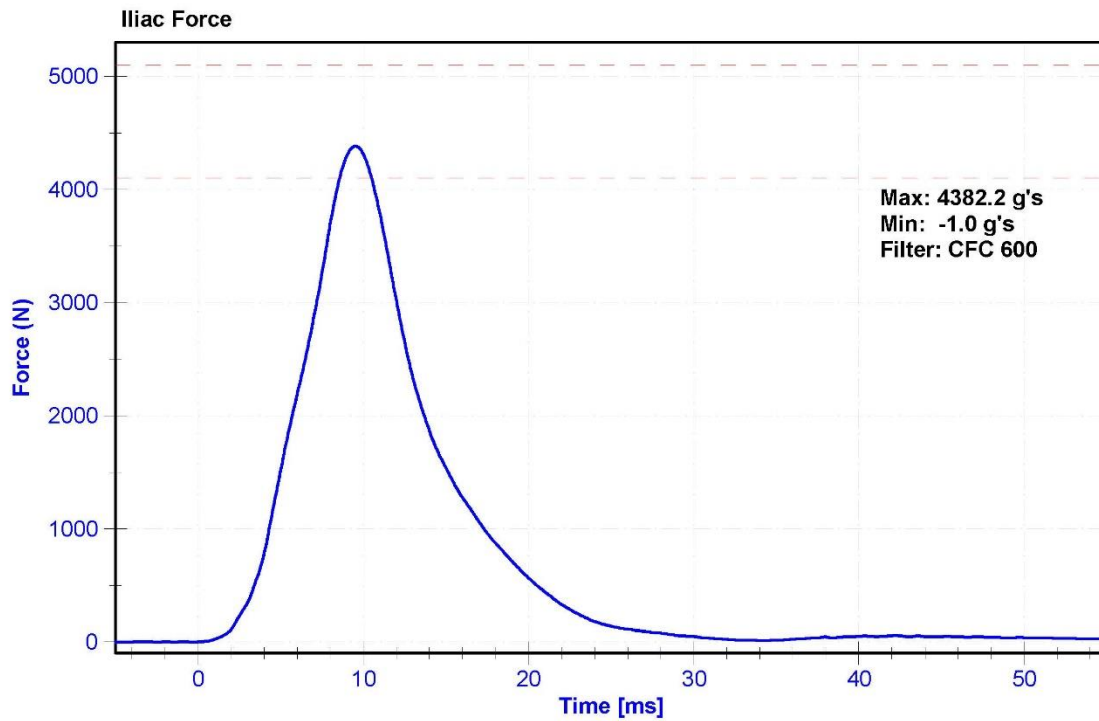
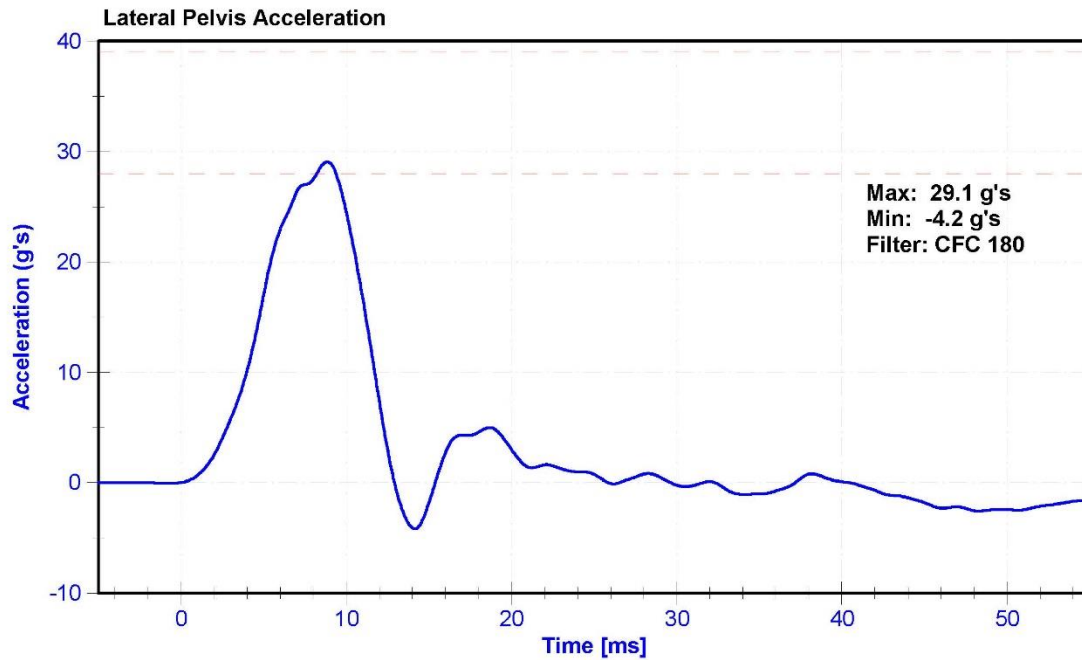
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.9	Pass
Humidity	10	70	%	39.6	Pass
Velocity	4.2	4.4	m/s	4.26	Pass
Probe Acceleration	36	45	g's	40.0	Pass
Lateral Pelvis Acceleration	28	39	g's	29.1	Pass
Iliac Force	4100	5100	N	4382.2	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7264CT	AC-P21393	5/27/2016	11/25/2016
Pelvis Y Accelerometer	ENDEVCO 7264CT	AC-P35797	6/16/2016	12/15/2016
Iliac Load Cell	DENTON 3228J	LC-279Fy	5/24/2016	5/24/2017





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	AC-P58777	ENDEVCO	6/16/2016
			Y	AC-P59018	ENDEVCO	6/16/2016
			Z	AC-P68608	ENDEVCO	6/16/2016
Head Accelerometers - Redundant			X	AC-P52095	ENDEVCO	6/16/2016
			Y	AC-P58986	ENDEVCO	6/16/2016
			Z	AC-P68057	ENDEVCO	6/16/2016
Displacement Potentiometer	Shoulder		Y			
	Thoracic Rib	Upper	Y	DS-451GFE	SERVO	6/16/2016
		Middle	Y	DS-1151GFE	SERVO	6/16/2016
		Lower	Y	DS-1156GFE	SERVO	6/16/2016
	Abdominal Rib	Upper	Y	DS-308GFE	SERVO	6/16/2016
		Lower	Y	DS-307GFE	SERVO	6/16/2016
Lower Spine Accelerometers (T12)			X	AC-P58883	ENDEVCO	6/16/2016
			Y	AC-P64147	ENDEVCO	6/16/2016
			Z	AC-P58786	ENDEVCO	6/16/2016
Acetabulum Load Cell			Y	LC-275Fy	DENTON	5/24/2016
Lilac Wing Load Cell			Y	LC-279Fy	DENTON	5/24/2016
Pelvis Plug (Struck Side)				79630	HUMANETICS	11/05/2014
Pelvis Plug (Non-Struck Side)						

Table 2 – Vehicle Instrumentation

Vehicle Instrumentation		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	AC-A192203	Measurement	10/13/2016
Vehicle Center of Gravity	Y	AC-A192208	Measurement	10/13/2016
Vehicle Center of Gravity	Z	AC-A192222	Measurement	10/13/2016
Left Floor Sill	Y	AC-A196982	MSI 1201-1000	5/17/2016
A-Pillar Sill	Y	AC-A192231	Measurement	10/13/2016
A-Pillar Low	Y	AC-A192202	Measurement	10/13/2016
A-Pillar Mid	Y	AC-A197055	MSI 1201-1000	5/17/2016
B-Pillar Sill	Y	AC-A189589	MSI 1201-1000	10/17/2016
B-Pillar Low	Y	AC-A189596	MSI 1201-1000	10/17/2016
B-Pillar Mid	Y	AC-A192206	Measurement	10/17/2016
Driver Seat	Y	AC-A192199	Measurement	10/13/2016
Engine Top	X	AC-A189587	MSI 1201-1000	7/13/2016
Engine Top	Y	AC-A189595	MSI 1201-1000	7/13/2016
Firewall	Y	AC-A126803	MSI 1201	10/19/2016
Right Roof	Y	AC-A196996	MSI 1201-1000	5/17/2016
Right Floor Sill	Y	AC-A005899	MSI 1201	10/19/2016
Rear Floorpan	X	AC-A197049	MSI 1201-1000	5/17/2016
Rear Floorpan	Y	AC-A197053	MSI 1201-1000	5/17/2016

Table 3 – Pole Instrumentation

Pole Instrumentation	Serial Number	Manufacturer	Calibration Date
Load Cell 1	LC-18879	INTERFACE	6/30/2016
Load Cell 2	LC-18852	INTERFACE	6/30/2016
Load Cell 3	LC-46955	INTERFACE	6/30/2016
Load Cell 4	LC-18882	INTERFACE	6/30/2016
Load Cell 5	LC-18864	INTERFACE	6/30/2016
Load Cell 6	LC-18847	INTERFACE	6/30/2016
Load Cell 7	LC-62086	INTERFACE	6/30/2016
Load Cell 8	LC-46962	INTERFACE	6/30/2016