

REPORT NUMBER: R&D-CAL-15-007

**VEHICLE TO FRONTAL BARRIER CRASH TEST IN SUPPORT OF NHTSA'S
FRONTAL RESEARCH PROGRAM**

2016 Honda Fit

56.3 KPH RIGID BARRIER FRONTAL

TEST DATE: 1/11/2016

NHTSA No: M20165306

**CALSPAN CORPORATION
TRANSPORTATION TEST OPERATIONS
P.O. BOX 400
BUFFALO, NEW YORK 14225**



FINAL REPORT SUBMITTED:

May 2, 2016

PREPARED FOR:

**U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Vehicle safety Research
1200 New Jersey Ave, SE
Room W46-446
Washington, DC 20590**

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, Test Engineer

Date: May 2, 2016

Approved by: Edward J. Dutton
Edward J. Dutton, Test Engineer
Director Transportation Test Operations

Date: May 2, 2016

FINAL REPORT ACCEPTANCE BY VEHICLE SAFETY RESEARCH, OFFICE OF
STRUCTURAL AND RESTRAINTS RESEARCH DIVISION:

Date: _____

TOM, Vehicle Crash Testing
NHTSA, Office of Structures and Restraints Research

Date: _____

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. R&D-CAL-15-007	2. Government Accession No.		3. Recipient's Catalog No.																																																													
4. Title and Subtitle Report for Frontal Research Program Testing of a 2016 Honda Fit 5 door hatchback NHTSA No.: M20165306			5. Report Date 5/2/2016																																																													
			6. Performing Organization Code CAL																																																													
7. Author(s) Vanessa Hansen, Test Engineer Edward Dutton, Operations Manager			8. Performing Organization Report No. CAL-DOT-2015-007																																																													
9. Performing Organization Name and Address Calspan Corporation 4455 Genesee Street Buffalo, New York 14225			10. Work Unit No.																																																													
			11. Contract or Grant No. DTNH22-14-D-00359 TO-0002																																																													
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Vehicle Safety Research 1200 New Jersey Ave SE, Room W46-446 Washington, DC 20590			13. Type of Report and Period Covered Final Report, 5/2/2016																																																													
			14. Sponsoring Agency Code NSR-210																																																													
15. Supplementary Notes																																																																
16. Abstract A test was conducted in accordance with Contract DTNH22-14-D-00359 Task Order 0002. The test consisted of a 2016 Honda Fit traveling at a target speed of 56.3 kph into a stationary flat frontal barrier wall. The test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and foot well intrusion performance. The test was conducted at the Calspan Corporation's Transportation Test Operation's facility in Buffalo, New York on January 11, 2016. The vehicle's impact velocity was 56.09 KPH and the ambient temperature at the test vehicle at the time of impact was 21°C. The target vehicle post-test maximum crush was 314 mm. The test vehicle's occupant performance was as follows: <table border="1"> <thead> <tr> <th>Measurement Description</th> <th>Units</th> <th>Driver</th> <th>Front Passenger</th> <th>Rear Passenger</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₁₅)</td> <td>N/A</td> <td>320.95</td> <td>154.90</td> <td>915.47</td> </tr> <tr> <td>Brain Injury Criterion (BrIC)</td> <td>N/A</td> <td>0.85</td> <td>0.81</td> <td></td> </tr> <tr> <td>Abdomen Deflection</td> <td>mm</td> <td>-63.90</td> <td></td> <td></td> </tr> <tr> <td>Resultant Acetabulum Force</td> <td>N</td> <td>1599.03</td> <td></td> <td></td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>-47.92</td> <td>-24.38</td> <td>-53.76</td> </tr> <tr> <td>Neck Injury Criteria (Nij)</td> <td>N/A</td> <td>0.48</td> <td>0.57</td> <td>1.05</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>1115.59</td> <td>1242.09</td> <td>2982.77</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>-206.26</td> <td>-190.77</td> <td>-693.56</td> </tr> <tr> <td>Tibia Index</td> <td>N/A</td> <td>0.62</td> <td>0.48</td> <td></td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>-1996.34</td> <td>-71.00</td> <td>-169.80</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>-2501.65</td> <td>-69.59</td> <td>-162.62</td> </tr> </tbody> </table>					Measurement Description	Units	Driver	Front Passenger	Rear Passenger	Head Injury Criteria (HIC ₁₅)	N/A	320.95	154.90	915.47	Brain Injury Criterion (BrIC)	N/A	0.85	0.81		Abdomen Deflection	mm	-63.90			Resultant Acetabulum Force	N	1599.03			Maximum Chest Compression	mm	-47.92	-24.38	-53.76	Neck Injury Criteria (Nij)	N/A	0.48	0.57	1.05	Neck Tension	N	1115.59	1242.09	2982.77	Neck Compression	N	-206.26	-190.77	-693.56	Tibia Index	N/A	0.62	0.48		Left Femur Force	N	-1996.34	-71.00	-169.80	Right Femur Force	N	-2501.65	-69.59	-162.62
Measurement Description	Units	Driver	Front Passenger	Rear Passenger																																																												
Head Injury Criteria (HIC ₁₅)	N/A	320.95	154.90	915.47																																																												
Brain Injury Criterion (BrIC)	N/A	0.85	0.81																																																													
Abdomen Deflection	mm	-63.90																																																														
Resultant Acetabulum Force	N	1599.03																																																														
Maximum Chest Compression	mm	-47.92	-24.38	-53.76																																																												
Neck Injury Criteria (Nij)	N/A	0.48	0.57	1.05																																																												
Neck Tension	N	1115.59	1242.09	2982.77																																																												
Neck Compression	N	-206.26	-190.77	-693.56																																																												
Tibia Index	N/A	0.62	0.48																																																													
Left Femur Force	N	-1996.34	-71.00	-169.80																																																												
Right Femur Force	N	-2501.65	-69.59	-162.62																																																												
17. Key Words THOR ATD HIII 5 th Female RibEye 56.3 kph Frontal Barrier Impact Test			18. Distribution Statement <u>Copies of this report are available from:</u> National Highway Traffic Safety Administration Technical Reference Division 1200 New Jersey Ave, SE Washington, DC 20590																																																													
19. Security Classif. (of this report) UNCLASSIFIED	20. Security Classif. (of this page) UNCLASSIFIED	21. No. of Pages		22. Price																																																												

DISCLAIMER

The contents of this report relate only to the specific product evaluated under the specific test conditions, as defined within this report. The findings and conclusions are those of the author(s) and not necessarily those of Calspan Corporation. For the purposes of this report, Calspan Corporation provided test services only and was not involved with the consulting, design or manufacture of any product. Calspan Corporation does not endorse products or manufacturers. Further, Calspan Corporation (to include: any of its affiliates, parent companies or subsidiaries) assumes no liability associated with the contents of this report or the use of this report.

Prepared by: Vanessa Hansen
Vanessa Hansen, Test Engineer

Date: May 2, 2016

Approved by: Edward J. Dutton
Edward J. Dutton, Test Engineer
Director Transportation Test Operations

Date: May 2, 2016

TABLE OF CONTENTS

Test Vehicle: 2016 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
 Test Date: 1/11/2016

<u>Section</u>	<u>Page No.</u>
1 Purpose of Test	1-1
2 Summary of Test	2-1
Crash Vehicle Summary	2-3
Preliminary Injury Summary: Driver	2-4
Preliminary Injury Summary: Front Right Passenger	2-5
Preliminary Injury Summary: Rear Passenger	2-6
3 Data Sheets	3-1
<u>Data Sheet No.</u>	<u>Page No.</u>
1 General Test and Vehicle Parameter Data	3-2
2 Seat Adjustment, Fuel System, and Steering Wheel	3-6
3 Dummy Longitudinal Clearance Dimensions	3-8
4 Dummy Lateral Clearance Dimensions	3-15
5 Seat Belt Positioning Data	3-16
6 High-Speed Camera Locations and Data	3-17
7 Vehicle Instrumentation Data	3-19
8 Photographic Reference Target Locations	3-22
9 Test Vehicle Summary of Results	3-23
10 Post-Test Observations	3-24
11 Vehicle Profile Measurements	3-25
12 Accident Investigation Division Data	3-27
13 Vehicle Intrusion Measurements	3-28
14 Summary of FMVSS 212, 219 (Partial), and 301 Data	3-30
Windshield Periphery Measurements	3-30
Areas of Protected Zone Failures	3-30
Fuel System Integrity Post Impact Data	3-31
15 FMVSS 301 Static Rollover Results	3-32
16 Dummy / Vehicle Temperature Stabilization	3-33
<u>Appendix</u>	<u>Page No.</u>
A Photographs	A-1
B Vehicle & Dummy Response Data Traces	B-1
C Dummy Calibration and Performance Verification Data Sheets	C-1

SECTION 1
PURPOSE OF TEST

Test Vehicle: 2016 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
Test Date: 1/11/2016

This 56.3 kph (35 mph) test vehicle into a rigid barrier is part of the Frontal Rigid Barrier Test as outlined in Contract No. DTNH22-14-D-00359 Task Order 0002. The purpose of this test is to obtain vehicle crashworthiness and occupant restraint system performance data for research purposes.

This test was conducted in accordance with the instructions set forth for a vehicle to rigid barrier impact, outlined in Contract No. DTNH22-14-D-00359 Task Order 0002. Data was obtained indicant of Federal Motor Vehicle Safety Standard FMVSS 208-Occupant Crash Protection, FMVSS 212 – Windshield Mounting, FMVSS 219 (partial) – Windshield Zone Intrusion, and FMVSS 301 – Fuel System Integrity, in addition to the requirements of Contract No. DTNH22-14-D-00359 Task Order 0002.

SECTION 2 SUMMARY OF TEST

Test Vehicle: 2016 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
Test Date: 1/11/2016

A rigid fixed barrier was impacted by a 2016 Honda Fit at a velocity of 56.09 km/h. The test was performed at Calspan Corporation's Transportation Test Operations facility in Buffalo, New York on January 11, 2015. Pre- and post-test photographs of the vehicle and dummies to document the test can be found in Appendix A. One real-time camera and 16 high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in Data Sheet 6 of this report.

One 50% adult male THOR-M anthropomorphic test device (ATD) (Serial No. DL9207), was placed in the driver seating position according to dummy placement instructions specified in the THOR Seating Test Procedure, and one Part 572O 5th percentile female ATD with RibEye (Serial No. 324), was placed in the right-front passenger seating position at mid-track according to dummy placement instructions specified in the frontal NCAP laboratory test procedure. One Part 572O 5th percentile female ATD with RibEye (Serial No. 019) was also placed in the rear seating position (P3) and positioned according to dummy placement instructions specified in the Side MDB NCAP Laboratory Test Procedure.

Seat belt load cells were also on the drivers and passengers' shoulder and lap belts to measure the dummy's torso and pelvic section loading. In addition to seat belt load cells, belt movement sensors were utilized on both the driver and front passengers' seat belts to measure displacement. The driver (position 1) ATD (Serial No. DL9207), right-front passenger (position 2) ATD (Serial No. 324), and the rear passenger ATD (Serial No. 019) were calibrated previous to this test. Certification details, along with instrumentation calibration data, can be found in Appendix C of this report.

Two hundred and sixty seven (267) channels of data from the ATD's and test vehicle were collected using Kayser – Threde data acquisition systems. Appendix B contains dummy and vehicle response data plots.

There was 100% total windshield retention and there appeared to be no intrusion into the protected zone of the windshield during any portion of the impact event. The maximum static crush of the vehicle was 314mm at C2 to the left of the vehicle's centerline. Full vehicle measurements are presented in Section 3 of this report.

SECTION 2 (CONTINUED)
SUMMARY OF TEST

Test Vehicle: 2016 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
Test Date: 1/11/2016

All four vehicle doors remained closed and latched during the test. All doors remained operational after the impact event.

Structure observations include the following:

- Hood bent inwards exposing part of the engine compartment
- Windshield has minor cracks along the bottom corners

The driver ATD's visible contact points were:

- Head contacted the frontal airbag, and headrest
- Torso contacted the frontal airbag
- Knees contacted the knee bolster

The right front passenger ATD's visible contact points were:

- Head contacted the frontal airbag and headrest
- Torso contacted the frontal airbag
- Knees contacted the glove box

The rear passenger ATD's visible contact points were:

- Head contacted the headrest and C-Pillar headliner

SECTION 2 (CONTINUED)
CRASH VEHICLE SUMMARY

Test Vehicle: 2016 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
Test Date: 1/11/2016

Primary Impact Data

Measured Parameter	Units	Value
Test Vehicle Velocity at Impact	kph	56.09
Vehicle Test Weight	kg	1436
Vehicle Maximum Static Crush	mm	314
Number of Data Channels		267
Number of Real-Time Cameras		1
Number of High-Speed Cameras		16

GENERAL COMMENTS:

1. P1 (Driver) serial number – DL9207
2. P2 (Passenger) serial number – 324
3. P3 (Rear Passenger) serial number – 019

Data Anamolies:

- Rear Passenger RibEye Left Rib 01 Displacement X, Questionable data 64.8ms to 112ms B-56
- Rear Passenger RibEye Left Rib 01 Displacement Y, Questionable data 64.8ms to 112ms B-56
- Rear Passenger RibEye Left Rib 05 Displacement X, Questionable data 73.1ms to 101ms B-58
- Rear Passenger RibEye Left Rib 05 Displacement Y, Questionable data 73.1ms to 101ms B-58
- Rear Passenger RibEye Left Rib 06 Displacement X, Questionable data 67.9ms to 114ms B-59
- Rear Passenger RibEye Left Rib 06 Displacement Y, Questionable data 67.9ms to 114ms B-59
- Rear Passenger RibEye Right Rib 04 Displacement X, Questionable data 66.2ms to 110ms B-61
- Rear Passenger RibEye Right Rib 05 Displacement X, Questionable data 53.2ms to 117ms B-61
- Rear Passenger RibEye Right Rib 05 Displacement Y, Questionable data 53.2ms to 117ms B-61
- Rear Passenger RibEye Right Rib 06 Displacement X, Questionable data 46.9ms to 128ms B-62
- Rear Passenger RibEye Right Rib 06 Displacement Y, Questionable data 46.9ms to 128ms B-62
- Rear Passenger Lap Outer Force, Questionable data 7.34ms to 15.7ms B-65

PRELIMINARY INJURY SUMMARY: Driver

Test Vehicle: 2016 Honda Fit - M20165306 NHTSA No.: M20165306
 Test Program: NHTSA R&D Frontal Rigid Barrier Test Date: 1/11/2016

Driver: THOR Serial No. DL9207 Injury Summary

Location	Description	Unit	Source	Max	Min
Head	HIC 15ms		Compute	320.95	
	Brain Injury Criteria (BrIC)		Compute	0.85	
	Head Rotational Velocity X	Deg/s	60	583.04	-123.86
	Head Rotational Velocity Y	Deg/s	60	1482.99	-1464.70
	Head Rotational Velocity Z	Deg/s	60	1356.44	-1719.97
Neck	Upper Neck Z-axis Force	N	1000	1115.59	-206.26
	Upper Neck Y-axis Moment	Nm	Thortest	24.31	-20.39
Chest	Upper Left Resultant Chest Deflection	mm	Thortest	31.12	
	Upper Right Resultant Chest Deflection	mm	Thortest	47.92	
	Lower Left Resultant Chest Deflection	mm	Thortest	11.50	
	Lower Right Resultant Chest Deflection	mm	Thortest	30.97	
Abdomen	Lower Left X-axis Deflection	mm	Thortest	0.22	-58.56
	Lower Right X-axis Deflection	mm	Thortest	0.23	-63.90
Acetabulum	Left Acetabulum Resultant Force	N	Compute	1531.26	0.08
	Right Acetabulum Resultant Force	N	Compute	1599.03	1.50
Femur	Left Femur Force, FZ	N	600	196.67	-1996.34
	Right Femur Force, FZ	N	600	644.72	-2501.65
Tibia	Left Upper Tibia, FZ	N	600	112.71	-1372.65
	Left Upper Tibia Index		Compute	0.53	
	Right Upper Tibia, FZ	N	600	188.99	-1285.10
	Right Upper Tibia Index		Compute	0.36	
	Left Lower Tibia, FZ	N	600	217.85	-2811.41
	Left Lower Tibia Index		Compute	0.47	
	Right Lower Tibia, FZ	N	600	635.12	-4615.88
	Right Lower Tibia Index		Compute	0.62	
Ankle	Left Ankle Rotation, RX	Deg	180	13.25	-18.40
	Left Ankle Rotation, RY	Deg	180	30.31	-6.16
	Left Ankle Dorsiflexion Moment, MY	Nm	Compute	50.23	-22.03
	Left Ankle In/Eversion Moment, MX	Nm	Compute	48.96	-14.81
	Right Ankle Rotation, RX	Deg	180	8.29	-10.43
	Right Ankle Rotation, RY	Deg	180	37.30	-7.54
	Right Ankle Dorsiflexion Moment, MY	Nm	Compute	132.37	-8.44
	Right Ankle In/Eversion Moment, MX	Nm	Compute	10.92	-37.99
Anomalies: None					

PRELIMINARY INJURY SUMMARY: Right Front Passenger

Test Vehicle: 2016 Honda Fit - M20165306 NHTSA No.: M20165306
 Test Program: NHTSA R&D Frontal Rigid Barrier Test Date: 1/11/2016

Right Front Passenger: HF Serial No. 324 Injury Summary

Location	Description	Unit	Source	Max	Min
Head	15 ms HIC		Compute	154.90	
	Brain Injury Criteria (BrIC)		Compute	0.81	
Neck	Upper Neck Force Z	N	1000	1242.09	-190.77
	Upper Neck Moment Y	Nm	600	27.16	-30.89
	NIJ		Compute	0.57	
Chest	Chest Potentiometer Deflection	mm	600		-22.85
	Left Ribeye 01 X-Axis Deflection	mm	600	0.34	-24.38
	Left Ribeye 02 X-Axis Deflection	mm	600	0.37	-23.86
	Left Ribeye 03 X-Axis Deflection	mm	600	0.26	-23.51
	Left Ribeye 04 X-Axis Deflection	mm	600	0.22	-22.83
	Left Ribeye 05 X-Axis Deflection	mm	600	0.24	-21.89
	Left Ribeye 06 X-Axis Deflection	mm	600	0.19	-20.58
	Right Ribeye 01 X-Axis Deflection	mm	600	0.19	-17.09
	Right Ribeye 02 X-Axis Deflection	mm	600	0.31	-14.64
	Right Ribeye 03 X-Axis Deflection	mm	600	0.27	-13.39
	Right Ribeye 04 X-Axis Deflection	mm	600	0.18	-12.40
	Right Ribeye 05 X-Axis Deflection	mm	600	0.23	-11.68
	Right Ribeye 06 X-Axis Deflection	mm	600	0.26	-10.88
	Overall Ribeye X-Axis Deflection	Mm	600	0.37	-24.38
	Chest Resultant Acceleration	g	Compute	54.60	
	Chest Resultant Acceleration, 3 ms clip	g	Compute	53.41	
	Pelvis Resultant Acceleration	g	Compute	59.71	
Femur	Left Femur Force, FZ	N	600	1153.01	-71.00
	Right Femur Force, FZ	N	600	1140.10	-69.59
Tibia	Left Upper Tibia, FZ	N	600	49.91	-569.82
	Left Upper Tibia Index		Compute	0.42	
	Right Upper Tibia, FZ	N	600	121.59	-628.56
	Right Upper Tibia Index		Compute	0.48	
	Left Lower Tibia, FZ	N	600	298.30	-830.41
	Left Lower Tibia Index		Compute	0.26	
	Right Lower Tibia, FZ	N	600	90.67	-933.05
	Right Lower Tibia Index		Compute	0.28	
Anomalies					
None					

PRELIMINARY INJURY SUMMARY: Right Rear Passenger

Test Vehicle: 2016 Honda Fit - M20165306 NHTSA No.: M20165306
 Test Program: NHTSA R&D Frontal Rigid Barrier Test Date: 1/11/2016

Right Rear Passenger: HF Serial No. 019 Injury Summary

Location	Description	Unit	Source	Max	Min
Head	15 ms HIC		Compute	915.47	
Neck	Upper Neck Force Z	N	1000	2982.77	-693.56
	Upper Neck Moment Y	Nm	600	30.65	-53.00
	NIJ		Compute	1.05	
Chest	Chest Potentiometer Deflection	mm	600		-47.83
	Left Ribeye 01 X-Axis Deflection	mm	600	0.22 ⁽¹⁾	-83.88 ⁽¹⁾
	Left Ribeye 02 X-Axis Deflection	mm	600	0.22	-47.73
	Left Ribeye 03 X-Axis Deflection	mm	600	0.30	-50.68
	Left Ribeye 04 X-Axis Deflection	mm	600	0.20	-53.76
	Left Ribeye 05 X-Axis Deflection	mm	600	0.20 ⁽²⁾	-87.58 ⁽²⁾
	Left Ribeye 06 X-Axis Deflection	mm	600	0.19 ⁽²⁾	-87.61 ⁽²⁾
	Right Ribeye 01 X-Axis Deflection	mm	600	0.19	-31.37
	Right Ribeye 02 X-Axis Deflection	mm	600	0.21	-31.64
	Right Ribeye 03 X-Axis Deflection	mm	600	0.25	-30.34
	Right Ribeye 04 X-Axis Deflection	mm	600	15.46 ⁽²⁾	-27.47 ⁽²⁾
	Right Ribeye 05 X-Axis Deflection	mm	600	18.74 ⁽²⁾	-92.20 ⁽²⁾
	Right Ribeye 06 X-Axis Deflection	mm	600	35.78 ⁽²⁾	-91.02 ⁽²⁾
	Overall Ribeye X-Axis Deflection	Mm	600	35.78 ⁽²⁾	-92.20 ⁽²⁾
	Chest Resultant Acceleration	g	Compute	63.44	
	Chest Resultant Acceleration, 3 ms clip	g	Compute	63.05	
Pelvis	Pelvis Resultant Acceleration	g	Compute	59.17	
	Left ASIS Force X	N	600	40.53	-4361.16
	Right ASIS Force X	N	600	27.32	-3308.01
Femur	Left Femur Force Z	N	600	1634.84	-169.80
	Right Femur Force Z	N	600	1610.28	-162.62
Anomalies (1) Questionable data 64.8ms to 112ms (2) Interference by Chest Pot and Abdominal Insert					

SECTION 3 DATA SHEETS

Test Vehicle: 2016 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
Test Date: 1/11/2016

<u>Data Sheet No.</u>		<u>Page No.</u>
1	General Test and Vehicle Parameter Data	3-2
2	Seat Adjustment, Fuel System, and Steering Wheel	3-6
3	Dummy Longitudinal Clearance Dimensions	3-8
4	Dummy Lateral Clearance Dimensions	3-15
5	Seat Belt Positioning Data	3-16
6	High-Speed Camera Locations and Data	3-17
7	Vehicle Instrumentation Data	3-19
8	Photographic Reference Target Locations	3-22
9	Test Vehicle Summary of Results	3-23
10	Post-Test Observations	3-24
11	Vehicle Profile Measurements	3-25
12	Accident Investigation Division Data	3-27
13	Vehicle Intrusion Measurements	3-28
14	Summary of FMVSS 212, 219 (Partial), and 301 Data	3-30
	Windshield Periphery Measurements	3-30
	Areas of Protected Zone Failures	3-30
	Fuel System Integrity Post Impact Data	3-31
15	FMVSS 301 Static Rollover Results	3-32
16	Dummy / Vehicle Temperature Stabilization	3-33

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2016 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
 Test Date: 1/11/2016

VEHICLE INFORMATION

NHTSA No.	M20165306
Model Year	2016
Make	Honda
Model	Fit
Body Style	5 Door Hatchback
VIN	JHMGK5H52GX007683
Body Color	Blue
Odometer Reading (km/mi)	67.6 km / 42 mi
Engine Displacement. (L)	1.5
Type/No. Cylinders	I4
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	CVT
Overdrive	Yes
Final Drive	FWD
Roof Rack	No
Sunroof/T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes
All-Wheel Drive (AWD)	No
Traction Control System (TCS)	Yes

VEHICLE OPTIONS

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	Yes
Driver Torso/Pelvis Airbag	No
Driver Pelvis Airbag	No
Driver Knee Airbag	No
Pass. Front Airbag	Yes
Pass. Curtain Airbag	Yes
Pass. Head/Torso Airbag	No
Pass. Torso Airbag	Yes
Pass. Torso/Pelvis Airbag	No
Pass. Pelvis Airbag	No
Pass. Knee Airbag	No
Driver Seat Belt Pretensioner	Yes
Pass. Seat Belt Pretensioner	Yes
Driver Load Limiter	Yes
Pass. Load Limiter	Yes
Other Safety Restraint	-

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

Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Honda Motor Co., LTD
Date of Manufacture	10/15

GWR (kg)	1539
GAWR Front (kg)	823
GAWR Rear (kg)	716

VEHICLE SEATING AND WEIGHT CAPACITY

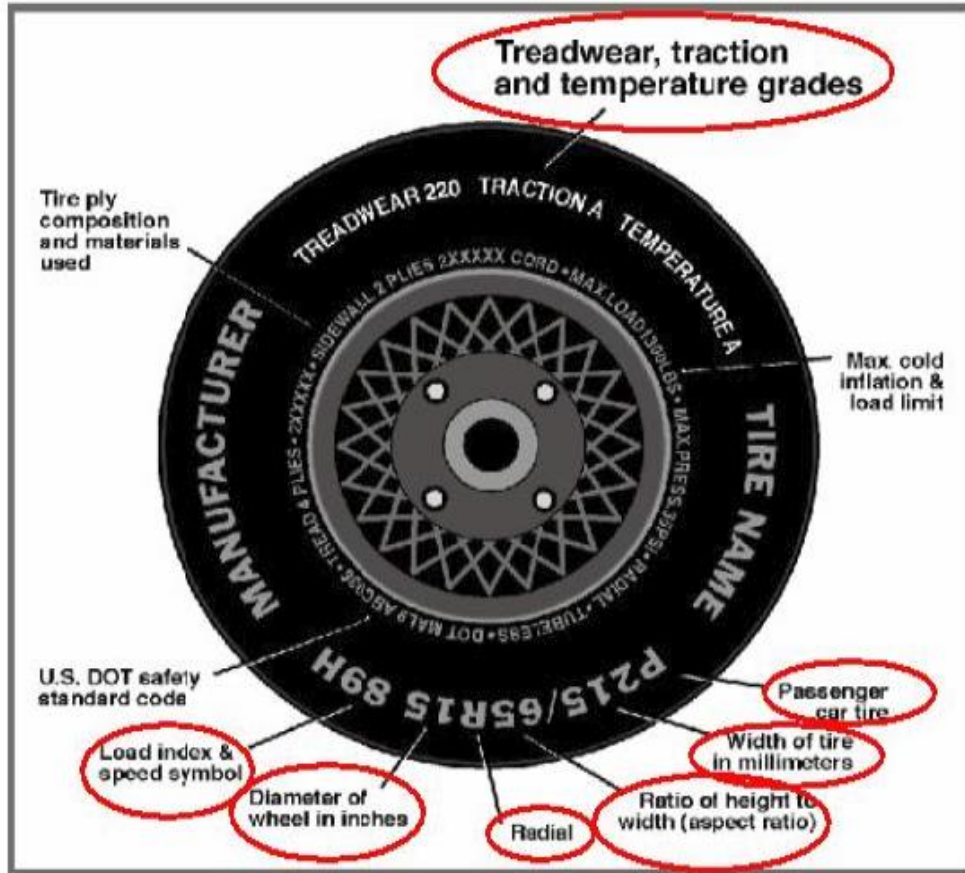
Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench	-	
Number of Occupants	2	3	-	5
Capacity Wt. (VCW) (kg)				385
Cargo Wt. (RCLW) (kg)				44.8

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

Test Vehicle: 2016 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
 Test Date: 1/11/2016

Collect items circled in red, tire manufacturer, and tire name.



Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	230	230
Recommended Tire Size	P185/60R15	185/60R15
Tire Size on Vehicle	P185/60R15	185/60R15
Tire Manufacturer	Firestone	Firestone
Tire Model	FR740	FR740
Treadwear	400	400
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	1 Polyester	1 Polyester
Tire Plies Body	1 Polyester, 2 Steel, 1 Nylon	1 Polyester, 2 Steel, 1 Nylon
Load Index/Speed Symbol	84T	84T
Tire Material	Rubber	Rubber
DOT Safety Code Right	EL CA CJJ4115	EL CA CJJ4115
DOT Safety Code Left	EL CA CJJ4115	EL CA CJJ4115

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

Test Vehicle: 2016 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
 Test Date: 1/11/2016

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	382	201		398	327	
Right	kg	339	232		407	304	
Ratio	%	62.4	37.6		56	44	
Totals	kg	721	433	1154	805	631	1436

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1154
Weight of 1 THOR & 2 HIII 5 th Females	kg	211
Rated Cargo/Luggage Weight (RCLW)	kg	44.8
Calculated Vehicle Target Weight (TVTW)	kg	1409.8

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	648	657	658	666	950
As Tested	mm	640	645	614	622	1113
Post Test	mm	632	646	615	625	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2532
Total Vehicle Length at Left Side	mm	3992
Total Vehicle Length at Centerline	mm	4069
Total Vehicle Length at Right Side	mm	3996
Weight of Ballast in Cargo Area	kg	0
Weight of Vehicle Components Removed	kg	42
Amount of Stoddard Solvent in Fuel Tank	L	13.3

LIST OF COMPONENTS REMOVED TO MEET TEST WEIGHT:

Trunk carpeting, spare tire, jack, rear speaker, tail light, hatch/gate, side view mirrors,
Four windows.

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

Test Vehicle: 2016 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
Test Date: 1/11/2016

TARGET VEHICLE STRUCTURAL MEASUREMENT

	Elements	Units	Pre-Test
1	Total Length	mm	4069
2	Total Width	mm	1696
3*	Bumper Top Height	mm	554
4*	Bumper Bottom Height	mm	442
5*	Longitudinal Member Top Height	mm	542
6	Distance Between Longitudinal Members	mm	1066
7	Longitudinal Member Width	mm	80
8*	Engine Top Height	mm	890
9*	Engine Bottom Height	mm	257
10	Engine and Gearbox Width	mm	510
11	Front Bumper-Engine Distance	mm	507
12*	Front Shock Absorber Fixing Height	mm	899
13*	Bonnet Leading Edge Height	mm	771
14	Front Shock Absorber Fixing Width	mm	1116
15	Front Bumper – Front Axle Distance	mm	813
16	Front Axle – A Pillar Distance	mm	187
17	A-Pillar – B-Pillar Distance	mm	1326
18	B-Pillar – Rear Axle Distance	mm	1019
19	B-Pillar – C-Pillar Distance	mm	924
20*	Roof Sill Bottom Height	mm	1425
21*	Roof Sill Top Height	mm	1458
22*	Floor Sill Bottom Height	mm	292
23*	Floor Sill Top Height	mm	379

*Note: Height measurements are in reference to the ground.

DATA SHEET NO. 2

SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL

Test Vehicle: 2016 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

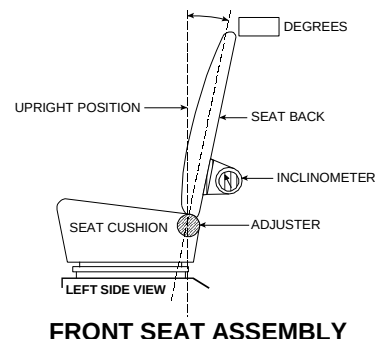
NHTSA No.: M20165306
 Test Date: 1/11/2016

NORMAL DESIGN RIDING POSITION

For adjustable driver and passenger seat backs. Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent, if applicable.

Driver seat: The driver seat back was positioned according to the Nominal Design Riding position listed in FORM 1 and THOR Seating Procedure.

Passenger Seat: The passenger seat back was positioned according to the Nominal Design Riding position listed in FORM 1 and THOR Seating Procedure.



	Deg.
Driver Seat Back Angle	+0.3
Passenger Seat Back Angle	-2.8
Rear Passenger Seat Back Angle	FIXED

SEAT FORE/AFT POSITIONS

Describe the method used of determining seat fore/aft positions.

The driver's seat was positioned at its lowest position at mid angle and at 2 detents rear of Midpoint per THOR seating procedure. The front passenger's seat was positioned at the mid-point of fore/aft travel at Mid angle and mid height.

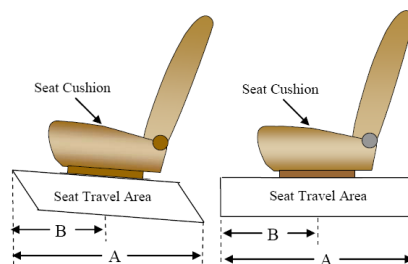
	Total Fore/Aft Travel	Placed in Position #
Driver Seat	35 (0-34)	19
Passenger Seat	35 (0-34)	17
Rear Passenger Seat	FIXED	FIXED

SEAT BELT UPPER ANCHORAGES

Describe the method of positioning seat belt upper anchorages. Belt anchorages were moved along the full range of motion, and marked on the B-Pillar to their respective possible positions.

Photographic evidence can be found in Appendix A of this report. Zero is defined as the upper-most position.

	Total # of Positions	Placed in Position #
Driver Seat	4	0
Passenger Seat	4	0
Rear Passenger Seat	FIXED	FIXED



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

Test Vehicle: 2016 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
 Test Date: 1/11/2016

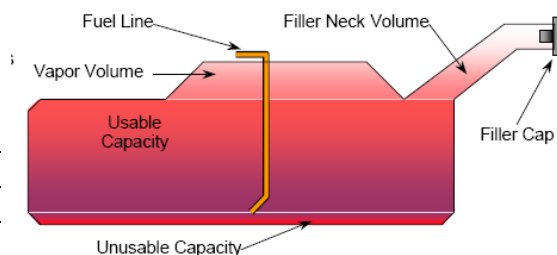
FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	40
Usable Capacity of "Optional Tank"	
93% of Usable Capacity	37.2
Actual Amount of Solvent Used	13.3
1/3 of Usable Capacity	13.3

FUEL PUMP

Describe the fuel system - what type of fuel pump, details about how it operates, etc.

Fuel evacuated according to the specifications provided by the manufacturer in Form 1. Electric fuel pump operates when the ignition is in the 'on' position and the engine is running. The fuel filler neck is located above the left rear wheel.

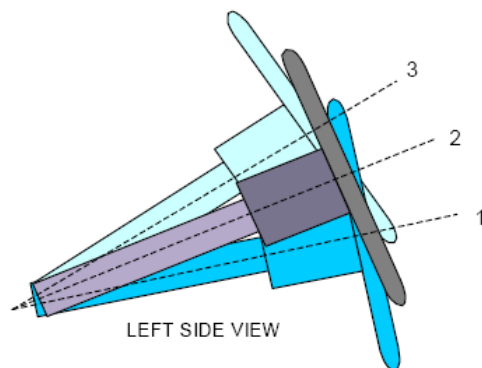


VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. Describe how this measurement was taken.

The steering wheel was adjusted to the midpoint of tilt angle range and the midpoint of the telescoping travel (if applicable)



LEFT SIDE VIEW

STEERING COLUMN ASSEMBLY

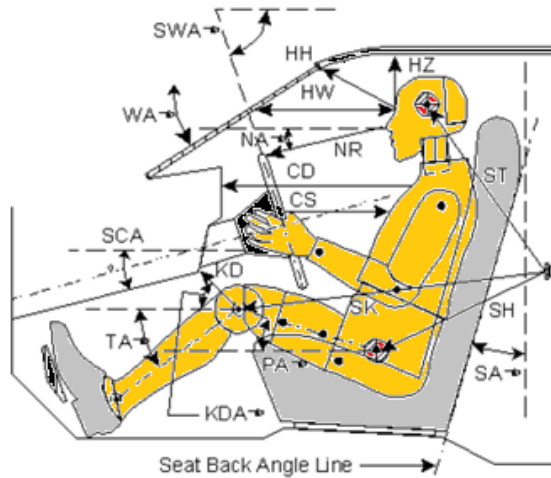
STEERING COLUMN POSITIONS

	Tilt (degrees)	Fore/Aft Position (mm)
Lowermost position No. 1	24.1	
Geometric center position No. 2	26.6	
Uppermost position No. 3	29.1	
Telescoping Steering Wheel Travel		40
Test Position	26.6	20

DATA SHEET NO. 3 DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2016 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
Test Date: 1/11/2016

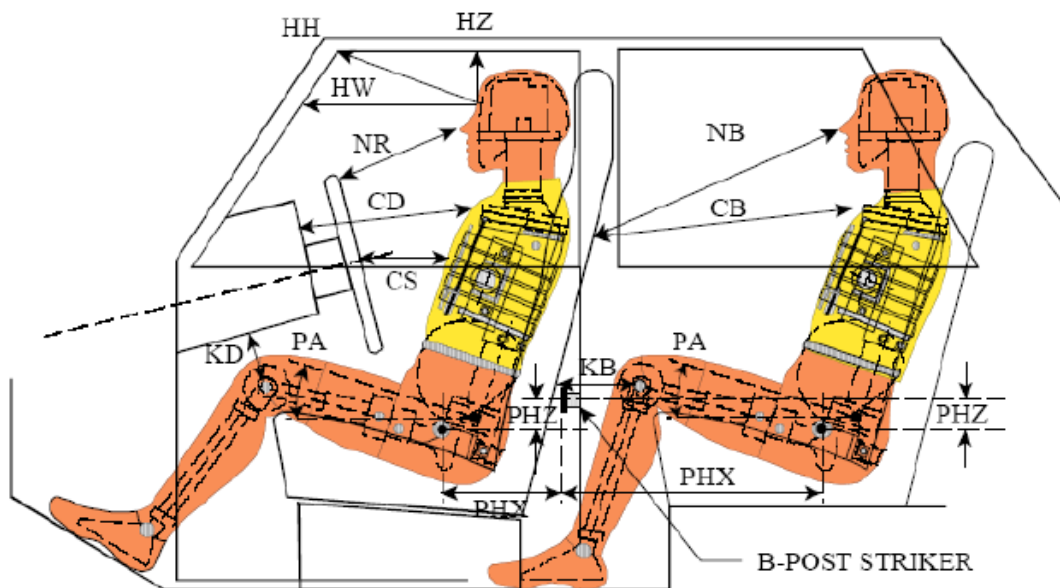


Code	Measurement Description	Driver (Serial # THOR DL9207)		Front Passenger (Serial # 324)	
		Length (mm)	Angle(°)	Length (mm)	Angle (°)
WA°	Windshield Angle		26.2		
SWA°	Steering Wheel Angle		27.4		
SCA°	Steering Column Angle		62.6		
SA°	Seat Back Angle (on headrest post)		0.3		-2.8
HZ	Head to Roof (Z)	198	90	288	90
HH	Head to Header	392	19.2	378	40.8
HW	Head to Windshield	742	0	845	0
NR	Nose to Rim/Dash	500	19.7	514	-24.9
CD	Chest to Dash	598		462	
CS	Chest to Steering Hub	382	7		
RA	Rim to Abdomen	171	0		
KDL	Left Knee to Dash	95	-24.7	165	43.5
KDR	Right Knee to Dash	82	-58.7	175	37.0
PA°	Pelvic Angle		33.3		20.8
TA°	Tibia Angle		-52.0		-44.1
SK	Striker to Knee	626	-6.0	600	-3.9
ST	Striker to Head	587	-87.1	497	-75.3
SH	Striker to H-Point	249	-17.1	275	-19.4
HAX°	Head Angle (X)		0.3		
HAY°	Head Angle (Y)		-3.1		
TAX°	T6 Angle (X)		-0.1		
TAY°	T6 Angle (Y)		25.3		
TAX°	T1 (X)		-0.2		
TAY°	T1 (Y)		5.2		
TAX°	T12 (X)		0.0		
TAY°	T12 (Y)		33.9		
PAX°	Pelvis (X)		0.6		
PAY°	Pelvis (Y)		33.3		

DATA SHEET NO. 3 (CONTINUED)
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2016 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
 Test Date: 1/11/2016



LEFT SIDE VIEW

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

Code	Measurement Description	Rear Passenger (Serial # 019)	
		Length (mm)	Angle (°)
SA°	Seat Back Angle (on headrest post)		13.0
HZ	Head to Roof (Z)	277	
NB	Nose to Seatback	596	
CB	Chest to Seatback	608	
KDL	Left Knee to Seatback	342	28
KDR	Right Knee to Seatback	340	10.3
PAX°	Pelvic Tilt Angle (X-axis)		19.3
PAY°	Pelvic Tilt Angle (Y-axis)		0.4
PHX	Hip Point to Striker (X-Axis)	201	
PHZ	Hip Point to Striker (Z-Axis)	274	

DATA SHEET NO.3 (CONTINUED) **DUMMY CMM MEASUREMENTS**

Test Vehicle: 2016 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
 Test Date: 1/11/2016

MEASUREMENT LOCATIONS

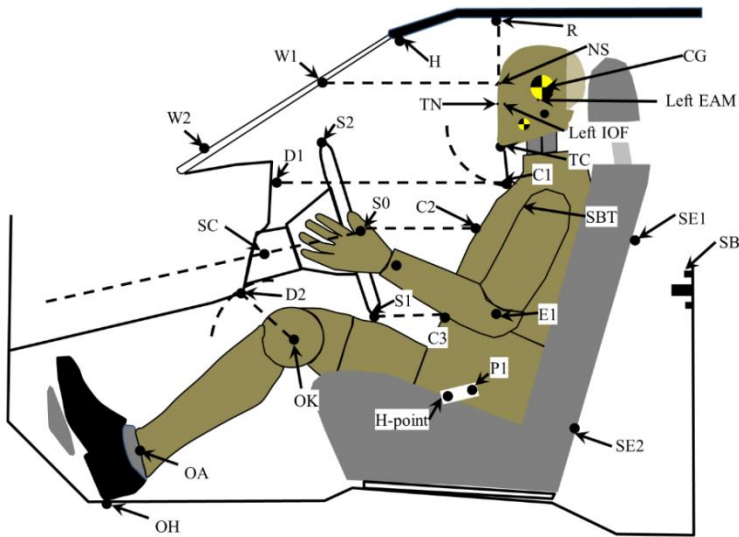


DIAGRAM #1

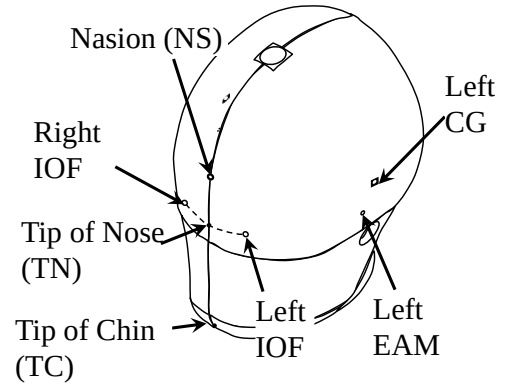


DIAGRAM #2

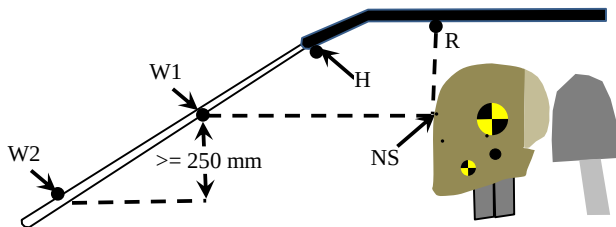


DIAGRAM #3

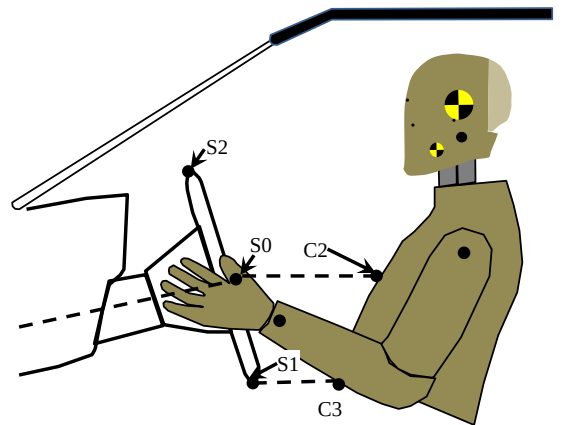


DIAGRAM #4

DATA SHEET NO.3 (CONTINUED)
DUMMY CMM MEASUREMENTS

Test Vehicle: 2016 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
 Test Date: 1/11/2016

DRIVER MEASUREMENT POINTS

Description	Units	Driver		
		X	Y	Z
Tip of Striker	mm	1843	-739	-139
Top of Head Restraint	mm	1722	-341	-826
Outboard Head Restraint Post	mm	1689	-417	-538
Head CG	mm	1873	-411	-725
Nasion	mm	1972	-339	-725
Tip of Nose	mm	1969	-340	-689
Tip of Chin	mm	1954	-340	-589
LEAM	mm	1877	-406	-696
LIOF	mm	1963	-371	-688
RIOF	mm	1967	-306	-687
Outboard Elbow	mm	2092	-568	-268
H-Point	mm	2081	-665	-66
Center of H-Point Tool	mm	2009	-588	-100
Outboard Knee	mm	2466	-571	-204
Inboard Knee	mm	2490	-246	-199
Outboard Ankle	mm	2722	-579	128
Outboard Heel	mm	2736	-576	263
Inboard Heel	mm	2754	-197	265
W1 – Upper Windshield	mm	2707	-340	-724
W2 – Lower Windshield	mm	2906	-341	-624
Header	mm	2336	-340	-868
Roof	mm	1972	-340	-926
C1- Upper Chest	mm	2003	-340	-458
C2 – Mid Chest	mm	2021	-342	-420
C3 – Lower Chest	mm	2110	-341	-265
S2 – Top Steering Wheel Rim	mm	2445	-340	-573
S1 – Lower Steering Wheel Rim	mm	2290	-341	-268
SC – Steering Column	mm	2574	-437	-316
D1 – Dash Point	mm	2658	-341	-459
D2 – Knee Bolster	mm	2550	-572	-243
SE1 – Seatback Point	mm	1632	-341	-513
SE2 – Seatback Point	mm	1816	-339	22
Left Front Outboard Seat Anchor Bolt	mm	2364	-563	158
Left Rear Outboard Seat Anchor Bolt	mm	1820	-560	240

Reference point: Origin at rear centerline of vehicle. Vertical coordinate point for origin determined with contact of vehicle structure by 10mm deep block moved downward along front edge of a level. The level is positioned perpendicular to ground and in contact with rear centerline of the vehicle.

- +X – From the rear of the vehicle to the front of the vehicle
- +Y – From the left side of the vehicle to the right side of the vehicle
- +Z – From the top of the vehicle to the bottom of the vehicle

DATA SHEET NO.3 (CONTINUED)
DUMMY CMM MEASUREMENTS

Test Vehicle: 2016 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
Test Date: 1/11/2016

FRONT PASSENGER MEASUREMENT POINTS

Description	Units	Front Passenger		
		X	Y	Z
Tip of Striker	mm	1841	738	-141
Top of Head Restraint	mm	1762	340	-769
Outboard Head Restraint Post	mm	1723	417	-551
Head CG	mm	1967	411	-622
Bridge of Nose	mm	2055	340	-619
Tip of Nose	mm	2077	339	-589
Tip of Chin	mm	2062	341	-517
Outboard Shoulder Bolt	mm	1948	495	-381
Outboard Elbow	mm	2025	559	-174
H-Point	mm	2100	608	-50
Center of H-Point Tool	mm	2015	590	-88
Outboard Knee	mm	2440	466	-100
Inboard Knee	mm	2432	300	-100
Outboard Ankle	mm	2632	437	183
Inboard Ankle	mm	2630	260	172
Outboard Heel	mm	2576	408	264
Inboard Heel	mm	2579	267	261
W1 – Upper Windshield	mm	2905	440	-617
W2 – Lower Windshield	mm	3090	440	-517
Header	mm	2338	341	-868
Head up to Roof	mm	2056	339	-906
C1 - Upper Chest	mm	2054	340	-384
D1 - Dash Point	mm	2544	341	-385
D2 - Dash Bolster	mm	2552	469	-223
SE1 - Seat Back Point	mm	1736	340	-562
SE2 - Seat Back Point	mm	1826	340	-4
Right Front Outboard Seat Anchor Bolt	mm	2363	562	156
Right Rear Outboard Seat Anchor Bolt	mm	1819	560	240

Reference point: Origin at rear centerline of vehicle. Vertical coordinate point for origin determined with contact of vehicle structure by 10mm deep block moved downward along front edge of a level. The level is positioned perpendicular to ground and in contact with rear centerline of the vehicle.

- +X – From the rear of the vehicle to the front of the vehicle
- +Y – From the left side of the vehicle to the right side of the vehicle
- +Z – From the top of the vehicle to the bottom of the vehicle

DATA SHEET NO.3 (CONTINUED)
DUMMY CMM MEASUREMENTS

Test Vehicle: 2016 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
Test Date: 1/11/2016

REAR PASSENGER MEASUREMENT POINTS

Description	Units	Rear Passenger		
		X	Y	Z
Tip of Striker	mm	908	707	-350
Top of Head Restraint	mm	721	325	-770
Outboard Head Restraint Post	mm	744	385	-526
Head CG	mm	963	390	-653
Bridge of Nose	mm	1055	324	-656
Tip of Nose	mm	1077	325	-624
Tip of Chin	mm	1061	326	-551
Outboard Shoulder Bolt	mm	953	475	-413
Outboard Elbow	mm	1011	560	-211
H-Point	mm	1109	111	-76
Center of H-Point Tool	mm	1029	117	-121
Outboard Knee	mm	1453	467	-114
Inboard Knee	mm	1453	304	-117
Outboard Ankle	mm	1576	432	208
Inboard Ankle	mm	1585	252	206
Outboard Heel	mm	1513	423	286
Inboard Heel	mm	1515	249	286
Roof	mm	1054	326	-932
C1 - Upper Chest	mm	1066	326	-420
D1 - Dash Point	mm	1743	325	-421
D2 - Dash Bolster	mm	1809	471	-171
SE1 - Seat Back Point	mm	700	320	-487
SE2 - Seat Back Point	mm	907	321	-15

Reference point: Origin at rear centerline of vehicle. Vertical coordinate point for origin determined with contact of vehicle structure by 10mm deep block moved downward along front edge of a level. The level is positioned perpendicular to ground and in contact with rear centerline of the vehicle.

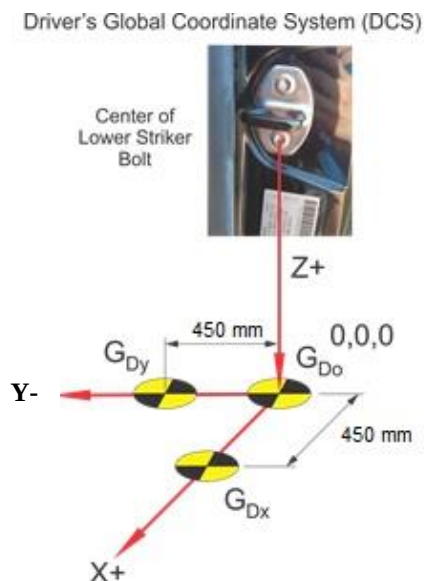
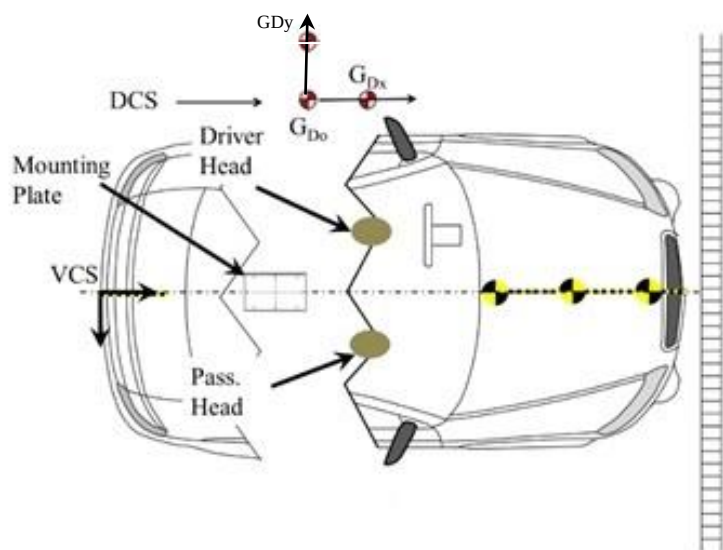
- +X – From the rear of the vehicle to the front of the vehicle
- +Y – From the left side of the vehicle to the right side of the vehicle
- +Z – From the top of the vehicle to the bottom of the vehicle

DATA SHEET NO.3 (CONTINUED) DUMMY CMM MEASUREMENTS

Test Vehicle: 2016 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
Test Date: 1/11/2016

DRIVER GLOBAL COORDINATE SYSTEM



Driver ATD Measurement Points

Measurement Points	Units	Measurements (mm)		
		X	Y	Z
Head CG	mm	56	294	-1233
Nasion	mm	155	366	-1236
Tip of Nose	mm	153	366	-1200
Tip of Chin	mm	139	369	-1100
LEAM	mm	60	300	-1204
LIOF	mm	146	335	-1198
RIOF	mm	151	399	-1199

Reference point: Located on the ground (GD_0) which is in line with the bottom striker bolt.

+X – From GD_0 to the front of the vehicle

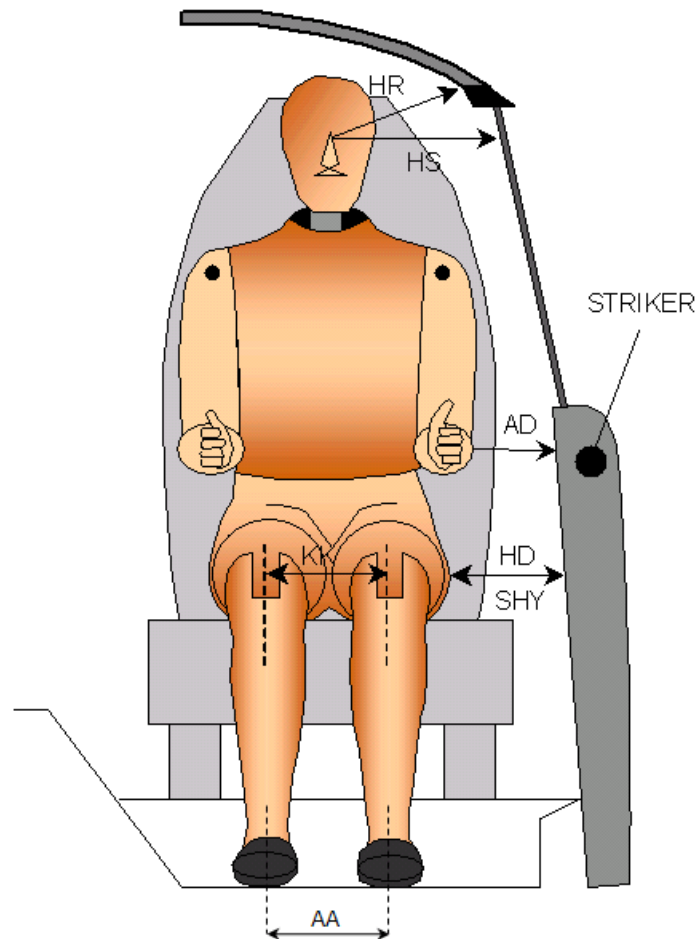
+Y – From GD_0 to the right side of the vehicle

+Z – From GD_0 into the ground

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2016 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
 Test Date: 1/11/2016

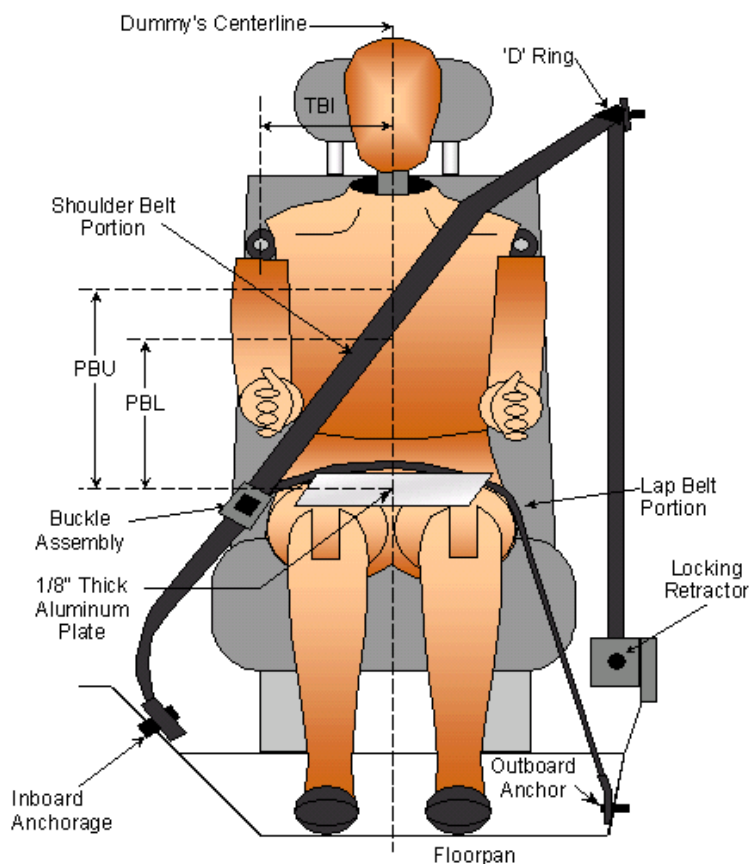


Code	Description	Units	Driver	Front Passenger	Rear Passenger
AD	Arm to Door	mm	146	92	101
HD	H-Point to Door	mm	131	183	156
HR	Head to Side Header	mm	207	274	234
HS	Head to Side Window	mm	340	360	350
KK	Knee to Knee	mm	382	167	165
SHY	Striker to H-Point (Y Direction)	mm	210	265	250
AA	Ankle to Ankle	mm	341	165	165

DATA SHEET NO. 5 SEAT BELT POSITIONING DATA

Test Vehicle: 2016 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
Test Date: 1/11/2016



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger	Rear Pass.
PBU — Top surface of reference to belt upper edge	mm	380	325	270
PBL — Top surface of reference to belt lower edge	mm	305	250	190

BELT LENGTH DATA

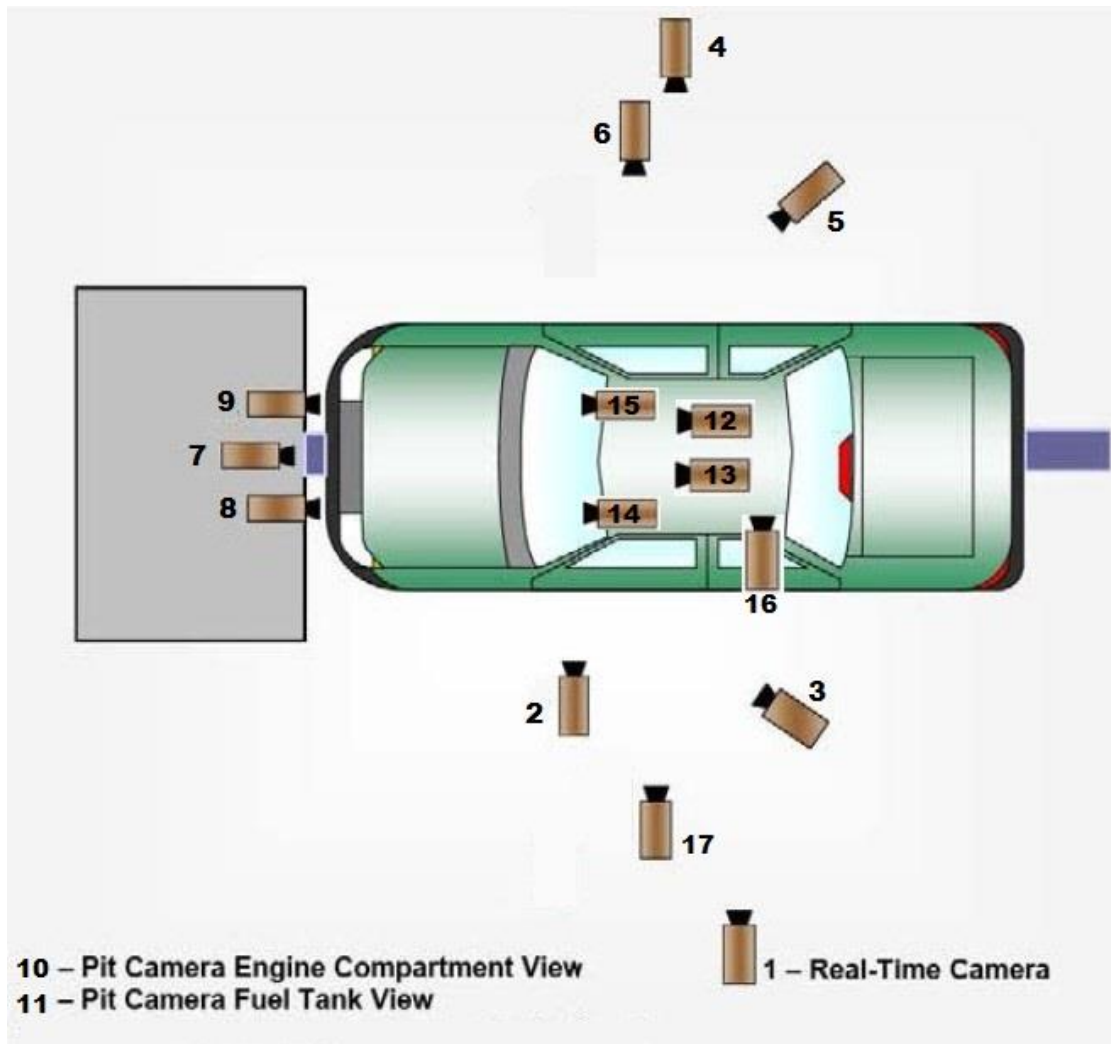
Measurement Description	Units	Driver	Passenger	Rear Pass.
Shoulder belt length as measured on ATD	mm	845	880	880
Lap Belt Length as measured on ATD	mm	750	480	625
Remainder of belt on reel	mm	755	1020	1095
Total belt length for continuous webbing systems	mm	2350	2380	2600

DATA SHEET NO. 6
HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2016 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
Test Date: 1/11/2016

HORIZONTAL LOCATION



DATA SHEET NO. 6 (CONTINUED)
HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2016 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
 Test Date: 1/11/2016

CAMERA LOCATIONS

No.	Camera View	Location (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Side	-	-	-	Zoom	60
2	Left Front Half	-1179	-9001	-1522	50	1000
3	Left Angle	-2451	-2861	-2220	24	1000
4	Right Overall	-1718	8488	-1158	24	1000
5	Right Angle	-2608	3035	-2153	24	1000
6	Right Front Half	-1161	6494	-1200	28	1000
7	Windshield	954	0	-3505	20	1000
8	Driver Windshield	-395	600	-2051	12.5	1000
9	Passenger Windshield	-395	-600	-2051	12.5	1000
10	Pit Front	-776	0	2102	13	1000
11	Pit Rear	-2772	0	2102	13	1000
12	Onboard Driver Airbag	2606	-75	-1322	12.5	1000
13	Onboard Passenger Airbag	2606	75	-1322	12.5	1000
14	Onboard Driver Toepan	1598	-714	-457	6.5	1000
15	Onboard Front Passenger Toepan	1601	714	-457	6.5	1000
16	Onboard Rear Passenger Side View	2806	-455	-962	8	1000
17	Left Overall	-2377	-8266	-1336	28	1000

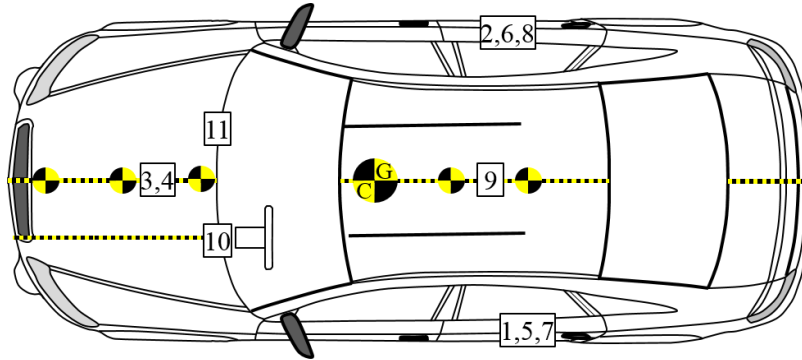
Reference Point:

- +X – forward of impact plane
- +Y – right of monorail center
- +Z – into ground

DATA SHEET NO. 7 **VEHICLE INSTRUMENTATION DATA**

Test Vehicle: 2016 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
Test Date: 1/11/2016



VEHICLE INSTRUMENTATION PRE-TEST LOCATIONS

No.	Accelerometer Location	Axes	Units	Measurements (mm)		
				X	Y	Z
1	Left Rear Seat Cross Member	X,Z	mm	1214	-417	257
2	Right Rear Seat Cross Member	X,Z	mm	1215	432	264
3	Top of Engine	X	mm	3526	337	-205
4	Bottom of Engine	X	mm			
5	Left Sill	X,Y	mm	1439	-686	188
6	Right Sill	X,Y	mm	1441	689	185
7	Left Rear Seat Cross Member Redundant	X,Z	mm	1211	-420	280
8	Right Rear Seat Cross Member Redundant	X,Z	mm	1216	416	262
9	Linear Acceleration & Angular Rate Sensors	X	mm	1587	0	209
		Y	mm	1576	11	209
		Z	mm	1576	0	205
10	Driver Toe Pan	X,Y,	mm	2964	-337	136
11	Front Passenger Toe Pan	X,Y,	mm	2921	336	161

Reference point: Origin at rear centerline of vehicle. Vertical coordinate point for origin determined with contact of vehicle structure by 10 mm deep block moved downward along front edge of a level. The level is positioned perpendicular to ground and in contact with rear centerline of vehicle.

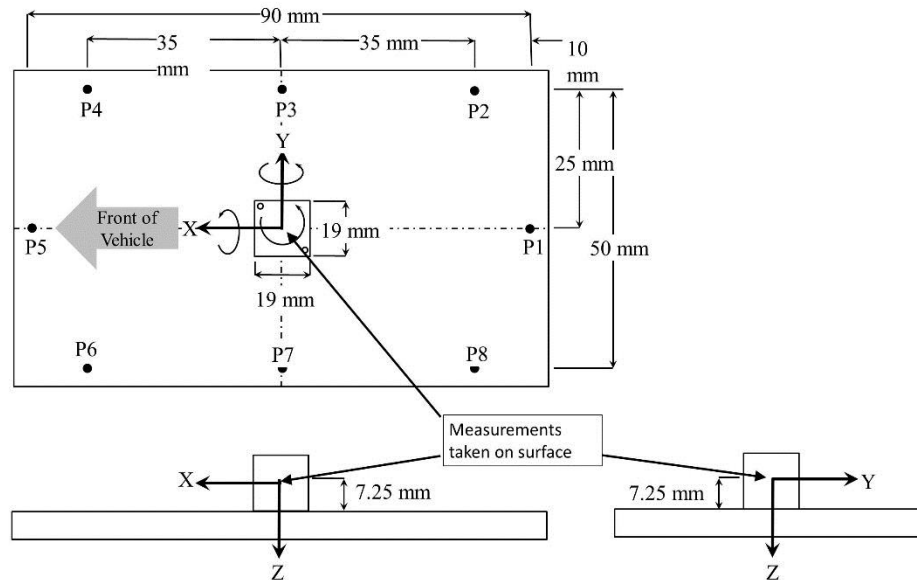
- +X – From the rear of the vehicle to the front of the vehicle
- +Y – From the left side of the vehicle to the right side of the vehicle
- +Z – From the top of the vehicle to the bottom of the vehicle

DATA SHEET NO. 7 (CONTINUED) **VEHICLE INSTRUMENTATION DATA**

Test Vehicle: 2016 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
Test Date: 1/11/2016

ANGULAR RATE SENSOR



VEHICLE COORDINATE SYSTEM					
No.	Accelerometer Location	Units	Measurements (mm)		
			X	Y	Z
ACC-1	Accelerometer CG – X Direction	mm	1587	0	209
ACC-2	Accelerometer CG – Y Direction	mm	1576	11	209
ACC-3	Accelerometer CG – Z Direction	mm	1576	0	205
M1	Mounting Bolt 1	mm	1568	-7	205
M2	Mounting Bolt 2	mm	1583	8	205
P1	Plate Point 1	mm	1531	0	220
P2	Plate Point 2	mm	1540	25	220
P3	Plate Point 3	mm	1575	25	220
P4	Plate Point 4	mm	1611	26	220
P5	Plate Point 5	mm	1621	1	220
P6	Plate Point 6	mm	1611	-24	220
P7	Plate Point 7	mm	1576	-25	220
P8	Plate Point 8	mm	1541	-25	220

Reference point: Origin at rear centerline of vehicle. Vertical coordinate point for origin determined with contact of vehicle structure by 10mm deep block moved downward along front edge of a level. The level is positioned perpendicular to ground and in contact with rear centerline of the vehicle.

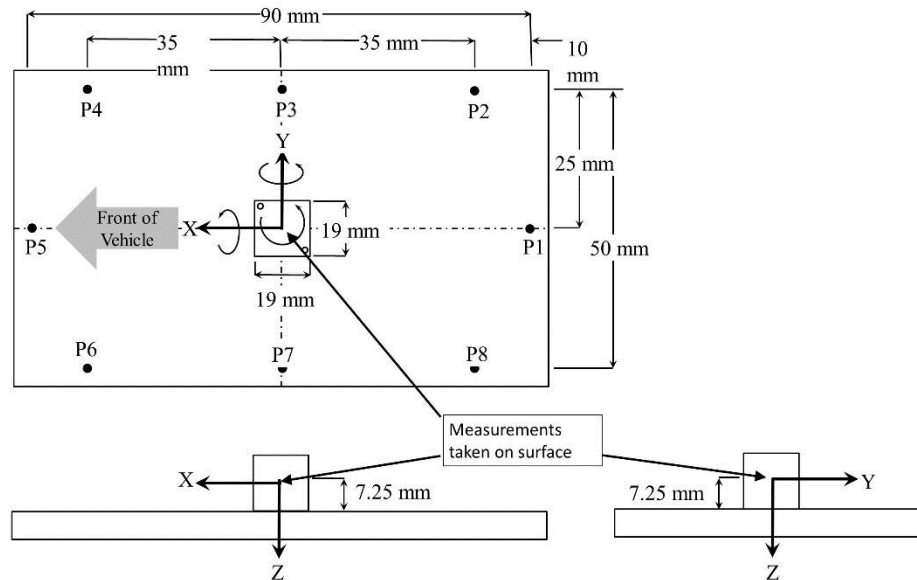
- +X – From the rear of the vehicle to the front of the vehicle
- +Y – From the left side of the vehicle to the right side of the vehicle
- +Z – From the top of the vehicle to the bottom of the vehicle

DATA SHEET NO. 7 (CONTINUED) VEHICLE INSTRUMENTATION DATA

Test Vehicle: 2016 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
Test Date: 1/11/2016

ANGULAR RATE SENSOR



DRIVER GLOBAL COORDINATE SYSTEM					
No.	Accelerometer Location	Units	Measurements (mm)		
			X	Y	Z
ACC-1	Accelerometer CG – X Direction	mm	-219	731	-307
ACC-2	Accelerometer CG – Y Direction	mm	-230	742	-307
ACC-3	Accelerometer CG – Z Direction	mm	-230	731	-311
M1	Mounting Bolt 1	mm	-238	723	-311
M2	Mounting Bolt 2	mm	-223	739	-312
P1	Plate Point 1	mm	-275	731	-296
P2	Plate Point 2	mm	-266	756	-297
P3	Plate Point 3	mm	-230	757	-297
P4	Plate Point 4	mm	-195	757	-298
P5	Plate Point 5	mm	-185	732	-297
P6	Plate Point 6	mm	-195	707	-296
P7	Plate Point 7	mm	-230	707	-296
P8	Plate Point 8	mm	-265	706	-295

Reference point: Located on the ground (GD_0) which is in line with the bottom striker bolt.

+X – From GD_0 to the front of the vehicle

+Y – From GD_0 to the right side of the vehicle

+Z – From GD_0 into the ground

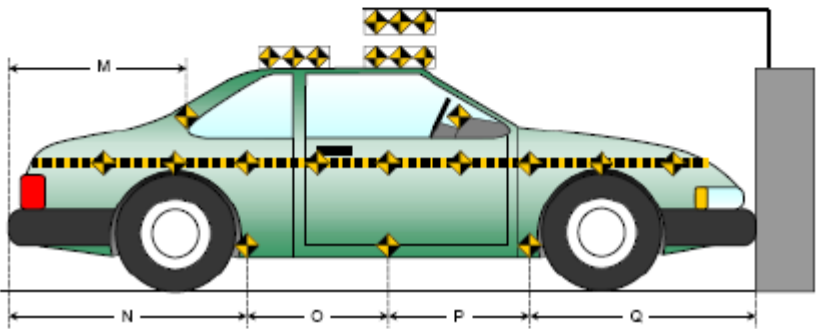
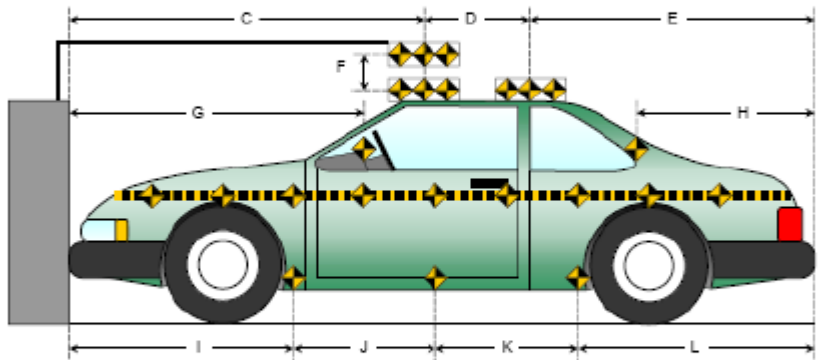
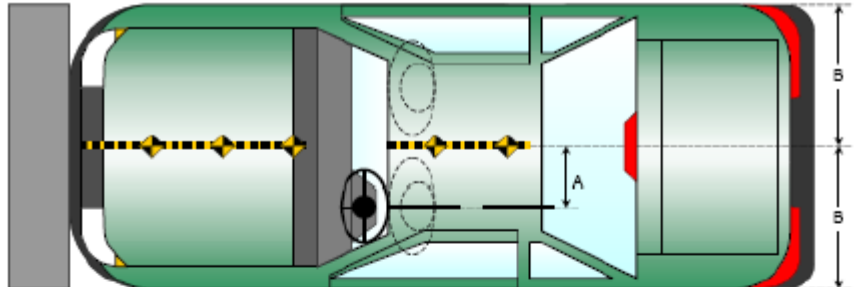
DATA SHEET NO. 8 **PHOTOGRAPHIC REFERENCE TARGET LOCATIONS**

Test Vehicle: 2016 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
 Test Date: 1/11/2016

Item	Value
A	332
B	848
C	2440
D	610
E	1010
F	152
G	1531
H	800
I	1234
J	872
K	823
L	1132
M	812
N	1133
O	870
P	824
Q	1233

All units in millimeters



DATA SHEET NO. 9
TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2016 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
 Test Date: 1/11/2016

INSTRUMENTATION

Instrumentation	Number of Channels Collected
Driver Dummy Accelerometers	108
Passenger Dummy Accelerometers	74
Rear Passenger Dummy Accelerometers	46
Vehicle Structure Accelerometers	39
Total	267

CAMERA COVERAGE

Type of Camera	Number Used in this Test
High-Speed Vehicle Onboard	5
High-Speed Off-board	11
Real-Time Panning	1
Total	17

**DATA SHEET NO. 10
POST TEST OBSERVATIONS**

Test Vehicle: 2016 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
Test Date: 1/11/2016

TEST DUMMY INFORMATION AND CONTACT LOCATIONS

Description	Driver	Right Front Passenger	Rear Passenger
Dummy Type/Serial No.	THOR/DL9207	5 th Female/324	5 th Female/019
Lower Leg Type	LX		
Lower Leg Serial No.	LX0045/LX0046		
Head Contact	Front Airbag & Headrest	Front Airbag & Headrest	Headrest & C-Pillar
Upper Torso Contact	Front Airbag	Front Airbag	None
Lower Torso Contact	None	None	None
Left Knee Contact	Knee Bolster	Glove Box	None
Right Knee Contact	Knee Bolster	Glove Box	None

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Right Front Passenger	Rear Passenger
Locked/Unlocked Doors	Unlocked	Unlocked	Unlocked
Front Door Opening	Closed & Operational	Closed & Operational	Closed & Operational
Rear Door Opening	Closed & Operational	Closed & Operational	Closed & Operational
Seat Track Shift (mm)	0	0	0
Seat Back Failure	None	None	None
Glazing Damage	None	None	None

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No damage
Windshield Damage	Minor crack along bottom corners
Window Damage	None
Other Notable Effects	None

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	658
Center	mm	634
Right Side	mm	668
Average	mm	653

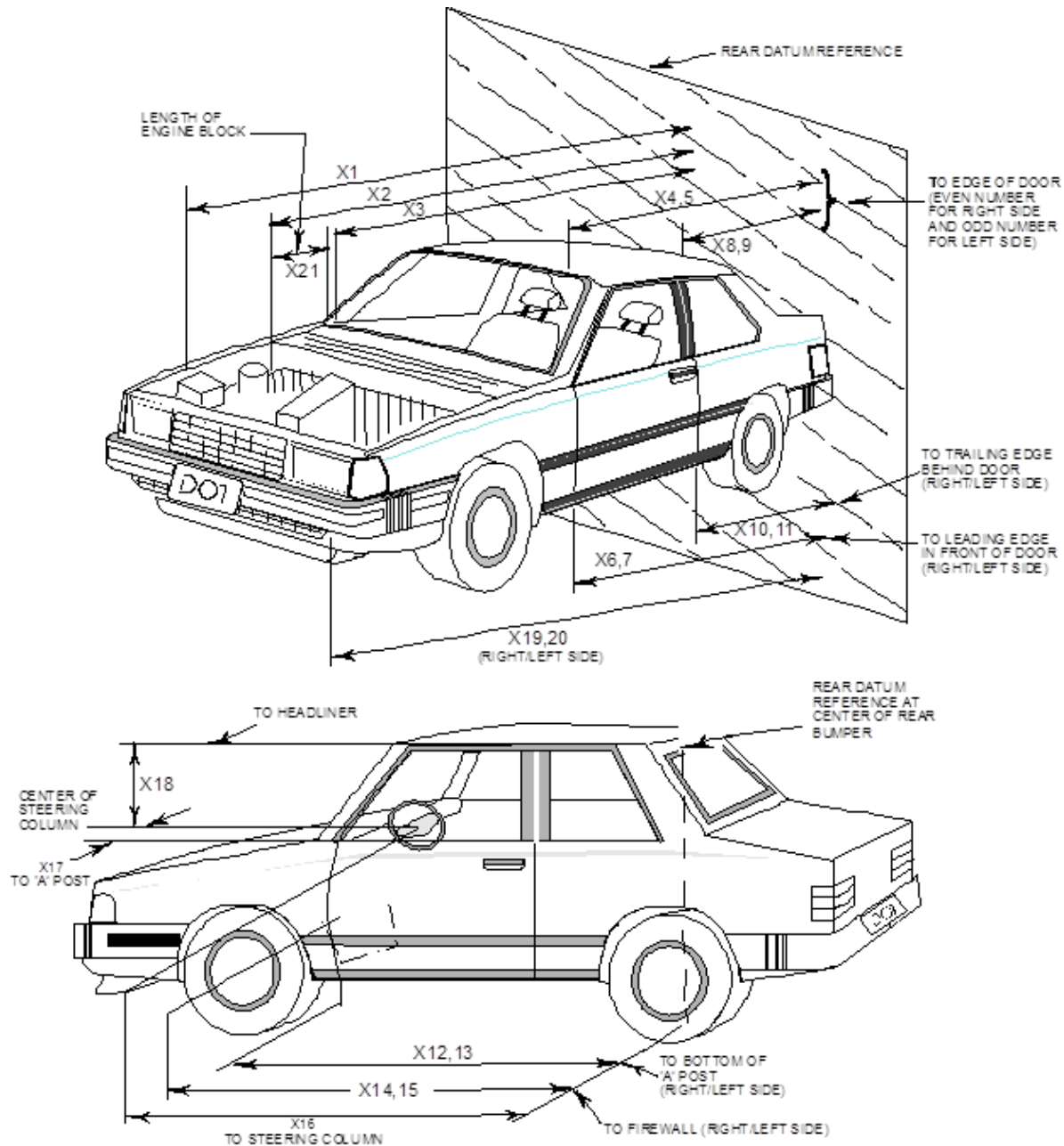
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Driver (Occupant 1)		Right Front Passenger (Occupant 2)		Rear Passenger (Occupant 3)	
	Installed	Deployed	Installed	Deployed	Installed	Deployed
Front Airbag	Yes	Yes	Yes	Yes	No	N/A
Curtain Airbag	Yes	No	Yes	No	Yes	No
Torso Airbag	Yes	No	Yes	No	No	N/A
Knee Airbag	No	N/A	No	N/A	No	N/A
Seat Belt Pretensioner	Yes	Yes	Yes	Yes	No	N/A
Seat Belt Load Limiter	Yes	Yes	Yes	Yes	No	N/A
Other						

DATA SHEET NO. 11 **VEHICLE PROFILE MEASUREMENTS**

Test Vehicle: 2016 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
 Test Date: 1/11/2016



DATA SHEET NO. 11 (CONTINUED)
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2016 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
 Test Date: 1/11/2016

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	mm	4069	3760	-310
2	Rear Surface of Vehicle (RSOV) to Front of Engine	mm	3562	3293	-269
3	RSOV to Firewall	mm	3162	3134	-28
4	RSOV to Upper Leading Edge of Right Door	mm	2795	2798	3
5	RSOV to Upper Leading Edge of Left Door	mm	2796	2796	0
6	RSOV to Lower Leading Edge of Right Door	mm	2790	2787	-3
7	RSOV to Lower Leading Edge of Left Door	mm	2785	2783	-2
8	RSOV to Upper Trailing Edge of Right Door	mm	1747	1750	3
9	RSOV to Upper Trailing Edge of Left Door	mm	1748	1749	0
10	RSOV to Lower Trailing Edge of Right Door	mm	1765	1767	1
11	RSOV to Lower Trailing Edge of Left Door	mm	1768	1765	-3
12	RSOV to Bottom of "A" Post of Right Side	mm	2992	2994	2
13	RSOV to Bottom of "A" Post of Left Side	mm	2992	2994	1
14	RSOV to Firewall, Right Side	mm	3317	3286	-31
15	RSOV to Firewall, Left Side	mm	3320	3317	-2
16	RSOV to Steering Column	mm	2381	2404	23
17	Center of Steering Column to "A" Post	mm	288	289	1
18	Center of Steering Column to Headliner	mm	436	411	-25
19	RSOV to Right Side of Front Bumper	mm	4032	3777	-255
20	RSOV to Left Side of Front Bumper	mm	4030	3721	-309
21	Length of Engine Block	mm	284	284	0
RD	RSOV to Right Side of Dash Panel	mm	2535	2538	3
CD	RSOV to Center of Dash Panel	mm	2527	2527	-1
LD	RSOV to Left Side of Dash Panel	mm	2559	2561	2

UR* = Unrecoverable Data Point

Reference point: Origin at rear centerline of vehicle. Vertical coordinate point for origin determined with contact of vehicle structure by 10mm deep block moved downward along front edge of a level. The level is positioned perpendicular to ground and in contact with rear centerline of the vehicle.

- +X – From the rear of the vehicle to the front of the vehicle
- +Y – From the left side of the vehicle to the right side of the vehicle
- +Z – From the top of the vehicle to the bottom of the vehicle

DATA SHEET NO. 12
ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2016 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

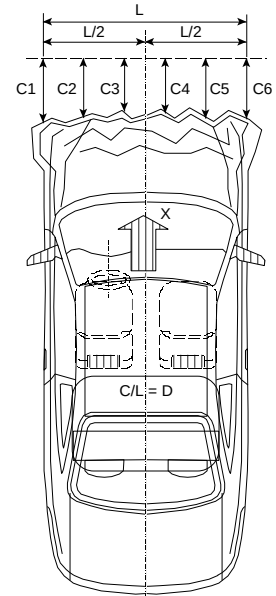
NHTSA No.: M20165306
 Test Date: 1/11/2016

VEHICLE INFORMATION

VIN: JHMGK5H52GX007683 Wheelbase (mm): 2,532
 Vehicle Size Category: Passenger Test Weight (kg): 1,436

ACCELEROMETER DATA

Accelerometer Locations: As Described in Data Sheet No. 7
 Cal. Procedure/Interval: Calspan Procedure / 6 month
 Integration Algorithm: Trapezoidal
 Linearity: > 99%
 Impact Velocity (kph): 56.09
 Velocity Change (kph): 56.09



CRUSH PROFILE

Collision Deformation Classification: 12FDEW2
 Midpoint of Damage: C3
 Damage Region Length (mm): 1380
 Impact Mode: Frontal Research

Crush Measurements: Bumper Cover

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	3880	3604	276
C2	Crush zone 2 at left side	mm	4028	3714	314
C3	Crush zone 3 at left side	mm	4053	3743	310
C4	Crush zone 4 at right side	mm	4053	3761	292
C5	Crush zone 5 at right side	mm	4027	3758	269
C6	Crush zone 6 at right side	mm	3878	3670	208
L	C1 to C6	mm	1380	1418	-38
	Logitudinal horizontal distance from the tip of the front bumper to the base of the windshield	mm	811	498	312

Reference point: Origin at rear centerline of vehicle. Vertical coordinate point for origin determined with contact of vehicle structure by 10mm deep block moved downward along front edge of a level. The level is positioned perpendicular to ground and in contact with rear centerline of the vehicle.

- +X – From the rear of the vehicle to the front of the vehicle
- +Y – From the left side of the vehicle to the right side of the vehicle
- +Z – From the top of the vehicle to the bottom of the vehicle

DATA SHEET NO. 13
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2016 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

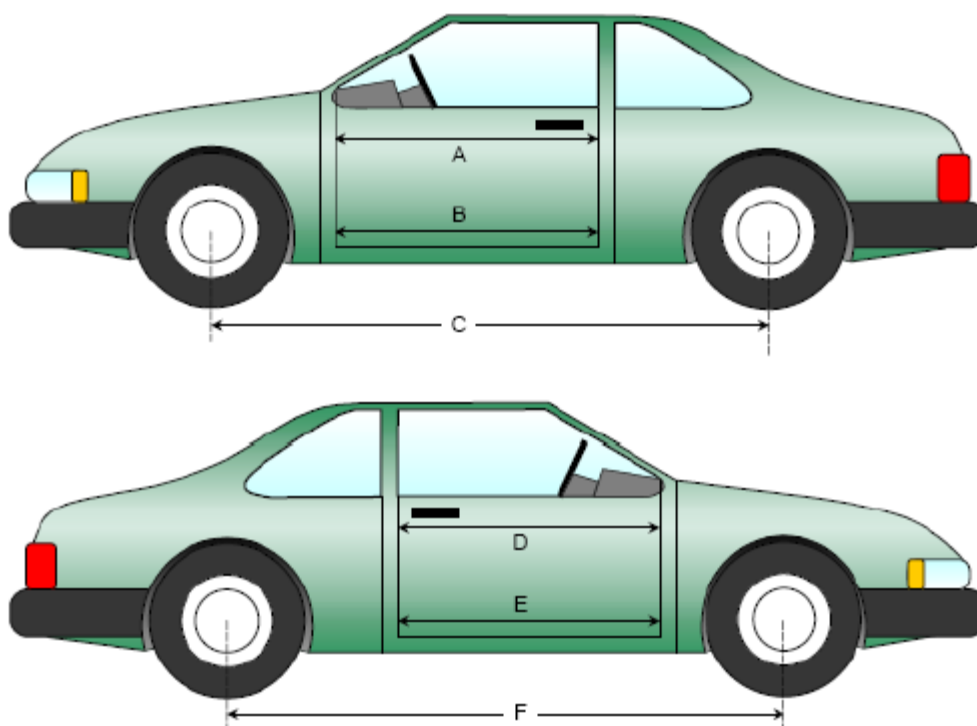
NHTSA No.: M20165306
Test Date: 1/11/2016

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	965	964	-1
B	Left Side Lower	mm	863	863	0
D	Right Side Upper	mm	956	956	0
E	Right Side Lower	mm	861	862	1

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2532	2417	115
F	Right Side Wheelbase	mm	2532	2402	-130



Left & Right Side Views

DATA SHEET NO.13 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

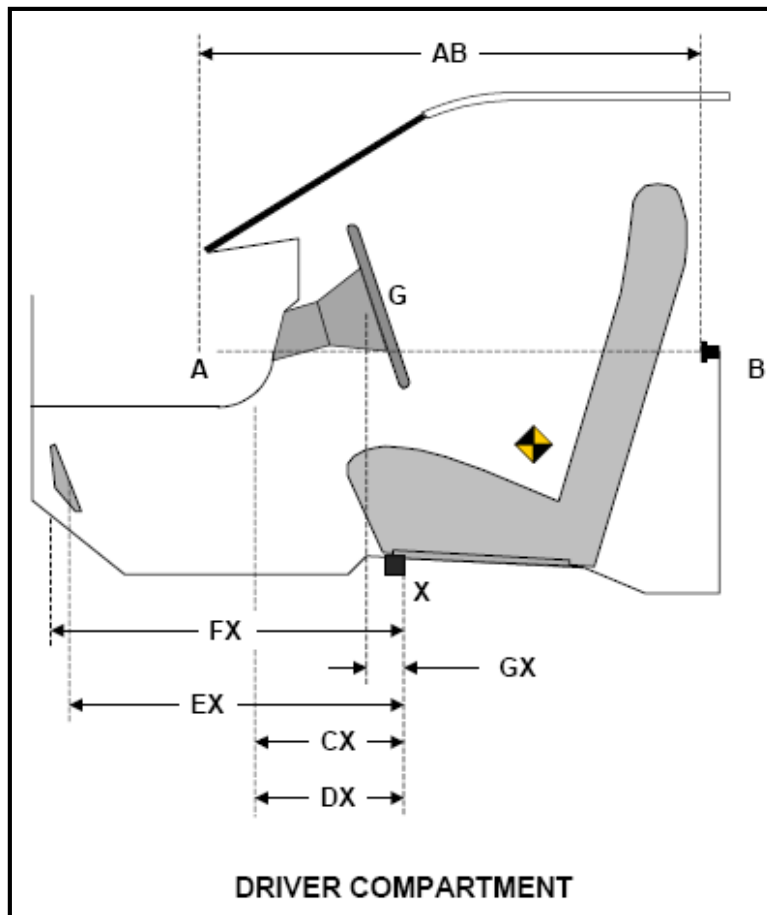
Test Vehicle: 2016 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
 Test Date: 1/11/2016

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	757	757	0
CX	Left Knee Bolster to X	mm	200	205	5
DX	Right Knee Bolster to X	mm	194	222	28
EX	Brake Pedal to X	mm	471	463	-8
FX	Foot Rest to X	mm	533	473	-60
GX	Center of Steering Column Wheel Hub to X	mm	8	30	22

X = Front of Seat Track (Stationary)



DATA SHEET NO. 14
SUMMARY OF FMVSS 212, 219 (PARTIAL), AND 301 DATA

Test Vehicle: 2016 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
 Test Date: 1/11/2016

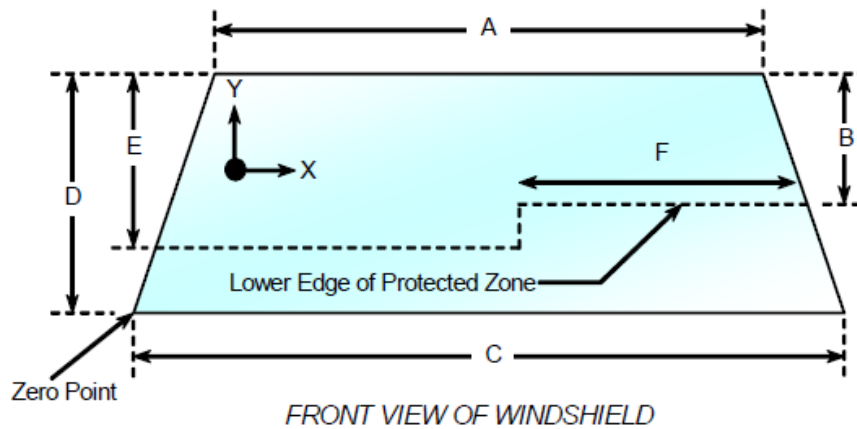
Please provide windshield mounting details. A 0.8 mm trim surrounds the top and side of windshield while a plastic shroud is on the bottom.

The standard requires that the post-test retention measurement be a minimum of 75% of the pre-test total periphery measurement for vehicles not equipped with occupant passive restraints and 50% for each side of the windshield for vehicles which are equipped with occupant passive restraints.

Temperature of windshield molding during test: 21°C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2172.5	2172.5	100.0%
Right Side	2161.5	2161.5	100.0%
Total	4334	4334	100.0%



Item	Units	Value
A	mm	1075
B	mm	564
C	mm	1358
D	mm	956
E	mm	614
F	mm	436

AREAS OF PROTECTED ZONE FAILURES

A. Provide coordinates of the area that the protected zone was penetrated more than .25 inches by a vehicle component other than one that is normally in contact with the windshield.

- No penetration

X	Y

B. Provide coordinates of the area beneath the protected zone that the inner surface of the windshield was penetrated by a vehicle component.

- No Penetration

X	Y

DATA SHEET NO. 14 (CONTINUED)
SUMMARY OF FMVSS 212, 219 (PARTIAL), AND 301 DATA

Test Vehicle: 2016 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
Test Date: 1/11/2016

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Ambient Temperature at Test Vehicle Time of Impact: 21° C

Test Time: 12:50 PM

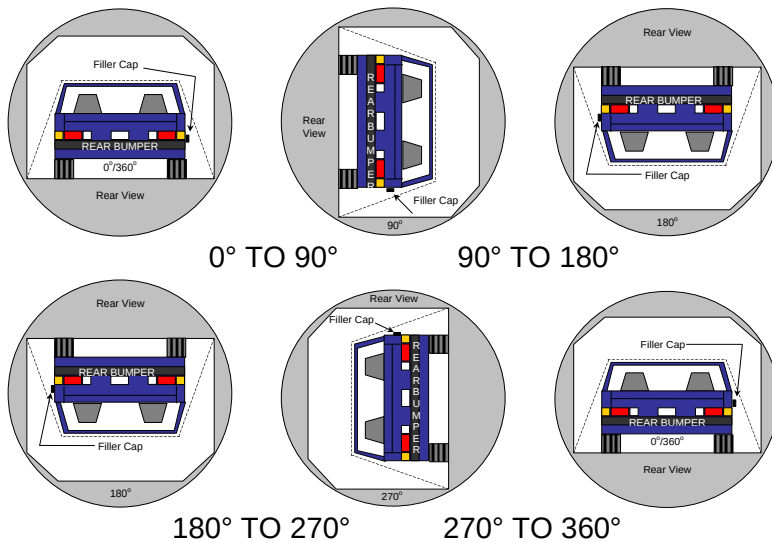
Stoddard Solvent Spillage Measurements

A.	From impact until vehicle motion ceases: (Maximum allowable = 1 oz.)	<u>0</u>	oz
B.	For the 5-minute period after motion ceases: (Maximum allowable = 5 oz.)	<u>0</u>	oz
C.	For the following 25 minutes: (Maximum allowable = 1 oz./minute)	<u>0</u>	oz
D.	Spillage	<u>0</u>	oz

DATA SHEET NO. 15
FMVSS 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2016 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
 Test Date: 1/11/2016



1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.

2. The position hold time at each position is 300 seconds (minimum).

3. Details of Stoddard Solvent spillage: None

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	72	300	372
90° to 180°	63	300	363
180° to 270°	63	300	363
270° to 360°	69	300	369

FMVSS 301 SPILLAGE TABLE

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

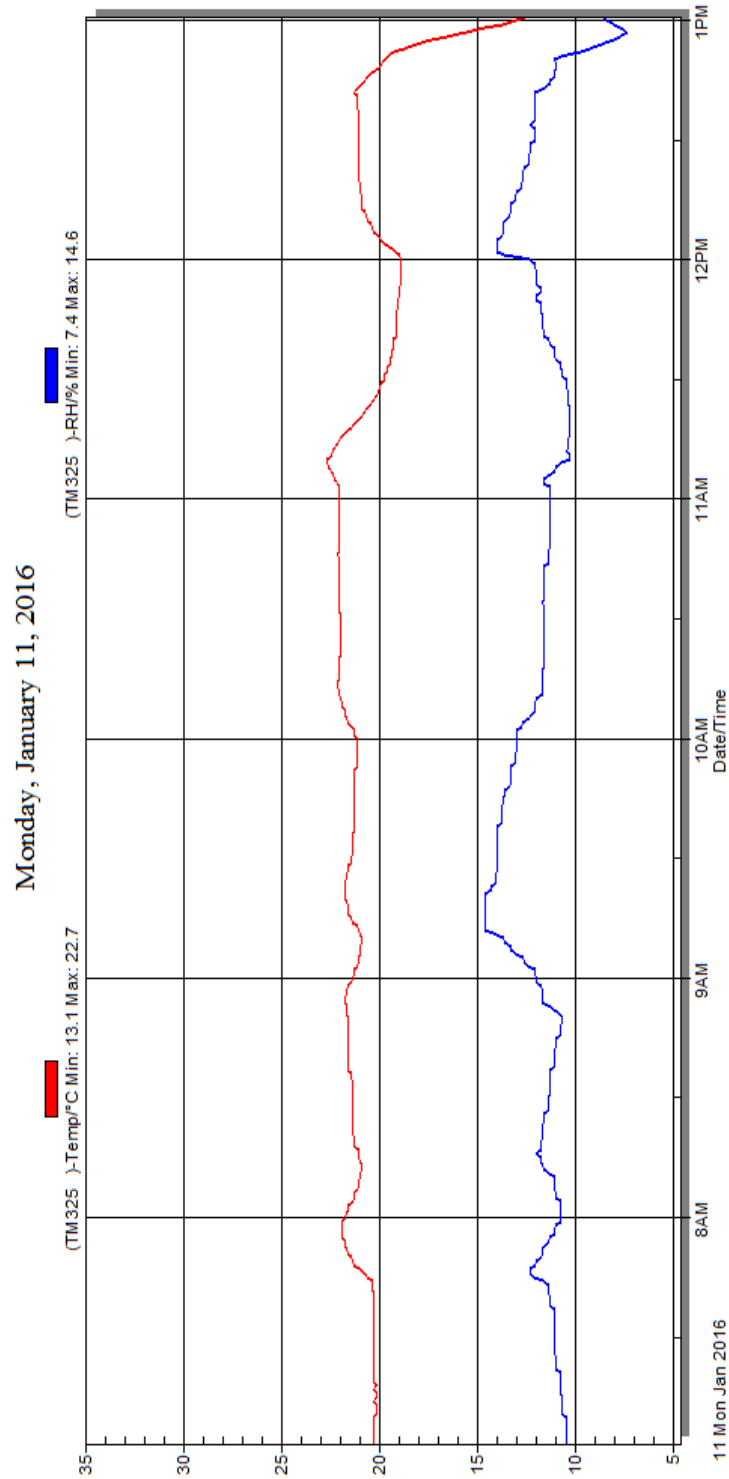
SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 16
DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2016 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: M20165306
Test Date: 1/11/2016



Temperature Stabilization Chart/Data

APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

Fig.	Description	Page
1	Load Cell Location	A-5
2	Load Cell Wall	A-5
3	Manufacturer's Label	A-6
4	Tire Placard	A-6
5	2016 Honda Fit Frontal As Delivered	A-7
6	Left Rear 3/4 View, as Received	A-7
7	Pre-Test Front View of Test Vehicle	A-8
8	Post-Test Front View of Test Vehicle	A-8
9	Pre-Test Left View of Test Vehicle	A-9
10	Post-Test Left View of Test Vehicle	A-9
11	Pre-Test Right View of Test Vehicle	A-10
12	Post-Test Right View of Test Vehicle	A-10
13	Pre-Test Right Front 3/4 View	A-11
14	Post-Test Right Front 3/4 View	A-11
15	Pre-Test Left Rear 3/4 View	A-12
16	Post-Test Left Rear 3/4 View	A-12
17	Pre-Test Windshield View	A-13
18	Post-Test Windshield View	A-13
19	Pre-Test Engine Compartment View	A-14
20	Post-Test Engine Compartment View	A-14
21	Pre-Test Fuel Filler Cap View	A-15
22	Post-Test Fuel Filler Cap View	A-15
23	Pre-Test Front Underbody View	A-16
24	Post-Test Front Underbody View	A-16
25	Pre-Test Rear Underbody View	A-17
26	Post-Test Rear Underbody View	A-17
27	Pre-Test Dummy Cable Routing	A-18
28	Post-Test Dummy Cable Routing	A-18
29	Pre-Test Driver Dummy Front View	A-19
30	Post-Test Driver Dummy Front View	A-19
31	Pre-Test Driver Dummy Window View	A-20
32	Post-Test Driver Dummy Window View	A-20
33	Pre-Test Driver Dummy and Vehicle Interior View	A-21
34	Post-Test Driver Dummy and Vehicle Interior View	A-21

Fig.	Description	Page
35	Pre-Test Driver's Seat Fore-Aft Markings	A-22
36	Post-Test Driver's Seat Fore-Aft Markings	A-22
37	Pre-Test View of Belt Anchorage for Driver Dummy	A-23
38	Post-Test View of Belt Anchorage for Driver Dummy	A-23
39	Pre-Test Driver Dummy Feet	A-24
40	Post-Test Driver Dummy Feet	A-24
41	Pre-Test Driver's Side Knee Bolster	A-25
42	Post-Test Driver's Side Knee Bolster	A-25
43	Pre-Test Driver's Side Floorpan	A-26
44	Post-Test Driver's Side Floorpan	A-26
45	Post-Test Driver Dummy Face	A-27
46	Post-Test Driver Dummy Contact With Airbag	A-27
47	Post-Test Driver Dummy Contact With Headrest	A-28
48	Pre-Test View of the Steering Wheel	A-28
49	Post-Test View of the Steering Wheel	A-29
50	Pre-Test Passenger Dummy Front View	A-29
51	Post-Test Passenger Dummy Front View	A-30
52	Pre-Test Passenger Dummy Window View	A-30
53	Post-Test Passenger Dummy Window View	A-31
54	Pre-Test Passenger Dummy and Vehicle Interior View	A-31
55	Post-Test Passenger Dummy and Vehicle Interior View	A-32
56	Pre-Test Passenger's Seat Fore-Aft Markings	A-32
57	Post-Test Passenger's Seat Fore-Aft Markings	A-33
58	Pre-Test View of Belt Anchorage for Passenger Dummy	A-33
59	Post-Test View of Belt Anchorage for Passenger Dummy	A-34
60	Pre-Test Passenger Dummy Feet	A-34
61	Post-Test Passenger Dummy Feet	A-35
62	Pre-Test Passenger's Side Knee Bolster	A-35
63	Post-Test Passenger's Side Knee Bolster	A-36
64	Pre-Test Passenger's Side Floorpan	A-36
65	Post-Test Passenger's Side Floorpan	A-37
66	Post-Test Passenger Dummy Face	A-37
67	Post-Test Passenger Dummy Contact With Airbag	A-38
68	Post-Test Passenger Dummy Contact With Headrest	A-38

Fig.	Description	Page
69	Photograph of Ballast Installed in Vehicle	A-39
70	Post-Test Stoddard Solvent Spillage Location View, if Required	A-39
71	Post-Test Speed Trap Read-Out	A-40
72	Vehicle at 0° on Static Rollover Device	A-40
73	Vehicle at 90° on Static Rollover Device	A-41
74	Vehicle at 180° on Static Rollover Device	A-41
75	Vehicle at 270° on Static Rollover Device	A-42
76	Vehicle at 360° on Static Rollover Device	A-42
77	2016 Honda Fit Frontal Impact Event	A-43
78	Monroney Label Photograph	A-43
79	Pre-Test Rear Passenger Dummy Front view	A-44
80	Post-Test Rear Passenger Dummy Front view	A-44
81	Pre-Test Rear Passenger Dummy Window View	A-45
82	Post-Test Rear Passenger Dummy Window View	A-45
83	Pre-Test Rear Passenger Dummy and Vehicle Interior View	A-46
84	Post-Test Rear Passenger Dummy and Vehicle Interior View	A-46
85	Pre-Test Rear Passenger Seat Fore-Aft Markings	A-47
86	Post-Test Rear Passenger Seat Fore-Aft Markings	A-47
87	Pre-Test View of Belt Anchorage for Rear Passenger Dummy	A-48
88	Post-Test View of Belt Anchorage for Rear Passenger Dummy	A-48
89	Pre-Test Rear Passenger Dummy Feet	A-49
90	Post-Test Rear Passenger Dummy Feet	A-49
91	Pre-Test Rear Passenger Dummy Knee and Seatback View	A-50
92	Post-Test Rear Passenger Dummy Knee Contact with Seatback	A-50
93	Pre-Test Rear Passenger's Side Floorpan	A-51
94	Post-Test Rear Passenger's Side Floorpan	A-51
95	Post-Test Rear Passenger Dummy Face	A-52
96	Post-Test Rear Passenger Dummy Head Contact	A-52
97	Post-Test Rear Passenger dummy Contact with Headrest	A-53

Photo Not Applicable

Figure A-1: Load Cell Location

Photo Not Applicable

Figure A-2: Load Cell Wall

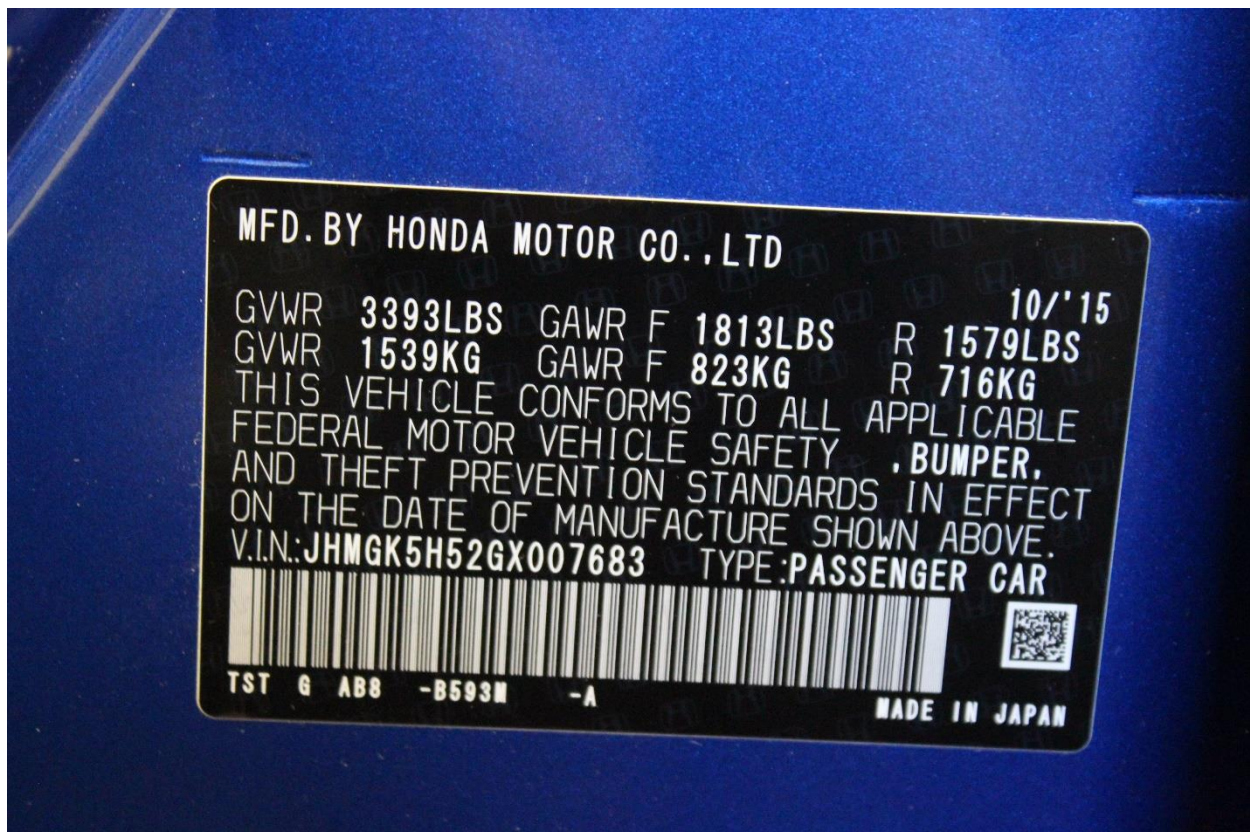


Figure A-3: Manufacturer's Label



Figure A-4: Tire Placard



Figure A-5: 2015 Honda Fit Frontal As Delivered



Figure A-6: Left Rear 3/4 View, As Received



Figure A-7: Pre-Test Front View of Test Vehicle

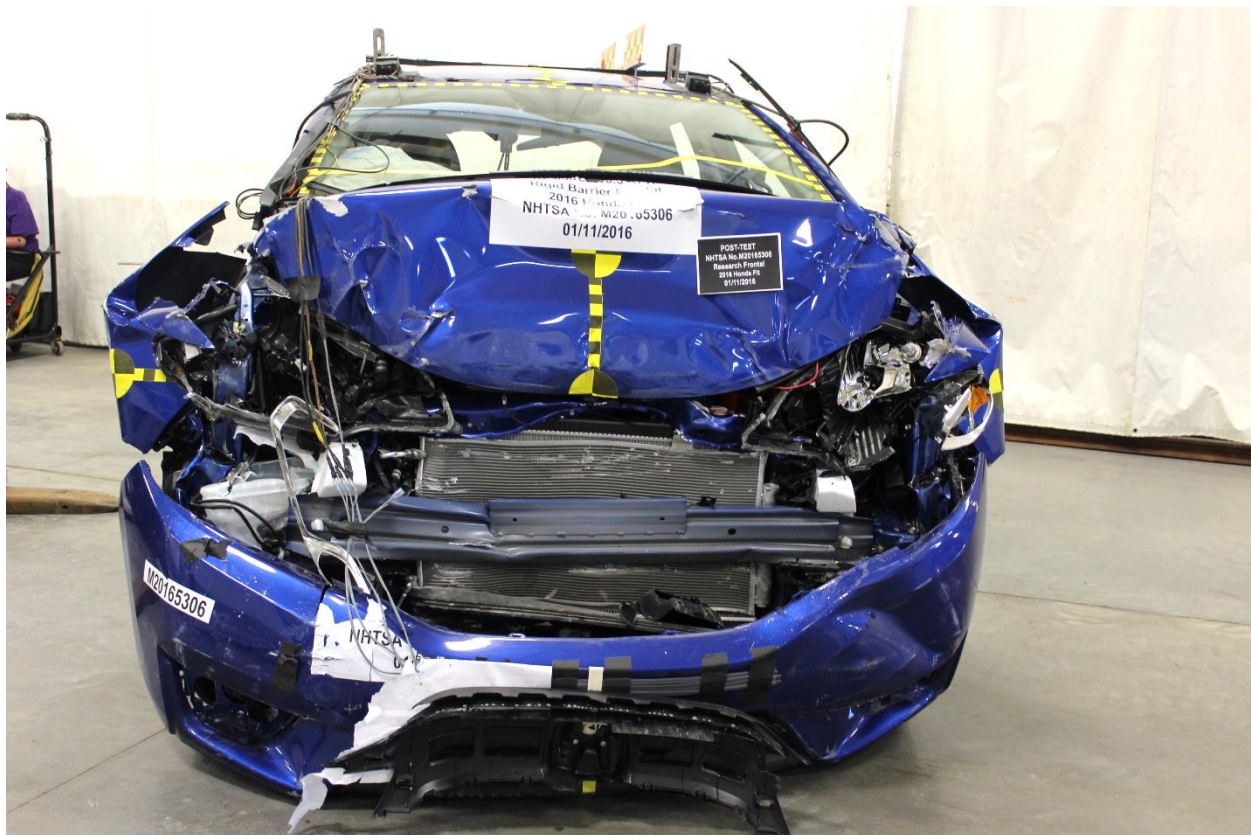


Figure A-8: Post-Test Front View of Test Vehicle



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



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



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



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



Figure A-13: Pre-Test Right Front 3/4 View



Figure A-14: Post-Test Right Front 3/4 View



Figure A-15: Pre-Test Left Rear 3/4 View



Figure A-16: Post-Test Left Rear 3/4 View

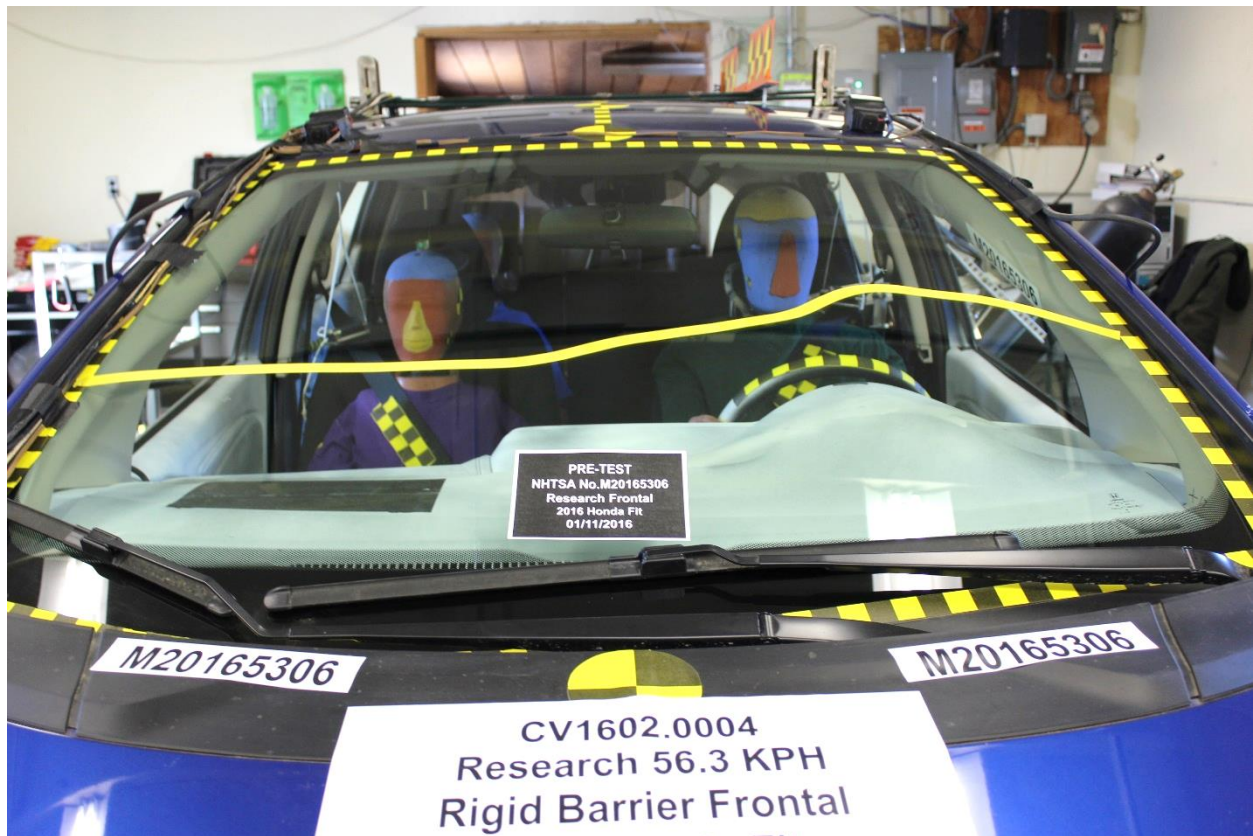


Figure A-17: Pre-Test Windshield View



Figure A-18: Post-Test Windshield View



Figure A-19: Pre-Test Engine Compartment View



Figure A-20: Post-Test Engine Compartment View



Figure A-21: Pre-Test Fuel Filler Cap View



Figure A-22: Post-Test Fuel Filler Cap View

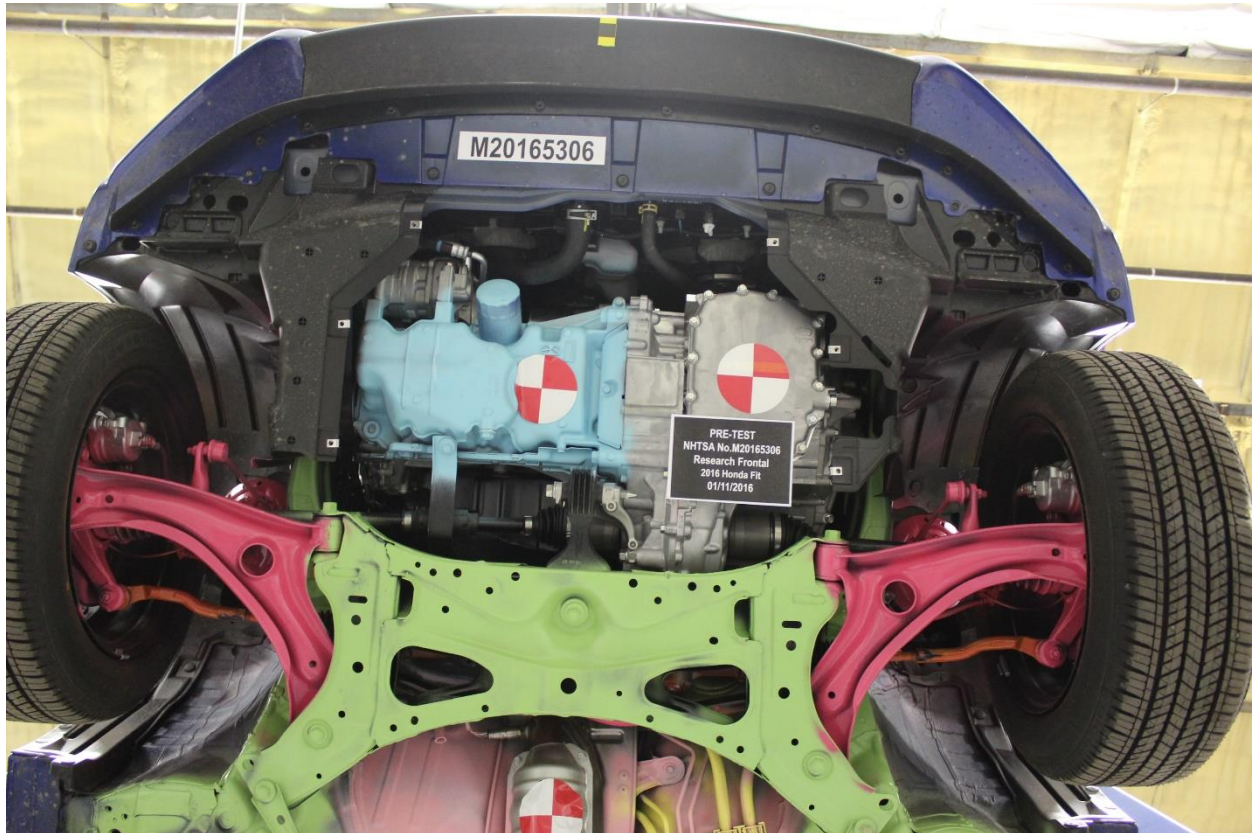


Figure A-23: Pre-Test Front Underbody View

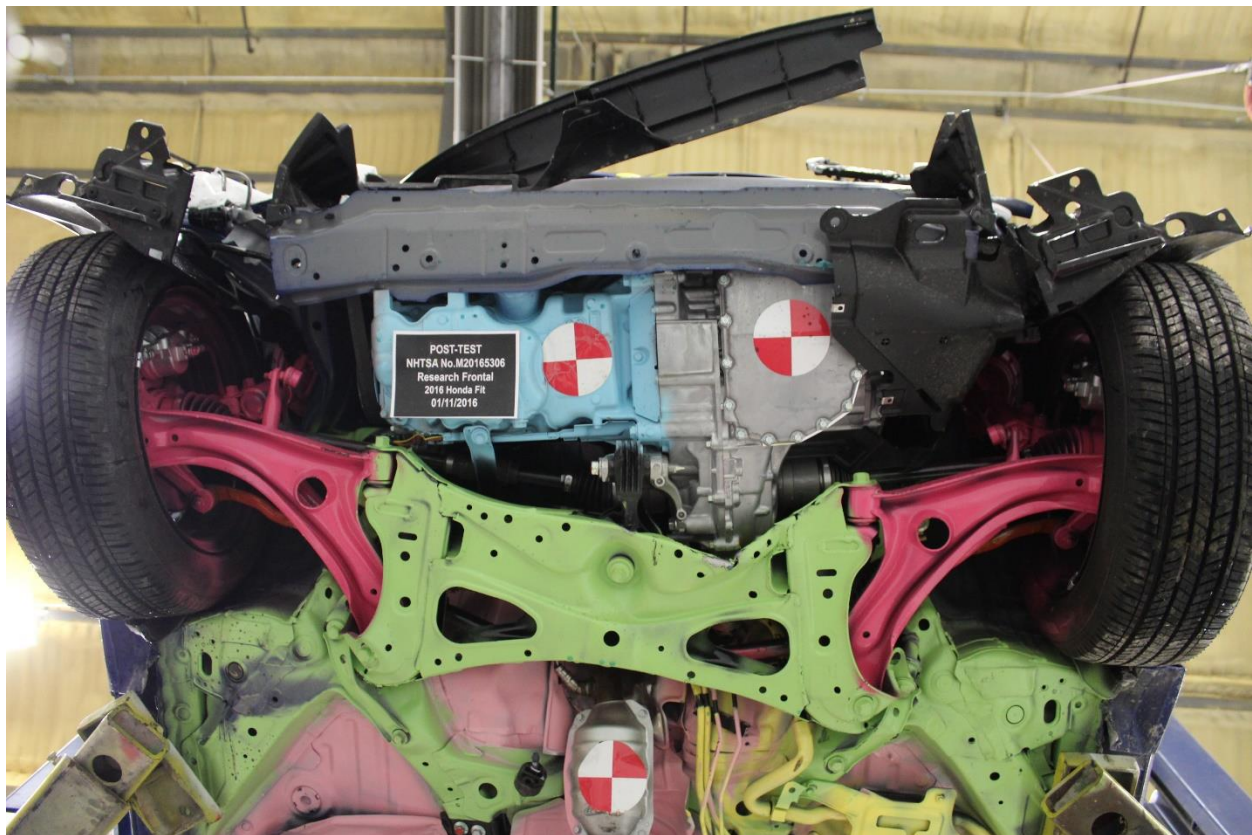


Figure A-24: Post-Test Front Underbody View



Figure A-25: Pre-Test Rear Underbody View



Figure A-26: Post-Test Rear Underbody View



Figure A-27: Pre-Test Dummy Cable Routing



Figure A-28: Post-Test Dummy Cable Routing

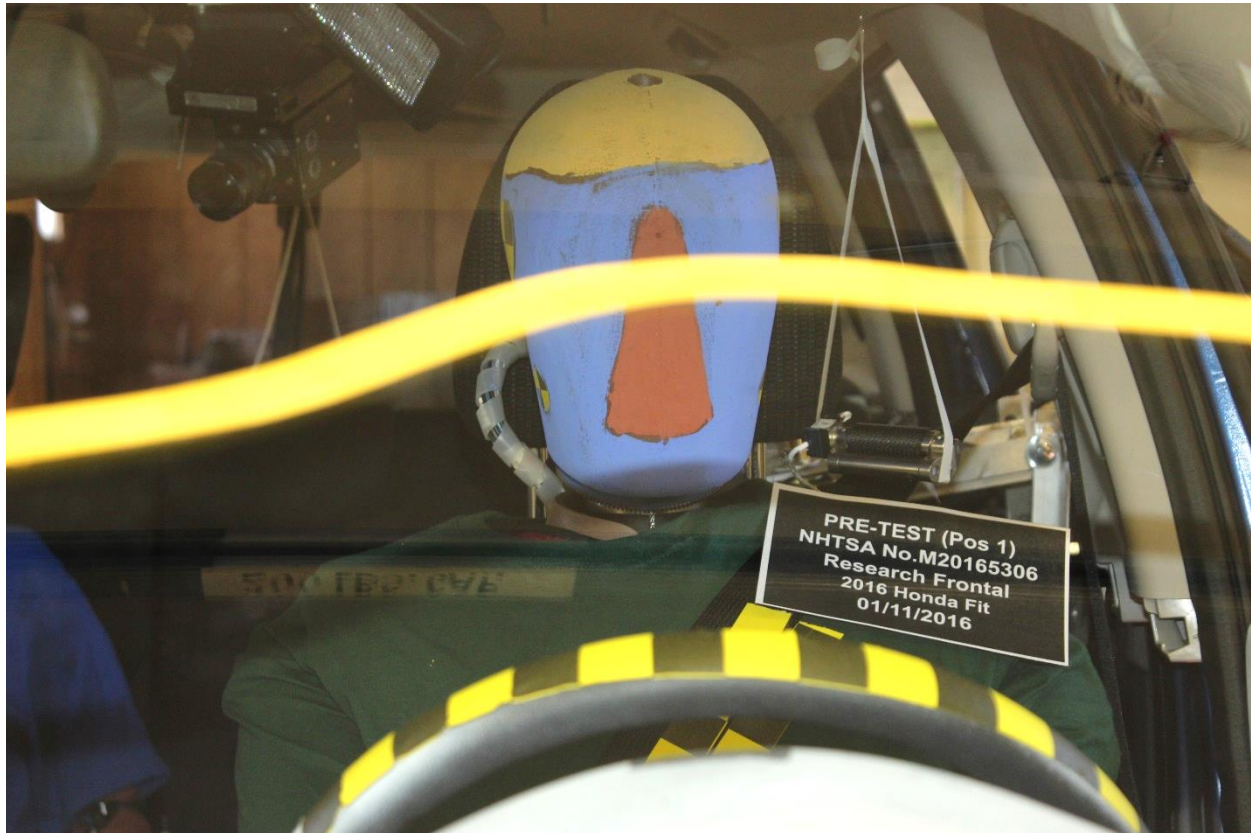


Figure A-29: Pre-Test Driver Dummy Front View



Figure A-30: Post-Test Driver Dummy Front View



Figure A-31: Pre-Test Driver Dummy Window View



Figure A-32: Post-Test Driver Dummy Window View



Figure A-33: Pre-Test Driver Dummy and Vehicle Interior View



Figure A-34: Post-Test Driver Dummy and Vehicle Interior View



Figure A-35: Pre-Test Driver's Seat Fore-Aft Markings



Figure A-36: Post-Test Driver's Seat Fore-Aft Markings



Figure A-37: Pre-Test View of Belt Anchorage for Driver Dummy



Figure A-38: Post-Test View of Belt Anchorage for Driver Dummy



Figure A-39: Pre-Test Driver Dummy Feet

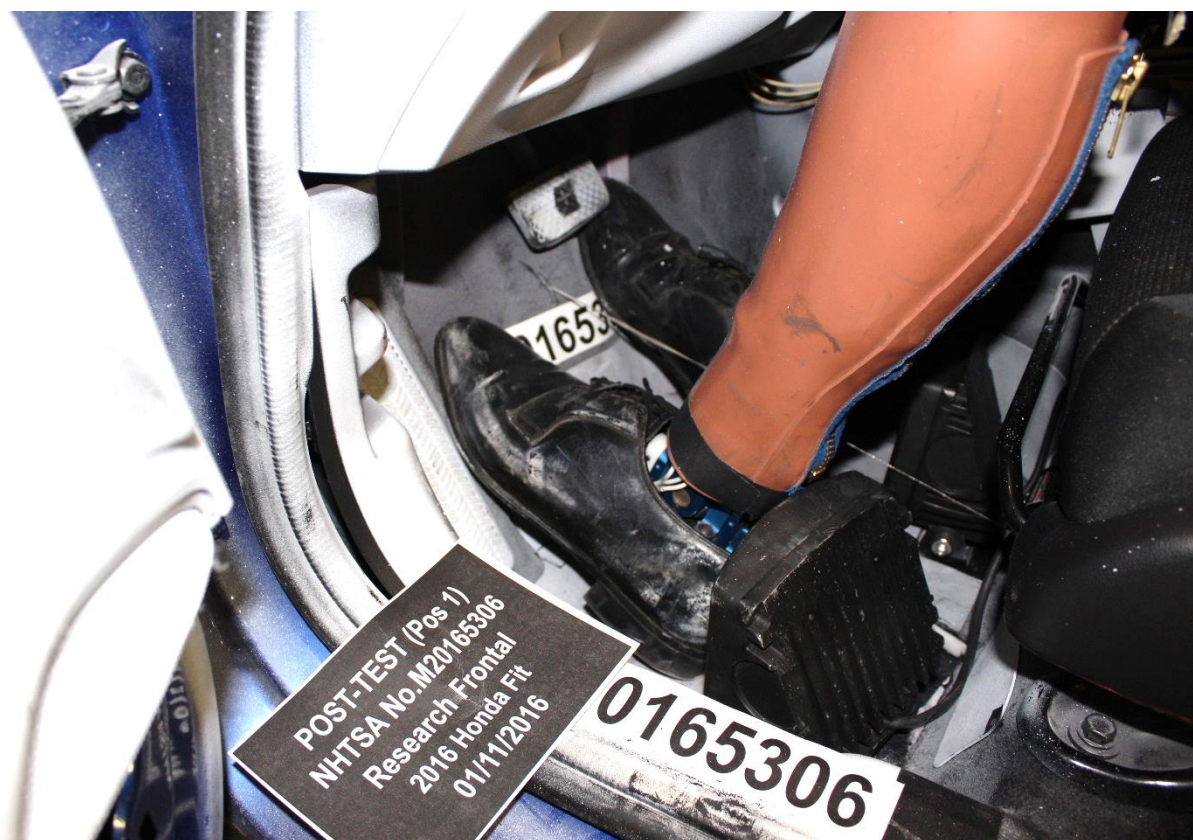


Figure A-40: Post-Test Driver Dummy Feet



Figure A-41: Pre-Test Driver's Side Knee Bolster



Figure A-42: Post-Test Driver's Side Knee Bolster



Figure A-43: Pre-Test Driver's Side Floorpan



Figure A-44: Post-Test Driver's Side Floorpan



Figure A-45: Post-Test Driver Dummy Face



Figure A-46: Post-Test Driver Dummy Contact With Airbag



Figure A-47: Post-Test Driver Dummy Contact With Headrest



Figure A-48: Pre-Test View of the Steering Wheel



Figure A-49: Post-Test View of the Steering Wheel

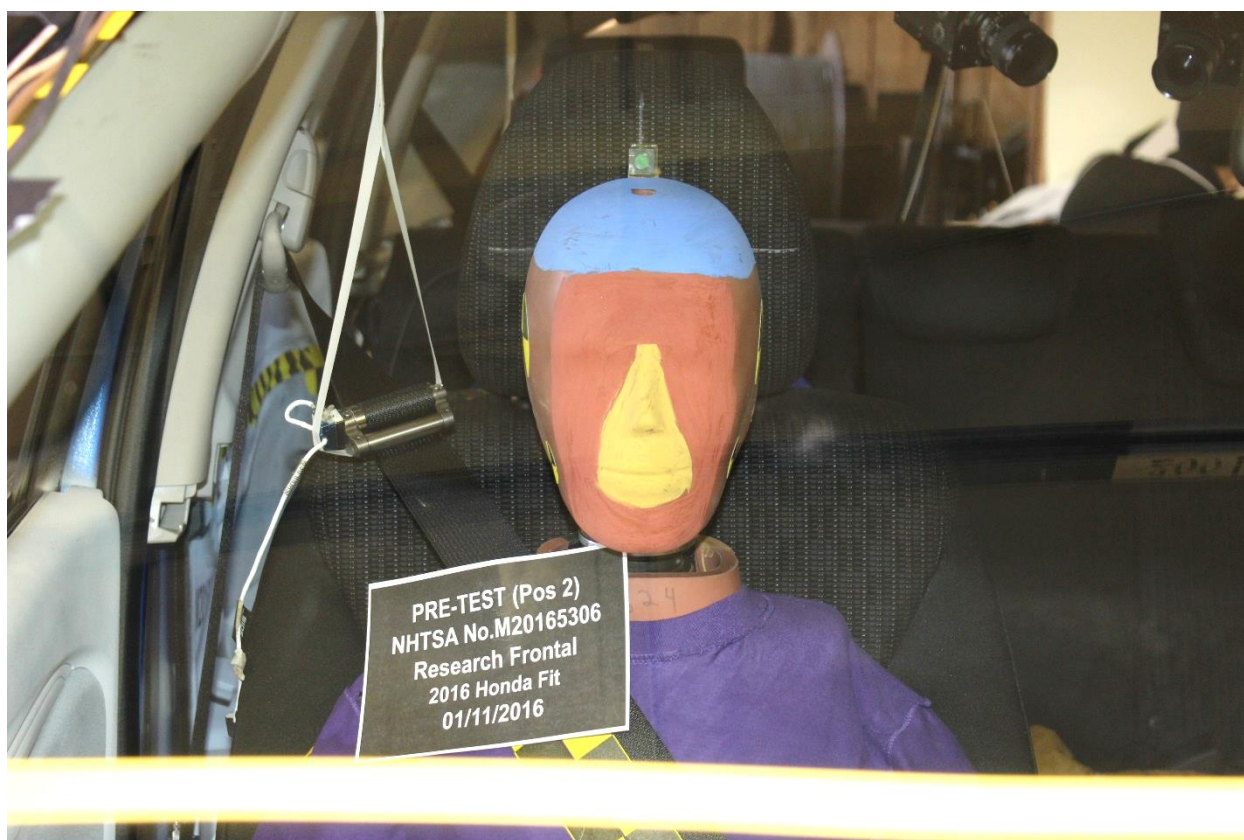


Figure A-50: Pre-Test Passenger Dummy Front View



Figure A-51: Post-Test Passenger Dummy Front View



Figure A-52: Pre-Test Passenger Dummy Window View



Figure A-53: Post-Test Passenger Dummy Window View



Figure A-54: Pre-Test Passenger Dummy and Vehicle Interior View



Figure A-55: Post-Test Passenger Dummy and Vehicle Interior View



Figure A-56: Pre-Test Passenger's Seat Fore-Aft Markings



Figure A-57: Post-Test Passenger's Seat Fore-Aft Markings

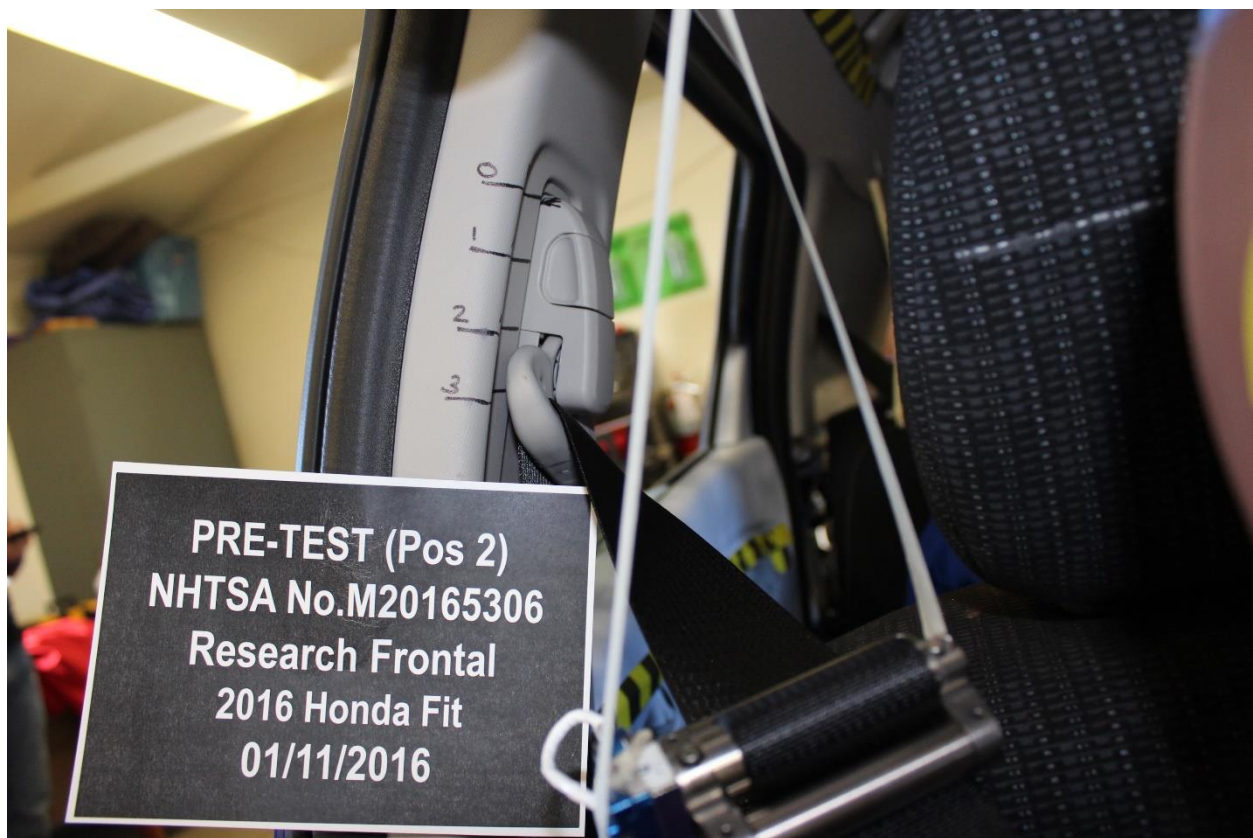


Figure A-58: Pre-Test View of Belt Anchorage for Passenger Dummy

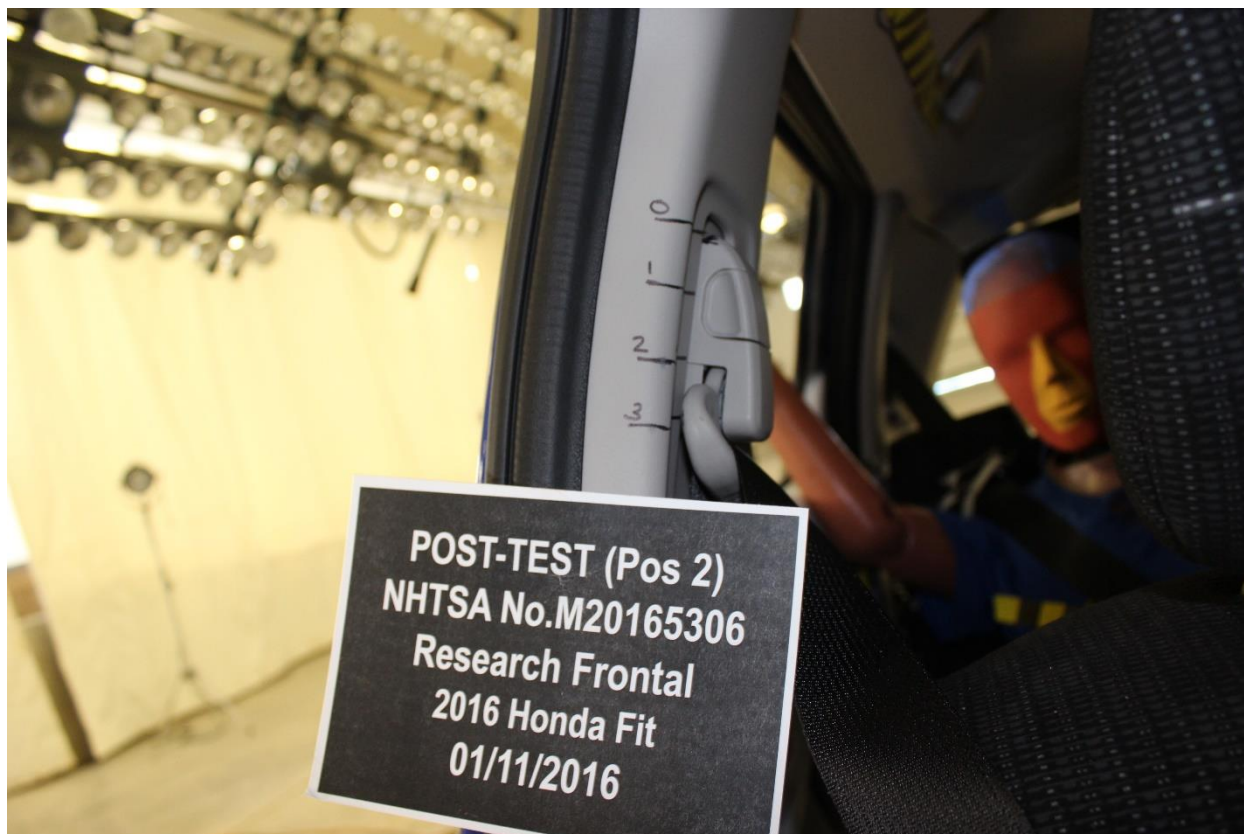


Figure A-59: Post-Test View of Belt Anchorage for Passenger Dummy



Figure A-60: Pre-Test Passenger Dummy Feet



Figure A-61: Post-Test Passenger Dummy Feet



Figure A-62: Pre-Test Passenger's Side Knee Bolster



Figure A-63: Post-Test Passenger's Side Knee Bolster



Figure A-64: Pre-Test Passenger's Side Floorpan



Figure A-65: Post-Test Passenger's Side Floorpan



Figure A-66: Post-Test Passenger Dummy Face



Figure A-67: Post-Test Passenger Dummy Contact With Airbag



Figure A-68: Post-Test Passenger Dummy Contact With Headrest

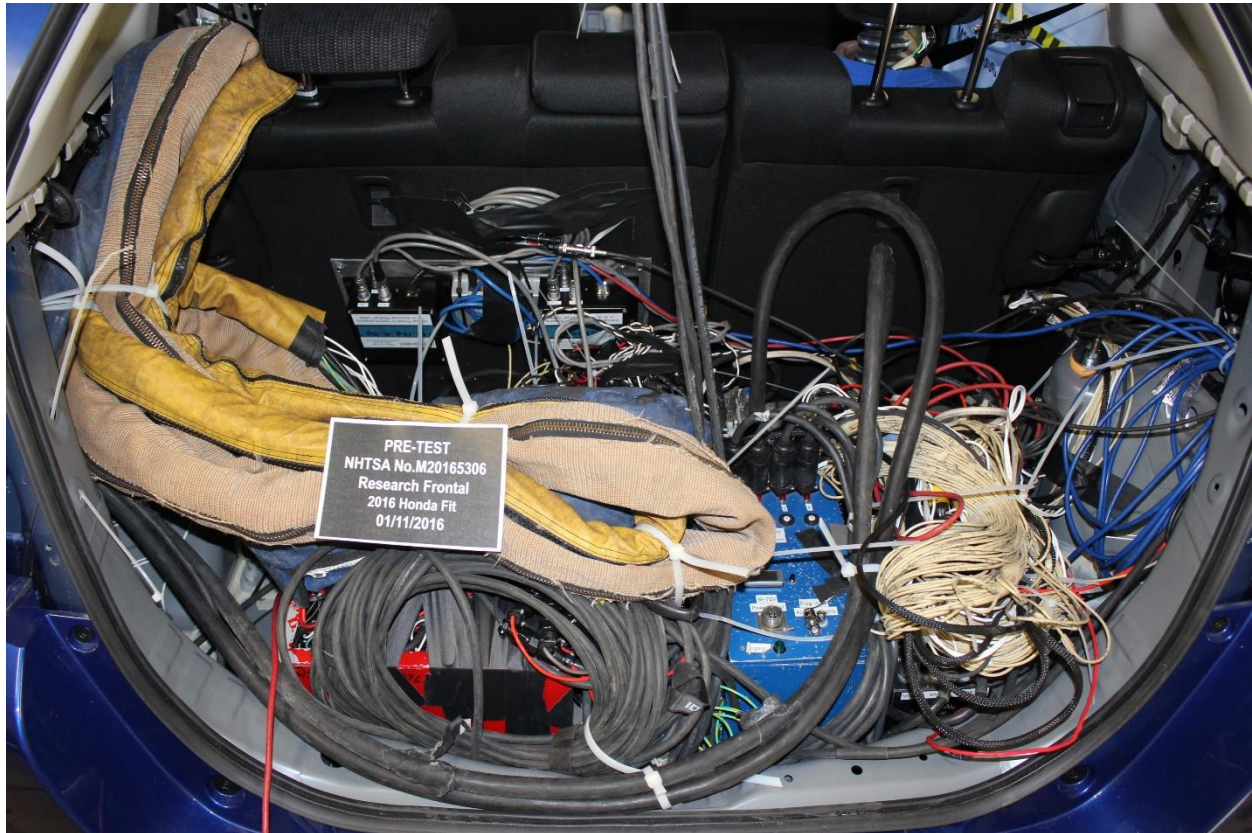


Figure A-69: Photograph of Ballast Installed in Vehicle

Photo Not Applicable

Figure A-70: Post-Test Stoddard Solvent Spillage Location View, If Required



Figure A-71: Post-Test Speed Trap Read-Out



Figure A-72: Vehicle at 0° on Static Rollover Device



Figure A-73: Vehicle at 90° on Static Rollover Device



Figure A-74: Vehicle at 180° on Static Rollover Device



Figure A-75: Vehicle at 270° on Static Rollover Device



Figure A-76: Vehicle at 360° on Static Rollover Device



Figure A-77: 2016 Honda Fit Frontal Impact Event

HONDA

2016 FIT 5DR LX
EXT: AEGEAN BLUE M. BLACK
INT: BLACK

ENGINE NUMBER: L15B1-1107684

STANDARD EQUIPMENT AT NO EXTRA COST

*** TECHNICAL FEATURES ***

- 130hp 1.5-Liter DOHC 16-Valve i-VTEC 4-Cylinder Direct Injection Engine w/ Earth Dreams Technology
- Continuously Variable Transmission (CVT) with Sport Mode
- Drive-by-Wire Throttle System
- Electric Power-Assisted Rack-and-Pinion Steering
- Front MacPherson Strut Suspension
- Rear Torsion Beam Suspension
- Immobilizer Theft-Deterrent System
- ECO Assist System

*** SAFETY FEATURES ***

- Driver's and Front Passenger's Dual-Stage Airbags (SRS)
- Driver's and Front Passenger's Side Airbags
- Side Curtain Airbags
- with Roll-over Sensor
- Anti-Lock Braking System (ABS)
- Brake Assist
- Electronic Brake Distribution (EBD)
- Vehicle Stability Assist (VSA)
- Tire Pressure Monitoring System
- ACS Body Structure
- Daytime Running Lights (DRL)
- LATCH System for Child Seats

*** INTERIOR FEATURES ***

- AM/FM/CD/MP3 Audio System with 4 Speakers
- 5-Inch Color LCD Screen with Rearview Camera
- Bluetooth Audio
- Bluetooth HandsFreeLink
- USB Audio Interface
- Steering Wheel Mounted Controls
- MP3/Auxiliary Input Jack
- Air Conditioning with Air Filtration System
- Center Storage Console w/ Armrest
- Driver's Seat Height Adjustment
- 60/40 Split 2nd-Row Magic Seat
- Power Windows and Programmable Auto Door Locks
- Driver's Auto Up/Down Window
- Tilt & Telescopic Steering Column
- Cargo Area Light
- Vanity Mirrors
- Cruise Control
- 12-Volt Power Outlets

*** EXTERIOR FEATURES ***

- 15" x 6.0" Steel Wheels with Full Wheel Covers
- P185/60 R15 All-Season Tires
- Intermittent Windshield Wipers
- Rear Window Defroster
- Rear Wiper with Washer
- Auto On/Off Headlights
- Expanded View Driver's Mirror
- Body-Colored Power Door Mirrors
- LED Brake Lights
- Rear Roofline Spoiler
- Remote Entry with Security System

Manufacturer's Suggested Retail Price **\$16,590.00**

Full Tank of Fuel No Charge

-Honda Roadside Assistance
3YR/36K Mile Warranty Term

Destination and Handling 835.00

TOTAL VEHICLE PRICE
(Includes Pre-Delivery Service)

\$17,425.00

License and title fees, state and local taxes and dealer options and accessories are not included in the manufacturer's suggested retail price.

EPA DOT Fuel Economy and Environment

Fuel Economy

36 MPG
combined city 33 highway 41

2.8 gallons per 100 miles

You Save \$2,750
in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost \$1,250

Fuel Economy & Greenhouse Gas Rating (single only) Smog Rating (tailpipe only)

1 2 3 4 5 6 7 8 9 10 Best

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 24 MPG and costs \$9,999 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$3.50 per gallon. MPG is miles per gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fuel economy.gov
Calculate personalized estimates and compare vehicles

PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS CARLINE
U.S./Canadian Parts Content: **15 %**

Major Sources of Foreign Parts Content:
JAPAN 55 %
MEXICO 15 %

NOTE: Parts content does not include final assembly, distribution or other non-parts costs.

Two or more assembly plants produce the vehicles in this carline. The vehicles assembled at the plant where this vehicle was assembled have a U.S./Canadian parts content of 15 %.

GOVERNMENT 5-STAR SAFETY RATING

Overall Vehicle Score ★★★★★

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 ★★★★★

Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.

Side Crash Front seat ★★★★★ Rear seat ★★★★★

Based on the risk of injury in a side impact.

Rollover ★★★★★

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

This vehicle is equipped with a front bumper of a type that has been tested at an impact speed of 8 miles per hour, and a rear bumper of a type that has been tested at an impact speed of 5 miles per hour, resulting in no damage to the vehicle's body and safety systems and minimal damage to the bumper and attachment hardware. "Minimal damage to the bumper" means minor cosmetic damage that can be repaired with the use of common repair materials and without replacing any parts. The stronger the bumper, the less likely the vehicle will require repair after a low-speed collision. This vehicle exceeds the current federal bumper standard of 2.5 miles per hour.

GROSSINGER HONDA
6600 N. WESTERN AVENUE
CHICAGO, IL 60645

PORT OF ENTRY: PORTLAND
DELIVERY POINT: SCHAMBURG
SHIP: 822-734600
ROWS/SPACE:
TRANS METHOD: N50 ELWOOD

ORIG. DLR: 208626
REF NO: 40127
HN CODE: HN-0604
EMISSION: 50 STATE
CONTROL NO: 331137
DEALER: 208626

VIN: JHMCK5H52GX007683

42 miles
10/15
H145411

Figure A-78: Monroney Label Photograph



Figure A-79: Pre-Test Rear Passenger Dummy Front view

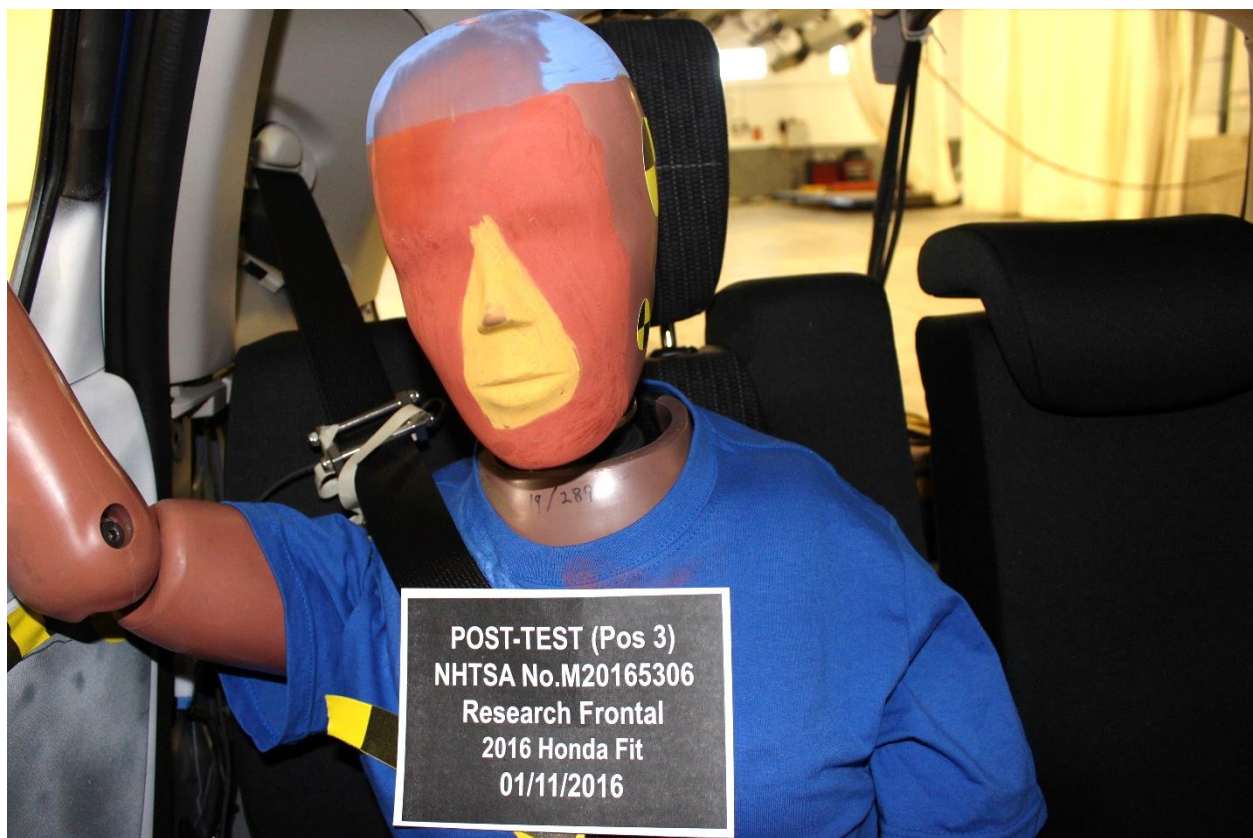


Figure A-80: Post-Test Rear Passenger Dummy Front view



Figure A-81: Pre-Test Rear Passenger Dummy Window View



Figure A-82: Post-Test Rear Passenger Dummy Window View



Figure A-83: Pre-Test Rear Passenger Dummy and Vehicle Interior View



Figure A-84: Post-Test Rear Passenger Dummy and Vehicle Interior View



Figure A-85: Pre-Test Rear Passenger Seat Fore-Aft Markings



Figure A-86: Post-Test Rear Passenger Seat Fore-Aft Markings

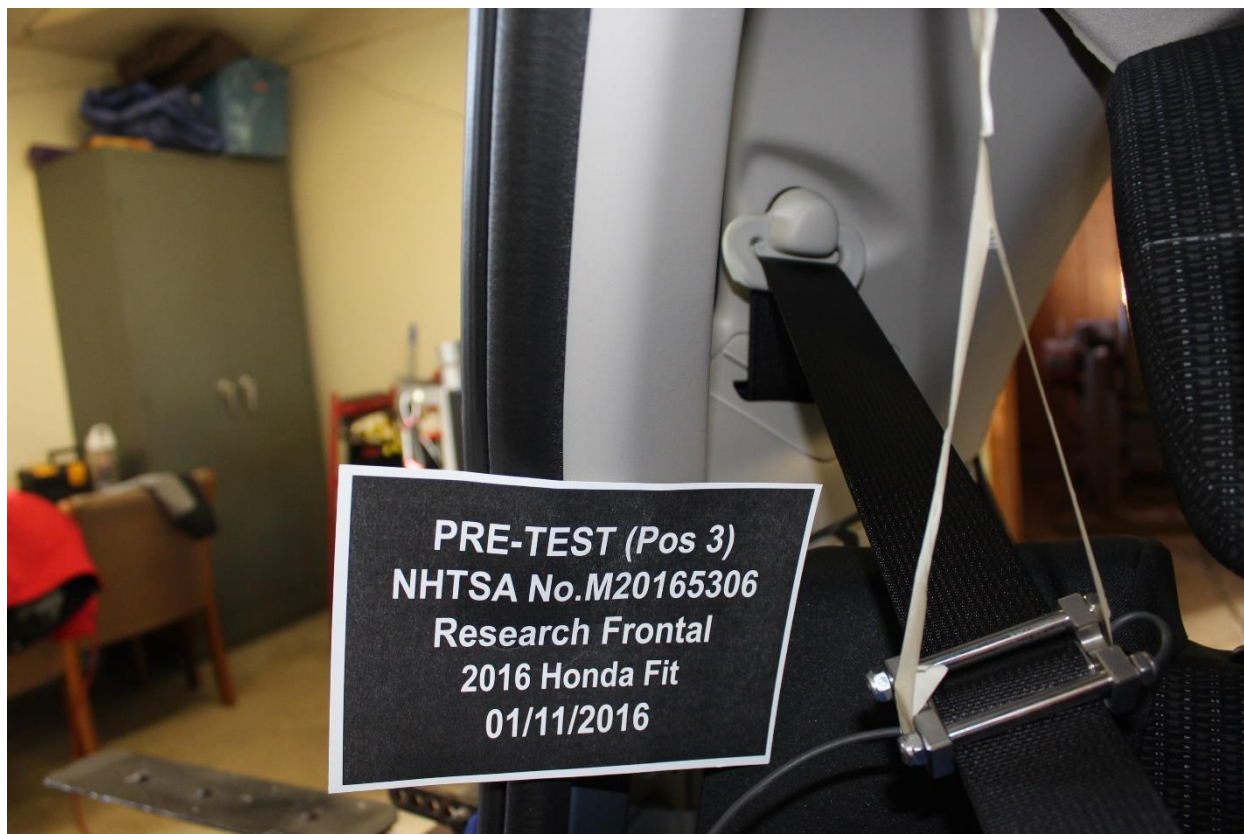


Figure A-87: Pre-Test View of Belt Anchorage for Rear Passenger Dummy



Figure A-88: Post-Test View of Belt Anchorage for Rear Passenger Dummy



Figure A-89: Pre-Test Rear Passenger Dummy Feet

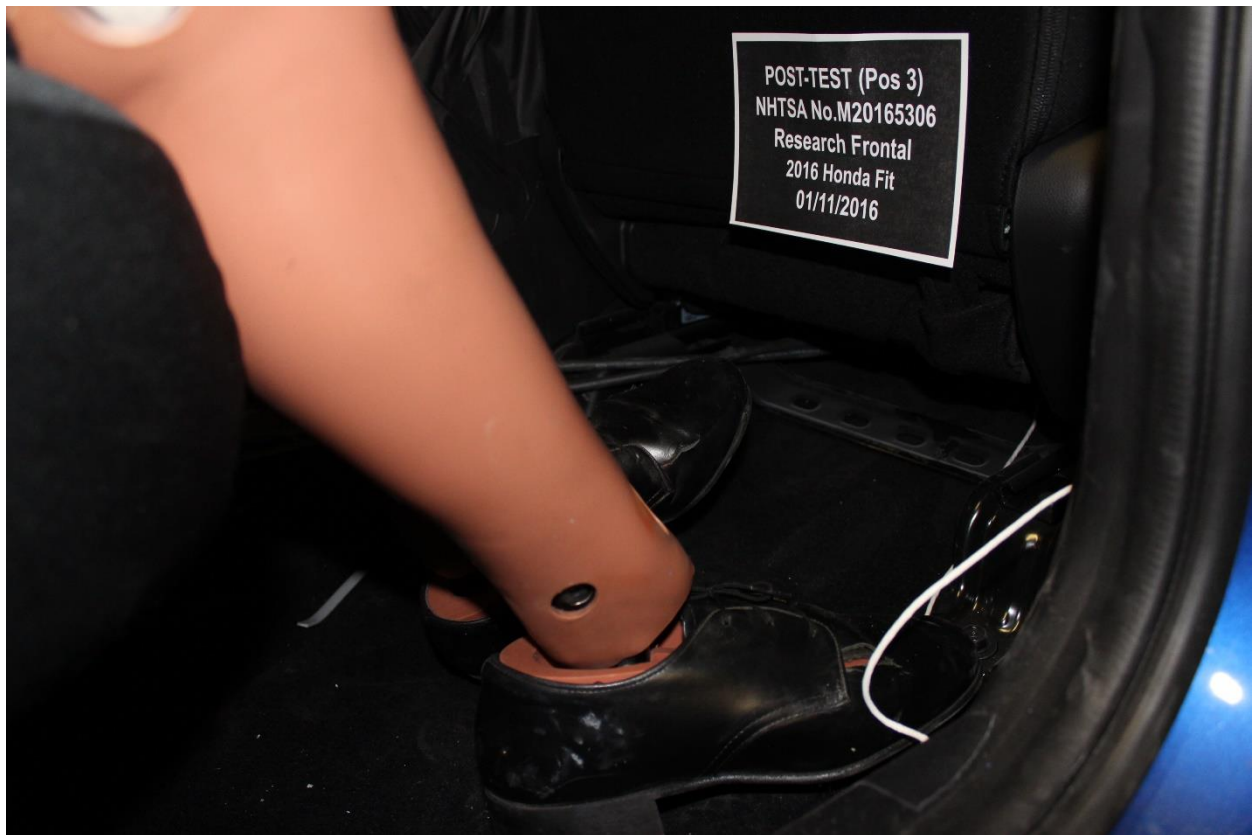


Figure A-90: Post-Test Rear Passenger Dummy Feet

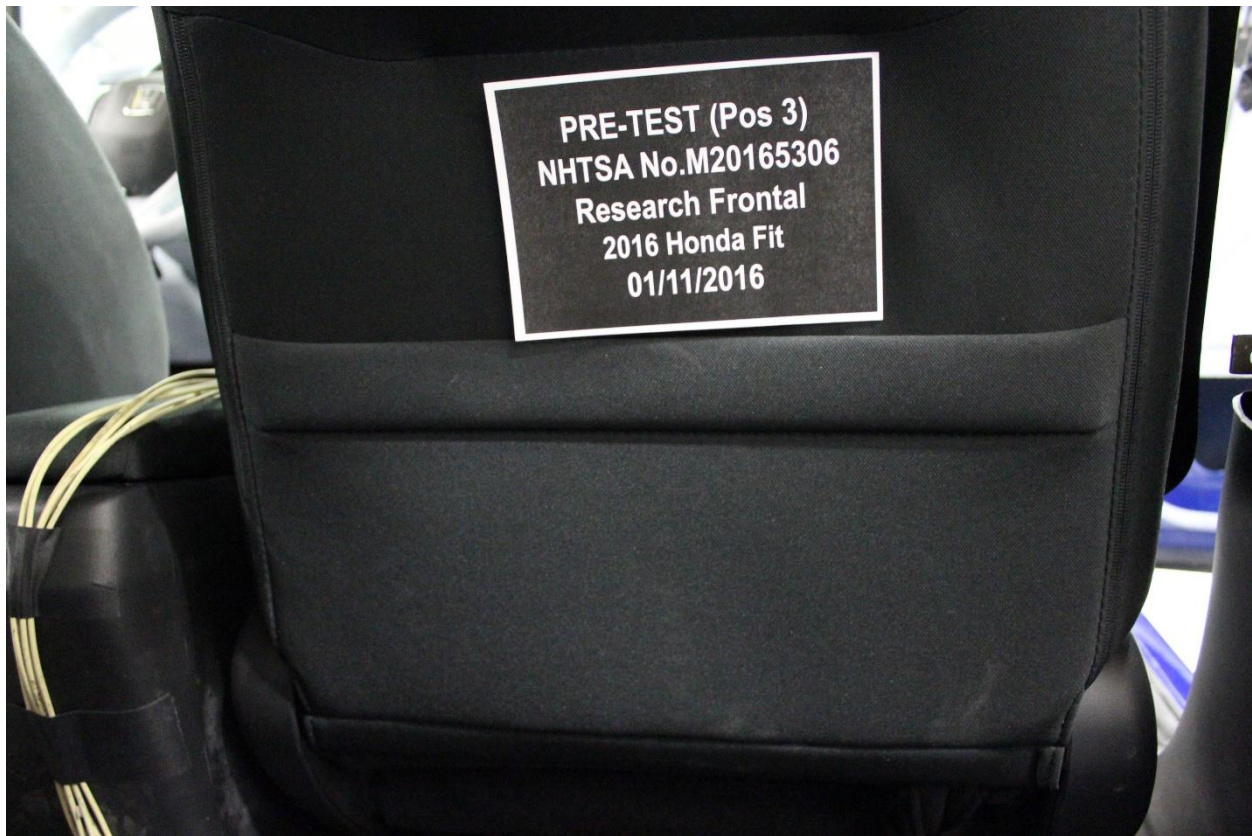


Figure A-91: Pre-Test Rear Passenger Dummy Knee and Seatback View

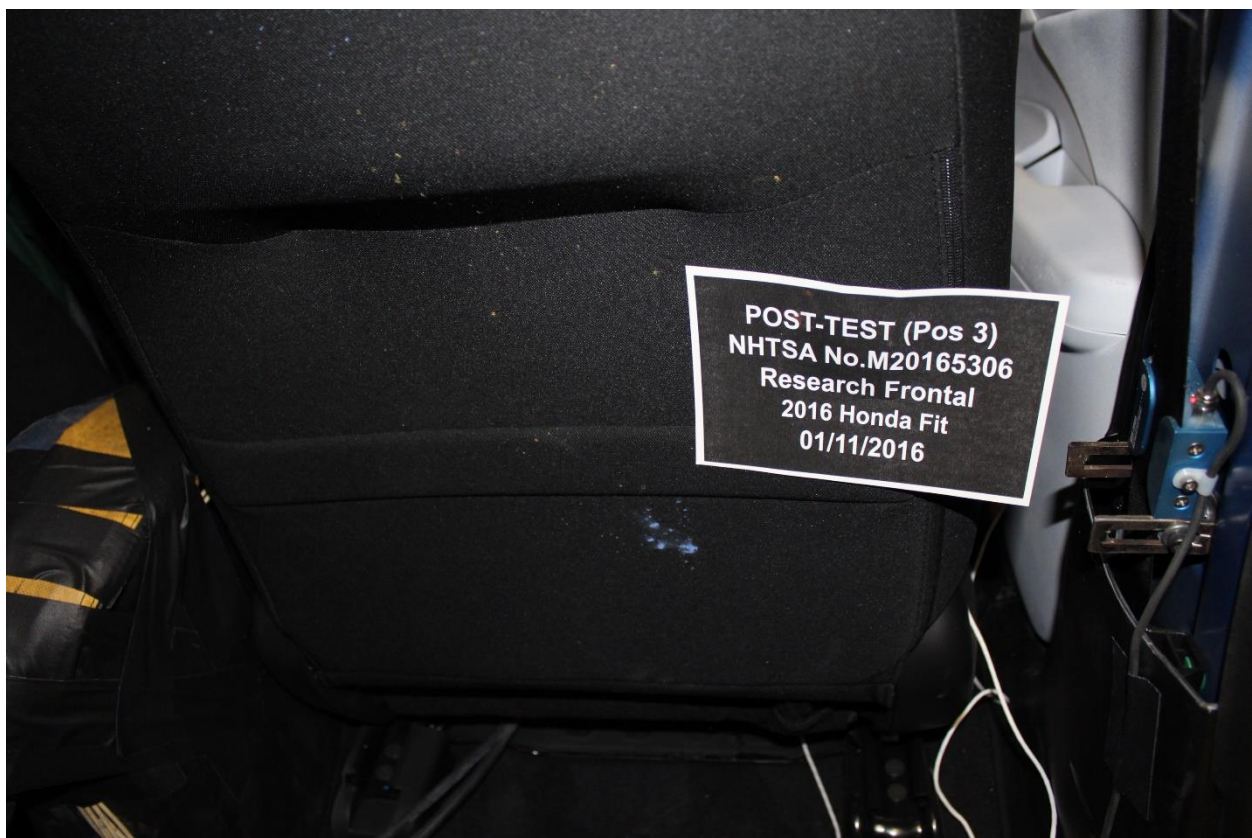


Figure A-92: Post-Test Rear Passenger Dummy Knee Contact with Seatback



Figure A-93: Pre-Test Rear Passenger's Side Floorpan



Figure A-94: Post-Test Rear Passenger's Side Floorpan



Figure A-95: Post-Test Rear Passenger Dummy Face

Photo Not Applicable

Figure A-96: Post-Test Rear Passenger Dummy Contact with Airbag



Figure A-97: Post-Test Rear Passenger dummy Contact with Headrest

APPENDIX B
VEHICLE & DUMMY RESPONSE DATA TRACES

Table of Data Plots

No.	Description	Page
Plot 1	V1P1 Head CG X Acceleration	B-8
Plot 2	V1P1 Head CG Y Acceleration	B-8
Plot 3	V1P1 Head CG Z Acceleration	B-8
Plot 4	V1P1 Head CG Angular Velocity About X	B-8
Plot 5	V1P1 Head CG Angular Velocity About Y	B-9
Plot 6	V1P1 Head CG Angular Velocity About Z	B-9
Plot 7	V1P1 Upper Neck X Force	B-9
Plot 8	V1P1 Upper Neck Y Force	B-9
Plot 9	V1P1 Upper Neck Z Force	B-10
Plot 10	V1P1 Upper Neck X Moment	B-10
Plot 11	V1P1 Upper Neck Y Moment	B-10
Plot 12	V1P1 Upper Neck Z Moment	B-10
Plot 13	V1P1 Lower Neck X Force	B-11
Plot 14	V1P1 Lower Neck Y Force	B-11
Plot 15	V1P1 Lower Neck Z Force	B-11
Plot 16	V1P1 Lower Neck X Moment	B-11
Plot 17	V1P1 Lower Neck Y Moment	B-12
Plot 18	V1P1 Lower Neck Z Moment	B-12
Plot 19	V1P1 Front Neck Spring Tower Load Cell	B-12
Plot 20	V1P1 Rear Neck Spring Tower Load Cell	B-12
Plot 21	V1P1 Occipital Condyle Rotation Potentiometer	B-13
Plot 22	V1P1 Upper Left DGIR X Displacement	B-13
Plot 23	V1P1 Upper Left DGIR Y Rotation	B-13
Plot 24	V1P1 Upper Left DGIR Z Rotation	B-13
Plot 25	V1P1 Upper Right DGIR X Displacement	B-14
Plot 26	V1P1 Upper Right DGIR Y Rotation	B-14
Plot 27	V1P1 Upper Right DGIR Z Rotation	B-14
Plot 28	V1P1 Lower Left DGIR X Displacement	B-14
Plot 29	V1P1 Lower Left DGIR Y Rotation	B-15
Plot 30	V1P1 Lower Left DGIR Z Rotation	B-15
Plot 31	V1P1 Lower Right DGIR X Displacement	B-15
Plot 32	V1P1 Lower Right DGIR Y Rotation	B-15
Plot 33	V1P1 Lower Right DGIR Z Rotation	B-16
Plot 34	V1P1 T1 X Acceleration	B-16
Plot 35	V1P1 T1 Y Acceleration	B-16
Plot 36	V1P1 T1 Z Acceleration	B-16
Plot 37	V1P1 Spine Lower Force X	B-17
Plot 38	V1P1 Spine Lower Force Y	B-17
Plot 39	V1P1 Spine Lower Force Z	B-17
Plot 40	V1P1 Spine Lower Moment X	B-17
Plot 41	V1P1 Spine Lower Moment Y	B-18
Plot 42	V1P1 T4 X Acceleration	B-18
Plot 43	V1P1 T4 Y Acceleration	B-18
Plot 44	V1P1 T4 Z Acceleration	B-18
Plot 45	V1P1 Abdomen Left DGIR X Displacement	B-19
Plot 46	V1P1 Abdomen Left DGIR Y Rotation	B-19
Plot 47	V1P1 Abdomen Left DGIR Z Rotation	B-19
Plot 48	V1P1 Abdomen Right DGIR X Displacement	B-19
Plot 49	V1P1 Abdomen Right DGIR Y Rotation	B-20
Plot 50	V1P1 Abdomen Right DGIR Z Rotation	B-20
Plot 51	V1P1 Pelvis Acetabulum Left X Force	B-20
Plot 52	V1P1 Pelvis Acetabulum Left Y Force	B-20
Plot 53	V1P1 Pelvis Acetabulum Left Z Force	B-21
Plot 54	V1P1 Pelvis Acetabulum Right X Force	B-21
Plot 55	V1P1 Pelvis Acetabulum Right Y Force	B-21
Plot 56	V1P1 Pelvis Acetabulum Right Z Force	B-21
Plot 57	V1P1 Pelvis X Acceleration	B-22

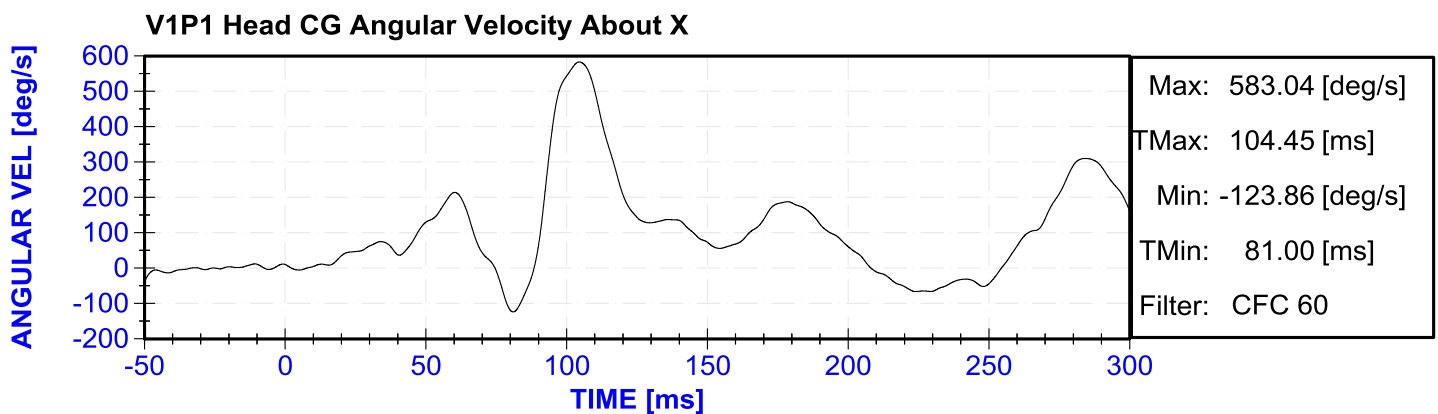
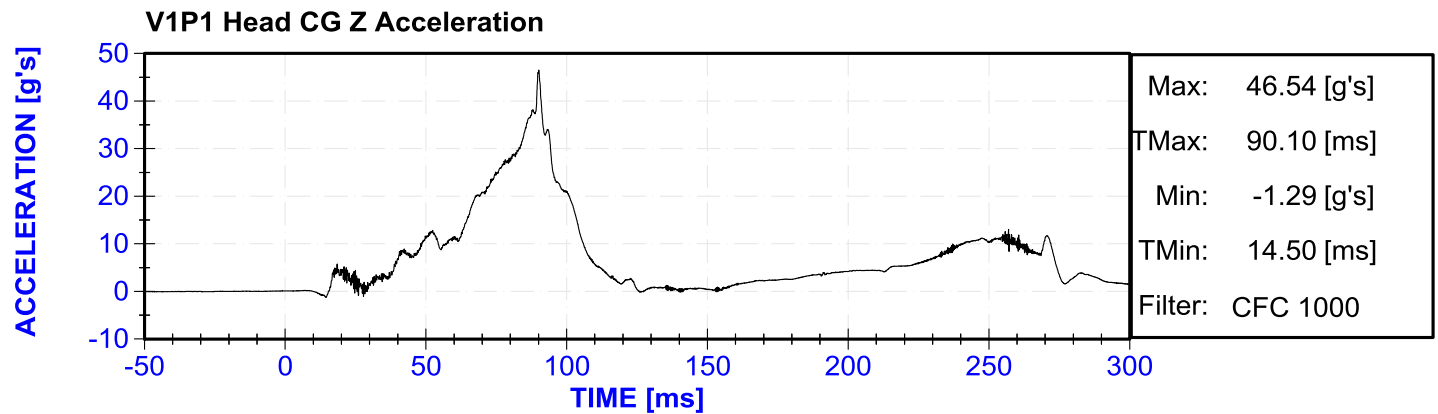
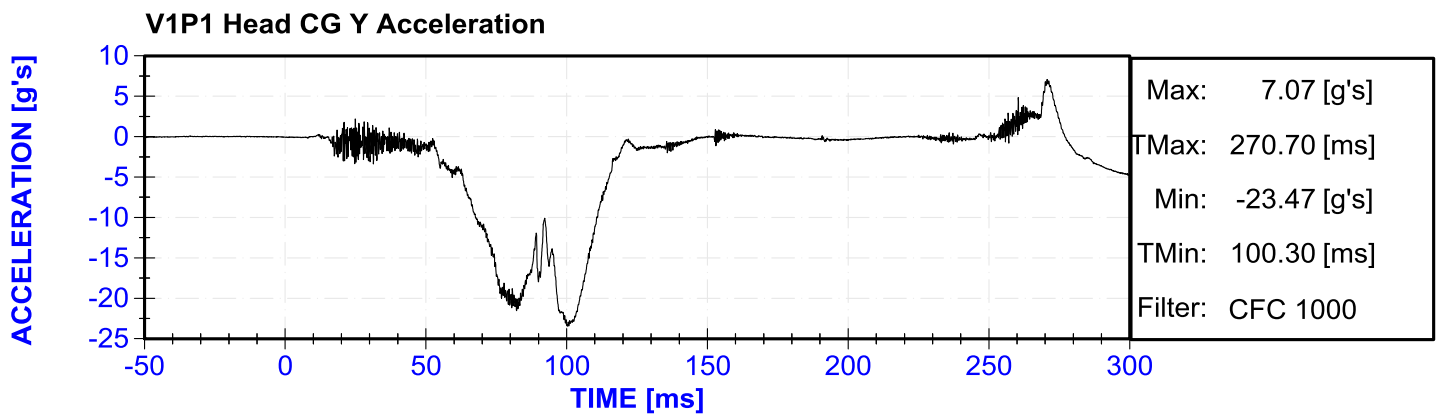
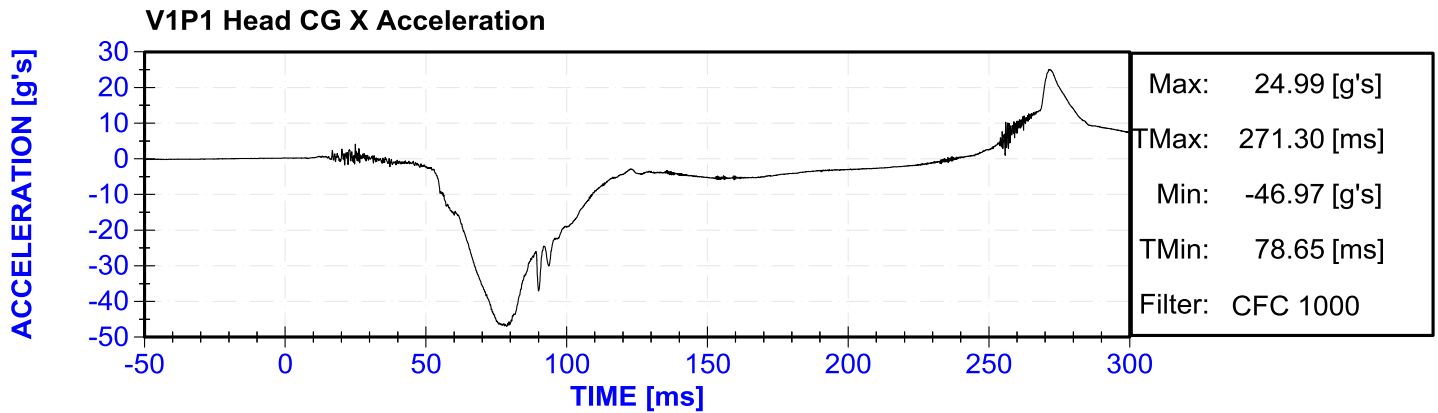
Plot 58	V1P1 Pelvis Y Acceleration	B-22
Plot 59	V1P1 Pelvis Z Acceleration	B-22
Plot 60	V1P1 ASIS Left X Force	B-22
Plot 61	V1P1 ASIS Left Y Moment	B-23
Plot 62	V1P1 ASIS Right X Force	B-23
Plot 63	V1P1 ASIS Right Y Moment	B-23
Plot 64	V1P1 Femur Left X Force	B-23
Plot 65	V1P1 Femur Left Y Force	B-24
Plot 66	V1P1 Femur Left Z Force	B-24
Plot 67	V1P1 Femur Left X Moment	B-24
Plot 68	V1P1 Femur Left Y Moment	B-24
Plot 69	V1P1 Femur Right X Force	B-25
Plot 70	V1P1 Femur Right Y Force	B-25
Plot 71	V1P1 Femur Right Z Force	B-25
Plot 72	V1P1 Femur Right X Moment	B-25
Plot 73	V1P1 Femur Right Y Moment	B-26
Plot 74	V1P1 Knee Left X Displacement	B-26
Plot 75	V1P1 Knee Right X Displacement	B-26
Plot 76	V1P1 Upper Tibia Left Z Force	B-26
Plot 77	V1P1 Upper Tibia Left X Moment	B-27
Plot 78	V1P1 Upper Tibia Left Y Moment	B-27
Plot 79	V1P1 Upper Tibia Right Z Force	B-27
Plot 80	V1P1 Upper Tibia Right X Moment	B-27
Plot 81	V1P1 Upper Tibia Right Y Moment	B-28
Plot 82	V1P1 Lower Tibia Left X Force	B-28
Plot 83	V1P1 Lower Tibia Left Y Force	B-28
Plot 84	V1P1 Lower Tibia Left Z Force	B-28
Plot 85	V1P1 Lower Tibia Left X Moment	B-29
Plot 86	V1P1 Lower Tibia Left Y Moment	B-29
Plot 87	V1P1 Lower Tibia Right X Force	B-29
Plot 88	V1P1 Lower Tibia Right Y Force	B-29
Plot 89	V1P1 Lower Tibia Right Z Force	B-30
Plot 90	V1P1 Lower Tibia Right X Moment	B-30
Plot 91	V1P1 Lower Tibia Right Y Moment	B-30
Plot 92	V1P1 Left Tibia Mid X Acceleration	B-30
Plot 93	V1P1 Left Tibia Mid Y Acceleration	B-31
Plot 94	V1P1 Right Tibia Mid X Acceleration	B-31
Plot 95	V1P1 Right Tibia Mid Y Acceleration	B-31
Plot 96	V1P1 Foot Left X Acceleration	B-31
Plot 97	V1P1 Foot Left Z Acceleration	B-32
Plot 98	V1P1 Foot Right X Acceleration	B-32
Plot 99	V1P1 Foot Right Z Acceleration	B-32
Plot 100	V1P1 Ankle Left X Rotation	B-32
Plot 101	V1P1 Ankle Left Y Rotation	B-33
Plot 102	V1P1 Ankle Left Z Rotation	B-33
Plot 103	V1P1 Ankle Right X Rotation	B-33
Plot 104	V1P1 Ankle Right Y Rotation	B-33
Plot 105	V1P1 Ankle Right Z Rotation	B-34
Plot 106	V1 Driver Lap Belt Force	B-34
Plot 107	V1 Driver Shoulder Belt Upper Force	B-34
Plot 108	V1 Driver Shoulder Belt Displacement	B-34
Plot 109	V1P2 Head CG X Acceleration	B-35
Plot 110	V1P2 Head CG Y Acceleration	B-35
Plot 111	V1P2 Head CG Z Acceleration	B-35
Plot 112	V1P2 Head Redundant X Acceleration	B-35
Plot 113	V1P2 Head Redundant Y Acceleration	B-36
Plot 114	V1P2 Head Redundant Z Acceleration	B-36
Plot 115	V1P2 Head CG Angular Velocity About X	B-36
Plot 116	V1P2 Head CG Angular Velocity About Y	B-36

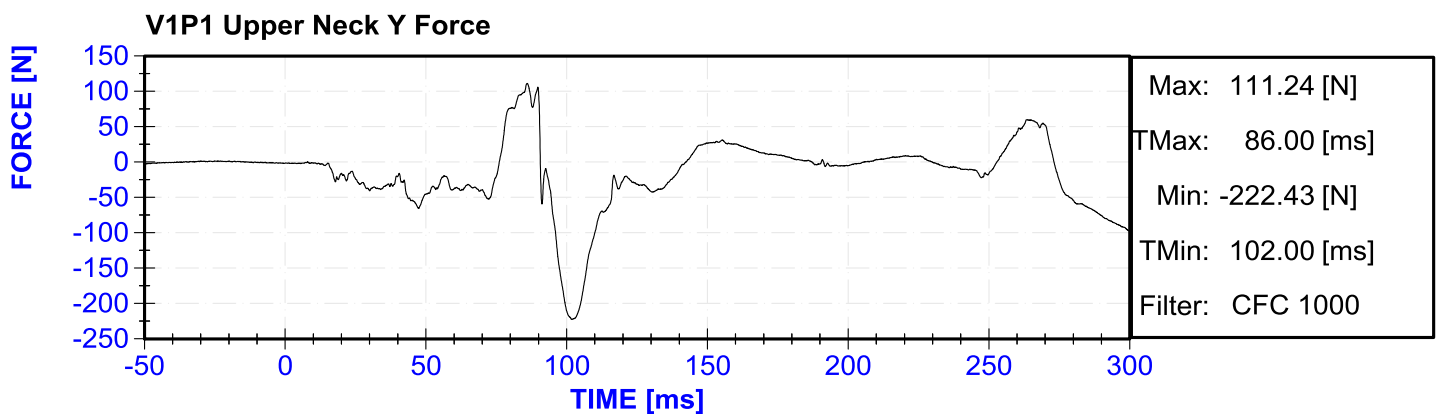
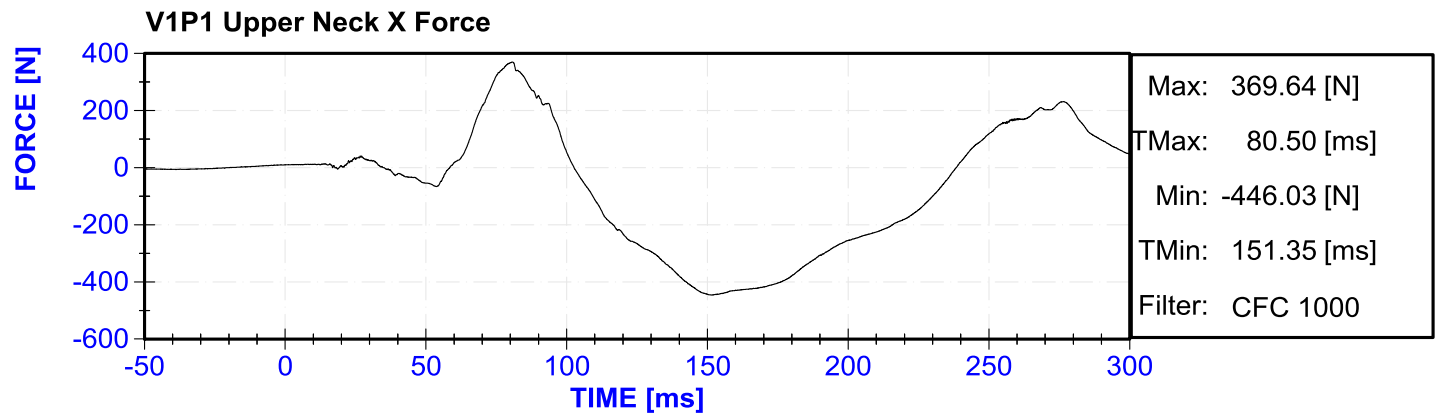
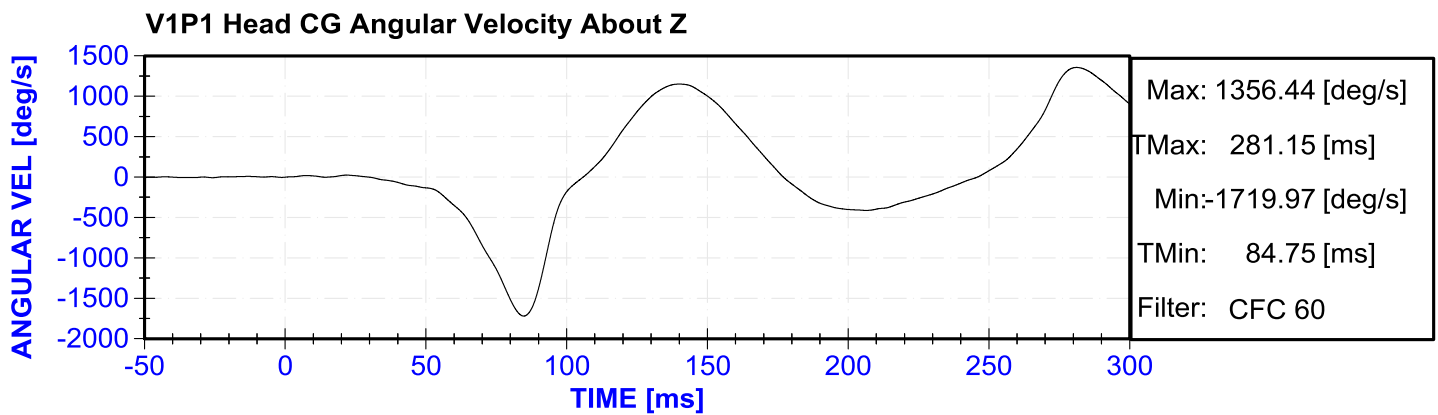
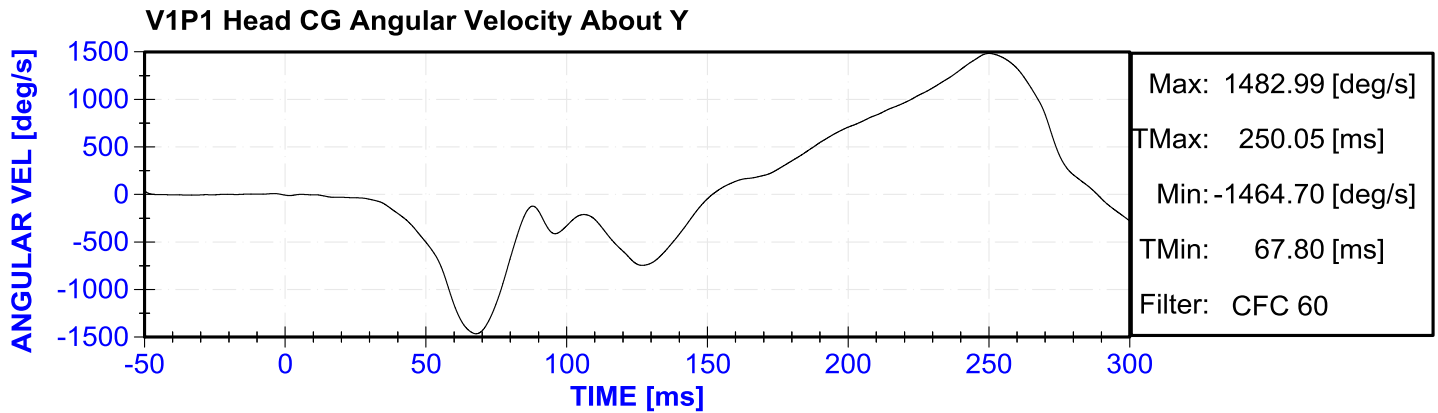
Plot 117	V1P2 Head CG Angular Velocity About Z	B-37
Plot 118	V1P2 Upper Neck X Force	B-37
Plot 119	V1P2 Upper Neck Y Force	B-37
Plot 120	V1P2 Upper Neck Z Force	B-37
Plot 121	V1P2 Upper Neck X Moment	B-38
Plot 122	V1P2 Upper Neck Y Moment	B-38
Plot 123	V1P2 Upper Neck Z Moment	B-38
Plot 124	V1P2 Ribs Left 01 X Displacement	B-38
Plot 125	V1P2 Ribs Left 01 Y Displacement	B-39
Plot 126	V1P2 Ribs Left 02 X Displacement	B-39
Plot 127	V1P2 Ribs Left 02 Y Displacement	B-39
Plot 128	V1P2 Ribs Left 03 X Displacement	B-39
Plot 129	V1P2 Ribs Left 03 Y Displacement	B-40
Plot 130	V1P2 Ribs Left 04 X Displacement	B-40
Plot 131	V1P2 Ribs Left 04 Y Displacement	B-40
Plot 132	V1P2 Ribs Left 05 X Displacement	B-40
Plot 133	V1P2 Ribs Left 05 Y Displacement	B-41
Plot 134	V1P2 Ribs Left 06 X Displacement	B-41
Plot 135	V1P2 Ribs Left 06 Y Displacement	B-41
Plot 136	V1P2 Ribs Right 01 X Displacement	B-41
Plot 137	V1P2 Ribs Right 01 Y Displacement	B-42
Plot 138	V1P2 Ribs Right 02 X Displacement	B-42
Plot 139	V1P2 Ribs Right 02 Y Displacement	B-42
Plot 140	V1P2 Ribs Right 03 X Displacement	B-42
Plot 141	V1P2 Ribs Right 03 Y Displacement	B-43
Plot 142	V1P2 Ribs Right 04 X Displacement	B-43
Plot 143	V1P2 Ribs Right 04 Y Displacement	B-43
Plot 144	V1P2 Ribs Right 05 X Displacement	B-43
Plot 145	V1P2 Ribs Right 05 Y Displacement	B-44
Plot 146	V1P2 Ribs Right 06 X Displacement	B-44
Plot 147	V1P2 Ribs Right 06 Y Displacement	B-44
Plot 148	V1P2 Chest X Displacement	B-44
Plot 149	V1P2 Chest CG X Acceleration	B-45
Plot 150	V1P2 Chest CG Y Acceleration	B-45
Plot 151	V1P2 Chest CG Z Acceleration	B-45
Plot 152	V1P2 Pelvis X Acceleration	B-45
Plot 153	V1P2 Pelvis Y Acceleration	B-46
Plot 154	V1P2 Pelvis Z Acceleration	B-46
Plot 155	V1P2 Left Femur Z Force	B-46
Plot 156	V1P2 Right Femur Z Force	B-46
Plot 157	V1P2 Left Upper Tibia X Force	B-47
Plot 158	V1P2 Left Upper Tibia Y Force	B-47
Plot 159	V1P2 Left Upper Tibia Z Force	B-47
Plot 160	V1P2 Left Upper Tibia X Moment	B-47
Plot 161	V1P2 Left Upper Tibia Y Moment	B-48
Plot 162	V1P2 Right Upper Tibia X Force	B-48
Plot 163	V1P2 Right Upper Tibia Y Force	B-48
Plot 164	V1P2 Right Upper Tibia Z Force	B-48
Plot 165	V1P2 Right Upper Tibia X Moment	B-49
Plot 166	V1P2 Right Upper Tibia Y Moment	B-49
Plot 167	V1P2 Left Lower Tibia X Force	B-49
Plot 168	V1P2 Left Lower Tibia Y Force	B-49
Plot 169	V1P2 Left Lower Tibia Z Force	B-50
Plot 170	V1P2 Left Lower Tibia X Moment	B-50
Plot 171	V1P2 Left Lower Tibia Y Moment	B-50
Plot 172	V1P2 Right Lower Tibia X Force	B-50
Plot 173	V1P2 Right Lower Tibia Y Force	B-51
Plot 174	V1P2 Right Lower Tibia Z Force	B-51
Plot 175	V1P2 Right Lower Tibia X Moment	B-51

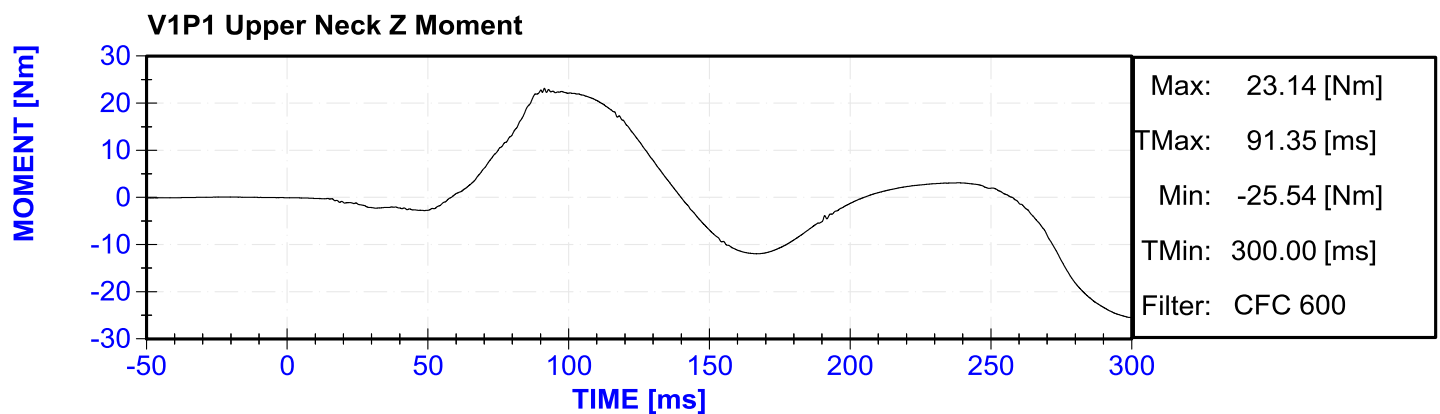
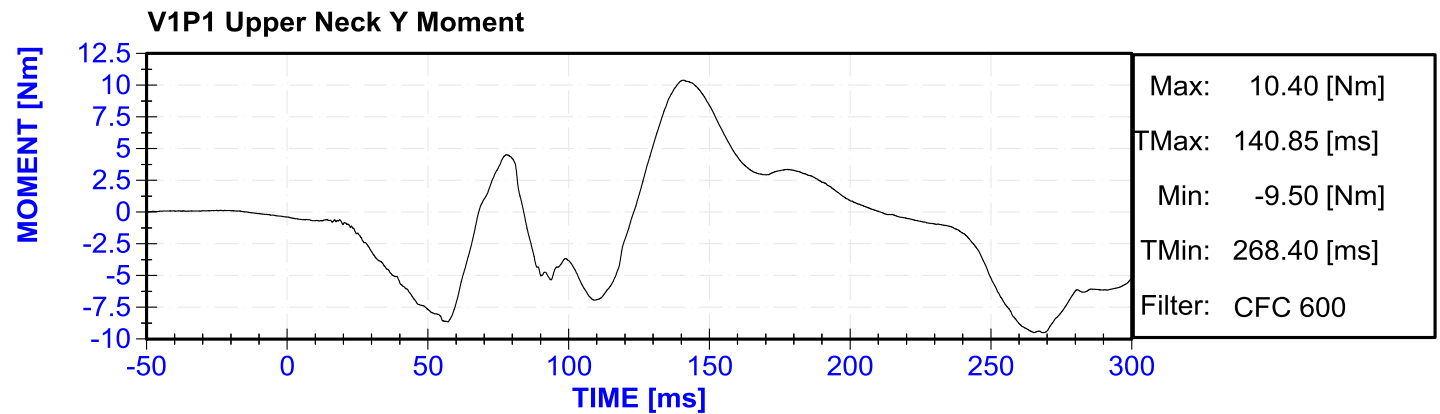
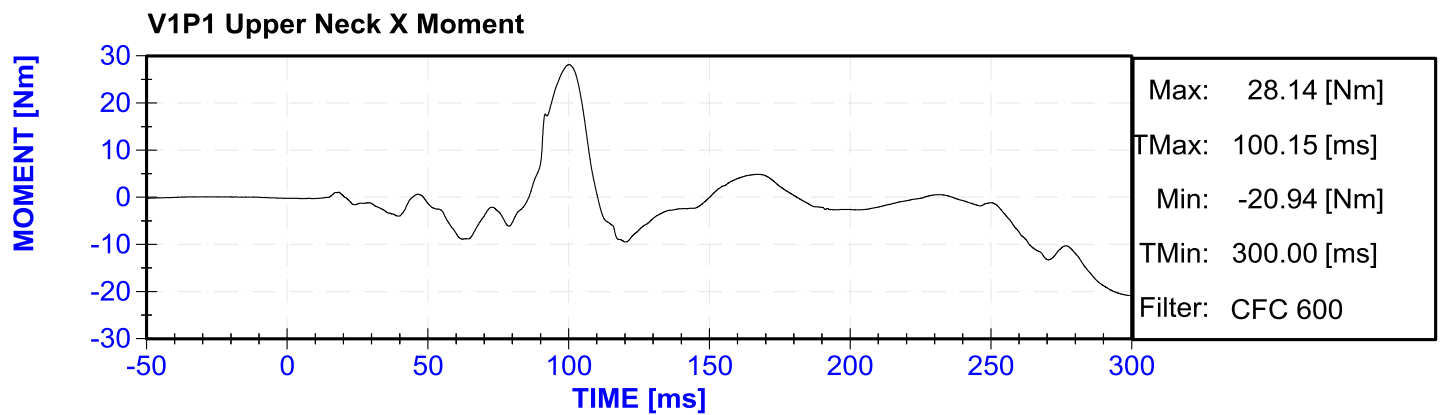
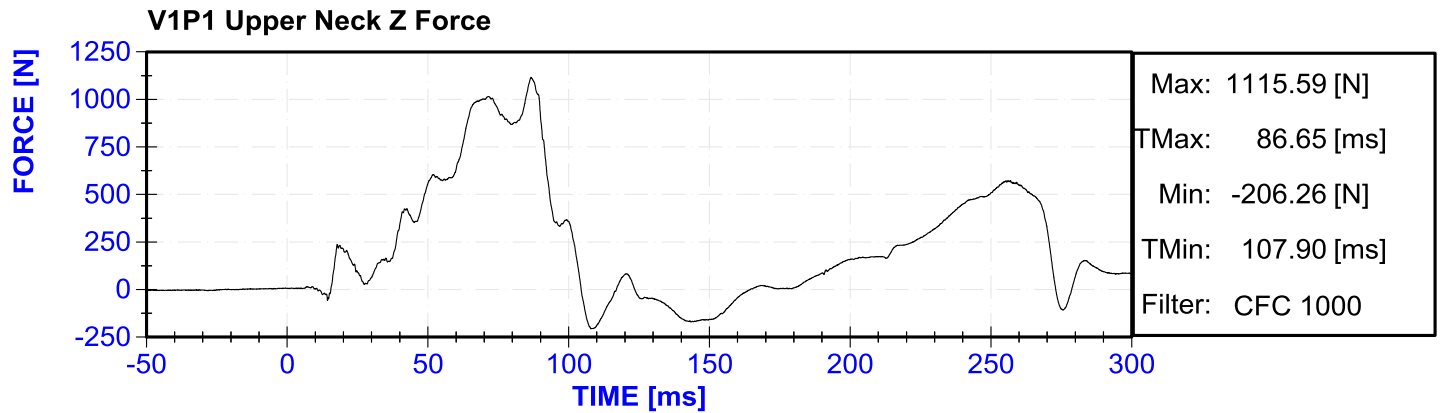
Plot 176	V1P2 Right Lower Tibia Y Moment	B-51
Plot 177	V1P2 Left Foot Aft X Acceleration	B-52
Plot 178	V1P2 Left Foot Aft Z Acceleration	B-52
Plot 179	V1P2 Left Foot Fore Z Acceleration	B-52
Plot 180	V1P2 Right Foot Aft X Acceleration	B-52
Plot 181	V1P2 Right Foot Aft Z Acceleration	B-53
Plot 182	V1P2 Right Foot Fore Z Acceleration	B-53
Plot 183	V1 Front Right Passenger Lap Belt Force	B-53
Plot 184	V1 Front Right Passenger Shoulder Belt Force	B-53
Plot 185	V1 Front Right Passenger Shoulder Belt Displacement	B-54
Plot 186	V1P3 Head CG X Acceleration	B-54
Plot 187	V1P3 Head CG Y Acceleration	B-54
Plot 188	V1P3 Head CG Z Acceleration	B-54
Plot 189	V1P3 Upper Neck X Force	B-55
Plot 190	V1P3 Upper Neck Y Force	B-55
Plot 191	V1P3 Upper Neck Z Force	B-55
Plot 192	V1P3 Upper Neck X Moment	B-55
Plot 193	V1P3 Upper Neck Y Moment	B-56
Plot 194	V1P3 Upper Neck Z Moment	B-56
Plot 195	V1P3 Ribs Left 01 X Displacement	B-56
Plot 196	V1P3 Ribs Left 01 Y Displacement	B-56
Plot 197	V1P3 Ribs Left 02 X Displacement	B-57
Plot 198	V1P3 Ribs Left 02 Y Displacement	B-57
Plot 199	V1P3 Ribs Left 03 X Displacement	B-57
Plot 200	V1P3 Ribs Left 03 Y Displacement	B-57
Plot 201	V1P3 Ribs Left 04 X Displacement	B-58
Plot 202	V1P3 Ribs Left 04 Y Displacement	B-58
Plot 203	V1P3 Ribs Left 05 X Displacement	B-58
Plot 204	V1P3 Ribs Left 05 Y Displacement	B-58
Plot 205	V1P3 Ribs Left 06 X Displacement	B-59
Plot 206	V1P3 Ribs Left 06 Y Displacement	B-59
Plot 207	V1P3 Ribs Right 01 X Displacement	B-59
Plot 208	V1P3 Ribs Right 01 Y Displacement	B-59
Plot 209	V1P3 Ribs Right 02 X Displacement	B-60
Plot 210	V1P3 Ribs Right 02 Y Displacement	B-60
Plot 211	V1P3 Ribs Right 03 X Displacement	B-60
Plot 212	V1P3 Ribs Right 03 Y Displacement	B-60
Plot 213	V1P3 Ribs Right 04 X Displacement	B-61
Plot 214	V1P3 Ribs Right 04 Y Displacement	B-61
Plot 215	V1P3 Ribs Right 05 X Displacement	B-61
Plot 216	V1P3 Ribs Right 05 Y Displacement	B-61
Plot 217	V1P3 Ribs Right 06 X Displacement	B-62
Plot 218	V1P3 Ribs Right 06 Y Displacement	B-62
Plot 219	V1P3 Chest X Displacement	B-62
Plot 220	V1P3 Chest CG X Acceleration	B-62
Plot 221	V1P3 Chest CG Y Acceleration	B-63
Plot 222	V1P3 Chest CG Z Acceleration	B-63
Plot 223	V1P3 Pelvis X Acceleration	B-63
Plot 224	V1P3 Pelvis Y Acceleration	B-63
Plot 225	V1P3 Pelvis Z Acceleration	B-64
Plot 226	V1P3 Left Femur Z Force	B-64
Plot 227	V1P3 Right Femur Z Force	B-64
Plot 228	V1P3 ASIS Left X Force	B-64
Plot 229	V1P3 ASIS Left Y Moment	B-65
Plot 230	V1P3 ASIS Right X Force	B-65
Plot 231	V1P3 ASIS Right Y Moment	B-65
Plot 232	V1 Rear Passenger Lap Belt Force	B-65
Plot 233	V1 Rear Passenger Shoulder Belt Force	B-66
Plot 234	V1 Left Rear Sill X Acceleration	B-66

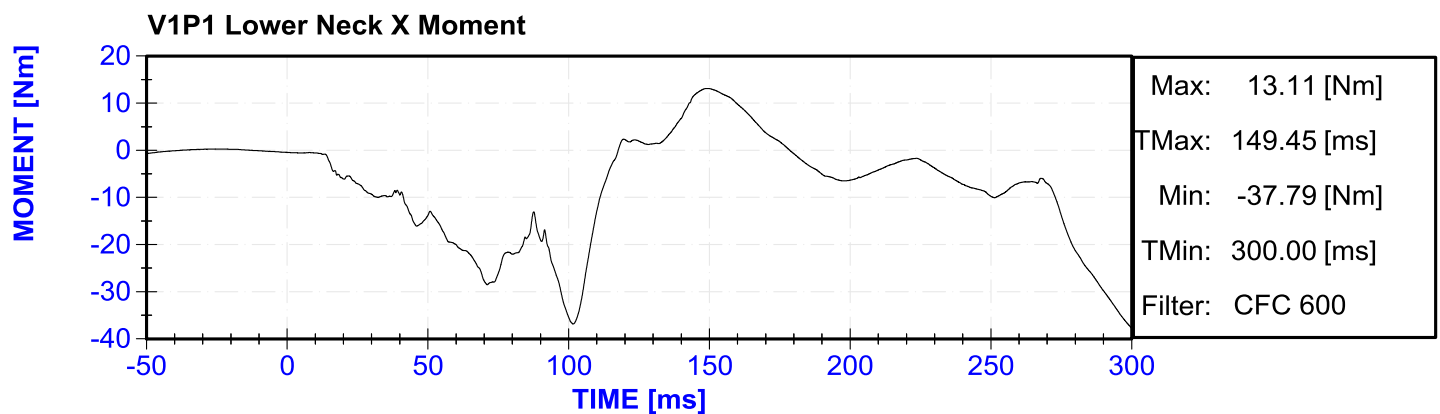
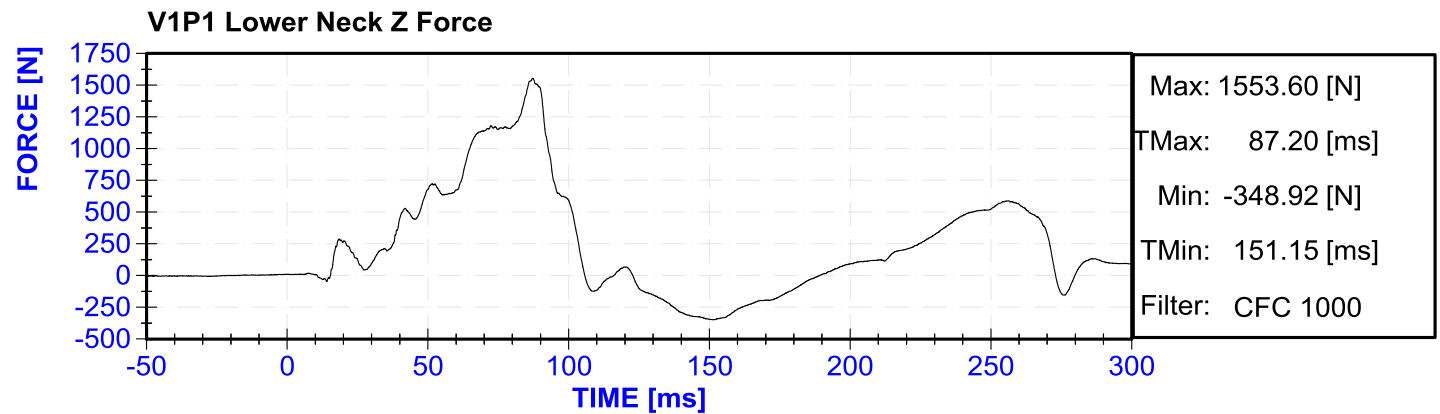
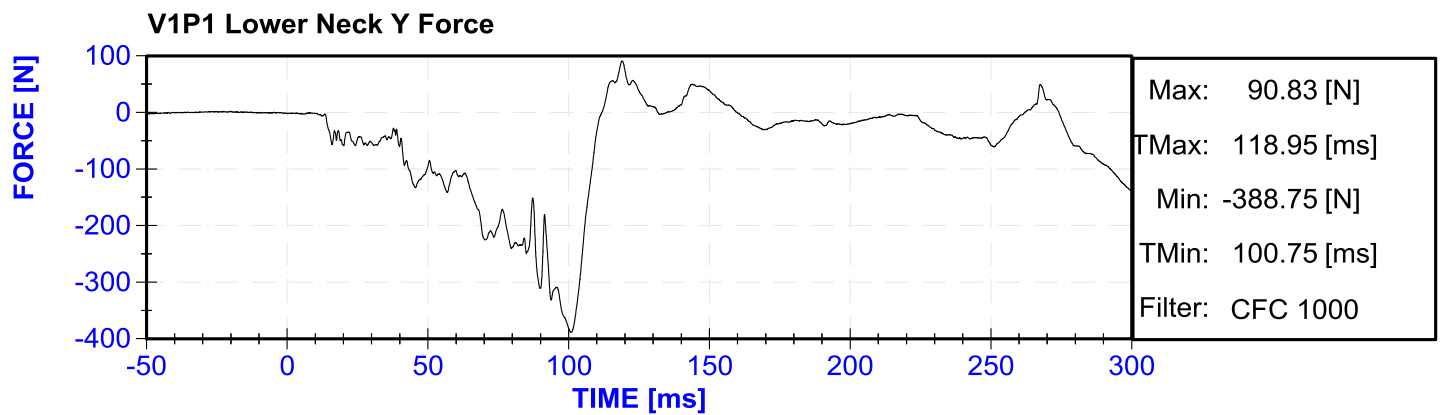
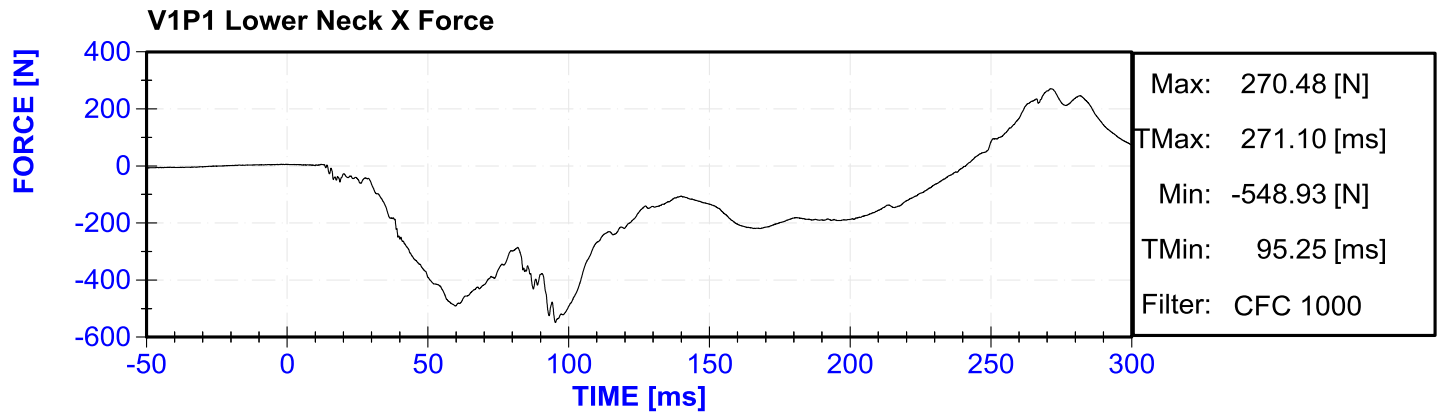
Plot 235	V1 Left Rear Sill Y Acceleration	B-66
Plot 236	V1 Left Rear Sill Redundant X Acceleration	B-66
Plot 237	V1 Left Rear Sill Redundant Y Acceleration	B-67
Plot 238	V1 Right Rear Sill X Acceleration	B-67
Plot 239	V1 Right Rear Sill Y Acceleration	B-67
Plot 240	V1 Left Rear Sill Redundant X Acceleration	B-67
Plot 241	V1 Left Rear Sill Redundant Y Acceleration	B-68
Plot 242	V1 Left Front Outer Seat Track Mid X Acceleration	B-68
Plot 243	V1 Left Front Outer Seat Track Mid Z Acceleration	B-68
Plot 244	V1 Left Front Seat Cross Member Mid X Acceleration	B-68
Plot 245	V1 Left Front Seat Cross Member Mid Z Acceleration	B-69
Plot 246	V1 Left Rear Seat Cross Member X Acceleration	B-69
Plot 247	V1 Left Rear Seat Cross Member Z Acceleration	B-69
Plot 248	V1 Right Rear Seat Cross Member X Acceleration	B-69
Plot 249	V1 Right Rear Seat Cross Member Z Acceleration	B-70
Plot 250	V1 Vehicle CG X Acceleration	B-70
Plot 251	V1 Vehicle CG Y Acceleration	B-70
Plot 252	V1 Vehicle CG Z Acceleration	B-70
Plot 253	V1 Vehicle CG X Angular Rate	B-71
Plot 254	V1 Vehicle CG Y Angular Rate	B-71
Plot 255	V1 Vehicle CG Z Angular Rate	B-71
Plot 256	V1 Engine Top X Acceleration	B-71
Plot 257	V1 Driver Floor Pan X Acceleration	B-72
Plot 258	V1 Driver Floor Pan Y Acceleration	B-72
Plot 259	V1 Driver Floor Pan Z Acceleration	B-72
Plot 260	V1 Driver Floor Pan X Displacement	B-72
Plot 261	V1 Passenger Floor Pan X Acceleration	B-73
Plot 262	V1 Passenger Floor Pan Y Acceleration	B-73
Plot 263	V1 Passenger Floor Pan Z Acceleration	B-73
Plot 264	V1 Passenger Floor Pan X Displacement	B-73
Plot 265	V1P1 Fx on head acting through the O.C. joint only	B-74
Plot 266	V1P1 Fz on head acting through the O.C. joint only	B-74
Plot 267	V1P1 My on head acting through the O.C. joint only	B-74
Plot 268	V1P1 Fx on head acting through the total neck section	B-74
Plot 269	V1P1 Fy on head acting through the total neck section	B-75
Plot 270	V1P1 Fz on head acting through the total neck section	B-75
Plot 271	V1P1 Mx on head acting through the total neck section	B-75
Plot 272	V1P1 My on head acting through the total neck section	B-75
Plot 273	V1P1 Mz on head acting through the total neck section	B-76
Plot 274	V1P1 Chest Left Upper Dx	B-76
Plot 275	V1P1 Chest Left Upper Dy	B-76
Plot 276	V1P1 Chest Left Upper Dz	B-76
Plot 277	V1P1 Chest Left Upper D	B-77
Plot 278	V1P1 Chest Right Upper Dx	B-77
Plot 279	V1P1 Chest Right Upper Dy	B-77
Plot 280	V1P1 Chest Right Upper Dz	B-77
Plot 281	V1P1 Chest Right Upper D	B-78
Plot 282	V1P1 Chest Left Lower Dx	B-78
Plot 283	V1P1 Chest Left Lower Dy	B-78
Plot 284	V1P1 Chest Left Lower Dz	B-78
Plot 285	V1P1 Chest Left Lower D	B-79
Plot 286	V1P1 Chest Right Lower Dx	B-79
Plot 287	V1P1 Chest Right Lower Dy	B-79
Plot 288	V1P1 Chest Right Lower Dz	B-79
Plot 289	V1P1 Chest Right Lower D	B-80
Plot 290	V1P1 Abdomen Left Lower Dx	B-80
Plot 291	V1P1 Abdomen Left Lower Dy	B-80
Plot 292	V1P1 Abdomen Left Lower Dz	B-80
Plot 293	V1P1 Abdomen Left Lower D	B-81

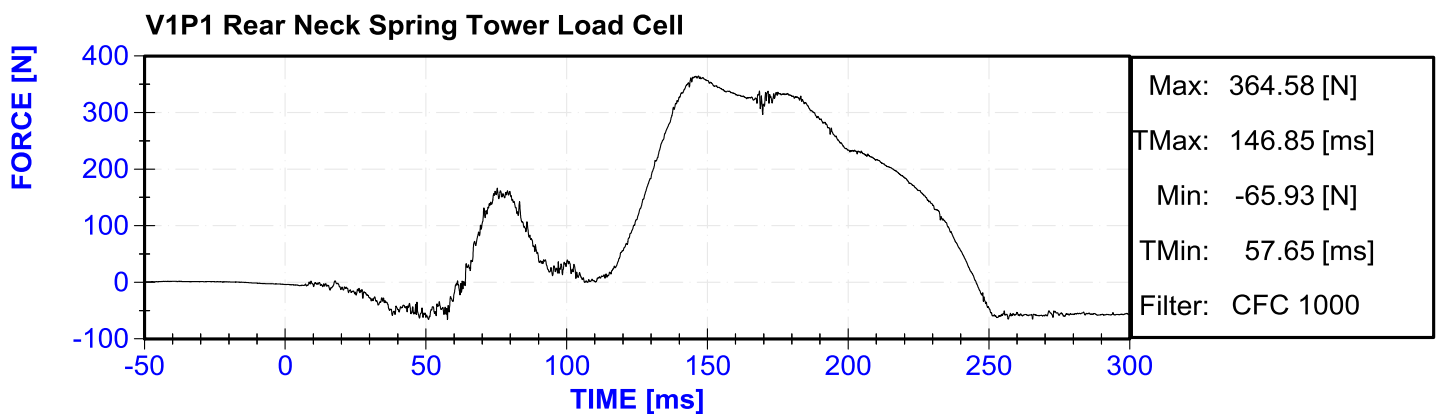
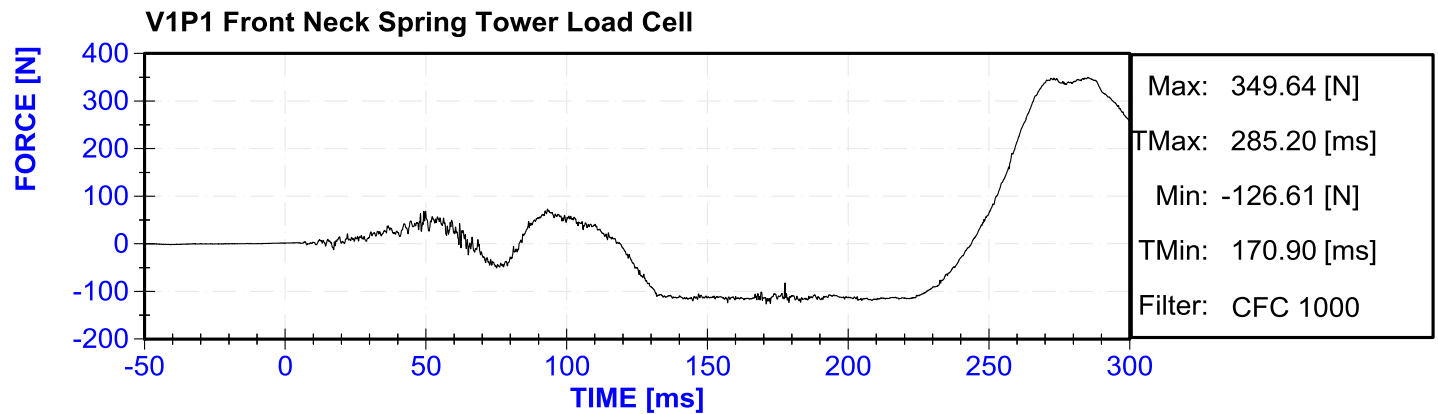
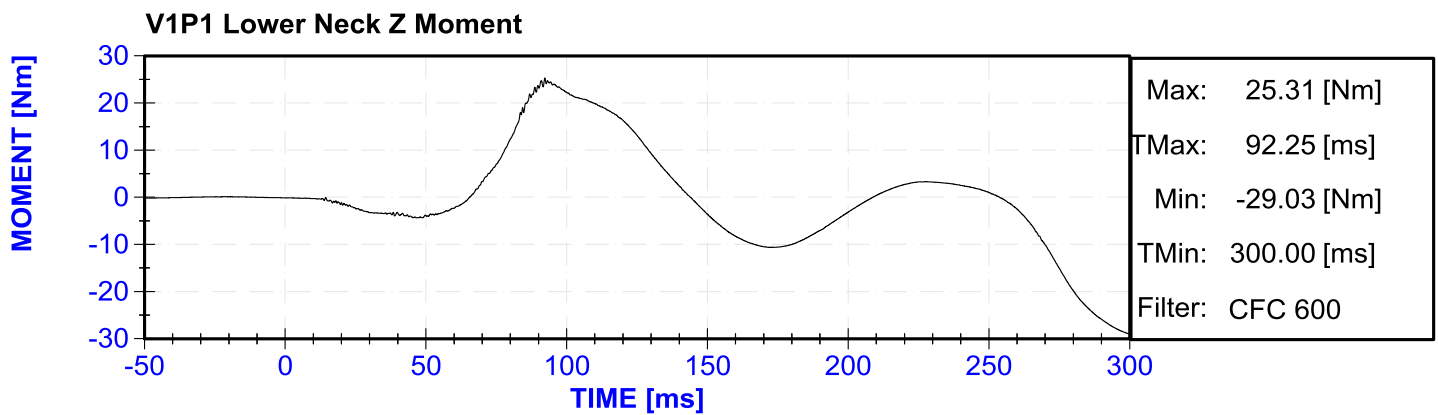
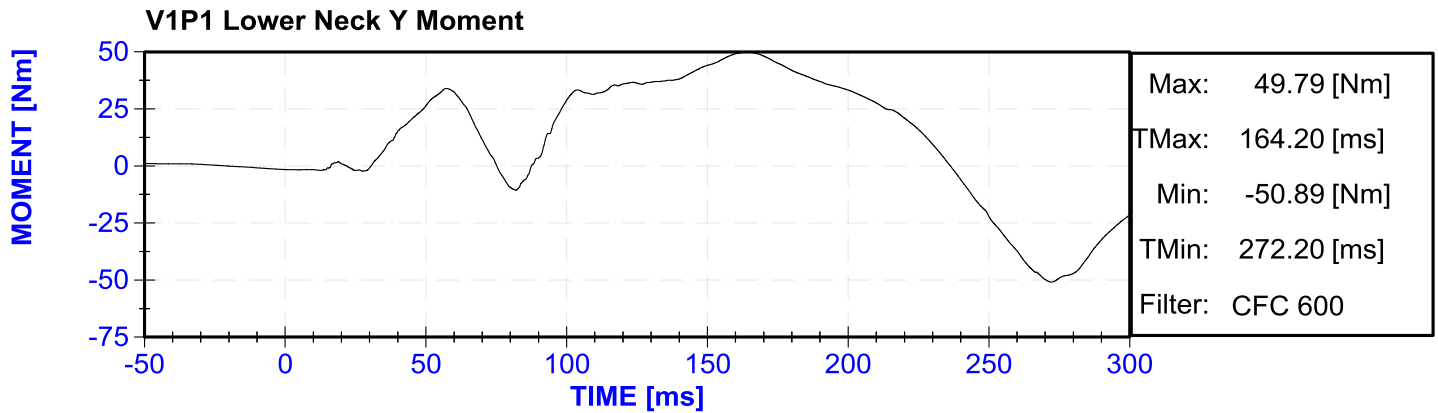
Plot 294	V1P1 Abdomen Right Lower Dx	B-81
Plot 295	V1P1 Abdomen Right Lower Dy	B-81
Plot 296	V1P1 Abdomen Right Lower Dz	B-81
Plot 297	V1P1 Abdomen Right Lower D	B-82



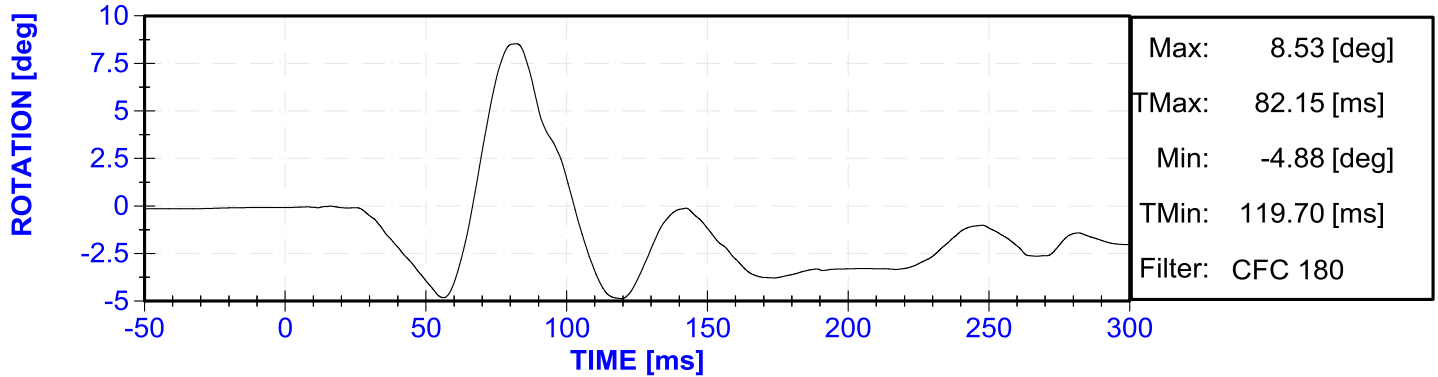




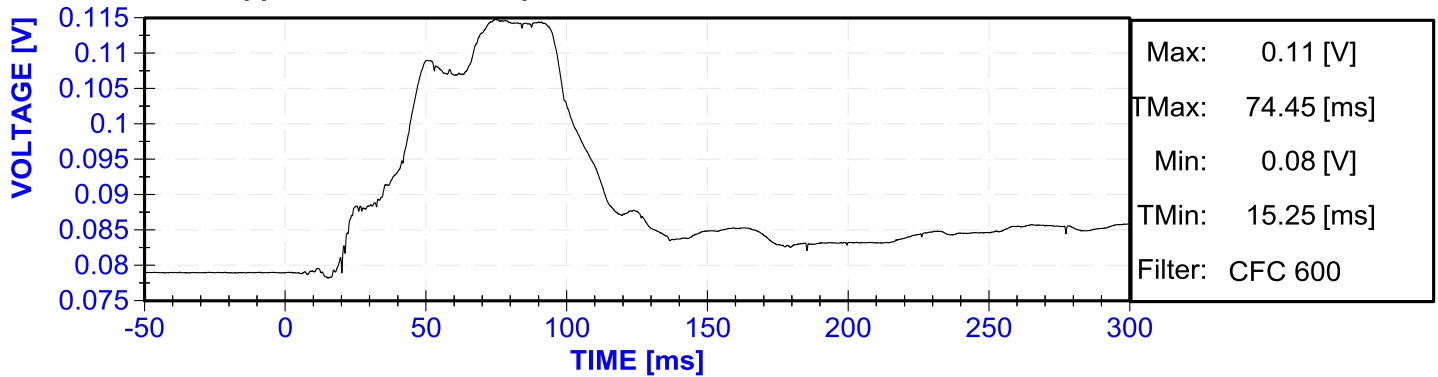




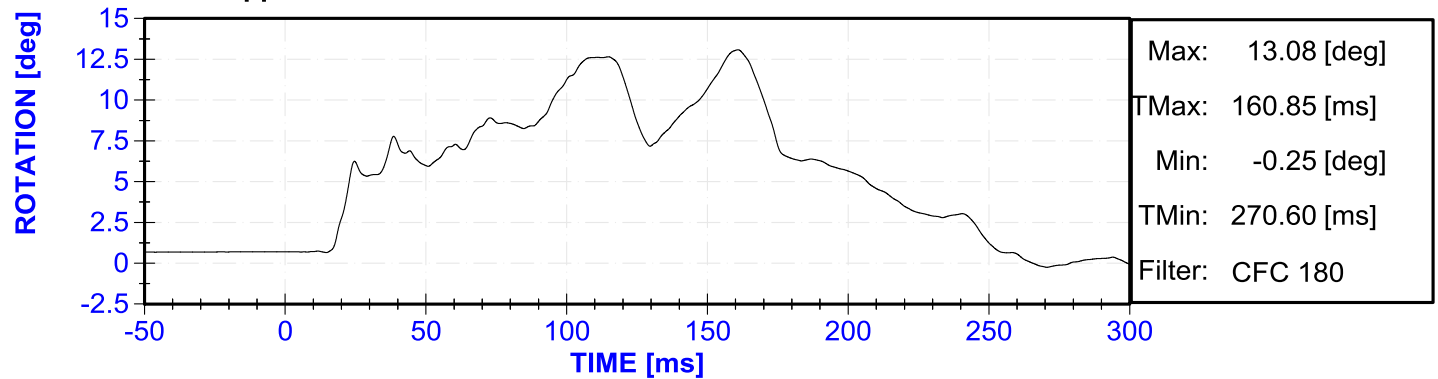
V1P1 Occipital Condyle Rotation Potentiometer



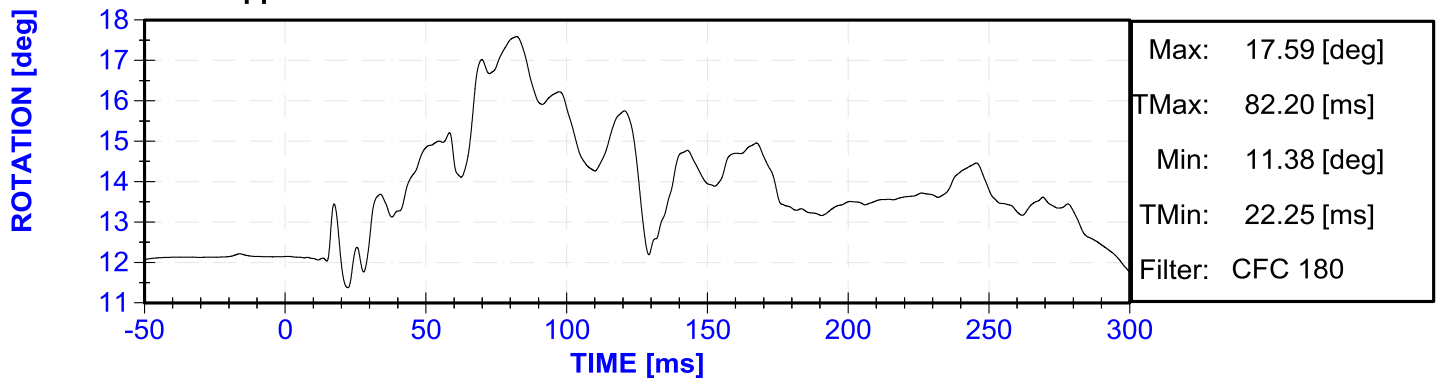
V1P1 Upper Left DGIR X Displacement



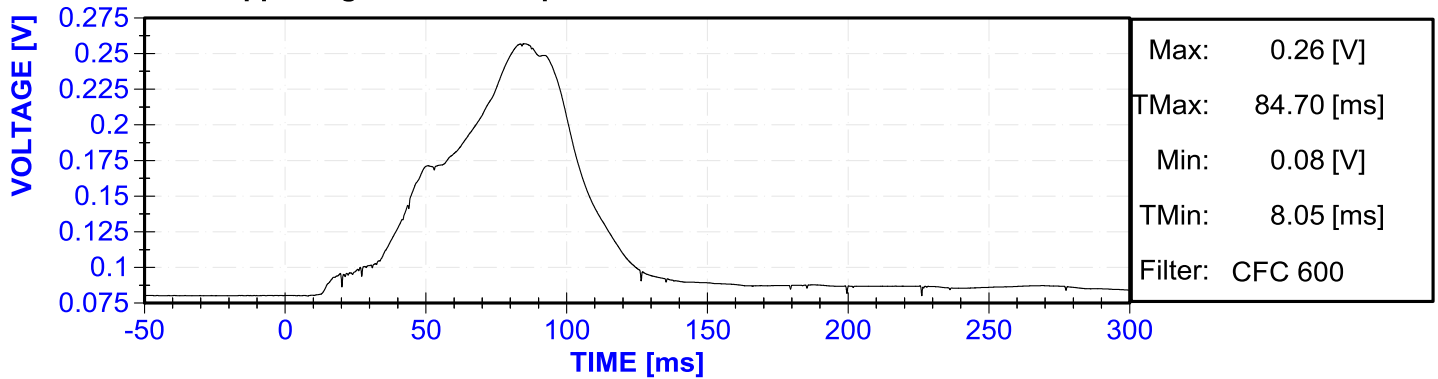
V1P1 Upper Left DGIR Y Rotation



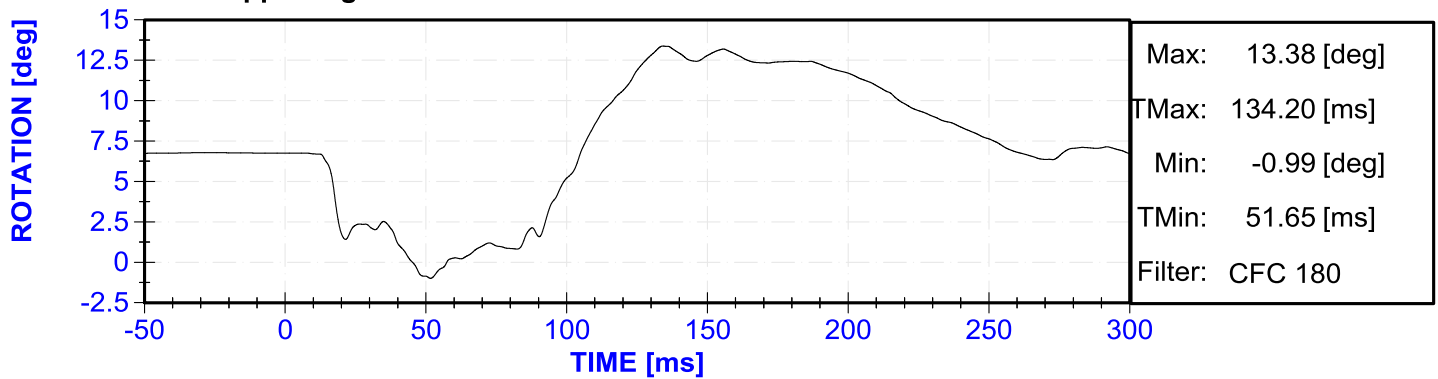
V1P1 Upper Left DGIR Z Rotation



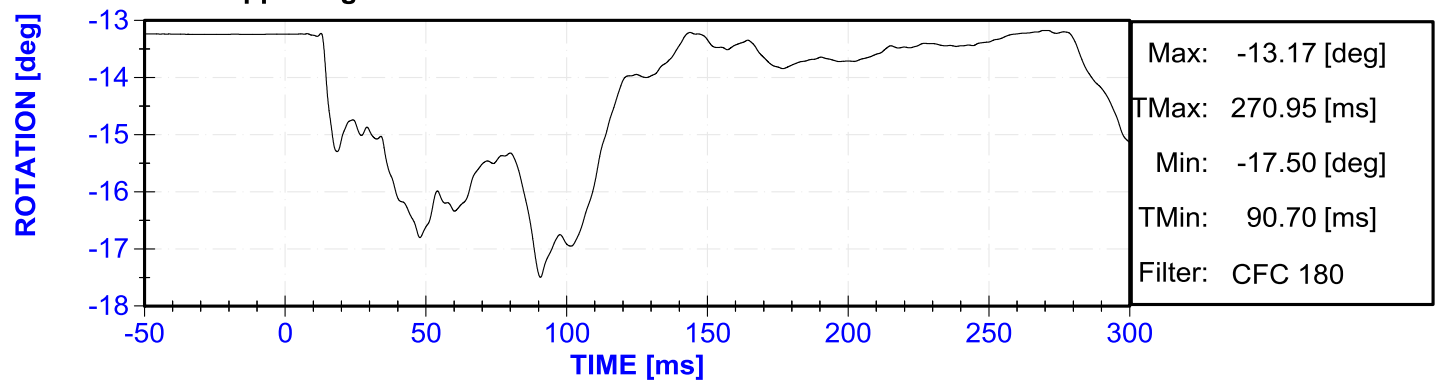
V1P1 Upper Right DGIR X Displacement



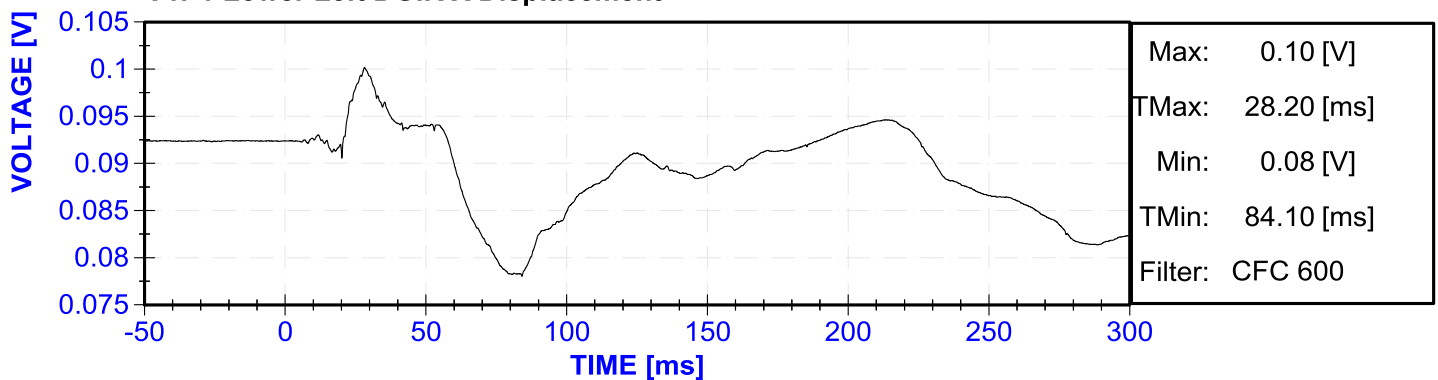
V1P1 Upper Right DGIR Y Rotation

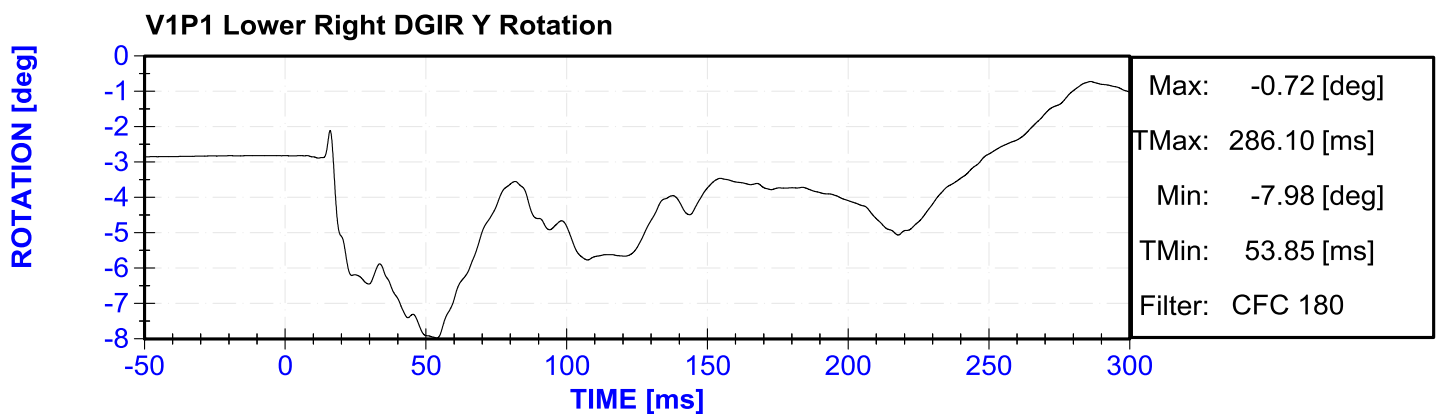
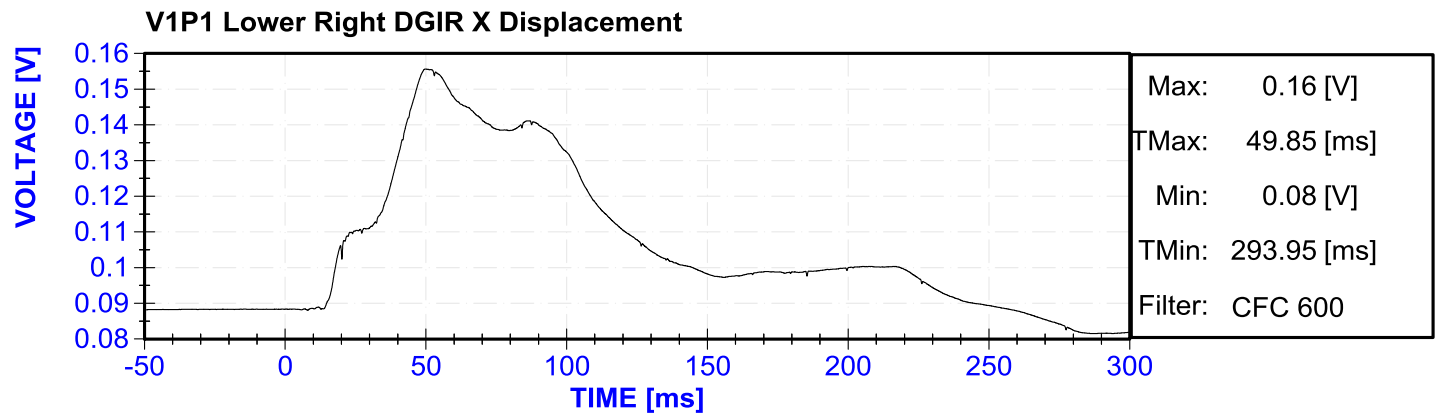
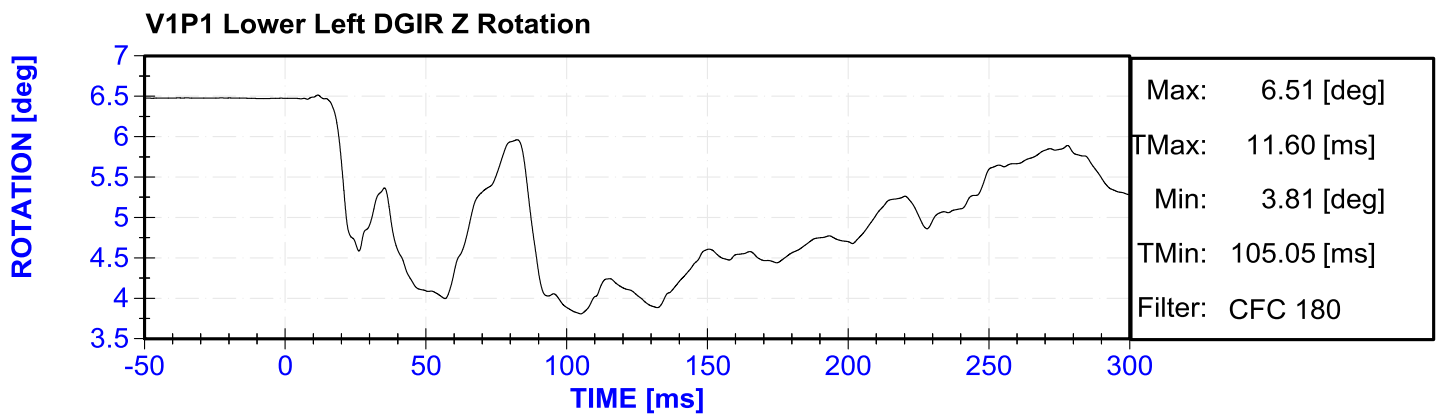
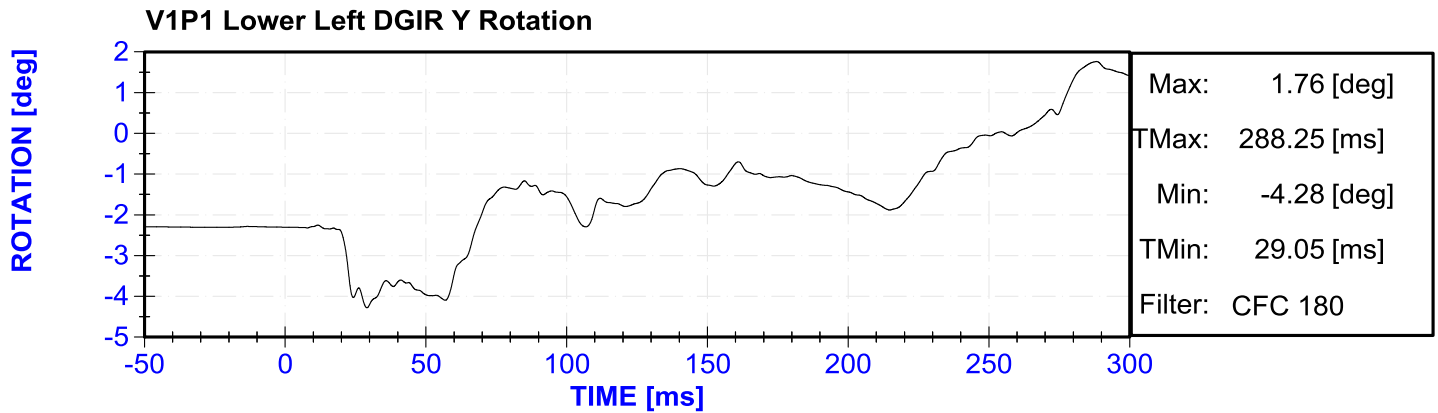


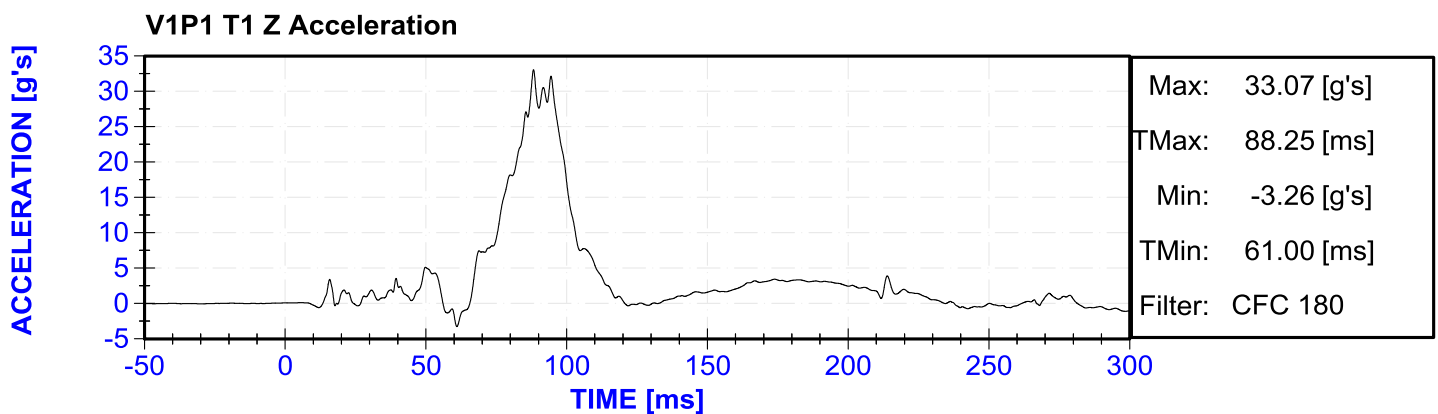
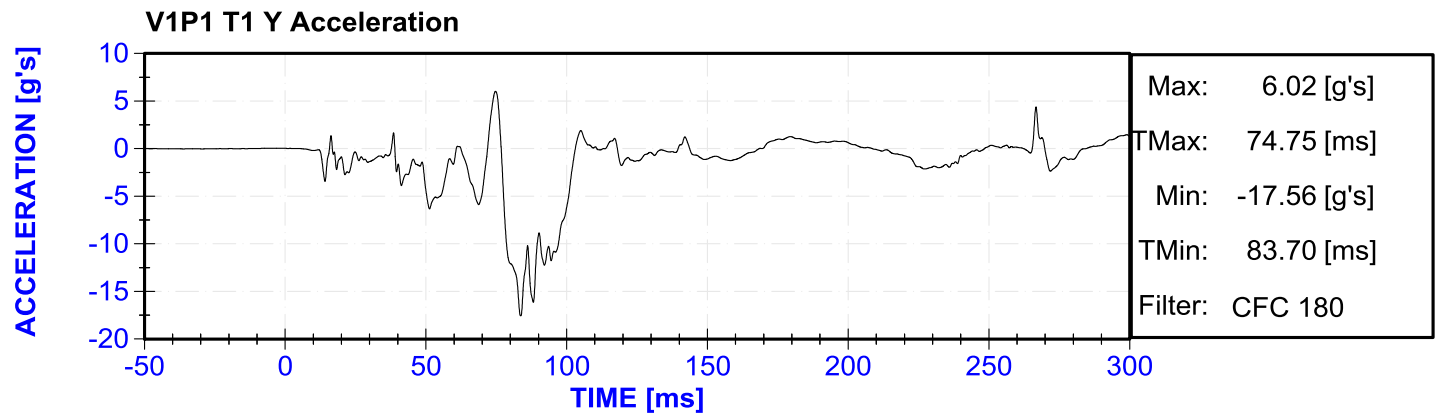
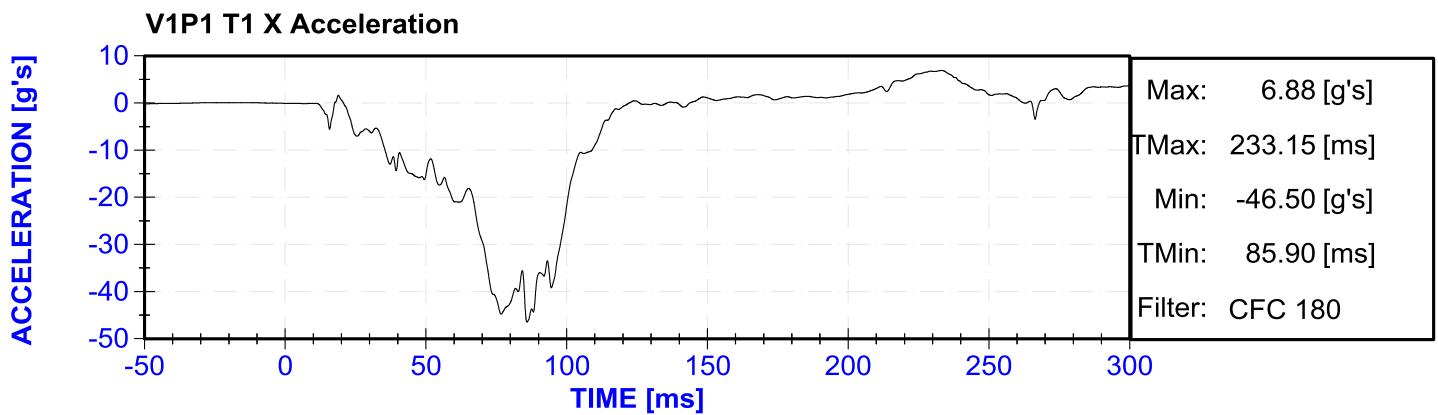
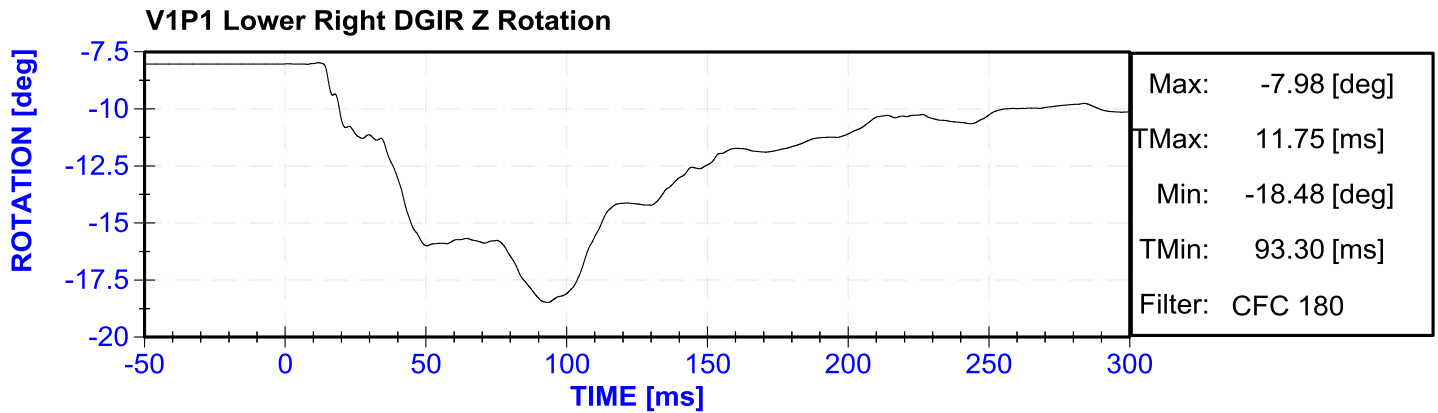
V1P1 Upper Right DGIR Z Rotation

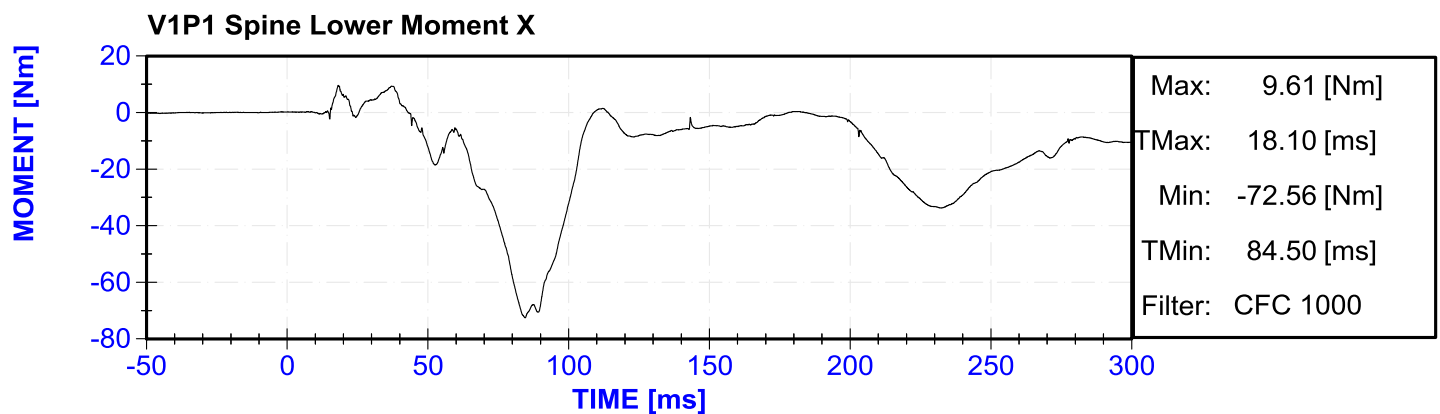
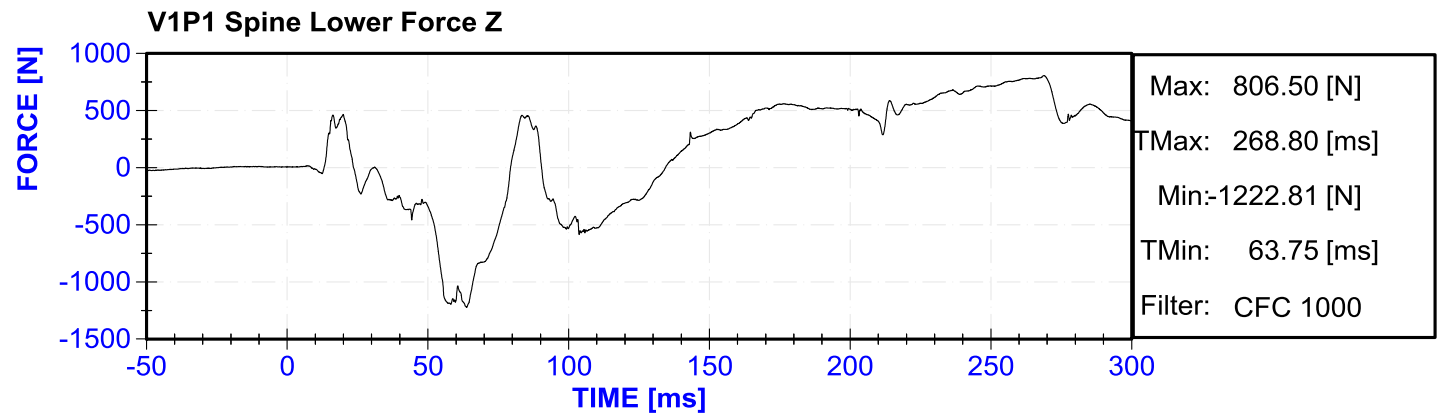
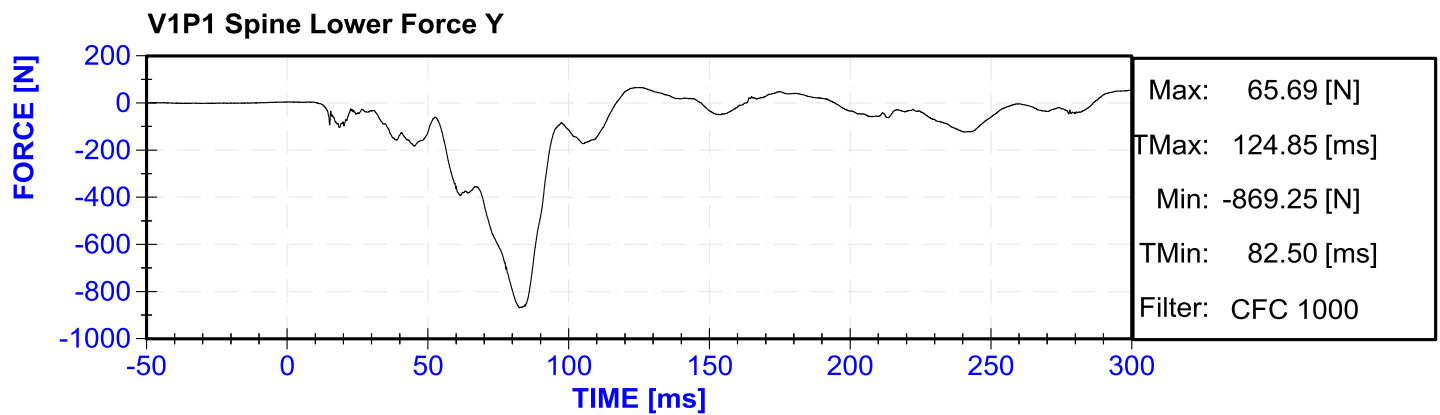
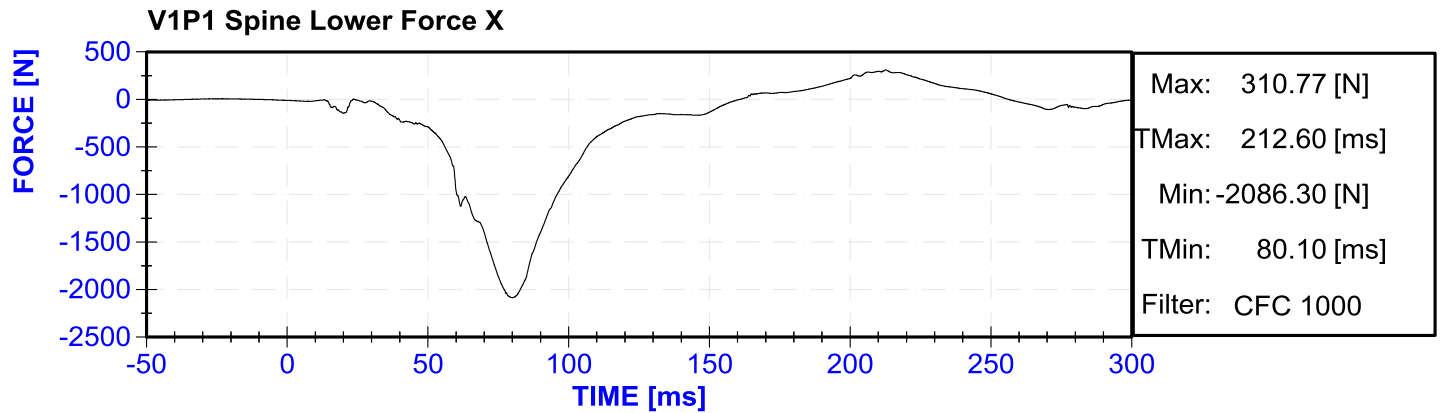


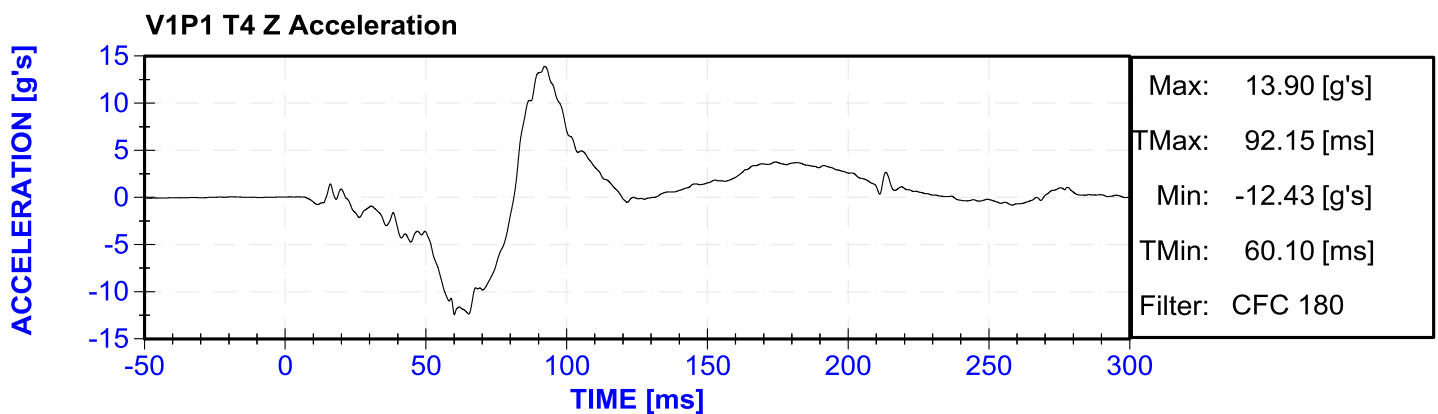
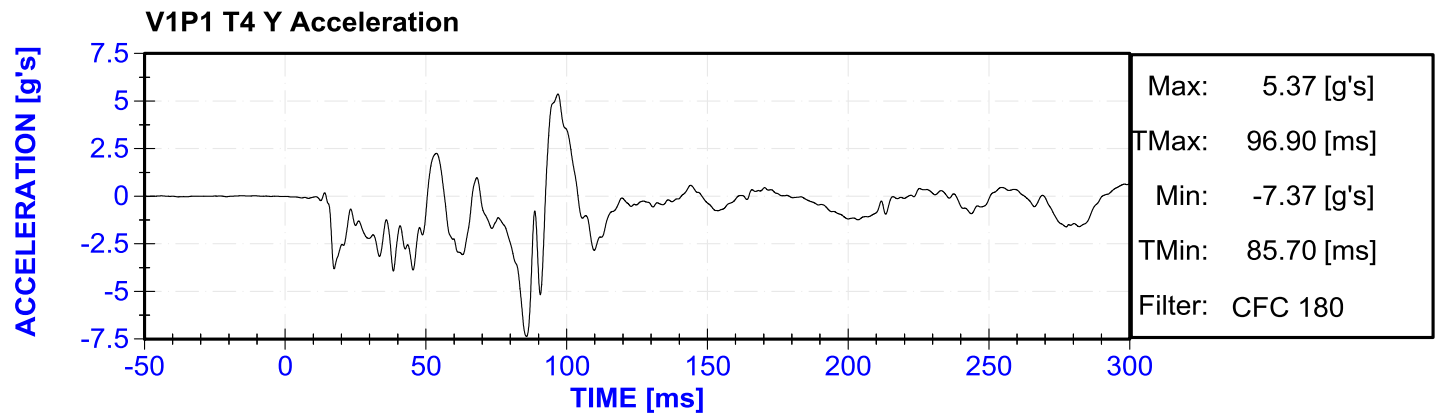
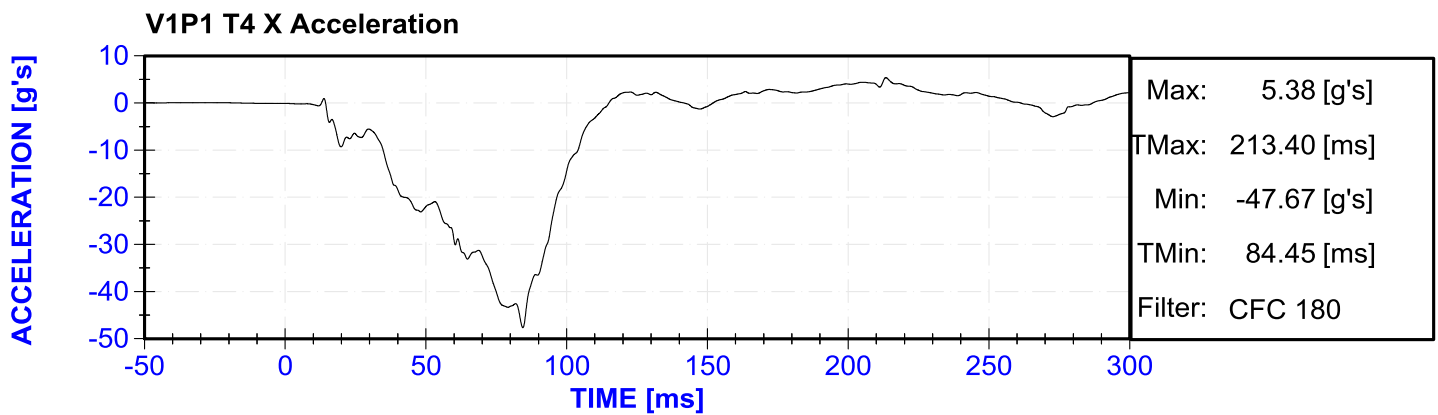
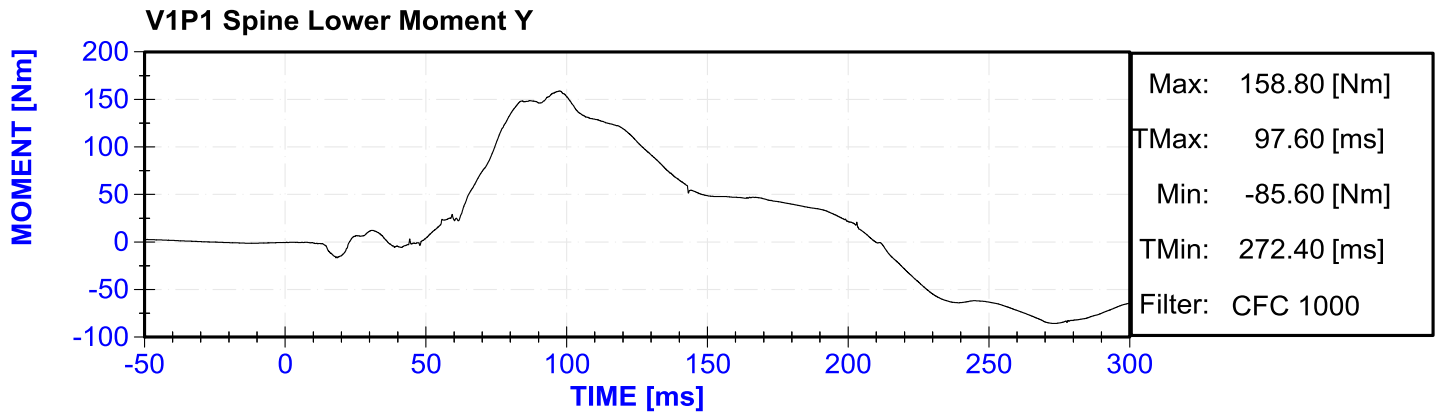
V1P1 Lower Left DGIR X Displacement



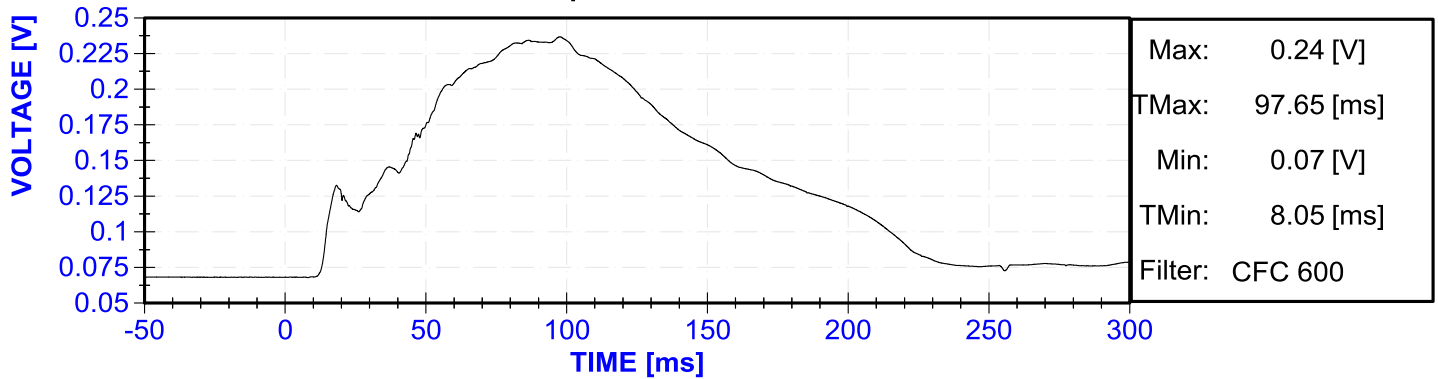




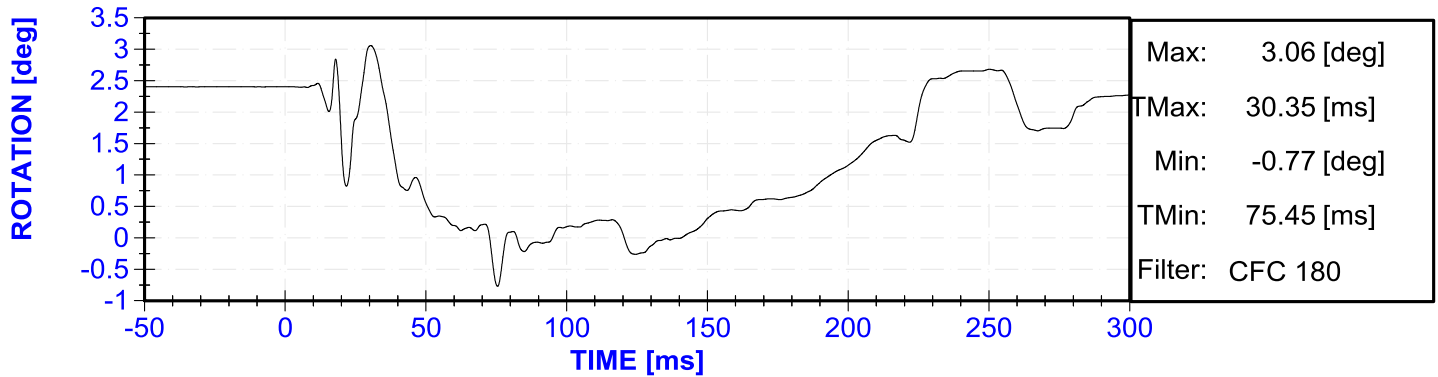




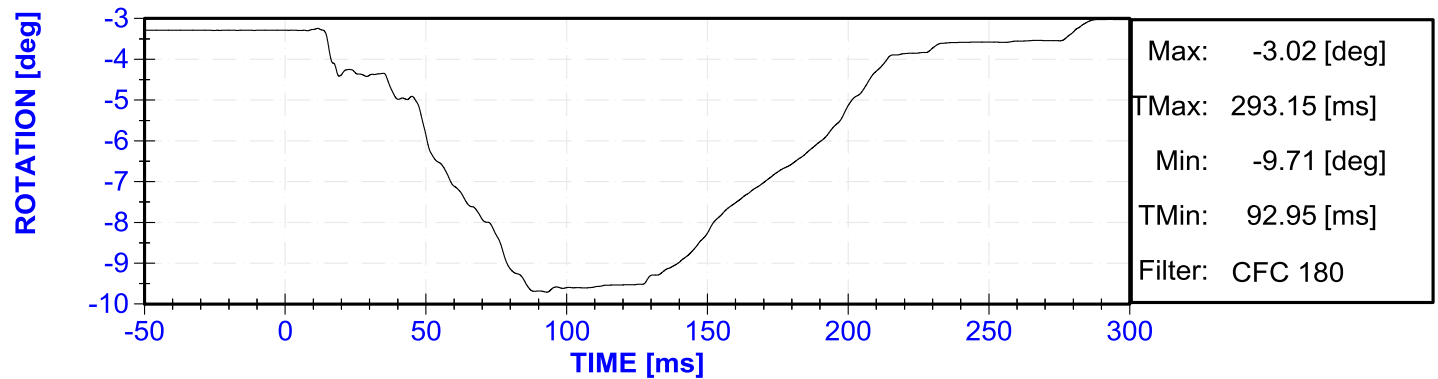
V1P1 Abdomen Left DGIR X Displacement



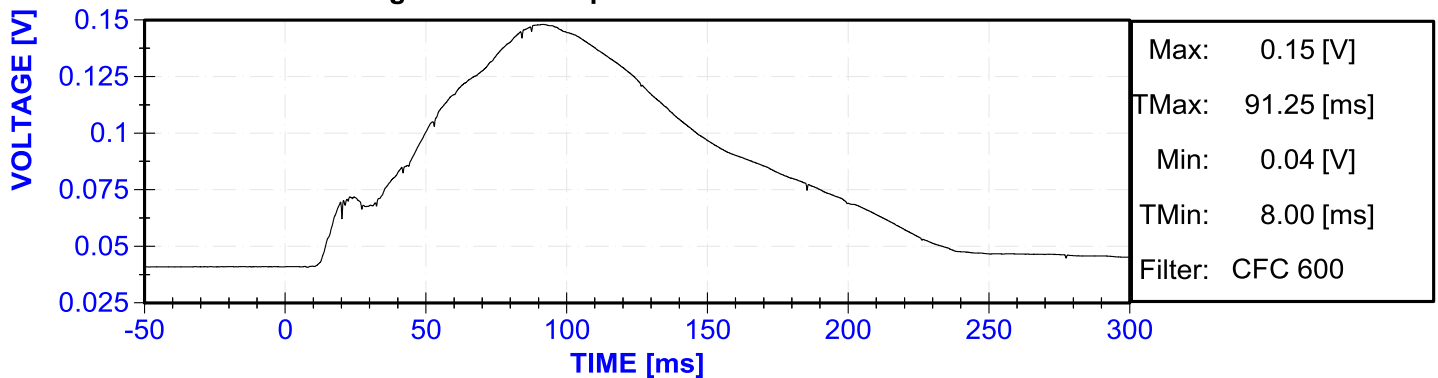
V1P1 Abdomen Left DGIR Y Rotation

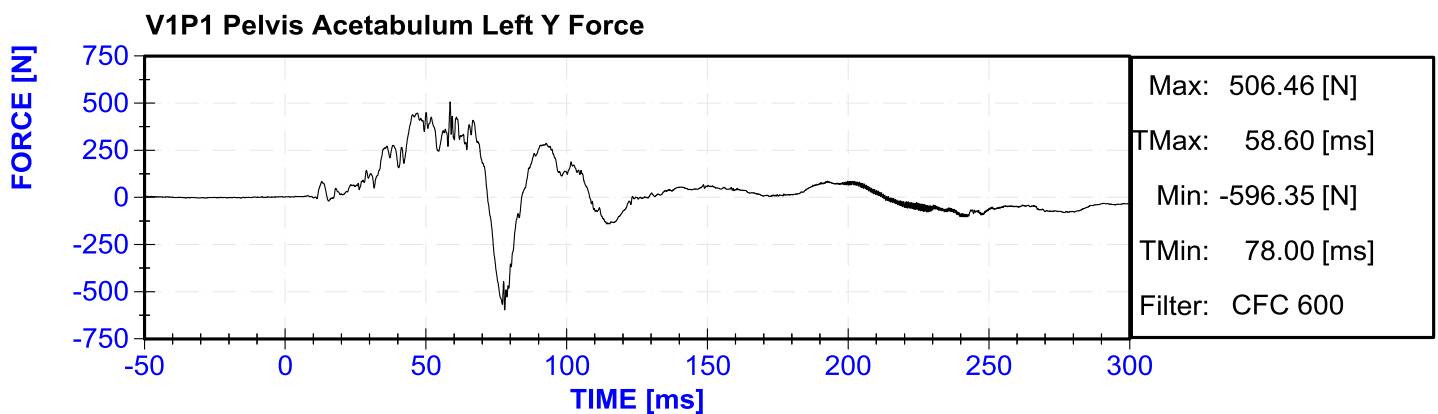
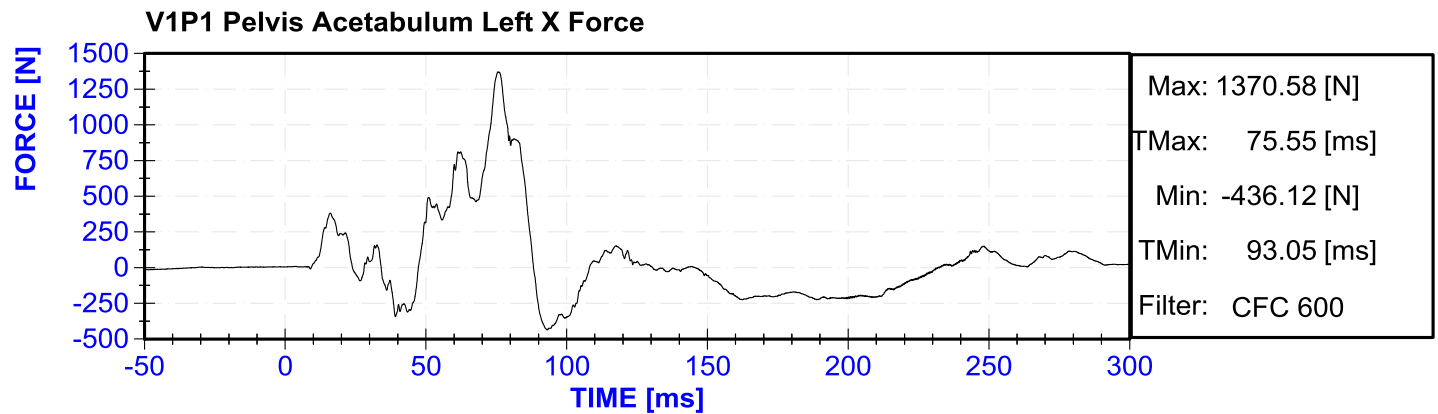
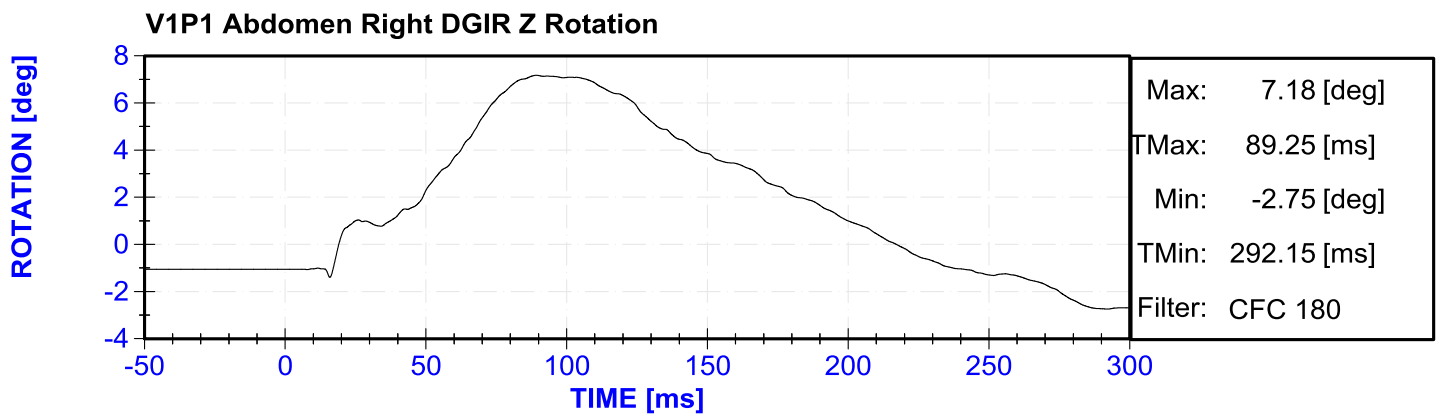
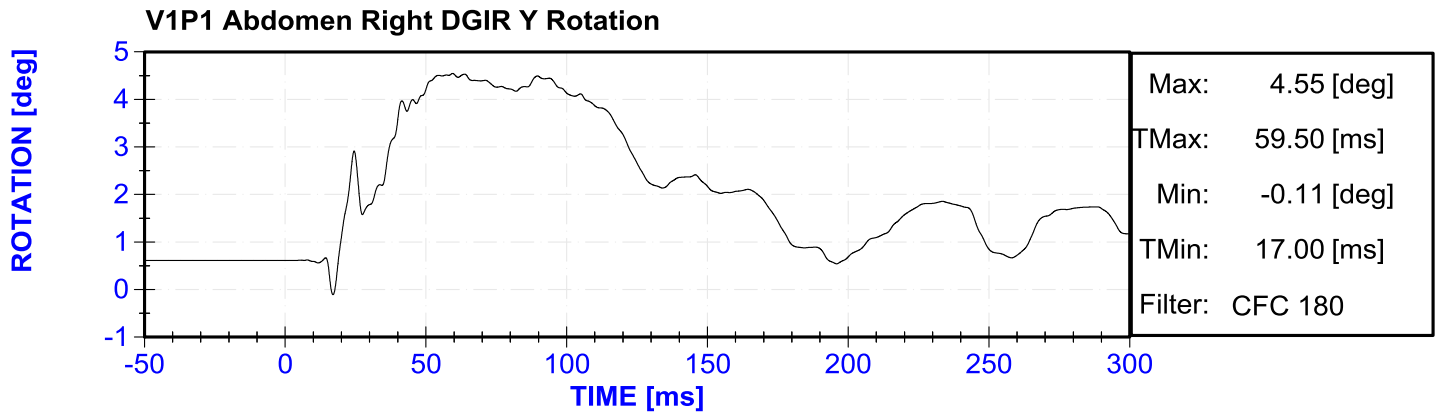


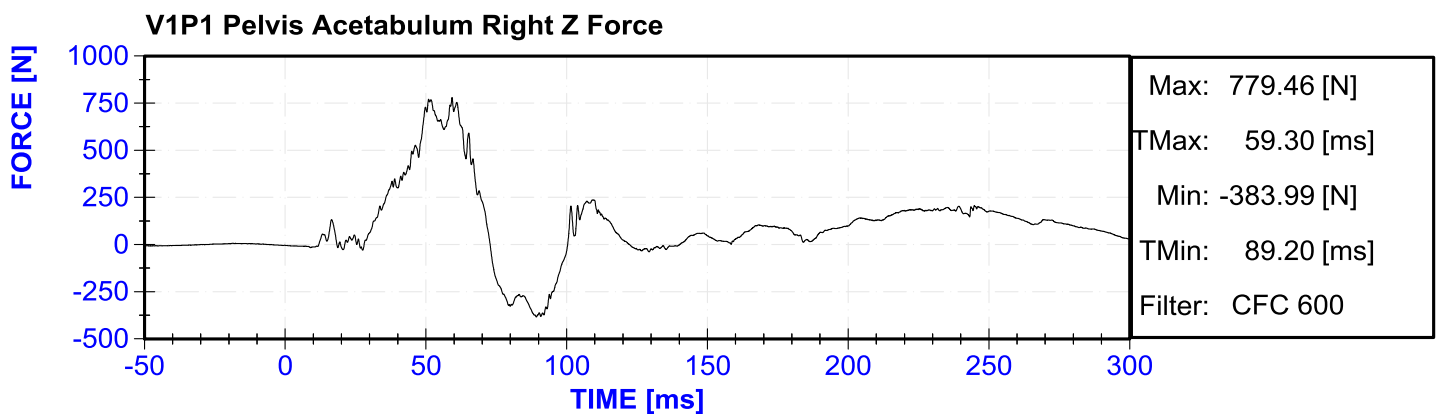
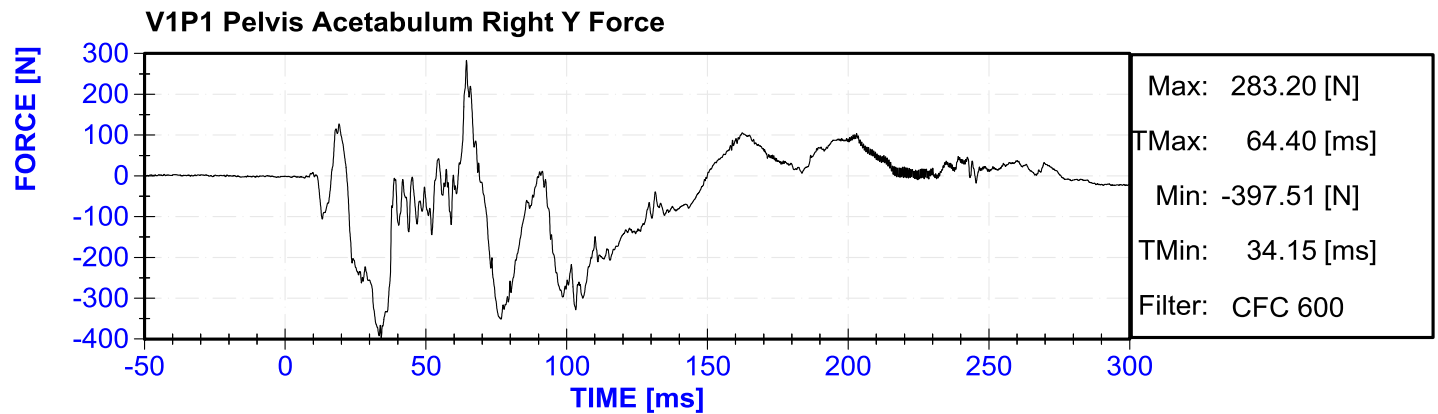
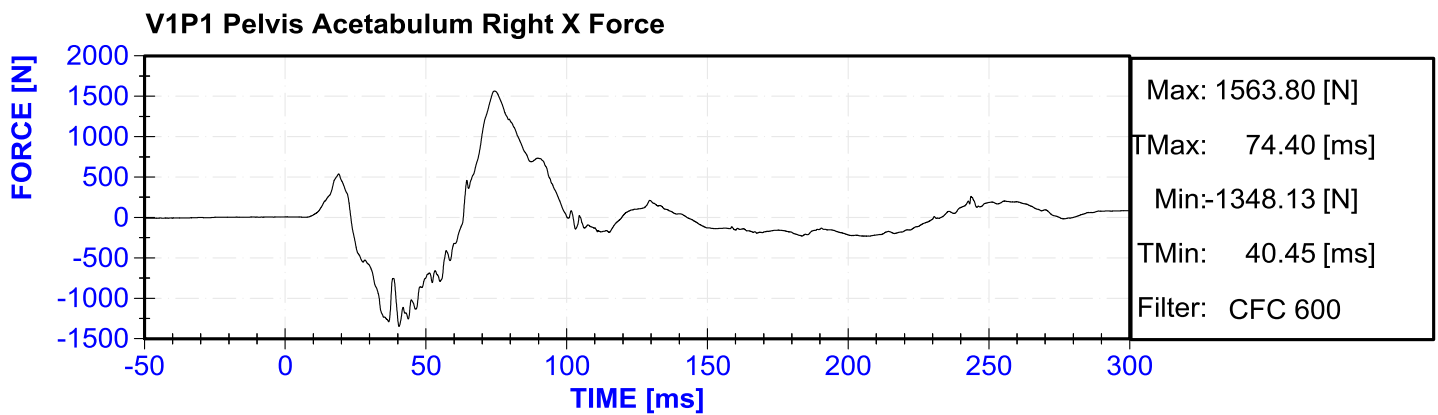
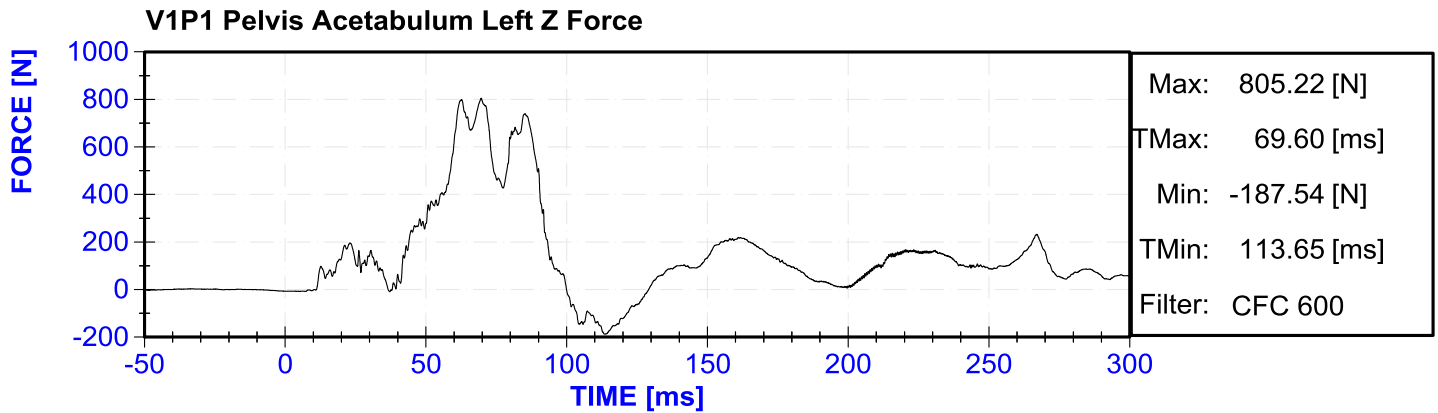
V1P1 Abdomen Left DGIR Z Rotation

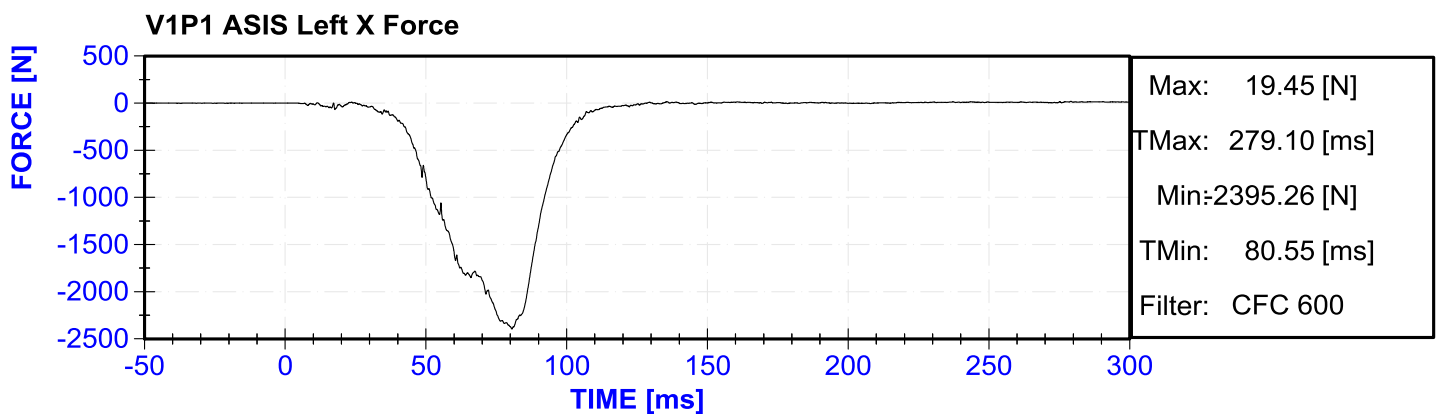
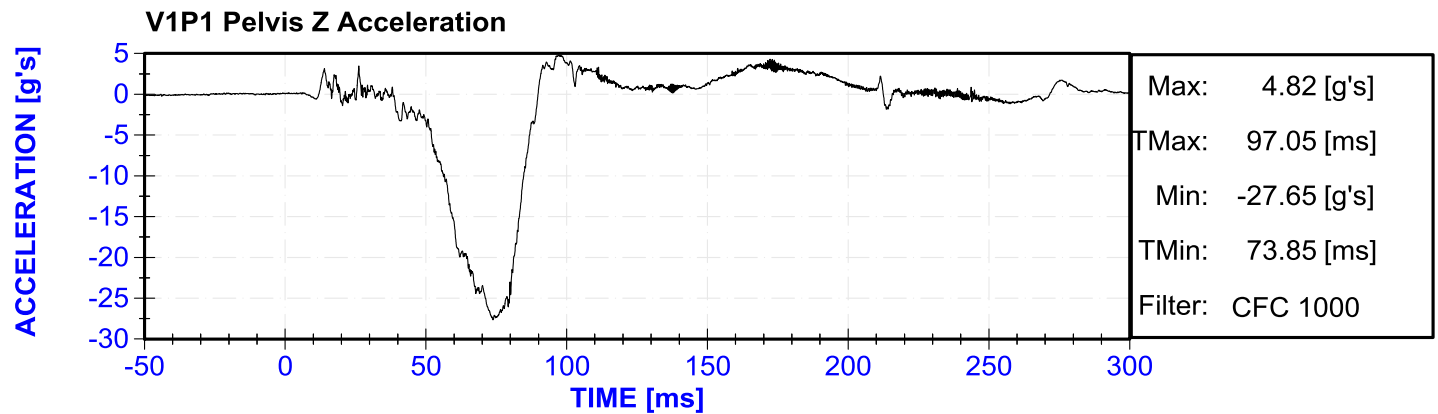
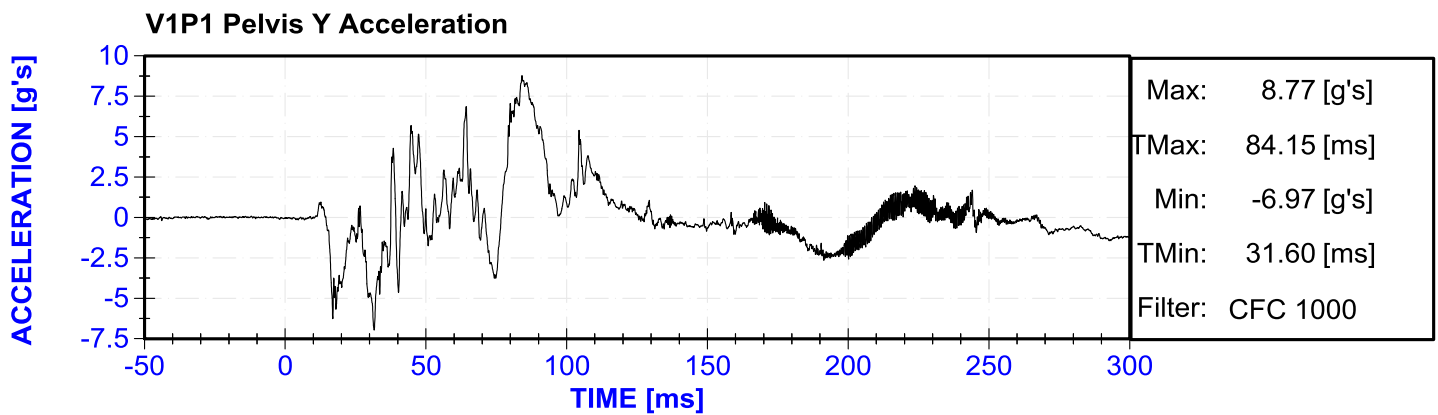
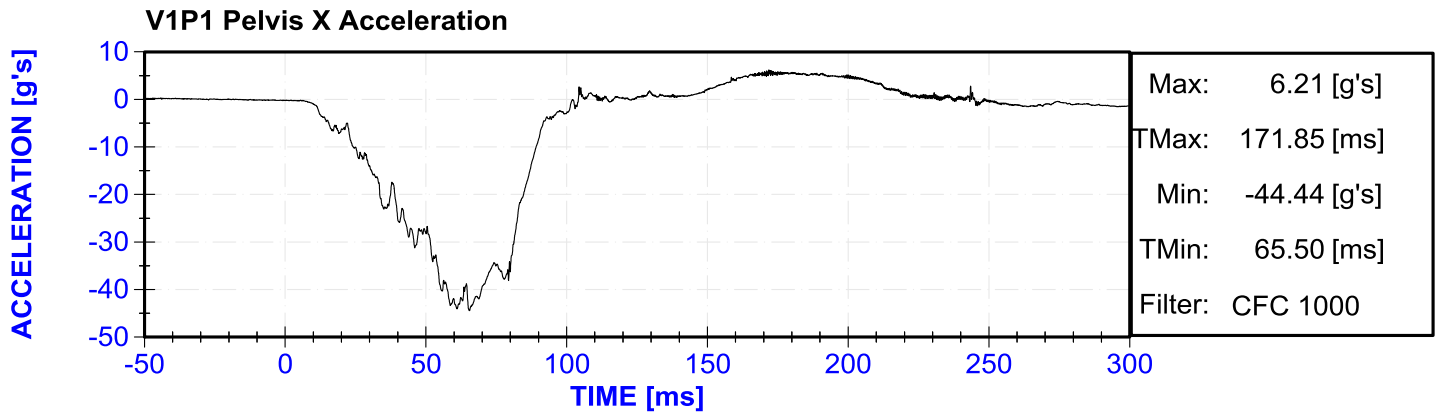


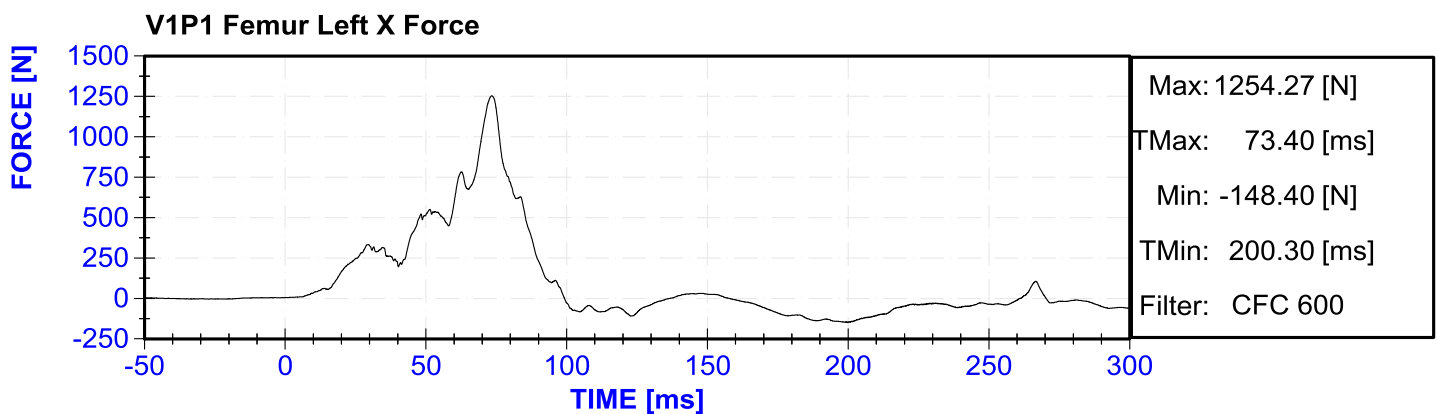
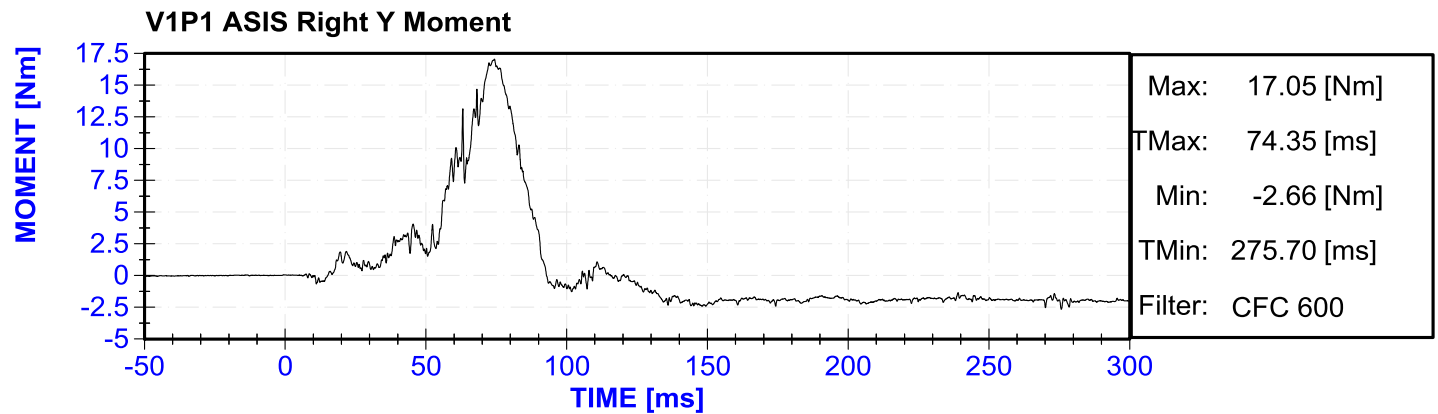
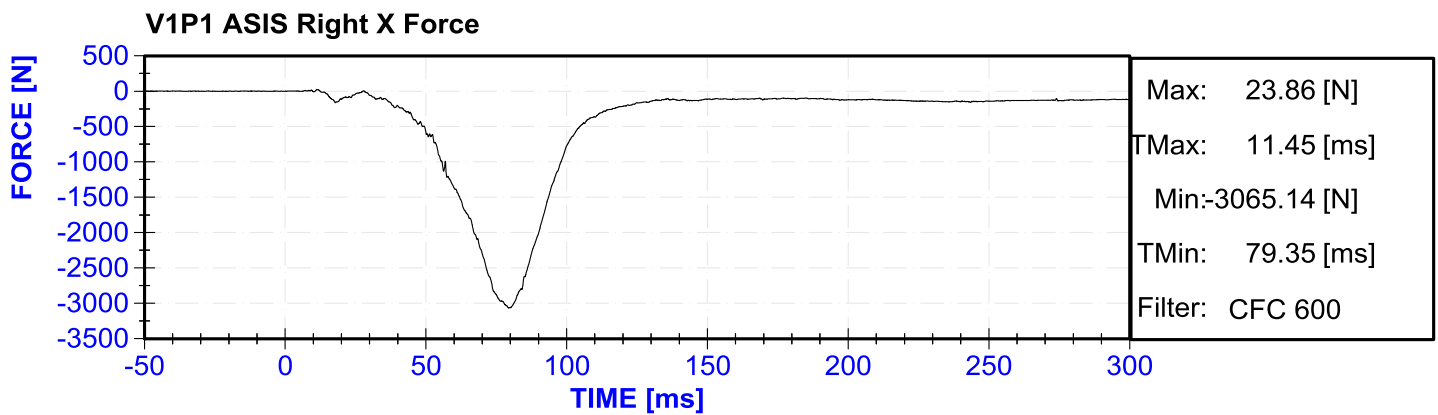
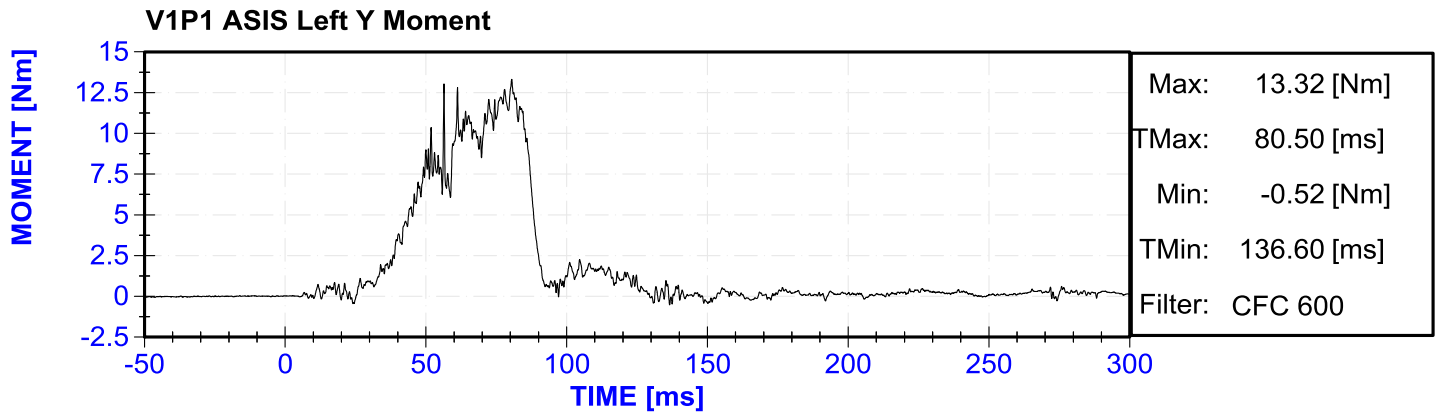
V1P1 Abdomen Right DGIR X Displacement

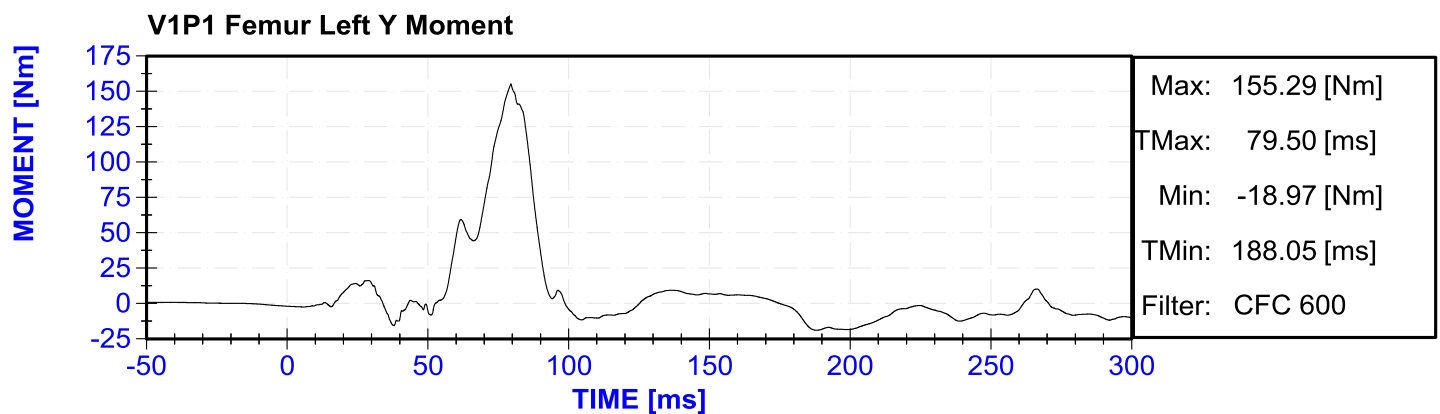
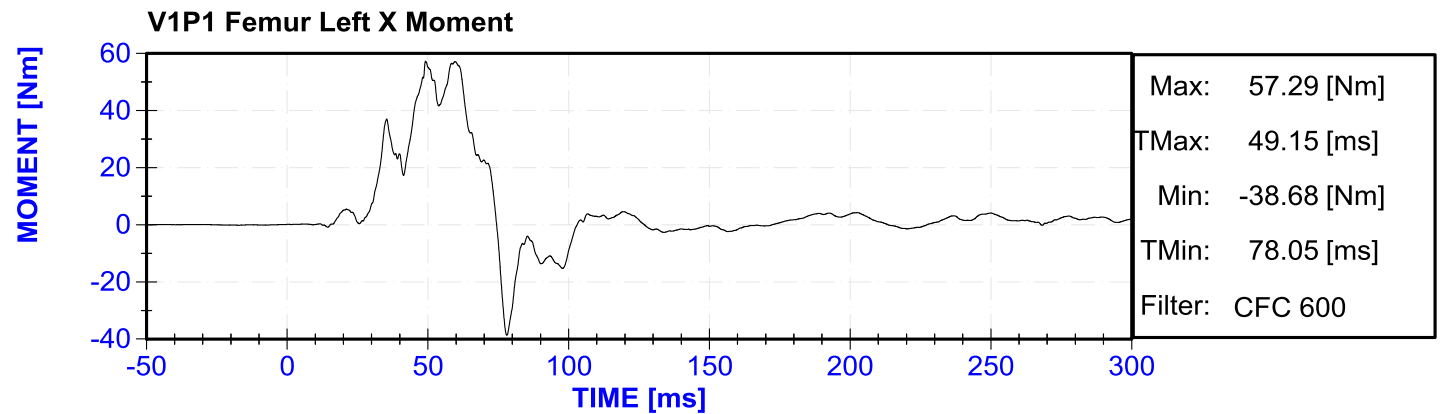
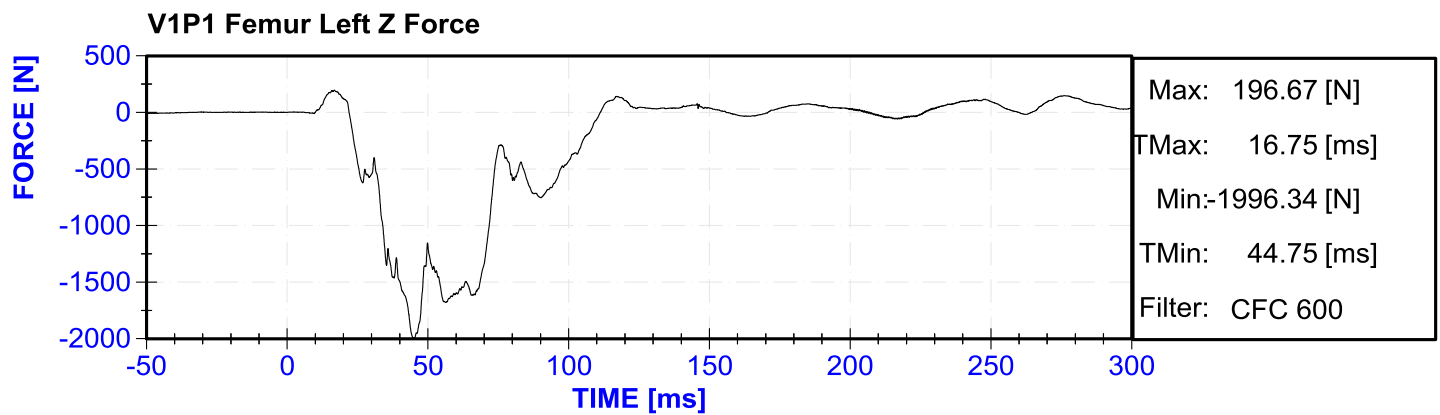
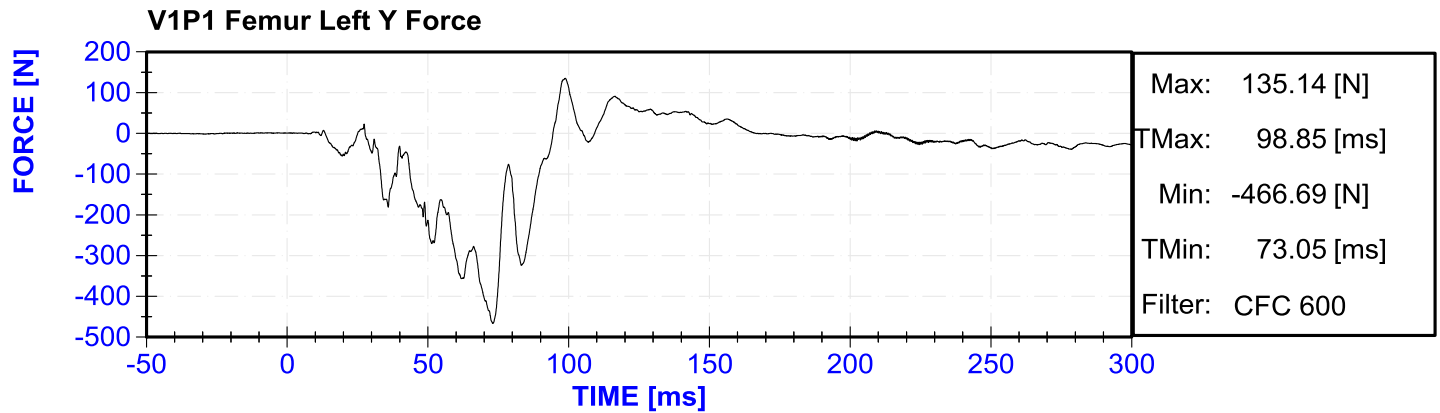


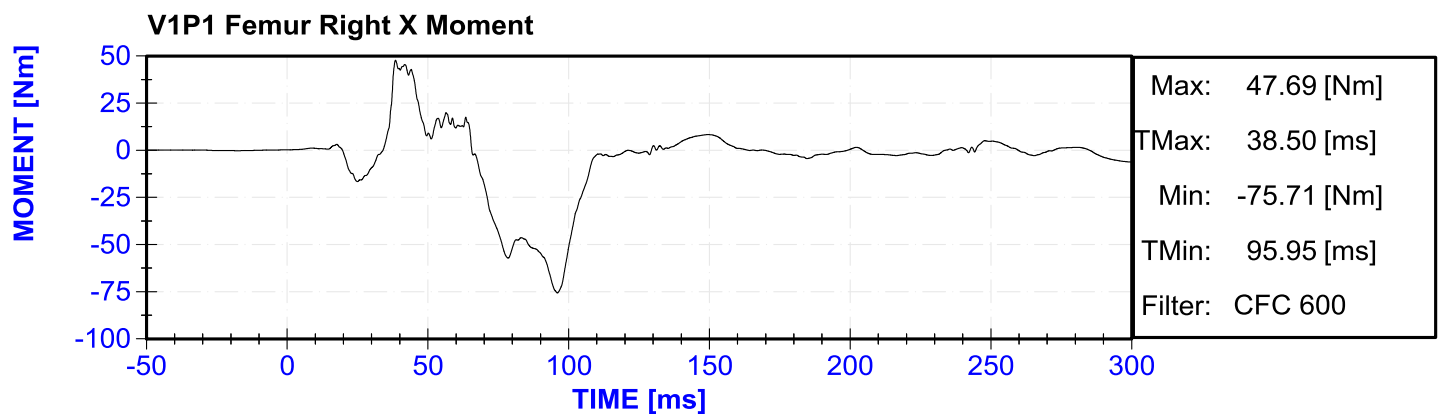
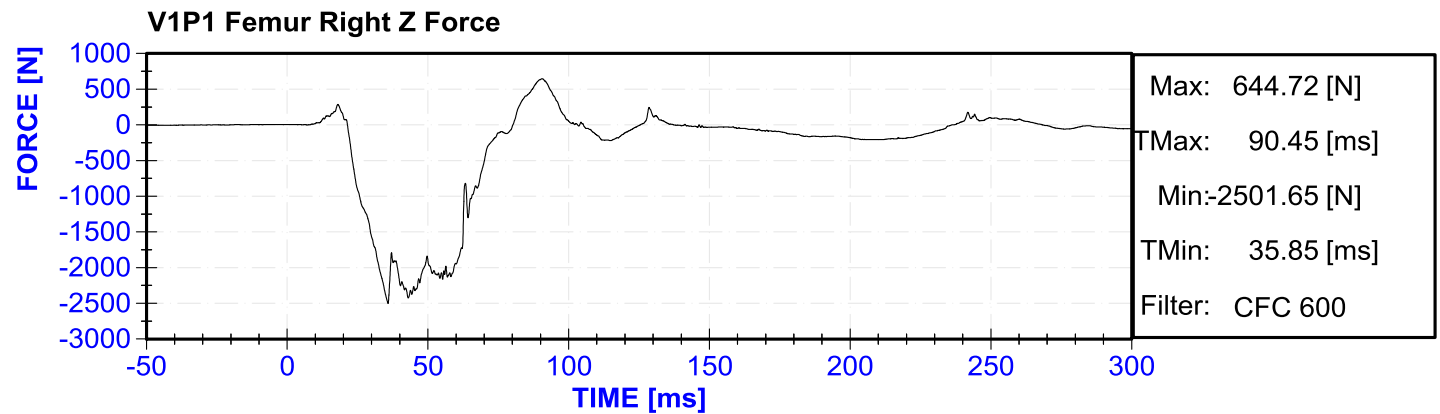
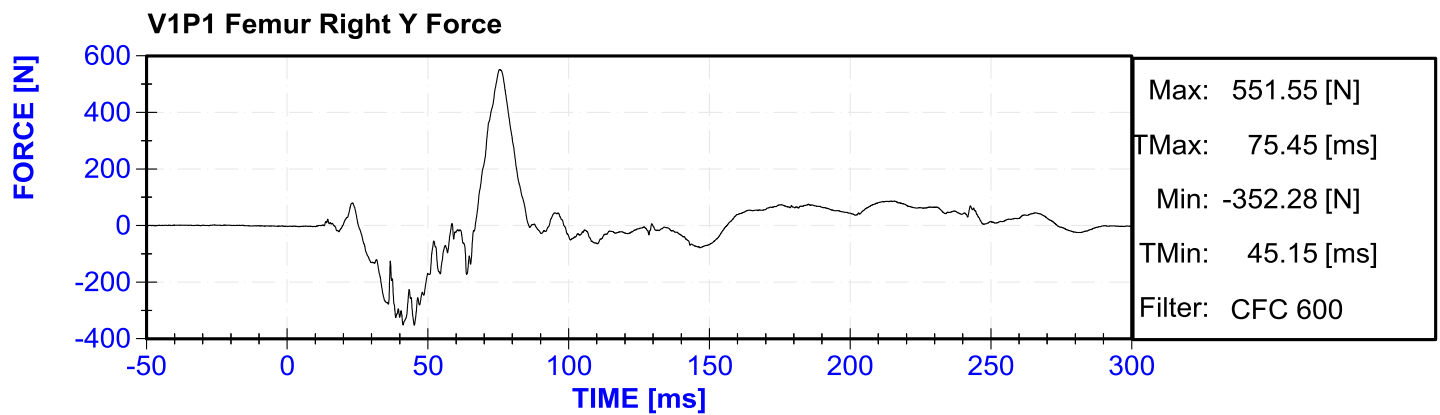
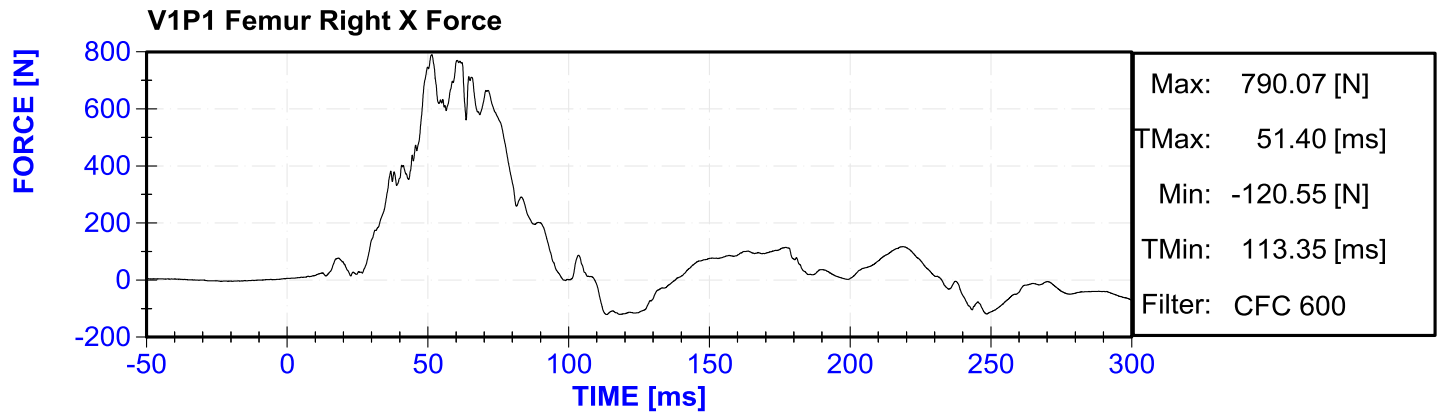


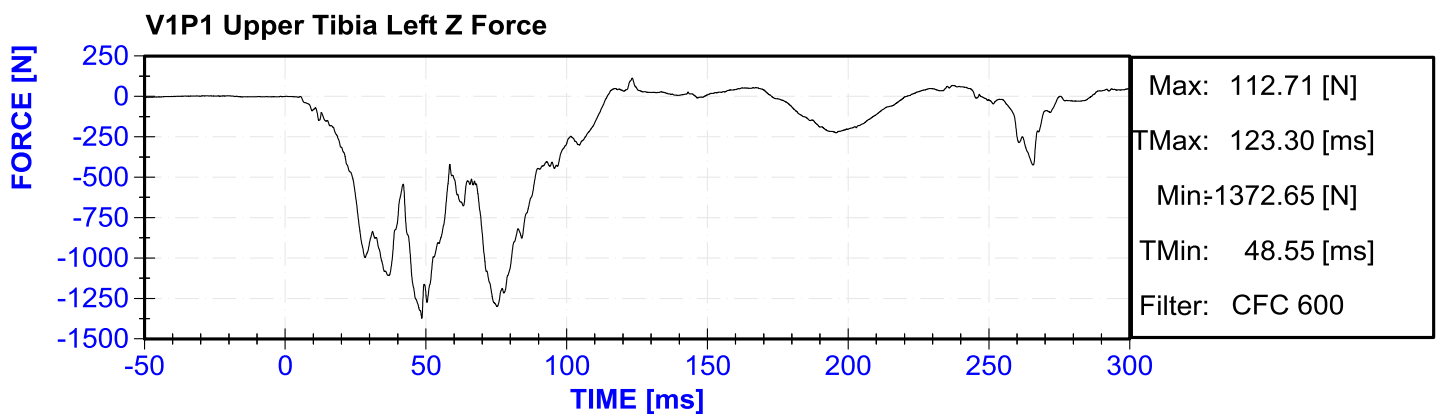
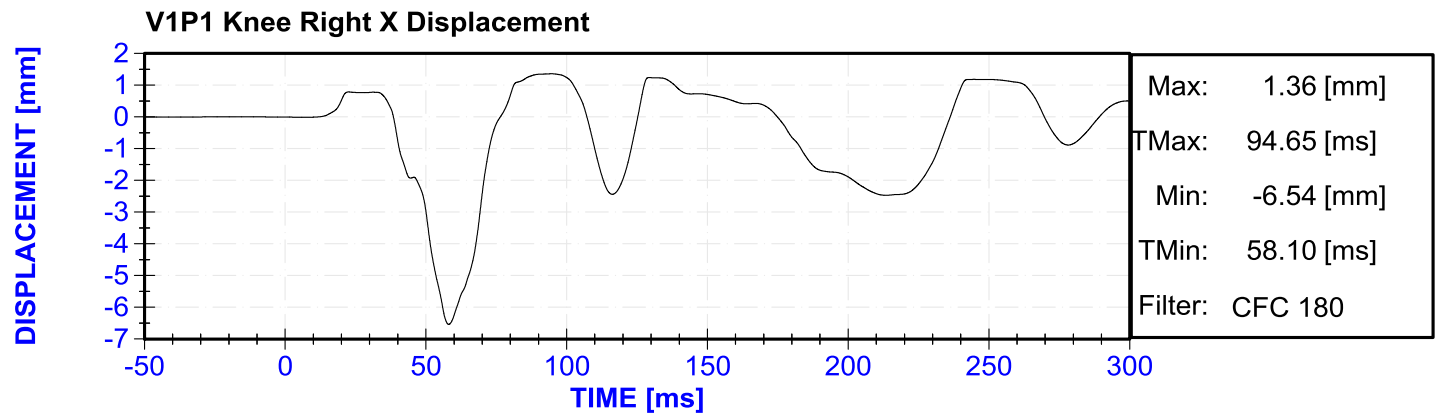
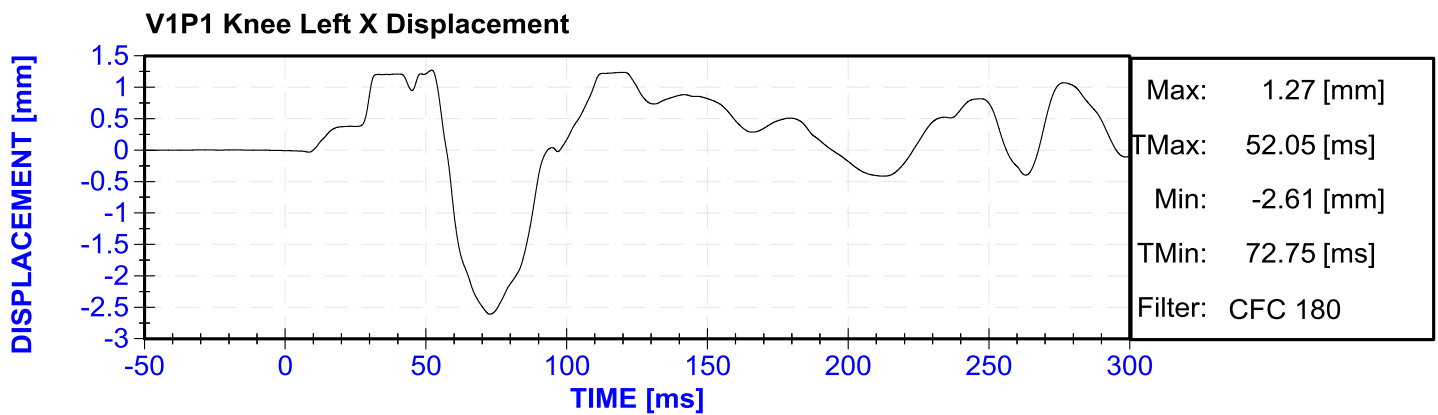
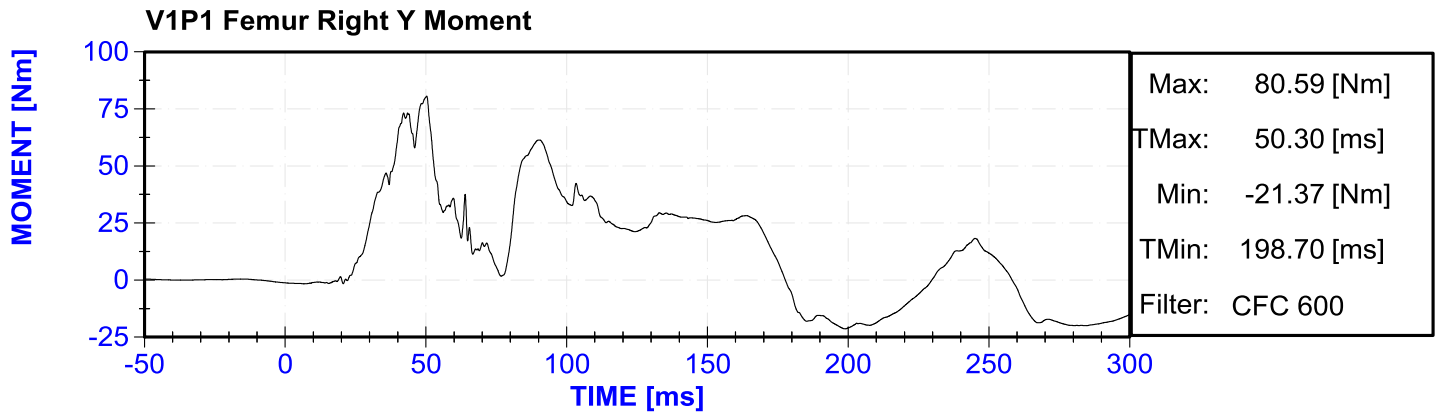


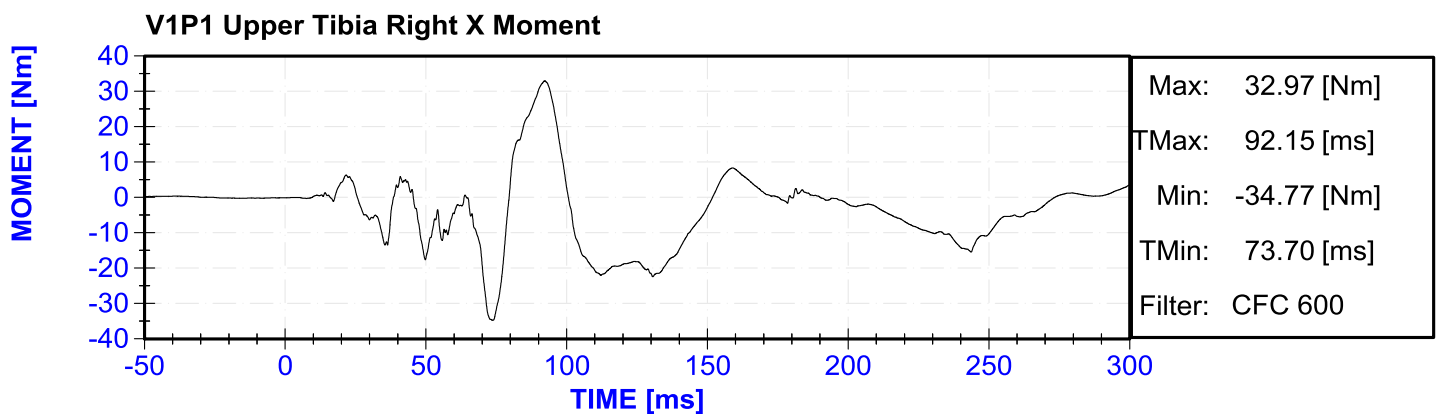
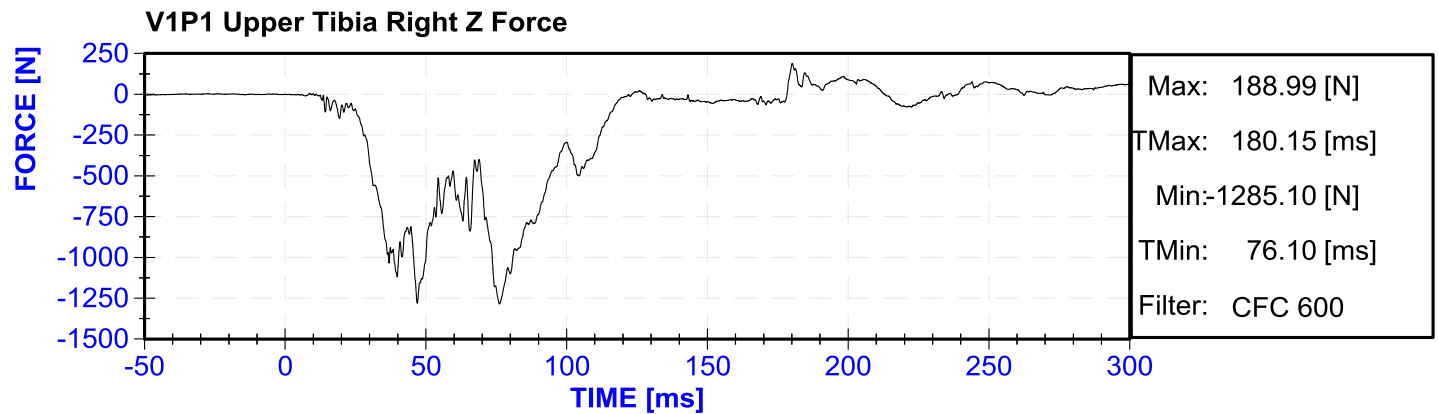
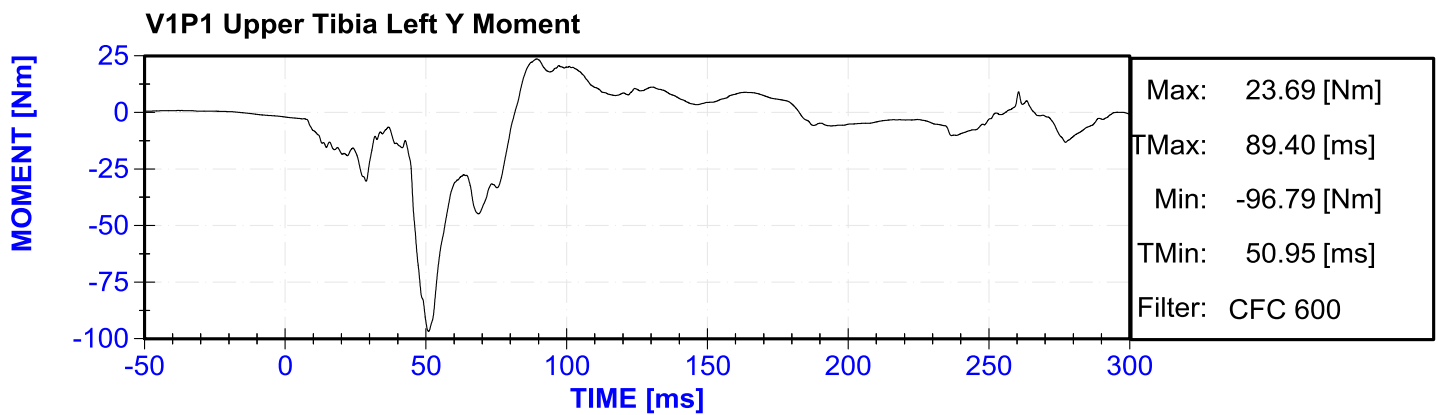
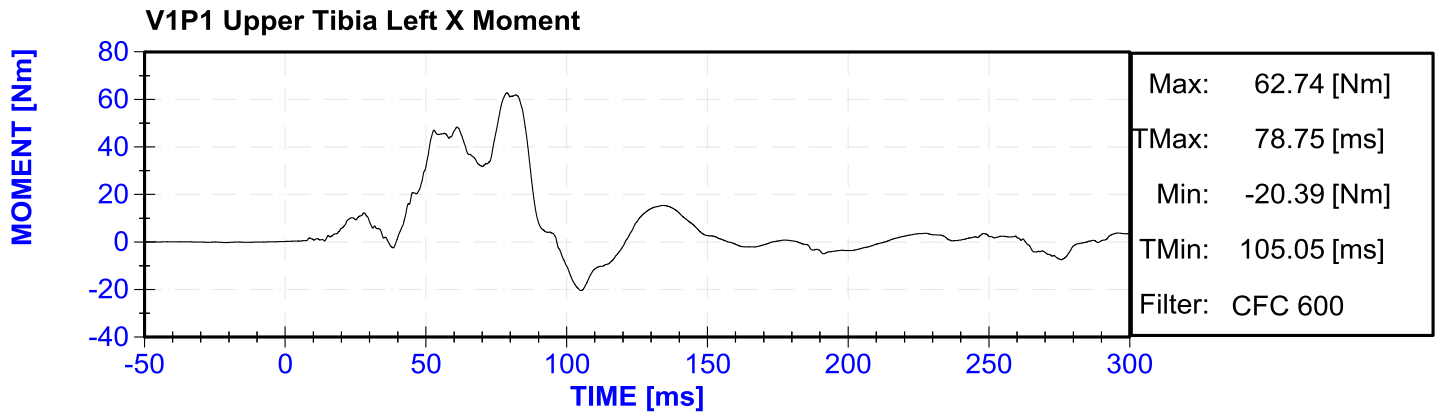


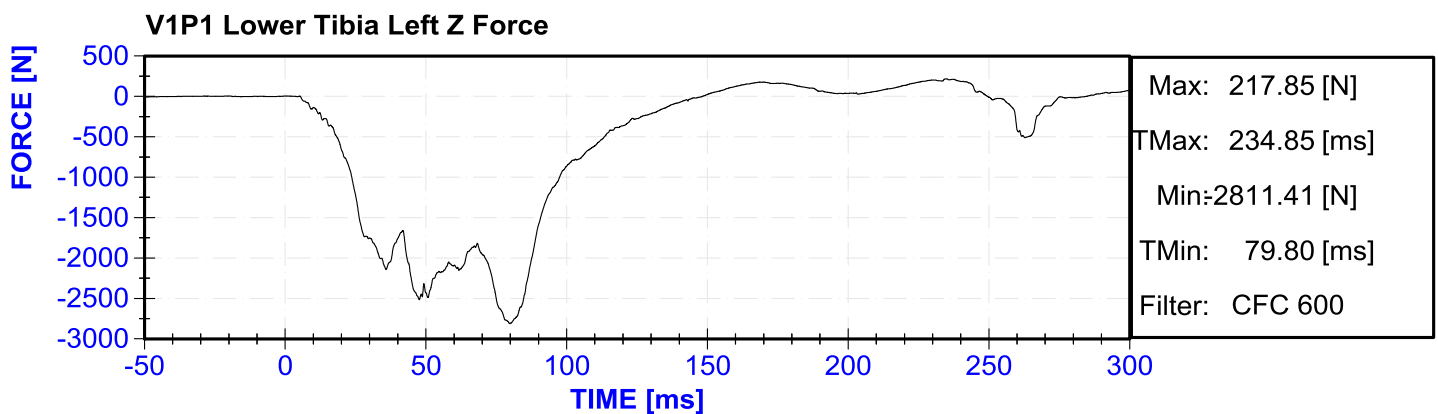
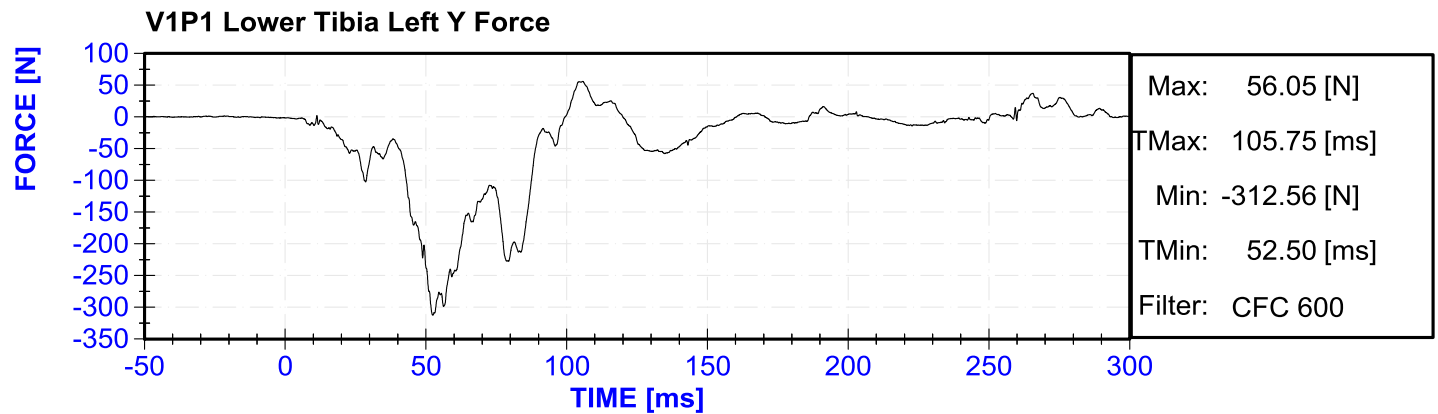
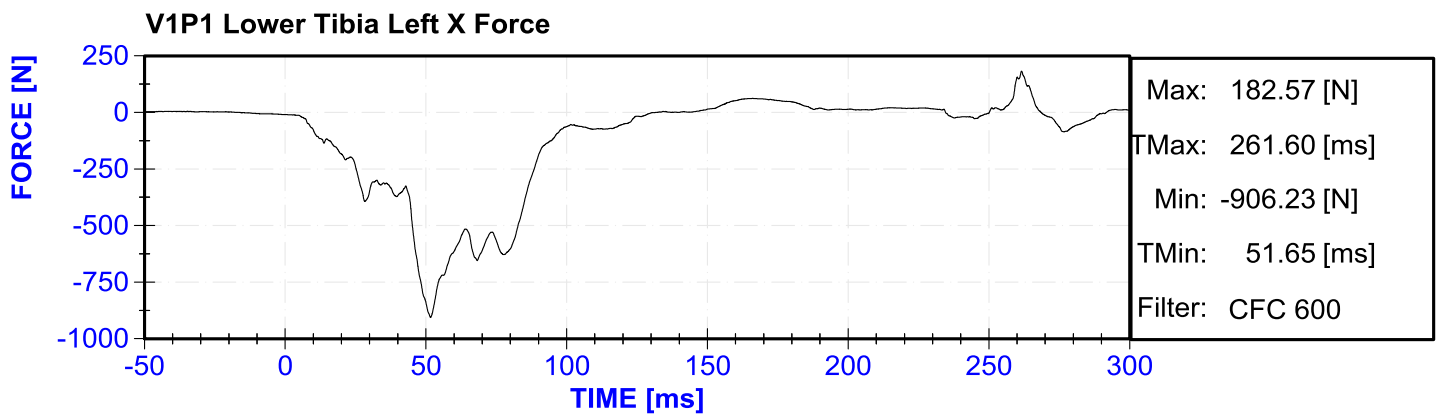
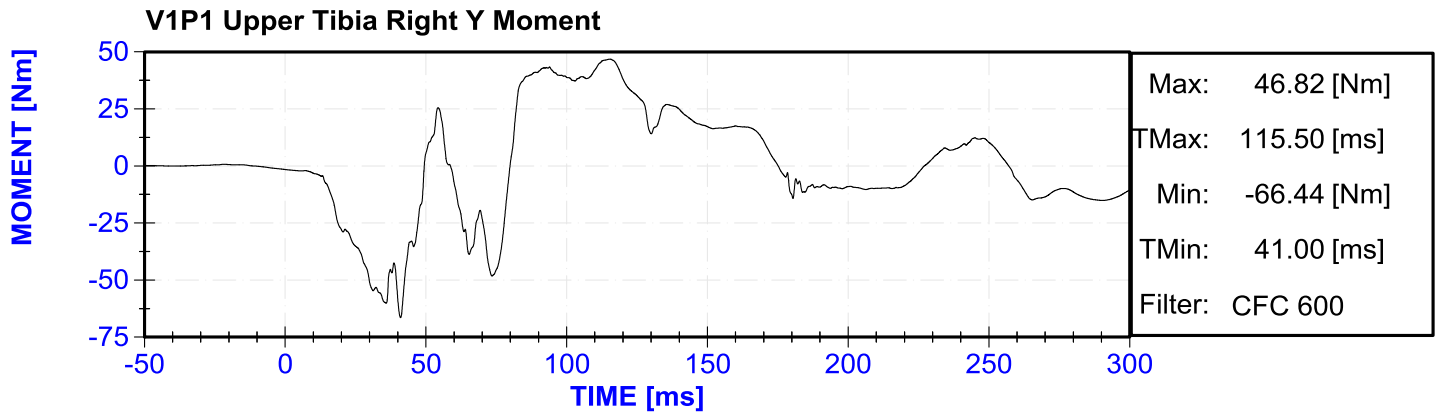


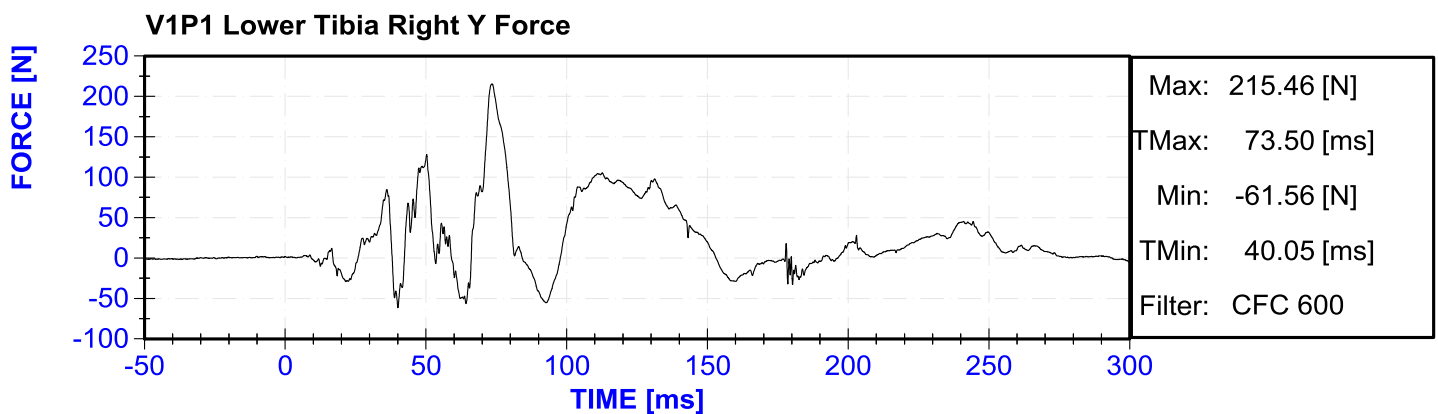
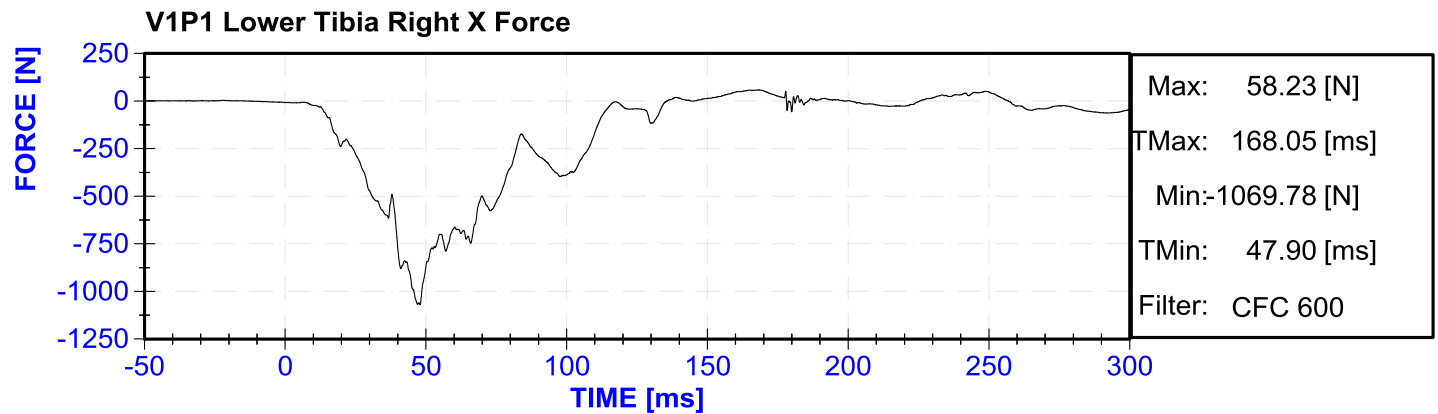
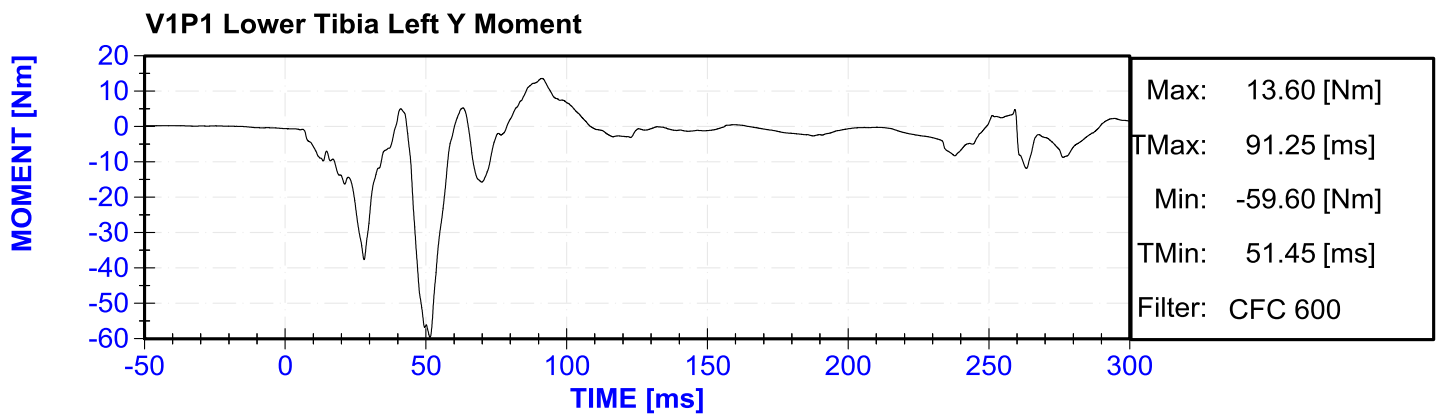
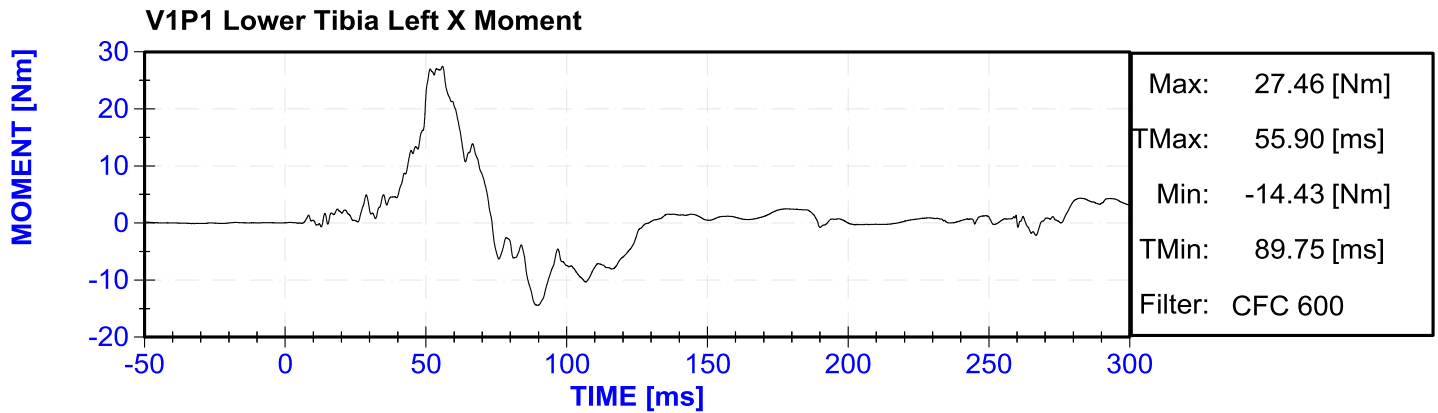


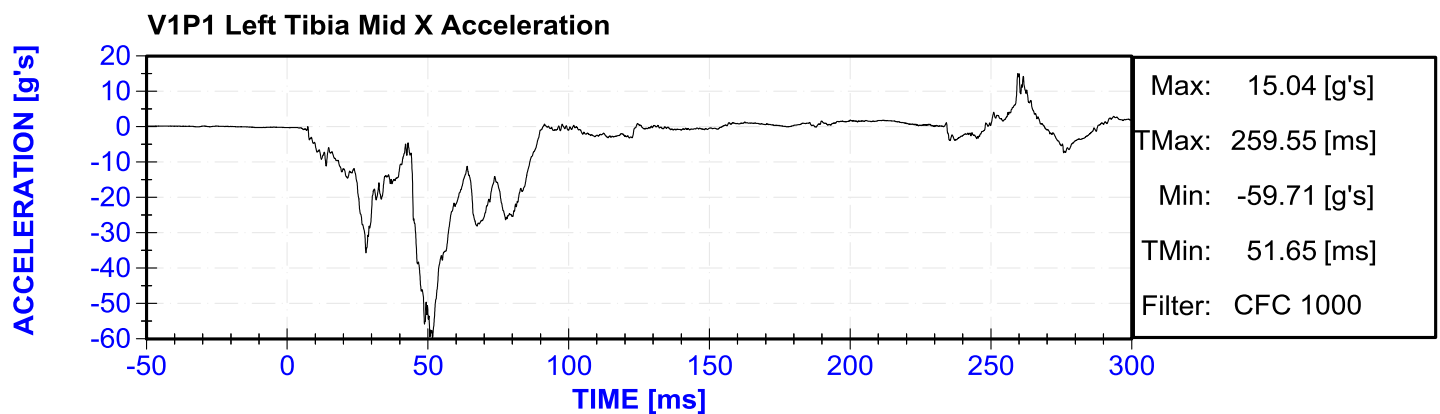
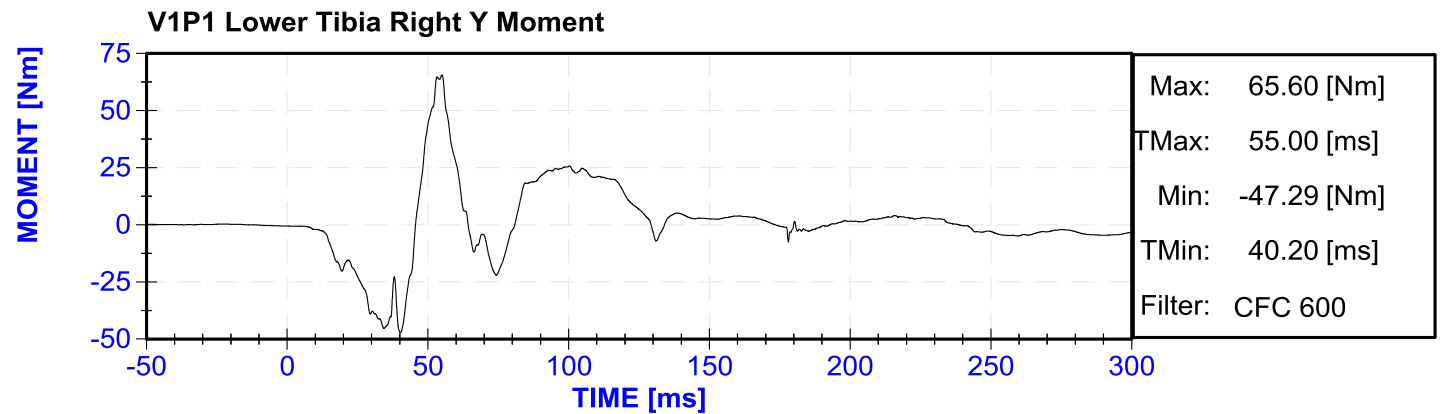
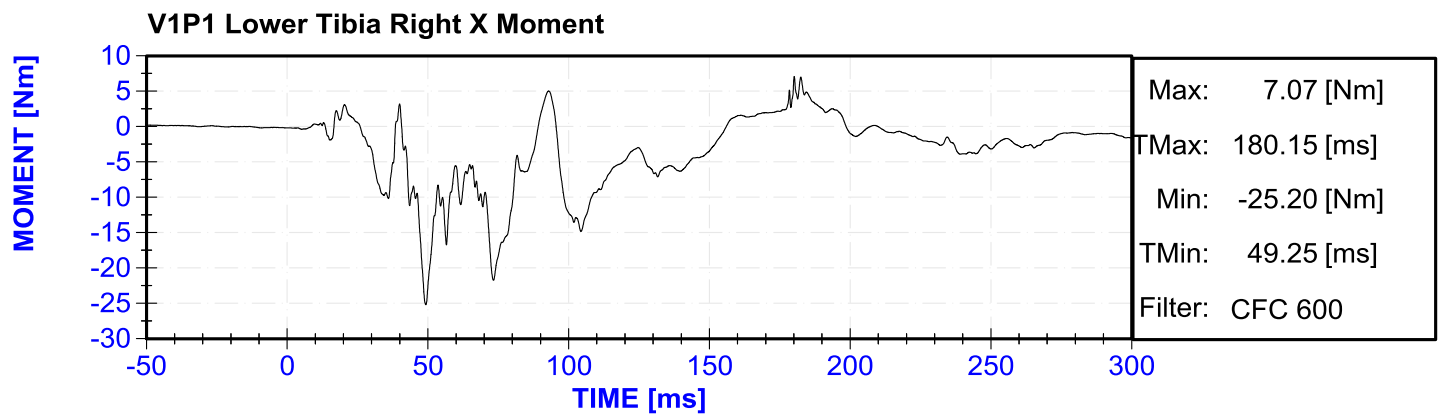
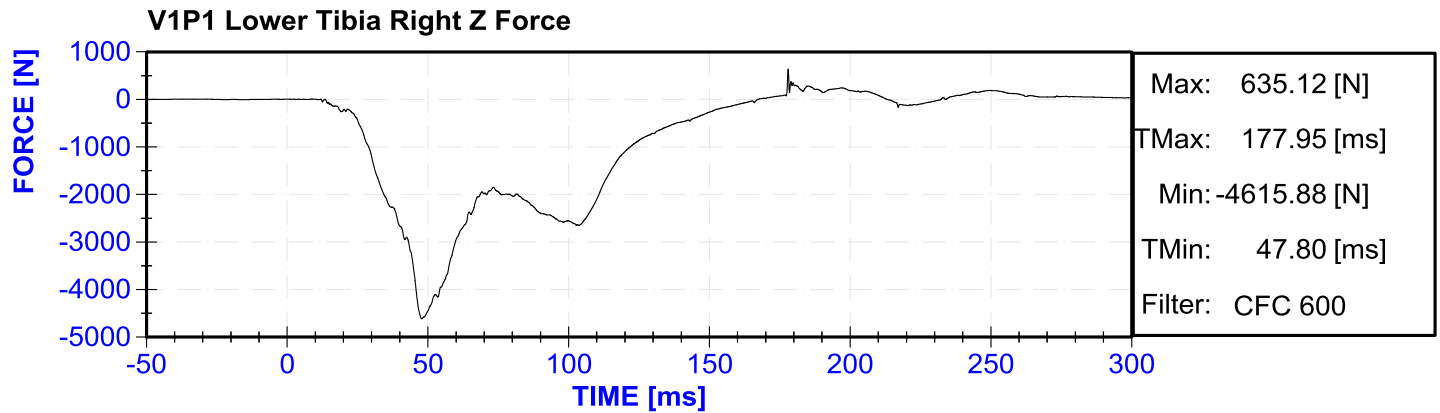


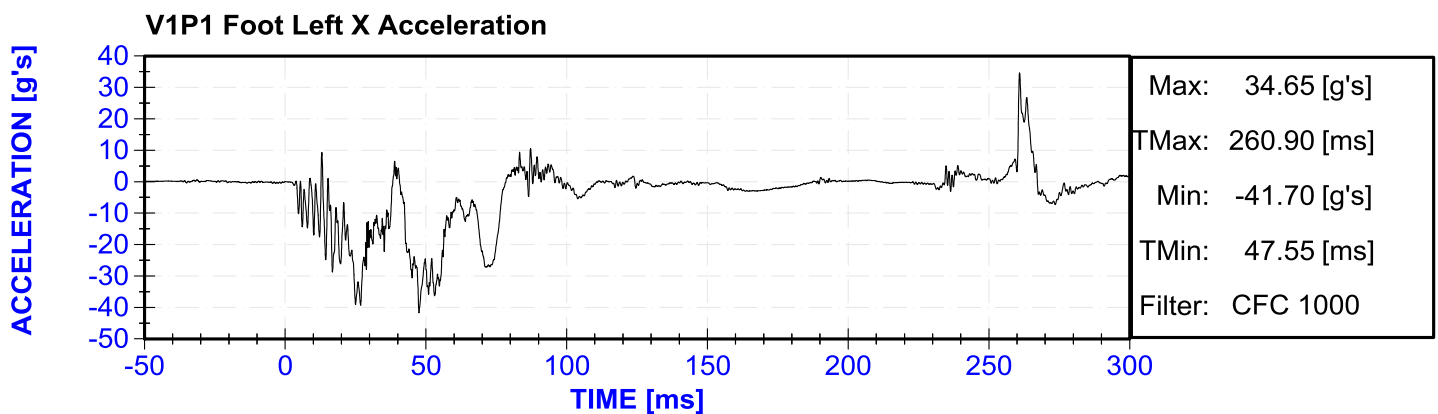
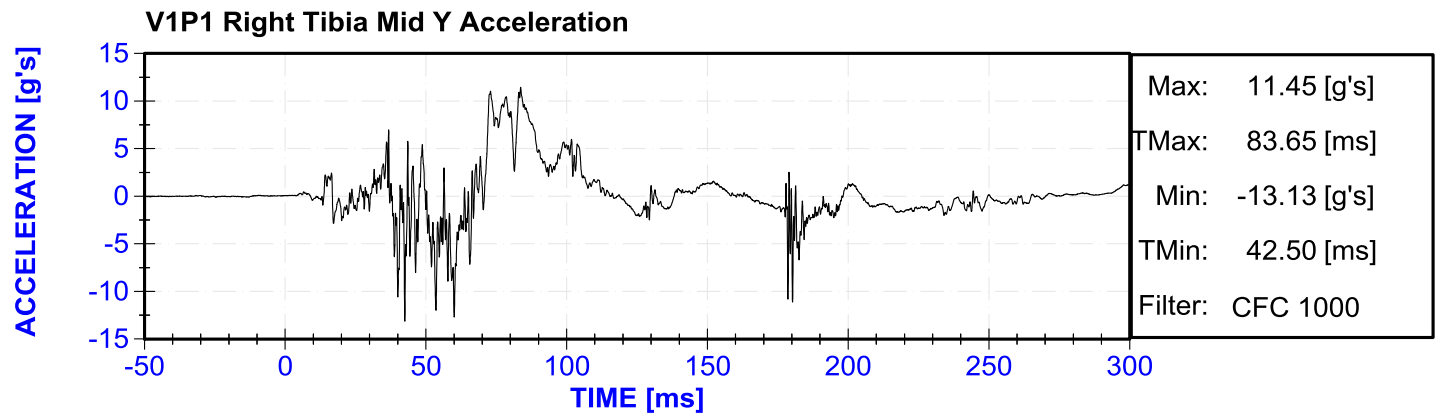
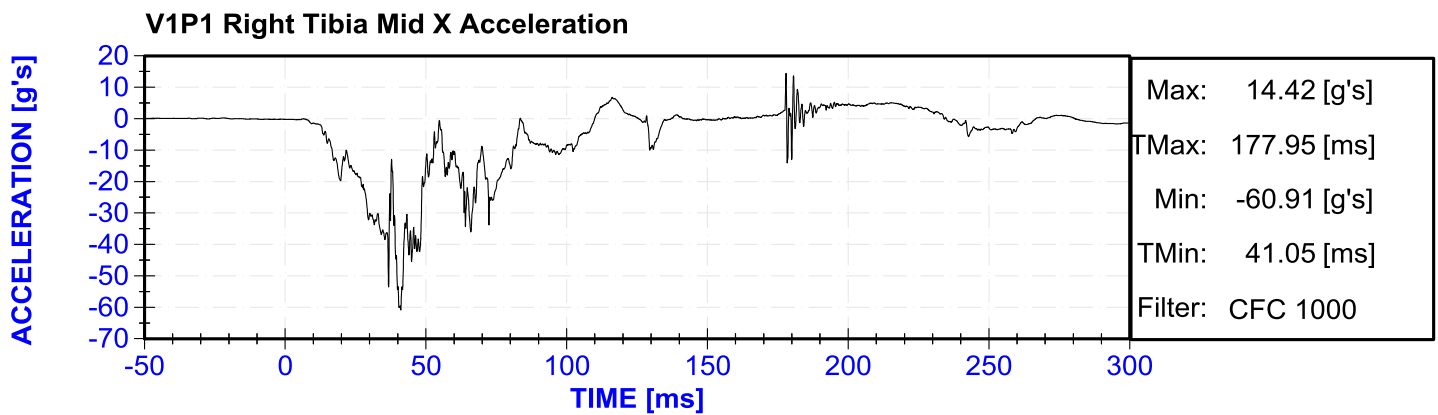
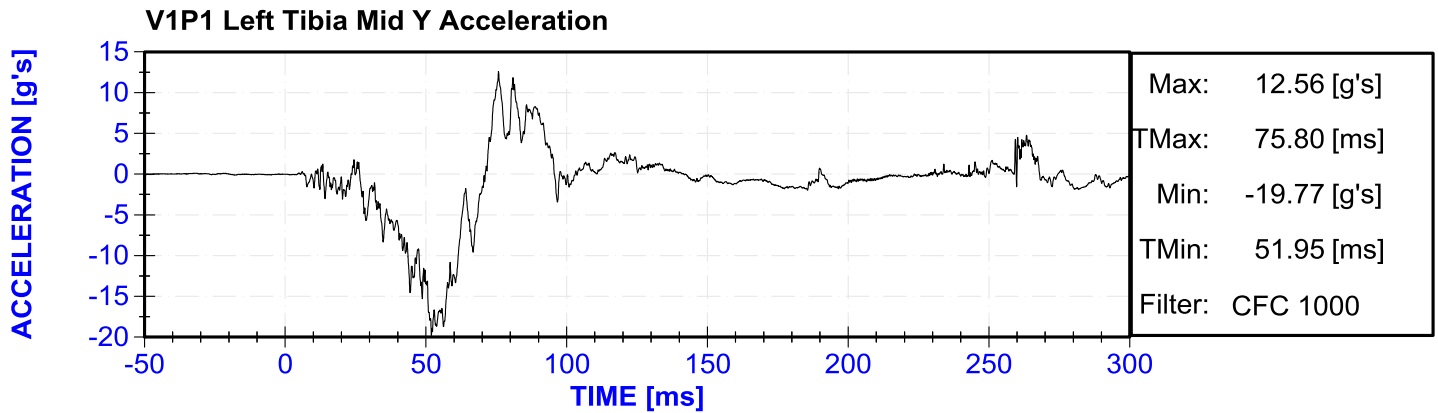


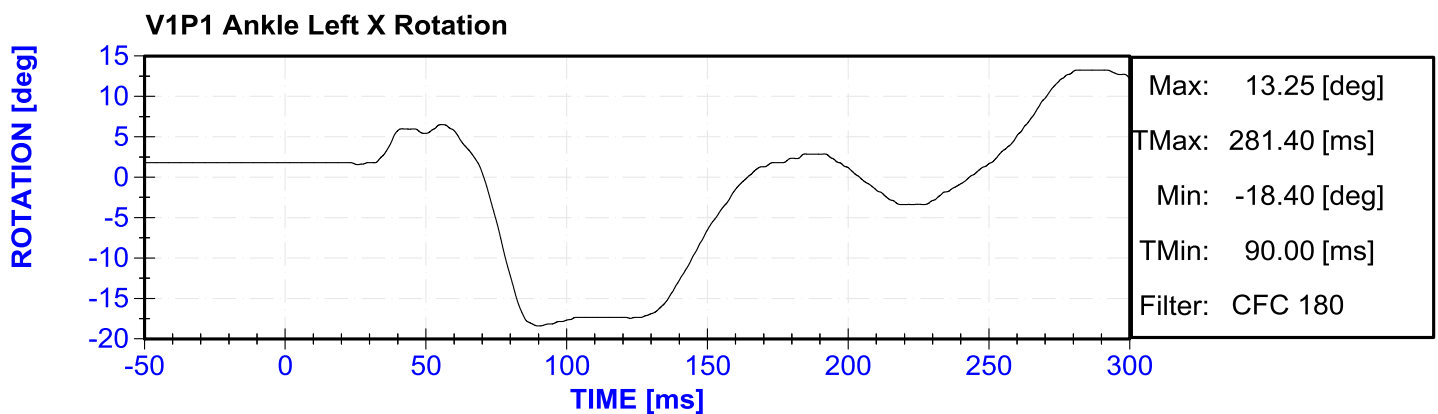
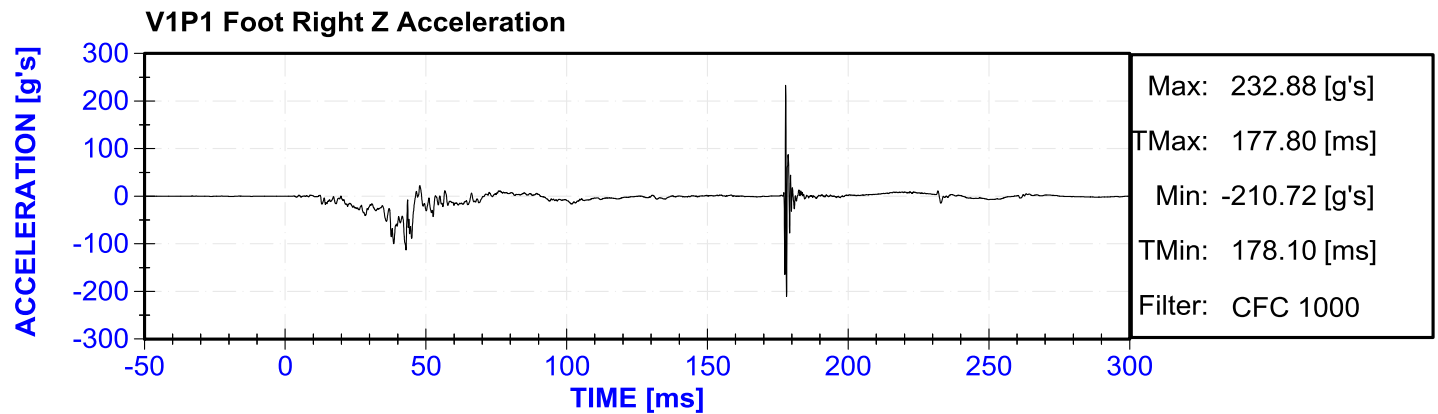
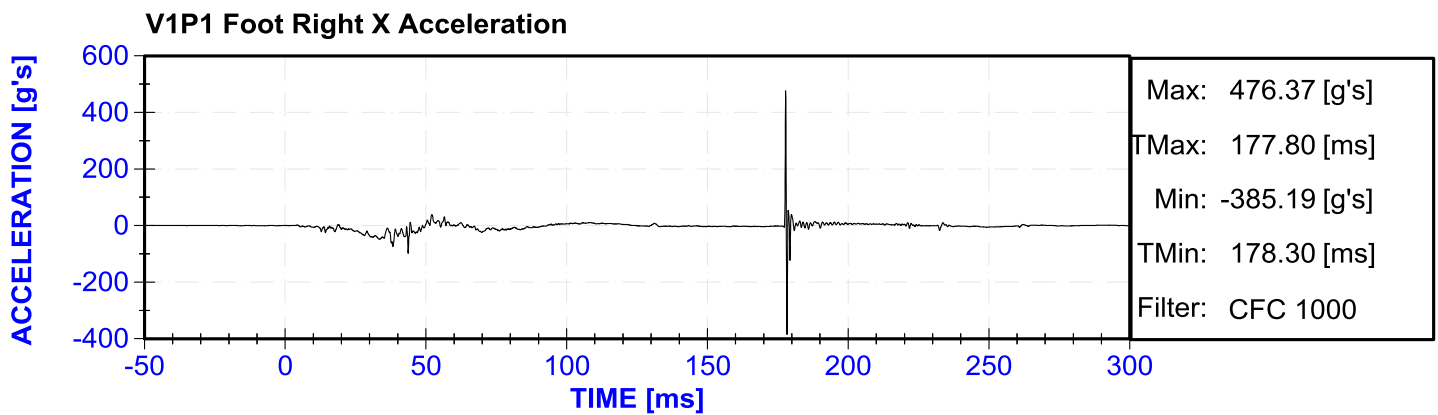
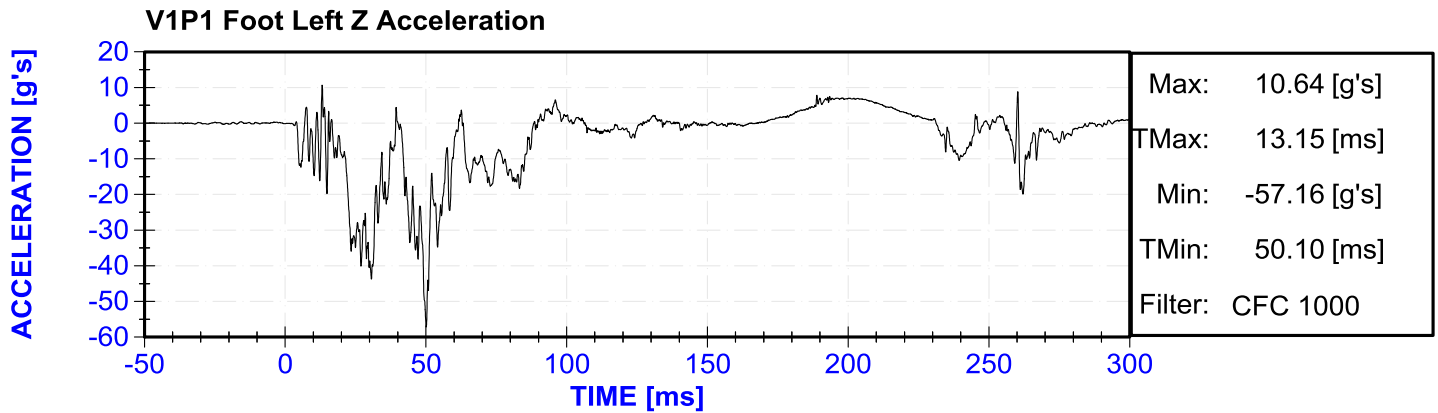


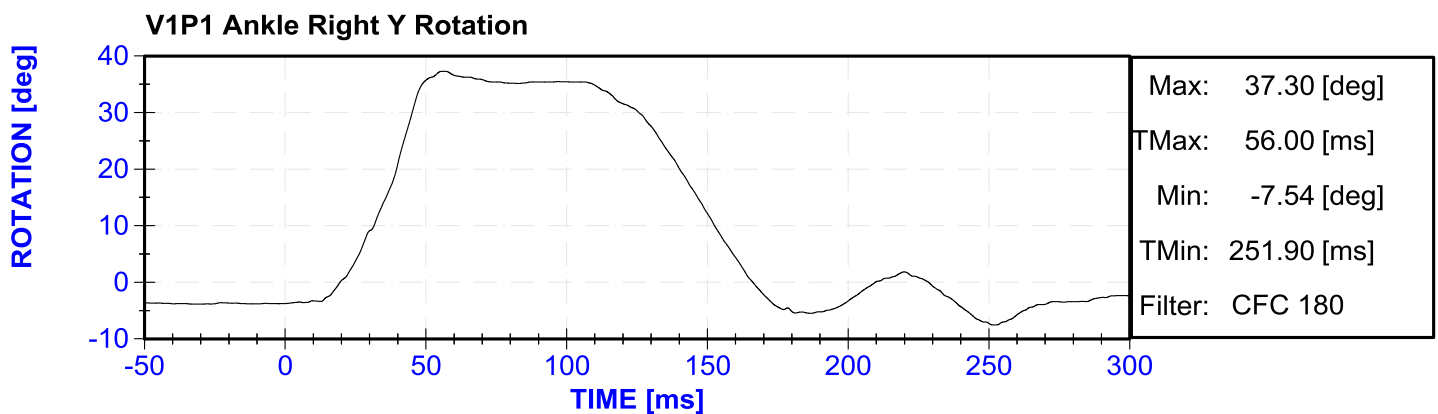
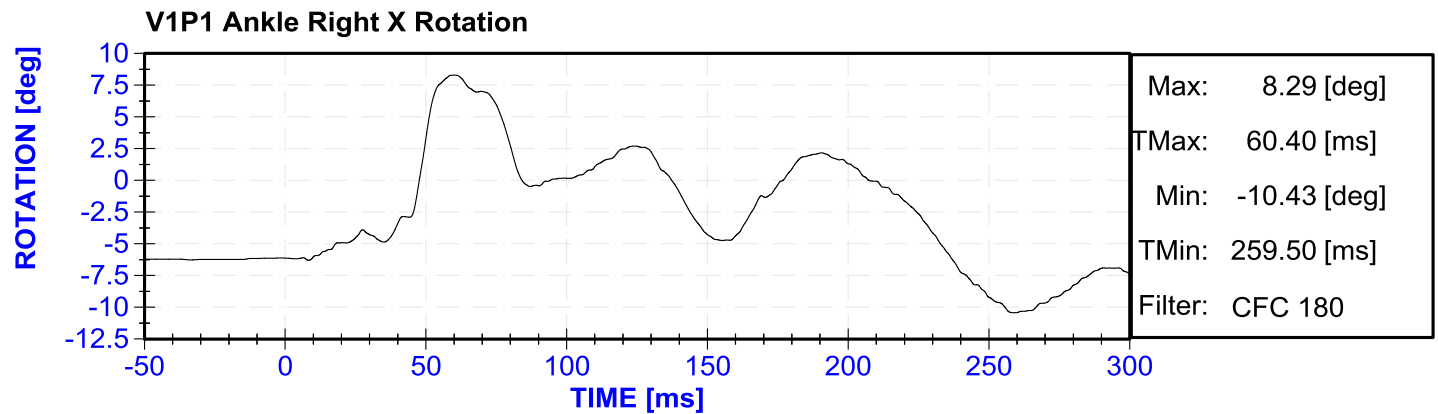
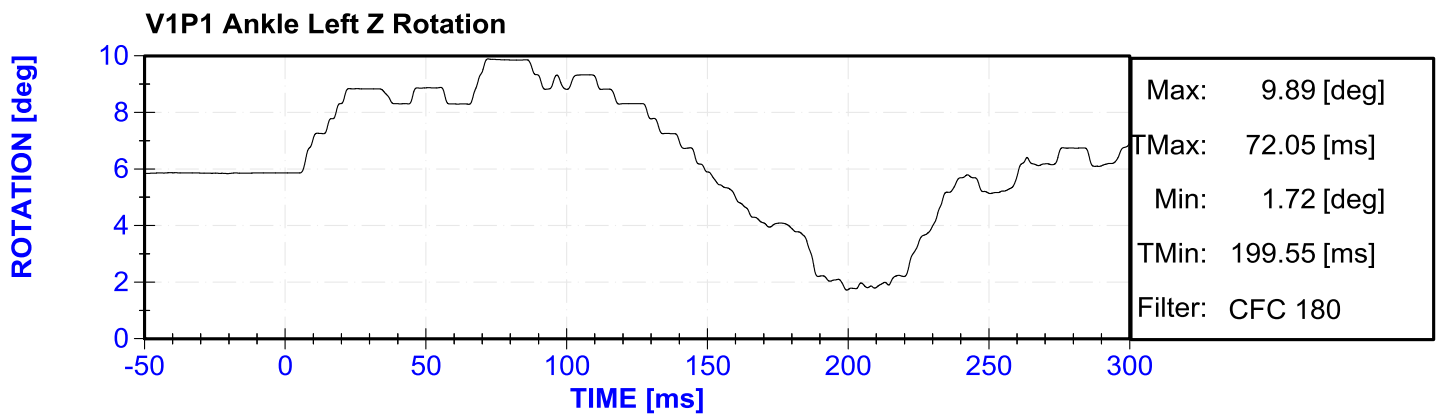
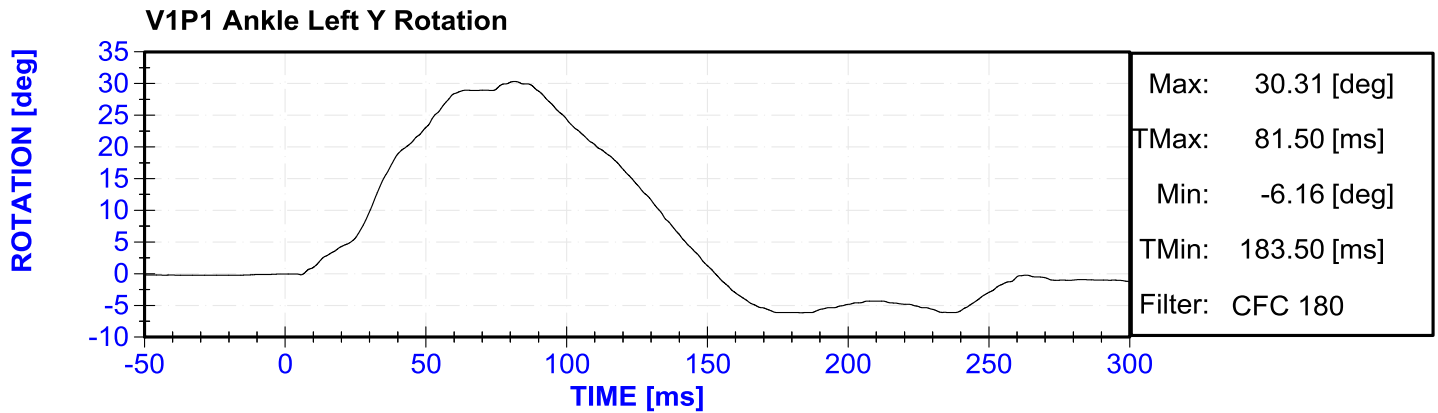


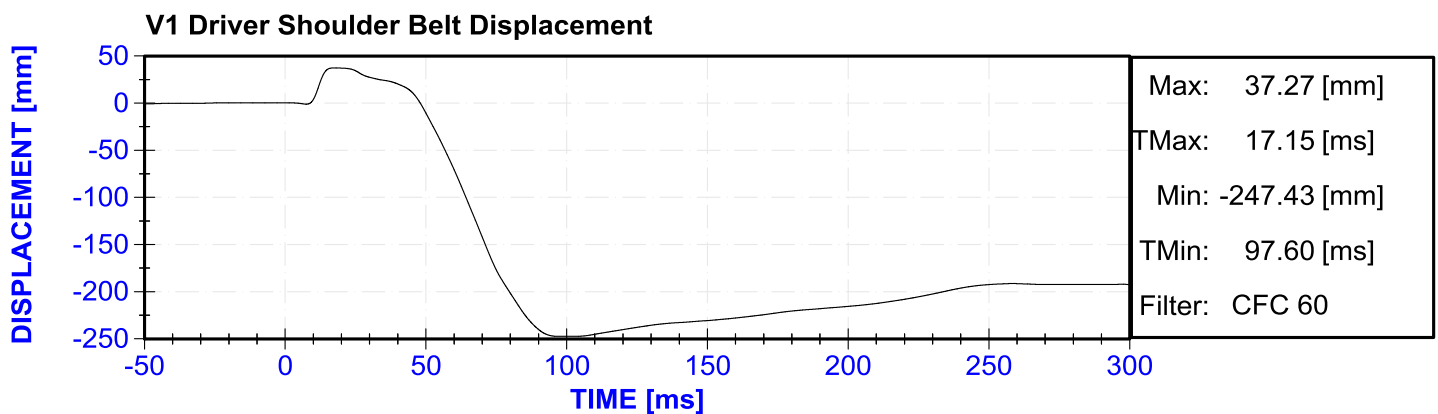
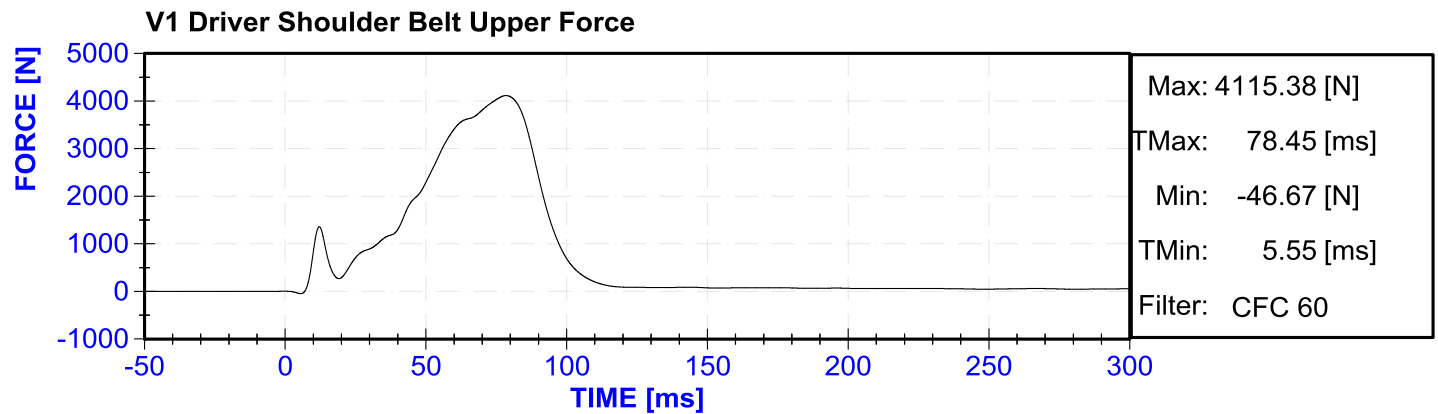
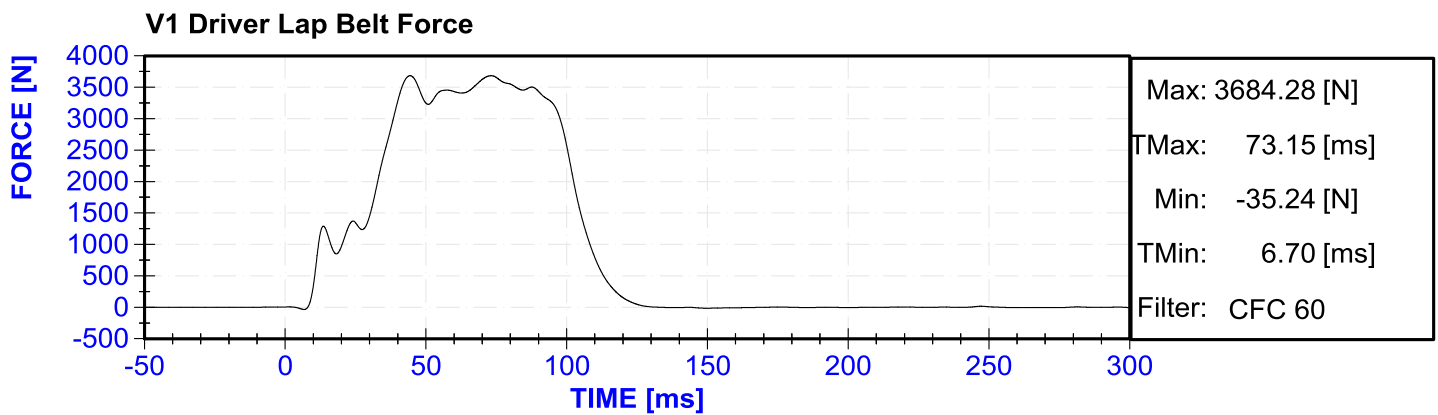
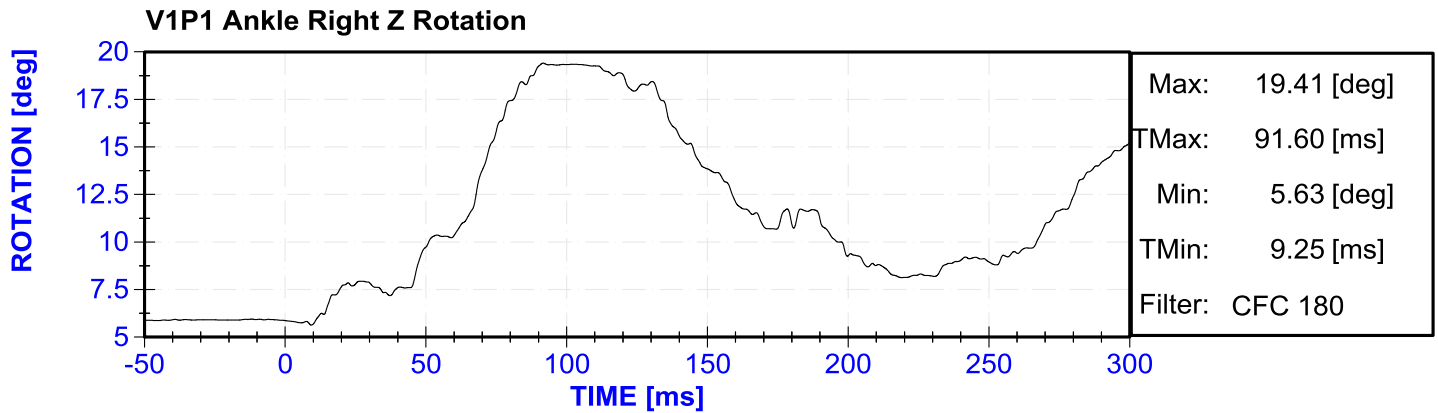


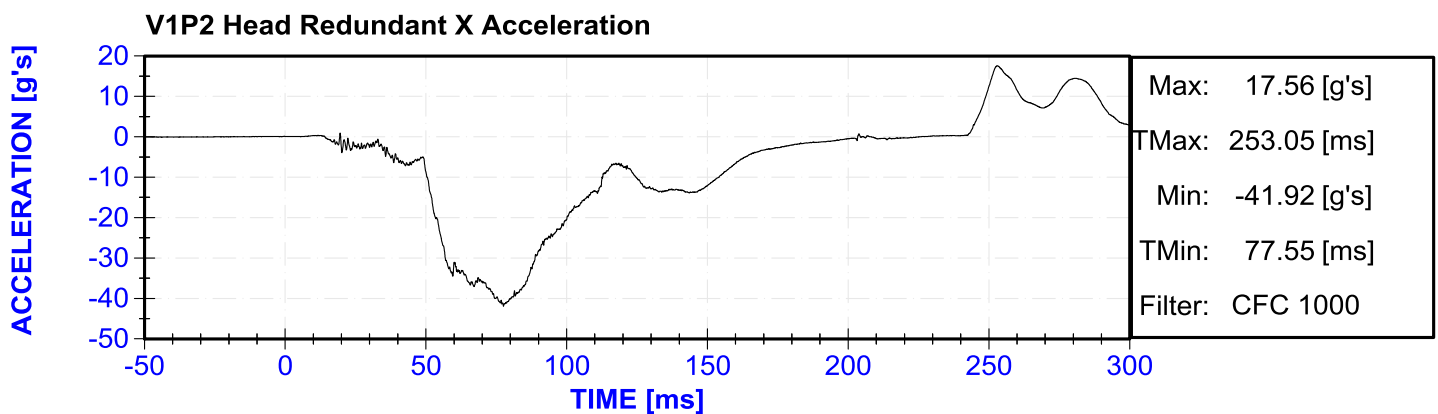
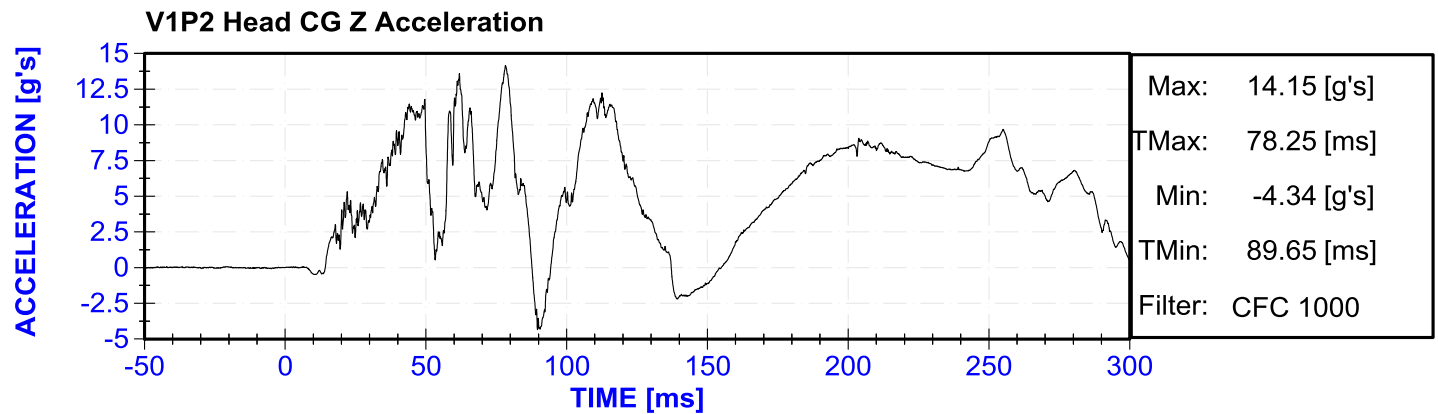
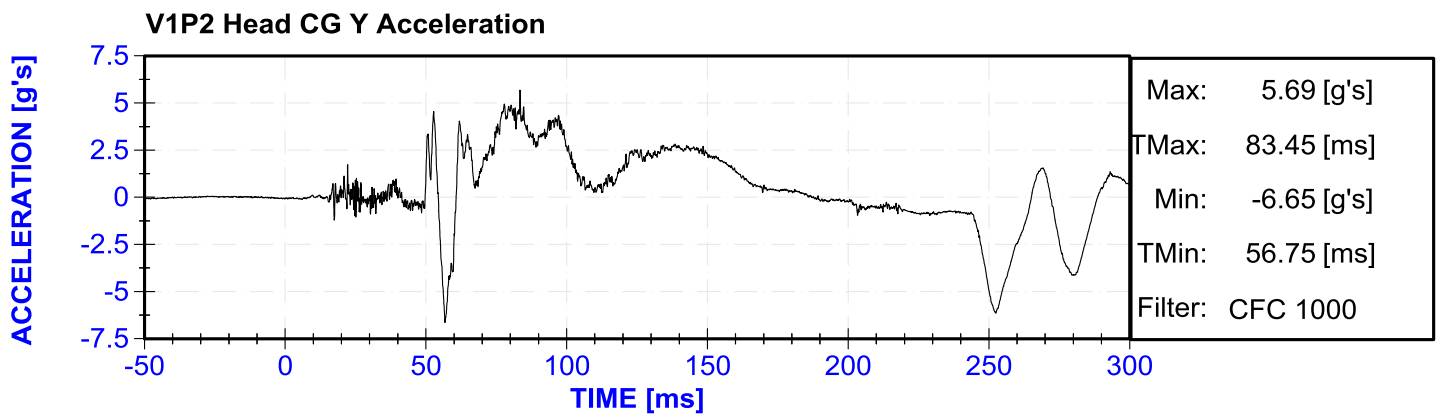
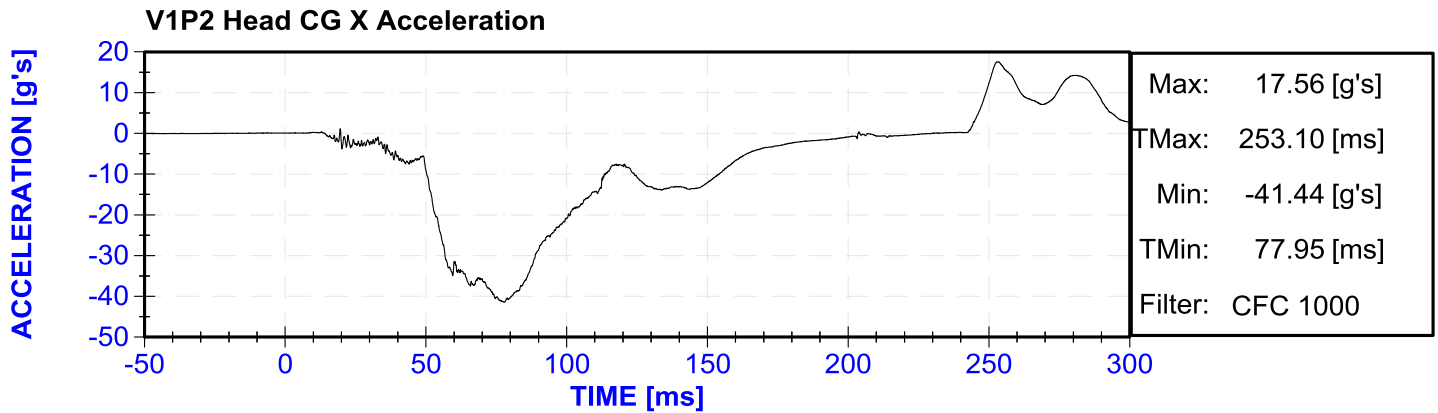


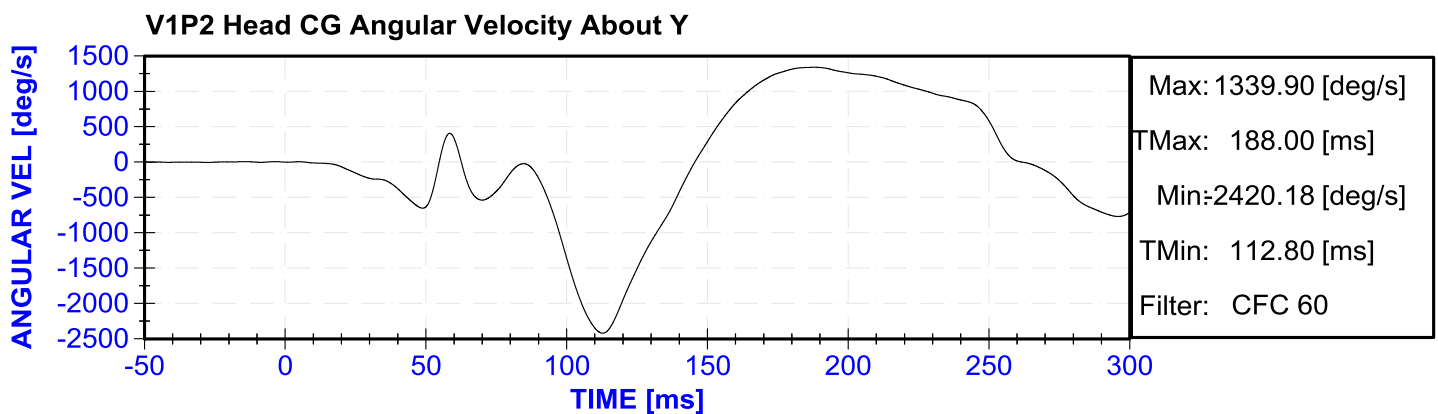
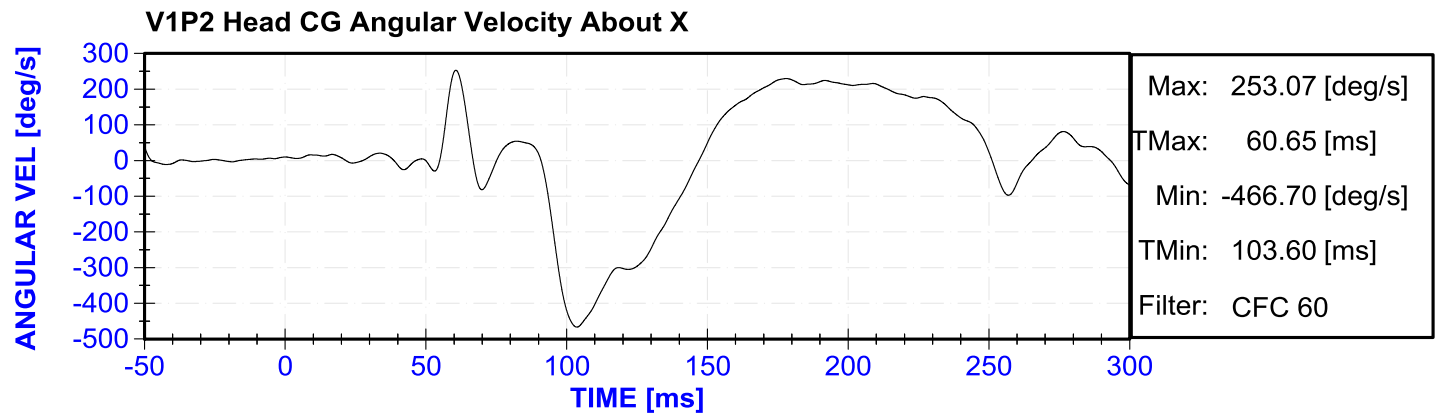
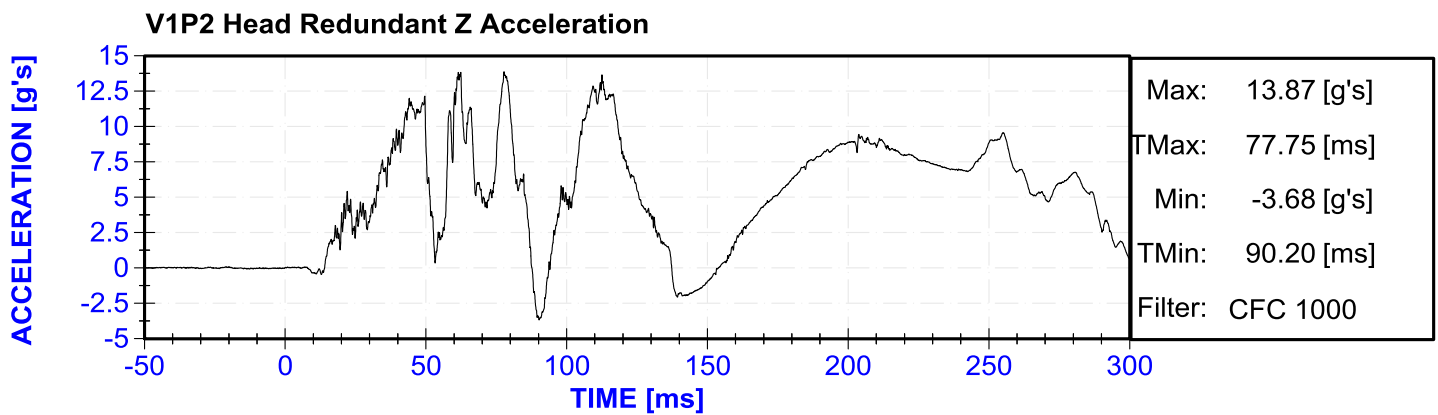
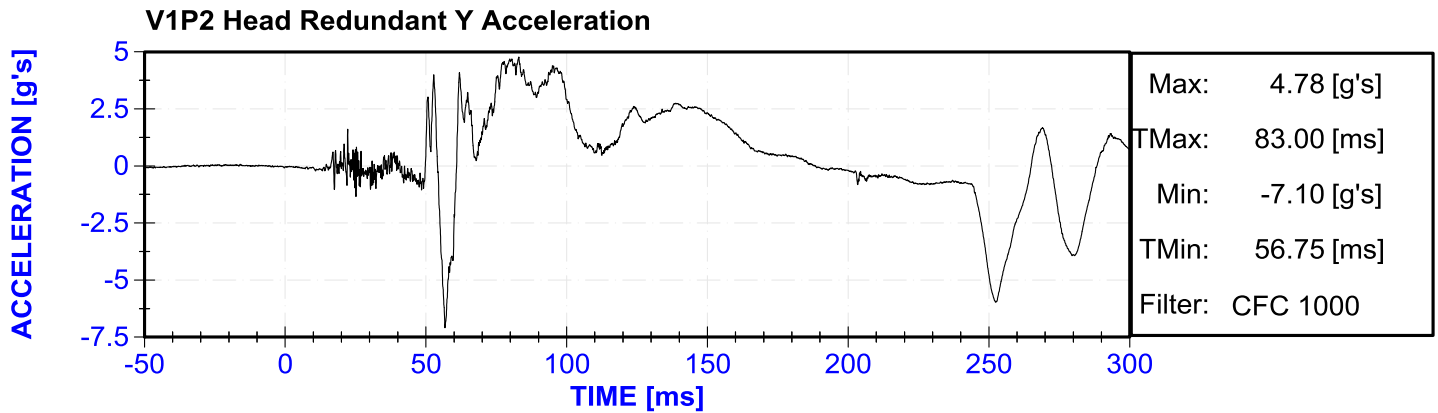


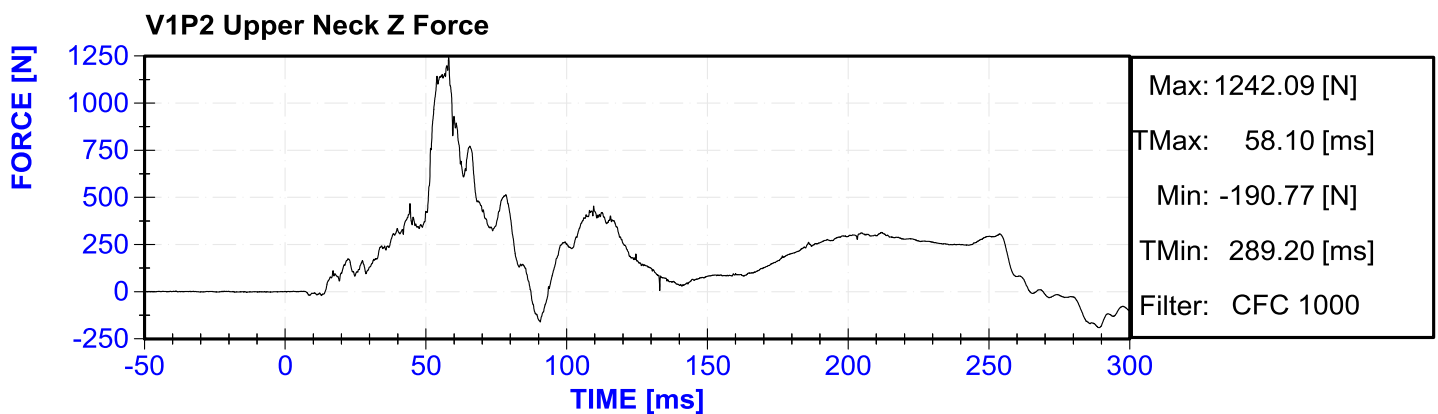
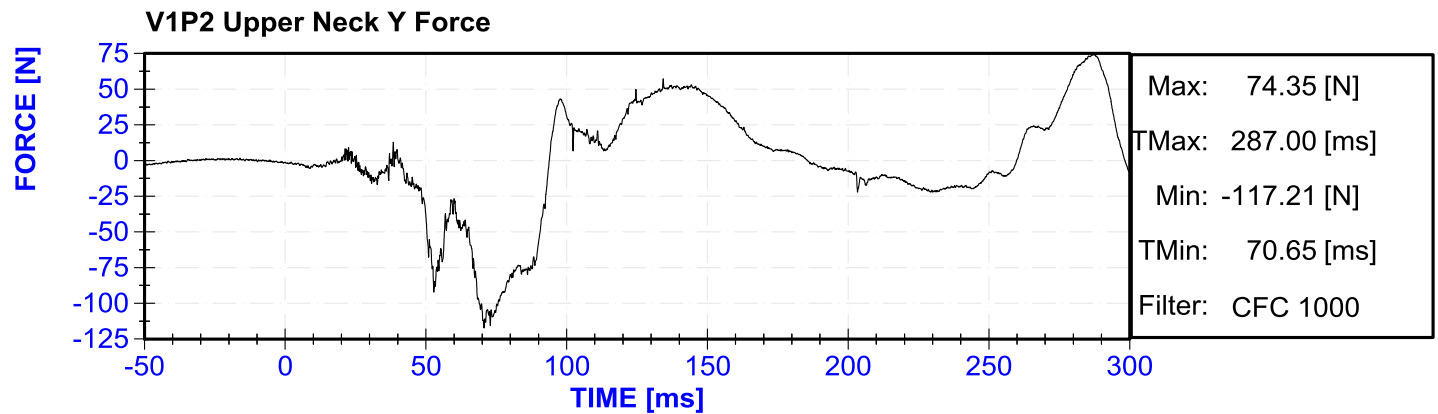
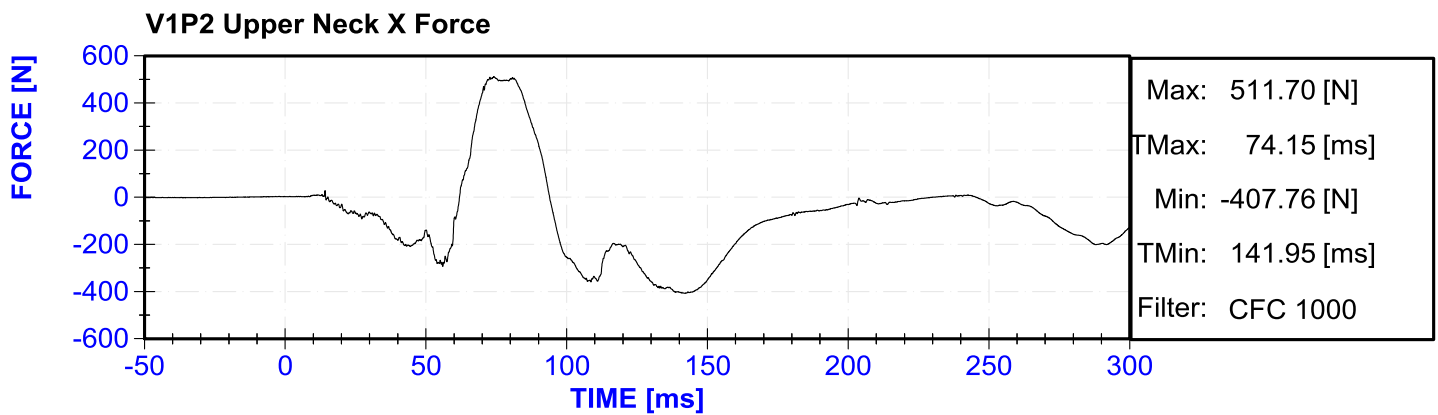
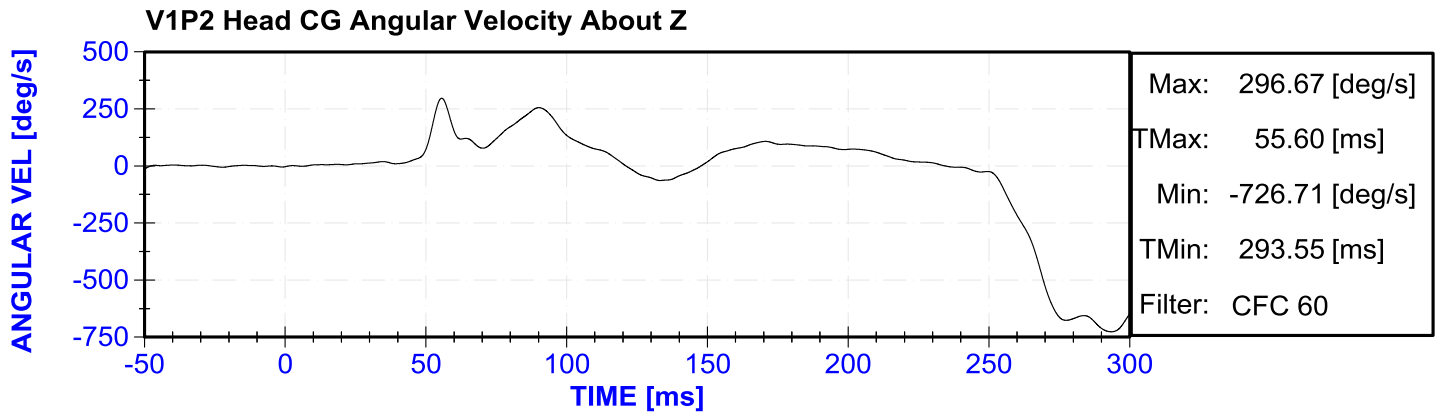


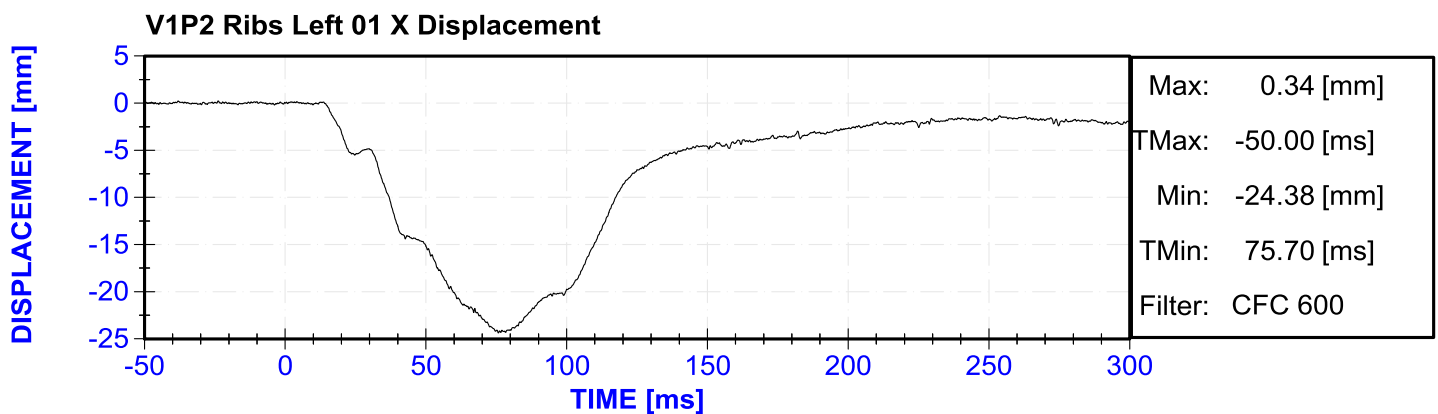
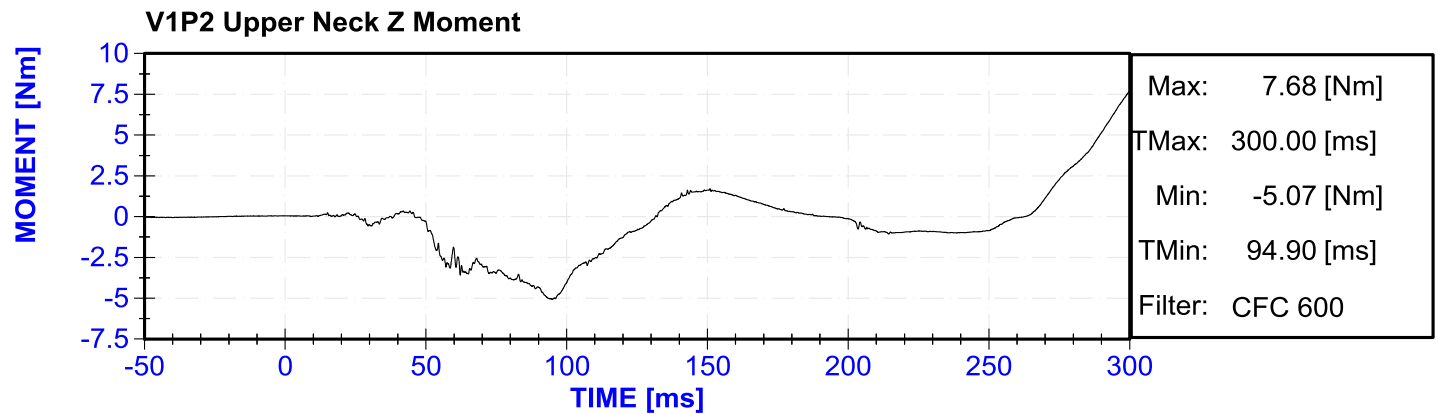
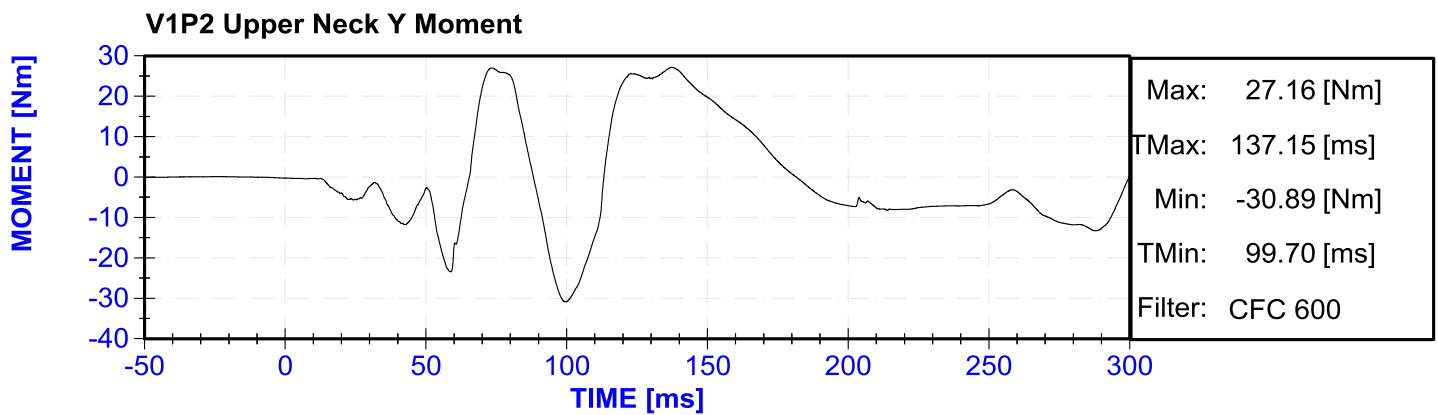
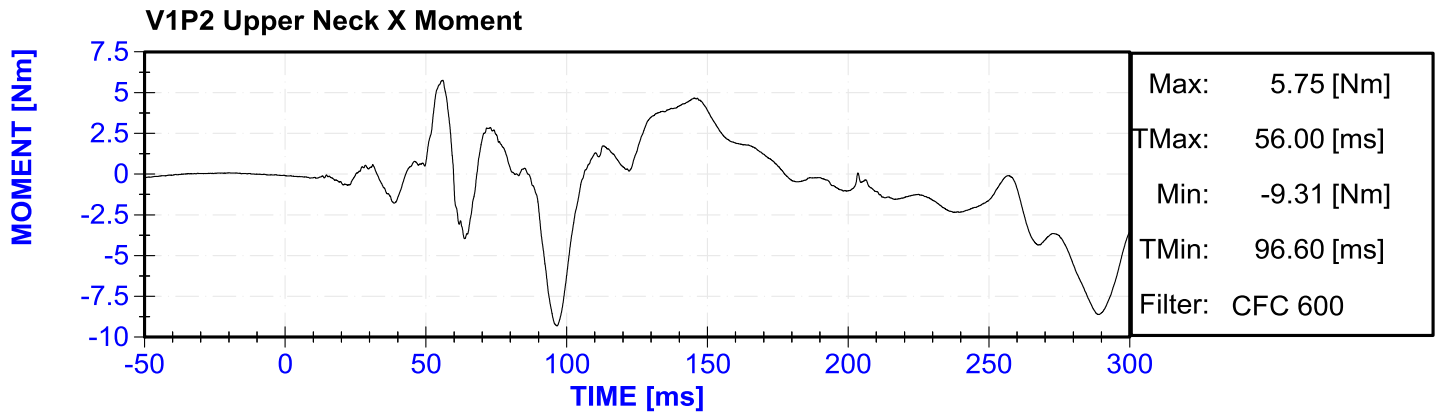


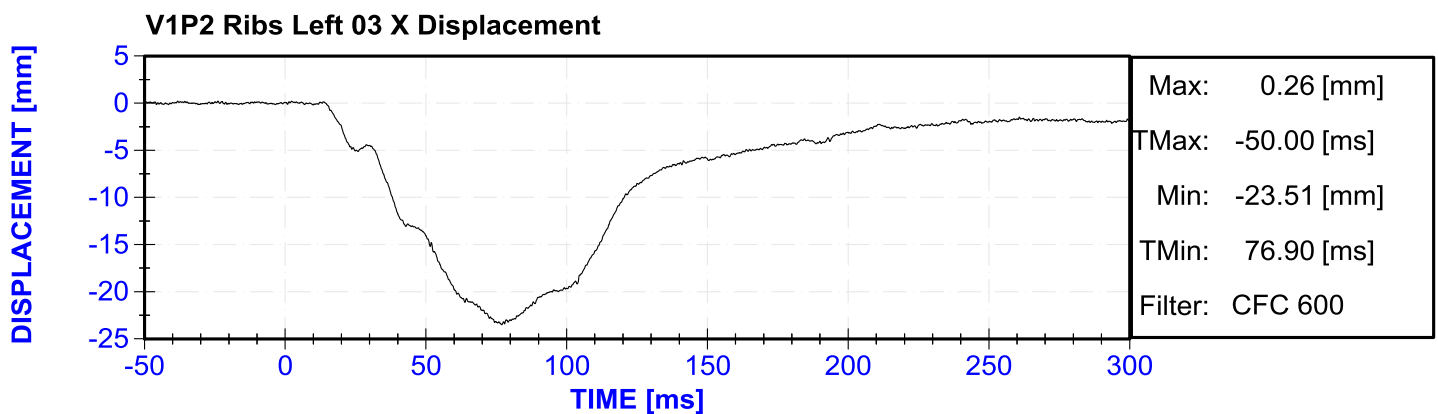
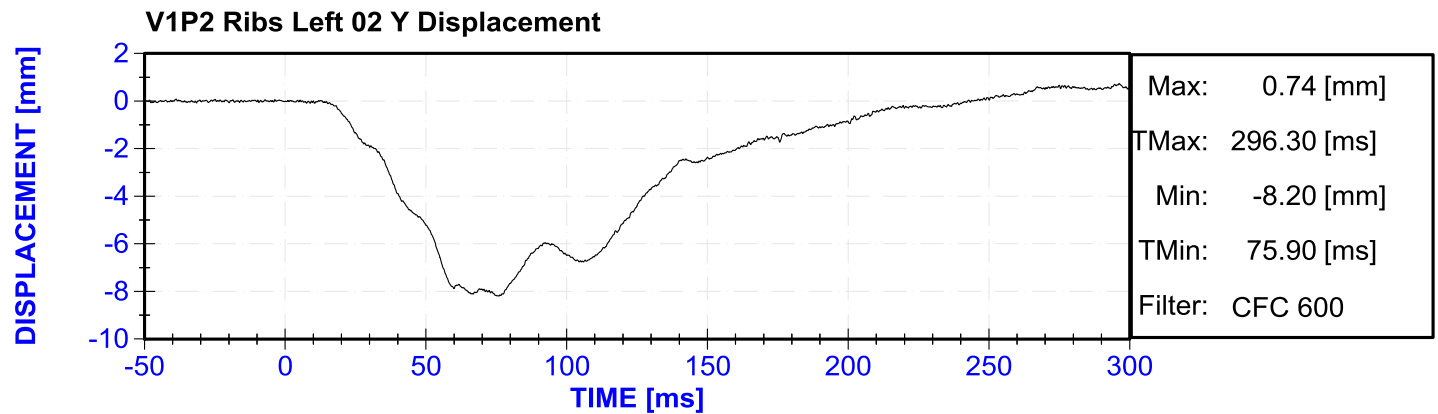
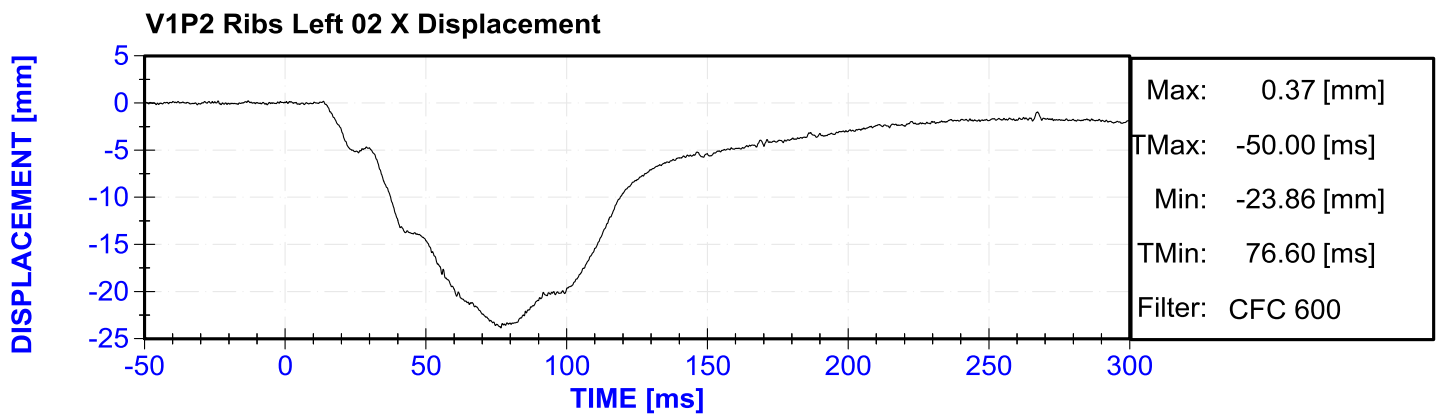
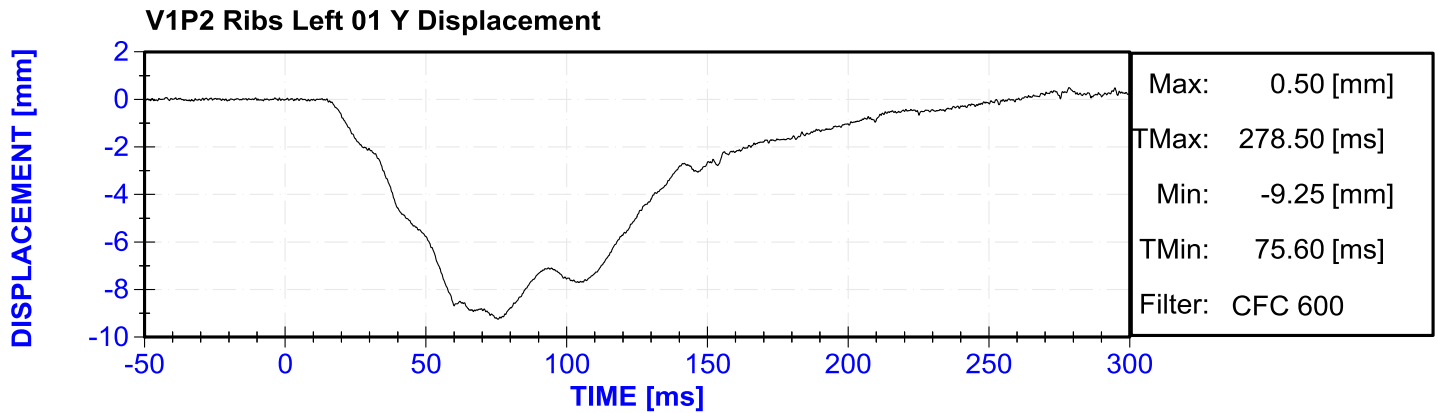


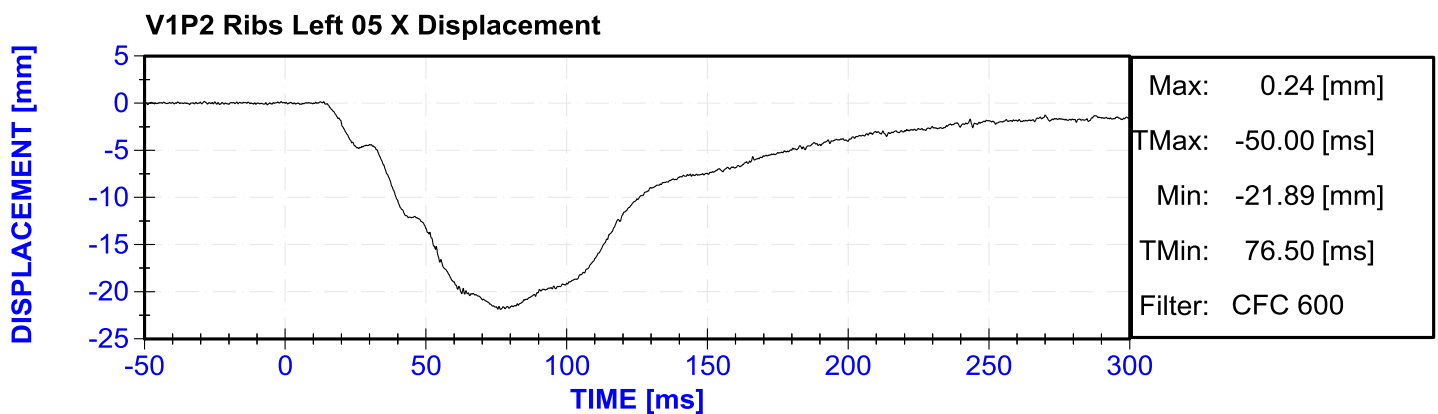
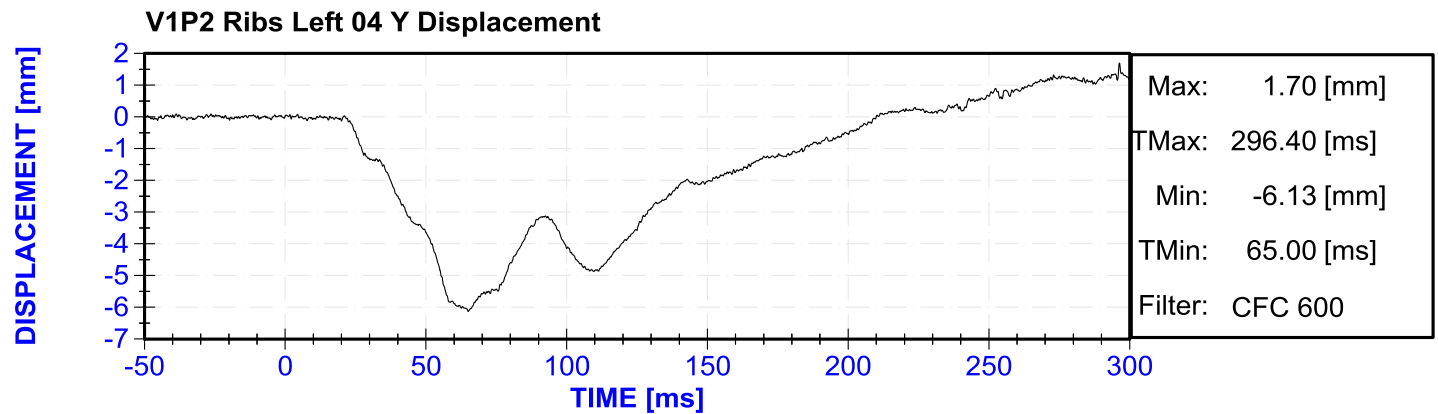
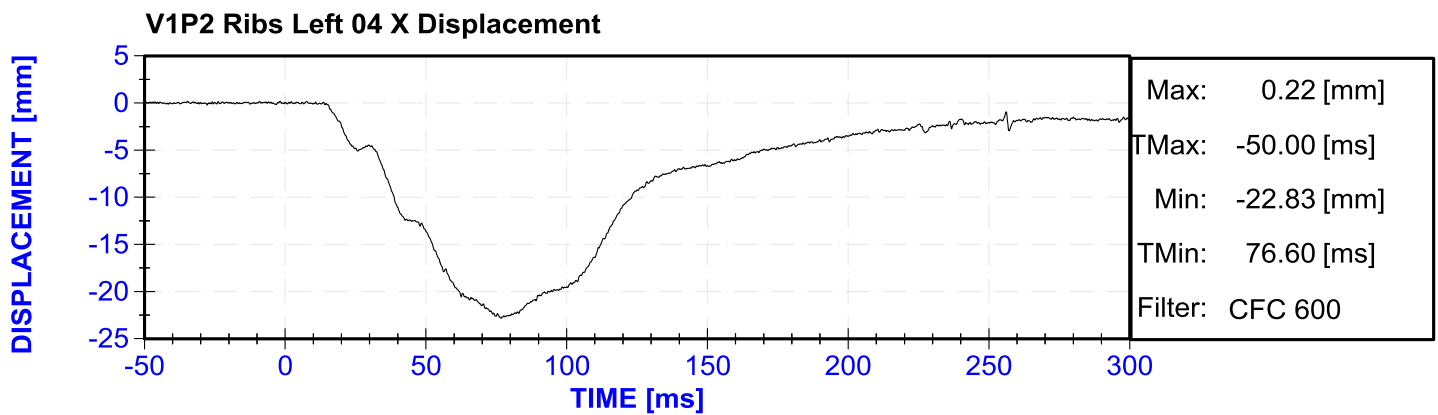
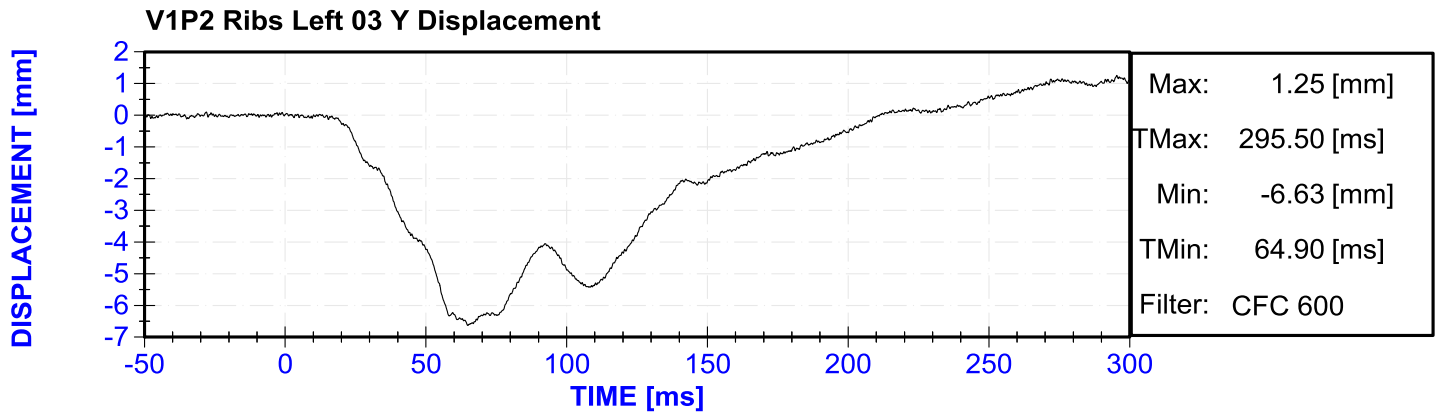


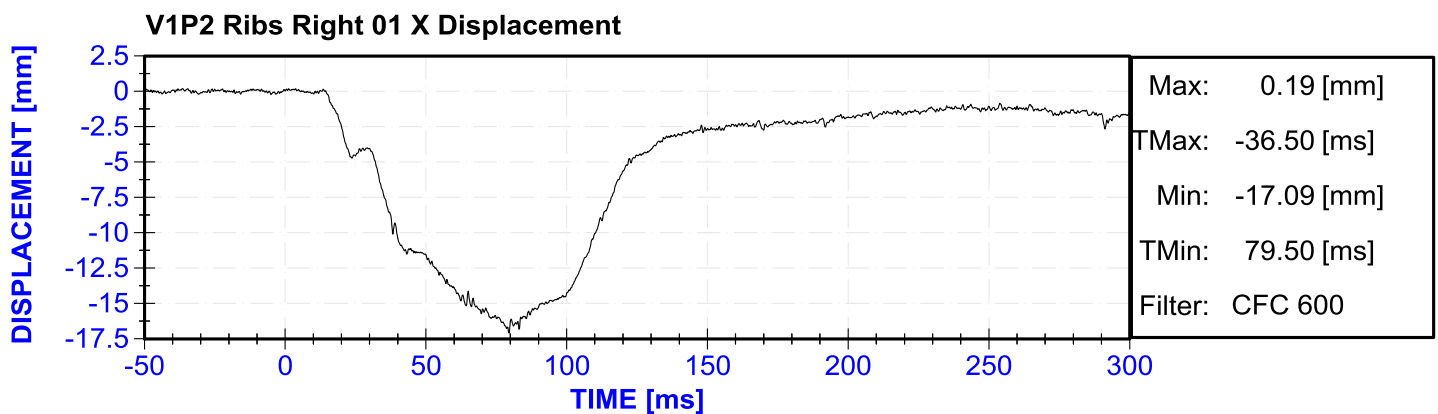
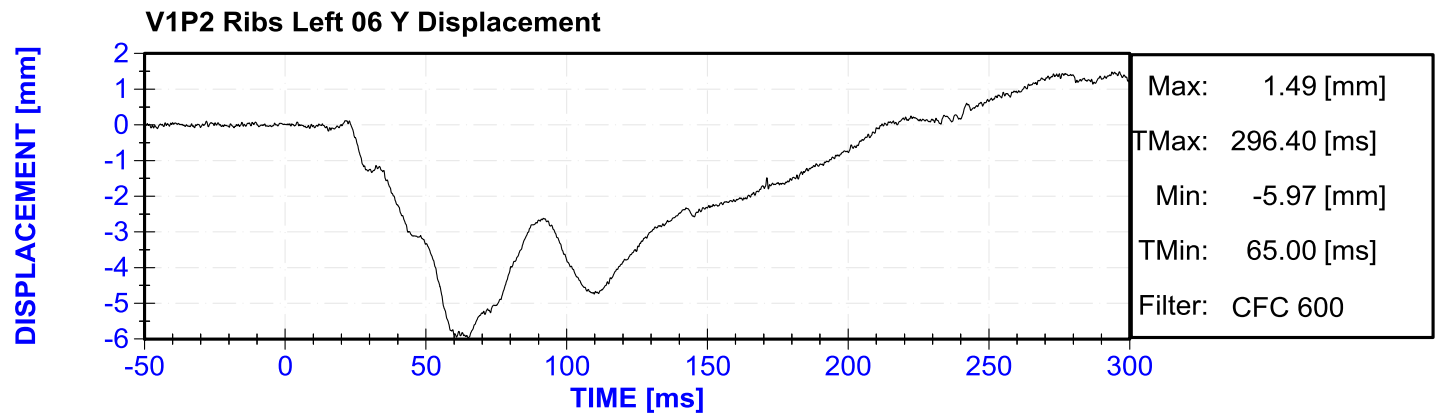
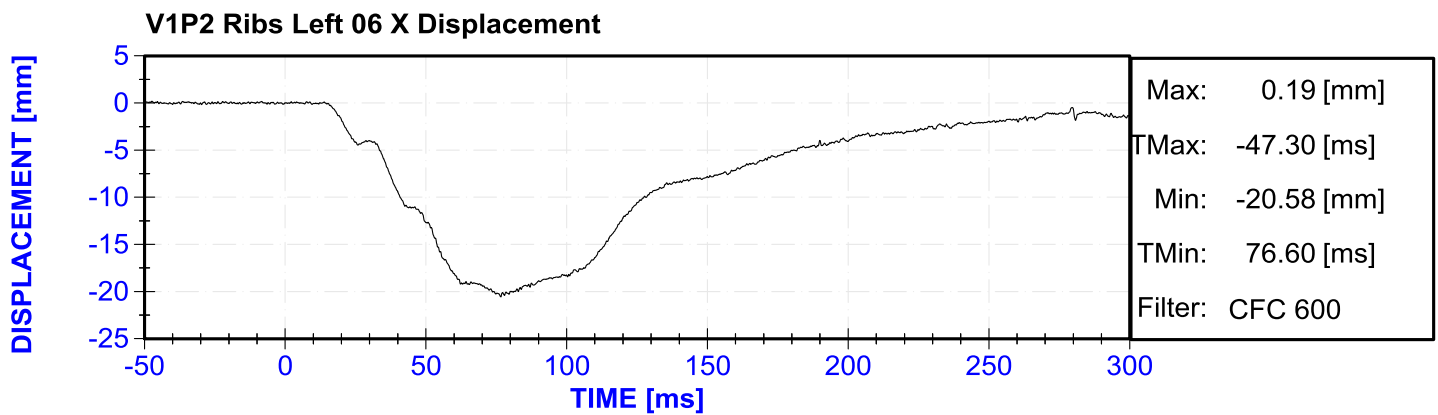
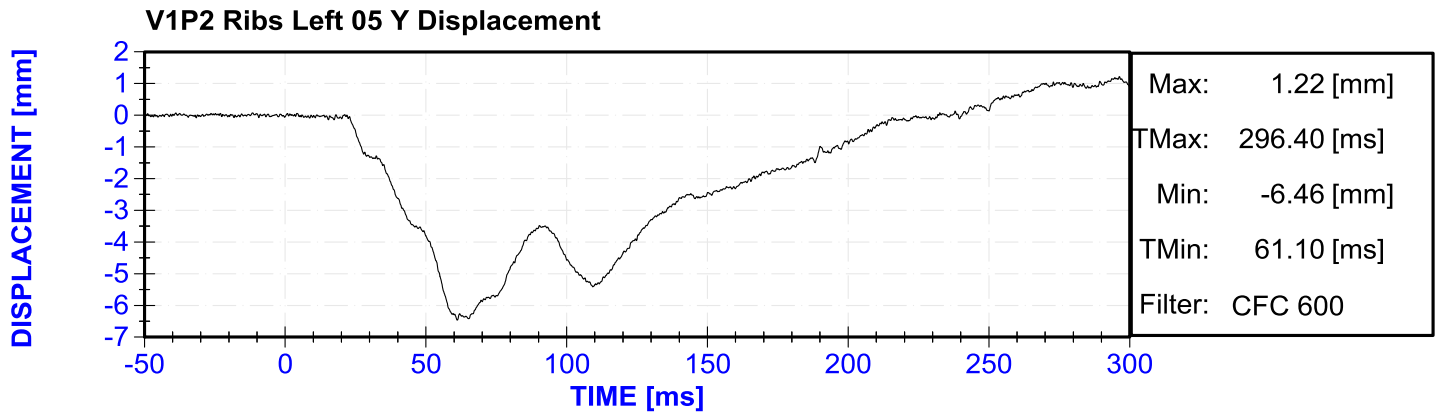


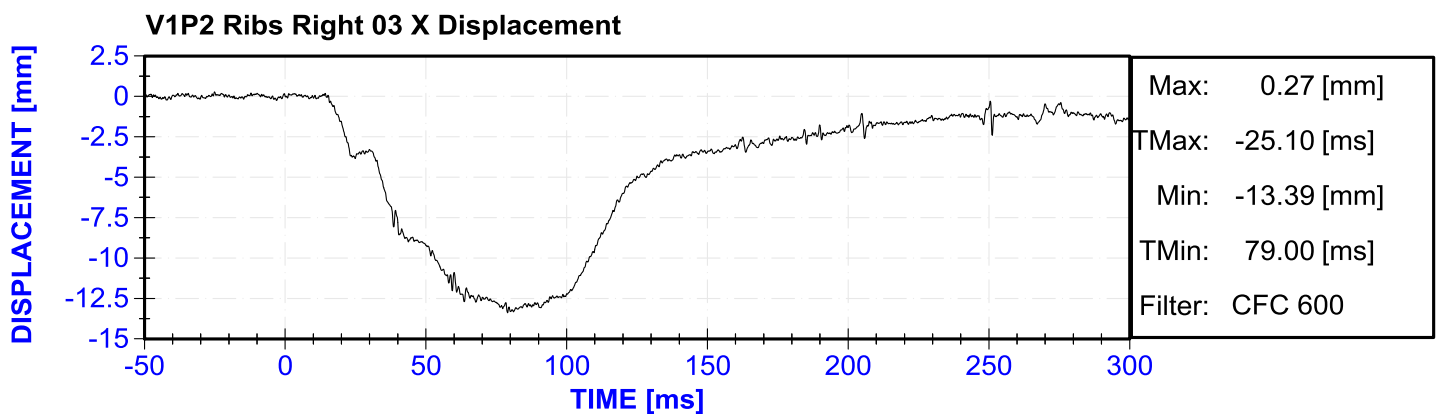
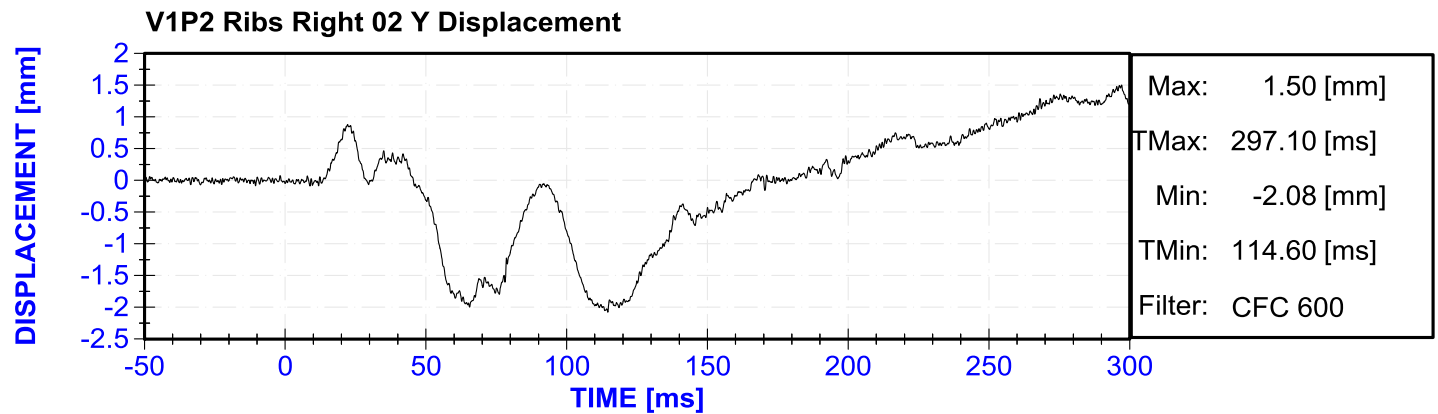
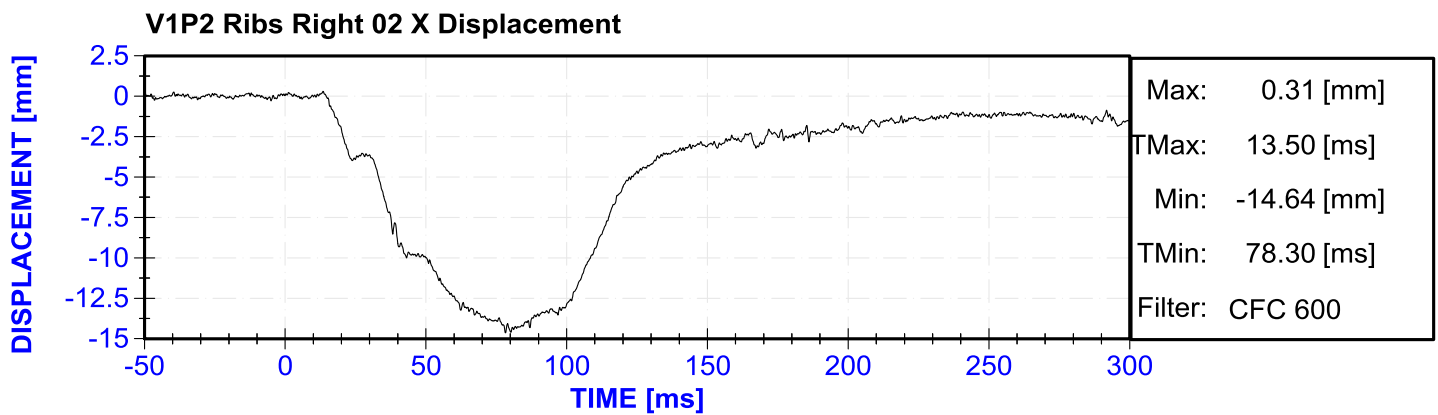
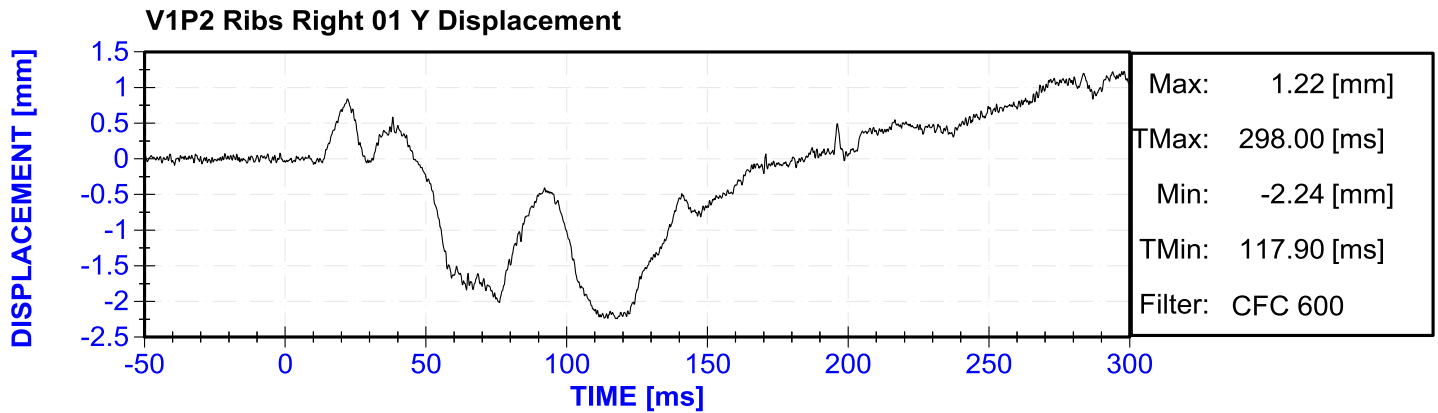


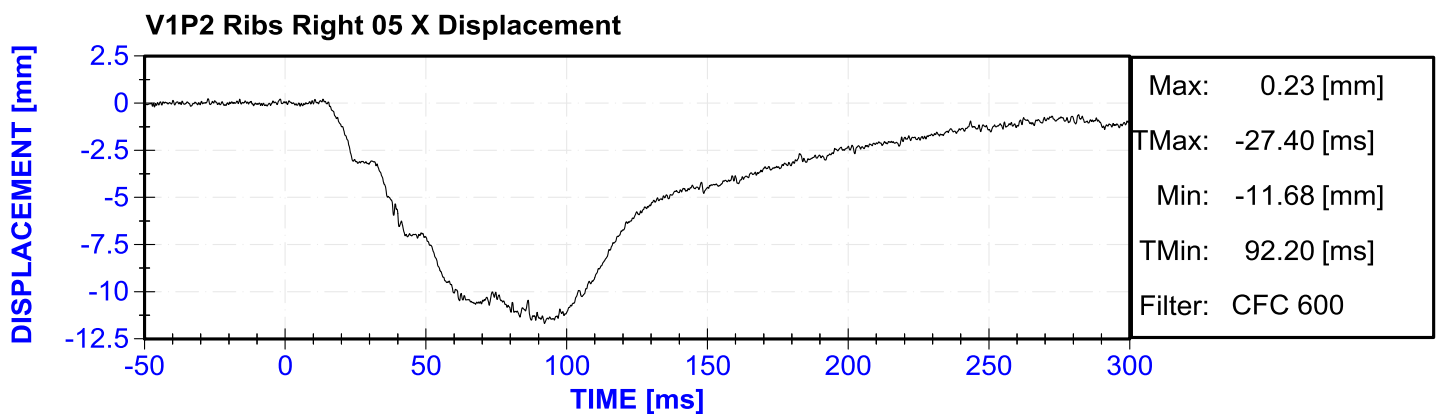
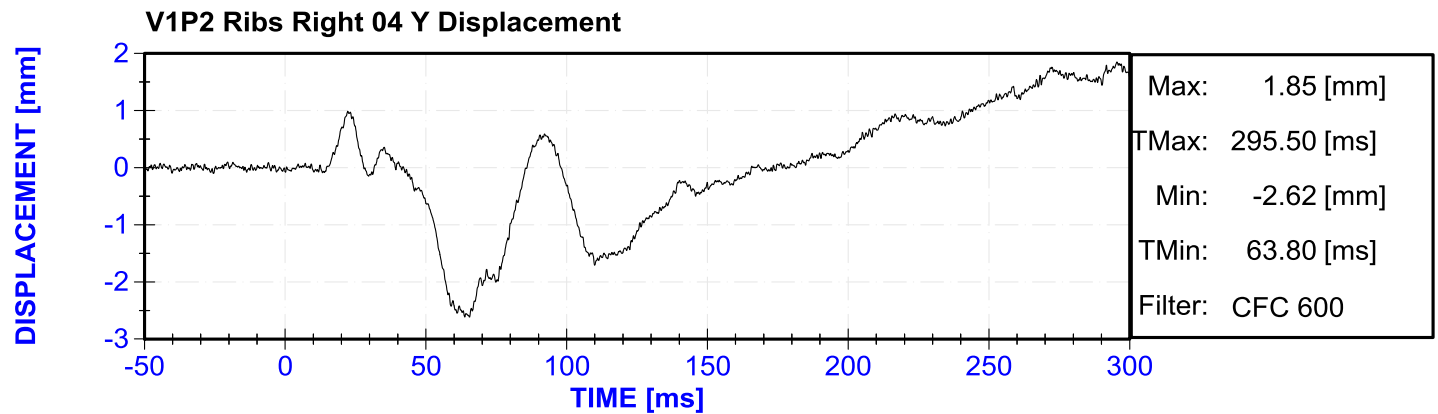
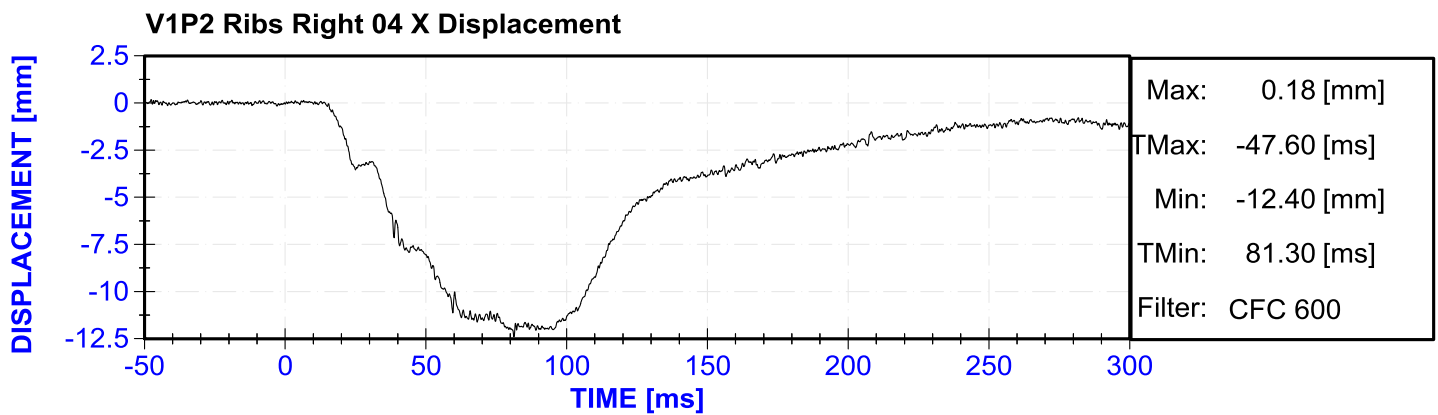
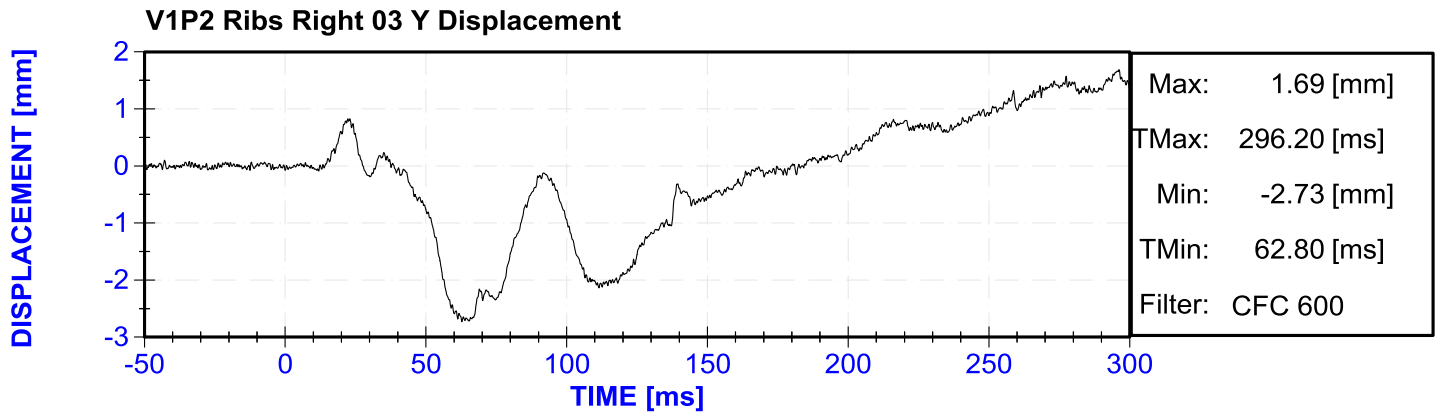


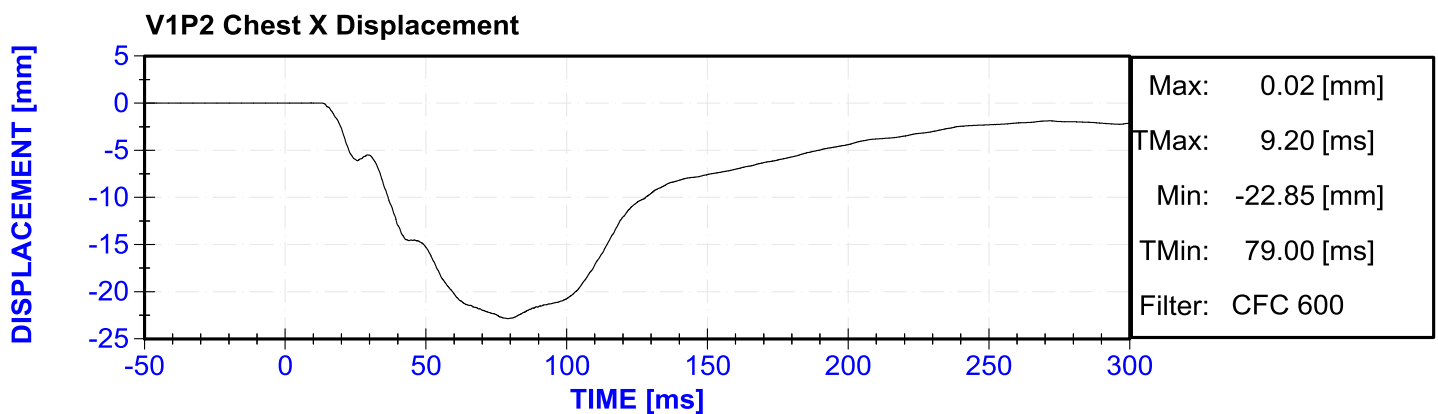
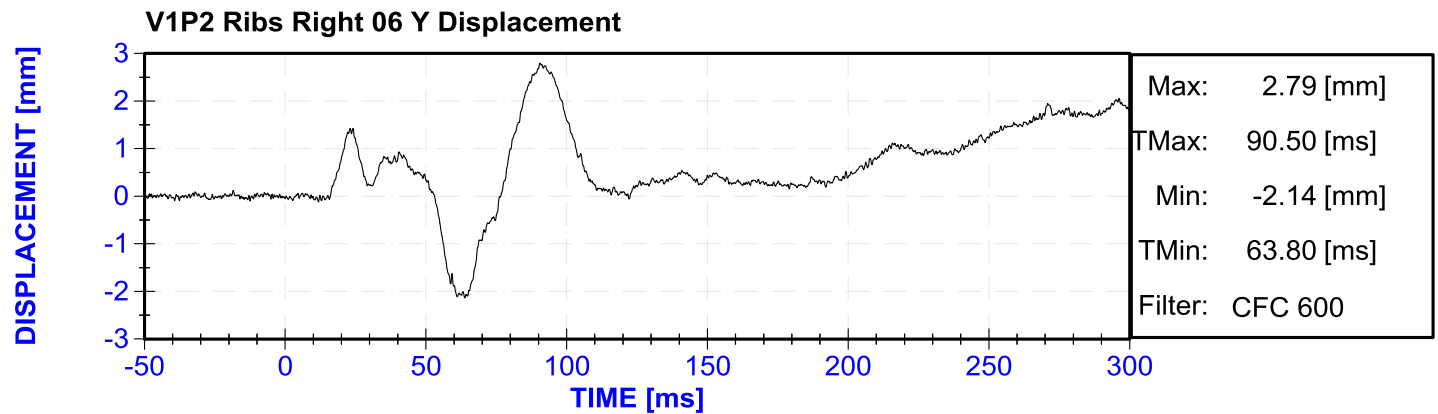
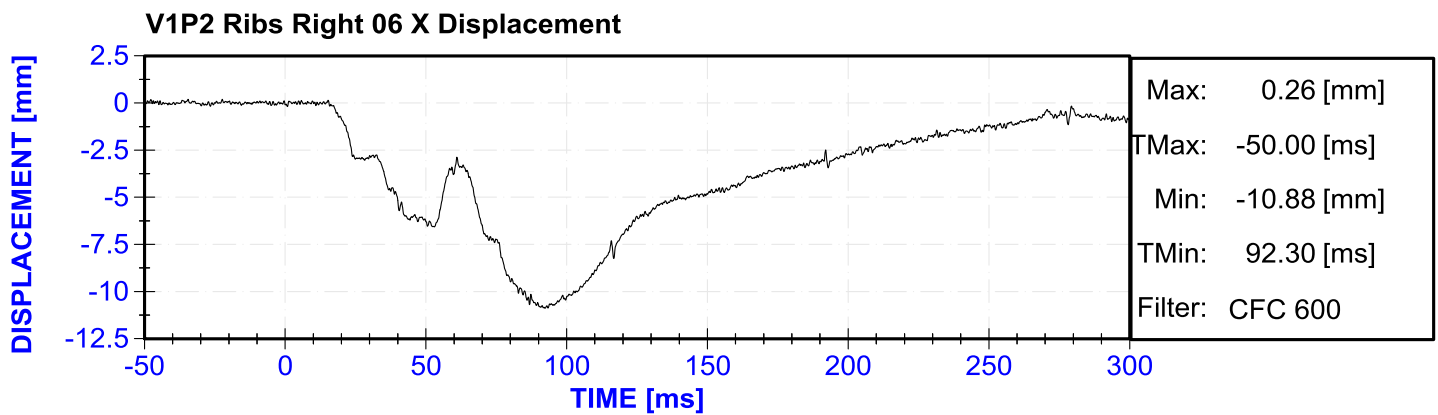
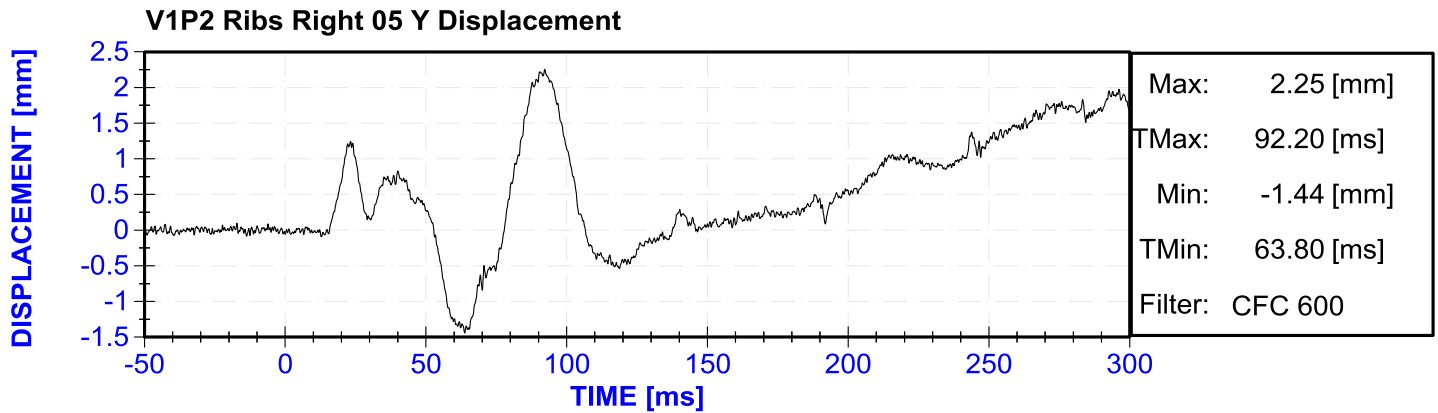


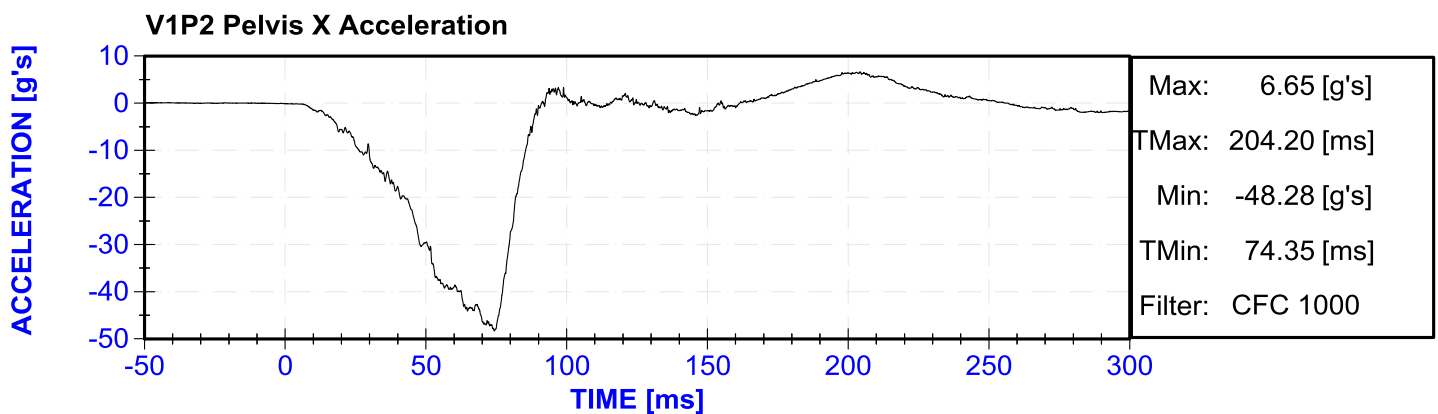
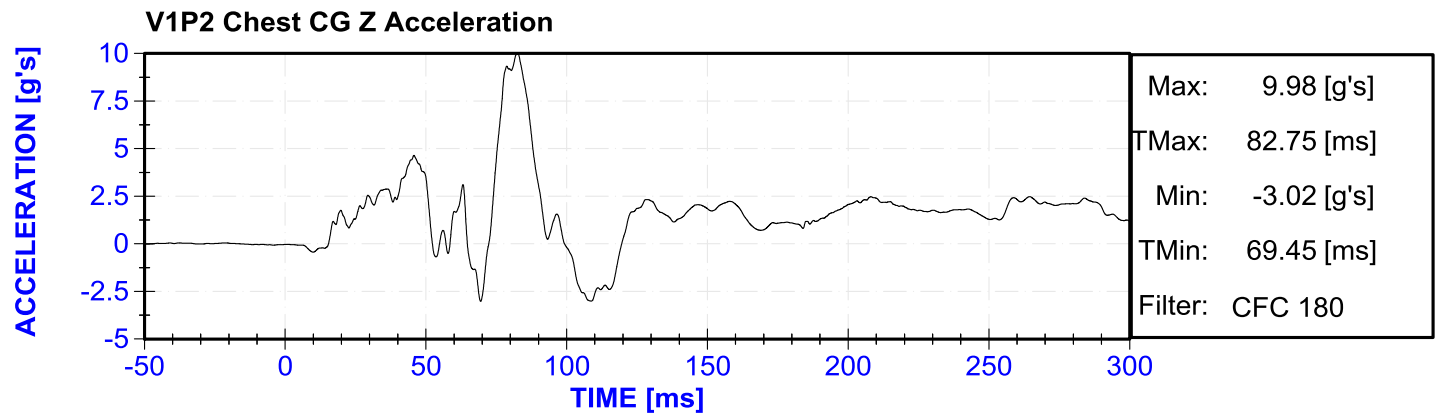
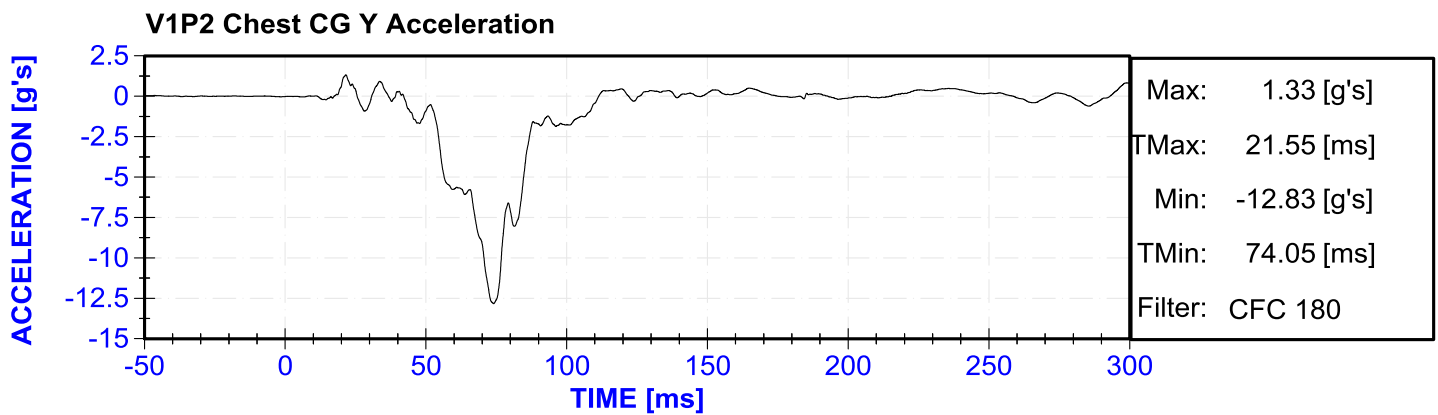
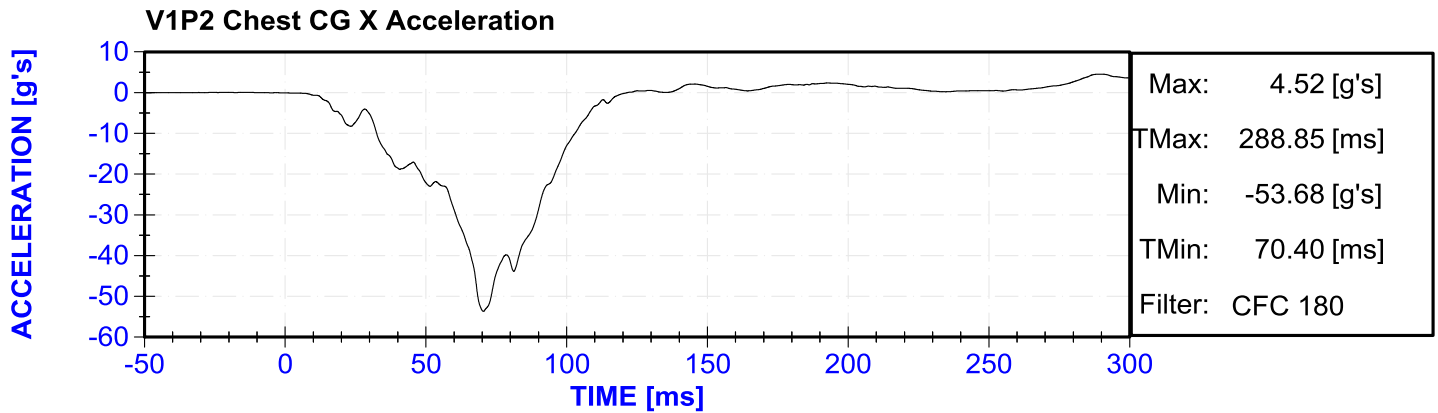


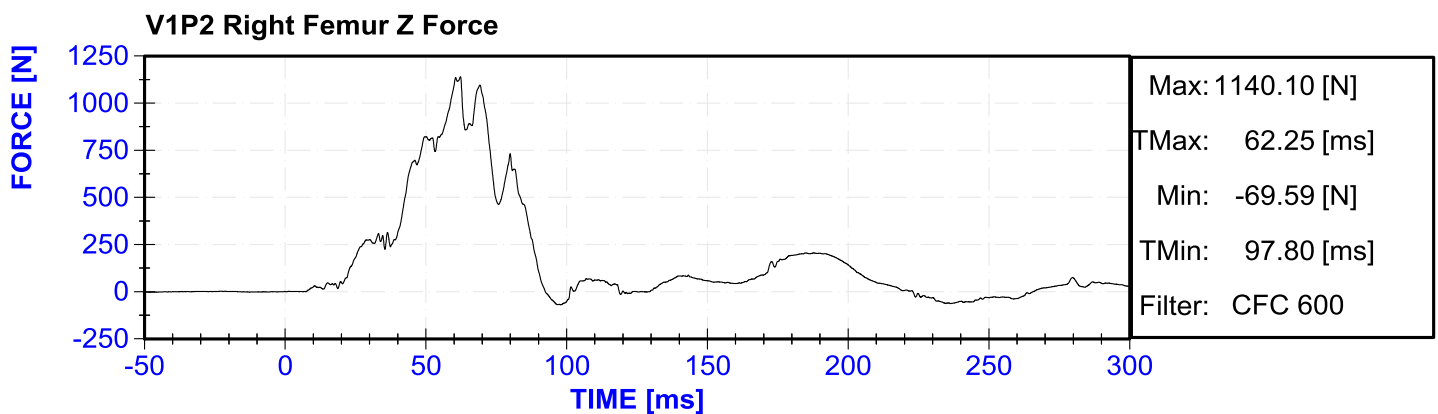
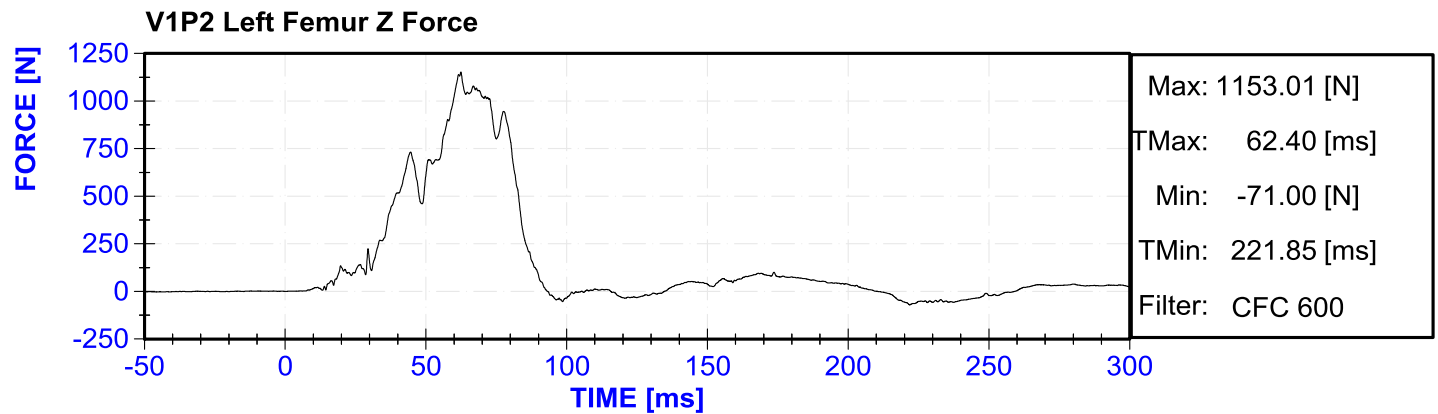
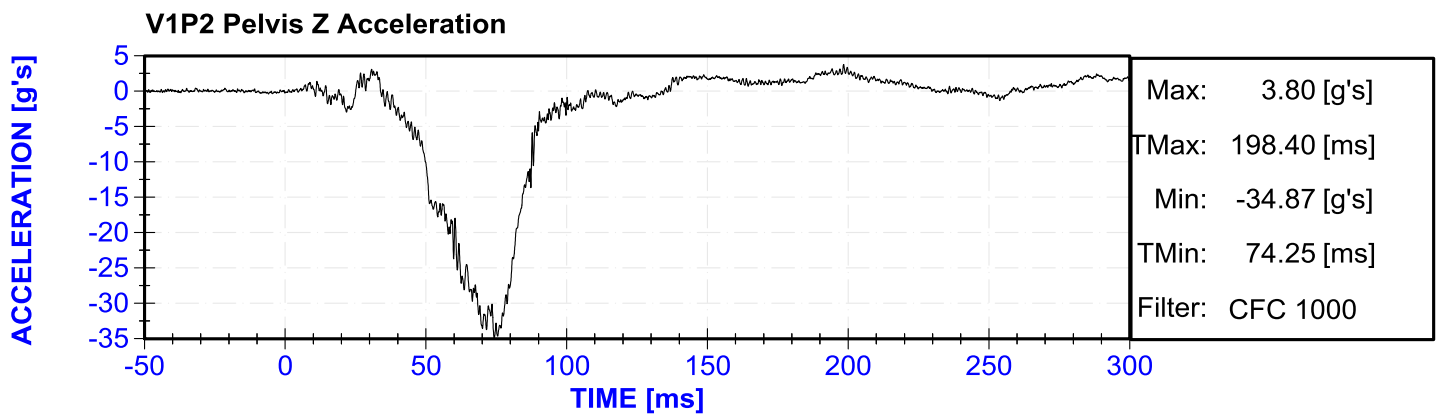
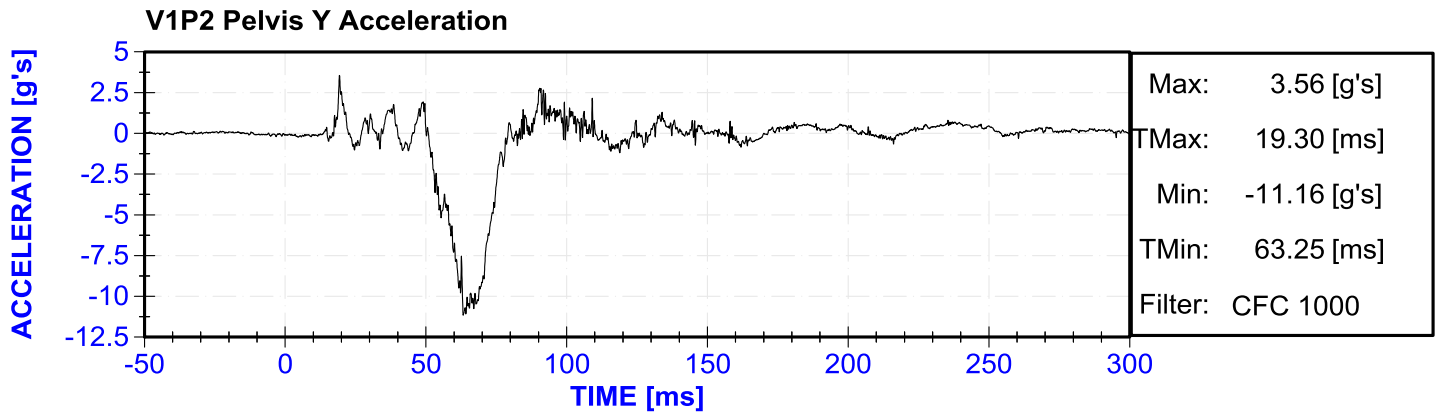


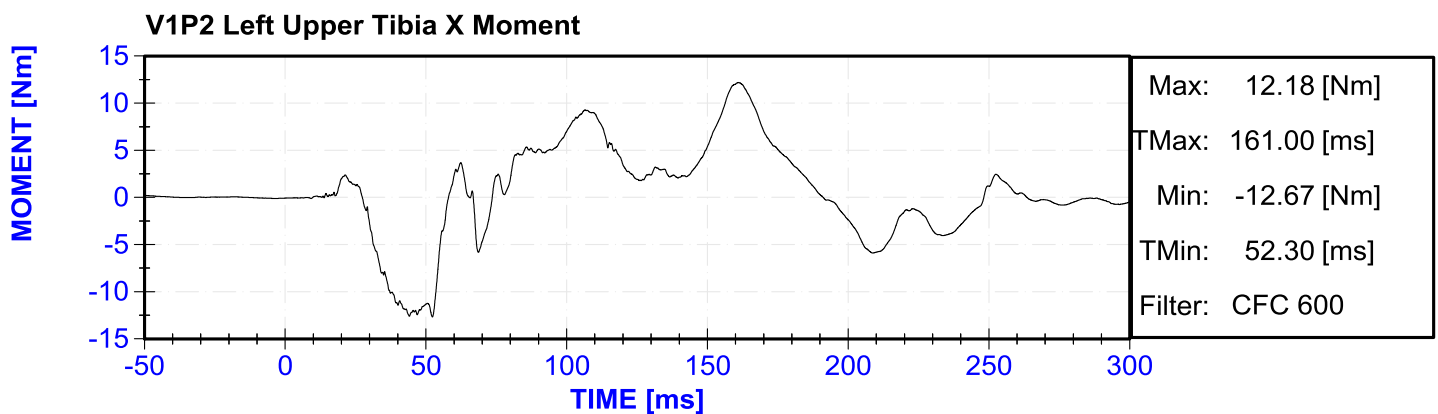
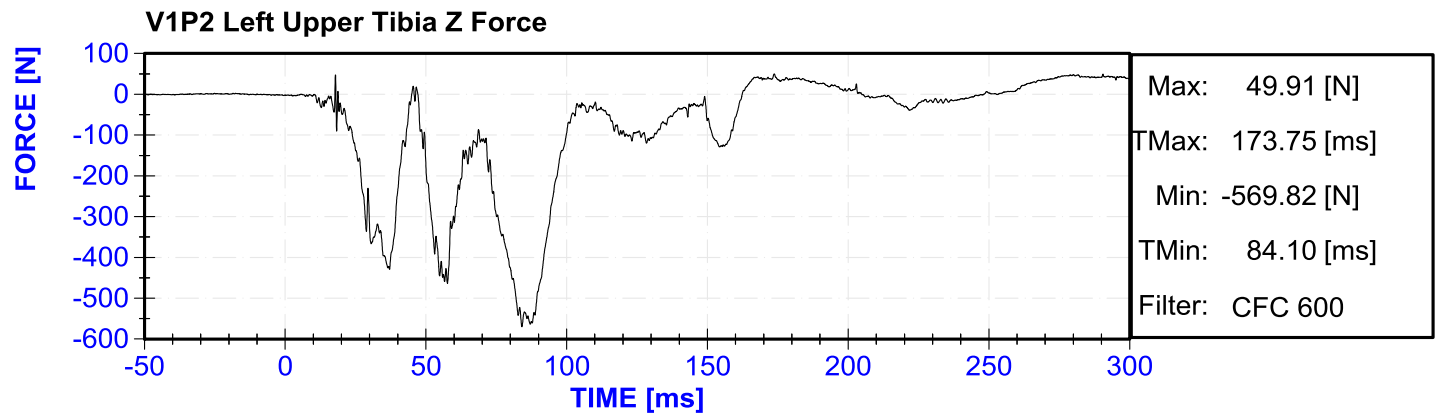
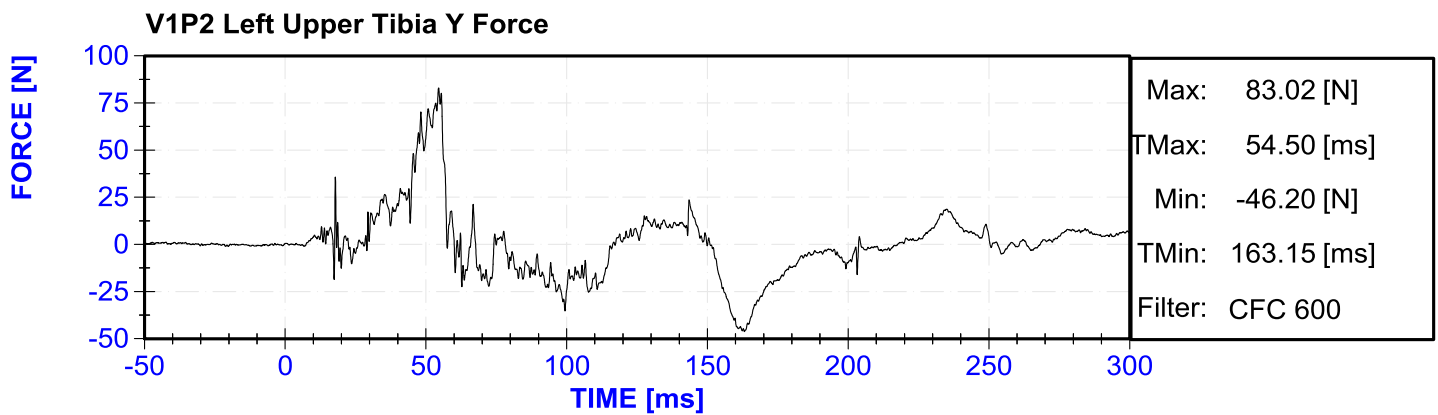
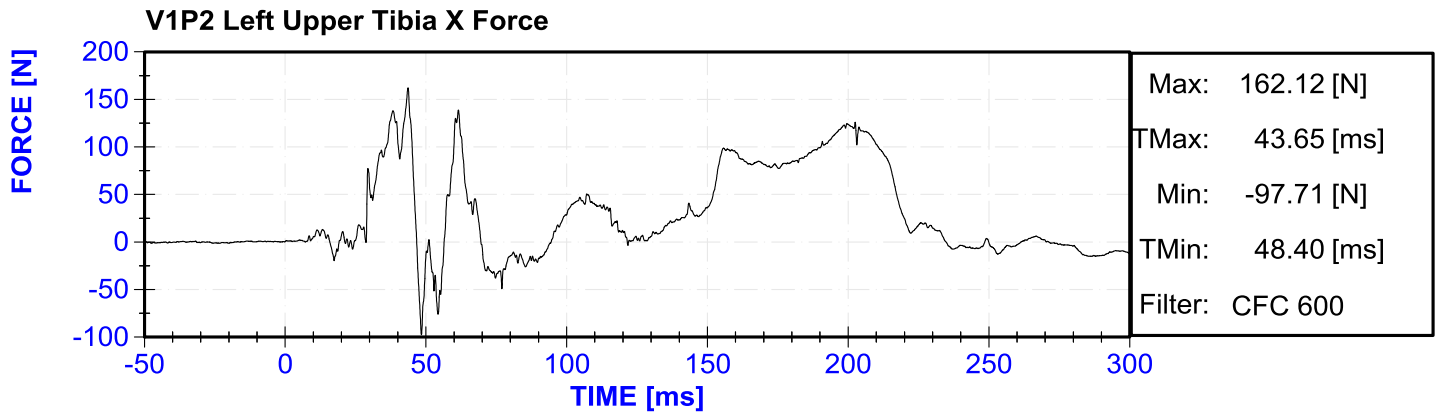


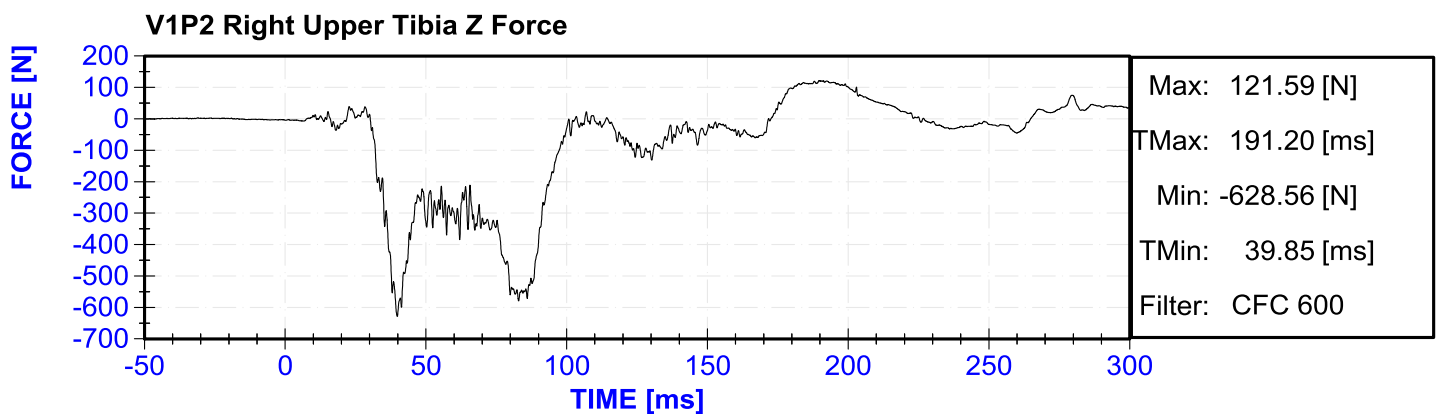
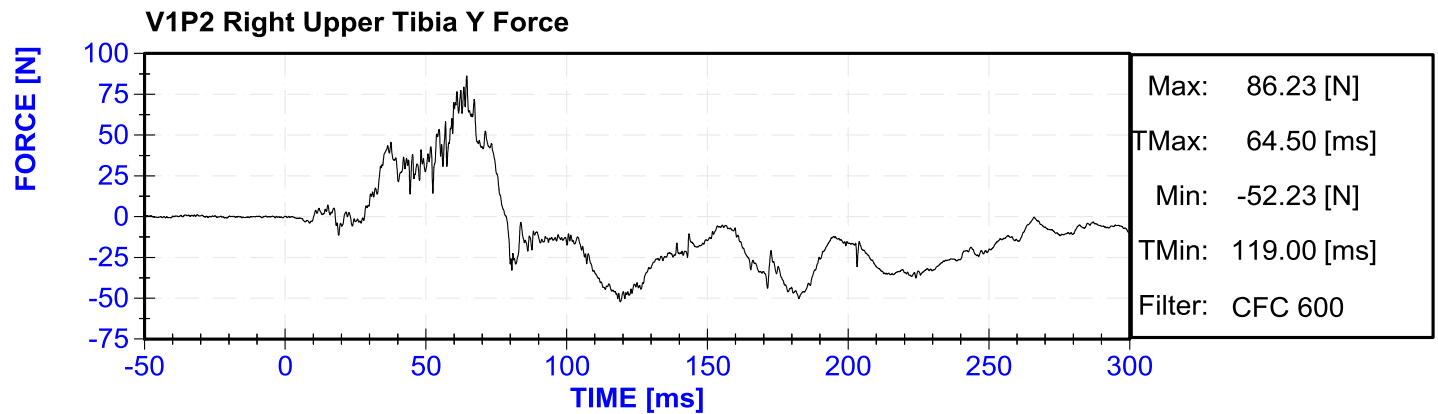
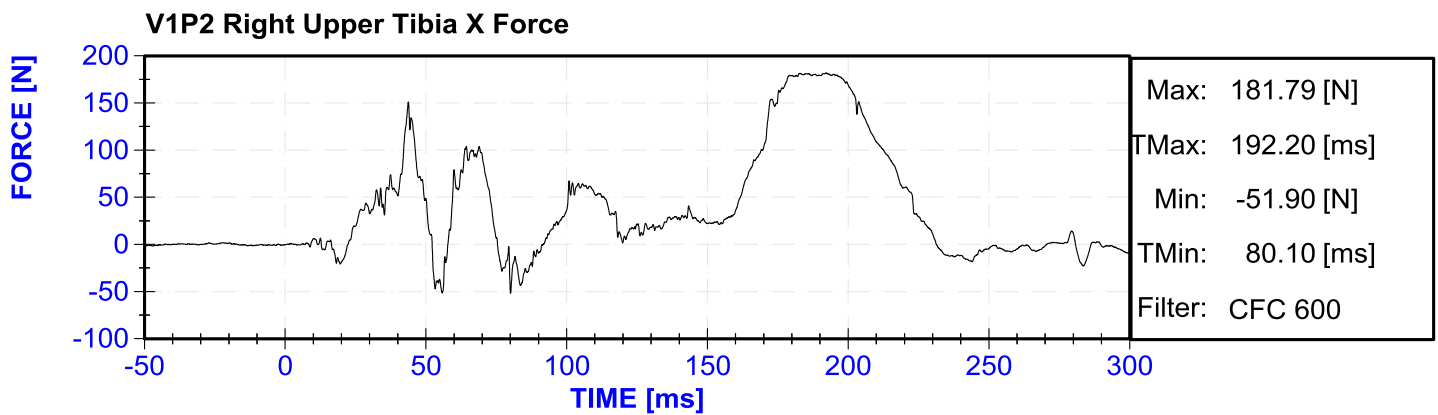
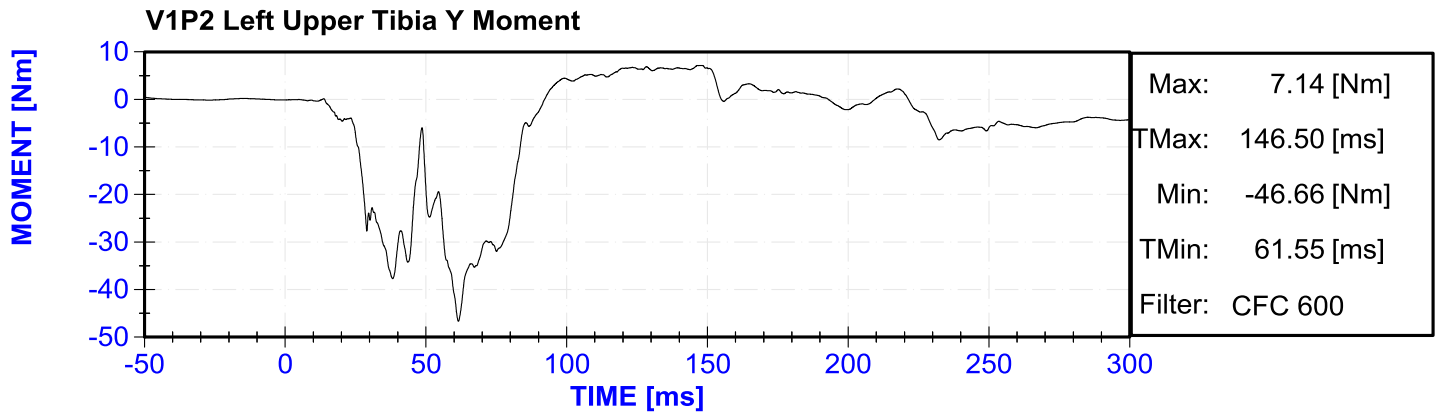


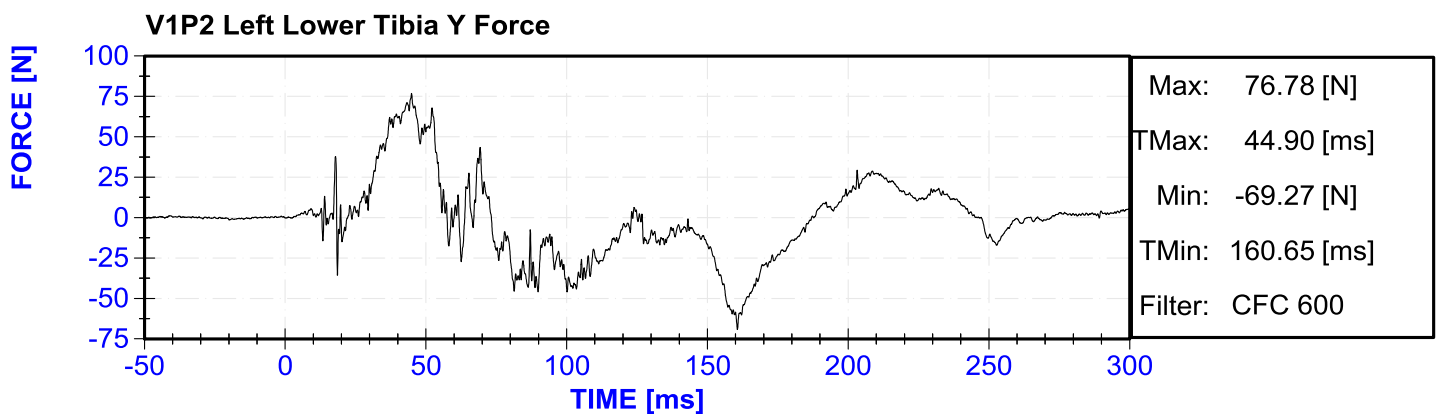
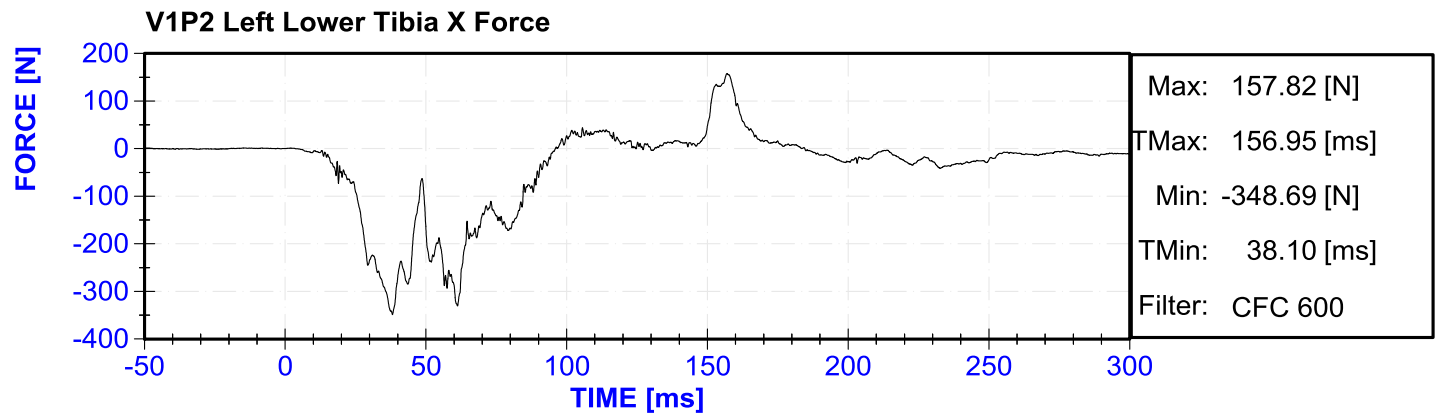
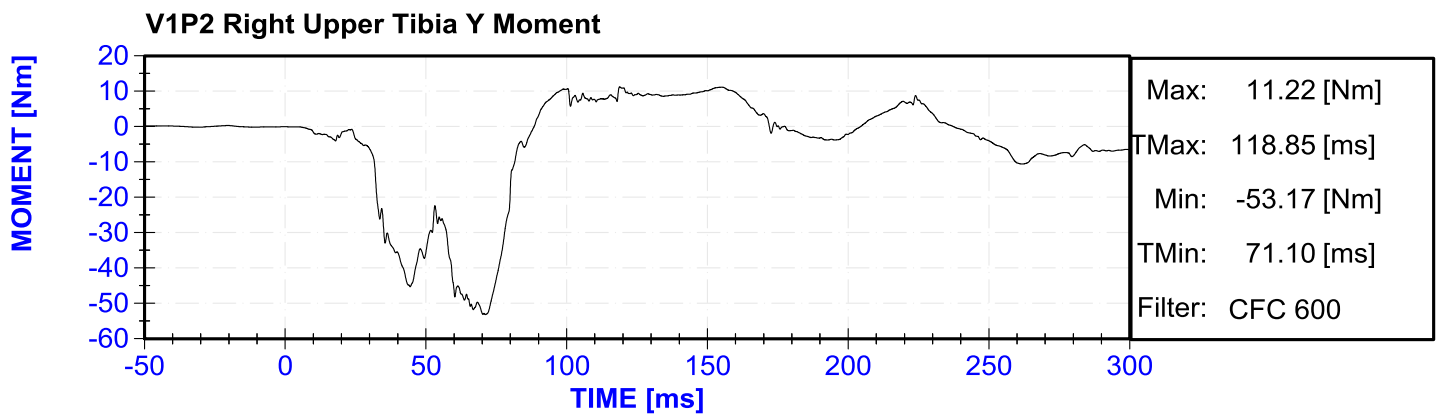
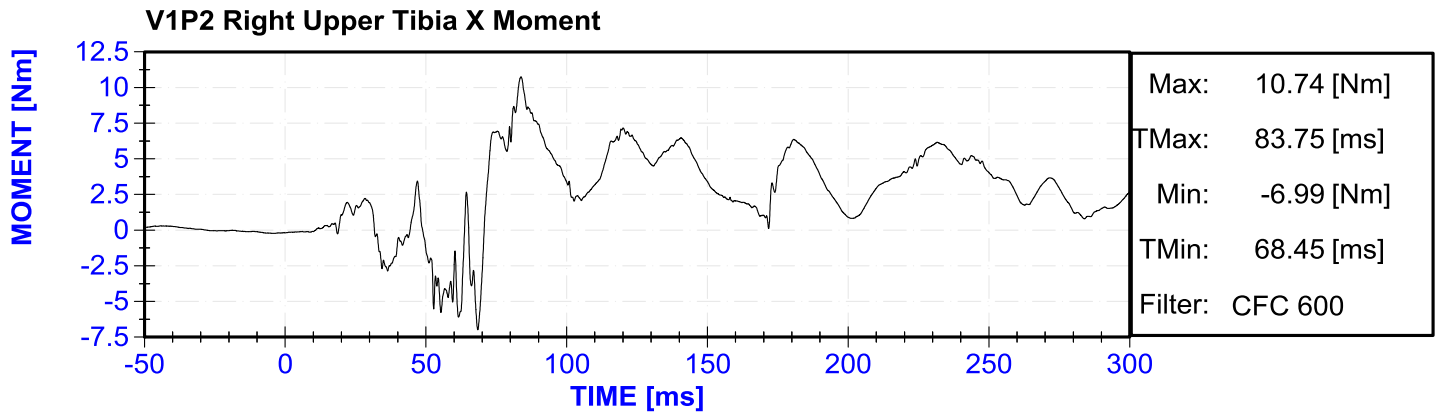


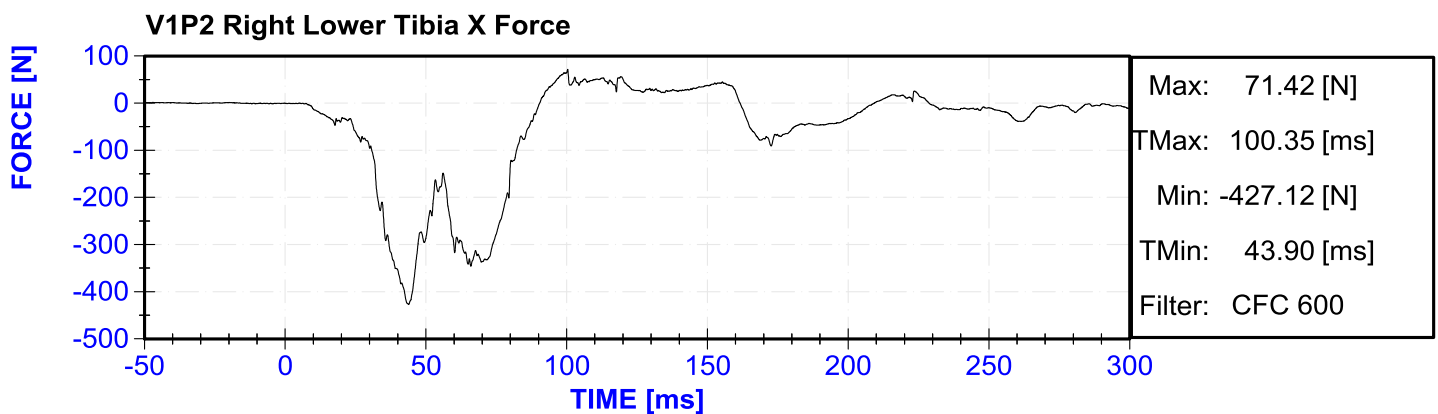
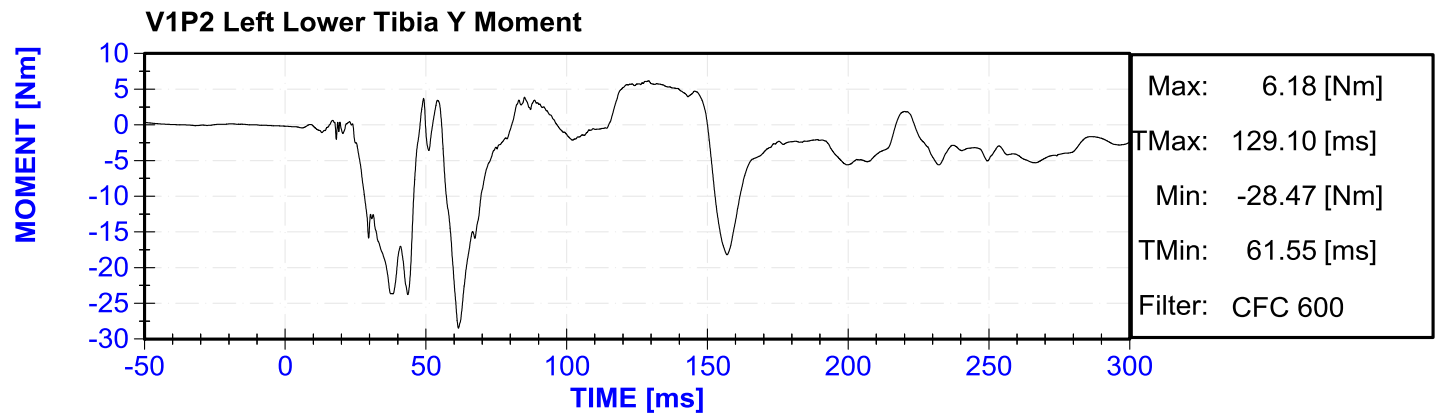
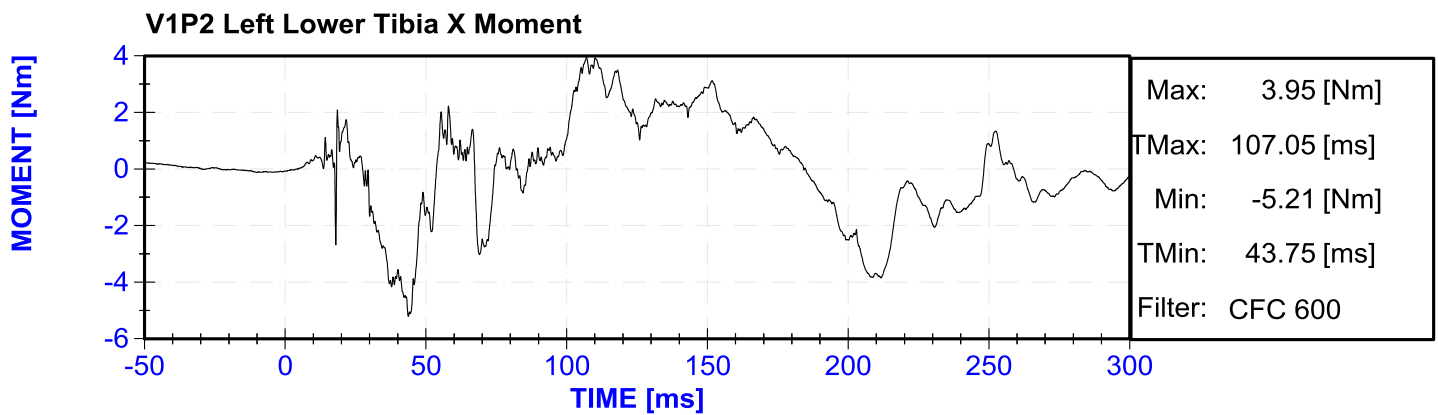
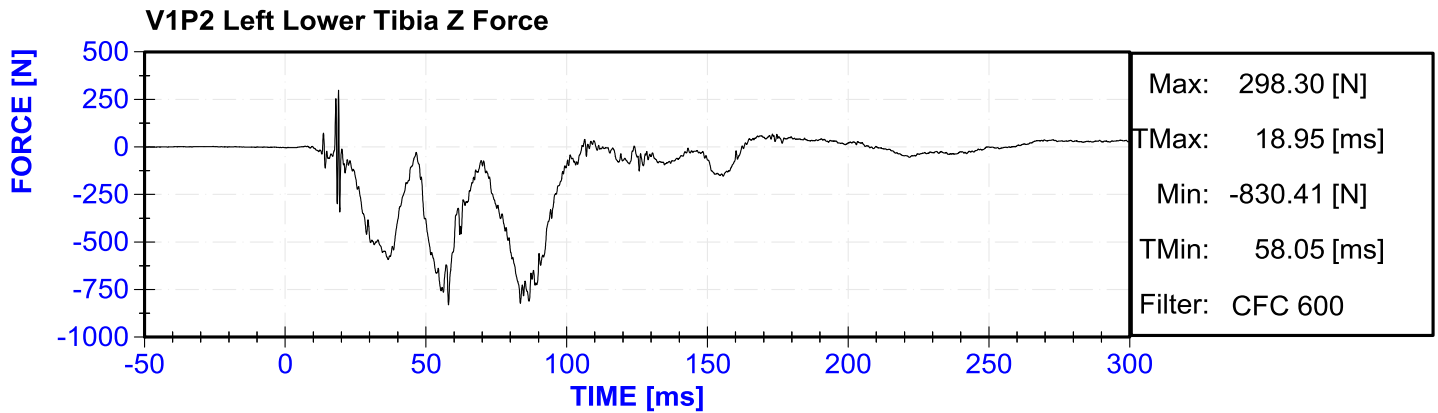


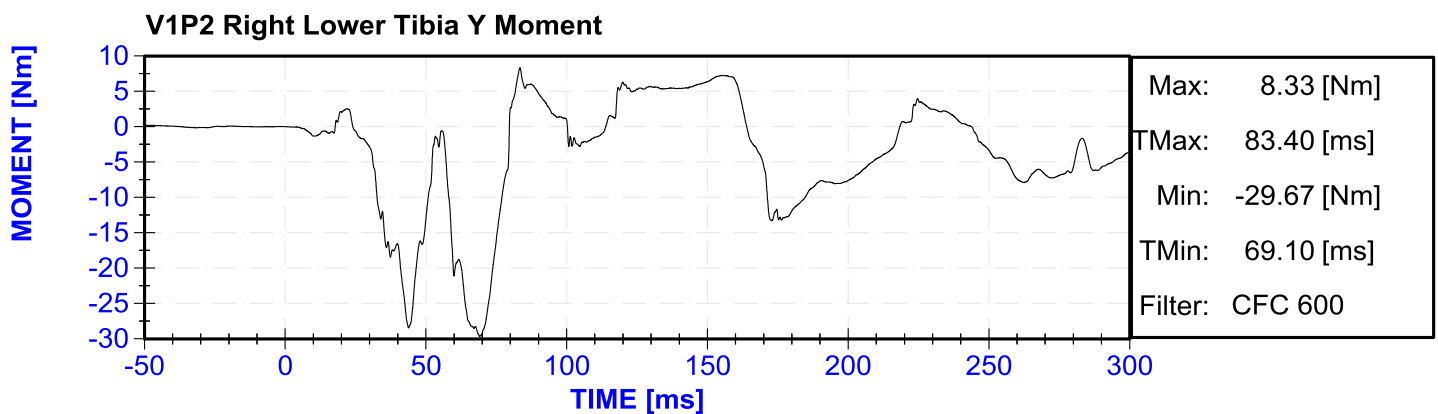
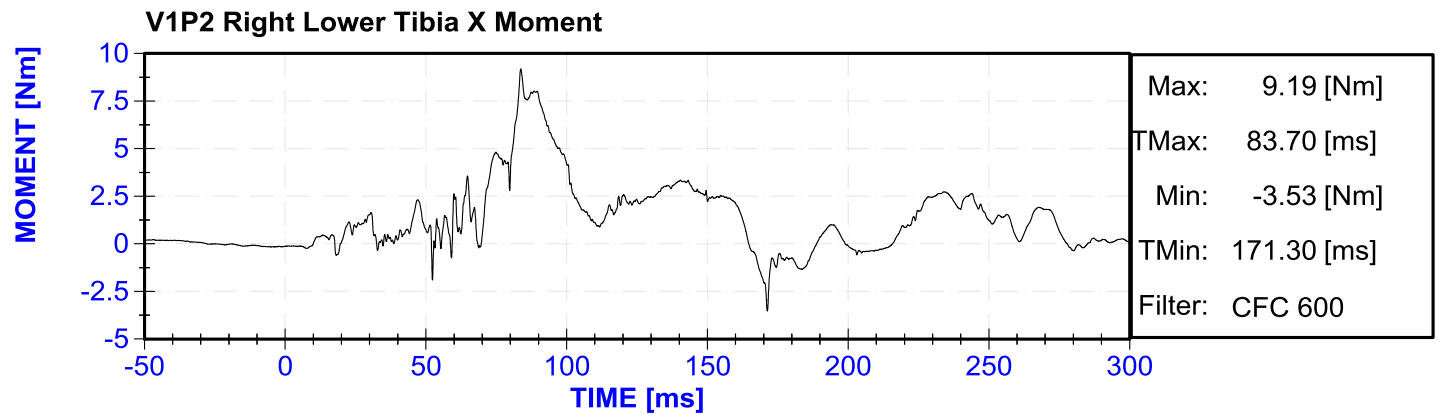
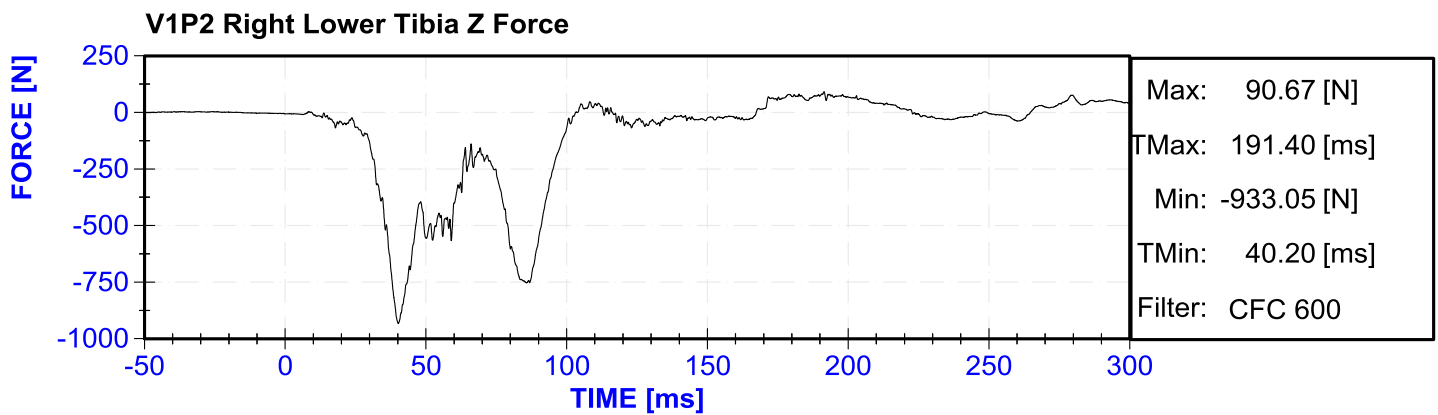
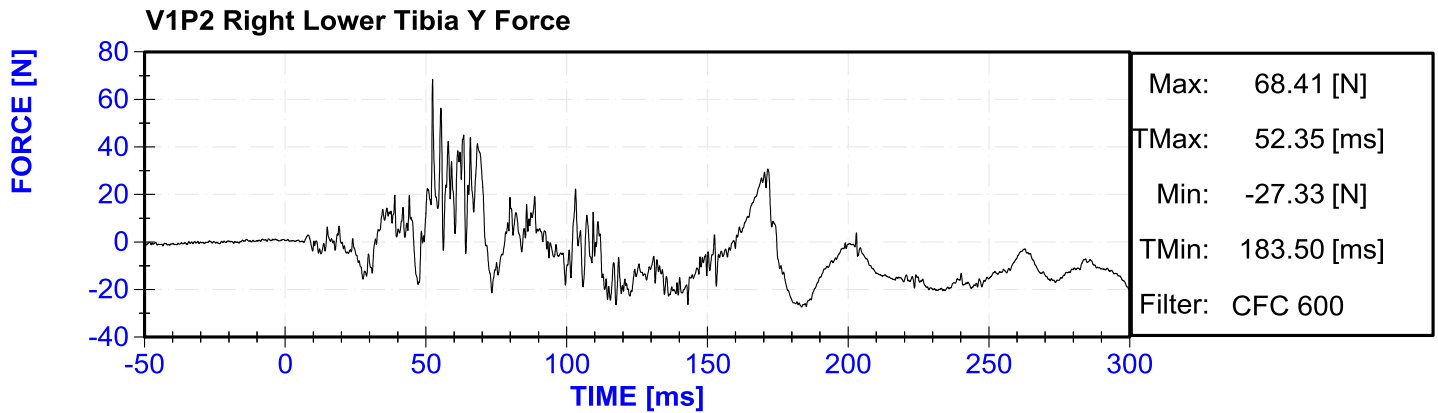


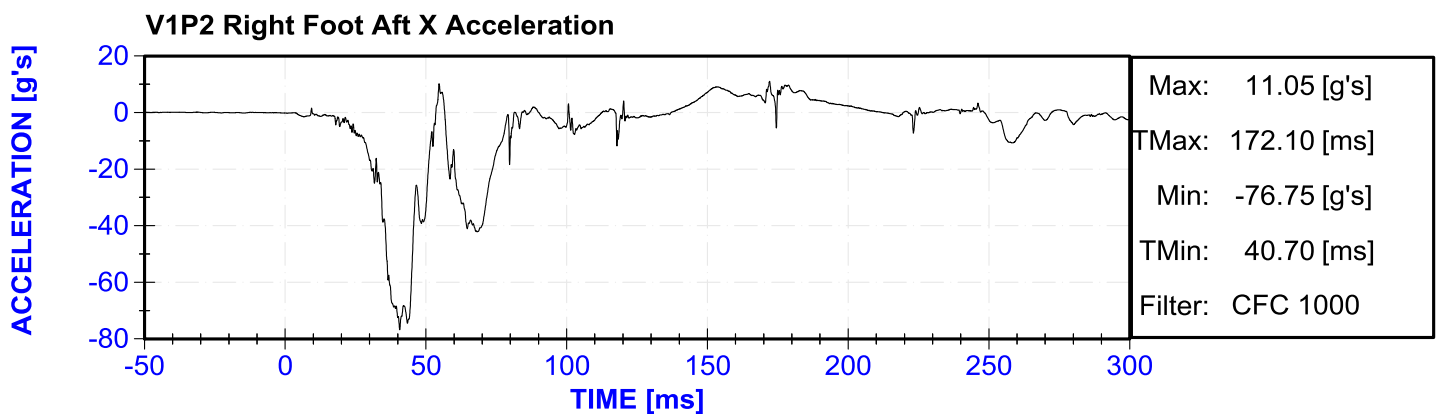
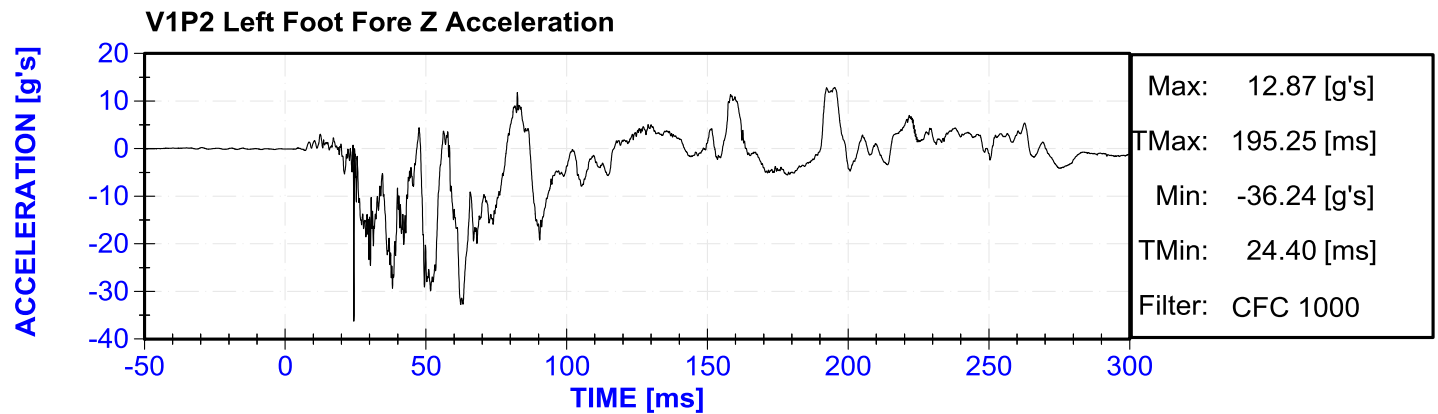
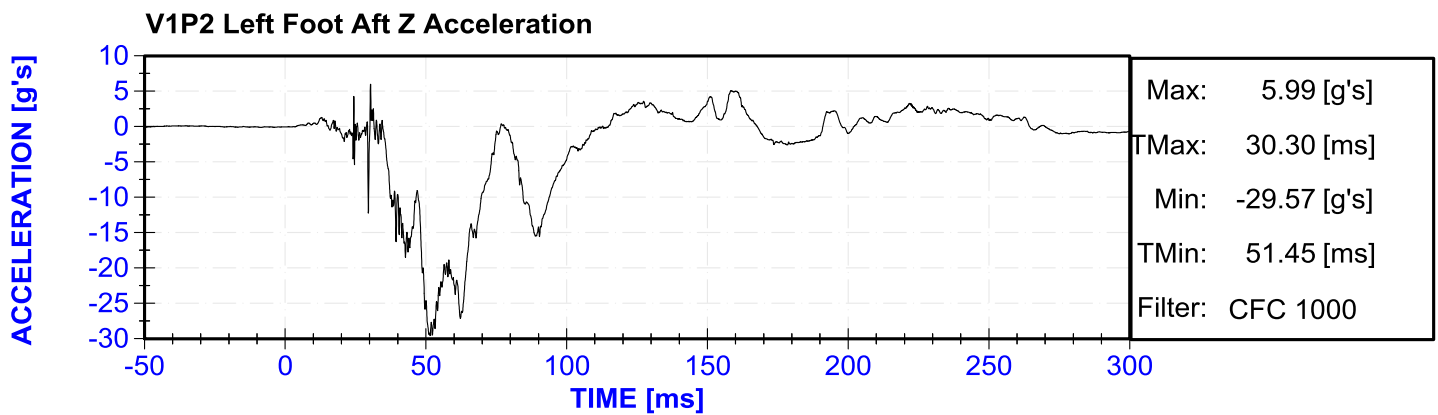
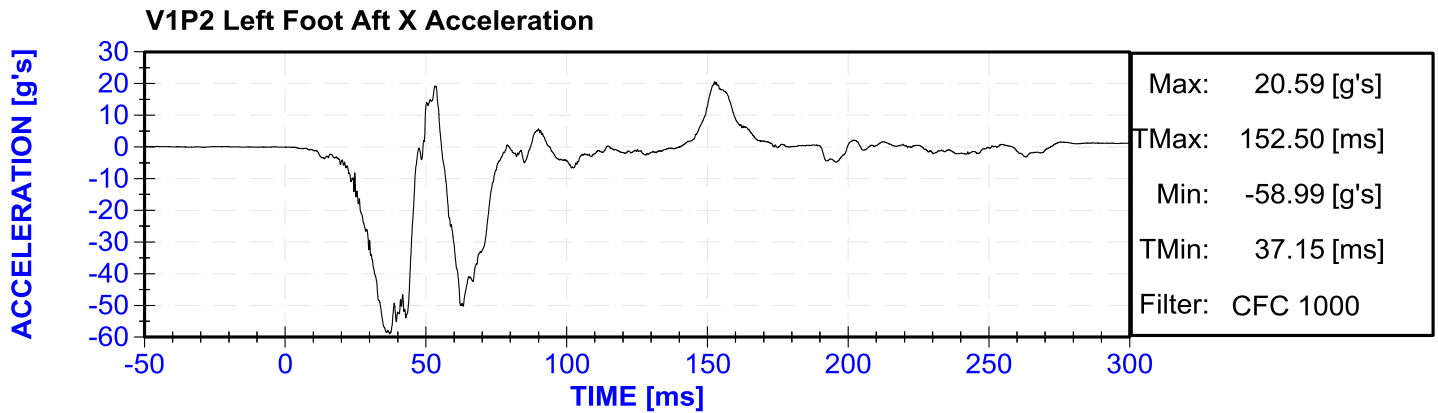


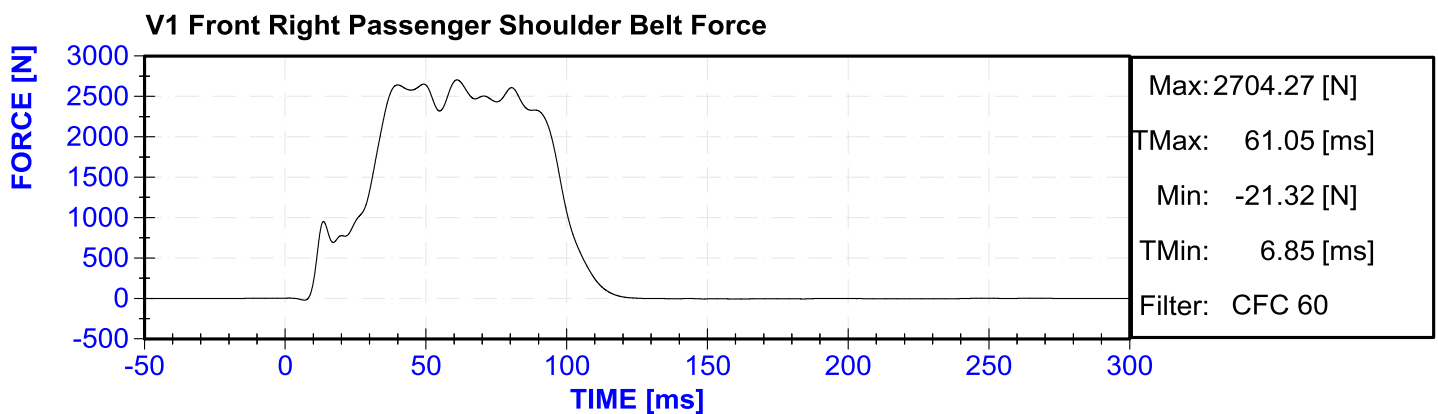
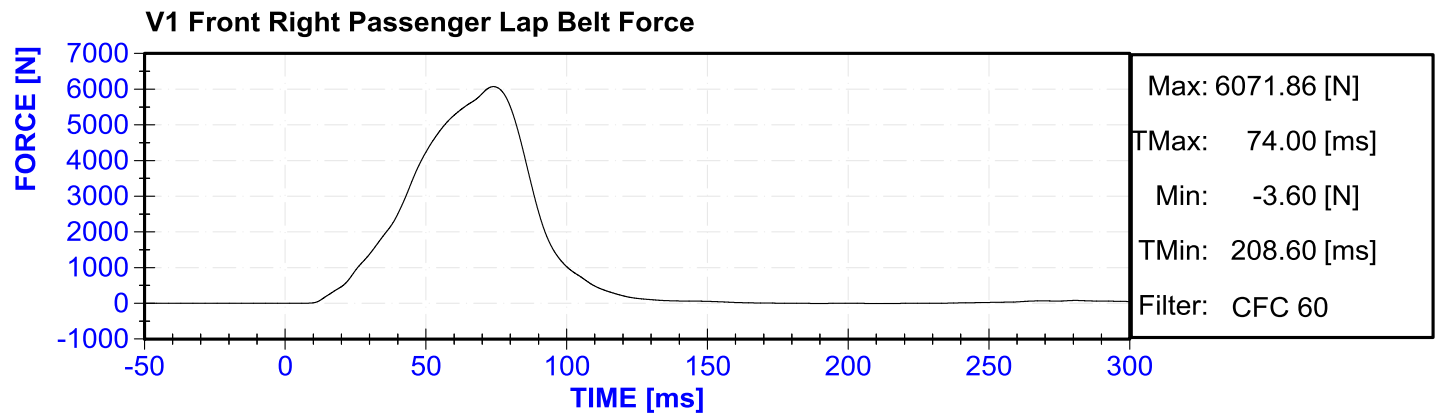
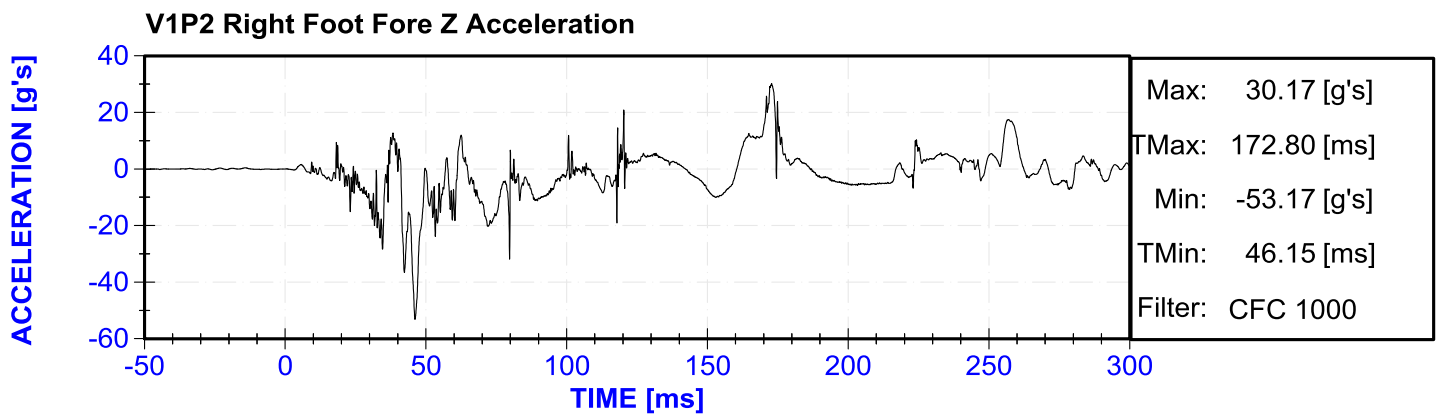
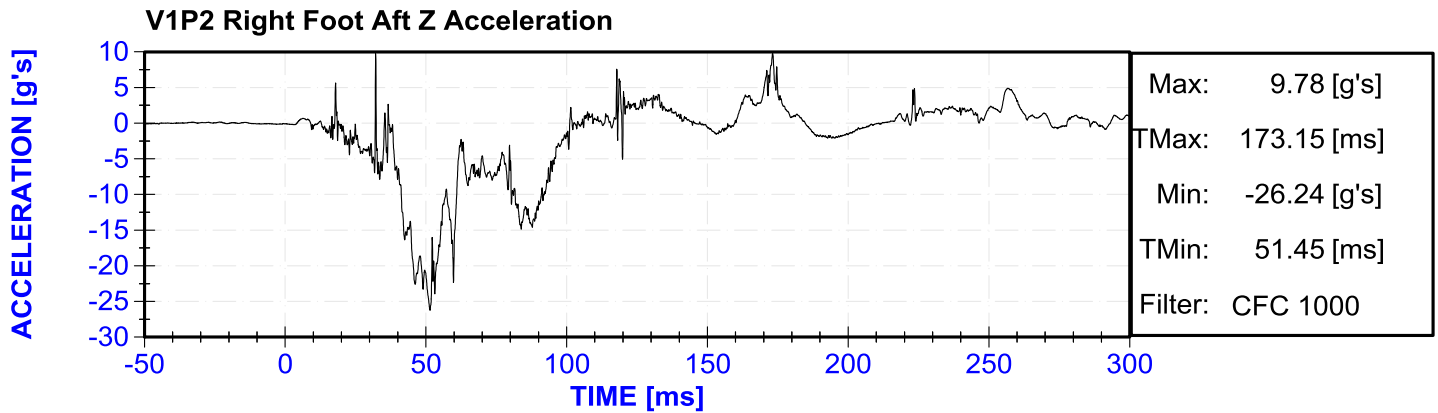




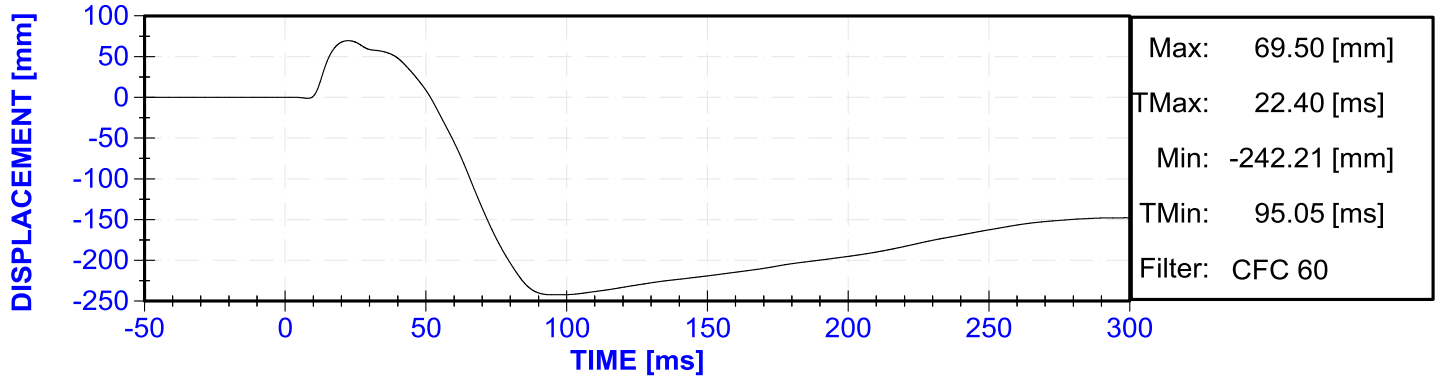




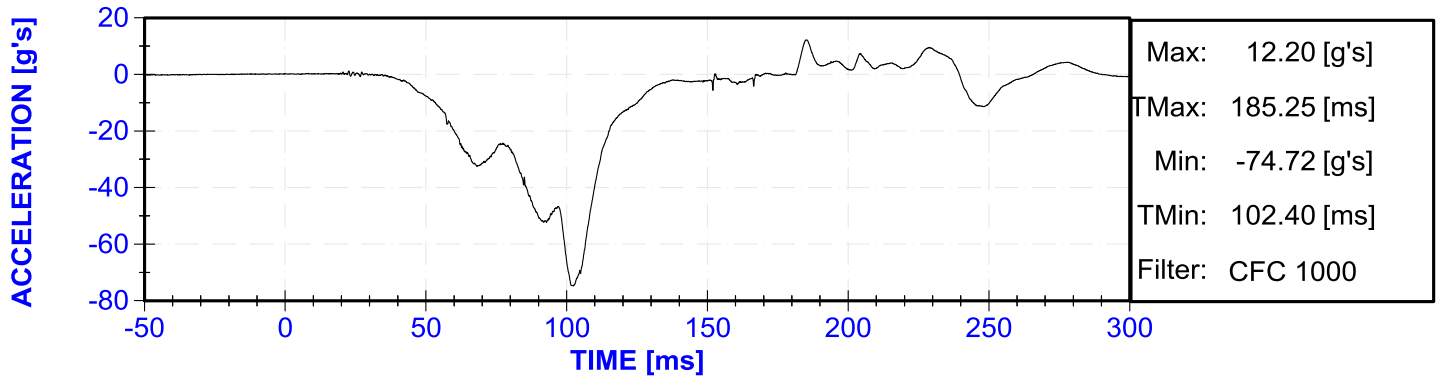




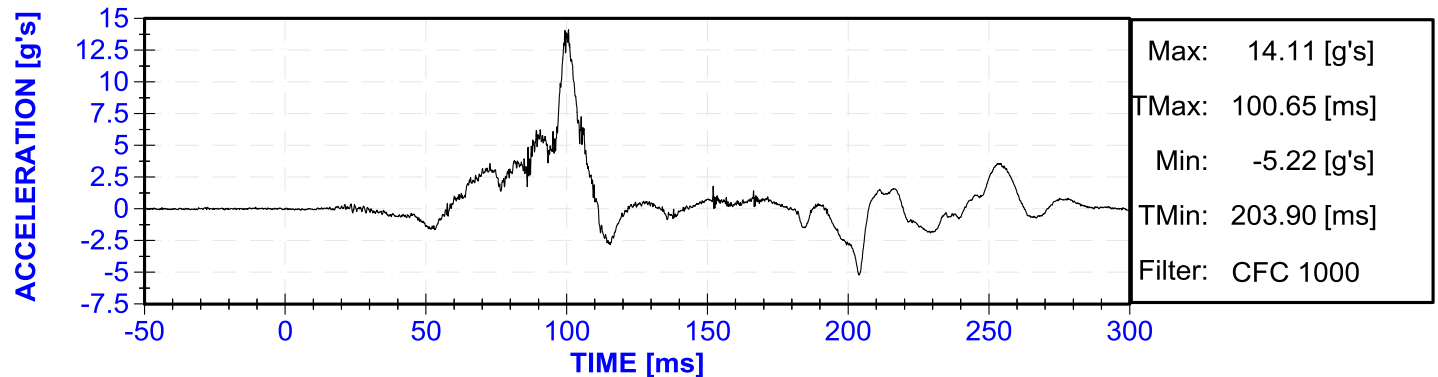
V1 Front Right Passenger Shoulder Belt Displacement



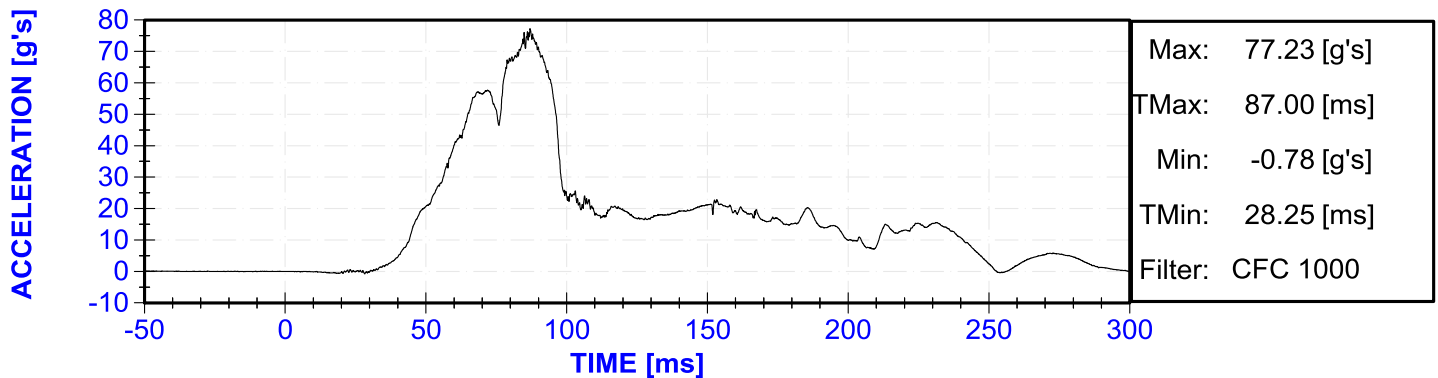
V1P3 Head CG X Acceleration

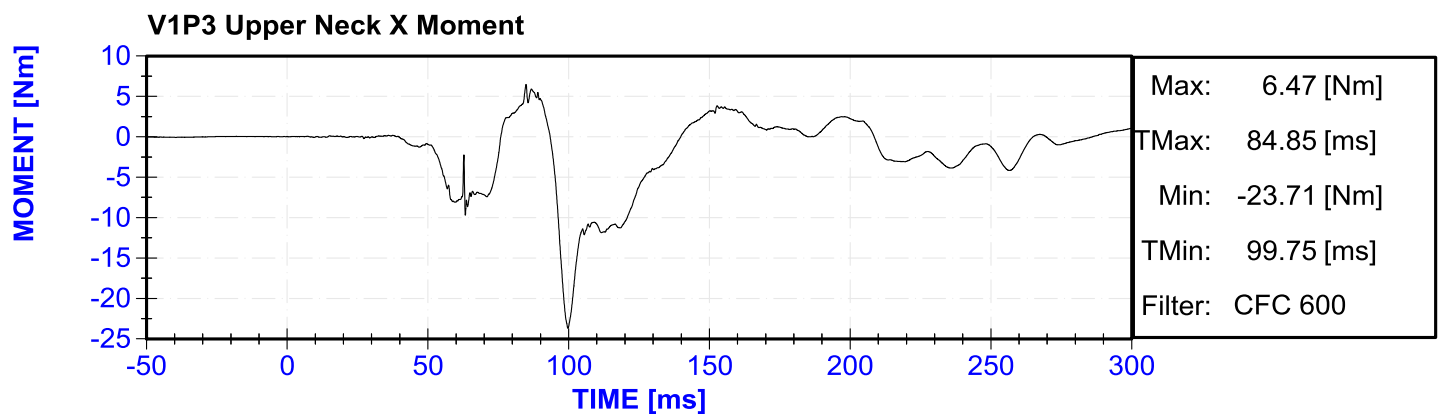
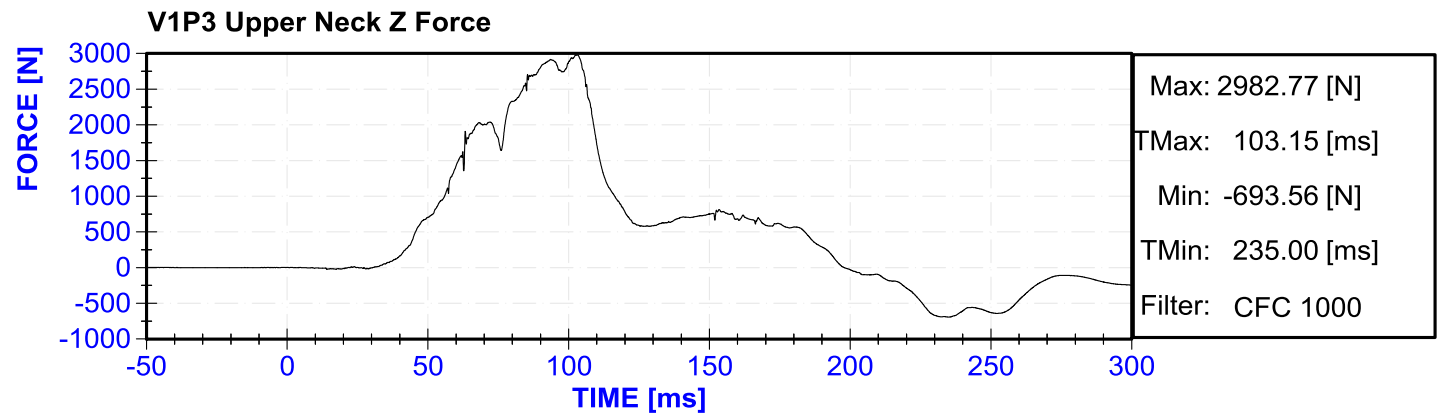
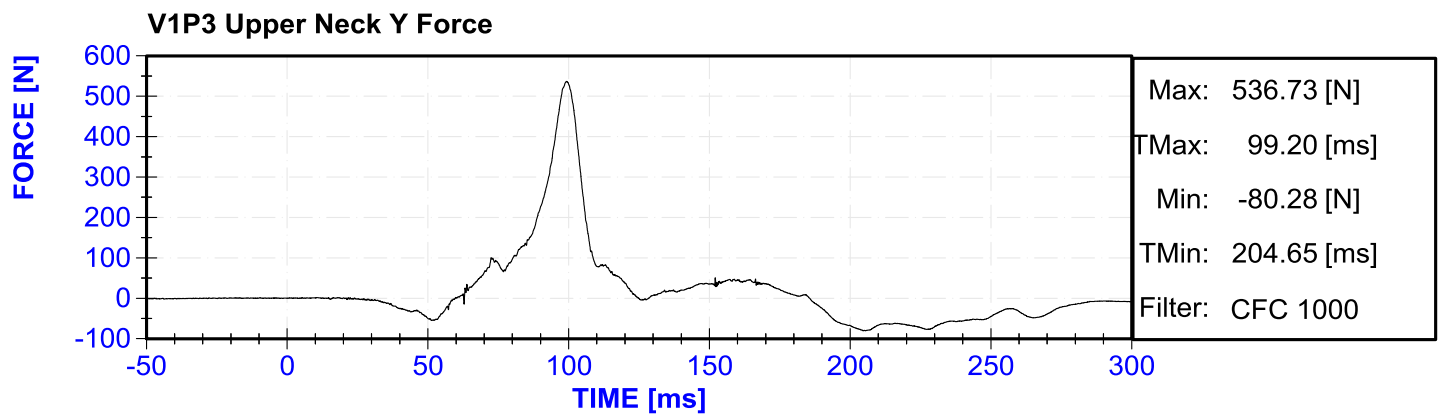
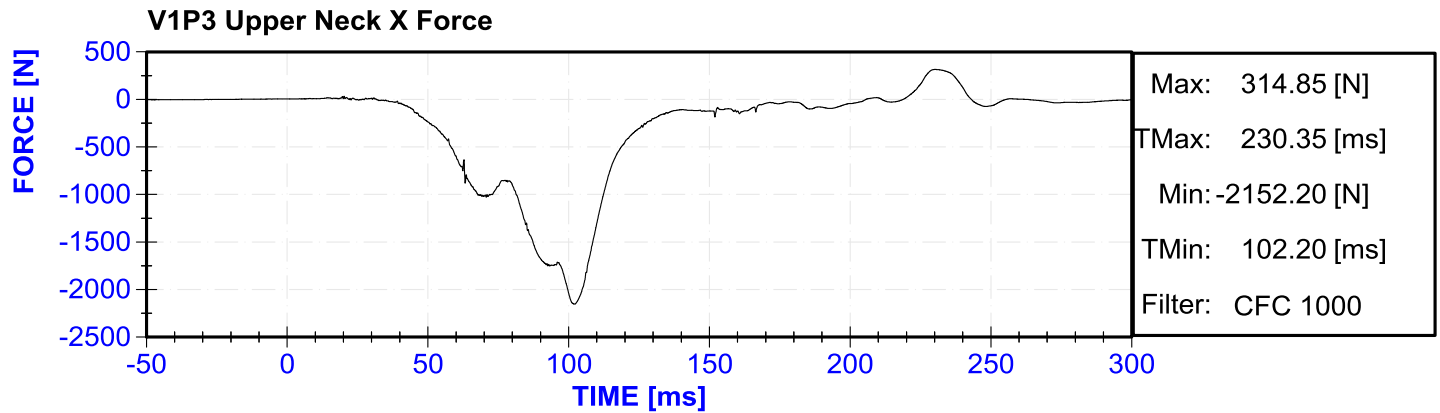


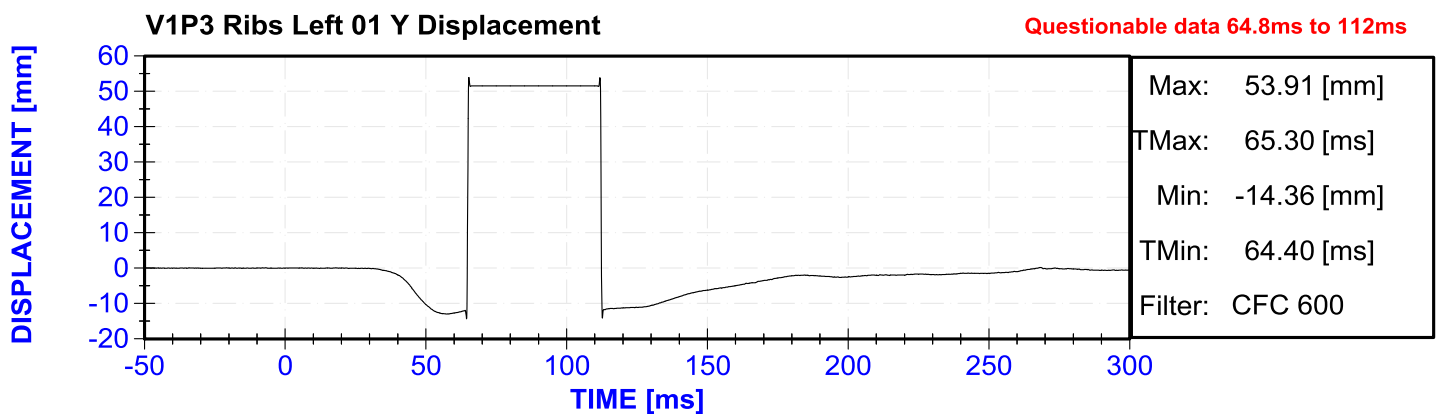
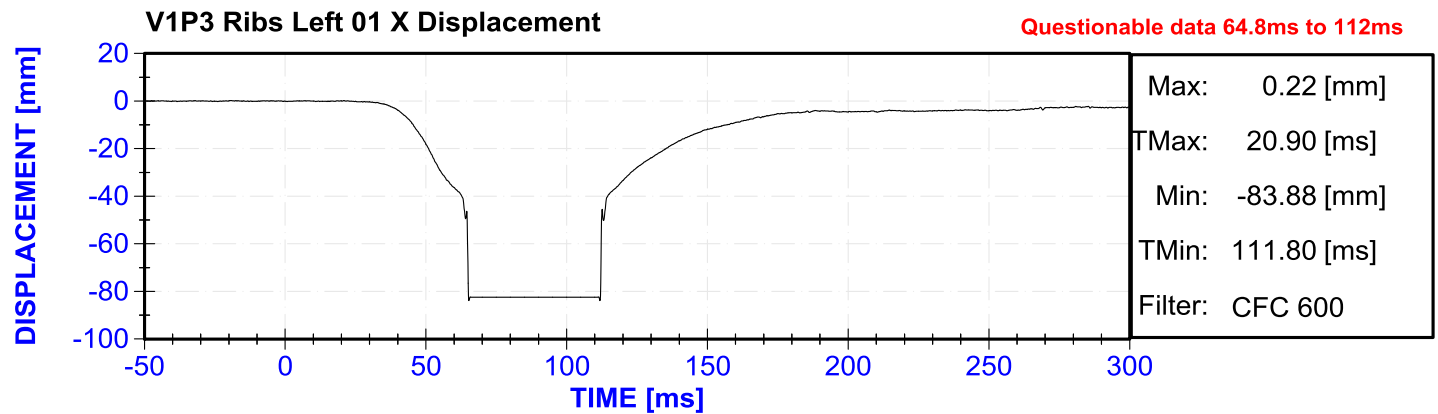
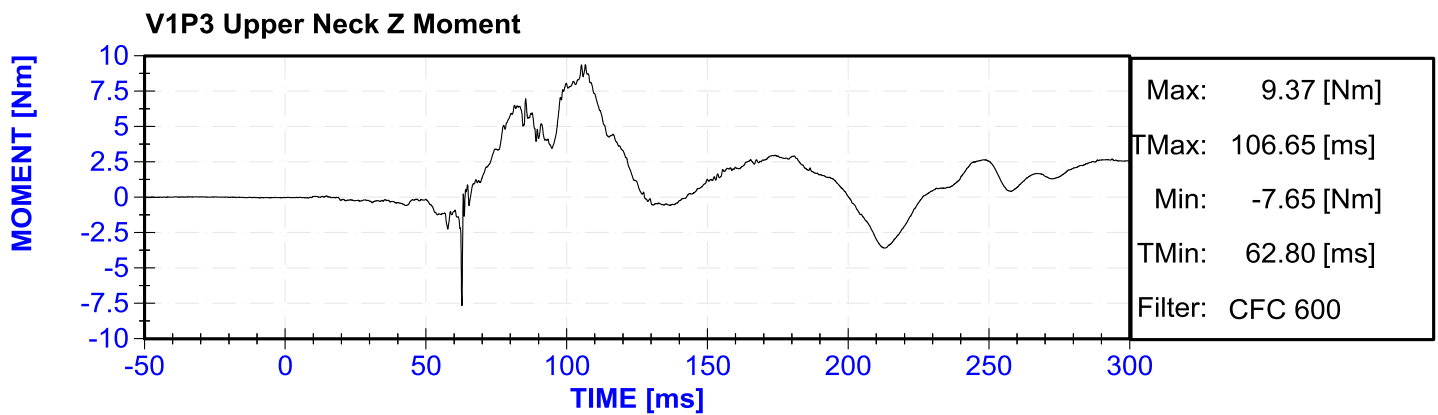
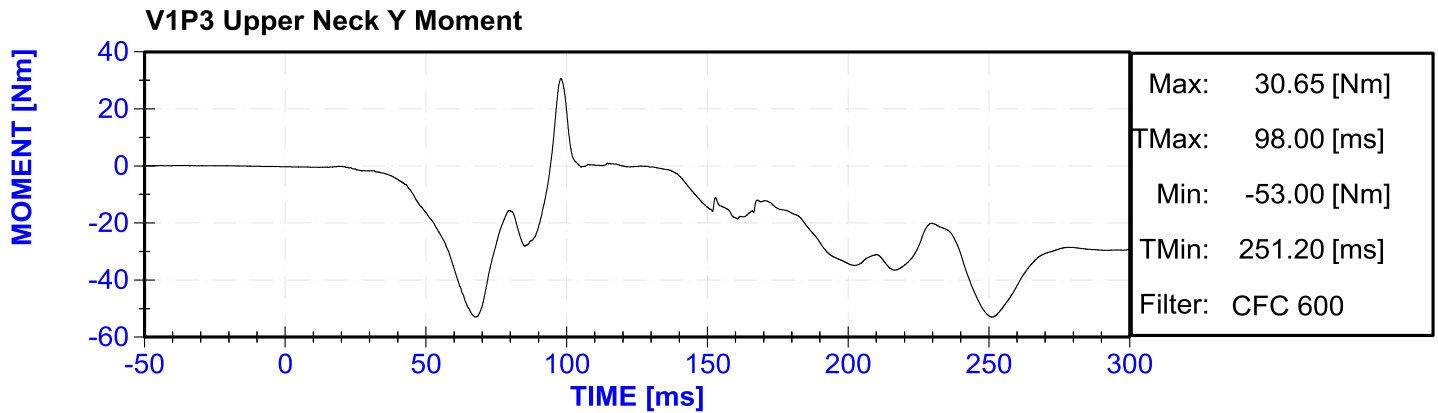
V1P3 Head CG Y Acceleration

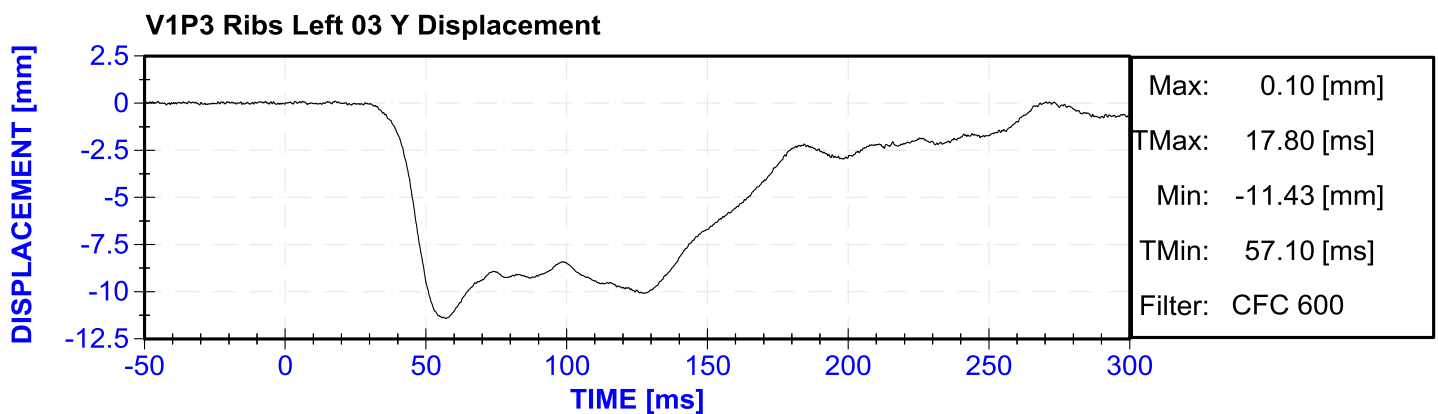
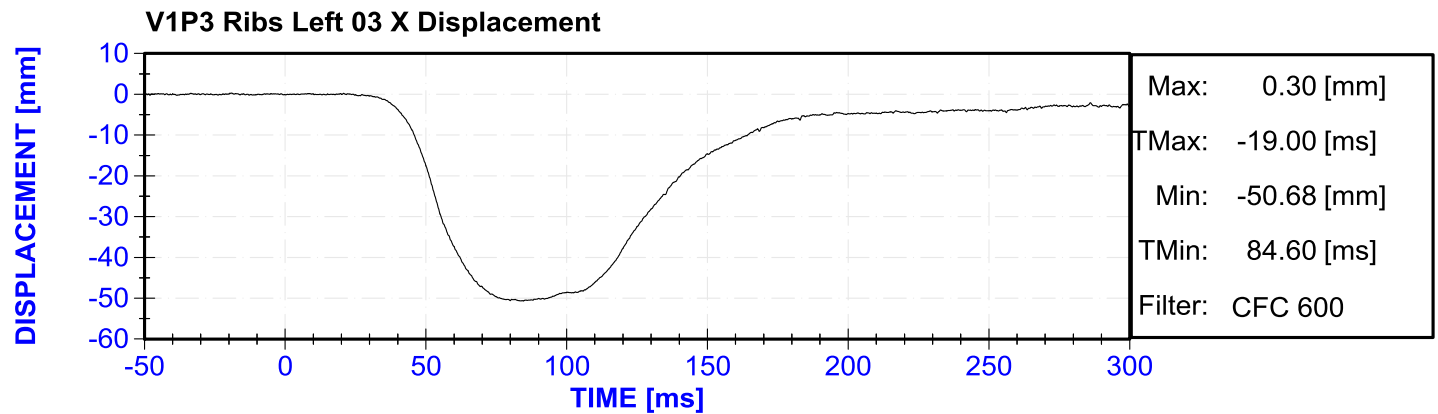
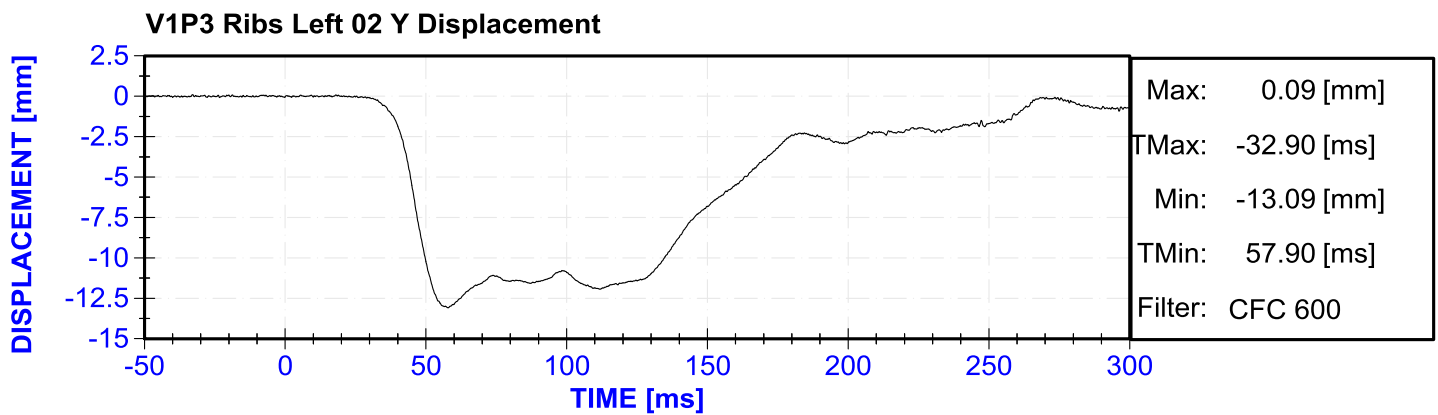
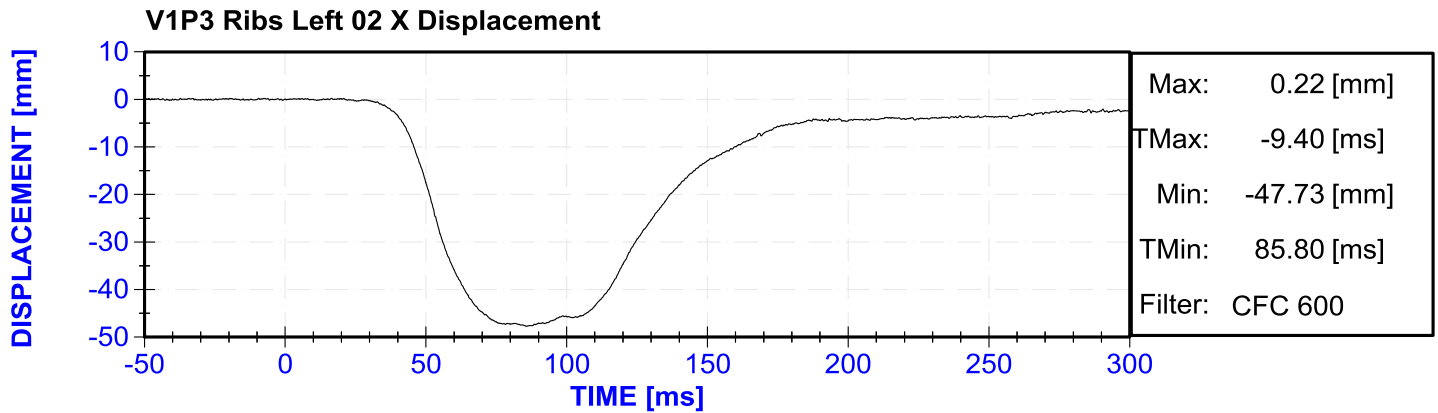


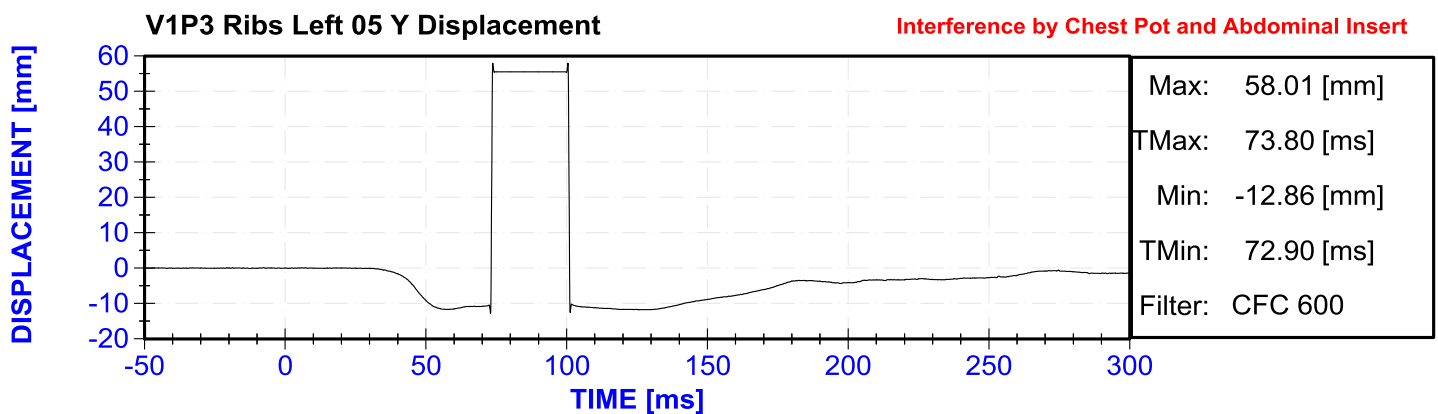
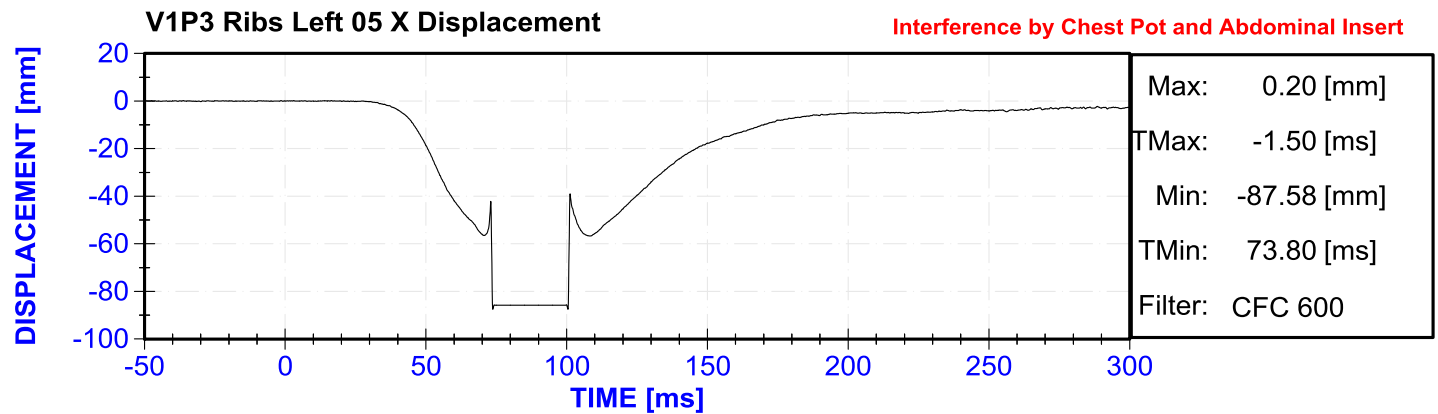
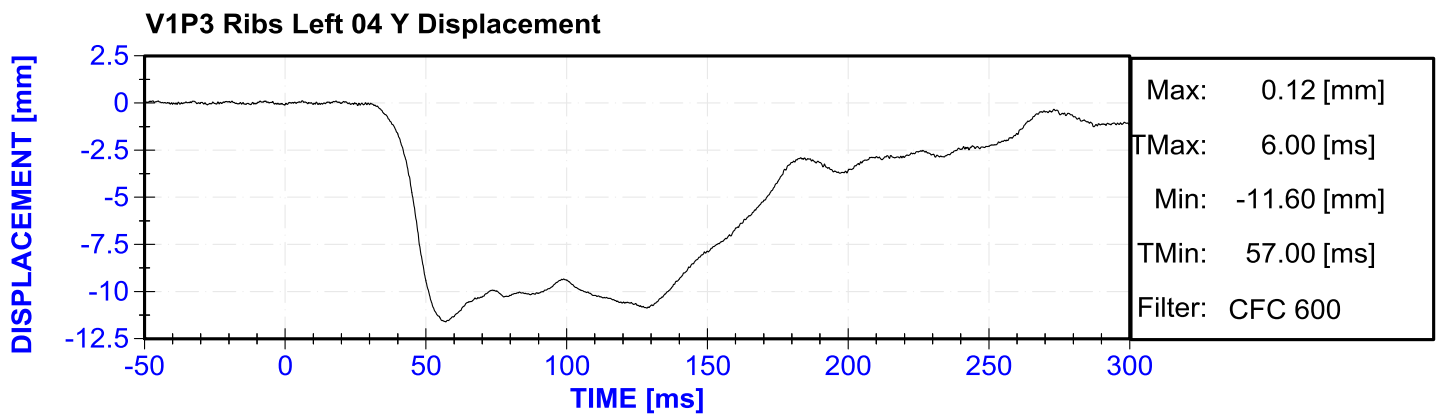
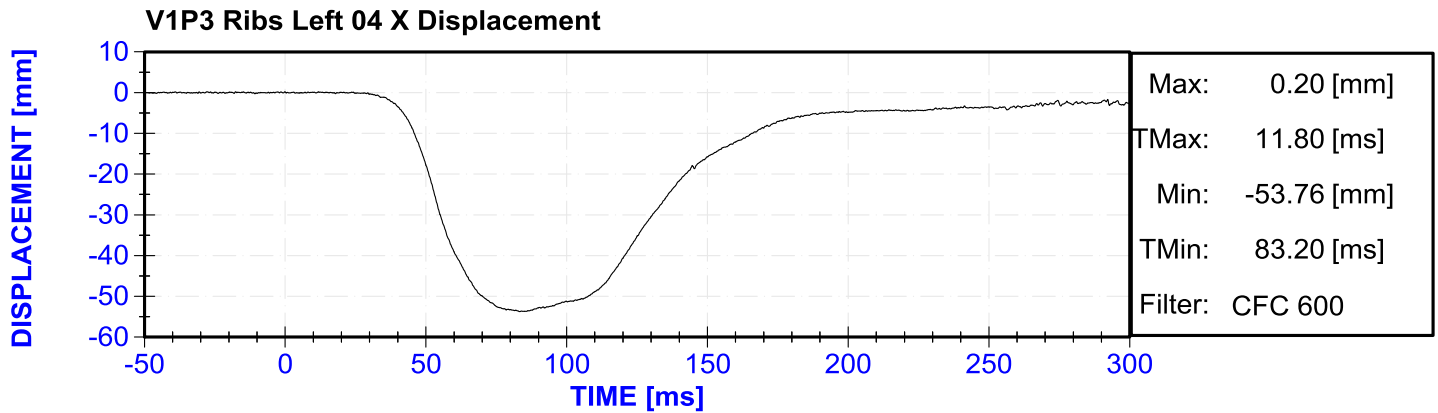
V1P3 Head CG Z Acceleration

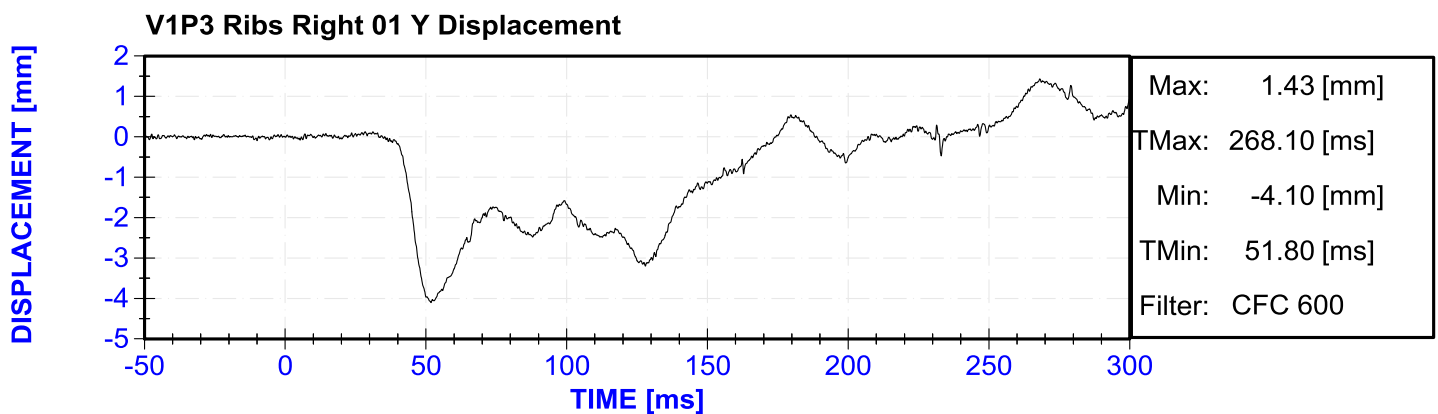
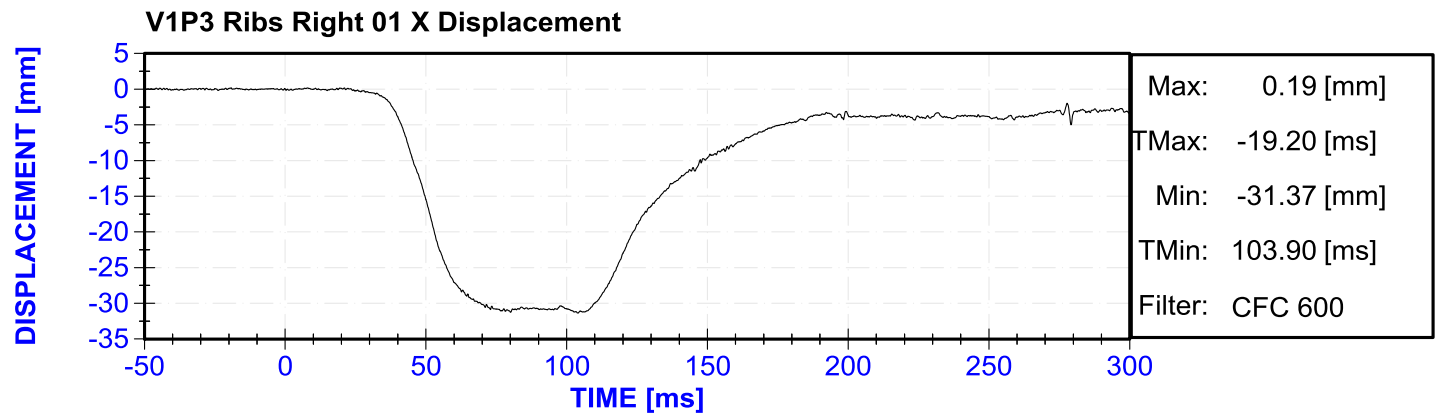
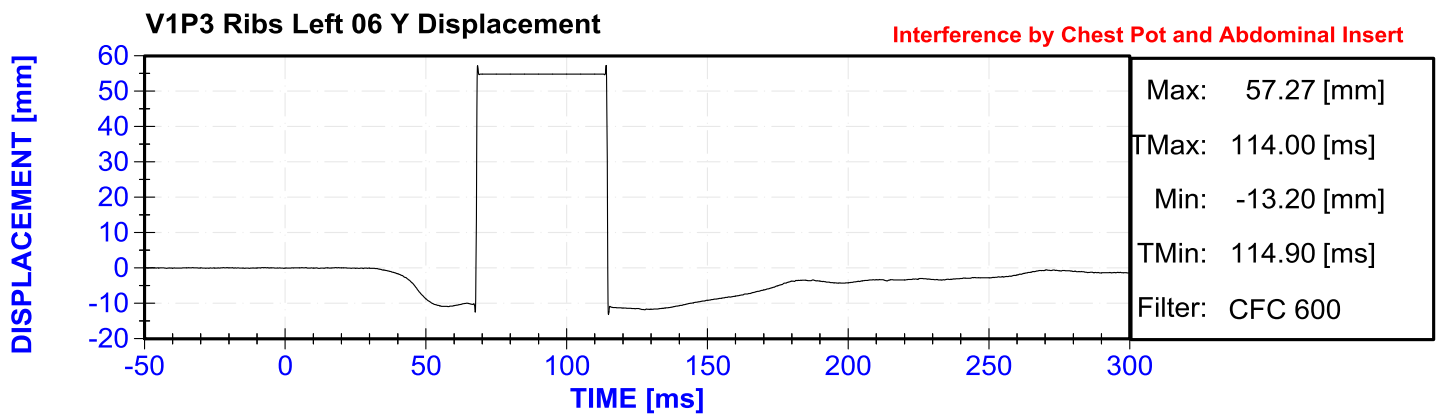
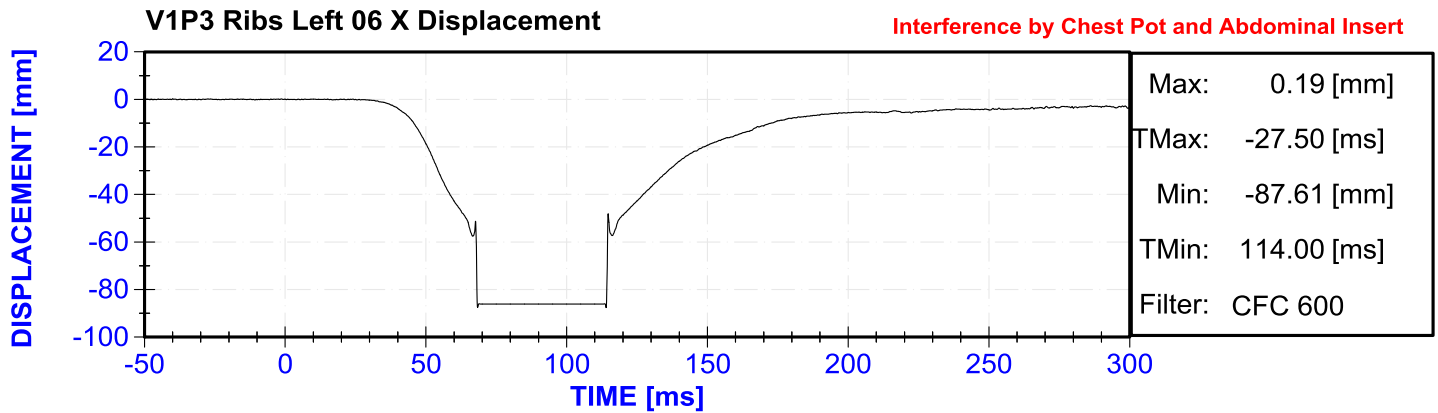


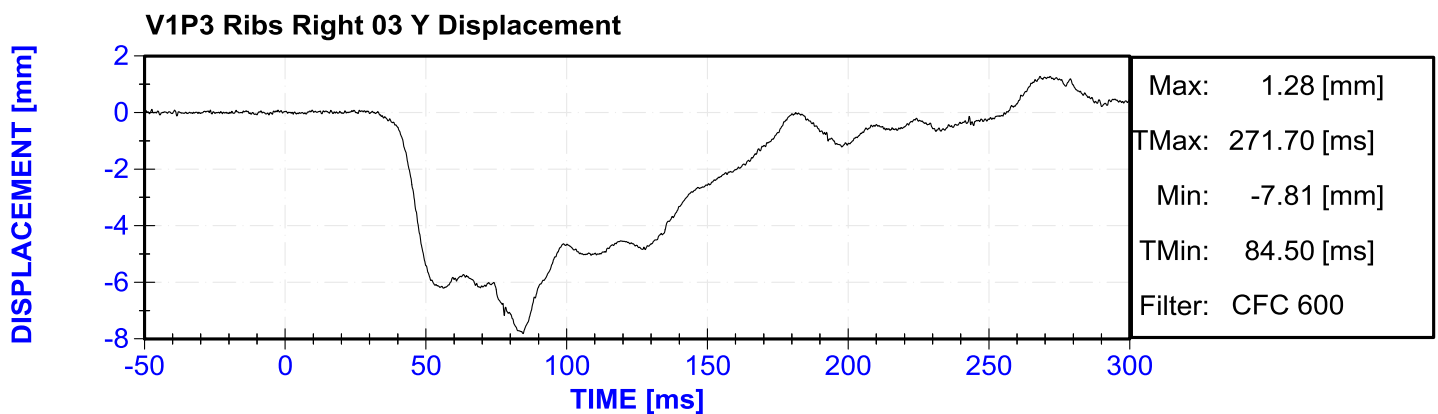
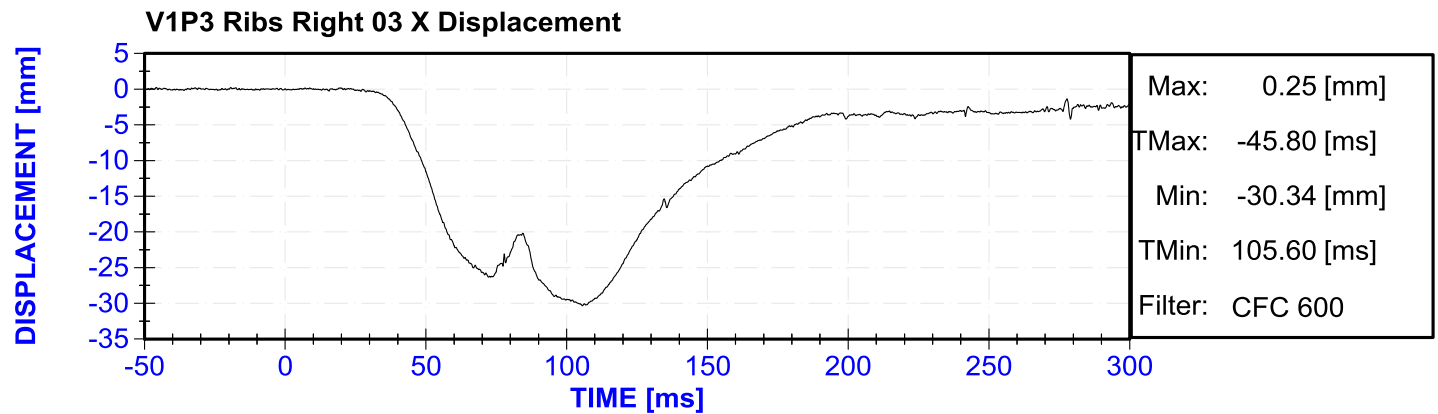
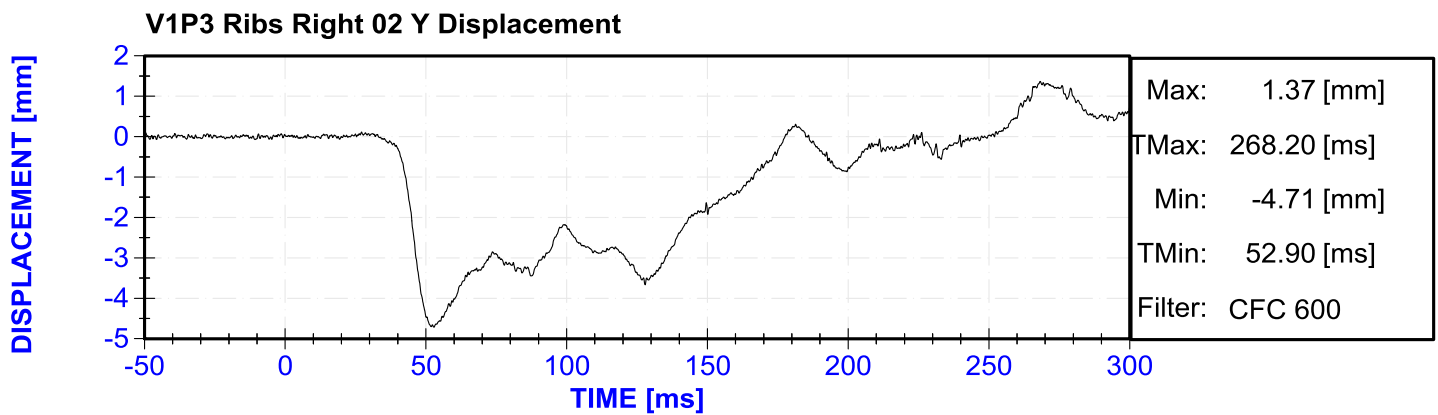
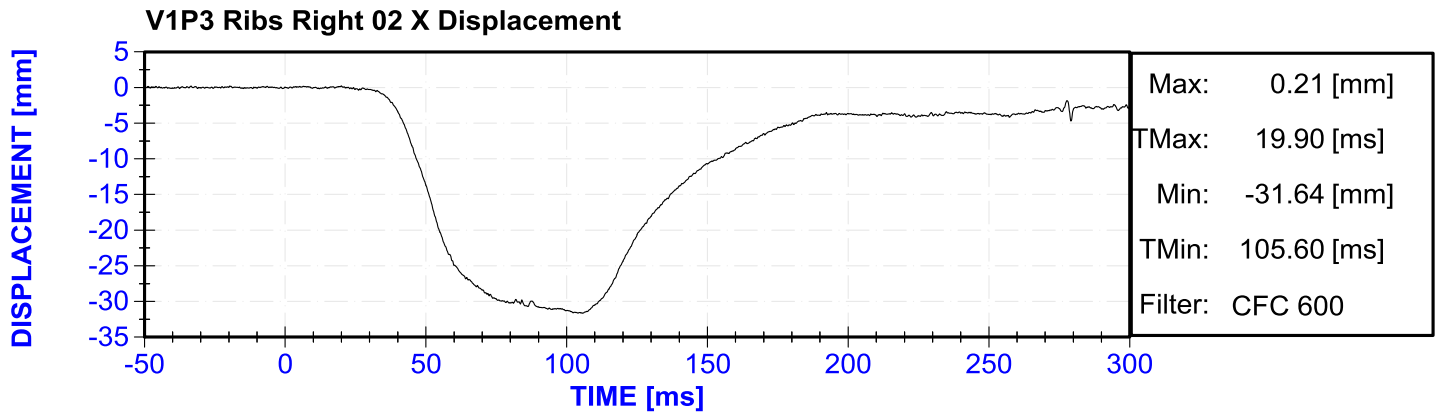


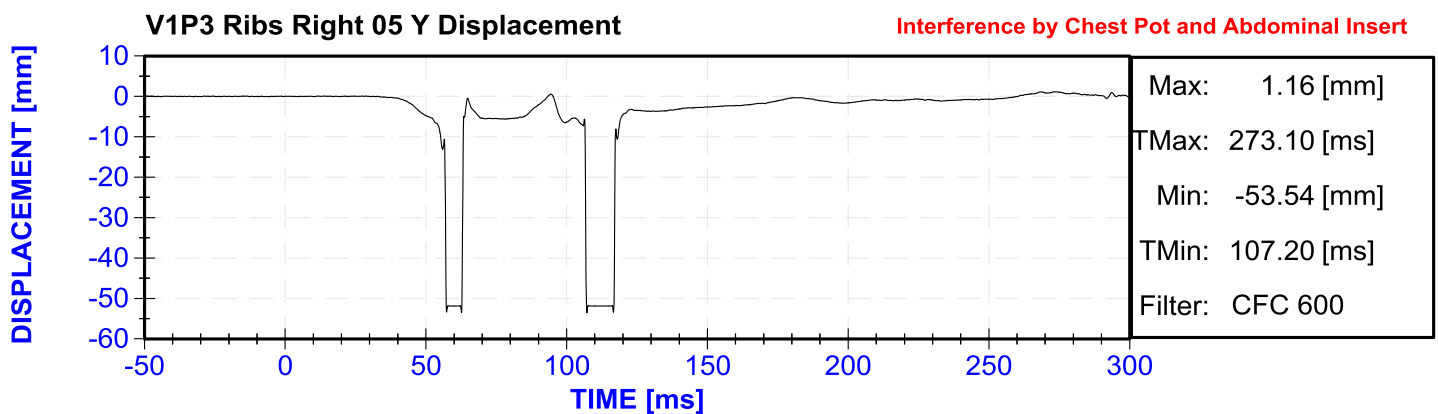
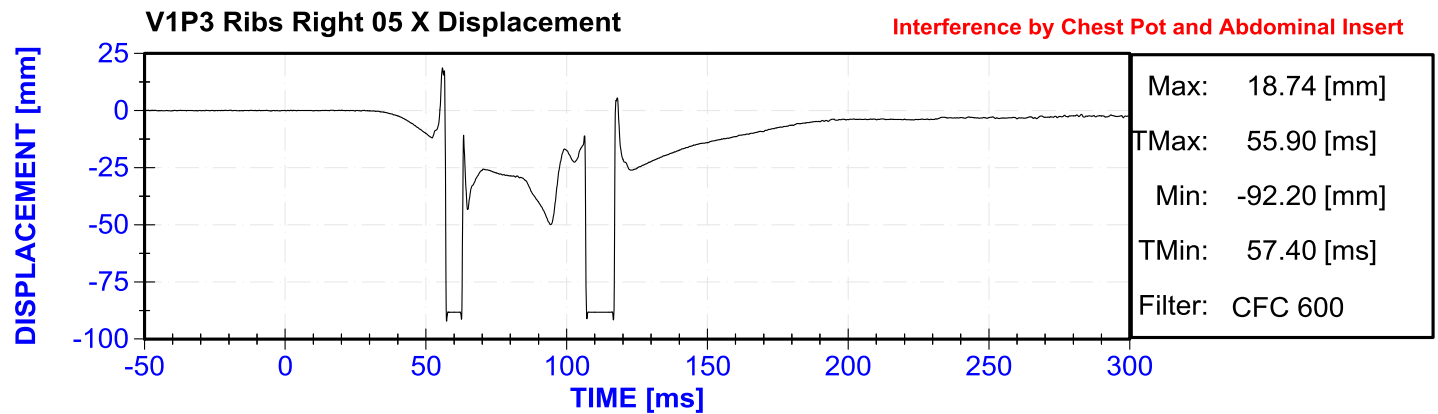
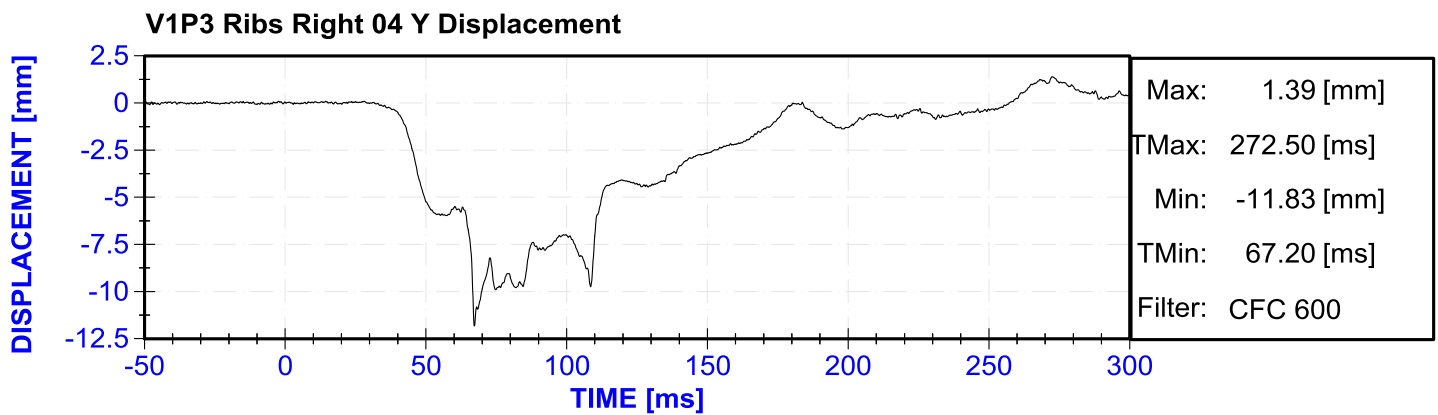
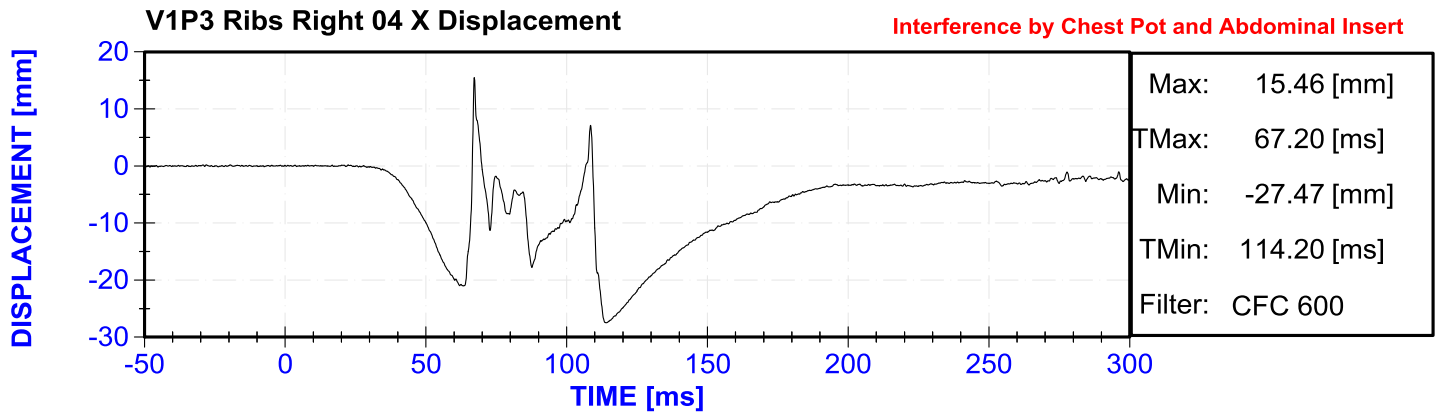


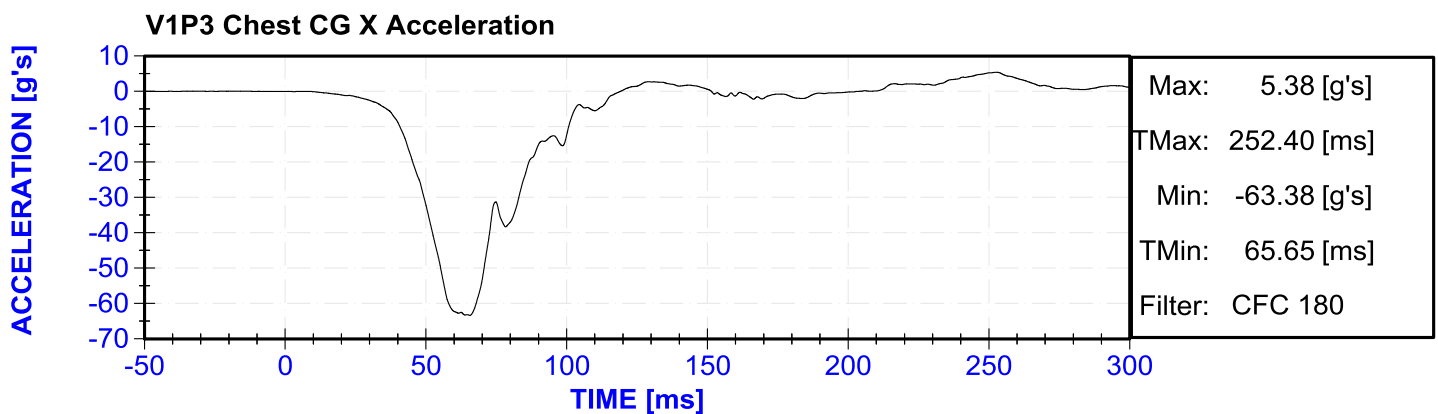
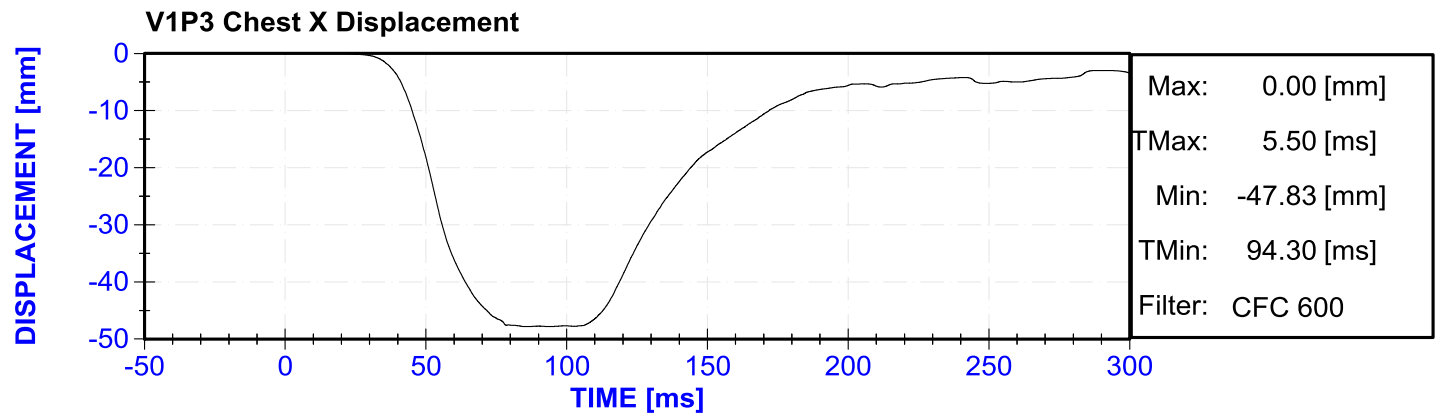
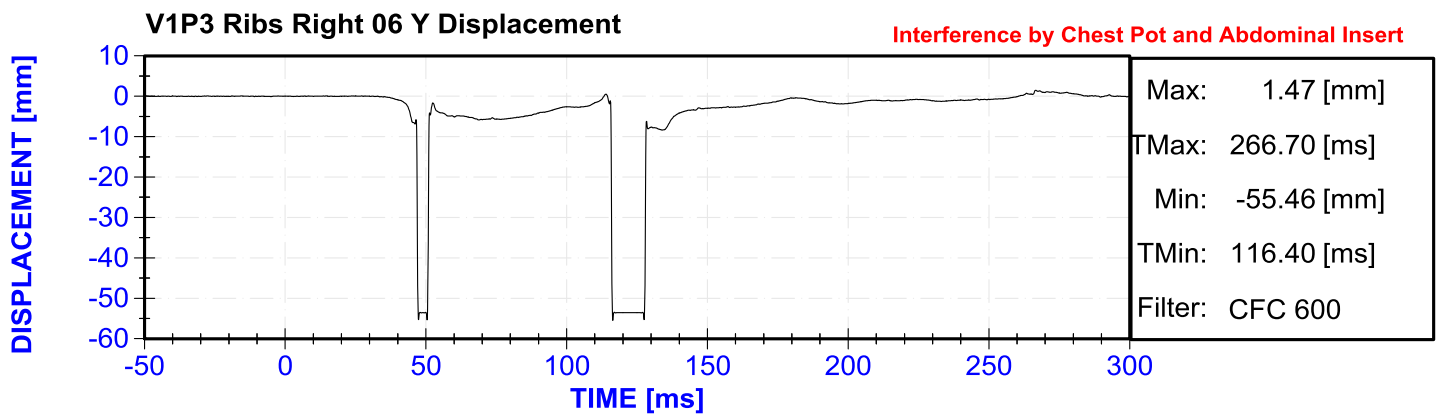
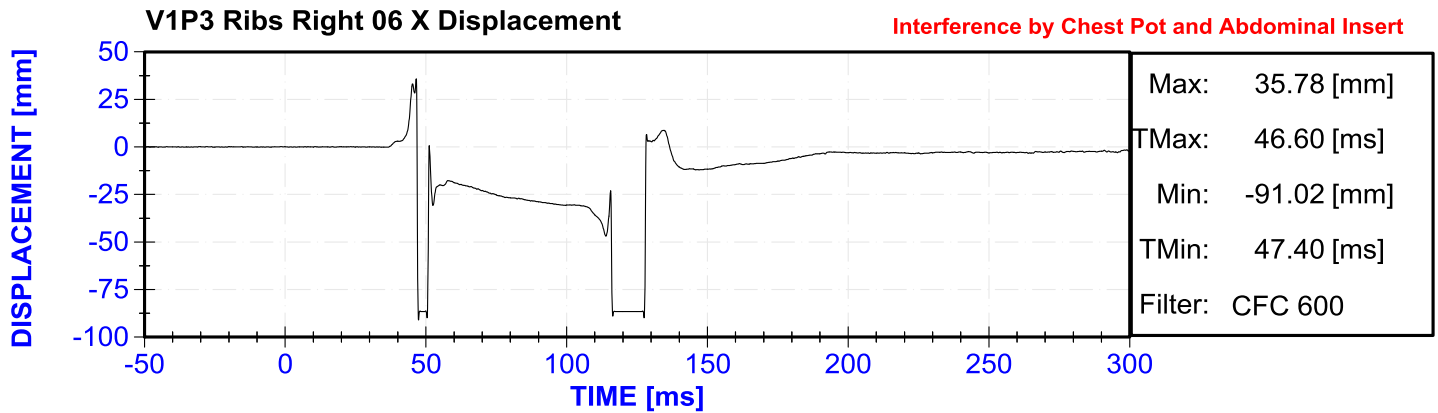


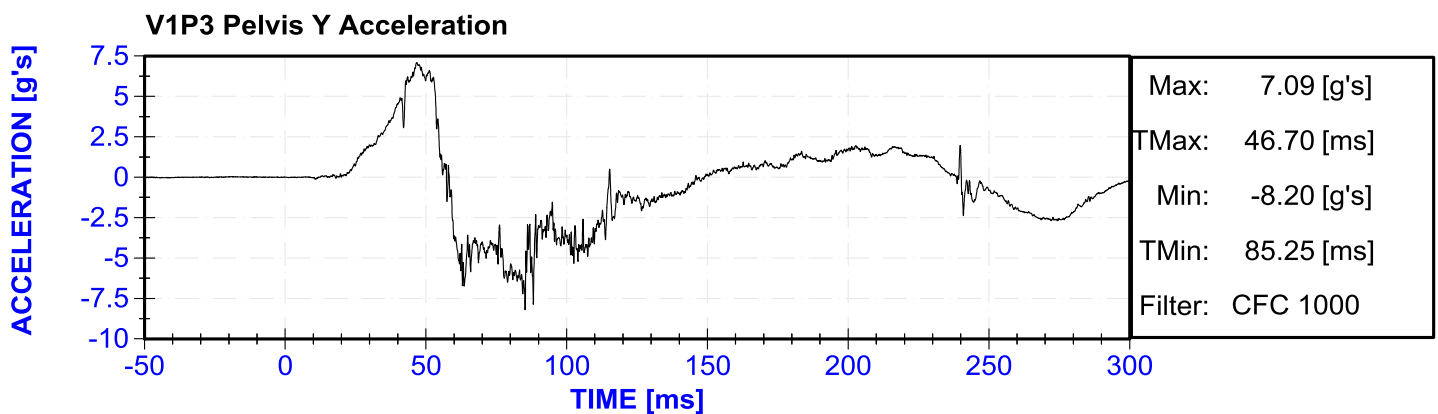
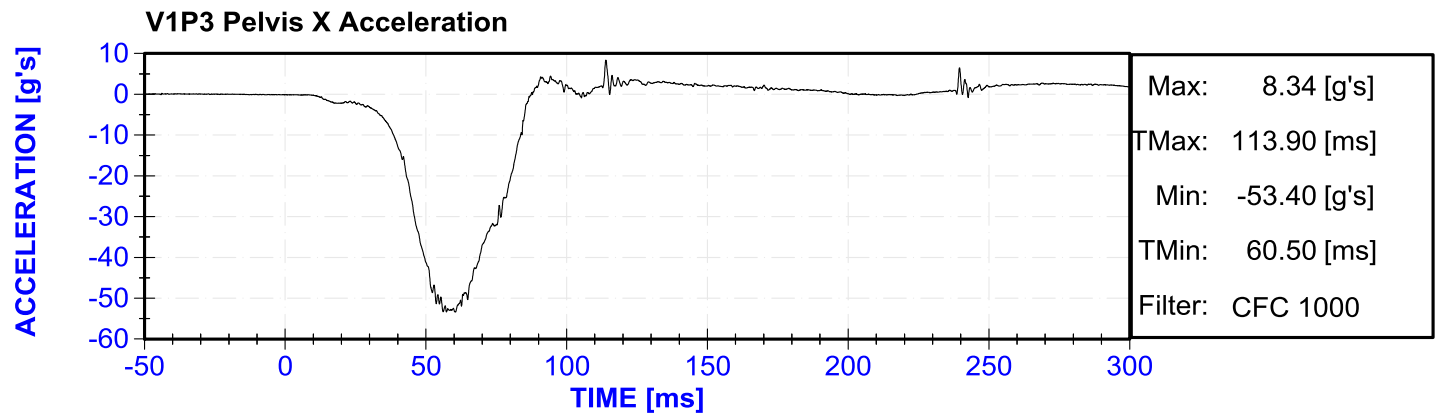
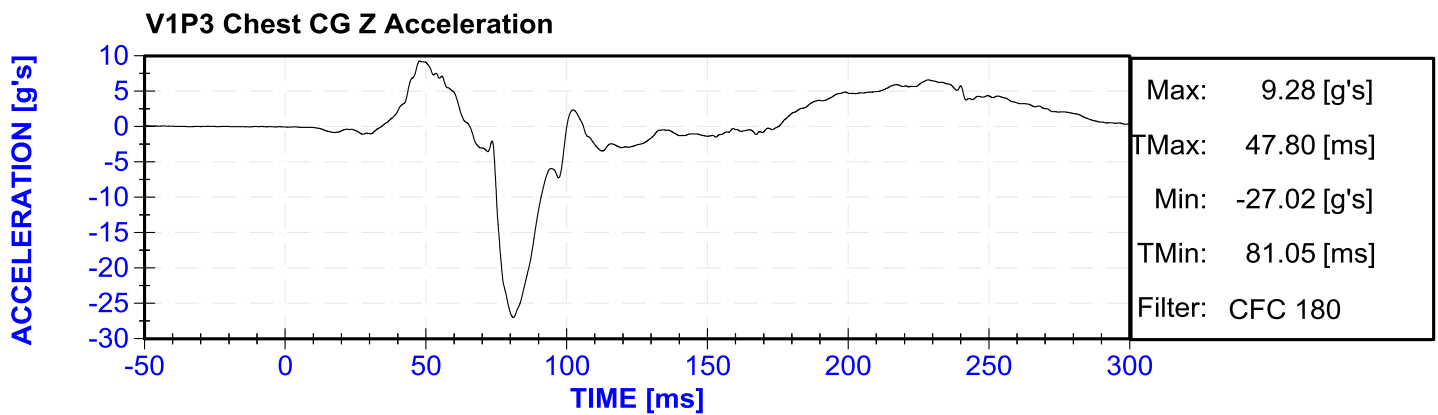
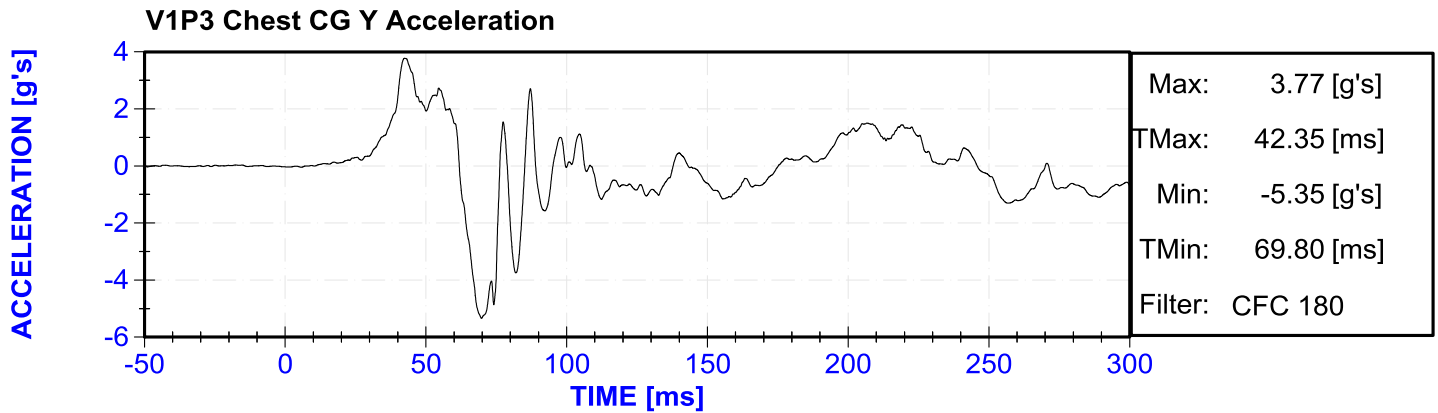


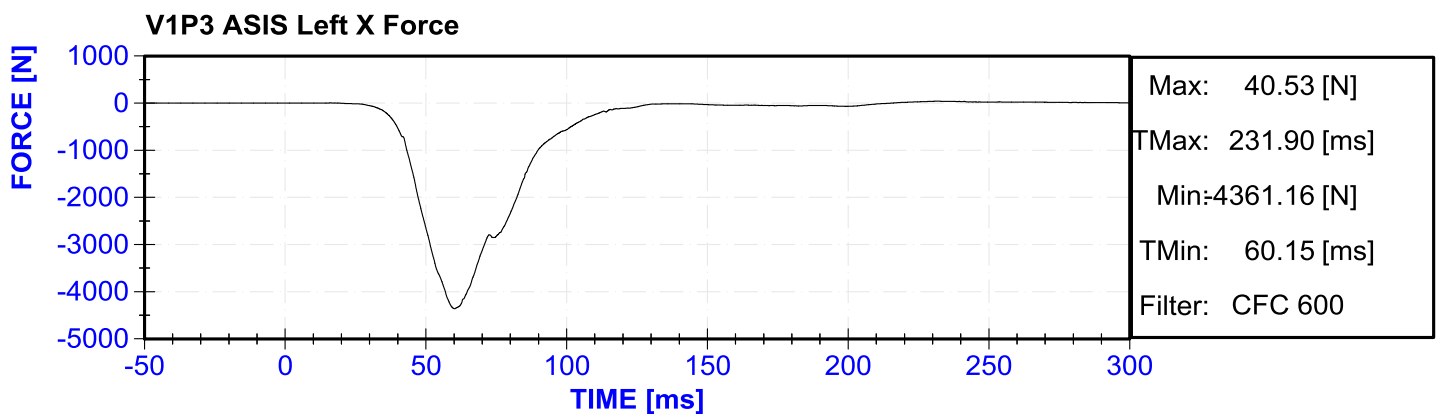
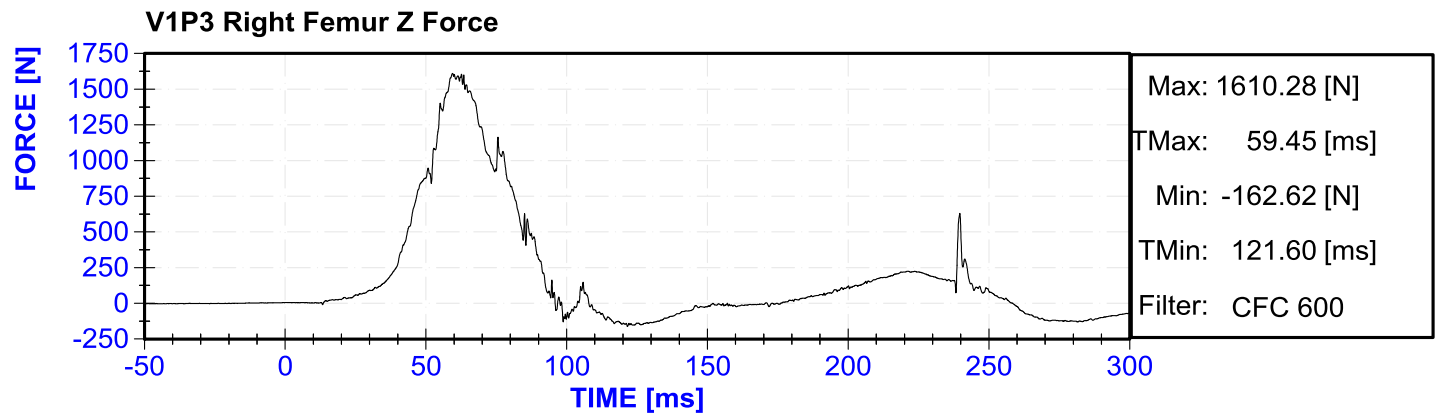
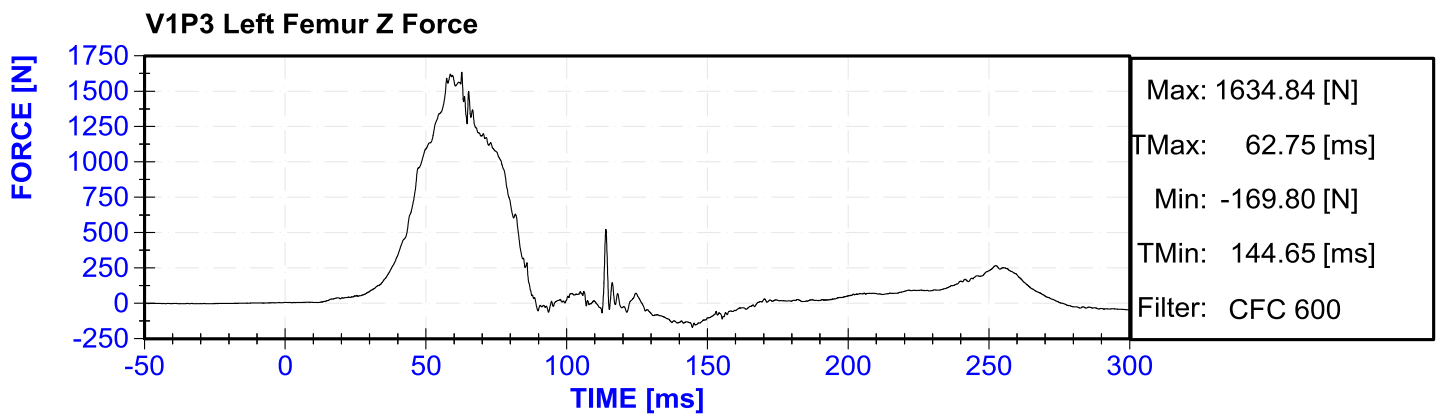
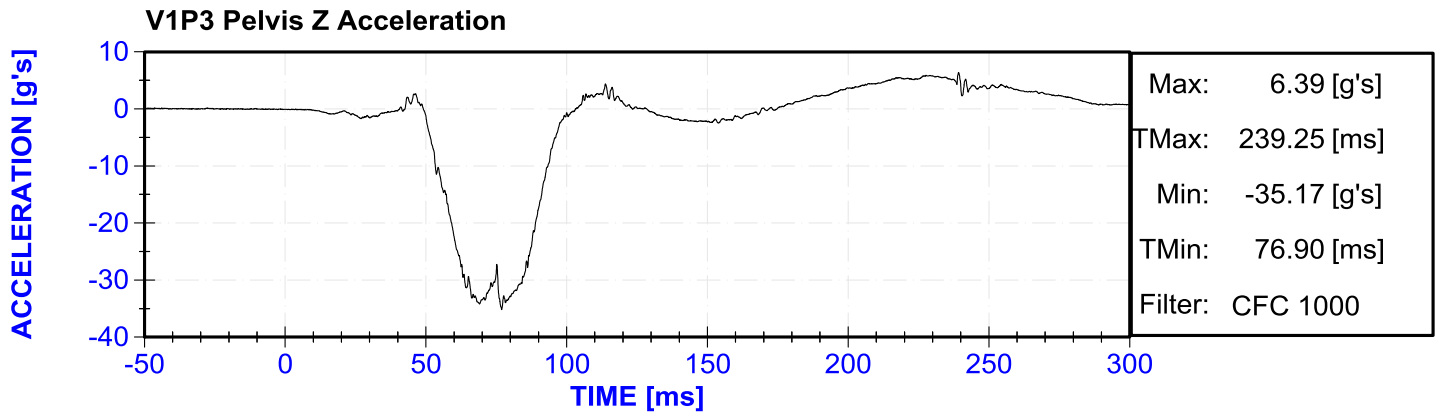


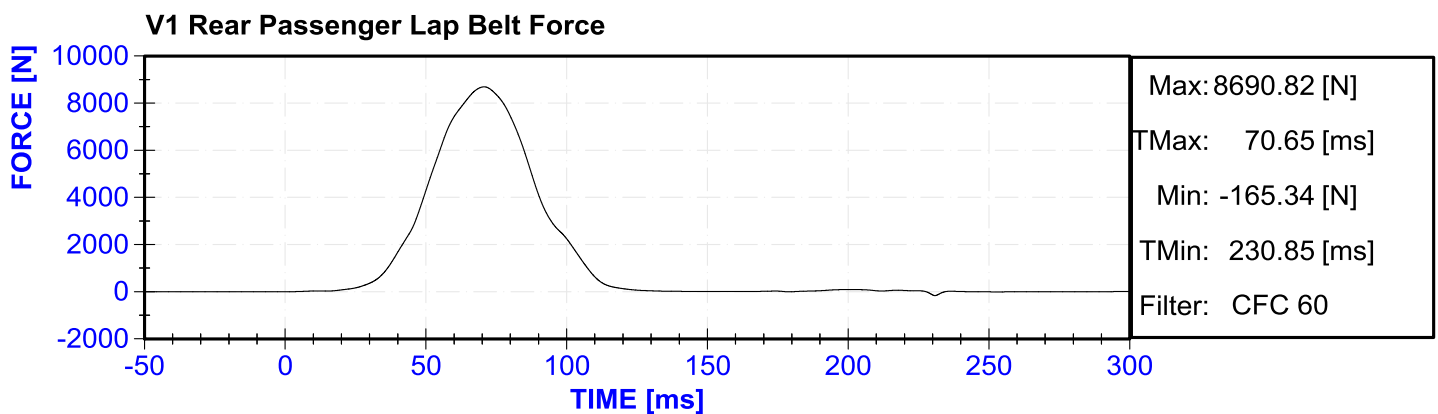
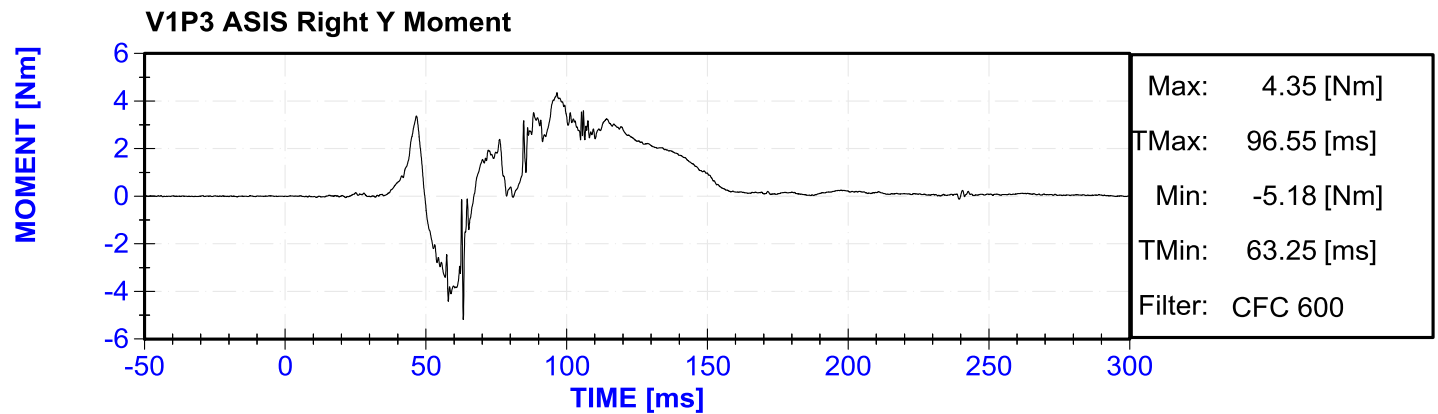
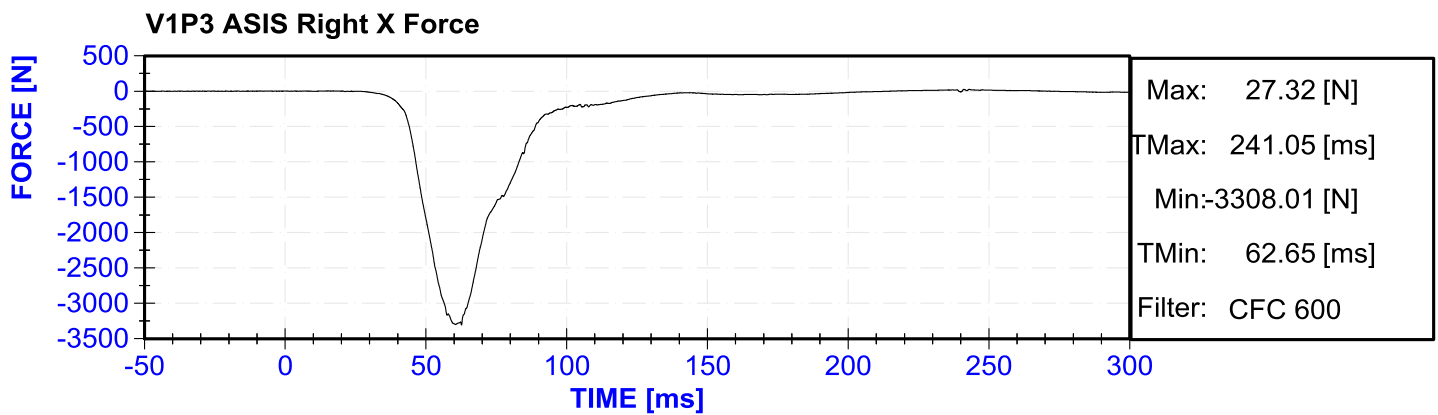
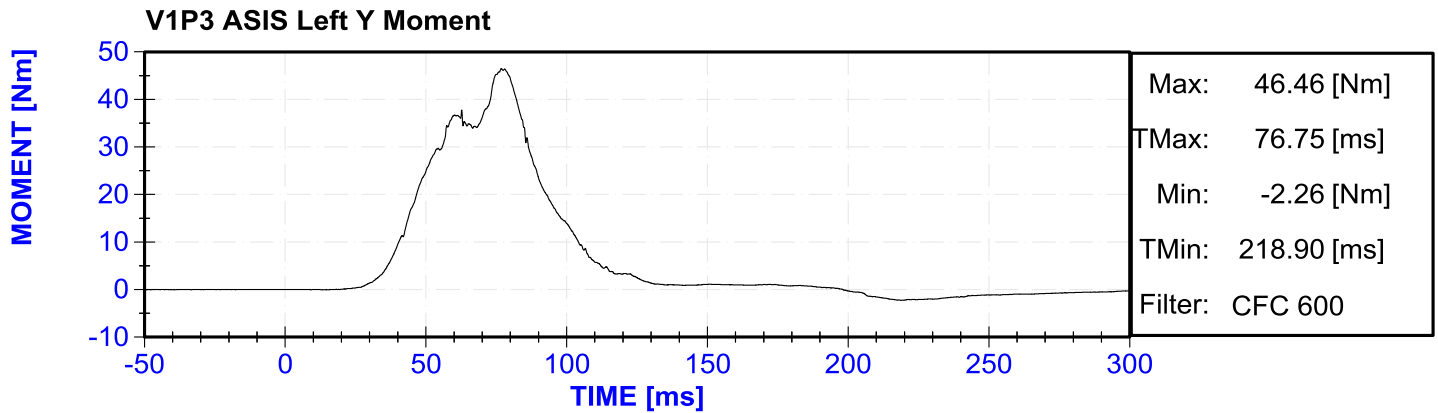






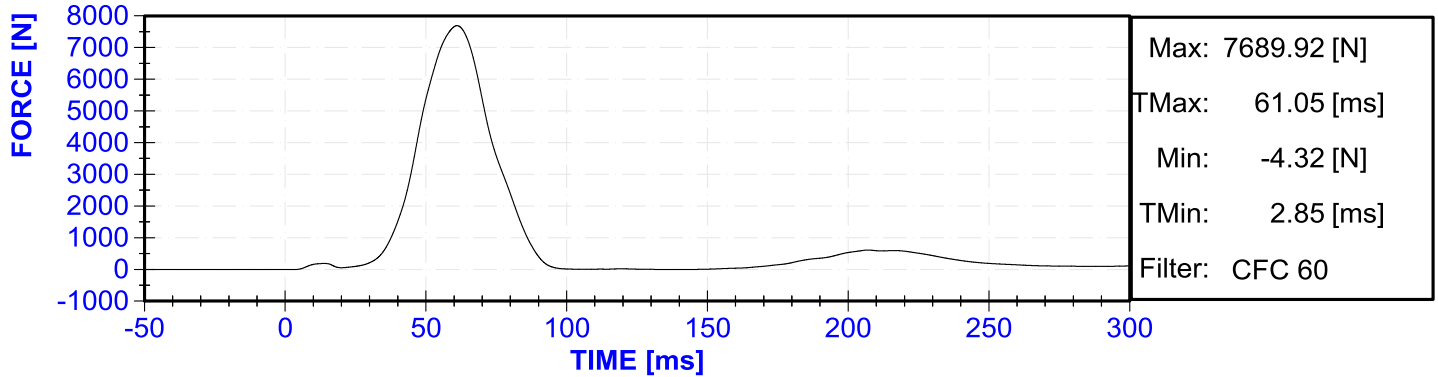




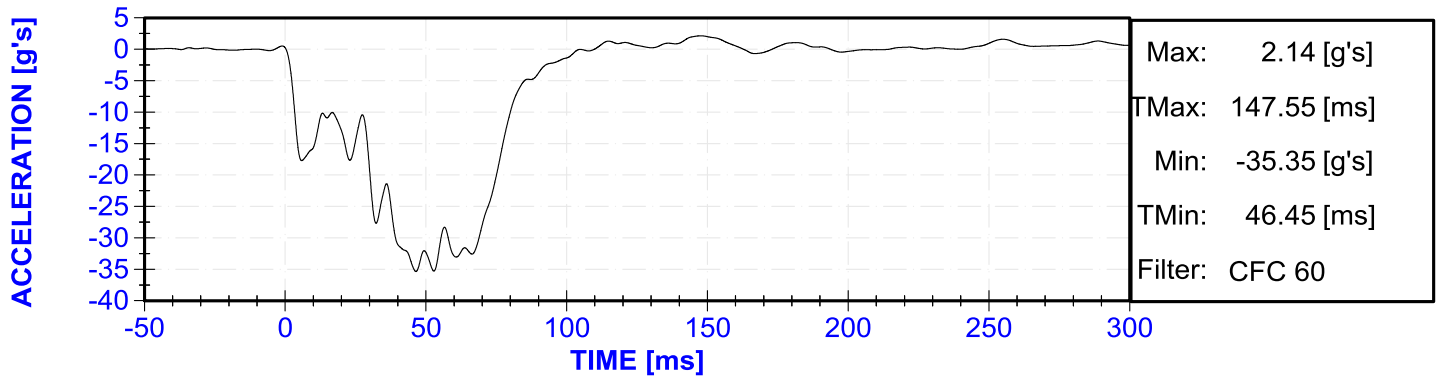


V1 Rear Passenger Shoulder Belt Force

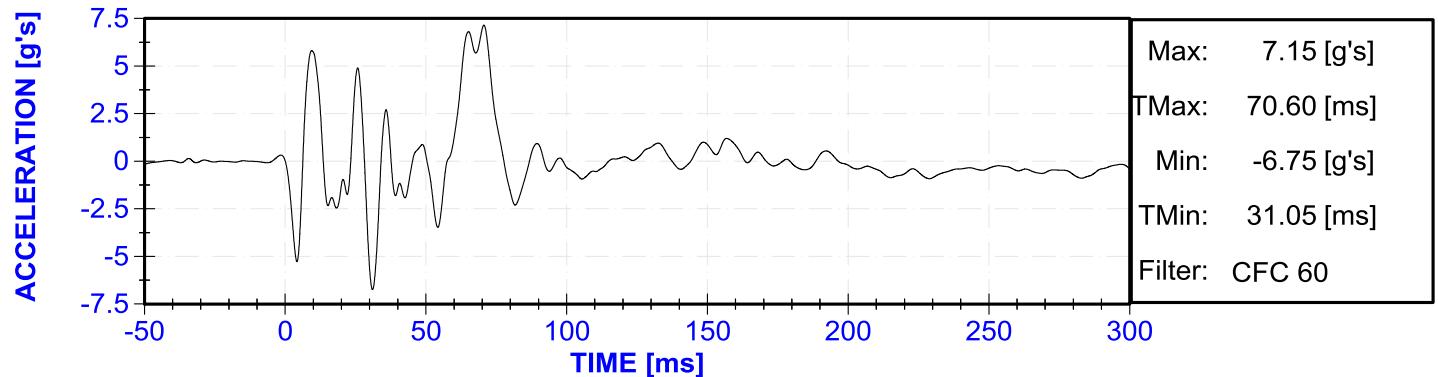
Questionable data 7.34ms to 15.7ms



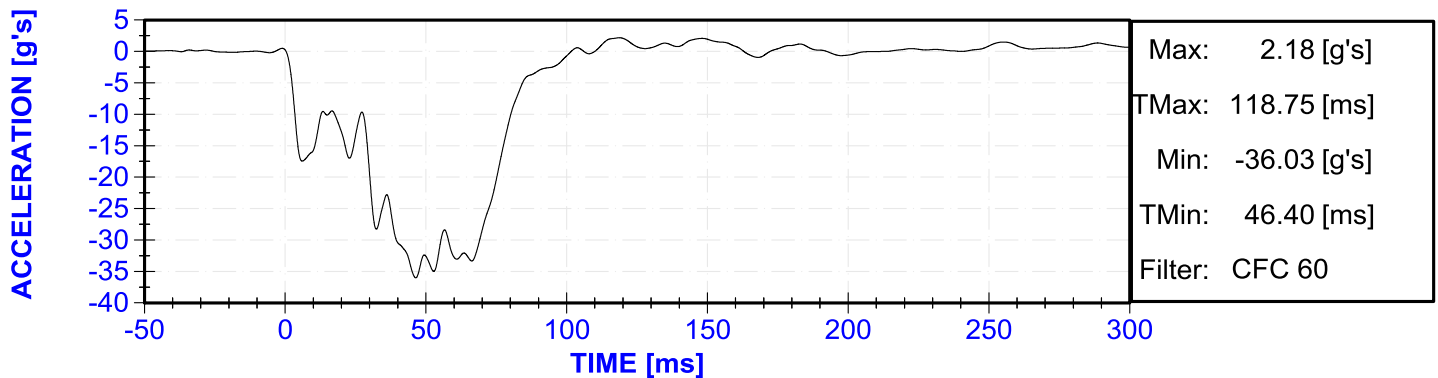
V1 Left Rear Sill X Acceleration

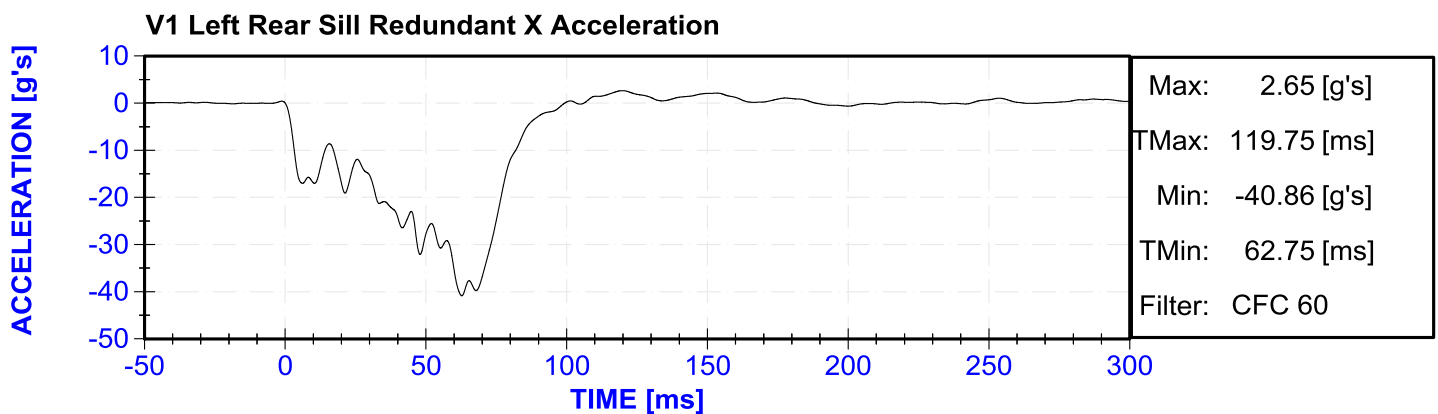
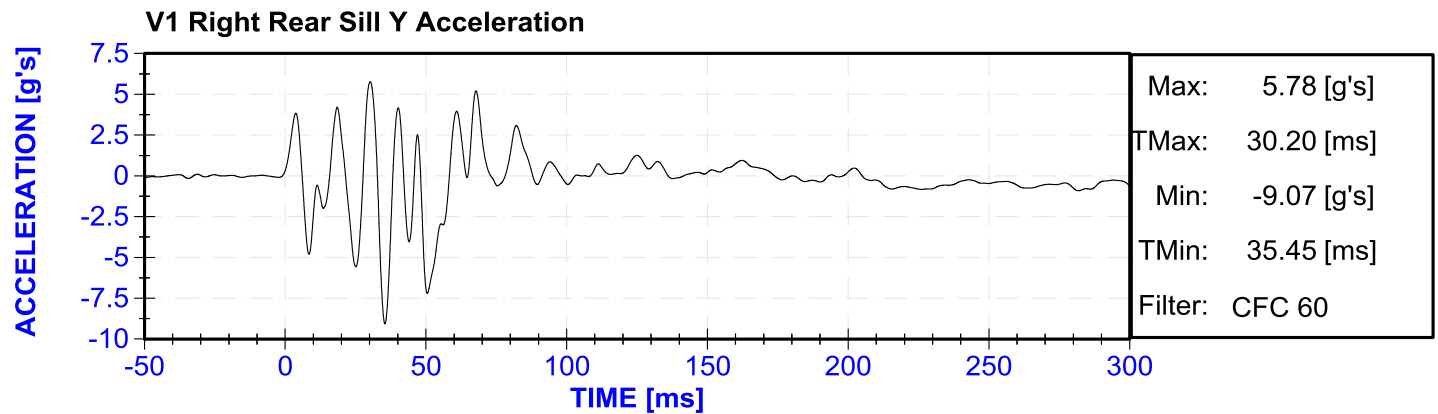
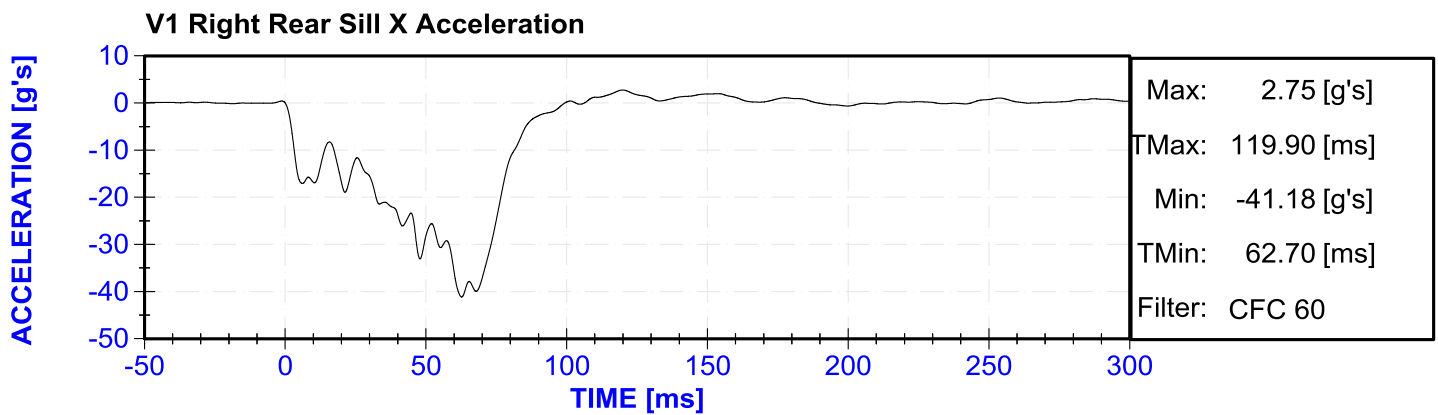
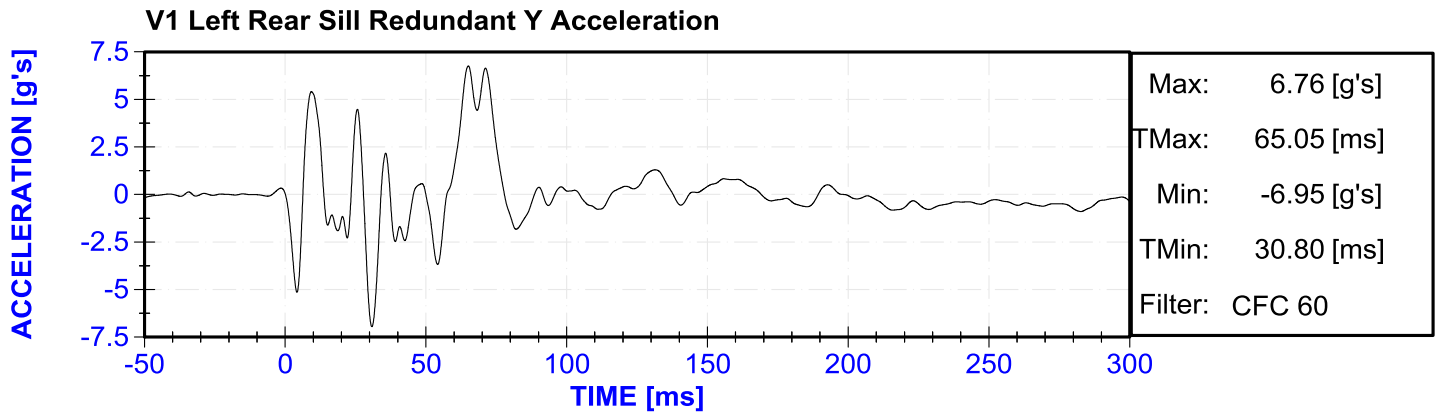


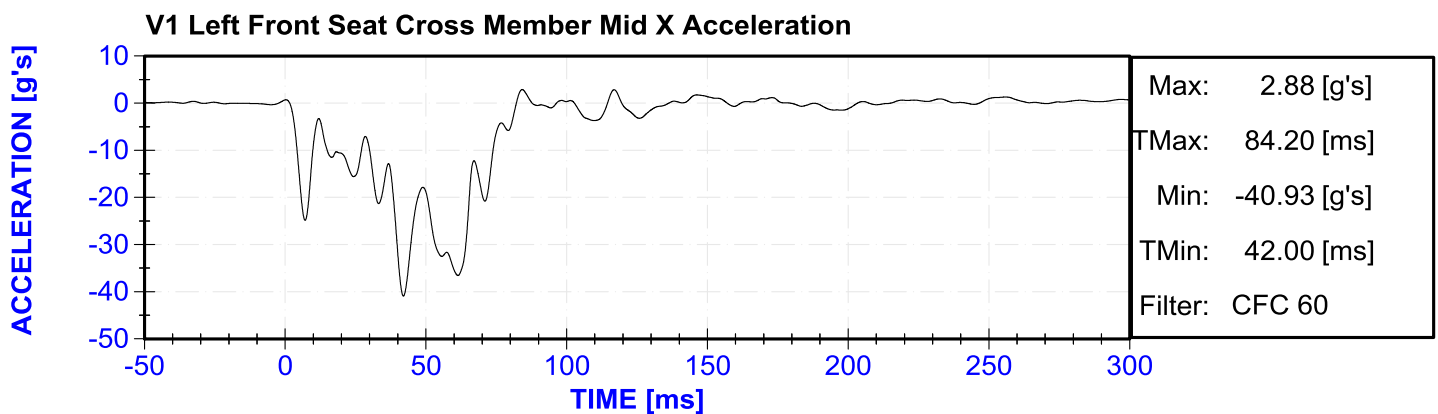
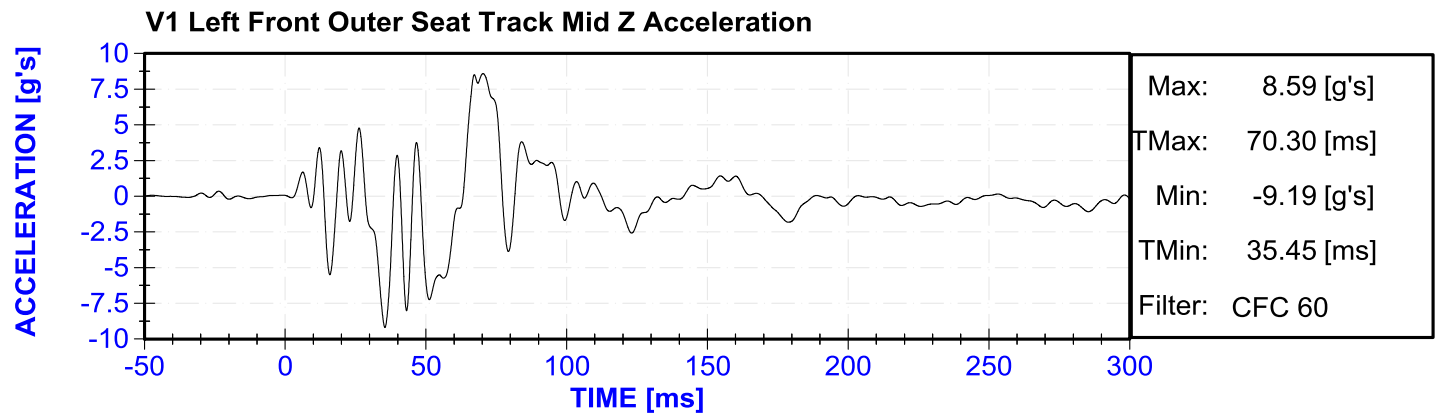
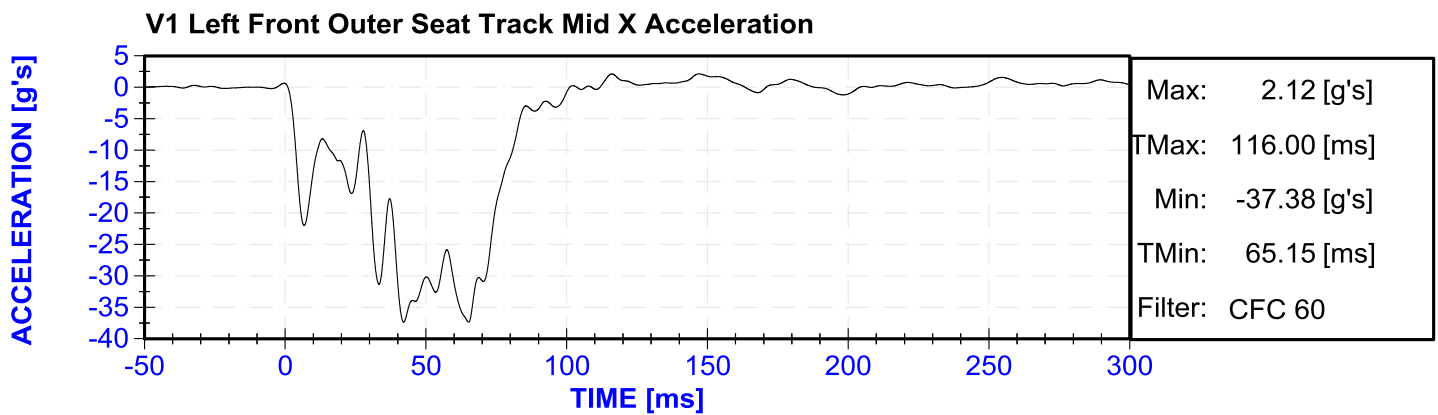
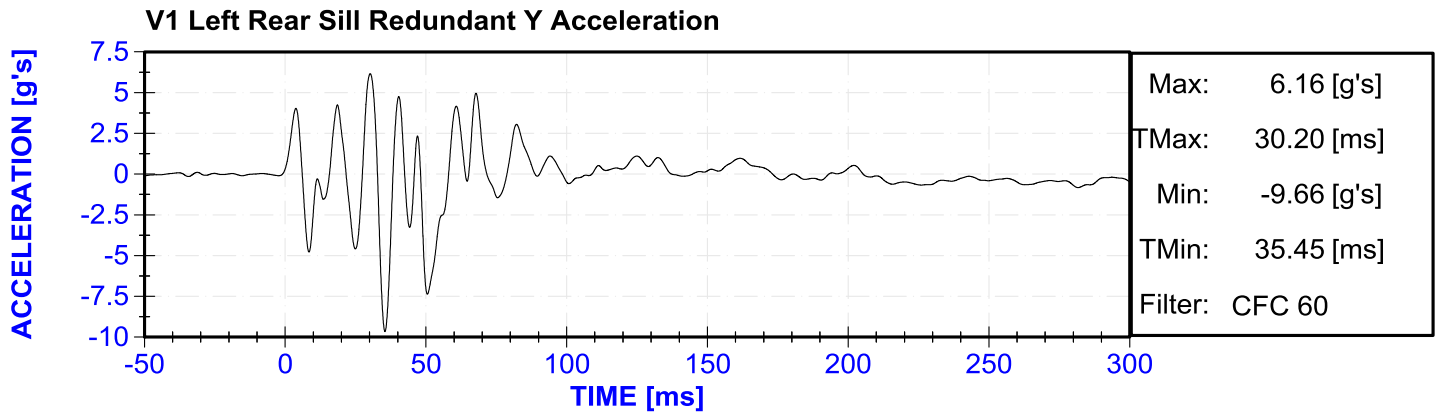
V1 Left Rear Sill Y Acceleration

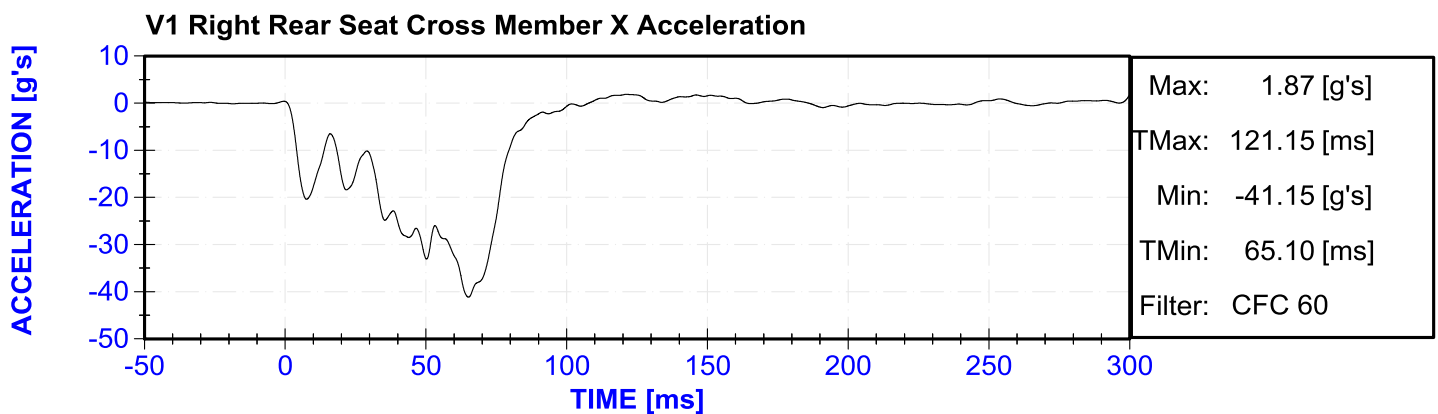
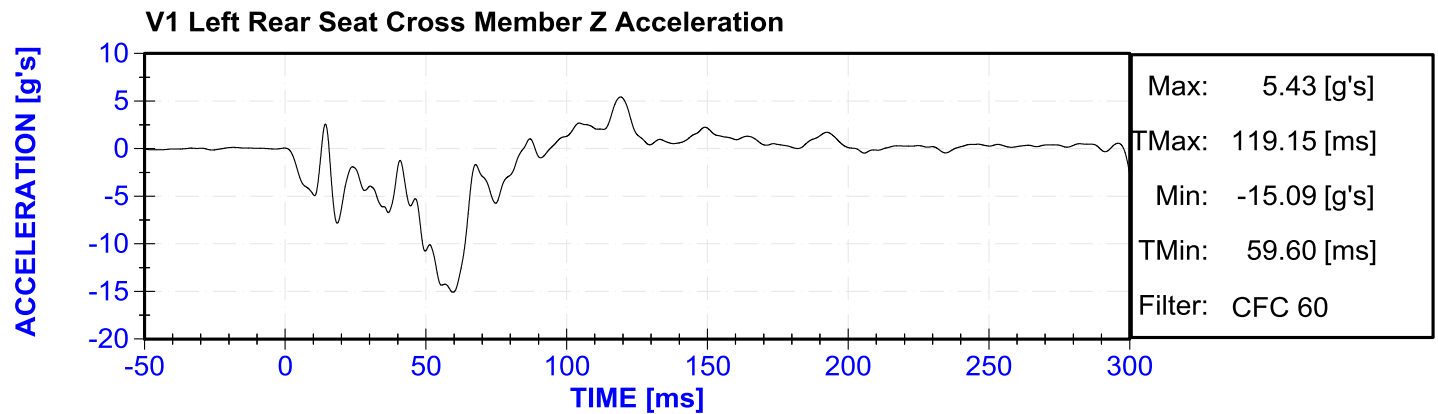
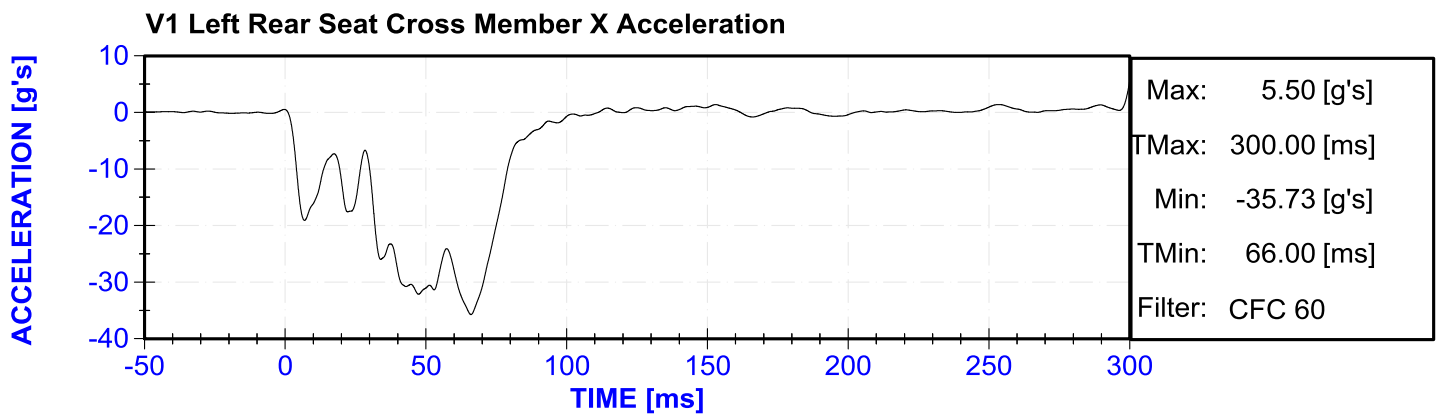
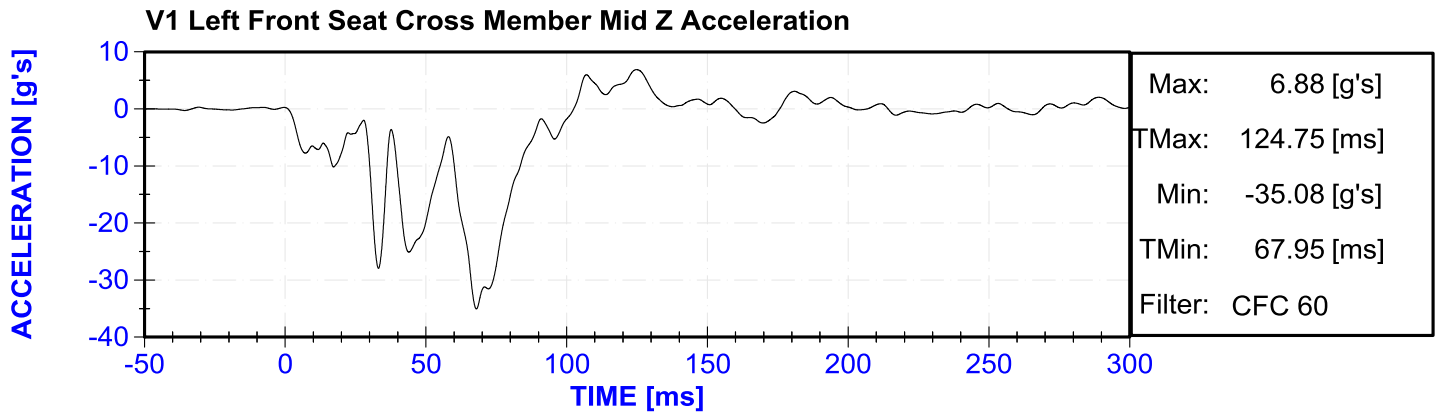


V1 Left Rear Sill Redundant X Acceleration

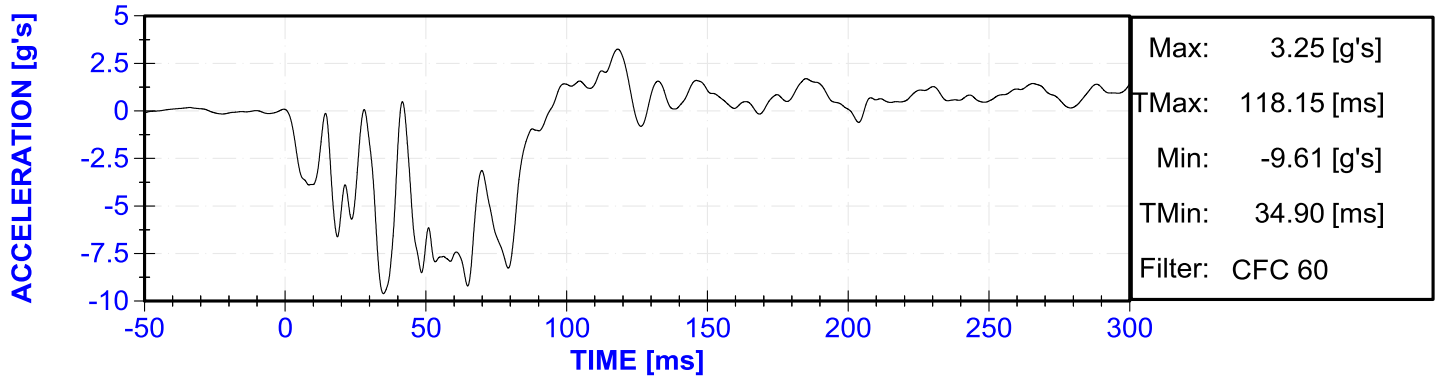




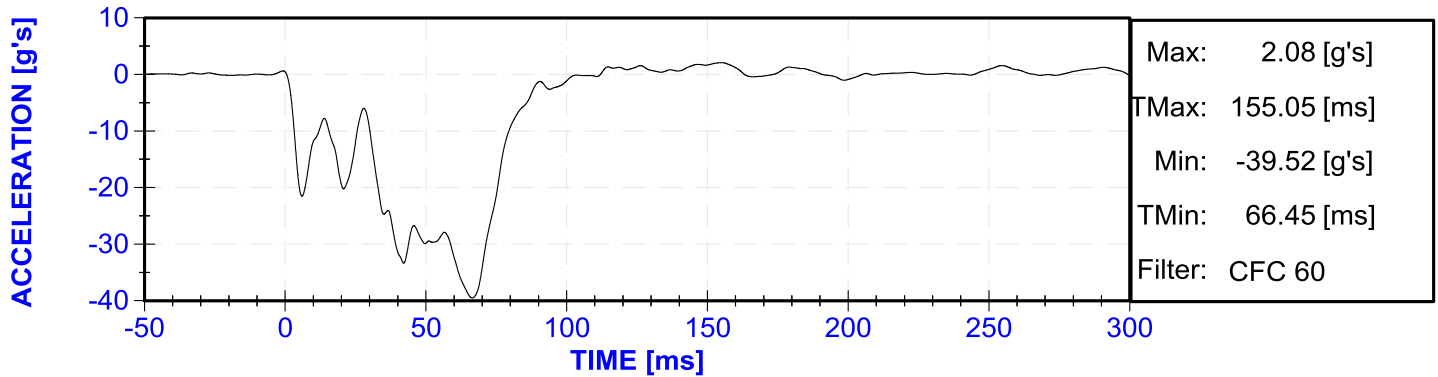




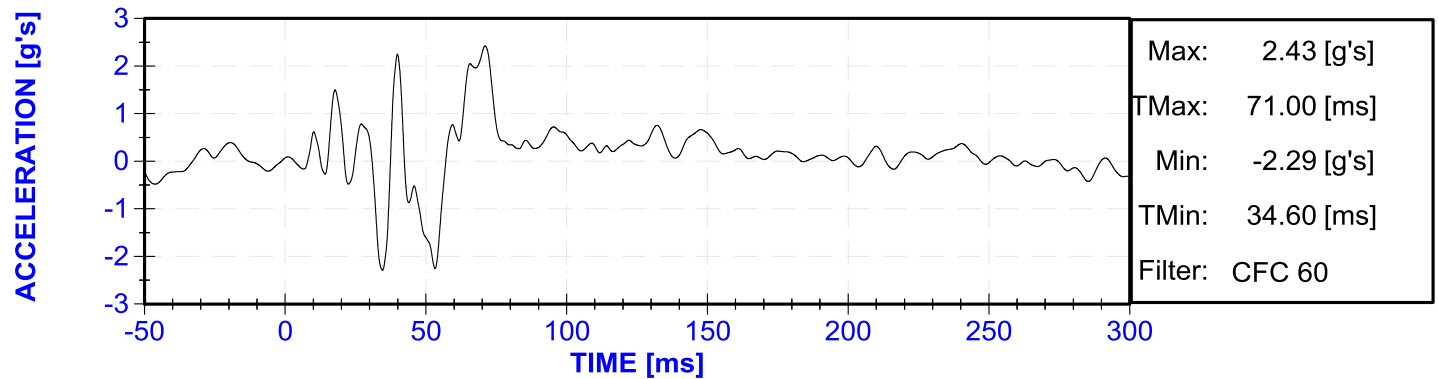
V1 Right Rear Seat Cross Member Z Acceleration



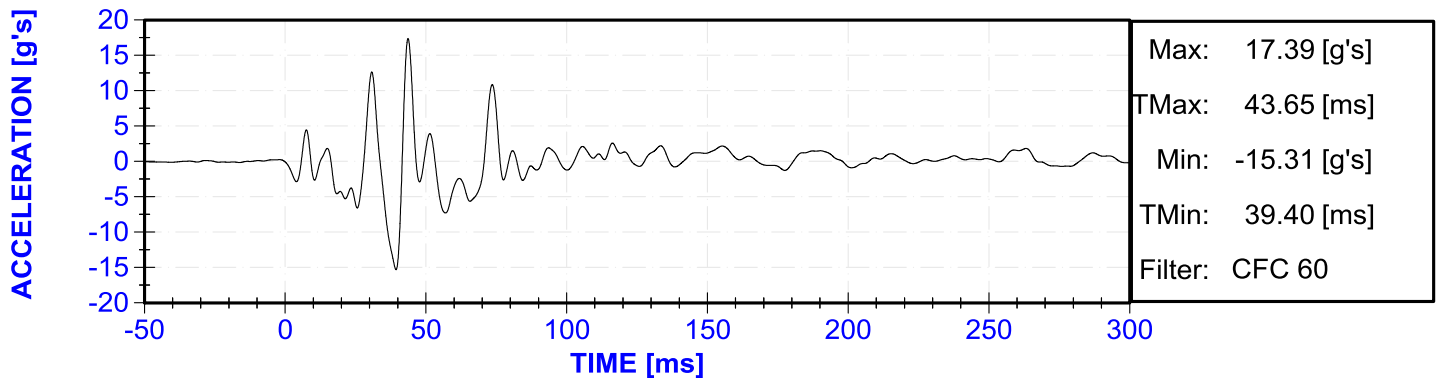
V1 Vehicle CG X Acceleration

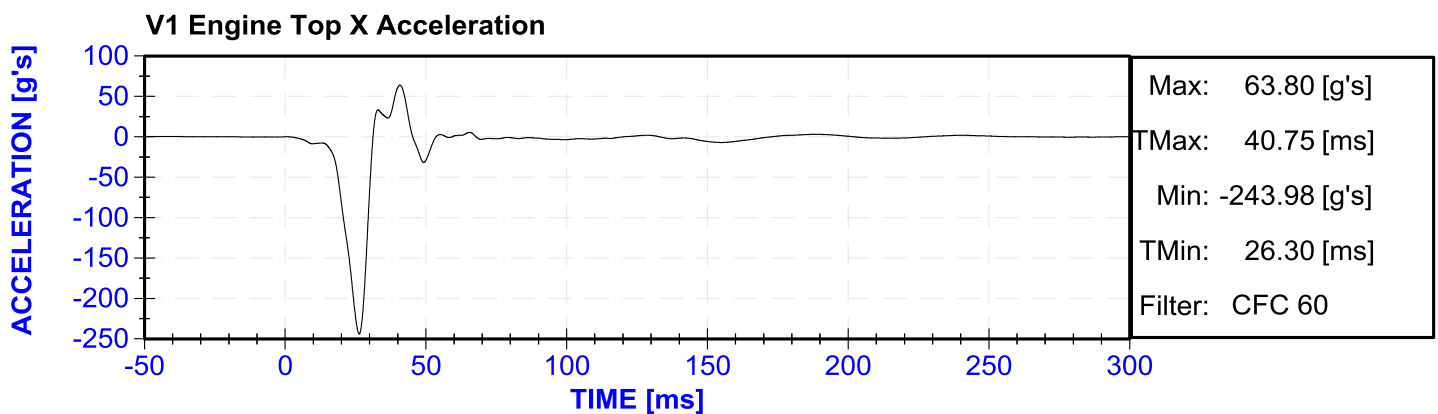
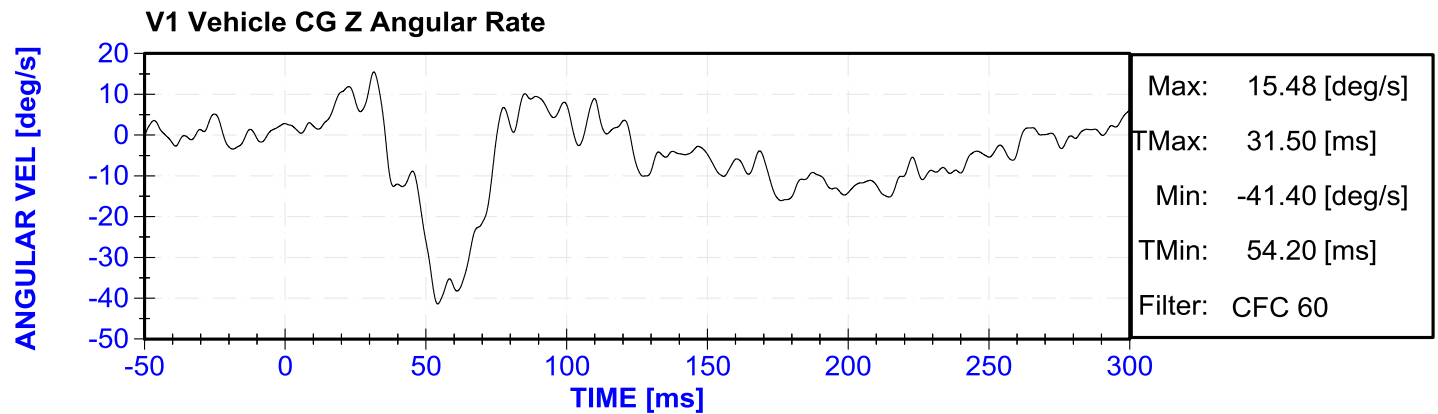
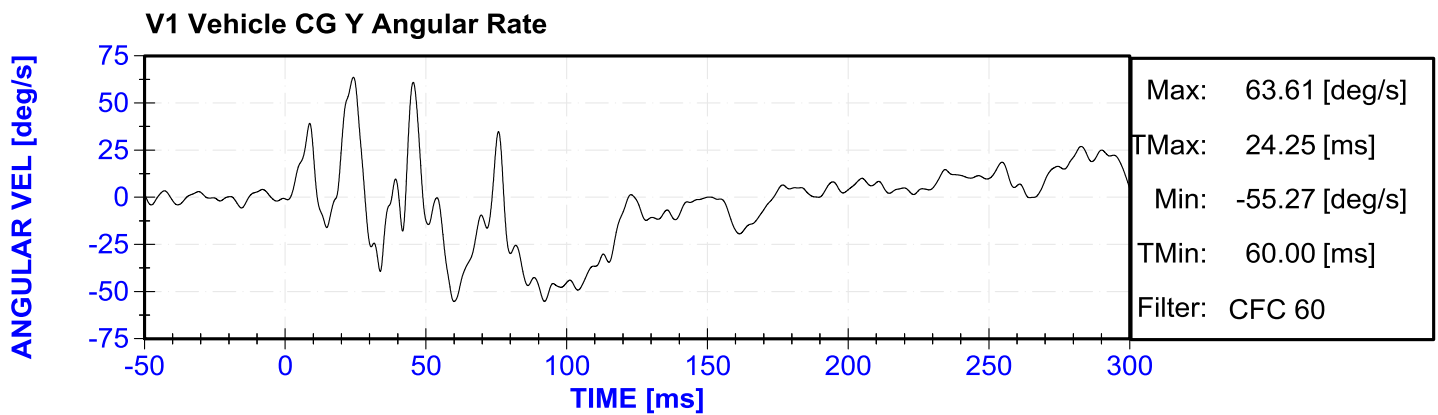
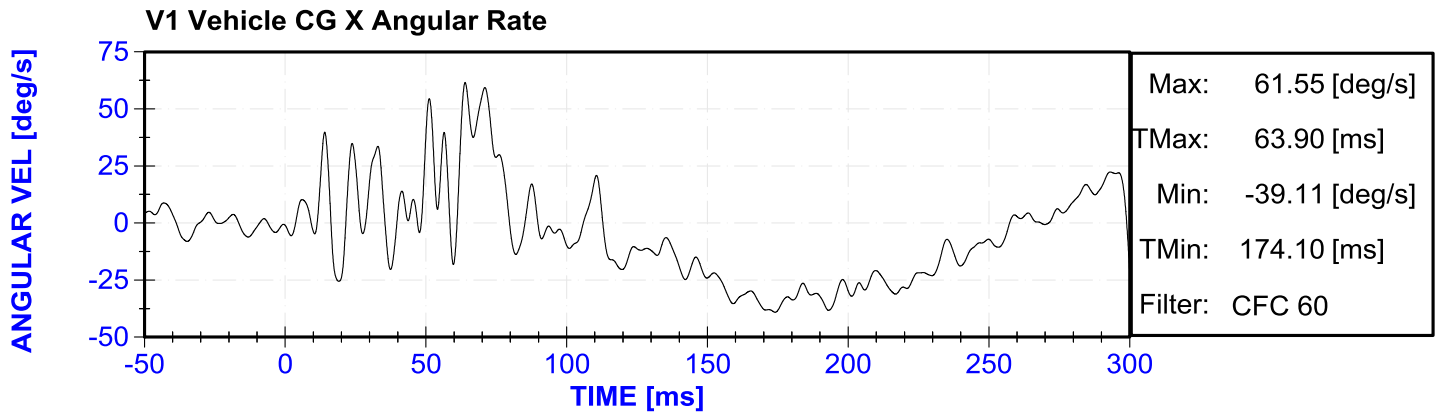


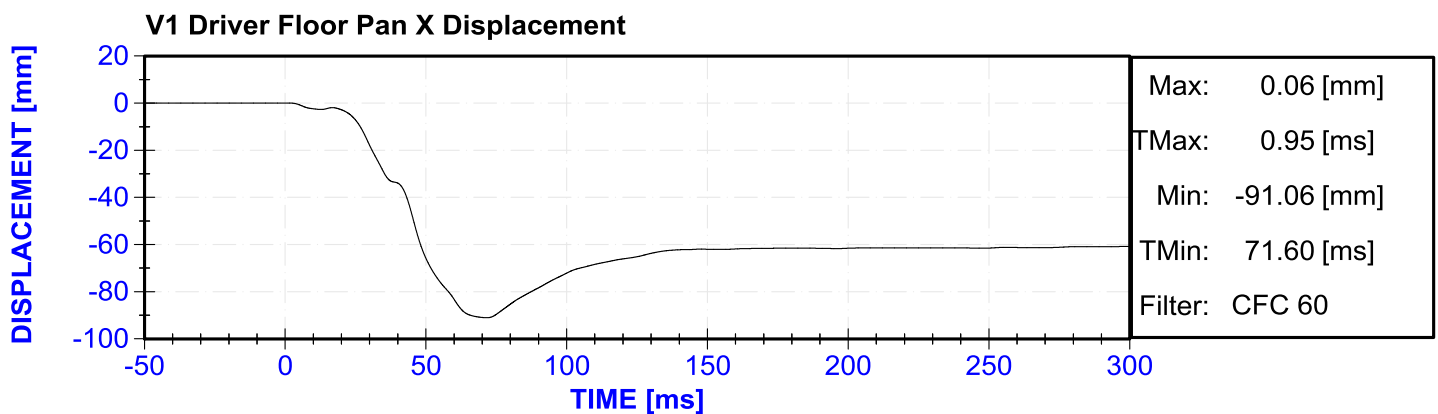
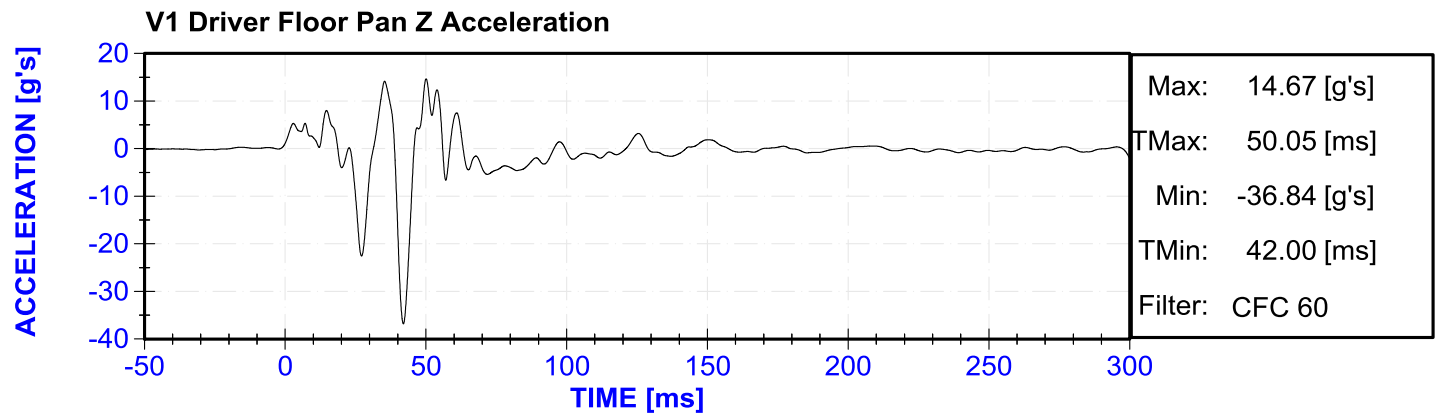
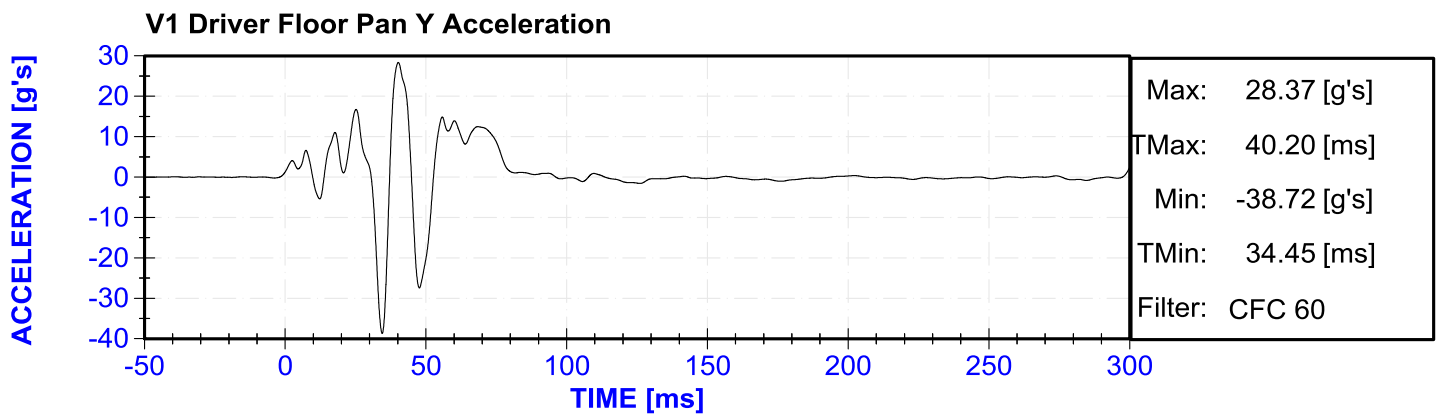
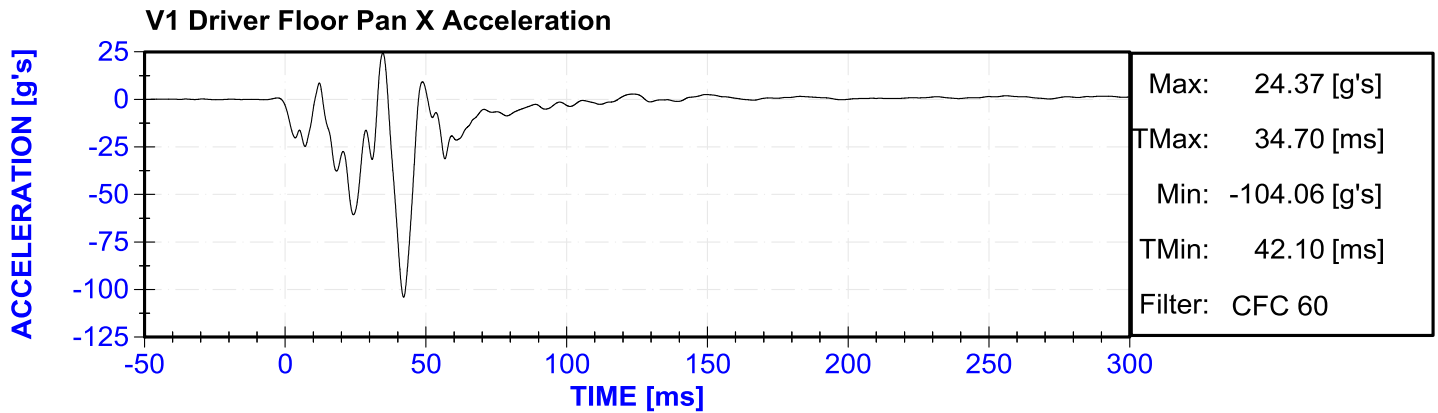
V1 Vehicle CG Y Acceleration



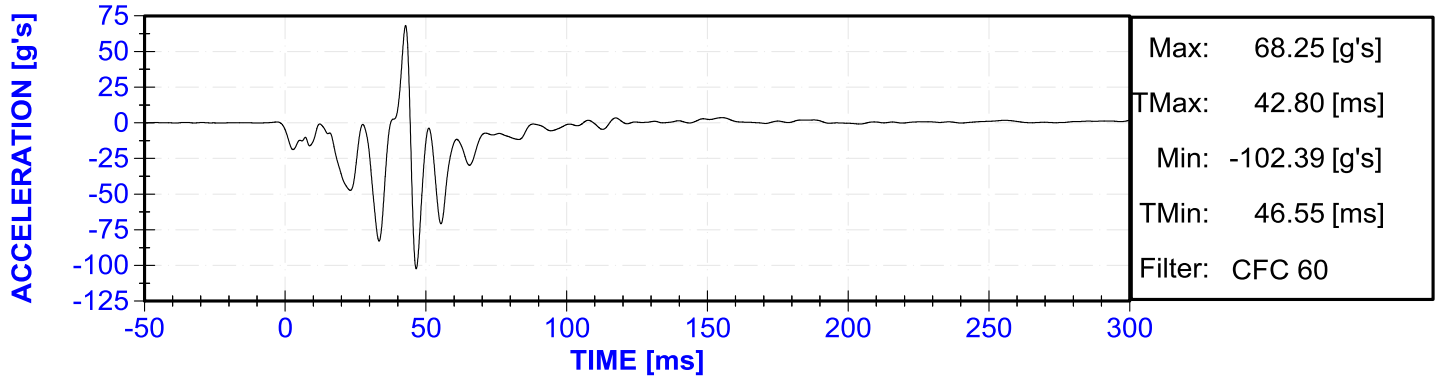
V1 Vehicle CG Z Acceleration



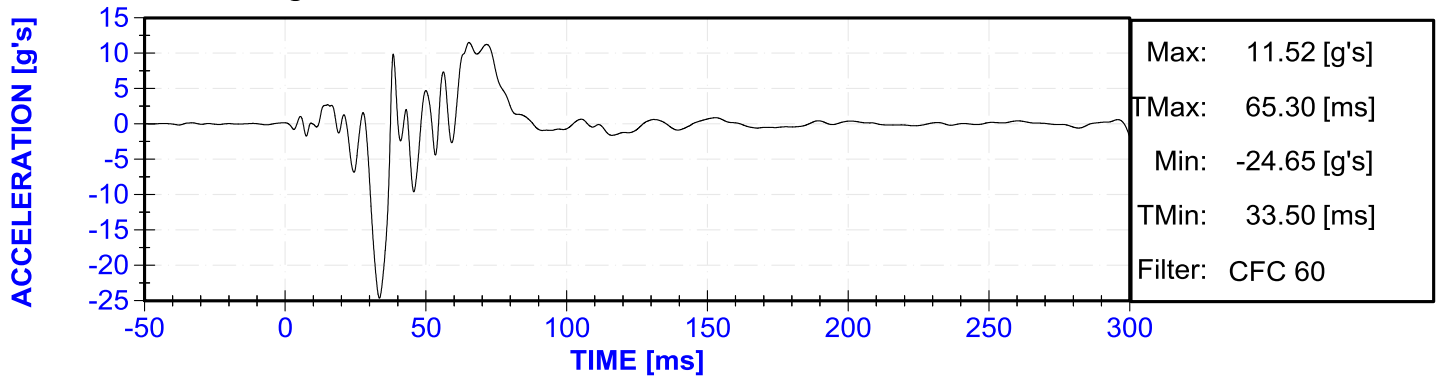




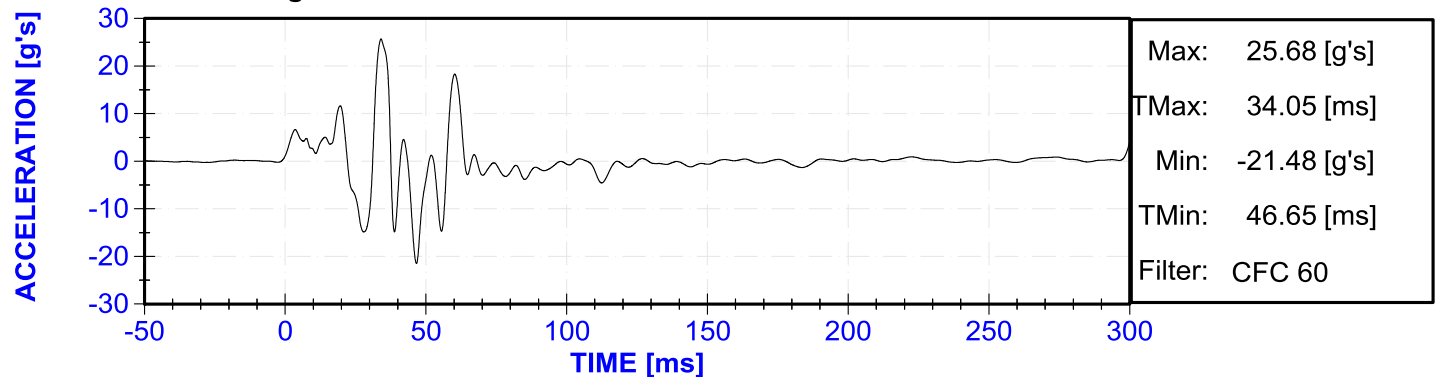
V1 Passenger Floor Pan X Acceleration



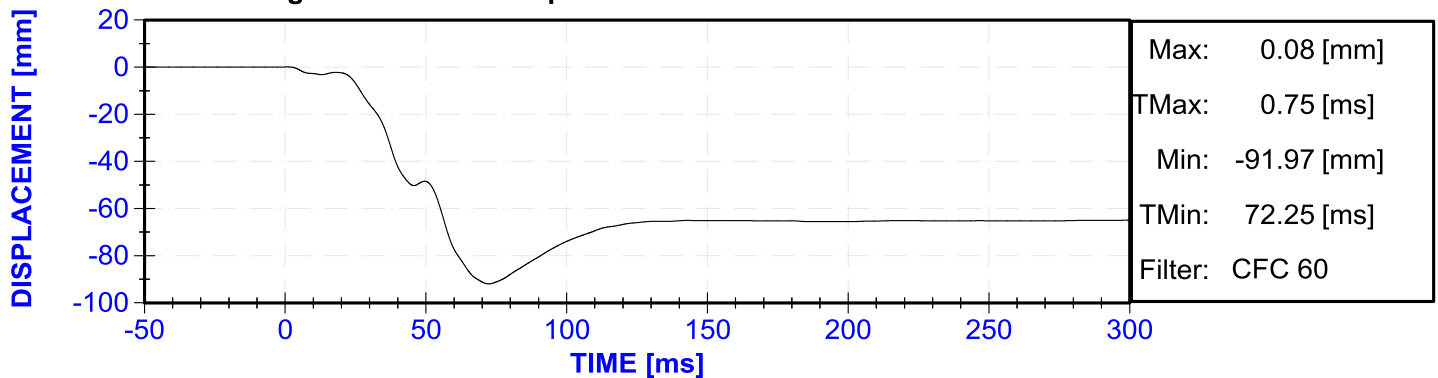
V1 Passenger Floor Pan Y Acceleration

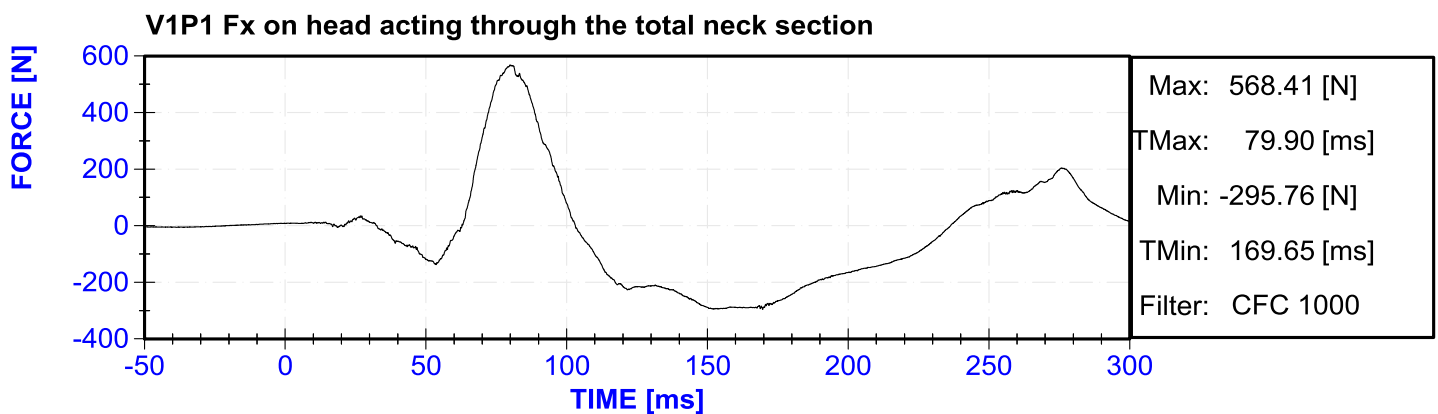
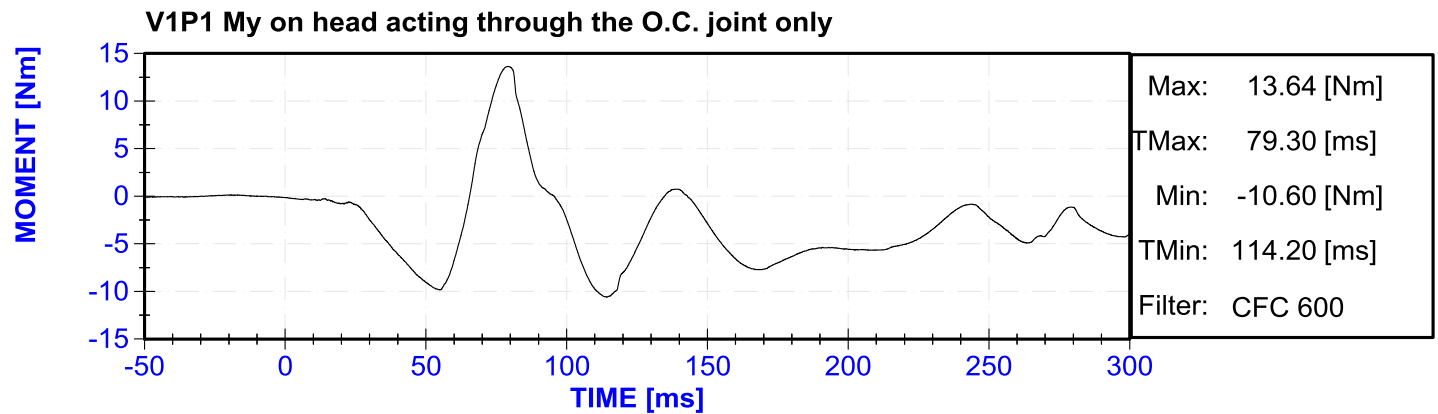
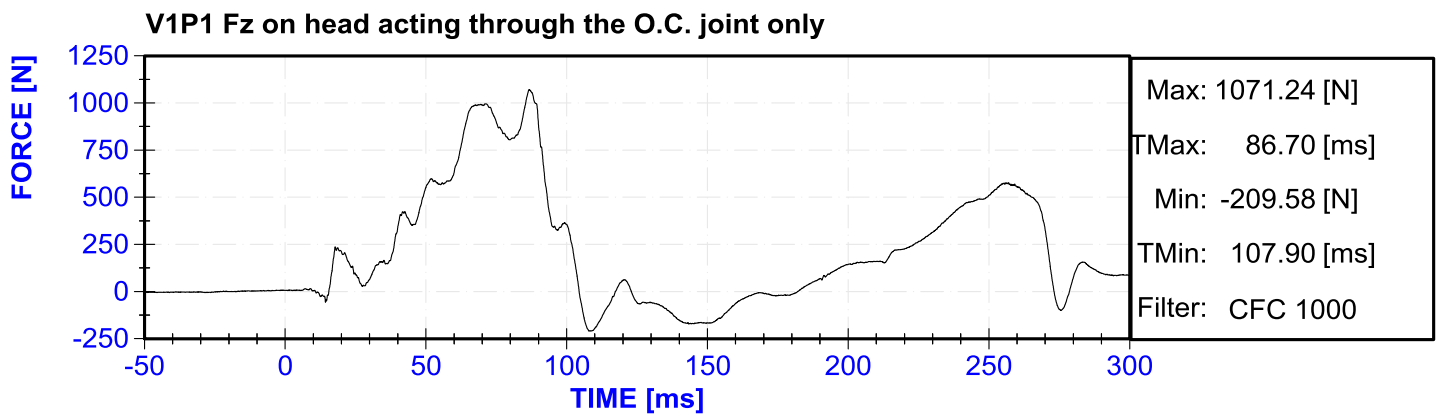
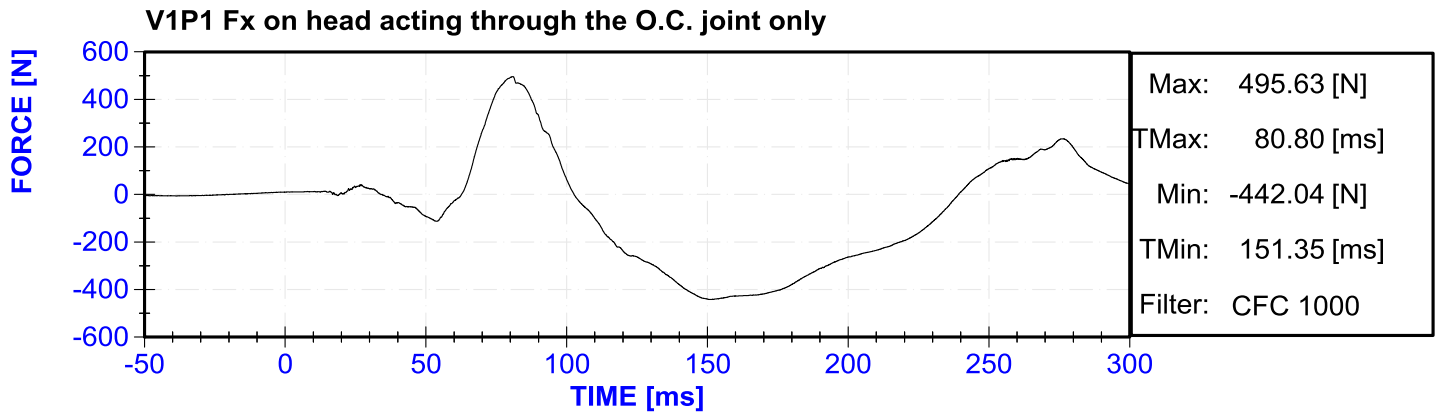


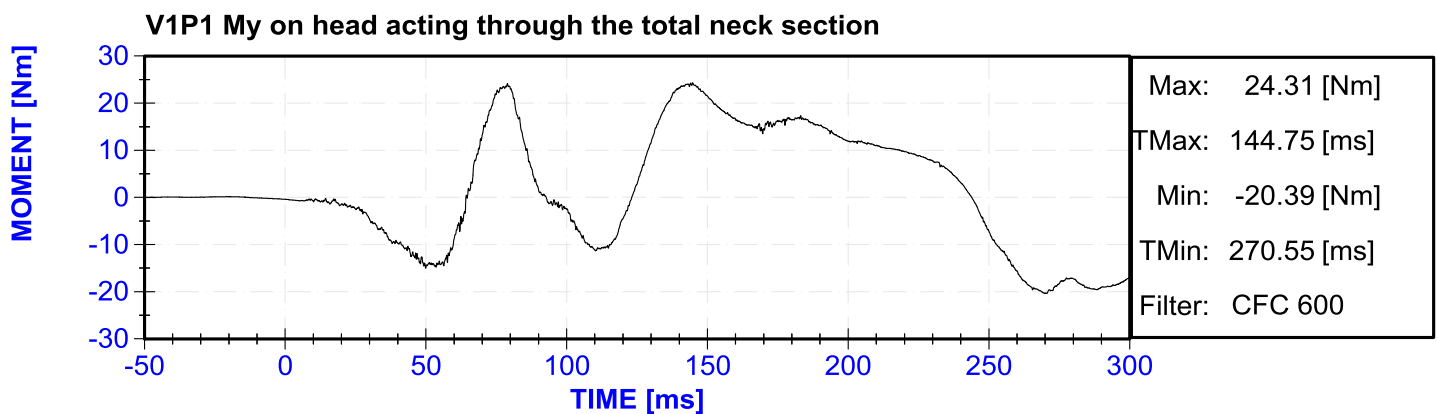
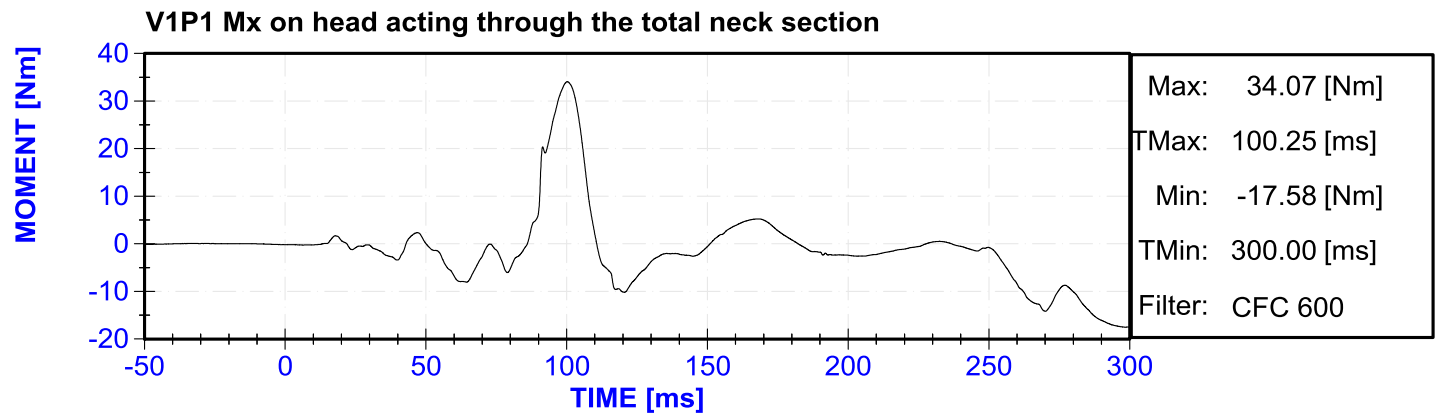
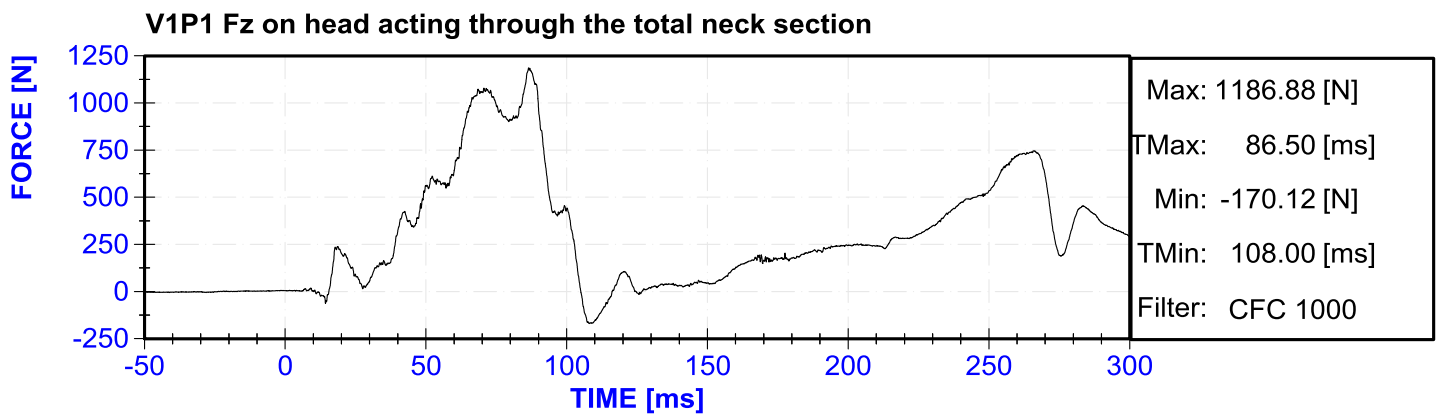
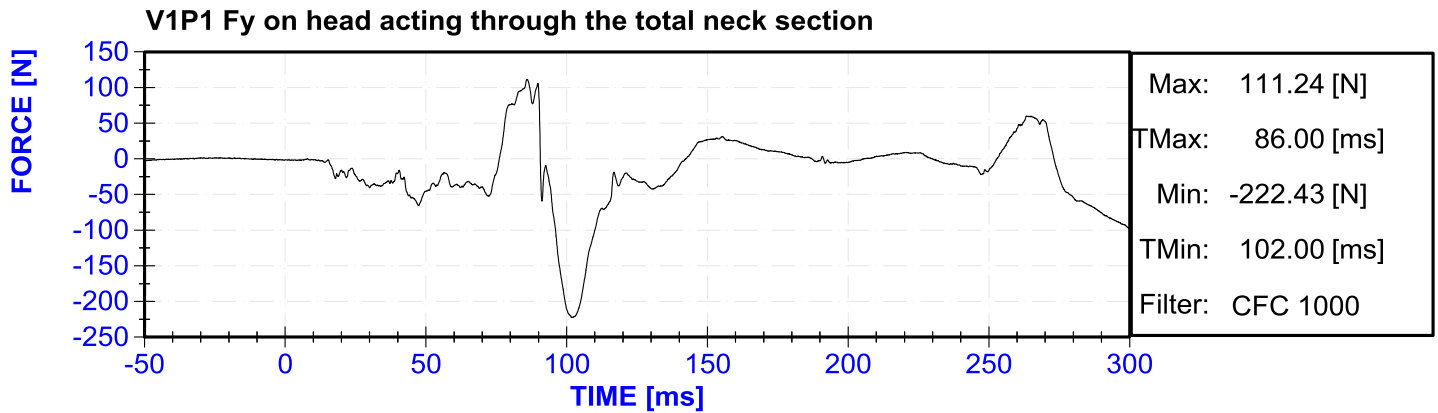
V1 Passenger Floor Pan Z Acceleration

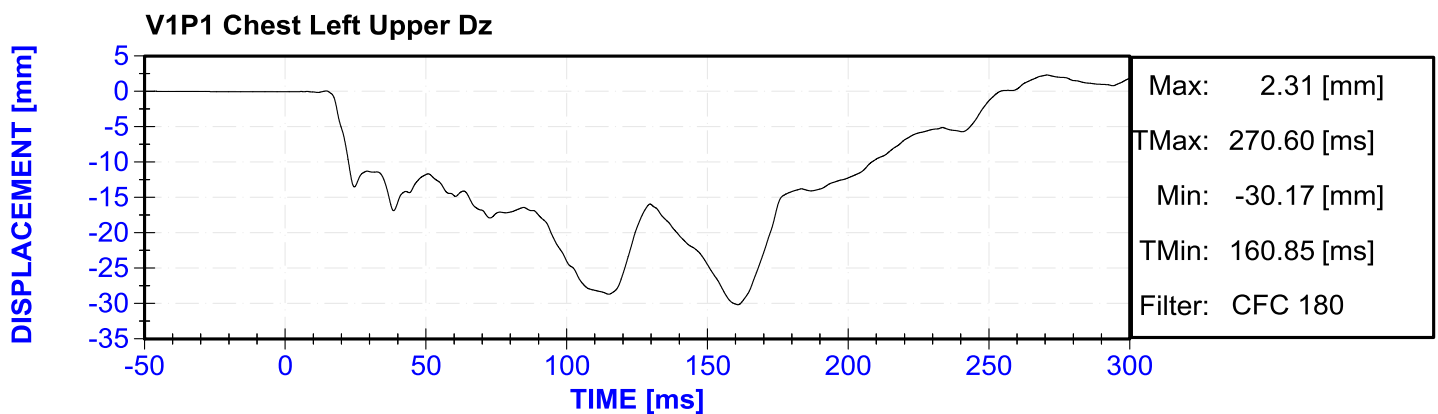
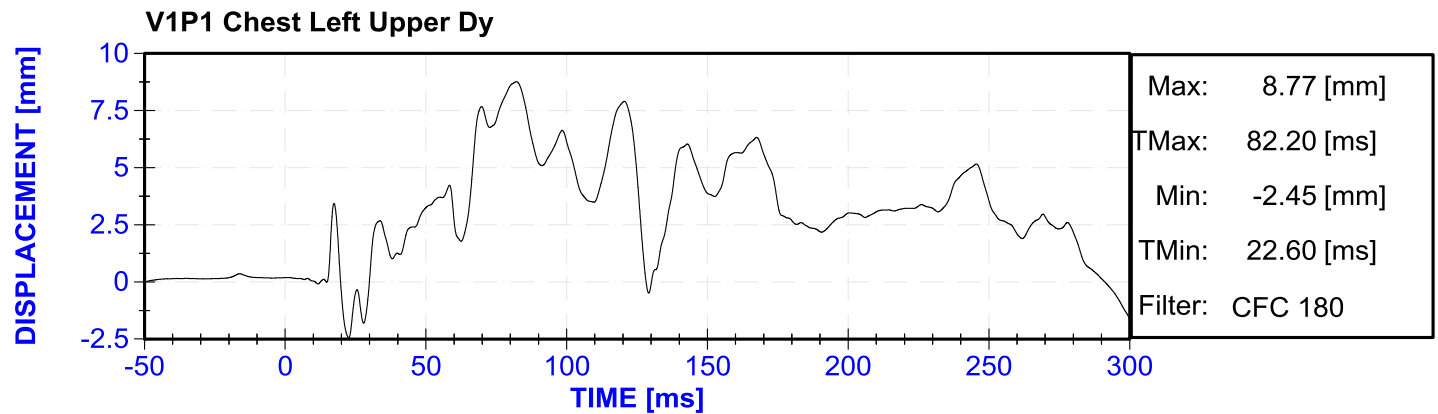
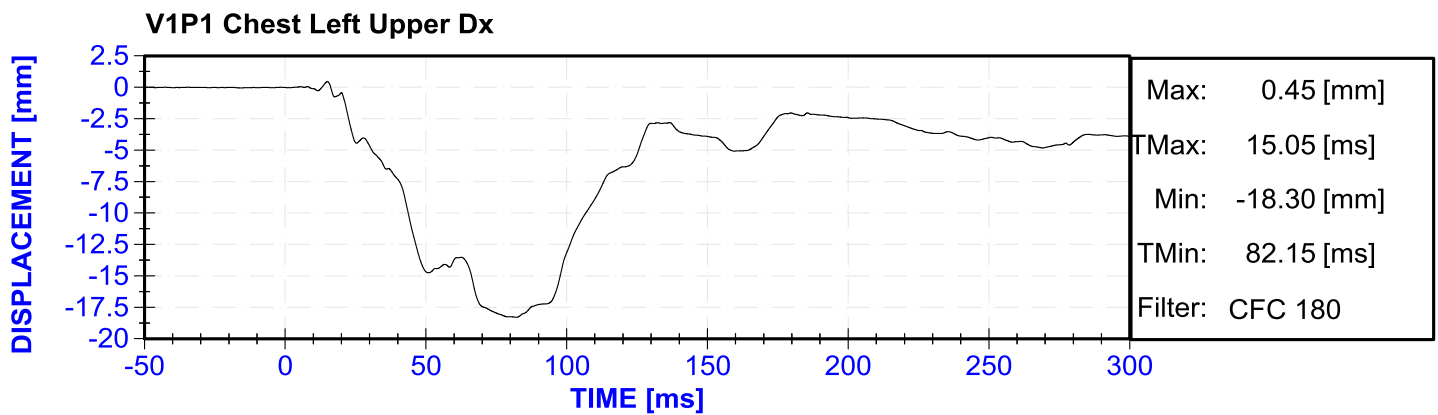
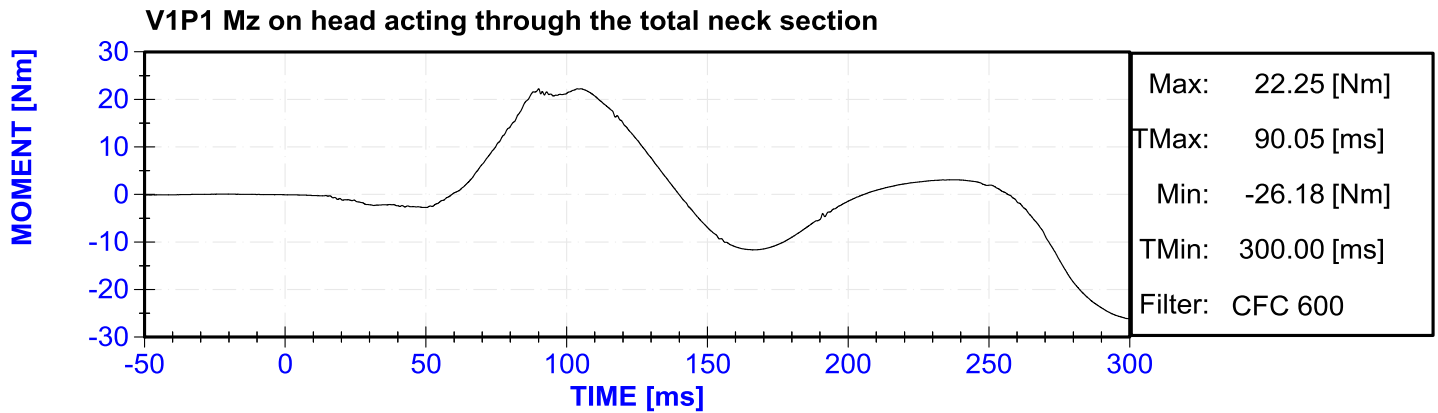


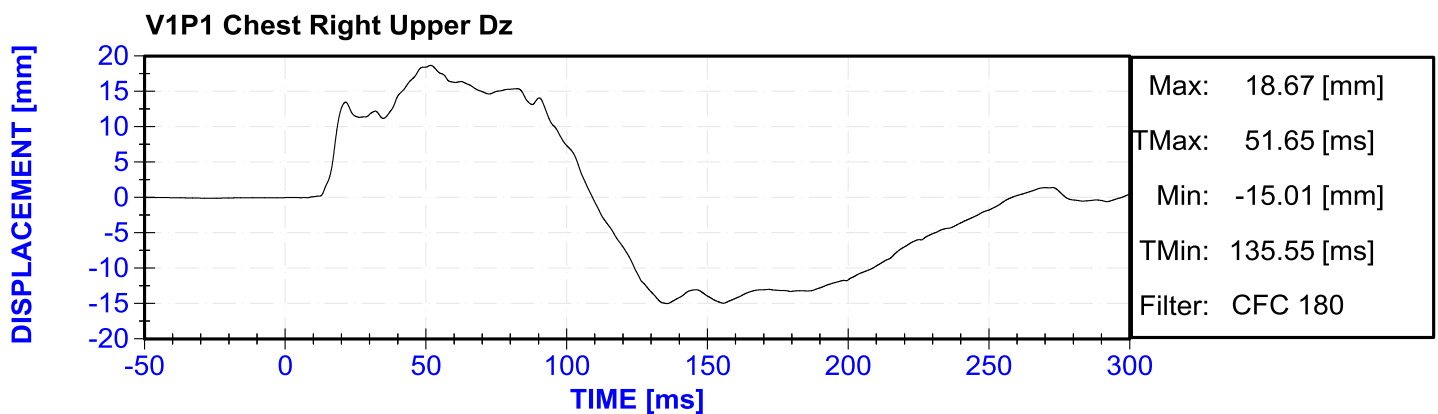
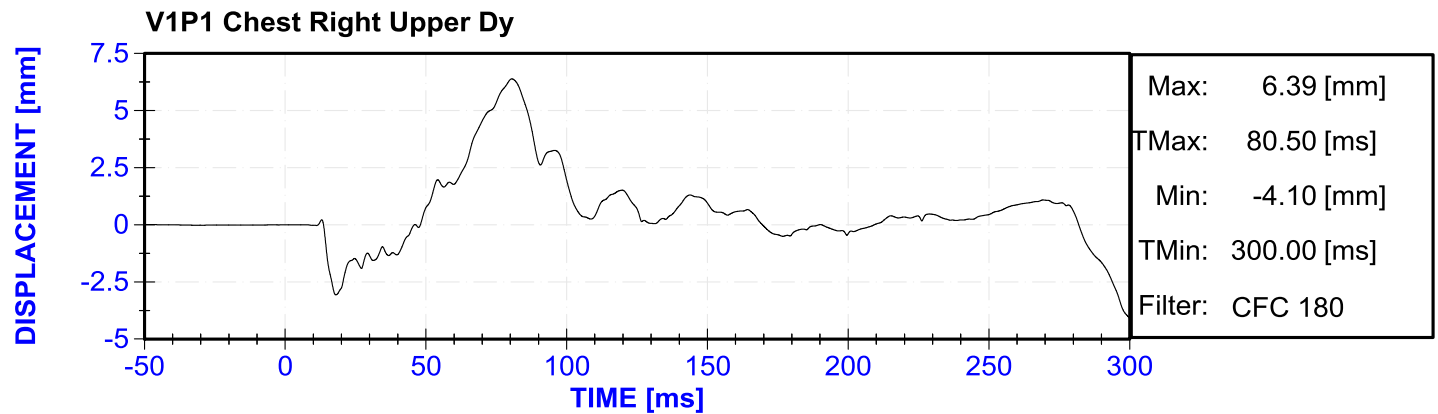
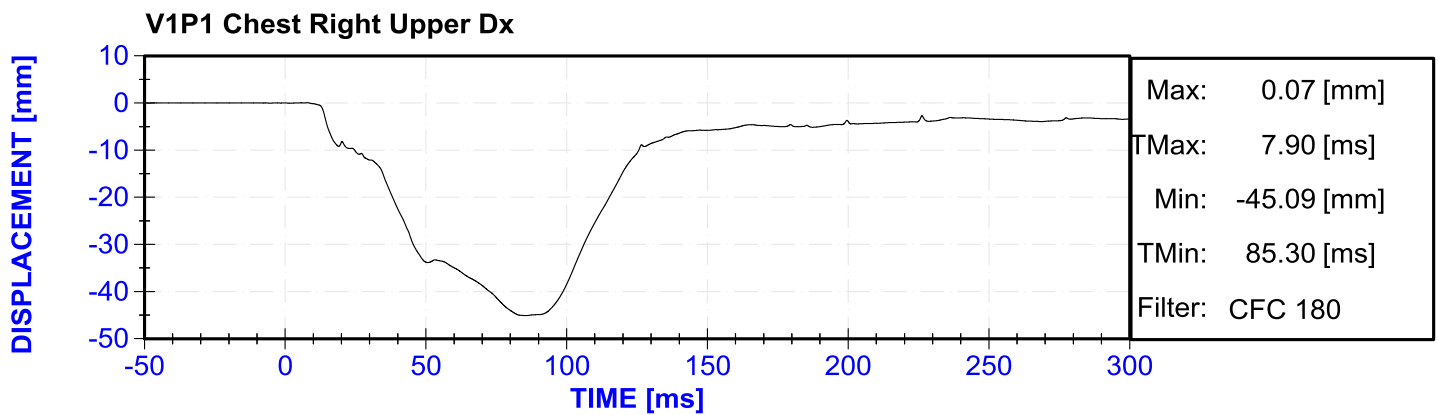
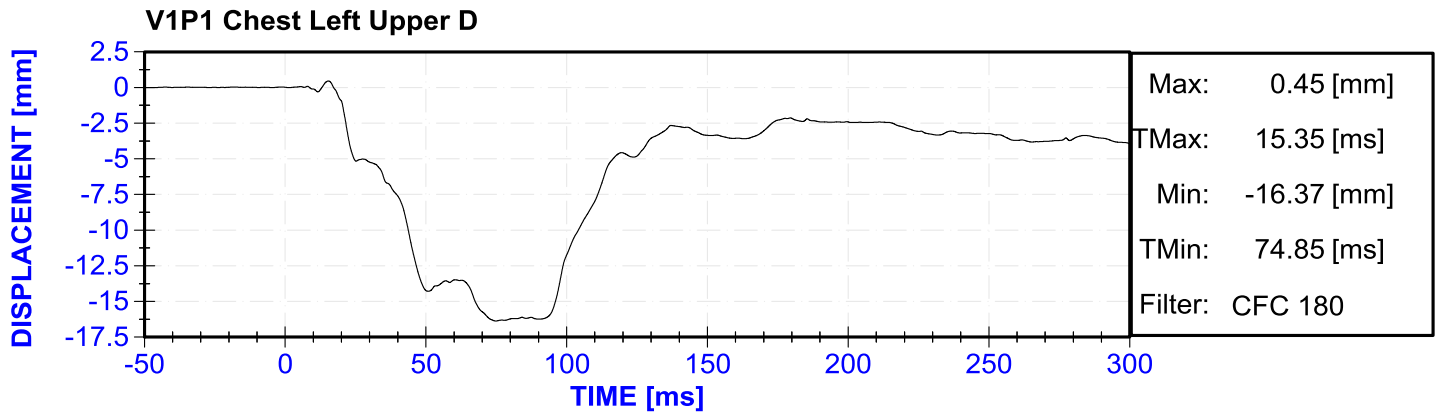
V1 Passenger Floor Pan X Displacement

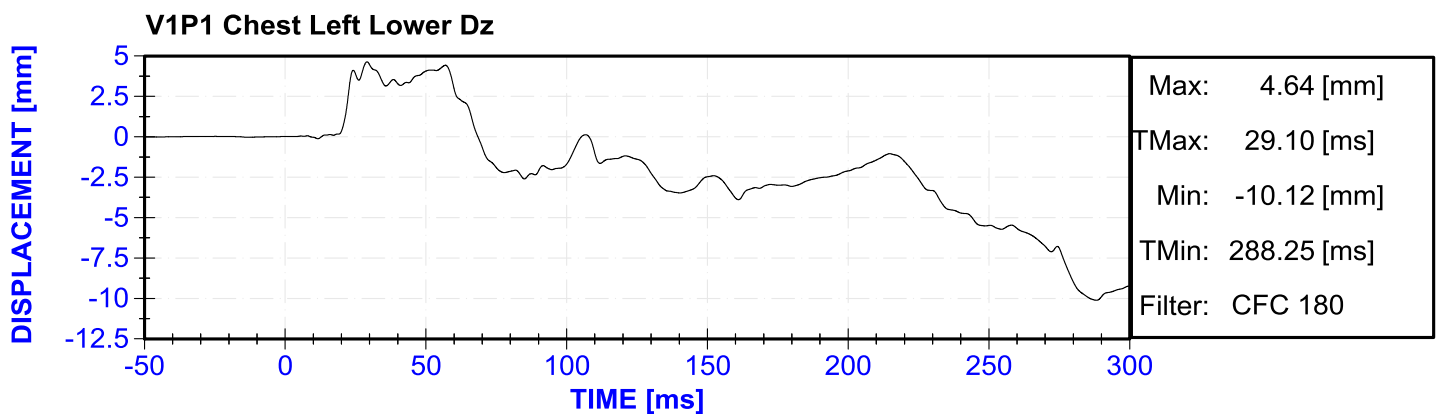
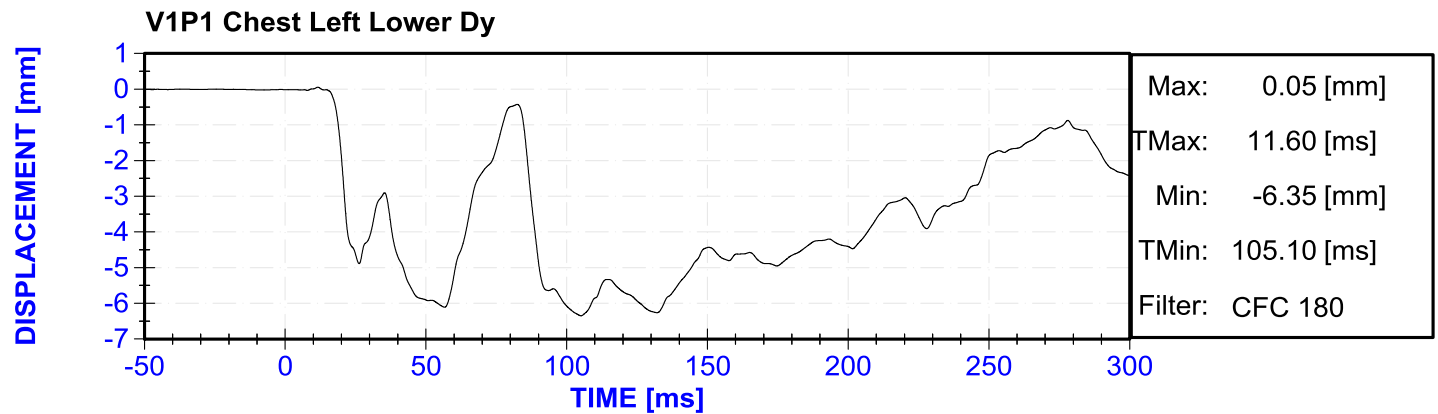
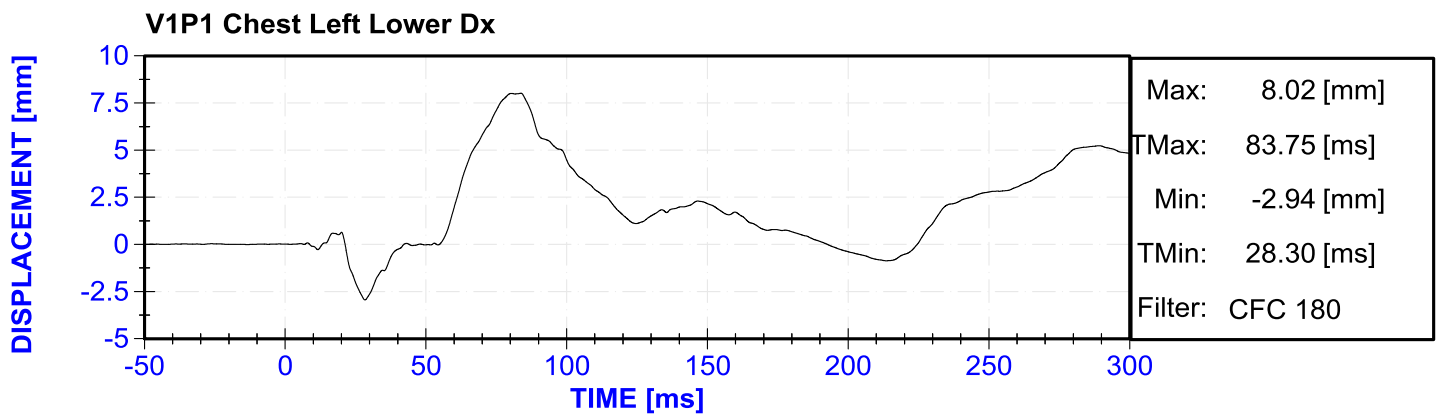
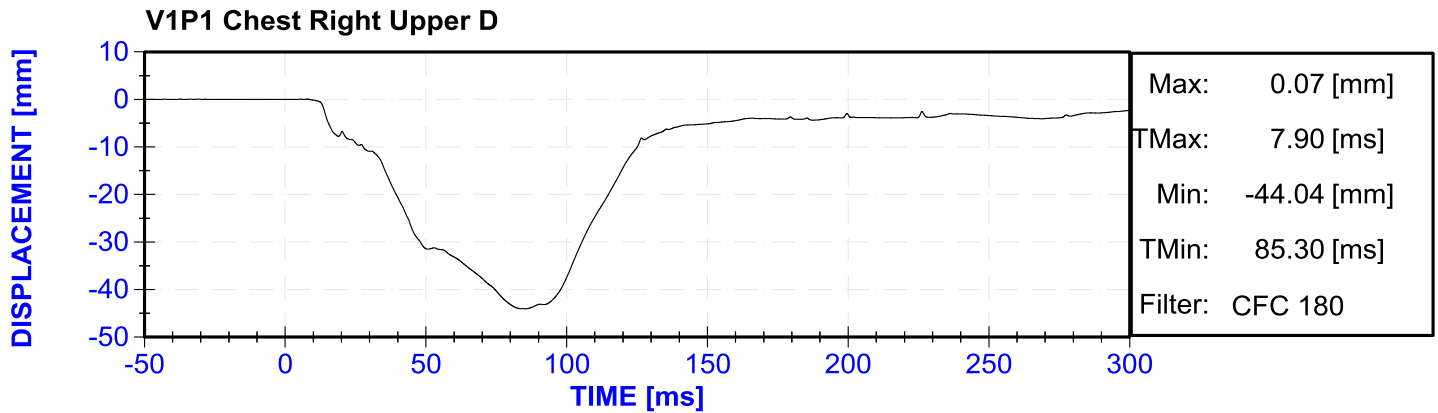


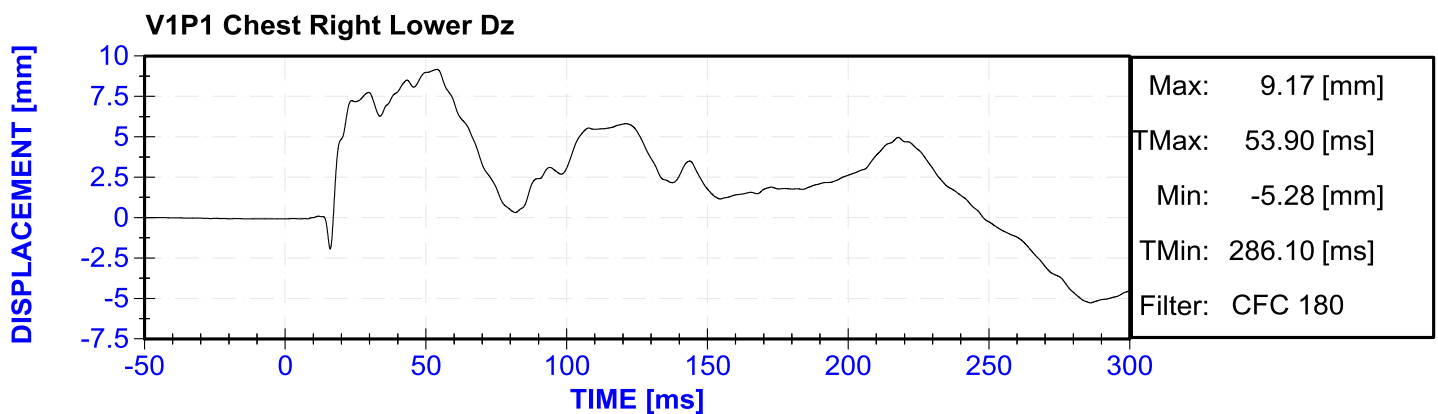
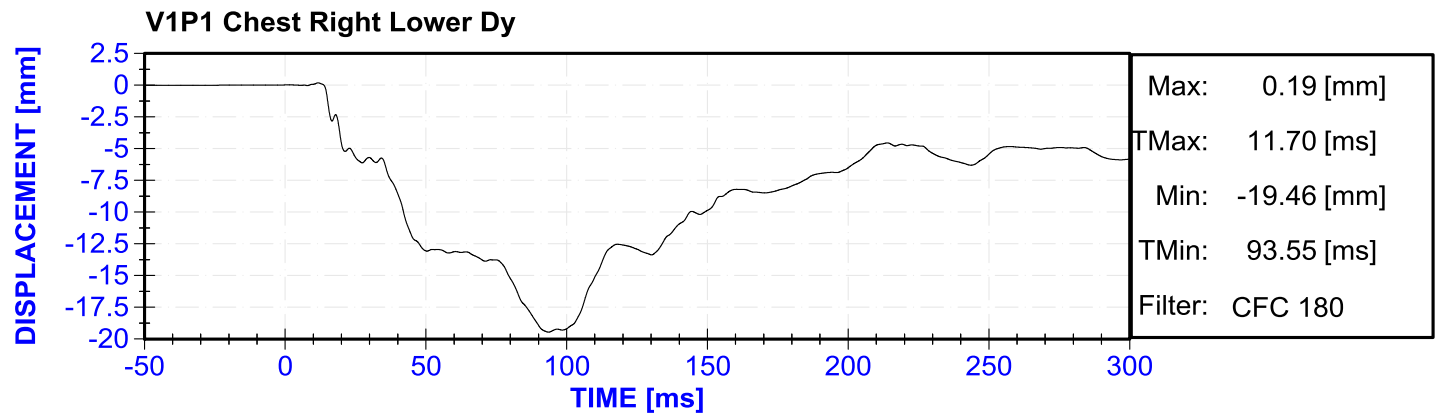
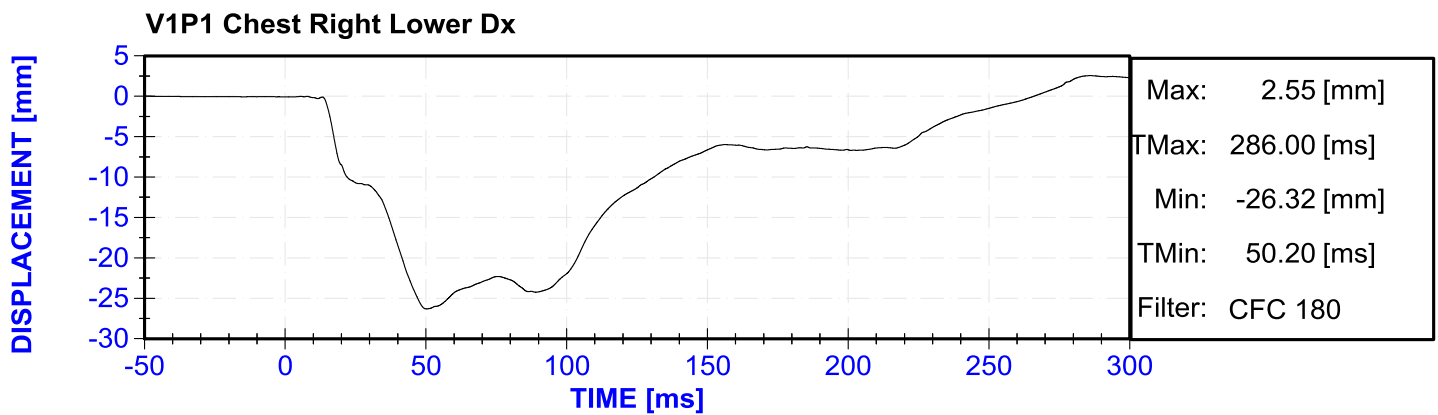
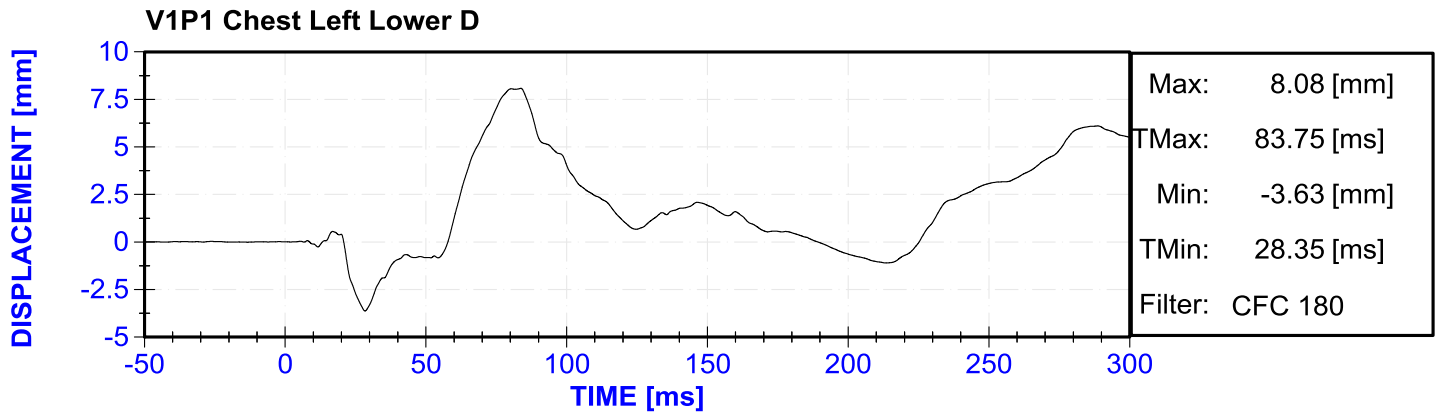


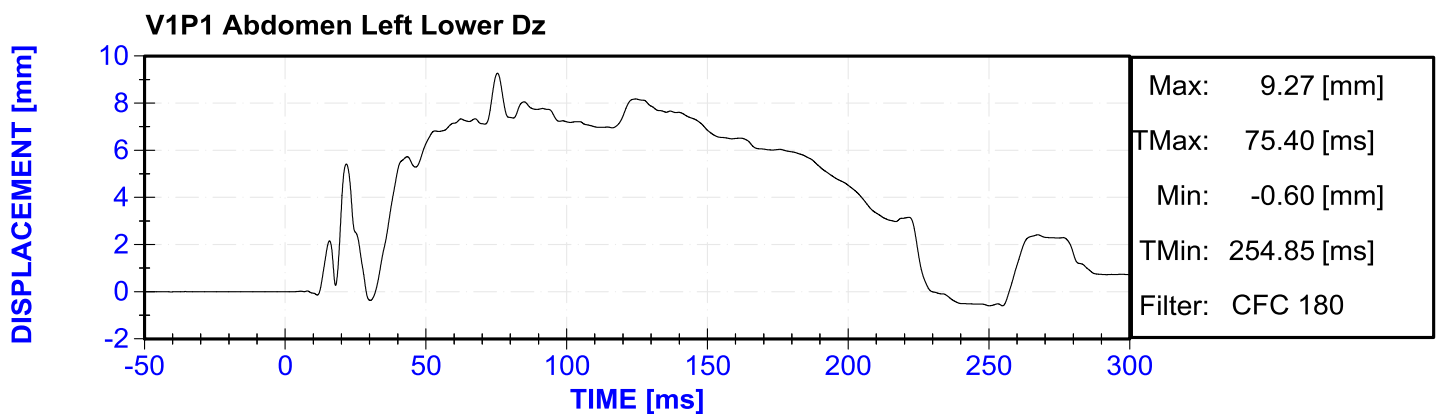
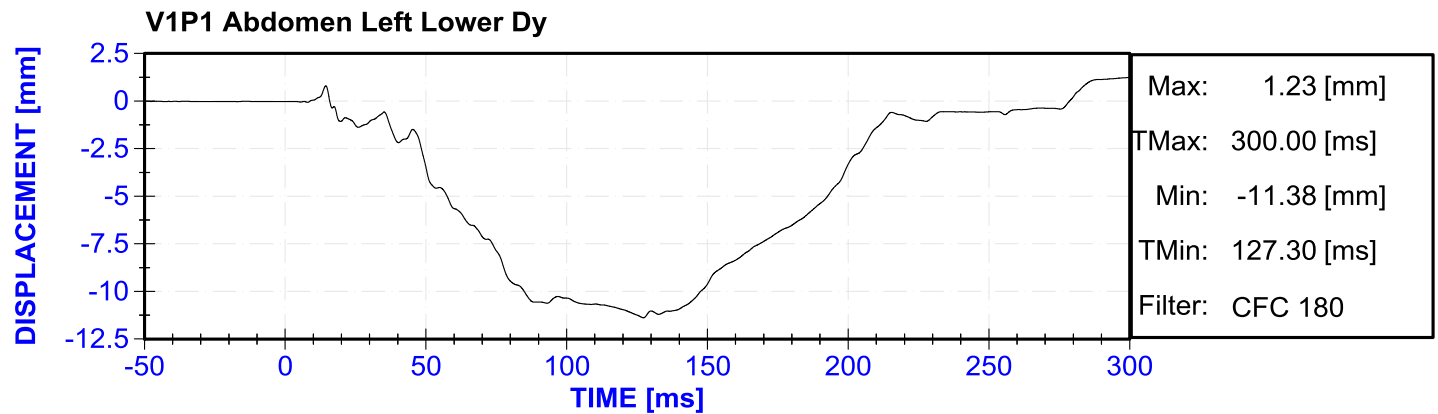
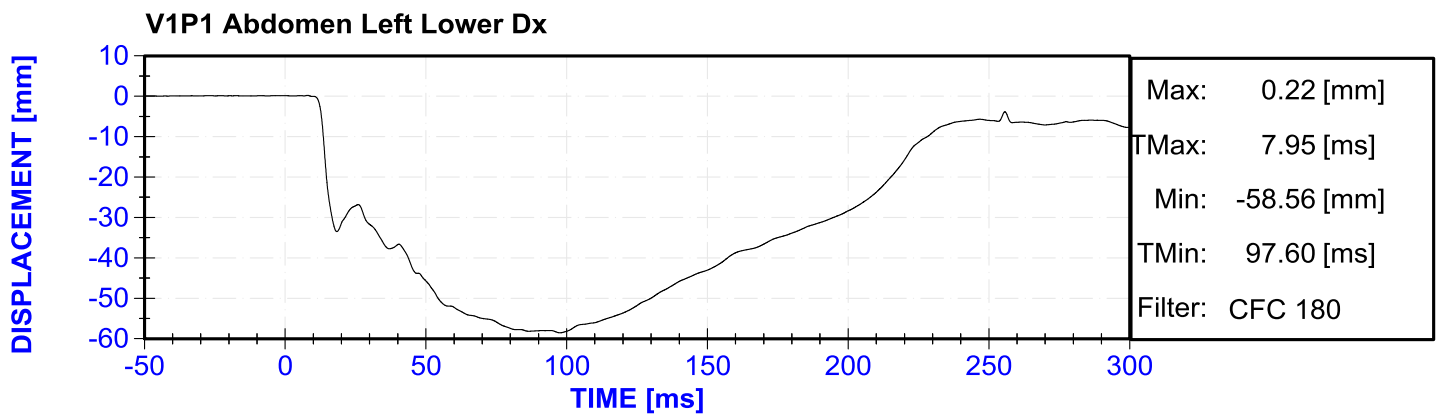
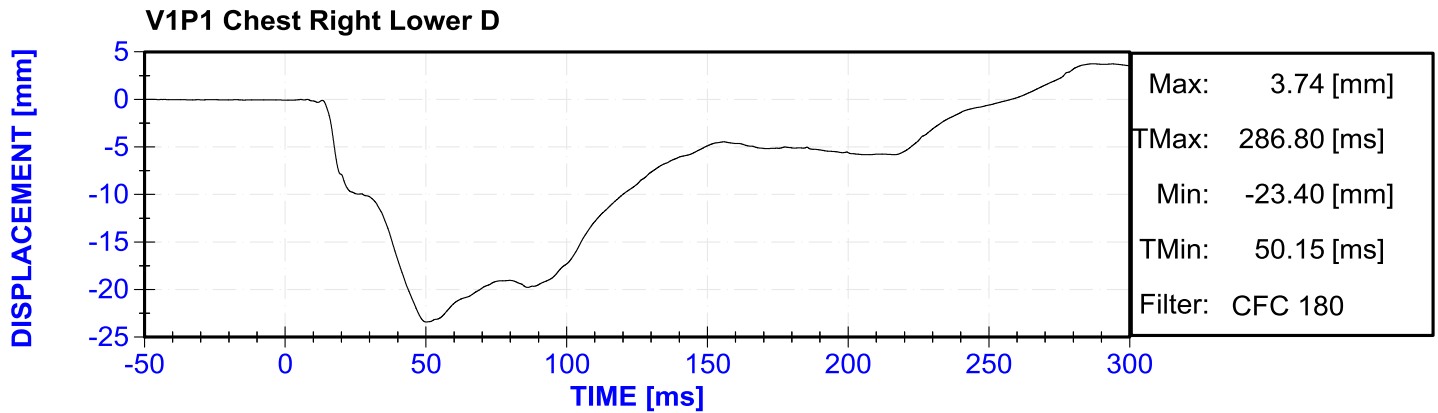


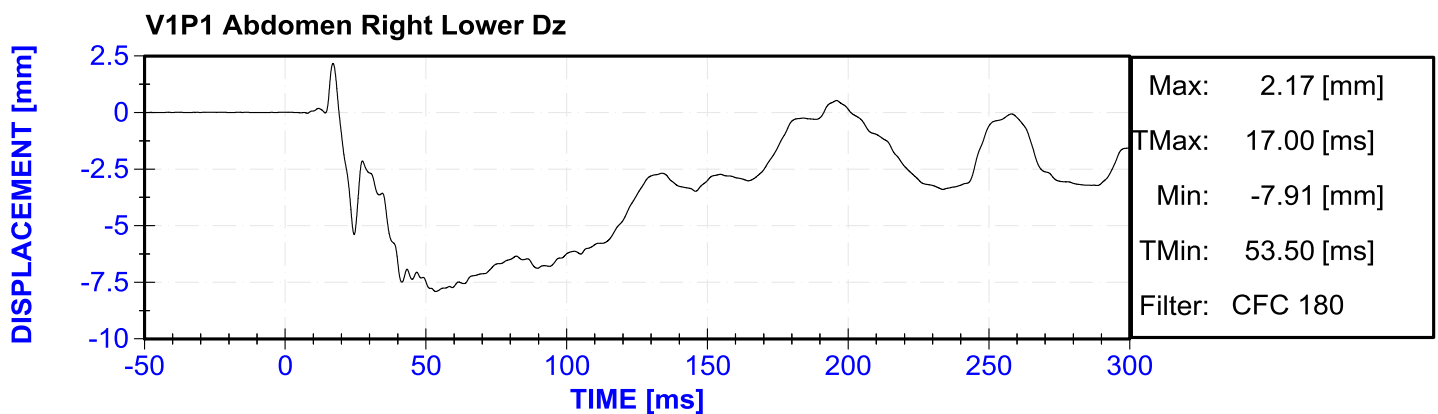
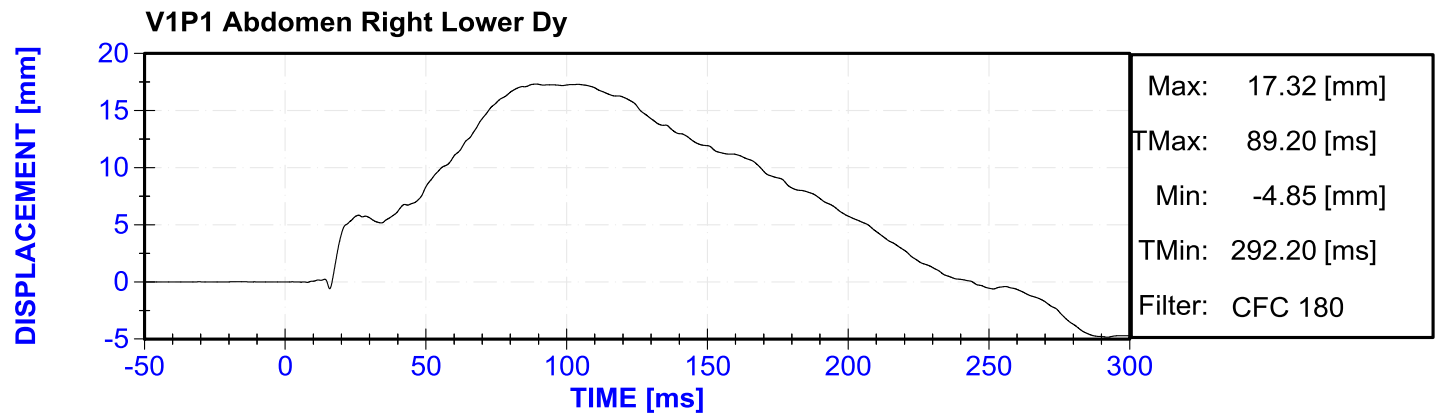
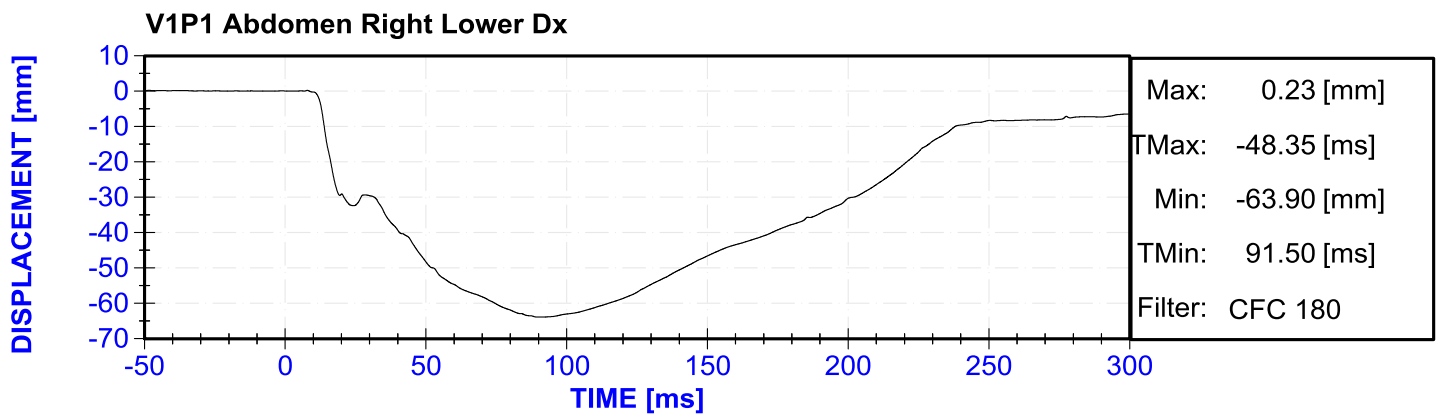
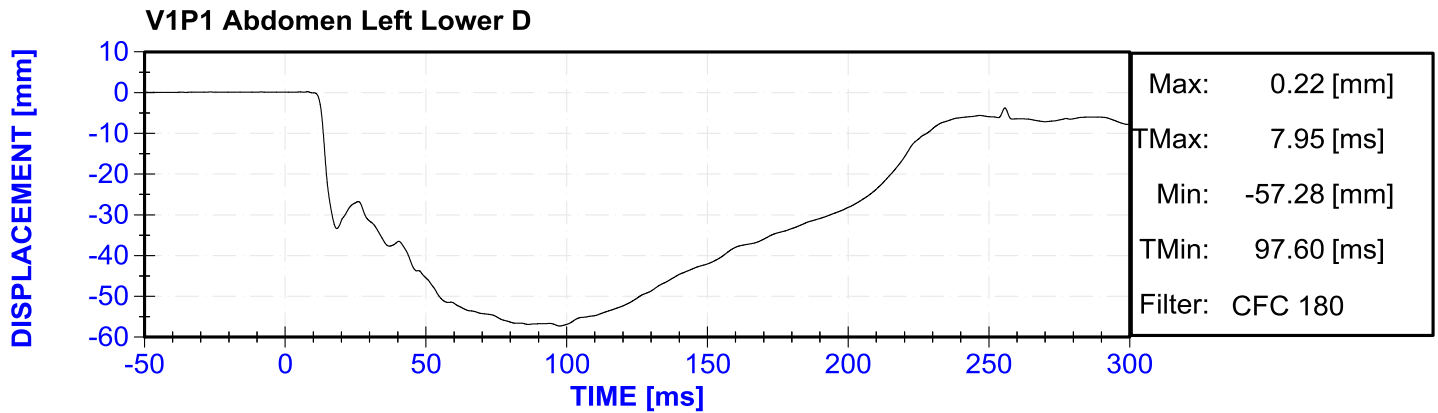


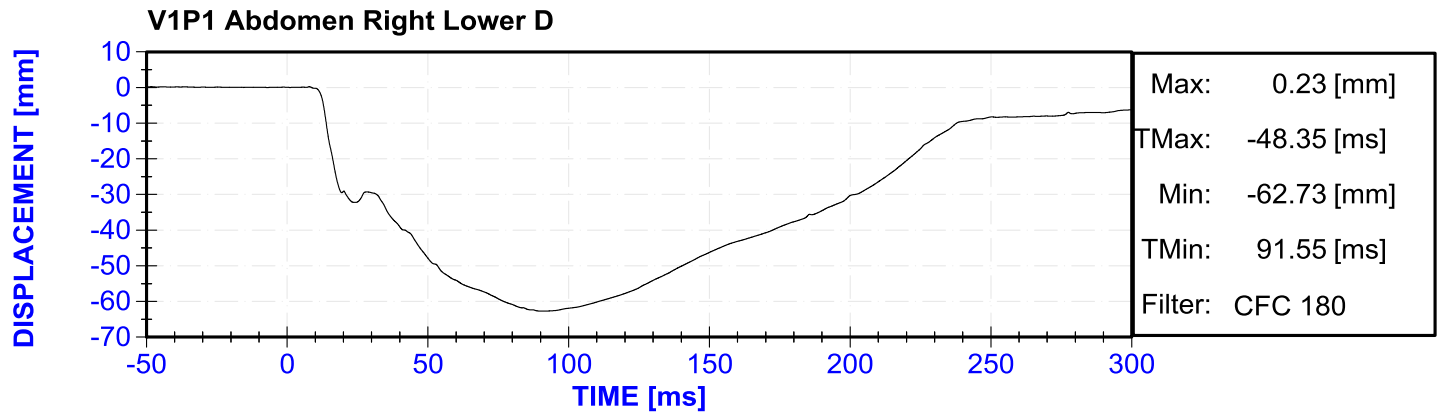












APPENDIX C

PART 572 E/O DUMMY CALIBRATION AND PERFORMANCE VERIFICATION DATA SHEETS

Table C-1: Dummy Information

TYPE	SERIAL NUMBER
THOR-M 50 TH Male	DL9207
5 th Female	324
5 th Female	019

Table C-2: THOR IR-TRACC Initial Set-Up Information

THOR – M S/N: DL9207		
IR-TRACC Location	IR-TRACC Exponent	IR-TRACC Slope
Upper Left Thorax Dx	-0.43199	36.9703
Upper Right Thorax Dx	-0.48860	29.8982
Lower Left Thorax Dx	-0.45268	35.3389
Lower Right Thorax Dx	-0.43502	37.4827
Left Abdomen Dx	-0.34061	66.5336
Right Abdomen Dx	-0.50000	26.8025

Table C- 3: THOR Dummy Initial Set-Up Information

THOR – M S/N: DL9207					
Sensor	Manufacturer	Serial Number	Range	Sensitivity	Sensitivity Units
Head CG Ax	Endevco	P82183	2000	0.017690000	mV/V/g
Head CG Ay	Endevco	P81384	2000	0.017600000	mV/V/g
Head CG Az	Endevco	P81797	2000	0.019350000	mV/V/g
Head Wx	DTS	ARS4740	18000	0.091430000	mV/deg/sec
Head Wy	DTS	ARS4737	18000	0.095640000	mV/deg/sec
Head Wz	DTS	ARS4073	18000	0.093760000	mV/deg/sec
Skull Spring Front Fz	Humanetics	DO9740	4448.2	0.000512814	mV/V/N
Skull Spring Rear Fz	Humanetics	DO9741	4448.2	0.000508183	mV/V/N
Condyle Pot Ry	Humanetics	DK5911	180	3.021000000	mV/V/deg
Upper Neck Fx	Humanetics	DP3956	8896.4	0.000224158	mV/V/N
Upper Neck Fy	Humanetics	DP3956	8896.4	0.000227755	mV/V/N
Upper Neck Fz	Humanetics	DP3956	13344.7	0.000085255	mV/V/N
Upper Neck Mx	Humanetics	DP3956	282.5	0.005819469	mV/V/Nm
Upper Neck My	Humanetics	DP3956	282.5	0.005983009	mV/V/Nm
Upper Neck Mz	Humanetics	DP3956	282.5	0.009425133	mV/V/Nm
Lower Neck Fx	Humanetics	DP4780	13344.7	0.000173709	mV/V/N
Lower Neck Fy	Humanetics	DP4780	13344.7	0.000174489	mV/V/N

Lower Neck Fz	Humanetics	DP4780	13344.7	0.000070575	mV/V/N
Lower Neck Mx	Humanetics	DP4780	451.9	0.004108210	mV/V/Nm
Lower Neck My	Humanetics	DP4780	451.9	0.004146714	mV/V/Nm
Lower Neck Mz	Humanetics	DP4780	226	0.006740265	mV/V/Nm
T1 Ax	Endevco	P79630	2000	0.020870000	mV/V/g
T1 Ay	Endevco	P78880	2000	0.019820000	mV/V/g
T1 Az	Endevco	P82758	2000	0.018610000	mV/V/g
Upper Left Thorax Dx	Humanetics	DS6355			
Upper Left Thorax Ry	Humanetics	DI2382	180	2.978800000	mV/V/deg
Upper Left Thorax Rz	Humanetics	DI2383	180	3.007300000	mV/V/deg
Upper Right Thorax Dx	Humanetics	DJ2613			
Upper Right Thorax Ry	Humanetics	DI7753	180	3.035900000	mV/V/deg
Upper Right Thorax Rz	Humanetics	DI7752	180	3.052400000	mV/V/deg
Lower Left Thorax Dx	Humanetics	DS6353			
Lower Left Thorax Ry	Humanetics	DM4781	180	3.001400000	mV/V/deg
Lower Left Thorax Rz	Humanetics	DS4092	180	3.072500000	mV/V/deg
Lower Right Thorax Dx	Humanetics	DS6354			
Lower Right Thorax Ry	Humanetics	DM4776	180	3.004900000	mV/V/deg
Lower Right Thorax Rz	Humanetics	DM4777	180	2.994700000	mV/V/deg
T6 Ax	Endevco	P49229	2000	0.018010000	mV/V/g
T6 Ay	Endevco	P49215	2000	0.016950000	mV/V/g
T6 Az	Endevco	P52122	2000	0.017050000	mV/V/g
Thoracic Spine Fx	Humanetics	DP2984	13344.7	0.000146365	mV/V/N
Thoracic Spine Fy	Humanetics	DP2984	13344.7	0.000147107	mV/V/N
Thoracic Spine Fz	Humanetics	DP2984	17792.9	0.000060193	mV/V/N
Thoracic Spine Mx	Humanetics	DP2984	677.9	0.002146039	mV/V/Nm
Thoracic Spine My	Humanetics	DP2984	903.9	0.001914371	mV/V/Nm
T12 Ax	Endevco	P74936	2000	0.017350000	mV/V/g
T12 Ay	Endevco	P74937	2000	0.017230000	mV/V/g
T12 Az	Endevco	P52005	2000	0.019870000	mV/V/g
Abdomen Left Dx	Humanetics	DQ2303			
Abdomen Left Ry	Humanetics	DS8363	150	3.024100000	mV/V/deg
Abdomen Left Rz	Humanetics	DS8361	150	3.047400000	mV/V/deg
Abdomen Right Dx	Humanetics	DM2641			
Abdomen Right Ry	Humanetics	DS4094	150	3.012300000	mV/V/deg
Abdomen Right Rz	Humanetics	DS4121	150	3.021800000	mV/V/deg
Acetabulum Right Fx	Humanetics	DP3835	22241.1	0.000118506	mV/V/N
Acetabulum Right Fy	Humanetics	DP3835	13344.7	0.000059342	mV/V/N
Acetabulum Right Fz	Humanetics	DP3835	13344.7	0.000161173	mV/V/N
Acetabulum Left Fx	Humanetics	DP4639	22241.1	0.000121280	mV/V/N
Acetabulum Left Fy	Humanetics	DP4639	13344.7	0.000059432	mV/V/N
Acetabulum Left Fz	Humanetics	DP4639	13344.7	0.000165871	mV/V/N
Pelvis Ax	Endevco	P83434	2000	0.017540000	mV/V/g
Pelvis Ay	Endevco	P82752	2000	0.018310000	mV/V/g
Pelvis Az	Endevco	P80296	2000	0.019410000	mV/V/g
ASIS Right Fx	Humanetics	DP5091	13000	0.000065215	mV/V/N
ASIS Right My	Humanetics	DP5091	325	0.003697538	mV/V/Nm

ASIS Left Fx	Humanetics	DP5092	13000	0.000067323	mV/V/N
ASIS Left My	Humanetics	DP5092	325	0.003688923	mV/V/Nm
Femur Left Fx	Denton	DM4975	15000	0.000143700	mV/V/N
Femur Left Fy	Denton	DM4975	15000	0.000143600	mV/V/N
Femur Left Fz	Denton	DM4975	15000	0.000072700	mV/V/N
Femur Left Mx	Denton	DM4975	350	0.006601400	mV/V/Nm
Femur Left My	Denton	DM4975	350	0.006642000	mV/V/Nm
Femur Left Mz	Denton	DM4975	300	0.008961300	mV/V/Nm
Femur Right Fx	Denton	DM4976	15000	0.000142600	mV/V/N
Femur Right Fy	Denton	DM4976	15000	0.000142900	mV/V/N
Femur Right Fz	Denton	DM4976	15000	0.000072200	mV/V/N
Femur Right Mx	Denton	DM4976	350	0.006505700	mV/V/Nm
Femur Right My	Denton	DM4976	350	0.006488900	mV/V/Nm
Femur Right Mz	Denton	DM4976	300	0.008811600	mV/V/Nm
Upper Tibia Fx	Denton	97	11120	0.00017270	mv/v/N
Upper Tibia Fz	Denton	97	11120	0.00009330	mv/v/N
Upper Tibia Mx	Denton	97	395	0.00733320	mv/v/Nm
Upper Tibia My	Denton	97	395	0.00739800	mv/v/Nm
Lower Tibia Fx	Denton	121	11100	0.00017510	mv/v/N
Lower Tibia Fy	Denton	121	11100	0.00017180	mv/v/N
Lower Tibia Fz	Denton	121	11100	0.00009580	mv/v/N
Lower Tibia Mx	Denton	121	395	0.00739650	mv/v/Nm
Lower Tibia My	Denton	121	395	0.00744720	mv/v/Nm
Ankle Rx	Contelec	0523	180	3.17860	mv/v/deg
Ankle Ry	Contelec	0524	180	3.19060	mv/v/deg
Ankle Rz	Contelec	0525	180	3.18790	mv/v/deg
Knee Dx	Space Age	C2102639B	33	24.09410	mv/v/mm
Leg Ax	Endevco	P77996	2000	0.01803	mv/v/g
Leg Ay	Endevco	P64094	2000	0.02214	mv/v/g
Foot Ax	Endevco	P80271	2000	0.02100	mv/v/g
Foot Ay	Endevco	P74950	2000	0.01782	mv/v/g
Foot Az	Endevco	P51684	2000	0.01953	mv/v/g
Achilles Fz	Denton	136	4448	0.000257800	mv/V/N
Upper Tibia Fx	Denton	75	11120	0.00017350	mv/v/N
Upper Tibia Fz	Denton	75	11120	0.00009520	mv/v/N
Upper Tibia Mx	Denton	75	395	0.00749000	mv/v/Nm
Upper Tibia My	Denton	75	395	0.00747580	mv/v/Nm
Lower Tibia Fx	Denton	166	11100	0.00017560	mv/v/N
Lower Tibia Fy	Denton	166	11100	0.00017130	mv/v/N
Lower Tibia Fz	Denton	166	11100	0.00009950	mv/v/N
Lower Tibia Mx	Denton	166	395	0.00742480	mv/v/Nm
Lower Tibia My	Denton	166	395	0.00737260	mv/v/Nm
Ankle Rx	Contelec	0528	180	3.20220	mv/v/deg
Ankle Ry	Contelec	0526	180	3.15530	mv/v/deg

Ankle Rz	Contelec	0527-1	180	3.16060	mv/v/deg
Knee Dx	Space Age	021033	30	23.25080	mv/v/mm
Leg Ax	Endevco	P82744	2000	0.01827	mv/v/g
Leg Ay	Endevco	P82322	2000	0.01726	mv/v/g
Foot Ax	Endevco	P74976	2000	0.01784	mv/v/g
Foot Ay	Endevco	P83340	2000	0.02038	mv/v/g
Foot Az	Endevco	P83339	2000	0.01990	mv/v/g
Achilles Fz	Denton	129	4448	0.000278100	mv/V/N

Table C- 4: 5th Female Dummy Initial Set-Up Information

5 th Female S/N: 324					
Sensor	Manufacturer	Serial Number	Range	Sensitivity	Sensitivity Units
Head CG Ax	Endevco	AC-P72219	2000	0.017320001	mV/V/g
Head CG Ax	Endevco	AC-P49160	2000	0.016579999	mV/V/g
Head CG Ax	Endevco	AC-P78168	2000	0.017820001	mV/V/g
Head CG RAx	Endevco	AC-P49438	2000	0.019560001	mV/V/g
Head CG RAY	Endevco	AC-P82323	2000	0.018110000	mV/V/g
Head CG RAz	Endevco	AC-P74784	2000	0.017210001	mV/V/g
Head Wx	DTS	LC-2254 Fx	18000	0.000190700	mV/V/sec
Head Wy	DTS	LC-2254 Fy	18000	0.000185600	mV/V/sec
Head Wz	DTS	LC-2254 Fz	18000	0.000099100	mV/V/sec
Upper Neck Fx	Denton	LC-2254 Mx	8896.4	0.005778900	mV/V/N
Upper Neck Fy	Denton	LC-2254 My	8896.4	0.005884700	mV/V/N
Upper Neck Fz	Denton	LC-2254 Mz	13344.6	0.008229600	mV/V/N
Upper Neck Mx	Denton	ARS-5931	282.5	0.093230003	mV/V/Nm
Upper Neck My	Denton	ARS-4714	282.5	0.094490002	mV/V/Nm
Upper Neck Mz	Denton	ARS-6635	282.5	0.098429999	mV/V/Nm
Chest Ax	Endevco	AC-P83431	2000	0.017900000	mV/V/g
Chest Ay	Endevco	AC-P84365	2000	0.019450001	mV/V/g
Chest Az	Endevco	AC-P84472	2000	0.019229999	mV/V/g
Chest Dx	Servo	DS-CST324	54	1.752399956	mV/V/deg
Pelvis Ax	Endevco	AC-ACCE6	2000	0.023119999	mV/V/g
Pelvis Ay	Endevco	AC-AGT82	2000	0.019800000	mV/V/g
Pelvis Az	Endevco	AC-J19561	2000	0.026219999	mV/V/g
Femur Right Fz	Denton	LC-1702 Fz	13340	0.000109400	mV/V/N
Femur Left Fz	Denton	LC-1714 Fz	13340	0.000108200	mV/V/N
Upper Tibia Right Fx	Denton	LC-372 Fx	11120.55	0.000171412	mV/V/N
Upper Tibia Right Fy	Denton	LC-372 Fy	11120.55	0.000170342	mV/V/N
Upper Tibia Right Fz	Denton	LC-372 Fz	11120.55	0.000092600	mV/V/N
Upper Tibia Right Mx	Denton	LC-372 Mx	395.4467	0.007423756	mV/V/Nm

Upper Tibia Right My	Denton	LC-372 My	395.4467	0.007387342	mV/V/Nm
Lower Tibia Right Fx	Denton	LC-405 Fx	11120.55	0.000174398	mV/V/N
Lower Tibia Right Fy	Denton	LC-405 Fy	11120.55	0.000178211	mV/V/N
Lower Tibia Right Fz	Denton	LC-405 Fz	11120.55	0.000093900	mV/V/N
Lower Tibia Right Mx	Denton	LC-405 Mx	395.4467	0.007600771	mV/V/Nm
Lower Tibia Right My	Denton	LC-405 My	395.4467	0.007638450	mV/V/Nm
Upper Tibia Left Fx	Denton	LC-484 Fx	11120.55	0.000172159	mV/V/N
Upper Tibia Left Fy	Denton	LC-484 Fy	11120.55	0.000170585	mV/V/N
Upper Tibia Left Fz	Denton	LC-484 Fz	11120.55	0.000098900	mV/V/N
Upper Tibia Left Mx	Denton	LC-484 Mx	395.4467	0.007399480	mV/V/Nm
Upper Tibia Left My	Denton	LC-484 My	395.4467	0.007426791	mV/V/Nm
Lower Tibia Left Fx	Denton	LC-397 Fx	11120.55	0.000174299	mV/V/N
Lower Tibia Left Fy	Denton	LC-397 Fy	11120.55	0.000178453	mV/V/N
Lower Tibia Left Fz	Denton	LC-397 Fz	11120.55	0.000095000	mV/V/N
Lower Tibia Left Mx	Denton	LC-397 Mx	395.4467	0.007559047	mV/V/Nm
Lower Tibia Left My	Denton	LC-397 My	395.4467	0.007546908	mV/V/Nm
Right Toe Az	Endevco	AC-P77601	2000	0.019200001	mV/V/g
Right Foot Ax	Endevco	AC-P80250	2000	0.020280000	mV/V/g
Right Foot Az	Endevco	AC-P63954	2000	0.021530001	mV/V/g
Left Toe Az	Endevco	AC-P82324	2000	0.017890001	mV/V/g
Left Foot Ax	Endevco	AC-P58708	2000	0.017799999	mV/V/g
Left Foot Az	Endevco	AC-P64109	2000	0.019409999	mV/V/g
RibEye Rib Deflection System	Boxboro	108	N/A	N/A	N/A

Table C- 5: 5th Female Dummy Initial Set-Up Information

5 th Female S/N: 019					
Sensor	Manufacturer	Serial Number	Range	Sensitivity	Sensitivity Units
Head CG Ax	Endevco	AC-P79591	2000	0.023450000	mV/V/g
Head CG Ay	Endevco	AC-P49181	2000	0.016900000	mV/V/g
Head CG Az	Endevco	AC-P49214	2000	0.018500001	mV/V/g
Upper Neck Fx	Denton	LC-2184 Fx	8896.4	0.000186800	mV/V/N
Upper Neck Fy	Denton	LC-2184 Fy	8896.4	0.000182300	mV/V/N
Upper Neck Fz	Denton	LC-2184 Fz	13344.6	0.000098100	mV/V/N
Upper Neck Mx	Denton	LC-2184 Mx	282.5	0.005686400	mV/V/Nm
Upper Neck My	Denton	LC-2184 My	282.5	0.005715100	mV/V/Nm
Upper Neck Mz	Denton	LC-2184 Mz	282.5	0.008202000	mV/V/Nm
Chest Ax	Endevco	AC-P80261	2000	0.020690000	mV/V/g
Chest Ay	Endevco	AC-P80259	2000	0.019980000	mV/V/g
Chest Az	Endevco	AC-P80254	2000	0.020050000	mV/V/g
Chest Ds	Servo	DS-FEM019	54	1.831499976	mV/V/deg
Pelvis Ax	Endevco	AC-P83343	2000	0.019850000	mV/V/g

Pelvis Ay	Endevco	AC-P49439	2000	0.019120000	mV/V/g
Pelvis Az	Endevco	AC-P82757	2000	0.018490000	mV/V/g
ASIS Left Fx	Denton	LC-1396 Fz	8896.4	0.000107900	mV/V/N
ASIS Left My	Denton	LC-1527 Fz	225.9	0.000106300	mV/V/Nm
ASIS Right Fx	Denton	LC-79 Fx	8896.4	0.000185400	mV/V/N
ASIS Right My	Denton	LC-79 My	225.9	0.005273300	mV/V/Nm
Left Femur Fz	Denton	LC-76 Fx	13340	0.000185200	mV/V/N
Right Femur Fz	Denton	LC-76 My	13340	0.005243000	mV/V/N
RibEye Rib Deflection System	Boxboro	107	N/A	N/A	N/A

Table 5 – THOR IR-TRACC Polarity

In order to reduce the risk of damage to instrumentation, it is recommended that the 3D IR-TRACC units are not disconnected from the rib cage to conduct the polarity test. An alternate procedure for checking the IR-TRACC polarity is described below.

1. Using the data acquisition system control software, open a live view of each channel. If possible, view the DX, RY, and RZ components of a given quadrant simultaneously.
2. Record the initial reading of each channel
3. Perform the following motions on each of the four rib attachment locations and two abdomen attachment locations (specified by the hexagonal bolt attaching the blue ribs).
 - a. DX: Push inward (front-to-back). The IR-TRACC tube voltage should increase.
 - b. RY: Push downward (head-to-pelvis). The Y-axis potentiometer reading should decrease.
 - c. RZ: Push rightward (left-to-right). The Z-axis potentiometer should increase.
4. Record the final reading of each channel
5. If the “Measured” value (increase or decrease) does not match the “Expected” value, the polarity of the channel must be inverted.

THOR DL9207

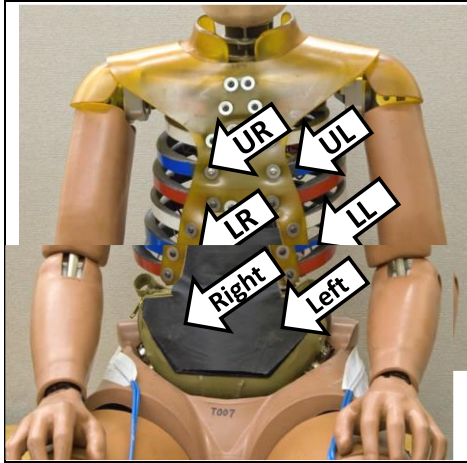


Figure 1. Manipulation to determine thoracic and abdominal IR-TRACC polarity.

Channel	Motion
DX	Push inward
RY	Push upward
RZ	Push rightward

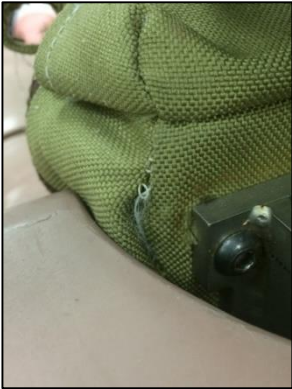
Upper Right Thorax				Upper Left Thorax			
Channel	Initial Value	Expected Polarity	Recorded Polarity	Channel	Initial Value	Expected Polarity	Recorded Polarity
DX (V)	0.12625	+	+	DX (V)	0.14208	+	+
RY (Deg)	8.1864	+	+	RY (Deg)	3.5479	+	+
RZ (Deg)	-8.7763	+	+	RZ (Deg)	11.9783	+	+
Lower Right Thorax				Lower Left Thorax			
Channel	Initial Value	Expected Polarity	Recorded Polarity	Channel	Initial Value	Expected Polarity	Recorded Polarity
DX (V)	0.07354	+	+	DX (V)	0.08948	+	+
RY (Deg)	0.77097	+	+	RY (Deg)	3.7068	+	+
RZ (Deg)	-6.8798	+	+	RZ (Deg)	7.1676	+	+
Abdomen Right				Abdomen Left			
Channel	Initial Value	Expected Polarity	Recorded Polarity	Channel	Initial Value	Expected Polarity	Recorded Polarity
DX (V)	N/A	+	+	DX (V)	N/A	+	+
RY (Deg)	N/A	+	+	RY (Deg)	N/A	+	+
RZ (Deg)	N/A	+	+	RZ (Deg)	N/A	+	+

THOR Inspection Checklist

Date: 1/8/2016		
NHTSA Representative: Tim Keon		
Inspection Reporter: Matt Goehle		
Inspection type (check one): ☒ Pre-Test ☐ Post-Test		
Dummy S/N: DL9207	Legs S/N: LX0045/LX0046	
Dummy Description: THOR-M 50th Male		
Date of last Certification: 12/23/2015		
Tests conducted since last inspection: None	Since last certification: None	
<u>Known errors in data channels (no data, clipping, unexpected drops):</u> None		
<u>Physical evidence of damage:</u> None New		
<u>Anecdotal evidence of damage:</u> None		
<u>Equipment delivered to Borrower:</u> THOR DL9207 ATD 26 Accelerometers 3 Angular Rate Sensors 2 Skull Spring LC 1 Condyle Pot 1 Upper Neck LC 6 IRTraccs 12 Rotational Pots 1 Spine LC 2 Acetabulum LC 2 ASIS LC 2 Femur LC	<i>Continued</i> 2 LX Leg Assemblies 2 Upper Tibia LC 2 Lower Tibia LC 6 Ank1e Potentiometers 2 Knee Sliders 1 Neck Skin 1 Neck Foam 1 Tiltview Interface Cable 4 Tilt Sensors 1 H-Point Tool 1 Tool Box 1 Laptop	

Note: New Damage is Shown in Red

HEAD	
Y / N	Rear head cap mounts securely to head
Y / N	Head skin fits securely over skull
Y / N	Head skin shows no sign of tears or damage
Y / N	Interior components of skull cavity (ballast, accelerometer mount, accelerometers) securely attached
Y / N	Head securely mounted to OC joint
OTHER	
NECK	
Y / N	Neck cables slide freely through holes in neck plates
Y / N	Neck cables show no sign of fraying, broken strands, or kinking
Y / N	No evidence of de-bonding between neck pucks and plates
Y / N	No evidence of de-bonding or permanent compression in neck soft stop assemblies Front of the neck is missing the soft stop
	
Y / N	Neck securely attached to upper neck load cell
Y / N	Neck securely attached to lower neck load cell
Y / N	Neck pitch change joint mechanism mating teeth are engaged
OTHER	
SHOULDER	
Y / N	Urethane shoulder pads show no evidence of contact
Y / N	Clavicles securely attached to sternum and shoulder
Y / N	No evidence of de-bonding, tearing, or permanent compression of posterior soft stops Damage to both the left and right shoulder soft stops. The left shoulder is missing one.
	Left:  Right: 
OTHER	
SPINE	
Y / N	No evidence of de-bonding between thoracic spine flex joint and metal plates
Y / N	No evidence of de-bonding between lumbar spine flex joint and metal plates
Y / N	Lumbar spine pitch change joint mechanism mating teeth are engaged
OTHER	
THORAX	
Y / N	No evidence of contact at top, bottom, or interior faces of rib damping material
Y / N	No evidence of de-bonding between rib damping material and ribs
Y / N	IRTRACCs securely attached to anterior ribs
Y / N	IRTRACCs securely attached to double gimbals, spine
Y / N	Urethane bib is securely attached to ribs with no sign of tearing or washer penetration
Y / N	Ribs securely attached to posterior spine
Y / N	Rib stiffeners show no evidence of bending (no gaps between ribs and stiffeners)
OTHER	

ABDOMEN	
Y / N	No evidence of tearing, cuts, or broken stitches in upper abdomen bag and zipper
Y / N	Upper abdomen insert securely attached to spine
Y / N	Upper abdomen insert shows no evidence of permanent set
Y / N	No evidence of tearing, cuts, or broken stitches in lower abdomen bag and zipper Multiple tears and broken stitches in lower abdomen bag. The upper and lower abdomen bags appear to be from THOR SN007
	       
Y / N	Lower abdomen insert securely attached to spine
Y / N	Lower abdomen insert shows no evidence of permanent set
OTHER	
PELVIS	
Y / N	Pelvis flesh fits securely over pelvis bones
Y / N	H-point tool fits securely into hole on both sides of pelvis
OTHER	
FEMUR	
Y / N	Acetabular load cells firmly attached
Y / N	Femur load cells firmly attached
Y / N	No evidence of deformation of knee slider bump stop
Y / N	No cuts, tears, or scuffing of knee flesh Right knee flesh torn
	

OTHER	Left femur flesh is separating from zipper. We placed gaffer's tape across zipper to prevent further damage. 	
LOWER EXTREMITY (LX)		
Y / N	Rotational potentiometers in ankle securely attached	
Y / N	Achilles tendon provides resistance to dorsiflexion	
Y / N	No evidence of de-bonding, tearing, or permanent compression of ankle soft stops	
Y / N	No cuts, tears, or scuffing of leg flesh Left lower leg flesh is torn near zipper. We placed gaffer's tape around the flesh to prevent further damage. 	
OTHER		
JACKET		
Y / N	Rib stiffeners show no sign of permanent deformation	
Y / N	No evidence of tears or holes in jacket fabric, Velcro, or zippers The chest jacket has two tears near the middle:  	
OTHER		

THOR Inspection Checklist

Date: 1/11/2016		
NHTSA Representative: Tim Keon		
Inspection Reporter: Matt Goehle		
Inspection type (check one): ☐ Pre-Test ☒ Post-Test		
Dummy S/N: DL9207	Legs S/N: LX0045/LX0046	
Dummy Description: THOR-M 50th Male		
Date of last Certification: 12/23/2015		
Tests conducted since last inspection: M20165306 - 2016 Honda Fit	Since last certification: M20165306 - 2016 Honda Fit	
<u>Known errors in data channels (no data, clipping, unexpected drops):</u> None		
<u>Physical evidence of damage:</u> None New		
<u>Anecdotal evidence of damage:</u> None		
<u>Equipment delivered to Borrower:</u> THOR DL9207 ATD 26 Accelerometers 3 Angular Rate Sensors 2 Skull Spring LC 1 Condyle Pot 1 Upper Neck LC 6 IRTraccs 12 Rotational Pots 1 Spine LC 2 Acetabulum LC 2 ASIS LC 2 Femur LC	<i>Continued</i> 2 LX Leg Assemblies 2 Upper Tibia LC 2 Lower Tibia LC 6 Ank1e Potentiometers 2 Knee Sliders 1 Neck Skin 1 Neck Foam 1 Tiltview Interface Cable 4 Tilt Sensors 1 H-Point Tool 1 Tool Box 1 Laptop	

Note: New Damage is Noted in Red

HEAD	
Y / N	Rear head cap mounts securely to head
Y / N	Head skin fits securely over skull
Y / N	Head skin shows no sign of tears or damage
Y / N	Interior components of skull cavity (ballast, accelerometer mount, accelerometers) securely attached
Y / N	Head securely mounted to OC joint
OTHER	
NECK	
Y / N	Neck cables slide freely through holes in neck plates
Y / N	Neck cables show no sign of fraying, broken strands, or kinking
Y / N	No evidence of de-bonding between neck pucks and plates
Y / N	No evidence of de-bonding or permanent compression in neck soft stop assemblies Front of the neck is missing the soft stop
	
Y / N	Neck securely attached to upper neck load cell
Y / N	Neck securely attached to lower neck load cell
Y / N	Neck pitch change joint mechanism mating teeth are engaged
OTHER	
SHOULDER	
Y / N	Urethane shoulder pads show no evidence of contact
Y / N	Clavicles securely attached to sternum and shoulder
Y / N	No evidence of de-bonding, tearing, or permanent compression of posterior soft stops Damage to both the left and right shoulder soft stops. The left shoulder is missing one.
	Left:  Right: 
OTHER	
SPINE	
Y / N	No evidence of de-bonding between thoracic spine flex joint and metal plates
Y / N	No evidence of de-bonding between lumbar spine flex joint and metal plates
Y / N	Lumbar spine pitch change joint mechanism mating teeth are engaged
OTHER	
THORAX	
Y / N	No evidence of contact at top, bottom, or interior faces of rib damping material
Y / N	No evidence of de-bonding between rib damping material and ribs
Y / N	IRTRACCs securely attached to anterior ribs
Y / N	IRTRACCs securely attached to double gimbals, spine
Y / N	Urethane bib is securely attached to ribs with no sign of tearing or washer penetration
Y / N	Ribs securely attached to posterior spine
Y / N	Rib stiffeners show no evidence of bending (no gaps between ribs and stiffeners)
OTHER	

ABDOMEN	
Y / N	No evidence of tearing, cuts, or broken stitches in upper abdomen bag and zipper
Y / N	Upper abdomen insert securely attached to spine
Y / N	Upper abdomen insert shows no evidence of permanent set
Y / N	No evidence of tearing, cuts, or broken stitches in lower abdomen bag and zipper Multiple tears and broken stitches in lower abdomen bag. The upper and lower abdomen bags appear to be from THOR SN007 
Y / N	Lower abdomen insert securely attached to spine
Y / N	Lower abdomen insert shows no evidence of permanent set
OTHER	
PELVIS	
Y / N	Pelvis flesh fits securely over pelvis bones
Y / N	H-point tool fits securely into hole on both sides of pelvis
OTHER	
FEMUR	
Y / N	Acetabular load cells firmly attached
Y / N	Femur load cells firmly attached
Y / N	No evidence of deformation of knee slider bump stop
Y / N	No cuts, tears, or scuffing of knee flesh Right knee flesh torn 

OTHER	Left femur flesh is separating from zipper. We placed gaffer's tape across zipper to prevent further damage. 	
LOWER EXTREMITY (LX)		
Y / N	Rotational potentiometers in ankle securely attached	
Y / N	Achilles tendon provides resistance to dorsiflexion	
Y / N	No evidence of de-bonding, tearing, or permanent compression of ankle soft stops	
Y / N	No cuts, tears, or scuffing of leg flesh Left lower leg flesh is torn near zipper. We placed gaffer's tape around the flesh to prevent further damage. 	
OTHER		
JACKET		
Y / N	Rib stiffeners show no sign of permanent deformation	
Y / N	No evidence of tears or holes in jacket fabric, Velcro, or zippers The chest jacket has two tears near the middle:  	
OTHER		

ATD 324: Pre-Test Inspection

5th Female Inspection Checklist

Date: 1/8/2016		
NHTSA Representative: Tim Keon		
Inspection Reporter: Mary Geesey		
Inspection type (check one): ☒ Pre-Test ☐ Post-Test		
Dummy S/N: 324		
Dummy Description: Hybrid 3 – 5th Female		
Date of last Certification: 1/5/2016		
<u>Tests conducted since last inspection:</u> None	<u>Since last certification:</u> None	
<u>Known errors in data channels (no data, clipping, unexpected drops):</u> None		
<u>Physical evidence of damage:</u> Minor scuffing, leg cut, RibEye Wire damage		
<u>Anecdotal evidence of damage:</u> None		
<u>Equipment delivered to Borrower:</u> Hybrid 3 5th Female 1 RibEye rib displacement system 1 RibEye trunk box 1 RibEye power cable 1 RibEye trigger cable 1 Ethernet cable 1 RibEye software and manual disk 9 Accelerometers 1 Upper neck load cell 2 ASIS load cells 2 Femur load cells		

Note: New Damage is Noted in Red

HEAD	
Y / N	Ballast secure
Y / N	General appearance Minor cuts and scuffing
	
OTHER	
NECK	
Y / N	Rubber is not cracked or broken
Y / N	Upper neck bracket is firmly attached to the lower neck bracket
Y / N	The condyle joint is tight
Y / N	Nodding blocks are not cracked, broken, or out of position
OTHER	
SPINE/PELVIS	
Y / N	Rubber is not cracked or broken
Y / N	Pelvis is not broken or damaged
OTHER	
THORAX/ABDOMEN	
Y / N	Ribs are intact and straight
Y / N	Rib supports are intact and straight
Y / N	Rib damping material not separated or cracked
Y / N	Rubber bumpers in place
Y / N	Abdomen is not deformed
Y / N	Abdomen is not cracked or broken
OTHER	Abdomen flock paper modification to prevent RibEye data anomalies
	
KNEES	
Y / N	Skin is not torn
Y / N	Inserts are in good condition and the proper position
Y / N	Slider wires are intact
Y / N	Slider rubber returns to “at rest” position
OTHER	
LIMBS	
Y / N	Arms have normal movement and adjustment
Y / N	Arm flesh is in good condition
Y / N	Legs have normal movement and adjustment
Y / N	Leg flesh is in good condition

	Small cuts at top of tibia flesh: 
Y / N	Feet are in good condition
OTHER	
INSTRUMENTATION	
Y / N	Chest pot shaft is straight
Y / N	Slider arm is riding in track
Y / N	RibEye system (if equipped) has no physically broken wires or equipment
	Bottom Left wire is pinched under rib:  We spliced new wire in and tests prior to test
Y / N	Transducer cables are not torn or exposing shield
Y / N	Accelerometer mounts are all secure
Y / N	LEMO connectors are straight and securely fit into acquisition hardware
OTHER	

ATD 324: Post-Test Inspection

5th Female Inspection Checklist

Date: 1/11/2016		
NHTSA Representative: Tim Keon		
Inspection Reporter: Matt Goehle		
Inspection type (check one): ☐ Pre-Test ☒ Post-Test		
Dummy S/N: 324		
Dummy Description: Hybrid 3 – 5th Female		
Date of last Certification: 1/5/2016		
<u>Tests conducted since last inspection:</u> M20165306-2016 Honda Fit	<u>Since last certification:</u> M20165306-2016 Honda Fit	
<u>Known errors in data channels (no data, clipping, unexpected drops):</u> None		
<u>Physical evidence of damage:</u> None New		
<u>Anecdotal evidence of damage:</u> None		
<u>Equipment delivered to Borrower:</u> Hybrid 3 5th Female 1 RibEye rib displacement system 1 RibEye trunk box 1 RibEye power cable 1 RibEye trigger cable 1 Ethernet cable 1 RibEye software and manual disk 9 Accelerometers 1 Upper neck load cell 2 ASIS load cells 2 Femur load cells		

Note: New Damage is Noted in Red

HEAD	
Y / N	Ballast secure
Y / N	General appearance Minor cuts and scuffing
	
OTHER	
NECK	
Y / N	Rubber is not cracked or broken
Y / N	Upper neck bracket is firmly attached to the lower neck bracket
Y / N	The condyle joint is tight
Y / N	Nodding blocks are not cracked, broken, or out of position
OTHER	
SPINE/PELVIS	
Y / N	Rubber is not cracked or broken
Y / N	Pelvis is not broken or damaged
OTHER	
THORAX/ABDOMEN	
Y / N	Ribs are intact and straight
Y / N	Rib supports are intact and straight
Y / N	Rib damping material not separated or cracked
Y / N	Rubber bumpers in place
Y / N	Abdomen is not deformed
Y / N	Abdomen is not cracked or broken
OTHER	Abdomen flock paper modification before test:  After test: 

KNEES	
Y / N	Skin is not torn
Y / N	Inserts are in good condition and the proper position
Y / N	Slider wires are intact
Y / N	Slider rubber returns to “at rest” position
OTHER	
LIMBS	
Y / N	Arms have normal movement and adjustment
Y / N	Arm flesh is in good condition
Y / N	Legs have normal movement and adjustment
Y / N	Leg flesh is in good condition Small cuts at top of tibia flesh:
	
Y / N	Feet are in good condition
OTHER	
INSTRUMENTATION	
Y / N	Chest pot shaft is straight
Y / N	Slider arm is riding in track
Y / N	RibEye system (if equipped) has no physically broken wires or equipment
Y / N	Transducer cables are not torn or exposing shield
Y / N	Accelerometer mounts are all secure
Y / N	LEMO connectors are straight and securely fit into acquisition hardware
OTHER	

ATD 019: Pre-Test Inspection**5th Female Inspection Checklist**

Date: 1/8/2016		
NHTSA Representative: Tim Keon		
Inspection Reporter: Mary Geesey		
Inspection type (check one): ☒ Pre-Test ☐ Post-Test		
Dummy S/N: 019		
Dummy Description: Hybrid 3 – 5th Female		
Date of last Certification: 1/5/2016		
<u>Tests conducted since last inspection:</u> None	<u>Since last certification:</u> None	
<u>Known errors in data channels (no data, clipping, unexpected drops):</u> None		
<u>Physical evidence of damage:</u> Minor scuffing, leg cut		
<u>Anecdotal evidence of damage:</u> None		
<u>Equipment delivered to Borrower:</u> Hybrid 3 5th Female 1 RibEye rib displacement system 1 RibEye trunk box 1 RibEye power cable 1 RibEye trigger cable 1 Ethernet cable 1 RibEye software and manual disk 9 Accelerometers 1 Upper neck load cell 2 ASIS load cells 2 Femur load cells		

Note: New Damage is Noted in Red

HEAD	
Y / N	Ballast secure
Y / N	General appearance Minor scuffing
OTHER	
NECK	
Y / N	Rubber is not cracked or broken Minor scuffing
Y / N	Upper neck bracket is firmly attached to the lower neck bracket
Y / N	The condyle joint is tight
Y / N	Nodding blocks are not cracked, broken, or out of position
OTHER	
SPINE/PELVIS	
Y / N	Rubber is not cracked or broken
Y / N	Pelvis is not broken or damaged
OTHER	
THORAX/ABDOMEN	
Y / N	Ribs are intact and straight
Y / N	Rib supports are intact and straight
Y / N	Rib damping material not separated or cracked
Y / N	Rubber bumpers in place
Y / N	Abdomen is not deformed
Y / N	Abdomen is not cracked or broken
OTHER	Abdomen flock paper modification to prevent RibEye data anomalies 
KNEES	
Y / N	Skin is not torn
Y / N	Inserts are in good condition and the proper position
Y / N	Slider wires are intact
Y / N	Slider rubber returns to “at rest” position
OTHER	
LIMBS	
Y / N	Arms have normal movement and adjustment
Y / N	Arm flesh is in good condition
Y / N	Legs have normal movement and adjustment
Y / N	Leg flesh is in good condition Right tibia flesh has minor cut at bottom front 
Y / N	Feet are in good condition
OTHER	

INSTRUMENTATION	
Y / N	Chest pot shaft is straight
Y / N	Slider arm is riding in track
Y / N	RibEye system (if equipped) has no physically broken wires or equipment
Y / N	Transducer cables are not torn or exposing shield
Y / N	Accelerometer mounts are all secure
Y / N	LEMO connectors are straight and securely fit into acquisition hardware
OTHER	

ATD 019: Post-Test Inspection**5th Female Inspection Checklist**

Date: 1/11/2016		
NHTSA Representative: Tim Keon		
Inspection Reporter: Matt Goehle		
Inspection type (check one): ☐ Pre-Test ☒ Post-Test		
Dummy S/N: 019		
Dummy Description: Hybrid 3 – 5th Female		
Date of last Certification: 1/5/2016		
<u>Tests conducted since last inspection:</u> M20165306 - 2016 Honda Fit	<u>Since last certification:</u> M20165306 - 2016 Honda Fit	
<u>Known errors in data channels (no data, clipping, unexpected drops):</u> • 16RIBS01LEHFDSXP,RibEye Left Rib 01 Displacement X, Questionable data 64.8ms to 112ms • 16RIBS01LEHFDSYP,RibEye Left Rib 01 Displacement Y, Questionable data 64.8ms to 112ms • 16RIBS05LEHFDSXP,RibEye Left Rib 05 Displacement X, Interference by Chest Pot and Abdominal Insert • 16RIBS05LEHFDSYP,RibEye Left Rib 05 Displacement Y, Interference by Chest Pot and Abdominal Insert • 16RIBS06LEHFDSXP,RibEye Left Rib 06 Displacement X, Interference by Chest Pot and Abdominal Insert • 16RIBS06LEHFDSYP,RibEye Left Rib 06 Displacement Y, Interference by Chest Pot and Abdominal Insert • 16RIBS04RIHFDSXP,RibEye Right Rib 04 Displacement X, Interference by Chest Pot and Abdominal Insert • 16RIBS05RIHFDSXP,RibEye Right Rib 05 Displacement X, Interference by Chest Pot and Abdominal Insert • 16RIBS05RIHFDSYP,RibEye Right Rib 05 Displacement Y, Interference by Chest Pot and Abdominal Insert • 16RIBS06RIHFDSXP,RibEye Right Rib 06 Displacement X, Interference by Chest Pot and Abdominal Insert • 16RIBS06RIHFDSYP,RibEye Right Rib 06 Displacement Y, Interference by Chest Pot and Abdominal Insert		
<u>Physical evidence of damage:</u> None New		
<u>Anecdotal evidence of damage:</u> None		
<u>Equipment delivered to Borrower:</u> Hybrid 3 5th Female 1 RibEye rib displacement system 1 RibEye trunk box 1 RibEye power cable 1 RibEye trigger cable 1 Ethernet cable 1 RibEye software and manual disk 9 Accelerometers 1 Upper neck load cell 2 ASIS load cells 2 Femur load cells		

Note: New Damage is Noted in Red

HEAD	
Y / N	Ballast secure
Y / N	General appearance Minor scuffing
OTHER	
NECK	
Y / N	Rubber is not cracked or broken Minor scuffing
Y / N	Upper neck bracket is firmly attached to the lower neck bracket
Y / N	The condyle joint is tight
Y / N	Nodding blocks are not cracked, broken, or out of position
OTHER	
SPINE/PELVIS	
Y / N	Rubber is not cracked or broken
Y / N	Pelvis is not broken or damaged
OTHER	
THORAX/ABDOMEN	
Y / N	Ribs are intact and straight
Y / N	Rib supports are intact and straight
Y / N	Rib damping material not separated or cracked
Y / N	Rubber bumpers in place
Y / N	Abdomen is not deformed
Y / N	Abdomen is not cracked or broken
OTHER	Abdomen flock paper modification before test:  After test: 
KNEES	
Y / N	Skin is not torn
Y / N	Inserts are in good condition and the proper position
Y / N	Slider wires are intact
Y / N	Slider rubber returns to “at rest” position
OTHER	

LIMBS	
Y / N	Arms have normal movement and adjustment
Y / N	Arm flesh is in good condition
Y / N	Legs have normal movement and adjustment
Y / N	Leg flesh is in good condition Right tibia flesh has minor cut at bottom front
	
Y / N	Feet are in good condition
OTHER	
INSTRUMENTATION	
Y / N	Chest pot shaft is straight
Y / N	Slider arm is riding in track
Y / N	RibEye system (if equipped) has no physically broken wires or equipment
Y / N	Transducer cables are not torn or exposing shield
Y / N	Accelerometer mounts are all secure
Y / N	LEMO connectors are straight and securely fit into acquisition hardware
OTHER	

Test Data/Sensor Repair Notes

DUMMY CALIBRATIONS

50% ADULT MALE THOR DL9207 DUMMY CALIBRATIONS

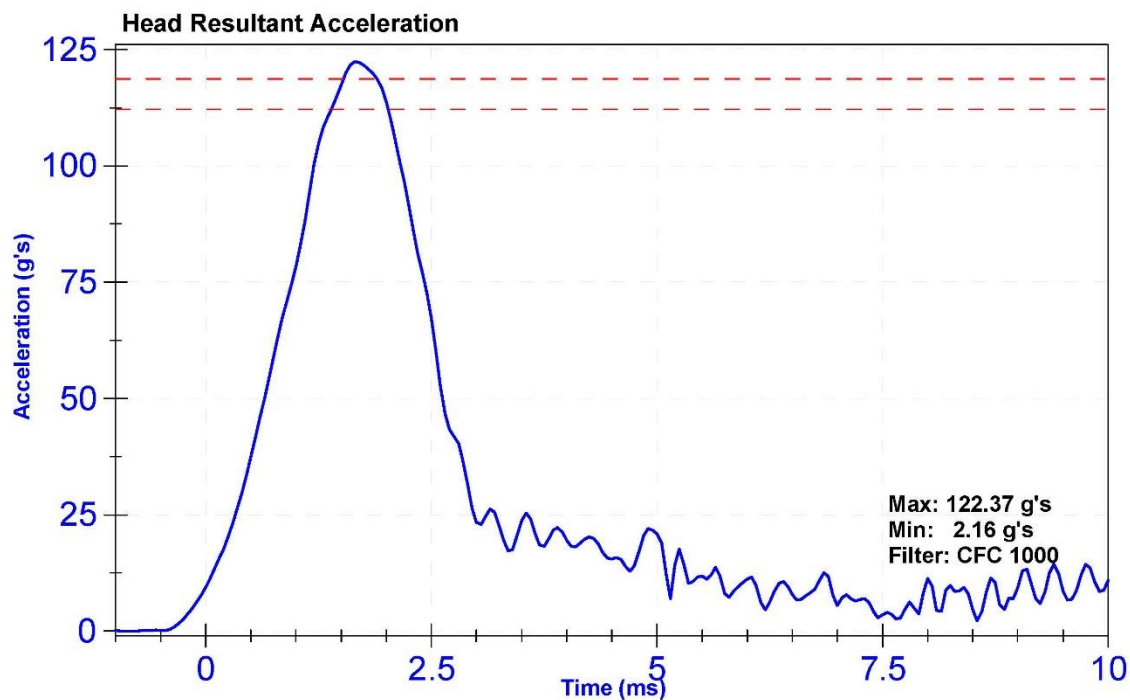
ATD Manufacturer	Humanetics	Test Technician	M. Goehle
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

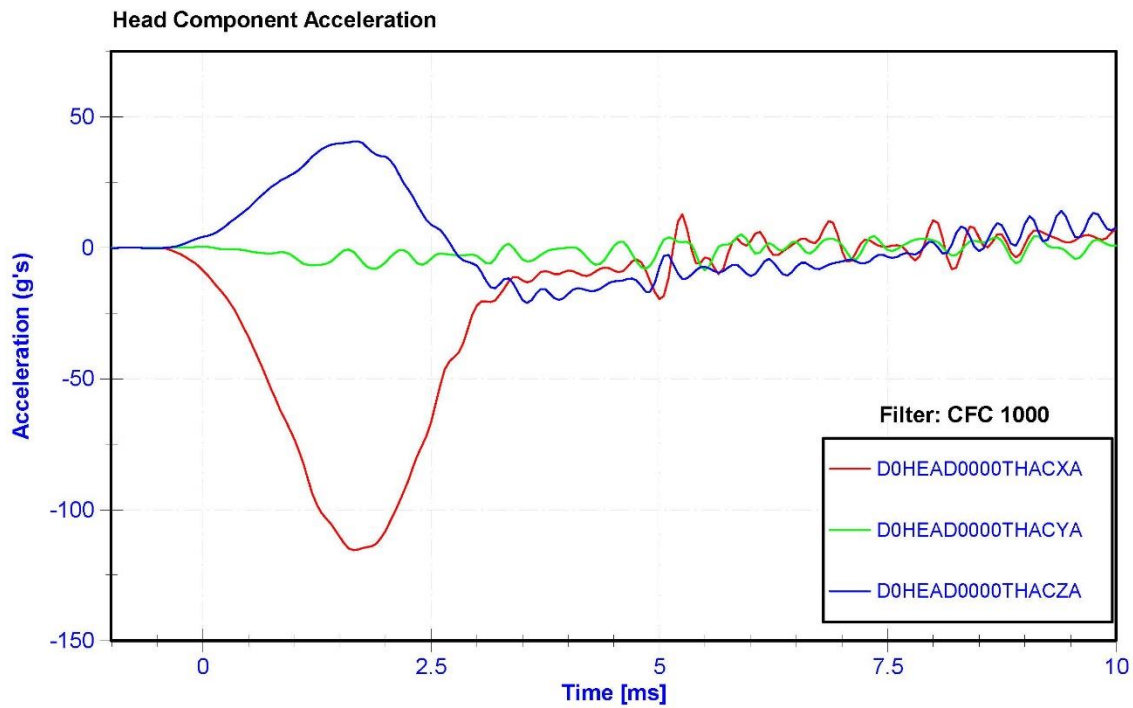
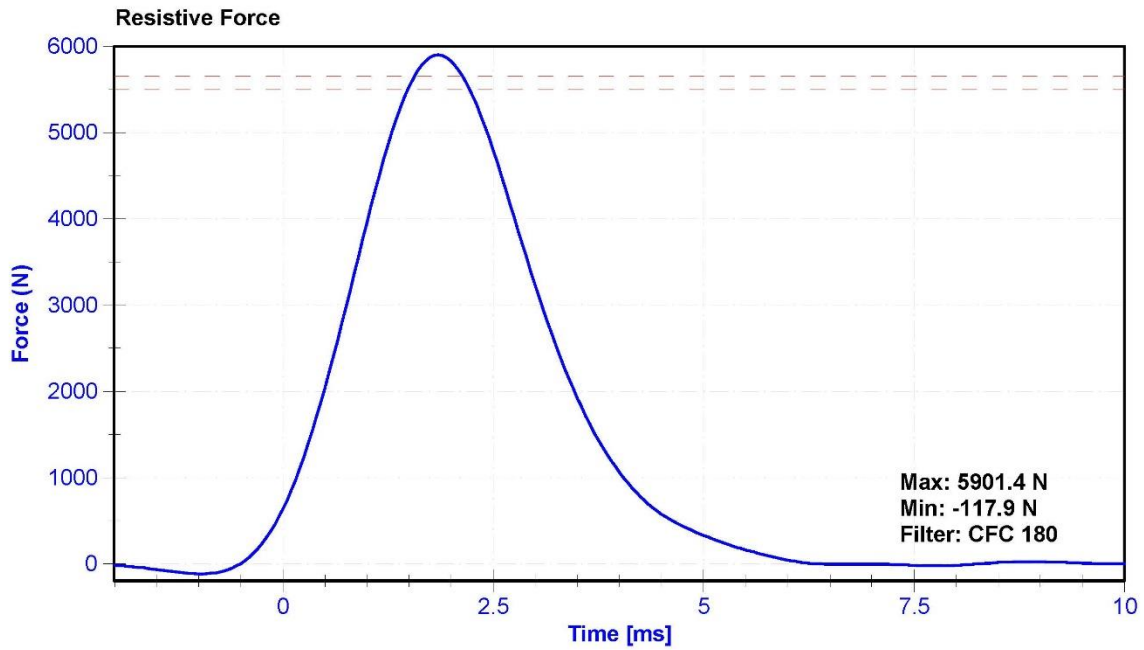
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.3	Pass
Humidity	10	70	%	17.7	Pass
Impact Velocity	1.95	2.05	m/s	2.020	Pass
Probe Force	5498	5660	N	5901.4	Fail
Resultant Acceleration	112.2	118.7	g's	122.37	Fail

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Head X Accel	Endevco 7264	AC-P82183	4/3/2015	4/2/2016
Head Y Accel	Endevco 7264	AC-P81384	4/3/2015	4/2/2016
Head Z Accel	Endevco 7264	AC-P81797	4/3/2015	4/2/2016
Probe Accel	ENDEVCO 7231CT	AC-C15018	7/15/2015	7/14/2016





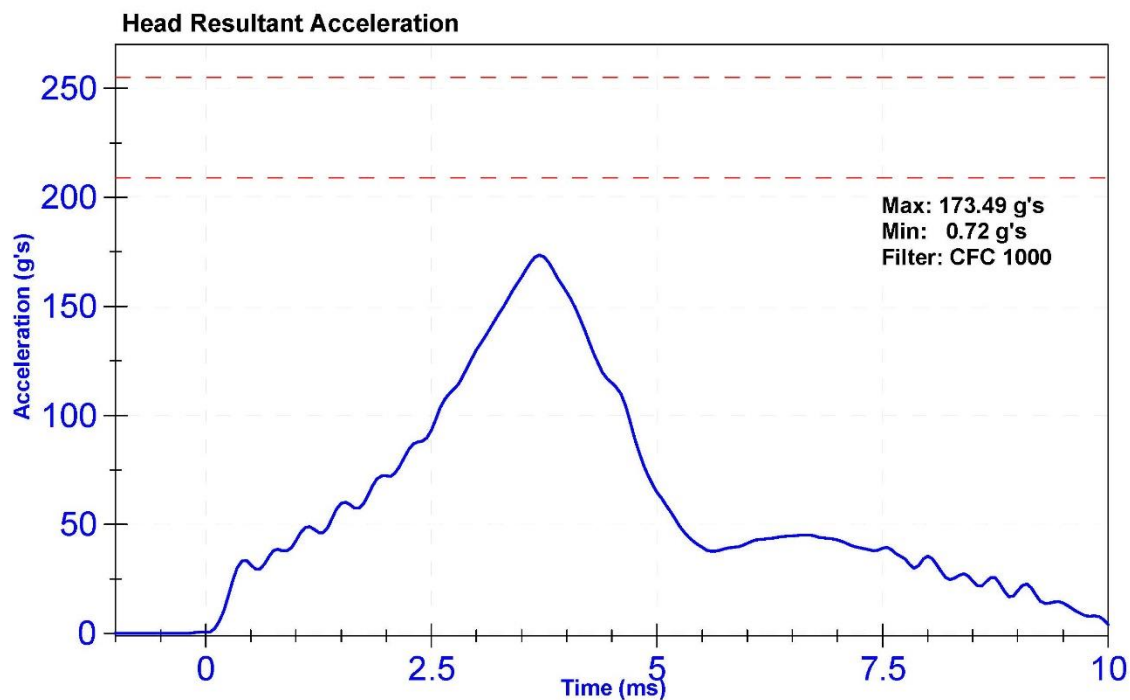
ATD Manufacturer	Humanetics	Test Technician	M. Goehle
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

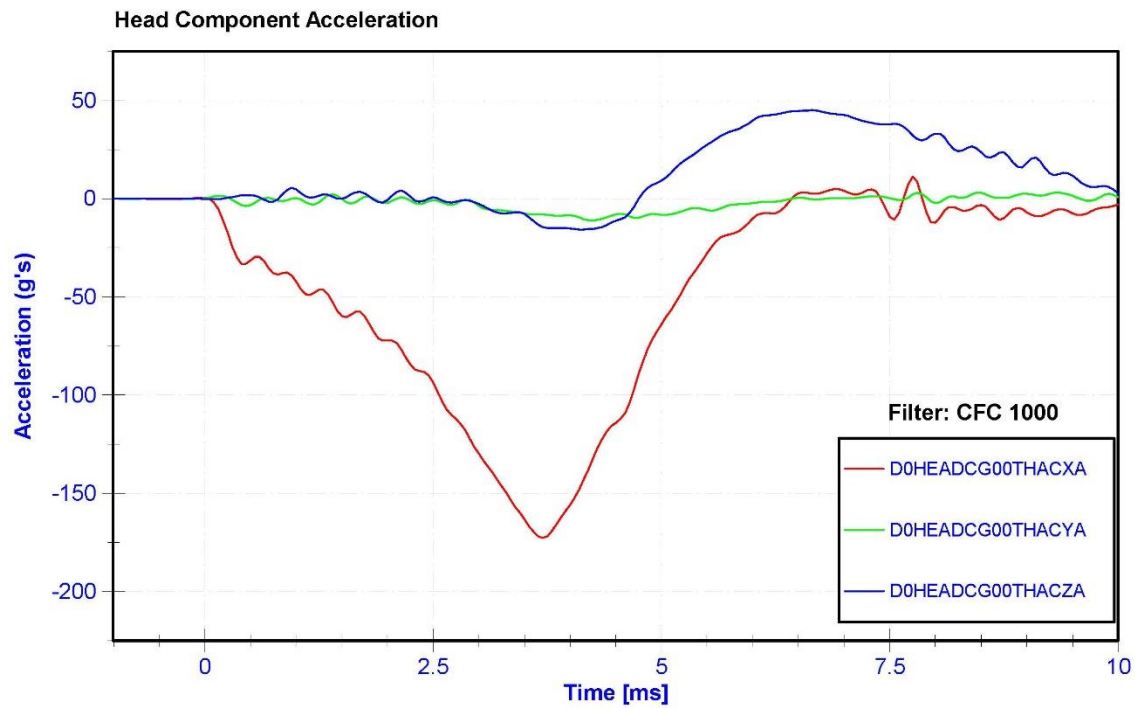
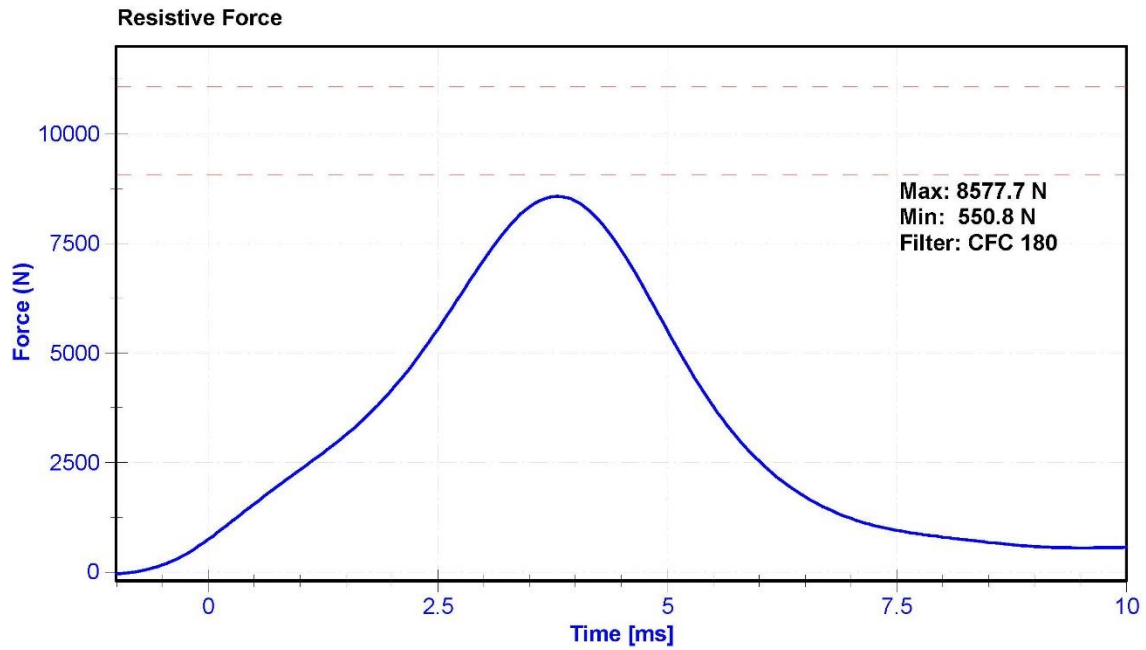
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.2	Pass
Humidity	10	70	%	20.7	Pass
Impact Velocity	6.68	6.78	m/s	6.699	Pass
Probe Force	9067	11082	N	8577.7	Fail
Resultant Acceleration	209	255	g's	173.5	Fail

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Head X Accel	Endevco 7264	AC-P82183	4/3/2015	4/2/2016
Head Y Accel	Endevco 7264	AC-P81384	4/3/2015	4/2/2016
Head Z Accel	Endevco 7264	AC-P81797	4/3/2015	4/2/2016
Probe Accel	ENDEVCO 7231CT	AC-C15018	7/15/2015	7/14/2016





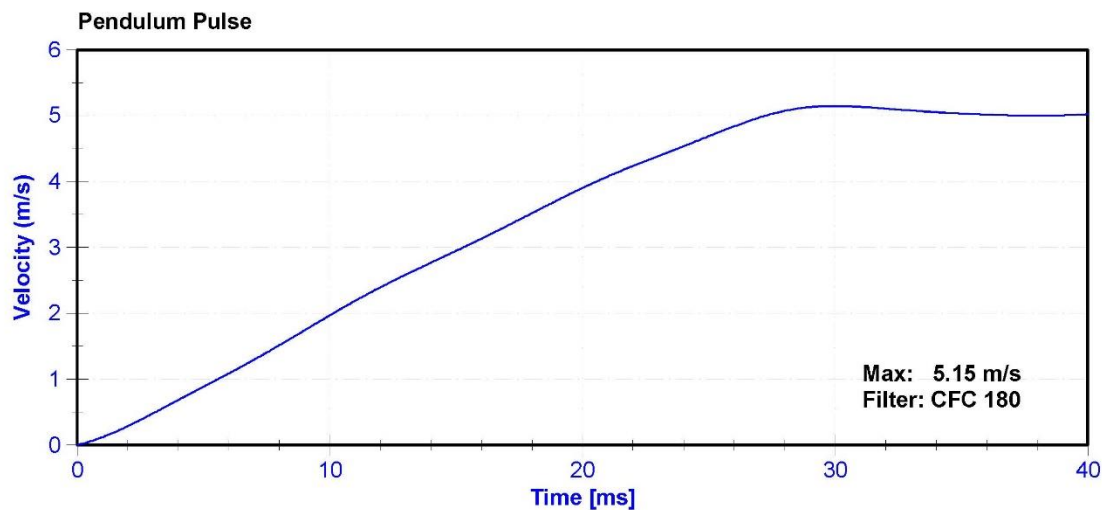
ATD Manufacturer	Humanetics	Test Technician	M. Goehle
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

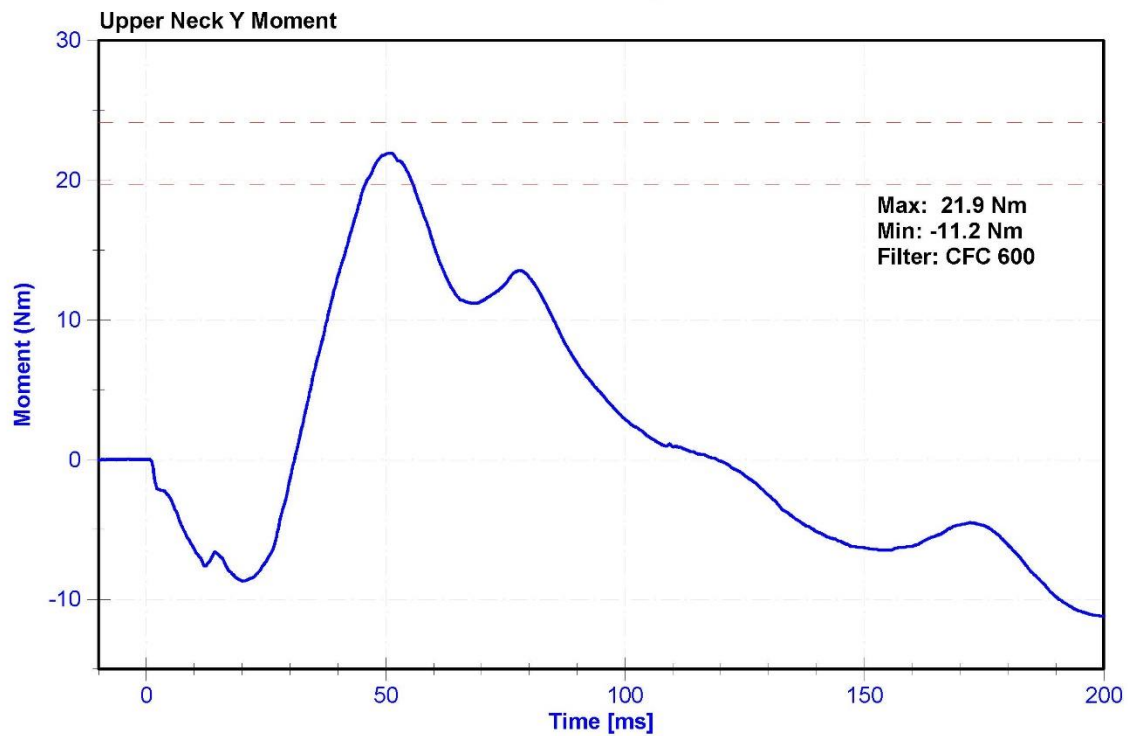
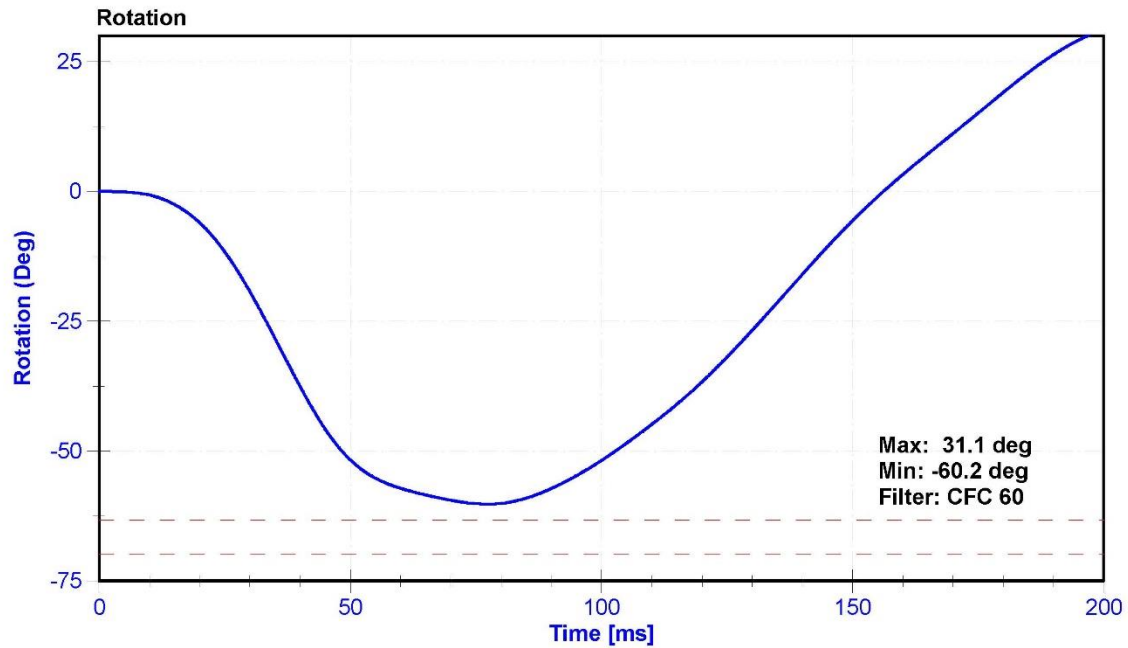
Results

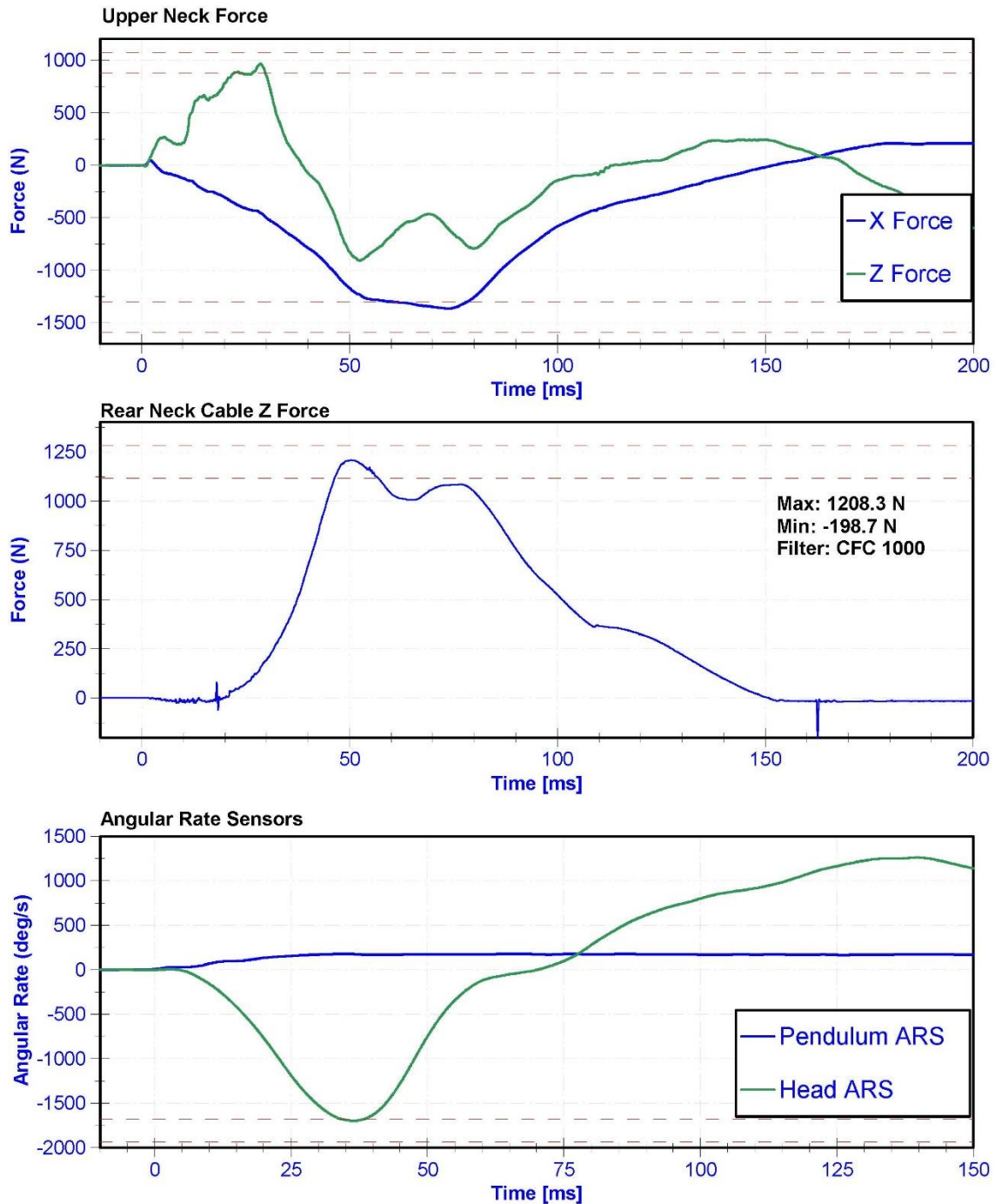
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.0	Pass
Humidity	10	70	%	33.0	Pass
Velocity	4.95	5.05	m/s	4.985	Pass
Pendulum Impulse at 8ms	1.49	1.85	m/s	1.515	Pass
Pendulum Impulse at 16ms	3.08	3.86	m/s	3.134	Pass
Pendulum Impulse at 24ms	4.48	5.26	m/s	4.536	Pass
Peak Upper Neck Y Moment	19.7	24.1	Nm	21.94	Pass
Peak Upper Neck X Force	-1592	-1302	N	-1364.0	Pass
Maximum Upper Neck Z Force	877	1072	N	965.4	Pass
First Peak Rear Neck Cable Force	1115	1282	N	1208.3	Pass
Peak Head Y Angular Rate	-1935	-1675	deg/s	-1696.4	Pass
Peak Head Y Rotation	-69.9	-63.3	deg	-60.20	Fail
Rotation Decay Time to Zero	83.0	86.2	ms	78.70	Fail

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-AH5F3	5/7/2015	5/6/2016
Upper Neck Load Cell	Humanetics 10380J14	LC-DP3956 Fx	3/5/2015	3/4/2016
Rear Neck Cable Load Cell	Humanetics 10386J14	LC-DO9741	3/6/2015	3/5/2016
Pendulum ARS	DTS ARS PRO-18K	ARS-9122	9/30/2015	9/29/2016
Head Y ARS	DTS ARS-18K	ARS-4737	3/30/2015	3/29/2016







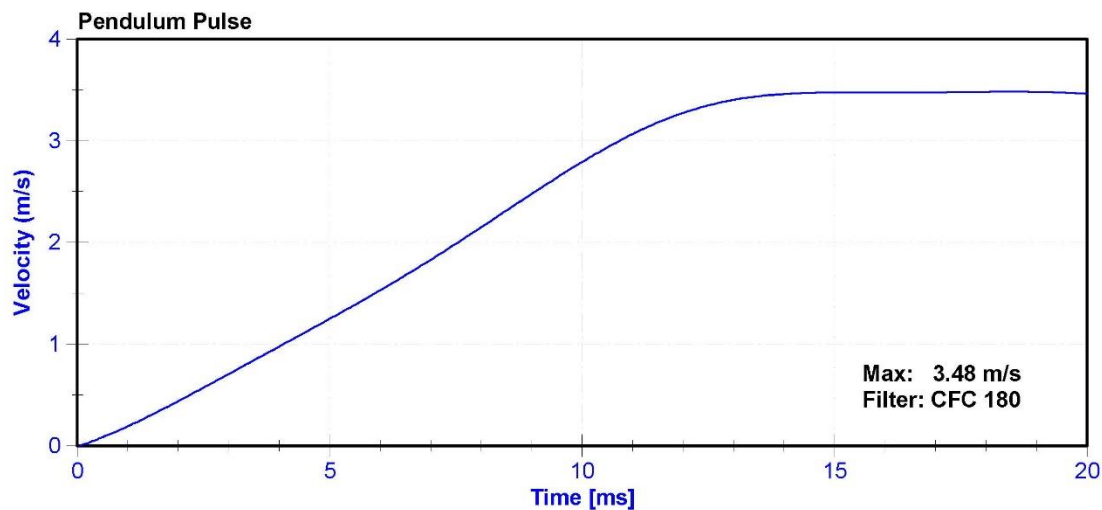
ATD Manufacturer	Humanetics	Test Technician	M. Goehle
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

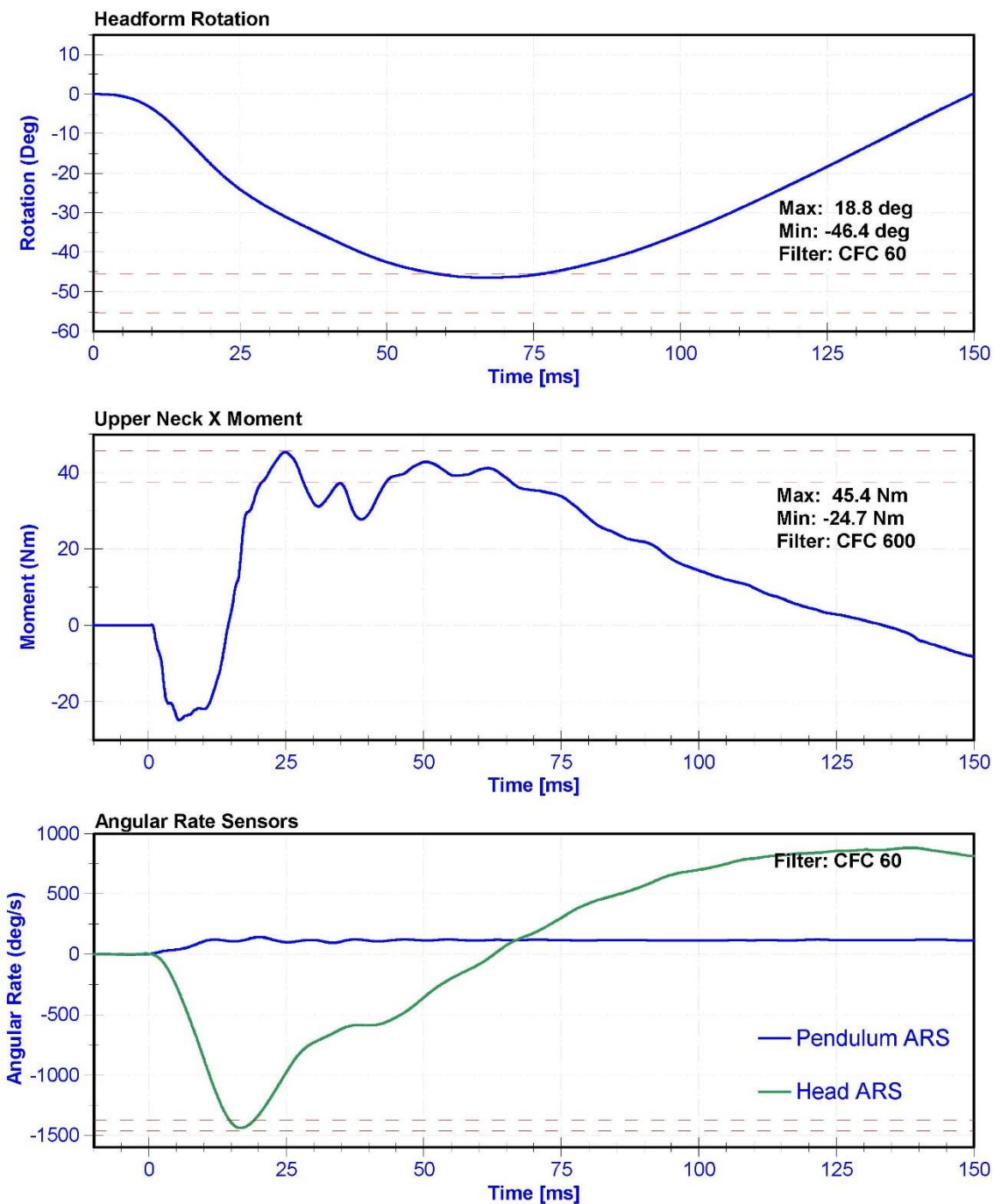
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.3	Pass
Humidity	10	70	%	35.5	Pass
Velocity	3.35	3.45	m/s	3.418	Pass
Pendulum Impulse at 4ms	0.89	1.08	m/s	0.977	Pass
Pendulum Impulse at 8ms	2.04	2.36	m/s	2.150	Pass
Pendulum Impulse at 12ms	3.21	3.46	m/s	3.273	Pass
Peak Upper Neck X Moment after 40ms	37.4	45.7	Nm	42.80	Pass
Peak Head X Angular Rate	-1462	-1375	deg/s	-1440.0	Pass
Peak Head X Rotation	-55.3	-45.4	deg	-46.41	Pass
Rotational Decay Time to Zero	83.7	90.9	ms	82.95	Fail

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-AH5F3	5/7/2015	5/6/2016
Upper Neck Load Cell	Humanetics 10380J14	LC-DP3956 Mx	3/5/2015	3/4/2016
Pendulum ARS	DTS ARS PRO-18K	ARS-9122	9/30/2015	9/29/2016
Head X ARS	DTS ARS-18K	ARS-4740	3/30/2015	3/29/2016





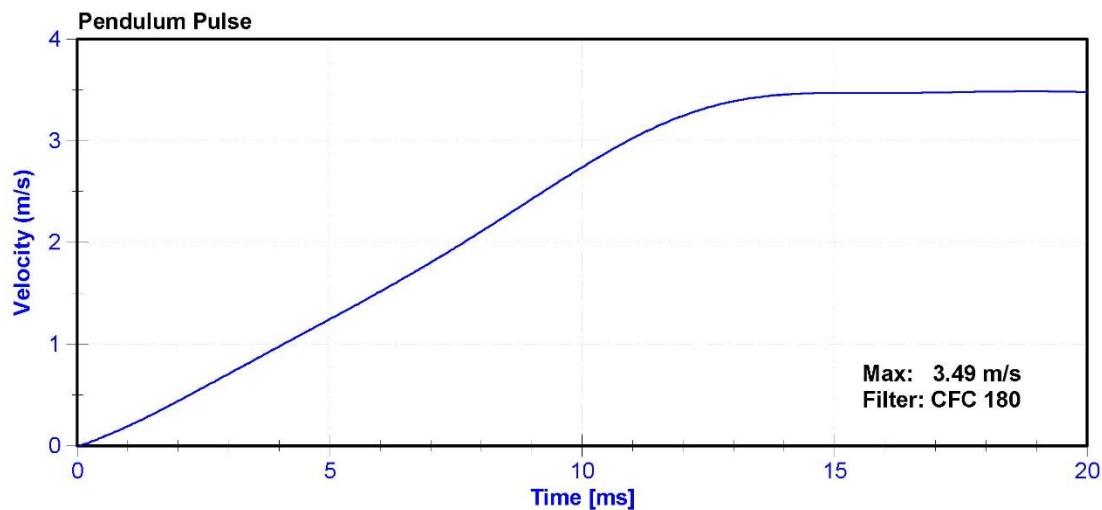
ATD Manufacturer	Humanetics	Test Technician	M. Goehle
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

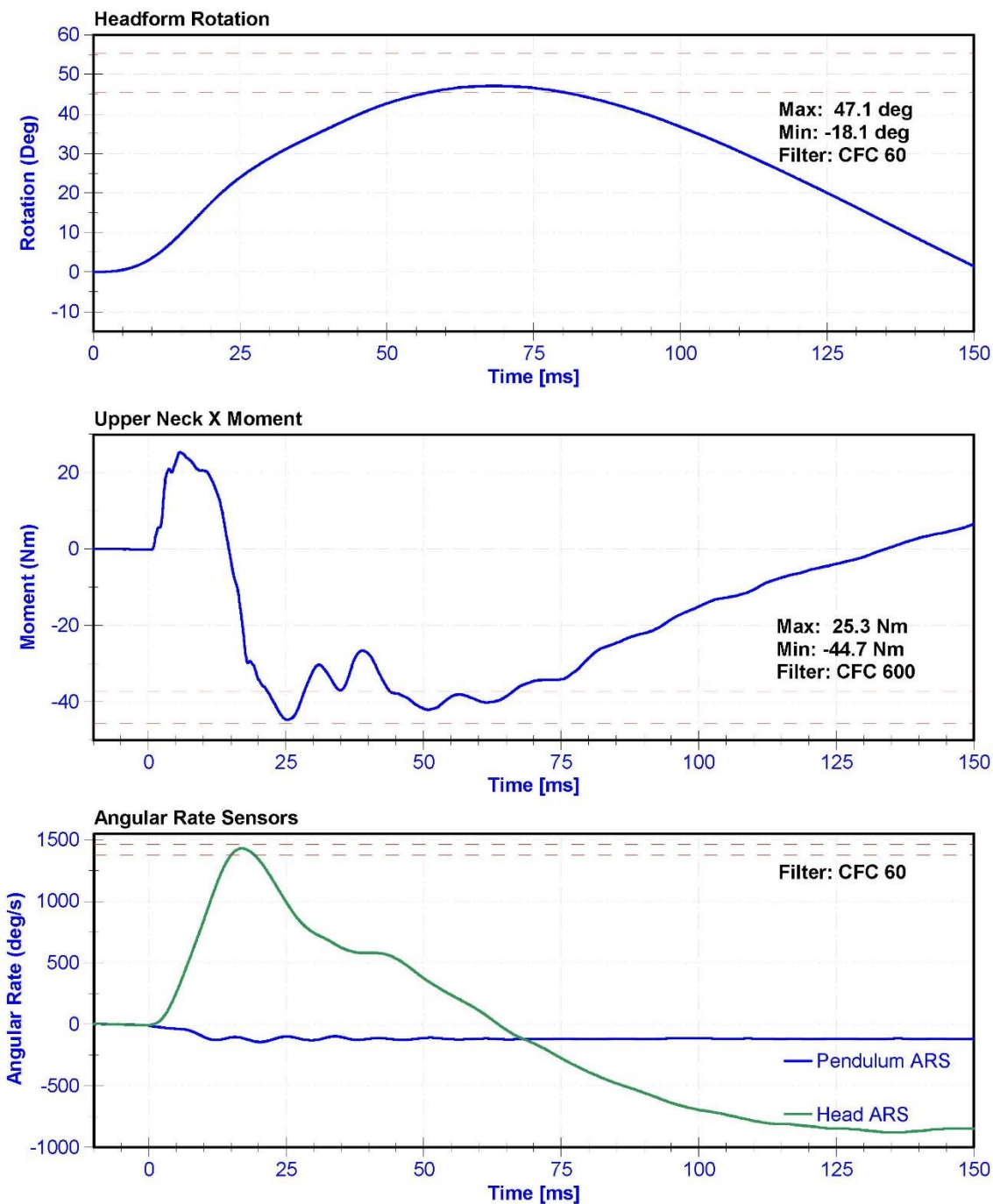
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.3	Pass
Humidity	10	70	%	34.3	Pass
Velocity	3.35	3.45	m/s	3.42	Pass
Pendulum Impulse at 4ms	0.89	1.08	m/s	0.977	Pass
Pendulum Impulse at 8ms	2.04	2.36	m/s	2.107	Pass
Pendulum Impulse at 12ms	3.21	3.46	m/s	3.246	Pass
Peak Upper Neck X Moment after 40ms	-45.7	-37.4	Nm	-42.03	Pass
Peak Head X Angular Rate	1375	1462	deg/s	1430.3	Pass
Peak Head X Rotation	45.4	55.3	deg	47.06	Pass
Rotation Decay Time to Zero	83.7	90.9	ms	83.85	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-AH5F3	5/7/2015	5/6/2016
Upper Neck Load Cell	Humanetics 10380J14	LC-DP3956 Mx	3/5/2015	3/4/2016
Pendulum ARS	DTS ARS PRO-18K	ARS-9122	9/30/2015	9/29/2016
Head X ARS	DTS ARS-18K	ARS-4740	3/30/2015	3/29/2016





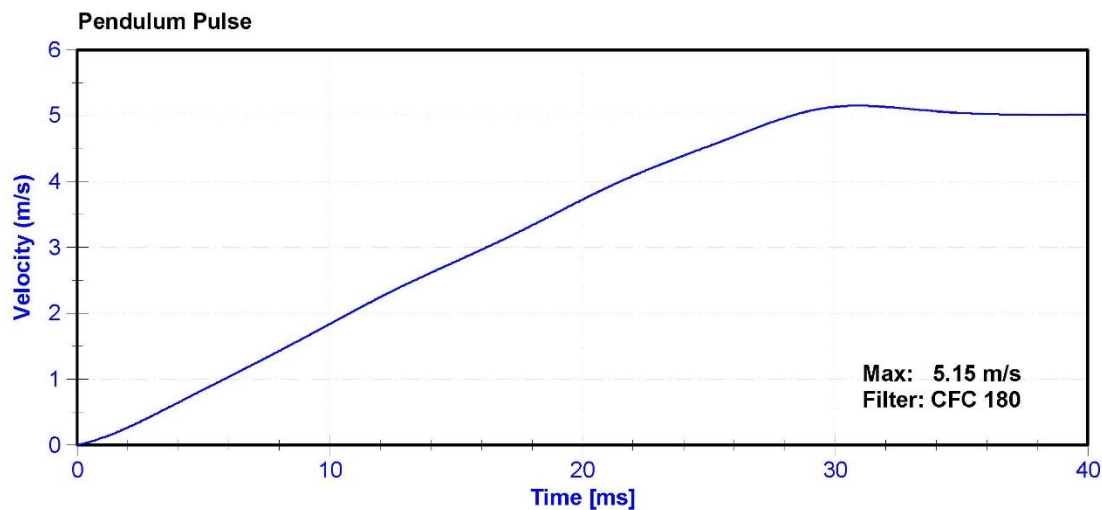
ATD Manufacturer	Humanetics	Test Technician	M. Goehle
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

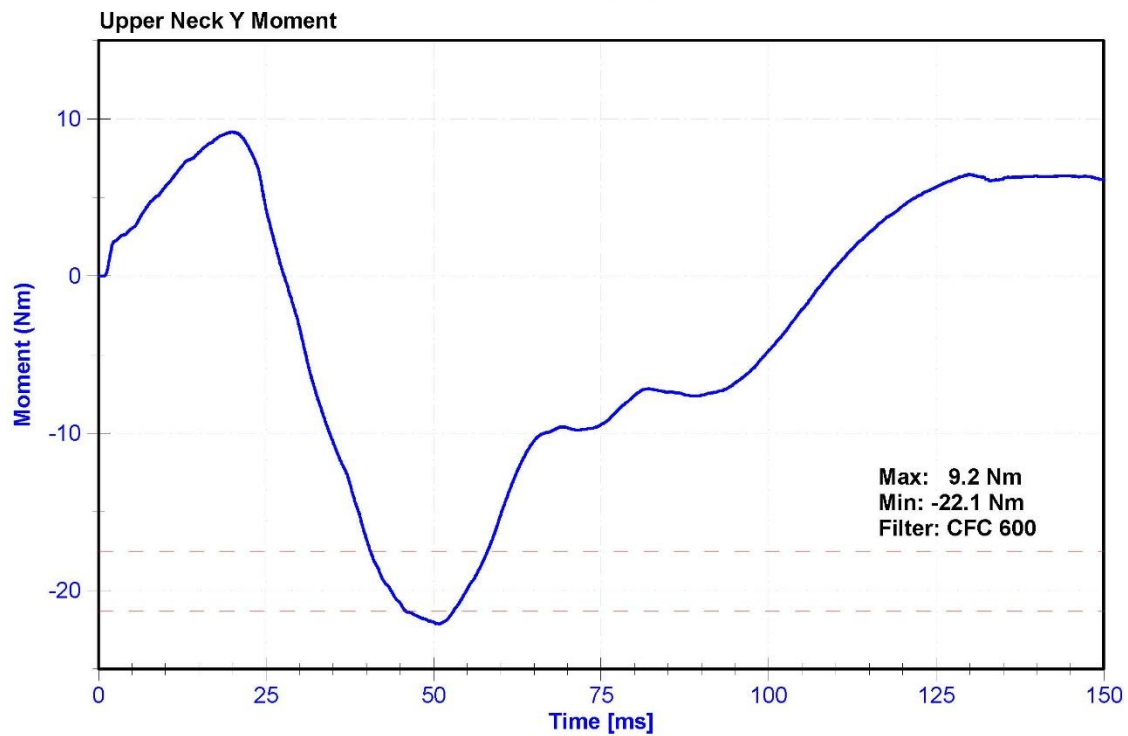
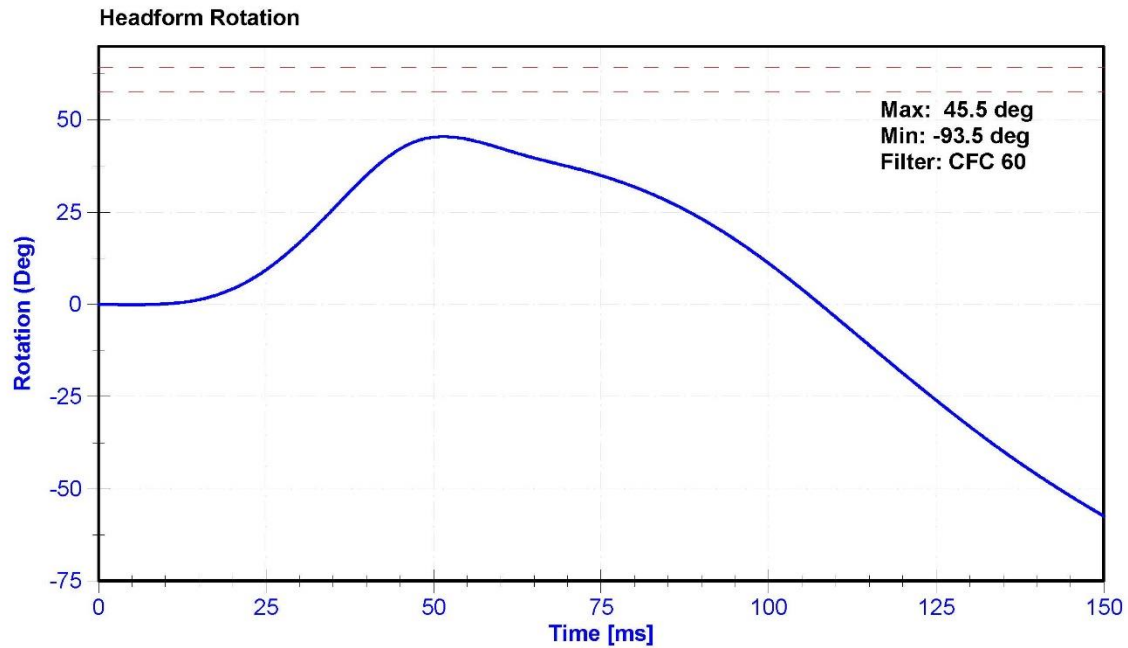
Results

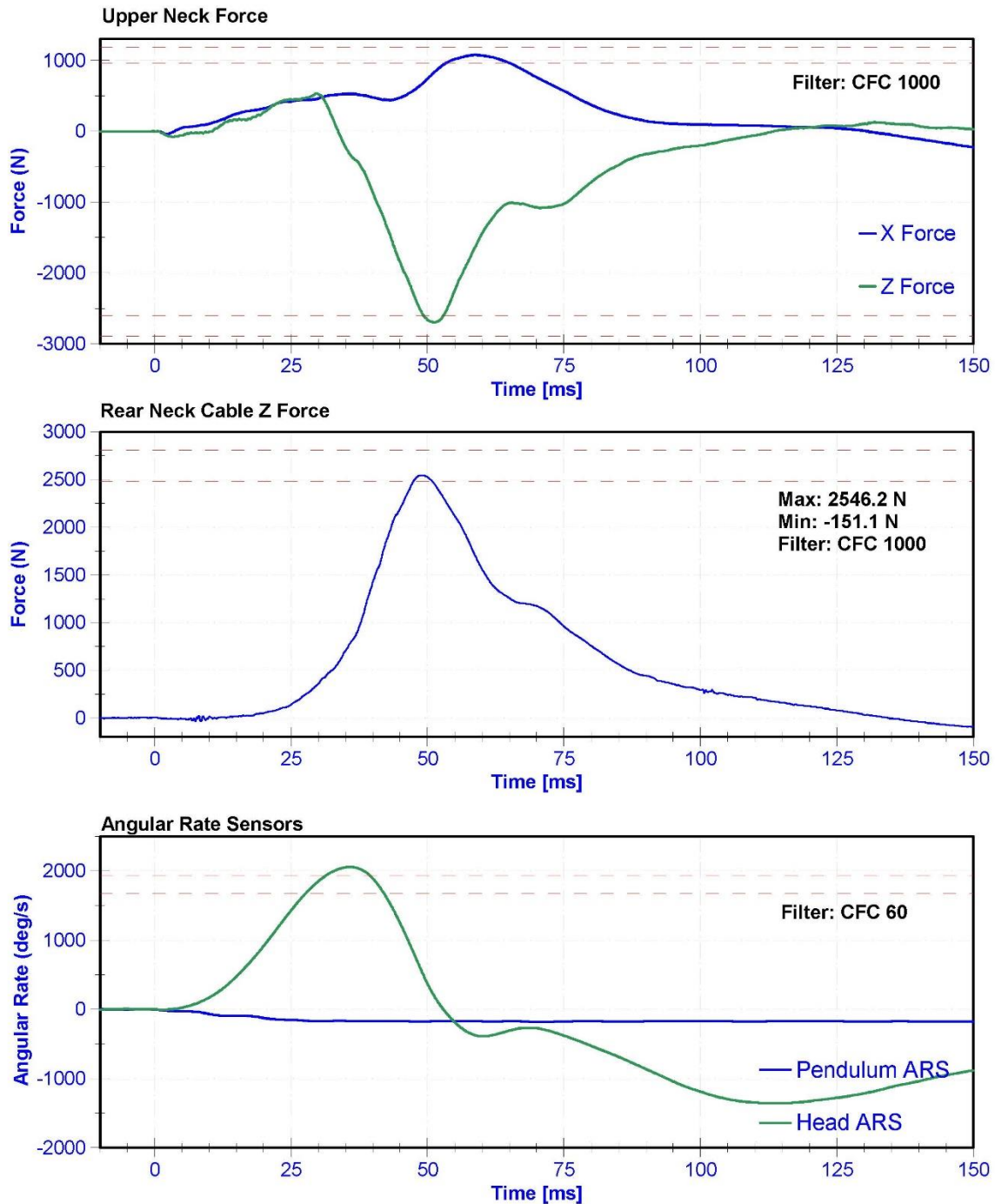
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.3	Pass
Humidity	10	70	%	36.0	Pass
Velocity	4.95	5.05	m/s	4.985	Pass
Pendulum Impulse at 10ms	1.76	1.91	m/s	1.840	Pass
Pendulum Impulse at 20ms	3.50	3.75	m/s	3.727	Pass
Pendulum Impulse at 30ms	4.88	5.20	m/s	5.134	Pass
Peak Upper Neck Y Moment	-21.3	-17.5	Nm	-22.12	Fail
Peak Upper Neck X Force	967	1182	N	1078.0	Pass
Peak Upper Neck Z Force	-2893	-2603	N	-2701.5	Pass
Peak Front Neck Cable Force	2482	2809	N	2546.2	Pass
Peak Head Y Angular Rate	1907	2043	deg/s	2056.4	Fail
Peak Head Y Rotation	57.6	64.2	deg	45.50	Fail
Rotational Decay Time to Zero	79.3	82.5	ms	56.30	Fail

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-AH5F3	5/7/2015	5/6/2016
Upper Neck Load Cell	Humanetics 10380Jl4	LC-DP3956 Fx	3/5/2015	3/4/2016
Fr Neck Cable Load	Humanetics 10386Jl4	LC-DO9740	3/6/2015	3/5/2016
Pendulum ARS	DTS ARS PRO-18K	ARS-9122	9/30/2015	9/29/2016
Head ARS Y-Axis	DTS ARS-18K	ARS-4737	3/30/2015	3/29/2016







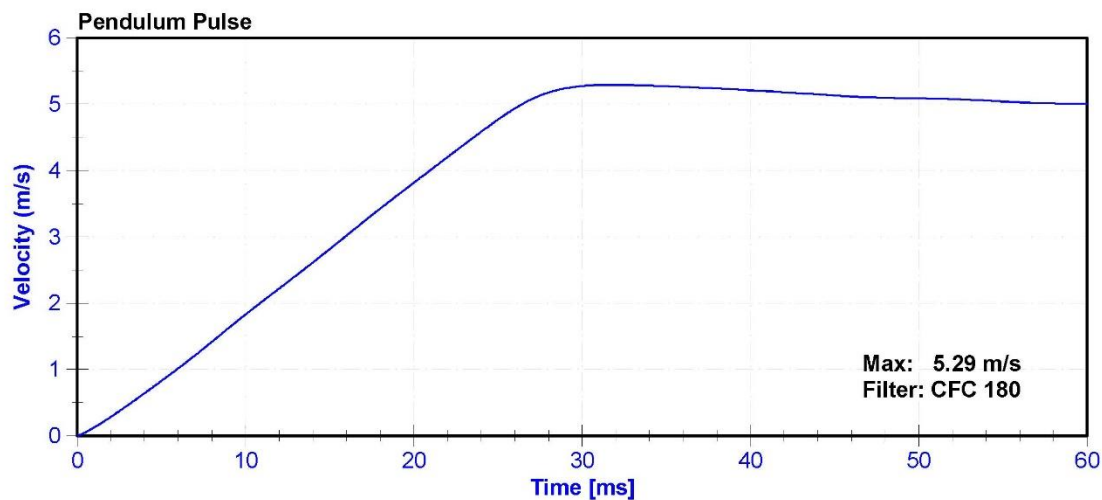
ATD Manufacturer	Humanetics	Test Technician	M. Goehle
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

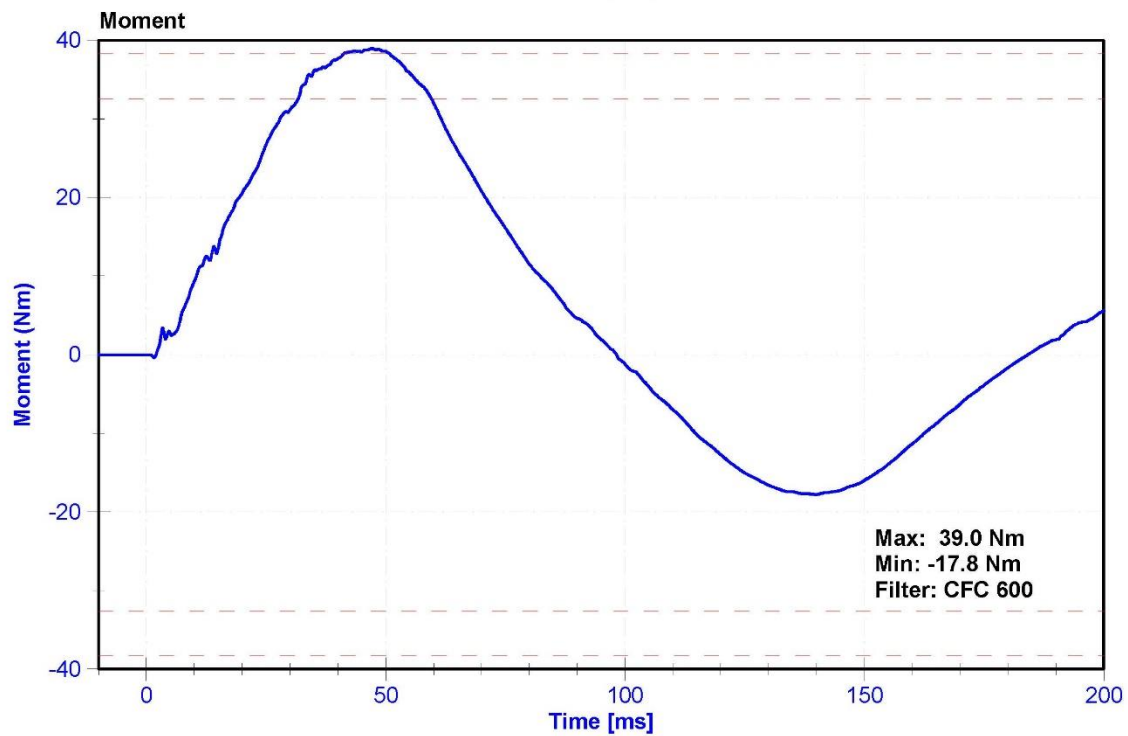
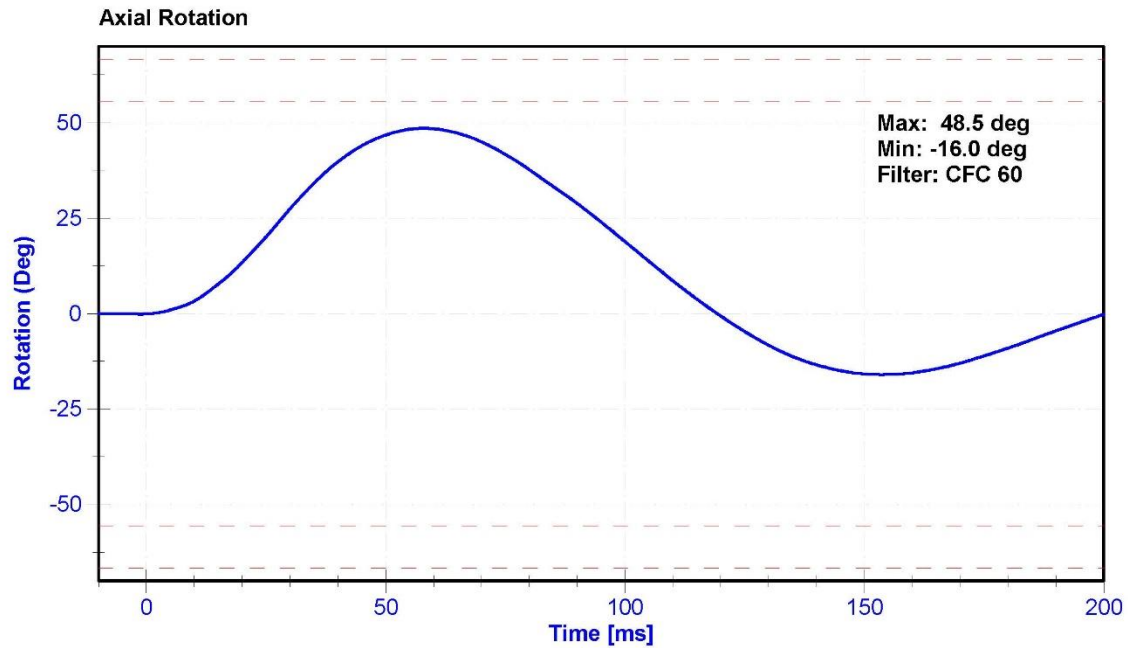
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.1	Pass
Humidity	10	70	%	29.7	Pass
Velocity	4.95	5.05	m/s	5.04	Pass
Pendulum Impulse at 10ms	1.72	1.98	m/s	1.829	Pass
Pendulum Impulse at 15ms	2.67	2.97	m/s	2.816	Pass
Pendulum Impulse at 20ms	3.59	3.98	m/s	3.817	Pass
Pendulum Impulse at 25ms	4.43	4.92	m/s	4.769	Pass
Peak Upper Neck Z Moment	32.6	38.3	Nm	38.98	Fail
Peak Neck Axial Rotation	55.6	66.6	deg	48.54	Fail
Rotation Decay Time to Zero	58.0	61.6	ms	61.35	Pass
Peak Upper Neck Angular Velocity	1559	1709	deg/s	1576.78	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-AH5F3	5/7/2015	5/6/2016
Neck Fixture Potentiometer	Servo 14CB1-3615	DS-0001	10/21/2015	10/20/2016
Upper Neck Load Cell	Humanetics 10380JI4	LC-DP3956 Mz	3/5/2015	3/4/2016
Upper Neck ARS	DTS ARS PRO-18K	ARS-9097	9/30/2015	9/29/2016





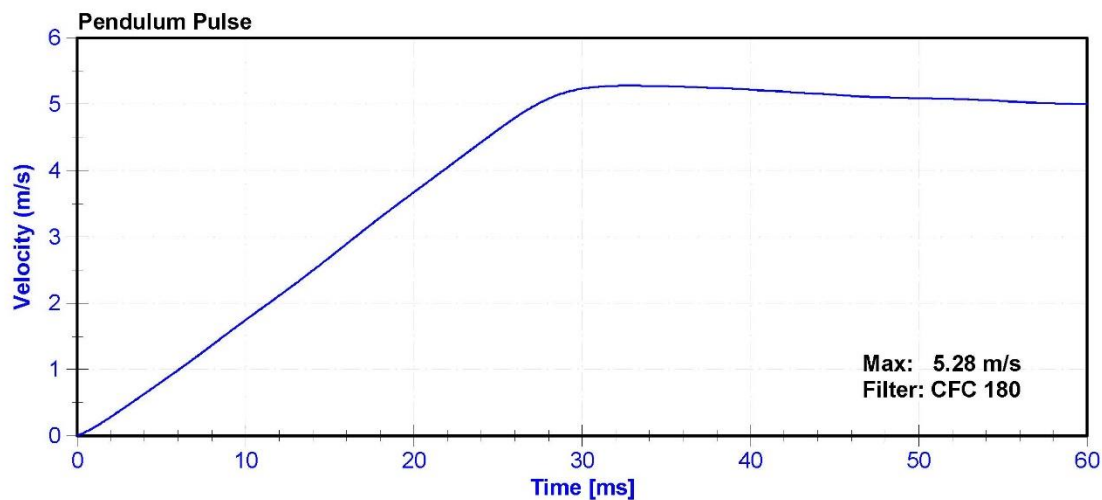
ATD Manufacturer	Humanetics	Test Technician	M. Goehle
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

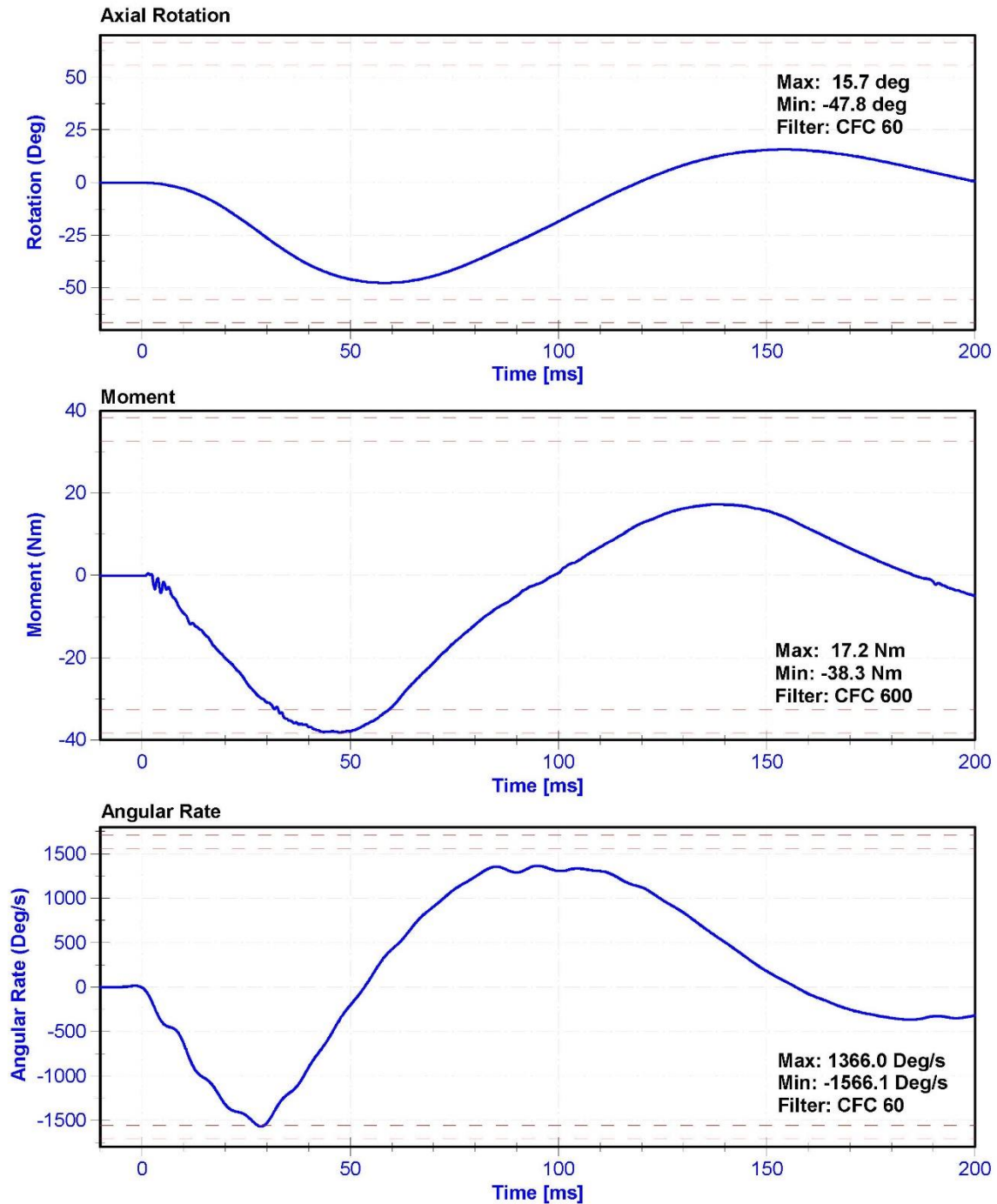
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.0	Pass
Humidity	10	70	%	31.8	Pass
Velocity	4.95	5.05	m/s	5.045	Pass
Pendulum Impulse at 10ms	1.72	1.98	m/s	1.746	Pass
Pendulum Impulse at 15ms	2.67	2.97	m/s	2.693	Pass
Pendulum Impulse at 20ms	3.59	3.98	m/s	3.674	Pass
Pendulum Impulse at 25ms	4.43	4.92	m/s	4.615	Pass
Peak Upper Neck Z Moment	32.6	38.3	Nm	38.26	Pass
Peak Neck Axial Rotation	55.6	66.6	deg	47.76	Fail
Rotation Decay Time to Zero	58.0	61.6	ms	47.00	Fail
Peak Upper Neck Angular Velocity	1559	1709	deg/s	1566.1	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-AH5F3	5/7/2015	5/6/2016
Neck Fixture Potentiometer	Servo 14CB1-3615	DS-0001	10/21/2015	10/20/2016
Upper Neck Load Cell	Humanetics 10380JI4	LC-DP3956 Mz	3/5/2015	3/4/2016
Upper Neck ARS	DTS ARS PRO-18K	ARS-9097	9/30/2015	9/29/2016





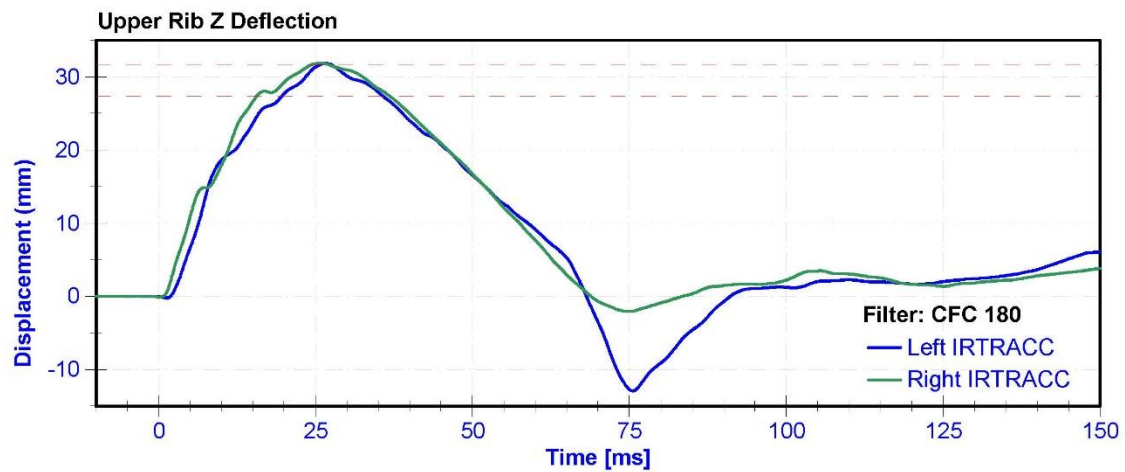
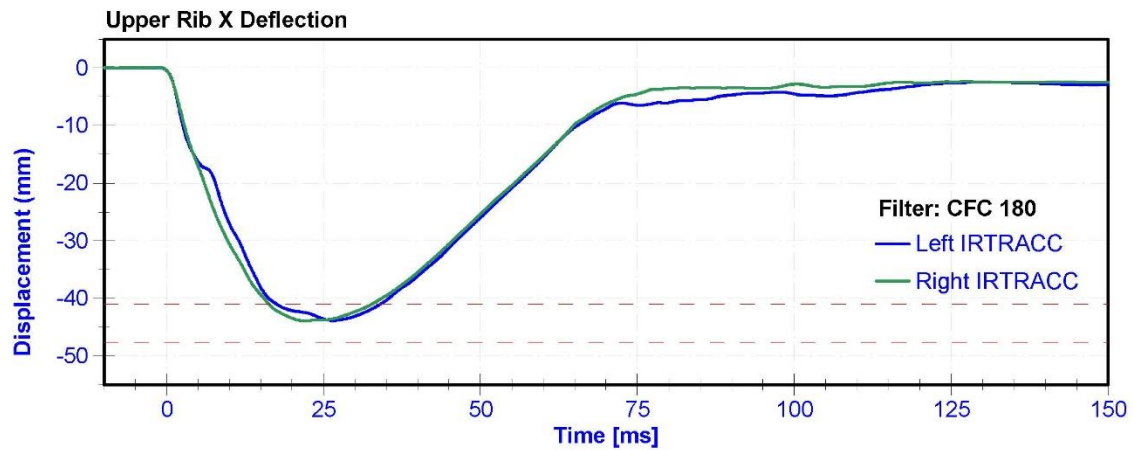
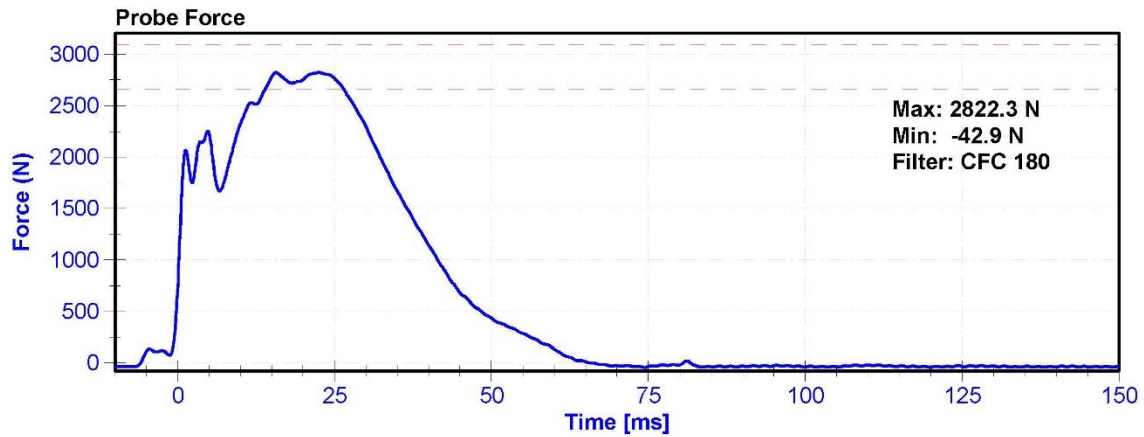
ATD Manufacturer	Humanetics	Test Technician	M. Goehle
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

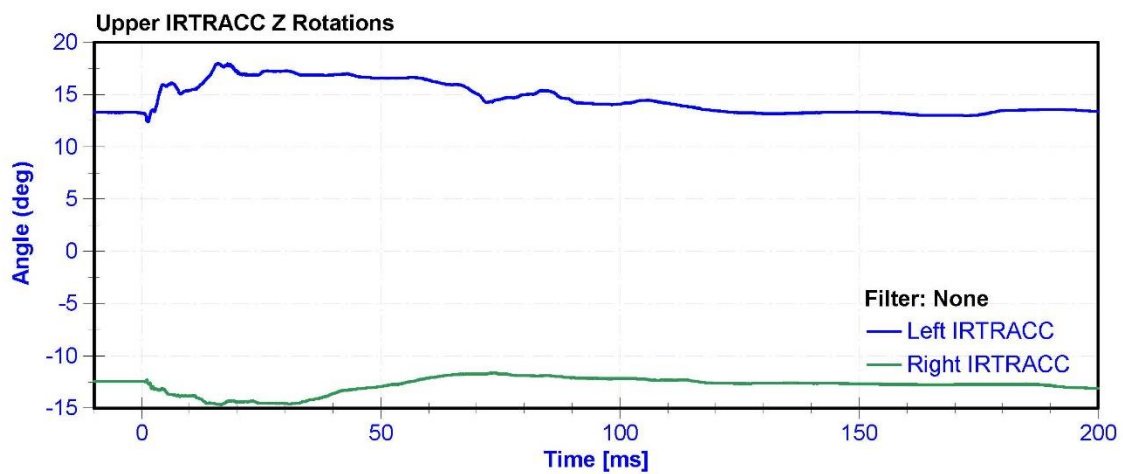
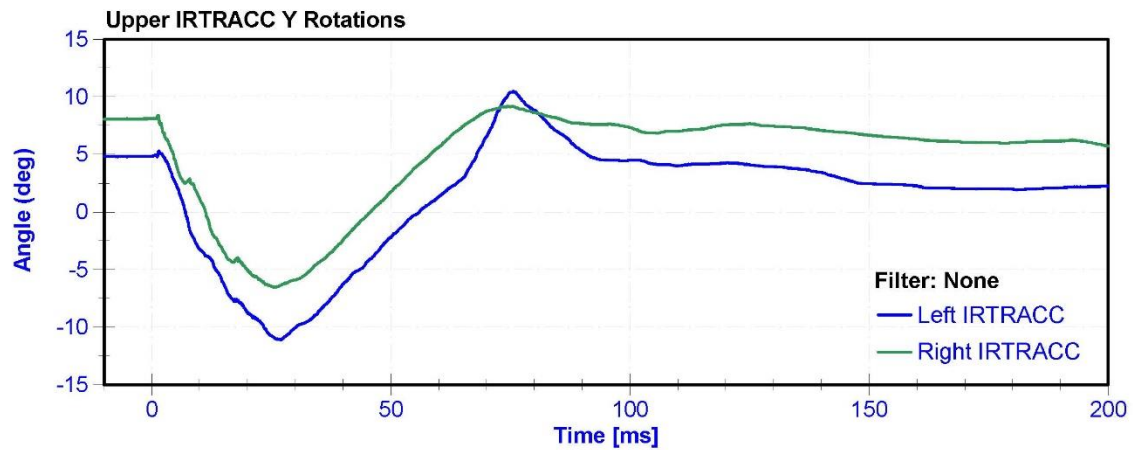
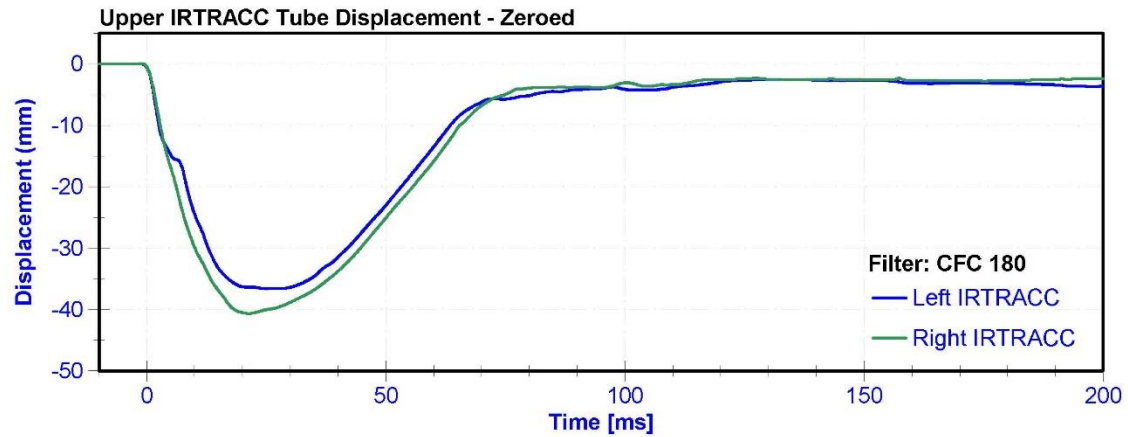
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	20.8	Pass
Humidity	10	70	%	30.8	Pass
Impact Velocity	4.25	4.35	m/s	4.323	Pass
Probe Force	2474	2850	N	2822.3	Pass
Upper Left X Rib Deflection	-47.6	-41.0	mm	-43.87	Pass
Upper Right X Rib Deflection	-47.6	-41.0	mm	-43.90	Pass
Left/Right X Rib Deviation	-7.00	7.00	mm	0.033	Pass
Upper Left Z Rib Deflection	27.3	31.7	mm	31.86	Fail
Upper Right Z Rib Deflection	27.3	31.7	mm	31.90	Fail
Left/Right Z Rib Deviation	-7.00	7.00	mm	-0.031	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accelerometer	ENDEVCO 7231CT	AC-C14972	8/13/2015	2/11/2016
Upper Left IRTRACC	Humanetics IF-364-C-R3	DS-DS6355	11/10/2015	11/9/2016
Upper Left Y Potentiometer	Humanetics 9945	DS-DI2382	4/8/2015	4/7/2016
Upper Left Z Potentiometer	Humanetics 9945	DS-DI2383	4/8/2015	4/7/2016
Upper Right IRTRACC	Humanetics IF-364-C-R3	DS-DJ2613	4/8/2015	4/7/2016
Upper Right Y Potentiometer	Humanetics 9945	DS-DI7753	4/9/2015	4/8/2016
Upper Right Z Potentiometer	Humanetics 9945	DS-DI7752	4/9/2015	4/8/2016





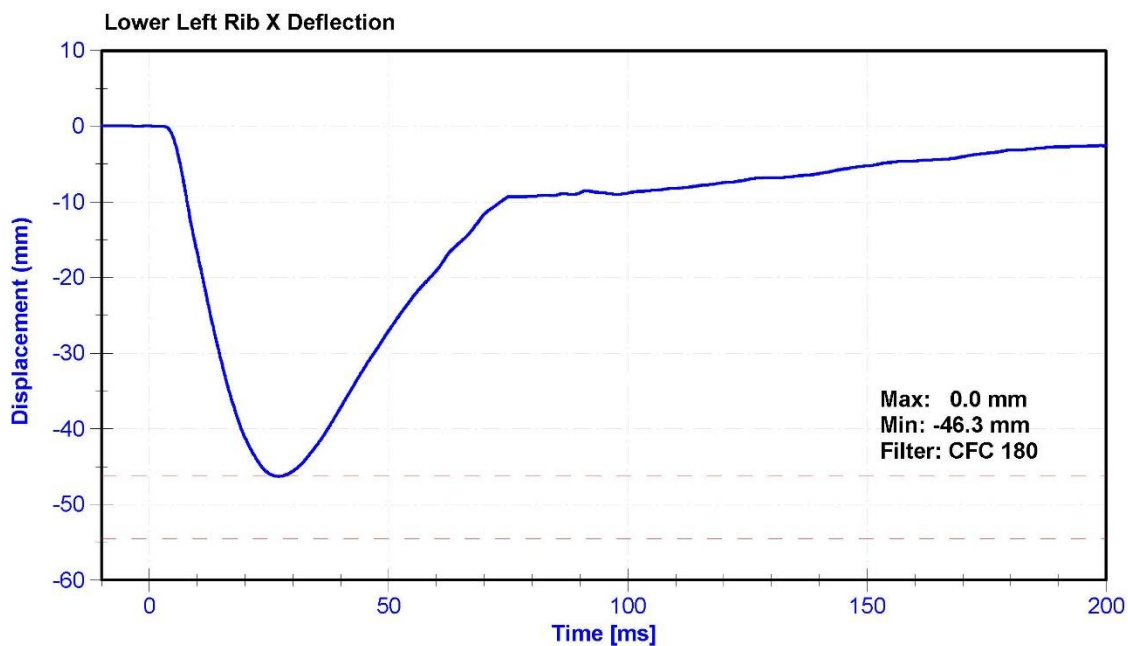
ATD Manufacturer	Humanetics	Test Technician	M. Goehle
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

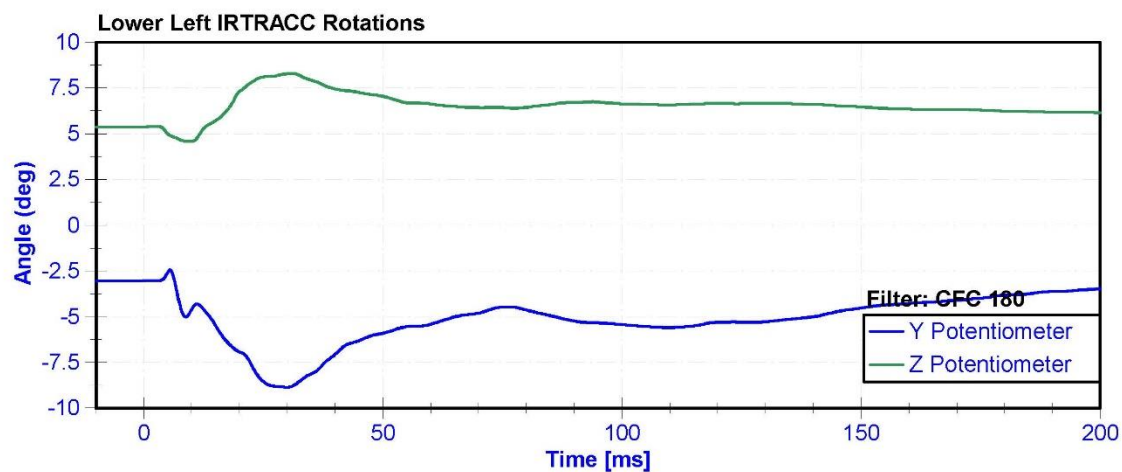
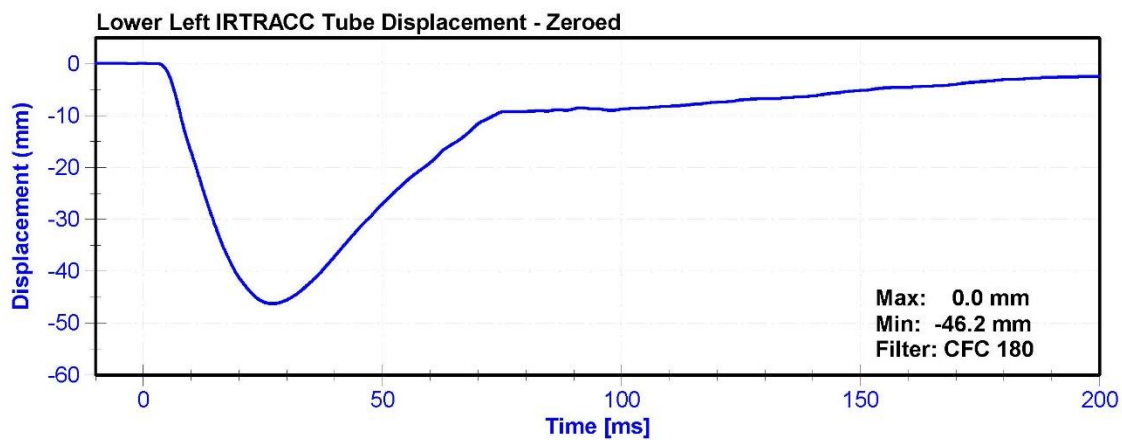
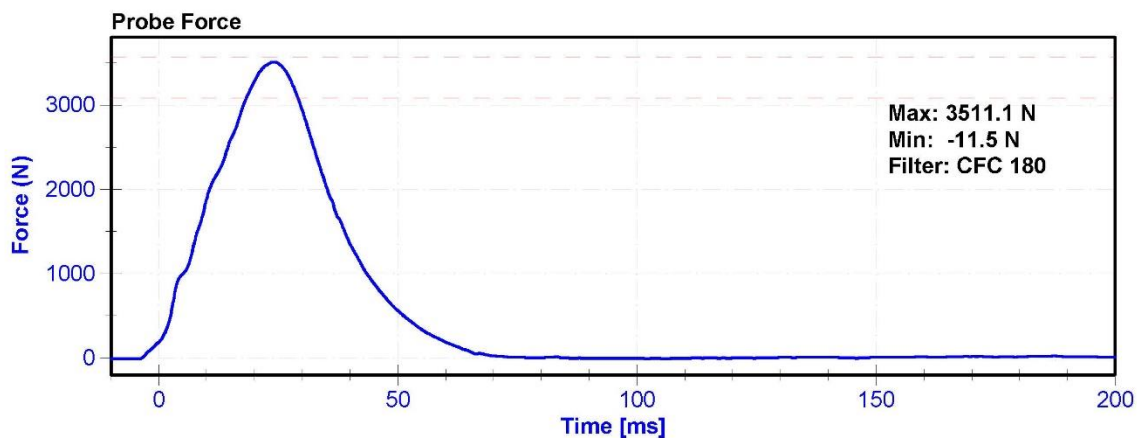
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.8	Pass
Humidity	10	70	%	17.4	Pass
Impact Velocity	4.25	4.35	m/s	4.311	Pass
Peak Left X Rib Deflection	-54.5	-46.2	mm	-46.28	Pass
Probe Force during Peak Deflection	3083	3571	N	3511.1	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accel	ENDEVCO 7231CT	AC-C14972	8/13/2015	2/11/2016
Lower Left IRTACC	Humanetics IF-364-C-R3	DS-DS6353	11/10/2015	11/9/2016
Lower Left Y Potentiometer	Humanetics 9945	DS-DM4781	4/7/2015	4/6/2016
Lower Left Z Potentiometer	Humanetics 9945	DS-DS4092	4/7/2015	4/6/2016





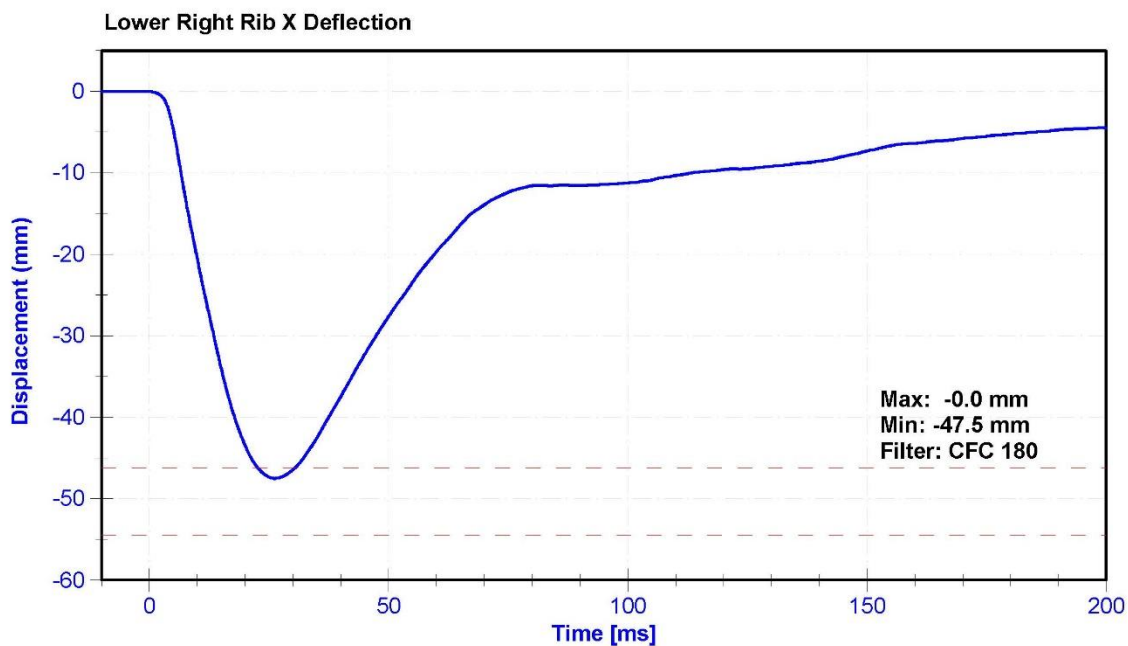
ATD Manufacturer	Humanetics	Test Technician	M. Goehle
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

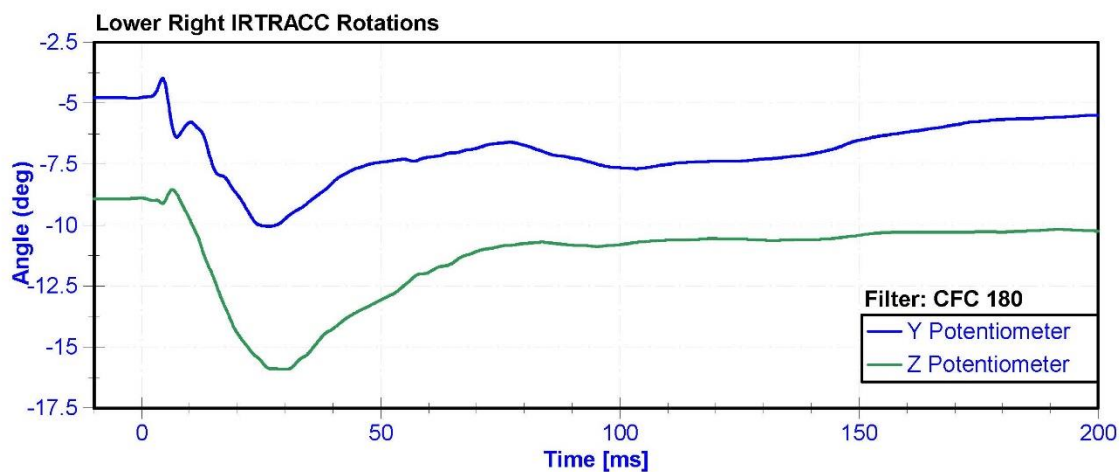
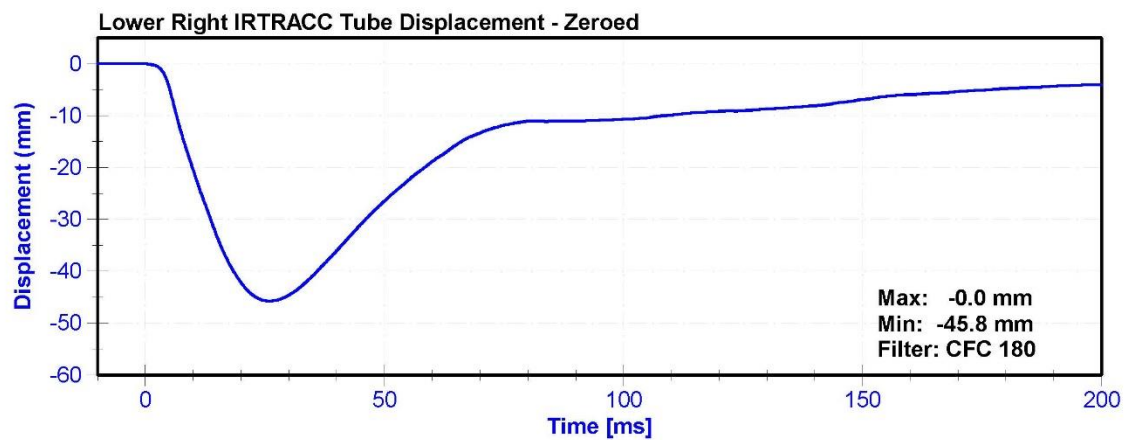
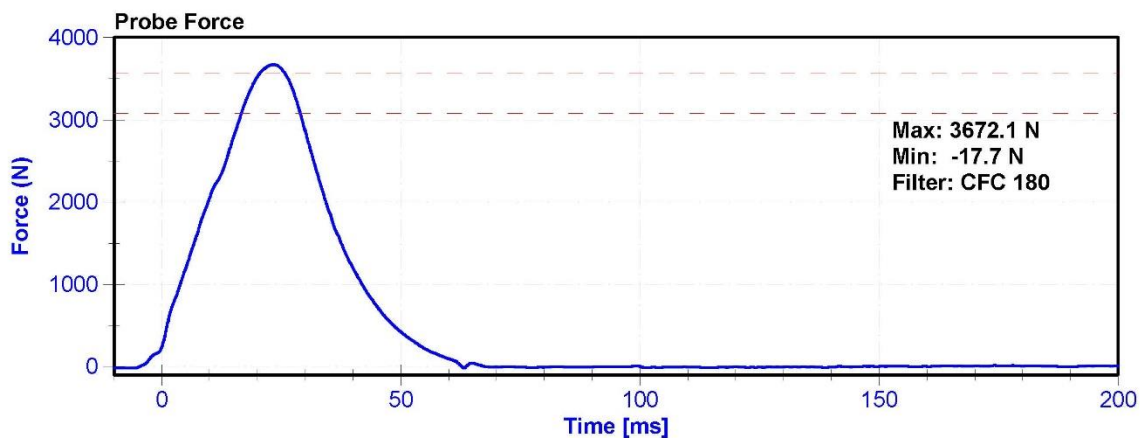
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.9	Pass
Humidity	10	70	%	17.3	Pass
Impact Velocity	4.25	4.35	m/s	4.314	Pass
Peak Right X Rib Deflection	-54.5	-46.2	mm	-47.51	Pass
Probe Force during Peak Deflection	3083	3571	N	3672.1	Fail

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accel	ENDEVCO 7231CT	AC-C14972	8/13/2015	2/11/2016
Lower Right IRTRACC	Humanetics IF-364-C-R3	DS-DS6354	11/10/2015	11/9/2016
Lower Right Y Potentiometer	Humanetics 9945	DS-DM4776	4/7/2015	4/6/2016
Lower Right Z Potentiometer	Humanetics 9945	DS-DM4777	4/7/2015	4/6/2016







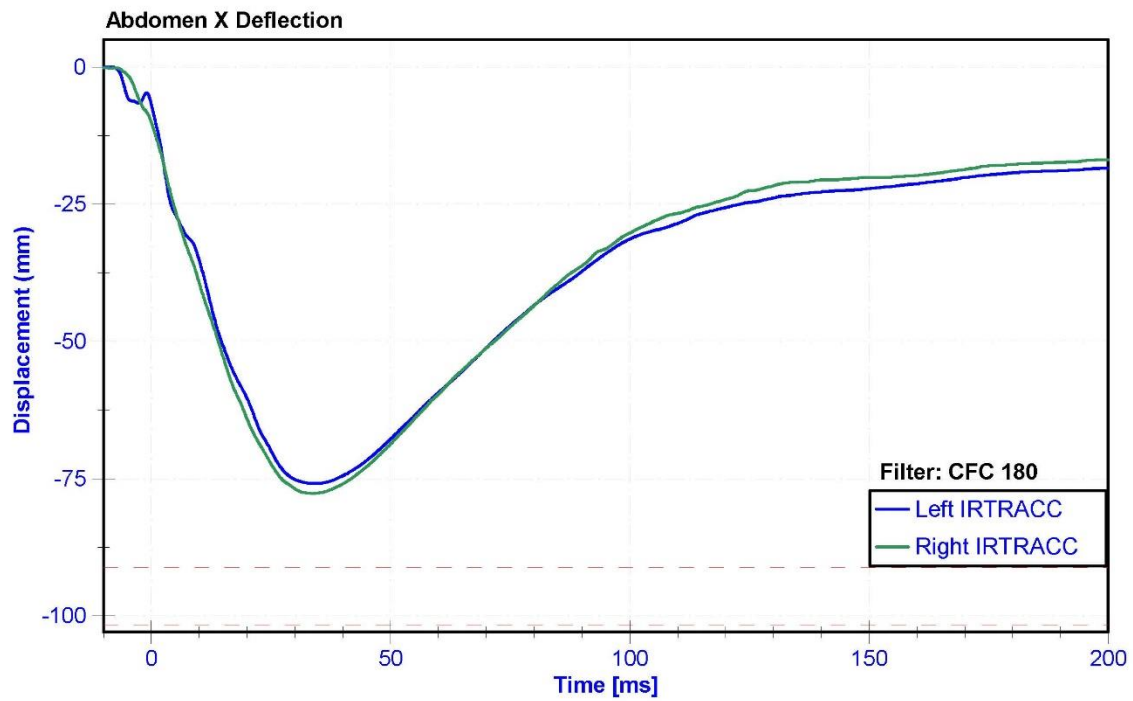
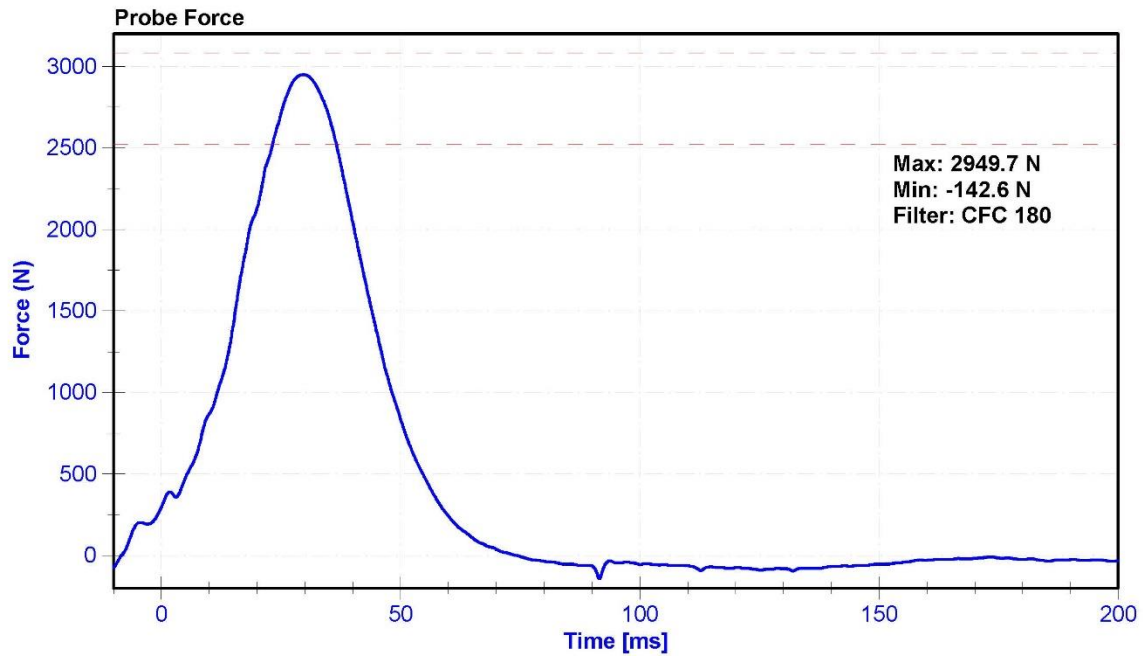
ATD Manufacturer	Humanetics	Test Technician	M. Goehle
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

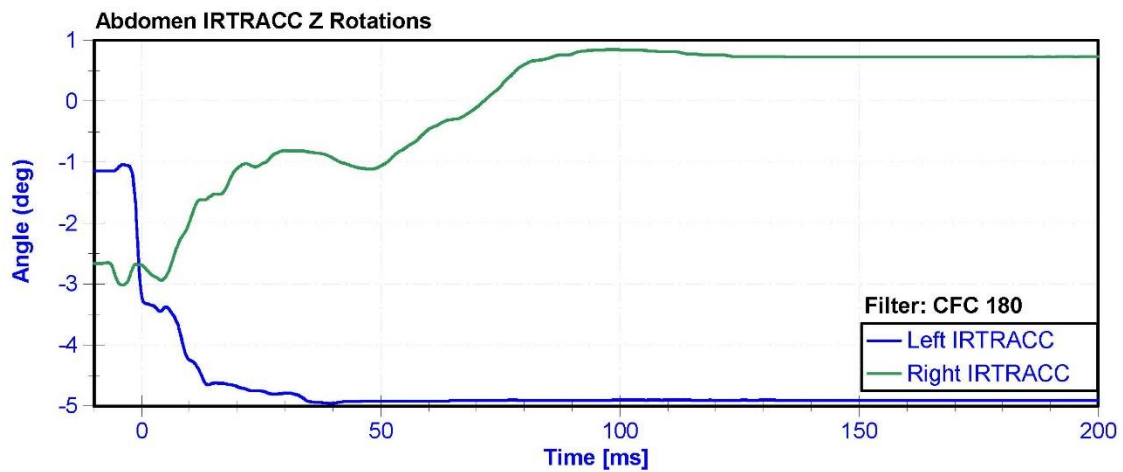
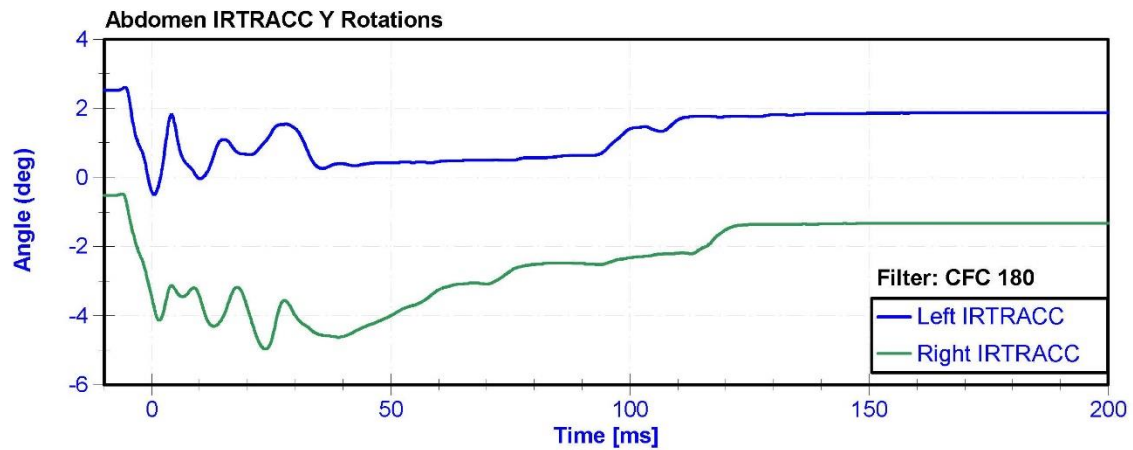
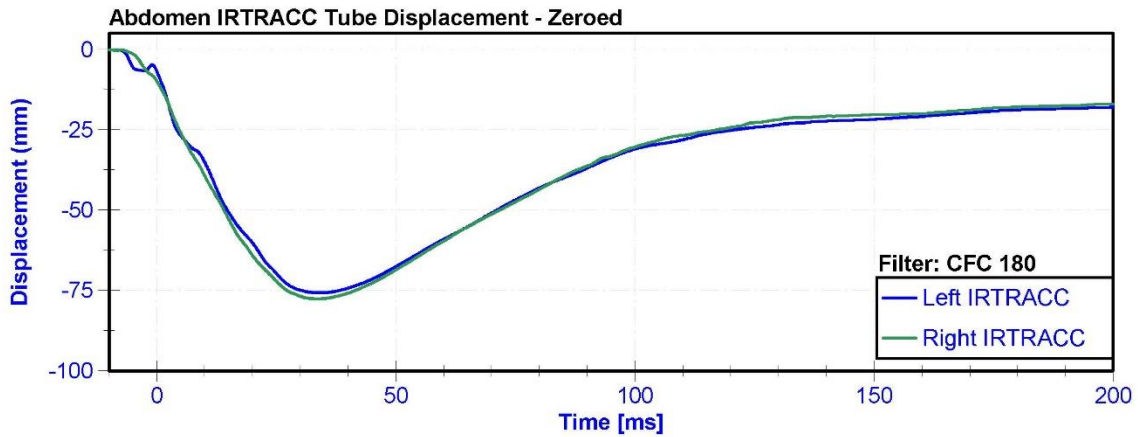
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.9	Pass
Humidity	10	70	%	17.9	Pass
Impact Velocity	3.25	3.35	m/s	3.315	Pass
Probe Force	2523	3083	N	2949.7	Pass
Left Abdomen X Deflection	-101.6	-91.2	mm	-75.86	Fail
Right Abdomen X Deflection	-101.6	-91.2	mm	-77.68	Fail
Left/Right X Deviation	-7.00	7.00	mm	1.824	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accel	ENDEVCO 7231CT	AC-C14972	8/13/2015	2/11/2016
Abdomen Left IRTRACC	Humanetics 9910	DS-DQ2303	4/13/2015	4/12/2016
Abdomen Left Y Potentiometer	Humanetics 9945	DS-DS8363	12/16/2015	12/15/2016
Abdomen Left Z Potentiometer	Humanetics 9945	DS-DS8361	12/16/2015	12/15/2016





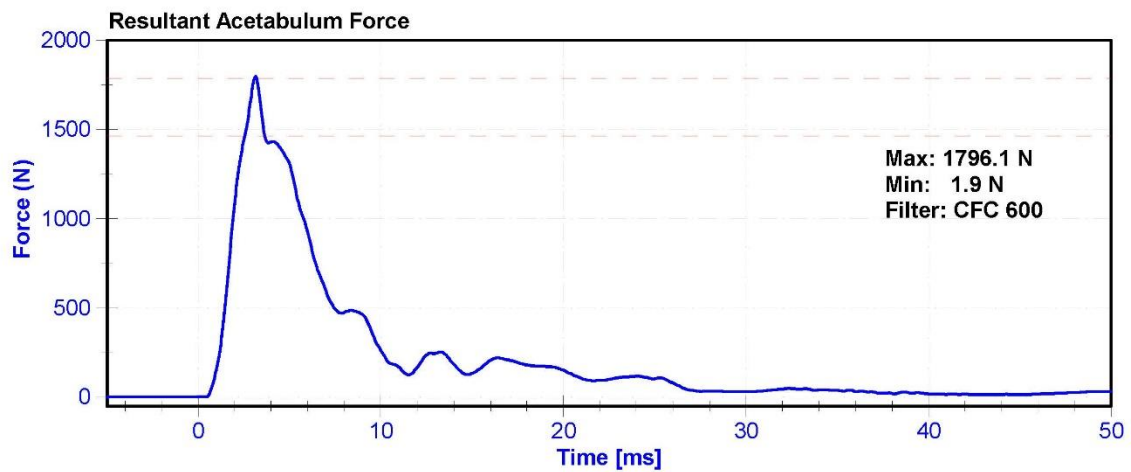
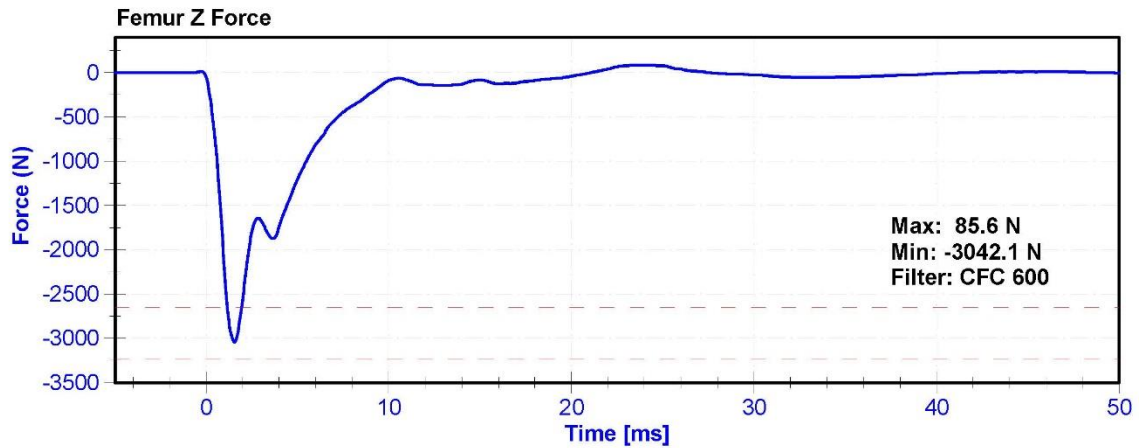
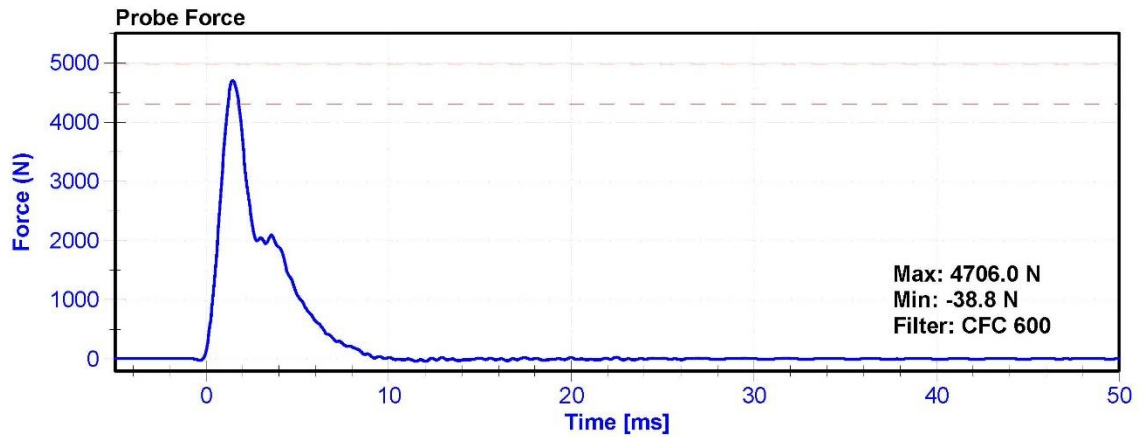
ATD Manufacturer	Humanetics	Test Technician	M. Goehle
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

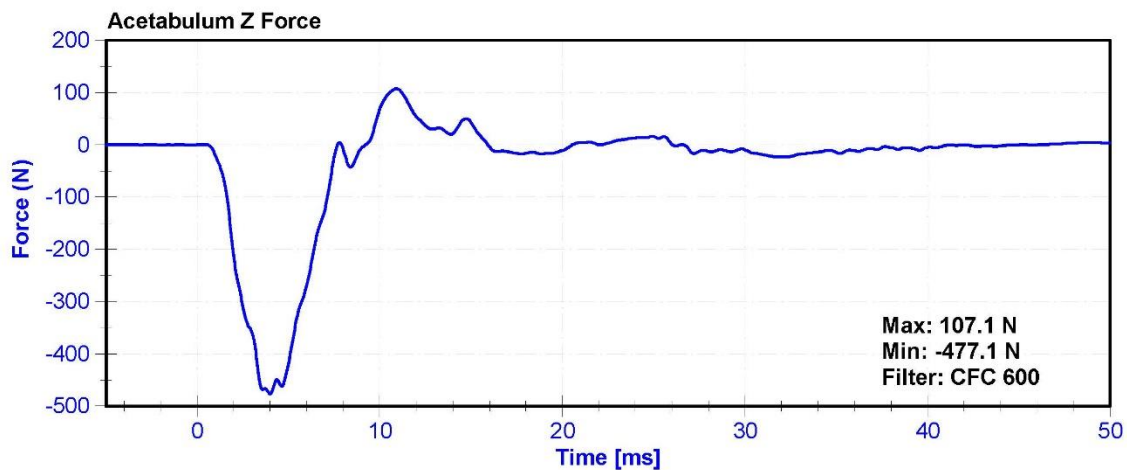
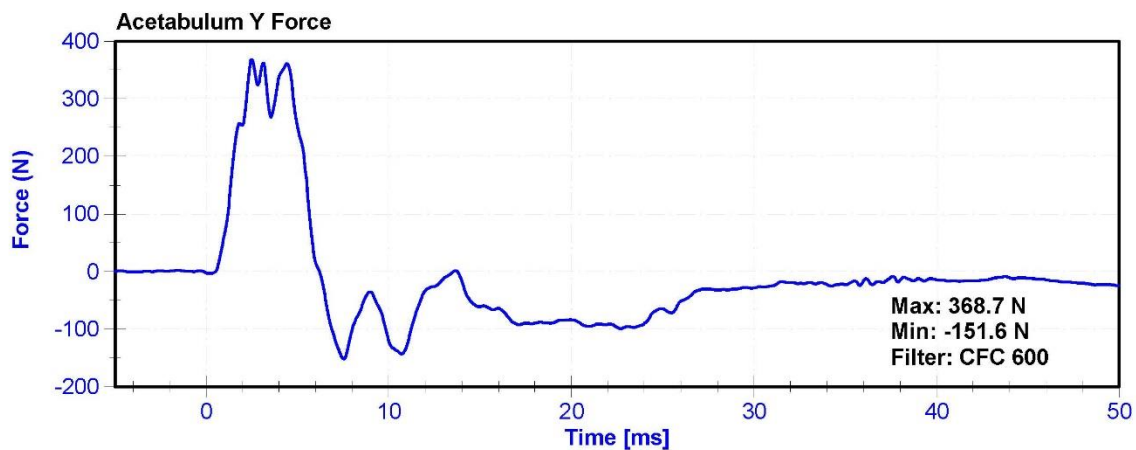
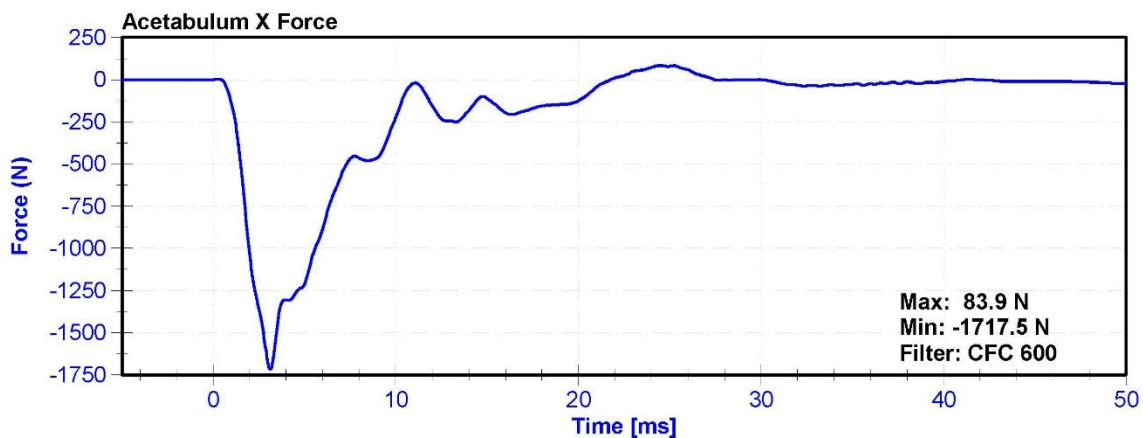
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.2	Pass
Humidity	10	70	%	15.3	Pass
Impact Velocity	2.55	2.65	m/s	2.592	Pass
Probe Force	4318	4989	N	4706.0	Pass
Peak Femur Z Force	-3241	-2652	N	-3042.13	Pass
Peak Resultant Acetabulum Force	1462	1787	N	1796.09	Fail

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accel	ENDEVCO 7231CT	AC-C14972	8/13/2015	2/11/2016
Left Femur Load Cell	Denton W50-7101051	LC-DM4975 Fz	2/20/2015	2/20/2016
Left Acetabulum Load Cell	Humanetics 10530JI4	LC-DP4639 Fx	3/6/2015	3/5/2016





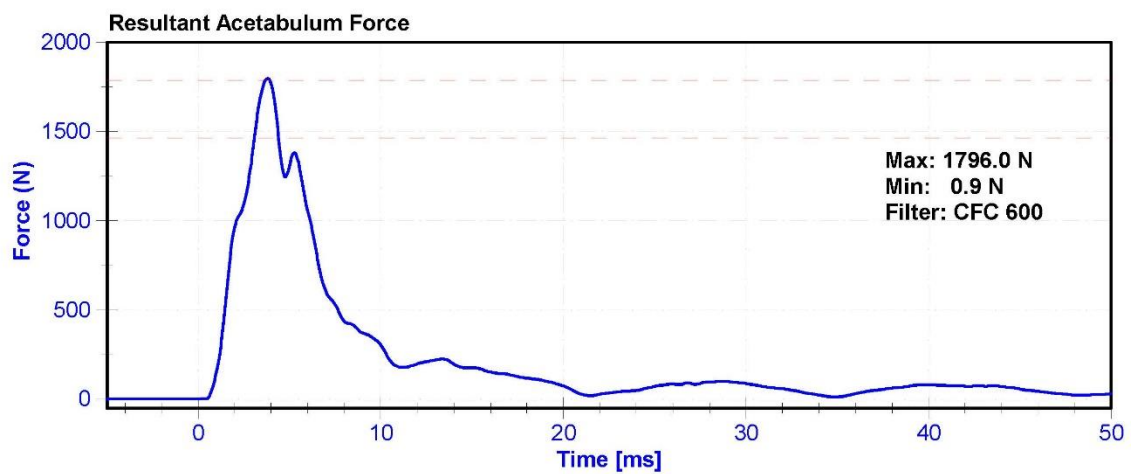
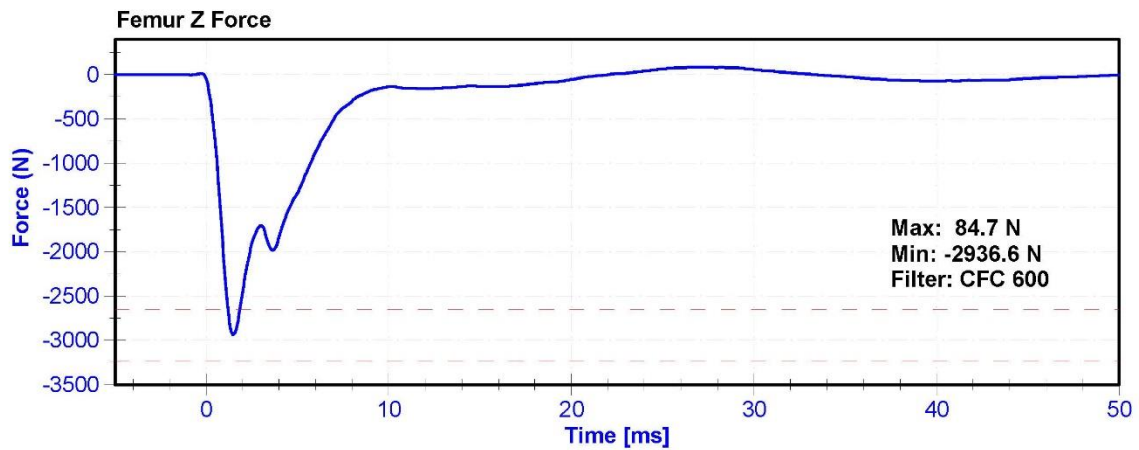
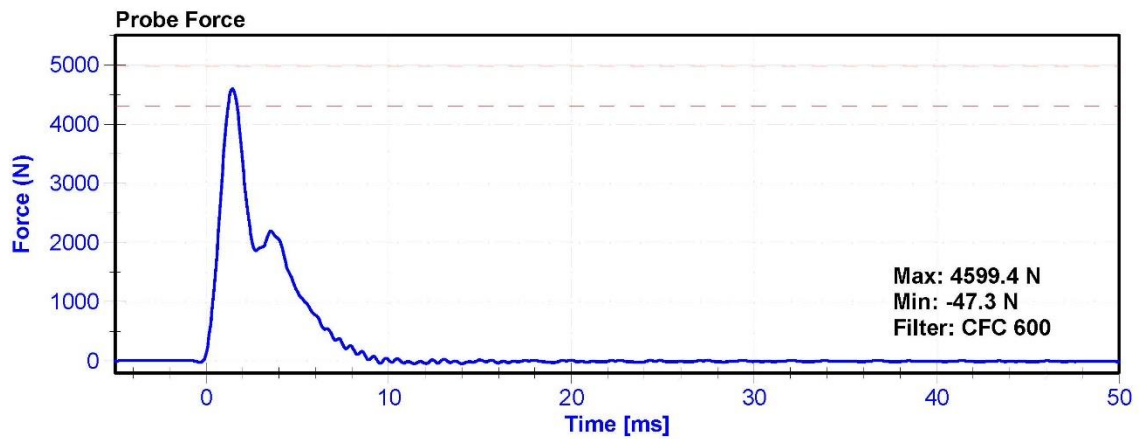
ATD Manufacturer	Humanetics	Test Technician	M. Goehle
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

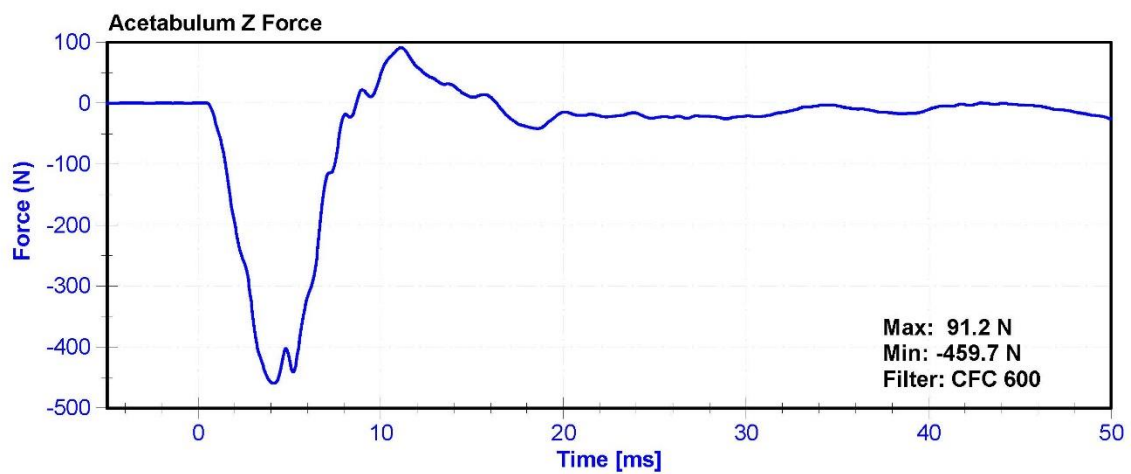
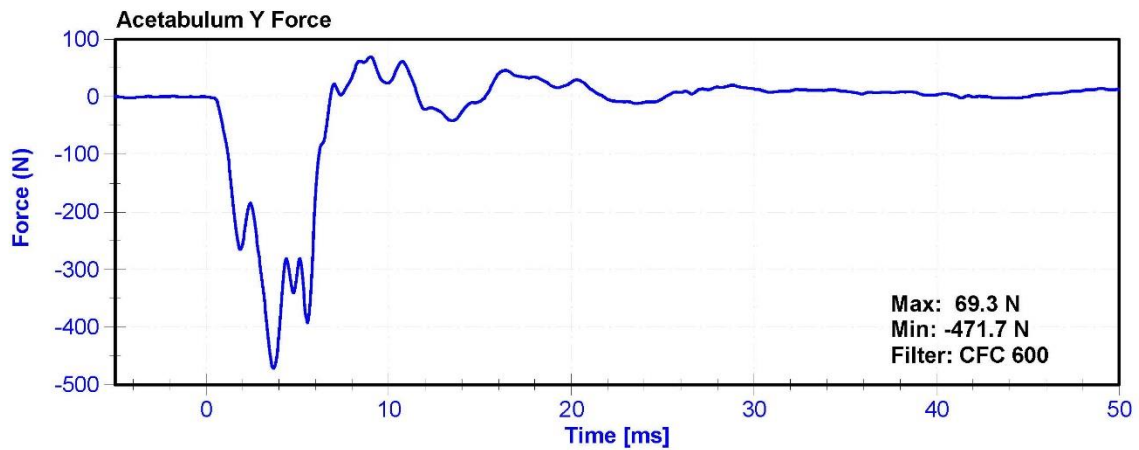
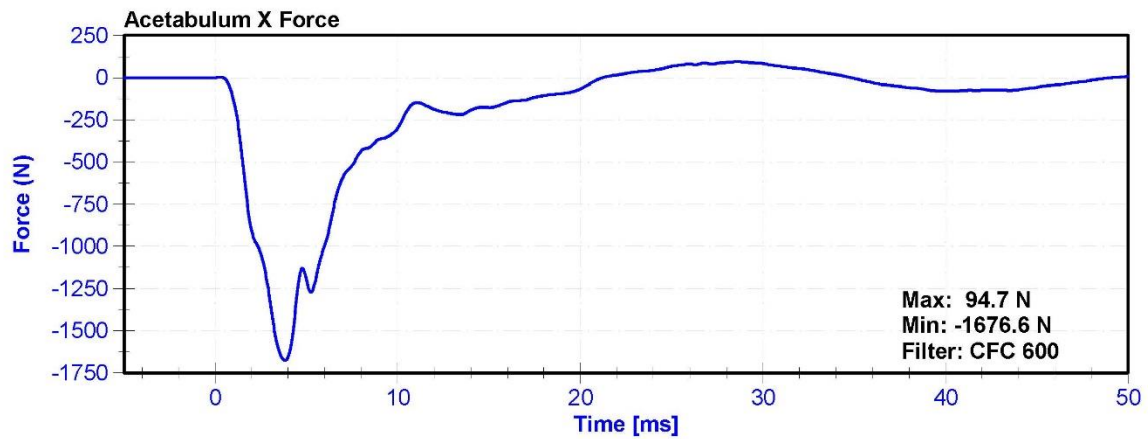
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.1	Pass
Humidity	10	70	%	15.6	Pass
Impact Velocity	2.55	2.65	m/s	2.579	Pass
Probe Force	4318	4989	N	4599.4	Pass
Peak Femur Z Force	-3241	-2652	N	-2936.62	Pass
Peak Resultant Acetabulum Force	1462	1787	N	1795.97	Fail

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accel	ENDEVCO 7231CT	AC-C14972	8/13/2015	2/11/2016
Right Femur Load Cell	Denton W50-7101051	LC-DM4976 Fz	2/23/2015	2/23/2016
Right Acetabulum Load Cell	Humanetics 10670JI4	LC-DP3835 Fx	3/7/2015	3/6/2016







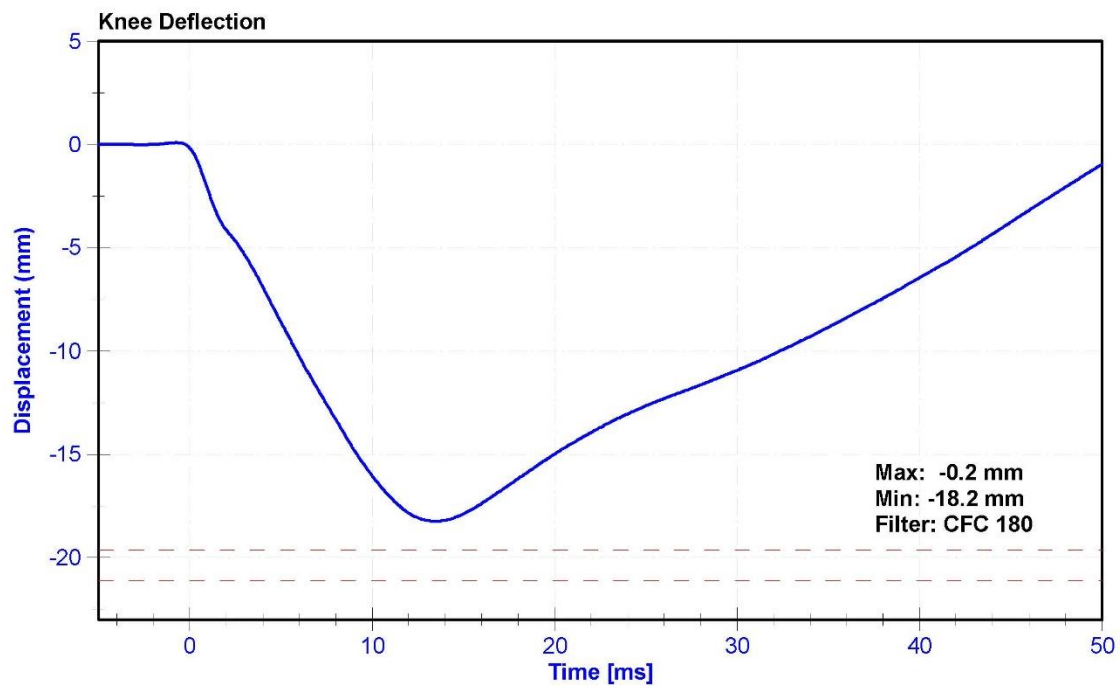
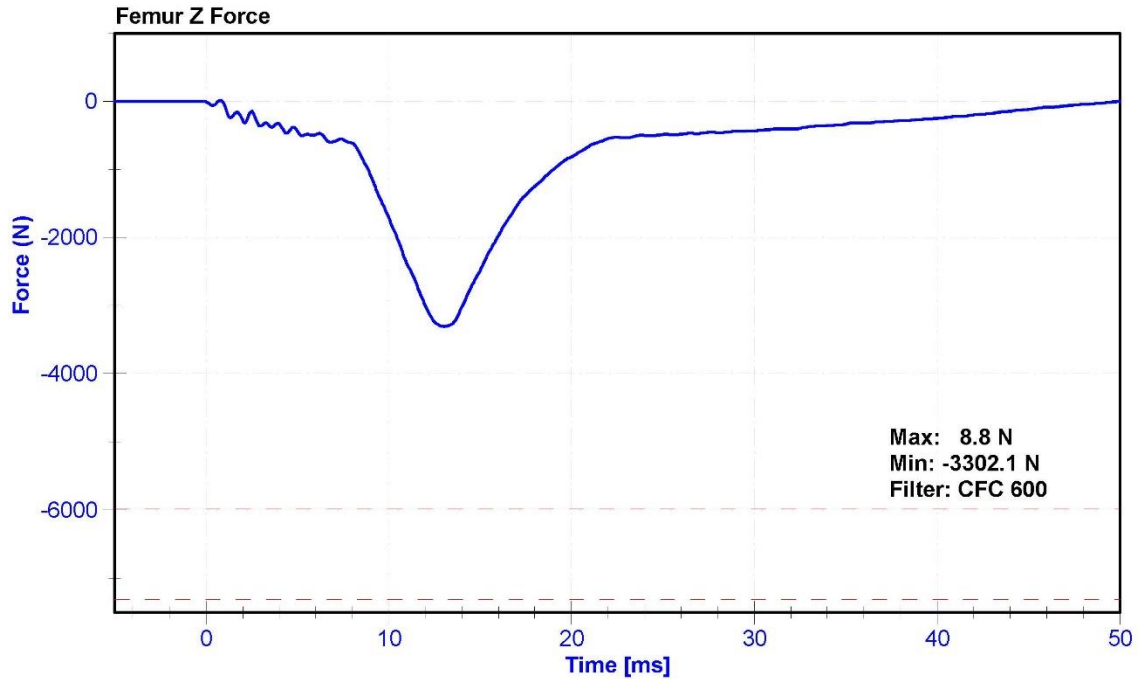
ATD Manufacturer	Humanetics	Test Technician	M. Goehle
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.5	Pass
Humidity	10	70	%	16.4	Pass
Impact Velocity	2.15	2.25	m/s	2.223	Pass
Peak Femur Z Force	-7317	-5987	N	-3302.1	Fail
Knee Deflection at Peak Force	-21.12	-19.62	mm	-18.24	Fail

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accel	ENDEVCO 7231CT	AC-C14972	8/13/2015	2/11/2016
Femur Load Cell	Denton W50-7101051	LC-DM4975 Fz	2/20/2015	2/20/2016
Knee Potentiometer	Space Age 150-0121V	DS-C2102639B	2/17/2015	2/17/2016



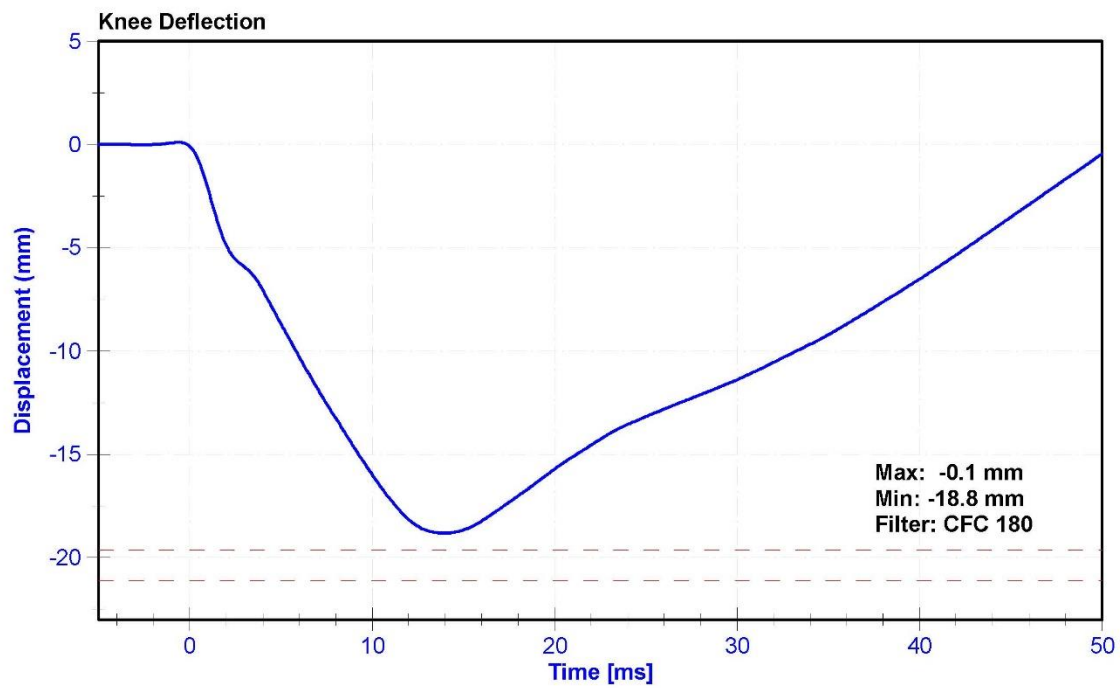
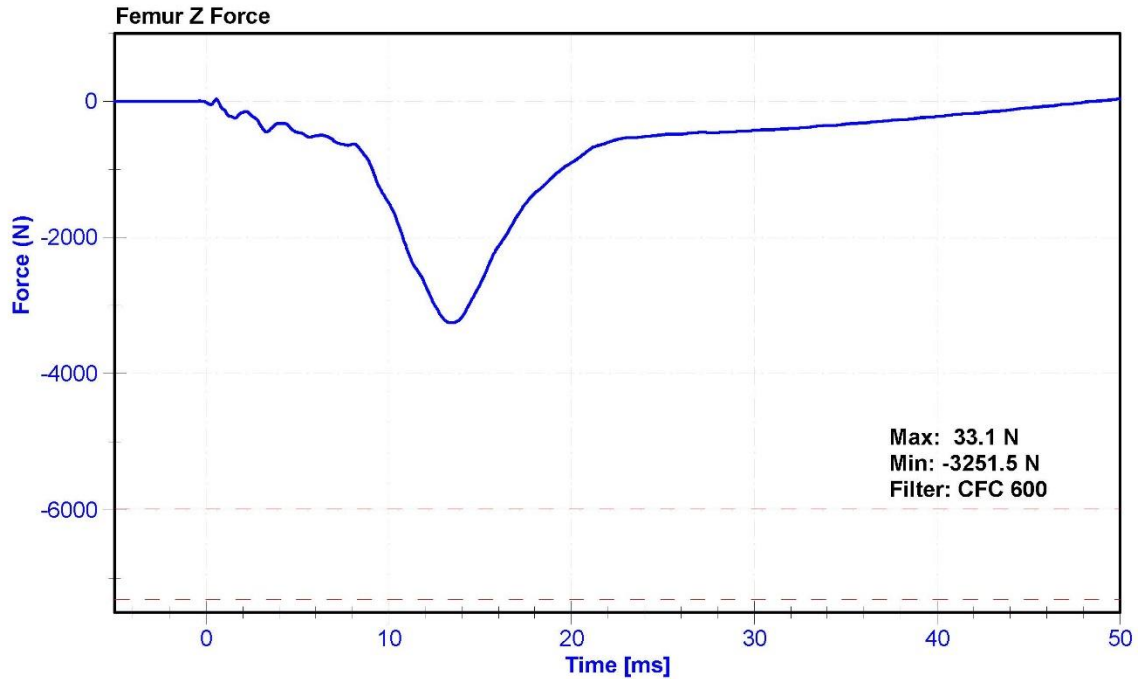
ATD Manufacturer	Humanetics	Test Technician	M. Goehle
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.2	Pass
Humidity	10	70	%	16.4	Pass
Impact Velocity	2.15	2.25	m/s	2.190	Pass
Peak Femur Z Force	-7317	-5987	N	-3251.5	Fail
Knee Deflection at Peak Force	-21.12	-19.62	mm	-18.82	Fail

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Probe Accel	ENDEVCO 7231CT	AC-C14972	8/13/2015	2/11/2016
Femur Load Cell	Denton W50-7101051	LC-DM4976 Fz	2/23/2015	2/23/2016
Knee Potentiometer	Space Age 150-0121VL	DS-021033	3/18/2015	3/17/2016



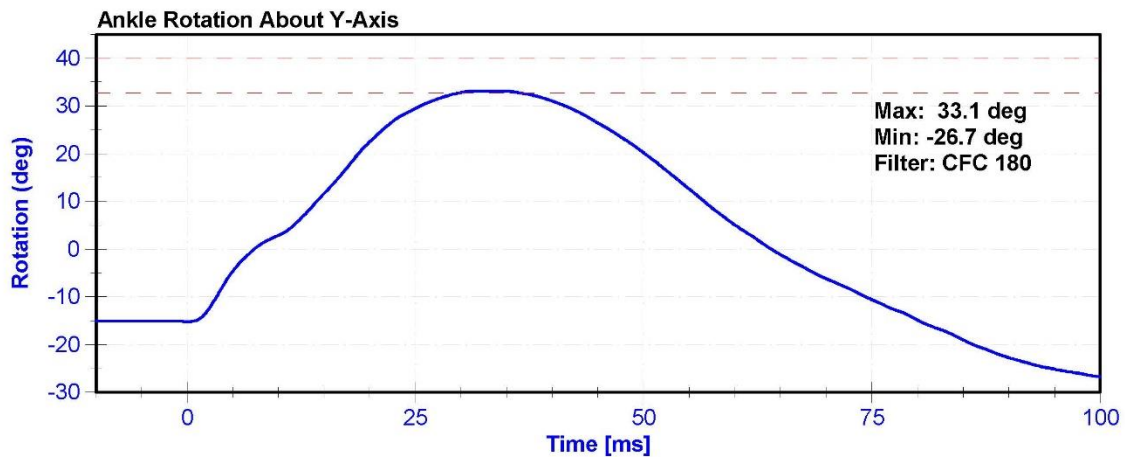
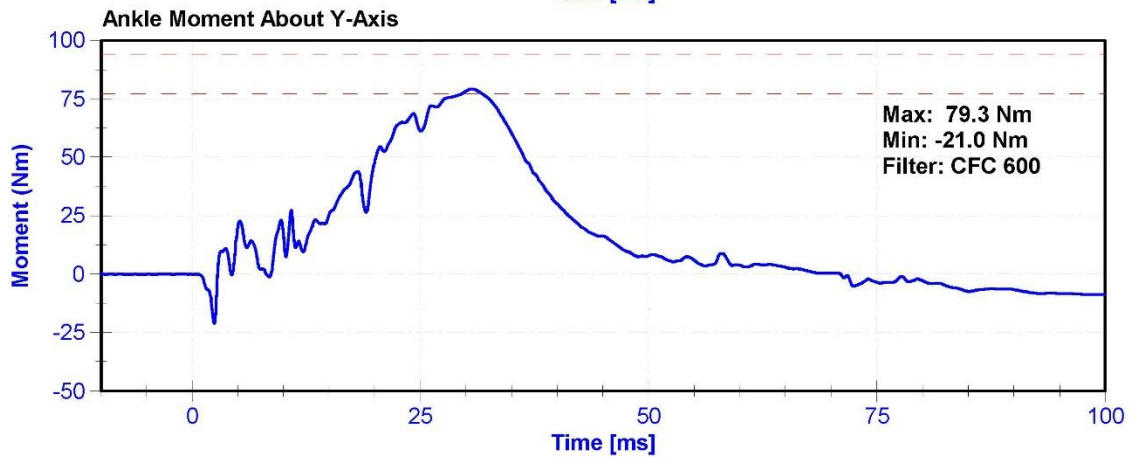
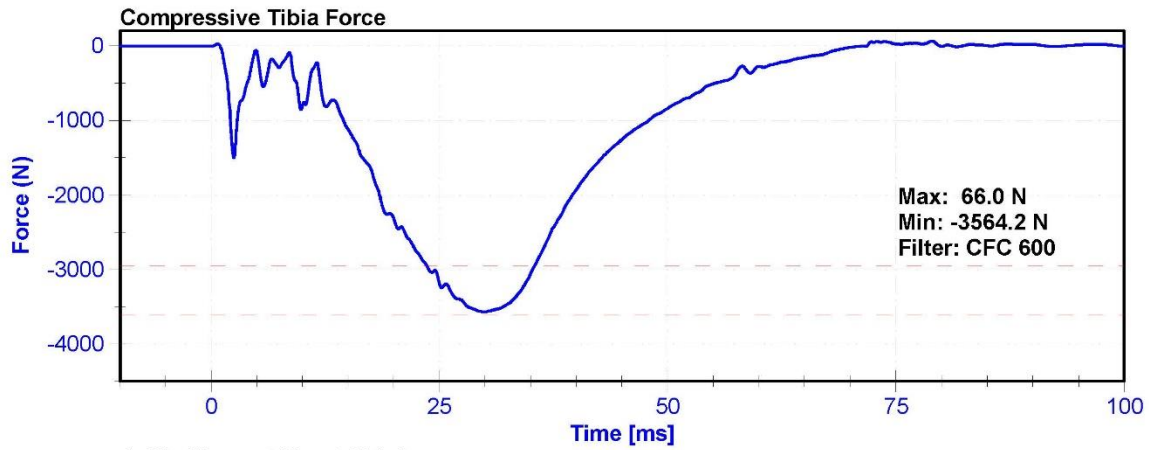
ATD Manufacturer	Humanetics	Test Technician	M.Hartung
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.2	Pass
Humidity	10	70	%	44.9	Pass
Velocity	4.9	5.1	m/s	4.948	Pass
Lower Tibia Compressive Force	-3613	-2956	N	-3564.2	Pass
Peak Moment about Y-Axis	77.1	94.2	Nm	79.35	Pass
Peak Rotation about Y-Axis	32.7	39.9	deg	33.08	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C15018	7/15/2015	7/14/2016
Lower Tibia Load Cell	Denton 4929J	LC-121 Fz	2/10/2015	2/10/2016
Ankle Y Potentiometer	Contelec PD210-4B	DS-0524	2/18/2015	2/18/2016



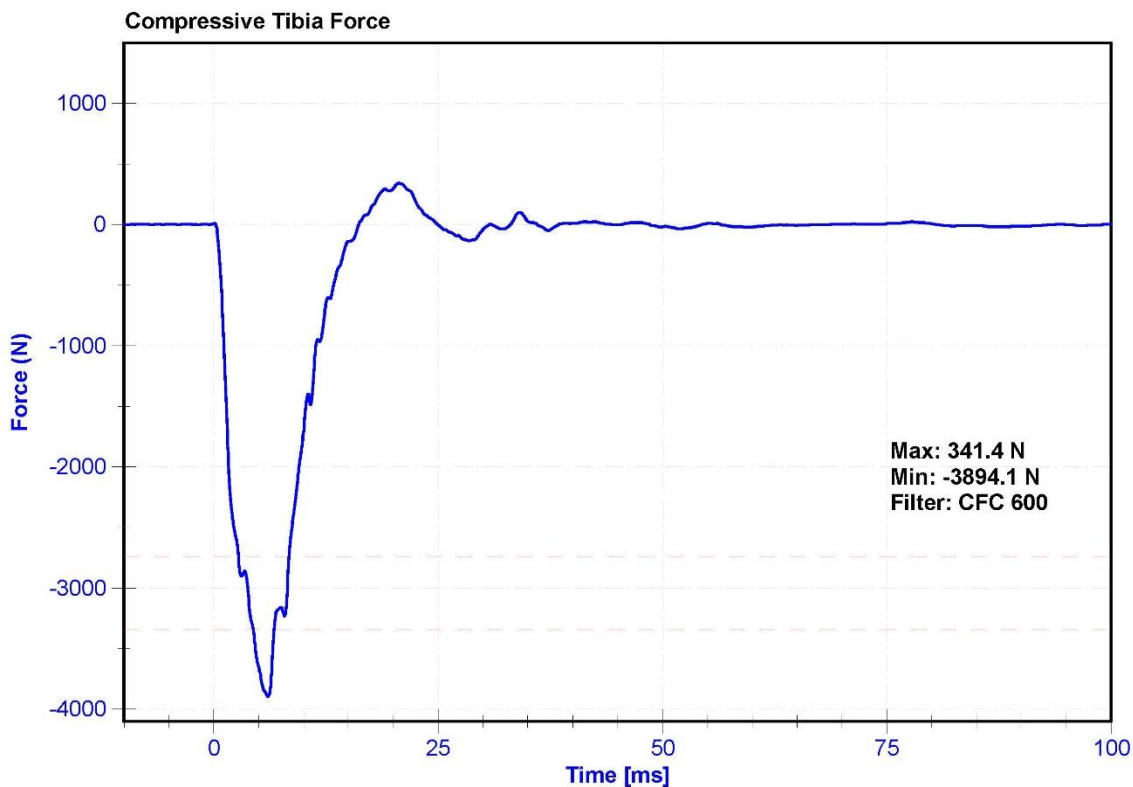
ATD Manufacturer	Humanetics	Test Technician	M.Hartung
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21	Pass
Humidity	10	70	%	43.2	Pass
Velocity	3.9	4.1	m/s	4.053	Pass
Lower Tibia Compressive Force	-3346	-2738	N	-3894.1	Fail

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C15018	7/15/2015	7/14/2016
Lower Tibia Load Cell	Denton 4929J	LC-121 Fz	2/10/2015	2/10/2016



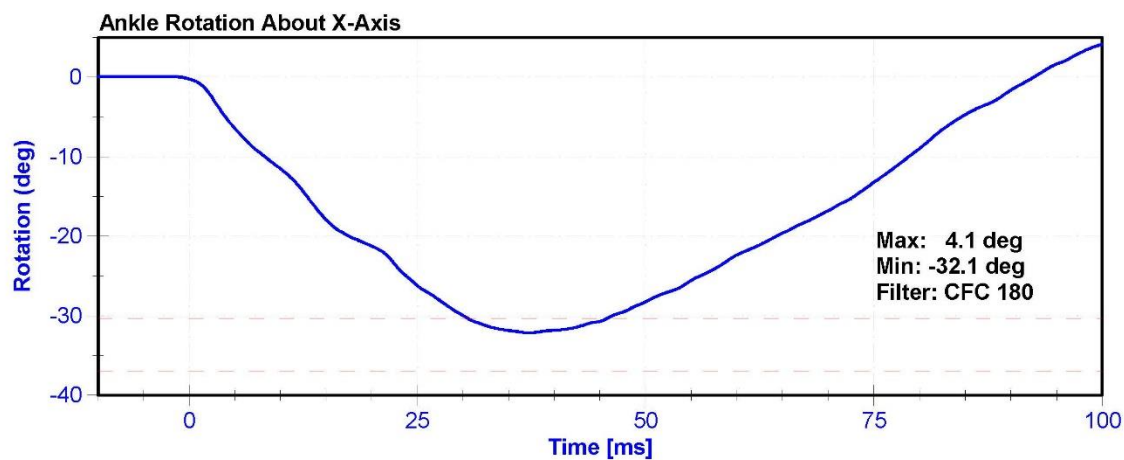
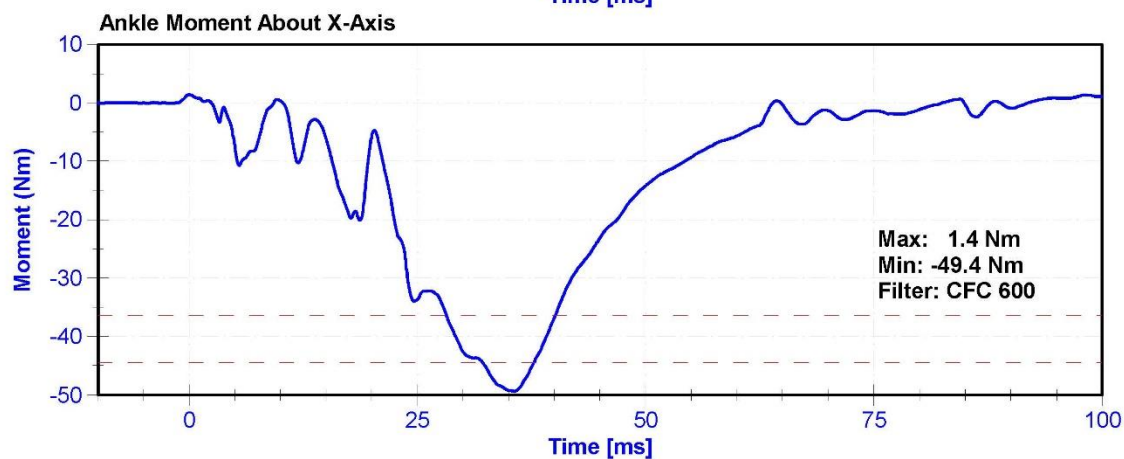
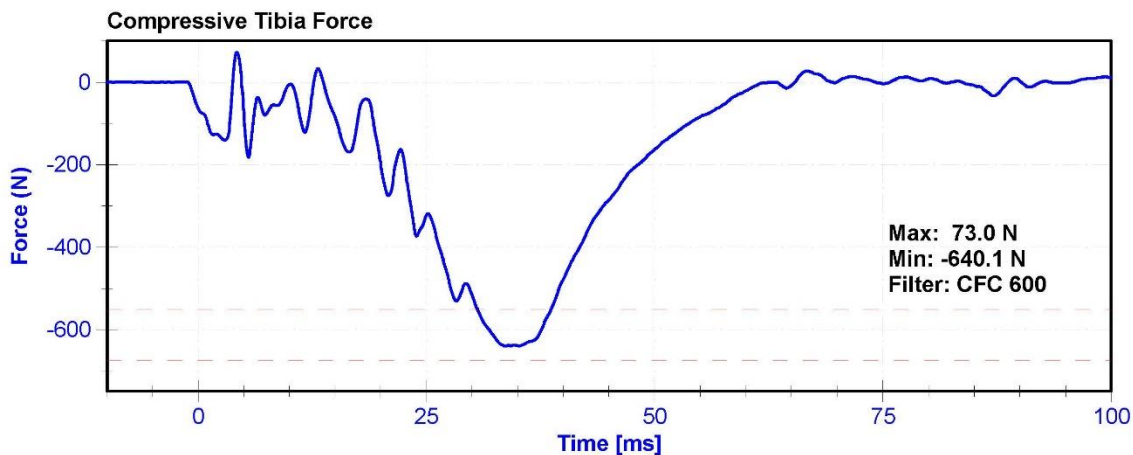
ATD Manufacturer	Humanetics	Test Technician	M.Hartung
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.1	Pass
Humidity	10	70	%	45.5	Pass
Velocity	1.9	2.1	m/s	2.016	Pass
Lower Tibia Compressive Force	-675	-552	N	-640.1	Pass
Peak Moment about X-Axis	-44.4	-36.3	Nm	-49.36	Fail
Peak Rotation about X-Axis	-37.0	-30.3	deg	-32.11	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C15018	7/15/2015	7/14/2016
Lower Tibia Load Cell	Denton 4929J	LC-121 Fz	2/10/2015	2/10/2016
Ankle Y Potentiometer	Contelec PD210-4B	DS-0525	2/18/2015	2/18/2016





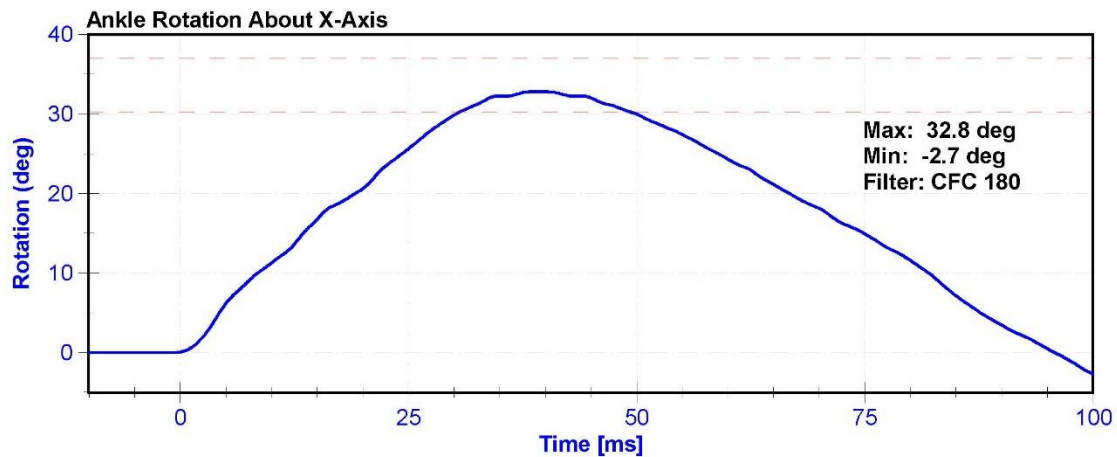
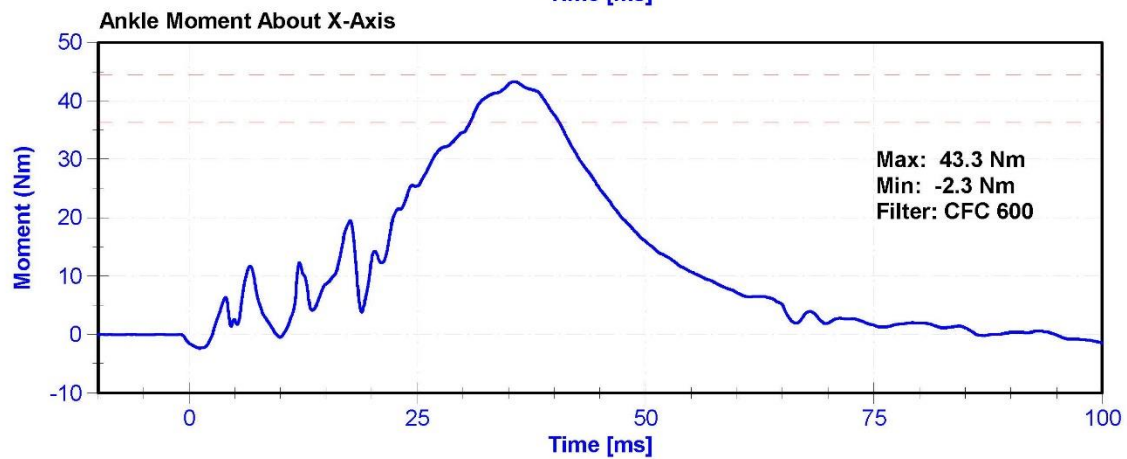
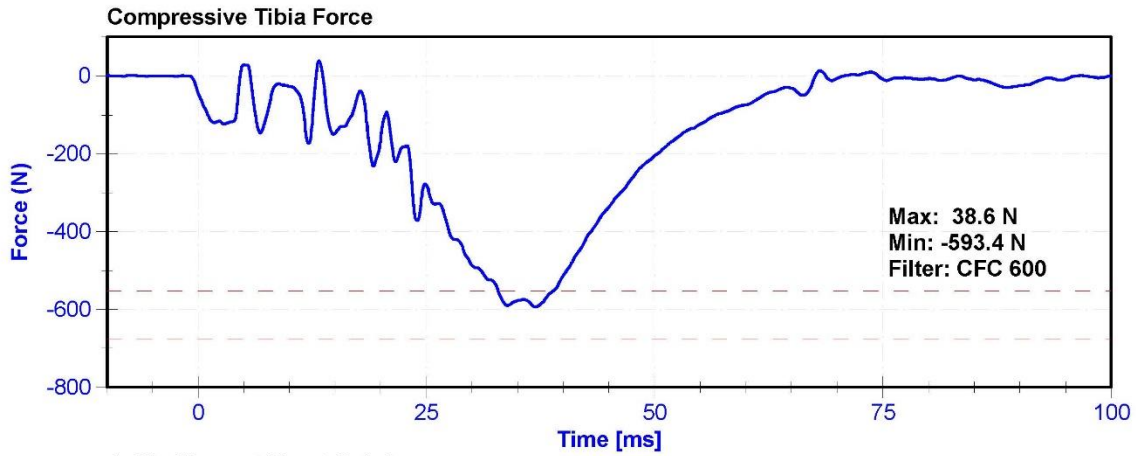
ATD Manufacturer	Humanetics	Test Technician	M.Hartung
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.1	Pass
Humidity	10	70	%	45.7	Pass
Velocity	1.9	2.1	m/s	2.016	Pass
Lower Tibia Compressive Force	-675	-552	N	-593.4	Pass
Peak Moment about X-Axis	36.3	44.4	Nm	43.27	Pass
Peak Rotation about X-Axis	30.3	37.0	deg	32.78	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C15018	7/15/2015	7/14/2016
Lower Tibia Load Cell	Denton 4929J	LC-121 Fz	2/10/2015	2/10/2016
Ankle Y Potentiometer	Contelec PD210-4B	DS-0525	2/18/2015	2/18/2016





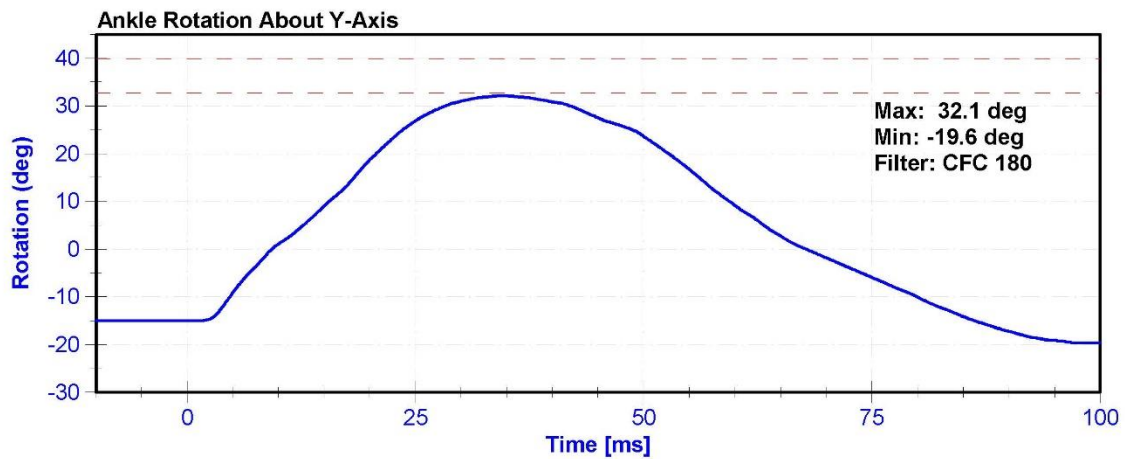
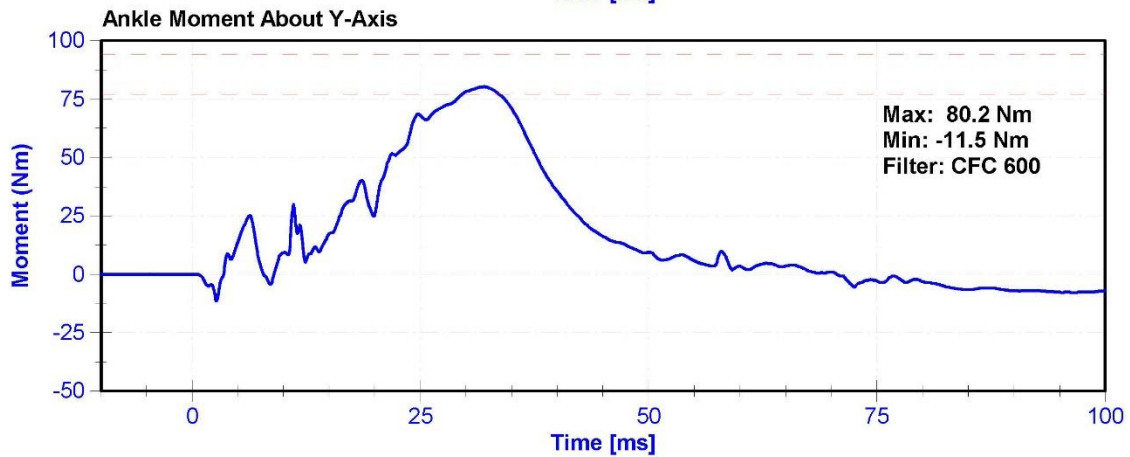
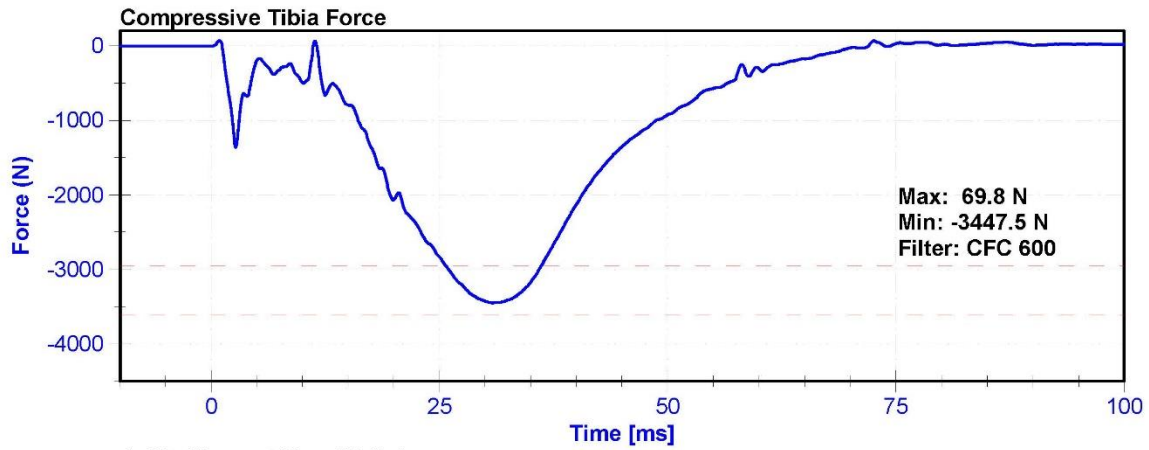
ATD Manufacturer	Humanetics	Test Technician	M.Hartung
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.3	Pass
Humidity	10	70	%	48.7	Pass
Velocity	4.9	5.1	m/s	4.916	Pass
Lower Tibia Compressive Force	-3613	-2956	N	-3447.5	Pass
Peak Moment about Y-Axis	77.1	94.2	Nm	80.21	Pass
Peak Rotation about Y-Axis	32.7	39.9	deg	32.14	Fail

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C15018	7/15/2015	7/14/2016
Lower Tibia Load Cell	Denton 4929J	LC-166 Fz	2/9/2015	2/9/2016
Ankle Y Potentiometer	Contelec PD210-4B	DS-0526	2/19/2015	2/19/2016



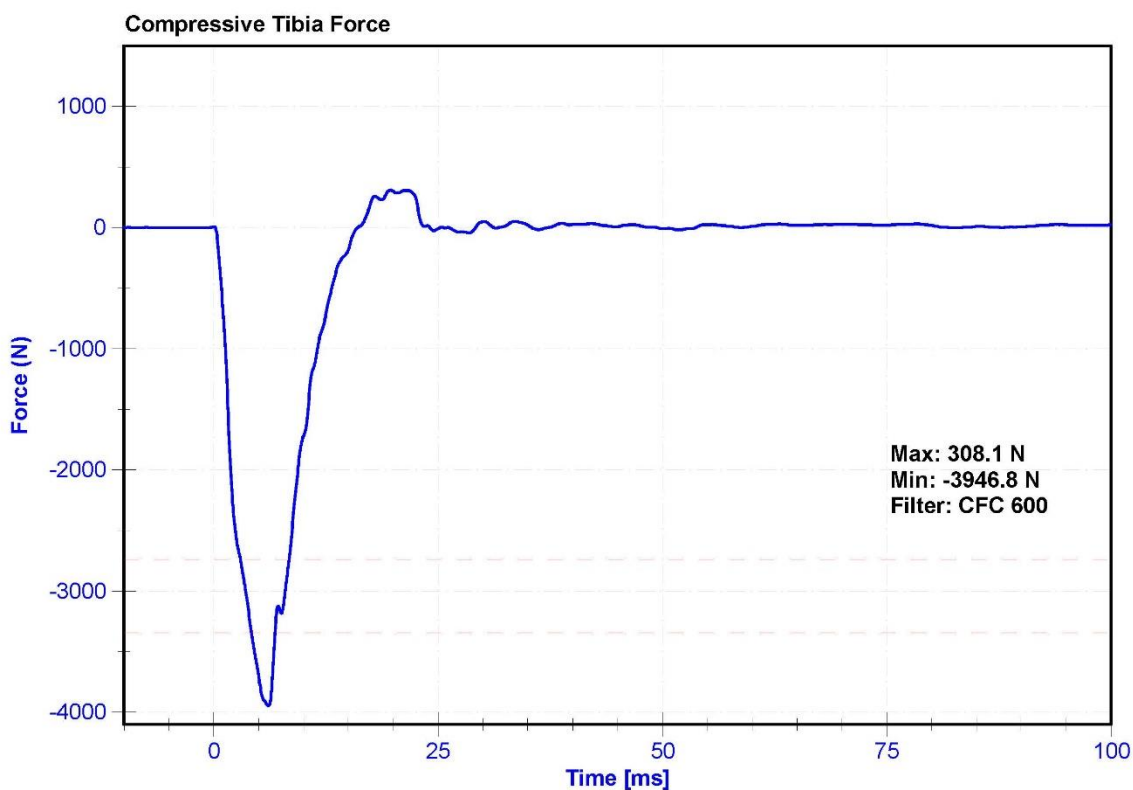
ATD Manufacturer	Humanetics	Test Technician	M.Hartung
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.3	Pass
Humidity	10	70	%	48.3	Pass
Velocity	3.9	4.1	m/s	4.032	Pass
Lower Tibia Compressive Force	-3346	-2738	N	-3946.8	Fail

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C15018	7/15/2015	7/14/2016
Lower Tibia Load Cell	Denton 4929J	LC-166 Fz	2/9/2015	2/9/2016





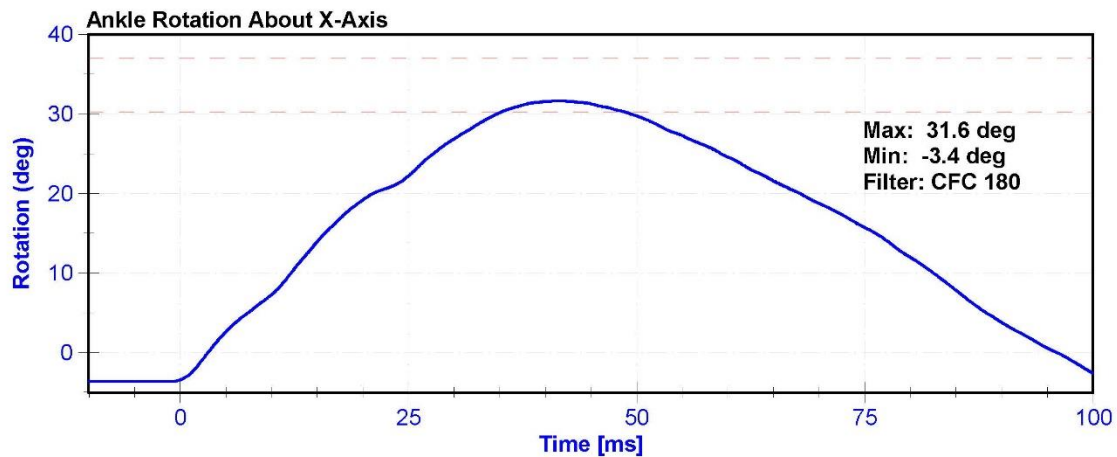
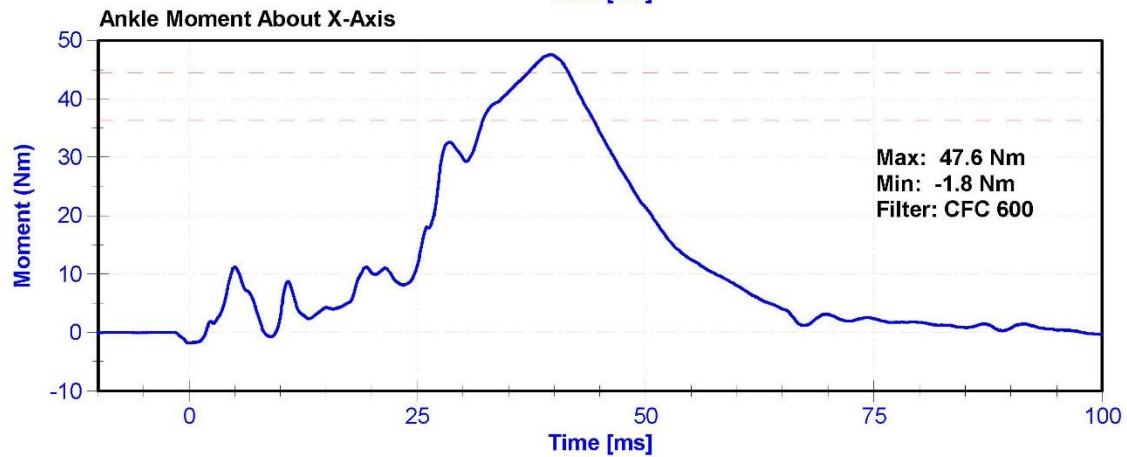
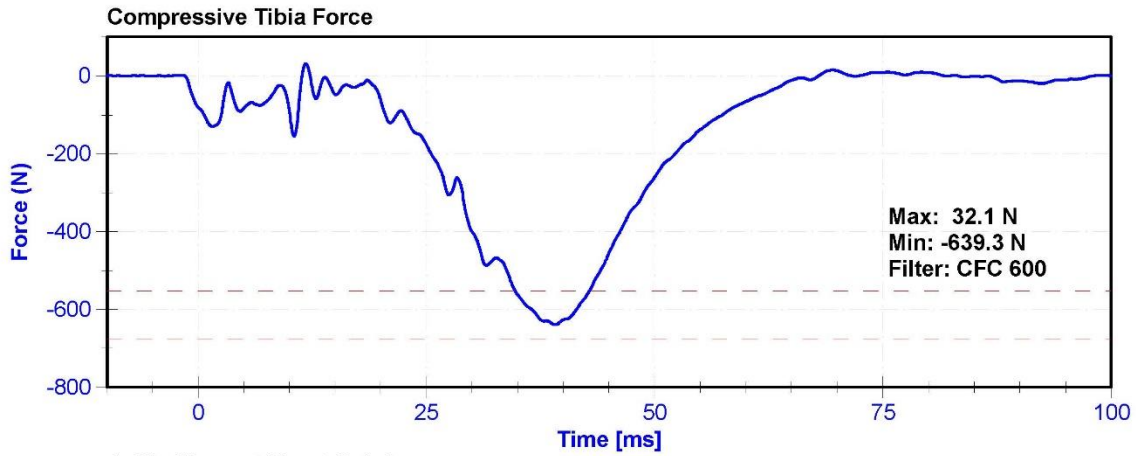
ATD Manufacturer	Humanetics	Test Technician	M.Hartung
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.3	Pass
Humidity	10	70	%	51.0	Pass
Velocity	1.9	2.1	m/s	1.949	Pass
Lower Tibia Compressive Force	-675	-552	N	-639.3	Pass
Peak Moment about X-Axis	36.3	44.4	Nm	47.58	Fail
Peak Rotation about X-Axis	30.3	37.0	deg	31.61	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C15018	7/15/2015	7/14/2016
Lower Tibia Load Cell	Denton 4929J	LC-166 Fz	2/9/2015	2/9/2016
Ankle Y Potentiometer	Contelec PD210-4B	DS-0528	2/19/2015	2/19/2016





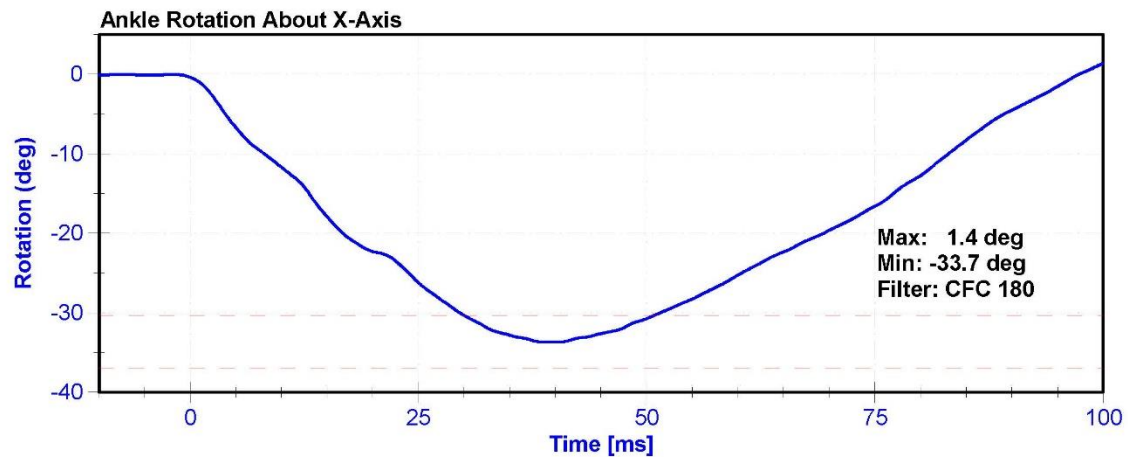
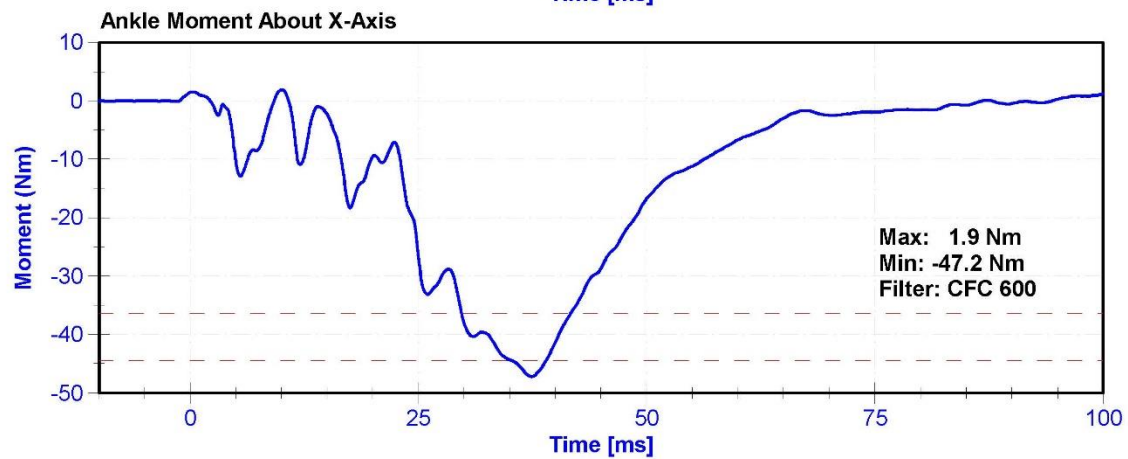
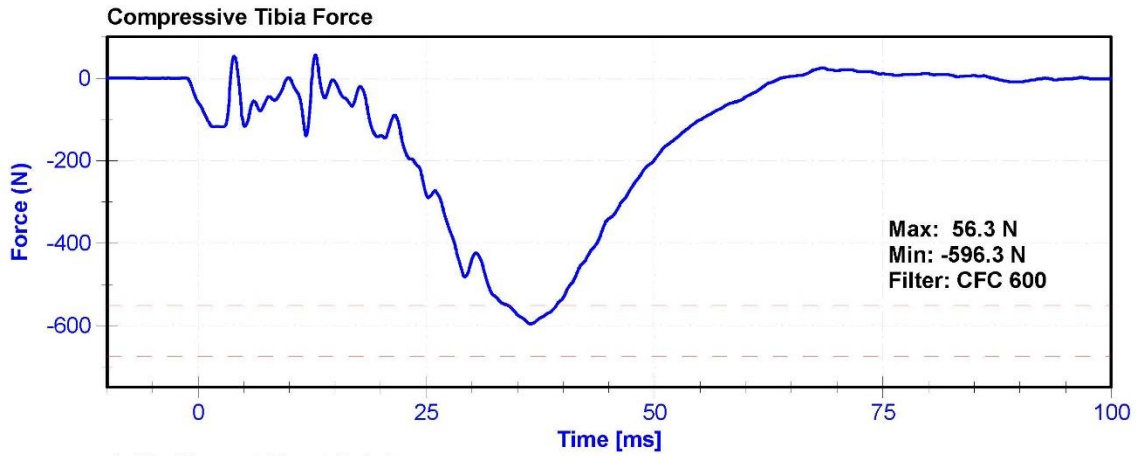
ATD Manufacturer	Humanetics	Test Technician	M.Hartung
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.3	Pass
Humidity	10	70	%	51.6	Pass
Velocity	1.9	2.1	m/s	1.944	Pass
Lower Tibia Compressive Force	-675	-552	N	-596.3	Pass
Peak Moment about X-Axis	-44.4	-36.3	Nm	-47.18	Fail
Peak Rotation about X-Axis	-37.0	-30.3	deg	-33.66	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C15018	7/15/2015	7/14/2016
Lower Tibia Load Cell	Denton 4929J	LC-166 Fz	2/9/2015	2/9/2016
Ankle Y Potentiometer	Contelec PD210-4B	DS-0528	2/19/2015	2/19/2016



Hybrid III 5th Female 019 DUMMY CALIBRATIONS

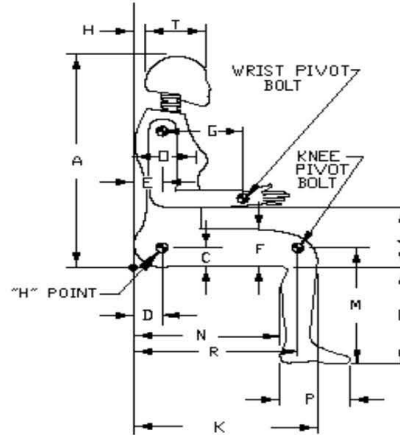
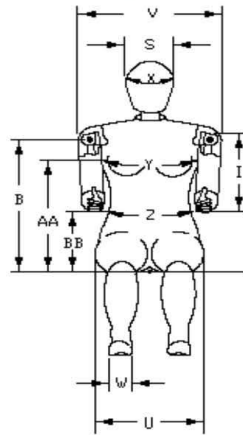


External Measurements - Hybrid 3 - 5th Female

Technician: M.Hartung

Date: 1/6/2016

Dummy Serial Number: 19



Symbol	Description	Specification (mm)		Result (mm)	Pass/Fail
A	Sitting Height	775	800	778	Pass
B	Shoulder Pivot Height	432	457	446	Pass
C	H-Point Height	81	86	85	Pass
D	H-Point from Backline	145	150	147	Pass
E	Shoulder Pivot from Backline	69	84	74	Pass
F	Thigh Clearance	119	135	133	Pass
G	Back of Elbow to Wrist Pivot	244	259	250	Pass
H	Head Back to Backline	43	48	45	Pass
I	Shoulder to Elbow Length	277	297	282	Pass
J	Elbow Rest Height	183	203	190	Pass
K	Buttock to Knee Length	521	546	539	Pass
L	Popliteal Height	356	376	361	Pass
M	Knee Pivot Height	394	419	400	Pass
N	Buttock Popliteal Length	414	439	427	Pass
O	Chest Depth without Jacket	175	191	182	Pass
P	Foot Length (right)	219	234	227	Pass
R	Buttock To Knee Pivot Length	457	483	473	Pass
S	Head Breadth	137	147	145	Pass
T	Head Depth	178	188	180	Pass
U	Hip Breadth	300	315	311	Pass
V	Shoulder Breadth	351	366	360	Pass
W	Foot Breadth	79	94	82	Pass
X	Head Circumference	528	549	530	Pass
Y	Chest Circumference with Jacket	851	881	872	Pass
Z	Waist Circumference	460	790	768	Pass
AA	Reference Location (Chest Circumference)	333	358	338	Pass
BB	Reference Location (Waist Circumference)	160	170	166	Pass

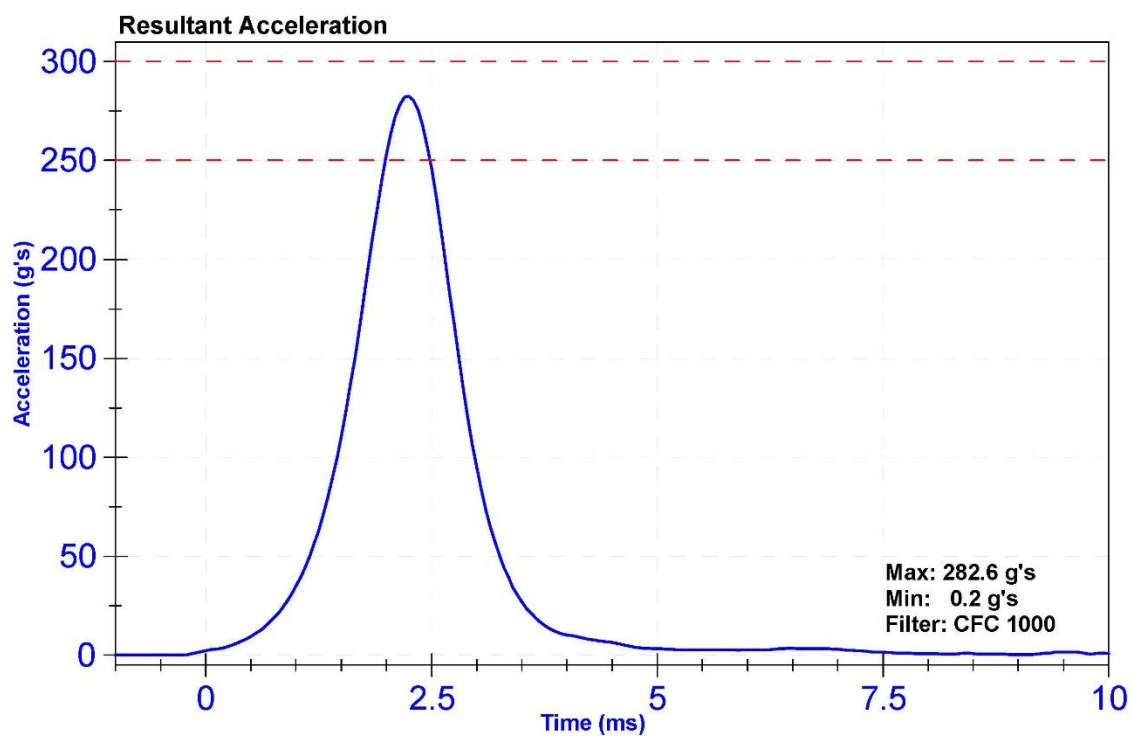
ATD Manufacturer	ATSC	Test Technician	M.Hartung
ATD Serial Number	019	Laboratory Supervisor	M.Goehle

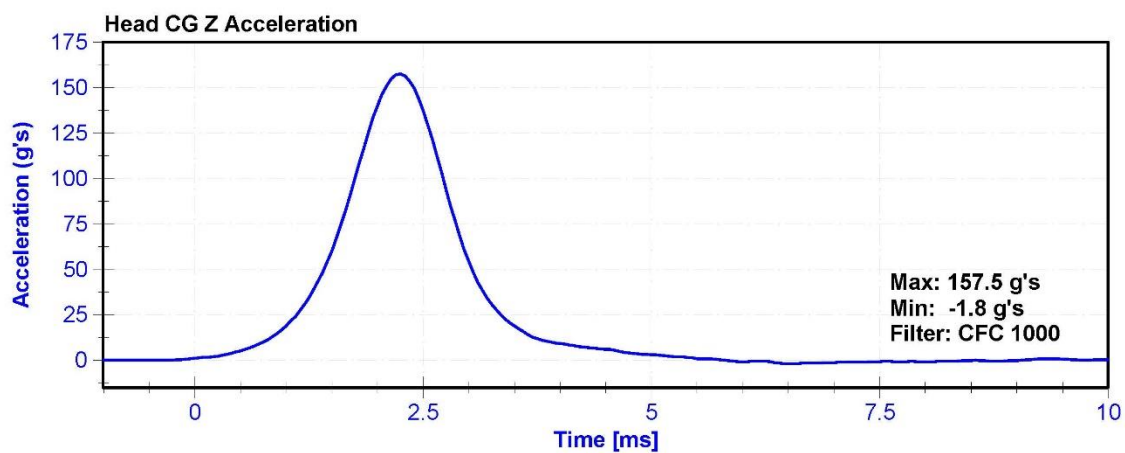
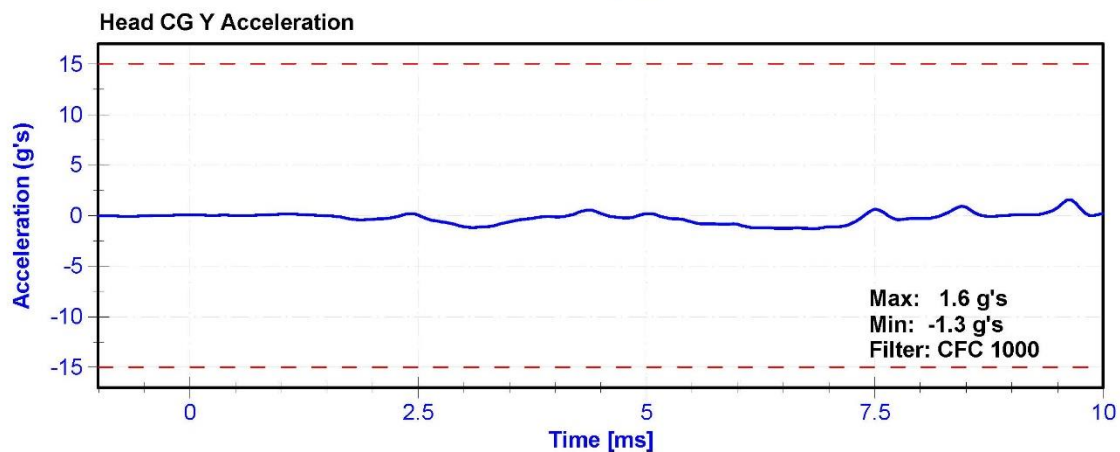
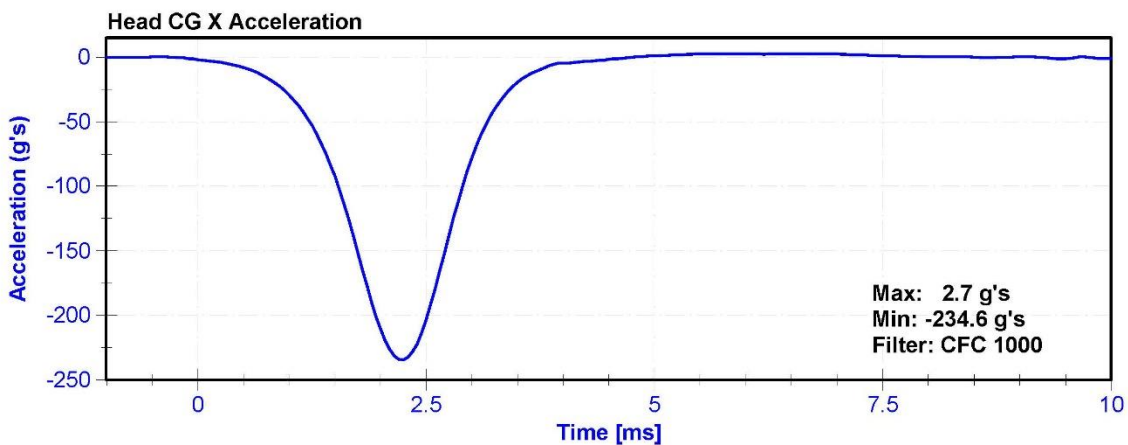
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	21.9	Pass
Humidity	10	70	%	19.7	Pass
Resultant Acceleration	250	300	g's	282.6	Pass
Oscillation	0	10	%	1.2	Pass
Lateral Acceleration	-15	15	g's	1.6	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
X Accelerometer	Endevco 7264C	AC-P79591	10/30/2015	4/29/2016
Y Accelerometer	Endevco 7264C	AC-P49181	10/30/2015	4/29/2016
Z Accelerometer	Endevco 7264C	AC-P49214	10/30/2015	4/29/2016





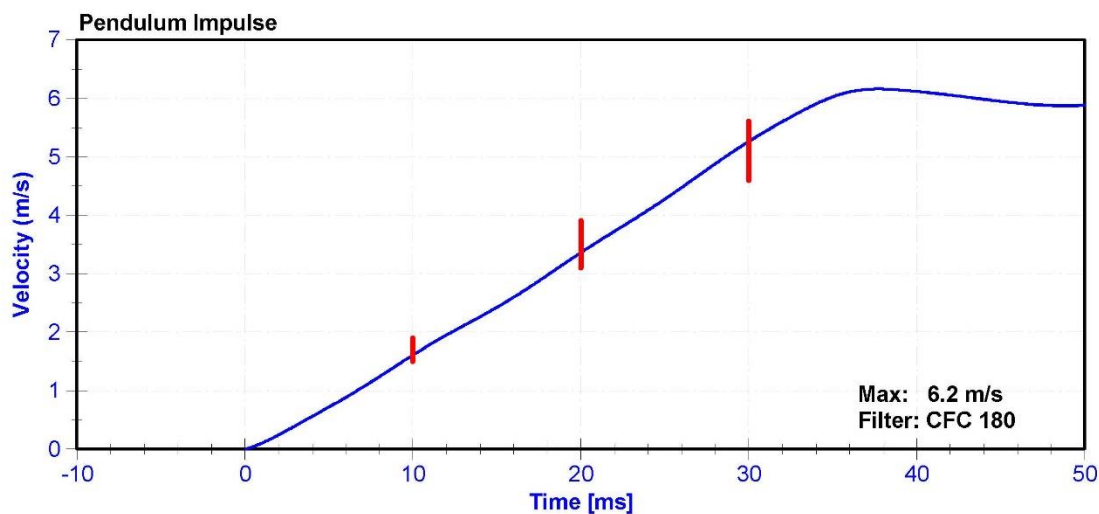
ATD Manufacturer	ATSC	Test Technician	M. Goehle
ATD Serial Number	019	Laboratory Supervisor	M. Goehle

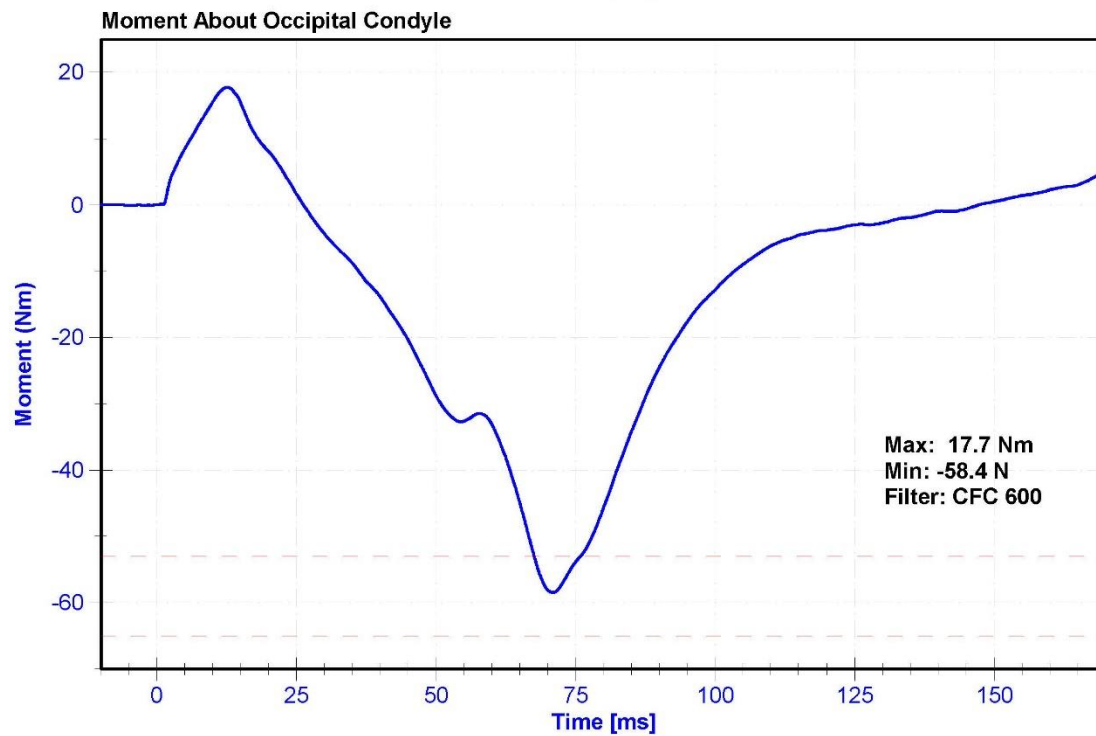
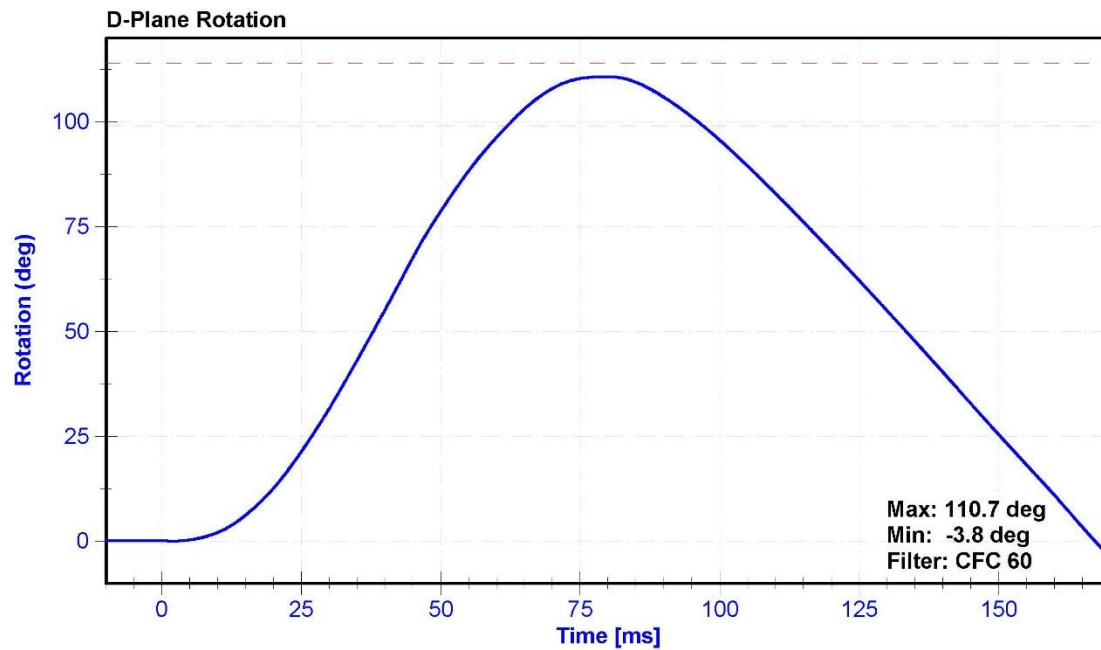
Results

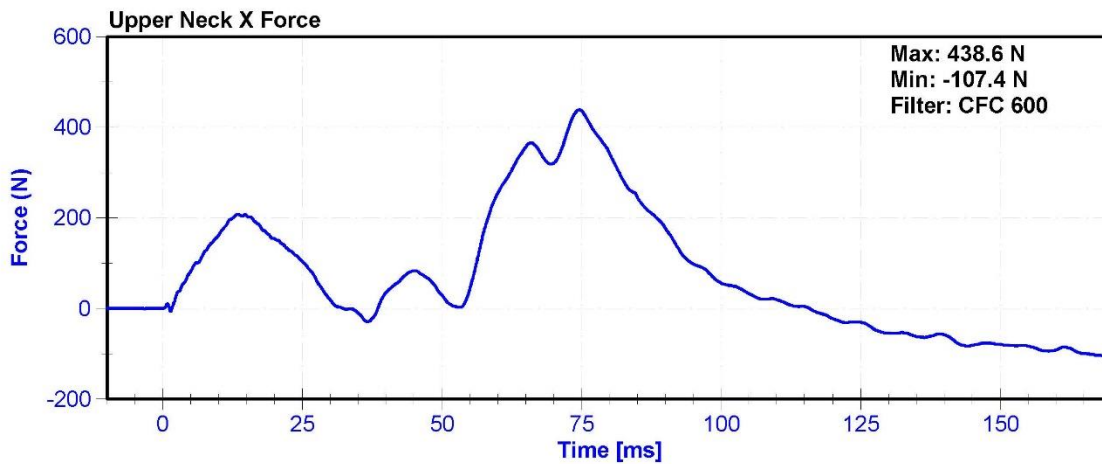
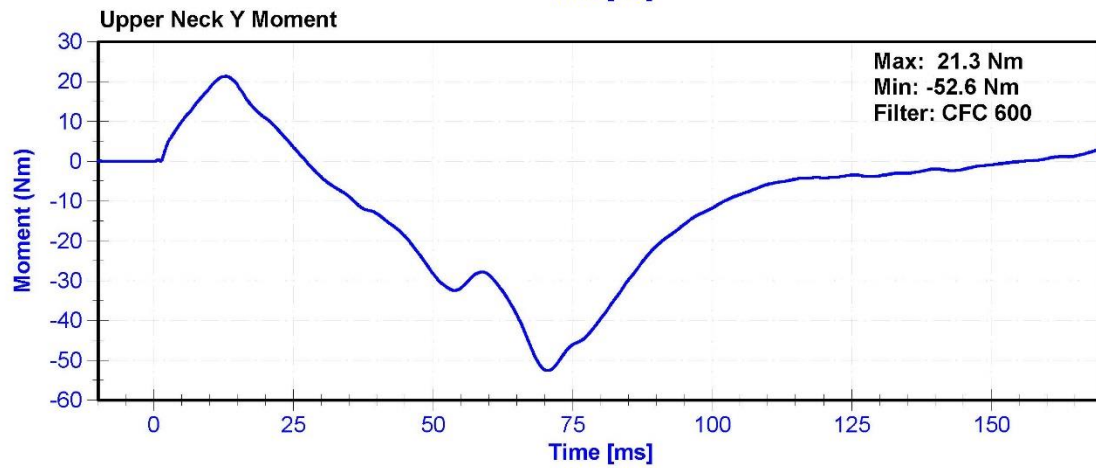
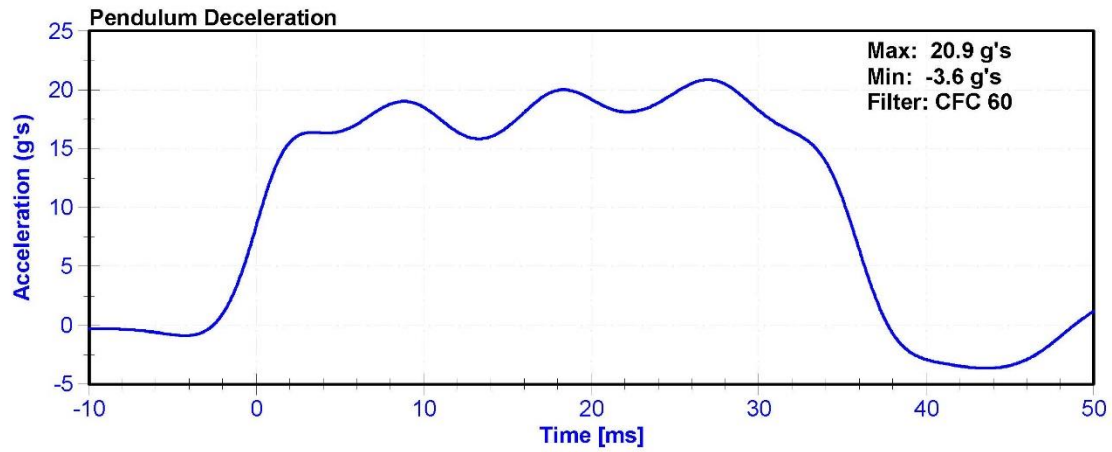
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.9	Pass
Humidity	10	70	%	17.0	Pass
Velocity	5.95	6.19	m/s	6.068	Pass
Pendulum Impulse at 10ms	1.5	1.9	m/s	1.61	Pass
Pendulum Impulse at 20ms	3.1	3.9	m/s	3.36	Pass
Pendulum Impulse at 30ms	4.6	5.6	m/s	5.26	Pass
D Plane Rotation	99	114	deg	110.7	Pass
Moment During Rotation Interval	-65	-53	Nm	-58.4	Pass
Moment Decay to -10Nm	94	114	ms	103.5	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-AH5F3	5/7/2015	5/6/2016
Pendulum Potentiometer	ETI SP22G	DS-PendPot	9/28/2015	9/27/2016
Condyle Potentiometer	ETI SP22G	DS-CondPot	9/28/2015	9/27/2016
Upper Neck Load Cell	Denton 1716ATF	LC-2184 Fx	6/29/2015	6/28/2016







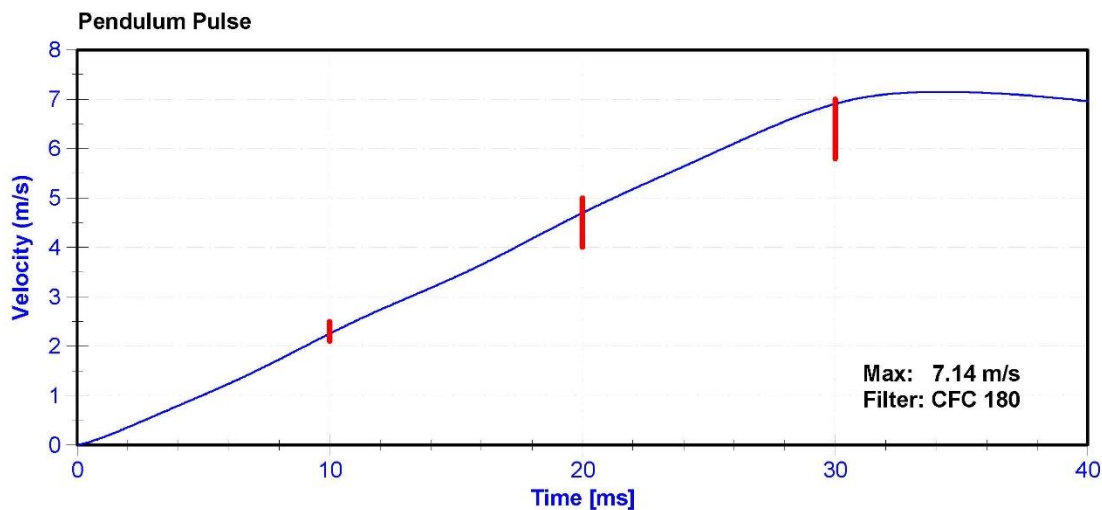
ATD Manufacturer	ATSC	Test Technician	M. Goehle
ATD Serial Number	019	Laboratory Supervisor	M. Goehle

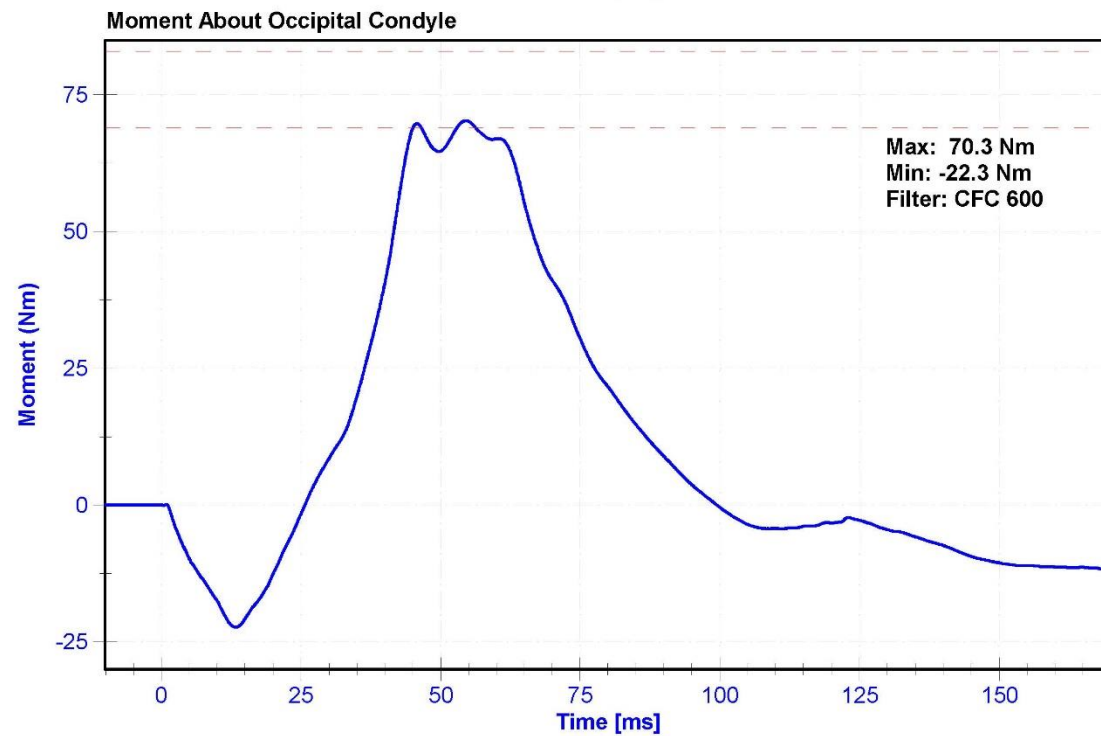
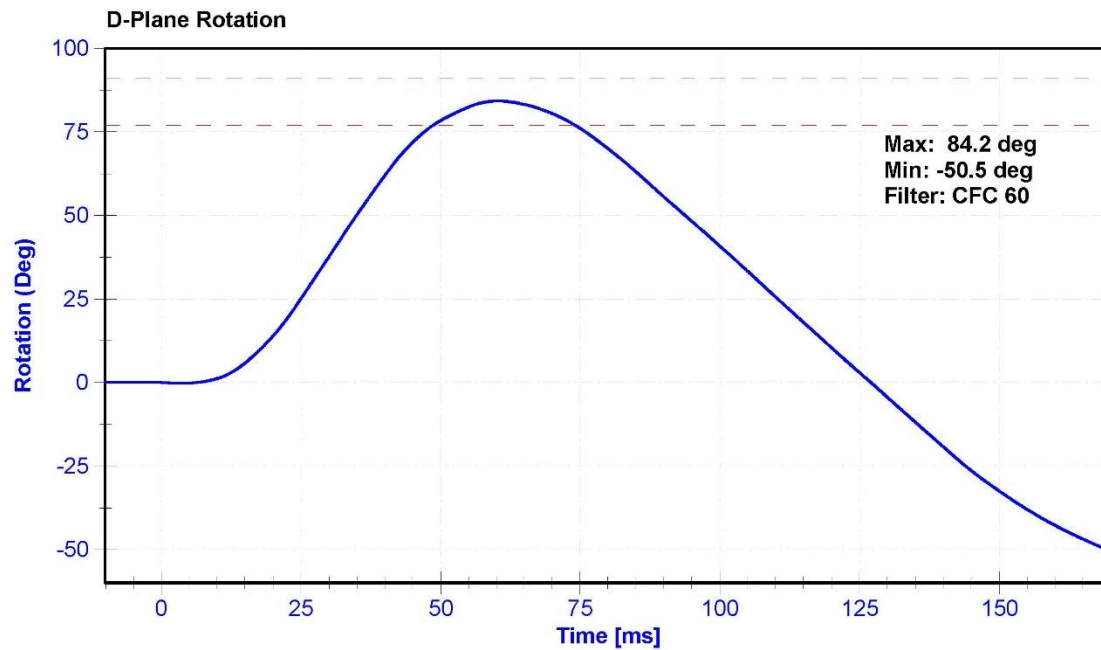
Results

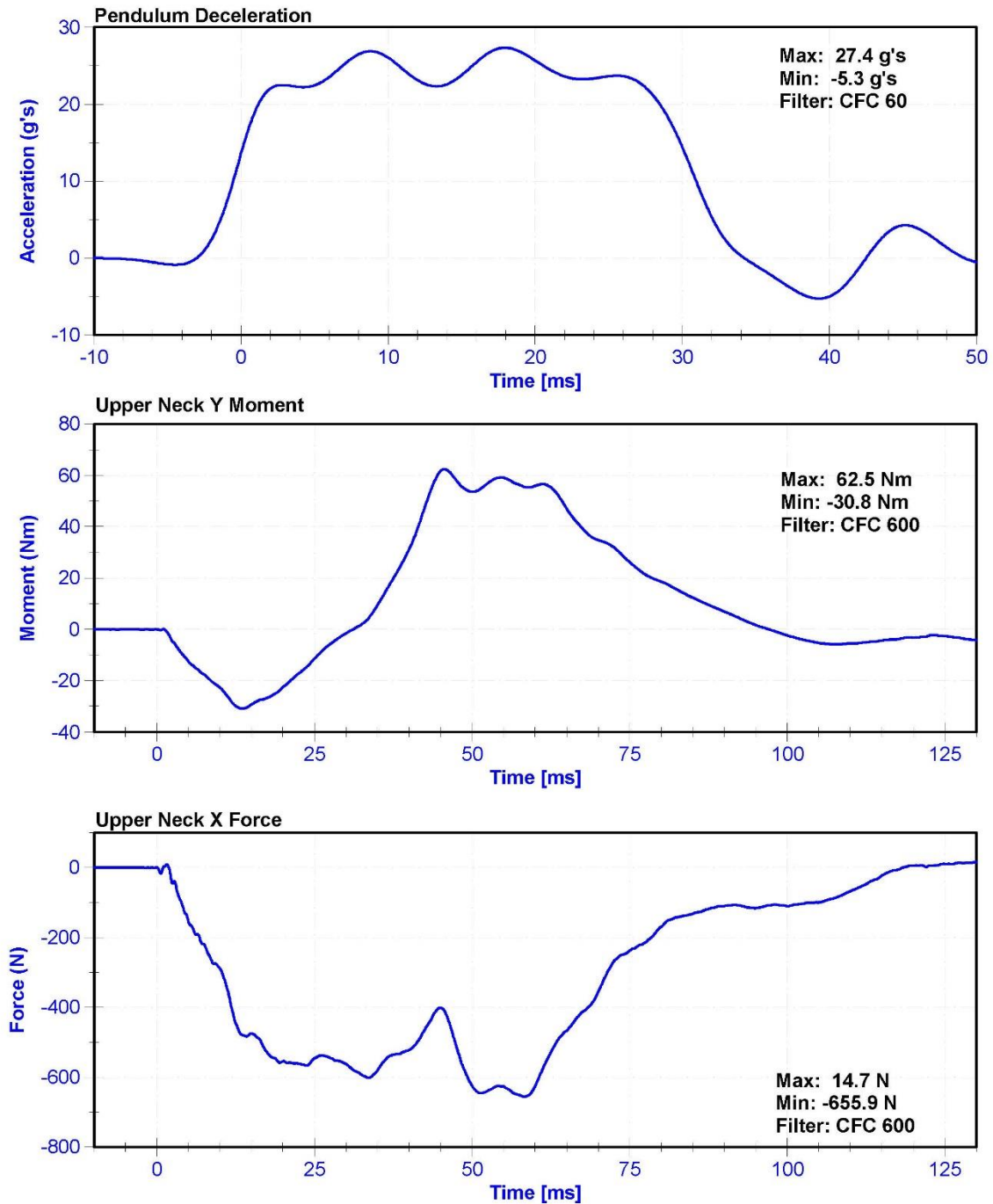
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.0	Pass
Humidity	10	70	%	17.0	Pass
Velocity	6.89	7.13	m/s	6.979	Pass
Pendulum Impulse at 10ms	2.1	2.5	m/s	2.26	Pass
Pendulum Impulse at 20ms	4.0	5.0	m/s	4.70	Pass
Pendulum Impulse at 30ms	5.8	7.0	m/s	6.90	Pass
Max D Plane Rotation	77	91	deg	84.2	Pass
Max Moment During Rotation Interval	69	83	Nm	70.3	Pass
Moment Decay to 10.0 Nm	80	100	ms	89.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-AH5F3	5/7/2015	5/6/2016
Pendulum Potentiometer	ETI SP22G	DS-PendPot	9/28/2015	9/27/2016
Condyle Potentiometer	ETI SP22G	DS-CondPot	9/28/2015	9/27/2016
Upper Neck Load Cell	Denton 1716ATF	LC-2184 Fx	6/29/2015	6/28/2016







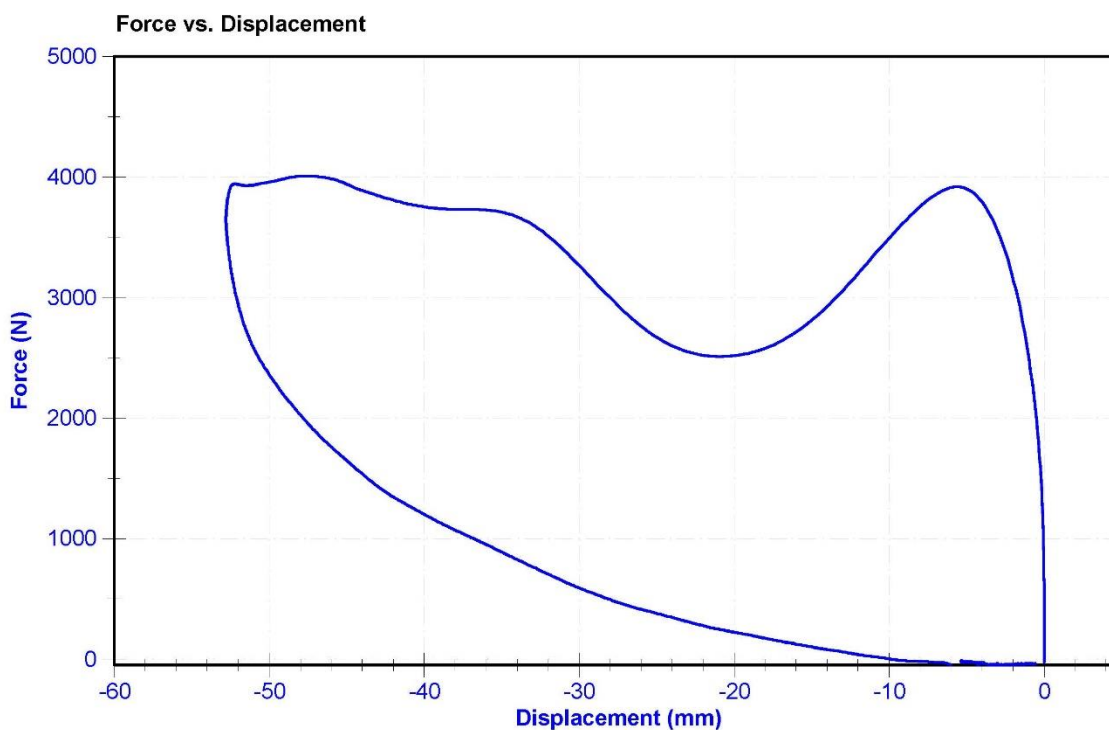
ATD Manufacturer	ASTC	Test Technician	M. Geesey
ATD Serial Number	019	Laboratory Supervisor	M. Goehle

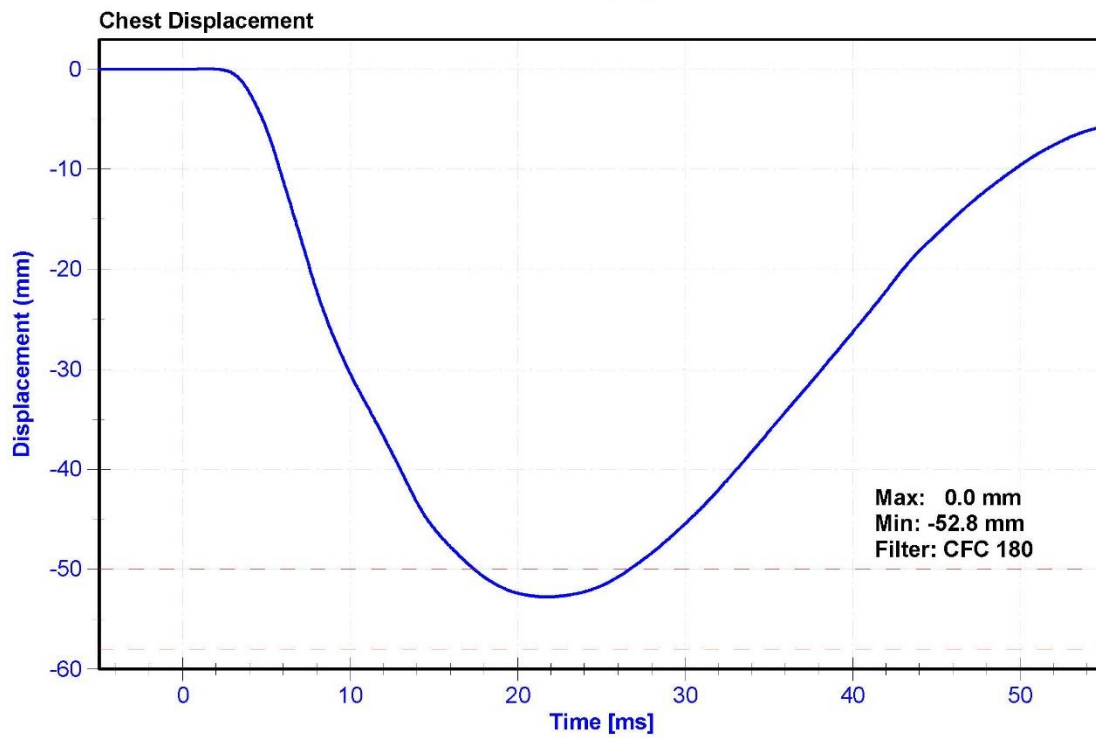
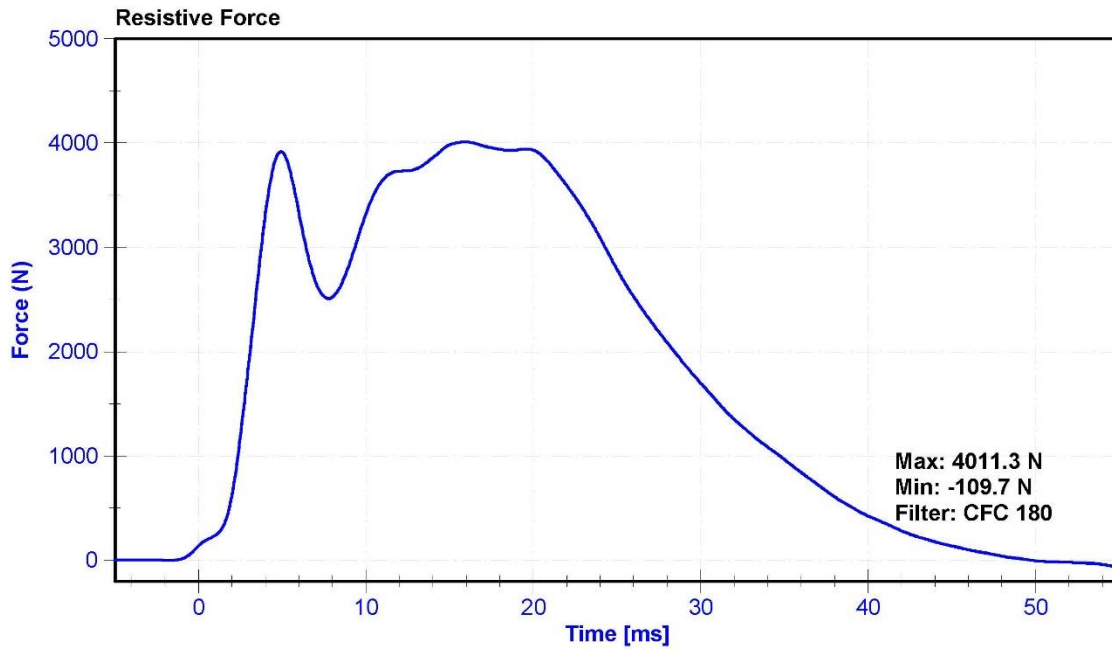
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.8	Pass
Humidity	10	70	%	16.3	Pass
Velocity	6.59	6.83	m/s	6.773	Pass
Chest Deflection	-58	-50	mm	-52.8	Pass
Maximum Resistive Force (50 to 58mm)	3900	4400	N	3959.5	Pass
Maximum Resistive Force (18 to 50mm)	0	4600	N	4011.3	Pass
Hysteresis	69	85	%	78.3	Pass

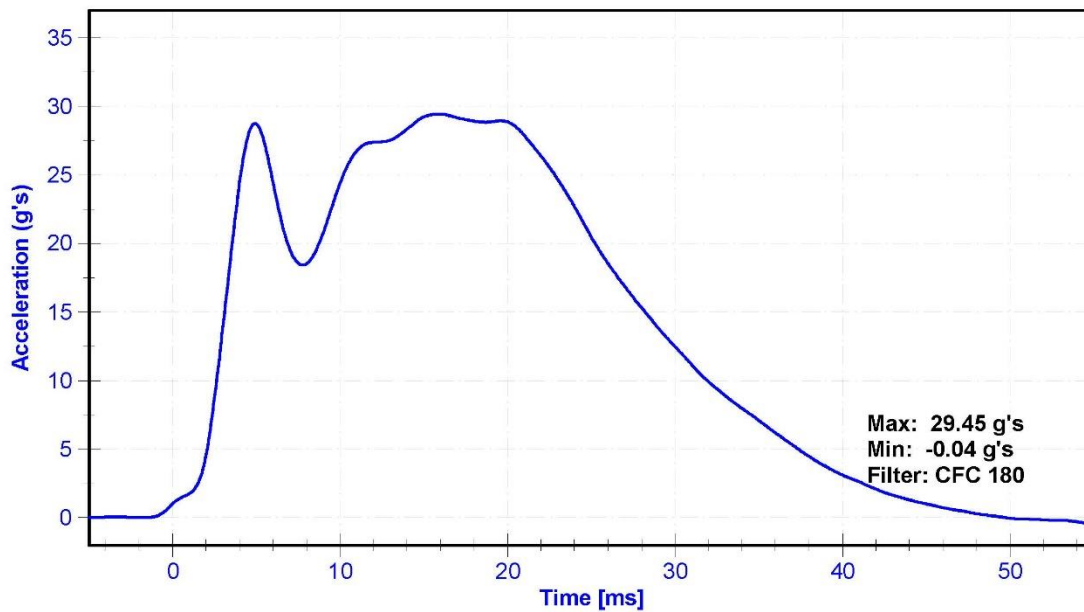
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C15018	7/15/2015	7/14/2016
Chest Potentiometer	Servo 14CB1	DS-FEM019	7/1/2015	6/30/2016

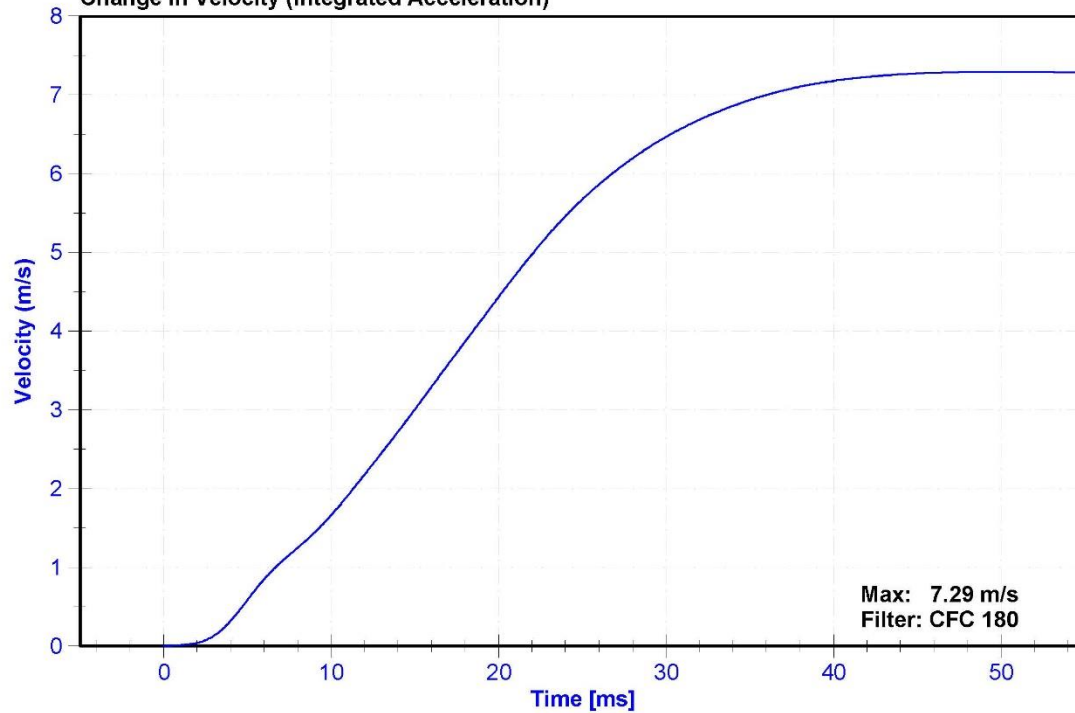




Probe Acceleration



Change in Velocity (Integrated Acceleration)



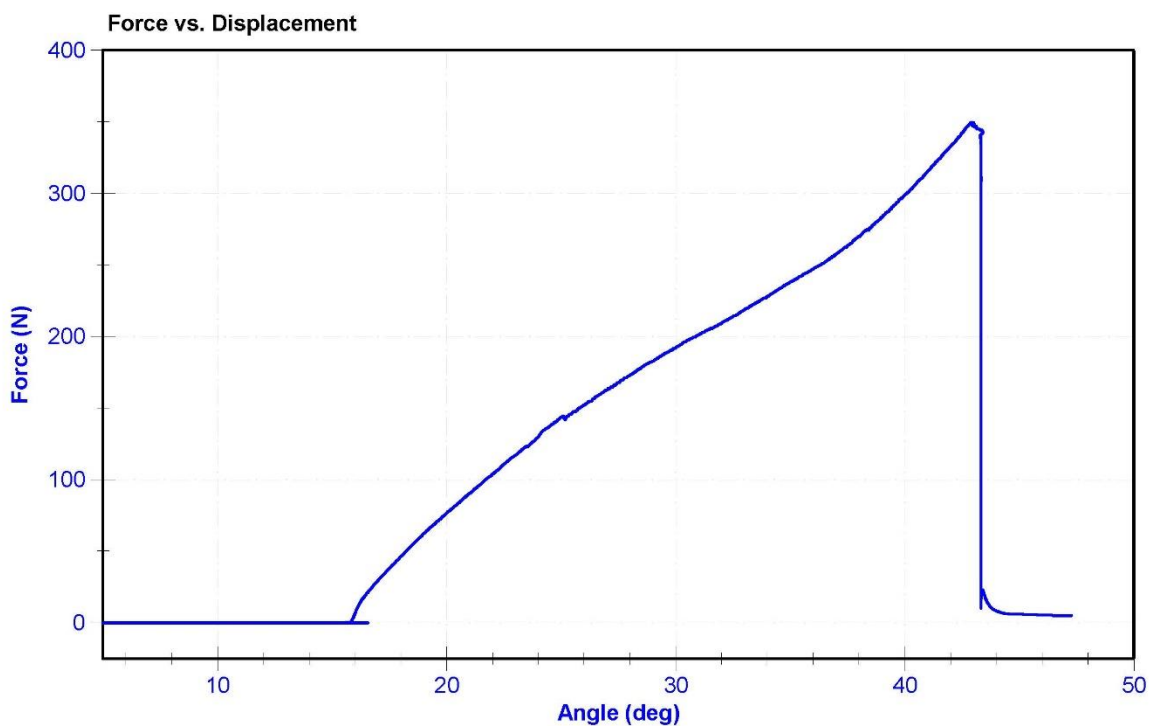
ATD Manufacturer	ATSC	Test Technician	M.Hartung
ATD Serial Number	019	Laboratory Supervisor	M.Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.6	25.6	°C	21.5	Pass
Humidity	10	70	%	17.7	Pass
Initial Angle	0	20	deg	15.4	Pass
Force at 45 Degrees	320	390	N	349.6	Pass
Return Angle Relative to Initial	0	8	deg	5.8	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Potentiometer	Rieker N4C-1	DS-13051548	8/14/2015	8/13/2016
Load Cell	Interface SML-200	LC-493319	8/13/2015	8/12/2016



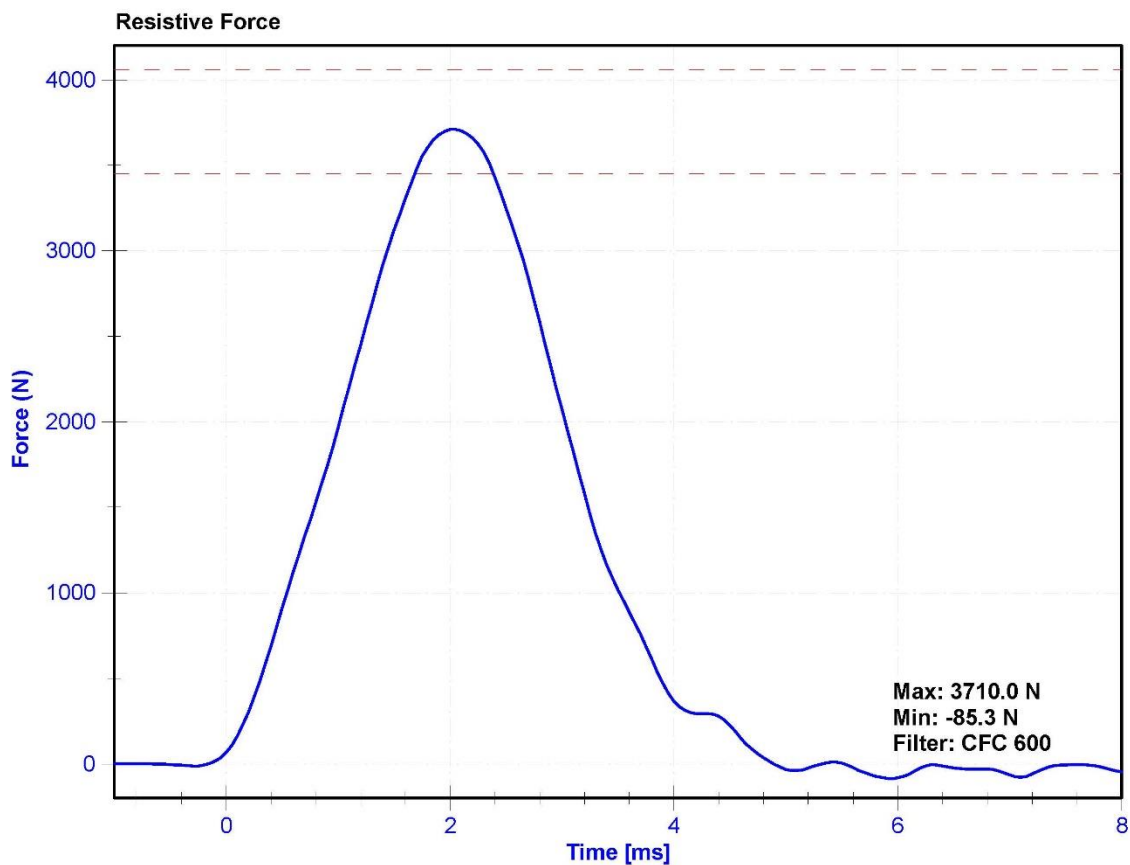
ATD Manufacturer	ASTC	Test Technician	M. Geesey
ATD Serial Number	019	Laboratory Supervisor	M. Goehle

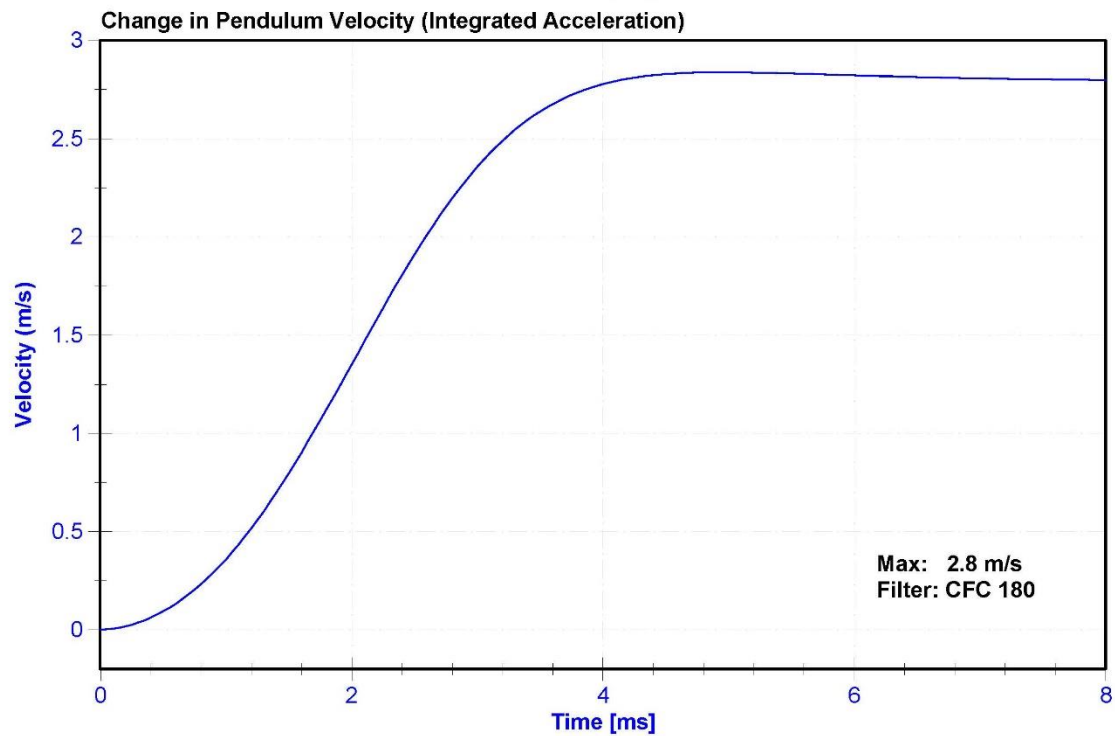
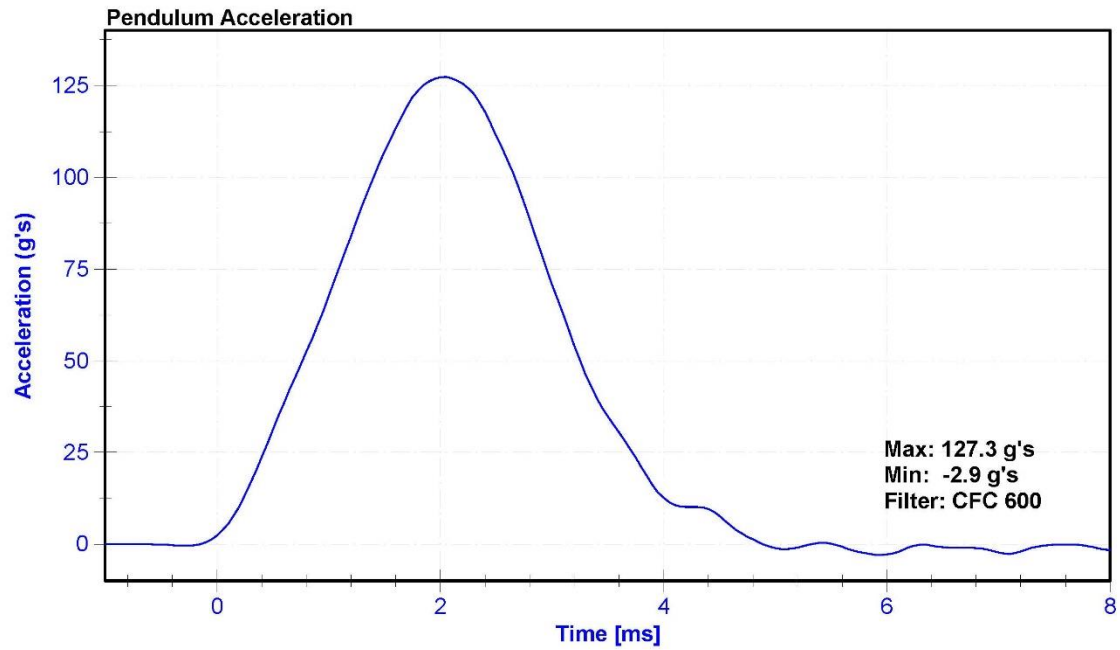
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	21.5	Pass
Humidity	10	70	%	15.1	Pass
Velocity	2.07	2.13	m/s	2.088	Pass
Resistive Force	3450	4060	N	3710.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C15018	7/15/2015	7/14/2016





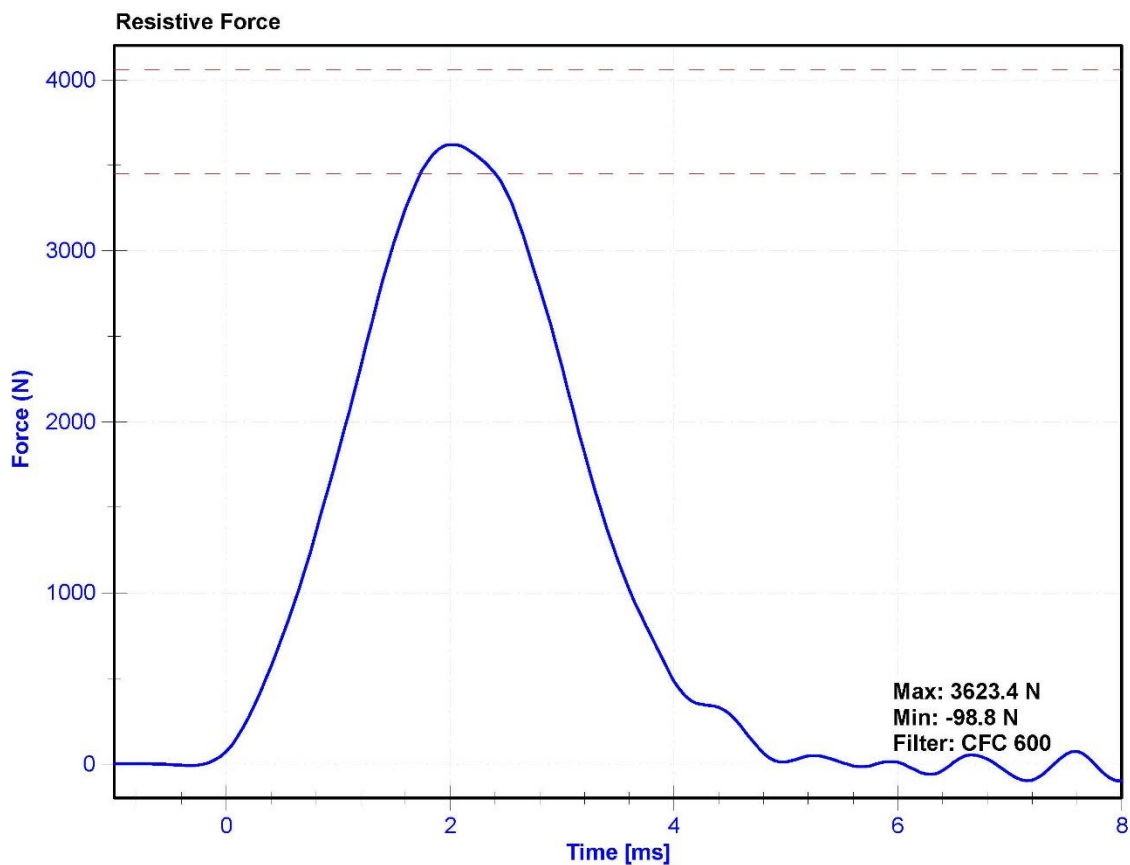
ATD Manufacturer	ASTC	Test Technician	M. Geesey
ATD Serial Number	019	Laboratory Supervisor	M. Goehle

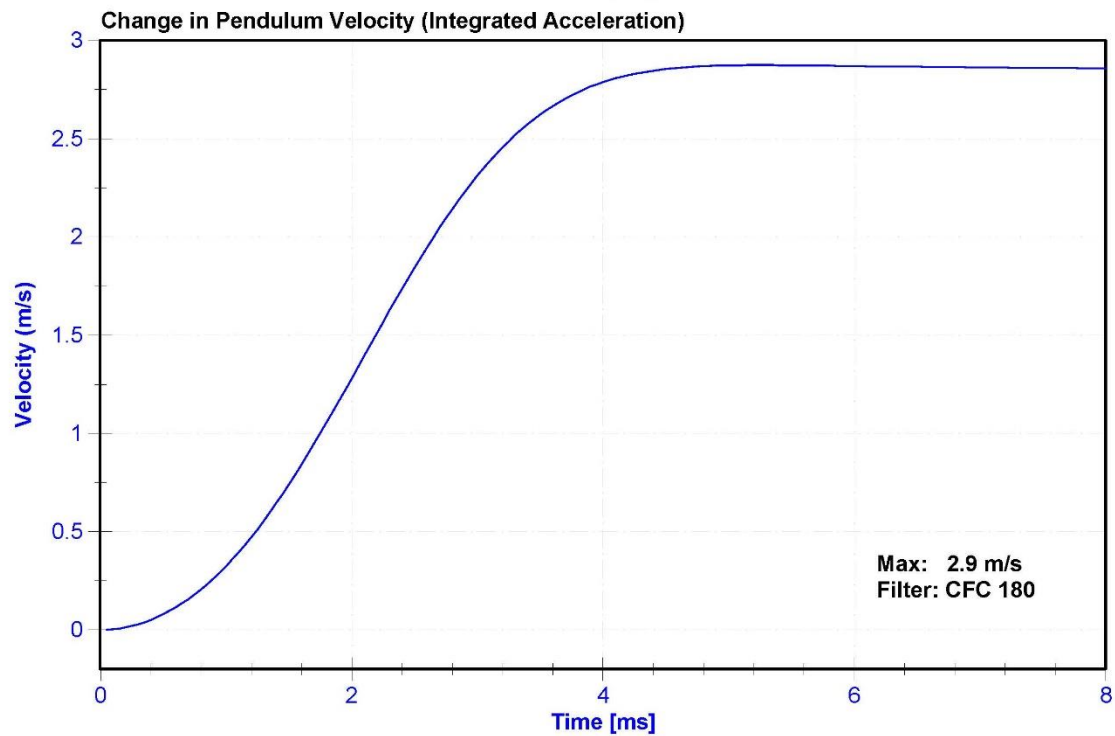
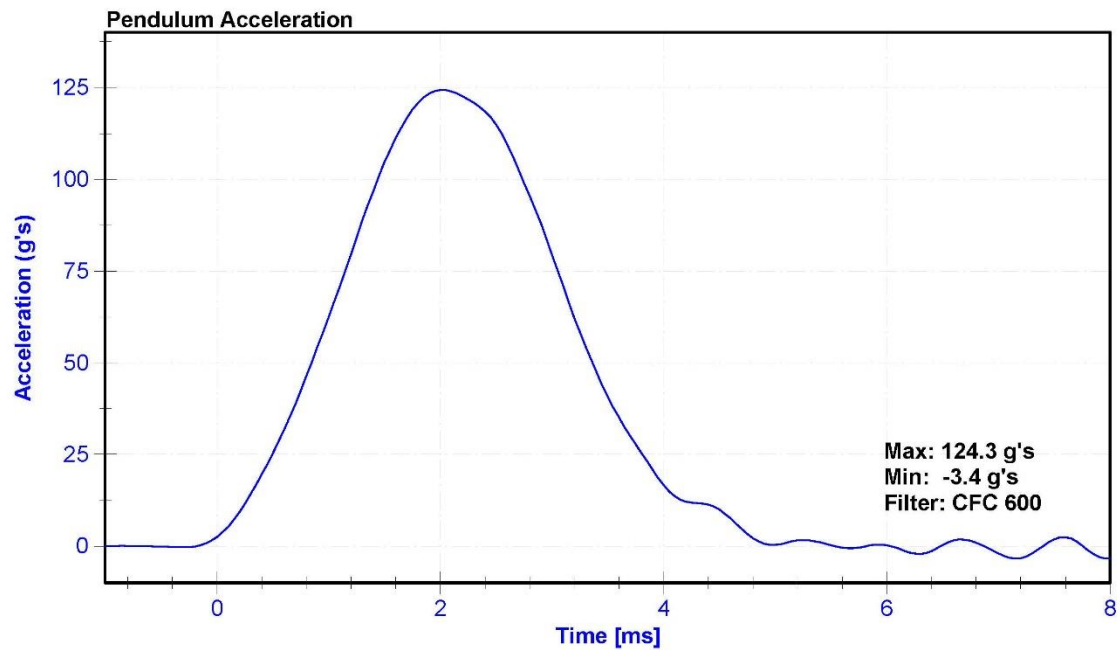
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	21.5	Pass
Humidity	10	70	%	15.1	Pass
Velocity	2.07	2.13	m/s	2.086	Pass
Resistive Force	3450	4060	N	3623.4	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C15018	7/15/2015	7/14/2016





Hybrid III 5th Female 324 DUMMY CALIBRATIONS

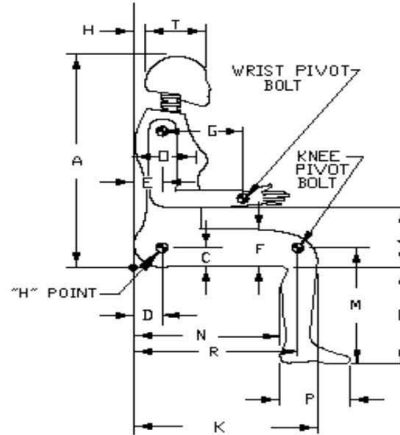
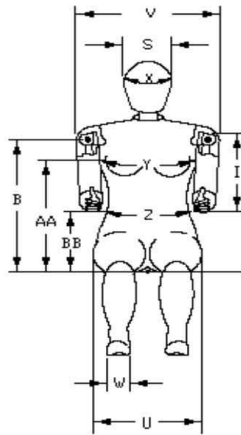


External Measurements - Hybrid 3 - 5th Female

Technician: M.Hartung

Date: 1/6/2016

Dummy Serial Number: 324



Symbol	Description	Specification (mm)		Result (mm)	Pass/Fail
A	Sitting Height	775	800	782	Pass
B	Shoulder Pivot Height	432	457	445	Pass
C	H-Point Height	81	86	86	Pass
D	H-Point from Backline	145	150	147	Pass
E	Shoulder Pivot from Backline	69	84	81	Pass
F	Thigh Clearance	119	135	130	Pass
G	Back of Elbow to Wrist Pivot	244	259	247	Pass
H	Head Back to Backline	43	48	45	Pass
I	Shoulder to Elbow Length	277	297	285	Pass
J	Elbow Rest Height	183	203	192	Pass
K	Buttock to Knee Length	521	546	530	Pass
L	Popliteal Height	356	376	366	Pass
M	Knee Pivot Height	394	419	411	Pass
N	Buttock Popliteal Length	414	439	430	Pass
O	Chest Depth without Jacket	175	191	182	Pass
P	Foot Length (right)	219	234	224	Pass
R	Buttock To Knee Pivot Length	457	483	473	Pass
S	Head Breadth	137	147	142	Pass
T	Head Depth	178	188	181	Pass
U	Hip Breadth	300	315	307	Pass
V	Shoulder Breadth	351	366	355	Pass
W	Foot Breadth	79	94	84	Pass
X	Head Circumference	528	549	536	Pass
Y	Chest Circumference with Jacket	851	881	867	Pass
Z	Waist Circumference	460	790	775	Pass
AA	Reference Location (Chest Circumference)	333	358	346	Pass
BB	Reference Location (Waist Circumference)	160	170	166	Pass

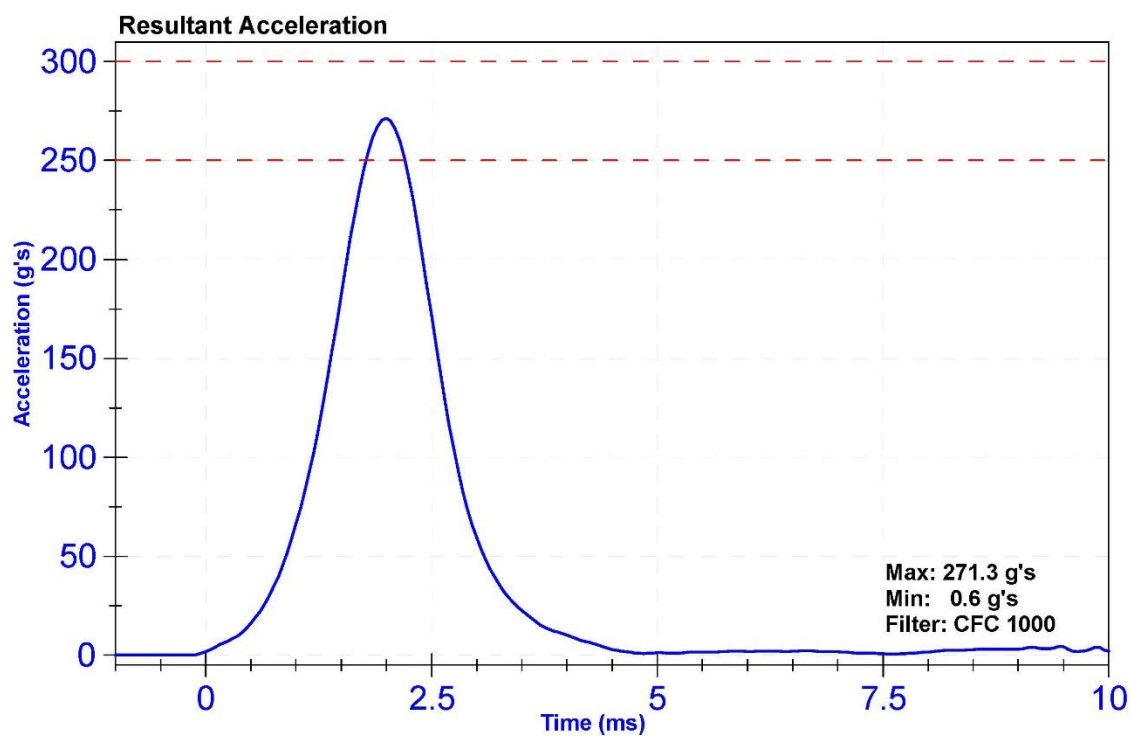
ATD Manufacturer	FTSS	Test Technician	M.Hartung
ATD Serial Number	324	Laboratory Supervisor	M.Goehle

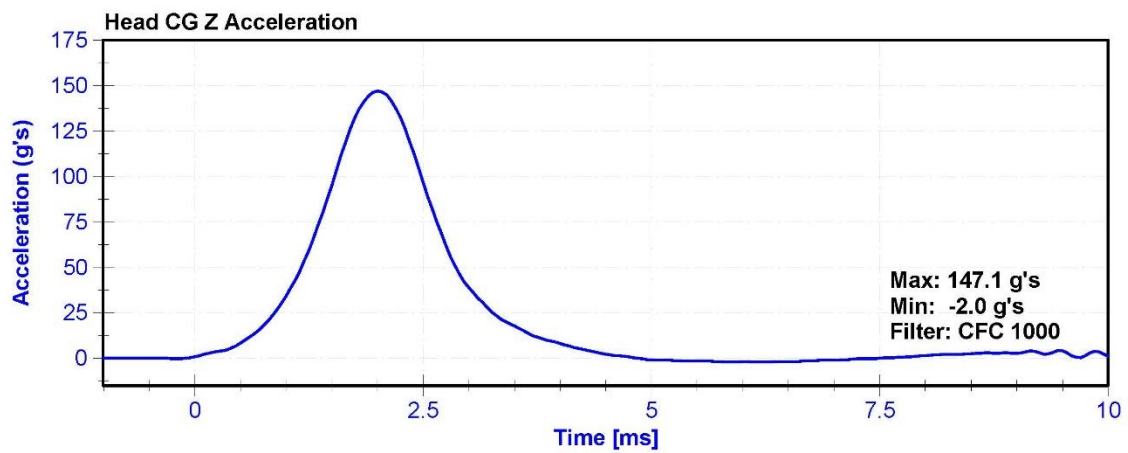
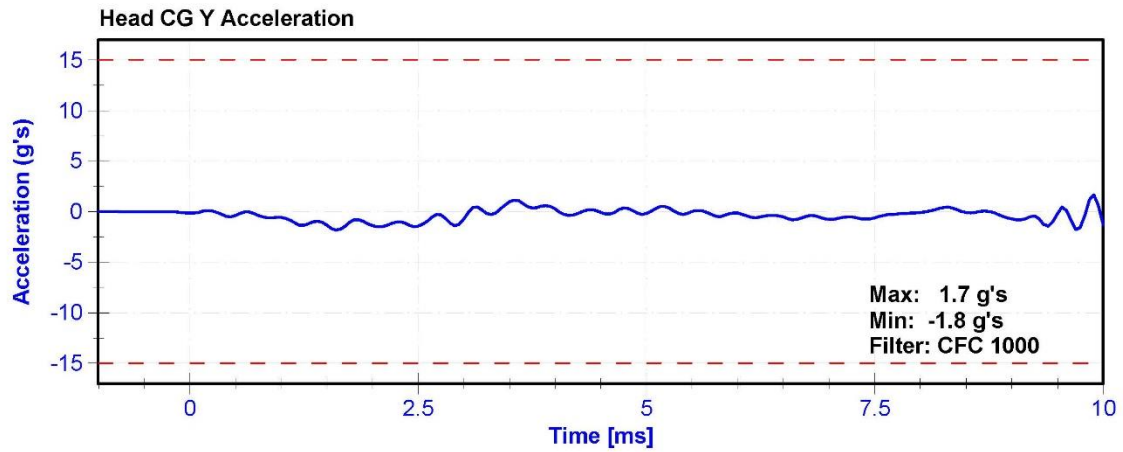
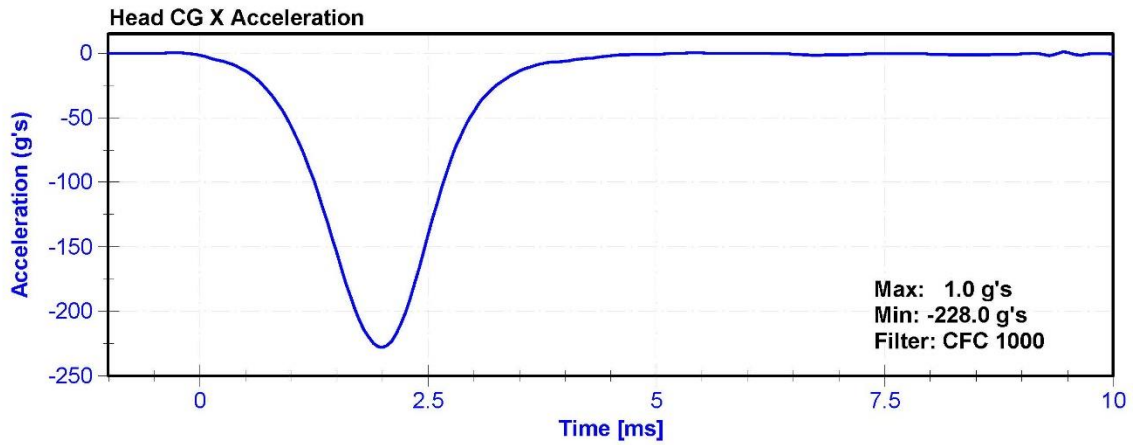
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	21.9	Pass
Humidity	10	70	%	16.9	Pass
Resultant Acceleration	250	300	g's	271.3	Pass
Oscillation	0	10	%	1.7	Pass
Lateral Acceleration	-15	15	g's	-2.4	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
X Accelerometer	Endevco 7264C	AC-P72219	12/8/2015	6/7/2016
Y Accelerometer	Endevco 7264C	AC-P49160	12/8/2015	6/7/2016
Z Accelerometer	Endevco 7264	AC-P78168	12/8/2015	6/7/2016





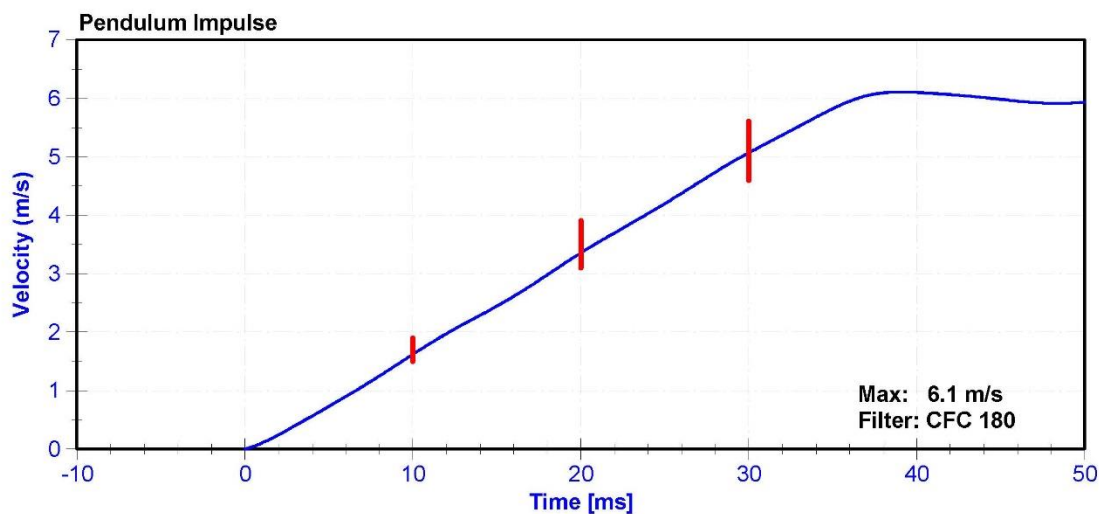
ATD Manufacturer	FTSS	Test Technician	M. Goehle
ATD Serial Number	324	Laboratory Supervisor	M. Goehle

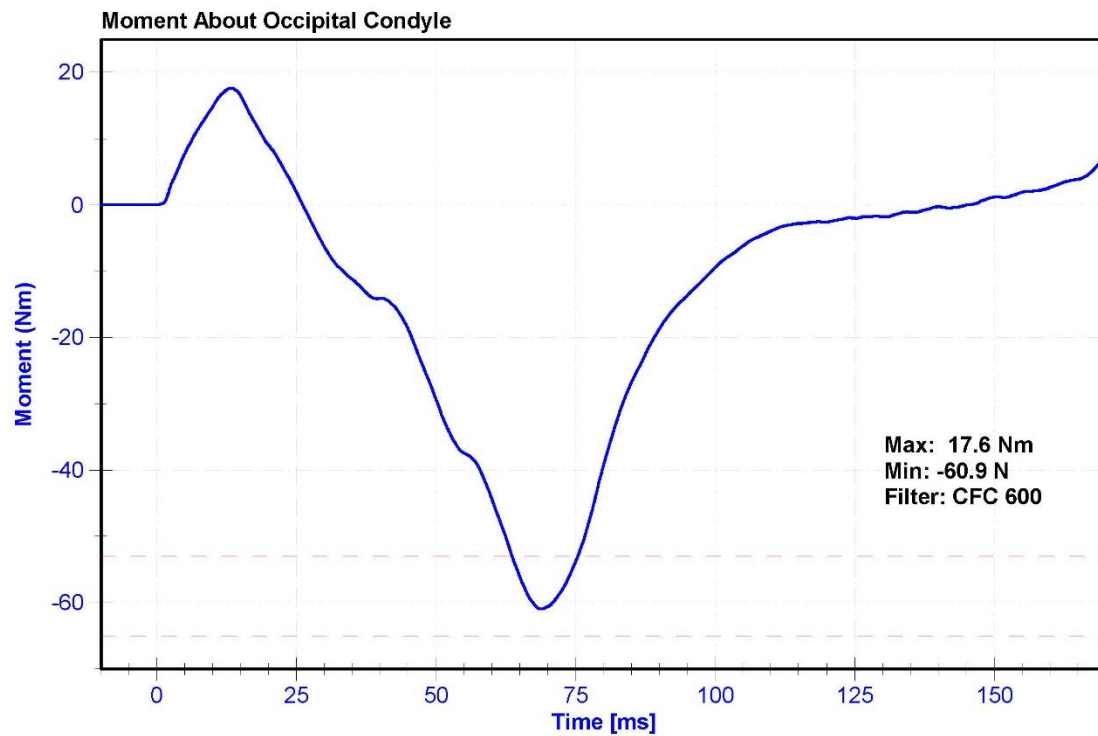
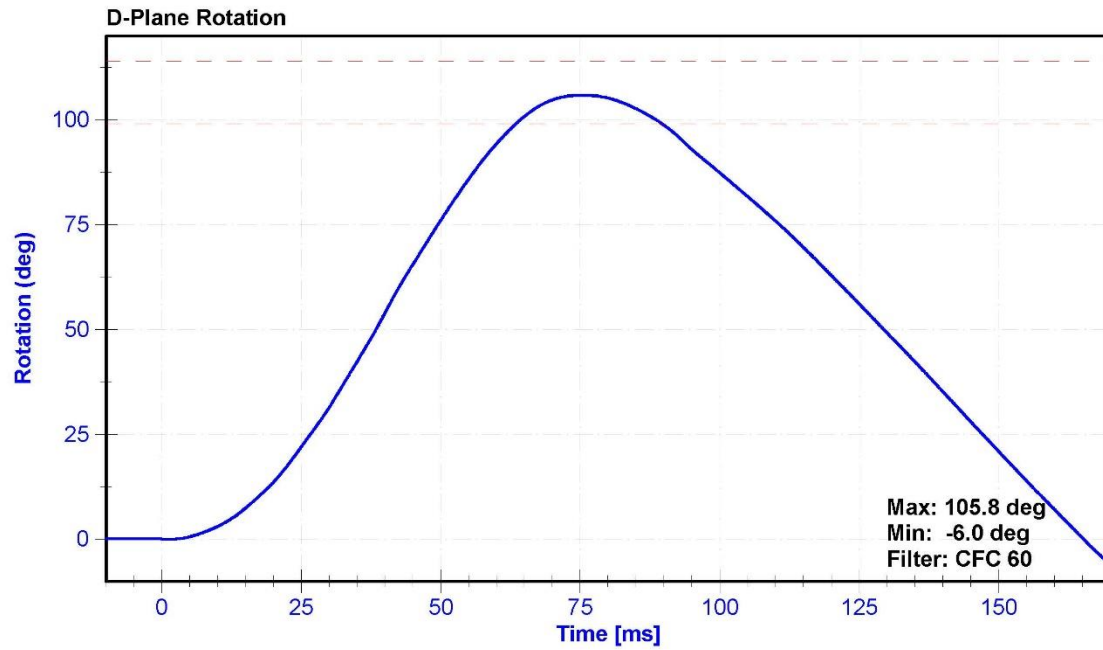
Results

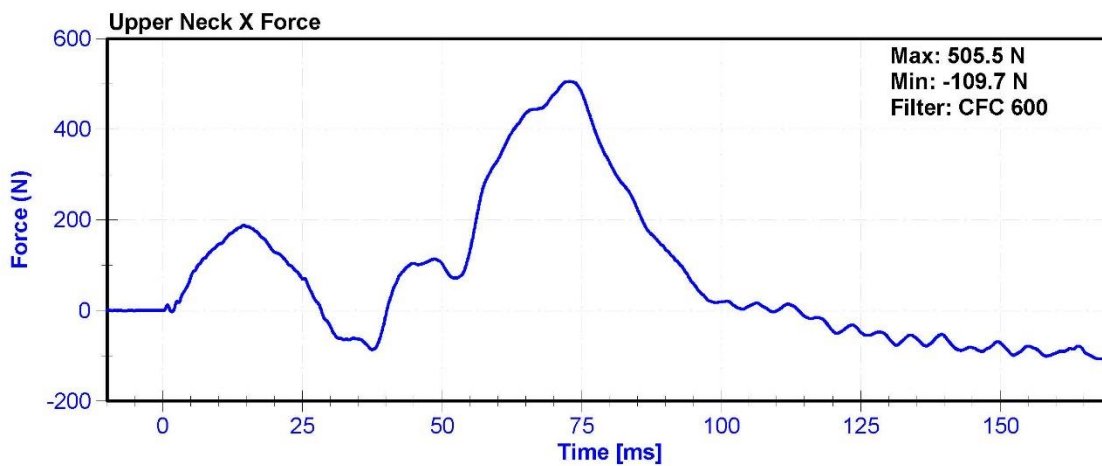
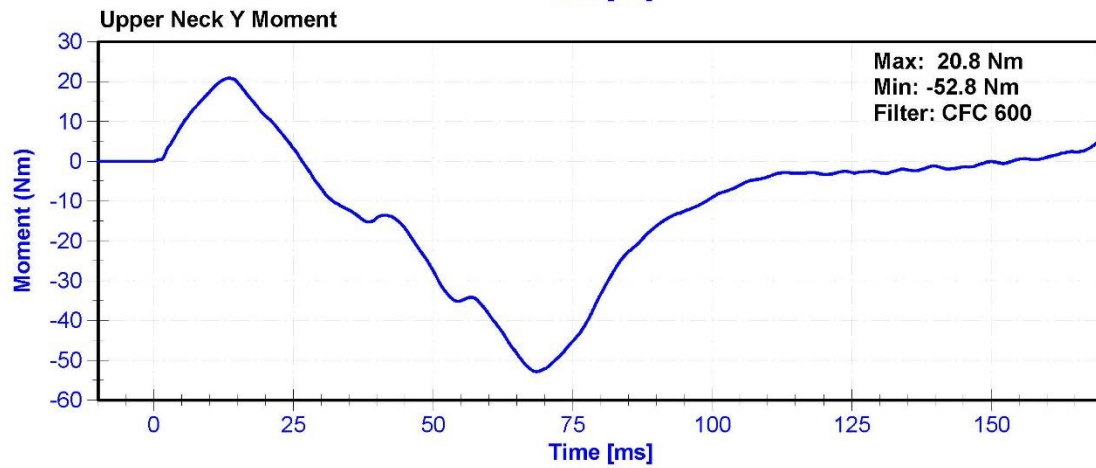
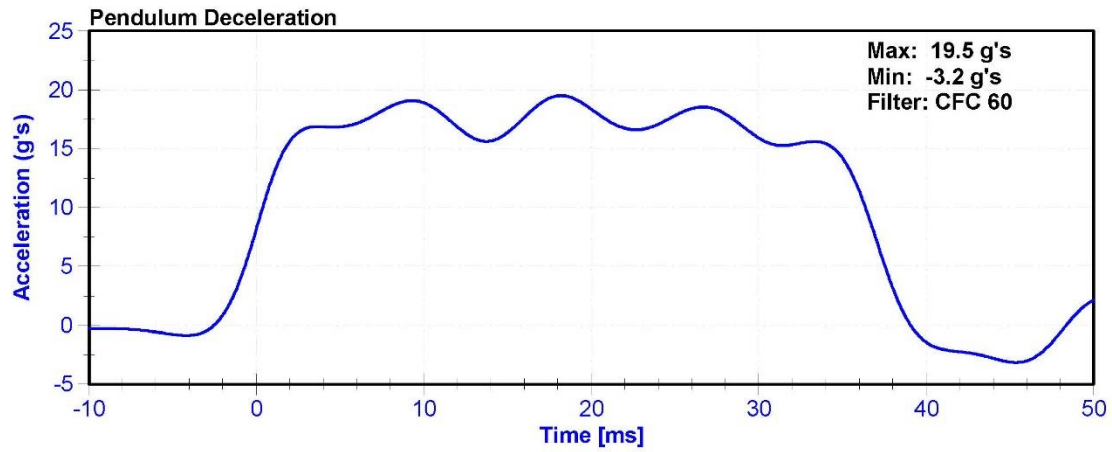
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.9	Pass
Humidity	10	70	%	17.0	Pass
Velocity	5.95	6.19	m/s	6.068	Pass
Pendulum Impulse at 10ms	1.5	1.9	m/s	1.62	Pass
Pendulum Impulse at 20ms	3.1	3.9	m/s	3.36	Pass
Pendulum Impulse at 30ms	4.6	5.6	m/s	5.07	Pass
D Plane Rotation	99	114	deg	105.8	Pass
Moment During Rotation Interval	-65	-53	Nm	-60.9	Pass
Moment Decay to -10Nm	94	114	ms	99.4	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-AH5F3	5/7/2015	5/6/2016
Pendulum Potentiometer	ETI SP22G	DS-PendPot	9/28/2015	9/27/2016
Condyle Potentiometer	ETI SP22G	DS-CondPot	9/28/2015	9/27/2016
Upper Neck Load Cell	DENTON 1716	LC-2254 Fx	12/17/2015	12/16/2016







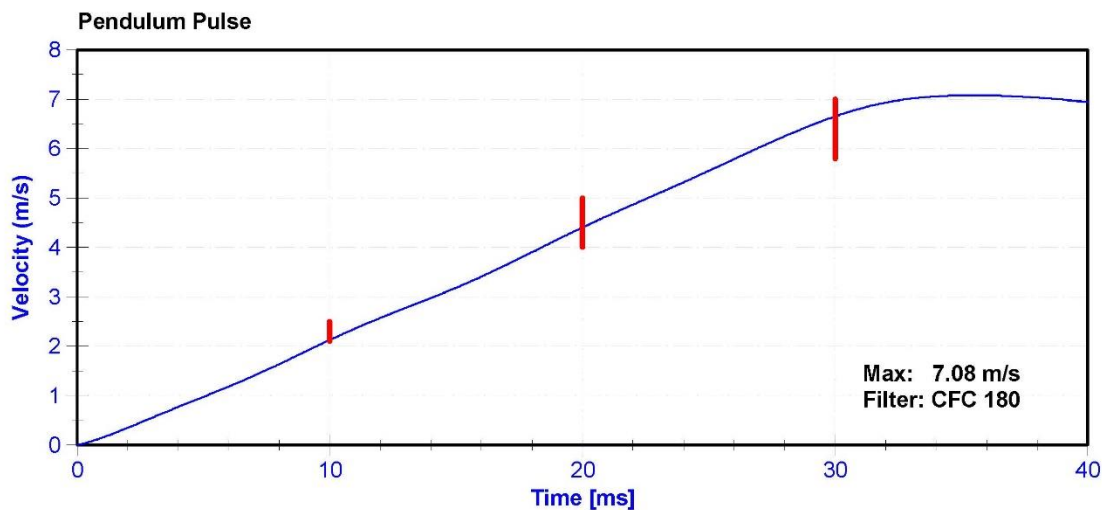
ATD Manufacturer	FTSS	Test Technician	M. Goehle
ATD Serial Number	324	Laboratory Supervisor	M. Goehle

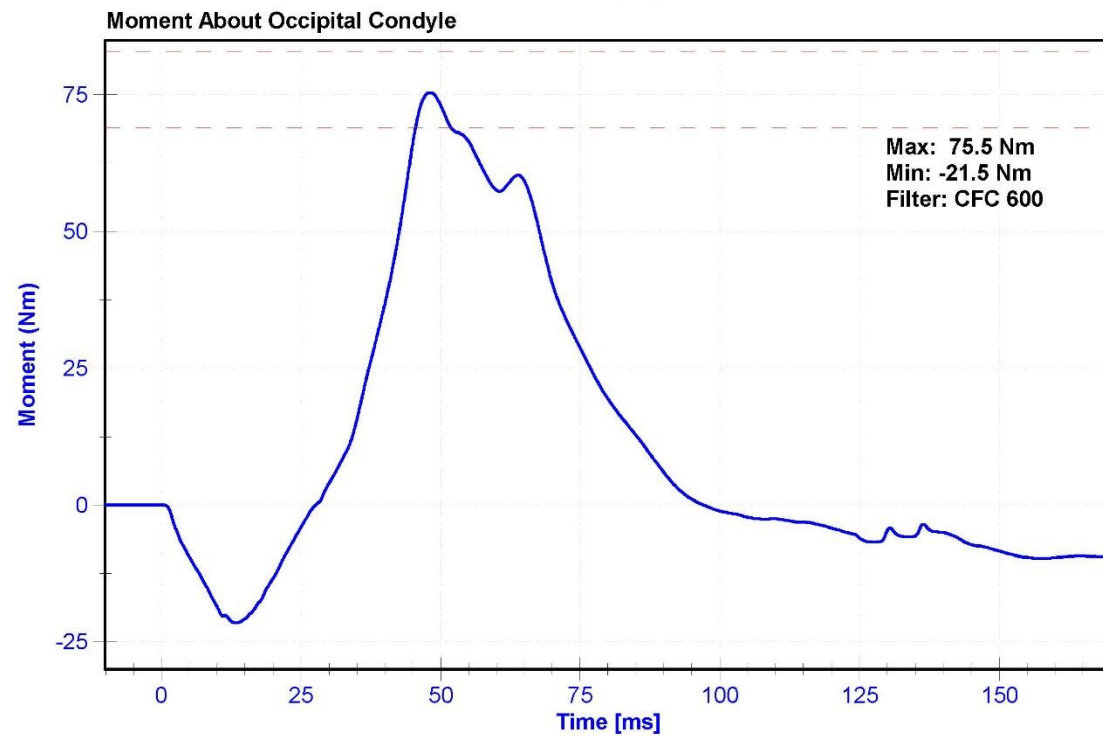
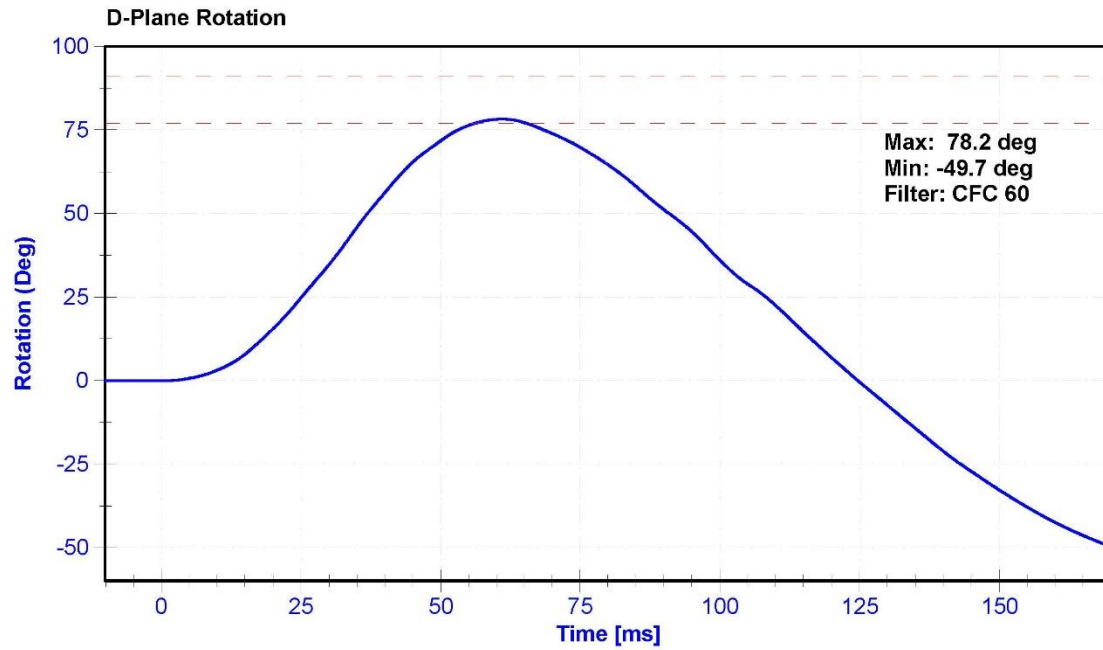
Results

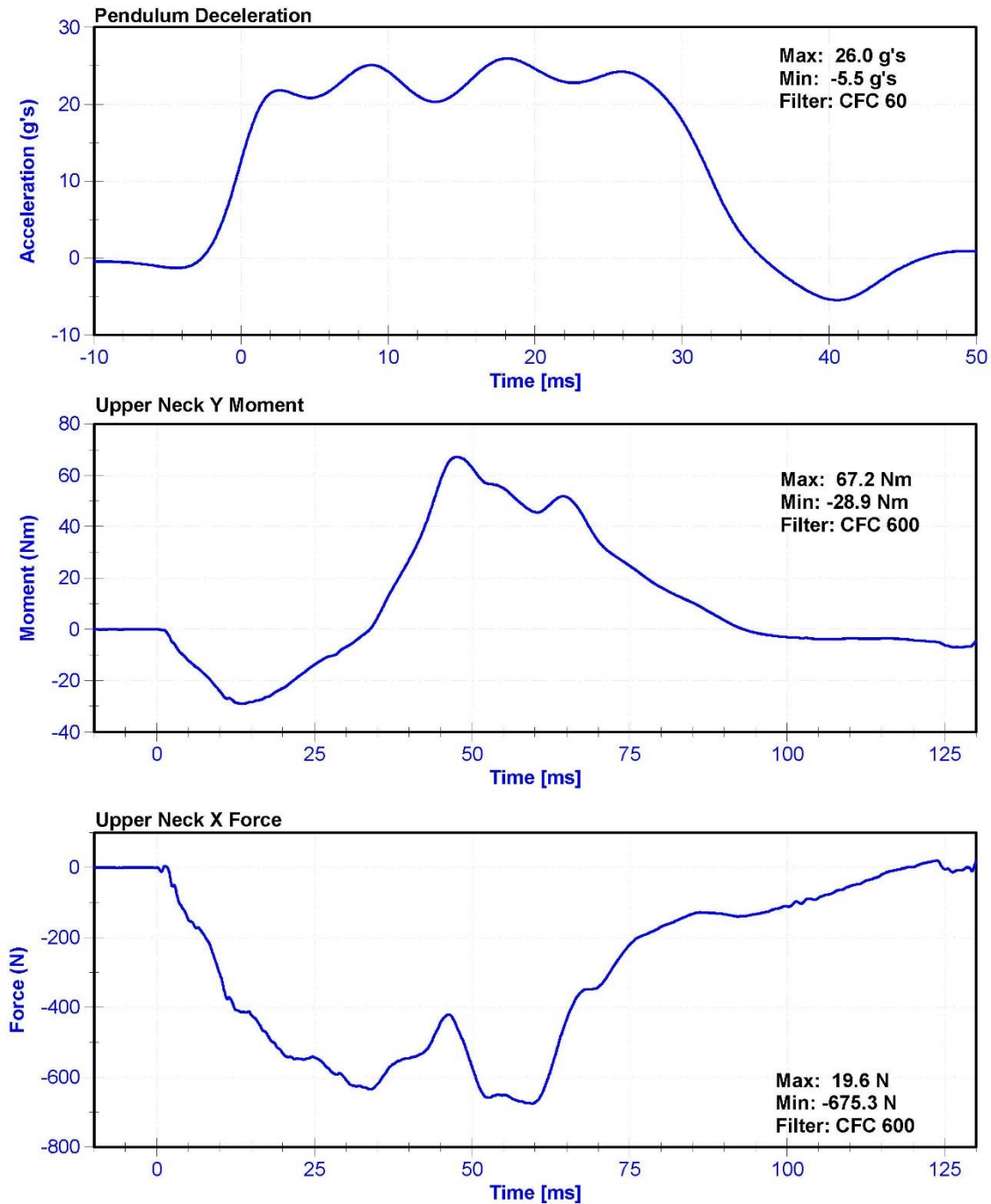
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	22.0	Pass
Humidity	10	70	%	16.9	Pass
Velocity	6.89	7.13	m/s	6.979	Pass
Pendulum Impulse at 10ms	2.1	2.5	m/s	2.13	Pass
Pendulum Impulse at 20ms	4.0	5.0	m/s	4.40	Pass
Pendulum Impulse at 30ms	5.8	7.0	m/s	6.65	Pass
Max D Plane Rotation	77	91	deg	78.2	Pass
Max Moment During Rotation Interval	69	83	Nm	75.5	Pass
Moment Decay to 10.0 Nm	80	100	ms	87.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-AH5F3	5/7/2015	5/6/2016
Pendulum Potentiometer	ETI SP22G	DS-PendPot	9/28/2015	9/27/2016
Condyle Potentiometer	ETI SP22G	DS-CondPot	9/28/2015	9/27/2016
Upper Neck Load Cell	DENTON 1716	LC-2254 Fx	12/17/2015	12/16/2016







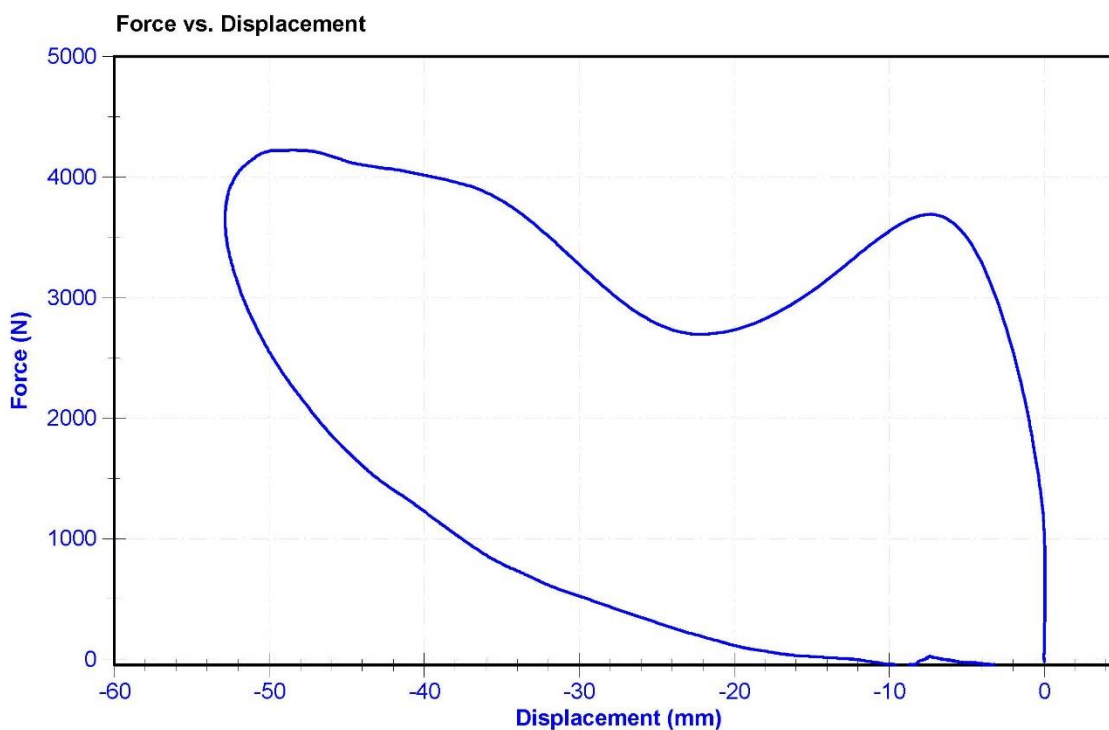
ATD Manufacturer	FTSS	Test Technician	M. Geesey
ATD Serial Number	324	Laboratory Supervisor	M. Goehle

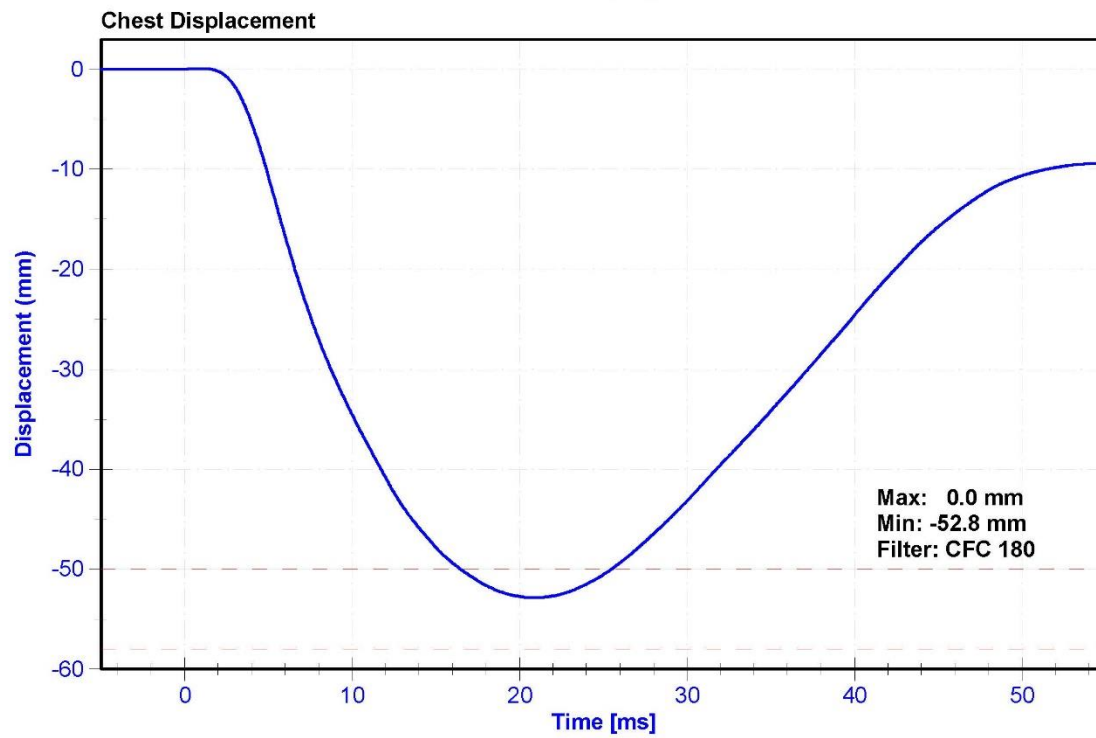
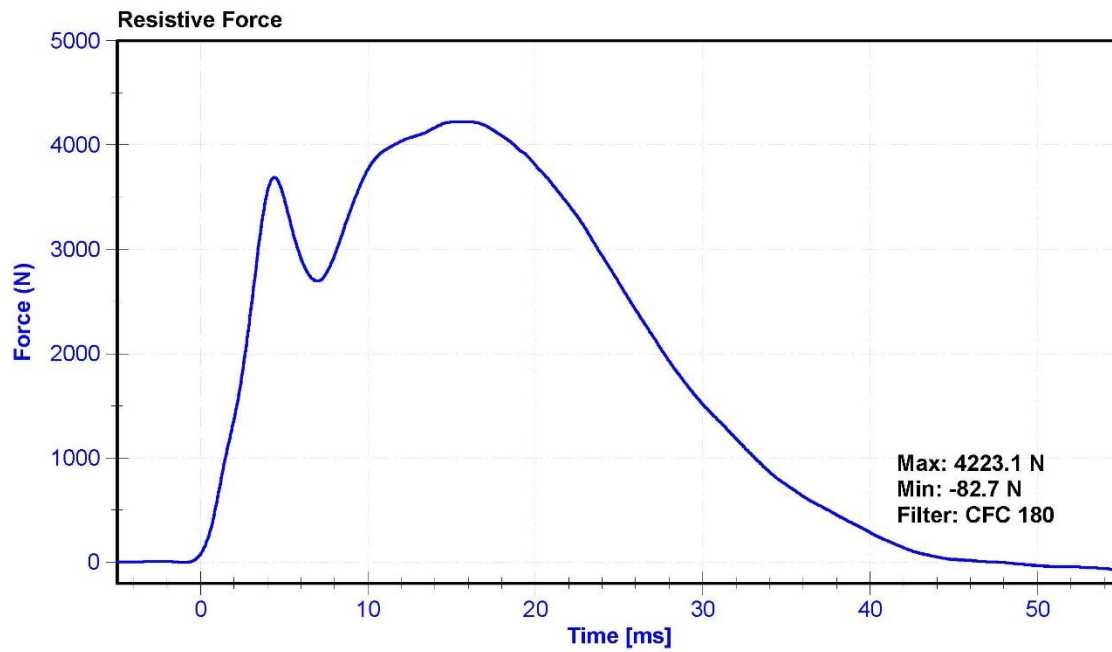
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.2	Pass
Humidity	10	70	%	16.7	Pass
Velocity	6.59	6.83	m/s	6.699	Pass
Chest Deflection	-58	-50	mm	-52.8	Pass
Maximum Resistive Force (50 to 58mm)	3900	4400	N	4216.6	Pass
Maximum Resistive Force (18 to 50mm)	0	4600	N	4223.1	Pass
Hysteresis	69	85	%	79.1	Pass

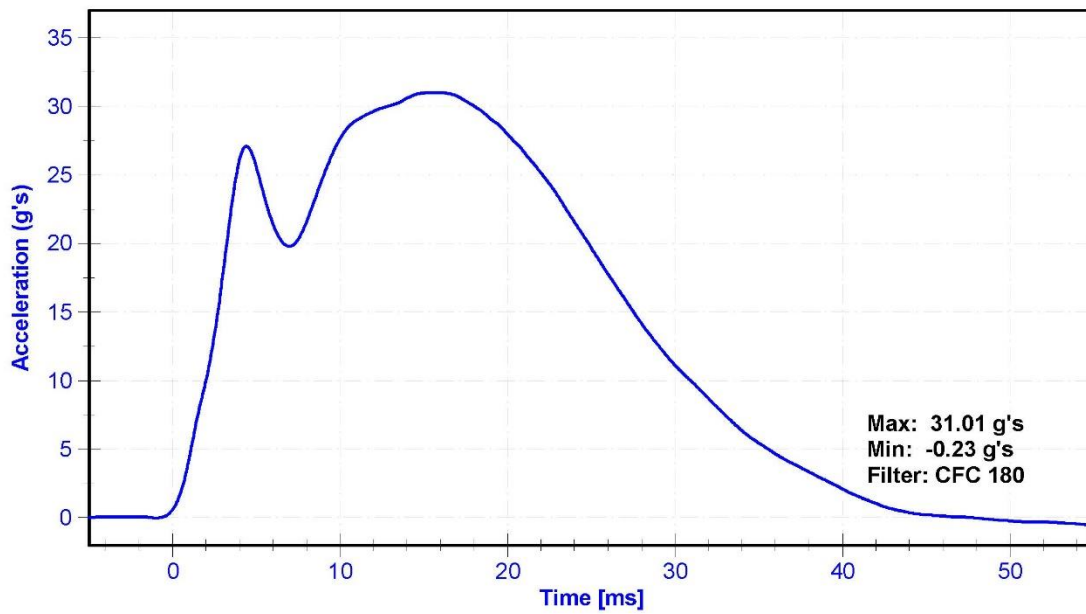
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C15018	7/15/2015	7/14/2016
Chest Potentiometer	Servo 14CB1	DS-CST324	6/30/2015	6/29/2016

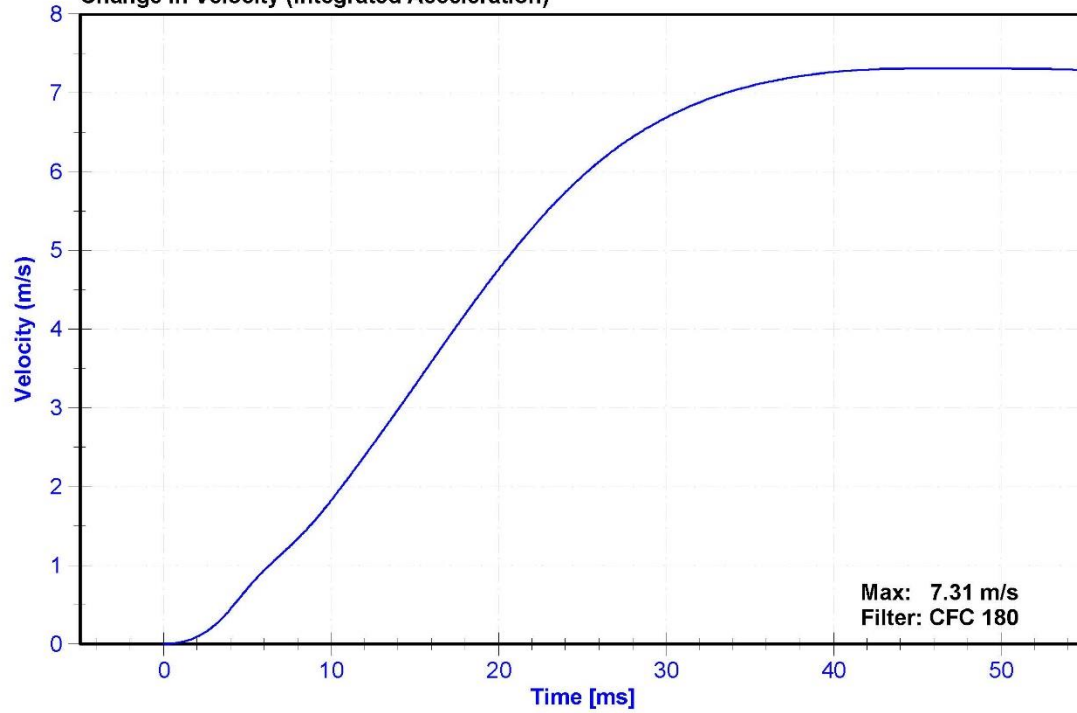




Probe Acceleration



Change in Velocity (Integrated Acceleration)



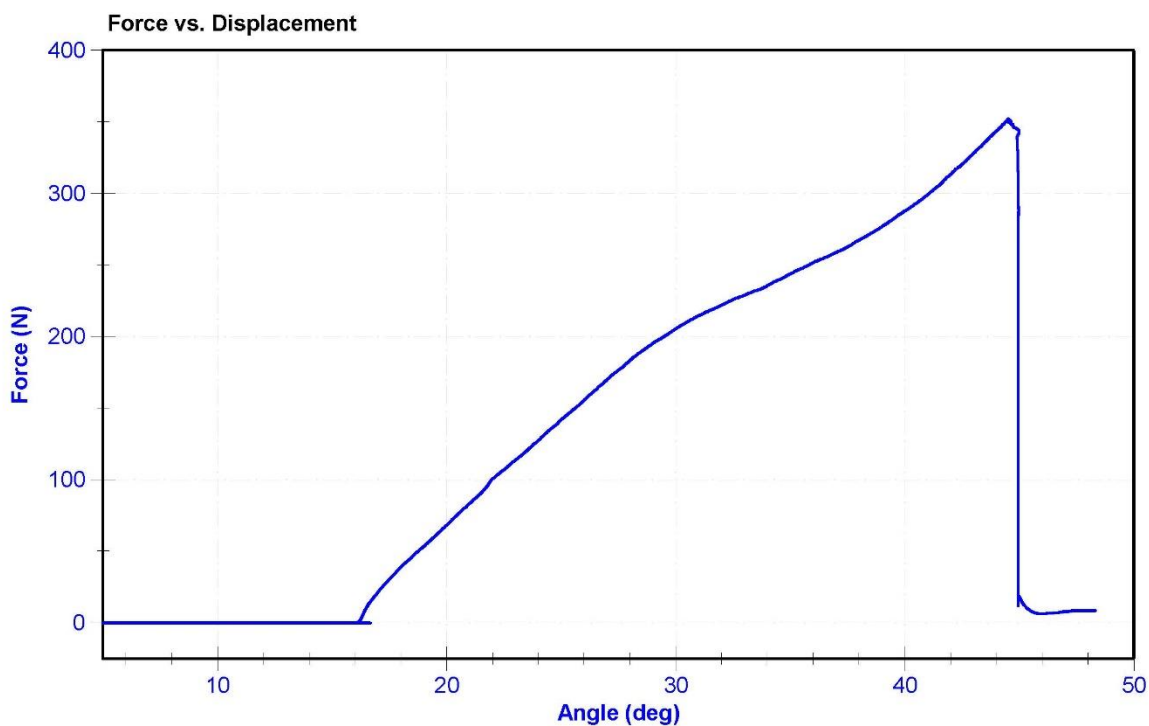
ATD Manufacturer	FTSS	Test Technician	M.Hartung
ATD Serial Number	324	Laboratory Supervisor	M.Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.6	25.6	°C	22.2	Pass
Humidity	10	70	%	17.2	Pass
Initial Angle	0	20	deg	15.6	Pass
Force at 45 Degrees	320	390	N	351.9	Pass
Return Angle Relative to Initial	0	8	deg	7.9	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Potentiometer	Rieker N4C-1	DS-13051548	8/14/2015	8/13/2016
Load Cell	Interface SML-200	LC-493319	8/13/2015	8/12/2016



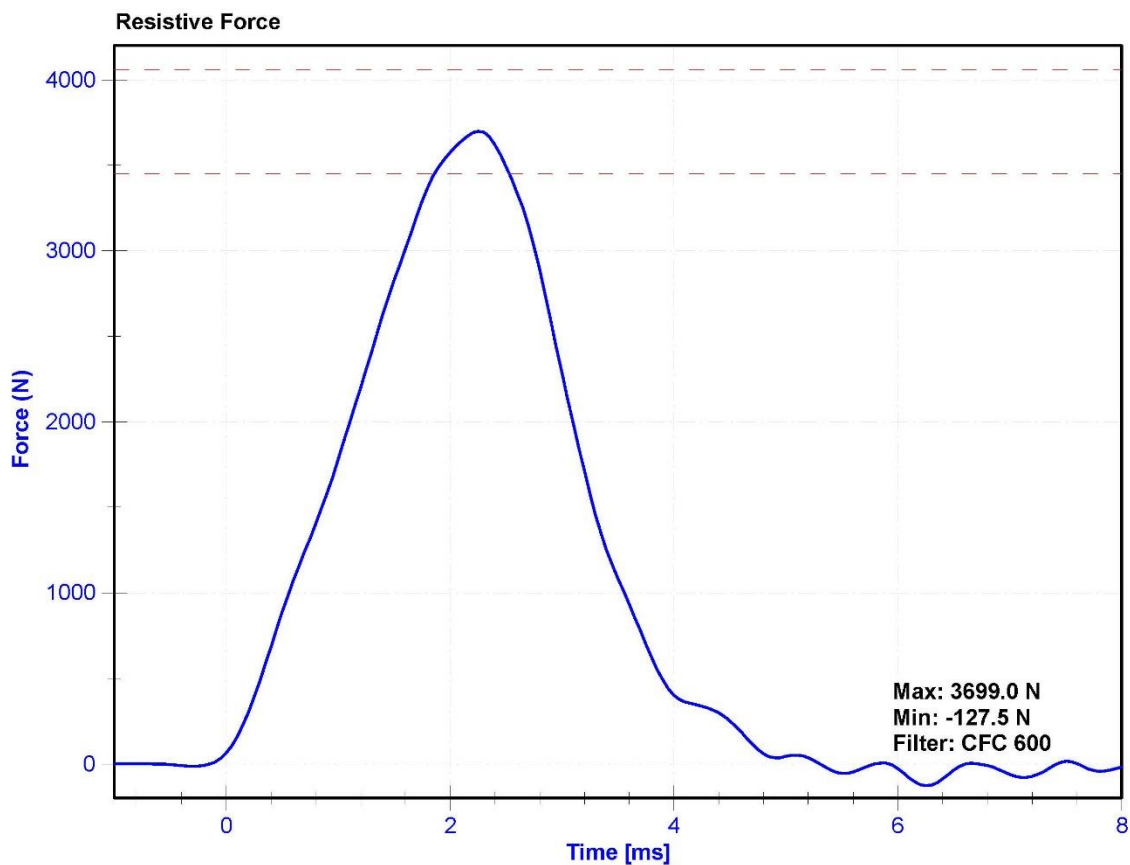
ATD Manufacturer	FTSS	Test Technician	M. Geesey
ATD Serial Number	324	Laboratory Supervisor	M. Goehle

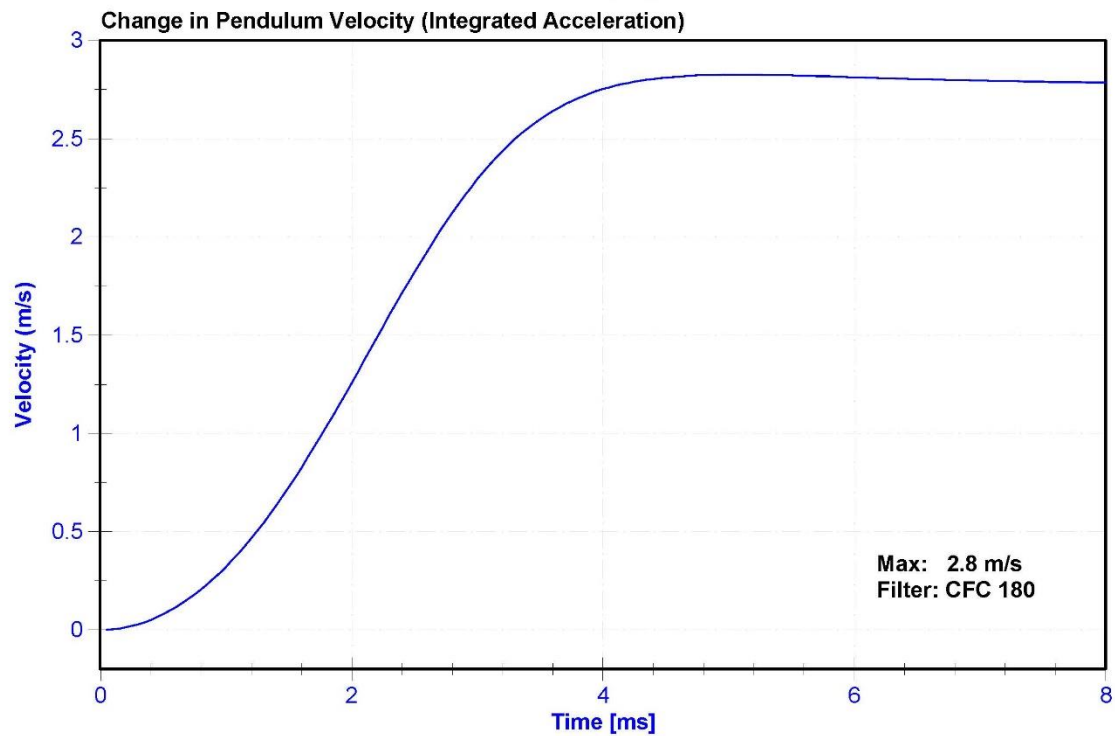
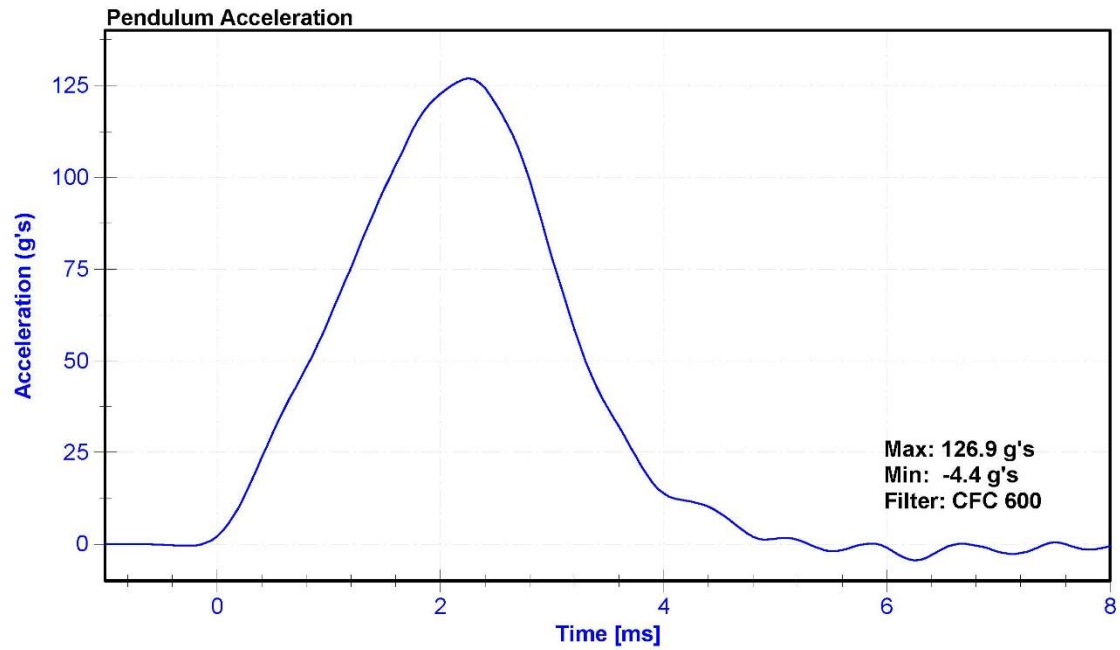
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	20.9	Pass
Humidity	10	70	%	14.9	Pass
Velocity	2.07	2.13	m/s	2.088	Pass
Resistive Force	3450	4060	N	3699.0	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C15018	7/15/2015	7/14/2016





ATD Manufacturer	FTSS	Test Technician	M. Geesey
ATD Serial Number	324	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	21.3	Pass
Humidity	10	70	%	15.1	Pass
Velocity	2.07	2.13	m/s	2.088	Pass
Resistive Force	3450	4060	N	3657.7	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C15018	7/15/2015	7/14/2016

