

REPORT NUMBER: R&D-CAL-15-006

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

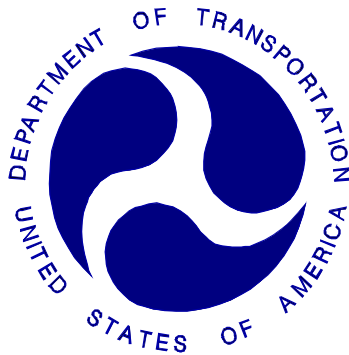
2015 Honda Fit

56.3 KPH RIGID BARRIER FRONTAL

TEST DATE: 8/27/2015

NHTSA No: R20155376

**CALSPAN CORPORATION
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FINAL REPORT SUBMITTED:

March 30, 2016

PREPARED FOR:

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

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Date: March 30, 2016

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STRUCTURAL AND RESTRAINTS RESEARCH DIVISION:

Date: _____

TOM, Vehicle Crash Testing
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Date: _____

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16. Abstract A test was conducted in accordance with Contract DTNH22-14-D-00359 Task Order 0002. The test consisted of a 2015 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 August 27, 2015. The vehicle's impact velocity was 56.27 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 538 mm. The test vehicle's 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>298.29</td> <td>149.33</td> <td>737.86</td> </tr> <tr> <td>Brain Injury Criterion (BrIC)</td> <td>N/A</td> <td>0.60</td> <td>0.69</td> <td></td> </tr> <tr> <td>Abdomen Deflection</td> <td>mm</td> <td>-46.49</td> <td></td> <td></td> </tr> <tr> <td>Resultant Acetabulum Force</td> <td>N</td> <td>1866.54</td> <td></td> <td></td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>50.39</td> <td>-26.10</td> <td></td> </tr> <tr> <td>Neck Injury Criteria (Nij)</td> <td>N/A</td> <td>0.29</td> <td>0.62</td> <td>1.05</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>1166.29</td> <td>1323.08</td> <td>3028.84</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>-767.83</td> <td>-206.34</td> <td>-693.43</td> </tr> <tr> <td>Tibia Index</td> <td>N/A</td> <td>0.47</td> <td>0.53</td> <td></td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>-1938.65</td> <td>-63.70</td> <td>-146.30</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>-2933.31</td> <td>-56.49</td> <td>-441.53</td> </tr> </tbody> </table>					Measurement Description	Units	Driver	Front Passenger	Rear Passenger	Head Injury Criteria (HIC ₁₅)	N/A	298.29	149.33	737.86	Brain Injury Criterion (BrIC)	N/A	0.60	0.69		Abdomen Deflection	mm	-46.49			Resultant Acetabulum Force	N	1866.54			Maximum Chest Compression	mm	50.39	-26.10		Neck Injury Criteria (Nij)	N/A	0.29	0.62	1.05	Neck Tension	N	1166.29	1323.08	3028.84	Neck Compression	N	-767.83	-206.34	-693.43	Tibia Index	N/A	0.47	0.53		Left Femur Force	N	-1938.65	-63.70	-146.30	Right Femur Force	N	-2933.31	-56.49	-441.53
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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.

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Date: March 30, 2016

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Transportation Test Operations

Date: March 30, 2016

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 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

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SECTION 1
PURPOSE OF TEST

Test Vehicle: 2015 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
Test Date: 8/27/2015

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: 2015 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
Test Date: 8/27/2015

A rigid fixed barrier was impacted by a 2015 Honda Fit at a velocity of 56.27 km/h. The test was performed at Calspan Corporation's Transportation Test Operations facility in Buffalo, New York on August 27th, 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 driver's 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 and DTS 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 538 mm at C5 to the right of the vehicle's centerline. Full vehicle measurements are presented in Section 3 of this report.

SECTION 2 (CONTINUED)
SUMMARY OF TEST

Test Vehicle: 2015 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
Test Date: 8/27/2015

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 cracks throughout

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 side header

SECTION 2 (CONTINUED)
CRASH VEHICLE SUMMARY

Test Vehicle: 2015 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
Test Date: 8/27/2015

Primary Impact Data

Measured Parameter	Units	Value
Test Vehicle Velocity at Impact	kph	56.27
Vehicle Test Weight	kg	1427
Vehicle Maximum Static Crush	mm	538
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:

- Driver Femur Left X Force, Questionable magnitude from 90ms to 125ms B-24
- Driver Lower Tibia Left Z Force, Questionable data from 57.8ms to 83.4ms B-29
- Driver Ankle Right Z Rotation, Questionable spikes from 35.5ms to 125ms B-34
- Rear Passenger RibEye Left Rib 01 Displacement X, Questionable data 67.2ms to 114ms B-57
- Rear Passenger RibEye Left Rib 01 Displacement Y, Questionable data 67.2ms to 114ms B-57

The following RibEye channels have questionable data due to interference from the chest pot or abdominal insert:

- Front Passenger RibEye Right Rib 06 Displacement X B-45
- Front Passenger RibEye Right Rib 06 Displacement Y B-45
- Rear Passenger RibEye Left Rib 05 Displacement X B-59
- Rear Passenger RibEye Left Rib 05 Displacement Y B-59
- Rear Passenger RibEye Left Rib 06 Displacement X B-59
- Rear Passenger RibEye Left Rib 06 Displacement Y B-60
- Rear Passenger RibEye Right Rib 04 Displacement X B-61
- Rear Passenger RibEye Right Rib 04 Displacement Y B-62
- Rear Passenger RibEye Right Rib 05 Displacement X B-62
- Rear Passenger RibEye Right Rib 05 Displacement Y B-62
- Rear Passenger RibEye Right Rib 06 Displacement X B-62
- Rear Passenger RibEye Right Rib 06 Displacement Y B-63

PRELIMINARY INJURY SUMMARY: Driver

Test Vehicle: 2015 Honda Fit - R20155376 NHTSA No.: R20155376
 Test Program: NHTSA R&D Frontal Rigid Barrier Test Date: 8/27/2015

Driver: THOR Serial No. DL9207 Injury Summary

Location	Description	Unit	Source	Max	Min
Head	15 ms HIC		Compute	298.29	
	Brain Injury Criteria		Compute	0.60	
	Head Rotational Velocity X	Deg/s	60	287.92	-124.47
	Head Rotational Velocity Y	Deg/s	60	1330.74	-1521.07
	Head Rotational Velocity Z	Deg/s	60	569.96	-889.30
Neck	Upper Neck Z-axis Force	N	1000	1166.29	-767.83
	Upper Neck Y-axis Moment	N-m	Thortest	35.44	-52.53
Chest	Upper Left Resultant Chest Deflection	mm	Thortest	18.75	
	Upper Right Resultant Chest Deflection	mm	Thortest	50.39	
	Lower Left Resultant Chest Deflection	mm	Thortest	12.92	
	Lower Right Resultant Chest Deflection	mm	Thortest	32.45	
Abdomen	Lower Left X-axis Deflection	mm	Thortest	0.97	-46.49
	Lower Right X-axis Deflection	mm	Thortest	0.08	-46.05
Acetabulum	Left Acetabulum Resultant Force	N	Compute	1866.54	1.42
	Right Acetabulum Resultant Force	N	Compute	1167.29	0.43
Femur	Left Femur Force, FZ	N	600	271.35	-1938.65
	Right Femur Force, FZ	N	600	345.39	-2933.31
Tibia	Left Upper Tibia, FZ	N	600	138.98	-1301.28
	Left Upper Tibia Index		Compute	0.47	
	Right Upper Tibia, FZ	N	600	111.37	-1163.88
	Right Upper Tibia Index		Compute	0.31	
	Left Lower Tibia, FZ	N	600	11586.48 ⁽¹⁾	-2675.92 ⁽¹⁾
	Left Lower Tibia Index		Compute	0.44	
	Right Lower Tibia, FZ	N	600	194.99	-3686.75
	Right Lower Tibia Index		Compute	0.44	
Ankle	Left Ankle Rotation, RX	Deg	180	3.78	-14.24
	Left Ankle Rotation, RY	Deg	180	26.99	-5.41
	Left Ankle Dorsiflexion Moment, MY	Nm	Compute	37.52	-8.63
	Left Ankle In/Eversion Moment, MX	Nm	Compute	46.28	-18.07
	Right Ankle Rotation, RX	Deg	180	9.49	-29.17
	Right Ankle Rotation, RY	Deg	180	32.57	-7.05
	Right Ankle Dorsiflexion Moment, MY	Nm	Compute	85.13	-19.24
	Right Ankle In/Eversion Moment, MX	Nm	Compute	11.90	-36.27

Anomalies:

(1) Questionable data from 57.8ms to 83.4ms

PRELIMINARY INJURY SUMMARY: Right Front Passenger

Test Vehicle: 2015 Honda Fit - R20155376 NHTSA No.: R20155376
 Test Program: NHTSA R&D Frontal Rigid Barrier Test Date: 8/27/2015

Right Front Passenger: HF Serial No. 324 Injury Summary

Location	Description	Unit	Source	Max	Min
Head	15 ms HIC		Compute	149.33	
	Brain Injury Criteria (BrIC)		Compute	0.69	
Neck	Upper Neck Force Z	N	1000	1323.08	-206.34
	Upper Neck Moment Y	Nm	600	37.29	-28.10
	NIJ		Compute	0.62	
Chest	Chest Potentiometer Deflection	mm	600		-24.42
	Left Ribeye 01 X-Axis Deflection	mm	600	0.19	-26.10
	Left Ribeye 02 X-Axis Deflection	mm	600	0.20	-25.48
	Left Ribeye 03 X-Axis Deflection	mm	600	0.19	-25.14
	Left Ribeye 04 X-Axis Deflection	mm	600	0.17	-24.46
	Left Ribeye 05 X-Axis Deflection	mm	600	0.20	-23.87
	Left Ribeye 06 X-Axis Deflection	mm	600	0.23	-22.55
	Right Ribeye 01 X-Axis Deflection	mm	600	0.26	-16.92
	Right Ribeye 02 X-Axis Deflection	mm	600	0.24	-14.82
	Right Ribeye 03 X-Axis Deflection	mm	600	0.67	-13.69
	Right Ribeye 04 X-Axis Deflection	mm	600	0.43	-12.41
	Right Ribeye 05 X-Axis Deflection	mm	600	0.64	-11.78
	Right Ribeye 06 X-Axis Deflection	mm	600	25.96 ⁽²⁾	-9.94 ⁽²⁾
	Overall Ribeye X-Axis Deflection	mm	600	25.96 ⁽²⁾	-26.10
	Chest Resultant Acceleration	g	Compute	56.03	
	Chest Resultant Acceleration, 3 ms clip	g	Compute	54.66	
	Pelvis Resultant Acceleration	g	Compute	56.70	
Femur	Left Femur Force, FZ	N	600	1125.46	-63.70
	Right Femur Force, FZ	N	600	948.65	-56.49
Tibia	Left Upper Tibia, FZ	N	600	84.31	-536.60
	Left Upper Tibia Index		Compute	0.49	
	Right Upper Tibia, FZ	N	600	93.39	-714.85
	Right Upper Tibia Index		Compute	0.53	
	Left Lower Tibia, FZ	N	600	181.44	-795.94
	Left Lower Tibia Index		Compute	0.28	
	Right Lower Tibia, FZ	N	600	47.86	-1042.08
	Right Lower Tibia Index		Compute	0.31	
Anomalies					
(2) Data anomaly due to chest pot or abdominal insert interference					

PRELIMINARY INJURY SUMMARY: Right Rear Passenger

Test Vehicle: 2015 Honda Fit - R20155376 NHTSA No.: R20155376
 Test Program: NHTSA R&D Frontal Rigid Barrier Test Date: 8/27/2015

Right Rear Passenger: HF Serial No. 019 Injury Summary

Location	Description	Unit	Source	Max	Min
Head	15 ms HIC		Compute	737.86	
Neck	Upper Neck Force Z	N	1000	3028.84	-693.43
	Upper Neck Moment Y	Nm	600	37.52	-54.05
	NIJ		Compute	1.05	
Chest	Chest Potentiometer Deflection	mm	600		-47.98
	Left Ribeye 01 X-Axis Deflection	mm	600	0.20 ⁽³⁾	-85.09 ⁽³⁾
	Left Ribeye 02 X-Axis Deflection	mm	600	0.28	-49.30
	Left Ribeye 03 X-Axis Deflection	mm	600	0.23	-52.82
	Left Ribeye 04 X-Axis Deflection	mm	600	0.30	-55.77
	Left Ribeye 05 X-Axis Deflection	mm	600	0.24 ⁽⁴⁾	-88.76 ⁽⁴⁾
	Left Ribeye 06 X-Axis Deflection	mm	600	5.84 ⁽⁴⁾	-88.64 ⁽⁴⁾
	Right Ribeye 01 X-Axis Deflection	mm	600	0.21	-29.19
	Right Ribeye 02 X-Axis Deflection	mm	600	0.19	-29.35
	Right Ribeye 03 X-Axis Deflection	mm	600	0.20	-28.26
	Right Ribeye 04 X-Axis Deflection	mm	600	13.70 ⁽⁴⁾	-26.47 ⁽⁴⁾
	Right Ribeye 05 X-Axis Deflection	mm	600	16.82 ⁽⁴⁾	-45.11 ⁽⁴⁾
	Right Ribeye 06 X-Axis Deflection	mm	600	29.46 ⁽⁴⁾	-32.76 ⁽⁴⁾
	Overall Ribeye X-Axis Deflection	Mm	600	29.46 ⁽⁴⁾	-88.76 ⁽⁴⁾
	Chest Resultant Acceleration	g	Compute	61.93	
	Chest Resultant Acceleration, 3 ms clip	g	Compute	61.34	
Pelvis	Pelvis Resultant Acceleration	g	Compute	59.09	
	Left ASIS Force X	N	600	30.48	-4718.56
	Right ASIS Force X	N	600	5.82	-3514.55
Femur	Left Femur Force Z	N	600	2856.86	-146.30
	Right Femur Force Z	N	600	2818.55	-441.53
Anomalies (3) Questionable data 67.2ms to 114ms (4) Data Anomaly due to Chest Pot or abdominal insert Interference					

SECTION 3 DATA SHEETS

Test Vehicle: 2015 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
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DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2015 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
 Test Date: 8/27/2015

VEHICLE INFORMATION

NHTSA No.	R20155376
Model Year	2015
Make	Honda
Model	Fit
Body Style	5 Door Hatchback
VIN	3HGGK5G53FM773866
Body Color	Blue
Odometer Reading (km/mi)	291 km / 181mi
Engine Displacement. (L)	1.5
Type/No. Cylinders	I4
Engine Placement	Transverse
Transmission Type	Manual
Transmission Speeds	6-Speed
Overdrive	No
Final Drive	Forward
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	Yes
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 De Mexico
Date of Manufacture	02/15

GWR (kg)	1525
GAWR Front (kg)	803
GAWR Rear (kg)	722

VEHICLE SEATING AND WEIGHT CAPACITY

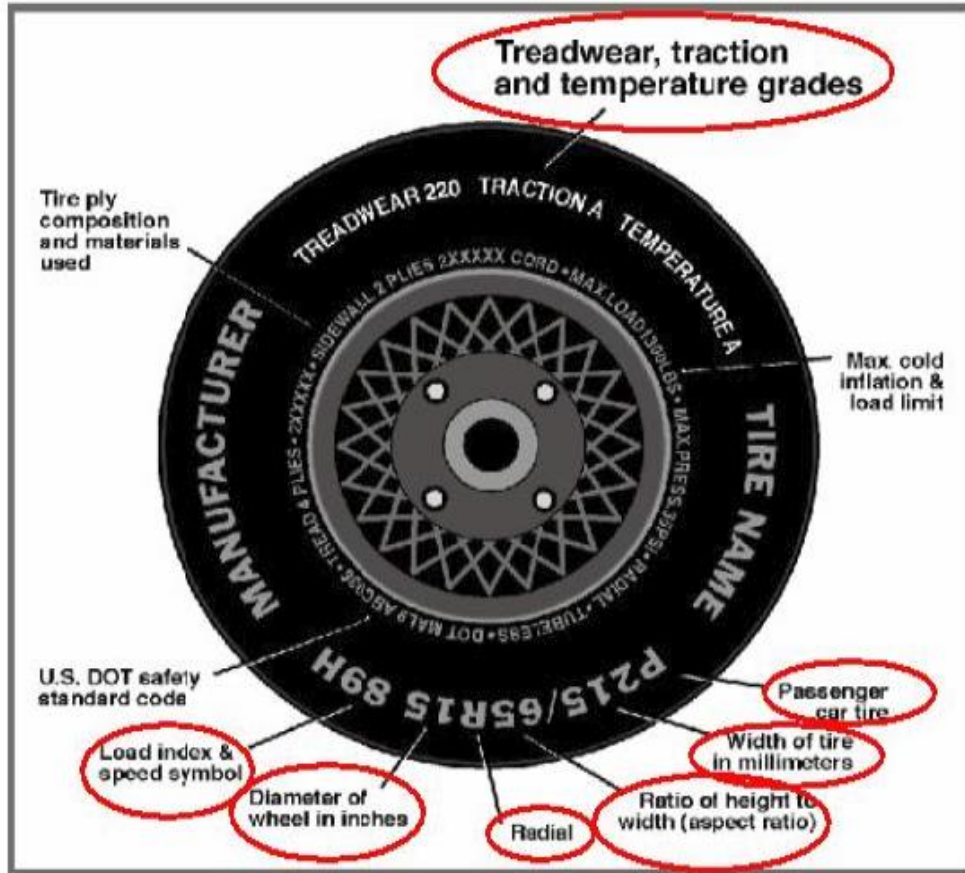
Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Split Bench	-	
Number of Occupants	2	3	-	5
Capacity Wt. (VCW) (kg)				385
Cargo Wt. (RCLW) (kg)				44.8

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

Test Vehicle: 2015 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
 Test Date: 8/27/2015

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	185/60R15	185/60R15
Tire Size on Vehicle	185/60R15	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 CJJ2814	EL CA CJJ2814
DOT Safety Code Left	EL CA CJJ2914	EL CA CJJ2814

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

Test Vehicle: 2015 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
 Test Date: 8/27/2015

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	346	230		390	338	
Right	kg	355	206		406	293	
Ratio	%	62%	38%		55.8%	44.2%	
Totals	kg	701	436	1137	796	631	1427

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1137
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	1392.8

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	646	649	664	669	970.5
As Tested	mm	637	642	616	622	1119
Post Test	mm	653	641	643	615	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2,531
Total Vehicle Length at Left Side	mm	3,993
Total Vehicle Length at Centerline	mm	4,069
Total Vehicle Length at Right Side	mm	3,994
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: 2015 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
 Test Date: 8/27/2015

TARGET VEHICLE STRUCTURAL MEASUREMENT

	Elements		Pre-Test
1	Total Length	mm	4069
2	Total Width	mm	1697
3*	Bumper Top Height	mm	546
4*	Bumper Bottom Height	mm	438
5*	Longitudinal Member Top Height	mm	534
6	Distance Between Longitudinal Members	mm	1038
7	Longitudinal Member Width	mm	68
8*	Engine Top Height	mm	813
9*	Engine Bottom Height	mm	145
10	Engine and Gearbox Width	mm	565
11	Front Bumper-Engine Distance	mm	520
12*	Front Shock Absorber Fixing Height	mm	893
13*	Bonnet Leading Edge Height	mm	763
14	Front Shock Absorber Fixing Width	mm	1116
15	Front Bumper – Front Axle Distance	mm	809
16	Front Axle – A Pillar Distance	mm	128
17	A-Pillar – B-Pillar Distance	mm	1390
18	B-Pillar – Rear Axle Distance	mm	1014
19	B-Pillar – C-Pillar Distance	mm	911
20*	Roof Sill Bottom Height	mm	1412
21*	Roof Sill Top Height	mm	1443
22*	Floor Sill Bottom Height	mm	286
23*	Floor Sill Top Height	mm	373

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

DATA SHEET NO. 2

SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL

Test Vehicle: 2015 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

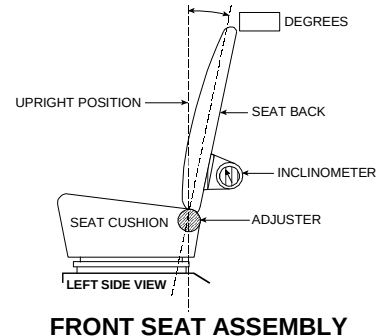
NHTSA No.: R20155376
 Test Date: 8/27/2015

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

Passenger Seat: The passenger seat back was positioned according to the Nominal Design Riding position listed in FORM 1. Rear Passenger seatback is a fixed angle.



	Deg.
Driver Seat Back Angle	1.2
Passenger Seat Back Angle	1.1
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.

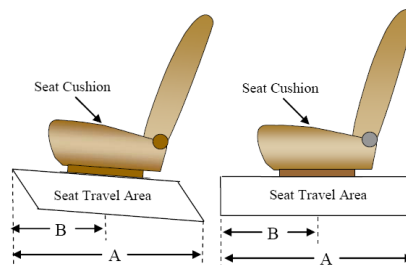
	Total Fore/Aft Travel	Placed in Position #
Driver Seat	35 (0-34)	19
Passenger Seat	35 (0-34)	17
Rear Passenger Seat	FIXED	FIXED

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: 2015 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
 Test Date: 8/27/2015

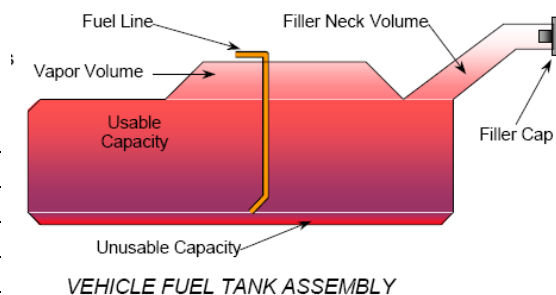
FUEL TANK CAPACITY

	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.

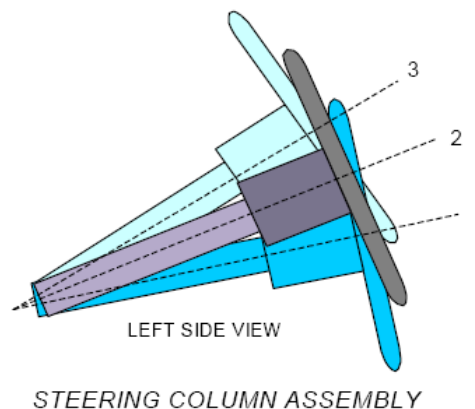
Fuel evacuated according to the specifications provided by the manufacturer in Form 1. Electric fuel pump operates when the ignition is in the 'on' position and the engine is running. The fuel filler neck is located above the left rear wheel.



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)



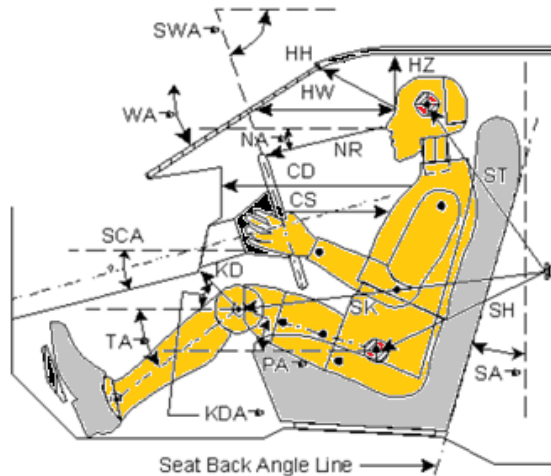
STEERING COLUMN POSITIONS

	Tilt (degrees)	Fore/Aft Position (mm)
Lowermost position No. 1	24.1	
Geometric center position No. 2	26.5	
Uppermost position No. 3	29.0	
Telescoping Steering Wheel Travel		40
Test Position	26.5	20

DATA SHEET NO. 3 DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2015 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
Test Date: 8/27/2015

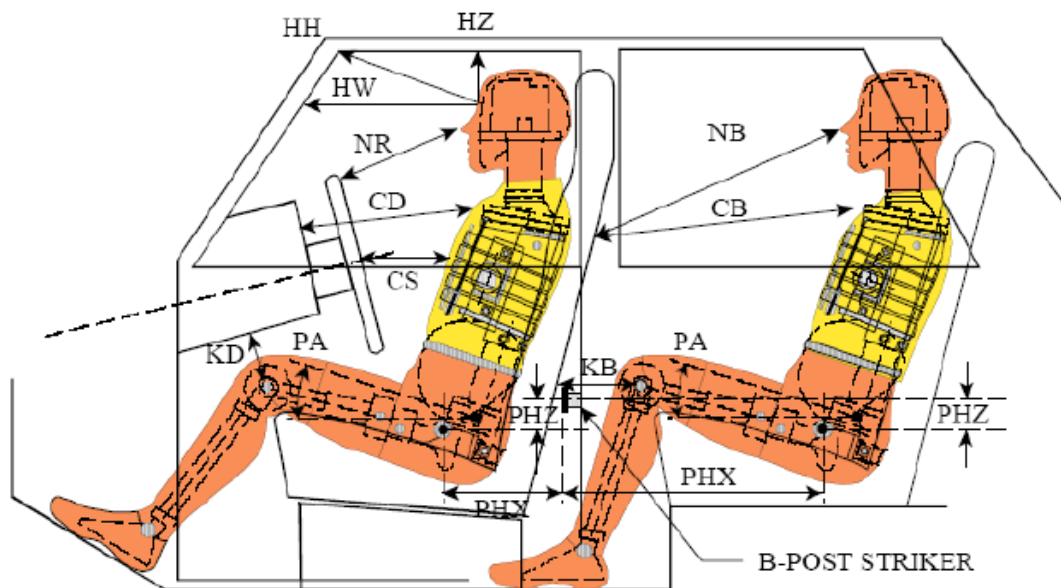


Code	Measurement Description	Driver (Serial # THOR DL9207)		Front Passenger (Serial # 324)	
		Length (mm)	Angle(°)	Length (mm)	Angle (°)
WA°	Windshield Angle		26.0		
SWA°	Steering Wheel Angle		27.4		
SCA°	Steering Column Angle		62.6		
SA°	Seat Back Angle (on headrest post)		0.5		-2.7
HZ	Head to Roof (Z)	192	90	286	90
HH	Head to Header	398	18.4	392	38.5
HW	Head to Windshield	688	0.0	856	0
NR	Nose to Rim/Dash	503	20.9	523	24.6
CD	Chest to Dash	607		474	
CS	Chest to Steering Hub	380	7.2		
RA	Rim to Abdomen	173	0		
KDL	Left Knee to Dash	99	23.7	165	40.6
KDR	Right Knee to Dash	90	24.6	175	39.8
PA°	Pelvic Angle		33.6		21.6
TA°	Tibia Angle		52.8		44.0
SK	Striker to Knee	624	5.5	590	4.0
ST	Striker to Head	582	-86.8	484	-76.9
SH	Striker to H-Point	248	16.9	270	20.1
HAX°	Head Angle (X)		0.4		
HAY°	Head Angle (Y)		-2.0		
TAX°	T6 Angle (X)		0.5		
TAY°	T6 Angle (Y)		23.2		
TAX°	T1 (X)		0.3		
TAY°	T1 (Y)		1.1		
TAX°	T12 (X)		0.5		
TAY°	T12 (Y)		31.8		
PAX°	Pelvis (X)		0.2		
PAY°	Pelvis (Y)		32.7		

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

Test Vehicle: 2015 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
 Test Date: 8/27/2015



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)		15.1
HZ	Head to Roof (Z)	268	
NR	Nose to Seatback	584	
CB	Chest to Seatback	593	
KDL	Left Knee to Seatback	339	11.4
KDR	Right Knee to Seatback	334	11.8
PAX°	Pelvic Tilt Angle (X-axis)		19.0
PAY°	Pelvic Tilt Angle (Y-axis)		0.0
PHX	Hip Point to Striker (X-Axis)	196	
PHZ	Hip Point to Striker (Z-Axis)	268	

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

Test Vehicle: 2015 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
 Test Date: 8/27/2015

MEASUREMENT LOCATIONS

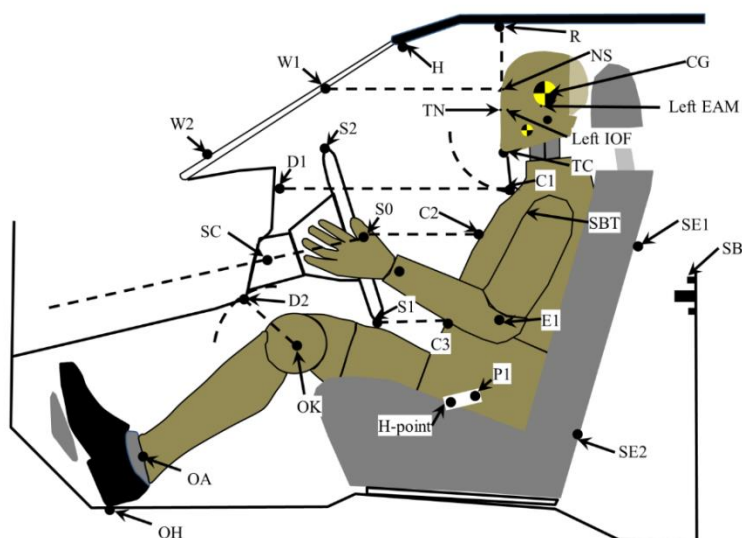


DIAGRAM #1

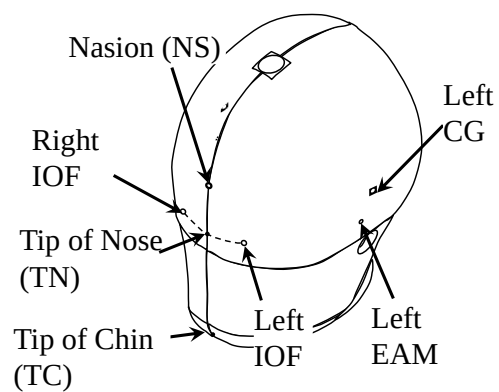


DIAGRAM #2

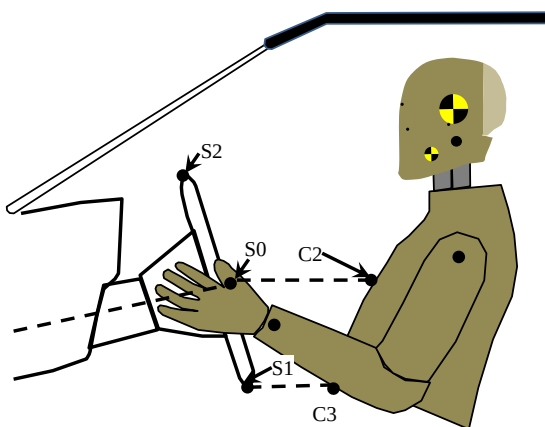


DIAGRAM #3

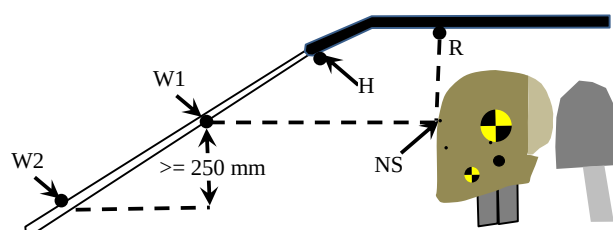


DIAGRAM #4

DATA SHEET NO.3 (CONTINUED)
DUMMY CMM MEASUREMENTS

Test Vehicle: 2015 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
Test Date: 8/27/2015

DRIVER MEASUREMENT PONITS

Description	Units	Driver		
		X	Y	Z
Tip of Striker	mm	1,842	-741	-136
Top of Head Restraint	mm	1,728	-339	-833
Outboard Head Restraint Post	mm	1,685	-416	-539
Head CG	mm	1,875	-414	-718
Nasion	mm	1,970	-337	-724
Tip of Nose	mm	1,969	-339	-687
Tip of Chin	mm	1,962	-339	-588
LEAM	mm	1,881	-408	-690
LIOF	mm	1,965	-368	-686
RIOF	mm	1,967	-304	-686
Outboard Elbow	mm	2,094	-555	-247
H-Point	mm	2,079	-534	-64
Center of H-Point Tool	mm	2,004	-579	-94
Left Knee	mm	2,463	-568	-196
Right Knee	mm	2,484	-254	-193
Left Ankle	mm	2,723	-582	135
Right Heel	mm	2,741	-564	267
Left Heel	mm	2,740	-190	269
W1 – Upper Windshield	mm	2,691	-339	-725
W2 – Lower Windshield	mm	2,896	-338	-625
Header	mm	2,340	-340	-860
Head to Roof	mm	1,971	-338	-917
C1- Upper Chest	mm	1,996	-340	-457
C2 – Mid Chest	mm	2,016	-339	-416
C3 – Lower Chest	mm	2,106	-340	-259
S2 – Top Steering Wheel Rim	mm	2,444	-339	-567
S1 – Lower Steering Wheel Rim	mm	2,288	-339	-259
SC – Steering Column	mm	2,574	-437	-309
D1 – Dash Point	mm	2,662	-343	-459
D2 – Knee Bolster	mm	2,550	-568	-239
SE1 – Seatback Point	mm	1,628	-340	-488
SE2 – Seatback Point	mm	1,769	-338	-190
Left Front Outboard Seat Anchor Bolt	mm	2363	-566	160
Left Rear Outboard Seat Anchor Bolt	mm	1818	-560	246

Reference point:

- +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: 2015 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
 Test Date: 8/27/2015

FRONT PASSENGER MEASUREMENT POINTS

Description	Units	Front Passenger		
		X	Y	Z
Tip of Striker	mm	1,843	743	-136
Top of Head Restraint	mm	1,768	339	-771
Outboard Head Restraint Post	mm	1,722	417	-546
Head CG	mm	1,953	410	-607
Bridge of Nose	mm	2,043	341	-613
Tip of Nose	mm	2,063	340	-581
Tip of Chin	mm	2,050	341	-511
Outboard Shoulder Bolt	mm	1,933	501	-374
Outboard Elbow	mm	2,036	561	-181
H-Point	mm	2,097	592	-43
Center of H-Point Tool	mm	2,012	598	-77
Left Knee	mm	2,433	288	-89
Right Knee	mm	2,432	458	-95
Left Ankle	mm	2,654	268	177
Right Ankle	mm	2,643	434	185
Left Heel	mm	2,604	264	265
Right Heel	mm	2,596	417	269
W1 – Upper Windshield	mm	2,922	339	-612
W2 – Lower Windshield	mm	3,109	338	-512
Header	mm	2,341	340	-861
Head up to Roof	mm	2,042	338	-897
C1 - Upper Chest	mm	2,049	340	-375
D1 - Dash Point	mm	2,541	339	-375
D2 - Dash Bolster	mm	2,551	289	-204
SE1 - Seat Back Point	mm	1,661	335	-504
SE2 - Seat Back Point	mm	1,826	336	-16
Right Front Outboard Seat Anchor Bolt	mm	2364	565	162
Right Rear Outboard Seat Anchor Bolt	mm	1819	560	245

Reference point:

- +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: 2015 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
 Test Date: 8/27/2015

REAR PASSENGER MEASUREMENT POINTS

Description	Units	Rear Passenger		
		X	Y	Z
Tip of Striker	mm	911	715	-345
Top of Head Restraint	mm	724	335	-765
Outboard Head Restraint Post	mm	741	392	-521
Head CG	mm	983	408	-649
Bridge of Nose	mm	1,067	336	-656
Tip of Nose	mm	1,088	335	-624
Tip of Chin	mm	1,072	336	-551
Outboard Shoulder Bolt	mm	971	491	-413
Outboard Elbow	mm	972	576	-198
H-Point	mm	1,107	145	-77
Center of H-Point Tool	mm	1,023	135	-115
Left Knee	mm	1,451	300	-101
Right Knee	mm	1,458	461	-102
Left Ankle	mm	1,577	284	227
Right Ankle	mm	1,570	438	230
Left Heel	mm	1,517	266	302
Right Heel	mm	1,509	426	304
Head up to Roof	mm	1,064	336	-926
C1 - Upper Chest	mm	1,076	335	-413
D1 - Dash Point	mm	1,680	336	-412
D2 - Dash Bolster	mm	1,780	300	-182
SE1 - Seat Back Point	mm	716	334	-447
SE2 - Seat Back Point	mm	849	334	-179

Reference point:

- +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

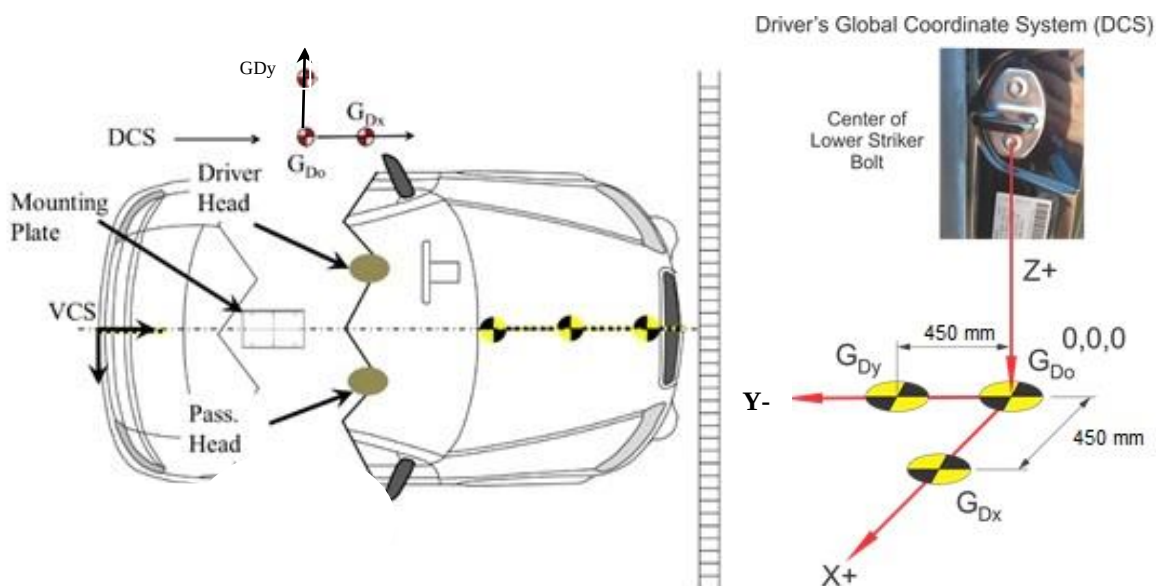
DATA SHEET NO.3 (CONTINUED)

DUMMY CMM MEASUREMENTS

Test Vehicle: 2015 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
 Test Date: 8/27/2015

DRIVER GLOBAL COORDINATE SYSTEM



Driver ATD Measurement Points

Measurement Points	Units	Measurements (mm)		
		X	Y	Z
Head CG	mm	71	327	-1226
Nasion	mm	166	404	-1232
Tip of Nose	mm	165	401	-1195
Tip of Chin	mm	158	401	-1096
LEAM	mm	77	333	-1198
LIOF	mm	161	372	-1194
RIOF	mm	163	436	-1194

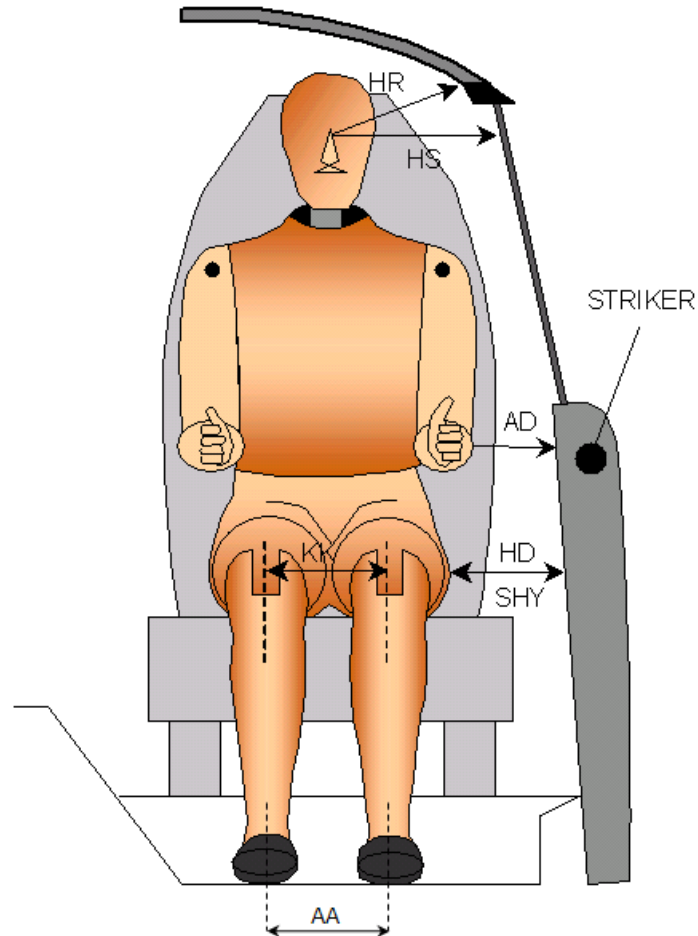
Reference point:

- +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: 2015 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
 Test Date: 8/27/2015

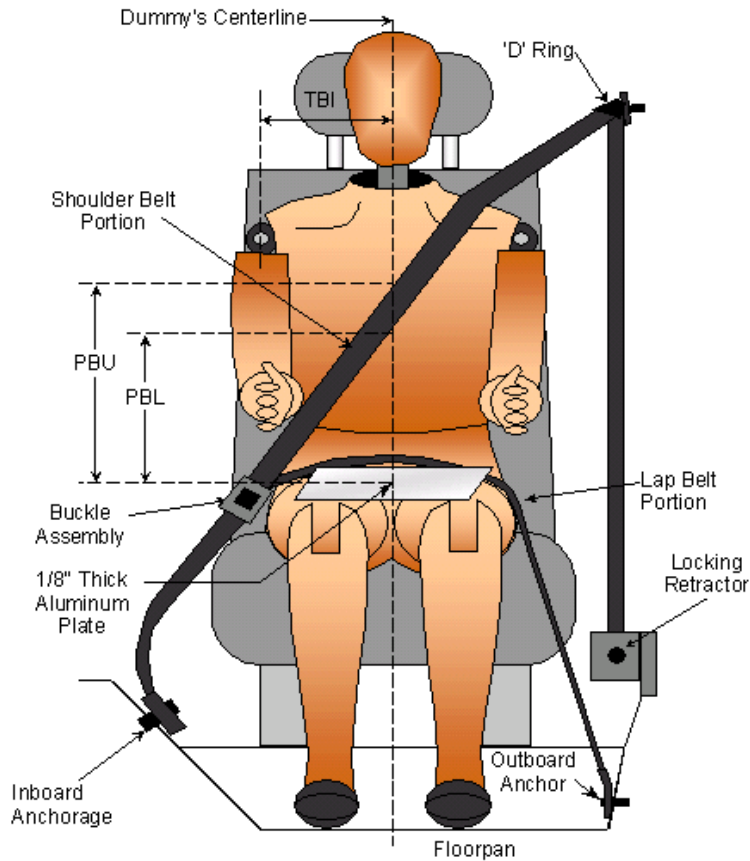


Code	Description	Units	Driver	Front Passenger	Rear Passenger
AD	Arm to Door	mm	137	85	85
HD	H-Point to Door	mm	138	171	146
HR	Head to Side Header	mm	204	280	233
HS	Head to Side Window	mm	340	360	350
KK	Knee to Knee	mm	362	167	164
SHY	Striker to H-Point (Y Direction)	mm	220	250	245
AA	Ankle to Ankle	mm	358	165	164

DATA SHEET NO. 5 SEAT BELT POSITIONING DATA

Test Vehicle: 2015 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
Test Date: 8/27/2015



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger	Rear Pass.
PBU — Top surface of reference to belt upper edge	mm	385	295	305
PBL — Top surface of reference to belt lower edge	mm	310	230	230

BELT LENGTH DATA

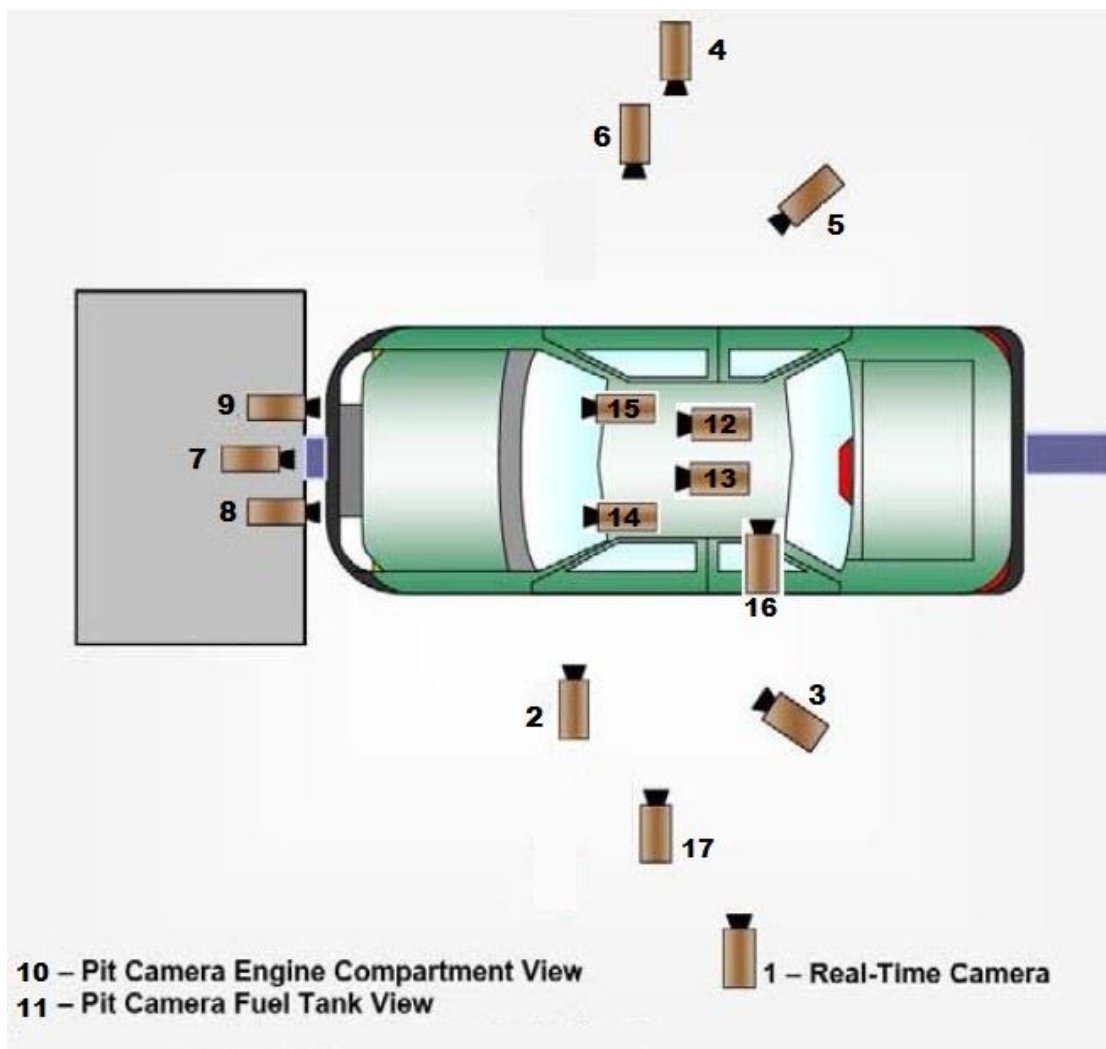
Measurement Description	Units	Driver	Passenger	Rear Pass.
Shoulder belt length as measured on ATD	mm	840	855	900
Lap Belt Length as measured on ATD	mm	725	465	540
Remainder of belt on reel	mm	765	1020	1160
Total belt length for continuous webbing systems	mm	2330	2340	2600

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

Test Vehicle: 2015 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
Test Date: 8/27/2015

HORIZONTAL LOCATION



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

Test Vehicle: 2015 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
 Test Date: 8/27/2015

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	-929	-9576	-1596	50	1000
3	Left Angle	-2544	-2947	-2225	28	1000
4	Right Overall	-1761	8147	-1094	24	1000
5	Right Angle	-2636	2580	-2002	28	1000
6	Right Front Half	-1012	6288	-1078	28	1000
7	Windshield	100	0	-3525	20	1000
8	Driver Windshield	-450	-606	-1989	12.5	1000
9	Passenger Windshield	-450	606	-1989	12.5	1000
10	Pit Front	-866	0	1530	13	1000
11	Pit Rear	-1924	0	1521	13	1000
12	Onboard Driver Airbag	2549	75	-1314	12.5	1000
13	Onboard Passenger Airbag	-2549	-168	-1314	12.5	1000
14	Onboard Driver Toepan	-1642	-709	-413	6.5	1000
15	Onboard Front Passenger Toepan	-1663	709	-413	6.5	1000
16	Onboard Rear Passenger Side View	-2806	507	-1914	12.5	1000
17	Left Overall	-2070	-9117	-1639	24	1000

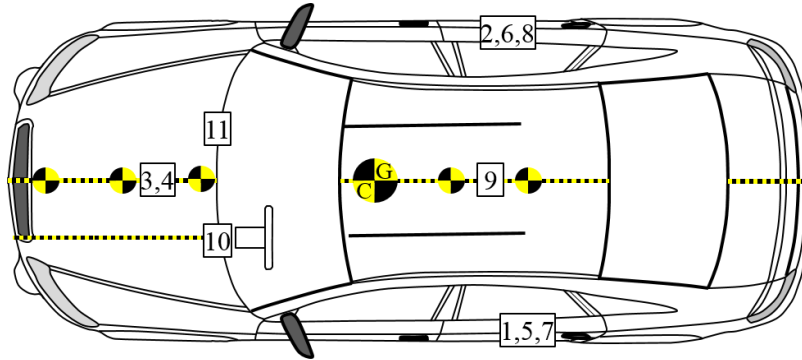
Reference Point:

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

DATA SHEET NO. 7
VEHICLE INSTRUMENTATION DATA

Test Vehicle: 2015 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
Test Date: 8/27/2015



VEHICLE INSTRUMENTATION PRE-TEST LOCATIONS

No.	Accelerometer Location	Axes	Units	Measurements (mm)		
				X	Y	Z
1	Left Rear Seat Cross Member	X,Z	mm	1136	-79	182
2	Right Rear Seat Cross Member	X,Z	mm	1124	757	183
3	Top of Engine	X	mm	3415	384	-230
4	Bottom of Engine	X	mm			
5	Left Sill	X,Y	mm	1409	-690	186
6	Right Sill	X,Y	mm	1381	689	179
7	Left Rear Seat Cross Member Redundant	X,Z	mm	1136	-780	182
8	Right Rear Seat Cross Member Redundant	X,Z	mm	1124	760	183
9	Linear Acceleration & Angular Rate Sensors	X	mm	1592	0	212
		Y	mm	1578	11	214
		Z	mm	1581	0	209
10	Driver Toe Pan	X,Y,	mm	2967	-300	141
11	Front Passenger Toe Pan	X,Y,	mm	2907	340	144

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.

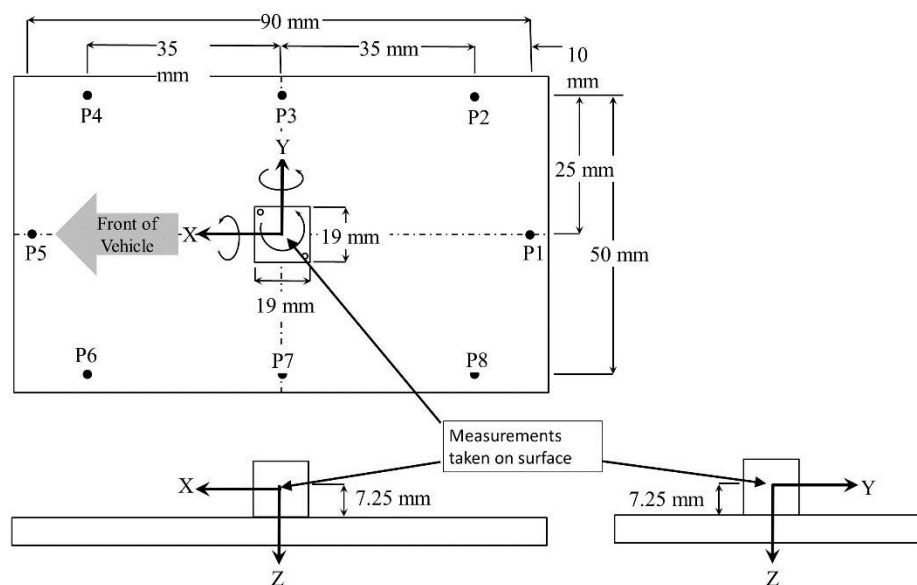
- +X – From the rear of the vehicle to the front of the vehicle
- +Y – From the left side of the vehicle to the right side of the vehicle
- +Z – From the top of the vehicle to the bottom of the vehicle

DATA SHEET NO. 7 (CONTINUED) VEHICLE INSTRUMENTATION DATA

Test Vehicle: 2015 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
Test Date: 8/27/2015

ANGULAR RATE SENSOR



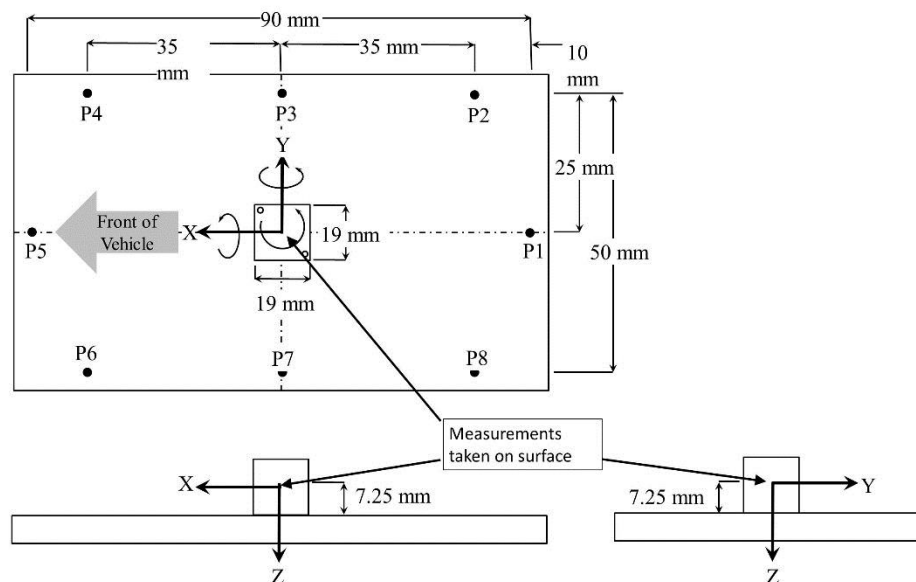
VEHICLE COORDINATE SYSTEM					
No.	Accelerometer Location	Units	Measurements (mm)		
			X	Y	Z
ACC-1	Accelerometer CG – X Direction	mm	1592	0	212
ACC-2	Accelerometer CG – Y Direction	mm	1578	11	214
ACC-3	Accelerometer CG – Z Direction	mm	1581	0	209
M1	Mounting Bolt 1	mm	1573	-8	209
M2	Mounting Bolt 2	mm	1588	7	209
P1	Plate Point 1	mm	1536	0	224
P2	Plate Point 2	mm	1546	25	223
P3	Plate Point 3	mm	1581	25	223
P4	Plate Point 4	mm	1616	25	222
P5	Plate Point 5	mm	1626	0	223
P6	Plate Point 6	mm	1616	-25	224
P7	Plate Point 7	mm	1581	-25	224
P8	Plate Point 8	mm	1546	-25	225

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

Test Vehicle: 2015 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
Test Date: 8/27/2015

ANGULAR RATE SENSOR



DRIVER GLOBAL COORDINATE SYSTEM					
No.	Accelerometer Location	Units	Measurements (mm)		
			X	Y	Z
ACC-1	Accelerometer CG – X Direction	mm	-211	741	-296
ACC-2	Accelerometer CG – Y Direction	mm	-224	752	-294
ACC-3	Accelerometer CG – Z Direction	mm	-222	741	-299
M1	Mounting Bolt 1	mm	-230	733	-299
M2	Mounting Bolt 2	mm	-215	748	-299
P1	Plate Point 1	mm	-267	741	-284
P2	Plate Point 2	mm	-257	766	-285
P3	Plate Point 3	mm	-222	766	-285
P4	Plate Point 4	mm	-187	766	-285
P5	Plate Point 5	mm	-177	741	-285
P6	Plate Point 6	mm	-187	716	-284
P7	Plate Point 7	mm	-222	716	-284
P8	Plate Point 8	mm	-257	716	-283

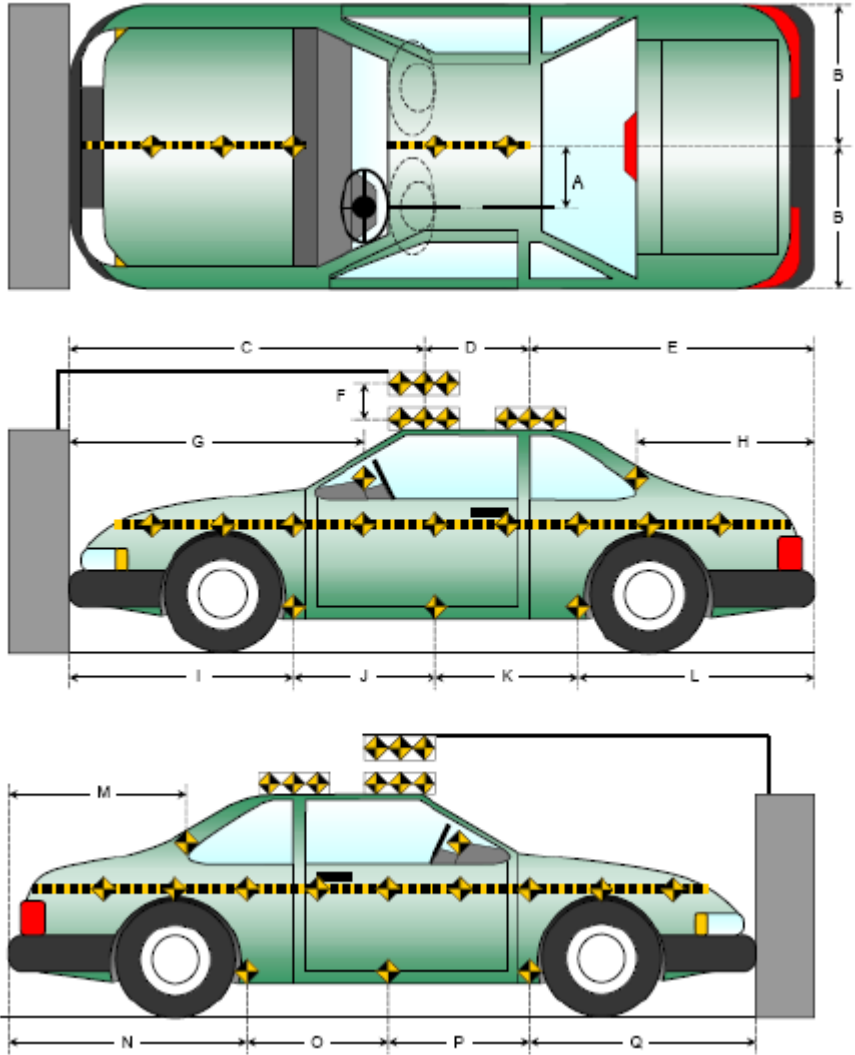
DATA SHEET NO. 8
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2015 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
 Test Date: 8/27/2015

Item	Value
A	322
B	849
C	2444
D	611
E	1004
F	132
G	1509
H	820
I	1231
J	841
K	853
L	1133
M	821
N	1131
O	849
P	848
Q	1230

All units in millimeters



DATA SHEET NO. 9
TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2015 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
 Test Date: 8/27/2015

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: 2015 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
Test Date: 8/27/2015

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	Front Airbag & Headrest	Headrest & side headliner
Upper Torso Contact	Front Airbag & Headrest	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	Cracks throughout
Window Damage	None
Other Notable Effects	None

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	575
Center	mm	669
Right Side	mm	723
Average	mm	656

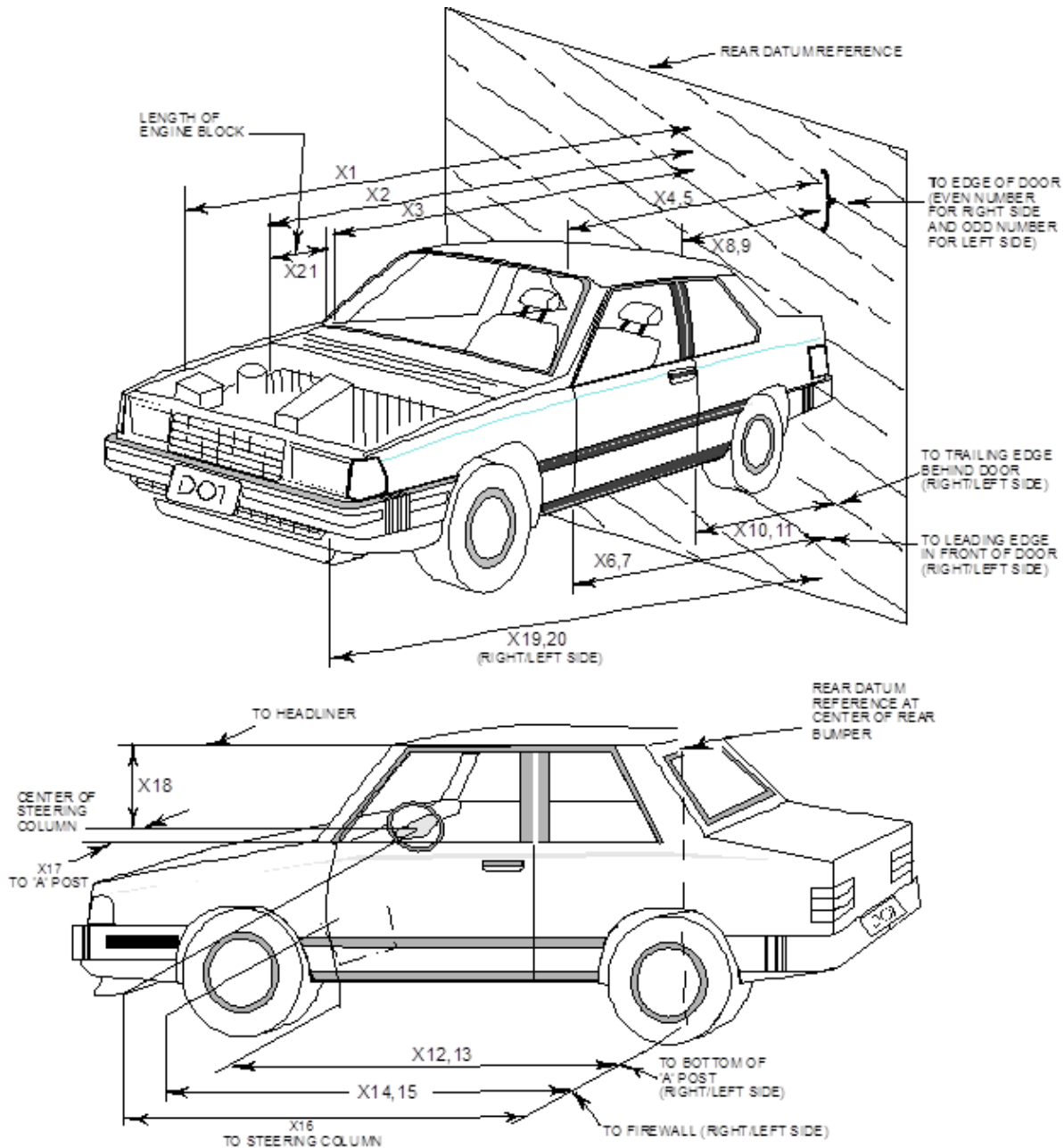
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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: 2015 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
 Test Date: 8/27/2015



DATA SHEET NO. 11 (CONTINUED)
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2015 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
 Test Date: 8/27/2015

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	mm	4069	3616	-453
2	Rear Surface of Vehicle (RSOV) to Front of Engine	mm	3549	3274	-274
3	RSOV to Firewall	mm	3333	3299	-34
4	RSOV to Upper Leading Edge of Right Door	mm	2799	2796	-3
5	RSOV to Upper Leading Edge of Left Door	mm	2798	2795	-2
6	RSOV to Lower Leading Edge of Right Door	mm	2796	2790	-7
7	RSOV to Lower Leading Edge of Left Door	mm	2793	2795	2
8	RSOV to Upper Trailing Edge of Right Door	mm	1751	1750	-1
9	RSOV to Upper Trailing Edge of Left Door	mm	1751	1749	-2
10	RSOV to Lower Trailing Edge of Right Door	mm	1768	1765	-3
11	RSOV to Lower Trailing Edge of Left Door	mm	1768	1765	-3
12	RSOV to Bottom of "A" Post of Right Side	mm	2995	2994	-1
13	RSOV to Bottom of "A" Post of Left Side	mm	2995	2994	-1
14	RSOV to Firewall, Right Side	mm	3206	3236	30
15	RSOV to Firewall, Left Side	mm	3293	3250	-43
16	RSOV to Steering Column	mm	2382	2401	19
17	Center of Steering Column to "A" Post	mm	291	285	-6
18	Center of Steering Column to Headliner	mm	433	417	-16
19	RSOV to Right Side of Front Bumper	mm	4031	3537	-494
20	RSOV to Left Side of Front Bumper	mm	4031	3736	-295
21	Length of Engine Block	mm	246	246	0
RD	RSOV to Right Side of Dash Panel	mm	2537	2535	-1
CD	RSOV to Center of Dash Panel	mm	2603	2601	-2
LD	RSOV to Left Side of Dash Panel	mm	2560	2560	1

UR* = Unrecoverable Data Point

DATA SHEET NO. 12
ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2015 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
 Test Date: 8/27/2015

VEHICLE INFORMATION

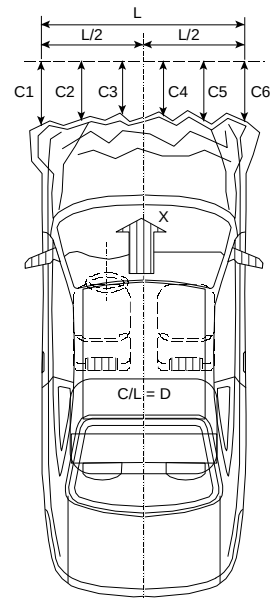
VIN: 3HGGK5G53FM773866 Wheelbase (mm): 2531
 Vehicle Size Category: Passenger Test Weight (kg): 1427

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): 56.27
 Velocity Change (kph): 56.27

CRUSH PROFILE

Collision Deformation Classification: 12FDEW3
 Midpoint of Damage: C4
 Damage Region Length (mm): 1339
 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	3904	3622	282
C2	Crush zone 2 at left side	mm	4033	3680	353
C3	Crush zone 3 at left side	mm	4057	3639	418
C4	Crush zone 4 at right side	mm	4058	3569	489
C5	Crush zone 5 at right side	mm	4034	3496	538
C6	Crush zone 6 at right side	mm	3905	3506	399
L	C1 to C6	mm	1339	1353	-13
	Logitudinal horizontal distance from the tip of the front bumper to the base of the windshield	mm	803	3606	-2803

DATA SHEET NO. 13
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2015 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

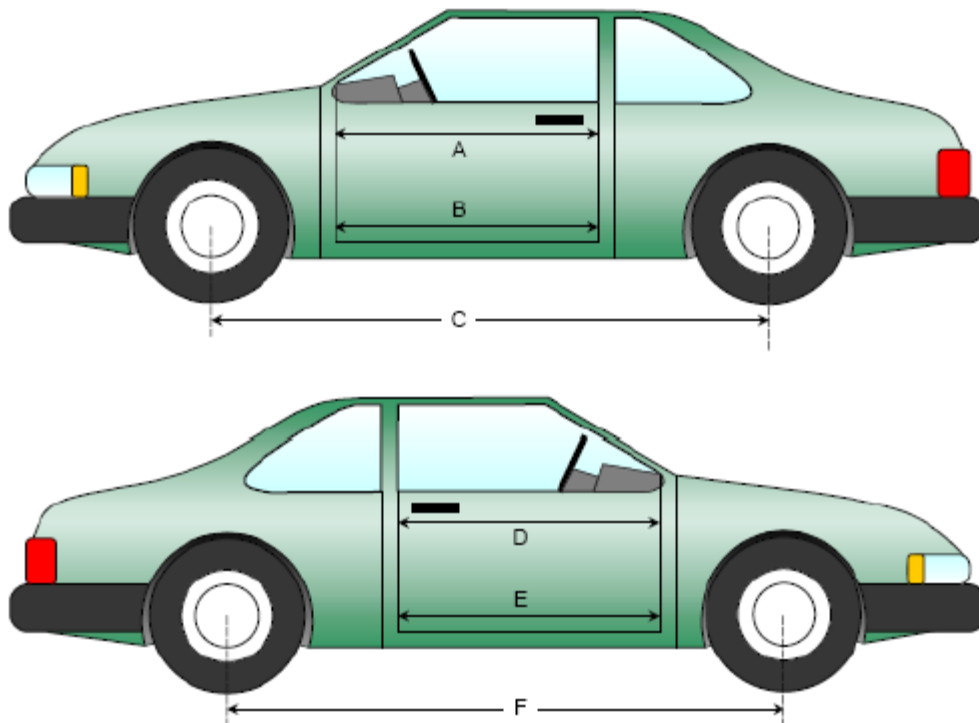
NHTSA No.: R20155376
 Test Date: 8/27/2015

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	875	875	0
B	Left Side Lower	mm	848	848	0
D	Right Side Upper	mm	873	873	0
E	Right Side Lower	mm	849	849	0

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2531	2416	-115
F	Right Side Wheelbase	mm	2531	2402	-129



Left & Right Side Views

DATA SHEET NO.13 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

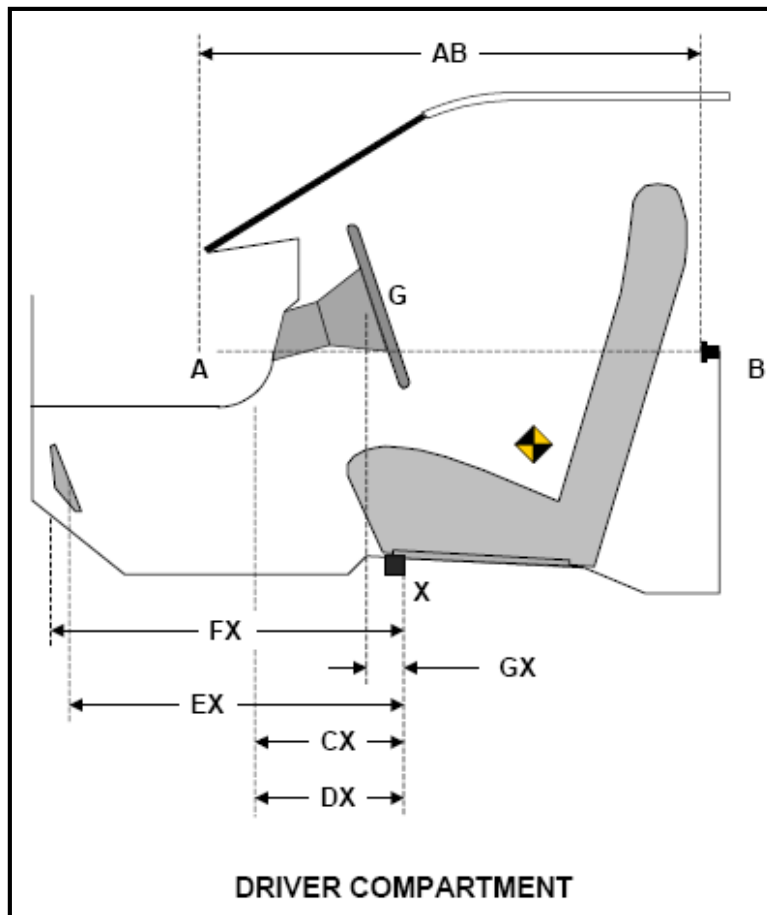
Test Vehicle: 2015 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
 Test Date: 8/27/2015

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	750	751	1
CX	Left Knee Bolster to X	mm	217	215	-2
DX	Right Knee Bolster to X	mm	226	245	19
EX	Brake Pedal to X	mm	484	476	-8
FX	Foot Rest to X	mm	534	497	-37
GX	Center of Steering Column Wheel Hub to X	mm	9	31	22

X = Front of Seat Track (Stationary)



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

Test Vehicle: 2015 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
 Test Date: 8/27/2015

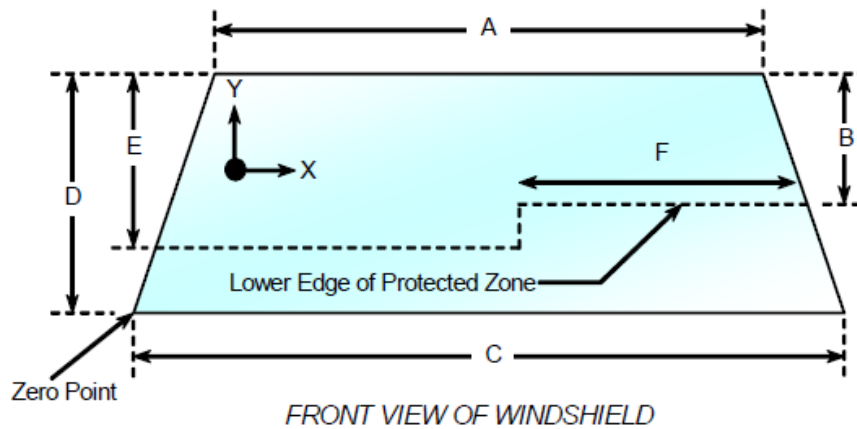
Please provide windshield mounting details. A 0.8 mm trim surrounds the top and side of windshield while a plastic shroud is on the bottom.

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	2162.5	2162.5	100.0%
Right Side	2162.5	2162.5	100.0%
Total	4325	4325	100.0%



Item	Units	Value
A	mm	1075
B	mm	610
C	mm	1350
D	mm	950
E	mm	585
F	mm	525

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: 2015 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
Test Date: 8/27/2015

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

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

Test Time: 12:00 PM

Stoddard Solvent Spillage Measurements

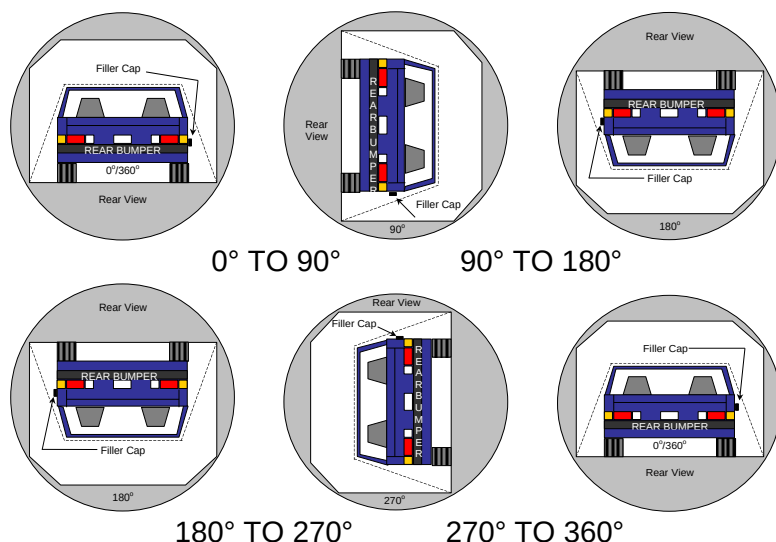
A.	From impact until vehicle motion ceases: (Maximum allowable = 1 oz.)	<u>0</u>	oz
B.	For the 5-minute period after motion ceases: (Maximum allowable = 5 oz.)	<u>0</u>	oz
C.	For the following 25 minutes: (Maximum allowable = 1 oz./minute)	<u>0</u>	oz
D.	Spillage	<u>0</u>	oz

DATA SHEET NO. 15

FMVSS 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2015 Honda Fit
 Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
 Test Date: 8/27/2015



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°	62	300	362
270° to 360°	70	300	370

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	

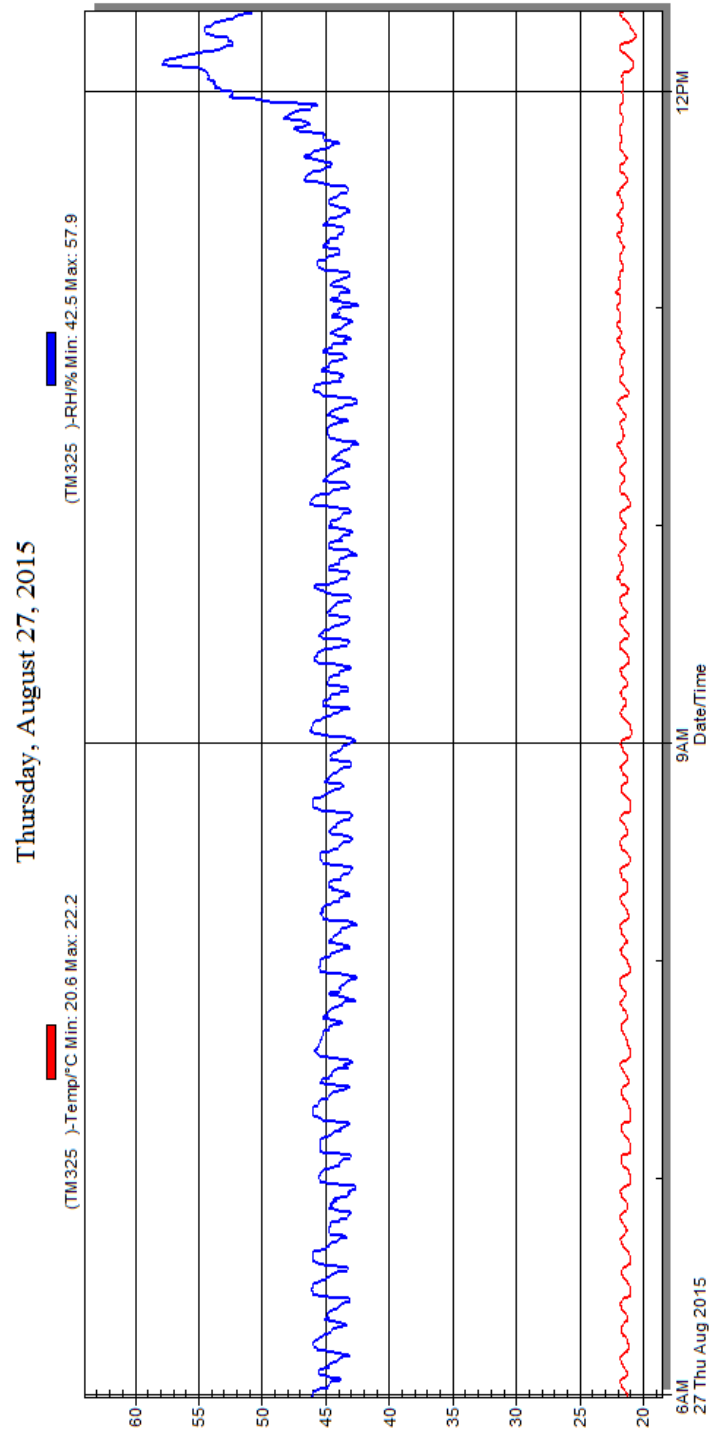
SOLVENT SPILLAGE LOCATION TABLE

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: 2015 Honda Fit
Test Program: 56.3 KPH Research Frontal Rigid Barrier Test

NHTSA No.: R20155376
Test Date: 8/27/2015



Temperature Stabilization Chart/Data

APPENDIX A
PHOTOGRAPHS

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62	Pre-Test Passenger's Side Knee Bolster	A-35
63	Post-Test Passenger's Side Knee Bolster	A-36
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95	Post-Test Rear Passenger Dummy Face	A-52
96	Post-Test Rear Passenger Dummy Head Contact	A-52
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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 Mazdam 3 Frontal As Delivered



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

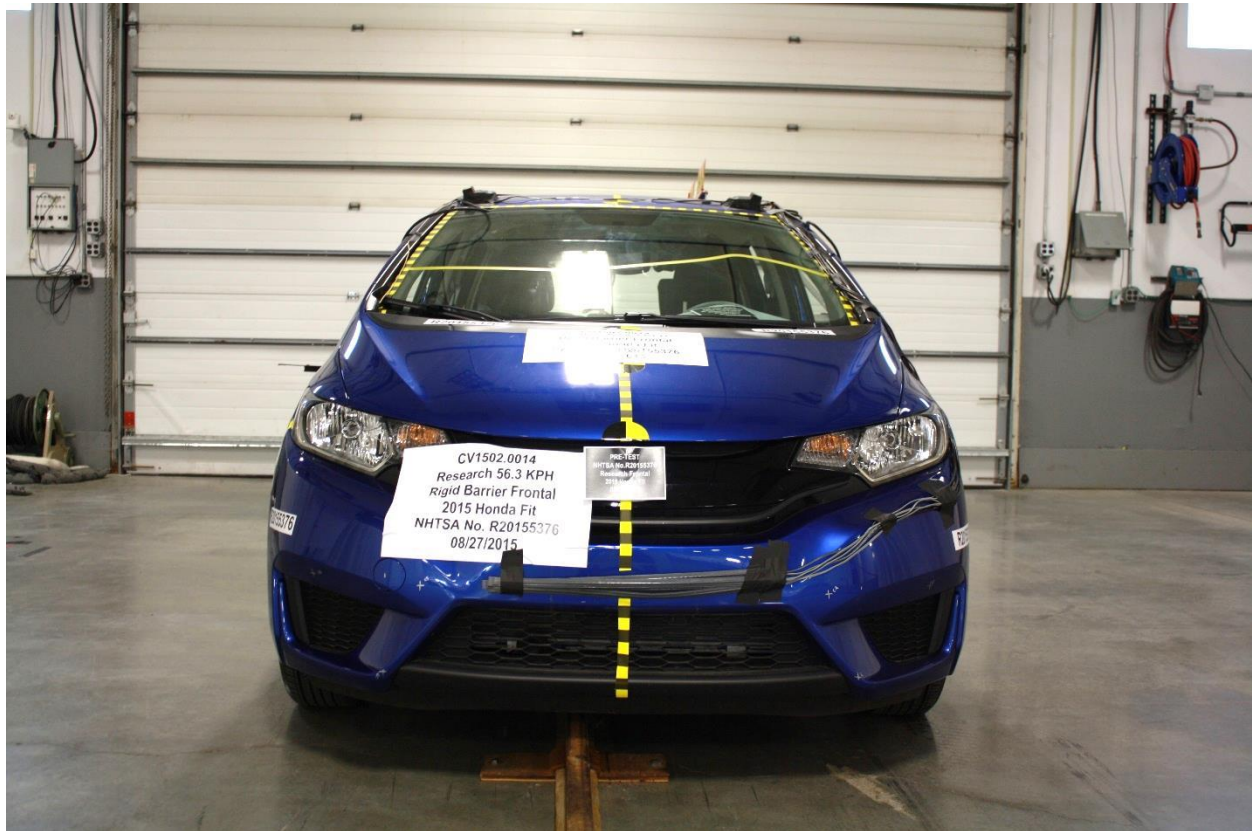


Figure A-7: Pre-Test Front View of Test Vehicle



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

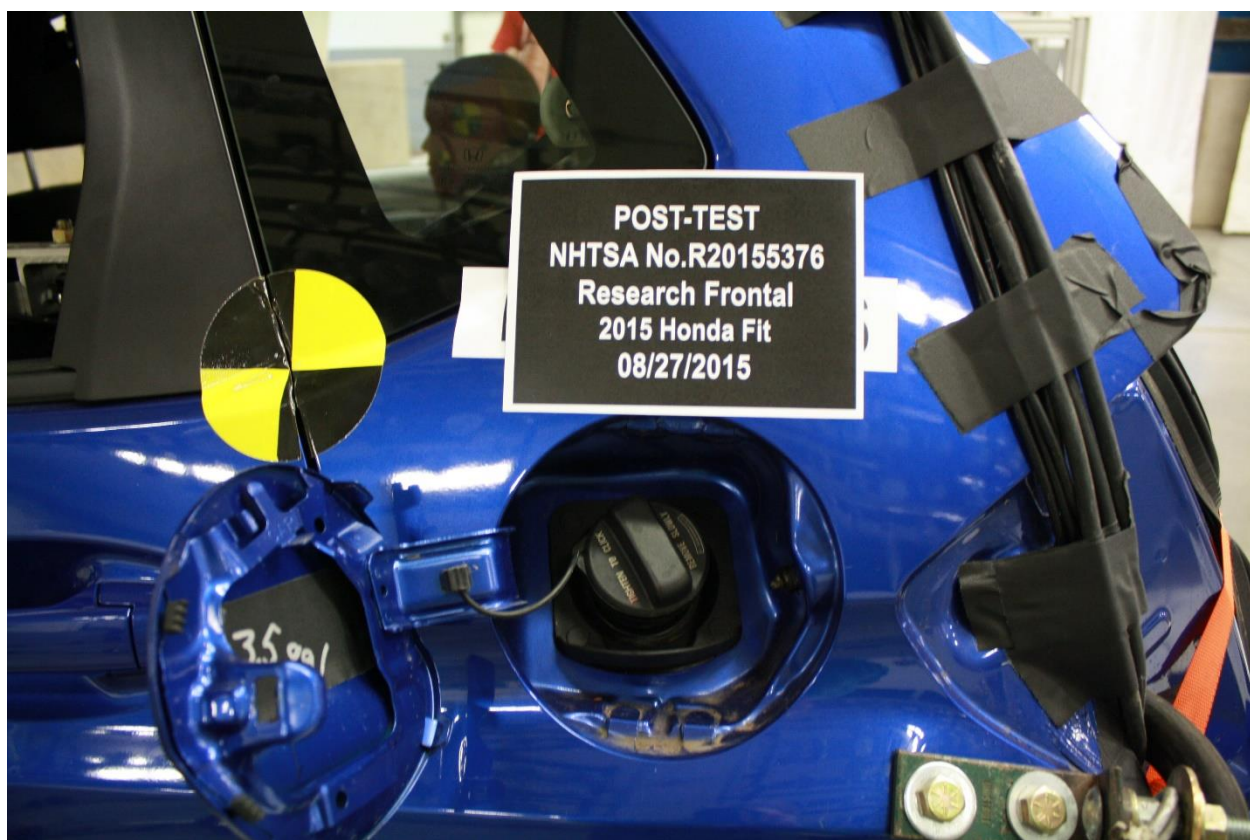


Figure A-22: Post-Test Fuel Filler Cap View

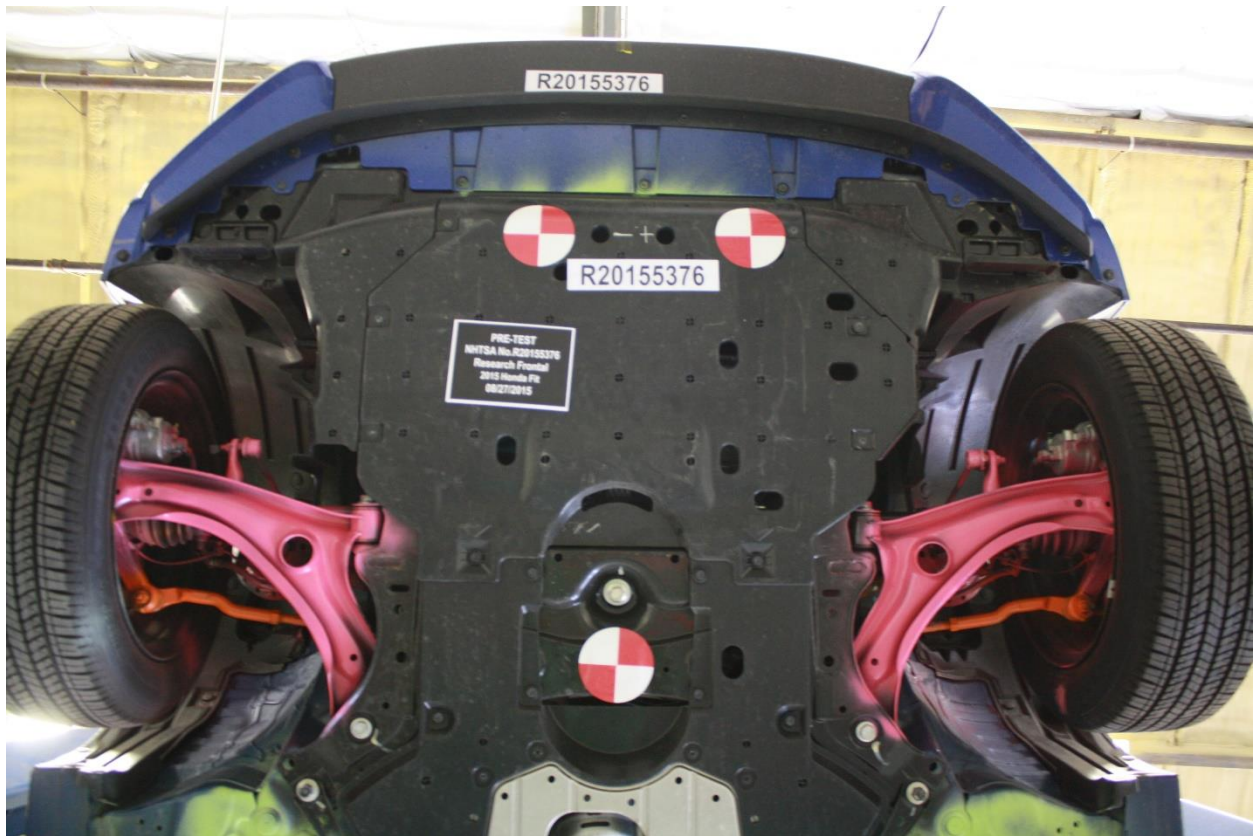


Figure A-23: Pre-Test Front Underbody View

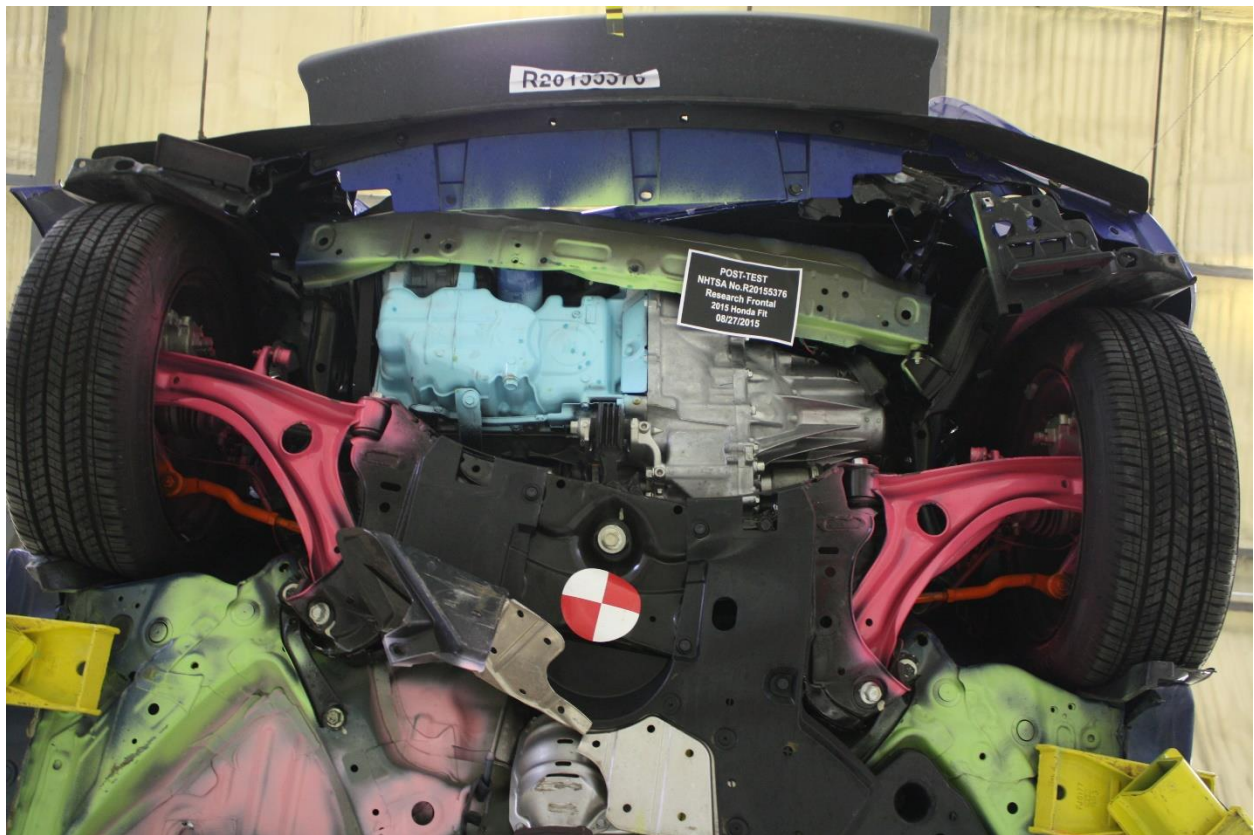


Figure A-24: Post-Test Front Underbody View

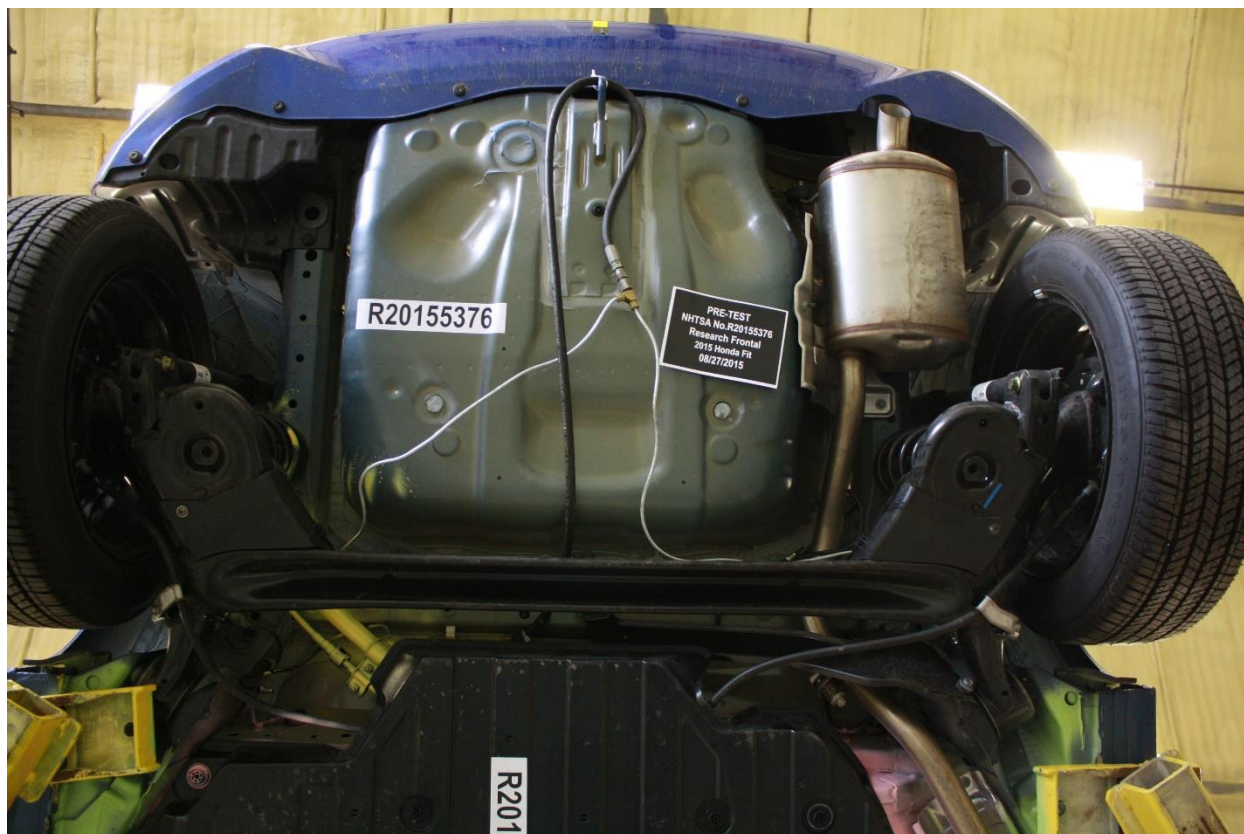


Figure A-25: Pre-Test Rear Underbody View



Figure A-26: Post-Test Rear Underbody View



Figure A-27: Pre-Test Dummy Cable Routing

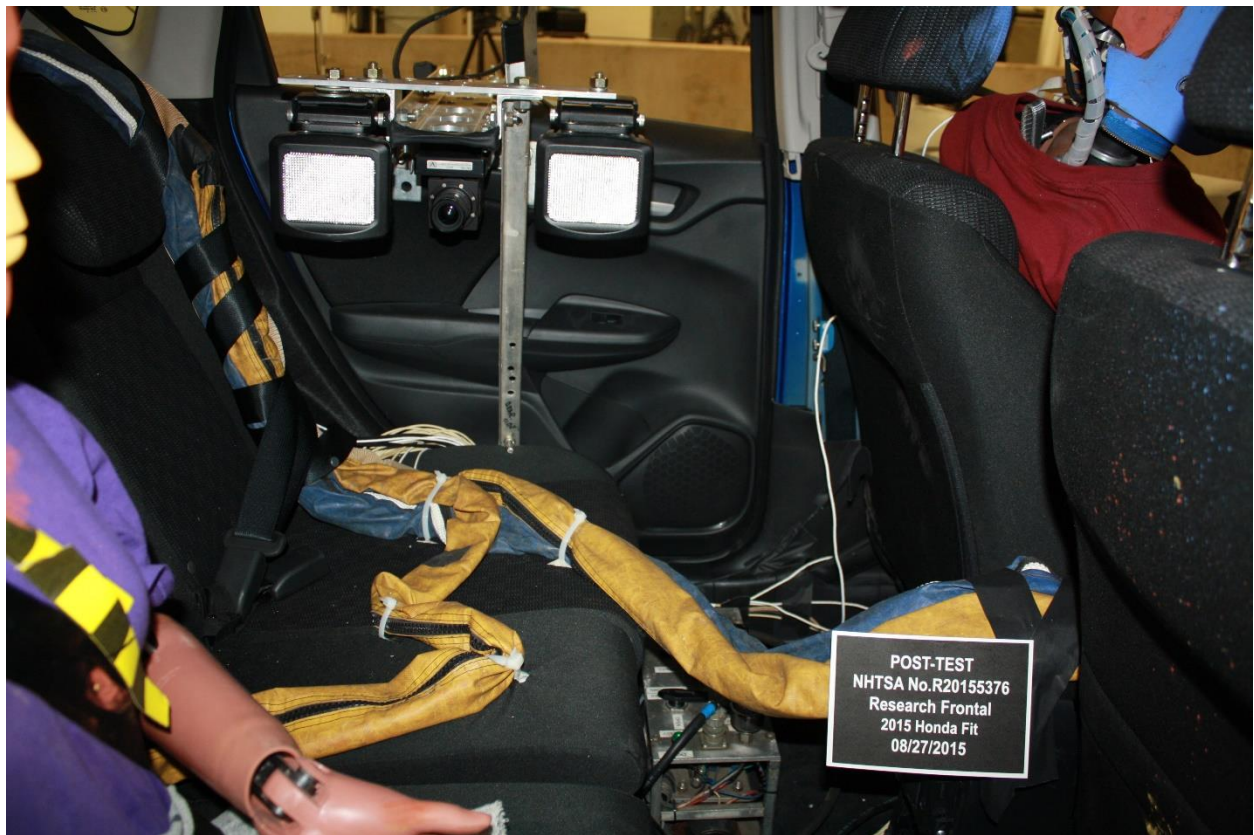


Figure A-28: Post-Test Dummy Cable Routing



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

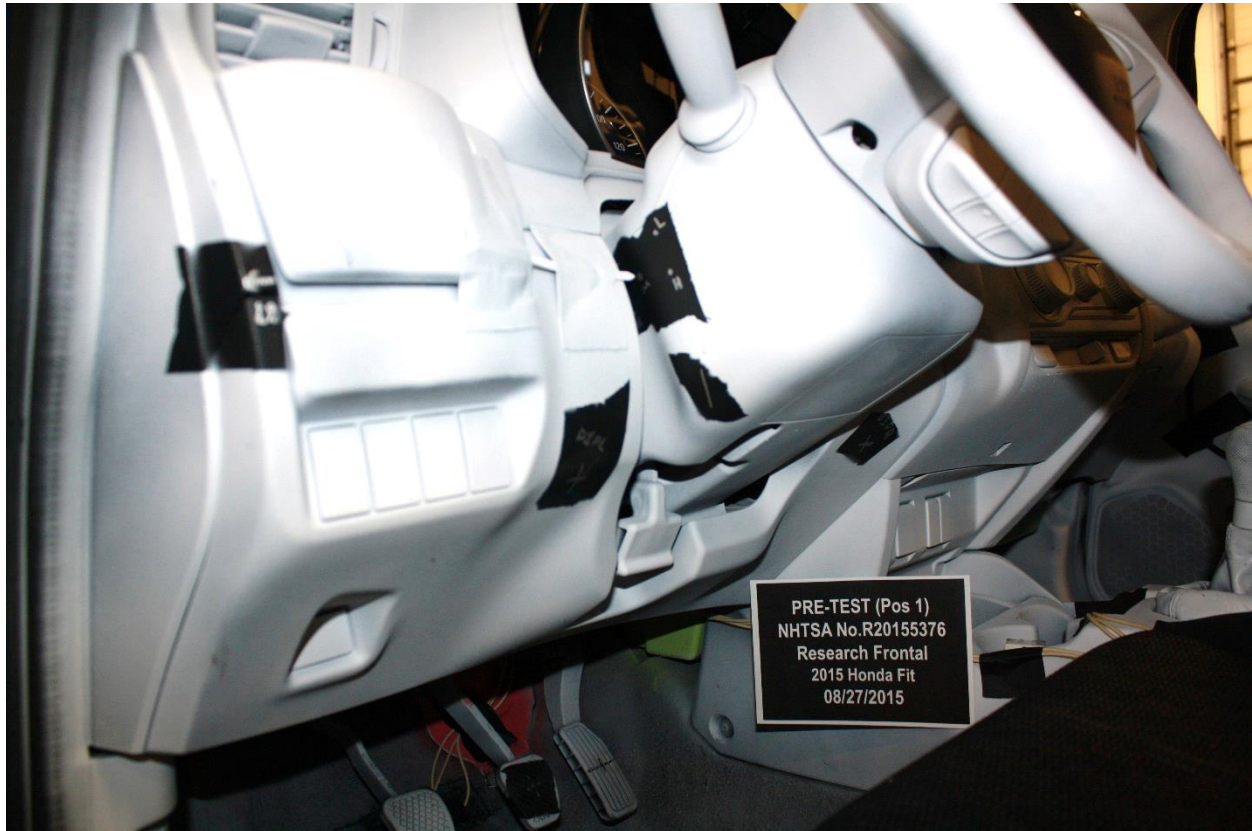


Figure A-41: Pre-Test Driver's Side Knee Bolster

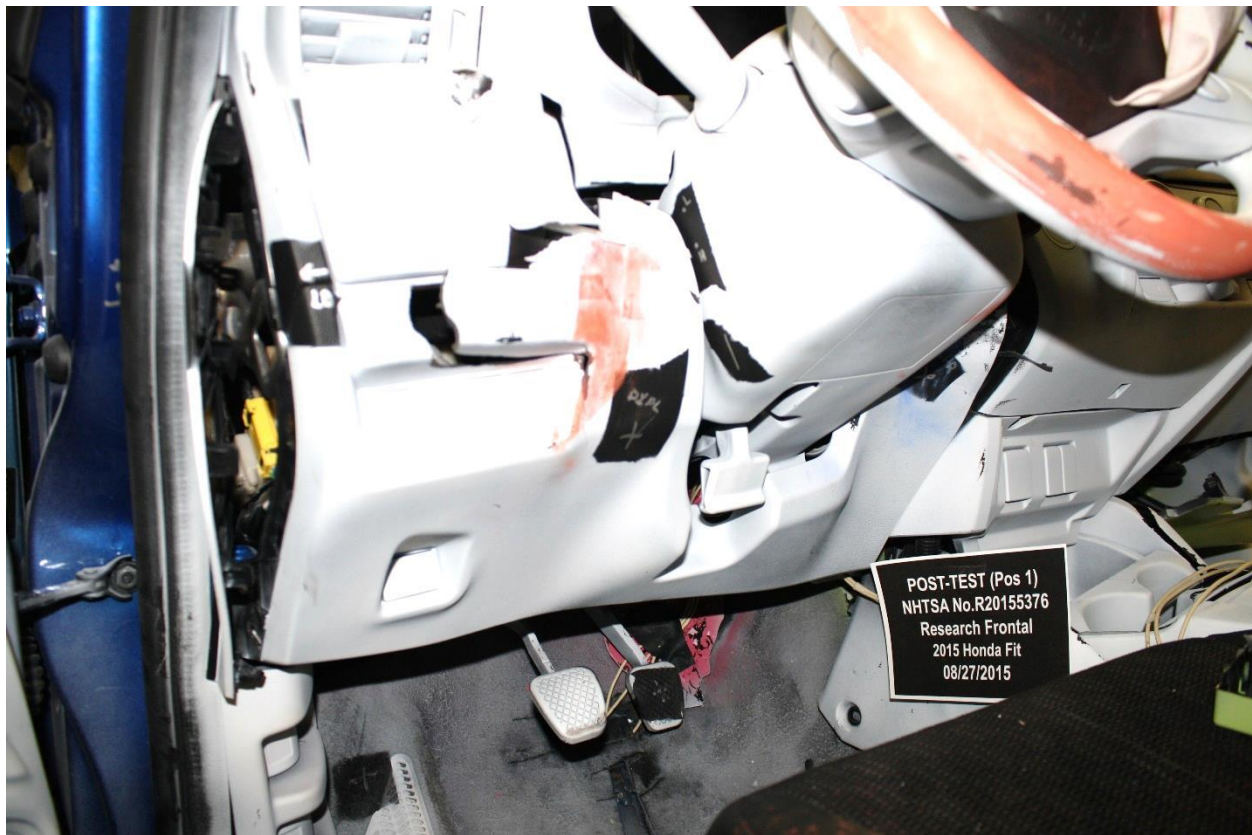


Figure A-42: Post-Test Driver's Side Knee Bolster



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

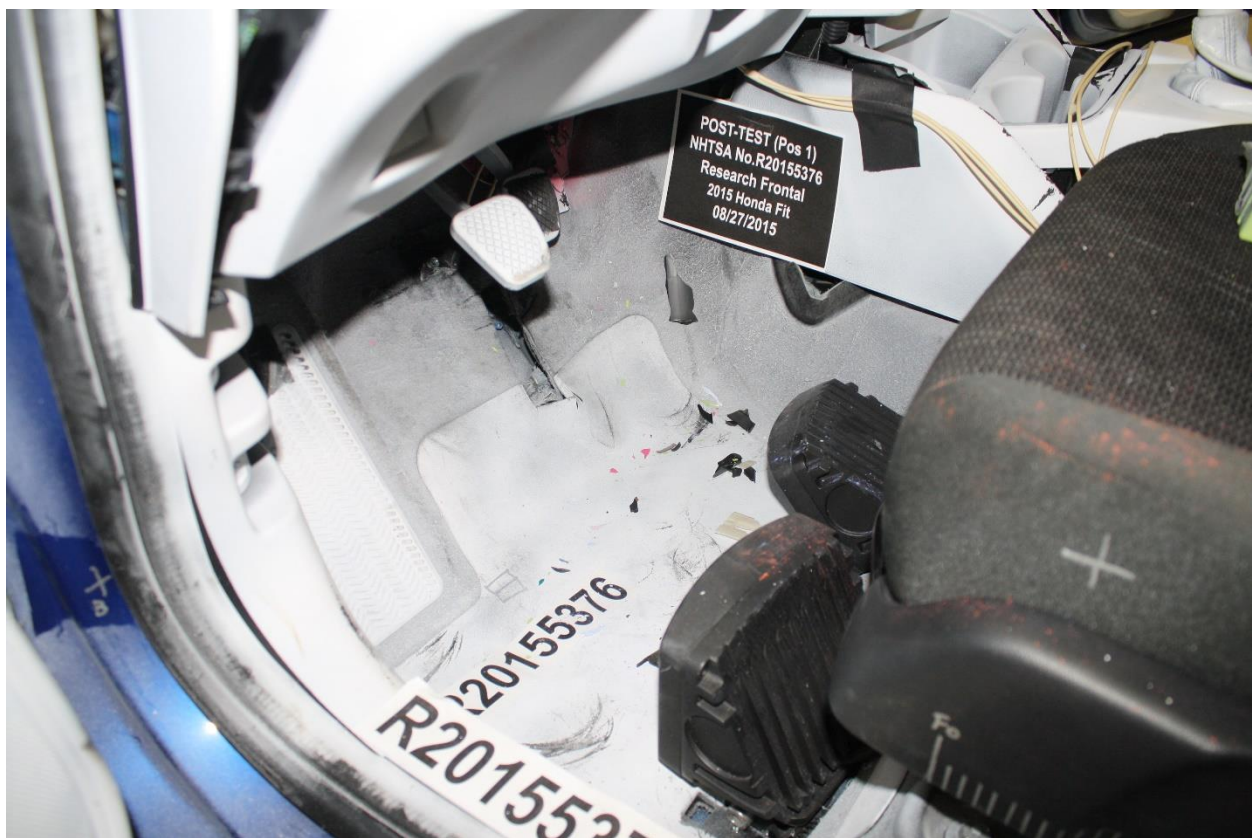


Figure A-44: Post-Test Driver's Side Floorpan



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

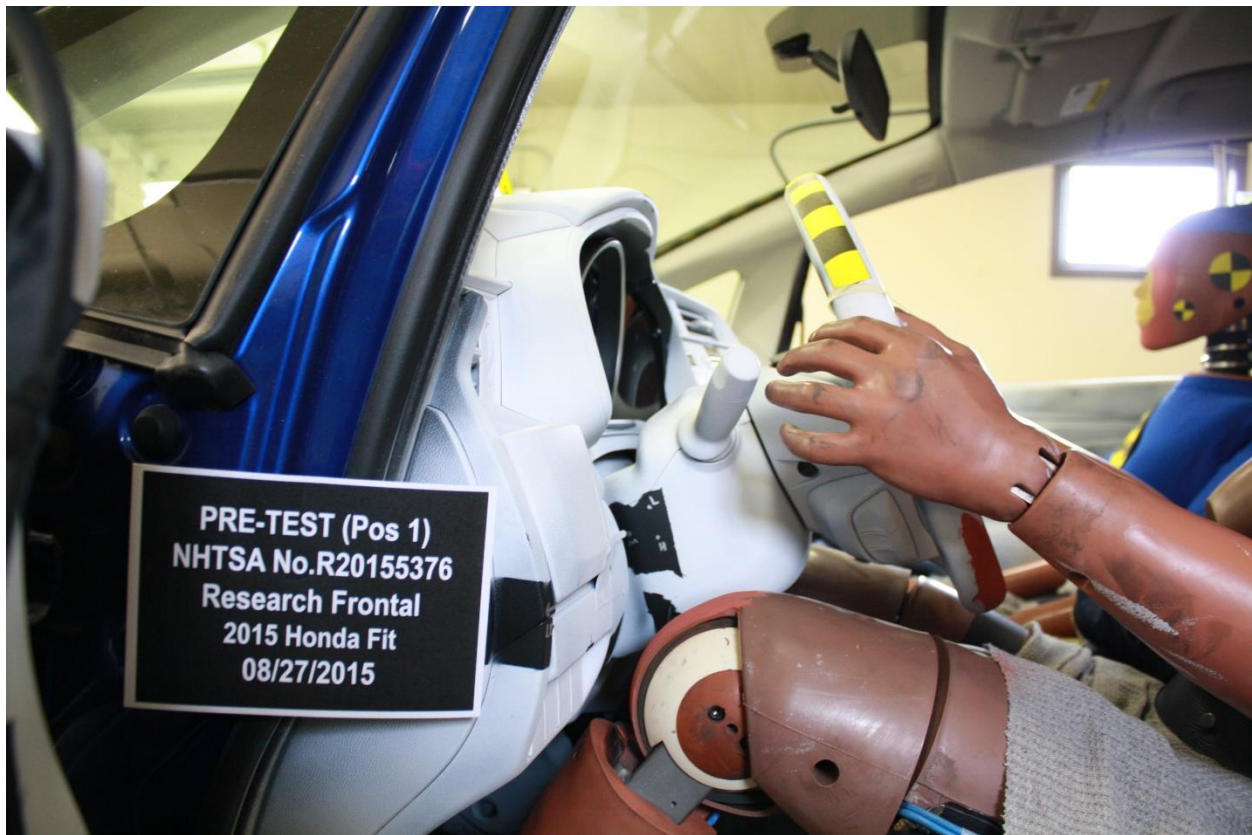


Figure A-48: Pre-Test View of the Steering Wheel



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

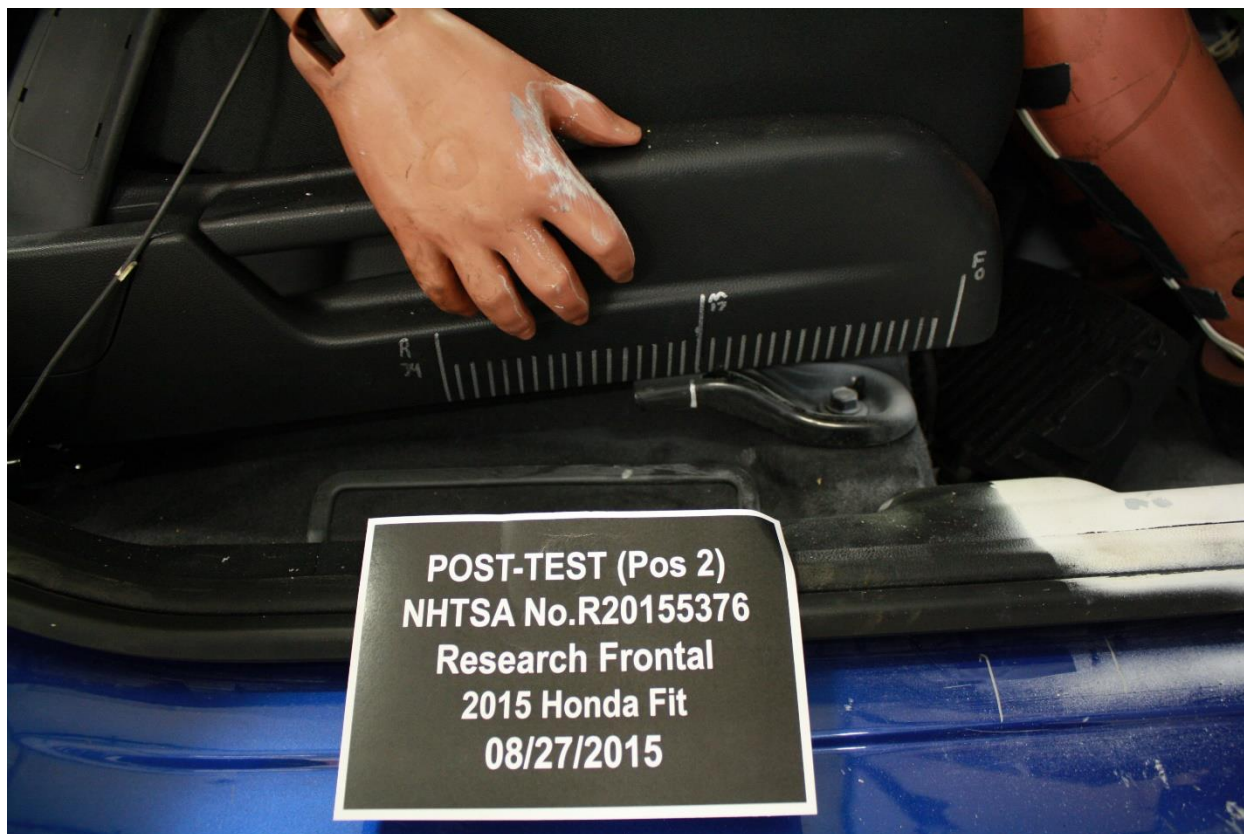


Figure A-57: Post-Test Passenger's Seat Fore-Aft Markings

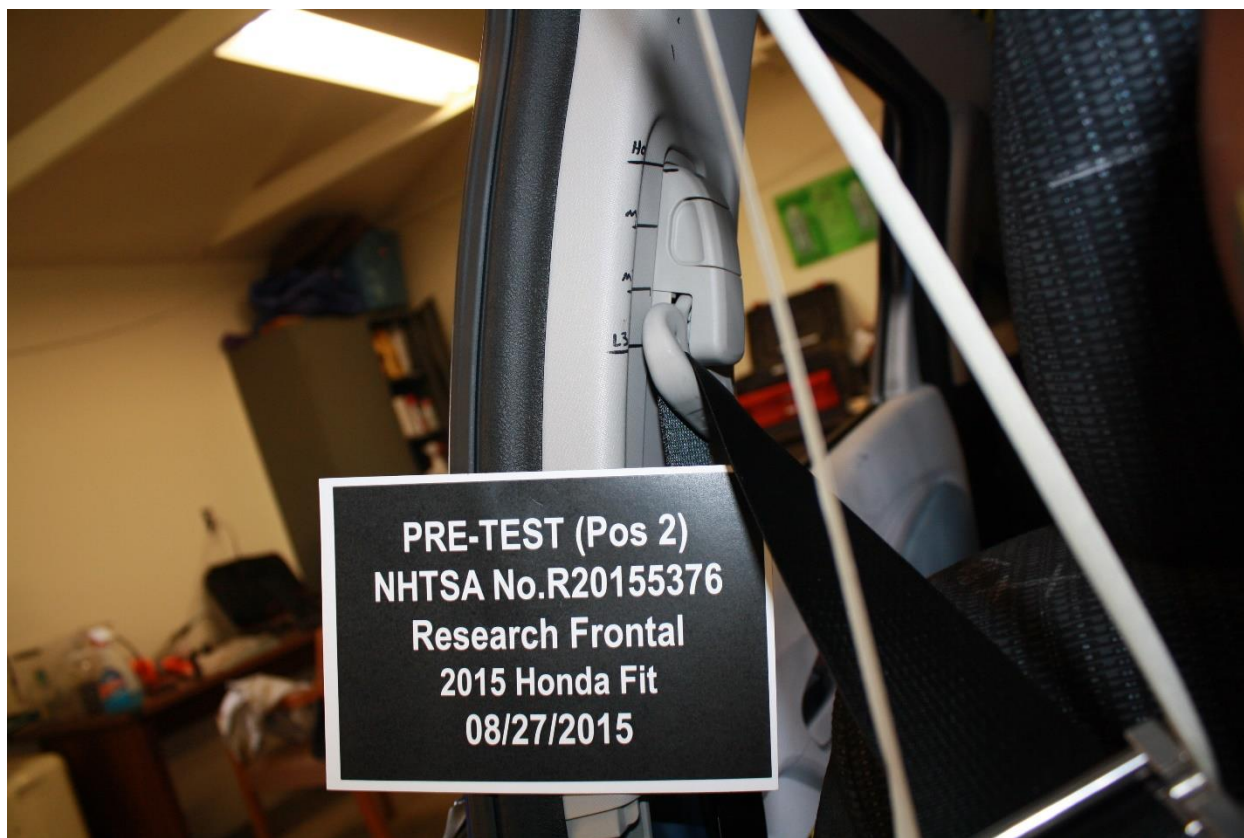


Figure A-58: Pre-Test View of Belt Anchorage for Passenger Dummy



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

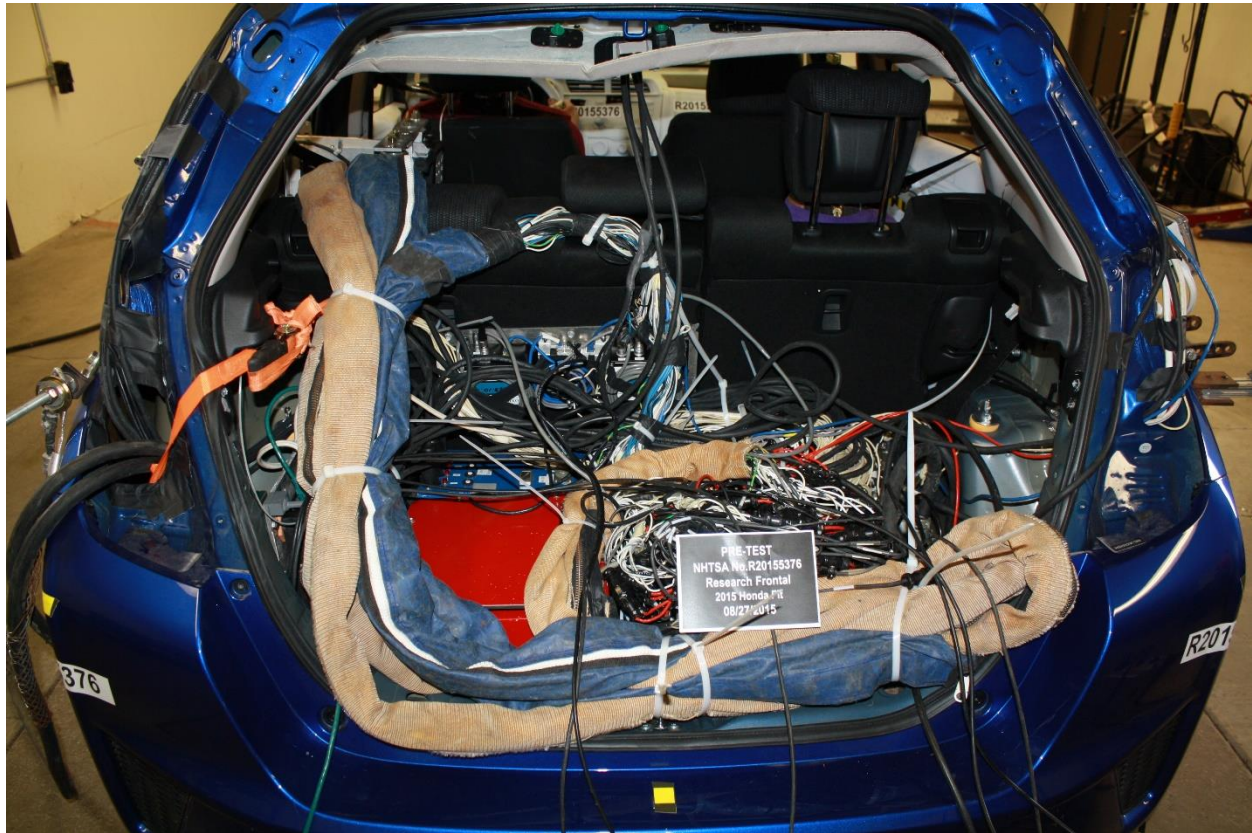


Figure A-69: Photograph of Ballast Installed in Vehicle

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: 2015 Honda Fit Frontal Impact Event

HONDA		2015 FIT 5DR LX EXT. AEGEAN BLUE M. INT. BLACK ENGINE NUMBER: L15B1-1097266										
STANDARD EQUIPMENT AT NO EXTRA COST		Manufacturer's Suggested Retail Price \$15,650.00 Full Tank of Fuel No Charge										
* TECHNICAL FEATURES * 130hp 1.5-Liter DOHC 16-Valve i-VTEC 4-Cylinder Direct Injection Engine w/ Earth Dreams Technology 6-Speed Manual Transmission - Drive-by-Wire Throttle System - Electric Power-Assisted Rack-and-Pinion Steering - Front MacPherson Strut Suspension - Rear Torsion Beam Suspension - Immobilizer Theft-Deterrent System	* INTERIOR FEATURES * - AM/FM/CD/MP3 Audio System with 4 Speakers 5-Inch Color LCD Screen with Rearview Camera - Bluetooth Audio - Bluetooth HandsFreeLink - 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 Mfg. Seat - Power Windows and Programmable Auto Door Locks - Driver's Auto Up/Down Window - Tilt & Telescopic Steering Column - Cargo Area Light - Visor 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 Spoiler - Remote Entry with Security 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 - ACE Body Structure - Daytime Running Lights (DRL) - LATCH System for Child Seats		Destination and Handling \$20.00 TOTAL VEHICLE PRICE (includes Pre-Delivery Service) \$16,470.00 License and title fees, state and local taxes and dealer options and accessories are not included in the manufacturer's suggested retail price.										
HONDA OF ITHACA 315 ELMIRA ROAD ITHACA, NY 14850 PORT OF ENTRY: MASONVILLE, DELIVERY POINT: WINDSOR LOCK SHIP: 834-001 TRANS METHOD: X50 VERACRUZ VIN: 3HGKK5G3FM773866		ORIG. DLR: 206869 REF. NO: 40511 HN CODE: HN-4057 EMISSION: 50 STATE CONTROL NO: 559764 DEALER: 206869										
EPA DOT Fuel Economy and Environment Gasoline Vehicle Fuel Economy 32 MPG combined city/hwy 29 city 37 highway 3.1 gallons per 100 miles Small Station Wagons range from 14 to 116 MPG. The best vehicle rates 116 MPG.		You save \$2,750 in fuel costs over 5 years compared to the average new vehicle. Annual fuel Cost \$1,650 Fuel Economy & Greenhouse Gas Rating (tailpipe only) 1 (Best) 8 10 (Best) This vehicle emits 277 grams CO ₂ per mile. The best emits 0 grams CO ₂ per mile (tailpipe only). Producing and distributing fuel also emits emissions, learn more at fueleconomy.gov. 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 \$1,000 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$3.50 per gallon. MPG is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog. fueleconomy.gov Calculate personalized estimates and compare vehicles.										
PARTS CONTENT INFORMATION FOR VEHICLES IN THIS CARLINE U.S./Canadian Parts Content: 5 % Major Sources of Foreign Parts Content: MEXICO 70 % NOTE: Parts content does not include final assembly, distribution or other non-parts costs.		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. <table border="1"> <tr> <td>Frontal Crash</td> <td>Driver Passenger</td> <td>★★★★★</td> </tr> <tr> <td>Side Crash</td> <td>Front seat Rear seat</td> <td>★★★★★</td> </tr> <tr> <td>Rollover</td> <td></td> <td>★★★★</td> </tr> </table> Based on the risk of injury in a frontal impact. Based on the risk of injury in a side impact. 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 that has been tested at an impact speed of 5 miles per hour and a rear bumper that has been tested at an impact speed of 5 miles per hour, and has sustained no damage to the vehicle's body and minimal damage to the bumper and attachment hardware. Minimal damage to the bumper means 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 car will require repair after a low-speed collision.		Frontal Crash	Driver Passenger	★★★★★	Side Crash	Front seat Rear seat	★★★★★	Rollover		★★★★
Frontal Crash	Driver Passenger	★★★★★										
Side Crash	Front seat Rear seat	★★★★★										
Rollover		★★★★										
FOR THIS VEHICLE Final Assembly Point: CELAYA, CELAYA MEXICO Country of Origin: Engine: MEXICO Transmission: PHILIPPINES												

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

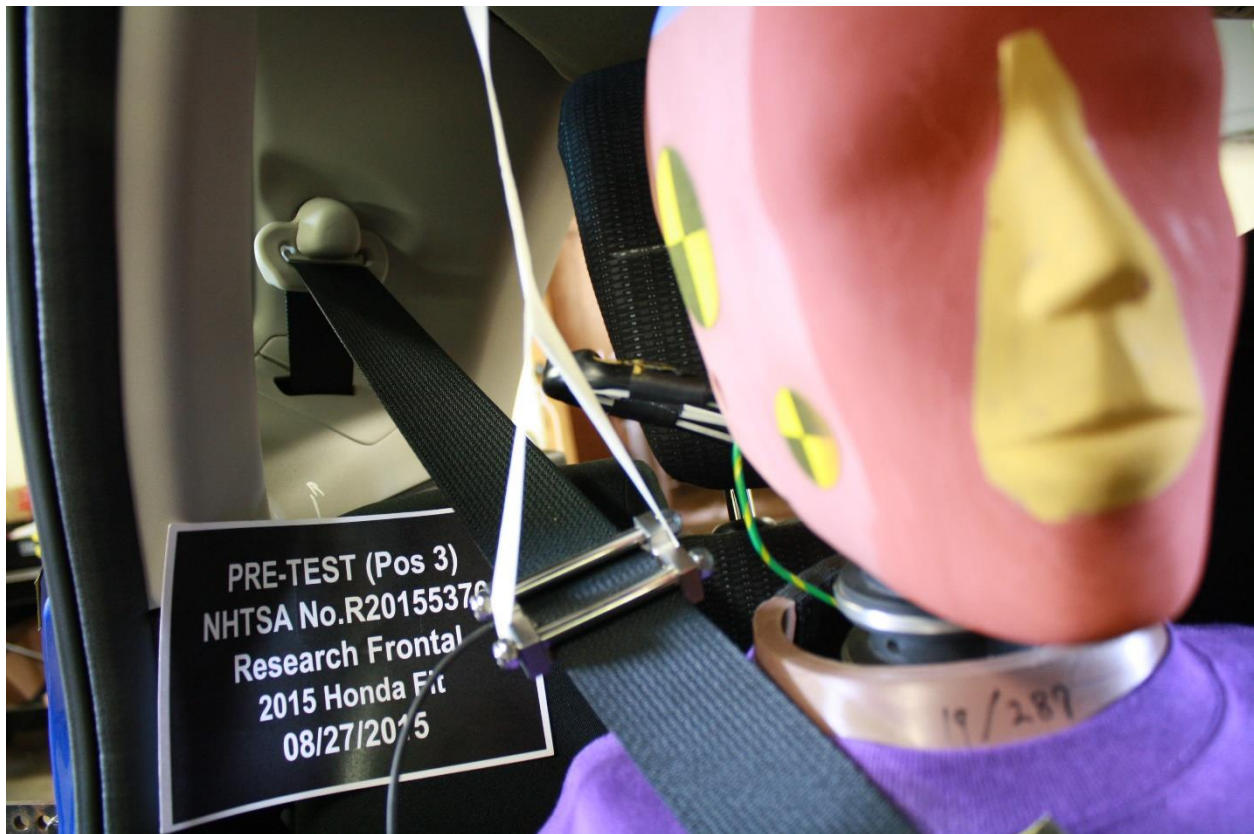


Figure A-87: Pre-Test View of Belt Anchorage for Rear Passenger Dummy

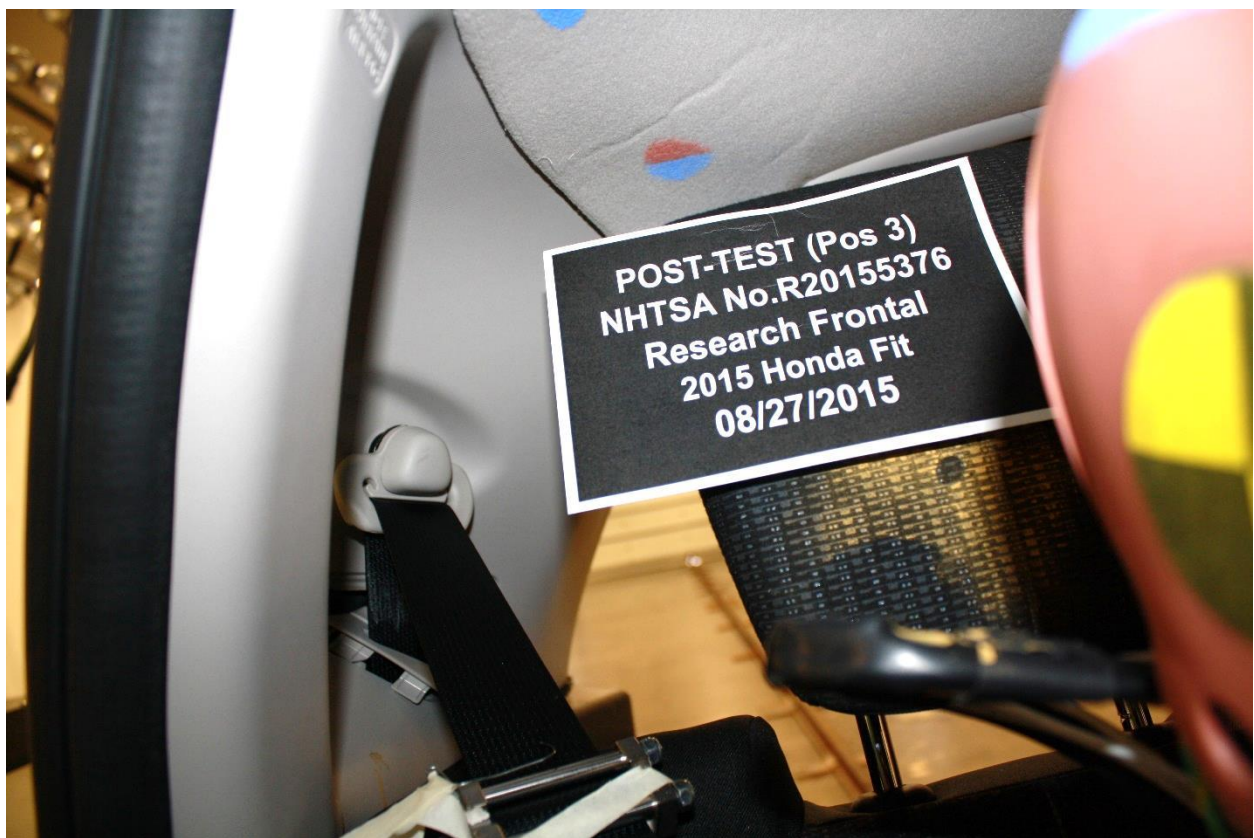


Figure A-88: Post-Test View of Belt Anchorage for Rear Passenger Dummy



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



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

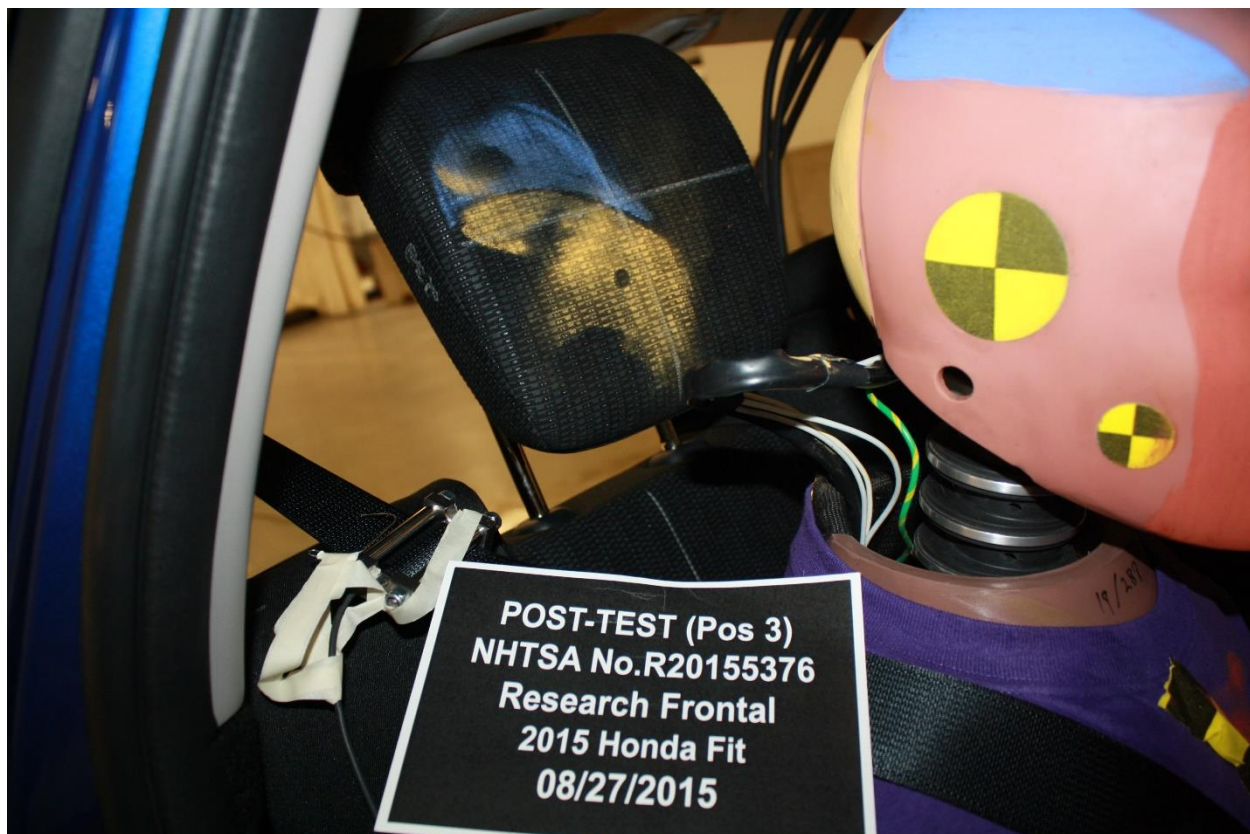


Figure A-97: Post-Test Rear Passenger dummy Contact with Headrest

APPENDIX B
VEHICLE & DUMMY RESPONSE DATA TRACES

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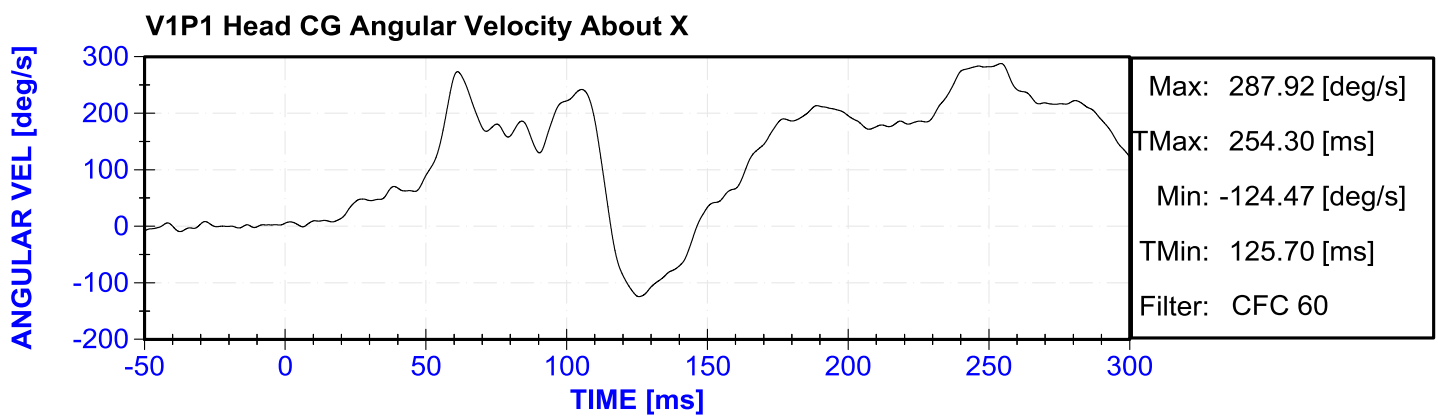
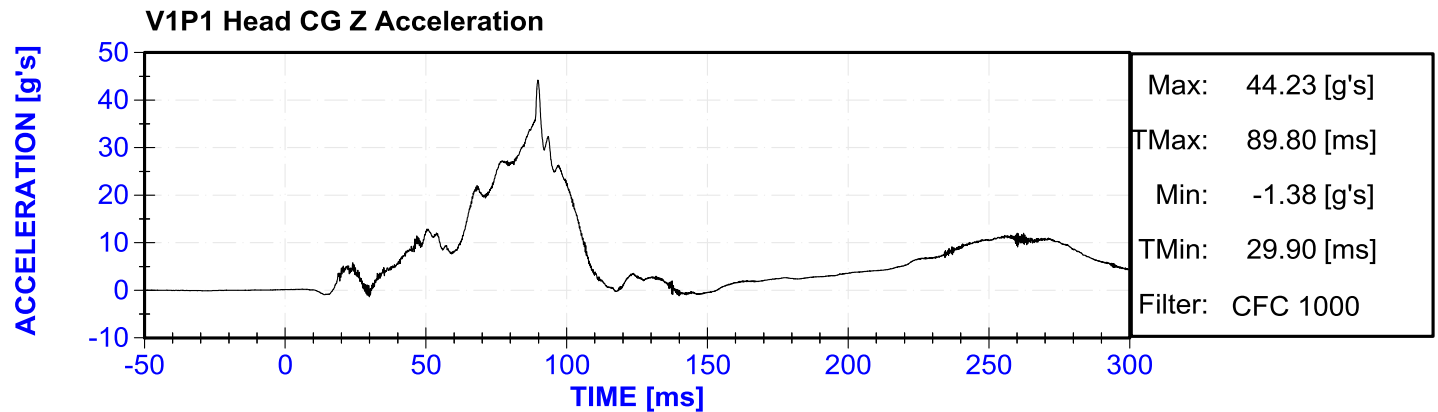
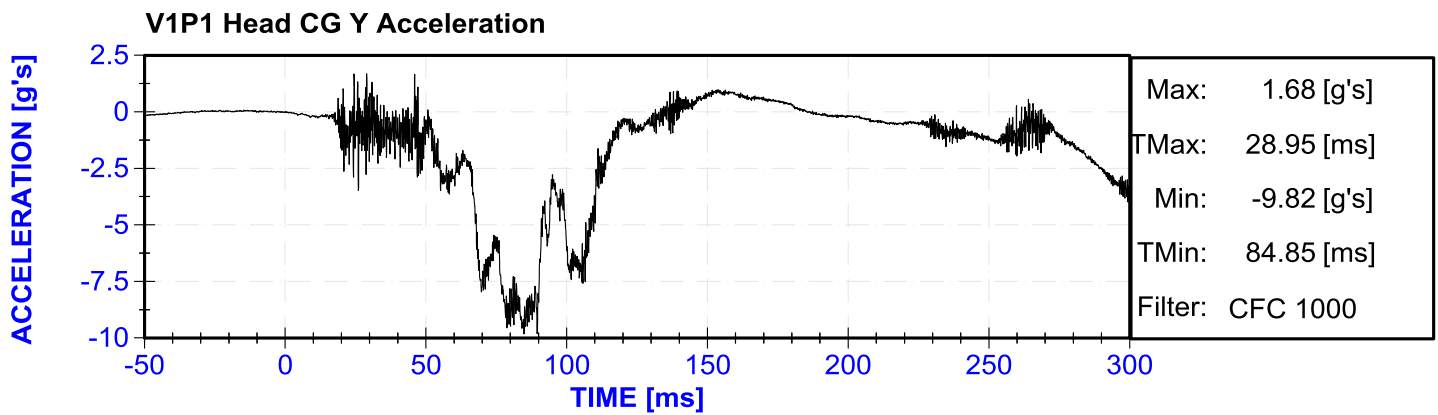
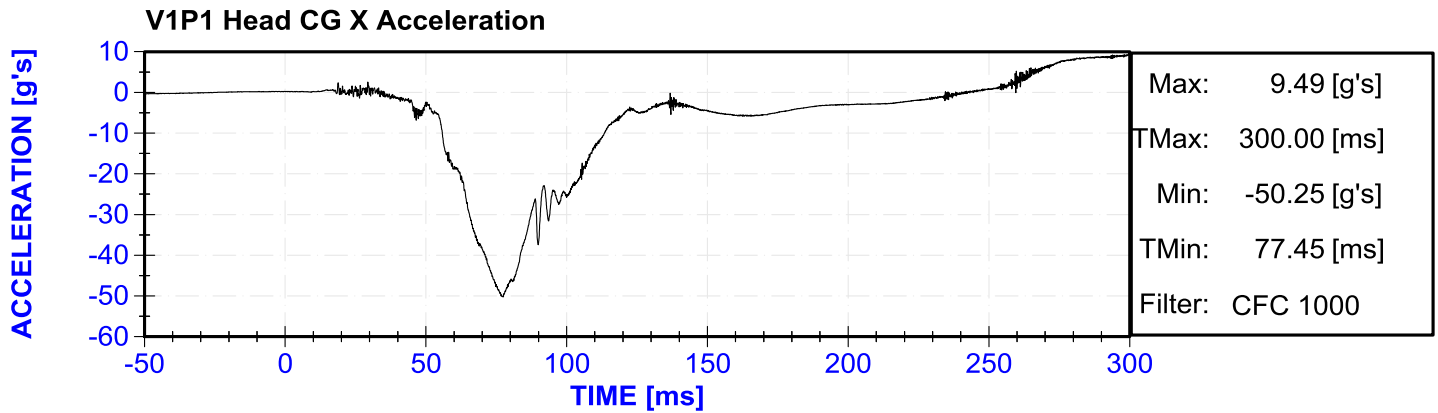
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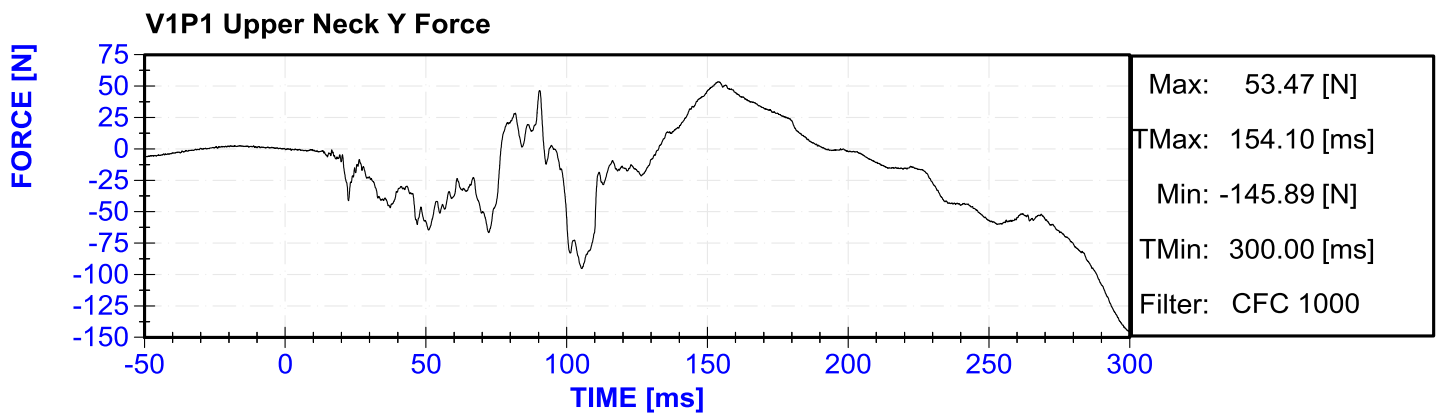
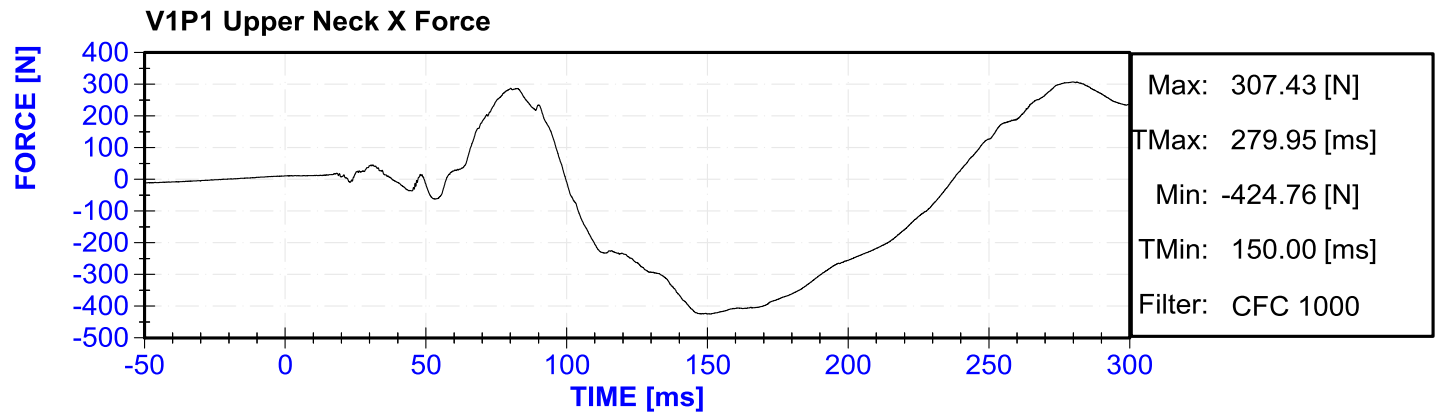
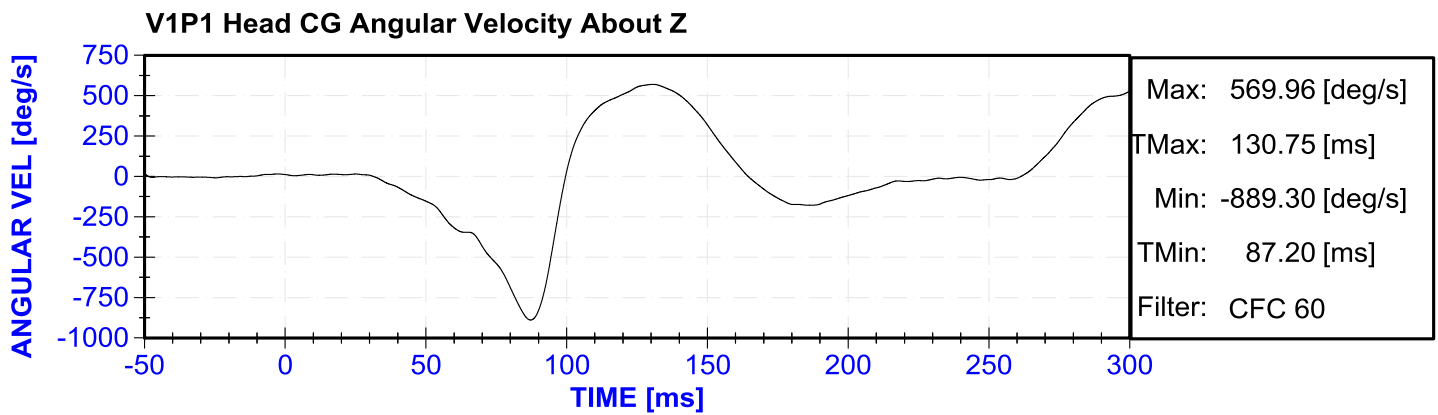
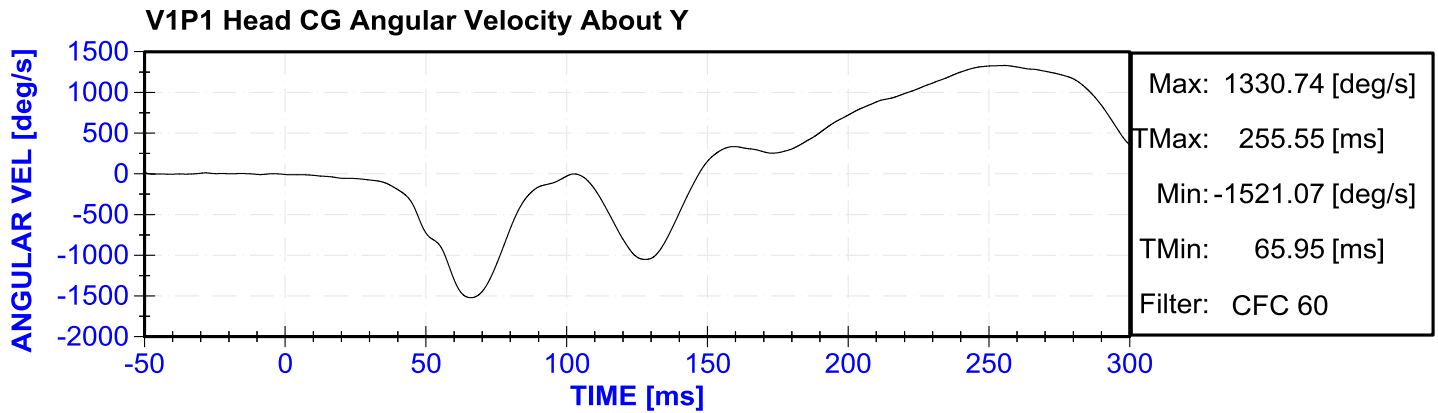
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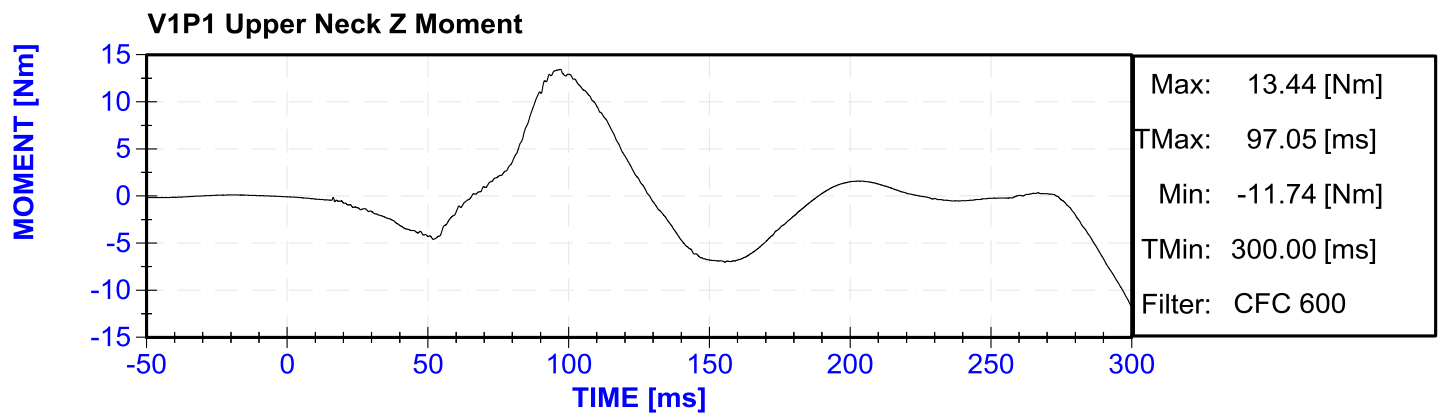
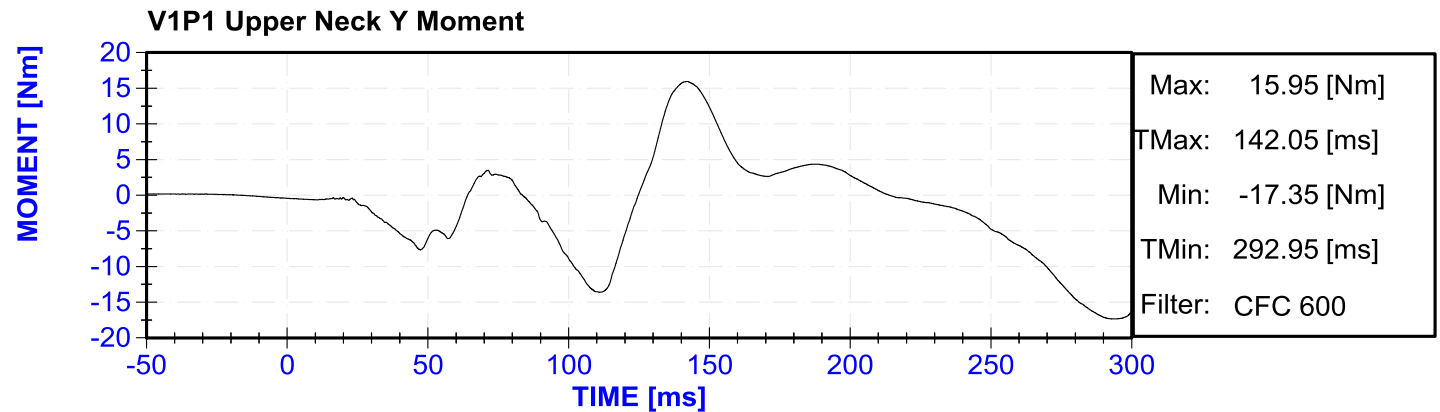
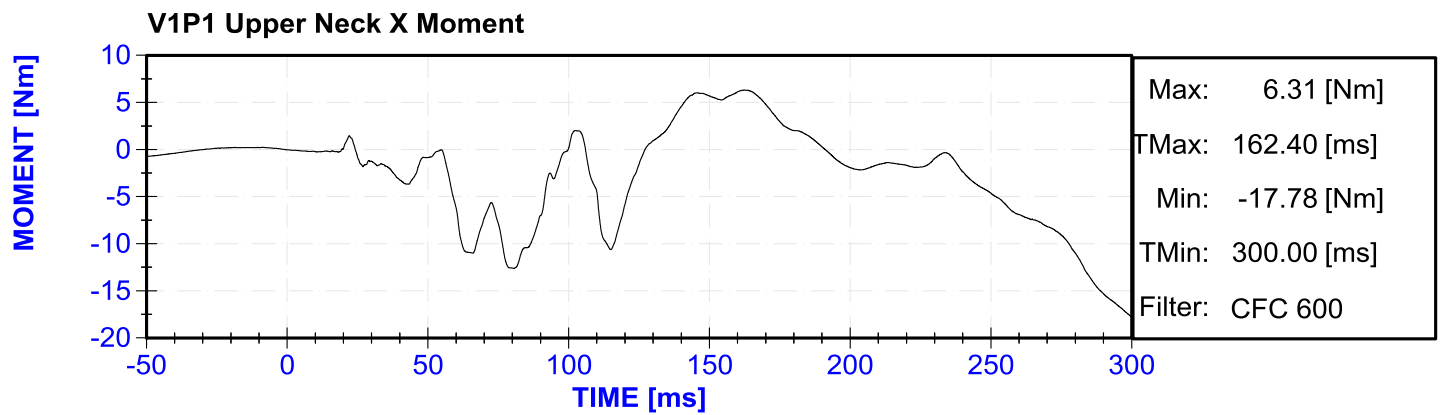
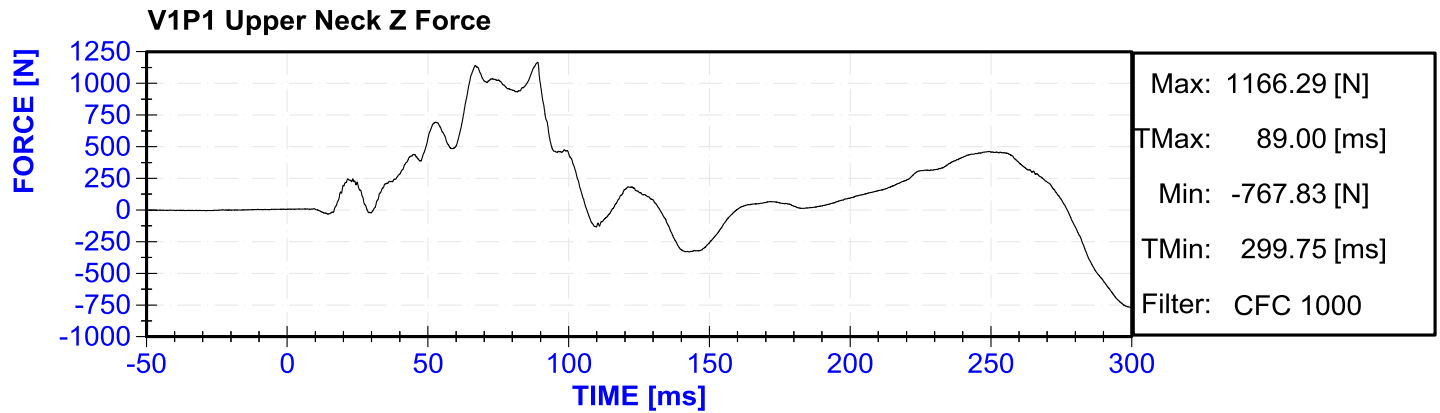
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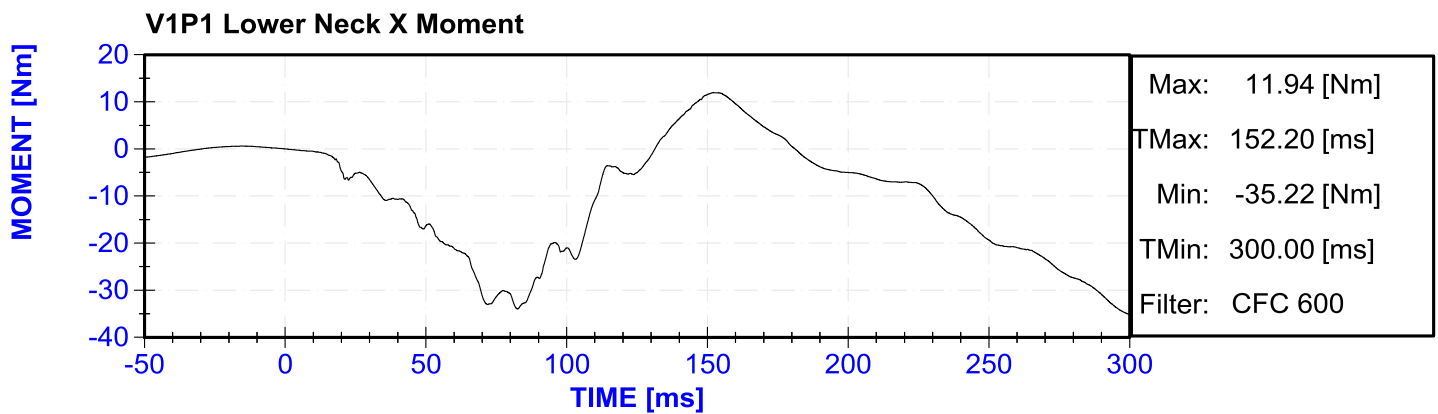
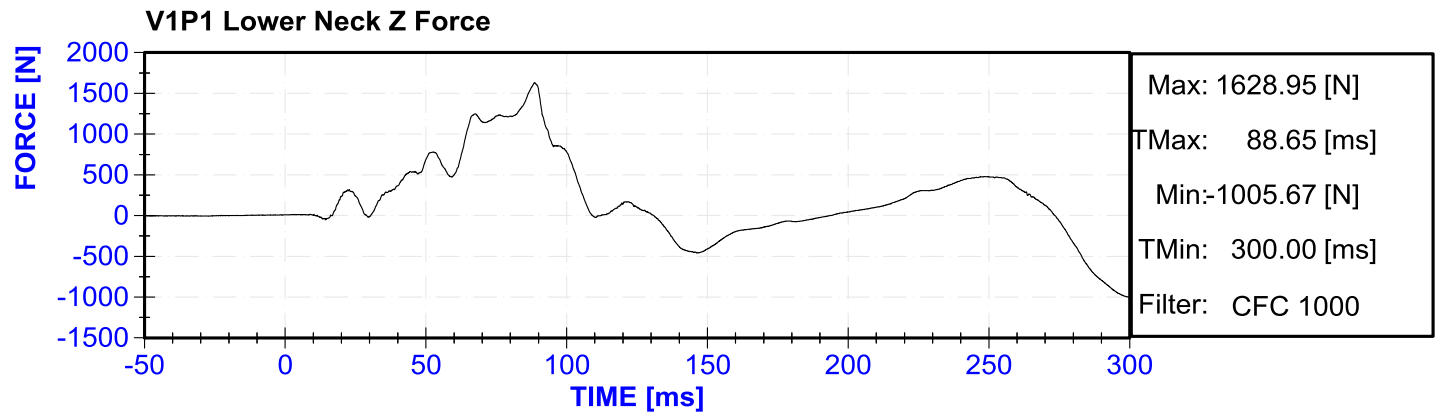
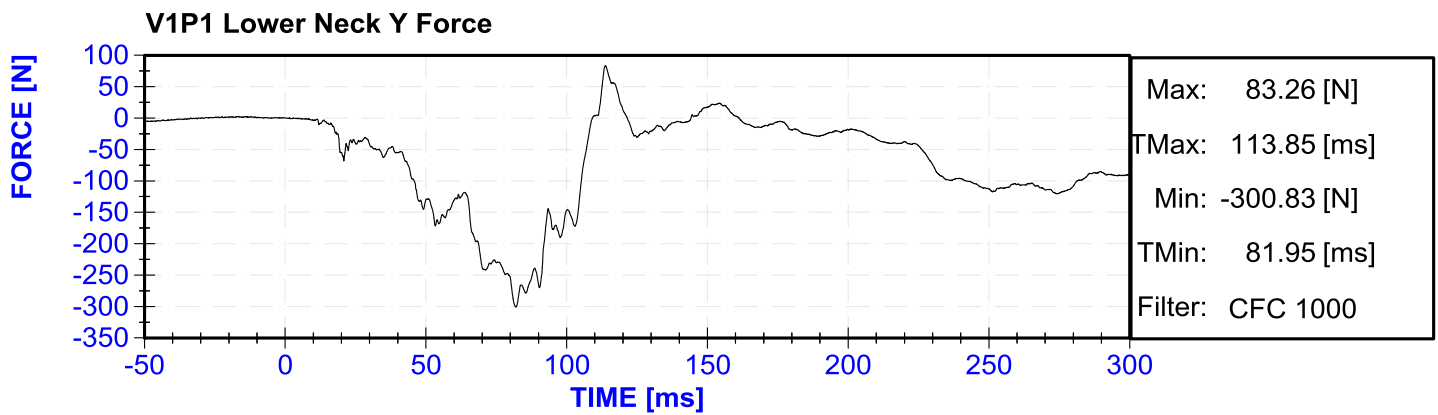
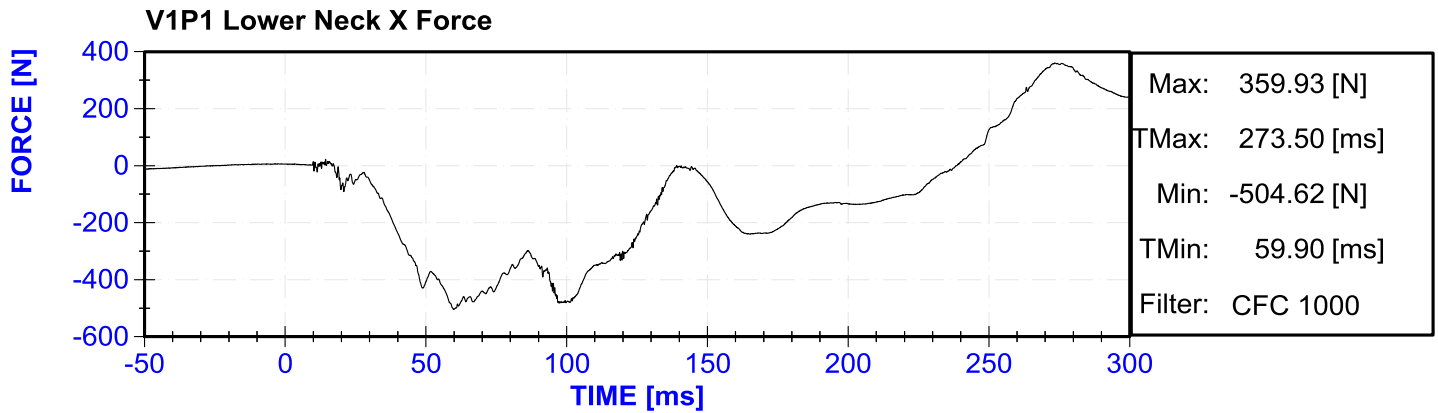
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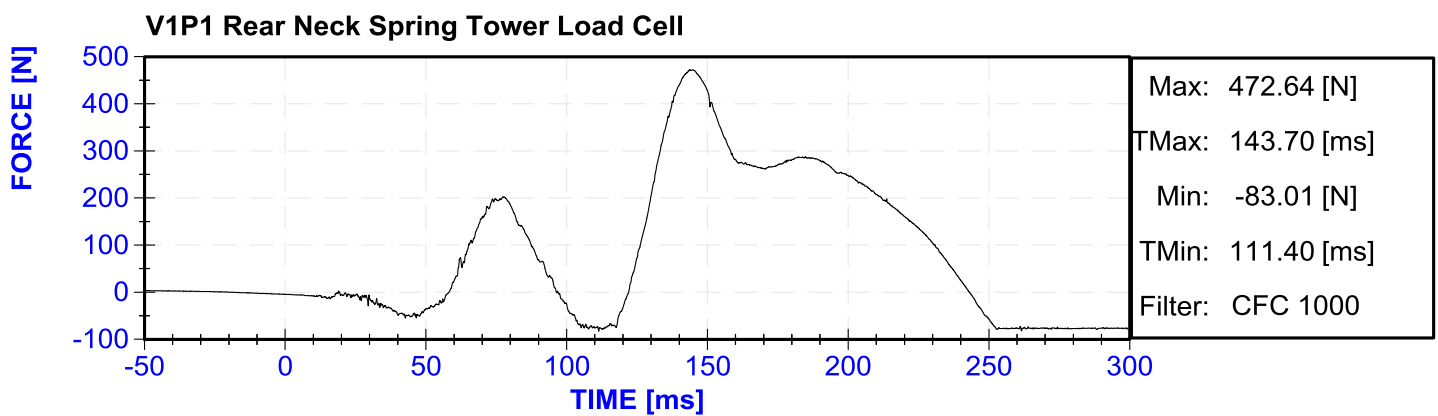
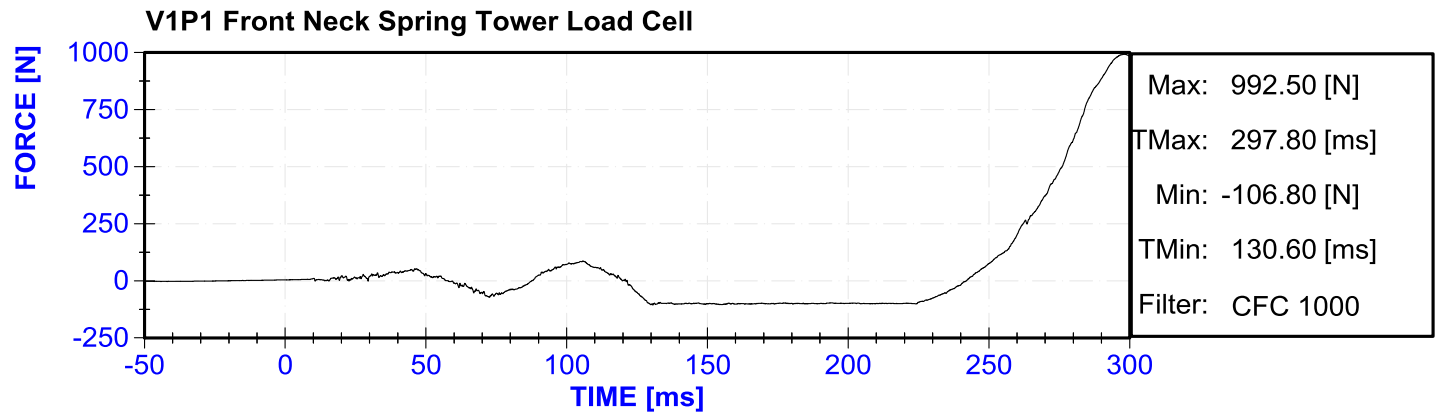
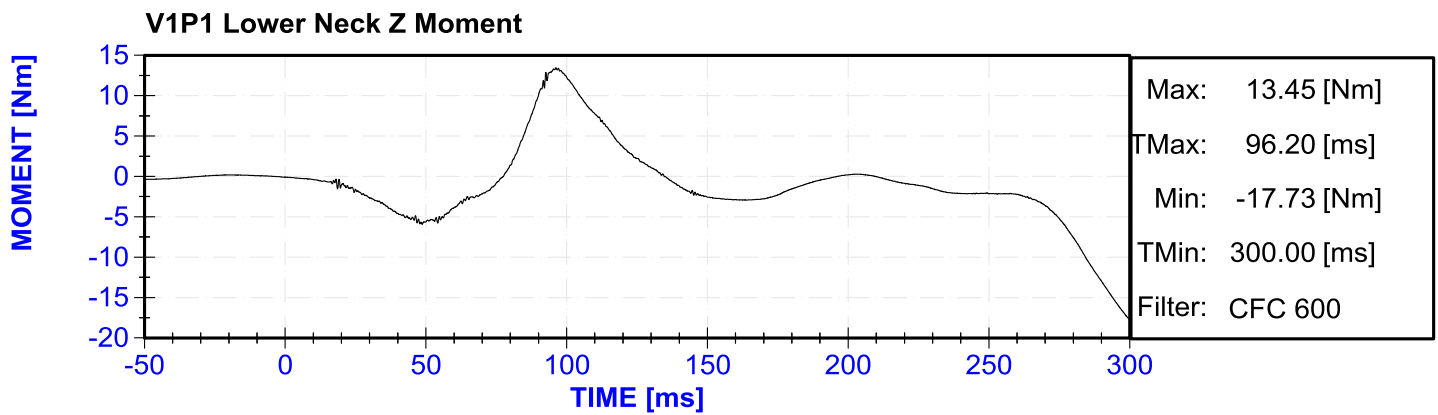
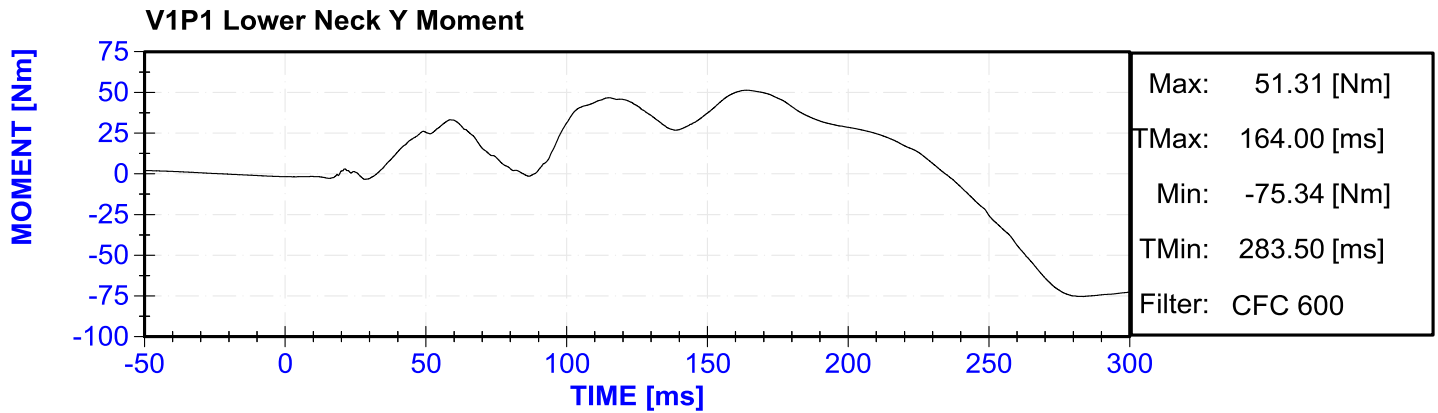
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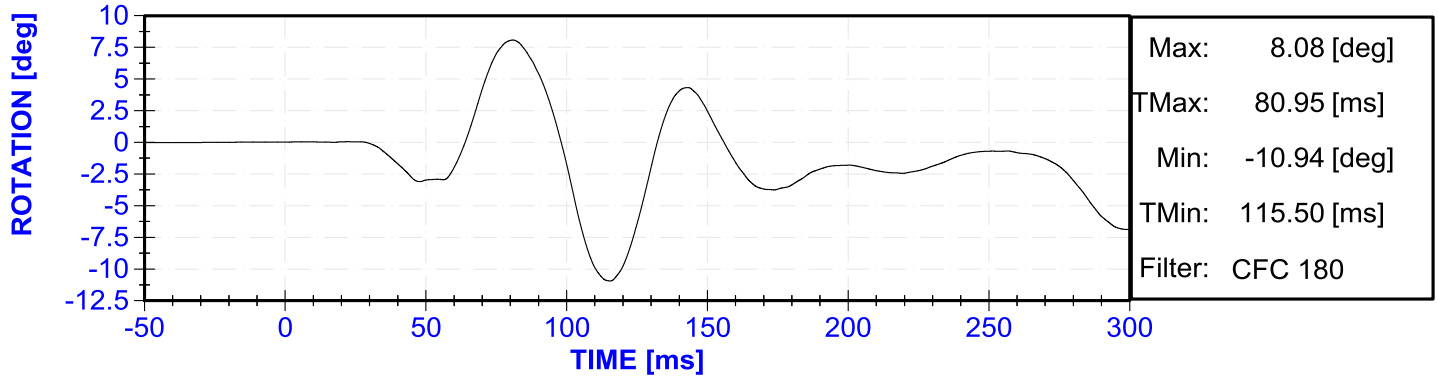




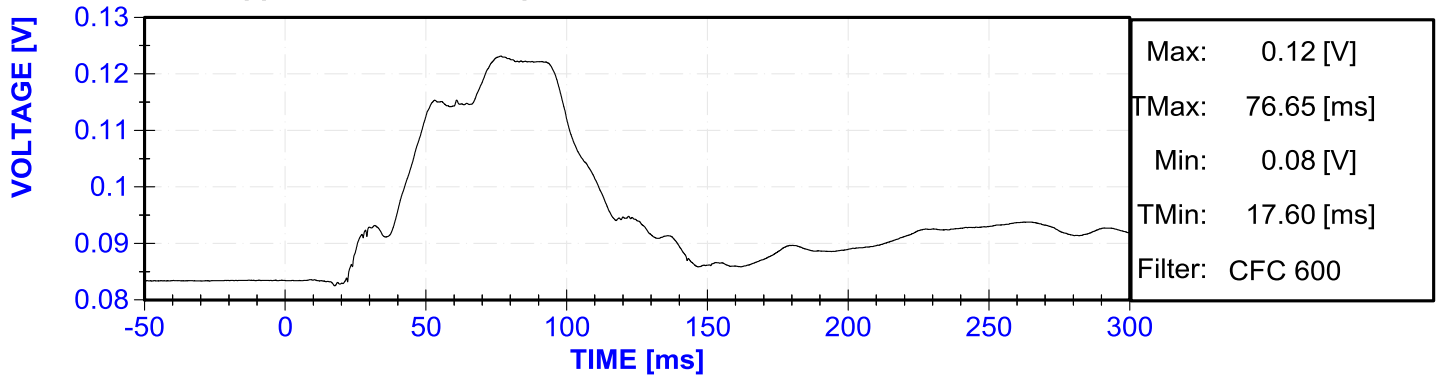




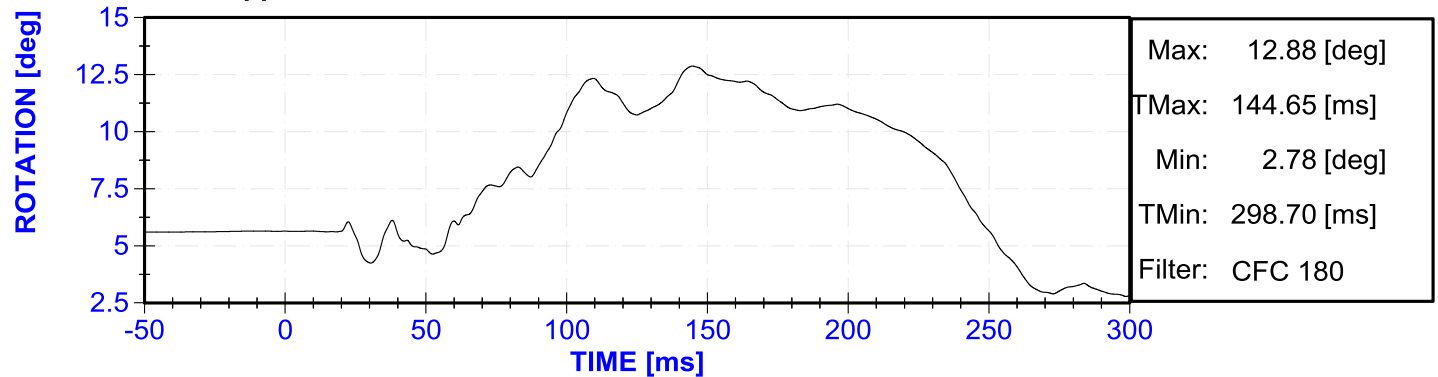
V1P1 Occipital Condyle Rotation Potentiometer



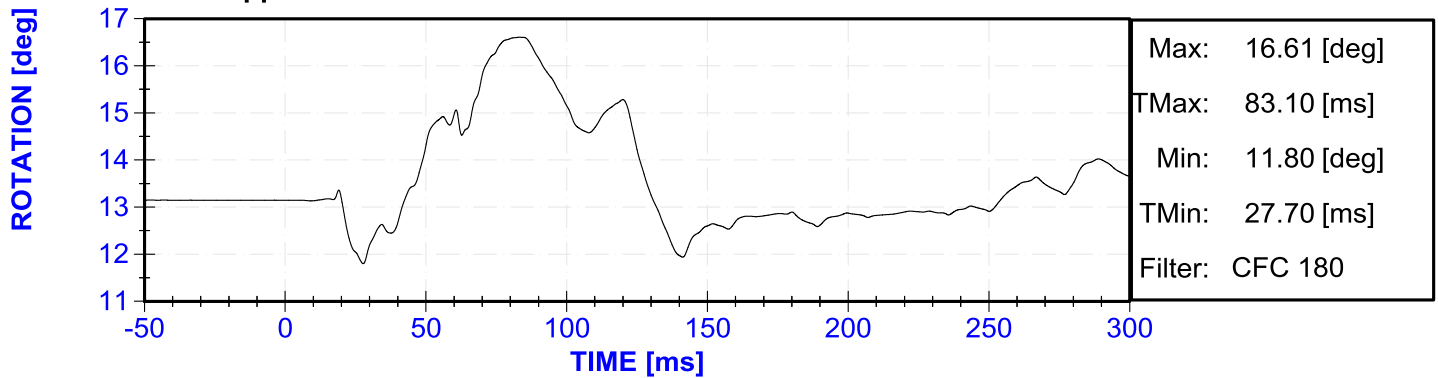
V1P1 Upper Left DGIR X Displacement



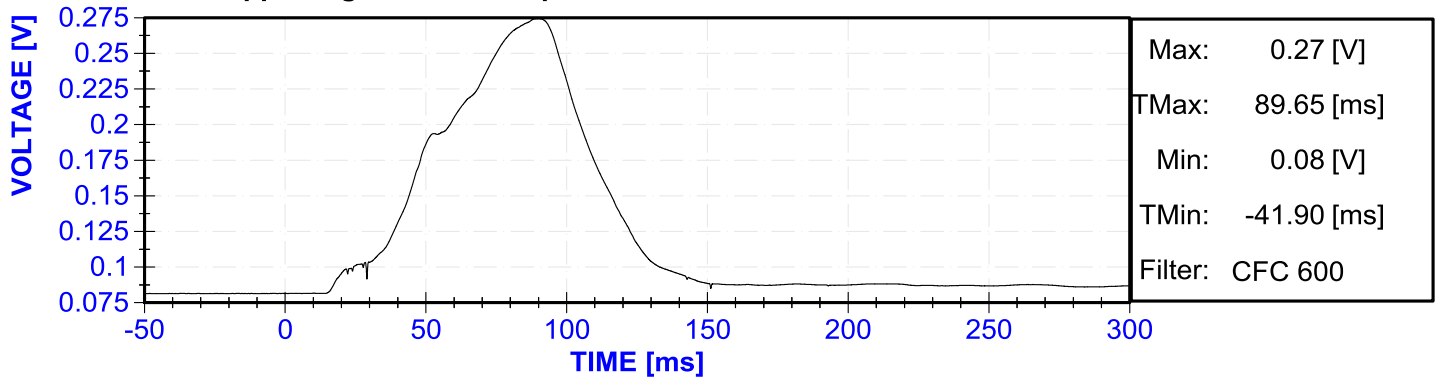
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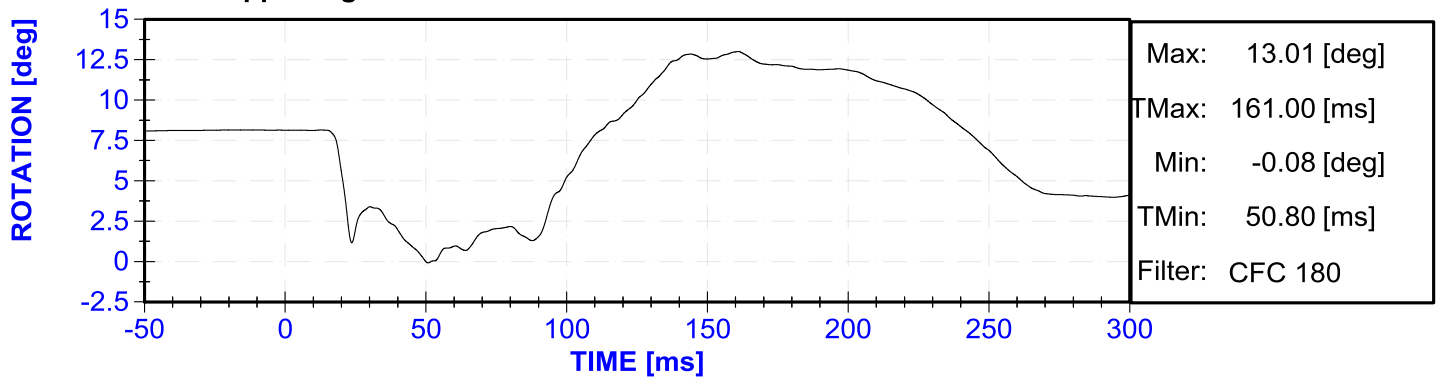
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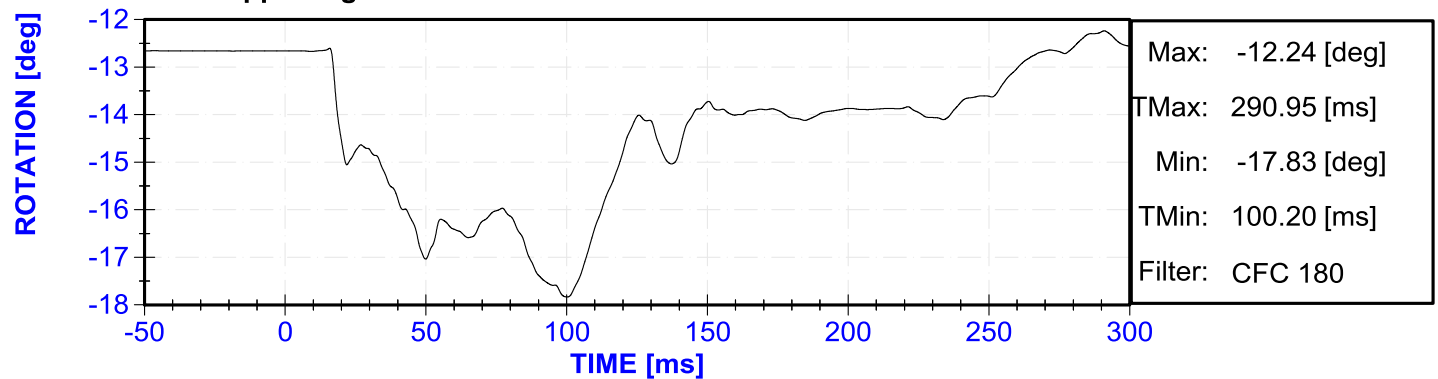
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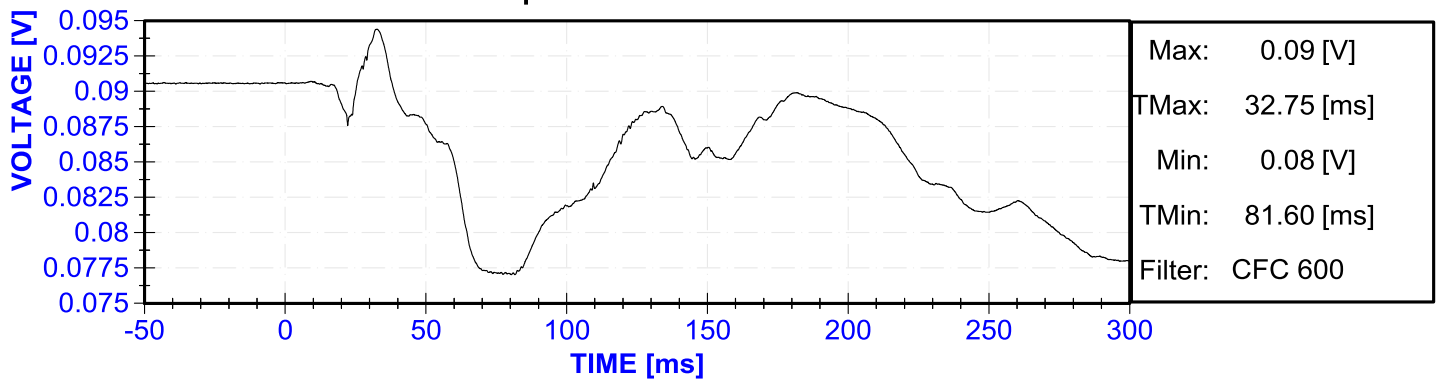
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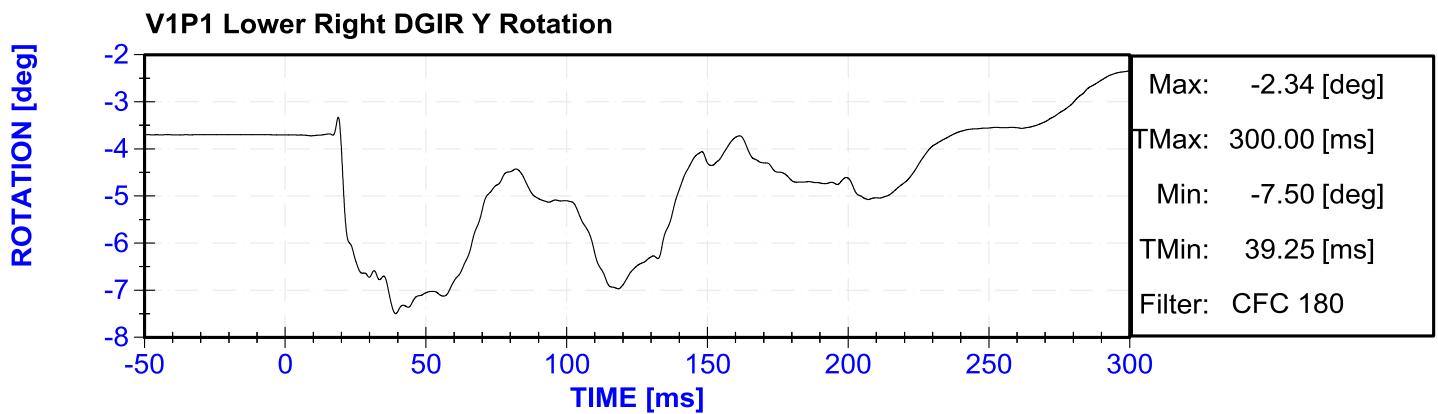
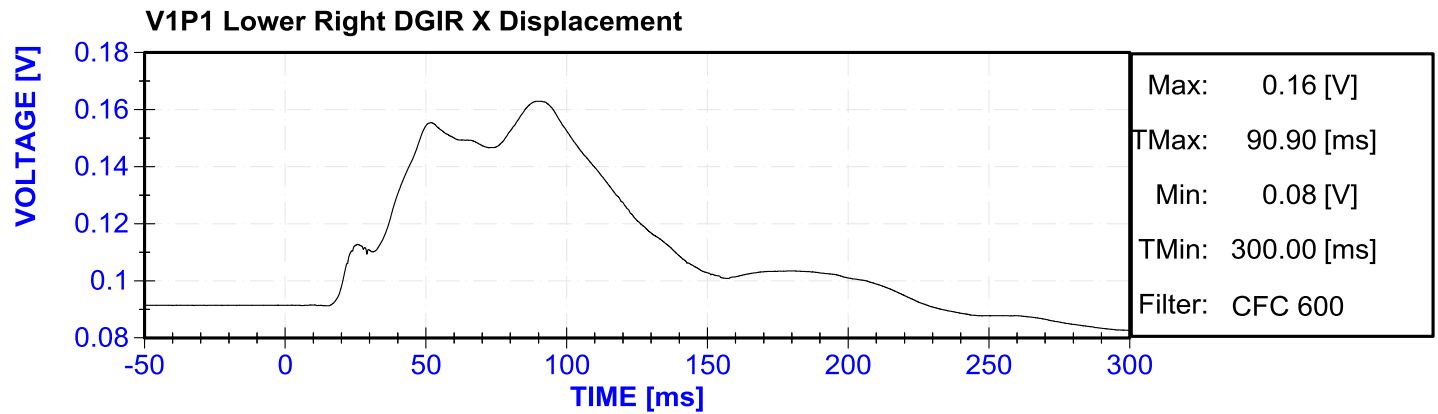
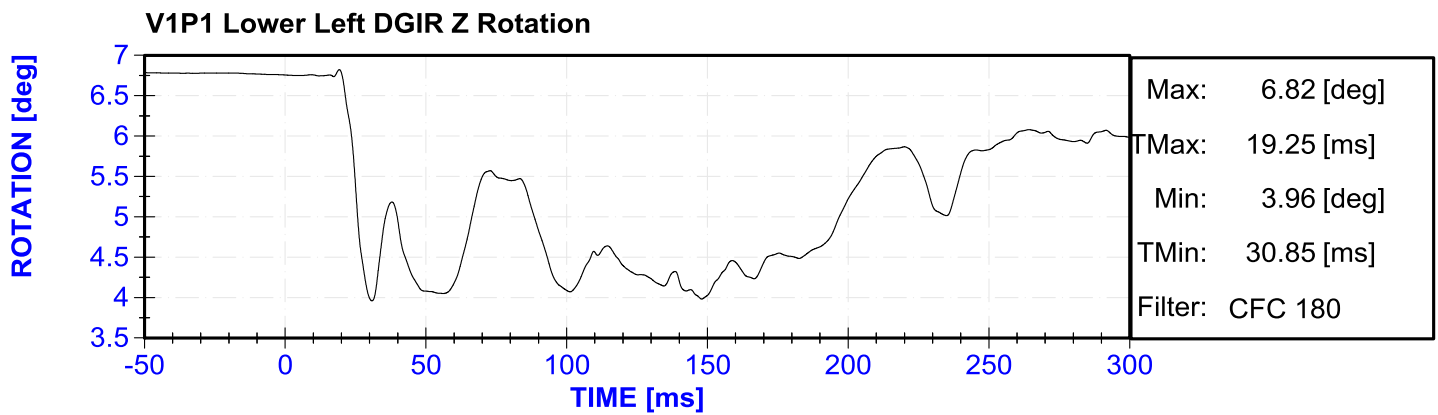
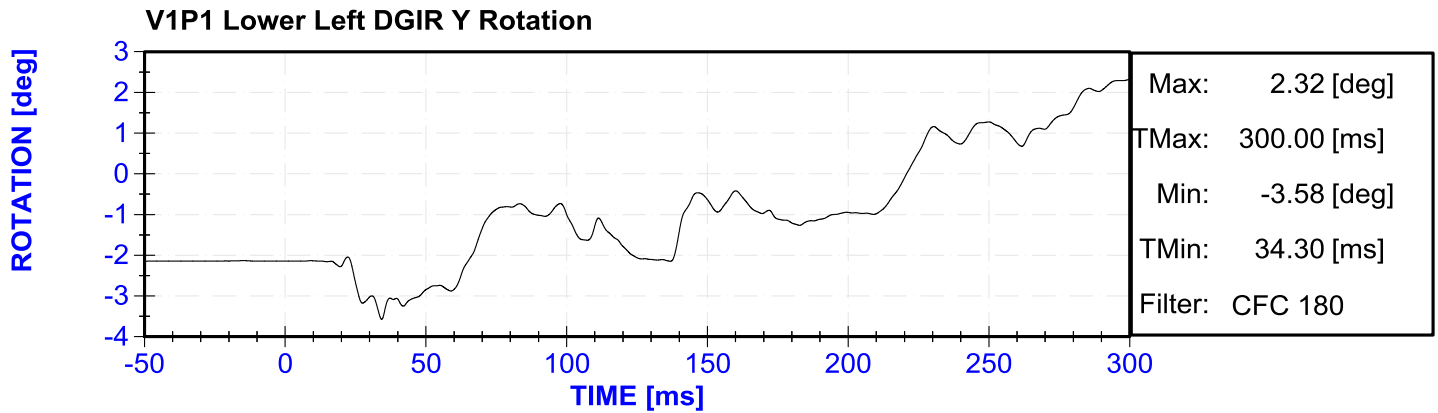


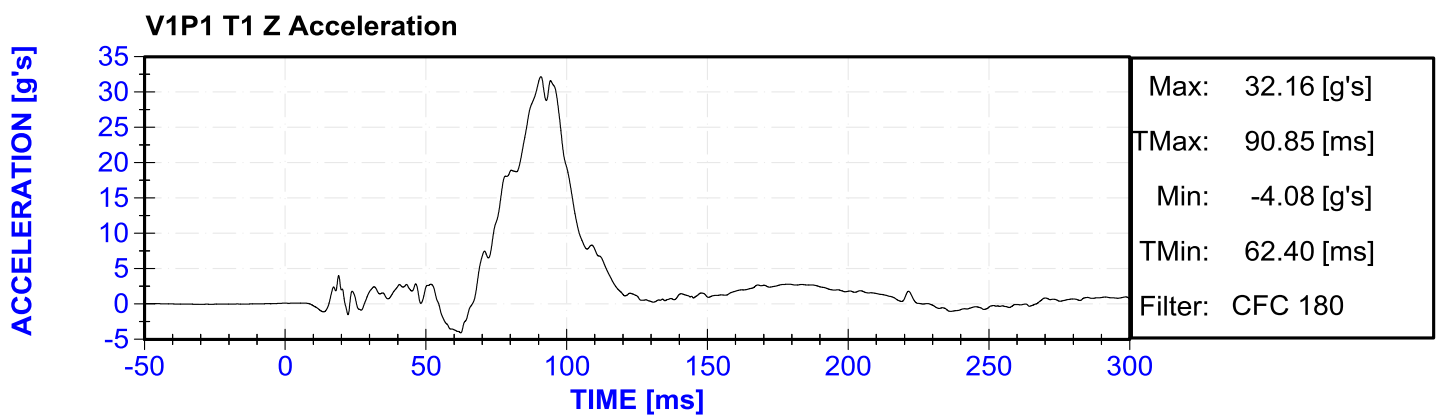
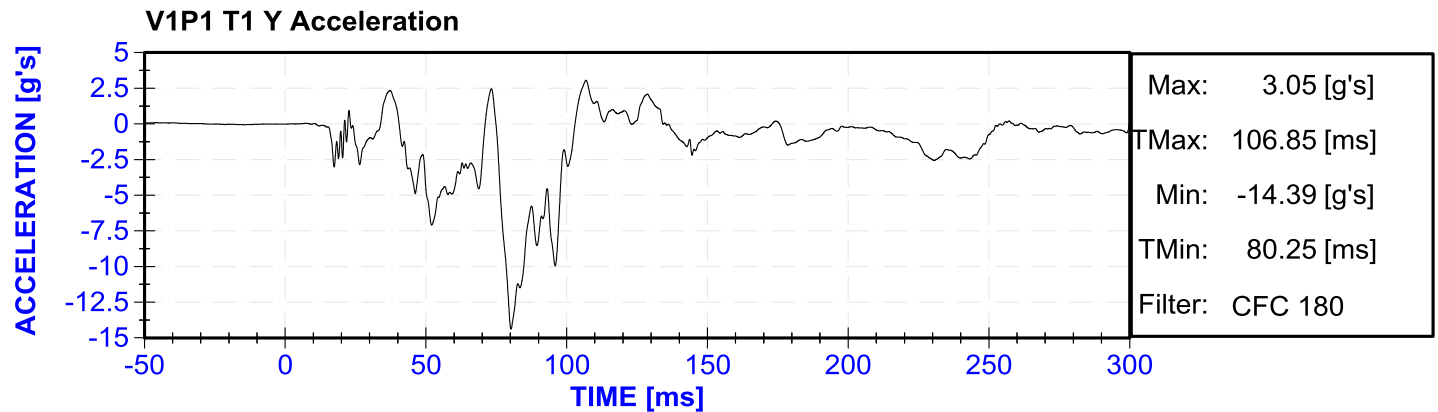
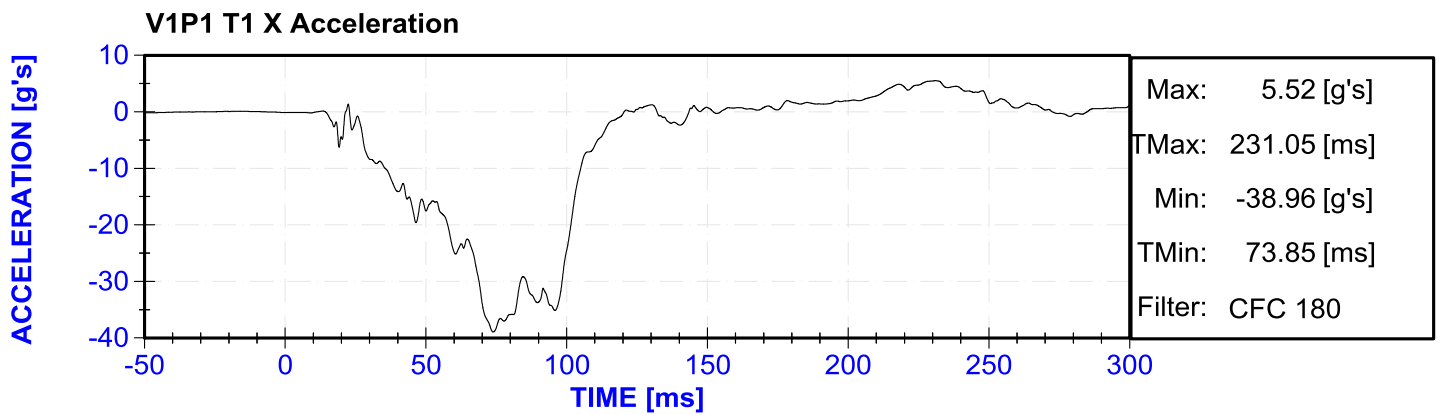
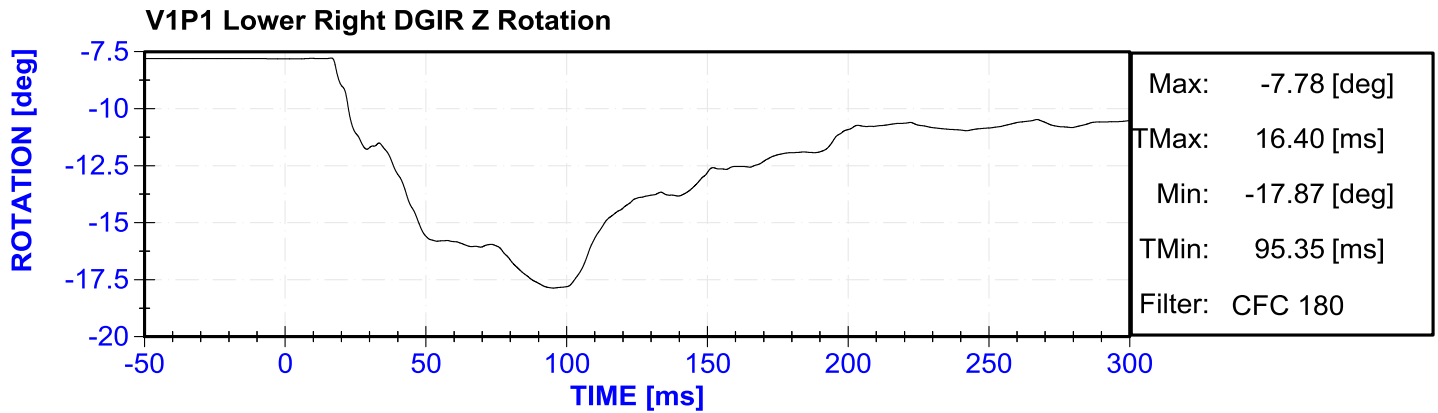
V1P1 Upper Right DGIR Z Rotation

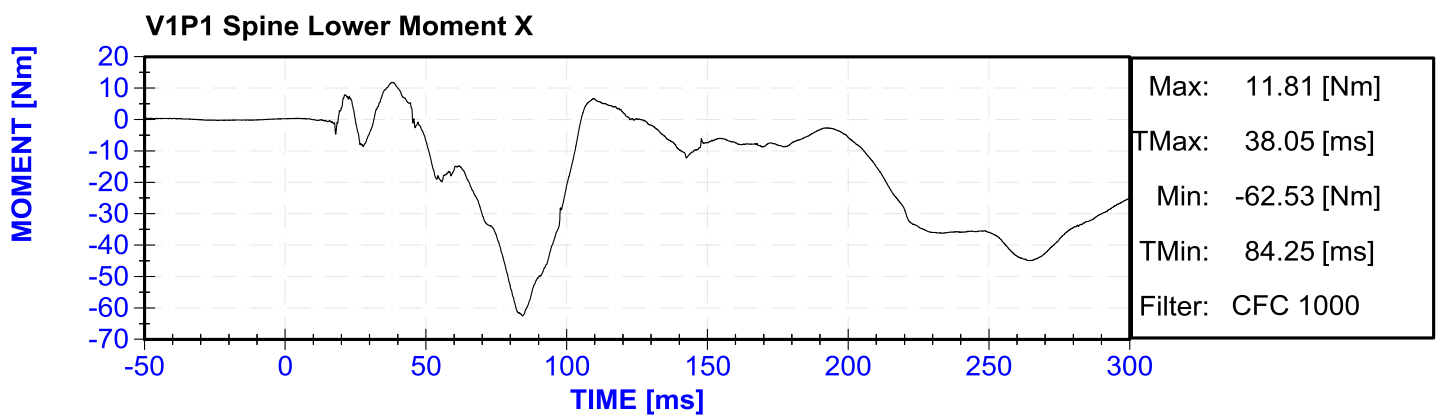
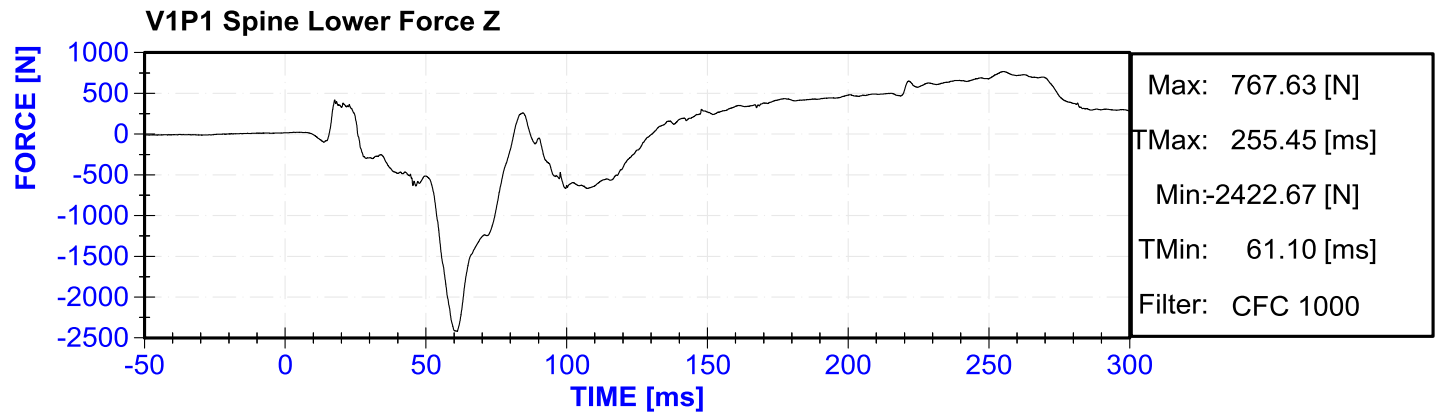
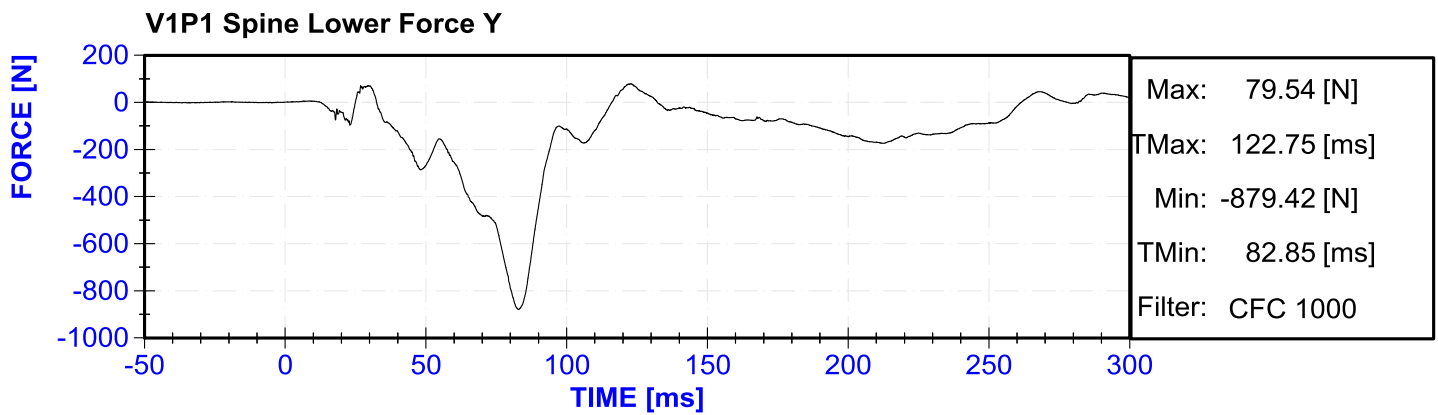
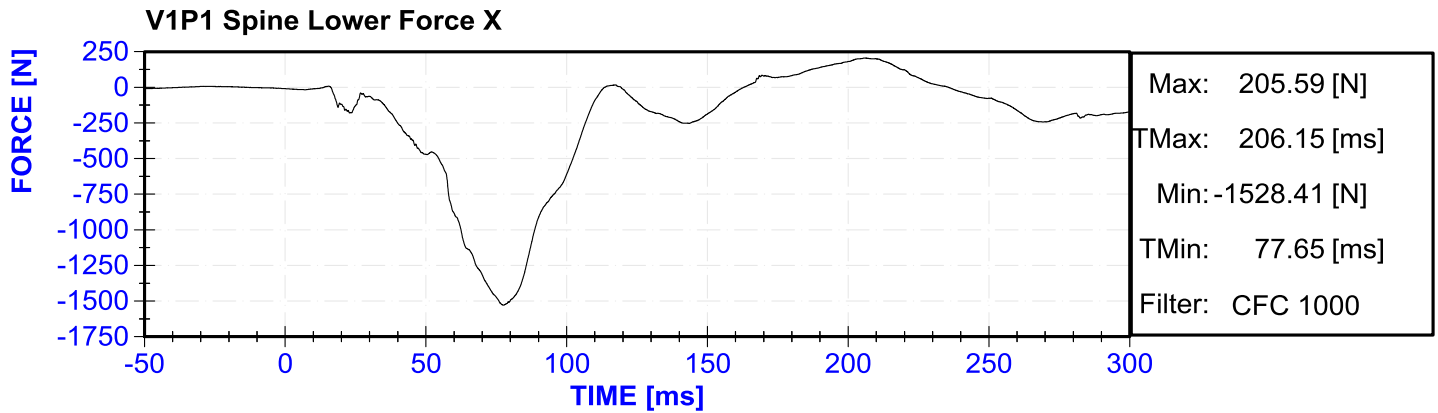


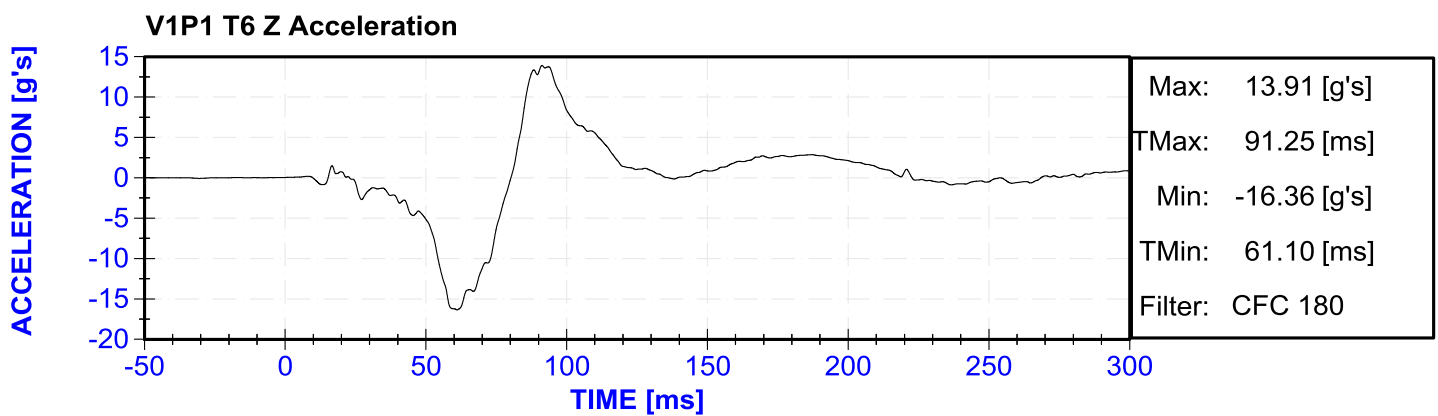
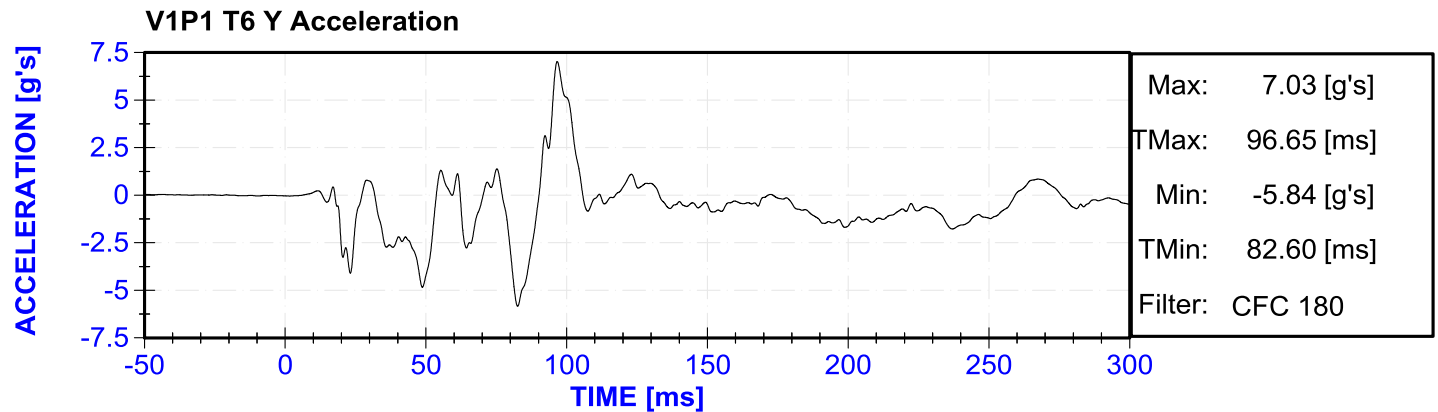
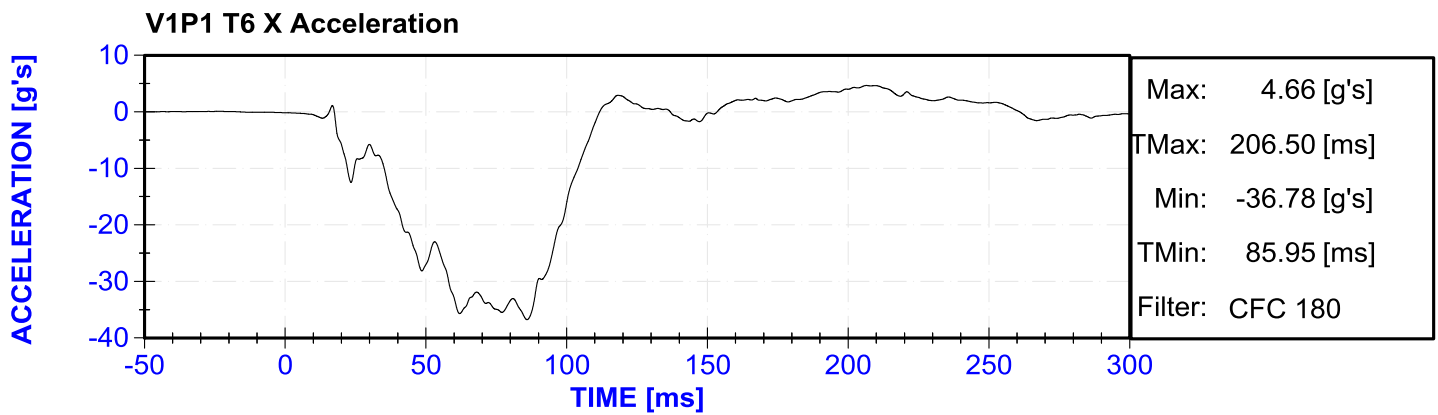
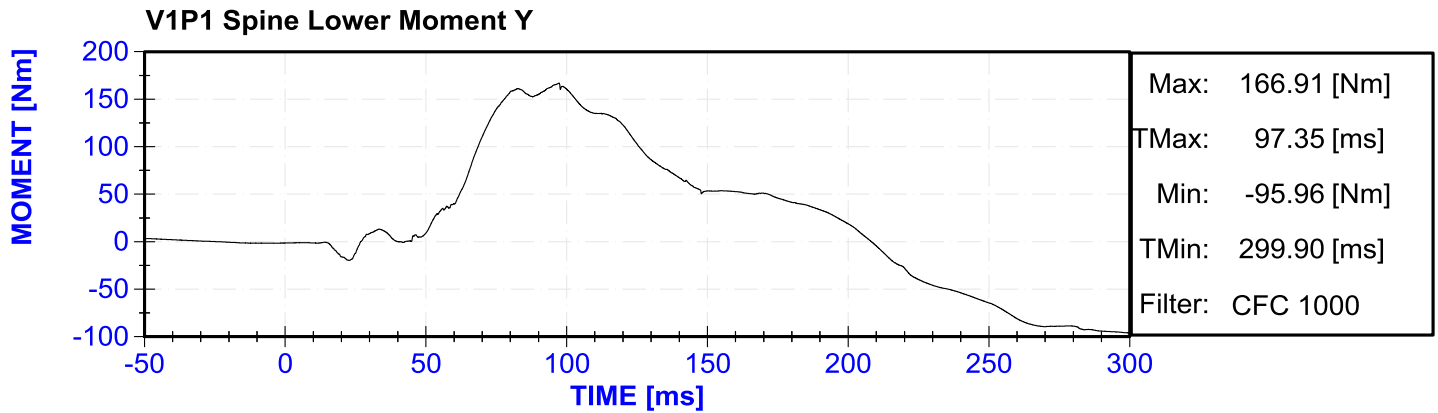
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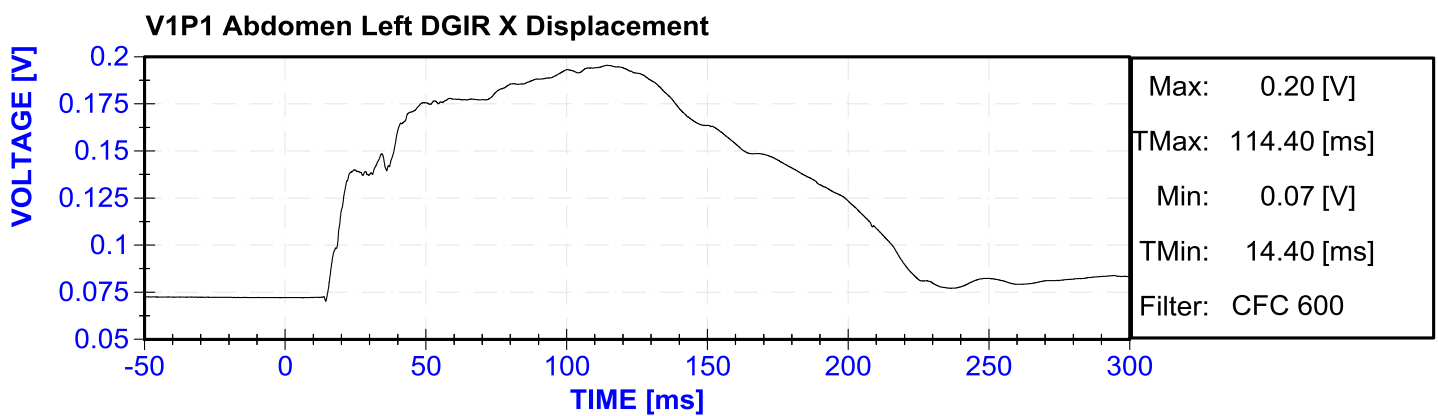
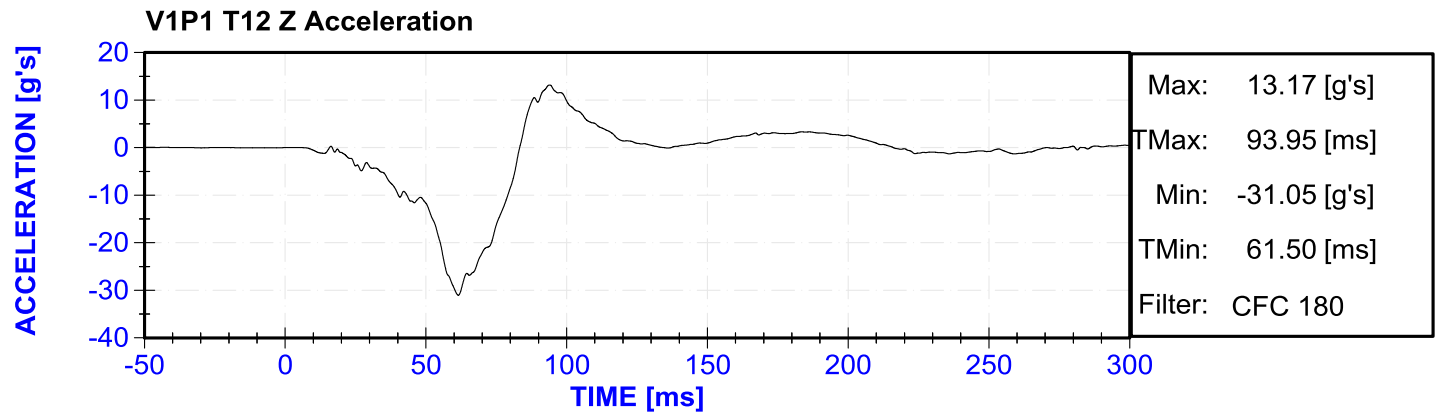
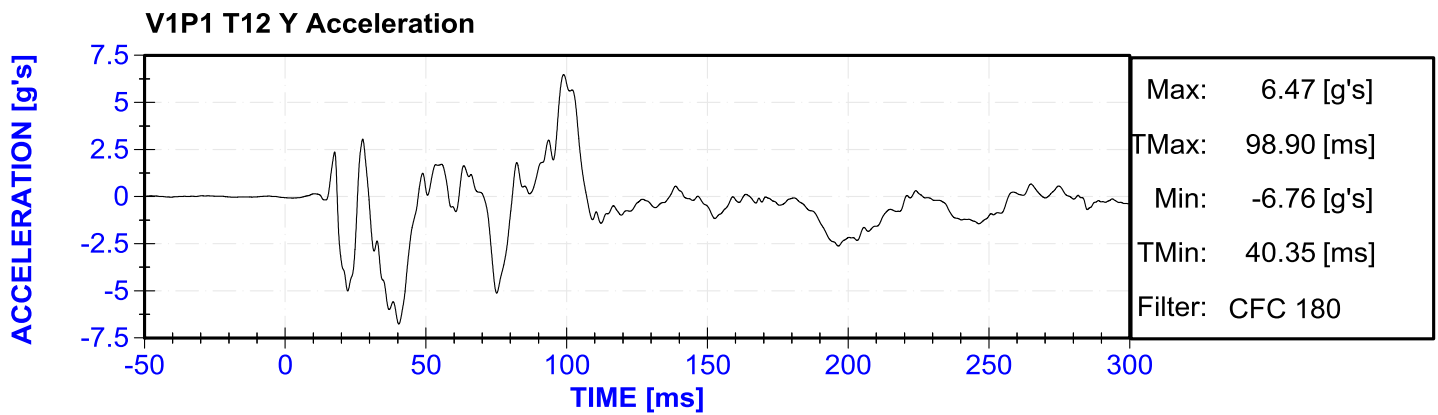
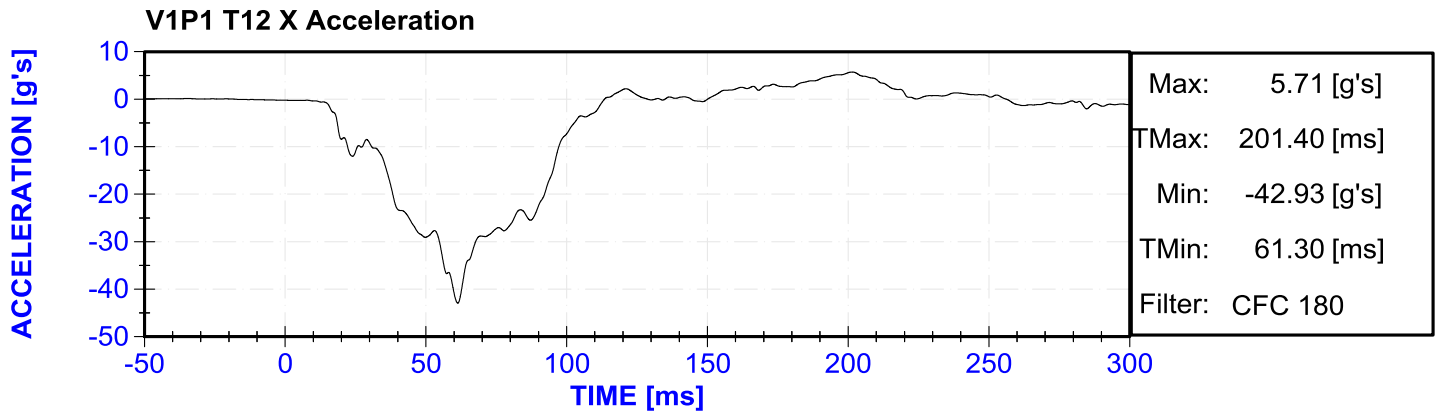


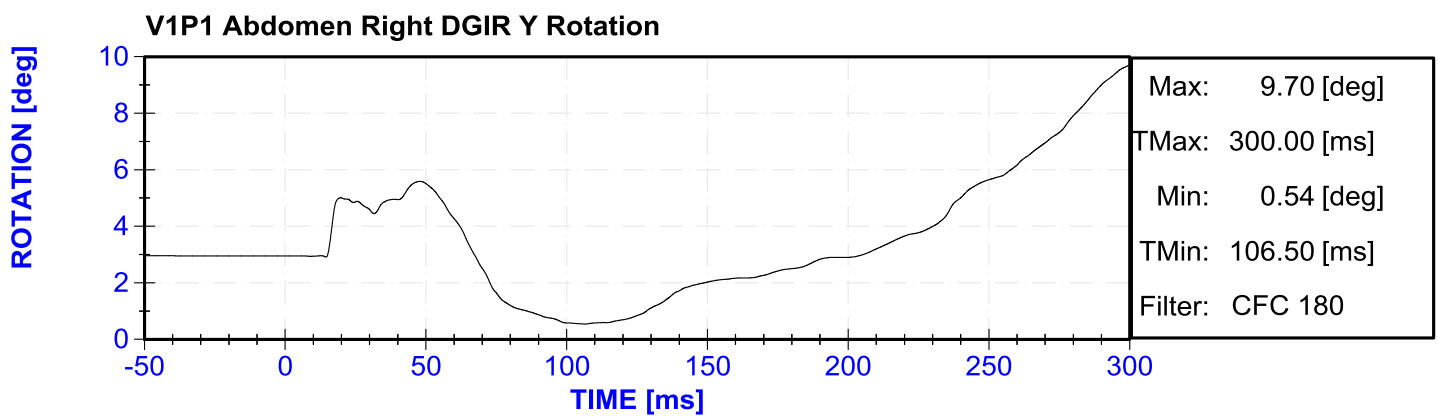
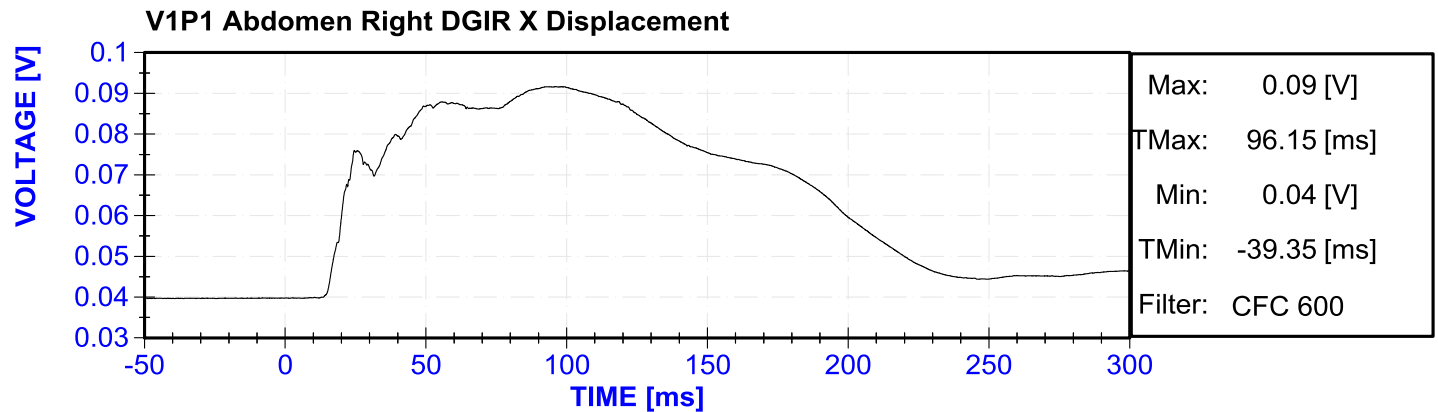
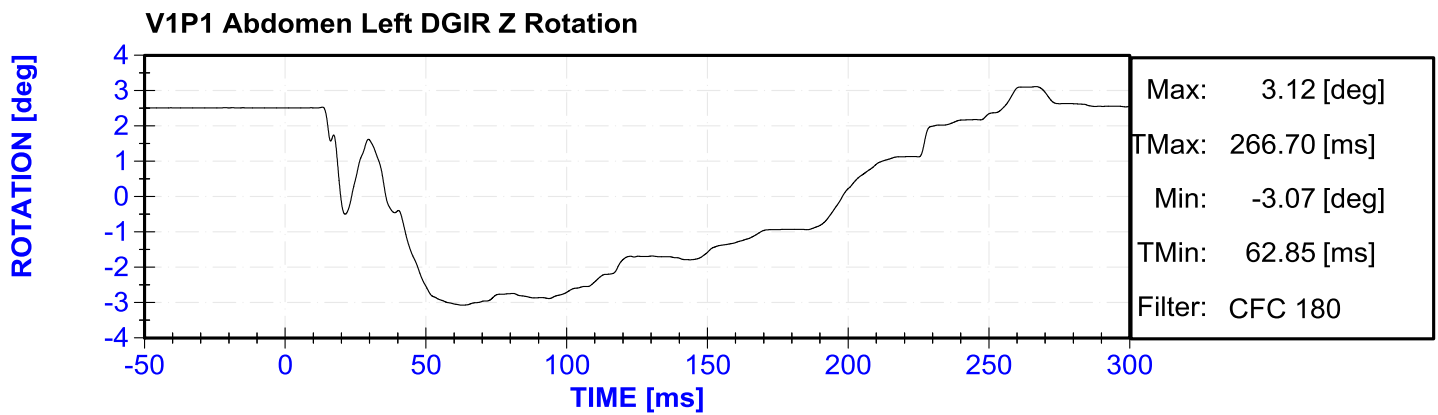
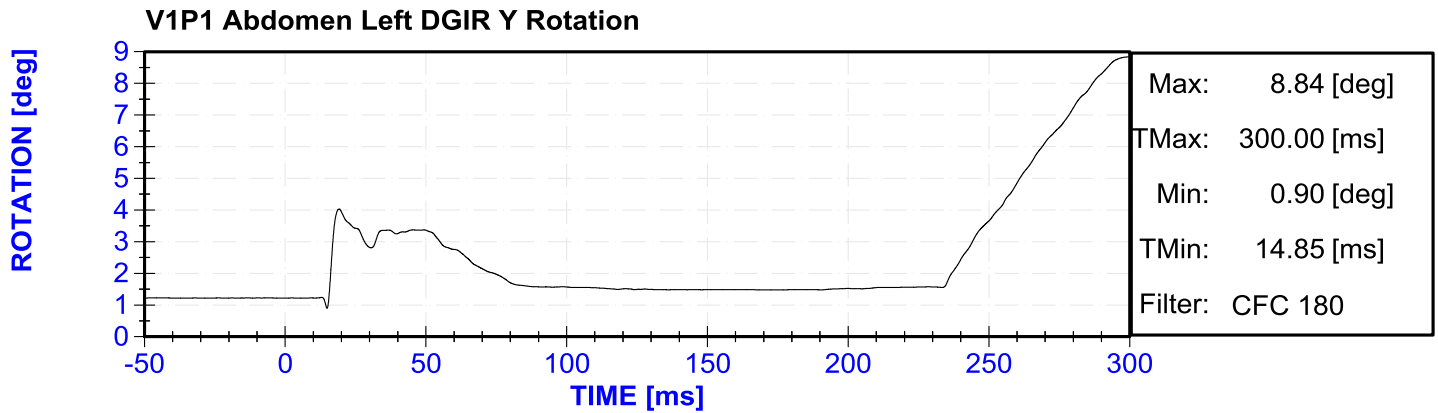


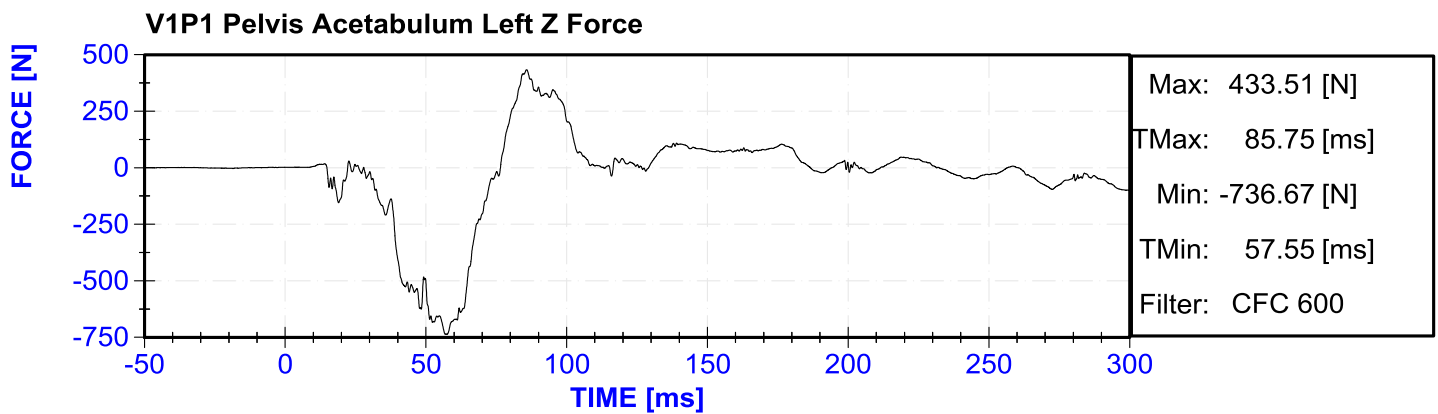
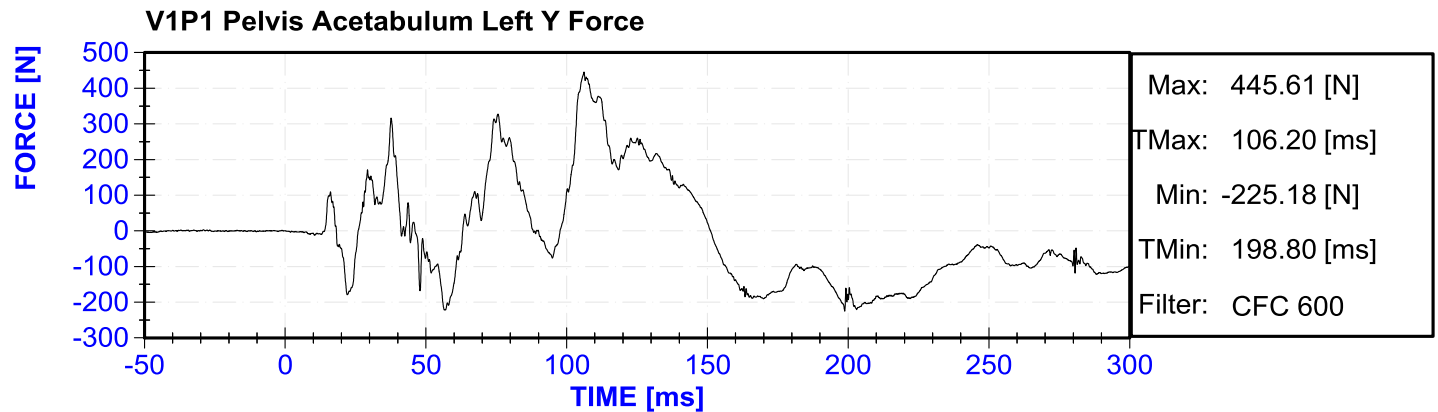
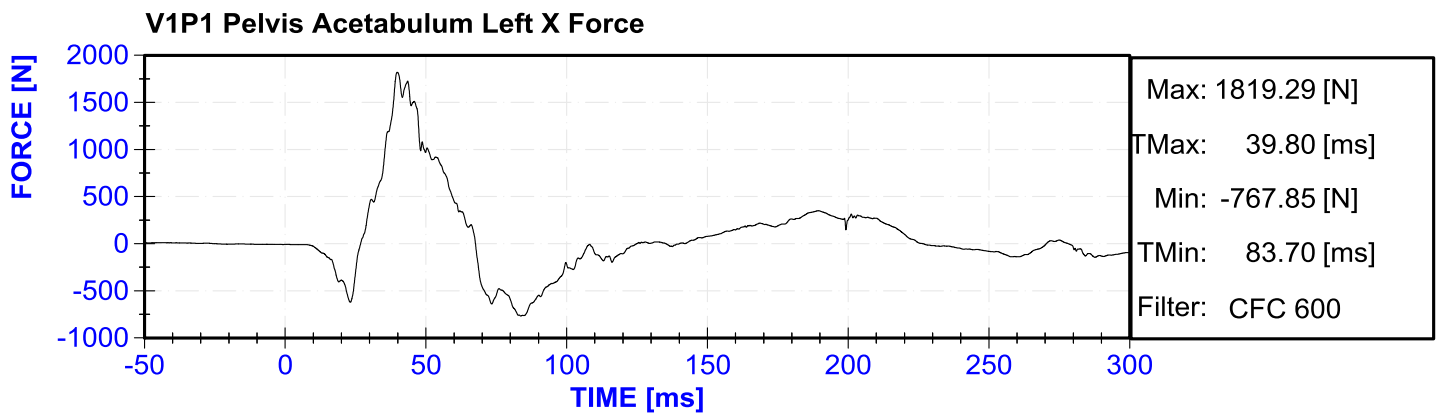
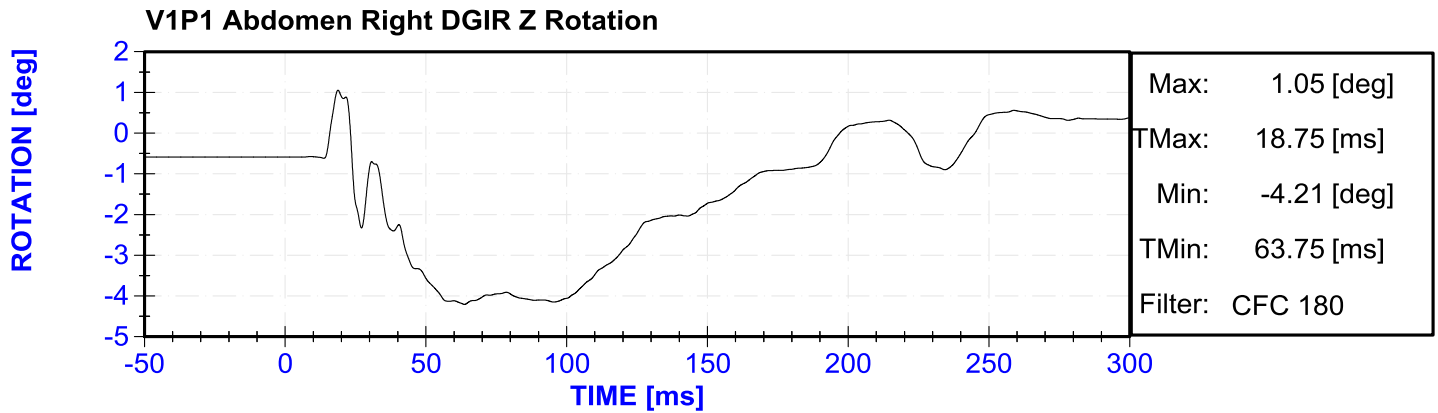


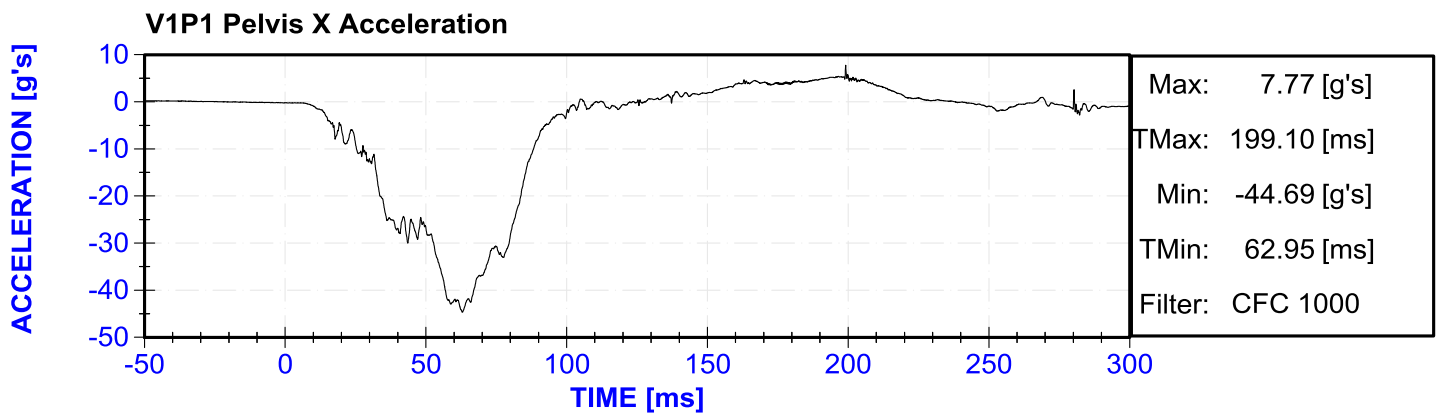
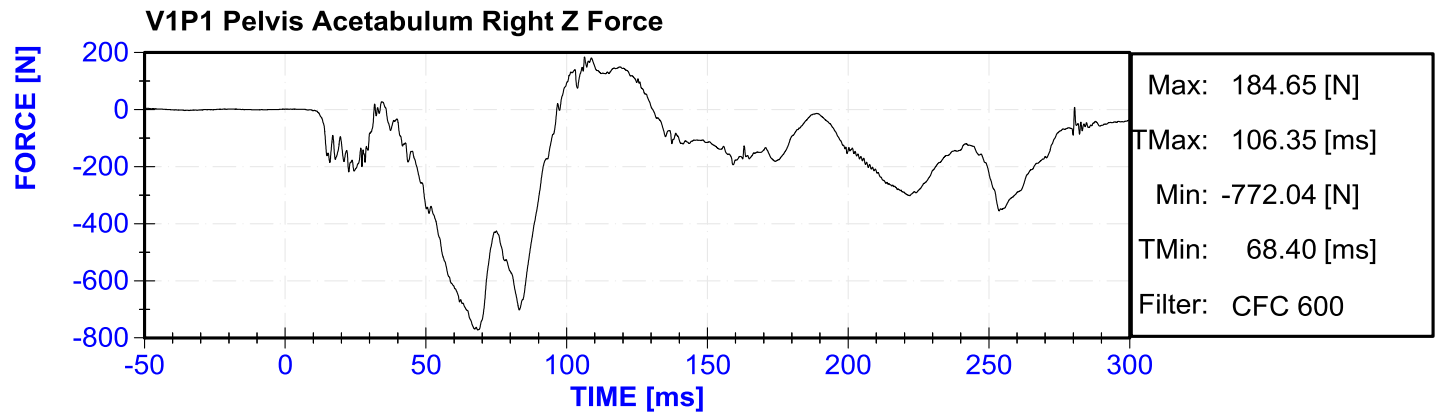
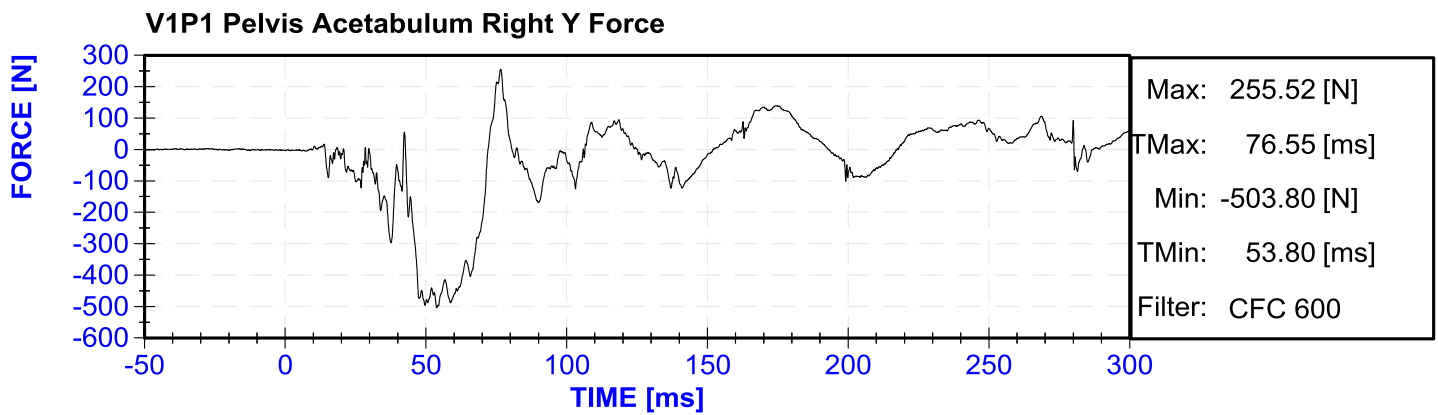
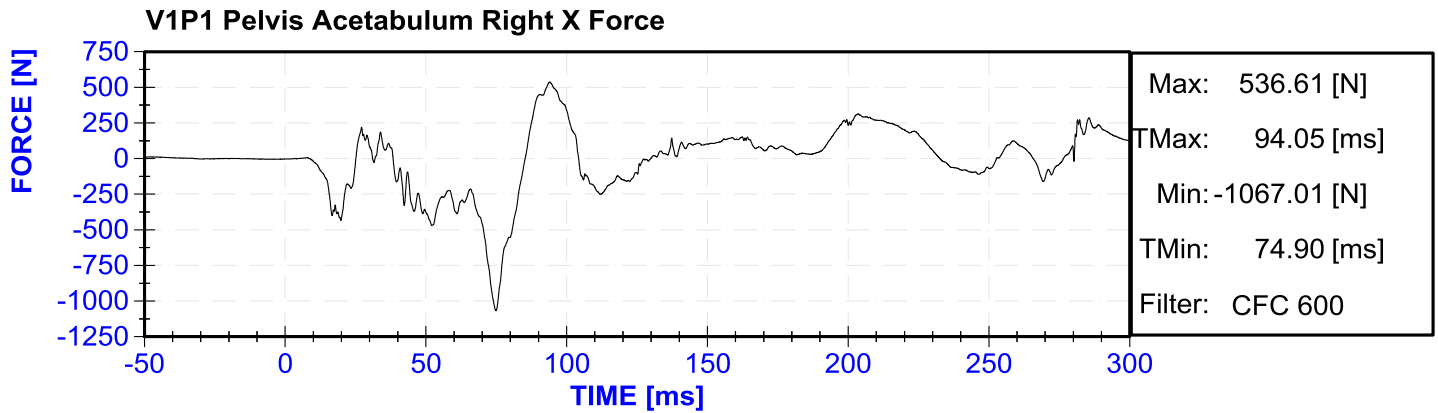


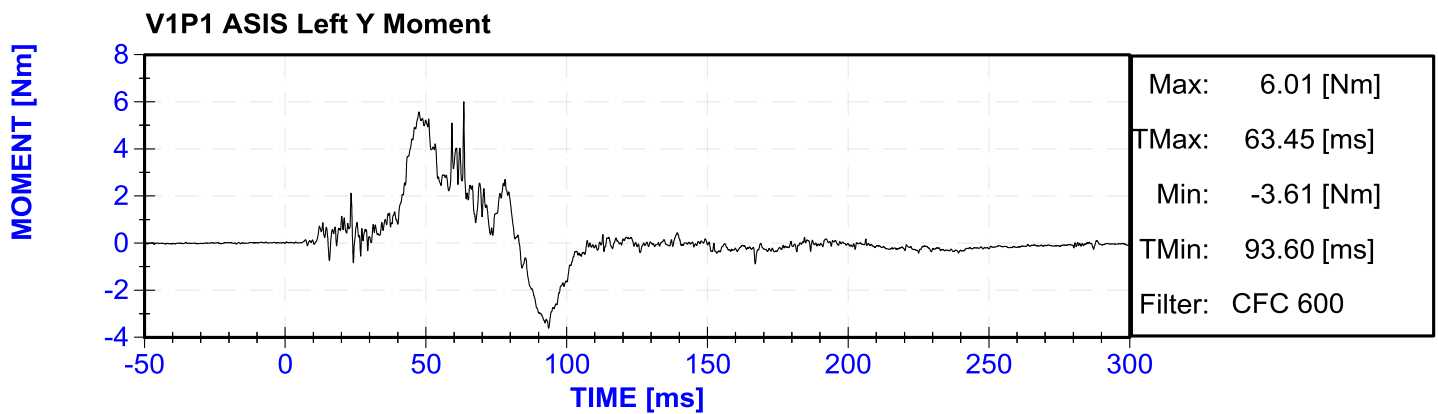
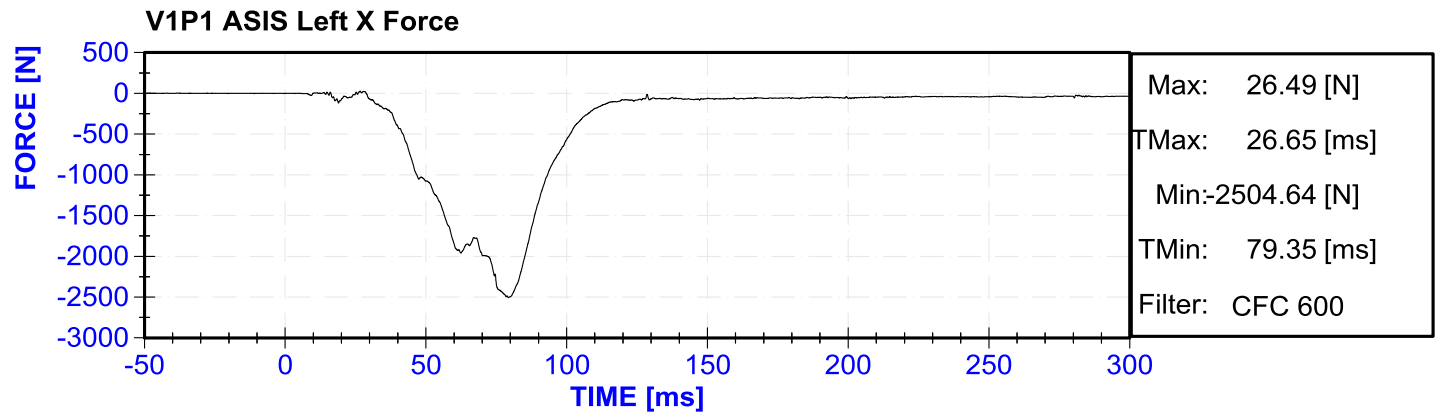
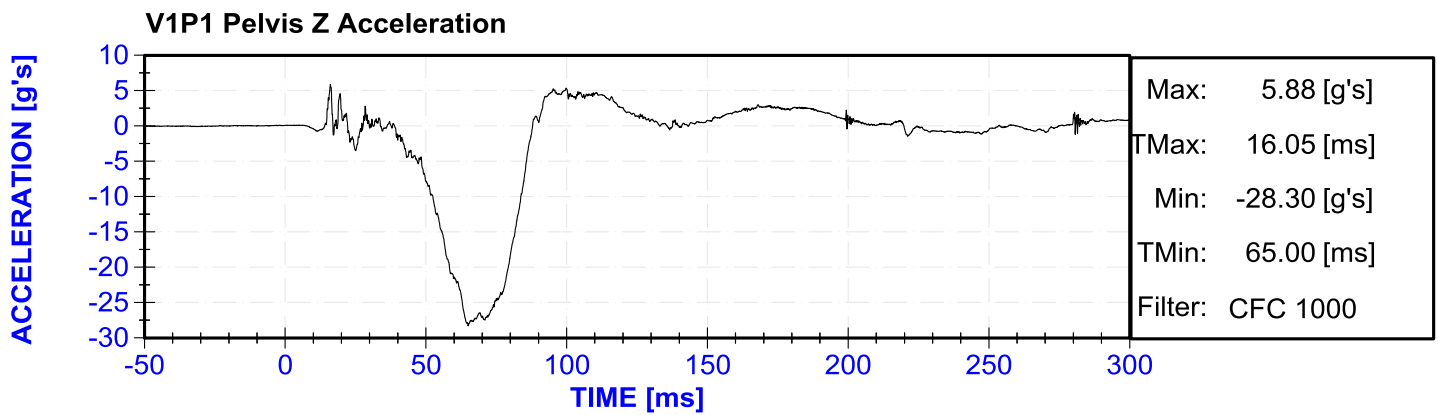
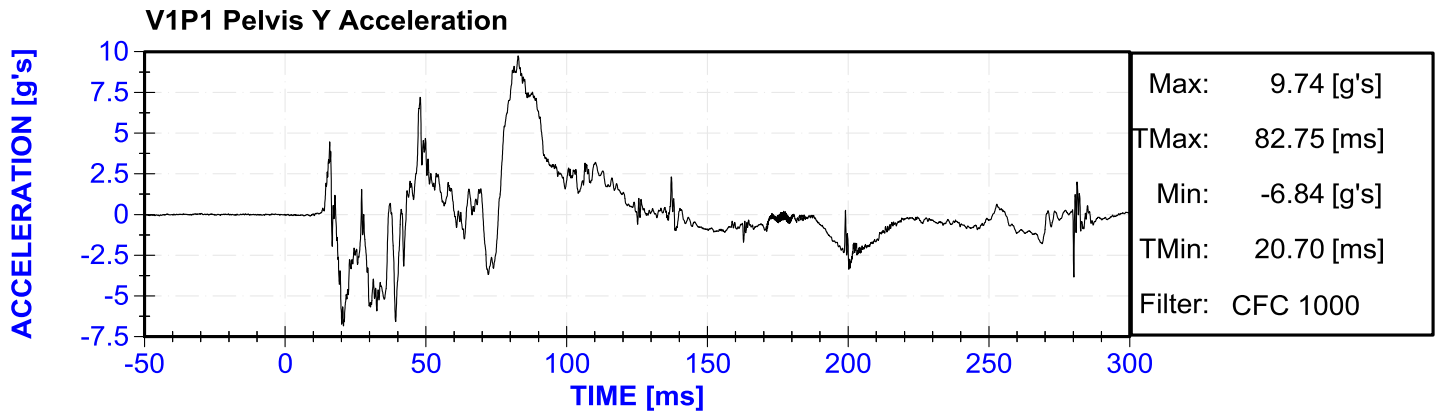


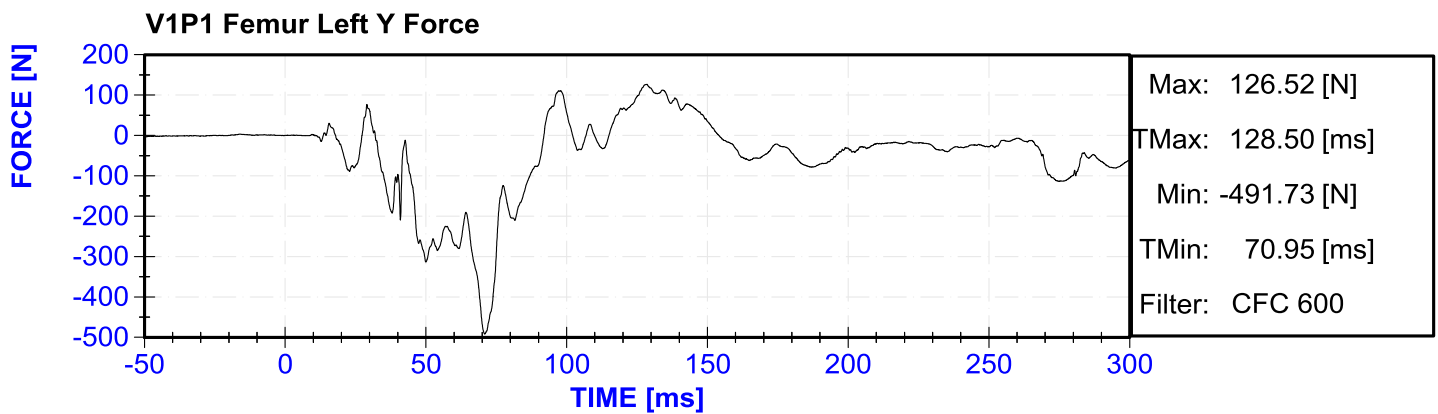
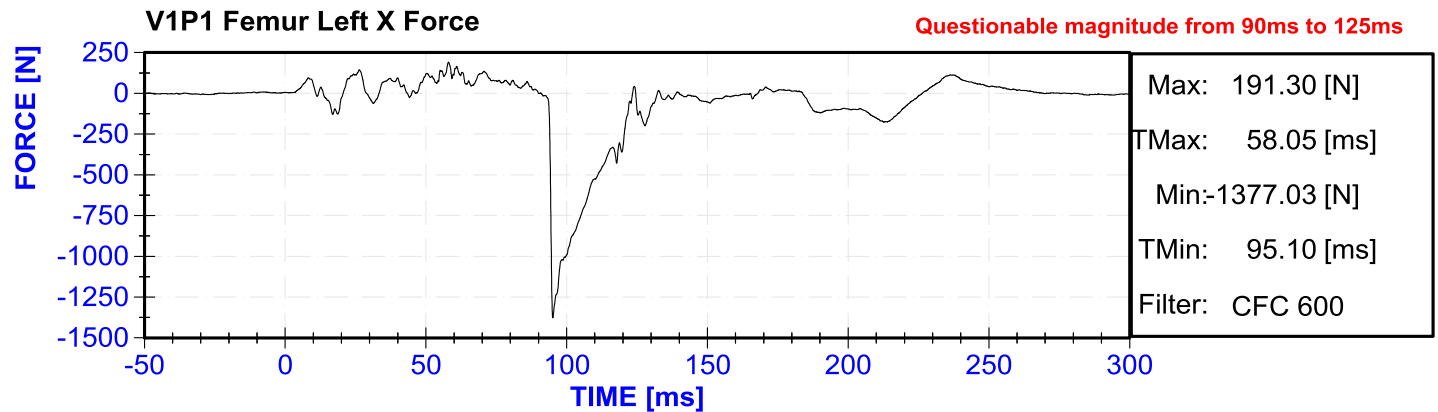
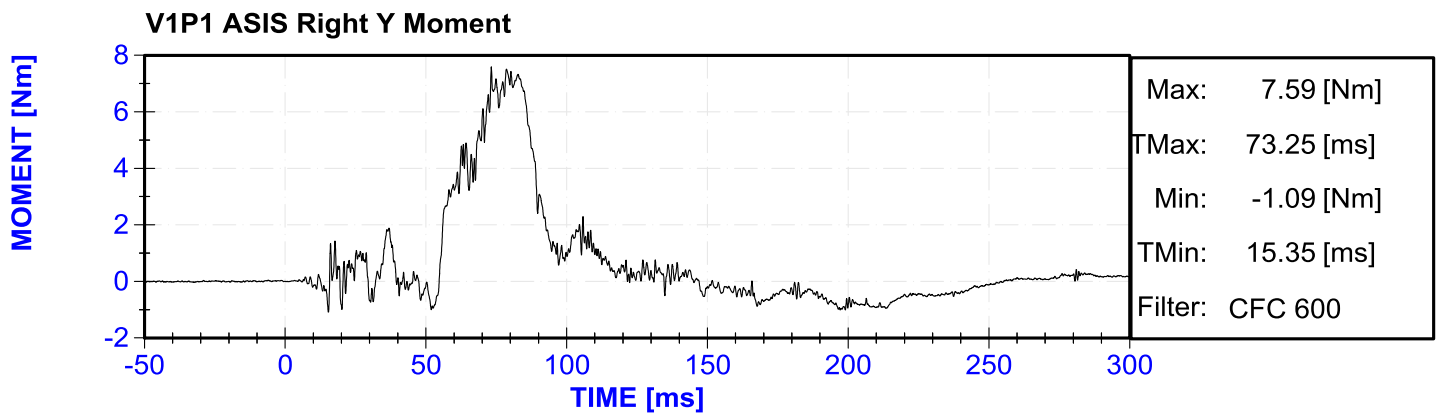
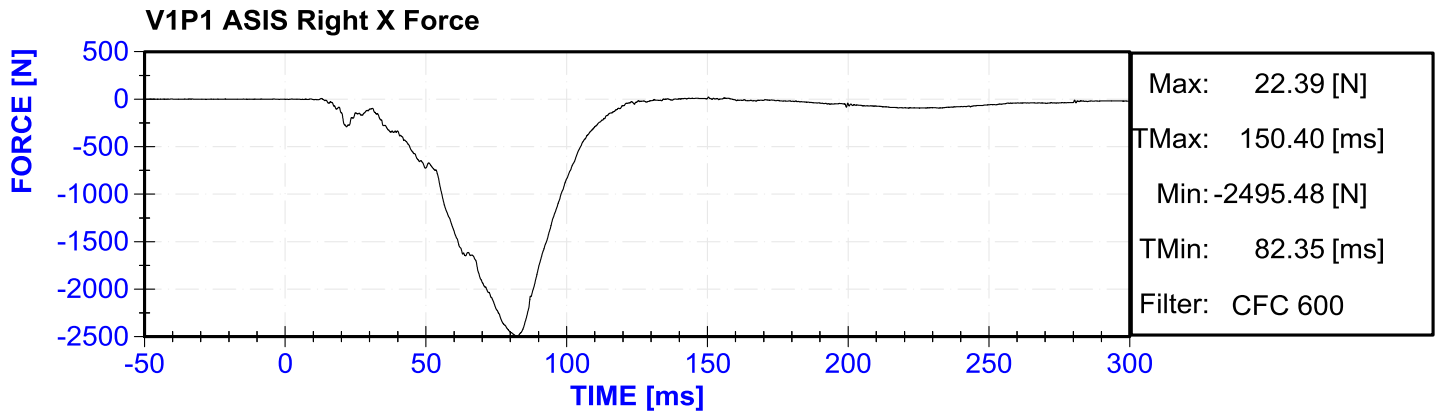


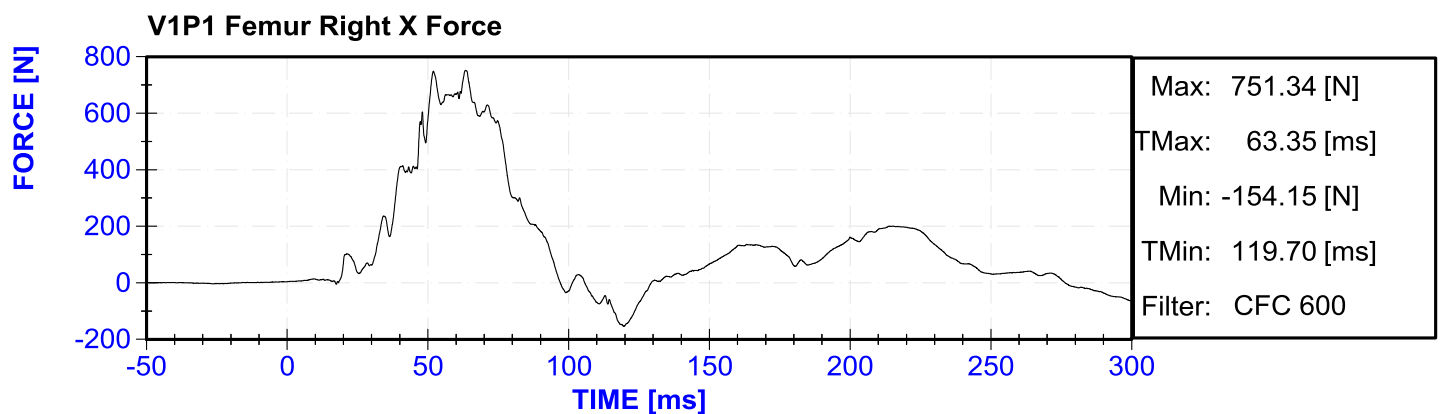
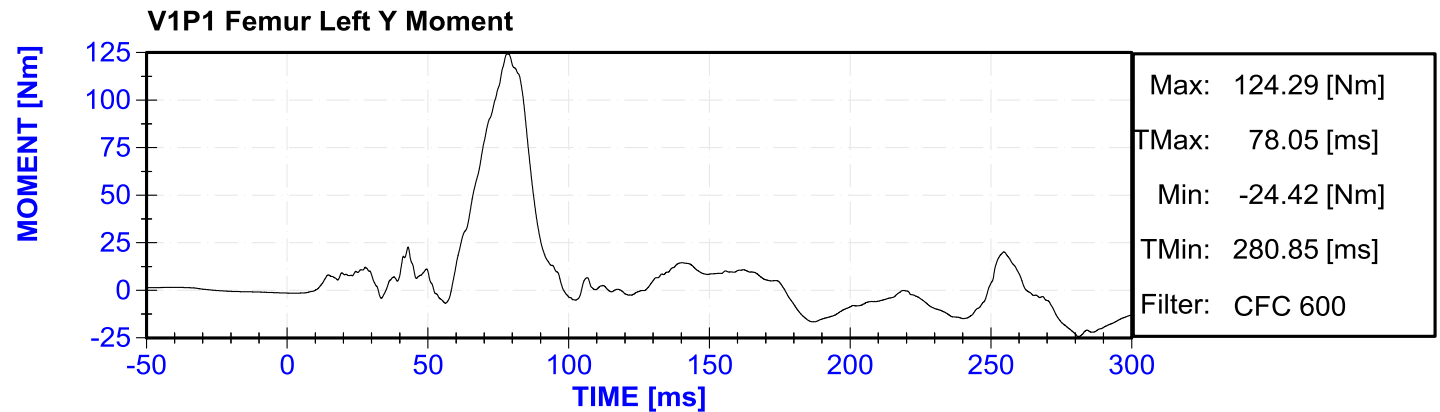
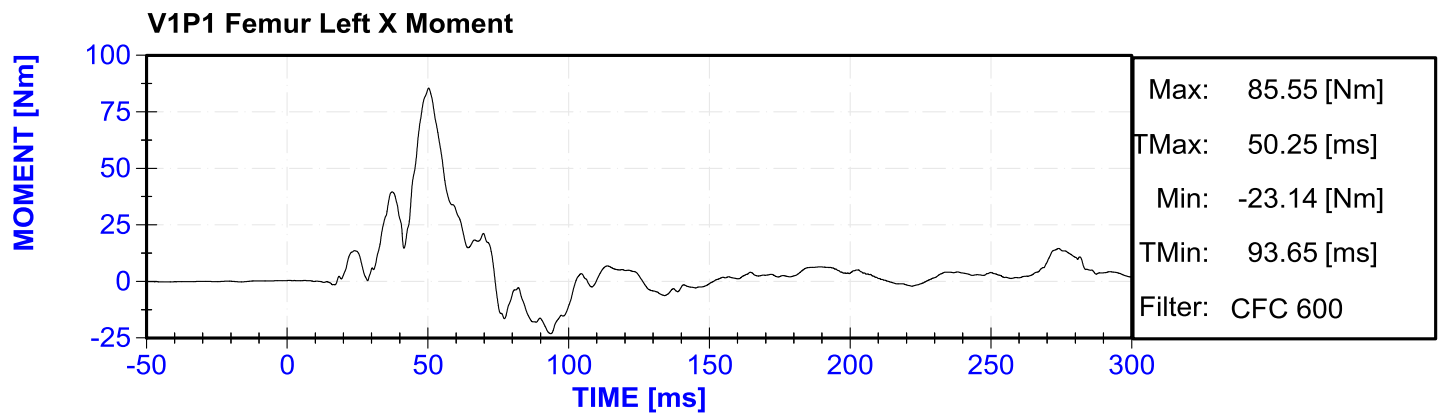
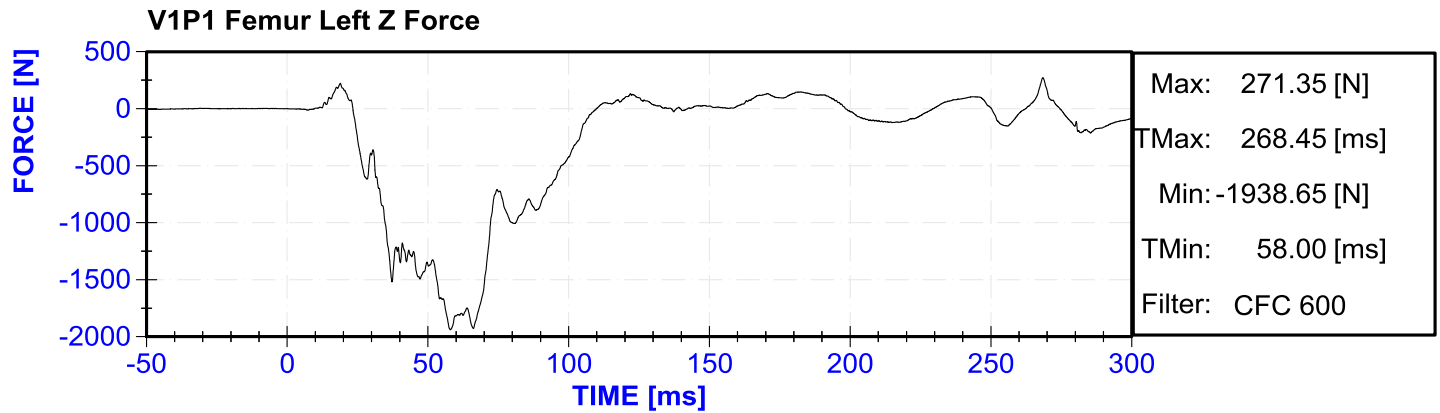


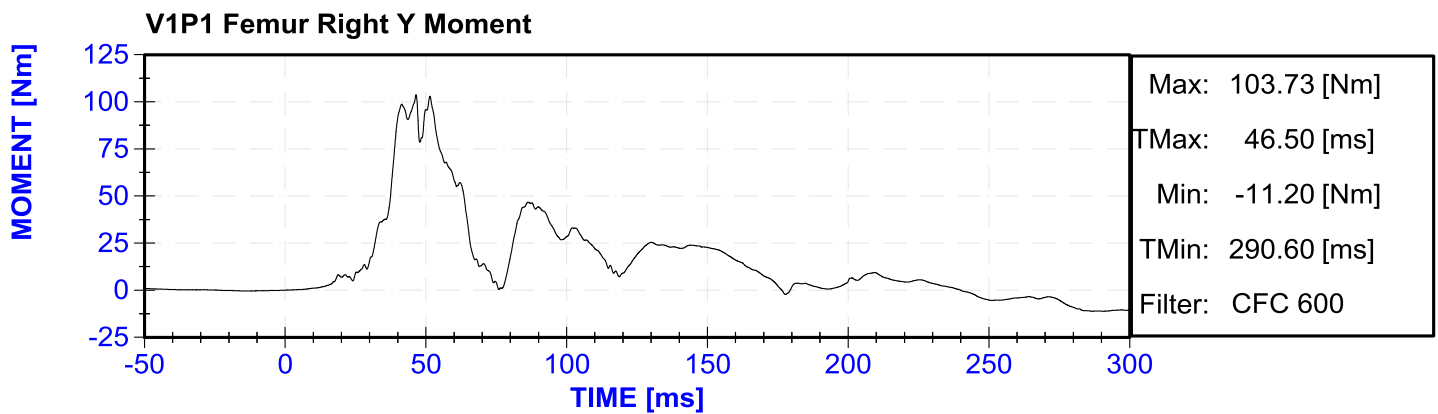
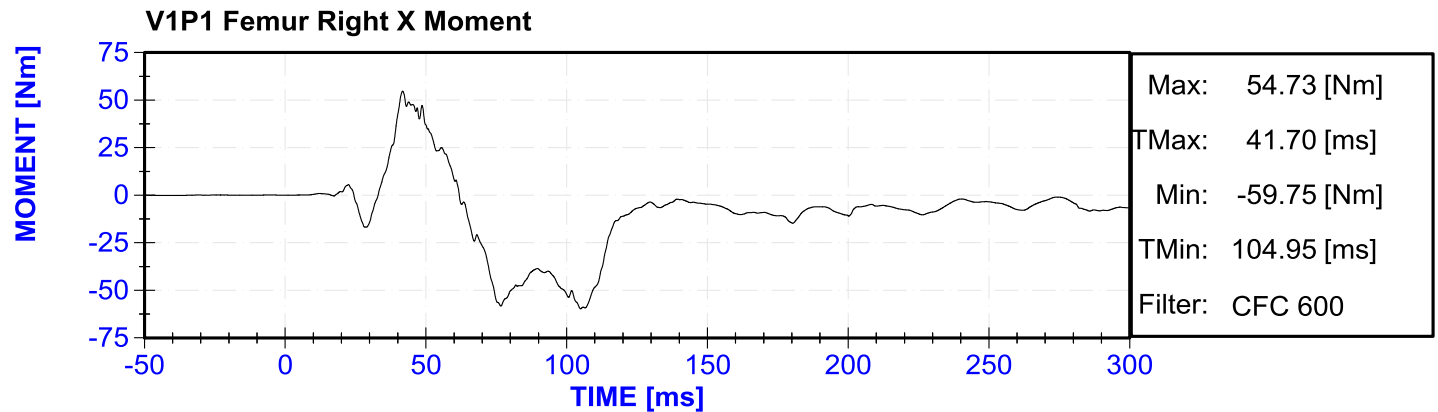
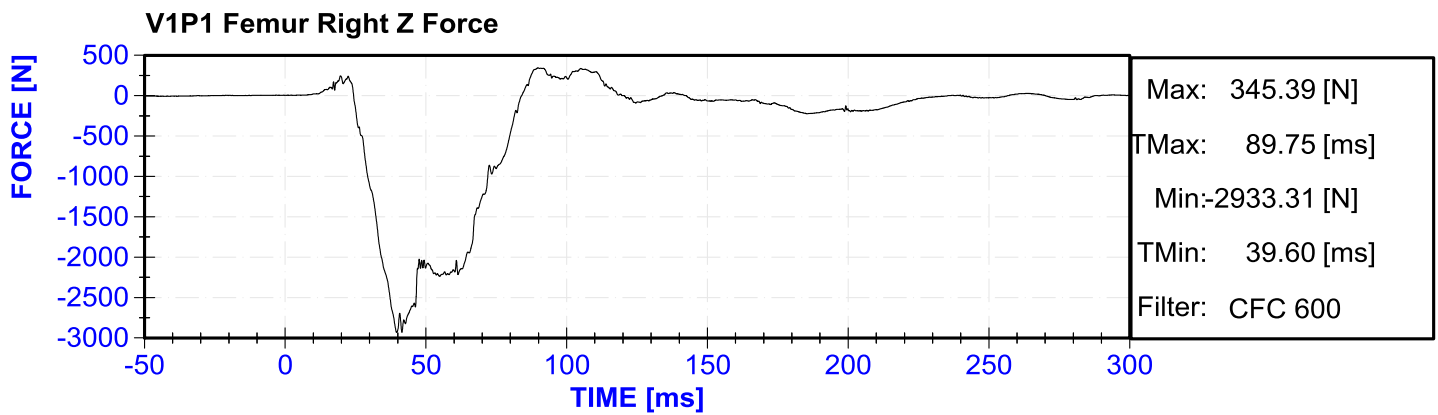
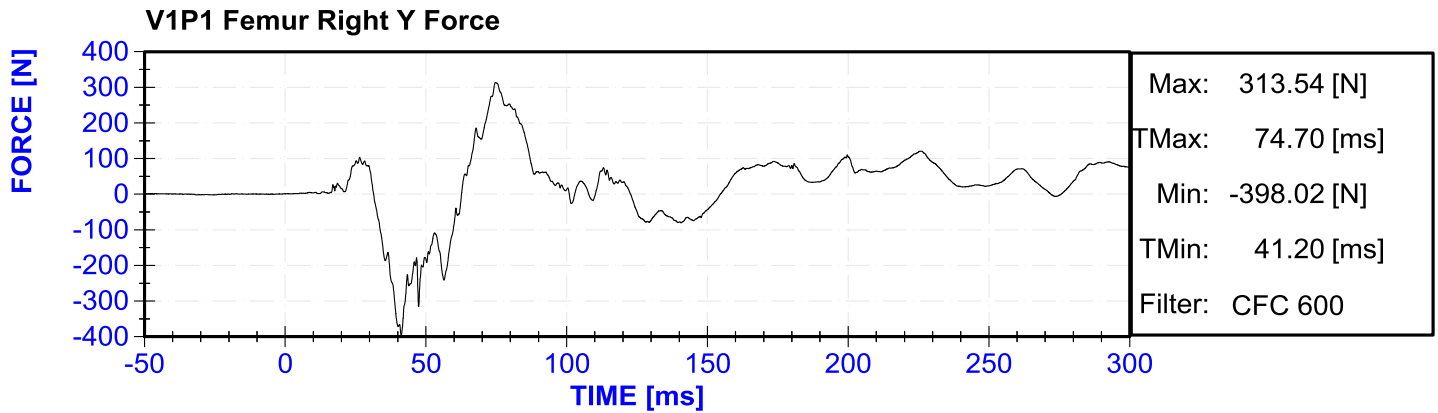


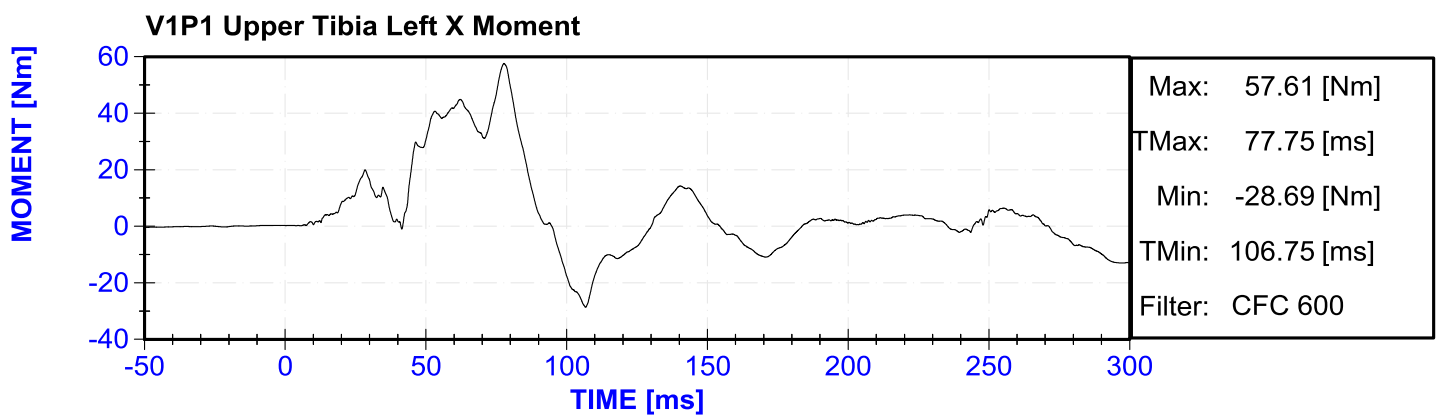
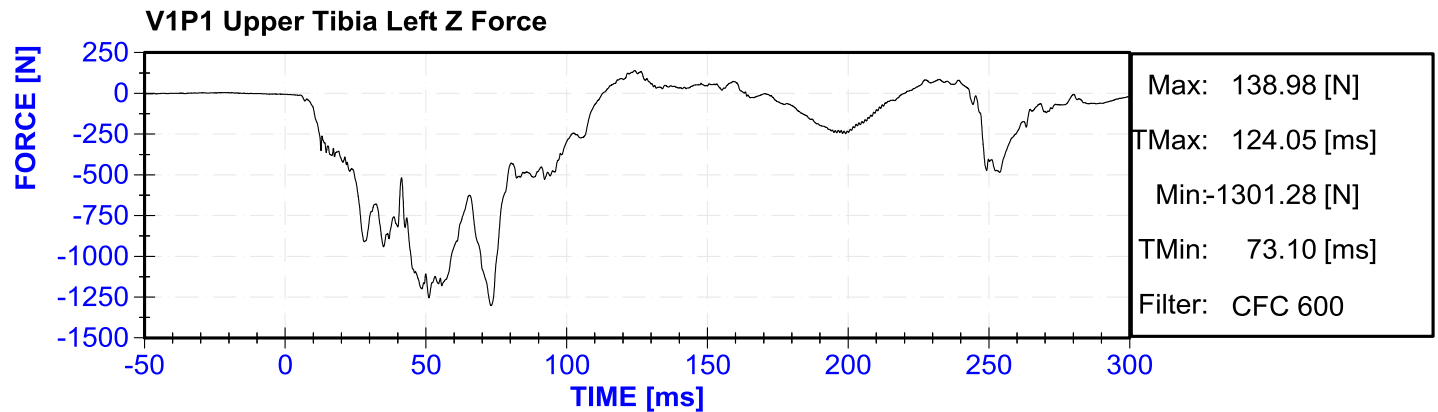
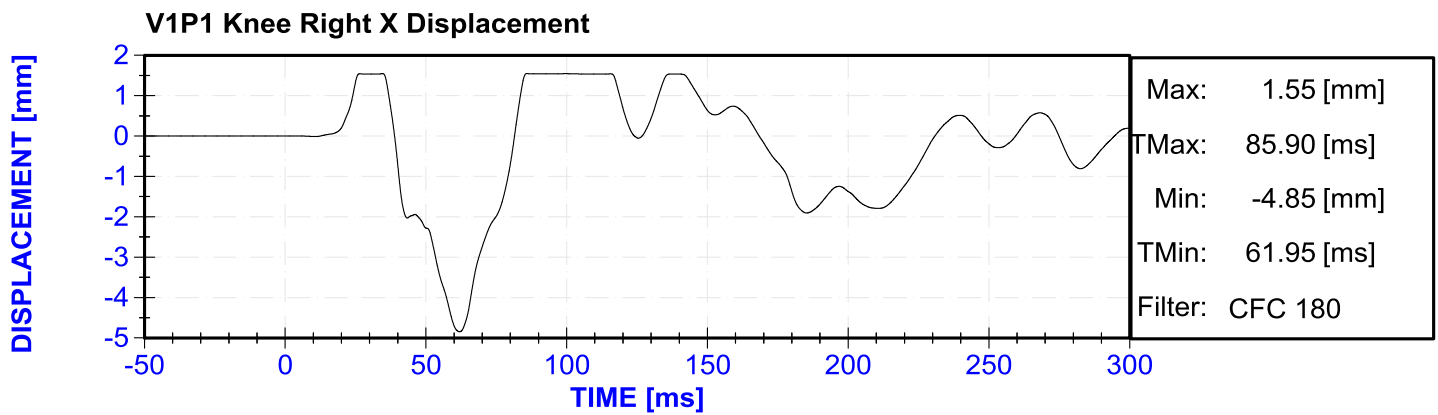
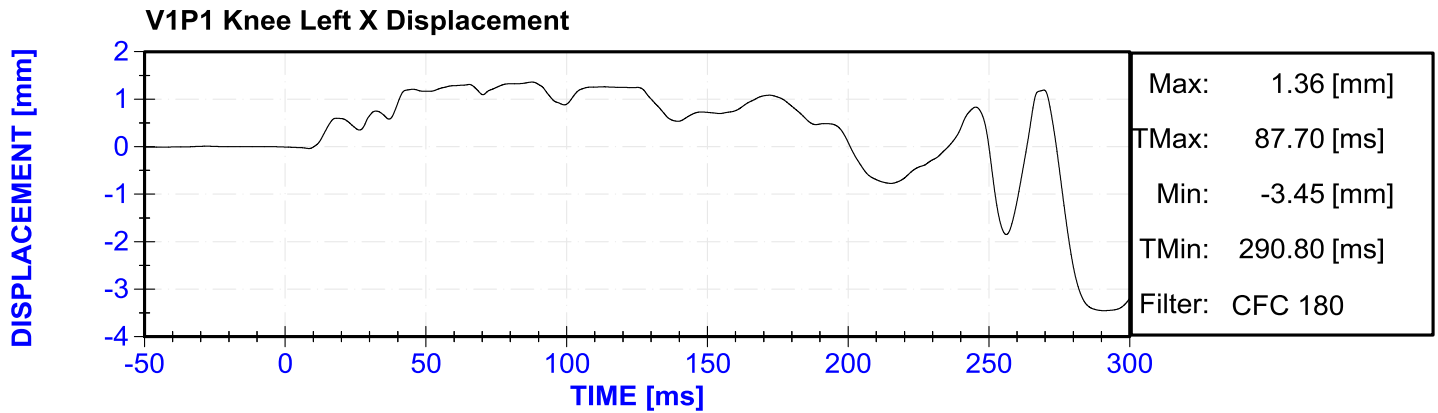


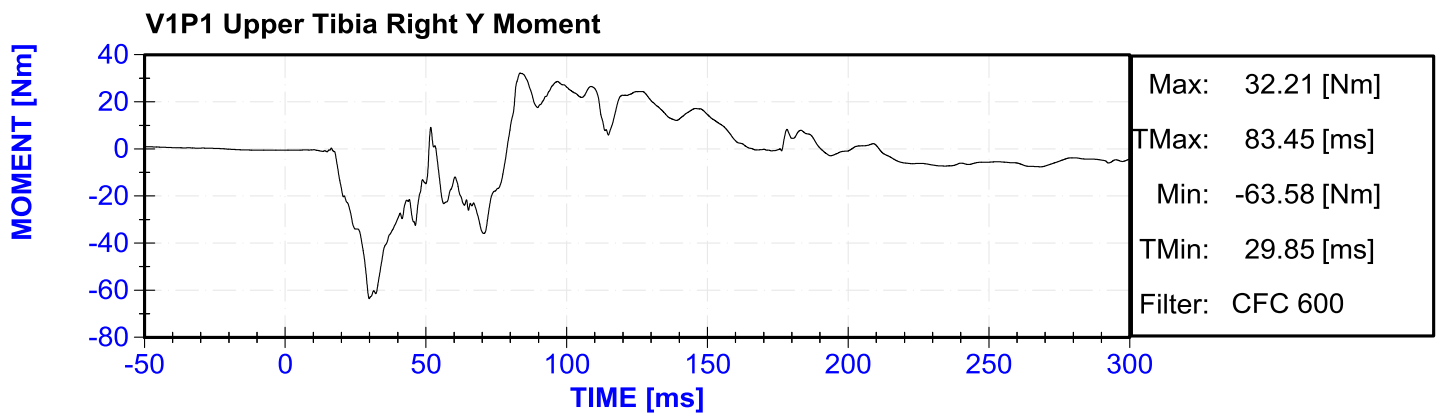
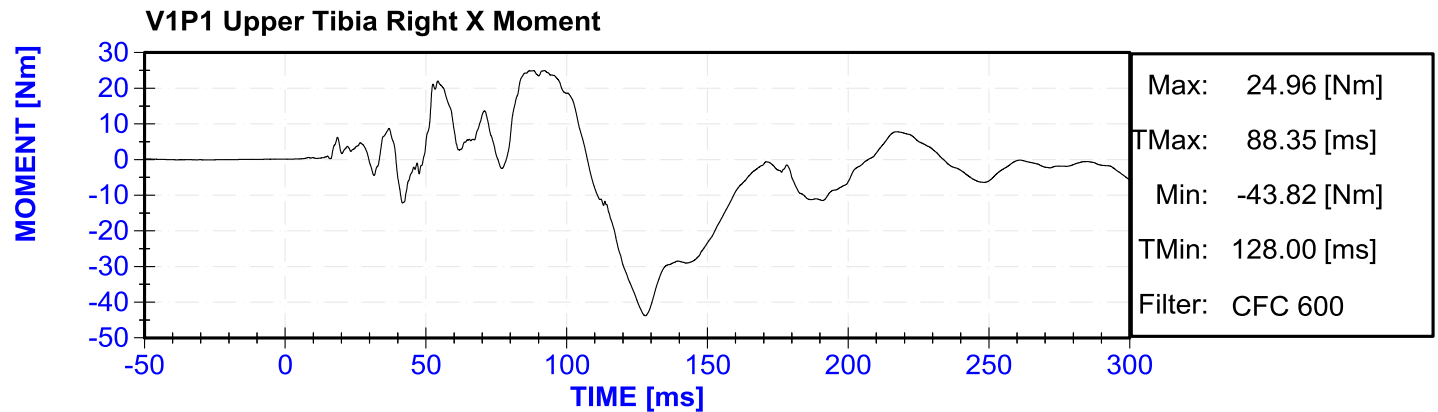
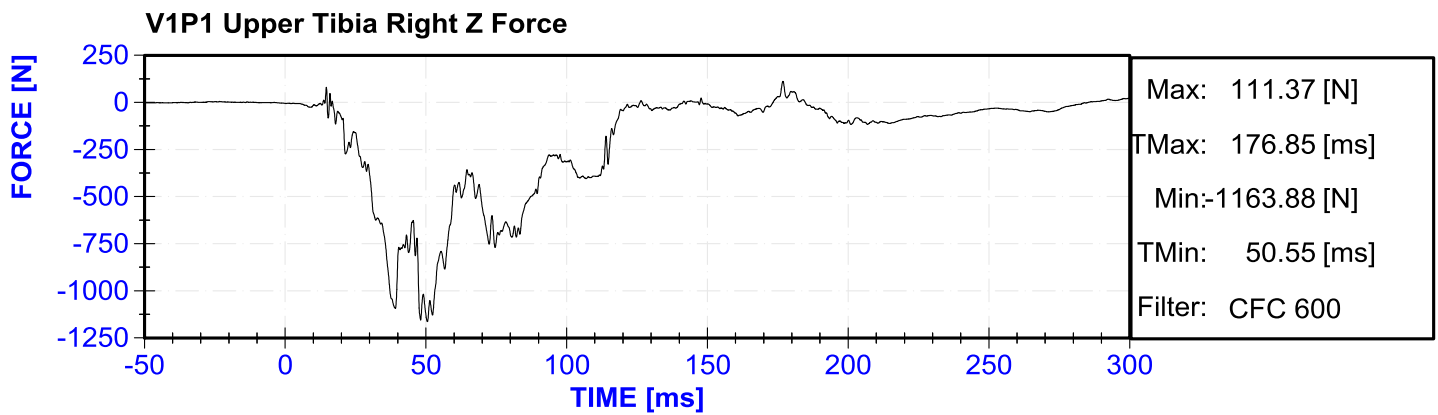
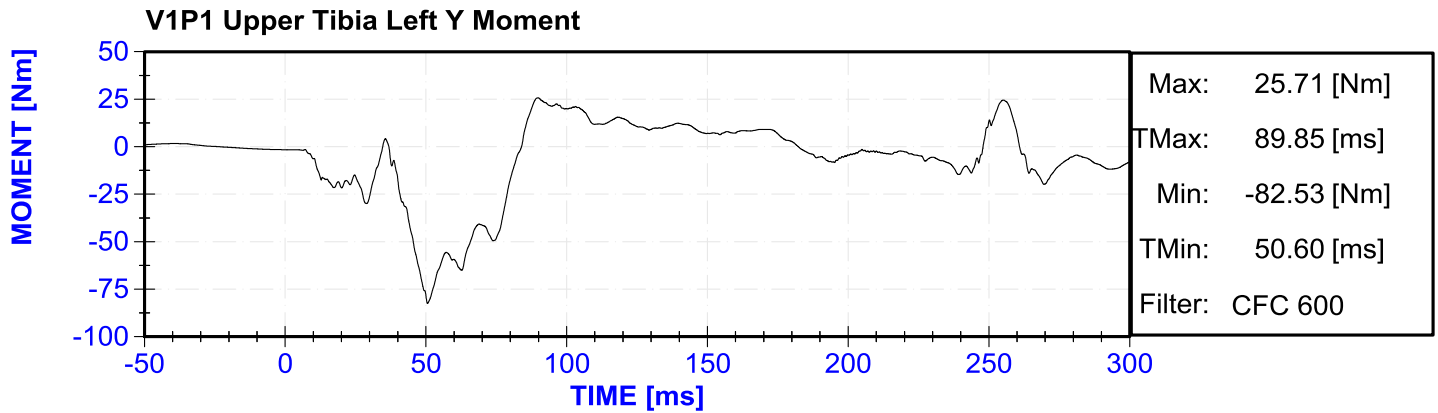


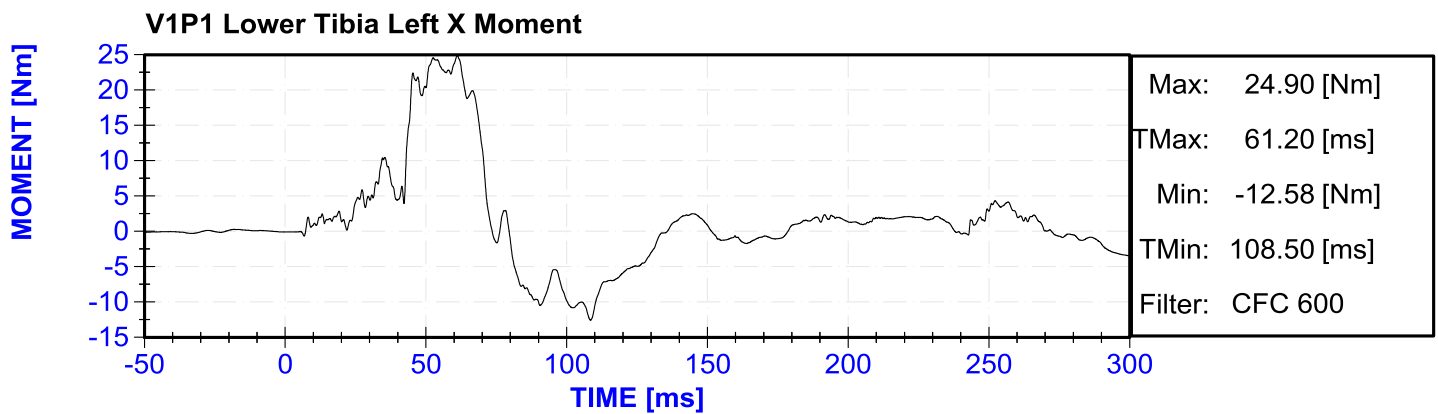
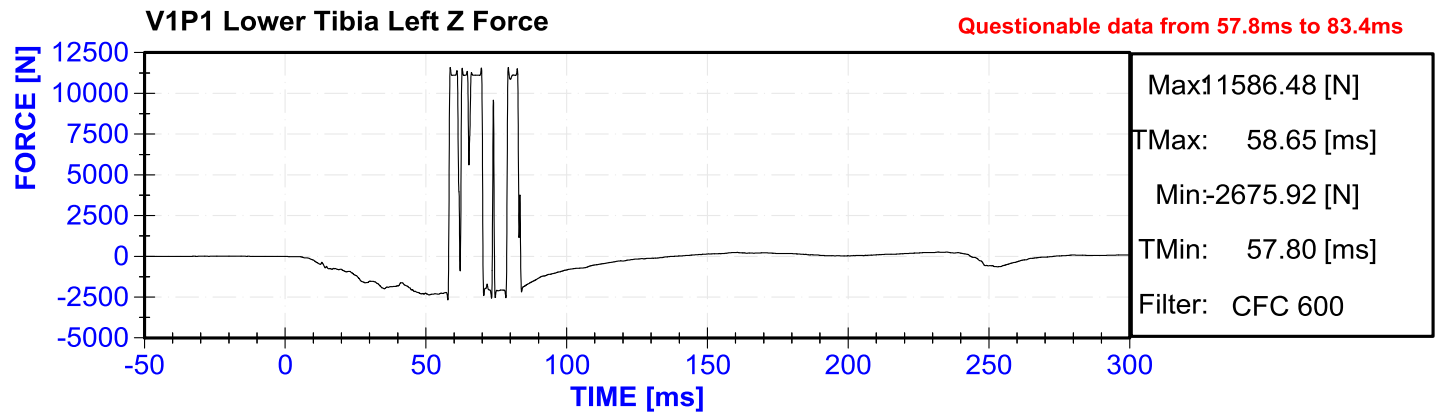
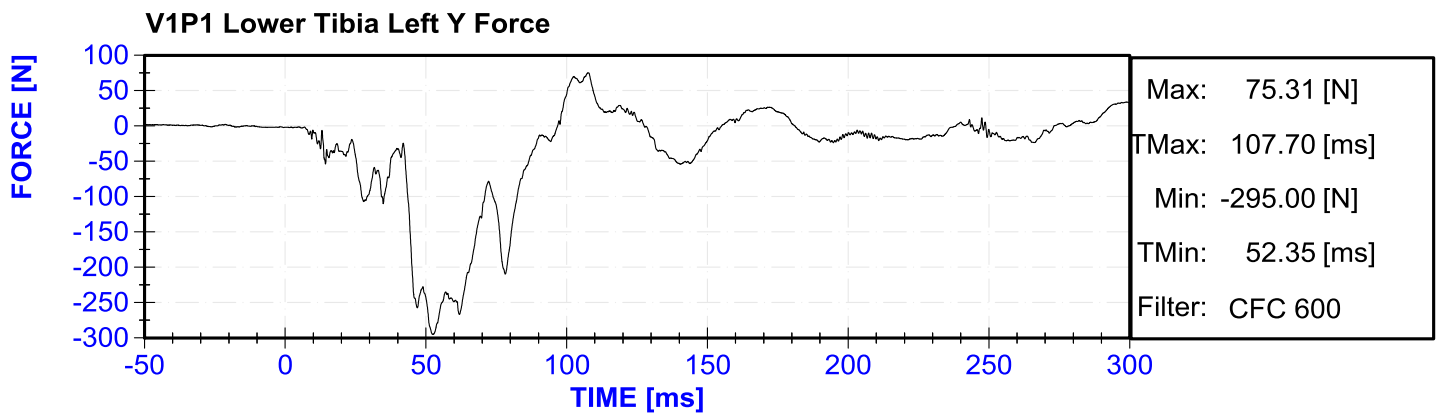
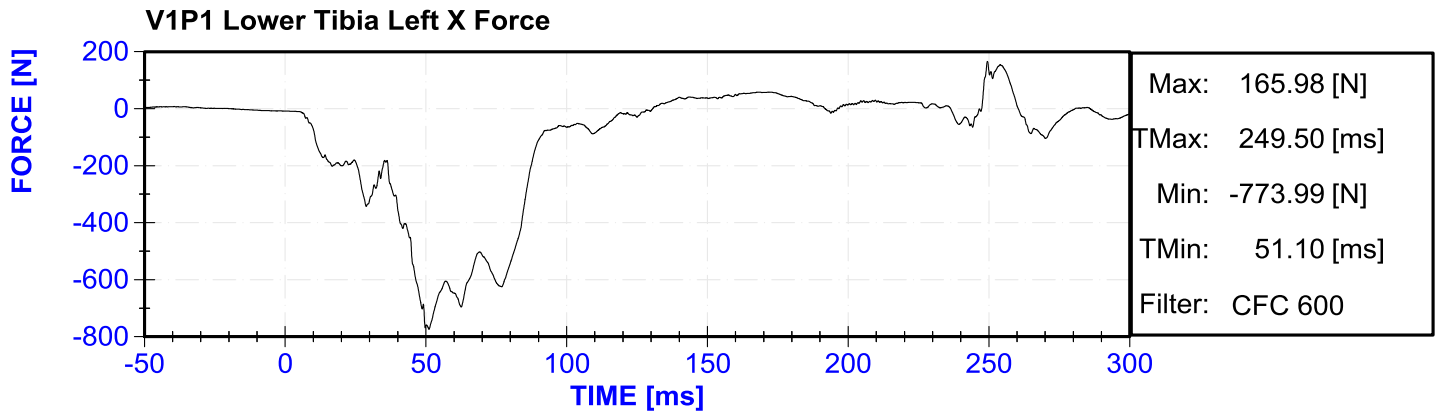


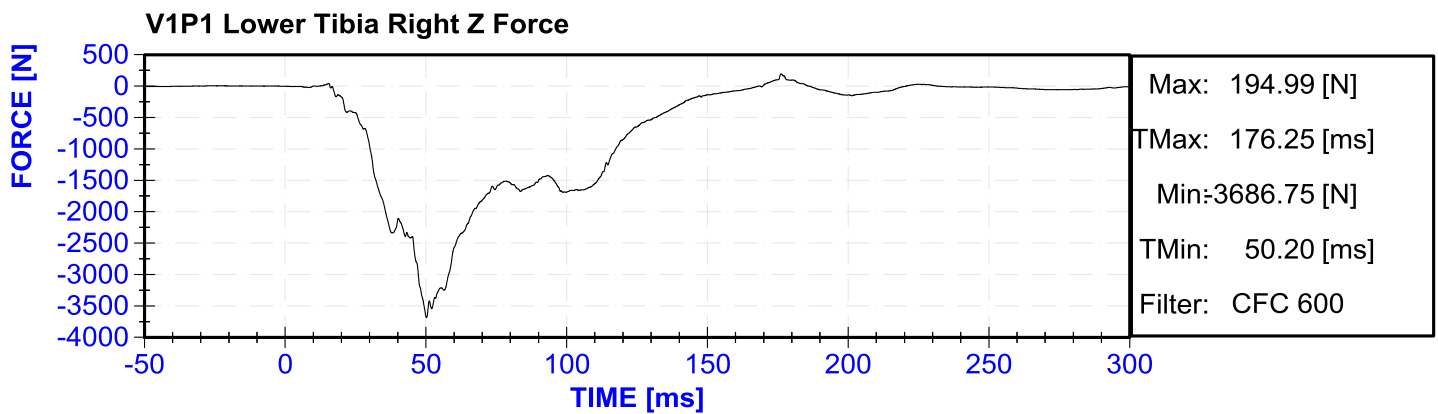
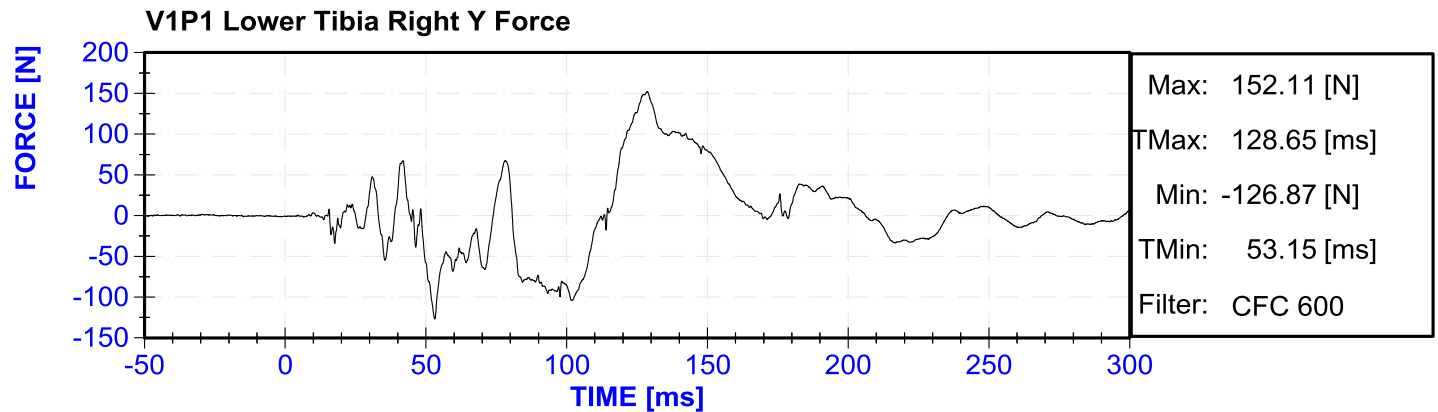
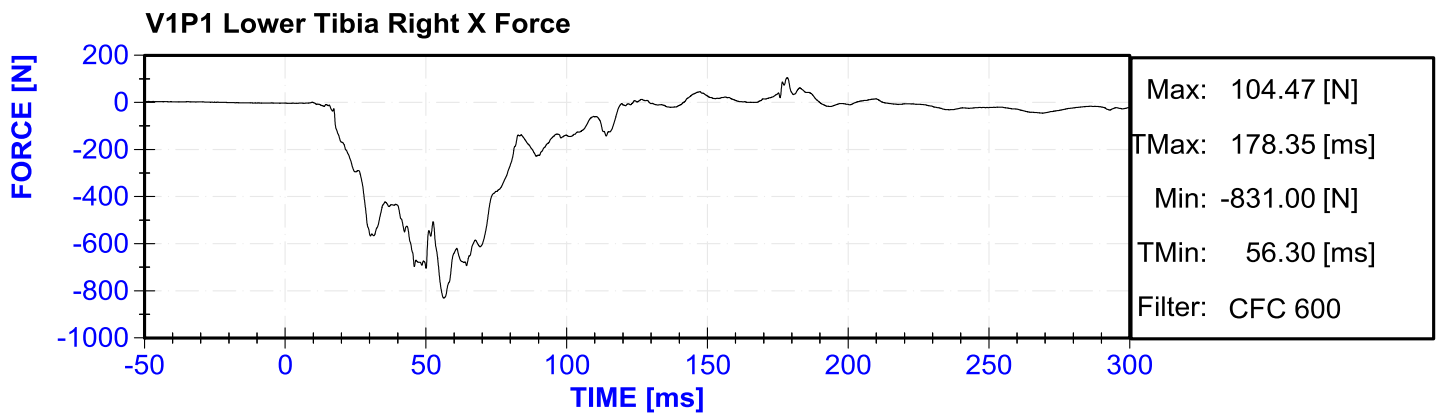
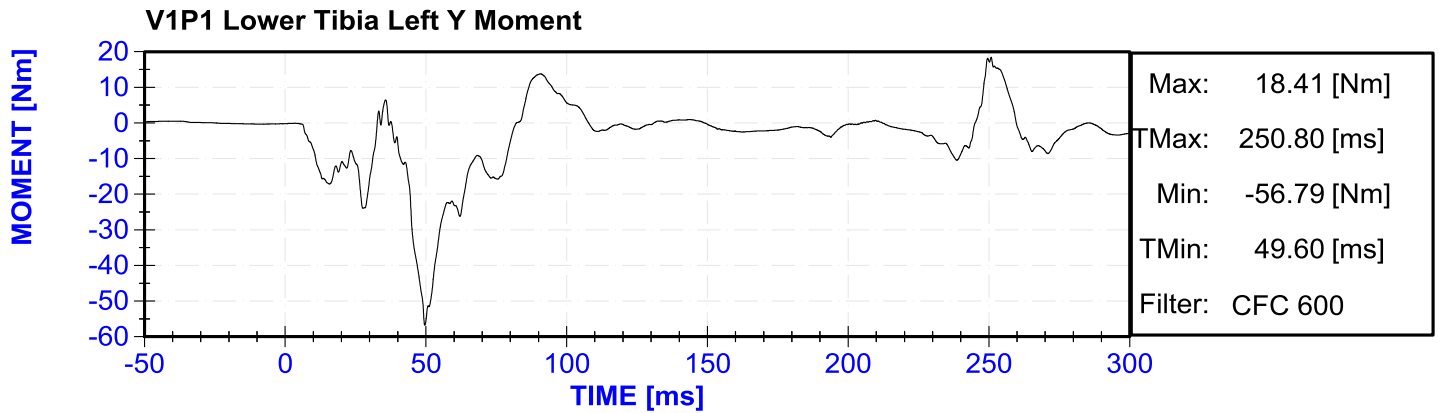


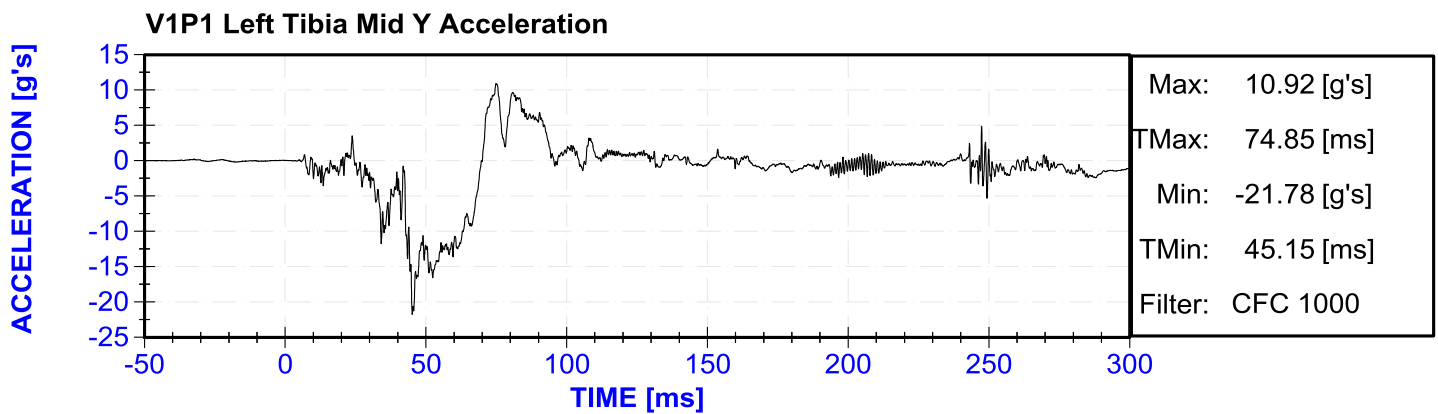
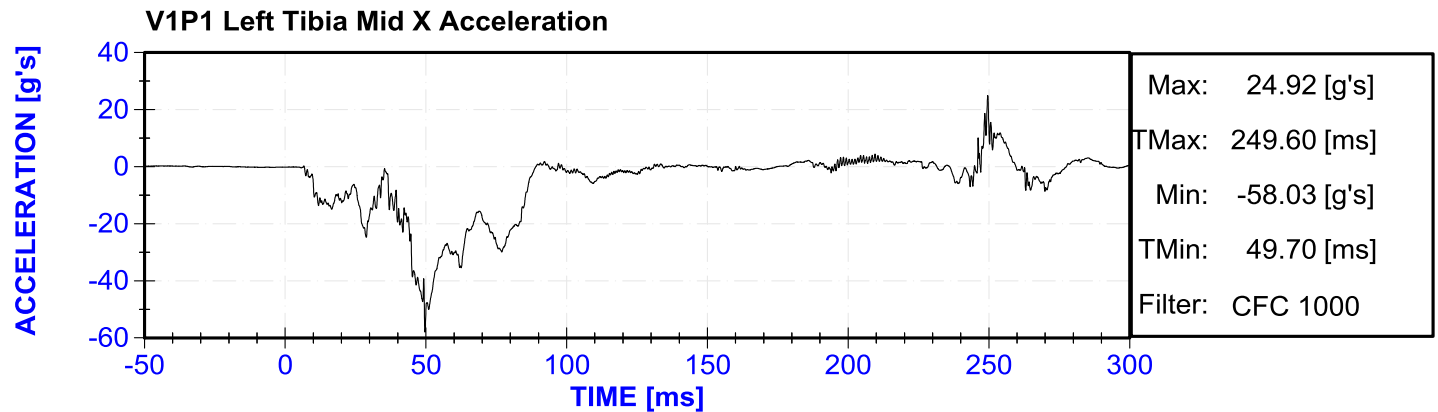
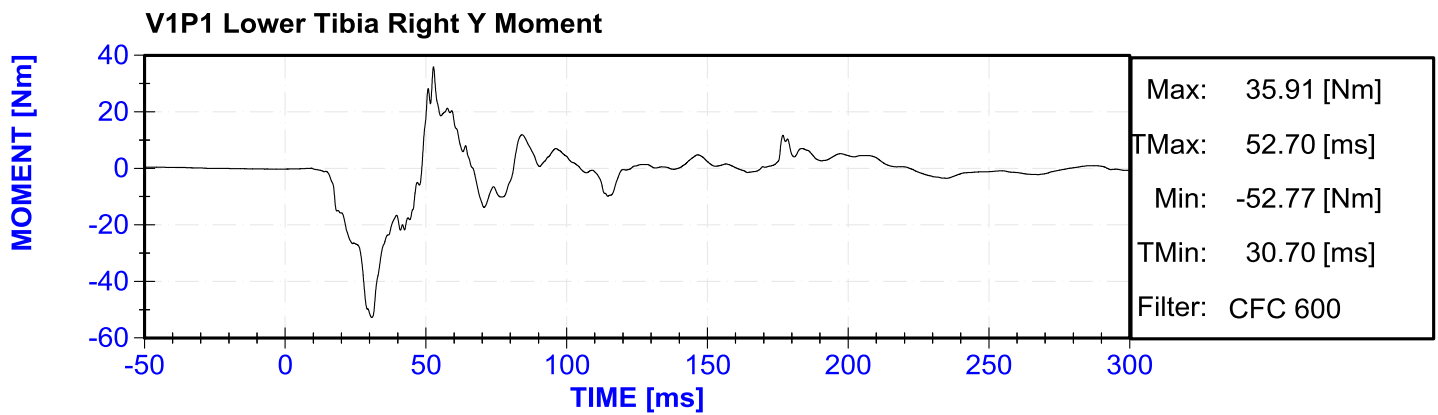
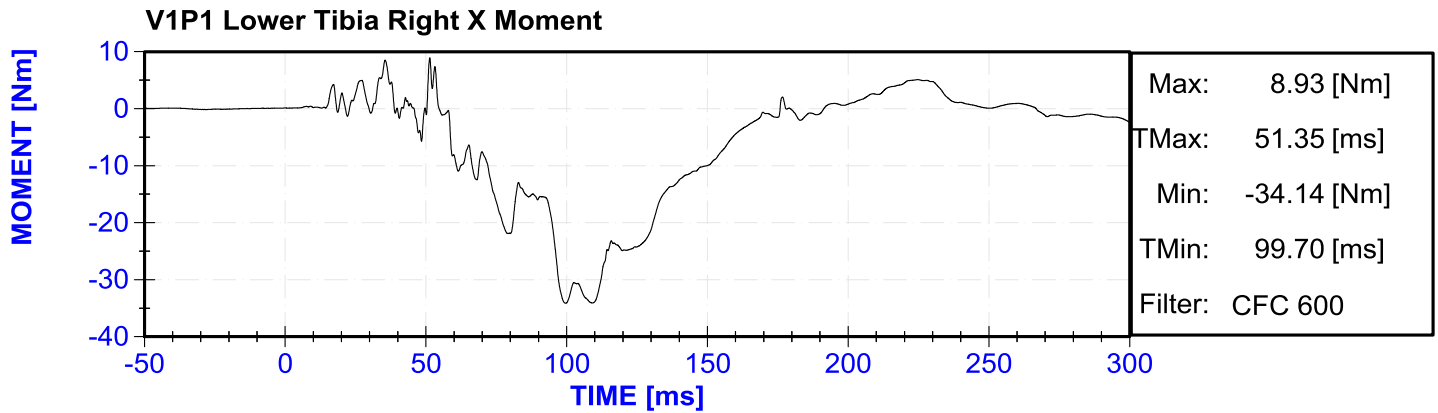


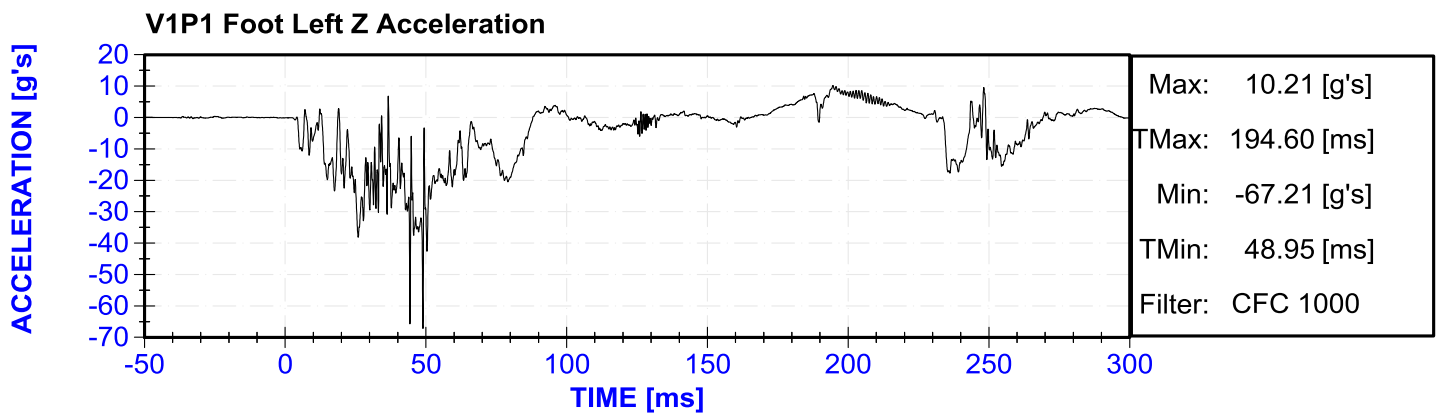
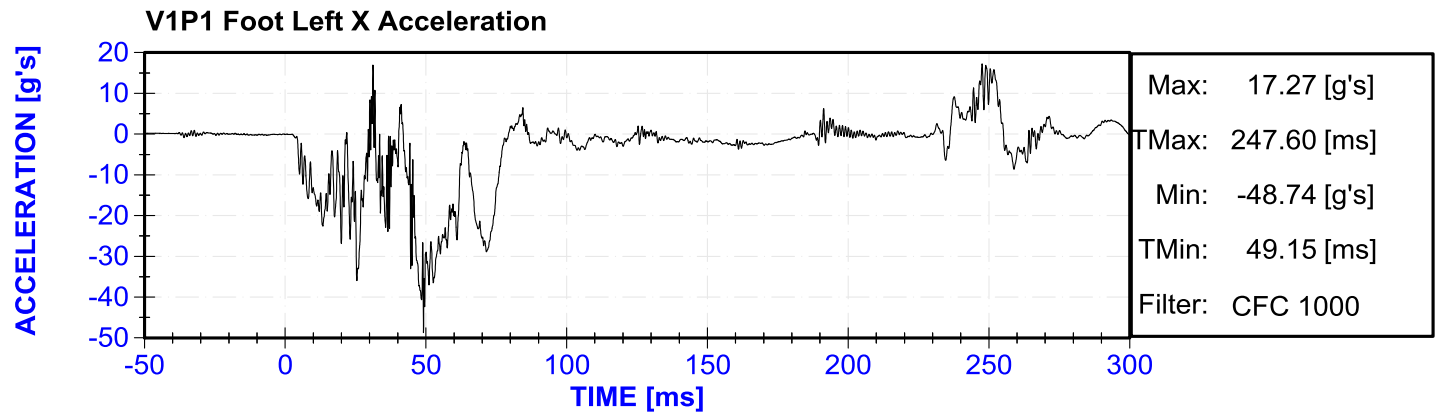
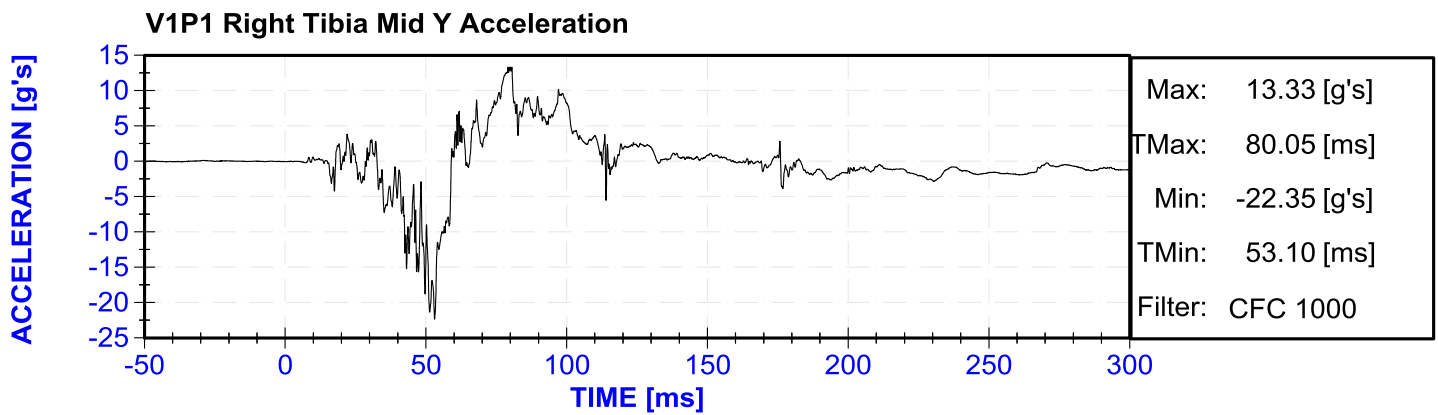
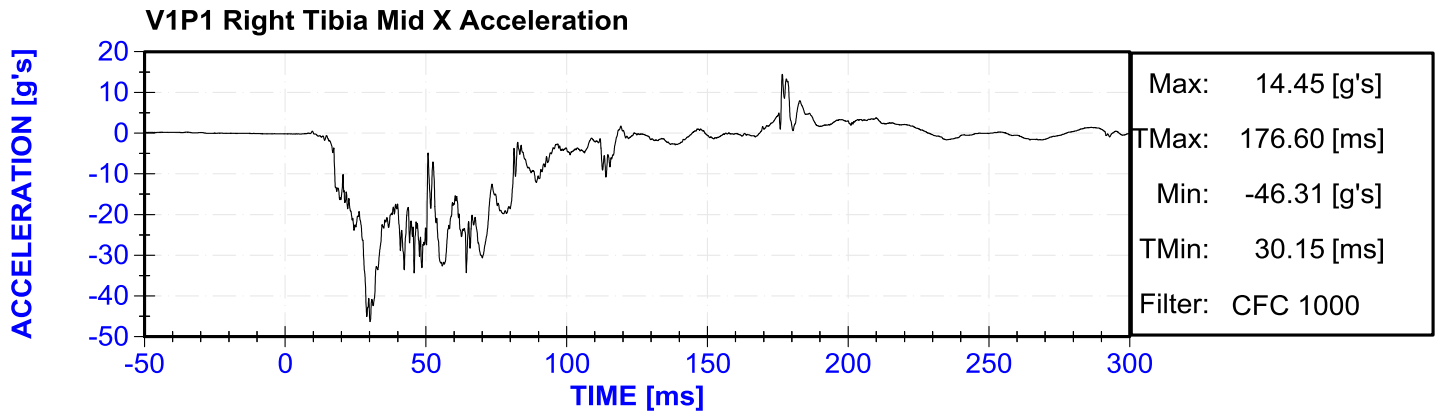


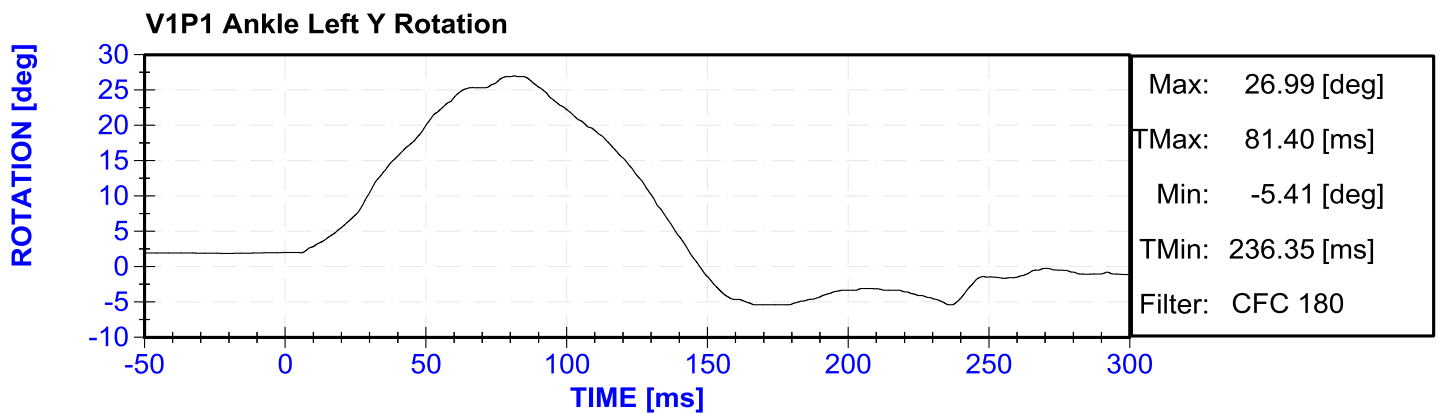
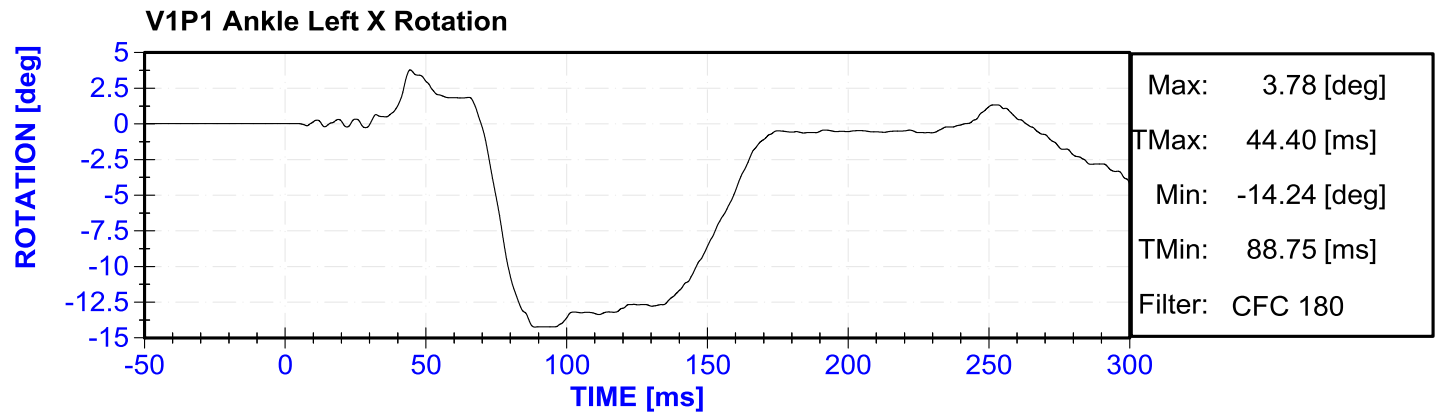
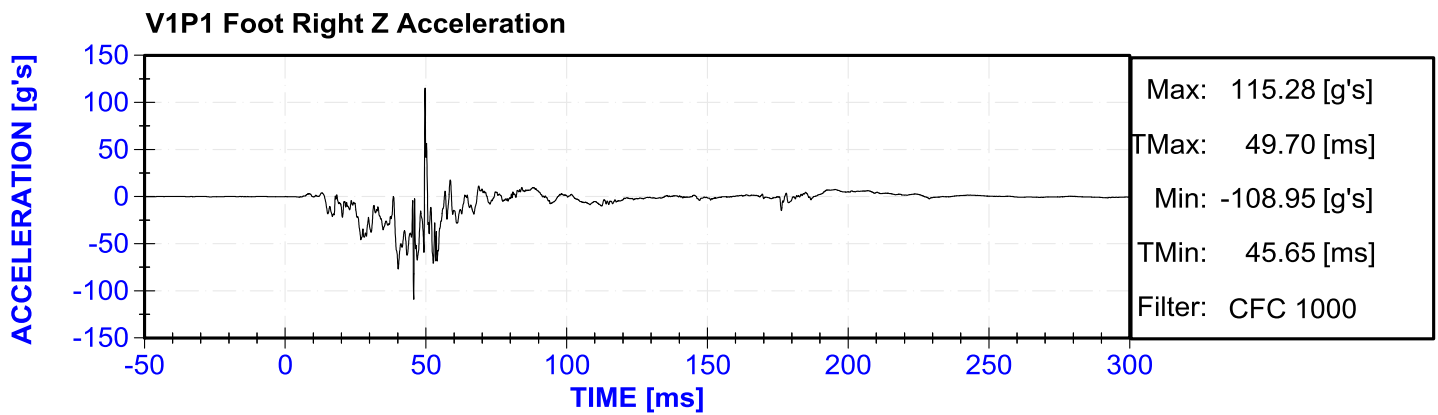
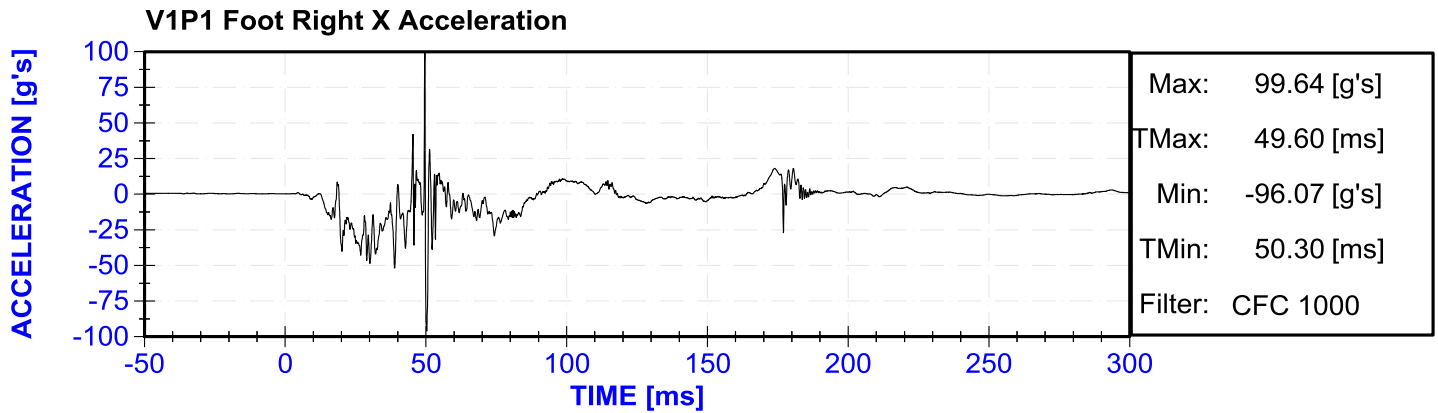


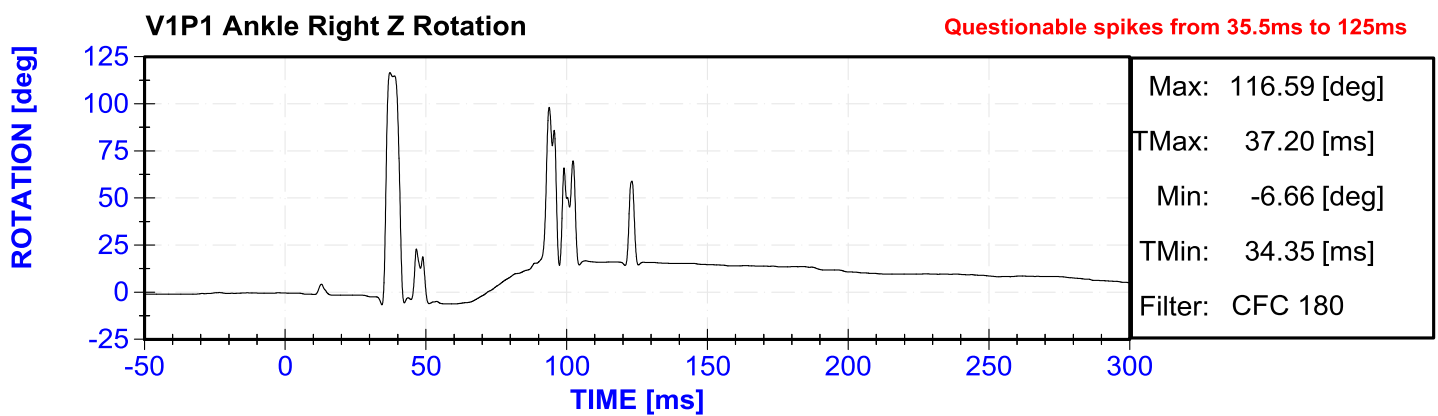
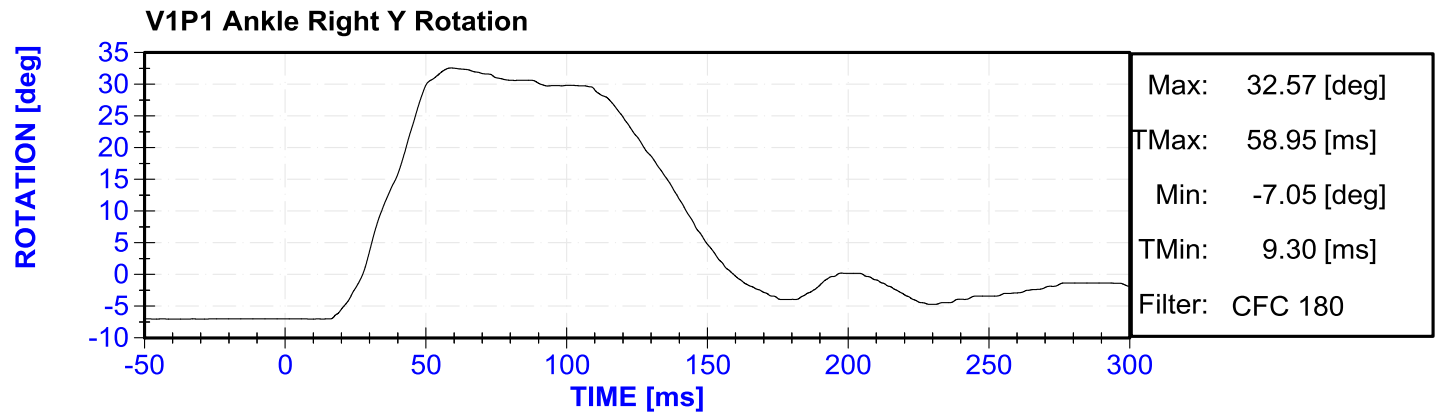
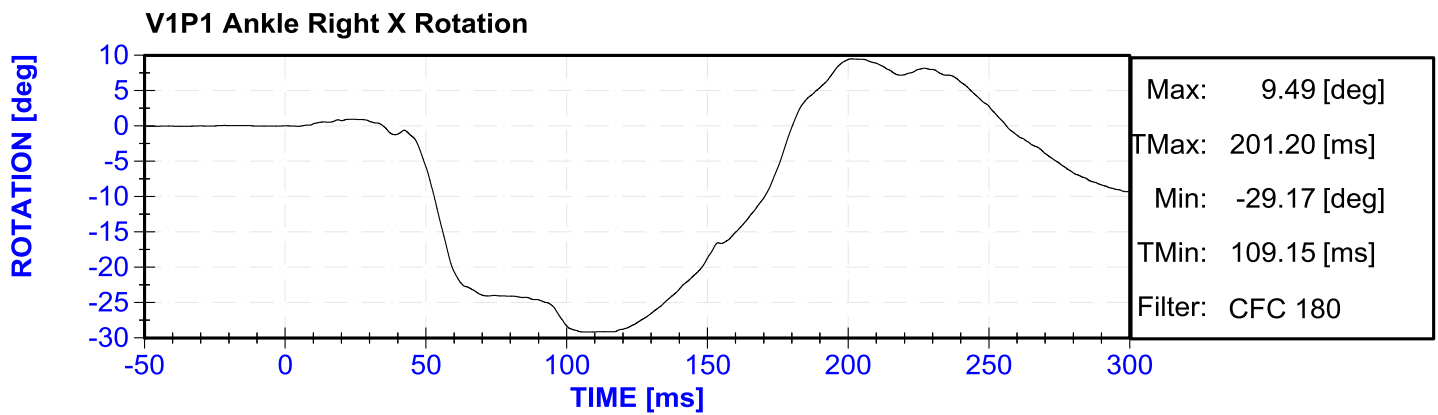
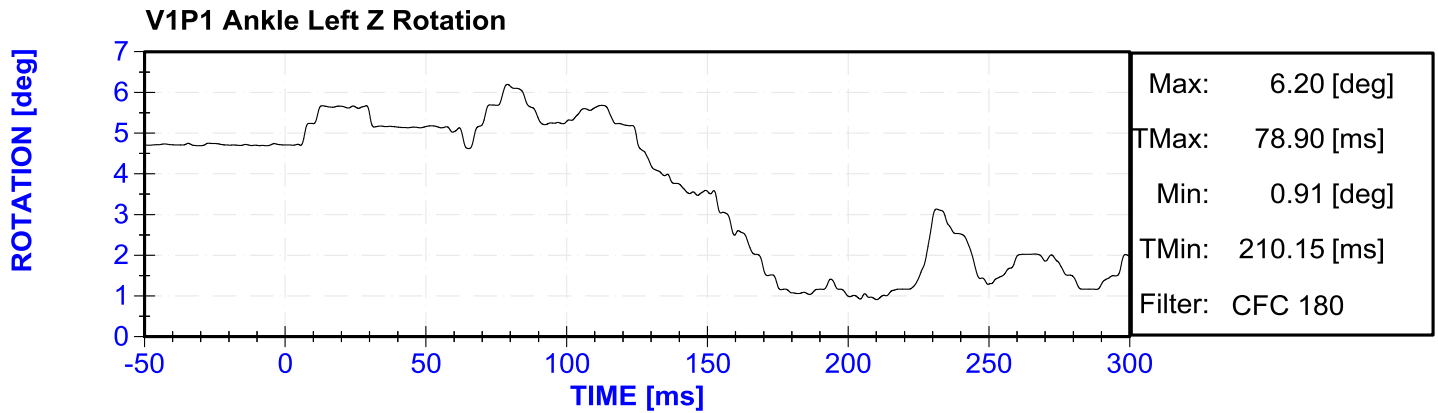


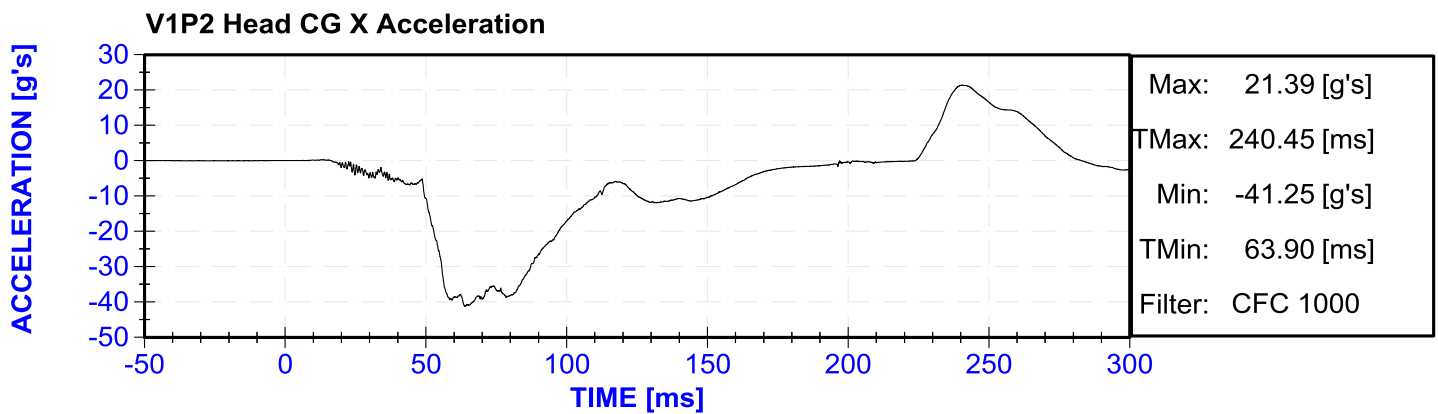
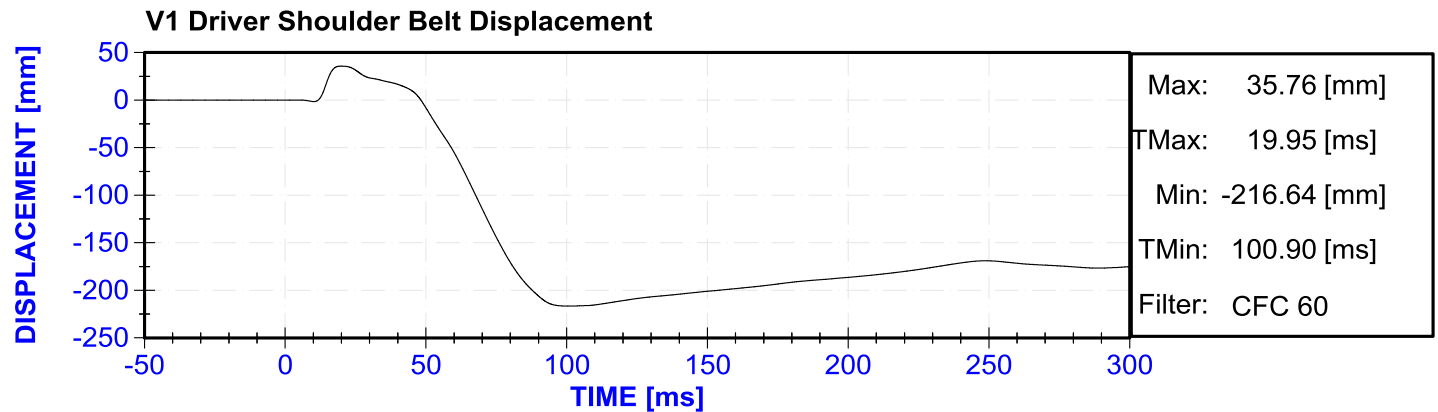
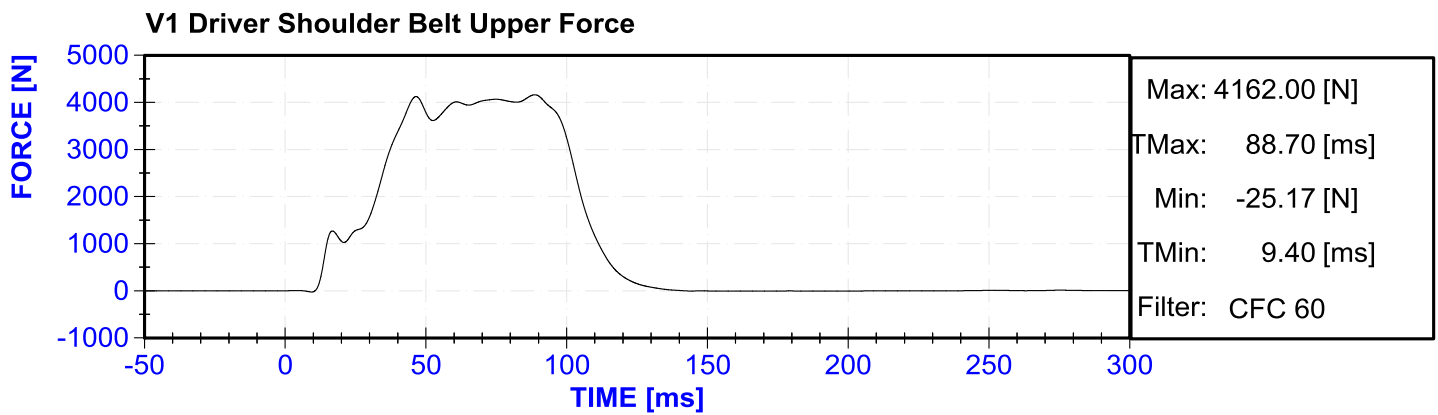
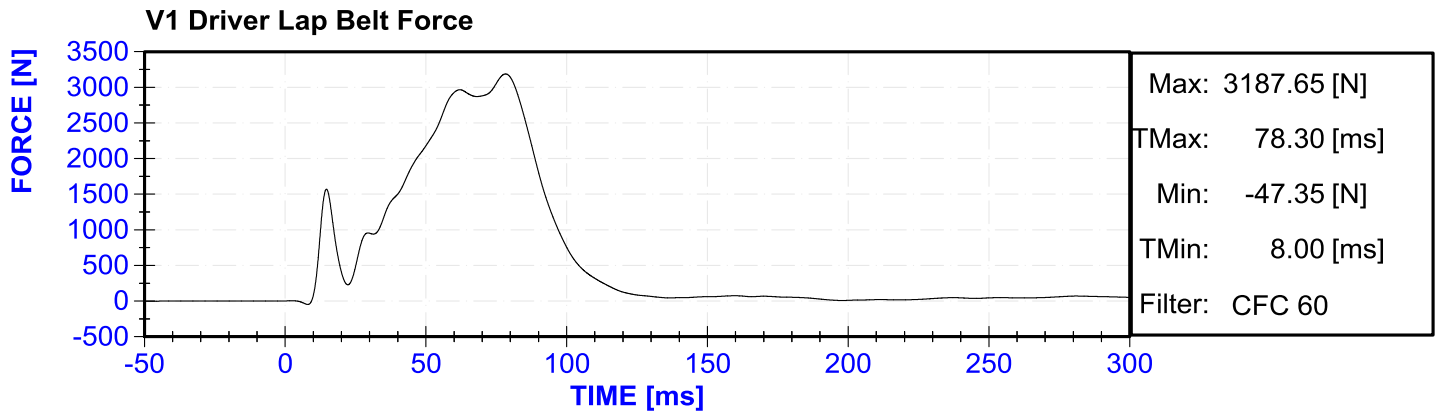


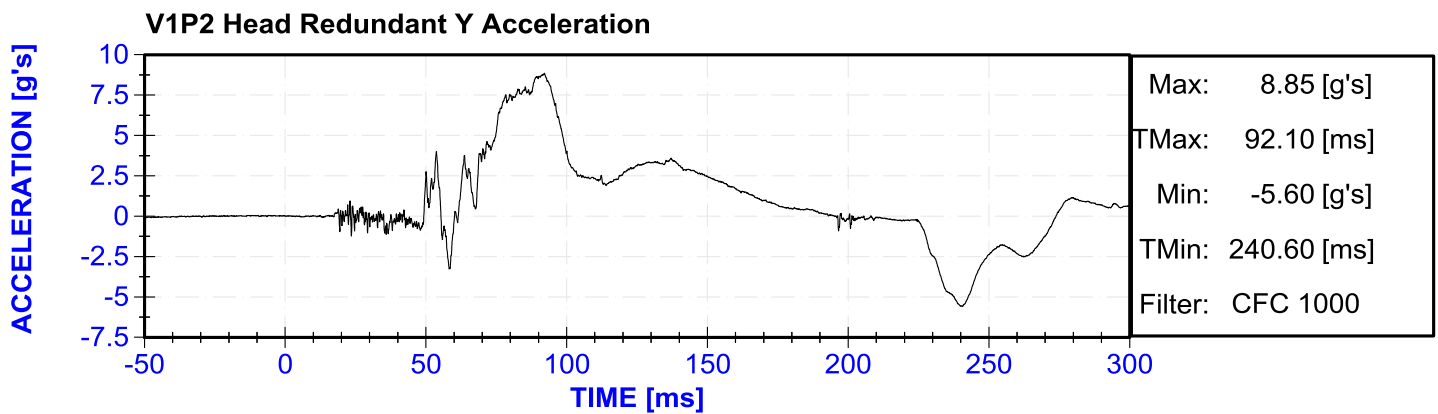
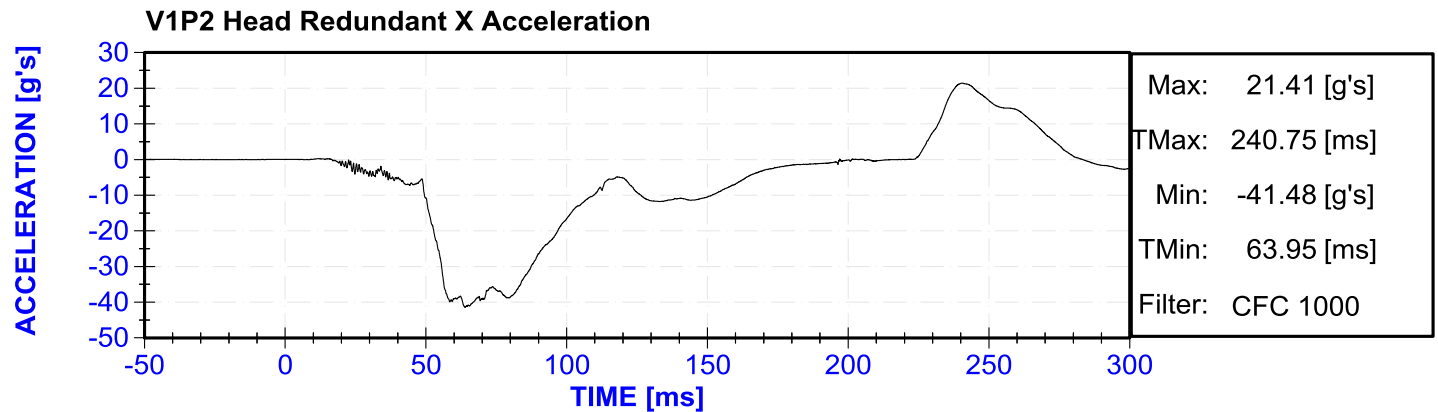
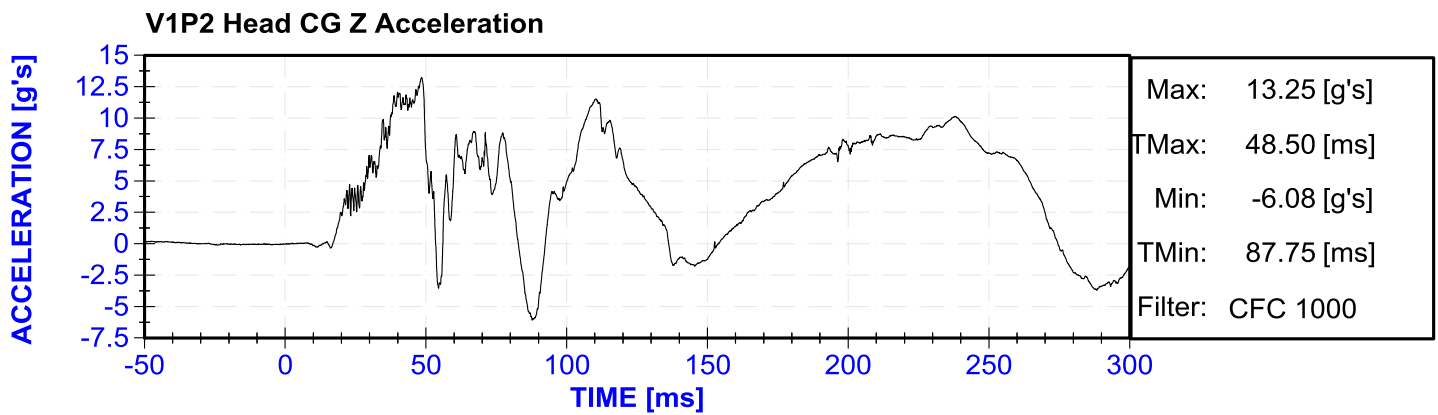
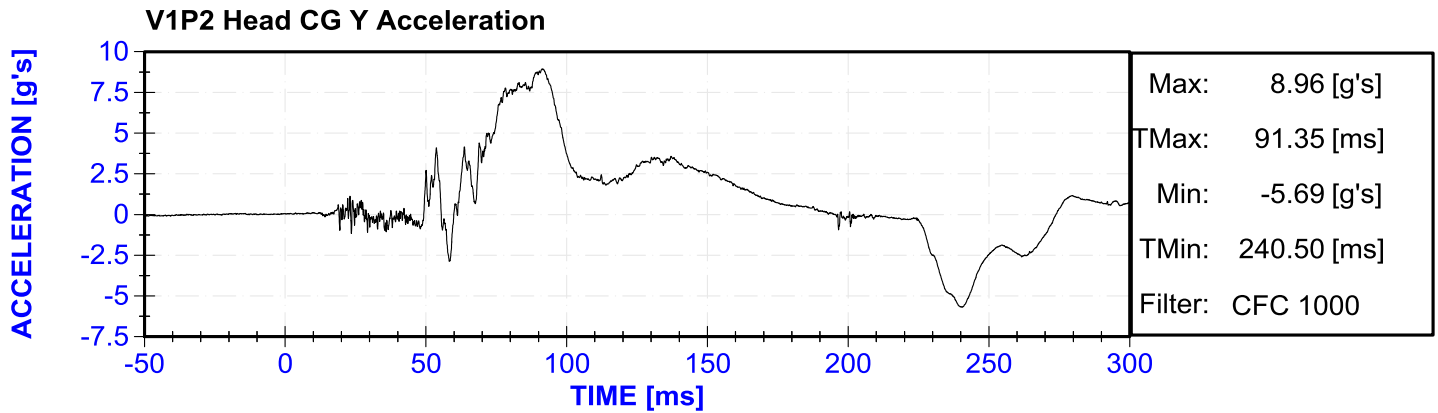


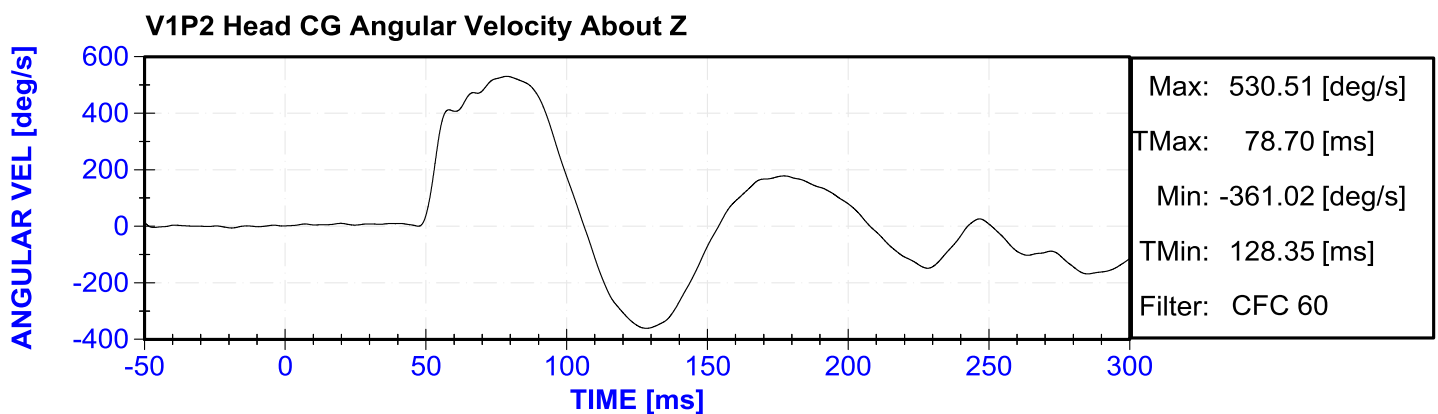
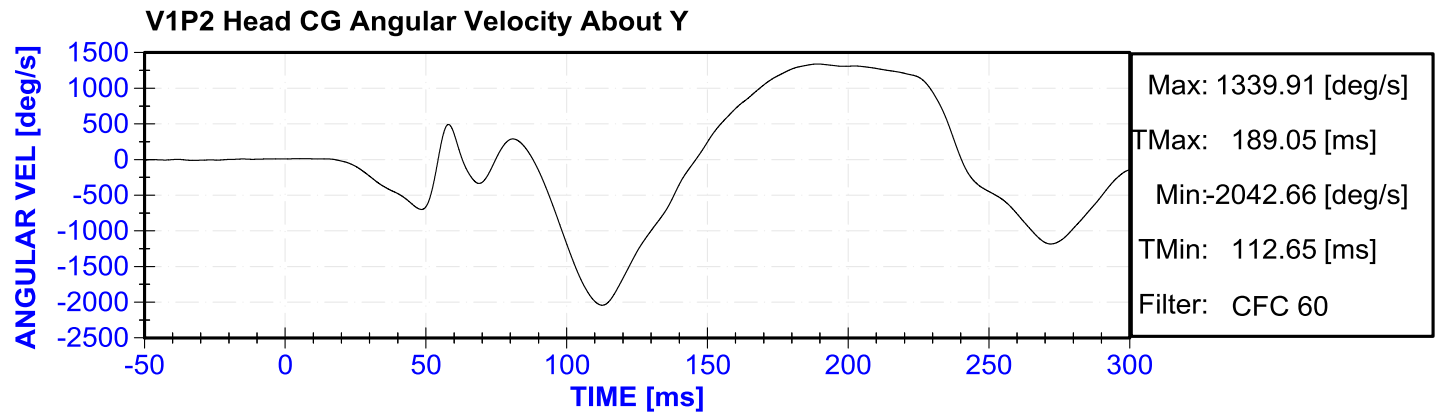
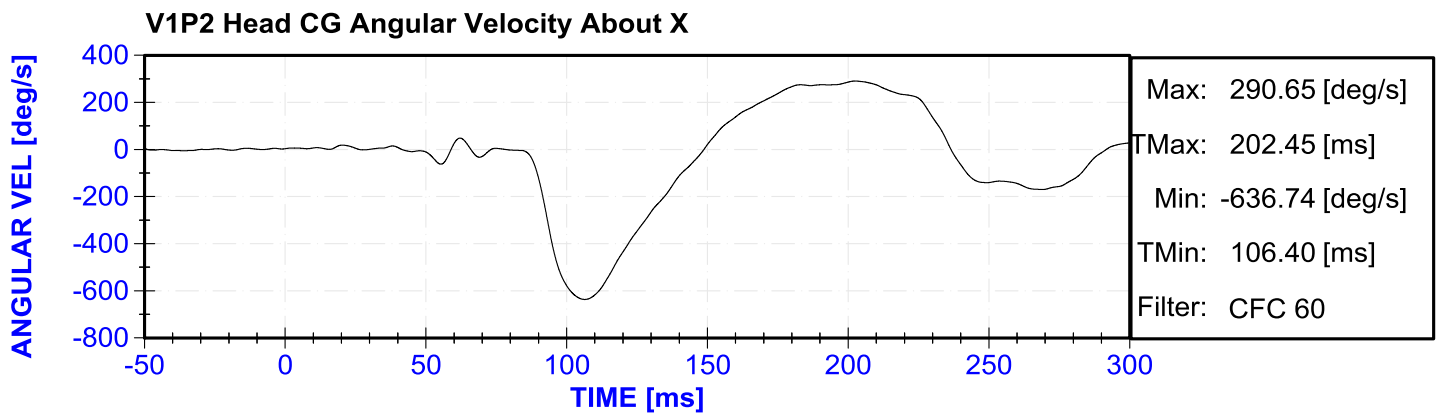
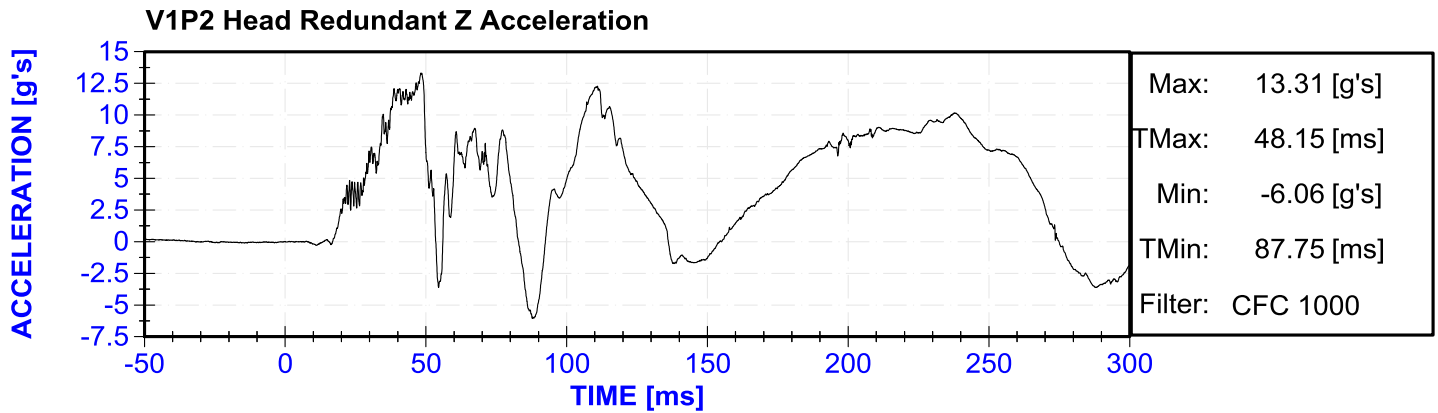


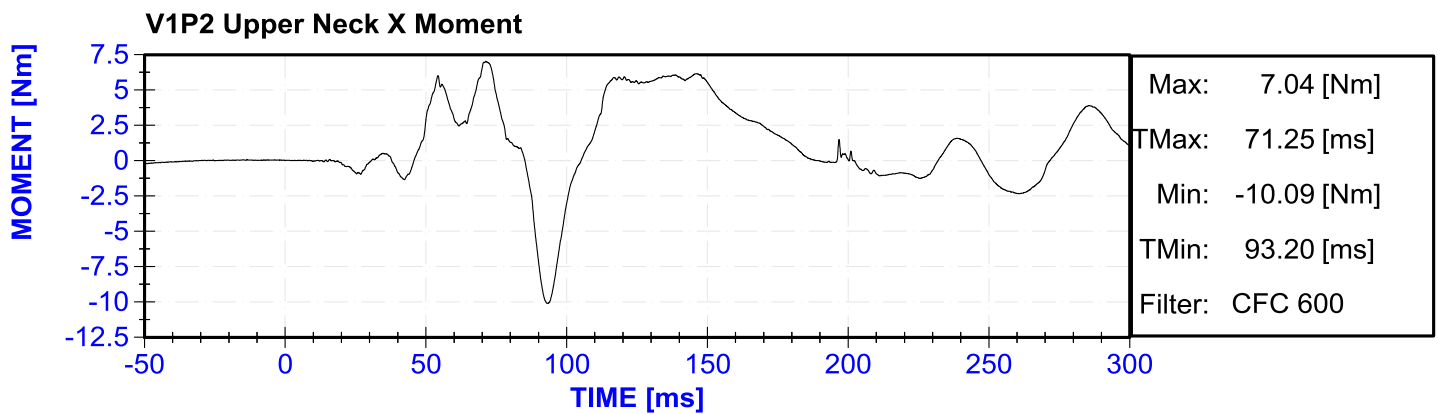
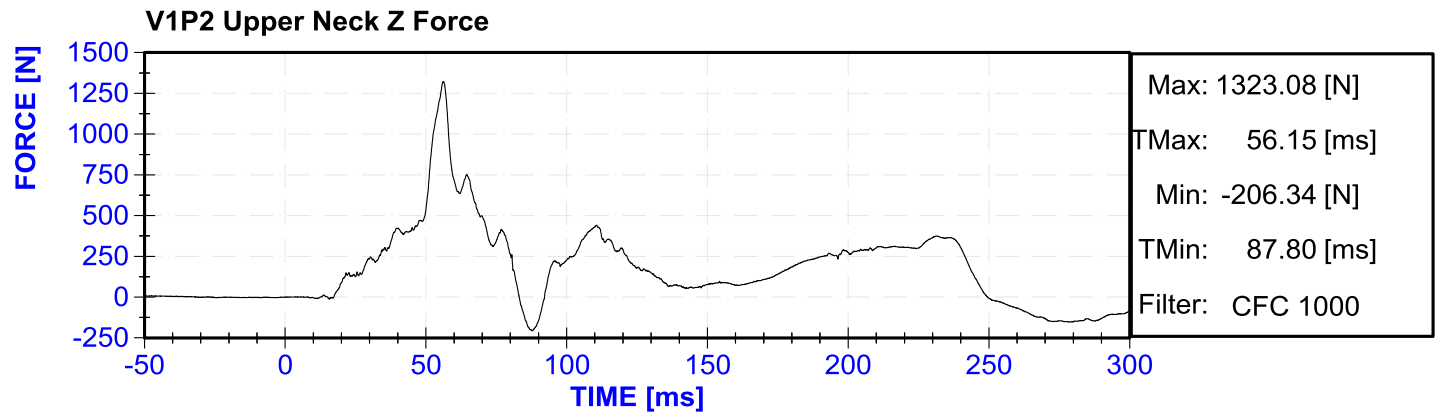
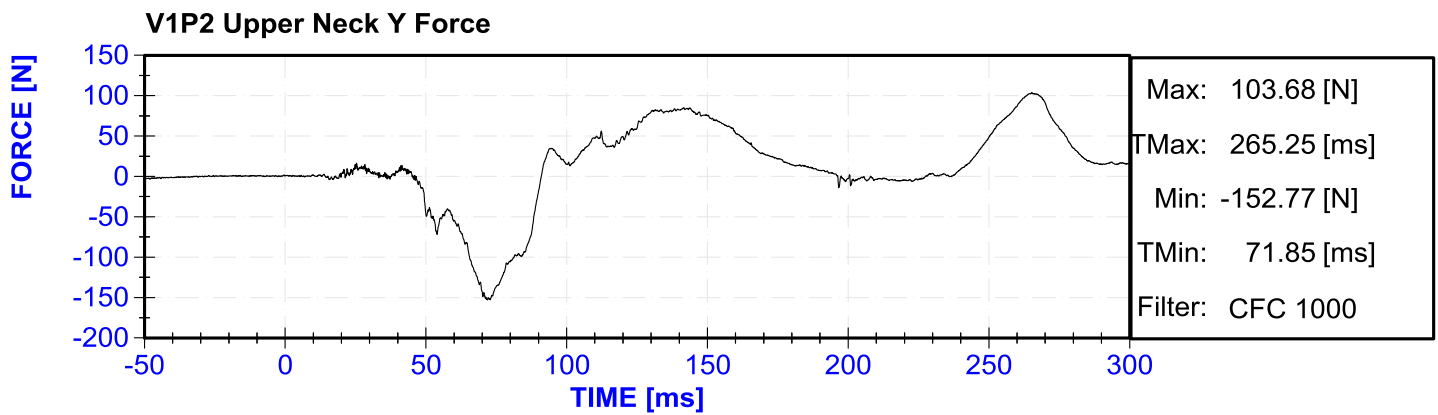
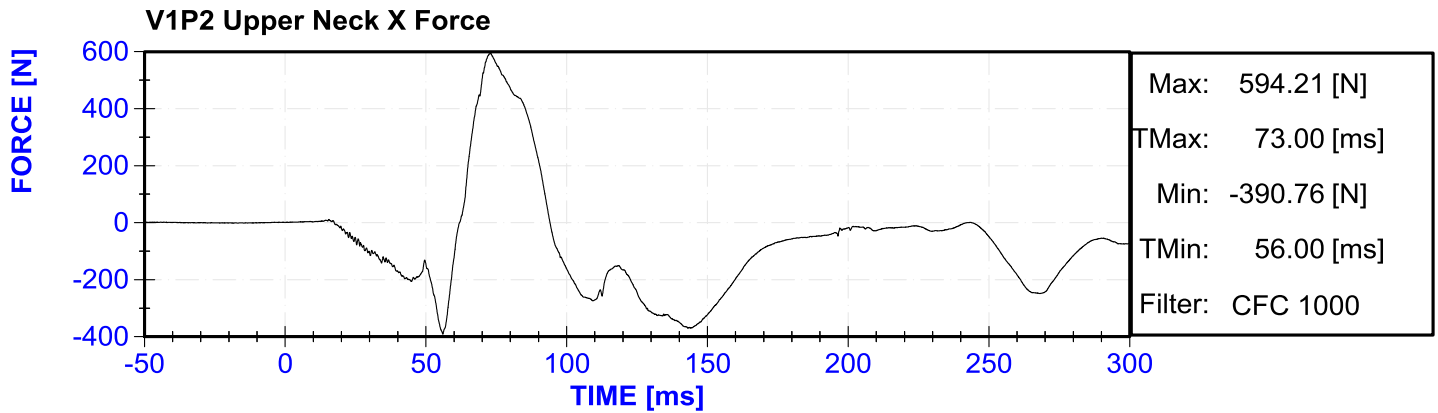


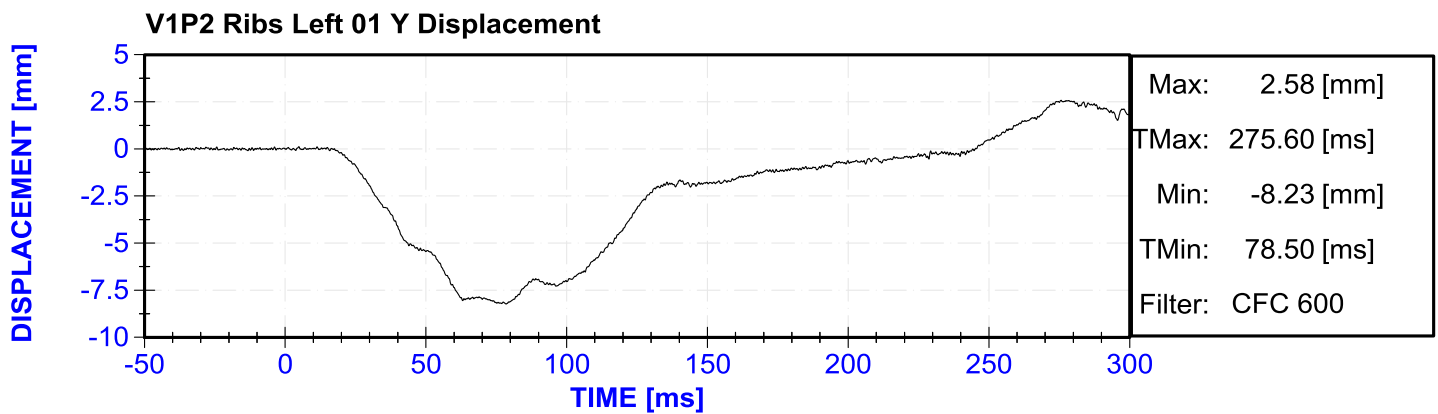
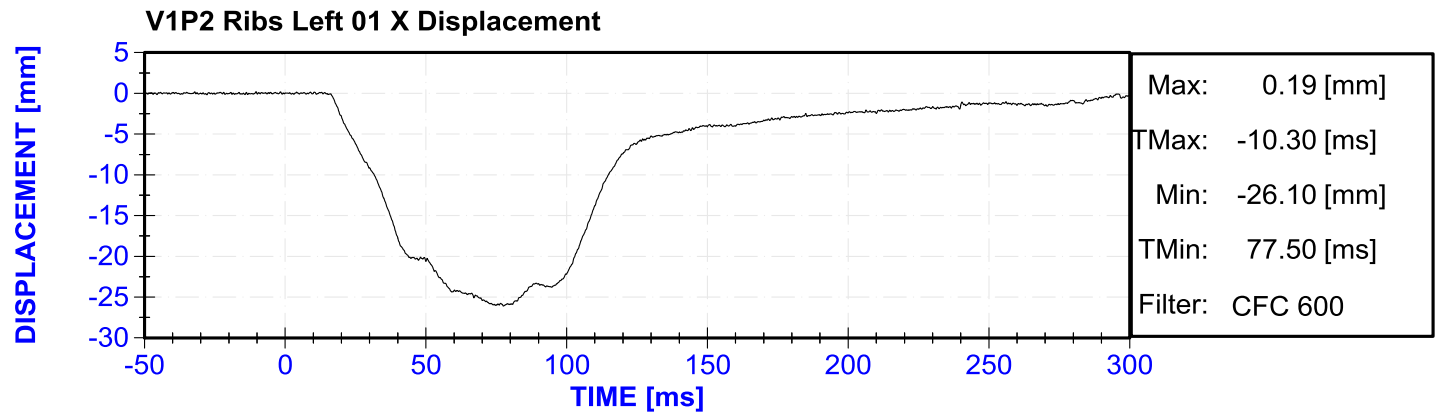
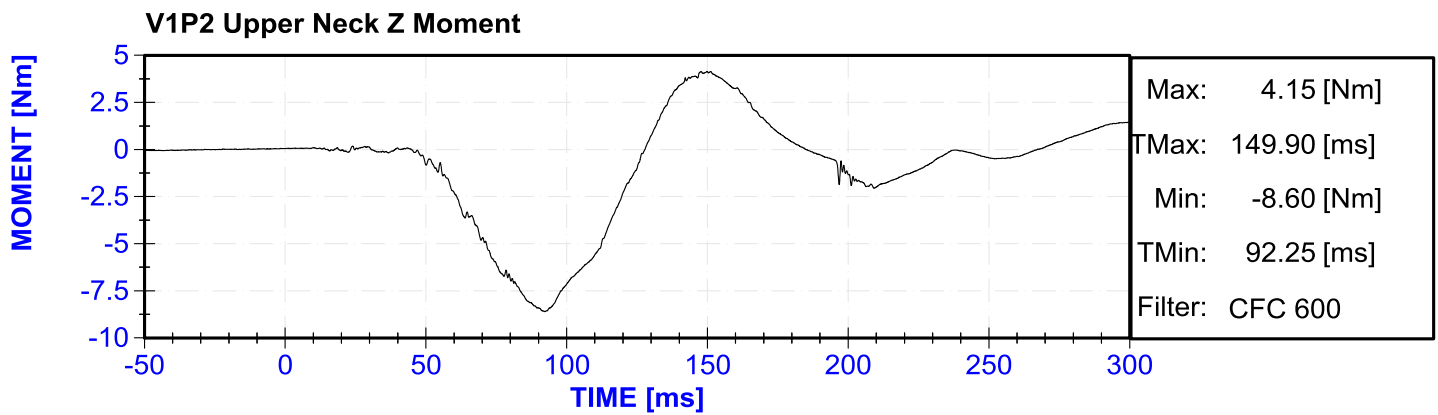
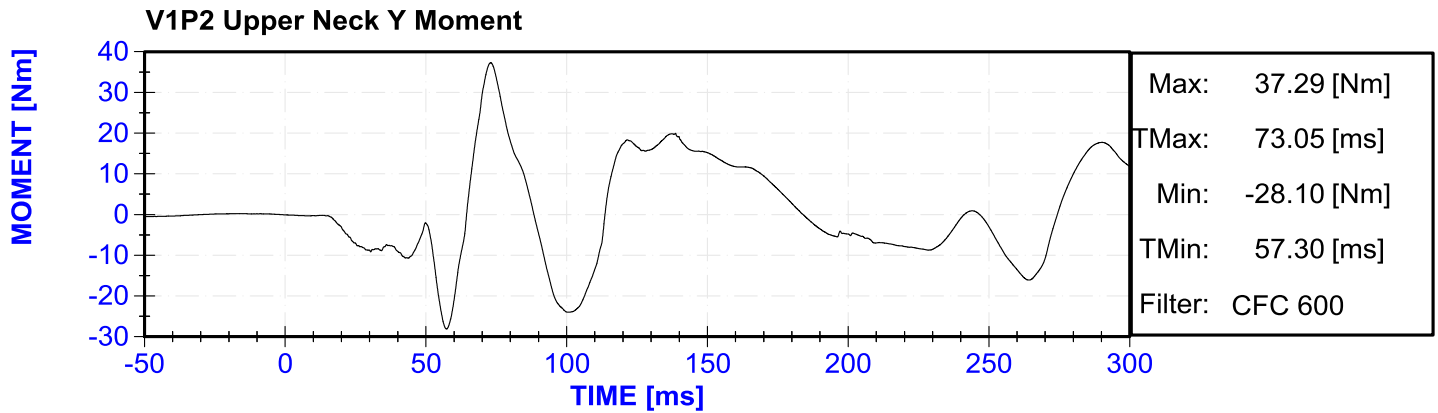


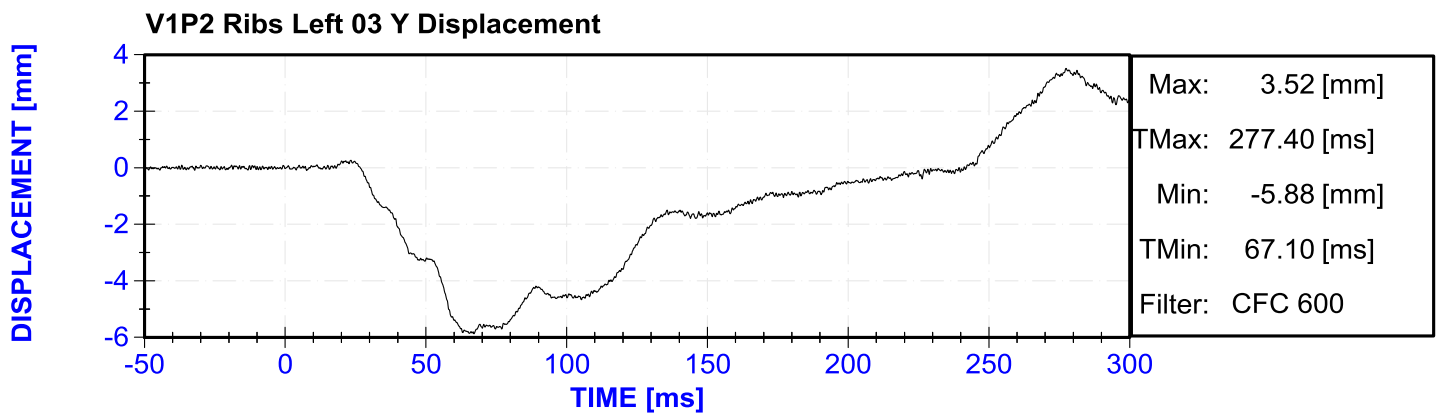
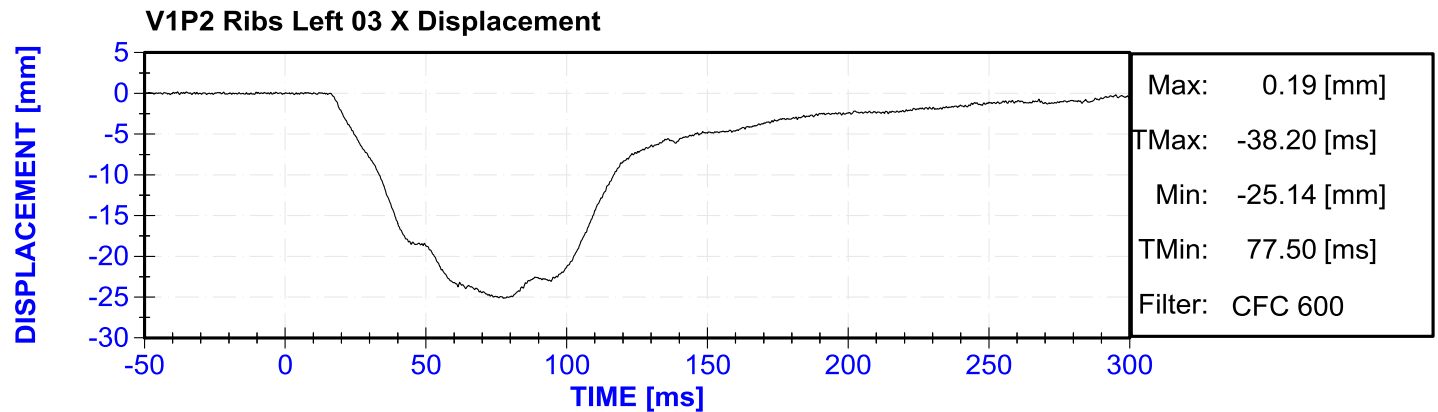
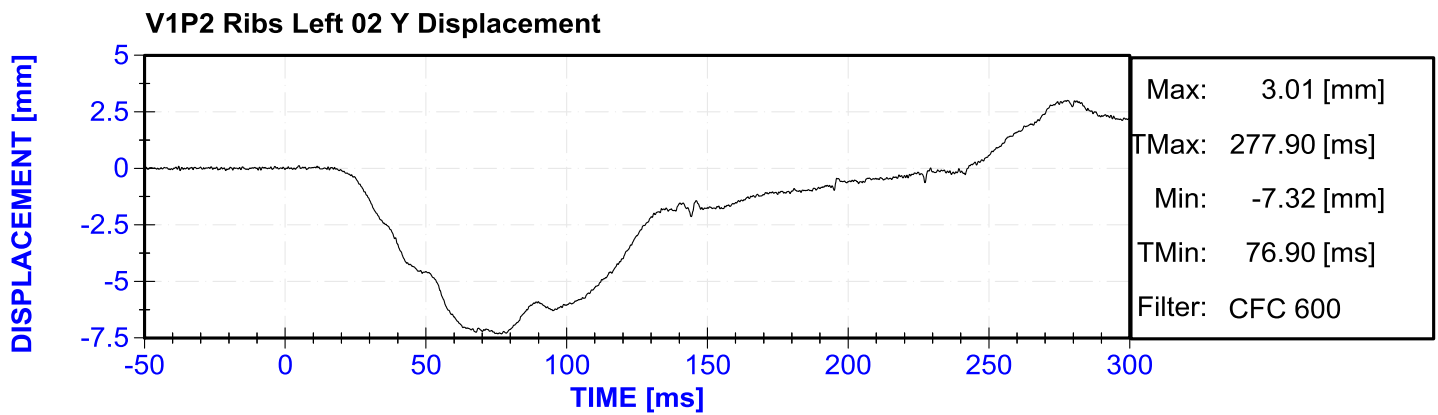
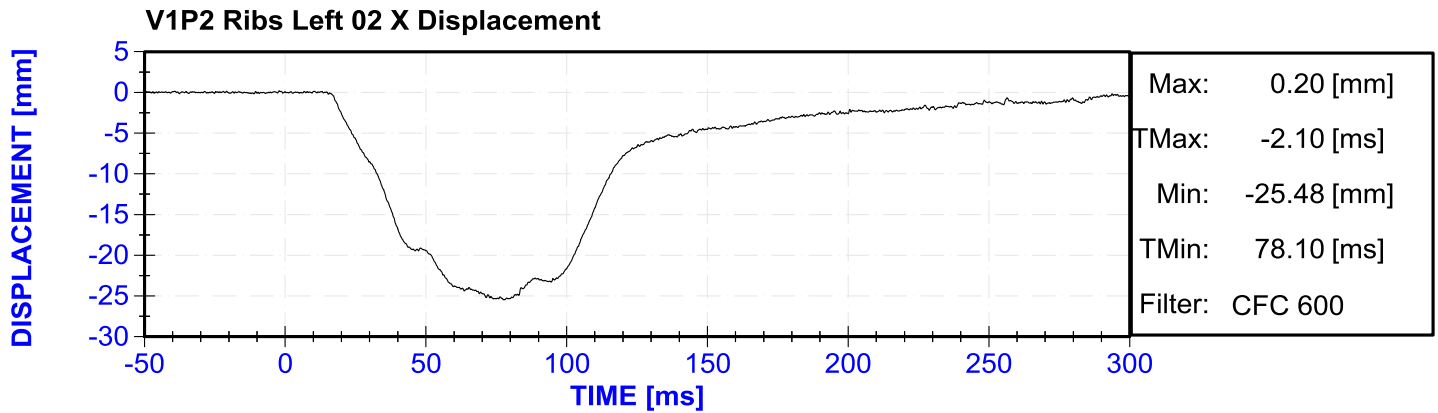


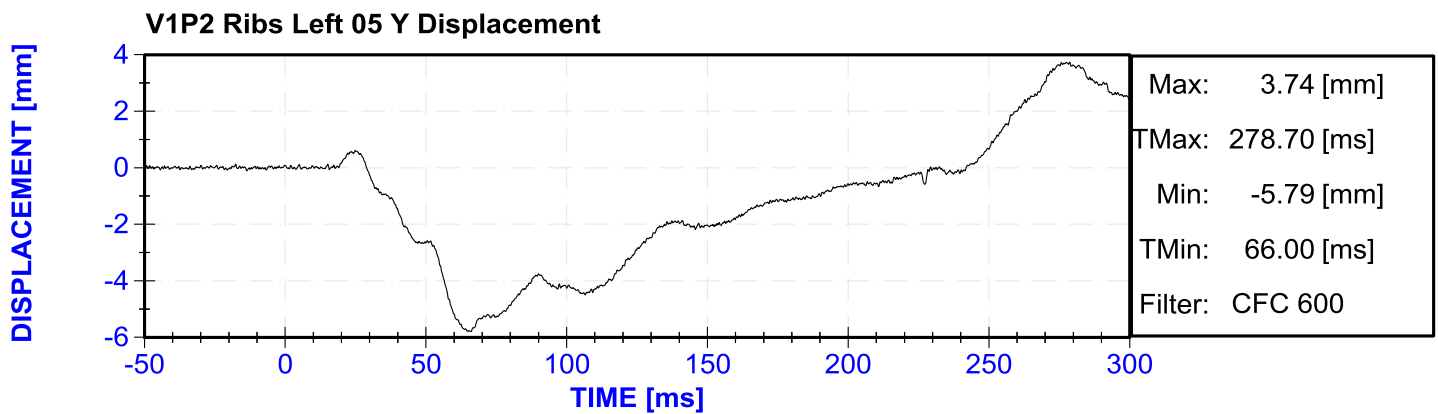
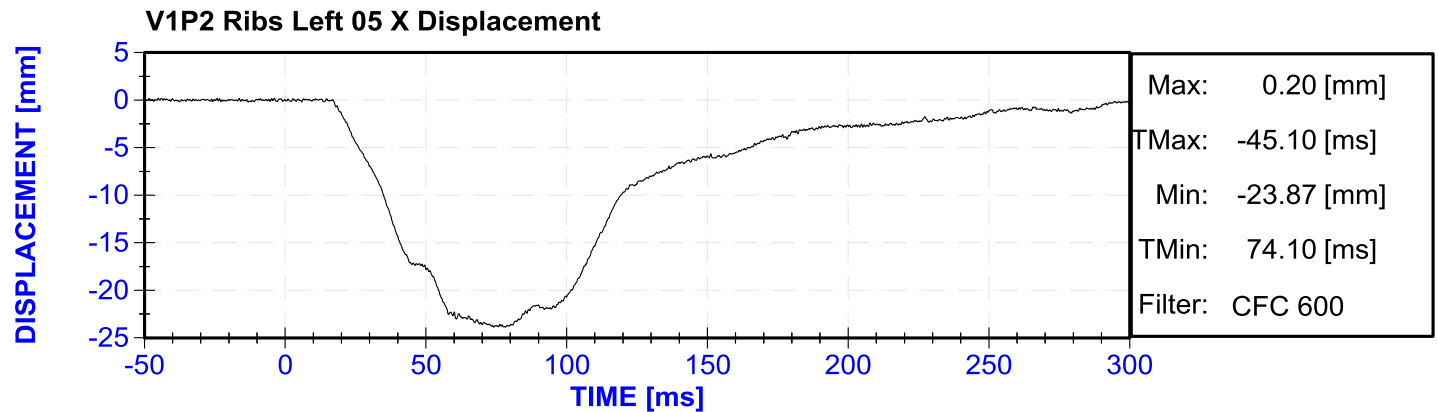
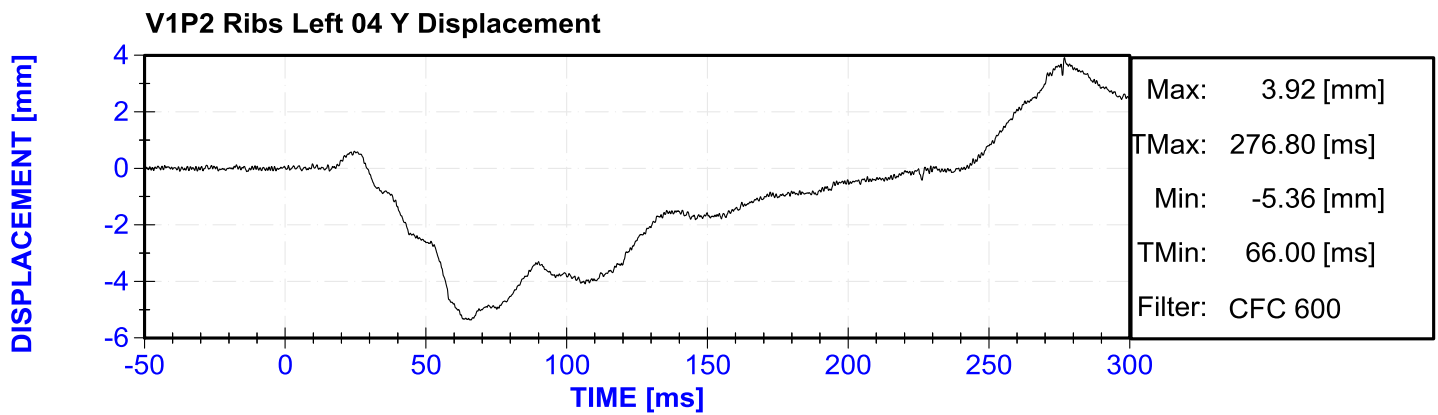
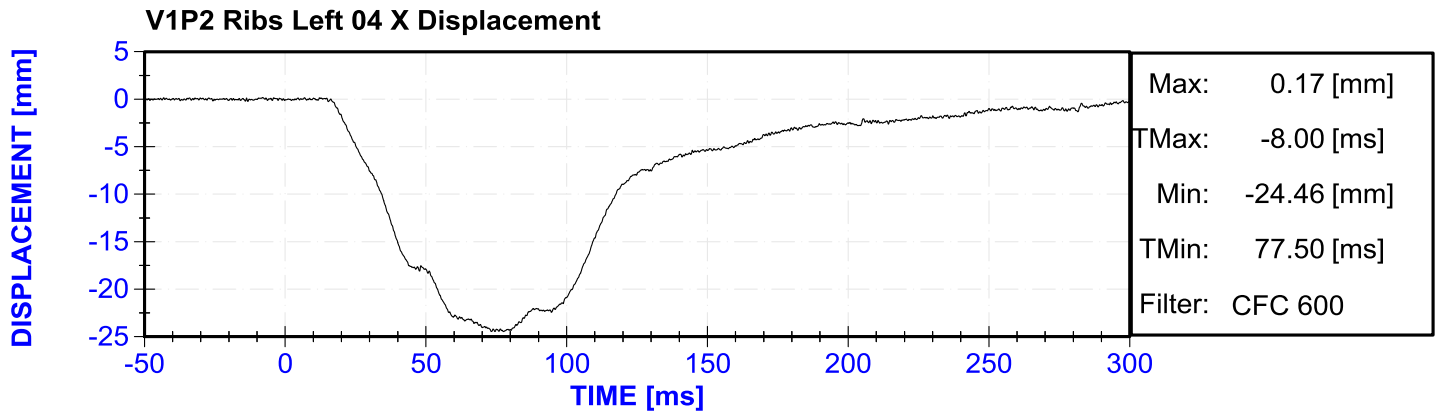


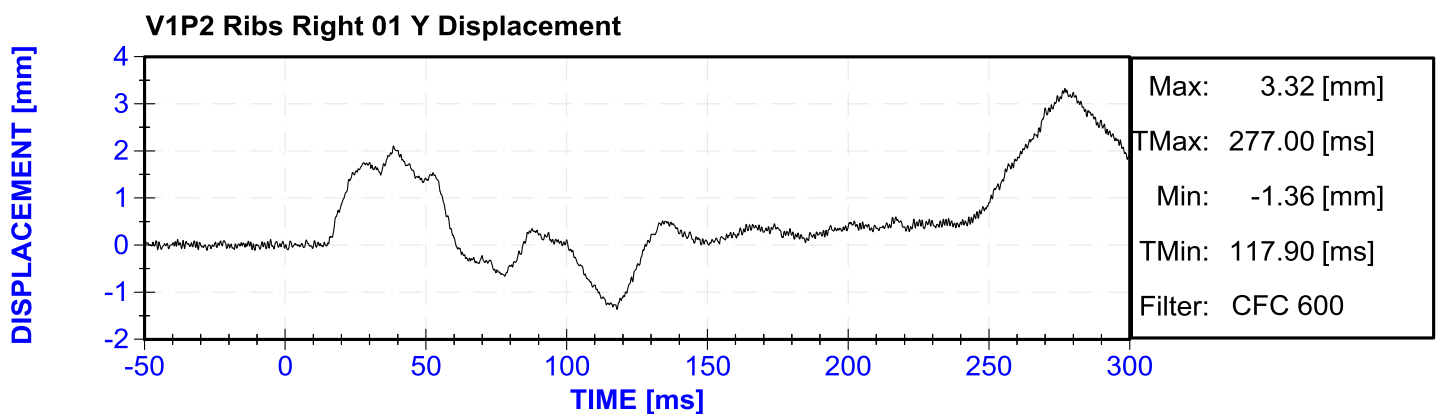
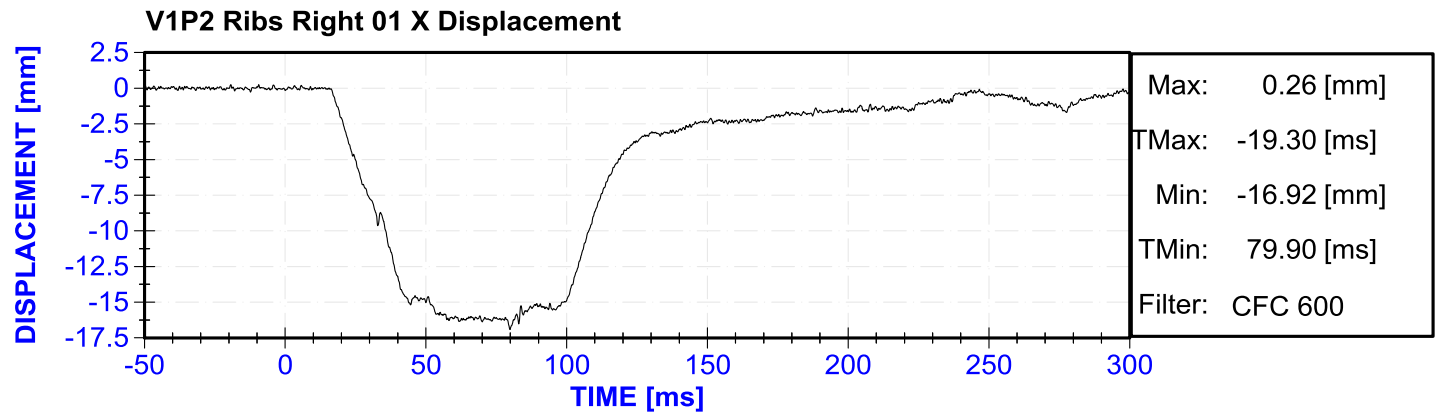
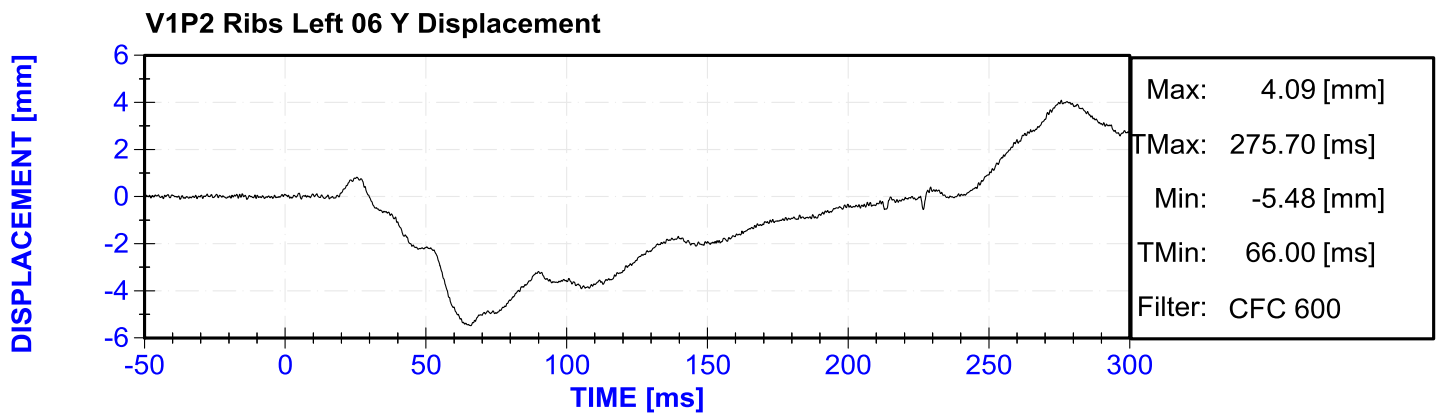
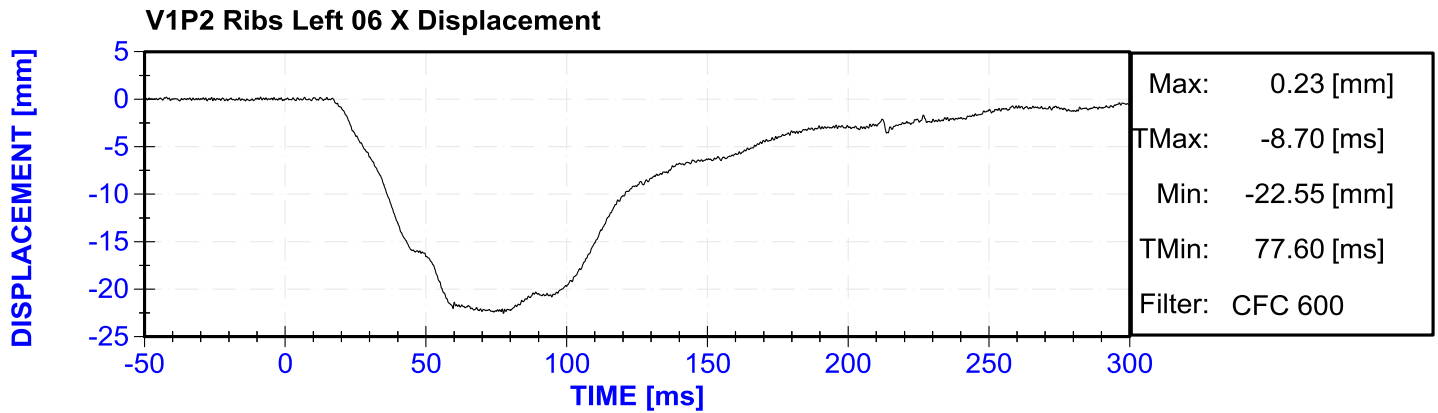


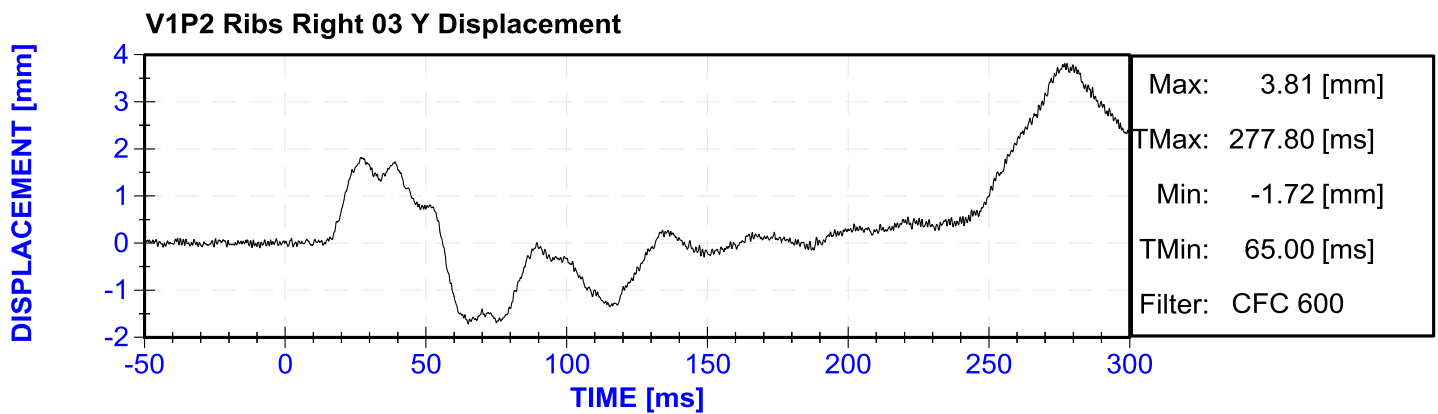
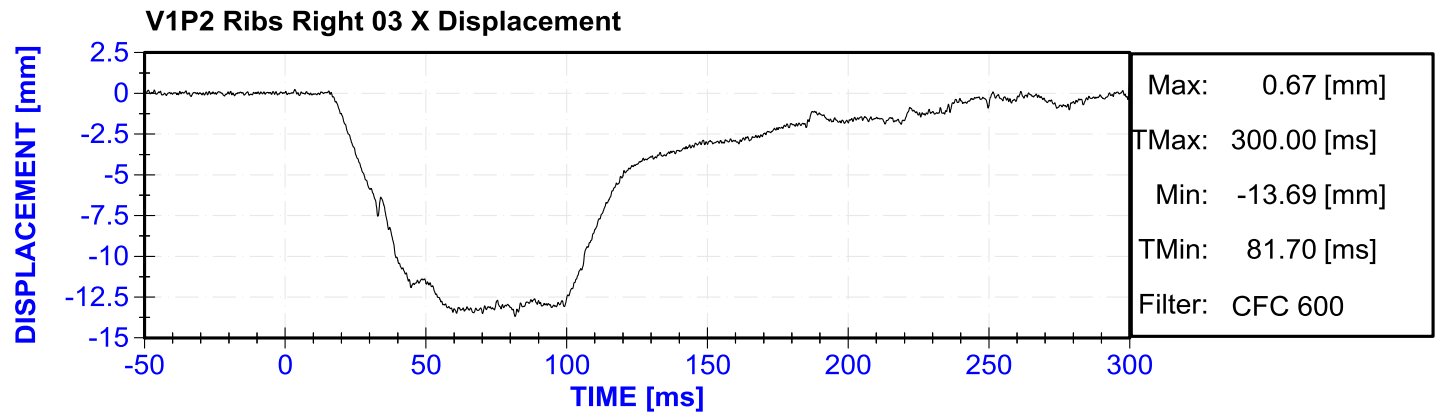
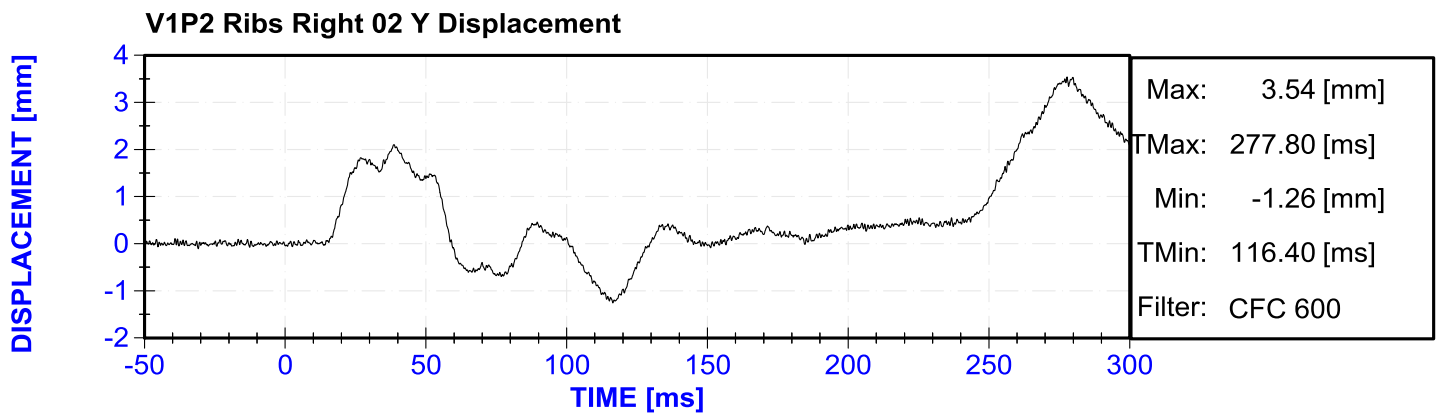
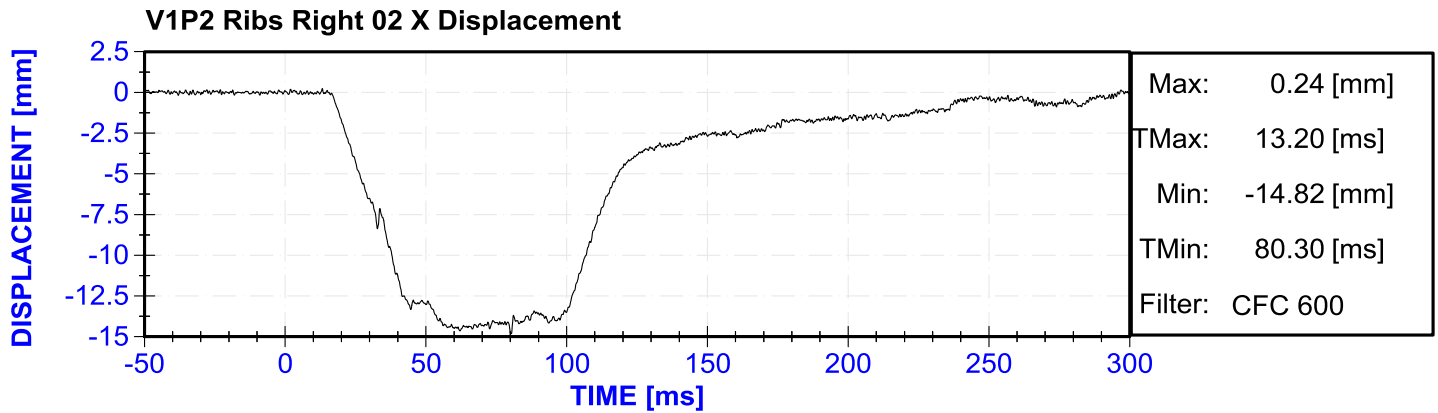


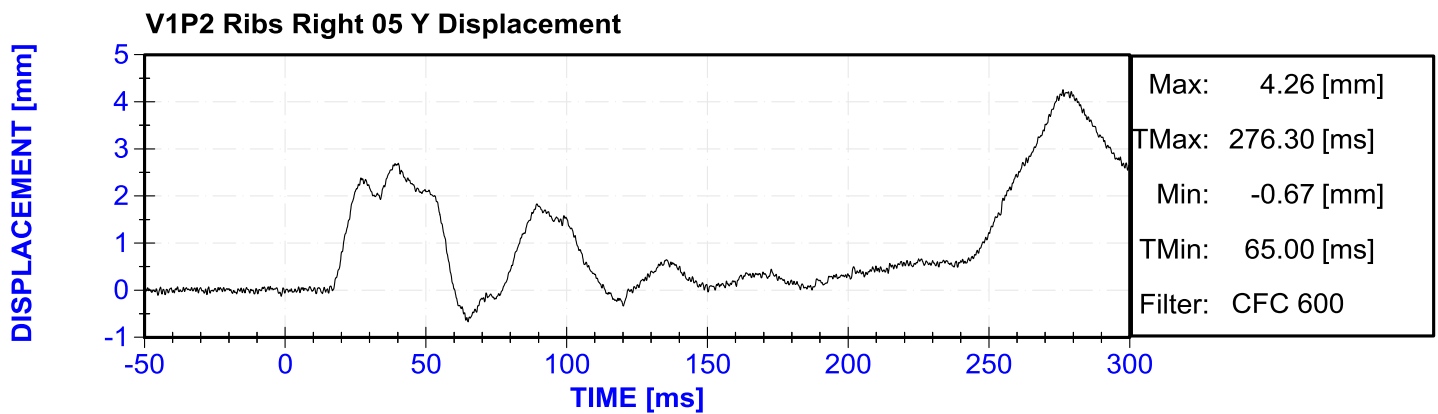
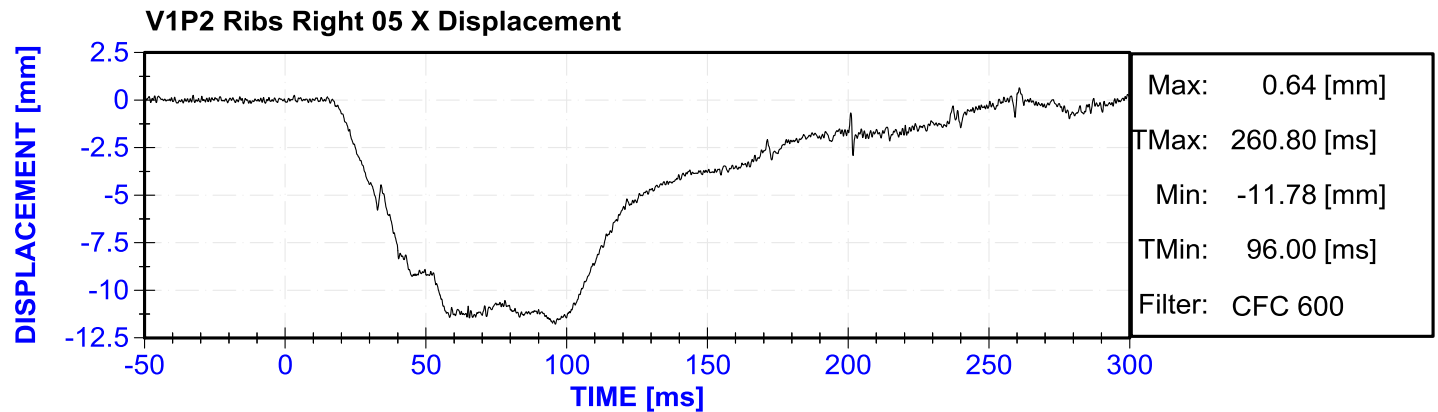
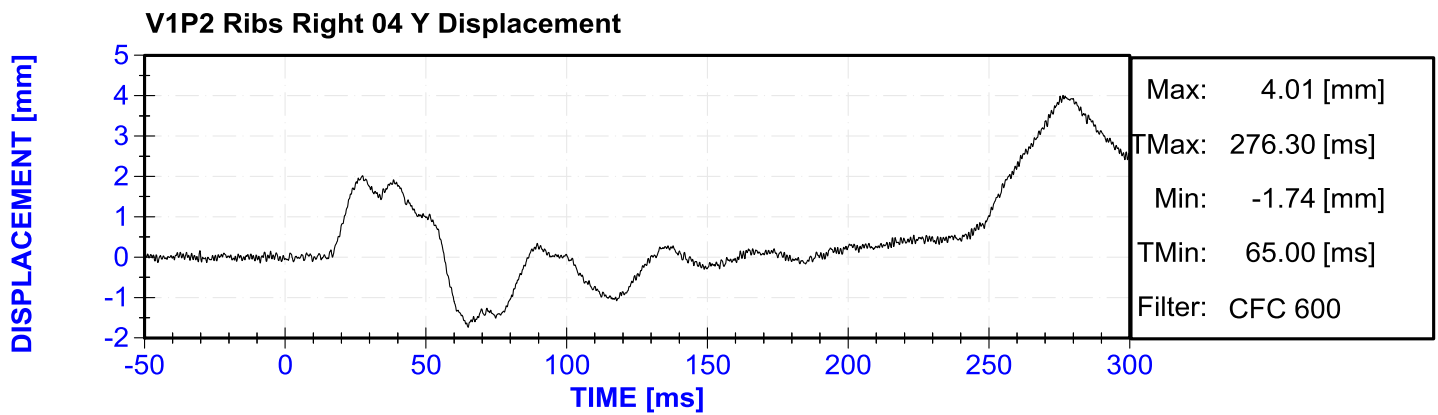
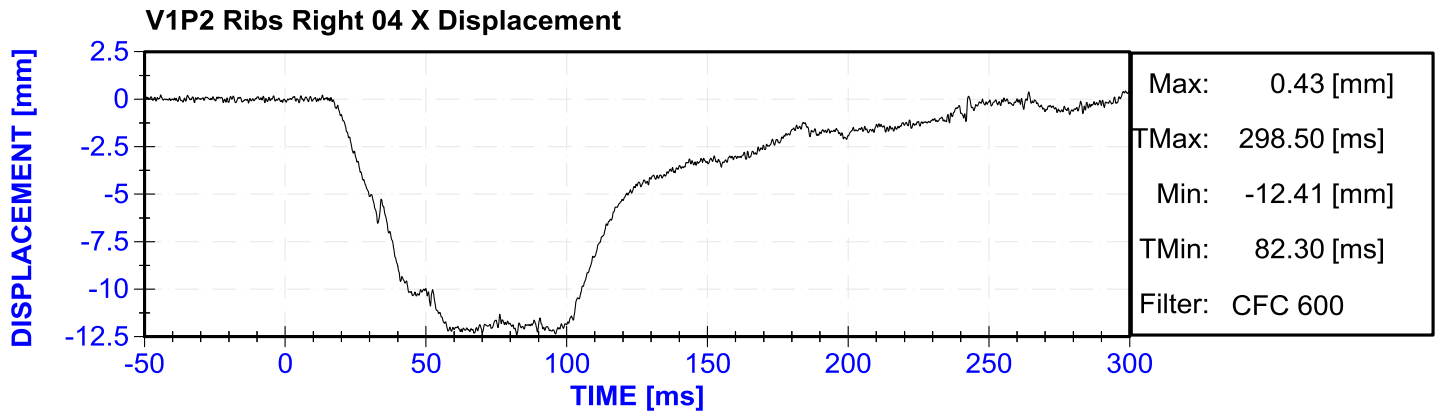


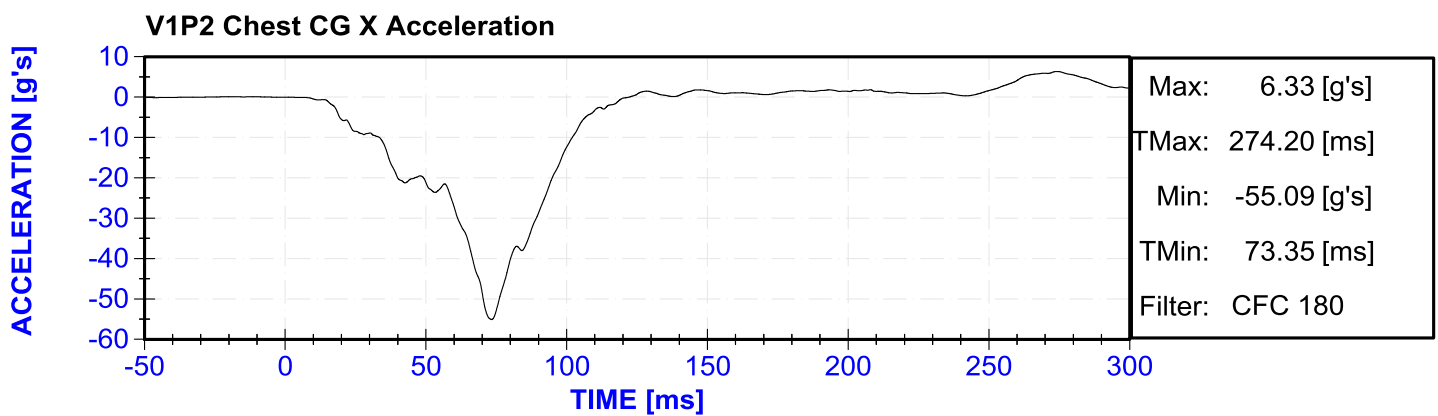
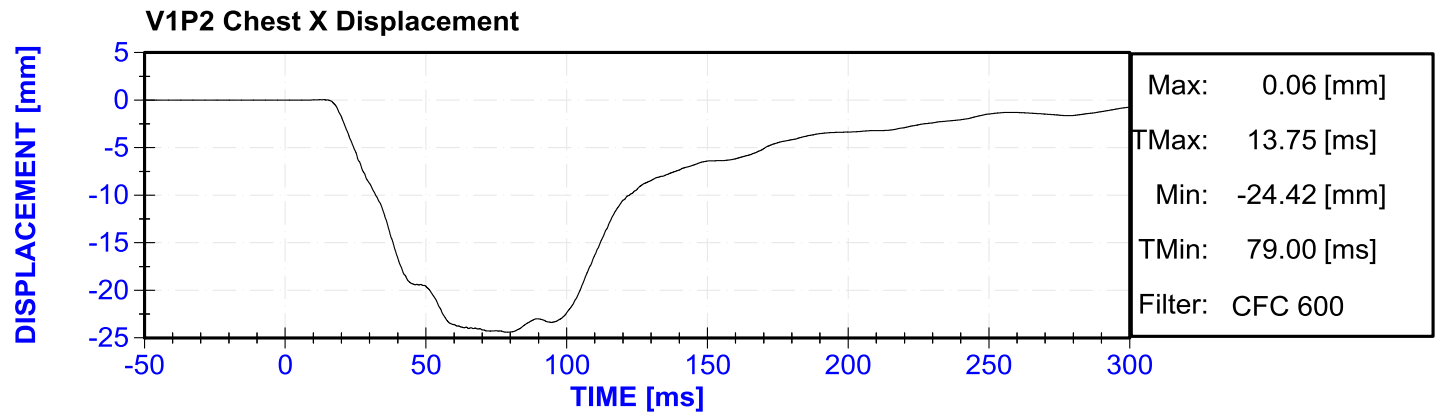
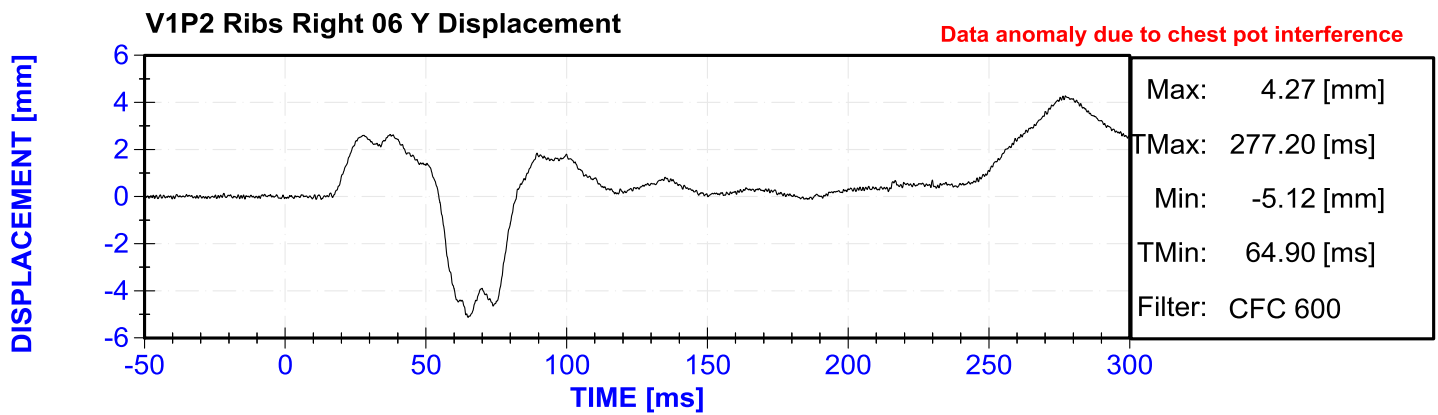
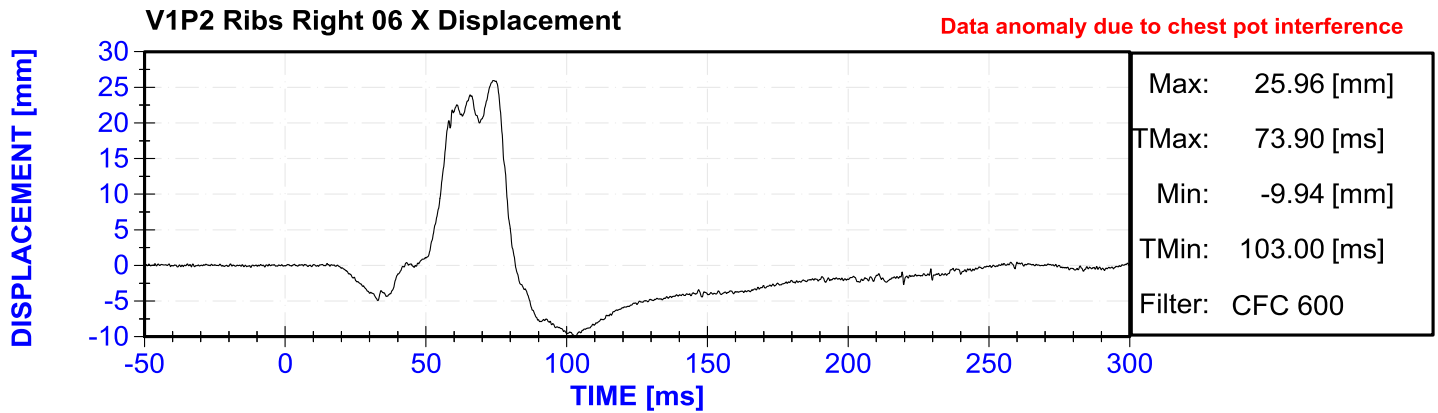


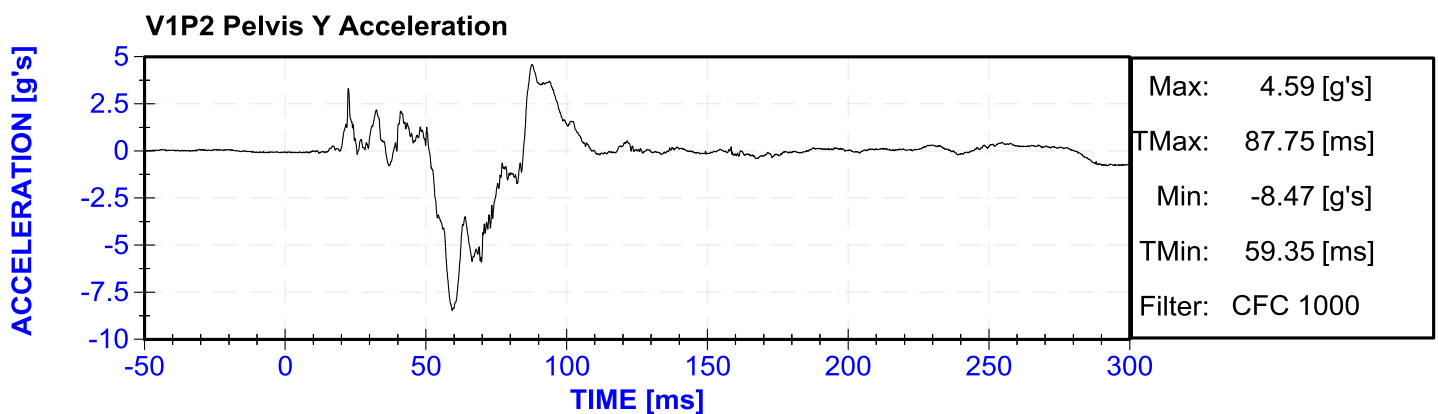
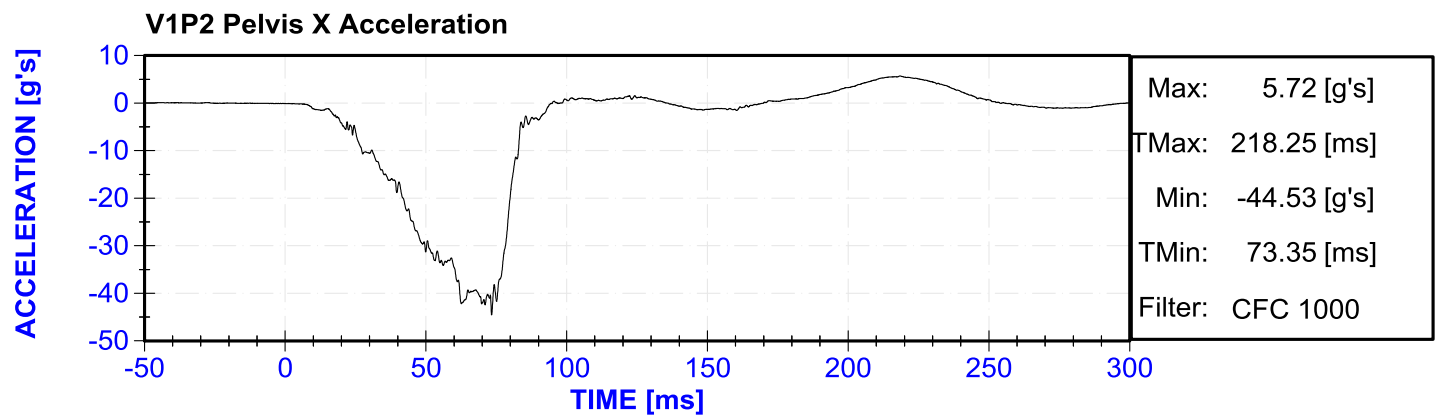
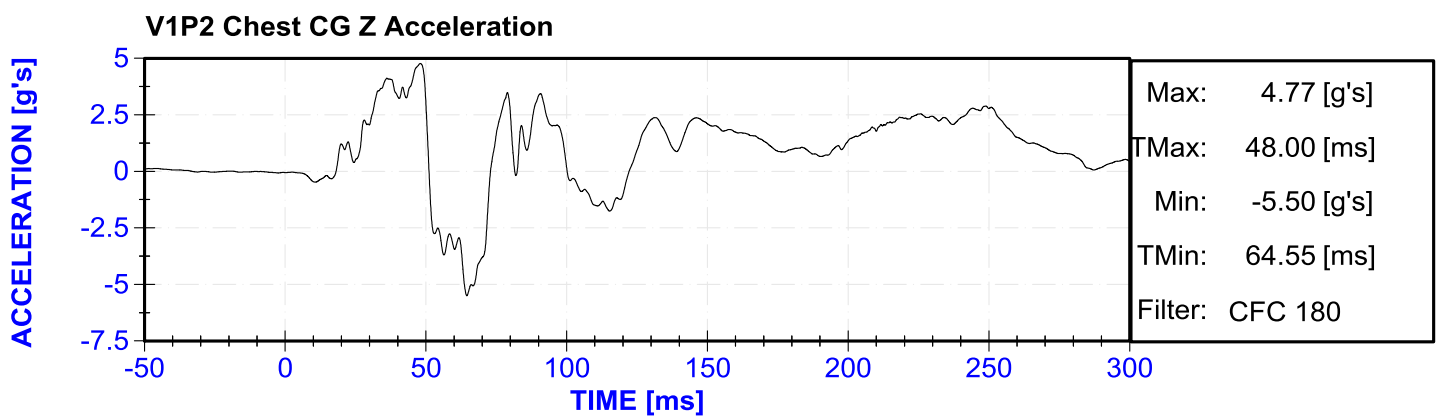
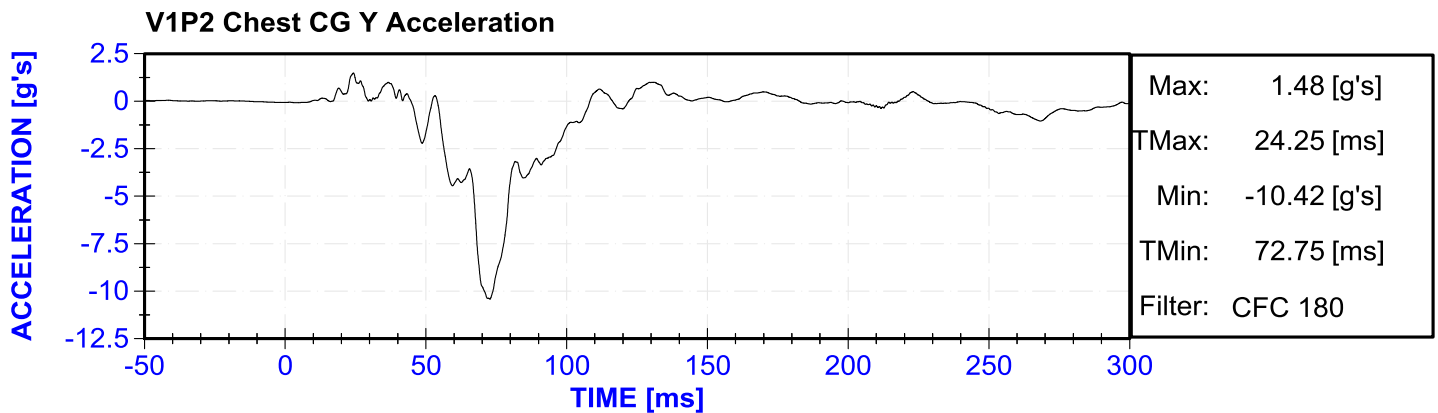


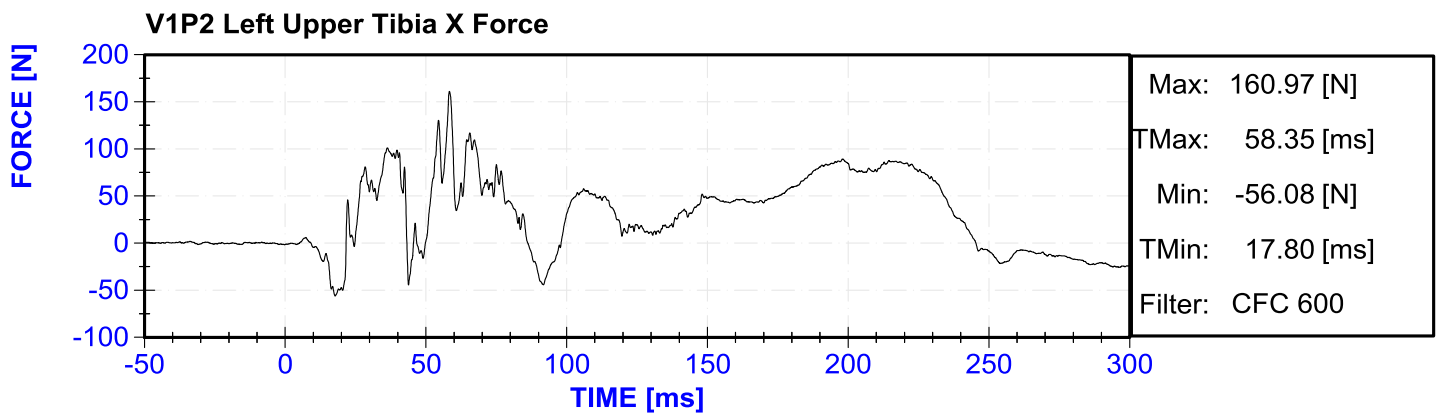
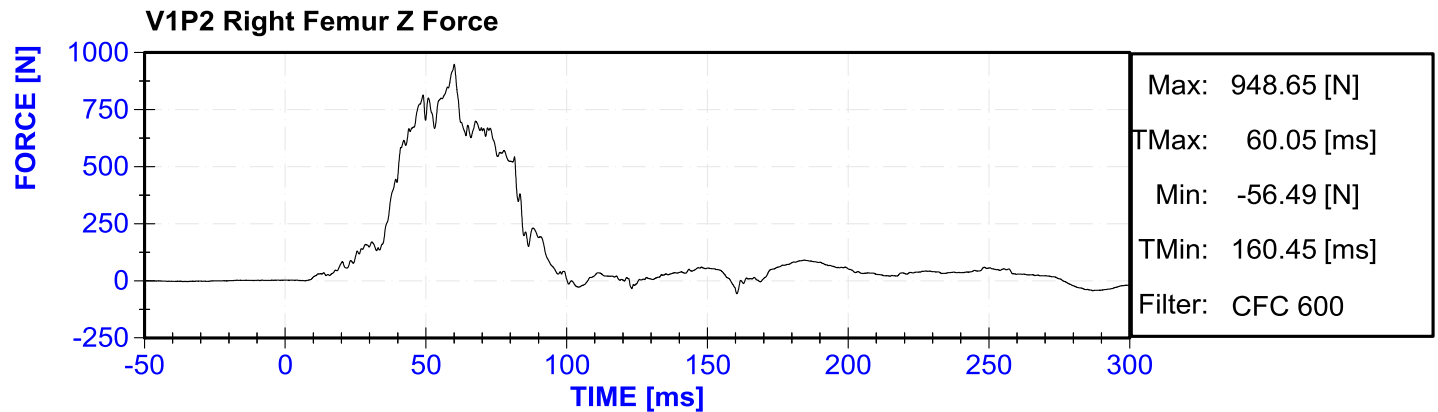
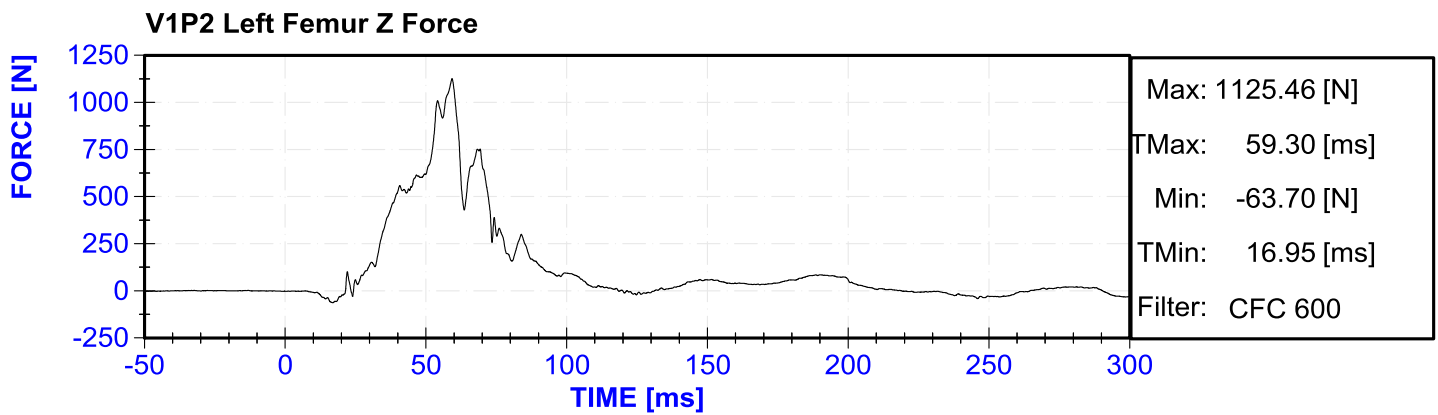
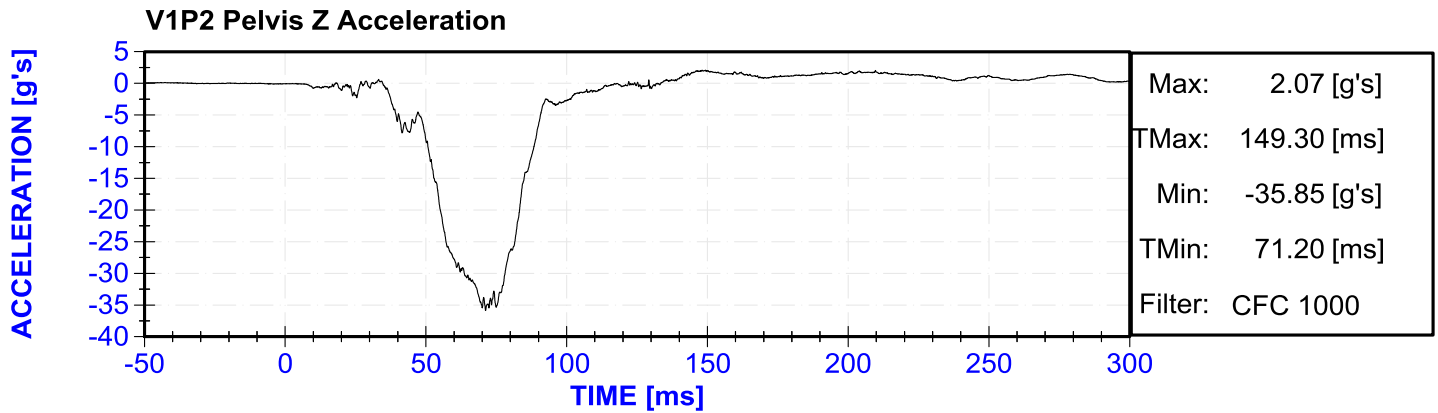


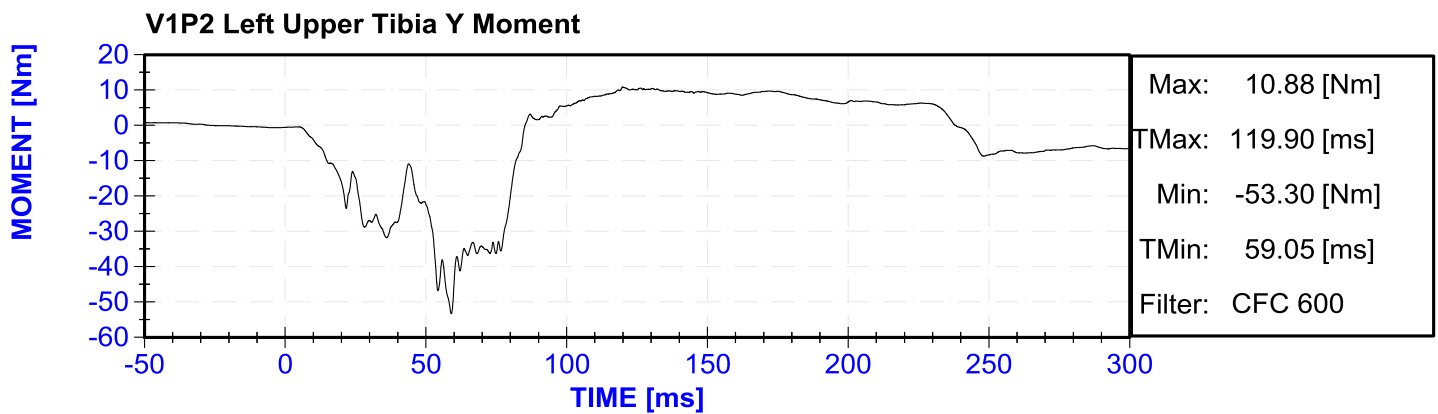
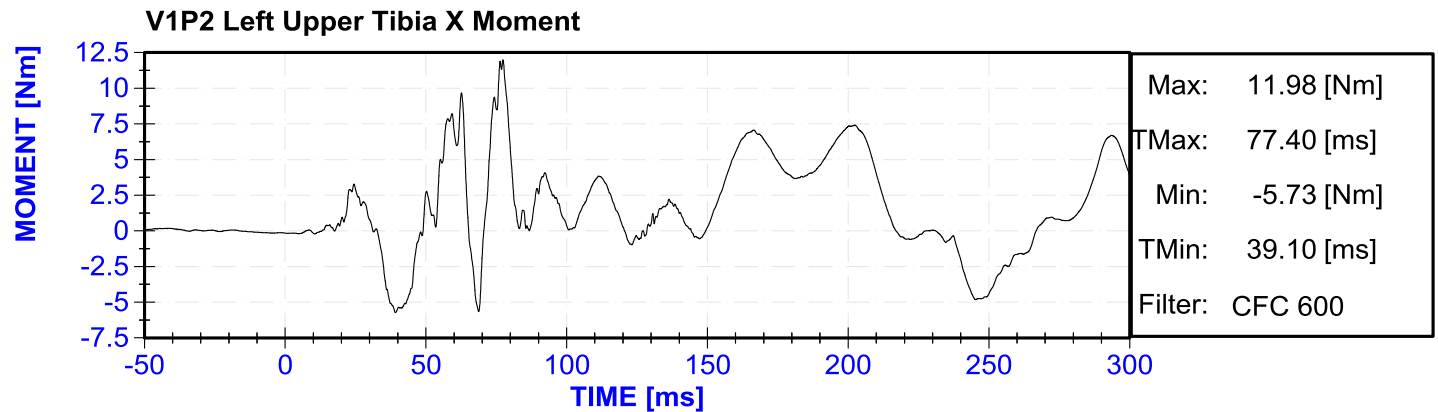
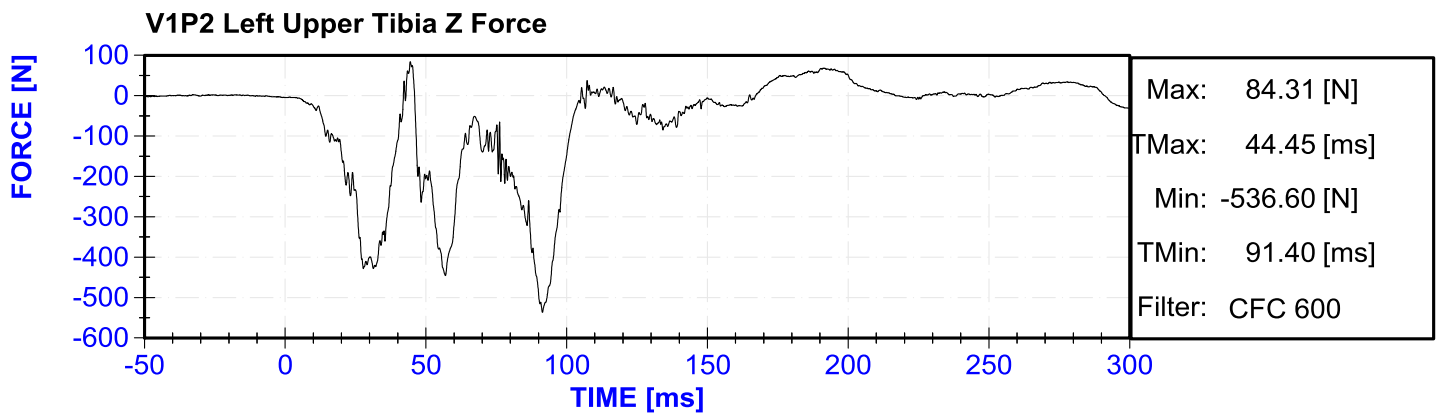
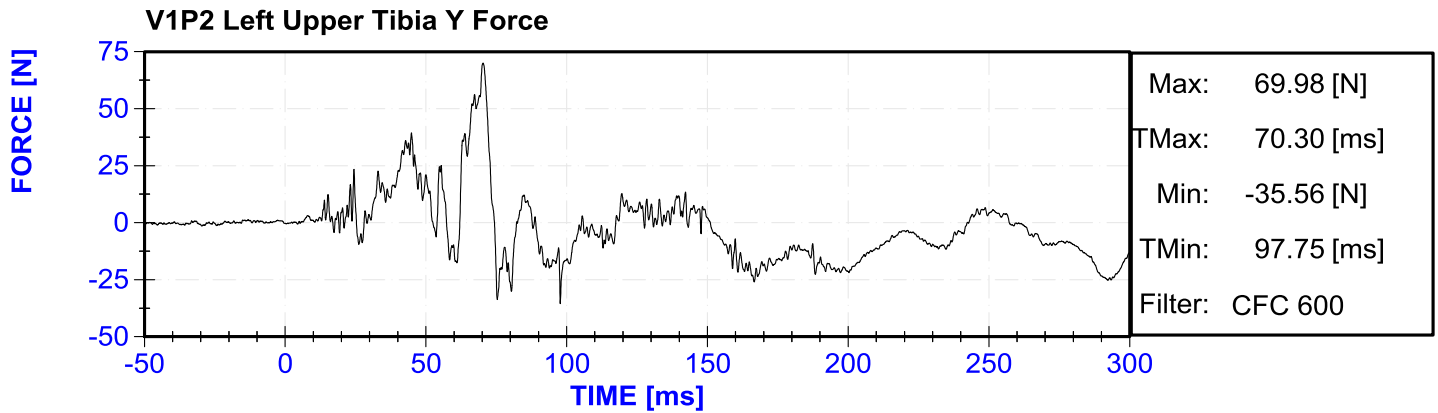


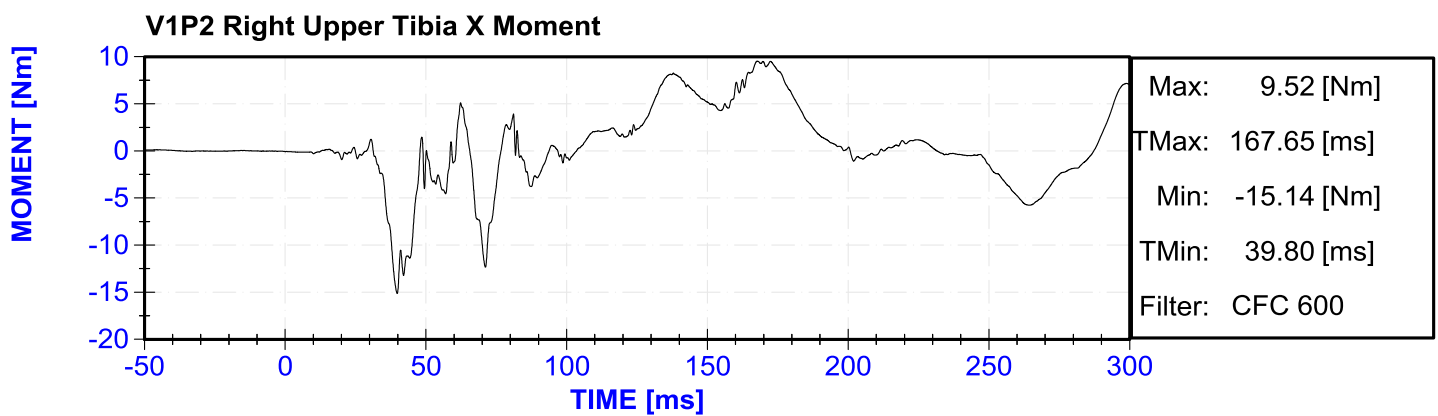
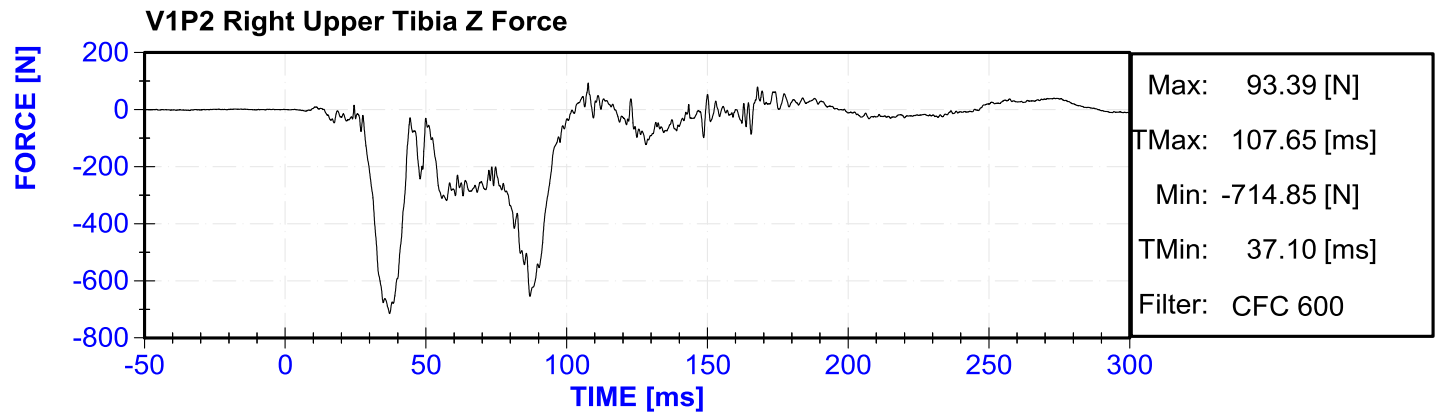
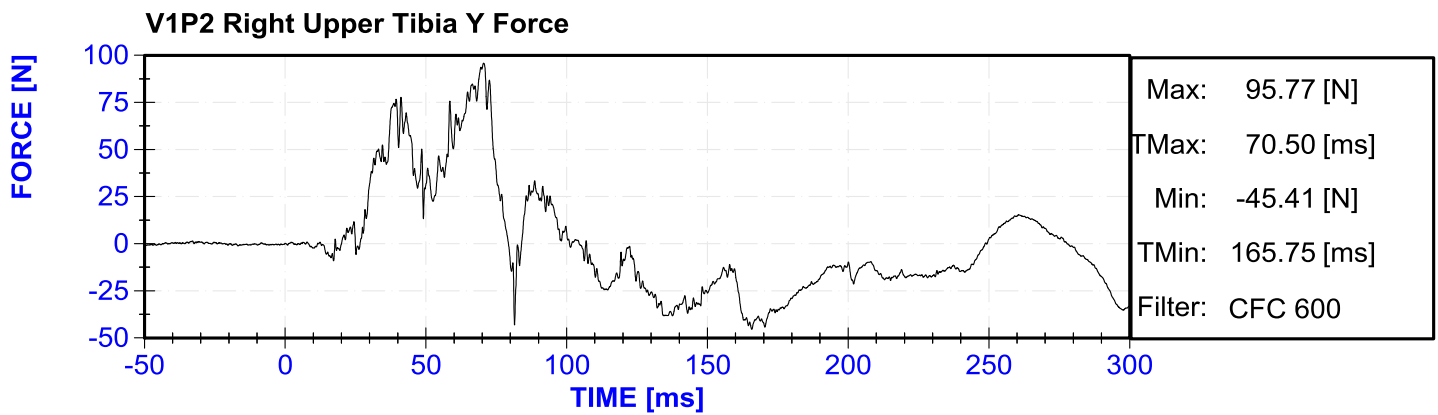
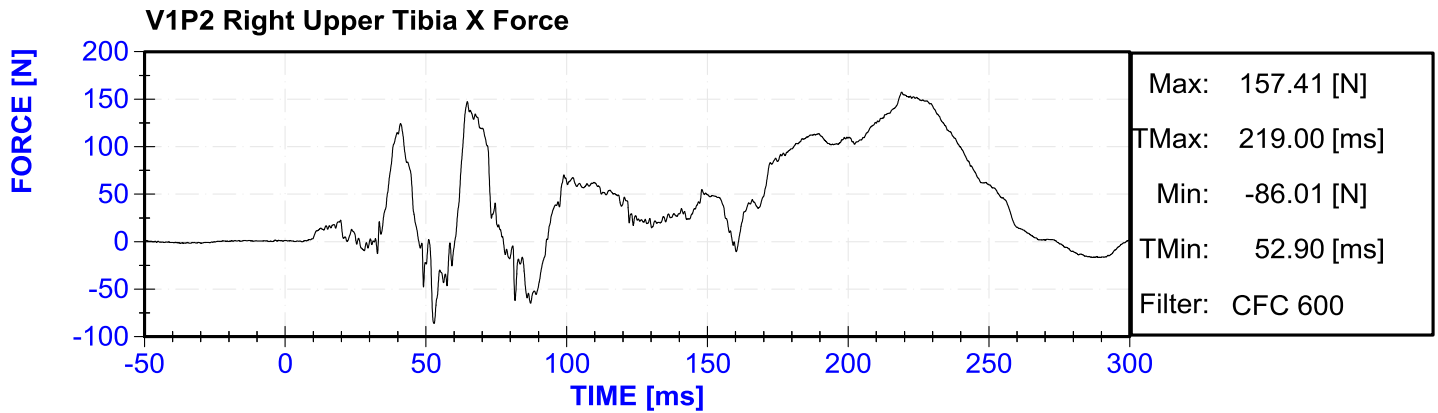


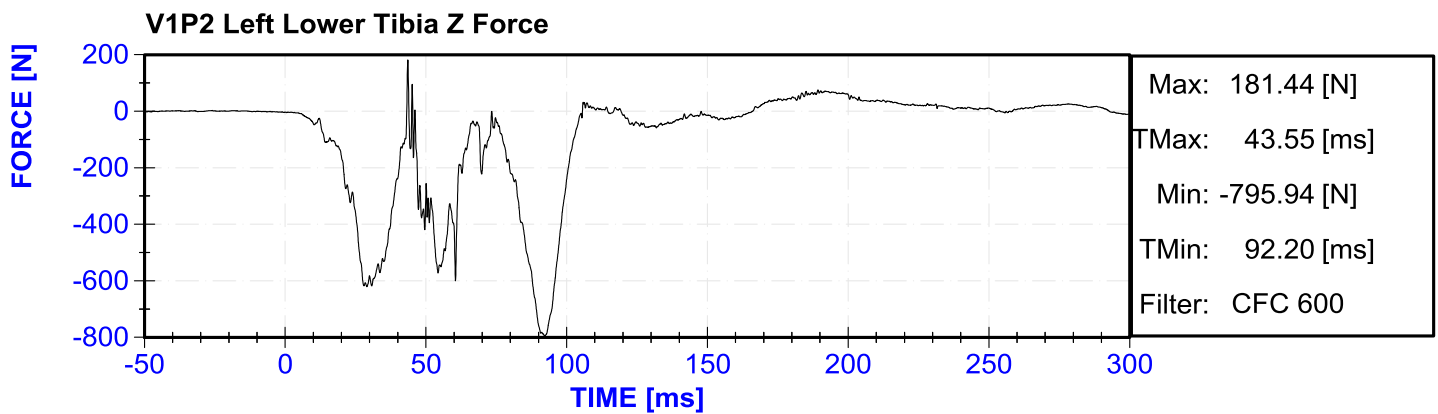
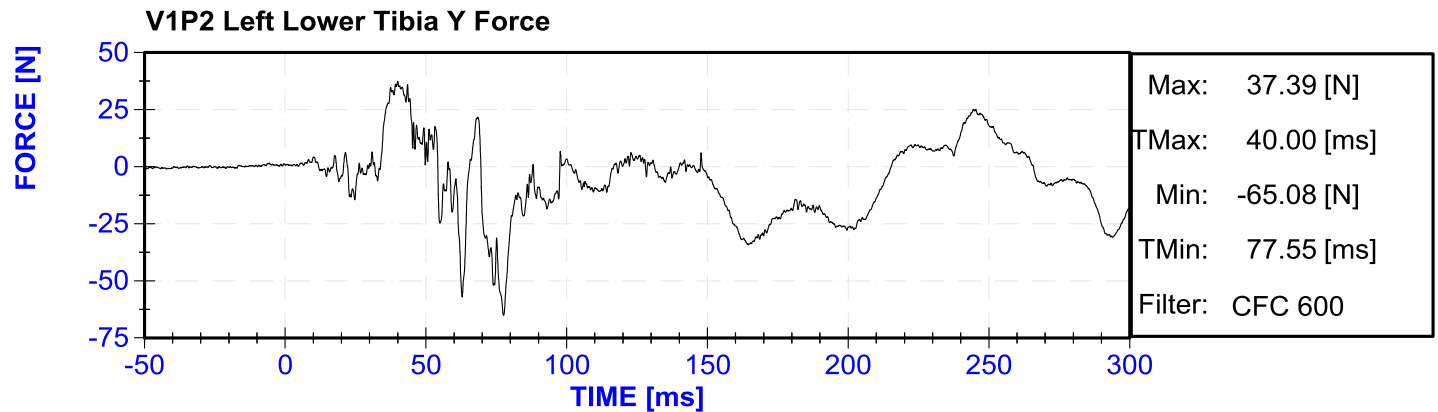
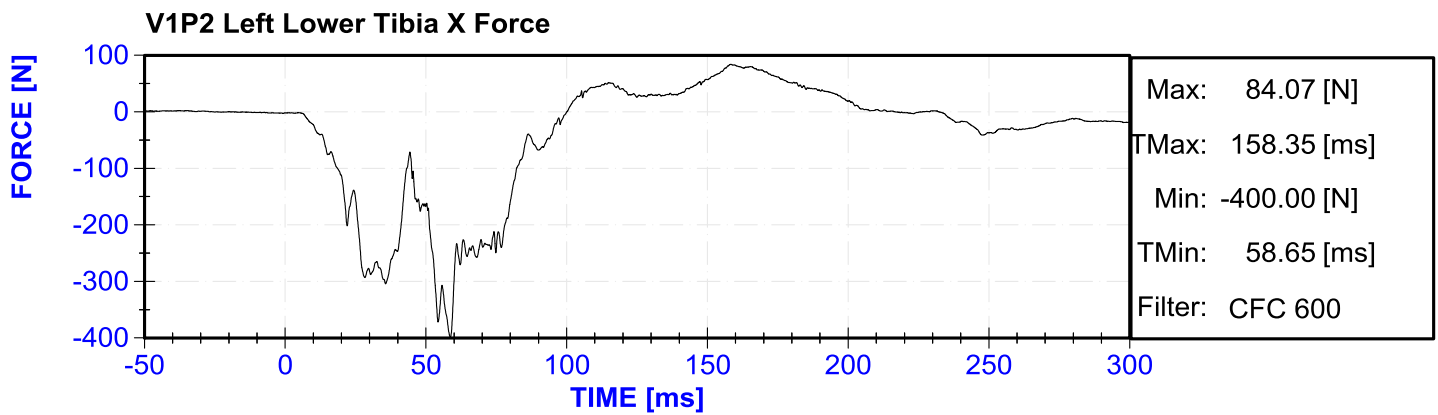
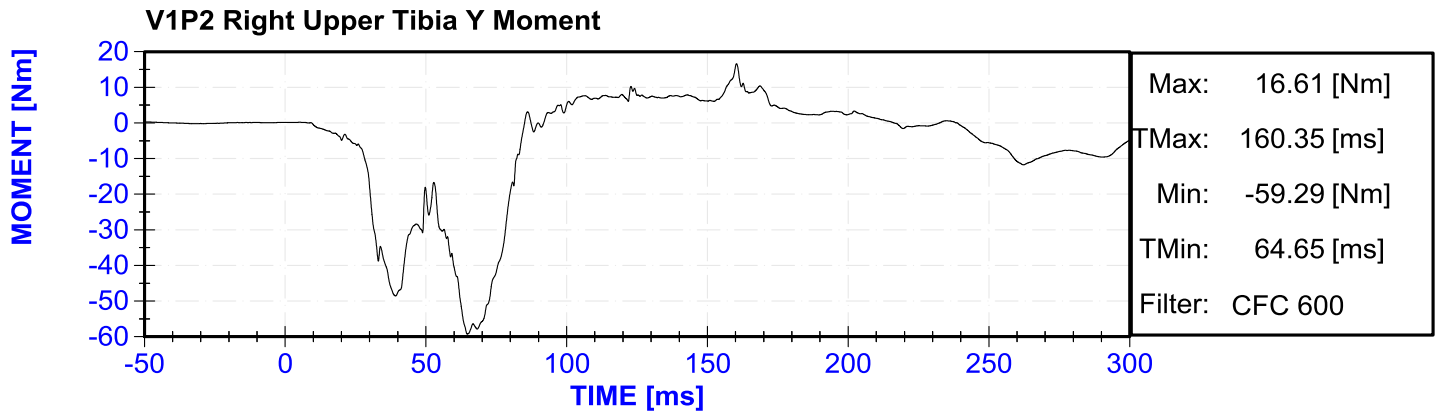


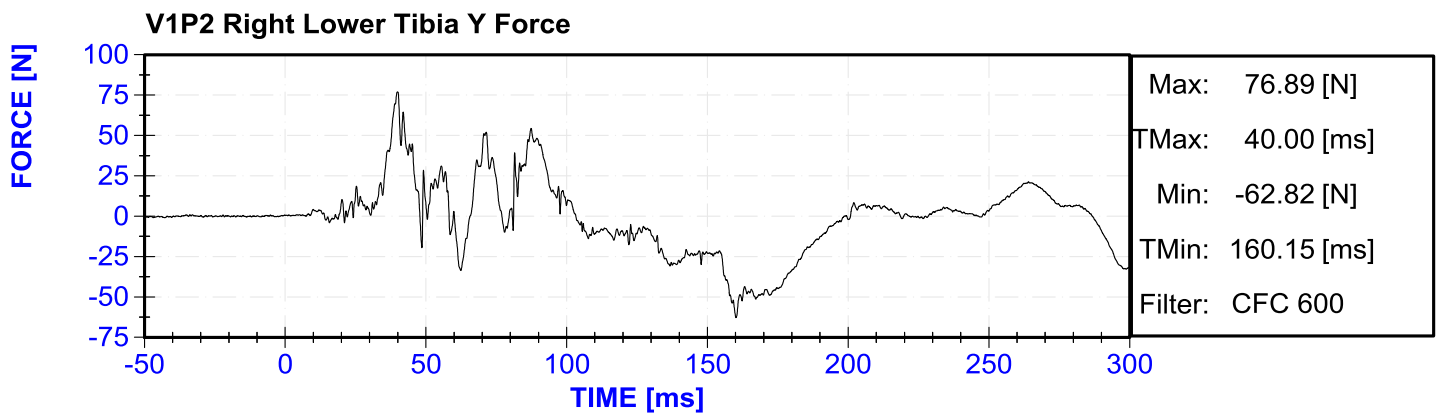
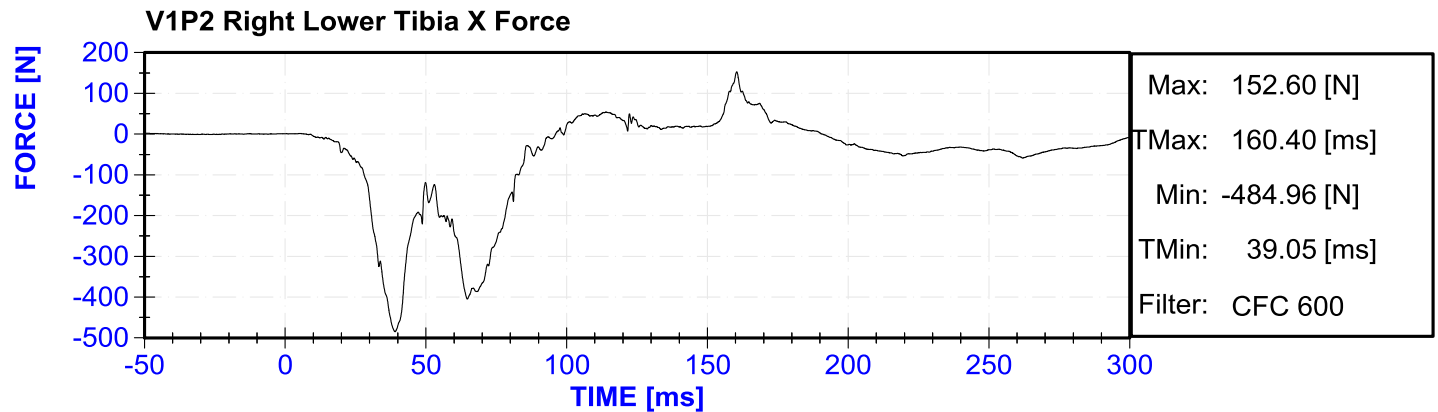
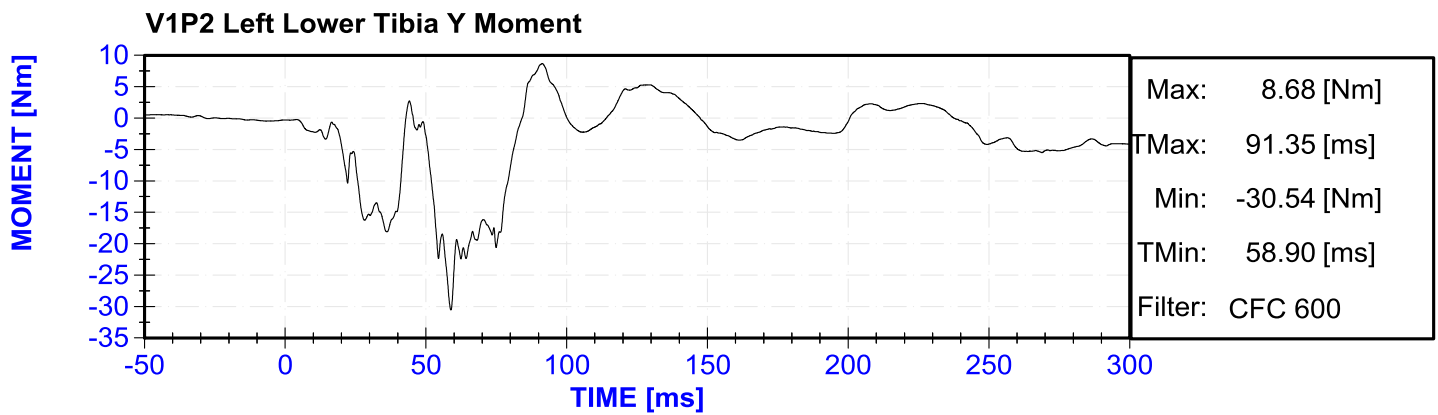
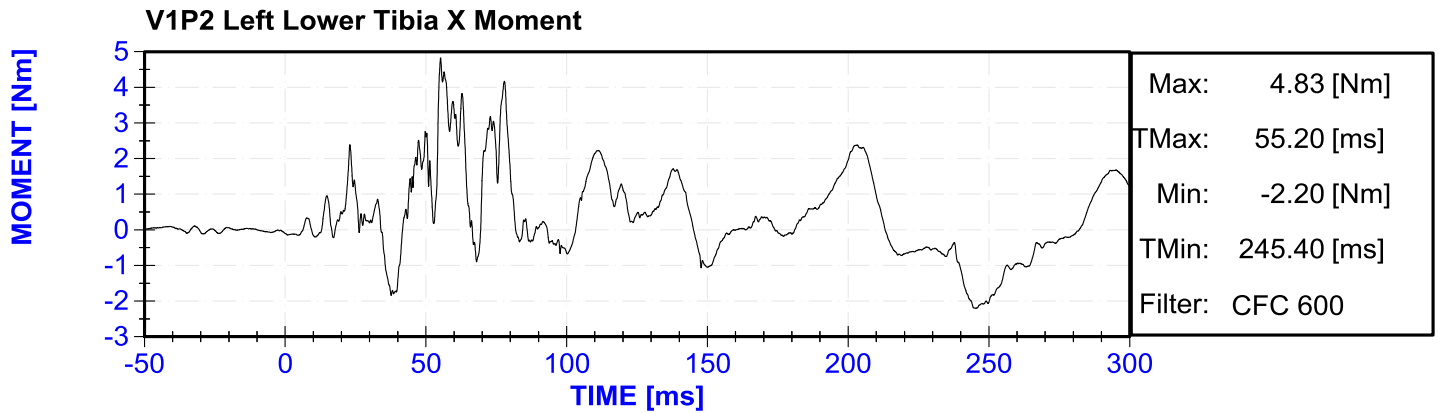


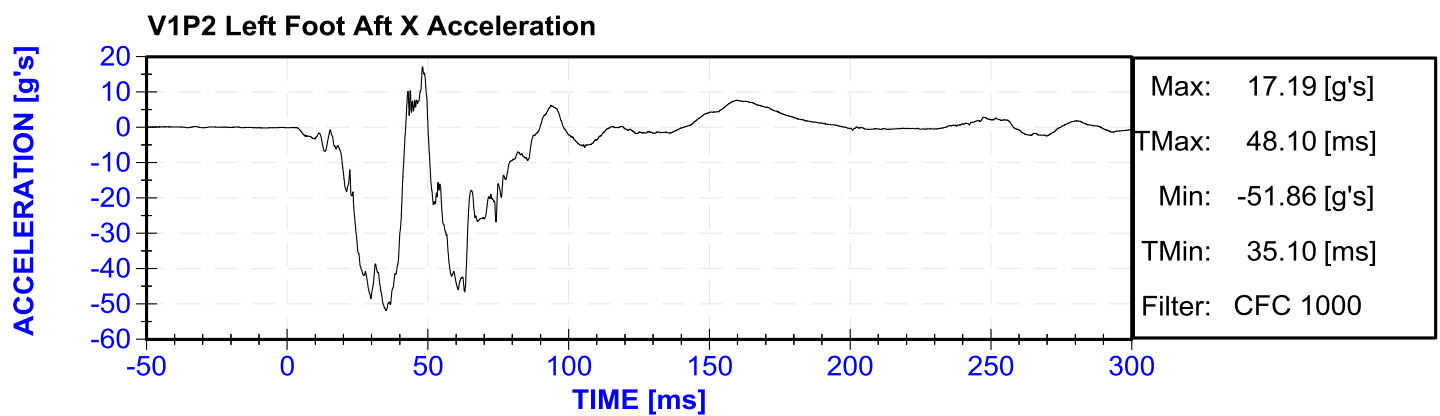
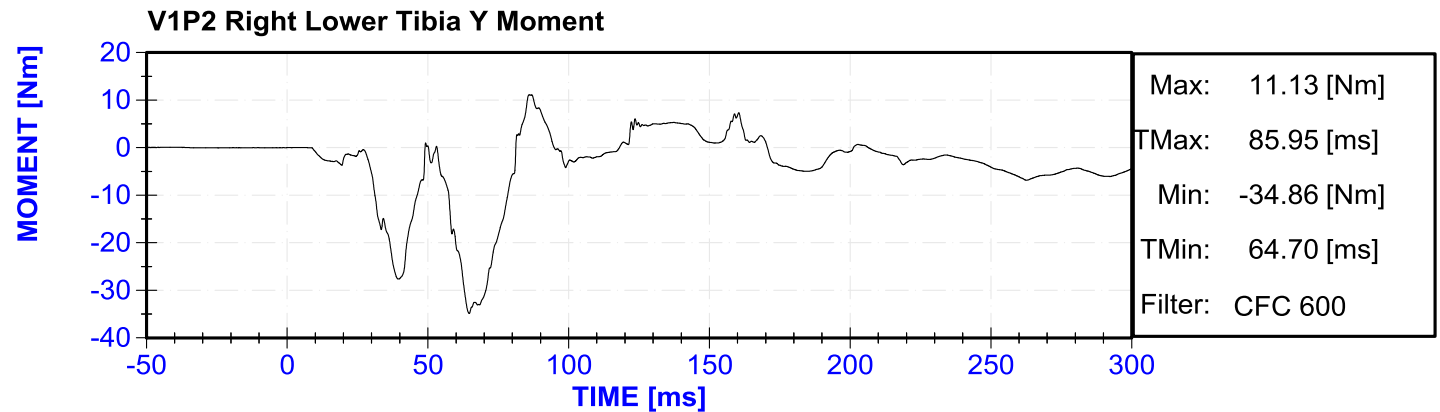
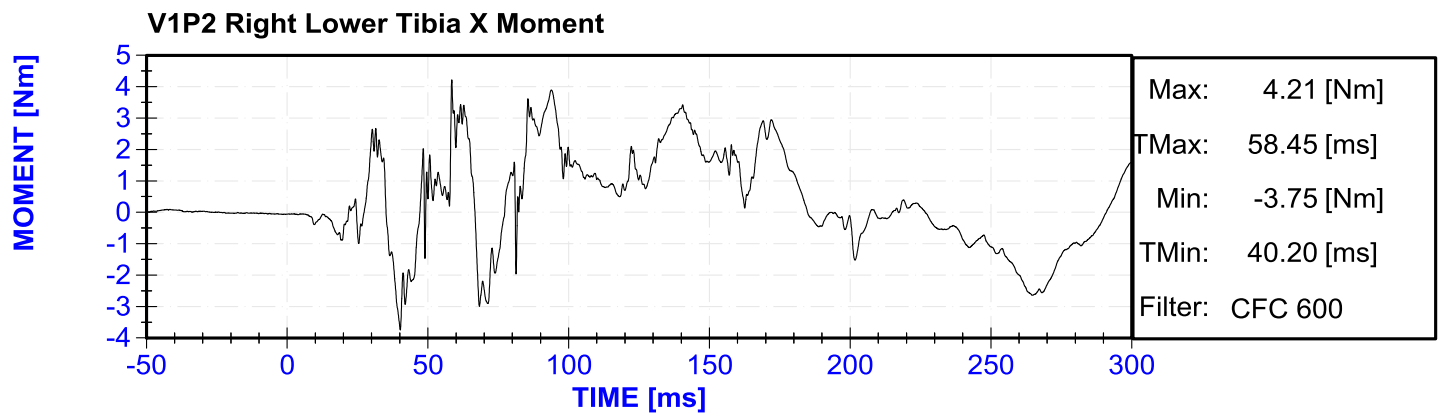
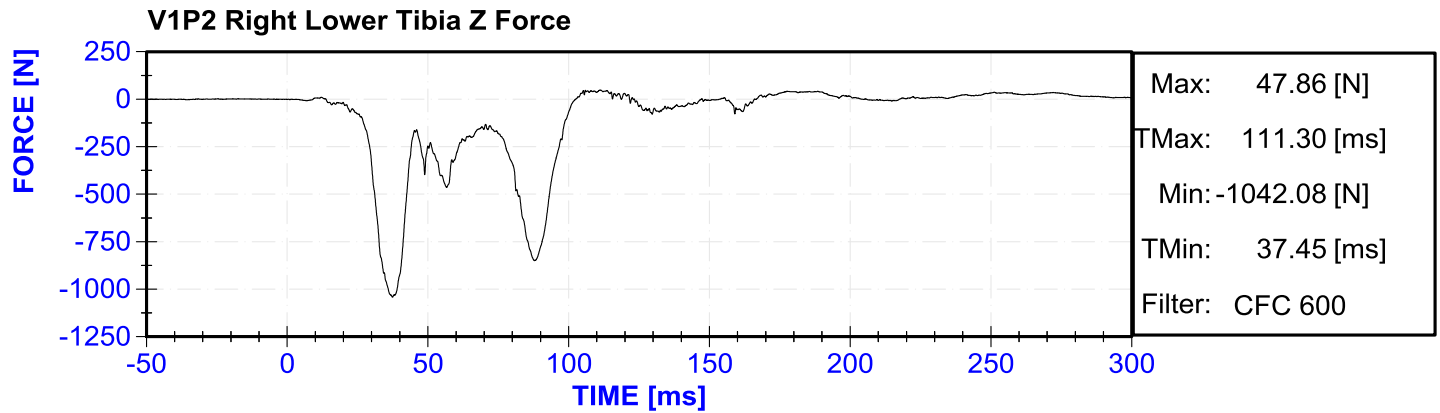


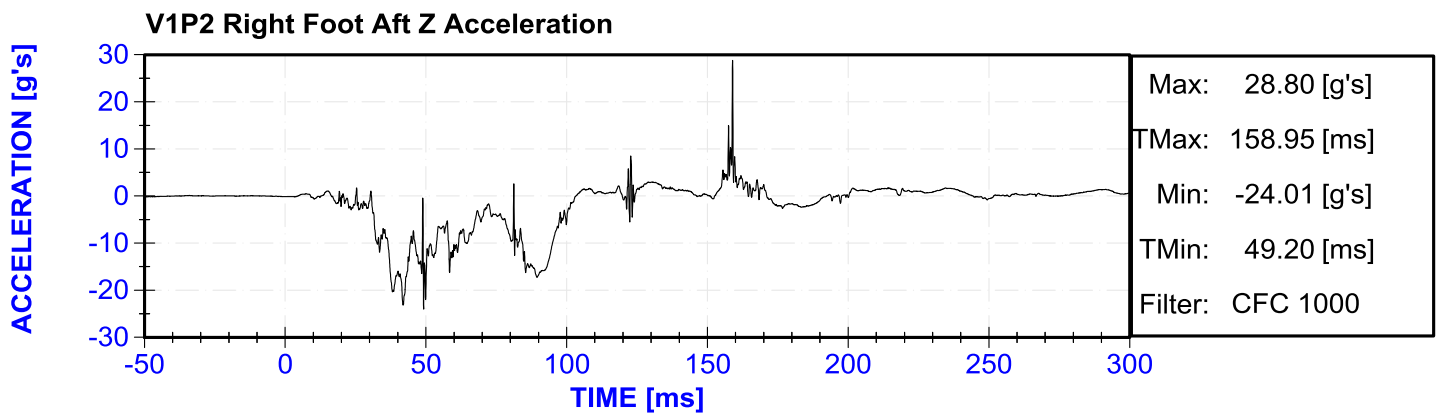
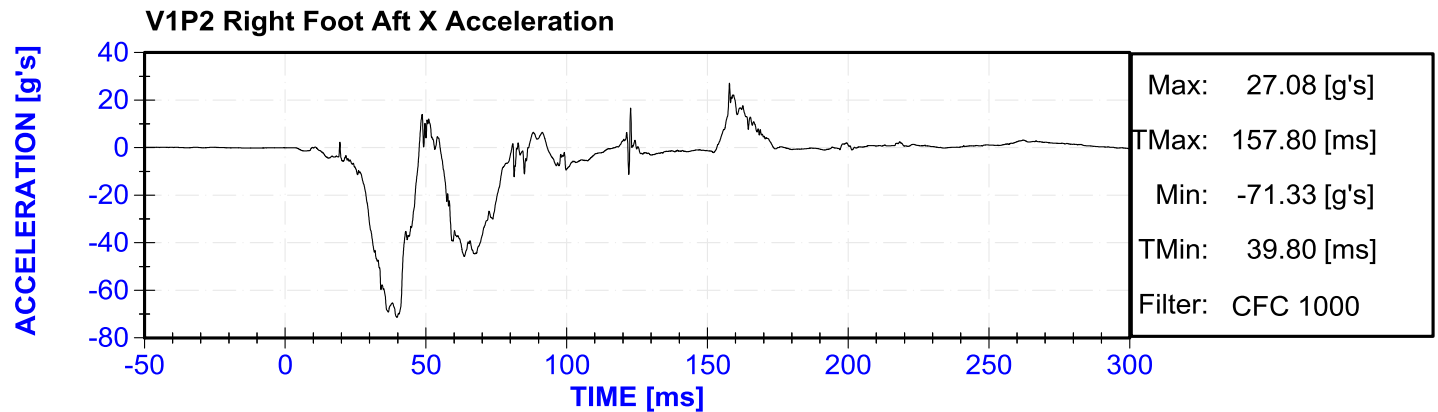
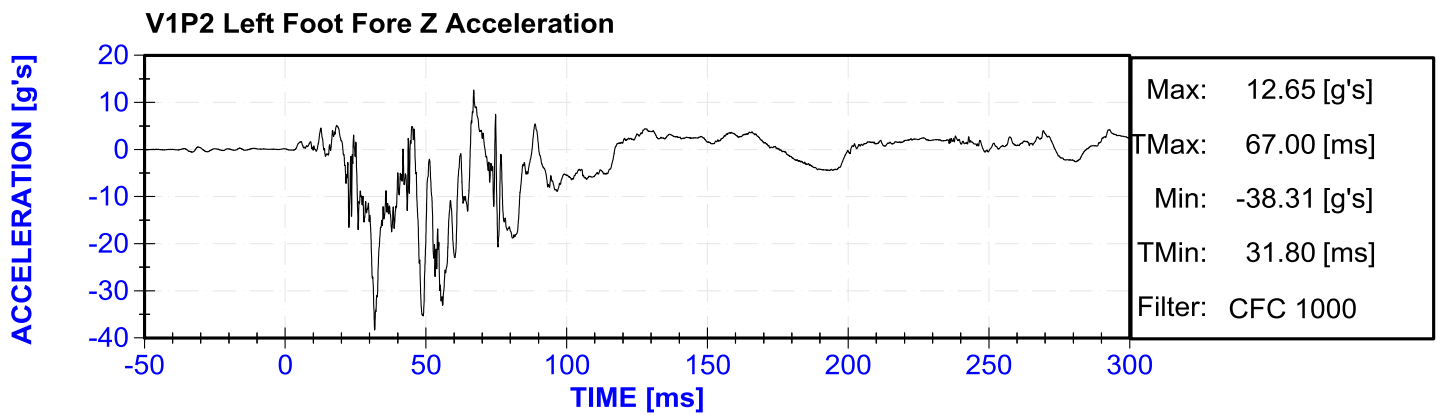
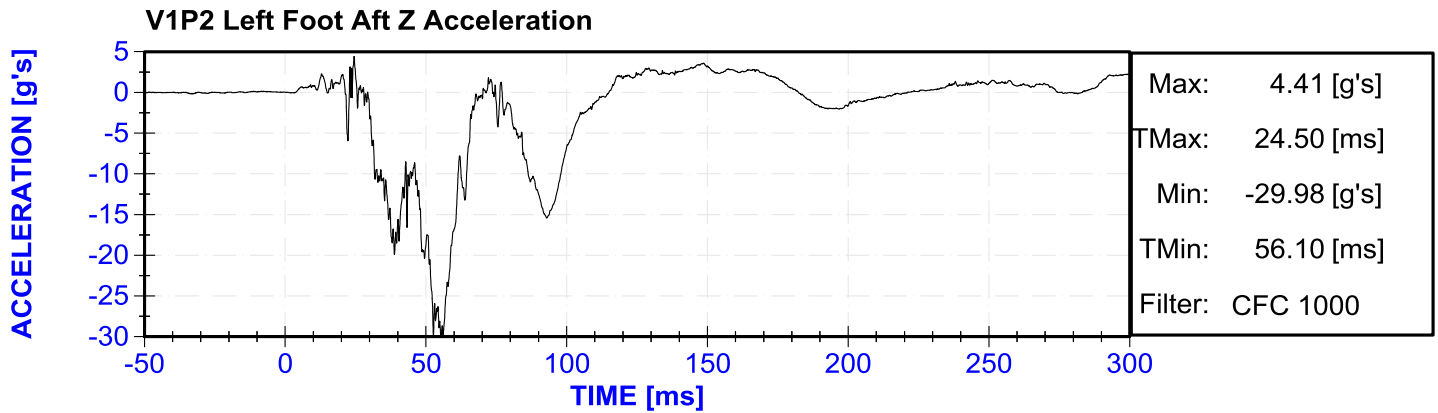


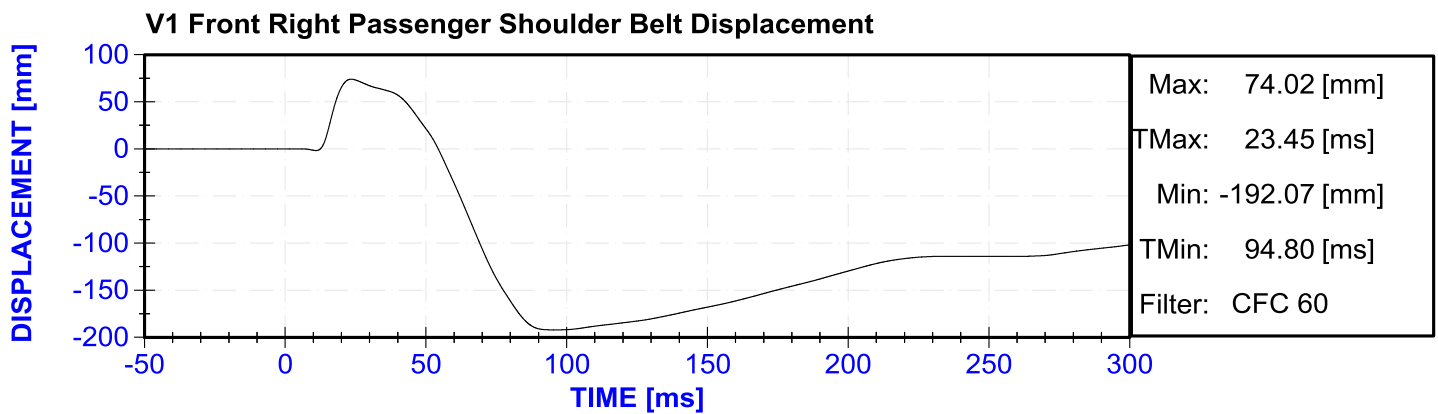
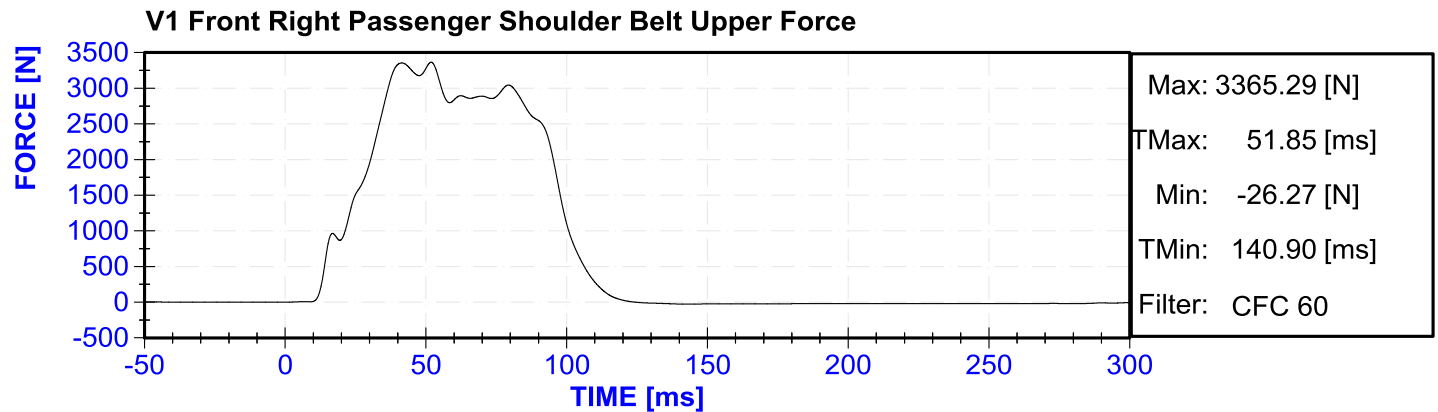
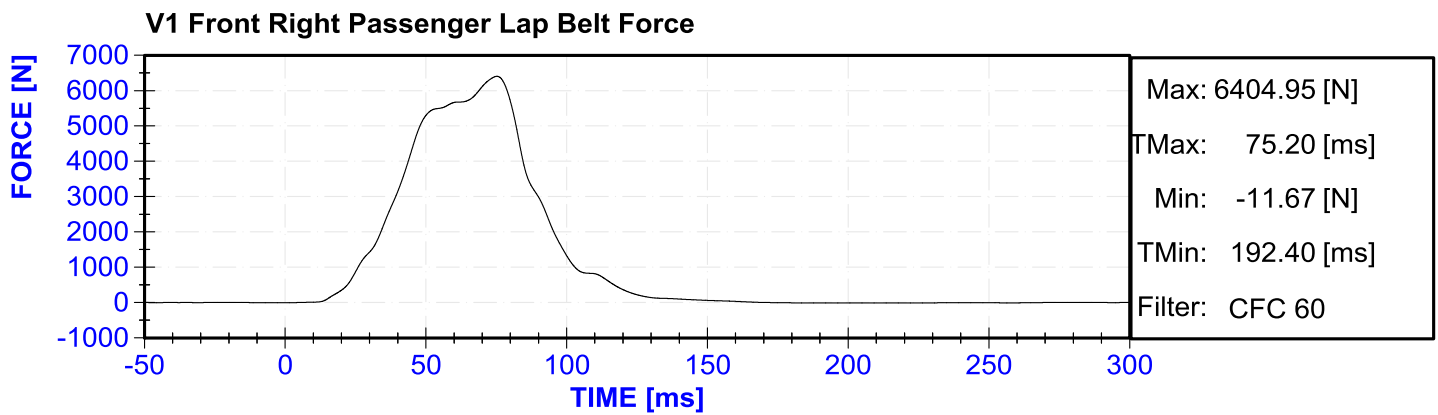
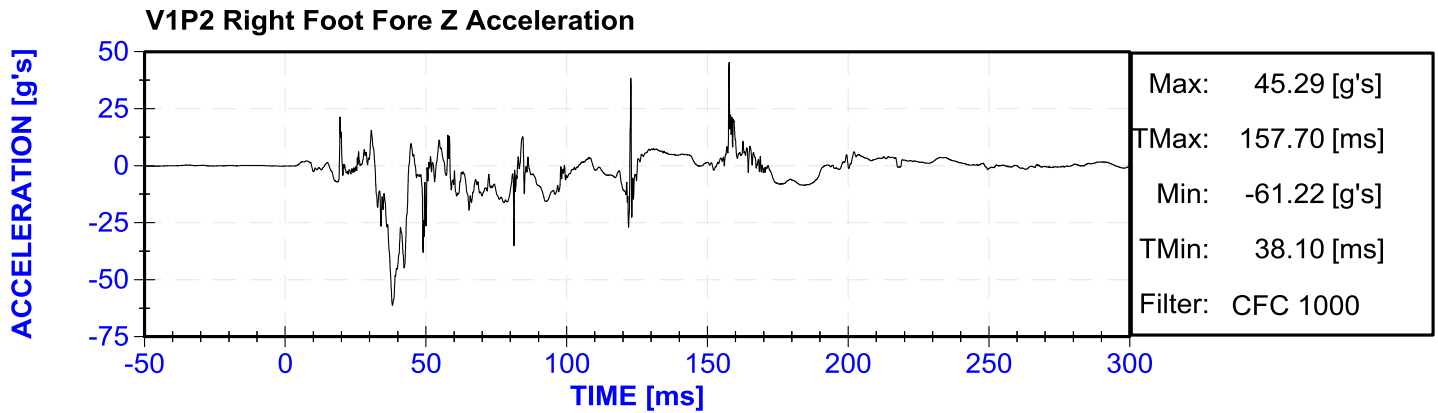


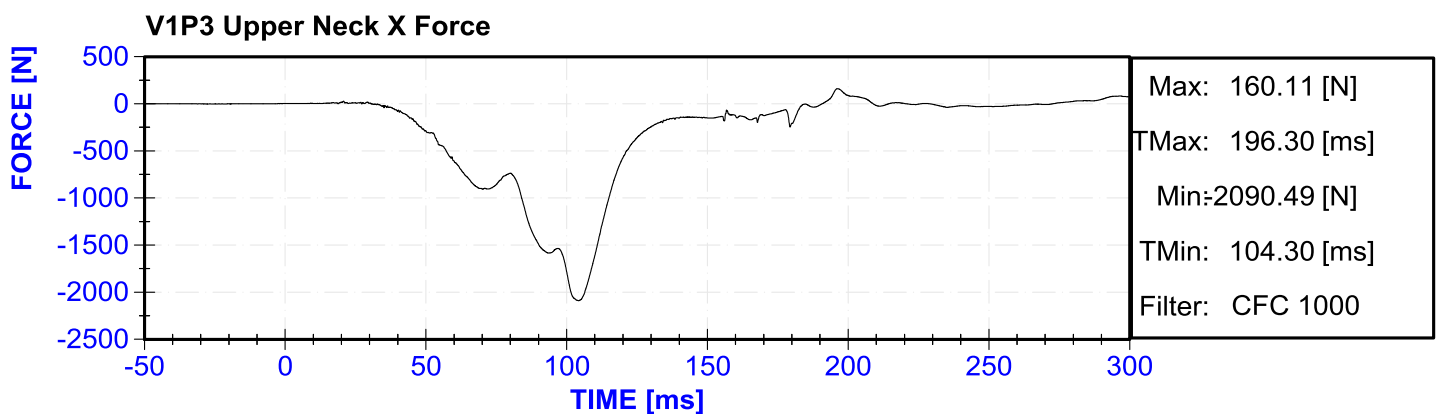
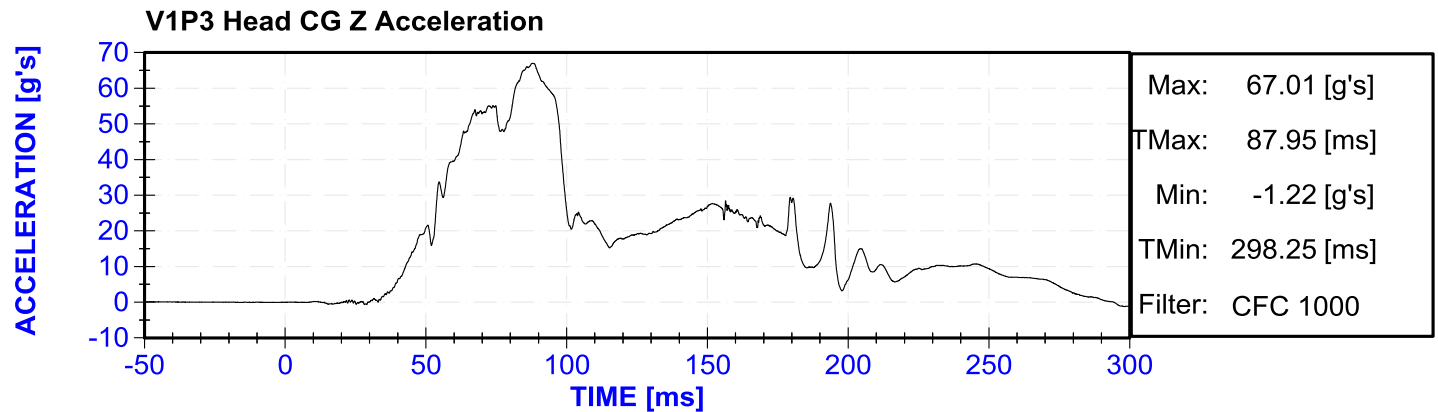
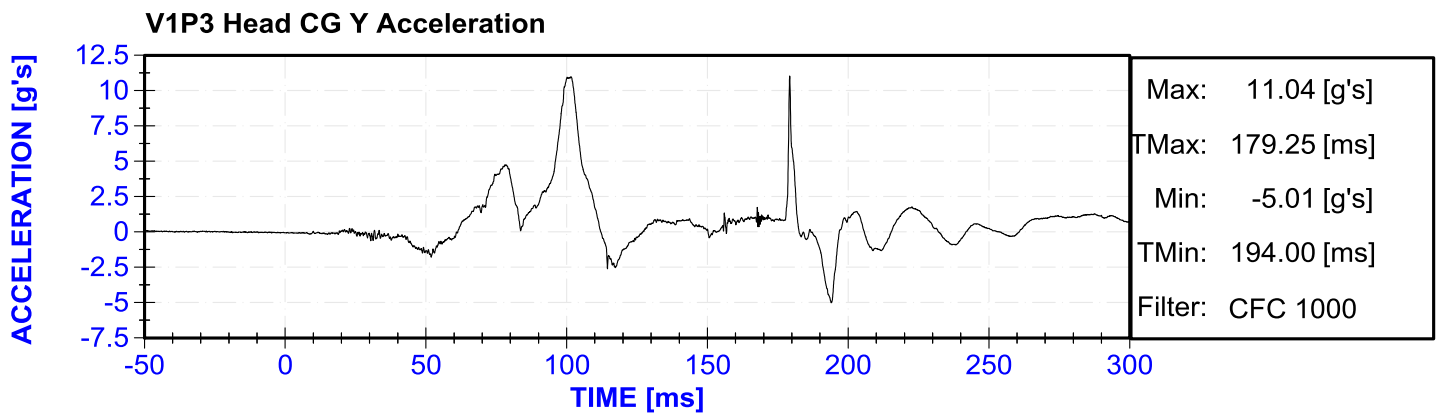
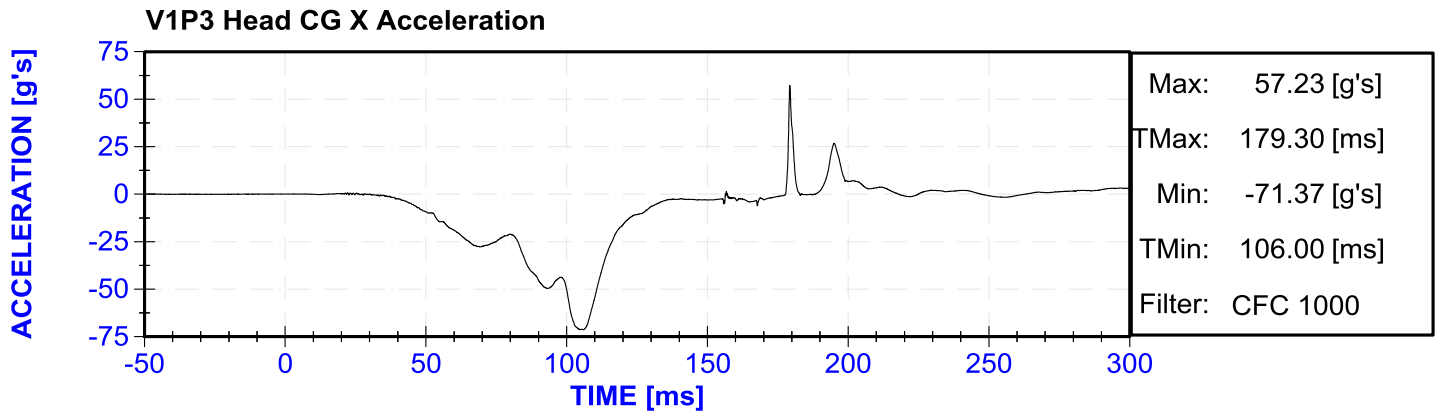


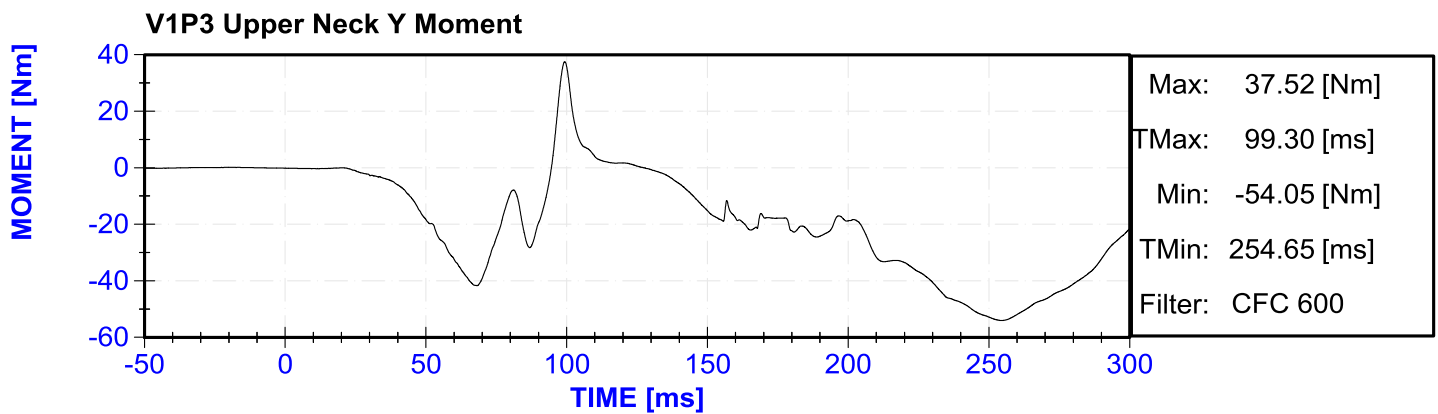
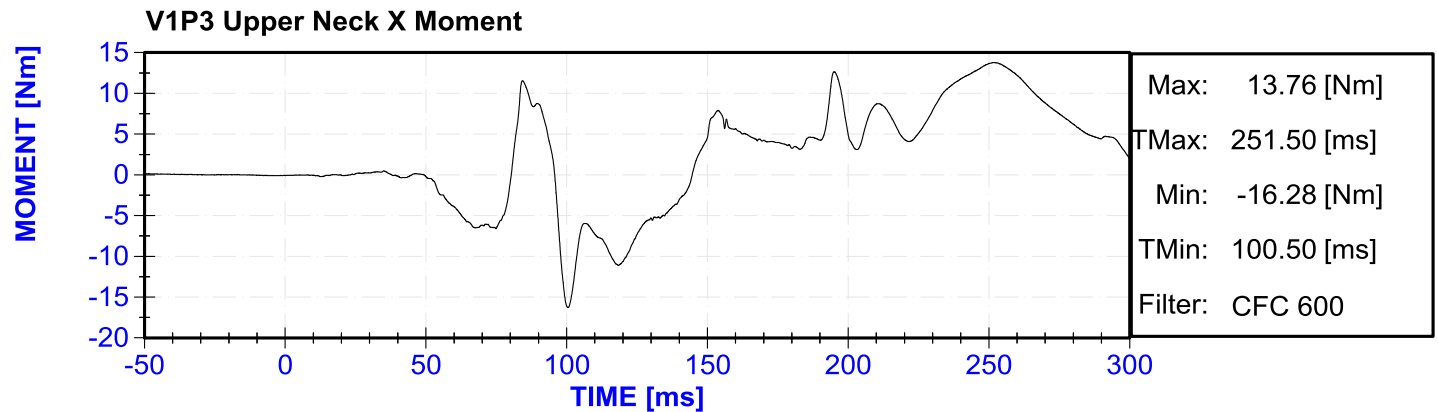
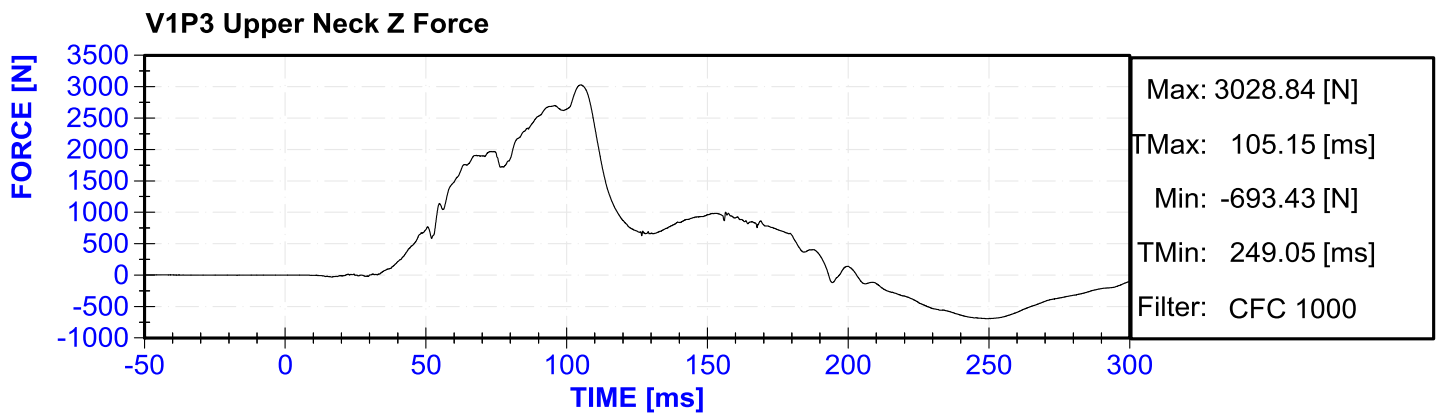
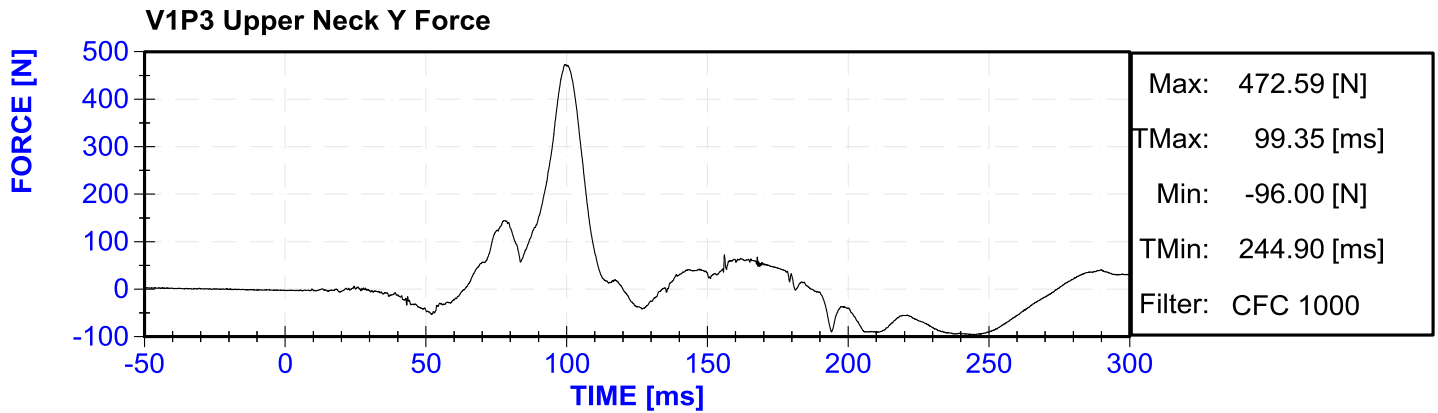


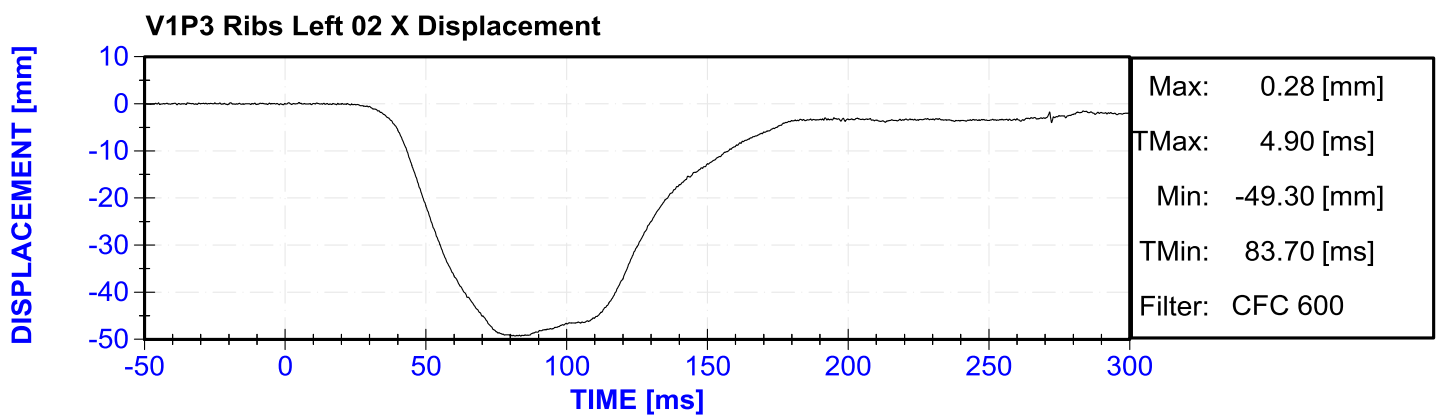
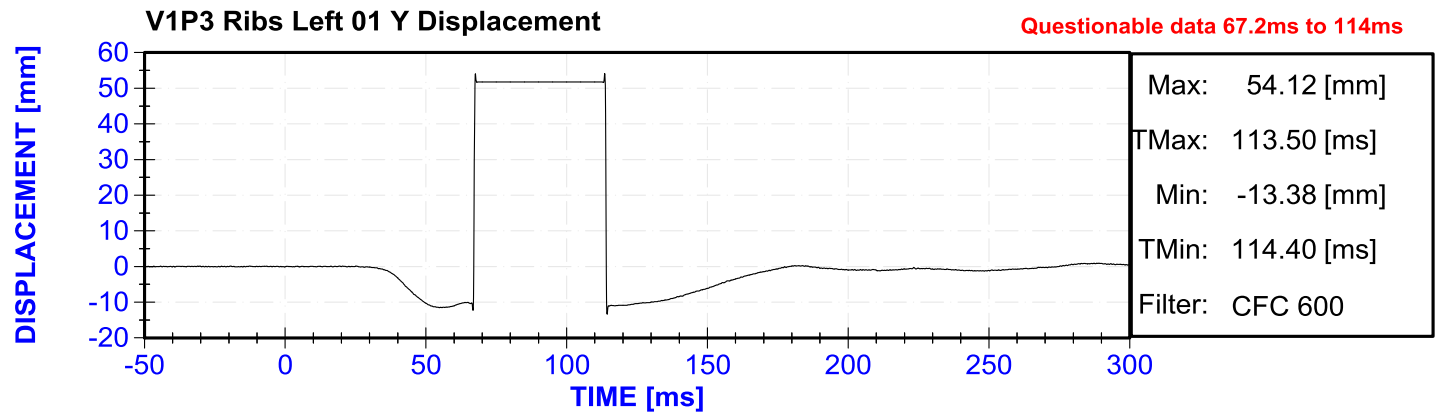
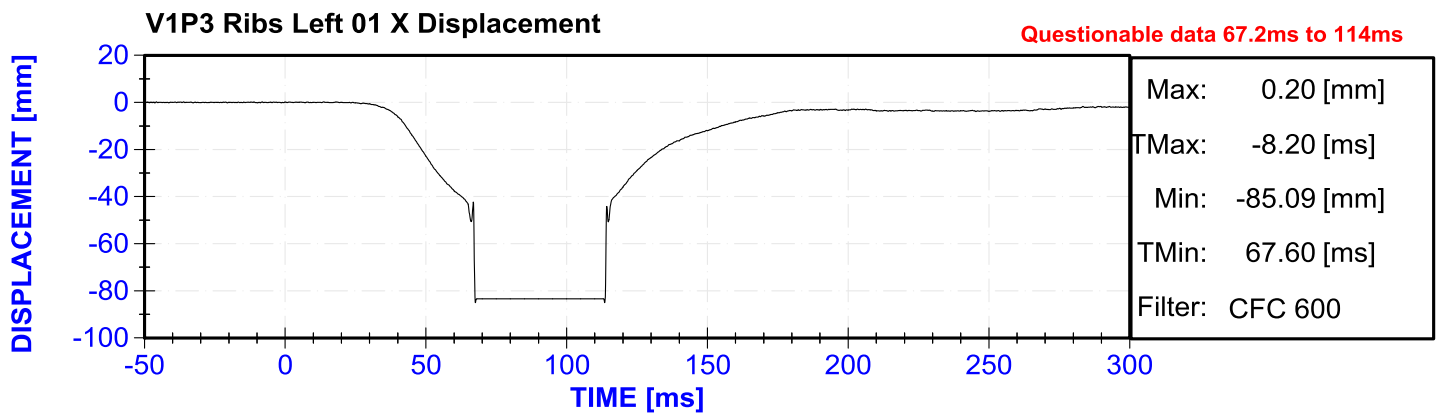
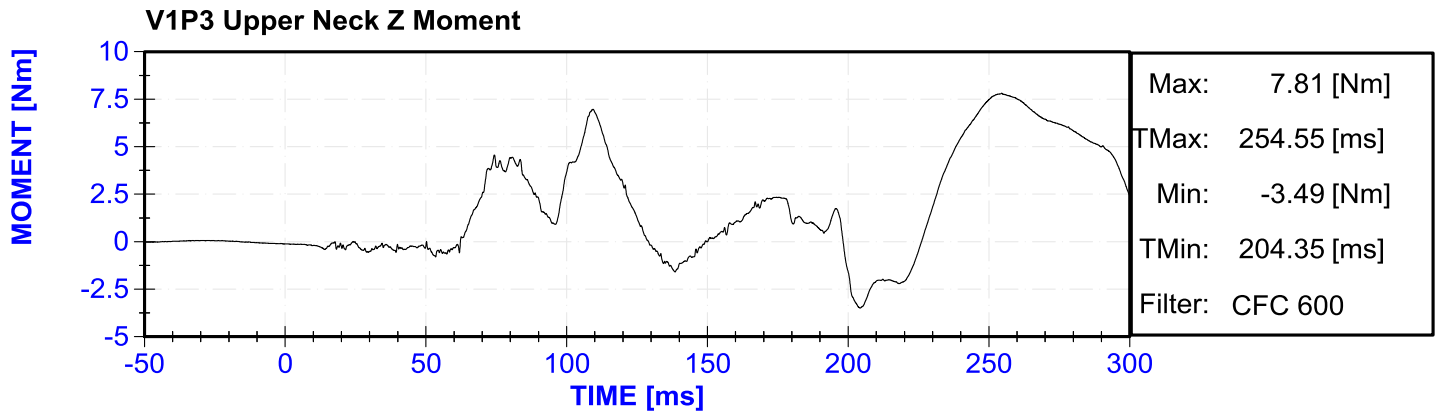


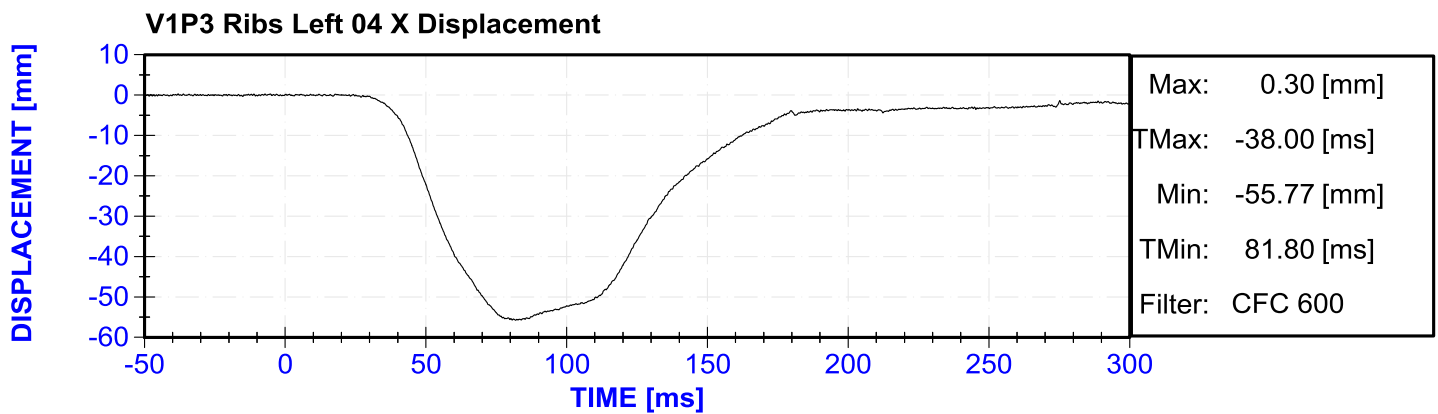
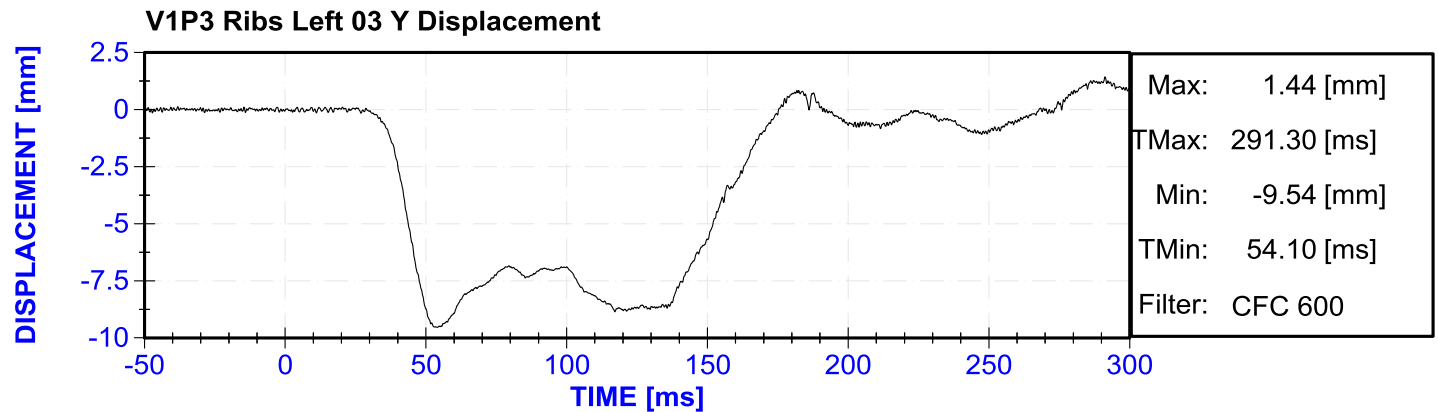
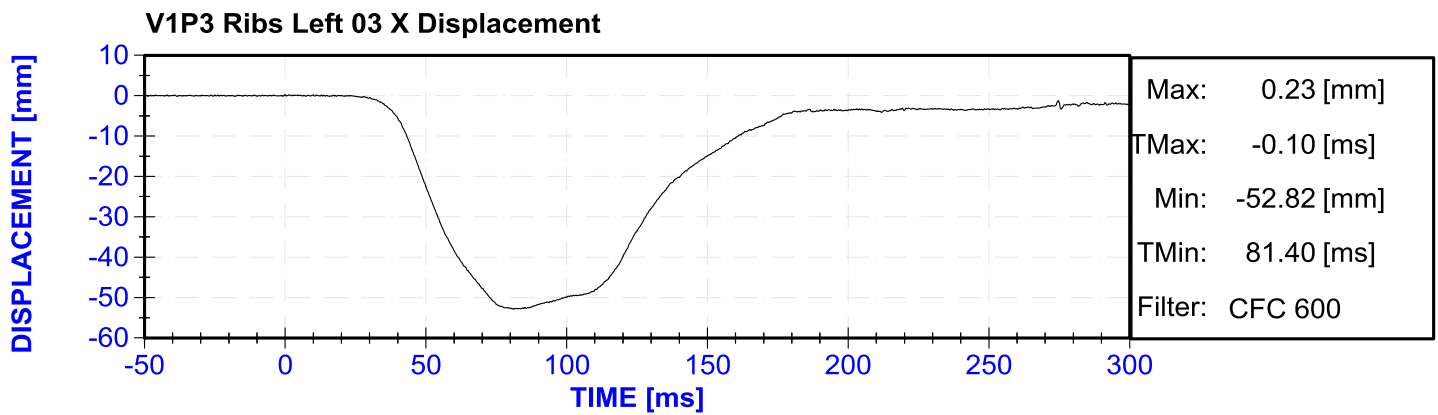
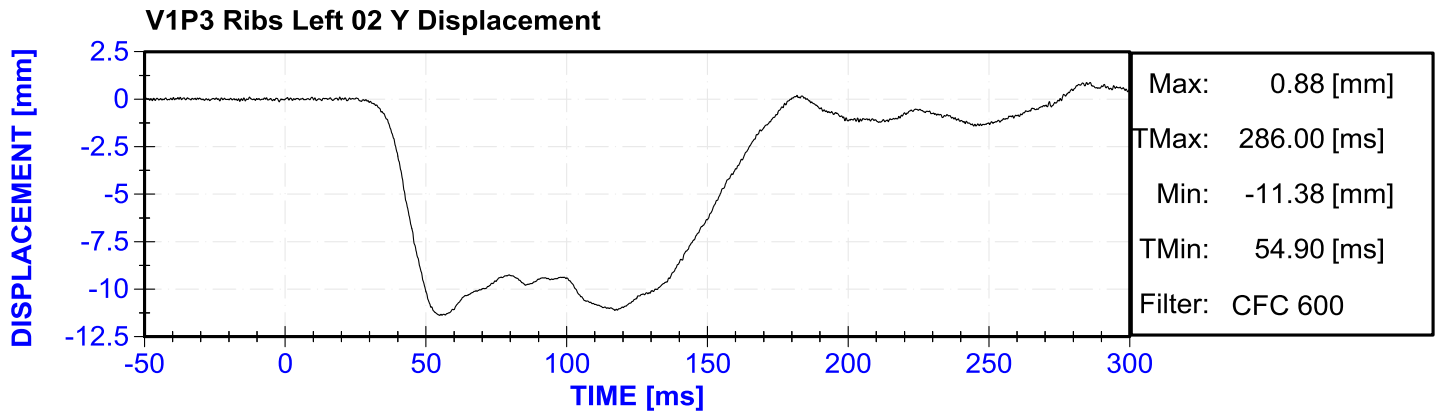


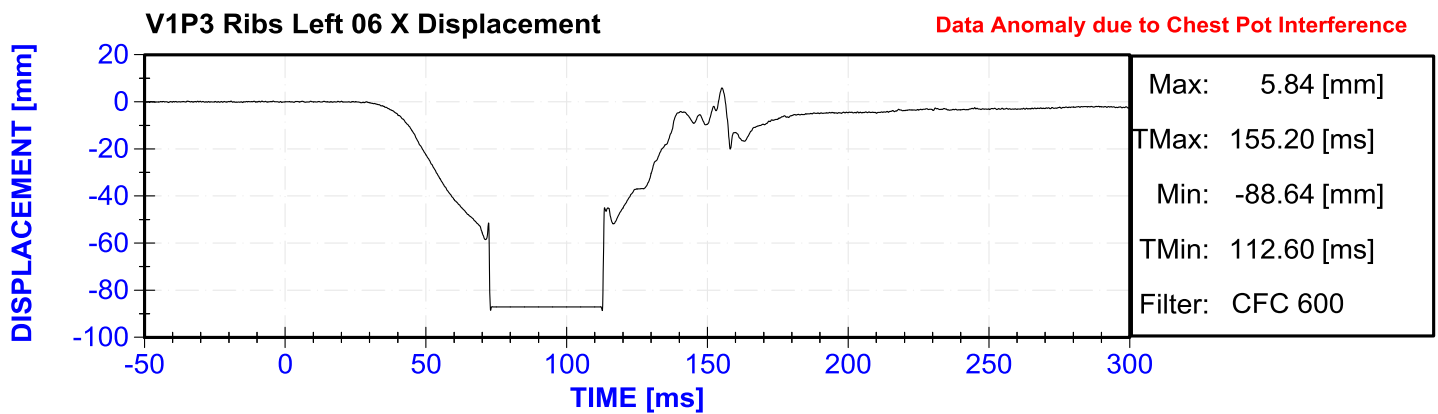
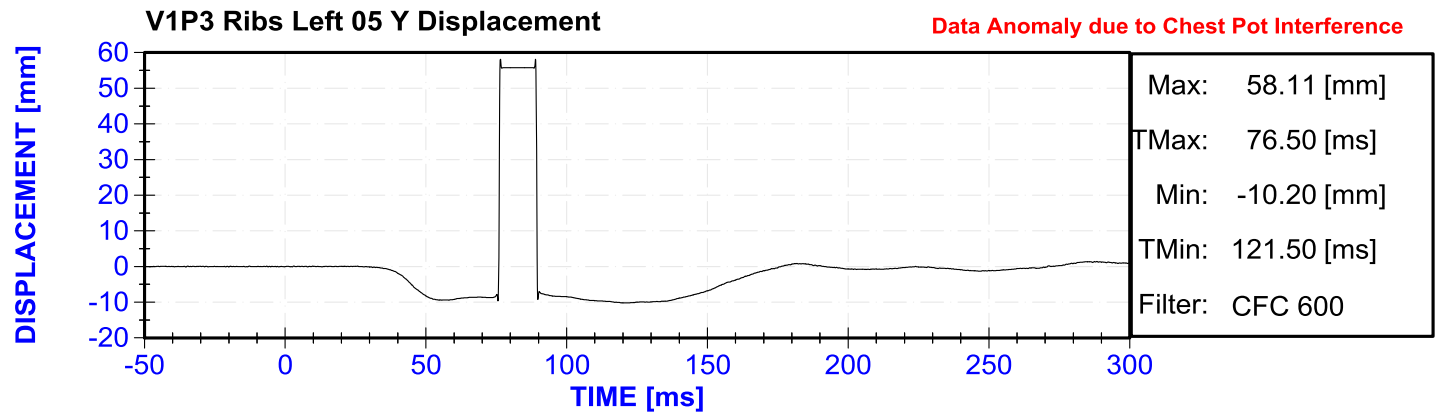
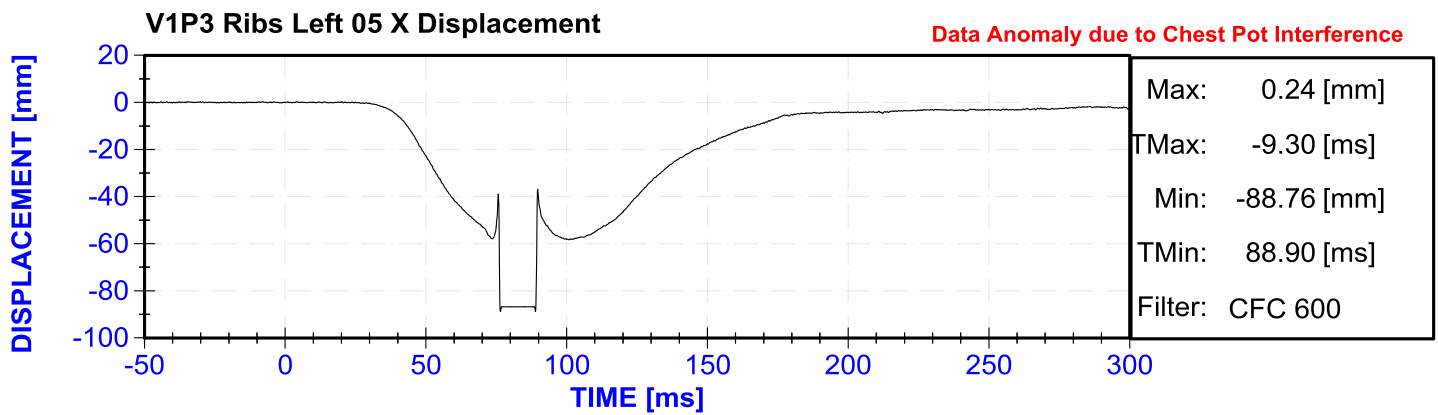
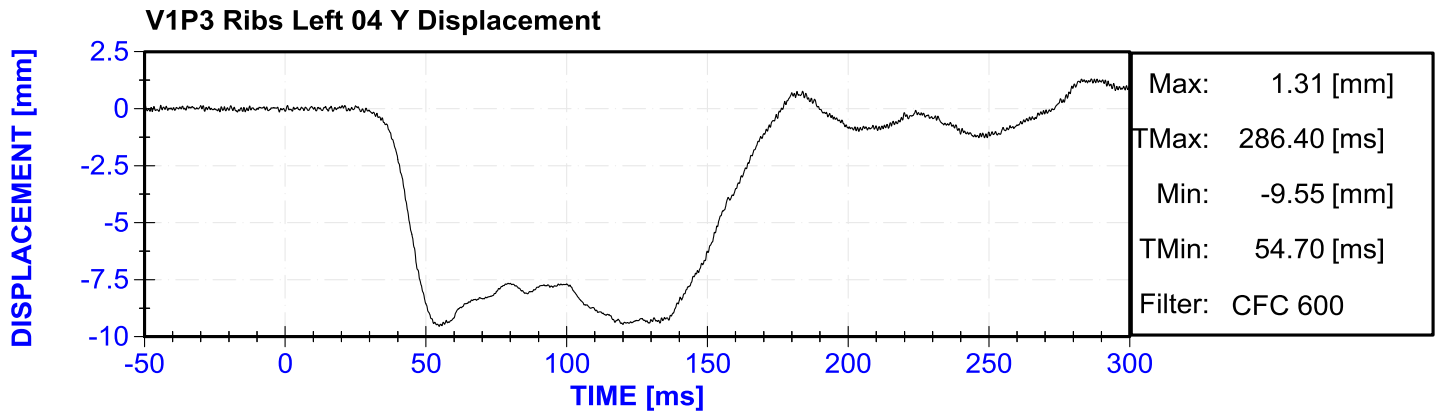


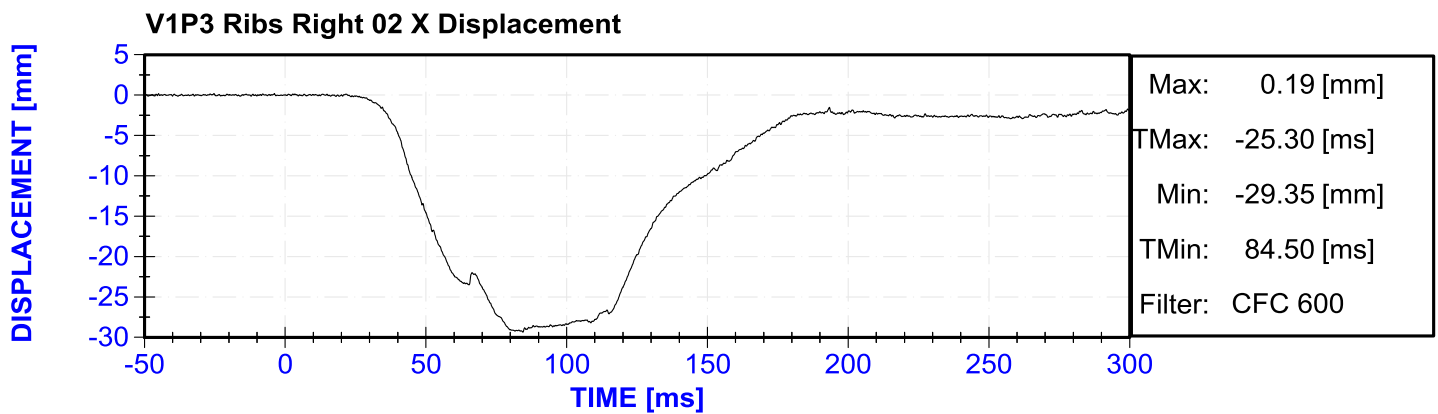
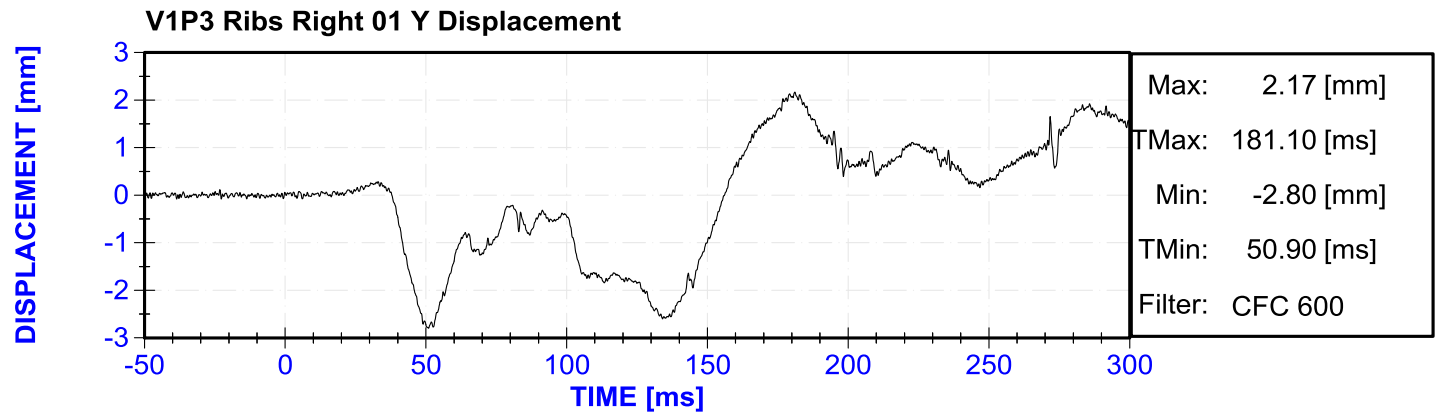
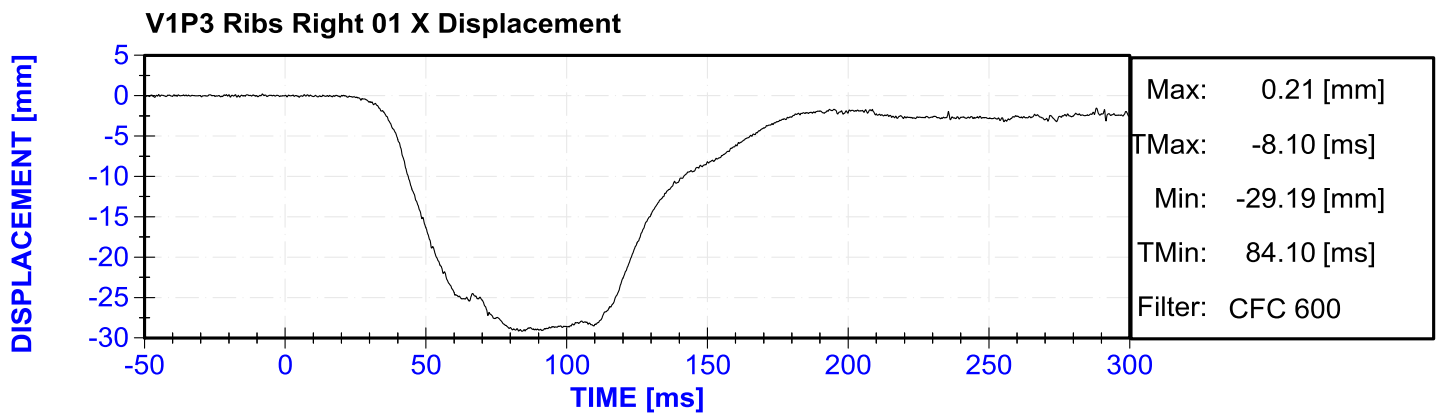
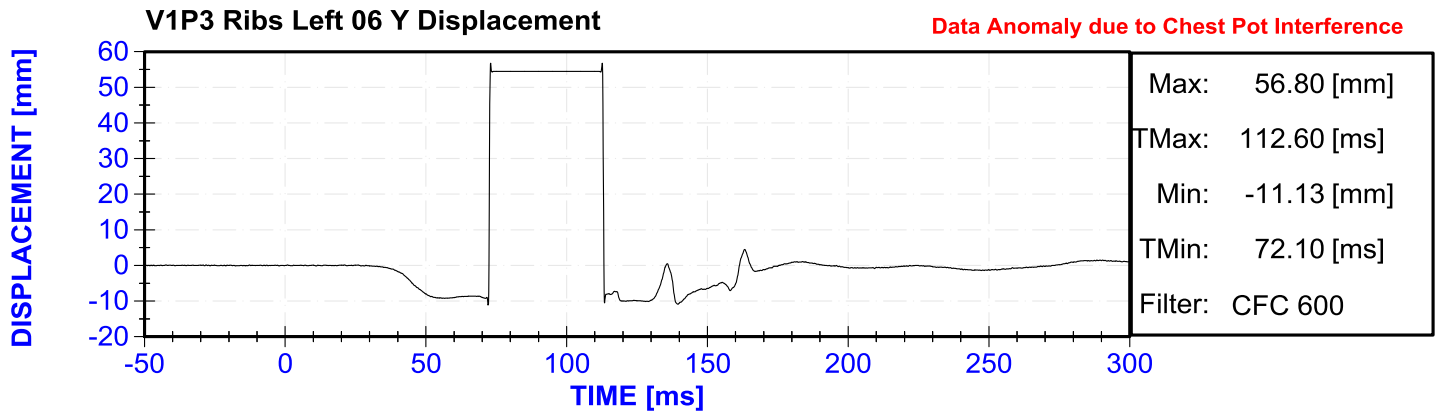


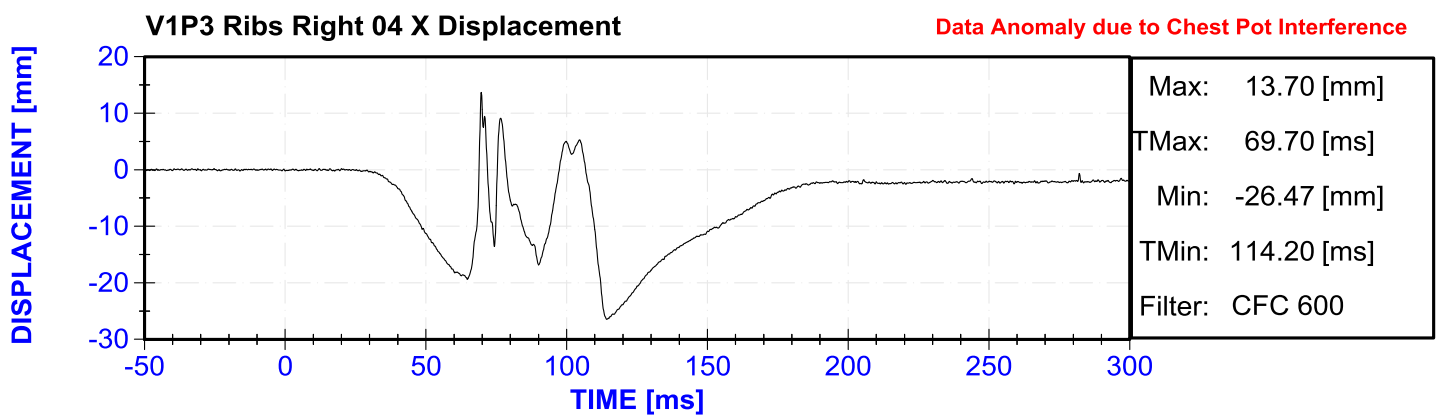
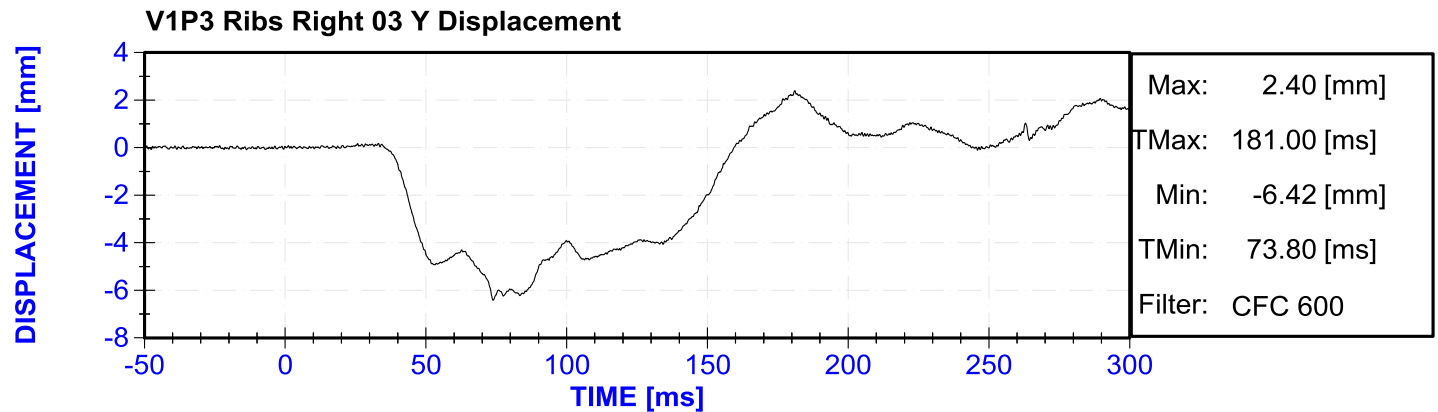
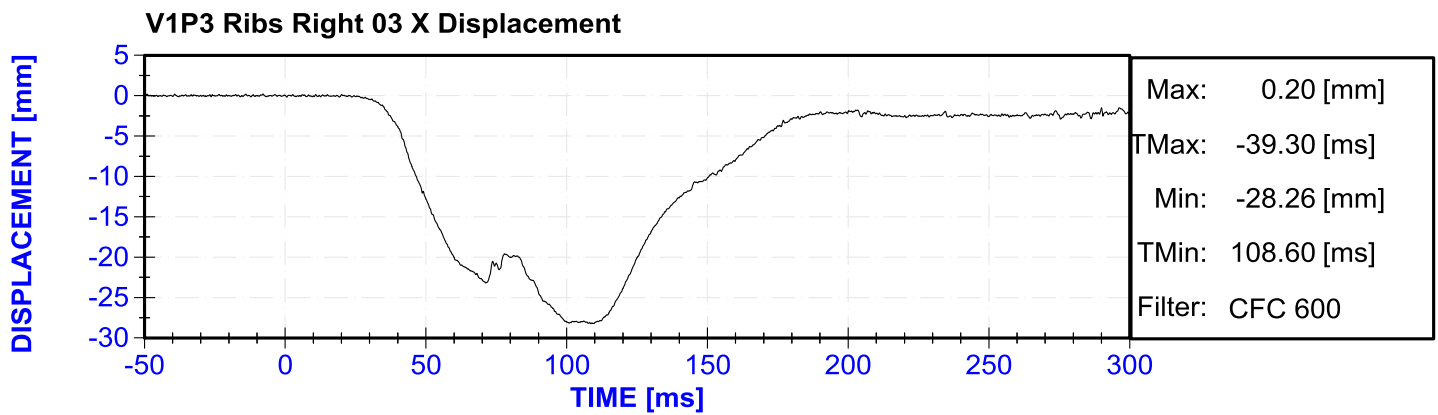
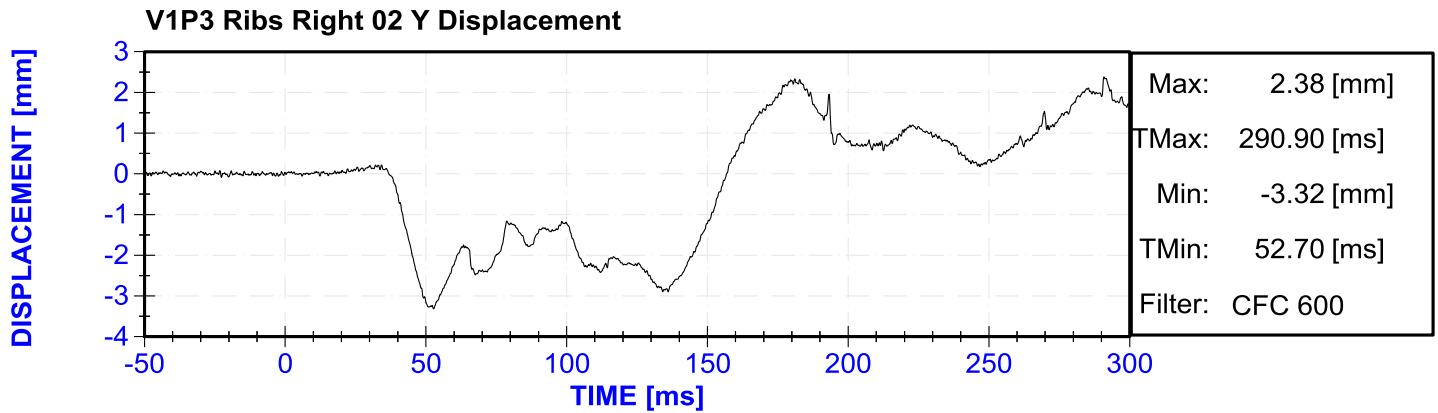


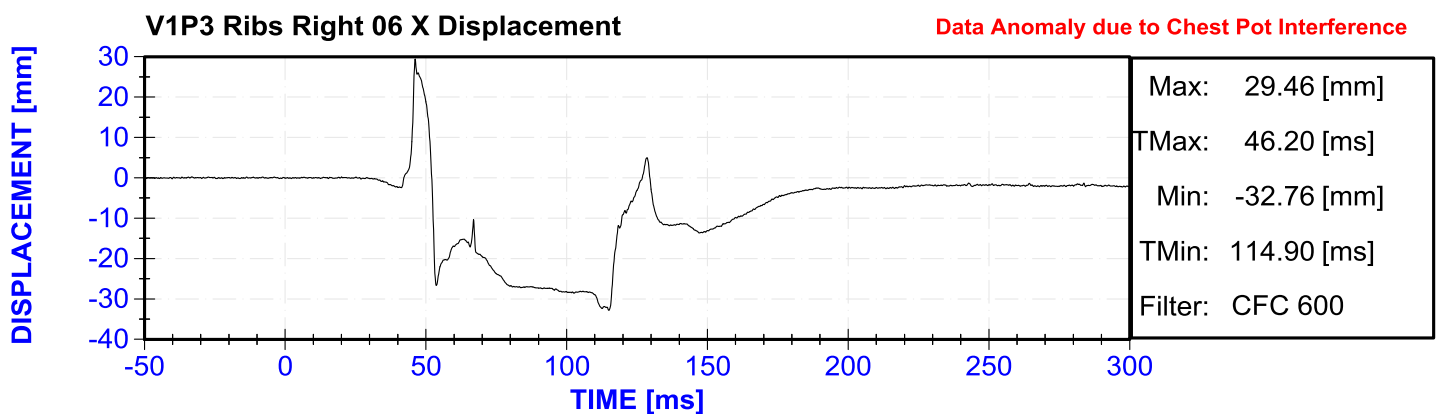
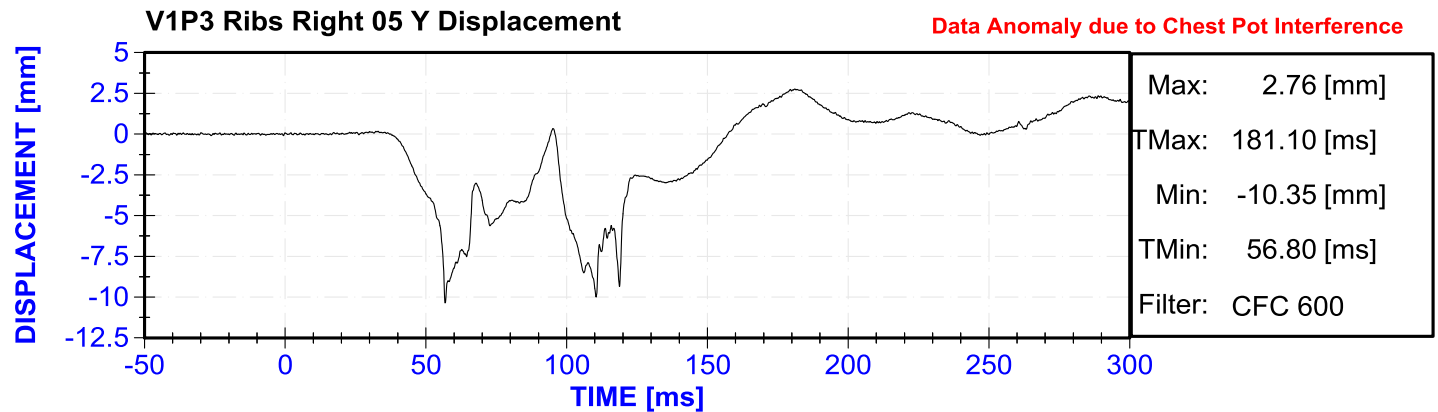
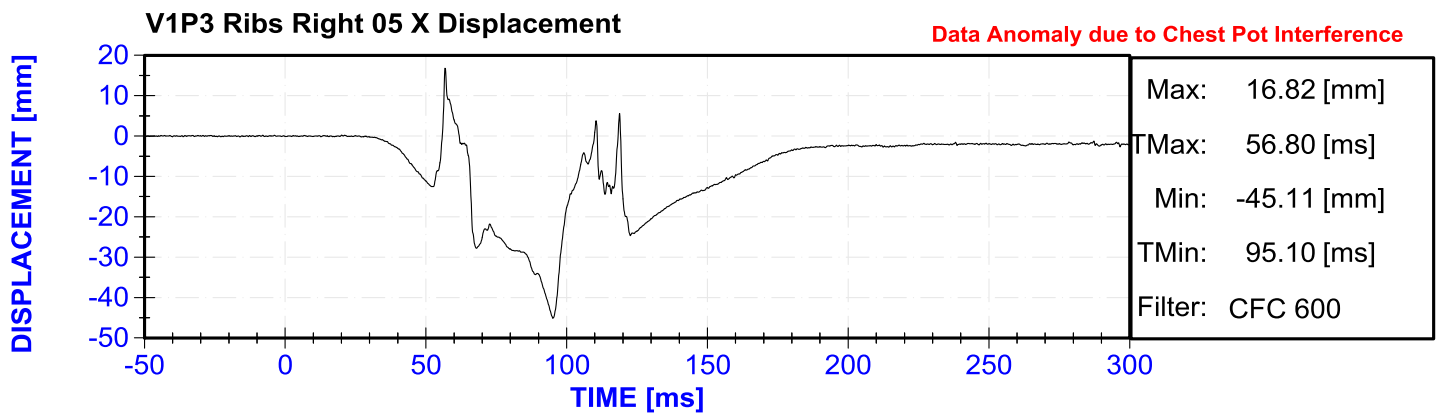
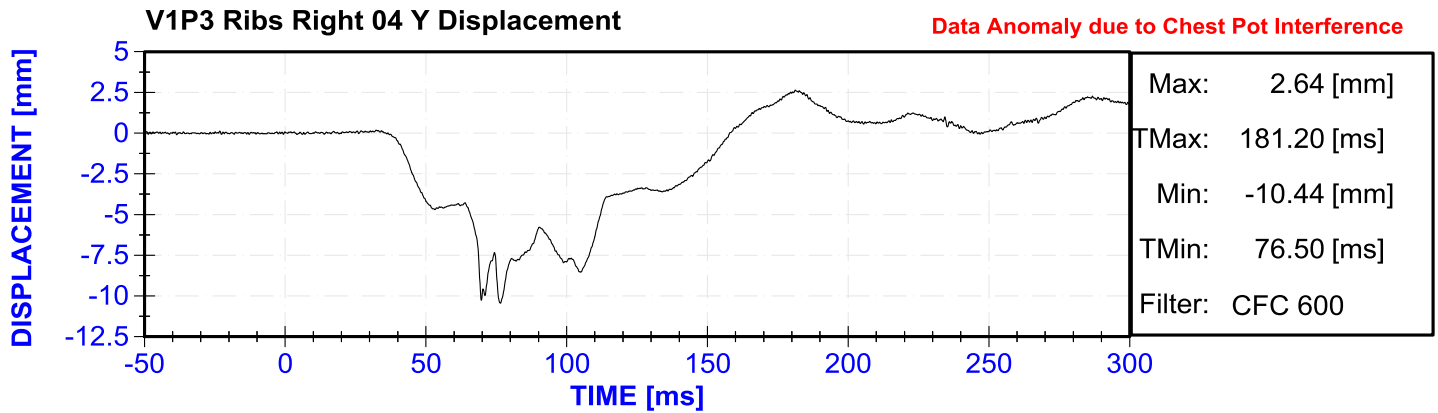


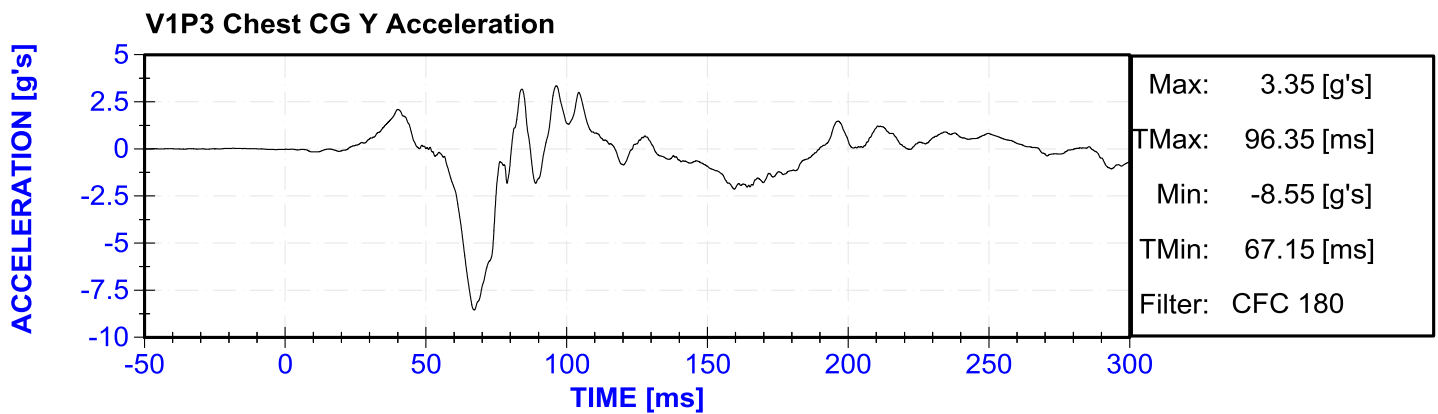
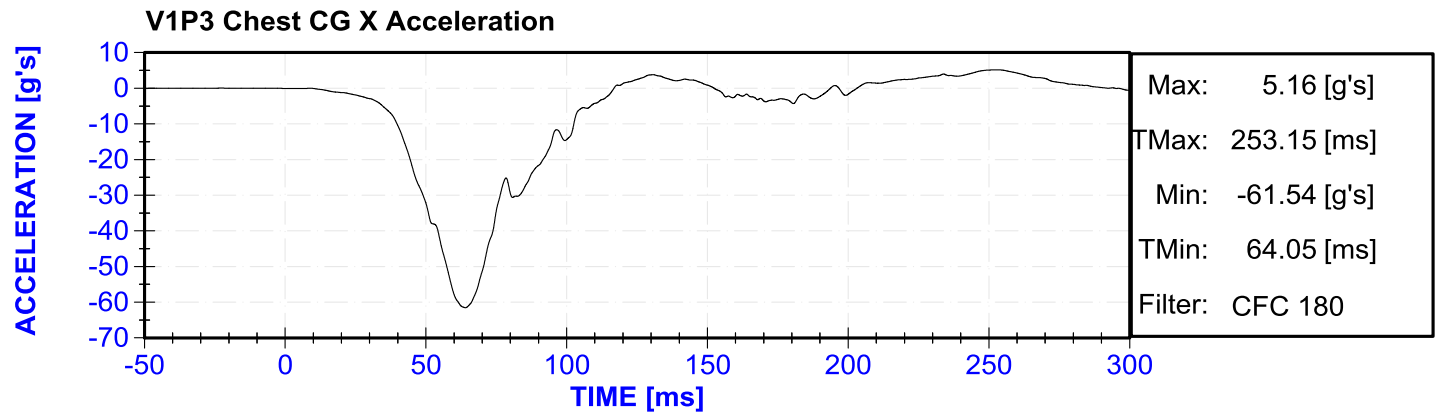
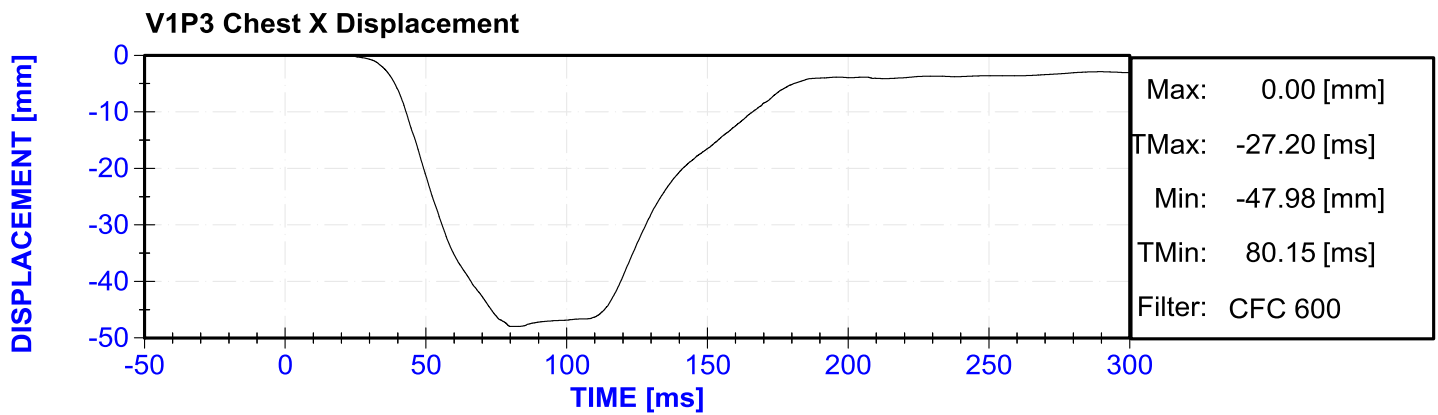
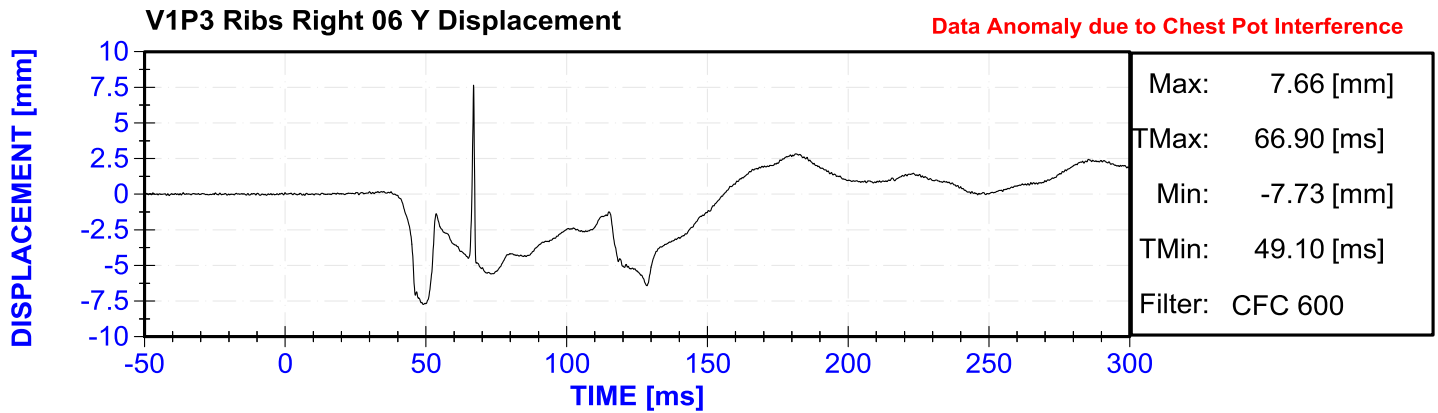


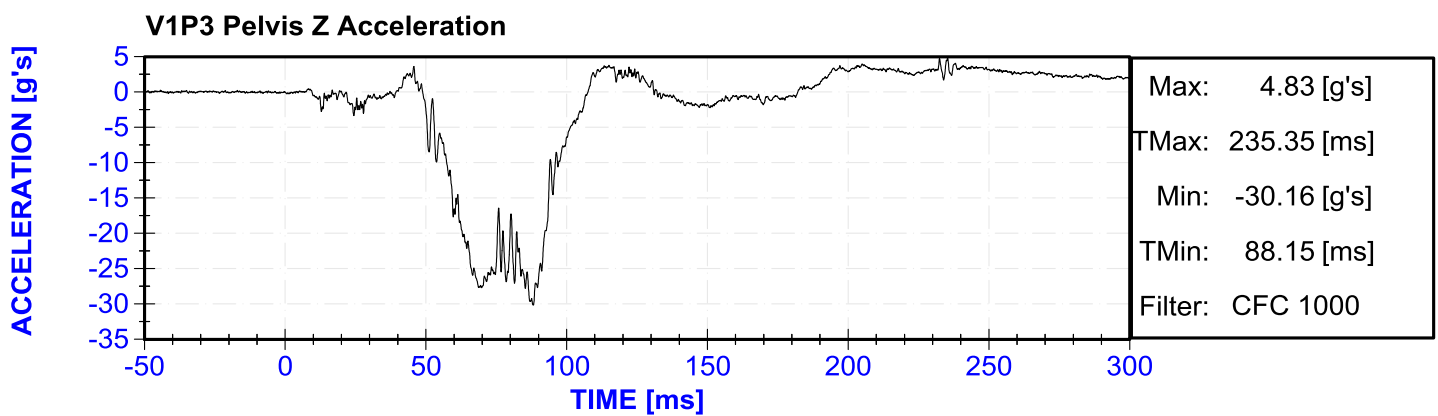
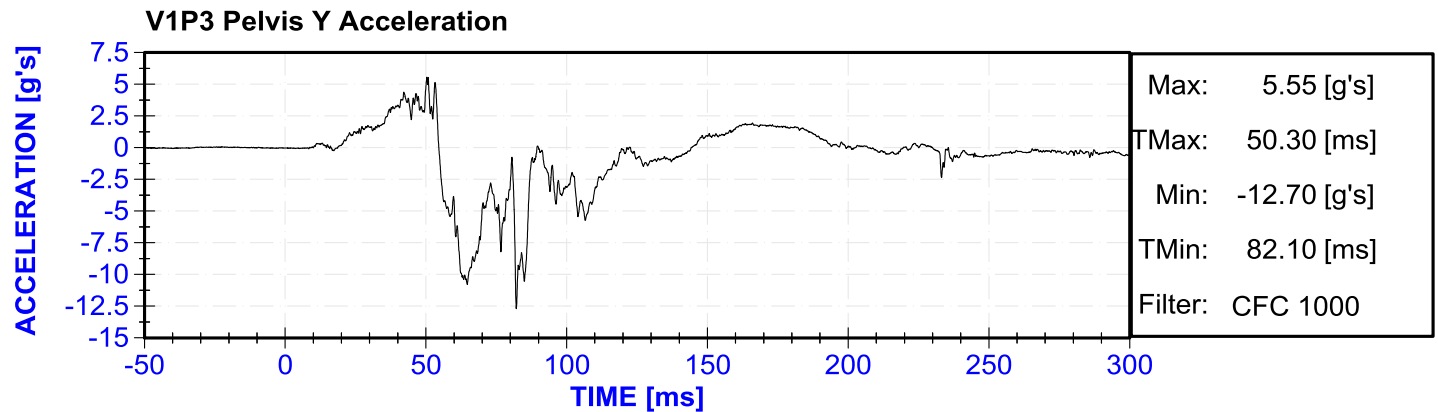
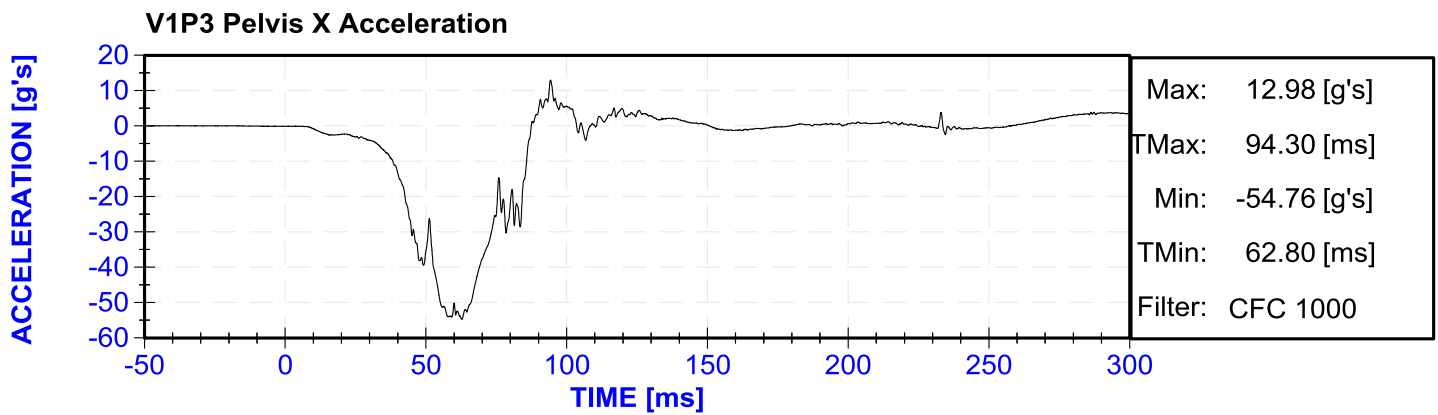
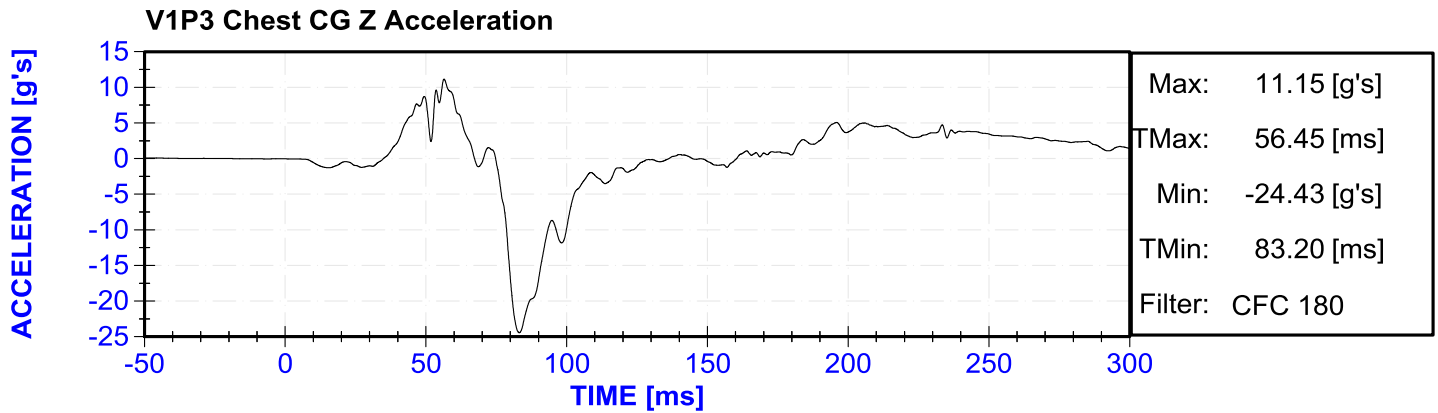


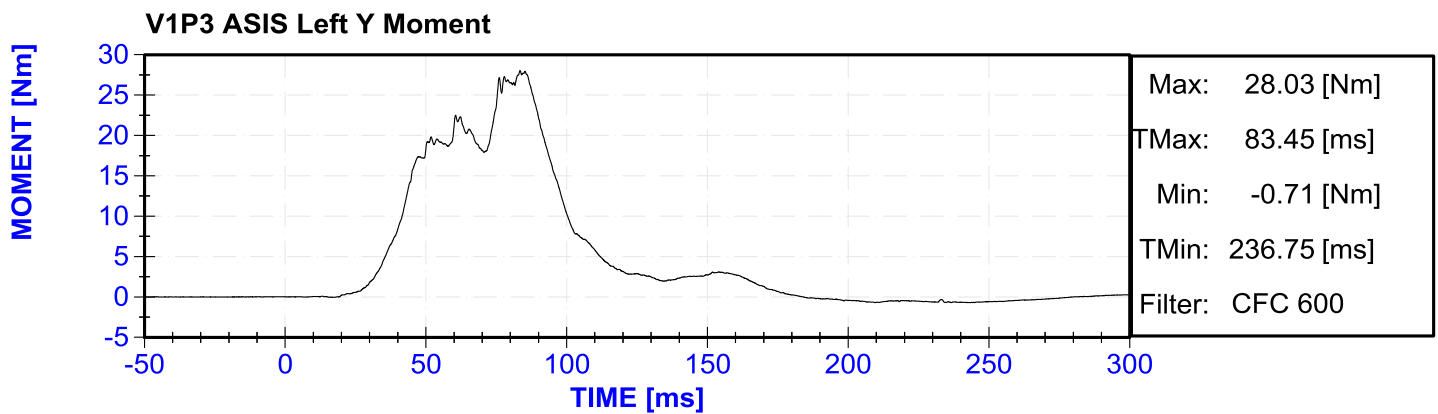
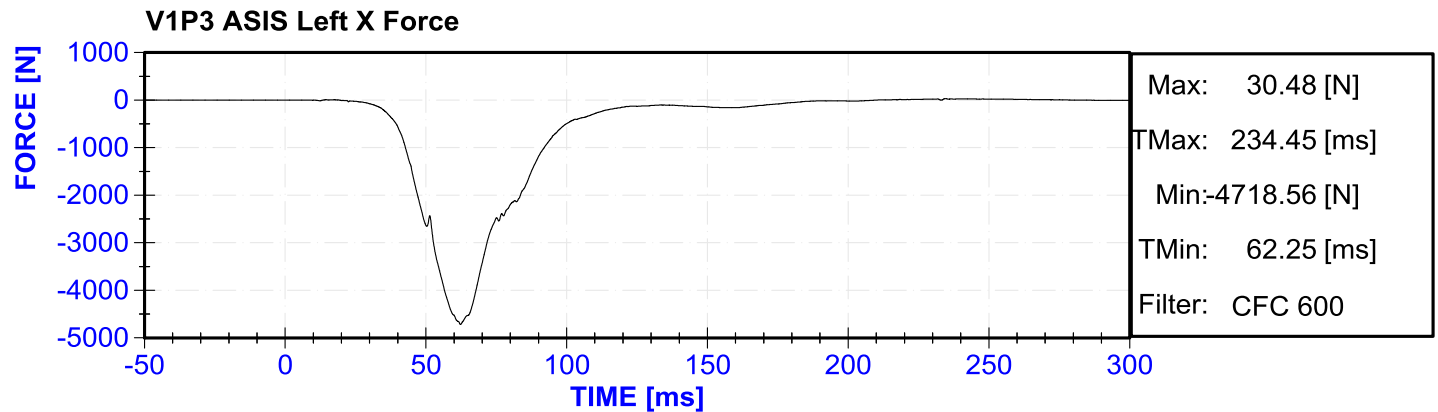
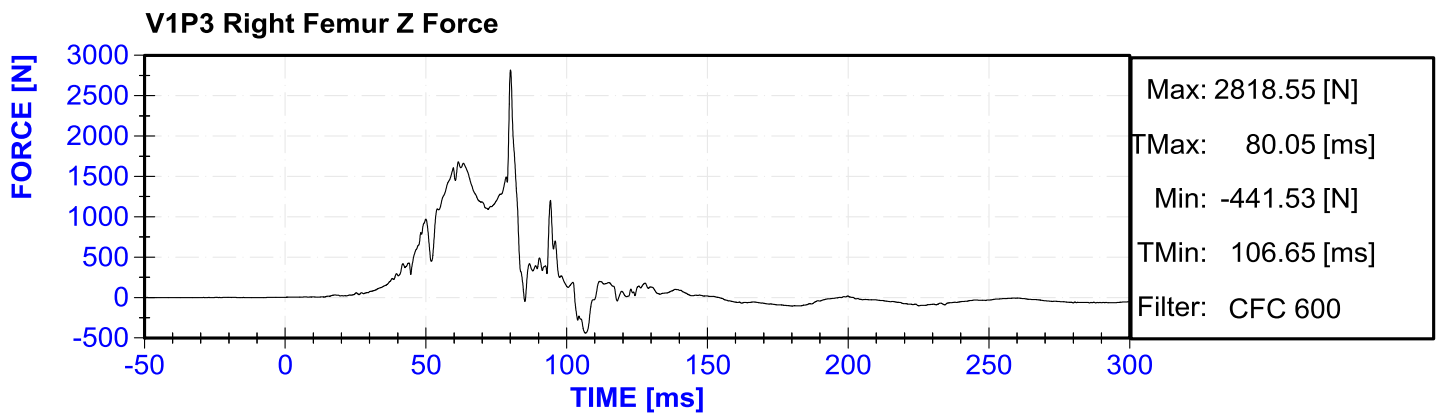
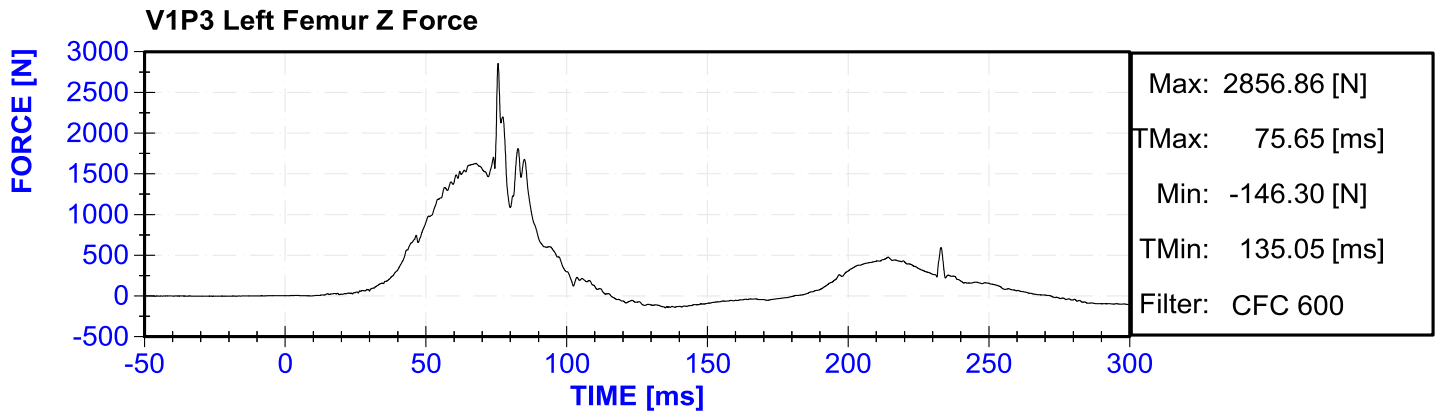


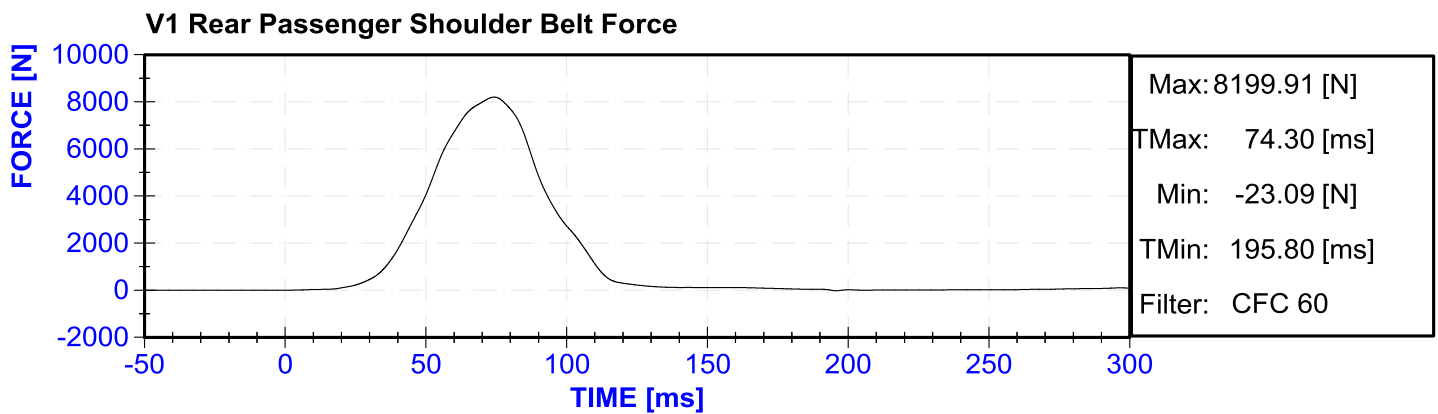
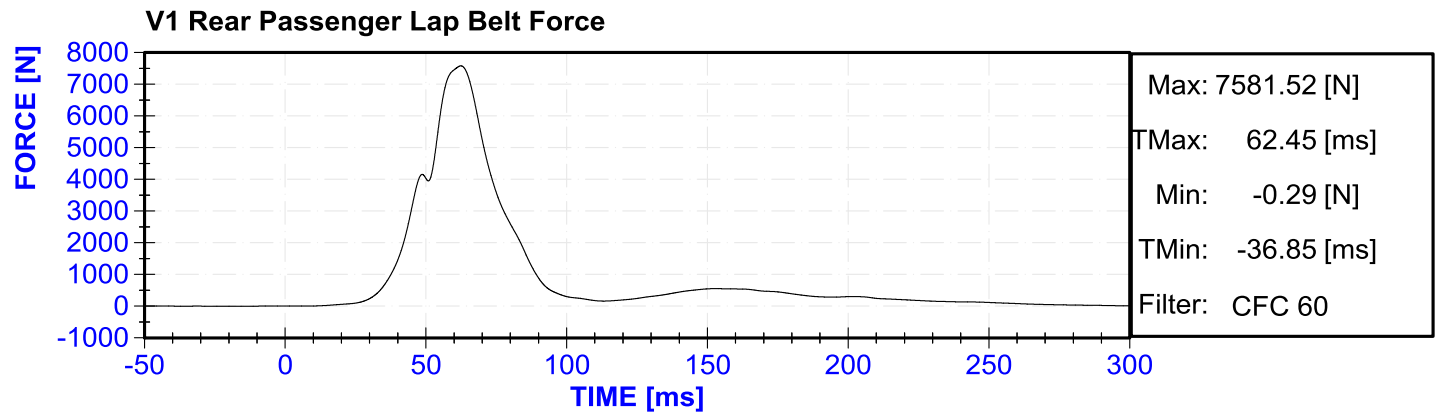
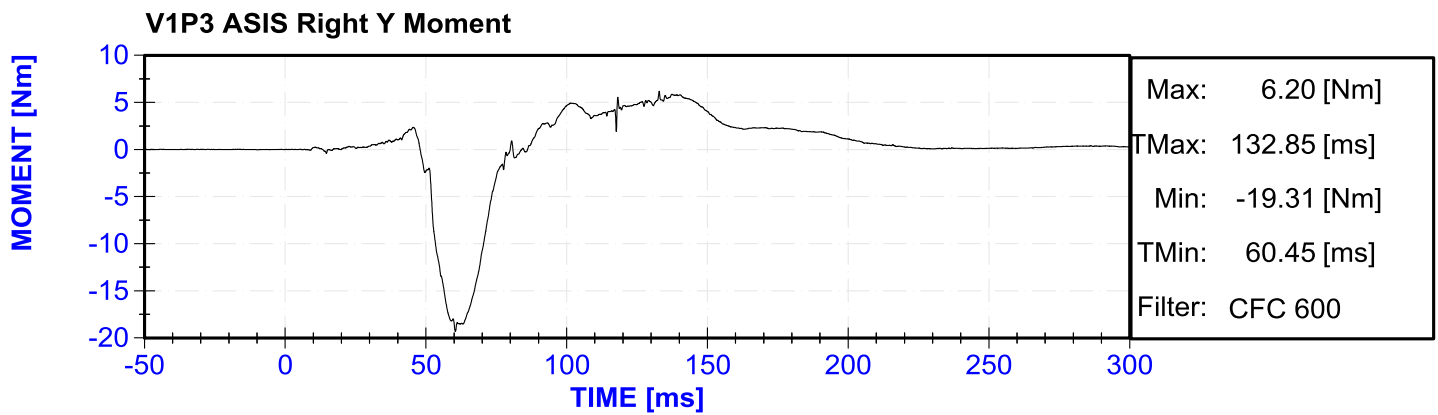
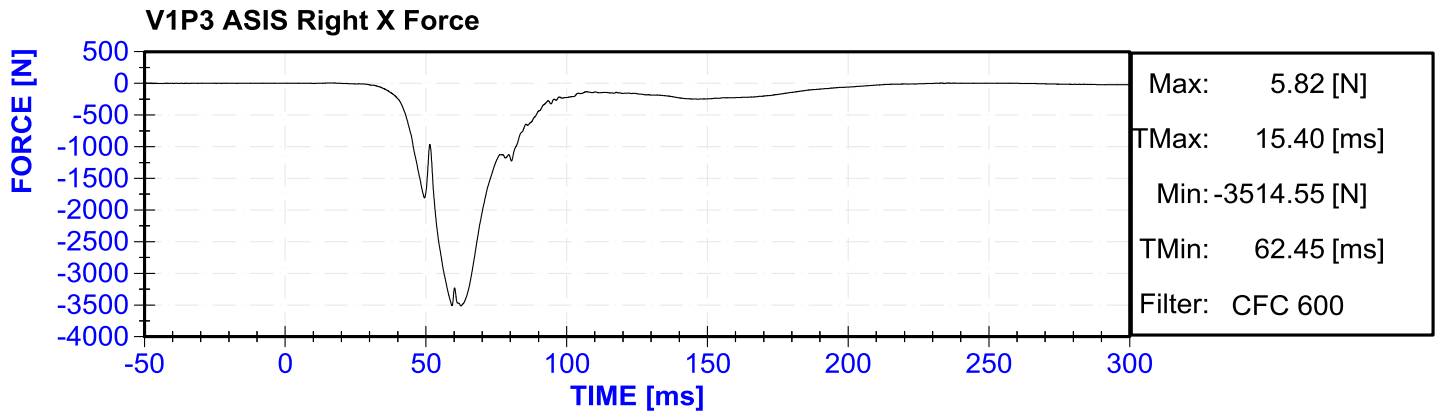


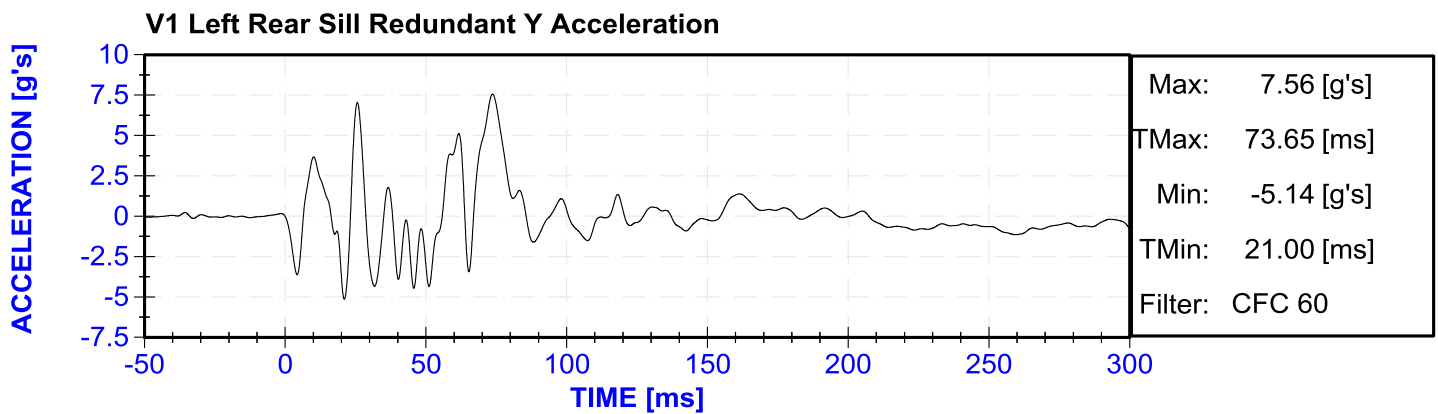
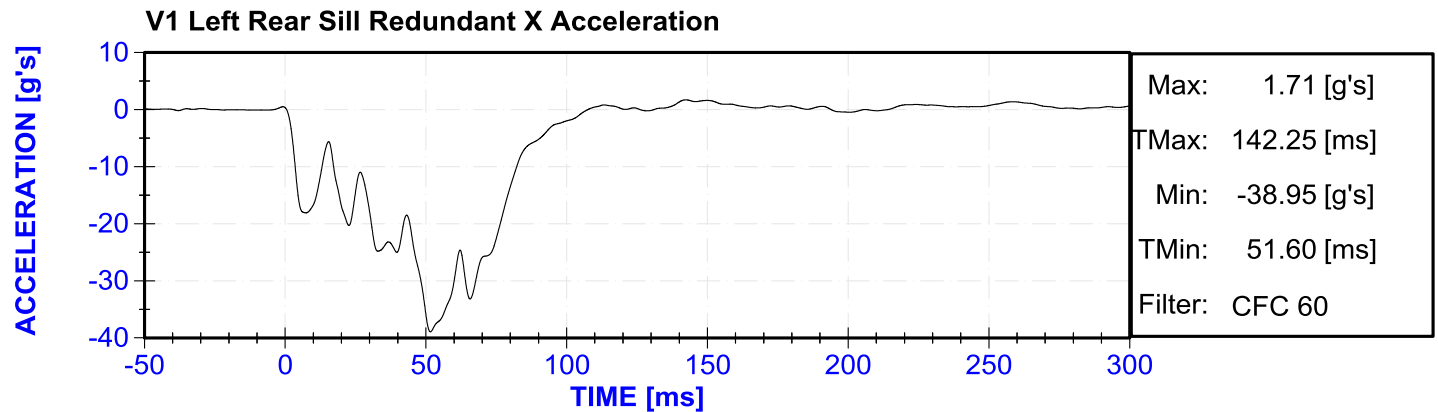
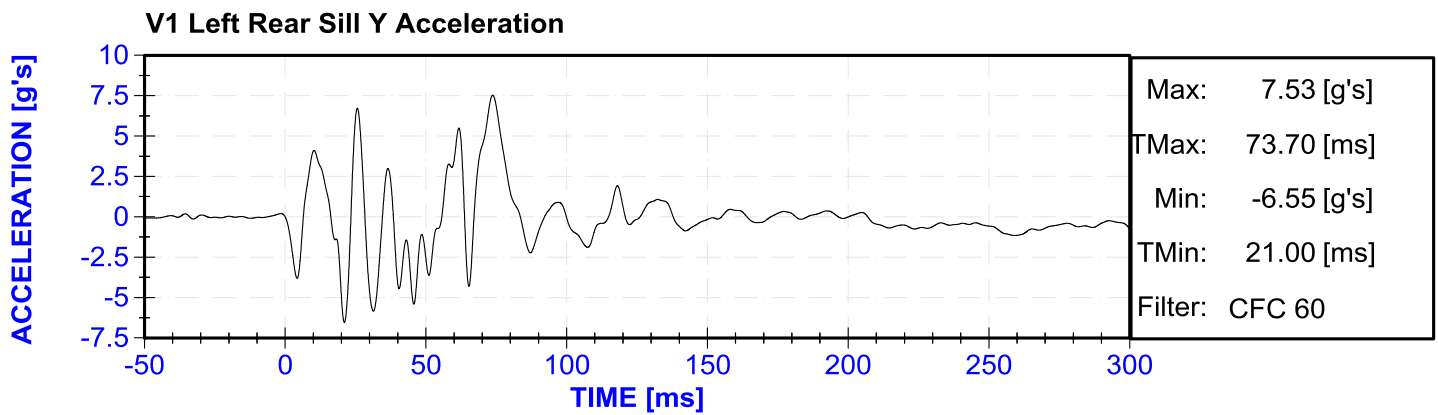
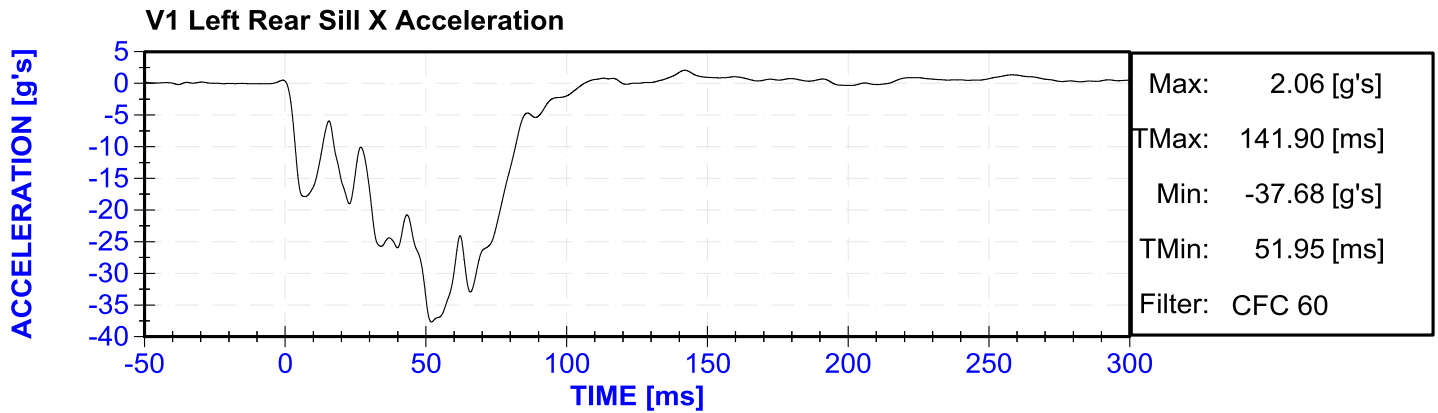


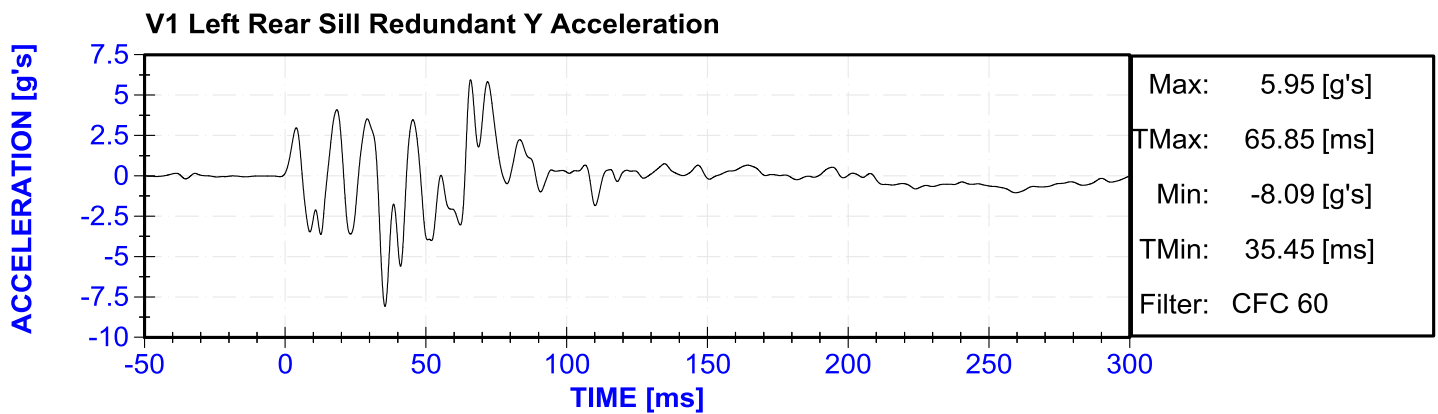
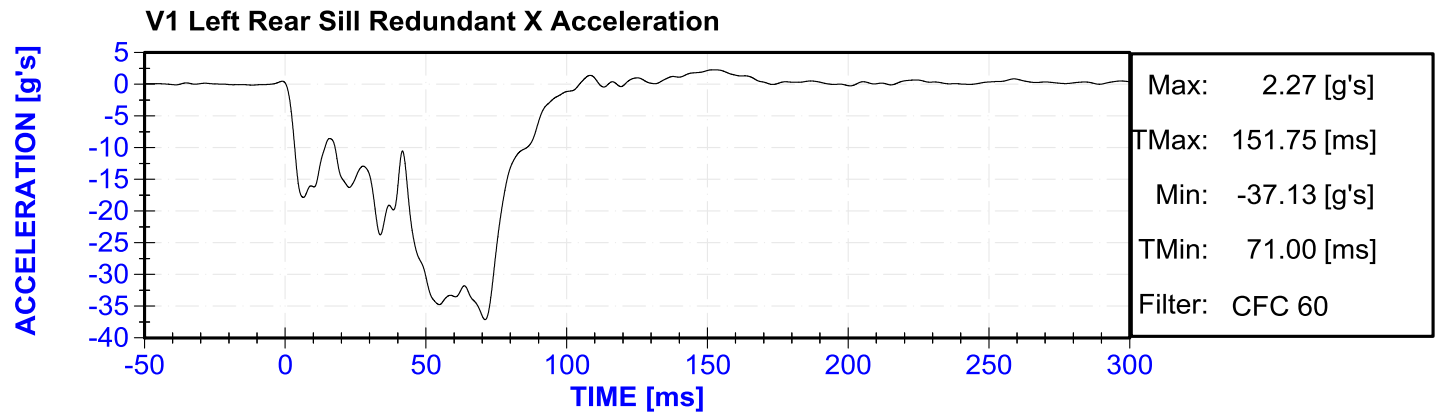
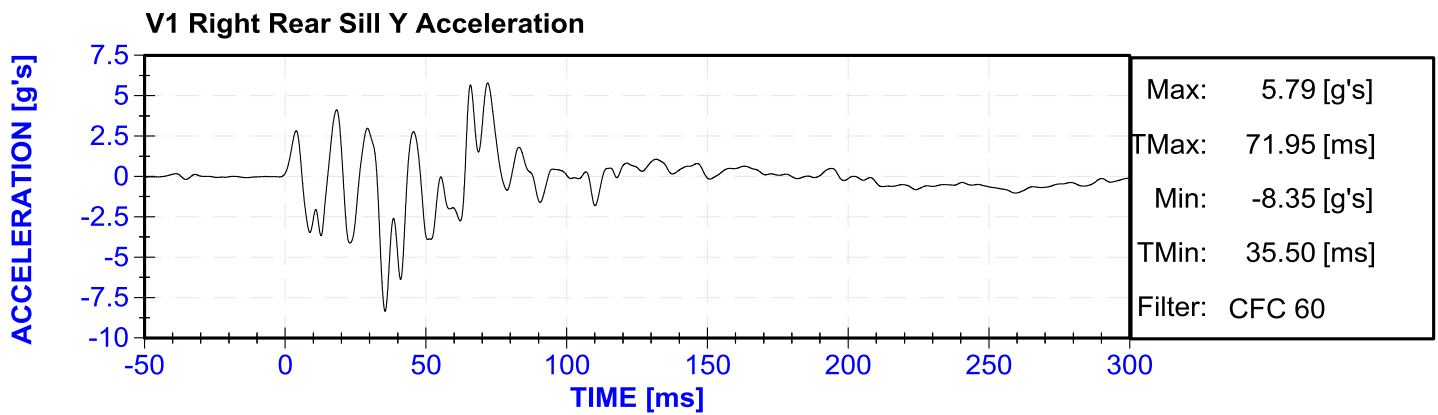
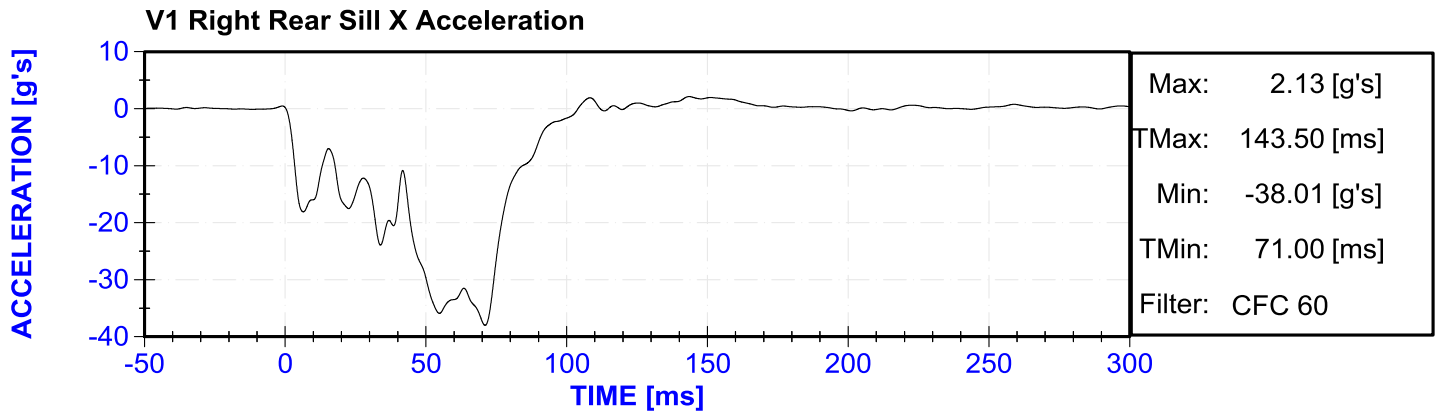


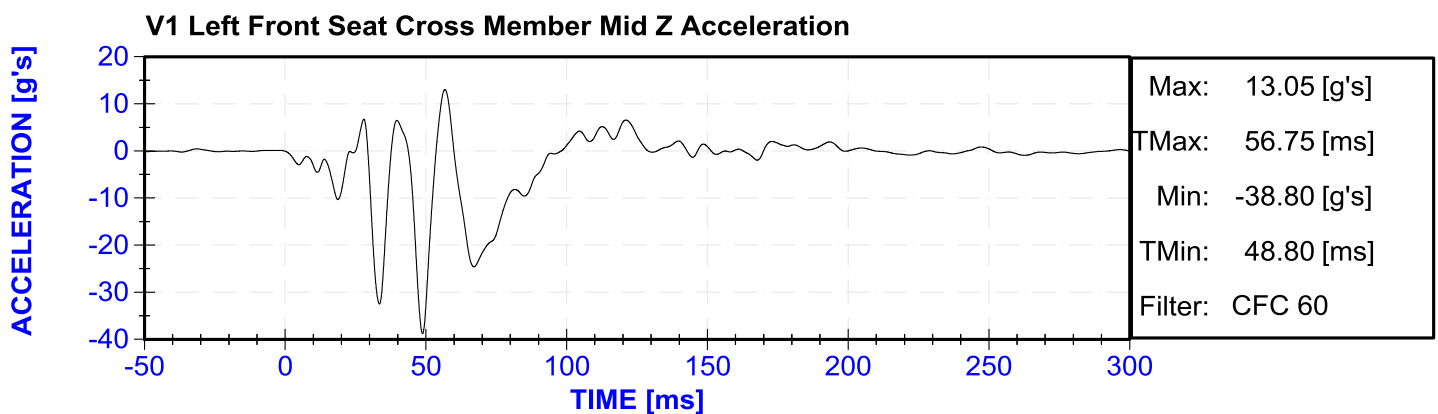
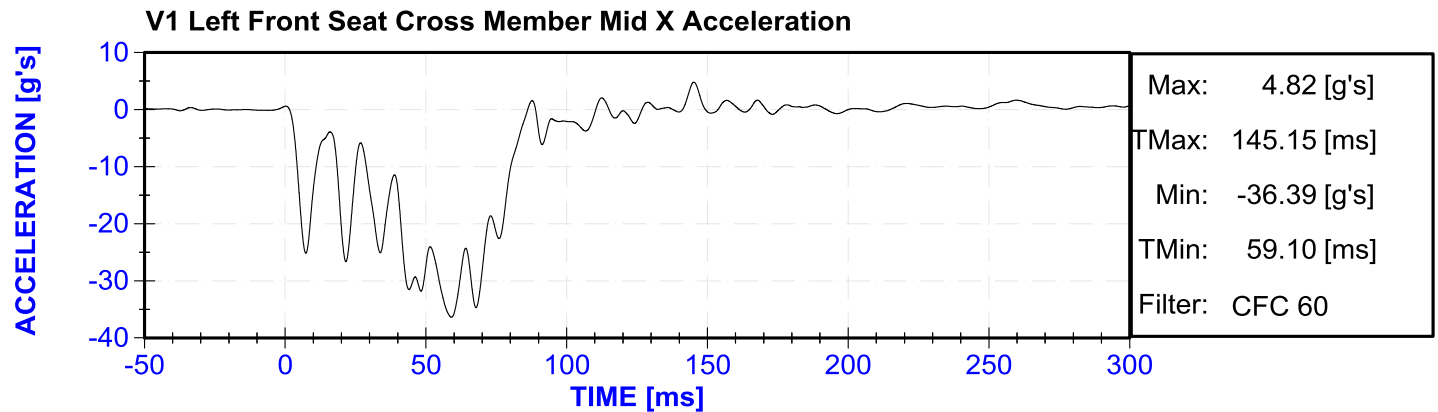
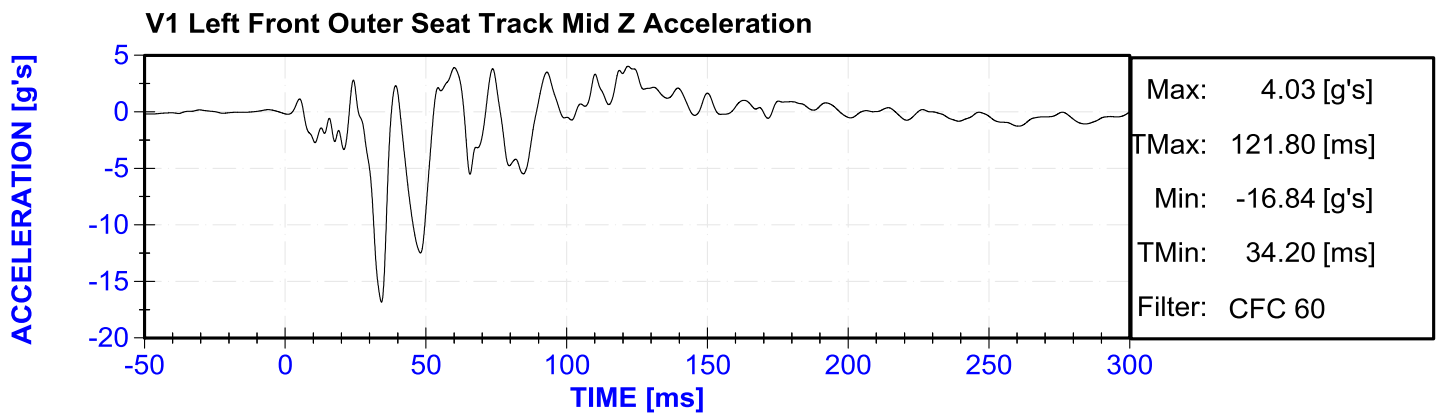
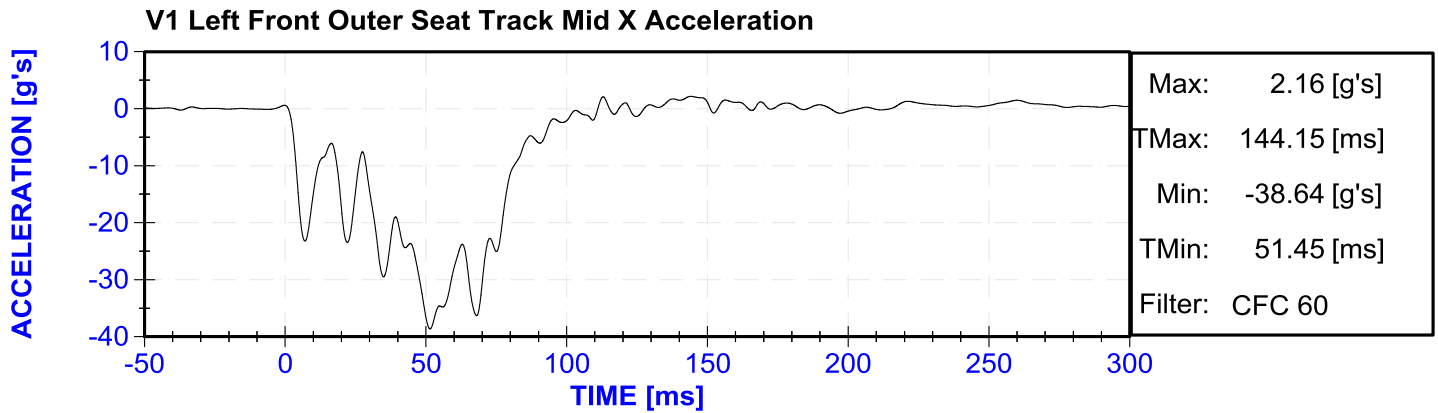




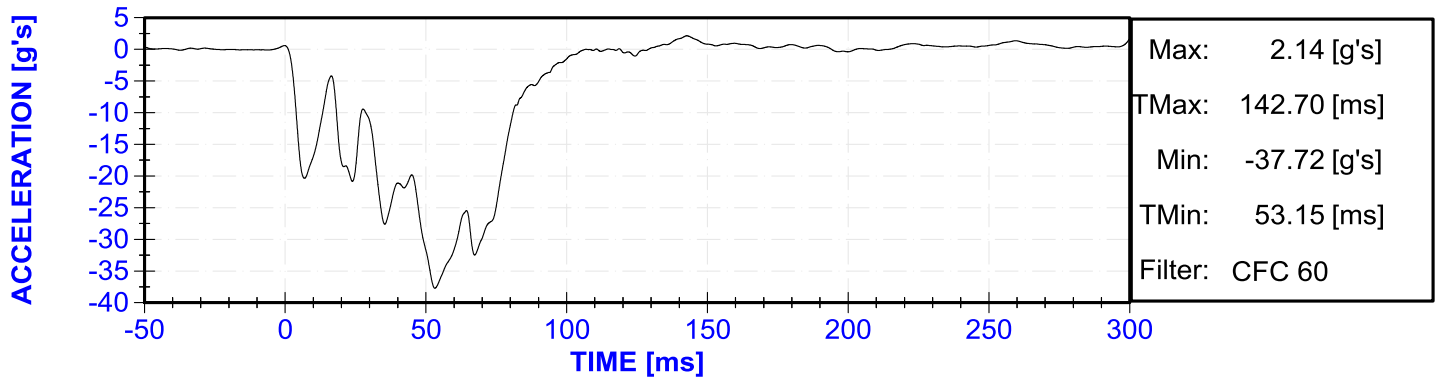




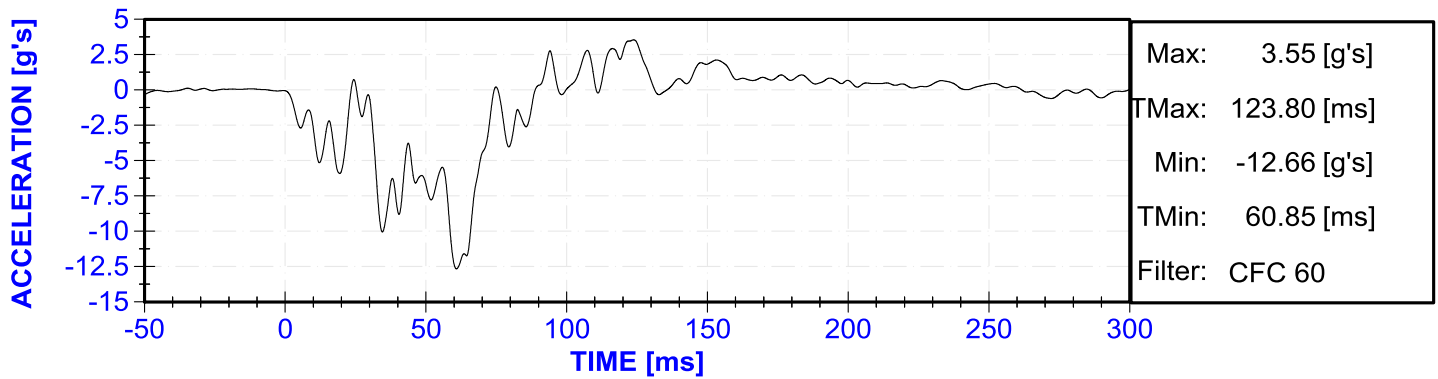




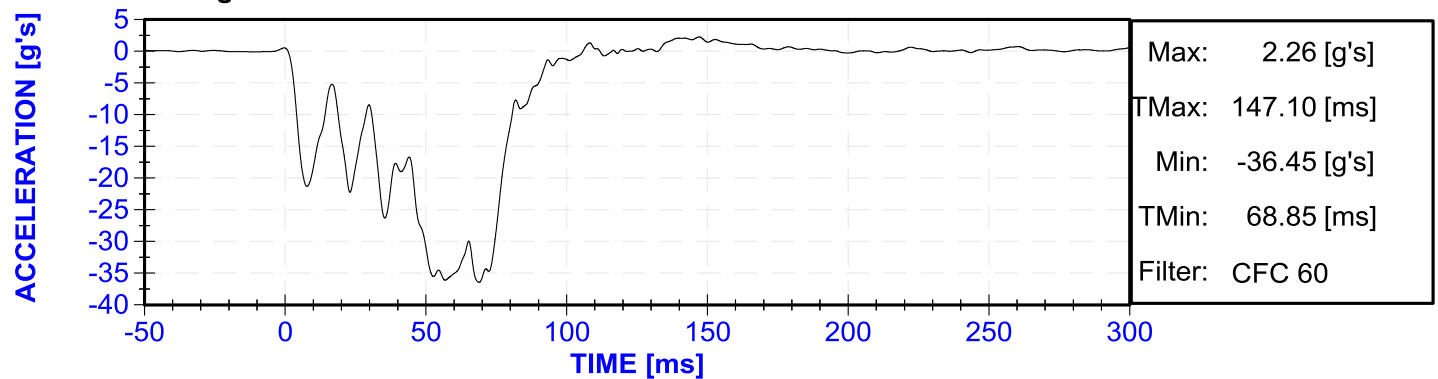
V1 Left Rear Seat Cross Member X Acceleration



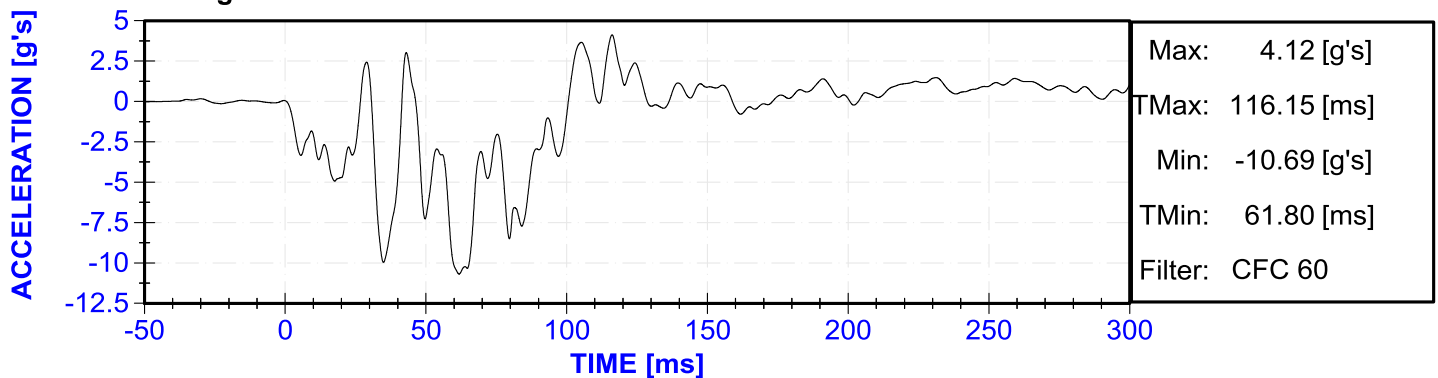
V1 Left Rear Seat Cross Member Z Acceleration

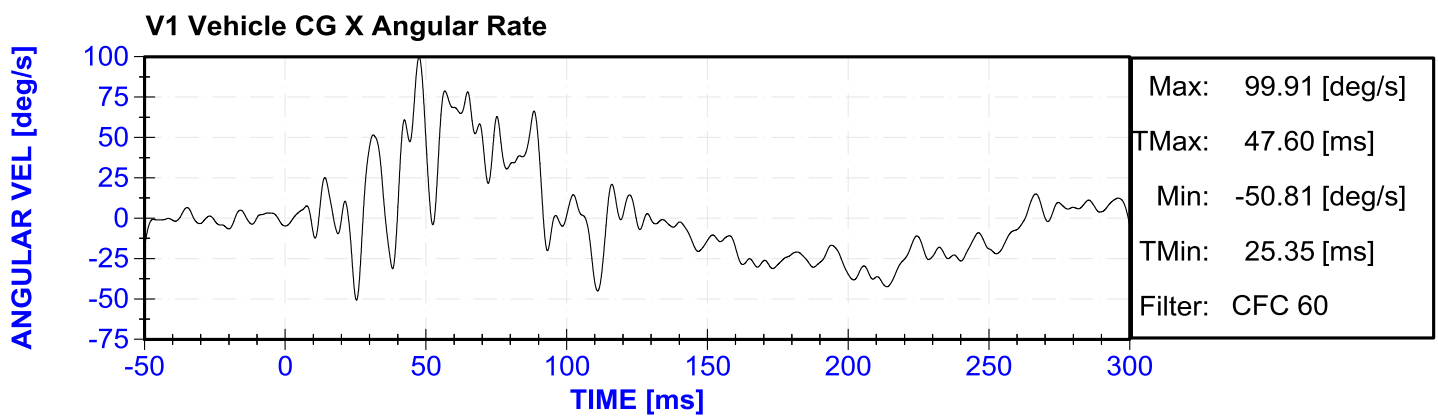
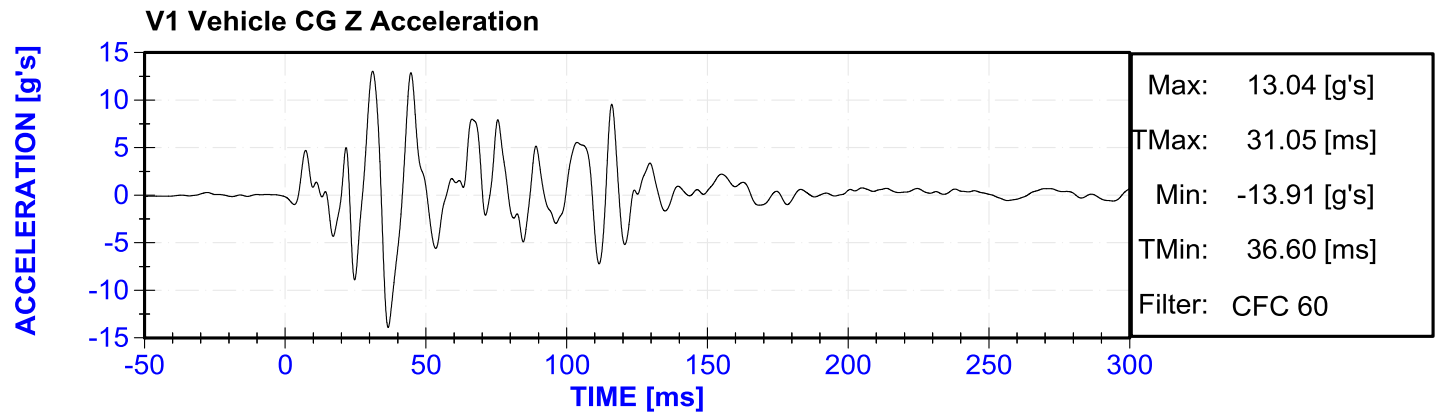
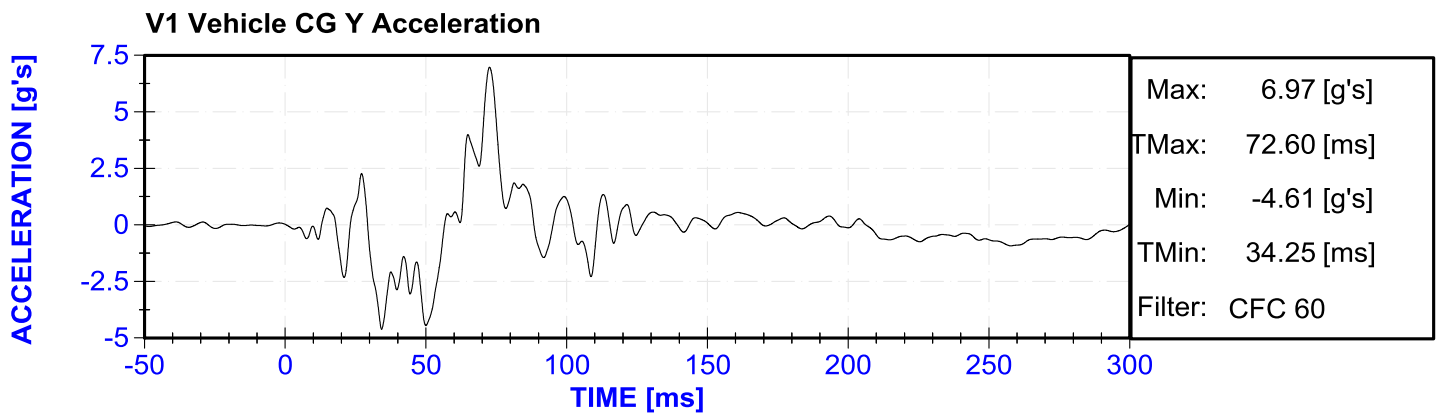
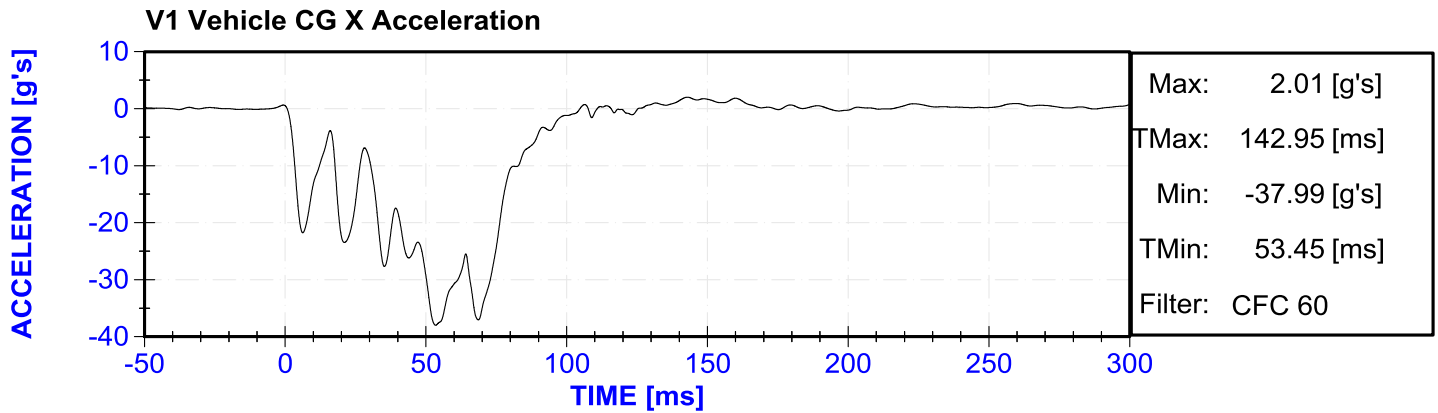


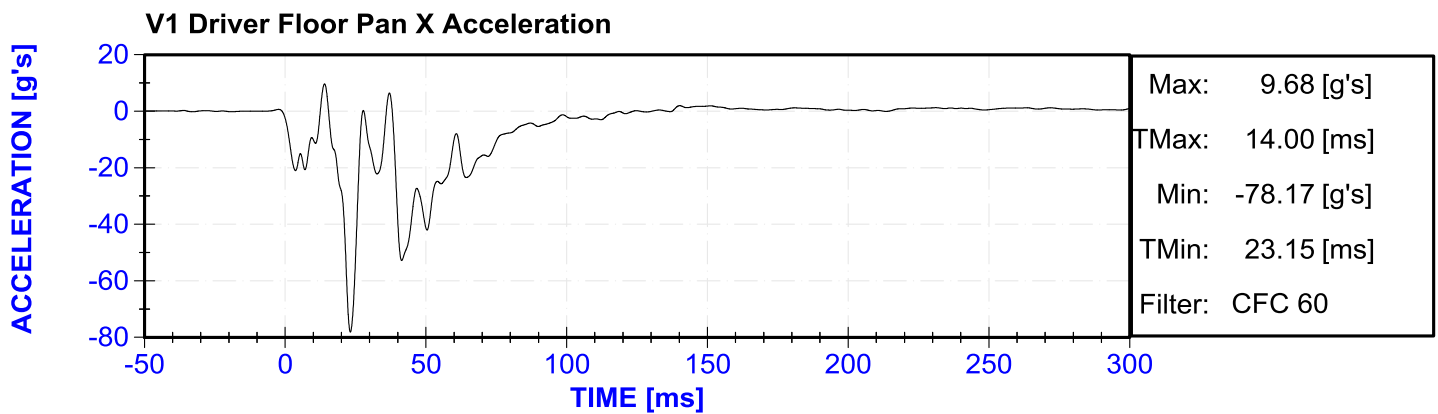
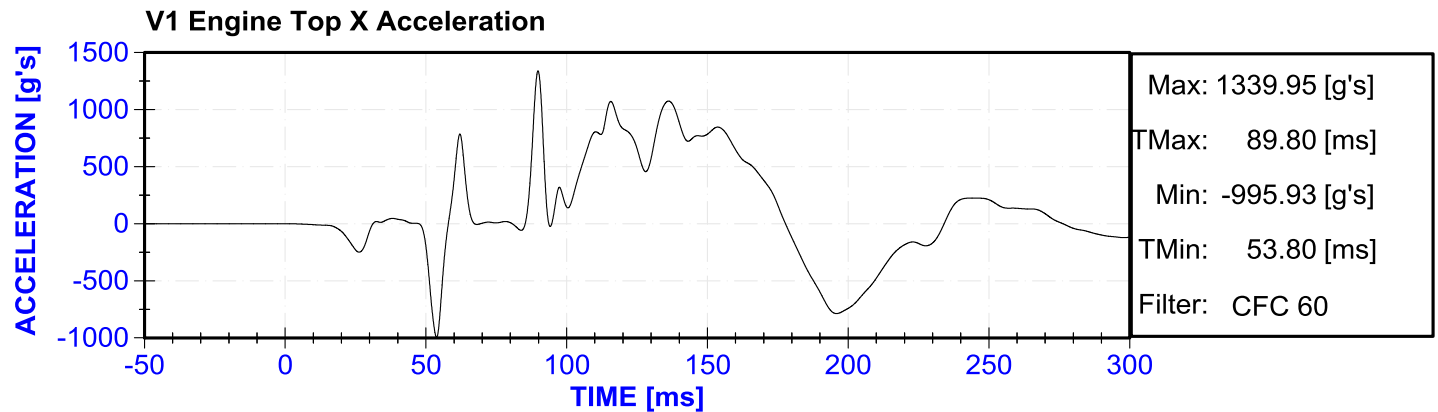
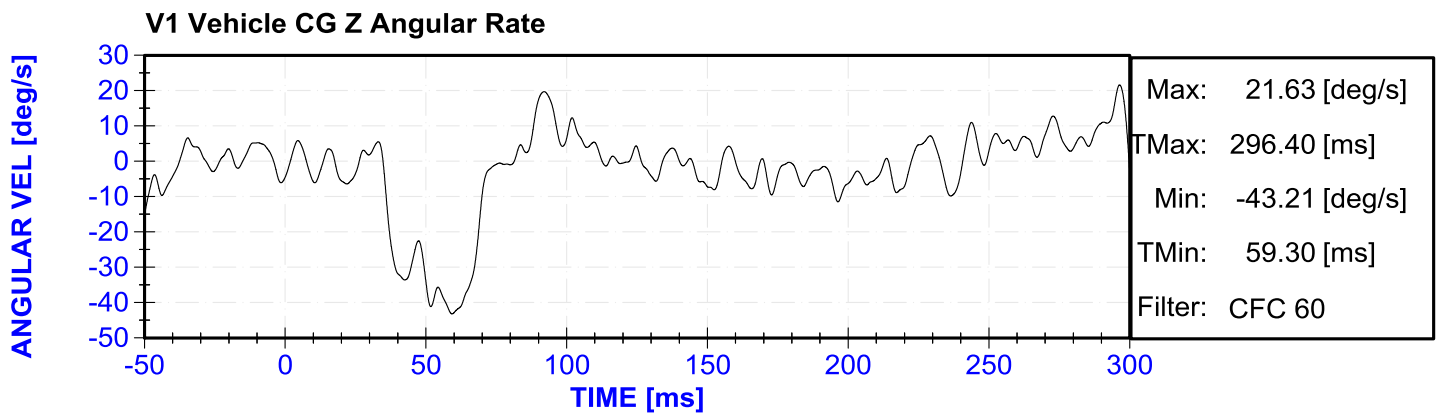
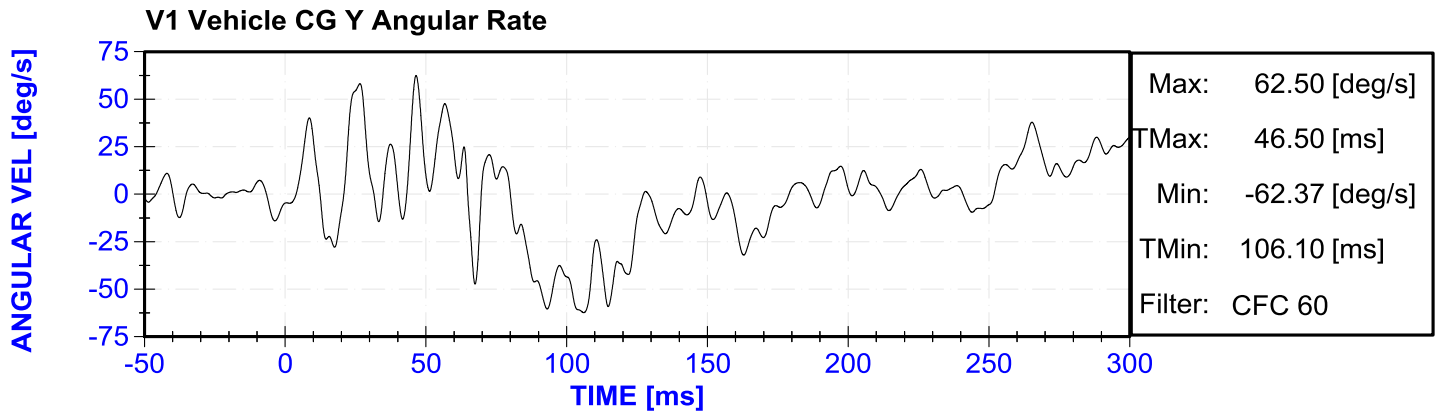
V1 Right Rear Seat Cross Member X Acceleration



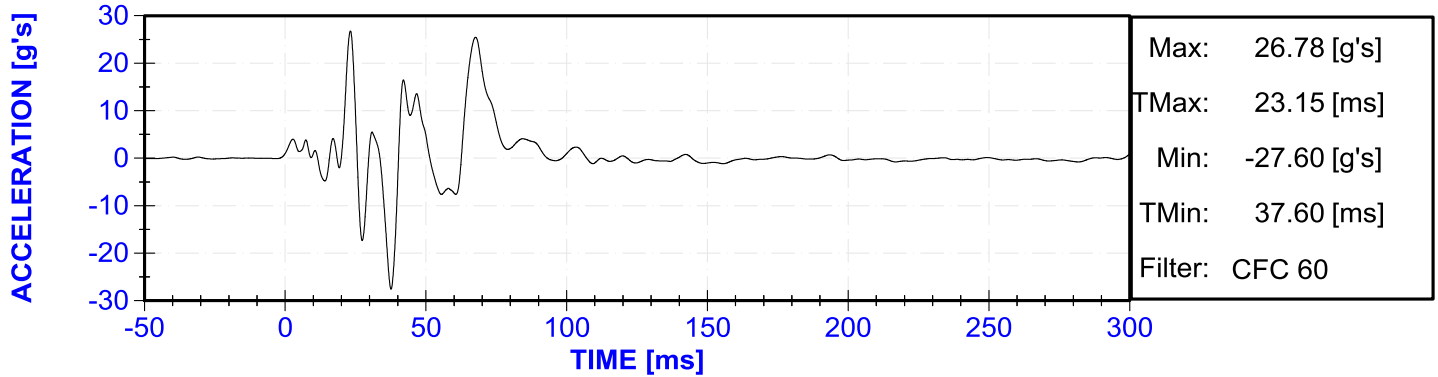
V1 Right Rear Seat Cross Member Z Acceleration



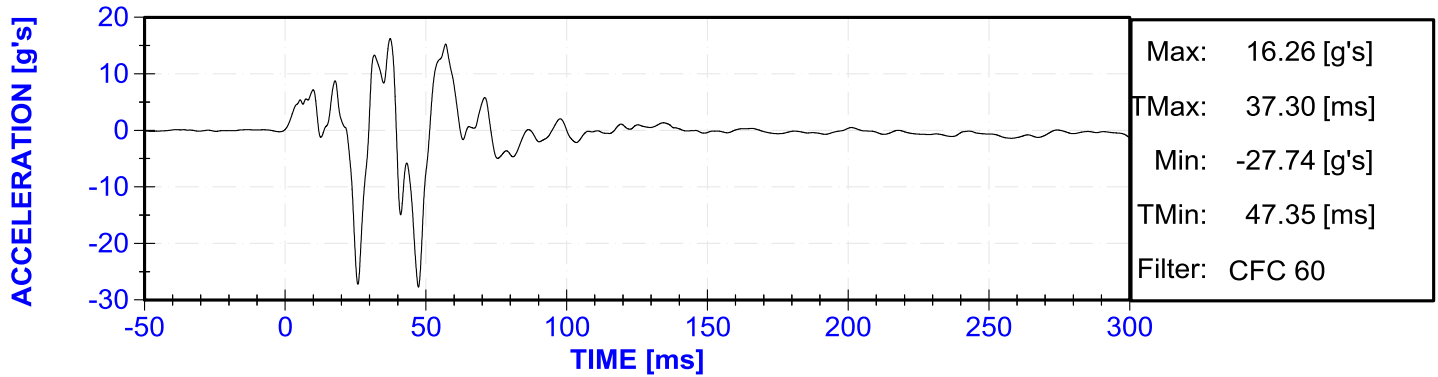




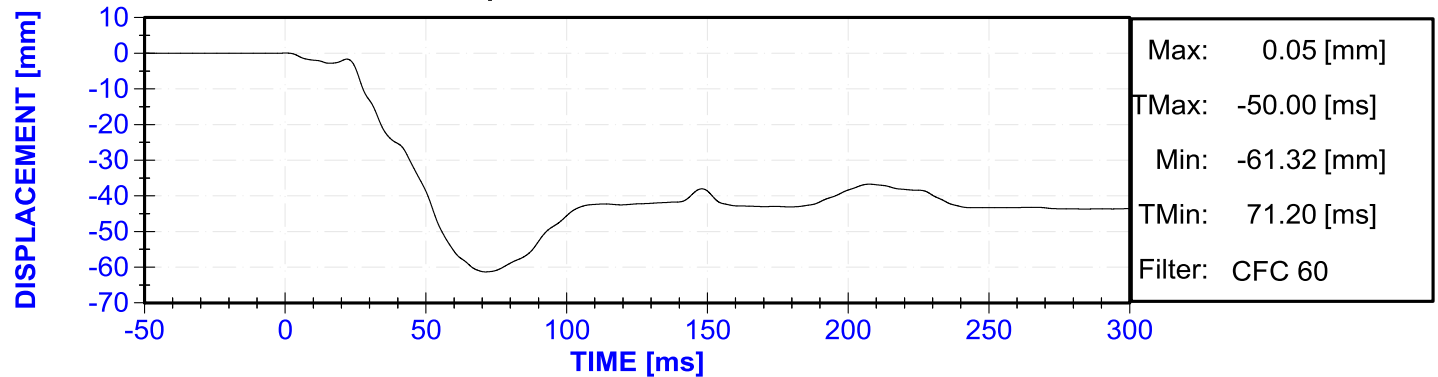
V1 Driver Floor Pan Y Acceleration



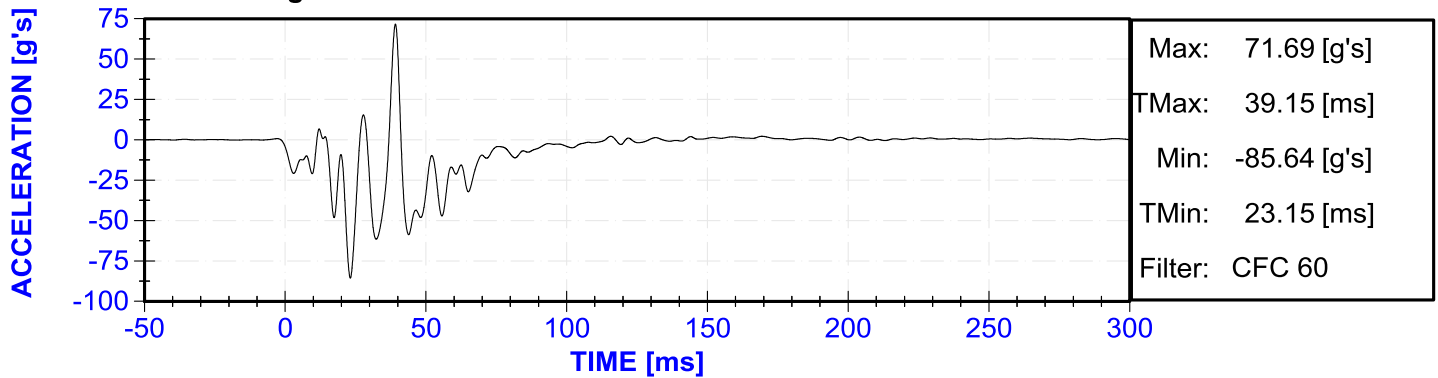
V1 Driver Floor Pan Z Acceleration



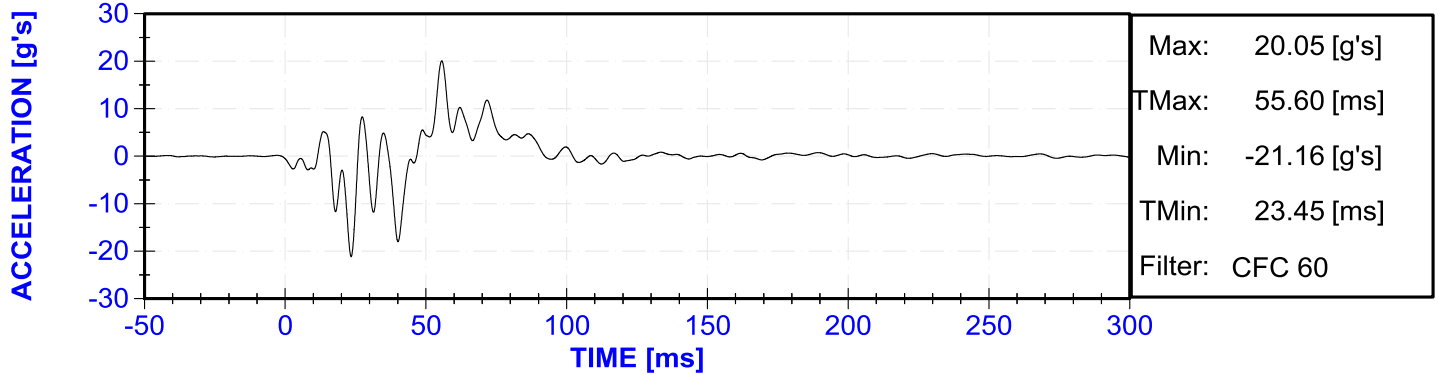
V1 Driver Floor Pan X Displacement



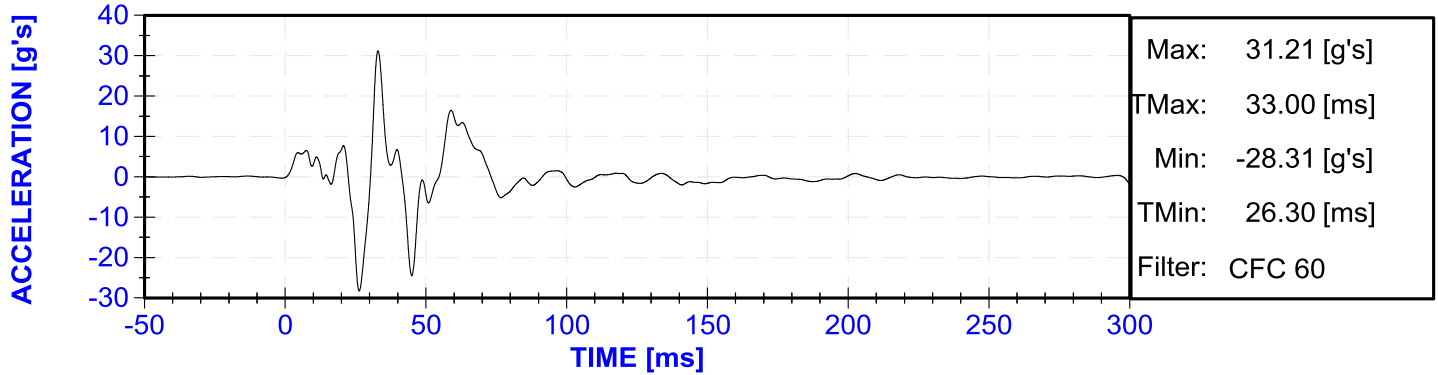
V1 Passenger Floor Pan X Acceleration



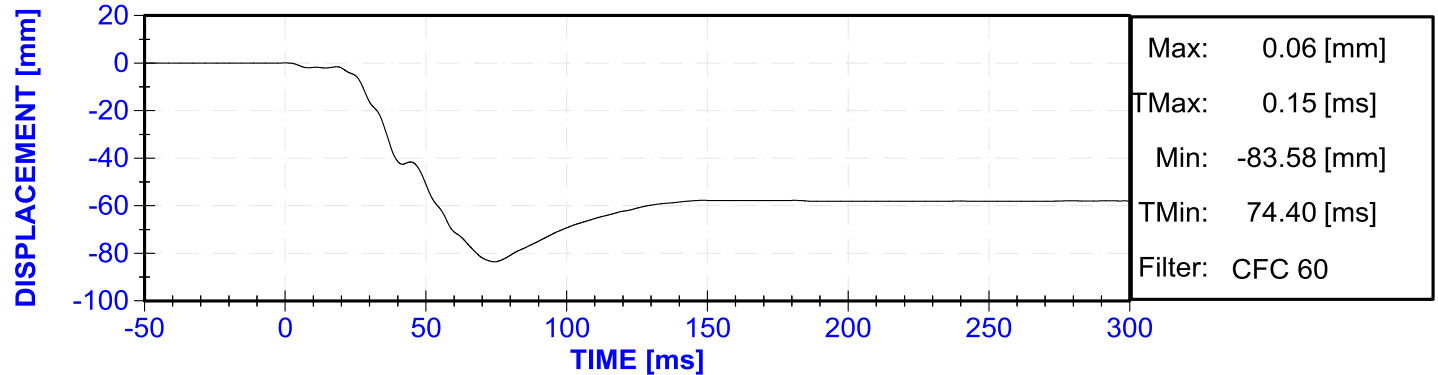
V1 Passenger Floor Pan Y Acceleration



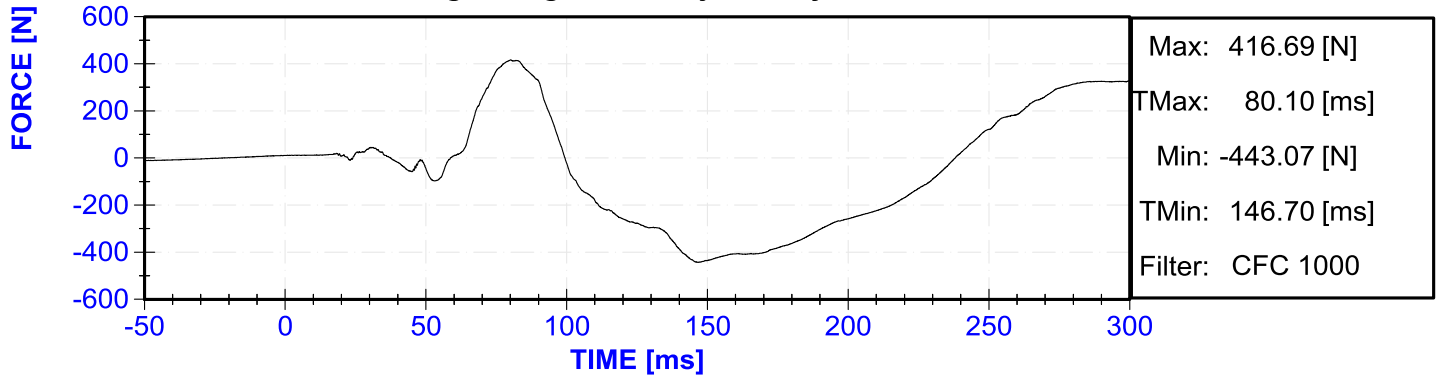
V1 Passenger Floor Pan Z Acceleration

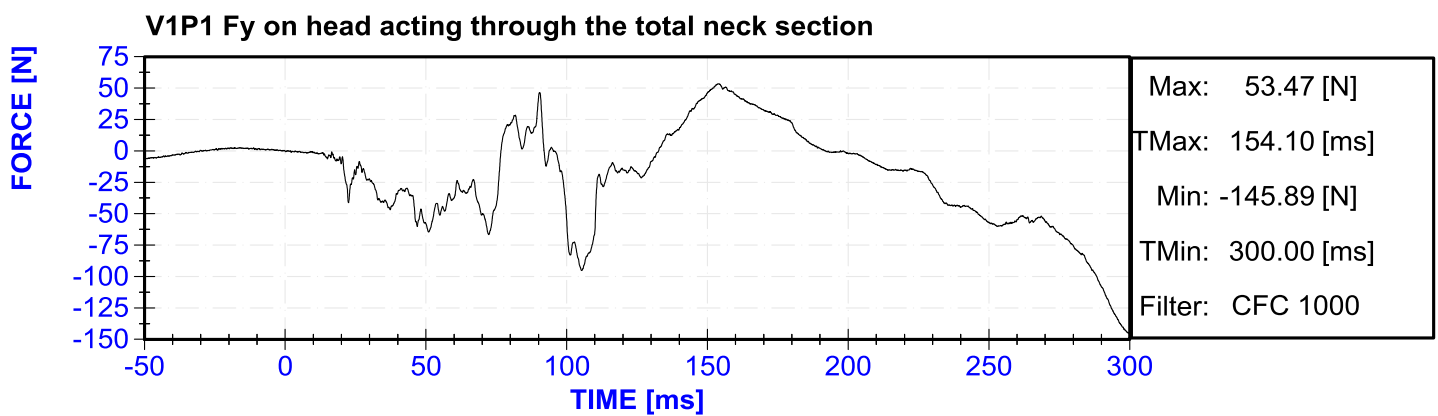
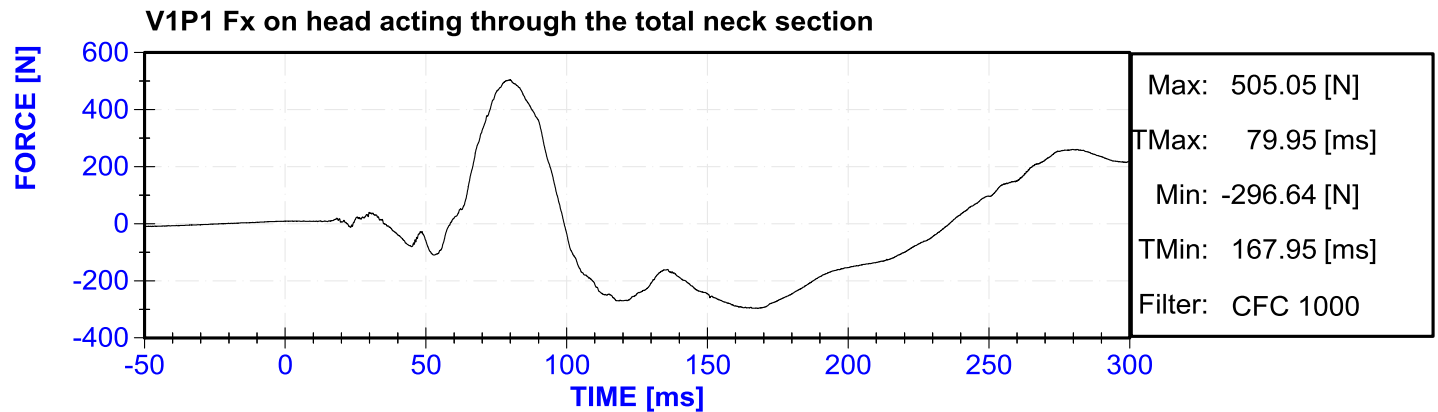
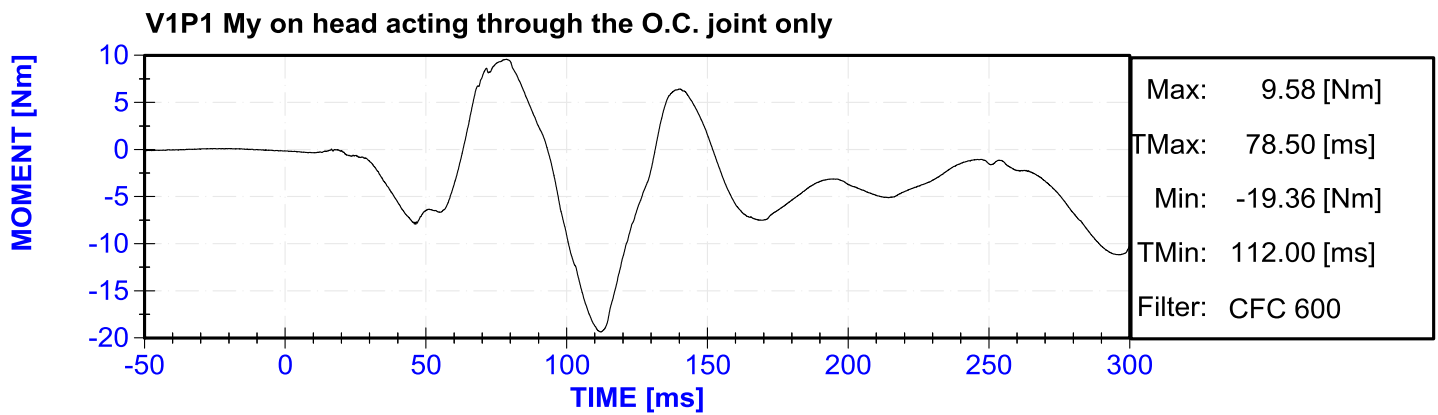
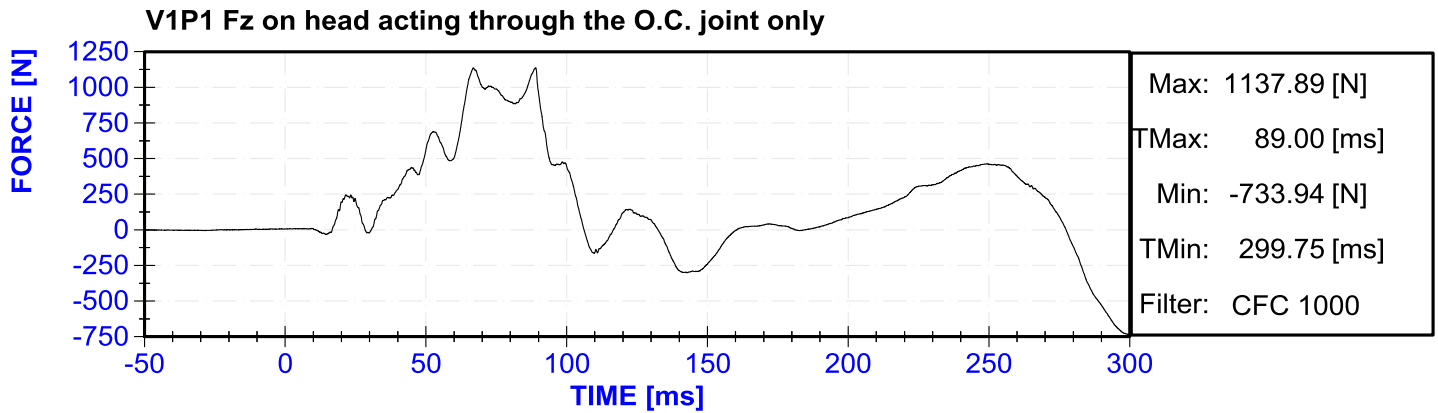


V1 Passenger Floor Pan X Displacement

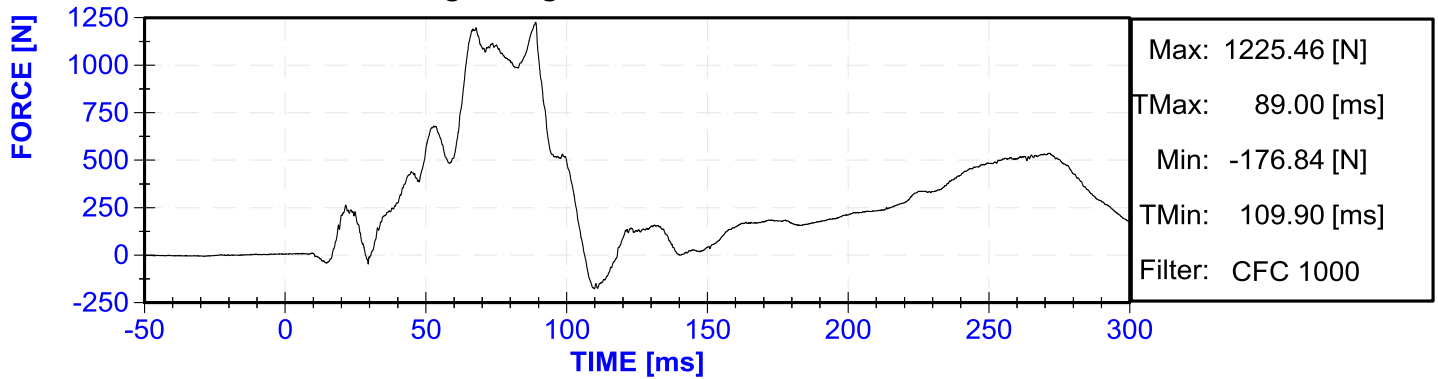


V1P1 Fx on head acting through the O.C. joint only

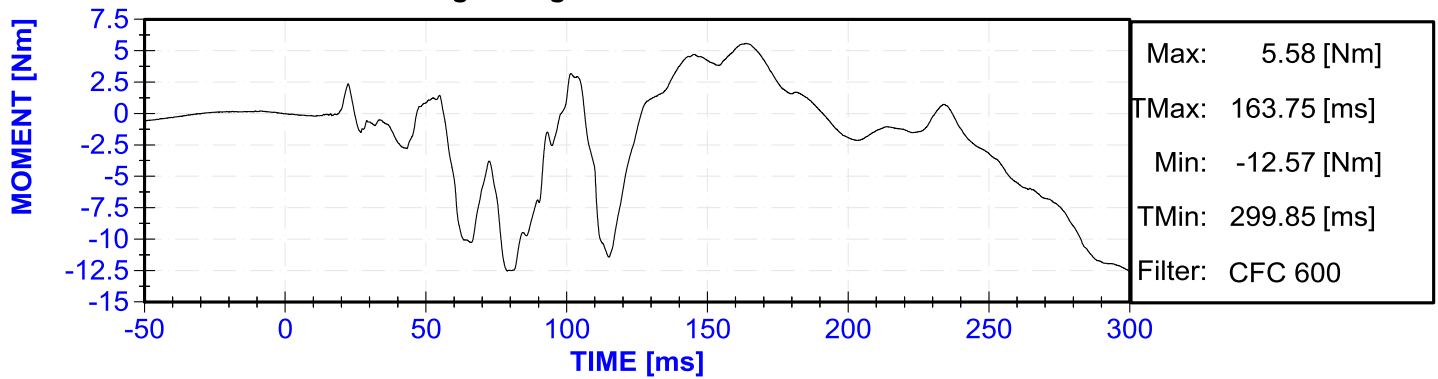




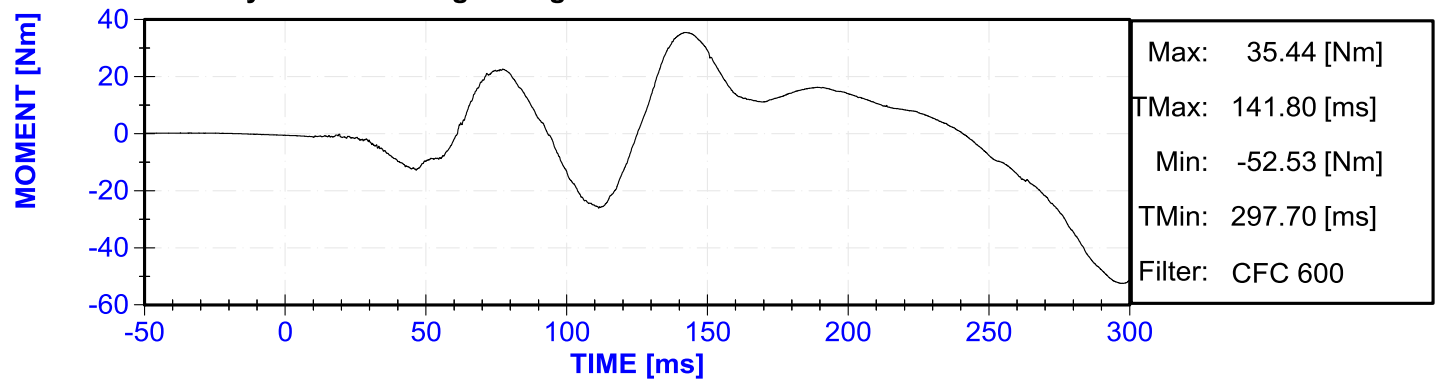
V1P1 Fz on head acting through the total neck section



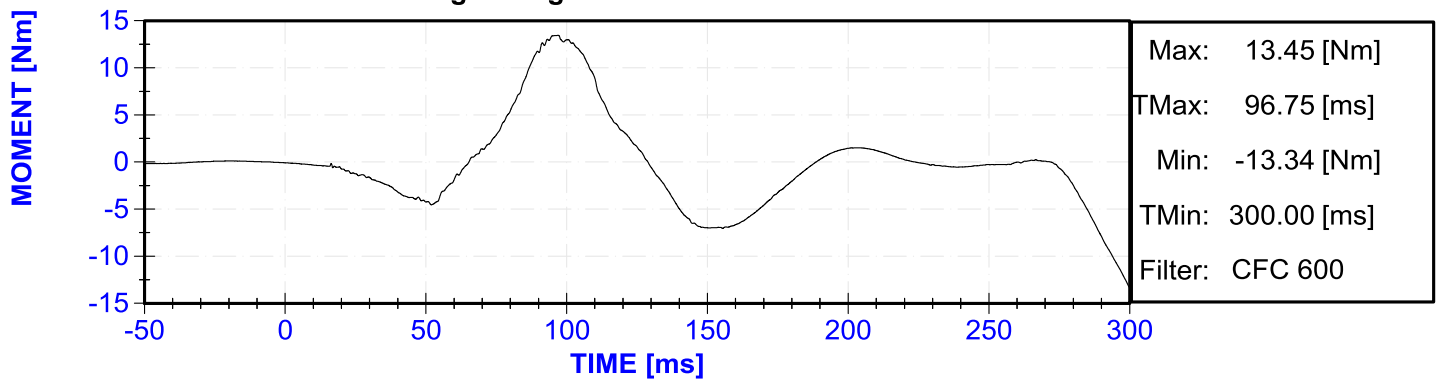
V1P1 Mx on head acting through the total neck section

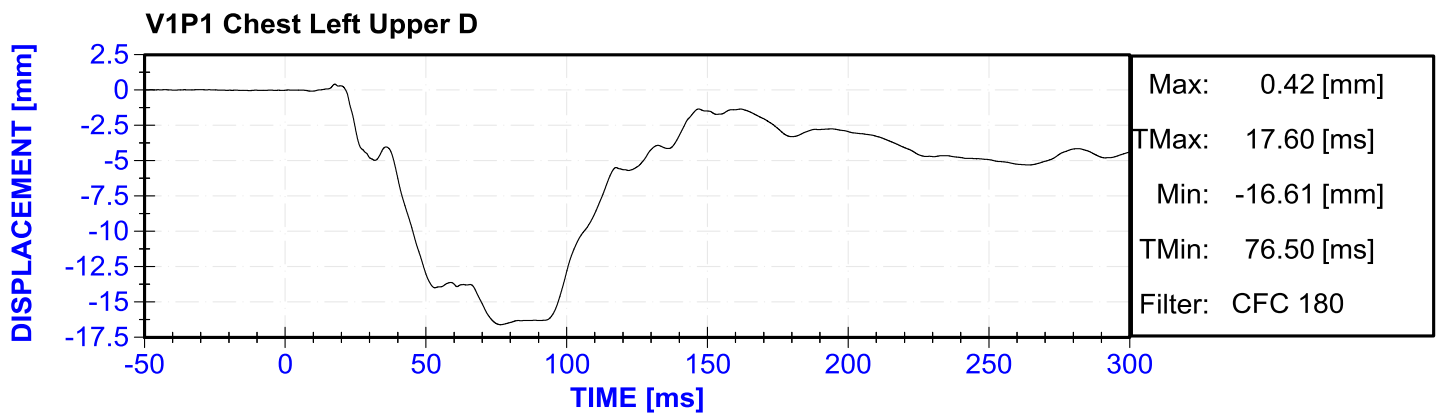
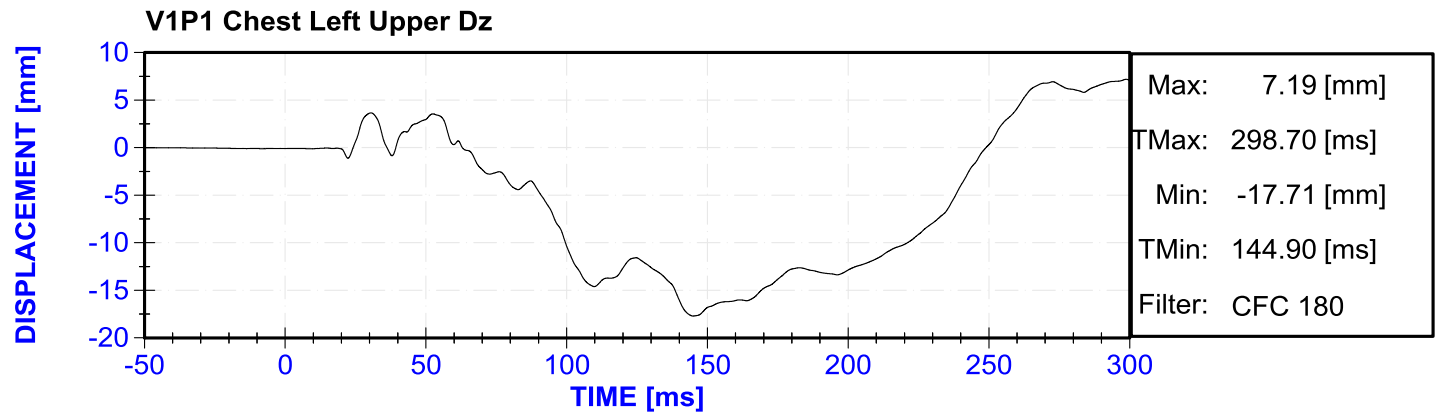
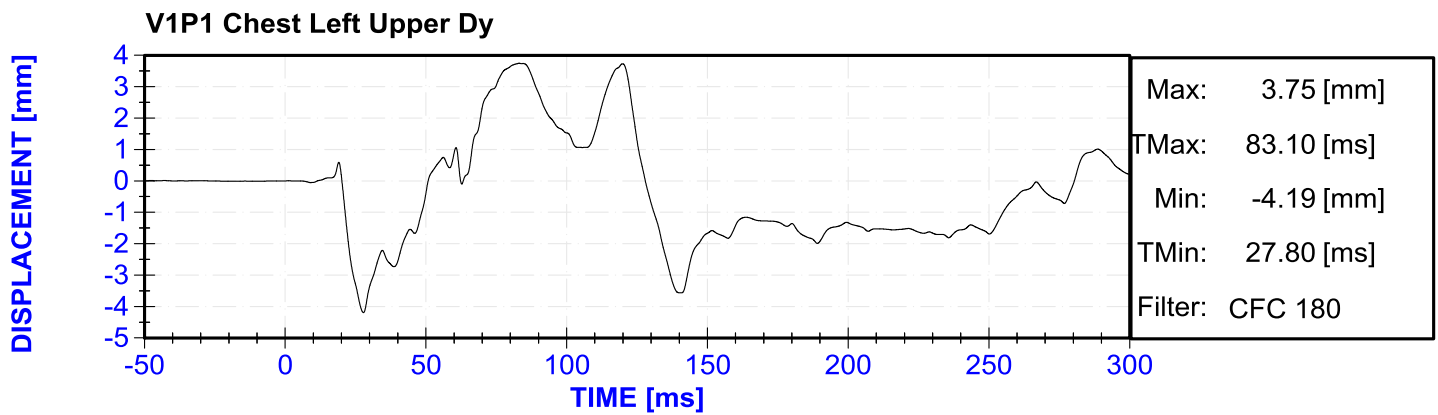
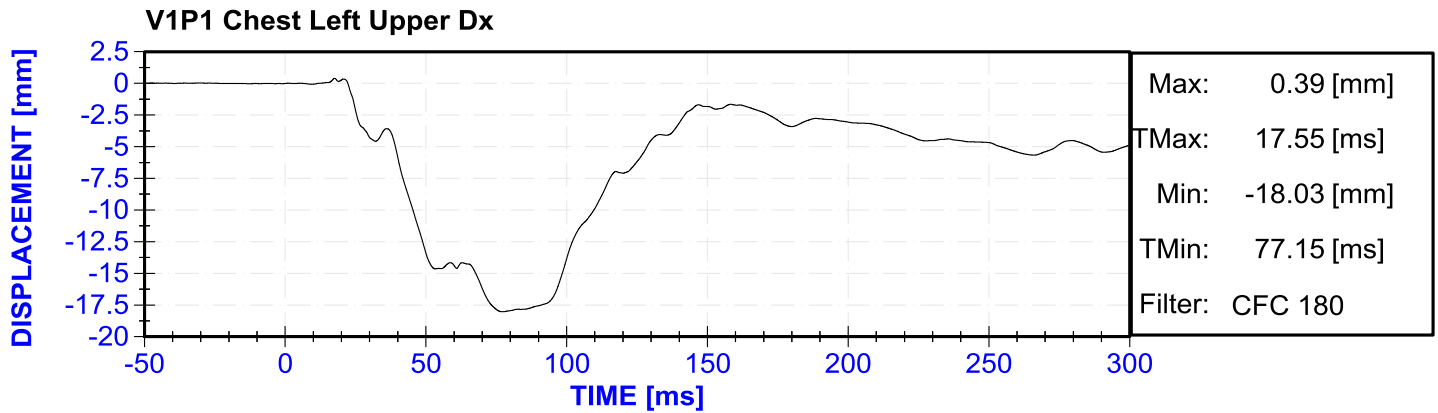


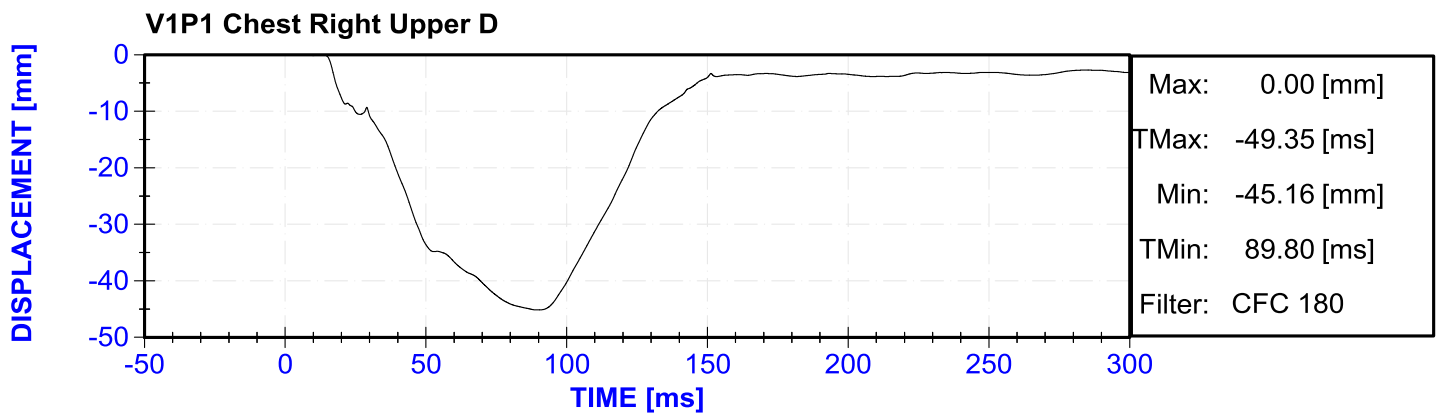
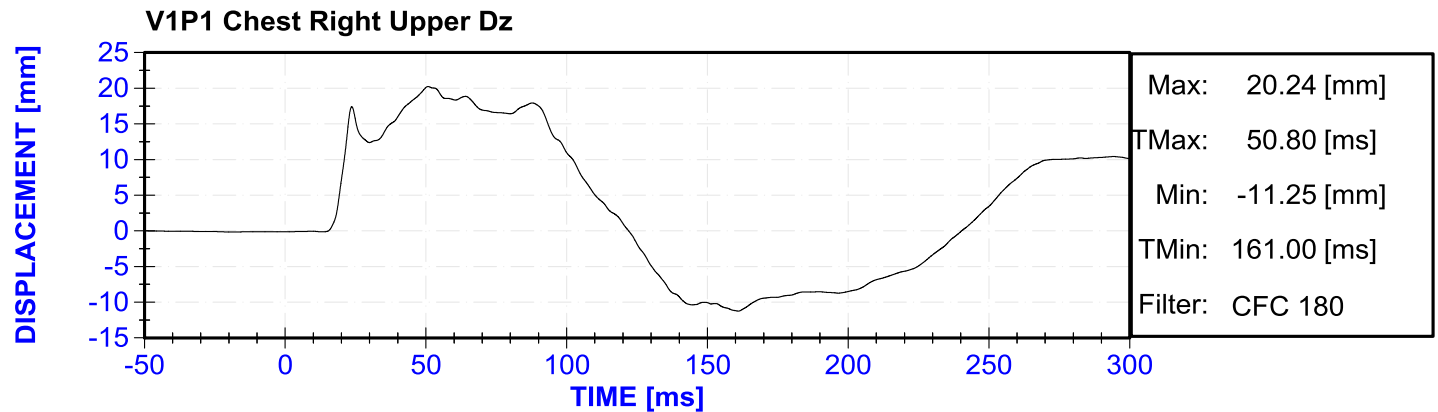
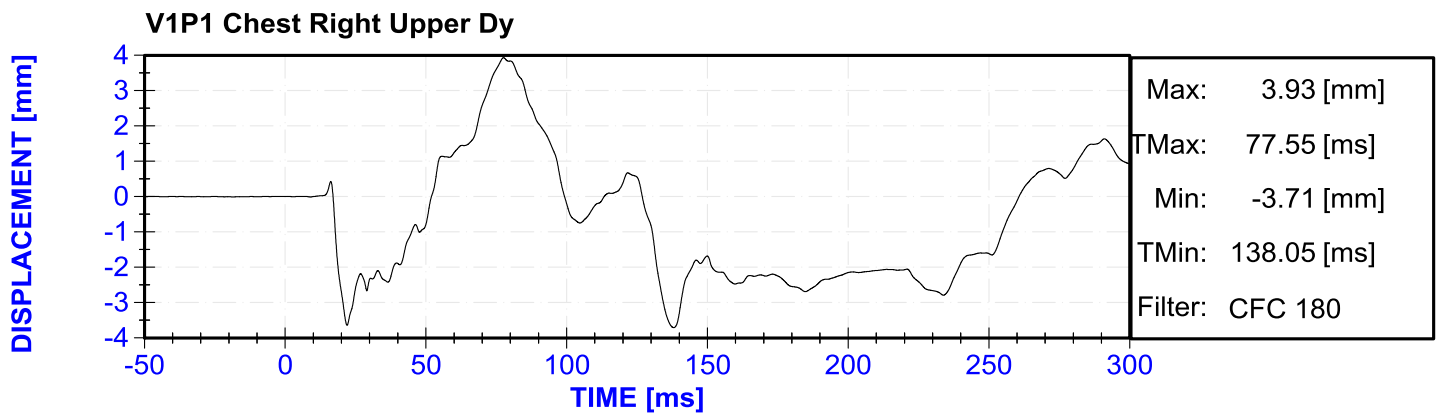
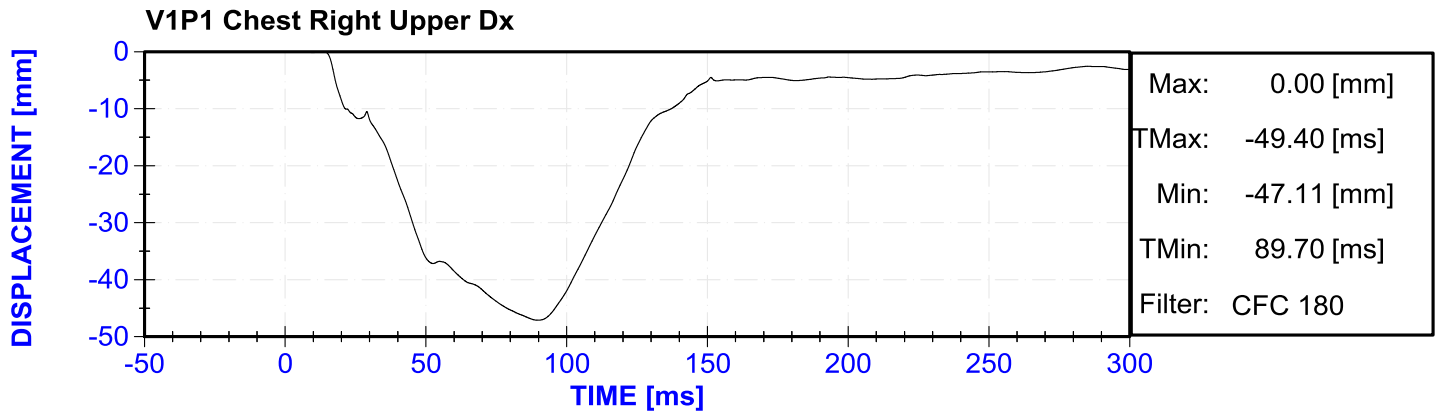
V1P1 My on head acting through the total neck section

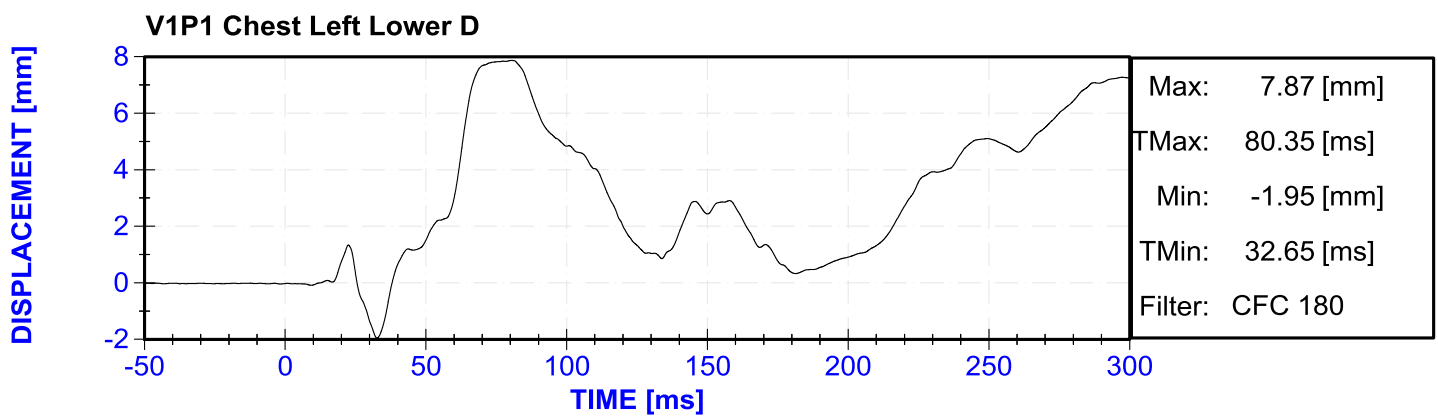
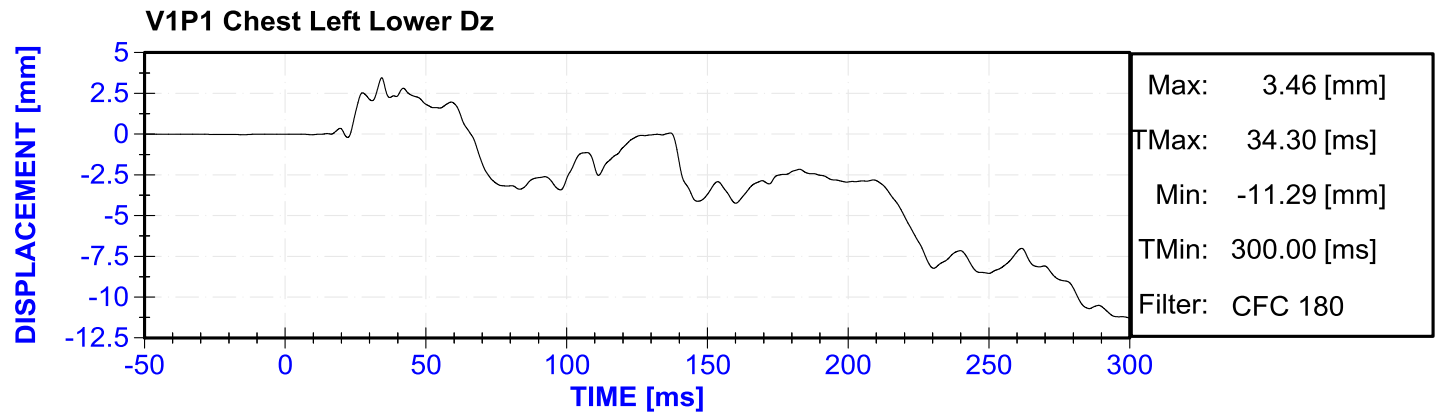
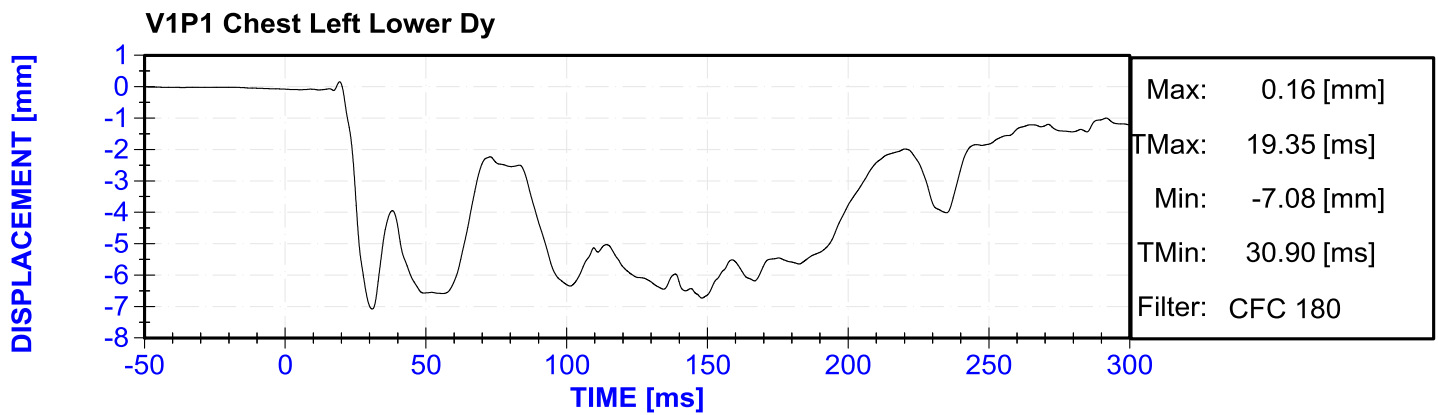
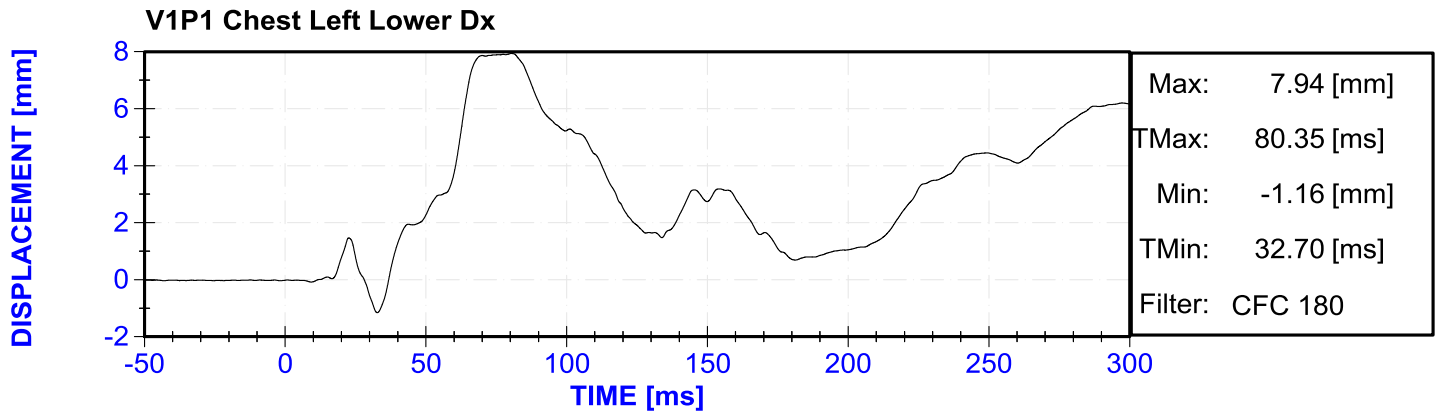


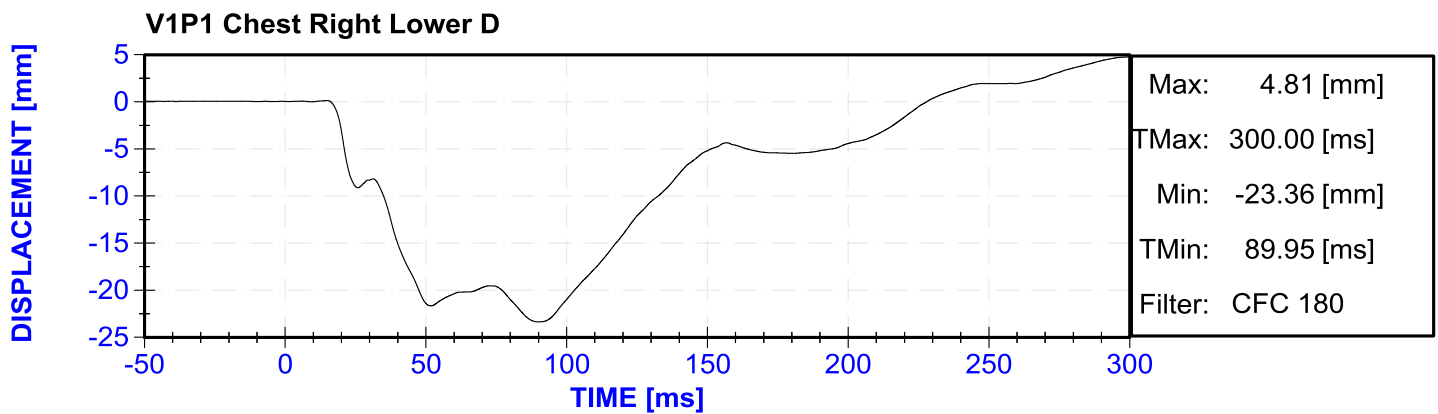
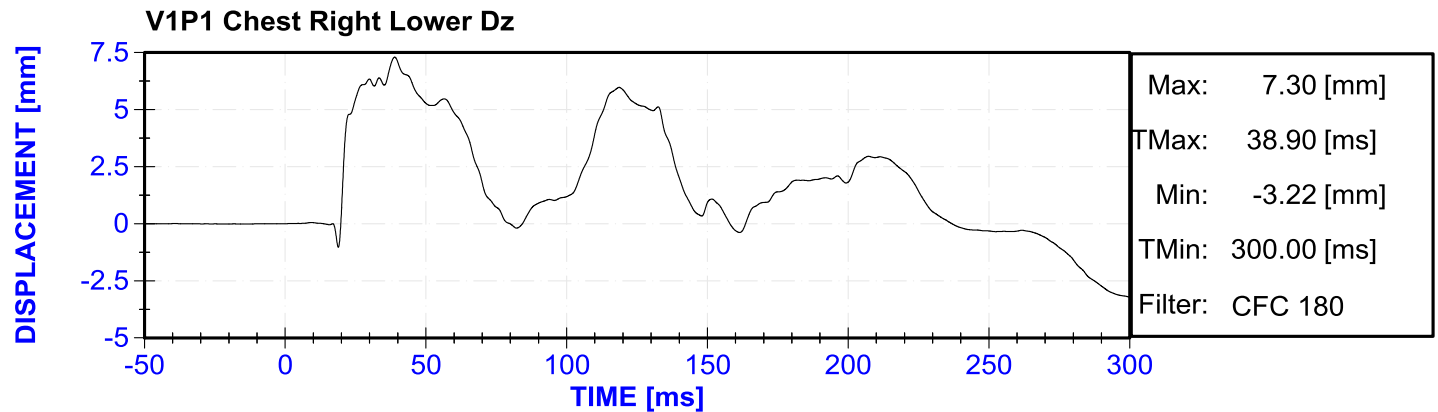
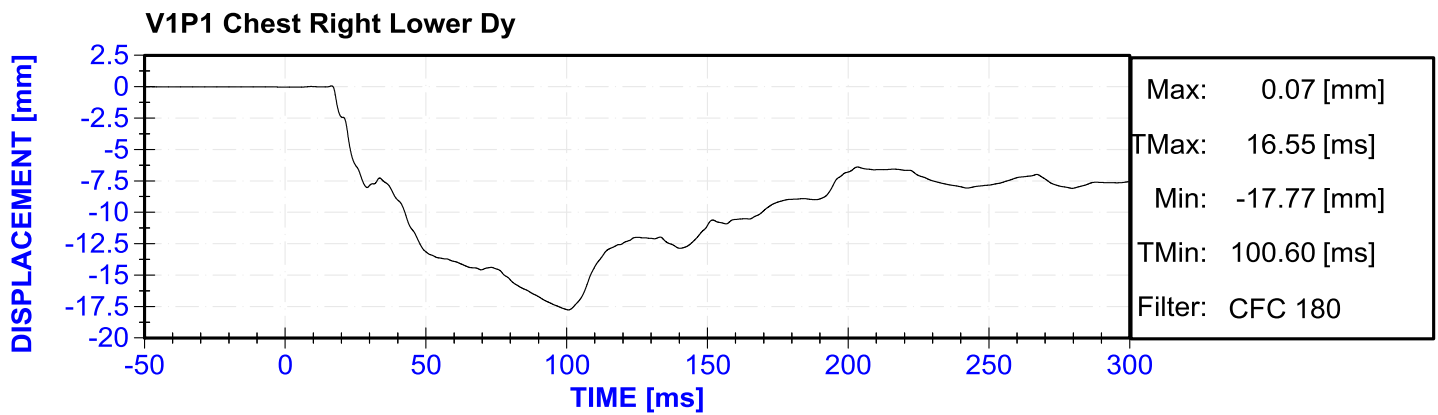
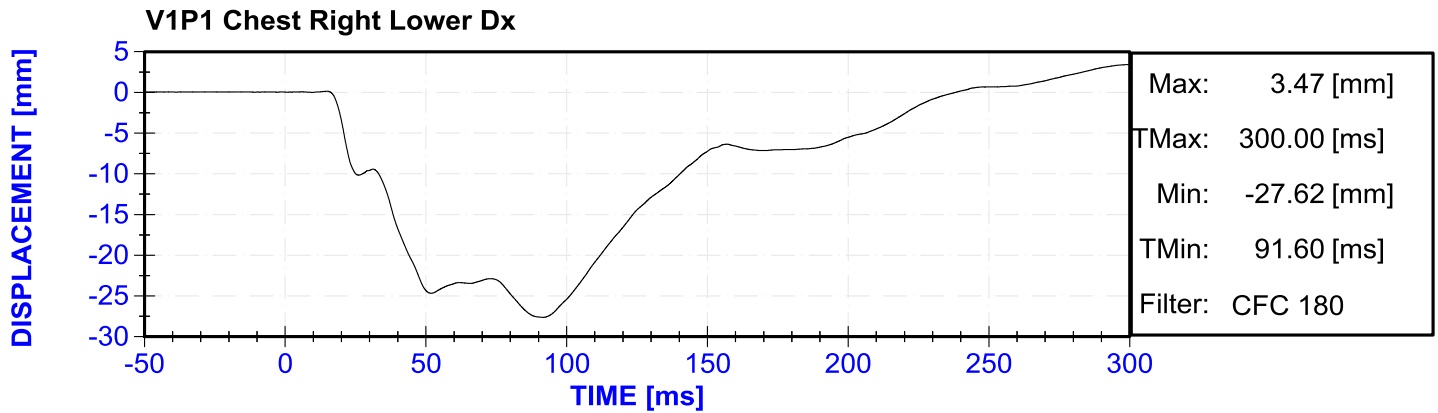
V1P1 Mz on head acting through the total neck section

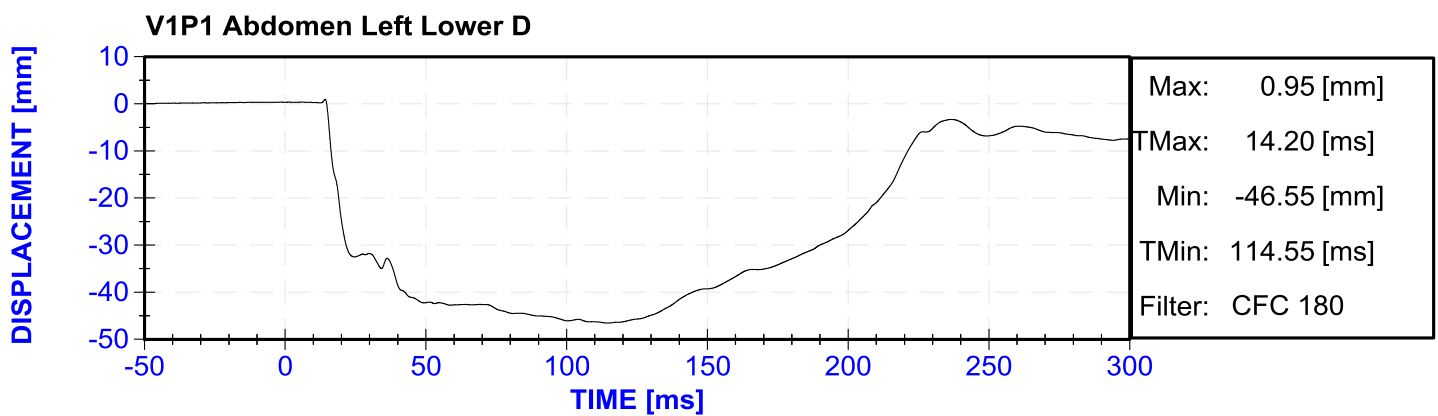
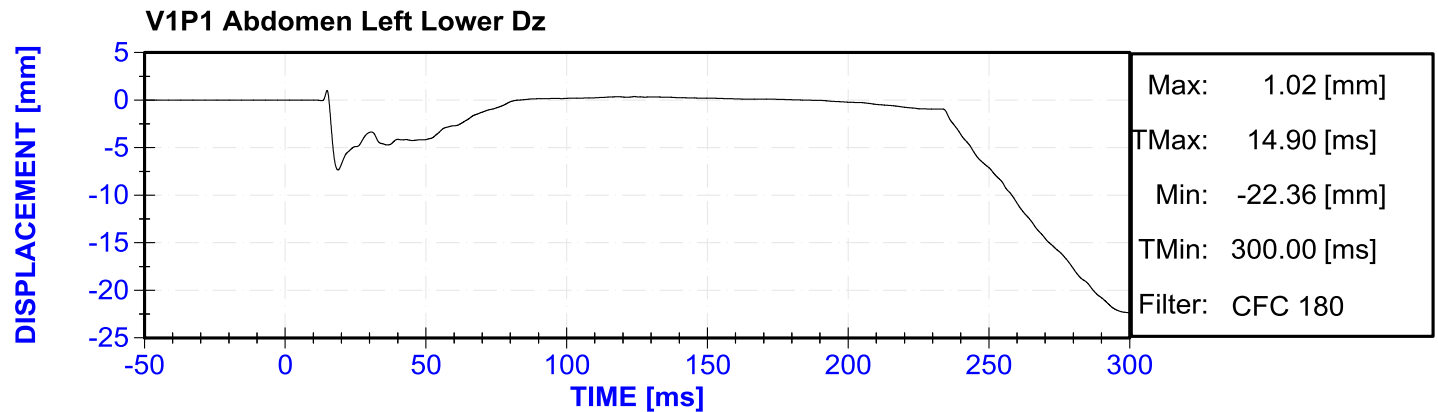
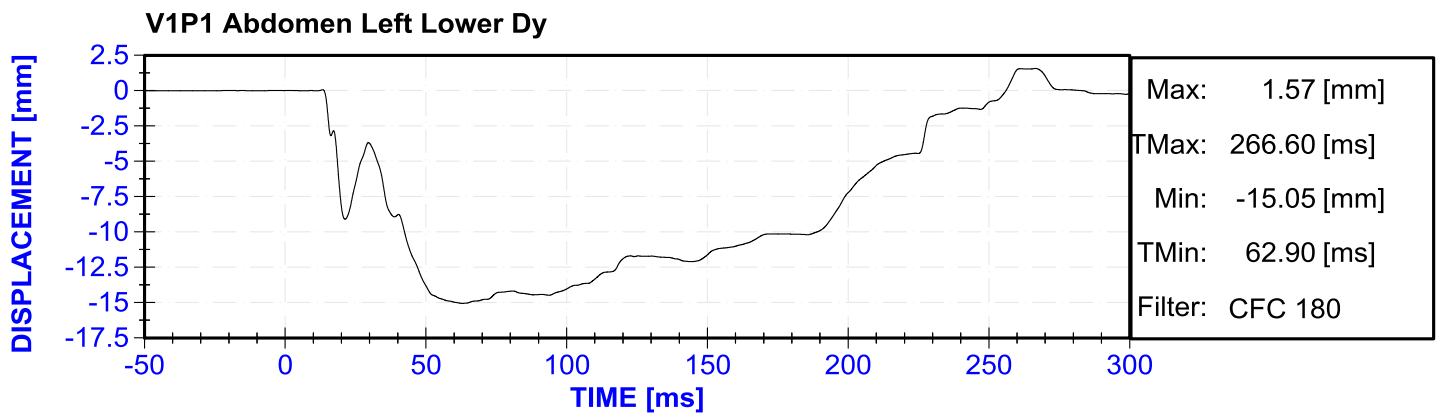
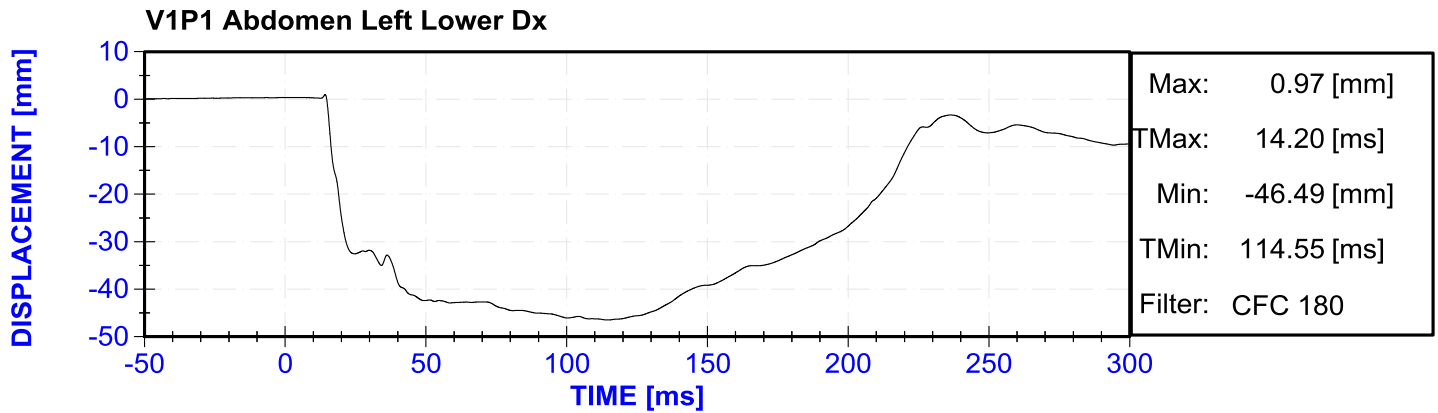


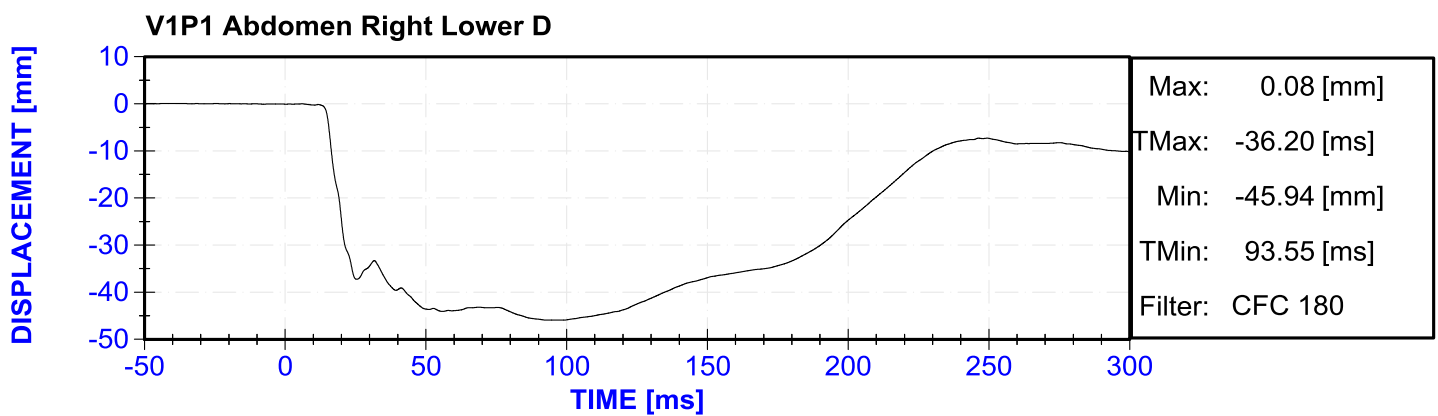
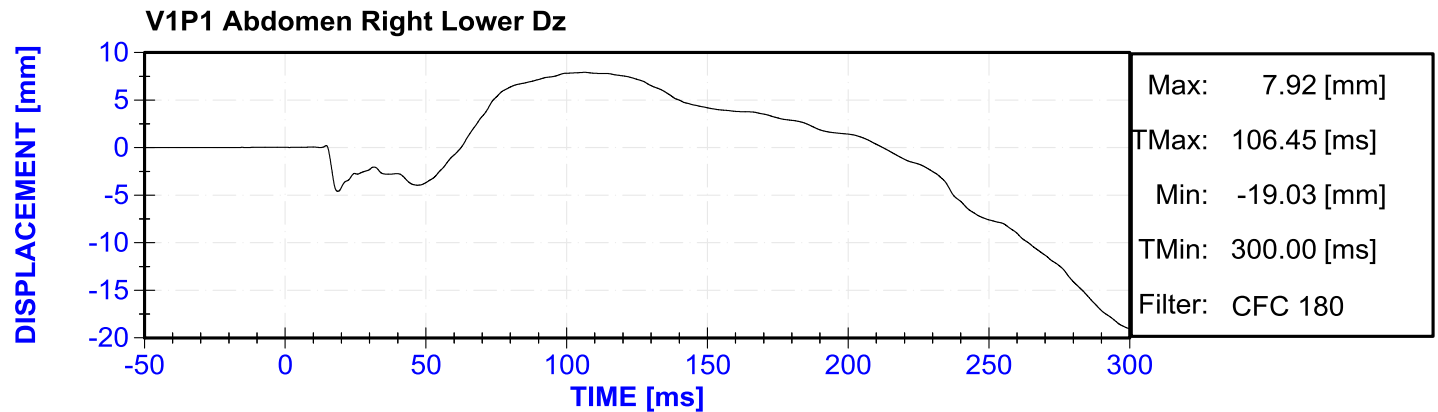
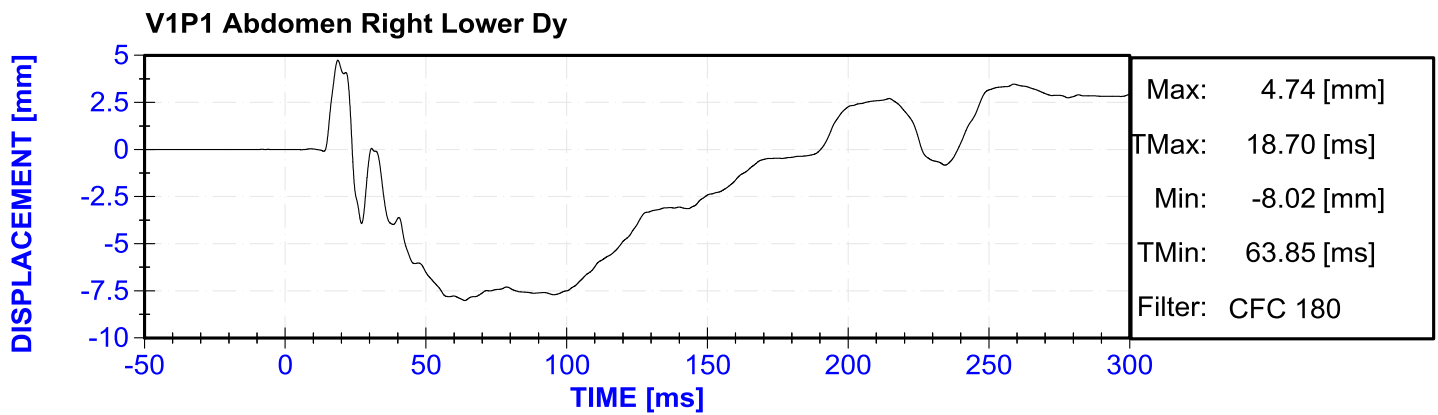
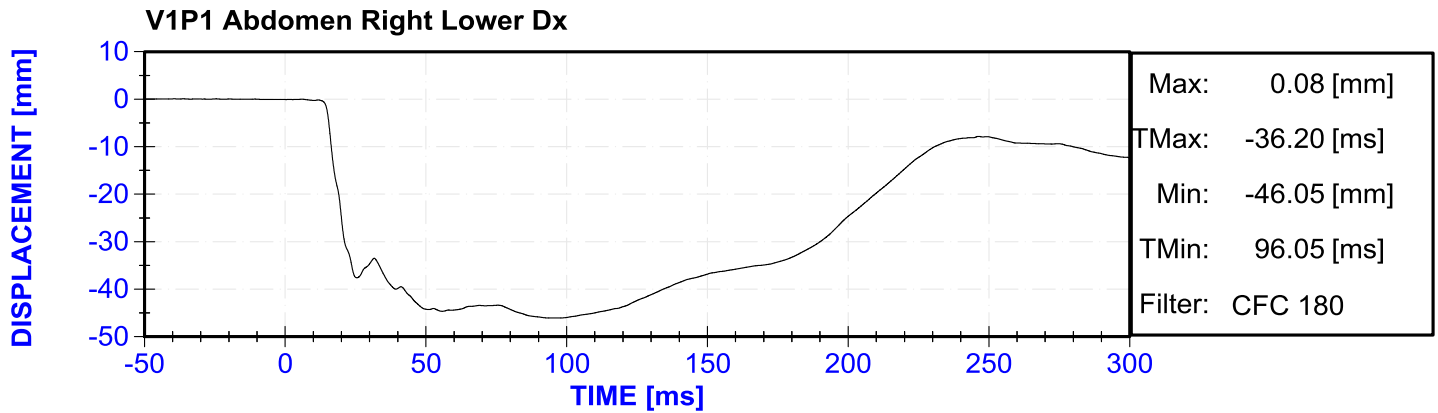












APPENDIX C

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:					
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	P58729	2000	0.018150000	mV/V/g
Head CG Ax	Endevco	P74955	2000	0.018560000	mV/V/g
Head CG Ax	Endevco	P74778	2000	0.017380000	mV/V/g
Head CG RAx	Endevco	P74972	2000	0.017520000	mV/V/g
Head CG RAY	Endevco	P82756	2000	0.017520000	mV/V/g
Head CG RAz	Endevco	P74773	2000	0.018130000	mV/V/g
Head Wx	DTS	ARS5931	18000	0.093230000	mV/V/sec
Head Wy	DTS	ARS4714	18000	0.094490000	mV/V/sec
Head Wz	DTS	ARS6635	18000	0.098430000	mV/V/sec
Upper Neck Fx	Denton	2193	8896.4	0.000189700	mV/V/N
Upper Neck Fy	Denton	2193	8896.4	0.000184400	mV/V/N
Upper Neck Fz	Denton	2193	13344.6	0.000098300	mV/V/N
Upper Neck Mx	Denton	2193	282.5	0.005692000	mV/V/Nm
Upper Neck My	Denton	2193	282.5	0.005724200	mV/V/Nm
Upper Neck Mz	Denton	2193	282.5	0.008138800	mV/V/Nm
Chest Ax	Endevco	P52012	2000	0.017510000	mV/V/g
Chest Ay	Endevco	P80910	2000	0.018350000	mV/V/g
Chest Az	Endevco	P74774	2000	0.017030000	mV/V/g
Chest Dx	Servo	CST324	54	1.752400000	mV/V/deg
Pelvis Ax	Endevco	P80335	2000	0.016810000	mV/V/g
Pelvis Ay	Endevco	P78730	2000	0.017530000	mV/V/g
Pelvis Az	Endevco	P52128	2000	0.016890000	mV/V/g
Femur Right Fz	Denton	1714	13340	0.000108200	mV/V/N
Femur Left Fz	Denton	1702	13340	0.000109400	mV/V/N
Upper Tibia Right Fx	Denton	372	11120.55	0.000171412	mV/V/N
Upper Tibia Right Fy	Denton	372	11120.55	0.000170342	mV/V/N
Upper Tibia Right Fz	Denton	372	11120.55	0.000092630	mV/V/N
Upper Tibia Right Mx	Denton	372	395.4467	0.007423756	mV/V/Nm

Upper Tibia Right My	Denton	372	395.4467	0.007387342	mV/V/Nm
Lower Tibia Right Fx	Denton	405	11120.55	0.000174398	mV/V/N
Lower Tibia Right Fy	Denton	405	11120.55	0.000178211	mV/V/N
Lower Tibia Right Fz	Denton	405	11120.55	0.000093925	mV/V/N
Lower Tibia Right Mx	Denton	405	395.4467	0.007600771	mV/V/Nm
Lower Tibia Right My	Denton	405	395.4467	0.007638450	mV/V/Nm
Upper Tibia Left Fx	Denton	484	11120.55	0.000172159	mV/V/N
Upper Tibia Left Fy	Denton	484	11120.55	0.000170585	mV/V/N
Upper Tibia Left Fz	Denton	484	11120.55	0.000098853	mV/V/N
Upper Tibia Left Mx	Denton	484	395.4467	0.007399480	mV/V/Nm
Upper Tibia Left My	Denton	484	395.4467	0.007426791	mV/V/Nm
Lower Tibia Left Fx	Denton	397	11120.55	0.000174299	mV/V/N
Lower Tibia Left Fy	Denton	397	11120.55	0.000178453	mV/V/N
Lower Tibia Left Fz	Denton	397	11120.55	0.000095040	mV/V/N
Lower Tibia Left Mx	Denton	397	395.4467	0.007559047	mV/V/Nm
Lower Tibia Left My	Denton	397	395.4467	0.007546908	mV/V/Nm
Right Toe Az	Endevco	P82746	2000	0.017850000	mV/V/g
Right Foot Ax	Endevco	P64098	2000	0.023010000	mV/V/g
Right Foot Az	Endevco	P52046	2000	0.019130000	mV/V/g
Left Toe Az	Endevco	P52045	2000	0.020320000	mV/V/g
Left Foot Ax	Endevco	P52055	2000	0.018800000	mV/V/g
Left Foot Az	Endevco	P79408	2000	0.017150000	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	P78168	2000	0.017840000	mV/V/g
Head CG Ay	Endevco	P82323	2000	0.018100000	mV/V/g
Head CG Az	Endevco	P58727	2000	0.017660000	mV/V/g
Upper Neck Fx	Denton	2184	8896.4	0.000186800	mV/V/N
Upper Neck Fy	Denton	2184	8896.4	0.000182300	mV/V/N
Upper Neck Fz	Denton	2184	13344.6	0.000098100	mV/V/N
Upper Neck Mx	Denton	2184	282.5	0.005686400	mV/V/Nm
Upper Neck My	Denton	2184	282.5	0.005715100	mV/V/Nm
Upper Neck Mz	Denton	2184	282.5	0.008202000	mV/V/Nm
Chest Ax	Endevco	P83431	2000	0.017910000	mV/V/g
Chest Ay	Endevco	P84365	2000	0.019440000	mV/V/g
Chest Az	Endevco	P84472	2000	0.019240000	mV/V/g
Chest Ds	Servo	FEM019	54	1.831500000	mV/V/deg
Pelvis Ax	Endevco	P84579	2000	0.017590000	mV/V/g

Pelvis Ay	Endevco	P51698	2000	0.022320000	mV/V/g
Pelvis Az	Endevco	P64084	2000	0.023570000	mV/V/g
ASIS Left Fx	Denton	79	8896.4	0.000185400	mV/V/N
ASIS Left My	Denton	79	225.9	0.005273300	mV/V/Nm
ASIS Right Fx	Denton	76	8896.4	0.000185200	mV/V/N
ASIS Right My	Denton	76	225.9	0.005243000	mV/V/Nm
Left Femur Fz	Denton	1394	13340	0.000108800	mV/V/N
Right Femur Fz	Denton	1395	13340	0.000108300	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

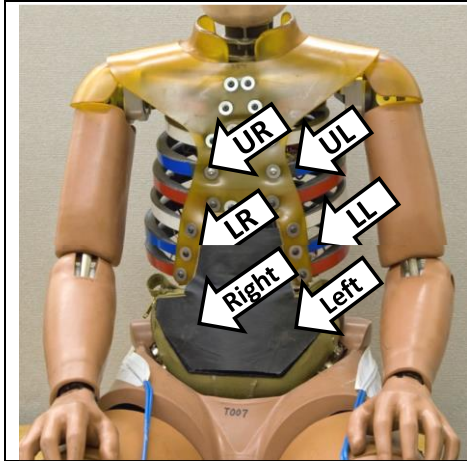


Figure 1. Manipulation to determine thoracic and abdominal IR-TRACC polarity.

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: 8/26/2015		
NHTSA Representative: Timothy 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: Certification performed from 7/2014 through 4/2015		
<u>Tests conducted:</u> <u>Since last inspection:</u> R20155404 - 2015 Mazda <u>Since last certification:</u> S0309 (at UVA)	S0310 (at UVA) S0311 (at UVA) S0312 (at UVA) LX Leg certification performed R20150186 - 2015 Malibu	R20150187 - 2015 Malibu R20155144 – 2015 Highlander LX Leg certification performed R20150228 - 2015 F-150 R20155404 - 2015 Mazda
<u>Known errors in data channels (no data, clipping, unexpected drops):</u> - 11NECKFR00THFO0P, Front Neck Spring Tower Load Cell, Channel saturated from 117ms to 123ms, SN:LC-DO9740 - We found an omnetics cable junction in the neck cable bundle that had disconnected. - We reconnected the connectors and retested okay. To reduce these little omnetics connectors from separating, we install a ziptie underneath the release mechanism and add heatshrink around the entire connection. We did this for both neck spring load cell cables - 11ABDOLL00THVO0P, Abdomen Left DGIR X Displacement, Questionable spikes throughout, SN:DS-DQ2303 - We are unable to repeat these spikes by shaking wires and connectors, and there do not seem to be any electrical issues. We disassembled the IRTACC to discover that a snap ring from the smallest diameter telescoping sections had fallen out, and was likely interfering with the LED-to-sensor path. - We reinstalled the snap ring, ensured it was seated properly, reassembled the dummy, and retested.		
<u>Physical evidence of damage:</u> See Report – Knee Flesh		
<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 IRTaccs 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
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
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	Left ITRACC snap ring was loose upon disassembly of the telescoping section. 
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
OTHER	

ATD 324: Pre-Test Inspection

FM-ATD-DC5F-031-R01
Damage Inspection – Hybrid III 5th Female



Damage Inspection Hybrid III – 5th Female

Dummy Serial Number 324

Technician M. Hartung

Test Date 8/25/15

- ☒ 1) Clean dummy and disassemble as necessary to check for damage.
- ☒ 2) Complete the following table and throughout the certification process, note any physical or anecdotal damage on this form.
- ☒ 3) Take 4 surround photos and photos of any damage and save on server.

Dummy Item	Inspect for	Comments	Damaged	OK
Outer skin	Gashes, rips, cracks			☒
Head	Ballast secure			☒
	General appearance <i>sin tear @ rear / abrasion/burn on nose</i>			☒
Neck	Broken or cracked rubber			☒
	Upper neck bracket firmly attached to the lower neck bracket			☒
	Looseness at the condyle joint			☒
	Nodding blocks cracked or out of position			☒
Spine	Broken or cracks in rubber.			☒
Ribs	Broken or bent ribs			☒
	Broken or bent rib supports			☒
	Damping material separated or cracked			☒
	Rubber bumpers in place			☒
Chest	Bent shaft			☒
Potentiometer	Slider arm riding in track			☒
Transducers	Torn cables			☒
Accelerometer Mountings	Head mounting secure			☒
	Chest mounting secure			☒
Knees	Skin condition			☒
	Insert (do not remove)			☒
	Casting			☒
Limbs	Normal movement and adjustment			☒
Knee Sliders	Wires intact			☒
	Rubber returned to "at rest" position			☒
Pelvis	Broken			☒
Other	<i>Ribeye</i>			☒

(Discuss any damage with the lab supervisor and if replacement parts are required, complete the "Parts Requested from NHTSA" Section of the Certification Workbook, and forward this form to Calspan's Contracts Department.)

M. Hartung
Signature

8/25/15
Date

ATD 324: Post-Test Inspection

FM-ATD-DC5F-031-R01
Damage Inspection – Hybrid III 5th Female



Damage Inspection Hybrid III – 5th Female

Dummy Serial Number 324

Technician W. Hunt

Test Date 8/27/15

- 1) Clean dummy and disassemble as necessary to check for damage.
- 2) Complete the following table and throughout the certification process, note any physical or anecdotal damage on this form.
- 3) Take 4 surround photos and photos of any damage and save on server.

Dummy Item	Inspect for	Comments	Damaged	OK
Outer skin	Gashes, rips, cracks			✓
Head	Ballast secure			✓
	General appearance <u>scratches (R) rear track for / transducer on neck / red on chair</u>			✓
Neck	Broken or cracked rubber			✓
	Upper neck bracket firmly attached to the lower neck bracket			✓
	Looseness at the condyle joint			✓
	Nodding blocks cracked or out of position			✓
Spine	Broken or cracks in rubber.			✓
Ribs	Broken or bent ribs			✓
	Broken or bent rib supports			✓
	Damping material separated or cracked			✓
	Rubber bumpers in place			✓
Chest	Bent shaft			✓
Potentiometer	Slider arm riding in track			✓
Transducers	Torn cables <u>Tear on (L) foot FX</u>			✓
Accelerometer Mountings	Head mounting secure			✓
	Chest mounting secure			✓
Knees	Skin condition			✓
	Insert (do not remove)			✓
	Casting			✓
Limbs	Normal movement and adjustment			✓
Knee Sliders	Wires intact			✓
	Rubber returned to "at rest" position			N/A
Pelvis	Broken			✓
Other	<u>Rib Eye</u>			✓

(Discuss any damage with the lab supervisor and if replacement parts are required, complete the "Parts Requested from NHTSA" Section of the Certification Workbook, and forward this form to Calspan's Contracts Department.)

Signature W. Hunt

Date 8/27/15

ATD 019: Pre-Test Inspection

FM-ATD-DC5F-031-R01
Damage Inspection – Hybrid III 5th Female



Damage Inspection Hybrid III – 5th Female

Dummy Serial Number 019

Technician M. Hartung

Test Date 8/25/15

- 1) Clean dummy and disassemble as necessary to check for damage.
- 2) Complete the following table and throughout the certification process, note any physical or anecdotal damage on this form.
- 3) Take 4 surround photos and photos of any damage and save on server.

Dummy Item	Inspect for	Comments	Damaged	OK
Outer skin	Gashes, rips, cracks	Seatbelt mark (R) collar		✓
Head	Ballast secure			✓
	General appearance	black mark from (L) eyebrow to skull cap		✓
Neck	Broken or cracked rubber			✓
	Upper neck bracket firmly attached to the lower neck bracket			✓
	Looseness at the condyle joint			✓
	Nodding blocks cracked or out of position			✓
Spine	Broken or cracks in rubber.			✓
Ribs	Broken or bent ribs			✓
	Broken or bent rib supports			✓
	Damping material separated or cracked			✓
	Rubber bumpers in place			✓
Chest	Bent shaft			✓
Potentiometer	Slider arm riding in track			✓
Transducers	Torn cables			✓
Accelerometer Mountings	Head mounting secure			✓
	Chest mounting secure			✓
Knees	Skin condition			✓
	Insert (do not remove)			✓
	Casting			✓
Limbs	Normal movement and adjustment			✓
Knee Sliders	Wires intact			✓
	Rubber returned to "at rest" position			✓
Pelvis	Broken			✓
Other	Rib eye			✓

(Discuss any damage with the lab supervisor and if replacement parts are required, complete the "Parts Requested from NHTSA" Section of the Certification Workbook, and forward this form to Calspan's Contracts Department.)

Signature M. Hartung

Date 8/25/15

ATD 019: Post-Test Inspection

FM-ATD-DC5F-031-R01
Damage Inspection – Hybrid III 5th Female



Damage Inspection Hybrid III – 5th Female

Dummy Serial Number 019

Technician W. Hartung

Test Date 8/27/15

- 4) Clean dummy and disassemble as necessary to check for damage.
- 2) Complete the following table and throughout the certification process, note any physical or anecdotal damage on this form.
- 3) Take 4 surround photos and photos of any damage and save on server.

Dummy Item	Inspect for	Comments	Damaged	OK
Outer skin	Gashes, rips, cracks	Seat belt rash (L) Cal (R)		✓
Head	Ballast secure			✓
	General appearance	Black mark (L) eye to skull cap (R) forehead		✓
Neck	Broken or cracked rubber			✓
	Upper neck bracket firmly attached to the lower neck bracket			✓
	Looseness at the condyle joint			✓
	Nodding blocks cracked or out of position			✓
Spine	Broken or cracks in rubber.			✓
Ribs	Broken or bent ribs			✓
	Broken or bent rib supports			✓
	Damping material separated or cracked			✓
	Rubber bumpers in place			✓
Chest Potentiometer	Bent shaft			✓
	Slider arm riding in track			✓
Transducers	Torn cables			✓
Accelerometer Mountings	Head mounting secure			✓
	Chest mounting secure			✓
Knees	Skin condition			✓
	Insert (do not remove)			✓
	Casting			✓
Limbs	Normal movement and adjustment			✓
Knee Sliders	Wires intact			✓
	Rubber returned to "at rest" position			✓
Pelvis	Broken			✓
Other	Rob Eye			✓

(Discuss any damage with the lab supervisor and if replacement parts are required, complete the "Parts Requested from NHTSA" Section of the Certification Workbook, and forward this form to Calspan's Contracts Department.)

Signature W. Hartung

Date 8/27/15

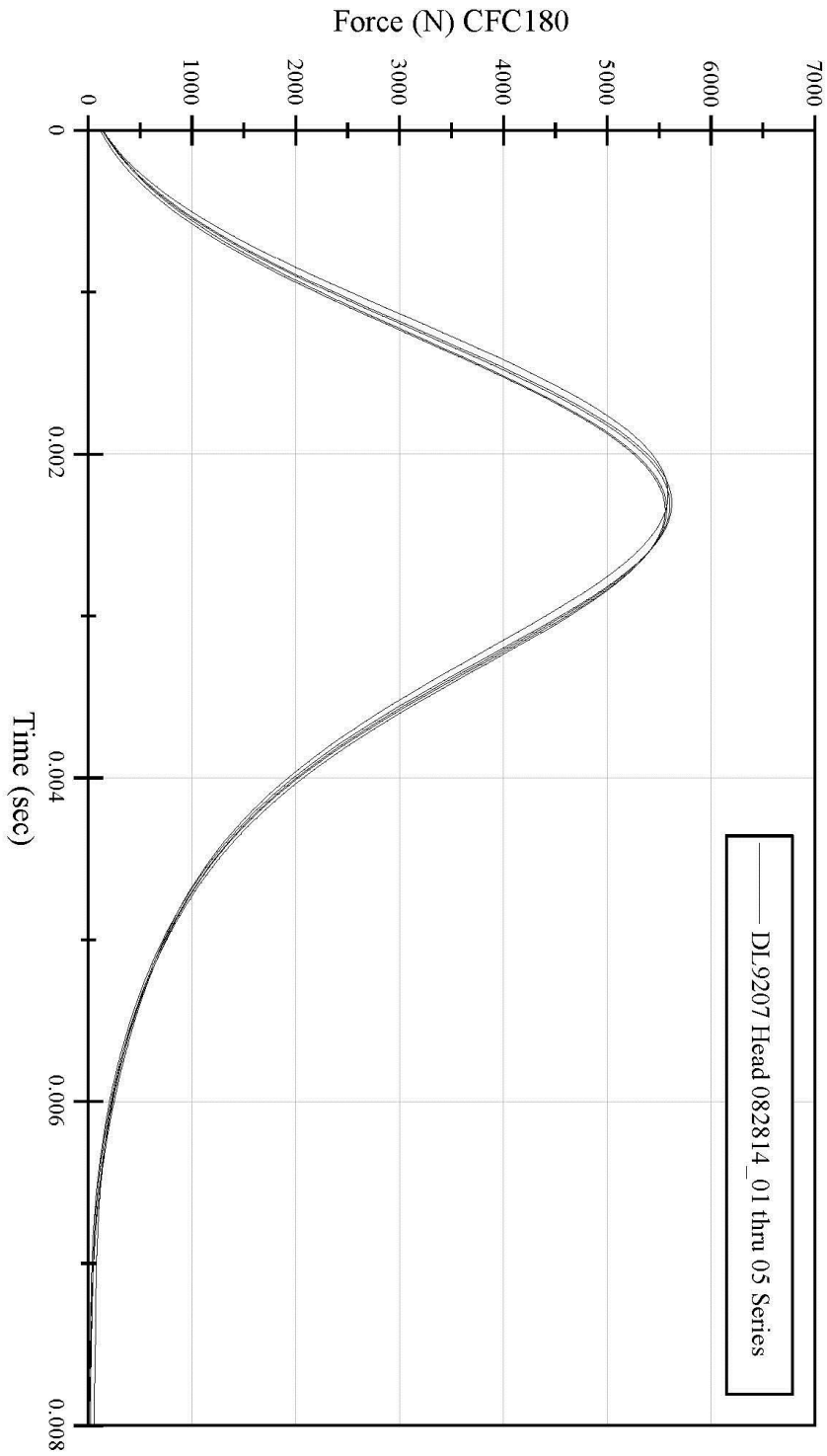
Test Data/Sensor Repair Notes

DUMMY CALIBRATIONS

50% ADULT MALE THOR DL9207 DUMMY CALIBRATIONS

Test Temperature: 71 degrees
Relative Humidity: 50%
Test Velocity: 2 m/s

THOR Head Impact Qualification
Probe Force
Serial Number: DL9207

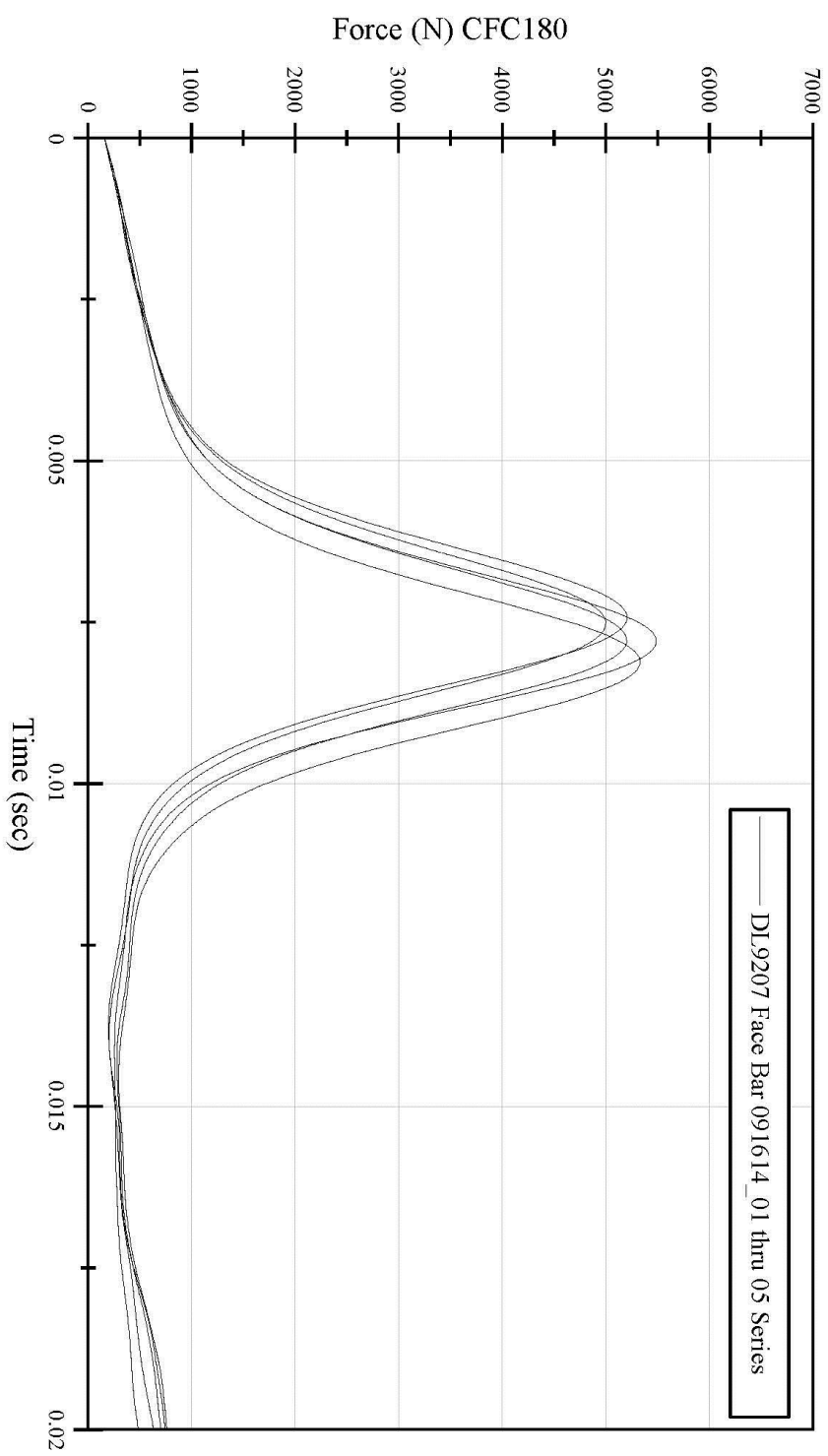


Software Version:

File Name: DL9207Head082814_01 thru 05 Series patrick
08/28/2014 14:08:19.0000

Test Temperature: 71 degrees
Relative Humidity: 44%
Test Velocity: 3.60 m/s

THOR Face-Bar Qualification
Probe Force
Serial Number: DL9207

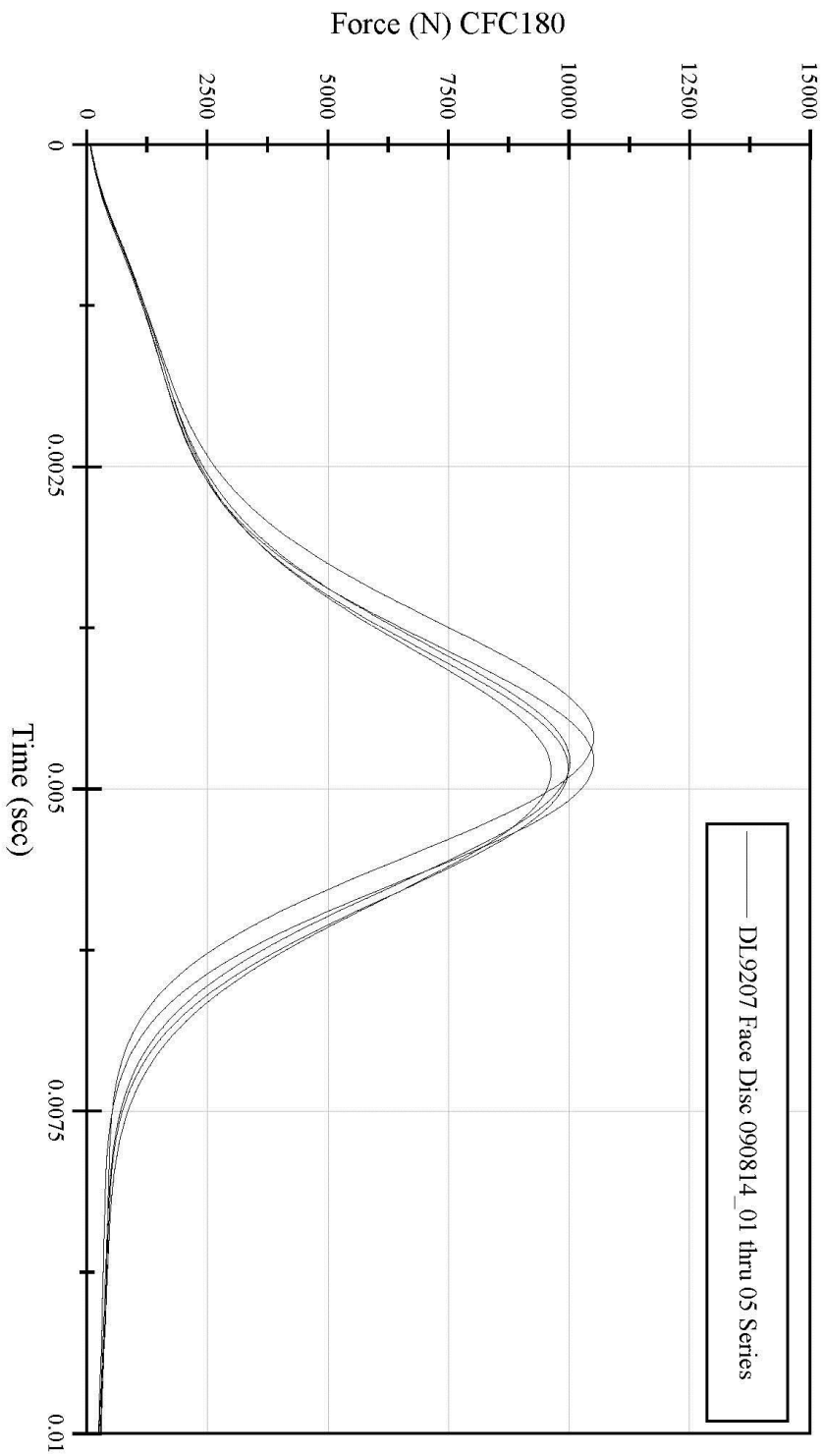


Software Version:

File Name: DL9207FaceBar091614_01 thru 05 Series patrick
09/16/2014 13:05:36.0000

Test Temperature: 71 degrees
Relative Humidity: 50%
Test Velocity: 6.68 m/s

THOR Face-Disk Qualification
Probe Force
Serial Number: DL9207

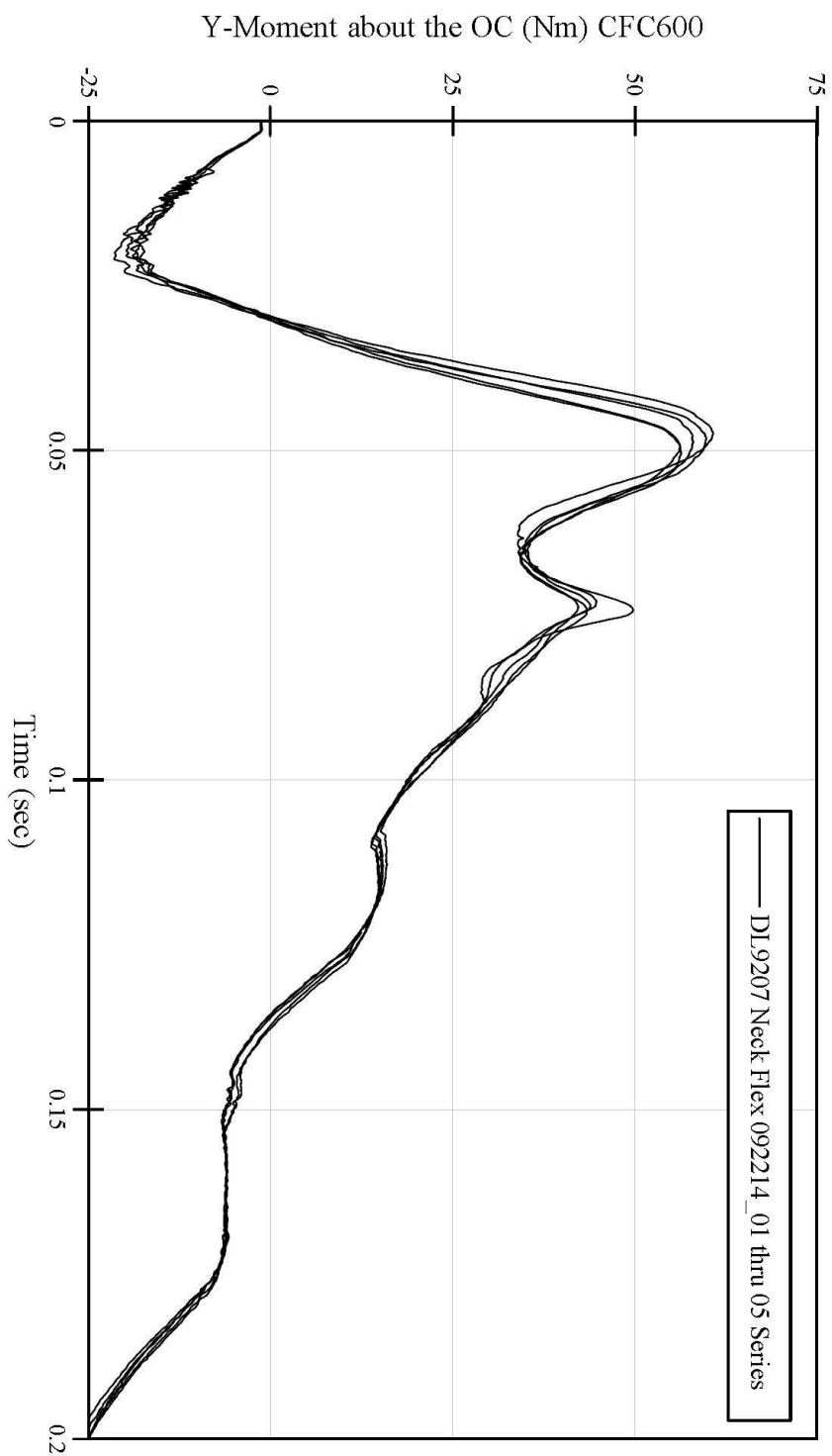


Software Version:

File Name: DL9207FaceDisc090814_01 thru 05 Series patrick
09/08/2014 14:44:59.0000

Test Temperature: 71 degrees
Relative Humidity: 50%
Test Velocity: 5.00 m/s

THOR Neck Flexion Qualification
Y-Moment
Serial Number: DL9207

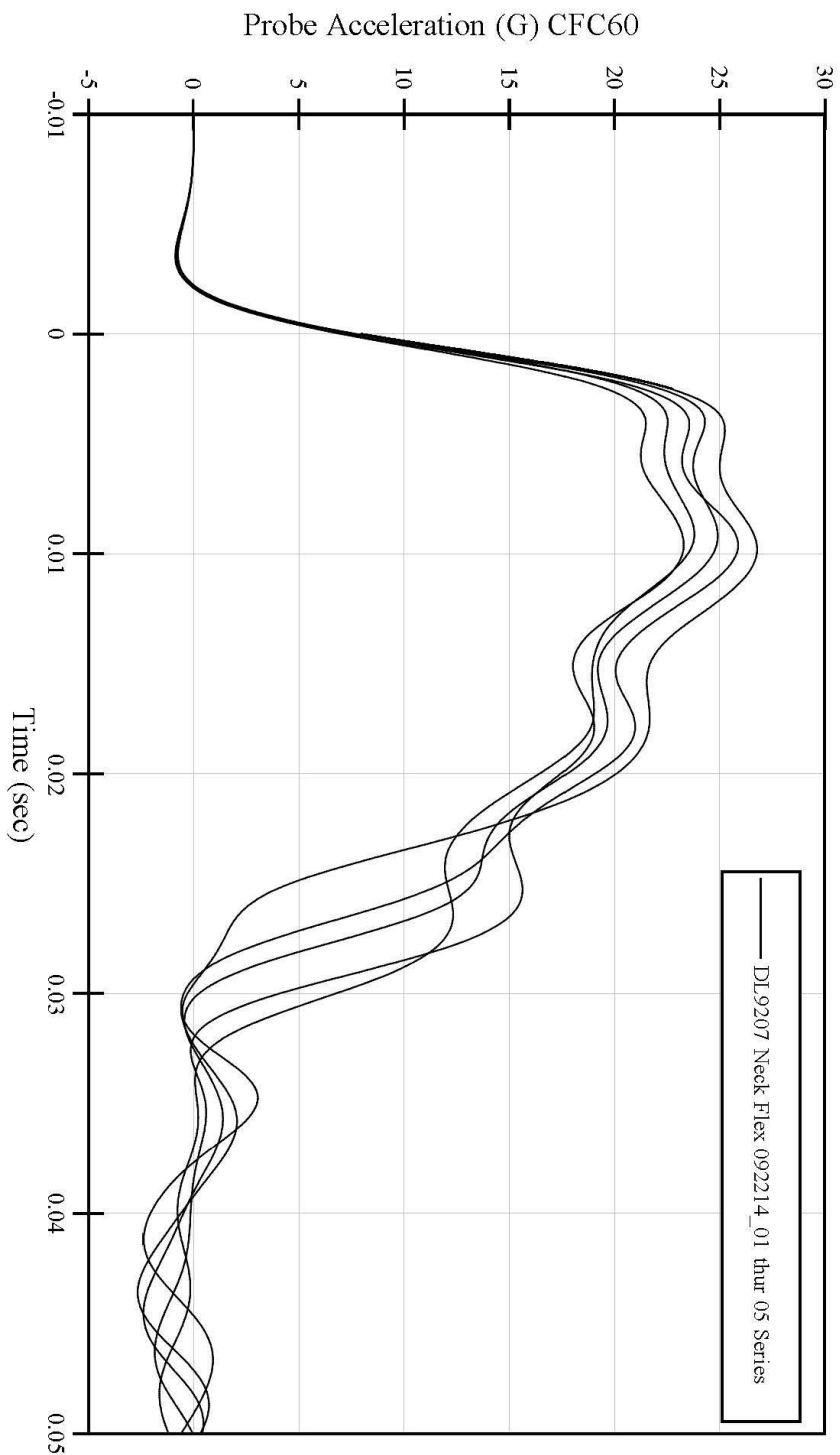


Software Version:

File Name: DL9207NeckFlex092214_01 thru 05 series patrick
09/22/2014 15:12:10.0000

Test Temperature: 71 degrees
Relative Humidity: 50%
Test Velocity: 5.00 m/s

THOR Neck Flexion Qualification
Probe Acceleration
Serial Number: DL9207

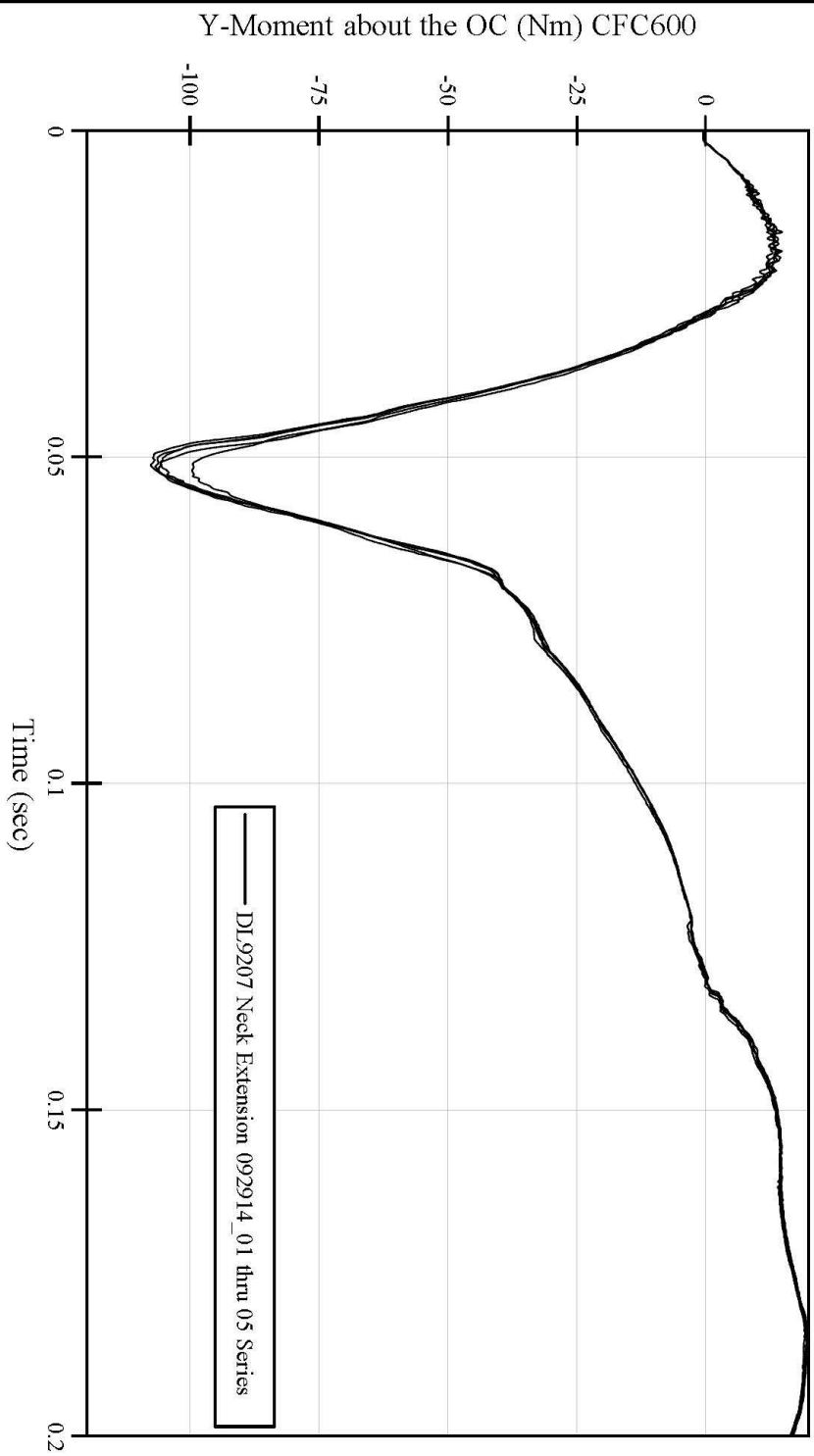


Software Version:

File Name: DL9207NeckFlex092214_01 thru 05 series patrick
09/22/2014 15:12:10.0000

Test Temperature: 71 degrees
Relative Humidity: 50%
Test Velocity: 5.04 m/s

THOR Neck Extension Qualification
Y-Moment
Serial Number: DL9207

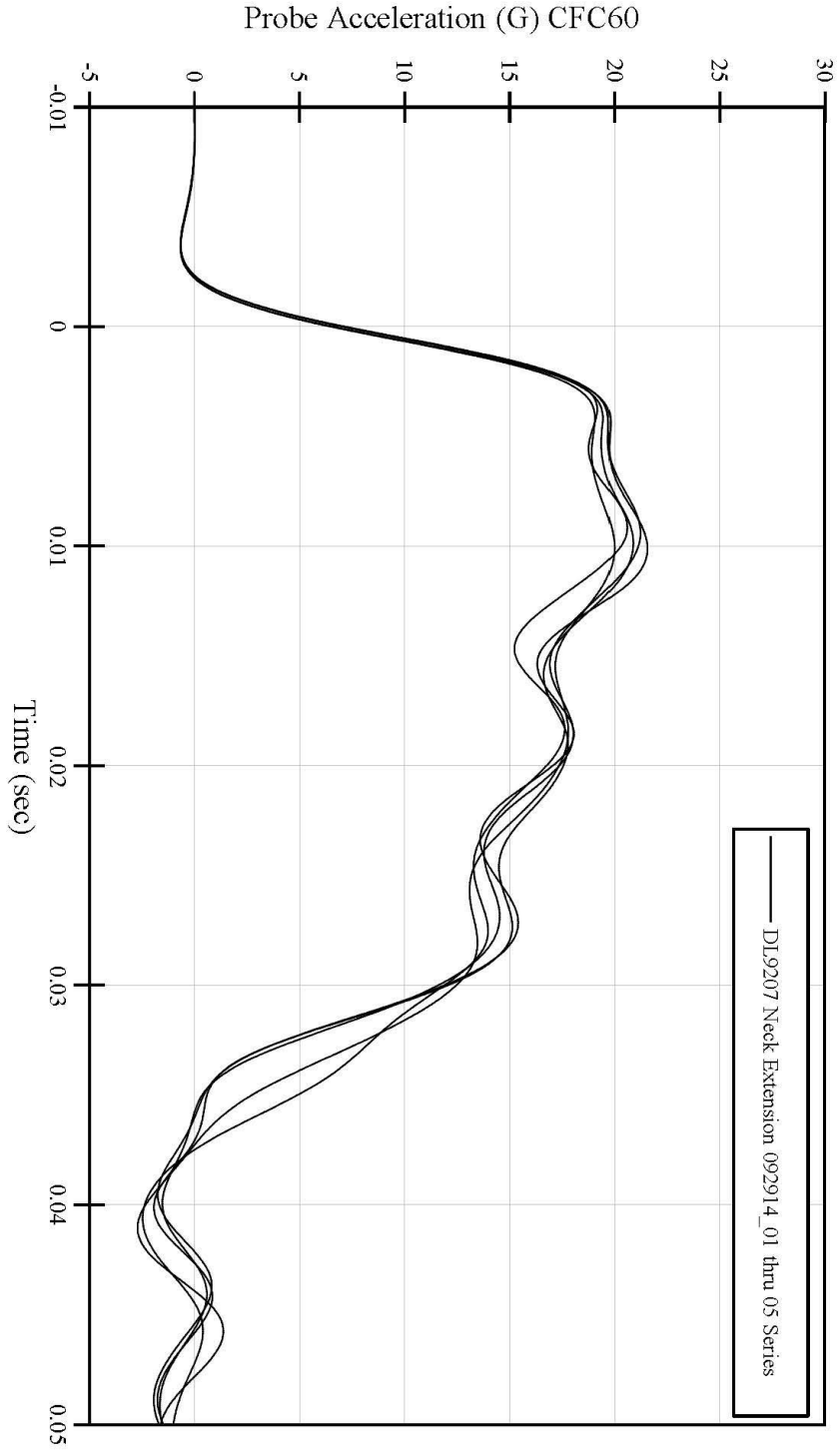


Software Version:

File Name: DL9207NeckExtension092914_01 thru 05 Series patrick
09/30/2014 09:17:19.0000

Test Temperature: 71 degrees
Relative Humidity: 50%
Test Velocity: 5.04 m/s

THOR Neck Extension Qualification
Probe Acceleration
Serial Number: DL9207



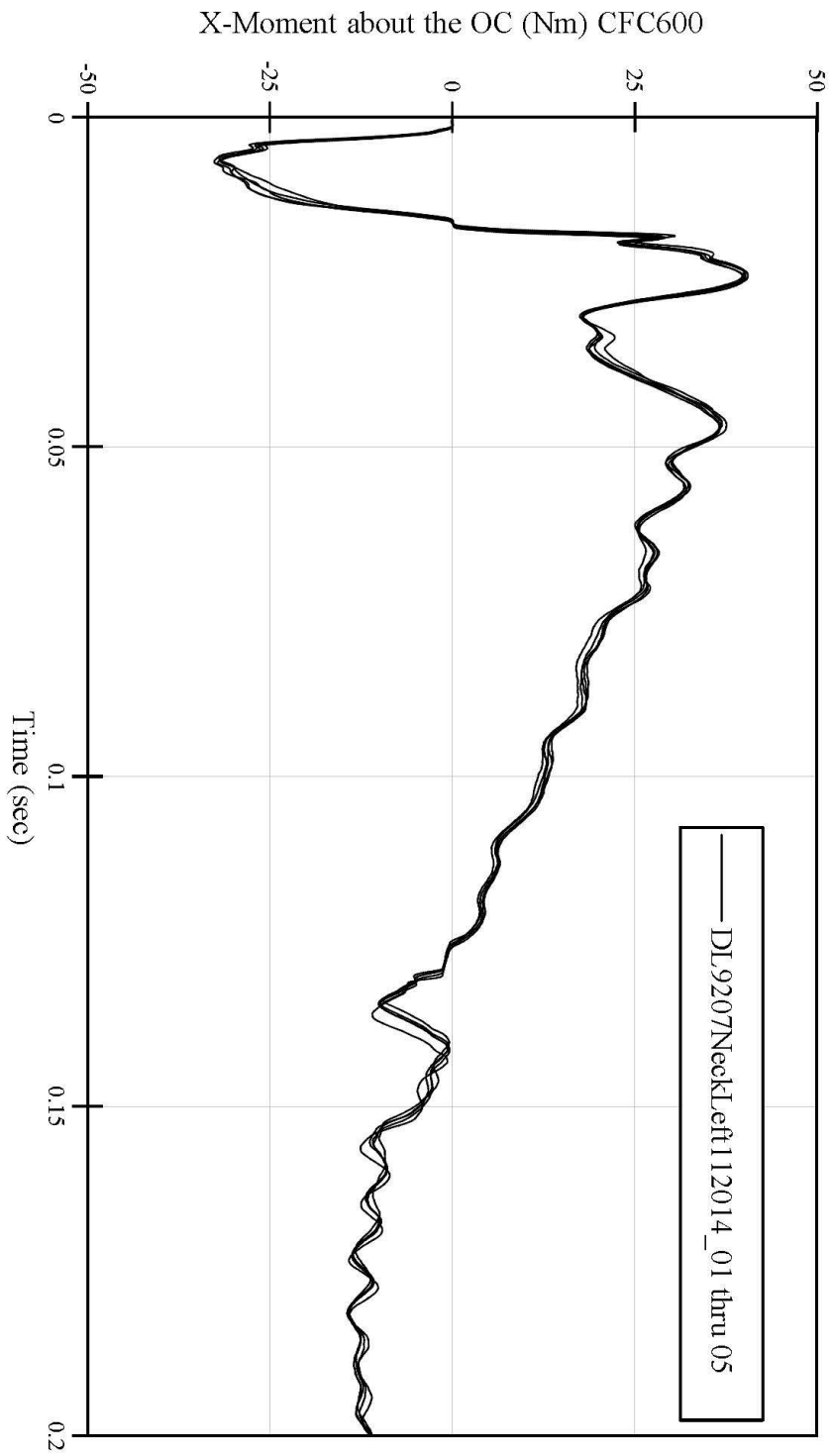
Software Version:

File Name: DL9207NeckExtension092914_01 thru 05 Series patrick
09/30/2014 09:17:19.0000

Test Temperature: 71 degrees
Relative Humidity: 30%
Test Velocity: 3.43 m/s

THOR Neck Left Lateral Flexion Qualification

X-Moment
Serial Number: DL9207



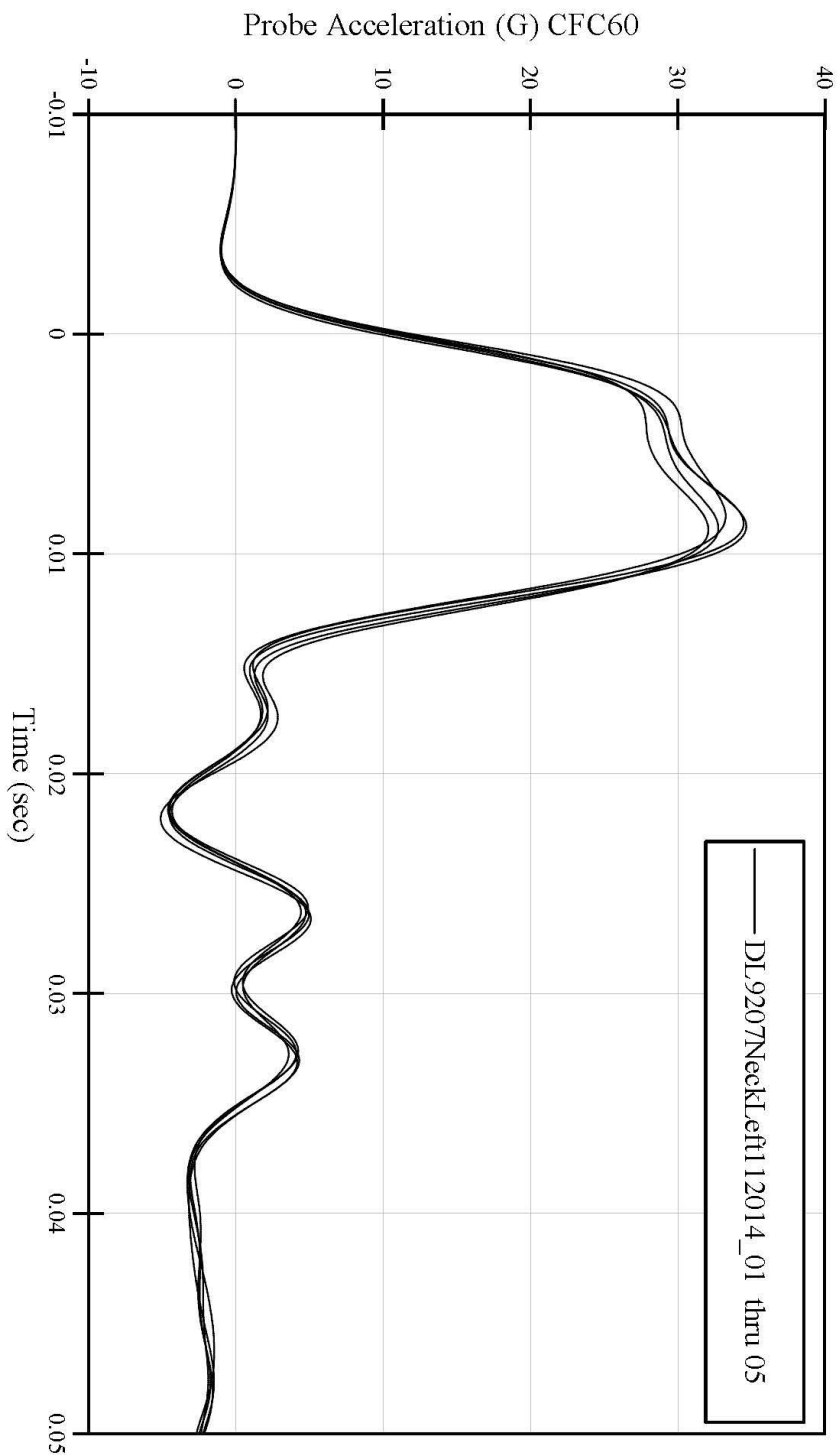
Software Version:

File Name: DL9207NeckLeft112014_01 thru 05 patrick
11/20/2014 12:31:49.0000

Test Temperature: 71 degrees
Relative Humidity: 30%
Test Velocity: 3.43 m/s

THOR Neck Left Lateral Flexion Qualification

Probe Acceleration
Serial Number: DL9207



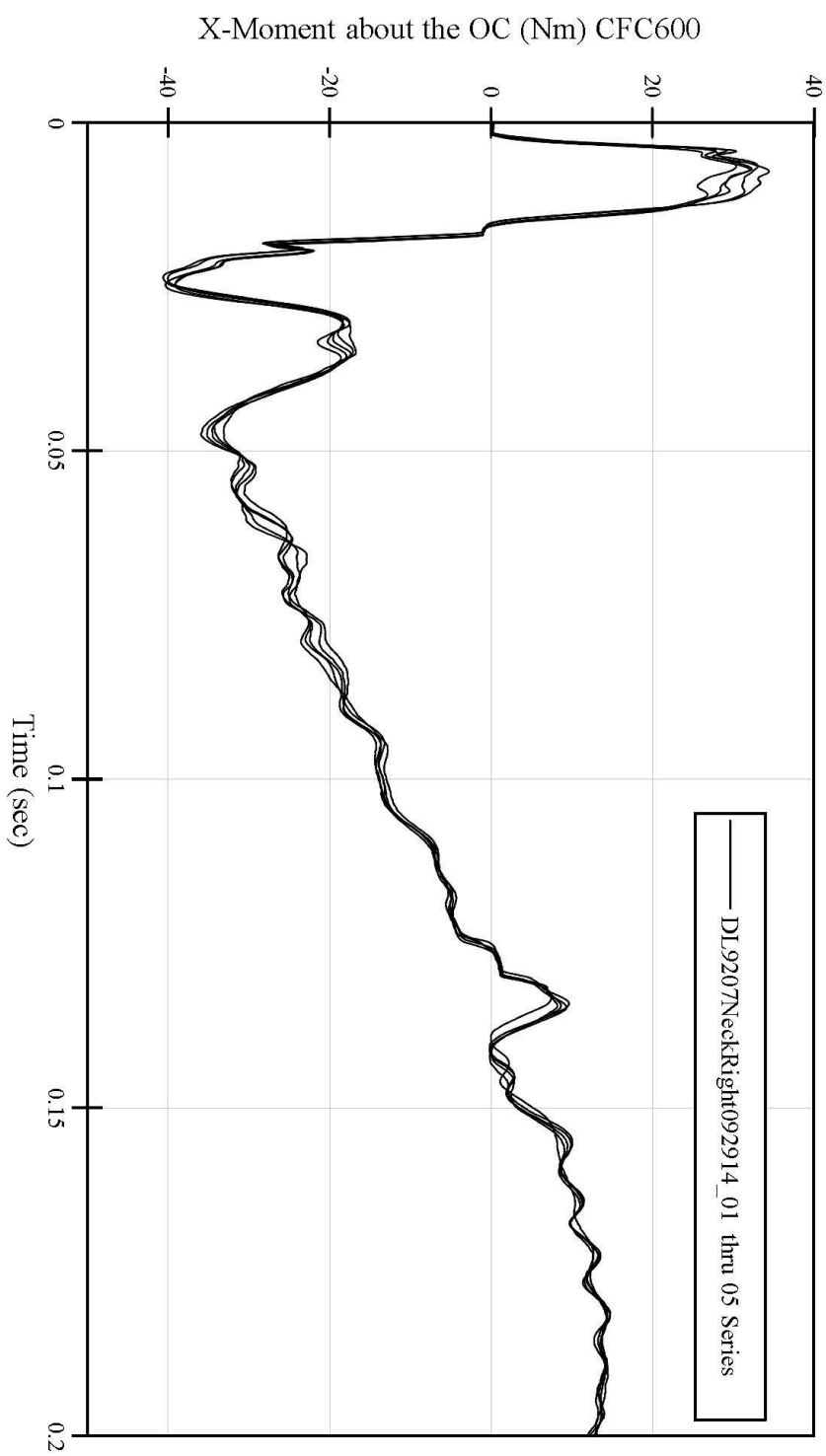
Software Version:

File Name: DL9207NeckLeft112014_01 thru 05 patrick
11/20/2014 12:31:49.0000

Test Temperature: 71 degrees
Relative Humidity: 50%
Test Velocity: 3.39 m/s

THOR Neck Right Lateral Flexion Qualification

X-Moment
Serial Number: DL9207



Software Version:

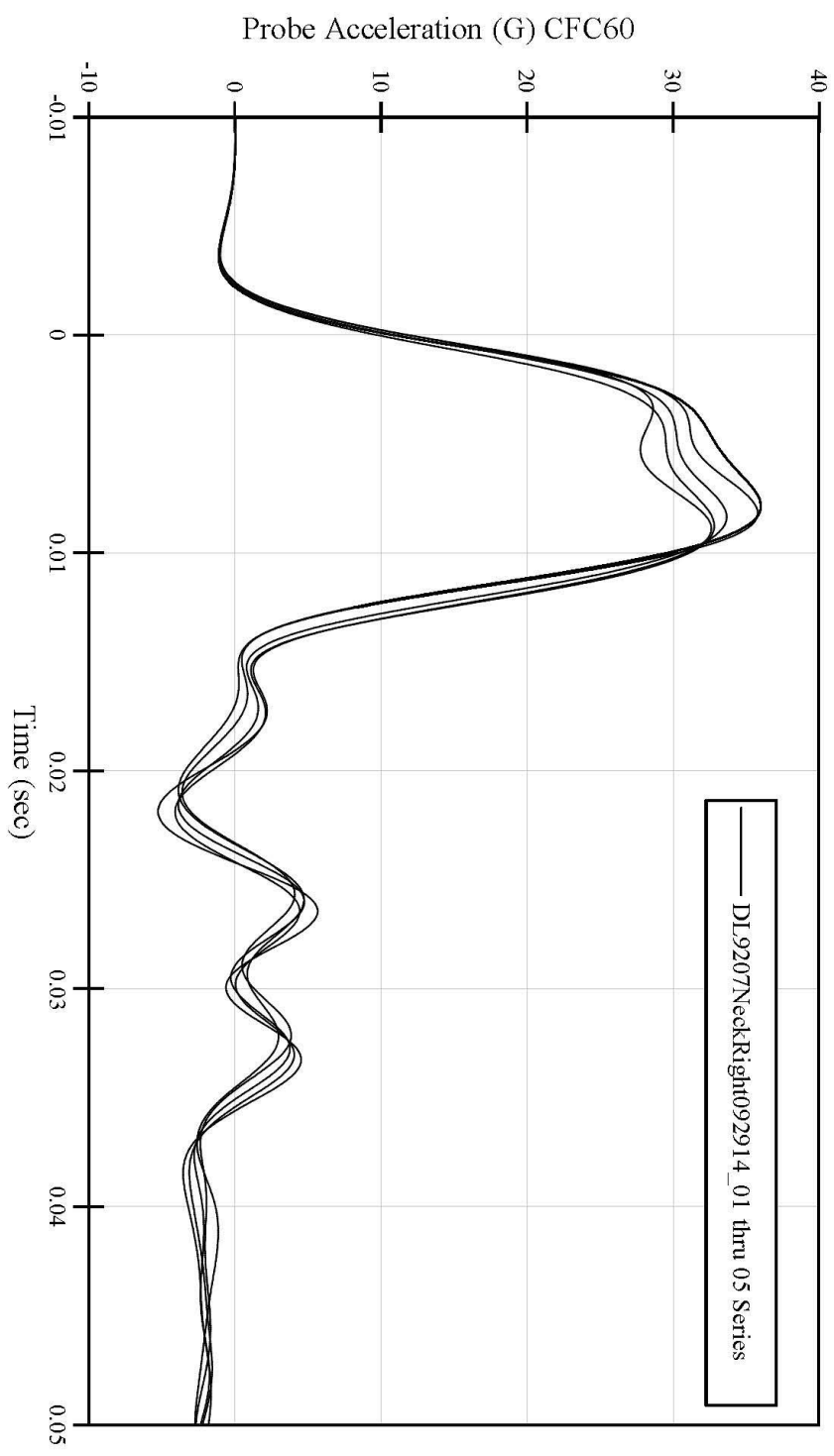
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09/30/2014 09:09:35.0000

Test Temperature: 71 degrees
Relative Humidity: 50%
Test Velocity: 3.39 m/s

THOR Neck Right Lateral Flexion Qualification

Probe Acceleration

Serial Number: DL9207

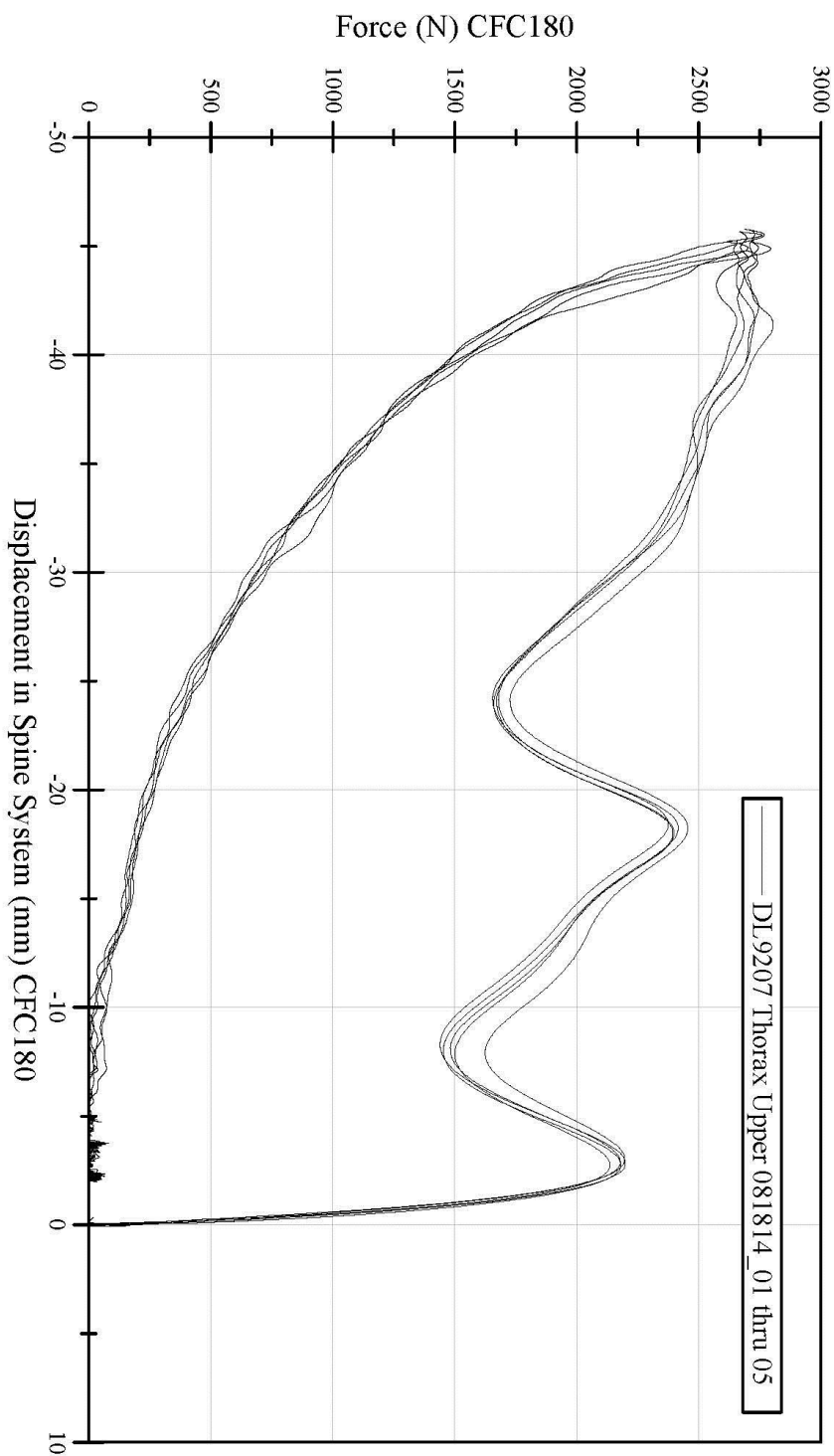


Software Version:

File Name: DL9207NeckRight092914_01 thru 05 Series patrick
09/30/2014 09:09:35.0000

Test Temperature: 71 degrees
Relative Humidity: 50%
Test Velocity: 4.34 m/s

THOR Upper Thorax Qualification
Serial Number: DL9207

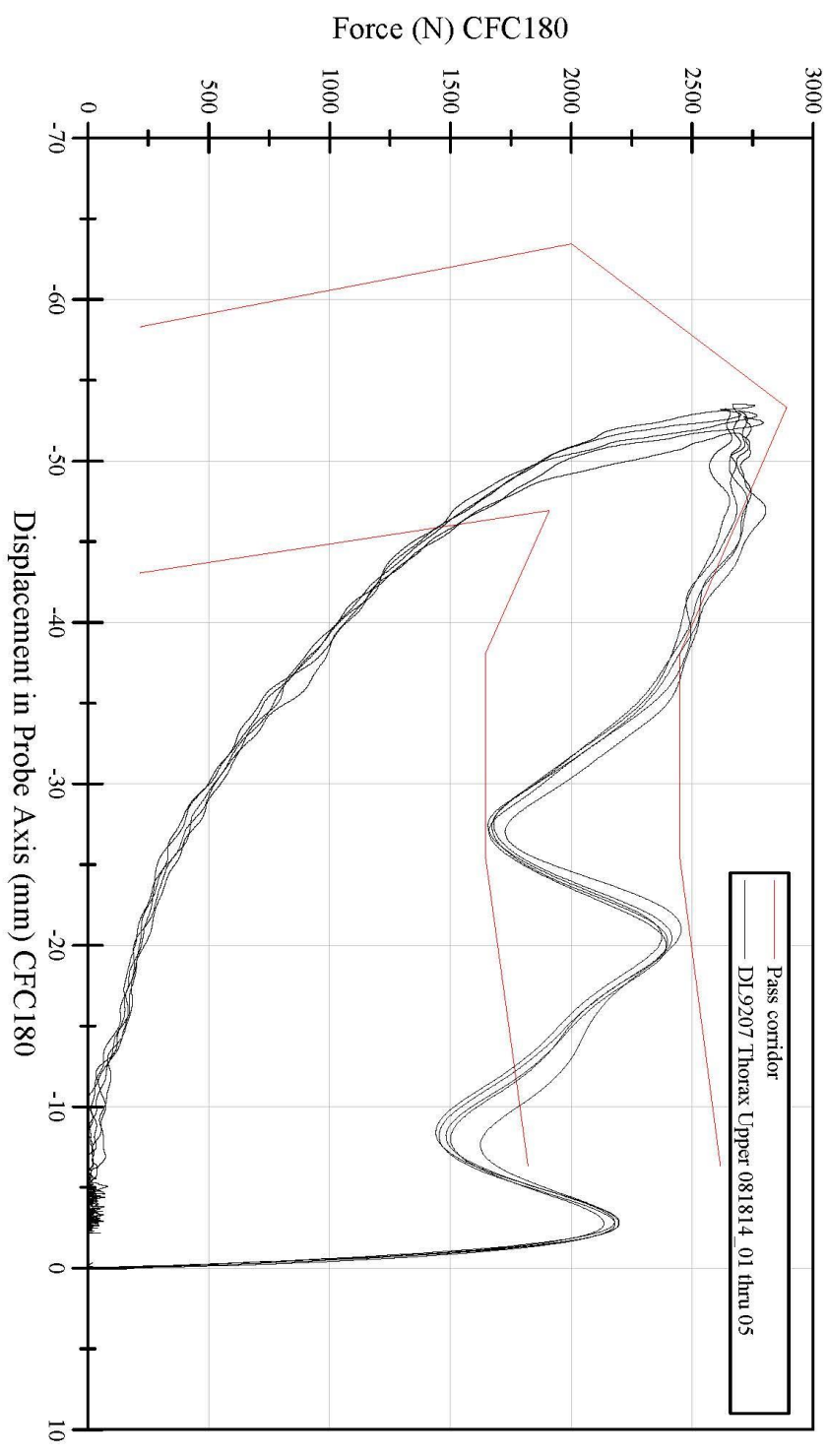


Software Version: 2.5

File Name: DL9207ThoraxUpper081814_01_DIADEMHeader_BINARY.patrick.tdms
08/21/2014 10:13:55.0000

Test Temperature: 71 degrees
Relative Humidity: 50%
Test Velocity: 4.34 m/s

THOR Upper Thorax Qualification
Thorax Response With Kroell Corridor
Serial Number: DL9207

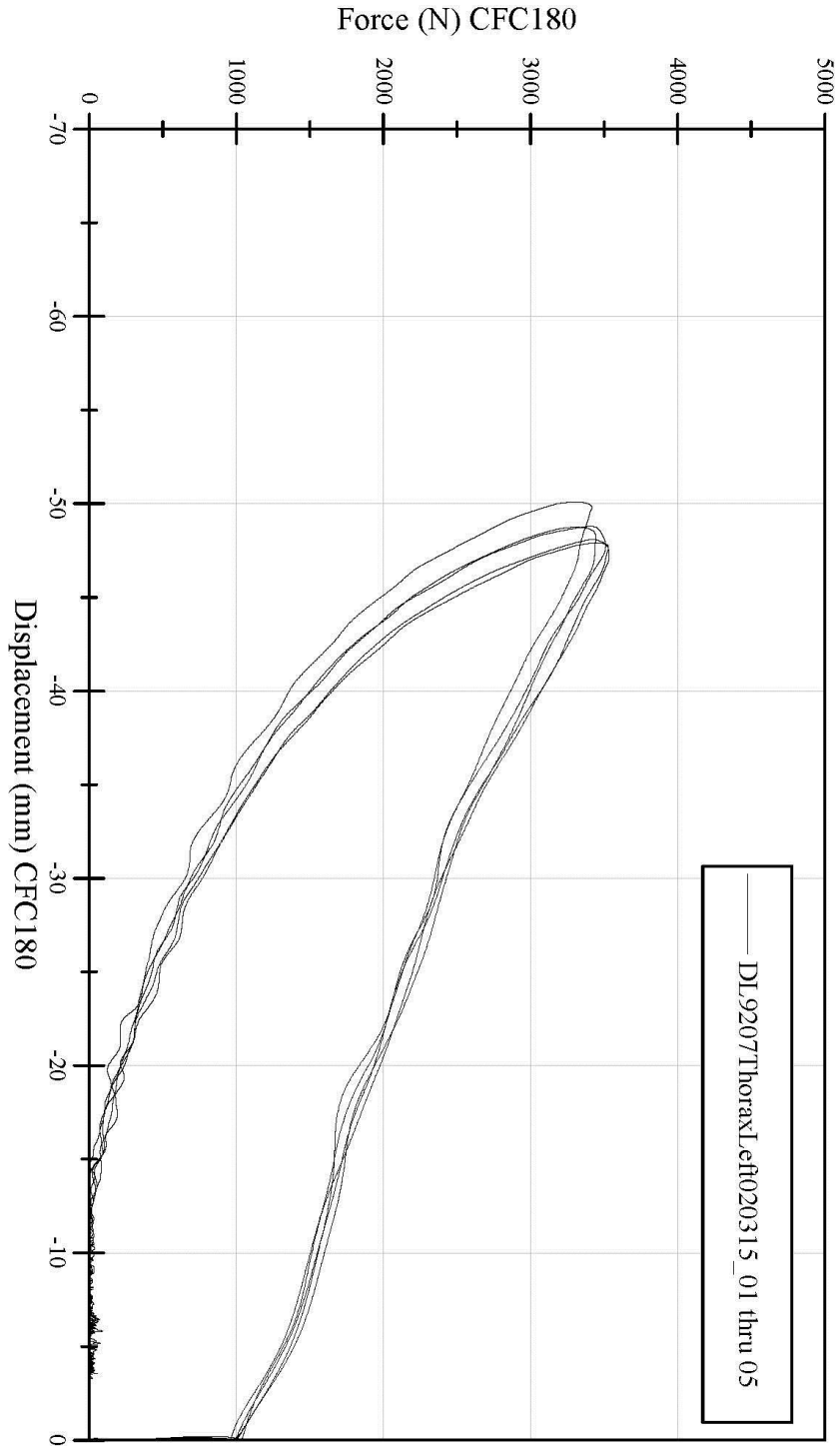


Software Version: 2.5

File Name: DL9207ThoraxUpper081814_01_DIAdemHeader_BINAR\Ypatrick.tdms
08/21/2014 10:13:55.0000

Test Temperature: 71 degrees
Relative Humidity: 30%
Test Velocity: 4.27 m/s

THOR Lower Left Thorax Qualification
Thorax Displacement vs. Probe Force
Serial Number: DL9207

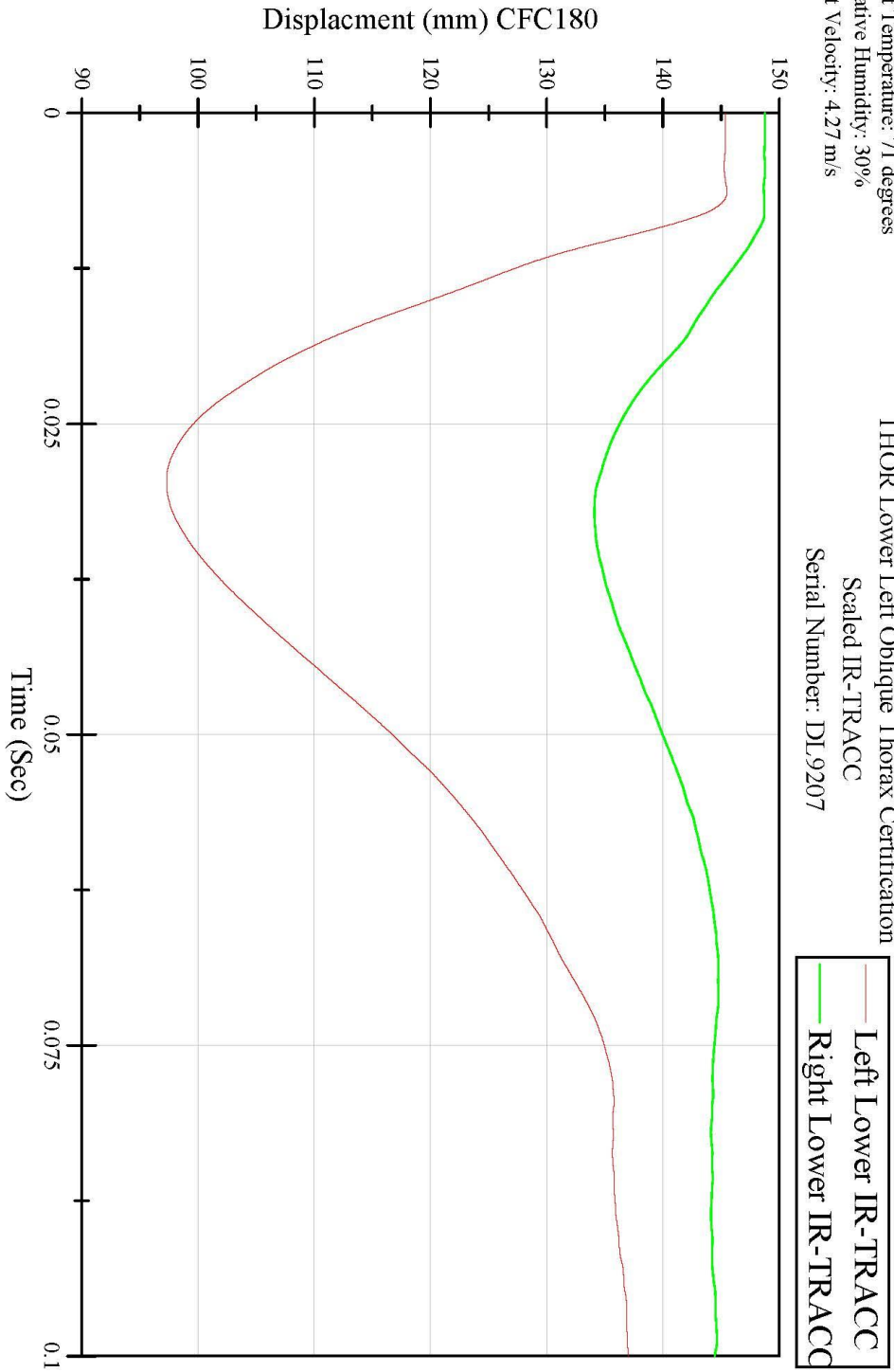


Software Version: 2.5

File Name: DL9207ThoraxLeft020315_01 thru 05 patrick
02/03/2015 13:26:42.0000

Test Temperature: 71 degrees
Relative Humidity: 30%
Test Velocity: 4.27 m/s

THOR Lower Left Oblique Thorax Certification
Scaled IR-TRACC
Serial Number: DL9207

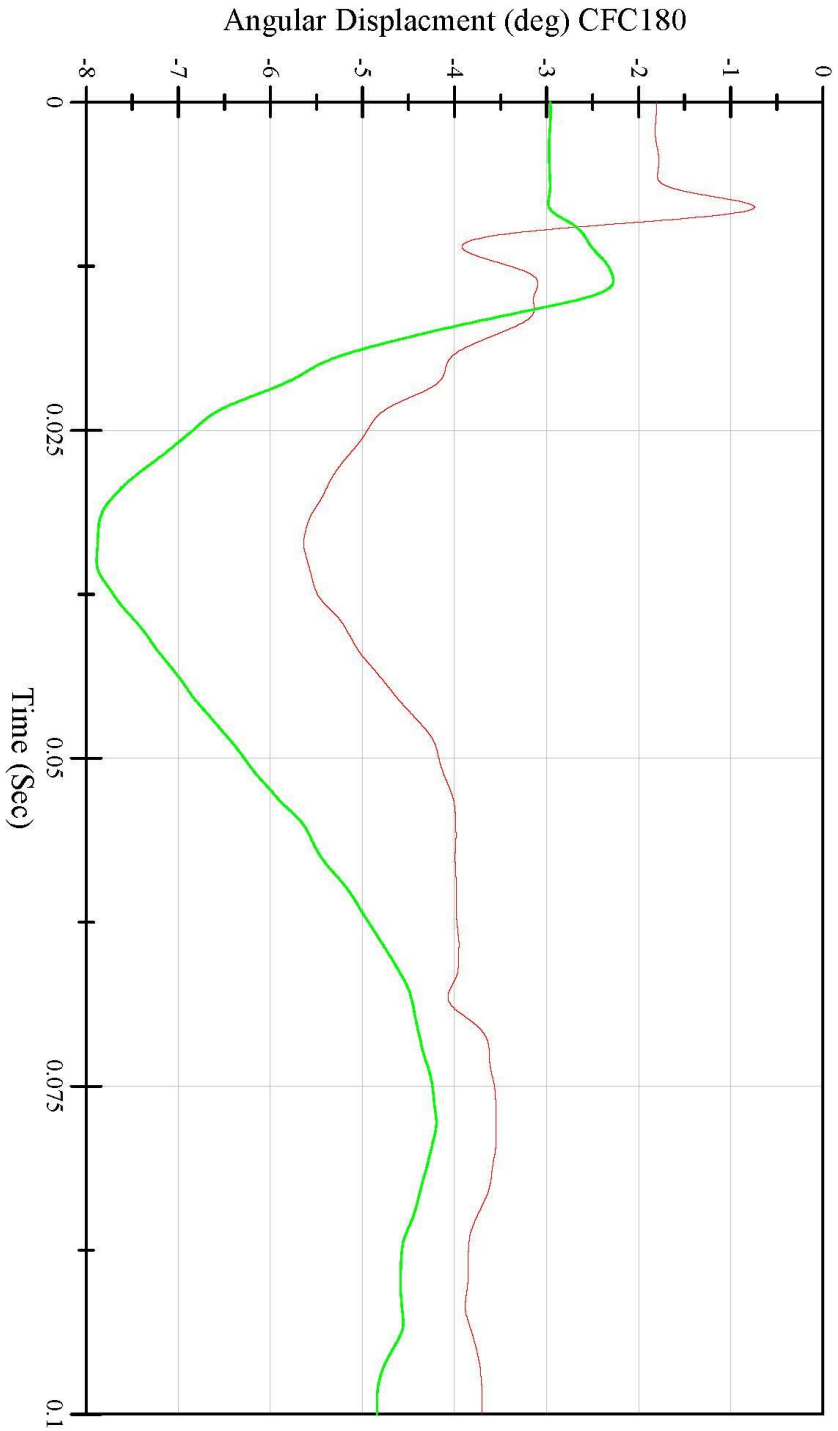


Software Version: 2.5

File Name: DL9207ThoraxLeft020315_01 thru 05 patrick
02/03/2015 13:26:42.0000

Test Temperature: 71 degrees
Relative Humidity: 30%
Test Velocity: 4.27 m/s

THOR Lower Left Oblique Thorax Certification
Y-Potentiometer
Serial Number: DL9207

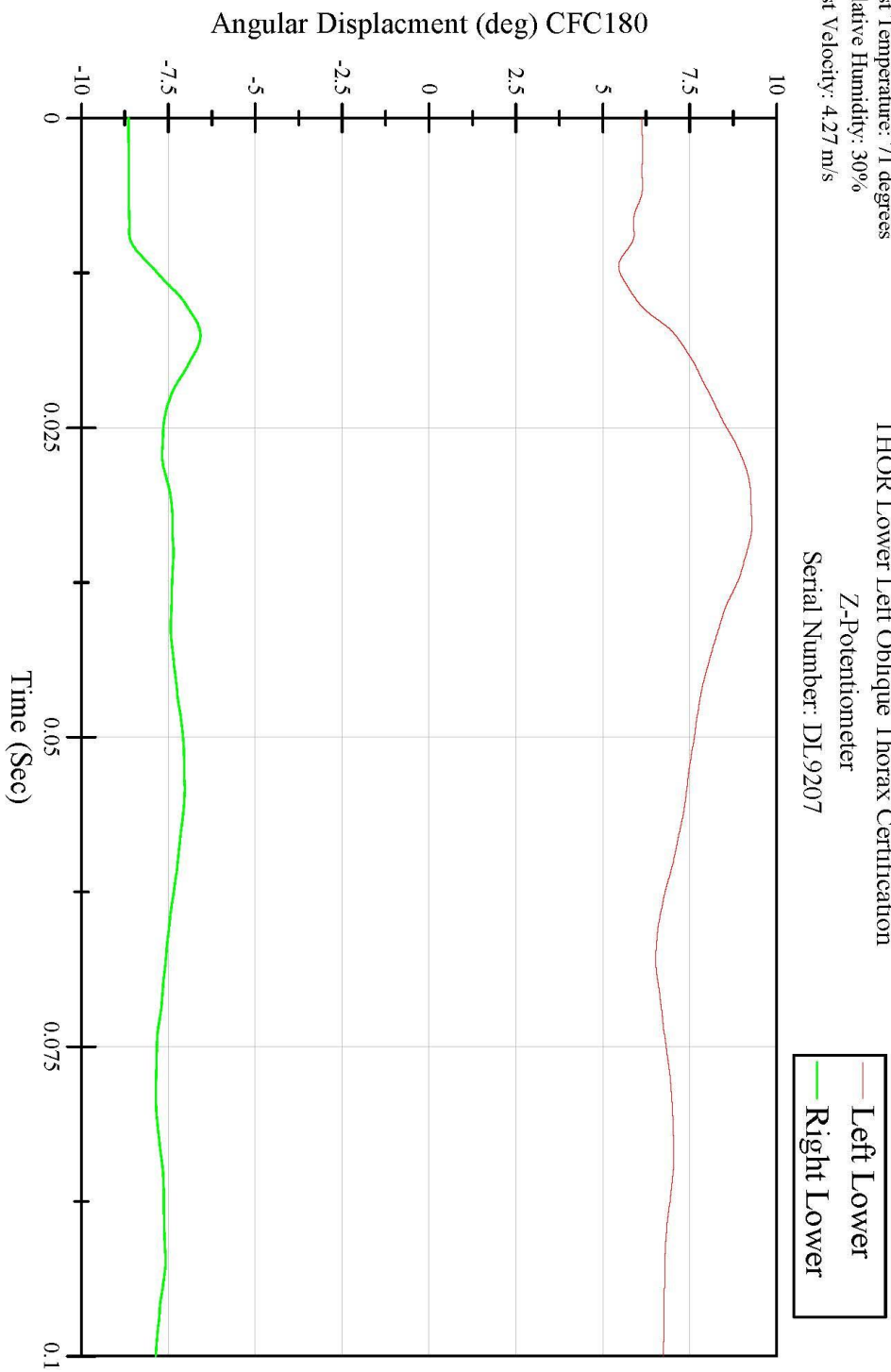


Software Version: 2.5

File Name: DL9207ThoraxLeft020315_01 thru 05 patrick
02/03/2015 13:26:42.0000

Test Temperature: 71 degrees
Relative Humidity: 30%
Test Velocity: 4.27 m/s

THOR Lower Left Oblique Thorax Certification
Z-Potentiometer
Serial Number: DL9207

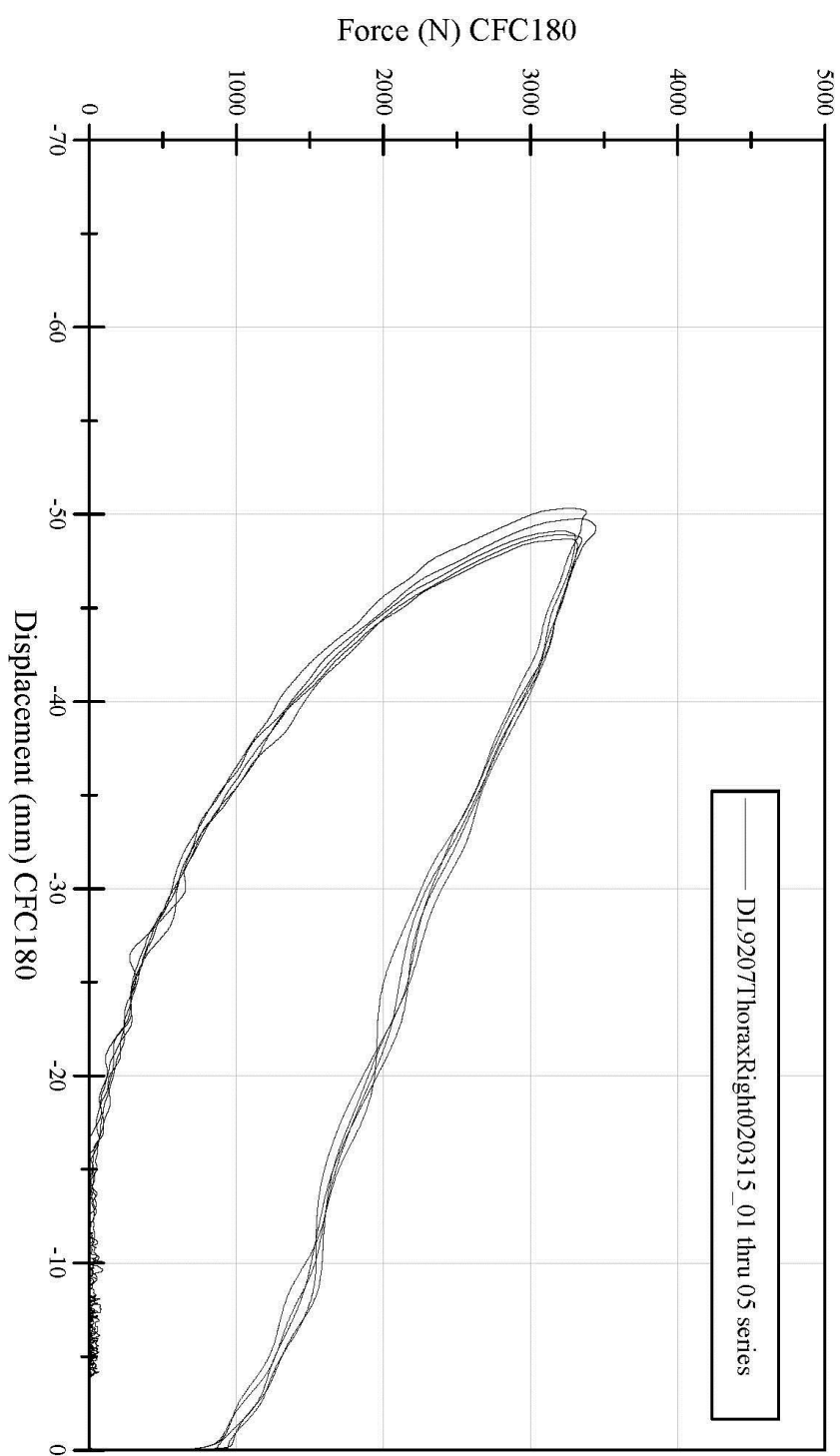


Software Version: 2.5

File Name: DL9207ThoraxLeft020315_01 thru 05 patrick
02/03/2015 13:26:42.0000

Test Temperature: 71 degrees
Relative Humidity: 30%
Test Velocity: 4.31 m/s

THOR Lower Right Thorax Qualification
Thorax Displacement vs. Probe Force
Serial Number: DL9207



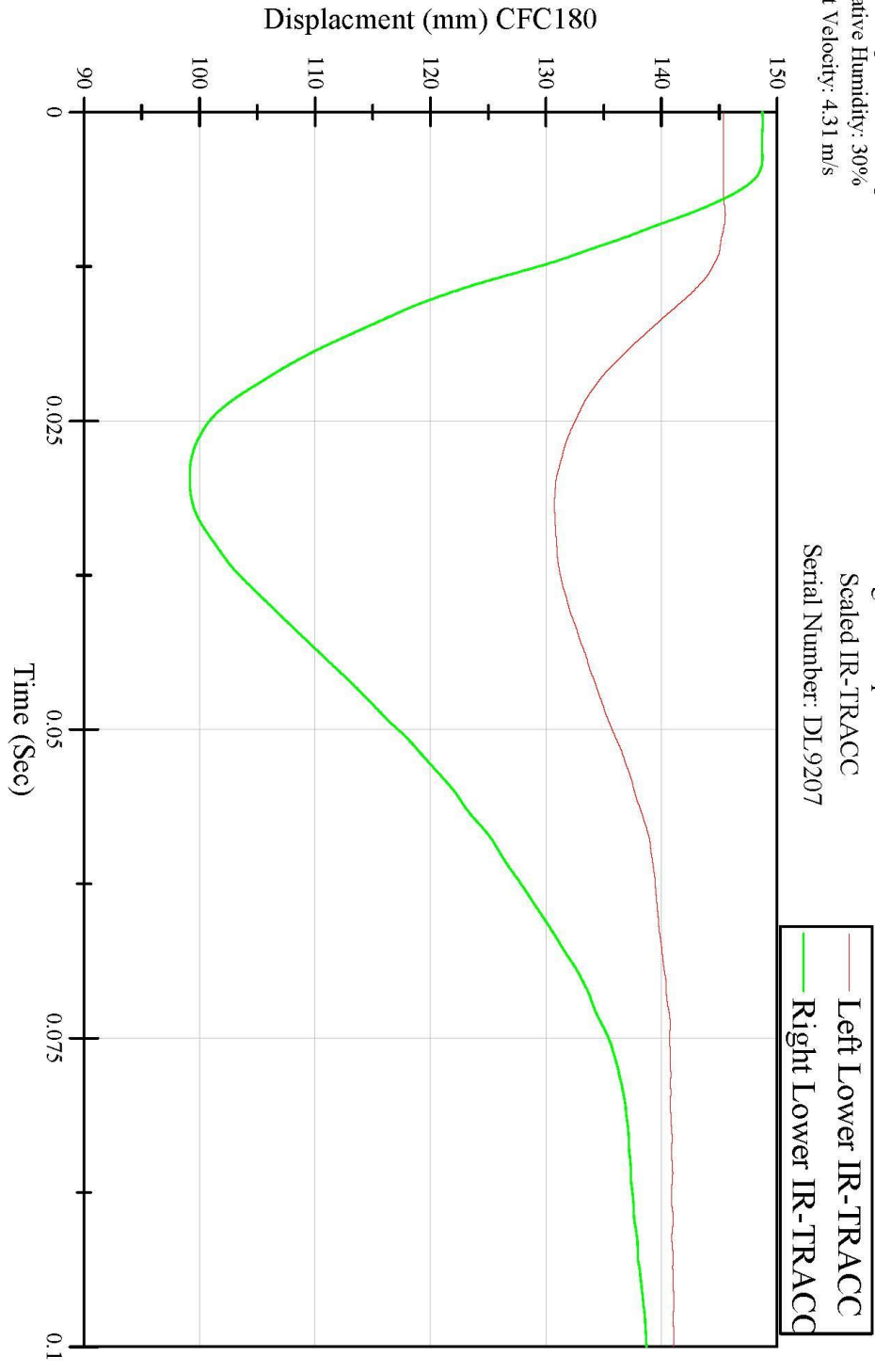
Software Version: 2.5

File Name: DL9207ThoraxRight020315_01 thru 05 series patrick
02/04/2015 06:45:49.0000

Test Temperature: 71 degrees
Relative Humidity: 30%
Test Velocity: 4.31 m/s

THOR Lower Right Oblique Thorax Certification

Scaled IR-TRACC
Serial Number: DL9207



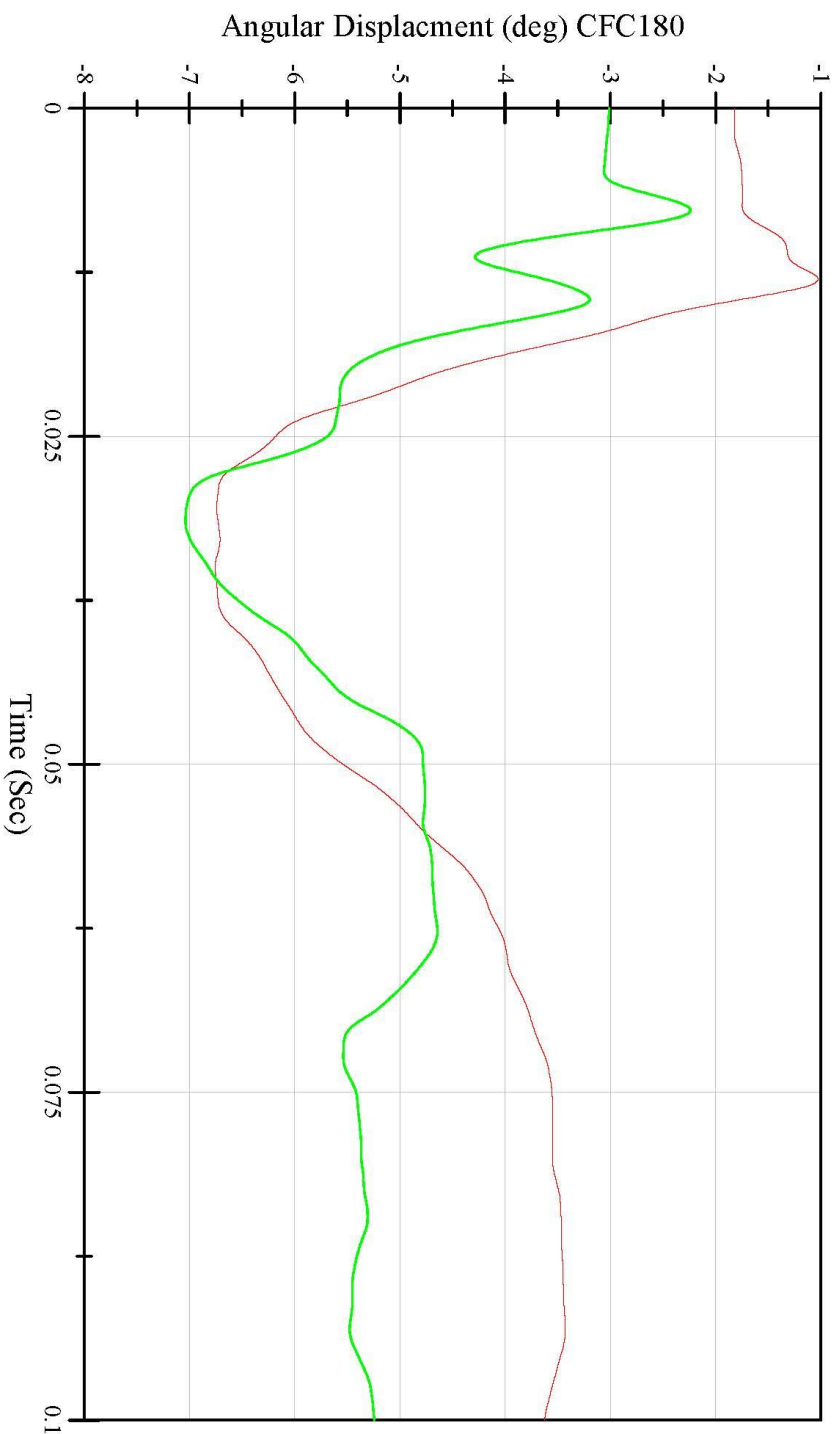
Software Version: 2.5

File Name: DL9207ThoraxRight020315_01 thru 05 series patrick
02/04/2015 06:45:49.0000

Test Temperature: 71 degrees
Relative Humidity: 30%
Test Velocity: 4.31 m/s

THOR Lower Right Oblique Thorax Certification

Y-Potentiometer
Serial Number: DL9207



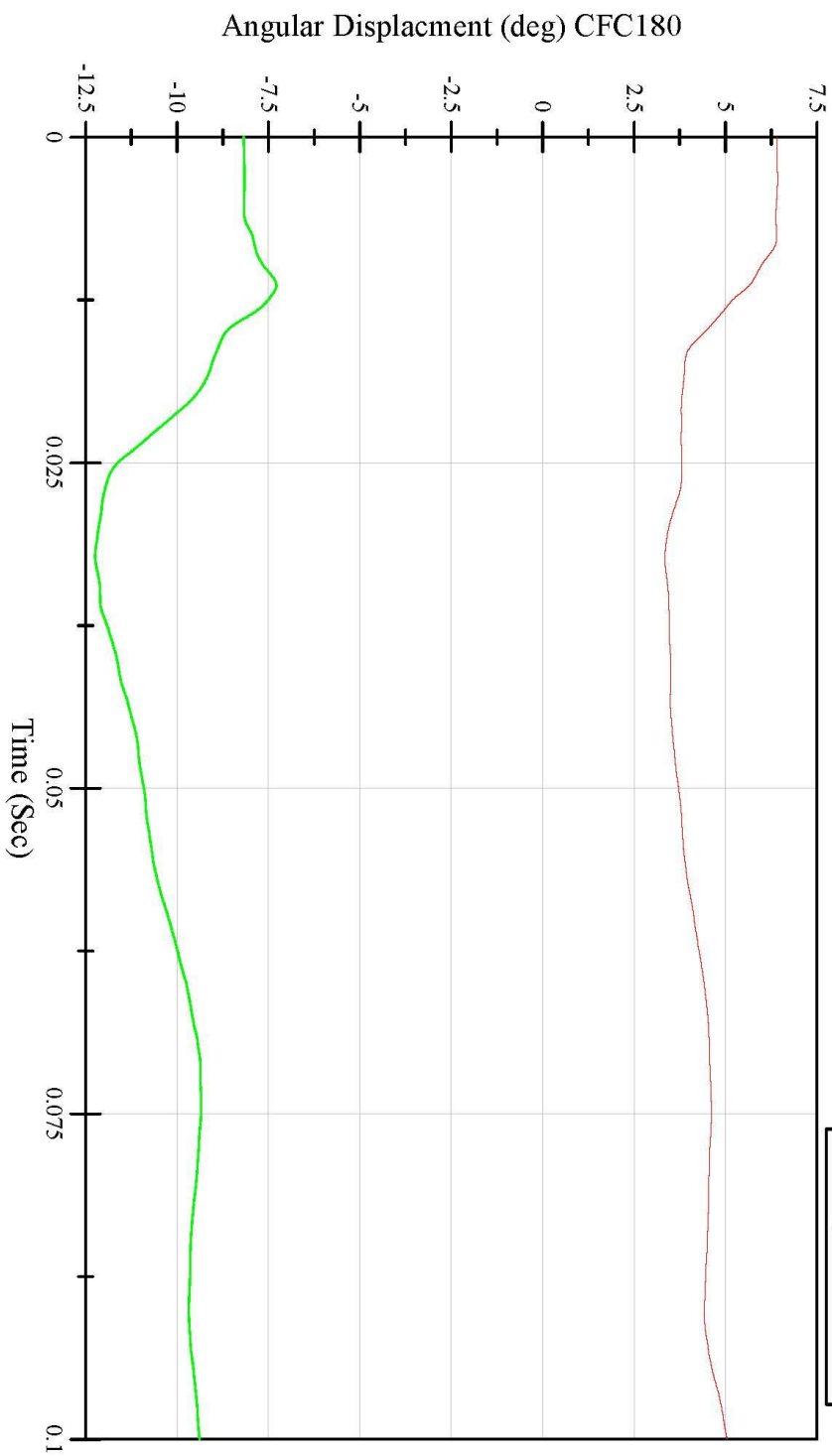
Software Version: 2.5

File Name: DL9207ThoraxRight020315_01 thru 05 series patrick
02/04/2015 06:45:49.0000

Test Temperature: 71 degrees
Relative Humidity: 30%
Test Velocity: 4.31 m/s

THOR Lower Right Oblique Thorax Certification

Z-Potentiometer
Serial Number: DL9207

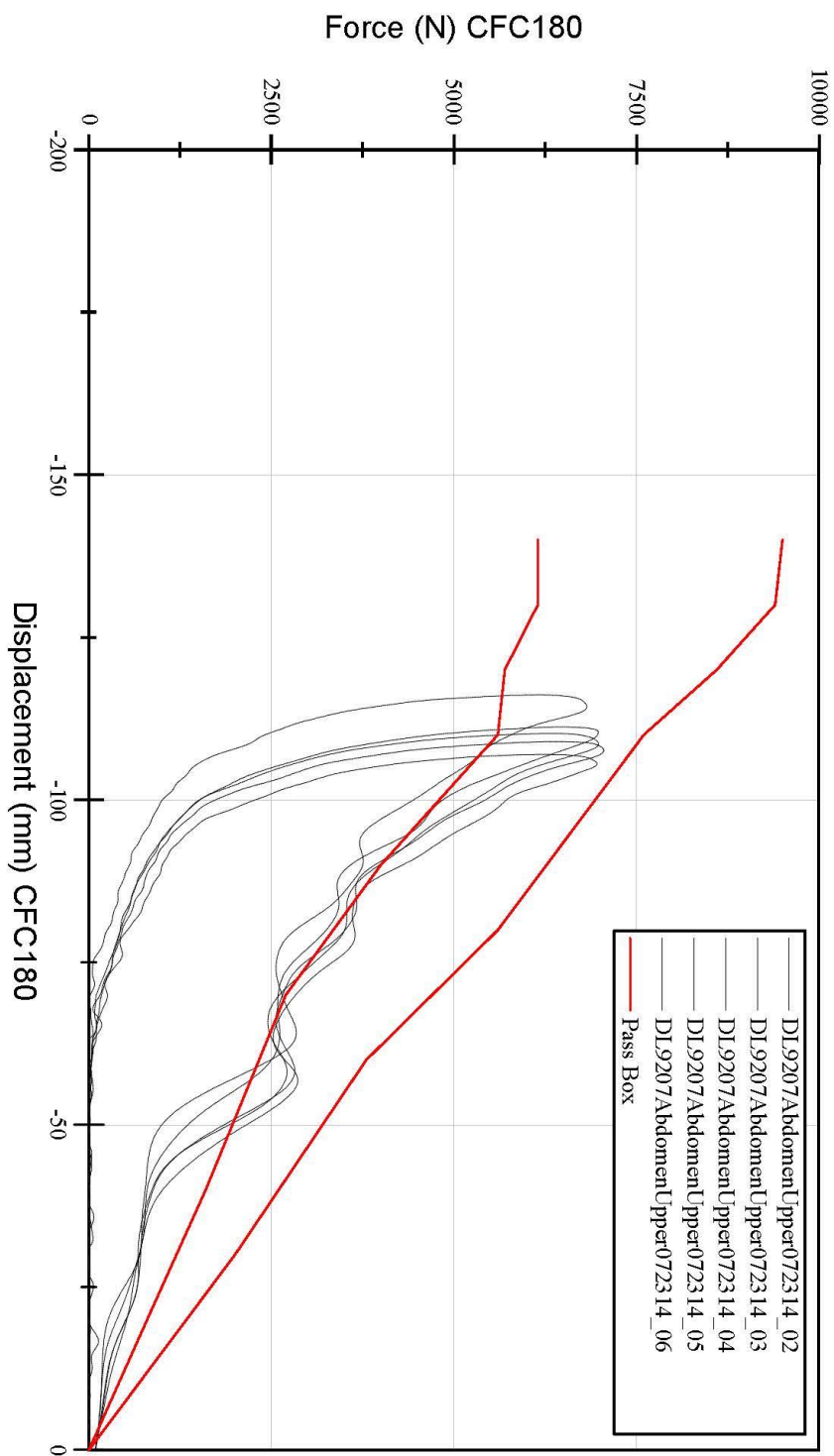


Software Version: 2.5

File Name: DL9207ThoraxRight020315_01 thru 05 series patrick
02/04/2015 06:45:49.0000

Test Temperature: 71 degrees
Relative Humidity: 50%
Test Velocity: 6.68 m/s

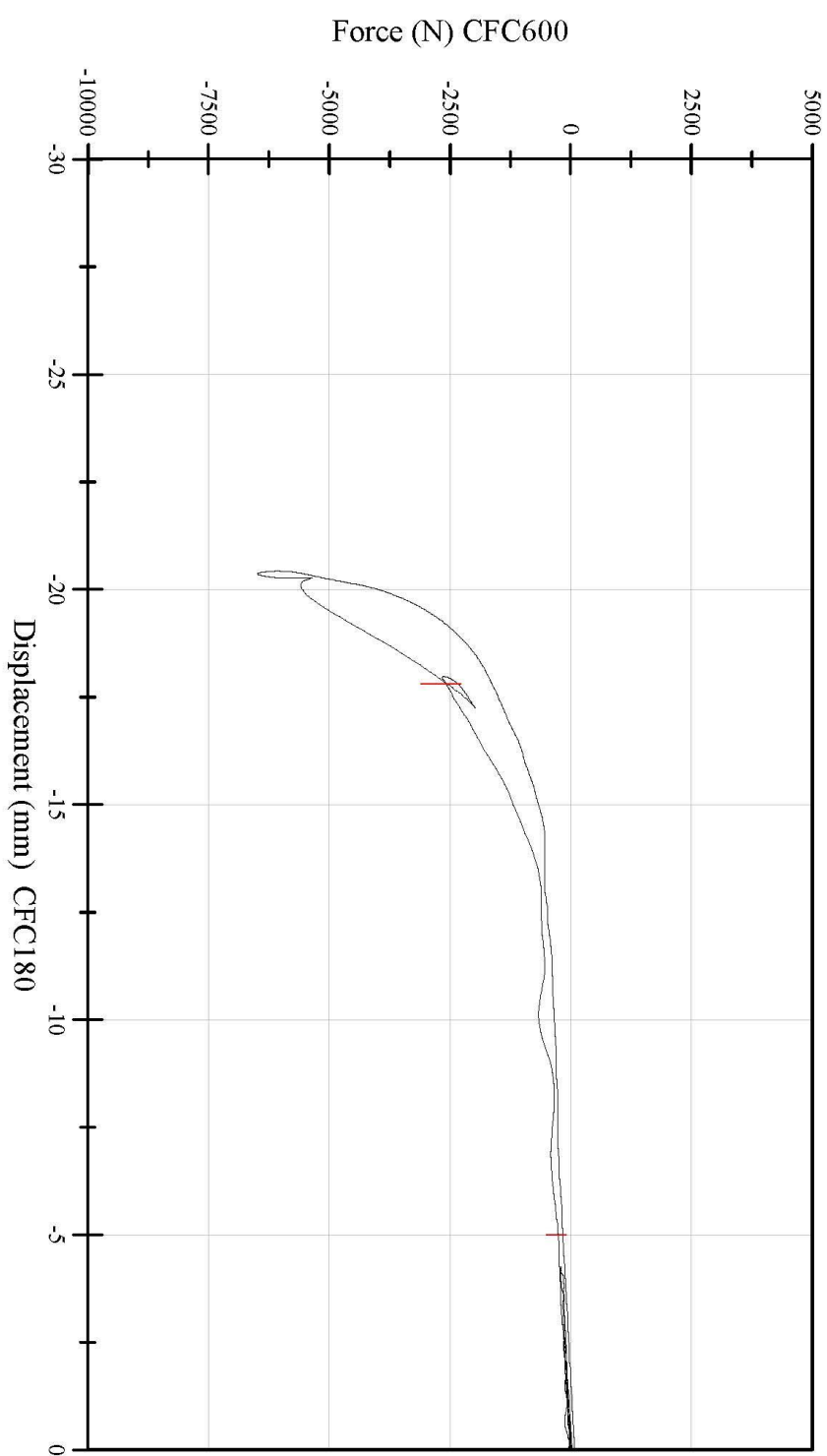
THOR Upper Abdomen Qualification
Abdomen Displacement vs. Probe Force
Serial Number: DL9207



Software Version: File Name: DL9207AbdomenUpper072314_all_DIAdemHeader_BINARYpatrick 07/23/2014 11:21:18.0000

Test Temperature: 70.7 degrees
Relative Humidity: 45%
Test Velocity: 2.78 m/s

THOR Right Knee Certification
Femur Force vs. Knee Displacement
Serial Number: 021033

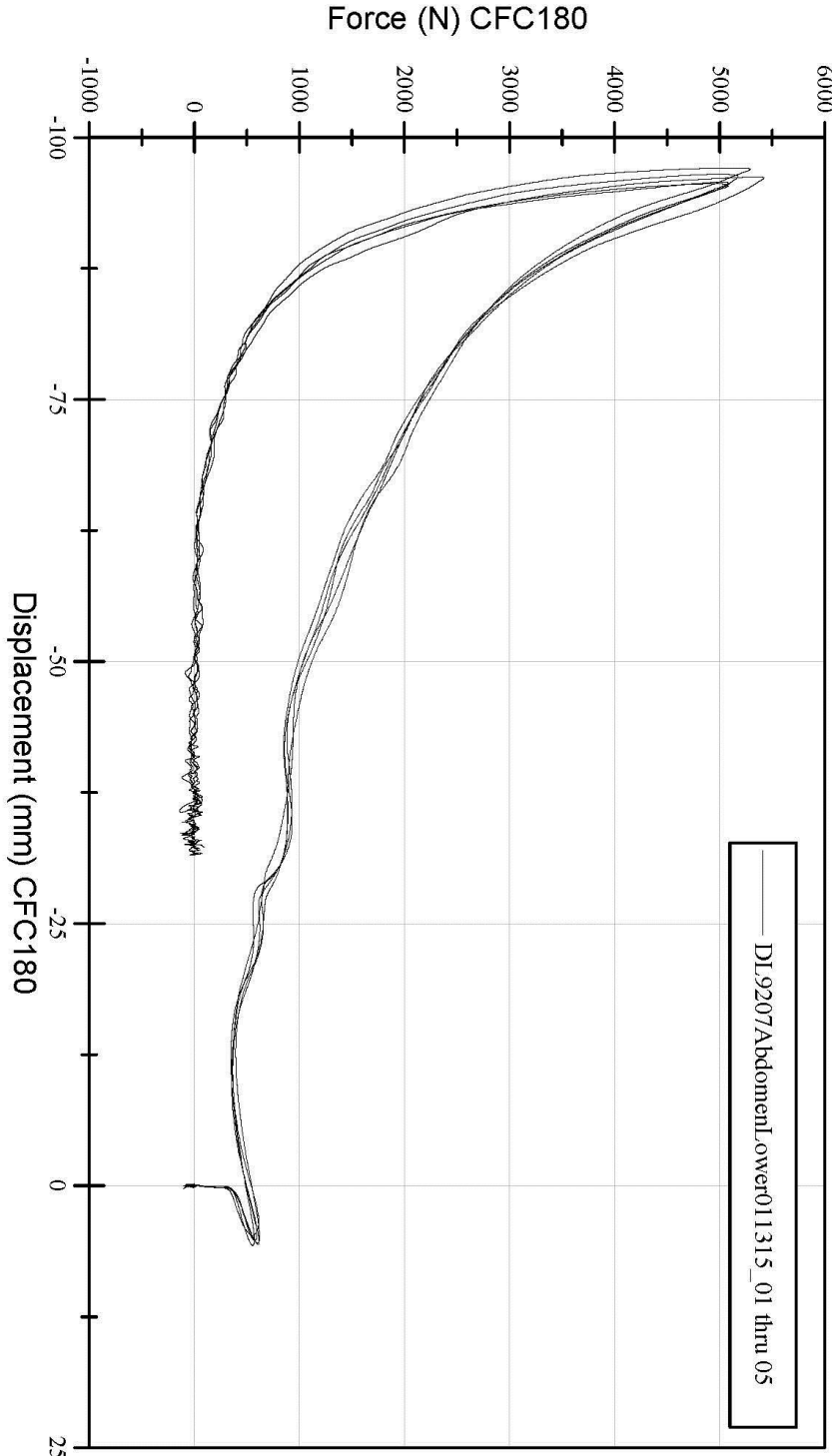


Software Version: 2.4

File Name: 012033 Knee1150407-03processed.dat
04/07/2015 09:51:56.0000

Test Temperature: 71 degrees
Relative Humidity: 25%
Test Velocity: 4.27 m/s

THOR Lower Abdomen Qualification
Abdomen Displacement vs. Probe Force
Serial Number: DL9207

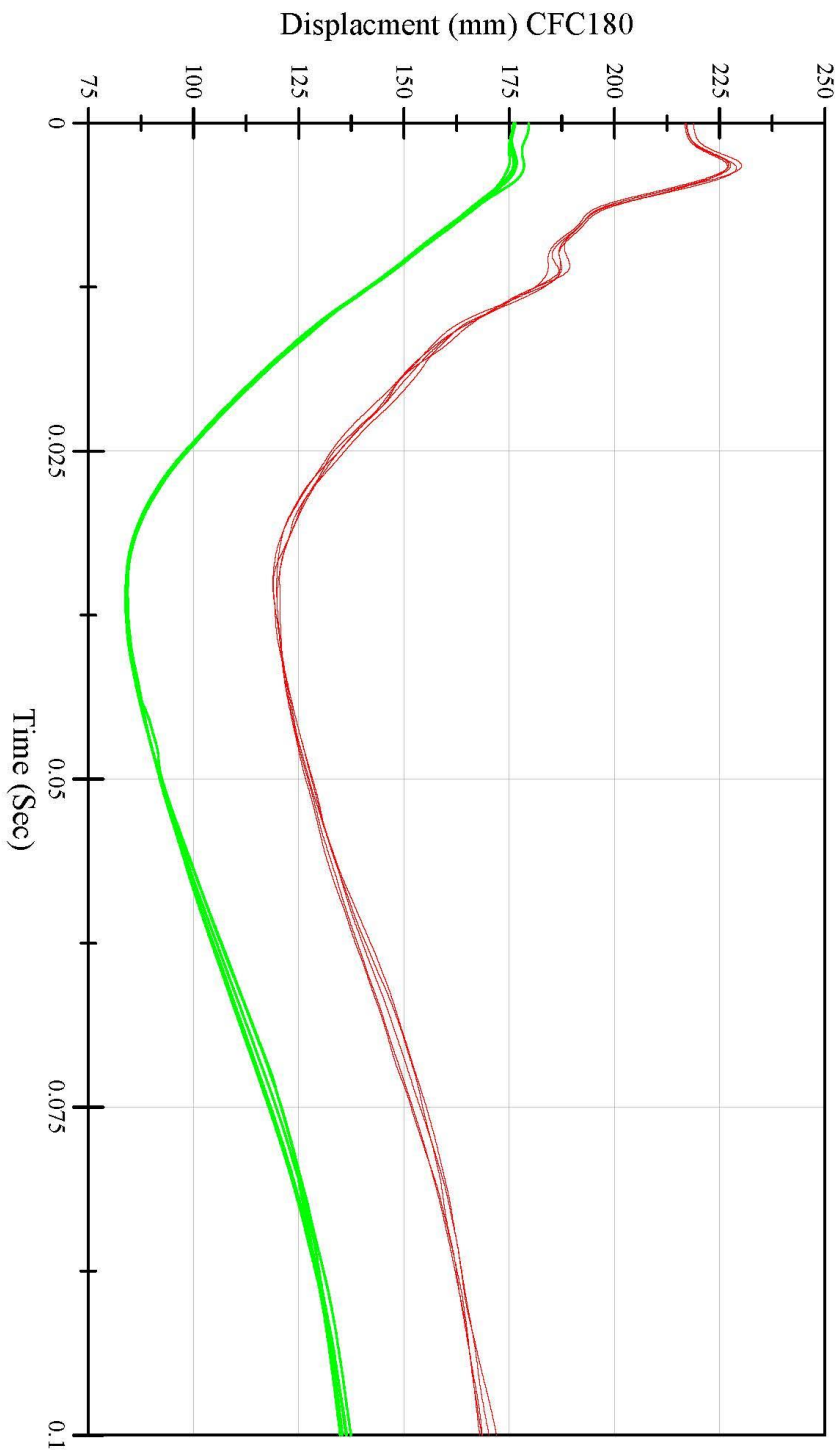


Software Version:

File Name: DL9207AbdomenLower011315_01 thru 05 Series patrick
01/13/2015 12:19:51.0000

Test Temperature: 71 degrees
Relative Humidity: 25%
Test Velocity: 4.27 m/s

THOR Lower Abdomen Qualification
IRTRACC Displacement
Serial Number: DL9207

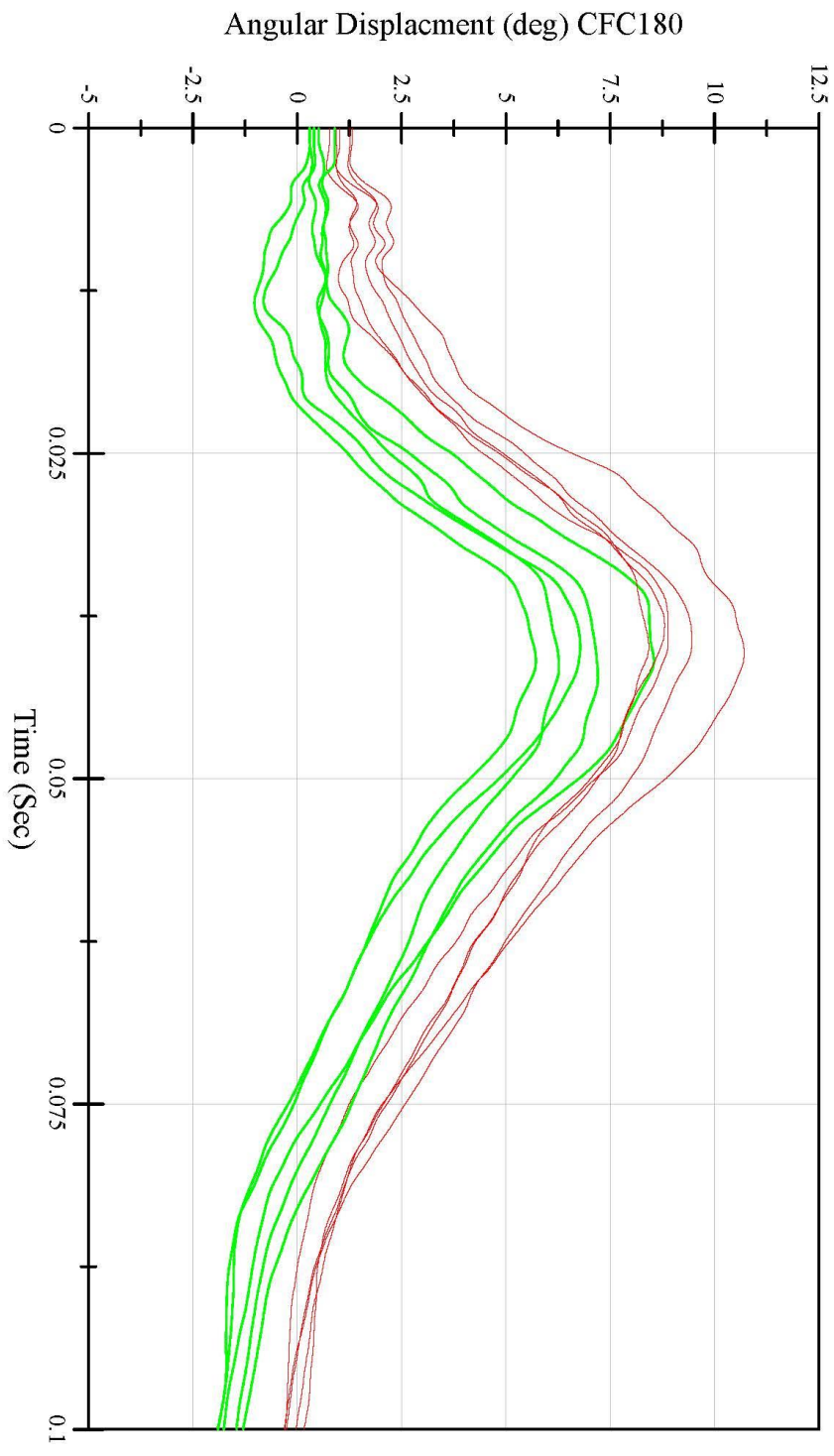


Software Version:

File Name: DL9207AbdomenLower011315_01 thru 05 Series patrick
01/13/2015 12:19:51.0000

Test Temperature: 71 degrees
Relative Humidity: 25%
Test Velocity: 4.27 m/s

THOR Lower Abdomen Qualification
Y-Pot Displacement
Serial Number: DL9207

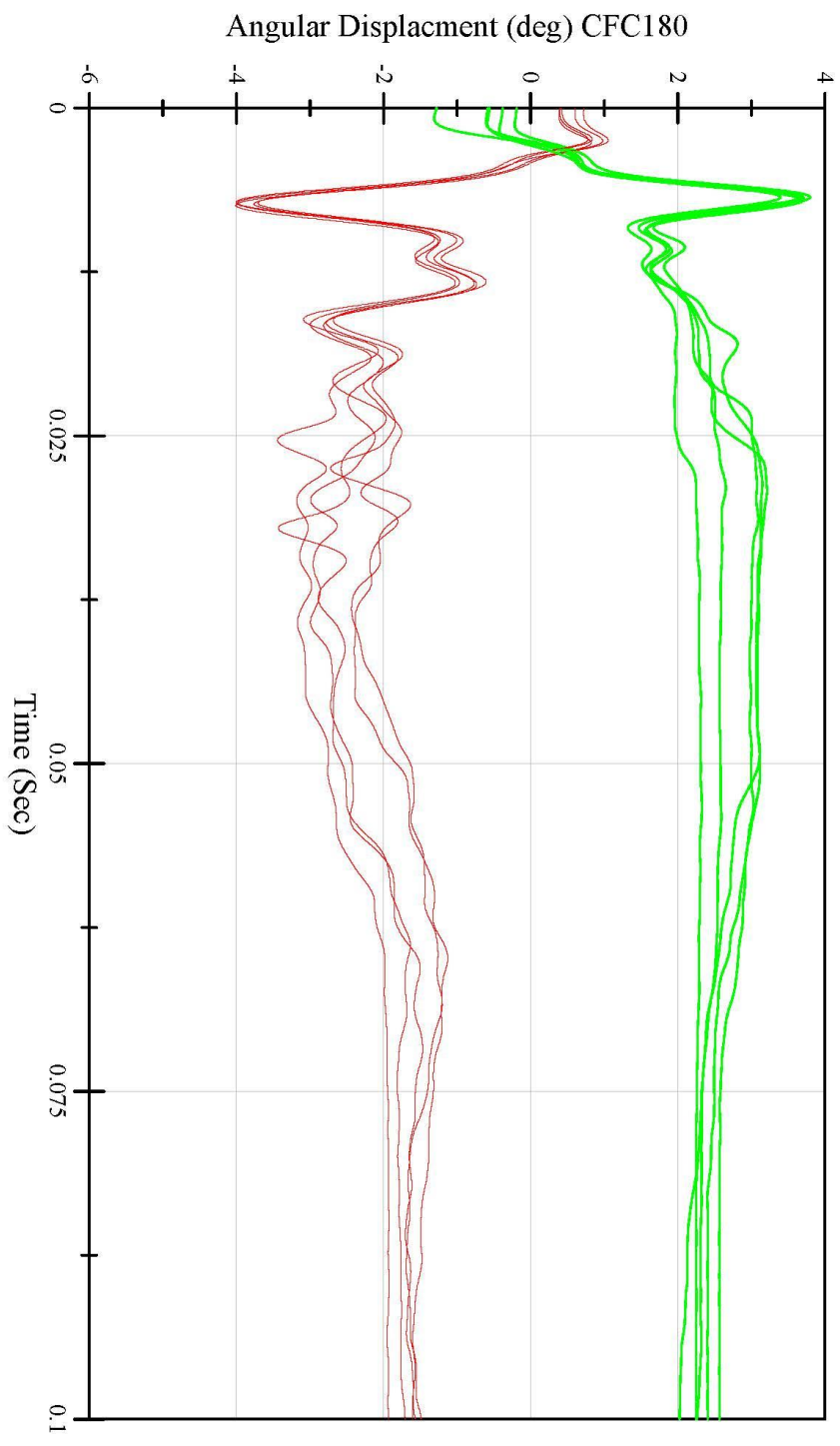


Software Version:

File Name: DL9207AbdomenLower011315_01 thru 05 Series patrick
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Relative Humidity: 25%
Test Velocity: 4.27 m/s

THOR Lower Abdomen Qualification
Z-Potentiometer
Serial Number: DL9207

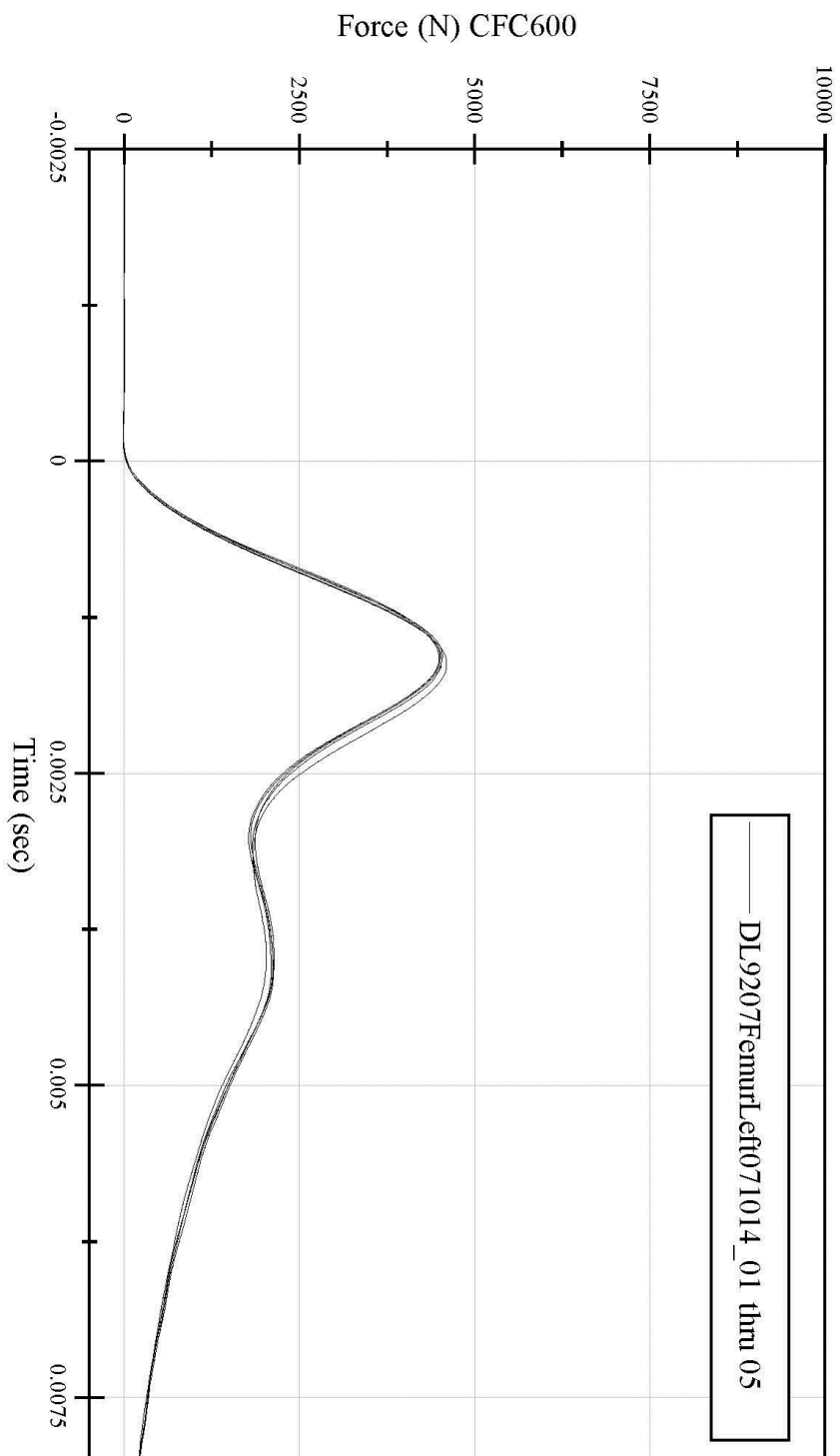


Software Version:

File Name: DL9207AbdomenLower011315_01 thru 05 Series patrick
01/13/2015 12:19:51.0000

Test Temperature: 71 degrees
Relative Humidity: 49%
Test Velocity: 2.58 m/s

THOR Left Femur Qualification
Probe Force
Serial Number: DL9207

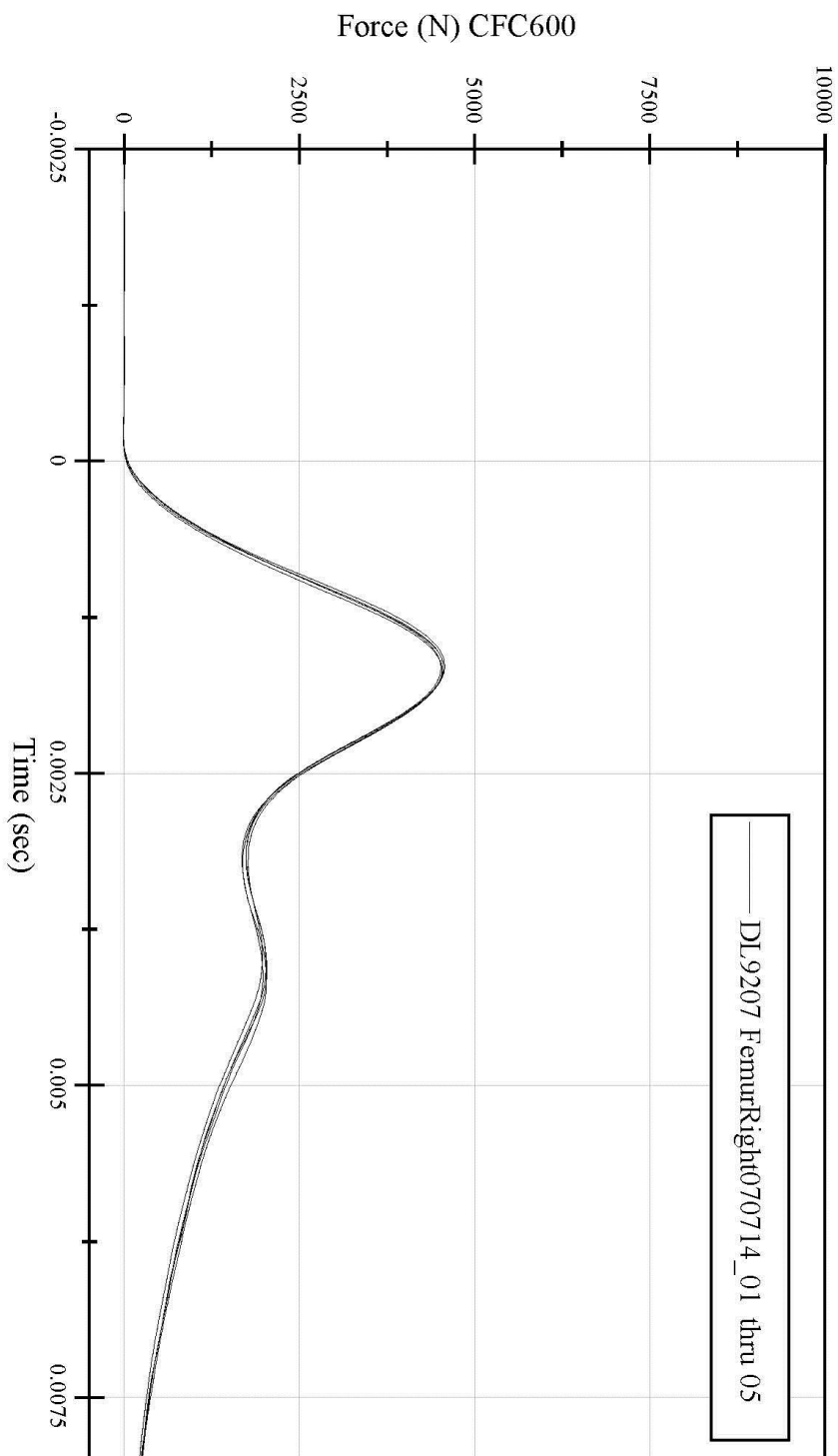


Software Version:

File Name: DL9207 Femur Left 070814_01 thru 05 Series
07/09/2014 09:10:57.0000

Test Temperature: 71 degrees
Relative Humidity: 49%
Test Velocity: 2.58 m/s

THOR Right Femur Qualification
Probe Force
Serial Number: DL9207

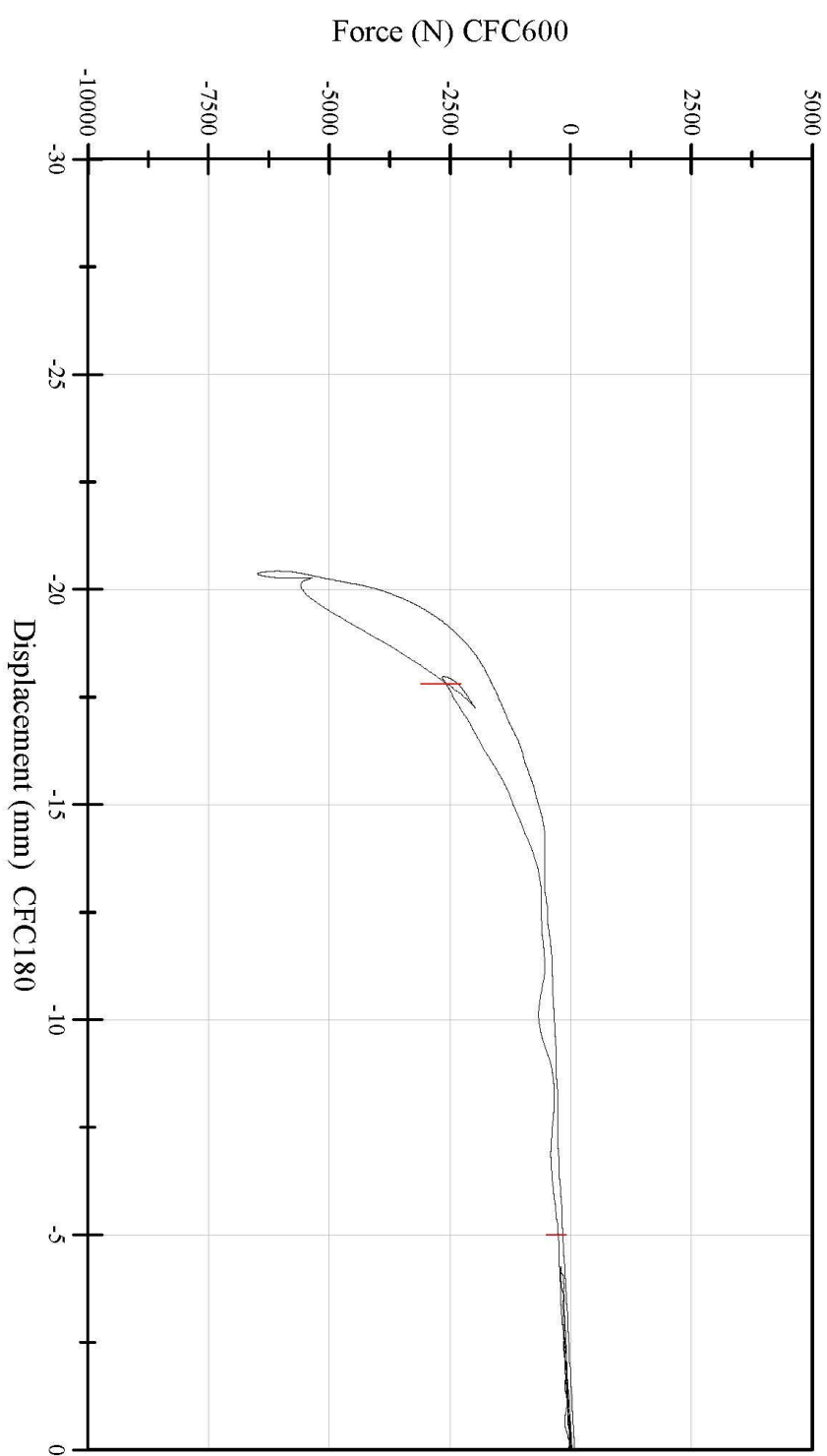


Software Version:

File Name: DL9207 Femur Right 070714_01 thru 05 Series
07/09/2014 09:12:34.0000

Test Temperature: 70.7 degrees
Relative Humidity: 45%
Test Velocity: 2.78 m/s

THOR Right Knee Certification
Femur Force vs. Knee Displacement
Serial Number: 021033



Software Version: 2.4

File Name: 012033 Knee1150407-03processed.dat
04/07/2015 09:51:56.0000



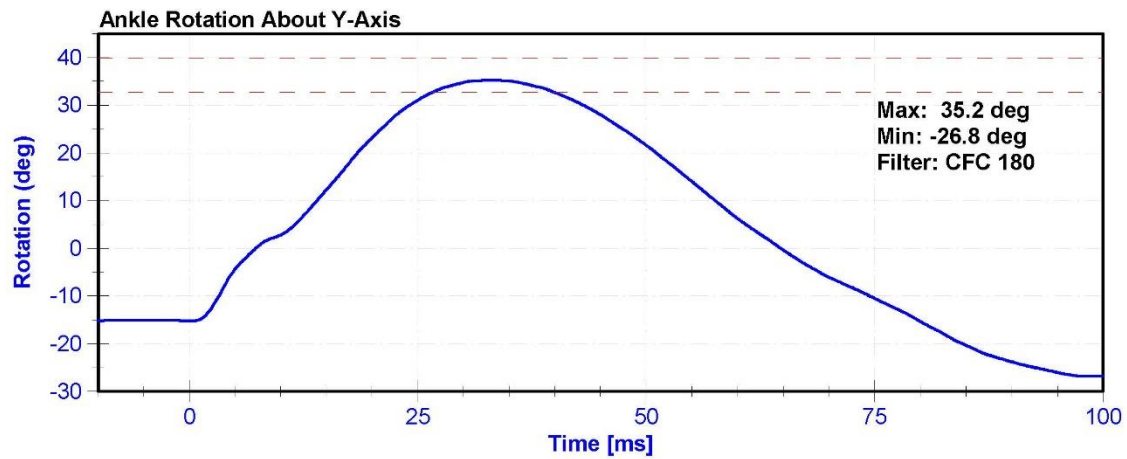
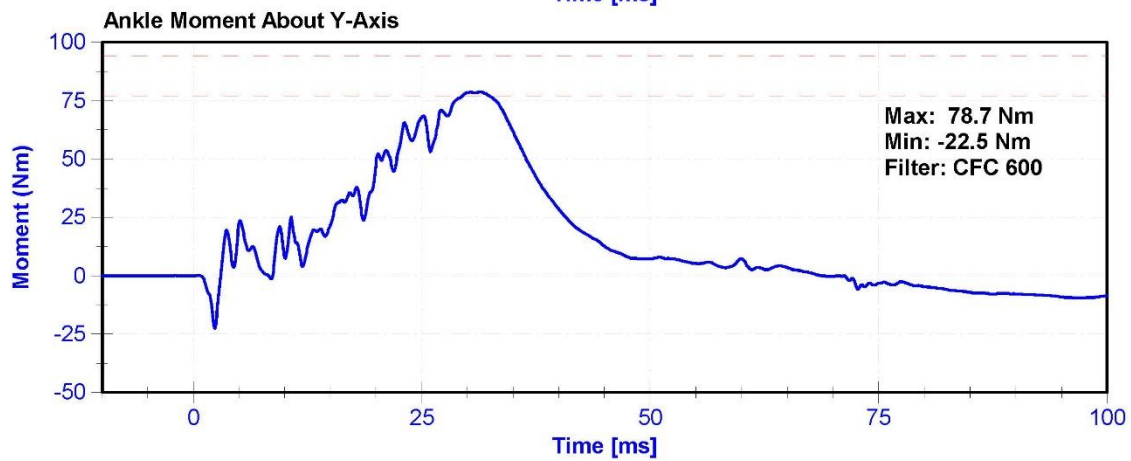
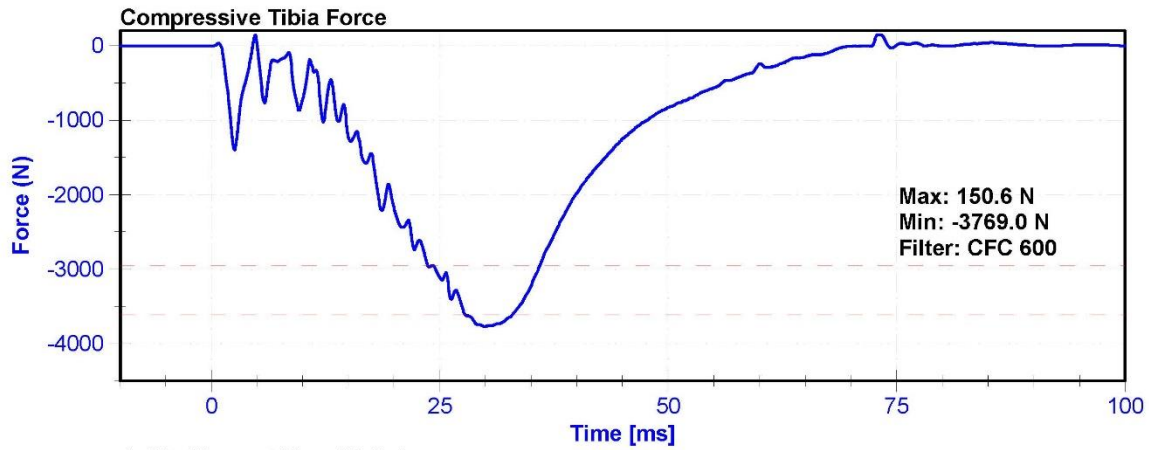
ATD Manufacturer	Humanetics	Test Technician	M. Goehle
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.4	Pass
Humidity	10	70	%	64.4	Pass
Velocity	4.9	5.1	m/s	4.916	Pass
Lower Tibia Compressive Force	-3,613	-2,956	N	-3769.0	Fail
Peak Moment about Y-Axis	77.1	94.2	Nm	78.73	Pass
Peak Rotation about Y-Axis	32.7	39.9	deg	35.23	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





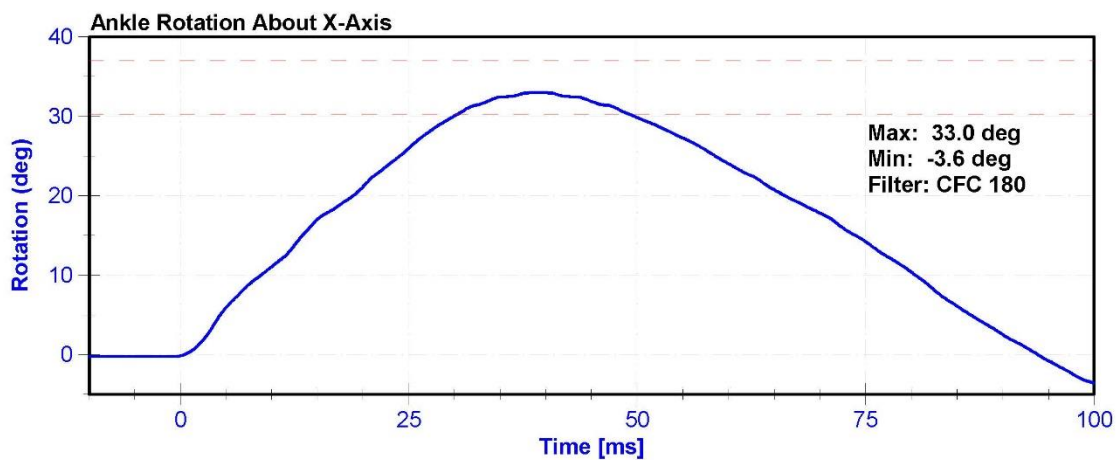
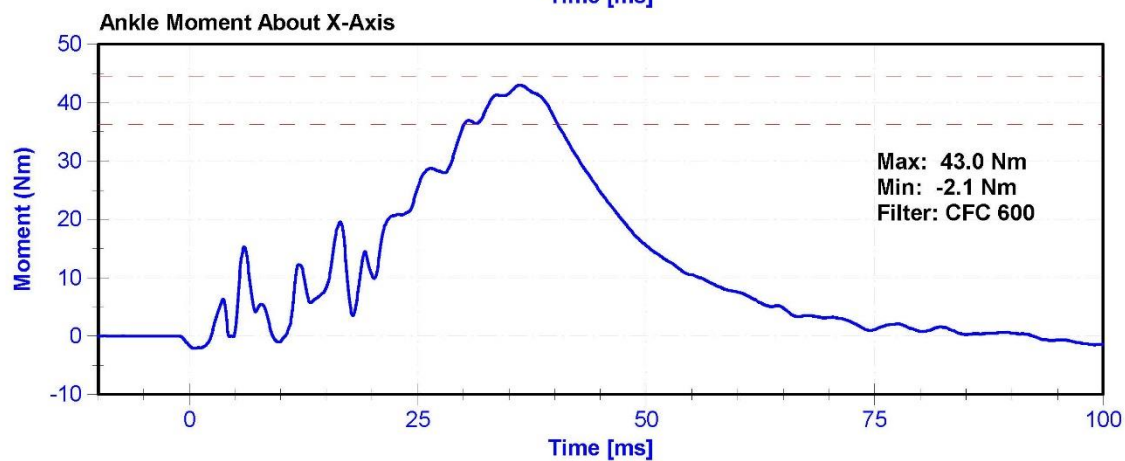
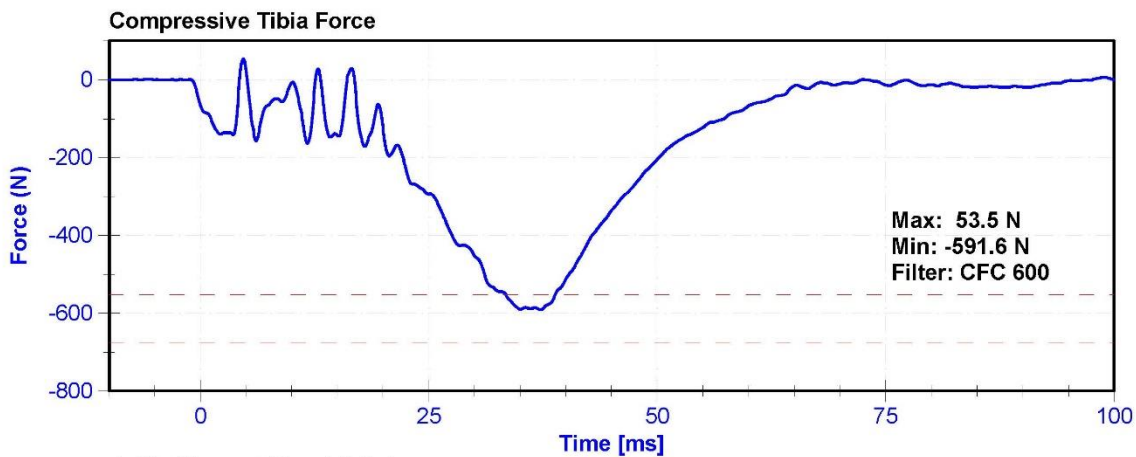
ATD Manufacturer	Humanetics	Test Technician	M. Goehle
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.1	Pass
Humidity	10	70	%	58.4	Pass
Velocity	1.9	2.1	m/s	2.016	Pass
Lower Tibia Compressive Force	-675	-552	N	-591.6	Pass
Peak Moment about X-Axis	36.3	44.4	Nm	42.99	Pass
Peak Rotation about X-Axis	30.3	37.0	deg	32.97	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



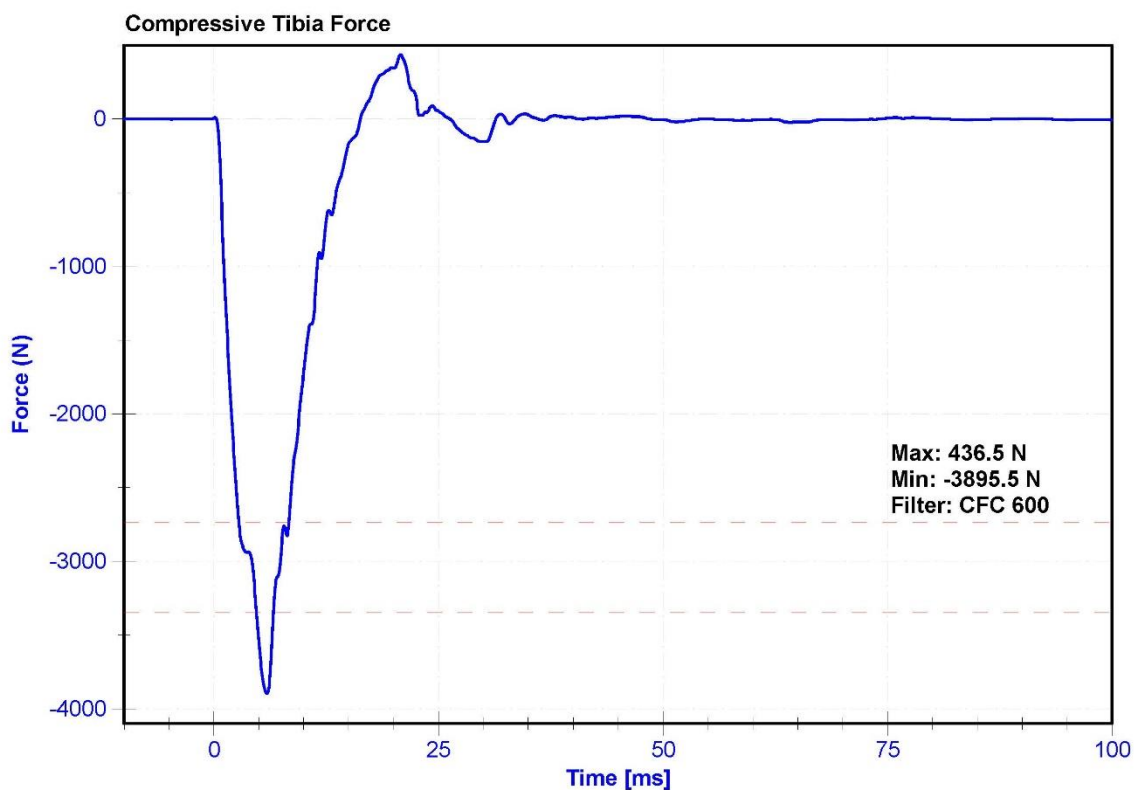
ATD Manufacturer	Humanetics	Test Technician	M. Goehle
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.3	Pass
Humidity	10	70	%	65.3	Pass
Velocity	3.9	4.1	m/s	3.908	Pass
Lower Tibia Compressive Force	2,738	3,346	N	-3895.5	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





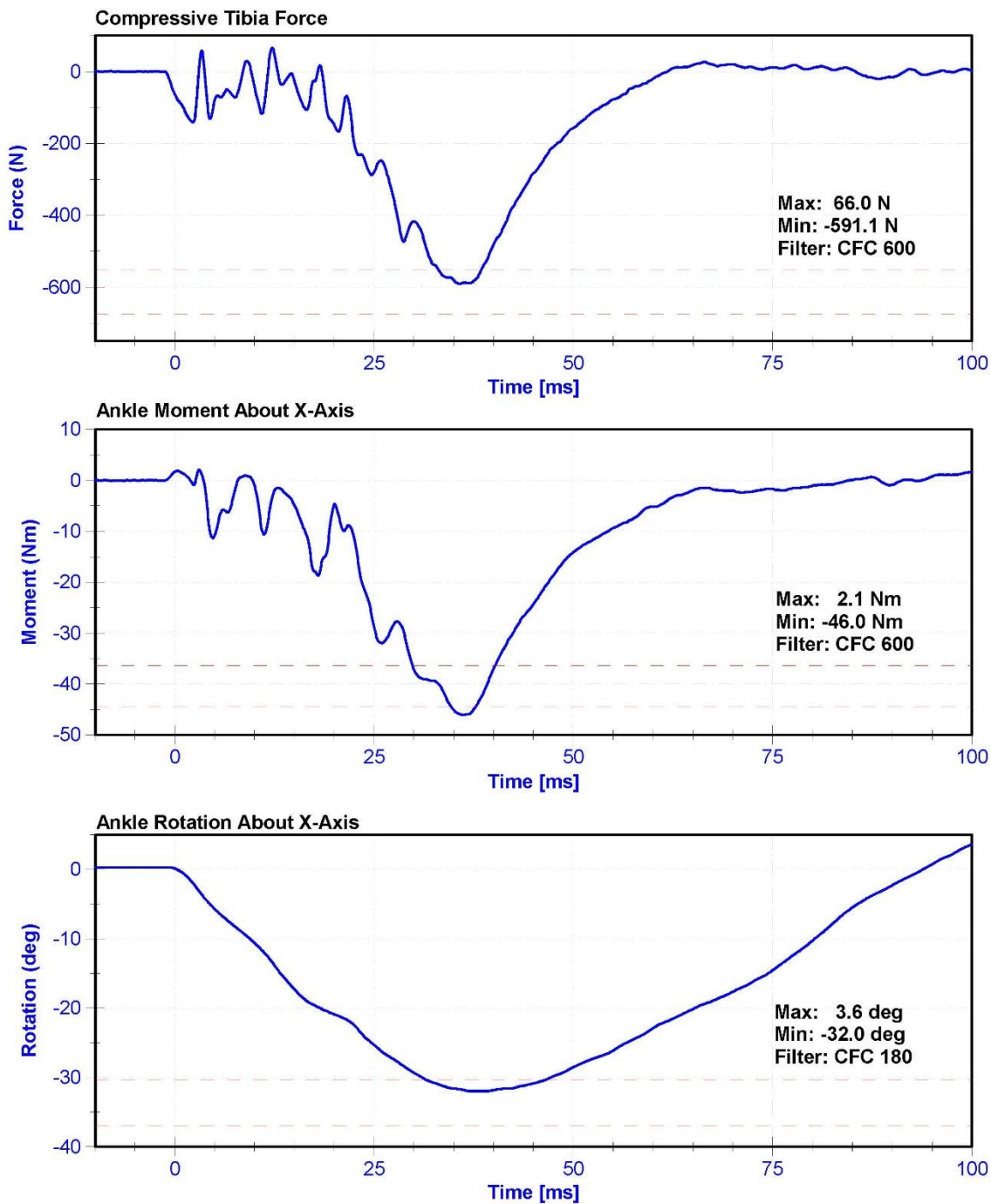
ATD Manufacturer	Humanetics	Test Technician	M. Goehle
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.3	Pass
Humidity	10	70	%	58.3	Pass
Velocity	1.9	2.1	m/s	1.939	Pass
Lower Tibia Compressive Force	-675	-552	N	-591.1	Pass
Peak Moment about X-Axis	-44.4	-36.3	Nm	-46.02	Fail
Peak Rotation about X-Axis	-37.0	-30.3	deg	-32.01	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





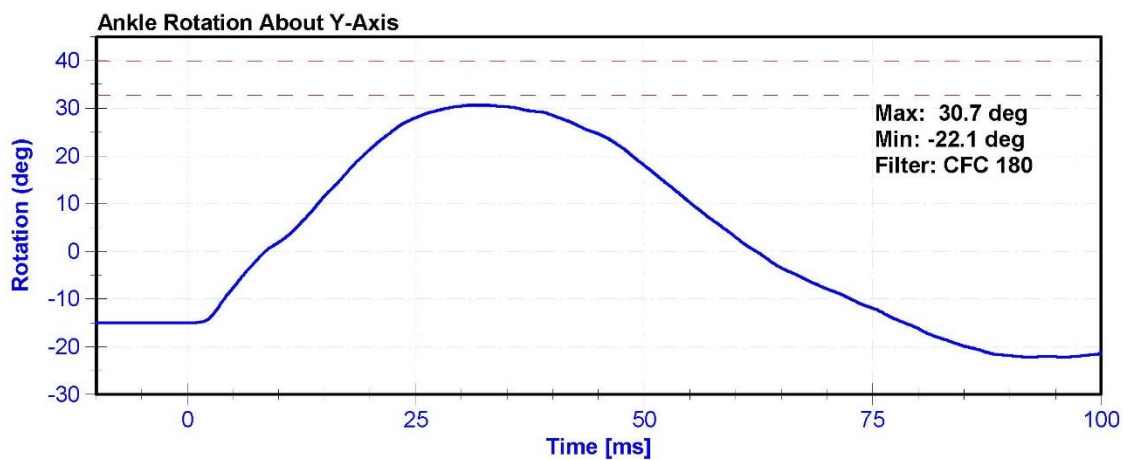
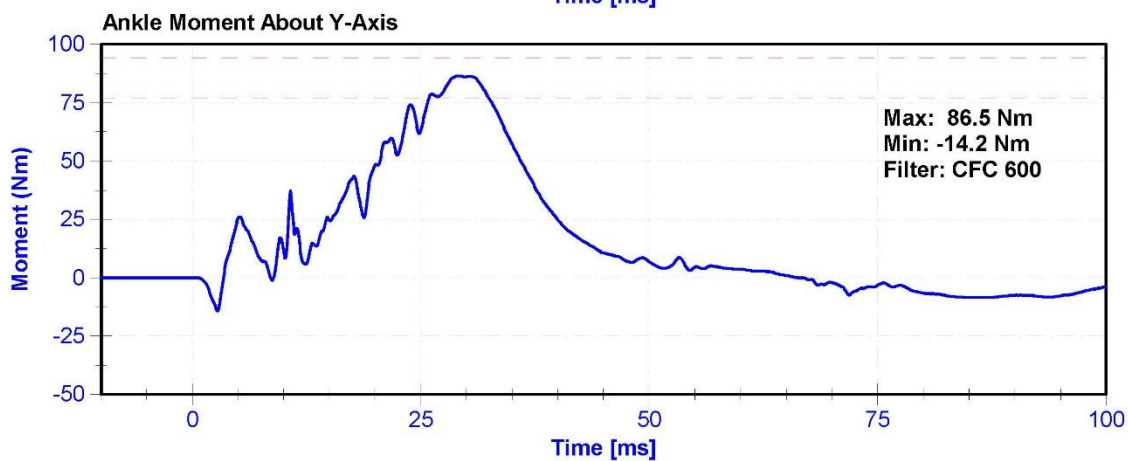
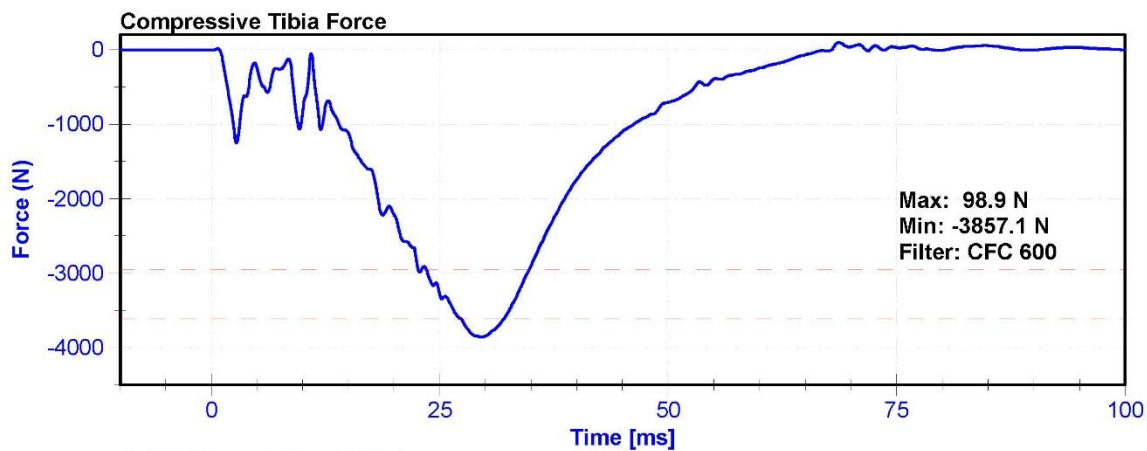
ATD Manufacturer	Humanetics	Test Technician	M. Goehle
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.1	Pass
Humidity	10	70	%	53.9	Pass
Velocity	4.9	5.1	m/s	4.916	Pass
Lower Tibia Compressive Force	-3,613	-2,956	N	-3857.1	Fail
Peak Moment about Y-Axis	77.1	94.2	Nm	86.48	Pass
Peak Rotation about Y-Axis	32.7	39.9	deg	30.69	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



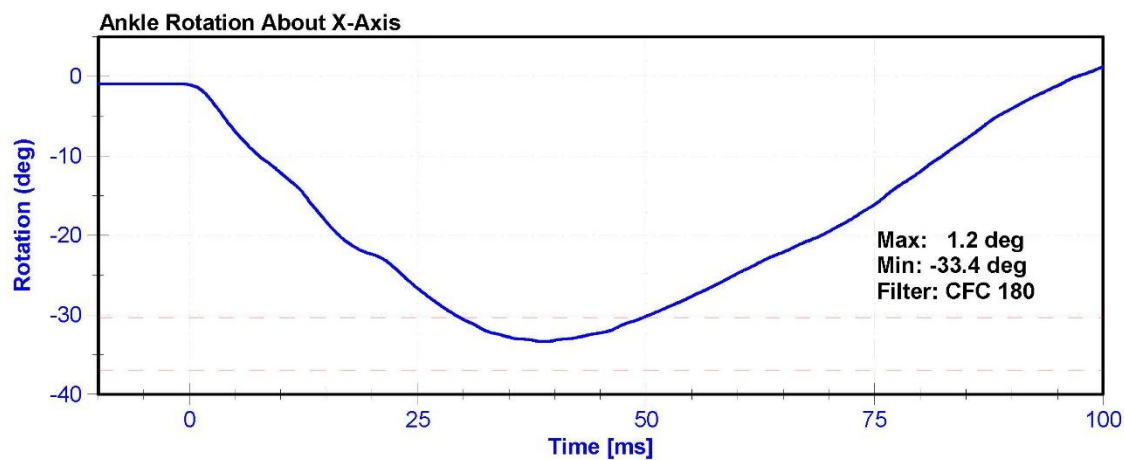
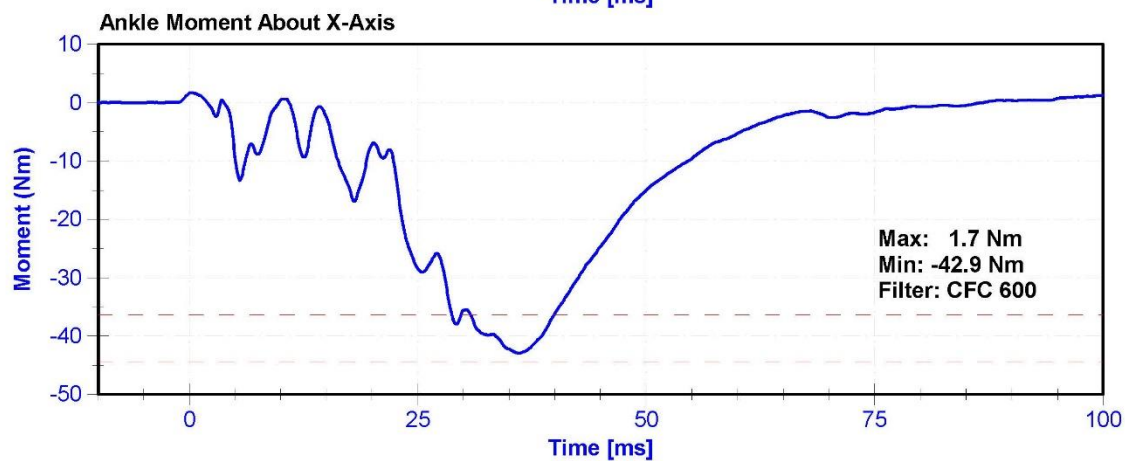
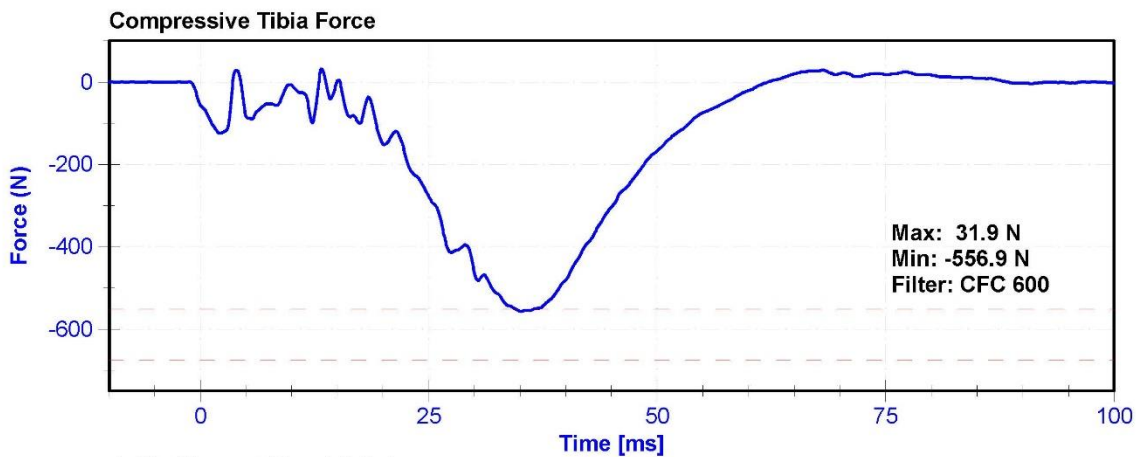
ATD Manufacturer	Humanetics	Test Technician	M. Goehle
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.3	Pass
Humidity	10	70	%	60.4	Pass
Velocity	1.9	2.1	m/s	1.934	Pass
Lower Tibia Compressive Force	-675	-552	N	-556.9	Pass
Peak Moment about X-Axis	-44.4	-36.3	Nm	-42.92	Pass
Peak Rotation about X-Axis	-37.0	-30.3	deg	-33.36	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



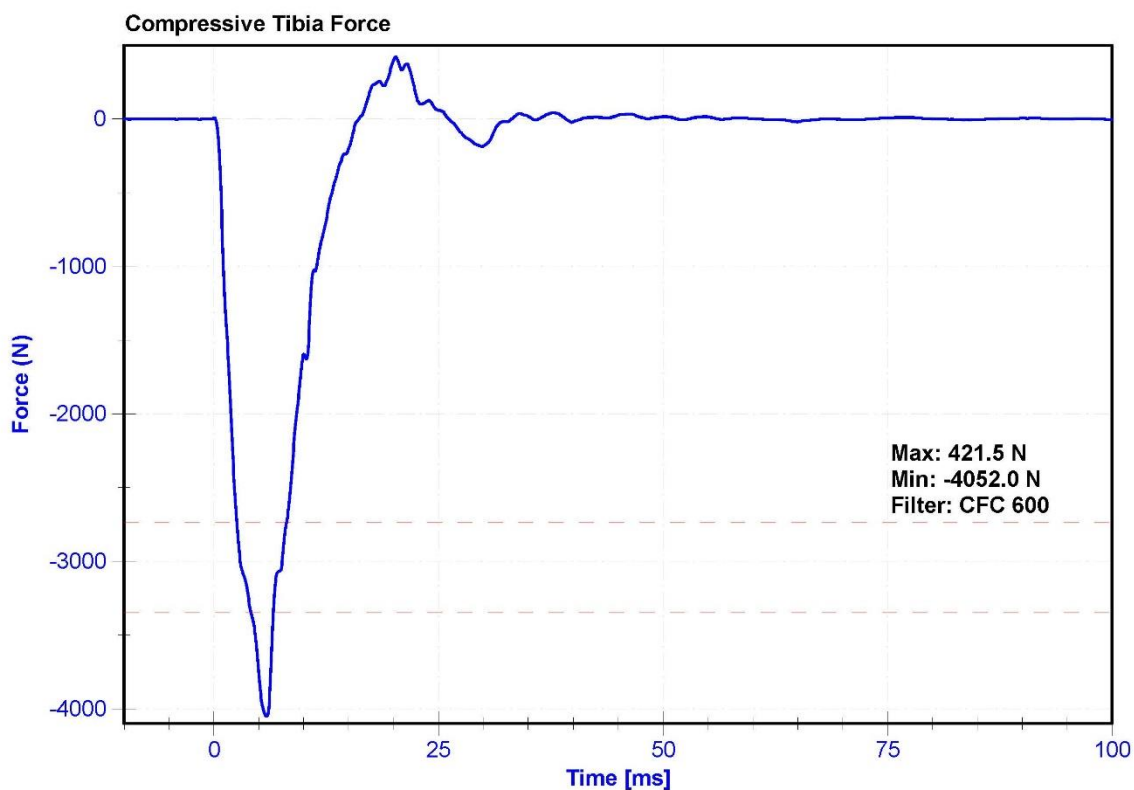
ATD Manufacturer	Humanetics	Test Technician	M. Goehle
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.1	Pass
Humidity	10	70	%	55.2	Pass
Velocity	3.9	4.1	m/s	3.948	Pass
Lower Tibia Compressive Force	2,738	3,346	N	-4052.0	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



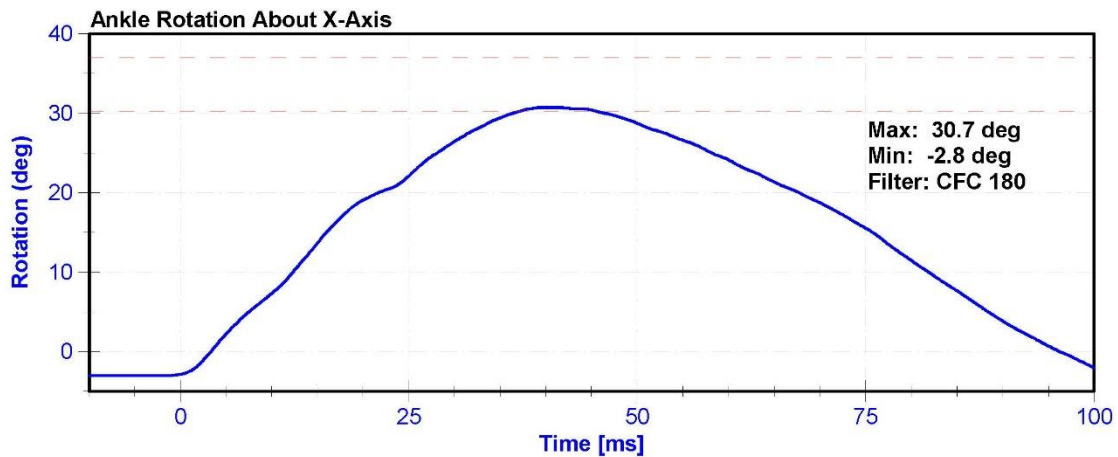
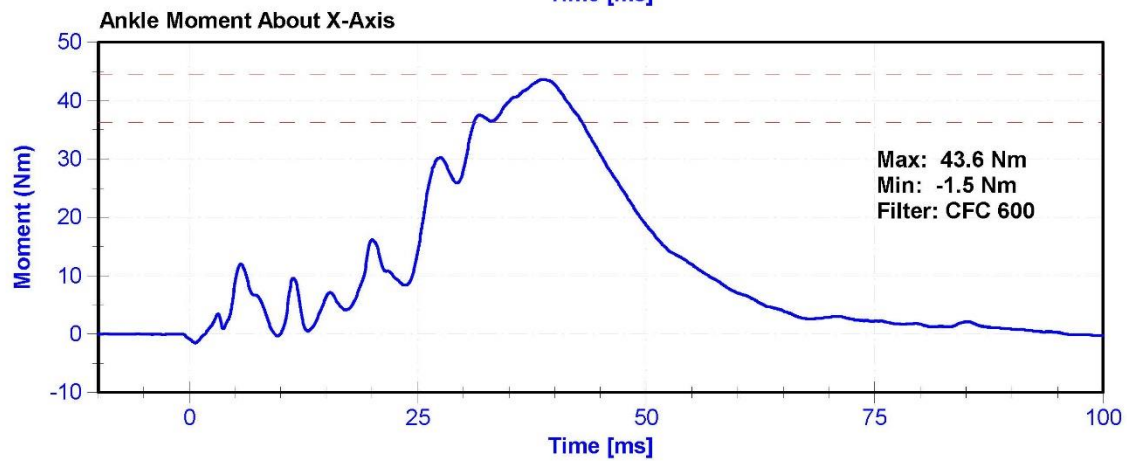
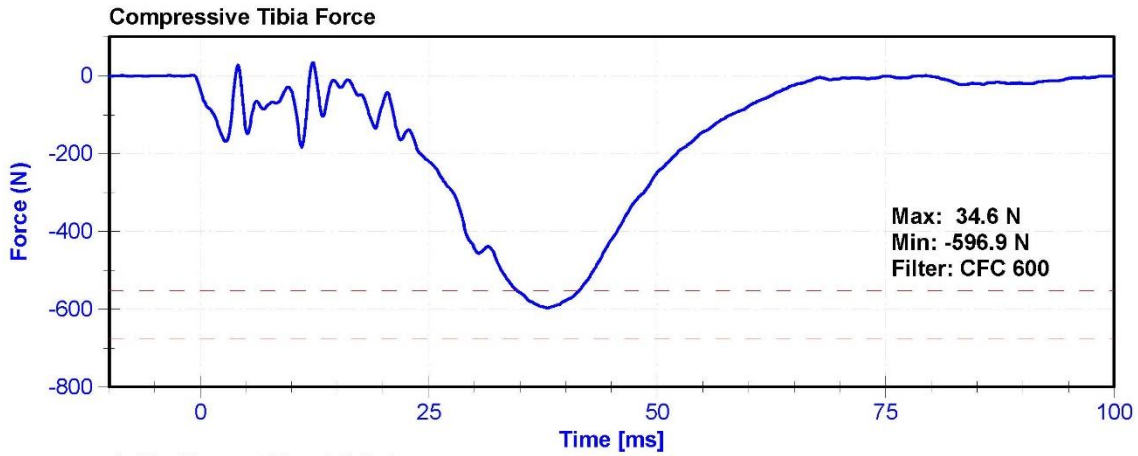
ATD Manufacturer	Humanetics	Test Technician	M. Goehle
ATD Serial Number	DL9207	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.1	Pass
Humidity	10	70	%	58.2	Pass
Velocity	1.9	2.1	m/s	1.934	Pass
Lower Tibia Compressive Force	-675	-552	N	-596.9	Pass
Peak Moment about X-Axis	36.3	44.4	Nm	43.63	Pass
Peak Rotation about X-Axis	30.3	37.0	deg	30.72	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

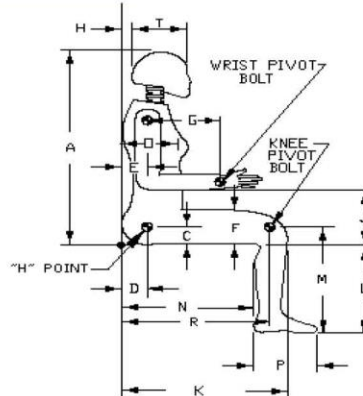
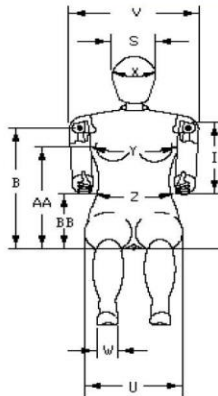


External Measurements - Hybrid 3 - 5th Female

Technician: M. Geesey

Date: 8/14/2015

Dummy Serial Number: 19



Symbol	Description	Specification (mm)		Result (mm)	Pass/Fail
A	Sitting Height	775	800	776	Pass
B	Shoulder Pivot Height	432	457	445	Pass
C	H-Point Height	81	86	83	Pass
D	H-Point from Backline	145	150	146	Pass
E	Shoulder Pivot from Backline	69	84	76	Pass
F	Thigh Clearance	119	135	130	Pass
G	Back of Elbow to Wrist Pivot	244	259	248	Pass
H	Head Back to Backline	43	48	45	Pass
I	Shoulder to Elbow Length	277	297	281	Pass
J	Elbow Rest Height	183	203	186	Pass
K	Buttock to Knee Length	521	546	535	Pass
L	Popliteal Height	356	376	360	Pass
M	Knee Pivot Height	394	419	401	Pass
N	Buttock Popliteal Length	414	439	429	Pass
O	Chest Depth without Jacket	175	191	182	Pass
P	Foot Length (right)	219	234	225	Pass
R	Buttock To Knee Pivot Length	457	483	478	Pass
S	Head Breadth	137	147	141	Pass
T	Head Depth	178	188	182	Pass
U	Hip Breadth	300	315	308	Pass
V	Shoulder Breadth	351	366	358	Pass
W	Foot Breadth	79	94	85	Pass
X	Head Circumference	528	549	533	Pass
Y	Chest Circumference with Jacket	851	881	869	Pass
Z	Waist Circumference	460	790	771	Pass
AA	Reference Location (Chest Circumference)	333	358	340	Pass
BB	Reference Location (Waist Circumference)	160	170	165	Pass

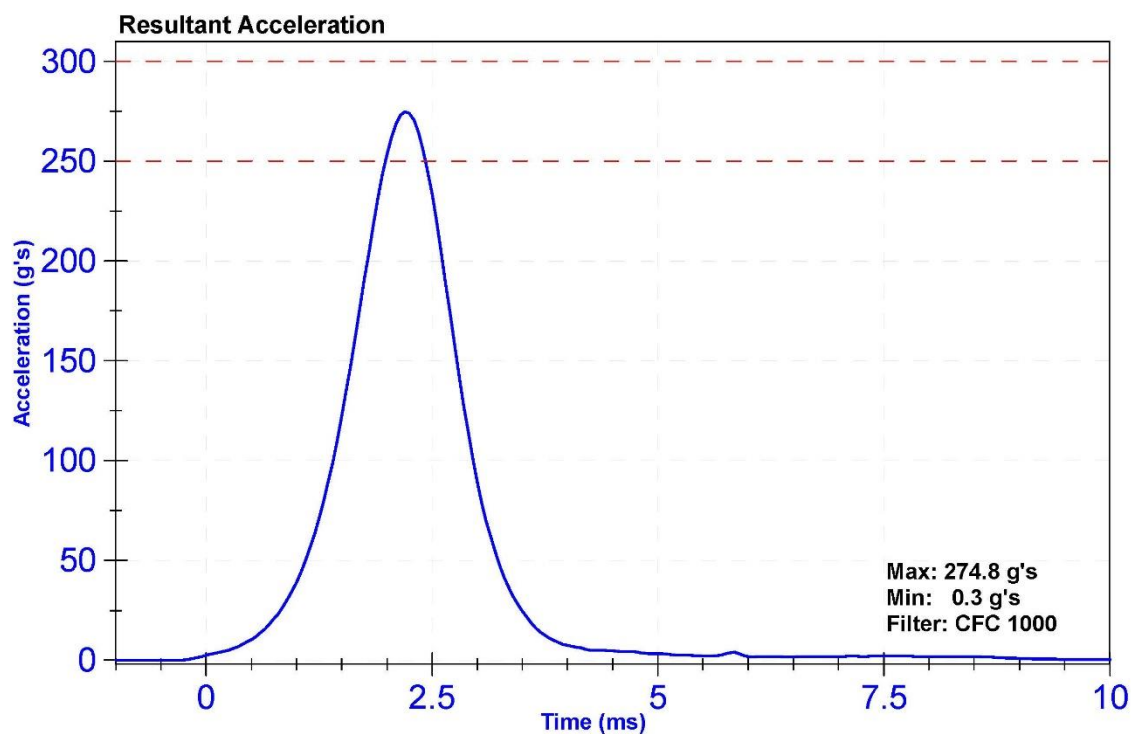
ATD Manufacturer	ASTC	Test Technician	M.Hartung
ATD Serial Number	019	Laboratory Supervisor	M.Goehle

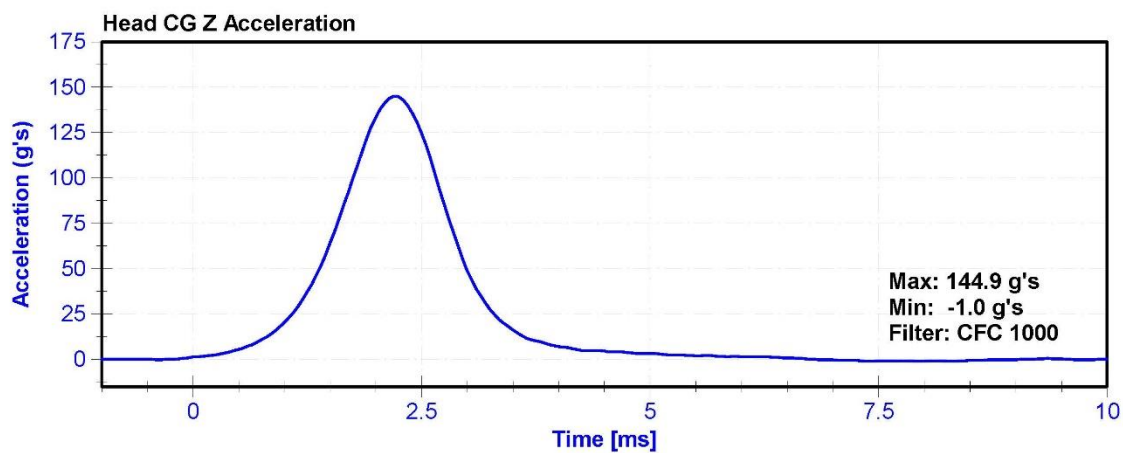
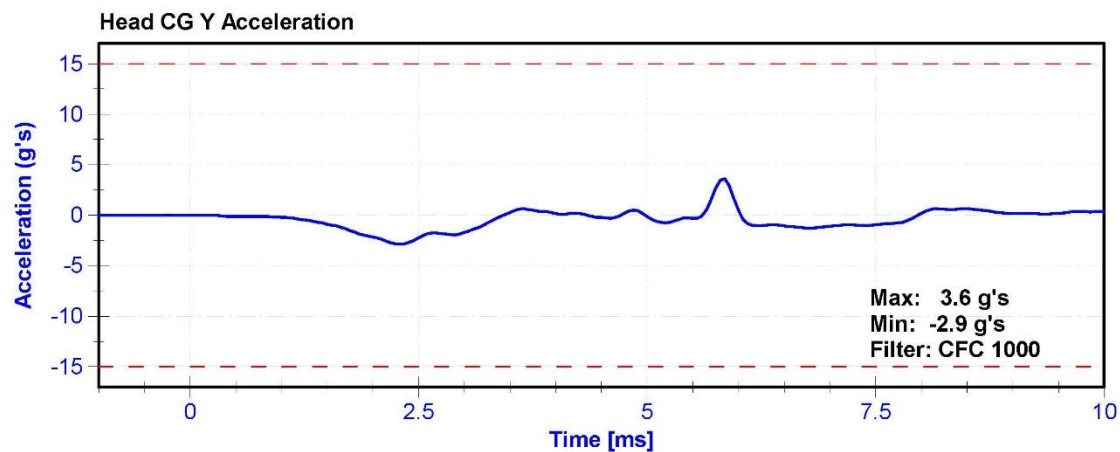
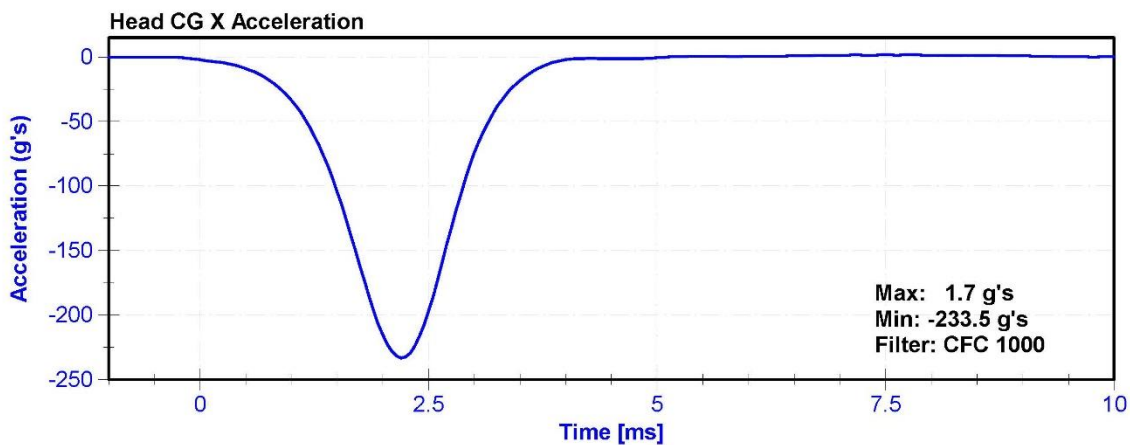
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	20.9	Pass
Humidity	10	70	%	66.5	Pass
Resultant Acceleration	250	300	g's	274.8	Pass
Oscillation	0	10	%	1.8	Pass
Lateral Acceleration	-15	15	g's	3.6	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
X Accelerometer	Endevco 7264	AC-P78168	6/26/2015	6/25/2016
Y Accelerometer	Endevco 7264	AC-P82323	6/26/2015	6/25/2016
Z Accelerometer	Endevco 7264	AC-P58727	6/26/2015	6/25/2016





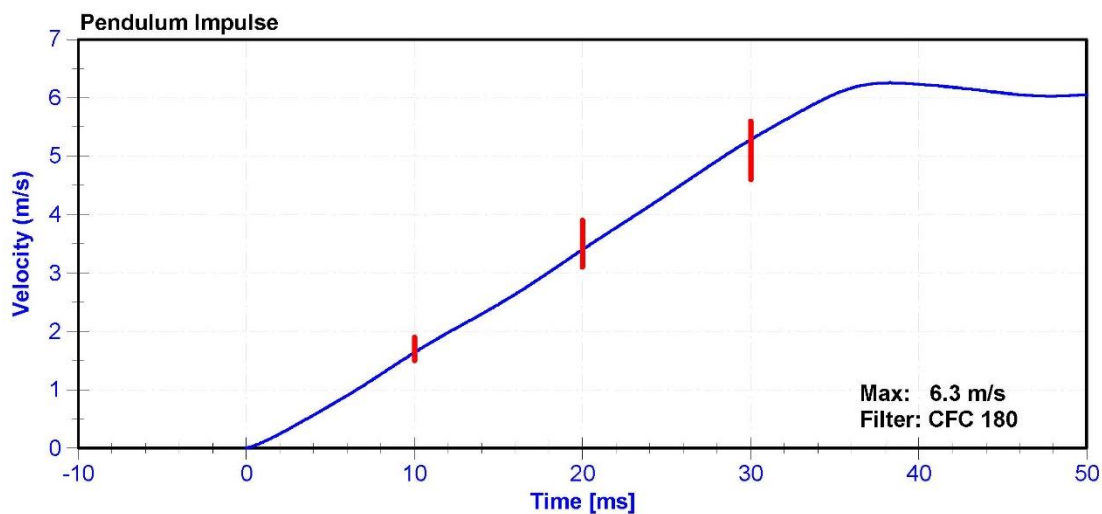
ATD Manufacturer	ASTC	Test Technician	M.Hartung
ATD Serial Number	019	Laboratory Supervisor	M.Goehle

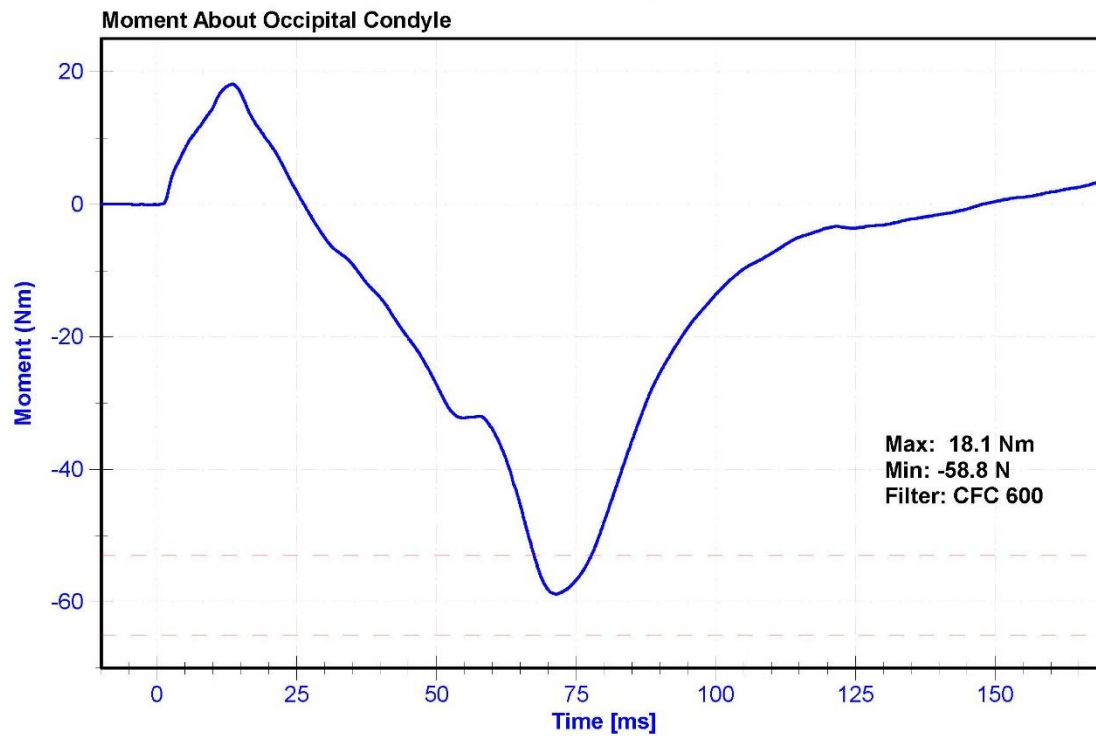
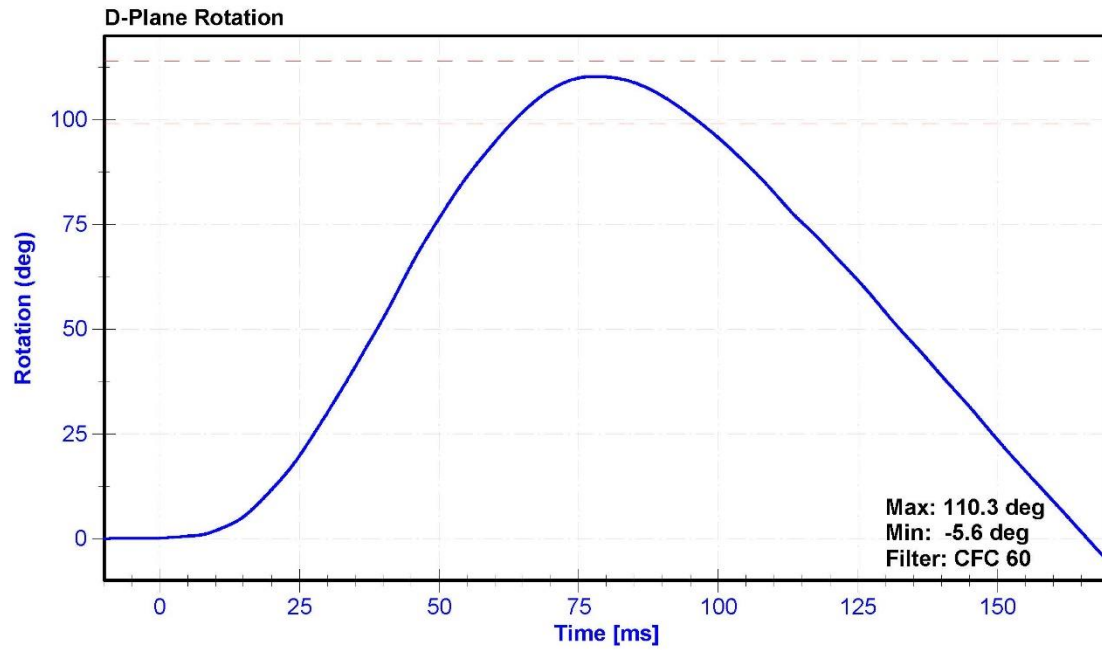
Results

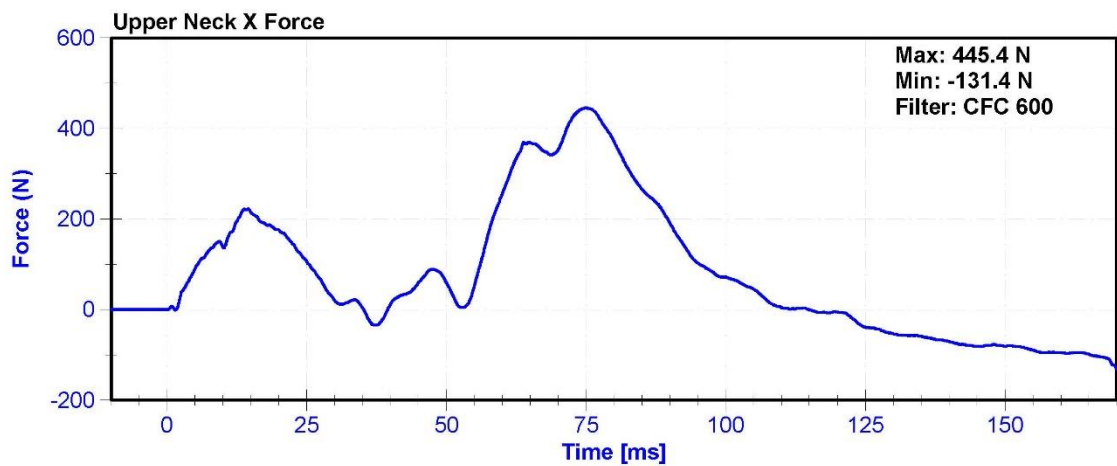
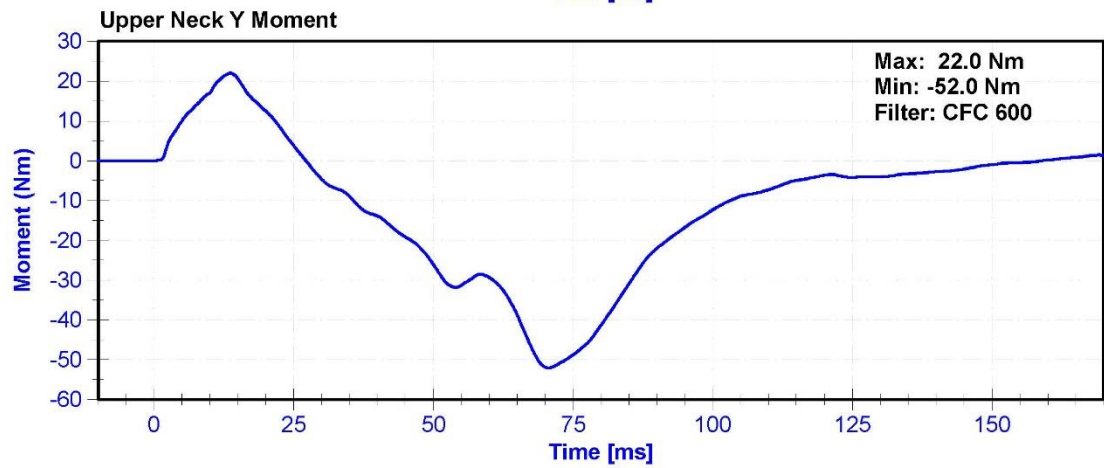
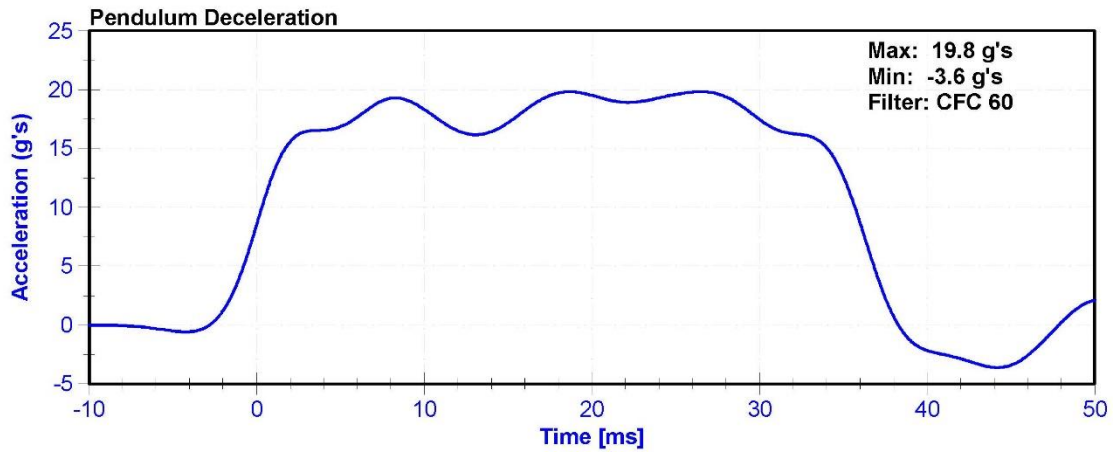
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.8	Pass
Humidity	10	70	%	61.2	Pass
Velocity	5.95	6.19	m/s	6.025	Pass
Pendulum Impulse at 10ms	1.5	1.9	m/s	1.64	Pass
Pendulum Impulse at 20ms	3.1	3.9	m/s	3.40	Pass
Pendulum Impulse at 30ms	4.6	5.6	m/s	5.28	Pass
D Plane Rotation	99	114	deg	110.3	Pass
Moment During Rotation Interval	-65	-53	Nm	-58.8	Pass
Moment Decay to -10Nm	94	114	ms	104.6	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-AH5F3	5/7/2015	11/7/2015
Pendulum Potentiometer	SP22G	DS-PendPot	3/3/2015	3/2/2016
Condyle Potentiometer	SP22G	DS-CondPot	3/3/2015	3/2/2016
Upper Neck Load Cell	Denton 1716ATF	LC-2184 Fx	6/29/2015	6/28/2016







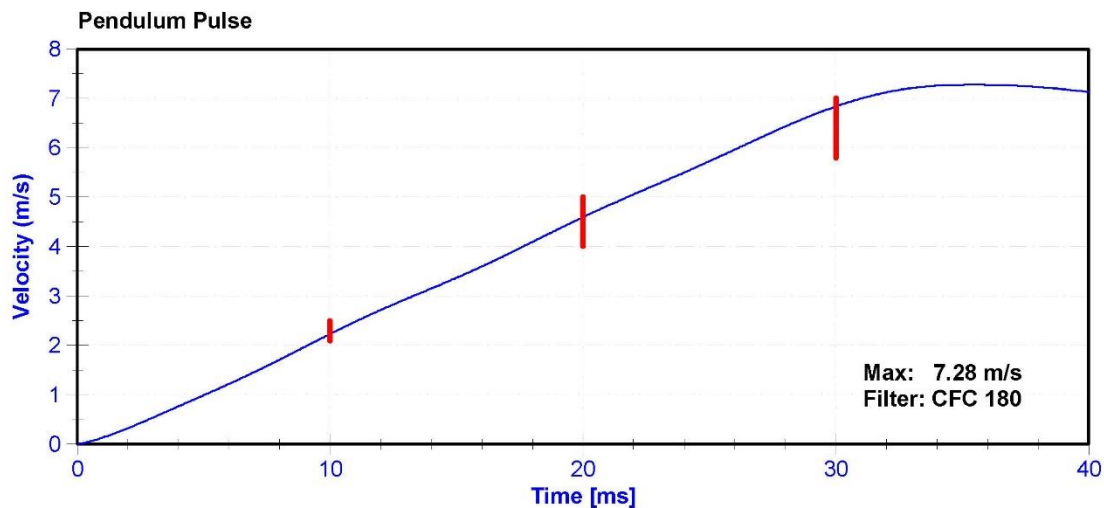
ATD Manufacturer	ASTC	Test Technician	M.Hartung
ATD Serial Number	019	Laboratory Supervisor	M.Goehle

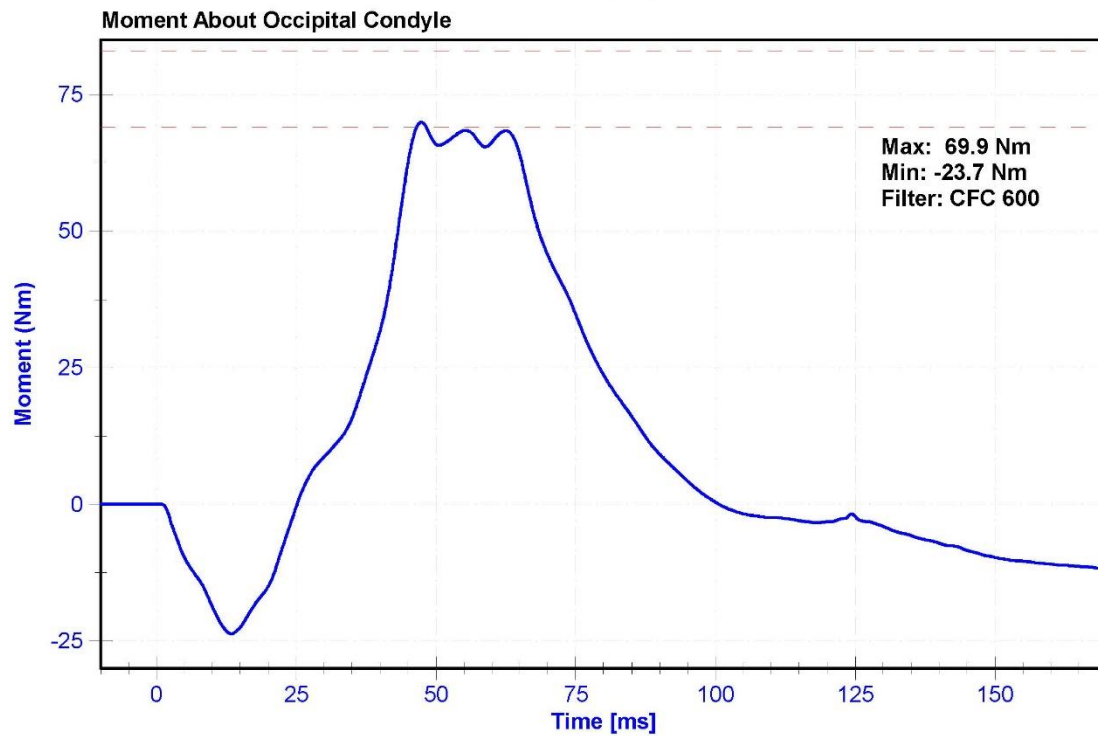
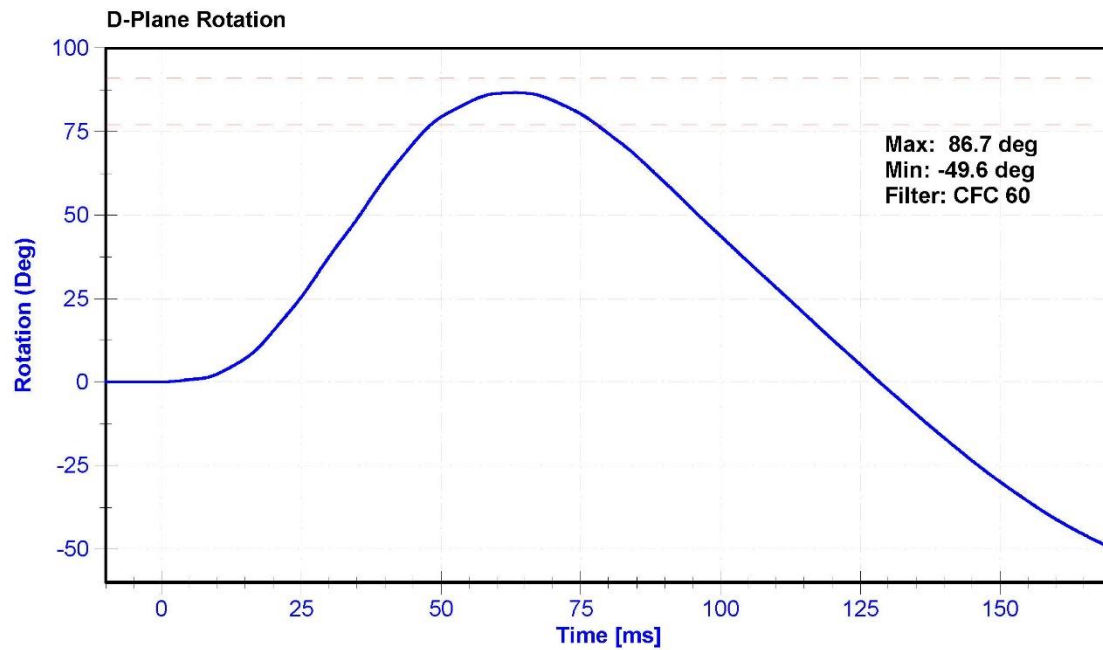
Results

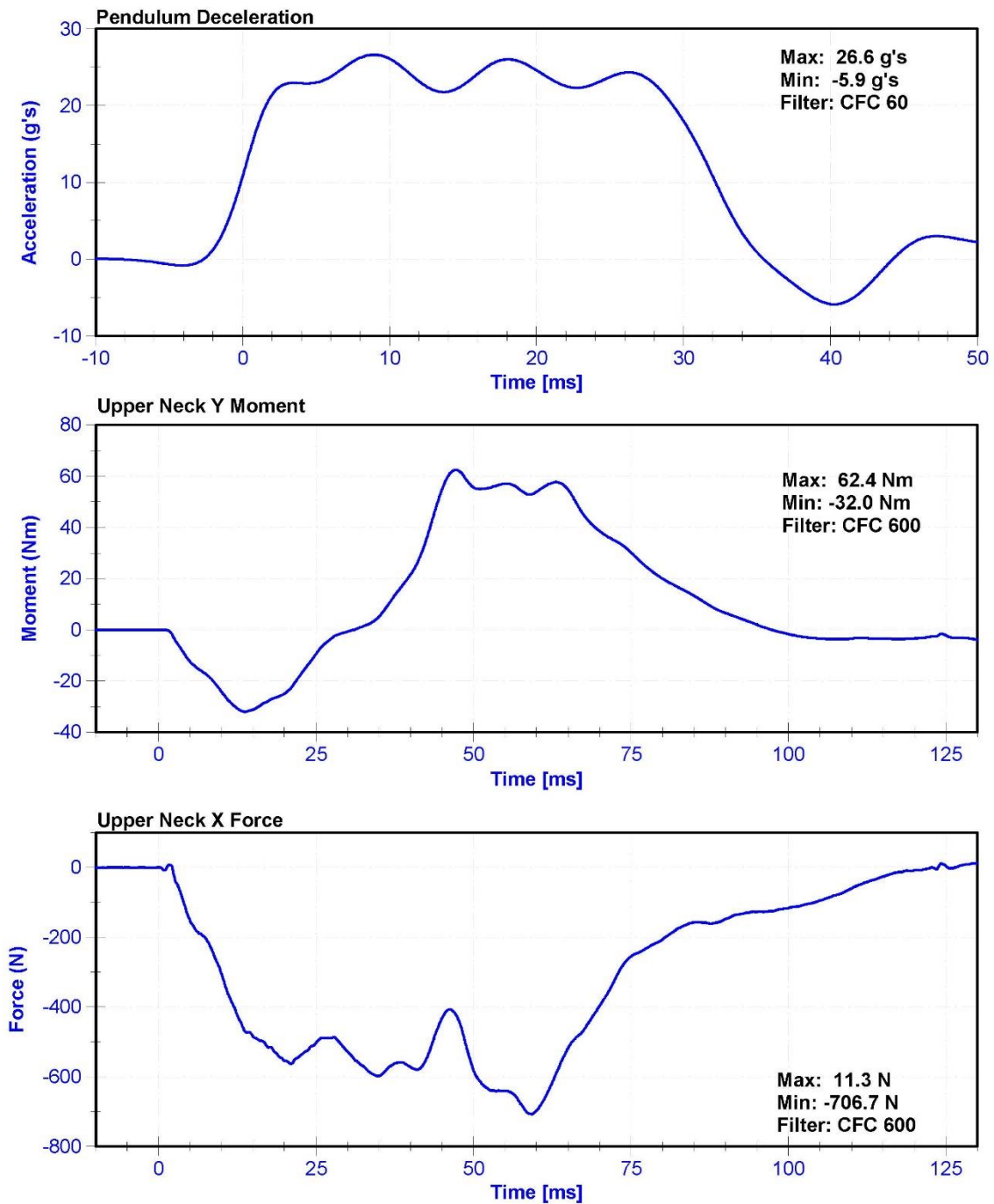
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21	Pass
Humidity	10	70	%	61.1	Pass
Velocity	6.89	7.13	m/s	7.037	Pass
Pendulum Impulse at 10ms	2.1	2.5	m/s	2.23	Pass
Pendulum Impulse at 20ms	4.0	5.0	m/s	4.60	Pass
Pendulum Impulse at 30ms	5.8	7.0	m/s	6.84	Pass
Max D Plane Rotation	77	91	deg	86.7	Pass
Max Moment During Rotation Interval	69	83	Nm	69.9	Pass
Moment Decay to 10.0 Nm	80	100	ms	89.3	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-AH5F3	5/7/2015	11/7/2015
Pendulum Potentiometer	SP22G	DS-PendPot	3/3/2015	3/2/2016
Condyle Potentiometer	SP22G	DS-CondPot	3/3/2015	3/2/2016
Upper Neck Load Cell	Denton 1716ATF	LC-2184 Fx	6/29/2015	6/28/2016







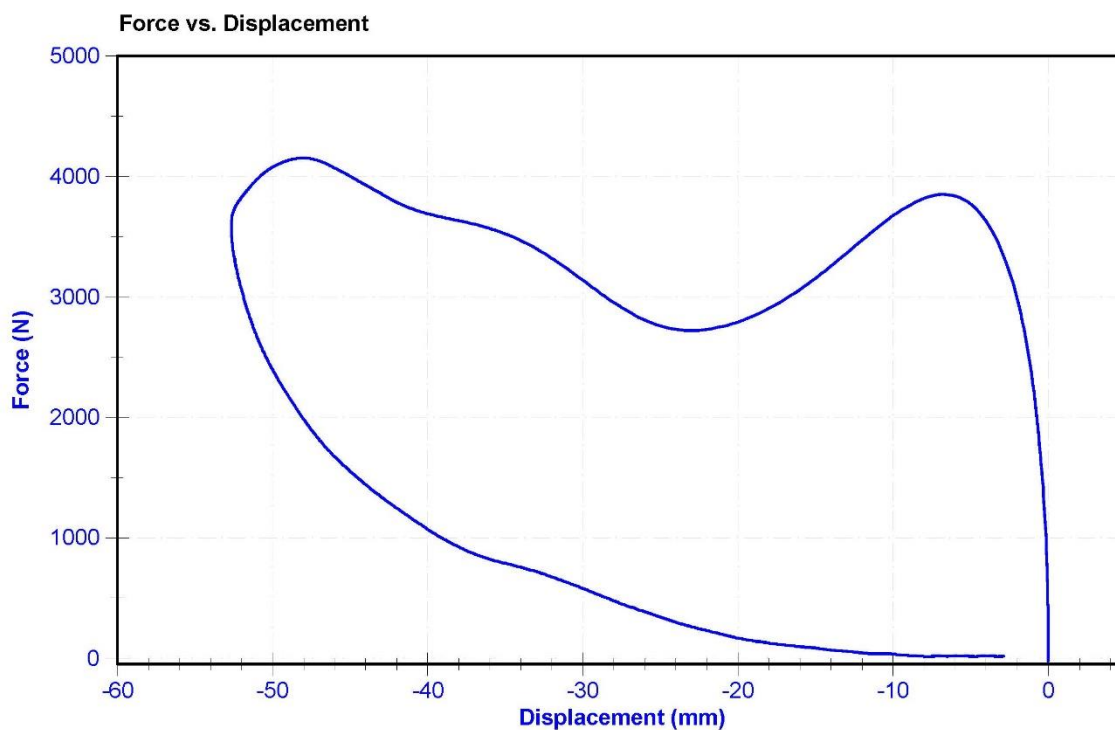
ATD Manufacturer	ASTC	Test Technician	M.Hartung
ATD Serial Number	019	Laboratory Supervisor	M.Goehle

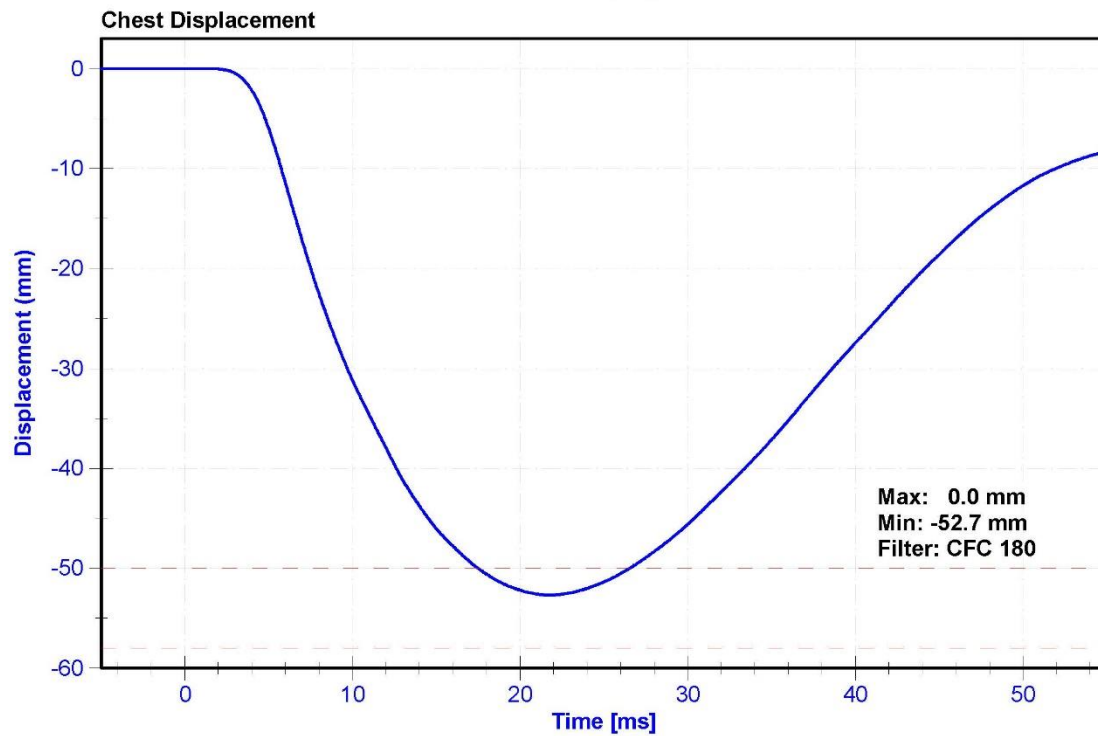
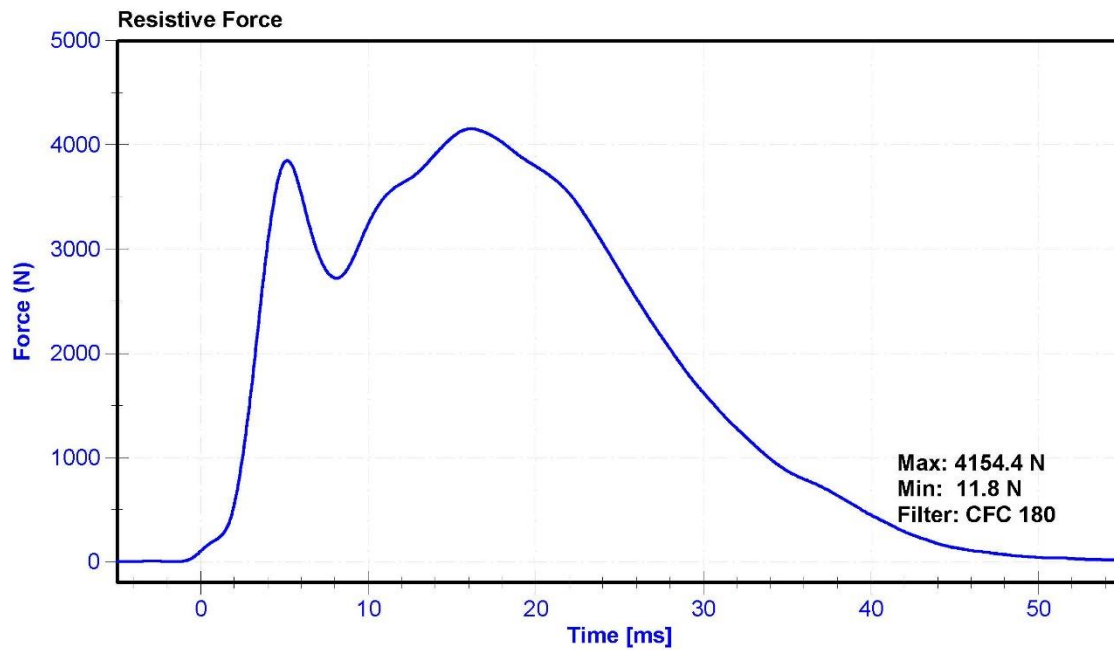
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.6	Pass
Humidity	10	70	%	65.9	Pass
Velocity	6.59	6.83	m/s	6.684	Pass
Chest Deflection	-58	-50	mm	-52.7	Pass
Maximum Resistive Force (50 to 58mm)	3,900	4,400	N	4081.9	Pass
Maximum Resistive Force (18 to 50mm)	0	4,600	N	4154.4	Pass
Hysteresis	69	85	%	79.8	Pass

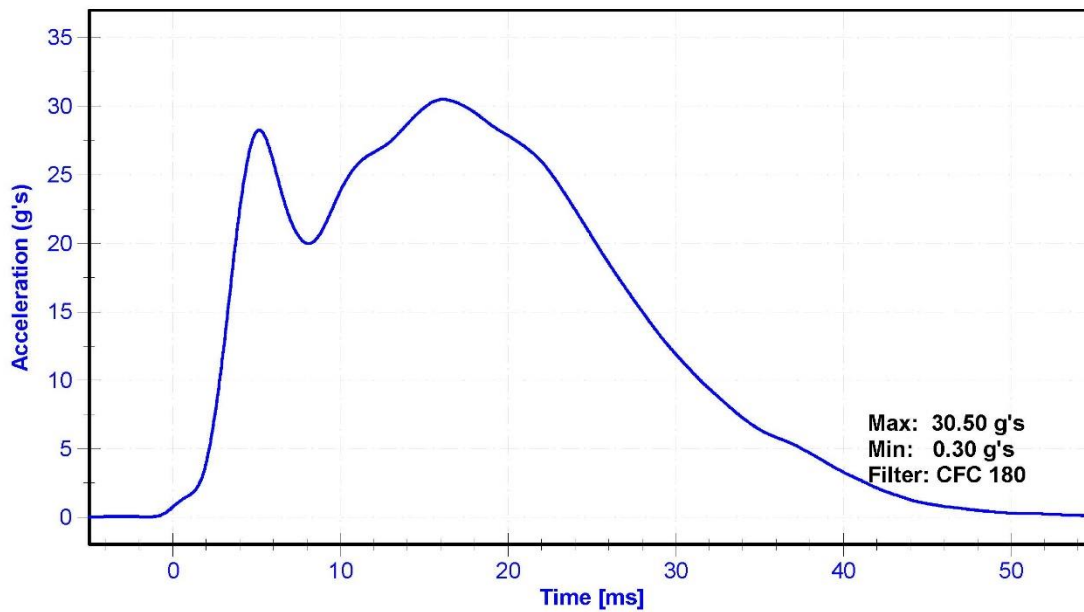
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C14972	8/13/2015	2/11/2016
Chest Potentiometer	Servo 14CB1	DS-FEM019	7/1/2015	6/30/2016

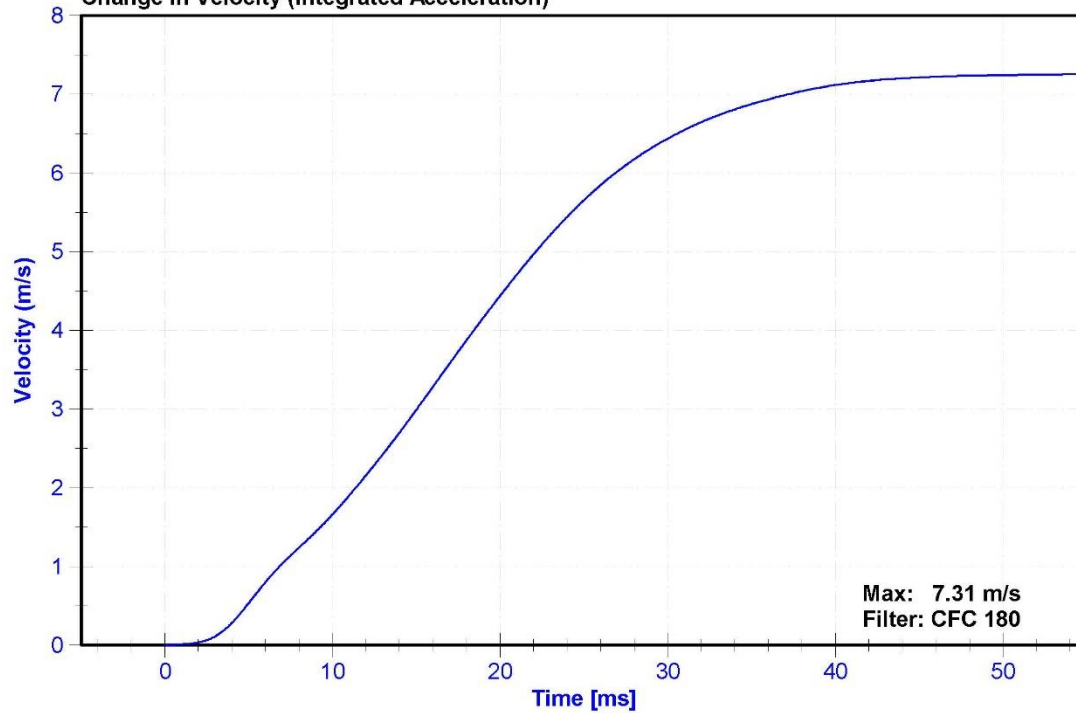




Probe Acceleration



Change in Velocity (Integrated Acceleration)



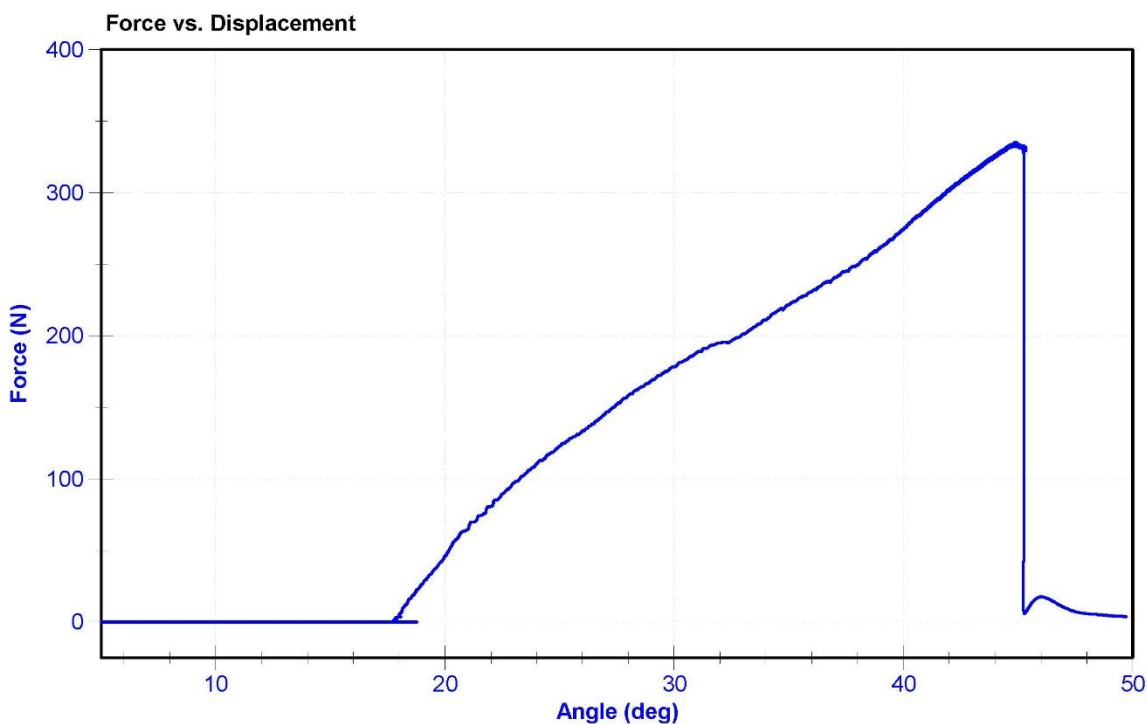
ATD Manufacturer	ASTC	Test Technician	M.Hartung
ATD Serial Number	019	Laboratory Supervisor	M.Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.6	25.6	°C	21.5	Pass
Humidity	10	70	%	68.6	Pass
Initial Angle	0	20	deg	17.3	Pass
Force at 45 Degrees	320	390	N	332.6	Pass
Return Angle Relative to Initial	0	8	deg	3.5	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



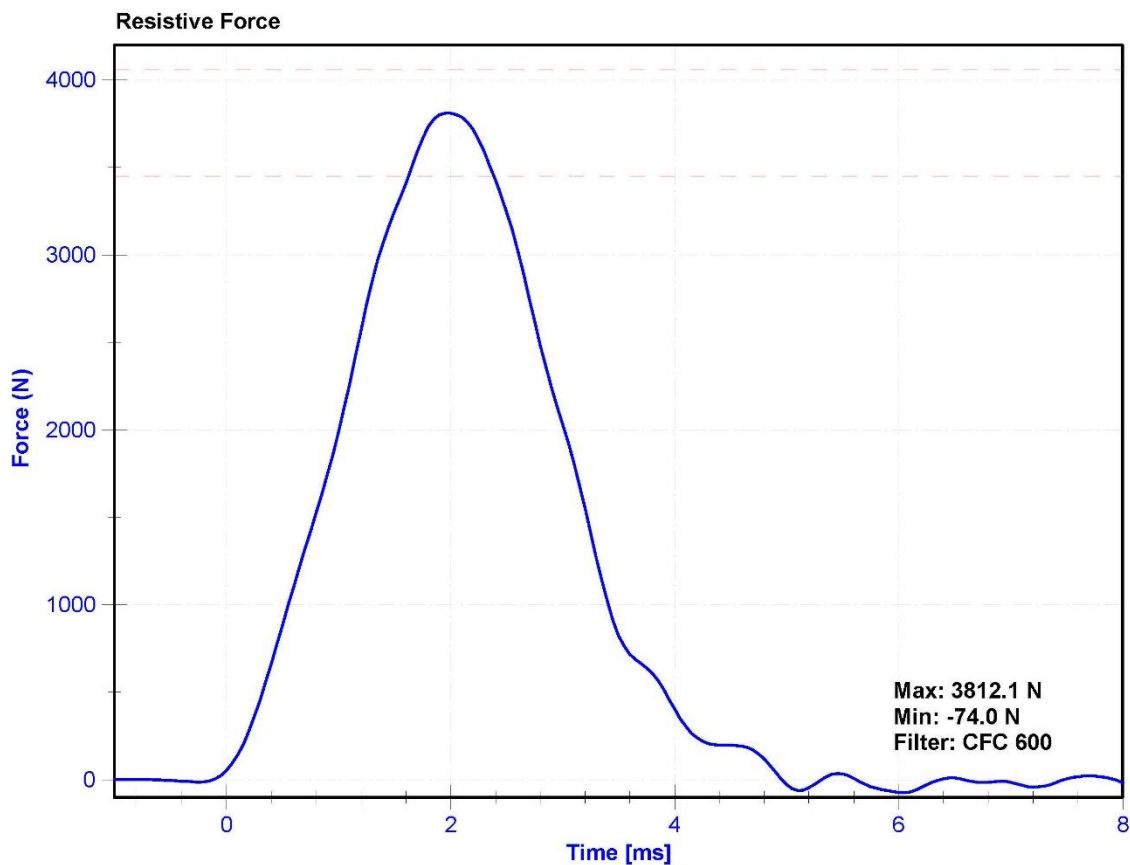
ATD Manufacturer	ASTC	Test Technician	M.Hartung
ATD Serial Number	019	Laboratory Supervisor	M.Goehle

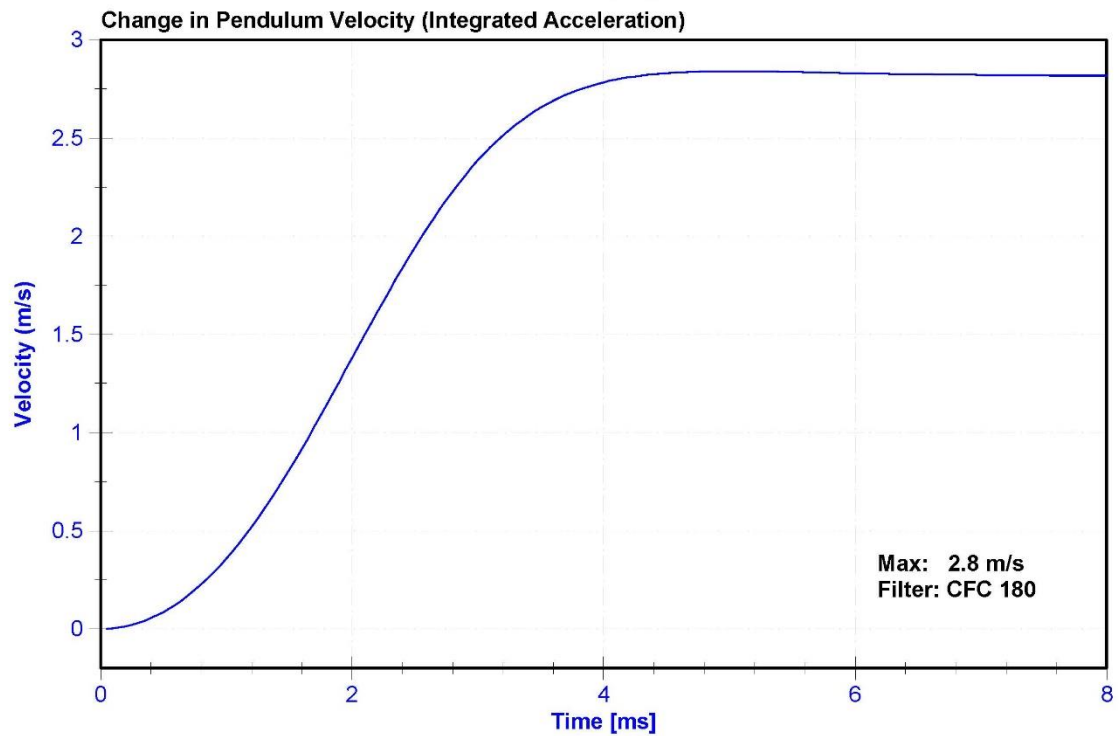
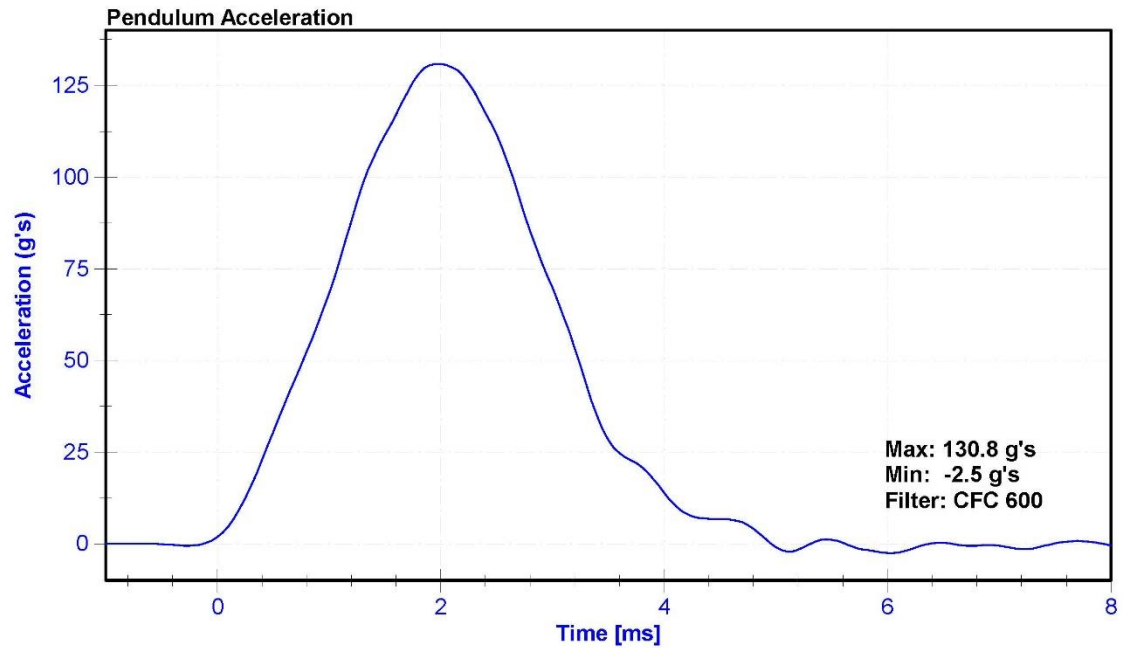
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	21	Pass
Humidity	10	70	%	69	Pass
Velocity	2.07	2.13	m/s	2.083	Pass
Resistive Force	3,450	4,060	N	3812.1	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C14972	8/13/2015	2/11/2016





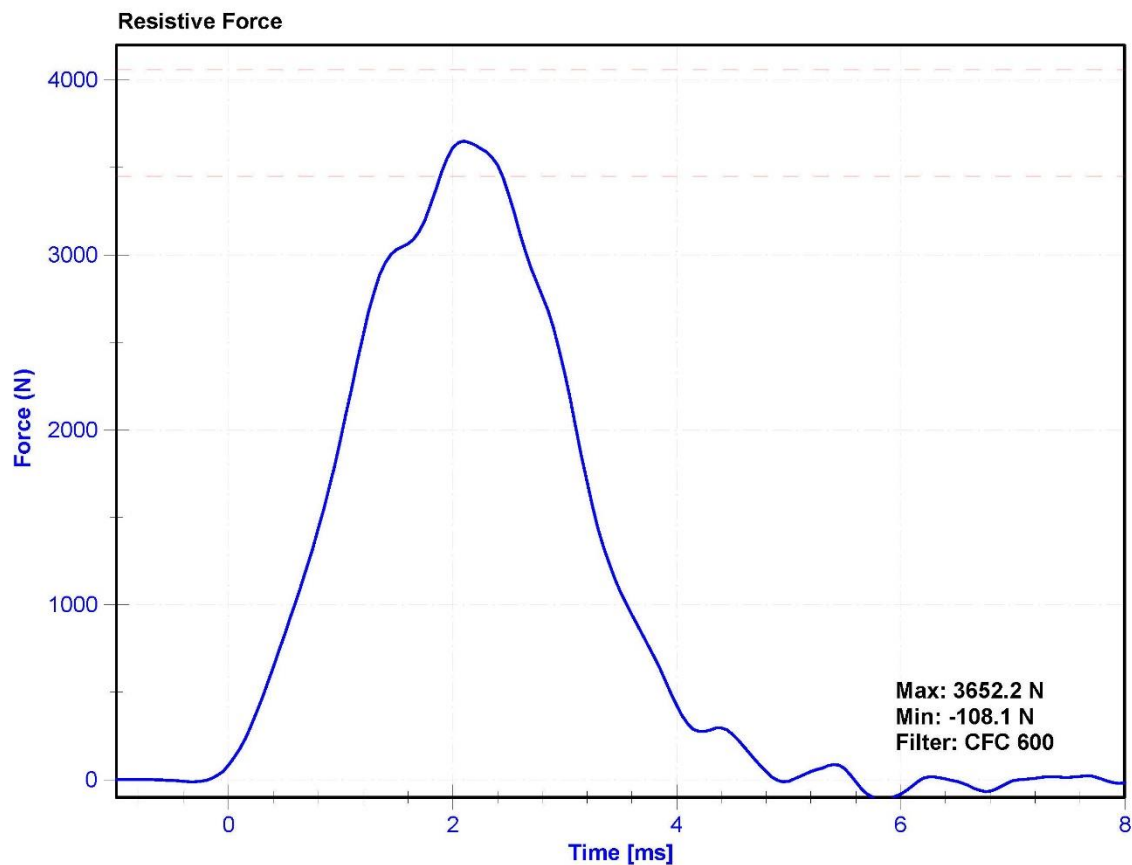
ATD Manufacturer	ASTC	Test Technician	M.Hartung
ATD Serial Number	019	Laboratory Supervisor	M.Goehle

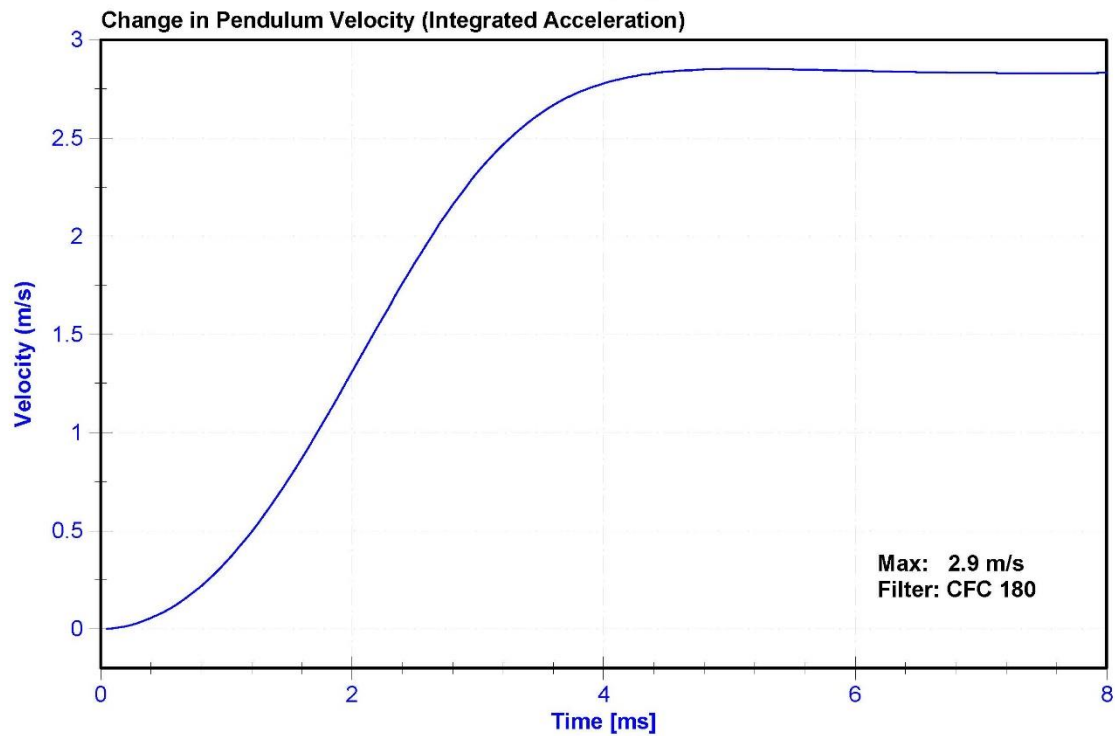
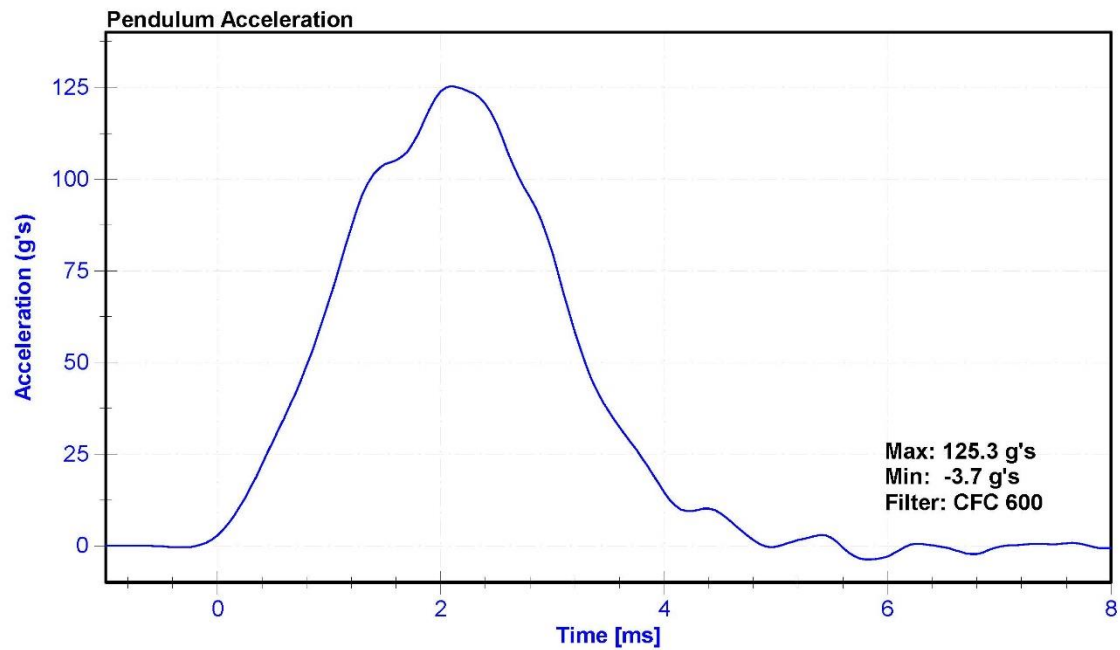
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	20.5	Pass
Humidity	10	70	%	63.4	Pass
Velocity	2.07	2.13	m/s	2.081	Pass
Resistive Force	3,450	4,060	N	3652.2	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C14972	8/13/2015	2/11/2016





Hybrid III 5th Female 324 DUMMY CALIBRATIONS

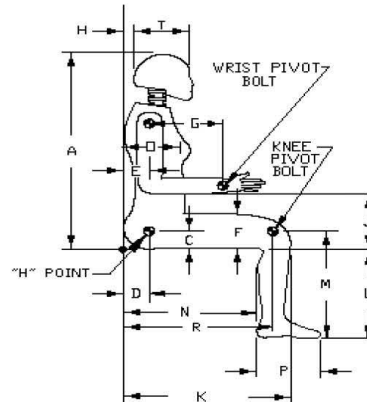
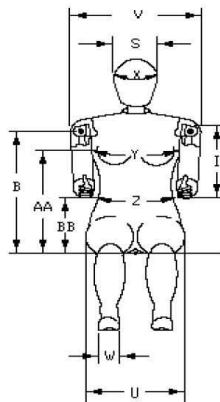


External Measurements - Hybrid 3 - 5th Female

Technician: M.Hartung

Date: 8/17/2015

Dummy Serial Number: 324



Symbol	Description	Specification (mm)		Result (mm)	Pass/Fail
A	Sitting Height	775	800	780	Pass
B	Shoulder Pivot Height	432	457	442	Pass
C	H-Point Height	81	86	85	Pass
D	H-Point from Backline	145	150	146	Pass
E	Shoulder Pivot from Backline	69	84	79	Pass
F	Thigh Clearance	119	135	128	Pass
G	Back of Elbow to Wrist Pivot	244	259	250	Pass
H	Head Back to Backline	43	48	46	Pass
I	Shoulder to Elbow Length	277	297	282	Pass
J	Elbow Rest Height	183	203	195	Pass
K	Buttock to Knee Length	521	546	535	Pass
L	Popliteal Height	356	376	368	Pass
M	Knee Pivot Height	394	419	409	Pass
N	Buttock Popliteal Length	414	439	433	Pass
O	Chest Depth without Jacket	175	191	183	Pass
P	Foot Length (right)	219	234	223	Pass
R	Buttock To Knee Pivot Length	457	483	471	Pass
S	Head Breadth	137	437	140	Pass
T	Head Depth	178	188	181	Pass
U	Hip Breadth	300	315	306	Pass
V	Shoulder Breadth	351	366	356	Pass
W	Foot Breadth	79	94	84	Pass
X	Head Circumference	528	549	539	Pass
Y	Chest Circumference with Jacket	851	881	865	Pass
Z	Waist Circumference	460	790	772	Pass
AA	Reference Location (Chest Circumference)	333	358	346	Pass
BB	Reference Location (Waist Circumference)	160	170	165	Pass

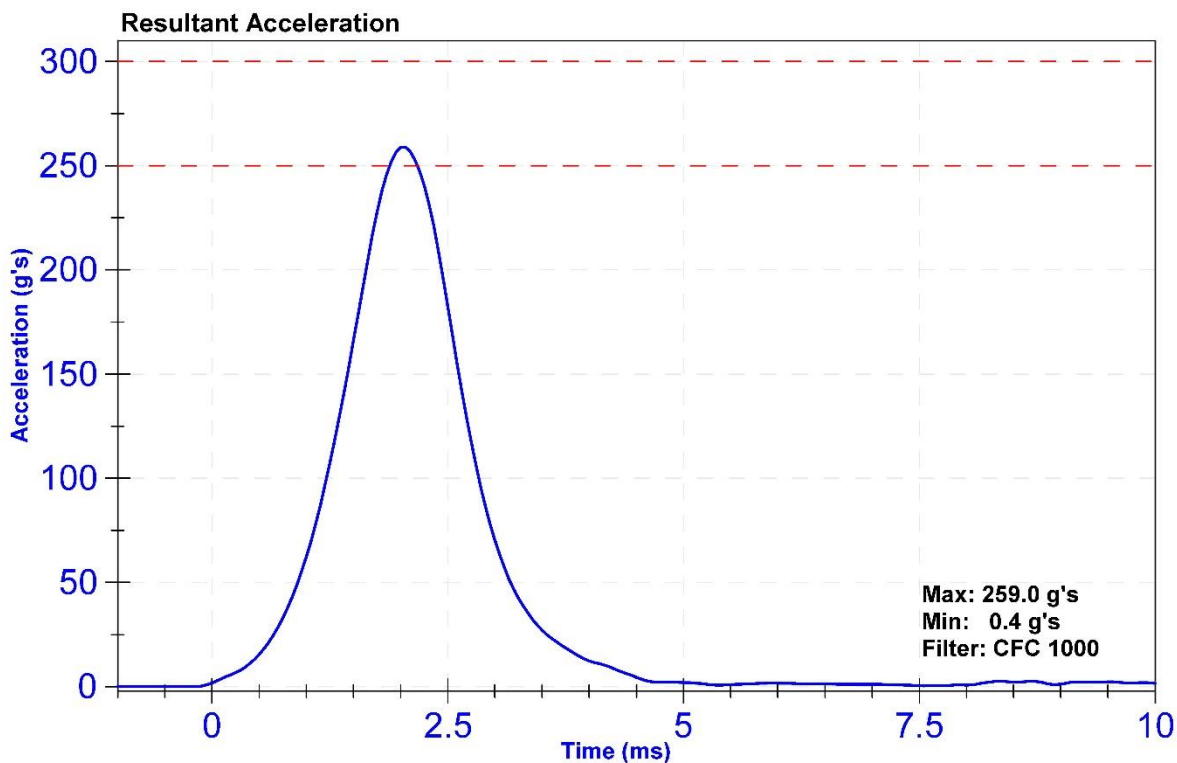
ATD Manufacturer	FTSS	Test Technician	M.Hartung
ATD Serial Number	324	Laboratory Supervisor	M.Goehle

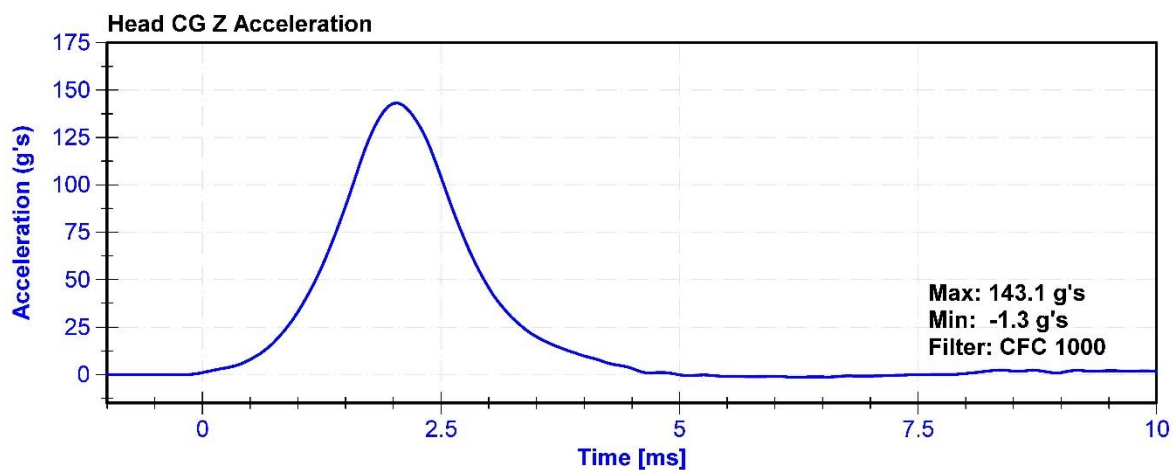
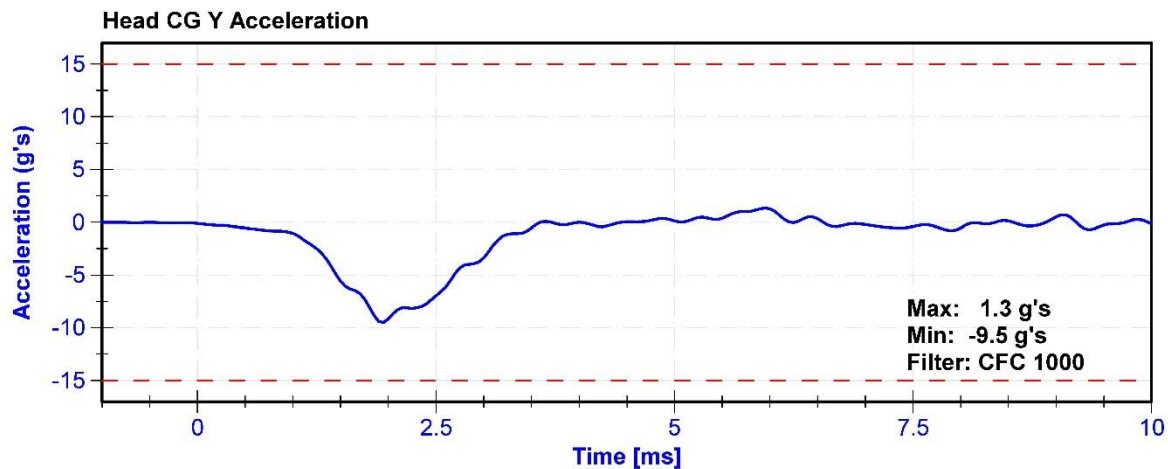
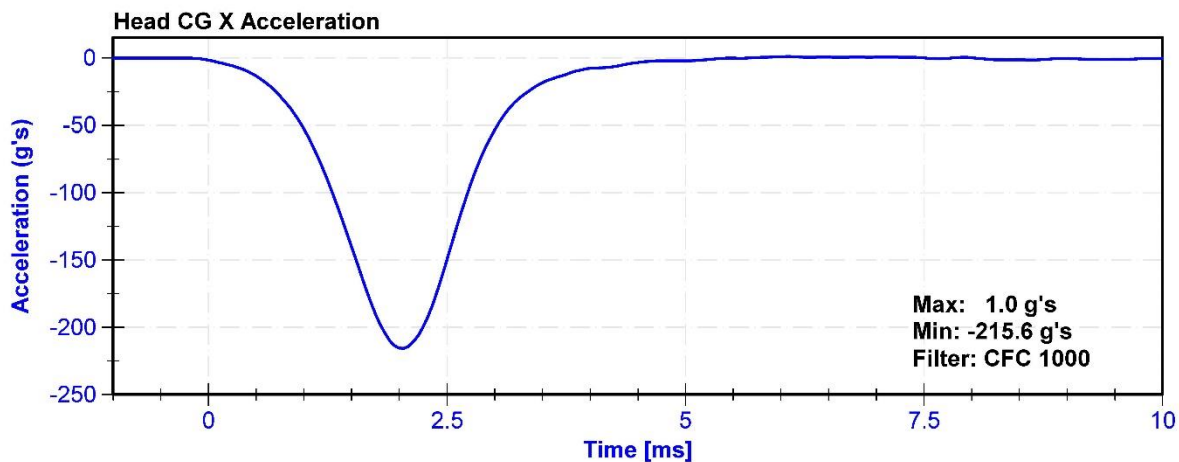
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	20.9	Pass
Humidity	10	70	%	61.8	Pass
Resultant Acceleration	250	300	g's	259.0	Pass
Oscillation	0	10	%	1.0	Pass
Lateral Acceleration	-15	15	g's	-9.5	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
X Accelerometer	Endevco 7264	AC-P58729	6/26/2015	6/25/2016
Y Accelerometer	Endevco 7264	AC-P74955	6/26/2015	6/25/2016
Z Accelerometer	Endevco 7264	AC-P74778	6/26/2015	6/25/2016





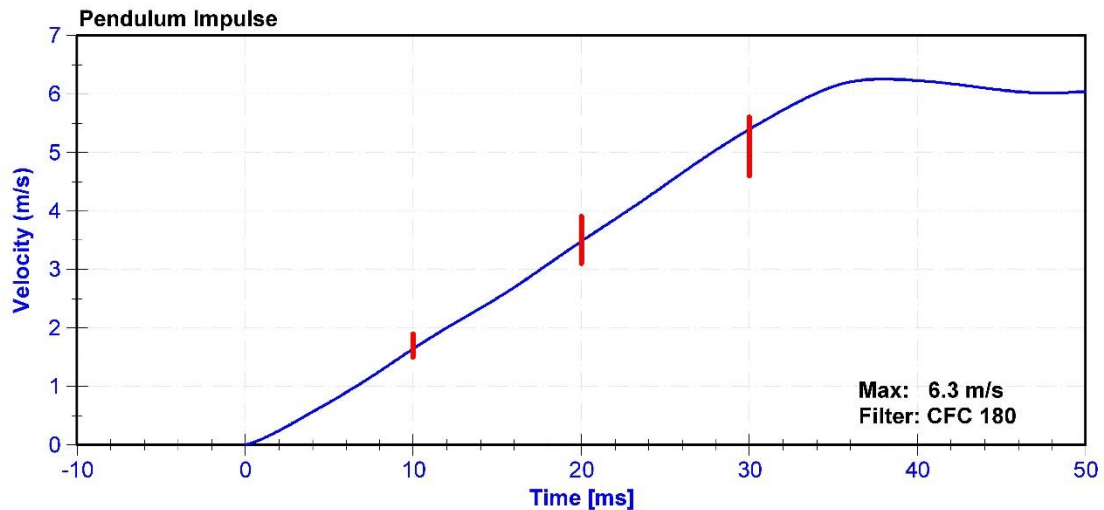
ATD Manufacturer	FTSS	Test Technician	M.Hartung
ATD Serial Number	324	Laboratory Supervisor	M.Goehle

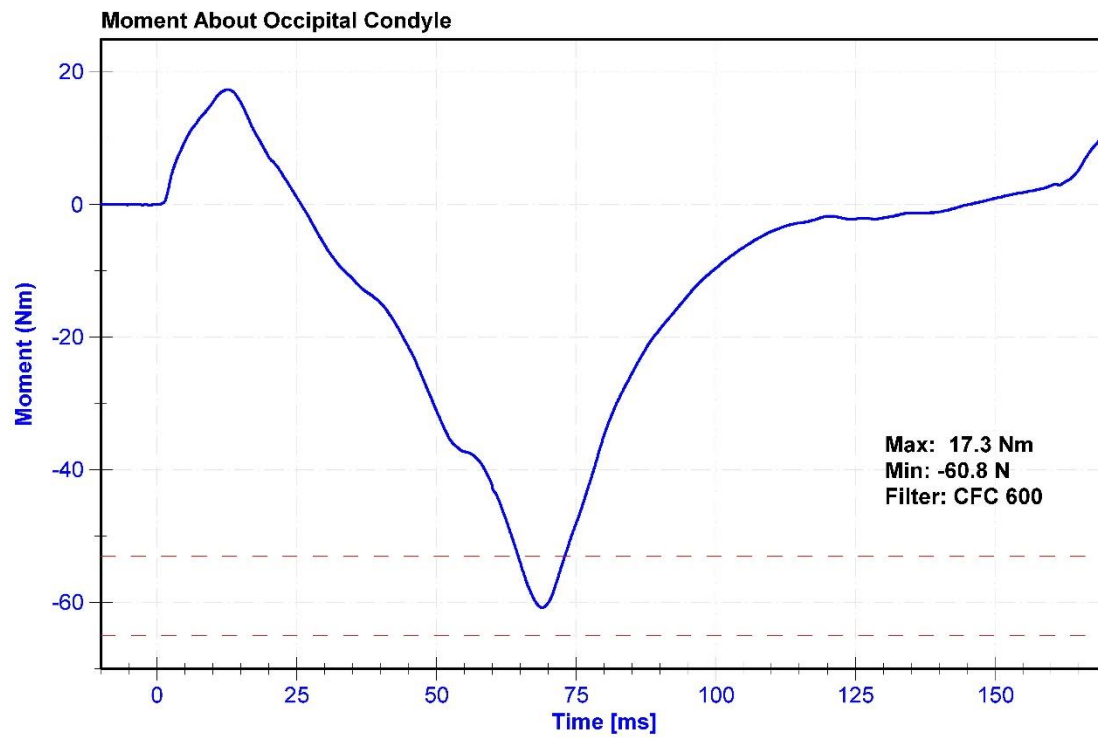
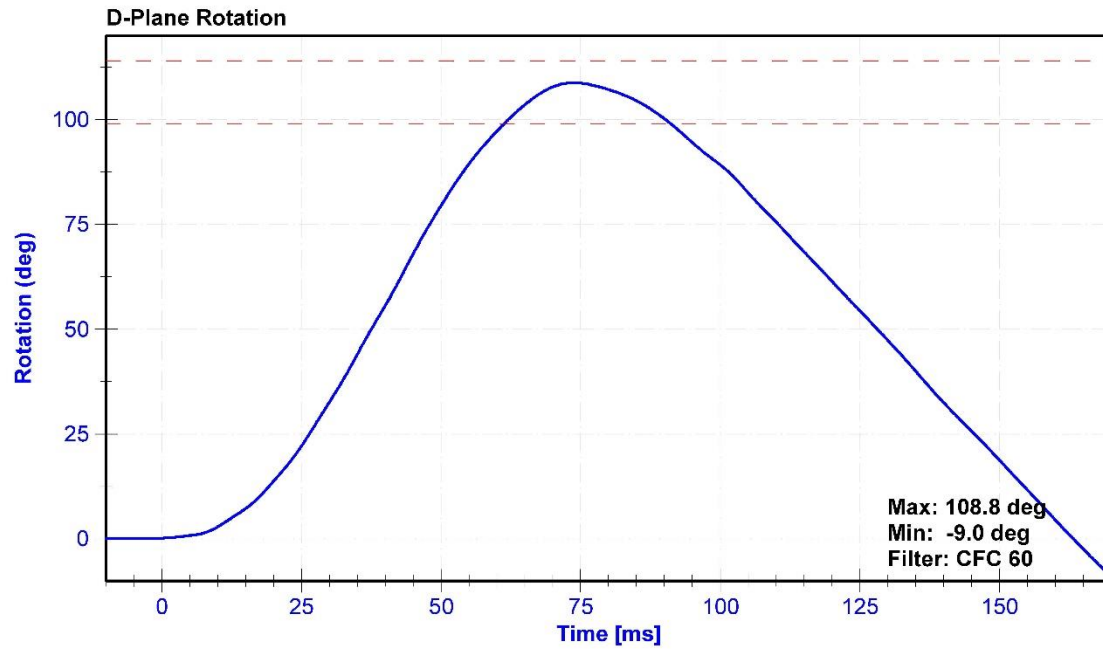
Results

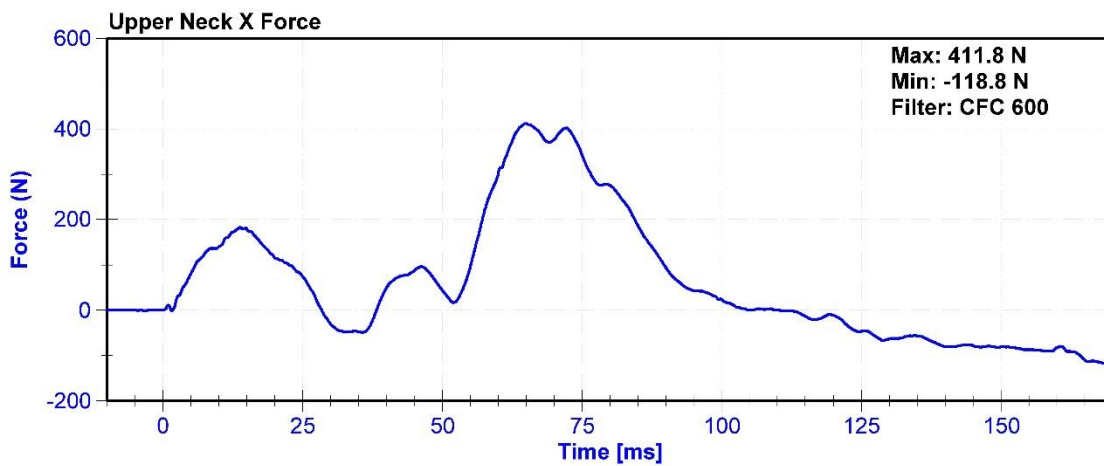
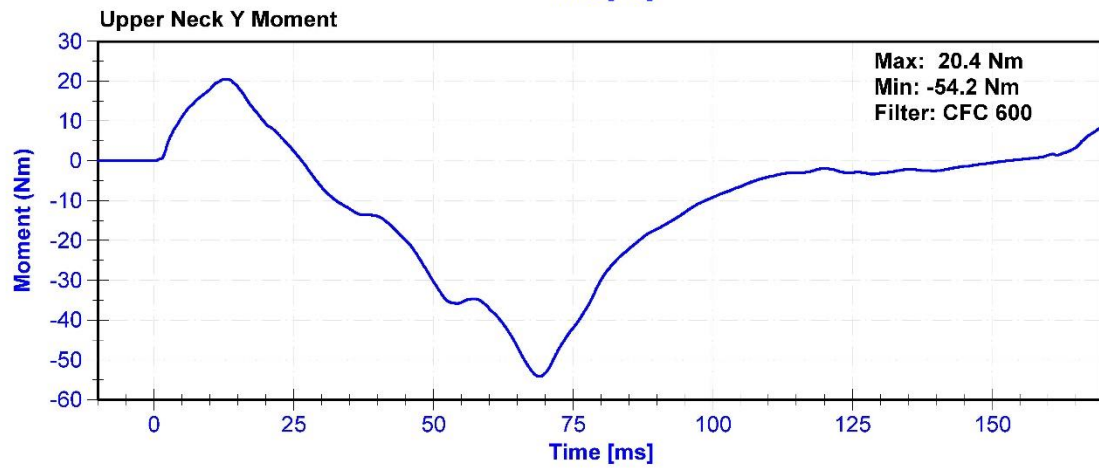
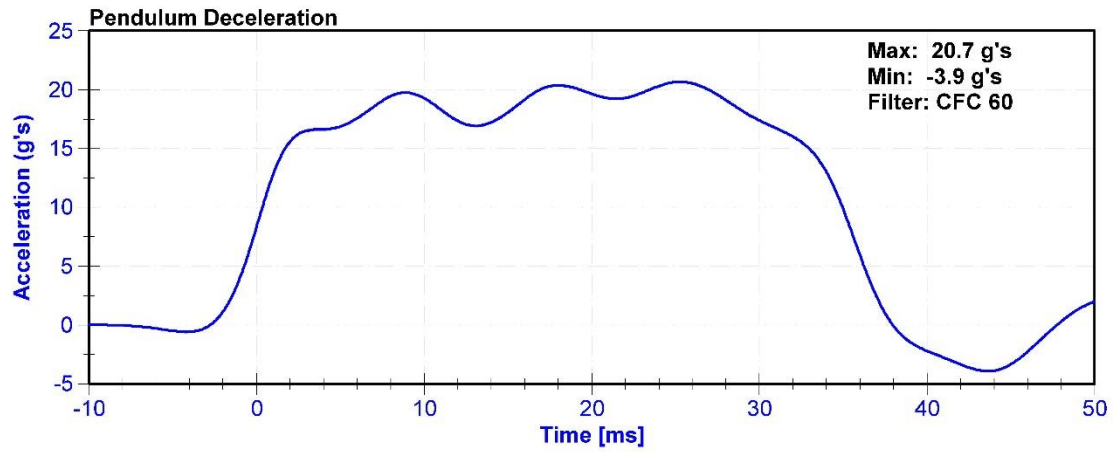
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.8	Pass
Humidity	10	70	%	62.0	Pass
Velocity	5.95	6.19	m/s	6.025	Pass
Pendulum Impulse at 10ms	1.5	1.9	m/s	1.64	Pass
Pendulum Impulse at 20ms	3.1	3.9	m/s	3.48	Pass
Pendulum Impulse at 30ms	4.6	5.6	m/s	5.40	Pass
D Plane Rotation	99	114	deg	108.8	Pass
Moment During Rotation Interval	-65	-53	Nm	-60.8	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	11/7/2015
Pendulum Potentiometer	SP22G	DS-PendPot	3/3/2015	3/2/2016
Condyle Potentiometer	SP22G	DS-CondPot	3/3/2015	3/2/2016
Upper Neck Load Cell	Denton 1716	LC-2193 Fx	11/25/2014	11/25/2015







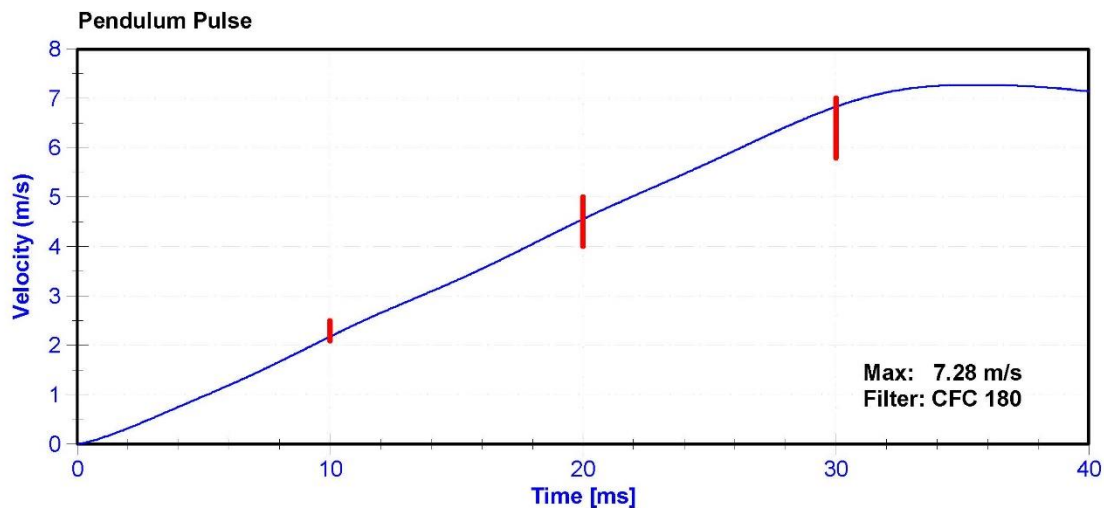
ATD Manufacturer	FTSS	Test Technician	M.Hartung
ATD Serial Number	324	Laboratory Supervisor	M.Goehle

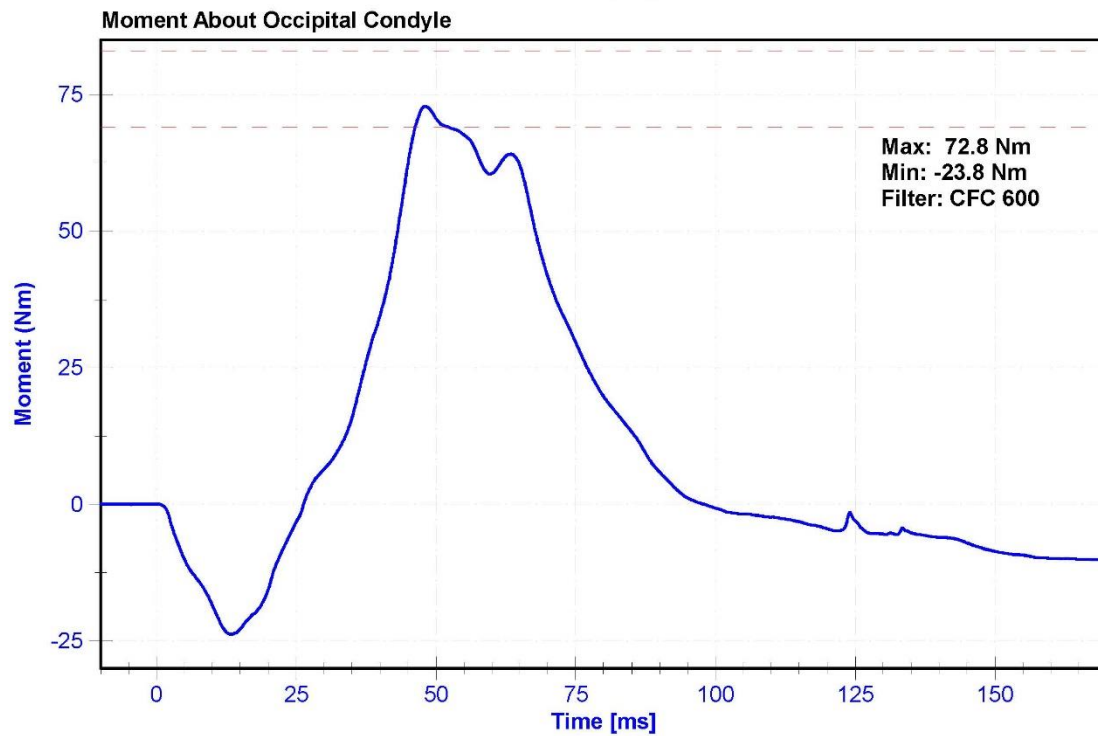
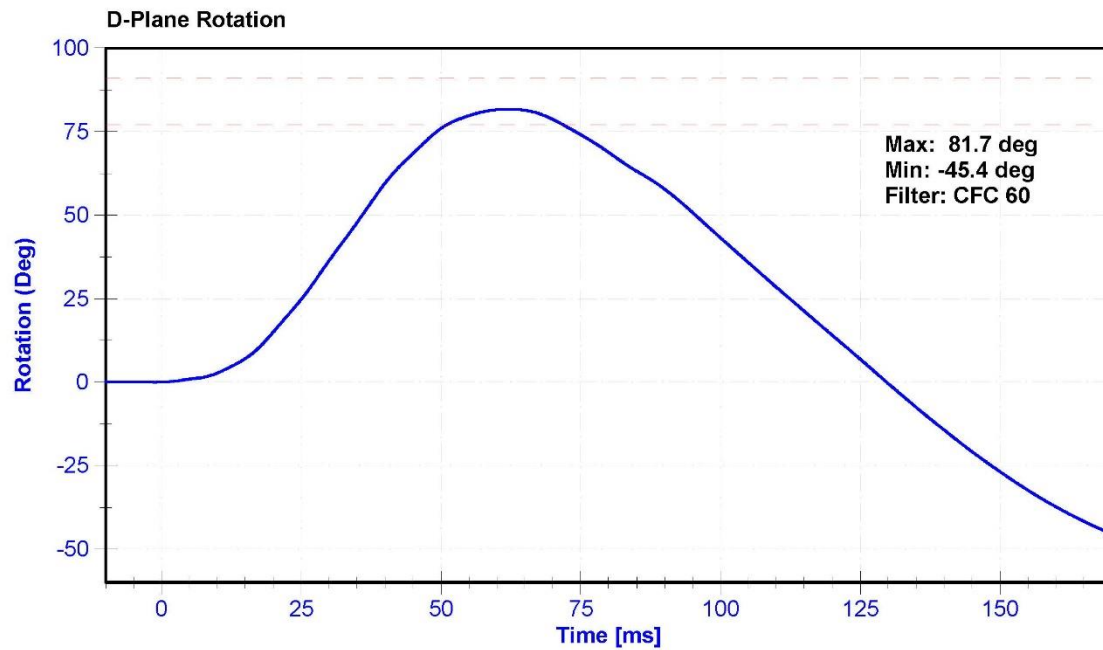
Results

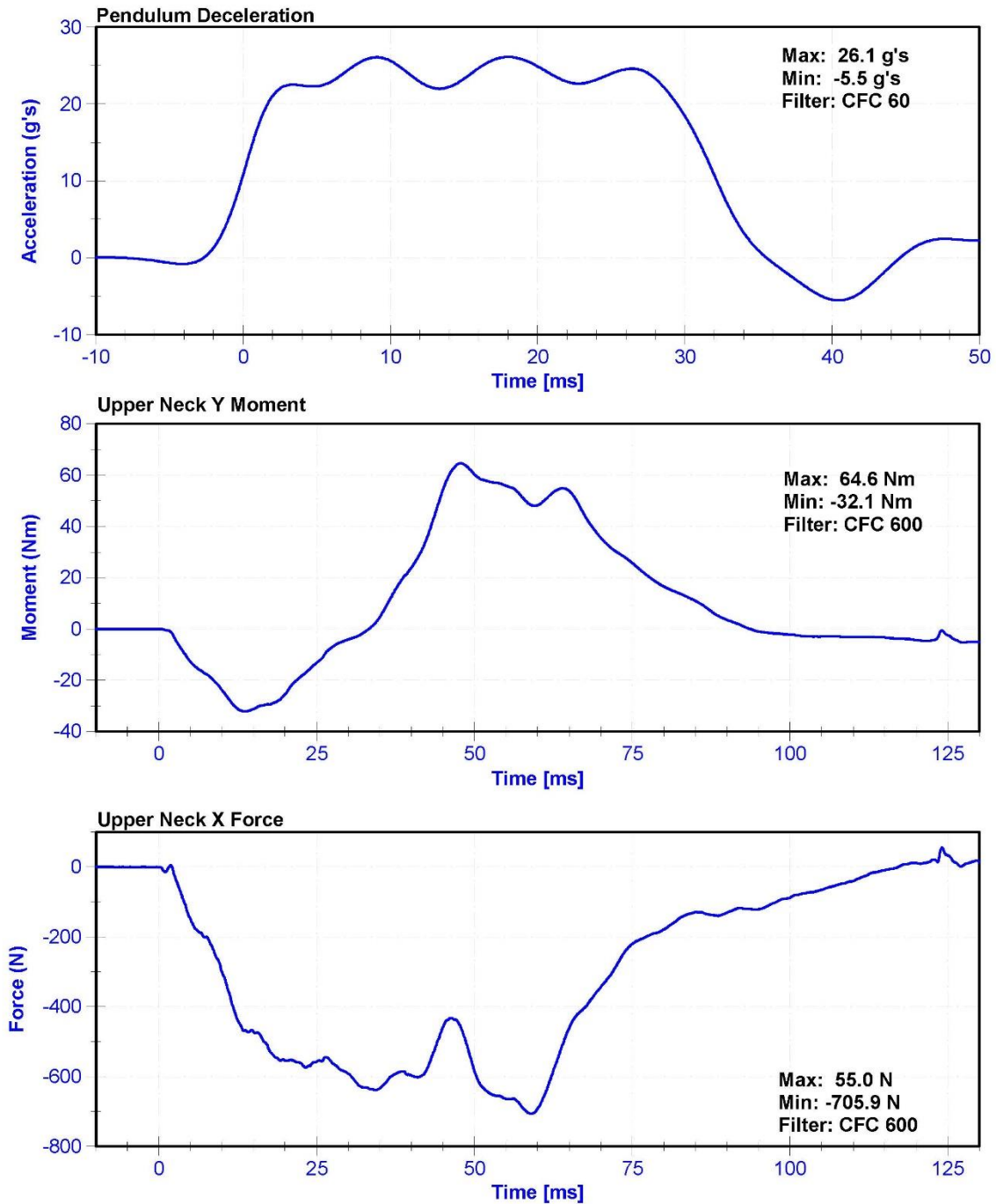
Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.8	Pass
Humidity	10	70	%	49.2	Pass
Velocity	6.89	7.13	m/s	6.979	Pass
Pendulum Impulse at 10ms	2.1	2.5	m/s	2.18	Pass
Pendulum Impulse at 20ms	4.0	5.0	m/s	4.56	Pass
Pendulum Impulse at 30ms	5.8	7.0	m/s	6.83	Pass
Max D Plane Rotation	77	91	deg	81.7	Pass
Max Moment During Rotation Interval	69	83	Nm	72.8	Pass
Moment Decay to 10.0 Nm	80	100	ms	87.1	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-AH5F3	5/7/2015	11/7/2015
Pendulum Potentiometer	SP22G	DS-PendPot	3/3/2015	3/2/2016
Condyle Potentiometer	SP22G	DS-CondPot	3/3/2015	3/2/2016
Upper Neck Load Cell	Denton 1716	LC-2193 Fx	11/25/2014	11/25/2015







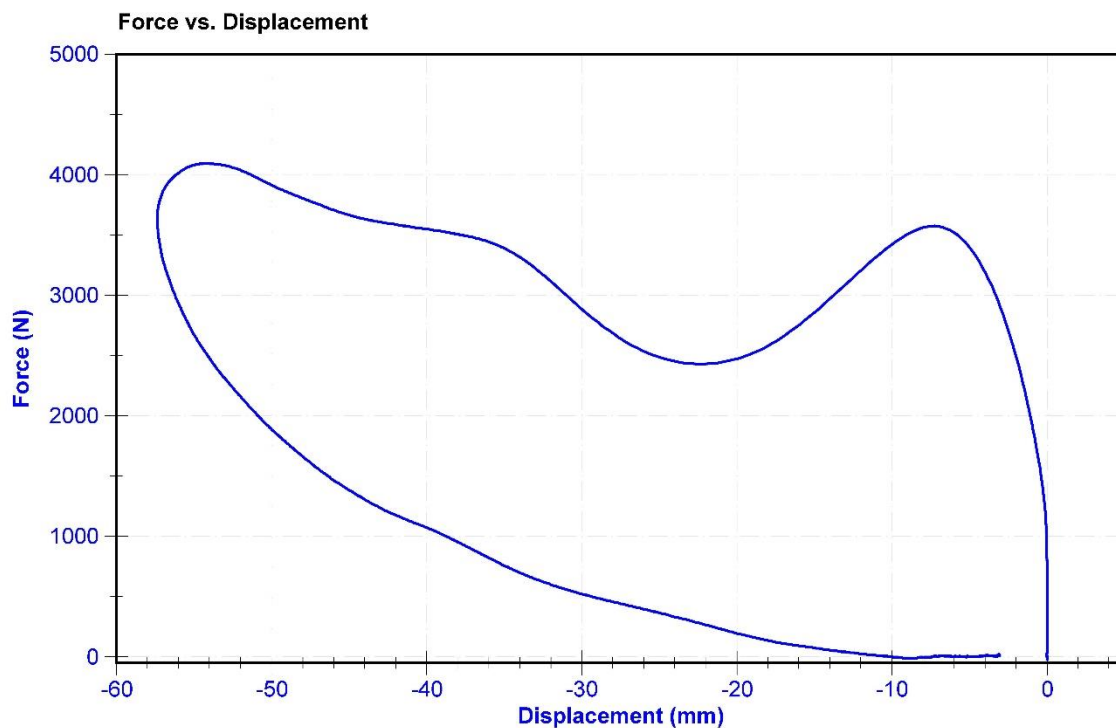
ATD Manufacturer	FTSS	Test Technician	M.Hartung
ATD Serial Number	324	Laboratory Supervisor	M.Goehle

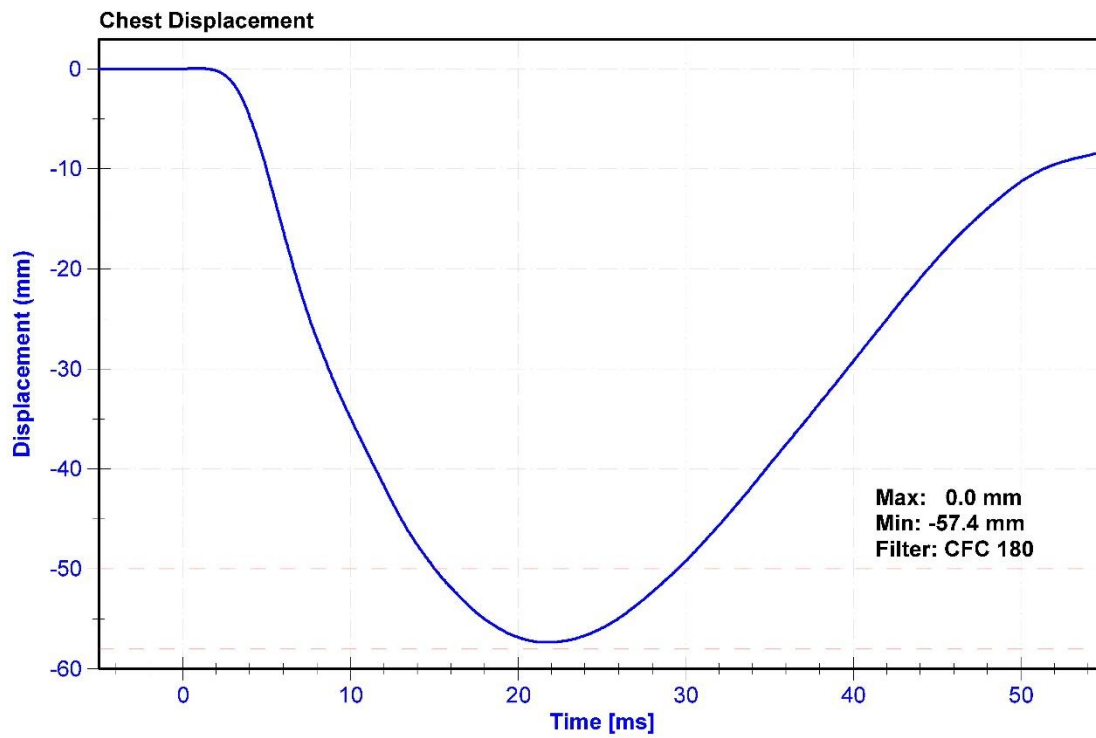
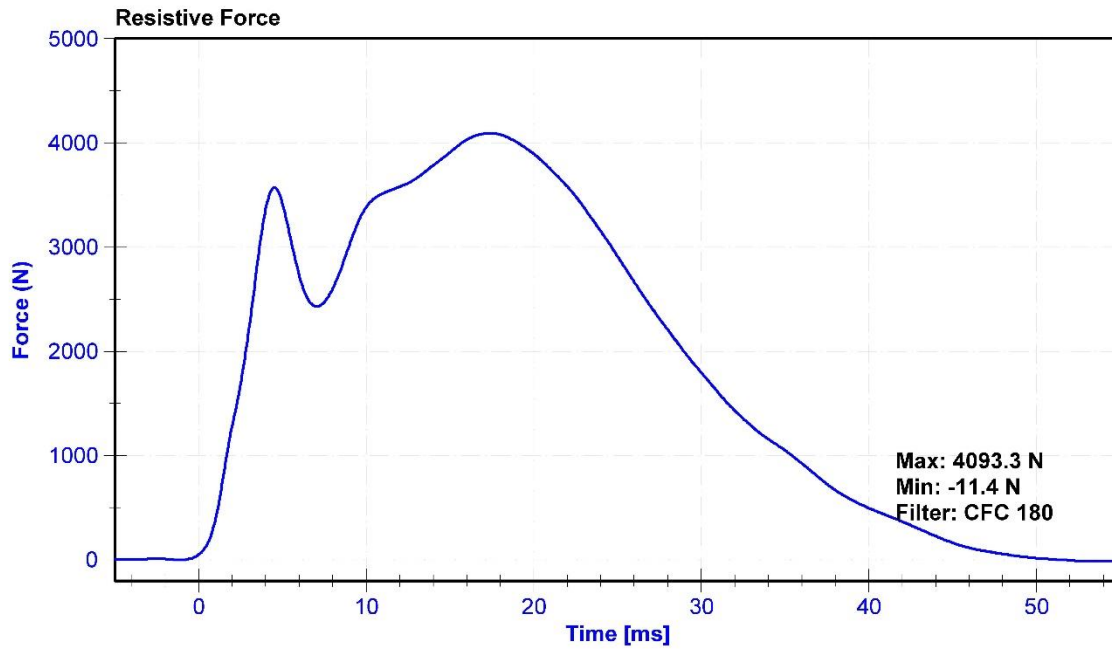
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	20.8	Pass
Humidity	10	70	%	57.5	Pass
Velocity	6.59	6.83	m/s	6.612	Pass
Chest Deflection	-58	-50	mm	-57.4	Pass
Maximum Resistive Force (50 to 58mm)	3,900	4,400	N	4093.3	Pass
Maximum Resistive Force (18 to 50mm)	0	4,600	N	3909.2	Pass
Hysteresis	69	85	%	75.8	Pass

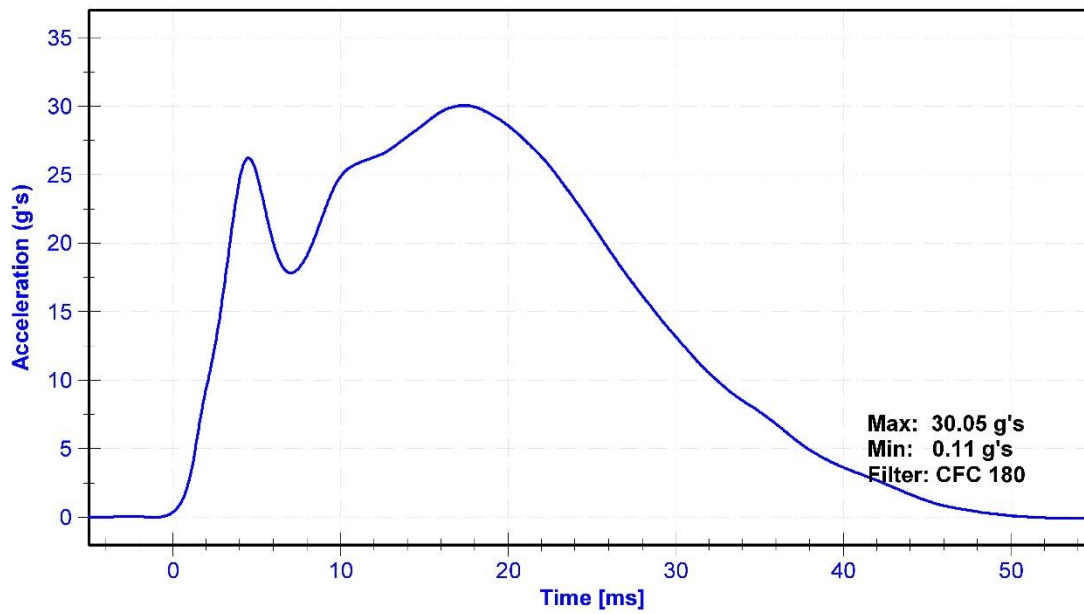
Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C14972	8/13/2015	2/11/2016
Chest Potentiometer	Servo 14CB1	DS-CST324	6/30/2015	6/29/2016

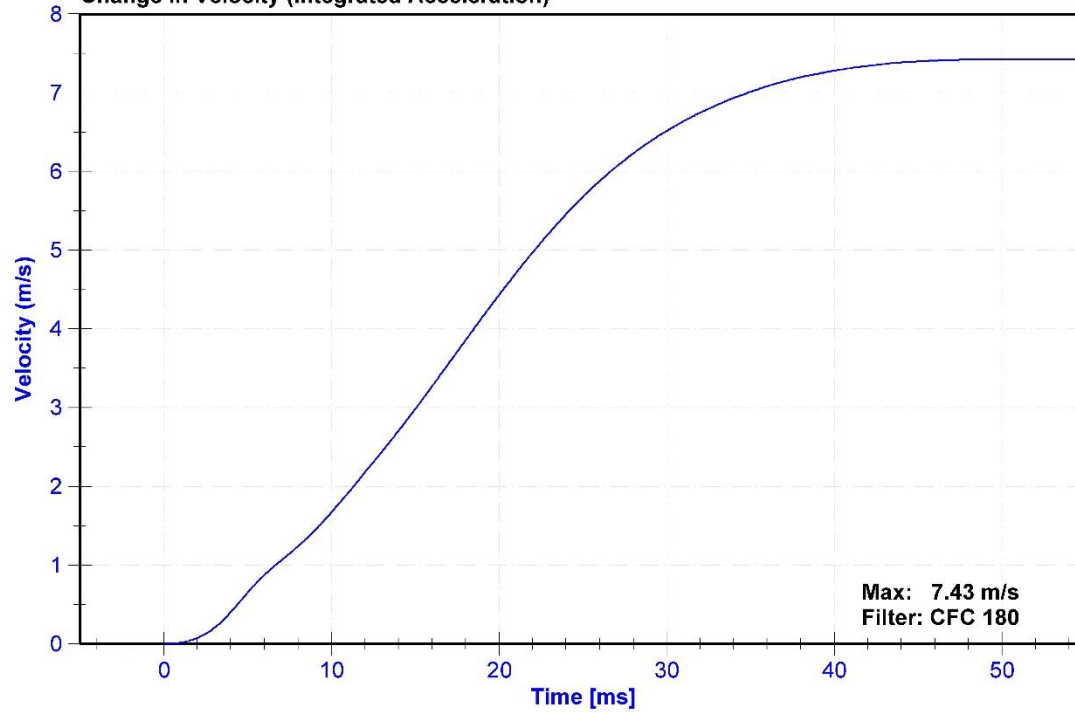




Probe Acceleration



Change in Velocity (Integrated Acceleration)



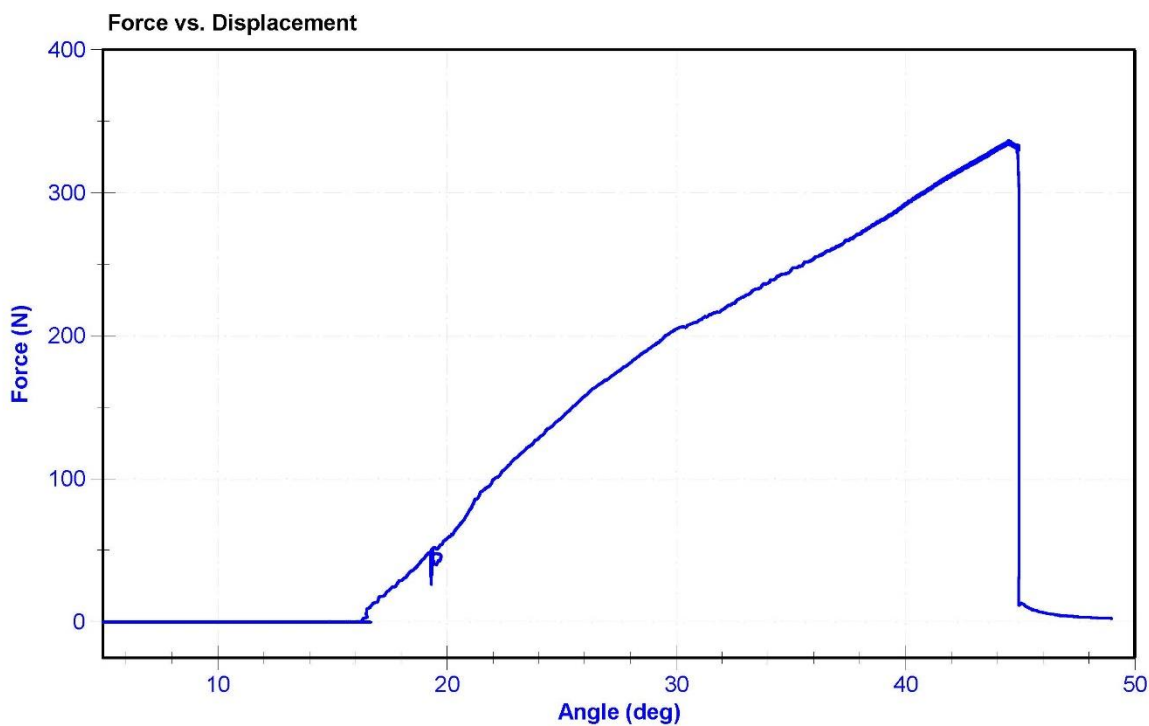
ATD Manufacturer	FTSS	Test Technician	M.Hartung
ATD Serial Number	324	Laboratory Supervisor	M.Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.6	25.6	°C	21.3	Pass
Humidity	10	70	%	69.2	Pass
Initial Angle	0	20	deg	15.6	Pass
Force at 45 Degrees	320	390	N	336.4	Pass
Return Angle Relative to Initial	0	8	deg	4.3	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



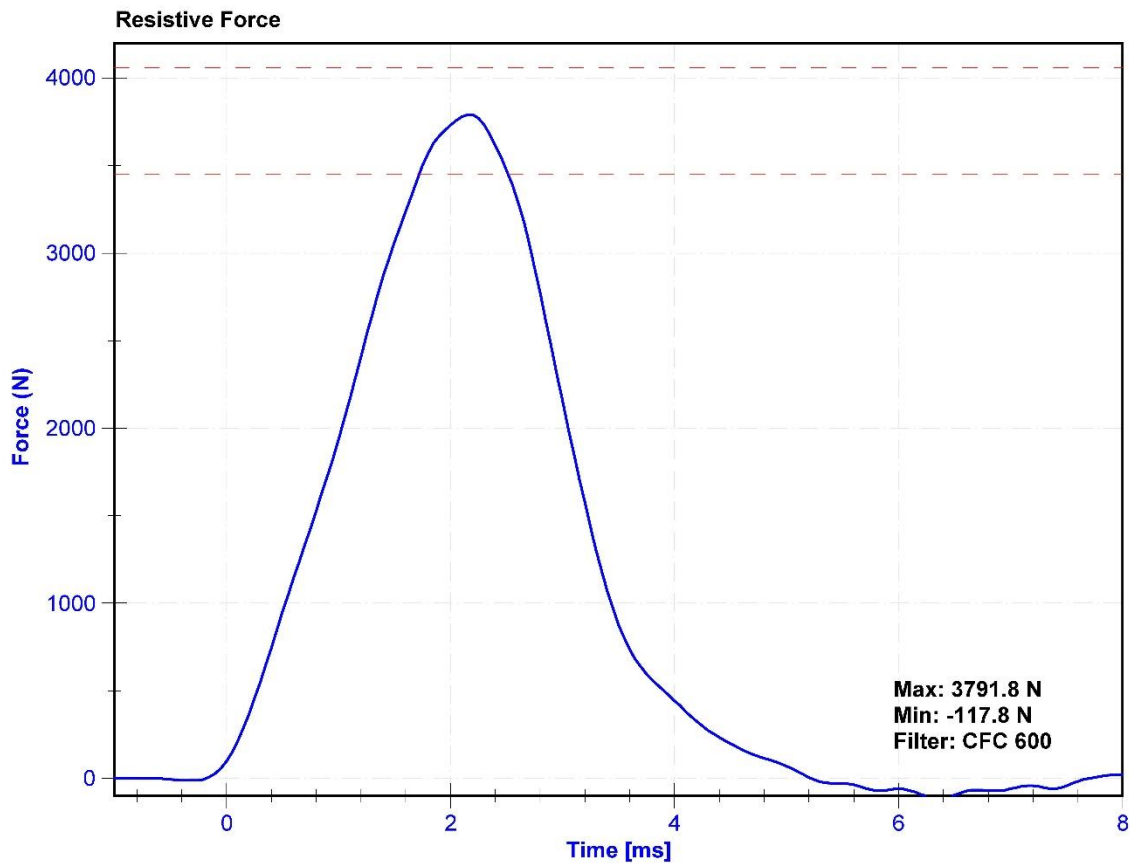
ATD Manufacturer	FTSS	Test Technician	M.Hartung
ATD Serial Number	324	Laboratory Supervisor	M.Goehle

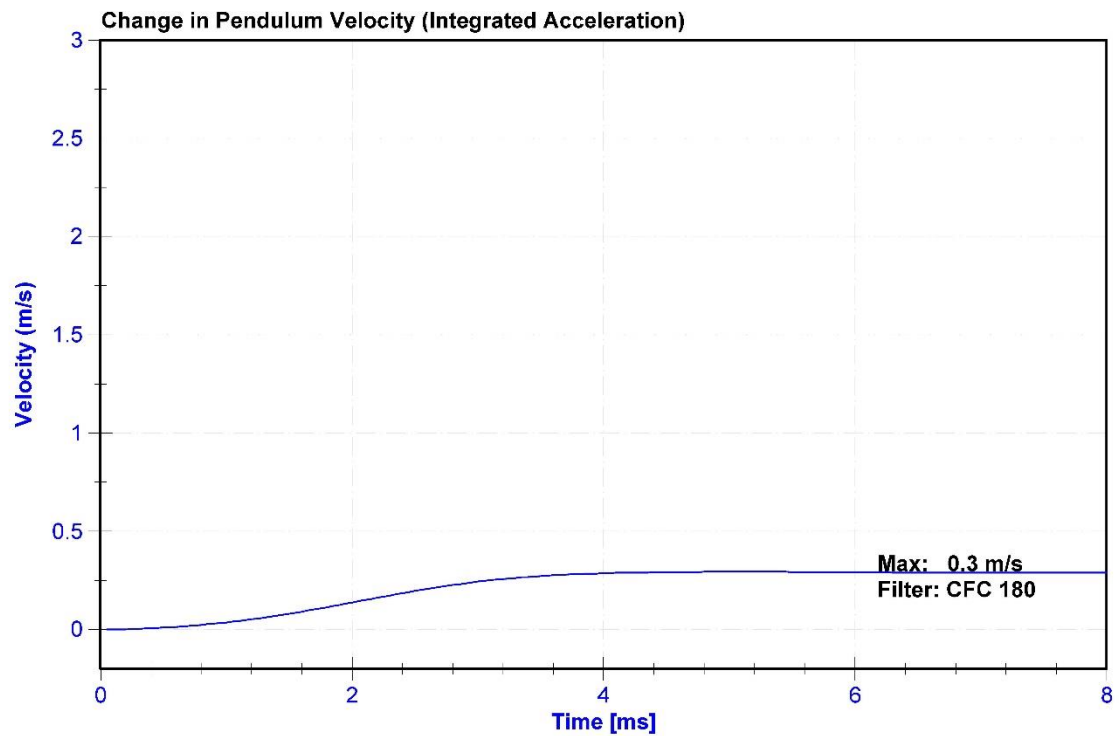
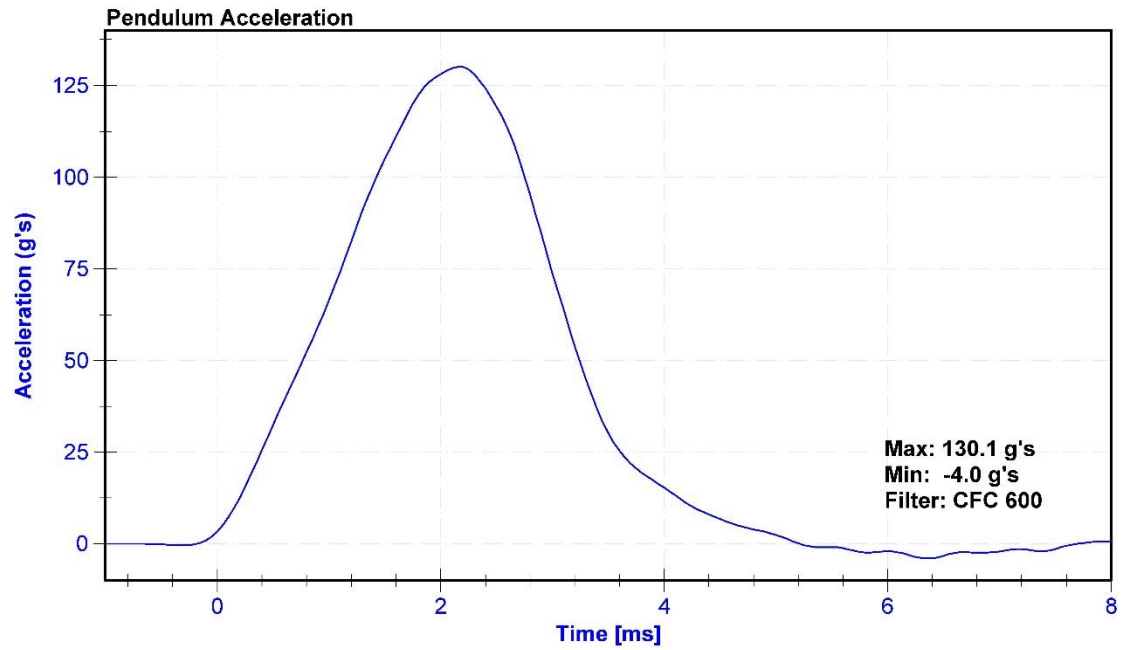
Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	18.9	25.6	°C	20.6	Pass
Humidity	10	70	%	68.3	Pass
Velocity	2.07	2.13	m/s	2.128	Pass
Resistive Force	3,450	4,060	N	3791.8	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C14972	8/13/2015	2/11/2016





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	20.7	Pass
Humidity	10	70	%	62.7	Pass
Velocity	2.07	2.13	m/s	2.082	Pass
Resistive Force	3,450	4,060	N	3527.7	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C14972	8/13/2015	2/11/2016

