

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

**MOVING BARRIER TO VEHICLE CRASH TEST IN SUPPORT OF NHTSA'S
FRONTAL OBLIQUE OFFSET PROGRAM
OBLIQUE MOVING DEFORMABLE BARRIER INTO LEFT FRONT OF A**

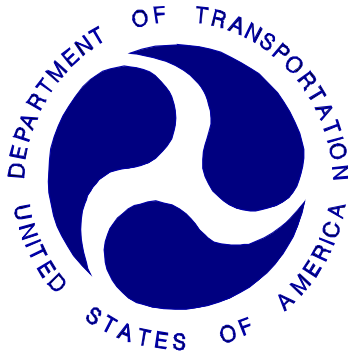
2015 Ford F-150

90.1KPH, 15 DEGREE ANGLE, 35% OVERLAP

TEST DATE: 10/14/2015

NHTSA No: R20150229

**CALSPAN CORPORATION
TRANSPORTATION TEST OPERATIONS
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FINAL REPORT SUBMITTED:

May 19, 2016

PREPARED FOR:

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

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Transportation Test Operations

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

Date: _____

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

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16. Abstract A test was conducted in accordance with Contract DTNH22-14-D-00359. The Test consisted of a Oblique Moving Deformable Barrier (OMDB) traveling at a target speed of 90.12 kph into a stationary 2015 Ford F-150 Pickup truck. The struck vehicle was positioned 15 degrees relative to the moving barrier and impacted 35% of the left side of the vehicle. 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 October 14, 2015. The OMDB impact velocity was 89.85 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 653 mm. The test vehicle's performance was as follows:																																									
<table border="1"> <thead> <tr> <th>Measurement Description</th> <th>Units</th> <th>Driver THOR</th> <th>Pass. THOR</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₁₅)</td> <td>N/A</td> <td>223.87</td> <td>152.19</td> </tr> <tr> <td>Brain Injury Criteria (BrIC)</td> <td>N/A</td> <td>1.16</td> <td>1.58</td> </tr> <tr> <td>Peak Neck Tension</td> <td>mm</td> <td>1102.23</td> <td>1025.24</td> </tr> <tr> <td>Peak Resultant Chest Deflection</td> <td>N/A</td> <td>43.90</td> <td>33.88</td> </tr> <tr> <td>Peak Abdomen Deflection</td> <td>N</td> <td>-54.14</td> <td>-43.31</td> </tr> <tr> <td>Peak Resultant Acetabulum force</td> <td>N</td> <td>1401.78</td> <td>1477.36</td> </tr> <tr> <td>Peak Femur Force</td> <td>N</td> <td>-2985.41</td> <td>-3735.23</td> </tr> <tr> <td>Right Tibia Index</td> <td>N</td> <td>0.40</td> <td>0.32</td> </tr> </tbody> </table>						Measurement Description	Units	Driver THOR	Pass. THOR	Head Injury Criteria (HIC ₁₅)	N/A	223.87	152.19	Brain Injury Criteria (BrIC)	N/A	1.16	1.58	Peak Neck Tension	mm	1102.23	1025.24	Peak Resultant Chest Deflection	N/A	43.90	33.88	Peak Abdomen Deflection	N	-54.14	-43.31	Peak Resultant Acetabulum force	N	1401.78	1477.36	Peak Femur Force	N	-2985.41	-3735.23	Right Tibia Index	N	0.40	0.32
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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: May 19, 2016

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 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
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**SECTION 1
PURPOSE OF TEST**

Test Vehicle: 2015 Ford F-150 Pickup truck
Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
Test Date: 10/14/2015

This 90.12 kph (56 mph) Moving Barrier into a test vehicle is part of the Frontal Offset Test outlined in Contract No. DTNH22-14-D-00359, Task Order 0001. The purpose of this test is to obtain vehicle crashworthiness and occupant restraint system performance data for consumer information purposes.

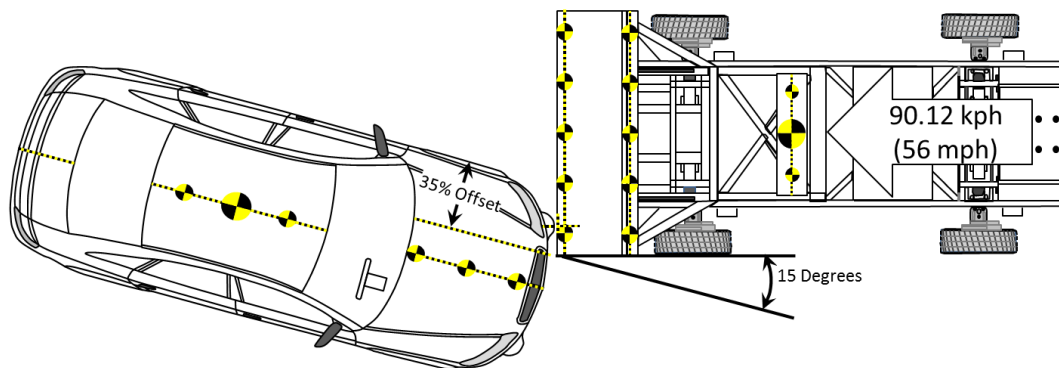
This test was conducted in accordance with the instructions set forth for a 15° angle, 35% offset moving barrier to vehicle impact, outlined in Contract No. DTNH22-14-D-00359, Task Order 0001. Data was obtained indicant of Federal Motor Vehicle Safety Standard FMVSS 208- Occupant Crash Protection, FMVSS 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 0001.

SECTION 2 SUMMARY OF TEST

Test Vehicle: 2015 Ford F-150 Pickup truck
Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
Test Date: 10/14/2015

A 2015 Ford F-150 Pickup truck was impacted on the right front corner by an Oblique Moving Deformable Barrier (OMDB). This test vehicle was stationary and positioned at a target angle of 15° and at a target offset of 35% to the forward line of motion of the OMDB. The OMDB was towed down the test track in a full forward direction, without any crabbing, and at the targeted impact velocity of 90.12 kph (56.0 mph) into the test vehicle. The test vehicle's mass was 2,462 kg (5,427.8 lbs), and the OMDB's mass was 2519 kg (5,552 lbs). The test was conducted by Calspan Corporation on October 14, 2015.



The test was documented by two (2) real time and fifteen (15) high-speed video cameras. Camera locations and other pertinent data are located in Data Sheet No. 6 of this report. Pre and post – test photographs of the test vehicle, OMDB, and test setup were taken using a digital still camera. Photographic documentation of the test is presented in Appendix A of this report.

One 50% adult male THOR-NT anthropomorphic test device (ATD) (Serial No. 015) was seated in the left, front (P1 -Driver's) seating position and one 50% adult male THOR-NT adult male ATD (Serial No. 016) was seated in the right front passenger seating position (P2). The driver and passenger were positioned according to instructions specified in the THOR seating procedures.

The driver was restrained with a 3 – point seat belt, a frontal, curtain, and torso airbag. The passenger was restrained with a 3 – point seat belt and frontal airbag. The passenger's curtain and torso airbags were disabled.

SECTION 2 (CONTINUED)
SUMMARY OF TEST

Test Vehicle: 2015 Ford F-150 Pickup truck
Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
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Two hundred and fifty eight (258) channels of data from the two ATD's, test vehicle and OMDB were collected using Kayser – Threde and DTS data acquisition systems. Appendix B contains dummy data plots, as well as vehicle and OMDB response data plots.

There was 100% total windshield retention, with 100% and 100% retention on the left and right sides, respectively. 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 653 mm at C1 to the left of the vehicle's centerline. The maximum crush of the structural bumper beam was 646 mm at B2, to the left of the vehicle's centerline. Full vehicle measurements are presented in Section 3 of this report.

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

Structure observations include the following:

- Windshield had minor cracks
- Hood bent inwards and exposed part of the engine compartment
- Driver Torso Airbag did not fully inflate – Lower section of bag was partially stuck in seatback

The driver ATD's visible contact points were:

- Head contacted the frontal and curtain airbag
- Torso contacted the frontal airbag
- Side Torso and Arm/Shoulder contacted the driver's door
- Left Knee contacted the knee bolster
- Right Knee 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

**SECTION 2 (CONTINUED)
CRASH VEHICLE SUMMARY**

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015

Primary Impact Data

Measured Parameter	Units	Value
OMDB Velocity at Impact	kph	89.85
OMDB Test Weight	kg	2519
OMDB Maximum Static Crush	mm	379
Vehicle Test Weight	kg	2462
Actual Vehicle Angle	degrees	15
Vehicle Maximum Static Crush	mm	653
Vertical Offset from Target Point (+ down / - up)*	mm	-10
Lateral Offset from Target Point (+ left / - right)*	mm	0
Number of Data Channels		258
Number of Real-Time Cameras		2
Number of High-Speed Cameras		15

*Offsets are in relation to the vehicle coordinate system.

Dummy Contacts

	Driver	Picture Ref.	Passenger	Picture Ref.
Dummy Type	THOR, S/N: 015		THOR, S/N: 016	
Head Contact	Front & Curtain Airbag	A49-A51	Front Airbag & Headrest	A70-A72
Upper Torso Contact	Front Airbag	N/A	Front Airbag	N/A
Lower Torso Contact	None	N/A	None	N/A
Side Torso Contact	Side Torso, Arm/shoulder contacted door	N/A	None	N/A
Left Knee Contact	Knee Bolster	A28	Glove Box	A52
Right Knee Contact	Knee Bolster	A28	Glove Box	A52

Data Anomalies

CHANNEL DESCRIPTION	EXPLANATION
Driver Tibia Lower Right X Force, Questionable spike 109ms, 124ms, 128ms and 192ms	Could not replicate problem
Driver Tibia Lower Right Y Force, Questionable spike 109ms, 124ms, 128ms and 192ms	Could not replicate problem
Driver Tibia Lower Right Z Force, Questionable spikes 40.8ms to 192ms	Could not replicate problem
Passenger Upper Neck X Moment, Channel Failed	Known bad channel - +Sig wire needs replacement
Passenger DGIR Upper Right X Displacement, Questionable spike 123ms, 127ms and 174ms	Could not replicate problem
Passenger DGIR Lower Left X Displacement, Questionable spike 123ms, 127ms and 174ms	Could not replicate problem
Passenger DGIR Lower Right X Displacement, Questionable spike 123ms, 127ms and 174ms	Could not replicate problem

PRELIMINARY INJURY SUMMARY: Driver

Test Vehicle: R20150229-2015 Ford F-150 NHTSA No.: R20150229
 Test Program: NHTSA R&D Left Oblique Offset 15deg/35% Test Date: 10/14/2015

Driver: THOR Serial No. 015 Injury Summary

Location	Description	Unit	Source	Max	Min
Head	HIC 15ms		Compute	223.87	
	Brain Injury Criteria (BrIC)		Compute	1.16	
	Head Rotational Velocity X	Deg/s	60	563.54	-1259.06
	Head Rotational Velocity Y	Deg/s	60	665.53	-1240.71
	Head Rotational Velocity Z	Deg/s	60	2573.27	-920.37
Neck	Upper Neck Z-axis Force	N	1000	1102.23	-642.55
	Upper Neck Y-axis Moment	Nm	Thortest	22.70	-12.82
Chest	Upper Left Resultant Chest Deflection	mm	Thortest	27.99	
	Upper Right Resultant Chest Deflection	mm	Thortest	43.90	
	Lower Left Resultant Chest Deflection	mm	Thortest	21.37	
	Lower Right Resultant Chest Deflection	mm	Thortest	31.79	
Abdomen	Lower Left X-axis Deflection	mm	Thortest	0.09	-54.14
	Lower Right X-axis Deflection	mm	Thortest	0.15	-49.46
Acetabulum	Left Acetabulum Resultant Force	N	Compute	1401.78	0.06
	Right Acetabulum Resultant Force	N	Compute	1245.80	0.06
Femur	Left Femur Force, FZ	N	600	281.68	-2985.41
	Right Femur Force, FZ	N	600	370.87	-1807.04
Tibia	Left Upper Tibia, FZ	N	600	103.93	-632.28
	Left Upper Tibia Index		Compute	0.26	
	Right Upper Tibia, FZ	N	600	144.90	-1974.20
	Right Upper Tibia Index		Compute	0.36	
	Left Lower Tibia, FZ	N	600	60.43	-1214.17
	Left Lower Tibia Index		Compute	0.18	
	Right Lower Tibia, FZ	N	600	593.39 ⁽¹⁾	-3023.52 ⁽¹⁾
	Right Lower Tibia Index		Compute	0.40 ⁽¹⁾	
Ankle	Left Ankle Rotation, RX	Deg	180	4.32	-19.40
	Left Ankle Rotation, RY	Deg	180	10.09	-8.73
	Left Ankle Dorsiflexion Moment, MY	Nm	Compute	22.51	-8.90
	Left Ankle In/Eversion Moment, MX	Nm	Compute	15.49	-5.92
	Right Ankle Rotation, RX	Deg	180	16.61	-9.87
	Right Ankle Rotation, RY	Deg	180	24.03	-20.21
	Right Ankle Dorsiflexion Moment, MY	Nm	Compute	36.66 ⁽²⁾	-40.40 ⁽²⁾
	Right Ankle In/Eversion Moment, MX	Nm	Compute	16.24 ⁽³⁾	-56.73 ⁽³⁾

Anomalies: (1) Questionable spikes 40.8ms to 192ms
 (2) Tibia Lower Right X Force - Questionable spike 109ms, 124ms, 128ms and 192ms
 (3) Tibia Lower Right Y Force - Questionable spike 109ms, 124ms, 128ms and 192ms

PRELIMINARY INJURY SUMMARY: Right Front Passenger

Test Vehicle: R20150229-2015 Ford F-150 NHTSA No.: R20150229
 Test Program: NHTSA R&D Left Oblique Offset 15deg/35% Test Date: 10/14/2015

Right Front Passenger: THOR Serial No. 016 Injury Summary

Location	Description	Unit	Source	Max	Min
Head	HIC 15ms		Compute	152.19	
	Brain Injury Criteria (BRIC)		Compute	1.58	
	Head Rotational Velocity X	Deg/s	60	644.40	-1200.05
	Head Rotational Velocity Y	Deg/s	60	982.12	-612.04
	Head Rotational Velocity Z	Deg/s	60	3732.87	-2342.46
Neck	Upper Neck Z-axis Force	N	1000	1025.24	-474.69
	Upper Neck Y-axis Moment	Nm	Thortest	15.38	-20.69
Chest	Upper Left Resultant Chest Deflection	mm	Thortest	26.49	
	Upper Right Resultant Chest Deflection	mm	Thortest	20.96 ⁽⁴⁾	
	Lower Left Resultant Chest Deflection	mm	Thortest	33.88 ⁽⁵⁾	
	Lower Right Resultant Chest Deflection	mm	Thortest	20.16 ⁽⁶⁾	
Abdomen	Lower Left X-axis Deflection	mm	Thortest	0.24	-43.31
	Lower Right X-axis Deflection	mm	Thortest	0.26	-42.94
Acetabulum	Left Acetabulum Resultant Force	N	Compute	1477.36	0.08
	Right Acetabulum Resultant Force	N	Compute	1464.82	0.05
Femur	Left Femur Force, FZ	N	600	356.87	-3517.13
	Right Femur Force, FZ	N	600	331.37	-3735.23
Tibia	Left Upper Tibia, FZ	N	600	57.37	-1085.88
	Left Upper Tibia Index		Compute	0.37	
	Right Upper Tibia, FZ	N	600	140.78	-1496.87
	Right Upper Tibia Index		Compute	0.32	
	Left Lower Tibia, FZ	N	600	25.48	-1125.22
	Left Lower Tibia Index		Compute	0.35	
	Right Lower Tibia, FZ	N	600	76.13	-1074.58
	Right Lower Tibia Index		Compute	0.27	
Ankle	Left Ankle Rotation, RX	Deg	180	23.00	-26.98
	Left Ankle Rotation, RY	Deg	180	-2.93	-25.18
	Left Ankle Dorsiflexion Moment, MY	Nm	Compute	7.03	-25.31
	Left Ankle In/Eversion Moment, MX	Nm	Compute	32.80	-78.58
	Right Ankle Rotation, RX	Deg	180	27.21	-21.60
	Right Ankle Rotation, RY	Deg	180	-5.32	-24.95
	Right Ankle Dorsiflexion Moment, MY	Nm	Compute	7.61	-54.32
	Right Ankle In/Eversion Moment, MX	Nm	Compute	48.01	-51.38

Anomalies: (4) DGIR Upper Right X Displacement – Questionable spikes 123ms to 127ms
 (5) DGIR Lower Left X Displacement - Questionable spike 123ms, 127ms and 174ms
 (6) DGIR Lower Right X Displacement - Questionable spike 123ms, 127ms and 174ms

**SECTION 3
DATA SHEETS**

Test Vehicle: 2015 Ford F-150 Pickup truck
Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
Test Date: 10/14/2015

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**DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015

VEHICLE INFORMATION

NHTSA No.	R20150229
Model Year	2015
Make	Ford
Model	F-150
Body Style	Pick Up Truck
VIN	1FTEW1CG2FKD64890
Body Color	Black
Odometer Reading (km/mi)	7.9
Engine Displacement. (L)	3.5
Type/No. Cylinders	V6
Engine Placement	Inline
Transmission Type	Automatic
Transmission Speeds	6-Speed
Overdrive	Yes
Final Drive	Rear Wheel Drive
Roof Rack	No
Sunroof/T-Top	No
Running Boards	Yes
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes
All-Wheel Drive (AWD)	No
Traction Control System (TCS)	Yes

VEHICLE OPTIONS

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

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

Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Ford Motor Co.
Date of Manufacture	06/15

GWR (kg)	3084
GAWR Front (kg)	1429
GAWR Rear (kg)	1724

VEHICLE SEATING AND WEIGHT CAPACITY

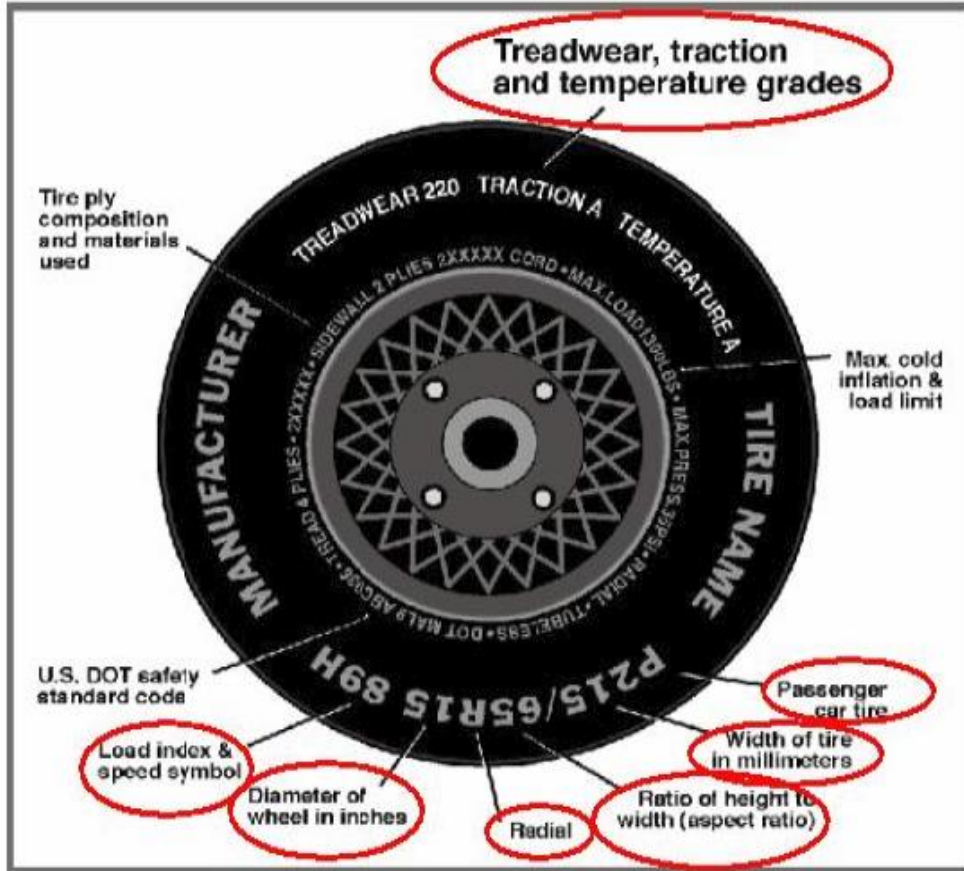
Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Split Bench	--	
Number of Occupants	3	3	--	6
Capacity Wt. (VCW) (kg)				920
Cargo Wt. (RCLW) (kg)				511.76

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

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015

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



Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	250	250
Recommended Tire Size	245/70R17	245/70R17
Tire Size on Vehicle	245/70R17	245/70R17
Tire Manufacturer	Michelin	Michelin
Tire Model	LTX m/s ²	LTX m/s ²
Treadwear	720	720
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 1 Polyamide, 2 Steel	2 Polyester, 1 Polyamide, 2 Steel
Load Index/Speed Symbol	110T	110T
Tire Material	Rubber	Rubber
DOT Safety Code Right	M3X600AX1815	M3X600AX1815
DOT Safety Code Left	M3X600AX1815	M3X600AX1815

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

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	606	470		668	573	
Right	kg	620	446		668	553	
Ratio	%	57%	43%		54%	46%	
Totals	kg	1226	916	2142	1336	1126	2462

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	2142
Weight of 2 THOR ATDs	kg	190
Rated Cargo/Luggage Weight (RCLW)	kg	136
Calculated Vehicle Target Weight (TVTW)	kg	2468

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	915	913	990	988	1577
As Tested	mm	898	898	955	956	1686
Post Test	mm	942	918	879	1032	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	3688
Total Vehicle Length at Left Side	mm	5831
Total Vehicle Length at Centerline	mm	5875
Total Vehicle Length at Right Side	mm	5831
Weight of Ballast in Cargo Area	kg	45
Weight of Vehicle Components Removed	kg	55
Amount of Stoddard Solvent in Fuel Tank	L	84.5

LIST OF COMPONENTS REMOVED TO MEET TEST WEIGHT:

Trunk carpeting, jack, rear seats, rear seatbelt hardware

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

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015

TARGET VEHICLE STRUCTURAL MEASUREMENT

	Elements		Pre-Test
1	Total Length	mm	5875
2	Total Width	mm	2026
3*	Bumper Top Height	mm	717
4*	Bumper Bottom Height	mm	473
5*	Longitudinal Member Top Height	mm	664
6	Distance Between Longitudinal Members	mm	951
7	Longitudinal Member Width	mm	85
8*	Engine Top Height	mm	1136
9*	Engine Bottom Height	mm	367
10	Engine and Gearbox Width	mm	559
11	Front Bumper-Engine Distance	mm	828
12*	Front Shock Absorber Fixing Height	mm	898
13*	Bonnet Leading Edge Height	mm	1194
14	Front Shock Absorber Fixing Width	mm	981
15	Front Bumper – Front Axle Distance	mm	953
16	Front Axle – A Pillar Distance	mm	589
17	A-Pillar – B-Pillar Distance	mm	1286
18	B-Pillar – Rear Axle Distance	mm	1809
19	B-Pillar – C-Pillar Distance	mm	1039
20*	Roof Sill Bottom Height	mm	1819
21*	Roof Sill Top Height	mm	1857
22*	Floor Sill Bottom Height	mm	593
23*	Floor Sill Top Height	mm	601

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

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

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

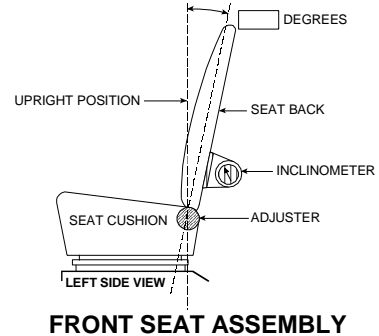
NHTSA No.: R20150229
 Test Date: 10/14/2015

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



	UNIT	FORM 1 POSITION	AFTER ATD POSITIONING
Driver Seat Back Angle	deg	3.0	2.8
Passenger Seat Back Angle	deg	3.0	2.5

SEAT FORE/AFT POSITIONS

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

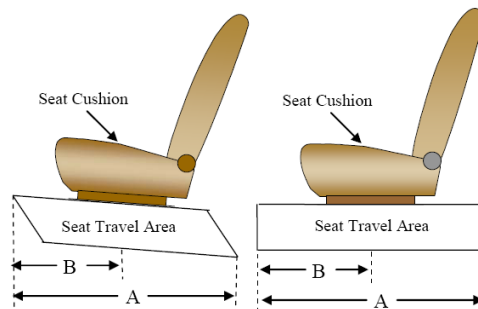
The driver's seat was positioned at its mid height position and at the mid-point of fore/aft travel. The passenger's seat was positioned at the mid-point of fore/aft travel.

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	38 (0 – 37)	19
Passenger Seat	38 (0 – 37)	19

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	1
Passenger Seat	4	1



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

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015

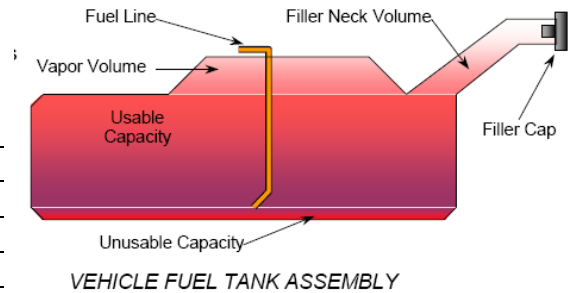
FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	90.85
Usable Capacity of "Optional Tank"	
93% of Usable Capacity	84.5
Actual Amount of Solvent Used	84.5
1/3 of Usable Capacity	30.2

FUEL PUMP

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

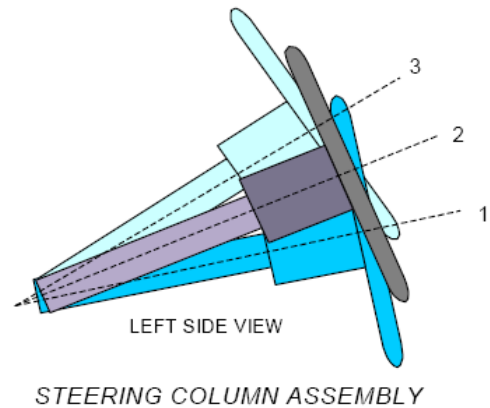
Fuel evacuated according to the specifications provided by the manufacturer in Form 1. Electric fuel pump operates when the ignition is in the 'on' position and the engine is running. The fuel filler neck is located above the left rear wheel.



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



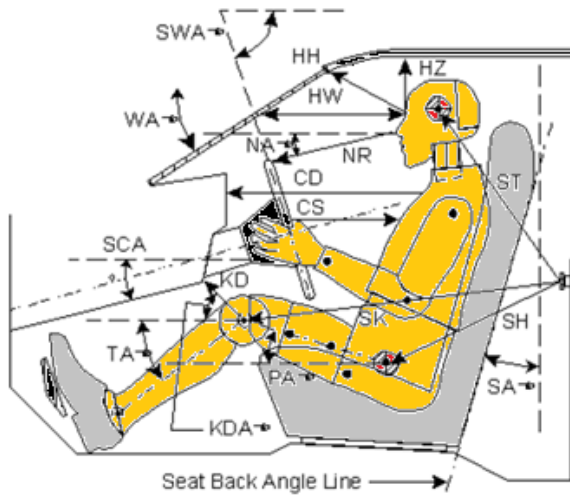
STEERING COLUMN POSITIONS

	Tilt (degrees)	Fore/Aft Position (mm)
Lowermost position No. 1	19.2	
Geometric center position No. 2	21	
Uppermost position No. 3	22.8	
Telescoping Steering Wheel Travel		40
Test Position	21	20

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015

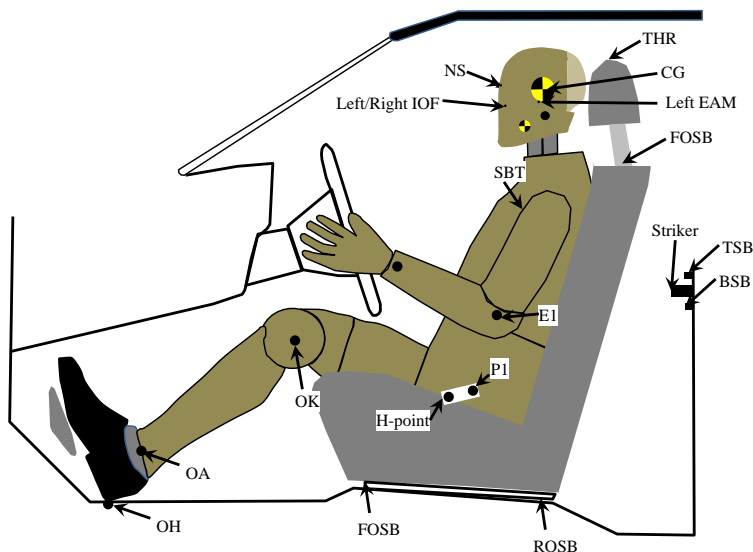


Code	Measurement Description	Driver (Serial # THOR 015)		Passenger (Serial # THOR 016)	
		Length (mm)	Angle(°)	Length (mm)	Angle (°)
WA ⁰	Windshield Angle		33.3		
SWA ⁰	Steering Wheel Angle		22.0		
SCA ⁰	Steering Column Angle		68		
SA ⁰	Seat Back Angle (on headrest post)		2.8		2.5
SA ⁰	Seat Back Angle		24.6		24.9
HZ	Head to Roof (Z)	235	90	227	90
HH	Head to Header	530	16.1	538	15.2
HW	Head to Windshield	760	0	748	0
NR	Nose to Rim	512	14.5	751	28.1
CD	Chest to Dash	658		630	
CS	Chest to Steering Hub	415	5.4		
RA	Rim to Abdomen	189	0		
KDL	Left Knee to Dash	124	13.3	110	28.2
KDR	Right Knee to Dash	115	32.6	113	27.3
PA ⁰	Pelvic Angle		31.5		34.1
TA ⁰	Tibia Angle		50		52.3
SK	Striker to Knee	733	4.7	747	4.1
ST	Striker to Head	630	80.1	635	80.7
SH	Striker to H-Point	331	7.5	327	3.9
HAX ⁰	Head Angle (X)		0.8		-0.3
HAY ⁰	Head Angle (Y)		-2.2		-3.2
TAX ⁰	T6 Angle (X)		-0.2		-0.3
TAY ⁰	T6 Angle (Y)		23.0		21.4
TAX ⁰	T1 (X)		0.0		0.1
TAY ⁰	T1 (Y)		1.4		2.0
TAX ⁰	T12 (X)		1.1		-1.7
TAY ⁰	T12 (Y)		30.5		30.7

DATA SHEET NO.3 (CONTINUED) DUMMY CMM MEASUREMENTS

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015



Description	Units	Driver			Passenger		
		X	Y	Z	X	Y	Z
Head CG	mm	3246	-535	-1096	3236	528	-1110
Nasion	mm	3340	-455	-1103	3330	450	-1117
Tip of Nose	mm	3341	-456	-1066	3332	448	-1079
Tip of Chin	mm	3334	-456	-965	3323	450	-979
Left EAM	mm	3253	-531	-1067	3243	377	-1080
Right EAM	mm	3252	-387	-1064	3243	524	-1081
Left IOF	mm	3337	-489	-1066	3328	417	-1078
Right IOF	mm	3337	-425	-1064	3327	482	-1079
Outboard Elbow	mm	3473	-674	-653	3378	722	-563
H-Point	mm	3466	-654	-432	3460	656	-461
H-Point Tool	mm	3394	-702	-464	3384	703	-488
Outboard Knee Bolt	mm	3869	-667	-535	3880	620	-536
Inboard Knee Bolt	mm	3878	-365	-530	3876	385	-538
Outboard Ankle Bolt	mm	4143	-702	-218	4136	627	-209
Outer Heel Point	mm	4140	-687	-75	4081	596	-84
Inboard Heel Point	mm	4162	-327	-80	4067	360	-82
Striker Top Bolt	mm	3104	-897	-494	3099	896	-499
Striker Bottom Bolt	mm	3106	-898	-458	3101	898	-463
Center Tip of Striker	mm	3138	-898	-475	3134	894	-483
Front Outboard Seat Anchor Bolt	mm	3694	-629	-125	3689	632	-131
Rear Outboard Seat Anchor Bolt	mm	3203	-668	-123	3201	669	-128
Outboard Head Restraint Post	mm	3066	-539	-948	3068	539	-957
Top of Head Restraint	mm	3084	-456	-1182	3070	451	-1189
Center of Steering Wheel	mm	3771	-466	-806			

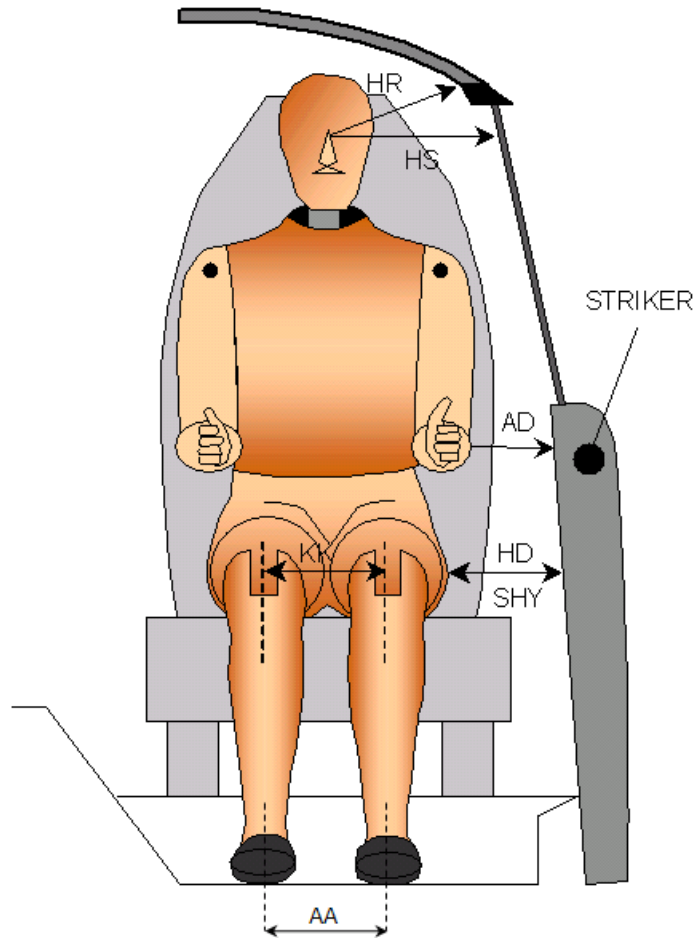
Reference point:

- +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. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015

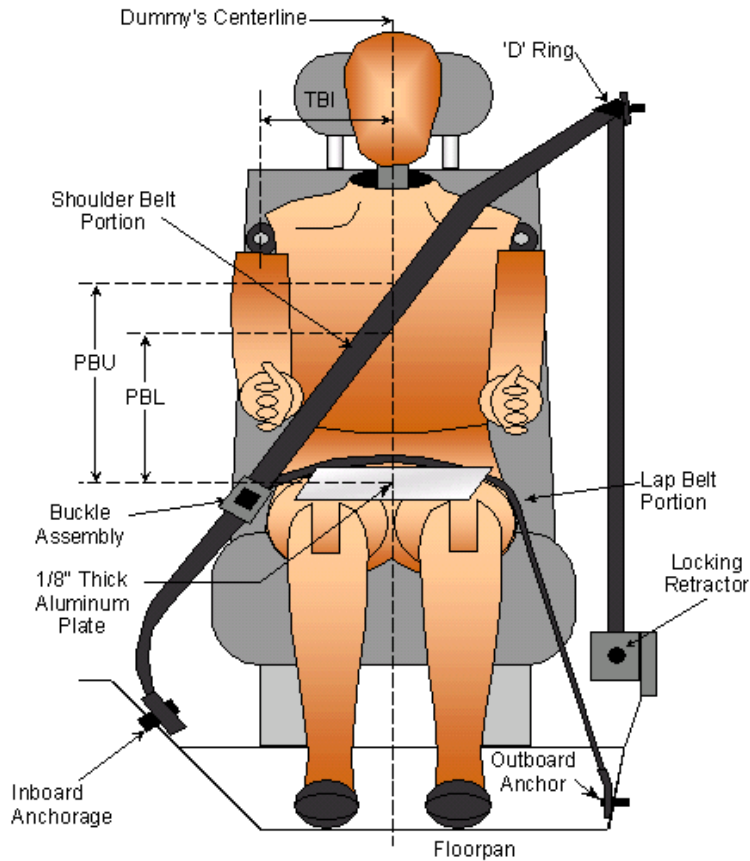


Code	Description	Units	Driver	Passenger
AD	Arm to Door	mm	154	38
HD	H-Point to Door	mm	142	134
HR	Head to Side Header	mm	215	207
HS	Head to Side Window	mm	364	359
KK	Knee to Knee	mm	348	270
SHY	Striker to H-Point (Y Direction)	mm	250	250
AA	Ankle to Ankle	mm	350	245

**DATA SHEET NO. 5
SEAT BELT POSITIONING DATA**

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU — Top surface of reference to belt upper edge	mm	365	375
PBL — Top surface of reference to belt lower edge	mm	290	290

BELT LENGTH DATA

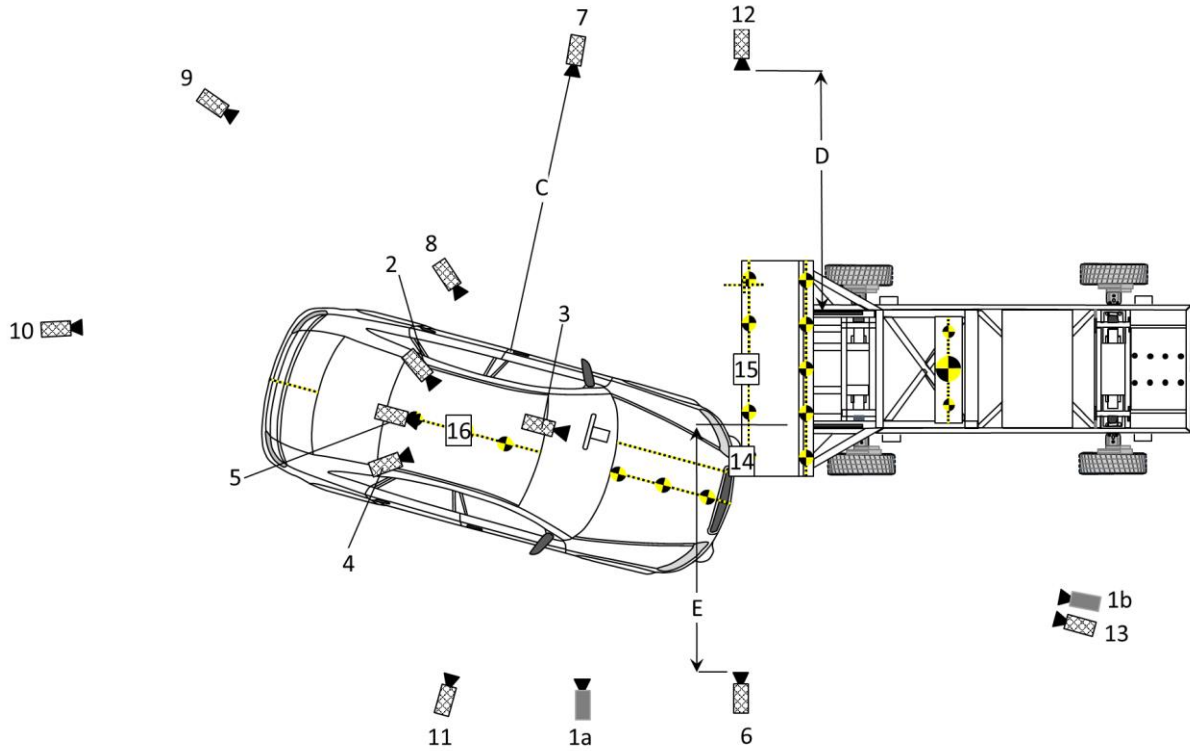
Measurement Description	Units	Driver	Passenger
Shoulder belt length as measured on ATD	mm	848	880
Lap Belt Length as measured on ATD	mm	790	800
Remainder of belt on reel	mm	862	820
Total belt length for continuous webbing systems	mm	2500	2500

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

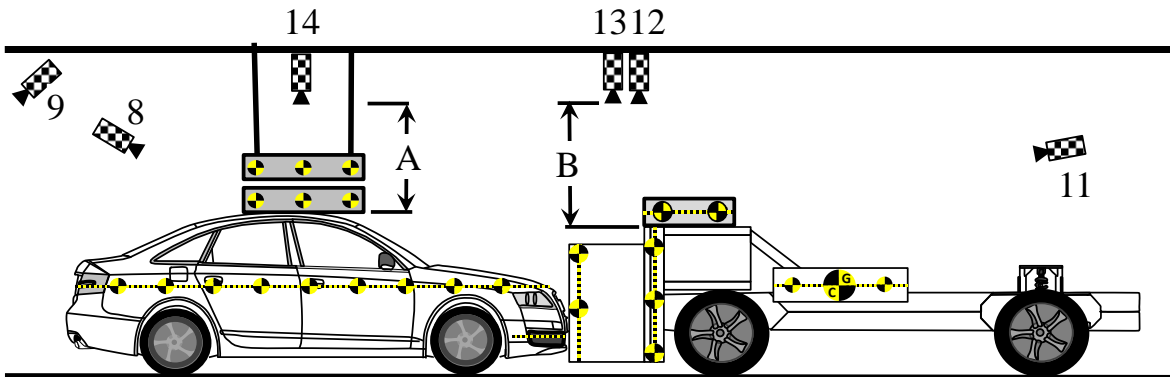
Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015

HORIZONTAL LOCATION



VERTICAL LOCATION



A	mm	3434
B	mm	4140
C	mm	7008
D	mm	8162
E	mm	8164

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

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015

CAMERA LOCATIONS

No.	Camera View	Location (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Side	--	--	--	Zoom	60
2	Onboard Passenger Movement	7702	-374	1677	12.5	1000
3	Onboard Driver Lower Leg	6746	305	605	6.5	1000
4	Onboard Driver Movement	7641	-796	1677	12.5	1000
5	Onboard Centerline	7836	-578	1654	8	1000
6	Right Side OMDB View	4920	9211	1057	24	1000
7	Left Side of Test Vehicle	5921	7150	1197	24	1000
8	Oblique Overhead Driver Motion	8426	-2150	8725	28	1000
9	Rear View of Vehicle and OMDB	13579	6835	2731	24	1000
10	Test Vehicle Rotation Impact	28750	0	3421	10	1000
11	Right Side Target Vehicle and OMDB	10873	-9721	2575	28	1000
12	Left Side of OMDB	4907	-947	1072	20	1000
13	Close-Up Impact Point	697	-3522	1253	28	1000
14	Overhead Impact Point View	-4937	-1166	45636	28	1000
15	Overhead Vehicle View	7369	0	5327	15	1000
16	Overhead OMDB View	4678	0	5327	15	1000

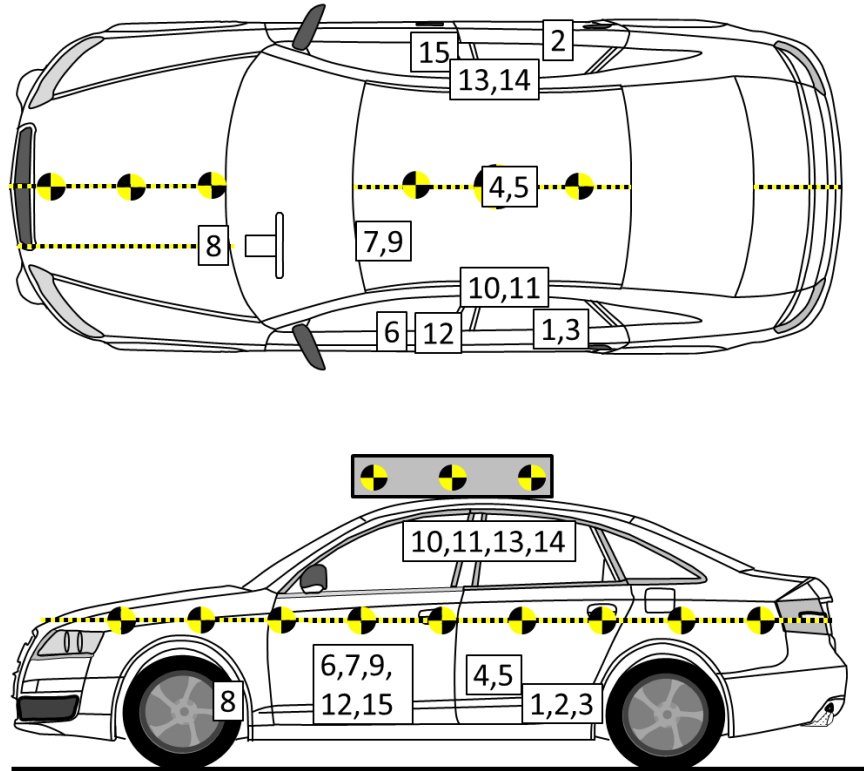
Reference Point:

- +X – From back of OMDB to front of OMDB
- +Y – Right of monorail center
- +Z – Up from ground

DATA SHEET NO. 7
VEHICLE INSTRUMENTATION DATA

Test Vehicle: 2015 Ford F-150 Pickup truck
Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
Test Date: 10/14/2015



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS RELATIVE TO VCS

No.	Accelerometer Location	Axes	Units	Measurements (mm)		
				X	Y	Z
1	Left Rear Sill	X,Y	mm	2509	-798	-24
2	Right Rear Sill	X,Y	mm	2493	804	-30
3	Left Rear Sill Redundant	X,Y	mm	2488	-797	-24
4	Vehicle CG	X,Y,Z	mm	3014	0	-143
5	Vehicle CG Angular Displacement	X	mm	3025	-1	-138
		Y	mm	3014	11	-141
		Z	mm	3014	0	-143
6	Left Side Seat Track	X,Y,Z	mm	3400	-651	-174
8	Left Side Toe Pan	X,Y,Z	mm	4508	-491	-268
7	Left Side String Pot	N/A	mm	4493	-480	-237

Reference point:

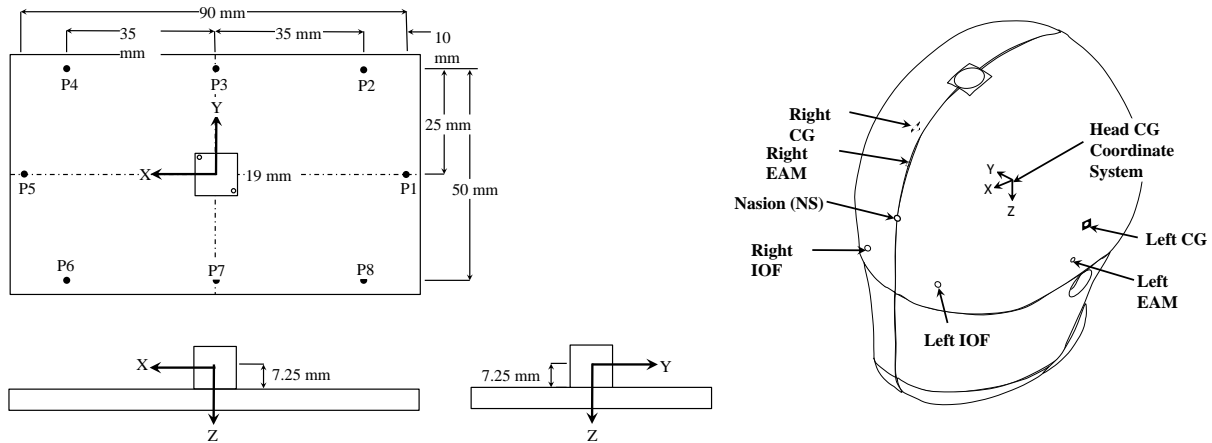
- +X – From the rear of the vehicle to the front of the vehicle
- +Y – From the left side of the vehicle to the right side of the vehicle
- +Z – From the top of the vehicle to the bottom of the vehicle

DATA SHEET NO. 7 (Continued)
VEHICLE INSTRUMENTATION DATA

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015

ANGULAR RATE SENSOR MOUNTING PLATE & THOR HEAT POINT DEFINITIONS



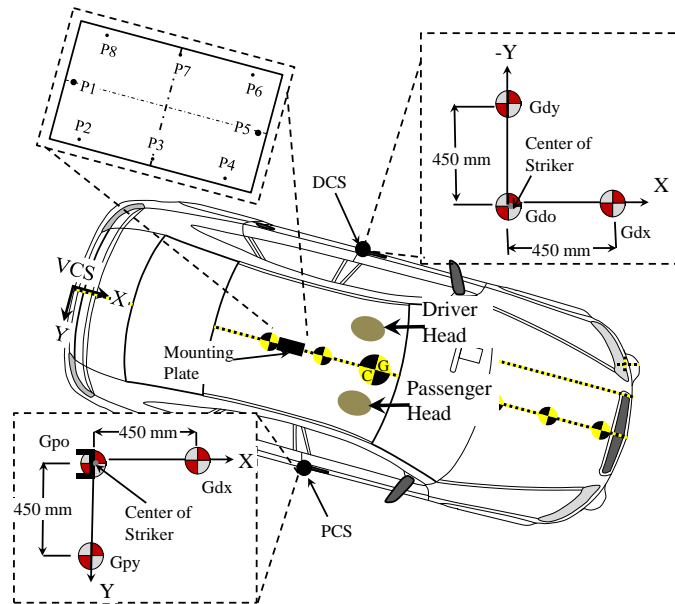
ARS MOUNTING PLATE - VEHICLE COORDINATE SYSTEM					
No.	Description	Units	Measurements (mm)		
			X	Y	Z
P1	Plate Point 1	mm	2969	0	-128
P2	Plate Point 2	mm	2979	25	-129
P3	Plate Point 3	mm	3014	25	-129
P4	Plate Point 4	mm	3049	25	-128
P5	Plate Point 5	mm	3059	0	-128
P6	Plate Point 6	mm	3049	-25	-128
P7	Plate Point 7	mm	3014	-25	-129
P8	Plate Point 8	mm	2979	-25	-129

HEAD POINTS IN RELATION TO HEAD CG COORDINATE SYSTEM					
Description	Units	X	Y	Z	
CG	mm	0	0	0	
Left CG	mm	0	-77	0	
Right CG	mm	0	77	0	
Left EAM	mm	7	-72	27	
Right EAM	mm	7	72	27	
Left IOF	mm	89	-32	28	
Right IOF	mm	89	32	28	
Nasion	mm	92	0	-10	

DATA SHEET NO. 7 (Continued)
VEHICLE INSTRUMENTATION DATA

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015



ARS MOUNTING PLATE & ATD'S HEAD POINTS RELATIVE TO GLOBAL COORDINATE SYSTEMS

DESCRIPTION	DRIVER DCS			PASS. PCS		
	X	Y	Z	X	Y	Z
G _o	0	0	0	0	0	0
G _x	-450	0	-9	-453	0	-8
G _y	2	448	5	-1	-451	-7
P1	383	-818	-611	-95	912	-593
P2	380	-845	-611	-98	885	-593
P3	346	-854	-611	-131	875	-593
P4	312	-863	-611	-165	866	-593
P5	296	-842	-610	-181	887	-593
P6	299	-815	-611	-179	914	-593
P7	333	-806	-611	-145	924	-593
P8	367	-796	-611	-111	933	-593
Left CG	-23	-373	-1578			
Right CG				-212	332	-1575
Left EAM	-29	-378	-1549			
Right EAM				-220	333	-1546
Left IOF	-99	-441	-1548	-330	414	-1543
Right IOF	-83	-502	-1546	-312	351	-1543
Nasion	-93	-474	-1585	-324	382	-1581

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

Test Vehicle: 2015 Ford F-150 Pickup truck
Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
Test Date: 10/14/2015

No.	Description	Axes	Units	Positive Direction		Negative Direction	
				Max	Time (ms)	Max	Time (ms)
1	Left Rear Sill	X	g	3.76	75.45	-46.21	46.85
		Y	g	32.20	50.05	-5.91	64.85
2	Right Rear Sill	X	g	5.05	124.50	-33.47	47.45
		Y	g	24.63	48.50	-8.48	85.30
3	Impact Side Rear Sill Redundant	X	g	3.74	75.40	-45.50	46.80
		Y	g	34.68	50.00	-4.83	64.85
4	Vehicle CG Acceleration	X	g	3.64	123.60	-36.82	46.95
		Y	g	23.67	48.00	-2.03	183.80
		Z	g	16.93	67.40	-14.12	72.90
5	Impact Side Seat Track	X	g	7.43	75.85	-45.35	47.30
		Y	g	16.30	79.50	-7.75	30.10
		Z	g	12.34	30.25	-13.49	70.20
6	Impact Side Seat Crossmember	X	g	6.81	85.80	-33.49	48.10
		Z	g	27.53	47.10	-17.89	80.25
7	Impact Side Toepan	X	g	56.16	61.20	-163.09	47.50
		Y	g	46.49	54.15	-33.36	48.65
		Z	g	17.36	31.75	-23.35	53.10
8	Angular Rate Sensors	X	Deg/s	74.44	45.85	-73.70	52.60
		Y	Deg/s	239.00	32.15	-349.89	75.20
		Z	Deg/s	103.29	96.45	-18.36	20.05
9	Driver Shoulder Displacement		mm	72.06	23.50	-130.98	104.40
10	Driver Shoulder Belt		N	4156.03	67.80	-37.13	13.35
11	Driver Lap Belt		N	2978.32	59.85	-52.93	15.90
12	Passenger Shoulder Displacement		mm	84.68	23.45	-252.34	104.70
13	Passenger Shoulder Belt		N	2900.20	85.00	-45.98	216.65
14	Passenger Lap Belt		N	4751.88	69.10	-52.75	15.70
15	Impact Side Floor String Pot		mm	0.35	20.05	-85.66	74.70

Note: See Appendix B for all vehicle data plots.

TIME TO FIRE RESTRAINT TIMING

No.	Description	Axes	Units	Time to Fire (ms)
1	Driver Air Bag Squib 1	*	A	33.30
2	Driver Air Bag Squib 2	*	A	53.30
3	Driver Curtain Airbag	*	A	83.30
4	Driver Torso Airbag	*	A	83.25
5	Driver Knee Airbag	*	A	N/A
6	Driver Pretensioner	*	A	14.35
7	Passenger Air Bag Squib 1	*	A	33.30
8	Passenger Air Bag Squib 2	*	A	43.30
9	Passenger Curtain Airbag	*	A	Did not fire
10	Passenger Torso Airbag	*	A	Did not fire
11	Passenger Knee Airbag	*	A	N/A
12	Passenger Pretensioner	*	A	14.30

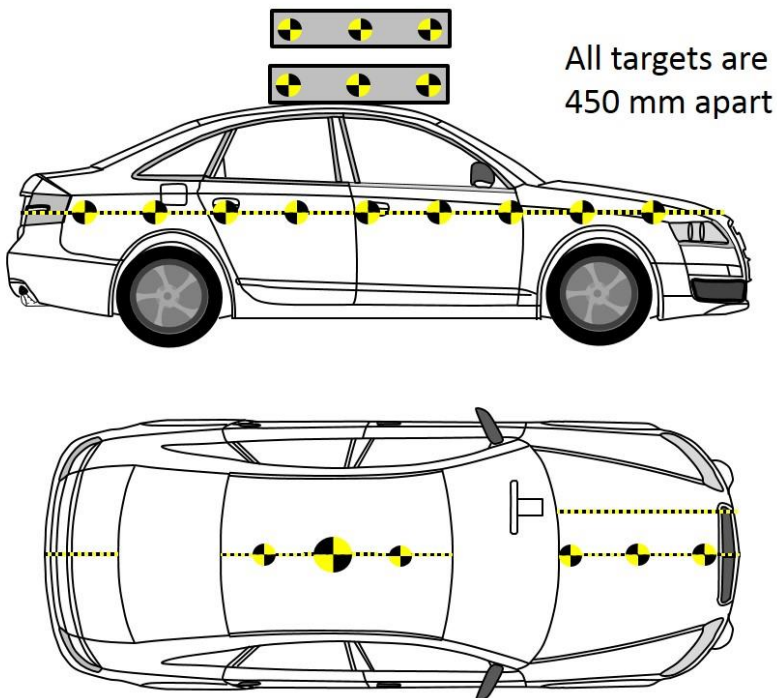
* The measurement indicates the time the voltage changed

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

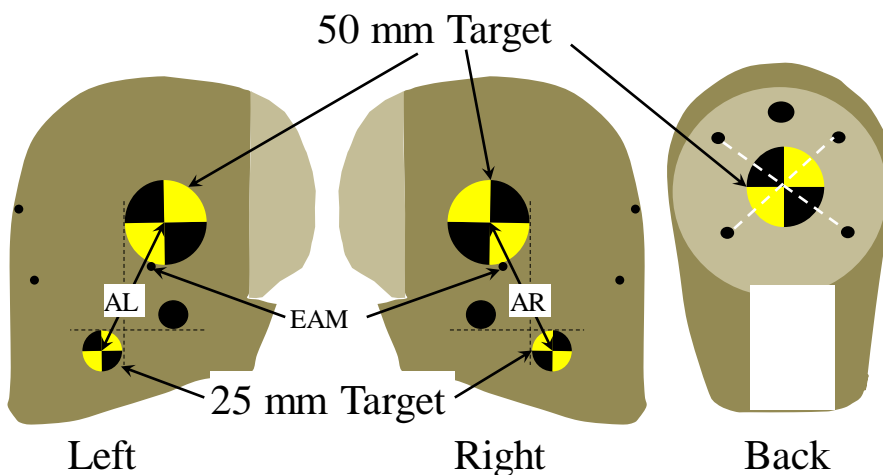
Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015

VEHICLE TARGETS



ATD HEAD TARGETS



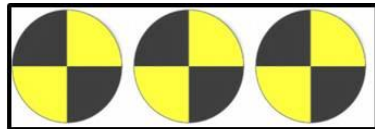
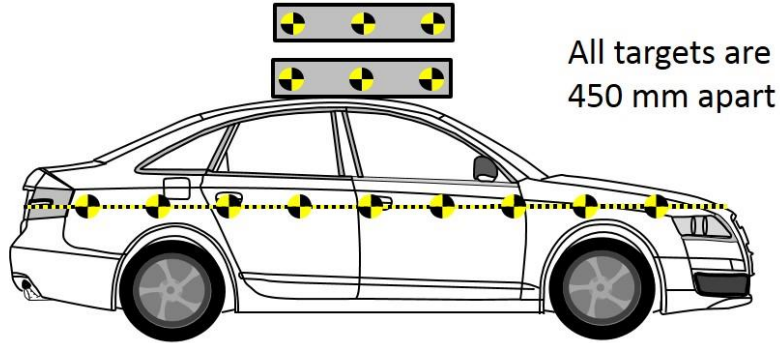
Target	Measurement
AL	85 mm
AR	85 mm

DATA SHEET NO. 8 (CONTINUED)
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

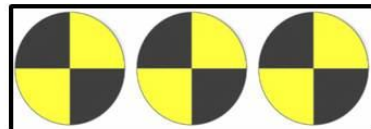
NHTSA No.: R20150229
 Test Date: 10/14/2015

OVERHEAD TARGET BARS



1 2 3

Vertical Target
Plane 1
(Driver's Side)



4 5 6

Vertical Target
Plane 2
(Passenger Side)

Target	Units	X	Y	Z
1	mm	3729	-469	-1727
2	mm	3276	-462	-1720
3	mm	2826	-461	-1717
4	mm	3732	467	-1722
5	mm	3282	459	-1720
6	mm	2829	451	-1713

Reference point:

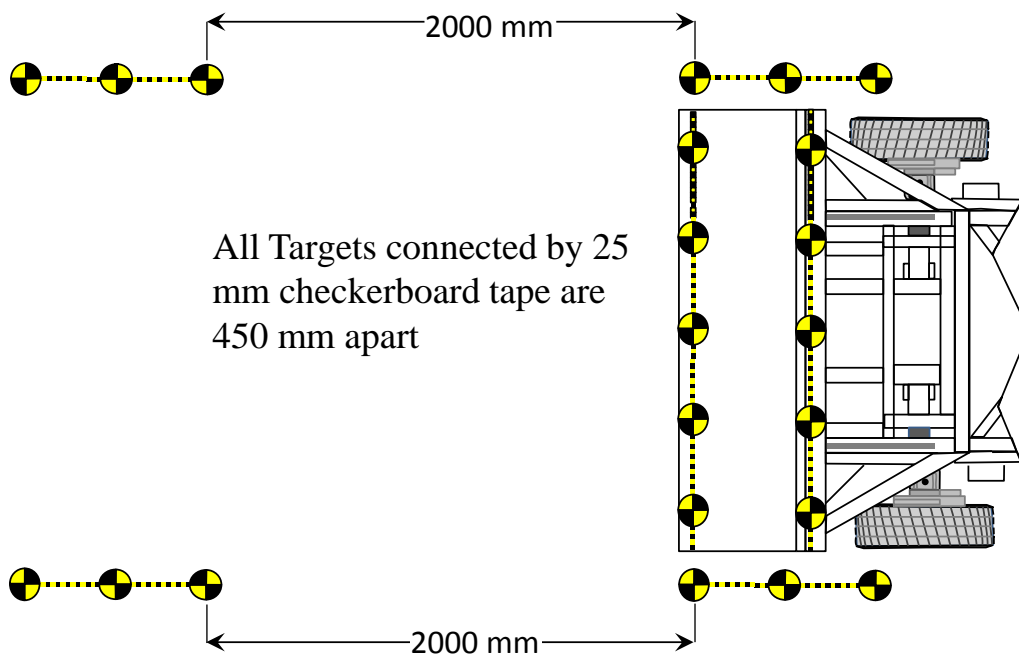
- +X – From the rear of the vehicle to the front of the vehicle
- +Y – From the left side of the vehicle to the right side of the vehicle
- +Z – From the top of the vehicle to the bottom of the vehicle

DATA SHEET NO. 8 (CONTINUED)
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2015 Ford F-150 Pickup truck
Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
Test Date: 10/14/2015

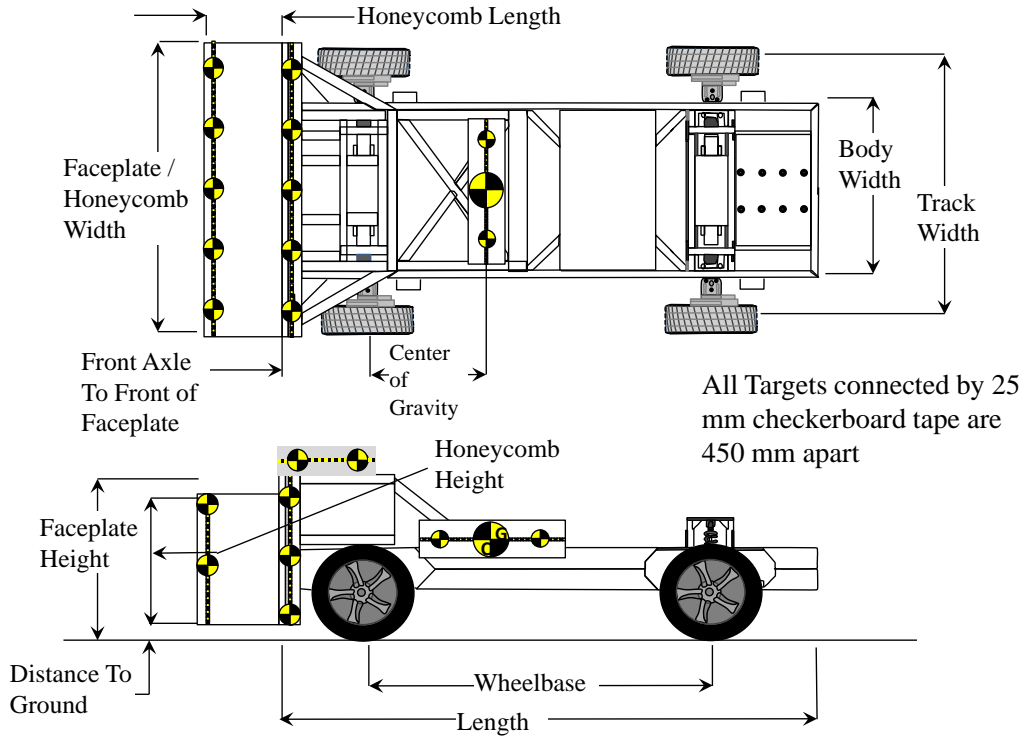
GROUND TARGETS LOCATED IN REFERENCE TO OMDB



DATA SHEET NO. 8 (CONTINUED)
OMDB PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015



Item	Units	Value	Item	Units	Value
Honeycomb Width	mm	2205	Faceplate Height	mm	1192
Honeycomb Length	mm	605	Faceplate to Ground	mm	89
Honeycomb Height	mm	947	Wheelbase	mm	2589
Left Front Axle to Front Faceplate	mm	600	Cart Length	mm	3993
Right Front Axle to Front Faceplate	mm	601	Body Width	mm	1301
Front Axle to CG	mm	926	Track Width	mm	1884

	Units	Front Axle	Rear Axle	Total
Left	kg	826	434	1260
Right	kg	792	467	1259
Ratio	%	64%	36%	
Total	kg	1618	901	2519
CG Aft of Front Axle	mm			926

Note: All targets on the OMDB honeycomb are 450mm apart

DATA SHEET NO. 9
TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015

INSTRUMENTATION

Instrumentation	Number of Channels Collected
Driver Dummy Accelerometers	105
Passenger Dummy Accelerometers	105
Vehicle Structure Accelerometers	27
SRS Inductive Pickups	12
OMDB Cart Accelerometers	9
Total	258

CAMERA COVERAGE

Type of Camera	Number Used in this Test
High-Speed Vehicle Onboard	4
High-Speed Off-board	11
Real-Time Panning	2
Total	17

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

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015

TEST DUMMY INFORMATION AND CONTACT LOCATIONS

Description	Driver	Right Front Passenger
Dummy Type/Serial No.	THOR015	THOR016
Lower Leg Type	LX	LX
Lower Leg Serial No.	LX0038/LX0039	LX0018/ LX0019
Head Contact	Front and Curtain Airbag	Front Airbag
Upper Torso Contact	Front Airbag, Side contacted door	Front Airbag
Lower Torso Contact	None	None
Left Knee Contact	Knee bolster	Glove box
Right Knee Contact	Knee bolster	Glove box

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Right Front Passenger
Locked/Unlocked Doors	Unlocked	Unlocked
Front Door Opening	Closed & Operational	Closed & Operational
Rear Door Opening	Closed & Operational	Closed & Operational
Seat Track Shift (mm)	20	0
Seat Back Failure	No	No
Glazing Damage	None	None

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions	Photo Taken (Y/N)
Pillar Performance	Remained in good condition	Y
Windshield Damage	Small cracks on lower passenger & driver side	Y
Window Damage	None	Y
Other Notable Effects	Torso Pelvic driver airbag did not fully inflate	Y

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

Note: Torso/Pelvis airbag did no inflate all the way. The bag got stuck in seatback (pelvis section).

**DATA SHEET NO. 11 (CONTINUED)
VEHICLE PROFILE MEASUREMENTS**

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	mm	5875	5549	326
2	Rear Surface of Vehicle (RSOV) to Front of Engine	mm	5047	4981	66
3	RSOV to Firewall	mm	4726	4703	23
4	RSOV to Upper Leading Edge of Right Door	mm	4281	4281	0
5	RSOV to Upper Leading Edge of Left Door	mm	4286	4263	23
6	RSOV to Lower Leading Edge of Right Door	mm	4248	4262	-14
7	RSOV to Lower Leading Edge of Left Door	mm	4252	4247	6
8	RSOV to Upper Trailing Edge of Right Door	mm	3049	3049	1
9	RSOV to Upper Trailing Edge of Left Door	mm	3054	3030	25
10	RSOV to Lower Trailing Edge of Right Door	mm	3049	3063	-14
11	RSOV to Lower Trailing Edge of Left Door	mm	3054	3047	7
12	RSOV to Bottom of "A" Post of Right Side	mm	4371	4371	0
13	RSOV to Bottom of "A" Post of Left Side	mm	4376	4351	24
14	RSOV to Firewall, Right Side	mm	4707	4706	0
15	RSOV to Firewall, Left Side	mm	4710	4709	2
16	RSOV to Steering Column	mm	3782	3794	-13
17	Center of Steering Column to "A" Post	mm	292	282	10
18	Center of Steering Column to Headliner	mm	441	432	9
19	RSOV to Right Side of Front Bumper	mm	5825	5837	-11
20	RSOV to Left Side of Front Bumper	mm	5825	5307	518
21	Length of Engine Block	mm	469	342	127
RD	RSOV to Right Side of Dash Panel	mm	3963	3978	-15
CD	RSOV to Center of Dash Panel	mm	3924	3919	5
LD	RSOV to Left Side of Dash Panel	mm	3967	3947	20

UR* = Unrecoverable Data Point

DATA SHEET NO. 12
ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2015 Ford F-150 Pickup truck
Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
Test Date: 10/14/2015

VEHICLE INFORMATION

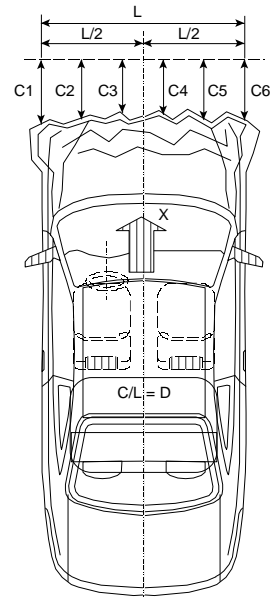
VIN: 1FTEW1CG2FKD64890 Wheelbase (mm): 3688
Vehicle Size Category: Passenger Test Weight (kg): 2462

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): 89.85
Velocity Change (kph): 89.85

CRUSH PROFILE

Collision Deformation Classification: 12FYEW3
Midpoint of Damage: C2
Damage Region Length (mm): 1515
Impact Mode: Frontal 15° Angle, 35% Right Offset



Crush Measurements: Bumper Cover

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	5657	5004	653
C2	Crush zone 2 at left side	mm	5811	5245	566
C3	Crush zone 3 at left side	mm	5860	5417	443
C4	Crush zone 4 at right side	mm	5860	5648	212
C5	Crush zone 5 at right side	mm	5812	5823	-11
C6	Crush zone 6 at right side	mm	5662	5888	-226
L	C1 to C6	mm	1515	1234	281

Crush Measurements: Bumper Cover Removed

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
B1	Bumper Beam 1 at left side	mm	5528	4932	-596
B2	Bumper Beam 2 at left side	mm	5681	5035	-646
B3	Bumper Beam 3 at left side	mm	5805	5221	-584
B4	Bumper Beam 4 at left side	mm	5851	5338	-513
B5	Bumper Beam 5 at right side	mm	5864	5540	-324
B6	Bumper Beam 6 at right side	mm	5851	5705	-146
B7	Bumper Beam 7 at right side	mm	5805	5833	28
B8	Bumper Beam 8 at right side	mm	5683	5883	200
B9	Bumper Beam 9 at right side	mm	5529	5898	369
L	B1 to B9	mm	1856	1633	223

**DATA SHEET NO. 13
VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

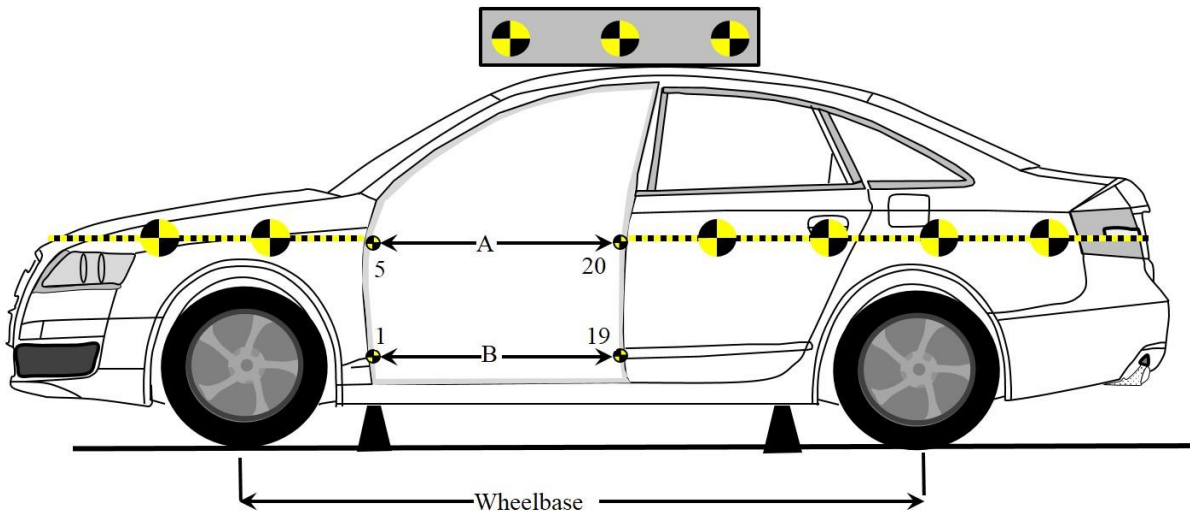
NHTSA No.: R20150229
 Test Date: 10/14/2015

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	1015	1012	-3
B	Left Side Lower	mm	962	960	-2
D	Right Side Upper	mm	1009	1009	0
E	Right Side Lower	mm	955	955	0

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	3688	3395	-293
F	Right Side Wheelbase	mm	3688	3682	-6



**DATA SHEET NO.13 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS**

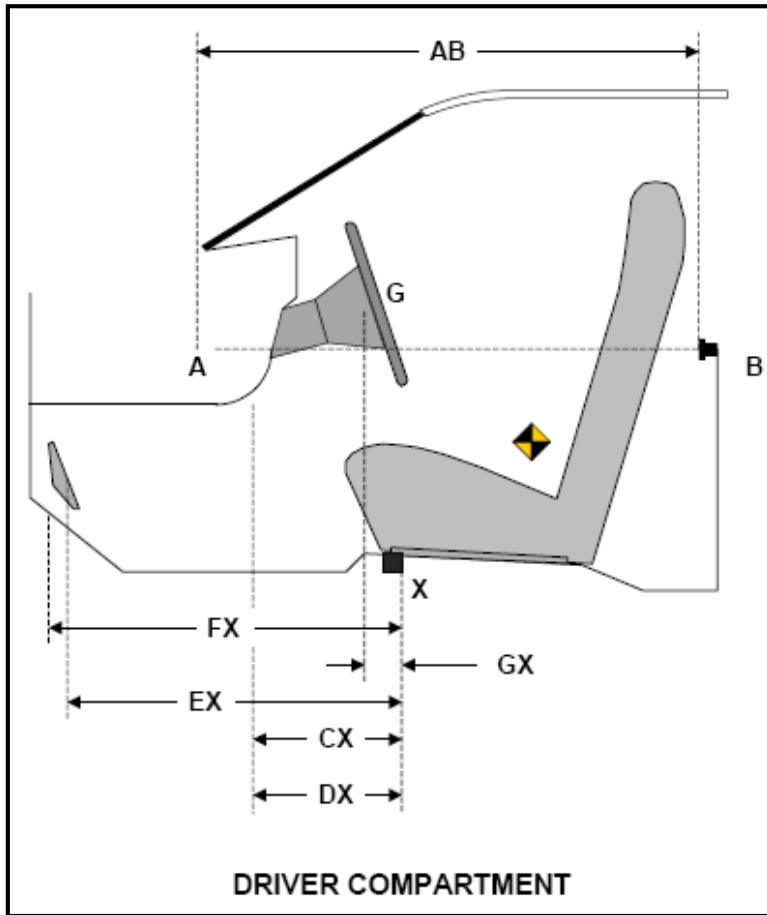
Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	845	848	3
CX	Left Knee Bolster to X	mm	290	273	-17
DX	Right Knee Bolster to X	mm	278	264	-14
EX	Brake Pedal to X	mm	553	461	-92
FX	Foot Rest to X	mm	742	710	-32
GX	Center of Steering Column Wheel Hub to X	mm	77	99	22

X = Front of Seat Track (Stationary)

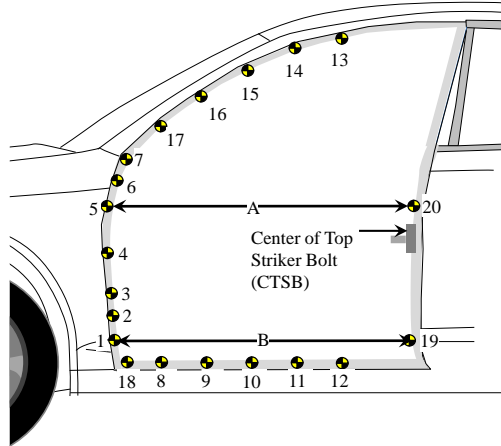


**DATA SHEET NO.13 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015

DRIVER SIDE DOOR SILL INTRUSIONS



- +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

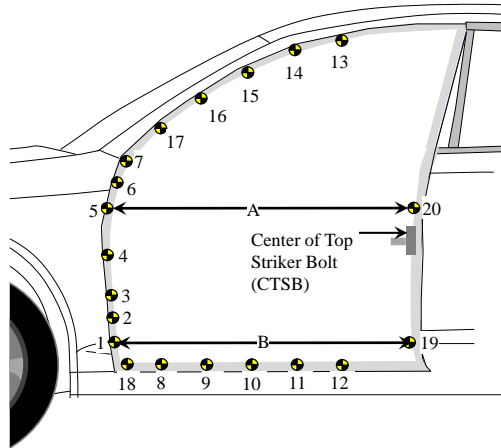
Point	Pre-Test			Post-Test			Difference		
	X	Y	Z	X	Y	Z	X	Y	Z
1	4154	-862	-260	4129	-865	-295	-25	-3	-35
2	4155	-860	-338	4129	-862	-372	-26	-2	-34
3	4156	-857	-412	4129	-860	-448	-27	-3	-36
4	4158	-852	-561	4129	-854	-597	-29	-2	-36
5	4161	-849	-711	4130	-849	-745	-31	0	-34
6	4158	-846	-786	4125	-846	-820	-33	0	-34
7	4136	-838	-863	4104	-839	-895	-32	-1	-32
17	4047	-813	-963	4015	-813	-995	-32	0	-32
16	3929	-788	-1042	3895	-785	-1072	-34	3	-30
15	3808	-761	-1118	3775	-757	-1147	-33	4	-29
14	3685	-734	-1188	3651	-726	-1212	-34	8	-24
13	3553	-718	-1226	3518	-706	-1248	-35	12	-22
20	3146	-847	-712	3117	-833	-726	-29	14	-14
19	3192	-864	-262	3169	-855	-276	-23	9	-14
12	3403	-867	-66	3382	-862	-86	-21	5	-20
11	3553	-868	-60	3531	-865	-81	-22	3	-21
10	3704	-866	-61	3683	-864	-86	-21	2	-25
9	3854	-866	-60	3833	-866	-89	-21	0	-29
8	4005	-866	-60	3983	-867	-92	-22	-1	-32
18	4123	-867	-125	4100	-868	-159	-23	-1	-34

**DATA SHEET NO.13 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015

PASSENGER SIDE DOOR SILL INTRUSIONS



- +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

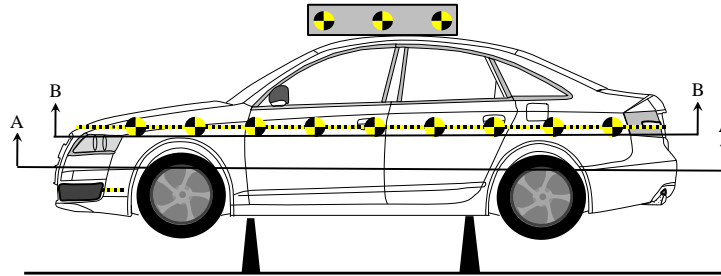
Point	Pre-Test			Post-Test			Difference		
	X	Y	Z	X	Y	Z	X	Y	Z
1	4150	863	-261	4149	875	-262	-1	12	-1
2	4151	860	-339	4150	870	-338	-1	10	1
3	4151	856	-413	4150	865	-411	-1	9	2
4	4153	851	-563	4152	855	-562	-1	4	1
5	4155	845	-712	4154	847	-711	-1	2	1
6	4153	842	-788	4151	843	-788	-2	1	0
7	4133	836	-863	4133	836	-861	0	0	2
17	4053	812	-963	4053	811	-960	0	-1	3
16	3934	787	-1041	3935	786	-1038	1	-1	3
15	3812	758	-1116	3813	759	-1114	1	1	2
14	3688	730	-1186	3688	729	-1184	0	-1	2
13	3549	712	-1229	3548	710	-1227	-1	-2	2
20	3145	844	-715	3145	846	-714	0	2	1
19	3195	865	-262	3195	871	-259	0	6	3
12	3497	868	-67	3497	880	-67	0	12	0
11	3648	869	-70	3648	882	-70	0	13	0
10	3798	870	-67	3797	885	-69	-1	15	-2
9	3947	868	-70	3948	885	-70	1	17	0
8	4098	867	-111	4098	884	-111	0	17	0
18	4145	865	-187	4145	880	-188	0	15	-1

**DATA SHEET NO.13 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015

**VEHICLE EXTERIOR CRUSH PROFILE
SECTION A-A**



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

Point	Pre-Test			Point	Post-Test		
	X	Y	Z		X	Y	Z
1	3052	-994	-85	1	3030	-987	-84
2	3323	-992	-85	2	3205	-987	-85
3	3460	-991	-85	3	3461	-988	-84
4	3644	-989	-85	4	3753	-990	-85
5	3817	-988	-85	5	4017	-989	-86
6	4047	-985	-85	6	4228	-990	-85
7	4254	-984	-85	7	4265	-987	-85
8	4424	-988	-85	8	4345	-990	-85
9	5399	-966	-85	9	4405	-970	-85
10	5510	-937	-84	10	4485	-874	-85
11	5580	-865	-85	11	4700	-765	-85
12	5719	-659	-85	12	4820	-714	-85
13	5795	-531	-85	13	4875	-686	-86
14	5853	-347	-85	14	4933	-655	-86
15	5866	-248	-85	15	4964	-600	-85
16	5837	-78	-85	16	4992	-449	-85
17	5837	95	-85	17	5086	-358	-85
18	5862	267	-85	18	5161	-349	-85
19	5840	415	-85	19	5231	-341	-85
20	5819	499	-85	20	5289	-325	-86
21	5791	546	-84	21	5327	-300	-85
22	5720	667	-85	22	5329	-201	-86
23	5575	878	-85	23	5326	-131	-85
24	5474	961	-85	24	5370	-32	-86
25	5393	975	-84	25	5470	116	-85

**DATA SHEET NO.13 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015

**VEHICLE EXTERIOR CRUSH PROFILE
SECTION A-A (Continued)**

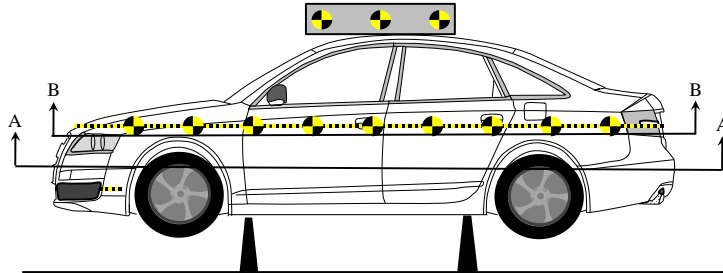
Point	Pre-Test			Point	Post-Test		
	X	Y	Z		X	Y	Z
26	4416	993	-84	26	5581	246	-85
27	4261	986	-85	27	5698	276	-86
28	4106	987	-85	28	5759	405	-85
29	3993	988	-84	29	5780	457	-85
30	3780	991	-85	30	5812	451	-85
31	3576	994	-85	31	5829	485	-85
32	3356	995	-85	32	5846	499	-85
33	3160	997	-85	33	5865	609	-85
34	3045	999	-85	34	5868	640	-85
				35	5867	643	-85
				36	5829	698	-85
				37	5811	748	-85
				38	5875	852	-85
				39	5896	895	-85
				40	5890	980	-85
				41	5845	1055	-85
				42	5810	1091	-85
				43	5437	964	-86
				44	5409	963	-85
				45	5267	999	-86
				46	5242	1064	-85
				47	5192	1093	-85
				48	5110	1088	-85
				49	4988	1043	-85
				50	4822	996	-86
				51	4650	976	-85
				52	4421	999	-86
				53	4269	995	-85
				54	4155	994	-85
				55	4026	997	-85
				56	3833	1002	-85
				57	3587	1007	-85
				58	3511	1008	-86
				59	3340	1011	-86
				60	3173	1013	-85
				61	3049	1016	-86

**DATA SHEET NO.13 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015

**VEHICLE EXTERIOR CRUSH PROFILE
SECTION B-B**



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

Point	Pre-Test			Point	Post-Test		
	X	Y	Z		X	Y	Z
1	3056	-1003	-669	1	3023	-991	-669
2	3357	-1000	-668	2	3149	-993	-669
3	3566	-997	-669	3	3343	-994	-669
4	3788	-994	-668	4	3600	-995	-669
5	4032	-988	-669	5	3875	-996	-670
6	4220	-984	-668	6	4123	-994	-669
7	4334	-981	-669	7	4254	-994	-669
8	4619	-971	-669	8	4321	-1007	-669
9	4761	-964	-669	9	4394	-1010	-669
10	4919	-954	-669	10	4493	-1000	-670
11	5136	-932	-669	11	4603	-1019	-670
12	5338	-901	-669	12	5041	-642	-670
13	5458	-841	-669	13	4931	-471	-669
14	5491	-809	-669	14	5004	-266	-669
15	5581	-696	-669	15	5061	-201	-670
16	5656	-595	-669	16	5149	-94	-669
17	5736	-358	-669	17	5274	23	-669
18	5756	-142	-669	18	5384	173	-669
19	5760	-3	-669	19	5438	297	-670
20	5755	94	-669	20	5743	192	-669
21	5742	290	-669	21	5722	373	-670
22	5715	478	-669	22	5690	505	-668
23	5713	509	-668	23	5641	575	-669
24	5519	780	-668	24	5566	683	-669
25	5424	874	-669	25	5495	769	-669

**DATA SHEET NO.13 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015

**VEHICLE EXTERIOR CRUSH PROFILE
SECTION B-B (Continued)**

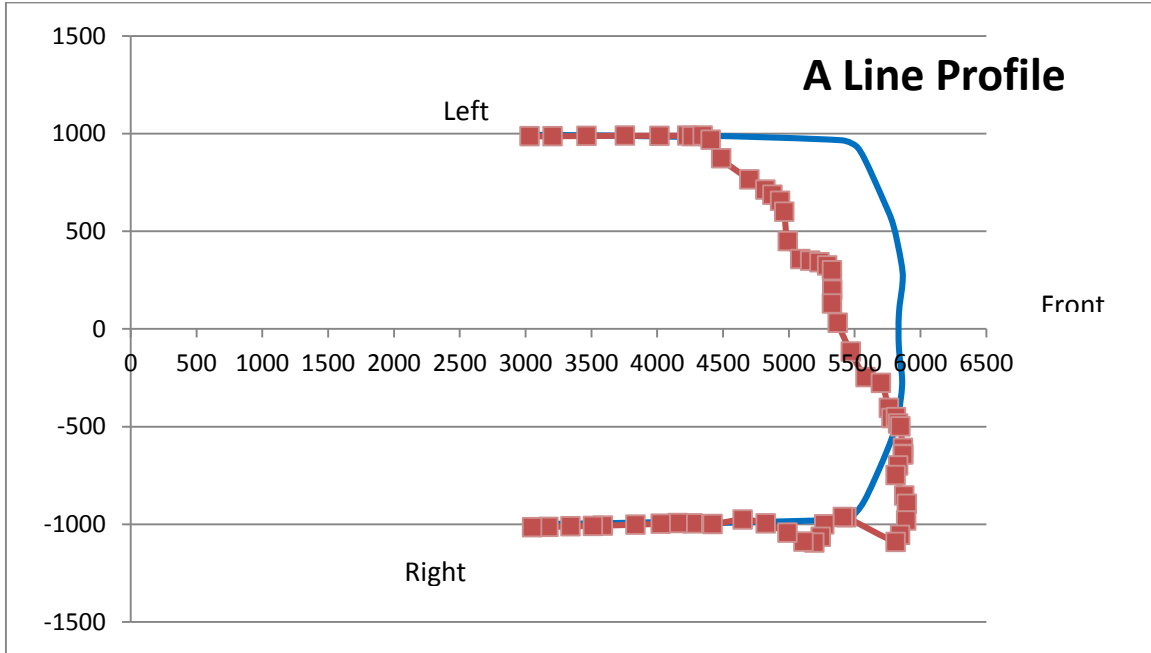
Point	Pre-Test			Point	Post-Test		
	X	Y	Z		X	Y	Z
26	5222	927	-668	26	5461	810	-669
27	4974	954	-669	27	5455	861	-669
28	4754	969	-669	28	5460	890	-669
29	4602	975	-669	29	5462	887	-669
30	4294	982	-669	30	5364	938	-669
31	4281	983	-668	31	5200	958	-669
32	4056	988	-669	32	4973	972	-669
33	3866	992	-669	33	4756	978	-669
34	3660	995	-669	34	4590	979	-669
35	3463	999	-669	35	4486	990	-670
36	3265	999	-669	36	4341	979	-669
37	3119	1001	-669	37	4278	978	-669
38	3052	1004	-669	38	4149	984	-669
				39	4032	988	-669
				40	3951	991	-669
				41	3773	995	-669
				42	3573	1000	-669
				43	3310	1005	-670
				44	3140	1008	-669
				45	3046	1009	-670

DATA SHEET NO.13 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

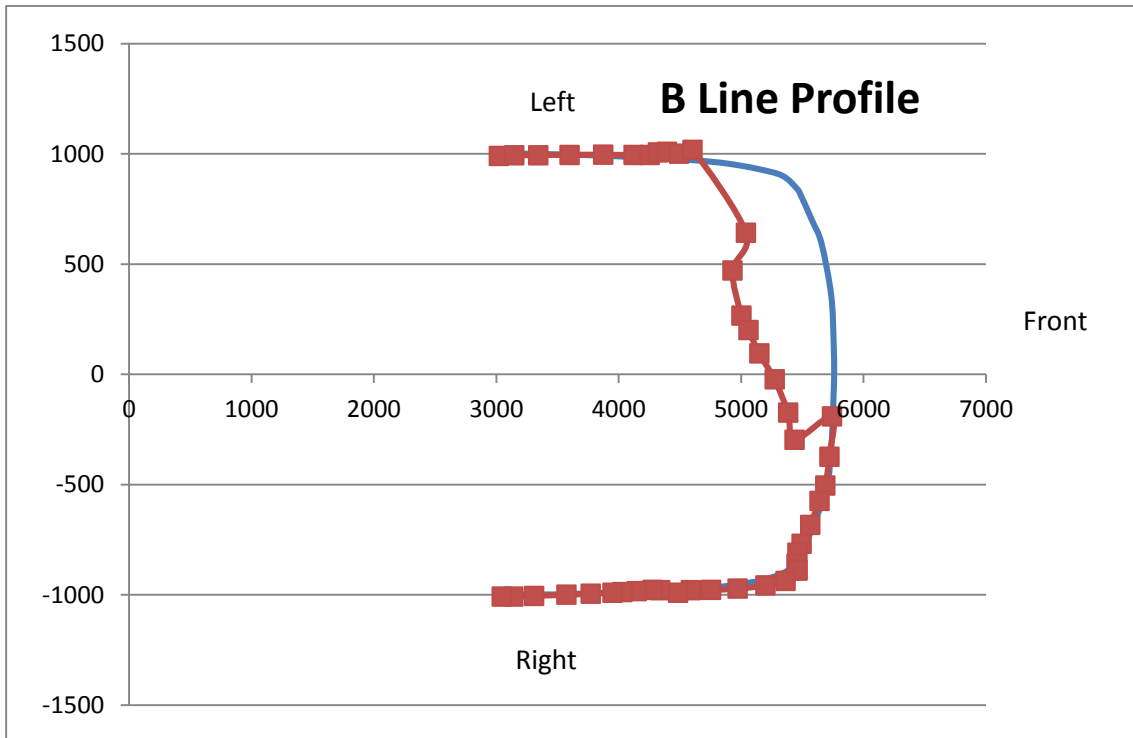
Test Vehicle: 2015 Ford F-150 Pickup truck
Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
Test Date: 10/14/2015

VEHICLE EXTERIOR CRUSH PROFILE
SECTION A-A



SECTION B-B



**DATA SHEET NO.13 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015

STRUCTURAL BUMPER BEAM POINTS

Point	Pre-Test (mm)			Post-Test (mm)			Difference (mm)			
	X	Y	Z	X	Y	Z	X	Y	Z	
Structural Bumper Beam	B1	5528	-925	-153	4932	-670	-163	-596	255	-10
	B2	5681	-722	-155	5035	-459	-220	-646	263	-65
	B3	5805	-502	-152	5221	-321	-242	-584	181	-90
	B4	5851	-255	-152	5338	-100	-237	-513	155	-85
	B5	5864	-1	-156	5540	54	-237	-324	55	-81
	B6	5851	252	-154	5705	242	-221	-146	-10	-67
	B7	5805	501	-152	5833	460	-195	28	-41	-43
	B8	5683	725	-152	5883	709	-168	200	-16	-16
	B9	5529	931	-153	5898	963	-144	369	32	9

Reference point:

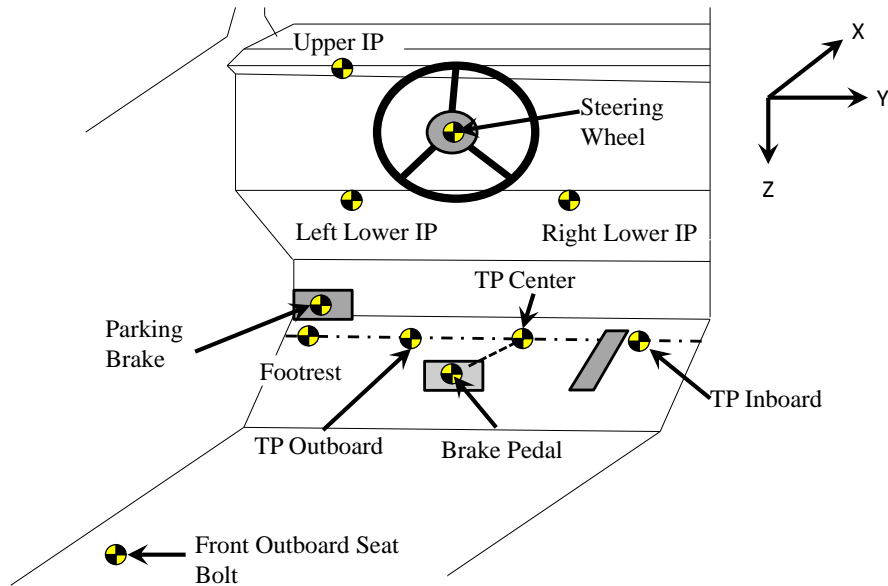
- +X – From the rear of the vehicle to the front of the vehicle
- +Y – From the left side of the vehicle to the right side of the vehicle
- +Z – From the top of the vehicle to the bottom of the vehicle

**DATA SHEET NO.13 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015

DRIVER FLOOR PAN MEASUREMENTS



Intrusion Location	Pre-Test (mm)			Post-Test (mm)			Difference (mm)		
	X	Y	Z	X	Y	Z	X	Y	Z
TP Inboard	4448	-327	-261	4362	-343	-293	85	16	32
TP Center	4516	-478	-261	4407	-499	-299	109	20	38
TP Outboard	4503	-629	-262	4435	-624	-314	67	-5	52
TP Footrest	4437	-729	-262	4387	-734	-311	50	5	49
Brake Pedal	4247	-478	-262	4137	-470	-329	110	-9	68
Left Lower IP	3984	-615	-591	3949	-624	-620	35	8	30
Right Lower IP	3972	-314	-592	3941	-323	-619	31	9	28
Upper IP	3956	-779	-695	3928	-784	-732	28	5	38
Steering Wheel	3771	-466	-806	3775	-479	-841	4	-13	-35
Front Outboard Bolt	3694	-629	-125	3676	-626	-140	18	-4	15
Emergency Brake	4150	-723	-332	4123	-732	-365	27	9	33

Reference point:

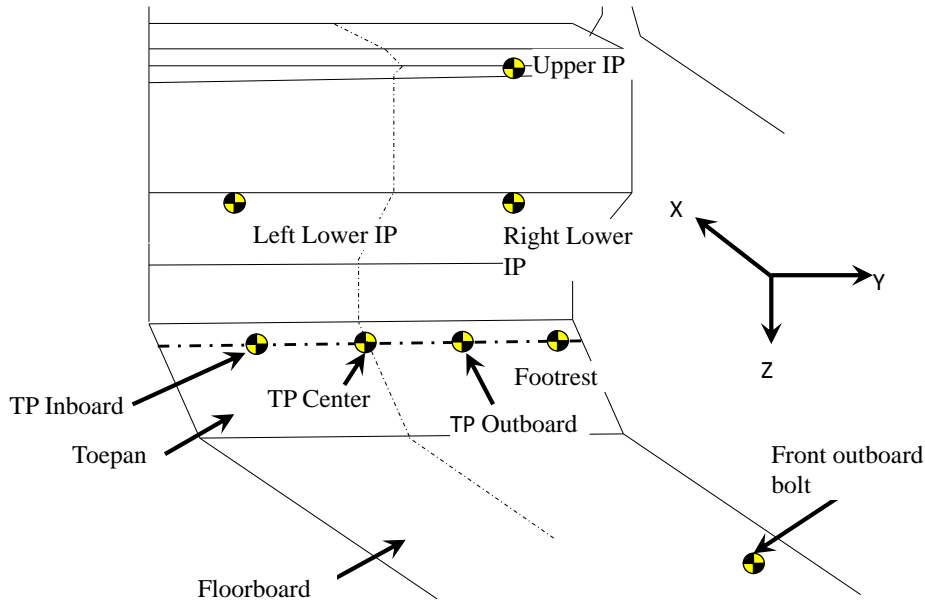
- +X – From the rear of the vehicle to the front of the vehicle
- +Y – From the left side of the vehicle to the right side of the vehicle
- +Z – From the top of the vehicle to the bottom of the vehicle

**DATA SHEET NO.13 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015

PASSENGER FLOOR PAN MEASUREMENTS



Intrusion Location	Pre-Test (mm)			Post-Test (mm)			Difference (mm)		
	X	Y	Z	X	Y	Z	X	Y	Z
TP Inboard	4390	304	-261	4385	323	-260	6	-19	-1
TP Center	4462	455	-262	4437	474	-262	26	-19	1
TP Outboard	4433	606	-261	4425	620	-259	8	-14	-2
TP Footrest	4422	706	-261	4416	721	-261	6	-15	0
Left Lower IP	4014	305	-540	4035	301	-545	-20	4	5
Right Lower IP	4004	606	-541	4013	602	-548	-10	4	7
Upper IP	3953	705	-700	3963	699	-703	-10	6	3
Front Outboard Bolt	3689	632	-131	3693	645	-126	-3	-14	-5

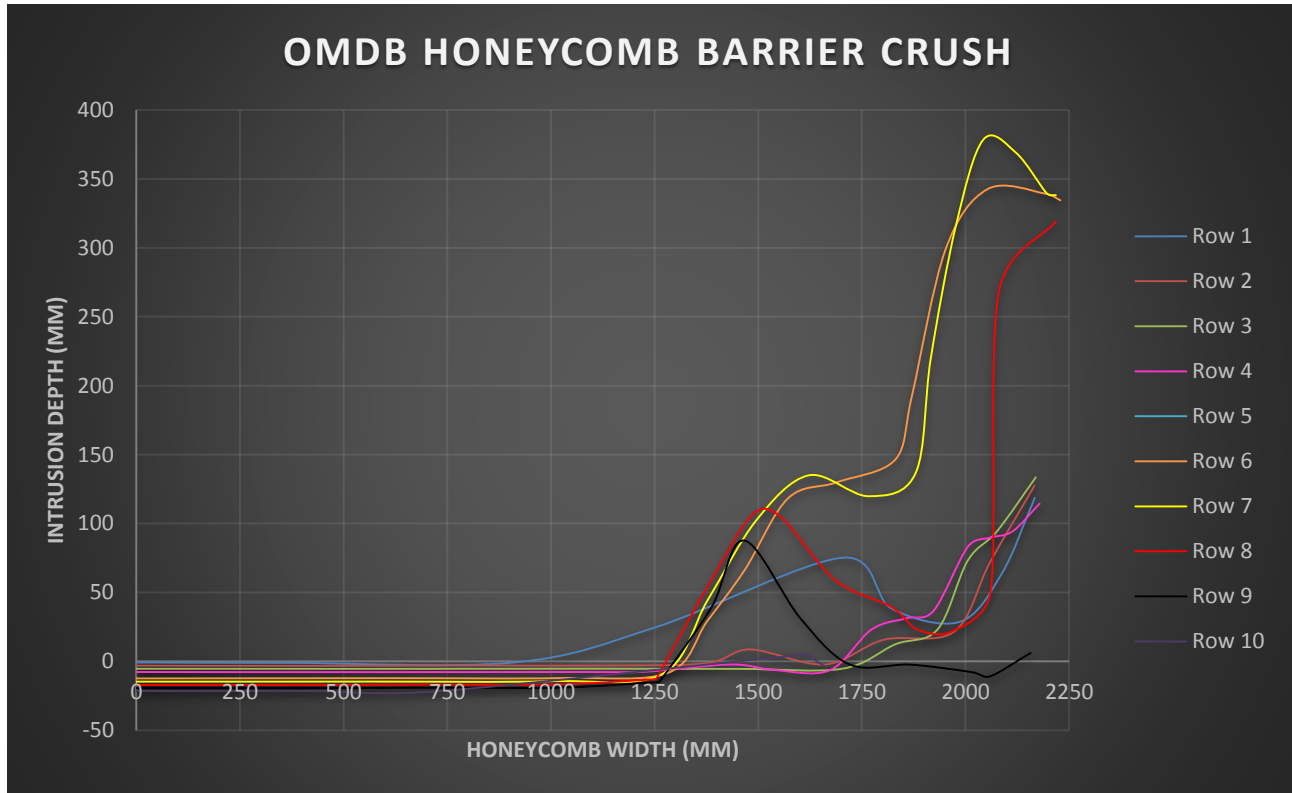
Reference point:

- +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.14
OMDB CRUSH MEASUREMENTS

Test Vehicle: 2015 Ford F-150 Pickup truck
Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
Test Date: 10/14/2015



**DATA SHEET NO. 15
SUMMARY OF FMVSS 212, 219 (PARTIAL), AND 301 DATA**

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015

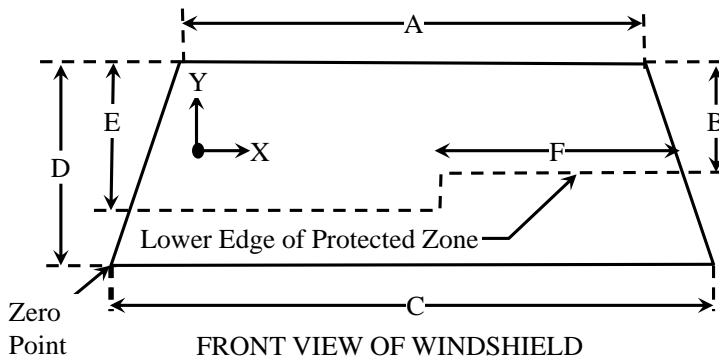
Please provide windshield mounting details. A 0.8 mm trim surrounds the top and side of windshield while a plastic shroud is on the bottom.

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	2395	2395	100
Right Side	2395	2395	100
Total	4790	4790	100



Item	Units	Value
A	mm	1480
B	mm	460
C	mm	1760
D	mm	775
E	mm	520
F	mm	550

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. 15 (CONTINUED)
SUMMARY OF FMVSS 212, 219 (PARTIAL), AND 301 DATA

Test Vehicle: 2015 Ford F-150 Pickup truck
Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
Test Date: 10/14/2015

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Ambient Temperature at Test Vehicle Time of Impact: 21.1° C

Test Time: 2:55 PM

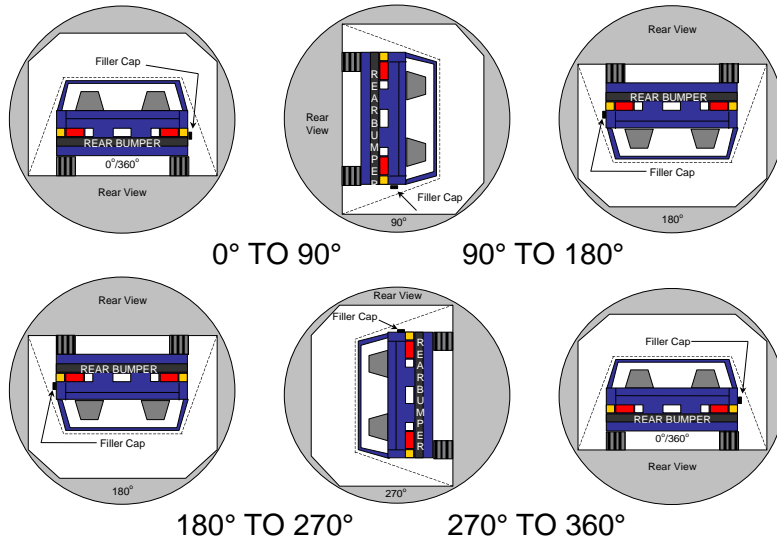
Stoddard Solvent Spillage Measurements

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. 16
FMVSS 301 STATIC ROLLOVER RESULTS**

Test Vehicle: 2015 Ford F-150 Pickup truck
 Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
 Test Date: 10/14/2015



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°	71	300	371
90° to 180°	65	300	365
180° to 270°	62	300	362
270° to 360°	69	300	369

FMVSS 301 SPILLAGE TABLE

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

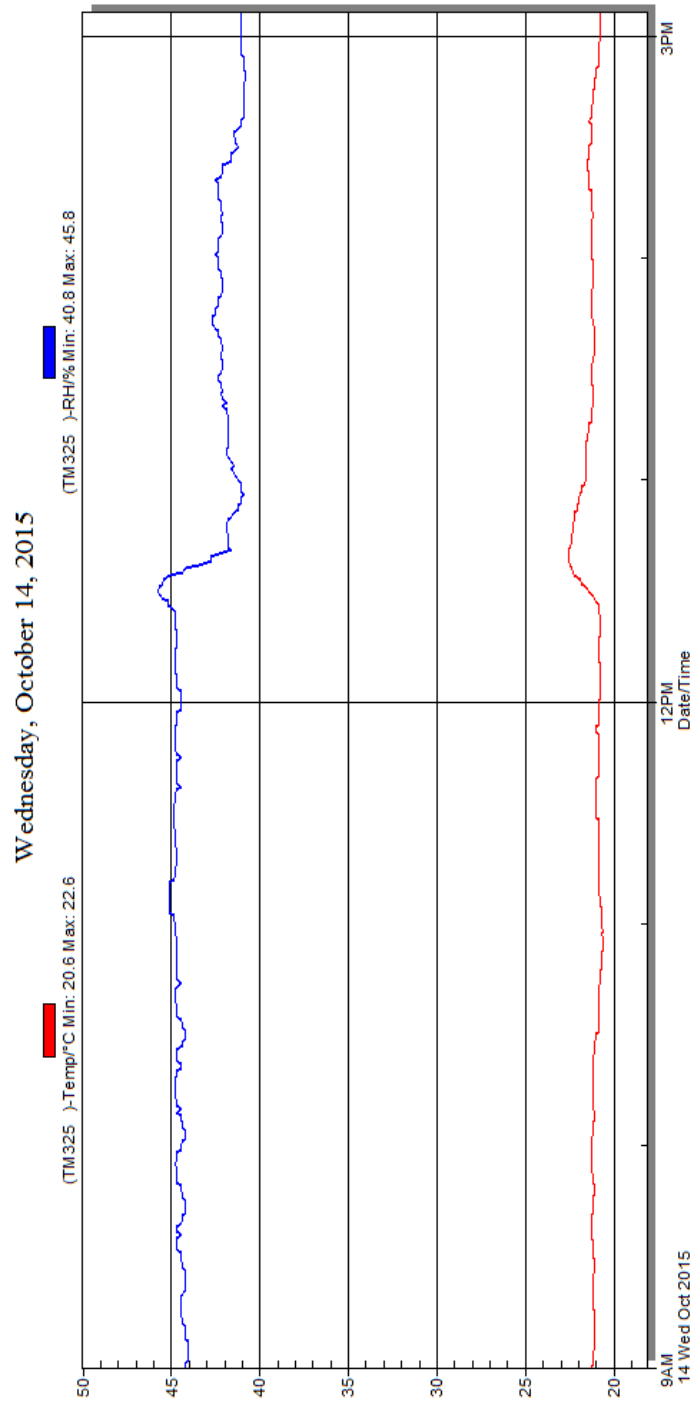
SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 17
DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2015 Ford F-150 Pickup truck
Test Program: R&D 90.1kph, 15° / 35% Left Oblique Offset

NHTSA No.: R20150229
Test Date: 10/14/2015



Temperature Stabilization Chart/Data

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183	Pre-Test OMDB & Vehicle, Right Side	A-102
184	Post-Test OMDB & Vehicle, Right Side	A-102
185	Pre-Test OMDB & Vehicle, Left Side	A-103
186	Post-Test OMDB & Vehicle, Left Side	A-103
187	Pre-Test OMDB & Vehicle, Top View	A-104
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193	Pre-Test OMDB & Vehicle Alignment View	A-107
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199	Impact Photo	A-110
200	Pre-Test Vehicle Bumper Left Side View	A-111
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202	Pre-Test Vehicle Bumper Left Front View	A-112
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204	Pre-Test Vehicle Bumper Front View	A-113
205	Post-Test Vehicle Bumper Front View	A-113
206	Pre-Test Vehicle Bumper Right Side View	A-114
207	Post-Test Vehicle Bumper Right Side View	A-114
208	Pre-Test Vehicle Bumper Right Front View	A-115
209	Post-Test Vehicle Bumper Right Front View	A-115



No. 001 As Delivered Right Front 3-4 View of Test Vehicle




No. 002 As Delivered Left Rear 3-4 View of Test Vehicle

MFD. BY FORD MOTOR CO. DATE: 06/15 GVWR: 3084 KG (6800 LB)
 FRONT GAWR: 1429 KG (3150 LB) REAR GAWR: 1724 KG (3800 LB)
 WITH 245/70R17 110T TIRES WITH 245/70R17 110T TIRES
 17x7.5J RIMS 17x7.5J RIMS
 AT 250 kPa/ 36 PSI COLD AT 250 kPa/ 36 PSI COLD
 THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE
 SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.
 VIN: 1FTEW1CG2FKD64890 TYPE: Truck



EXT PNT: UH RC: 24 DSO:
 WB INT TR TP/PS R AXLE TR SPR FFCTW F0000
 145 MG B 15 6 PPCC 10A T0903
 MADE IN U.S.A. 2201506117378 ULC ▽5U5A-3520472-AA

No. 003 Test Vehicle Certification Label



TIRE AND LOADING INFORMATION


SEATING CAPACITY TOTAL : 6 FRONT: 3 REAR: 3

The combined weight of occupants and cargo should never exceed : **920 kg or 2030 lbs.**

TIRE	SIZE	COLD TIRE PRESSURE
FRONT	245/70R17 110T	250 KPA, 36 PSI
REAR	245/70R17 110T	250 KPA, 36 PSI
SPARE	245/70R17 110T	250 KPA, 36 PSI

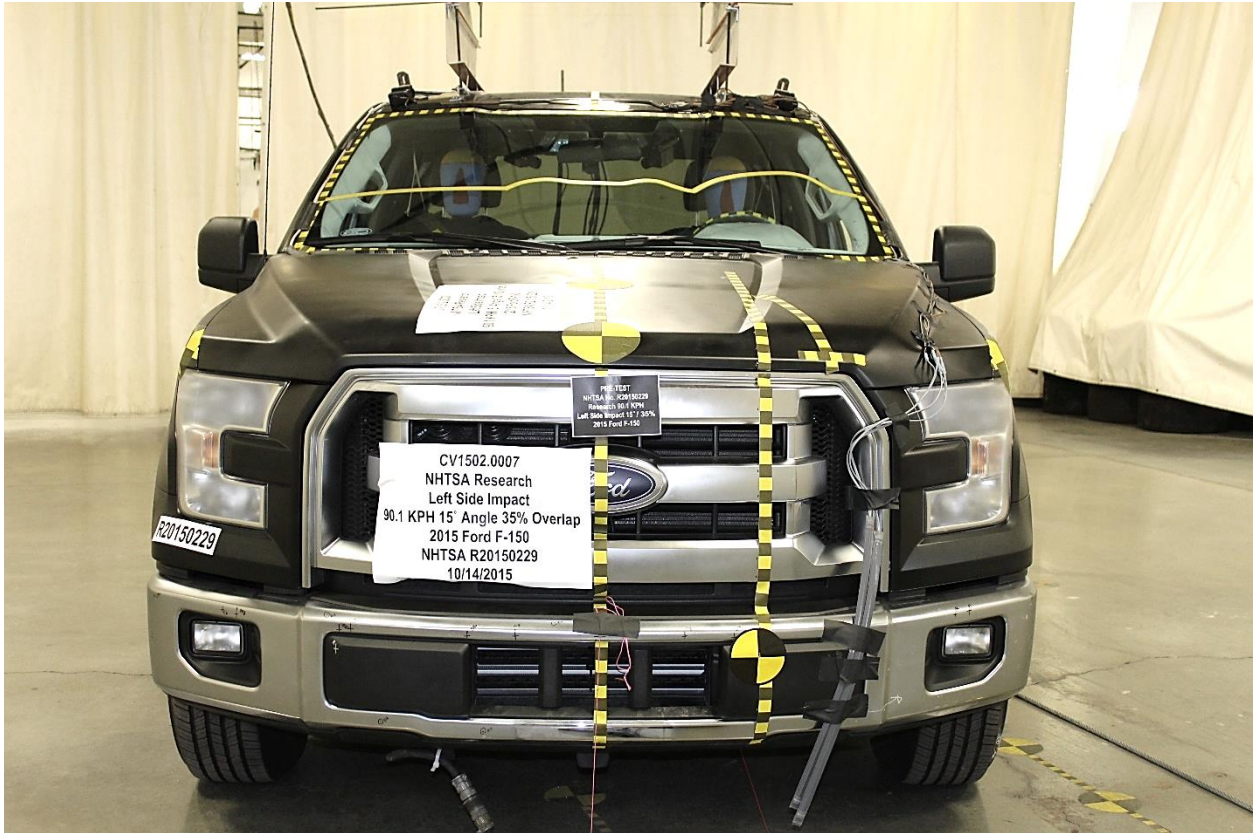
SEE OWNERS MANUAL FOR ADDITIONAL INFORMATION

▽5U5A-1532-AA (TLU)



1FTEW1CG2FKD64890

No. 004 Test Vehicle Tire Placard



No. 005 Pre-Test Front View of Test Vehicle



No. 006 Post-Test Front View of Test Vehicle



No. 007 Pre-Test Left Front 3-4 View of Test Vehicle



No. 008 Post-Test Left Front 3-4 View of Test Vehicle



No. 009 Pre-Test Left Side View of Test Vehicle



No. 010 Post-Test Left Side View of Test Vehicle



No. 011 Pre-Test Left Rear 3-4 View of Test Vehicle



No. 012 Post-Test Left Rear 3-4 View of Test Vehicle



No. 013 Pre-Test Rear View of Test Vehicle



No. 014 Post-Test Rear View of Test Vehicle



No. 015 Pre-Test Right Rear 3-4 View of Test Vehicle



No. 016 Post-Test Right Rear 3-4 View of Test Vehicle



No. 017 Pre-Test Right Side View of Test Vehicle




No. 018 Post-Test Right Side View of Test Vehicle





No. 019 Pre-Test Right Front 3-4 View of Test Vehicle



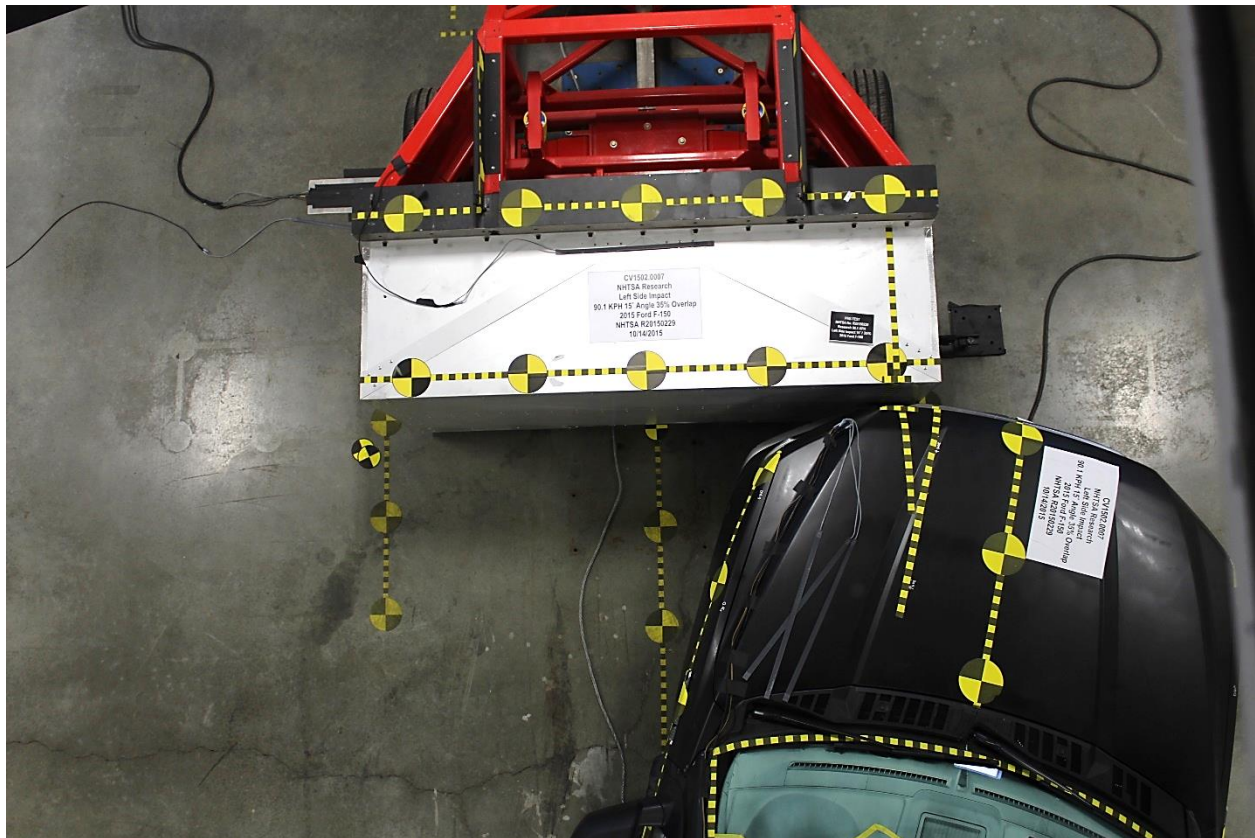
No. 020 Post-Test Right Front 3-4 View of Test Vehicle

 F-150 2015 F-150 4X2 SUPERCREW 148" WHEELBASE 3.5L V6 ECOBOOST ENGINE ELEC 6-SPEED AUTO W/TWO MOD ford.com		FK D64890 EXTERIOR TUXEDO BLACK METALLIC INTERIOR MEDIUM GRAY CLOTH 40/20/40	
STANDARD EQUIPMENT INCLUDED AT NO EXTRA CHARGE			
EXTERIOR • DOOR LINT • DOOR HANDLES - BLACK • EASY FUEL CAPLESS FILLER • FOG LAMPS • FULLY BOXED STEEL FRAME • HALOGEN HEADLAMPS • LOCKING REMOVABLE TAILGATE • PICKUP BOX TIE DOWN HOOKS • REAR PRIVACY GLASS • SPARE TIRE & WHEEL LOCK	INTERIOR • 110-CLOCK UP/DOWN DR/PASS WIN • 2.3" PRODUCTIVITY SCREEN • 4.2" CENTER STACK MULTI-FUNCTION DISPLAY • A/C W/MANUAL CLIMATE CONTROL, SINGLE ZONE • AUXILIARY AUDIO INPUT JACK • COLOR COORDINATED CARPET AND FLOOR MATS • CRUISE CONTROL • DAY/NIGHT REARVIEW MIRROR • TILT/TELESCOPE STR COLUMN	FUNCTIONAL • 4-WHEEL DISC BRAKES W/ABS • 12V AUXILIARY POWER POINT • AUTOLAMP-AUTO ON/OFF HDLAMP • FADE-TO-OFF INTERIOR LIGHT • FAIL-SAFE COOLING SYSTEM • HILL START ASSIST • OUTBOARD MNTD REAR SHOCKS • POWER LOCKS AND WINDOWS • POWER MAIN FOLD MIRRORS • POWER TAILGATE LOCK • PWR RACK AND PINION STEER • SYNC • TRAILER SWAY CONTROL • WIPER ACTIVATED HEADLAMPS	SAFETY/SECURITY • ADVANCE TRAC WITH RSC • AIRBAGS - FRONT SEAT MOUNTED SIDE IMPACT • AIRBAGS - SAFETY CANOPY SIDE CURTAIN • CTR HIGH MOUNT STOP LAMP • MYKEY • PERIMETER ALARM • SECURITY CODE KEYLESS KEYPAD • SOS POST CRASH ALERT SYS • TIRE PRESSURE MONITOR SYS
INCLUDED ON THIS VEHICLE EQUIPMENT GROUP 300A XLT SERIES OPTIONAL EQUIPMENT/OTHER SELECT SHIFT TRANSMISSION 17" SILVER PAINTED ALUMINUM 3.5L V6 ECOBOOST ENGINE .245/70R17 BRW ALL-SEASON 3.15 RATIO REGULAR DUTY 6800A GVWR PACKAGE FRONT LICENSE PLATE BRACKET BLACK PLATFORM RUNNING BOARDS 23 GALLON FUEL TANK		PRICE INFORMATION BASE PRICE \$38,320.00 TOTAL OPTIONS/OTHER 2,245.00 TOTAL VEHICLE & OPTIONS/OTHER DESTINATION & DELIVERY 38,865.00 1,195.00	
SOLD TO Don Reed Ford Inc 1075 S Orlando Ave Marlton FL 32751		DEALER NO. 24A 214 TOTAL MSRP \$39,760.00	
SHIP TO (IF OTHER THAN SOLD TO) RAMP ONE CW29		FINAL ASSEMBLY PLANT KANSAS CITY	
SHIP THROUGH CONVOY		ITEM #: 24-0430 O/T 2 FF092 N RB 2X 535 001029 06 03 15	

EPA DOT Fuel Economy and Environment Gasoline Vehicle	
Fuel Economy 20 MPG combined city/hwy 5.0 gallons per 100 miles	Standard Pickup Trucks range from 15 to 23 MPG. The best vehicle rates 119 MPG. You spend \$2,000 more in fuel costs over 5 years compared to the average new vehicle.
Annual fuel cost \$2,600	Fuel Economy & Greenhouse Gas Rating (pickup only) Smog Rating (pickup only) 1 5 10 1 6 10
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. Differences may occur because gallon equivalent vehicle emissions are a significant cause of climate change and smog.	
fueleconomy.gov Calculate personalized estimates and compare vehicles	
GOVERNMENT 5-STAR SAFETY RATINGS Overall Vehicle Score ★★★★★ Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight. Frontal Crash Driver ★★★★★ Passenger ★★★★★ Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight. Side Crash Front seat ★★★★★ Rear seat ★★★★★ Based on the risk of injury in a side impact. Rollover ★★★★★ Based on the risk of rollover in a single-vehicle crash. Star ratings range from 1 to 5 stars (★★★★★), with 5 being the highest. Source: National Highway Traffic Safety Administration (NHTSA). www.safercar.gov or 1-888-327-4236	
 1F1EW1C02F0D64890	
Ford ESP is the only extended service plan honored at every Ford dealership in the U.S. and Canada. See your dealer for additional details or visit www.FordOwner.com for more information.	

38 YEARS FORD F-SERIES AMERICA'S BEST SELLING TRUCK
 Scan this code to experience this vehicle or test 1FFKD64890 to 48026 or visit ford.com/windowslicker Standard messaging & data plan rates may apply.

No. 021 Monroney Label Photograph



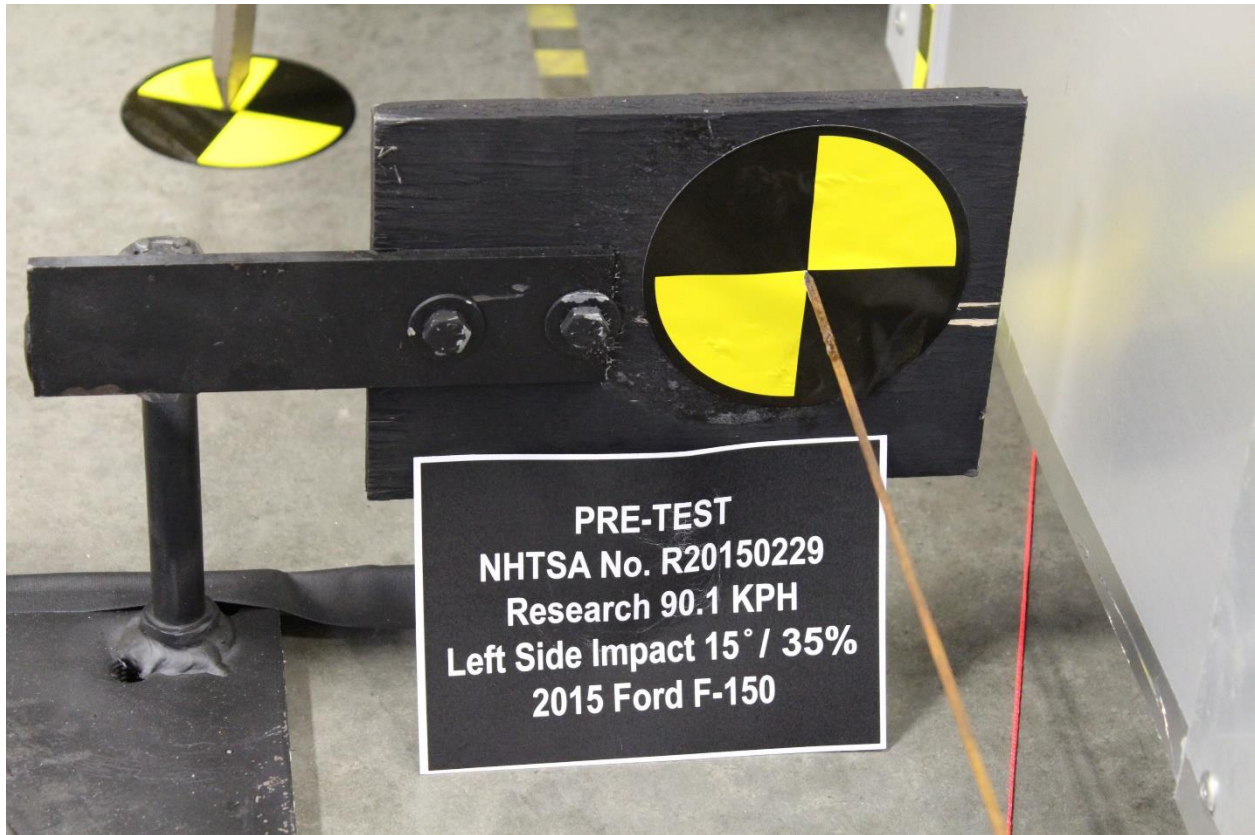
No. 022 Pre-Test Overhead View of OMDB against target vehicle at ideal Impact Point



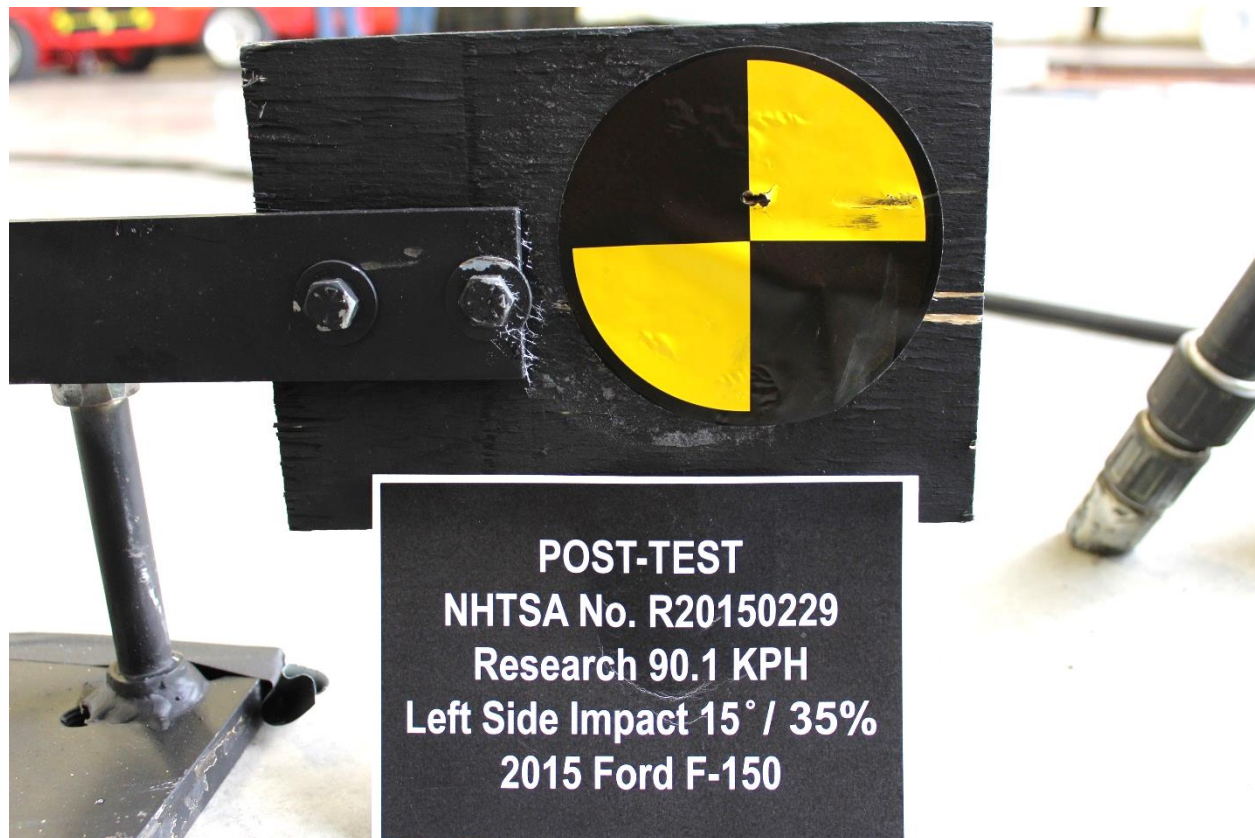
No. 023 Pre-Test Left Side View of OMDB against target vehicle at ideal Impact Point



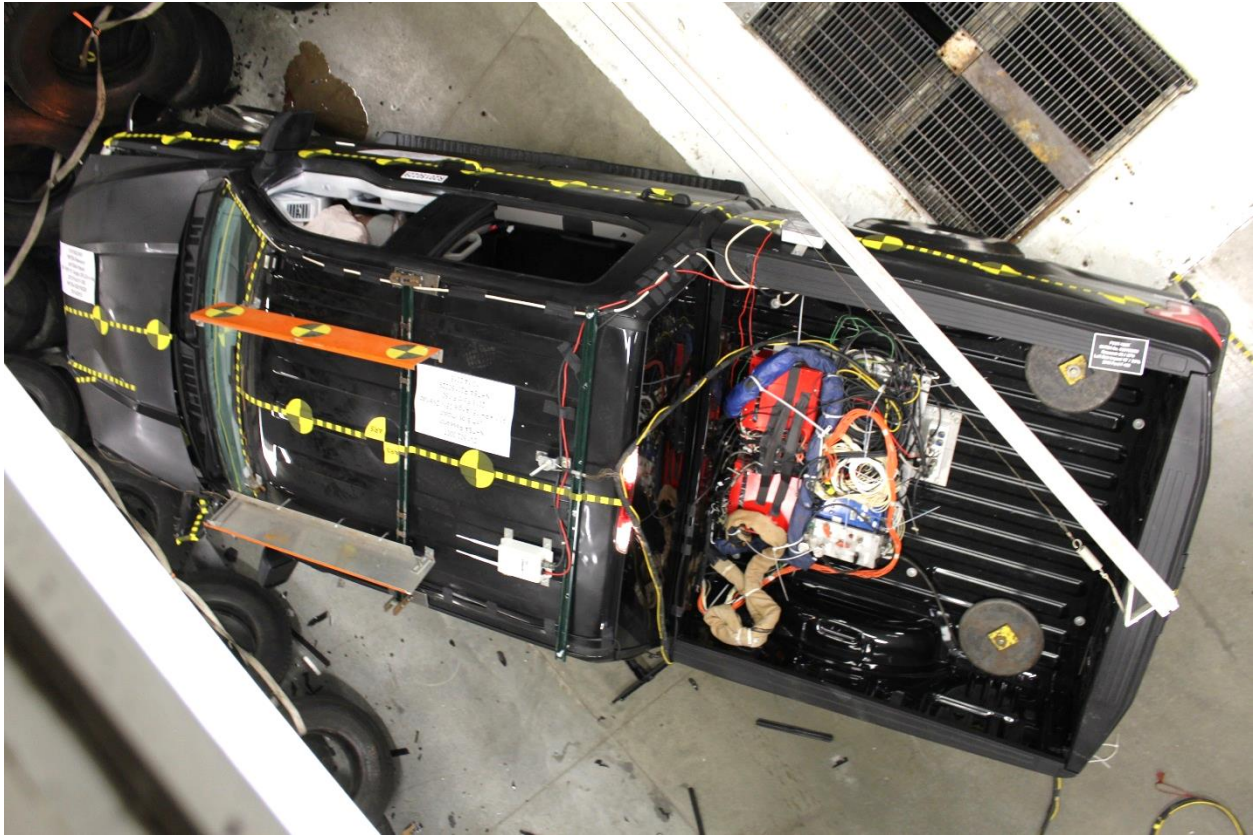
No. 024 Pre-Test Right Side View of OMDB against target vehicle at ideal Impact Point



No. 025 Pre-Test Close-up View of Impact Point



No. 026 Post-Test Close-up View of Impact Point



No. 027 Post-Test Vehicle Overhead View



No. 028 Pre-Test Close-up View of Driver Door Latch



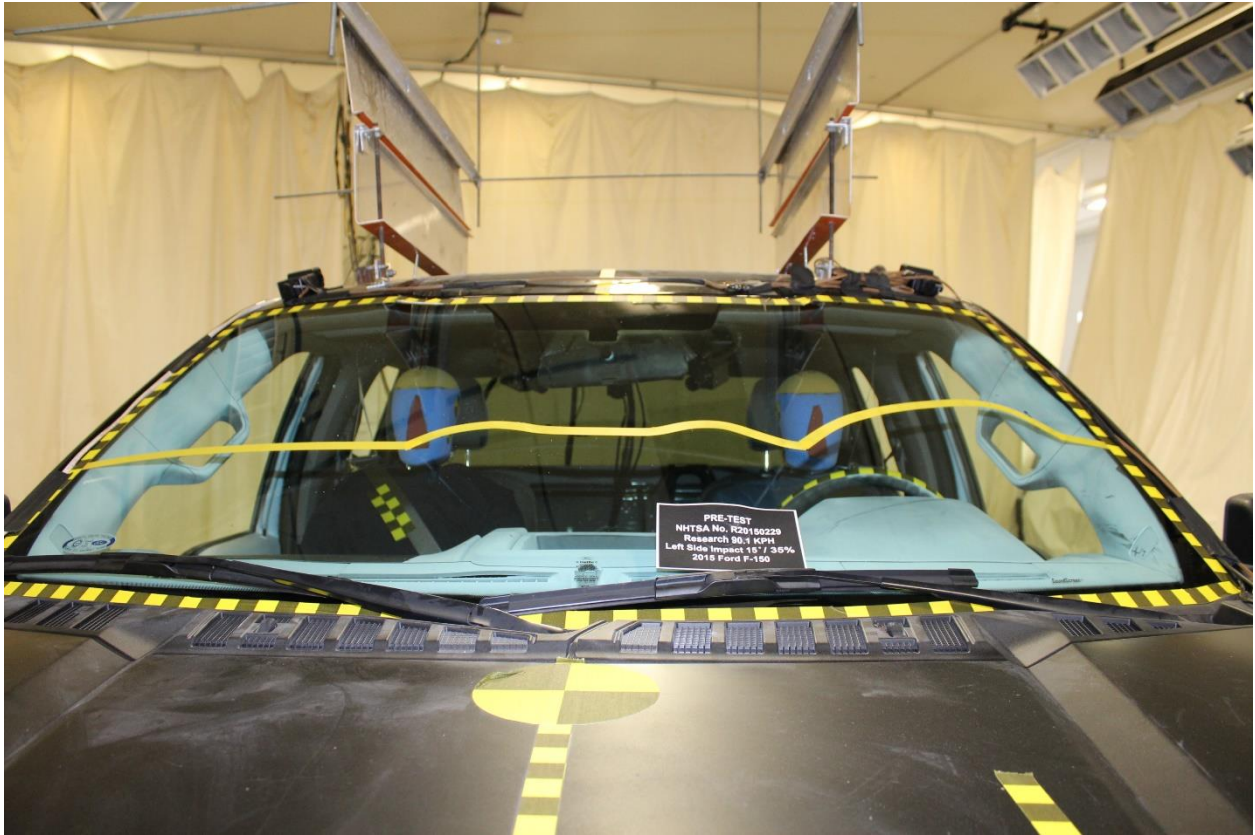
No. 029 Post-Test Close-up View of Driver Door Latch



No. 030 Pre-Test Close-up View of Passenger Door Latch



No. 031 Post-Test Close-up View of Passenger Door Latch



No. 032 Pre-Test Windshield View



No. 033 Post-Test Windshield View



No. 034 Pre-Test View of Driver Inner Door Panel



No. 035 Post-Test View of Driver Inner Door Panel



No. 036 Pre-Test View of Passenger Inner Door Panel



No. 037 Post-Test View of Passenger Inner Door Panel



No. 038 Pre-Test Overall View of Driver Knee Bolsters



No. 039 Post-Test Overall View of Driver Knee Bolsters



No. 040 Pre-Test Left Side View of Driver Knee Bolsters



No. 041 Post-Test Left Side View of Driver Knee Bolsters



No. 042 Pre-Test Right Side View of Driver Knee Bolsters



No. 043 Post-Test Right Side View of Driver Knee Bolsters



No. 044 Pre-Test View of Driver Floor pan at Left sill level, w/carpet



No. 045 Post-Test View of Driver Floor pan at Left sill level, w/carpet



No. 046 Pre-Test View of Driver Floor pan at Mid seat level, w/carpet



No. 047 Post-Test view of Driver Floor pan at Mid seat level, w/carpet



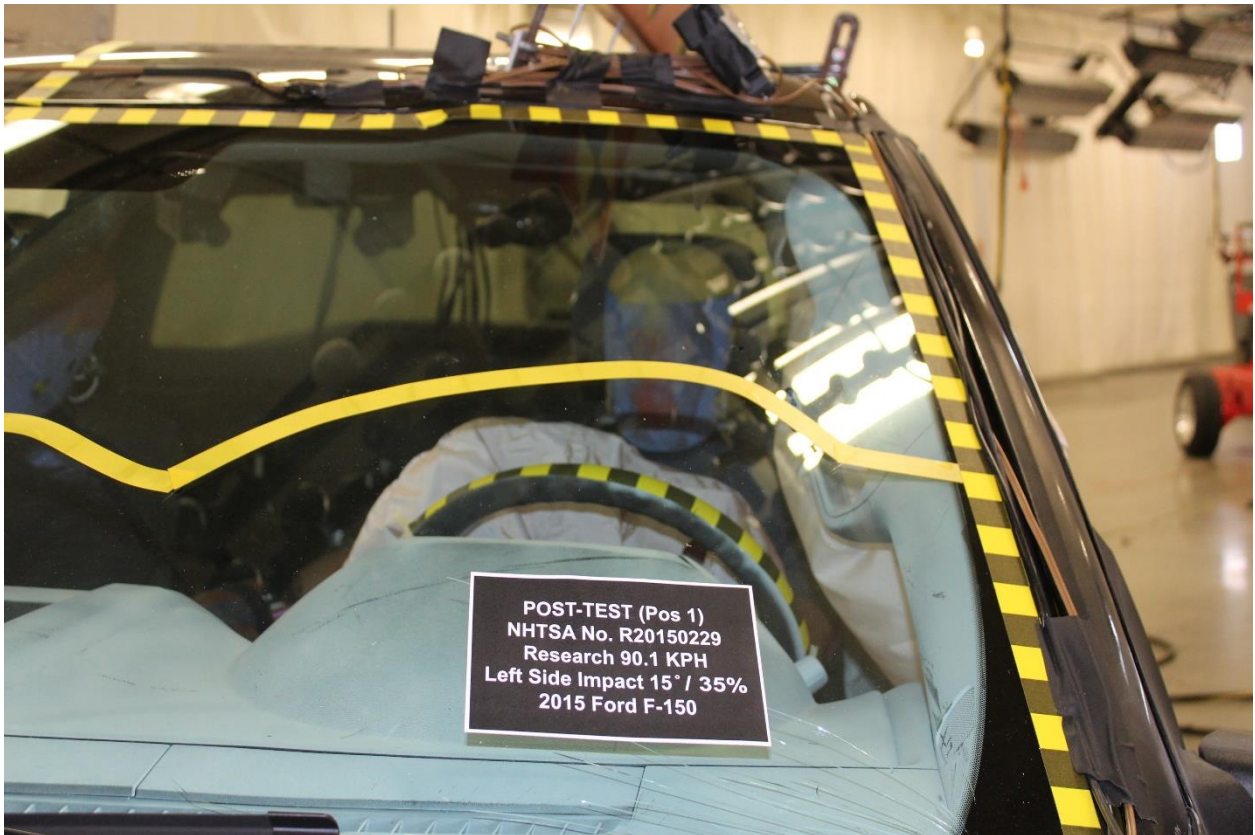
No. 048 Pre-Test View of Driver Floor pan at Right Side



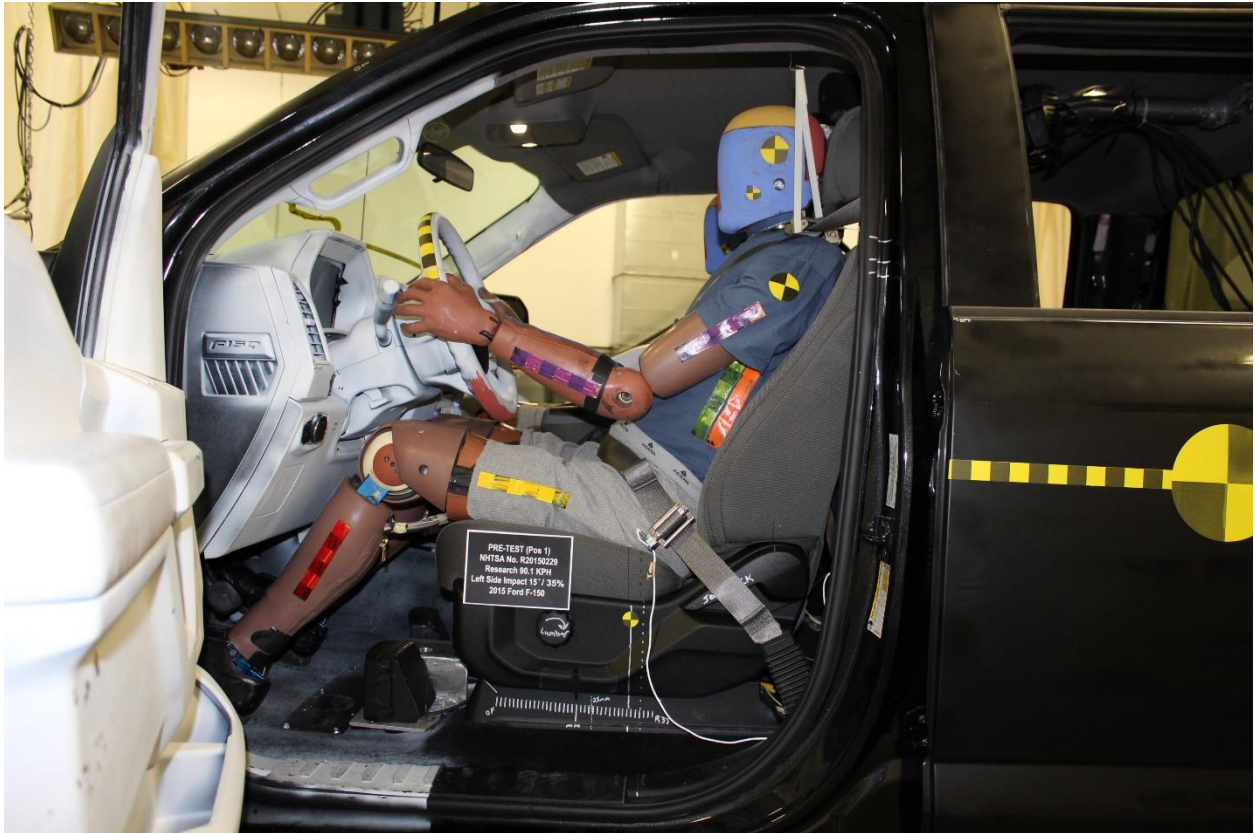
No. 049 Post-Test View of Driver Floor pan at Right Side



No. 050 Pre-Test Driver Front Windshield View



No. 051 Post-Test Driver Front Windshield View



No. 052 Pre-Test Left Side View of Driver and Interior



No. 053 Post-Test Left Side View of Driver and Interior



R20150229
PRE-TEST (Pos 1)
NHTSA No. R20150229
Research 90.1 KPH
Left Side Impact 15' / 35%
2015 Ford F-150

No. 054 Pre-Test Left Side Driver Window View



R20150229
POST-TEST (Pos 1)
NHTSA No. R20150229
Research 90.1 KPH
Left Side Impact 15' / 35%
2015 Ford F-150

No. 055 Post-Test Left Side Driver Window View



No. 056 Pre-Test Right Side View of Driver and Interior



No. 057 Post-Test Right Side View of Driver and Interior



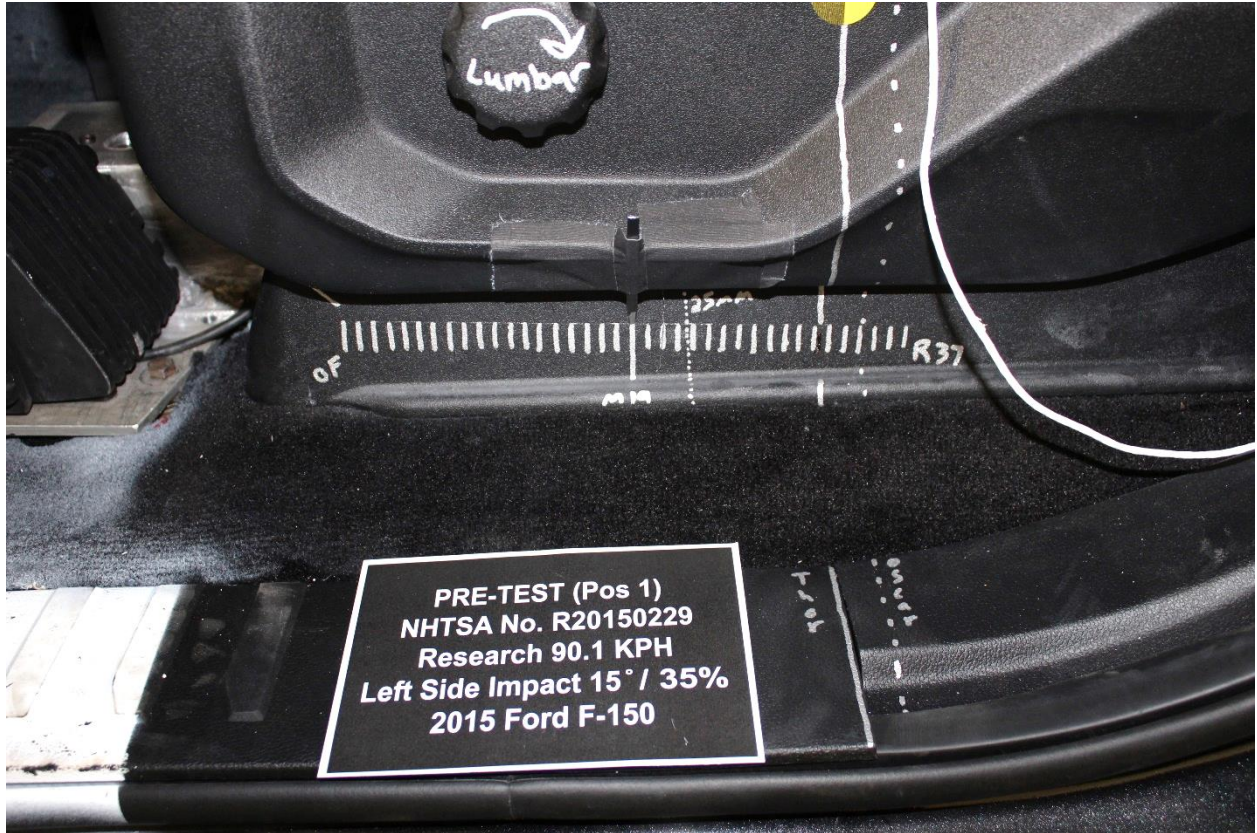
No. 058 Pre-Test View of Driver Door Clearance



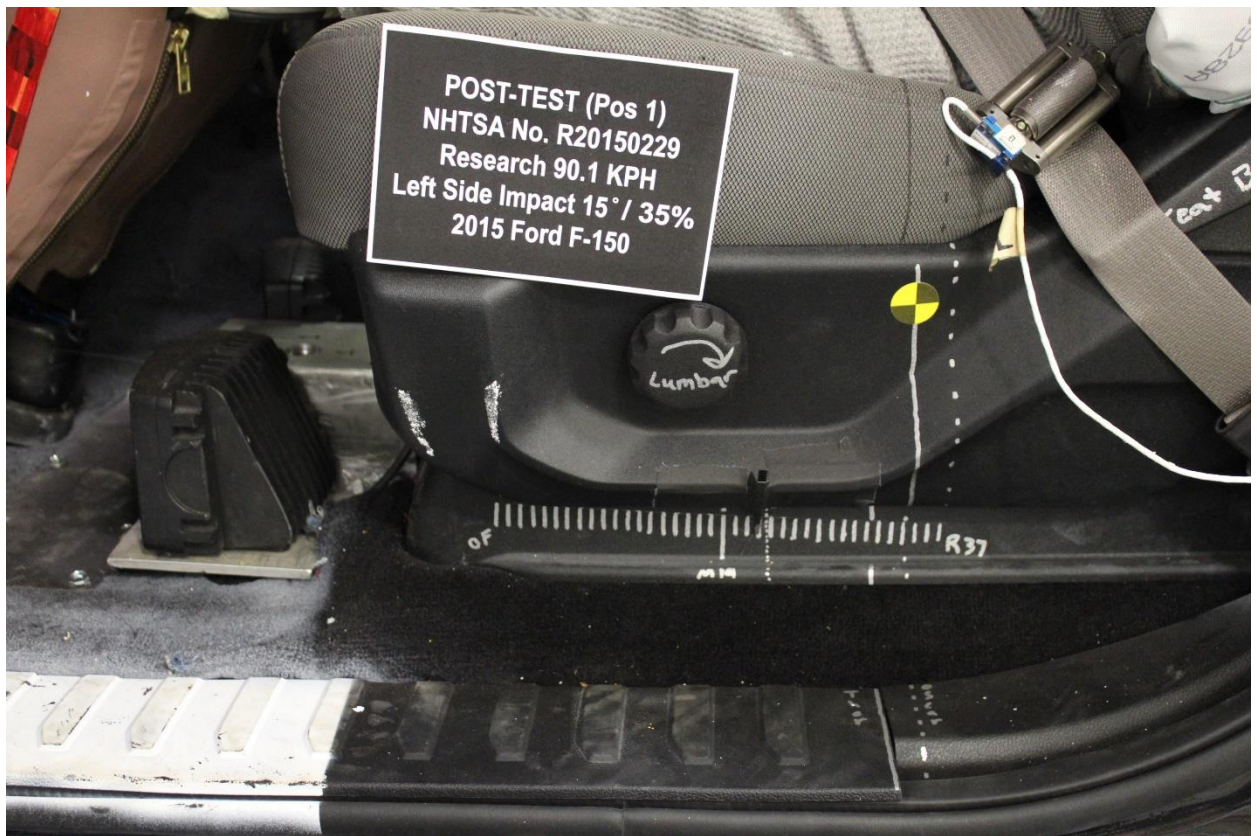
No. 059 Post-Test View of Driver Door Clearance



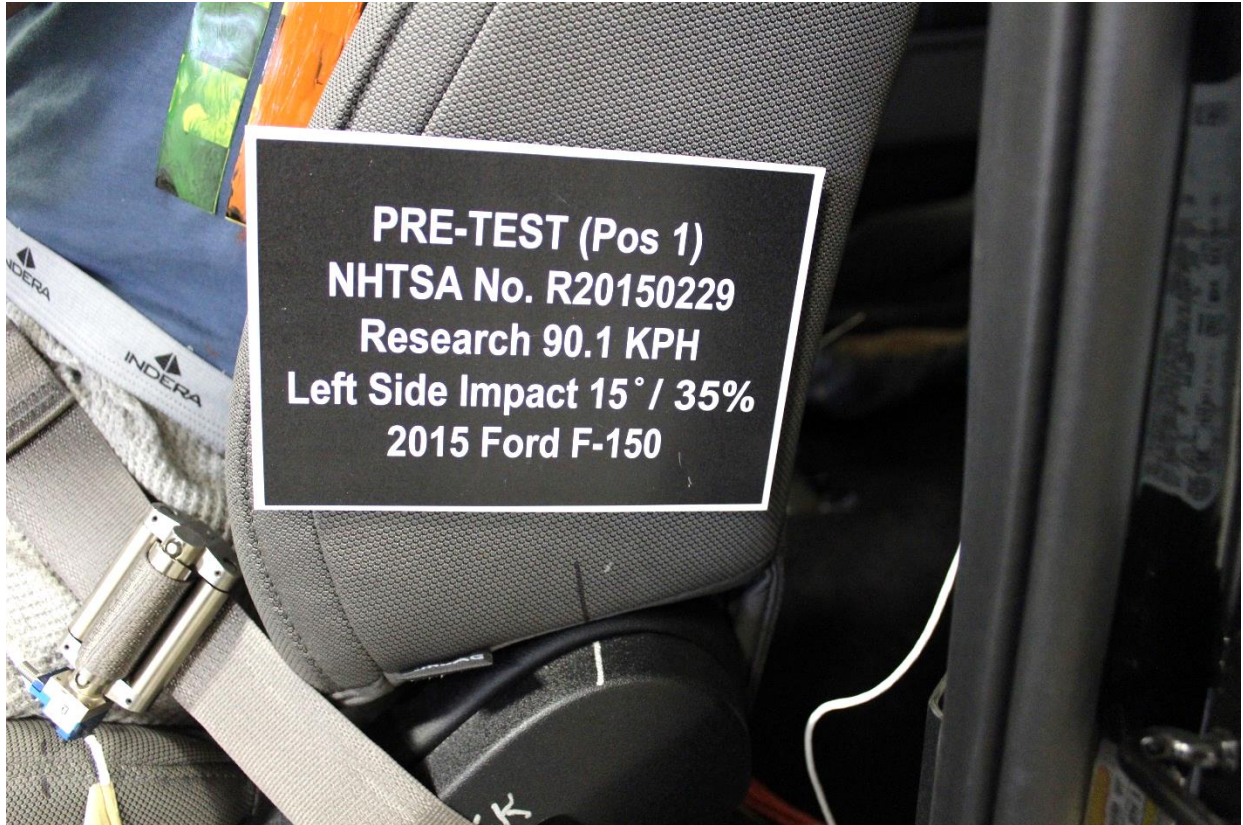
No. 060 Pre-Test View of Parking Brake



No. 061 Pre-Test Driver Seat Fore Aft Markings



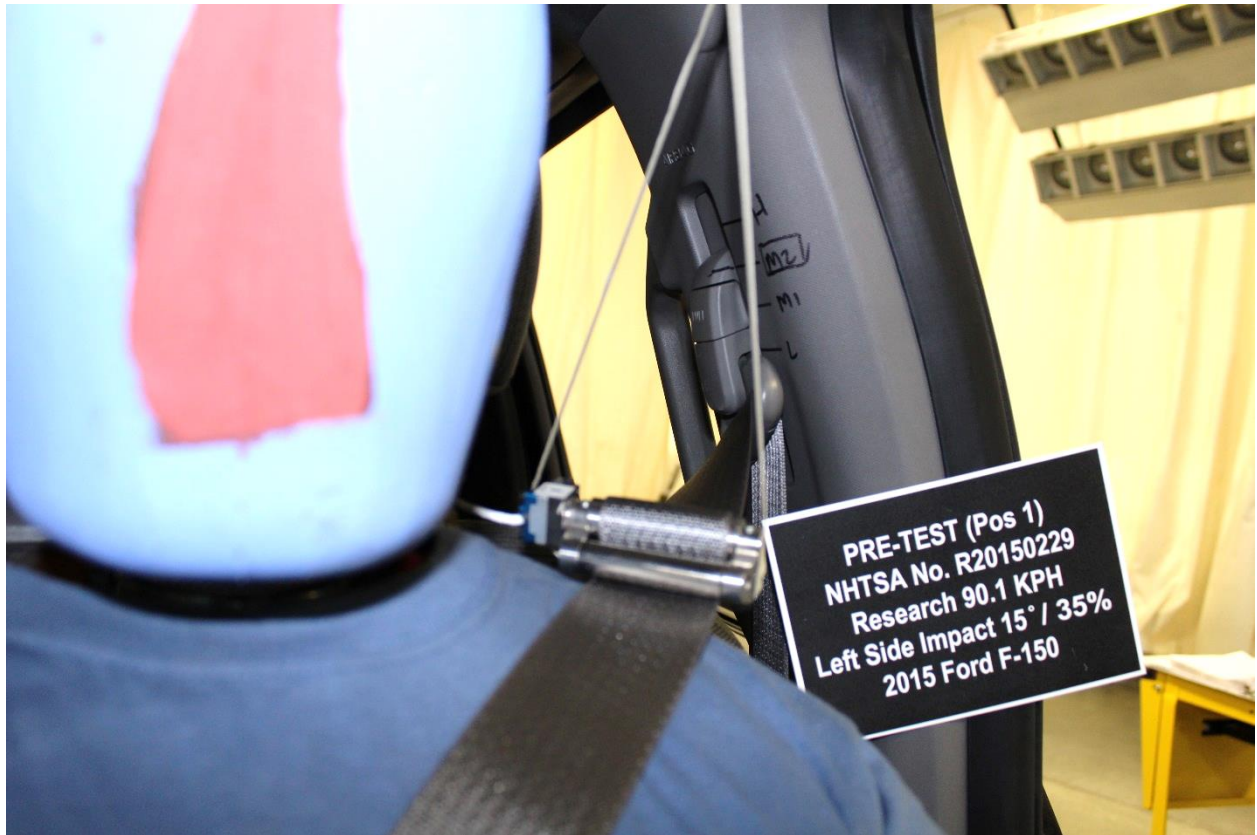
No. 062 Post-Test Driver Seat Fore Aft Markings



No. 063 Pre-Test Driver Seat Back Markings



No. 064 Pre-Test Overhead View of Driver Thighs on Seat



No. 065 Pre-Test Driver Adjustable D-Ring



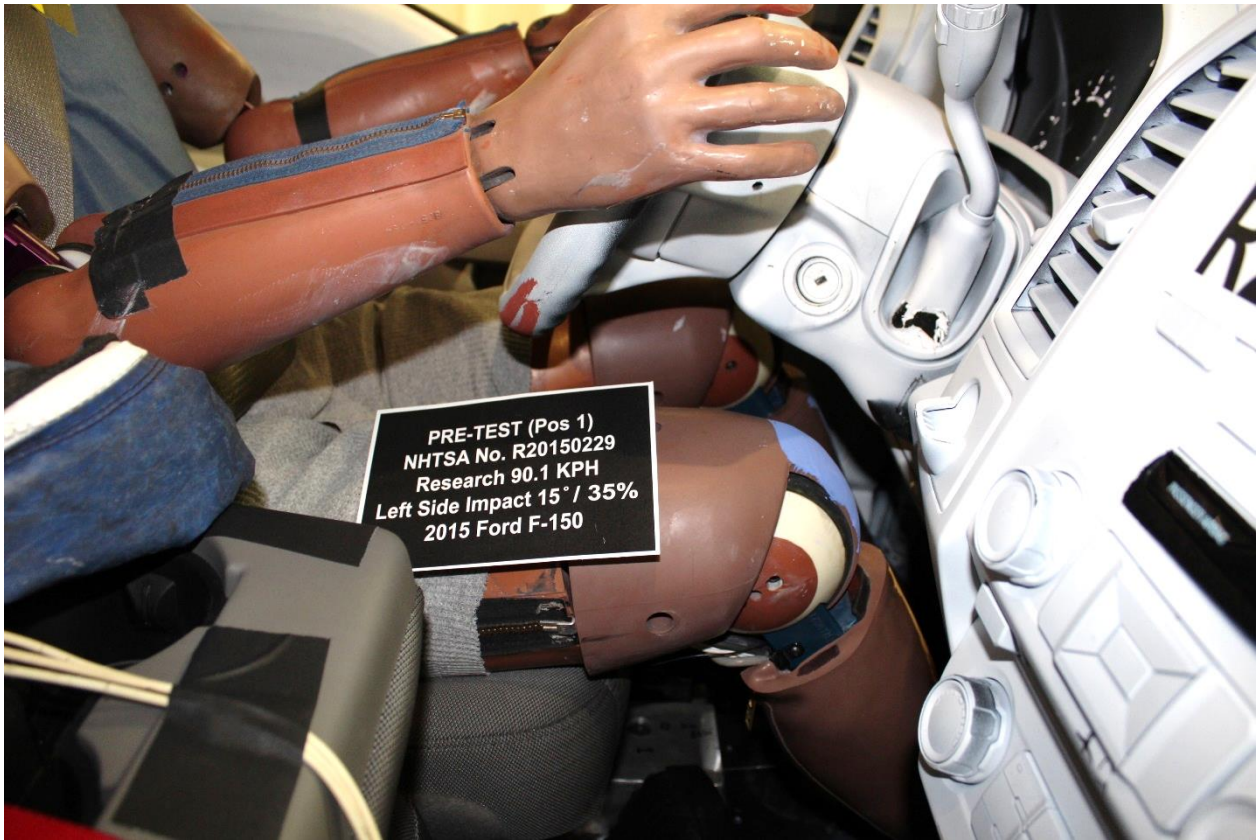
No. 066 Post-Test Driver Adjustable D-Ring



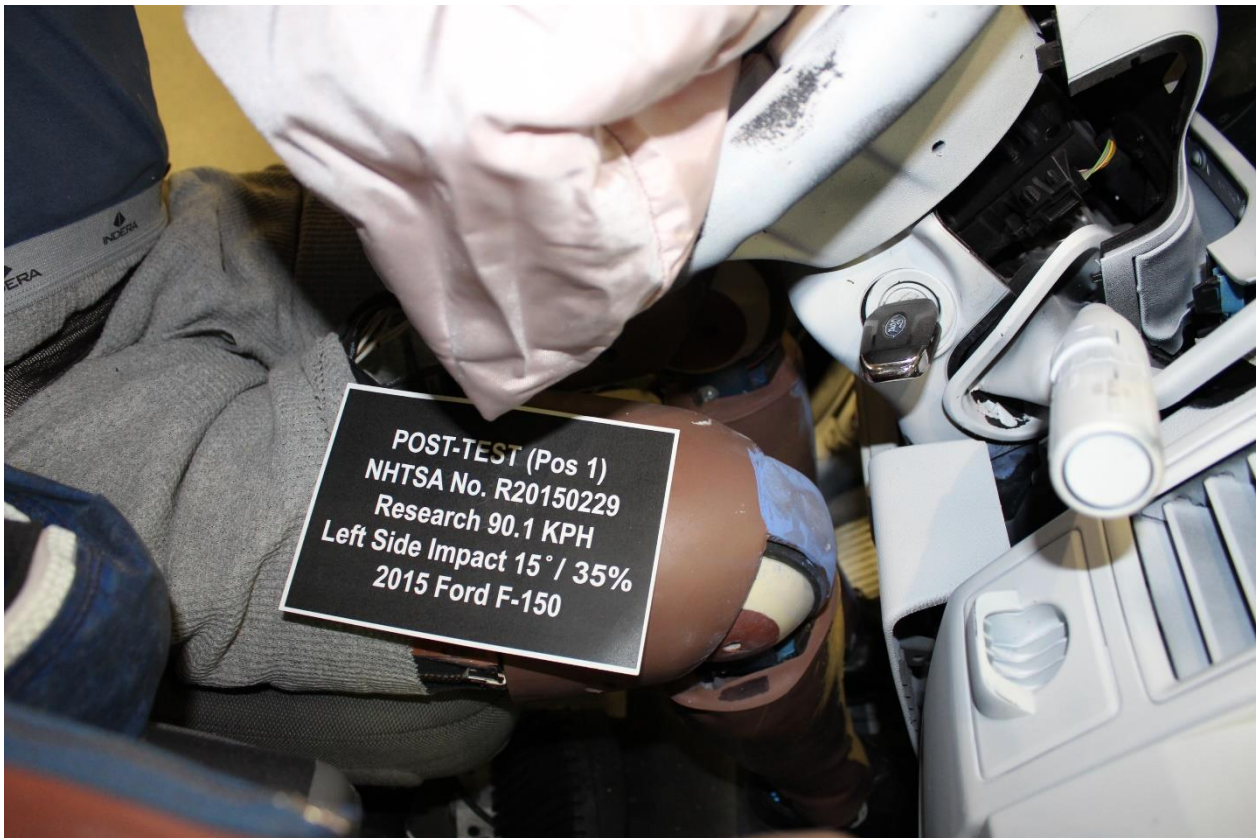
No. 067 Pre-Test Driver Feet



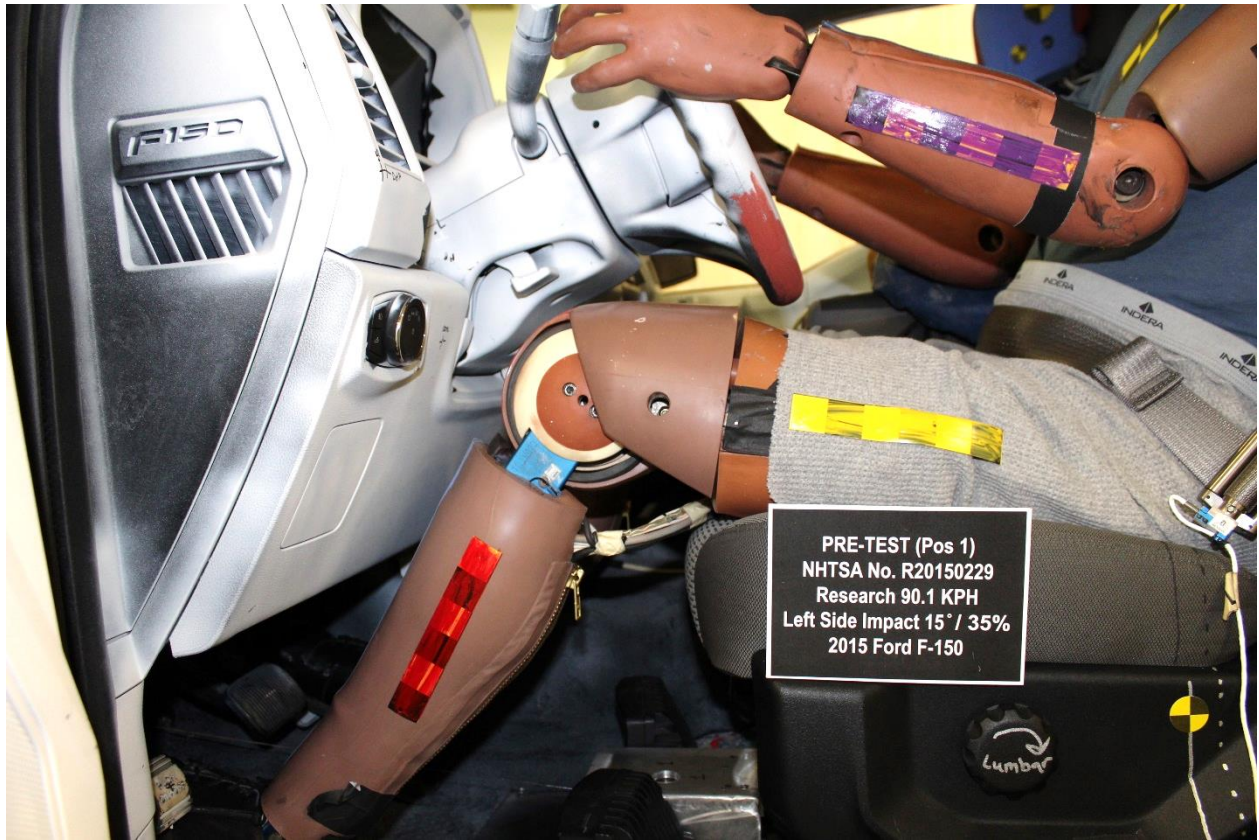
No. 068 Post-Test Driver Feet



No. 069 Pre-Test View of Driver Right Knee and Bolster

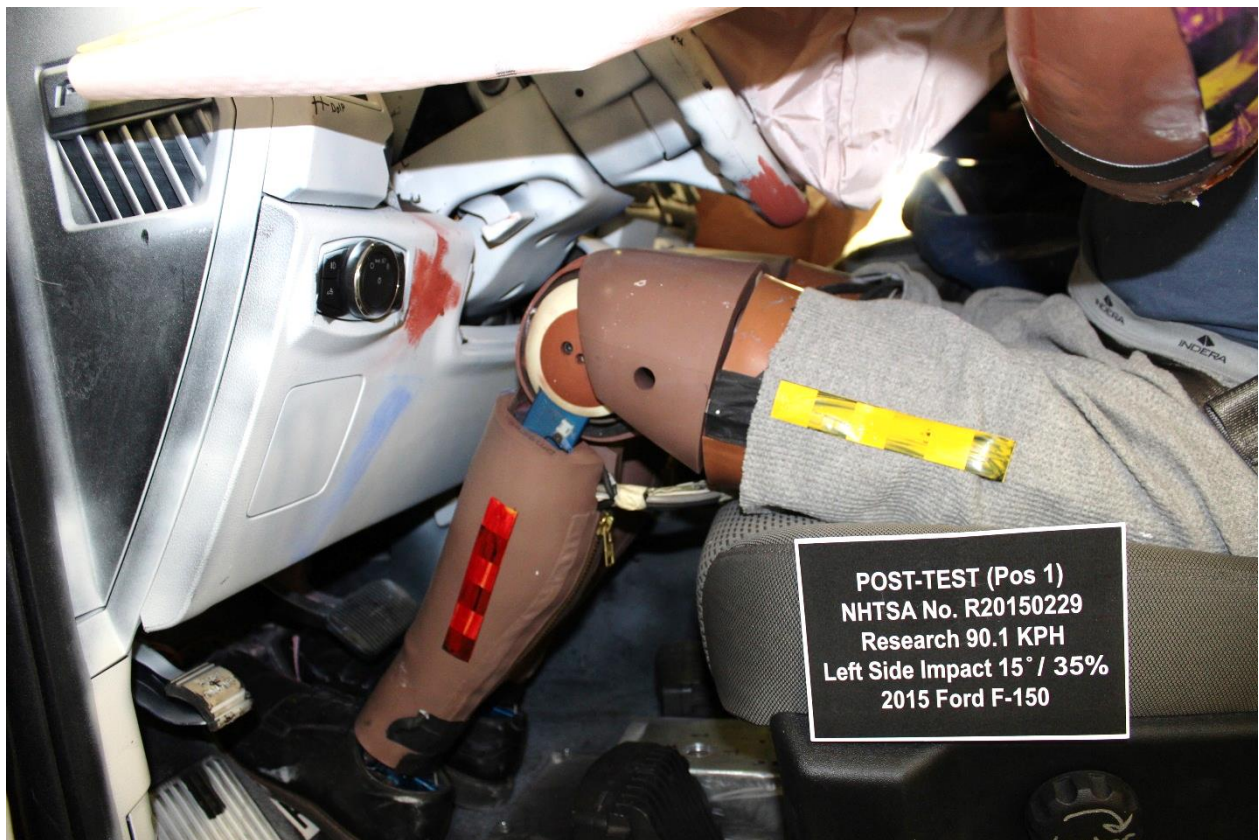


No. 070 Post-Test View of Driver Right Knee and Bolster



PRE-TEST (Pos 1)
NHTSA No. R20150229
Research 90.1 KPH
Left Side Impact 15° / 35%
2015 Ford F-150

No. 071 Pre-Test View of Driver Left Knee and Bolster



POST-TEST (Pos 1)
NHTSA No. R20150229
Research 90.1 KPH
Left Side Impact 15° / 35%
2015 Ford F-150

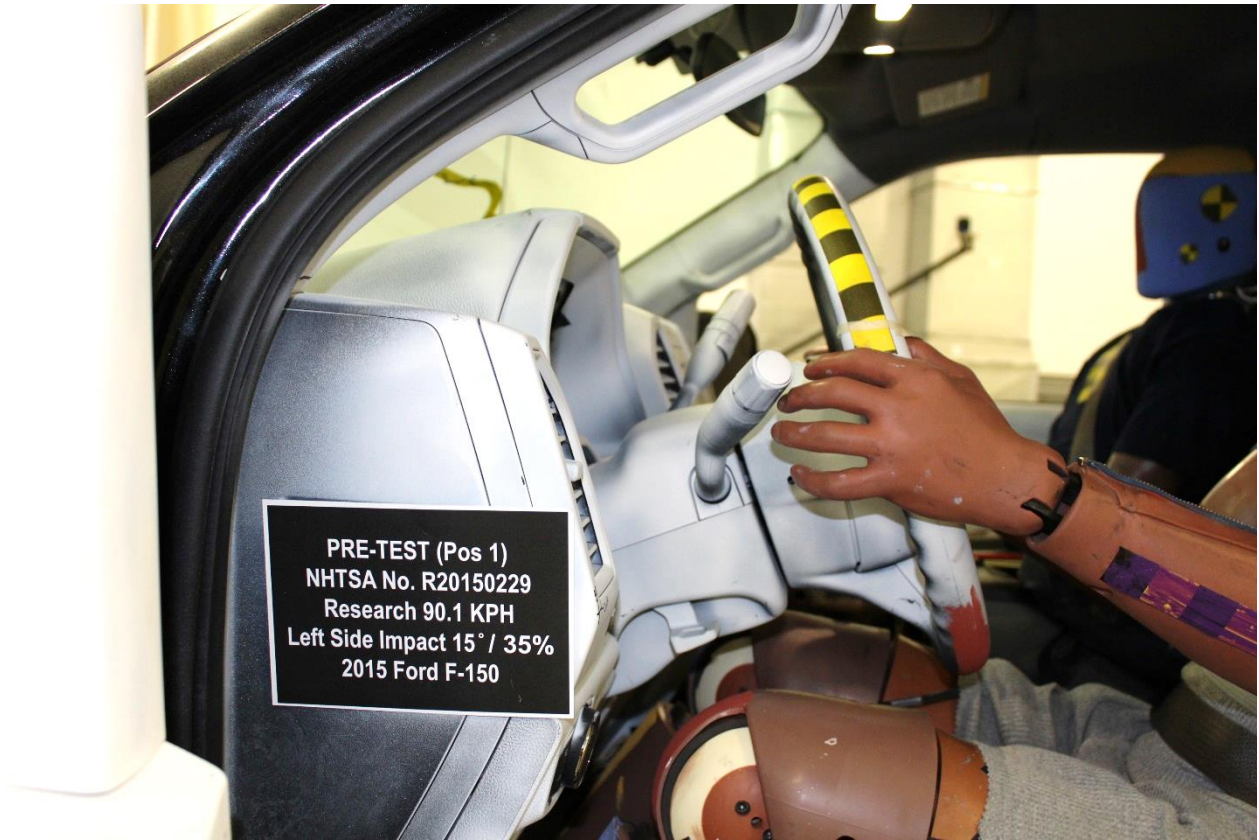
No. 072 Post-Test View of Driver Left Knee and Bolster



No. 073 Pre-Test View of Driver Abdomen



No. 074 Post-Test View of Driver Abdomen



No. 075 Pre-Test Left Side View of Steering Wheel set position



No. 076 Post-Test Left Side View of Steering Wheel set position



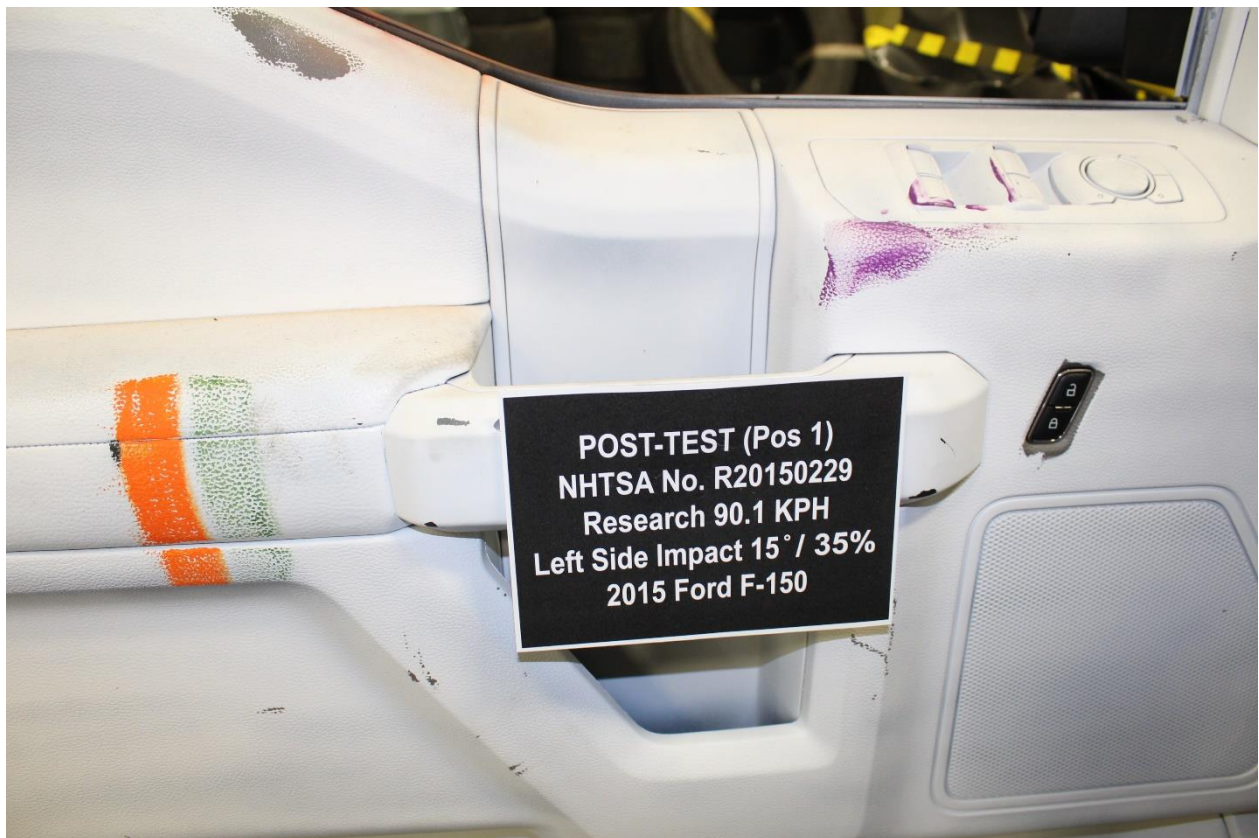
No. 077 Post-Test View of Driver Head Contact with Front Airbag



No. 078 Post-Test View of Driver Head Contact with Curtain Airbag

Photo Not Applicable

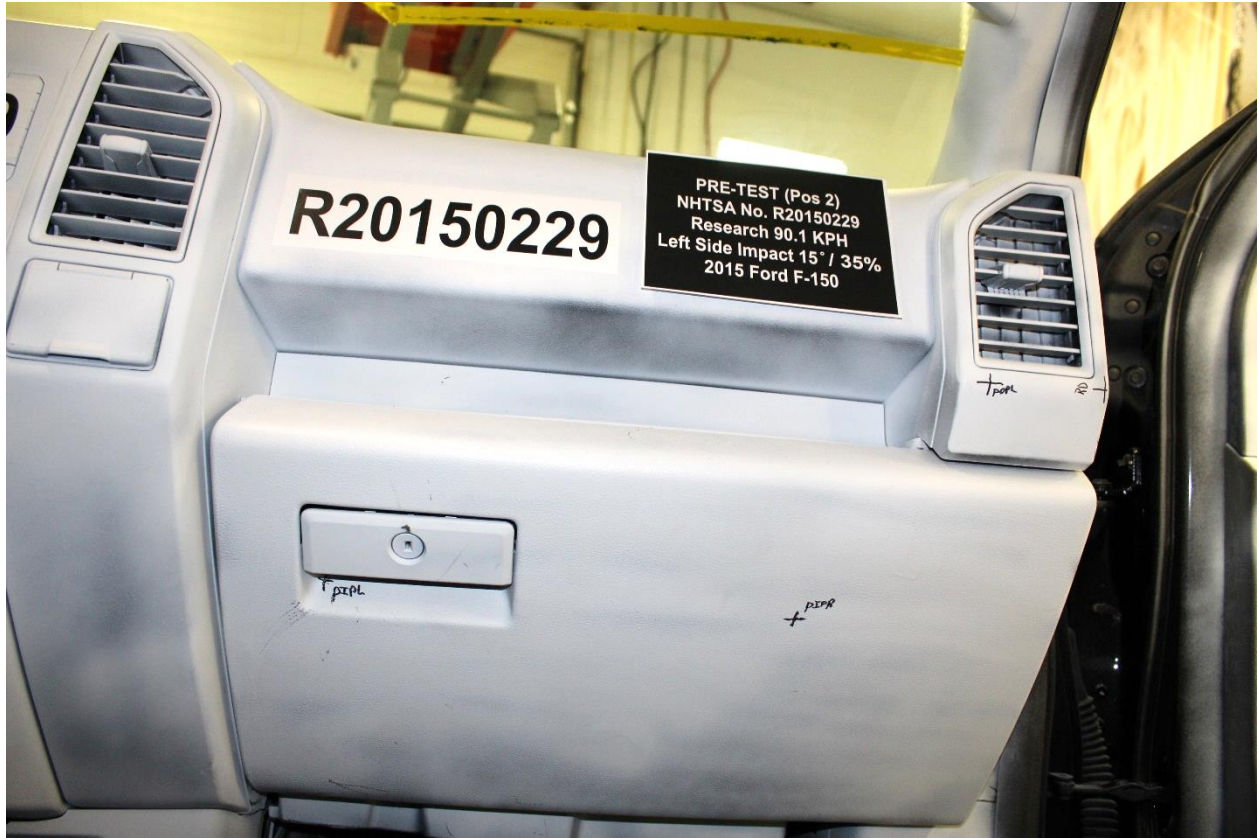
No. 079 Post-Test View of Driver Head Contact with Vehicle Interior – A



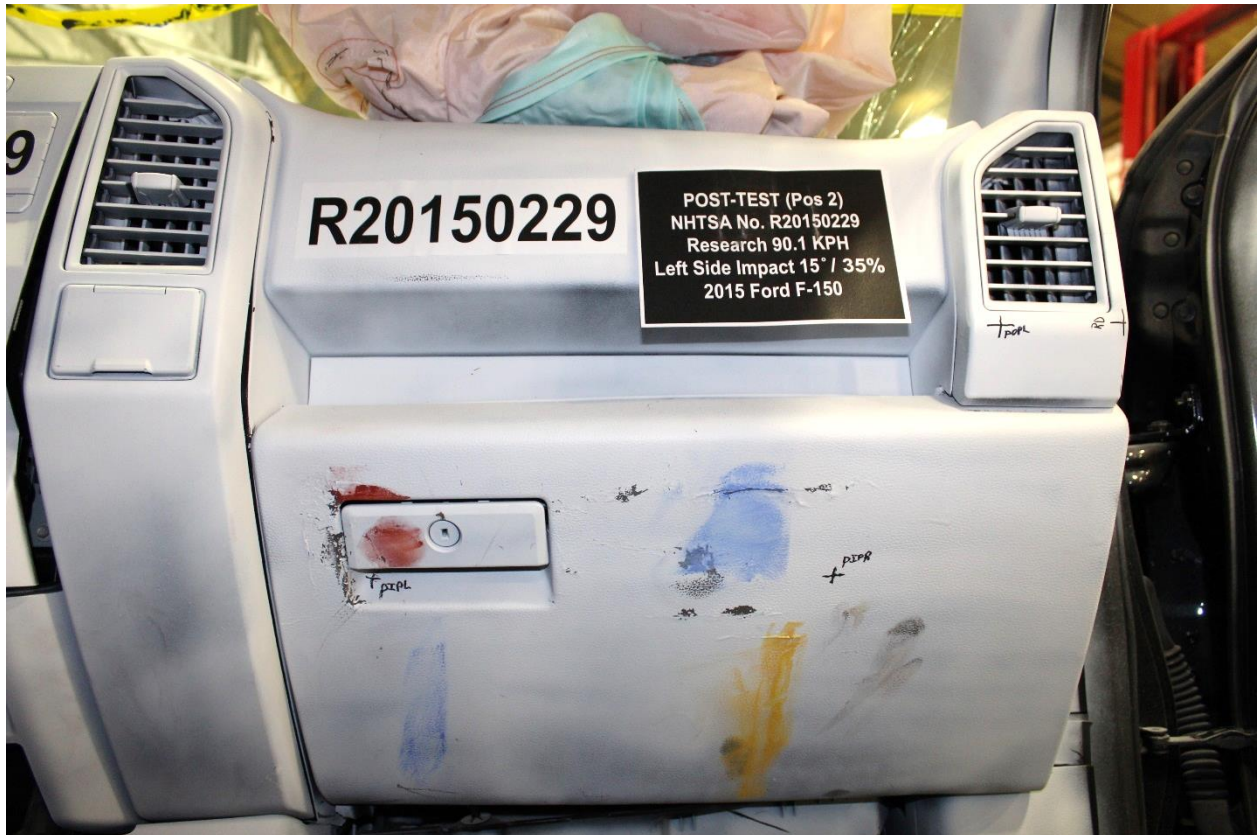
No. 080: Post-Test View of Driver Body Contact with Vehicle Interior - B

Photo Not Applicable

No. 081: Post-Test View of Driver Body Contact with Vehicle Interior - C



No. 082: Pre-Test Overall View of Passenger Knee Bolsters



No. 083: Post-Test Overall View of Passenger Knee Bolsters



No. 084: Pre-Test Left Side View of Passenger Knee Bolsters



No. 085: Post-Test Left Side View of Passenger Knee Bolsters



No. 086: Pre-Test Right Side View of Passenger Knee Bolsters



No. 087: Post-Test Right Side View of Passenger Knee Bolsters



No. 088: Pre-Test View of Passenger Floor pan at Right sill level, w/carpet



No. 089: Post-Test View of Passenger Floor pan at Right sill level, w/carpet



No. 090: Pre-Test View of Passenger Floor pan at Mid seat level, w/carpet



No. 091: Post-Test view of Passenger Floor pan at Mid seat level, w/carpet



No. 092: Pre-Test View of Passenger Floor pan at Left view



No. 093: Post-Test View of Passenger Floor pan at Left View



No. 094: Pre-Test Passenger Front Close-up View, Windshield



No. 095: Post-Test Passenger Front Close-up View, Windshield



No. 096: Pre-Test Left Side Passenger and Interior View



No. 097: Post-Test Left Side Passenger and Interior View



No. 98: Pre-Test Right Side Passenger Window View



No. 99: Post-Test Right Side Passenger Window View



No. 100: Pre-Test Right Side Passenger and Interior View



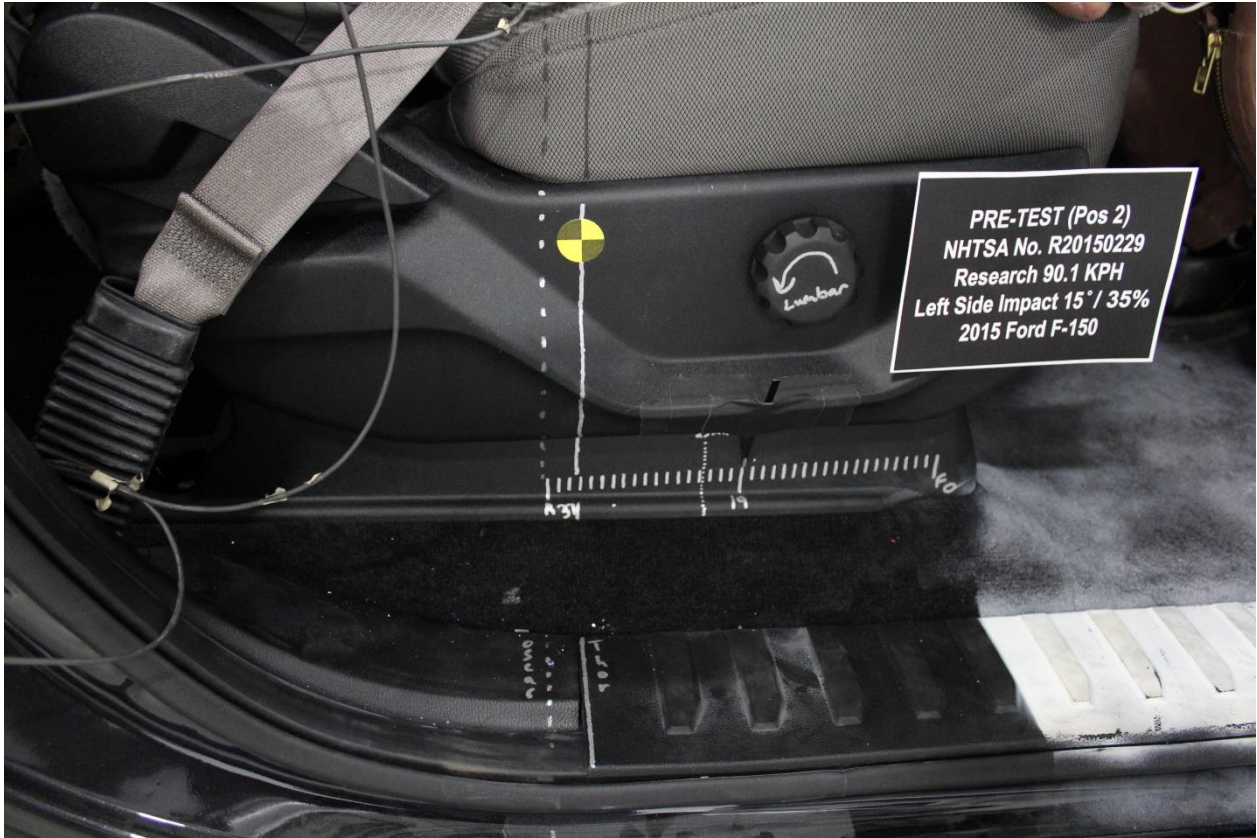
No. 101: Post-Test Right Side Passenger and Interior View



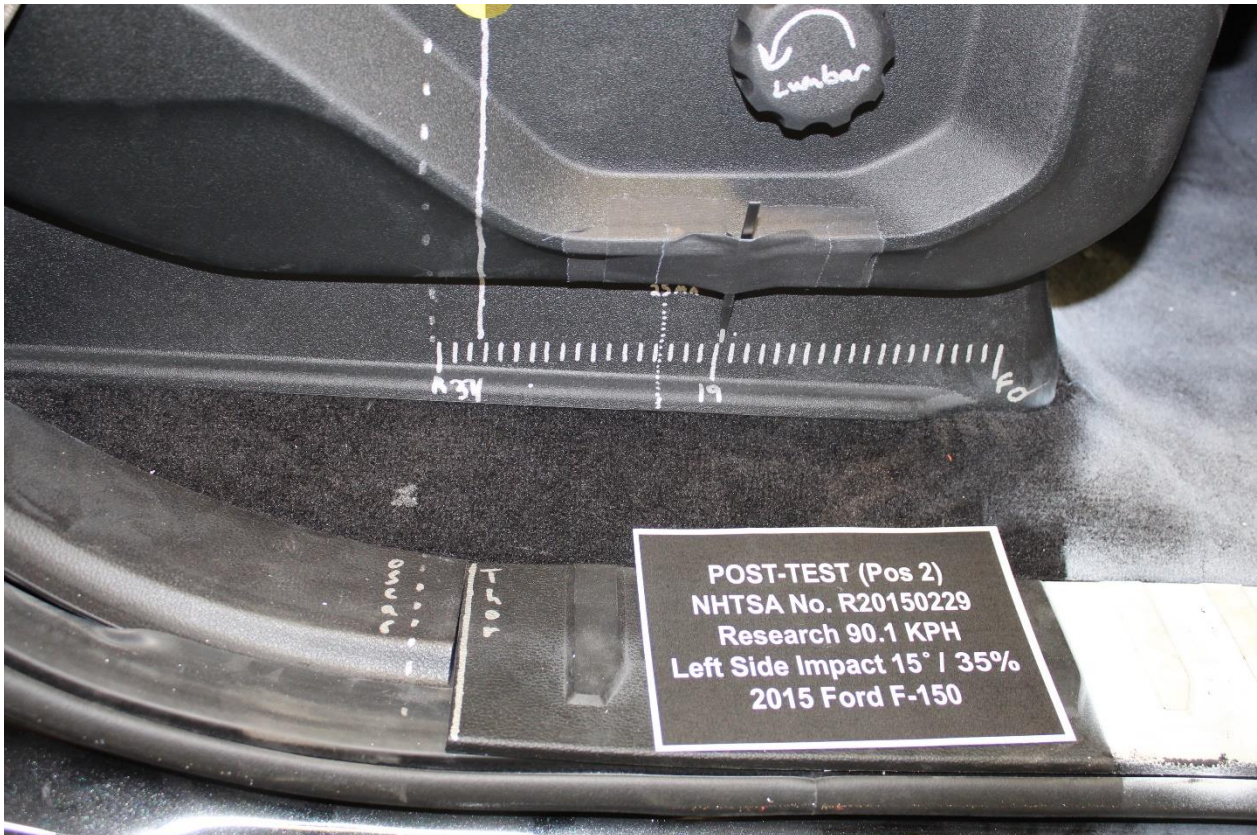
No. 102: Pre-Test View of Passenger Door Clearance



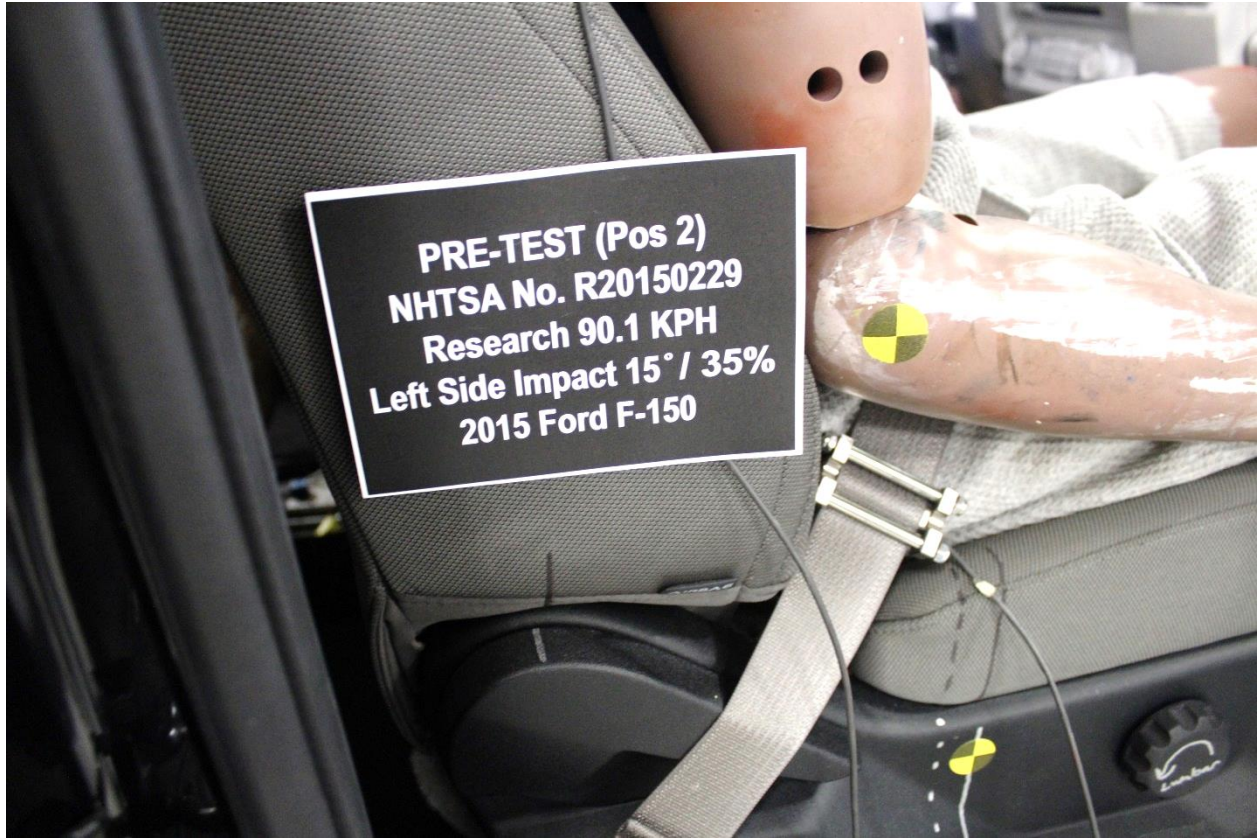
No. 103: Post-Test View of Passenger Door Clearance



No. 104: Pre-Test Passenger Seat Fore-Aft Markings



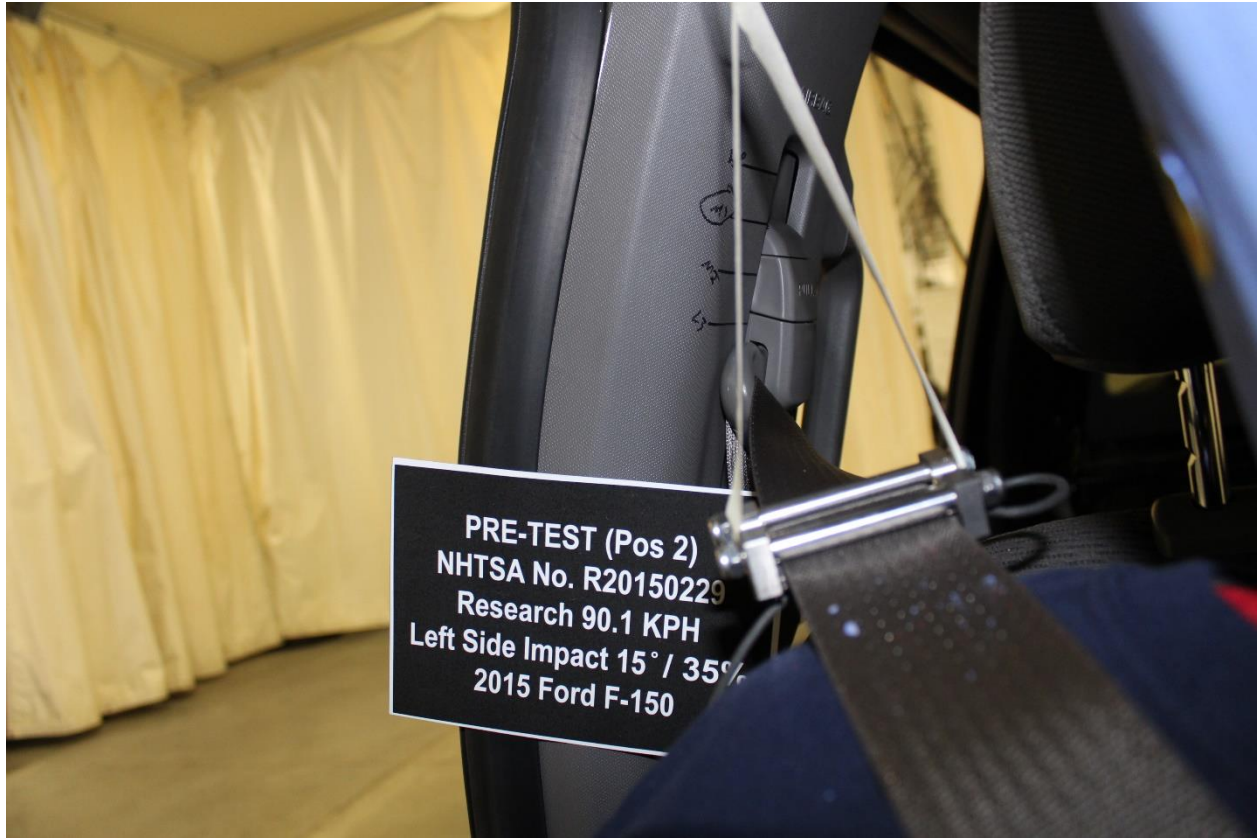
No. 105: Post-Test Passenger Seat Fore-Aft Markings (plastic moved not seat)



No. 106: Pre-Test Passenger Seat Back Markings



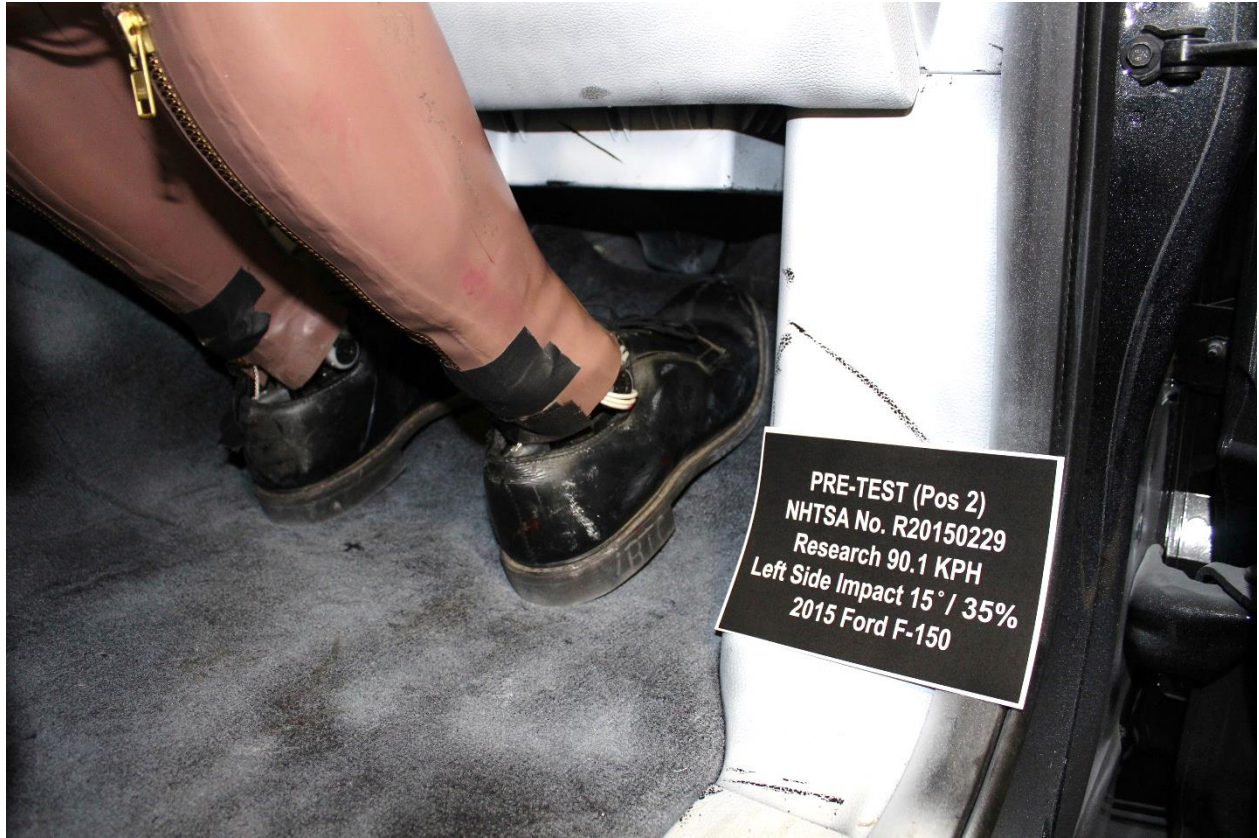
No. 107: Pre-Test Overhead View of Passenger Thighs on seat



No. 108: Pre-Test Passenger Adjustable D-ring



No. 109: Post-Test Passenger Adjustable D-ring



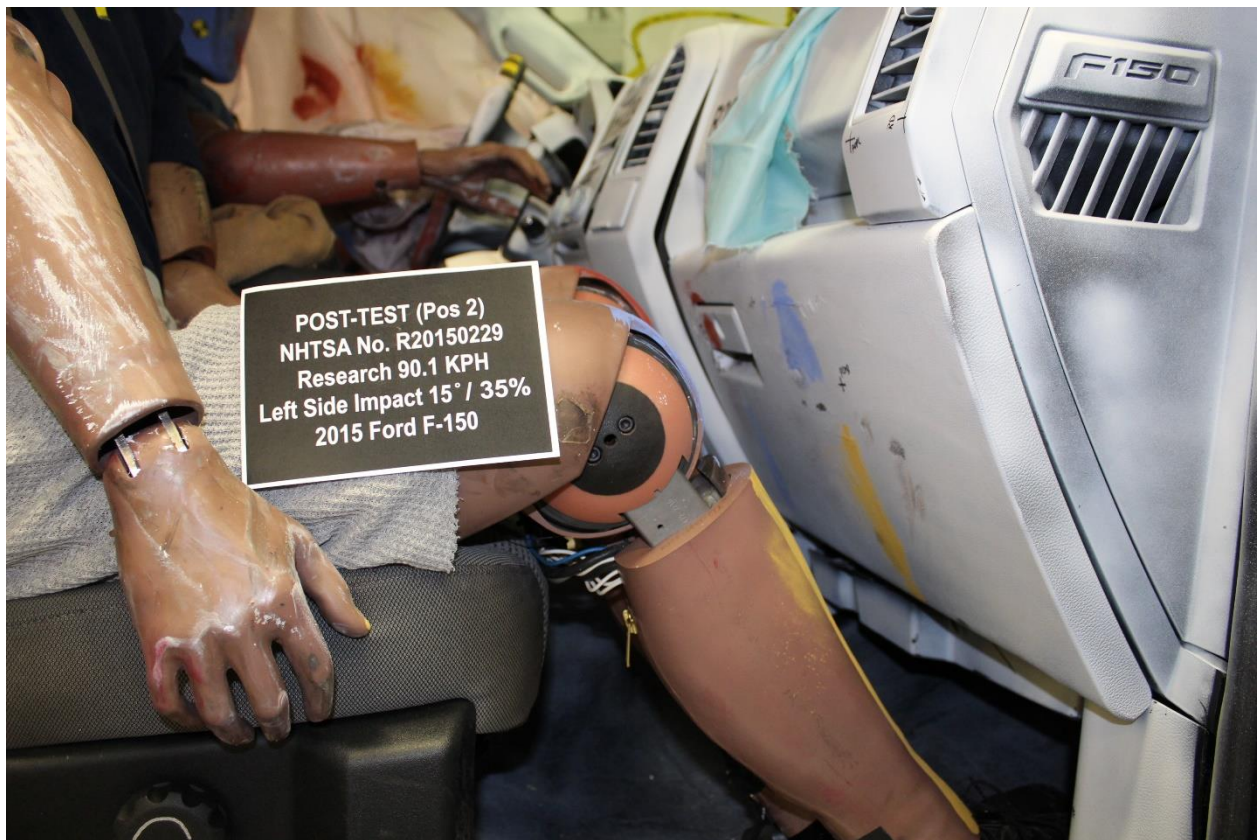
No. 110: Pre-Test View of Passenger Feet



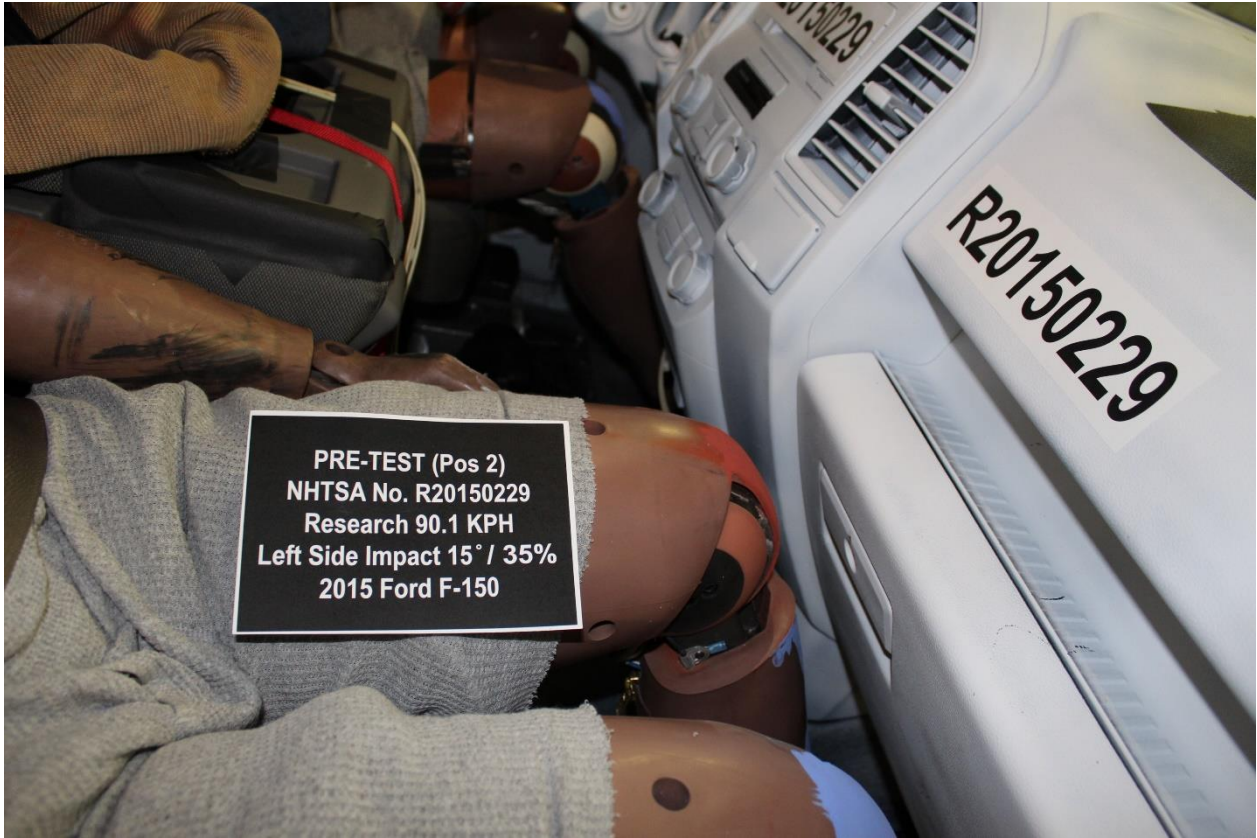
No. 111: Post-Test View of Passenger Feet



No. 112: Pre-Test View of Passenger Right Knee and Bolster



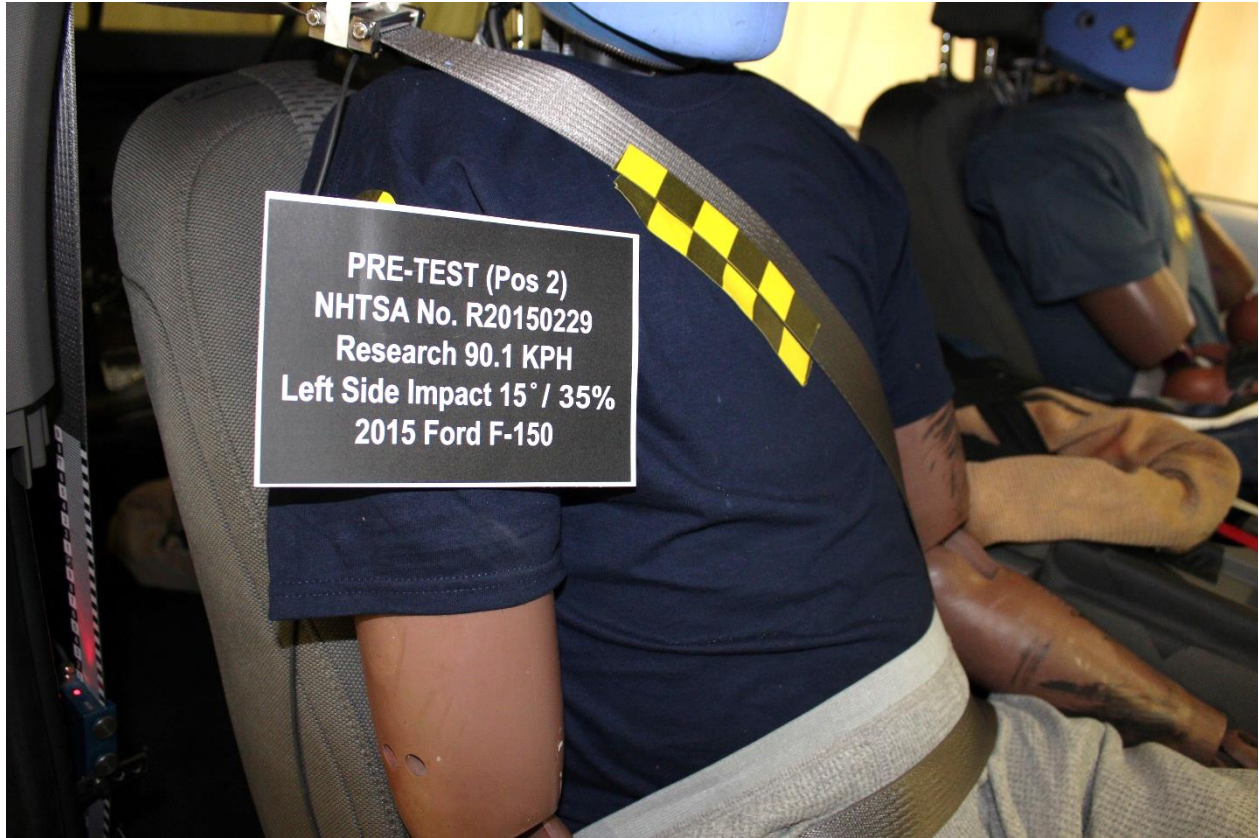
No. 113: Post-Test View of Passenger Right Knee and Bolster



No. 114: Pre-Test View of Passenger Left Knee and Bolster



No. 115: Post-Test View of Passenger Left Knee and Bolster



PRE-TEST (Pos 2)
NHTSA No. R20150229
Research 90.1 KPH
Left Side Impact 15° / 35%
2015 Ford F-150

No. 116: Pre-Test View of Passenger Abdomen



POST-TEST (Pos 2)
NHTSA No. R20150229
Research 90.1 KPH
Left Side Impact 15° / 35%
2015 Ford F-150

No. 117: Post-Test View of Passenger Abdomen



No. 118: Post-Test View of Passenger Head contact with Airbag – Front

Photo Not Applicable

No. 119: Post-Test View of Passenger Head contact with Airbag - Curtain



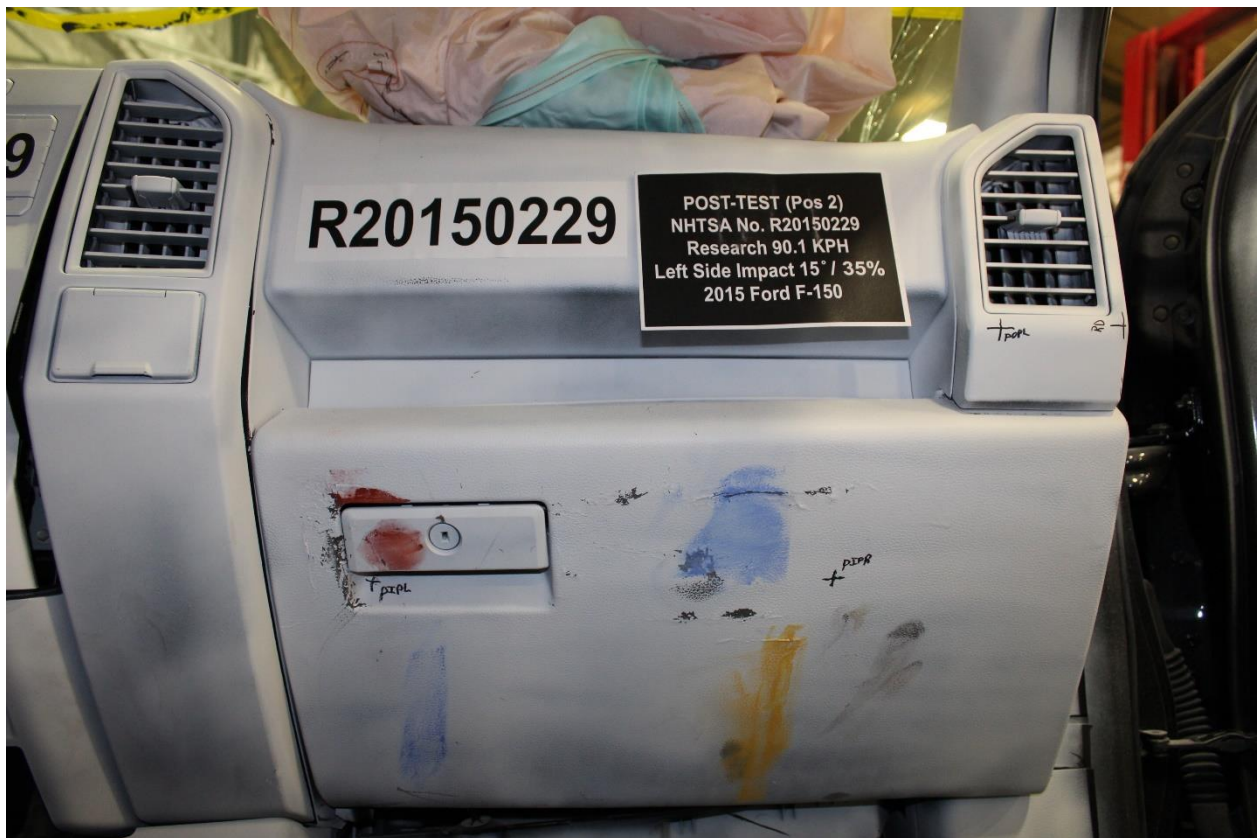
No. 120: Post-Test View of Passenger Head contact with Interior

Photo Not Applicable

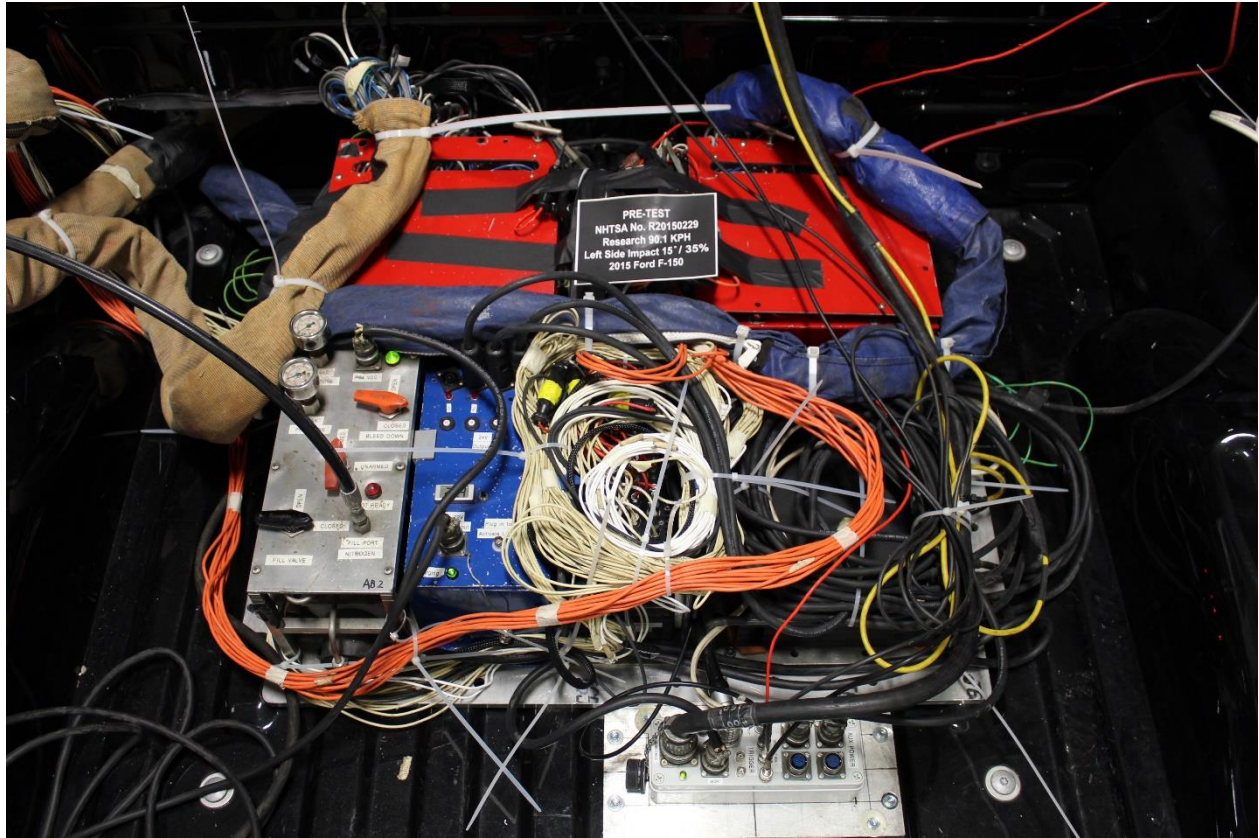
No. 121: Post-Test View of Passenger Body contact with Interior

Photo Not Applicable

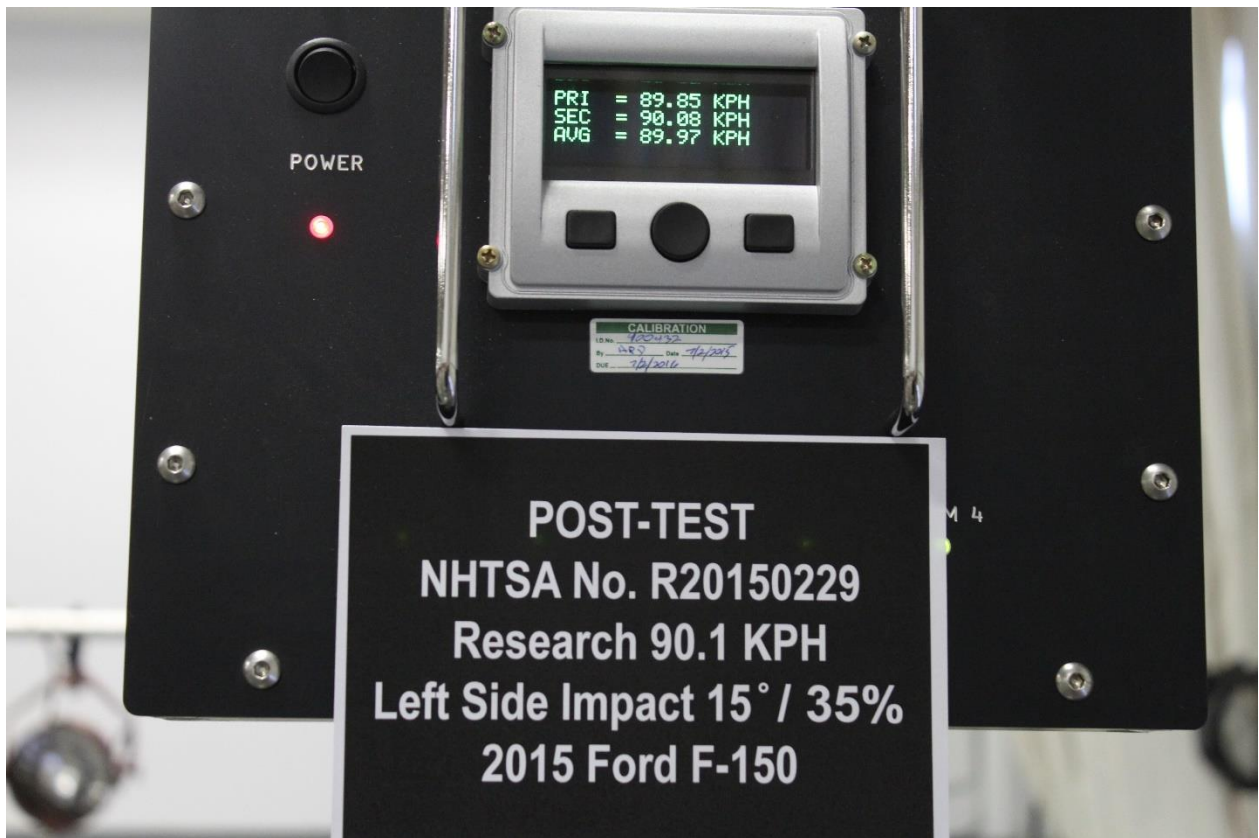
No. 122: Post-Test View of Passenger Head contact with Interior



No. 123: Post-Test Passenger Contact With Glovebox



No. 124: Pre-Test Ballast Locations



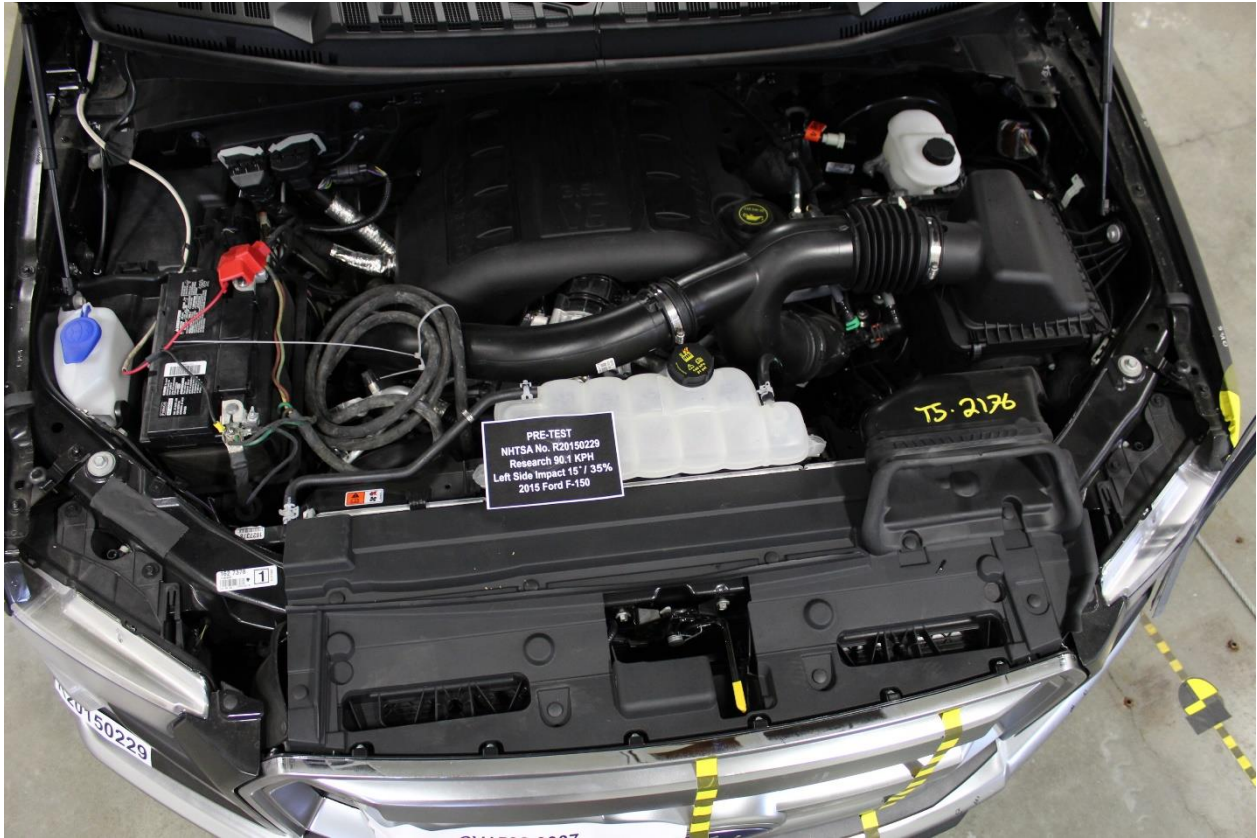
No. 125: Post-Test Speed Trap Readout



No. 126: Pre-Test View of Fuel Filler Cap



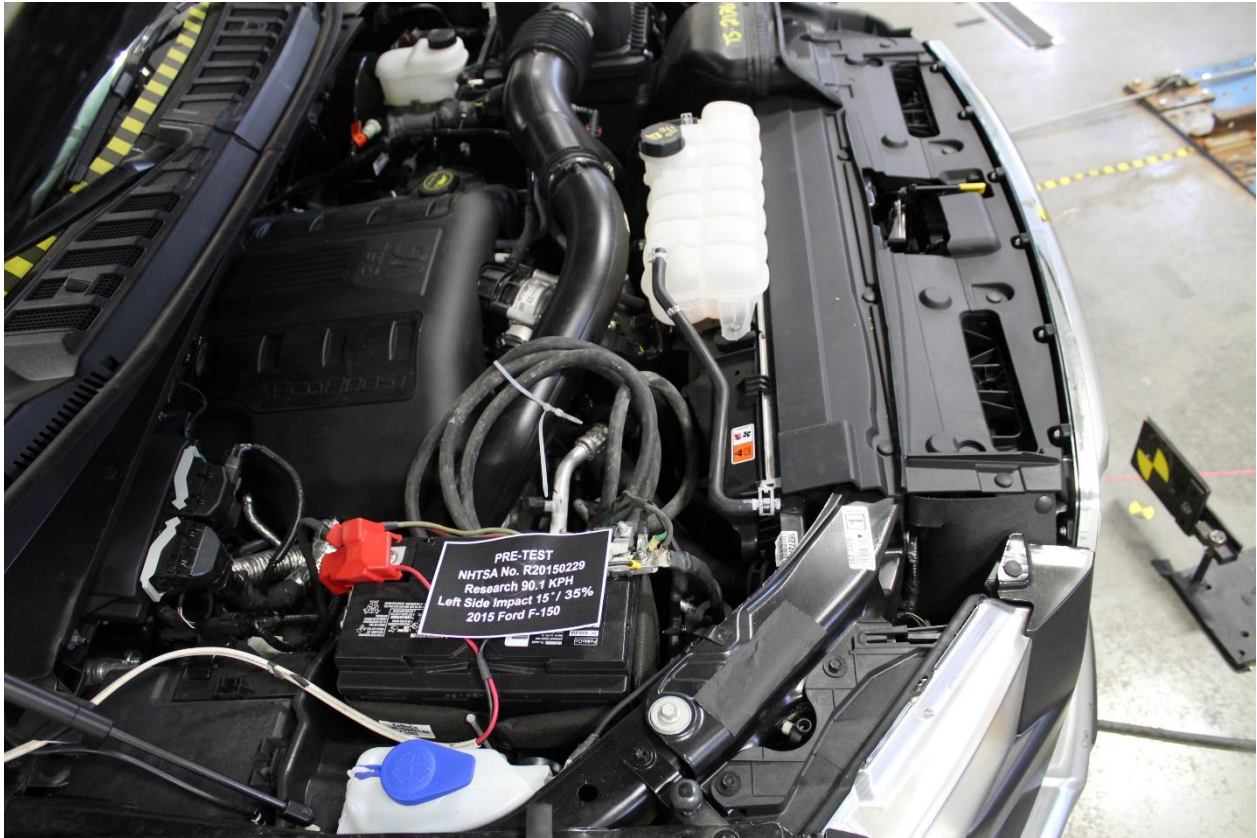
No. 127: Post-Test View of Fuel Filler Cap



No. 128: Pre-Test Engine Compartment View



No. 129: Post-Test Engine Compartment View



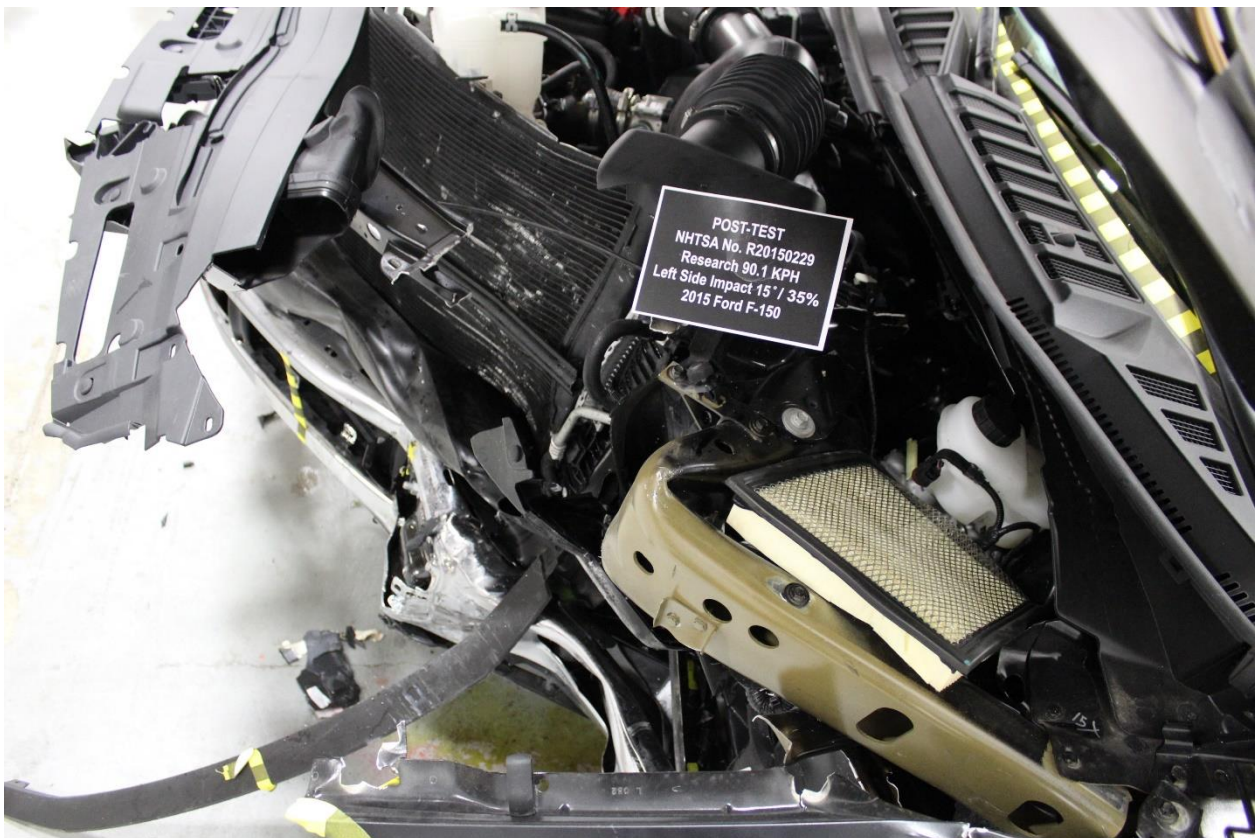
No. 130: Pre-Test Right Side Engine Compartment View



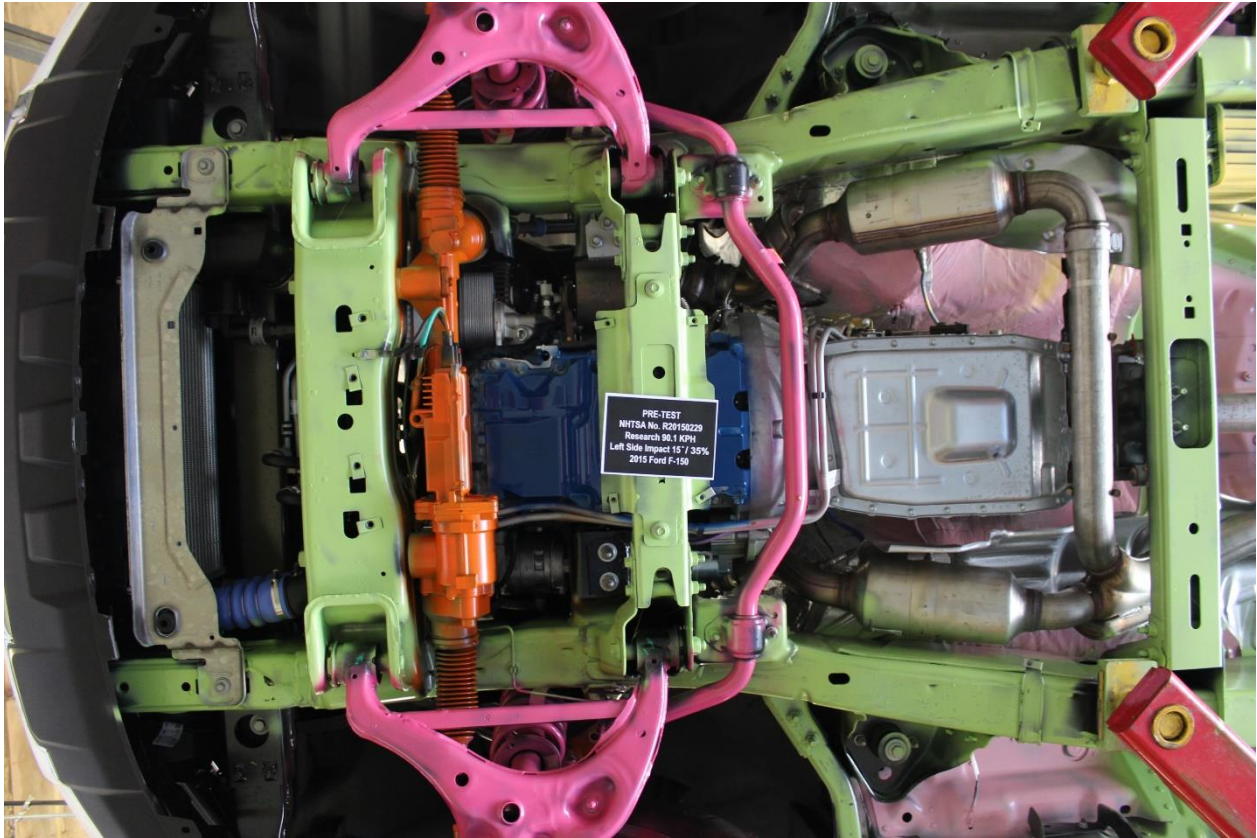
No. 131: Post-Test Right Side Engine Compartment View



No. 132: Pre-Test Left Side Engine Compartment View



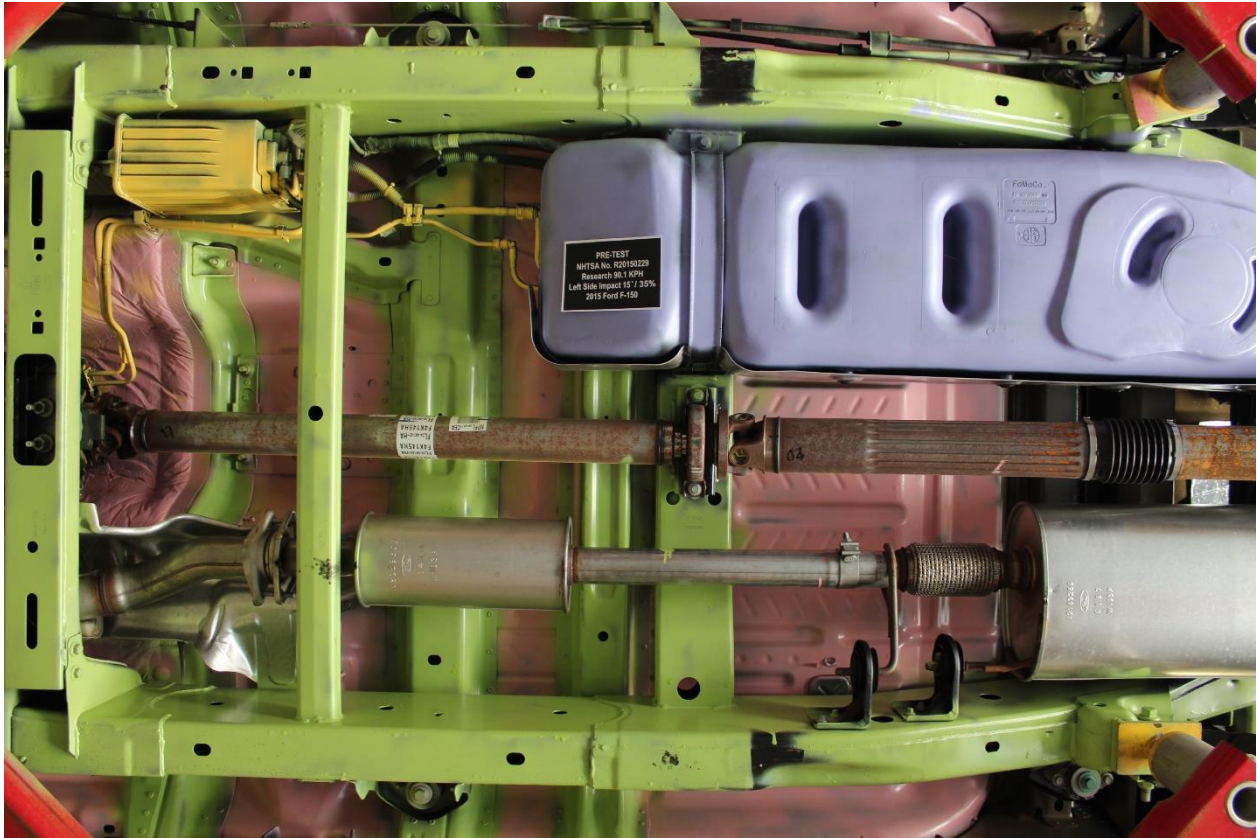
No. 133: Post-Test Left Side Engine Compartment View



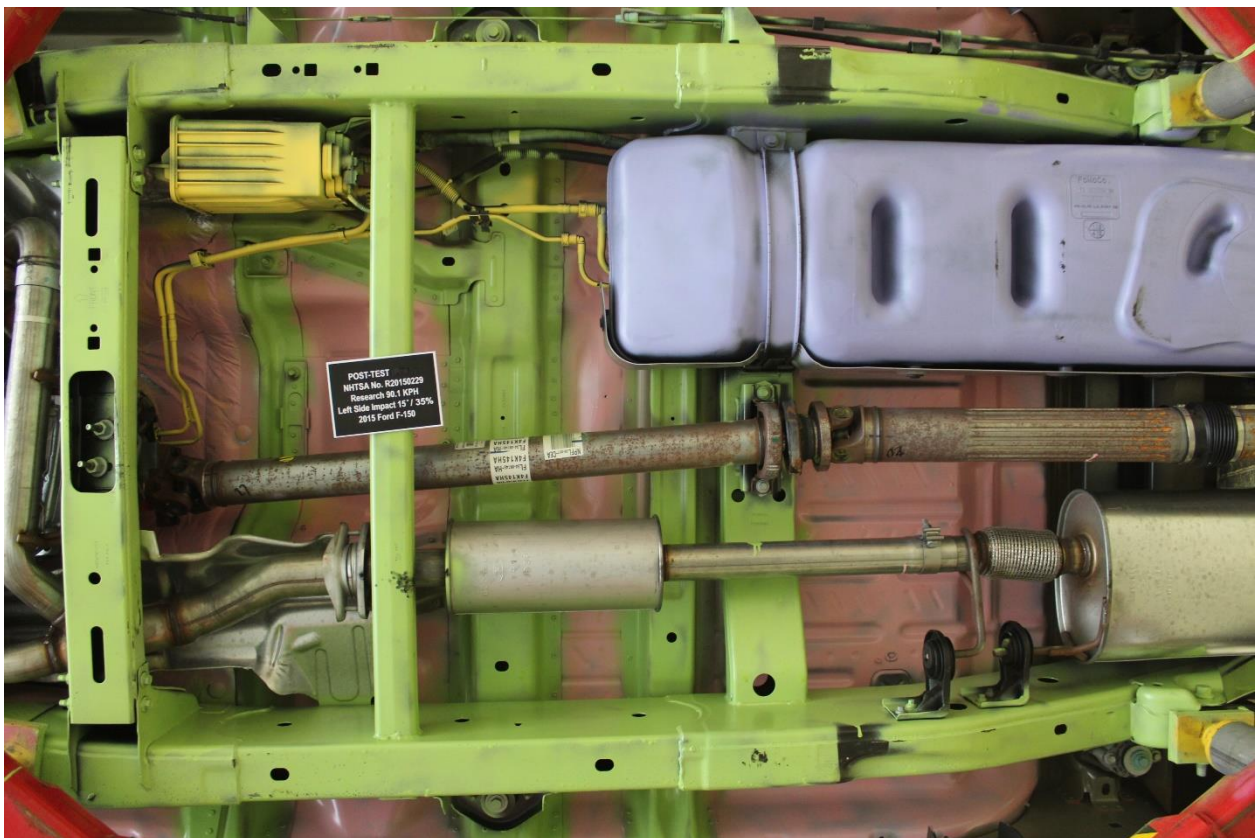
No. 134: Pre-Test View of Front Underbody (perpendicular to vehicle)



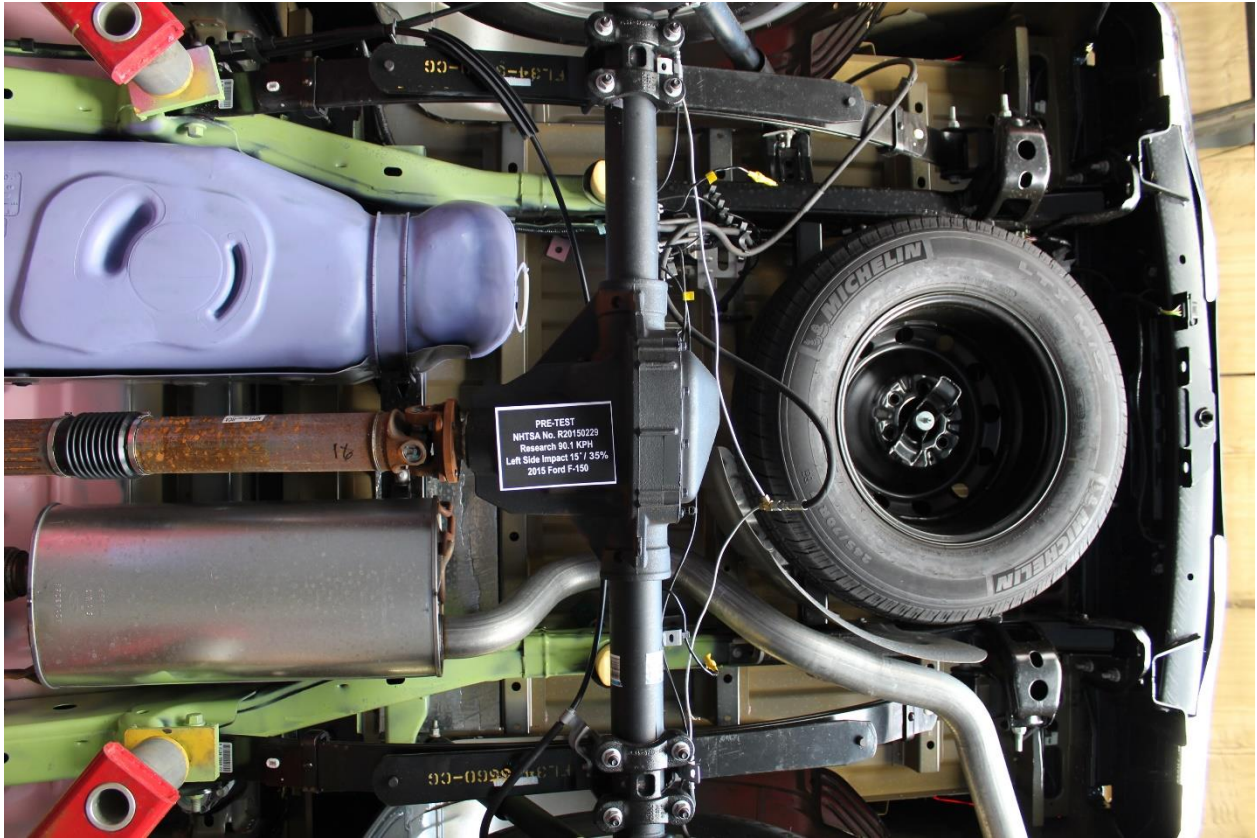
No. 135: Post-Test View of Front Underbody (perpendicular to vehicle)



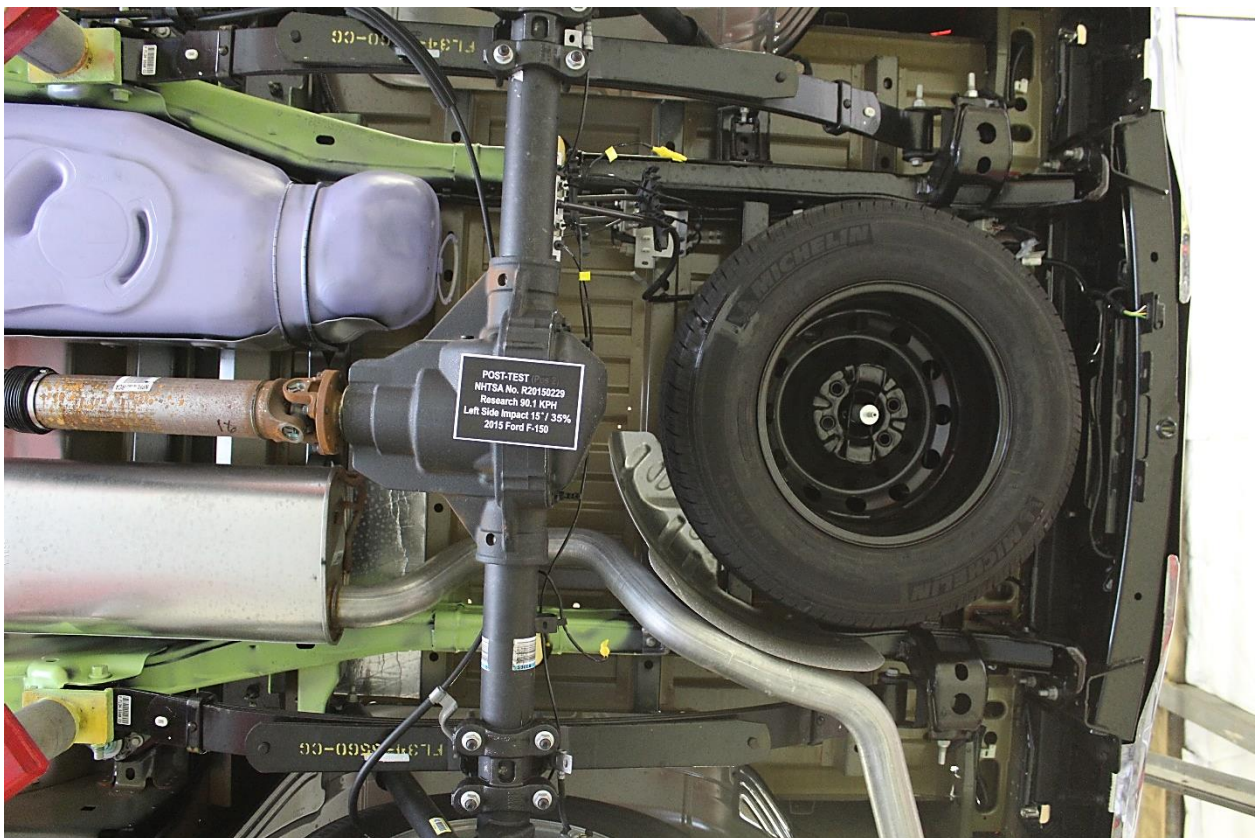
No. 136: Pre-Test View of Mid Underbody (perpendicular to vehicle)



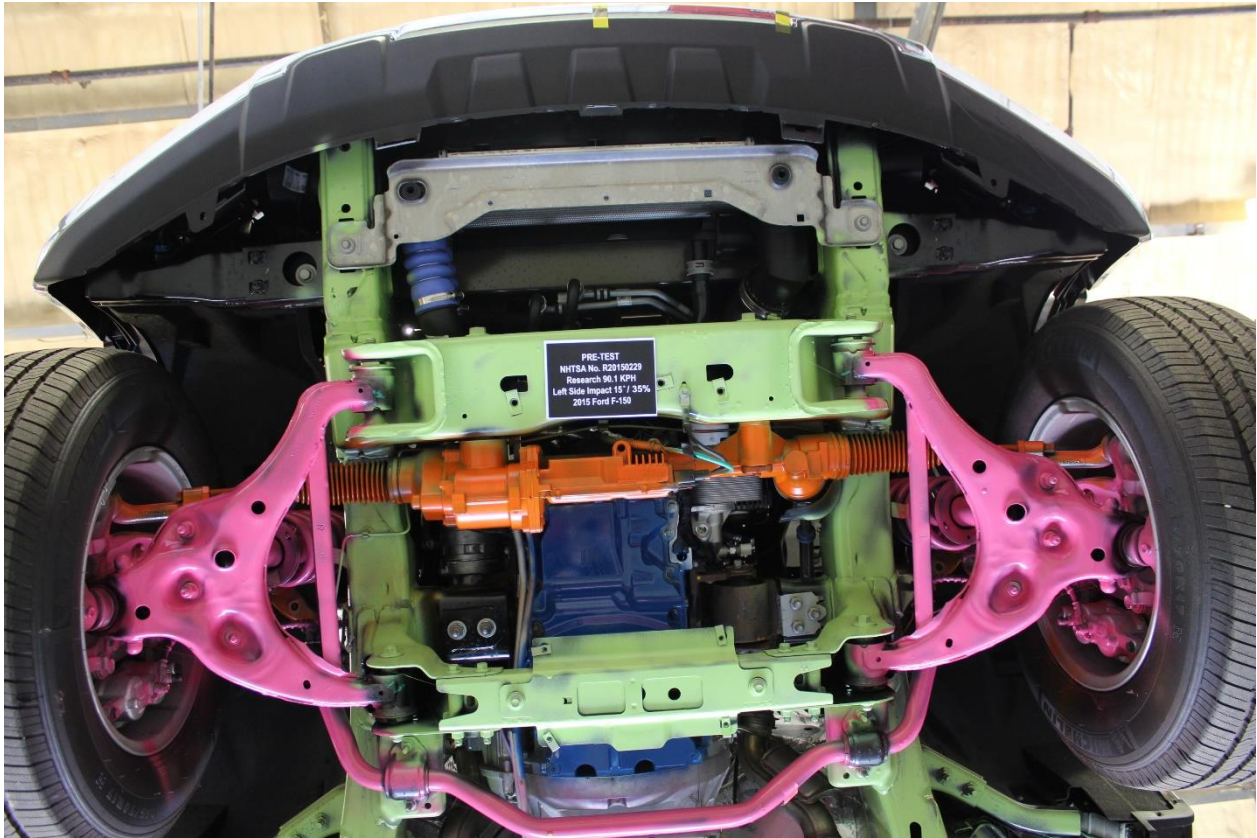
No. 137: Post-Test View of Mid Underbody (perpendicular to vehicle)



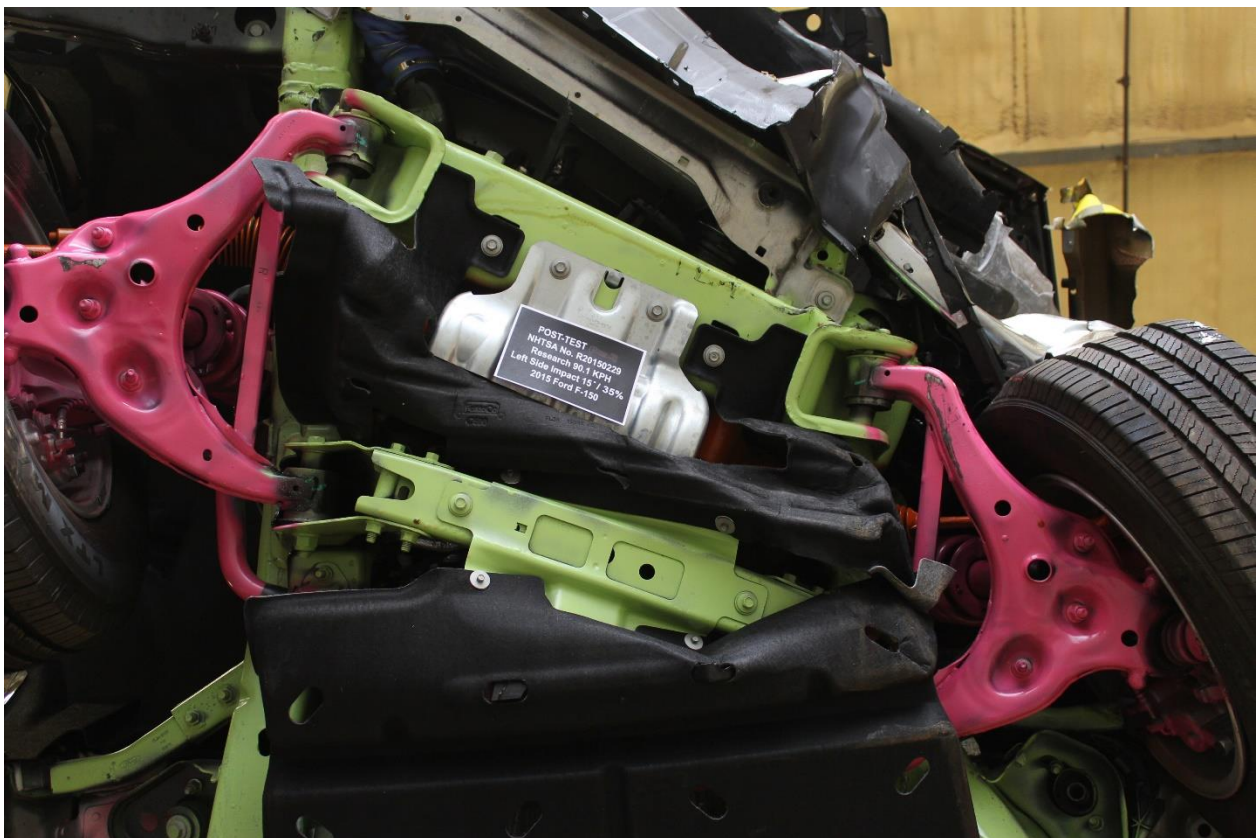
No. 138: Pre-Test View of Rear Underbody (perpendicular to vehicle)



No. 139: Post-Test View of Rear Underbody (perpendicular to vehicle)



No. 140: Pre-Test View of Steering rack and or sway bar



No. 141: Post-Test View of Steering rack and or sway bar



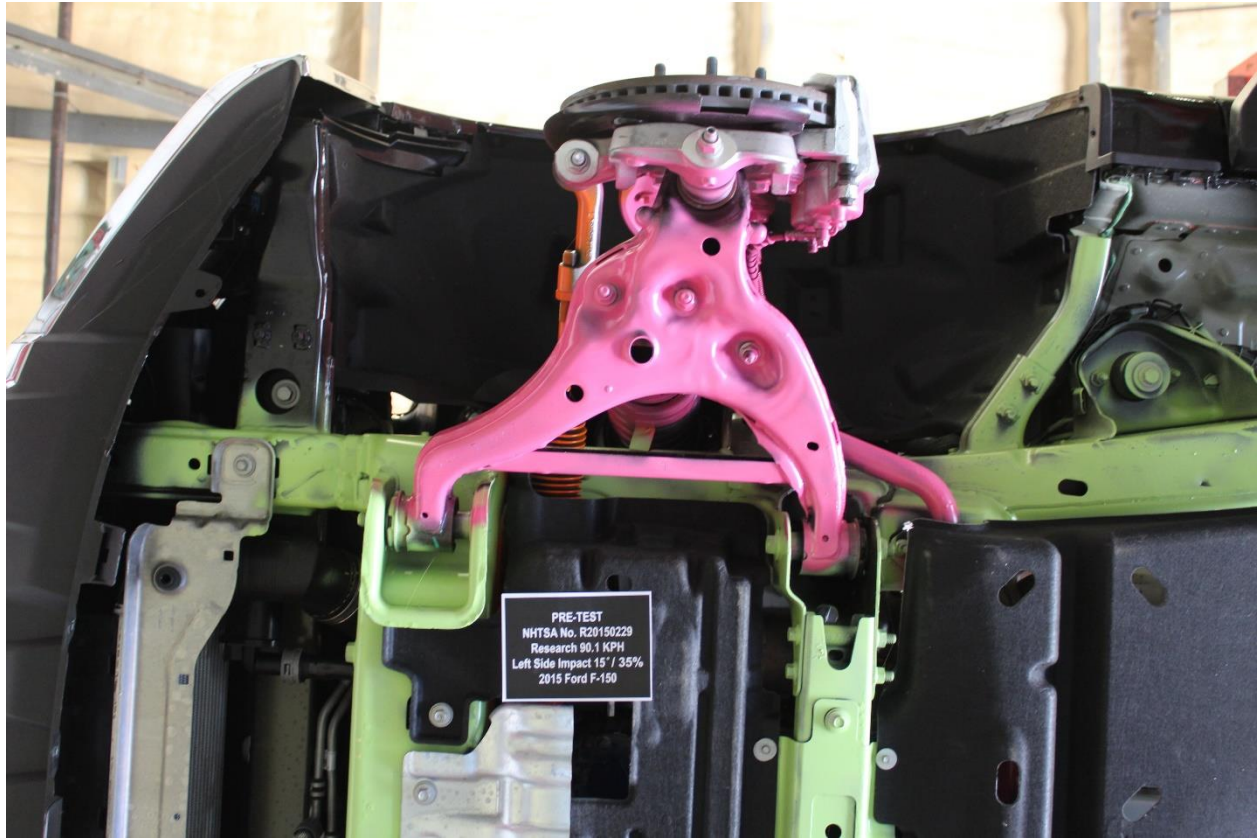
No. 142: Pre-Test Bumper to Rail Attachments and Crush Initiators



No. 143: Post-Test Bumper to Rail Attachments and Crush Initiators



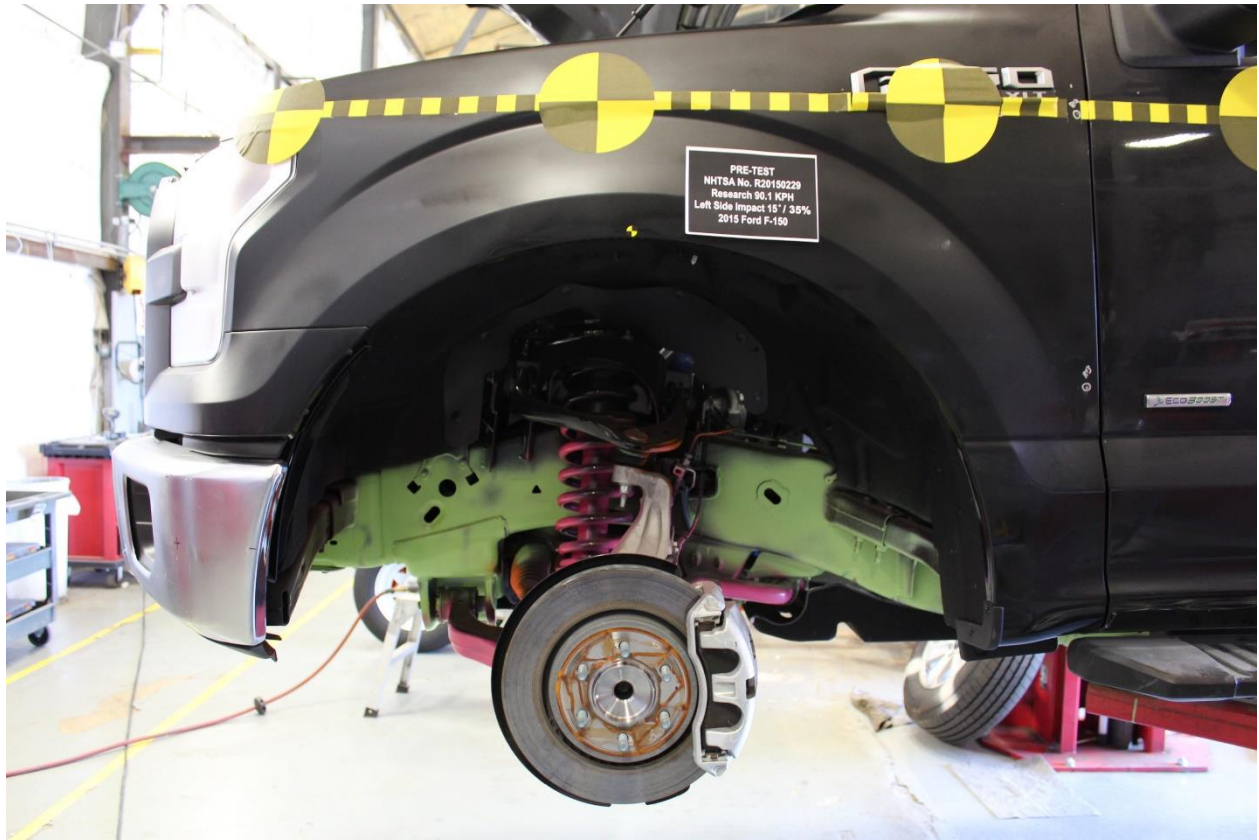
No. 144: Post-Test View of Front Sub-Frame Deformation



No. 145: Pre-Test Frame Rail with tire removed



No. 146: Post-Test Frame Rail with tire removed



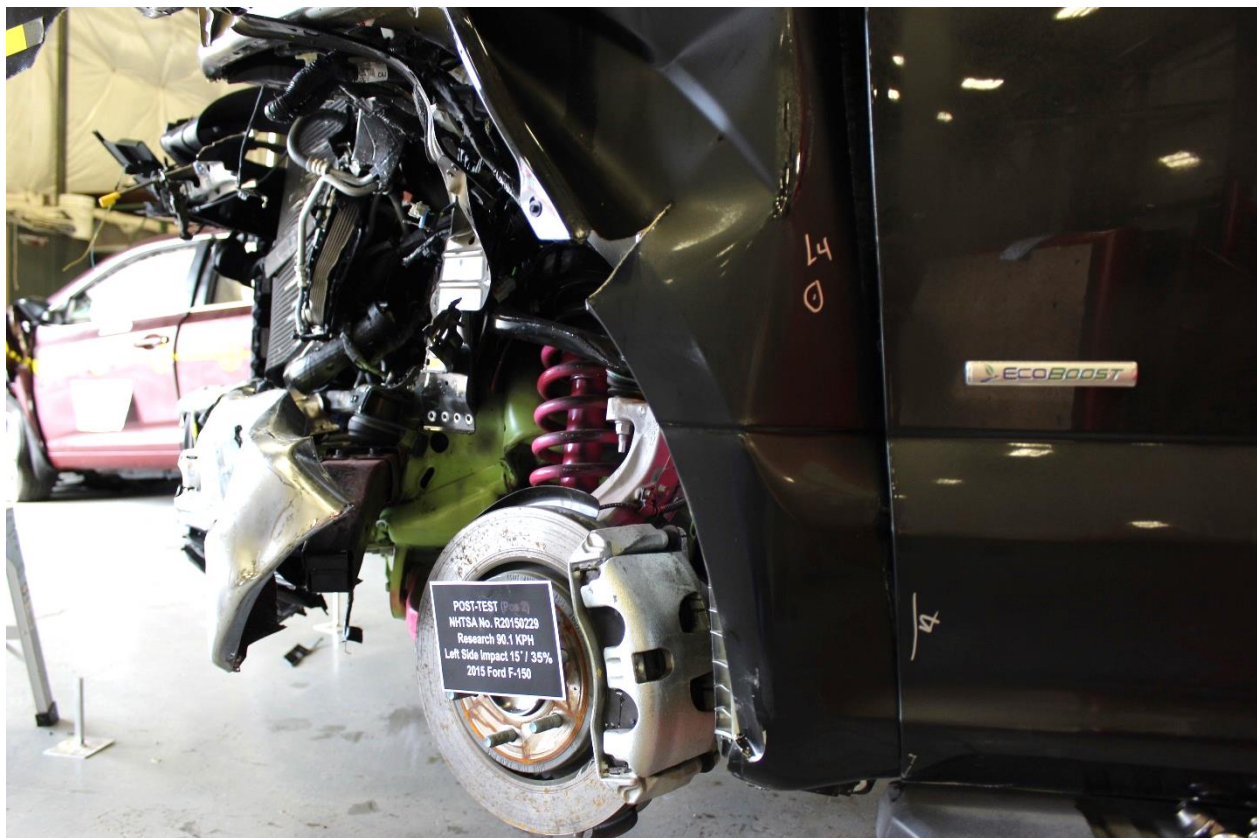
No. 147: Pre-Test View of Front Driver Wheel Well w/ Tire Removed



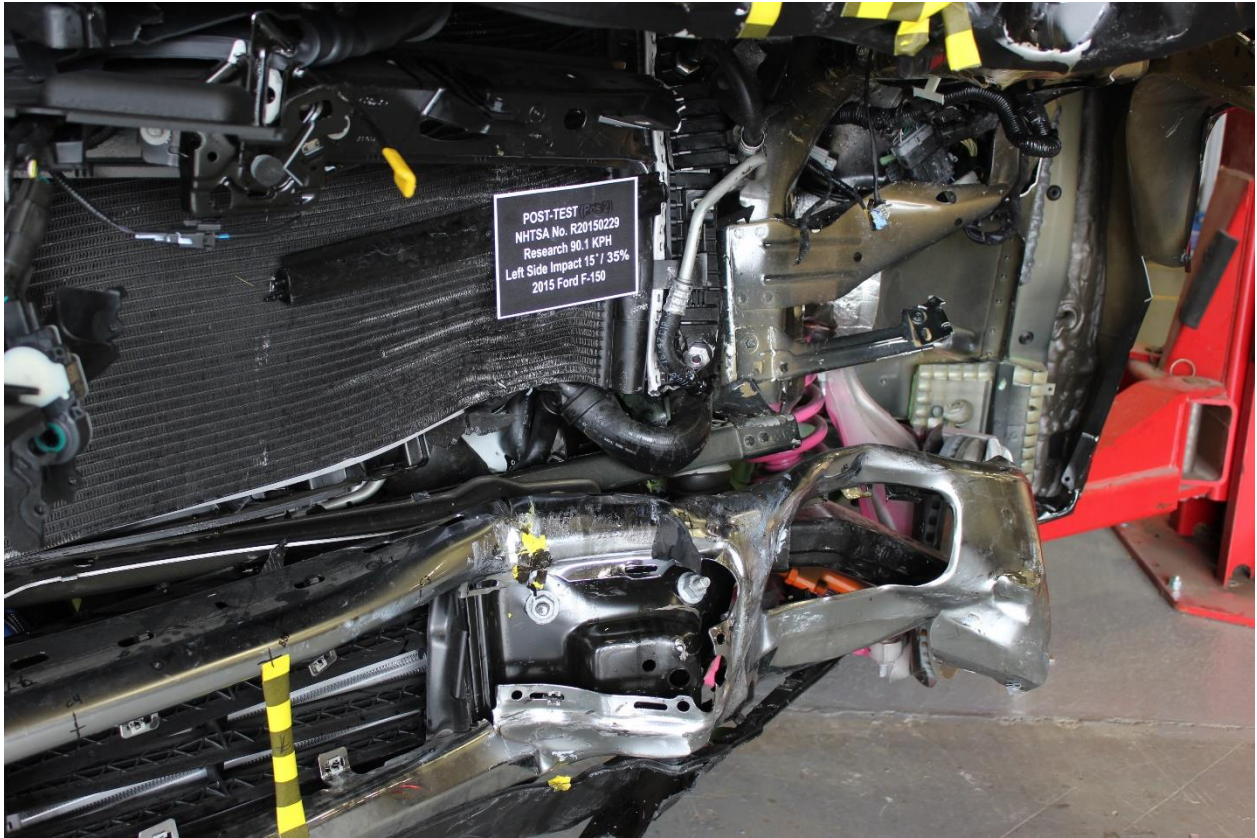
No. 148: Post-Test ¾ View of Front Driver Wheel Well w/ Tire Removed



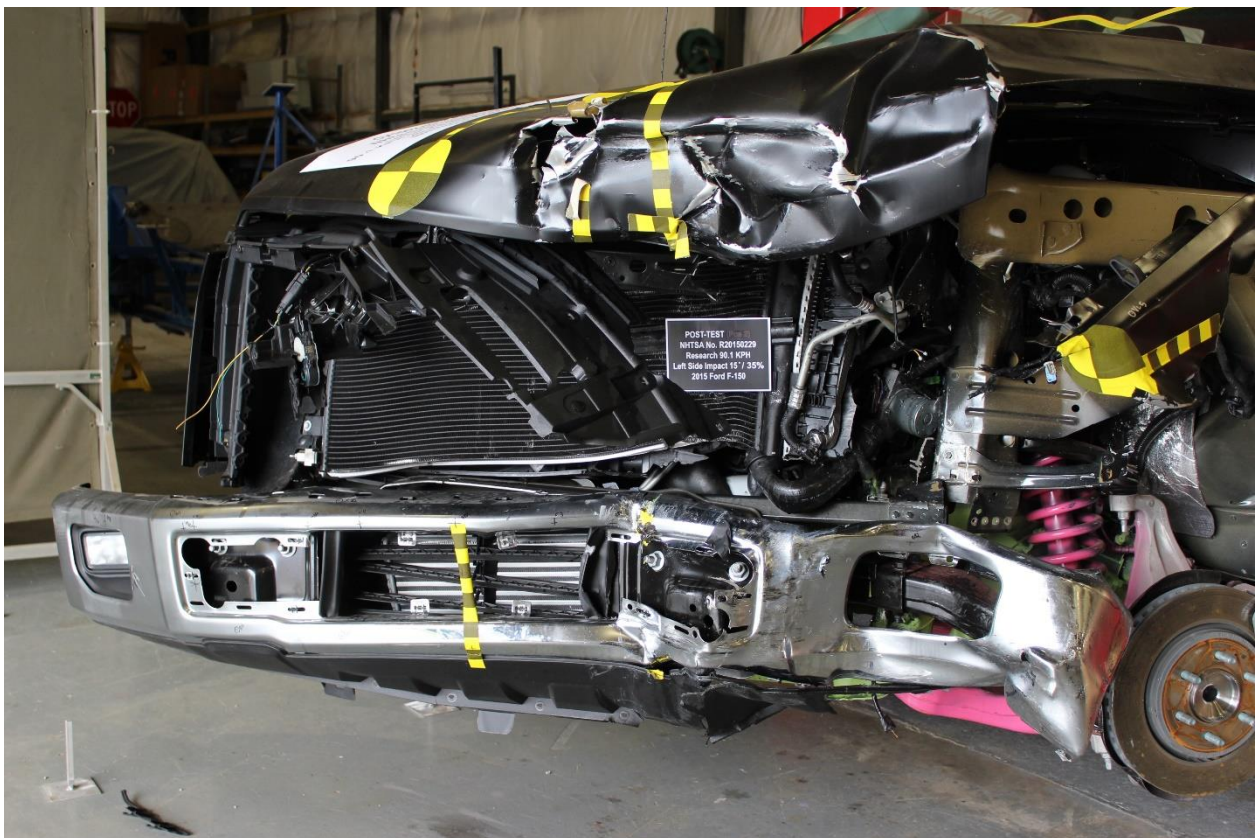
No. 149: Post-Test Side View of Front Driver Wheel Well w/ Tire Removed



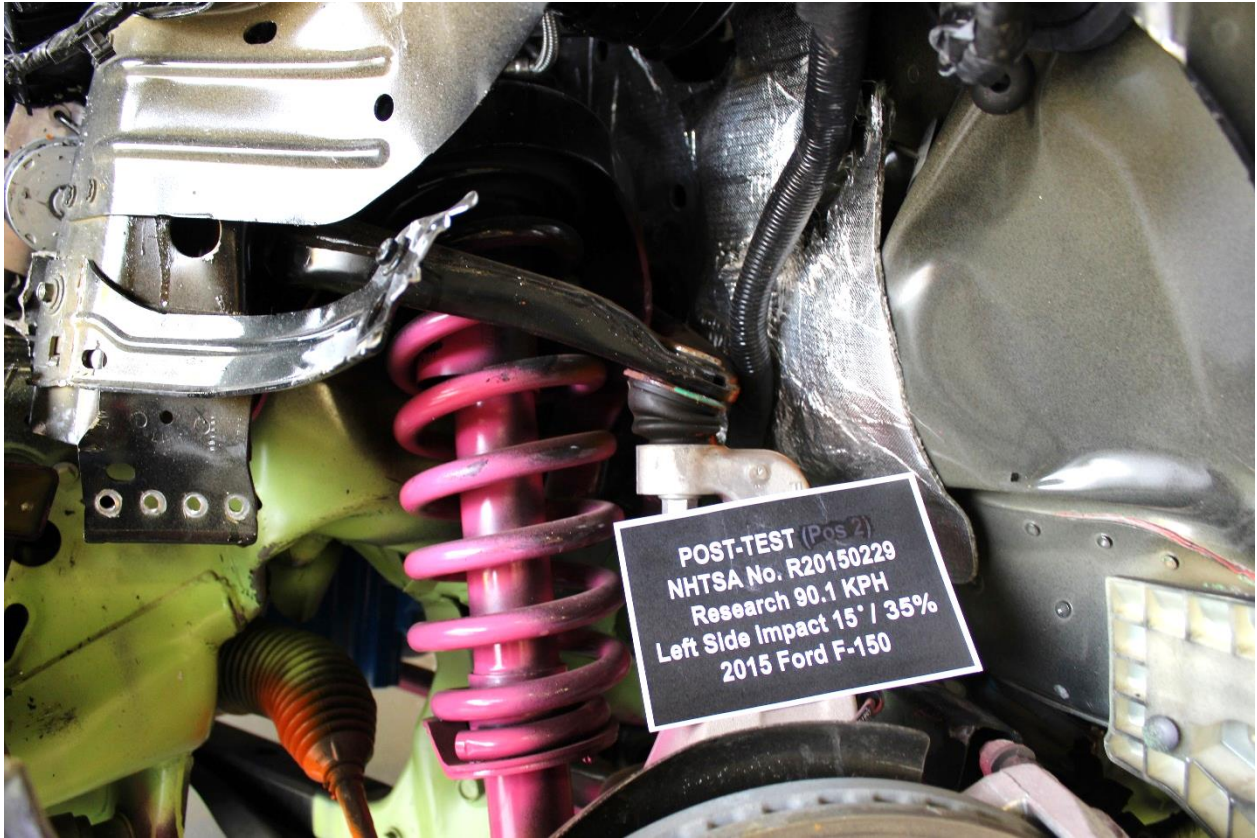
No. 150: Post-Test Right Side 3/4 Rear View of the Front Driver Wheel Well w/ Tire Removed



No. 151: Post-Test Looking Down at the Front Driver Shotgun



No. 152: Post-Test Right Side $\frac{3}{4}$ View of Front Driver Shotgun



No. 153: Post-Test Front Driver Close up View of Suspension w/ Tire Removed



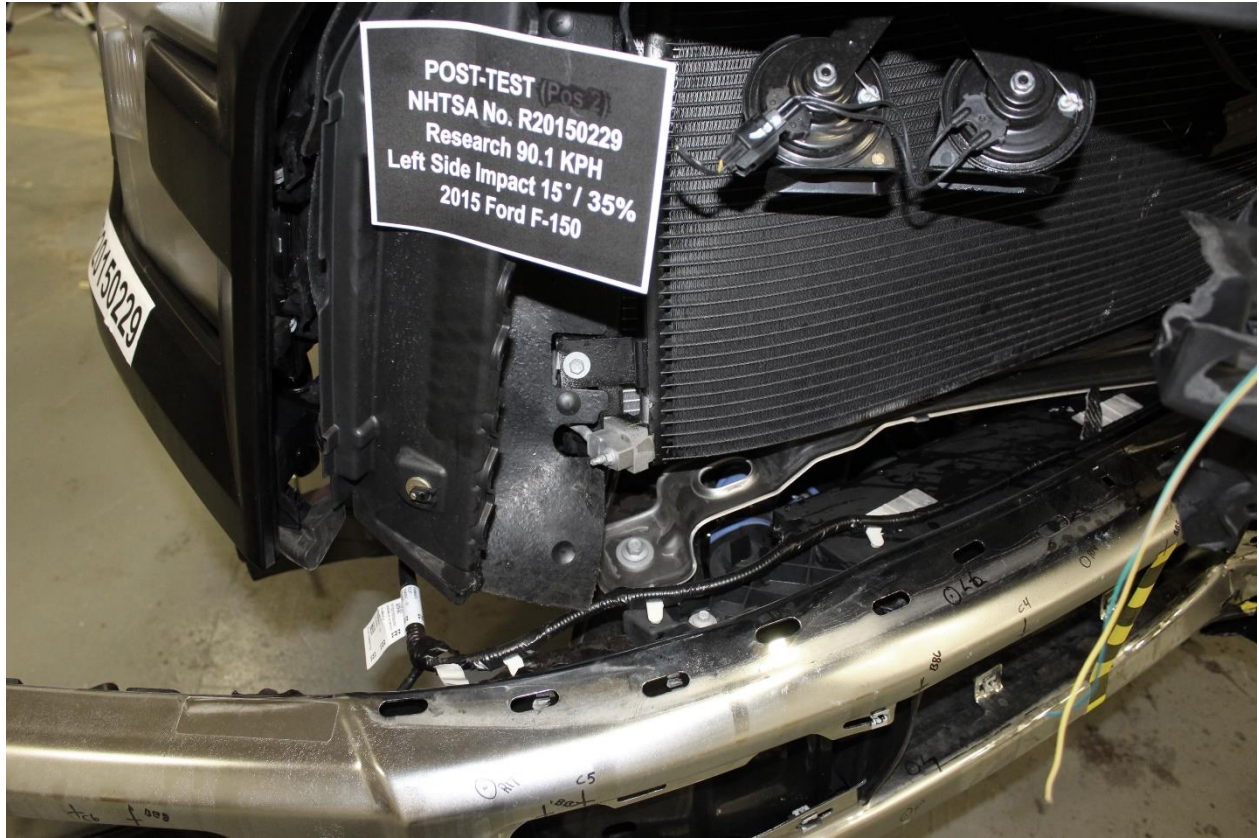
No. 154: Post-Test ¾ View of Front Passenger Wheel Well w/ Tire Removed



No. 155: Post-Test Side View of Front Passenger Wheel Well w/ Tire Removed



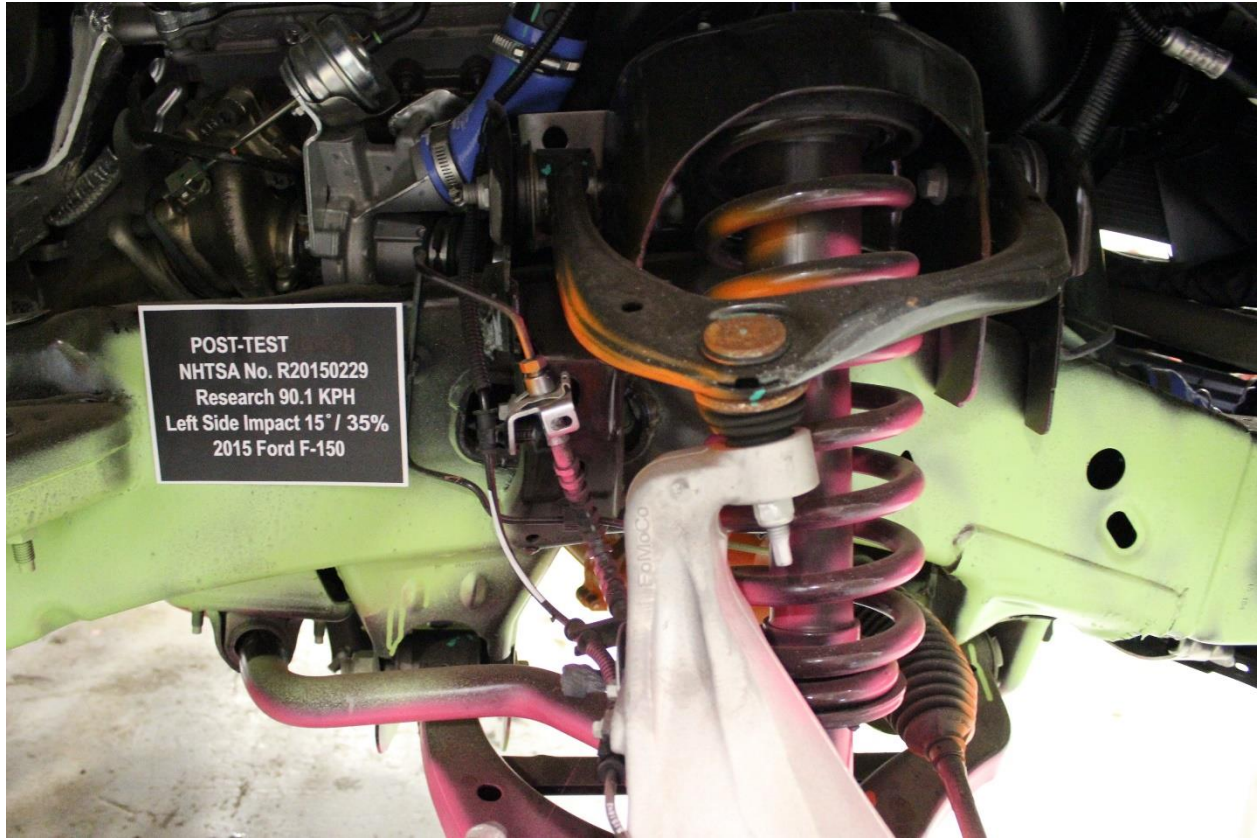
No. 156: Post-Test Right Side 3/4 Rear View of the Front Passenger Wheel Well w/ Tire Removed



No. 157: Post-Test Looking Down at the Front Passenger Shotgun



No. 158: Post-Test Right Side 3/4 View of Front Passenger Shotgun



No. 159: Post-Test Front Passenger Close up View of Suspension w/ Tire Removed



No. 160: Post-Test View of Door Sill with Door Open- Struck Side



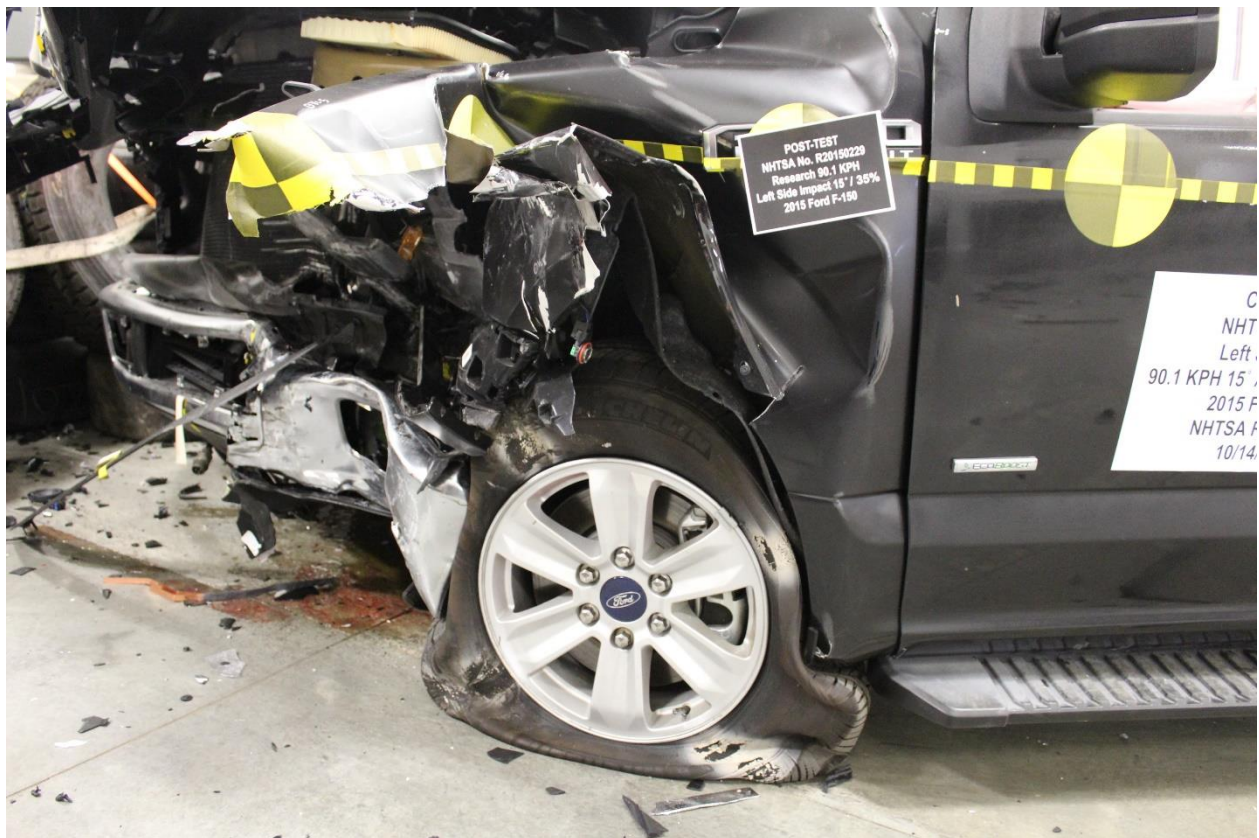
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No. 162: Post-Test View of Deformation of B pillar-Struck Side



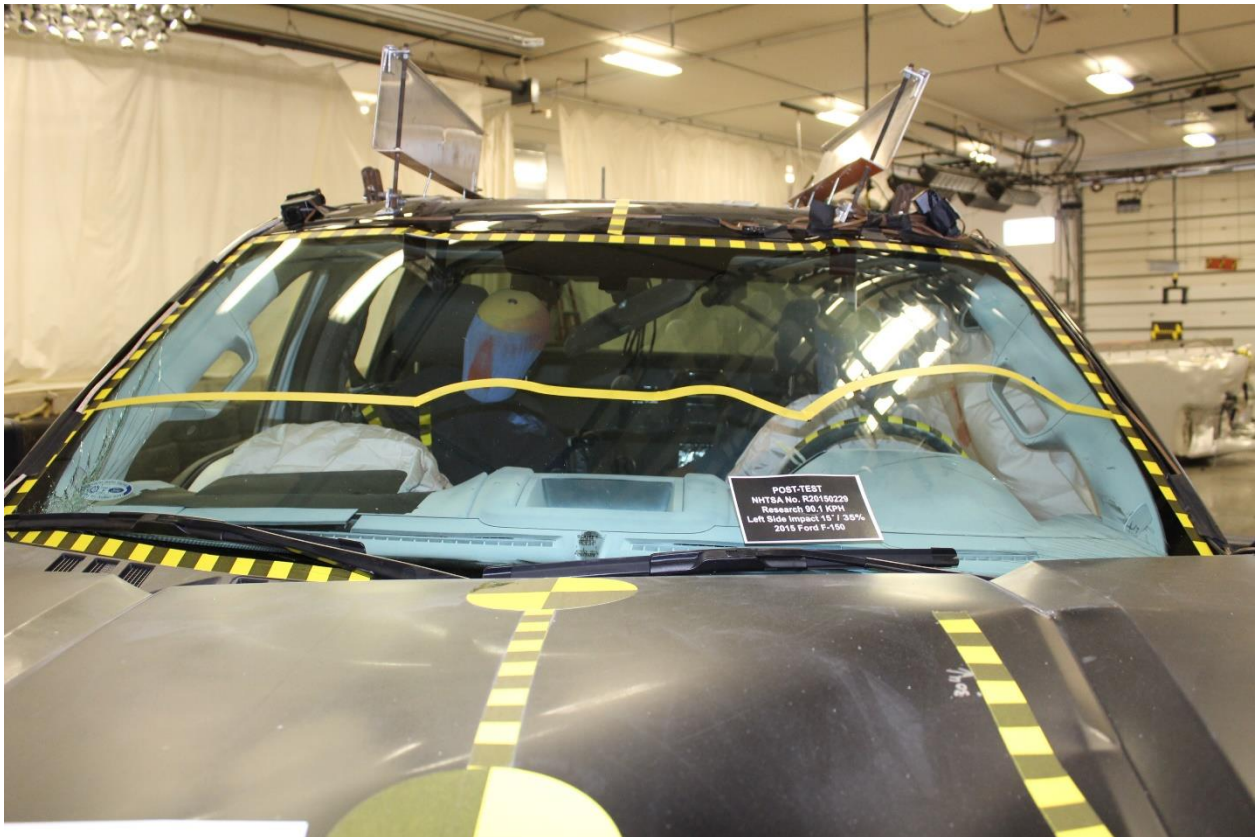
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No. 166: Post-Test View of Windshield Separation



No. 167: Pre-Test Left Side View of OMDB



No. 168: Post-Test Left Side View of OMDB



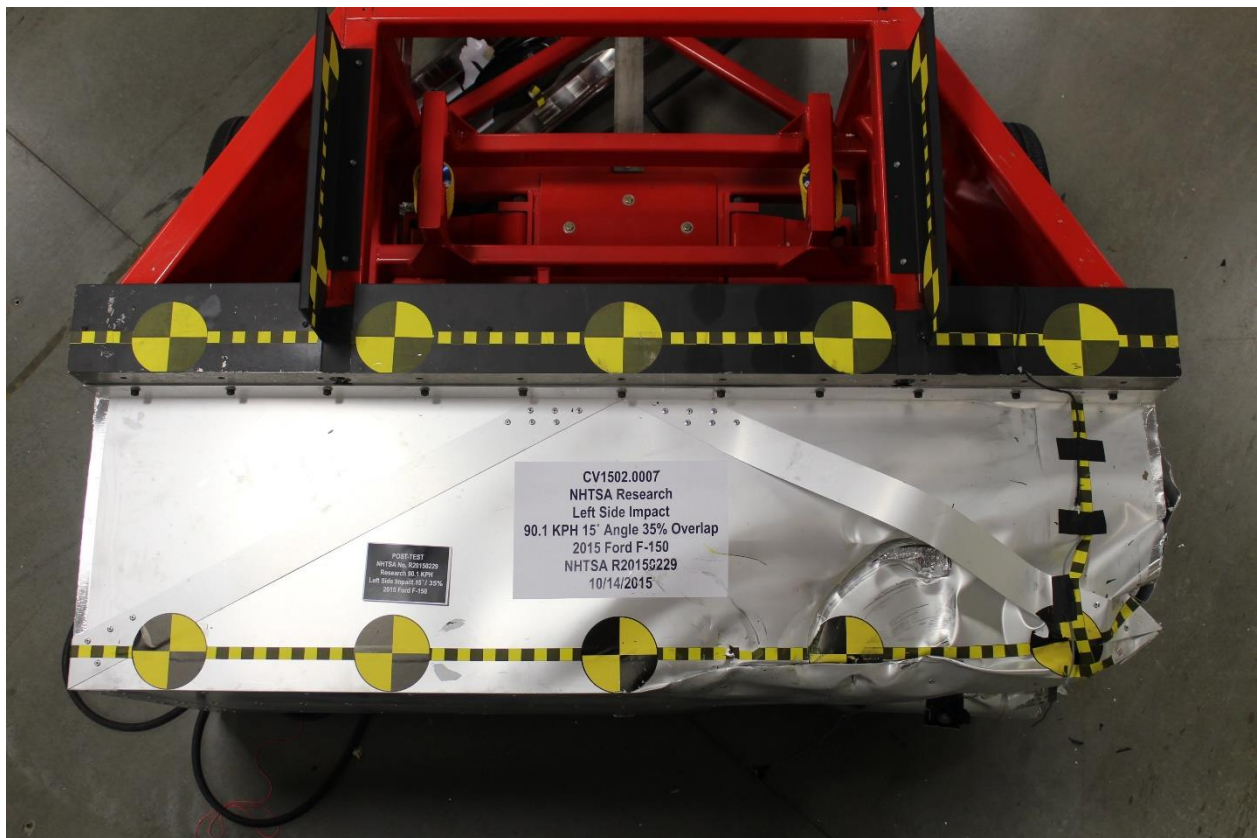
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No. 170: Post-Test Right Side View of OMDB



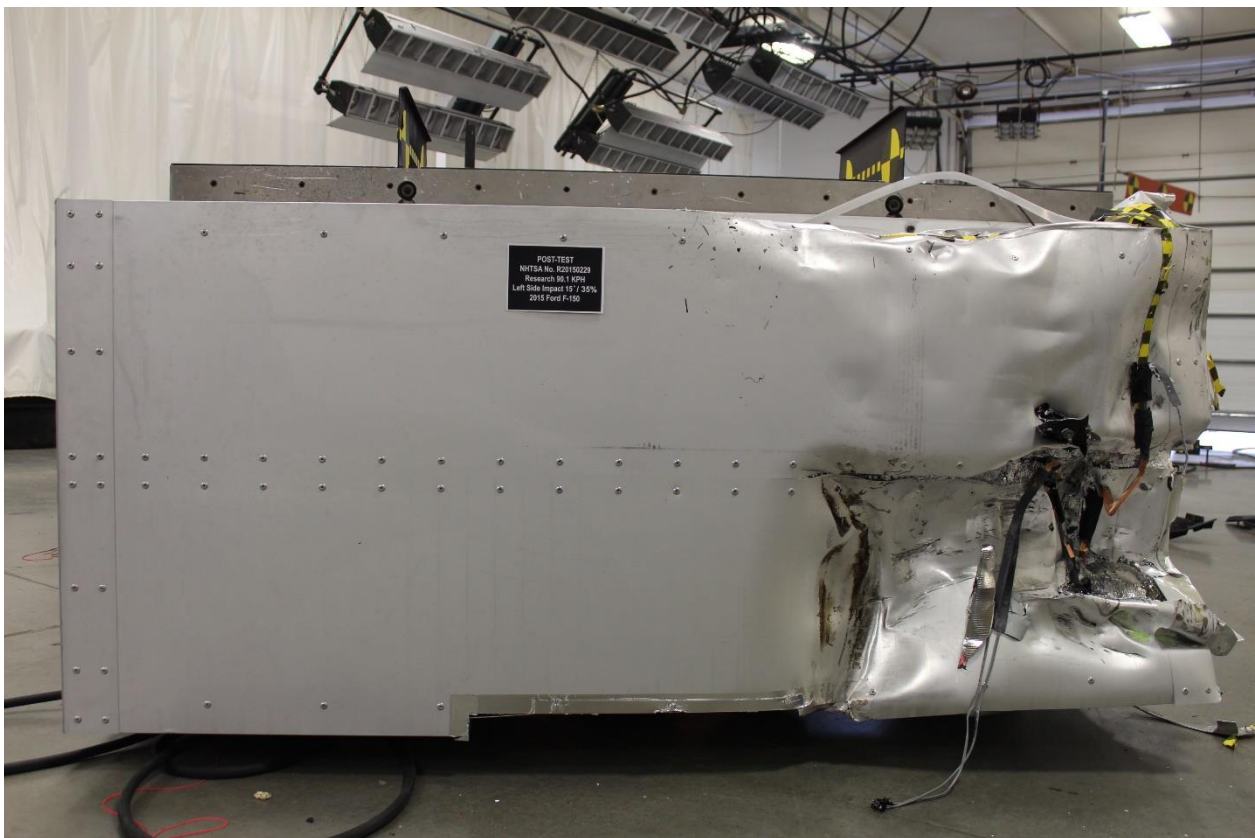
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No. 174: Post-Test Front View of OMDB



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No. 180: Post-Test Right Side View of OMDB



No. 181: Pre-Test Left Side View of OMDB



No. 182: Post-Test Left Side View of OMDB



No. 183: Pre-Test OMDB & Vehicle, Right Side



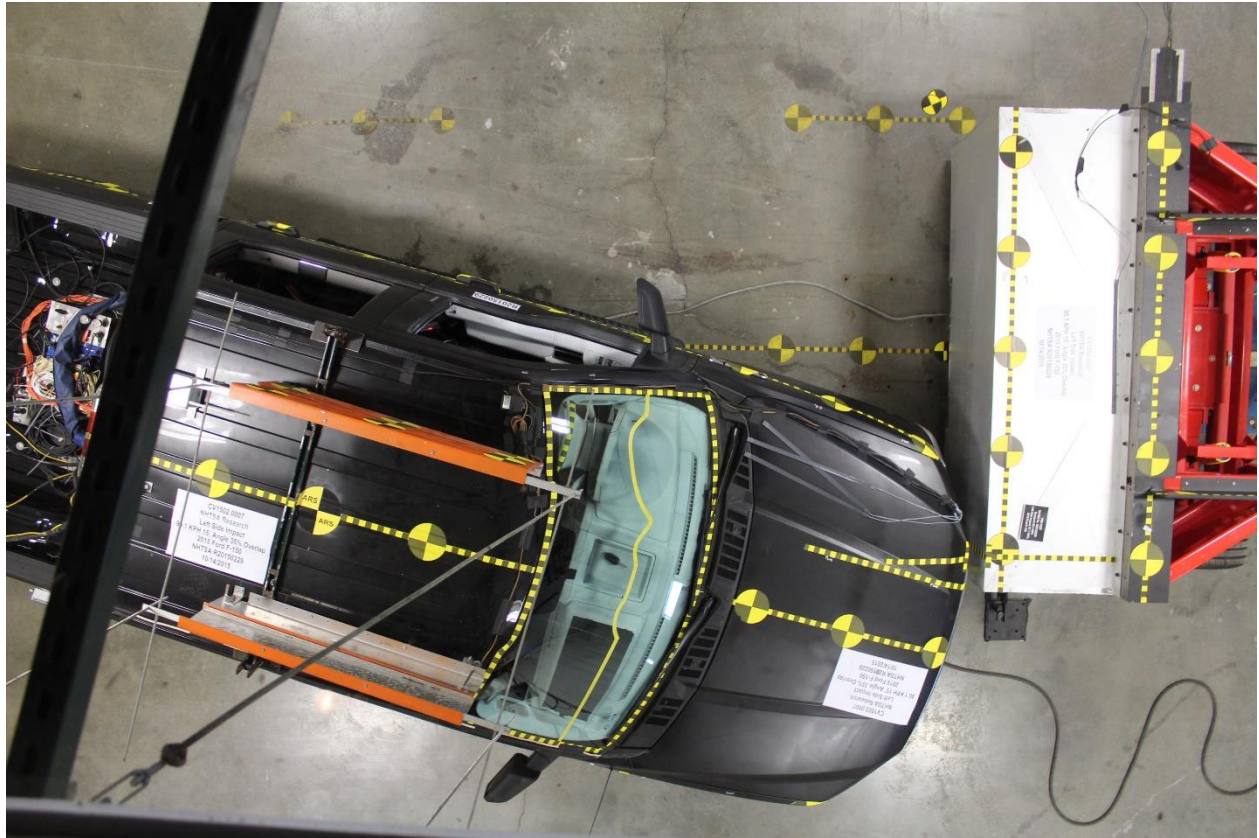
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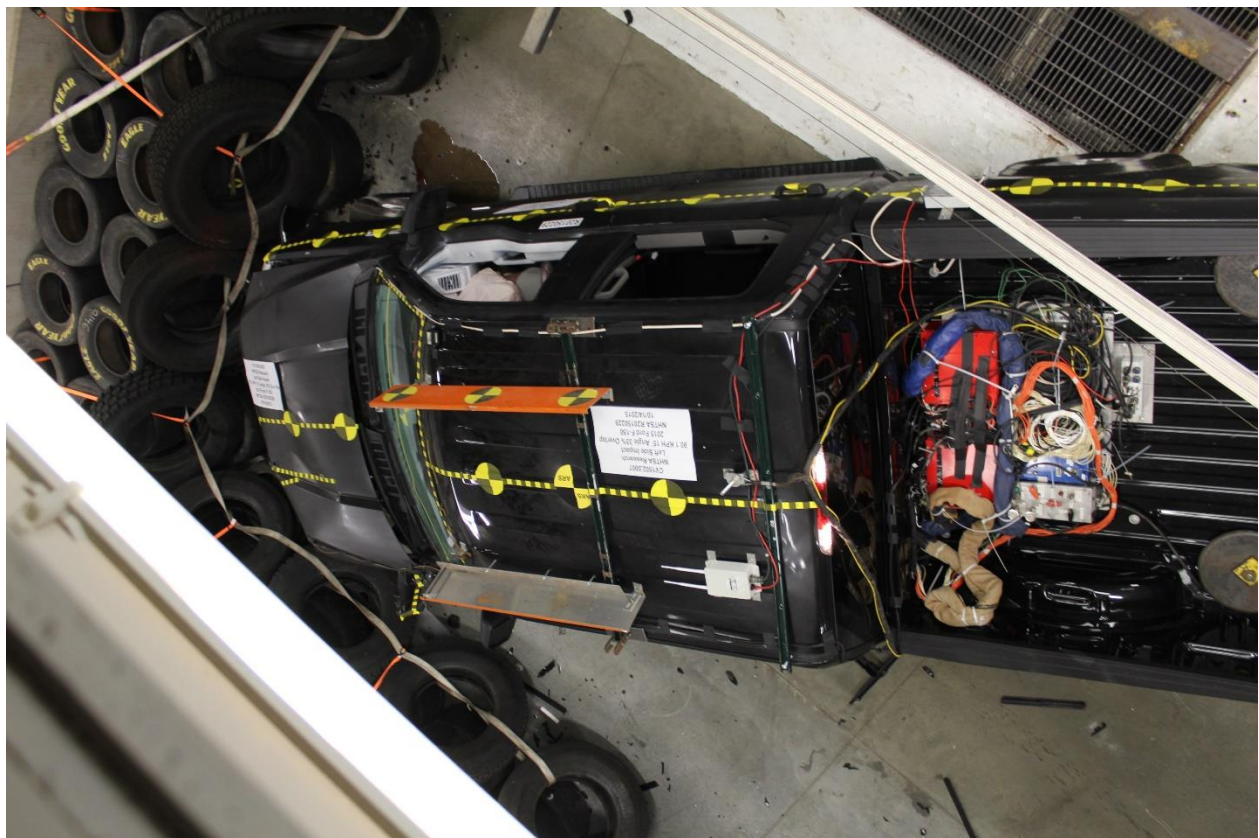
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No. 186: Post-Test OMDB & Vehicle, Left Side



No. 187: Pre-Test OMDB & Vehicle, Top View



No. 188: Post-Test OMDB & Vehicle, Top View



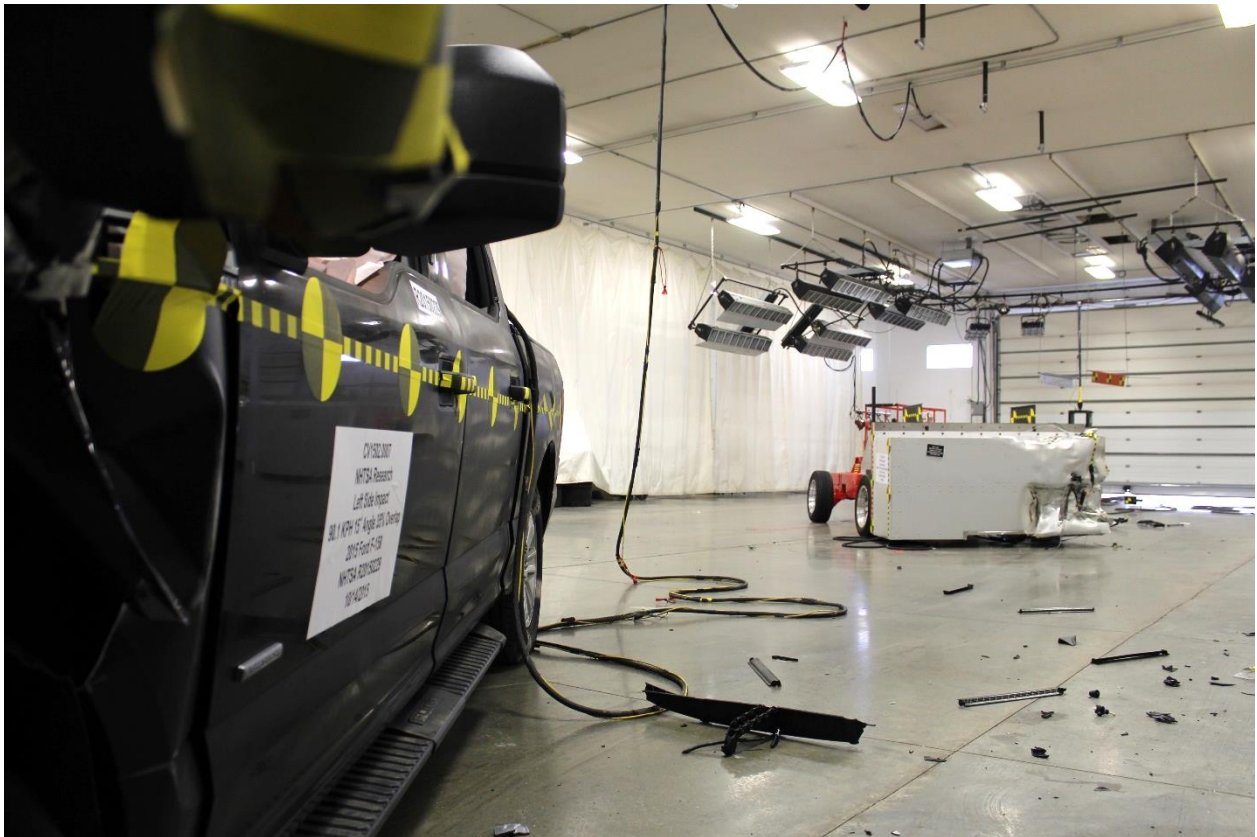
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No. 192: Post-Test OMDB & Vehicle, Front View



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No. 199: Impact Photo



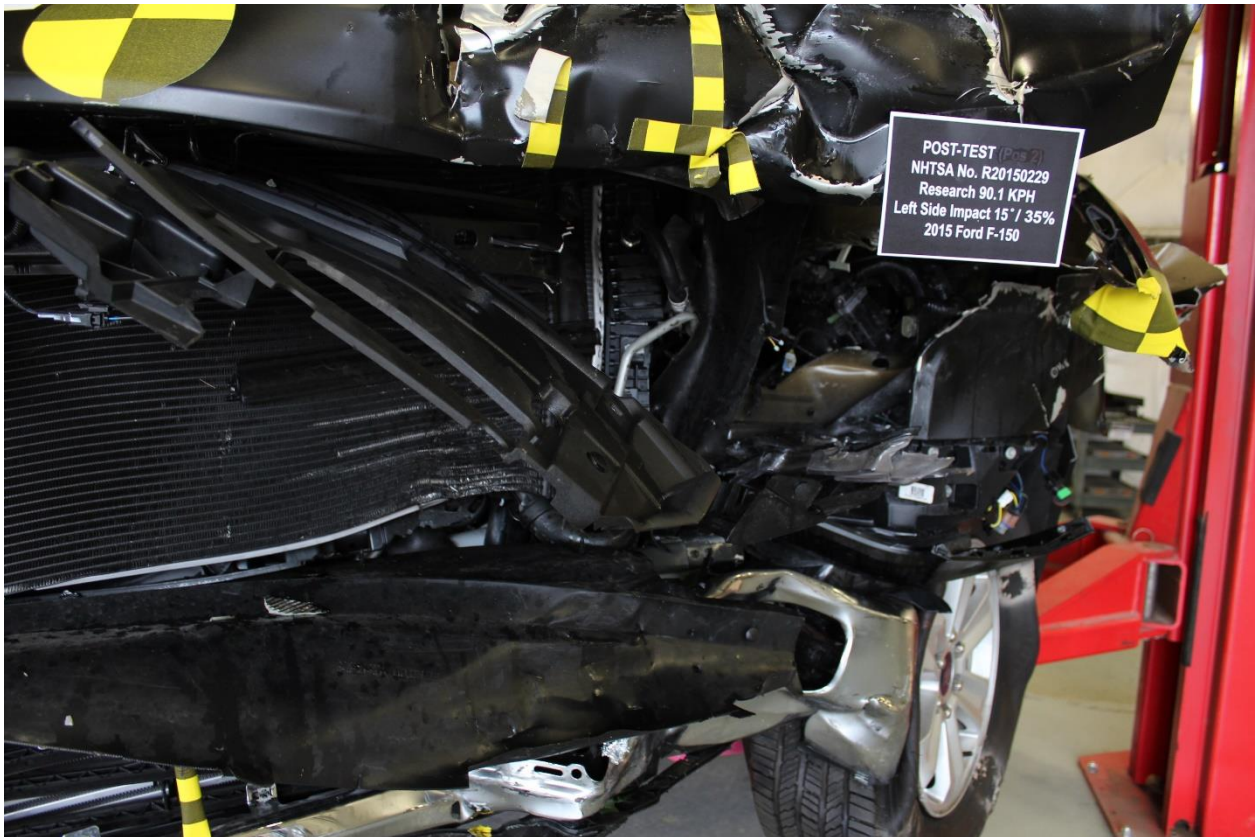
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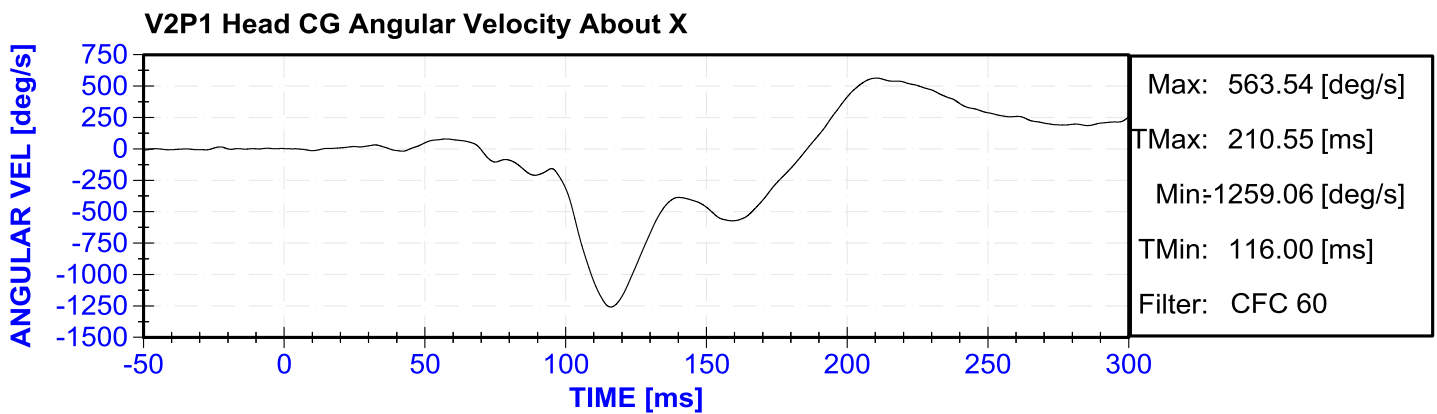
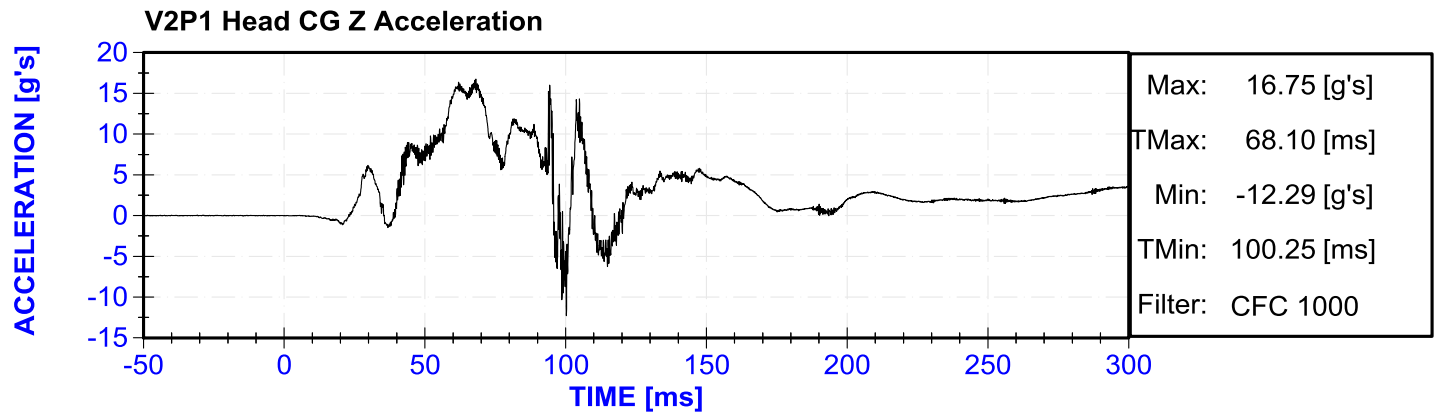
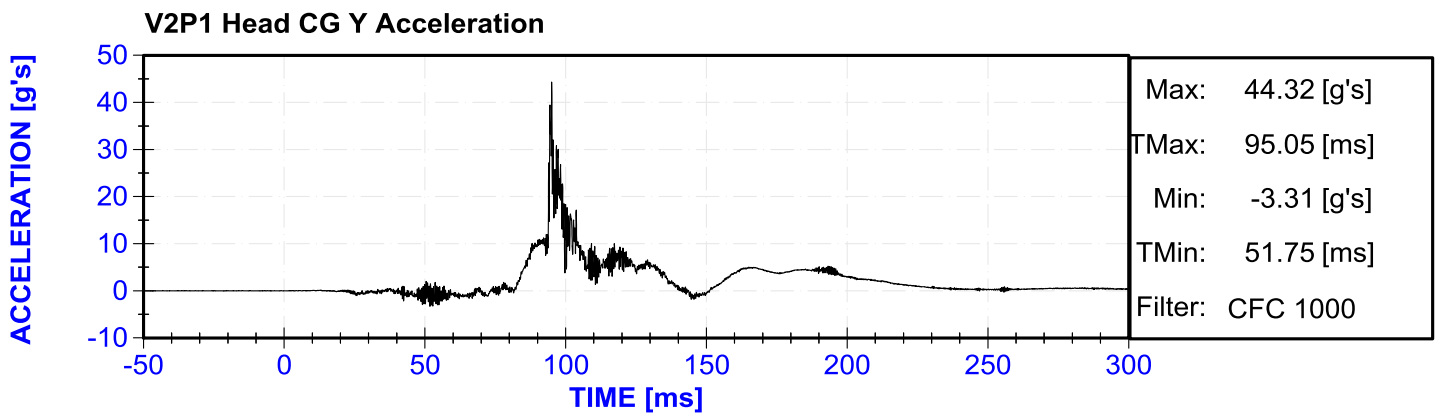
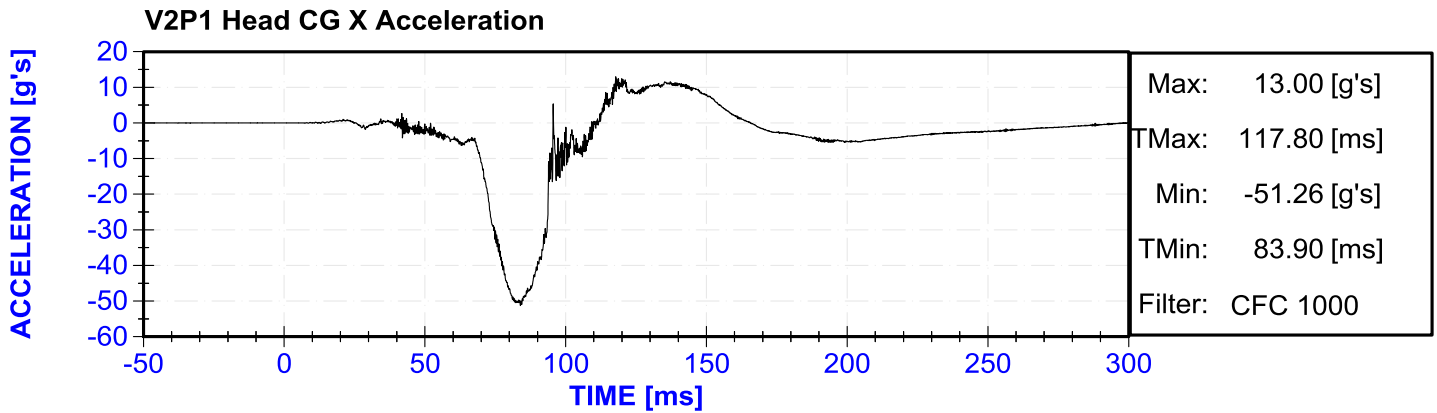
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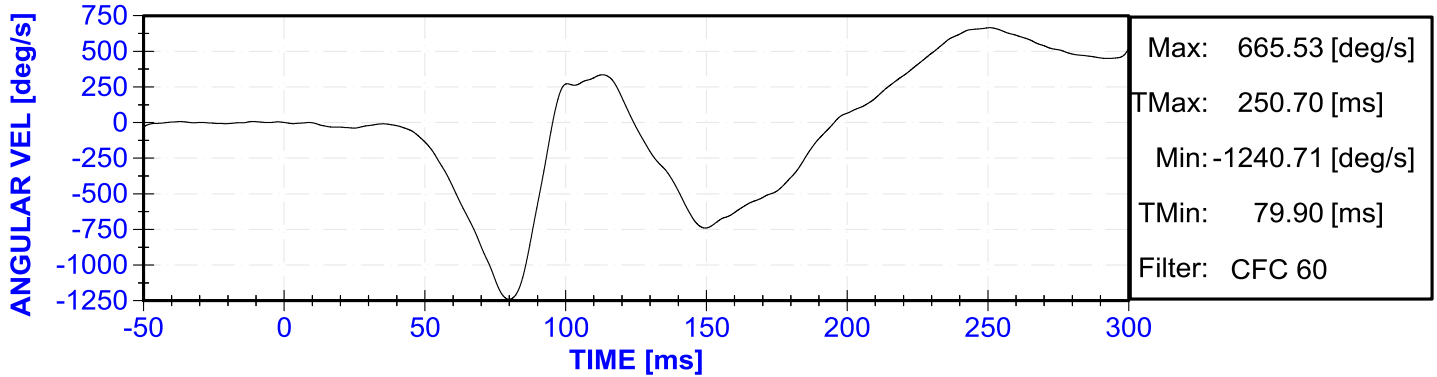
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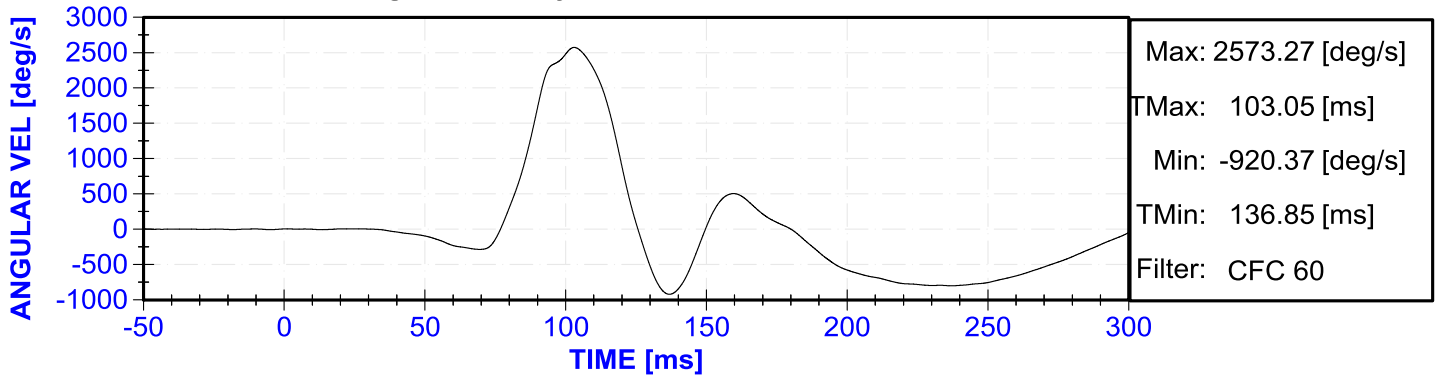
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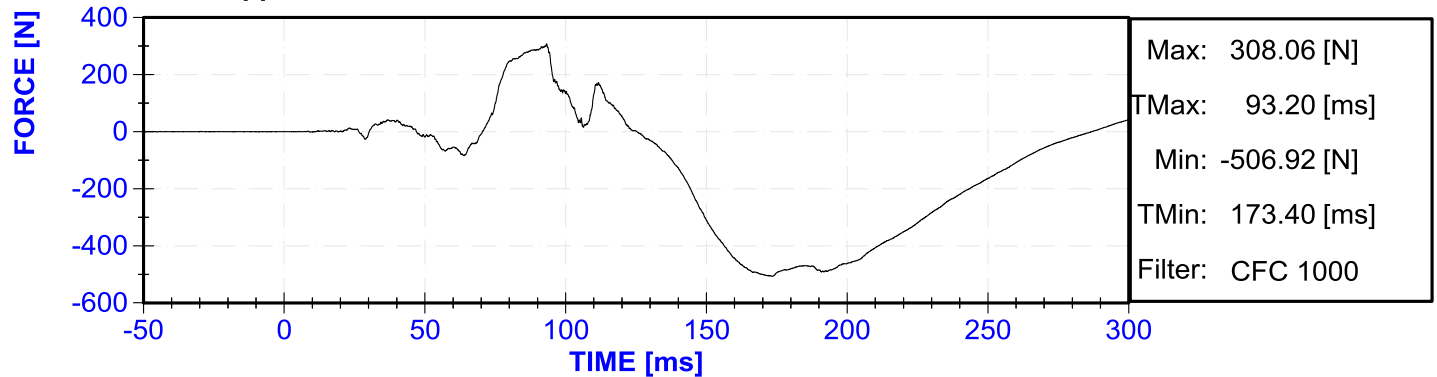
V2P1 Head CG Angular Velocity About Y



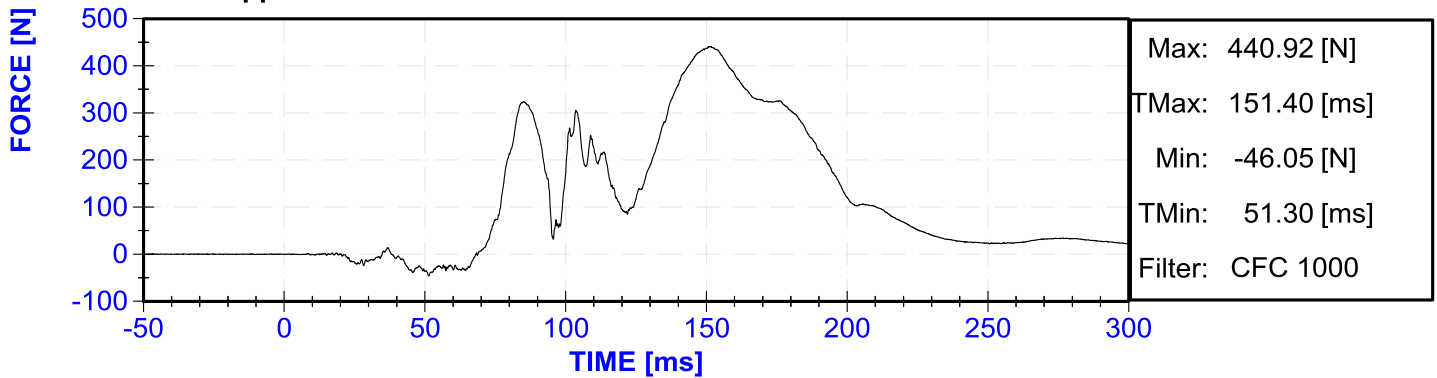
V2P1 Head CG Angular Velocity About Z

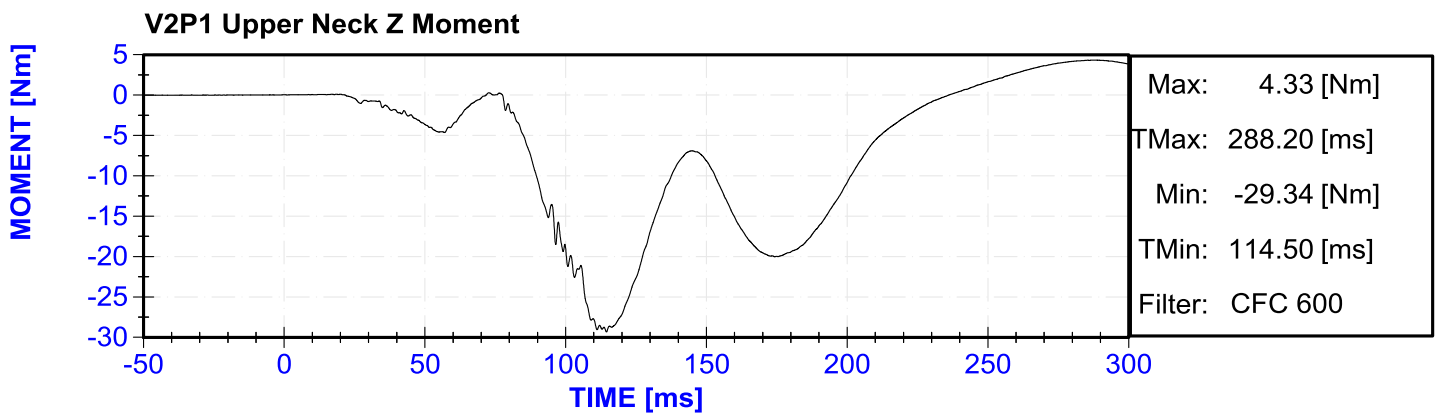
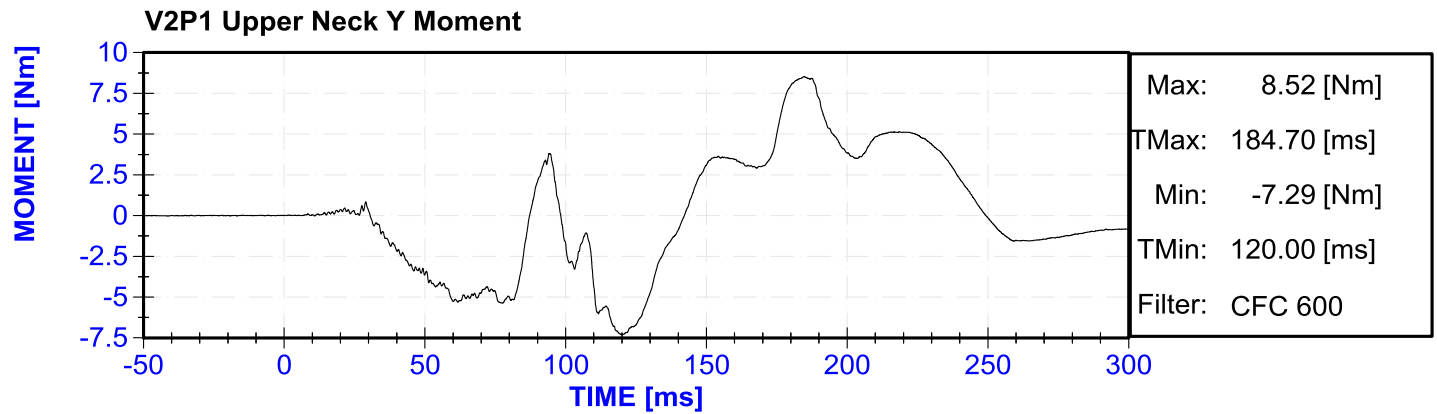
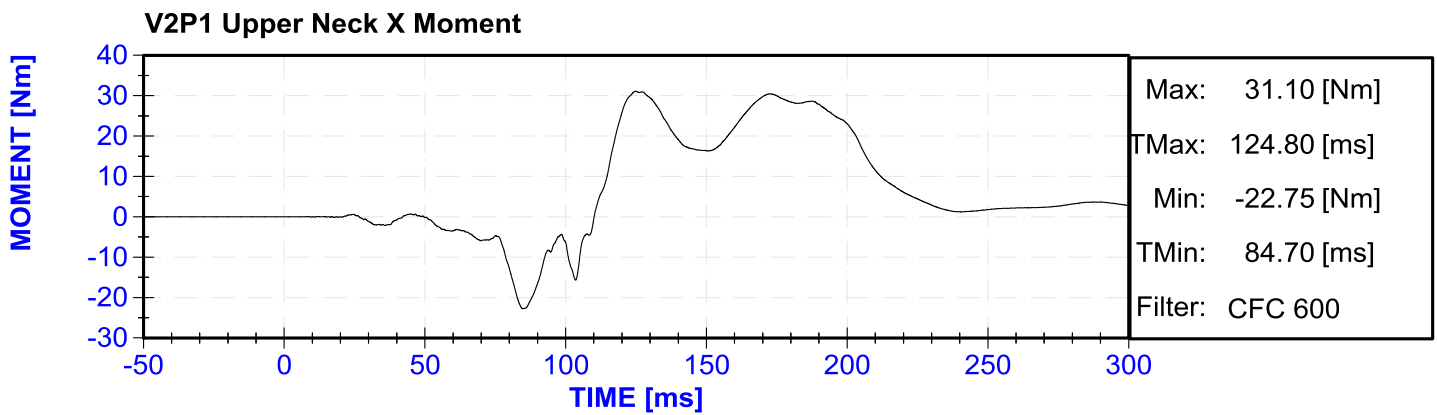
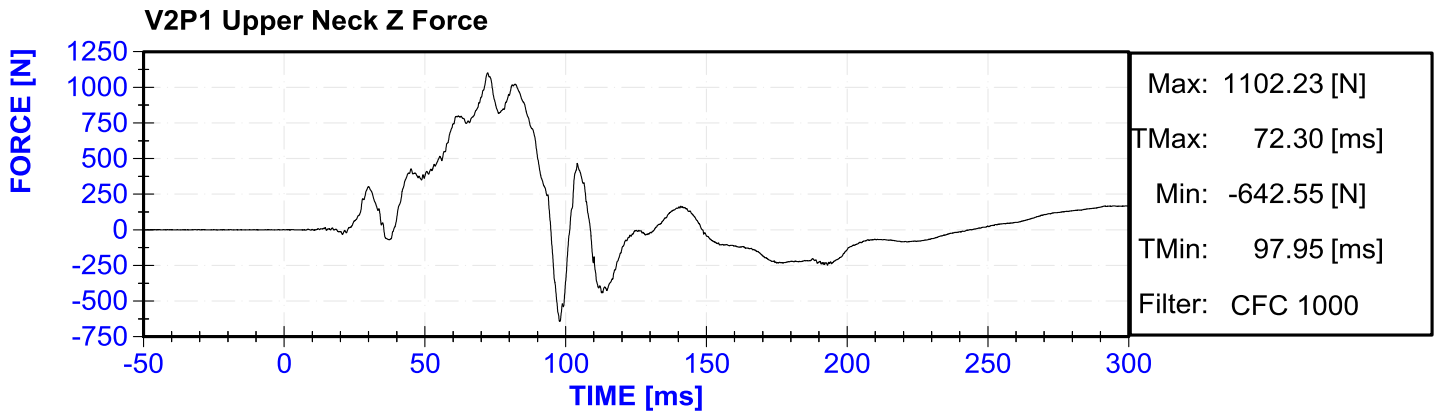


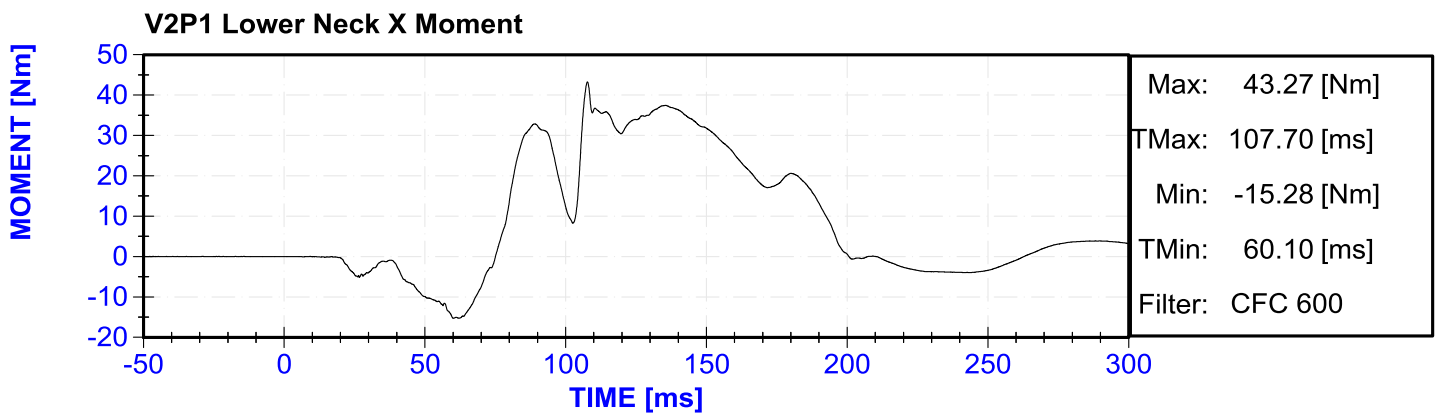
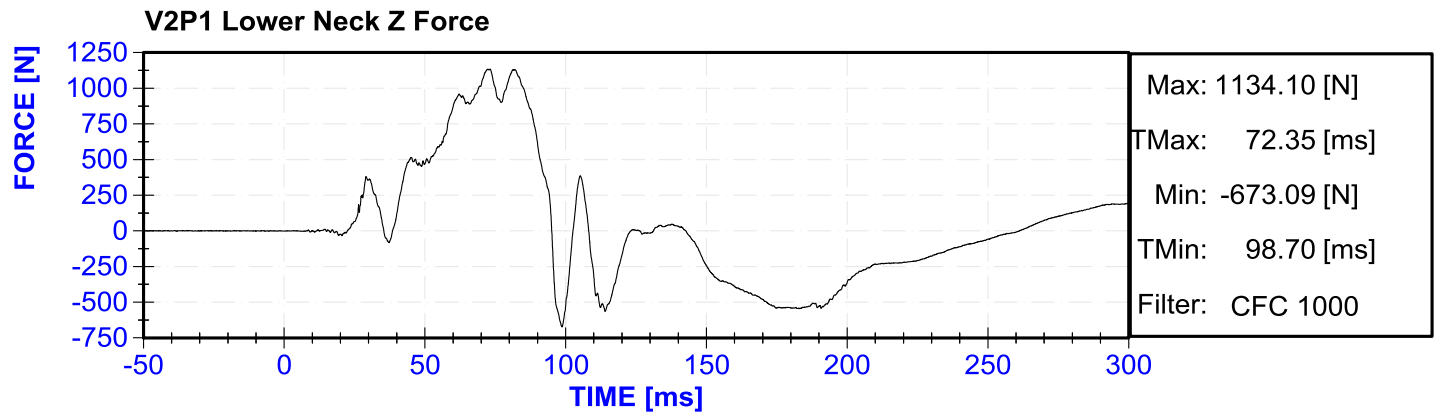
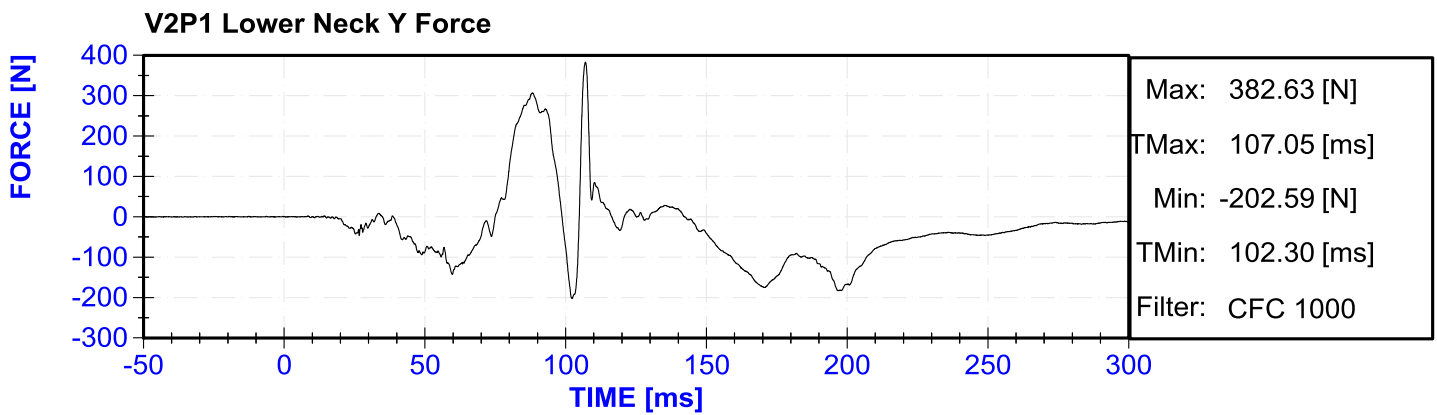
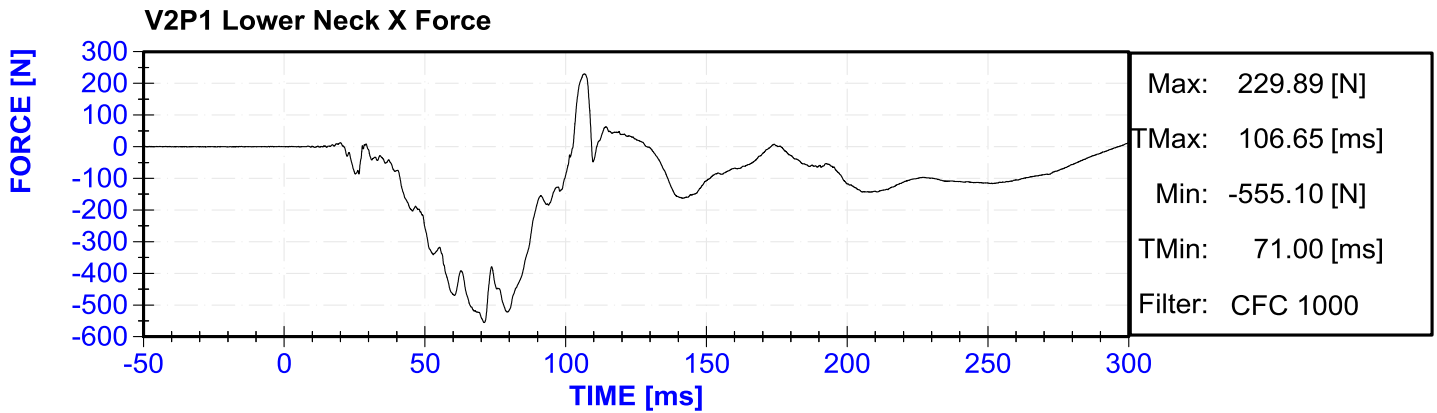
V2P1 Upper Neck X Force

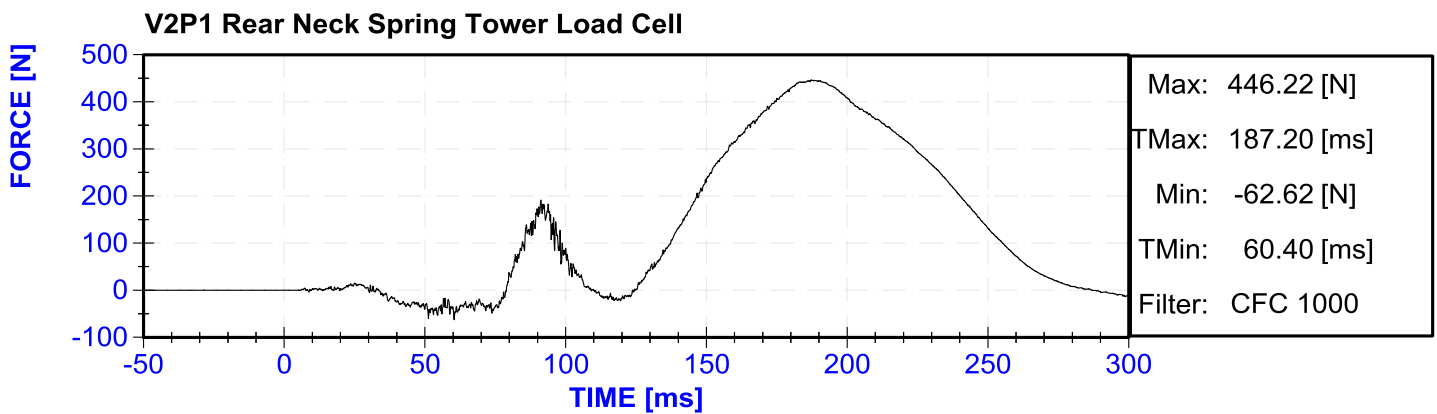
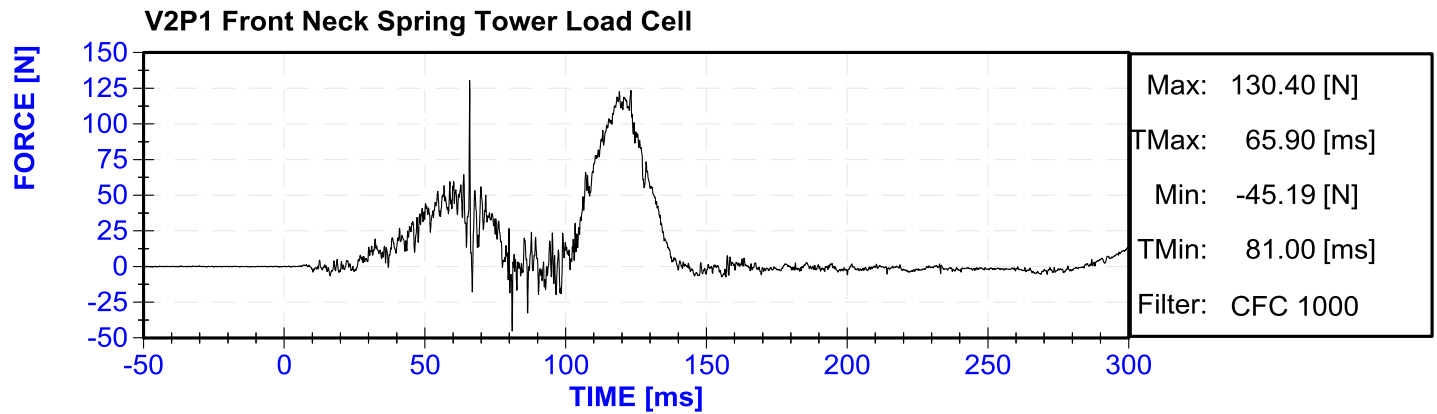
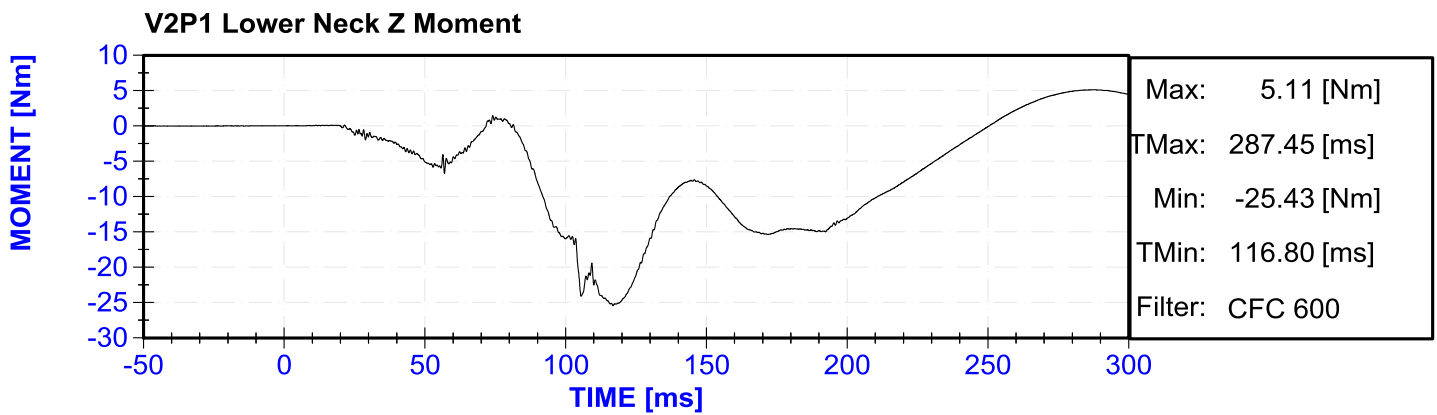
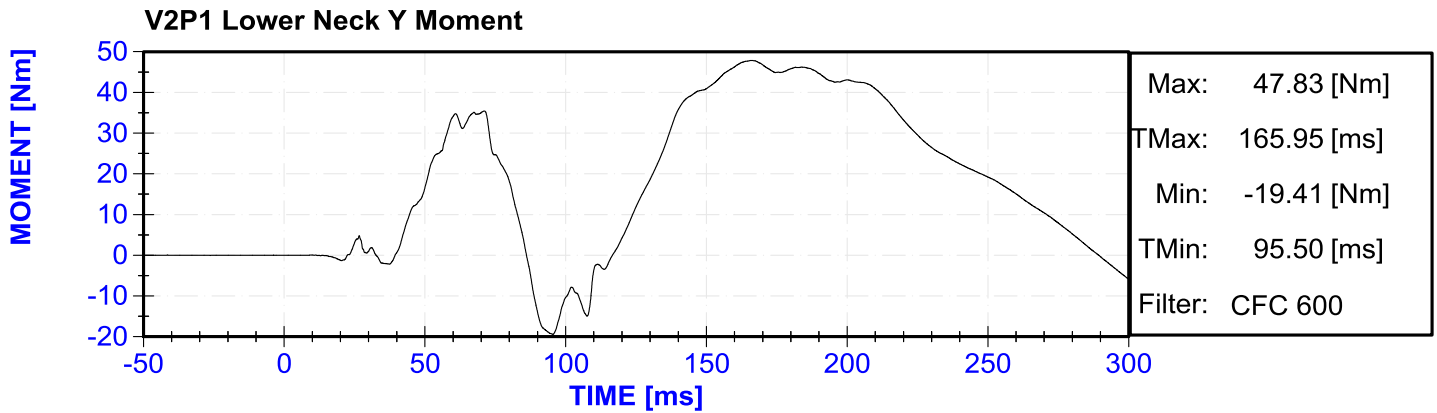


V2P1 Upper Neck Y Force

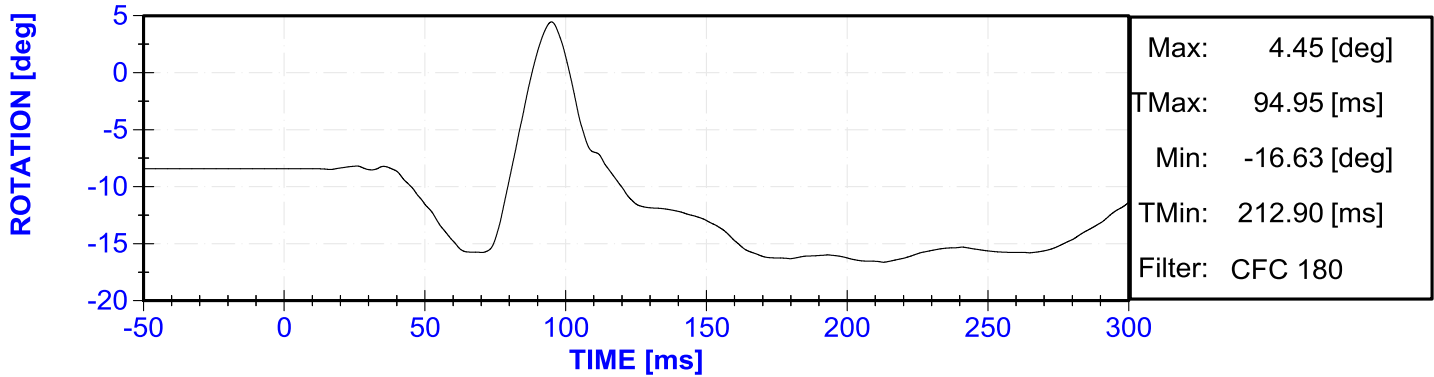




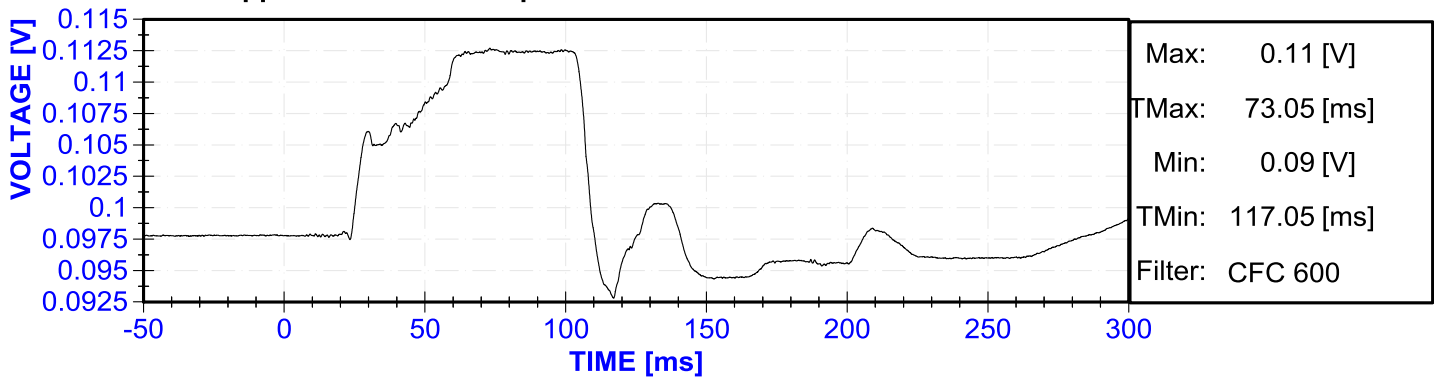




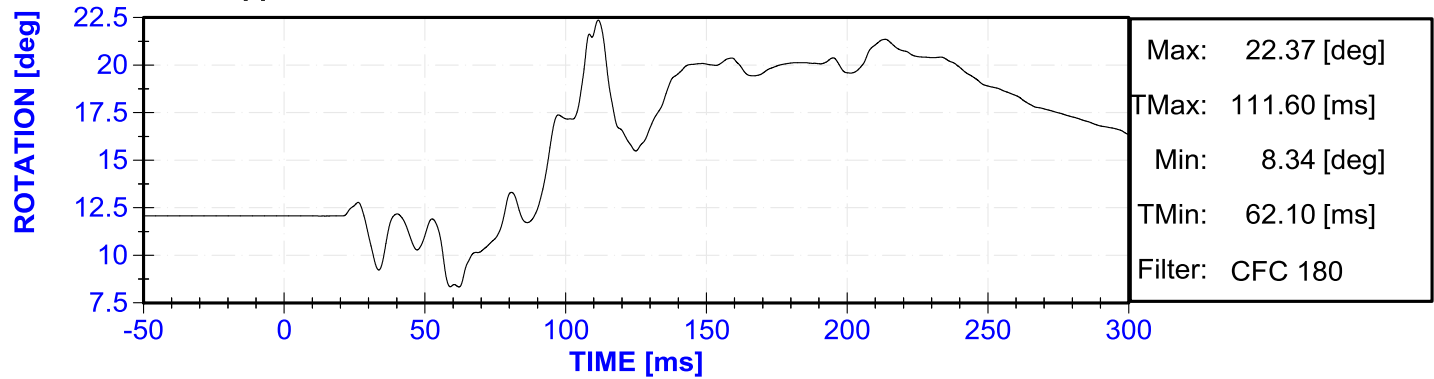
V2P1 Occipital Condyle Rotation Potentiometer



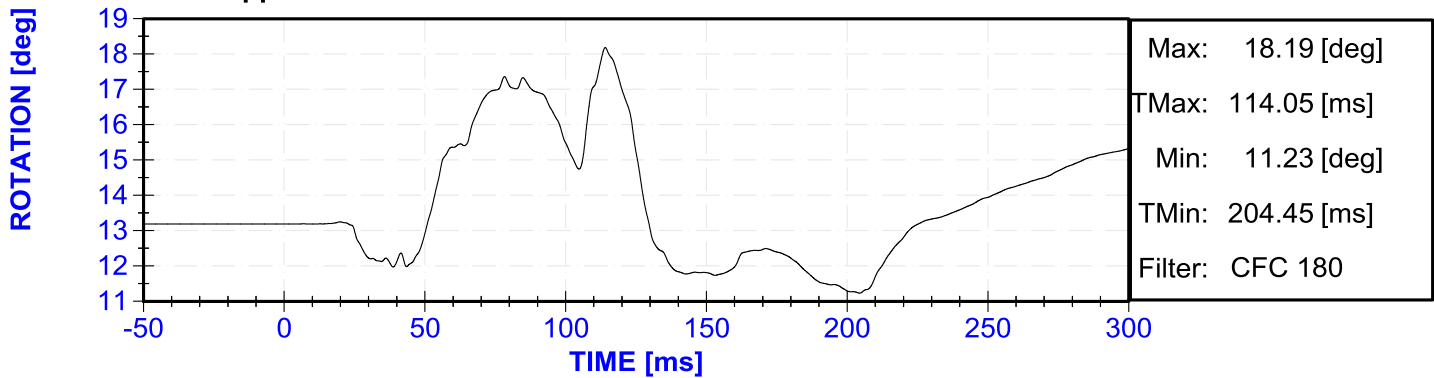
V2P1 Upper Left DGIR X Displacement



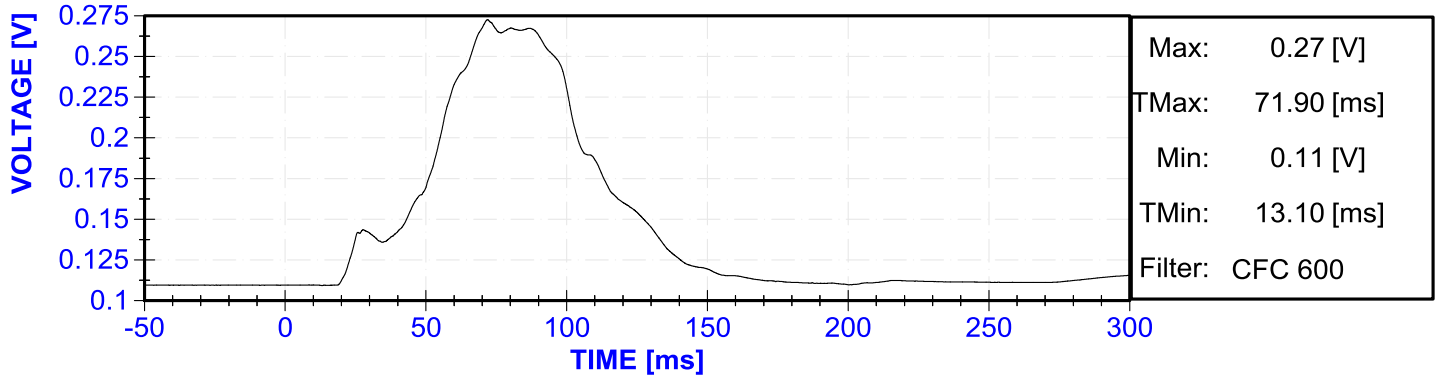
V2P1 Upper Left DGIR Y Rotation



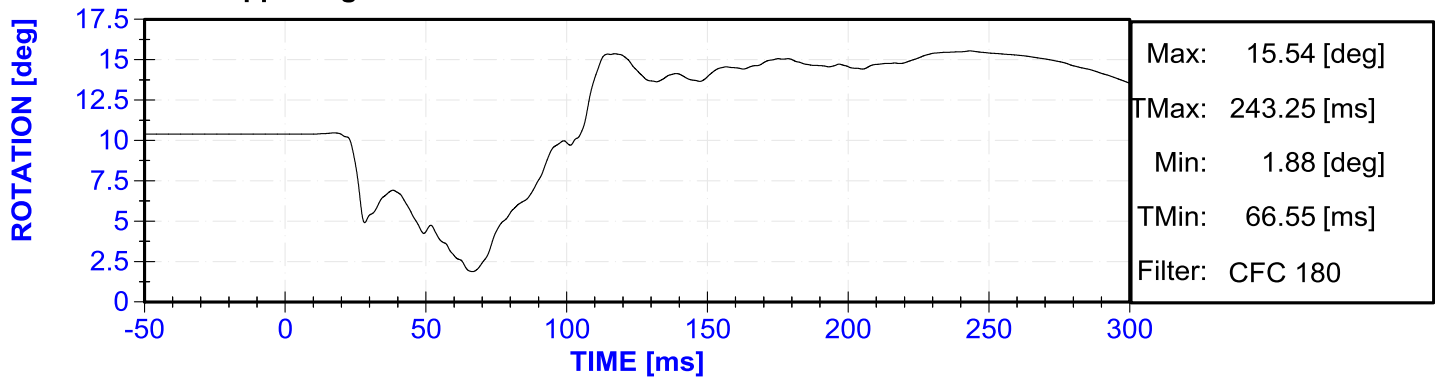
V2P1 Upper Left DGIR Z Rotation



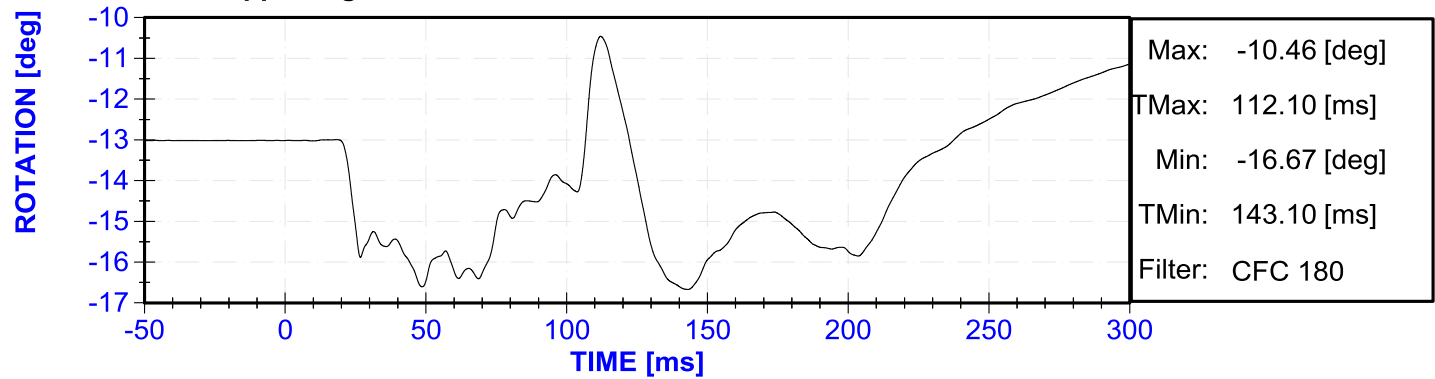
V2P1 Upper Right DGIR X Displacement



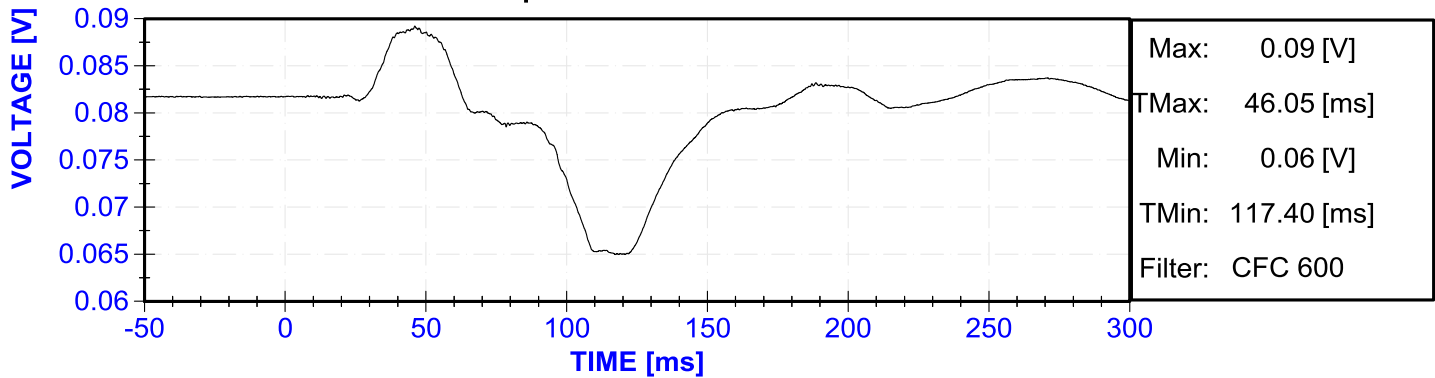
V2P1 Upper Right DGIR Y Rotation

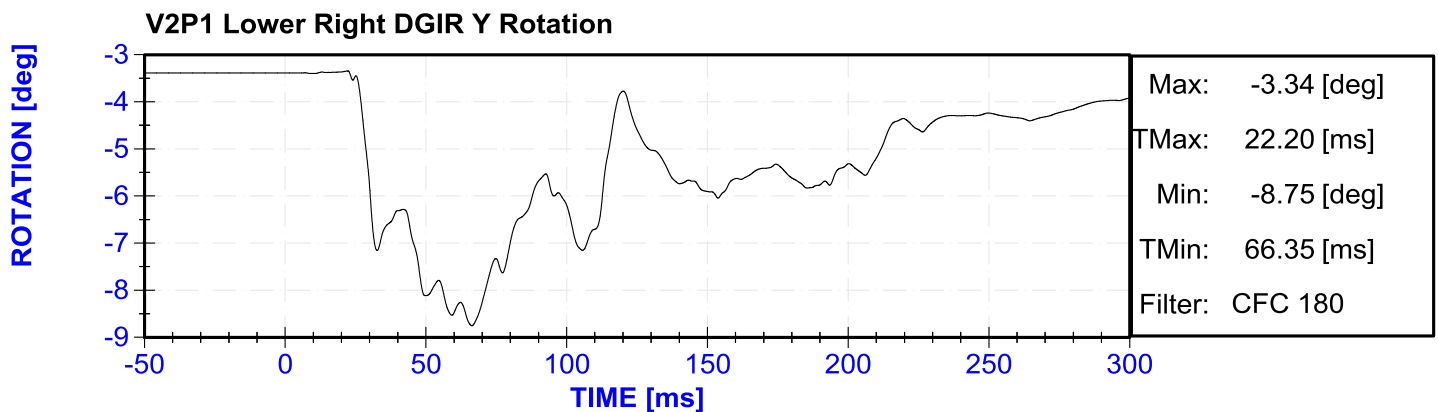
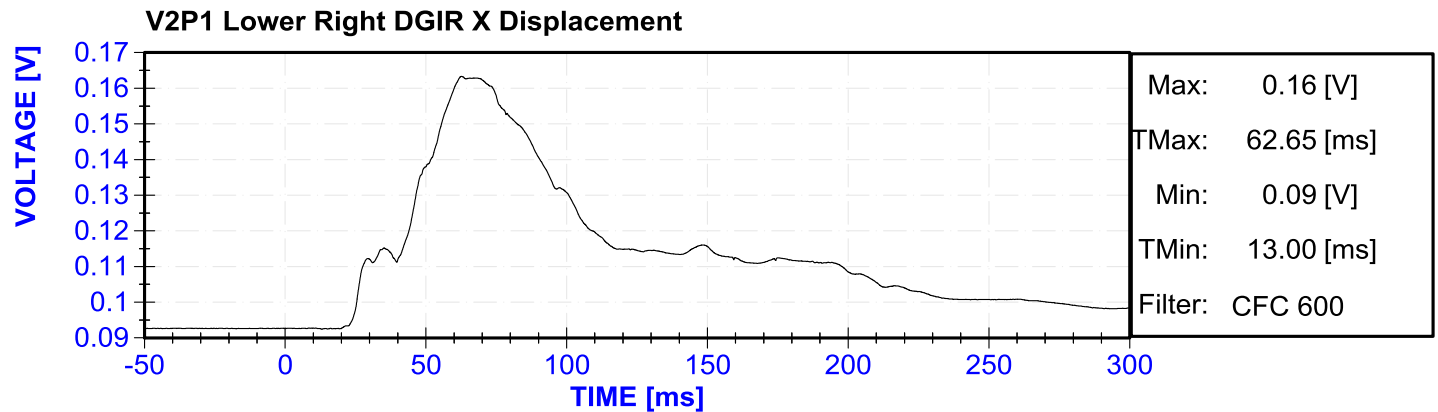
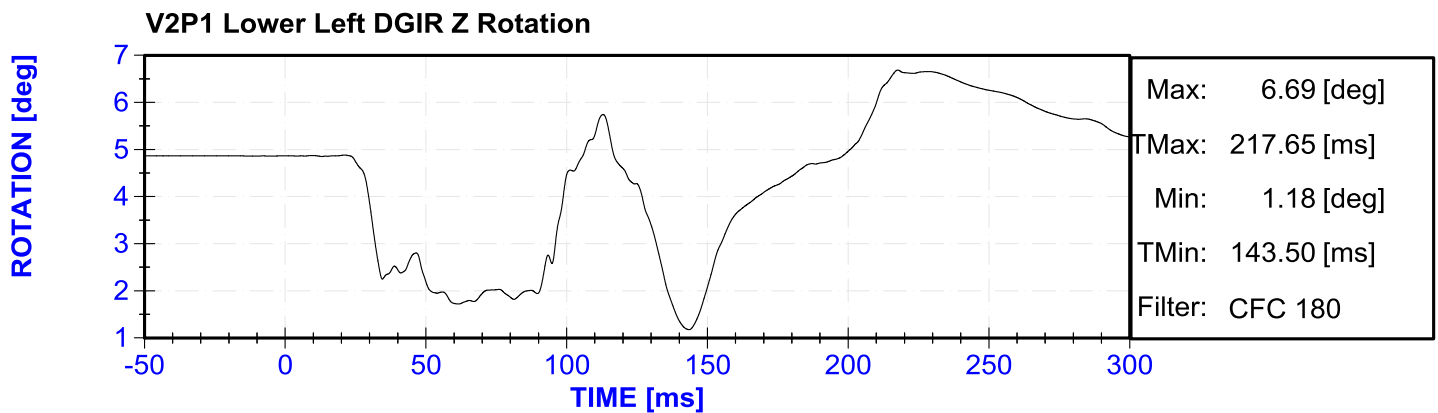
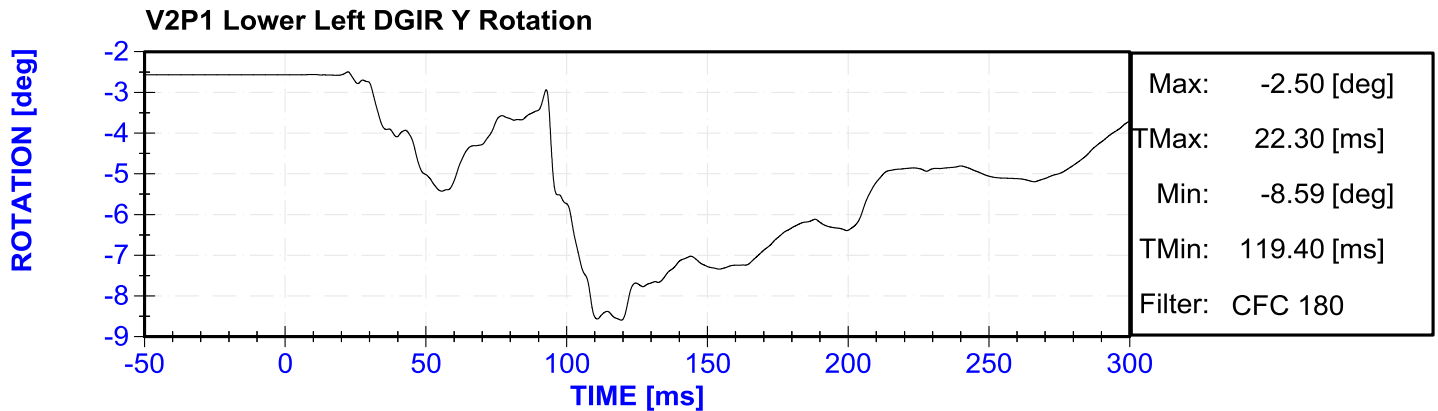


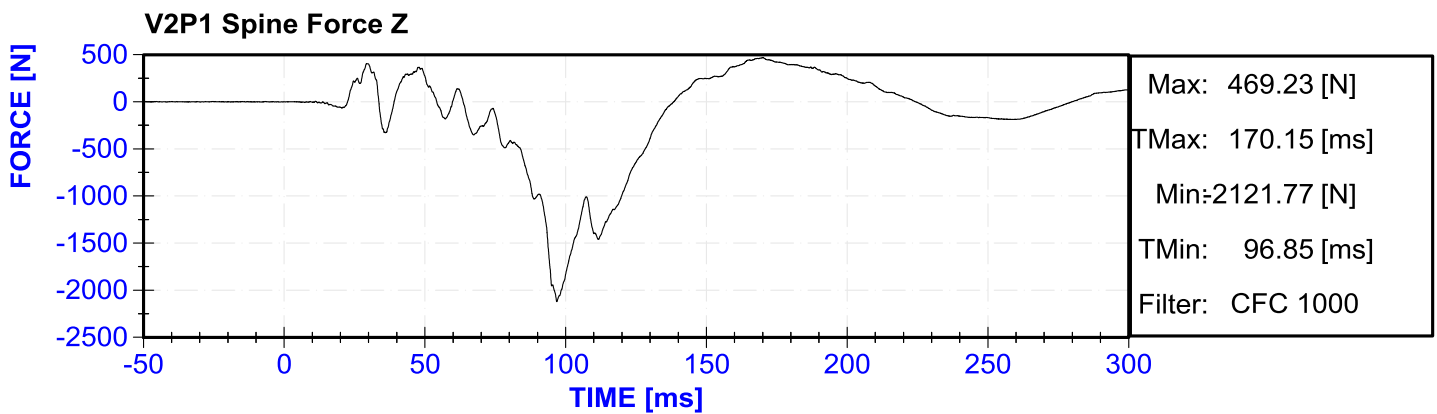
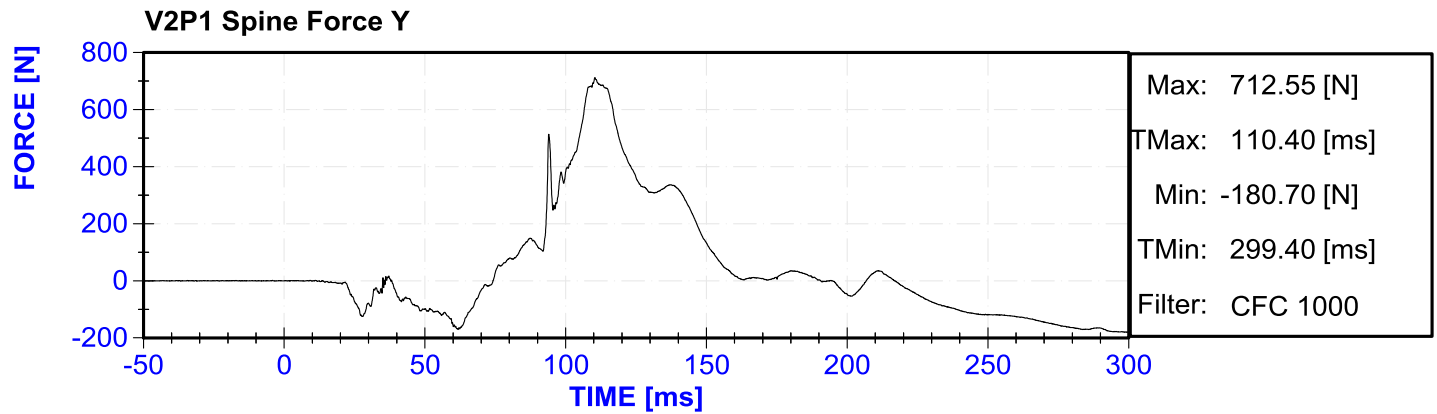
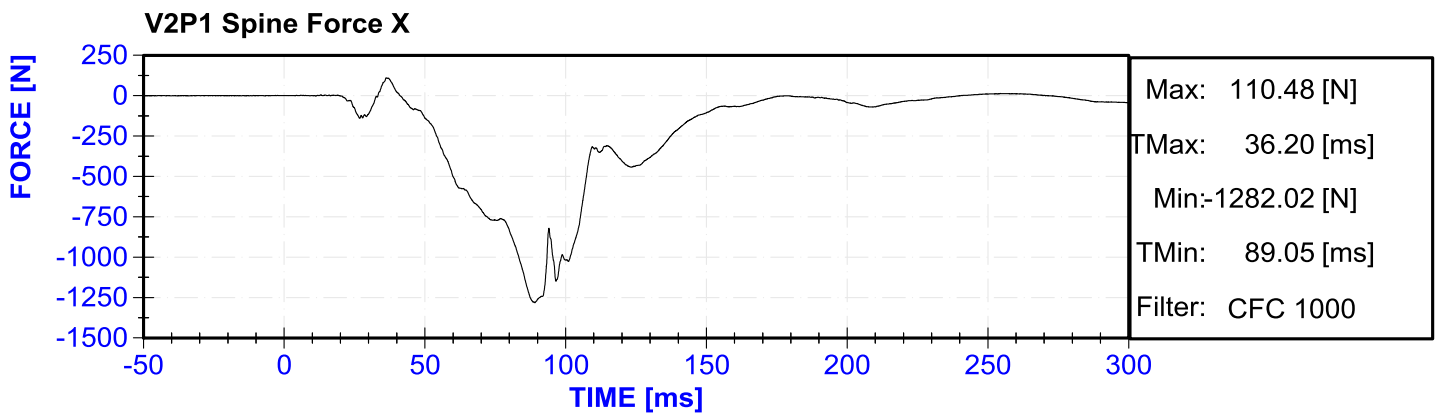
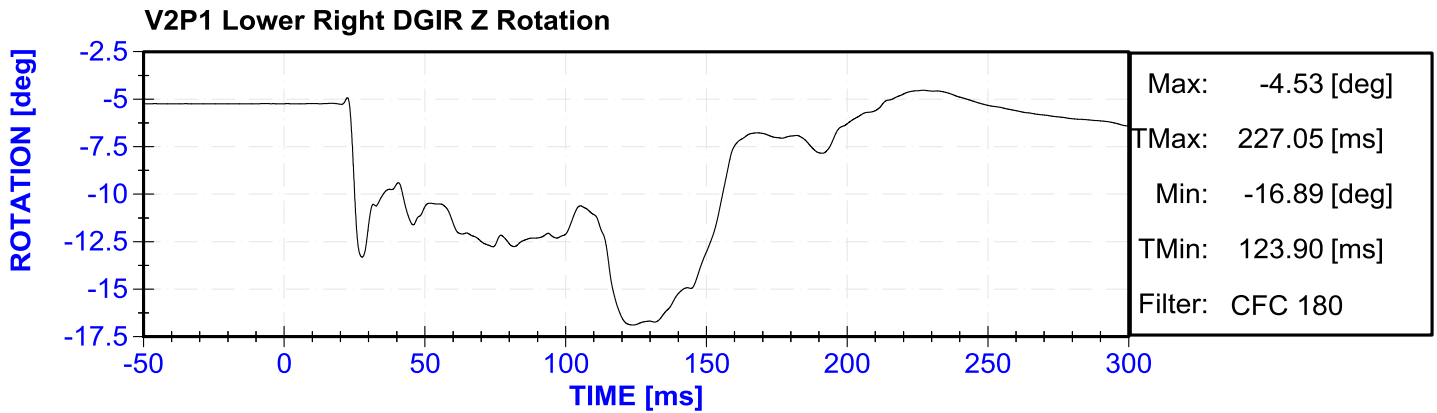
V2P1 Upper Right DGIR Z Rotation

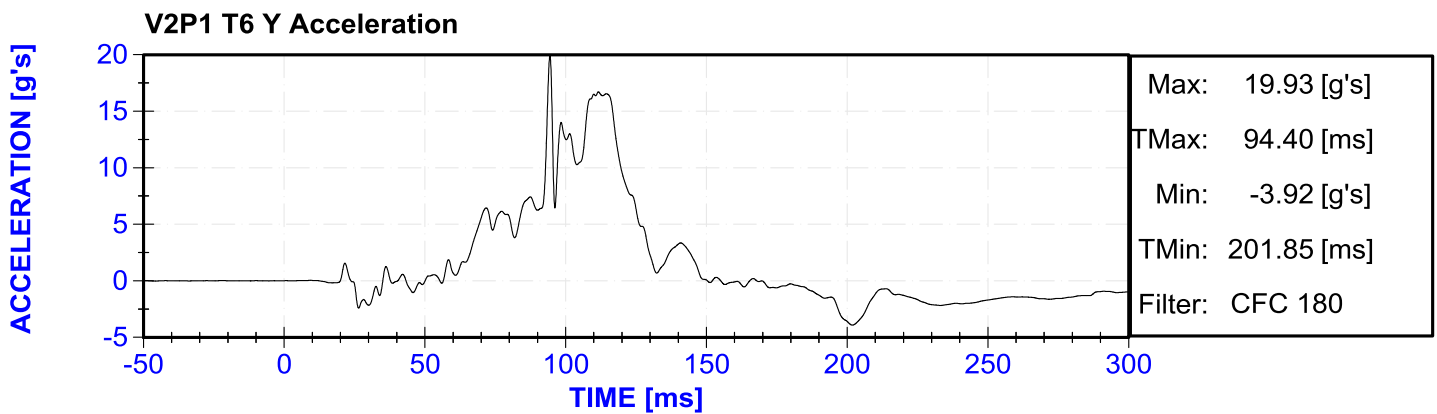
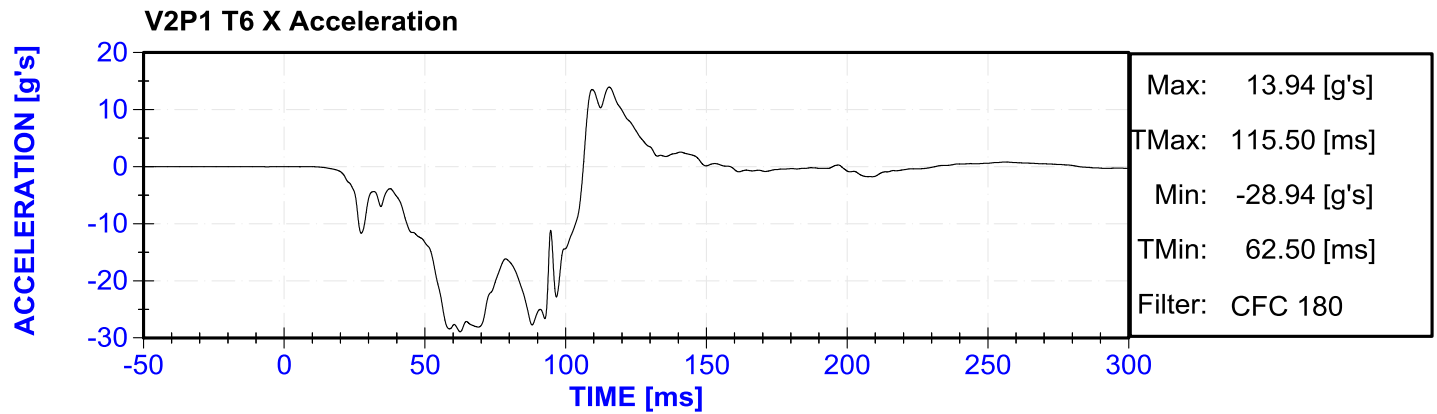
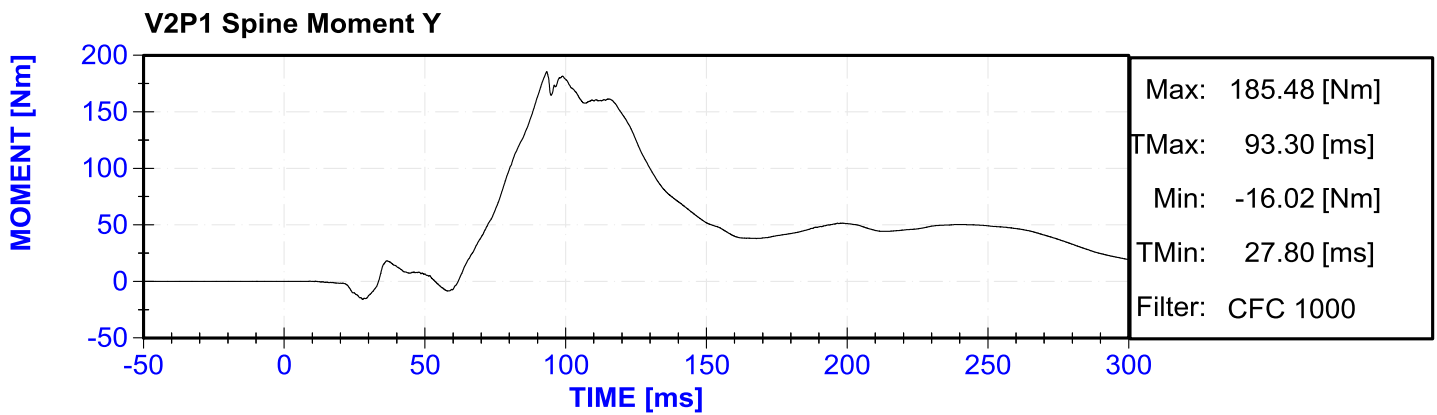
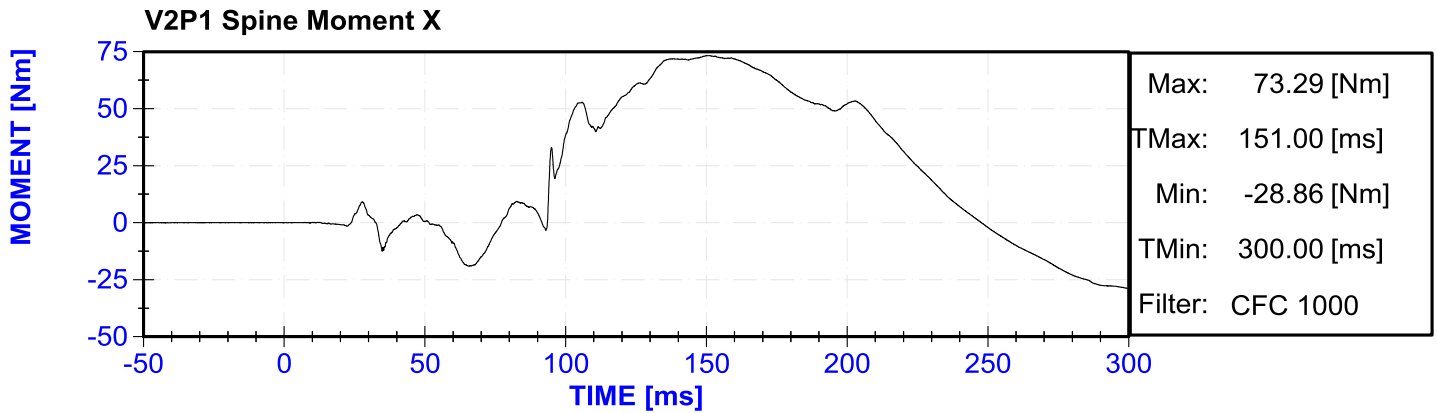


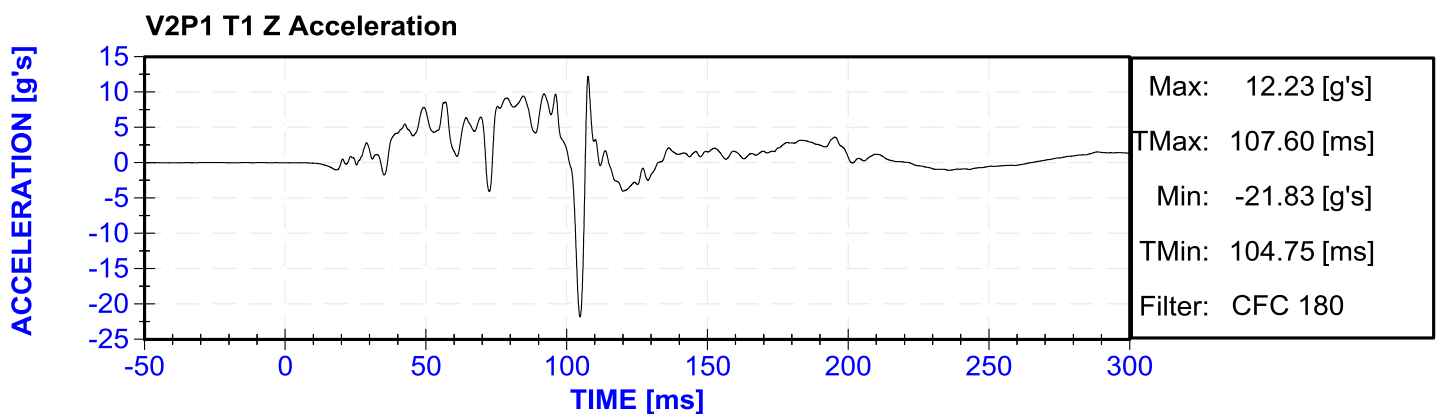
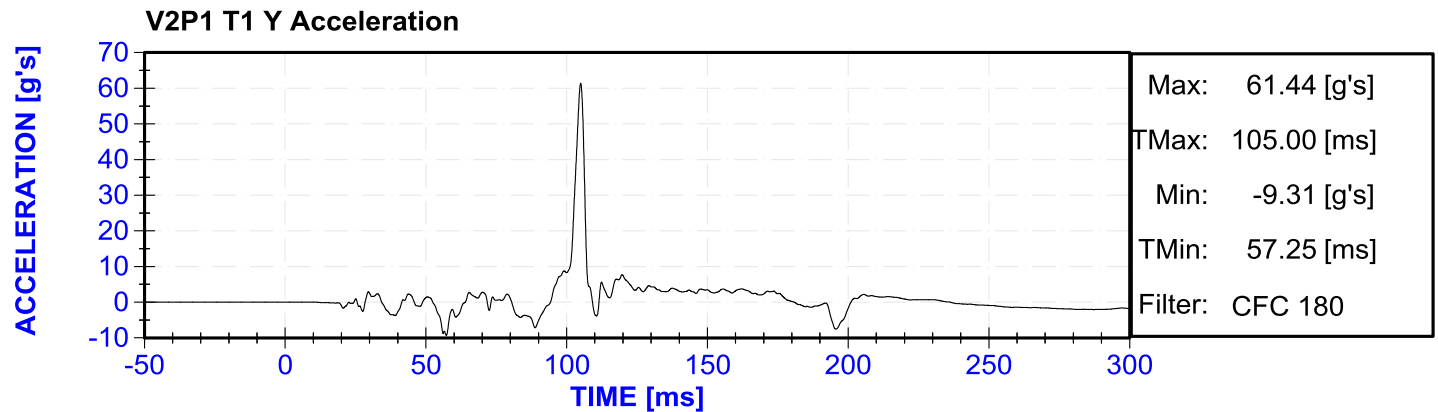
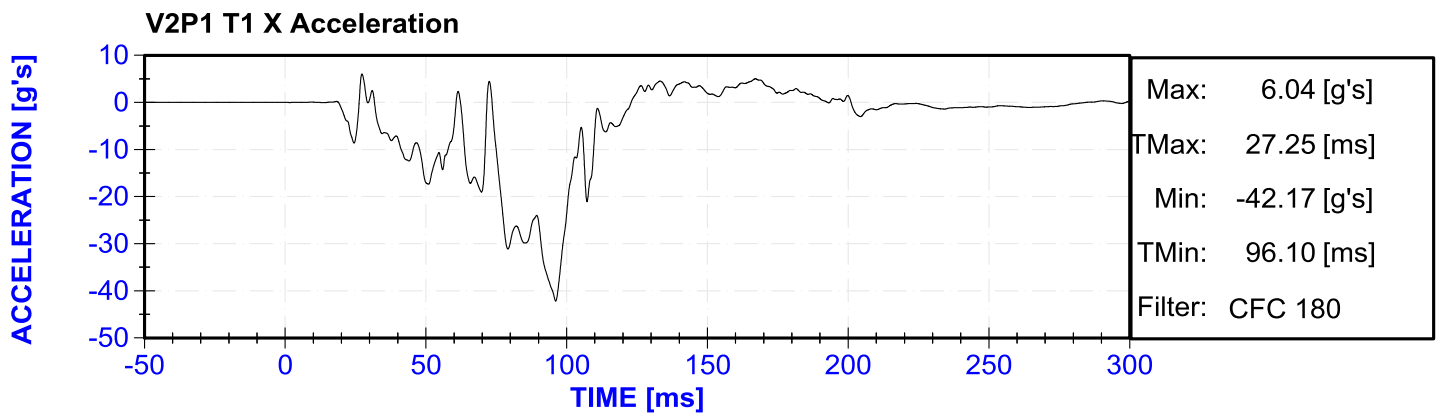
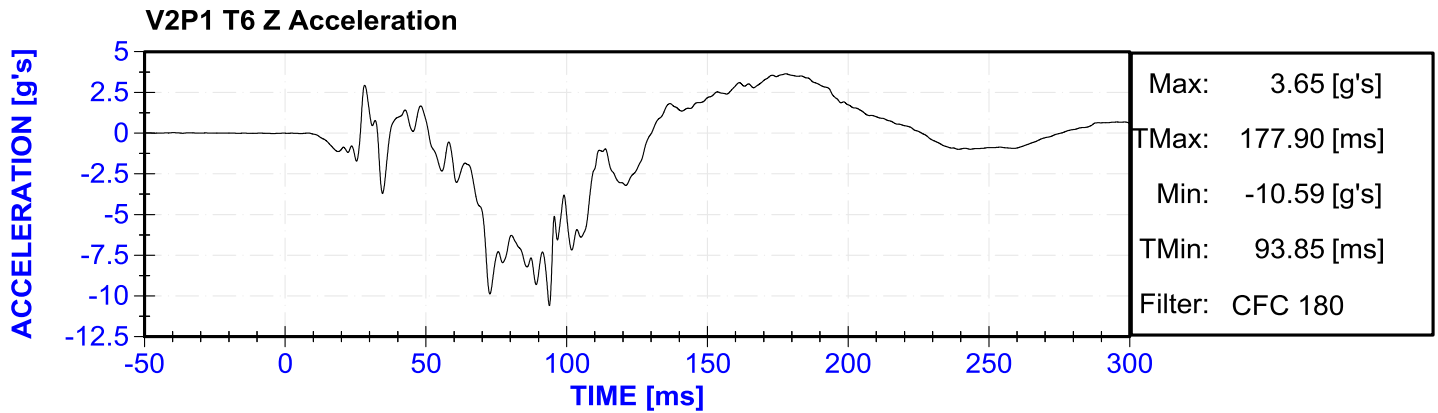
V2P1 Lower Left DGIR X Displacement



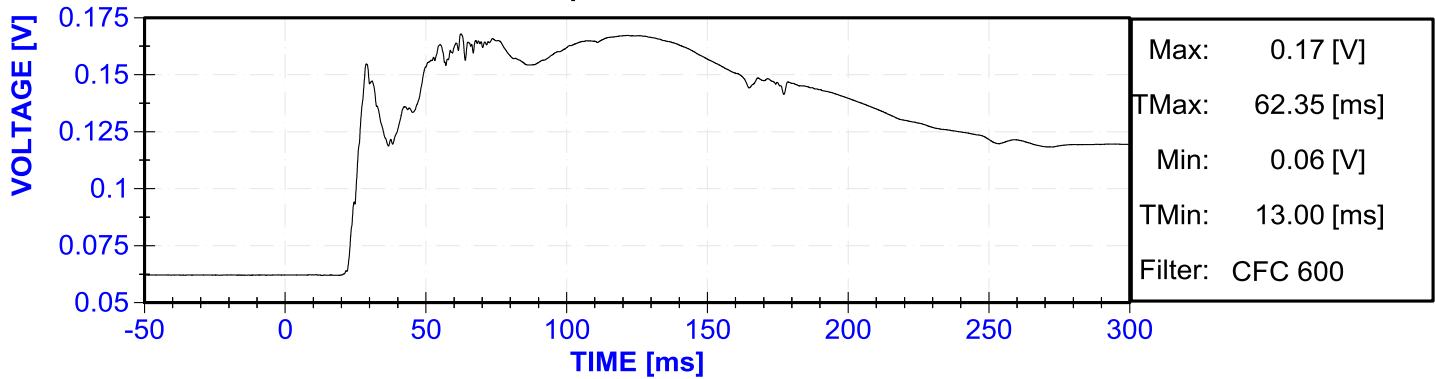




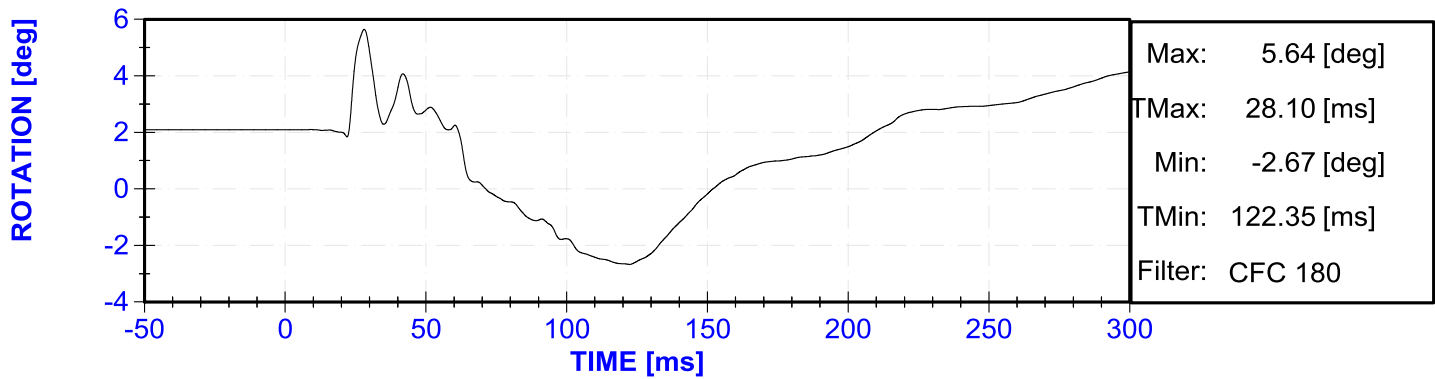




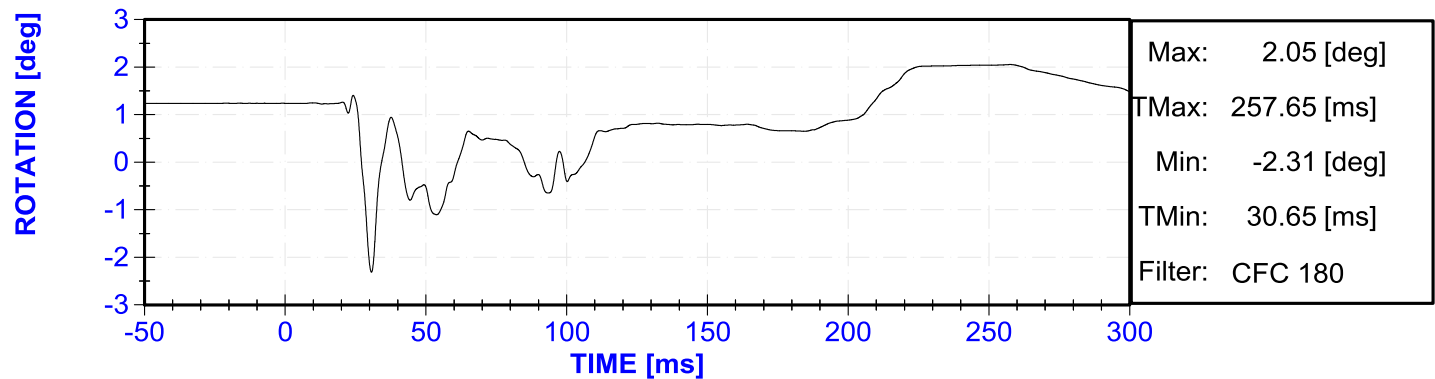
V2P1 Abdomen Left DGIR X Displacement



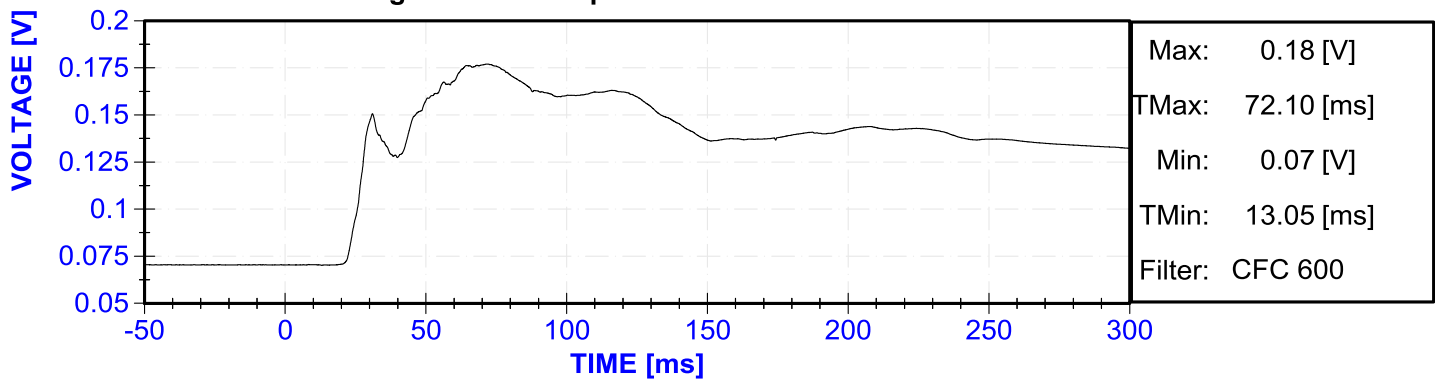
V2P1 Abdomen Left DGIR Y Rotation

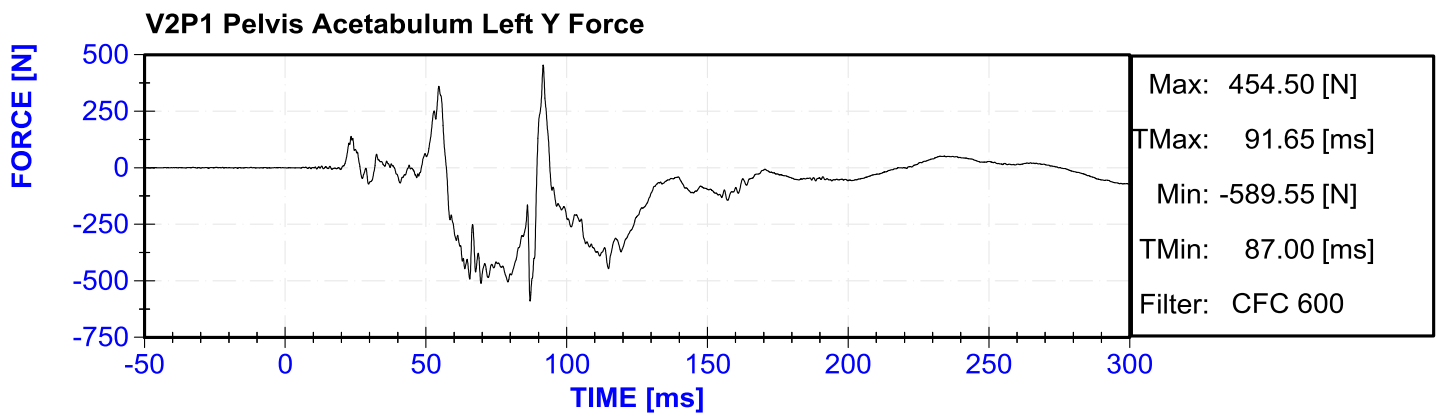
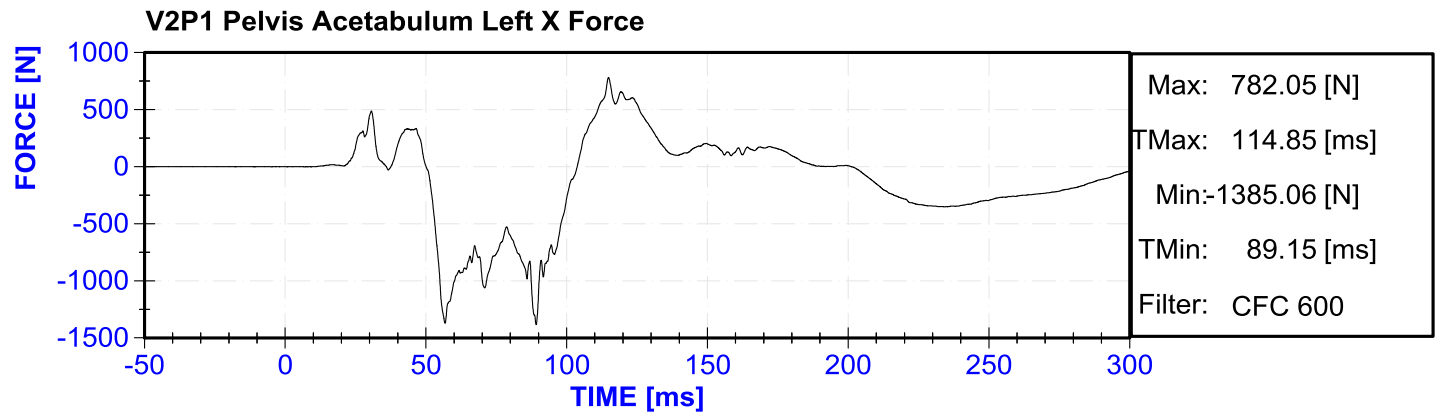
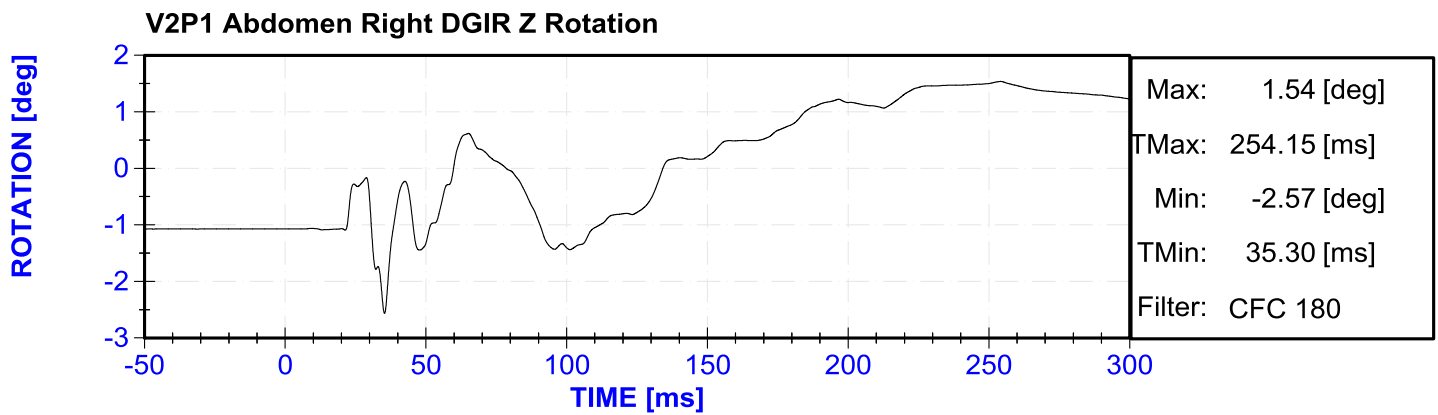
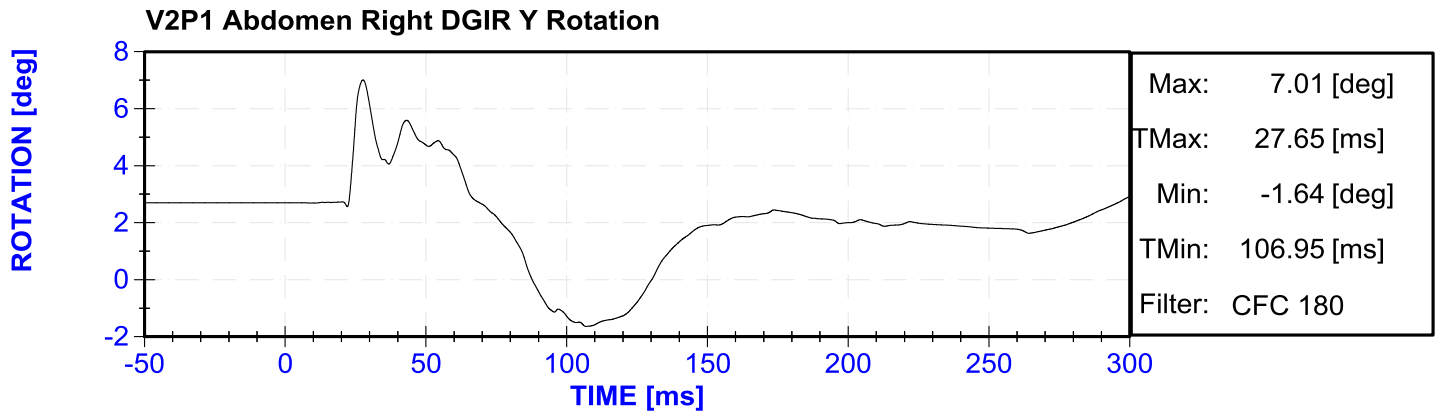


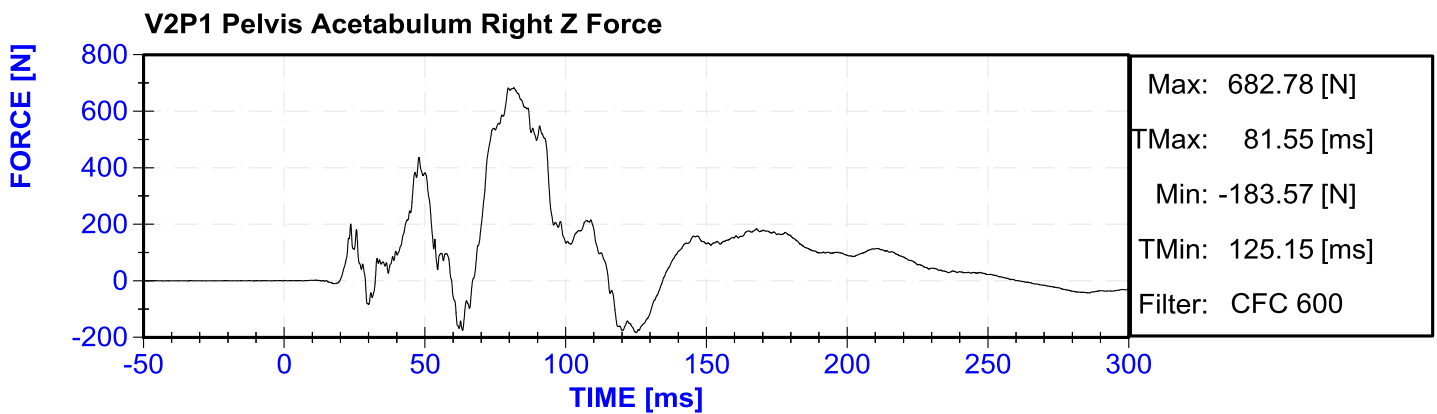
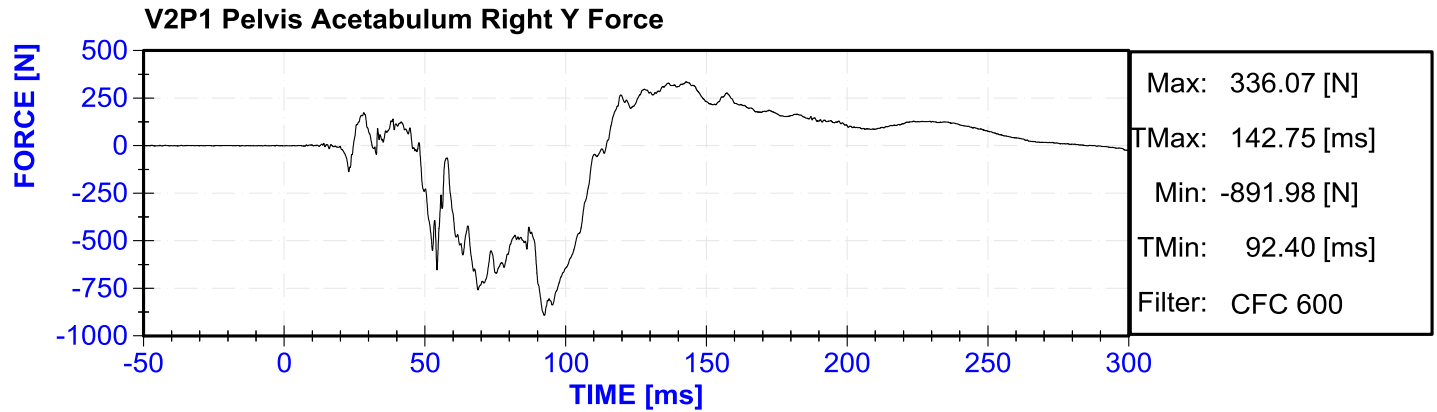
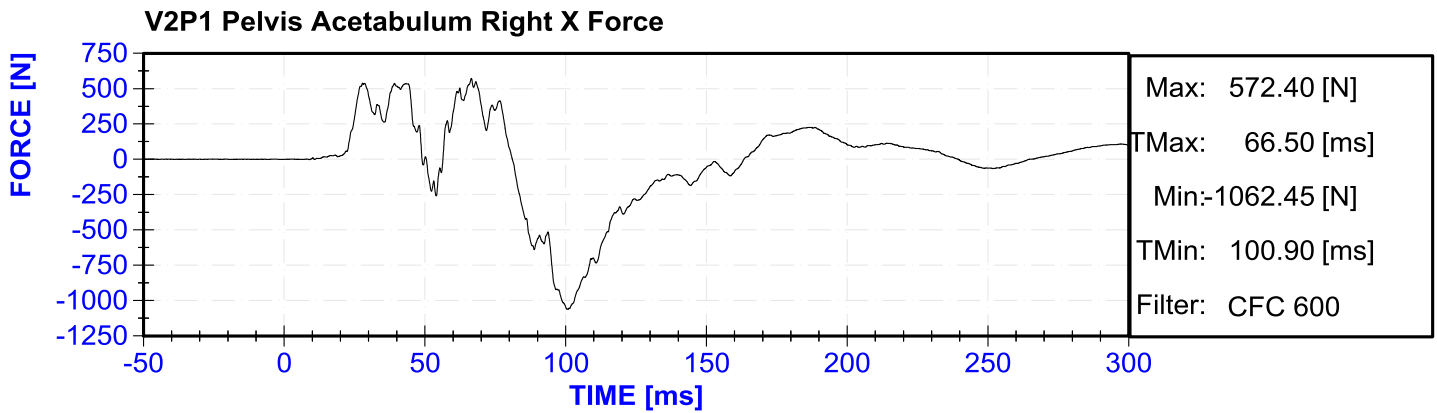
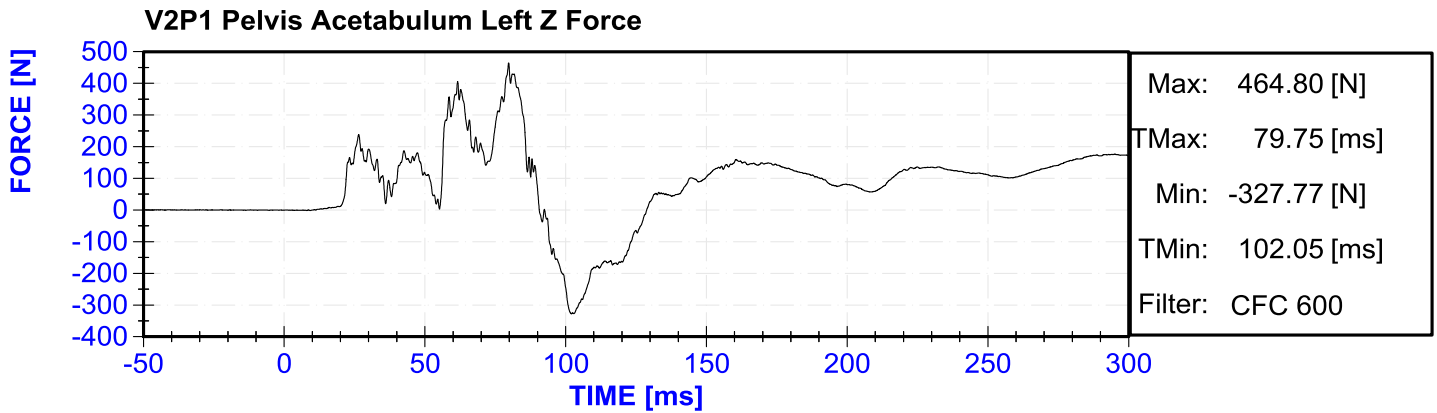
V2P1 Abdomen Left DGIR Z Rotation

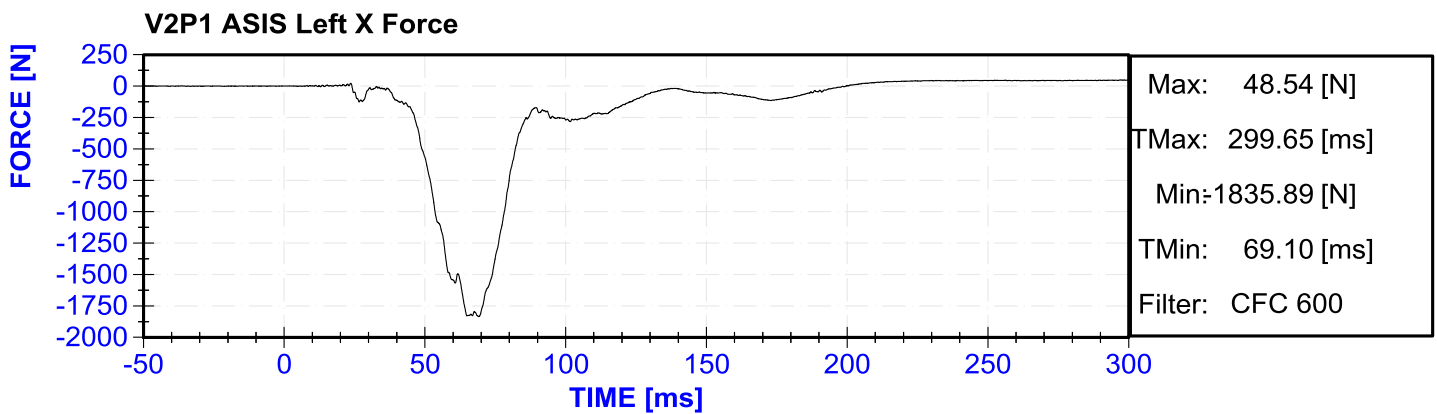
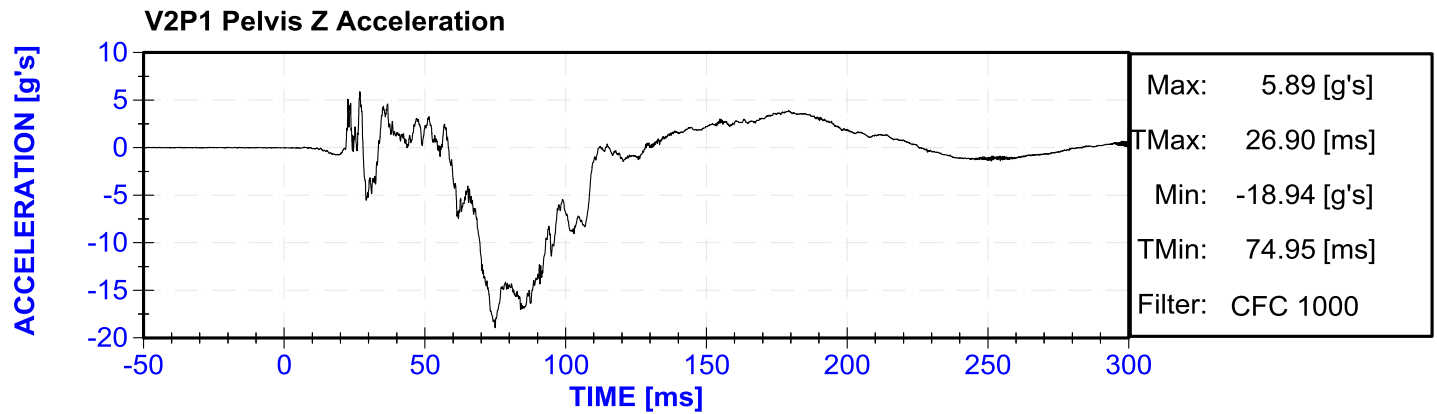
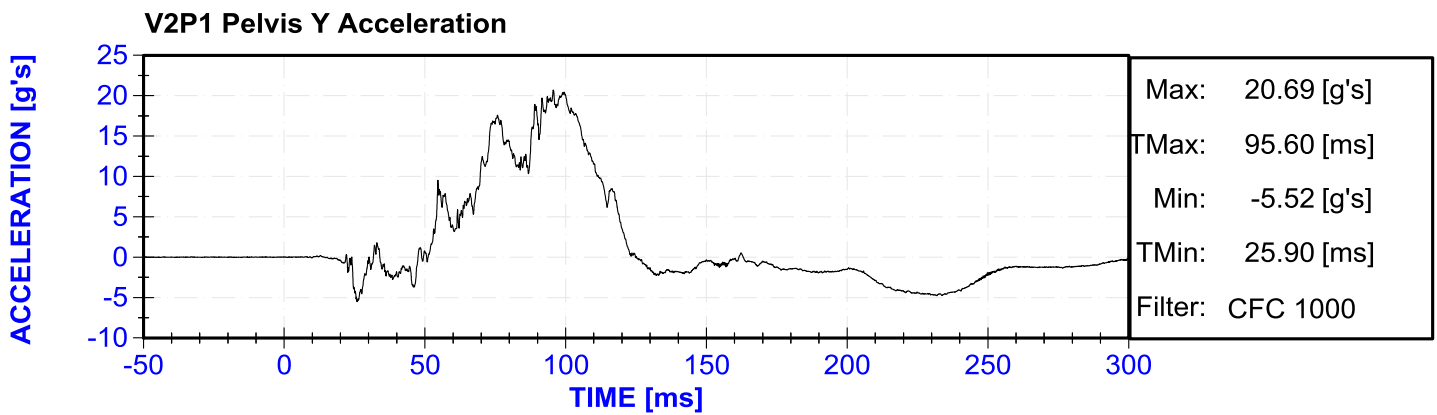
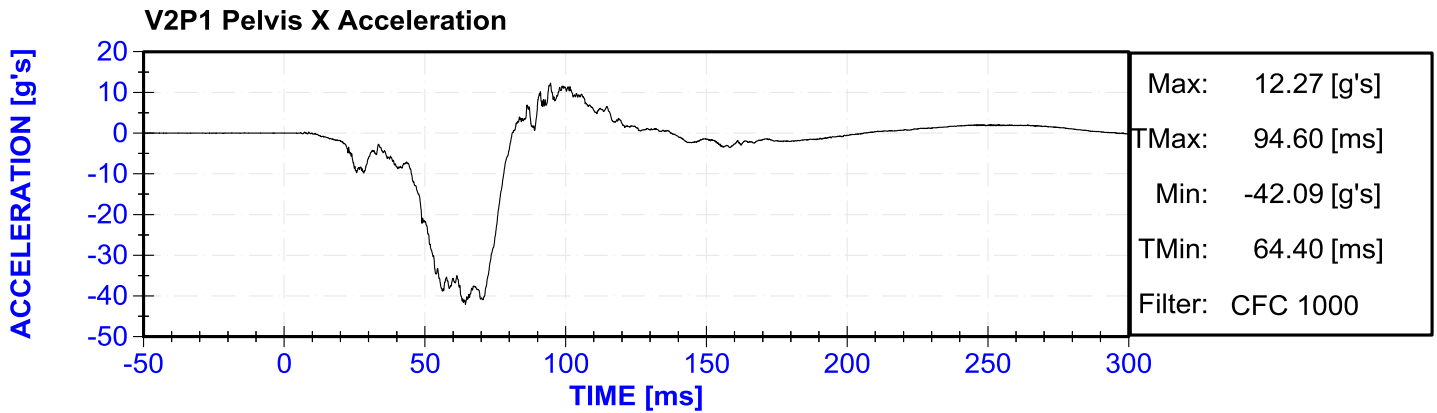


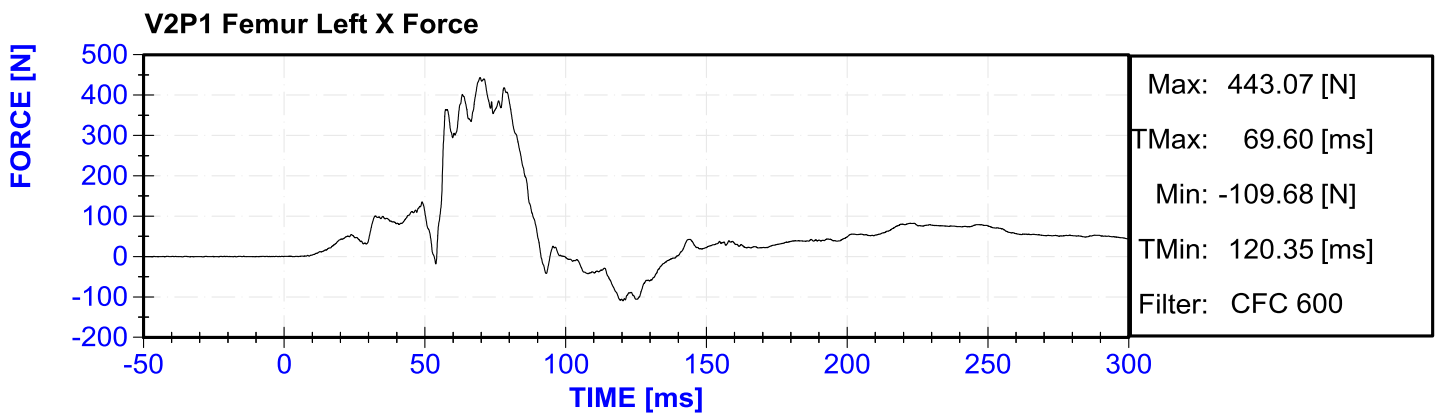
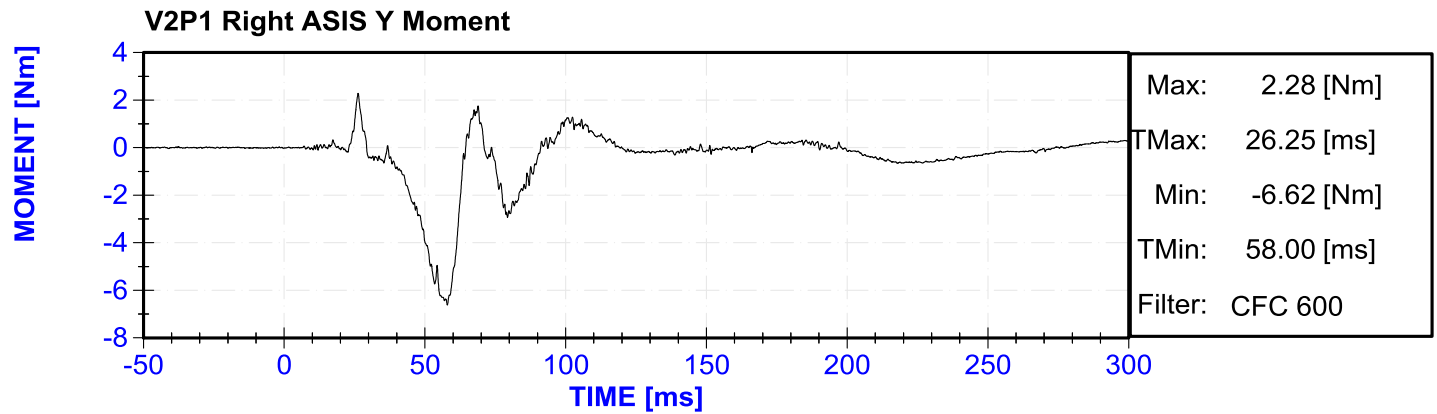
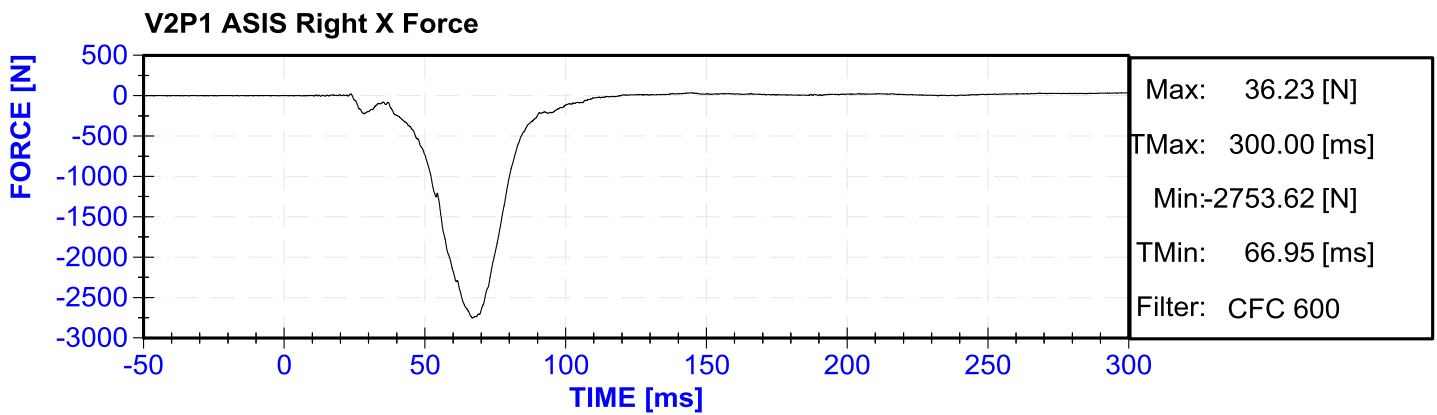
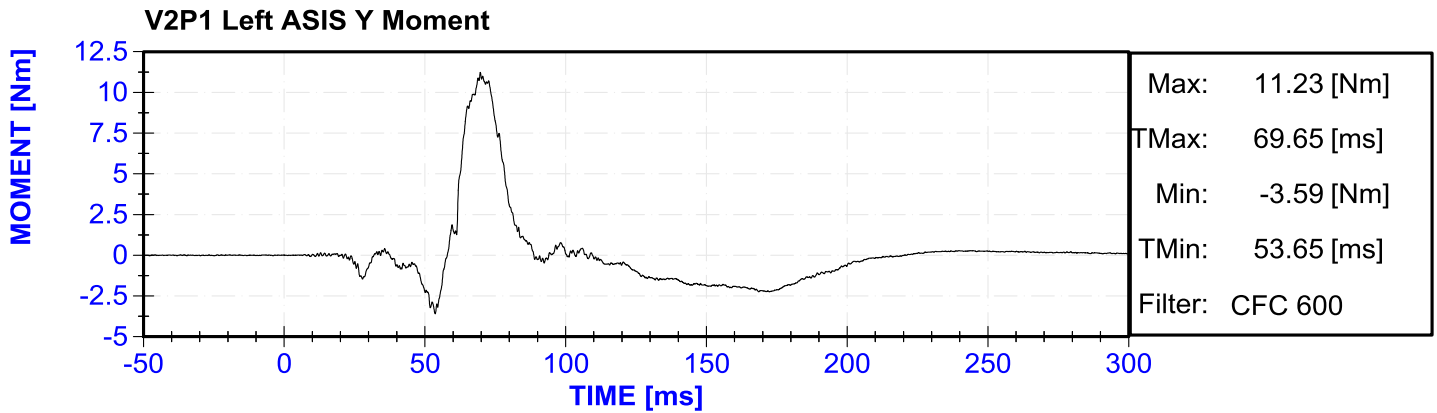
V2P1 Abdomen Right DGIR X Displacement

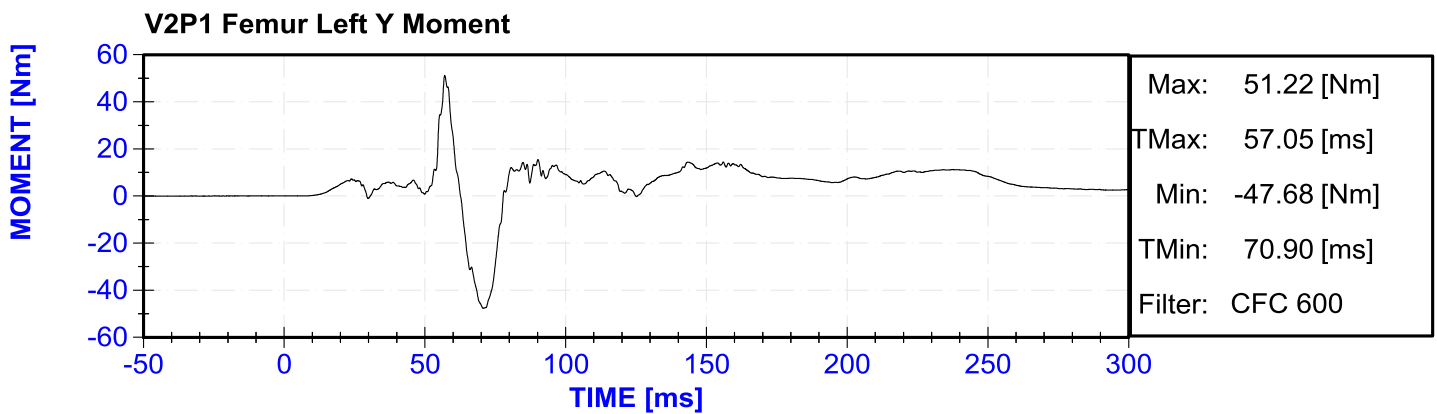
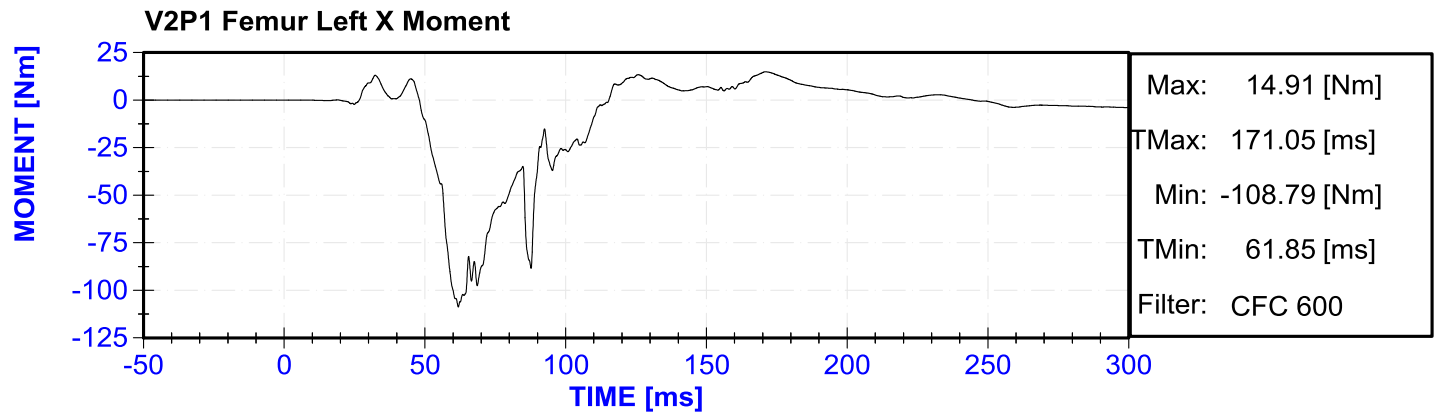
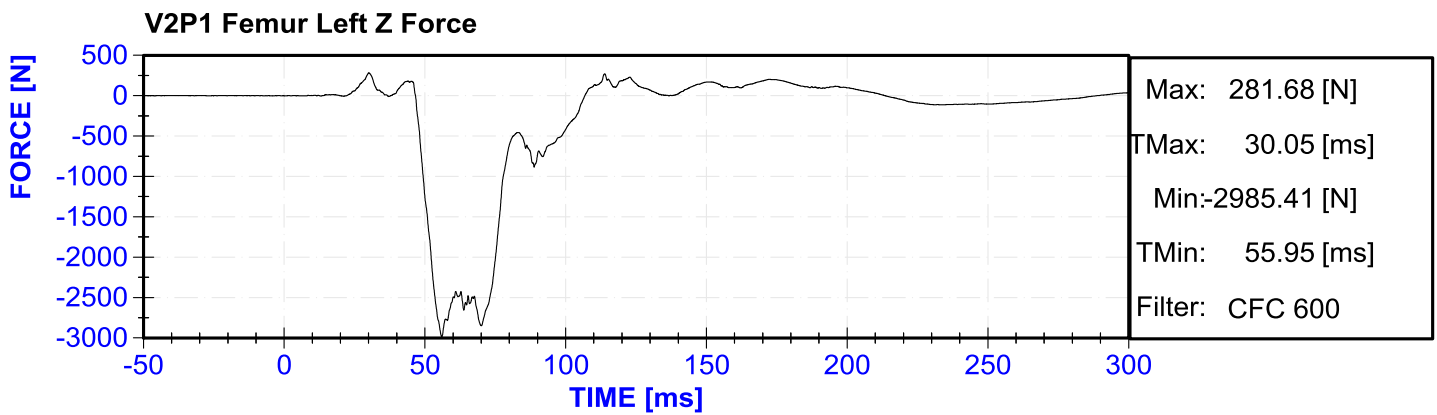
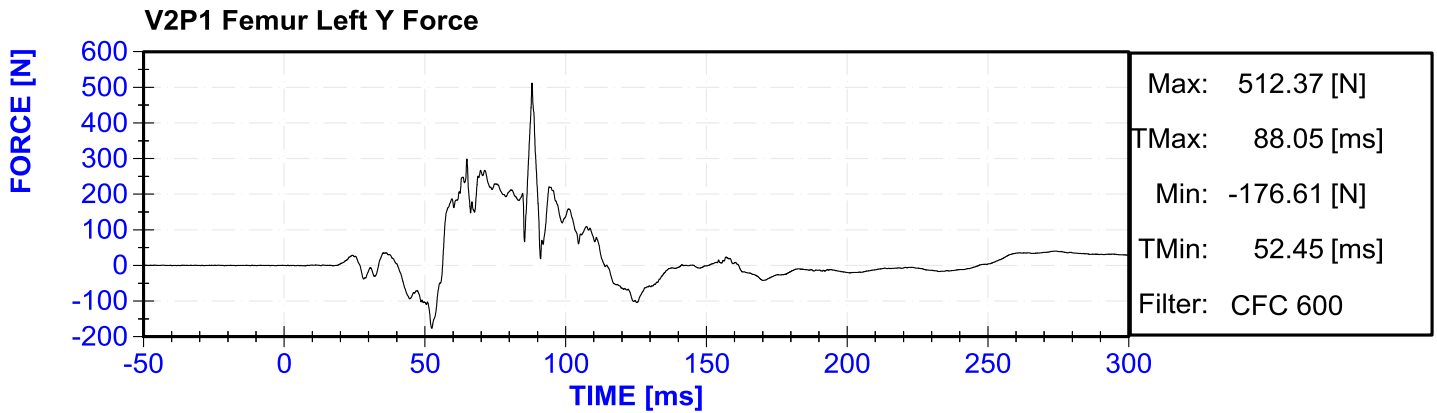


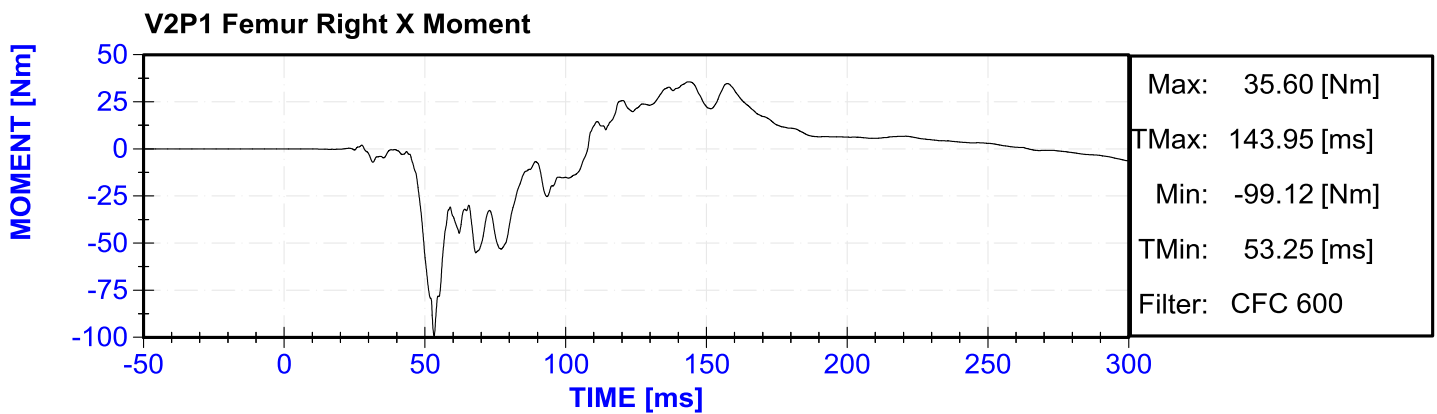
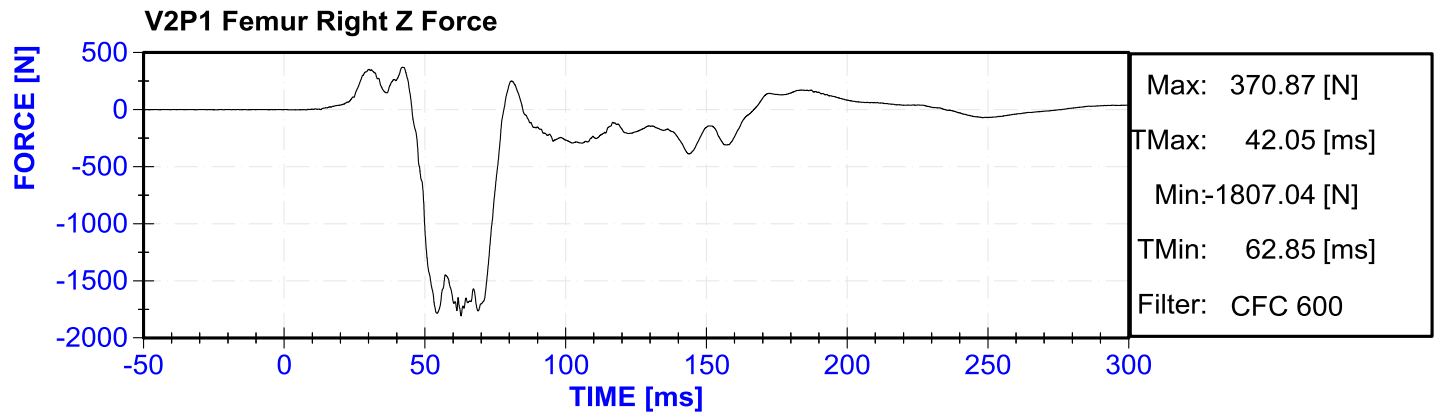
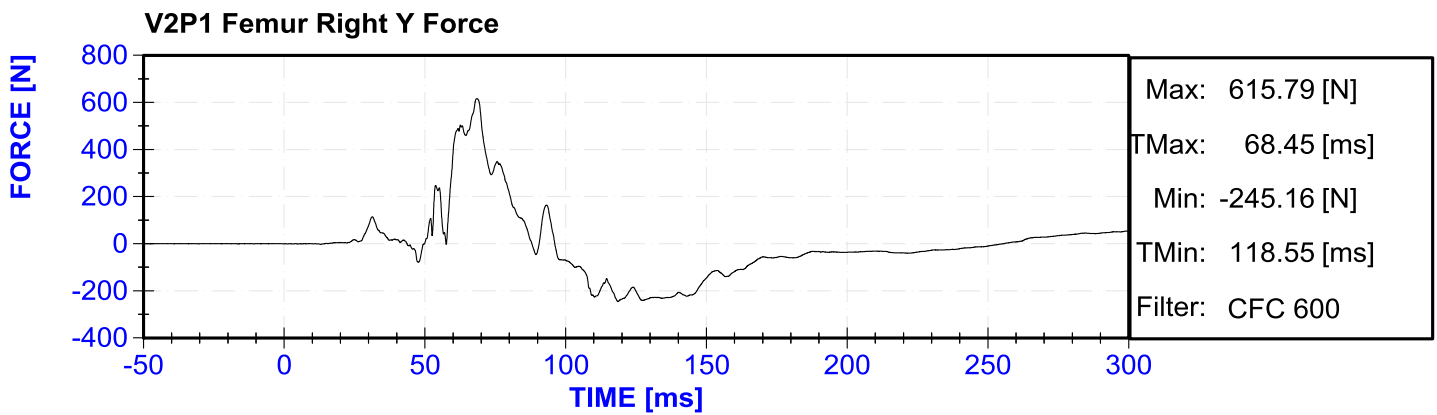
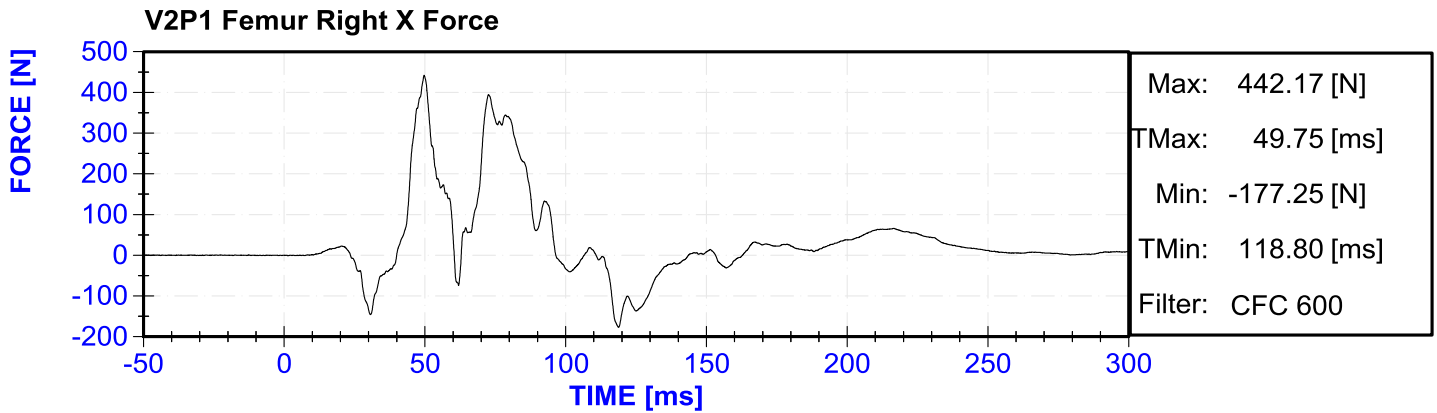


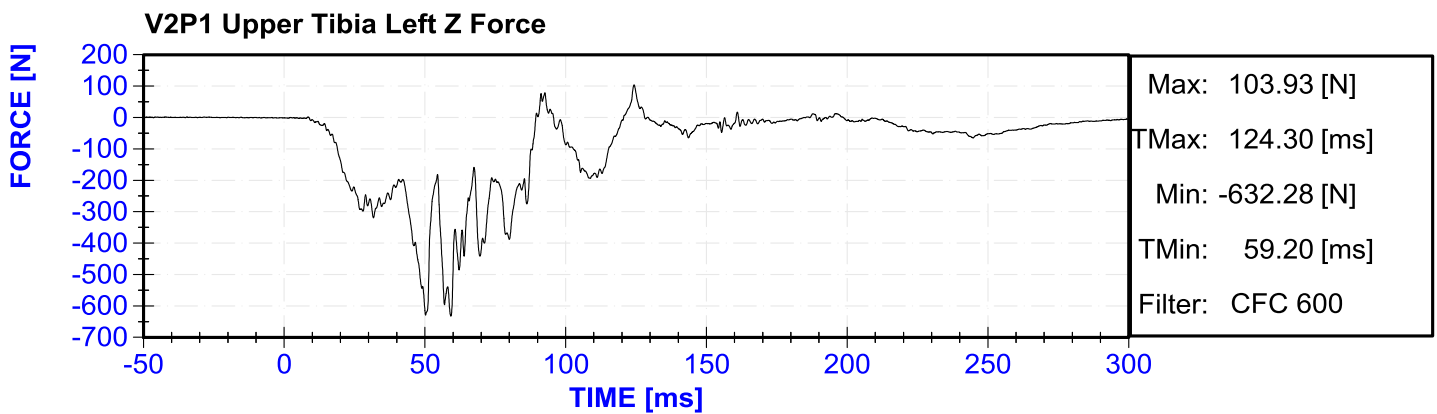
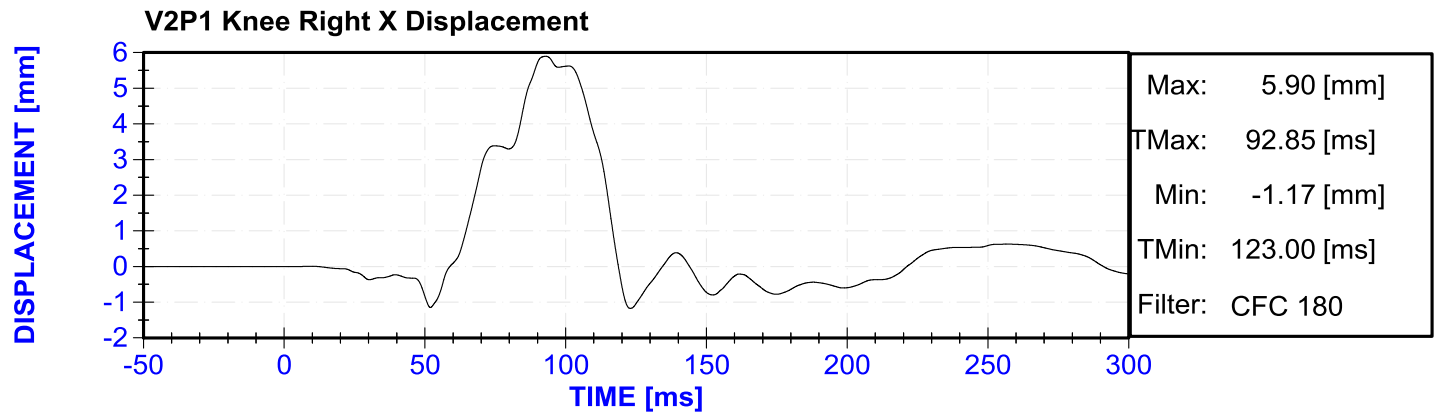
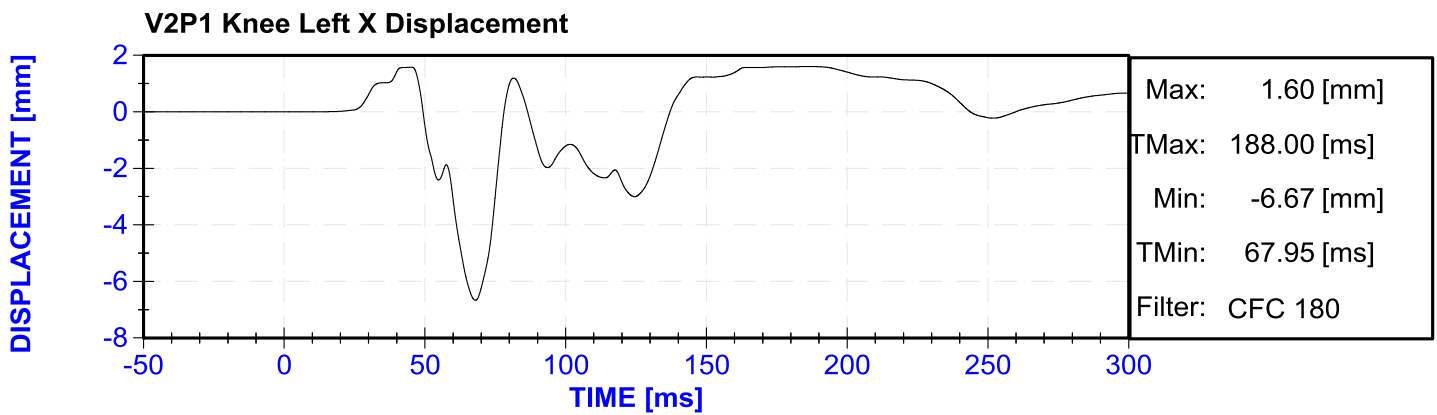
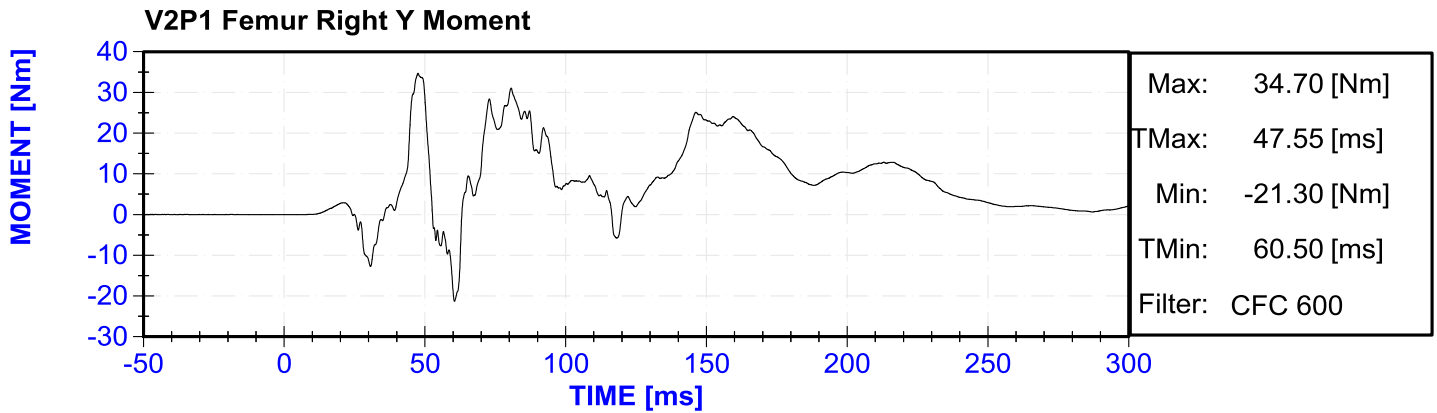


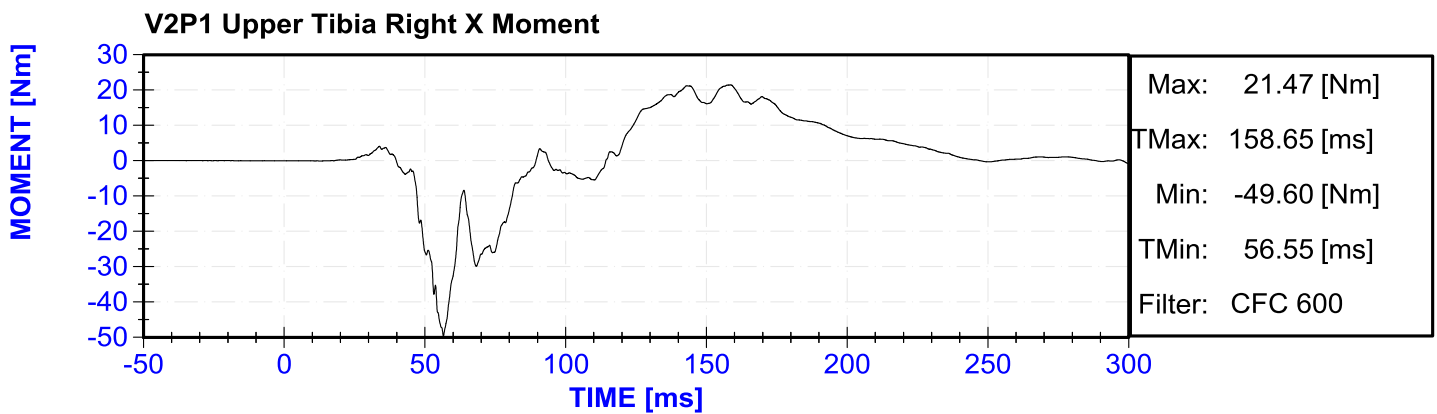
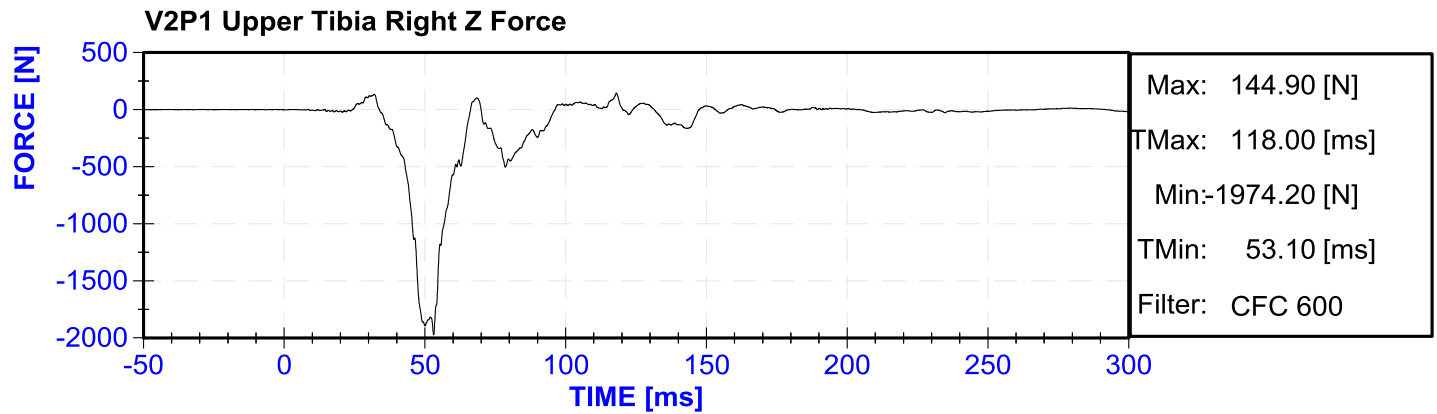
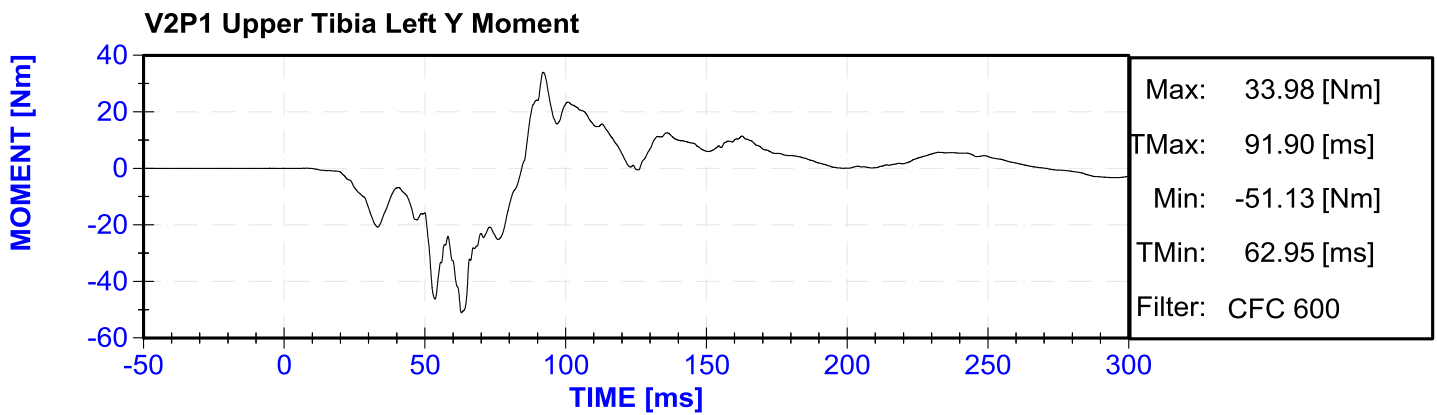
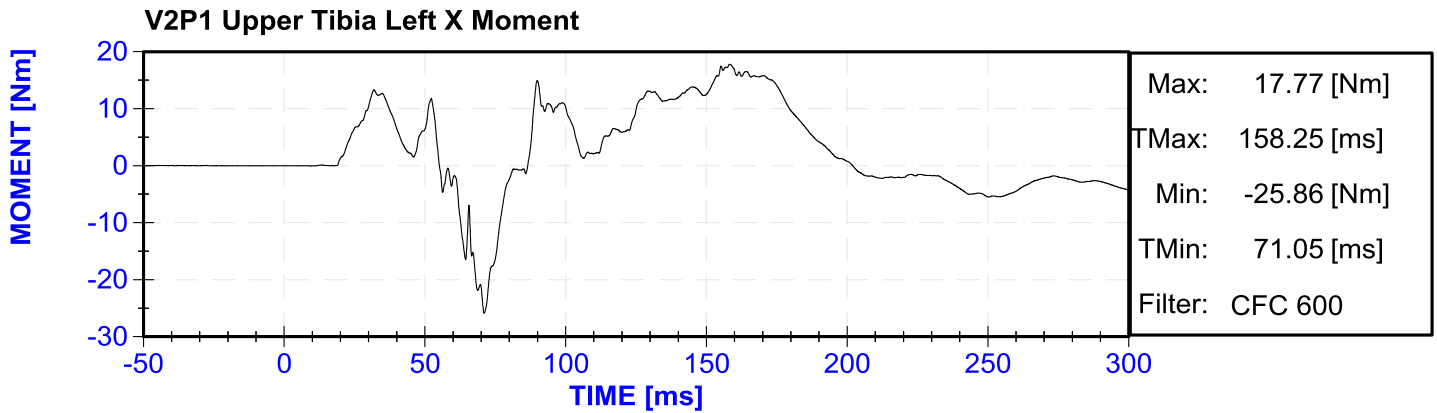


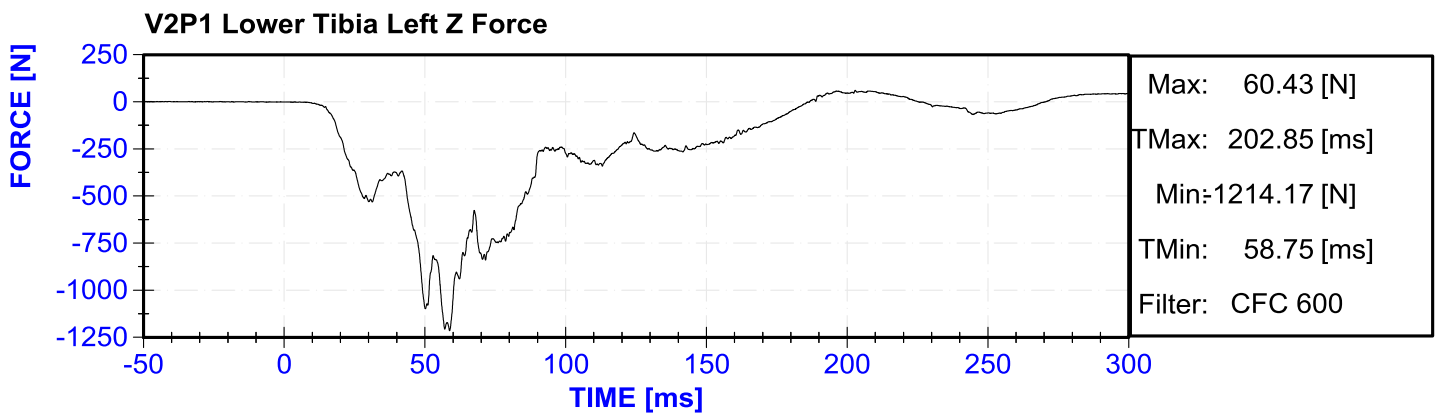
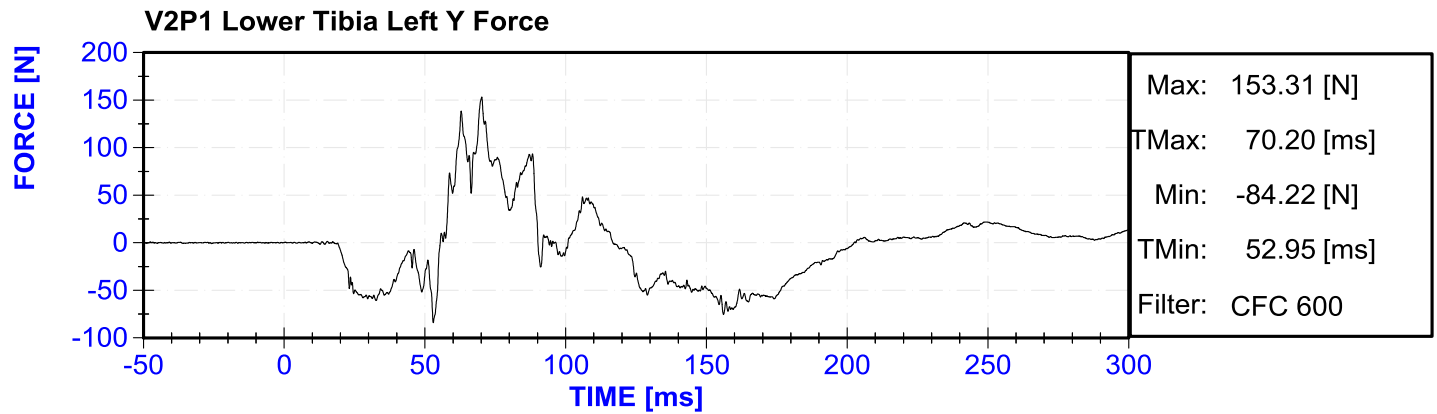
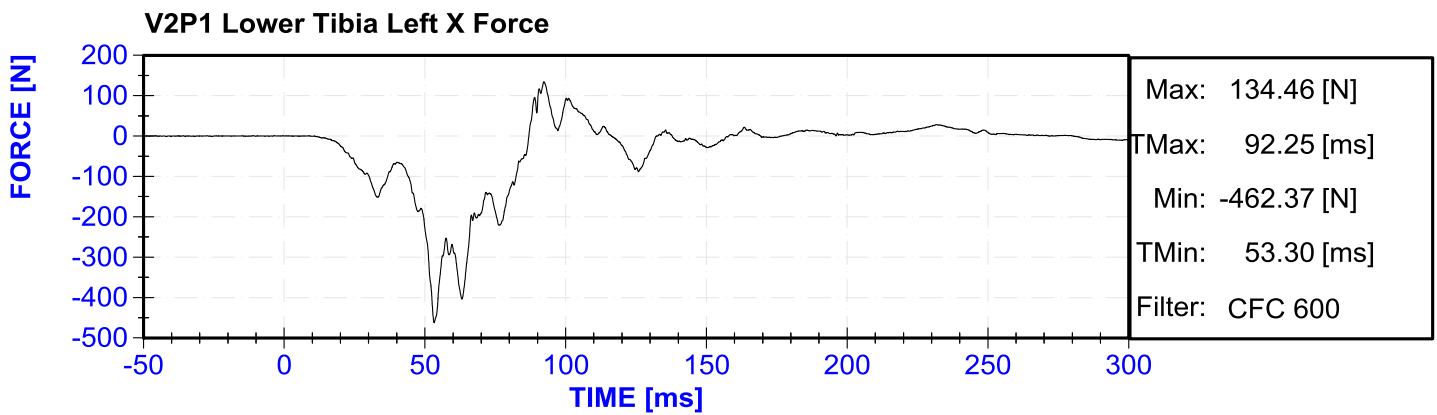
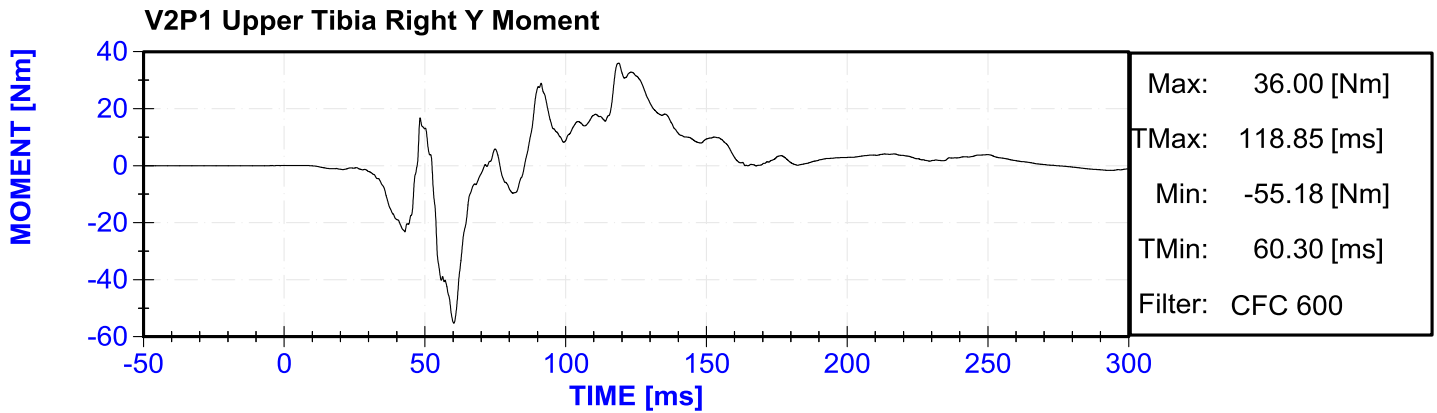




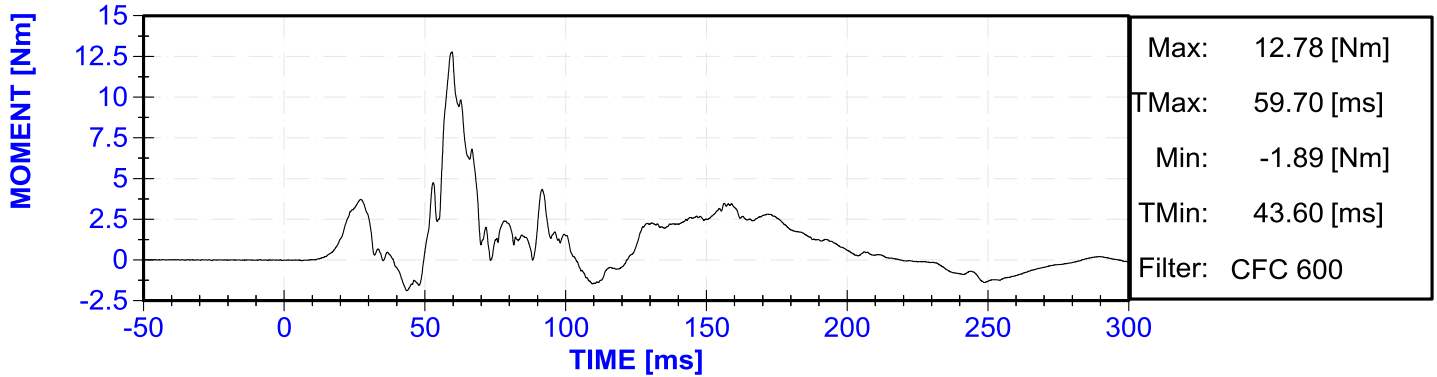




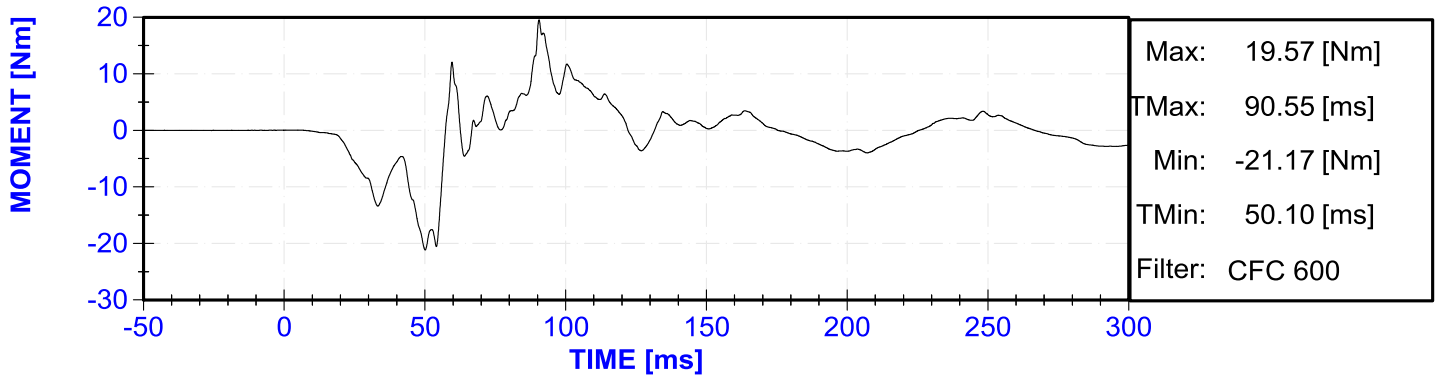




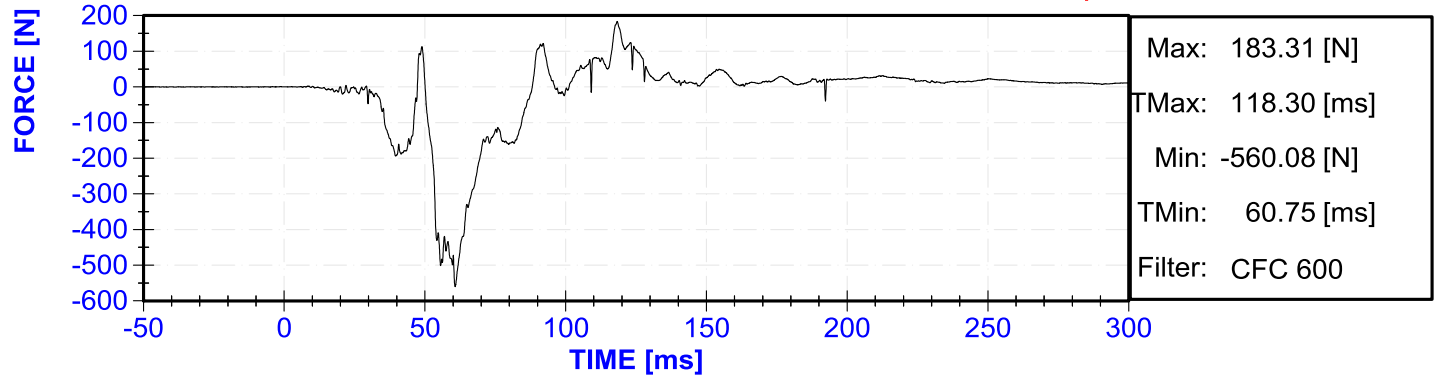
V2P1 Lower Tibia Left X Moment



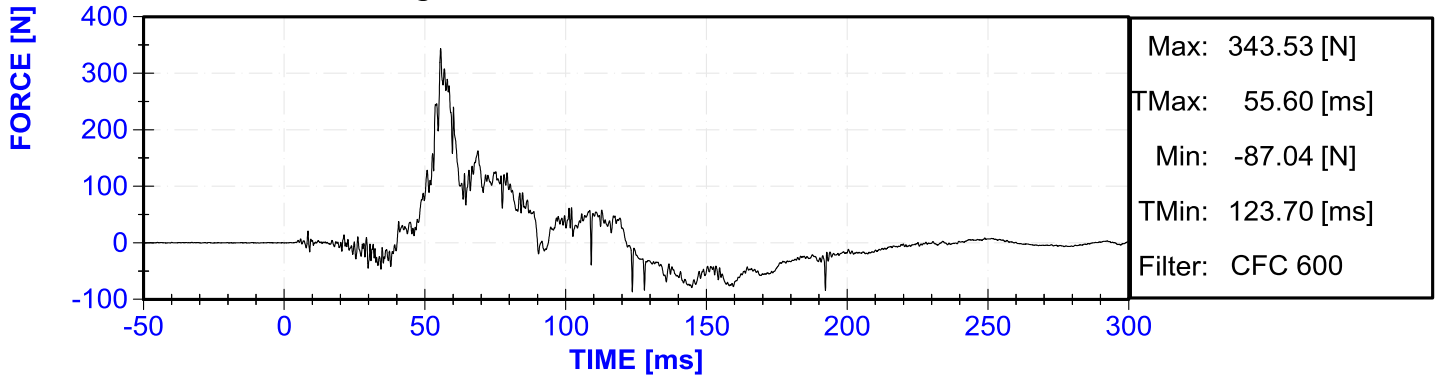
V2P1 Lower Tibia Left Y Moment

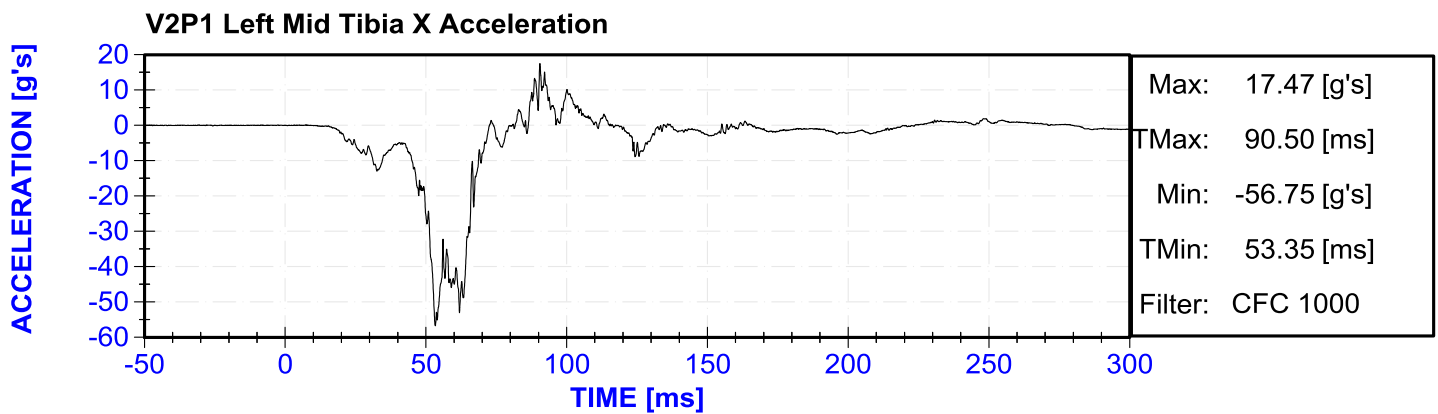
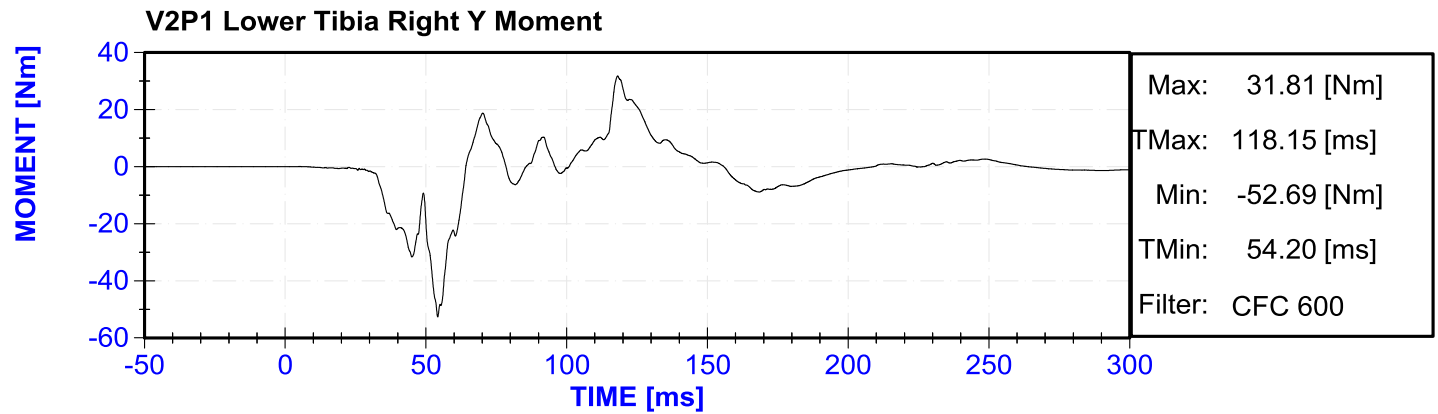
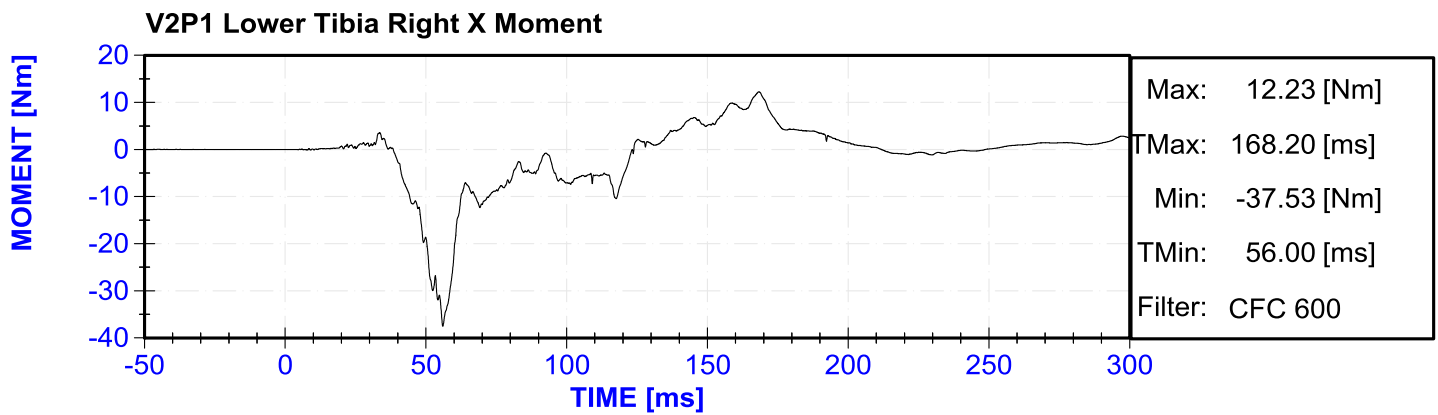
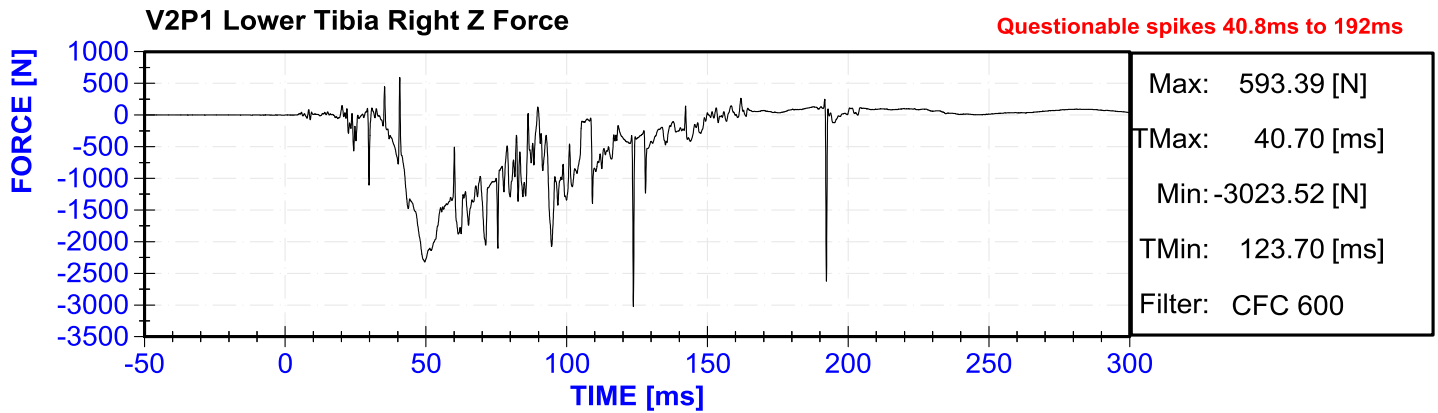


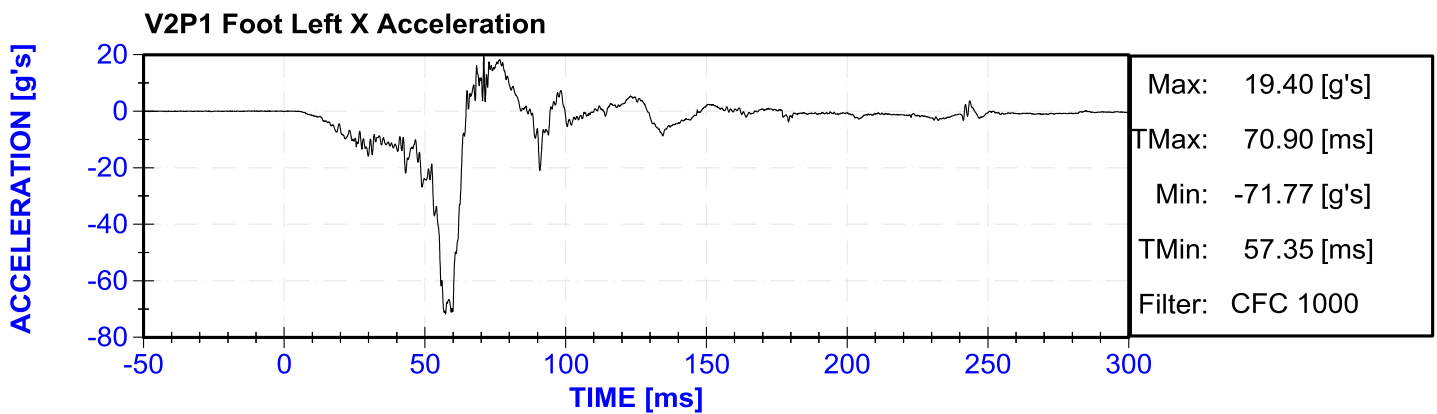
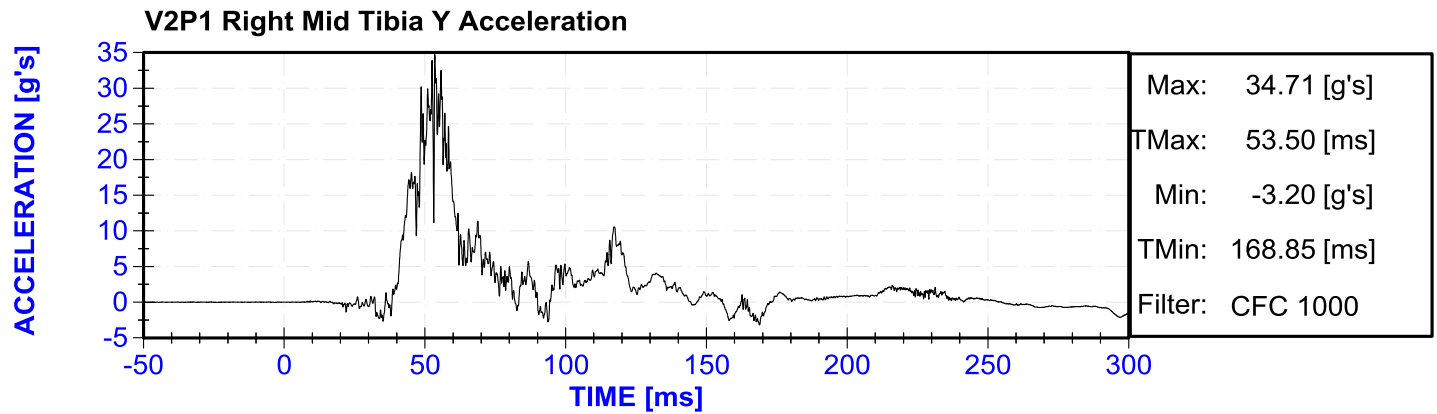
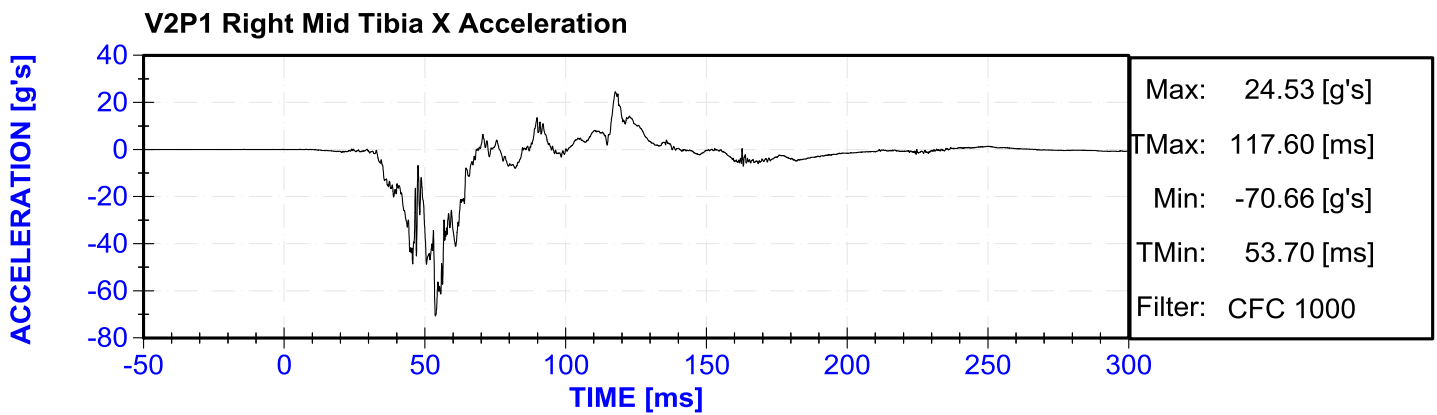
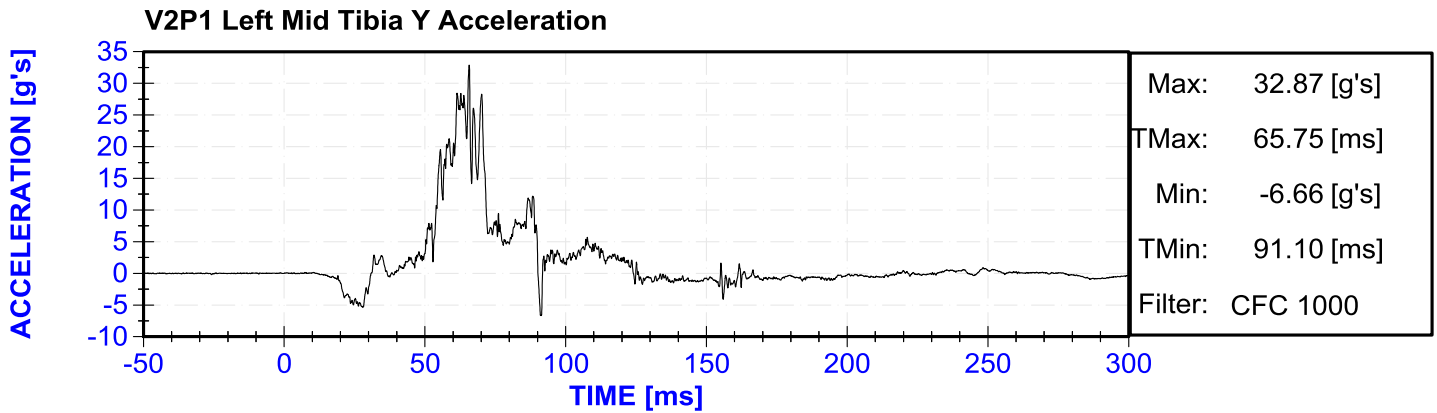
V2P1 Lower Tibia Right X Force

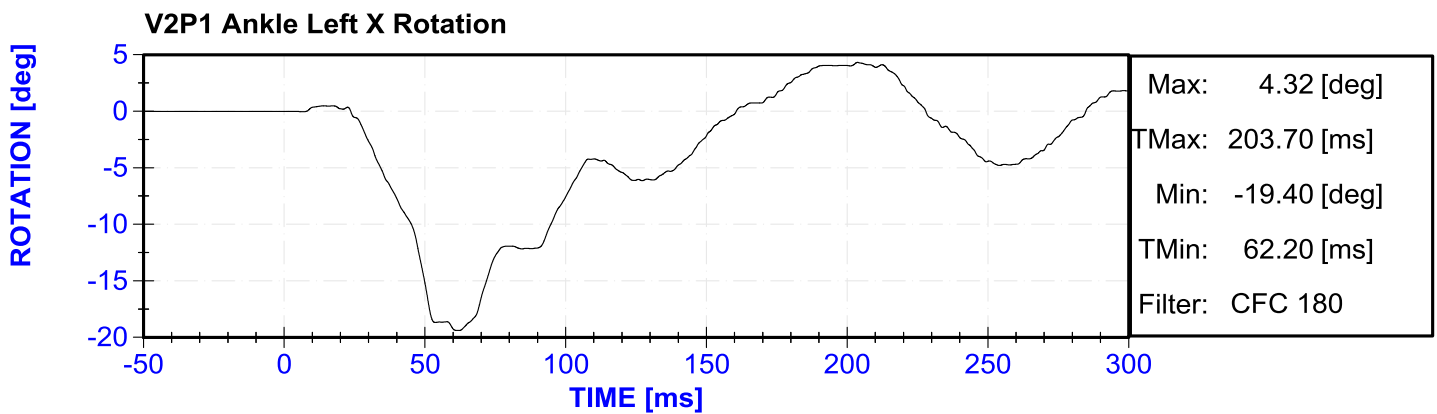
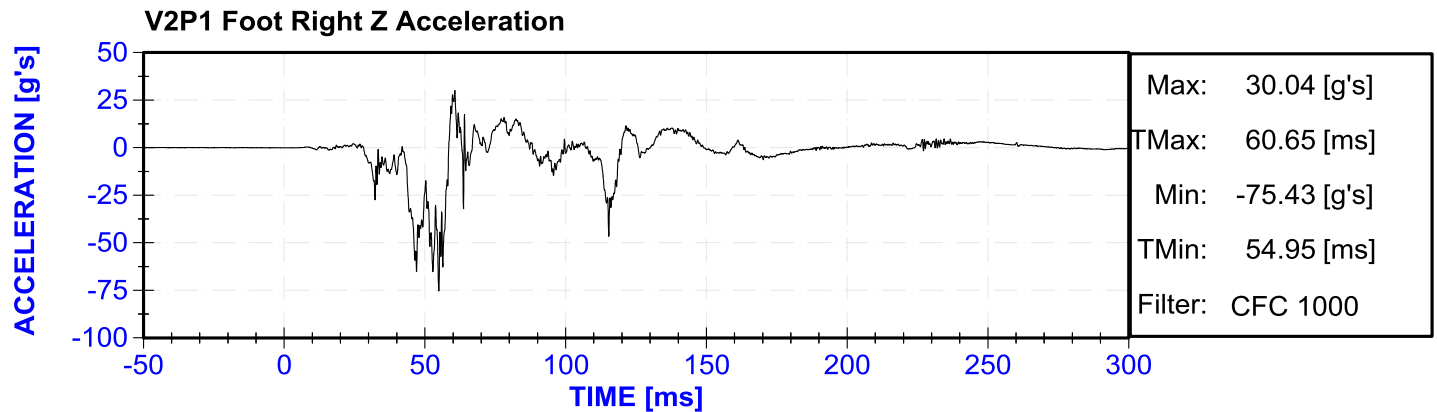
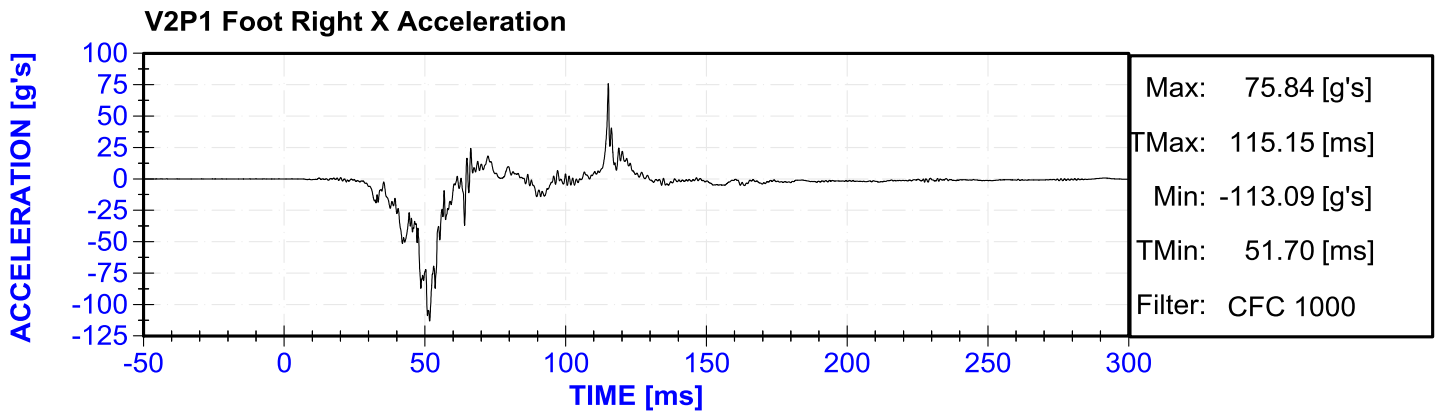
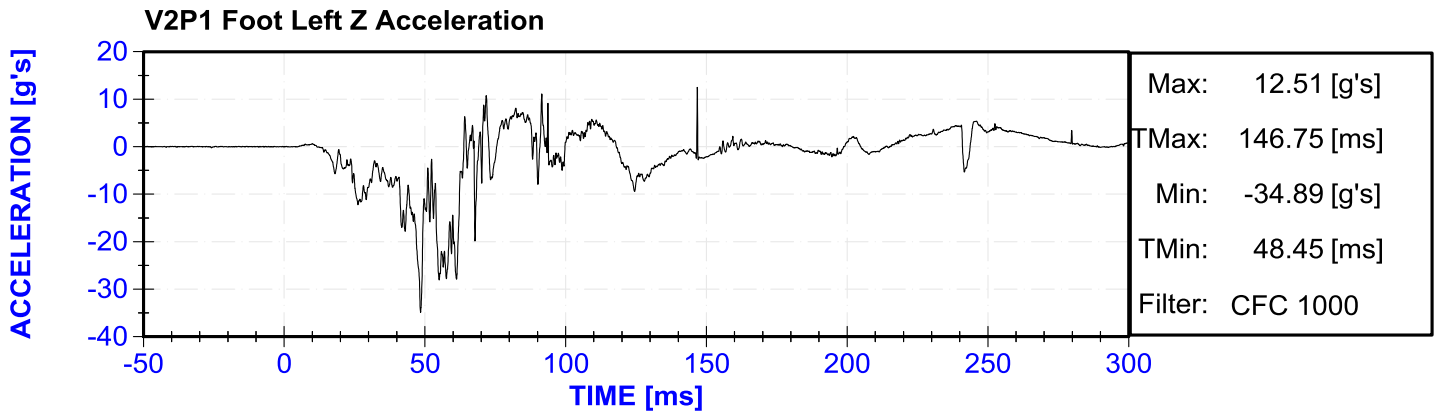


V2P1 Lower Tibia Right Y Force

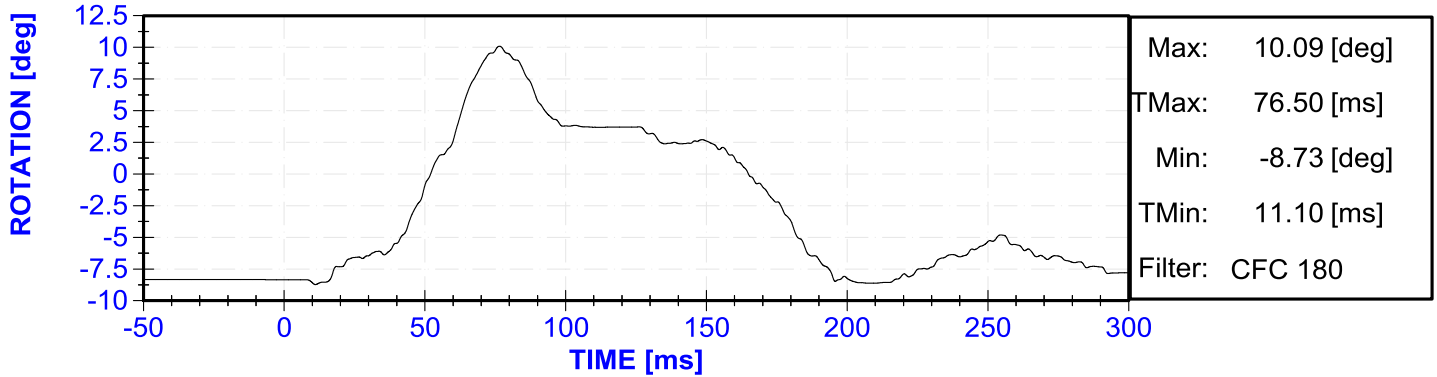




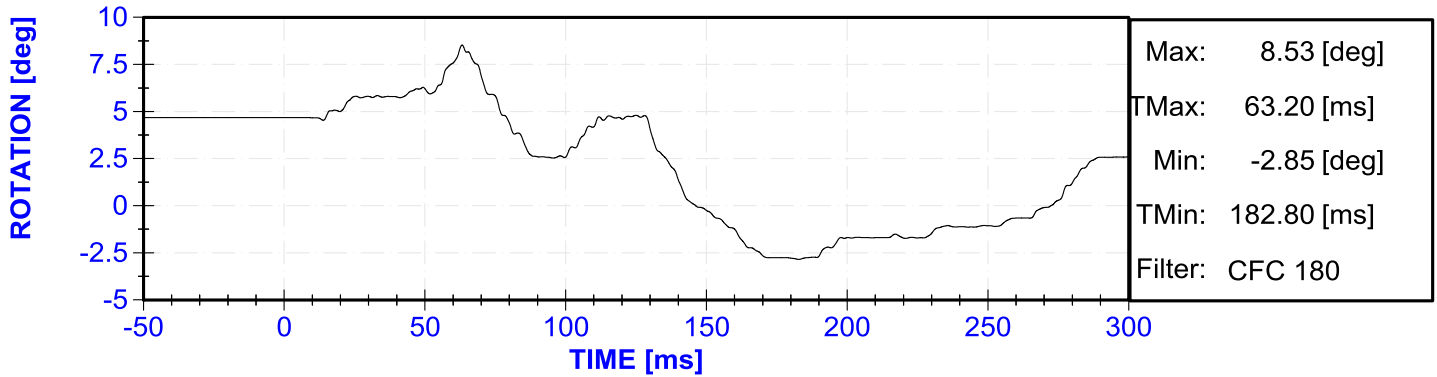




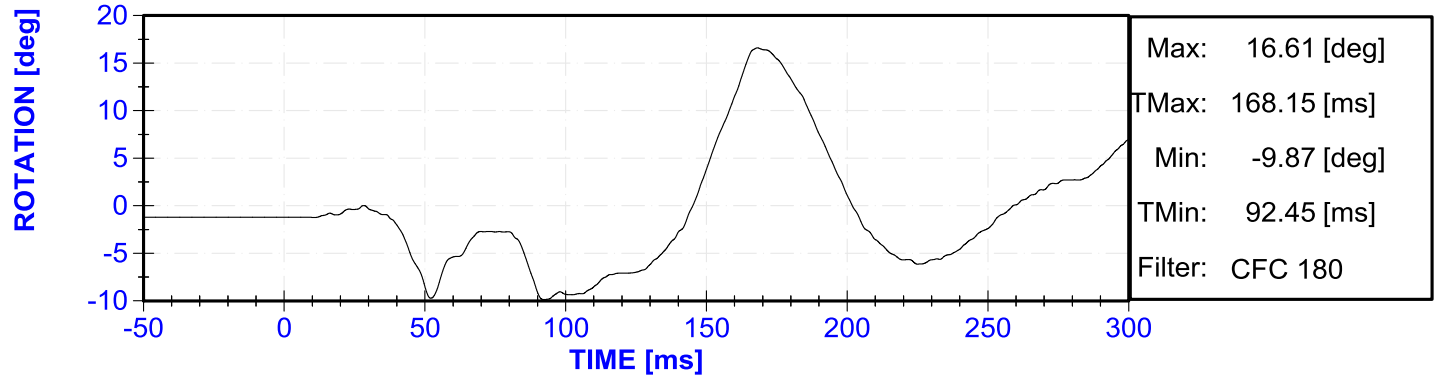
V2P1 Ankle Left Y Rotation



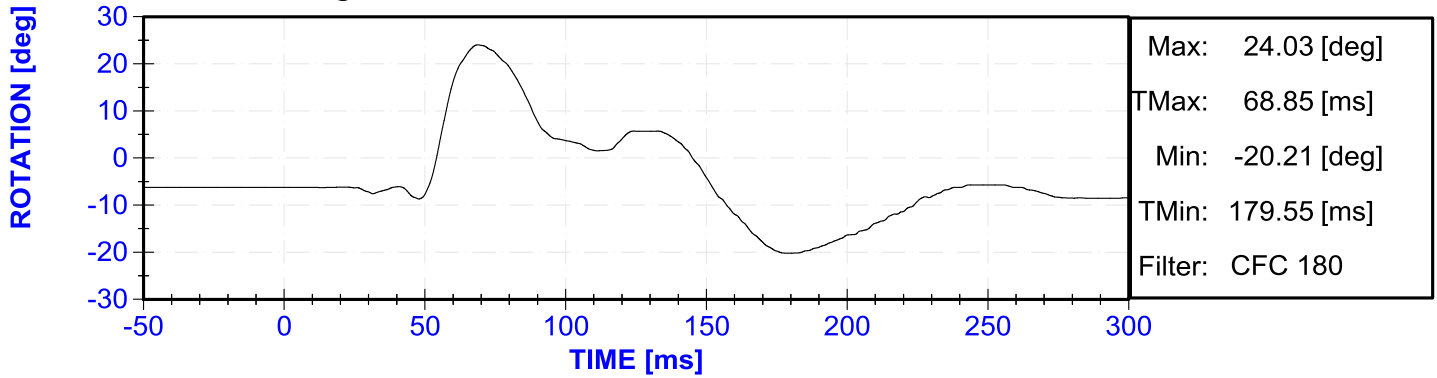
V2P1 Ankle Left Z Rotation

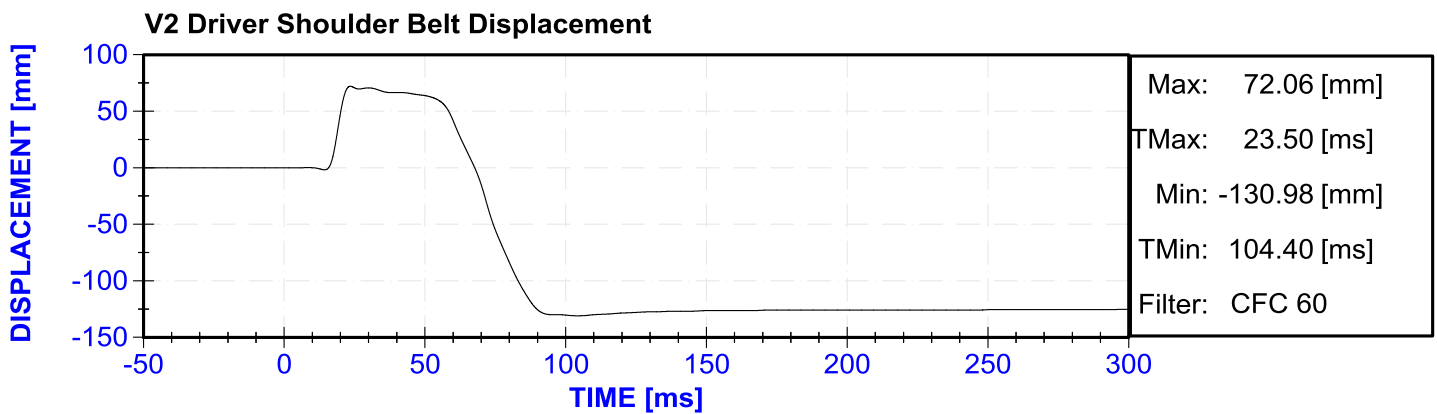
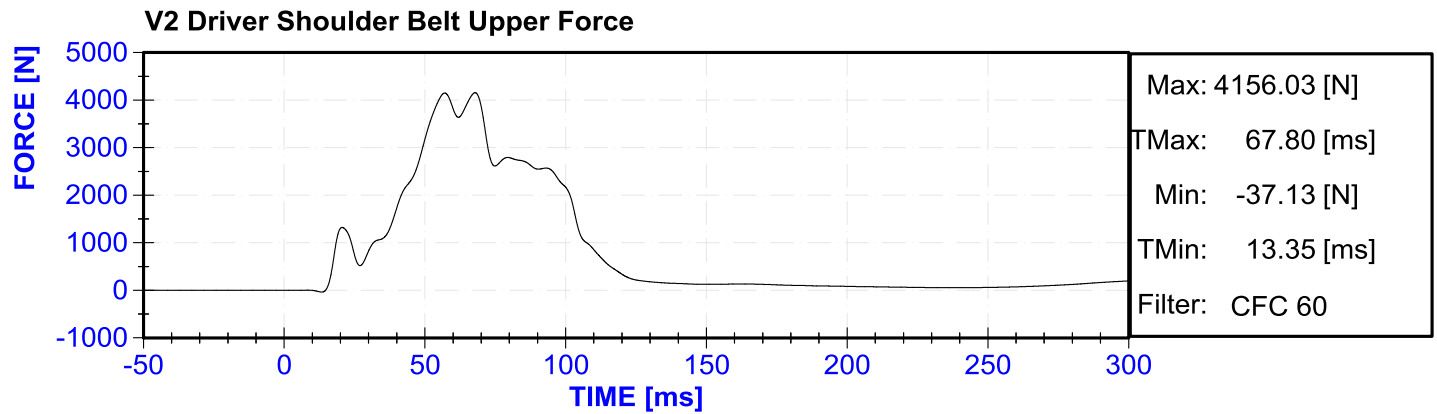
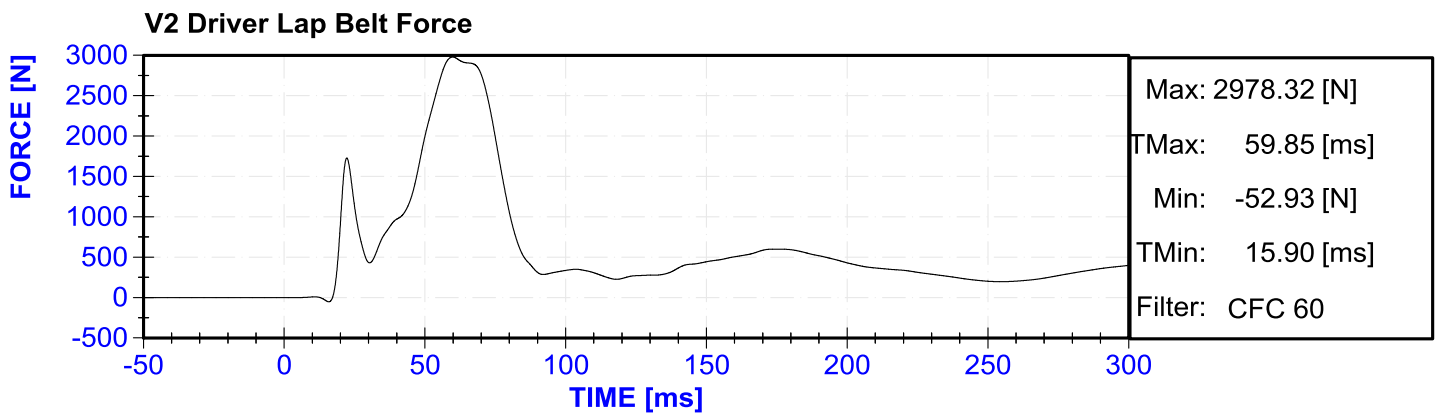
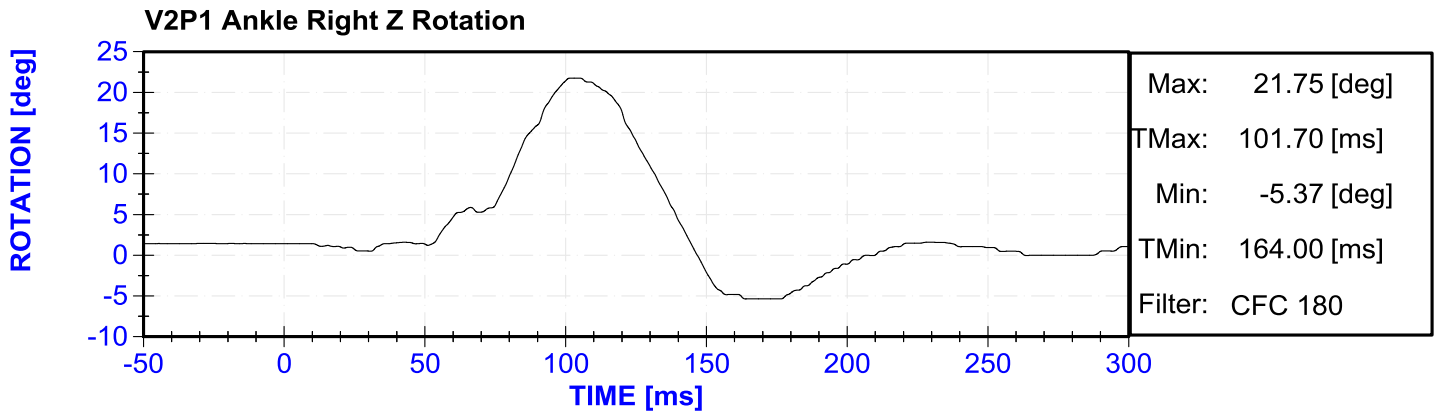


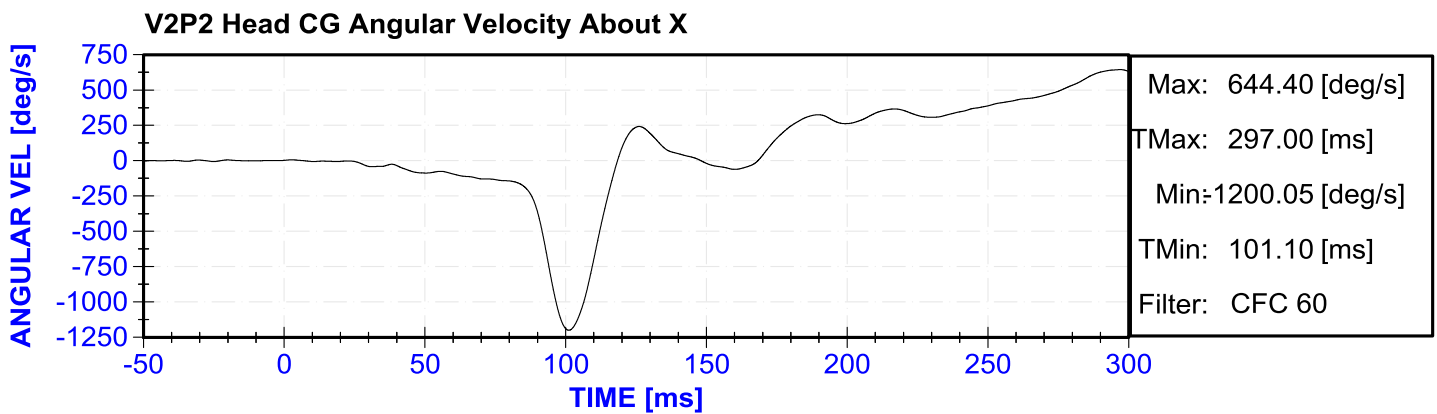
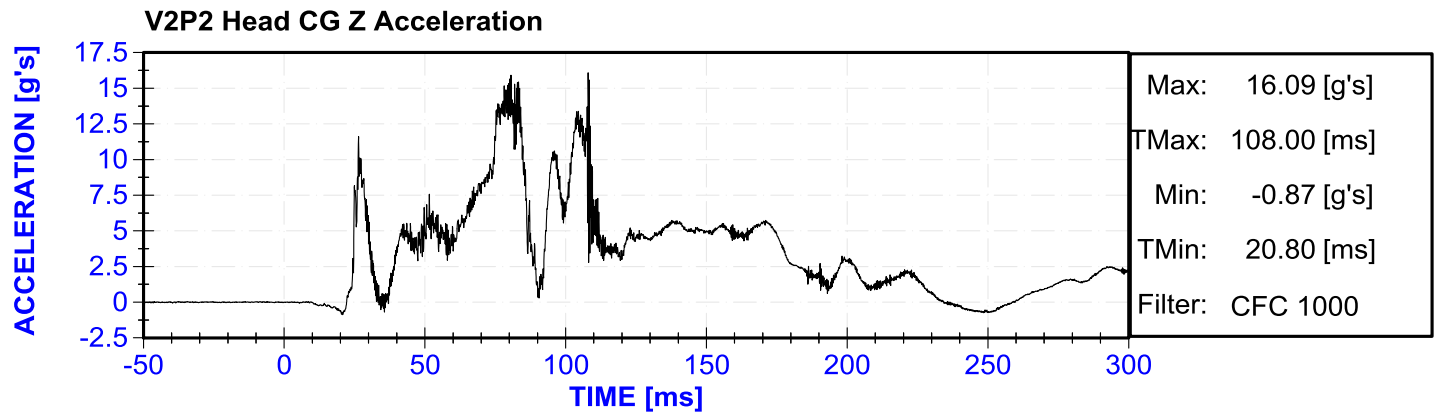
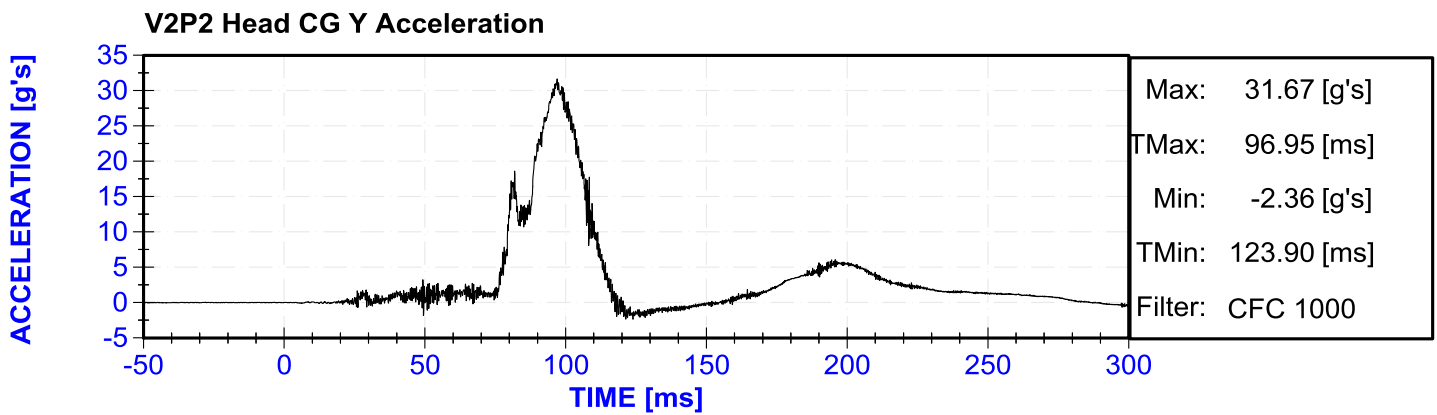
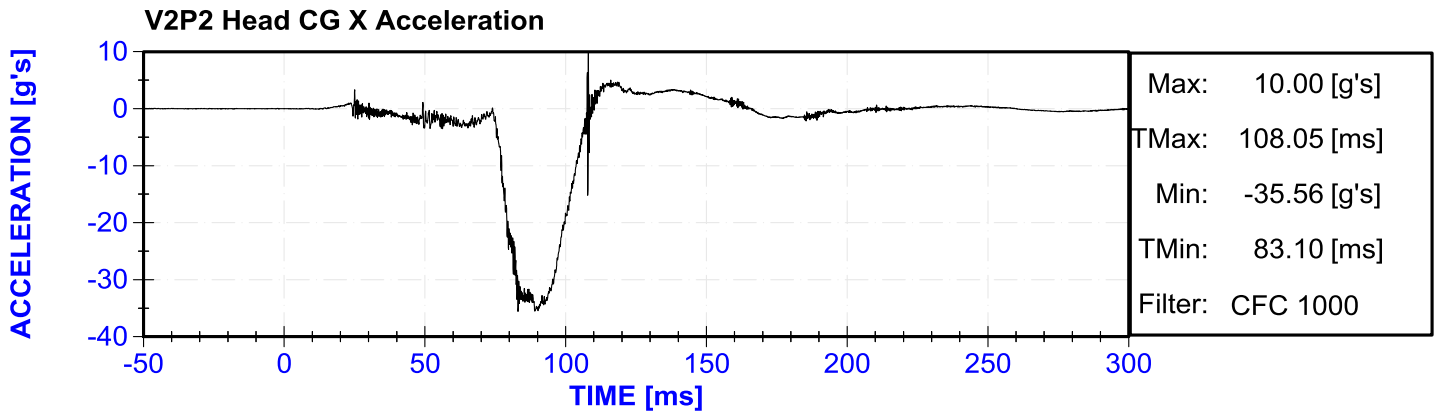
V2P1 Ankle Right X Rotation

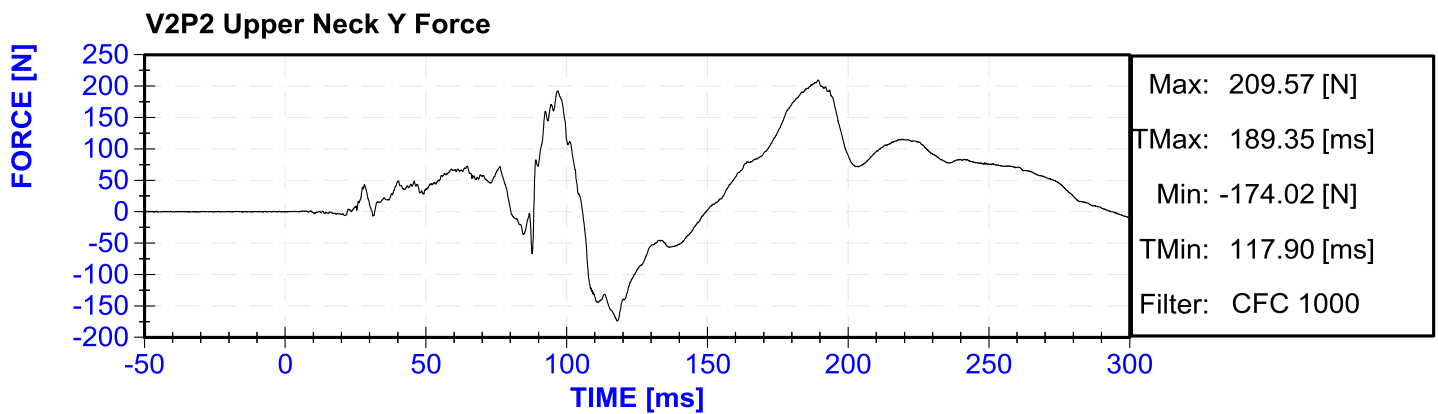
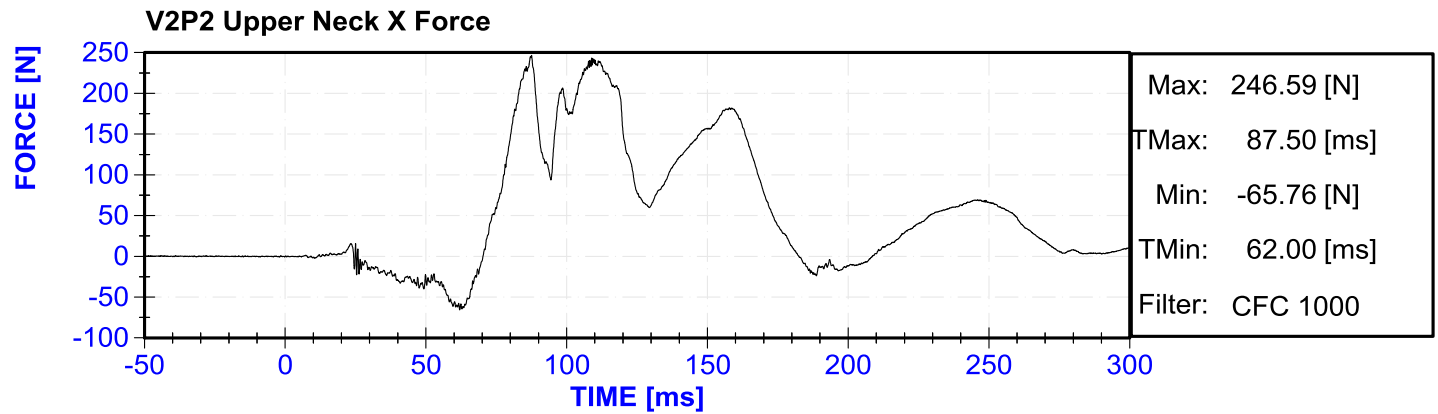
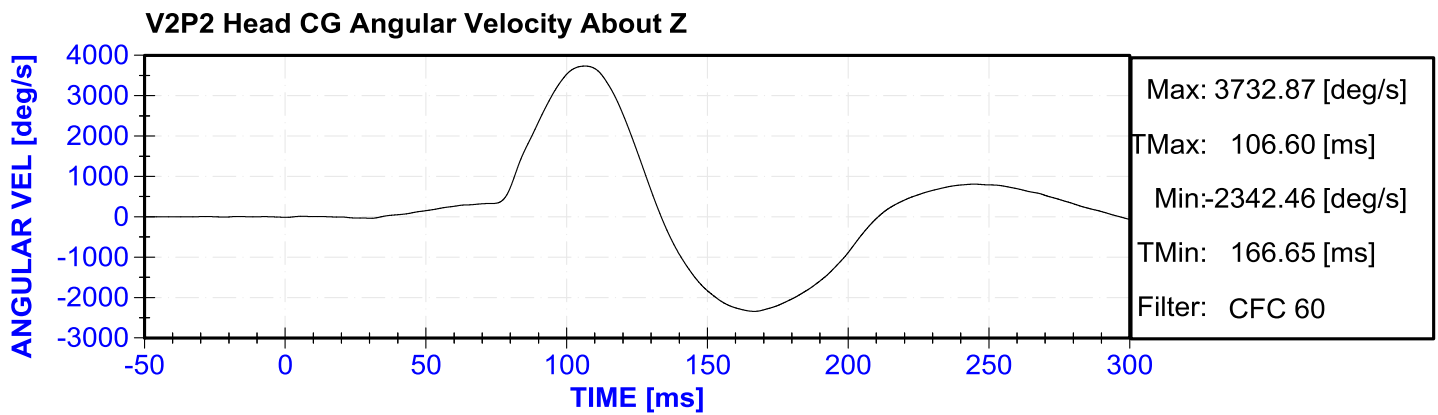
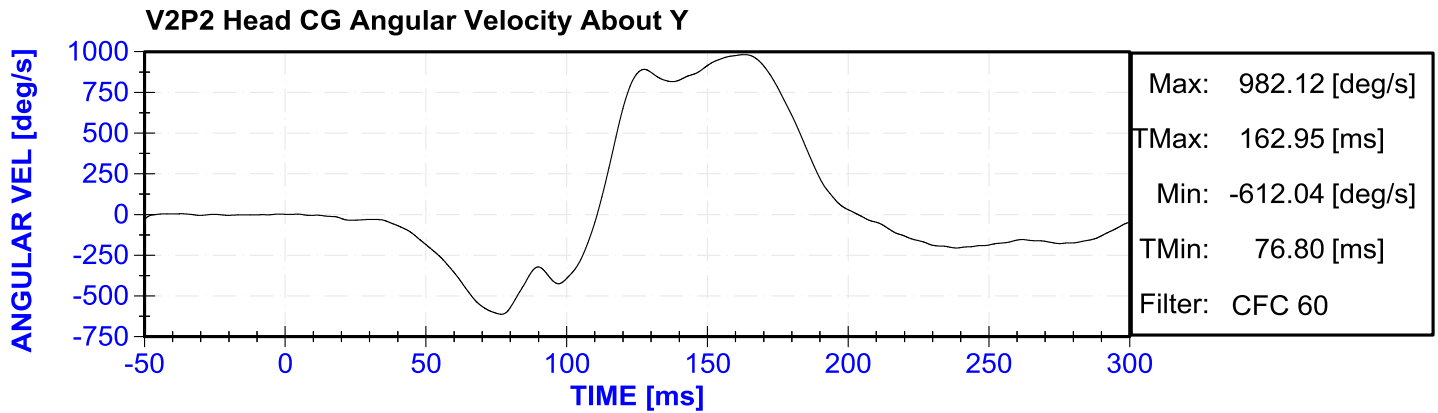


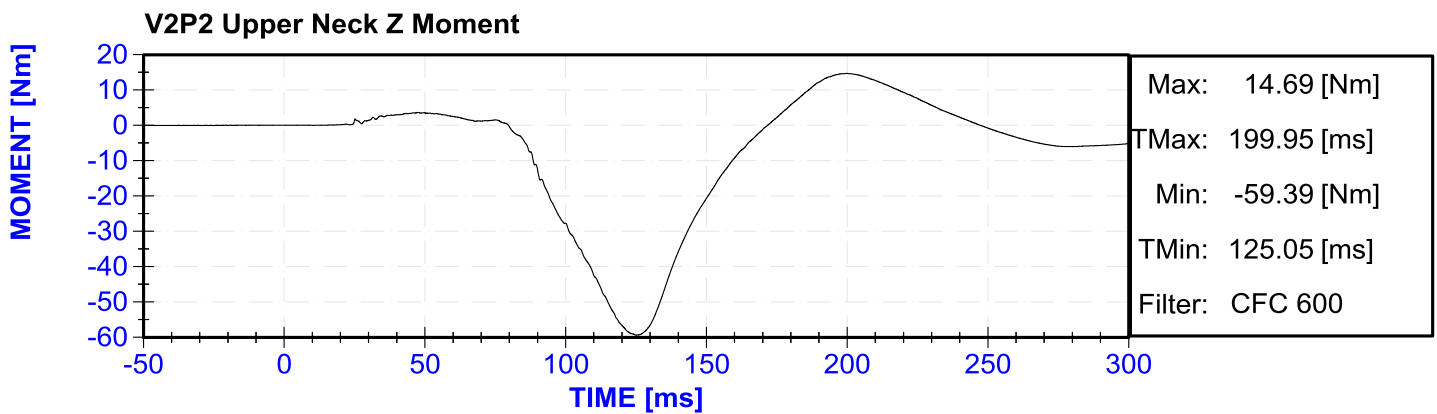
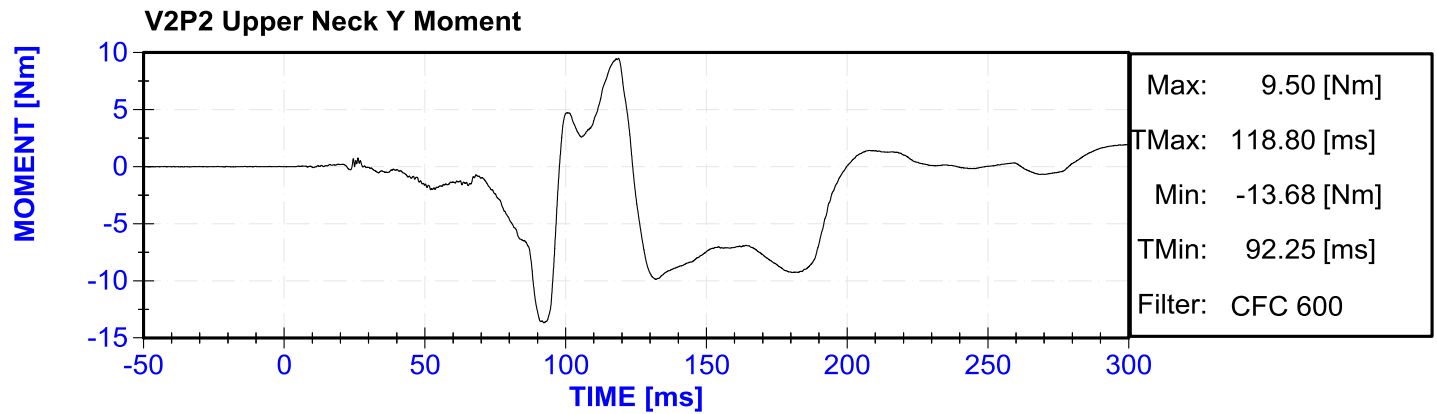
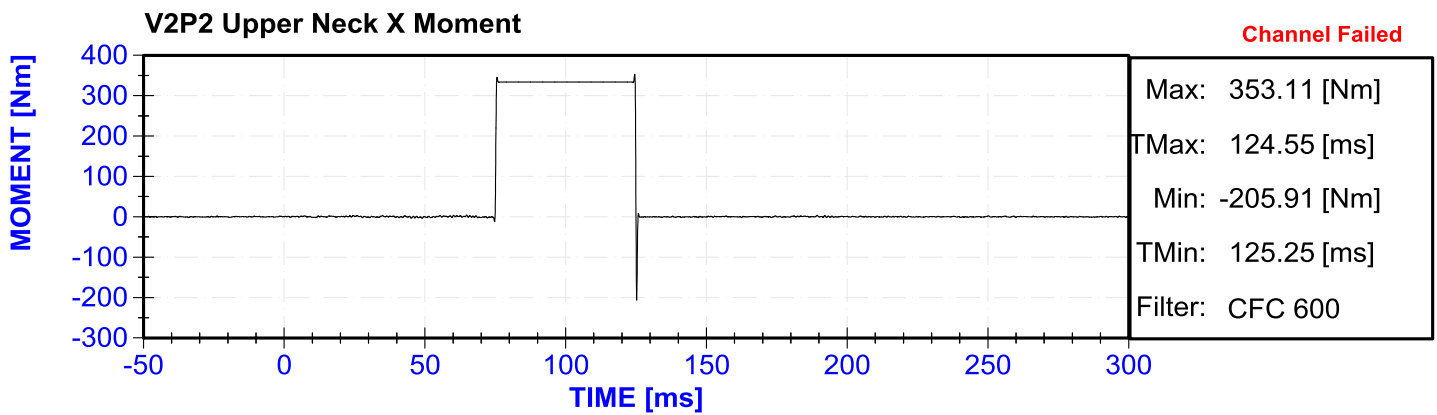
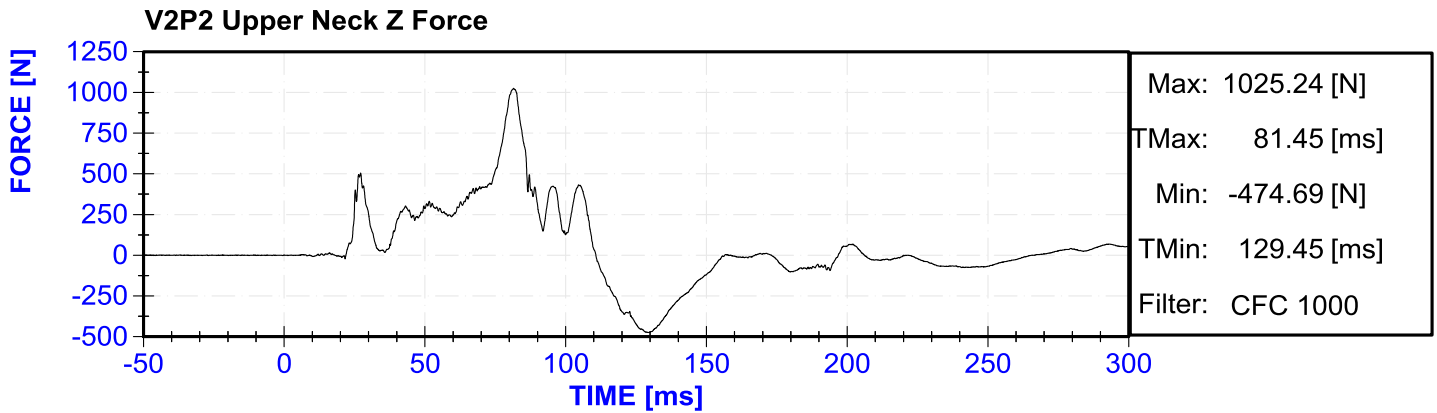
V2P1 Ankle Right Y Rotation

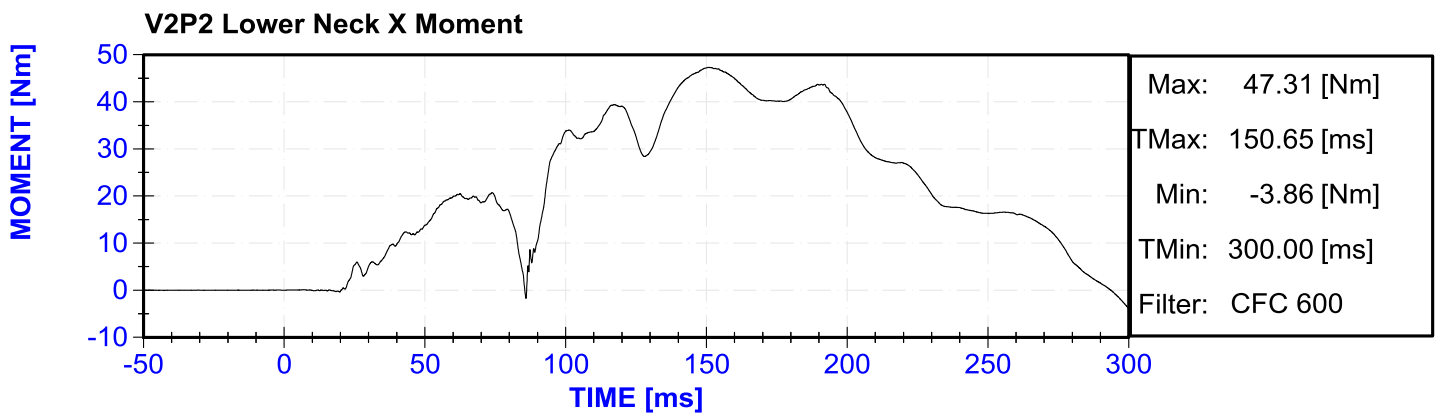
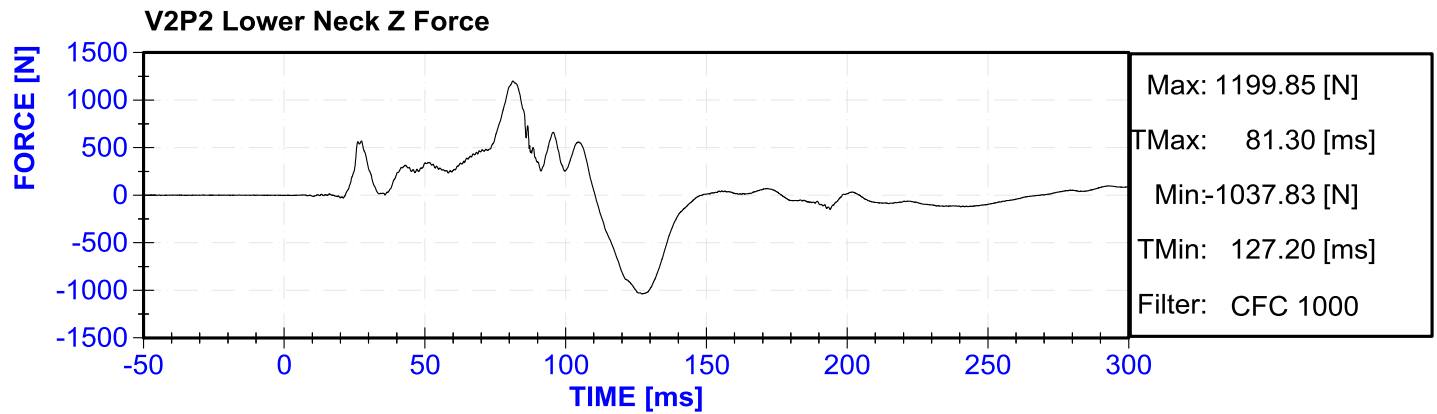
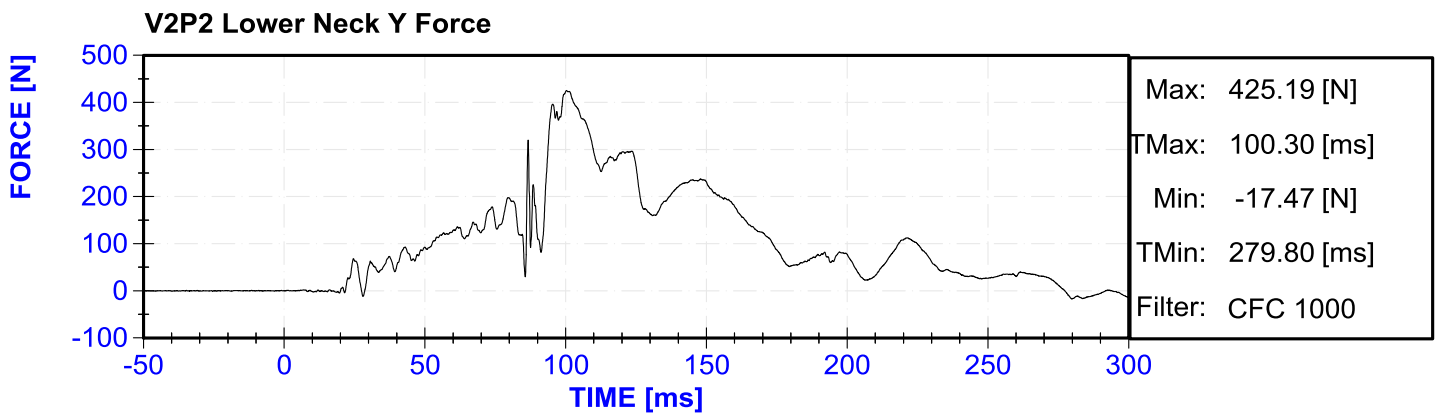
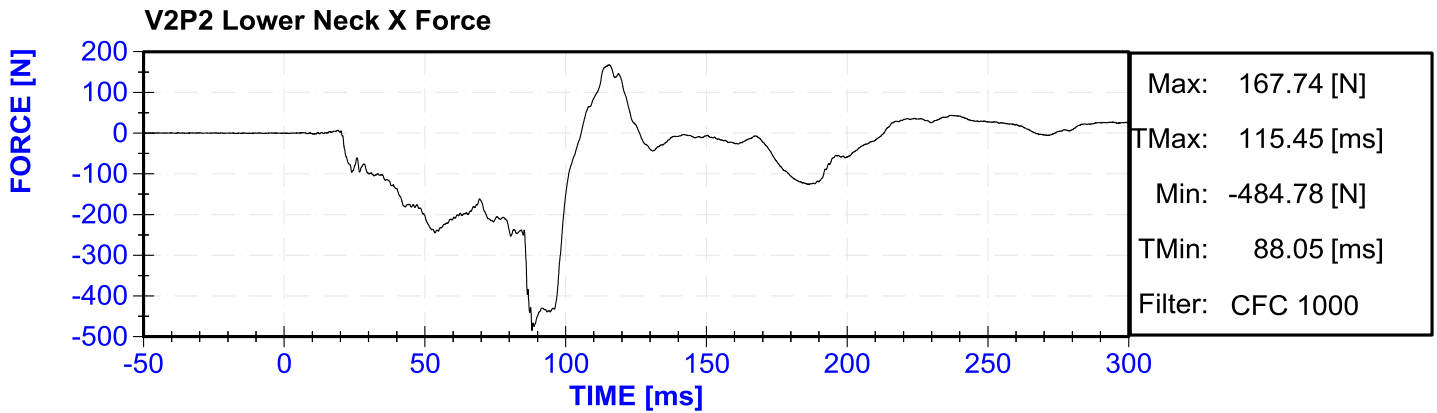


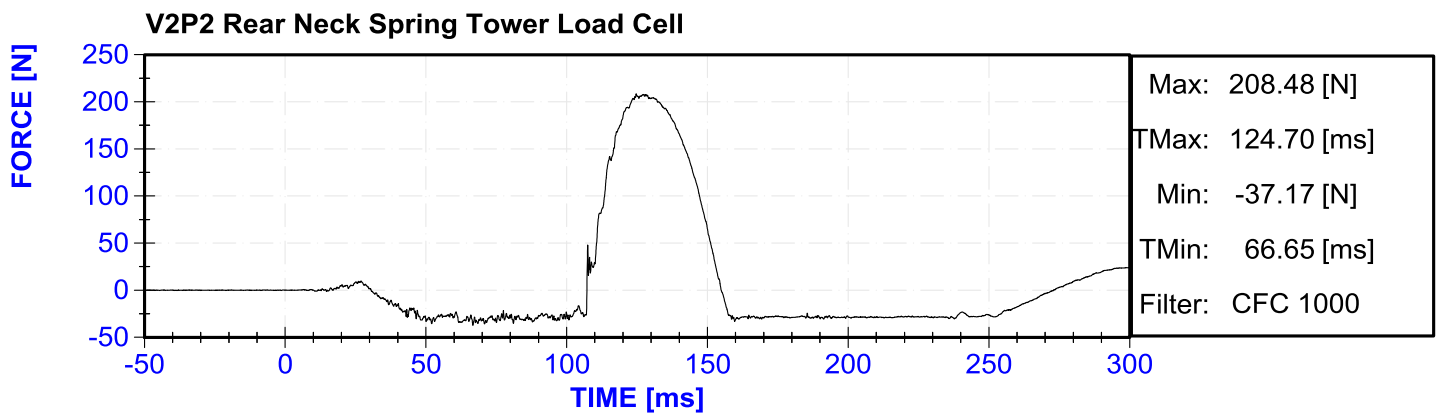
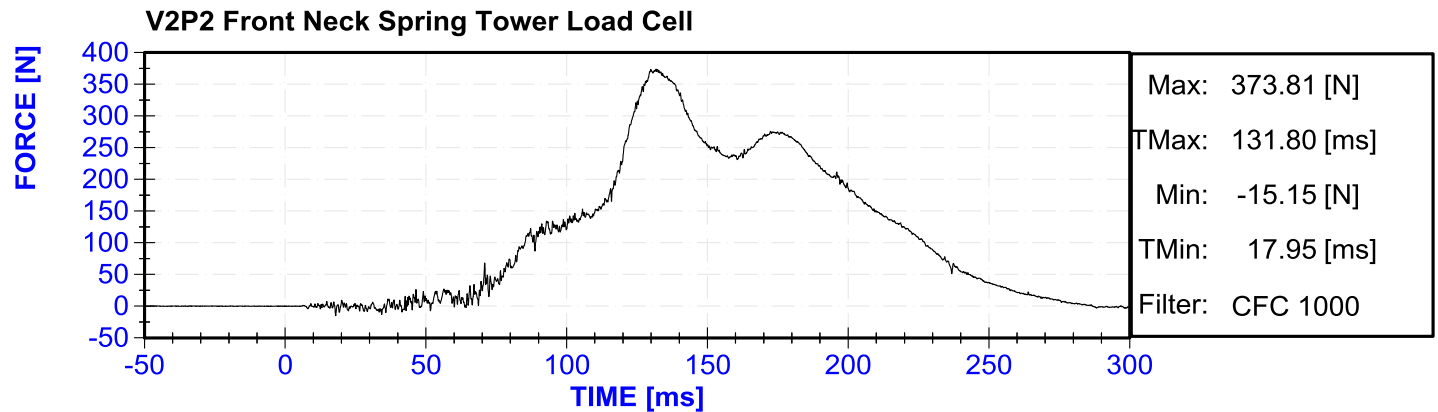
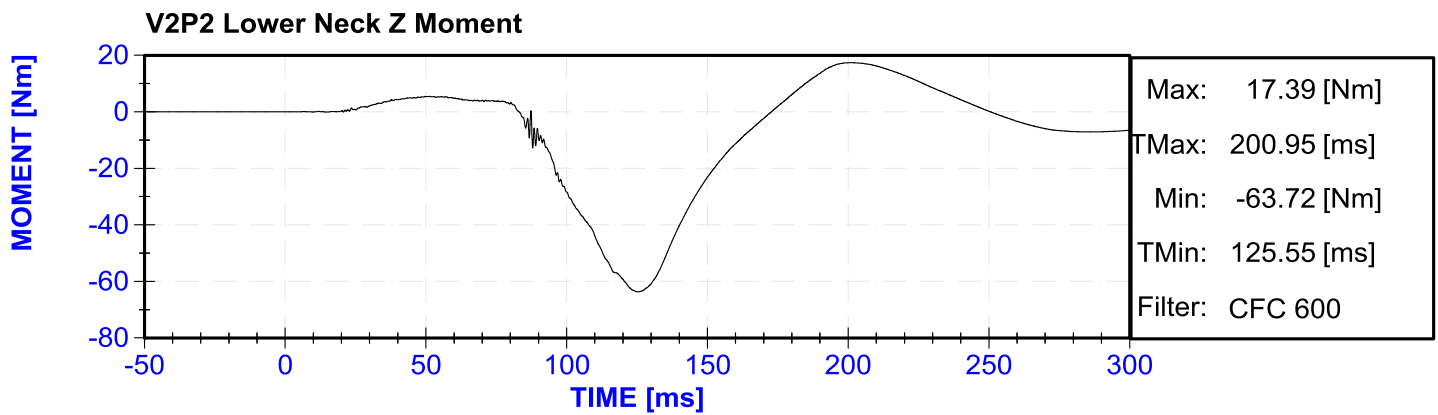
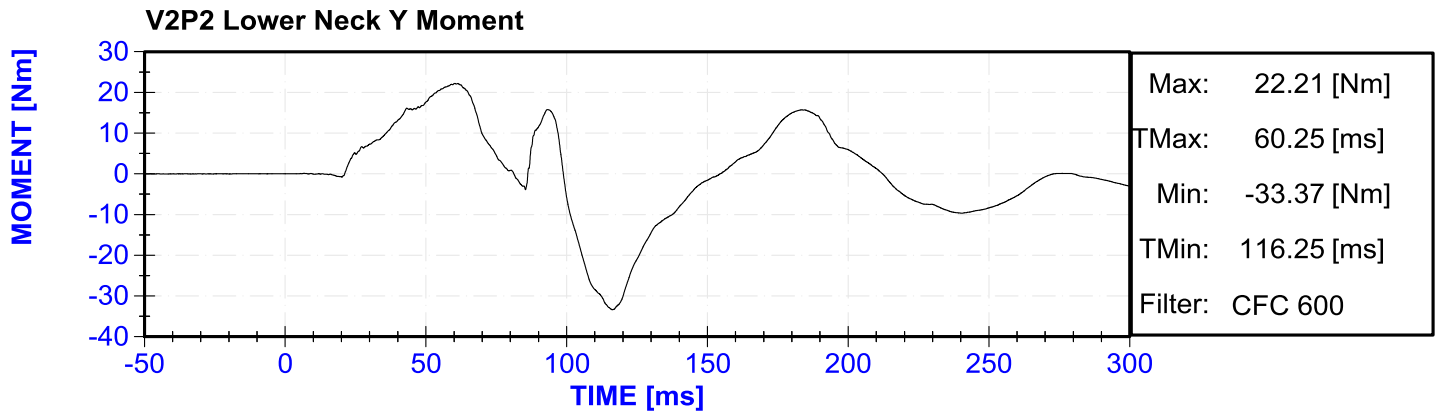




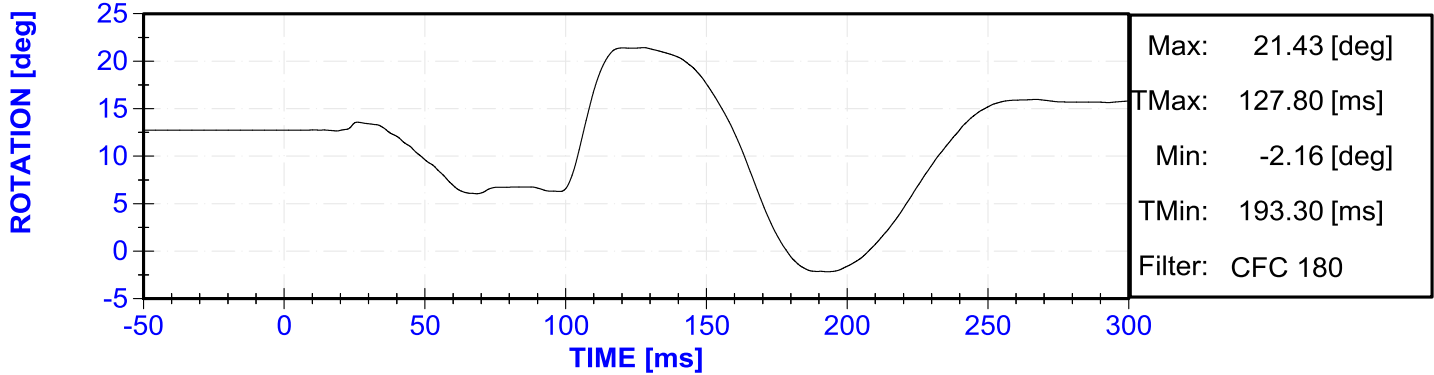




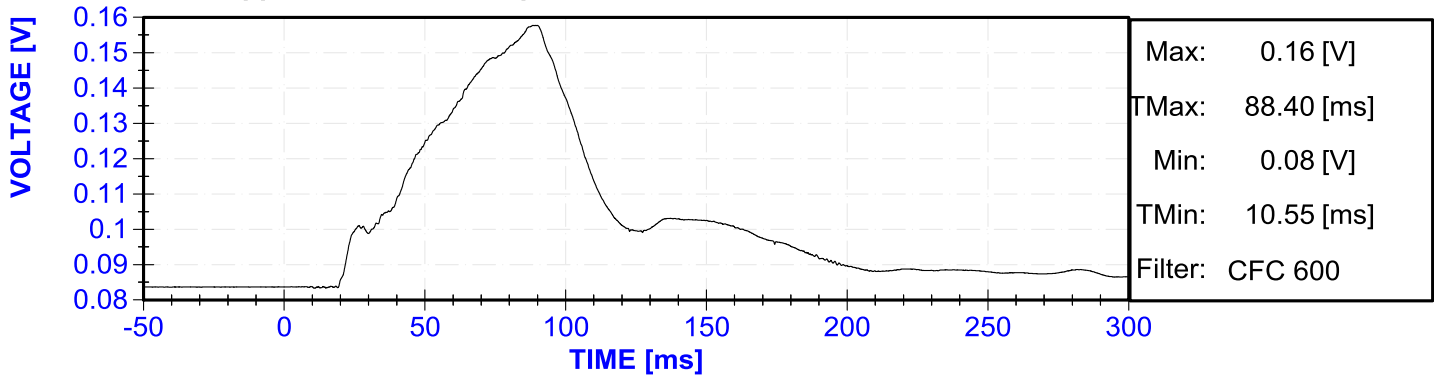




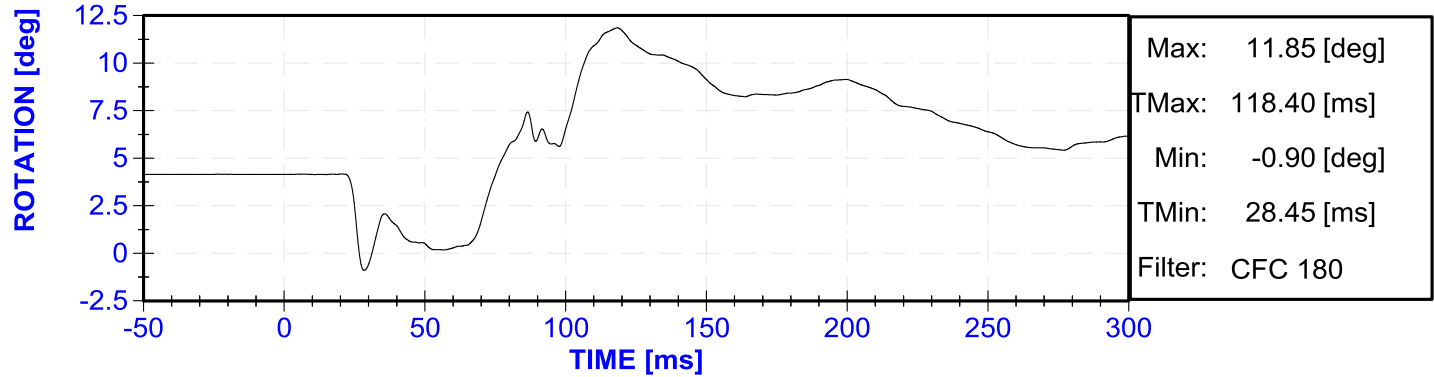
V2P2 Occipital Condyle Rotation Potentiometer



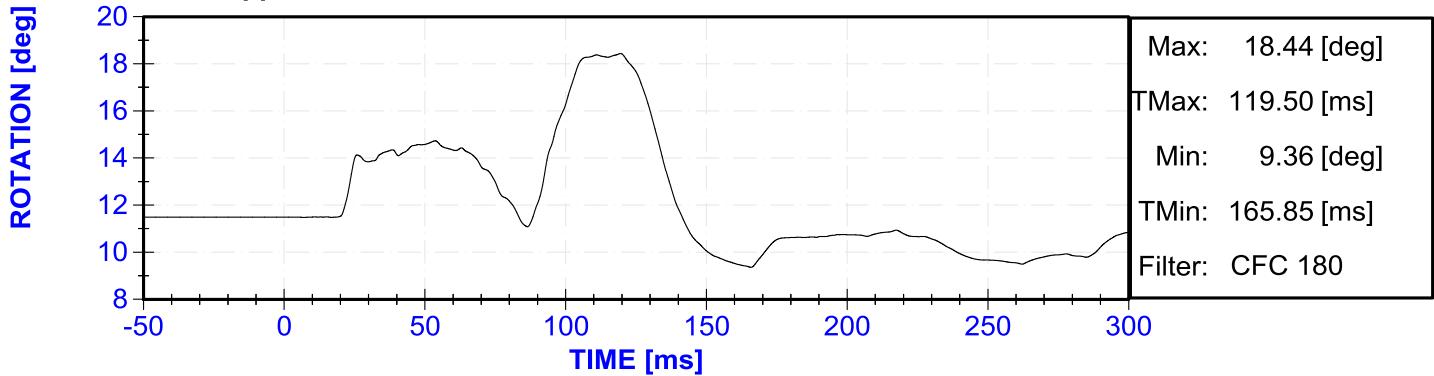
V2P2 Upper Left DGIR X Displacement



V2P2 Upper Left DGIR Y Rotation

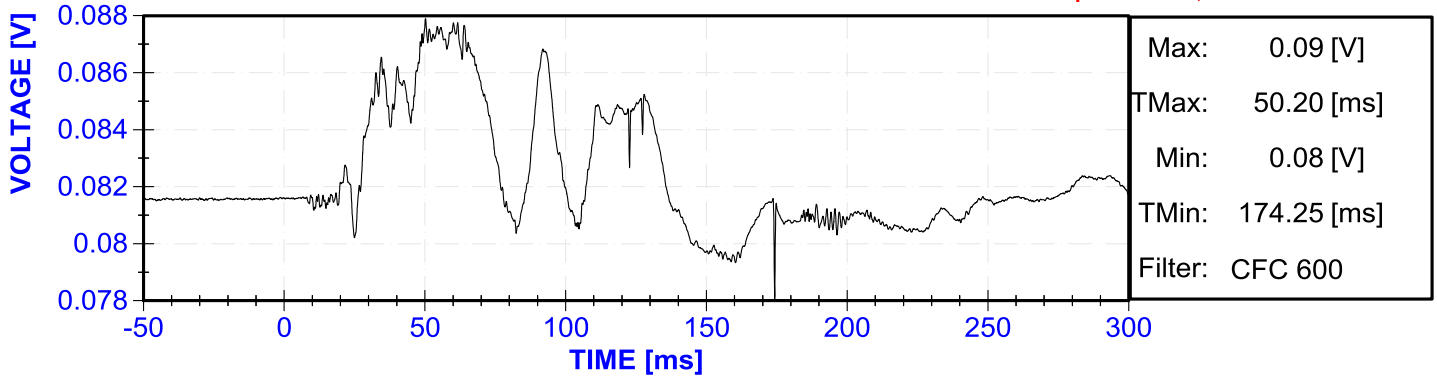


V2P2 Upper Left DGIR Z Rotation

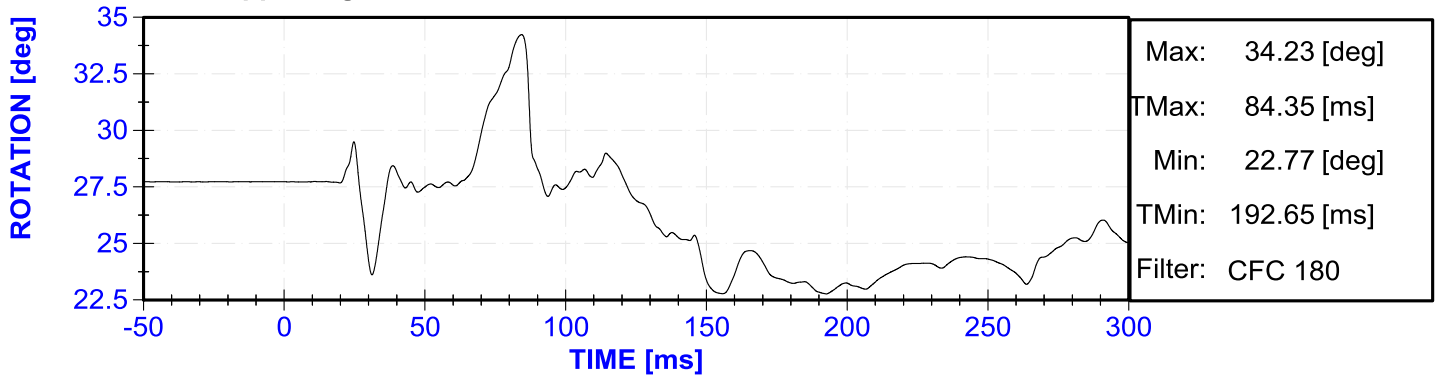


V2P2 Upper Right DGIR X Displacement

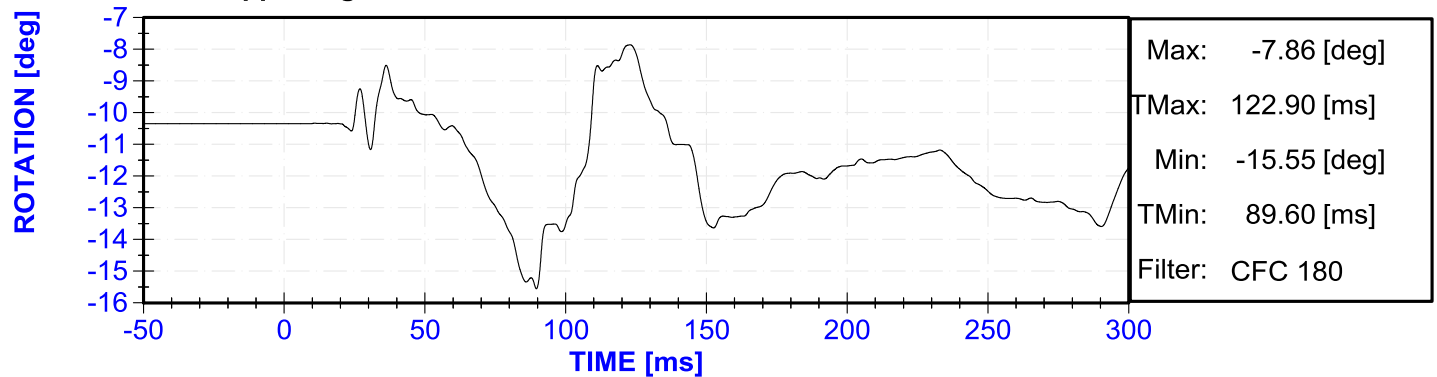
Questionable spike 123ms, 127ms and 174ms



V2P2 Upper Right DGIR Y Rotation

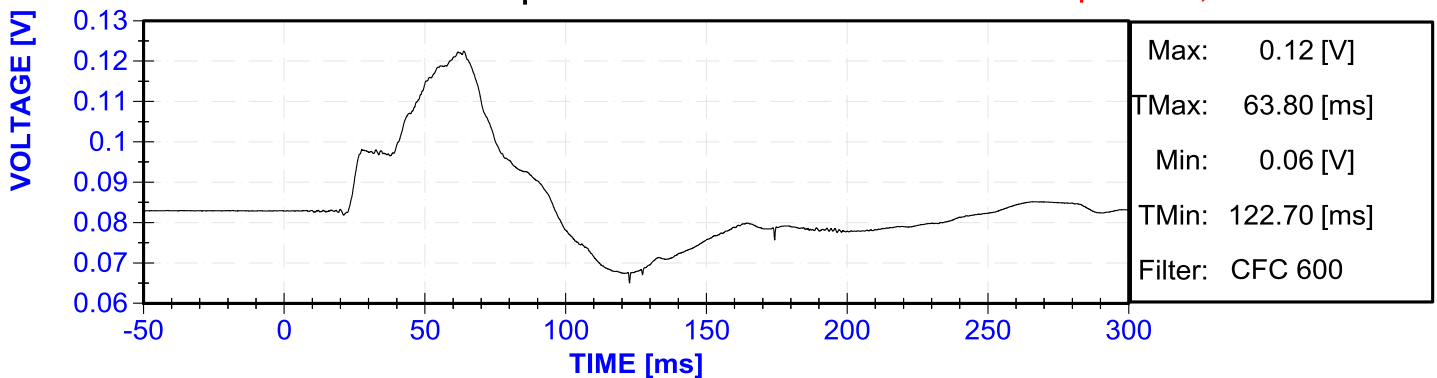


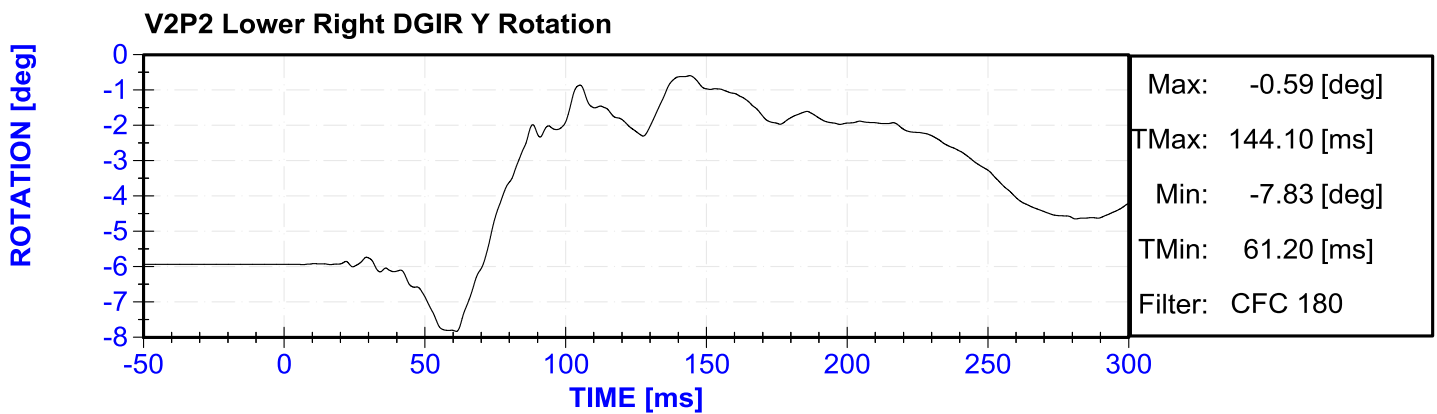
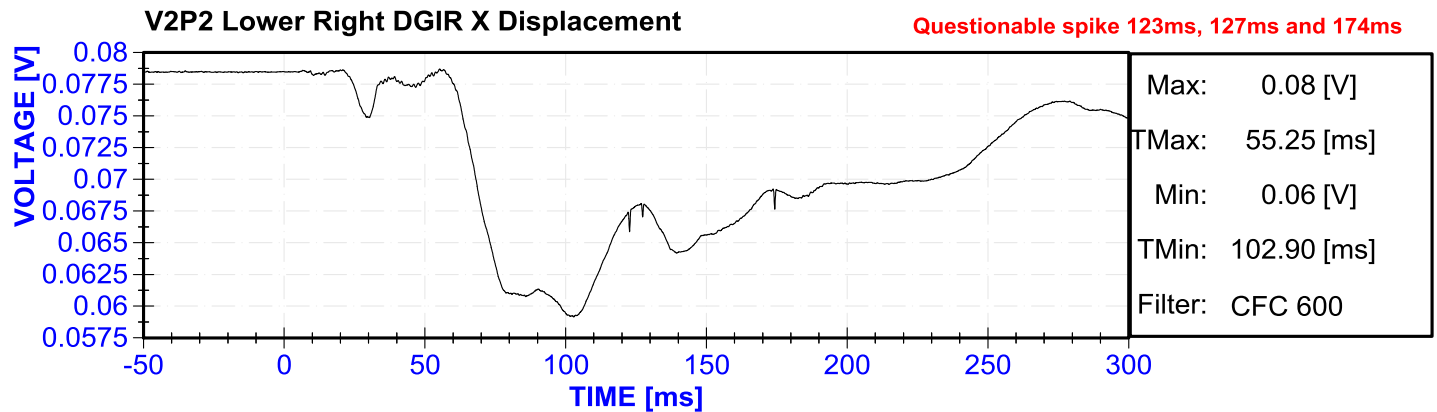
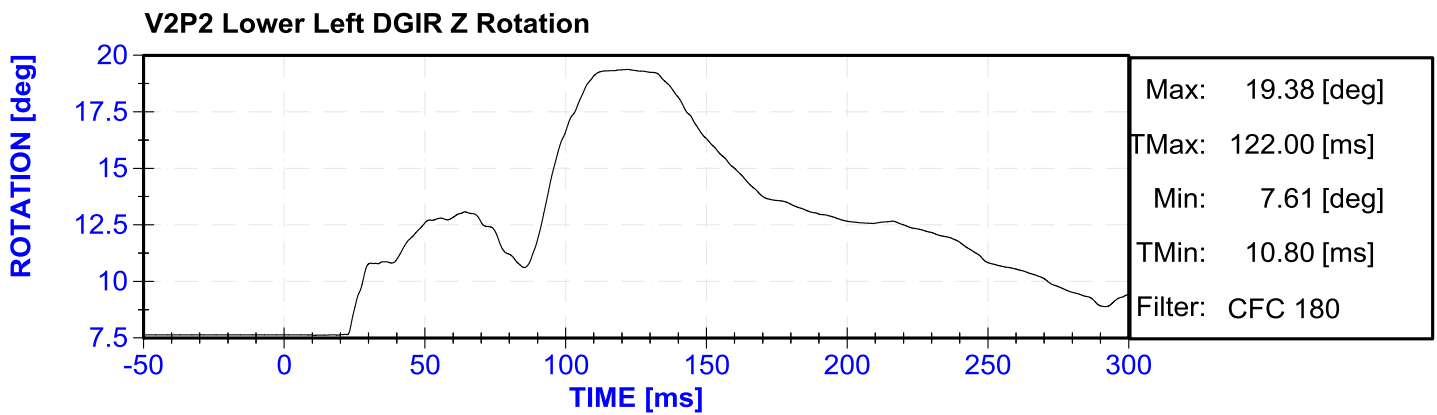
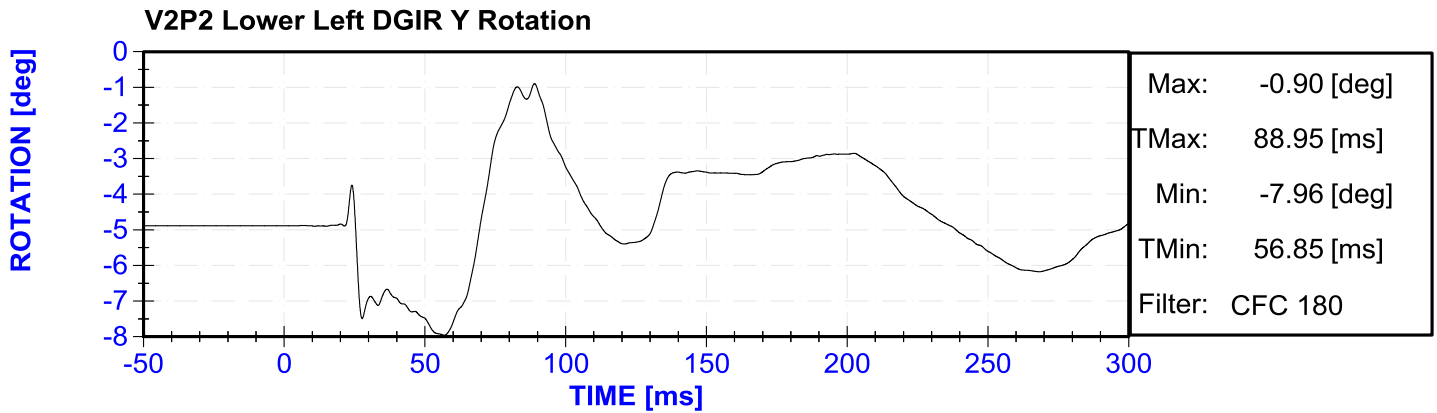
V2P2 Upper Right DGIR Z Rotation

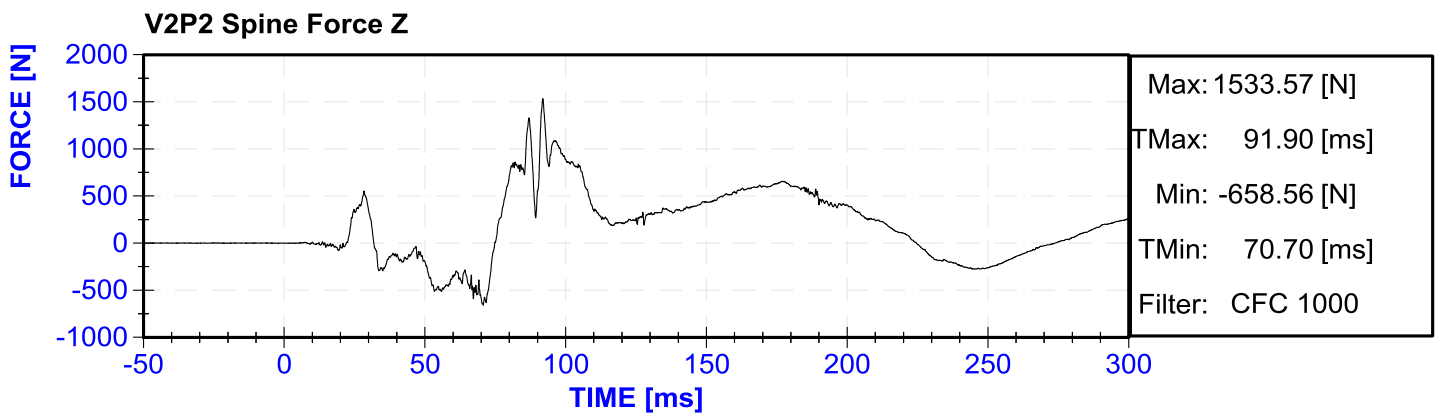
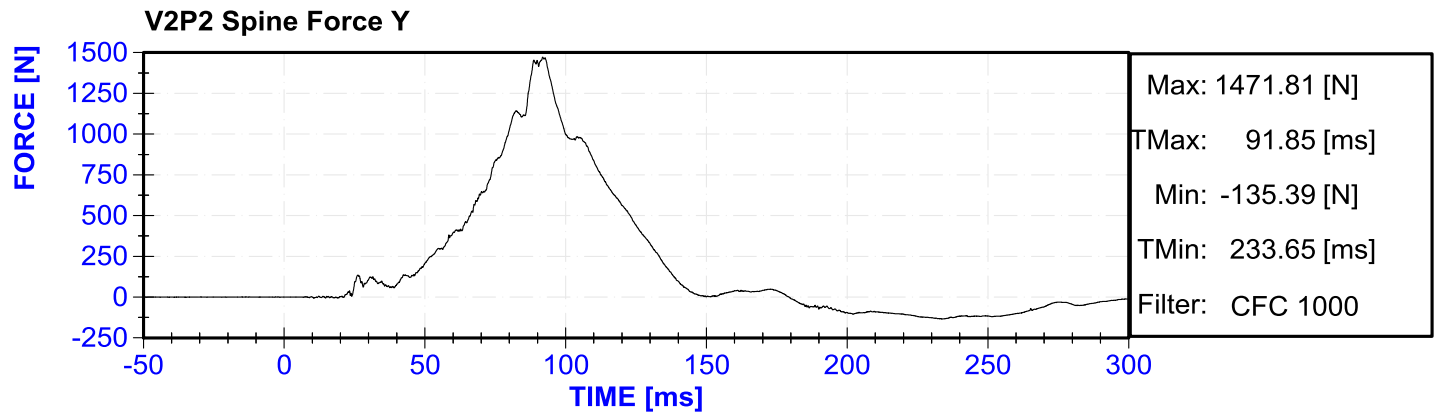
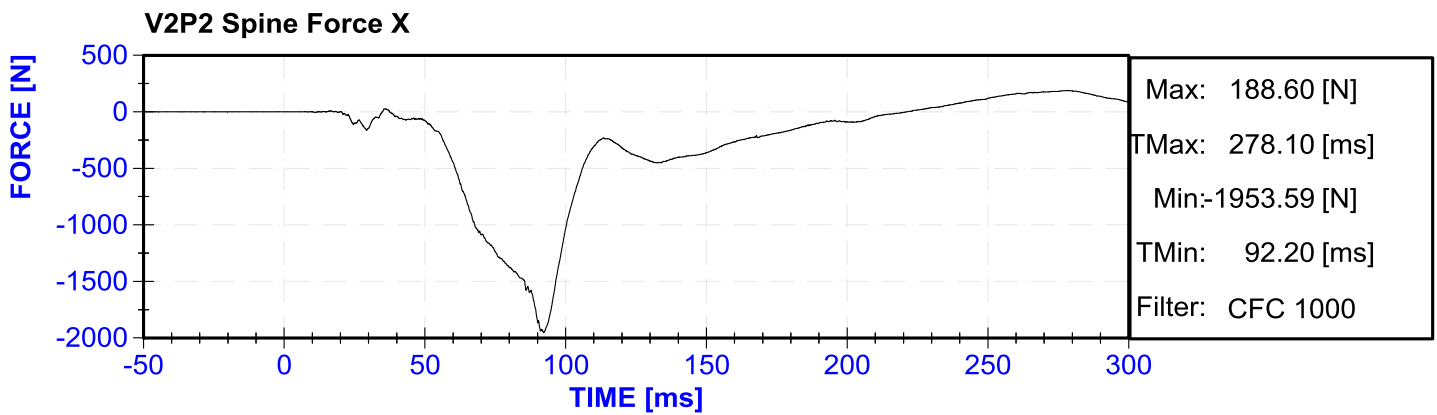
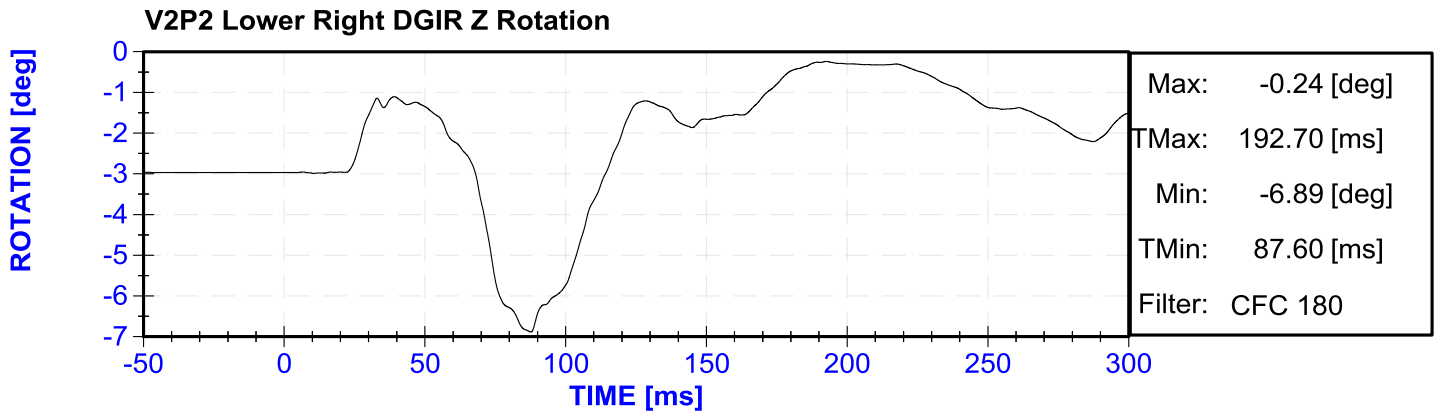


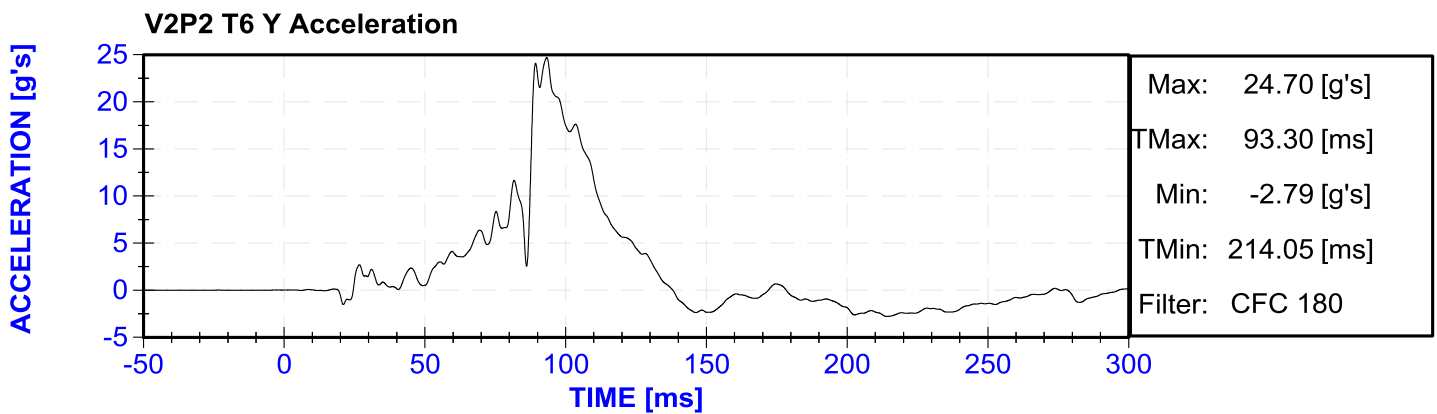
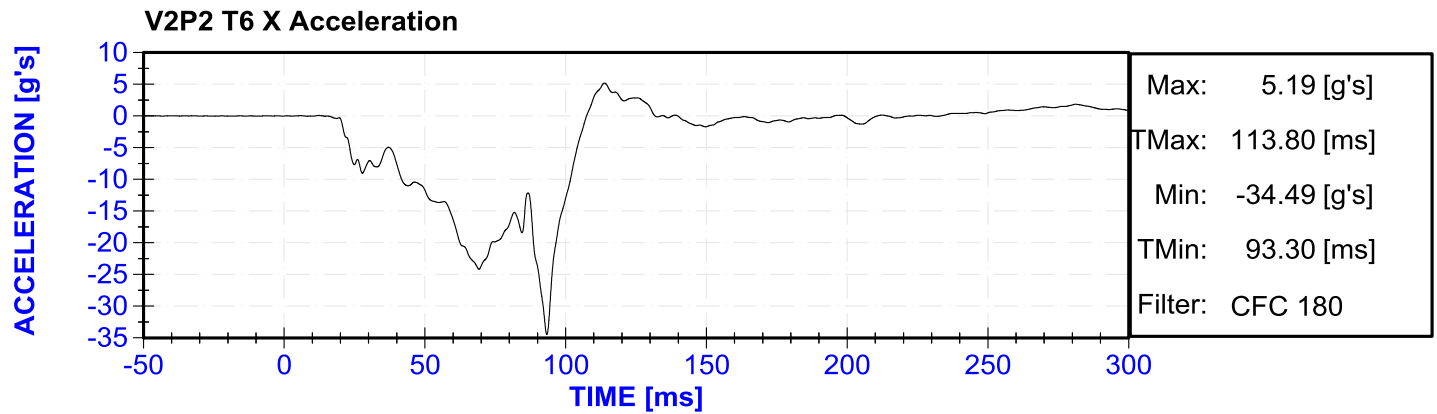
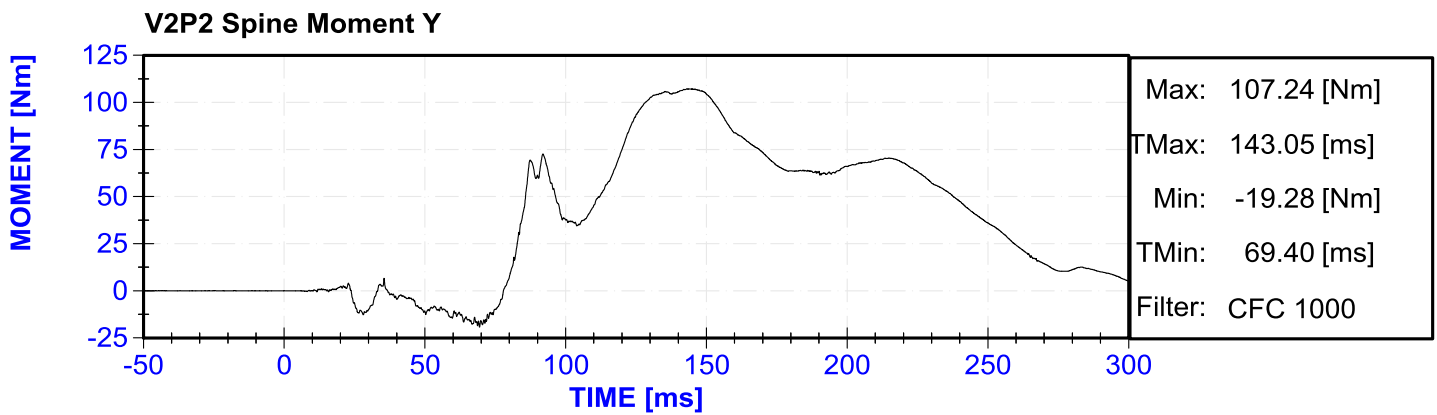
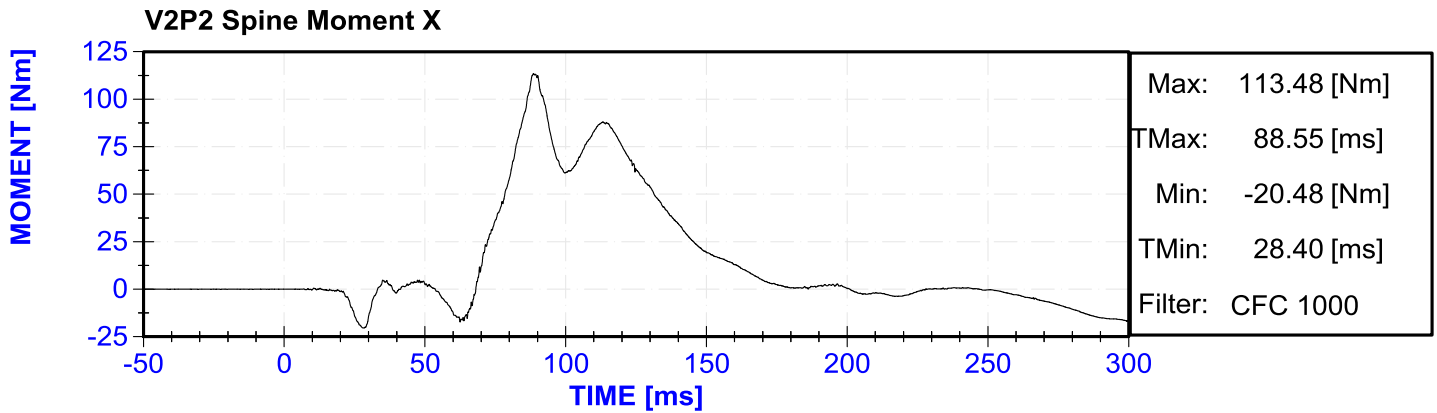
V2P2 Lower Left DGIR X Displacement

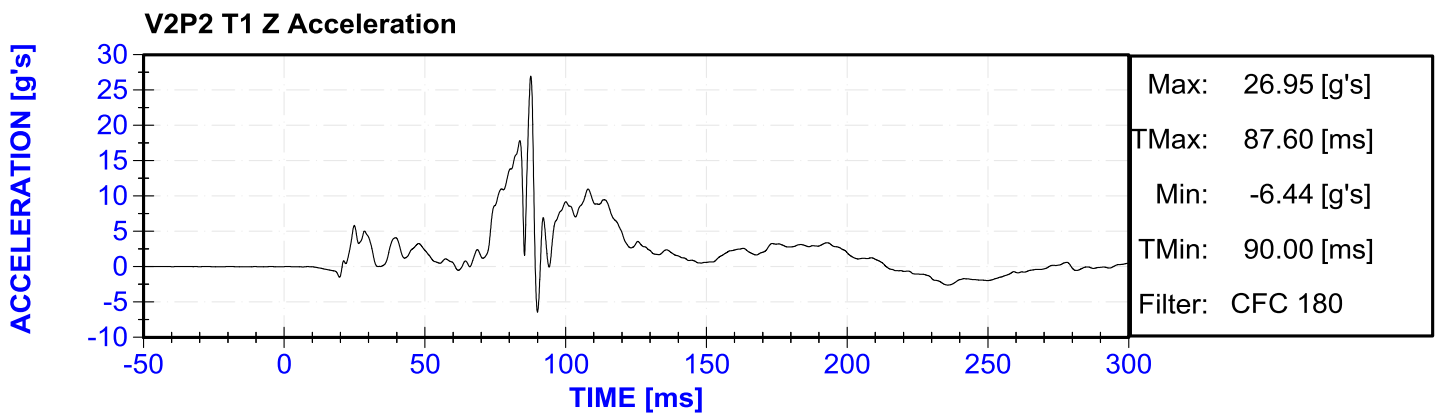
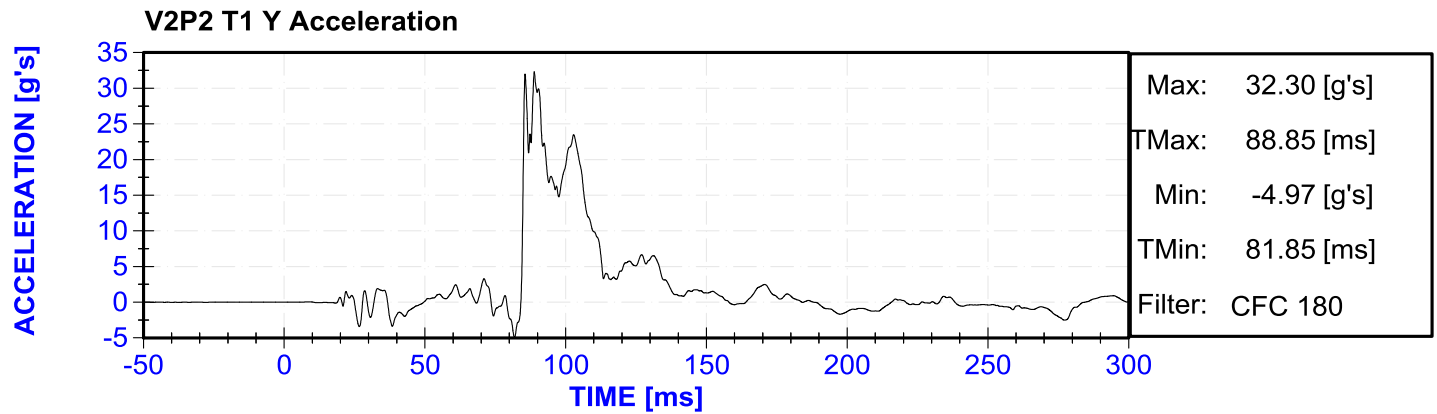
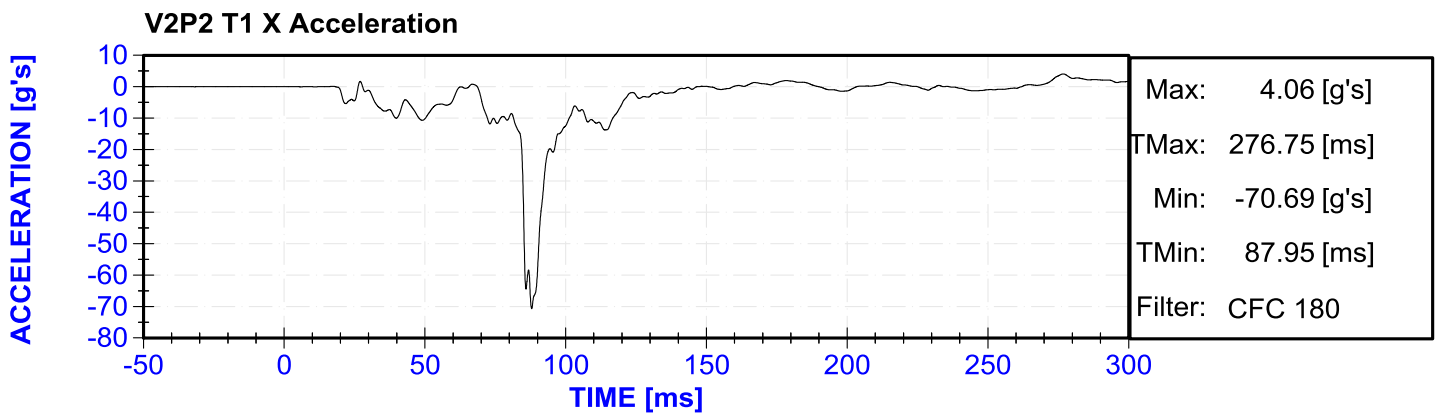
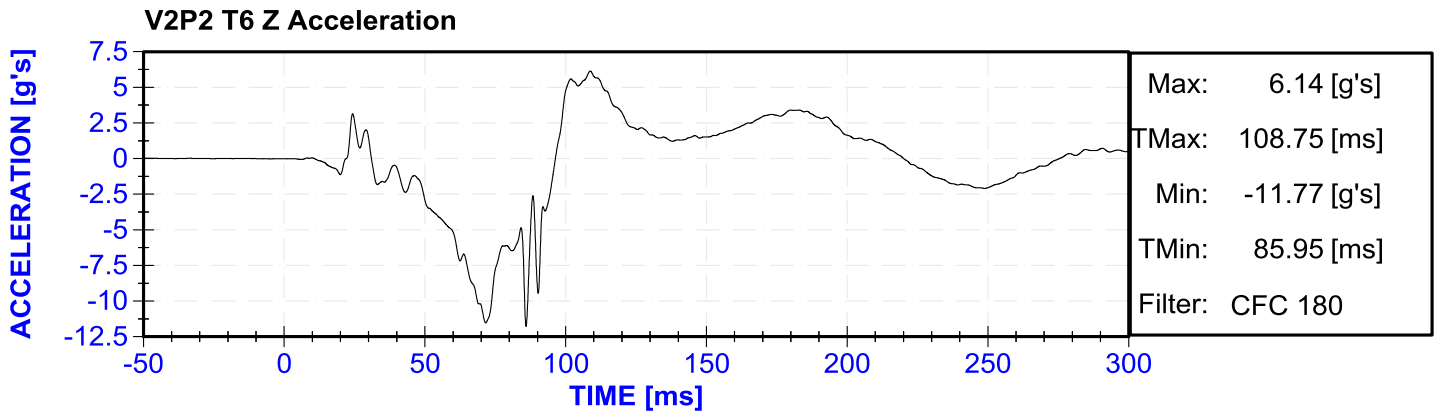
Questionable spike 123ms, 127ms and 174ms

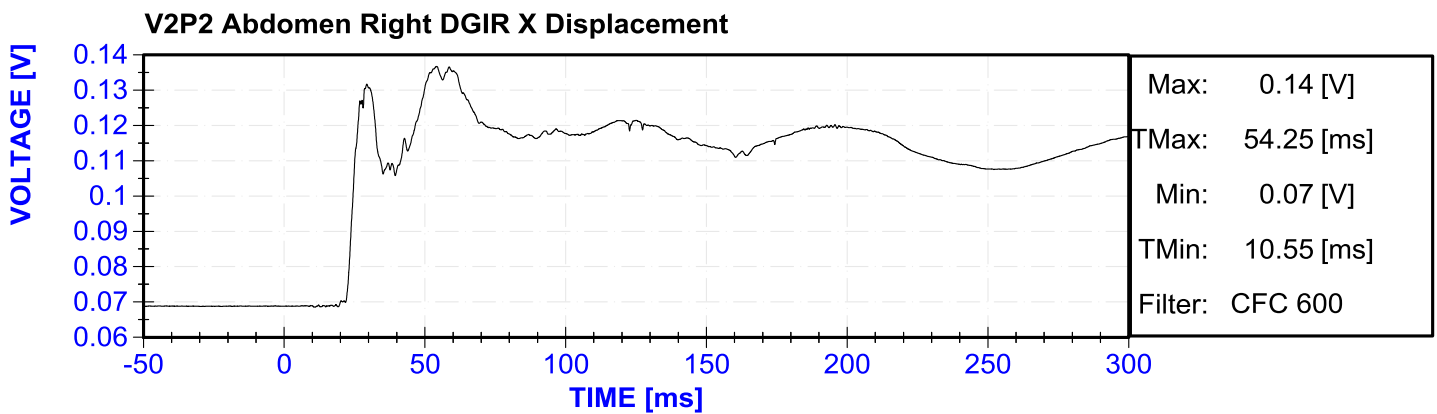
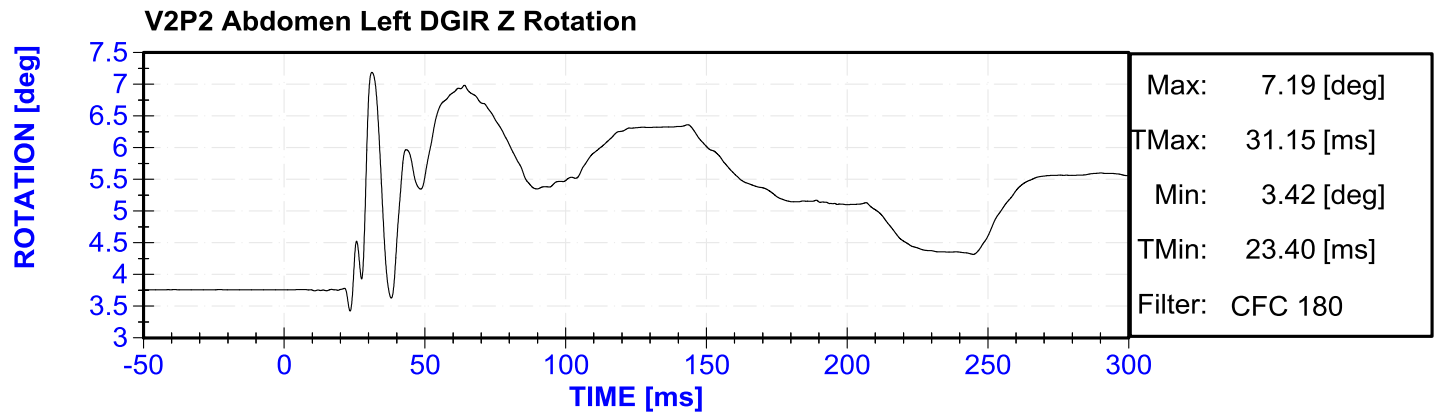
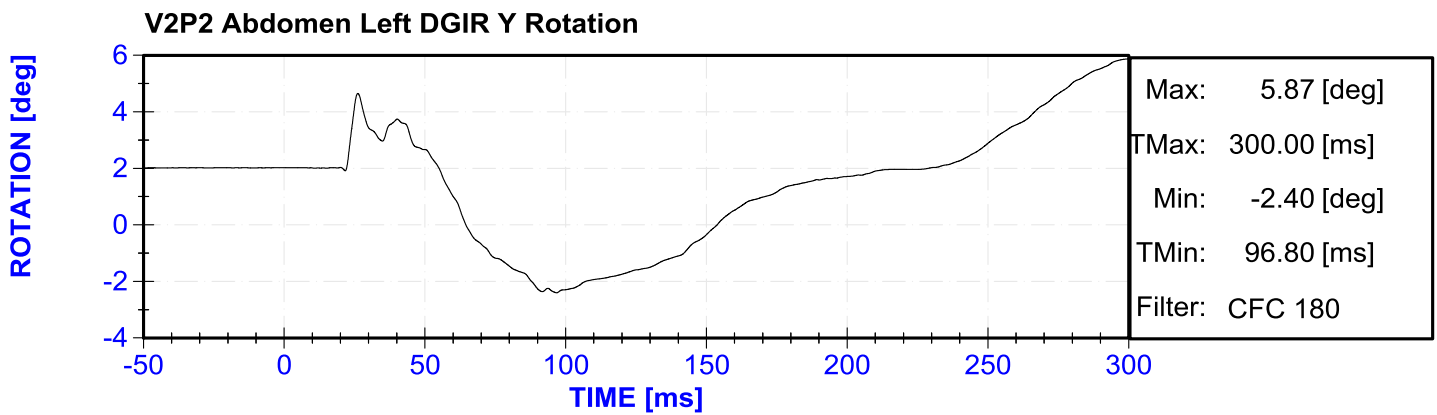
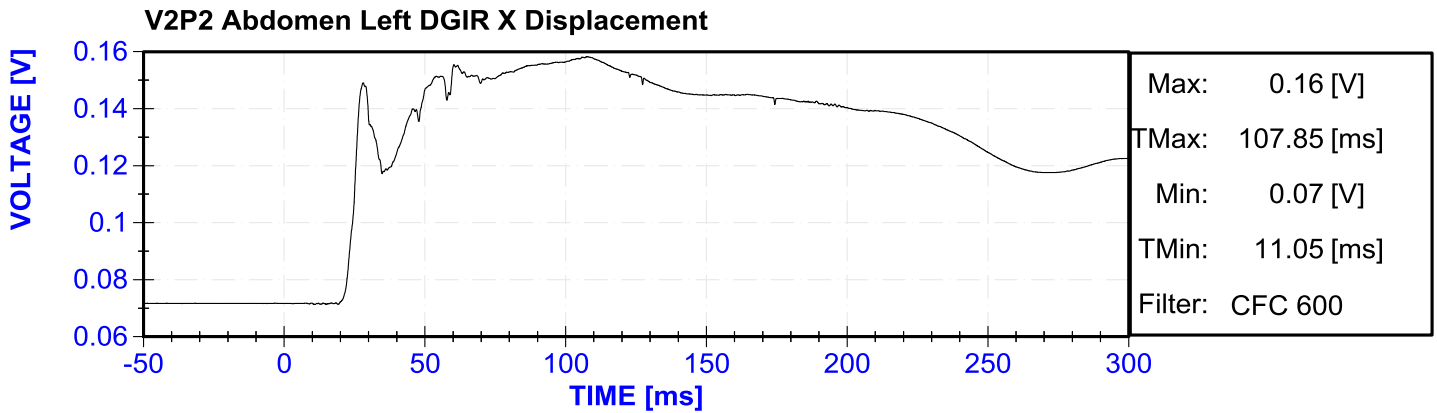




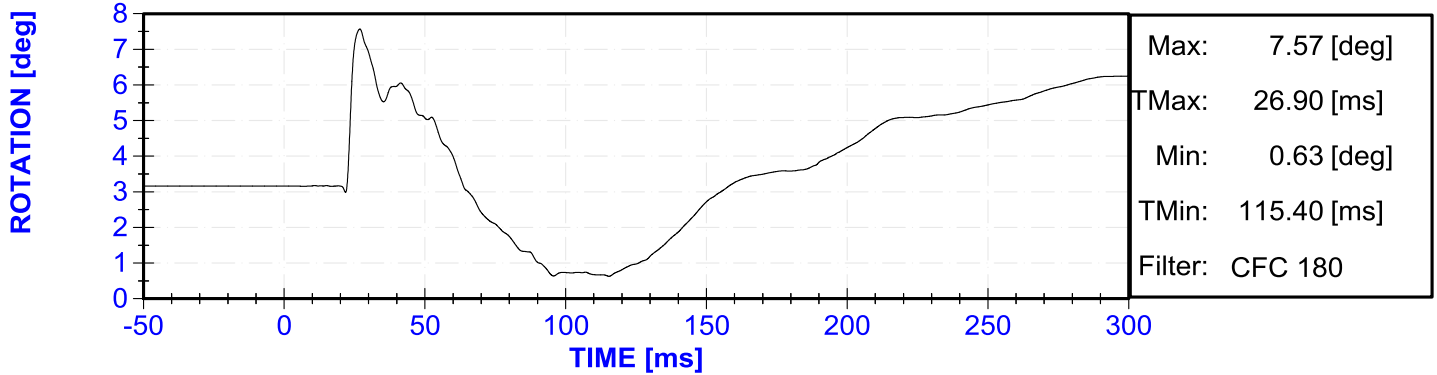




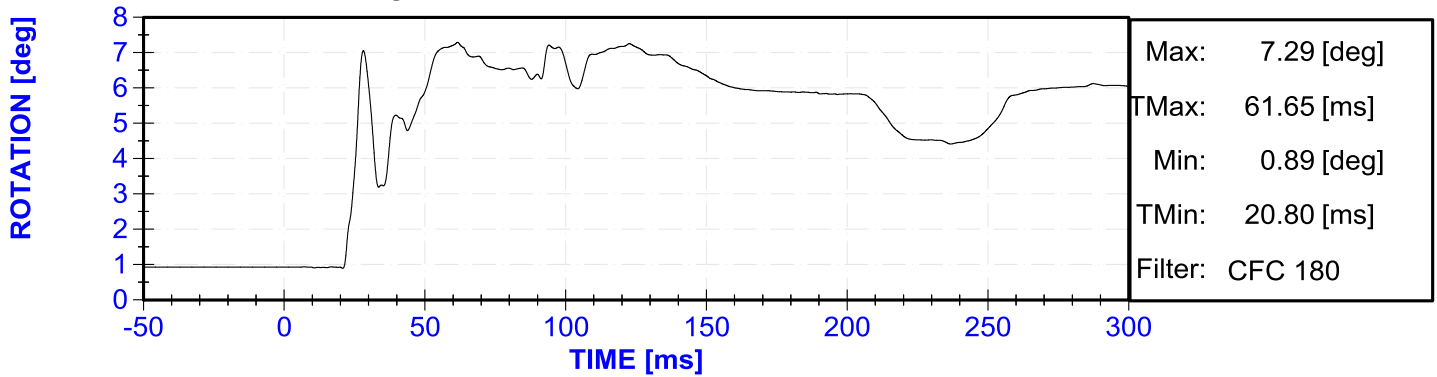




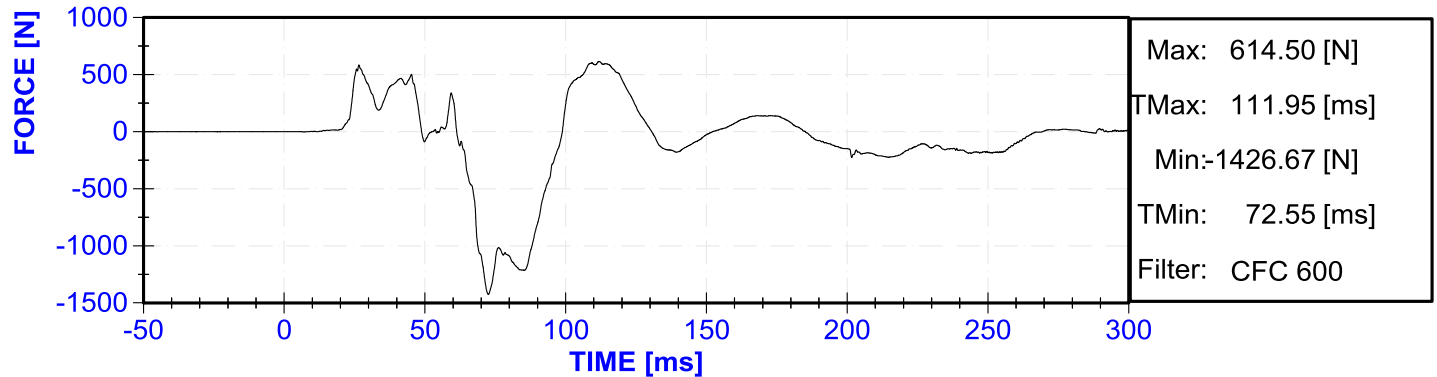
V2P2 Abdomen Right DGIR Y Rotation



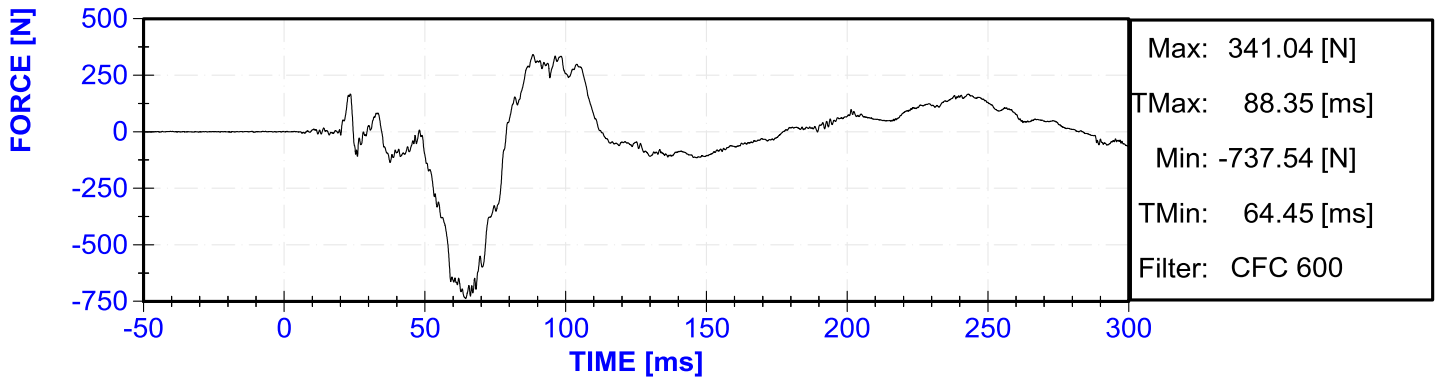
V2P2 Abdomen Right DGIR Z Rotation

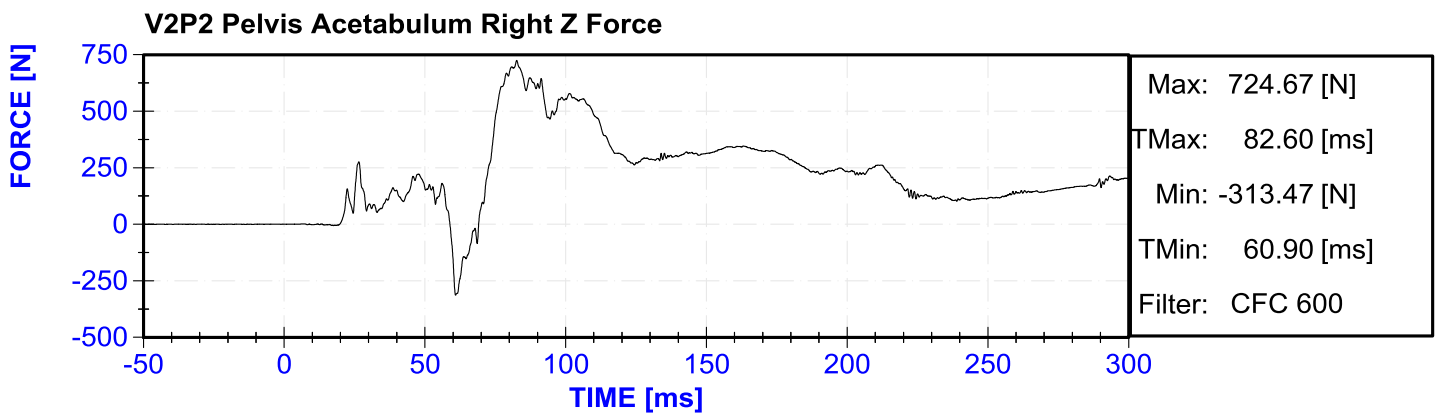
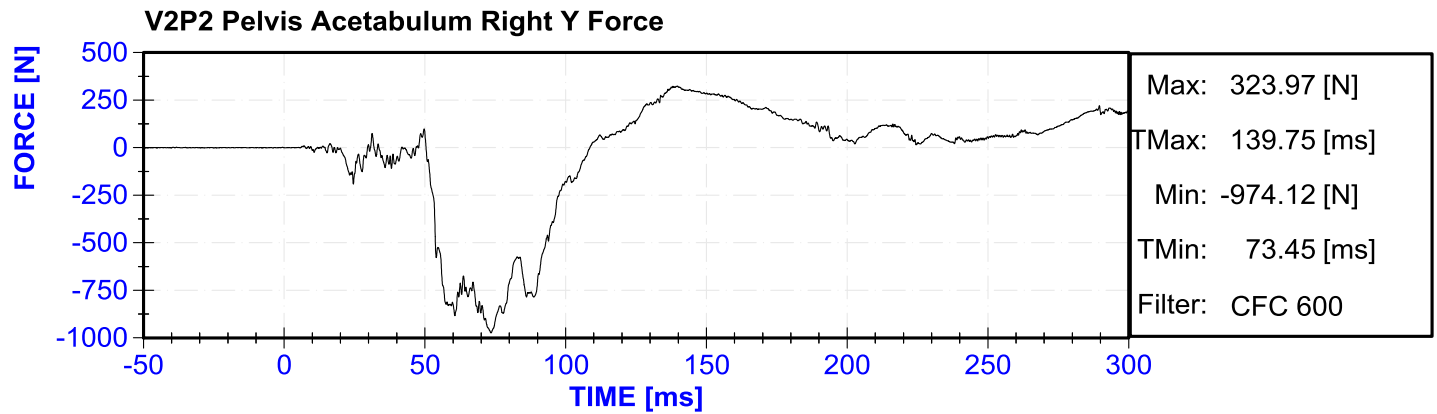
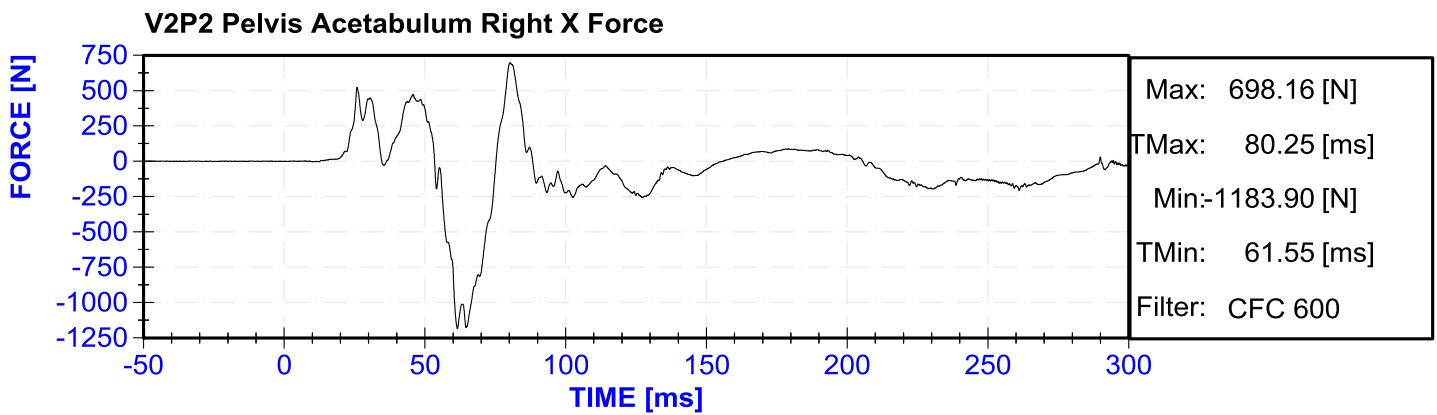
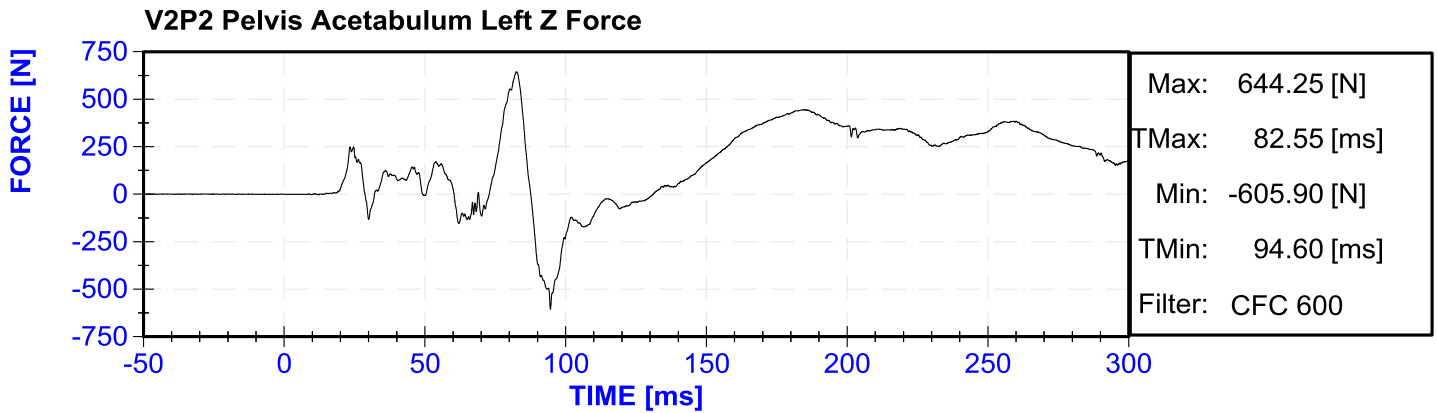


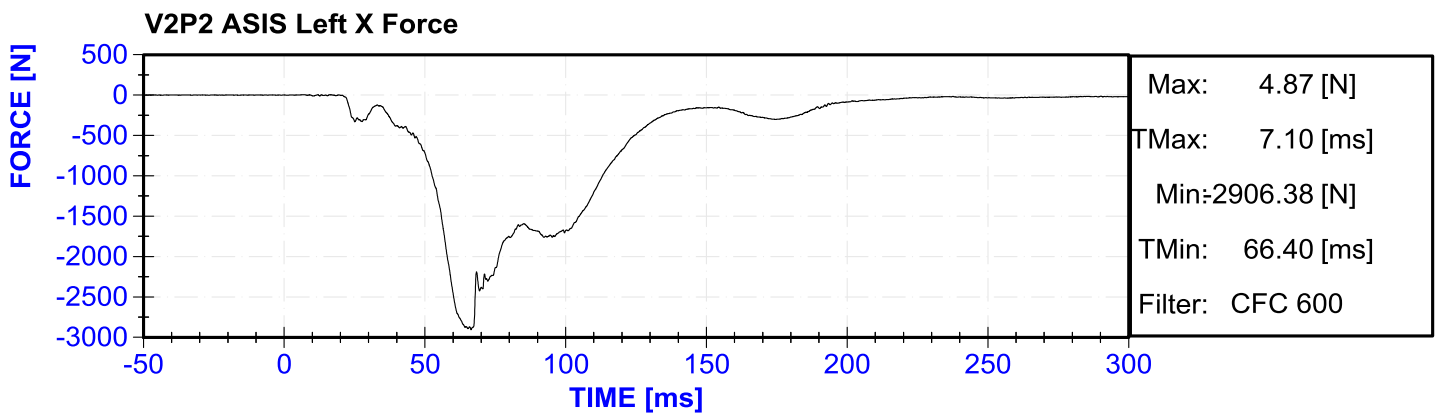
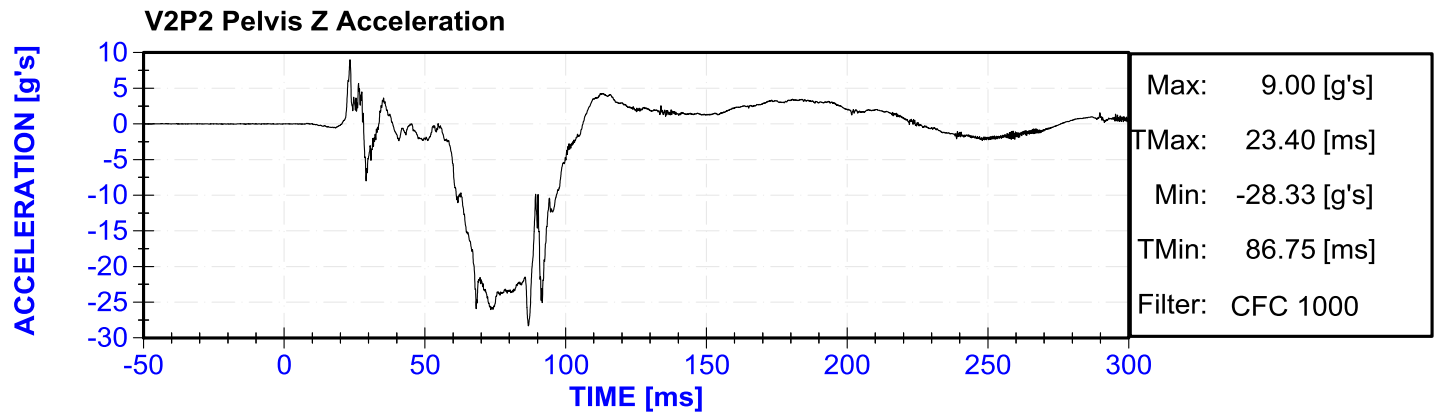
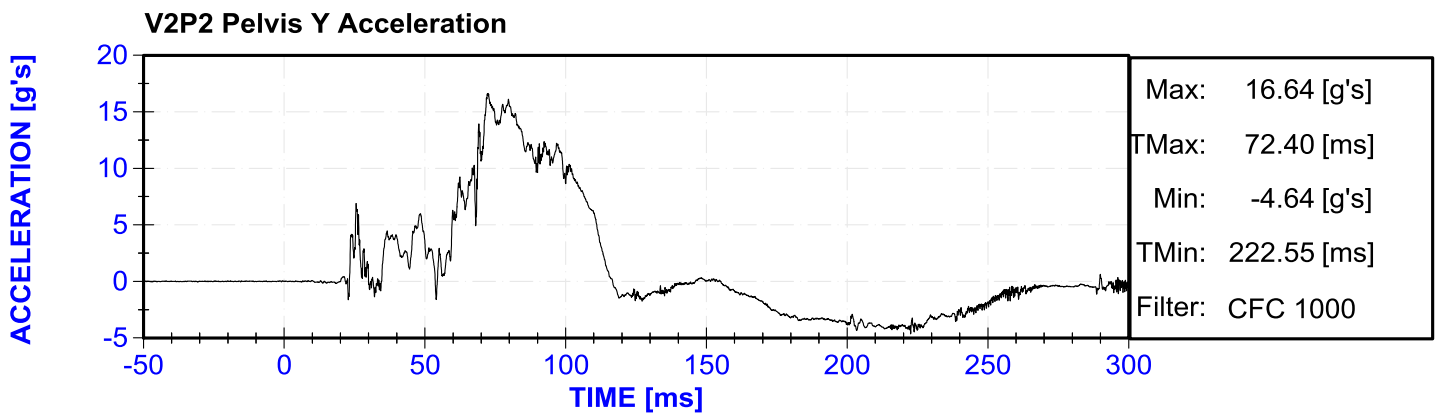
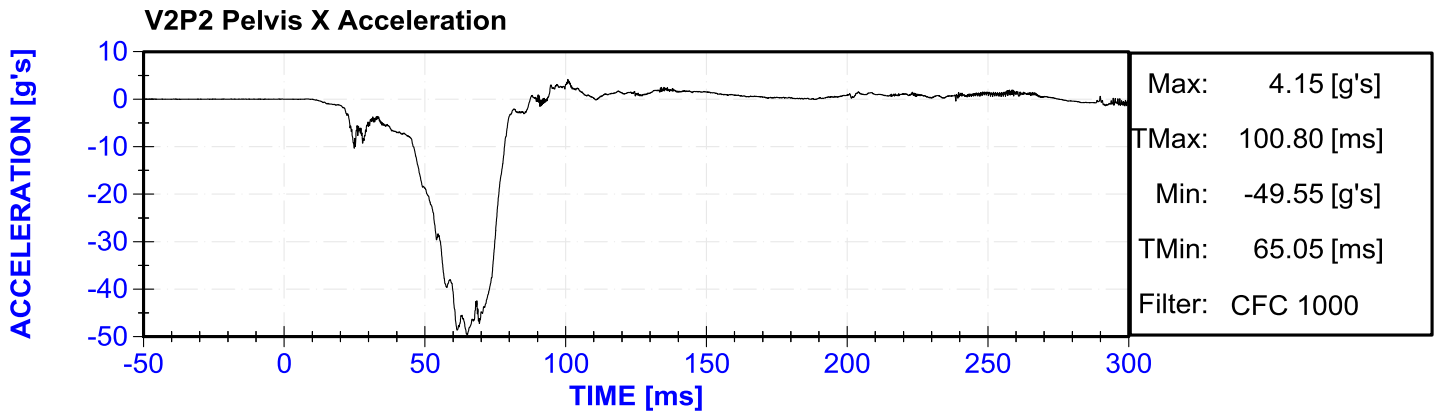
V2P2 Pelvis Acetabulum Left X Force

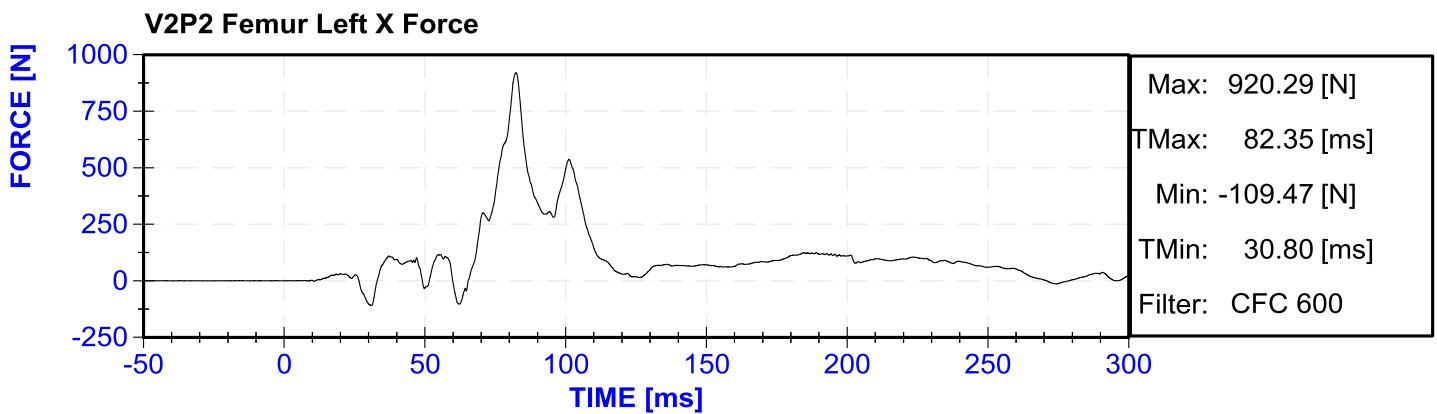
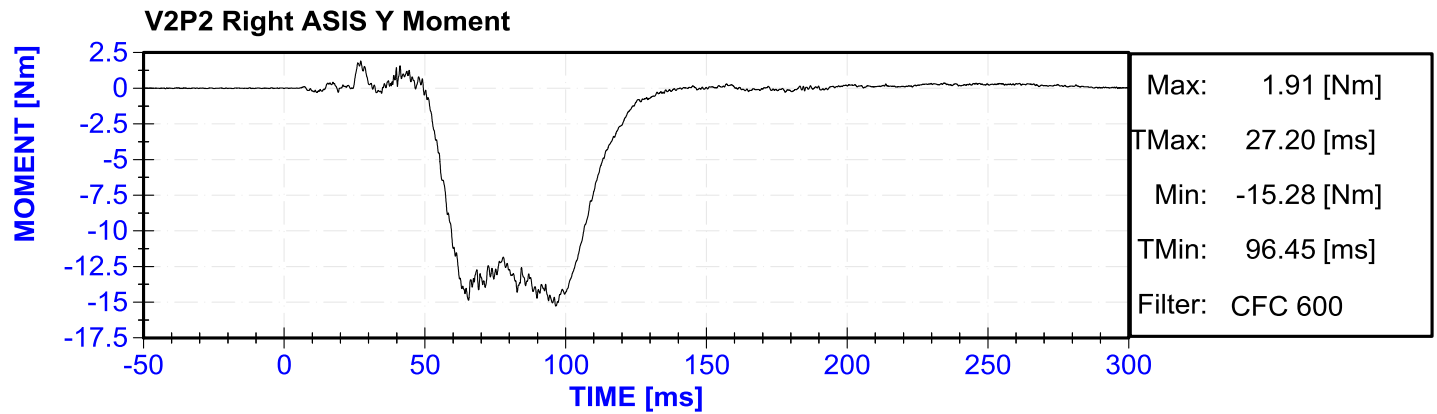
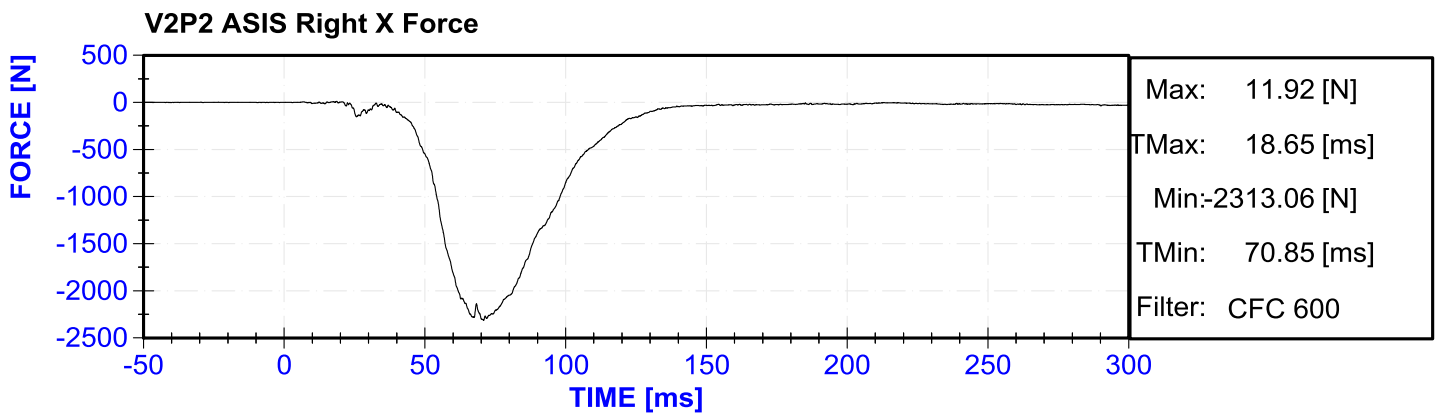
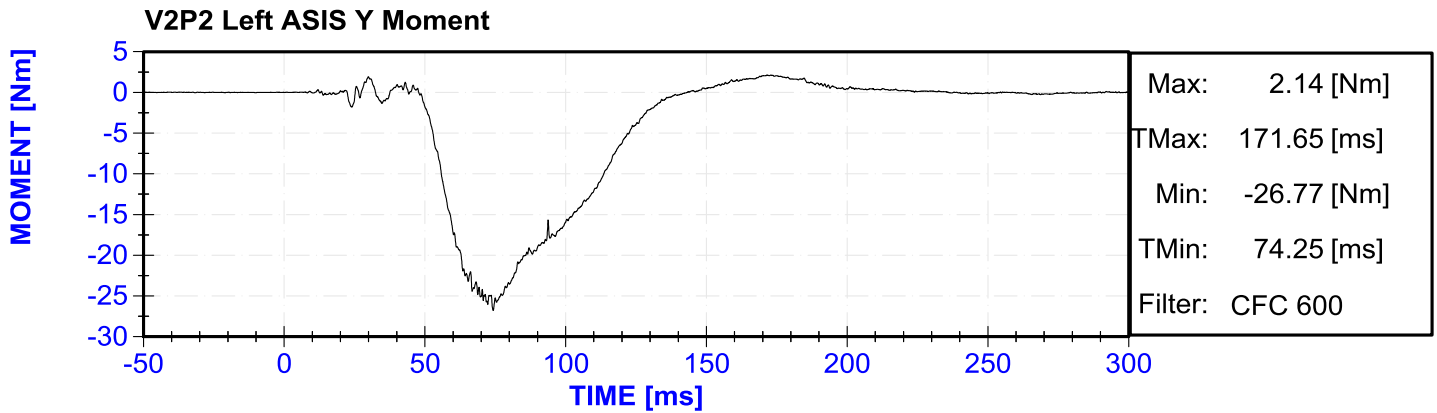


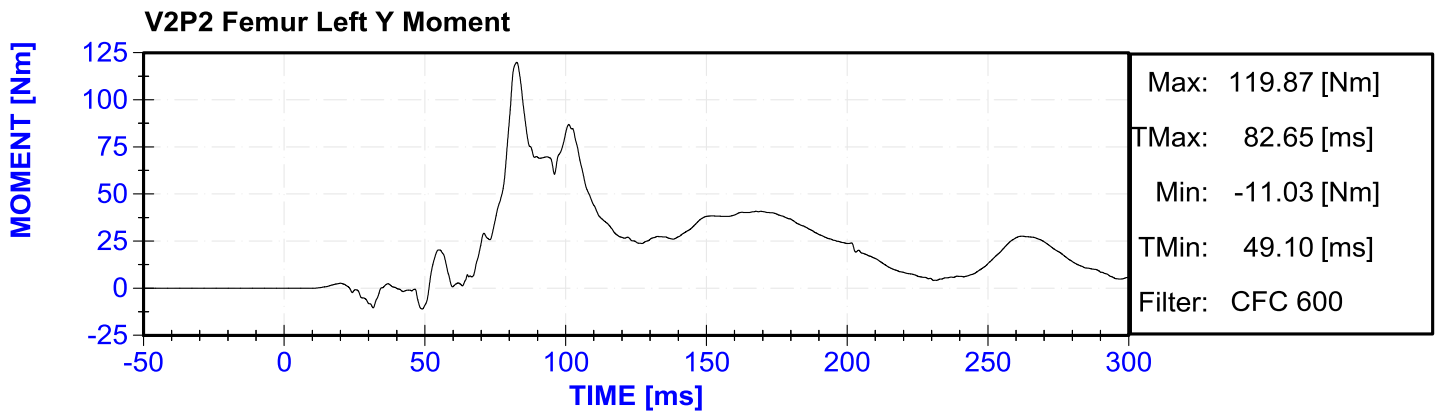
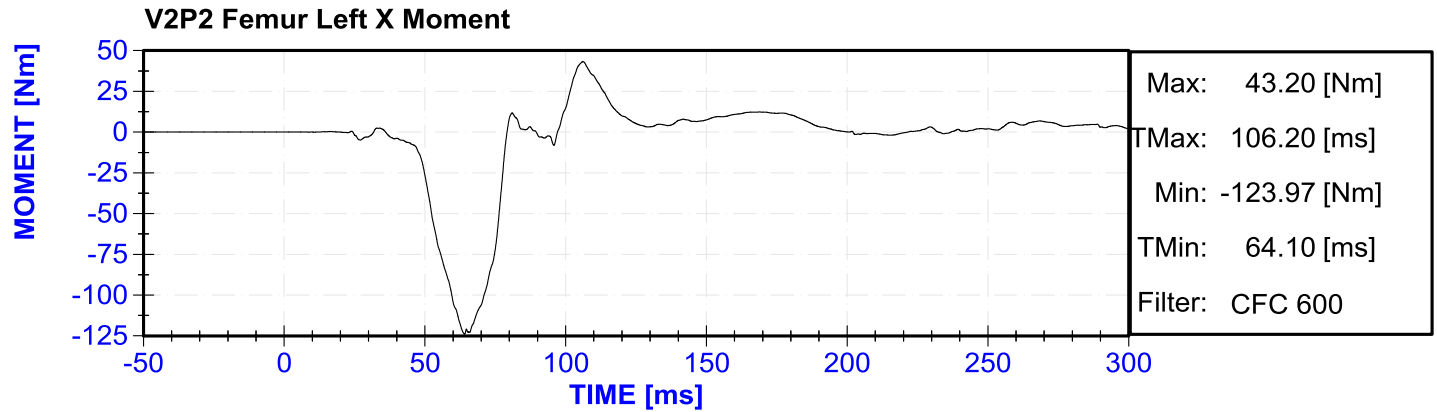
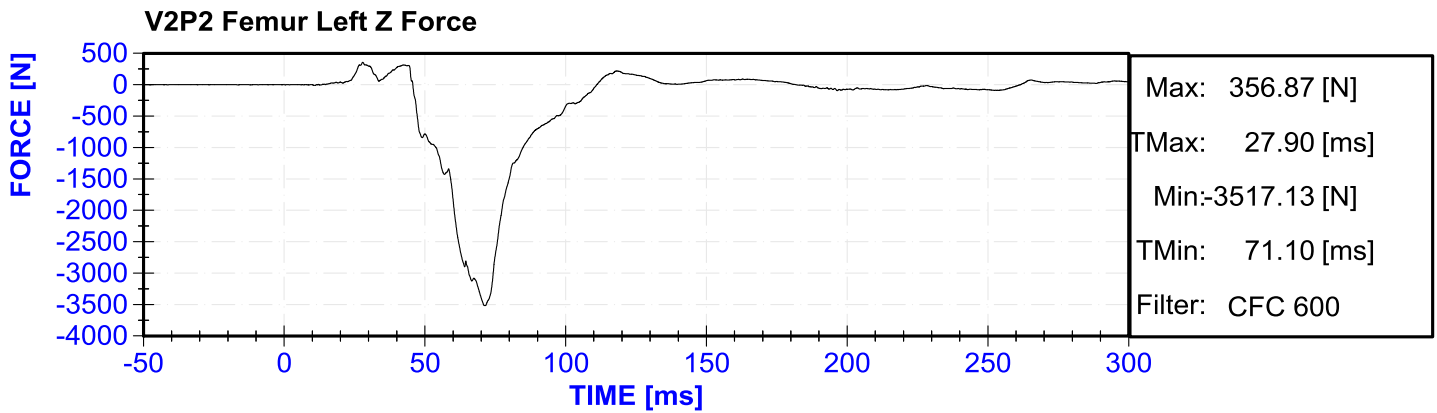
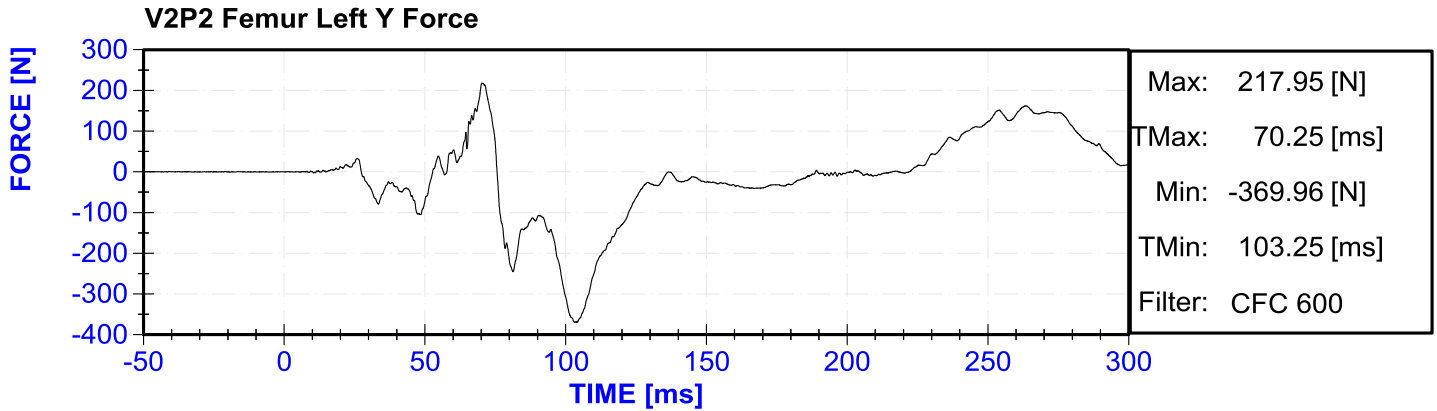
V2P2 Pelvis Acetabulum Left Y Force

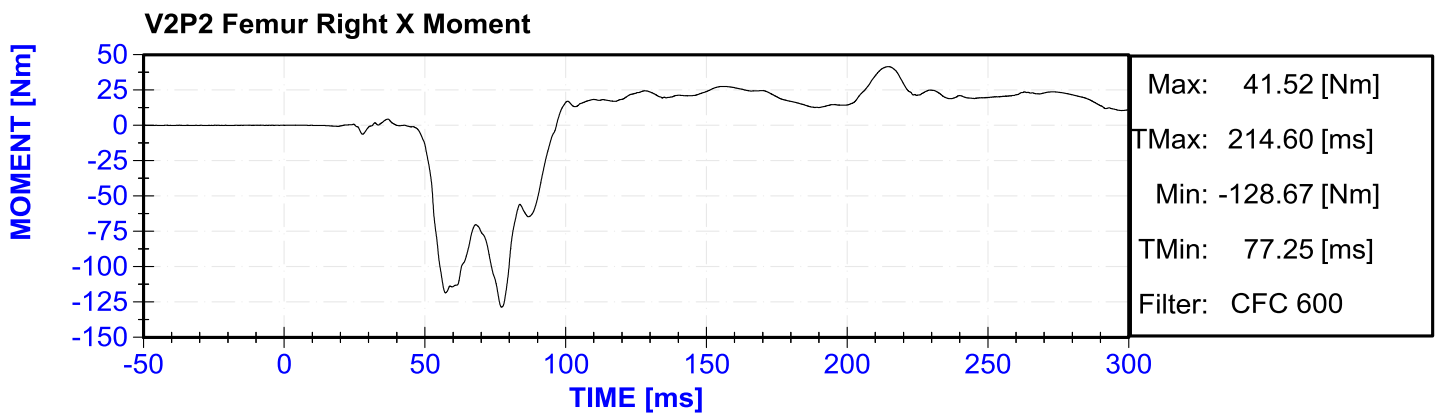
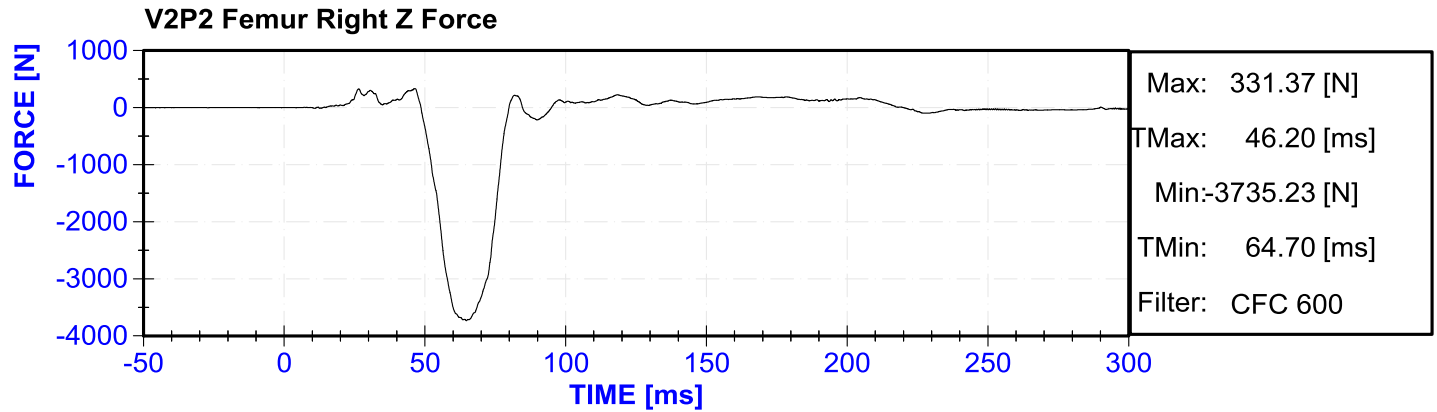
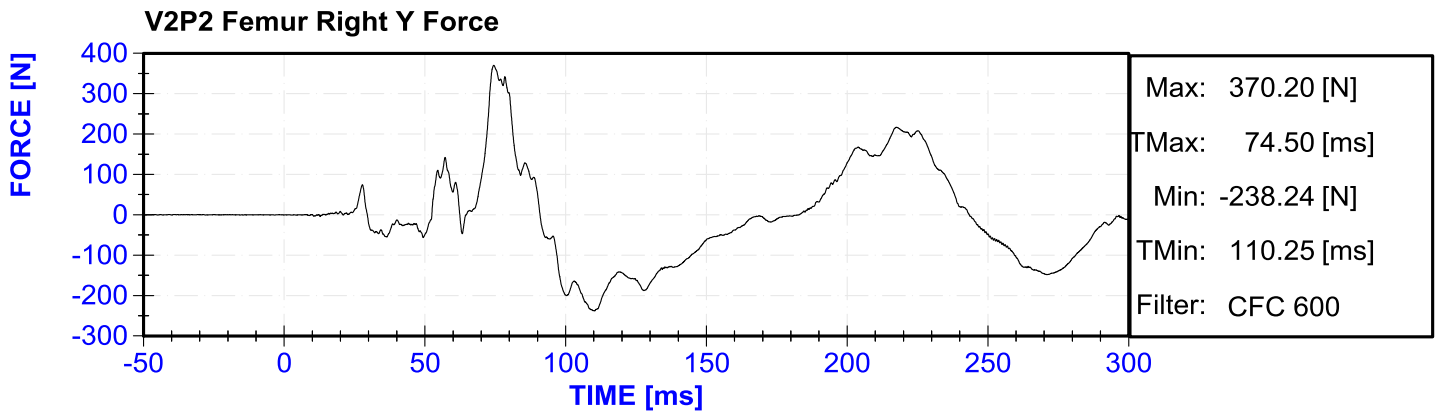
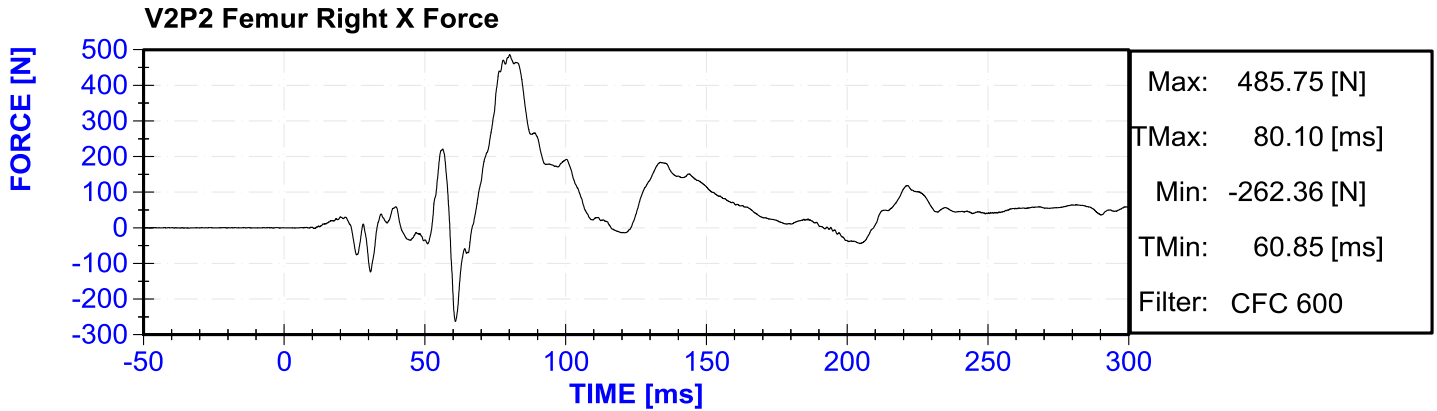


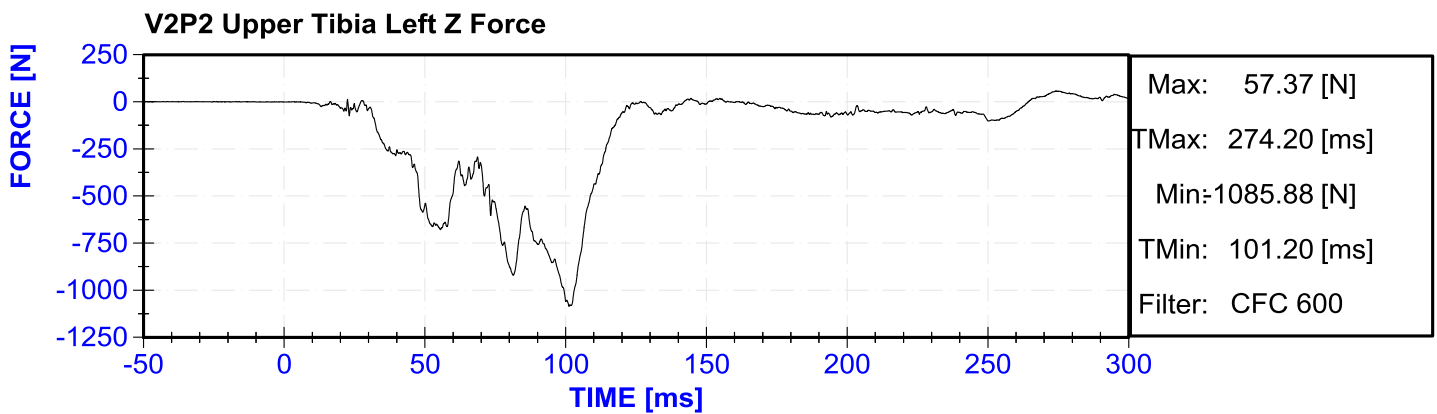
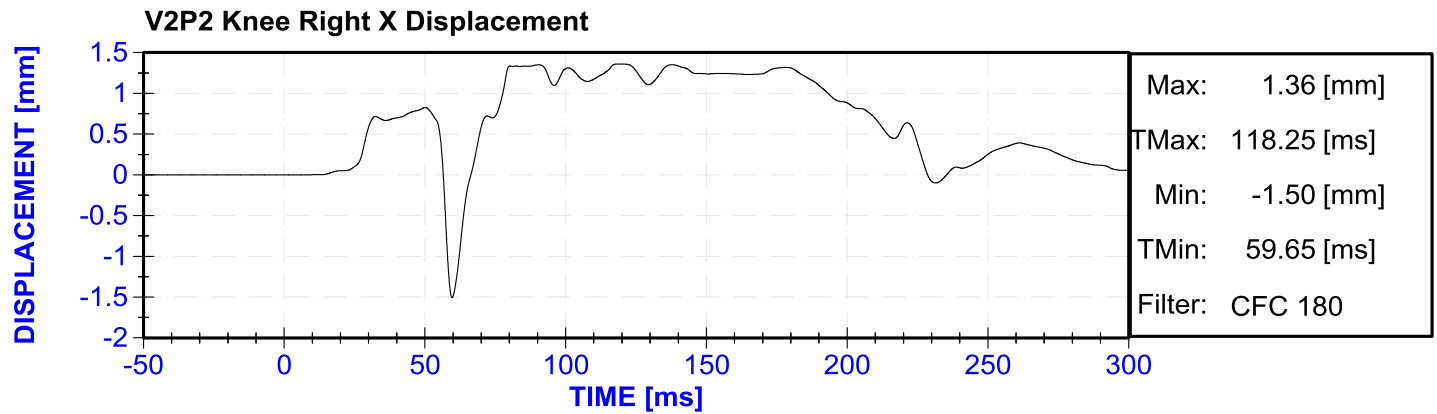
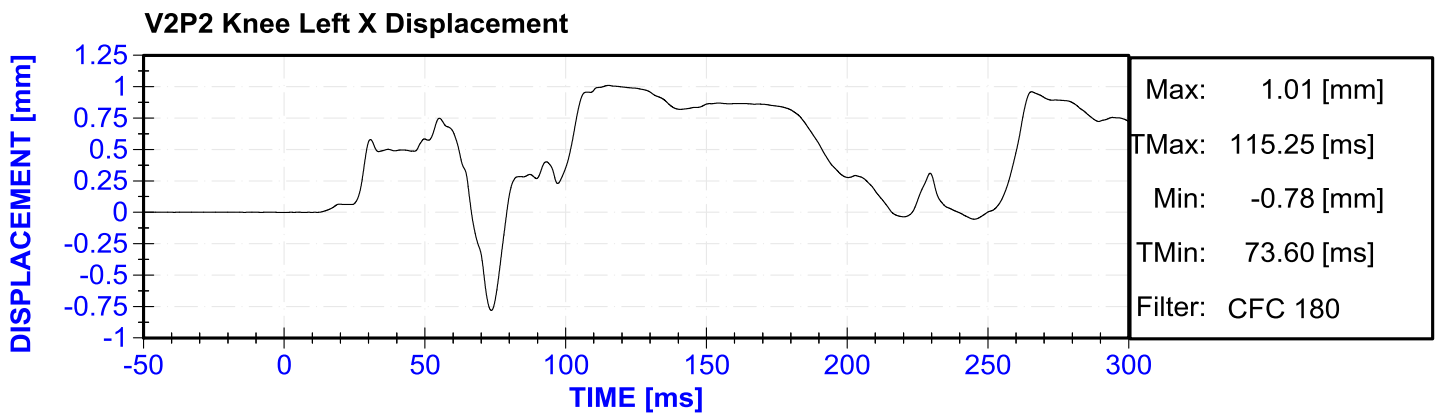
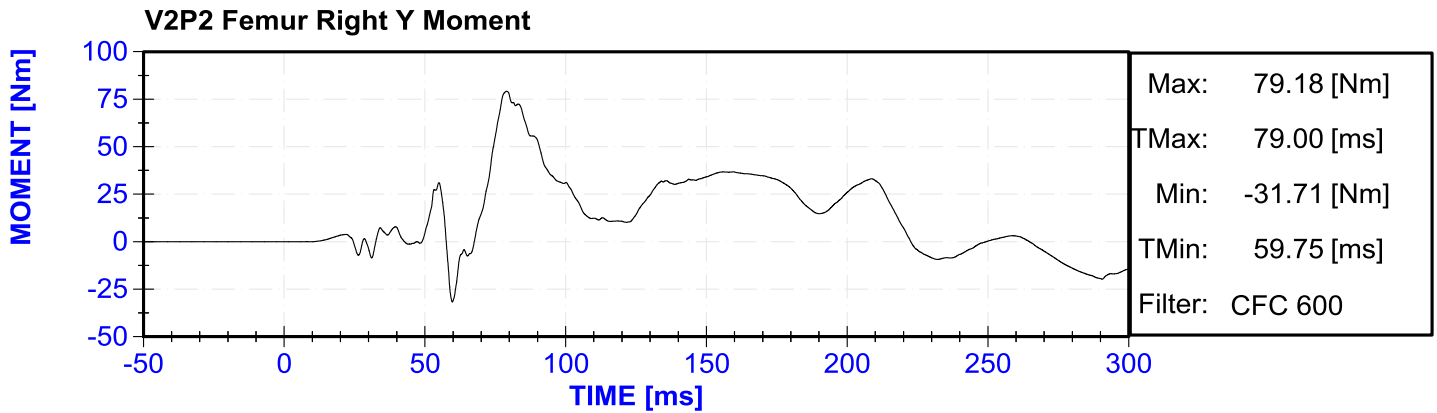


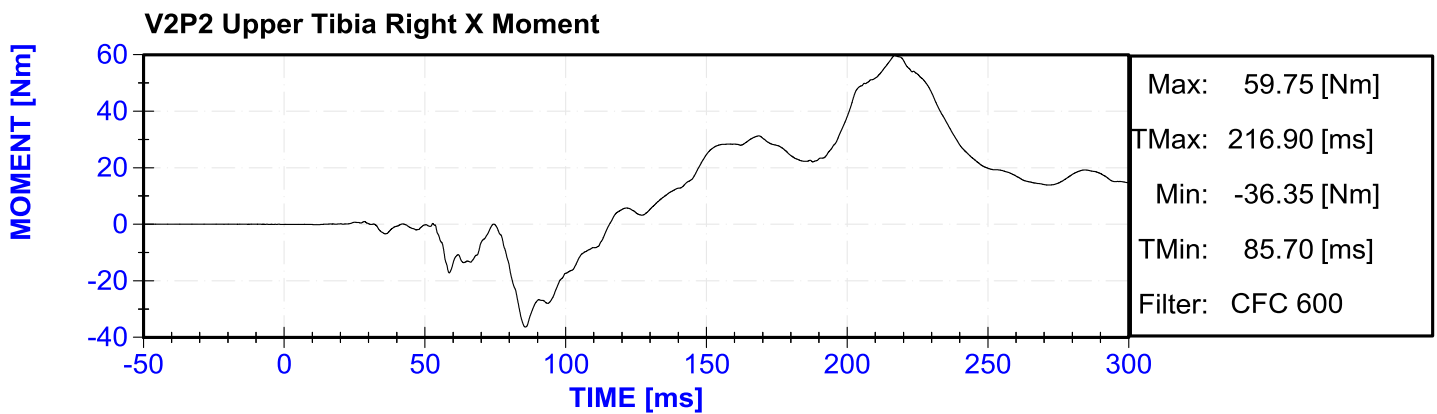
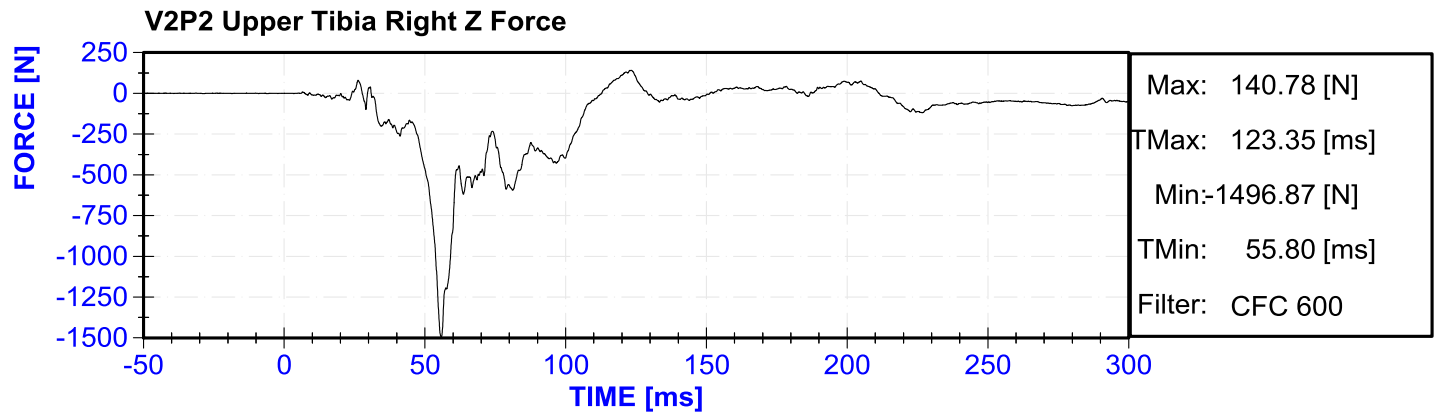
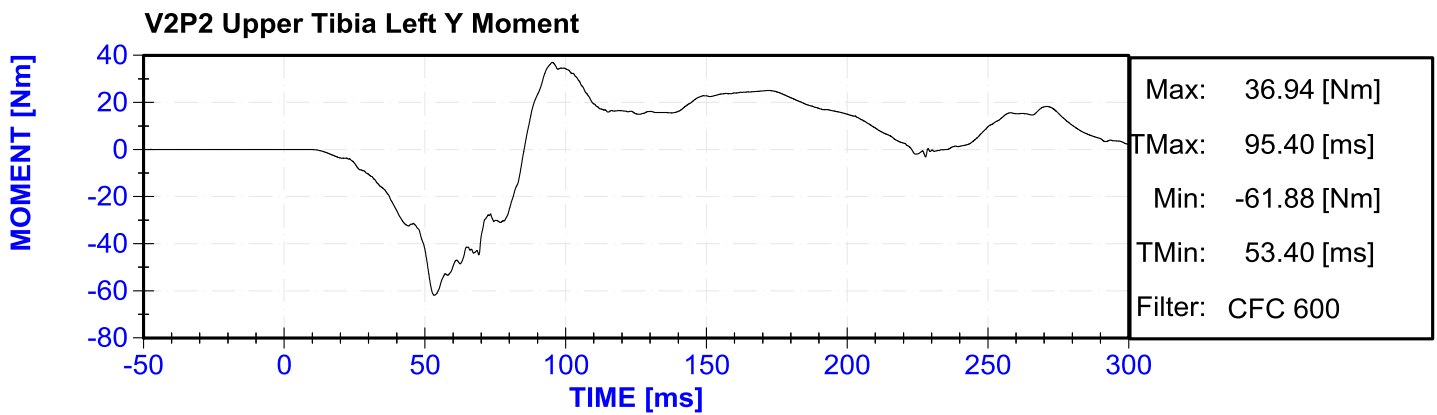
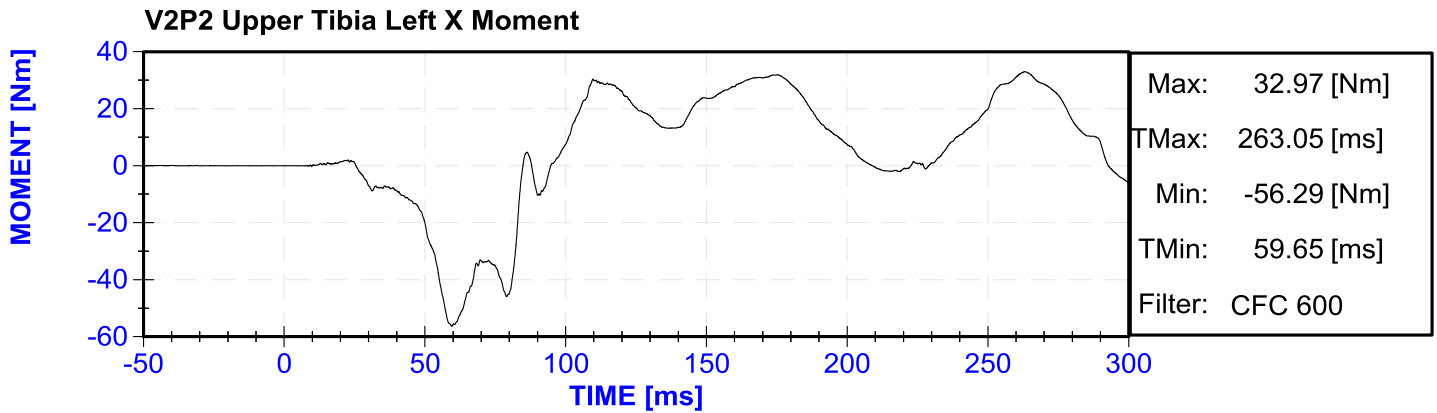




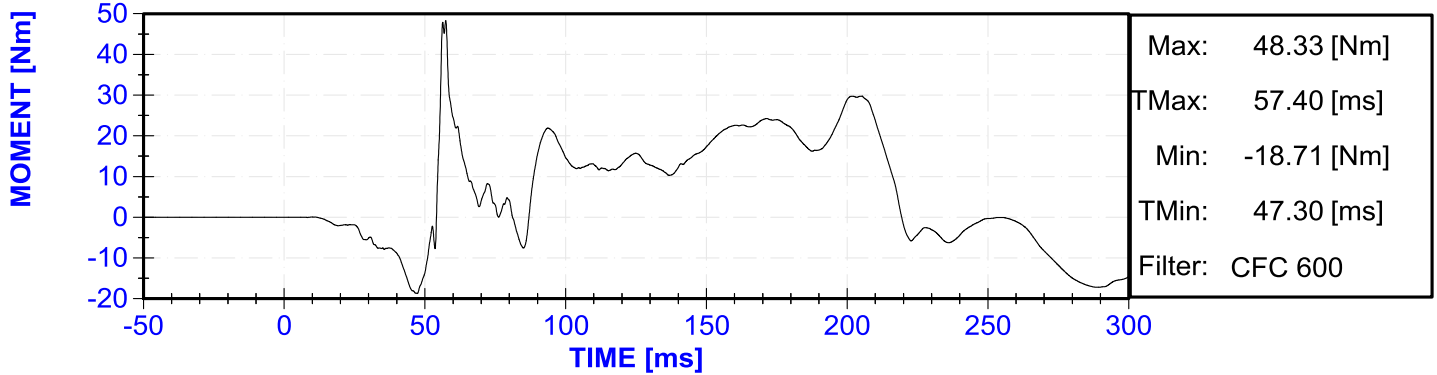




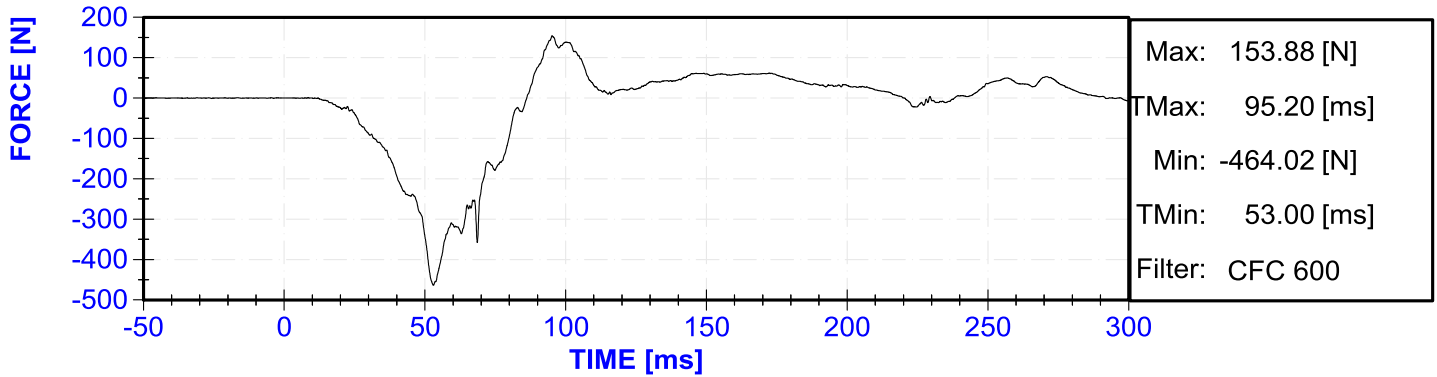




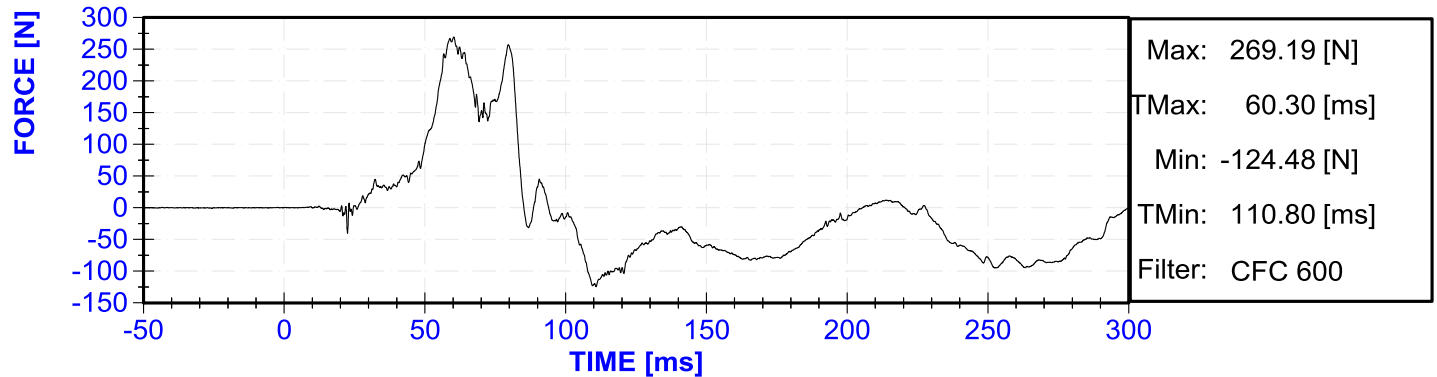
V2P2 Upper Tibia Right Y Moment



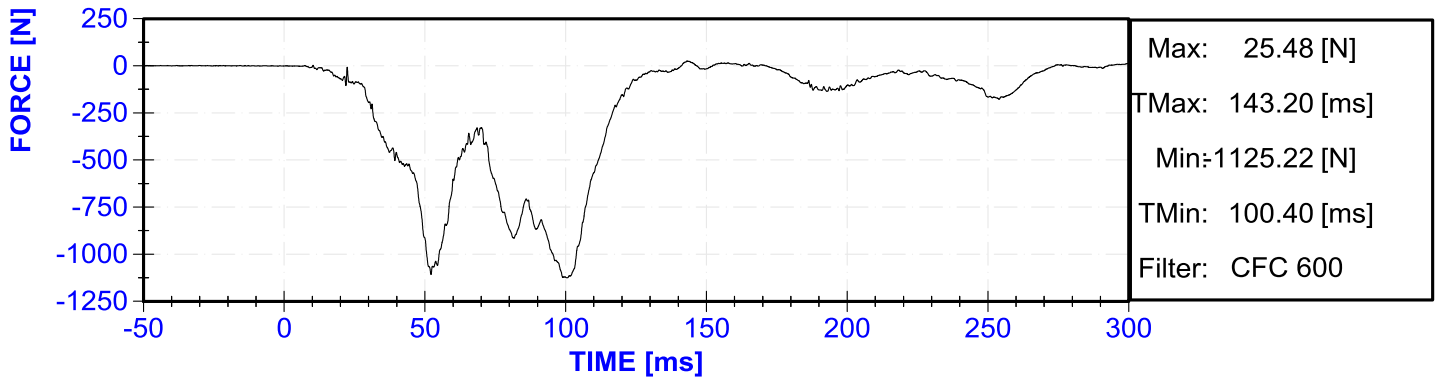
V2P2 Lower Tibia Left X Force

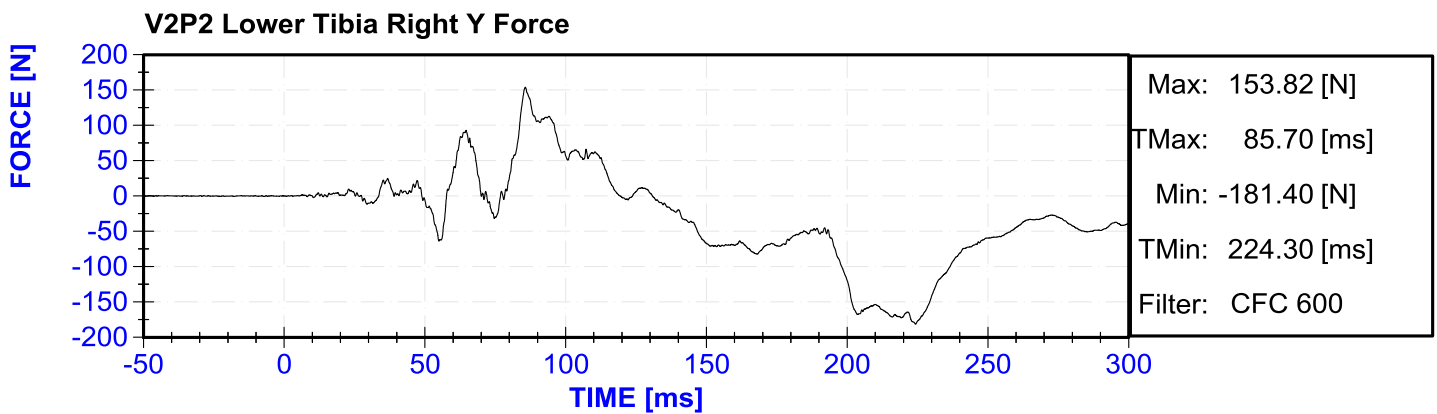
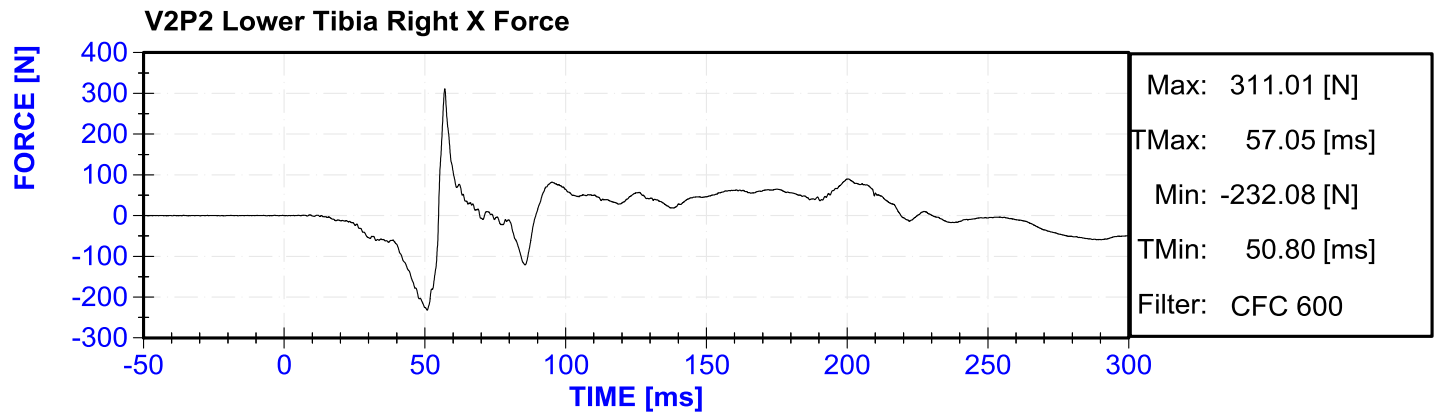
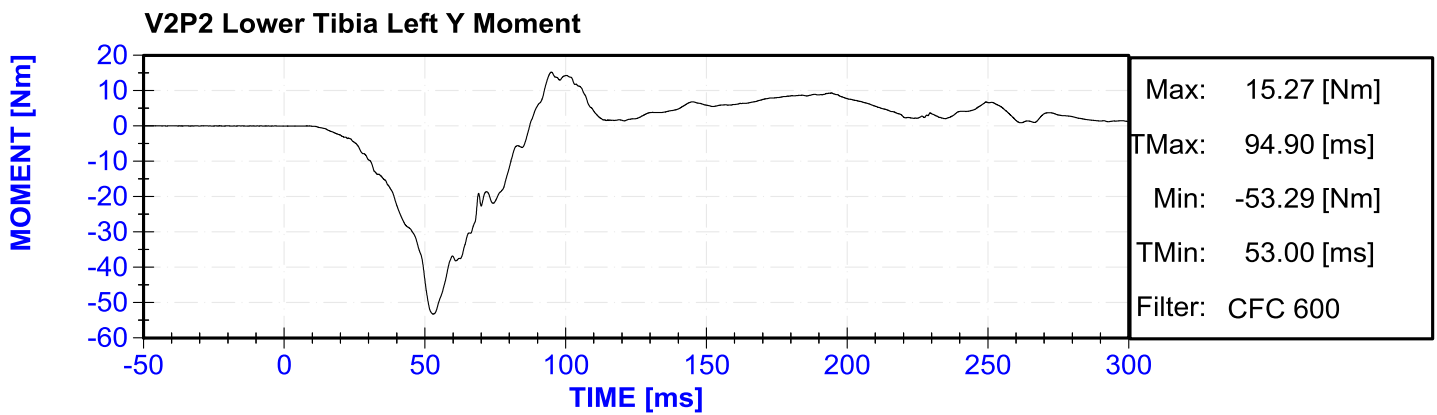
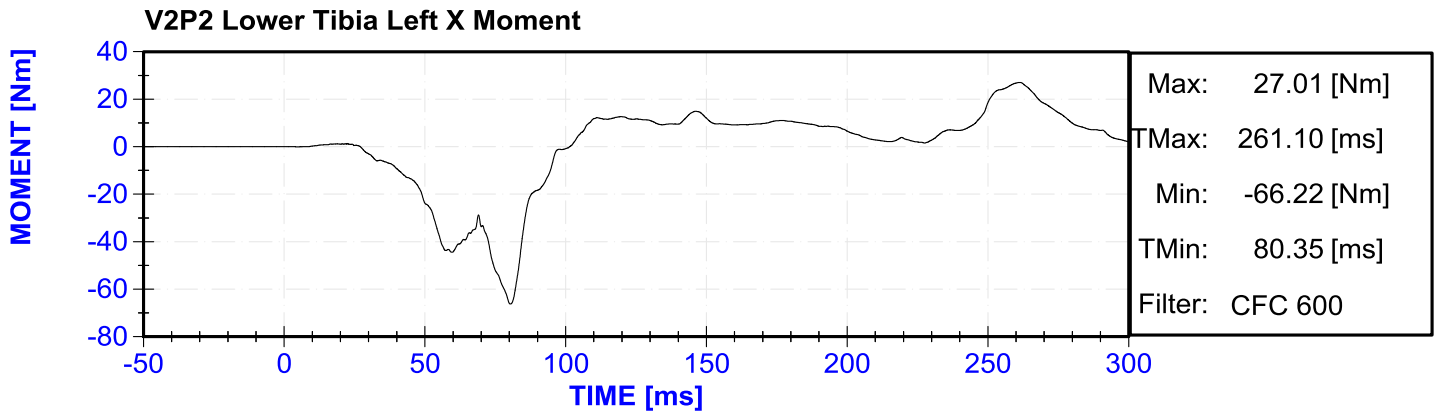


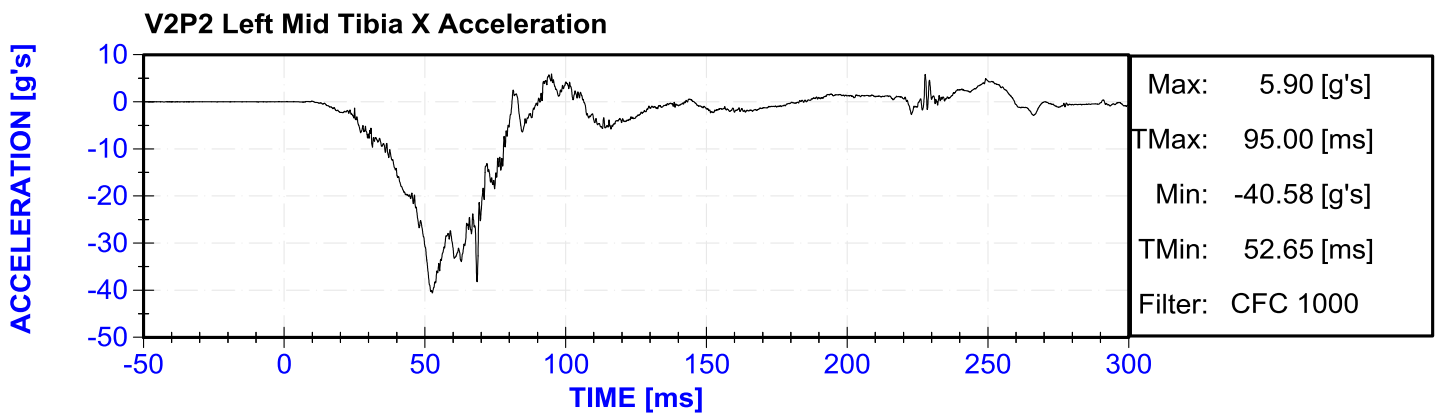
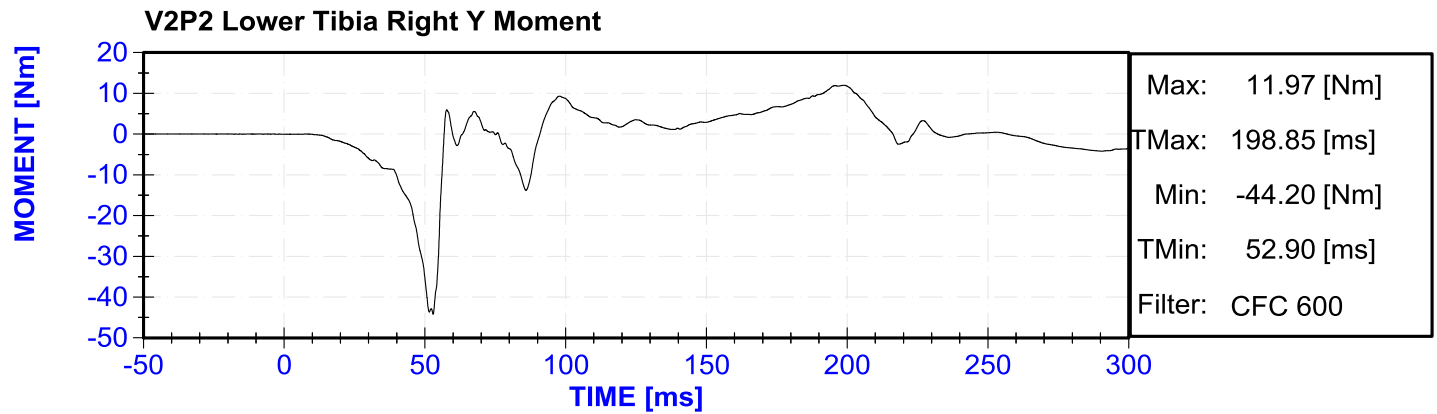
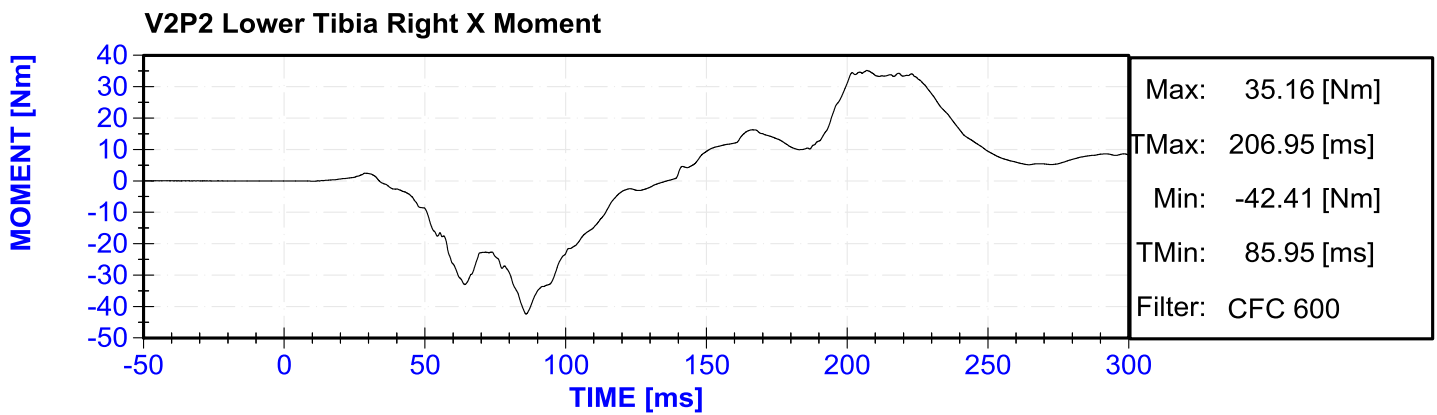
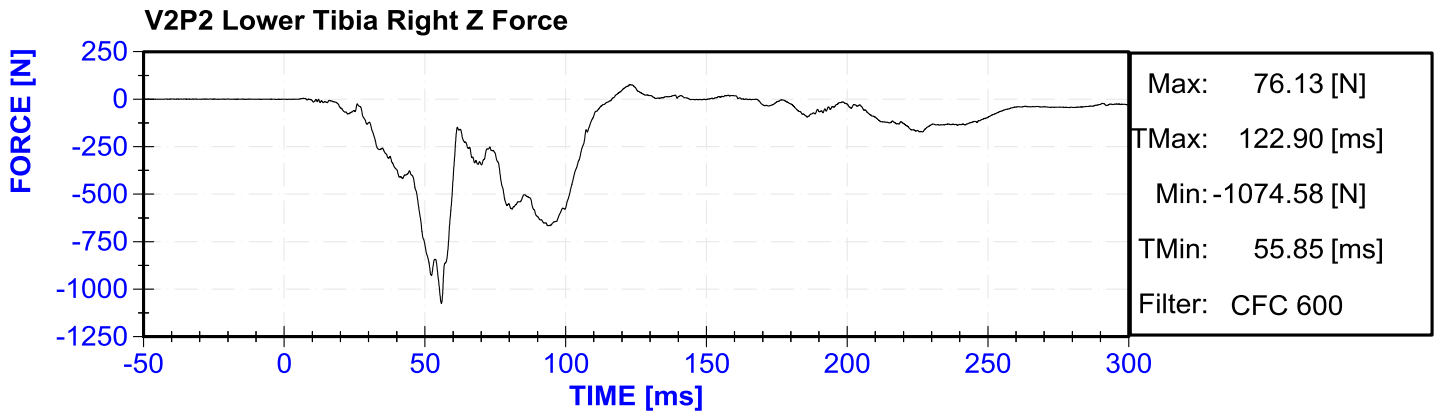
V2P2 Lower Tibia Left Y Force

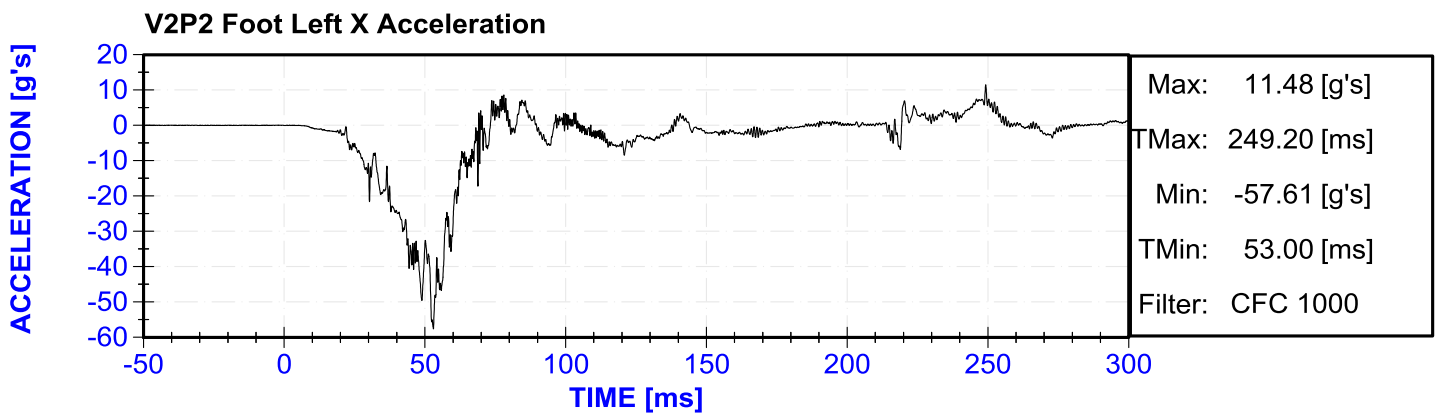
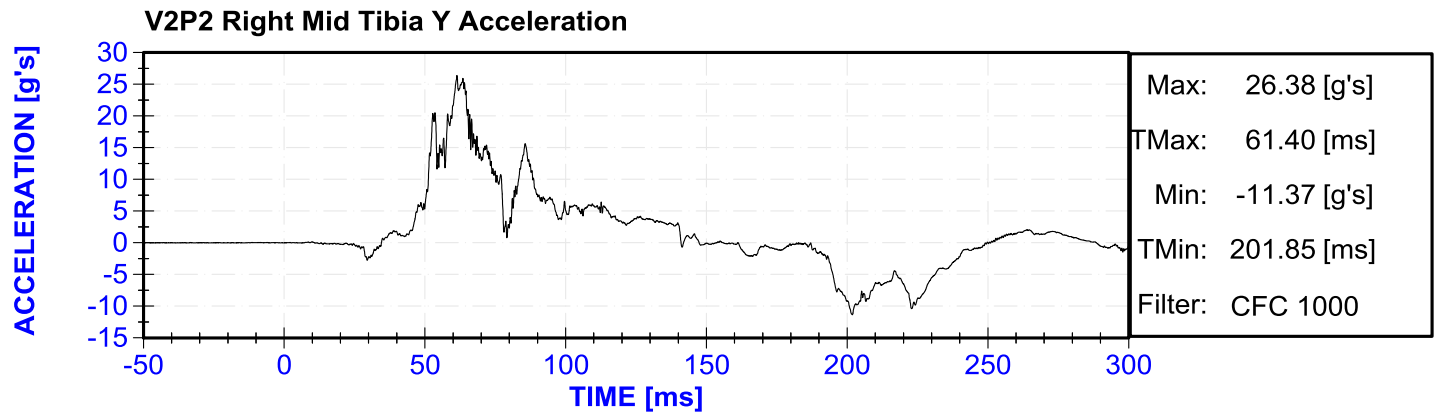
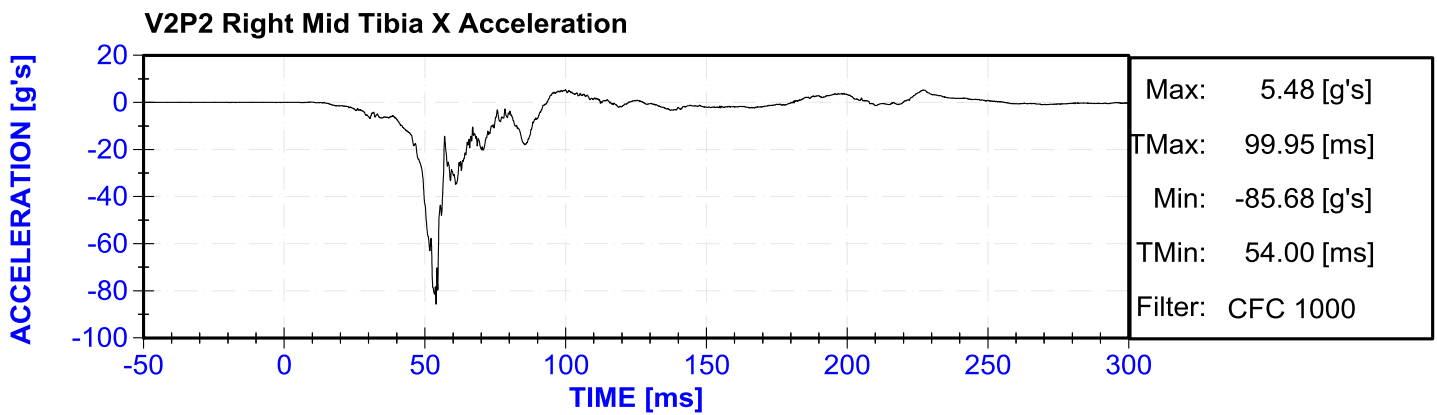
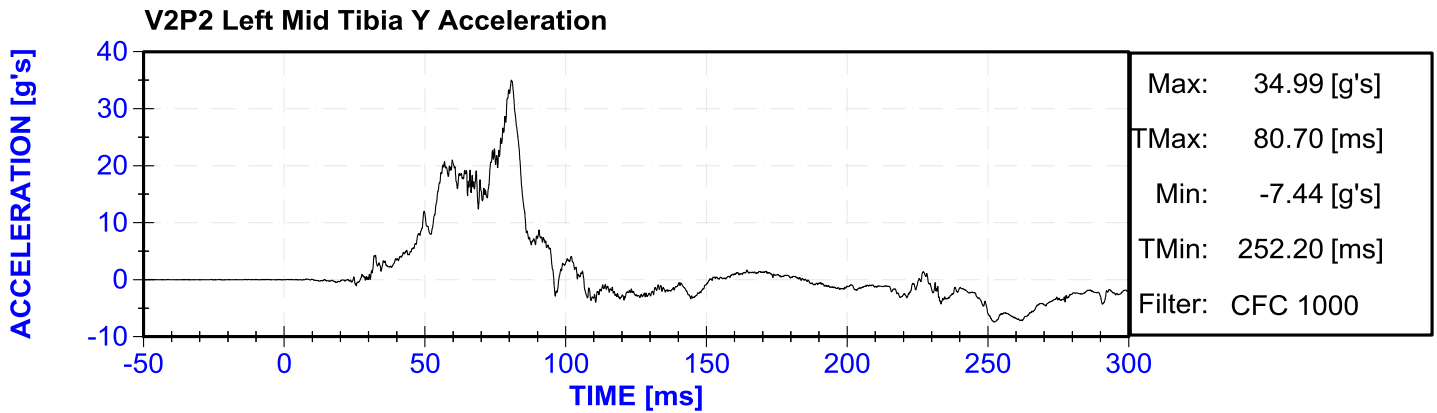


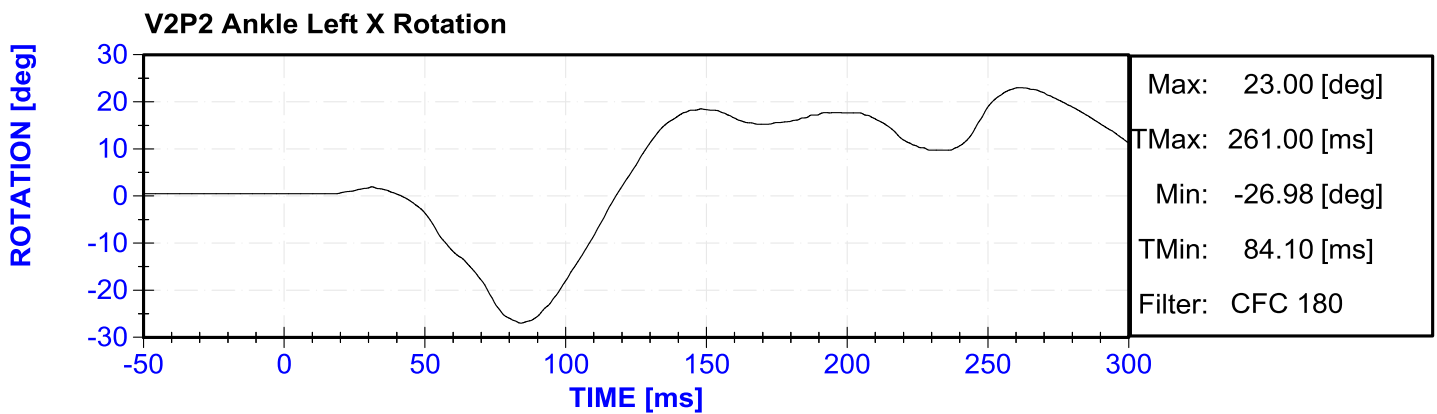
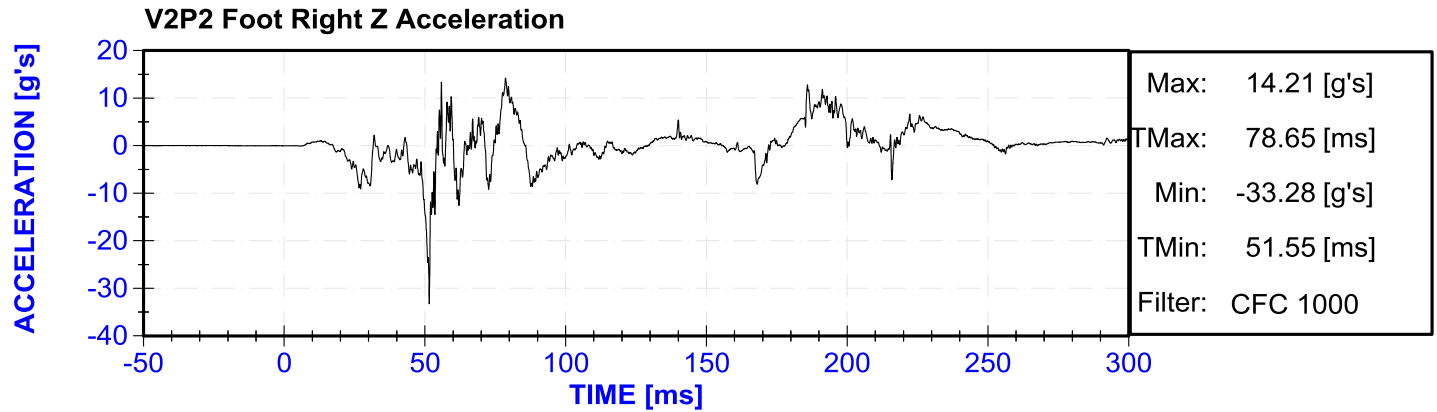
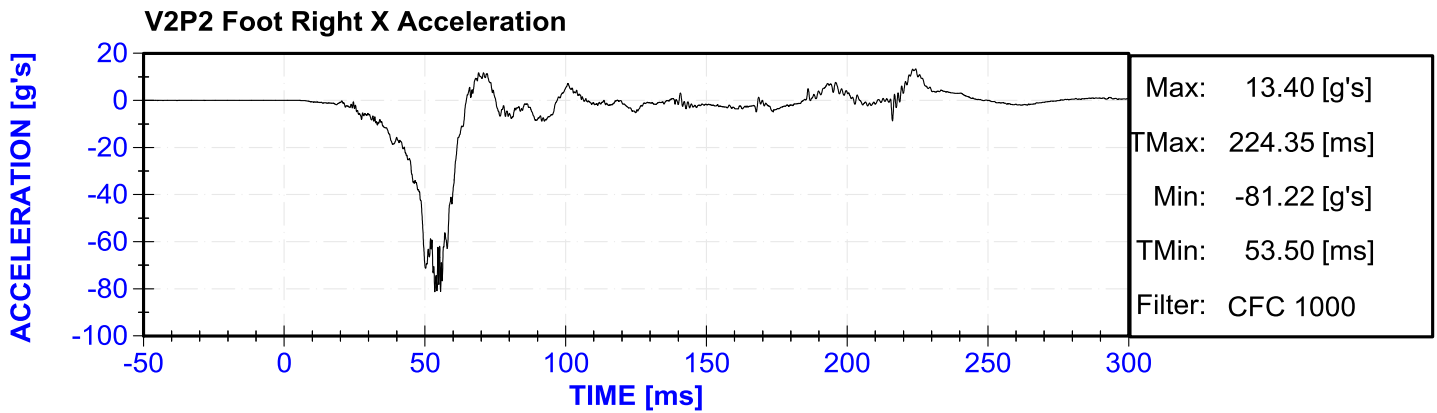
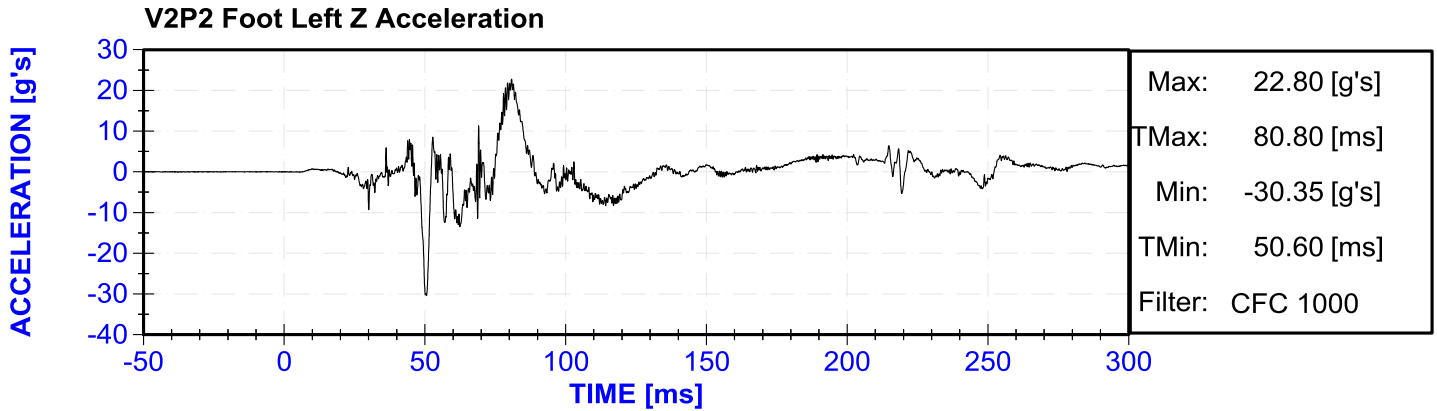
V2P2 Lower Tibia Left Z Force

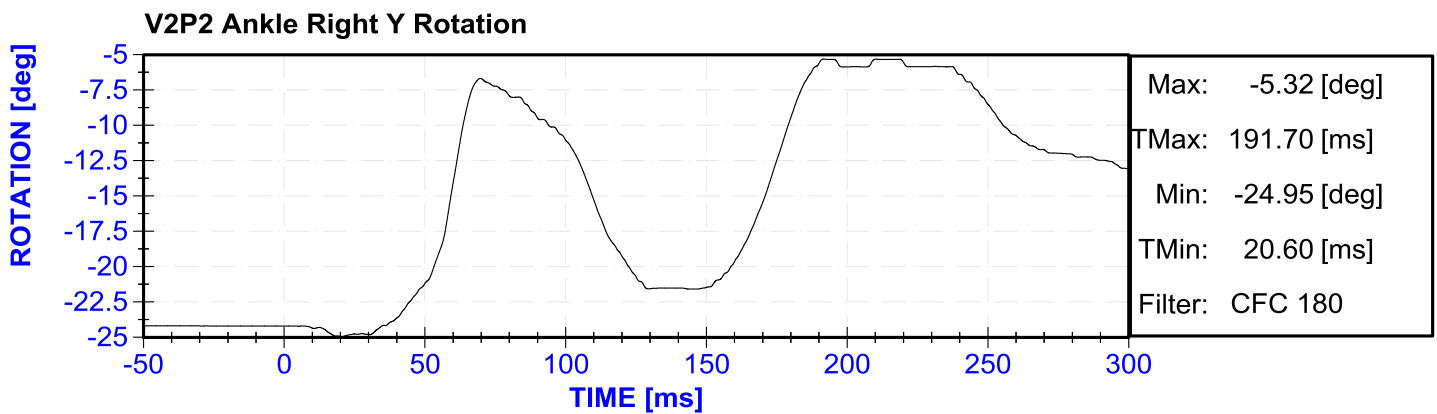
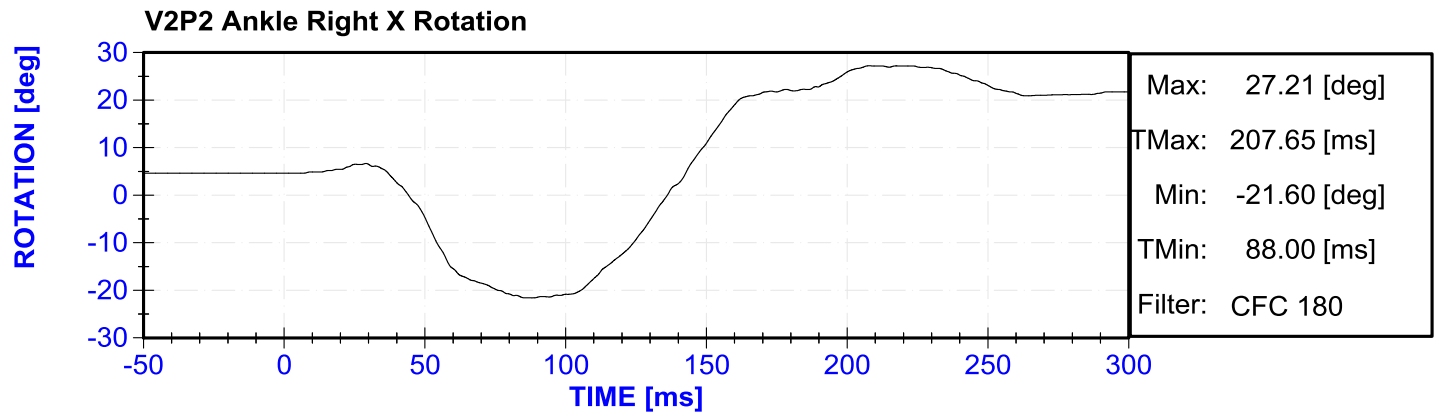
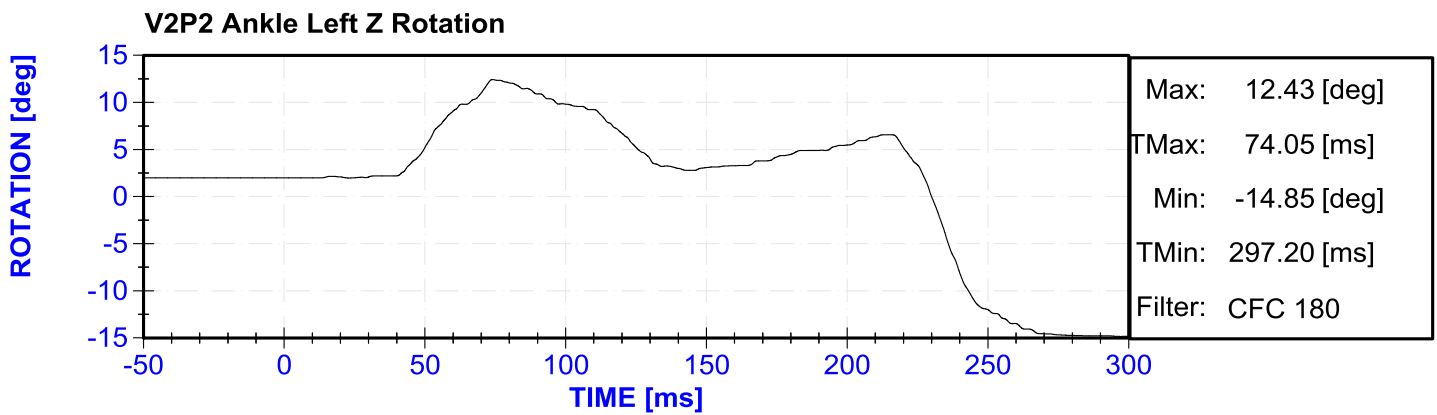
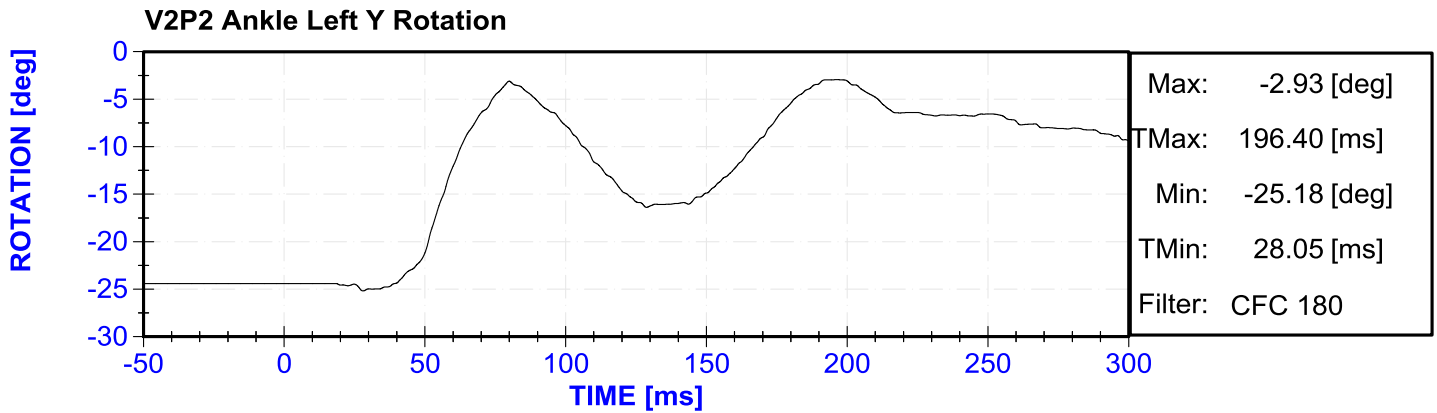




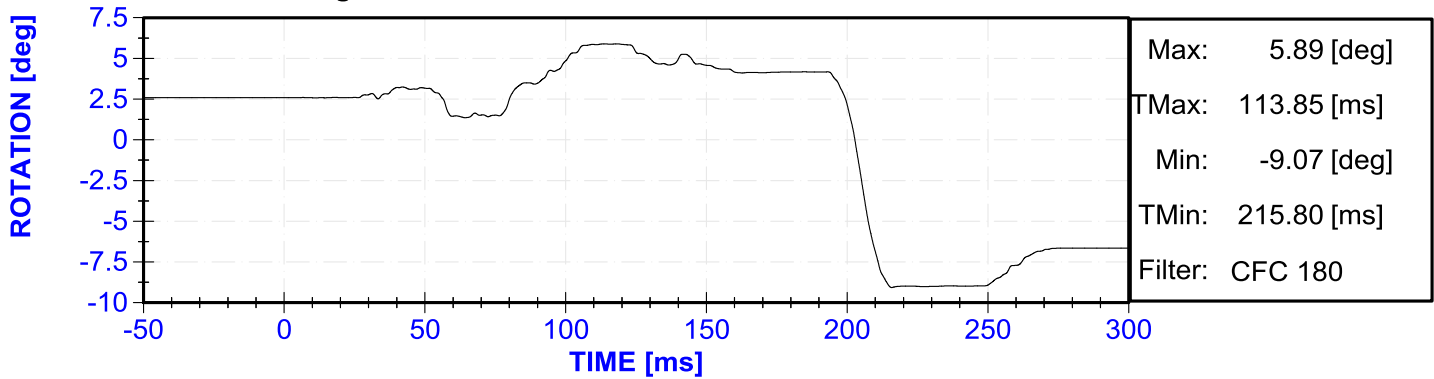




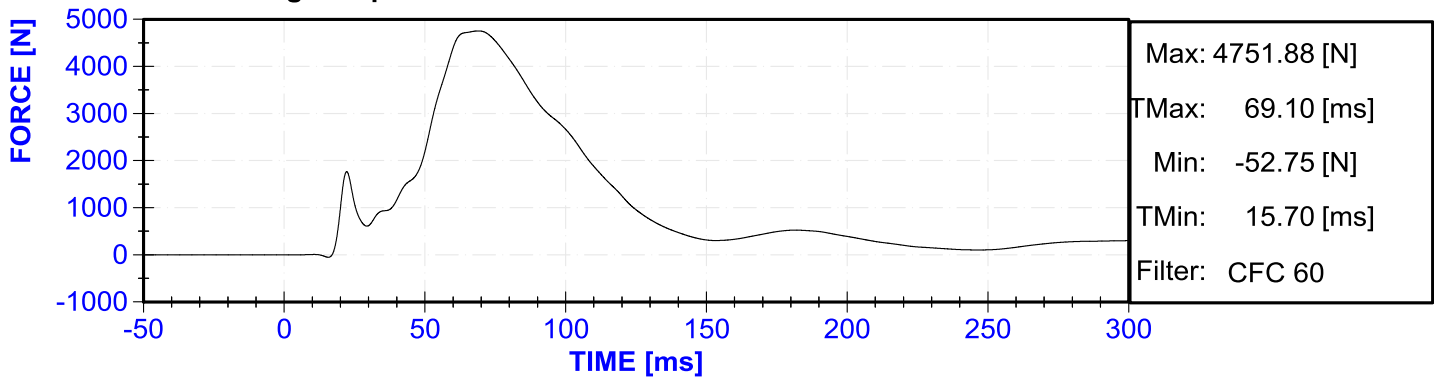




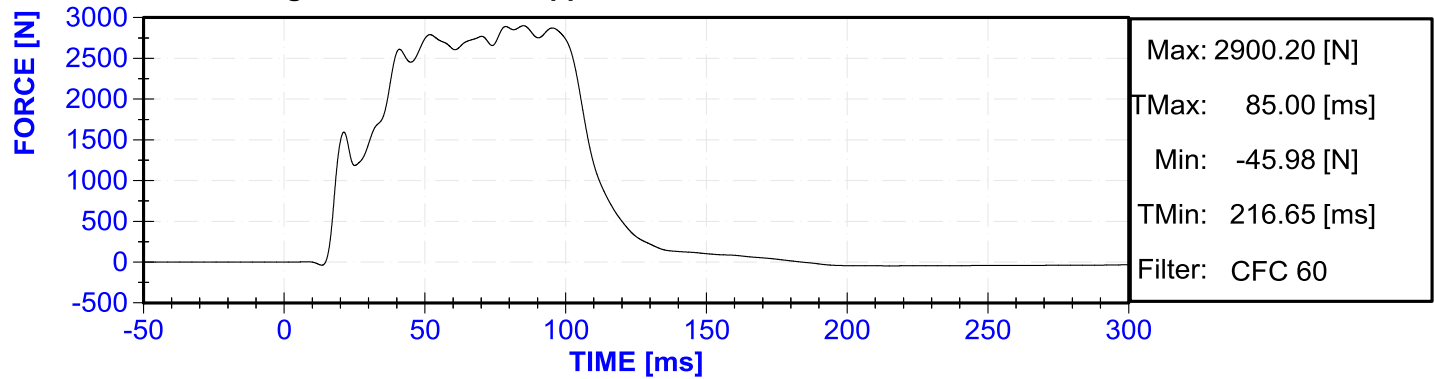
V2P2 Ankle Right Z Rotation



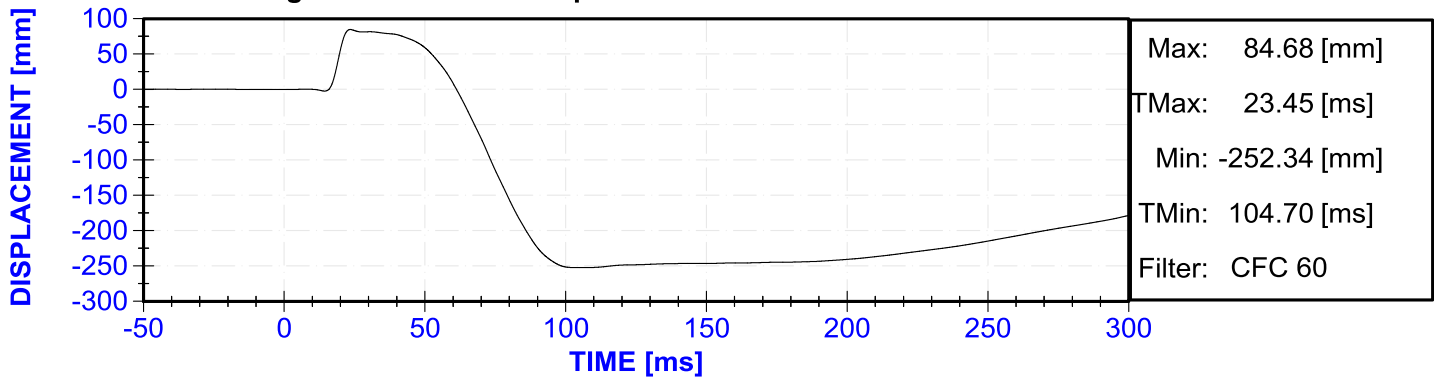
V2 Passenger Lap Belt Force

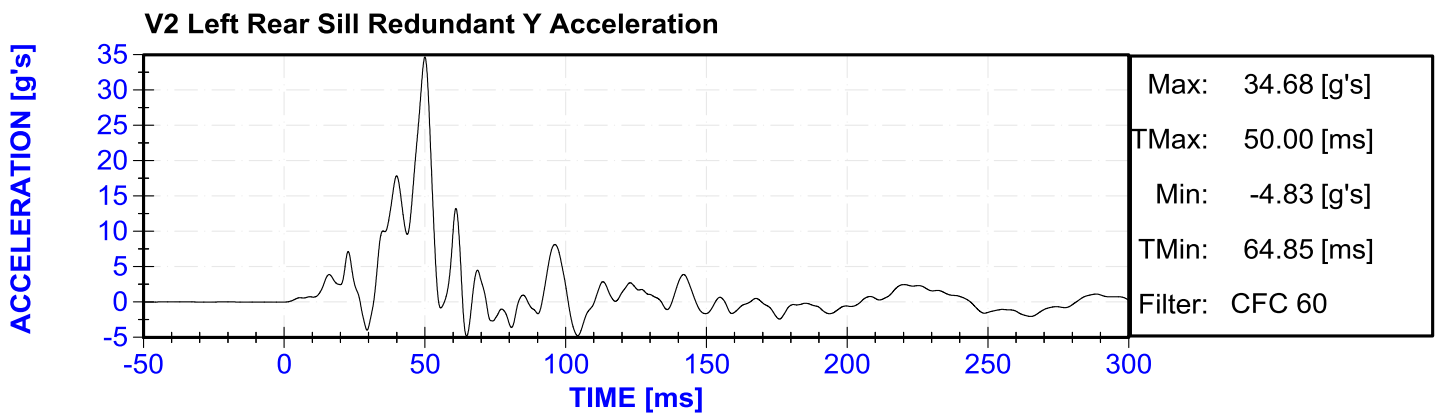
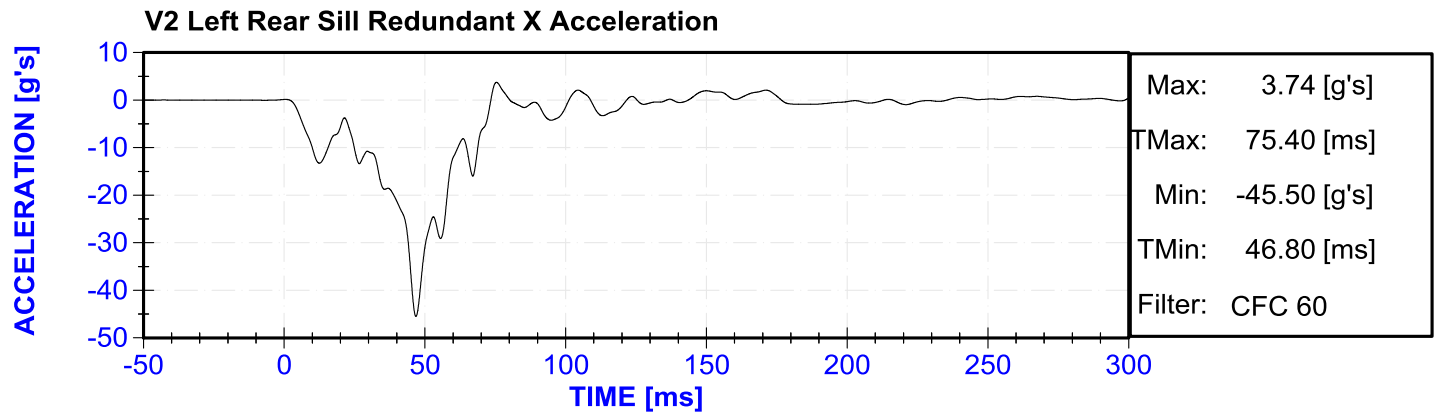
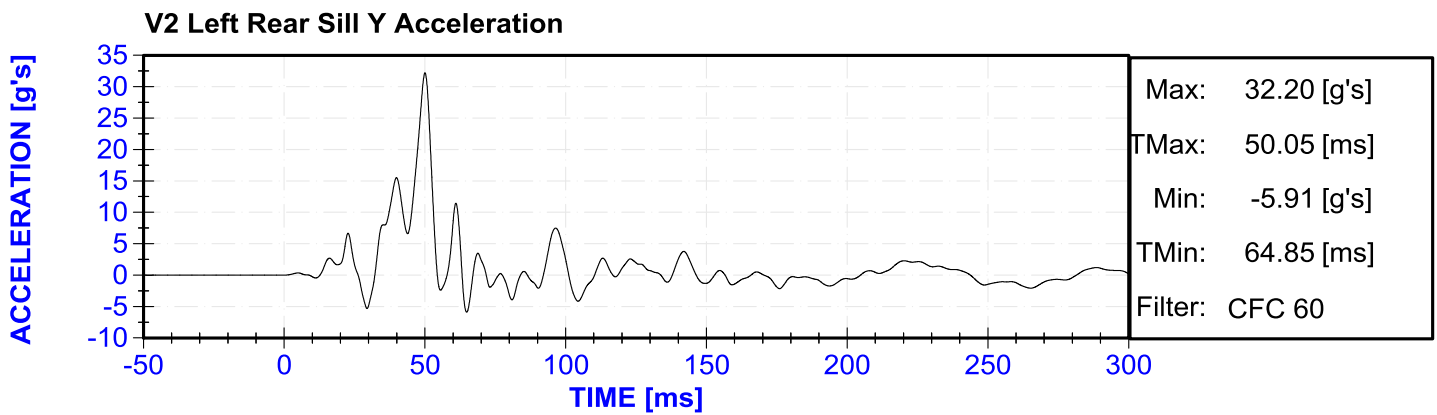
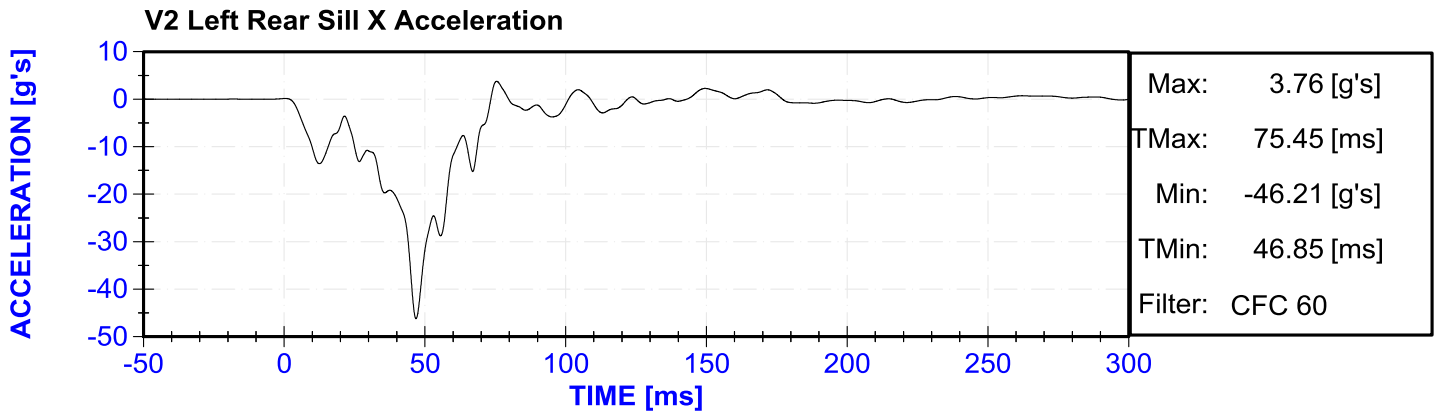


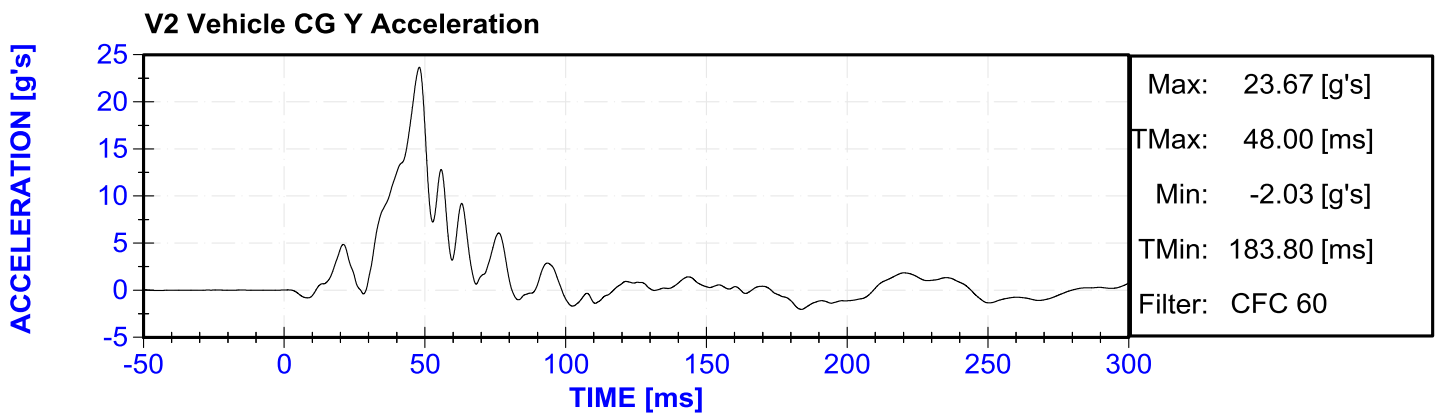
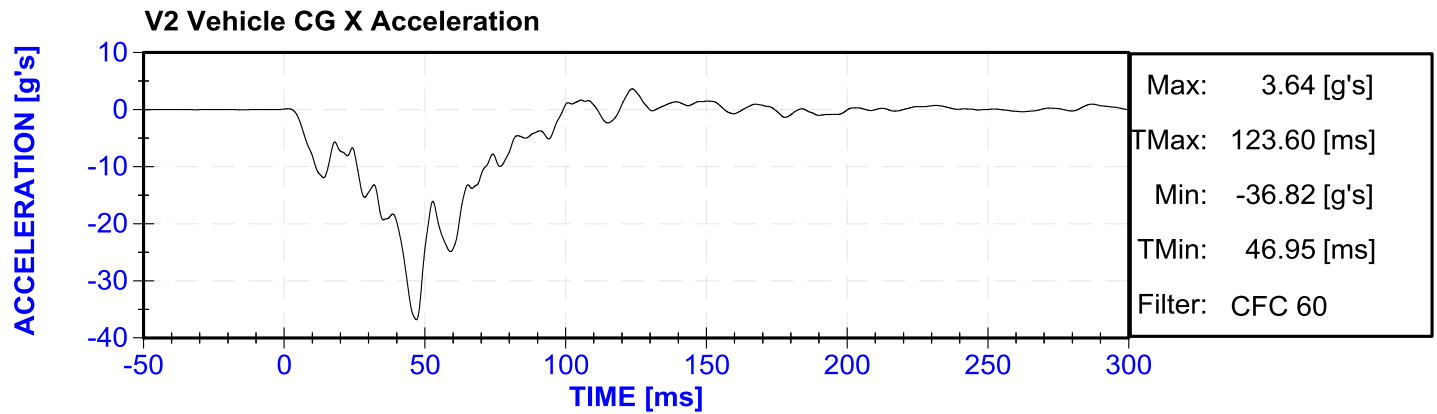
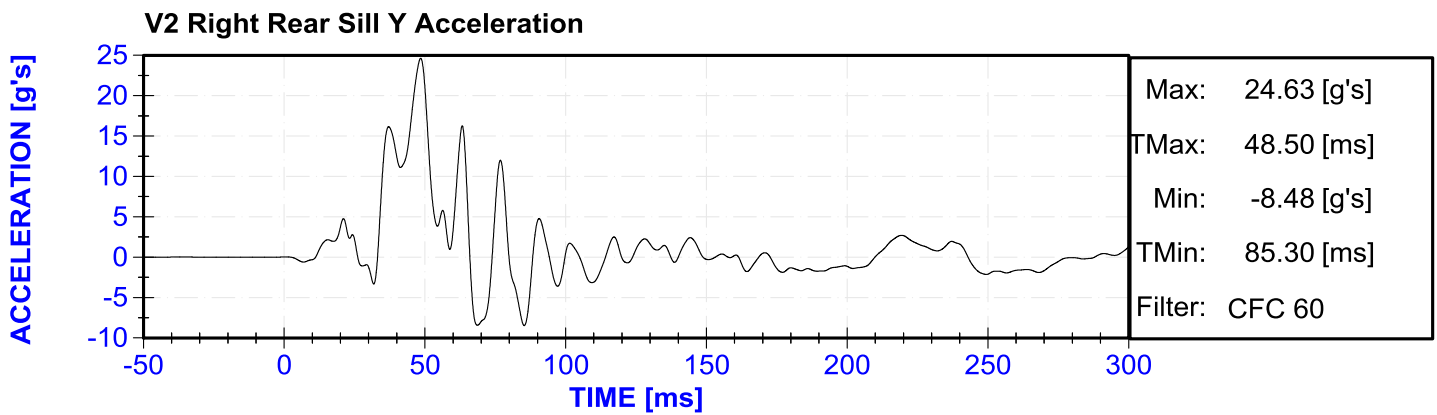
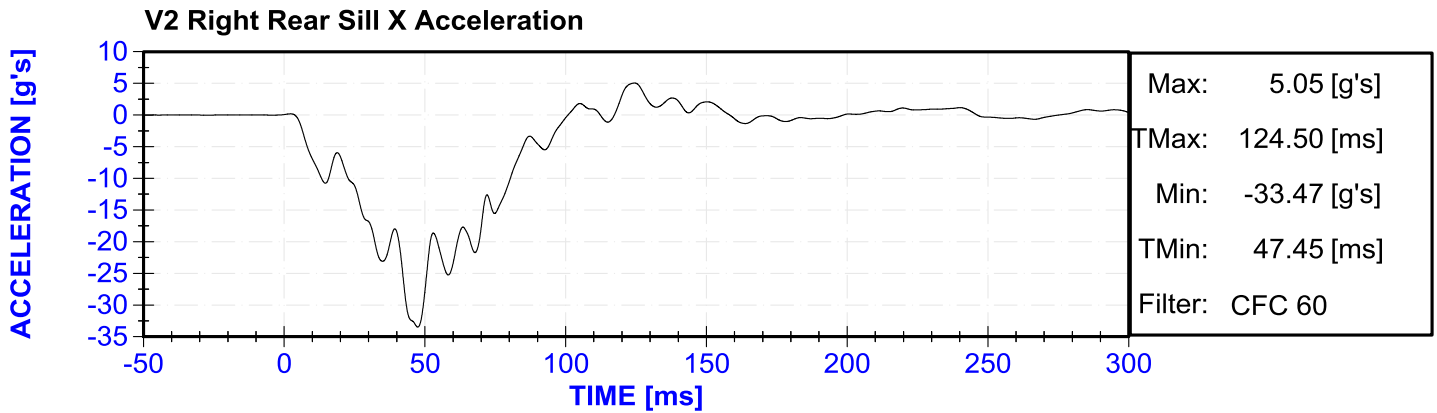
V2 Passenger Shoulder Belt Upper Force



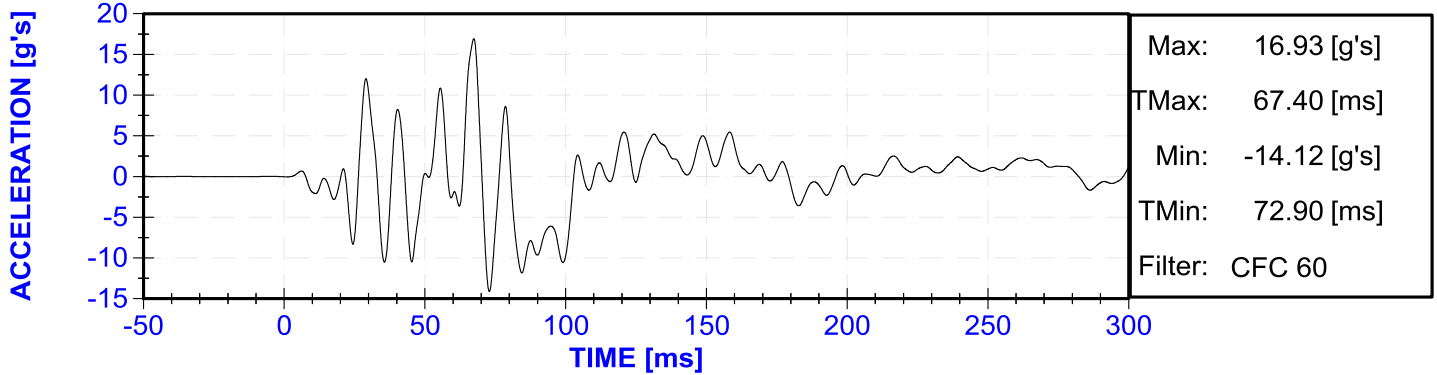
V2 Passenger Shoulder Belt Displacement



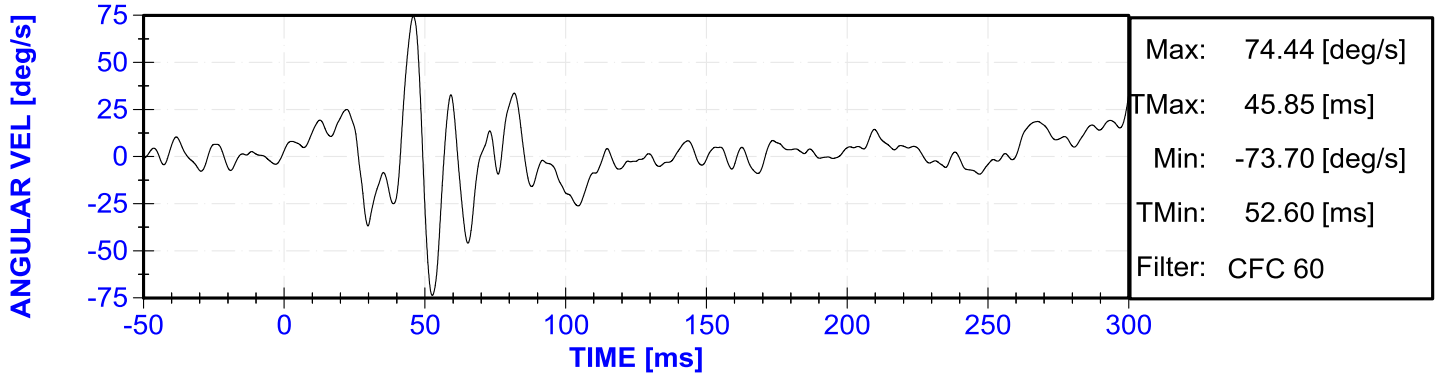




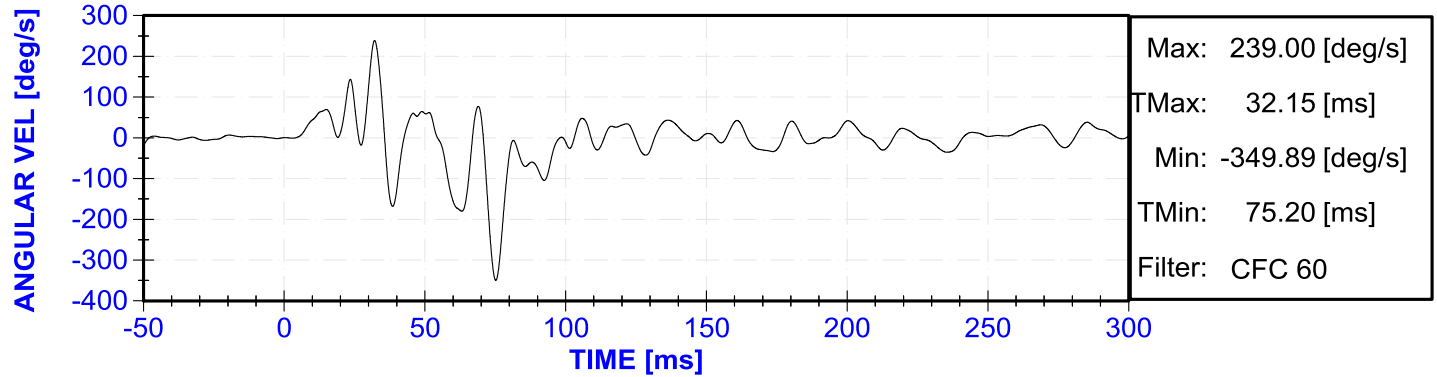
V2 Vehicle CG Z Acceleration



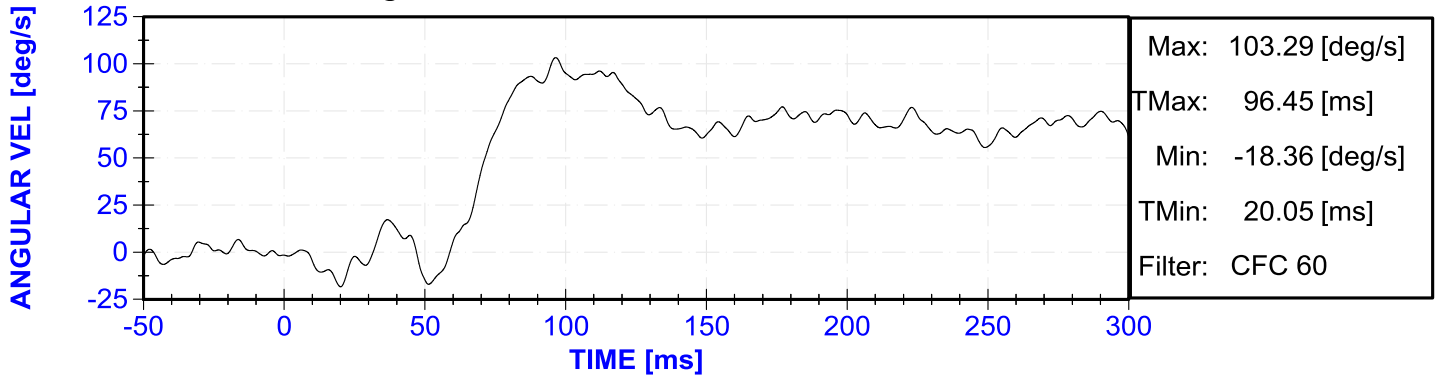
V2 Vehicle CG Angular Rate X

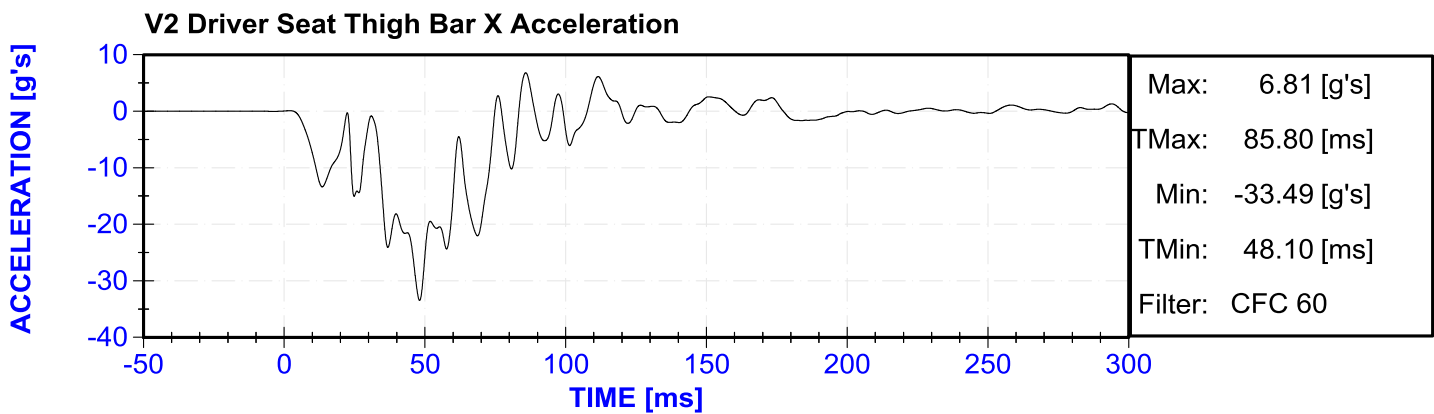
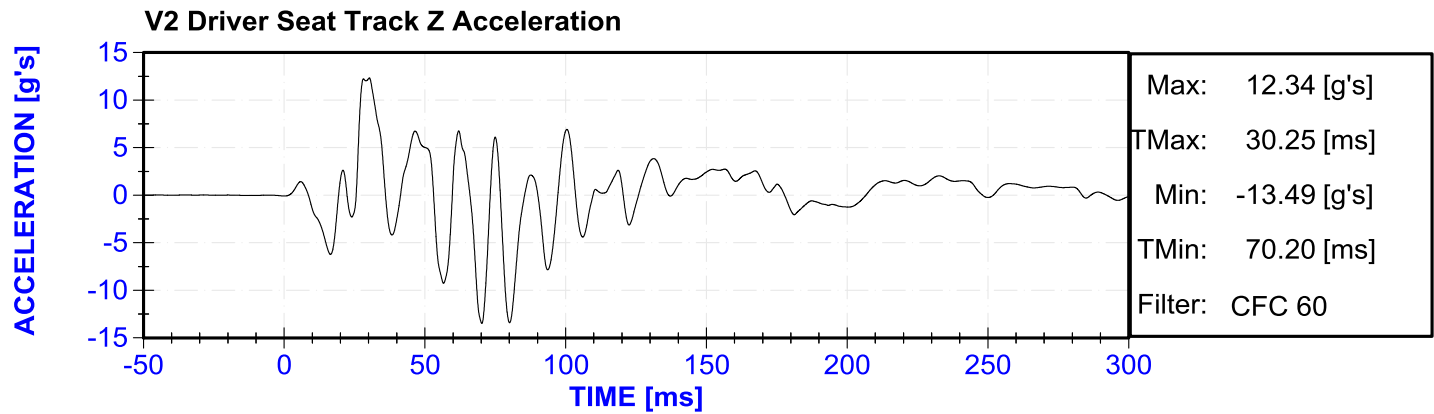
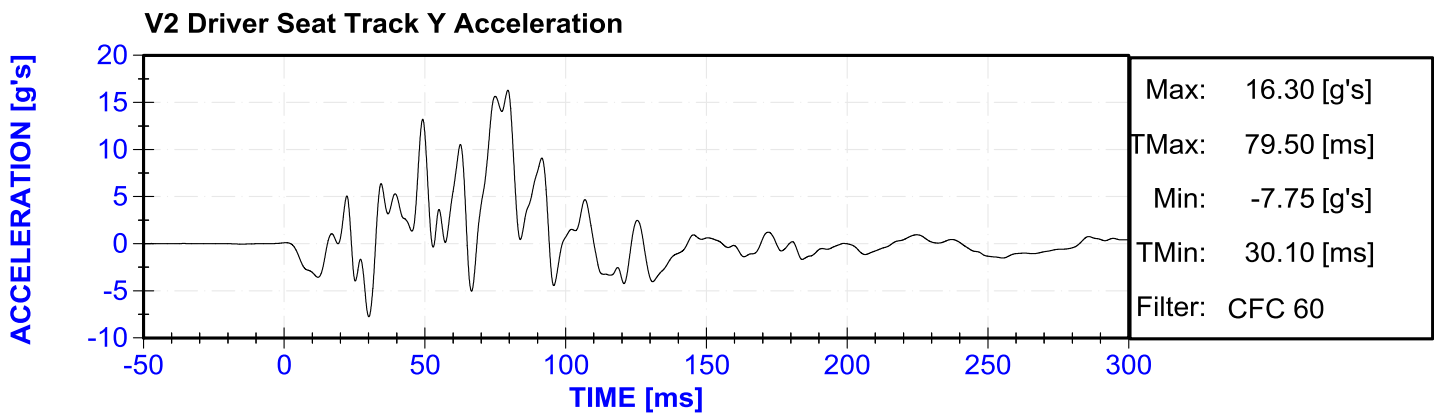
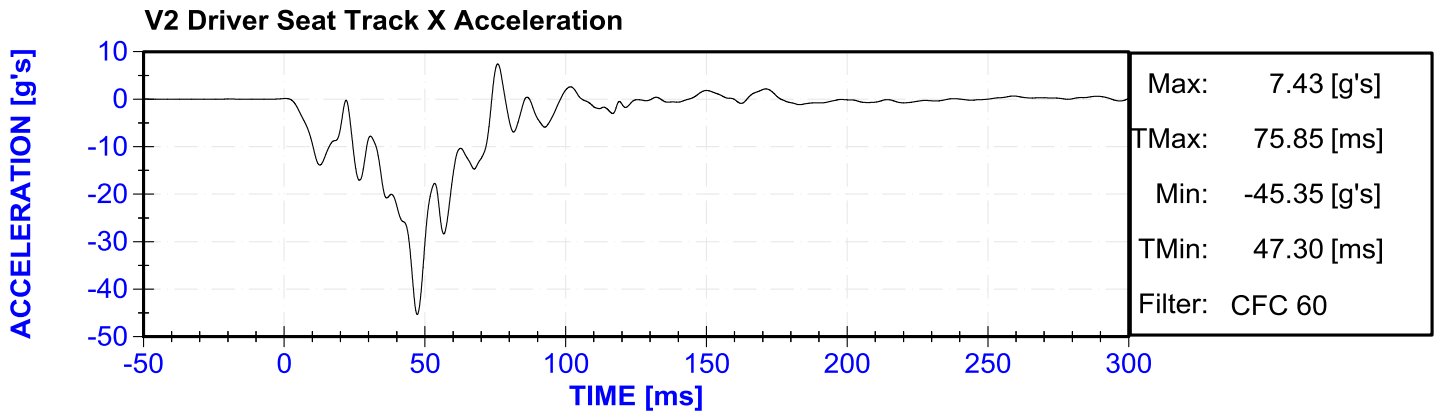


V2 Vehicle CG Angular Rate Y

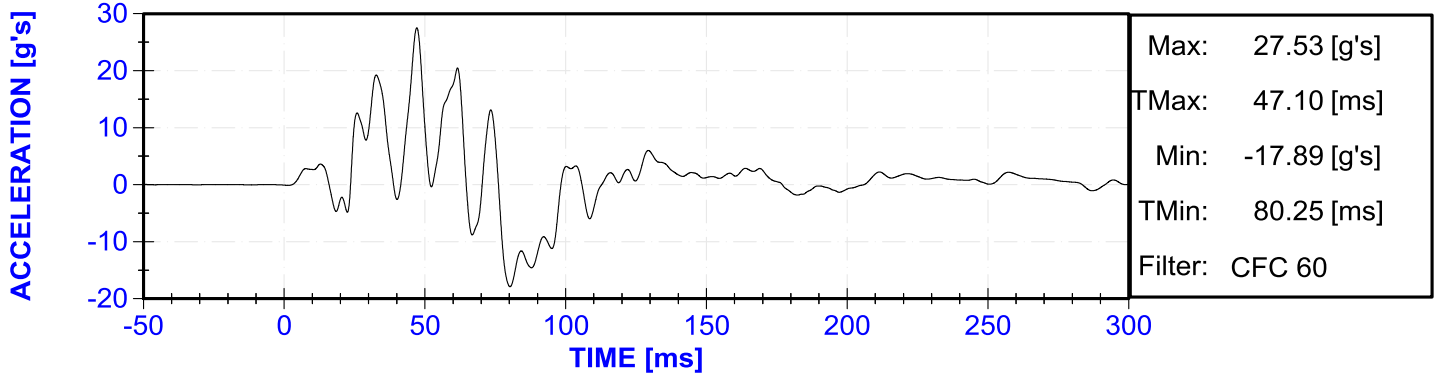


V2 Vehicle CG Angular Rate Z

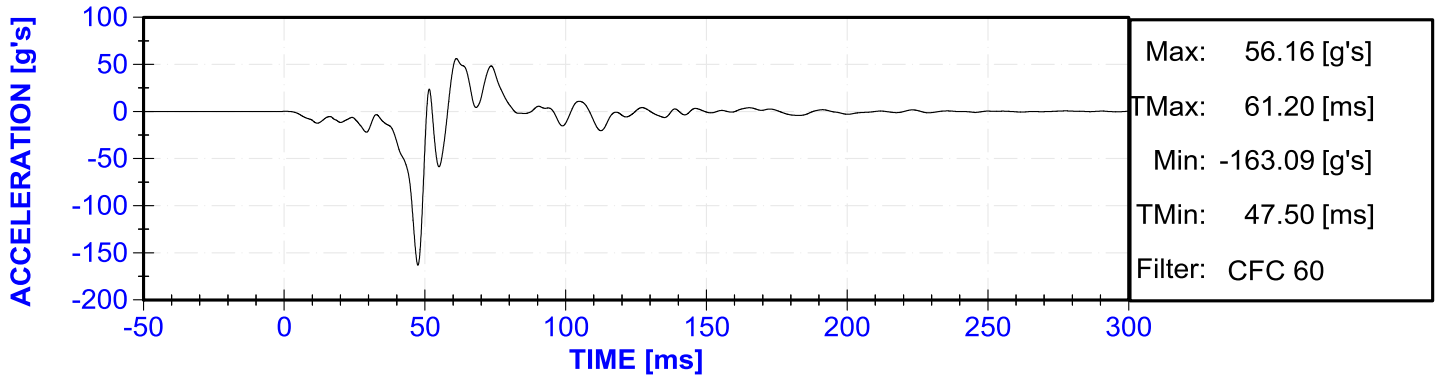




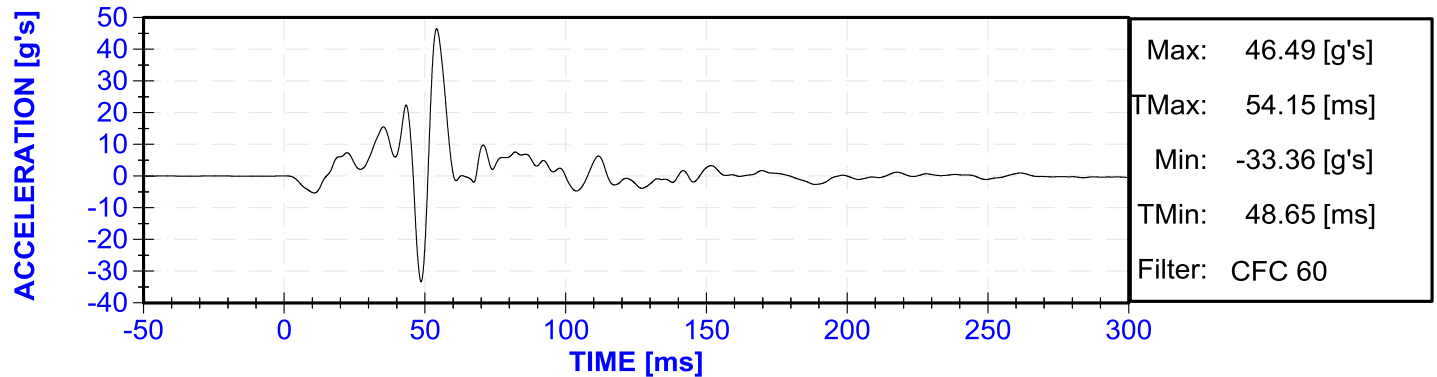
V2 Driver Seat Thigh Bar Z Acceleration



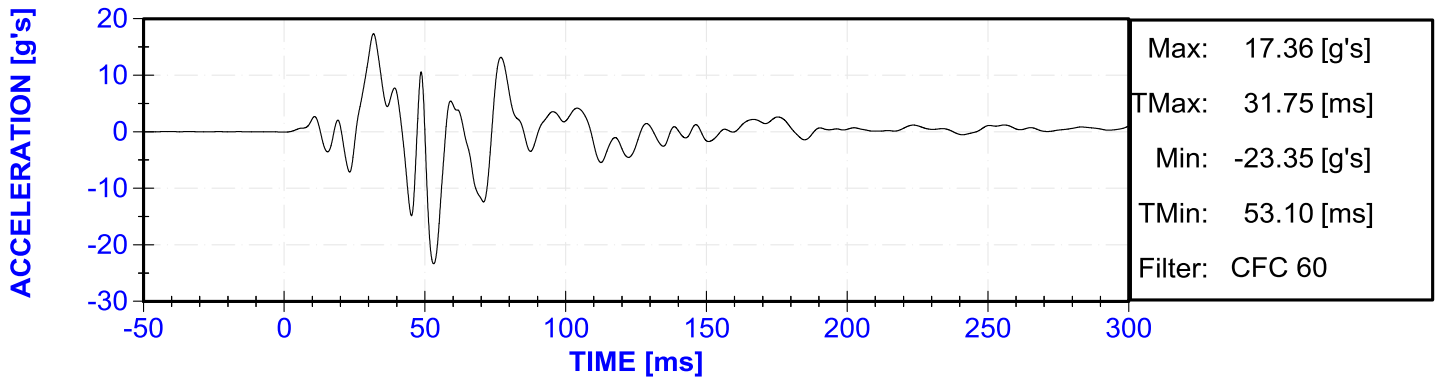
V2 Driver Floor Pan X Acceleration



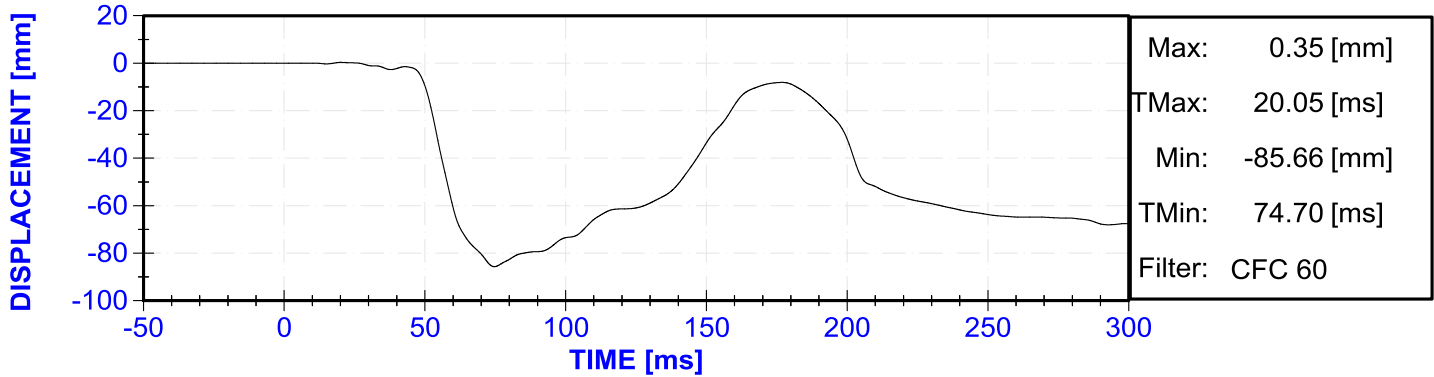
V2 Driver Floor Pan Y Acceleration



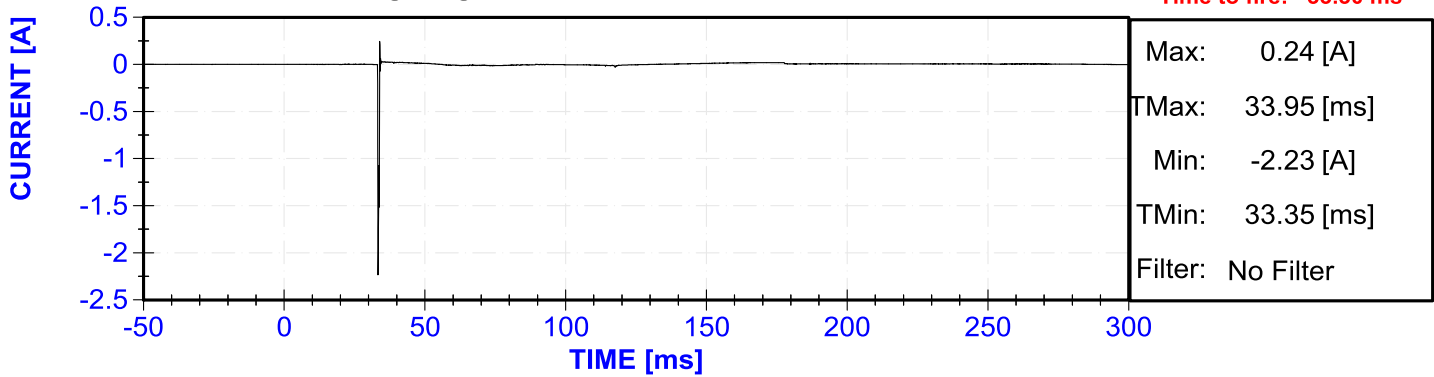
V2 Driver Floor Pan Z Acceleration



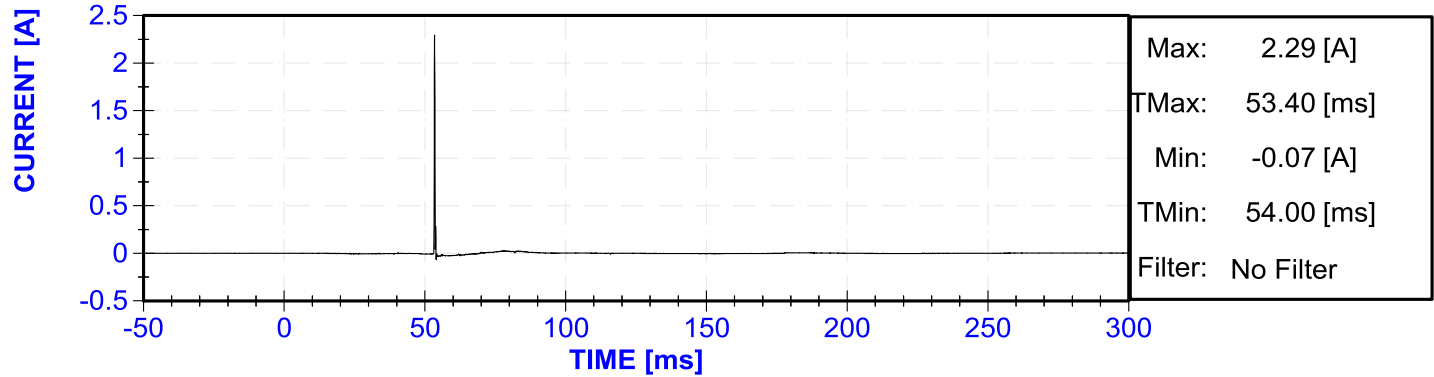
V2 Driver Floor Pan X Deflection



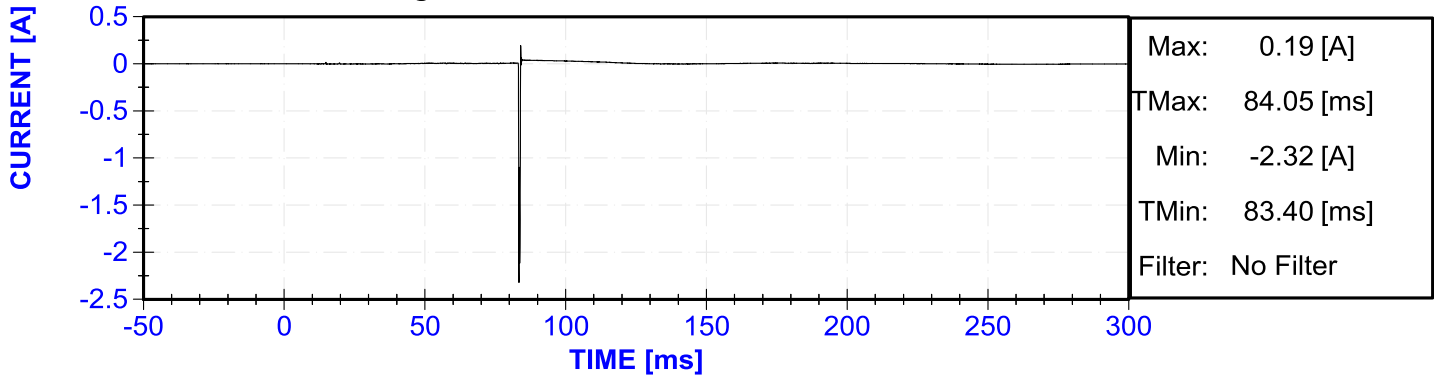
Driver Front Airbag Stage 1 Monitor

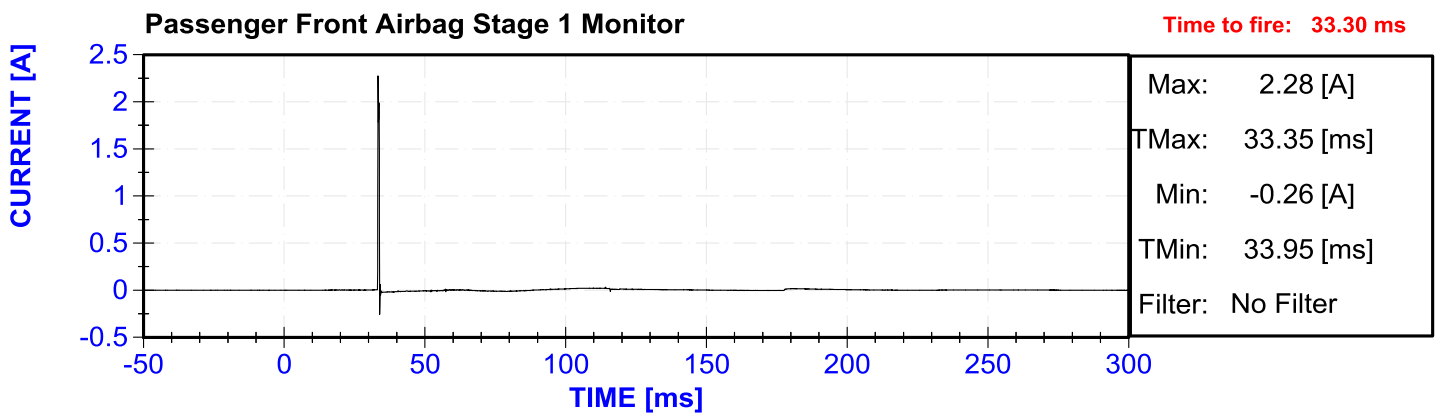
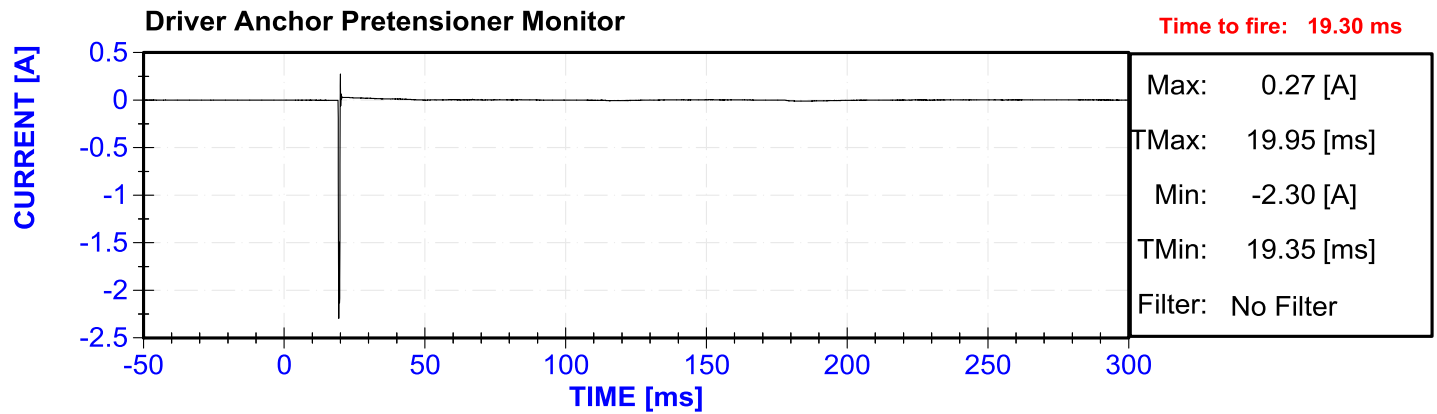
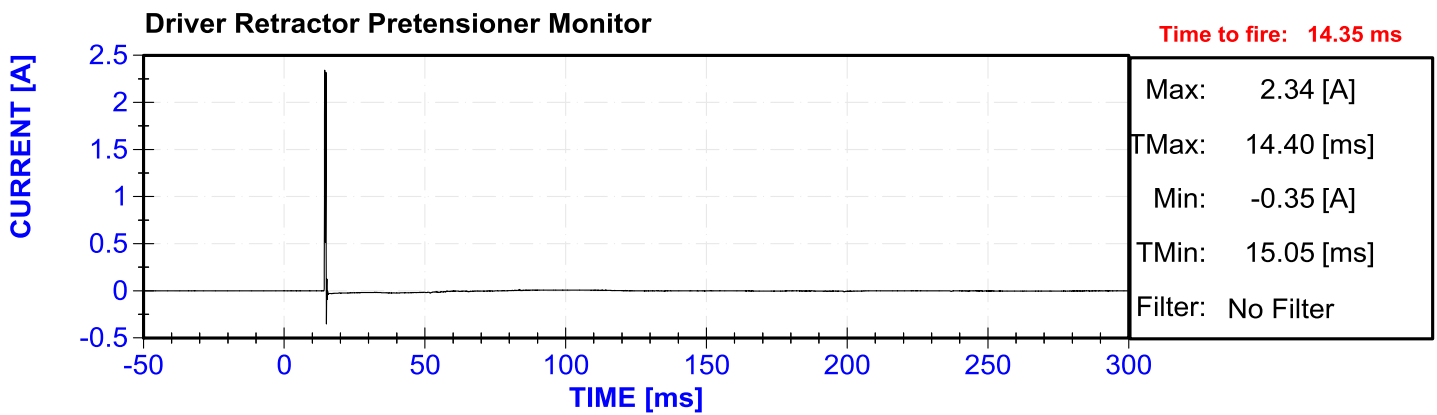
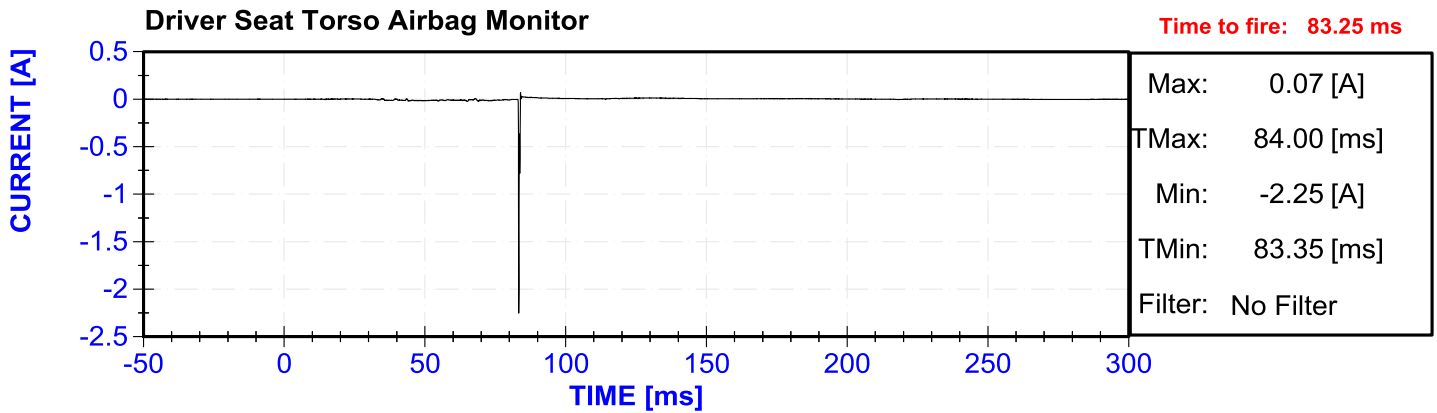


Driver Front Airbag Stage 2 Monitor



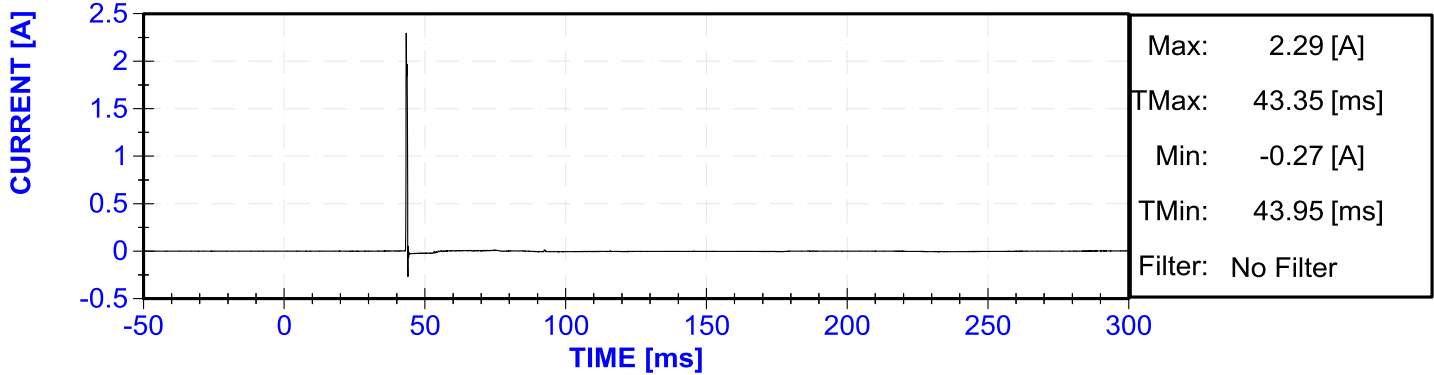
Driver Curtain Airbag Monitor





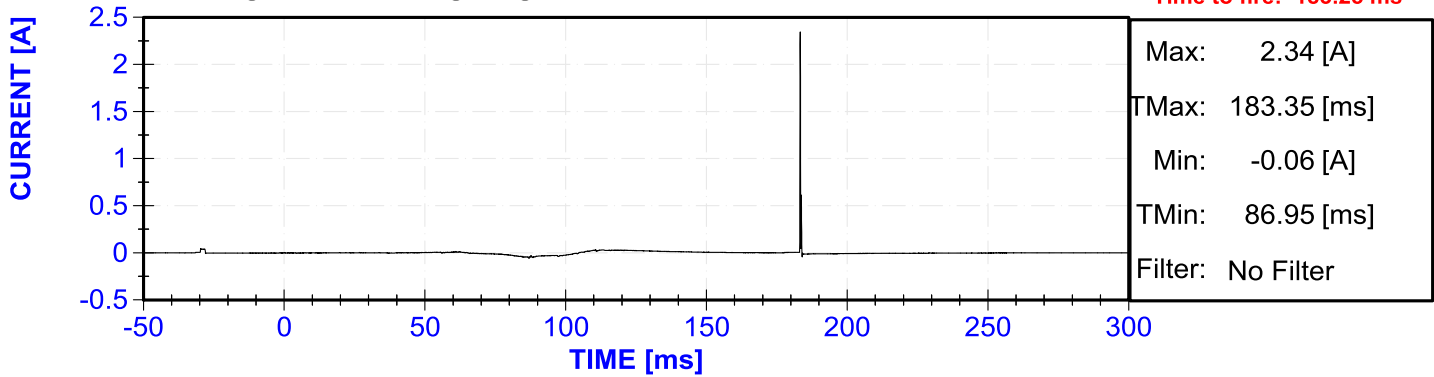
Passenger Front Airbag Stage 2 Monitor

Time to fire: 43.30 ms



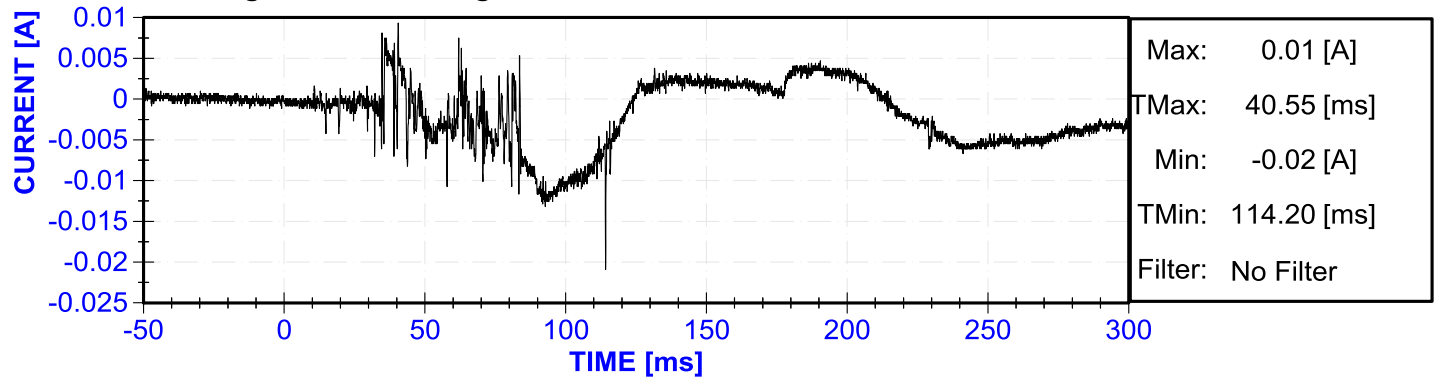
Passenger Front Airbag Stage 3 Monitor

Time to fire: 183.25 ms



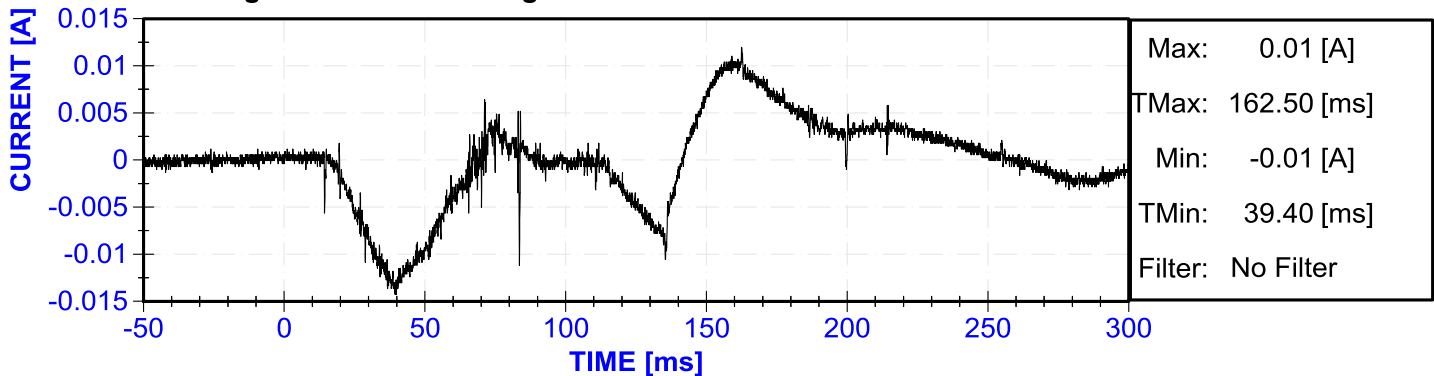
Passenger Curtain Airbag Monitor

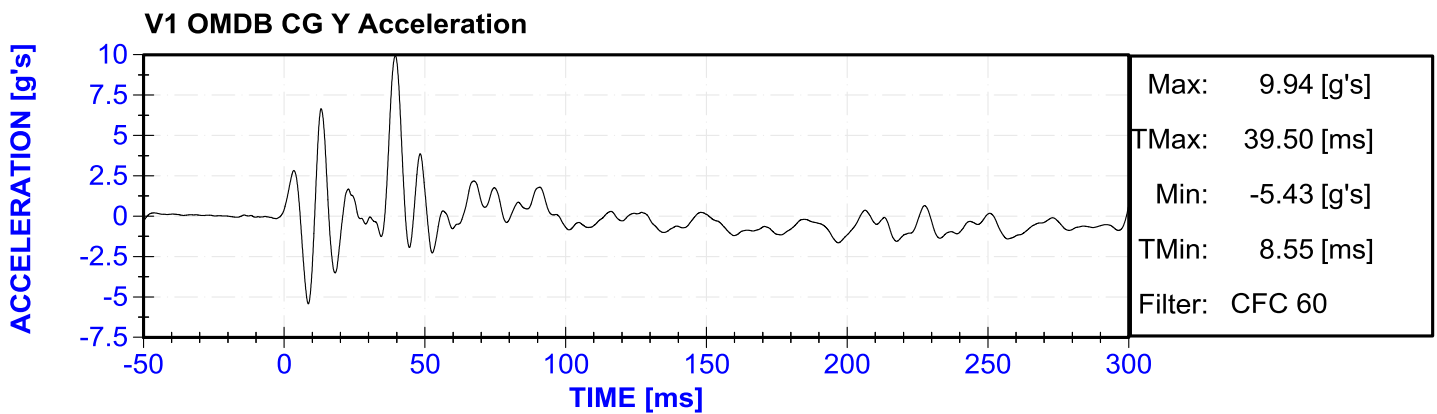
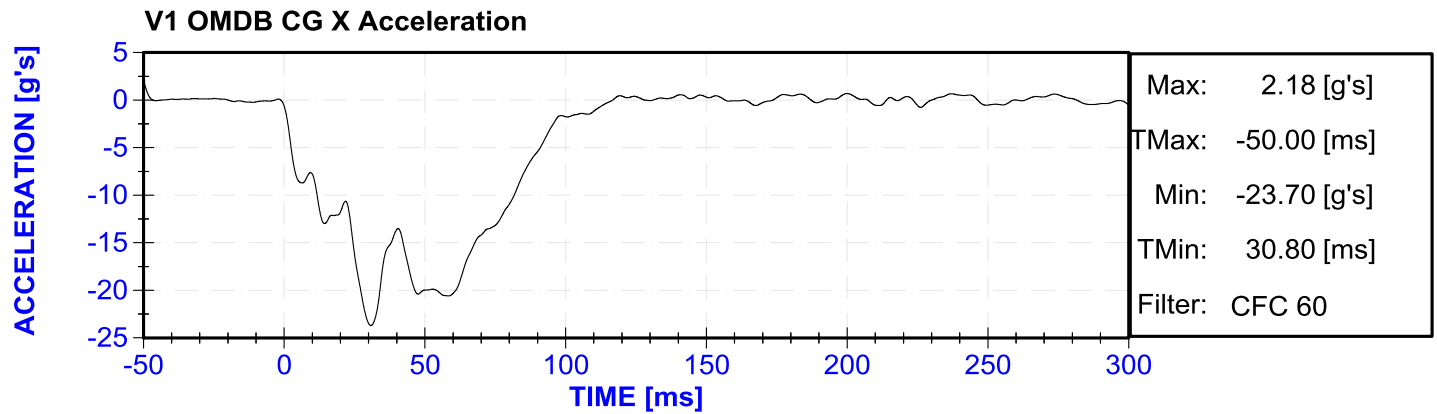
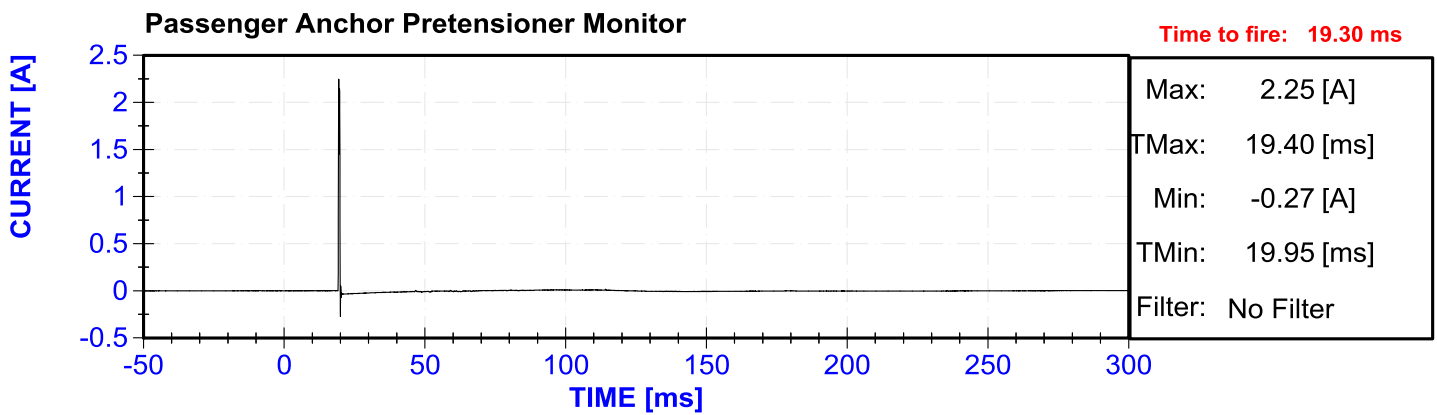
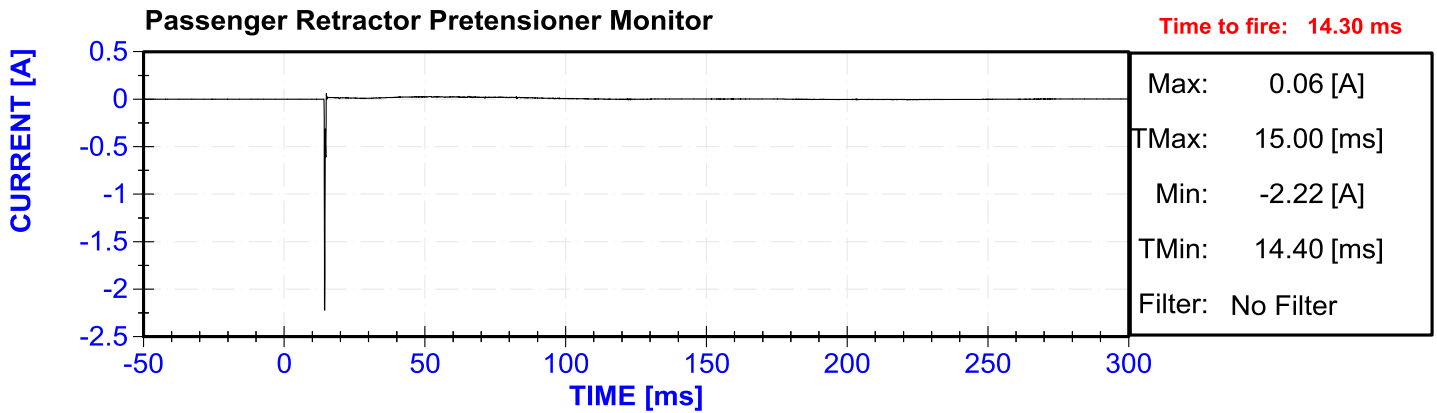
Did not fire

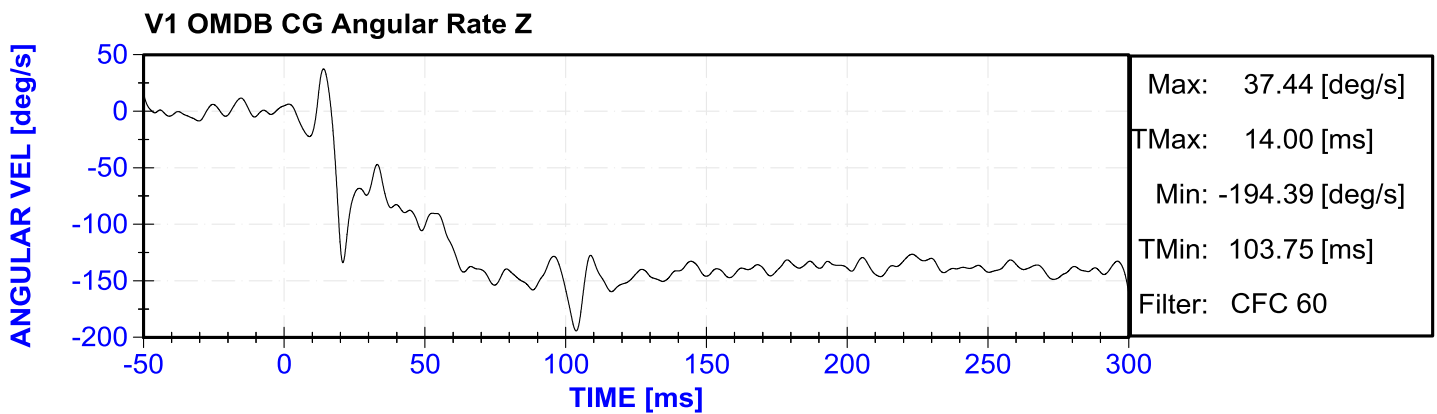
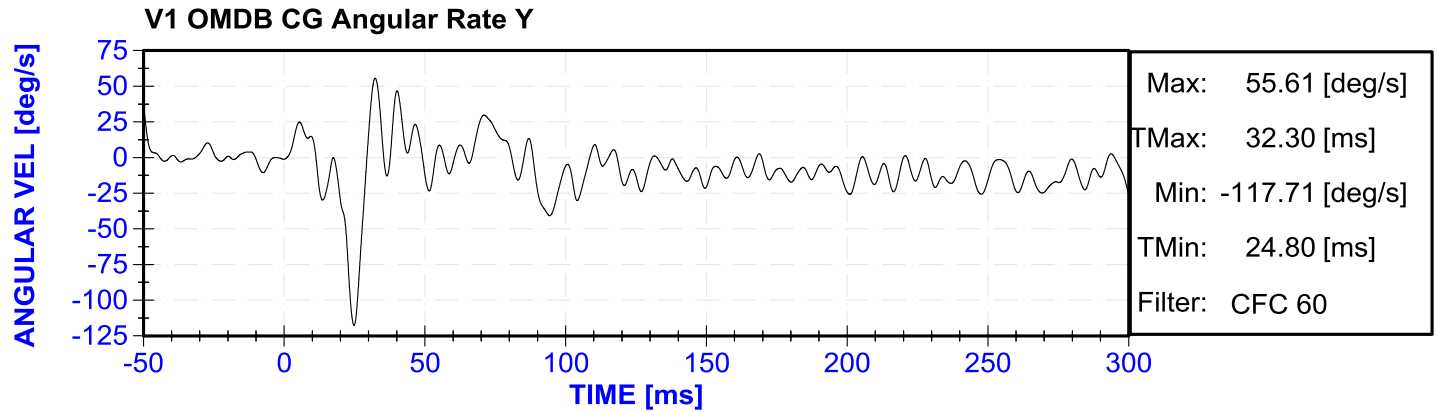
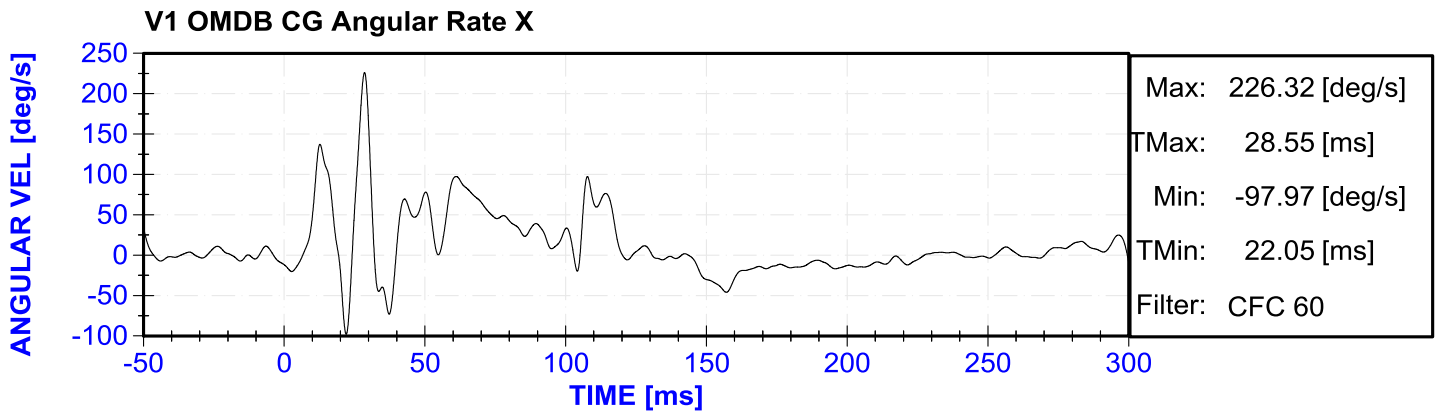
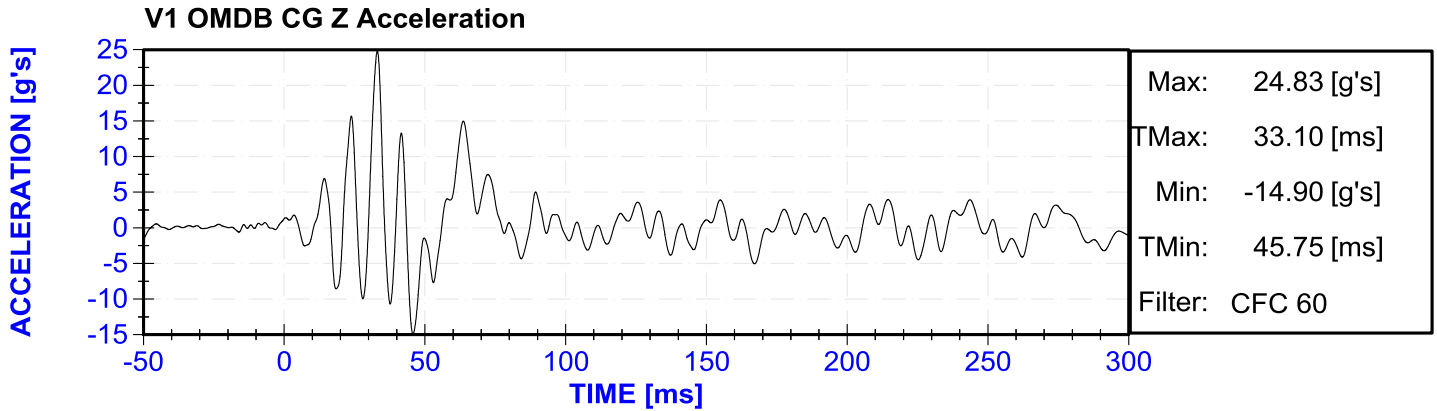


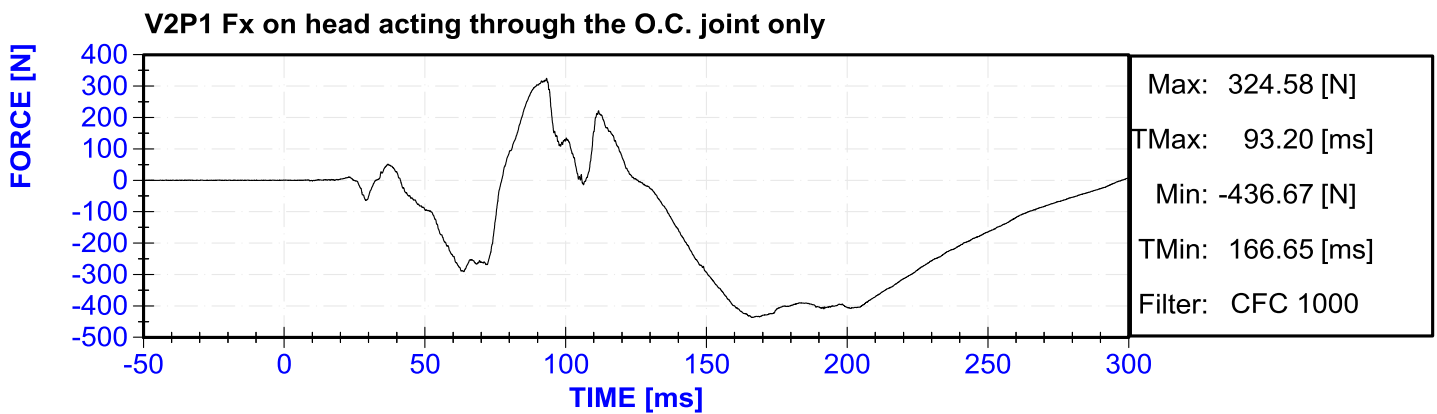
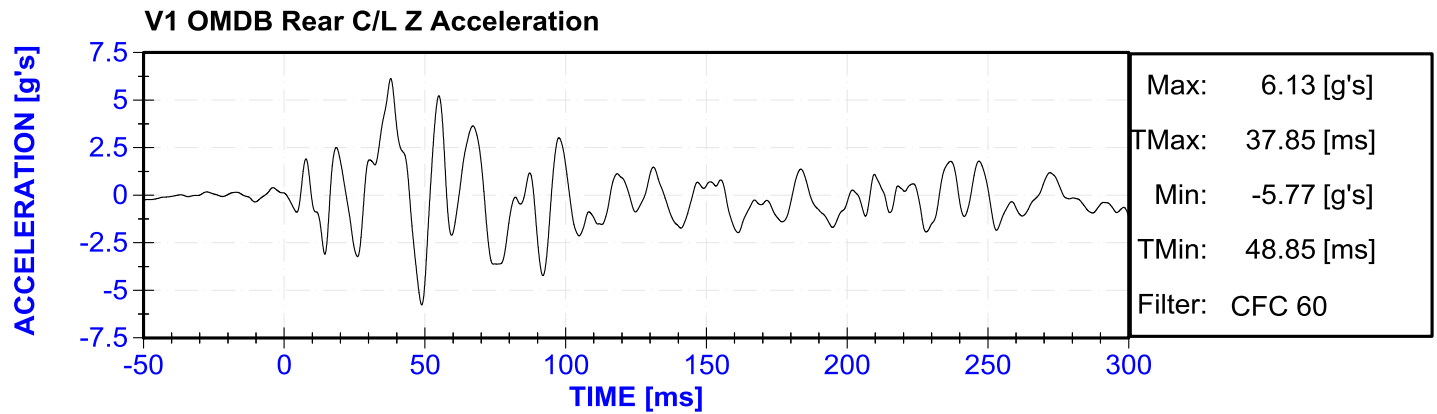
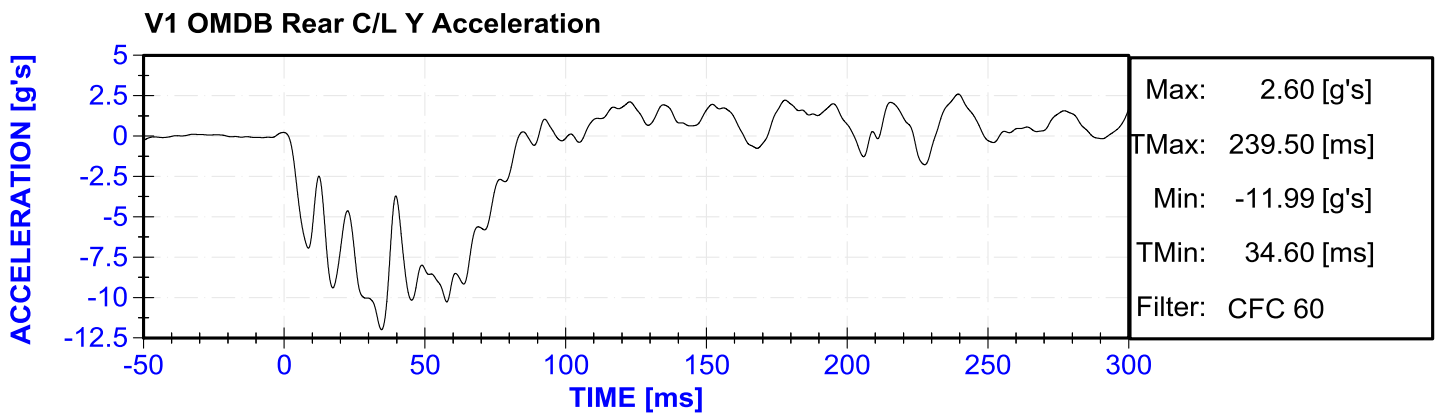
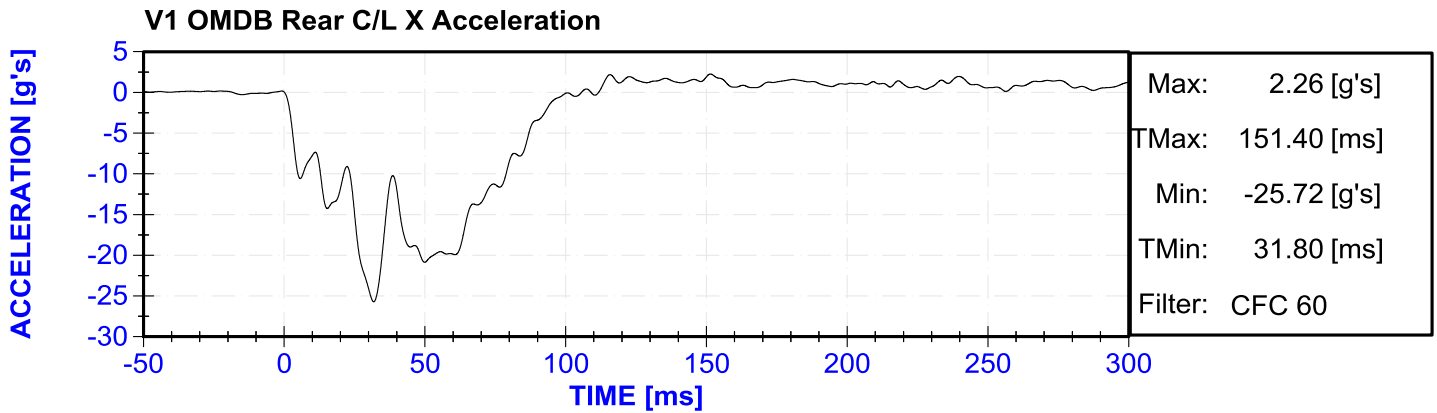
Passenger Seat Torso Airbag Monitor

Did not fire

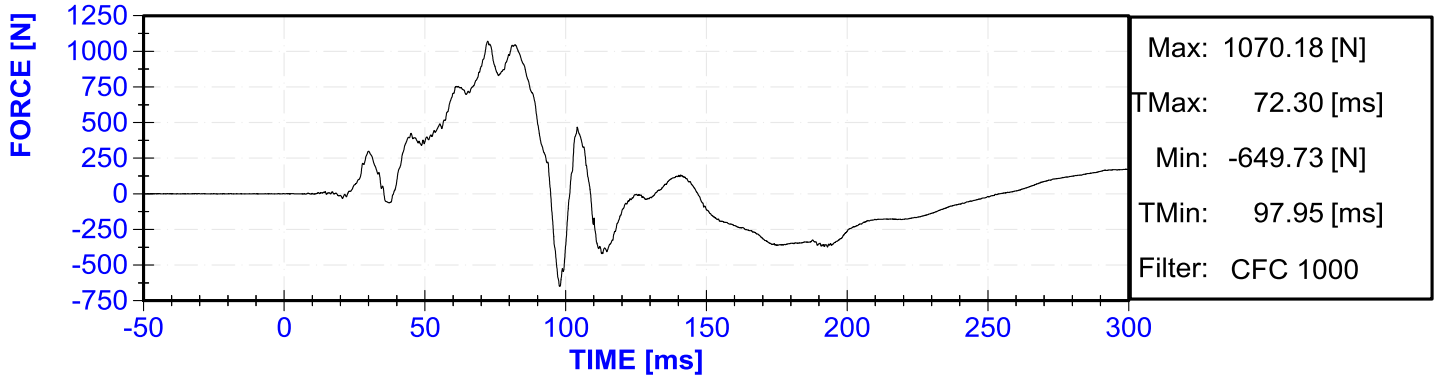




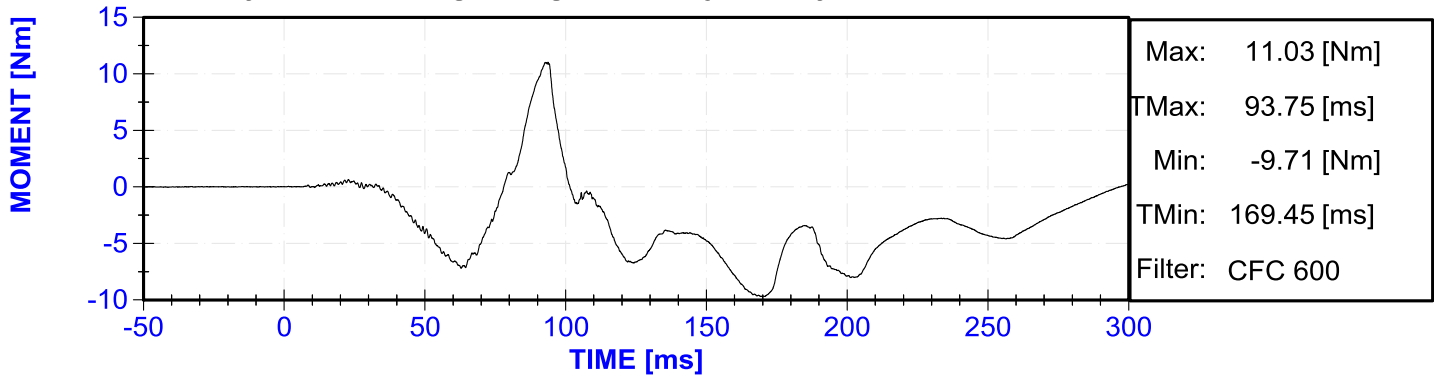




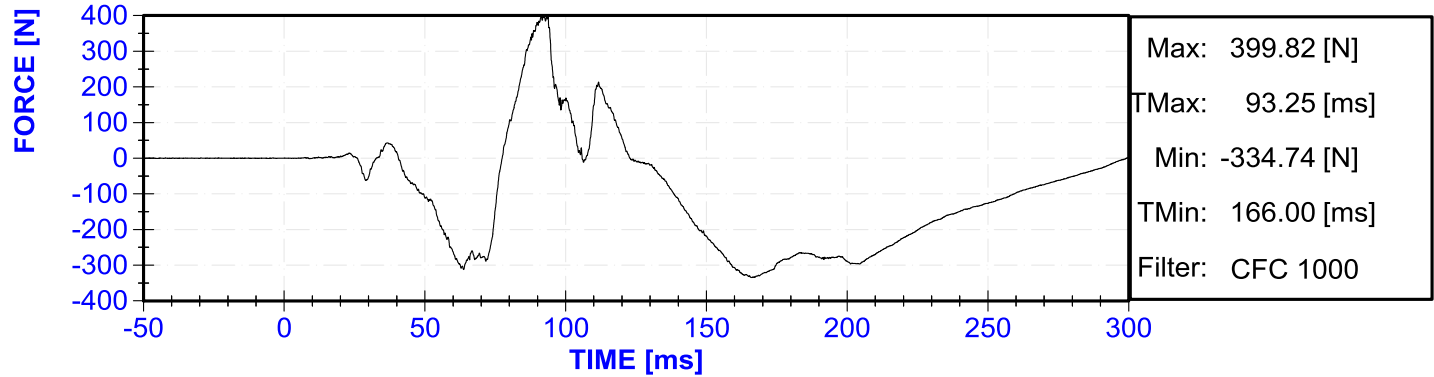
V2P1 Fz on head acting through the O.C. joint only



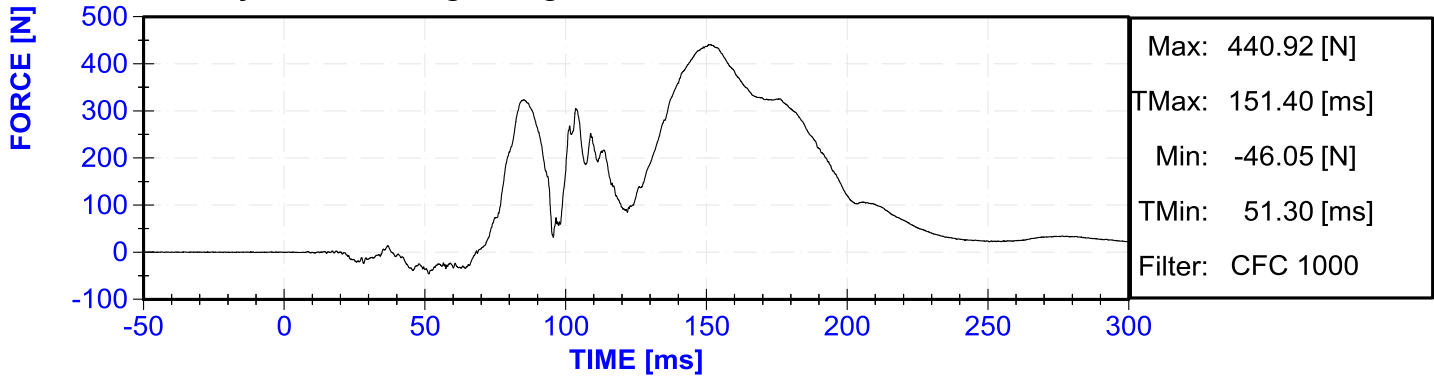
V2P1 My on head acting through the O.C. joint only



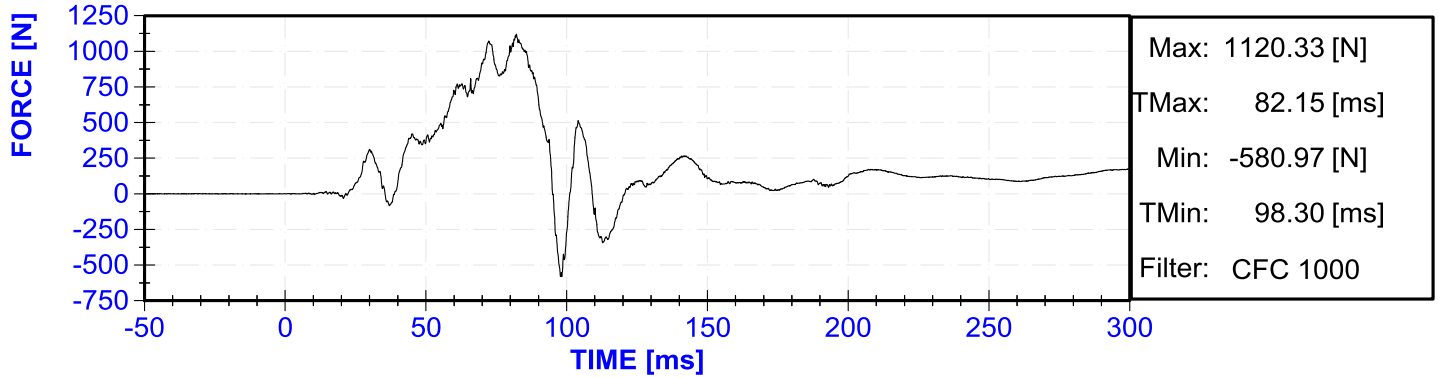
V2P1 Fx on head acting through the total neck section



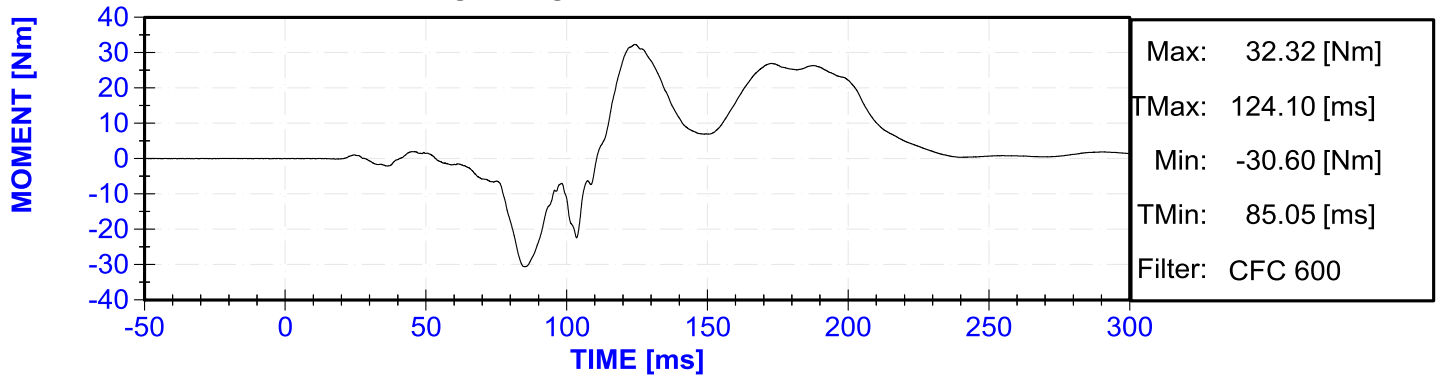
V2P1 Fy on head acting through the total neck section



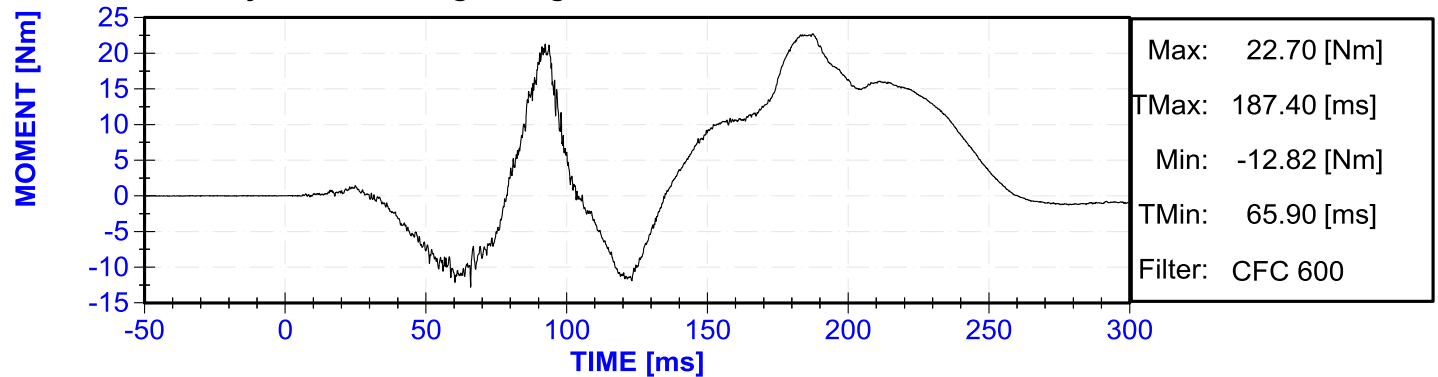
V2P1 Fz on head acting through the total neck section



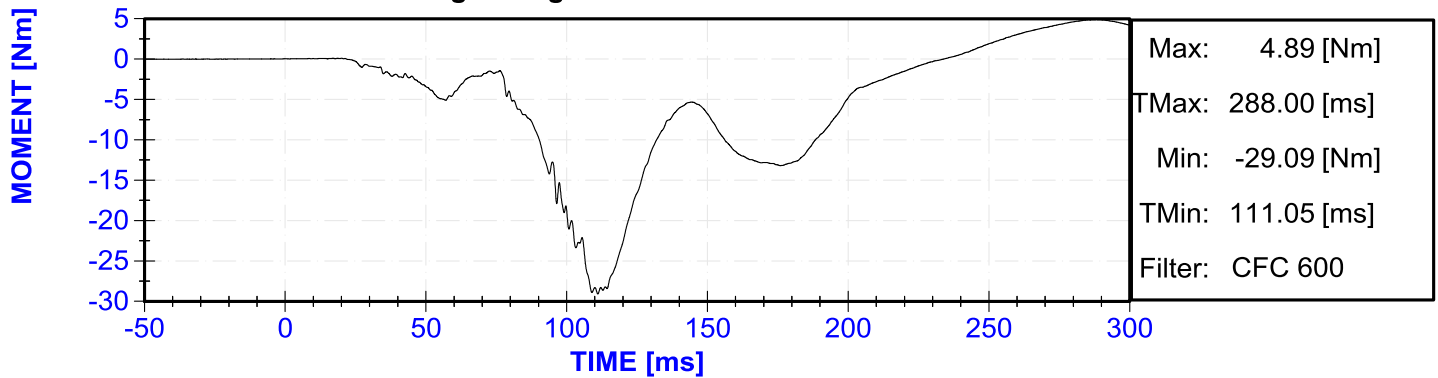
V2P1 Mx on head acting through the total neck section

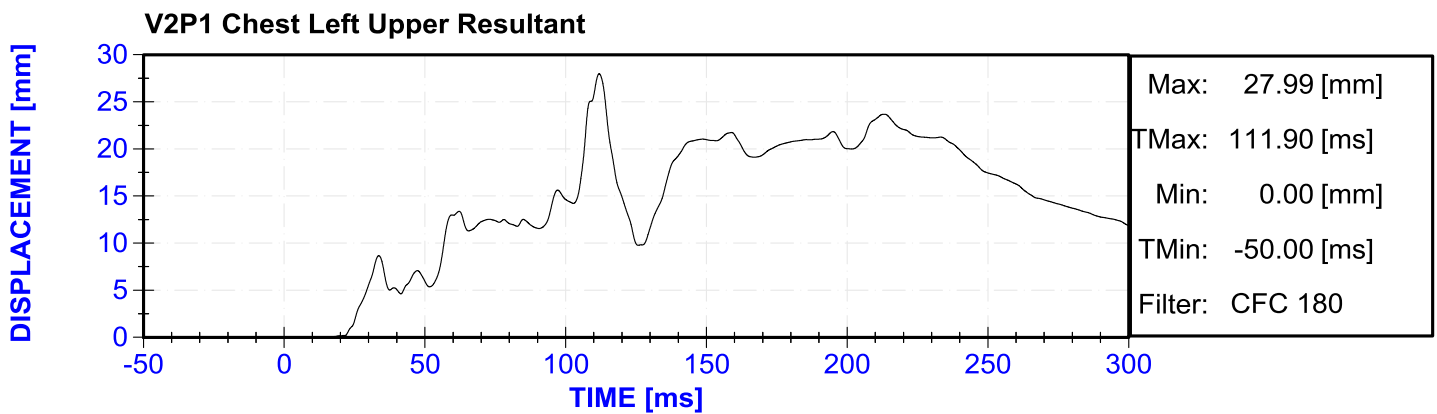
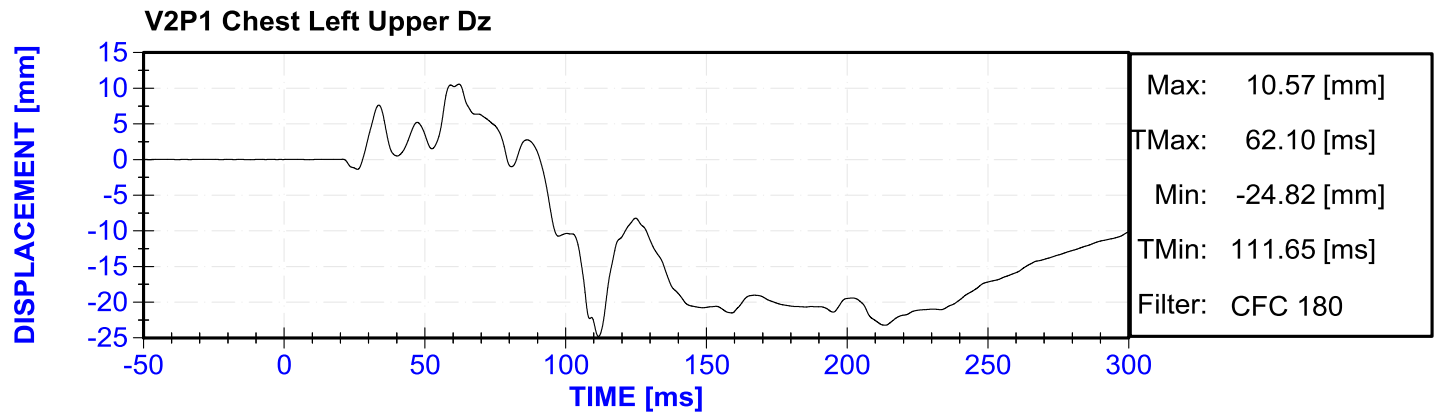
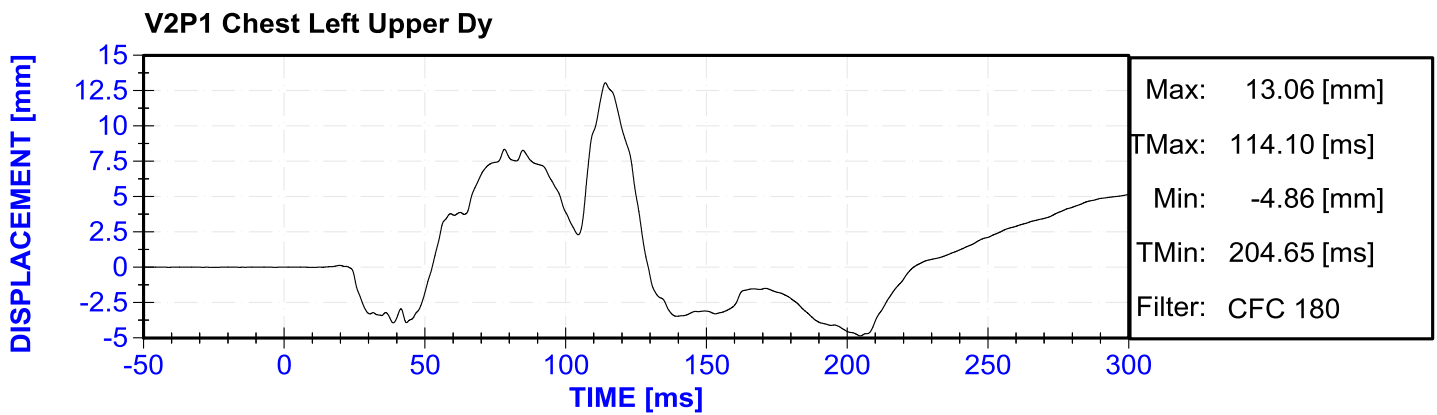
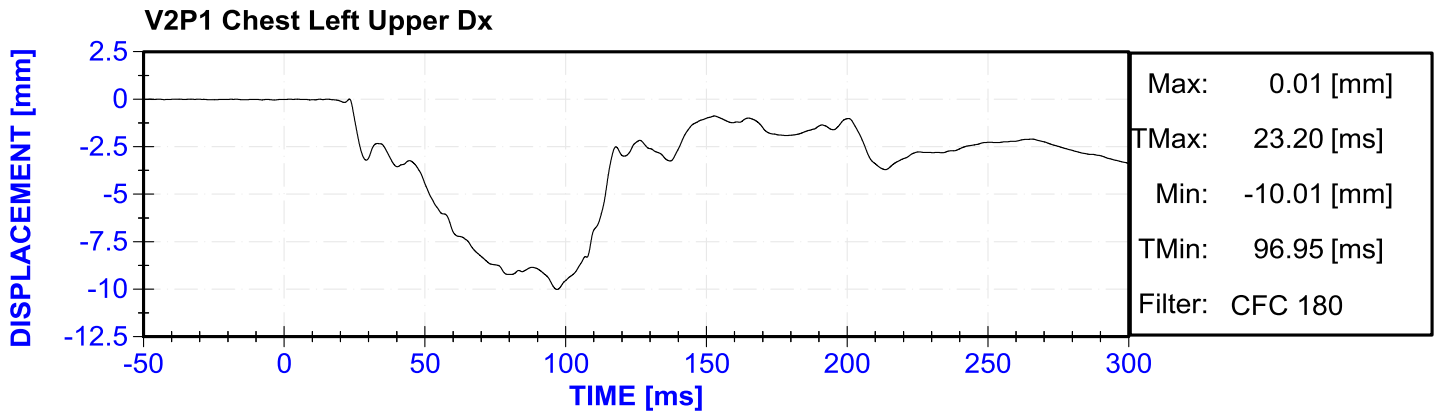


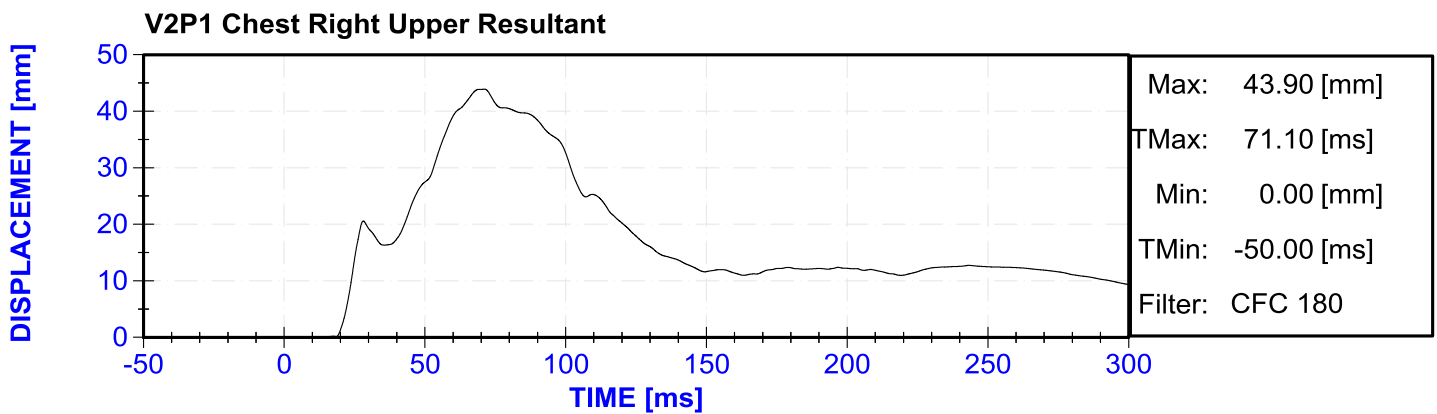
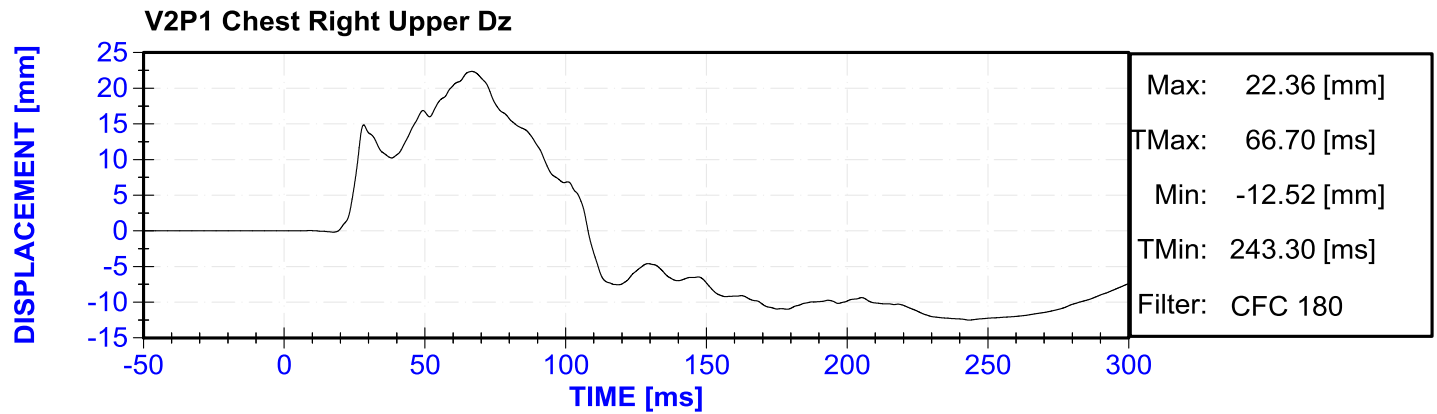
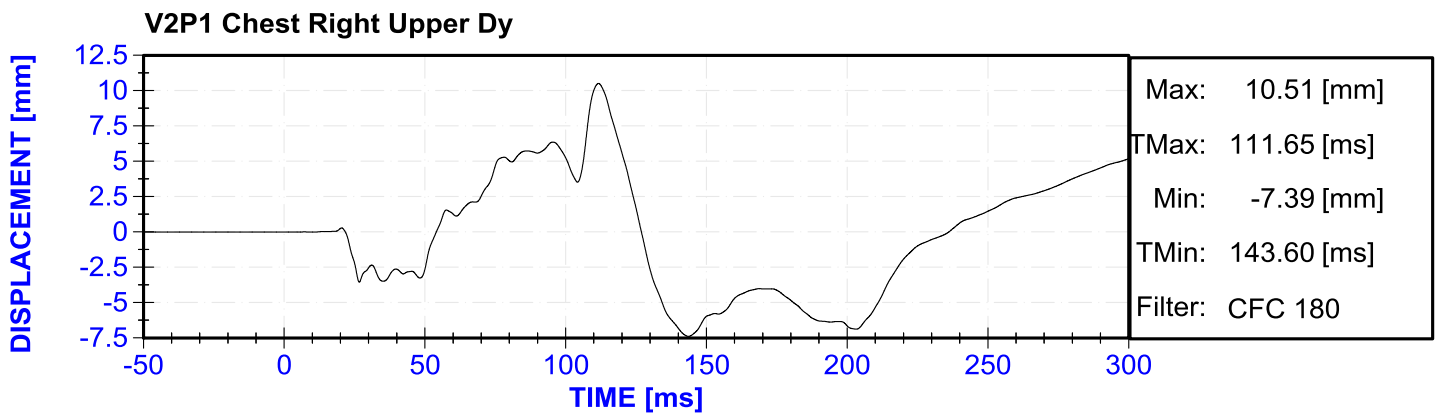
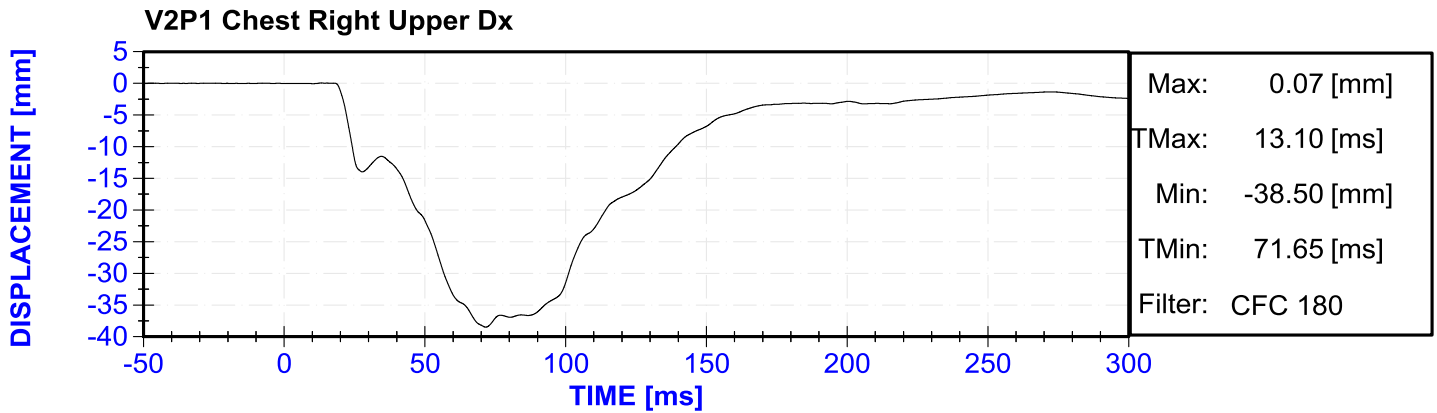
V2P1 My on head acting through the total neck section

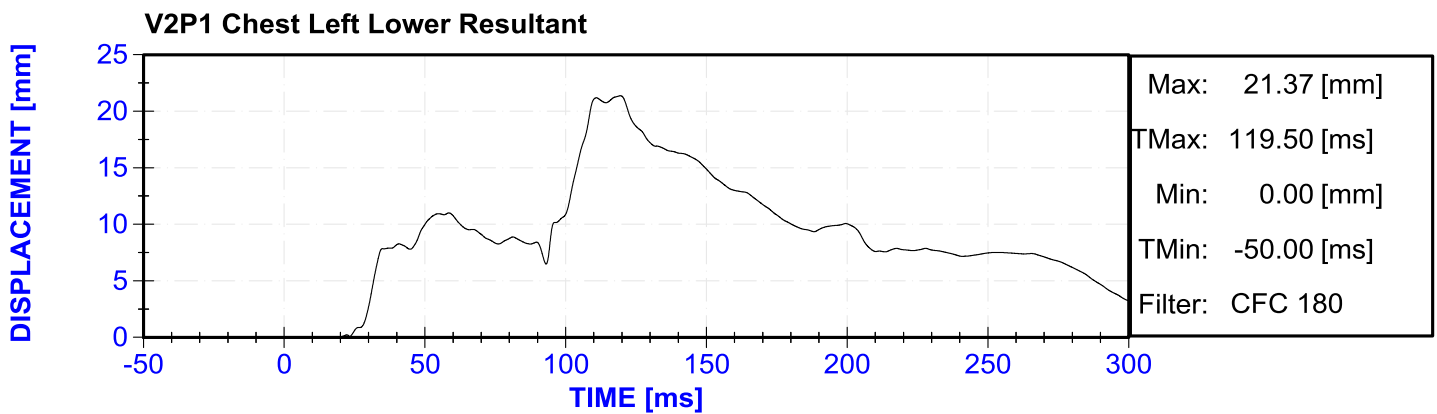
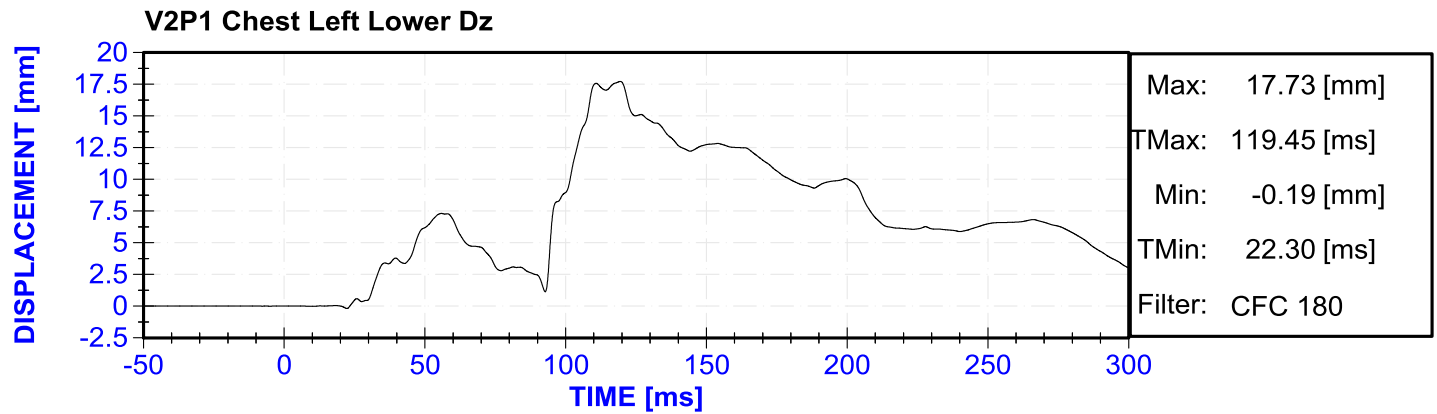
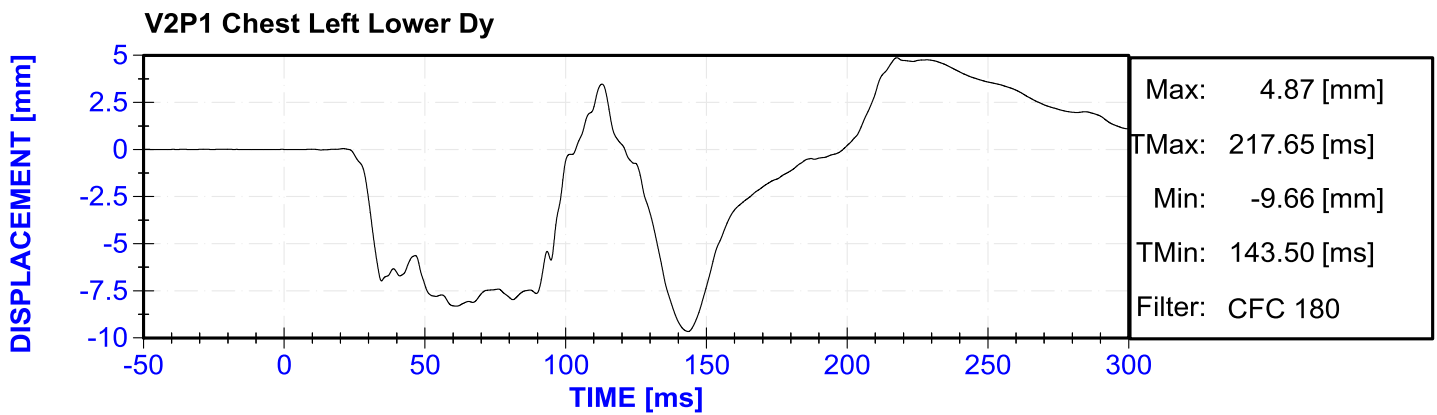
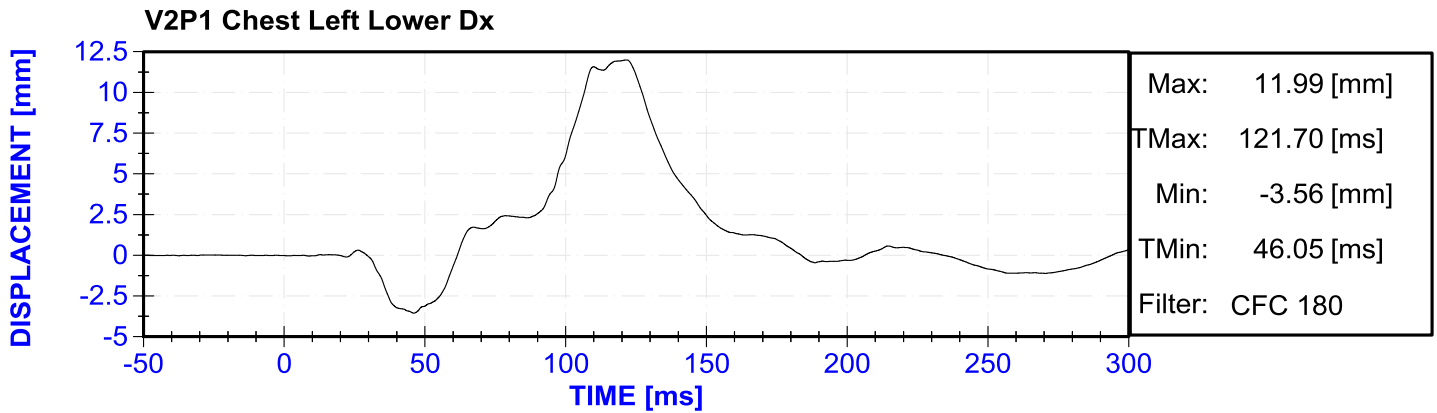


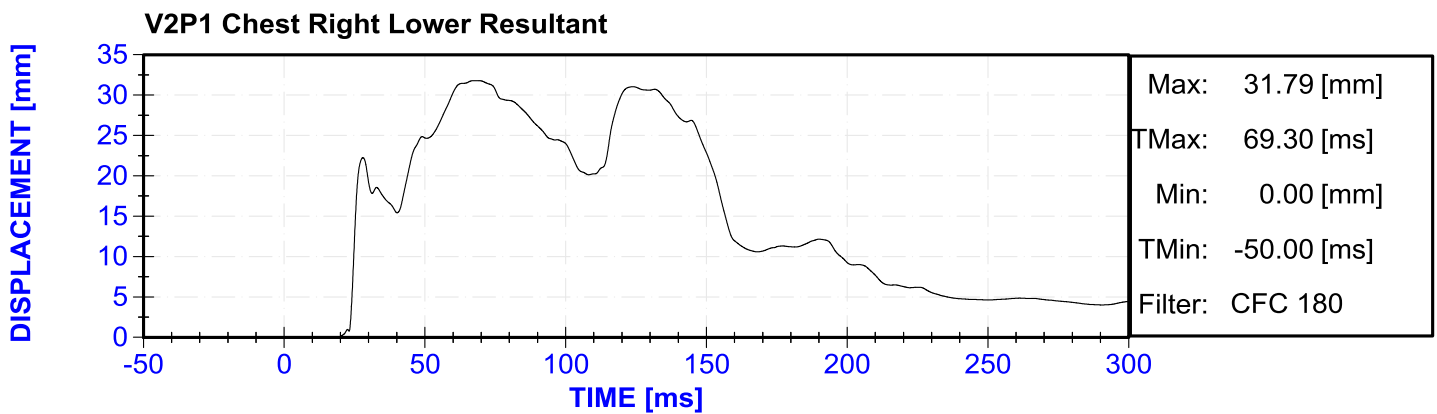
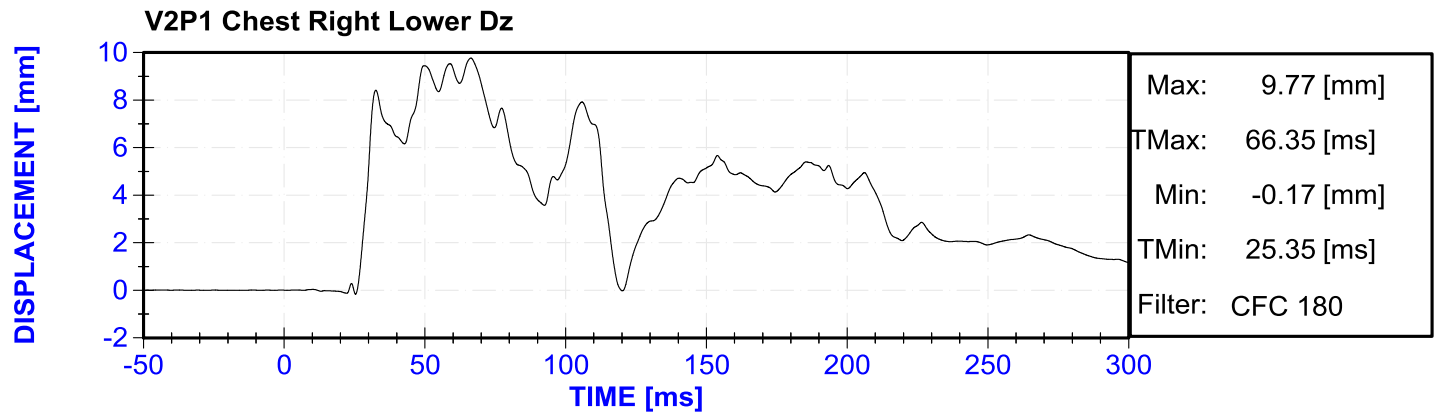
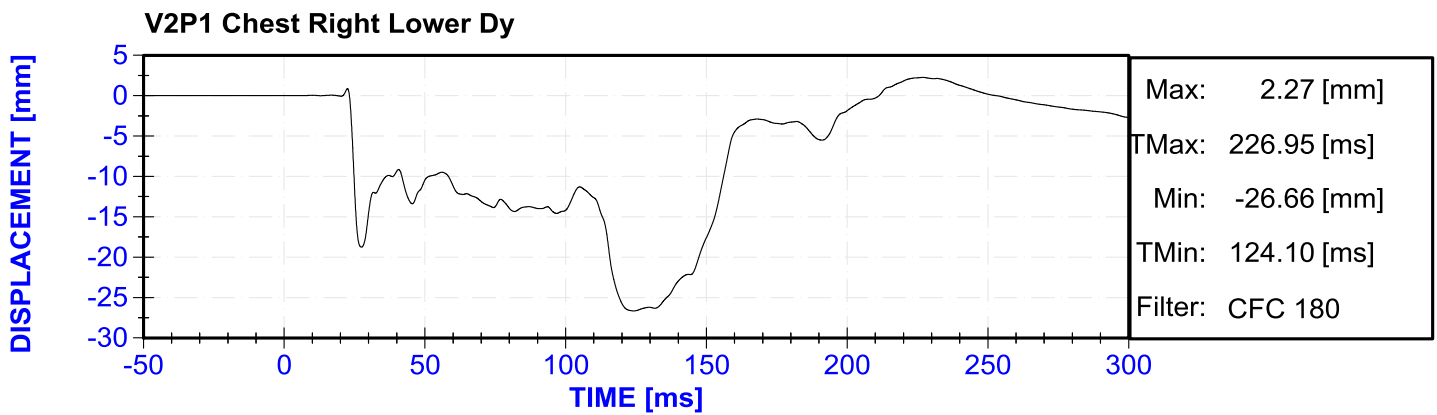
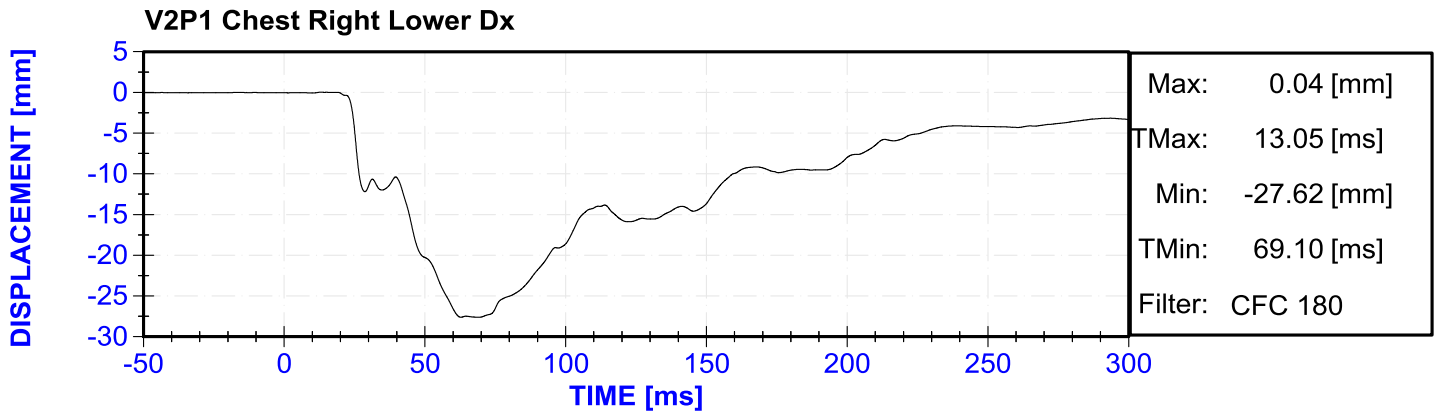
V2P1 Mz on head acting through the total neck section

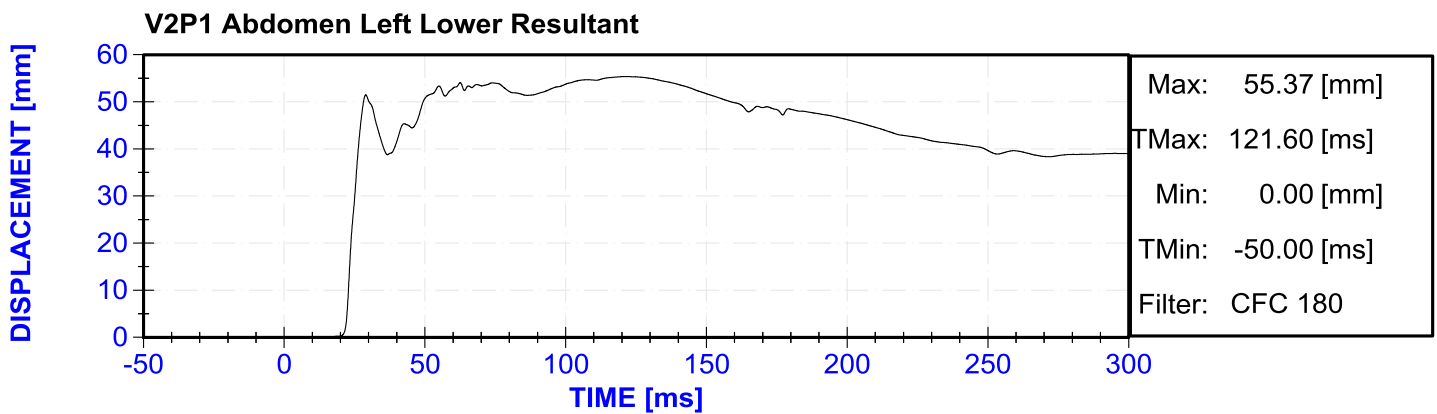
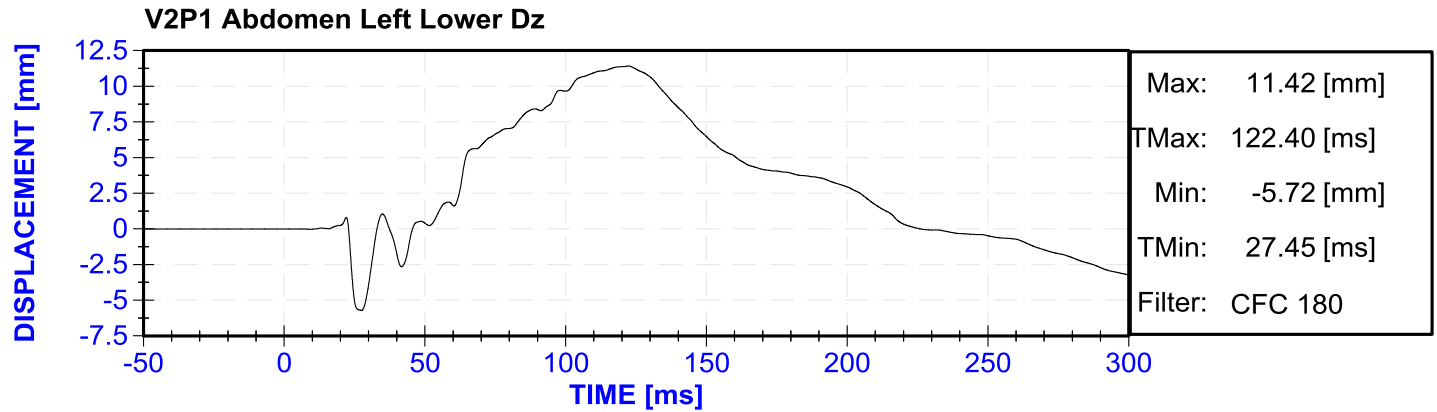
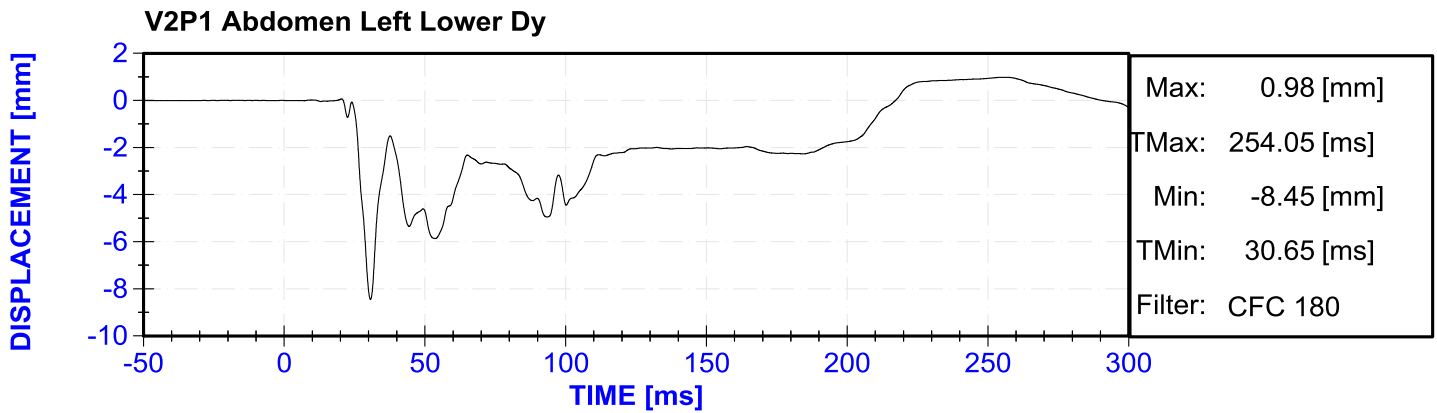
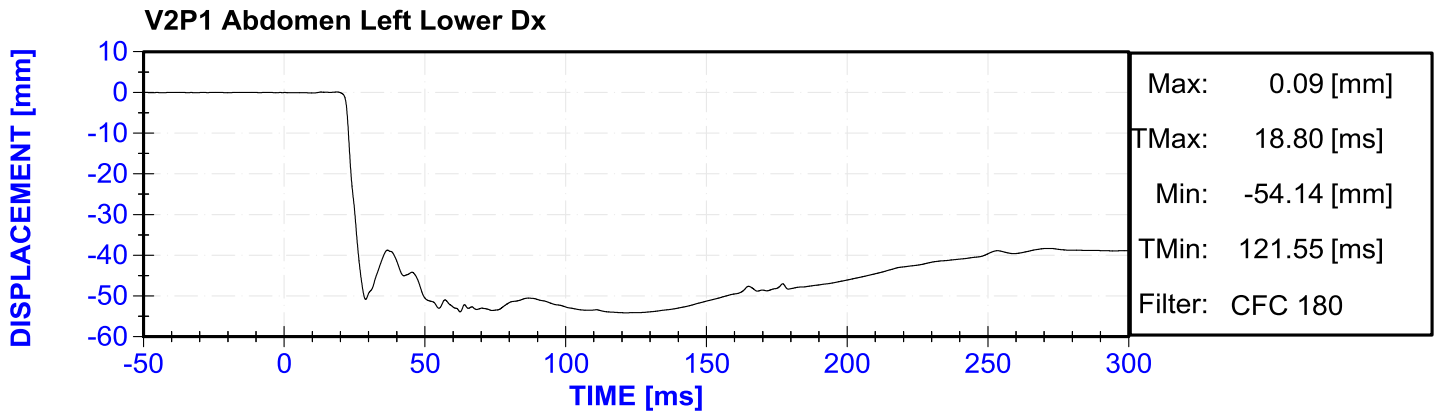


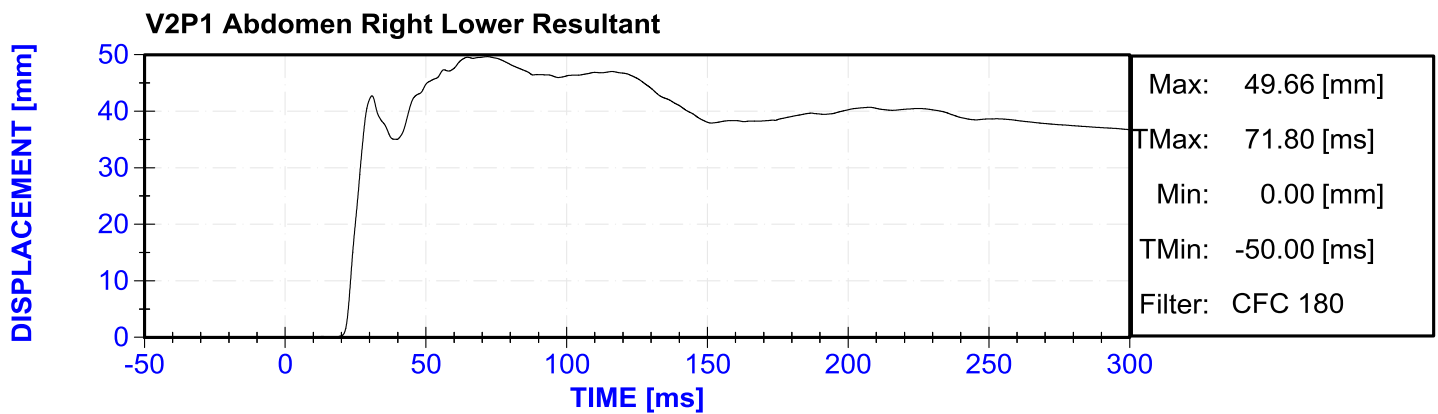
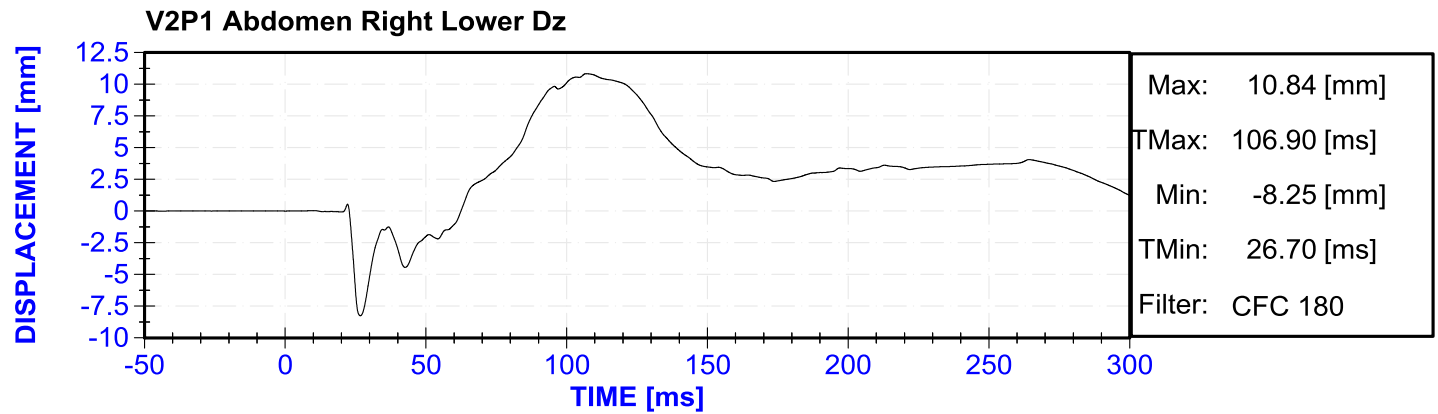
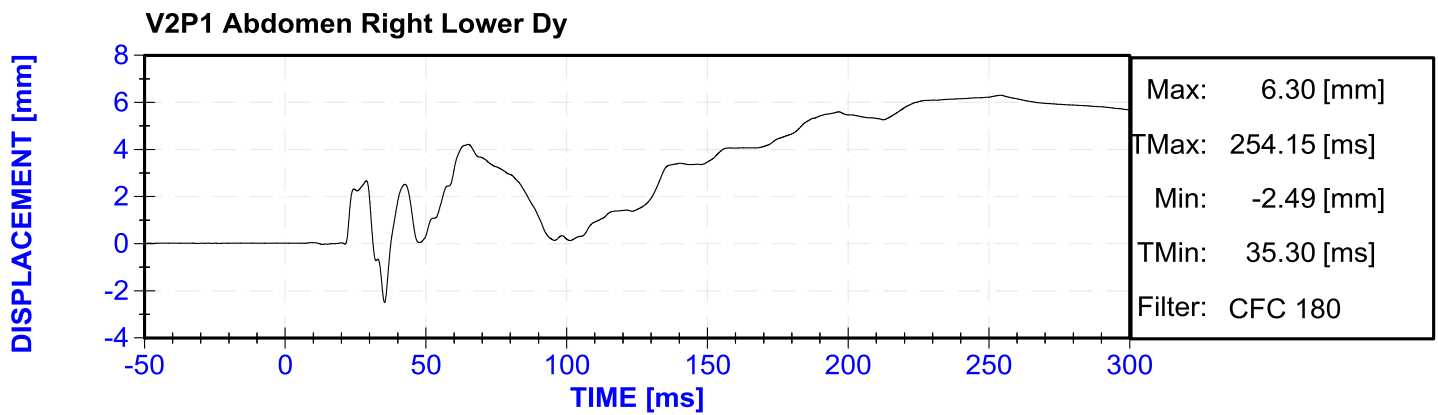
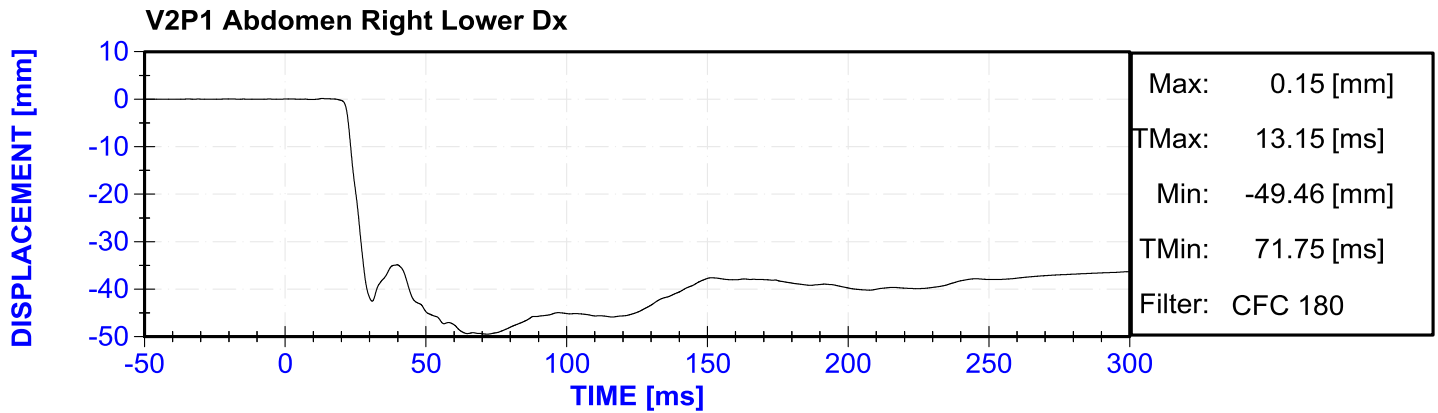




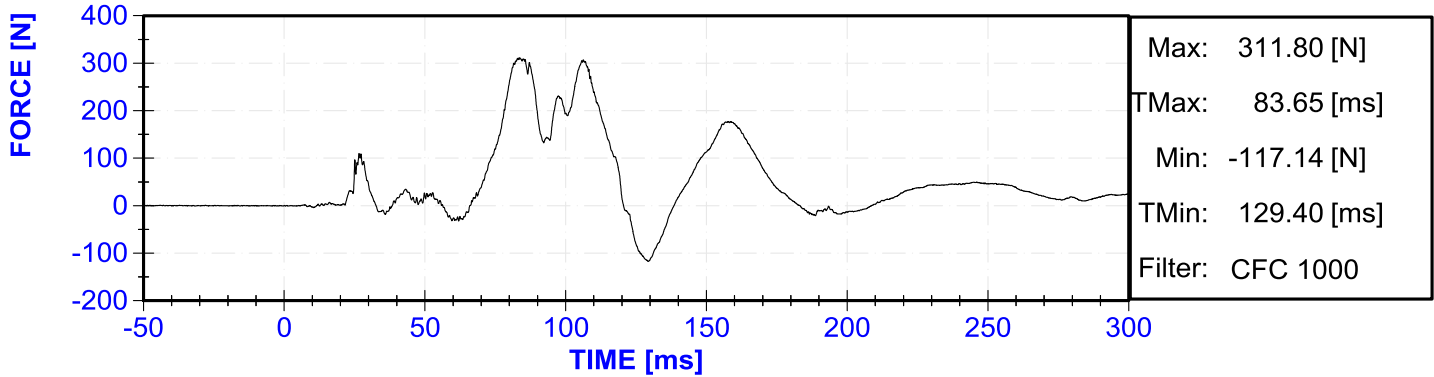




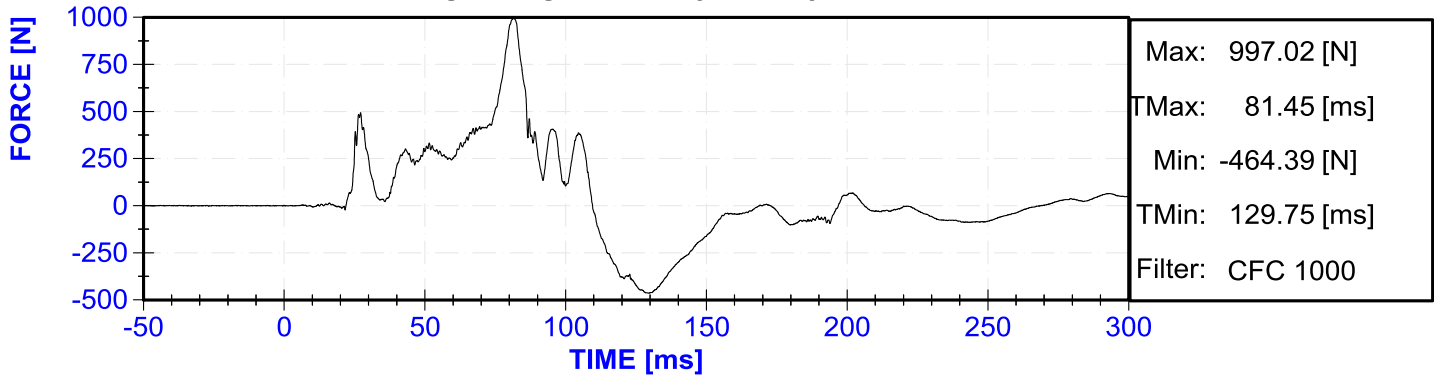




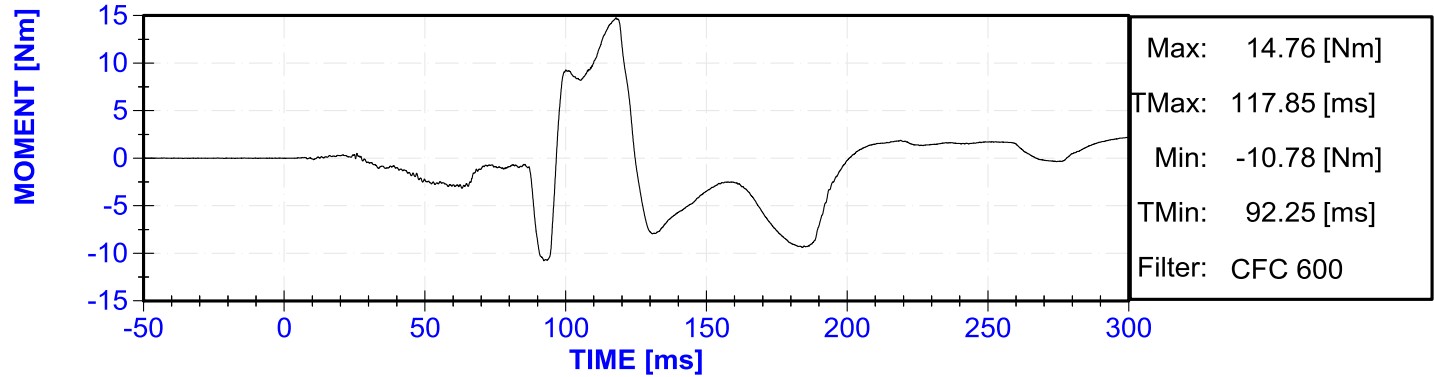
V2P2 Fx on head acting through the O.C. joint only



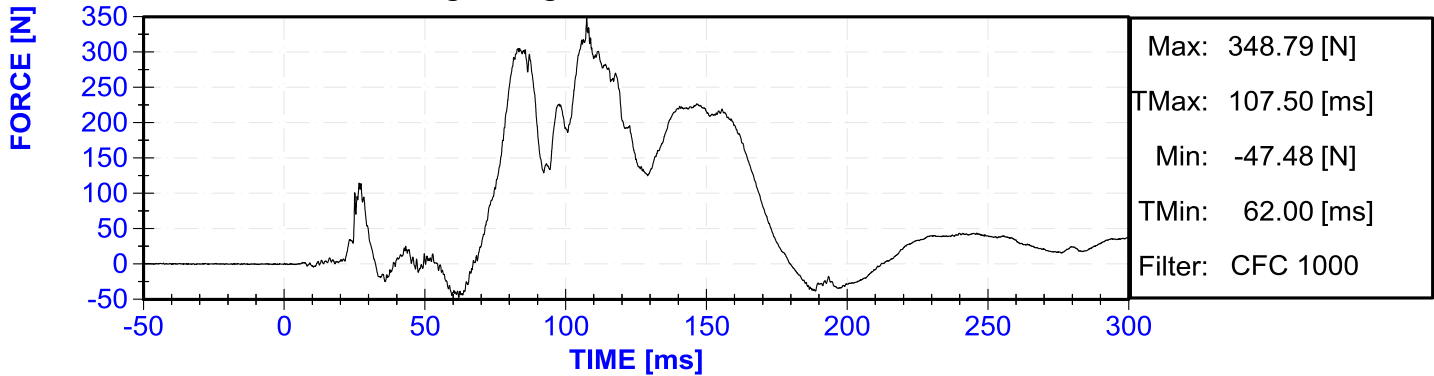
V2P2 Fz on head acting through the O.C. joint only



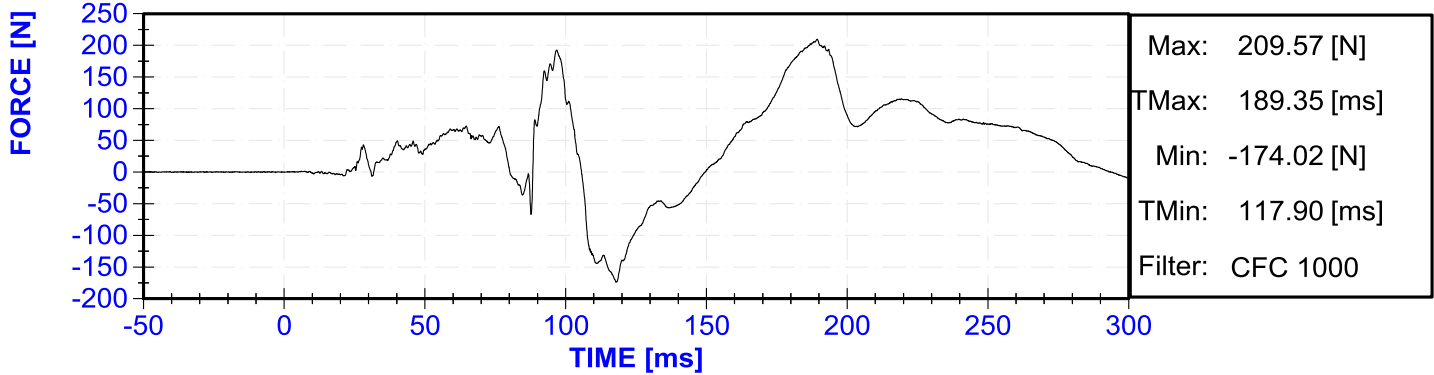
V2P2 My on head acting through the O.C. joint only



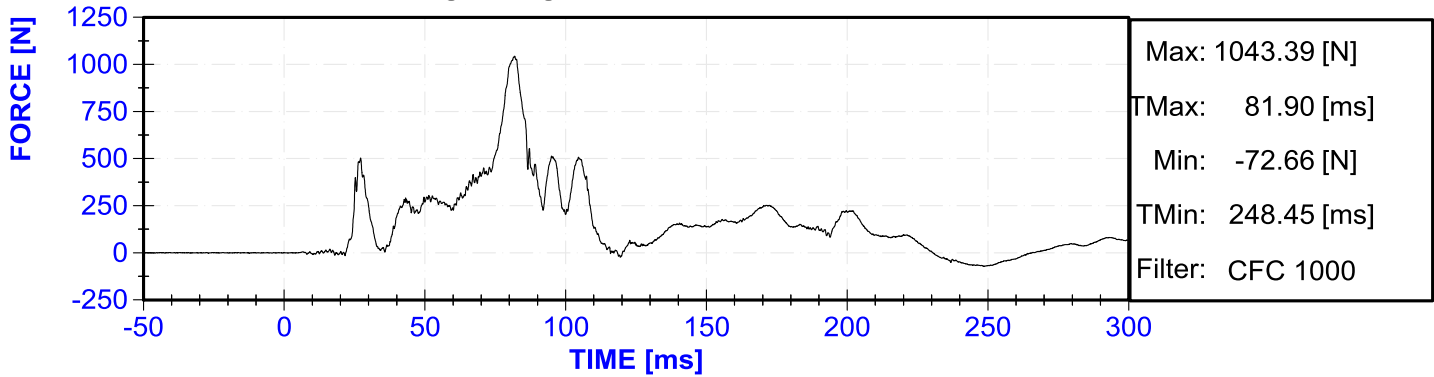
V2P2 Fx on head acting through the total neck section



V2P2 Fy on head acting through the total neck section

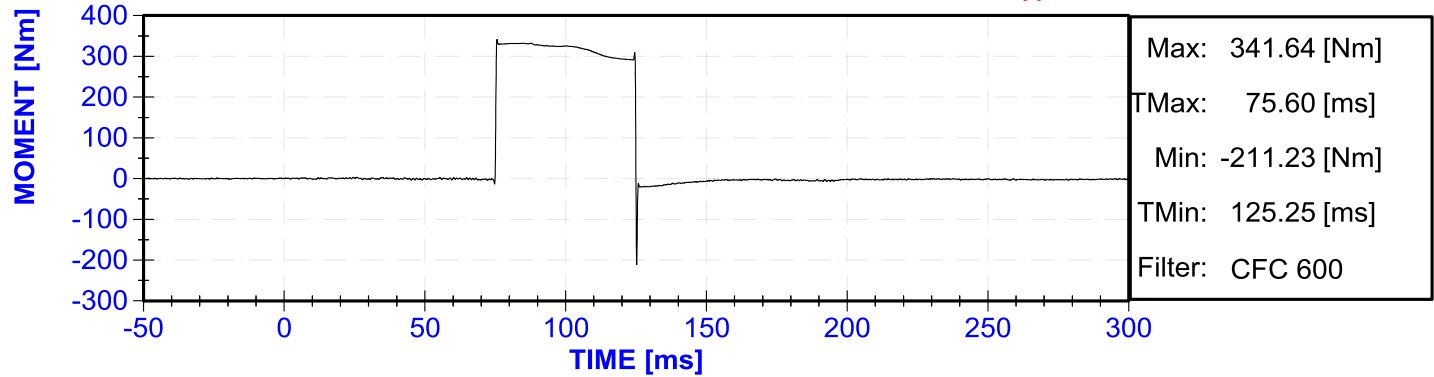


V2P2 Fz on head acting through the total neck section

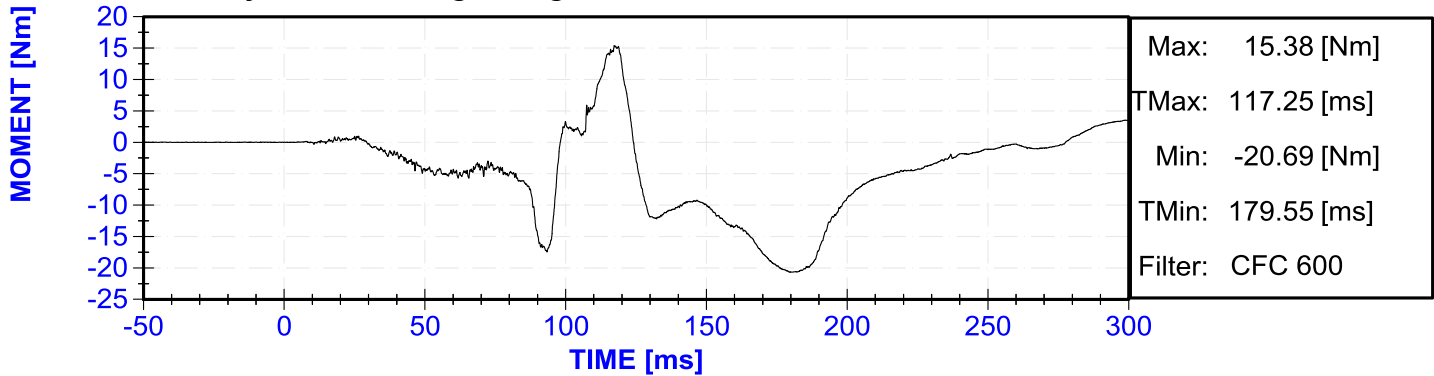


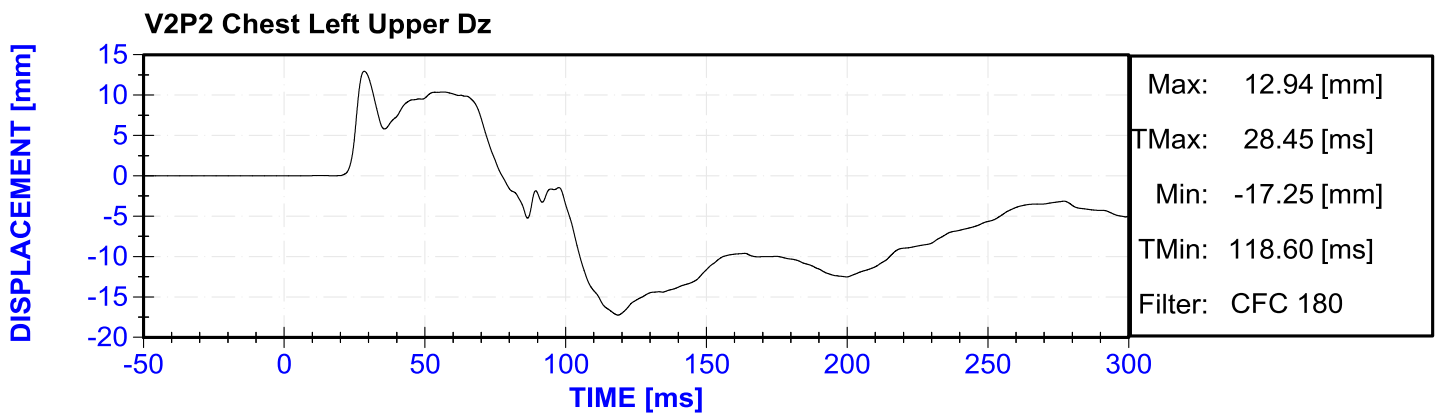
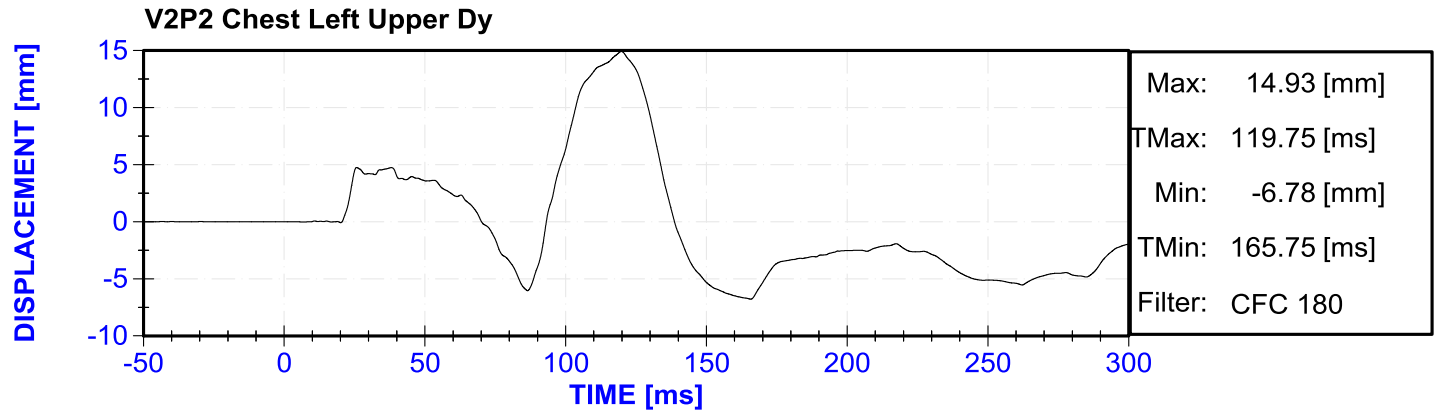
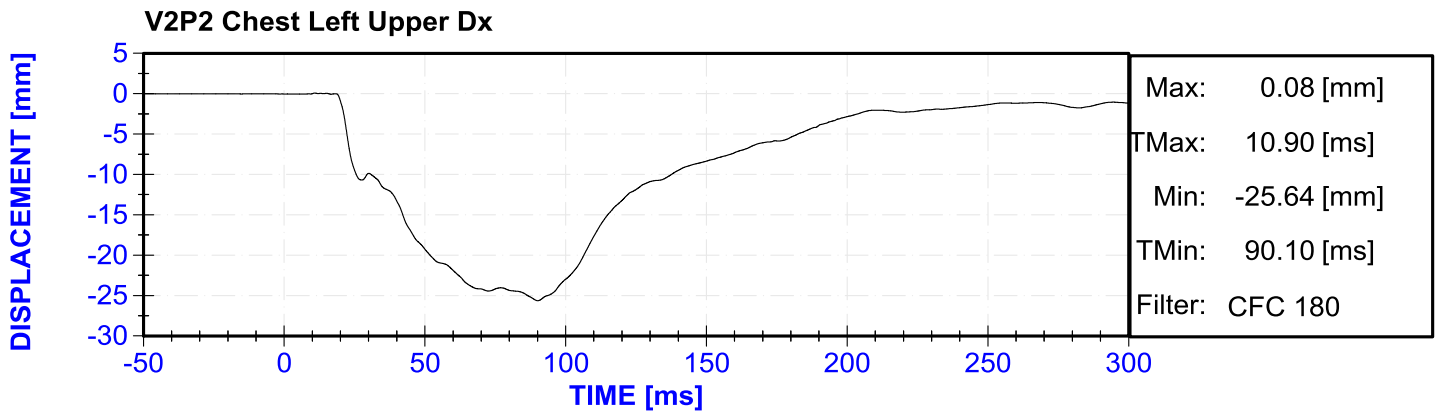
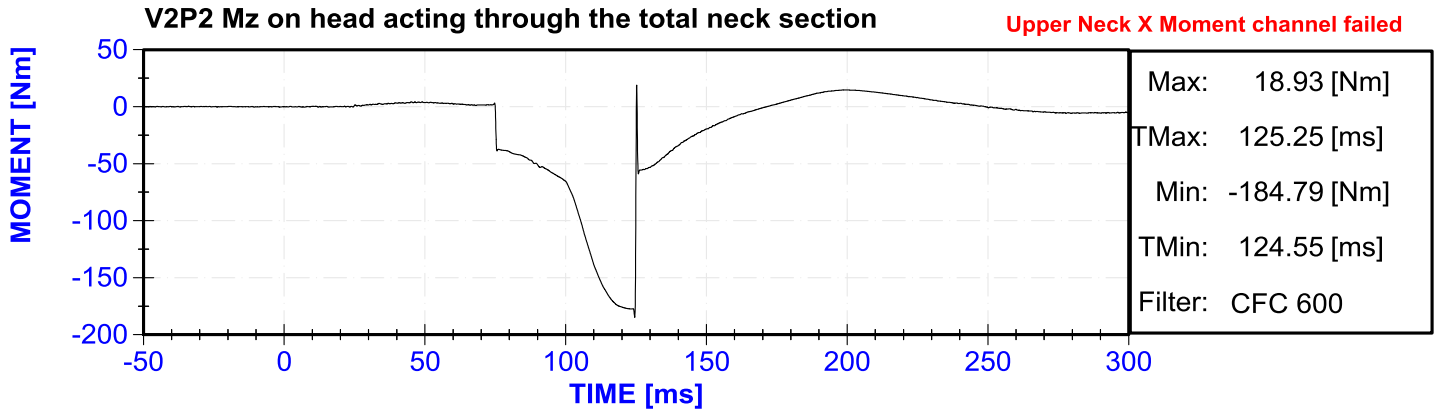
V2P2 Mx on head acting through the total neck section

Upper Neck X Moment channel failed

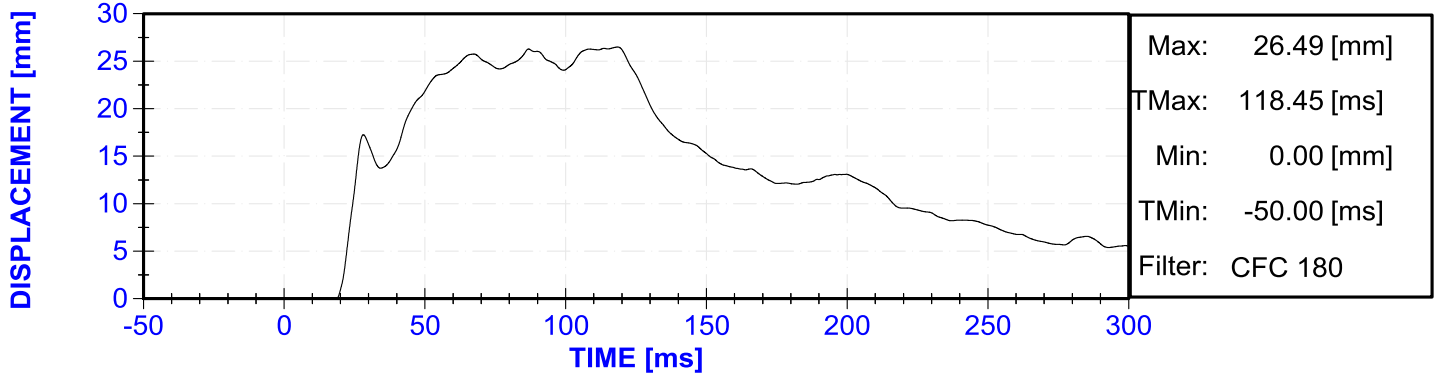


V2P2 My on head acting through the total neck section



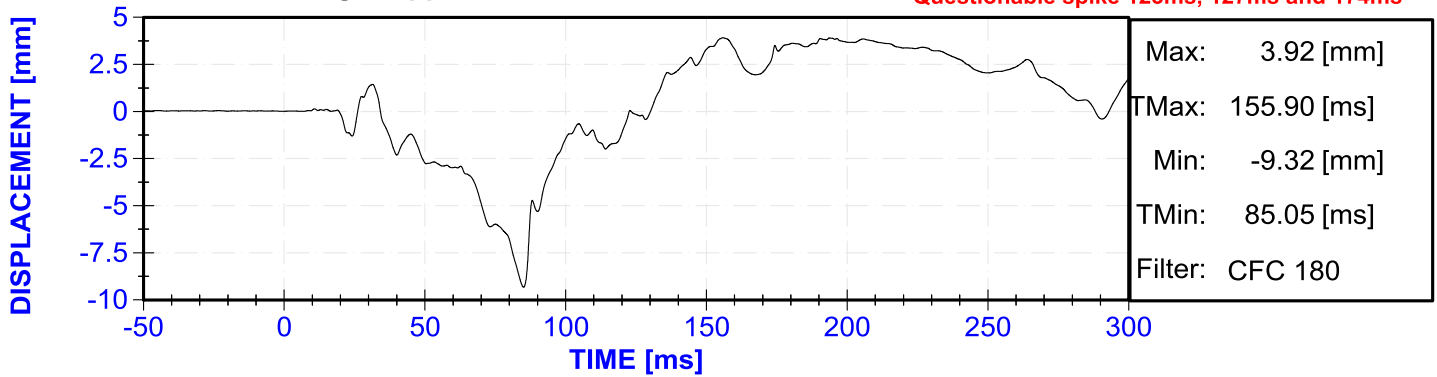


V2P2 Chest Left Upper Resultant



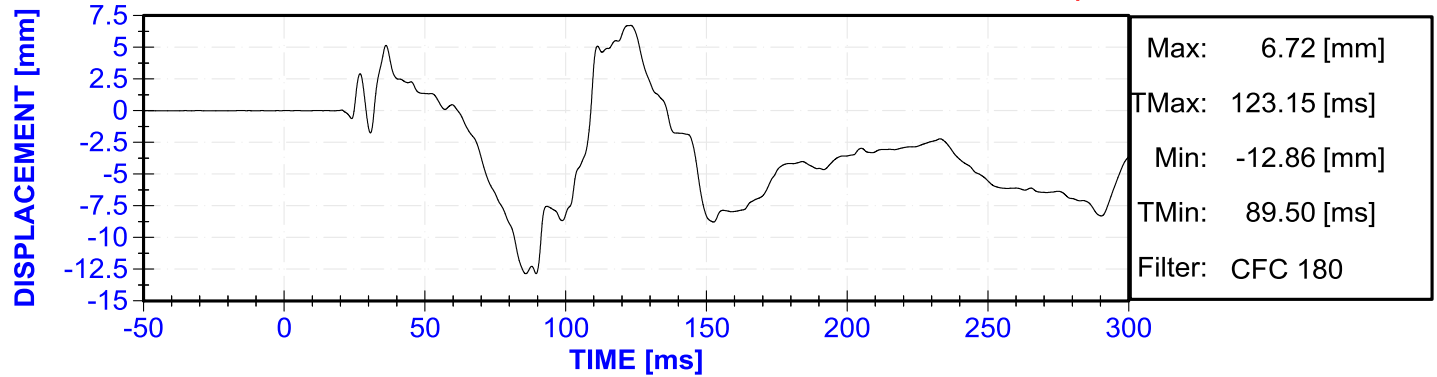
V2P2 Chest Right Upper Dx

Questionable spike 123ms, 127ms and 174ms



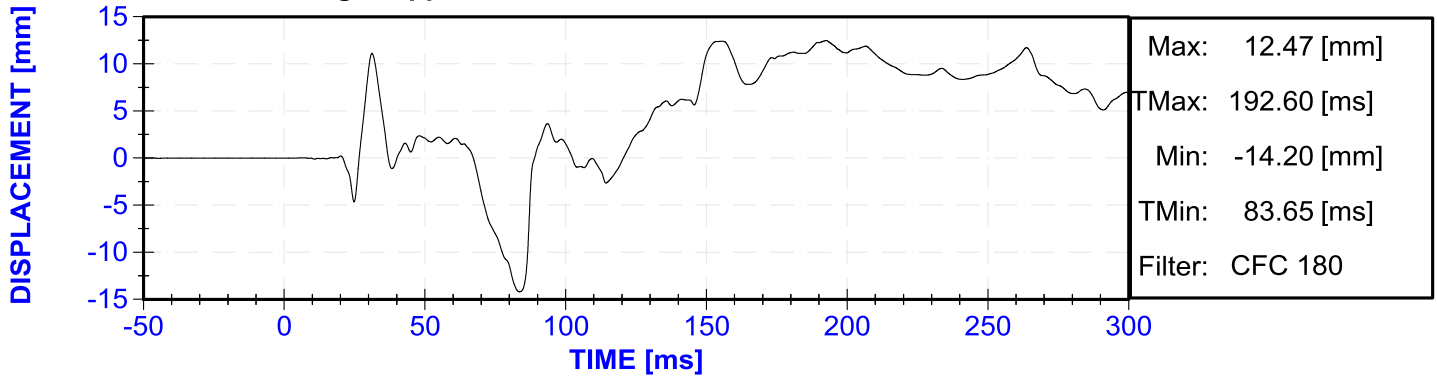
V2P2 Chest Right Upper Dy

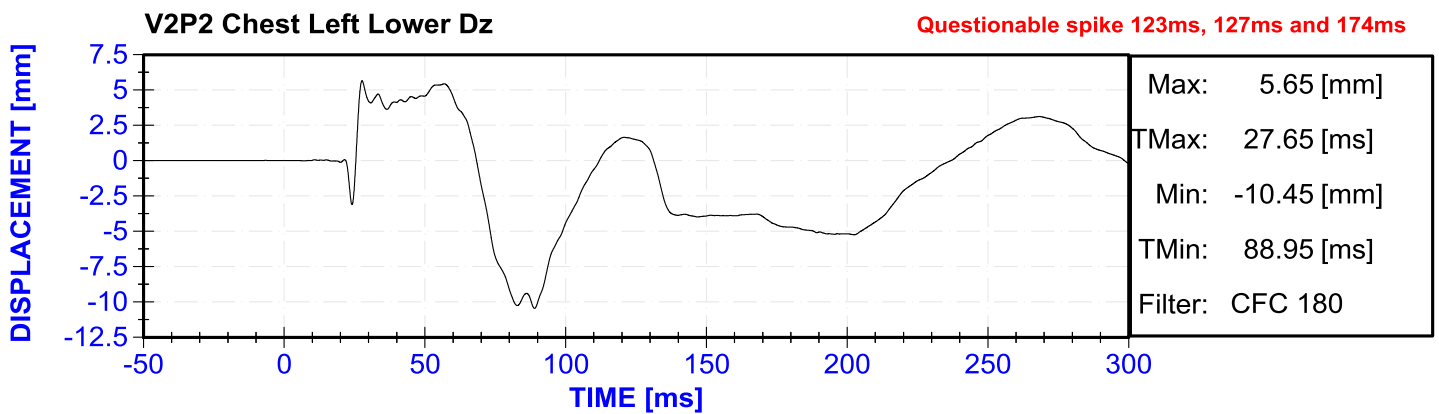
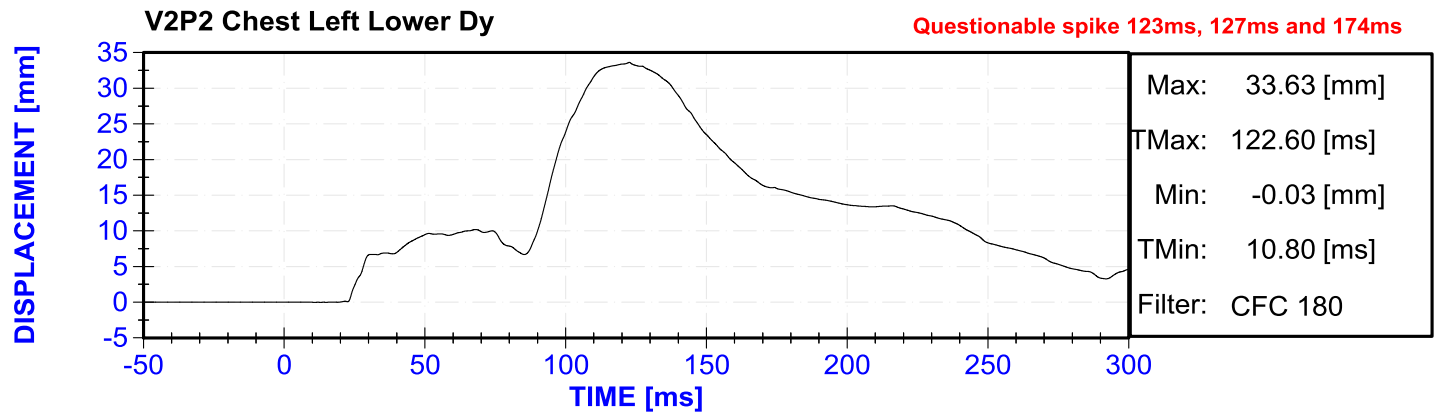
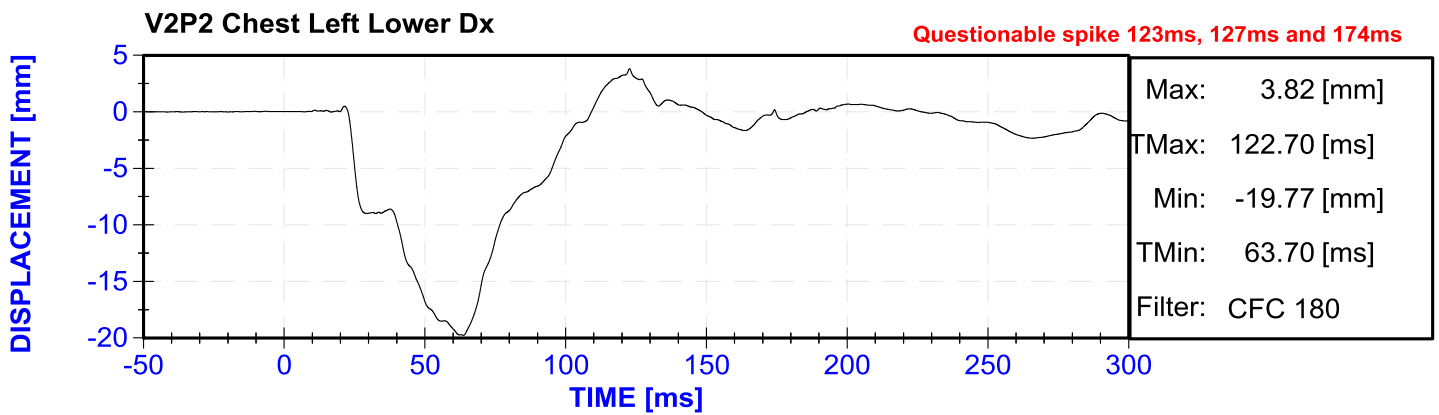
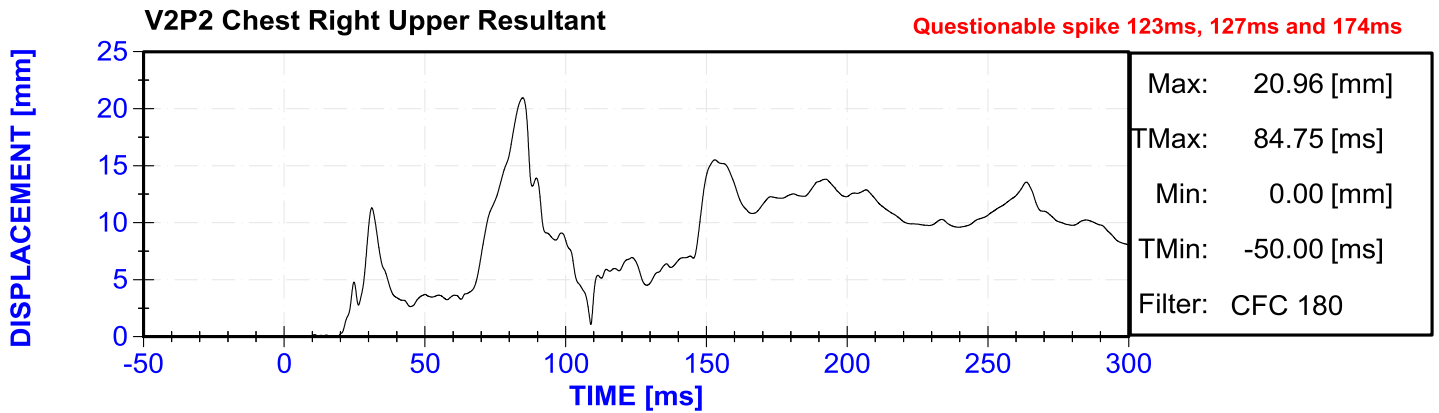
Questionable spike 123ms, 127ms and 174ms

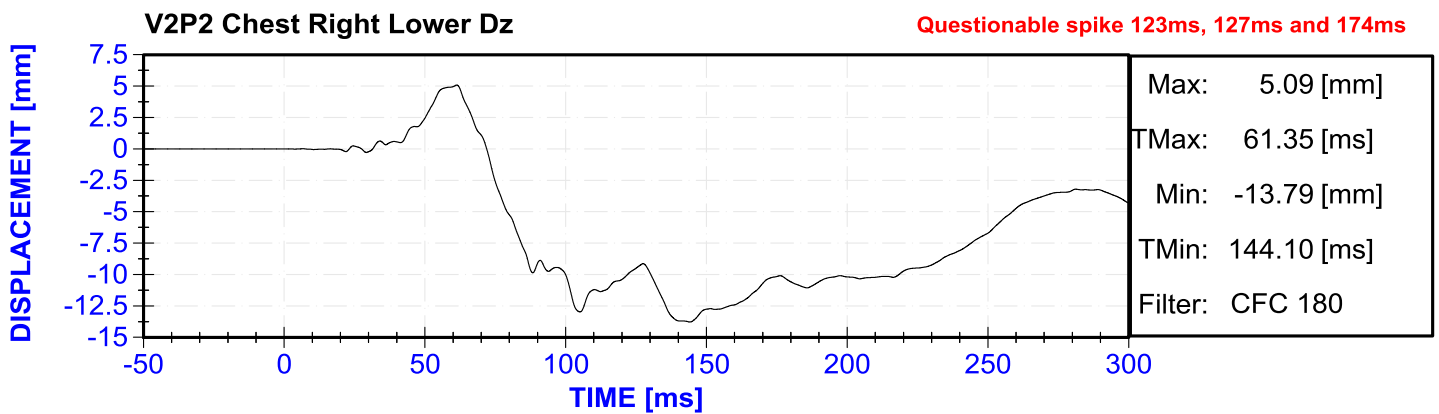
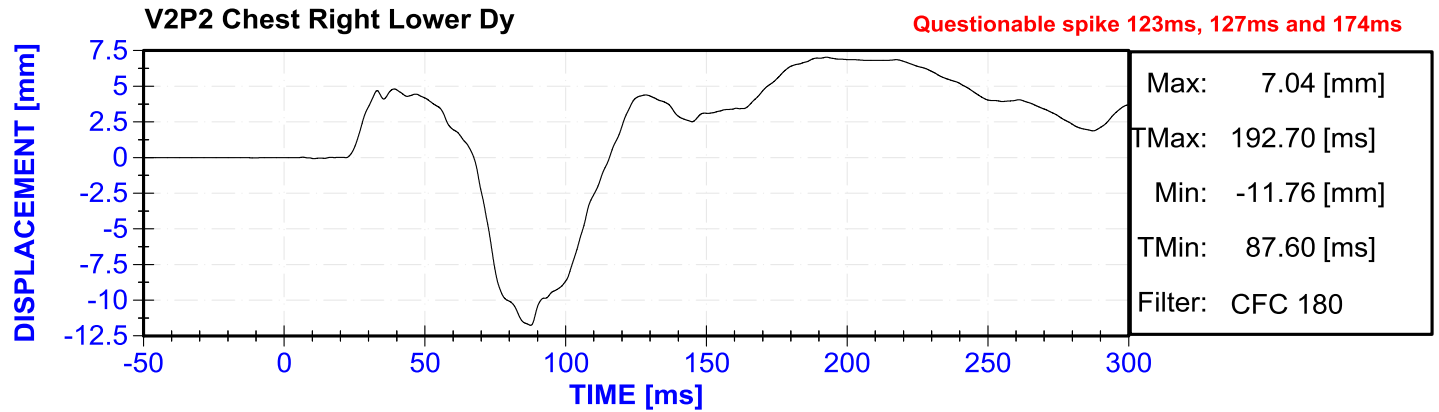
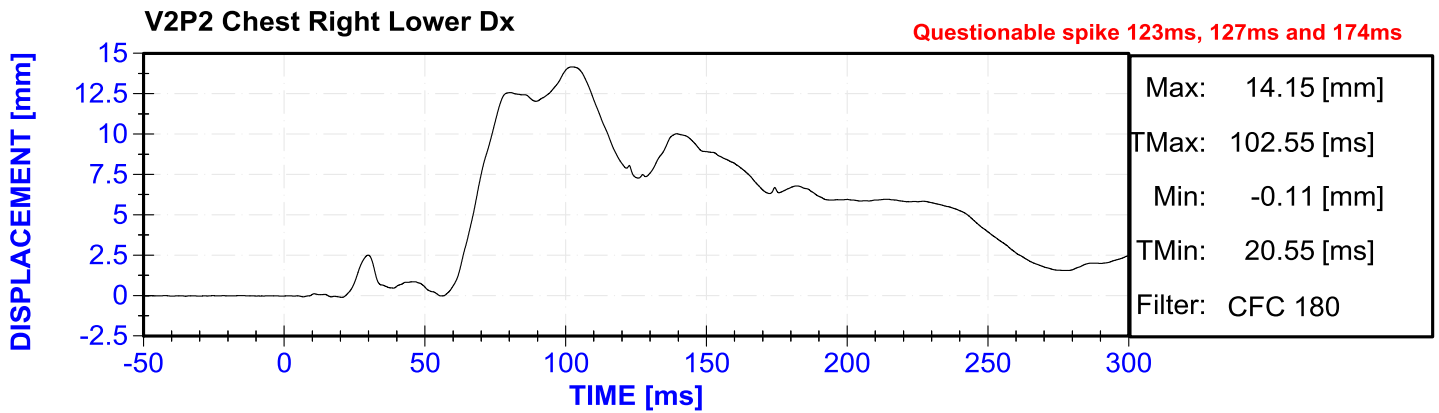
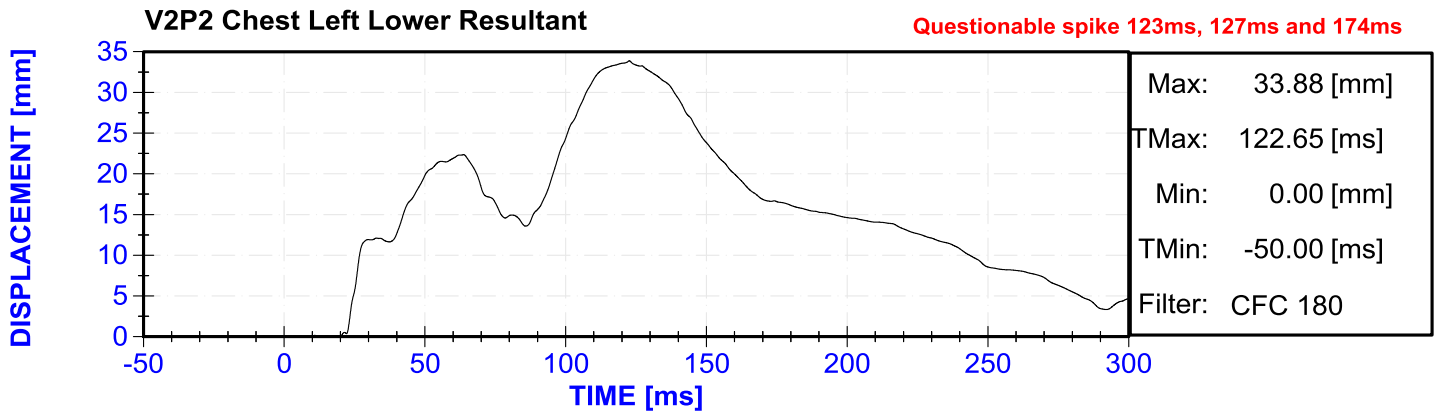


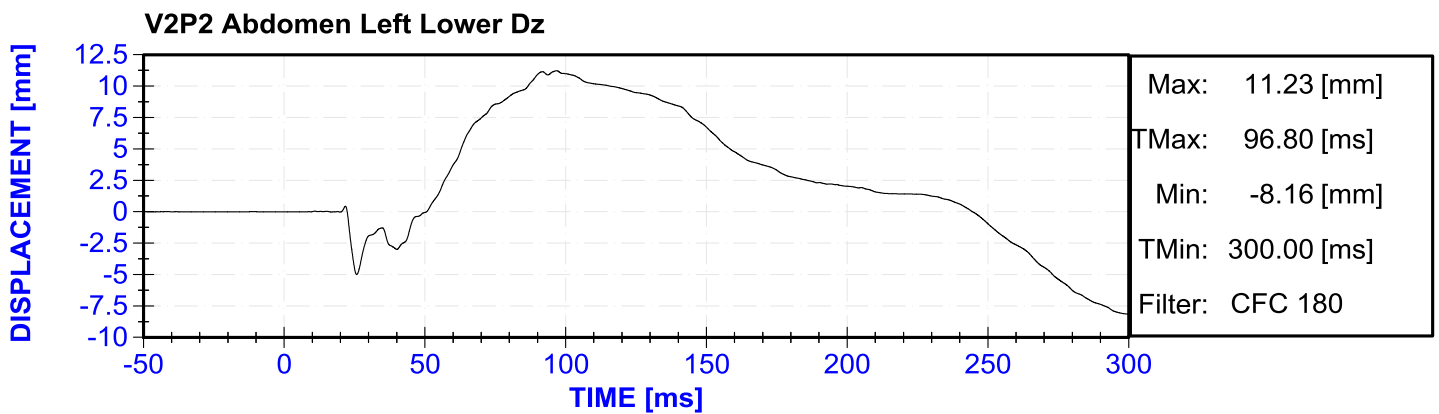
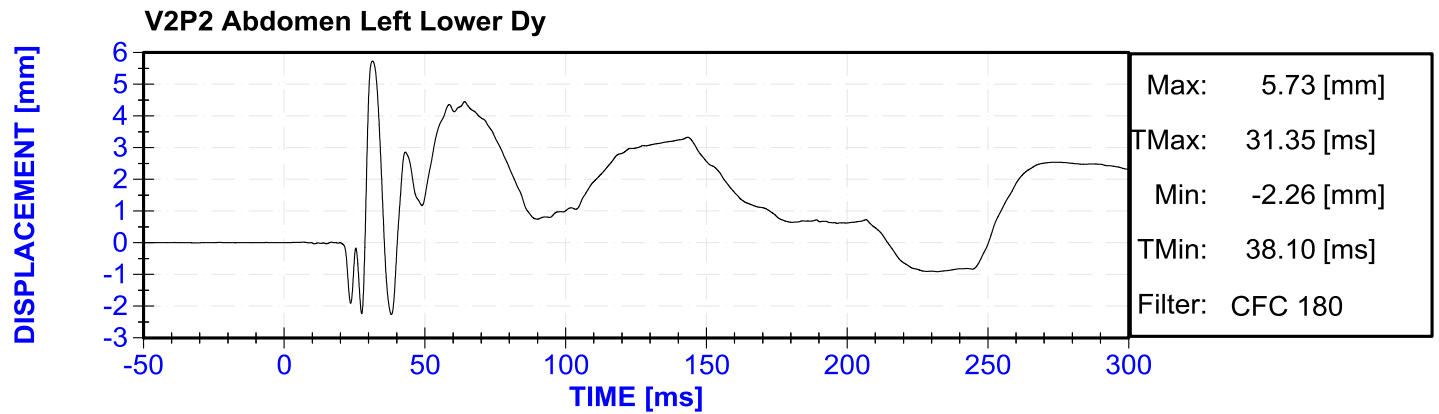
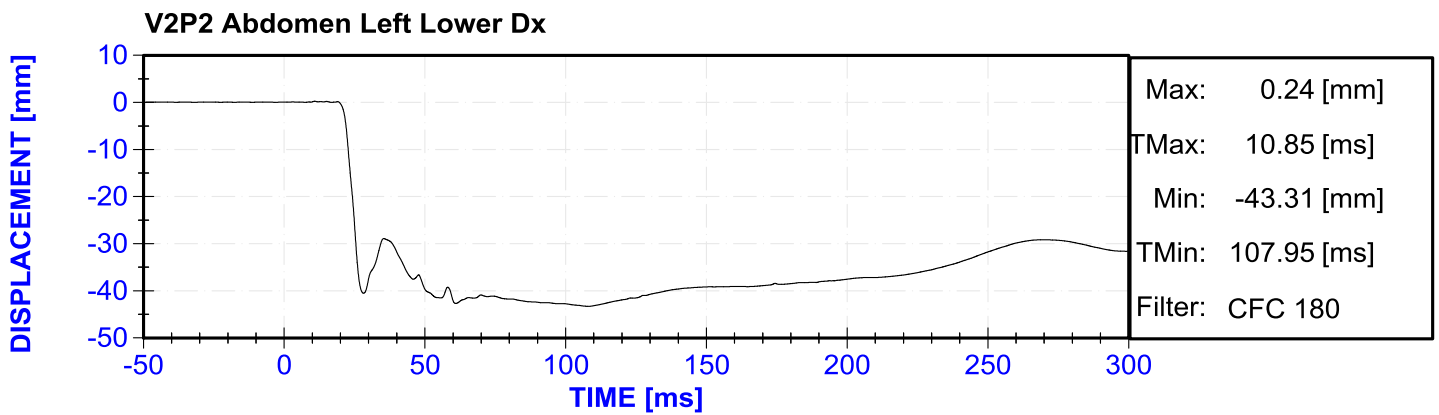
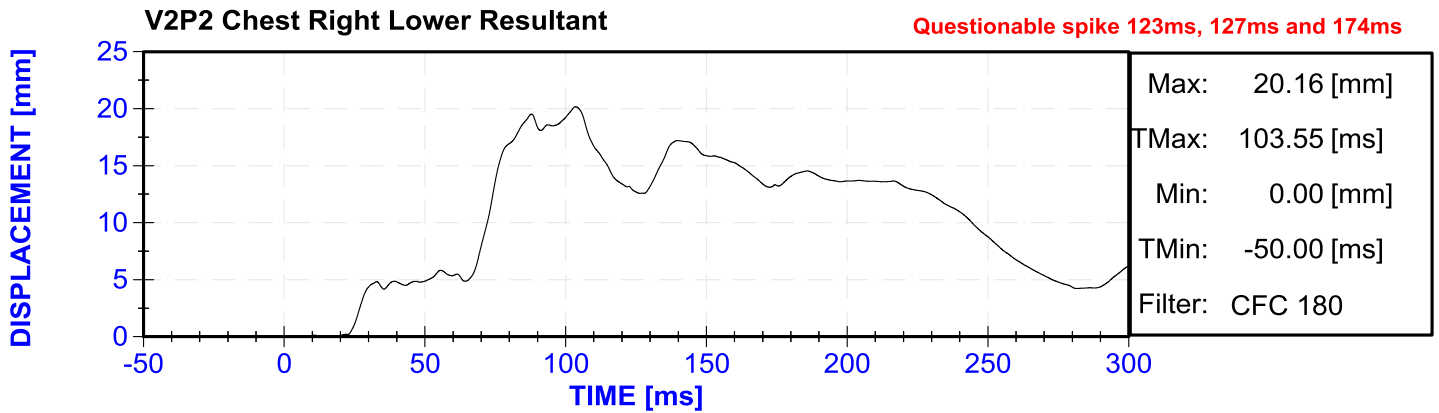
V2P2 Chest Right Upper Dz

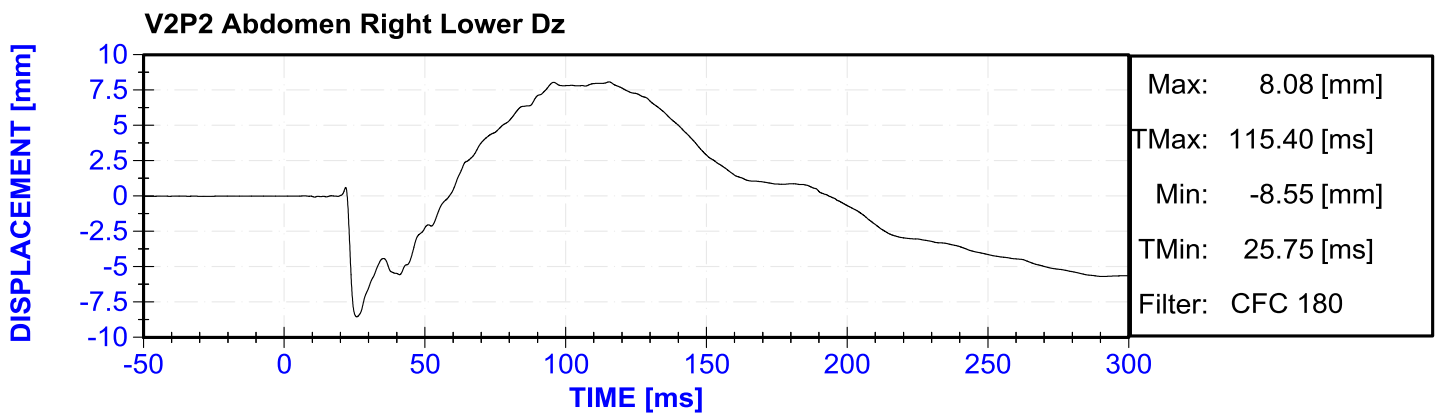
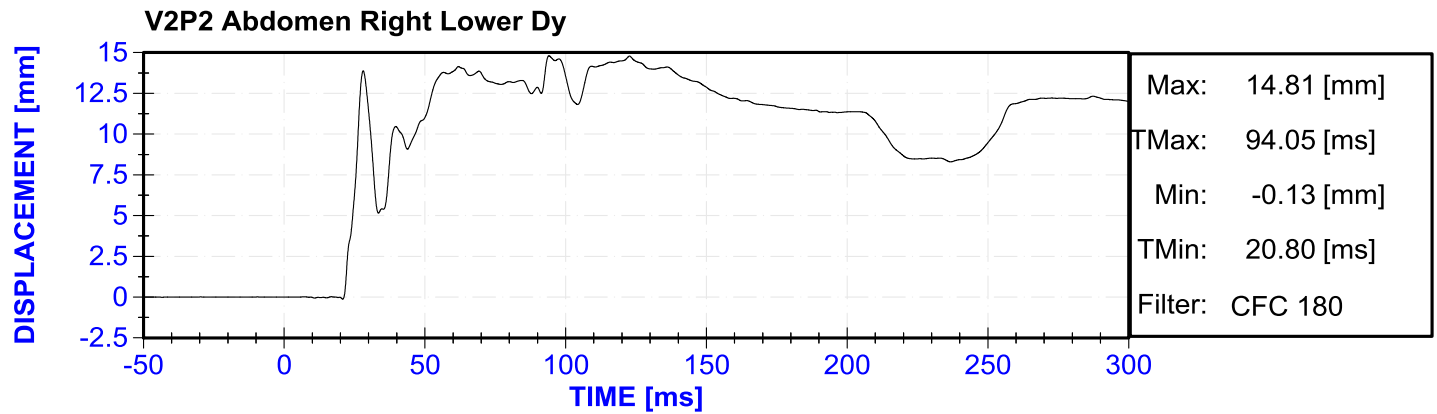
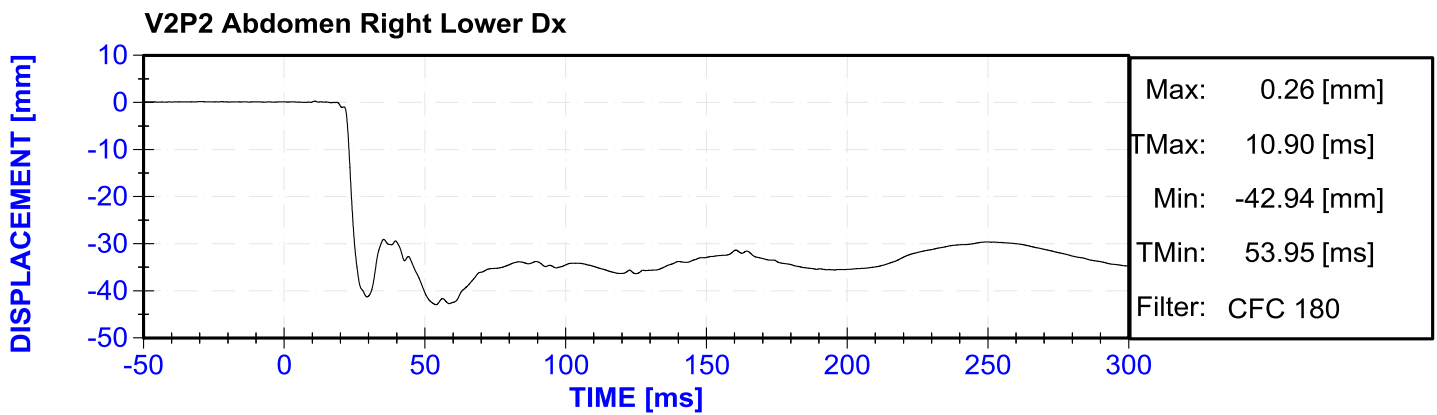
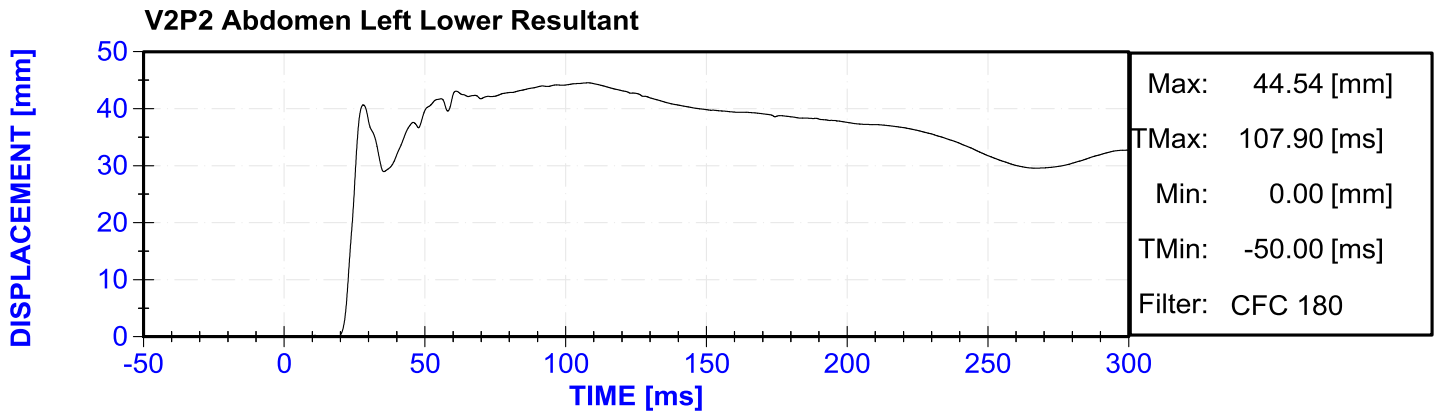
Questionable spike 123ms, 127ms and 174ms

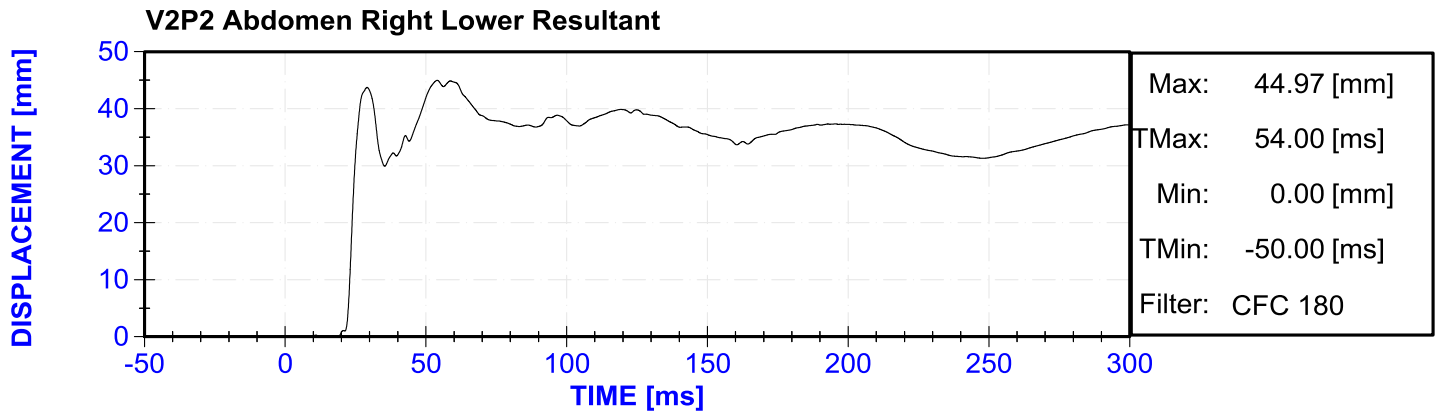












APPENDIX C

DUMMY CALIBRATION DATA

Table C-1: Dummy Information

TYPE	SERIAL NUMBER
THOR 50 TH Male	015
THOR 50 TH Male	016

Table C-2: THOR Ankle Zero Offset Information

THOR 50 th Male S/N: 015					
LFTX Left Ankle X	LFTY Left Ankle Y	LFTZ Left Ankle Z	RFTX Right Ankle X	RFTY Right Ankle Y	RFTZ Right Ankle Z
0.00893 deg	-15.7295 deg	-49.551 deg	-2.40521 deg	-12.1317 deg	-88.5479 deg
THOR 50 th Male S/N: 016					
LFTX Left Ankle X	LFTY Left Ankle Y	LFTZ Left Ankle Z	RFTX Right Ankle X	RFTY Right Ankle Y	RFTZ Right Ankle Z
2.16286 deg	-16.3445 deg	-44.58 deg	-3.53702 deg	-15.8108 deg	-46.565 deg

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

THOR 50 th Male S/N: 015					
Sensor	Manufacturer	Serial Number	Range	Sensitivity	Sensitivity Units
Head CG Ax	Endevco	AC-P63993	2000	0.020850001	mV/V/g
Head CG Ay	Endevco	AC-P51641	2000	0.019360001	mV/V/g
Head CG Az	Endevco	AC-P52011	2000	0.019339999	mV/V/g
Head Wx	DTS	ARS-5921	18000	0.094919997	mV/deg/sec
Head Wy	DTS	ARS-6120	18000	0.093950002	mV/deg/sec
Head Wz	DTS	ARS-6640	18000	0.094540002	mV/deg/sec
Upper Neck Fx	Humanetics	LC-76Fx	8896.4	0.000231699	mV/V/N
Upper Neck Fy	Humanetics	LC-76Fy	8896.4	0.000234116	mV/V/N
Upper Neck Fz	Humanetics	LC-76Fz	13344.7	8.84E-05	mV/V/N
Upper Neck Mx	Humanetics	LC-76Mx	282.5	0.005946997	mV/V/Nm
Upper Neck My	Humanetics	LC-76My	282.5	0.005957618	mV/V/Nm
Upper Neck Mz	Humanetics	LC-76Mz	282.5	0.009966654	mV/V/Nm
Lower Neck Fx	Humanetics	LC-DM4552Fx	13344.7	0.00017042	mV/V/N
Lower Neck Fy	Humanetics	LC-DM4552Fy	13344.7	0.000169911	mV/V/N
Lower Neck Fz	Humanetics	LC-DM4552Fz	13344.7	7.10E-05	mV/V/N
Lower Neck Mx	Humanetics	LC-DM4552Mx	451.9	0.004082851	mV/V/Nm
Lower Neck My	Humanetics	LC-DM4552My	451.9	0.004110952	mV/V/Nm
Lower Neck Mz	Humanetics	LC-DM4552Mz	226	0.006743385	mV/V/Nm
Skull Spring Front Fz	Humanetics	LC-DI7617 Fz	4448.2	0.000498224	mV/V/N
Skull Spring Rear Fz	Humanetics	LC-80 Fz	4448.2	0.000868662	mV/V/N
Condyle Pot Ry	Sfernice	LC-DI7189	180	3.035299946	mV/V/deg
T1 Ax	Endevco	AC-P80336	2000	0.016559999	mV/V/g
T1 Ay	Endevco	AC-P80338	2000	0.01672	mV/V/g
T1 Az	Endevco	AC-P72696	2000	0.02044	mV/V/g

THOR 50th Male (Continued) S/N: 015

Sensor	Manufacturer	Serial Number	Range	Sensitivity	Sensitivity Units
T4 Ax	Endevco	AC-P80288	2000	0.020150001	mV/V/g
T4 Ay	Endevco	AC-P82328	2000	0.018279999	mV/V/g
T4 Az	Endevco	AC-P78985	2000	0.01835	mV/V/g
Thoracic Spine Fx	Denton	LC-92Fx	13344.7	0.000137193	mV/V/N
Thoracic Spine Fy	Denton	LC-92Fy	13344.7	0.000137958	mV/V/N
Thoracic Spine Fz	Denton	LC-92Fz	17792.9	5.26E-05	mV/V/N
Thoracic Spine Mx	Denton	LC-92Mx	677.9	0.002160616	mV/V/Nm
Thoracic Spine My	Denton	LC-92My	903.9	0.001779222	mV/V/Nm
Upper Left Thorax Dx	Humanetics	DS-DP1394	160 mm	Non-linear Scale	
Upper Left Thorax Ry	Sfernice	DS-DO7273	180	3.04979994	mV/V/deg
Upper Left Thorax Rz	Sfernice	DS-DP3884	180	3.048900049	mV/V/deg
Upper Right Thorax Dx	Humanetics	DS-DP1387	160 mm	Non-linear Scale	
Upper Right Thorax Ry	Sfernice	DS-DO7282	180	3.034099936	mV/V/deg
Upper Right Thorax Rz	Sfernice	DS-DO7285	180	3.021700075	mV/V/deg
Lower Left Thorax Dx	Humanetics	DS-DM1151	160 mm	Non-linear Scale	
Lower Left Thorax Ry	Sfernice	DS-DI2386	180	2.952900017	mV/V/deg
Lower Left Thorax Rz	Sfernice	DS-DI6129	180	3.087900113	mV/V/deg
Lower Right Thorax Dx	Humanetics	DS-DI4717	160 mm	Non-linear Scale	
Lower Right Thorax Ry	Sfernice	DS-DI2385	180	2.602899913	mV/V/deg
Lower Right Thorax Rz	Sfernice	DS-DO7286	180	3.08299996	mV/V/deg
Abdomen Left Dx	Humanetics	DS-DJ5441	192 mm	Non-linear Scale	
Abdomen Left Ry	Sfernice	DS-VR31	150	3.035200061	mV/V/deg
Abdomen Left Rz	Sfernice	DS-VR30	150	3.023399971	mV/V/deg
Abdomen Right Dx	Humanetics	DS-DI4778	192 mm	Non-linear Scale	
Abdomen Right Ry	Sfernice	DS-DI7754	150	3.015900031	mV/V/deg
Abdomen Right Rz	Sfernice	DS-DI7902	150	3.029200016	mV/V/deg
Pelvis Ax	Endevco	AC-P52130	2000	0.017099999	mV/V/g
Pelvis Ay	Endevco	AC-P51678	2000	0.020879999	mV/V/g
Pelvis Az	Endevco	AC-P63840	2000	0.0222	mV/V/g
Acetabulum Left Fx	Humanetics	LC-DM5055Fx	22241.1	0.000121887	mV/V/N
Acetabulum Left Fy	Humanetics	LC-DM5055Fy	13344.7	5.93E-05	mV/V/N
Acetabulum Left Fz	Humanetics	LC-DM5055Fz	13344.7	0.000163534	mV/V/N
Acetabulum Right Fx	Denton	LC-87Fx	22241.1	0.000124068	mV/V/N
Acetabulum Right Fy	Denton	LC-87Fy	13344.7	6.08E-05	mV/V/N
Acetabulum Right Fz	Denton	LC-87Fz	13344.7	0.000167363	mV/V/N
ASIS Left Fx	Humanetics	LC-DI4774 Fx	13000	6.84E-05	mV/V/N
ASIS Left My	Humanetics	LC-DI4774 My	325	0.003740923	mV/V/Nm
ASIS Right Fx	Humanetics	LC-DI4775 Fx	13000	6.77E-05	mV/V/N
ASIS Right My	Humanetics	LC-DI4775 My	325	0.003728923	mV/V/Nm
Femur Left Fx	Humanetics	LC-DT1833Fx	15000	0.000146287	mV/V/N
Femur Left Fy	Humanetics	LC-DT1833Fy	15000	0.000145733	mV/V/N
Femur Left Fz	Humanetics	LC-DT1833Fz	15000	7.36E-05	mV/V/N
Femur Left Mx	Humanetics	LC-DT1833Mx	350	0.006617429	mV/V/Nm
Femur Left My	Humanetics	LC-DT1833My	350	0.006614857	mV/V/Nm
Femur Right Fx	Humanetics	LC-DT1830Fx	15000	0.00014712	mV/V/N
Femur Right Fy	Humanetics	LC-DT1830Fy	15000	0.000147193	mV/V/N
Femur Right Fz	Humanetics	LC-DT1830Fz	15000	7.29E-05	mV/V/N
Femur Right Mx	Humanetics	LC-DT1830Mx	350	0.006648857	mV/V/Nm

THOR 50 th Male (Continued) S/N: 015					
Sensor	Manufacturer	Serial Number	Range	Sensitivity	Sensitivity Units
Femur Right My	Humanetics	LC-DT1830My	350	0.006598	mV/V/Nm
Knee Dx	Space Age	DS-D2103665B	33	23.88590015	mv/v/mm
Upper Tibia Fz	Denton	LC-DS8145 Fz	11120	9.56E-05	mv/v/N
Upper Tibia Mx	Denton	LC-DS8145 Mx	395	0.0074603	mv/v/Nm
Upper Tibia My	Denton	LC-DS8145 My	395	0.0074283	mv/v/Nm
Lower Tibia Fx	Denton	LC-78 Fx	11100	0.0001747	mv/v/N
Lower Tibia Fy	Denton	LC-78 Fy	11100	0.0001706	mv/v/N
Lower Tibia Fz	Denton	LC-78 Fz	11100	9.64E-05	mv/v/N
Lower Tibia Mx	Denton	LC-78 Mx	395	0.0074895	mv/v/Nm
Lower Tibia My	Denton	LC-78 My	395	0.007513	mv/v/Nm
Leg Ax	Endevco	AC-P74940	2000	0.016620001	mv/v/g
Leg Ay	Endevco	AC-P51732	2000	0.01896	mv/v/g
Ankle Rx	Contelec	DS-0382	180	3.178999992	mv/v/deg
Ankle Ry	Contelec	DS-0386	180	3.176100086	mv/v/deg
Ankle Rz	Contelec	DS-0543	180	3.198399907	mv/v/deg
Foot Ax	Endevco	AC-P68071	2000	0.02365	mv/v/g
Foot Az	Endevco	AC-P51294	2000	0.02195	mv/v/g
Knee Dx	Space Age	DS-D2103657B	30	24.01199937	mv/v/mm
Upper Tibia Fz	Denton	LC-DS8144 Fz	11120	9.63E-05	mv/v/N
Upper Tibia Mx	Denton	LC-DS8144 Mx	395	0.0074676	mv/v/Nm
Upper Tibia My	Denton	LC-DS8144 My	395	0.0074022	mv/v/Nm
Lower Tibia Fx	Denton	LC-77 Fx	11100	0.0001737	mv/v/N
Lower Tibia Fy	Denton	LC-77 Fy	11100	0.0001715	mv/v/N
Lower Tibia Fz	Denton	LC-77 Fz	11100	9.61E-05	mv/v/N
Lower Tibia Mx	Denton	LC-77 Mx	395	0.0074698	mv/v/Nm
Lower Tibia My	Denton	LC-77 My	395	0.0073378	mv/v/Nm
Leg Ax	Endevco	AC-P79622	2000	0.02118	mv/v/g
Leg Ay	Endevco	AC-P83316	2000	0.01946	mv/v/g
Ankle Rx	Contelec	DS-0385	180	3.178199986	mv/v/deg
Ankle Ry	Contelec	DS-0383	180	3.153099911	mv/v/deg
Ankle Rz	Contelec	DS-0401	180	3.186699934	mv/v/deg
Foot Ax	Endevco	AC-P72691	2000	0.02014	mv/v/g
Foot Az	Endevco	AC-P83310	2000	0.01946	mv/v/g

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

THOR 50 th Male S/N: 016					
Sensor	Manufacturer	Serial Number	Range	Sensitivity	Sensitivity Units
Head CG Ax	Endevco	AC-P81382	2000	0.01759	mV/V/g
Head CG Ay	Endevco	AC-P80275	2000	0.020490001	mV/V/g
Head CG Az	Endevco	AC-P74947	2000	0.016690001	mV/V/g
Head Wx	DTS	ARS-6629	18000	0.094080002	mV/deg/sec
Head Wy	DTS	ARS-4735	18000	0.095700001	mV/deg/sec

THOR 50 th Male (Continued) S/N: 016					
Sensor	Manufacturer	Serial Number	Range	Sensitivity	Sensitivity Units
Head Wz	DTS	ARS-4069	18000	0.09311	mV/deg/sec
Upper Neck Fx	Humanetics	LC-75Fx	8896.4	0.000228159	mV/V/N
Upper Neck Fy	Humanetics	LC-75Fy	8896.4	0.000229418	mV/V/N
Upper Neck Fz	Humanetics	LC-75Fz	13344.7	8.76E-05	mV/V/N
Upper Neck Mx	Humanetics	LC-75Mx	282.5	0.005912656	mV/V/Nm
Upper Neck My	Humanetics	LC-75My	282.5	0.005966114	mV/V/Nm
Upper Neck Mz	Humanetics	LC-75Mz	282.5	0.009657586	mV/V/Nm
Lower Neck Fx	Humanetics	LC-79Fx	13344.7	0.000168262	mV/V/N
Lower Neck Fy	Humanetics	LC-79Fy	13344.7	0.000168472	mV/V/N
Lower Neck Fz	Humanetics	LC-79Fz	13344.7	7.02E-05	mV/V/N
Lower Neck Mx	Humanetics	LC-79Mx	451.9	0.003947435	mV/V/Nm
Lower Neck My	Humanetics	LC-79My	451.9	0.00396934	mV/V/Nm
Lower Neck Mz	Humanetics	LC-79Mz	226	0.006685855	mV/V/Nm
Skull Spring Front Fz	Humanetics	LC-130 Fz	4448.2	0.000493186	mV/V/N
Skull Spring Rear Fz	Humanetics	LC-DM2829Fz	4448.2	0.000514633	mV/V/N
Condyle Pot Ry	Sfernice	DS-0007	180	3.052179934	mV/V/deg
T1 Ax	Endevco	AC-P74948	2000	0.01686	mV/V/g
T1 Ay	Endevco	AC-P83429	2000	0.018139999	mV/V/g
T1 Az	Endevco	AC-P83430	2000	0.0177	mV/V/g
T4 Ax	Endevco	AC-P80268	2000	0.020920001	mV/V/g
T4 Ay	Endevco	AC-P81791	2000	0.01917	mV/V/g
T4 Az	Endevco	AC-P80269	2000	0.021170001	mV/V/g
Thoracic Spine Fx	Denton	LC-123Fx	13344.7	0.000139239	mV/V/N
Thoracic Spine Fy	Denton	LC-123Fy	13344.7	0.000140453	mV/V/N
Thoracic Spine Fz	Denton	LC-123Fz	17792.9	5.33E-05	mV/V/N
Thoracic Spine Mx	Denton	LC-123Mx	677.9	0.002083467	mV/V/Nm
Thoracic Spine My	Denton	LC-123My	903.9	0.001837305	mV/V/Nm
Upper Left Thorax Dx	Humanetics	DS-DS6356	160 mm	Non-linear Scale	
Upper Left Thorax Ry	Sfernice	DS-DJ4106	180	3.059499897	mV/V/deg
Upper Left Thorax Rz	Sfernice	DS-DJ4108	180	3.046100028	mV/V/deg
Upper Right Thorax Dx	Humanetics	DS-DM3232	160 mm	Non-linear Scale	
Upper Right Thorax Ry	Sfernice	DS-DI2381	180	3.058299888	mV/V/deg
Upper Right Thorax Rz	Sfernice	DS-DI2380	180	3.06040002	mV/V/deg
Lower Left Thorax Dx	Humanetics	DS-DP1389	160 mm	Non-linear Scale	
Lower Left Thorax Ry	Sfernice	DS-DP1972	180	3.044900019	mV/V/deg
Lower Left Thorax Rz	Sfernice	DS-DO7288	180	3.039200092	mV/V/deg
Lower Right Thorax Dx	Humanetics	DS-DP1393	160 mm	Non-linear Scale	
Lower Right Thorax Ry	Sfernice	DS-DO7275	180	3.038000083	mV/V/deg
Lower Right Thorax Rz	Sfernice	DS-DO7276	180	3.021999961	mV/V/deg
Abdomen Left Dx	Humanetics	DS-DJ5440	192 mm	Non-linear Scale	
Abdomen Left Ry	Sfernice	DS-DI7755	150	3.025599988	mV/V/deg
Abdomen Left Rz	Sfernice	DS-DI7901	150	3.057899885	mV/V/deg
Abdomen Right Dx	Humanetics	DS-DQ2304	192 mm	Non-linear Scale	
Abdomen Right Ry	Sfernice	DS-218	150	3.012799891	mV/V/deg
Abdomen Right Rz	Sfernice	DS-DI6580	150	2.744599944	mV/V/deg
Pelvis Ax	Endevco	AC-P82402	2000	0.01788	mV/V/g
Pelvis Ay	Endevco	AC-P82403	2000	0.01799	mV/V/g
Pelvis Az	Endevco	AC-P82332	2000	0.01715	mV/V/g

THOR 50th Male (Continued) S/N: 016

Sensor	Manufacturer	Serial Number	Range	Sensitivity	Sensitivity Units
Acetabulum Left Fx	Humanetics	LC-83Fx	22241.1	0.000120471	mV/V/N
Acetabulum Left Fy	Humanetics	LC-83Fy	13344.7	5.91E-05	mV/V/N
Acetabulum Left Fz	Humanetics	LC-83Fz	13344.7	0.000162964	mV/V/N
Acetabulum Right Fx	Denton	LC-84Fx	22241.1	0.000122579	mV/V/N
Acetabulum Right Fy	Denton	LC-84Fy	13344.7	5.82E-05	mV/V/N
Acetabulum Right Fz	Denton	LC-84Fz	13344.7	0.000165272	mV/V/N
ASIS Left Fx	Humanetics	LC-DT1000Fx	13000	6.88E-05	mV/V/N
ASIS Left My	Humanetics	LC-DT1000My	325	0.003827634	mV/V/Nm
ASIS Right Fx	Humanetics	LC-DT1001Fx	13000	6.94E-05	mV/V/N
ASIS Right My	Humanetics	LC-DT1001My	325	0.003849914	mV/V/Nm
Femur Left Fx	Humanetics	LC-DP4630Fx	15000	0.000142	mV/V/N
Femur Left Fy	Humanetics	LC-DP4630Fy	15000	0.0001419	mV/V/N
Femur Left Fz	Humanetics	LC-DP4630Fz	15000	7.16E-05	mV/V/N
Femur Left Mx	Humanetics	LC-DP4630Mx	350	0.0064409	mV/V/Nm
Femur Left My	Humanetics	LC-DP4630My	350	0.0064306	mV/V/Nm
Femur Right Fx	Humanetics	LC-DP3959Fx	15000	0.000142	mV/V/N
Femur Right Fy	Humanetics	LC-DP3959Fy	15000	0.0001422	mV/V/N
Femur Right Fz	Humanetics	LC-DP3959Fz	15000	7.24E-05	mV/V/N
Femur Right Mx	Humanetics	LC-DP3959Mx	350	0.006592	mV/V/Nm
Femur Right My	Humanetics	LC-DP3959My	350	0.0064729	mV/V/Nm
Knee Dx	Space Age	DS-017169	33	22.93870039	mv/v/mm
Upper Tibia Fz	Denton	LC-95 Fz	11120	9.60E-05	mv/v/N
Upper Tibia Mx	Denton	LC-95 Mx	395	0.0074226	mv/v/Nm
Upper Tibia My	Denton	LC-95 My	395	0.0073786	mv/v/Nm
Lower Tibia Fx	Denton	LC-139 Fx	11100	0.00017407	mv/v/N
Lower Tibia Fy	Denton	LC-139 Fy	11100	0.00017491	mv/v/N
Lower Tibia Fz	Denton	LC-139 Fz	11100	9.63E-05	mv/v/N
Lower Tibia Mx	Denton	LC-139 Mx	395	0.0074679	mv/v/Nm
Lower Tibia My	Denton	LC-139 My	395	0.007503	mv/v/Nm
Leg Ax	Endevco	AC-P67924	2000	0.02107	mv/v/g
Leg Ay	Endevco	AC-P51711	2000	0.01915	mv/v/g
Ankle Rx	Contelec	DS-0544	180	3.173100064	mv/v/deg
Ankle Ry	Contelec	DS-0527	180	3.160400083	mv/v/deg
Ankle Rz	Contelec	DS-0541	180	3.15340003	mv/v/deg
Foot Ax	Endevco	AC-P63979	2000	0.020310001	mv/v/g
Foot Az	Endevco	AC-P82182	2000	0.018090001	mv/v/g
Knee Dx	Space Age	DS-12070382	30	24.1260007	mv/v/mm
Upper Tibia Fz	Denton	LC-88 Fz	11120	9.33E-05	mv/v/N
Upper Tibia Mx	Denton	LC-88 Mx	395	0.0072837	mv/v/Nm
Upper Tibia My	Denton	LC-88 My	395	0.0071822	mv/v/Nm
Lower Tibia Fx	Denton	LC-140 Fx	11100	0.0001784	mv/v/N
Lower Tibia Fy	Denton	LC-140 Fy	11100	0.0001764	mv/v/N
Lower Tibia Fz	Denton	LC-140 Fz	11100	9.65E-05	mv/v/N
Lower Tibia Mx	Denton	LC-140 Mx	395	0.0076118	mv/v/Nm
Lower Tibia My	Denton	LC-140 My	395	0.0076405	mv/v/Nm
Leg Ax	Endevco	AC-P50100	2000	0.017660001	mv/v/g

THOR 50 th Male (Continued) S/N: 016					
Sensor	Manufacturer	Serial Number	Range	Sensitivity	Sensitivity Units
Leg Ay	Endevco	AC-P80922	2000	0.018160001	mv/v/g
Ankle Rx	Contelec	DS-0254	180	3.179399995	mv/v/deg
Ankle Ry	Contelec	DS-0525-1	180	3.179399995	mv/v/deg
Ankle Rz	Contelec	DS-0256	180	3.160899971	mv/v/deg
Foot Ax	Endevco	AC-P58836	2000	0.01903	mv/v/g
Foot Az	Endevco	AC-P72351	2000	0.021059999	mv/v/g

Table 4 – 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 50th Male 015

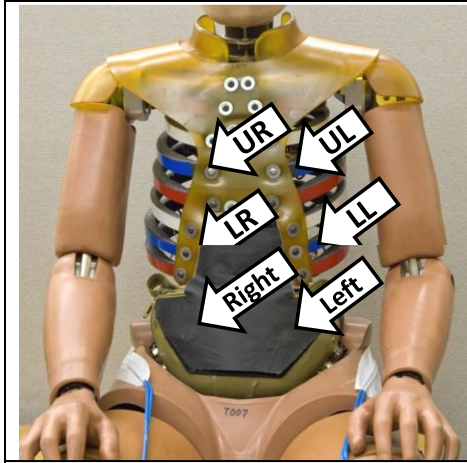


Figure 1. Manipulation to determine thoracic and abdominal IR-TRACC polarity.

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)	0.11203	+	+	DX (V)	0.10139	+	+
RY (Deg)	10.5792	+	+	RY (Deg)	11.7954	+	+
RZ (Deg)	-12.961	+	+	RZ (Deg)	13.0209	+	+
Lower Right Thorax				Lower Left Thorax			
Channel	Initial Value	Expected Polarity	Recorded Polarity	Channel	Initial Value	Expected Polarity	Recorded Polarity
DX (V)	0.09578	+	+	DX (V)	0.08445	+	+
RY (Deg)	-3.4367	+	+	RY (Deg)	-2.3055	+	+
RZ (Deg)	-5.1227	+	+	RZ (Deg)	5.23523	+	+
Abdomen Right				Abdomen Left			
Channel	Initial Value	Expected Polarity	Recorded Polarity	Channel	Initial Value	Expected Polarity	Recorded Polarity
DX (V)	0.06672	+	+	DX (V)	0.06328	+	+
RY (Deg)	2.86058	+	+	RY (Deg)	1.87899	+	+
RZ (Deg)	-0.8069	+	+	RZ (Deg)	1.53933	+	+

THOR 50th Male 016

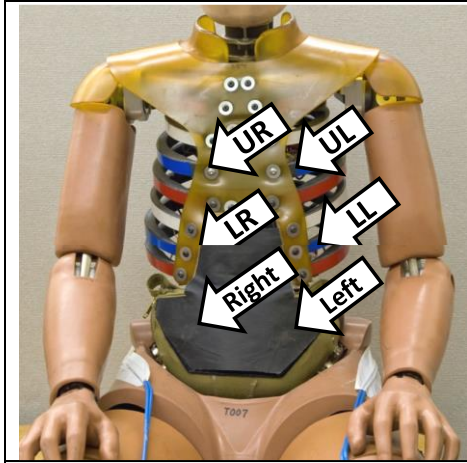


Figure 2. Manipulation to determine thoracic and abdominal IR-TRACC polarity.

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)	0.08380	+	+	DX (V)	0.85751	+	+
RY (Deg)	10.0137	+	+	RY (Deg)	4.55342	+	+
RZ (Deg)	-11.962	+	+	RZ (Deg)	11.7694	+	+
Lower Right Thorax				Lower Left Thorax			
Channel	Initial Value	Expected Polarity	Recorded Polarity	Channel	Initial Value	Expected Polarity	Recorded Polarity
DX (V)	0.08025	+	+	DX (V)	0.08125	+	+
RY (Deg)	-6.1346	+	+	RY (Deg)	-4.0026	+	+
RZ (Deg)	-2.2819	+	+	RZ (Deg)	7.84761	+	+
Abdomen Right				Abdomen Left			
Channel	Initial Value	Expected Polarity	Recorded Polarity	Channel	Initial Value	Expected Polarity	Recorded Polarity
DX (V)	0.07470	+	+	DX (V)	0.07571	+	+
RY (Deg)	3.52947	+	+	RY (Deg)	3.10074	+	+
RZ (Deg)	1.27844	+	+	RZ (Deg)	5.10226	+	+



Test Data/Sensor Repair Notes

THOR Inspection Checklist

Date: 10/1/2015	
NHTSA Representative: James Saunders	
Inspection Reporter: Mike Hartung	
Inspection type (check one): <input checked="" type="checkbox"/> Pre-Test <input type="checkbox"/> Post-Test	
Dummy S/N: 0015	Legs S/N: LX0038/LX0039
Dummy Description: THOR-M 50th Male	
Date of last Certification: July 2015	
<u>Tests conducted:</u> <u>Since last inspection:</u> R20155377-2015 Honda Fit <u>Since last certification:</u> R20155509 - Forester R20150227 - 2015 Ford F-150 R20155143 - 2015 Highlander <i>LX Leg Certification</i>	R20155913 - 2015 Volvo S60 R20150189 - 2015 Malibu R20155377-2015 Honda Fit
<u>Known errors in data channels (no data, clipping, unexpected drops):</u> - 11KNSLLE00THDSXP, Knee Left X Displacement, Channel Failed, SN:DS-D2103665B	
<u>Physical evidence of damage:</u> See Report-Left forearm flesh damaged near elbow, heavy scuffing/abrasions all over left forearm, left humerus bent, right knee- right cover flesh torn, puncture through palm of right hand	
<u>Anecdotal evidence of damage:</u> None	
<u>Equipment delivered to Borrower:</u> THOR 0015 ATD 26 Accelerometers 3 Angular Rate Sensors 2 Skull Spring LC 1 Condyle Pot 1 Upper Neck LC 6 IRTraccs 12 Rotational Pots 1 Spine LC 2 Acetabulum LC 2 ASIS LC 2 Femur LC	<i>Continued</i> 2 LX Leg Assemblies 2 Upper Tibia LC 2 Lower Tibia LC 6 Ankle 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	Front Neck Spring jam nut was loose. Tightened.
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.

		
Y / N	Lower abdomen insert securely attached to spine	
Y / N	Lower abdomen insert shows no evidence of permanent set	
OTHER		
PELVIS		
Y / N	Pelvis flesh fits securely over pelvis bones	
Y / N	H-point tool fits securely into hole on both sides of pelvis	
OTHER		
FEMUR		
Y / N	Acetabular load cells firmly attached	
Y / N	Femur load cells firmly attached	
Y / N	No evidence of deformation of knee slider bump stop	
Y / N	No cuts, tears, or scuffing of knee flesh	
OTHER	Right knee- right cover flesh torn New heavy scuffing on left knee skin.	
		
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	
OTHER	Left forearm flesh damaged near elbow, heavy scuffing/abrasions all over left forearm, left humerus bent, puncture through palm of right hand. Heavy scuffing on front of right calf. Both thigh zippers detaching from flesh. Zippers detaching on left and right calves. Torn zippers/flesh on L & R forearms.	




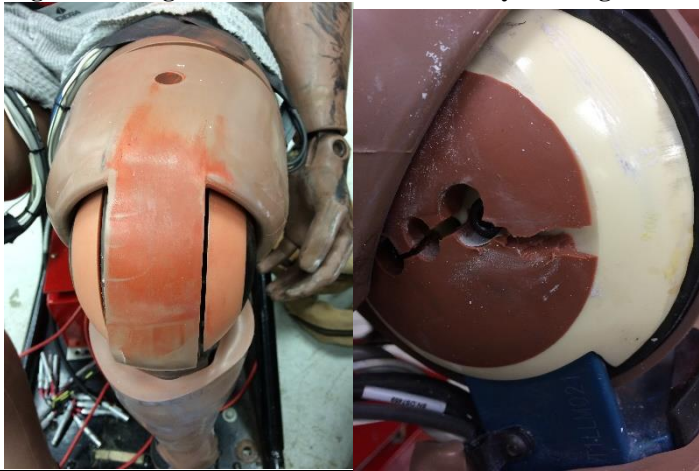
JACKET	
Y / N	Rib stiffeners show no sign of permanent deformation
Y / N	No evidence of tears or holes in jacket fabric, Velcro, or zippers
OTHER	

THOR Inspection Checklist

Date: 10/15/2015	
NHTSA Representative: James Saunders	
Inspection Reporter: Mike Hartung	
Inspection type (check one): <input type="checkbox"/> Pre-Test <input checked="" type="checkbox"/> Post-Test	
Dummy S/N: 0015	Legs S/N: LX0038/LX0039
Dummy Description: THOR-M 50th Male	
Date of last Certification: July 2015	
<u>Tests conducted:</u> <u>Since last inspection:</u> R20150229 - 2015 Ford F-150 <u>Since last certification:</u> R20155509 - Forester R20150227 - 2015 Ford F-150 R20155143 - 2015 Highlander <i>LX Leg Certification</i>	R20155913 - 2015 Volvo S60 R20150189 - 2015 Malibu R20155377-2015 Honda Fit <i>LX Leg Certification 10-2</i> R20150229 - 2015 Ford F-150
<u>Known errors in data channels (no data, clipping, unexpected drops):</u> <ul style="list-style-type: none"> - 11TIBIRILOTHFOXP, Tibia Lower Right X Force, Questionable spikes, SN:LC-77 Fx - 11TIBIRILOTHFOYP, Tibia Lower Right Y Force, Questionable spikes, SN:LC-77 Fy - 11TIBIRILOTHFOZP, Tibia Lower Right Z Force, Questionable spikes, SN:LC-77 Fz 	
<u>Physical evidence of damage:</u> None new	
<u>Anecdotal evidence of damage:</u> None	
<u>Equipment delivered to Borrower:</u> THOR 0015 ATD 26 Accelerometers 3 Angular Rate Sensors 2 Skull Spring LC 1 Condyle Pot 1 Upper Neck LC 6 IRTracs 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 Ankle 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	Front Neck Spring jam nut was loose. Tightened.
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.

	
Y / N	Lower abdomen insert securely attached to spine
Y / N	Lower abdomen insert shows no evidence of permanent set
OTHER	
PELVIS	
Y / N	Pelvis flesh fits securely over pelvis bones
Y / N	H-point tool fits securely into hole on both sides of pelvis
OTHER	
FEMUR	
Y / N	Acetabular load cells firmly attached
Y / N	Femur load cells firmly attached
Y / N	No evidence of deformation of knee slider bump stop
Y / N	No cuts, tears, or scuffing of knee flesh
OTHER	Right knee- right cover flesh torn New heavy scuffing on left knee skin.
	
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
OTHER	Left forearm flesh damaged near elbow, heavy scuffing/abrasions all over left forearm, left humerus bent, puncture through palm of right hand. Heavy scuffing on front of right calf. Both thigh zippers detaching from flesh. Zippers detaching on left and right calves. Torn zippers/flesh on L & R forearms.

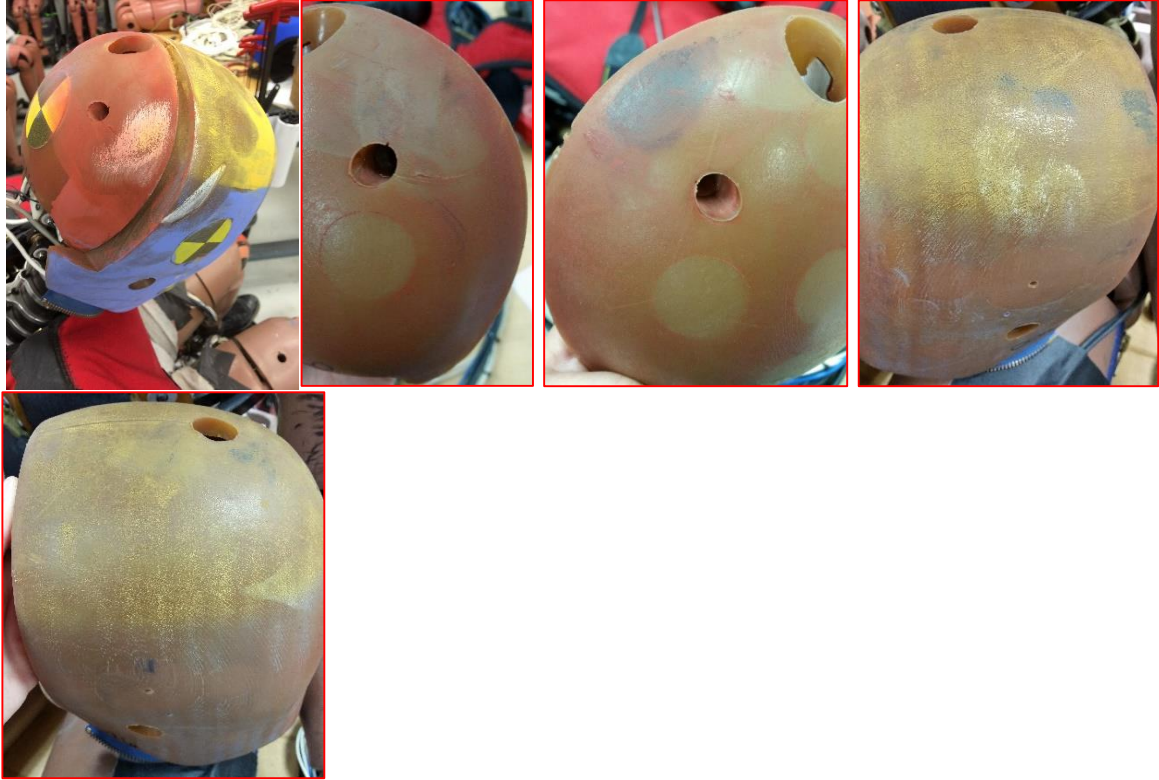




JACKET	
Y / N	Rib stiffeners show no sign of permanent deformation
Y / N	No evidence of tears or holes in jacket fabric, Velcro, or zippers
OTHER	

THOR Inspection Checklist

Date: 10/1/2015		
NHTSA Representative: James Saunders		
Inspection Reporter: Mike Hartung		
Inspection type (check one): <input checked="" type="checkbox"/> Pre-Test <input type="checkbox"/> Post-Test		
Dummy S/N: 0016		Legs S/N: LX0018/LX0019
Dummy Description: THOR 50th Male		
Date of last Certification: July 2015		
<u>Tests conducted:</u> <u>Since last inspection:</u> R20155377-2015 Honda Fit <u>Since last certification:</u> R20155509 - Forester R20150227 - 2015 Ford F-150 R20155143 - 2015 Highlander <i>LX Leg Certification</i>	R20155913 - 2015 Volvo S60 R20150189 - 2015 Malibu R20155377-2015 Honda Fit	
<u>Known errors in data channels (no data, clipping, unexpected drops):</u> <ul style="list-style-type: none"> • 13CHSTRIUPTHVO0P,DGIR Upper Right X Displacement,Questionable spikes 39.8ms to 134ms, SN:DS-DM3232 • 13CHSTRILOTHVO0P,DGIR Lower Right X Displacement,Questionable spikes 48.3ms to 106ms, SN:DS-DP1393 • 13ABDOLE00THVO0P,Abdomen Left DGIR X Displacement,Questionable spikes 67.6ms to 81.8ms, SN:DS-DJ5440 • 13ACTBLE00THFOZP,Acetabular Left Z Force,Questionable spike at 44.2ms, SN:LC-83Fz 		
<u>Physical evidence of damage:</u> None New		
<u>Anecdotal evidence of damage:</u> N/A		
<u>Equipment delivered to Borrower:</u> THOR 0016 ATD 2 LX Leg Assemblies 0018 & 0019 2 Lower Tibia Load Cells 2 Upper Tibia Load Cells 19 Rotational Potentiometers 1 Left Knee Slider Potentiometer 1 Right Knee Slider Potentiometer 25 Accelerometers 2 Achilles Load Cells	<i>Continued</i> 3 Angular Rate Sensors 2 Skull Spring Load Cells 1 Upper Neck Load Cell 1 Lower Neck Load Cell 6 IRTRACCs 1 Thoracic Spine Load Cell 1 Right Acetabulum Load Cell 1 Left Acetabulum Load Cell	2 ASIS Load Cells 2 Femur Load Cells 1 Interface Cable 1 IES Tilt Sensors 1 Laptop 1 H-Point Tool 1 Neck Foam Assembly 1 Neck Skin 1 Toolbox

Note: New Damage is in Red

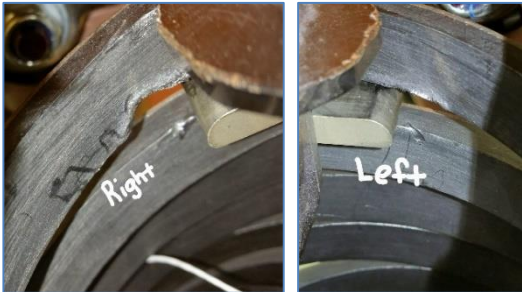
HEAD	
Y / N	Rear head cap mounts securely to head
Y / N	Head skin fits securely over skull
Y / N	Head skin shows no sign of tears or damage
Y / N	Interior components of skull cavity (ballast, accelerometer mount, accelerometers) securely attached
Y / N	Head securely mounted to OC joint
OTHER	<p>Right rear of head and right side of skull cap abrasions and scuffing. Rear head cap has a superficial cut and some scuffing. Head skin has scuffing.</p> 
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	<p>No evidence of de-bonding or permanent compression in neck soft stop assemblies</p> <p>Permanent compression of the first neck soft stop</p> 
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	<p>Urethane Pads are both torn, completely through, near the neck. We put Gaffer's tape over the tears to protect.</p>  <p>LH shoulder bumper missing, RH shoulder bumper deformed</p> 
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	<p>Small cut on the thoracic spine</p>  <p>Tears and rubbing damage to the front left Lumbar Spine. Tears also on rear sides – right side is pictured.</p>  <p>Damage is present on the surrounding metal structures of the Lumbar Spine</p>



THORAX

Y / N No evidence of contact at top, bottom, or interior faces of rib damping material
Both of the top two ribs, left and right, have contact damage



Y / N No evidence of de-bonding between rib damping material and ribs

Y / N IRTACCs securely attached to anterior ribs

Y / N IRTACCs securely attached to double gimbals, spine

Y / N Urethane bib is securely attached to ribs with no sign of tearing or washer penetration
Urethane bib has signs of washer penetration repair and a tear



Y / N Ribs securely attached to posterior spine

Y / N Rib stiffeners show no evidence of bending (no gaps between ribs and stiffeners)

OTHER There is heavy scuffing to the left upper arm, lower arm, and hand



The left hand and lower arm (inside and out) have cuts/punctures



The right lower arm (inside and out) has scuffing



The inside of the right hand has cuts and the thumb is tearing



The back of the right elbow has a small tear

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
Both sides have tears on the lower portion of the bag, and right side is torn near top



Y / N Lower abdomen insert securely attached to spine

Y / N Lower abdomen insert shows no evidence of permanent set



OTHER

PELVIS

Y / N Pelvis flesh fits securely over pelvis bones

Y / N H-point tool fits securely into hole on both sides of pelvis

OTHER

FEMUR	
Y / N	Acetabular load cells firmly attached
Y / N	Femur load cells firmly attached
Y / N	No evidence of deformation of knee slider bump stop
Y / N	No cuts, tears, or scuffing of knee flesh Scuffing to the right knee Slice on Right knee
	
OTHER	
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 Zipper pulling away from lower leg flesh of the left leg on both sides, and the front is scuffed.
	



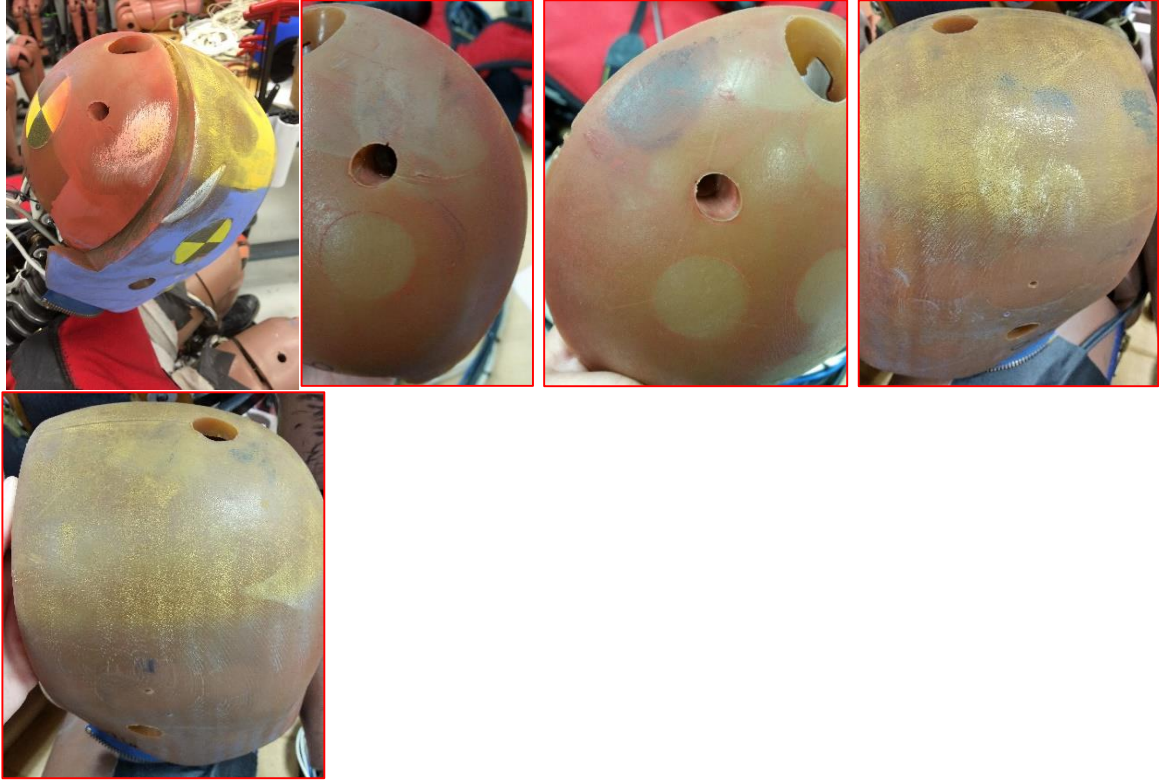

Heavy scuffing on left thigh. Puncture in front on left calf.




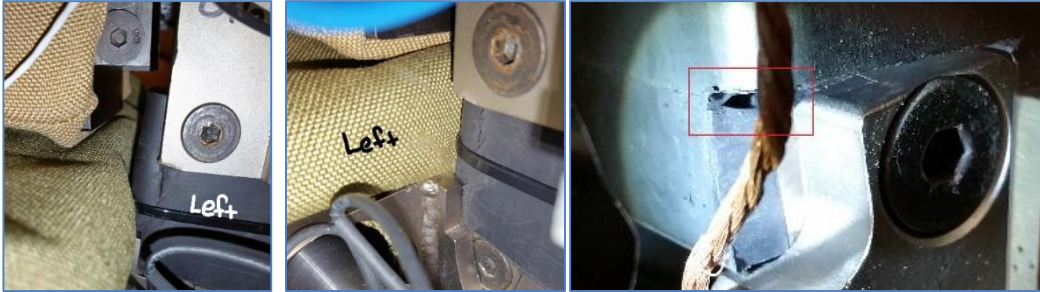
OTHER	
JACKET	
Y / N	Rib stiffeners show no sign of permanent deformation
Y / N	No evidence of tears or holes in jacket fabric, Velcro, or zippers
OTHER	

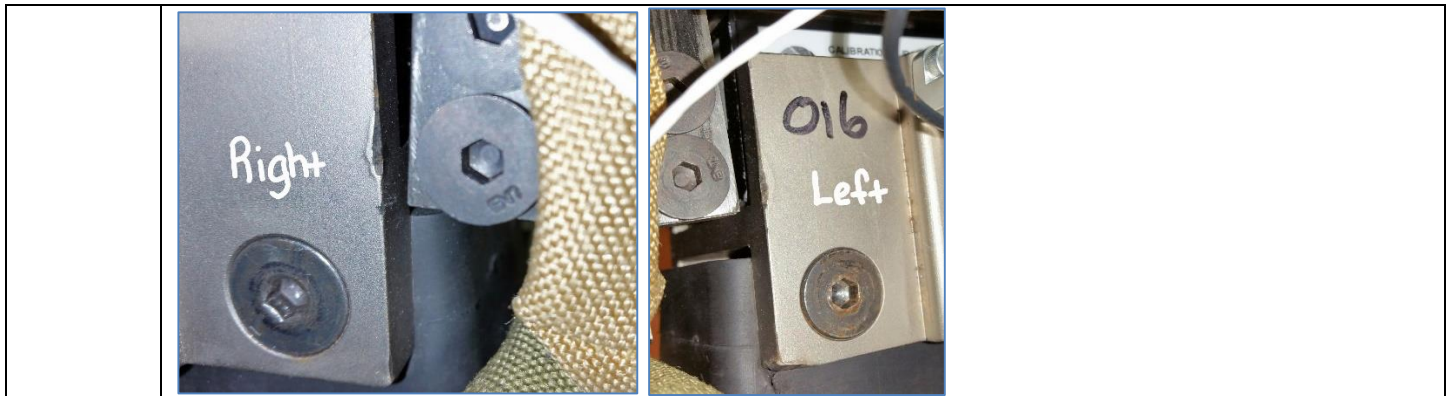
THOR Inspection Checklist

Date: 10/15/2015		
NHTSA Representative: James Saunders		
Inspection Reporter: Mike Hartung		
Inspection type (check one): <input type="checkbox"/> Pre-Test <input checked="" type="checkbox"/> Post-Test		
Dummy S/N: 0016	Legs S/N: LX0018/LX0019	
Dummy Description: THOR 50th Male		
Date of last Certification: July 2015		
<u>Tests conducted:</u> <u>Since last inspection:</u> R20150229 - 2015 Ford F-150 <u>Since last certification:</u> R20155509 - Forester R20150227 - 2015 Ford F-150 R20155143 - 2015 Highlander <i>LX Leg Certification</i>	R20155913 - 2015 Volvo S60 R20150189 - 2015 Malibu R20155377-2015 Honda Fit <i>LX Leg Certification 10-2</i> R20150229 - 2015 Ford F-150	
<u>Known errors in data channels (no data, clipping, unexpected drops):</u> <ul style="list-style-type: none"> - 13NECKUP00THMOXP, Upper Neck X Moment, Channel Failed, SN:LC-75Mx - 13CHSTRIUPTHVO0P, DGIR Upper Right X Displacement, Questionable spikes, SN:DS-DM3232 - 13CHSTLELOTHVO0P, DGIR Lower Left X Displacement, Questionable spikes, SN:DS-DP1389 - 13CHSTRILOTHVO0P, DGIR Lower Right X Displacement, Questionable spikes, SN:DS-DP1393 		
<u>Physical evidence of damage:</u> None New		
<u>Anecdotal evidence of damage:</u> N/A		
<u>Equipment delivered to Borrower:</u> THOR 0016 ATD 2 LX Leg Assemblies 0018 & 0019 2 Lower Tibia Load Cells 2 Upper Tibia Load Cells 19 Rotational Potentiometers 1 Left Knee Slider Potentiometer 1 Right Knee Slider Potentiometer 25 Accelerometers 2 Achilles Load Cells	<i>Continued</i> 3 Angular Rate Sensors 2 Skull Spring Load Cells 1 Upper Neck Load Cell 1 Lower Neck Load Cell 6 IRTRACCs 1 Thoracic Spine Load Cell 1 Right Acetabulum Load Cell 1 Left Acetabulum Load Cell	2 ASIS Load Cells 2 Femur Load Cells 1 Interface Cable 1 IES Tilt Sensors 1 Laptop 1 H-Point Tool 1 Neck Foam Assembly 1 Neck Skin 1 Toolbox

Note: New Damage is 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	<p>Right rear of head and right side of skull cap abrasions and scuffing. Rear head cap has a superficial cut and some scuffing. Head skin has scuffing.</p> 
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	<p>No evidence of de-bonding or permanent compression in neck soft stop assemblies</p> <p>Permanent compression of the first neck soft stop</p> 
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

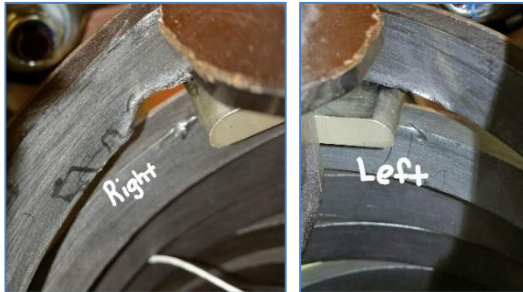
OTHER	<p>Urethane Pads are both torn, completely through, near the neck. We put Gaffer's tape over the tears to protect.</p>  <p>LH shoulder bumper missing, RH shoulder bumper deformed</p> 
SPINE	
Y / N	No evidence of de-bonding between thoracic spine flex joint and metal plates
Y / N	No evidence of de-bonding between lumbar spine flex joint and metal plates
Y / N	Lumbar spine pitch change joint mechanism mating teeth are engaged
OTHER	<p>Small cut on the thoracic spine</p>  <p>Tears and rubbing damage to the front left Lumbar Spine. Tears also on rear sides – right side is pictured.</p>  <p>Damage is present on the surrounding metal structures of the Lumbar Spine</p>



THORAX

Y / N

No evidence of contact at top, bottom, or interior faces of rib damping material
Both of the top two ribs, left and right, have contact damage



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
Urethane bib has signs of washer penetration repair and a tear



Y / N

Ribs securely attached to posterior spine

Y / N

Rib stiffeners show no evidence of bending (no gaps between ribs and stiffeners)

OTHER

There is heavy scuffing to the left upper arm, lower arm, and hand



The left hand and lower arm (inside and out) have cuts/punctures



The right lower arm (inside and out) has scuffing



The inside of the right hand has cuts and the thumb is tearing



The back of the right elbow has a small tear

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
Both sides have tears on the lower portion of the bag, and right side is torn near top



Y / N Lower abdomen insert securely attached to spine

Y / N Lower abdomen insert shows no evidence of permanent set



OTHER

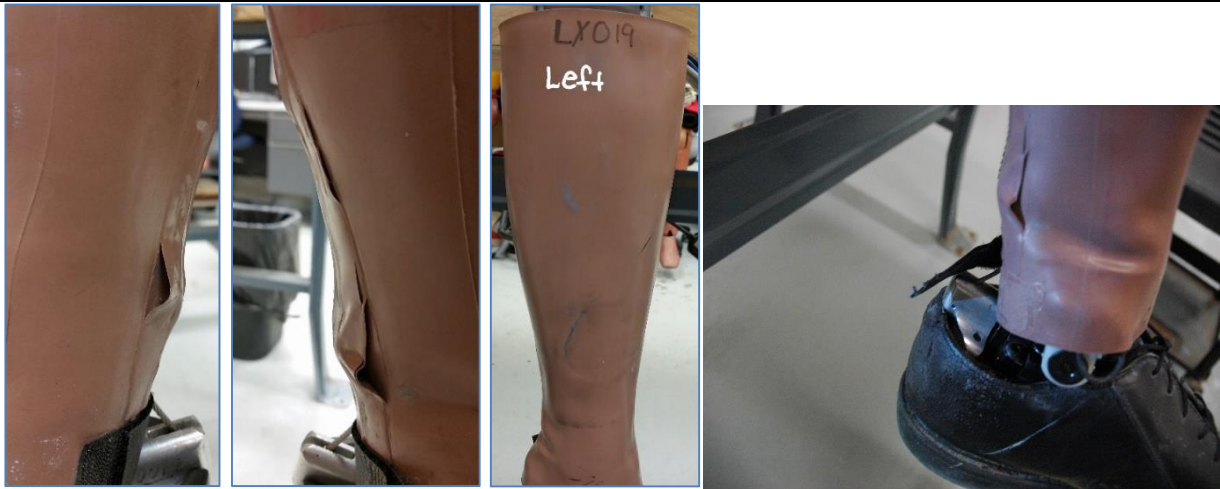
PELVIS

Y / N Pelvis flesh fits securely over pelvis bones

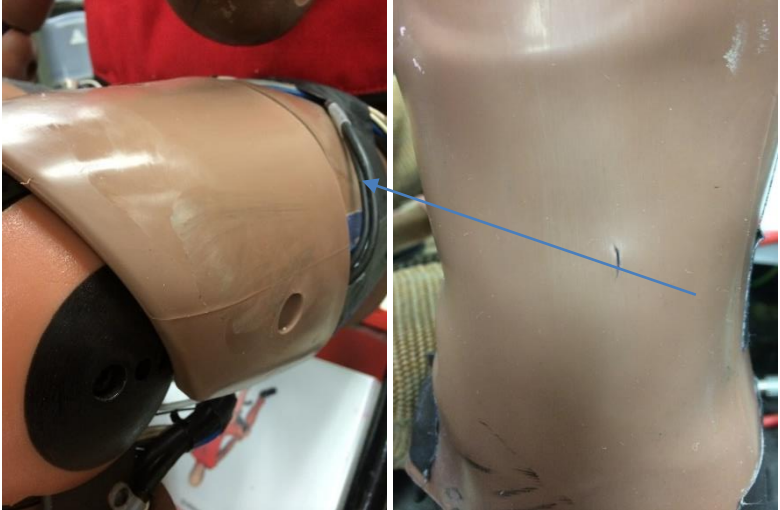
Y / N H-point tool fits securely into hole on both sides of pelvis

OTHER

FEMUR	
Y / N	Acetabular load cells firmly attached
Y / N	Femur load cells firmly attached
Y / N	No evidence of deformation of knee slider bump stop
Y / N	No cuts, tears, or scuffing of knee flesh Scuffing to the right knee Slice on Right knee
	
OTHER	
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 Additional scuffing on right calf. Zipper pulling away further on left calf. Zipper pulling away from lower leg flesh of the left leg on both sides, and the front is scuffed.
	



Velcro strap torn from LH tibia flesh at ankle.

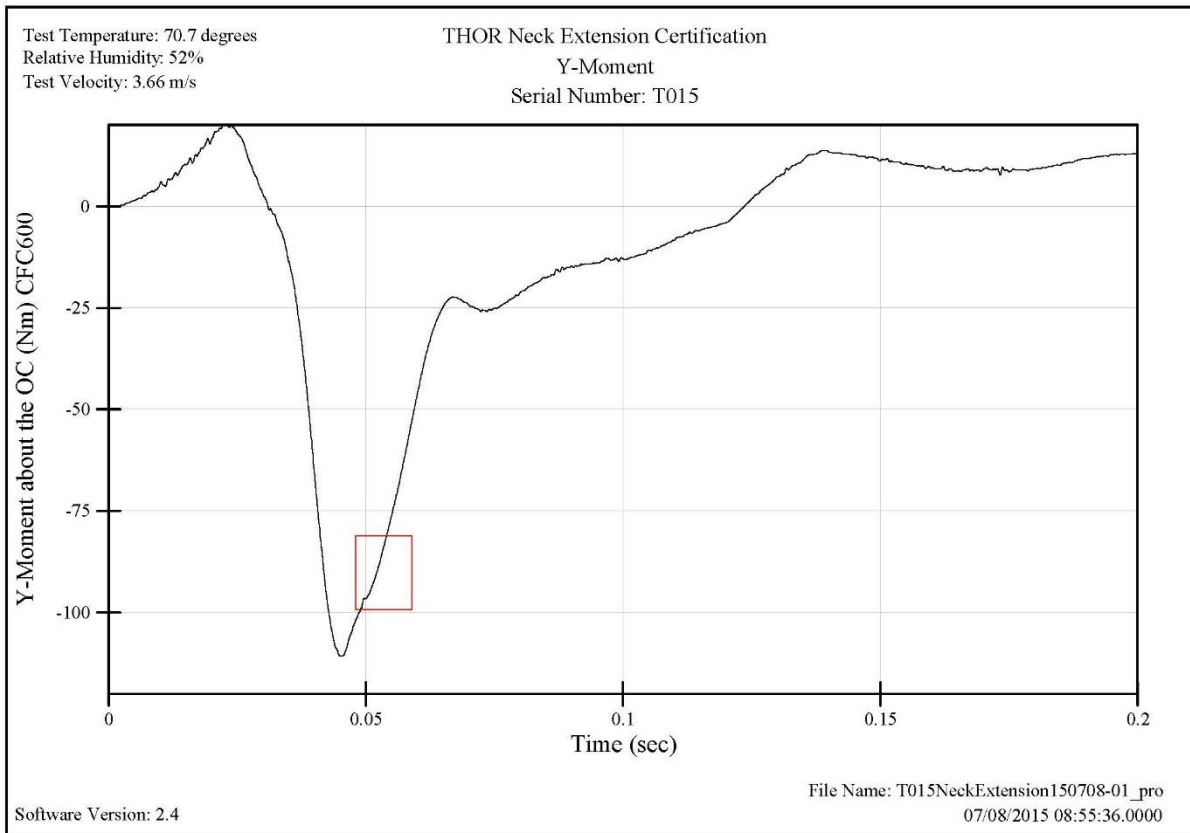
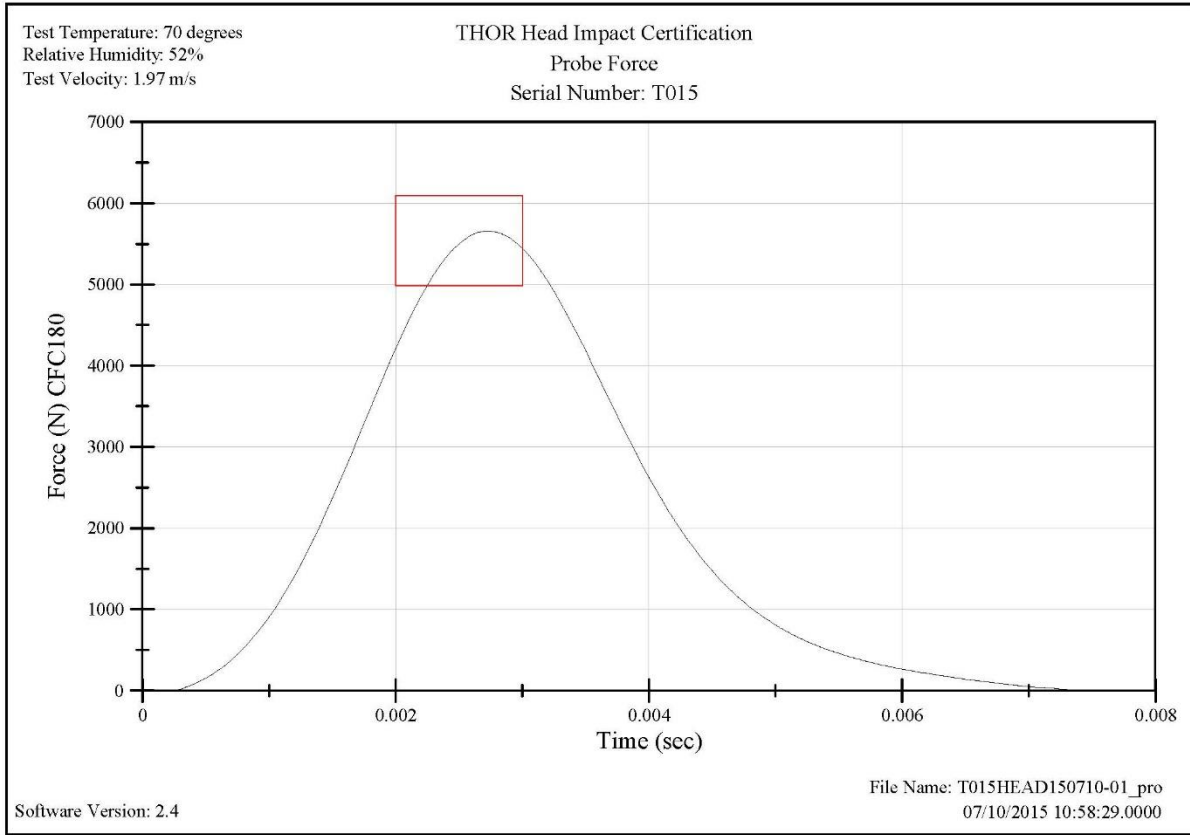


Heavy scuffing on left thigh. Puncture in front on left calf.

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	

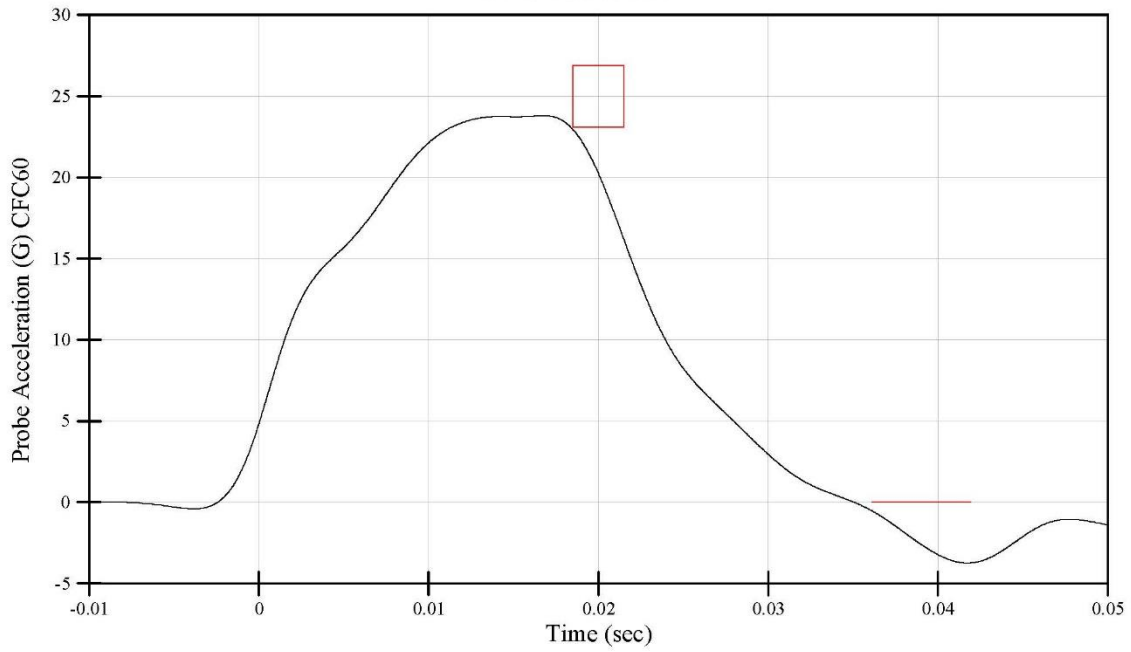
DUMMY CALIBRATIONS

50% ADULT MALE THOR015 DUMMY CALIBRATIONS



Test Temperature: 70.7 degrees
Relative Humidity: 52%
Test Velocity: 3.66 m/s

THOR Neck Extension Certification
Probe Acceleration
Serial Number: T015

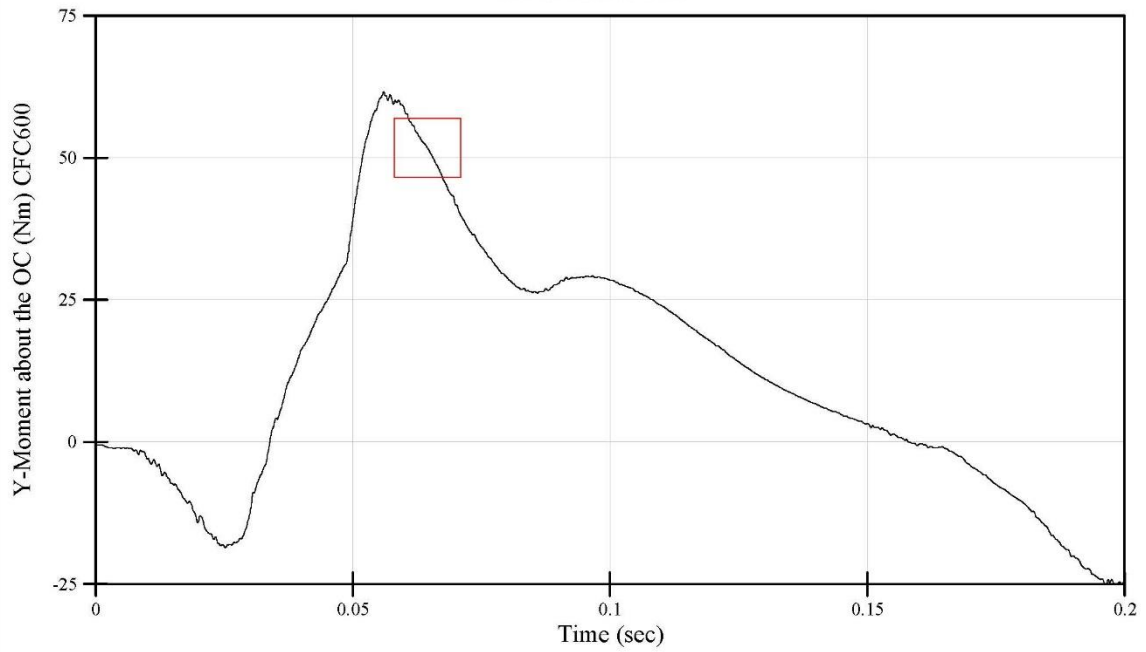


Software Version: 2.4

File Name: T015NeckExtension150708-01_pro
07/08/2015 08:55:36.0000

Test Temperature: 69.6 degrees
Relative Humidity: 51%
Test Velocity: 3.78 m/s

THOR Neck Flexion Certification
Y-Moment
Serial Number: T015

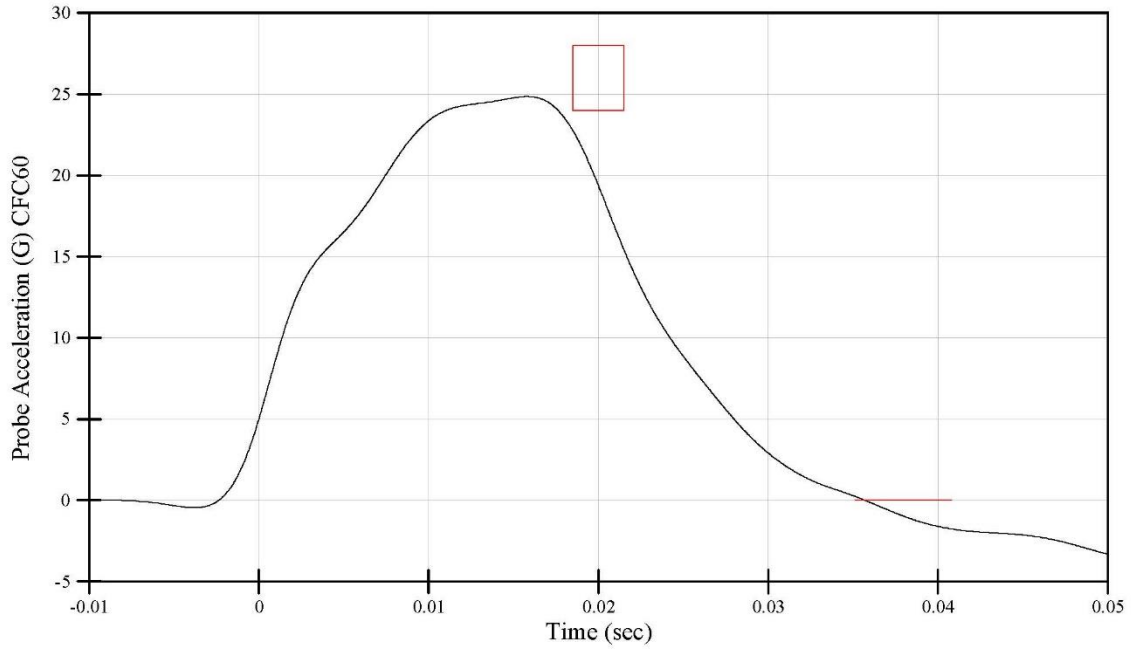


Software Version: 2.4

File Name: T015NeckFlexion150708-02_pro
07/08/2015 08:24:32.0000

Test Temperature: 69.6 degrees
Relative Humidity: 51%
Test Velocity: 3.78 m/s

THOR Neck Flexion Certification
Probe Acceleration
Serial Number: T015

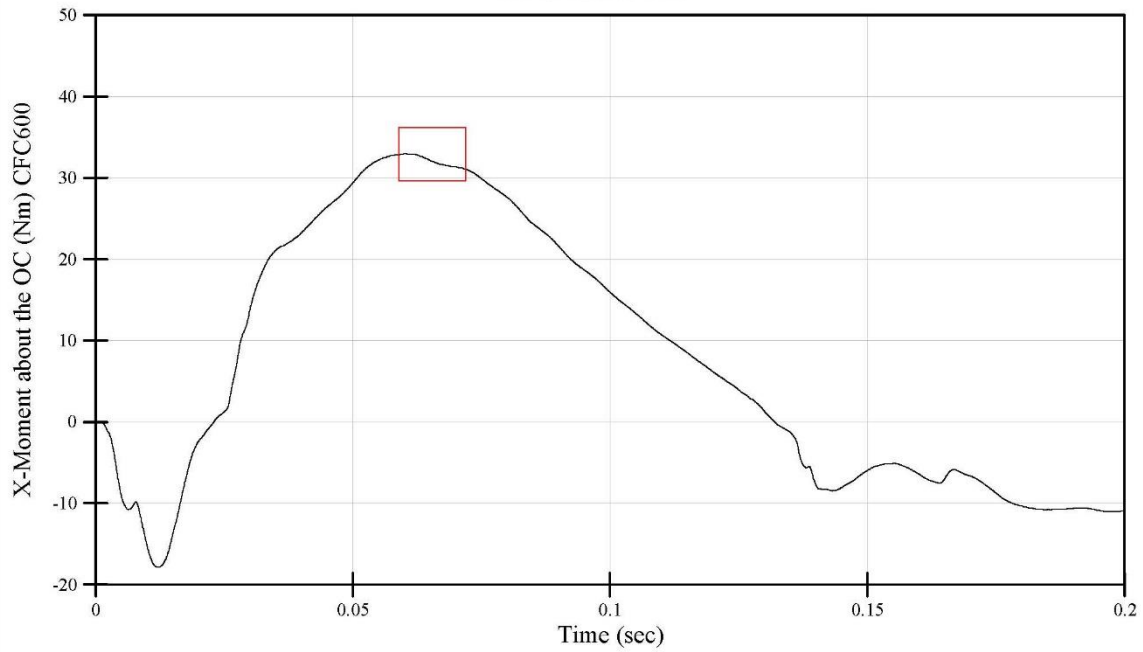


Software Version: 2.4

File Name: T015NeckFlexion150708-02_pro
07/08/2015 08:24:32.0000

Test Temperature: 70.5 degrees
Relative Humidity: 51%
Test Velocity: 2.86 m/s

THOR Neck Left Lateral Flexion Certification
X-Moment
Serial Number: T015

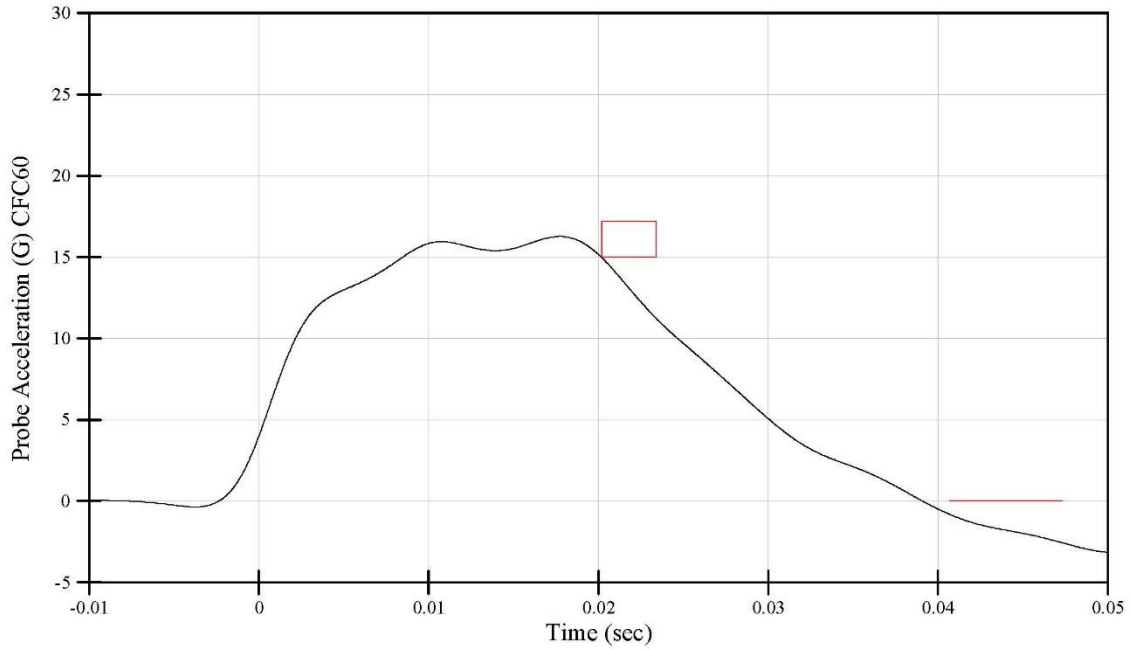


Software Version: 2.4

File Name: T015NeckLeft150708-01_pro
07/08/2015 09:59:03.0000

Test Temperature: 70.5 degrees
Relative Humidity: 51%
Test Velocity: 2.86 m/s

THOR Neck Left Lateral Flexion Certification
Probe Acceleration
Serial Number: T015

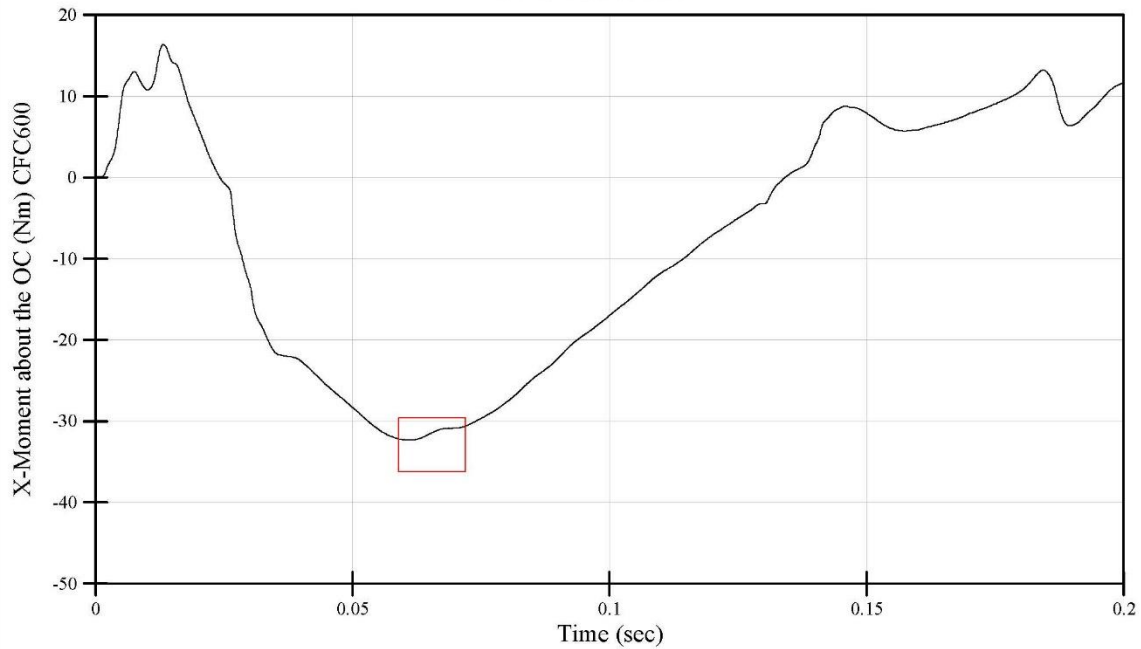


Software Version: 2.4

File Name: T015NeckLeft150708-01_pro
07/08/2015 09:59:03.0000

Test Temperature: 70.3 degrees
Relative Humidity: 52%
Test Velocity: 2.87 m/s

THOR Neck Right Lateral Flexion Certification
X-Moment
Serial Number: T015



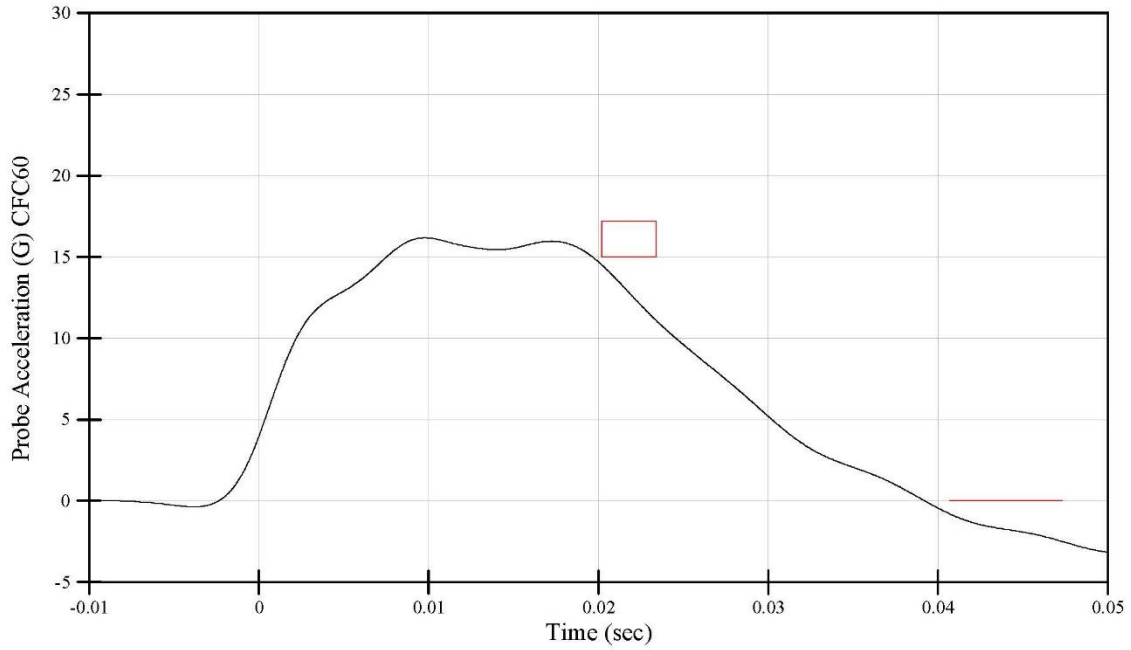
Software Version: 2.4

File Name: T015NeckRight150708-01_pro
07/08/2015 09:27:49.0000

Test Temperature: 70.3 degrees
Relative Humidity: 52%
Test Velocity: 2.87 m/s

THOR Neck Right Lateral Flexion Certification

Probe Acceleration
Serial Number: T015

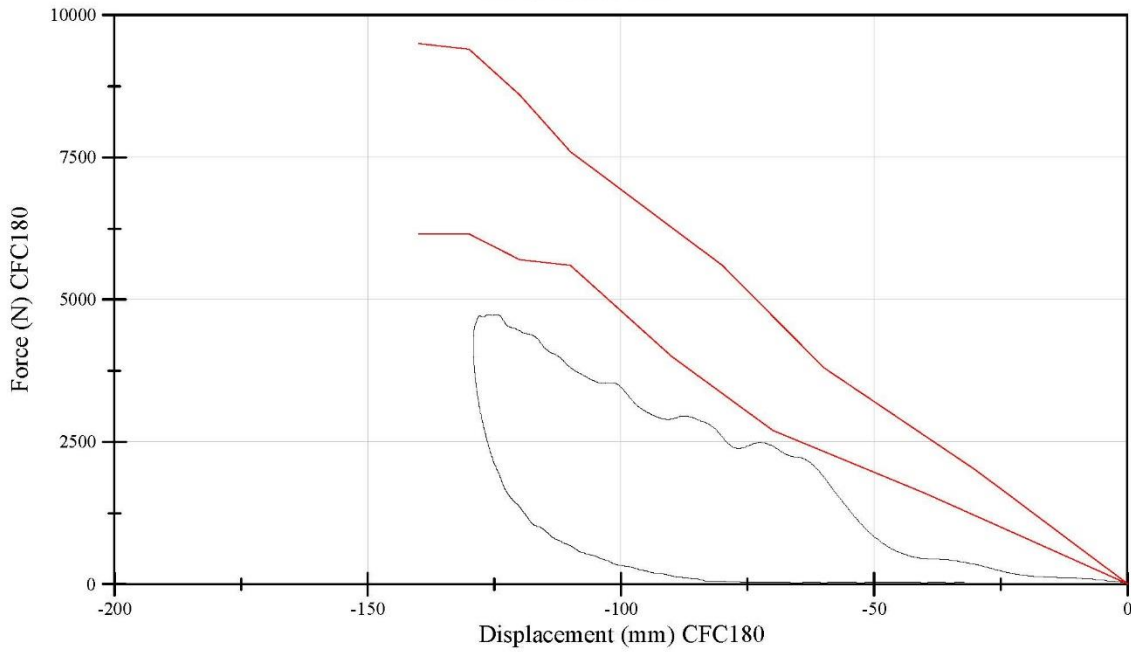


Software Version: 2.4

File Name: T015NeckRight150708-01_pro
07/08/2015 09:27:49.0000

Test Temperature: 70.2 degrees
Relative Humidity: 51%
Test Velocity: 6.63 m/s

THOR Upper Abdomen Certification Abdomen Displacement vs. Probe Force Serial Number: T015

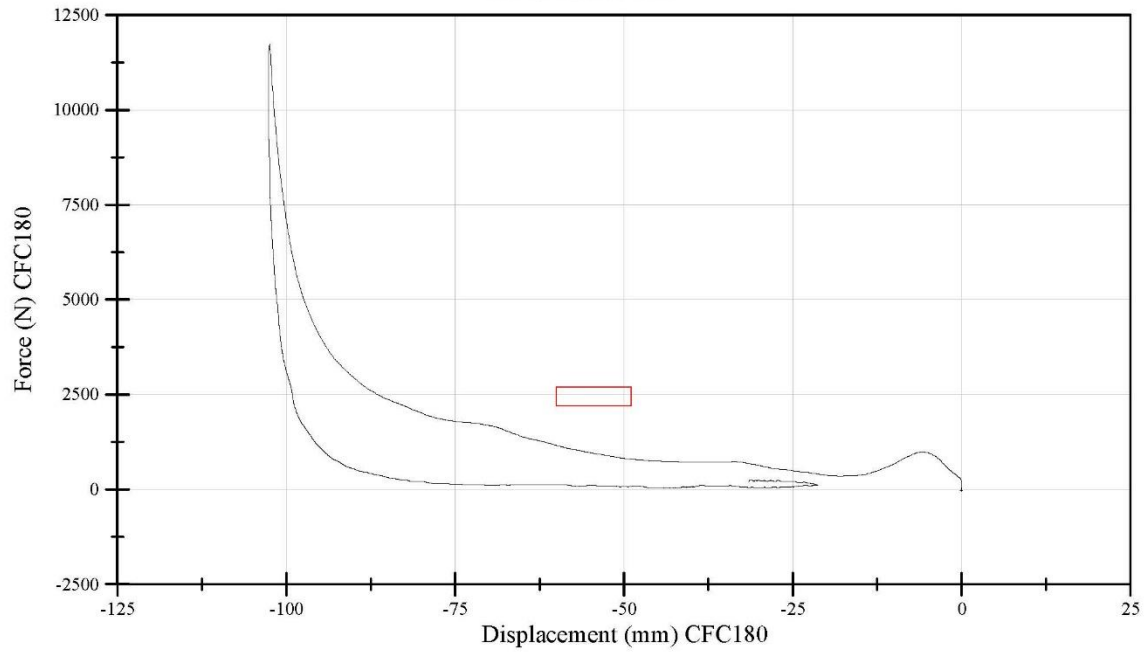


Software Version: 2.4

File Name: T015ABUP150709-01_pro
07/09/2015 15:52:54.0000

Test Temperature: 70.5 degrees
Relative Humidity: 52%
Test Velocity: 6.04 m/s

THOR Lower Abdomen Certification
Abdomen Displacement vs. Probe Force
Serial Number: T015



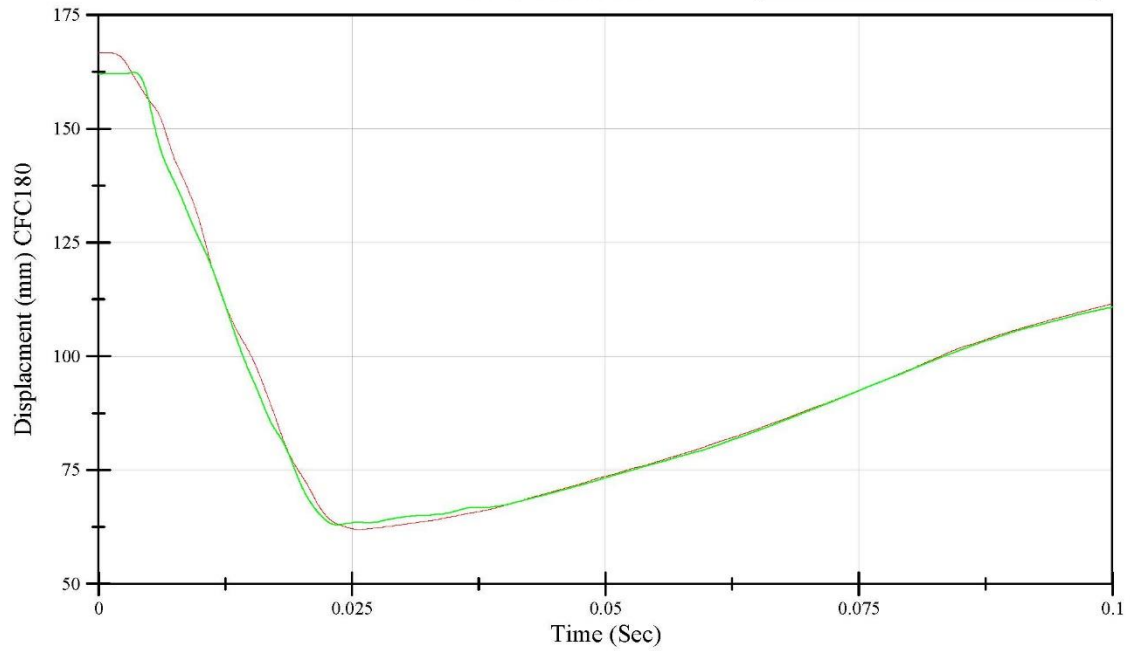
Software Version: 2.4

File Name: T015ABLR150709-04_pro
07/09/2015 14:46:27.0000

Test Temperature: 70.5 degrees
Relative Humidity: 52%
Test Velocity: 6.04 m/s

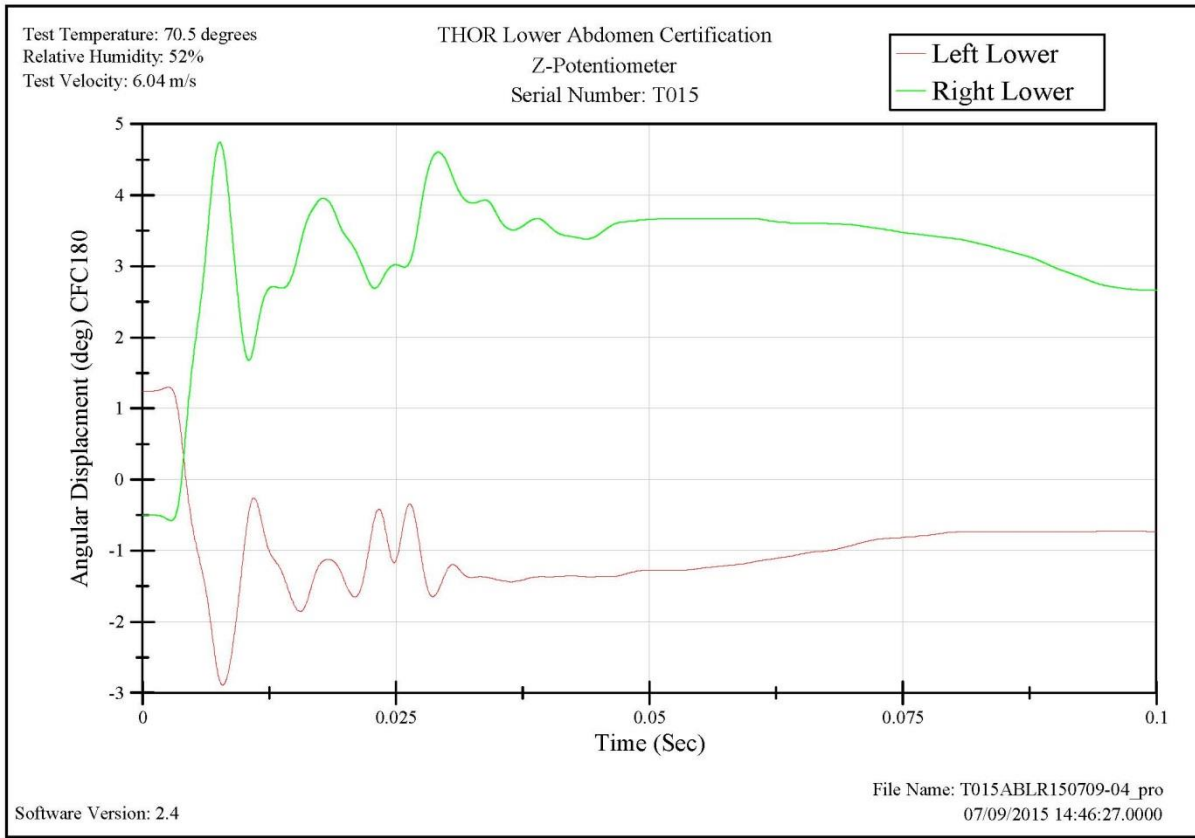
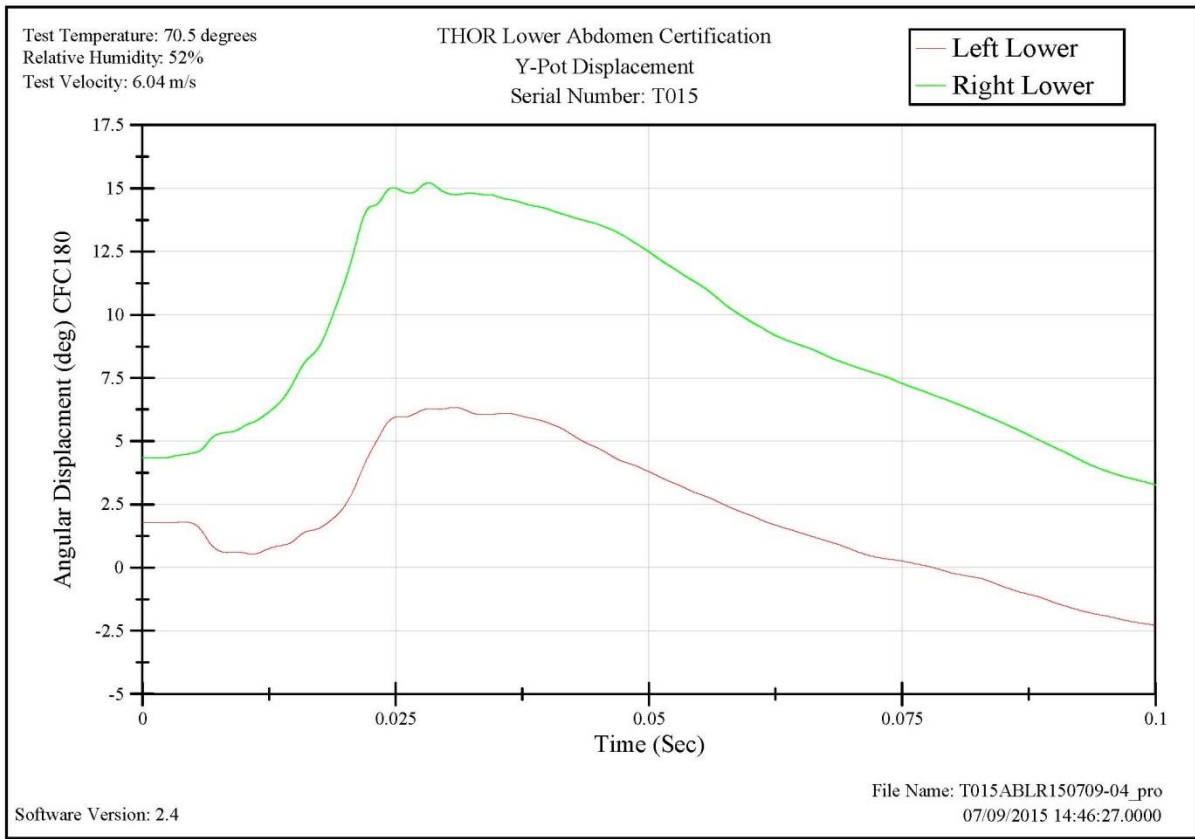
THOR Lower Abdomen Certification
IRTRACC Displacement
Serial Number: T015

Left Lower IR-TRACC
Right Lower IR-TRACC



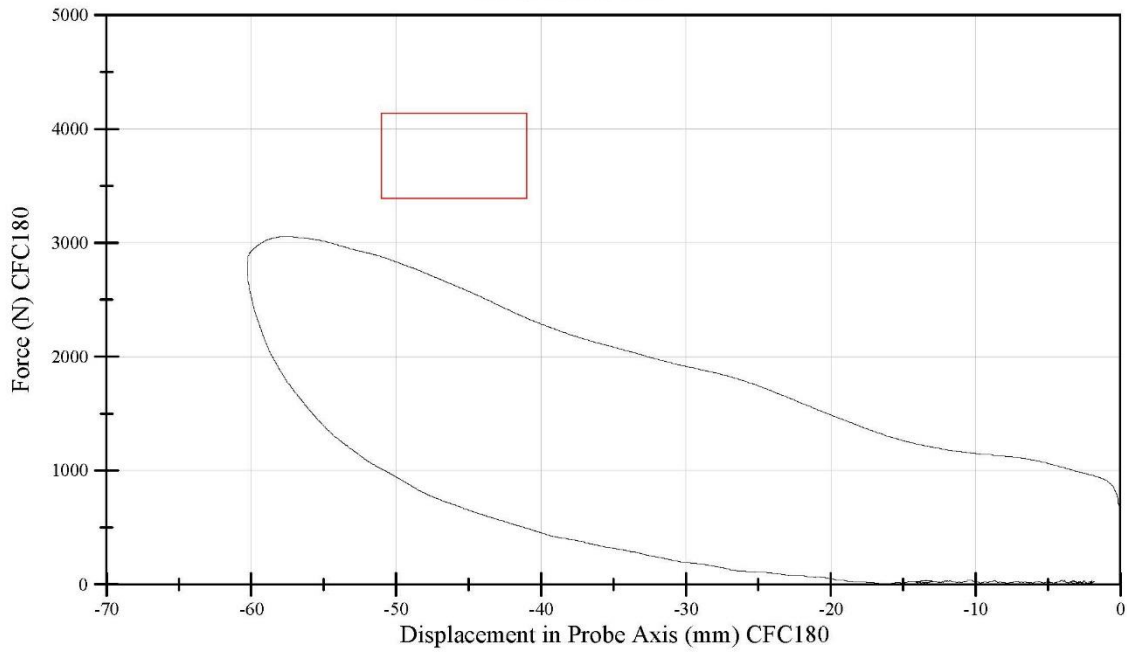
Software Version: 2.4

File Name: T015ABLR150709-04_pro
07/09/2015 14:46:27.0000



Test Temperature: 70.4 degrees
Relative Humidity: 52%
Test Velocity: 4.27 m/s

THOR Lower Left Oblique Thorax Certification
Thorax Displacement vs. Probe Force
Serial Number: T015

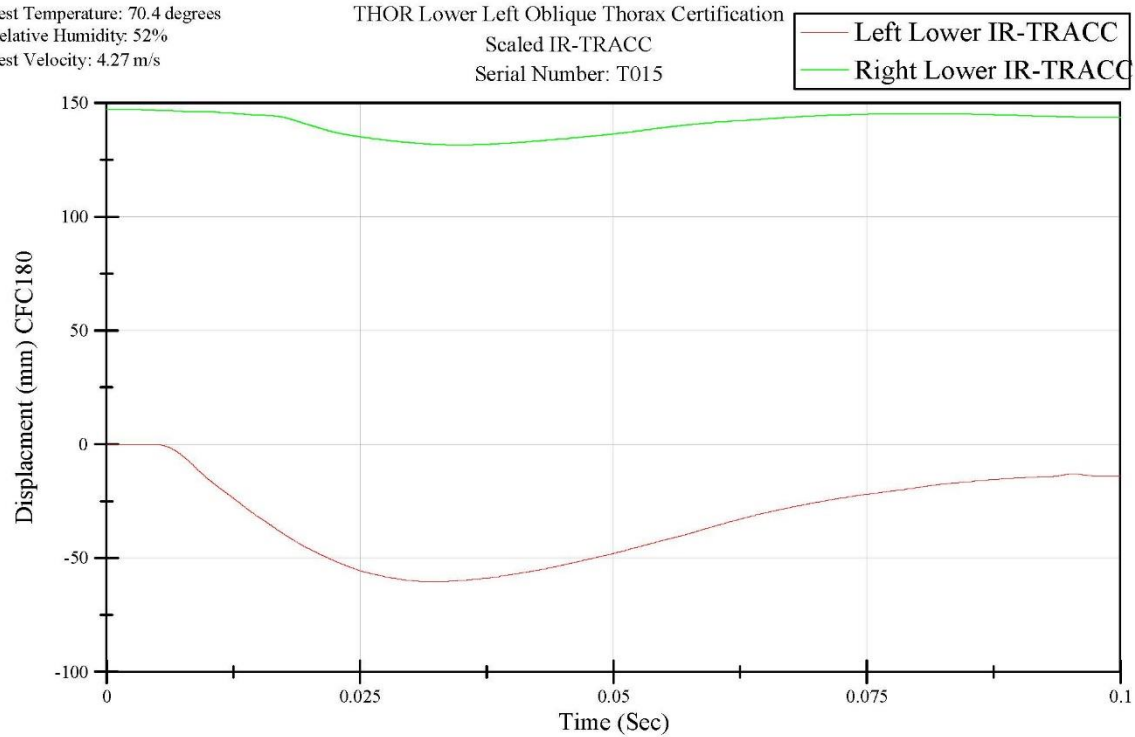


Software Version: 2.4

File Name: T015OBLE150710-01_pro
07/10/2015 14:01:12.0000

Test Temperature: 70.4 degrees
Relative Humidity: 52%
Test Velocity: 4.27 m/s

THOR Lower Left Oblique Thorax Certification
Scaled IR-TRACC
Serial Number: T015



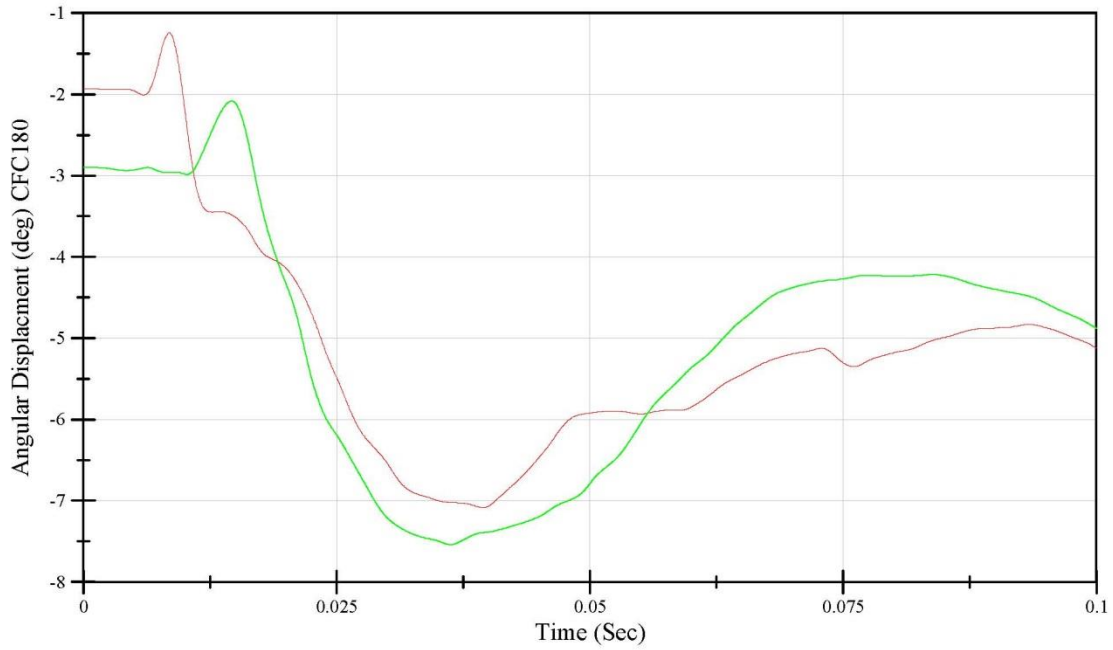
Software Version: 2.4

File Name: T015OBLE150710-01_pro
07/10/2015 14:01:12.0000

Test Temperature: 70.4 degrees
Relative Humidity: 52%
Test Velocity: 4.27 m/s

THOR Lower Left Oblique Thorax Certification
Y-Potentiometer
Serial Number: T015

— Left Lower
— Right Lower



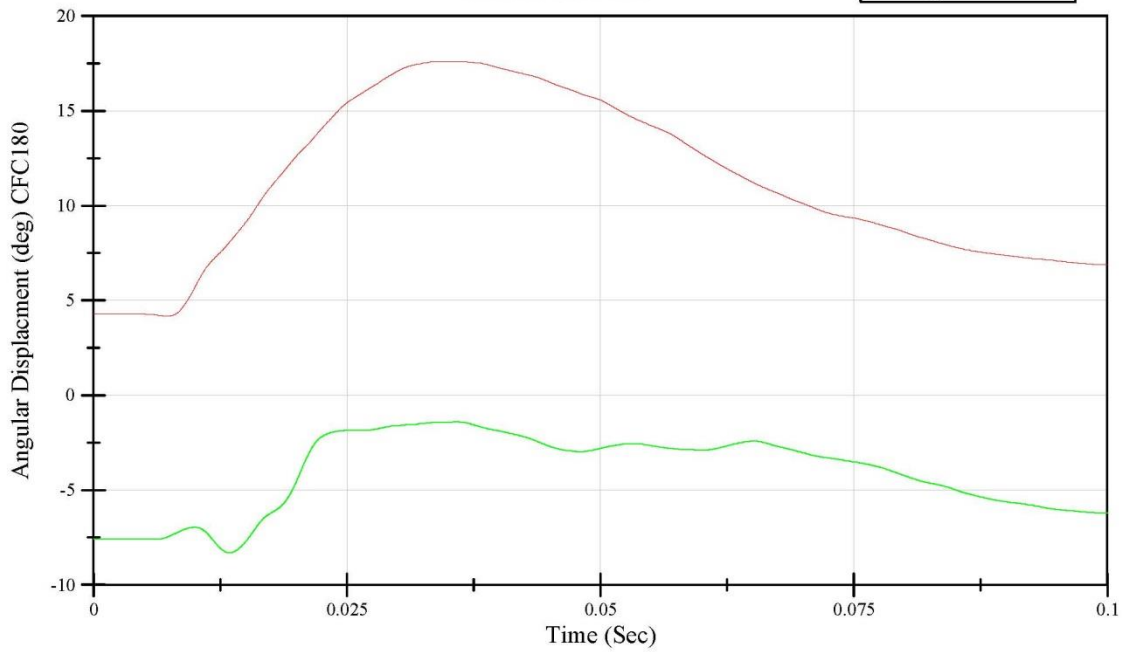
Software Version: 2.4

File Name: T015OBLE150710-01_pro
07/10/2015 14:01:12.0000

Test Temperature: 70.4 degrees
Relative Humidity: 52%
Test Velocity: 4.27 m/s

THOR Lower Left Oblique Thorax Certification
Z-Potentiometer
Serial Number: T015

— Left Lower
— Right Lower

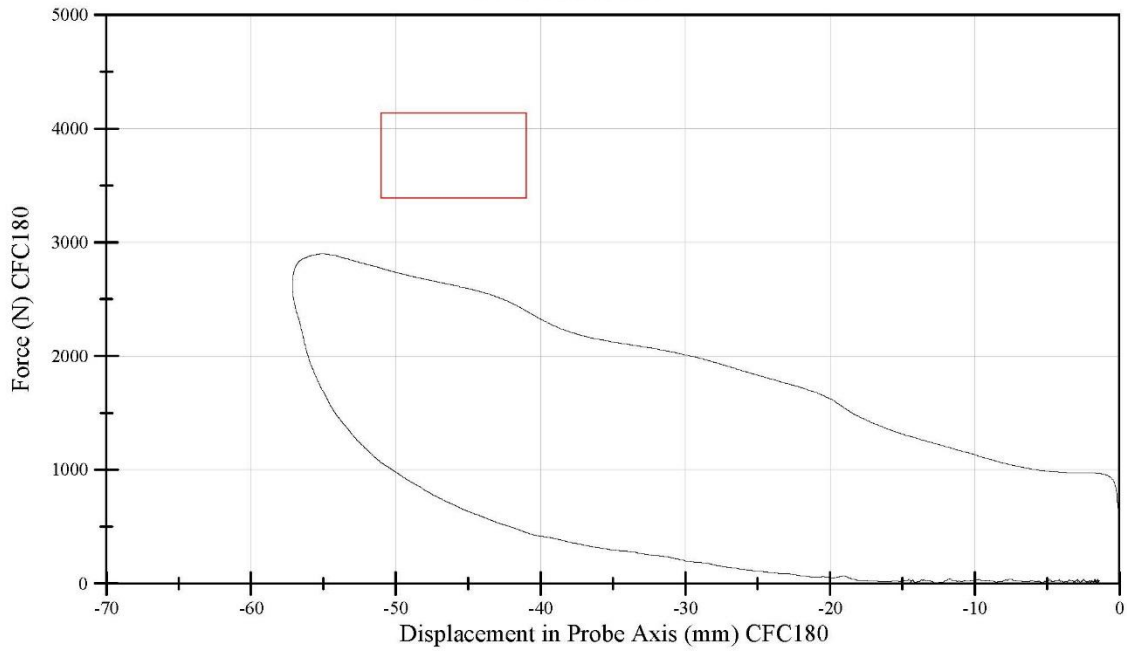


Software Version: 2.4

File Name: T015OBLE150710-01_pro
07/10/2015 14:01:12.0000

Test Temperature: 70.3 degrees
Relative Humidity: 51%
Test Velocity: 4.27 m/s

THOR Lower Right Oblique Thorax Certification
Thorax Displacement vs. Probe Force
Serial Number: T015

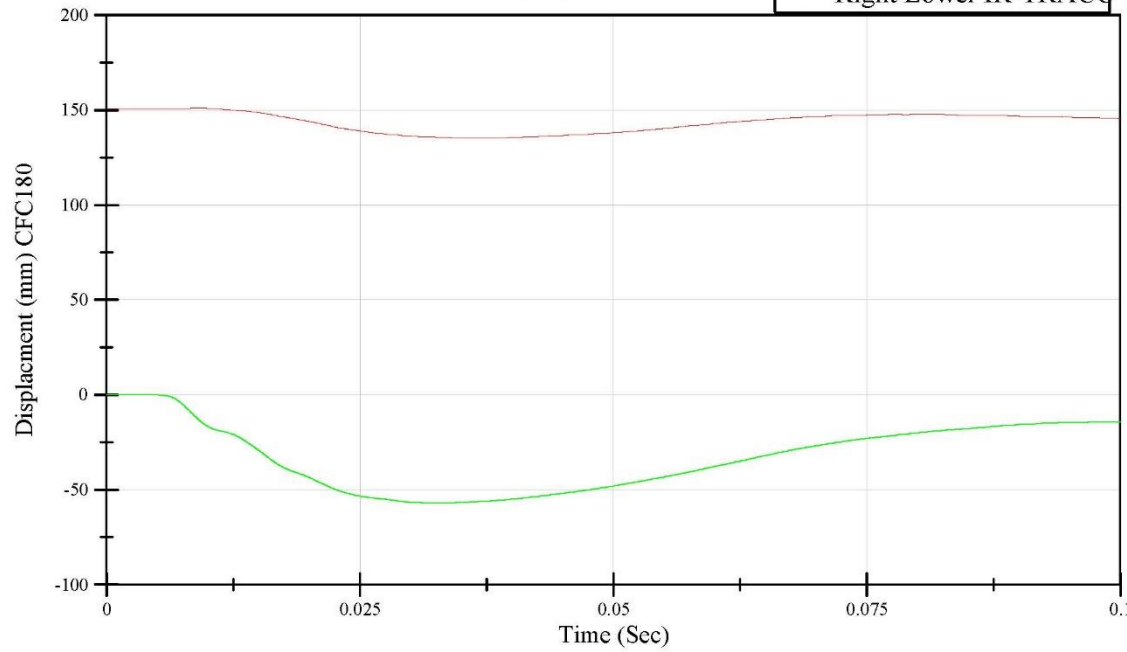


Software Version: 2.4

File Name: T015OBRI150710-01_pro
07/10/2015 12:55:35.0000

Test Temperature: 70.3 degrees
Relative Humidity: 51%
Test Velocity: 4.27 m/s

THOR Lower Right Oblique Thorax Certification
Scaled IR-TRACC
Serial Number: T015



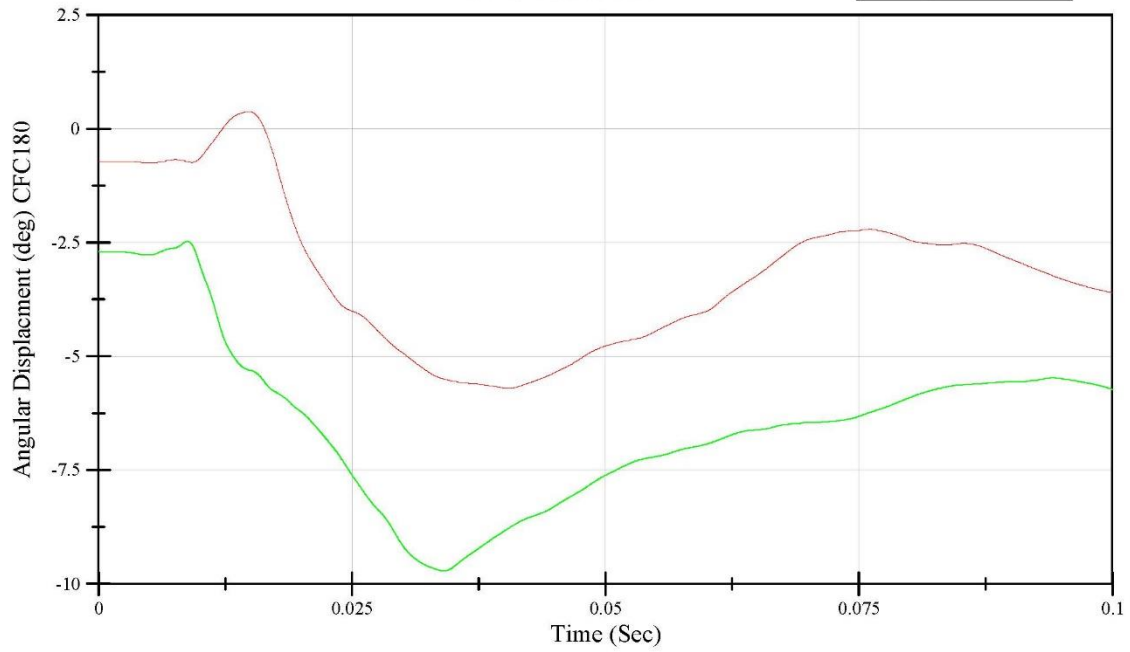
Software Version: 2.4

File Name: T015OBRI150710-01_pro
07/10/2015 12:55:35.0000

Test Temperature: 70.3 degrees
Relative Humidity: 51%
Test Velocity: 4.27 m/s

THOR Lower Right Oblique Thorax Certification
Y-Potentiometer
Serial Number: T015

Left Lower
Right Lower



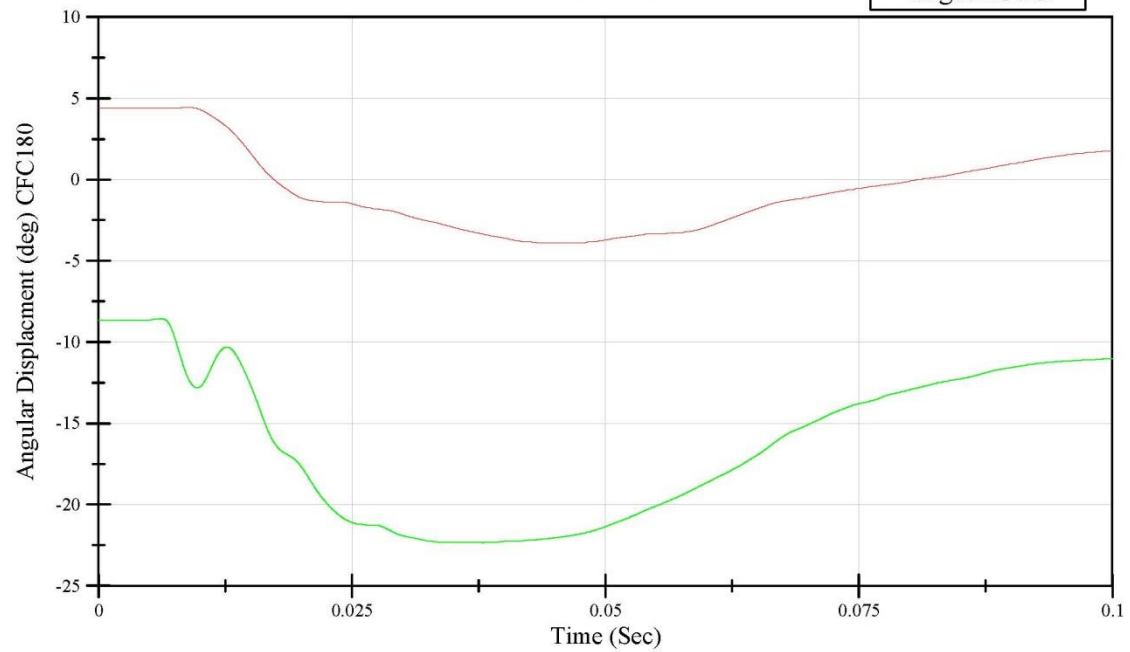
Software Version: 2.4

File Name: T015OBRI150710-01_pro
07/10/2015 12:55:35.0000

Test Temperature: 70.3 degrees
Relative Humidity: 51%
Test Velocity: 4.27 m/s

THOR Lower Right Oblique Thorax Certification
Z-Potentiometer
Serial Number: T015

Left Lower
Right Lower

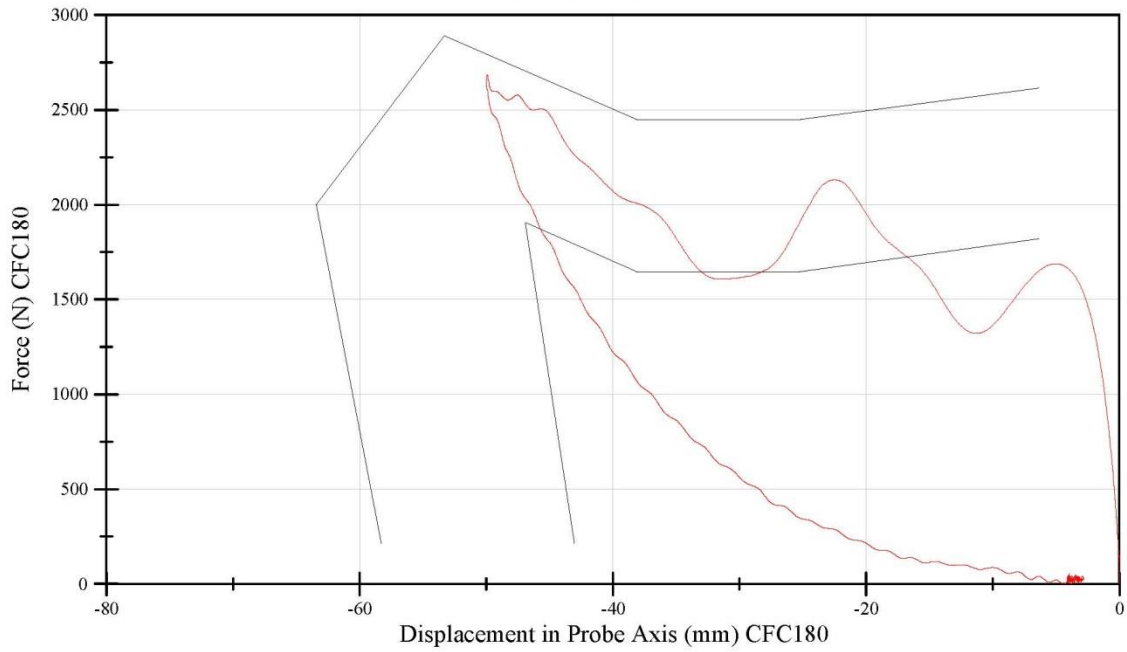


Software Version: 2.4

File Name: T015OBRI150710-01_pro
07/10/2015 12:55:35.0000

Test Temperature: 70.4 degrees
Relative Humidity: 53%
Test Velocity: 4.26 m/s

THOR Upper Thorax Certification
Thorax Response With Kroell Corridor
Serial Number: T015



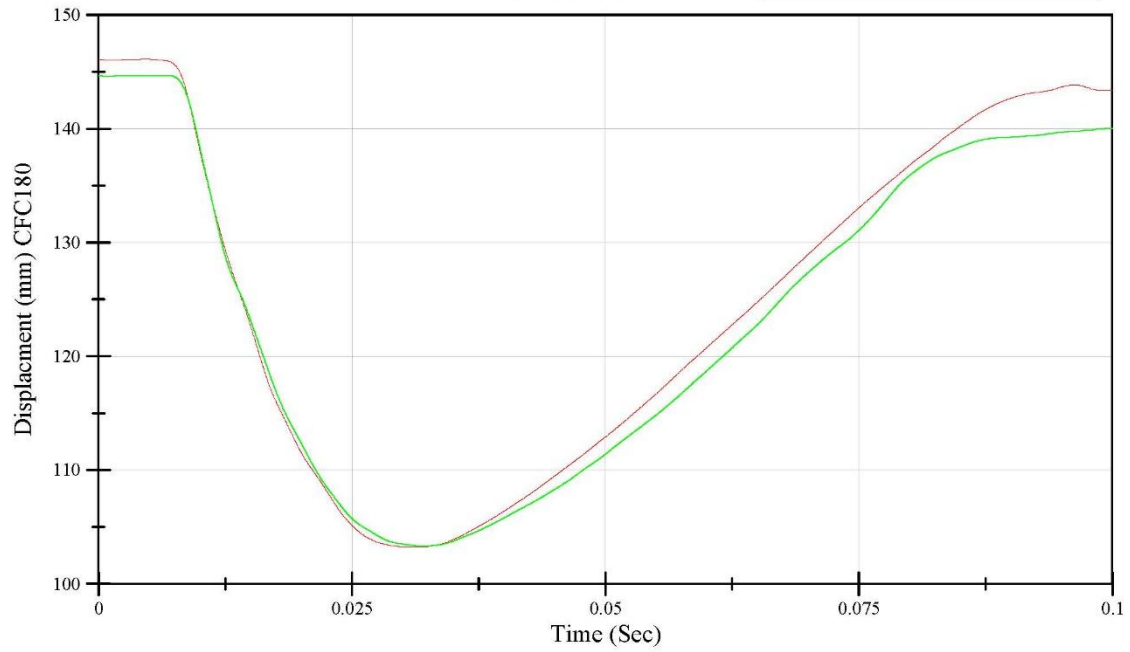
Software Version: 2.4

File Name: T015THUP150710-02_pro.tdms
07/10/2015 09:24:33.0000

Test Temperature: 70.4 degrees
Relative Humidity: 53%
Test Velocity: 4.26 m/s

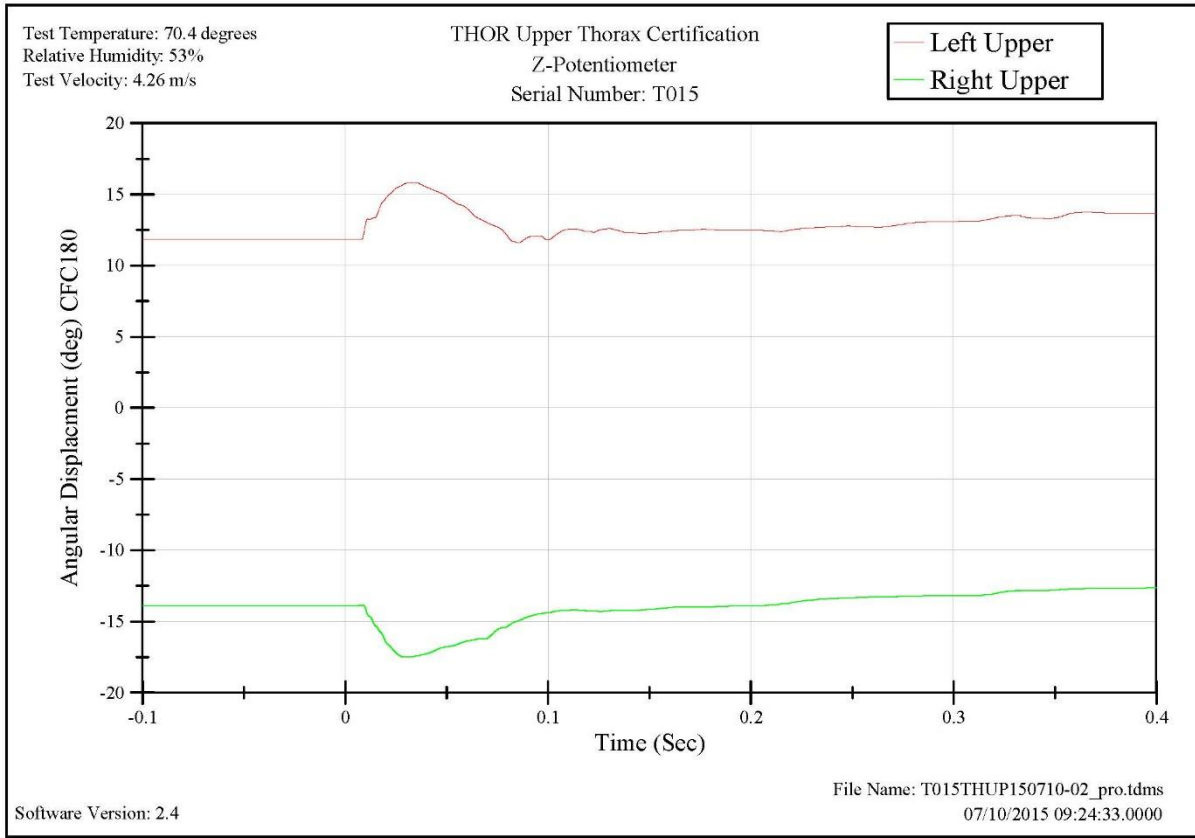
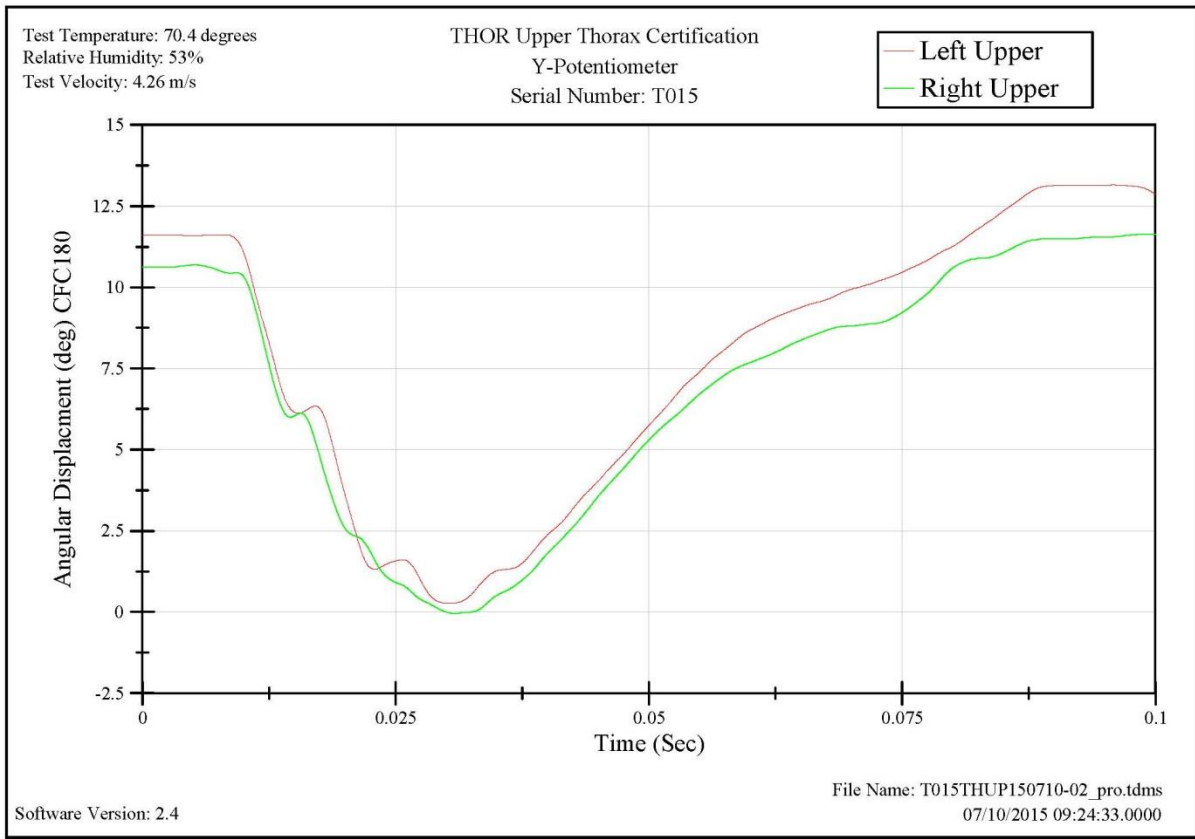
THOR Upper Thorax Certification
Scaled IR-TRACC
Serial Number: T015

— Left Upper IR-TRACC
— Right Upper IR-TRACC



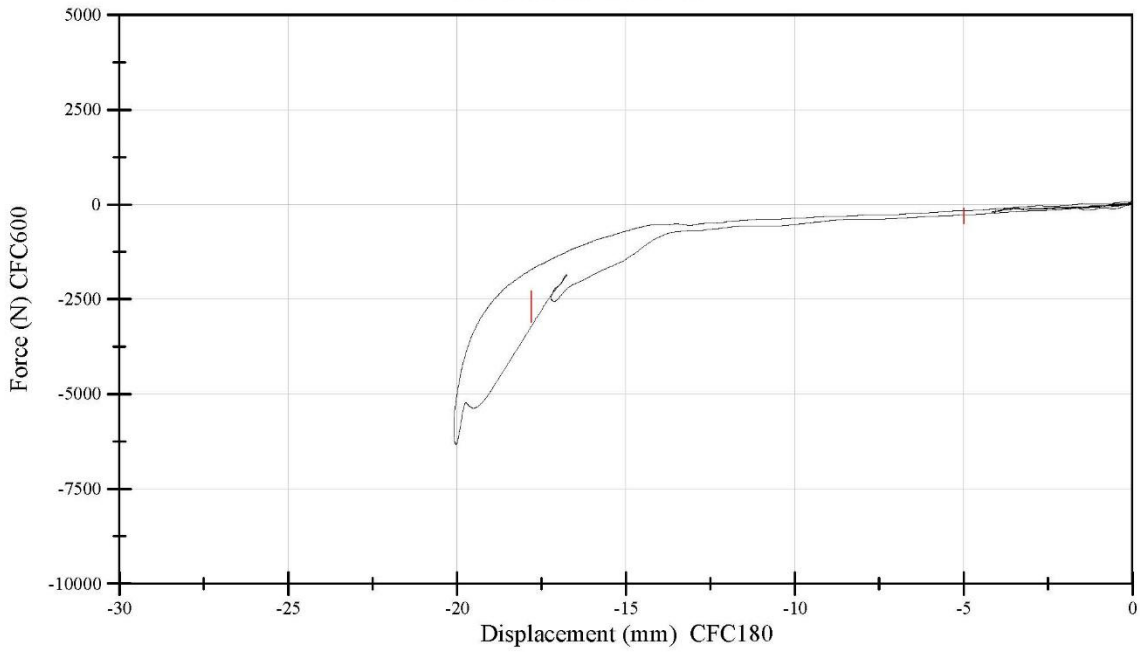
Software Version: 2.4

File Name: T015THUP150710-02_pro.tdms
07/10/2015 09:24:33.0000



Test Temperature: 71.4 degrees
Relative Humidity: 48%
Test Velocity: 2.77 m/s

THOR Right Knee Certification
Femur Force vs. Knee Displacement
Serial Number: D2103657B

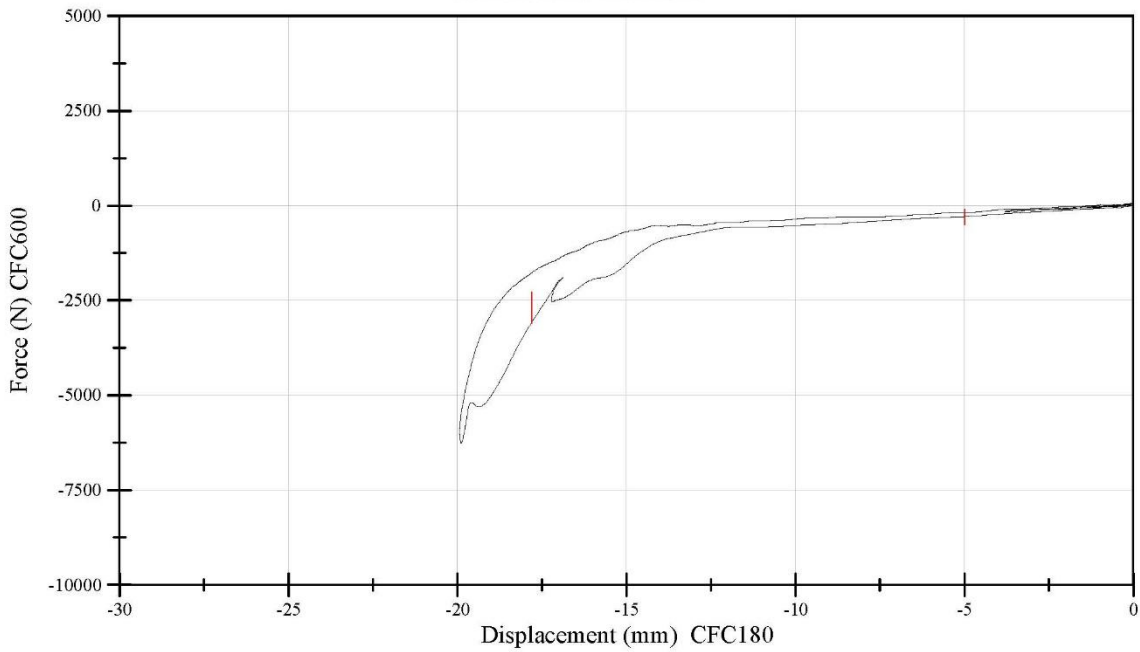


Software Version: 2.4

File Name: D2103657BKnee150407-01
01/01/0000 00:00:00.0000

Test Temperature: 70.2 degrees
Relative Humidity: 49%
Test Velocity: 2.77 m/s

THOR Left Knee Certification
Femur Force vs. Knee Displacement
Serial Number: D2103665B



Software Version: 2.4

File Name: D2103665BKnee150407-01processed
04/07/2015 13:14:07.0000

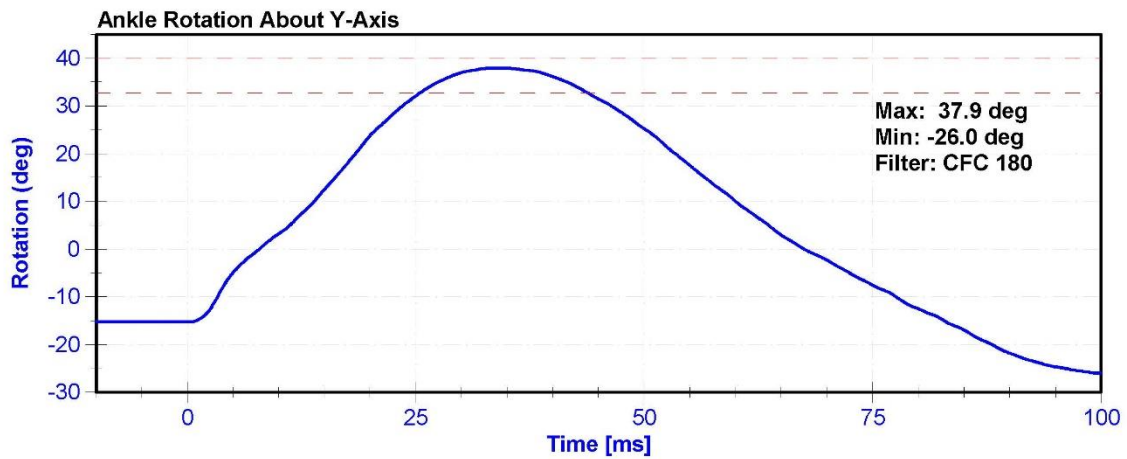
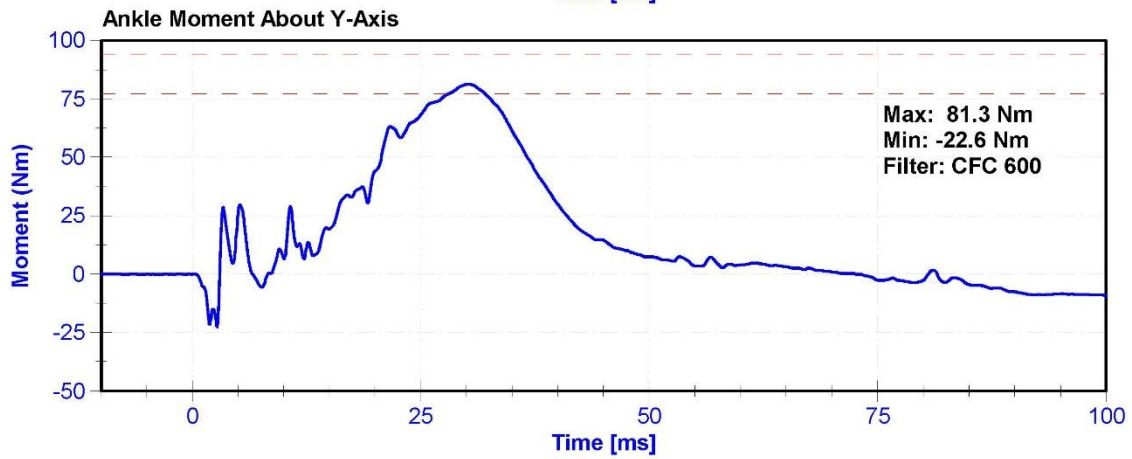
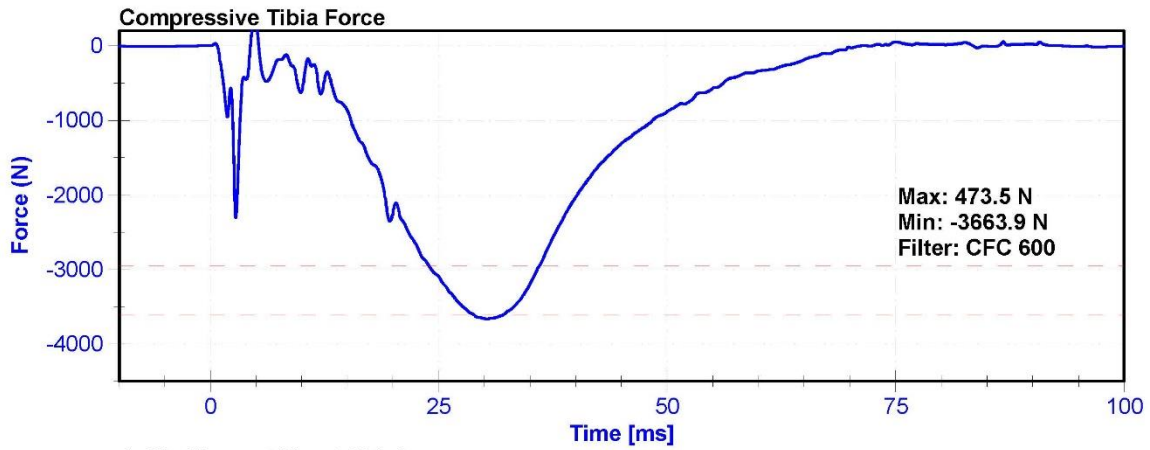
ATD Manufacturer	Humanetics	Test Technician	M.Hartung
ATD Serial Number	0015	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.6	Pass
Humidity	10	70	%	37.9	Pass
Velocity	4.9	5.1	m/s	4.948	Pass
Lower Tibia Compressive Force	-3,613	-2,956	N	-3663.9	Fail
Peak Moment about Y-Axis	77.1	94.2	Nm	81.32	Pass
Peak Rotation about Y-Axis	32.7	39.9	deg	37.91	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-77 Fz	2/20/2015	2/20/2016
Ankle Y Potentiometer	Contelec PD210-4B	DS-0383	2/27/2015	2/27/2016



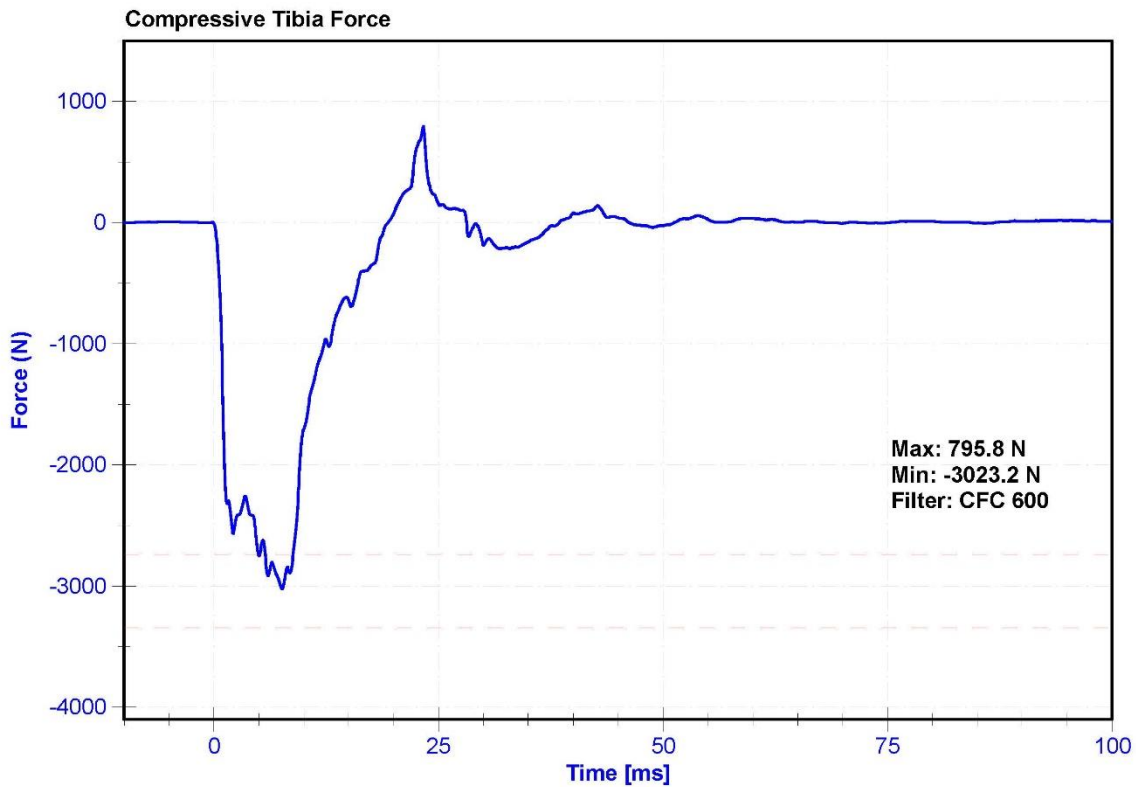
ATD Manufacturer	Humanetics	Test Technician	M.Hartung
ATD Serial Number	0015	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.7	Pass
Humidity	10	70	%	37.4	Pass
Velocity	3.9	4.1	m/s	4.011	Pass
Lower Tibia Compressive Force	-3,346	-2,738	N	-3023.2	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-77 Fz	2/20/2015	2/20/2016



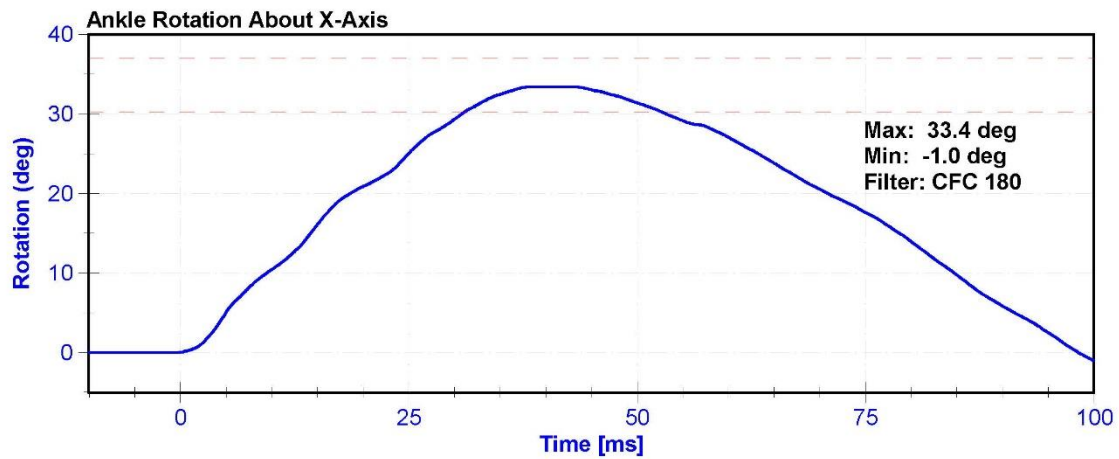
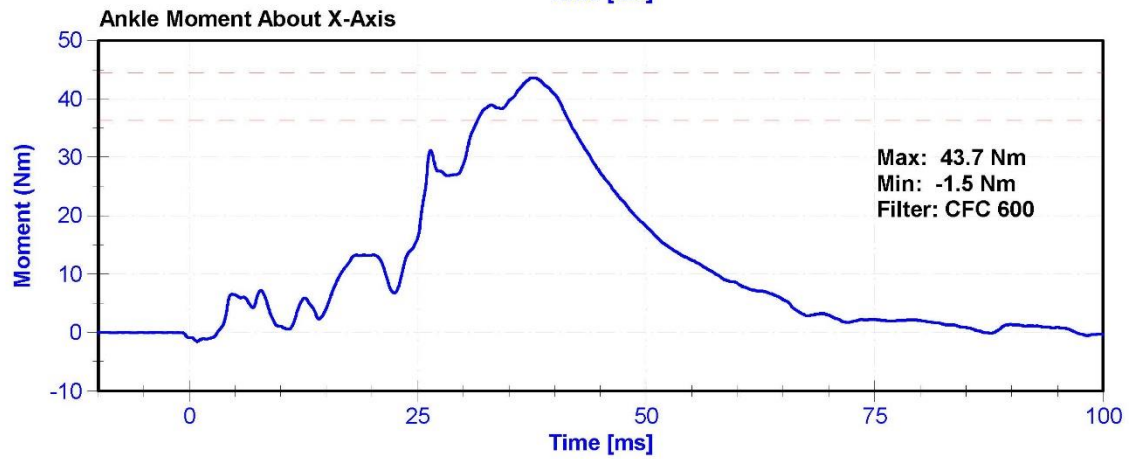
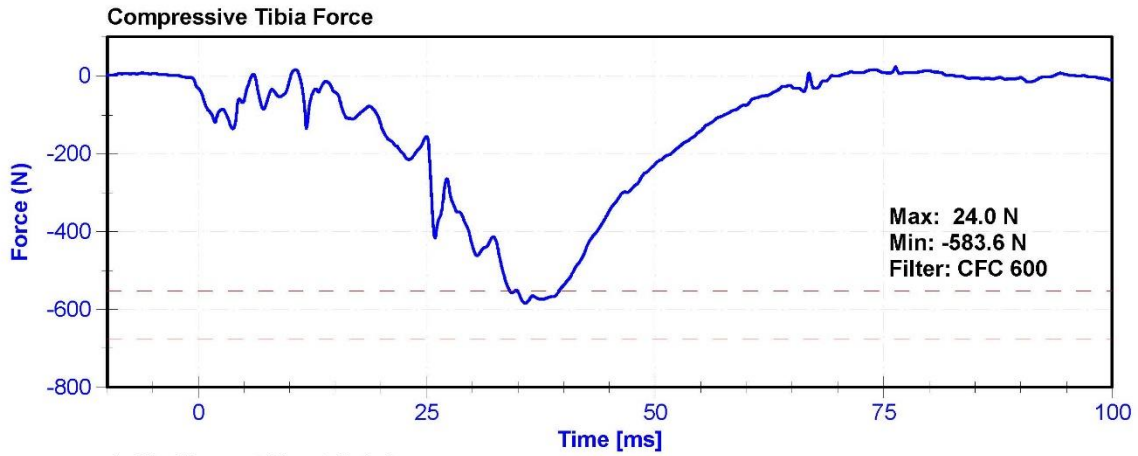
ATD Manufacturer	Humanetics	Test Technician	M.Hartung
ATD Serial Number	0015	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.7	Pass
Humidity	10	70	%	37.0	Pass
Velocity	1.9	2.1	m/s	1.944	Pass
Lower Tibia Compressive Force	-675	-552	N	-583.6	Pass
Peak Moment about X-Axis	36.3	44.4	Nm	43.66	Pass
Peak Rotation about X-Axis	30.3	37.0	deg	33.42	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-77 Fz	2/20/2015	2/20/2016
Ankle Y Potentiometer	Contelec PD210-4B	DS-0385	2/27/2015	2/27/2016



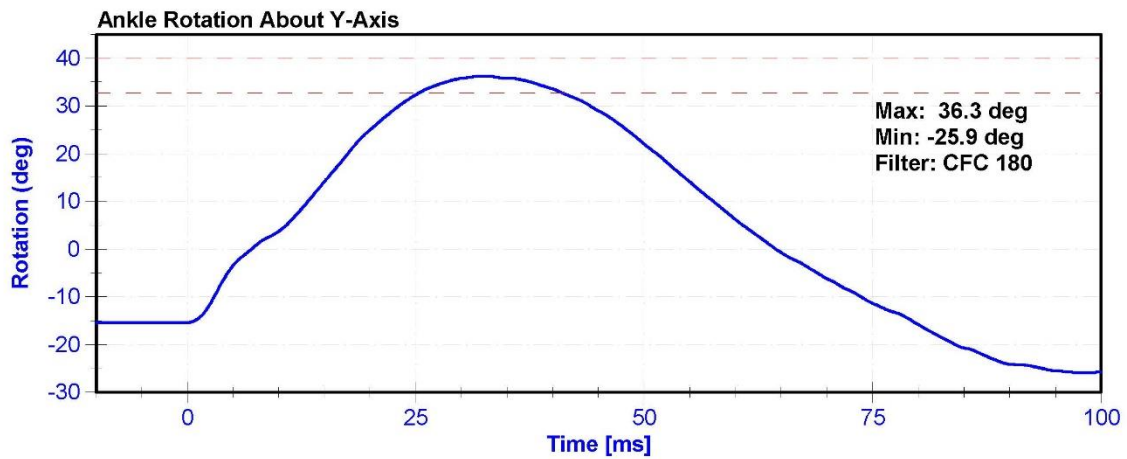
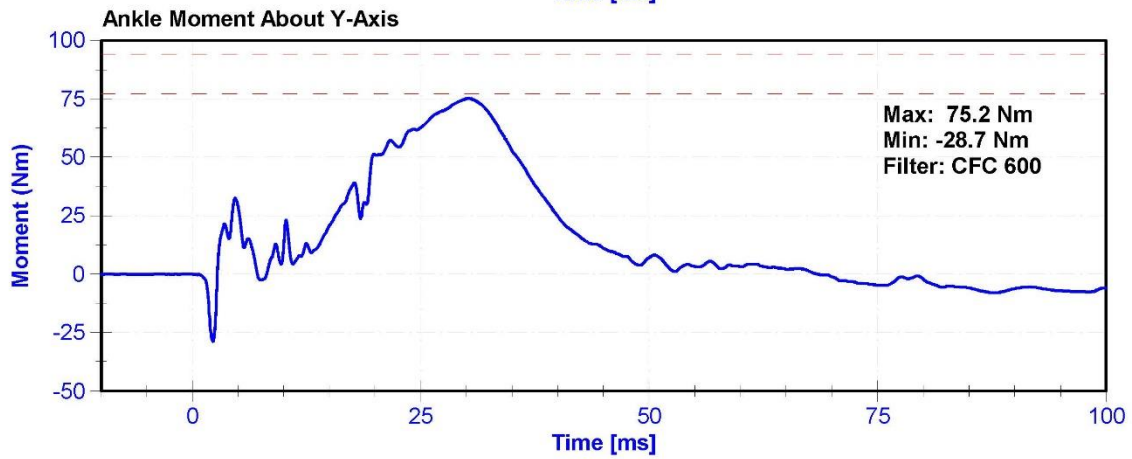
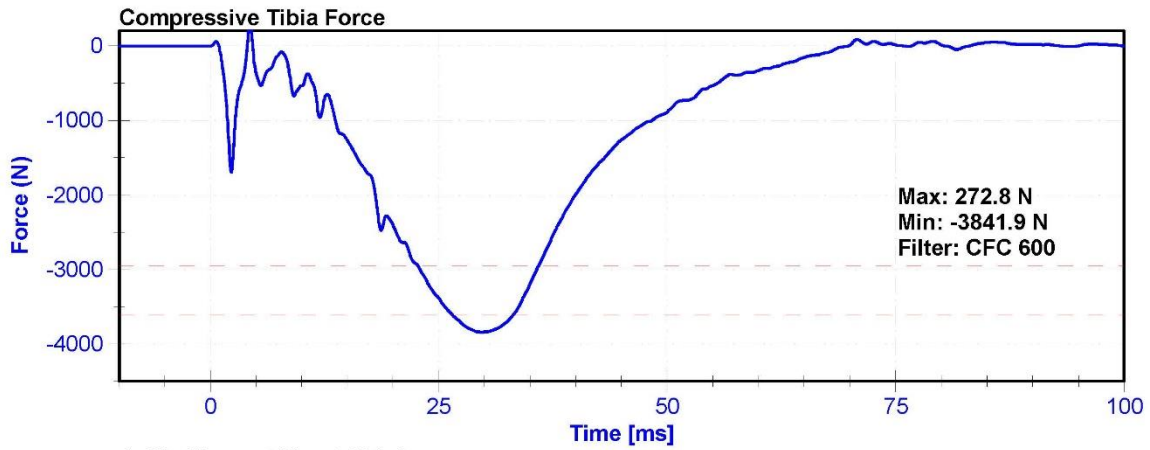
ATD Manufacturer	Humanetics	Test Technician	M.Hartung
ATD Serial Number	0015	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.4	Pass
Humidity	10	70	%	36.5	Pass
Velocity	4.9	5.1	m/s	4.948	Pass
Lower Tibia Compressive Force	-3,613	-2,956	N	-3841.9	Fail
Peak Moment about Y-Axis	77.1	94.2	Nm	75.19	Fail
Peak Rotation about Y-Axis	32.7	39.9	deg	36.31	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-78 Fz	2/20/2015	2/20/2016
Ankle Y Potentiometer	Contelec PD210-4B	DS-0386	3/2/2015	3/1/2016



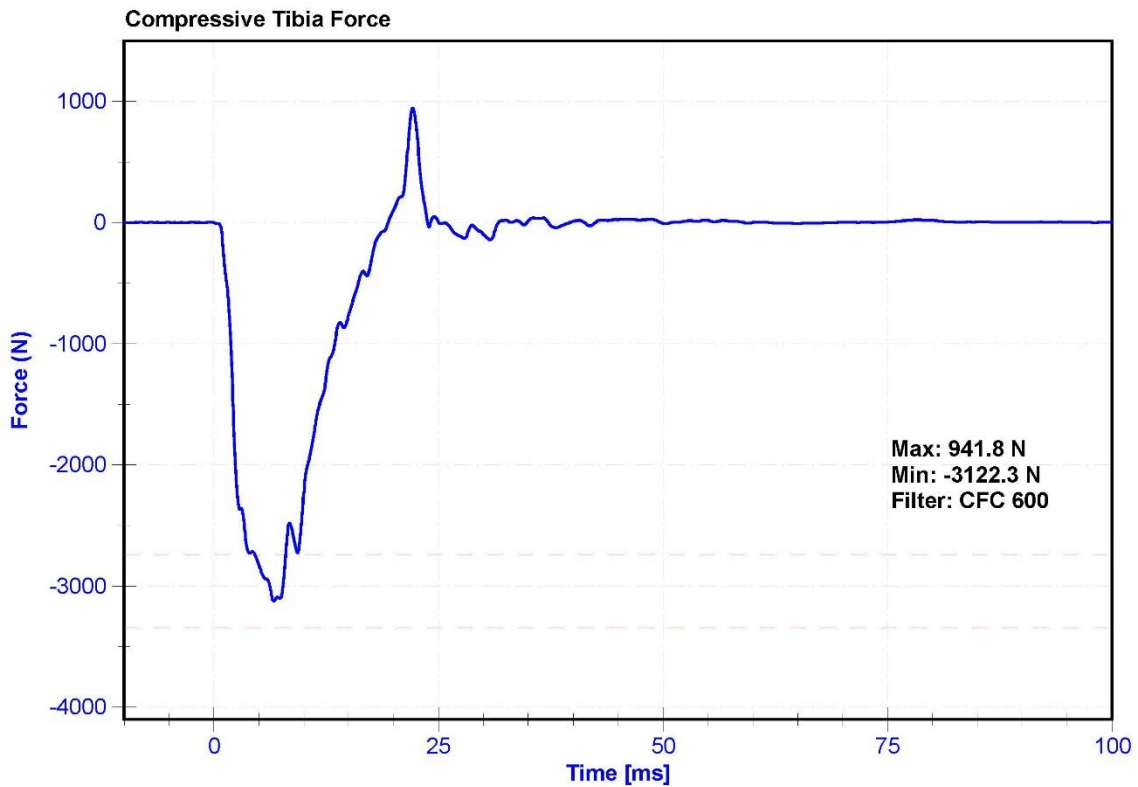
ATD Manufacturer	Humanetics	Test Technician	M.Hartung
ATD Serial Number	0015	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.8	Pass
Humidity	10	70	%	37.2	Pass
Velocity	3.9	4.1	m/s	4.032	Pass
Lower Tibia Compressive Force	-3,346	-2,738	N	-3122.3	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C15018	7/15/2015	7/14/2016
Lower Tibia Load Cell	Denton 4929J	LC-78 Fz	2/20/2015	2/20/2016



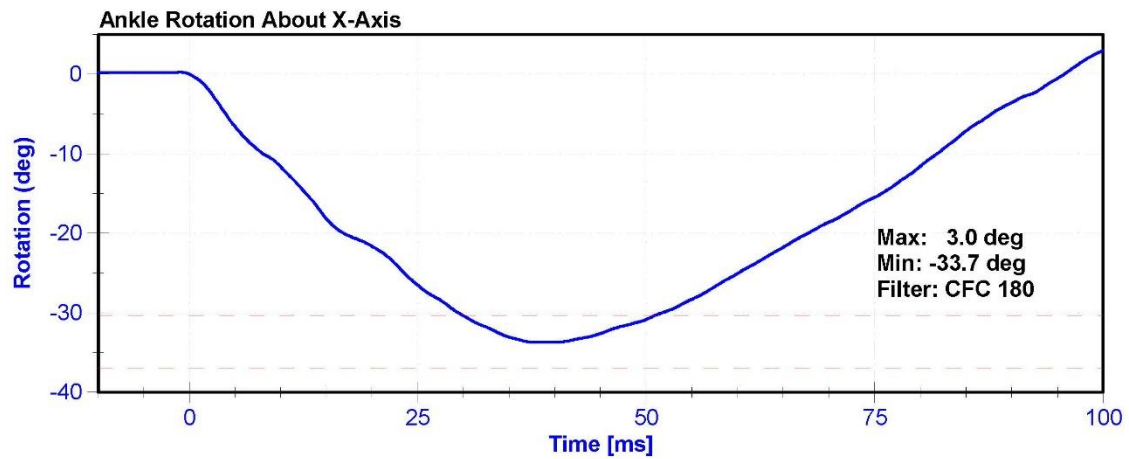
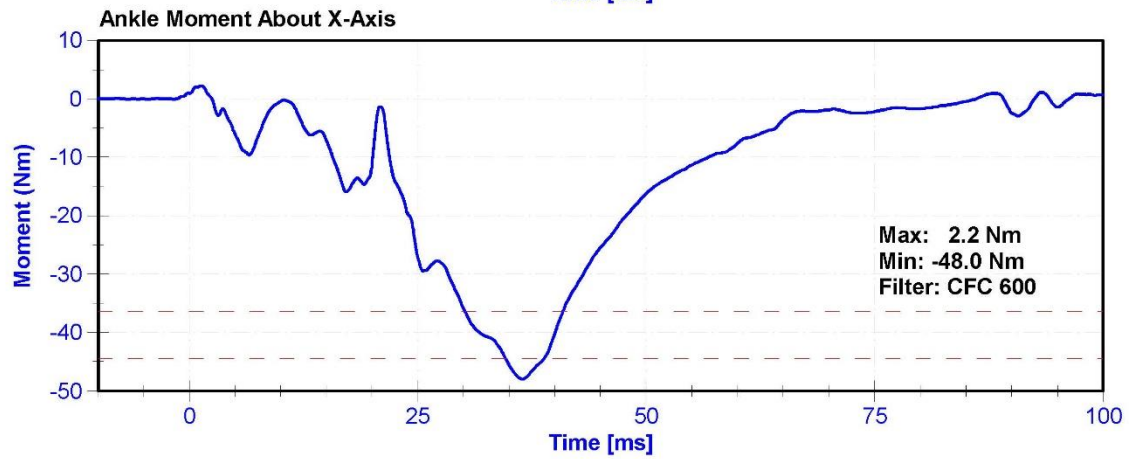
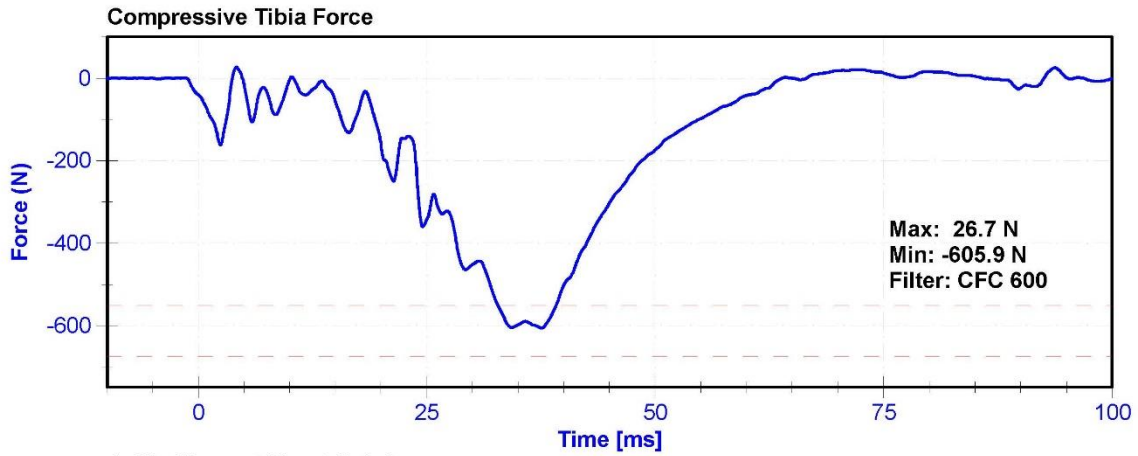
ATD Manufacturer	Humanetics	Test Technician	M.Hartung
ATD Serial Number	0015	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.5	Pass
Humidity	10	70	%	47.5	Pass
Velocity	1.9	2.1	m/s	1.979	Pass
Lower Tibia Compressive Force	-675	-552	N	-605.9	Pass
Peak Moment about X-Axis	-44.4	-36.3	Nm	-47.95	Fail
Peak Rotation about X-Axis	-37.0	-30.3	deg	-33.70	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-78 Fz	2/20/2015	2/20/2016
Ankle Y Potentiometer	Contelec PD210-4B	DS-0382	3/2/2015	3/1/2016



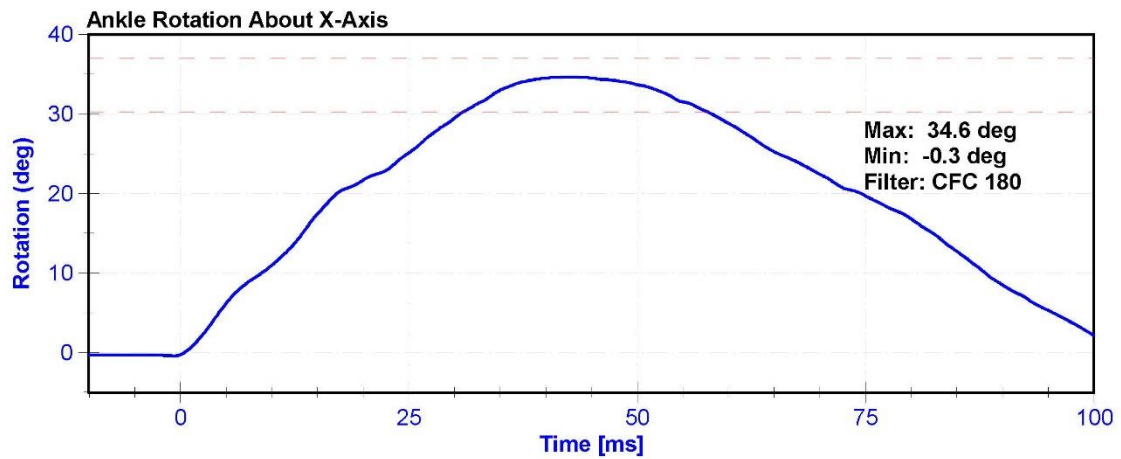
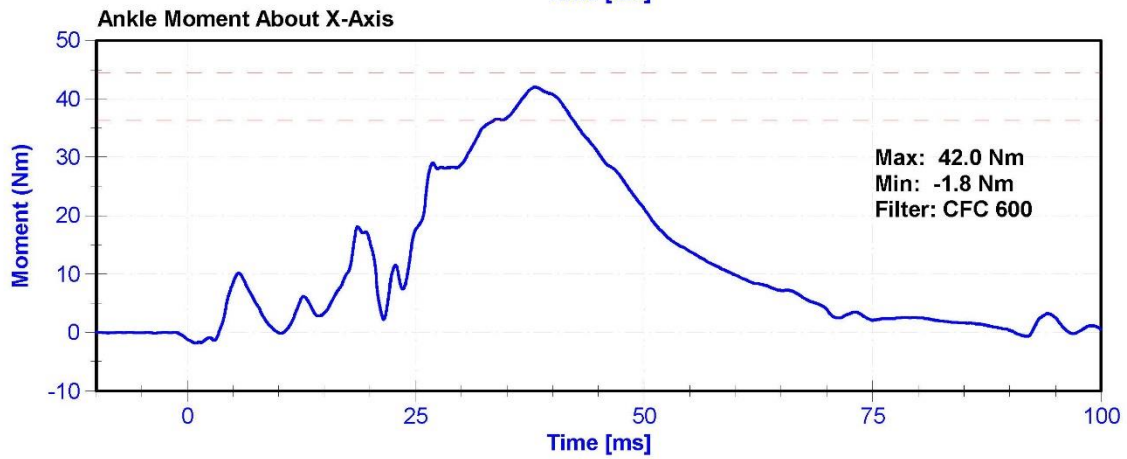
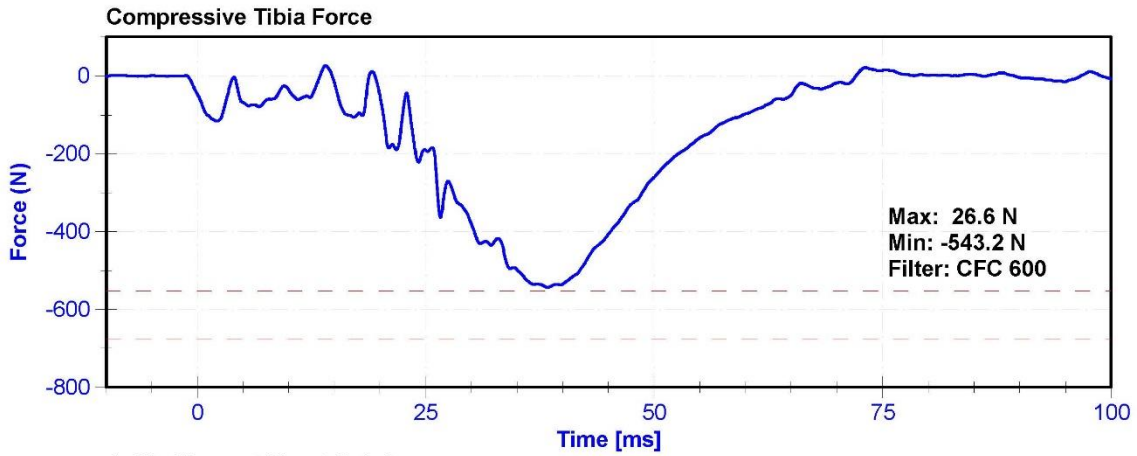
ATD Manufacturer	Humanetics	Test Technician	M.Hartung
ATD Serial Number	0015	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.4	Pass
Humidity	10	70	%	36.7	Pass
Velocity	1.9	2.1	m/s	1.939	Pass
Lower Tibia Compressive Force	-675	-552	N	-543.2	Fail
Peak Moment about X-Axis	36.3	44.4	Nm	42.02	Pass
Peak Rotation about X-Axis	30.3	37.0	deg	34.64	Pass

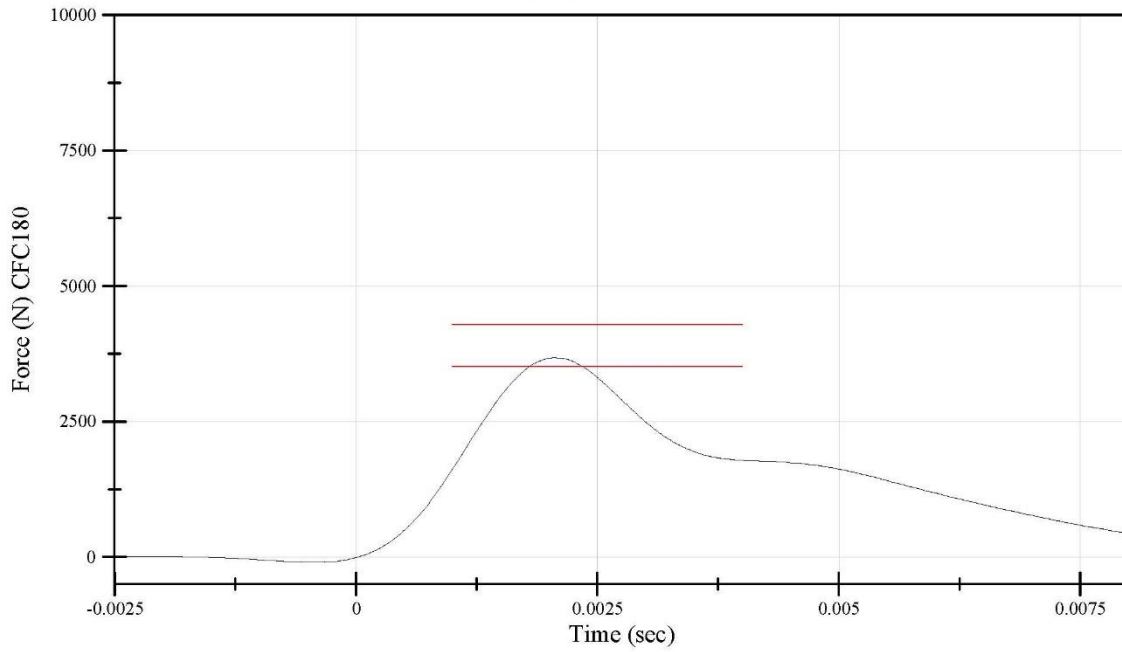
Transducer Calibrations

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-78 Fz	2/20/2015	2/20/2016
Ankle Y Potentiometer	Contelec PD210-4B	DS-0382	3/2/2015	3/1/2016



Test Temperature: 70 degrees
Relative Humidity: 52%
Test Velocity: 2.64 m/s

THOR Left Femur Certification
Probe Force
Serial Number: T015

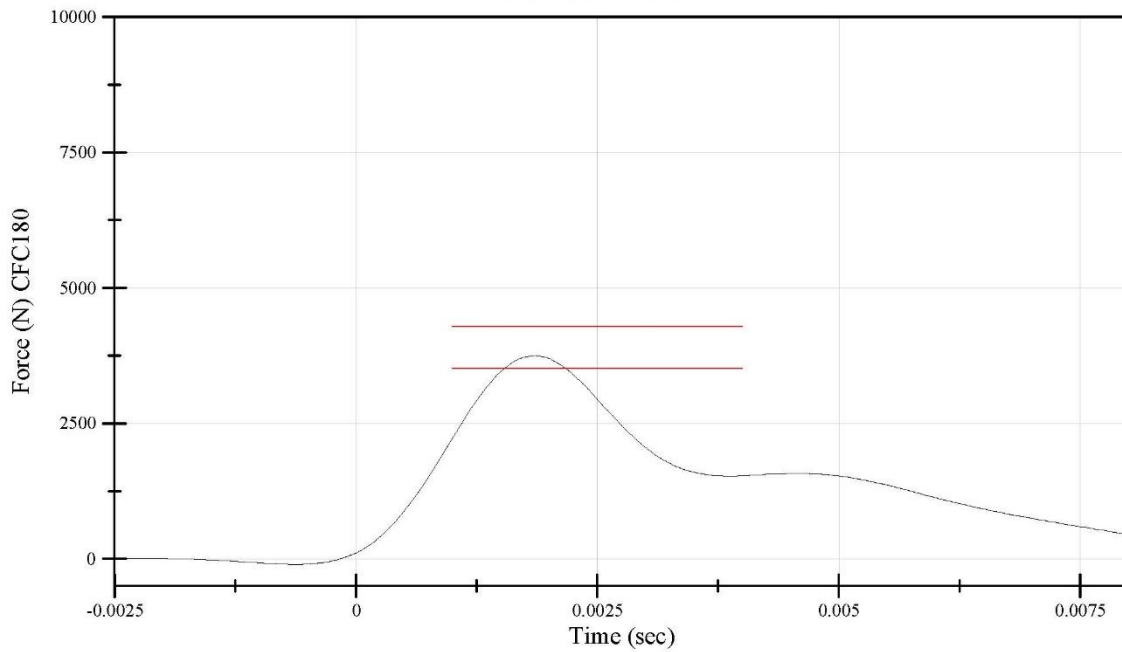


Software Version: 2.4

File Name: T015FELE150713-06_pro
07/13/2015 15:52:51.0000

Test Temperature: 69.9 degrees
Relative Humidity: 52%
Test Velocity: 2.64 m/s

THOR Right Femur Certification
Probe Force
Serial Number: T015

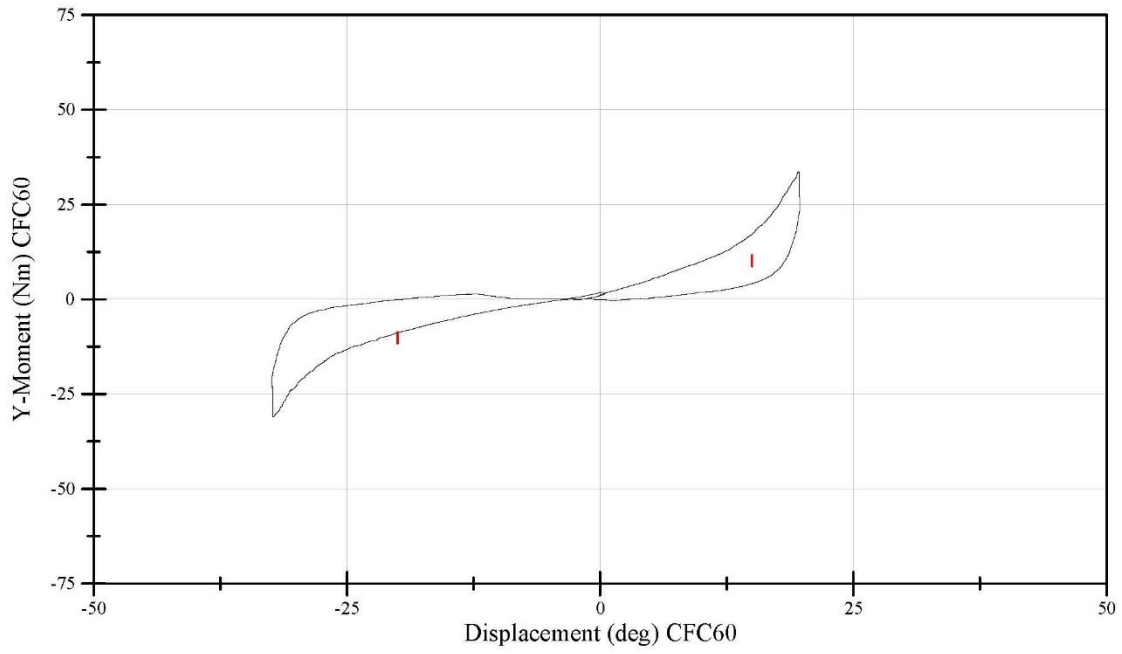


Software Version: 2.4

File Name: T015FERI150713-01_pro
07/13/2015 12:54:56.0000

Test Temperature: 69.6 degrees
Relative Humidity: 52%
Test Velocity: 0 m/s

THOR Occipital Condyle Quasi-Static Certification
Displacement vs. Torque
Serial Number: T015



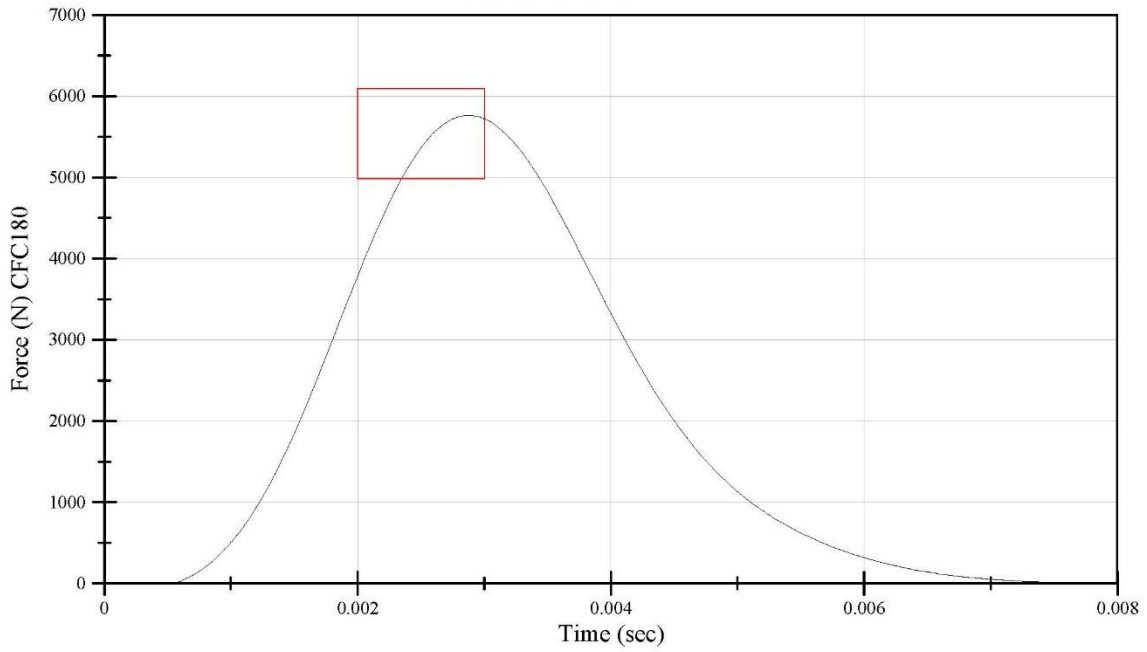
Software Version: 2.4

File Name: T015OCPot150701-03_pro
07/01/2015 13:24:58.0000

50% ADULT MALE THOR016 DUMMY CALIBRATIONS

Test Temperature: 69.8 degrees
Relative Humidity: 53%
Test Velocity: 1.98 m/s

THOR Head Impact Certification
Probe Force
Serial Number: T0016

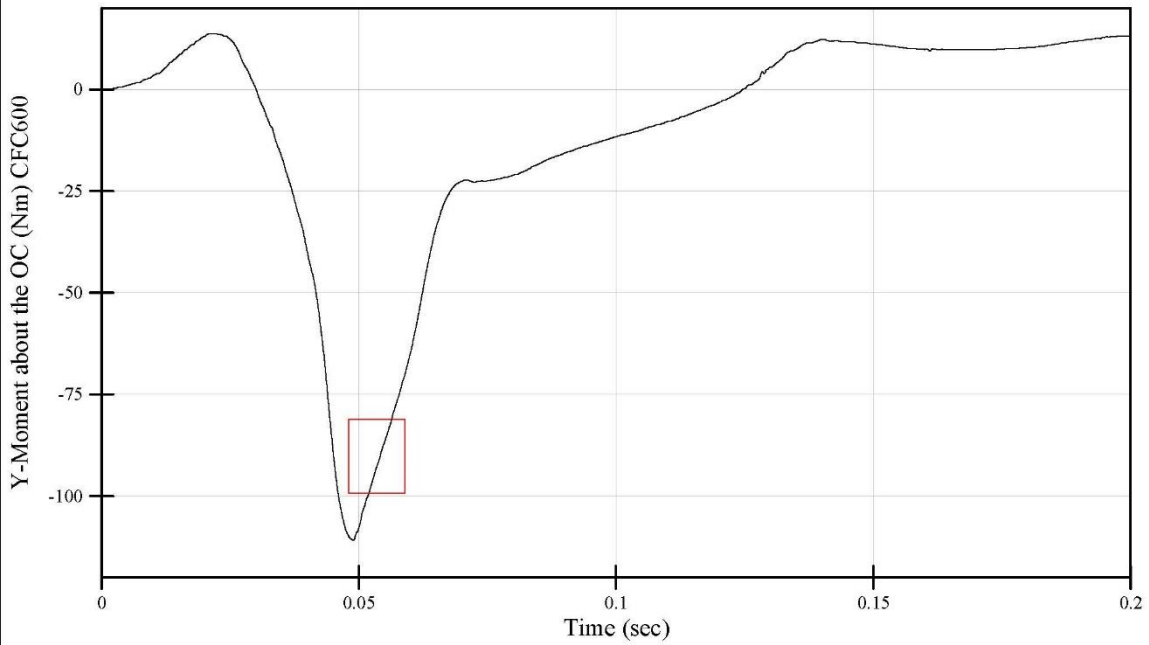


Software Version: 2.4

File Name: T0016HEAD150813-03_pro tdms
08/13/2015 12:52:18.0000

Test Temperature: 70.4 degrees
Relative Humidity: 53%
Test Velocity: 3.69 m/s

THOR Neck Extension Certification
Y-Moment
Serial Number: T0016

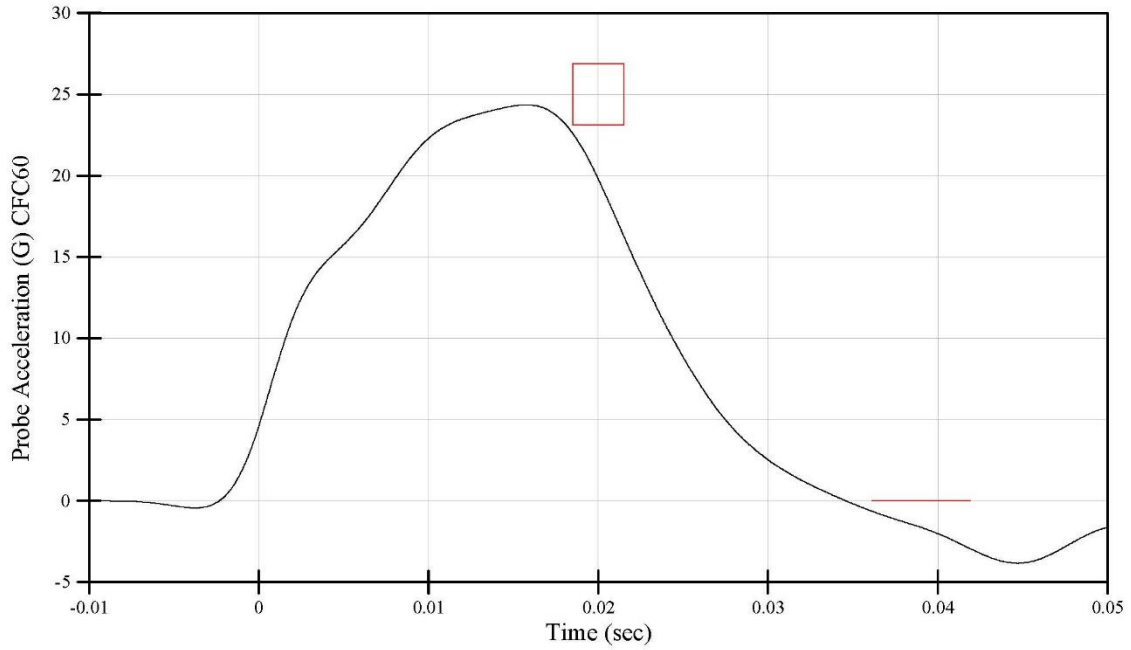


Software Version: 2.4

File Name: T0016NeckExtension150805-01_pro
08/05/2015 10:53:11.0000

Test Temperature: 70.4 degrees
Relative Humidity: 53%
Test Velocity: 3.69 m/s

THOR Neck Extension Certification
Probe Acceleration
Serial Number: T0016

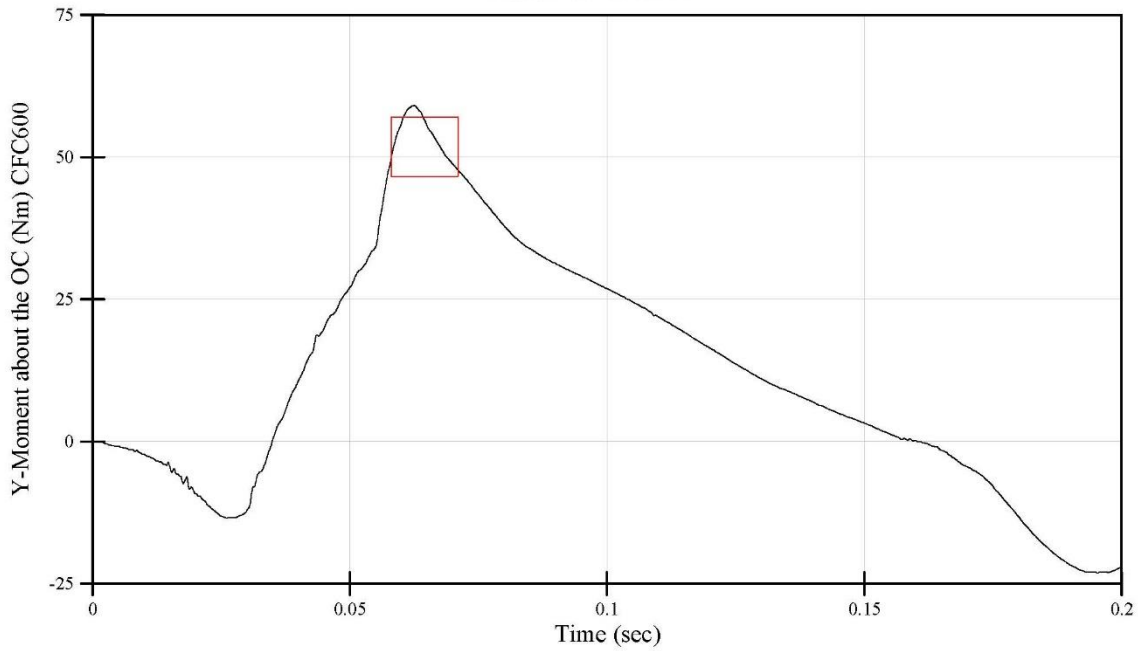


Software Version: 2.4

File Name: T0016NeckExtension150805-01_pro
08/05/2015 10:53:11.0000

Test Temperature: 70.6 degrees
Relative Humidity: 52%
Test Velocity: 3.78 m/s

THOR Neck Flexion Certification
Y-Moment
Serial Number: T0016

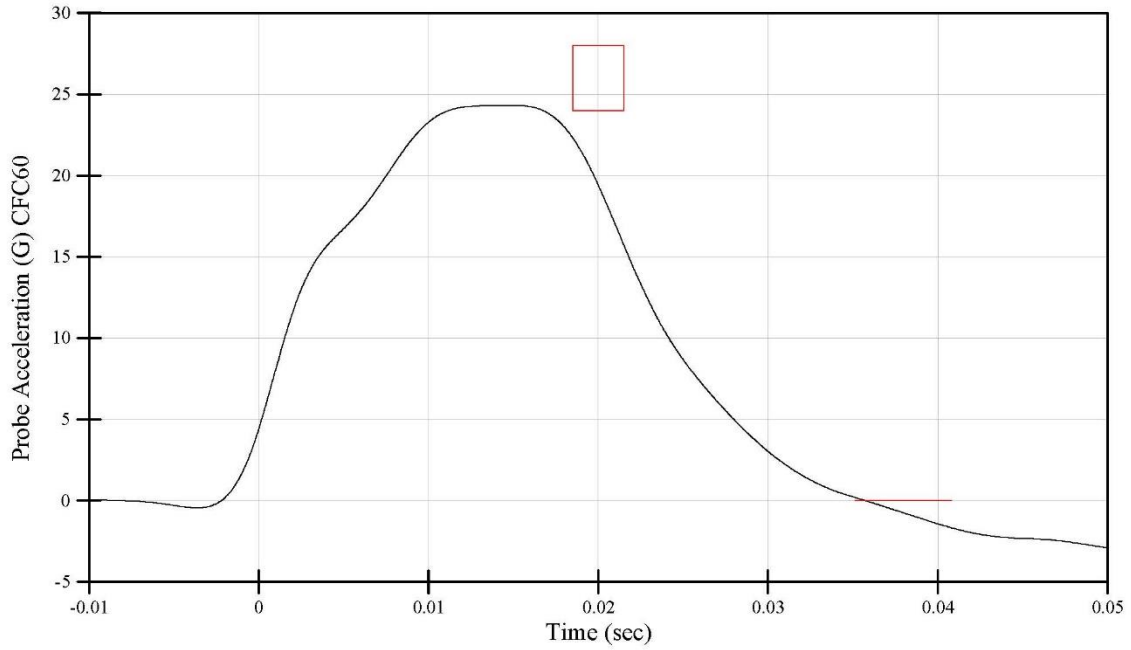


Software Version: 2.4

File Name: T0016NeckFlexion150805-01_pro
08/05/2015 10:24:56.0000

Test Temperature: 70.6 degrees
Relative Humidity: 52%
Test Velocity: 3.78 m/s

THOR Neck Flexion Certification
Probe Acceleration
Serial Number: T0016

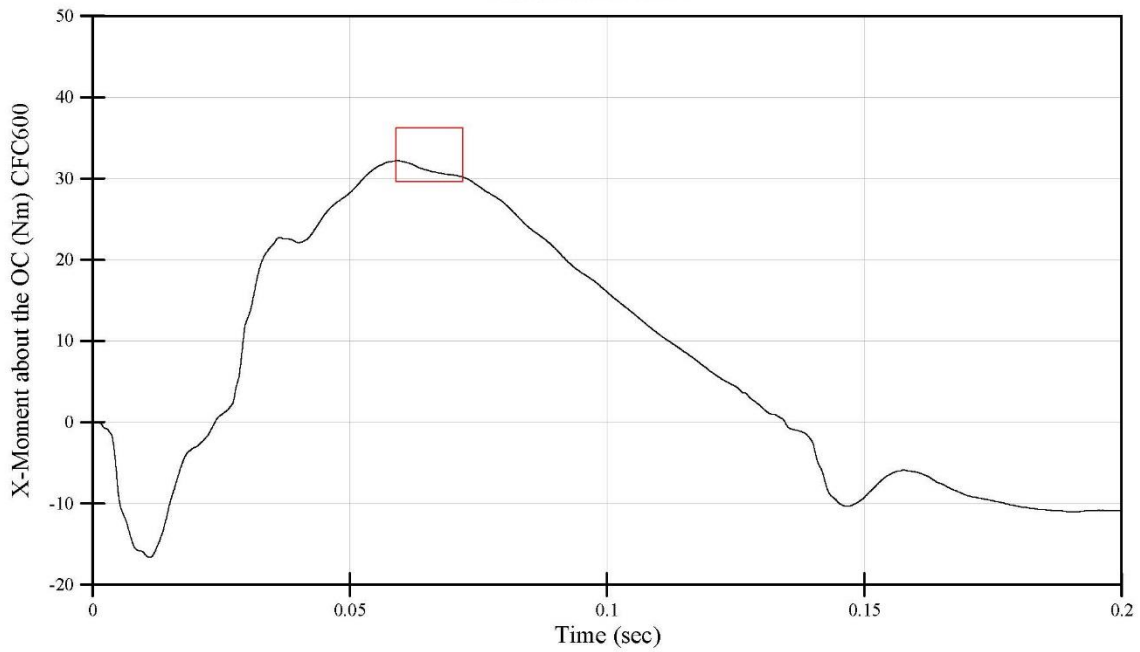


Software Version: 2.4

File Name: T0016NeckFlexion150805-01_pro
08/05/2015 10:24:56.0000

Test Temperature: 70.1 degrees
Relative Humidity: 51%
Test Velocity: 2.86 m/s

THOR Neck Left Lateral Flexion Certification
X-Moment
Serial Number: T0016

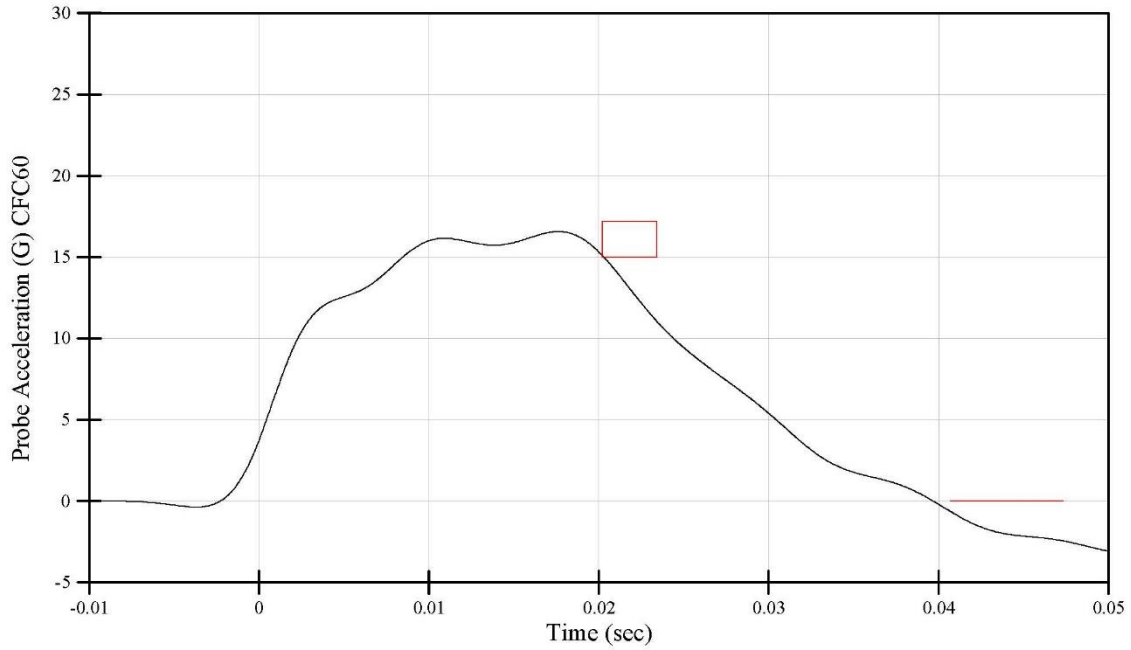


Software Version: 2.4

File Name: T0016NeckLeft150805-01_pro
08/05/2015 11:53:26.0000

Test Temperature: 70.1 degrees
Relative Humidity: 51%
Test Velocity: 2.86 m/s

THOR Neck Left Lateral Flexion Certification
Probe Acceleration
Serial Number: T0016

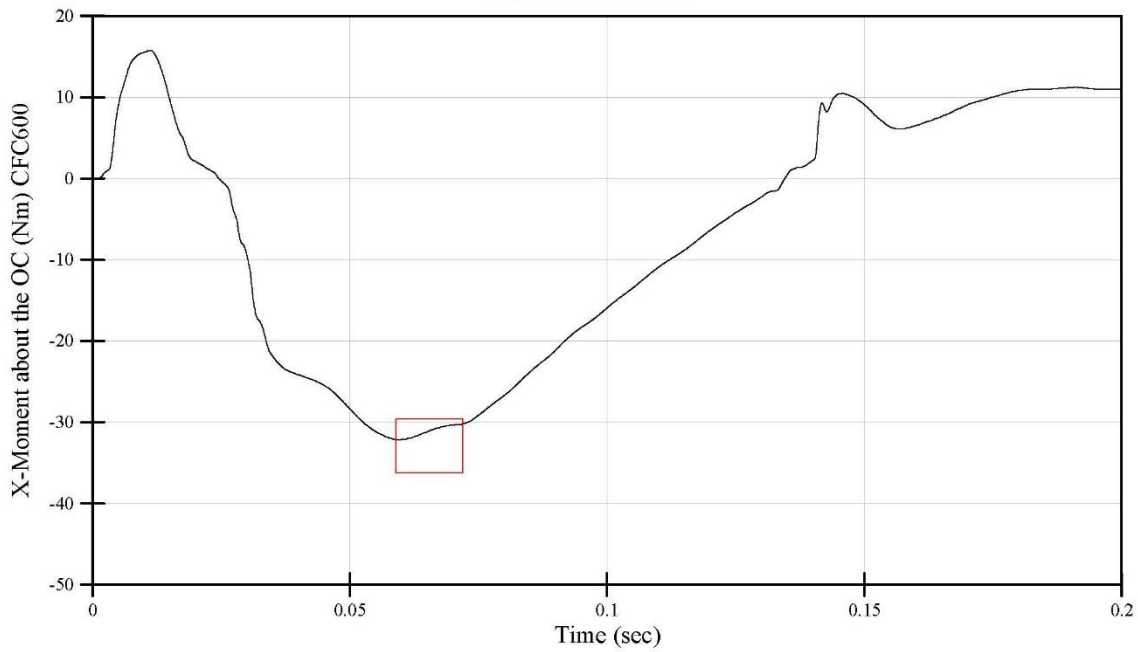


Software Version: 2.4

File Name: T0016NeckLeft150805-01_pro
08/05/2015 11:53:26.0000

Test Temperature: 70.2 degrees
Relative Humidity: 52%
Test Velocity: 2.87 m/s

THOR Neck Right Lateral Flexion Certification
X-Moment
Serial Number: T0016

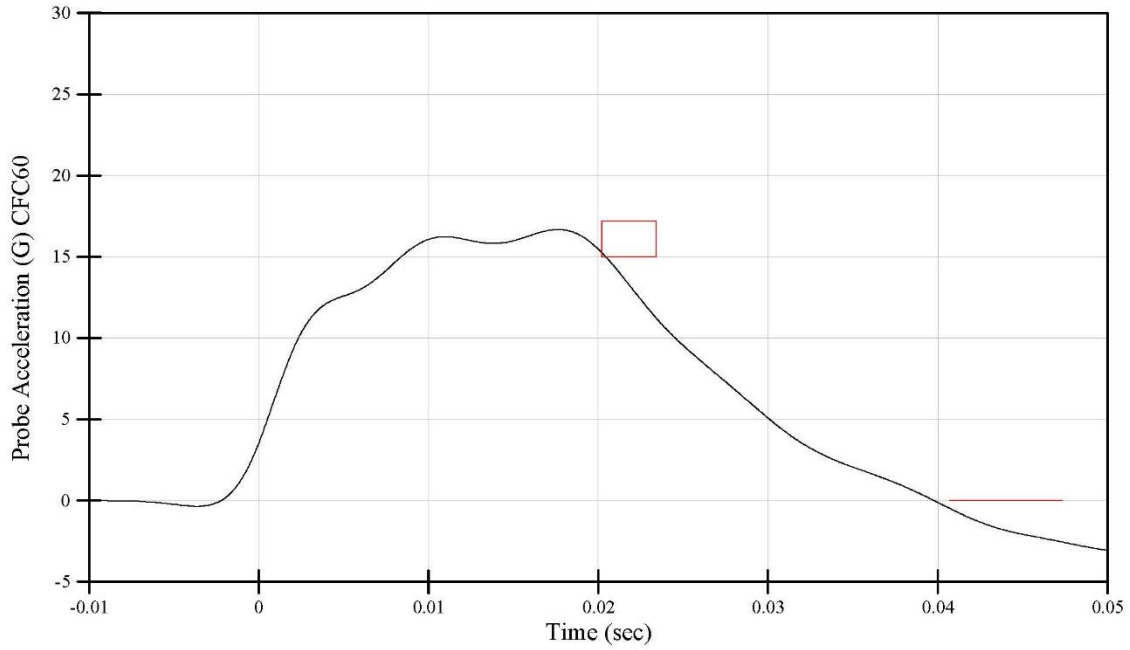


Software Version: 2.4

File Name: T0016NeckRight150805-01_pro
08/05/2015 11:24:43.0000

Test Temperature: 70.2 degrees
Relative Humidity: 52%
Test Velocity: 2.87 m/s

THOR Neck Right Lateral Flexion Certification
Probe Acceleration
Serial Number: T0016

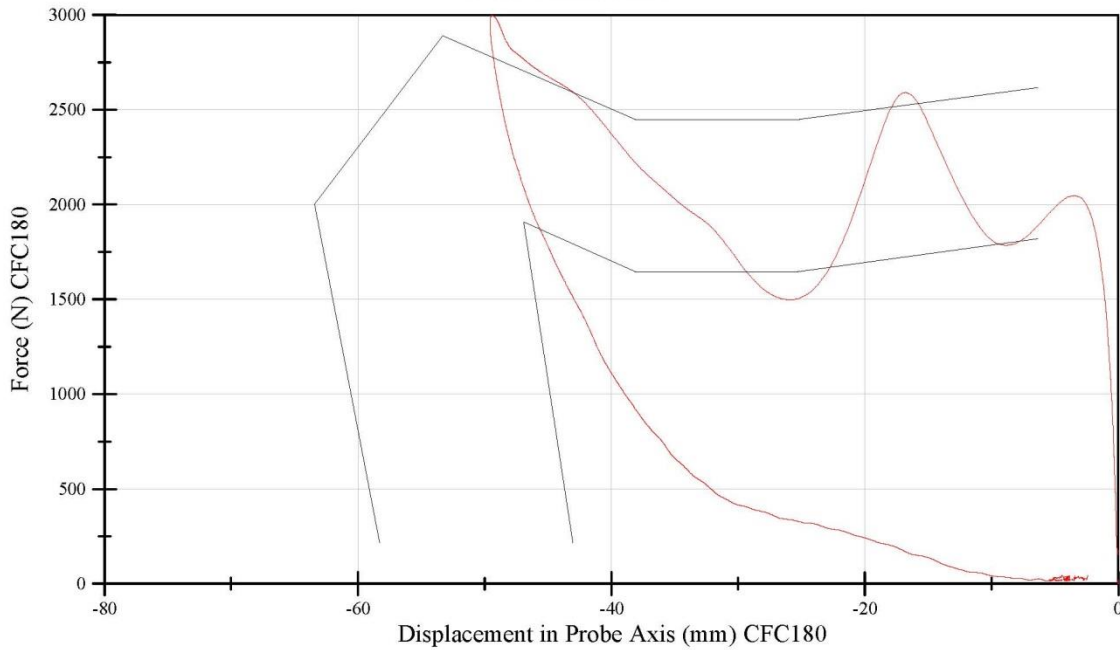


Software Version: 2.4

File Name: T0016NeckRight150805-01_pro
08/05/2015 11:24:43.0000

Test Temperature: 70.3 degrees
Relative Humidity: 52%
Test Velocity: 4.27 m/s

THOR Upper Thorax Certification
Thorax Response With Kroell Corridor
Serial Number: T0016



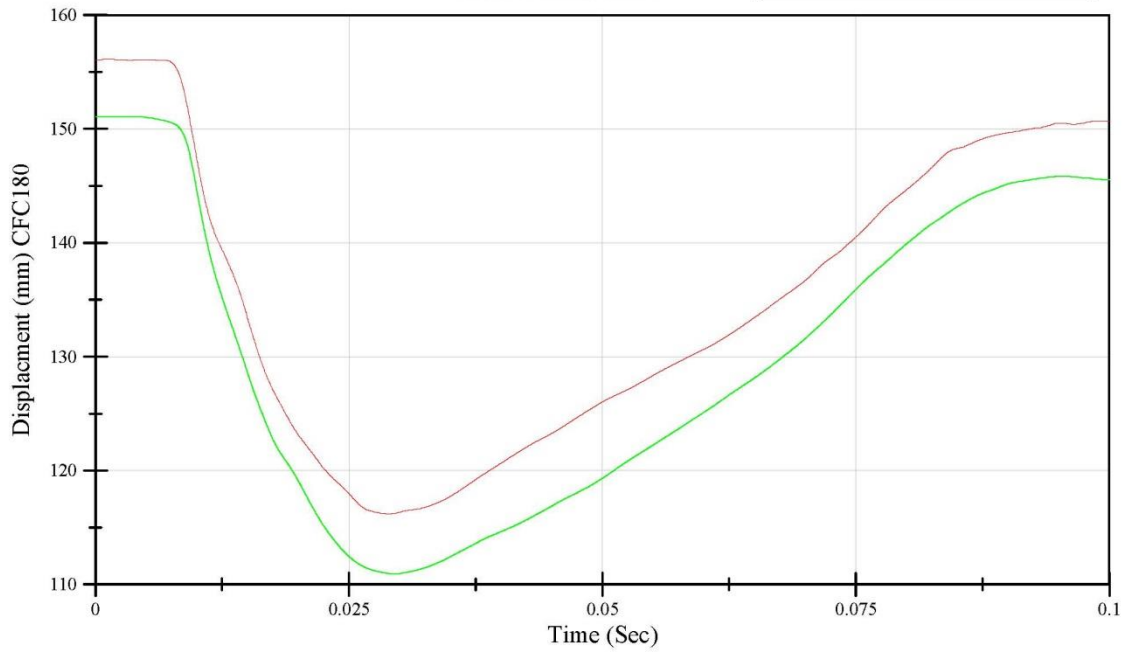
Software Version: 2.4

File Name: T0016ThoraxUpper150811-02_pro.tdms
08/11/2015 11:20:37.0000

Test Temperature: 70.3 degrees
Relative Humidity: 52%
Test Velocity: 4.27 m/s

THOR Upper Thorax Certification
Sealed IR-TRACC
Serial Number: T0016

Left Upper IR-TRACC
Right Upper IR-TRACC



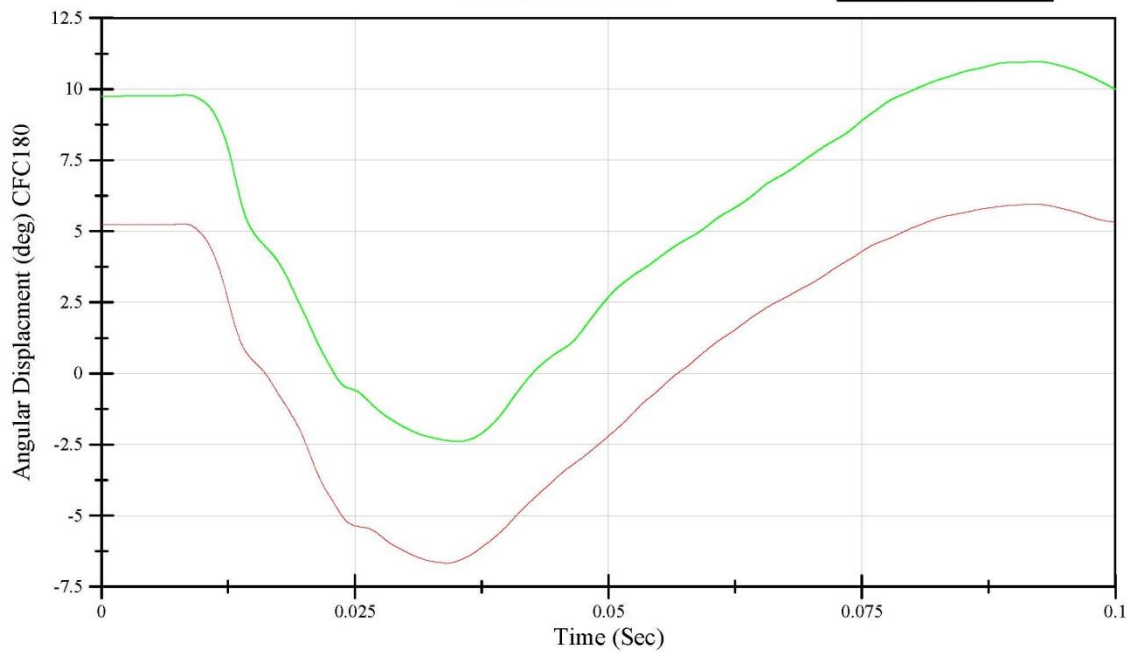
Software Version: 2.4

File Name: T0016ThoraxUpper150811-02_pro tdms
08/11/2015 11:20:37.0000

Test Temperature: 70.3 degrees
Relative Humidity: 52%
Test Velocity: 4.27 m/s

THOR Upper Thorax Certification
Y-Potentiometer
Serial Number: T0016

Left Upper
Right Upper



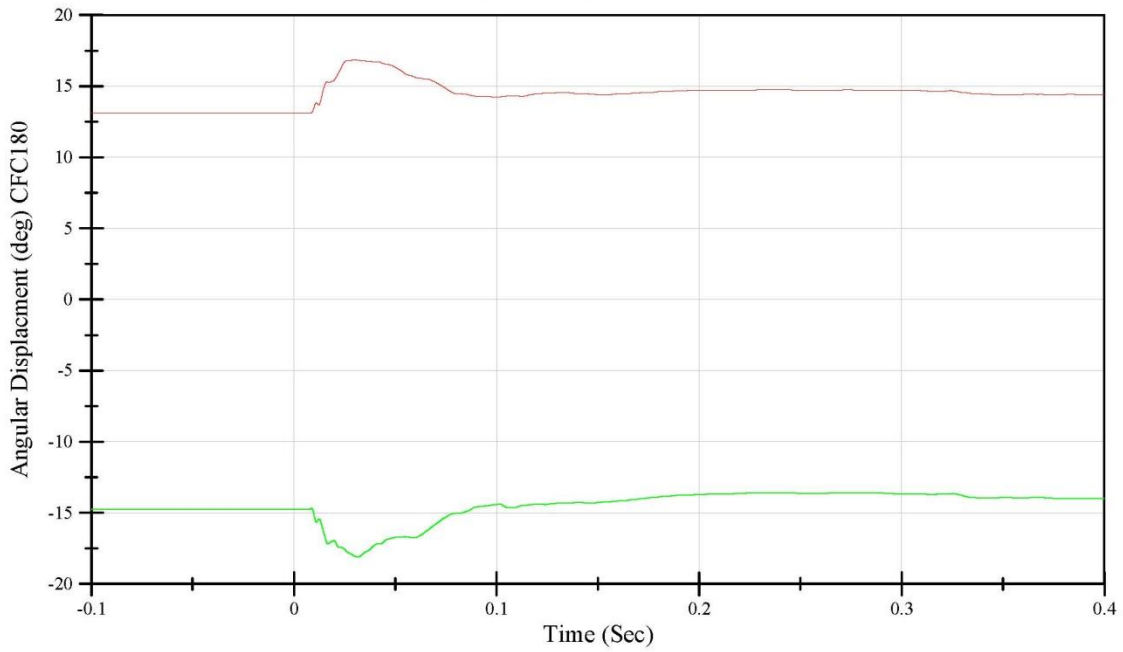
Software Version: 2.4

File Name: T0016ThoraxUpper150811-02_pro tdms
08/11/2015 11:20:37.0000

Test Temperature: 70.3 degrees
Relative Humidity: 52%
Test Velocity: 4.27 m/s

THOR Upper Thorax Certification
Z-Potentiometer
Serial Number: T0016

Left Upper
Right Upper

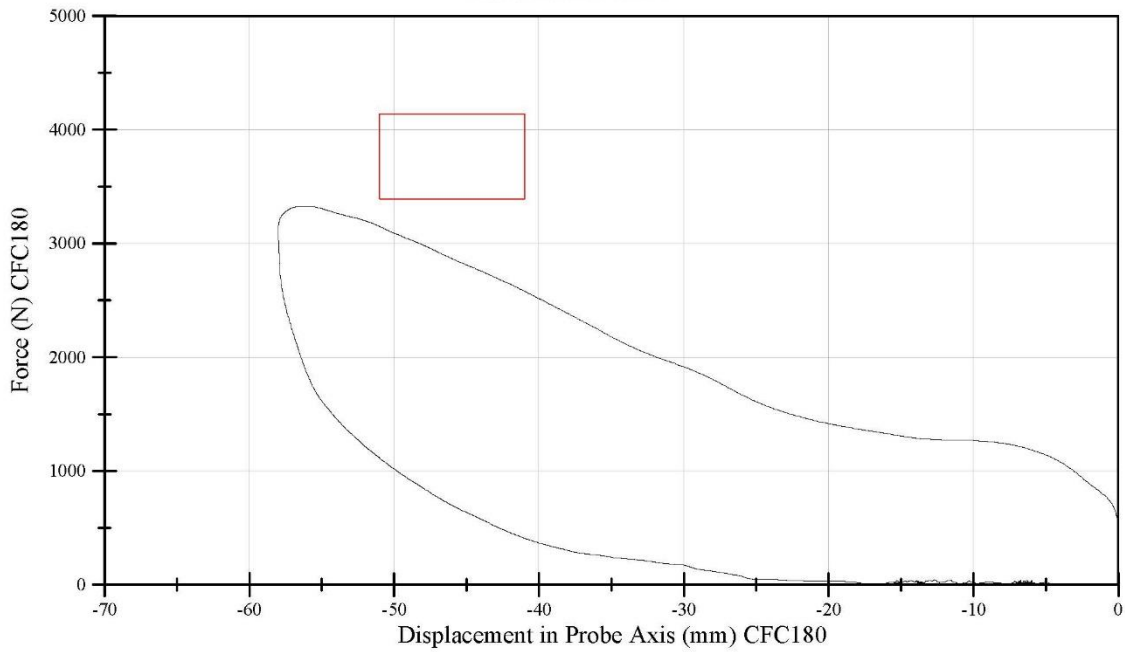


Software Version: 2.4

File Name: T0016ThoraxUpper150811-02_pro tdms
08/11/2015 11:20:37.0000

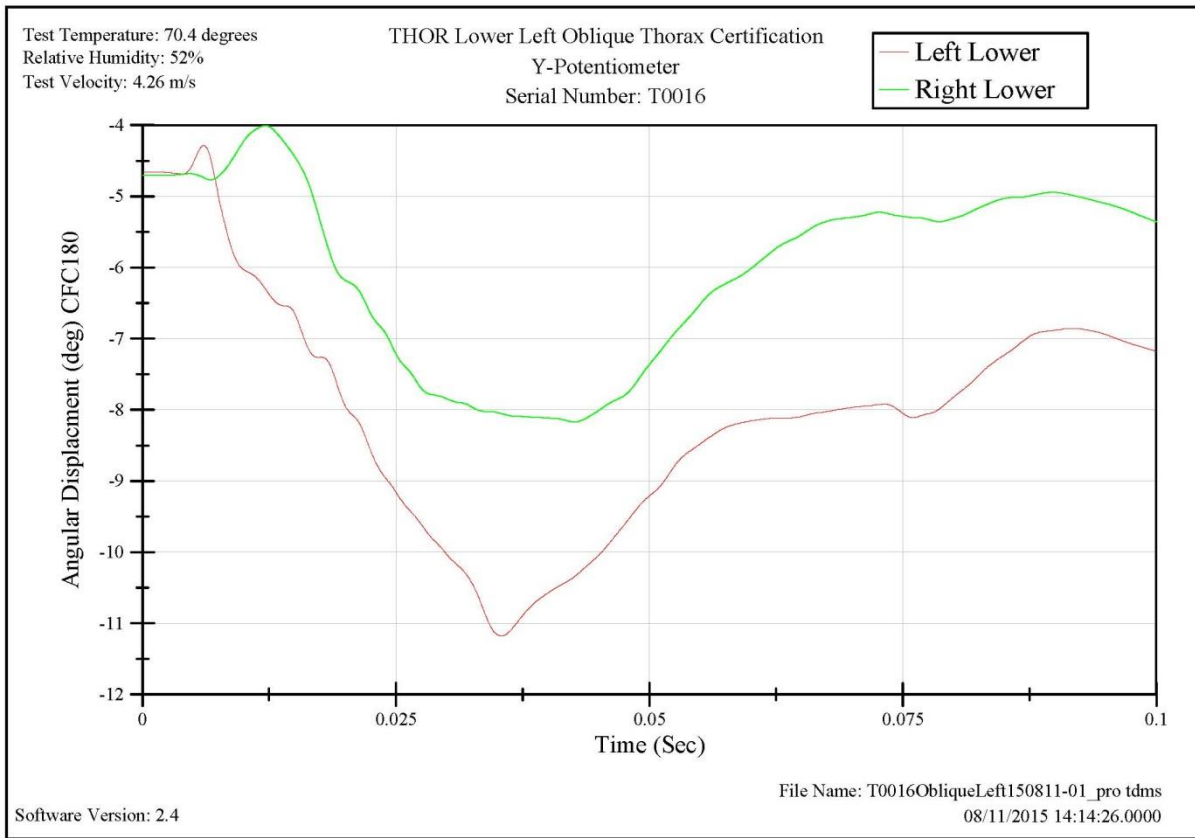
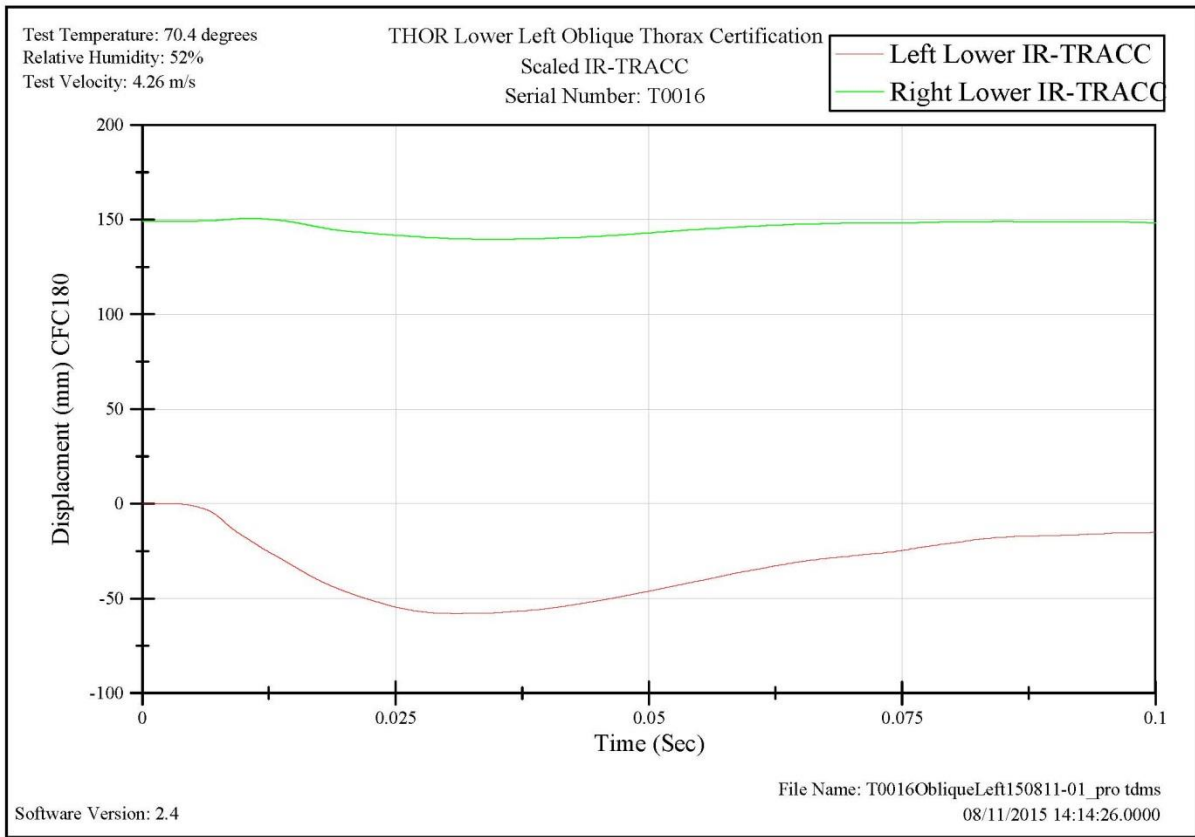
Test Temperature: 70.4 degrees
Relative Humidity: 52%
Test Velocity: 4.26 m/s

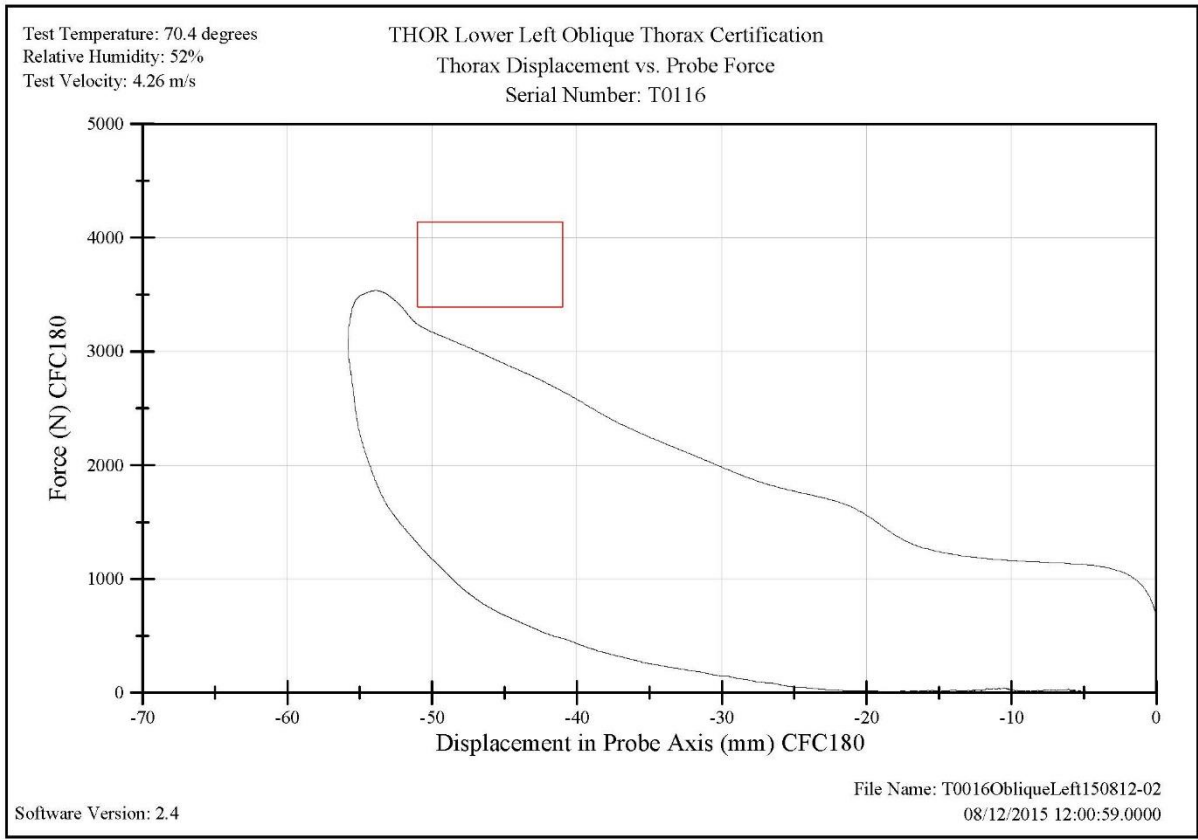
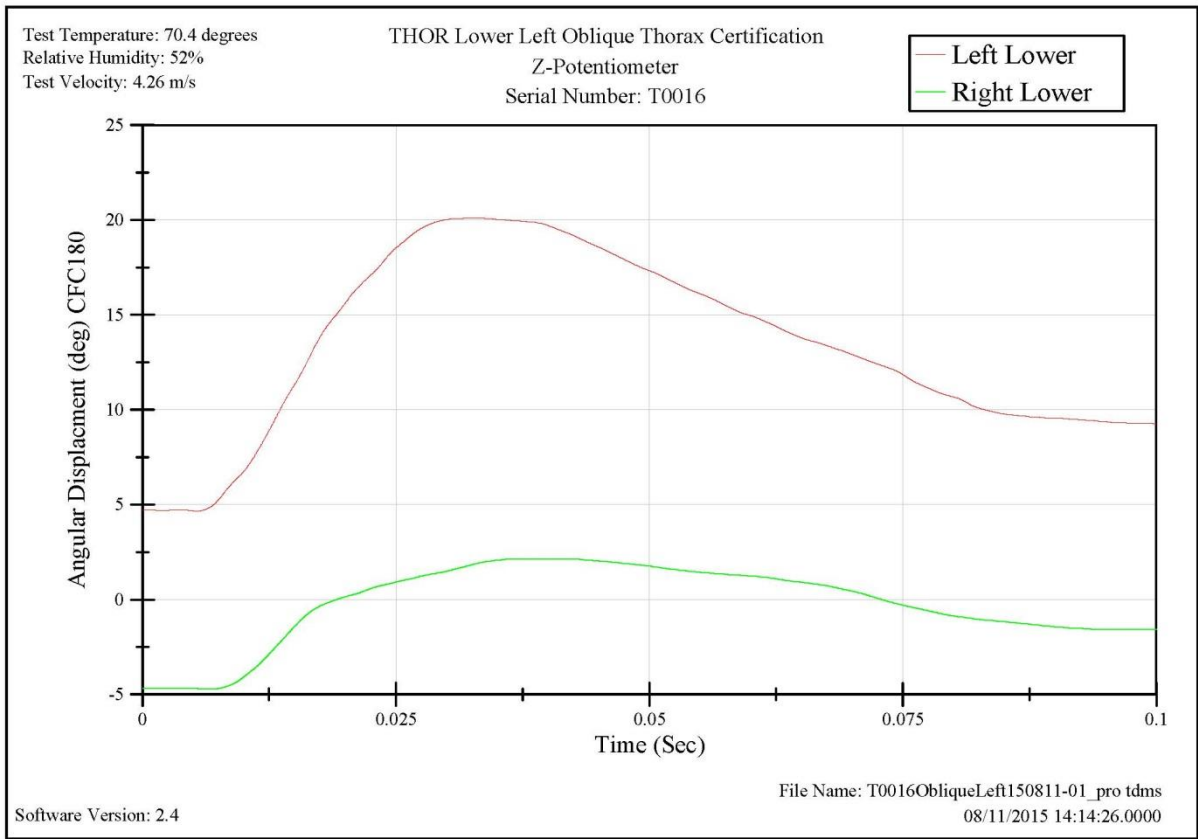
THOR Lower Left Oblique Thorax Certification
Thorax Displacement vs. Probe Force
Serial Number: T0016

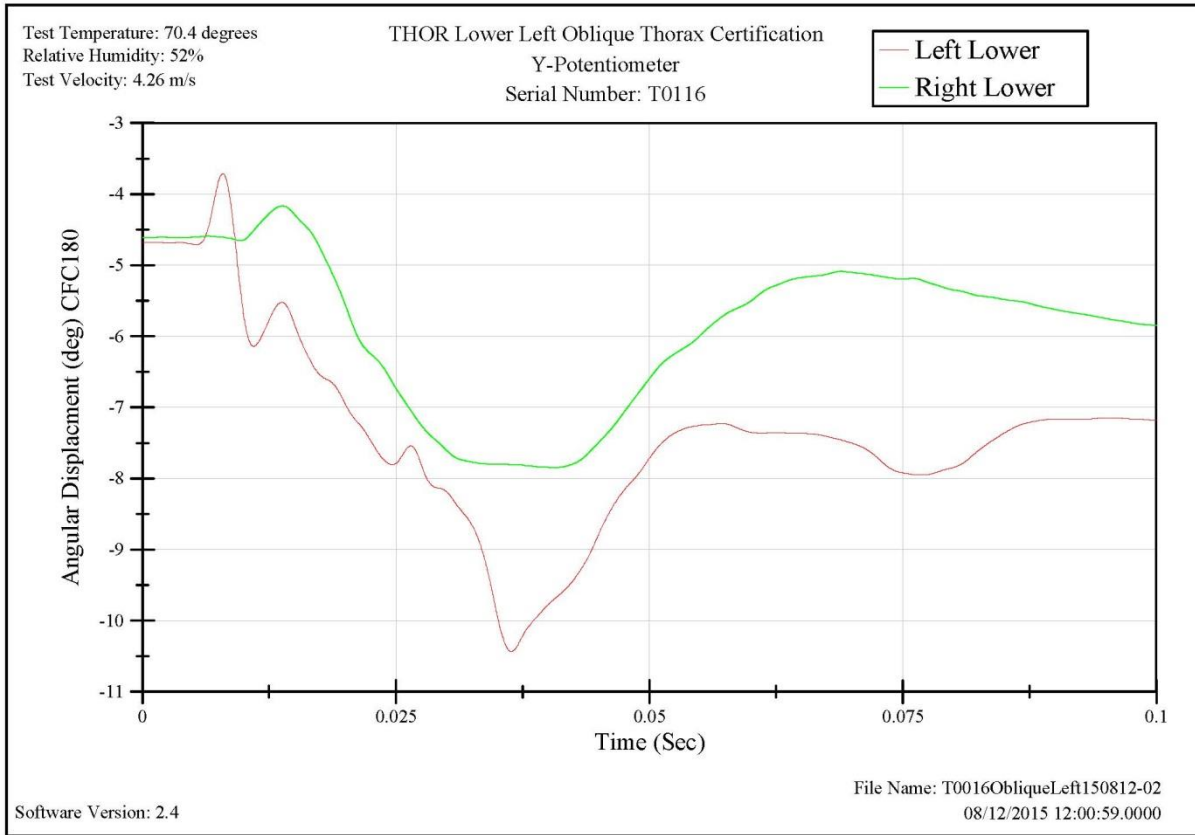
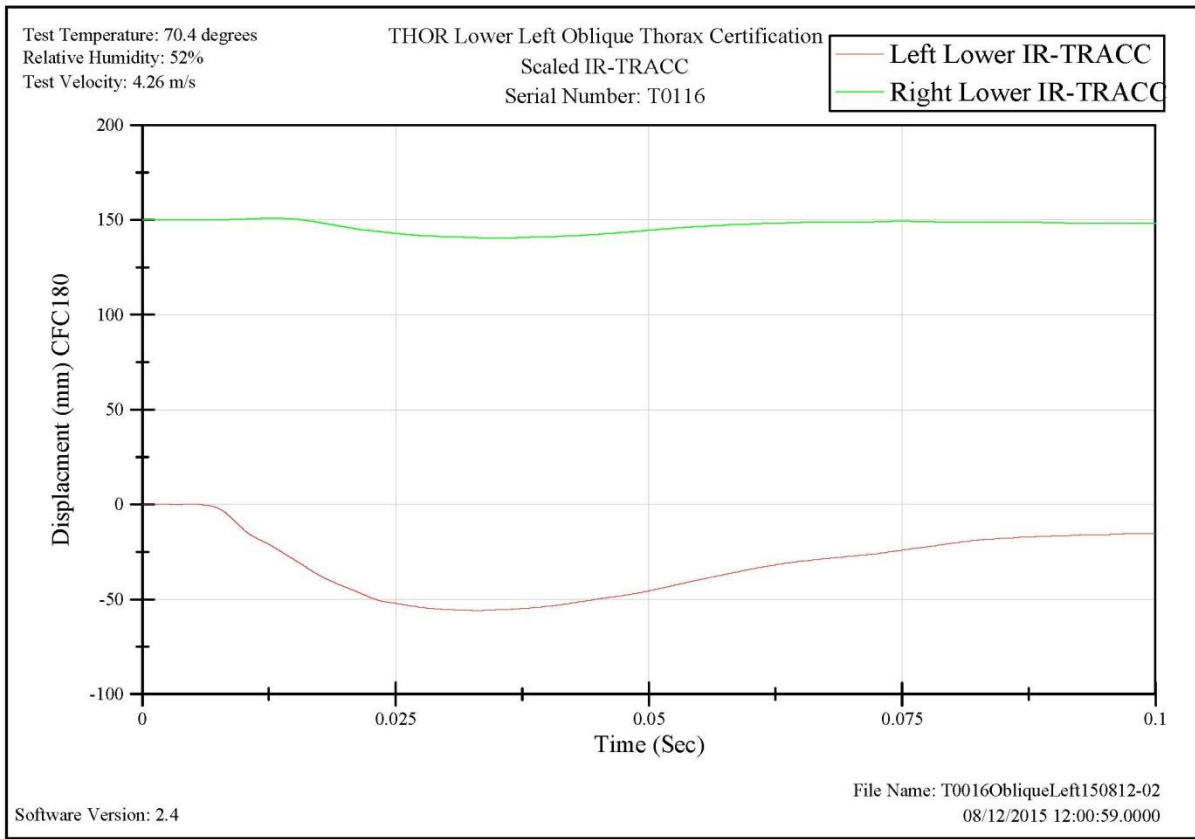


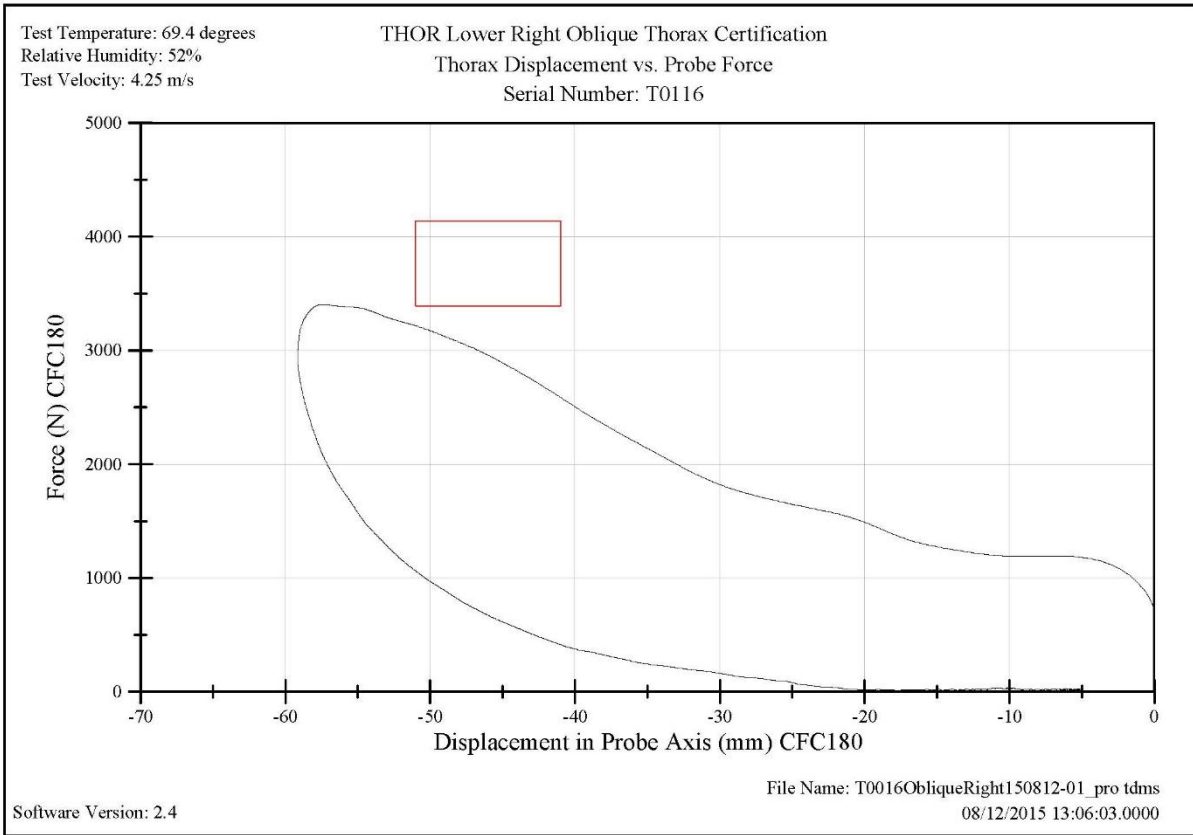
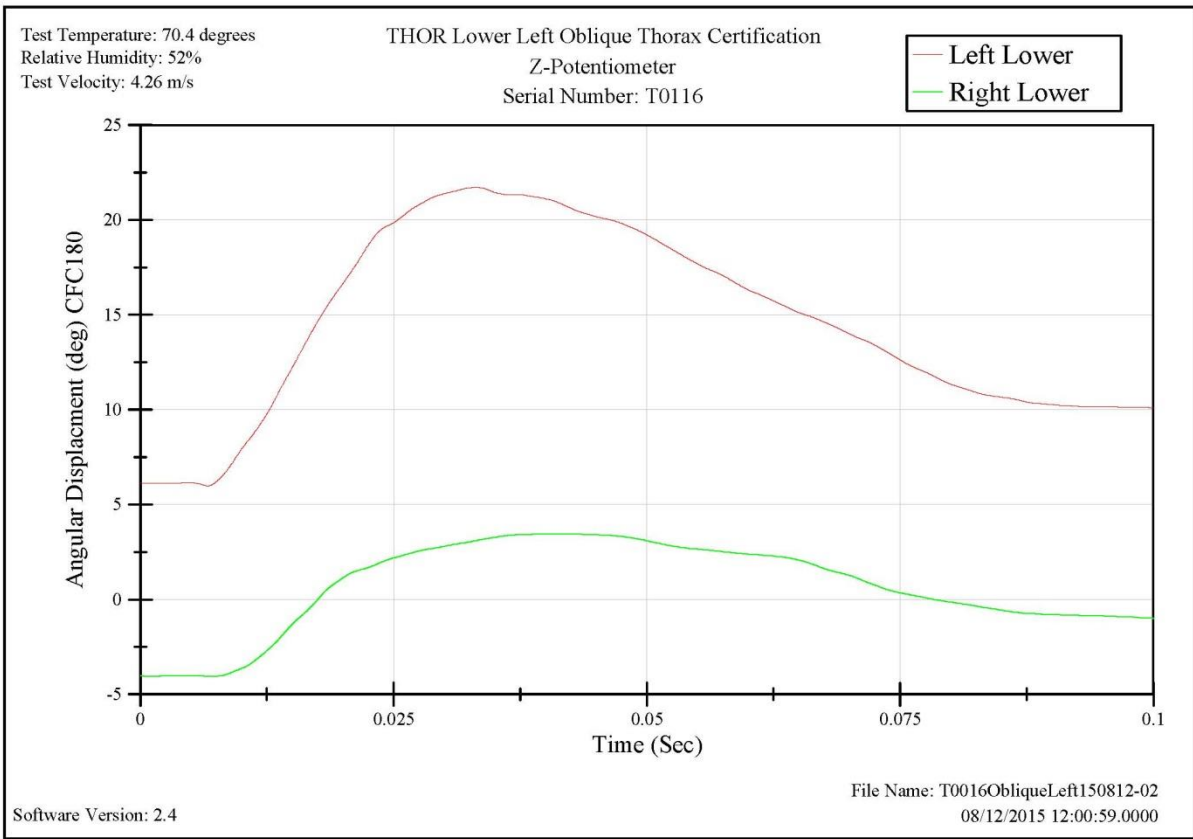
Software Version: 2.4

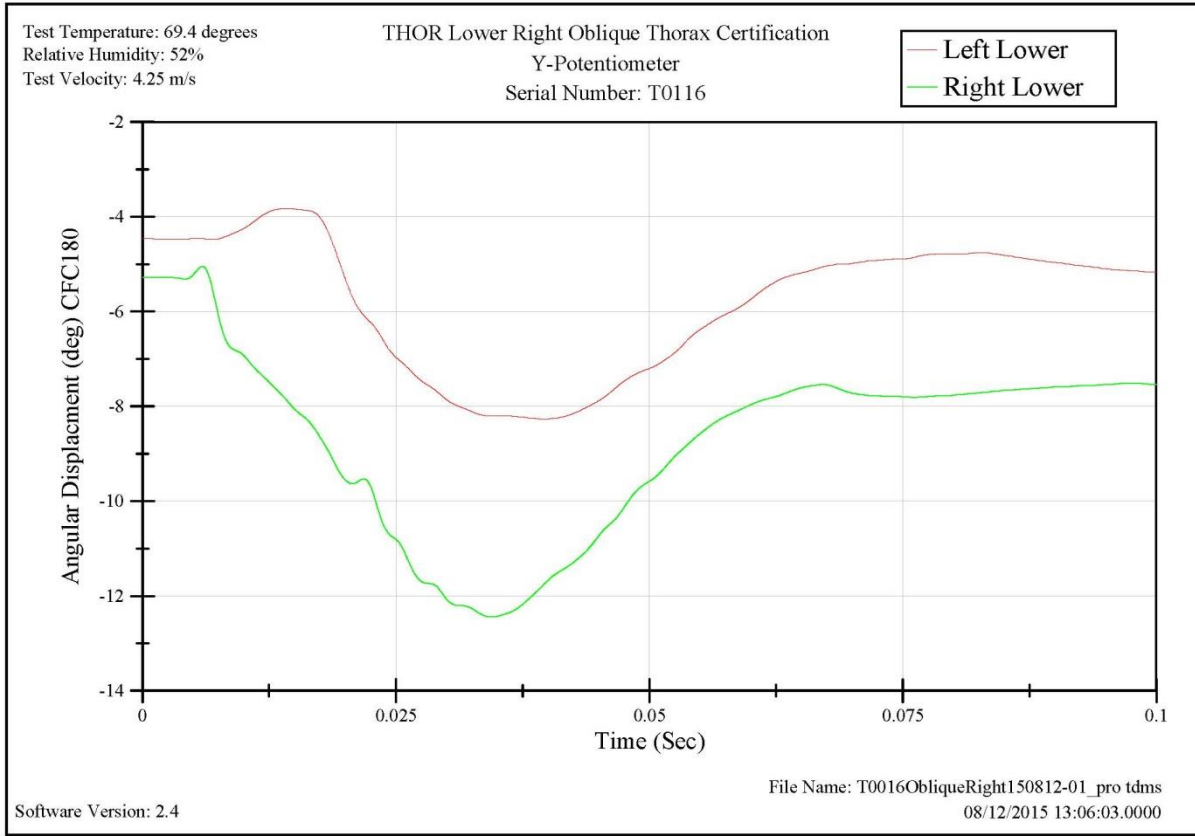
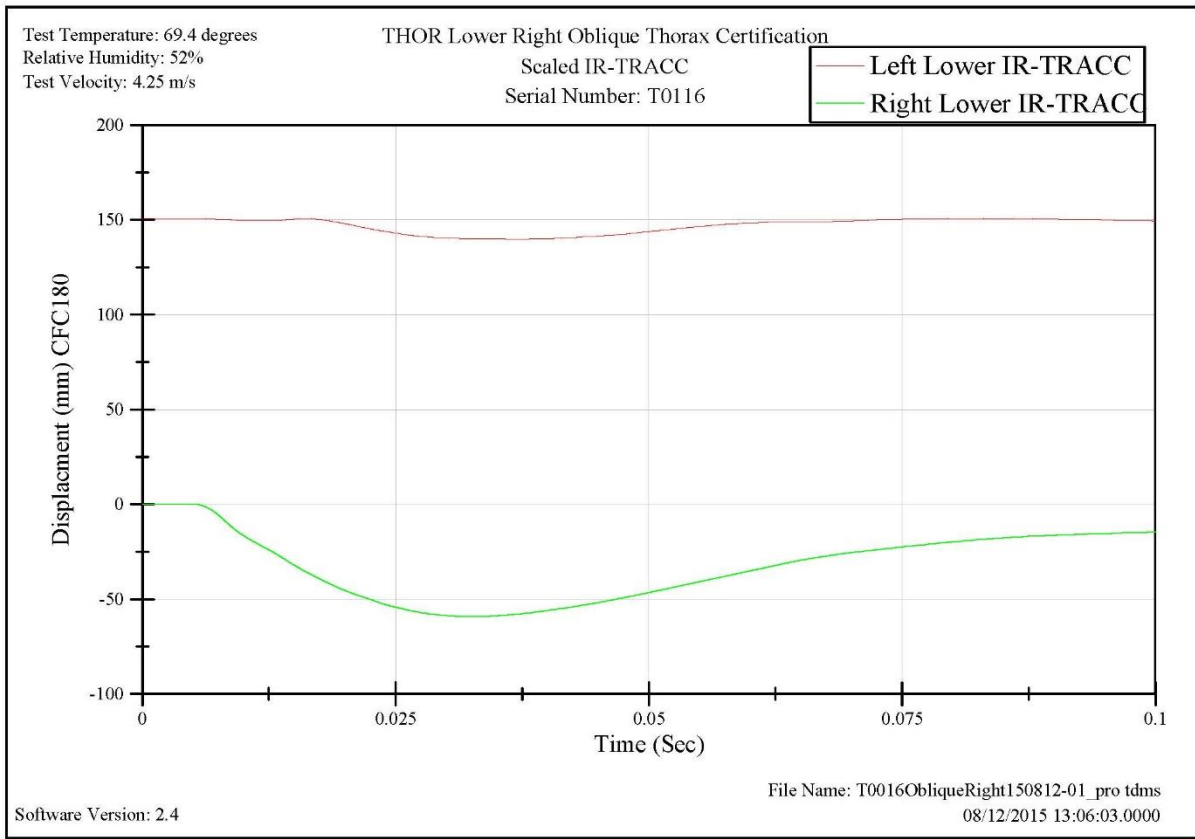
File Name: T0016ObliqueLeft150811-01_pro tdms
08/11/2015 14:14:26.0000







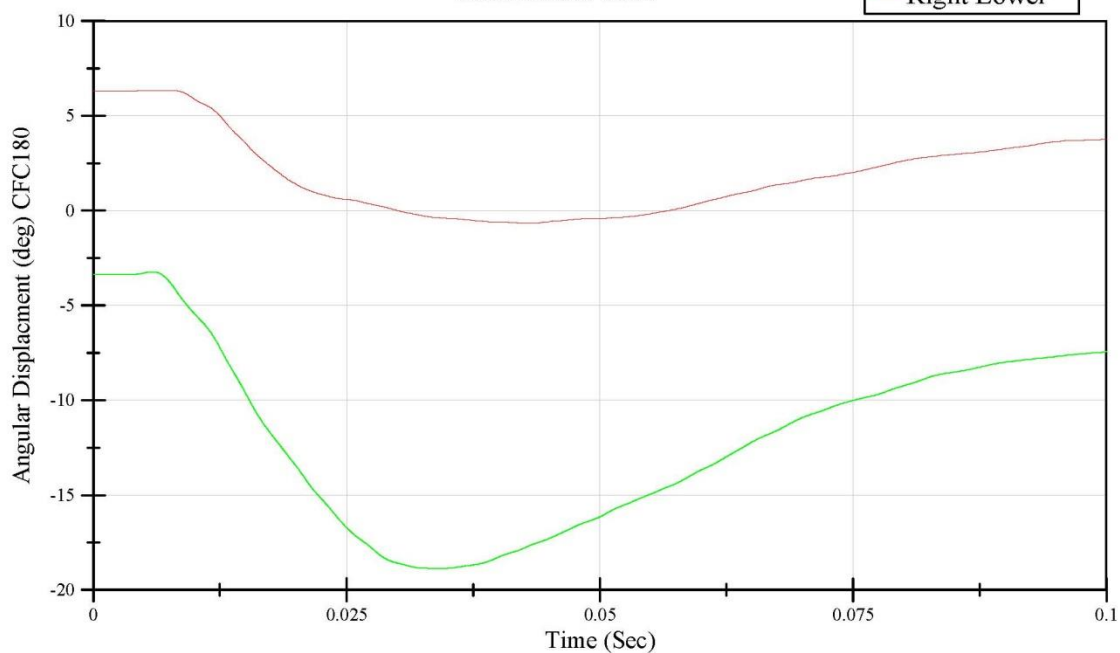




Test Temperature: 69.4 degrees
Relative Humidity: 52%
Test Velocity: 4.25 m/s

THOR Lower Right Oblique Thorax Certification
Z-Potentiometer
Serial Number: T0116

Left Lower
Right Lower

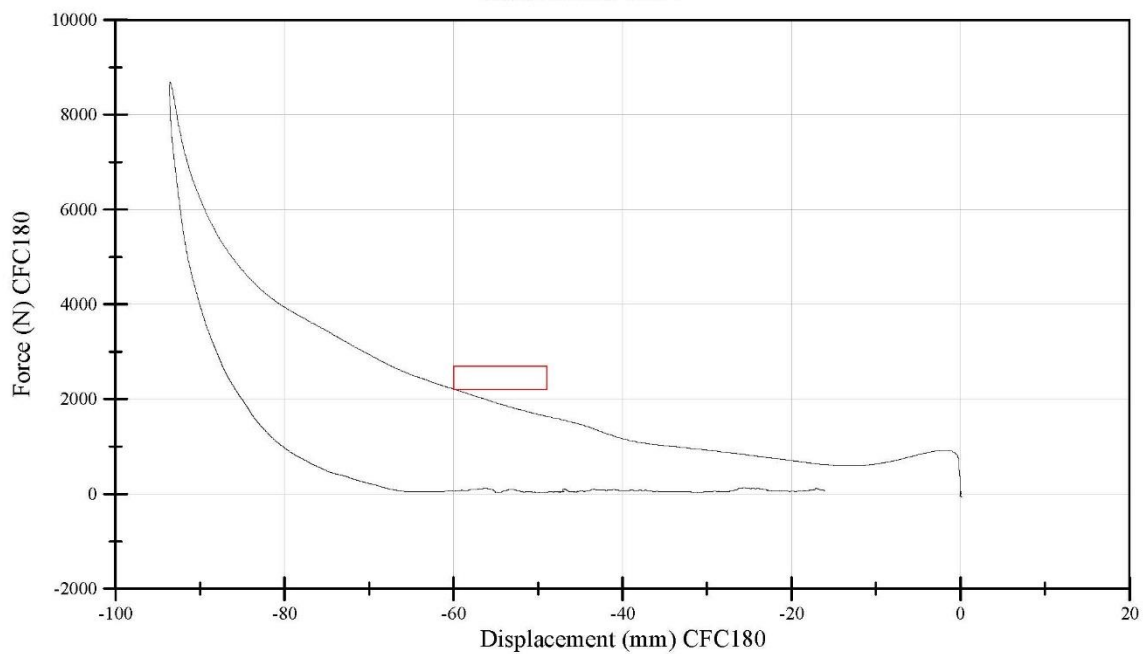


Software Version: 2.4

File Name: T0016ObliqueRight150812-01_pro tdms
08/12/2015 13:06:03.0000

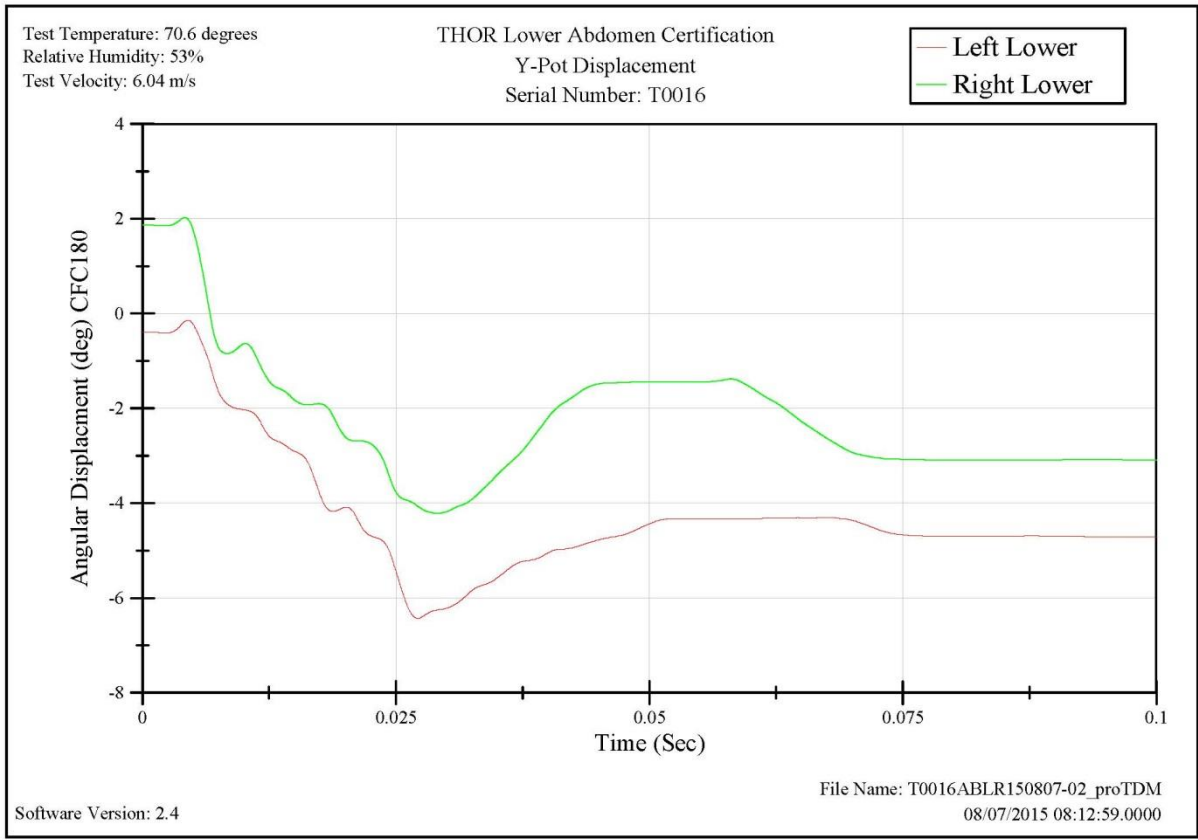
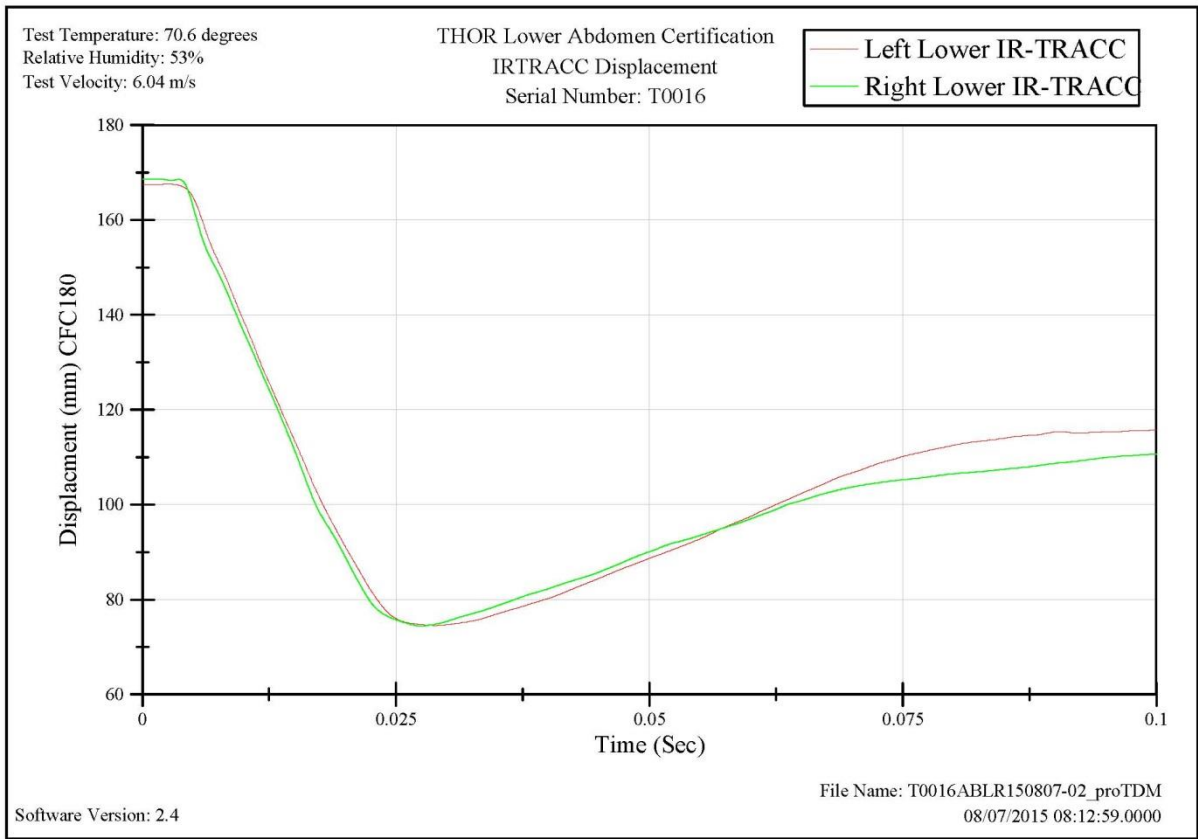
Test Temperature: 70.6 degrees
Relative Humidity: 53%
Test Velocity: 6.04 m/s

THOR Lower Abdomen Certification
Abdomen Displacement vs. Probe Force
Serial Number: T0016



Software Version: 2.4

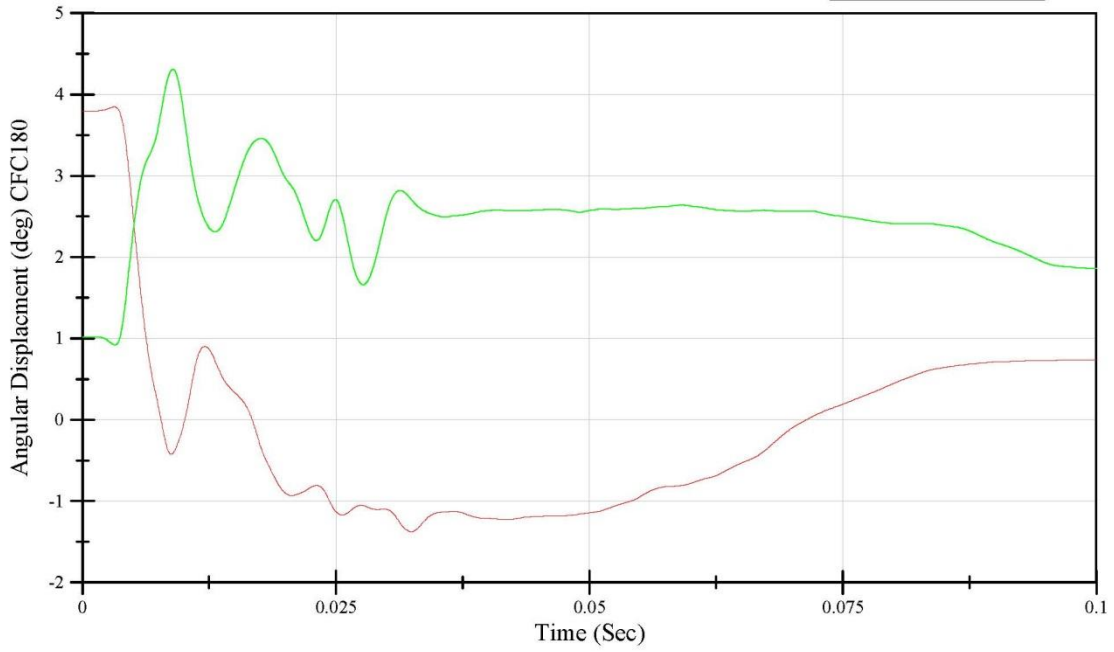
File Name: T0016ABLR150807-02_proTDM
08/07/2015 08:12:59.0000



Test Temperature: 70.6 degrees
Relative Humidity: 53%
Test Velocity: 6.04 m/s

THOR Lower Abdomen Certification
Z-Potentiometer
Serial Number: T0016

Left Lower
Right Lower

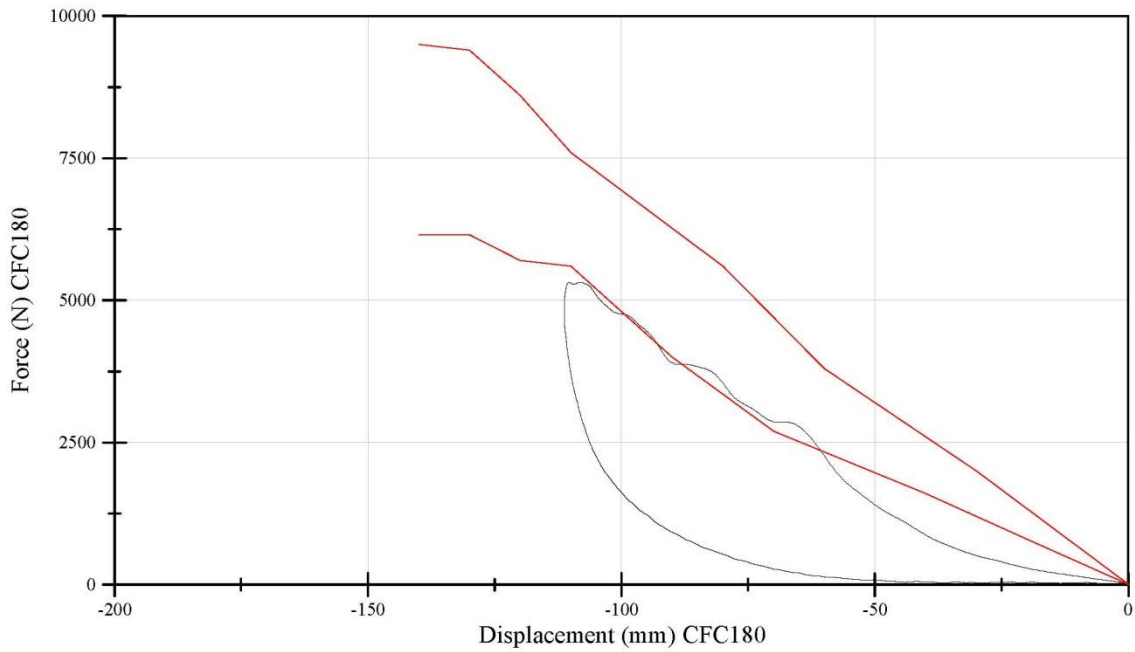


Software Version: 2.4

File Name: T0016ABLR150807-02_proTDM
08/07/2015 08:12:59.0000

Test Temperature: 70.6 degrees
Relative Humidity: 52%
Test Velocity: 6.57 m/s

THOR Upper Abdomen Certification
Abdomen Displacement vs. Probe Force
Serial Number: T0016

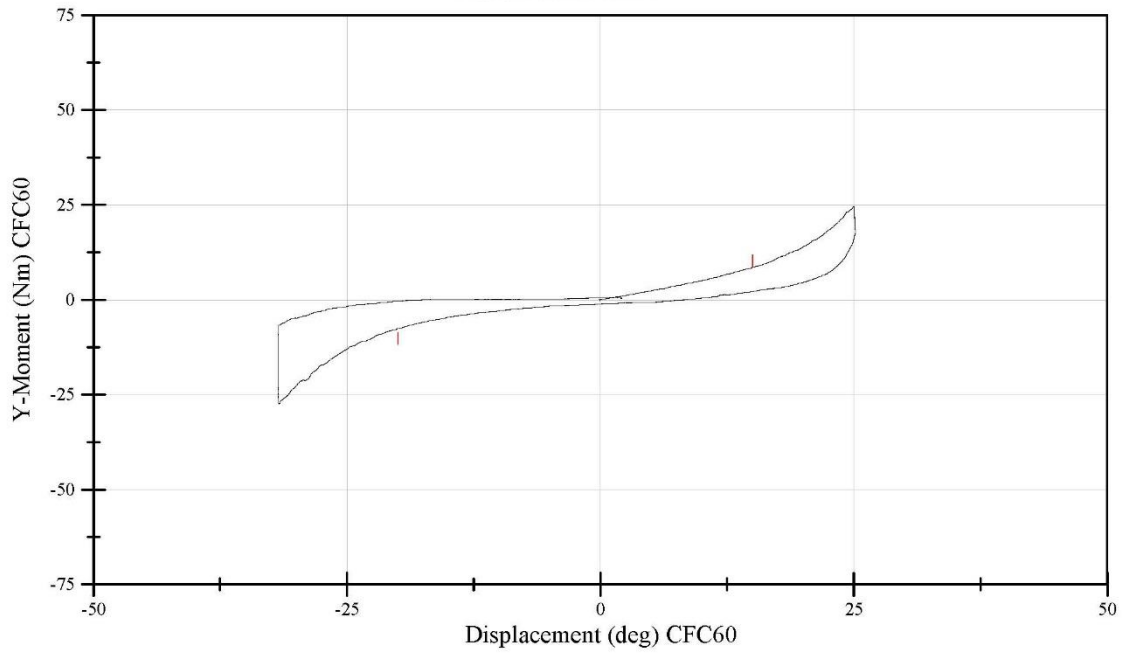


Software Version: 2.4

File Name: T0016ABUP150807-01_proTDM
08/07/2015 13:20:12.0000

Test Temperature: 70.1 degrees
Relative Humidity: 53%
Test Velocity: NOVALUE m/s

THOR Occipital Condyle Quasi-Static Certification
Displacement vs. Torque
Serial Number: T0016

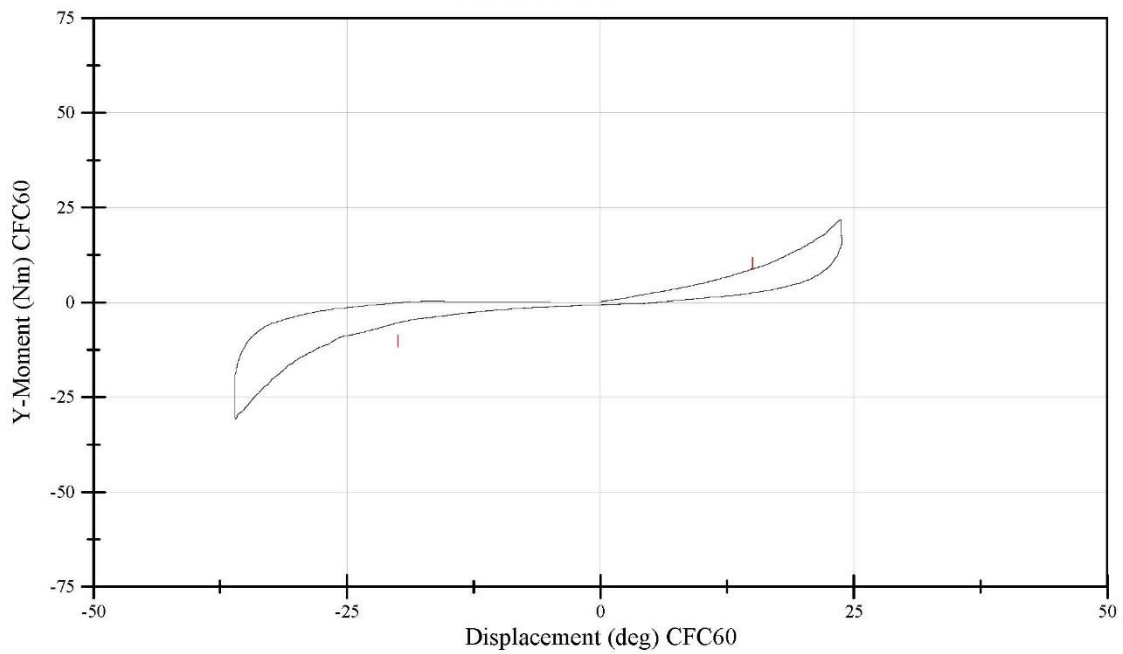


Software Version: 2.4

File Name: T0016OCPot150804-02_pro
08/04/2015 13:15:32.0000

Test Temperature: 70 degrees
Relative Humidity: 52%
Test Velocity: NOVALUE m/s

THOR Occipital Condyle Quasi-Static Certification
Displacement vs. Torque
Serial Number: T0016

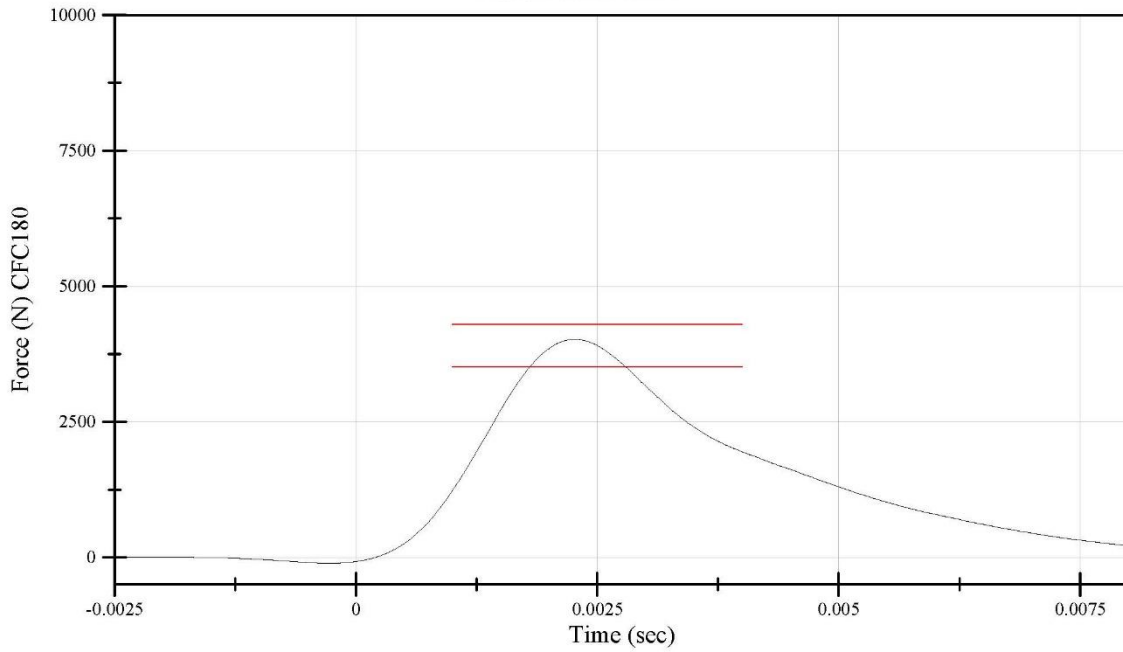


Software Version: 2.4

File Name: T0016OCPot150804-03_pro
08/04/2015 13:40:46.0000

Test Temperature: 70.2 degrees
Relative Humidity: 53%
Test Velocity: 2.63 m/s

THOR Left Femur Certification
Probe Force
Serial Number: T0016

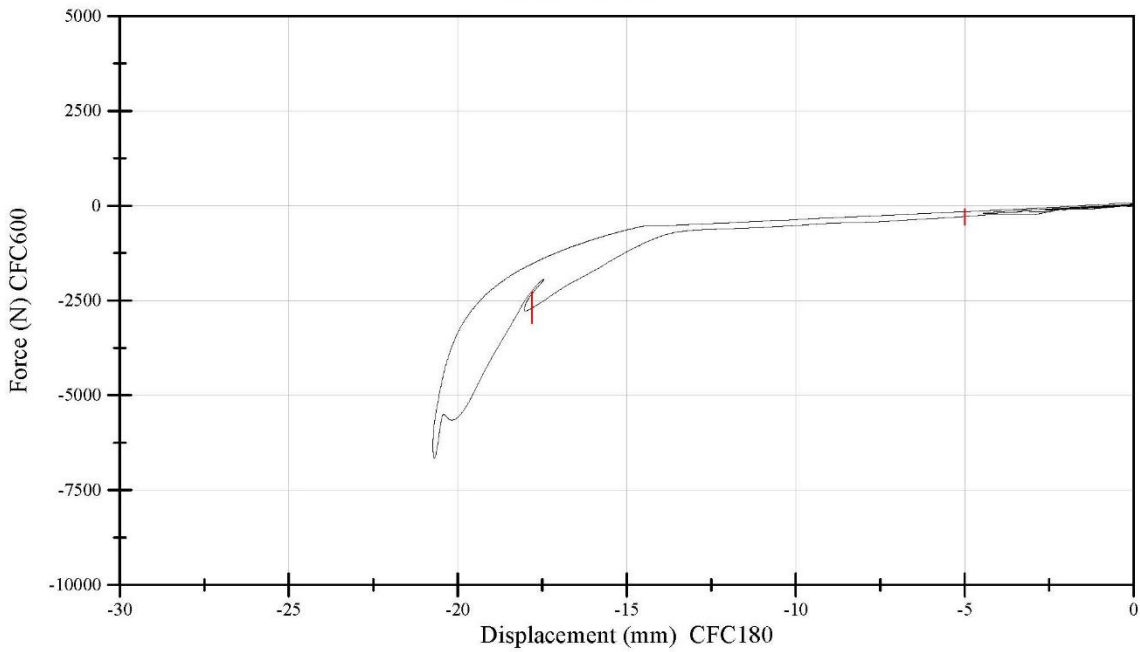


Software Version: 2.4

File Name: T0016LeftKnee150813-02_pro
08/14/2015 07:00:34.0000

Test Temperature: 71 degrees
Relative Humidity: 51%
Test Velocity: 2.76 m/s

THOR Left Knee Certification
Femur Force vs. Knee Displacement
Serial Number: 017169

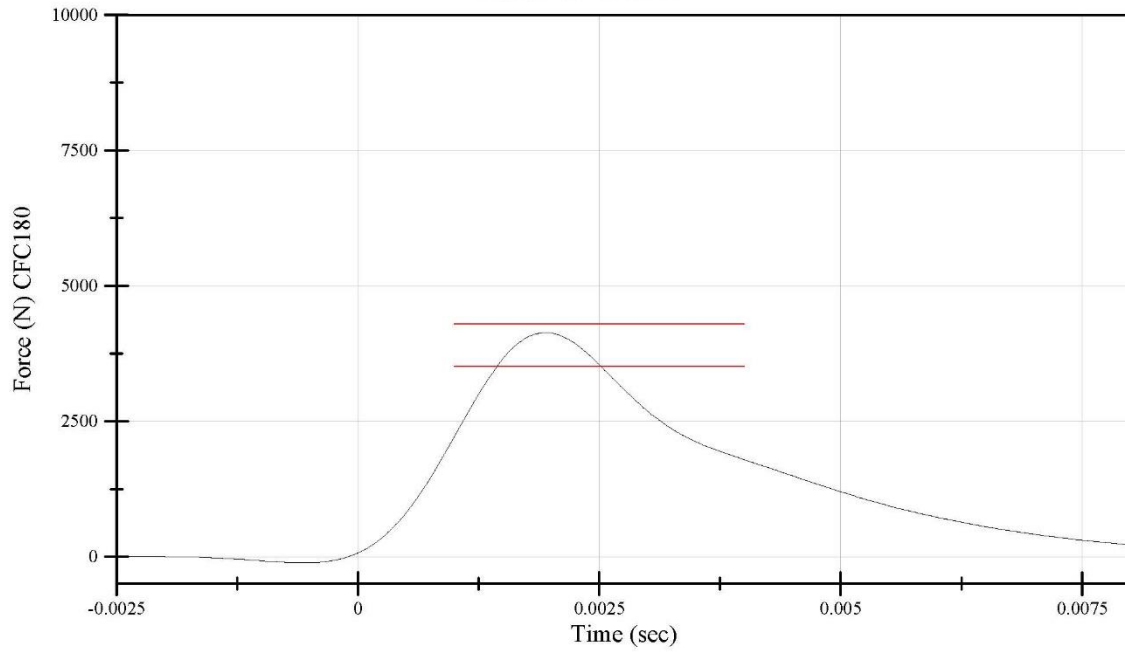


Software Version: 2.4

File Name: 017169Knee150708_01processed
07/08/2015 14:22:57.0000

Test Temperature: 69.7 degrees
Relative Humidity: 52%
Test Velocity: 2.63 m/s

THOR Right Femur Certification
Probe Force
Serial Number: T0016

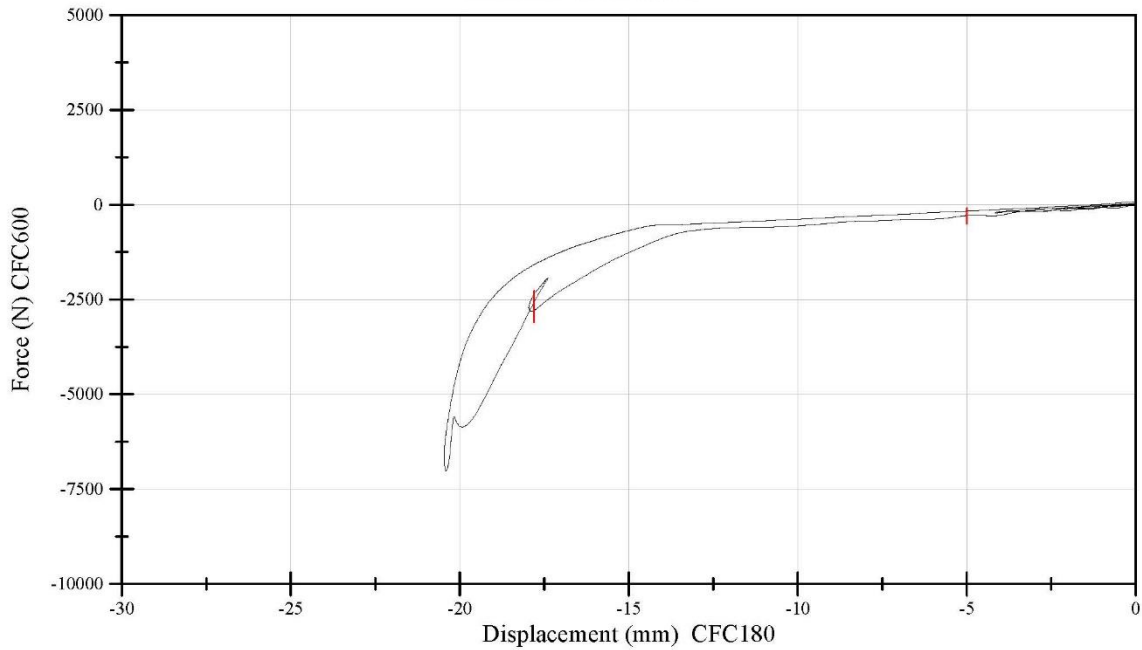


Software Version: 2.4

File Name: T0016RightKnee150814-01_pro
08/14/2015 07:48:52.0000

Test Temperature: 71 degrees
Relative Humidity: 50%
Test Velocity: 2.75 m/s

THOR Right Knee Certification
Femur Force vs. Knee Displacement
Serial Number: 12070382



Software Version: 2.4

File Name: 12070382Knee150708_01renamedprocessed
07/09/2015 06:31:18.0000

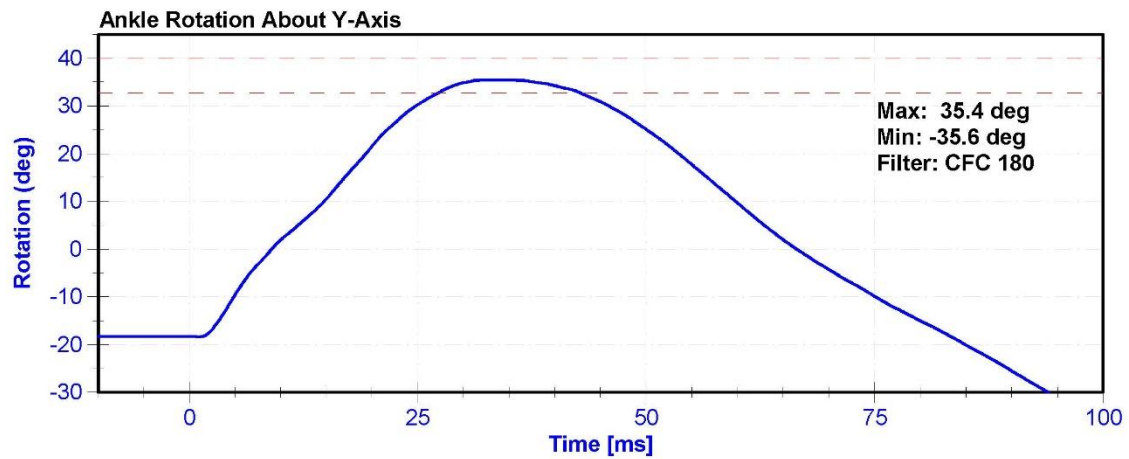
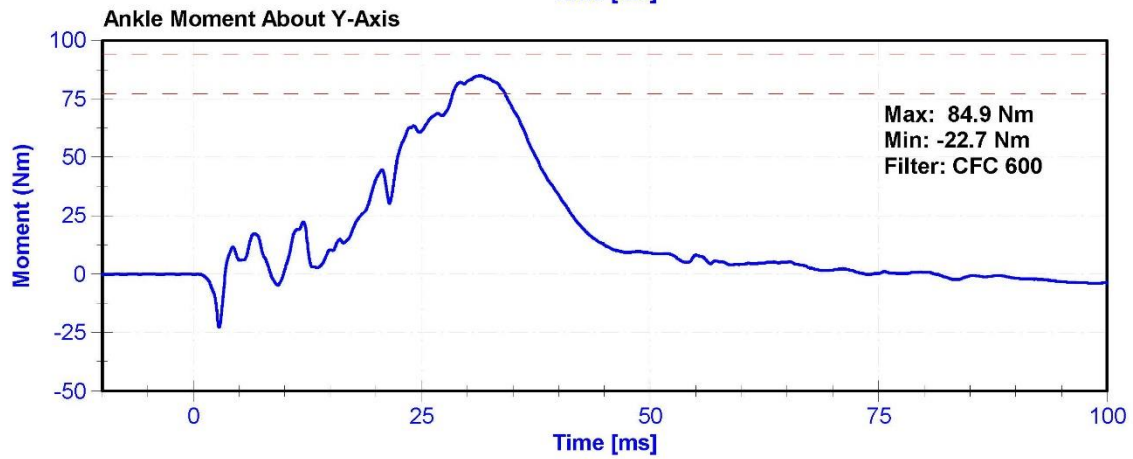
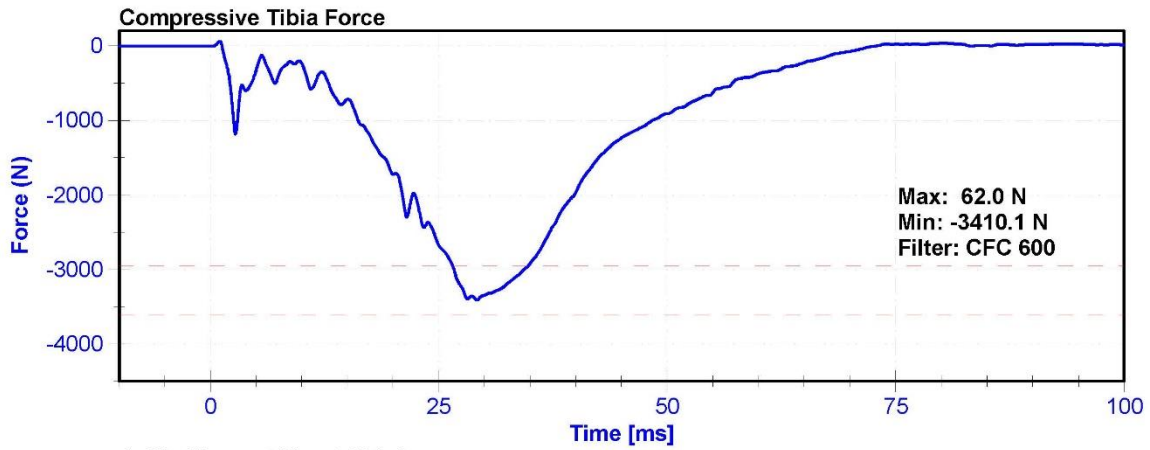
ATD Manufacturer	Huimanetics	Test Technician	M.Hartung
ATD Serial Number	0016	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.7	Pass
Humidity	10	70	%	33.5	Pass
Velocity	4.9	5.1	m/s	4.916	Pass
Lower Tibia Compressive Force	-3,613	-2,956	N	-3410.1	Pass
Peak Moment about Y-Axis	77.1	94.2	Nm	84.95	Pass
Peak Rotation about Y-Axis	32.7	39.9	deg	35.45	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-140 Fz	3/3/2015	3/2/2016
Ankle Y Potentiometer	Contelec PD210-4B	DS-0525-1	7/7/2015	7/6/2016



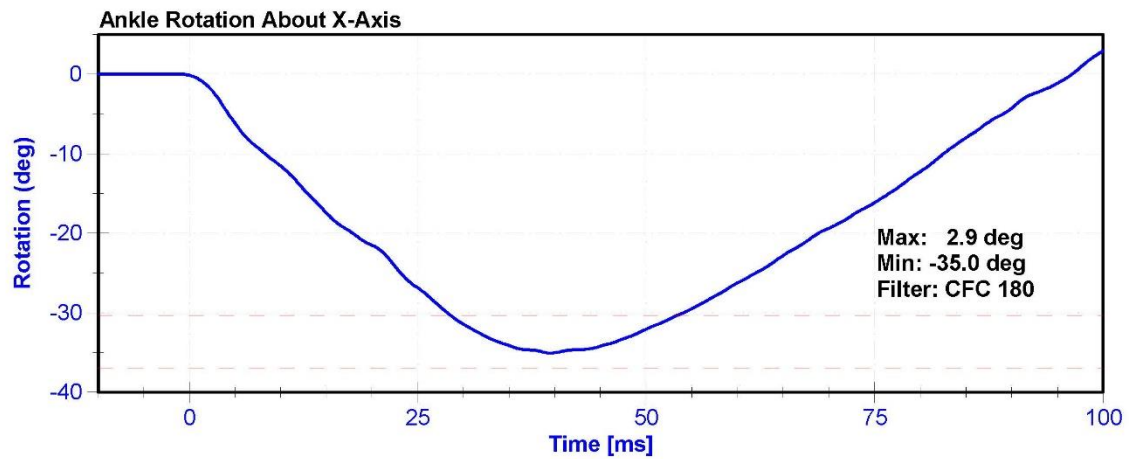
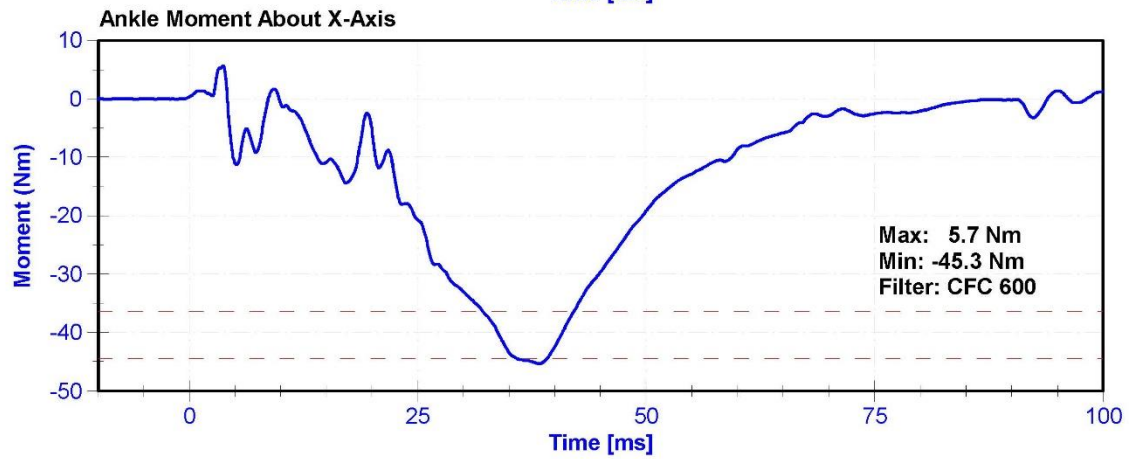
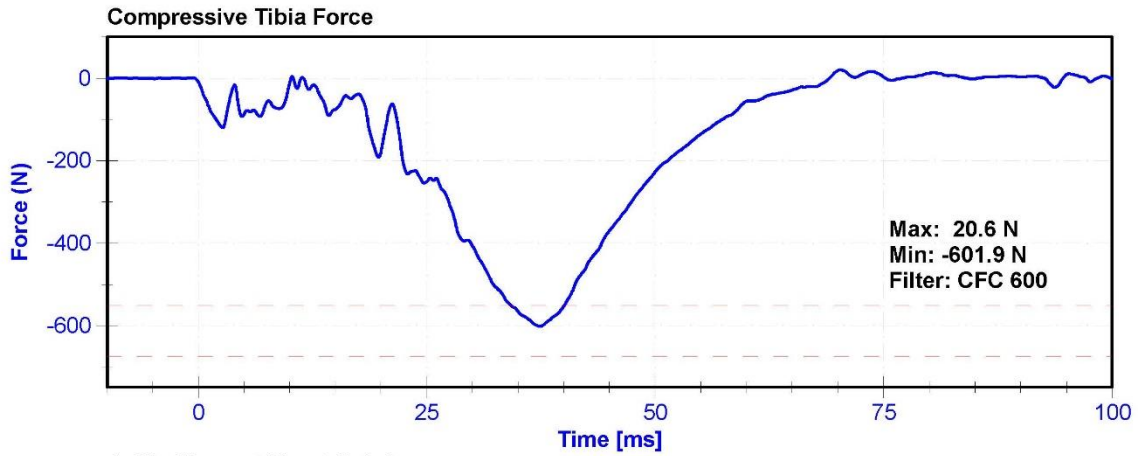
ATD Manufacturer	Humanetics	Test Technician	M.Hartung
ATD Serial Number	0016	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.6	Pass
Humidity	10	70	%	33.2	Pass
Velocity	1.9	2.1	m/s	2.016	Pass
Lower Tibia Compressive Force	-675	-552	N	-601.9	Pass
Peak Moment about X-Axis	-44.4	-36.3	Nm	-45.27	Pass
Peak Rotation about X-Axis	-37.0	-30.3	deg	-35.04	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-140 Fz	3/3/2015	3/2/2016
Ankle Y Potentiometer	Contelec PD210-4B	DS-0254	6/30/2015	6/29/2016



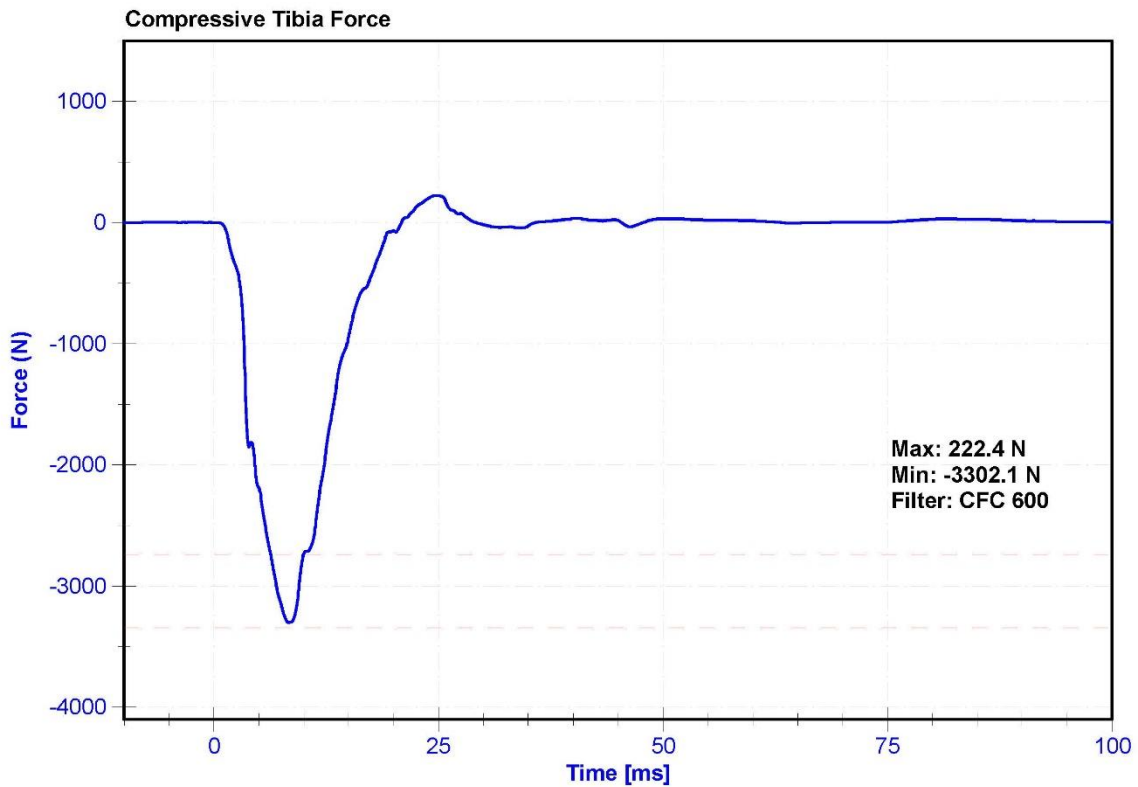
ATD Manufacturer	Humanetics	Test Technician	M.Hartung
ATD Serial Number	0016	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.6	Pass
Humidity	10	70	%	33.3	Pass
Velocity	3.9	4.1	m/s	3.928	Pass
Lower Tibia Compressive Force	-3,346	-2,738	N	-3302.1	Pass

Transducer Calibrations

Channel	Manufacturer	Serial Number	Calibration Date	Calibration Due Date
Pendulum Accelerometer	ENDEVCO 7231CT	AC-C15018	7/15/2015	7/14/2016
Lower Tibia Load Cell	Denton 4929J	LC-140 Fz	3/3/2015	3/2/2016



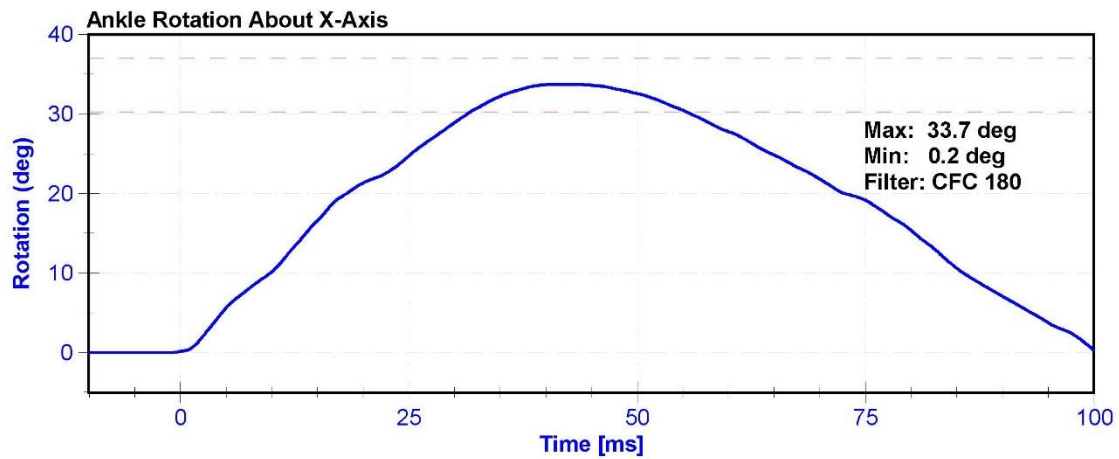
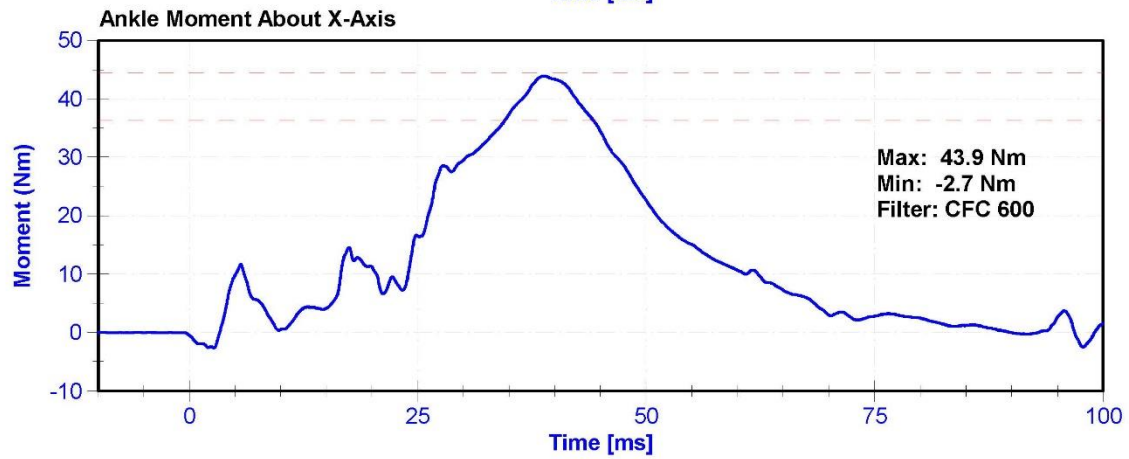
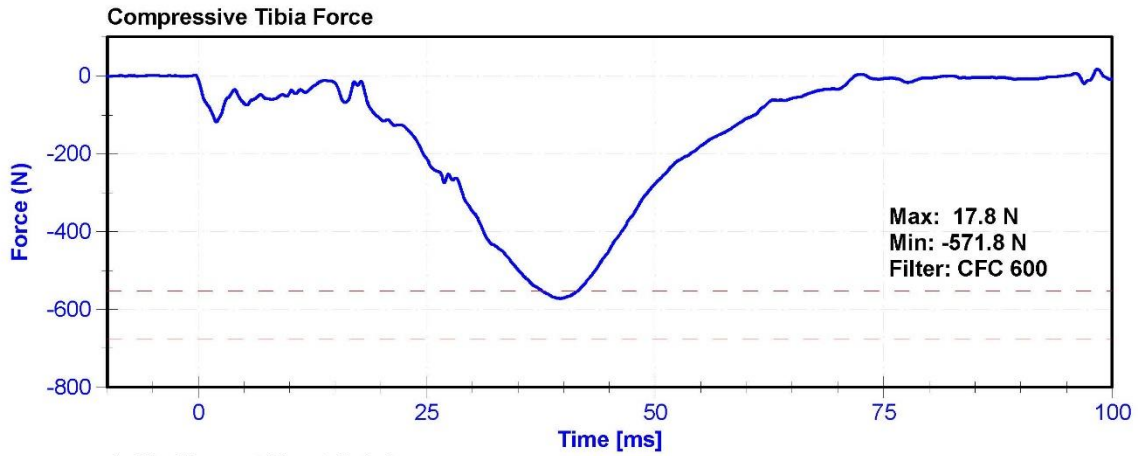
ATD Manufacturer	Humanetics	Test Technician	M.Hartung
ATD Serial Number	0016	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.2	Pass
Humidity	10	70	%	48.8	Pass
Velocity	1.9	2.1	m/s	1.969	Pass
Lower Tibia Compressive Force	-675	-552	N	-571.8	Pass
Peak Moment about X-Axis	36.3	44.4	Nm	43.89	Pass
Peak Rotation about X-Axis	30.3	37.0	deg	33.71	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-140 Fz	3/3/2015	3/2/2016
Ankle Y Potentiometer	Contelec PD210-4B	DS-0254	6/30/2015	6/29/2016



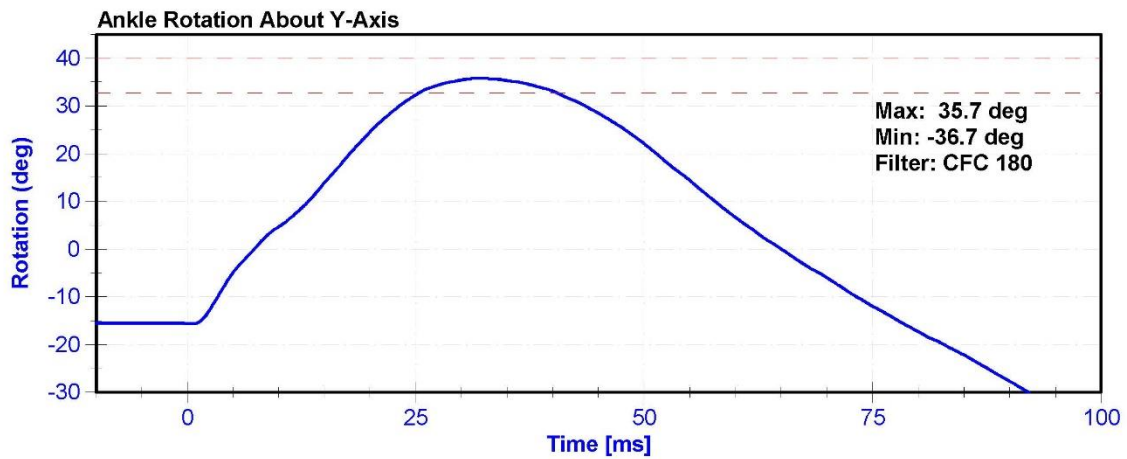
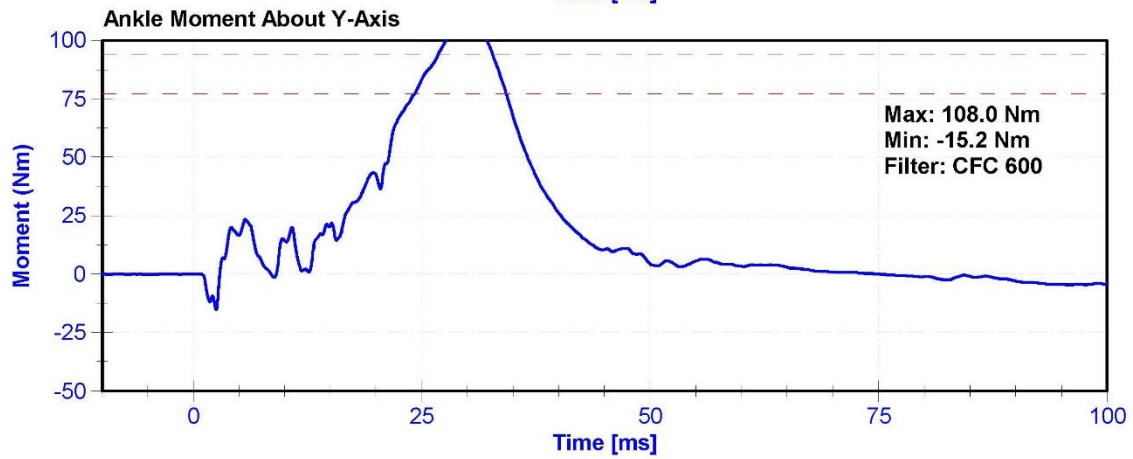
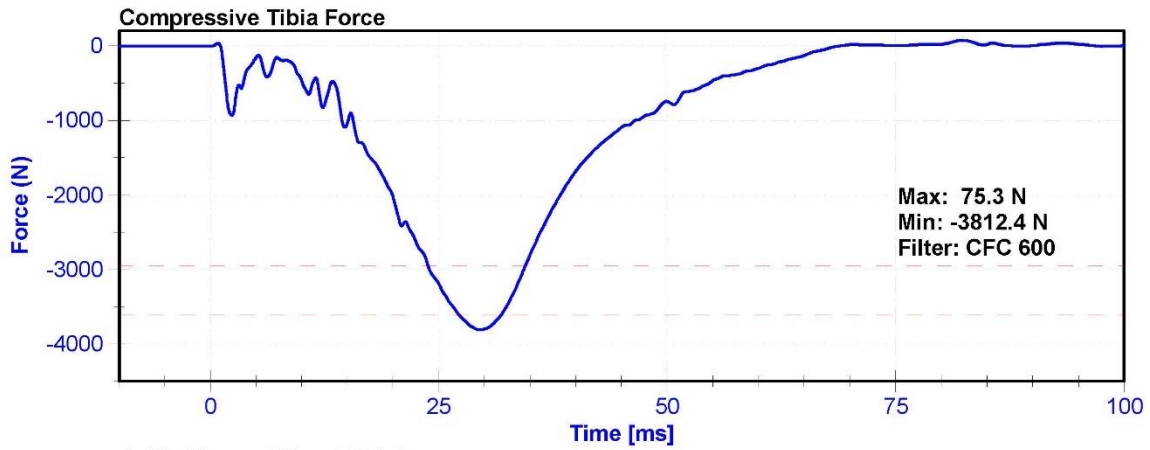
ATD Manufacturer	Humanetics	Test Technician	M.Hartung
ATD Serial Number	0016	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.3	Pass
Humidity	10	70	%	47.8	Pass
Velocity	4.9	5.1	m/s	4.916	Pass
Lower Tibia Compressive Force	-3,613	-2,956	N	-3812.4	Pass
Peak Moment about Y-Axis	77.1	94.2	Nm	107.99	Pass
Peak Rotation about Y-Axis	32.7	39.9	deg	35.71	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-139 Fz	6/16/2015	6/15/2016
Ankle Y Potentiometer	Contelec PD210-4B	DS-0527	6/30/2015	6/29/2016



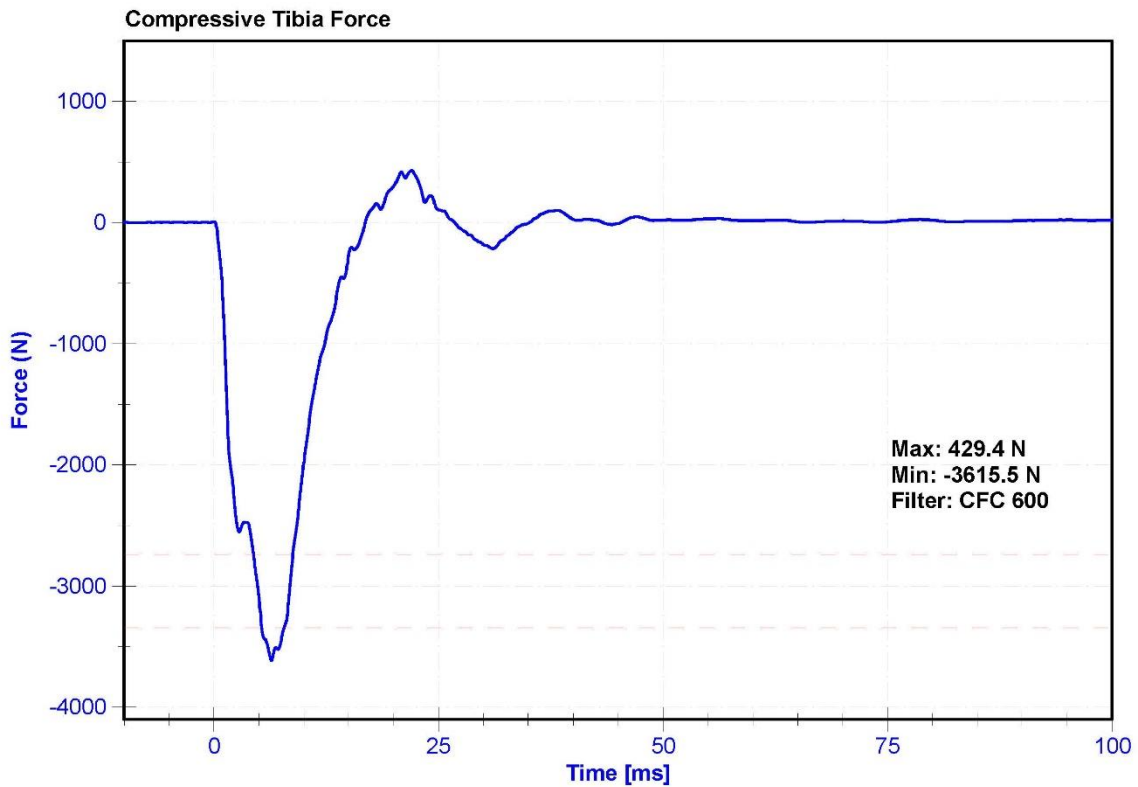
ATD Manufacturer	Humanetics	Test Technician	M.Hartung
ATD Serial Number	0016	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.3	Pass
Humidity	10	70	%	48.3	Pass
Velocity	3.9	4.1	m/s	3.948	Pass
Lower Tibia Compressive Force	-3,346	-2,738	N	-3615.5	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-139 Fz	6/16/2015	6/15/2016



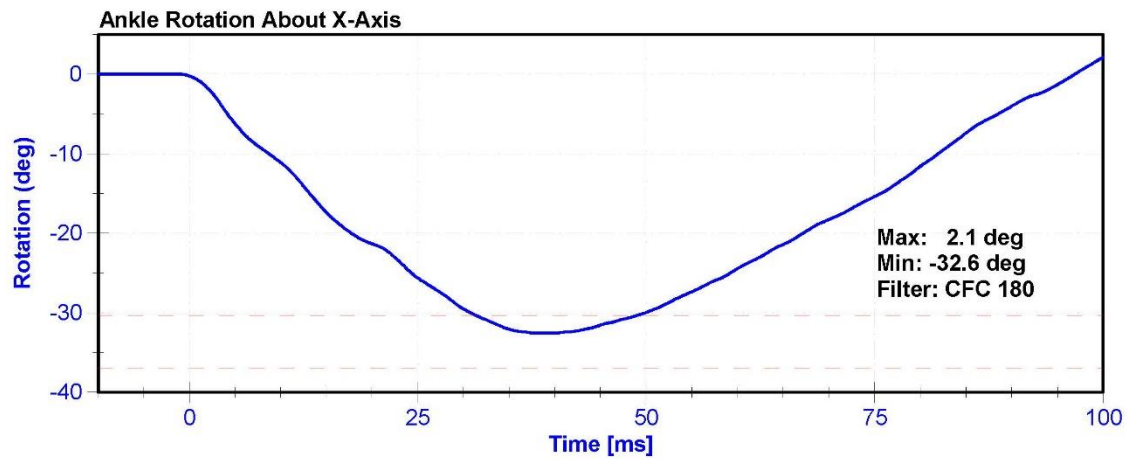
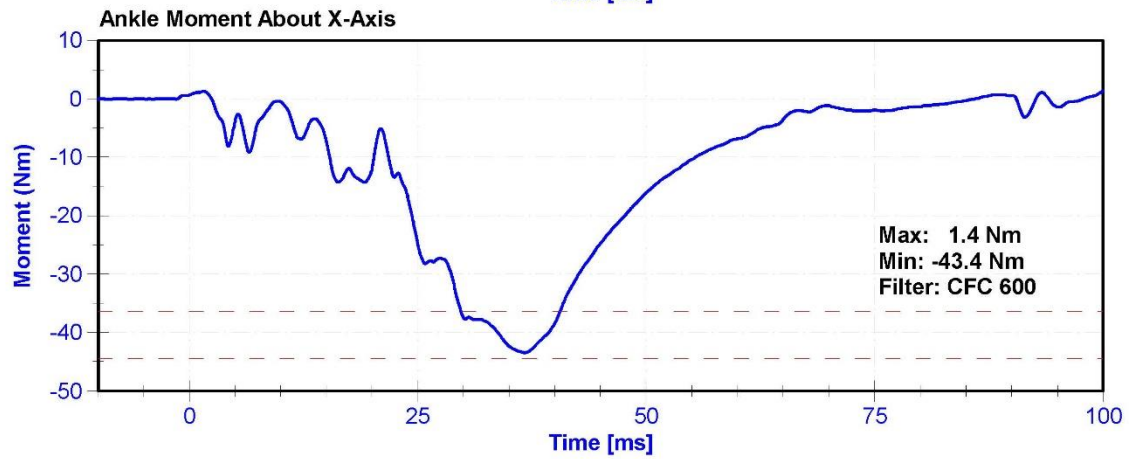
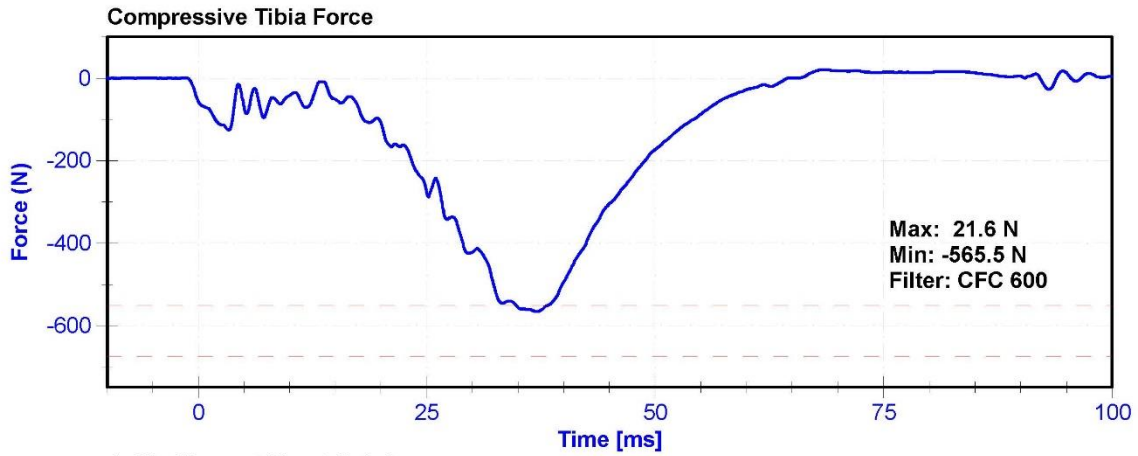
ATD Manufacturer	Humanetics	Test Technician	M.Hartung
ATD Serial Number	0016	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.7	Pass
Humidity	10	70	%	34.5	Pass
Velocity	1.9	2.1	m/s	1.915	Pass
Lower Tibia Compressive Force	-675	-552	N	-565.5	Pass
Peak Moment about X-Axis	-44.4	-36.3	Nm	-43.43	Pass
Peak Rotation about X-Axis	-37.0	-30.3	deg	-32.56	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-139 Fz	6/16/2015	6/15/2016
Ankle Y Potentiometer	Contelec PD210-4B	DS-0544	6/30/2015	6/29/2016



ATD Manufacturer	Humanetics	Test Technician	M.Hartung
ATD Serial Number	0016	Laboratory Supervisor	M. Goehle

Results

Test Parameter	Minimum Specification	Maximum Specification	Unit	Result	Pass/Fail
Temperature	20.6	22.2	°C	21.6	Pass
Humidity	10	70	%	34.3	Pass
Velocity	1.9	2.1	m/s	1.910	Pass
Lower Tibia Compressive Force	-675	-552	N	-586.5	Pass
Peak Moment about X-Axis	36.3	44.4	Nm	44.85	Fail
Peak Rotation about X-Axis	30.3	37.0	deg	33.98	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-139 Fz	6/16/2015	6/15/2016
Ankle Y Potentiometer	Contelec PD210-4B	DS-0544	6/30/2015	6/29/2016

