

REPORT NUMBER: R&D-CAL-11-003

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

2007 FORD 500 FOUR DOOR SEDAN
53.9 MPH, 15 DEGREE ANGLE, 35% OVERLAP

TEST DATE: JUNE 15, 2011
NHTSA NO: R70219

Prepared By;
Calspan Corporation
4455 Genesee, Buffalo NY



FINAL REPORT SUBMITTED:

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1200 NEW JERSEY AVE, SE
ROOM W46-446
WASHINGTON, DC 20590

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Prepared by: Vanessa Walsh
Vanessa Walsh, Test Engineer

Date: March 2, 2012

Approved by: David Travale
David Travale, Program
Manager

Date: March 2, 2012

FINAL REPORT ACCEPTANCE BY OCWS:

Division Chief, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: _____

COTR, New Car Assessment Program
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16. Abstract A test was conducted in accordance with Task Order 0001 of Contract DTNH22-10-D-00155. The Test consisted of a research moving deformable barrier (RMDB) traveling at a target speed of 99.3 kph into a stationary 2007 Ford 500 four-door sedan. 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 crash test facility in Buffalo, New York on June 15, 2011. The impact velocity of the vehicle was 100.69 km/h, and the ambient temperature at the barrier face at the time of impact was 22.2°C. The target vehicle post-test maximum crush was 639 mm of Vehicle. The test vehicle's performance is as follows:																																																																				
<table border="1"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th colspan="3">Driver ATD</th> <th colspan="3">Pass. ATD</th> </tr> <tr> <th>Units</th> <th>Threshold</th> <th>Result</th> <th>Units</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₁₅)</td> <td>N/A</td> <td>700</td> <td>2505.52</td> <td>N/A</td> <td>700</td> <td>609.60</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>37.36</td> <td>mm</td> <td>52</td> <td>-42.57</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td>1</td> <td>0.51</td> <td>N/A</td> <td>1</td> <td>0.95</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4,170</td> <td>3097.41</td> <td>N</td> <td>2,620</td> <td>3395.61</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4,000</td> <td>-320.44</td> <td>N</td> <td>2,520</td> <td>-1130.52</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10,008</td> <td>-5283.49</td> <td>N</td> <td>6,805</td> <td>100.54</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10,008</td> <td>-4276.67</td> <td>N</td> <td>6,805</td> <td>-346.94</td> </tr> </tbody> </table>							Measurement Description	Driver ATD			Pass. ATD			Units	Threshold	Result	Units	Threshold	Result	Head Injury Criteria (HIC ₁₅)	N/A	700	2505.52	N/A	700	609.60	Maximum Chest Compression	mm	63	37.36	mm	52	-42.57	Nij	N/A	1	0.51	N/A	1	0.95	Neck Tension	N	4,170	3097.41	N	2,620	3395.61	Neck Compression	N	4,000	-320.44	N	2,520	-1130.52	Left Femur Force	N	10,008	-5283.49	N	6,805	100.54	Right Femur Force	N	10,008	-4276.67	N	6,805	-346.94
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**SECTION 1
PURPOSE OF TEST**

Test Vehicle:	<u>2007 Ford 500 Four Door Sedan</u>	NHTSA No:	<u>R70219</u>
Test Program:	<u>R&D 53.9MPH, 35% offset, 15° Angle</u>	Test Date	<u>6/15/2011</u>

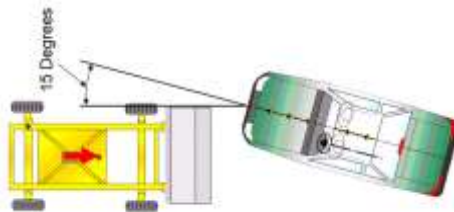
This 99.3 km/h (61.7 mph) Moving Barrier into a vehicle test is part of Frontal Offset Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-10-D-00155. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for consumer information purposes.

This test was conducted in accordance with the instructions set forth by NHTSA for a 15°, 35% offset moving barrier to vehicle impact, outlined in Task Order (TO) DTNH22-10-D-00155. 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 TO DTNH22-10-D-00155.

SECTION 2
SUMMARY OF TEST

Test Vehicle:	<u>2007 Ford 500 Four Door Sedan</u>	NHTSA No:	<u>R70219</u>
Test Program:	<u>R&D 53.9MPH, 35% offset, 15° Angle</u>	Test Date	<u>6/15/2011</u>

A 2007 Ford 500 four door sedan was impacted on the left front corner by an Research Moving Deformable Barrier (RMDB). The test vehicle was stationary and positioned at a target angle of 15° and a target offset of 35% to the line of forward motion of the RMDB. The RMDB was towed down the test track in a full forward direction, without any crabbing, and the targeted impact velocity of 99.3 km/h (61.7 mph) into the test vehicle. The test vehicle mass was 1894 kg (4167 lbs), and the RMDB mass was 2491 kg (5481 lbs). The test was conducted by Calspan Corporation on June 15, 2011.



The test was documented by one (1) real time and fourteen (14) high-speed video cameras. Camera locations and other pertinent data are located in Data Sheet No. 06 of this report. Pre- and post-test photographs of the test vehicle, the RMDB and the 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 MK (Mod Kit) anthropomorphic test device (ATD) (Serial No.: 006) was seated in the left front (driver's) seating position and one Part 572O 5% adult female (HIII 5th) ATD (Serial No. 421) was seated in the left rear seating position. The THOR MK driver was positioned according to instructions specified in Laboratory Test Procedure for FMVSS No. 208, "Occupant Crash Protection", TP208 13, July 27, 2005. The HIII 5th% left rear seat occupant was positioned according to a modified procedure of the Laboratory Test Procedure for FMVSS No. 214, "Side Impact Protection – Dynamic", TP214D-08, December 15, 2006.

The driver was restrained with a 3-point seat belt, and a dual stage frontal airbag. The left rear passenger was restrained with a 3-point seat belt.

SECTION 2 (CONTINUED)

SUMMARY OF TEST

Test Vehicle:	<u>2007 Ford 500 Four Door Sedan</u>	NHTSA No:	<u>R70219</u>
Test Program:	<u>R&D 53.9MPH, 35% offset, 15° Angle</u>	Test Date	<u>6/15/2011</u>

One hundred and ninety seven (197) channels of data from the two ATD's, test vehicle and RMDB were collected using a Kayser-Threde data acquisition system. Appendix B contains dummy data plots, as well as vehicle and RMDB response data plots.

There was 98% total windshield retention, with 97% 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 test. The maximum static crush of the vehicle was 639 mm at C1 to the left of the vehicle's centerline. The maximum crush of the lower bumper beam was 623 mm at C2, to the left of vehicle's centerline. Full vehicle measurements are presented in Section 3 of this report.

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

Structure observations include the following:

- A-Pillar and the door sill buckled causing the lower left portion of the windshield to move backwards, and the window frame to deform.
- The left shotgun rail of the vehicle frame protruded into the barrier face.

The driver ATD's visible contact points are as follows:

- Head contacted the front airbag, and headrest
- Chest contacted the airbag.
- Both knees contacted the knee bolster.

The left rear passenger ATD's visible contact points are as follows:

- Head contacted the seat back Knees contacted the driver seat back.

SECTION 2 (CONTINUED)
CRASH VEHICLE SUMMARY

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
RMDB Velocity at Impact	km/h	100.7
RMDB Test Weight	kg	2486
RMDB Maximum Static Crush	mm	456.4
Vehicle Test Weight	kg	1894
Actual Vehicle Angle	°	15°
Vehicle Maximum Static Crush	mm	79 mm to left centerline
Vertical Offset from Target Point	mm	12 Below
Lateral Offset from Target Point	mm	30 Right
Number of Data Channels		197
Number of Real-Time Cameras		1
Number of High-Speed Cameras		14

DUMMY CONTACTS

	Driver	Picture Ref.	Passenger	Picture Ref.
Dummy Type	THOR 50 th Male S/N 0006	N/A	5% Female, HIII 421	N/A
Head Contact	Airbag, Sun Visor	A-37 A-48	Top of Seat back	A-49 A-52 A-58
Upper Torso Contact	Airbag		None	
Lower Torso Contact	Airbag	A-46 A-47	None	
Left Knee Contact	Knee Bolster	A-45	Driver Seatback	A-59
Right Knee Contact	Knee Bolster	A-44	Driver Seatback	A-59

Data Anomalies:

P1 Driver

- V2P1 NECK CABLE POSTERIOR FZ -> Channel failed at 240ms
- V2P1 ABDOMEN RIGHT DY ->Pot. data spikes during event
- V2P1 ABDOMEN RIGHT DZ ->Channel questionable
- V2P1 TIBIA LEFT LOWER FY ->Channel failed between tests
- V2P1 TIBIA LEFT LOWER FZ ->Channel failed between tests
- V2P1 TIBIA LEFT LOWER MX ->Questionable after 56 ms
- V2P1 TIBIA RIGHT UPPER MY ->Questionable after 62 ms
- V2P1 ANKLE RIGHT POT X ->Questionable after 53 ms

P4 Passenger

- V2P4 HEAD 9 ARRAY CENTER X ->No Data

Vehicle Instrumentation

- V2 LEFT REAR SILL X ->Channel failed - new accelerom.
- V2 RIGHT REAR SILL Y ->New accelerometer failed

SECTION 2 (CONTINUED)
PRELIMINARY INJURY SUMMARY: Driver

Test Vehicle: 2010 Toyota Yaris Four Door Sedan NHTSA No.: R70219

Test Program: Research and Development Left Oblique Offset Test Date: 6/15/2011

Driver: Thor Serial No. 006 Injury Summary

	Nomenclature	Units	Source	Max	Min
Head	Head Rotational Acceleration X	rad/s ²	SIMon	10281.00	-3863.70
	Head Rotational Acceleration Y	rad/s ²	SIMon	13977.00	-3333.00
	Head Rotational Acceleration Z	rad/s ²	SIMon	4642.50	-13049.00
	Head Rotational Acceleration Resultant	rad/s ²	Compute	17111.26	
	Head Rotational Velocity X	rad/s	SIMon	24.76	-14.84
	Head Rotational Velocity Y	rad/s	SIMon	18.43	-63.33
	Head Rotational Velocity Z	rad/s	SIMon	8.74	-21.37
	Head Rotational Velocity Resultant	rad/s	Compute	64.45	
	36 ms HIC		Compute	2505.52	
	15 ms HIC		Compute	2505.52	
	Head Resultant CG Acceleration, 3 ms Clip	g	Compute	115.77	
	Skull fracture correlate	-	SIMon	264.60	
	Cumulative strain (Tolerance = 0.05)	-	SIMon	1.00	0.00
	Cumulative strain (Tolerance = 0.10)	-	SIMon	0.95	0.00
	Cumulative strain (Tolerance = 0.15)	-	SIMon	0.75	0.00
Neck	UNLC Transferred to OC, Neck System, FX	N	1000	181.96	-1034.08
	UNLC Neck System Tension, FZ	N	1000	3097.41	
	UNLC Neck System Compression, FZ	N	1000		-320.44
	UNLC Transferred to OC, Neck System Flexion, MY	N-m	Thortest	8.76	
	UNLC Transferred to OC, Neck System Extension, MY	N-m	Thortest		-37.74
	NIJ		Compute	0.51	
	On head acting through total neck section, FX	N	Thortest	2089.40	-3848.94
	On head acting through total neck section, FY	N	Thortest	519.59	-389.80
	On head acting through total neck section, FZ	N	Thortest	3504.91	-4533.73
	On head acting through total neck section, MX	N-m	Thortest	41.71	-15.18
	On head acting through total neck section, MY	N-m	Thortest	214.54	-253.20
	On head acting through total neck section, MZ	N-m	Thortest	36.12	-13.04
	On head acting through O.C. joint only, FX	N	Thortest	320.42	-2892.71
	On head acting through O.C. joint only, FZ	N	Thortest	1455.83	-659.32
	On head acting through O.C. joint only, MY	N-m	Thortest	8.76	-37.74
Chest	Upper Left Crux X – deflection	mm	Thortest	4.16	-33.02
	Upper Left Crux Y – deflection	mm	Thortest	-0.00	-36.73
	Upper Left Crux Z – deflection	mm	Thortest	7.64	-3.46
	Upper Left Crux D – deflection	mm	Thortest	37.36	0.00
	Upper Right Crux X – deflection	mm	Thortest	17.29	-6.82
	Upper Right Crux Y – deflection	mm	Thortest	19.83	-0.46
	Upper Right Crux Z – deflection	mm	Thortest	2.40	-1.49
	Upper Right Crux D – deflection	mm	Thortest	20.61	-0.43

SECTION 2 (CONTINUED)
PRELIMINARY INJURY SUMMARY: Driver

Test Vehicle: 2010 Toyota Yaris Four Door Sedan NHTSA No.: R70219
 Test Program: Research and Development Left Oblique Offset Test Date: 6/15/2011

Driver: Thor Serial No. 006 Injury Summary

	Nomenclature	Units	Source	Max	Min
Chest (Con't)	Lower Left Crux X – deflection	mm	Thortest	1.82	-26.74
	Lower Left Crux Y – deflection	mm	Thortest	4.89	-4.82
	Lower Left Crux Z – deflection	mm	Thortest	0.01	-15.87
	Lower Left Crux D – deflection	mm	Thortest	14.79	0.00
	Lower Right Crux X – deflection	mm	Thortest	6.08	-10.19
	Lower Right Crux Y – deflection	mm	Thortest	0.87	-5.65
	Lower Right Crux Z – deflection	mm	Thortest	7.86	-7.70
	Lower Right Crux D – deflection	mm	Thortest	5.86	-4.15
	Chest CG Acceleration, 3 ms clip	g	Compute	44.25	
Abdomen	Upper Displacement	mm	Thortest	10.20	-
	Lower Left X – deflection	mm	Thortest	30.76	-0.01
	Lower Left Y – deflection	mm	Thortest	6.13	-1.42
	Lower Left Z – deflection	mm	Thortest	4.08	-17.64
	Left Viscous Criterion Based on X - deflection		Compute	0.07	
	Lower Right X – deflection	mm	Thortest	0.25	-38.95
	Lower Right Y – deflection	mm	Thortest	11.56 ⁽¹⁾	-0.00 ⁽¹⁾
	Lower Right Z – deflection	mm	Thortest	51.30 ⁽¹⁾	-1.13 ⁽¹⁾
	Right Viscous Criterion Based on X - deflection		Compute	0.13 ⁽¹⁾	
Spine	Upper Spine (T1) AX	g	180	3.07	-38.78
	Upper Spine (T1) AY	g	180	26.91	-5.98
	Upper Spine (T1) AZ	g	180	29.28	-30.33
	Upper Spine (T1) Resultant	g	Compute	47.71	
	Middle Spine (T6) AX	g	180	16.21	-42.54
	Middle Spine (T6) AY	g	180	35.93	-5.18
	Middle Spine (T6) AZ	g	180	30.74	-10.40
	Middle Spine (T6) Resultant	g	Compute	48.36	
Pelvis	Pelvis CG Resultant Acceleration	g	Compute	55.40	
Acetabulum	Left FX force	N	600	201.00	-2594.54
	Left FY force	N	600	196.91	-967.26
	Left FZ force	N	600	3026.58	-255.43
	Left Acetabulum Resultant	N	Compute	3557.31	
	Right FX force	N	600	1877.92	-1460.88
	Right FY force	N	600	611.11	-1203.71
	Right FZ force	N	600	581.42	-344.16
	Right Acetabulum Resultant	N	Compute	2008.81	

SECTION 2 (CONTINUED)

PRELIMINARY INJURY SUMMARY: Driver Legs

Test Vehicle: 2010 Toyota Yaris Four Door Sedan NHTSA No.: R70219
 Test Program: Research and Development Left Oblique Offset Test Date: 6/15/2011

Driver: Thor Serial No. 006 Injury Summary

	Nomenclature	Units	Source	Max	Min
Knee	Left Knee Displacement, DX	mm	180	0.54	-1.50
	Right Knee Displacement, DX	mm	180	0.05	-1.34
Femur	Left Femur Force, FZ	N	600	231.95	-5283.49
	Left Femur Moment, MX	N-m	600	59.14	-238.06
	Left Femur Moment, MY	N-m	600	62.18	-79.11
	Left Femur Res (MX / MY only, not MZ)	N-m	Compute	247.97	
	Right Femur Force, FZ	N	600	923.12	-4276.67
	Right Femur Moment, MX	N-m	600	10.41	-102.91
	Right Femur Moment, MY	N-m	600	86.96	-51.98
	Right Femur Res (MX / MY only, not MZ)	N-m	Compute	130.79	
Tibia	Left Upper Tibia, FZ	N	600	708.31	-590.34
	Left Upper Tibia, MY	N-m	600	141.74	-65.15
	Left Upper Tibia, Index		Compute	0.77	
	Right Upper Tibia, FZ	N	600	1127.53	-1708.91
	Right Upper Tibia, MY	N-m	600	140.24 ⁽²⁾	-70.42 ⁽²⁾
	Right Upper Tibia, Index		Compute	0.77 ⁽²⁾	
	Left Lower Tibia, FZ	N	600	24333.14 ⁽³⁾	-389.53 ⁽³⁾
	Left Lower Tibia, MY	N-m	600	87.38	-53.32
	Left Lower Tibia, Index		Compute	1.69 ⁽³⁾	
	Right Lower Tibia, FZ	N	600	770.29	-4422.57
	Right Lower Tibia, MY	N-m	600	35.68	-186.45
	Right Lower Tibia, Index		Compute	1.24	
	Ankle	Left Ankle Rotation, RX	Deg	180	104.18 ⁽⁴⁾
Left Ankle Rotation, RY		Deg	180	27.03	-0.60
Right Ankle Rotation, RX		Deg	180	25.31	-27.50
Right Ankle Rotation, RY		Deg	180	23.36	-0.03

Anomalies

- (1) Data Spikes during event
- (2) Questionable after 62 ms
- (3) Channel Failed
- (4) Questionable after 53 ms

SECTION 2 (CONTINUED)
PRELIMINARY INJURY SUMMARY

Test Vehicle: 2010 Toyota Yaris Four Door Sedan NHTSA No.: R70219
 Test Program: Research and Development Left Oblique Offset Test Date: 6/15/2011

Left Rear Passenger: H3 Serial No. 421 Injury Summary

	Nomenclature	Source	Max	Min
Head	Angular acceleration (rad/sec^2) - X	SIMon	1975.20	-2210.40
	Angular acceleration (rad/sec^2) - Y	SIMon	619.28	-389.51
	Angular acceleration (rad/sec^2) - Z	SIMon	533.83	-1274.20
	Angular acceleration - resultant (rad/sec^2)	SIMon	2538.06	
	Angular velocity (rad/sec) - X	SIMon	24.87	-25.88
	Angular velocity (rad/sec) - Y	SIMon	21.08	-0.02
	Angular velocity (rad/sec) - Z	SIMon	0.12	-41.34
	Angular velocity - resultant (rad/sec)	SIMon	46.50	
	36 ms HIC	Compute	1218.47	
	15 ms HIC	Compute	609.60	
	Skull fracture correlate	SIMon	69.76	
	Cumulative strain (Tolerance = 0.05)	SIMon	0.98	
	Cumulative strain (Tolerance = 0.10)	SIMon	0.52	
	Cumulative strain (Tolerance = 0.15)	SIMon	0.22	
	Head resultant CG acceleration, 3 ms clip (g's)	Compute	86.49	
Neck	Upper Neck Tension (N) Fz	1000	3395.77	
	Upper Neck Compression (N) Fz	1000		-1130.36
	Upper Neck NTF	Compute	0.95	
	Upper Neck NTE	Compute	0.69	
	Upper Neck NCF	Compute	0.01	
	Upper Neck NCE	Compute	0.82	
Chest	Chest Deflection (mm)	600	0.12	-42.57
	Chest CG acceleration, 3 ms clip, (G's)	Compute	52.94	
Femur	Right Fz Force (N)	600	2722.98	-346.94
	Left Fz Force (N)	600	144.18	-100.54
Anomalies				
None				

SECTION 3

DATA SHEETS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date 6/15/2011

<u>Data Sheet No.</u>		<u>Page No.</u>
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2	Seat Adjustment, Fuel System, and Steering Wheel Data	3-6
3	Dummy CMM Measurements	3-9
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DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

TEST VEHICLE INFORMATION

NHTSA No.	RA0220
Make	2010
Model	Ford
Body Style	Fusion
Year	Four Door Sedan
VIN	3FAHP0GA0AR384267
Color	Silver
Delivery Date	1/31/2011
Odometer Reading (mi)	68 mi
Odometer Reading (km)	109.4 km
Dealer	Larson Ford INC
Transmission	6-Speed Manual
Final Drive	Front Wheel Drive
Type/No. Cyl	14
Engine Disp. (L)	2.5
Engine Placement	Lateral
Roof Rack	No
Sunroof/T-Top	No
Tinted Glass	No
Traction Control	Yes
Power Brakes	Yes
Front Disc	Yes
Rear Disc	Yes

TEST VEHICLE OPTIONS

Anti-Lock Brakes	Yes
All-Wheel Drive	No
Power Steering	Yes
Driver Front Airbag	Yes
Driver Side Airbag	Yes
Driver Head Airbag	No
Driver Curtain Airbag	Yes
Driver Knee Airbag	No
Pass. Front Airbag	Yes
Pass. Side Airbag	Yes
Pass. Head Airbag	Yes
Pass. Curtain Airbag	No
Pretensioners	Yes
Load Limiters	No
Bucket Seats	No
Air Cond.	Yes
AM/FM CD	Yes
Tilt Steering	Yes
Automatic Door Locks	Yes
Power Windows	Yes
Power Seats	No
Other	-
Other	-

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

Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Ford Motor Company
Date of Manufacture	05/06

GVWR (kg)	2186
GAWR Front (kg)	1150
GAWR Rear (kg)	1066

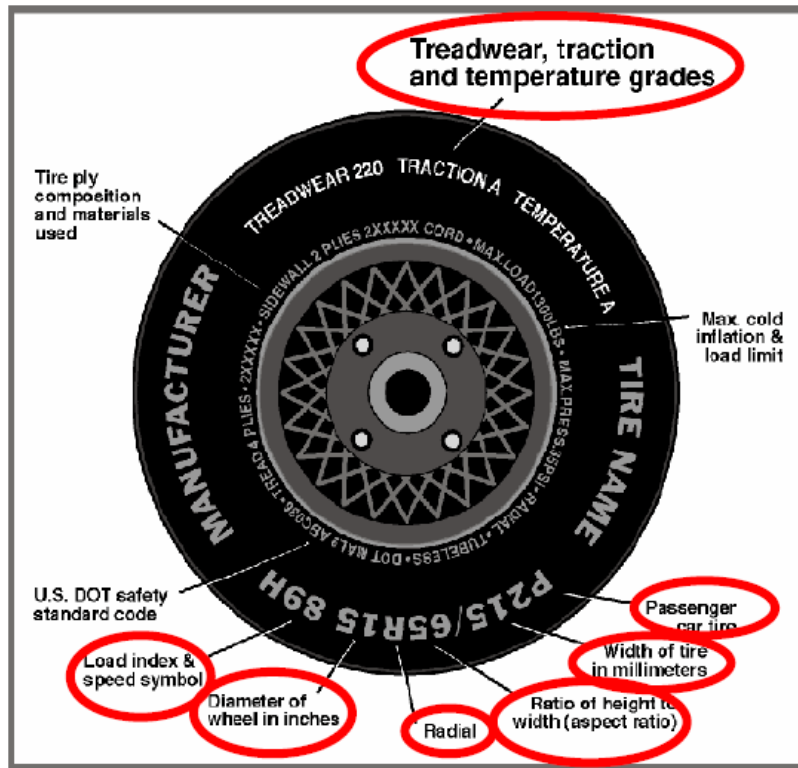
VEHICLE SEATING AND WEIGHT CAPACITY

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Contoured	Bench	-	
Number of Occupants	2	3	-	5
Capacity Wt. (VCW) (kg)				430
Cargo Wt. (RCLW) (kg)				90

DATA SHEET NO. 1 (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011



Measured Parameter	Front	Rear
Maximum Tire Pressure	300	300
Cold Pressure (kPa)	220	220
Recommended Tire Size	P215/60R17	P215/60R17
Tire Size on Vehicle	P215/60R17	P215/60R17
Tire Manufacturer	Pirelli	Pirelli
Tire Model	P4	P4
Treadwear	750	750
Traction	A	A
Temperature Grades	B	B
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	1 Nylon, 2 Steel, 2 Polyester	1 Nylon, 2 Steel, 2 Polyester
Load Index/Speed Symbol	96T	96T
Tire Material	Rubber	Rubber
DOT Safety Code Right	0310	0310
DOT Safety Code Left	0310	0310

DATA SHEET NO. 1 (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date 6/15/2011

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	504.5	342		556	432	
Right	kg	504	329.5		504	402	
Ratio	%	60	40		56	44	
Totals	kg	1008.5	671.5	1680	1060	834	1894

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1680
Weight of 1 P572E ATD & 1 P572O ATD	kg	153.54
Rated Cargo/Luggage Weight (RCLW)	kg	90
Calculated Vehicle Target Weight (TVTW)	kg	1892

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	757	762	771	775	1146
As Tested	mm	745	758	732	742	1261
Post Test	mm	852	749	696	750	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2,865
Total Vehicle Length at Left Side	mm	4,951
Total Vehicle Length at Centerline	mm	5,093
Total Vehicle Length at Right Side	mm	4,951
Weight of Ballast in Cargo Area	kg	22.0
Weight of Vehicle Components Removed	kg	0
Amount of Stoddard Solvent in Fuel Tank	L	70.0

LIST OF COMPONENTS REMOVED TO MEET TEST WEIGHT: No components were removed to meet the required Test weights.

MASS OF BALLAST ADDED (kg) 0

DATA SHEET NO.1 (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date 6/15/2011

TARGET VEHICLE STRUCTURAL MEASUREMENT

	Elements	Pre-Test (mm)
1	Total Length	5093
2	Total Width	1887
3	Bumper Top Height	-35
4	Bumper Bottom Height	87
5	Longitudinal Member Top Height	-54
6	Distance Between Longitudinal Members	1216
7	Longitudinal Member Width	102
8	Engine Top Height	-425
9	Engine Bottom Height	219
10	Engine and Gearbox Width	758
11	Front Bumper-Engine Distance	539
12	Front Shock Absorber Fixing Height	-383
13	Bonnet Leading Edge Height	-324
14	Front Shock Absorber Fixing Width	1151
15	Front Bumper – Front Axle Distance	1015
16	Front Axle – A Pillar Distance	518
17	A- Pillar – B-Pillar Distance	1135
18	B-Pillar – Rear Axle Distance	1212
19	B-Pillar – C-Pillar Distance	974
20	Roof Sill Bottom Height	-959
21	Roof Sill Top Height	-1002
22	Floor Sill Bottom Height	256
23	Floor Sill Top Height	126

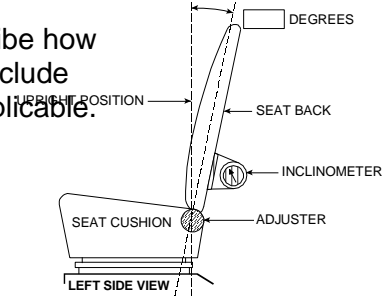
DATA SHEET NO. 2

SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

NOMINAL 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.



	Deg.
Driver seat back angle:	8.0
Passenger seat back angle:	-

FRONT SEAT ASSEMBLY

SEAT FORE/AFT POSITIONS

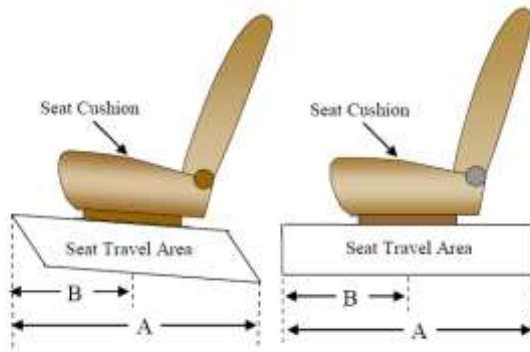
Describe the method used of determining seat fore/aft positions. set in mid position

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	284mm	142mm
Passenger Seat	FIXED	FIXED

SEAT BELT UPPER ANCHORAGE

Describe the method of positioning seat belt upper anchorages.

	Total # of Positions	Placed in Position #
Driver Seat	5	0 (upper most position)
Passenger Seat	FIXED	FIXED

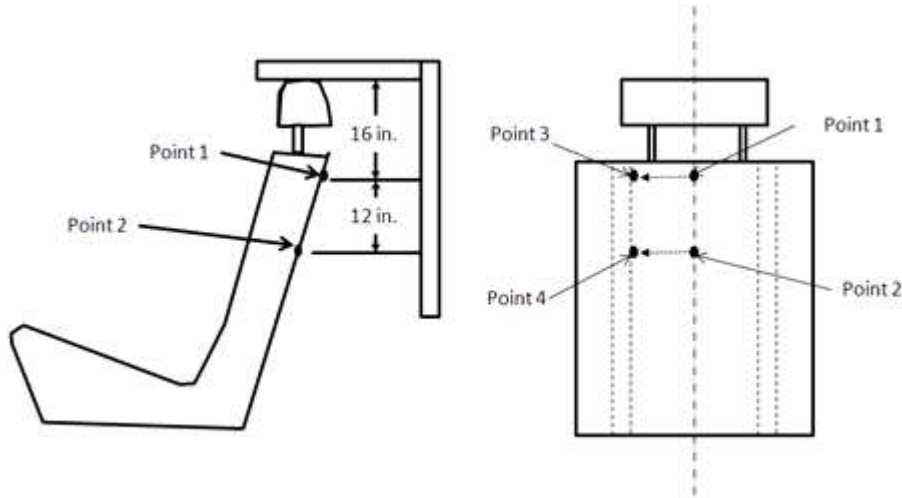


DATA SHEET NO. 2 (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

Seat Back Measurement Points



Reference point: Rear most center of the top of rear bumper beam
 +X - From the rear of the vehicle to the front of the vehicle
 +Y - From 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

	X	Y	Z
Point 3	2381.473	-543.163	-421.141
Point 4	2499.12	-572.692	-122.275

Note: See Appendix E.1 for a detailed description of procedure to obtain required measurements

DATA SHEET NO. 2 (CONTINUED)

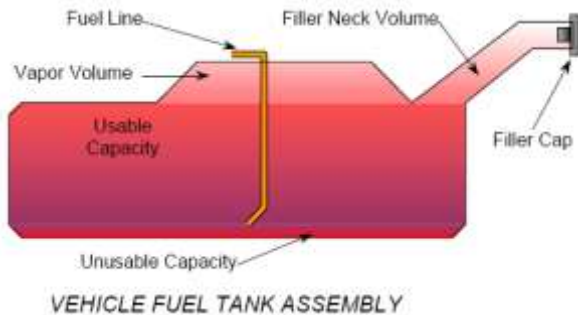
SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

FUEL TANK CAPACITY

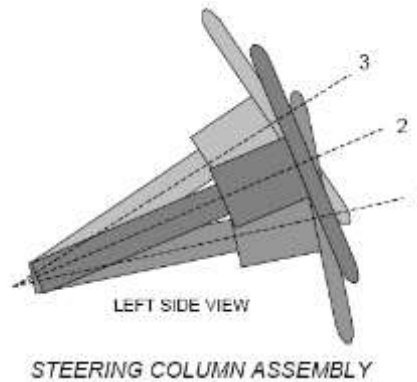
	Liters
Usable Capacity of "Standard Tank"	76.1
Usable Capacity of "Optional Tank"	
92%-94% of Usable Capacity	70-71.5
Actual Amount of Solvent Used	70.0
1/3 of Usable Capacity	25.4

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



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.



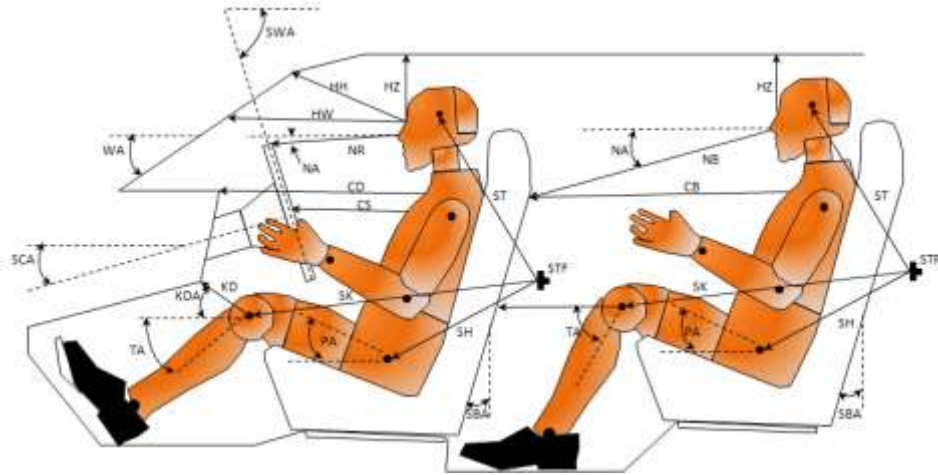
STEERING COLUMN POSITIONS

	Degrees	Fore/Aft Position (mm)
Lowermost position No. 1	67.6	
Geometric center position No. 2	65.0	
Uppermost position No. 3	62.4	
Telescoping Steering Wheel Travel		NA
Test Position	65.0	NA

DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No.: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011



Code	Measurement Description	Driver (P1)		Left Rear Passenger (P4)	
		Length (mm)	Angle(°)	Length (mm)	Angle (°)
WA°	Windshield Angle		28.4		
SWA°	Steering Wheel Angle		65.0		
SCA°	Steering Column Angle		23.8		
SA°	Seat Back Angle (on headrest post)		7.1		
HZ	Head to Roof (Z)	200	90	320	90
HH	Head to Header	338	25.3		
HW	Head to Windshield	608	0		
NR/NB	Nose to Rim/Seat Back	468	14.1	652	11.6
CD/CB	Chest to Dash/Seat Back	615		651	
CS	Chest to Steering Hub	363	0		
RA	Rim to Abdomen	205	0		
KDL/KBL	Left Knee to Dash/Seat Back	131	21.4	360	14.1
KDR/KBR	Right Knee to Dash/Seat Back	95	19.5	378	18.8
PA°	Pelvic Angle		24.4		19.5
TA°	Tibia Angle		62.1		61.0
SK	Striker to Knee	632	5.8	645	19.5
ST	Striker to Head	495	85	325	58.2
SH	Striker to H-Point	263	33.7	398	45.9
HAX°	Head Angle X		55.7		
HAY°	Head Angle Y		8		
NAX°	Neck Angle X		4.9		
NAY°	Neck Angle Y		6.6		
TAX°	T Angle X		41.3		
TAY°	T Angle Y		41.2		
LAX°	Lumbar Angle (X)		15.2		
LAY°	Lumbar Angle (Y)		33.1		

DATA SHEET NO. 3 (CONTINUED)

DUMMY CMM MEASUREMENTS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

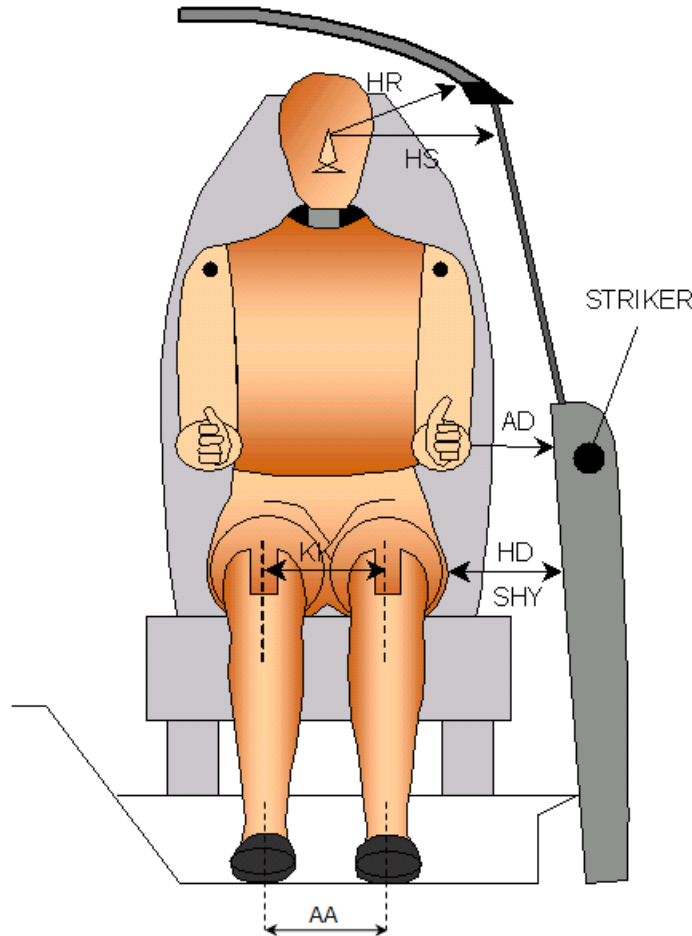
Description	Units	Driver			Left Rear Passenger		
		X	Y	Z	X	Y	Z
Striker (Driver/Passenger)	mm	2507.453	-	-261.524	1484.404	-	-383.262
Head CG	mm	2605.69	-	-767.005	1628.606	-	-665.94
Bridge of Nose	mm	-	-	-	1713.688	-	-671.129
Tip of Nose	mm	-	-	-	1735.506	-	-638.111
Shoulder Bolt	mm	2650.042	-	-509.378	1621.075	-	-435.823
Tip of Chin	mm	2697.149	-	-626.068	1717.314	-	-562.596
H-point	mm	2756.439	-551.69	-88.9455	1688.069	-	-138.122
Left Knee	mm	3167.518	-	-224.657	2107.012	-	-150.274
Right Knee	mm	3191.696	-	-229.396	2103.078	-	-152.271
Left Ankle	mm	3417.505	-	117.1168	2279.743	-	123.6807
Right Ankle	mm	3435.836	-	113.8579	2267.32	-	126.8354
Left Heel	mm	3431.377	-	246.4001	2228.315	-	219.3358
Right Heel	mm	3428.755	-237.56	246.911	2204.419	-	218.4114
Driver's Outboard Seat Anchor Bolt	mm	3056.907	-	170.6806			
Outboard Head Restraint Post	mm	2409.894	-448.88	-574.634	-	-	-
Top of Head Restraint*	mm	2435.695	-	-825.926	1329.718	-	-722.321
Center of Steering Wheel	mm	3067.753	-364.37	-458.735			

Reference point: Rear most center of the top of rear bumper beam
 +X - From the rear of the vehicle to the front of the vehicle
 +Y - From 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: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

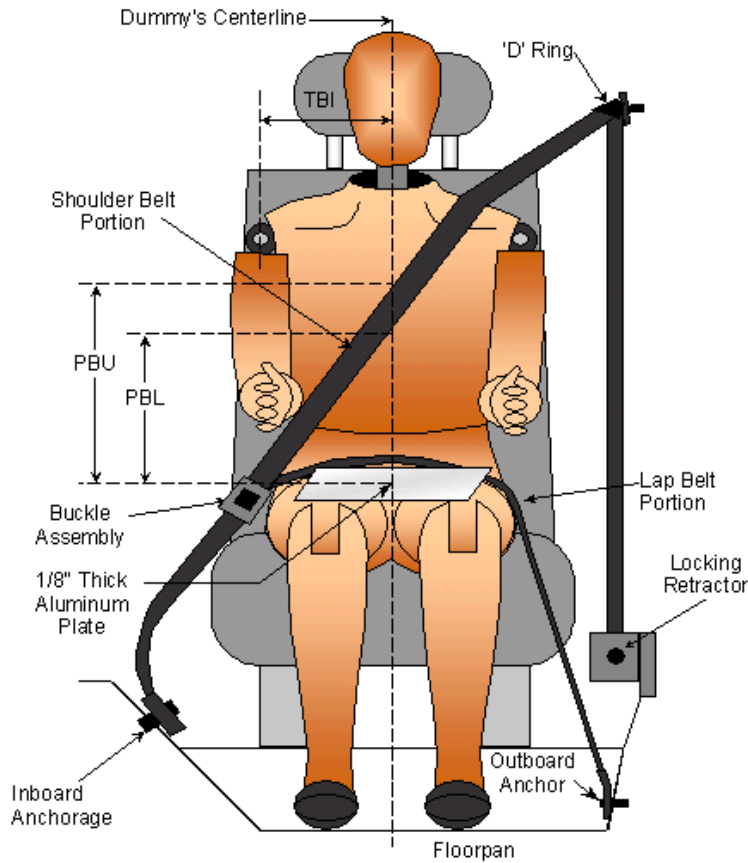


Code	Description	Units	Driver (P1)	Passenger (P4)
AD	Arm to Door	mm	130	112
HD	H-Point to Door	mm	130	192
HR	Head to Side Header	mm	221	288
HS	Head to Side Window	mm	352	366
KK	Knee to Knee	mm	270	166
SHY	Striker to H-Point (Y Direction)	mm	265	305
AA	Ankle to Ankle	mm	300	165

DATA SHEET NO. 5

SEAT BELT POSITIONING DATA

Test Vehicle:	2007 Ford 500 Four Door Sedan	NHTSA No:	R70219
Test Program:	R&D 53.9MPH, 35% offset, 15° Angle	Test Date	6/15/2011



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver (P1)	Passenger (P4)
PBU — Top surface of aluminum plate to belt upper edge	mm	360	304
PBL — Top surface of aluminum plate to belt lower edge	mm	280	210

BELT LENGTH DATA

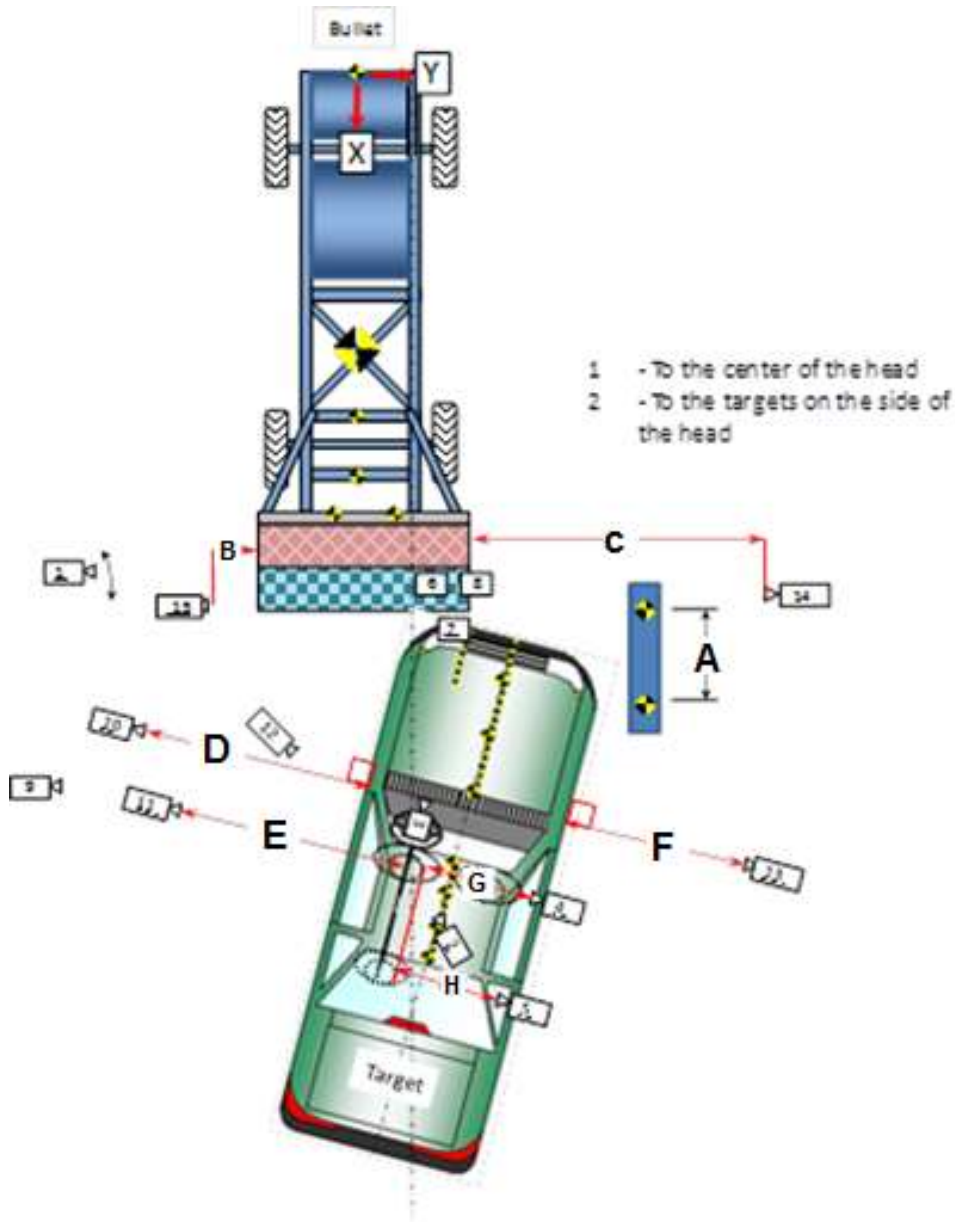
Measurement Description	Units	Driver (P1)	Passenger (P4)
Shoulder belt length as measured on ATD	mm	924	968
Lap Belt Length as measured on ATD	mm	610	540
Remainder of belt on reel	mm	666	692
Total belt length for continuous webbing systems	mm	2200	2200

DATA SHEET NO. 6

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

Horizontal Location

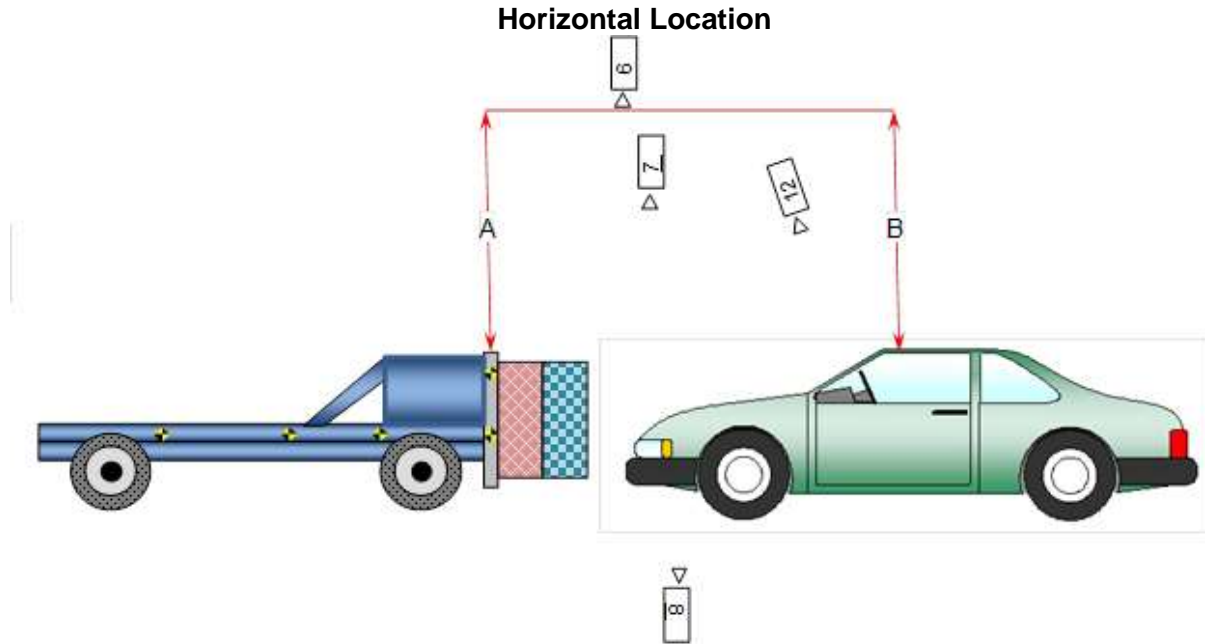


A	mm	915
B	mm	
C	mm	8738
D	mm	8763
E	mm	9462
F	mm	8882
G	mm	7620
H	mm	730

DATA SHEET NO. 6 (CONTINUED)

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011



	Units	Value
A	mm	3449
B	mm	3226

DATA SHEET NO. 6 (CONTINUED)

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

CAMERA LOCATIONS

No.	Camera View	Location (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Side View					
2	Onboard Driver Over Shoulder	7628	780	1320	12.5	500
3	Onboard Driver Lower Leg	6588	410	360	6.5	500
4	Onboard Driver Perpendicular	6698	1270	925	12.5	500
5	Onboard Left Rear Passenger Perpendicular	7588	1150	920	12.5	500
6	Overall Top View	6310	780	3920	14	1000
7	Zoomed Top View	4670	770	3320	28	1000
8	Pit Front					
9	Overall Left Side	5618	9425	1390	24	1000
10	Target Vehicle Left Side	4818	8645	1350	24	1000
11	Driver's Motion	4898	9305	1205	50	1000
12	Look Down Driver's Motion	7698	2300	3350	24	1000
13	Target Vehicle Right Side	9798	11912	1380	20	1000
14	Bullet Vehicle Left Side	4708	9956	1360	24	1000
15	Bullet Vehicle Right Side	4708	8655	1350	28	1000
16	Onboard RMDB					

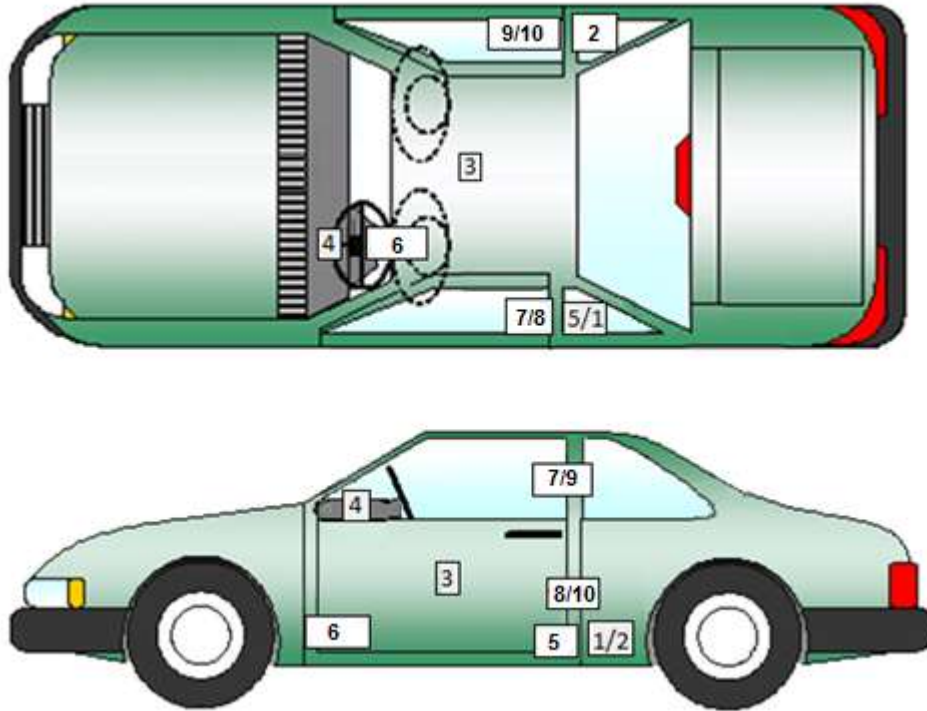
Reference point: center most rearward point of the RMDB when in contact with the Target Vehicle):

- +X = from back of RMDB to front of RMDB
- +Y = right of monorail center
- +Z = up from ground

DATA SHEET NO. 7

VEHICLE INSTRUMENTATION LOCATIONS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

Accelerometer Location	Axes	Units	Location		
			X	Y	Z
Left Rear Sill	X,Y	mm	2184.766	-556.787	138.0526
Right Rear Sill	X,Y	mm	2227.036	534.6738	180.1564
Vehicle CG	X, Y, Z	mm	2727.76	10.3728	-300.756
Driver Seat Track	X	mm	3234.303	-0.0174	-390.187
Instrument Panel	X, Y, Z	mm	2616.039	-291.721	132.2233
Behind Brake Pedal	X, Y, Z	mm	3749.123	-409.584	80.3801

Reference point: Rear most center of the top of rear bumper beam
 +X - From the rear of the vehicle to the front of the vehicle
 +Y - From 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: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

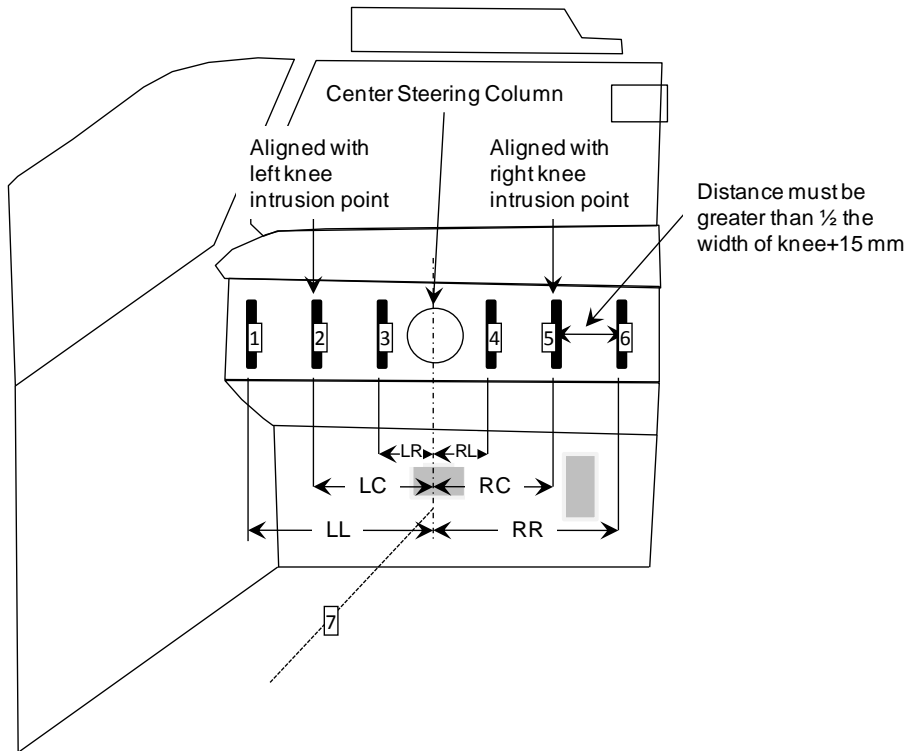
VEHICLE INSTRUMENTATION DATA

Loc.	Description	Axes	Units	Positive Direction		Negative Direction	
				Max	Time (ms)	Max	Time (ms)
1	Left Rear Cross Member	X	G	0.69	25.05	-1.76	164.20
		Y	G	19.76	45.40	-4.19	76.05
2	Right Rear Cross Member	X	G	2.57	152.40	-38.29	49.95
		Y	G	438.80	111.80	-4.08	204.90
3	Vehicle CG	X	G	3.36	33.55	-38.49	44.25
		Y	G	26.26	39.60	-3.70	76.05
		Z	G	23.97	38.55	-13.89	62.15
4	Instrument Panel	X	G	16.58	121.15	-55.54	50.05
5	Driver Seat Track	X	G	2.66	148.90	-42.12	43.95
		Y	G	32.28	42.60	-4.07	75.55
		Z	G	22.06	39.90	-18.95	81.50
6	Behind Brake Pedal	X	G	22.88	7.90	-119.55	35.85
		Y	G	45.00	37.10	-9.44	77.80
		Z	G	42.35	40.70	-124.95	214.95
7	Driver Shoulder Belt		N	5825.73	56.10	-40.61	189.55
8	Driver Lap Belt		N	4137.64	64.40	-0.70	-3.60
9	Passenger Shoulder Belt		N	6692.04	78.30	-12.14	204.25
10	Passenger Lap Belt		N	6681.21	62.55	-0.29	1.20

DATA SHEET NO. 7 (CONTINUED)

VEHICLE INSTRUMENTATION DATA

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011



Location	Distance (mm)	Location	Distance (mm)
LL	100	RL	100
LC	150	RC	150
LR	200	RR	200

VEHICLE INSTRUMENTATION DATA

Loc.	Description		Positive Direction		Negative Direction	
			Max	Time (ms)	Max	Time (ms)
1	Left knee contact switch (LL) (ms)	*	0.61	49.80	-5.44	49.45
2	Left knee contact switch (LC) (ms)	*	0.72	60.45	-5.51	223.80
3	Left knee contact switch (LR) (ms)	*	0.57	55.05	-5.30	49.65
4	Right knee contact switch (RL) (ms)	*	0.65	67.75	-5.40	41.65
5	Right knee contact switch (RC) (ms)	*	0.46	68.50	-5.28	34.70
6	Right knee contact switch (RR) (ms)	*	0.67	51.75	-5.38	70.00
7	Toe pan string pot (mm)		0.11	-0.55	-128.38	295.10

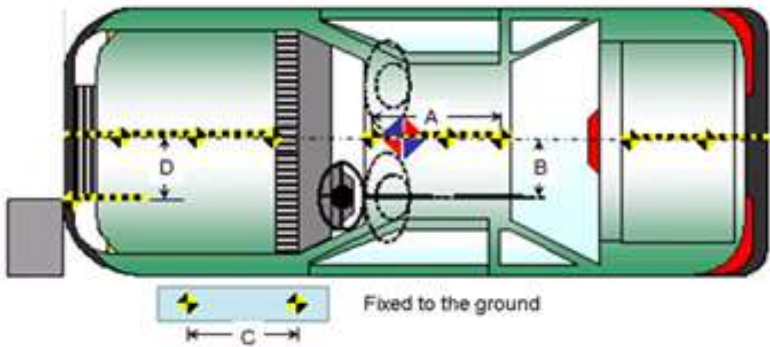
* No contact with CS number 6

* The measurement indicates the initial time the voltage changed

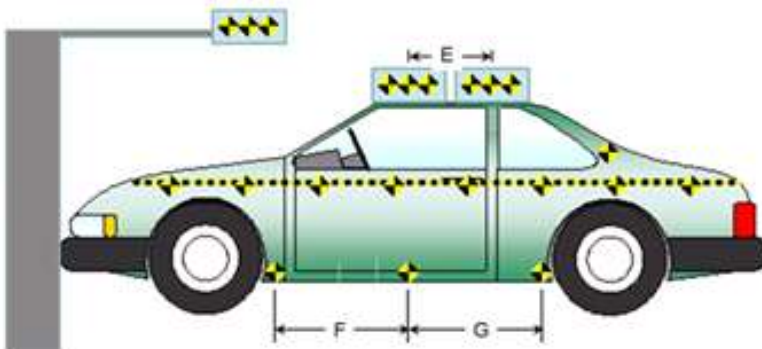
DATA SHEET NO. 8

VEHICLE PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

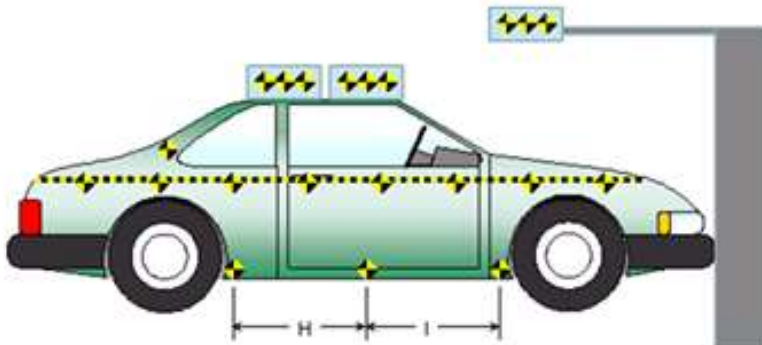
Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011



Top View



Left Side View



Right Side View

Item	Units	Value
A	mm	610
B	mm	370
C	mm	915
D	mm	284
E	mm	1220
F	mm	974
G	mm	962
H	mm	962
I	mm	970

DATA SHEET NO. 8 (CONTINUED)

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

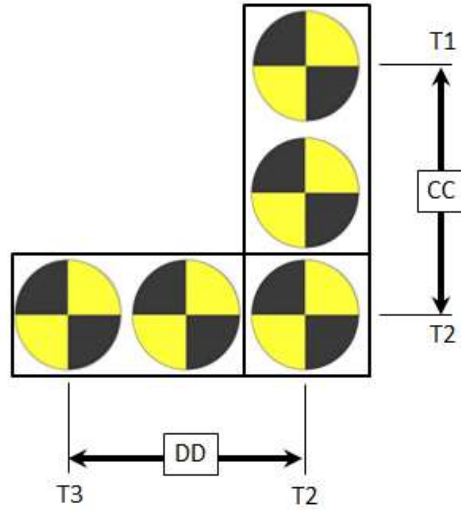
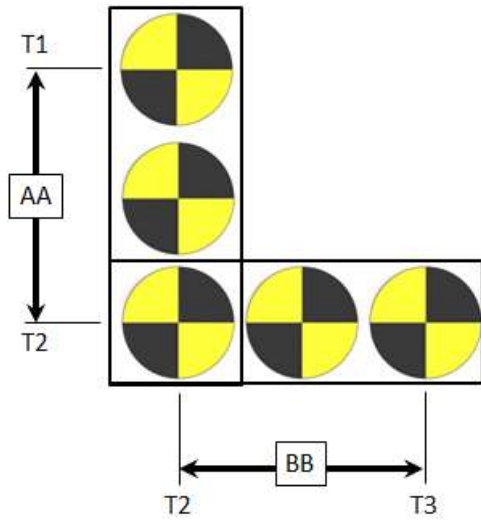
Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date 6/15/2011

Overhead Reference Targets:

AA (T1 to T2) 236 mm
BB (T2 to T3) 236 mm

Ground Reference Targets:

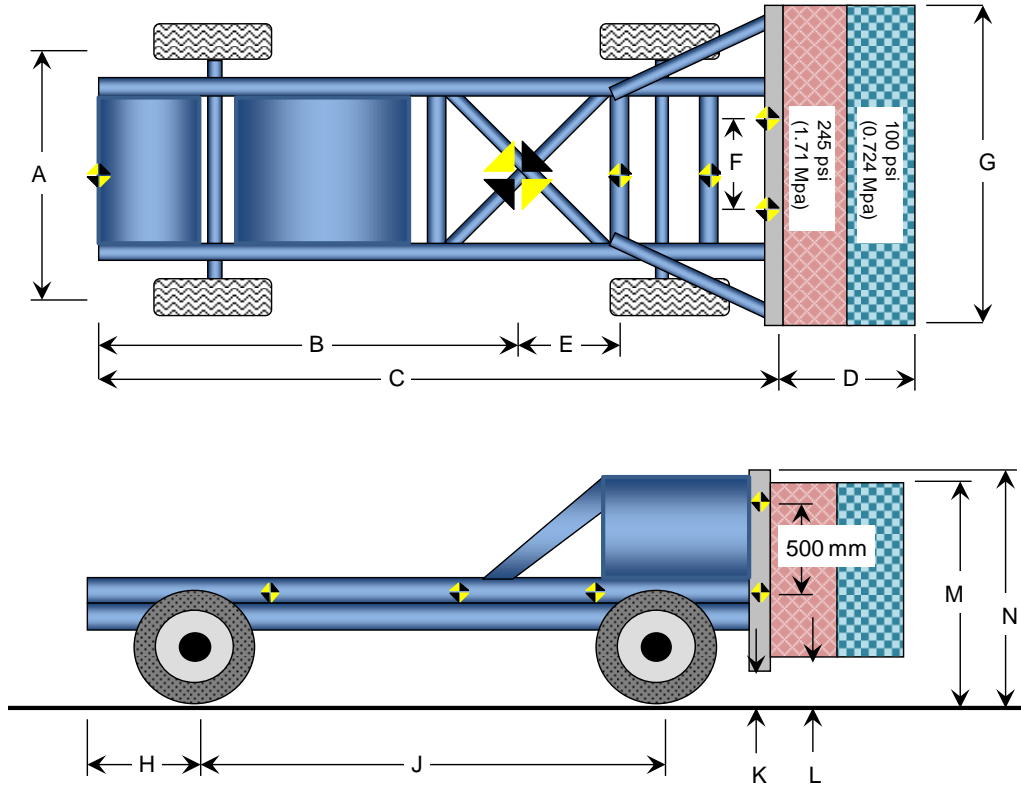
CC (T1 to T2) 236 mm
DD (T2 to T3) 236 mm



DATA SHEET NO. 8 (CONTINUED)

RMDB PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011



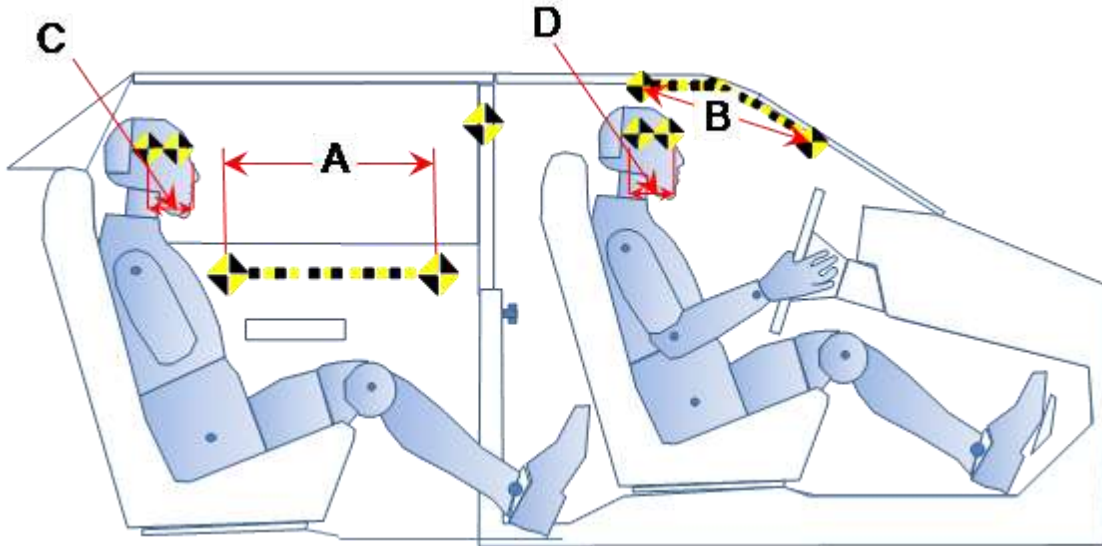
Item	Units	Value
A	mm	1550
B	mm	2215
C	mm	3940
D	mm	606
E	mm	1185
F	mm	1130
G	mm	2210
H	mm	795
I	mm	500
J	mm	2585
K	mm	90
L	mm	98
M	mm	1055
N	mm	1190

	Units	Front Axle	Rear Axle	Total
Left	kg	779.3	470.4	1249.7
Right	kg	749.3	487.2	1236.5
Ratio	%	61.5%	38.5%	100%
Total	kg	1528.6	957.6	2486.2
CG After of Front Axle	mm			1285

DATA SHEET NO. 8 (CONTINUED)

DUMMY PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011



Item	Units	Value
A	mm	305
B	mm	305
C	mm	51
D	mm	37

DATA SHEET NO. 9

TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date 6/15/2011

INSTRUMENTATION

Driver Dummy Accelerometers	119
Passenger Dummy Accelerometers	34
Vehicle Structure Accelerometers	30
Total	185

CAMERA COVERAGE

High-Speed Vehicle Onboard	4
High-Speed Offboard	10
Real-Time Panning	1
Total	15

DATA SHEET NO. 10

POST TEST OBSERVATIONS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

TEST DUMMY INFORMATION AND CONTACT

Description	Driver	Picture Ref.	Passenger	Picture Ref.
Dummy Type	50 th Male THOR	N/A	5 th Female H3	N/A
Dummy Serial No.	0006	N/A	006	N/A
Lower Leg Type	THOR	N/A		N/A
Lower Leg Serial No.	LX103/104	N/A		N/A
Head Contact	Airbag, visor	A-37 A-48	Head rest (top of seat)	A-49 A-52 A-58
Upper Torso Contact	Airbag	-	None	-
Lower Torso Contact	Airbag	A-46 A-47	None	-
Left Knee Contact	Knee Bolster	A-45	None	A-59
Right Knee Contact	Knee Bolster	A-44	None	A-59

DOOR OPENING AND SEAT TRACK INFORMATION

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

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions	Picture Ref
Windshield Damage	Damage, minor separation on left lower side	A-21
Window Damage	None	A-36 / A-51
Other Notable Effects	Left frame rail protruded into barrier during event	-

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

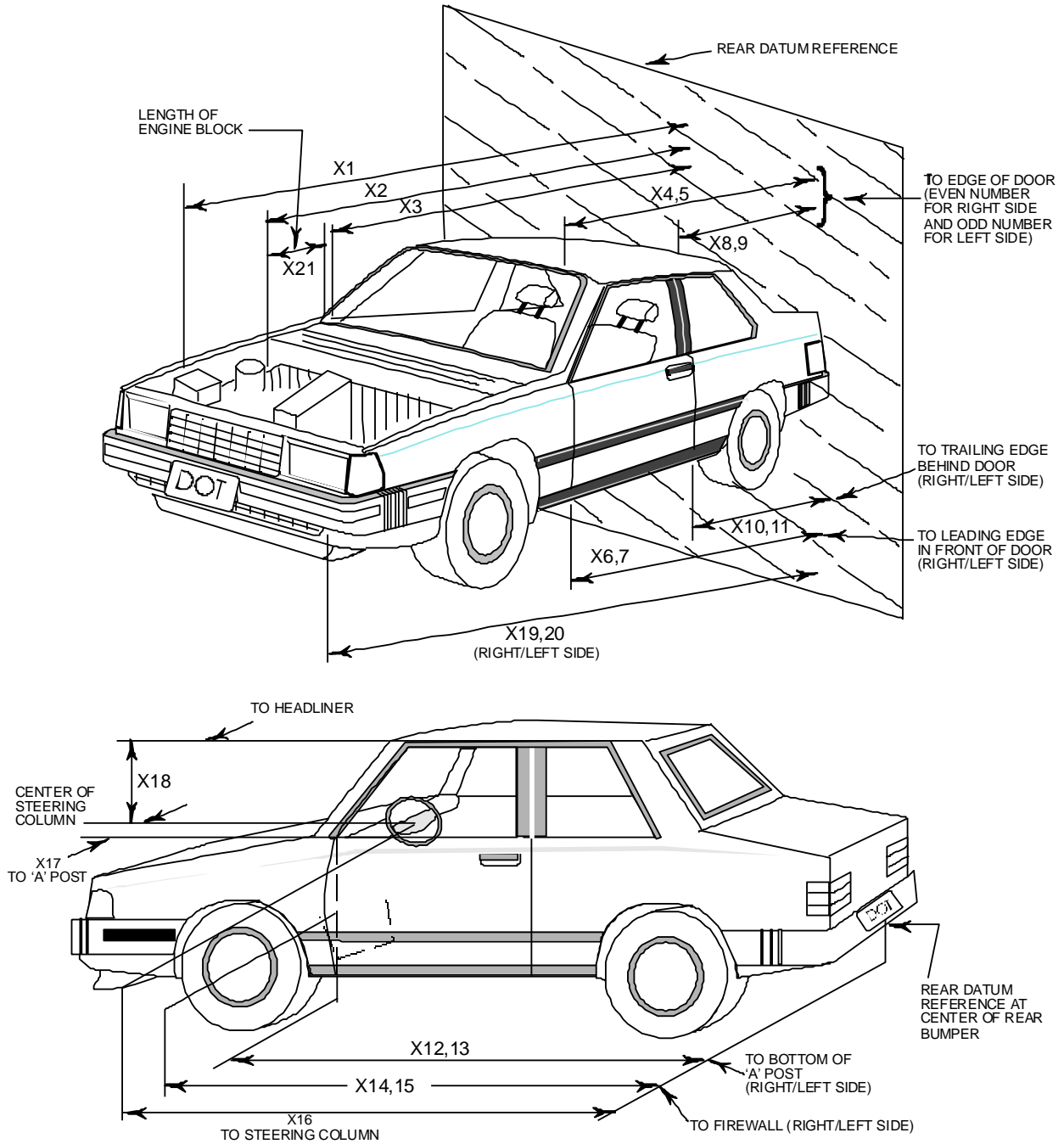
Restraint Type	Driver (Occupant 1)		Passenger (Occupant 2)	
	Installed	Operated	Installed	Operated
Front Airbag	Yes	Yes	No	N/A
Curtain Airbag	Yes	Disabled, No	Yes	Disabled, No
Knee Airbag	No	No	No	N/A
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	Yes

Note if any restraint system was disabled

DATA SHEET NO. 11

VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011



DATA SHEET NO. 11 (CONTINUED)

VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

No.	Measurement Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	5093	4666*	426*
2	Rear Surface of Vehicle (RSOV) to Front of Engine	4553	4341	212
3	RSOV to Firewall	4035	3792	243
4	RSOV to Upper Leading Edge of Right Door	3541	3536	5
5	RSOV to Upper Leading Edge of Left Door	3543	3505	37
6	RSOV to Lower Leading Edge of Right Door	3523	3517	7
7	RSOV to Lower Leading Edge of Left Door	3522	3490	32
8	RSOV to Upper Trailing Edge of Right Door	2435	2431	3
9	RSOV to Upper Trailing Edge of Left Door	2434	2409	25
10	RSOV to Lower Trailing Edge of Right Door	2472	2469	3
11	RSOV to Lower Trailing Edge of Left Door	2466	2439	27
12	RSOV to Bottom of "A" Post of Right Side	3608	3593	15
13	RSOV to Bottom of "A" Post of Left Side	3613	3516	96
14	RSOV to Firewall, Right Side	4102	4076	26
15	RSOV to Firewall, Left Side	4063	3694	369
16	RSOV to Steering Column	3068	2992	76
17	Center of Steering Column to "A" Post	310	304	6
18	Center of Steering Column to Headliner	427	418	9
19	RSOV to Right Side of Front Bumper	5001	4995*	6*
20	RSOV to Left Side of Front Bumper	5000	4420*	581*
21	Length of Engine Block	519	519	0
RD	RSOV to Right Side of Dash Panel	3254	3233	21
CD	RSOV to Center of Dash Panel	3305	3211	94
LD	RSOV to Left Side of Dash Panel	3253	3118	135

All Dimensions in mm

*Measurement is approximate as the bumper fell off due to impact

DATA SHEET NO. 12

ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

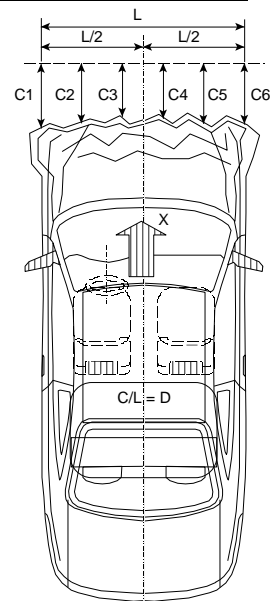
VEHICLE INFORMATION

VIN: 1FAFP24117G105822 Wheelbase: 2865
 Vehicle Size Category: Passenger – Four Door Sedan Test Weight (kg): 1894

ACCELEROMETER DATA

Accelerometer Locations: Data Sheet No.7
 Cal. Procedure/Interval: Shaker table 180 days
 Integration Algorithm: Trapezoidal
 Impact Velocity (km/h): 100.7
 Velocity Change (km/h): 100.7

Linearity: >99%



CRUSH PROFILE

Collision Deformation Classification : 12FYEW3
 Midpoint of Damage: C2
 Damage Region Length (mm): 1455
 Impact Mode: 35%offset, 15° Angle

CRUSH MEASUREMENTS: WITH BUMPER COVER

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	4947	4445	-502
C2	Crush zone 2 at left side	mm	5045	4406	-639
C3	Crush zone 3 at left side	mm	5087	4555	-532
C4	Crush zone 4 at right side	mm	5087	4760	-327
C5	Crush zone 5 at right side	mm	5046	4927	-119
C6	Crush zone 6 at right side	mm	4950	5044	94
L	C1 to C6	mm	1455	1146	-309

CRUSH MEASUREMENTS: WITH BUMPER COVER REMOVED

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	4932	4534	-398
C2	Crush zone 2 at left side	mm	4991	4367	-624
C3	Crush zone 3 at left side	mm	5005	4537	-468
C4	Crush zone 4 at right side	mm	5003	4710	-294
C5	Crush zone 5 at right side	mm	4989	4858	-131
C6	Crush zone 6 at right side	mm	4934	4955	21
L	C1 to C6	mm	1321	1251	70

DATA SHEET NO. 13

VEHICLE INTRUSION MEASUREMENTS

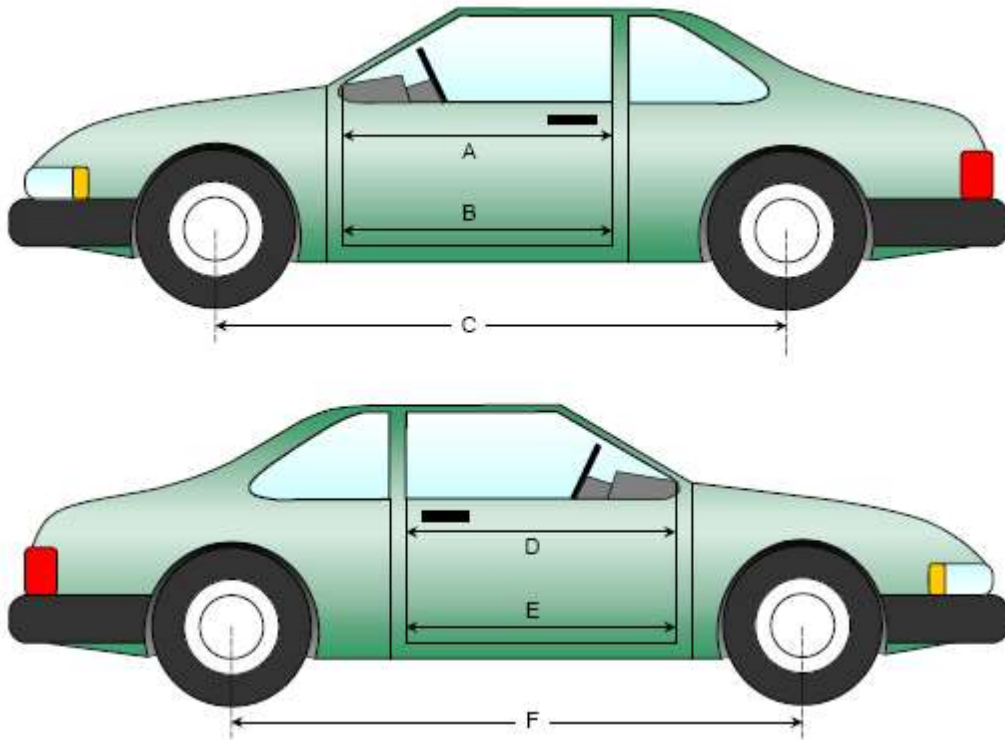
Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	966	926	-40
B	Left Side Lower	mm	849	810	-39
D	Right Side Upper	mm	966	960	-5
E	Right Side Lower	mm	864	863	-1

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2865	2694	-171
F	Right Side Wheelbase	mm	2864	2835	-29



DATA SHEET NO.13 (CONTINUED)

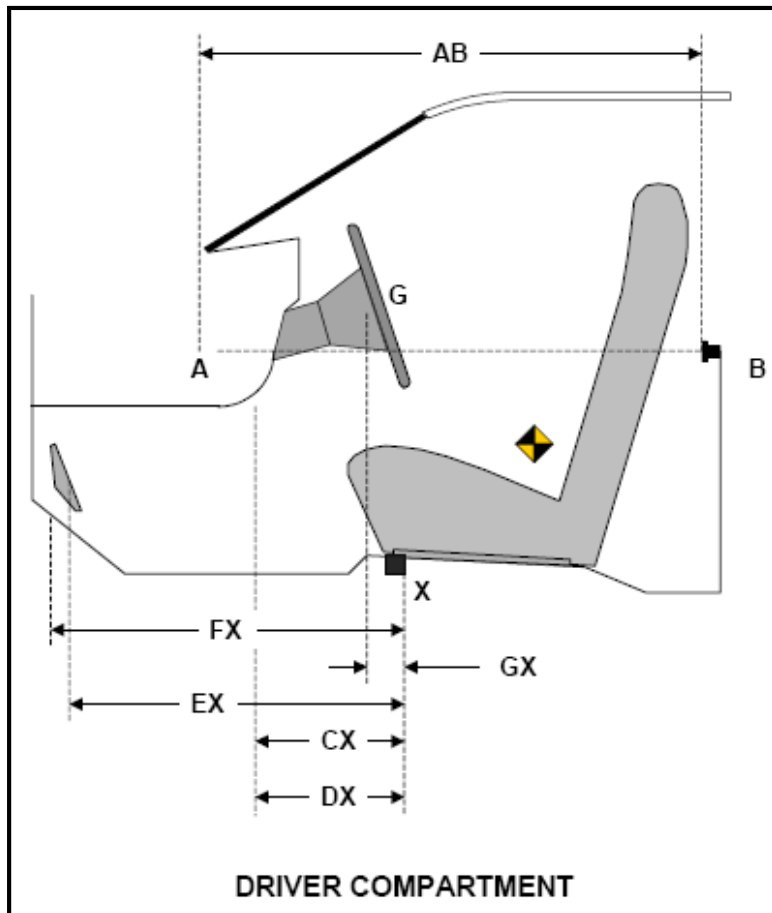
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	760	759	-2
CX	Left Knee Bolster to X	mm	278	182	-96
DX	Right Knee Bolster to X	mm	263	191	-72
EX	Brake Pedal to X	mm	488	428	-59
FX	Foot Rest to X	mm	543	500	-43
GX	Center of Steering Column Wheel Hub to X	mm	11	-63	-74

X = Front of Seat Track (Stationary)

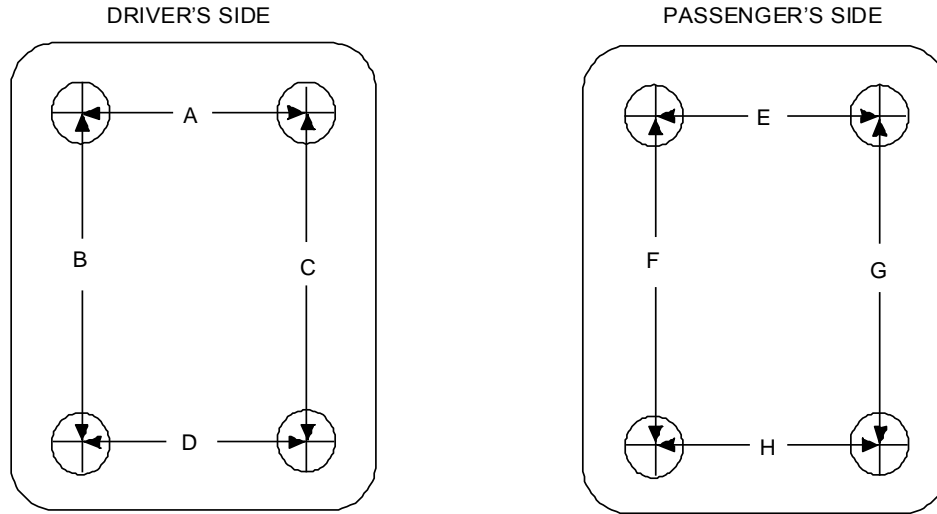


DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

TOP VIEW THROUGH FLOOR PAN



UNDERBODY FLOORBOARD DEFORMATION

Measurement	Pre-Test	Post-Test	Difference
A	400	404	-4
B	197	230	-33
C	294	286	7
D	403	407	-3
E			
F			
G			
H			

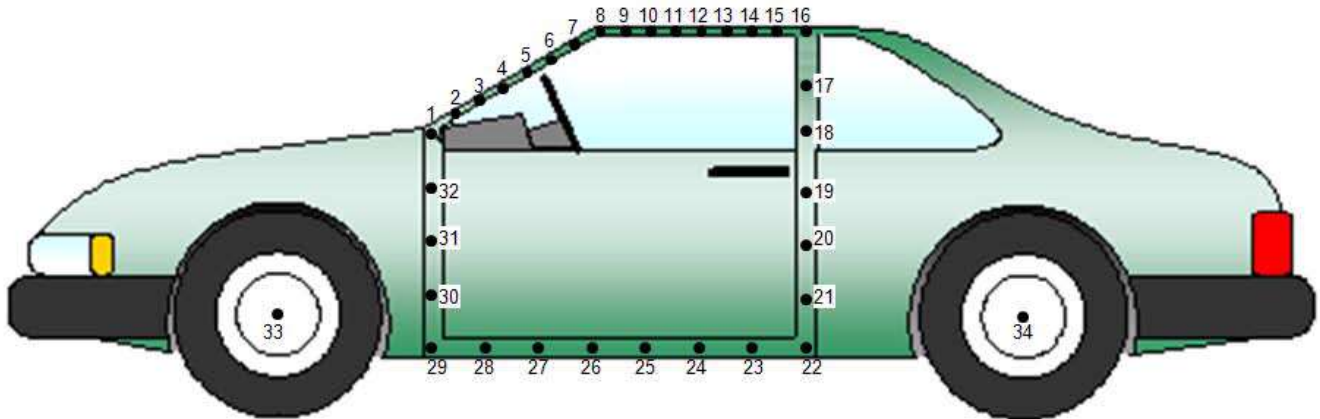
All units in millimeters

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date 6/15/2011

DRIVER SIDE DOOR SILL INTRUSIONS



Left Side View

Reference point: Rear most center of the top of rear bumper beam
+X – From the rear of the vehicle to the front of the vehicle
+Y – From 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

Note: See appendix E.2 for detailed procedure to measure required Door sill intrusion.

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

DRIVER SIDE DOOR SILL INTRUSIONS

Pt.	Pre-Test			Post-Test			Difference		
	X	Y	Z	X	Y	Z	X	Y	Z
1	3581.8	-823.8	-500.4	3534.6	-860.3	-484.0	-47	-36	16
2	3510.7	-801.3	-563.4	3479.8	-826.5	-547.4	-31	-25	16
3	3442.2	-783.2	-616.3	3429.7	-786.8	-594.8	-12	-4	21
4	3373.3	-764.9	-667.7	3364.1	-764.9	-645.1	-9	0	23
5	3300.9	-747.1	-718.2	3293.7	-745.8	-696.2	-7	1	22
6	3227.0	-729.0	-767.3	3222.0	-724.5	-747.8	-5	4	19
7	3152.4	-711.7	-812.6	3148.0	-706.8	-794.8	-4	5	18
8	3074.9	-696.6	-853.4	3073.1	-689.6	-838.2	-2	7	15
9	2994.4	-680.4	-891.1	2992.9	-673.5	-877.5	-1	7	14
10	2914.1	-666.8	-921.8	2912.8	-659.6	-909.6	-1	7	12
11	2827.6	-652.5	-949.5	2826.9	-644.6	-938.3	-1	8	11
12	2743.1	-642.7	-968.9	2742.9	-635.6	-958.0	0	7	11
13	2655.6	-633.3	-984.7	2655.5	-625.2	-975.3	0	8	9
14	2566.8	-626.2	-995.9	2567.5	-618.3	-987.2	1	8	9
15	2478.2	-621.5	-1003.4	2479.7	-615.3	-994.1	2	6	9
16	2371.0	-618.0	-1008.2	2371.4	-613.2	-999.0	0	5	9
17	2406.5	-713.0	-798.7	2405.4	-711.0	-790.5	-1	2	8
18	2445.5	-800.7	-553.6	2442.5	-801.4	-546.7	-3	-1	7
19	2489.0	-848.4	-344.4	2484.7	-850.0	-337.6	-4	-2	7
20	2510.5	-850.8	-104.6	2505.8	-854.7	-98.0	-5	-4	7
21	2548.8	-840.0	65.0	2546.8	-844.8	73.9	-2	-5	9
22	2537.5	-819.7	169.0	2534.8	-827.2	177.2	-3	-8	8
23	2628.2	-819.6	176.5	2625.0	-829.3	184.4	-3	-10	8
24	2754.8	-820.8	171.2	2750.9	-829.6	177.7	-4	-9	7
25	2909.8	-821.3	180.1	2905.9	-827.3	191.2	-4	-6	11
26	3064.1	-822.2	181.0	3060.0	-823.6	202.3	-4	-1	21
27	3220.7	-823.0	183.5	3211.9	-828.0	201.9	-9	-5	18
28	3340.0	-823.6	182.9	3316.1	-852.1	199.4	-24	-29	17
29	3392.9	-811.1	147.0	3368.6	-850.9	161.1	-24	-40	14
30	3461.1	-809.7	-29.4	3408.7	-858.9	-24.1	-52	-49	5
31	3464.7	-812.2	-179.5	3403.0	-868.3	-170.9	-62	-56	9
32	3473.3	-813.2	-336.1	3431.3	-850.7	-324.5	-42	-38	12

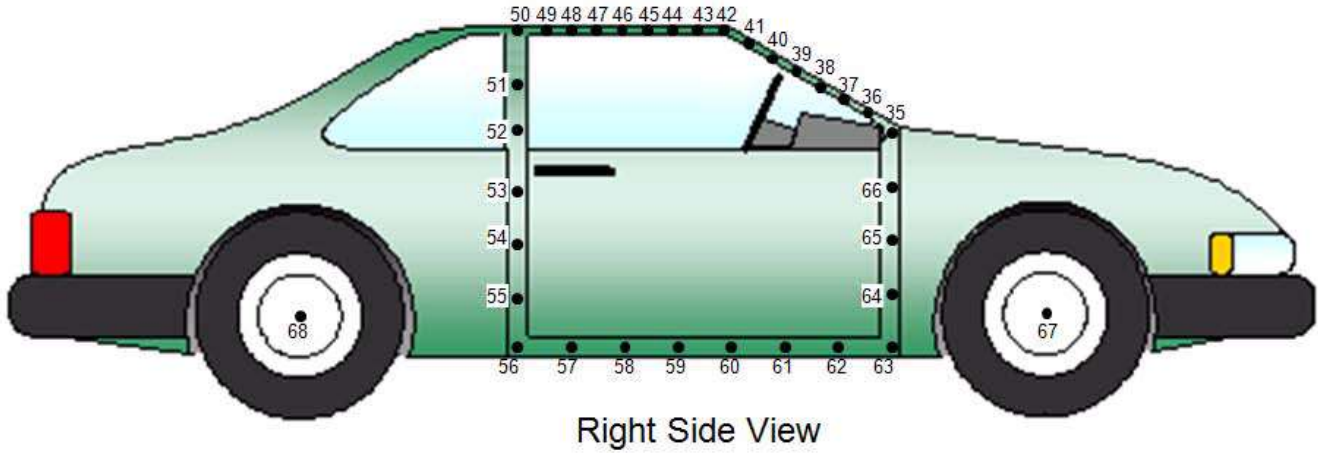
Note: Please see Appendix E.2 for a detailed procedure used to measure the required door sill intrusions

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

DRIVER SIDE DOOR SILL INTRUSIONS



Reference point: Rear most center of the top of rear bumper beam
+X – From the rear of the vehicle to the front of the vehicle
+Y – From 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

Note: See appendix E.2 for detailed procedure to measure required Door sill intrusion.

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

DRIVER SIDE DOOR SILL INTRUSIONS

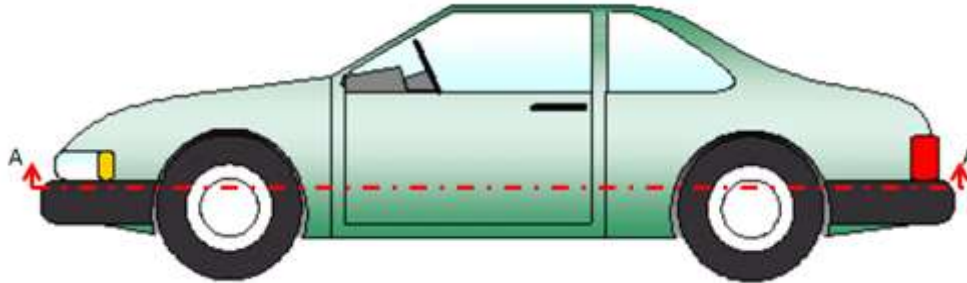
Pt.	Pre-Test			Post-Test			Difference		
	X	Y	Z	X	Y	Z	X	Y	Z
33	3581.0	830.4	-499.2	3565.9	881.5	-495.6	-15	51	4
34	3521.8	805.5	-557.5	3505.0	859.1	-555.2	-17	54	2
35	3451.1	790.6	-608.4	3435.4	841.5	-602.8	-16	51	6
36	3379.0	773.9	-660.2	3364.3	819.3	-654.7	-15	45	5
37	3305.3	757.4	-710.9	3293.6	794.4	-705.2	-12	37	6
38	3231.5	743.0	-757.5	3220.5	772.3	-752.8	-11	29	5
39	3155.2	728.3	-802.3	3147.1	749.0	-798.9	-8	21	3
40	3077.4	710.9	-845.9	3073.6	727.1	-841.6	-4	16	4
41	2998.6	695.2	-883.4	2993.7	709.4	-878.5	-5	14	5
42	2917.8	679.7	-916.5	2911.4	692.0	-913.6	-6	12	3
43	2830.4	666.8	-943.8	2826.4	678.6	-940.7	-4	12	3
44	2745.2	657.8	-963.0	2741.0	668.8	-960.7	-4	11	2
45	2657.8	647.6	-979.4	2651.9	659.9	-976.3	-6	12	3
46	2569.2	640.7	-990.6	2564.0	652.4	-987.8	-5	12	3
47	2480.2	637.2	-997.4	2475.0	648.3	-995.0	-5	11	2
48	2368.6	634.8	-1001.9	2364.1	646.5	-999.2	-5	12	3
49	2376.5	740.8	-815.0	2364.2	755.8	-810.2	-12	15	5
50	2410.8	834.1	-554.3	2402.3	846.9	-550.8	-8	13	4
51	2445.0	935.0	-354.5	2440.9	948.6	-352.3	-4	14	2
52	2460.7	947.1	-172.8	2456.0	959.2	-167.4	-5	12	5
53	2465.4	936.5	55.8	2461.6	948.2	58.9	-4	12	3
54	2451.1	866.8	279.3	2447.4	878.0	286.8	-4	11	7
55	2602.6	877.3	267.6	2598.3	892.4	274.6	-4	15	7
56	2755.9	878.0	269.1	2749.5	895.5	275.7	-6	18	7
57	2907.8	879.0	267.5	2901.1	898.9	276.0	-7	20	9
58	3055.1	880.5	266.0	3052.4	903.7	274.5	-3	23	9
59	3207.8	879.0	268.6	3203.3	905.9	276.6	-4	27	8
60	3359.4	878.5	269.4	3353.7	909.0	278.3	-6	31	9
61	3529.2	868.9	285.8	3523.3	903.6	295.6	-6	35	10
62	3557.8	931.0	73.0	3570.0	972.8	80.8	12	42	8
63	3572.9	938.6	-122.8	3576.6	985.2	-116.5	4	47	6
64	3577.1	925.8	-327.0	3573.5	980.8	-320.1	-4	55	7
65	4079.0	910.8	190.1	4061.9	899.0	154.1	-17	-12	-36
66	1214.9	911.4	180.9	1226.6	911.7	229.2	12	0	48

Note: Please see Appendix E.2 for a detailed procedure used to measure the required door sill intrusions

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011



Reference point: Rear most center of the top of rear bumper beam
 +X - From the rear of the vehicle to the front of the vehicle
 +Y - From 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

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

Pt.	Pre-Test			Pt.	Post-Test		
	X	Y	Z		X	Y	Z
1	165.6	-795.2	-116.8	1	938.0	-931.7	-147.6
2	92.2	-717.2	-110.2	2	879.9	-927.6	-147.3
3	39.8	-509.9	-101.9	3	806.5	-914.4	-144.6
4	11.7	-232.7	-99.4	4	685.1	-893.8	-140.5
5	4.8	27.7	-101.8	5	479.7	-868.9	-135.1
6	17.1	319.1	-99.3	6	270.6	-829.5	-129.7
7	39.0	512.9	-97.8	7	203.4	-807.3	-125.5
8	93.0	723.9	-89.7	8	144.4	-773.2	-122.8
9	142.0	781.3	-86.0	9	105.5	-732.7	-118.2
10	243.1	832.1	-91.7	10	76.7	-686.5	-116.8
11	424.2	870.6	-105.7	11	51.0	-601.5	-110.4
12	615.9	897.7	-100.0	12	35.0	-491.9	-103.6
13	894.9	941.1	-103.9	13	6.4	-211.4	-84.3
14	1525.7	942.7	-97.1	14	1.2	-106.9	-76.5
15	1737.5	935.5	-107.4	15	-0.9	-8.8	-71.4
16	1999.4	940.2	-109.7	16	-0.2	106.9	-64.5
17	2252.1	944.2	-107.6	17	3.7	219.7	-56.2
18	2491.8	947.6	-94.9	18	13.2	347.3	-48.7
19	2678.3	948.3	-98.3	19	24.0	449.9	-42.9
20	2869.0	946.9	-97.6	20	37.0	550.8	-37.6
21	3163.6	944.8	-105.5	21	53.5	640.9	-31.4
22	3528.1	939.2	-103.0	22	83.8	719.6	-29.0

Note: See Appendix E.3 for a detailed procedure on how to measure the required vehicle exterior crush profile.

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

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

Pt.	Pre-Test			Pt.	Post-Test		
	X	Y	Z		X	Y	Z
23	3757.8	949.8	-103.1	23	101.3	745.7	-26.9
24	4375.4	940.0	-126.1	24	163.7	800.6	-24.7
25	4654.8	878.7	-123.3	25	279.9	844.6	-25.2
26	4927.7	673.6	-43.4	26	405.2	871.7	-27.2
27	4970.6	583.1	-41.9	27	571.0	899.0	-27.6
28	4999.7	276.8	-43.9	28	654.6	910.0	-32.5
29	5008.4	2.1	-40.0	29	810.5	935.6	-35.4
30	5002.9	-262.0	-42.4	30	1567.4	942.9	-50.3
31	4971.5	-585.3	-43.0	31	1708.0	942.4	-54.7
32	4932.2	-672.4	-47.4	32	1890.1	945.9	-58.3
33	4643.1	-876.5	-126.3	33	1995.1	948.9	-59.7
34	4394.9	-935.2	-131.2	34	2129.8	952.6	-77.9
35	3762.2	-945.2	-119.1	35	2303.5	956.1	-83.4
36	3546.4	-931.4	-120.7	36	2516.2	962.4	-86.0
37	3272.8	-935.9	-118.9	37	2818.1	971.8	-92.0
38	3015.8	-939.1	-118.6	38	3093.8	980.6	-99.6
39	2783.6	-938.9	-118.3	39	3360.1	984.1	-107.1
40	2546.3	-939.3	-117.9	40	3531.3	983.8	-109.7
41	2406.7	-935.4	-117.4	41	3615.2	979.4	-109.0
42	2255.0	-933.8	-106.6	42	3695.0	980.4	-113.1
43	2012.5	-929.4	-113.5	43	3775.8	975.7	-115.2
44	1726.0	-923.5	-113.7	44	4349.5	834.7	-134.5
45	1521.5	-930.6	-114.4	45	4439.4	768.0	-140.4
46	827.9	-920.7	-120.2	46	4484.6	736.7	-145.4
				47	4513.2	705.5	-145.4
				48	4657.9	490.2	-164.0
				49	4738.8	483.5	-164.1
				50	4815.7	478.0	-168.4
				51	4885.3	533.3	-169.4
				52	4915.0	571.3	-165.1
				53	4930.2	483.1	-168.8
				54	4897.0	396.7	-174.5
				55	4834.9	285.1	-178.4
				56	4748.6	151.2	-186.2
				57	4677.9	49.1	-192.8

Note: See Appendix E.3 for a detailed procedure on how to measure the required vehicle exterior crush profile.

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

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

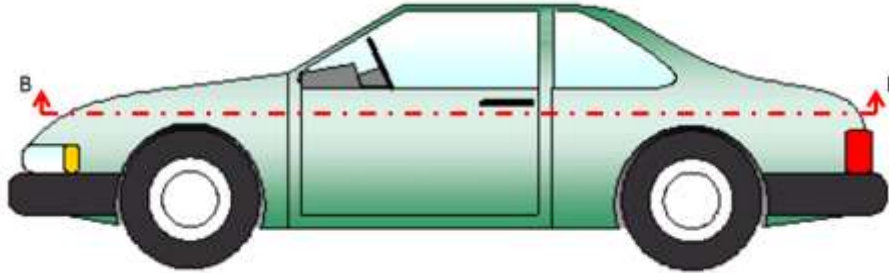
Pt.	Post-Test		
	X	Y	Z
58	4612.9	-43.4	-193.3
59	4541.0	-135.6	-198.0
60	4468.1	-227.7	-201.6
61	4408.8	-301.4	-201.2
62	4365.4	-355.3	-202.5
63	4330.5	-408.3	-210.3
64	4398.0	-493.2	-218.0
65	4461.2	-548.0	-222.1
66	4618.5	-604.6	-227.4
67	4616.9	-621.3	-225.4
68	4655.1	-726.6	-232.7
69	4569.1	-763.3	-232.2
70	4226.3	-599.9	-214.5
71	4115.3	-621.3	-215.5
72	4192.5	-700.4	-221.7
73	4195.6	-769.1	-222.5
74	3639.0	-943.7	-221.3
75	3507.2	-971.2	-221.4
76	3347.5	-980.3	-218.8
77	3142.6	-979.9	-211.3
78	2945.6	-975.2	-206.6
79	2706.8	-966.9	-199.3
80	2611.1	-963.5	-198.4
81	2344.0	-934.8	-191.7
82	2118.5	-931.9	-188.3
83	1883.4	-928.6	-181.5
84	1683.3	-925.4	-178.7
85	1620.2	-927.9	-176.7

Note: See Appendix E.3 for a detailed procedure on how to measure the required vehicle exterior crush profile.

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011



Reference point: Rear most center of the top of rear bumper beam
 +X - From the rear of the vehicle to the front of the vehicle
 +Y - From 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

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

Pt.	Pre-Test			Pt.	Post-Test		
	X	Y	Z		X	Y	Z
1	221.8	-760.3	-316.4	1	1404.9	-898.4	-372.1
2	184.1	-647.0	-318.2	2	1288.5	-900.7	-367.9
3	151.9	-398.3	-315.4	3	1187.3	-900.6	-365.5
4	140.3	-259.0	-315.7	4	1010.5	-886.0	-361.9
5	167.4	-15.8	-309.1	5	888.6	-877.0	-357.0
6	139.4	267.2	-312.4	6	716.3	-864.1	-354.3
7	163.1	514.4	-308.3	7	580.5	-852.8	-349.7
8	198.0	713.2	-307.3	8	447.8	-839.0	-346.6
9	238.2	790.1	-303.3	9	337.2	-820.5	-343.0
10	342.3	840.1	-305.0	10	280.1	-803.7	-340.6
11	494.7	864.0	-309.2	11	231.4	-767.8	-338.9
12	609.0	875.7	-308.2	12	189.5	-681.7	-331.6
13	874.4	899.4	-301.3	13	176.3	-612.9	-329.2
14	1045.9	925.9	-302.9	14	165.6	-536.9	-323.6
15	1249.2	940.4	-305.0	15	161.1	-497.7	-319.0
16	1457.3	928.6	-301.4	16	155.5	-453.3	-318.9
17	1781.5	932.8	-301.8	17	148.9	-395.7	-312.4
18	2089.7	939.1	-305.2	18	141.3	-312.6	-308.0
19	2444.4	941.6	-307.3	19	136.1	-235.4	-302.6
20	2553.6	941.4	-320.2	20	136.4	-247.1	-298.9
21	2947.9	945.5	-307.0	21	157.1	-14.1	-287.1
22	3141.5	942.3	-315.3	22	153.6	188.4	-274.0

Note: See Appendix E.3 for a detailed procedure on how to measure the required vehicle exterior crush profile.

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

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

Pt.	Pre-Test			Pt.	Post-Test		
	X	Y	Z		X	Y	Z
23	3436.2	934.8	-312.2	23	149.0	421.6	-257.3
24	3694.2	925.4	-305.8	24	188.1	688.7	-240.0
25	3931.6	927.9	-306.4	25	228.8	789.4	-235.5
26	4104.8	933.9	-302.2	26	404.4	867.6	-235.9
27	4324.1	898.5	-295.3	27	513.9	885.6	-236.4
28	4628.5	635.4	-314.0	28	627.6	896.7	-236.6
29	4761.6	530.4	-301.3	29	635.1	897.3	-236.7
30	4786.7	463.0	-306.4	30	740.8	905.5	-244.5
31	4786.6	119.4	-315.4	31	937.2	934.3	-248.0
32	4787.2	-131.9	-317.4	32	1039.0	955.0	-247.0
33	4785.9	-370.9	-318.8	33	1162.0	959.4	-252.2
34	4772.8	-502.3	-308.5	34	1290.0	958.8	-253.2
35	4177.6	-910.3	-317.1	35	1496.5	942.5	-258.8
36	4059.7	-922.0	-316.8	36	1672.7	940.4	-262.7
37	3859.5	-918.8	-310.3	37	1866.7	946.6	-267.4
38	3554.0	-919.9	-320.5	38	2151.8	952.9	-282.6
39	3303.9	-926.1	-326.0	39	2327.0	955.5	-288.4
40	3057.1	-929.5	-324.7	40	2538.5	964.3	-292.6
41	2819.3	-930.3	-322.8	41	2988.0	980.6	-301.1
42	2551.7	-931.8	-326.7	42	3304.0	983.9	-306.2
43	2274.2	-926.8	-327.1	43	3518.8	983.1	-313.7
44	1946.6	-920.9	-323.7	44	3637.2	976.7	-317.7
45	1682.5	-913.9	-320.3	45	3650.5	971.5	-316.9
46	1423.9	-912.8	-324.6	46	3793.5	954.7	-322.1
47	1204.7	-924.5	-321.5	47	3982.7	946.3	-327.8
48	983.6	-896.8	-325.3	48	4167.6	930.1	-331.6
49	806.9	-877.6	-325.2	49	4340.1	891.6	-337.6
				50	4424.1	828.8	-342.6
				51	4511.3	801.8	-347.1
				52	4571.5	775.7	-345.3
				53	4470.9	678.6	-349.4
				54	4468.9	541.7	-357.5
				55	4687.9	447.9	-367.6
				56	4682.1	260.1	-377.5
				57	4676.1	129.5	-388.9

Note: See Appendix E.3 for a detailed procedure on how to measure the required vehicle exterior crush profile.

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

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

Pt.	Post-Test		
	X	Y	Z
58	4584.8	-6.1	-393.0
59	4466.9	-112.7	-397.5
60	4347.5	-197.8	-393.2
61	4174.6	-341.4	-405.6
62	4109.0	-386.0	-406.1
63	4108.2	-393.8	-407.6
64	3998.7	-527.9	-415.0
65	3898.3	-680.0	-422.7
66	3749.2	-798.3	-424.8
67	3671.0	-891.5	-427.9
68	3575.8	-1000.2	-434.8
69	3437.7	-1014.0	-432.2
70	3306.7	-924.0	-426.7
71	3189.0	-930.4	-419.9
72	3054.9	-938.9	-419.0
73	2886.9	-944.8	-414.1
74	2650.0	-943.7	-410.6
75	2428.2	-933.5	-403.9
76	2355.8	-913.3	-400.8
77	2148.3	-913.0	-396.3
78	1918.2	-910.4	-392.3
79	1740.6	-907.5	-387.9
80	1591.8	-935.3	-385.2

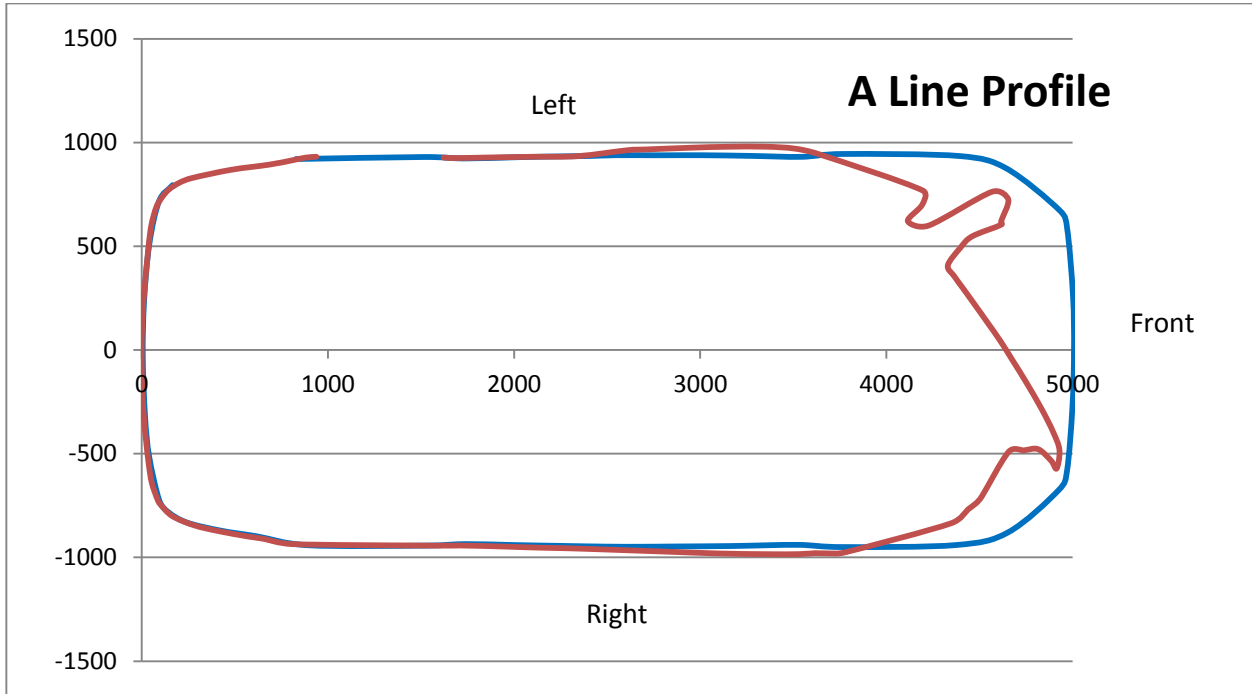
Note: See Appendix E.3 for a detailed procedure on how to measure the required vehicle exterior crush profile.

DATA SHEET NO.13 (CONTINUED)

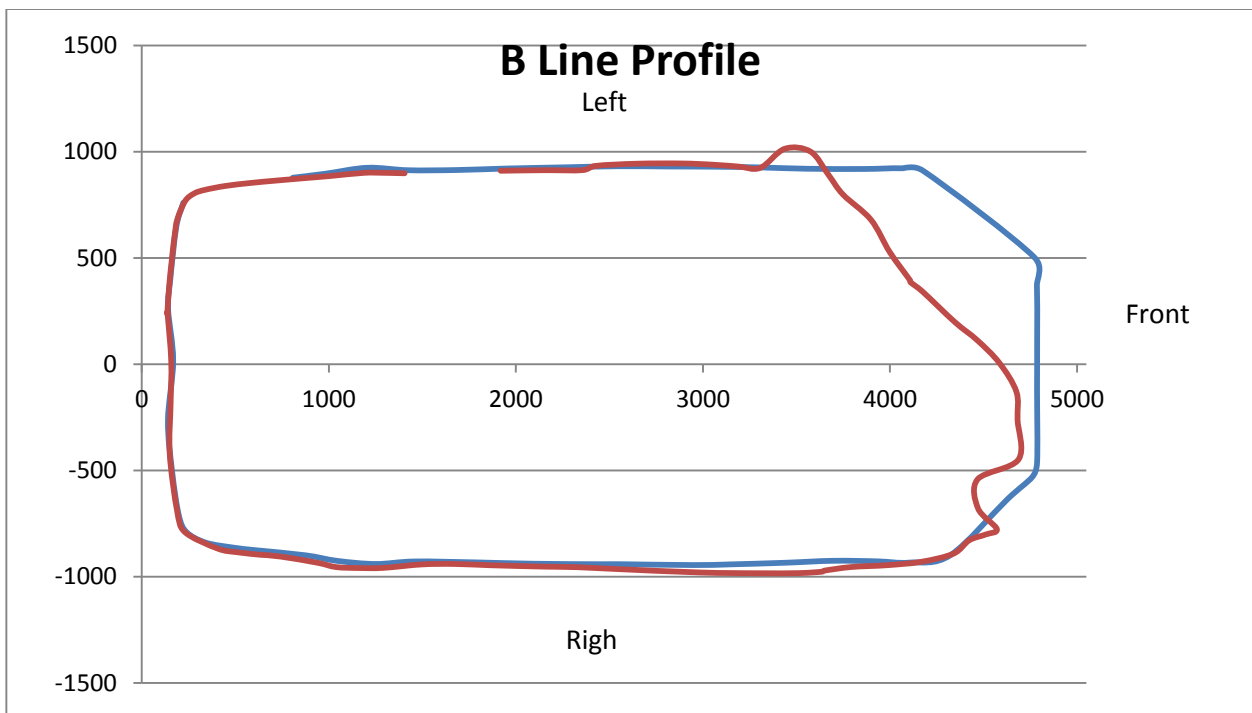
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

SECTION A-A



SECTION B-B



DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

Left Profile of the Dash

Picture Not Available

Points	Pre-Test (mm)			Post-Test (mm)			Difference (mm)		
	X	Y	Z	X	Y	Z	X	Y	Z
Ltn	*	*	*	*	*	*	*	*	*
.	*	*	*	*	*	*	*	*	*
.	*	*	*	*	*	*	*	*	*
.	*	*	*	*	*	*	*	*	*
Lt2	*	*	*	*	*	*	*	*	*
Lt1	*	*	*	*	*	*	*	*	*
L1	*	*	*	*	*	*	*	*	*
Lb1	*	*	*	*	*	*	*	*	*
Lb2	*	*	*	*	*	*	*	*	*
.	*	*	*	*	*	*	*	*	*
.	*	*	*	*	*	*	*	*	*
.	*	*	*	*	*	*	*	*	*
Lbn	*	*	*	*	*	*	*	*	*

***SOW did not require measurements at this time**

Reference point: Rear most center of the top of rear bumper beam
 +X - From the rear of the vehicle to the front of the vehicle
 +Y - From 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

Note: See Appendix E.4 for a detailed procedure on how to measure the required profile dash.

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

Right Profile of the Dash

Picture Not Available

Points	Pre-Test (mm)			Post-Test (mm)			Difference (mm)		
	X	Y	Z	X	Y	Z	X	Y	Z
Rtn	*	*	*	*	*	*	*	*	*
.	*	*	*	*	*	*	*	*	*
.	*	*	*	*	*	*	*	*	*
.	*	*	*	*	*	*	*	*	*
Rt2	*	*	*	*	*	*	*	*	*
Rt1	*	*	*	*	*	*	*	*	*
R1	*	*	*	*	*	*	*	*	*
Rb1	*	*	*	*	*	*	*	*	*
Rb2	*	*	*	*	*	*	*	*	*
.	*	*	*	*	*	*	*	*	*
.	*	*	*	*	*	*	*	*	*
.	*	*	*	*	*	*	*	*	*
Rbn	*	*	*	*	*	*	*	*	*

***SOW did not require measurements at this time**

Reference point: Rear most center of the top of rear bumper beam
 +X - From the rear of the vehicle to the front of the vehicle
 +Y - From 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

Note: See Appendix E.4 for a detailed procedure on how to measure the required profile dash.

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

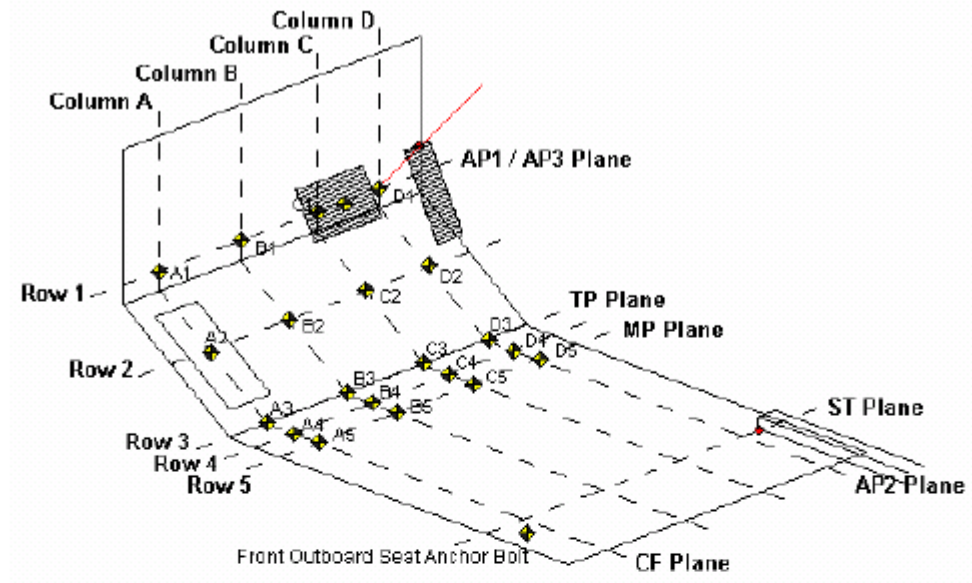
	Points	Pre-Test (mm)			Post-Test (mm)			Difference (mm)		
		X	Y	Z	X	Y	Z	X	Y	Z
Lower Bumper Beam	1	4575.9	-679.3	-341.5	3962.8	-493.3	-553.1	-613.1	186.1	-211.6
	2	4769.3	-374.6	-330.0	4146.3	-194.4	-520.1	-623.0	180.2	-190.1
	3	4772.3	-104.7	-334.3	4314.6	29.6	-549.3	-457.8	134.3	-214.9
	4	4767.0	160.5	-330.7	4509.9	208.4	-561.7	-257.1	47.9	-231.0
	5	4768.2	392.4	-324.0	4655.3	364.0	-502.7	-112.9	-28.5	-178.6
	6	4582.2	680.1	-333.9	4542.4	655.3	-398.1	-39.8	-24.8	-64.2
Upper Bumper Beam	1	4936.1	-662.9	-43.8	4561.2	-797.3	-310.6	-374.9	-134.4	-266.8
	2	4993.4	-402.5	-31.4	4340.7	-323.3	-264.8	-652.7	79.2	-233.4
	3	5007.6	-132.3	-35.1	4513.1	-125.1	-261.3	-494.6	7.2	-226.2
	4	5006.5	139.7	-32.5	4677.0	89.5	-239.8	-329.5	-50.2	-207.3
	5	4991.3	408.1	-36.8	4826.5	311.6	-212.8	-164.8	-96.5	-176.0
	6	4935.3	663.1	-36.4	4936.6	547.2	-175.1	1.4	-115.9	-138.6
Upper Radiator Support	1	4932.3	-661.3	52.7	4534.2	-732.2	-221.6	-398.1	-70.9	-274.3
	2	4990.9	-396.4	85.2	4367.1	-349.4	-163.0	-623.8	47.0	-248.2
	3	5005.0	-129.6	86.6	4536.9	-148.8	-147.4	-468.1	-19.2	-234.0
	4	5003.5	140.4	91.7	4709.6	56.5	-124.7	-293.9	-84.0	-216.5
	5	4989.0	404.1	93.3	4857.6	267.9	-100.6	-131.3	-136.2	-193.9
	6	4933.8	659.9	57.2	4955.1	519.0	-89.0	21.4	-140.9	-146.1

Reference point: Rear most center of the top of rear bumper beam
 +X - From the rear of the vehicle to the front of the vehicle
 +Y - From 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:	2007 Ford 500 Four Door Sedan	NHTSA No:	R70219
Test Program:	R&D 53.9MPH, 35% offset, 15° Angle	Test Date	6/15/2011



AP1: Y-Z Plane passing through D1

AP2: X-Z Plane passing through D1

AP3: X-Y plane passing through D1

MP: Y-Z plane, halfway between the ST plane and AP1 plane

CF Plane: X-Z plane passes through center of footrest.

BP Plane: X-Z plane passes through center of brake pedal

TP Plane: Y-Z plane, intersection of BP Plane and the intersection of the toe pan and floorboard

Column A: intersection of vehicle and CF plane

Column D: Intersection of vehicle and AP2 plane

Row 1: intersection of the vehicle and the AP3 Plane

Row 3: intersection of the vehicle and TP plane

Row 5: intersection of the vehicle and MP plane

Row 2: evenly spaced between row 1 and 3

Row 4: evenly spaced between row 3 and 5

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

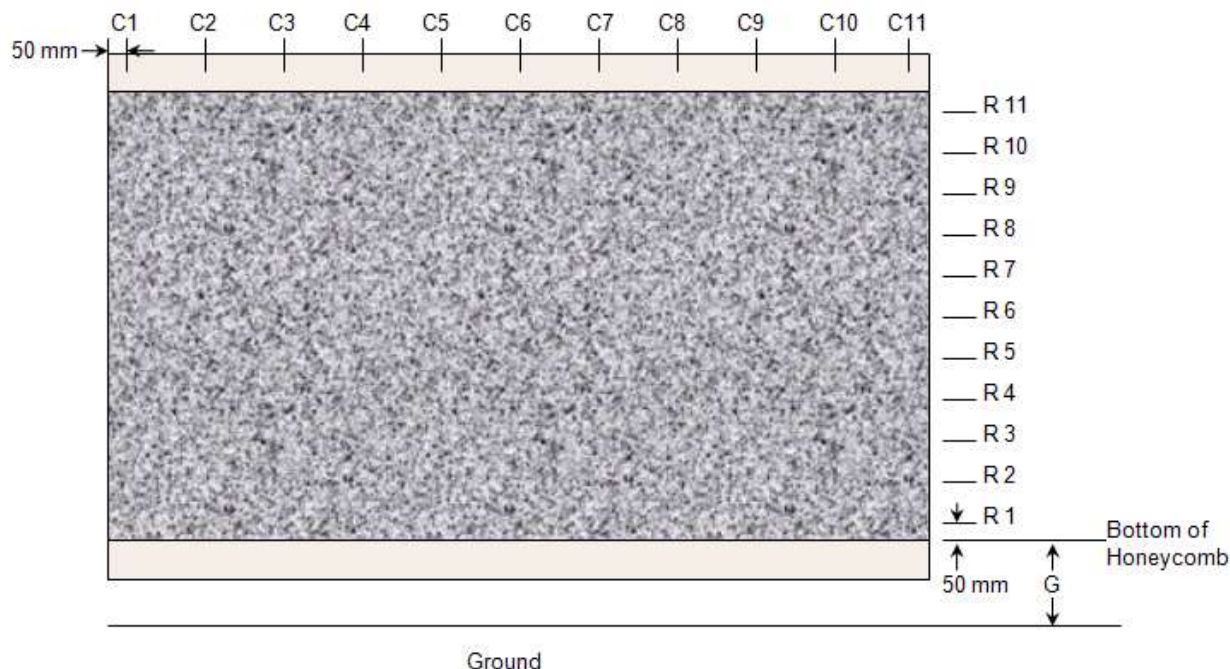
Intrusion Location	Pre-Test (mm)			Post-Test (mm)			Difference (mm)		
	X	Y	Z	X	Y	Z	X	Y	Z
A1	3616.7	-580.2	140.0	3552.0	-584.2	120.9	-64.7	-4.0	-19.1
B1	3684.8	-465.1	165.0	3600.8	-450.3	129.2	-84.0	14.7	-35.8
C1	3694.6	-321.1	152.7	3623.7	-308.7	118.6	-70.9	12.4	-34.1
D1	3723.7	-221.3	158.1	3672.0	-213.6	123.4	-51.7	7.7	-34.7
A2	3600.0	-587.9	217.0	3555.1	-585.9	199.0	-44.9	2.0	-18.0
B2	3602.2	-468.1	229.7	3577.9	-465.5	217.9	-24.3	2.6	-11.7
C2	3617.3	-330.4	211.8	3586.6	-327.7	201.7	-30.7	2.7	-10.1
D2	3639.5	-203.0	220.2	3620.1	-207.3	203.4	-19.4	-4.3	-16.7
A3	3523.9	-588.2	261.2	3513.9	-590.6	259.3	-9.9	-2.4	-1.8
B3	3520.1	-463.7	261.0	3510.1	-464.7	259.7	-10.0	-1.0	-1.3
C3	3527.3	-335.4	256.3	3510.9	-319.8	260.0	-16.4	15.6	3.7
D3	3525.6	-206.4	262.7	3514.0	-203.9	251.3	-11.7	2.5	-11.5
A4	3440.8	-583.7	257.6	3432.1	-584.4	262.5	-8.7	-0.8	5.0
B4	3452.0	-459.1	255.7	3443.2	-461.9	250.4	-8.8	-2.8	-5.3
C4	3451.3	-343.8	257.9	3444.1	-343.9	235.8	-7.2	-0.1	-22.1
D4	3449.2	-216.4	257.3	3438.8	-214.2	230.9	-10.4	2.3	-26.4
A5	3385.9	-574.2	255.0	3375.8	-574.9	264.0	-10.1	-0.7	9.0
B5	3396.6	-457.4	255.2	3387.3	-459.5	251.4	-9.3	-2.1	-3.8
C5	3399.6	-340.9	256.9	3390.8	-343.7	240.8	-8.8	-2.8	-16.2
D5	3404.5	-220.9	258.5	3394.0	-220.5	229.8	-10.5	0.4	-28.7
Brake Pedal	3544.5	-368.0	62.6	3483.6	-410.5	81.8	-60.8	-42.5	19.2
IP Left	3334.9	-535.3	-214.4	3237.8	-483.8	-216.7	-97.1	51.4	-2.3
IP Right	3320.2	-231.3	-230.8	3246.7	-177.7	-230.2	-73.5	53.6	0.5
Steering Column	3067.8	-364.4	-458.7	2991.9	-328.7	-453.8	-75.9	35.7	4.9
Front Outboard Bolt	3056.9	-577.6	170.7	3055.3	-587.3	193.5	-1.6	-9.7	22.8

Reference point: Rear most center of the top of rear bumper beam
 +X - From the rear of the vehicle to the front of the vehicle
 +Y - From 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

RMDB CRUSH MEASUREMENTS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011



BARRIER X-CRUSH

		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
		50 mm	260 mm	470 mm	680 mm	890 mm	1100 mm	1310 mm	1520 mm	1730 mm	1940 mm	2150 mm
R1	910mm	0*	0*	0*	0*	0*	3.7	3.6	4.1	5.0	4.1	5.3
R2	824mm	0*	0*	0*	0*	0*	1.3	1.8	3.8	11.3	9.5	26.1
R3	738mm	0*	0*	0*	0*	0*	1.1	1.4	5.7	10.6	16.4	58.1
R4	652mm	0*	0*	0*	0*	0*	0.9	1.2	38.3	20.3	27.8	91.2
R5	566mm	0*	0*	0*	0*	0*	1.1	4.8	46.1	51.0	50.7	132.5
R6	480mm	0*	0*	0*	0*	0*	0.7	1.8	33.2	87.5	83.0	184.3
R7	384mm	0*	0*	0*	0*	0*	0.8	2.9	20.0	200.0	130.4	228.2
R8	308mm	0*	0*	0*	0*	0*	0.7	30.3	1.0	259.8	286.8	269.5
R9	222mm	0*	0*	0*	0*	0*	1.0	45.9	24.7	254.9	456.4	290.8
R10	136mm	0*	0*	0*	0*	0*	1.5	66.9	69.3	46.6	177.2	276.4
R11	50mm	0*	0*	0*	0*	0*	1.3	91.2	113.7	143.9	232.5	286.1

*Left side of barrier was used in previous test, measurements not valid.

**Rows shifted to correspond to physical location on barrier (R1 is the lowest row)

DATA SHEET NO. 15

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

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

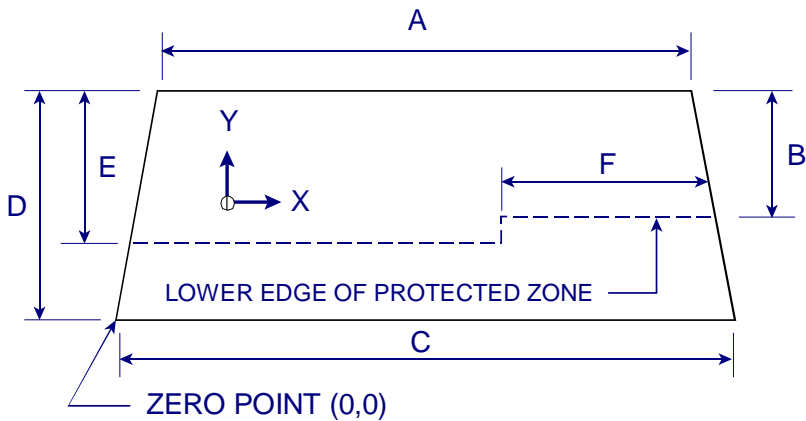
Please provide windshield mounting details.
Windshield perimeter is adhesive mounted to vehicle body and no moldings were used.

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: 21.3°C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2241	2166	97
Right Side	2241	2241	100
Total	4482	4407	98



Item	Units	Value
A	mm	1315
B	mm	463
C	mm	1615
D	mm	776
E	mm	520
F	mm	558

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.

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.

X	Y

DATA SHEET NO. 15 (CONTINUED)

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

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 22.2°C Test Time: 1:50PM

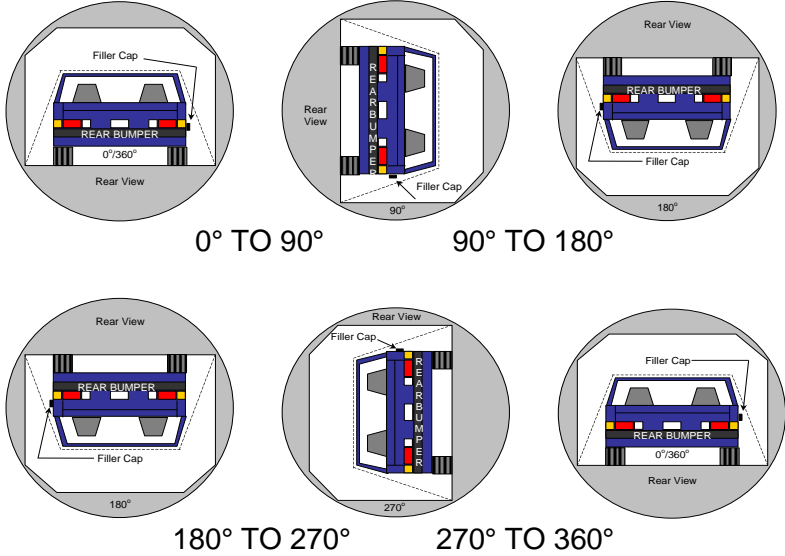
Stoddard Solvent Spillage Measurements

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

DATA SHEET NO. 16

FMVSS 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2007 Ford 500 Four Door Sedan NHTSA No: R70219
 Test Program: R&D 53.9MPH, 35% offset, 15° Angle Test Date: 6/15/2011



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).
2. Details of Stoddard Solvent spillage: _____

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	68	300	368
90° to 180°	63	300	363
180° to 270°	61	300	361
270° to 360°	71	300	371

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°	
90° to 180°	
180° to 270°	
270° to 360°	

DATA SHEET NO. 17

DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle:	<u>2007 Ford 500 Four Door Sedan</u>	NHTSA No:	<u>R70219</u>
Test Program:	<u>R&D 53.9MPH, 35% offset, 15° Angle</u>	Test Date	<u>6/15/2011</u>

Picture Not Available

APPENDIX A
PHOTOGRAPHS

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



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



No. 003 Test Vehicle Certification Label



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 Side View of Test Vehicle



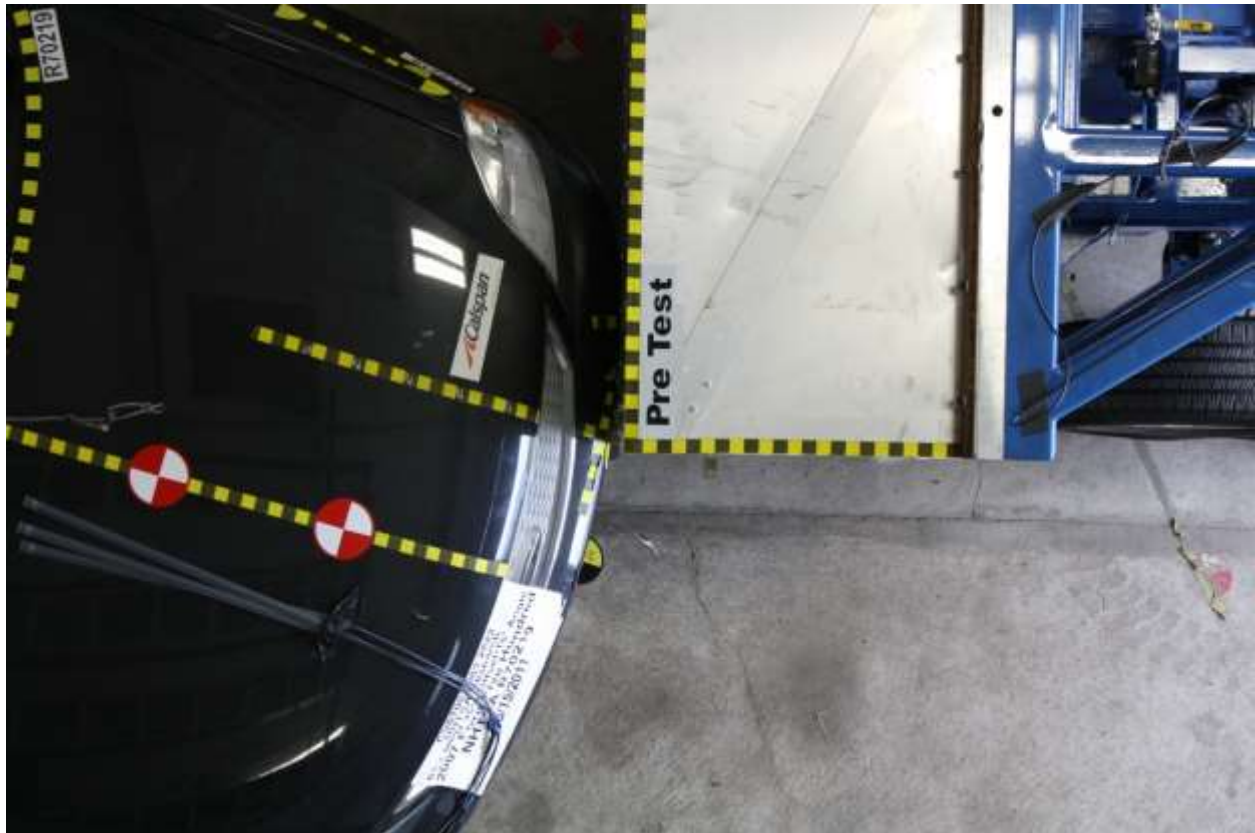
No. 016 Post-Test Right Side View of Test Vehicle



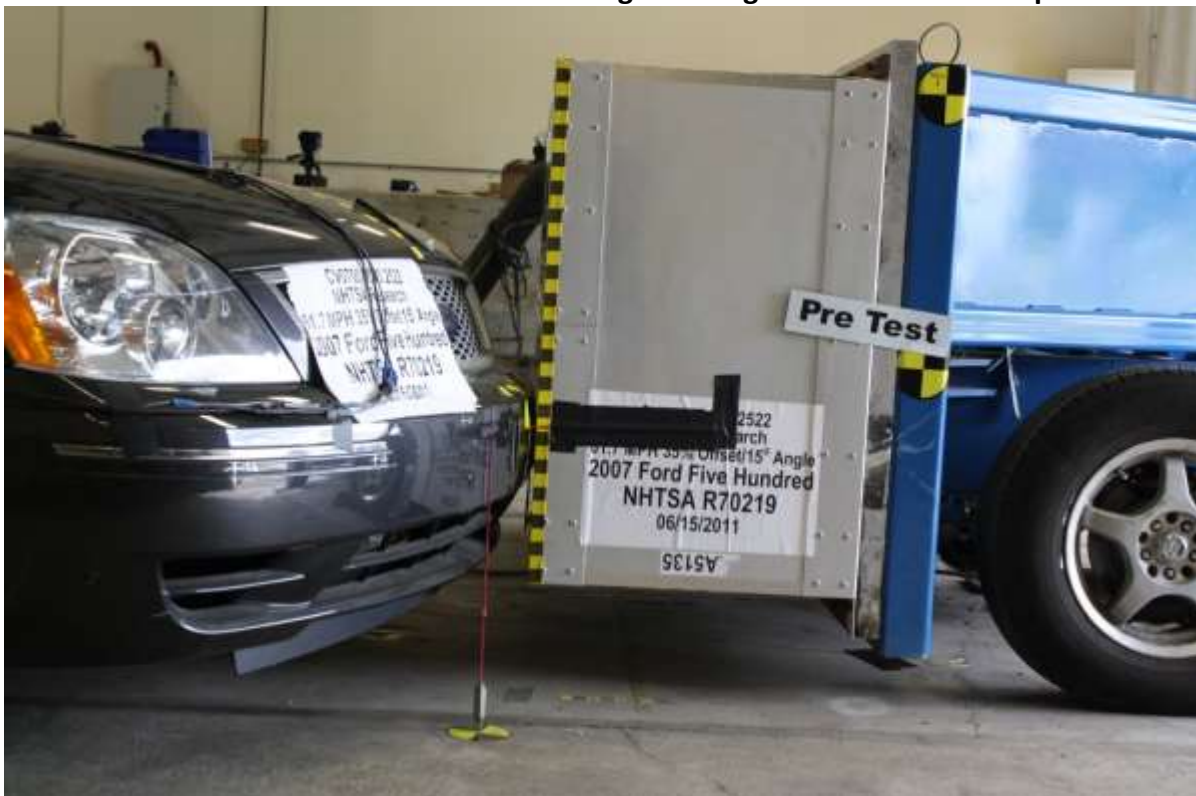
No. 017 Pre-Test Right Front 3-4 View of Test Vehicle



No. 018 Post-Test Right Front 3-4 View of Test Vehicle



No. 019 Pre-Test Overhead View of RMDB against target vehicle at ideal Impact Point



No. 020 Pre-Test Left Side View of RMDB against target vehicle at ideal Impact Point



No. 021 Pre-Test Right Side View of RMDV against target vehicle at ideal Impact Point



No. 022 Pre-Test Close-up View of Impact Point



No. 023 Post-Test Close-up View of Impact Point



No. 024 Pre-Test Close-up View of Left Front Door Latch



No. 025 Post-Test Close-up View of Left Front Door Latch



No. 026 Pre-Test Close-up View of Left Rear Door Latch



No. 027 Post-Test Close-up View of Left Rear Door Latch



No. 028 Pre-Test Windshield View



No. 029 Post-Test Windshield View



No. 030 Pre-Test View of Driver Inner Door Panel



No. 031 Post-Test View of Driver Inner Door Panel



No. 032 Pre-Test View of Passenger Inner Door Panel



No. 033 Post-Test View of Passenger Inner Door Panel



No. 034 Pre-Test Frontal View of Driver Seat pan



No. 035 Pre-Test Frontal View of Driver Seat back



No. 036 Pre-Test Frontal View of Left Rear Seat pan



No. 037 Pre-Test Frontal View of Left Rear Seat back



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



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



No. 040 Pre-Test Overall View of Driver Knee Bolsters with panel removed



No. 041 Post-Test Overall View of Driver Knee Bolsters with panel removed



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



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



No. 044 Pre-Test Left Side View of Driver Knee Bolsters with panel removed



No. 045 Post-Test Left Side View of Driver Knee Bolsters with panel removed



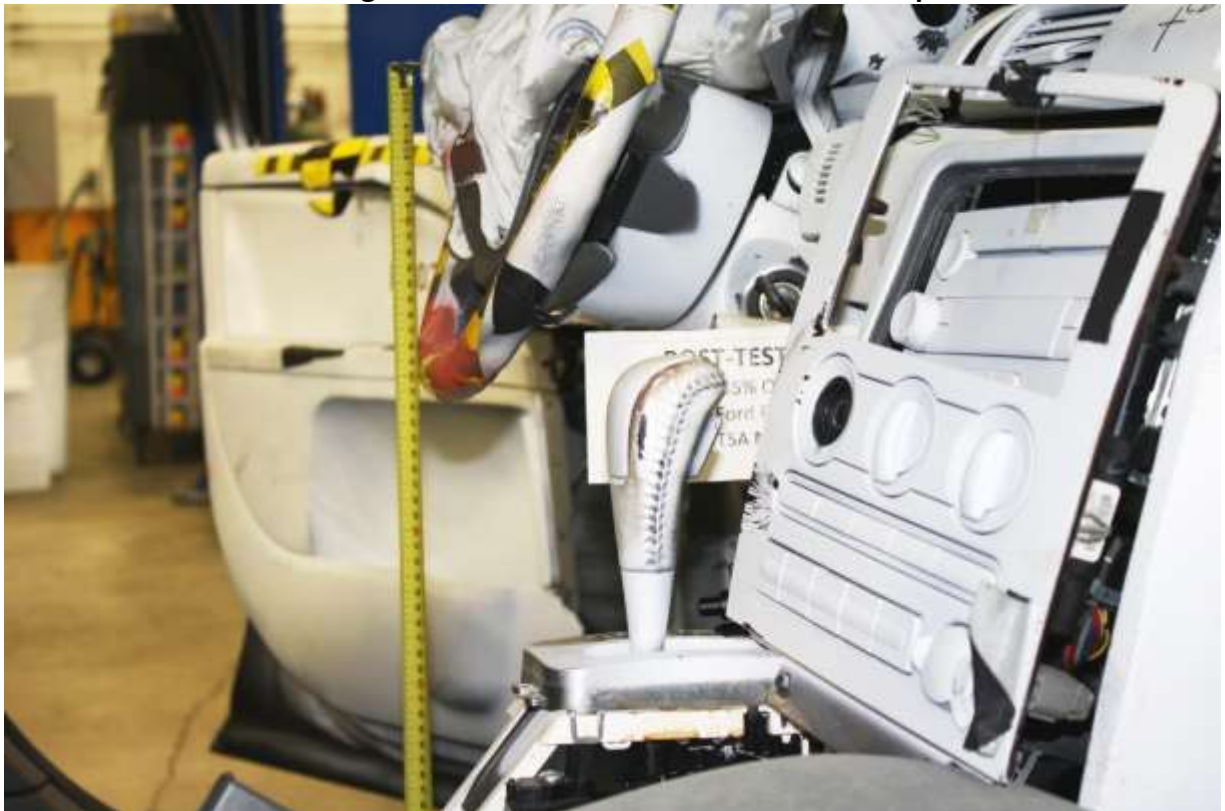
No. 046 Pre-Test Right Side View of Driver Knee Bolsters



No. 047 Post-Test Right Side View of Driver Knee Bolsters



No. 048 Pre-Test Right Side View of Driver Knee Bolster with panel removed



No. 049 Post-test right side view of driver knee bolster with panel removed



No. 050 Pre-Test View of Driver Floor pan at Left sill level



No. 051 Post-Test View of Driver Floor pan at Left sill level



No. 052 Pre-Test View of Driver Floor pan at Mid seat level



No. 053 Post-Test view of Driver Floor pan at Mid seat level



No. 054 Pre-Test Driver Dummy Front Windshield View



No. 055 Post-Test Driver Dummy Front Windshield View



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

Photo Not Available

Dummy removed before photo was taken

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



No. 058 Pre-Test Left Side Driver Dummy Window View



No. 059 Post-Test Left Side Driver Dummy Window View



No. 060 Pre-Test Right Side View of Driver Dummy and Interior



No. 061 Post-Test Right Side View of Driver Dummy and Interior



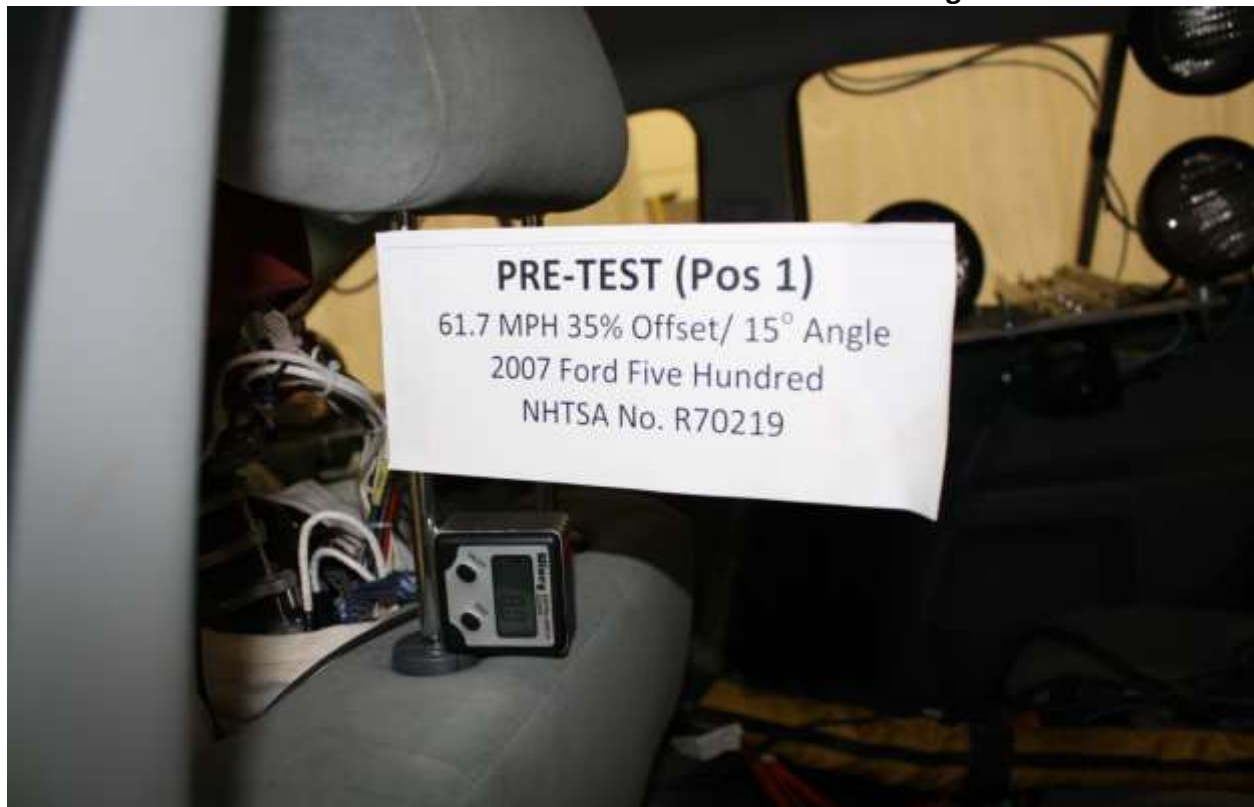
No. 062 Pre-Test View of Driver Dummy Door Clearance



No. 063 Post-Test View of Driver Dummy Door Clearance



No. 064 Pre-Test Driver Seat Back Position markings



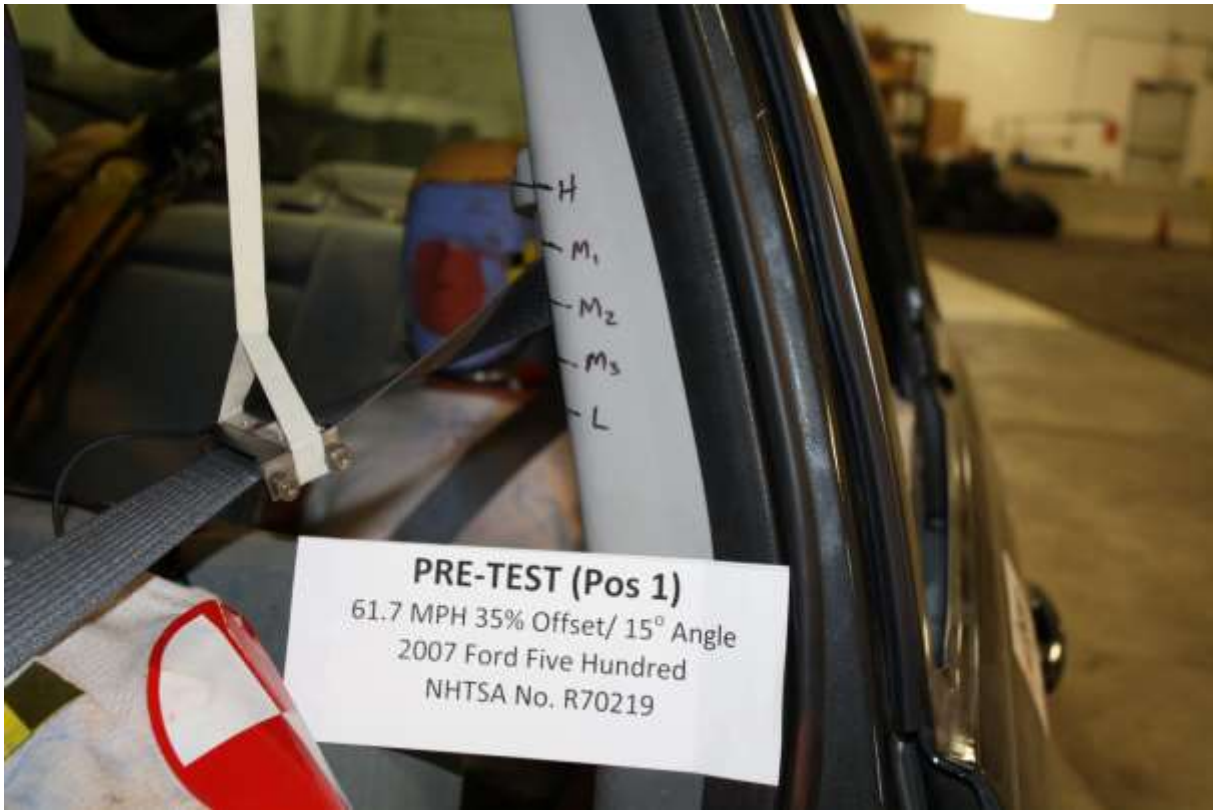
No. 065 Pre-Test Driver Seat Back Position with Level or Inclinometer



No. 066 Pre-Test Driver Seat Fore Aft Markings



No. 067 Post-Test Driver Seat Fore Aft Markings



No. 068 Pre-Test Driver Adjustable D-ring



No. 069 Pre-Test Overhead View of Driver Dummy Thighs in seat



No. 070 Pre-Test View of Parking Brake



No. 071 Pre-Test Driver Dummy Feet

Photo Not Available

Impossible to see feet post crash

No. 072 Post-Test Driver Dummy Feet



No. 073 Pre-Test View of Driver Dummy Right Knee and Bolster



No. 074 Post-Test View of Driver Dummy Right Knee and Bolster



No. 075 Pre-Test View of Driver Dummy Left Knee and Bolster



No. 076 Post-Test View of Driver Dummy Left Knee and Bolster



No. 077 Pre-Test View of Driver Dummy Abdomen



No. 078 Post-Test View of Driver Dummy Abdomen



No. 079 Pre-Test Left Side View of Steering Wheel set position



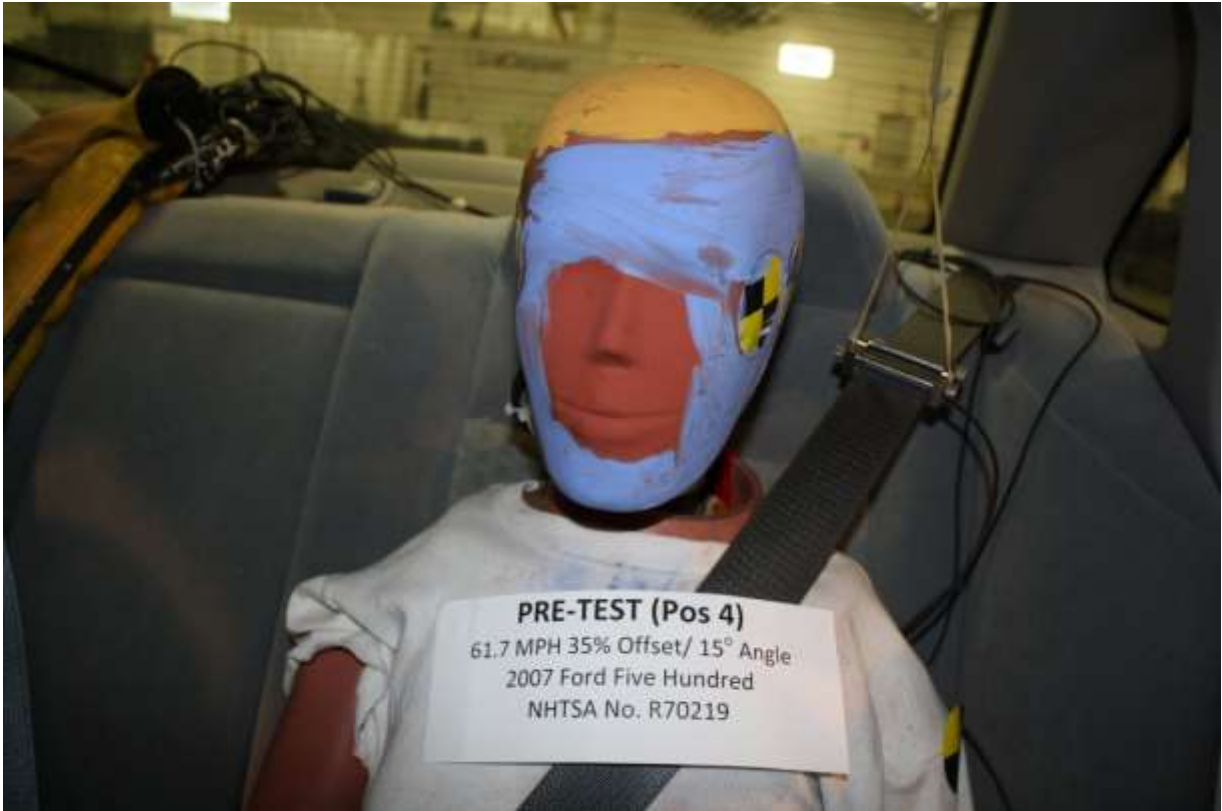
No. 080 Post-Test Left Side View of Steering Wheel set position



No. 081 Post-Test View of Driver Dummy Head Contact with Airbag



No. 082 Post-Test View of Driver Dummy Head Contact with Vehicle Interior (a, b, c, etc)



No. 083 Pre-Test Passenger Dummy Front Close-up View



No. 084 Post-Test Passenger Dummy Front Close-up View



No. 085 Pre-Test Left Side Passenger Dummy and Interior View



No. 086 Post-Test Left Side Passenger Dummy and Interior View



No. 087 Pre-Test Left Side Passenger Dummy Window View



No. 088 Post-Test Left Side Passenger Dummy Window View



No. 089 Pre-Test Right Side View of Passenger Dummy and Interior

Photo Not Available

Dummy removed before photo was taken

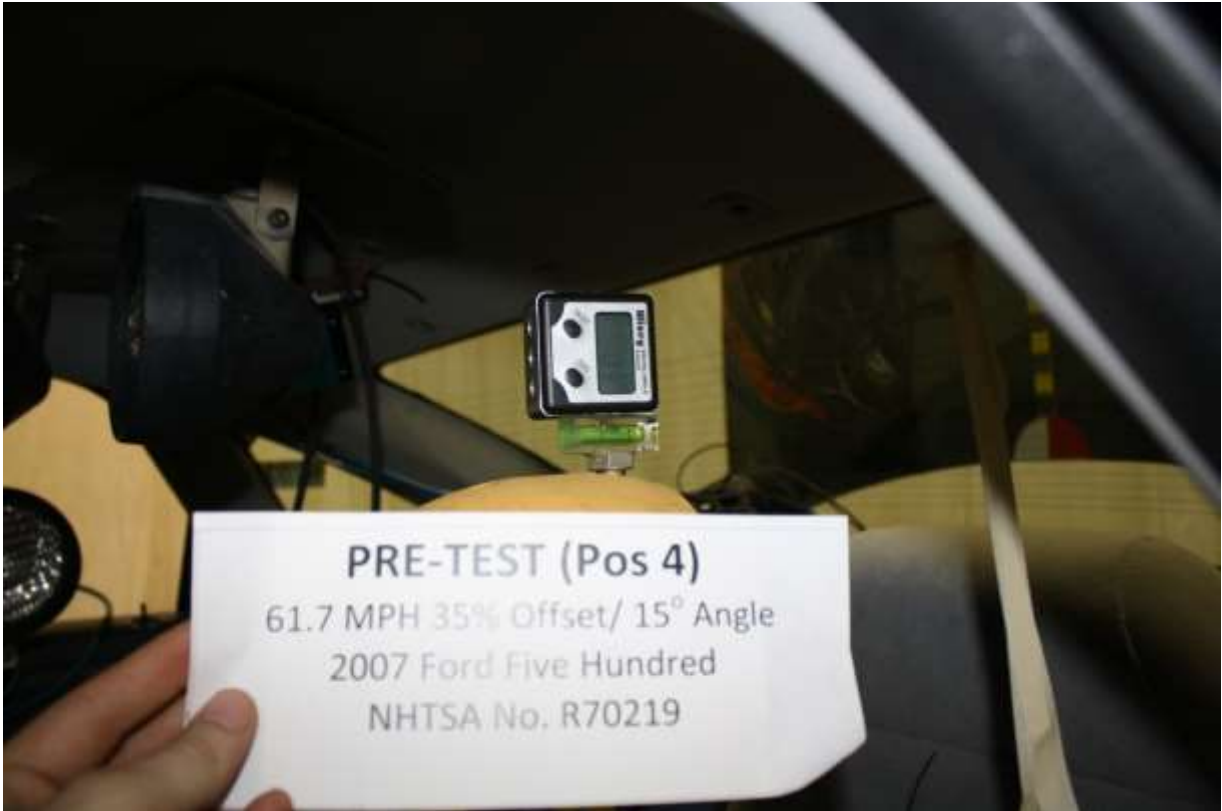
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No. 091 Pre-Test View of Passenger Dummy Door Clearance



No. 092 Post-Test View of Passenger Dummy Door Clearance



No. 093 Pre-Test Passenger View Showing Head Level



No. 094 Pre-Test Passenger Seat Fore-Aft Markings



No. 095 Pre-Test Passenger Seat Back Angle



No. 096 Pre-Test Overhead View of Passenger Dummy Thighs on seat



No. 097 Pre-Test Passenger Adjustable D-ring



No. 098 Pre-Test View of Passenger Dummy Feet



No. 099 Post-Test View of Passenger Dummy Feet

Photo Not Applicable

No Passenger Airbag

No. 100 Post-Test View of Passenger Dummy Head contact with Airbag



No. 101 Post-Test View of Passenger Dummy Head contact with Interior (a,b,c)



No. 102 Post-Test View of Passenger Dummy Knee Contact with Seatback



No. 103 Pre-Test Ballast Locations



No. 104 Post-Test Speed Trap Readout



No. 105 Pre-Test View of Fuel Filler Cap



No. 106 Post-Test View of Fuel Filler Cap



No. 107 Pre-Test Engine Compartment View



No. 108 Post-Test Engine Compartment View



No. 109 Pre-Test View of Front Underbody (perpendicular to vehicle)



No. 110 Post-Test View of Front Underbody (perpendicular to vehicle)



No. 111 Pre-Test View of Overall Underbody (perpendicular to vehicle)



No. 112 Post-Test View of Overall Underbody (perpendicular to vehicle)



No. 113 Pre-Test View of Steering rack and or sway bar



No. 114 Post-Test View of Steering rack and or sway bar



No. 115 Pre-Test Close up of Bumper and Crush Initiators



No. 116 Post-Test View of Front Sub-Frame Deformation



No. 117 Pre-Test Frame Rail with tire removed



No. 118 Post-Test Frame Rail with tire removed



No. 119 Pre-Test View of Wheel Well with tire removed



No. 120 Post-Test View of Wheel Well with tire removed



No. 121 Post-Test View of Door Sill with door open



No. 122 Post-Test View of Deformation of A pillar



No. 123 Post-Test View of Deformation of B pillar



No. 124 Post-Test View of Deformation of C pillar



No. 125 Post-Test View of Wheel and or Tire Deformation



No. 126 Post-Test View of Deformation of Rocker or Post

Photo Not Applicable

Windsheild didn't separate

No. 127 Post-Test View of Windshield Separation



No. 128 Pre-Test Left Side View of RMDB



No. 129 Post-Test Left Side View of RMDB



No. 130 Pre-Test Right Side View of RMDB



No. 131 Post-Test Right Side View of RMDB



No. 132 Pre-Test Top View of RMDB



No. 133 Post-Test Top View of RMDB



No. 134 Pre-Test Front View of RMDB



No. 135 Post-Test Front View of RMDB



No. 136 Vehicle at 0 Degrees on Static Rollover Device



No. 137 Vehicle at 90 Degrees on Static Rollover Device



No. 138 Vehicle at 180 Degrees on Static Rollover Device



No. 139 Vehicle at 270 Degrees on Static Rollover Device



No. 140 Vehicle at 360 Degrees on Static Rollover Device

APPENDIX B
VEHICLE & DUMMY RESPONSE DATA TRACES

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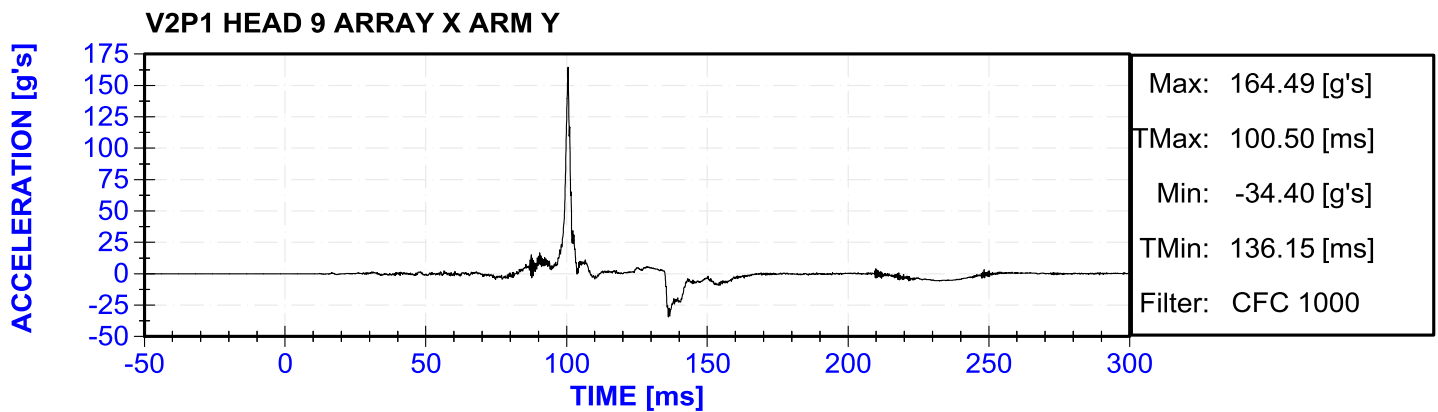
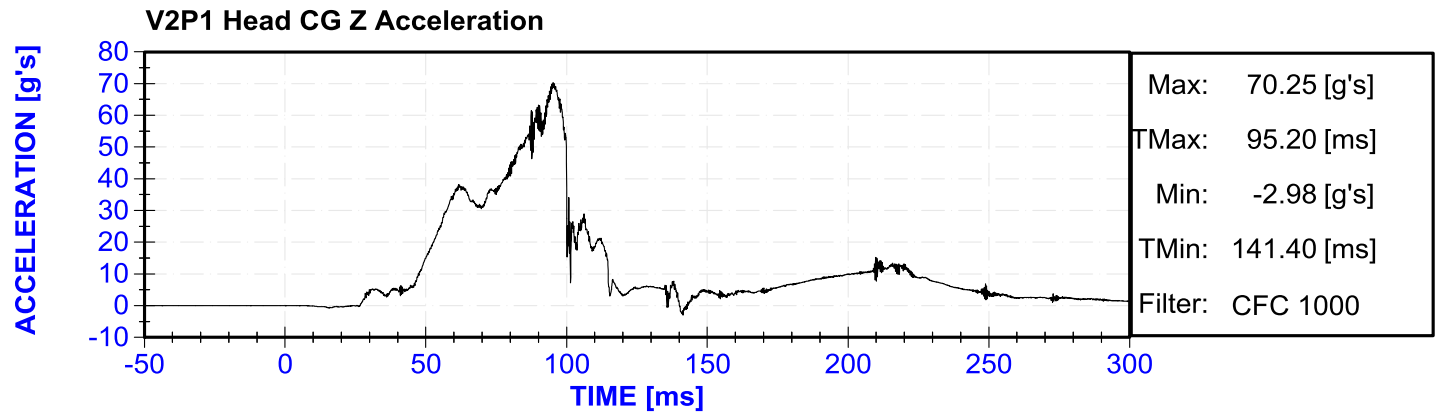
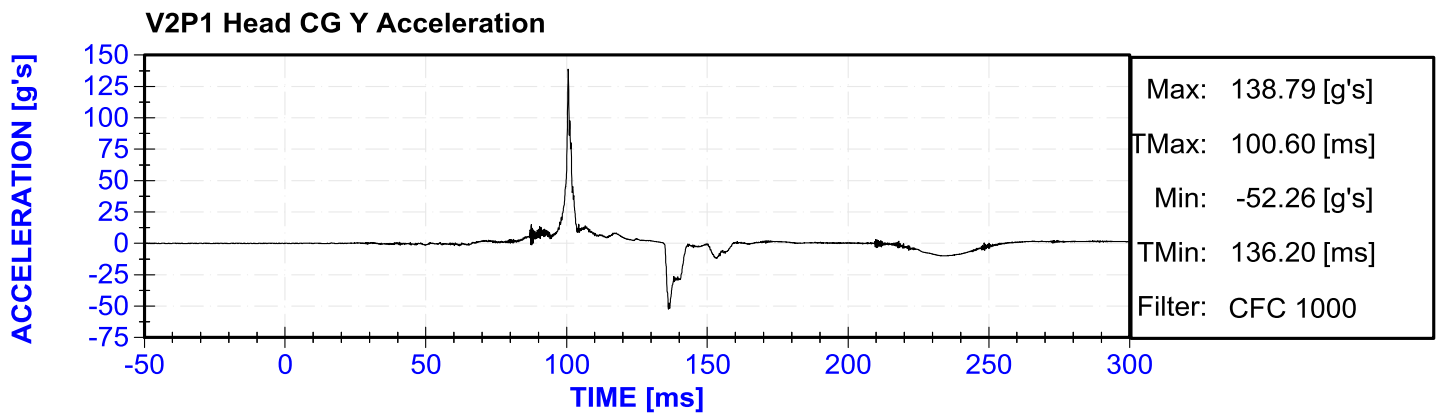
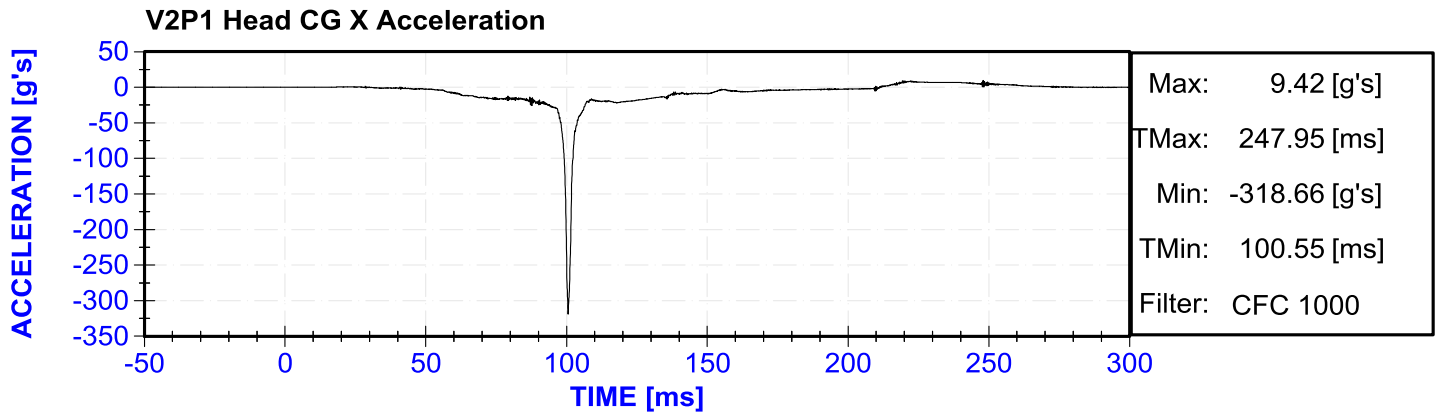
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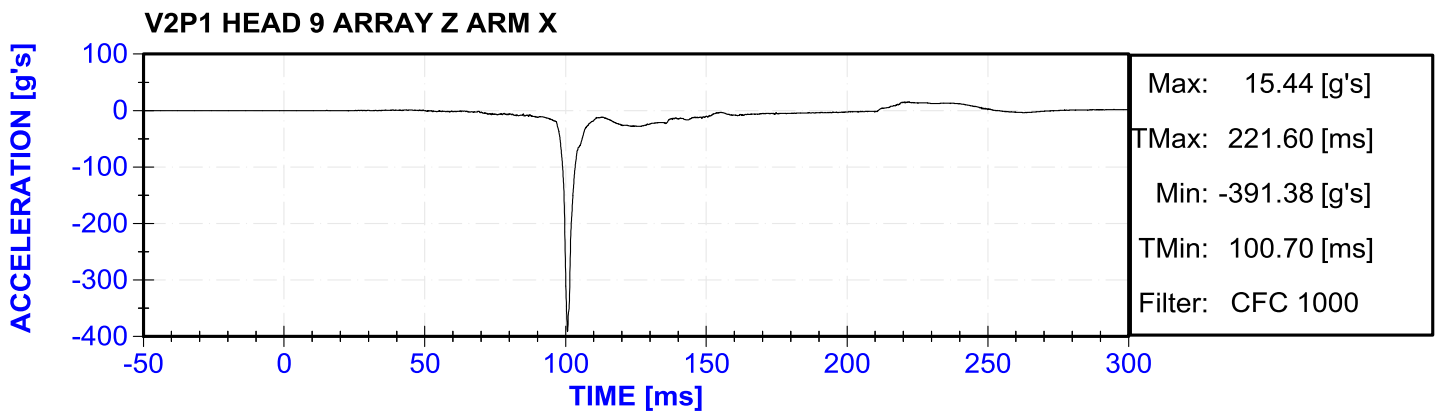
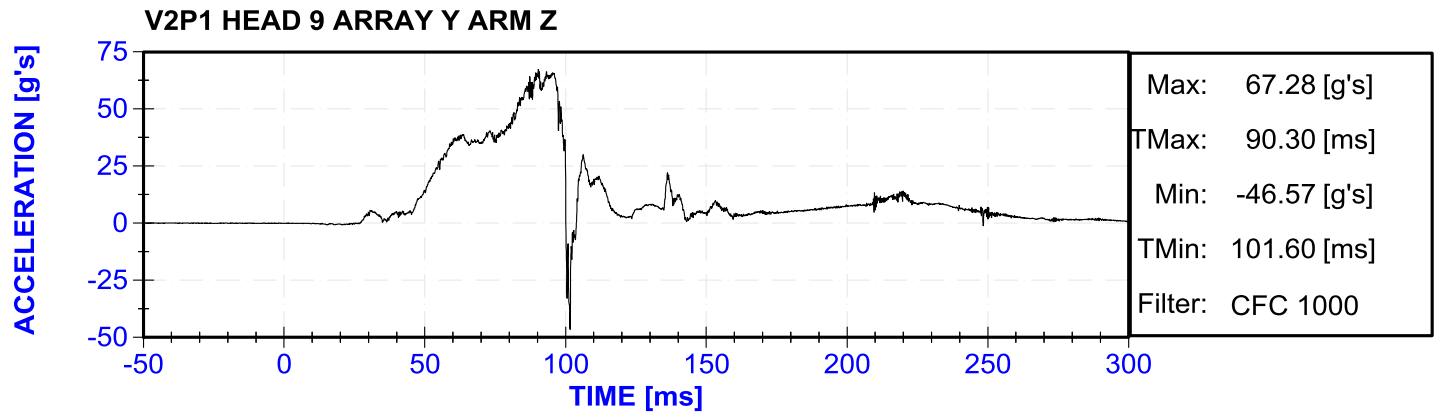
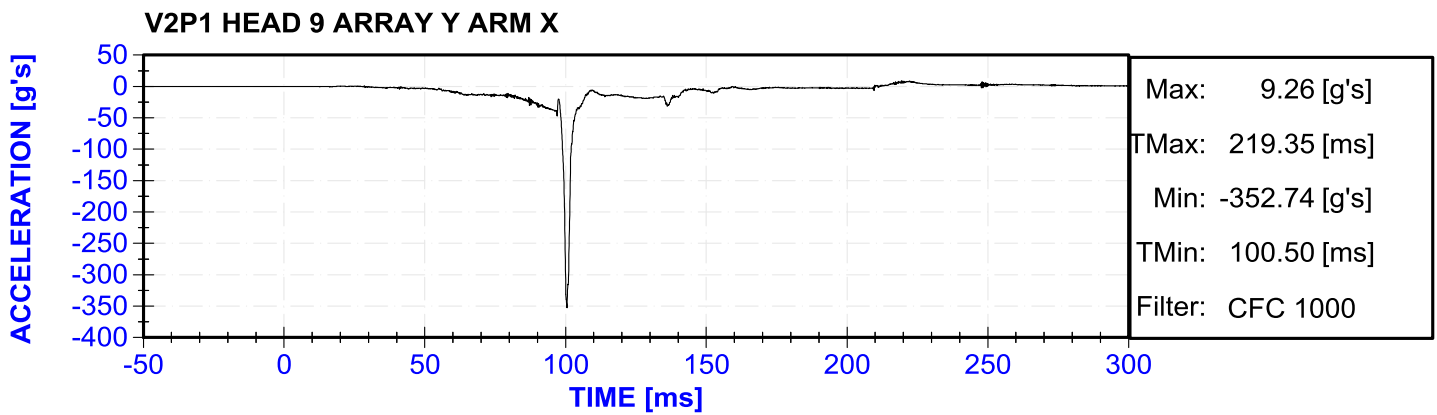
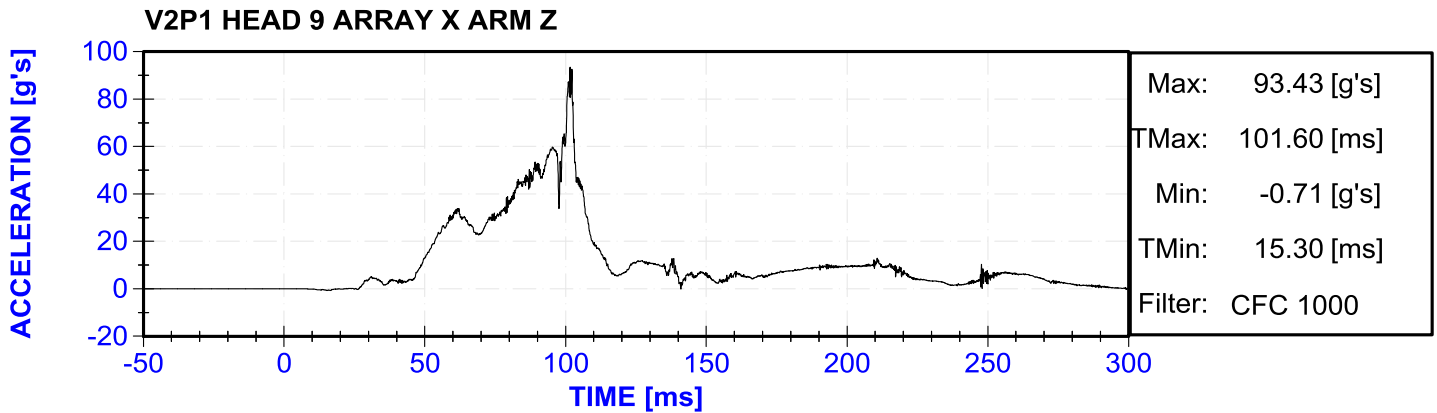
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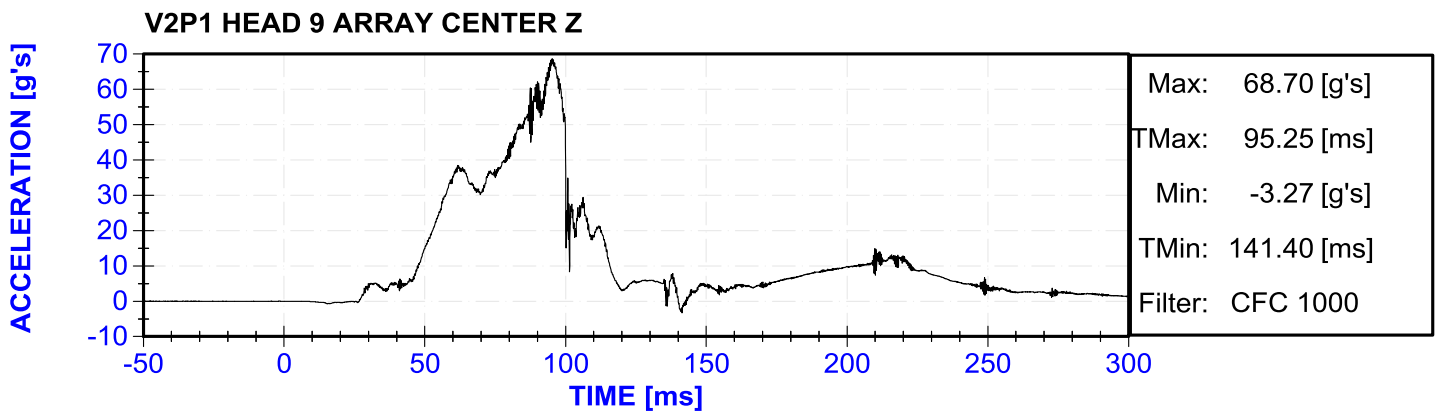
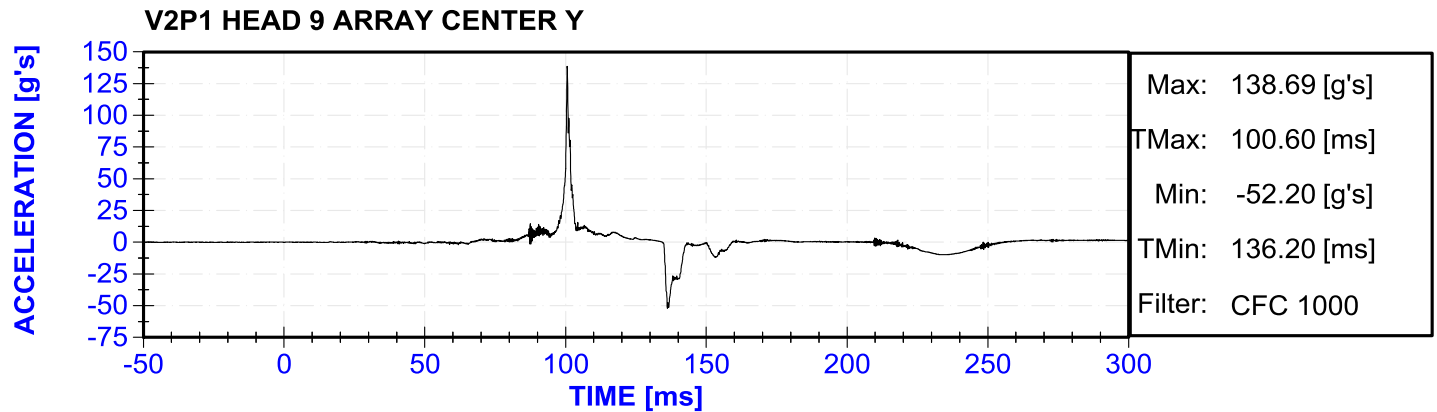
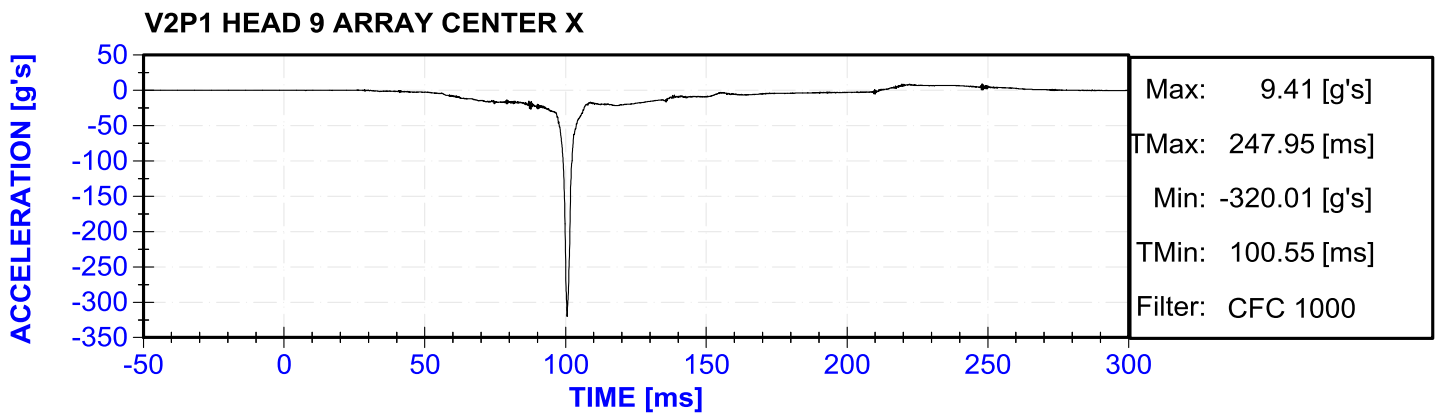
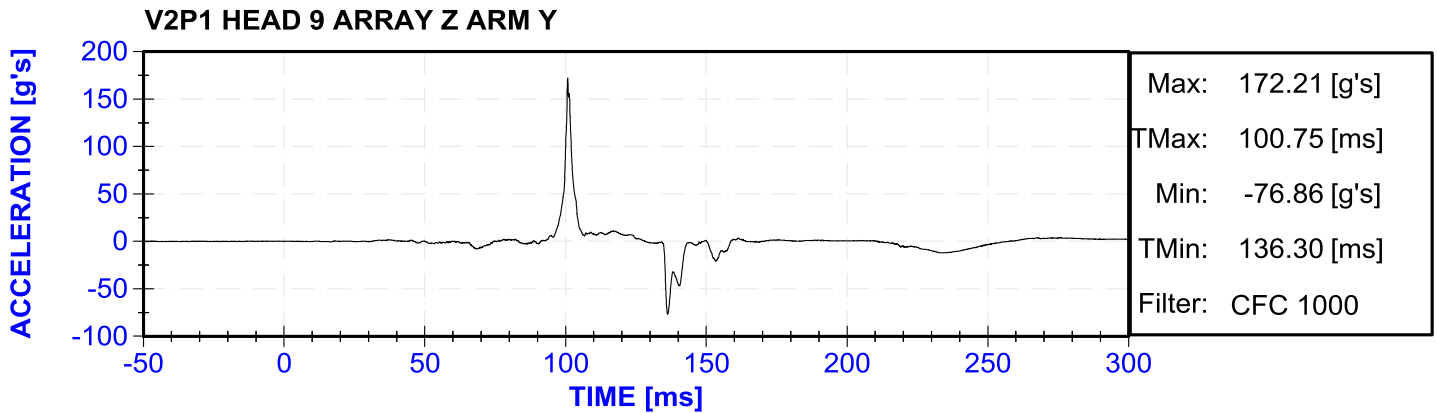
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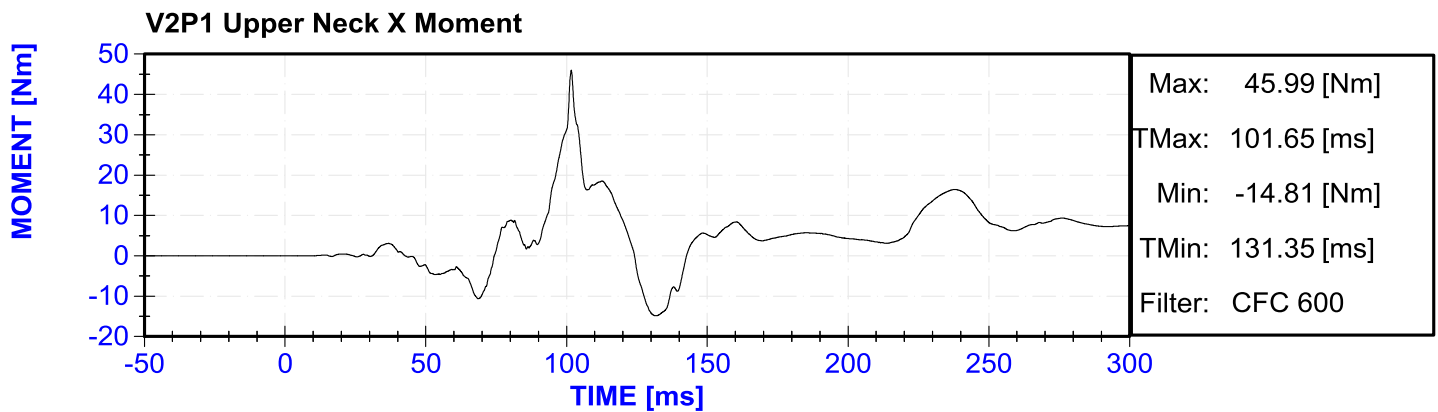
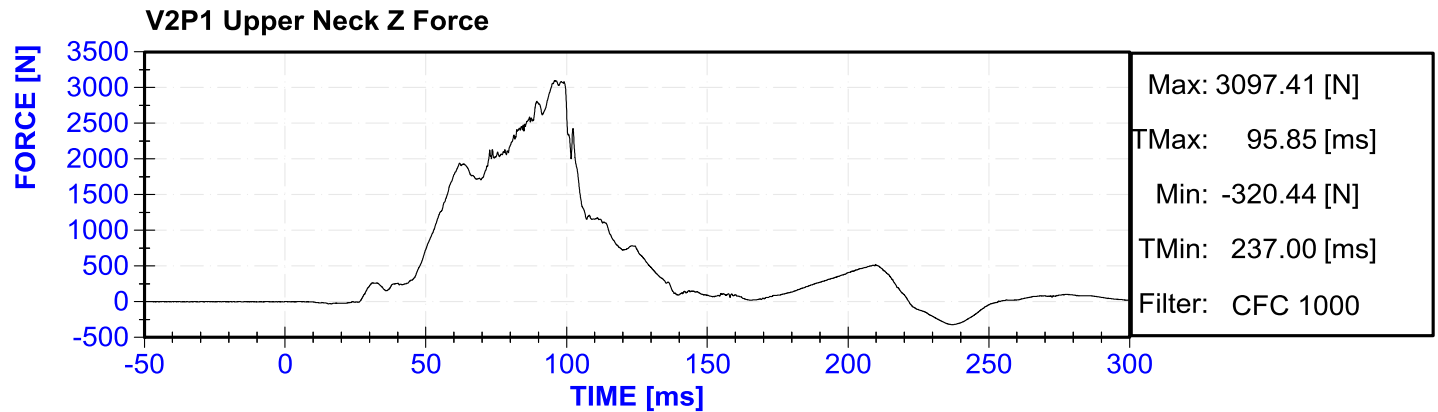
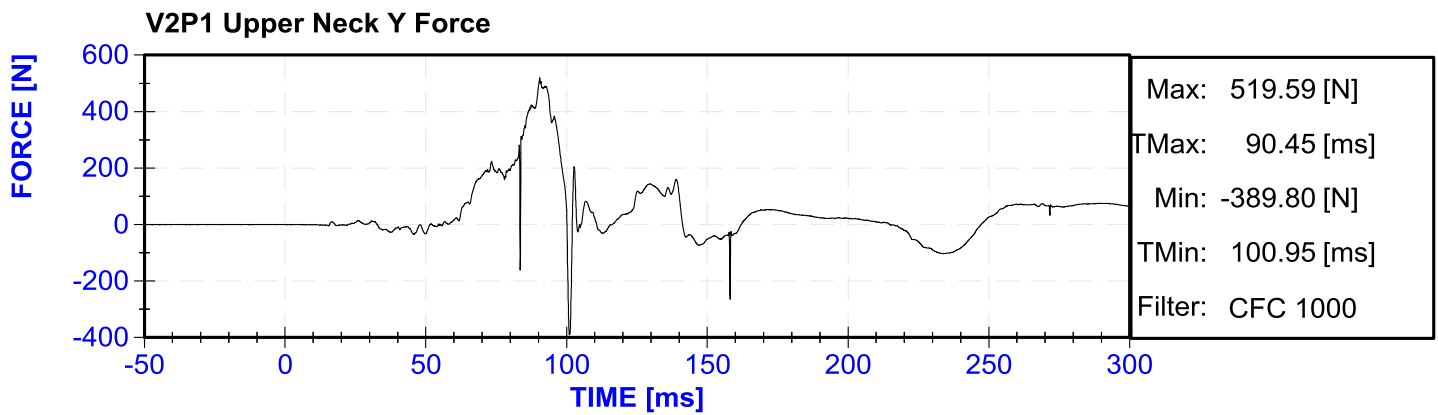
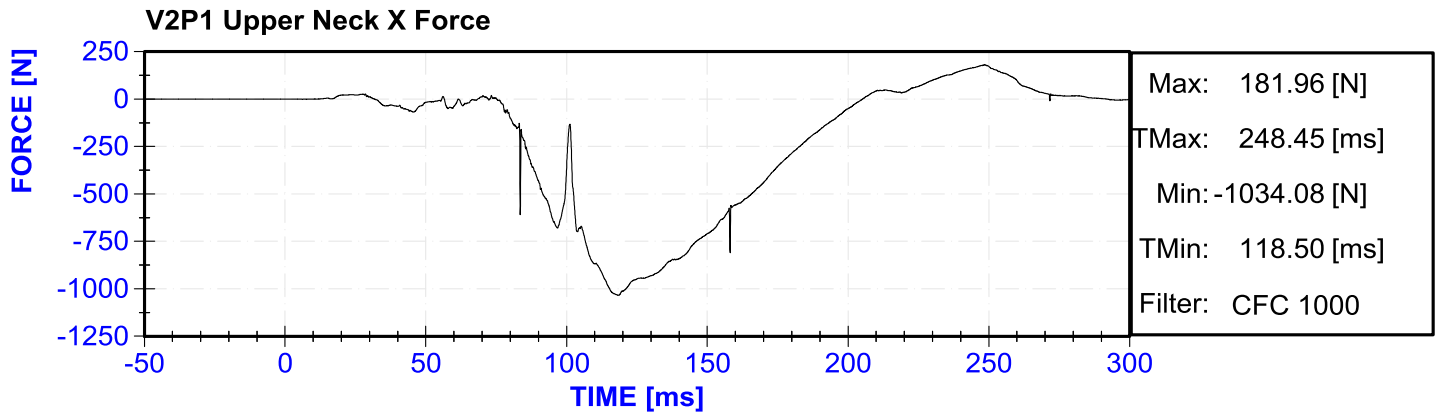
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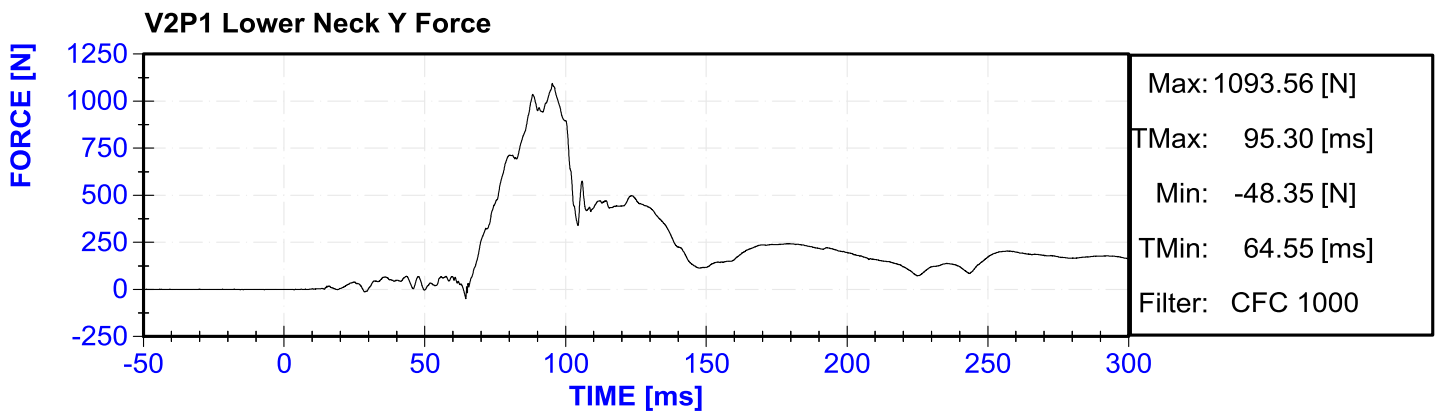
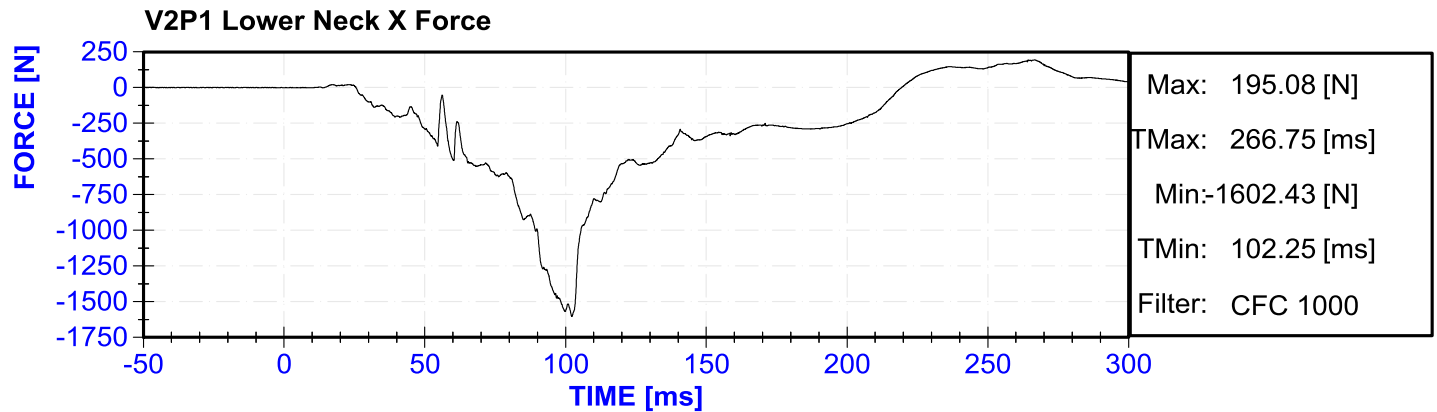
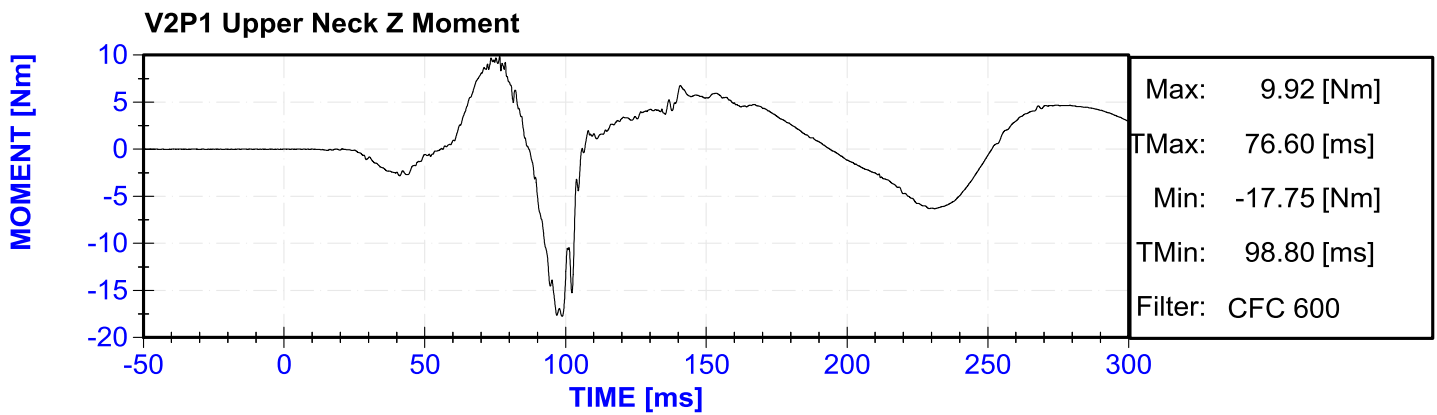
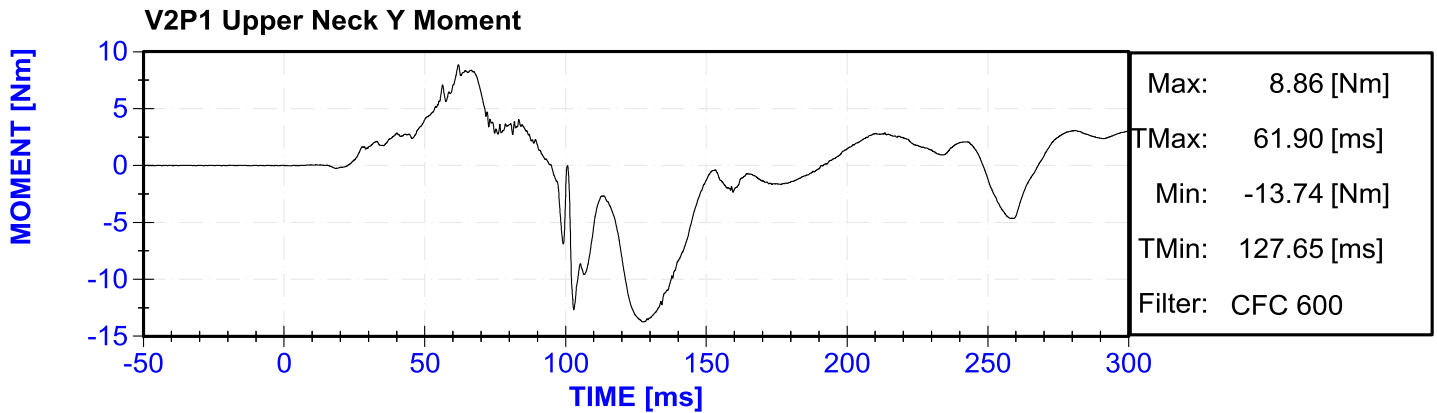
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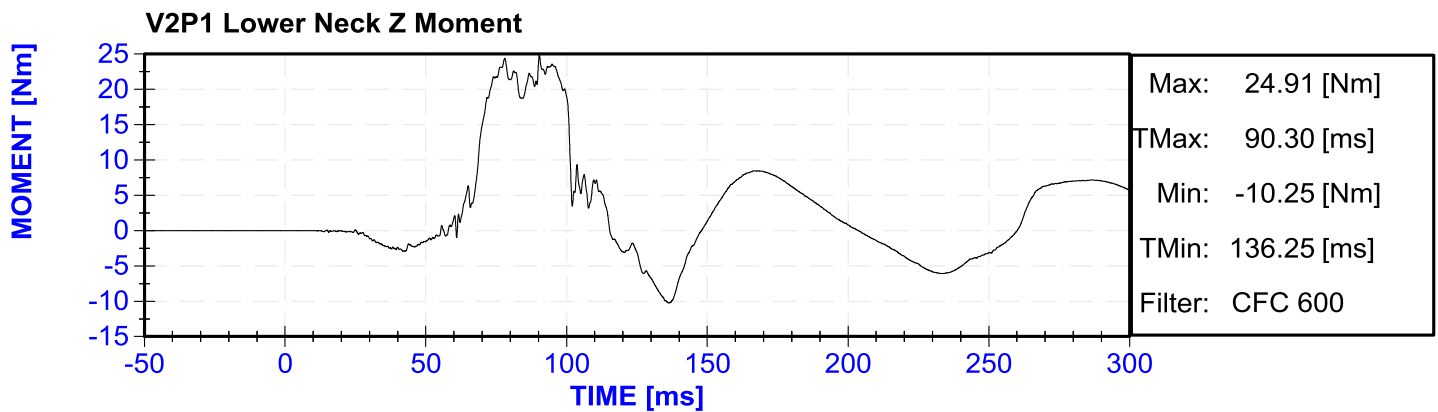
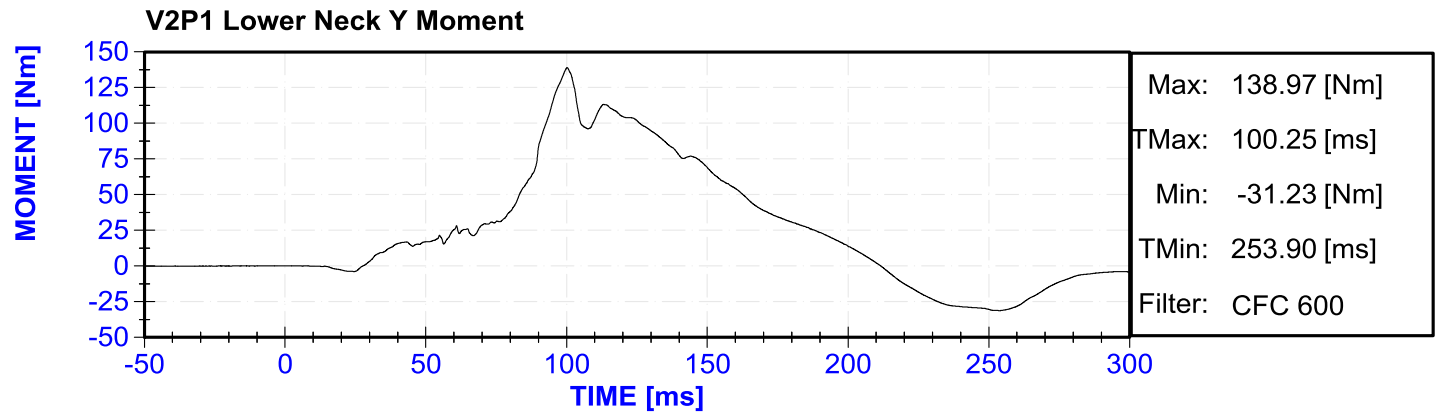
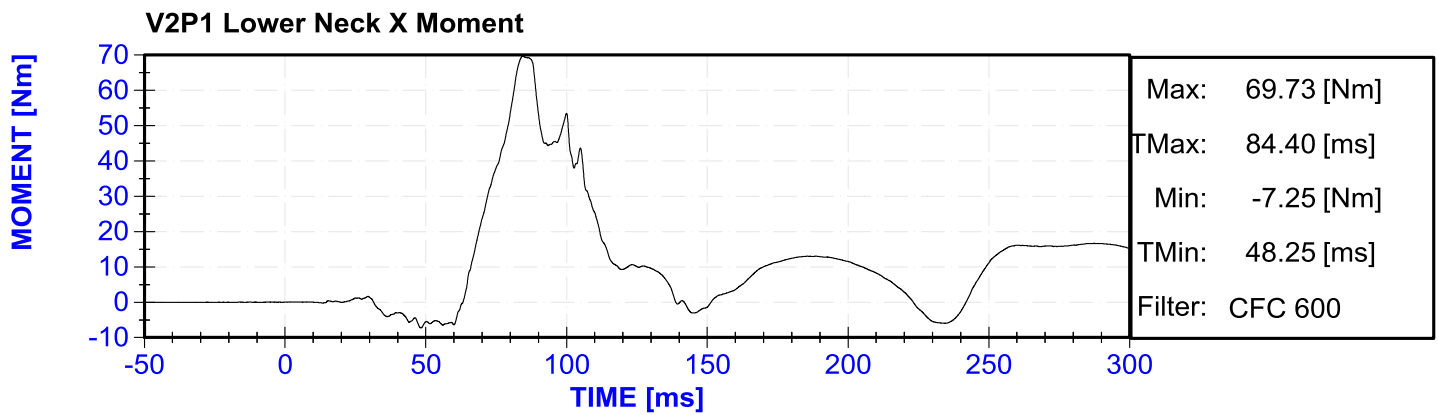
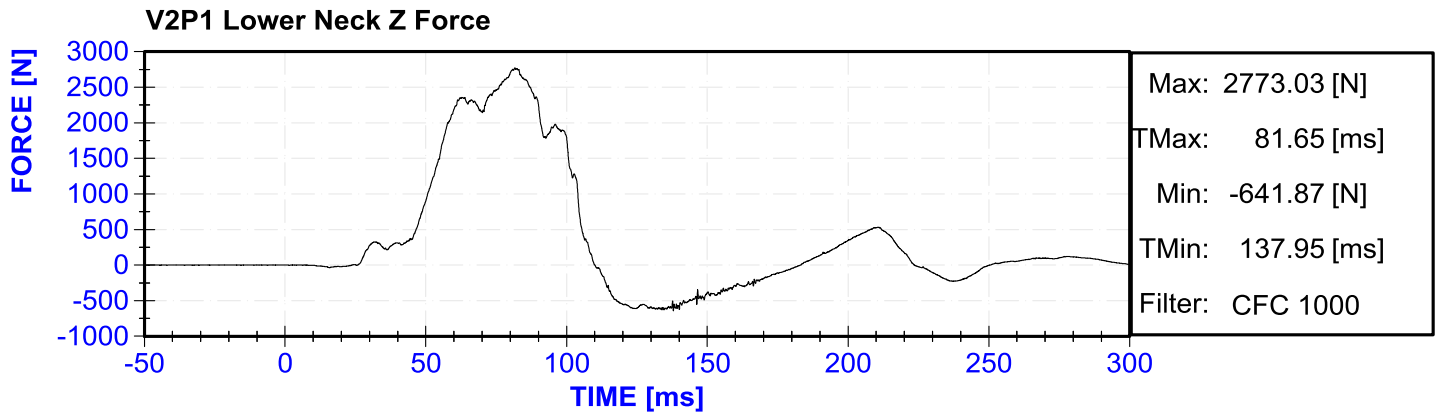




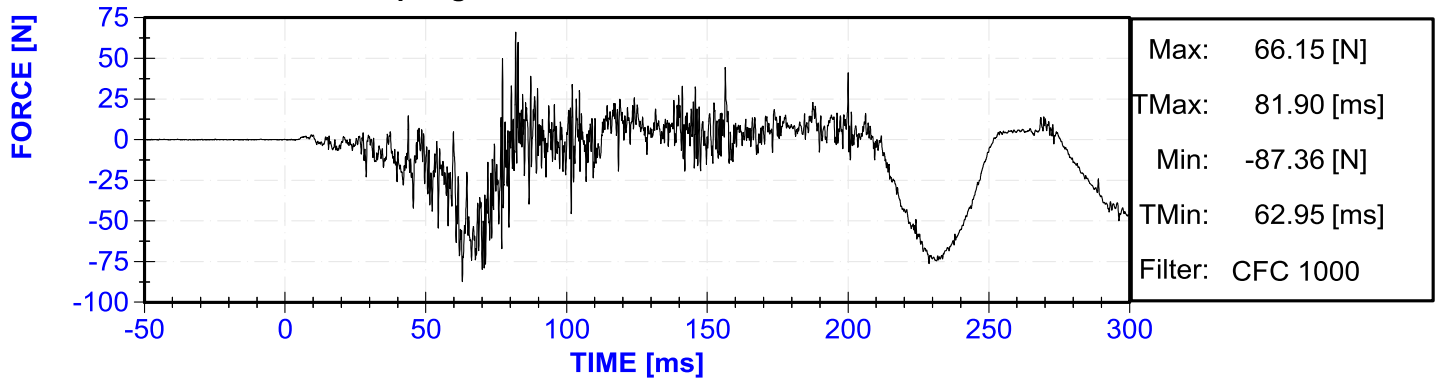




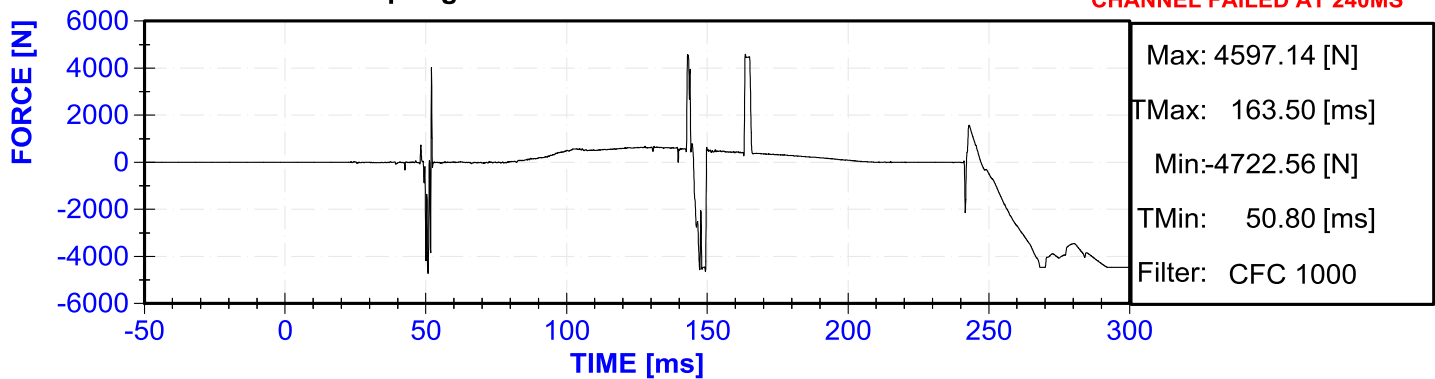




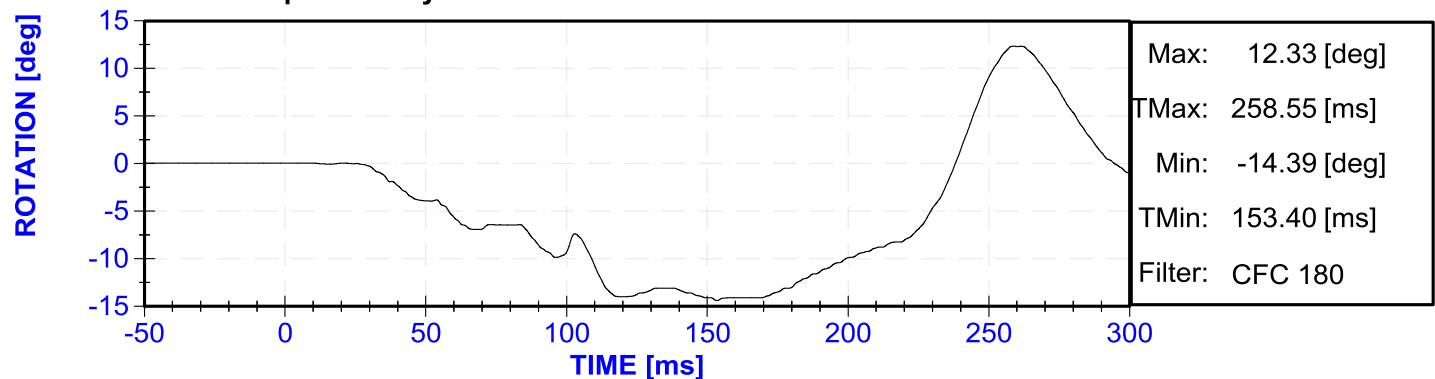
V2P1 Front Neck Spring Tower Load Cell



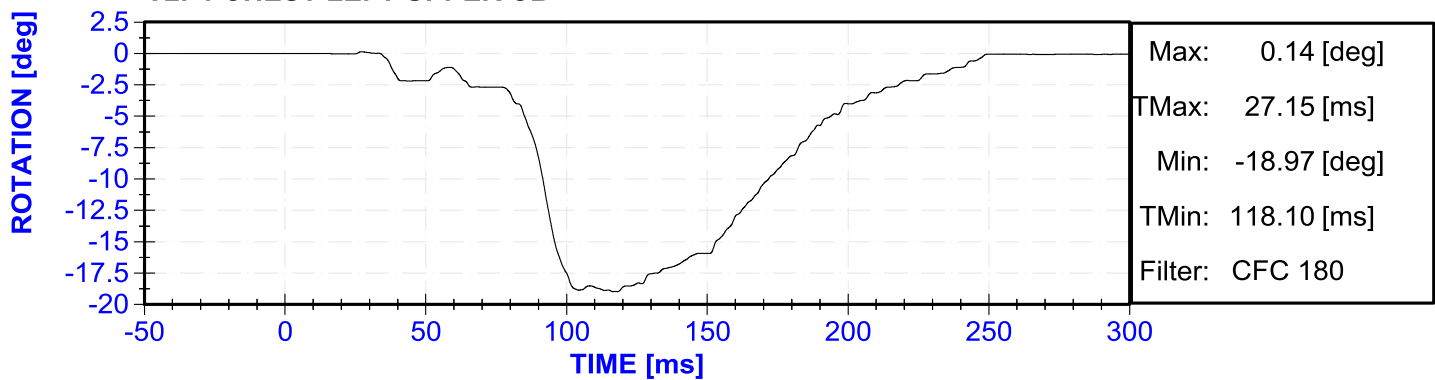
V2P1 Rear Neck Spring Tower Load Cell

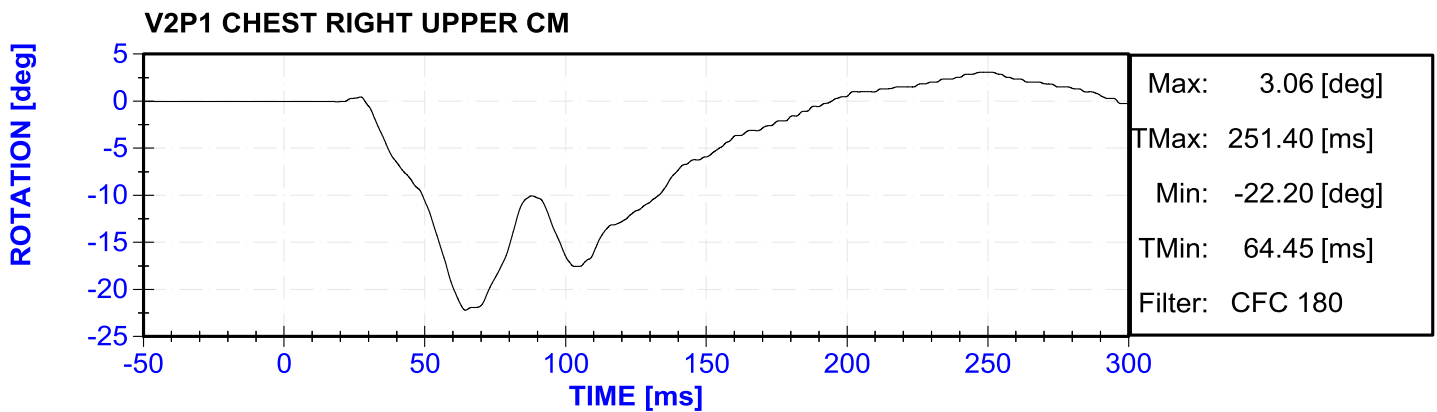
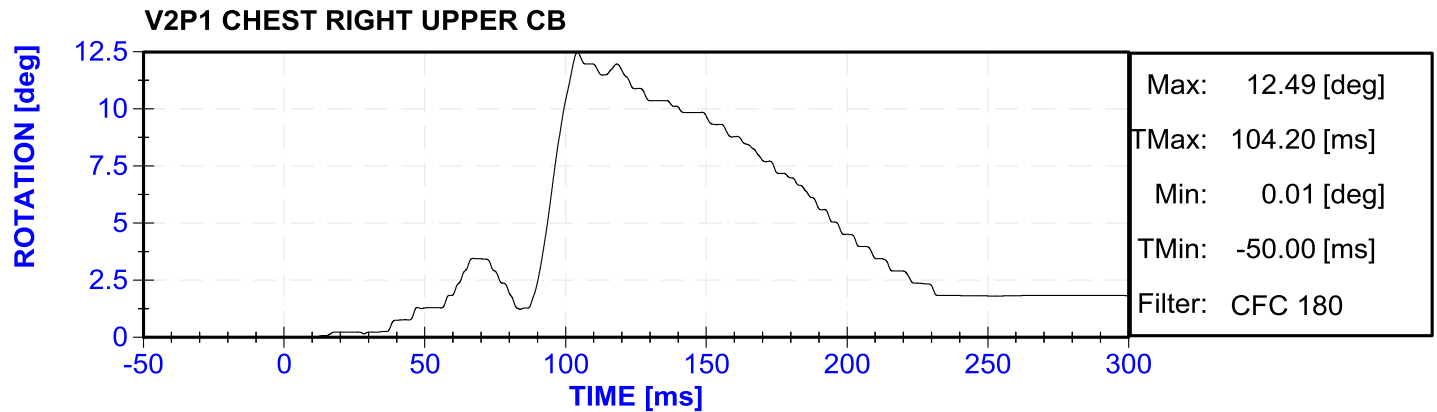
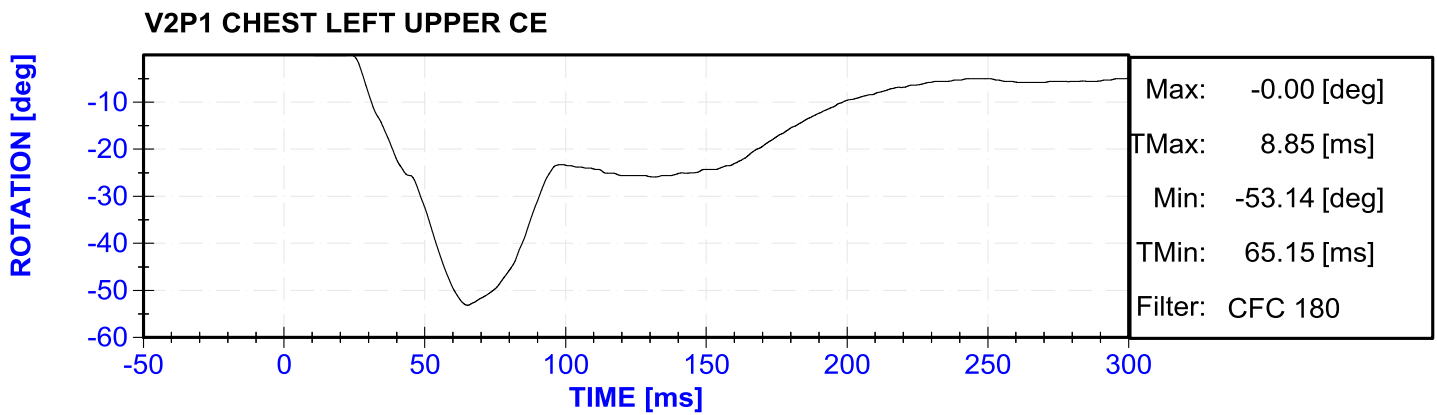
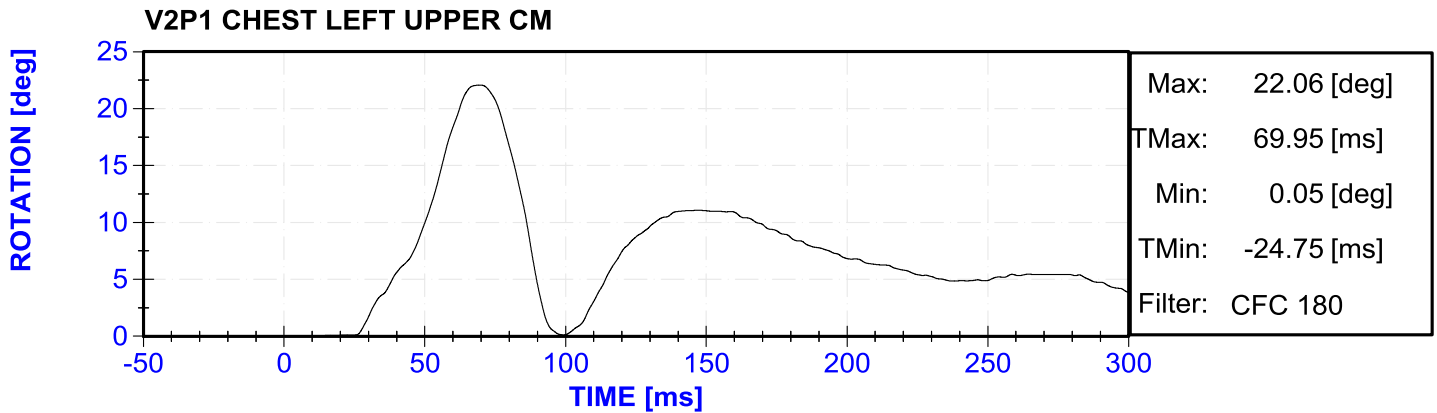


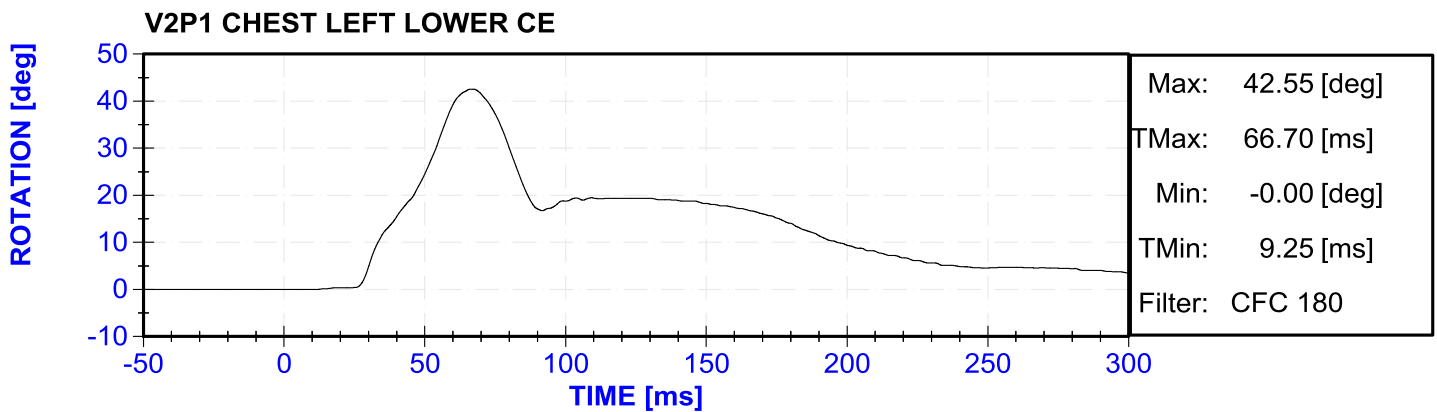
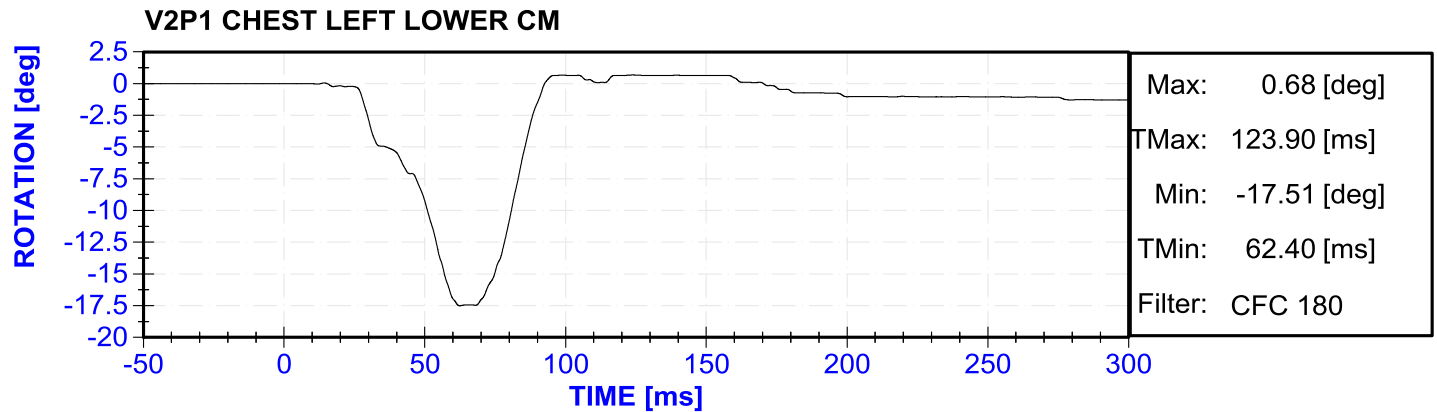
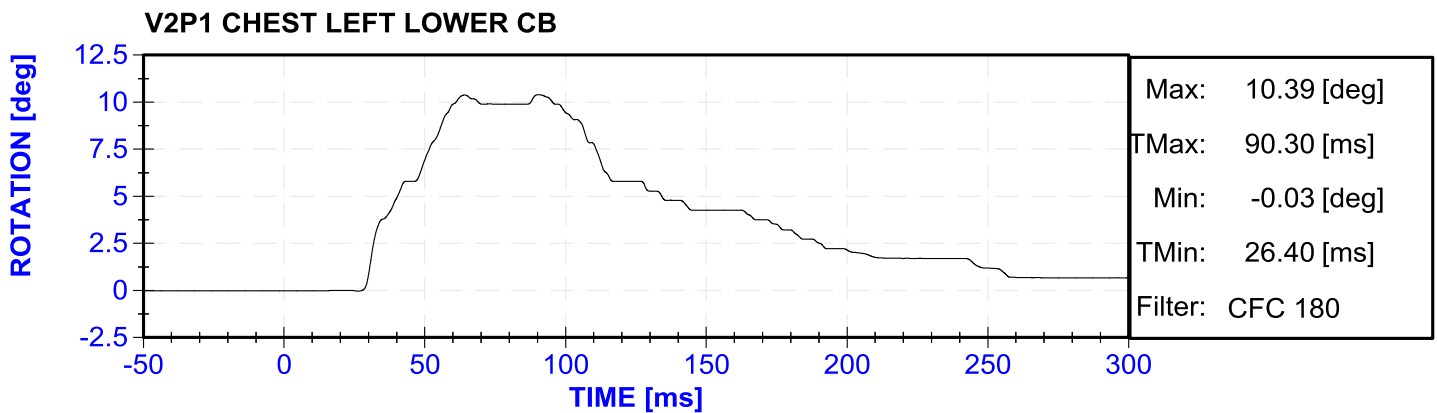
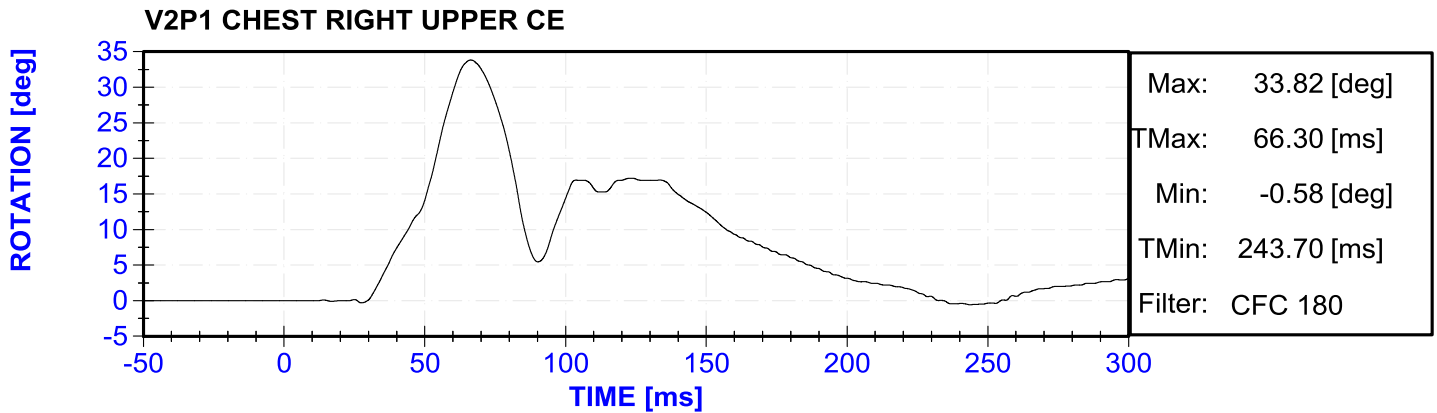
V2P1 Occipital Condyle Rotation Potentiometer

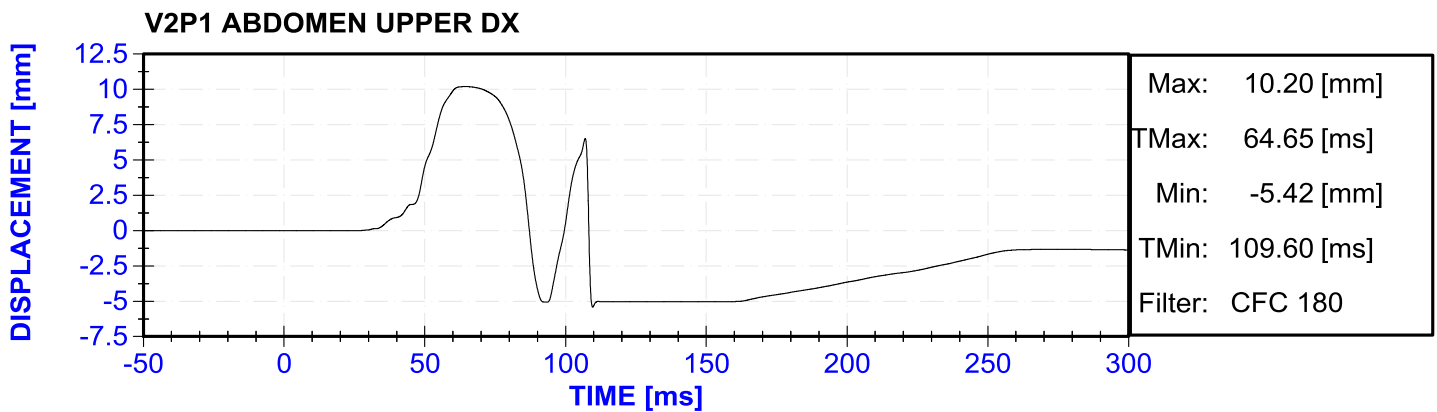
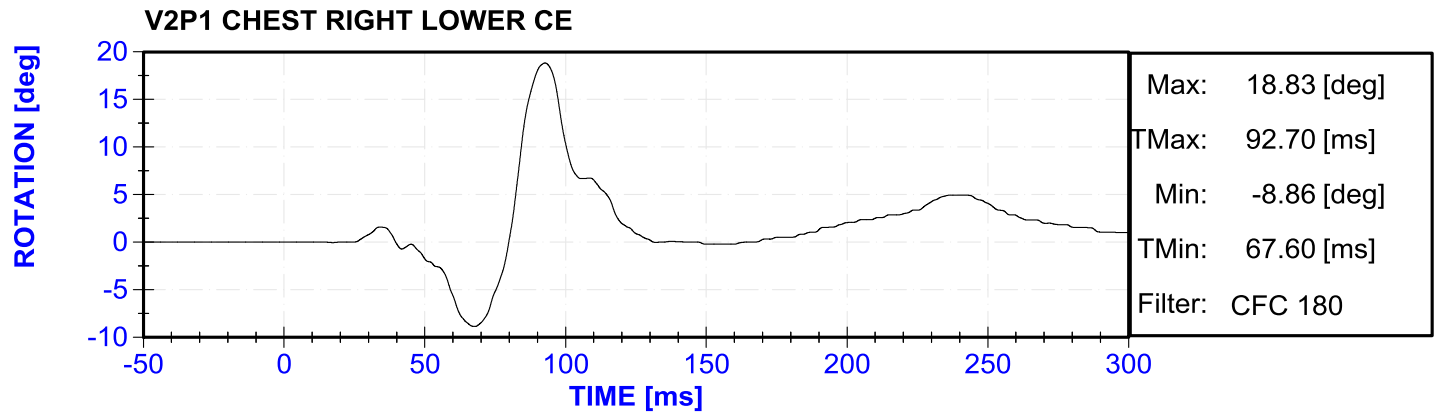
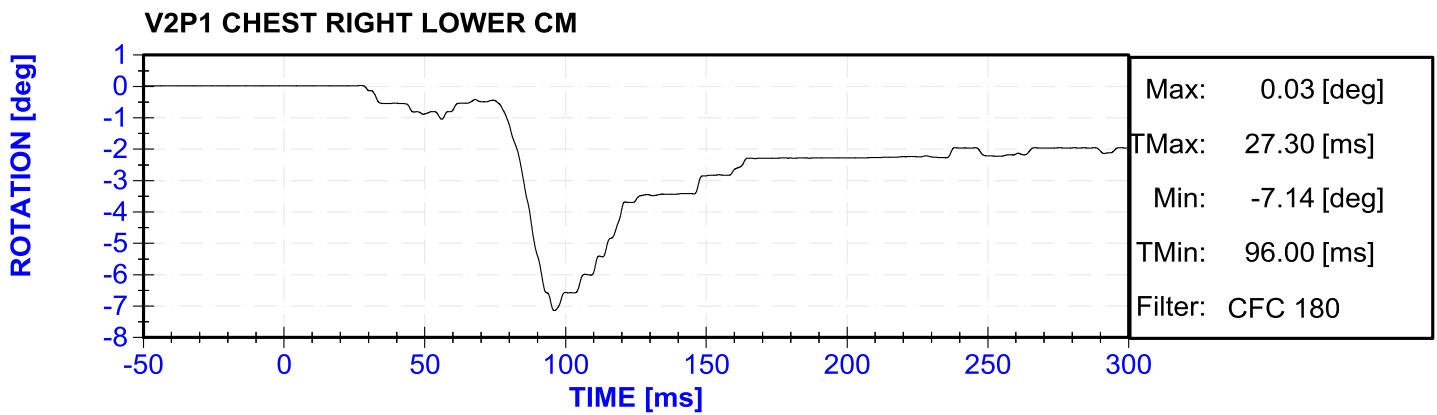
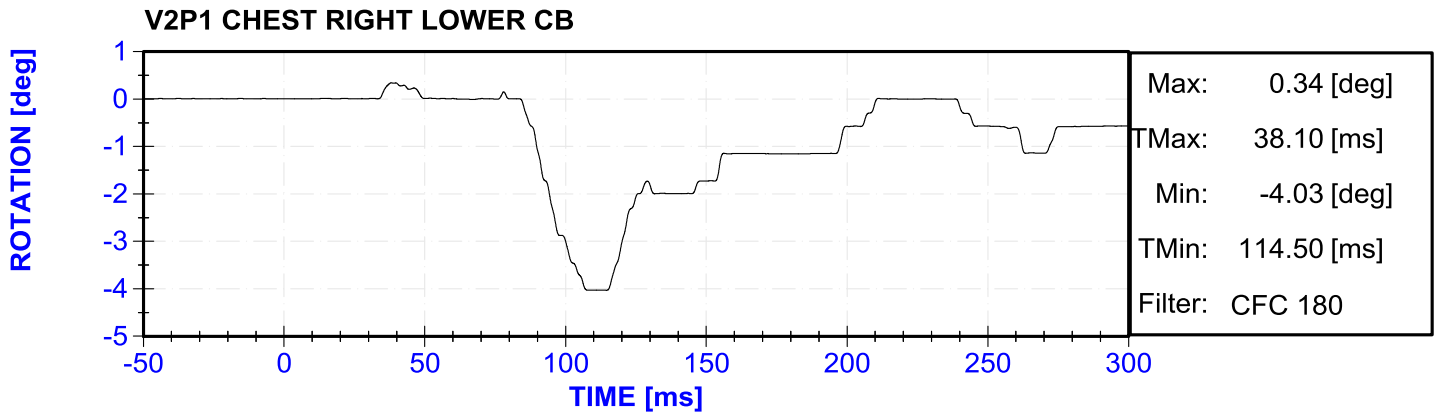


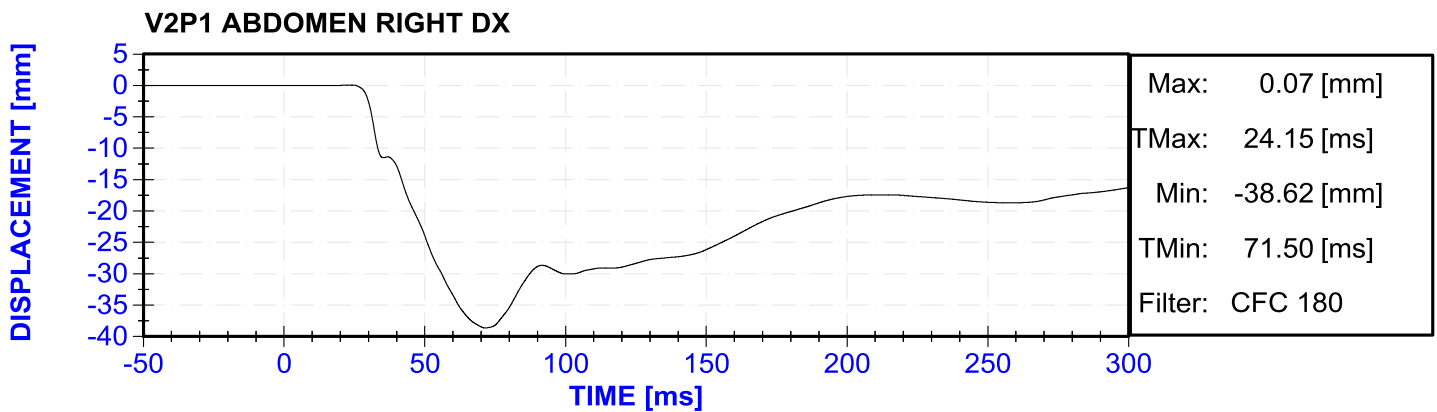
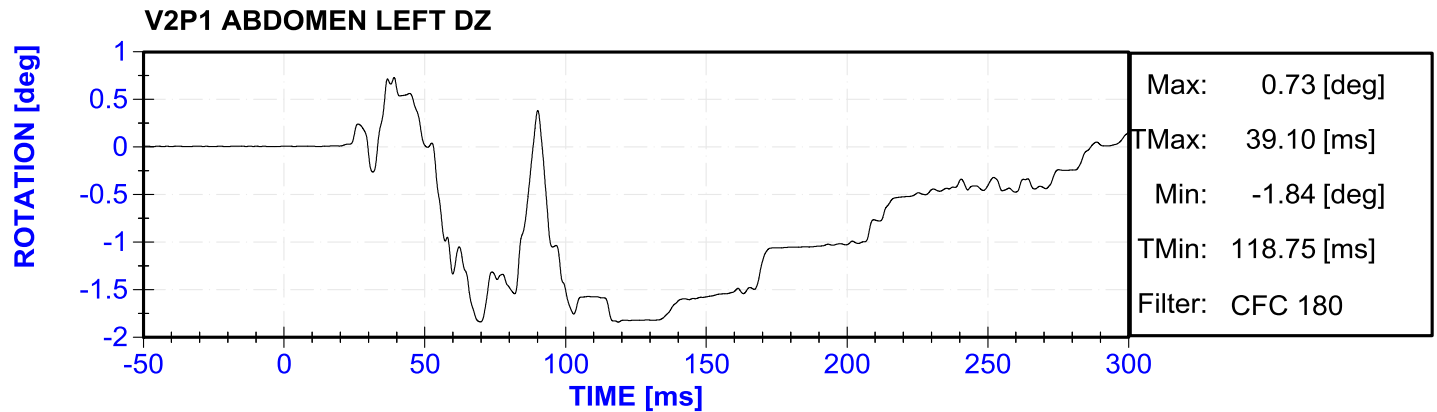
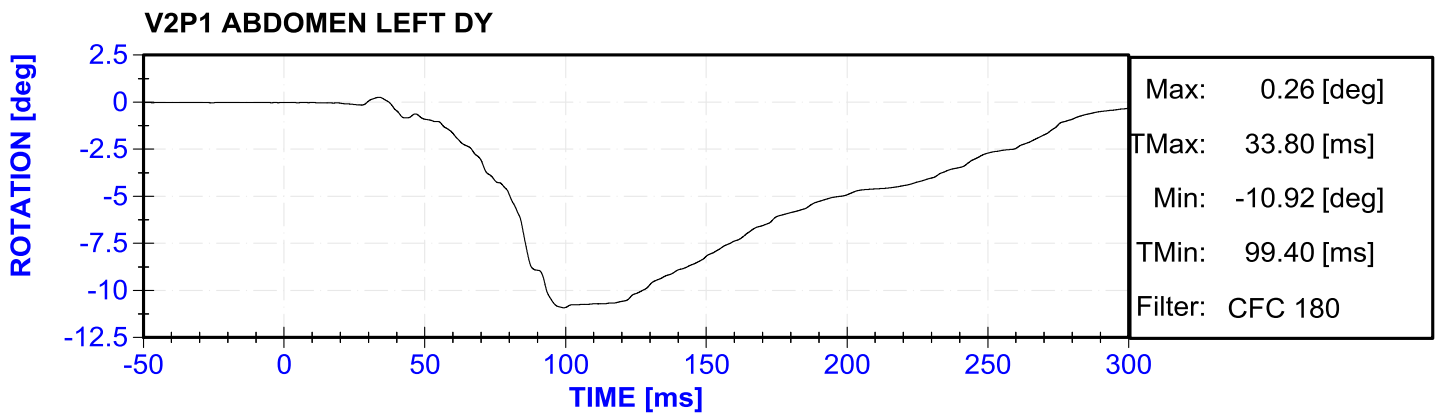
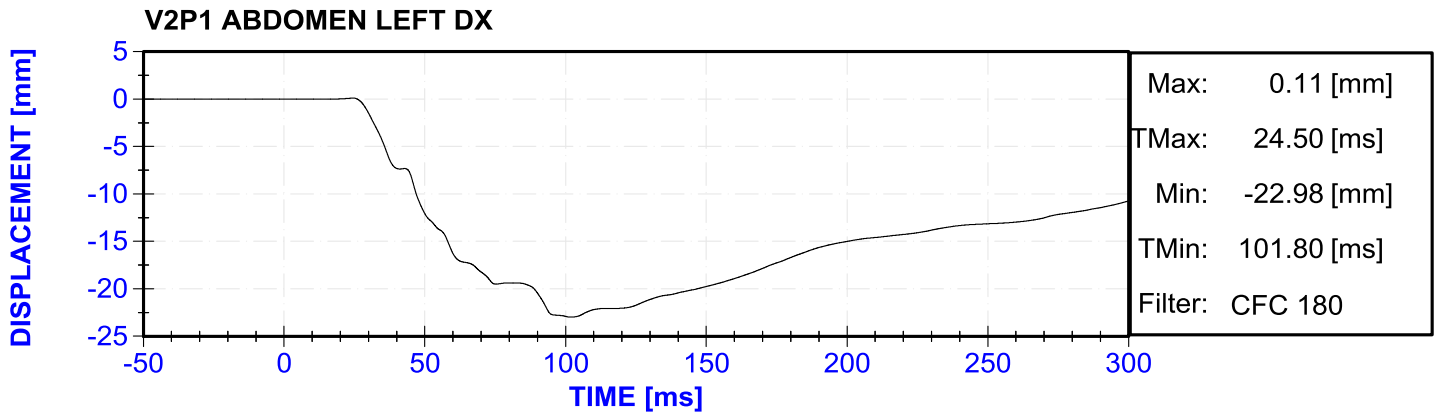
V2P1 CHEST LEFT UPPER CB

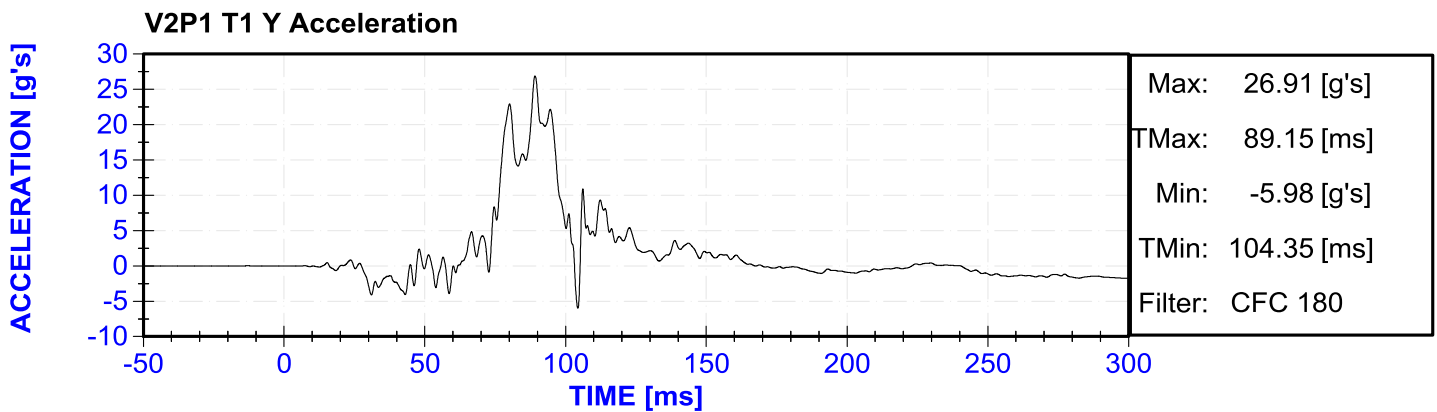
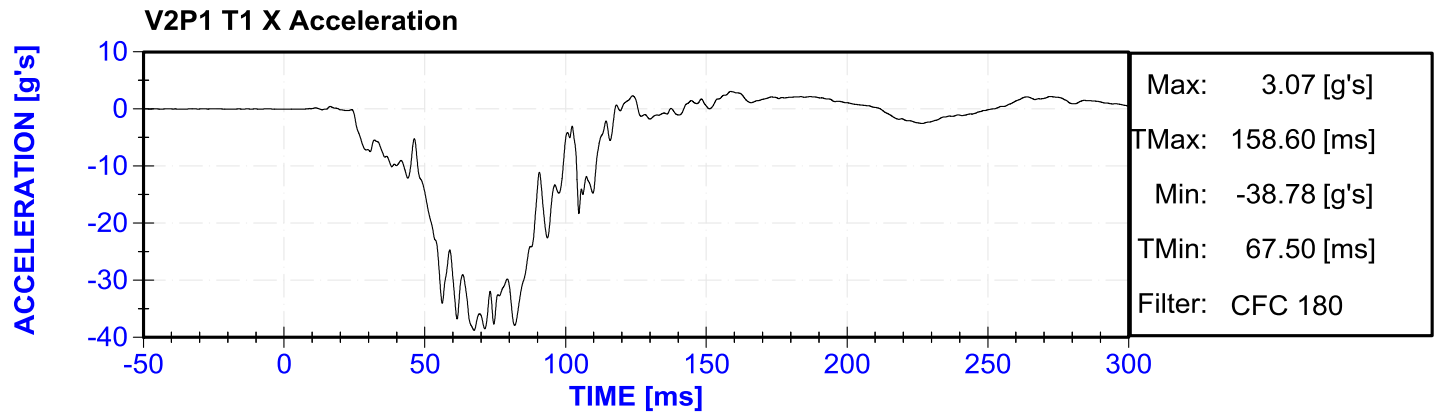
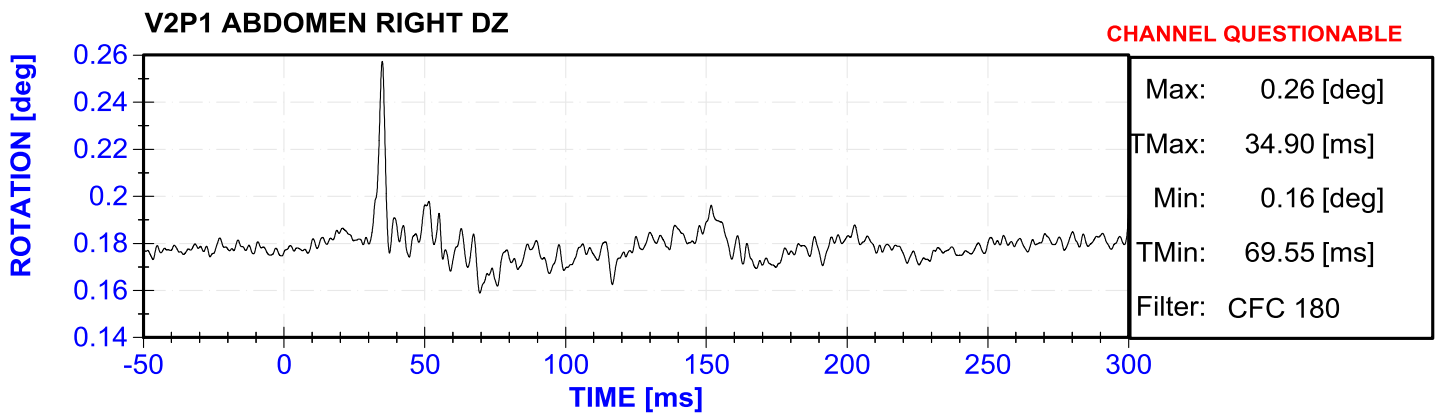
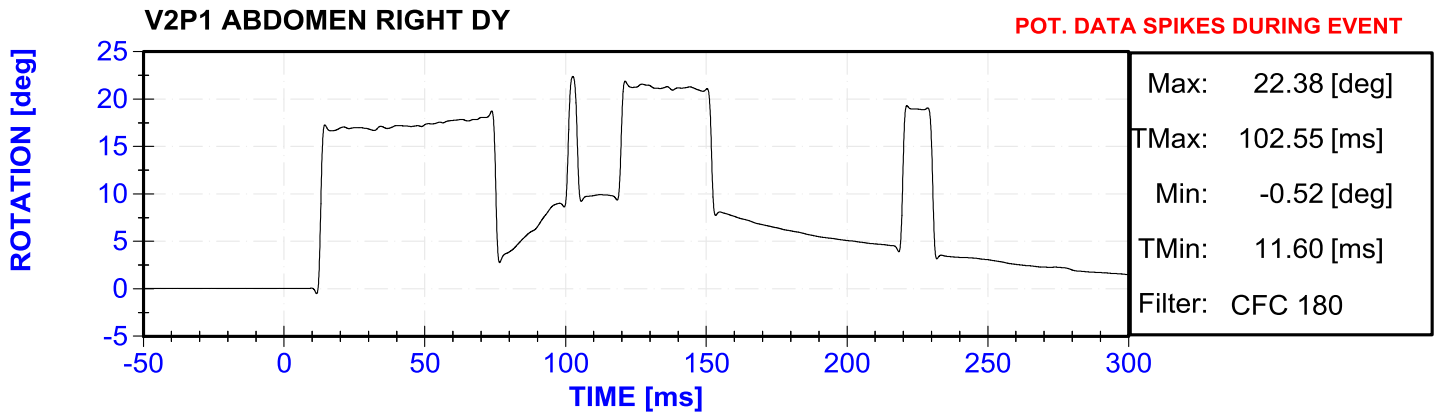


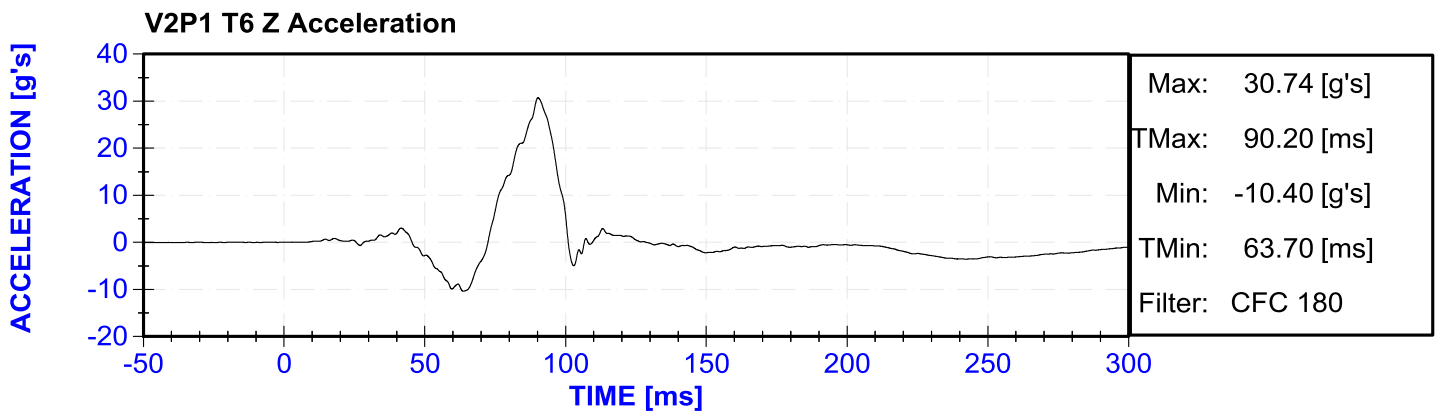
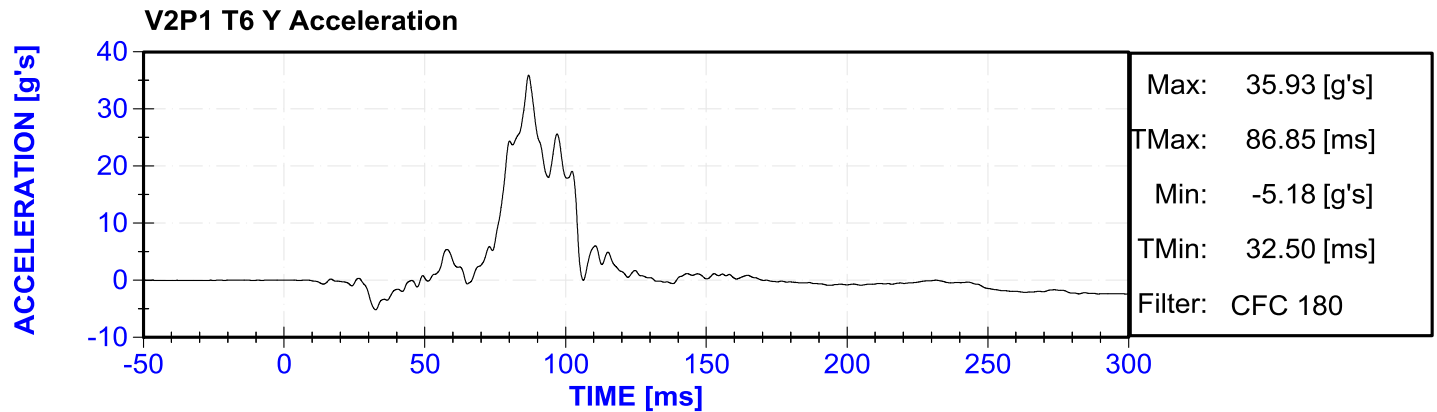
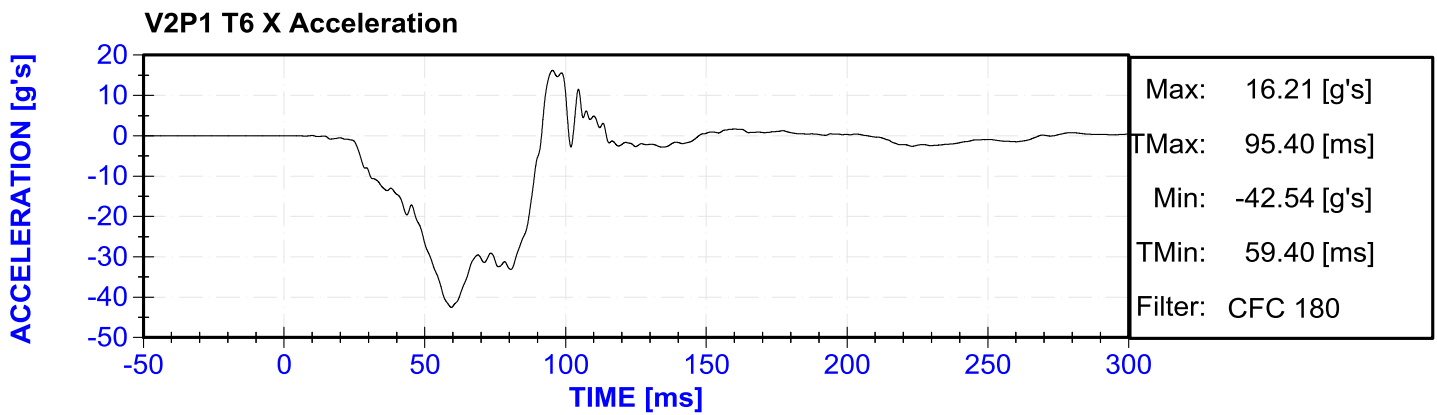
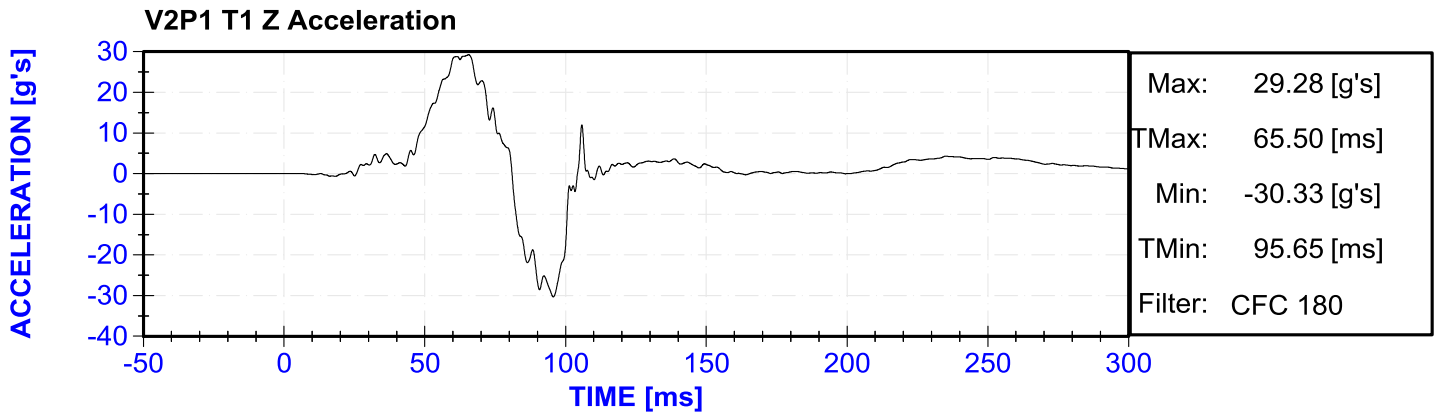


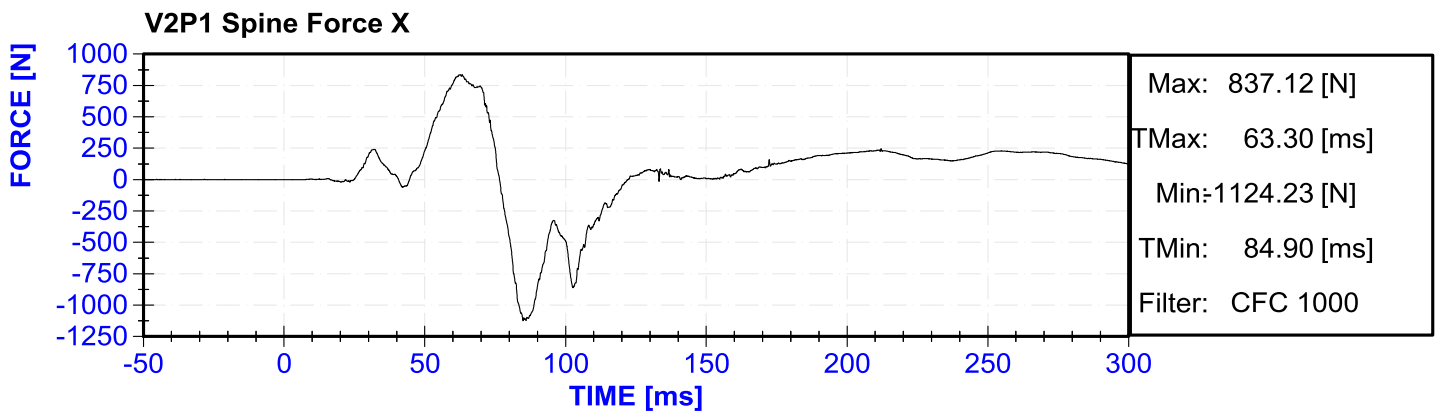
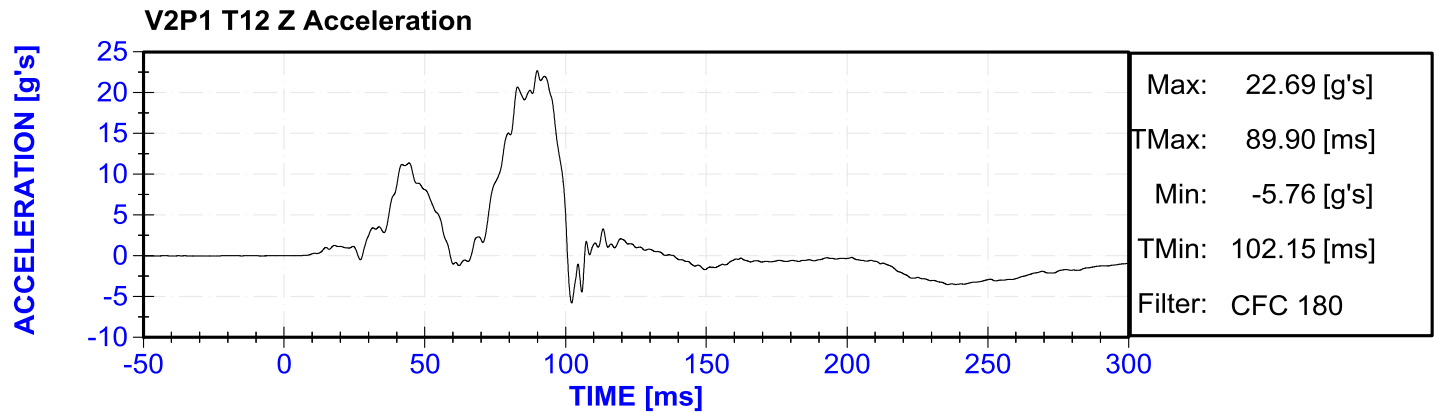
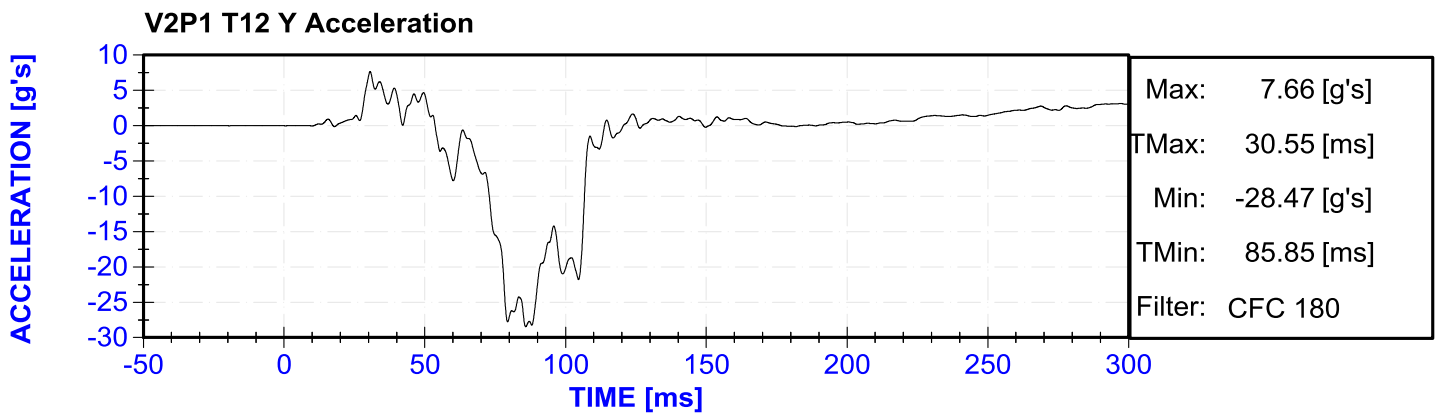
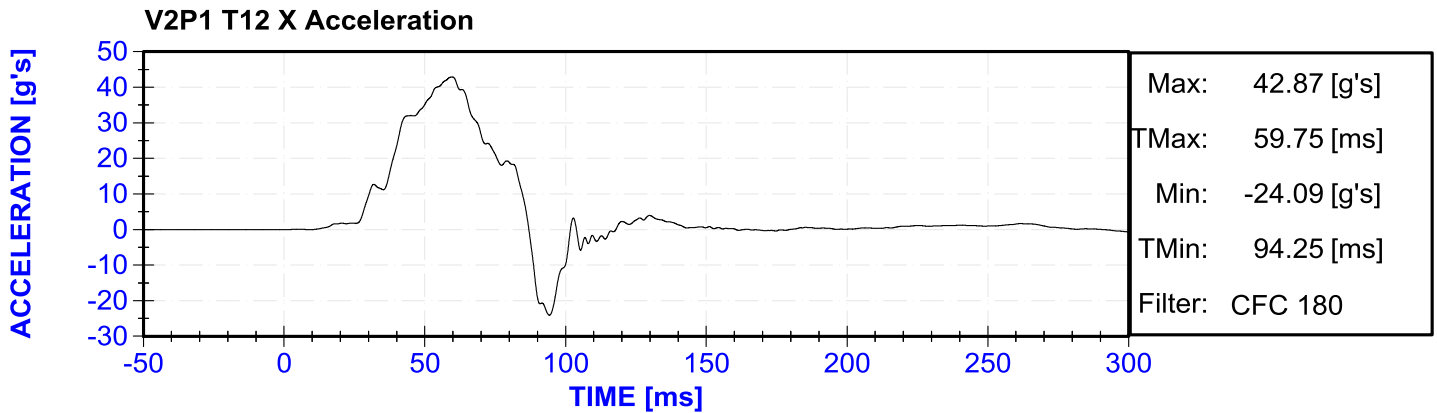


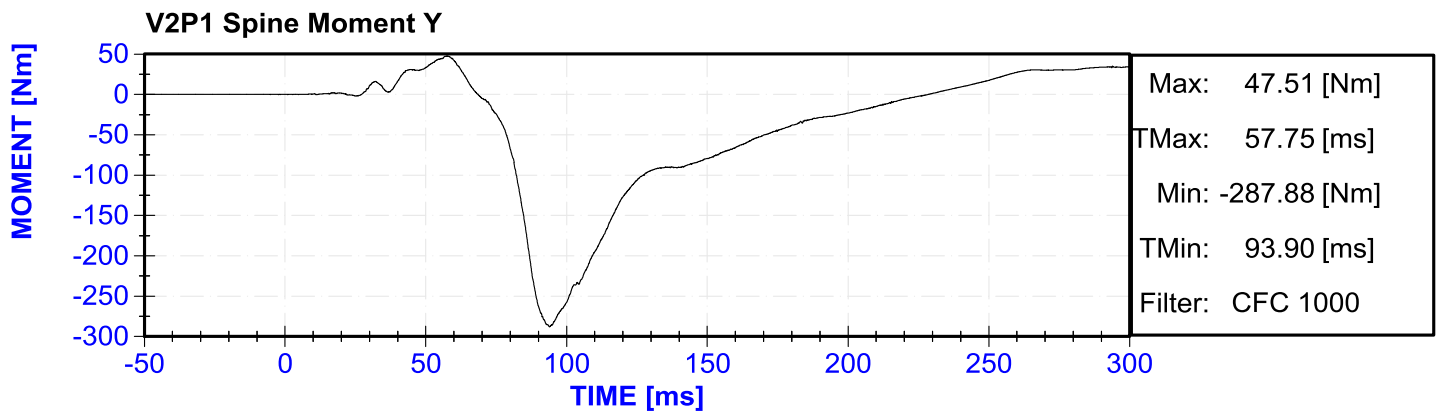
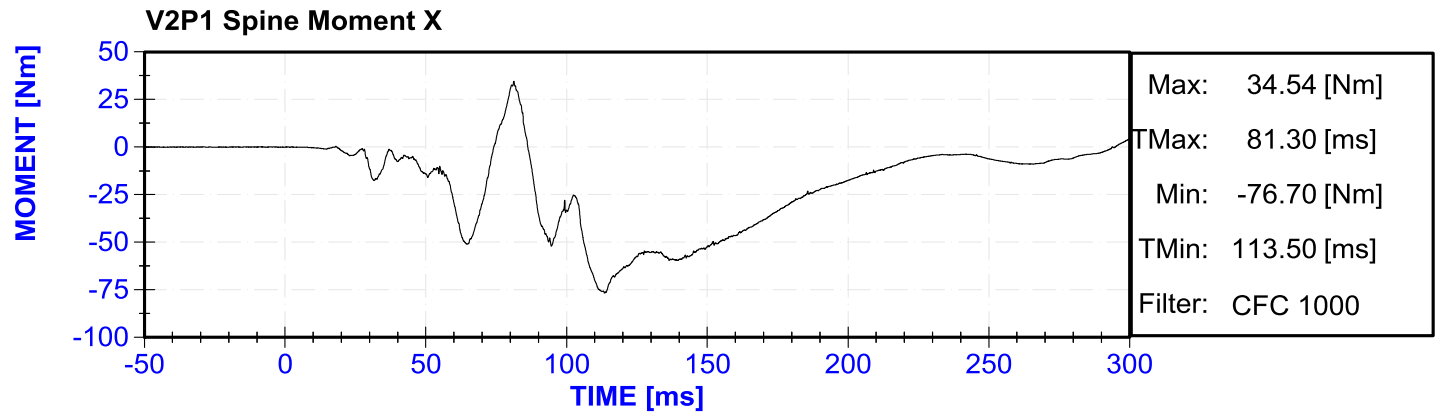
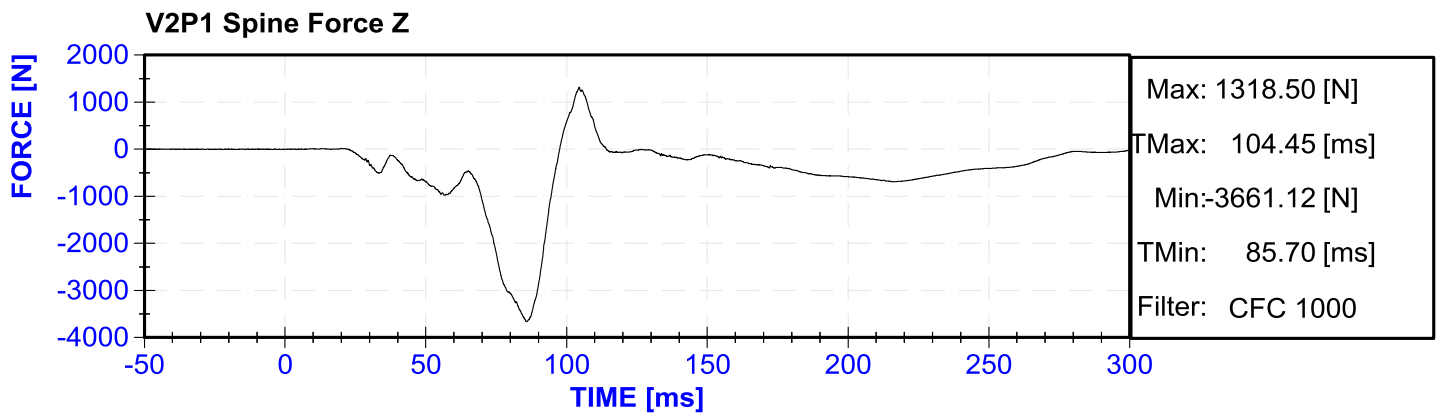
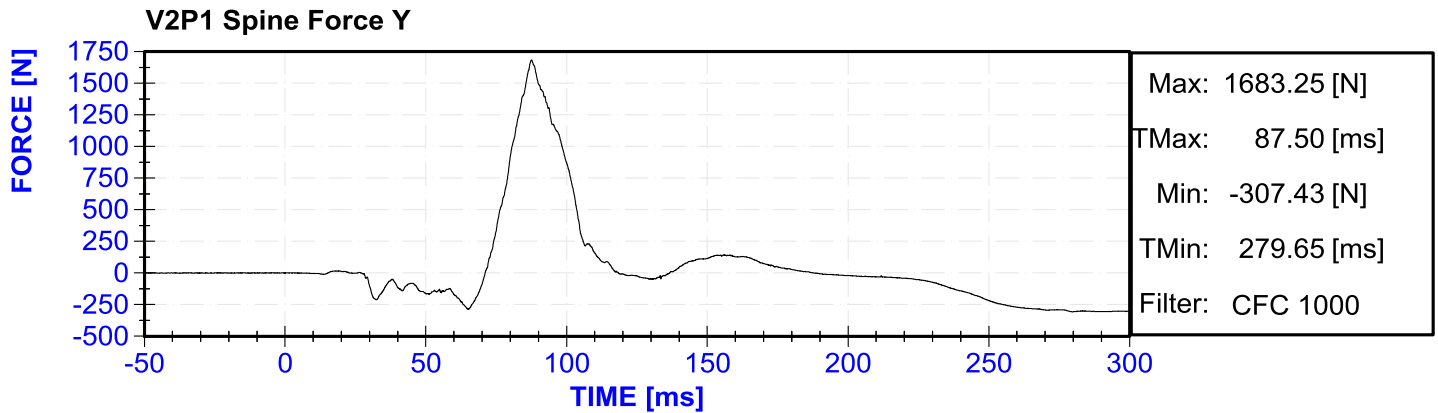


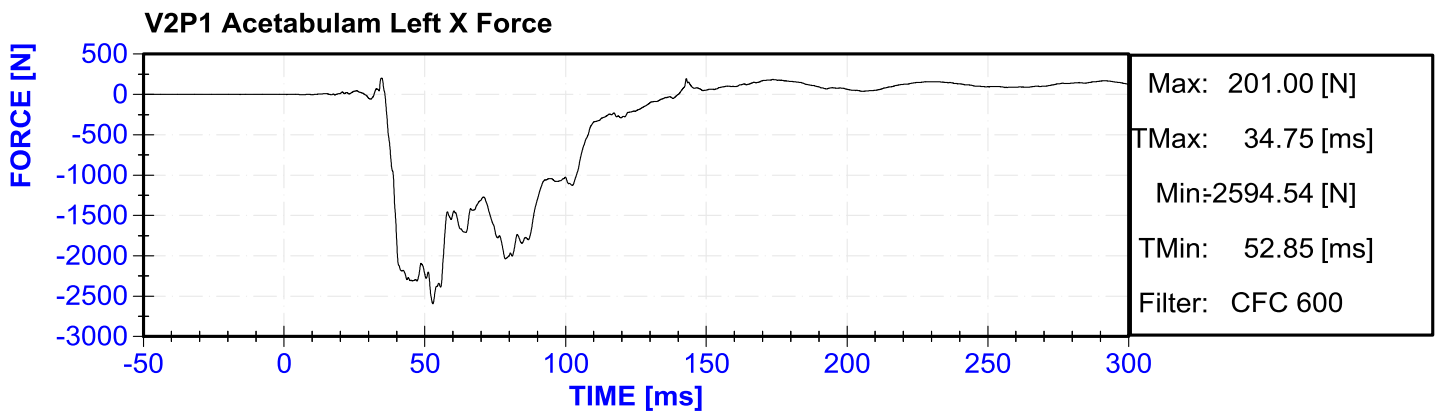
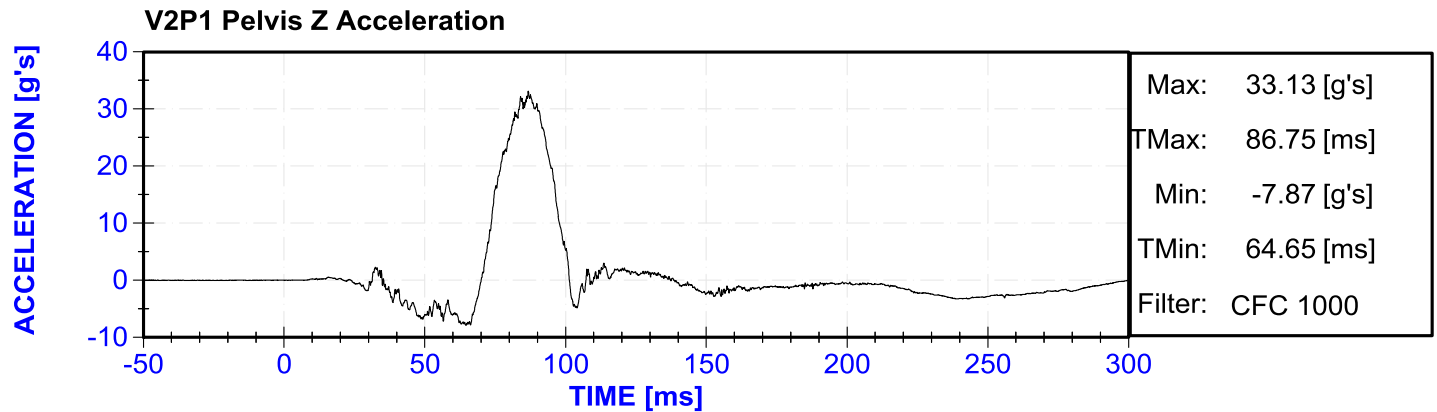
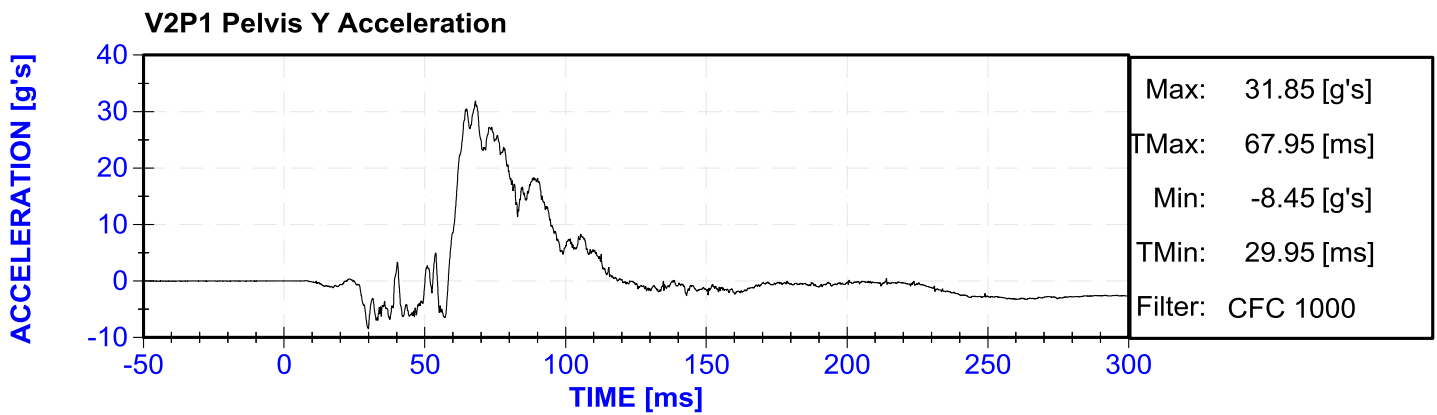
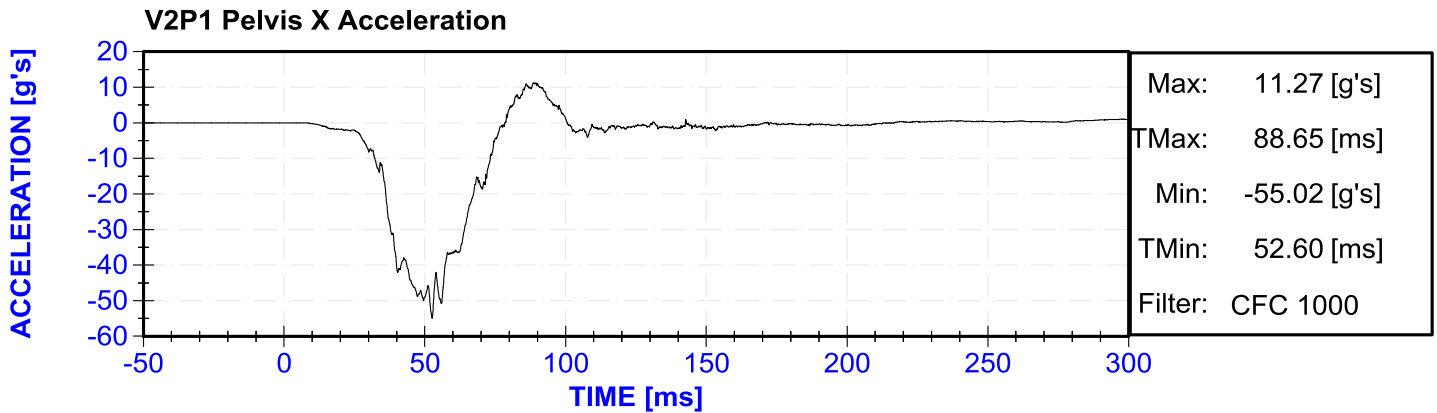


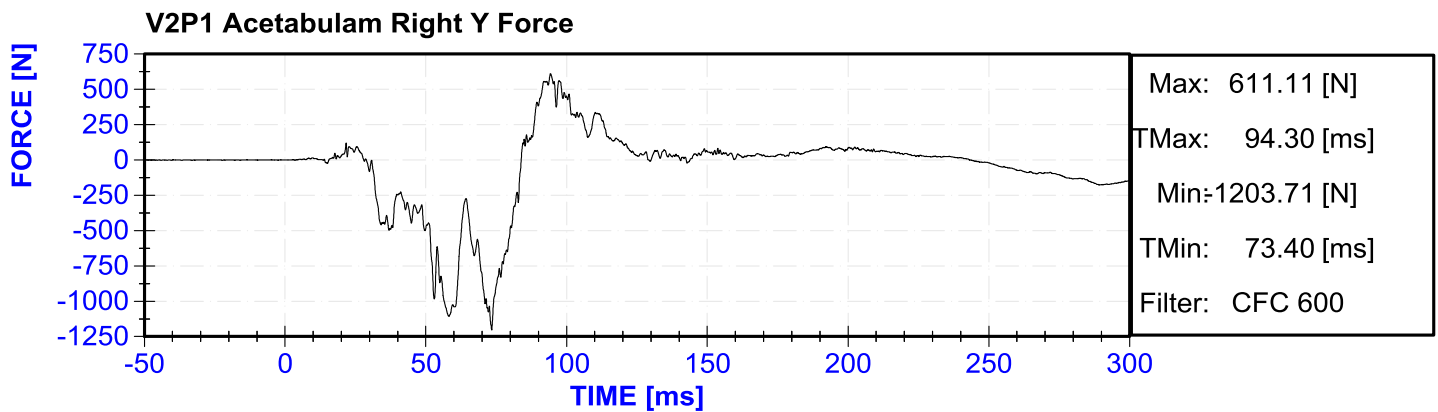
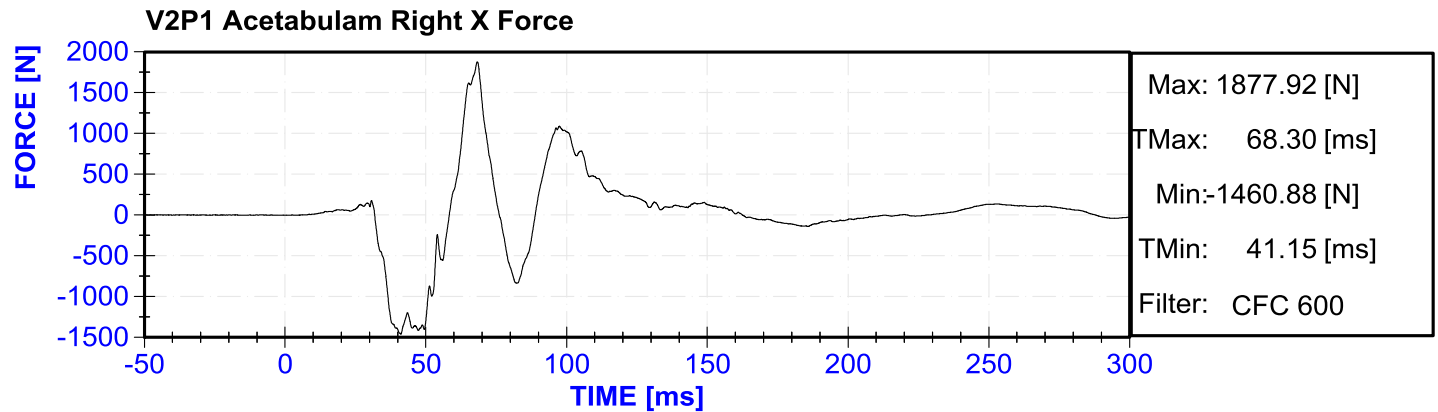
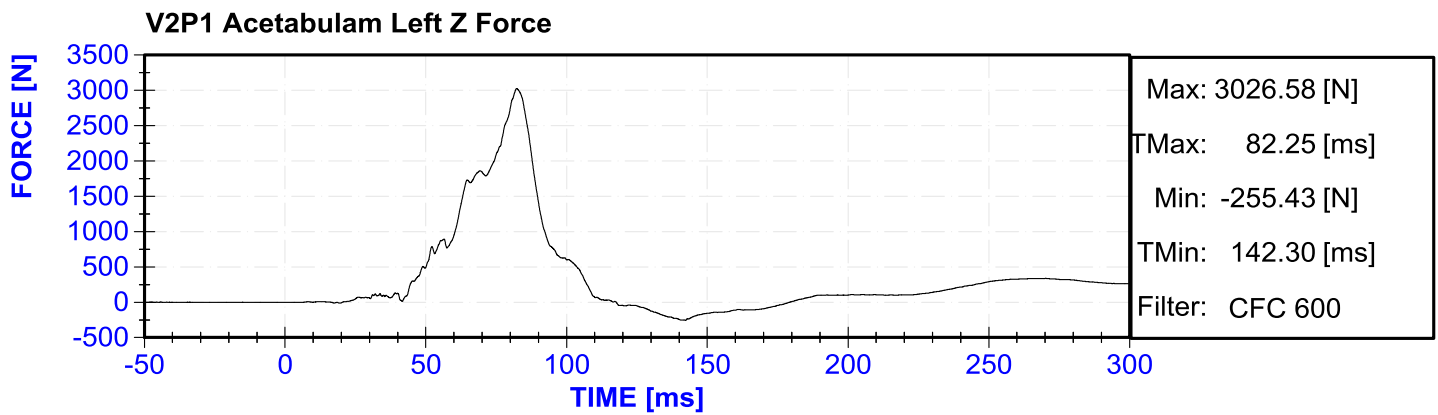
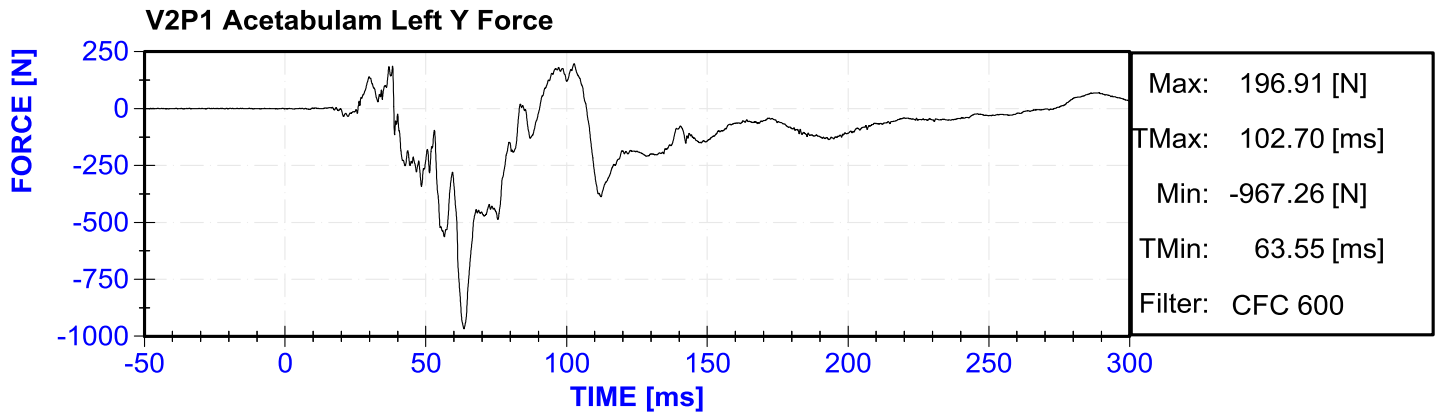


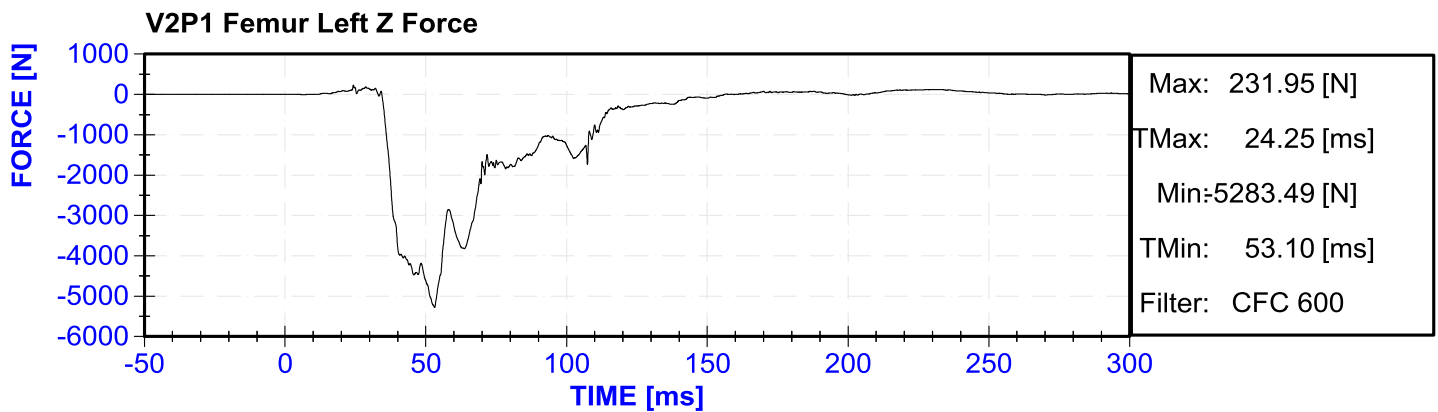
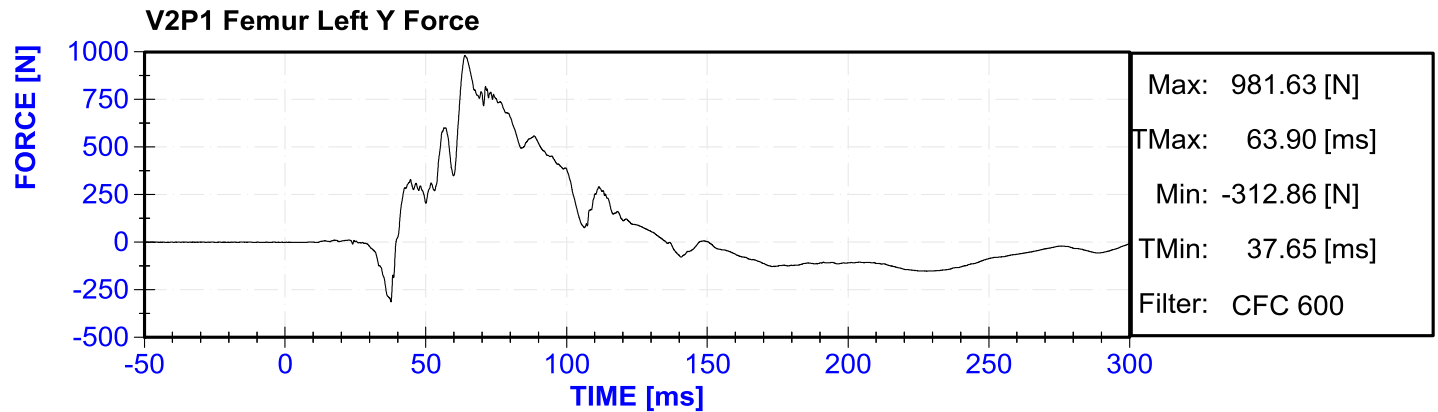
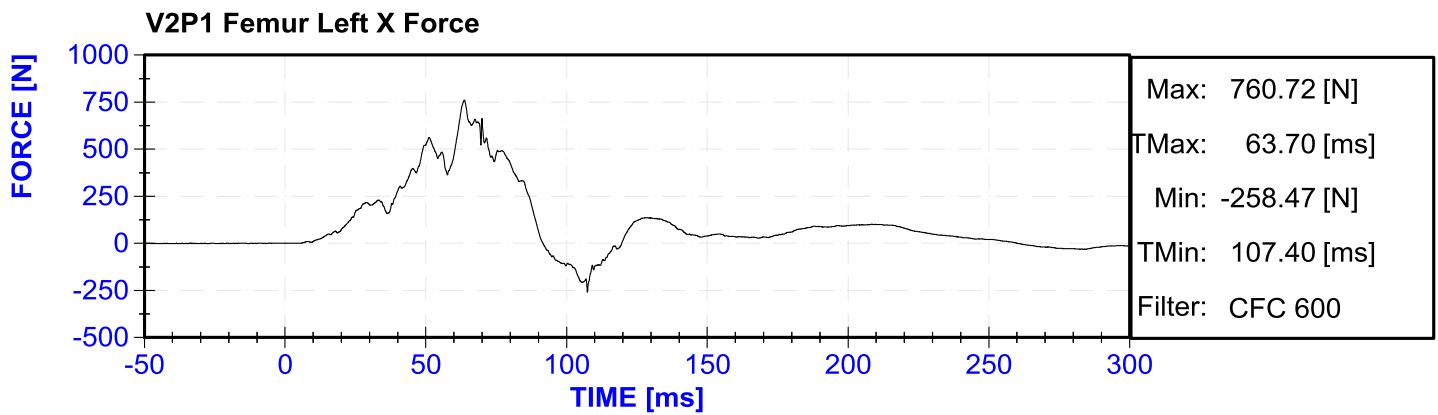
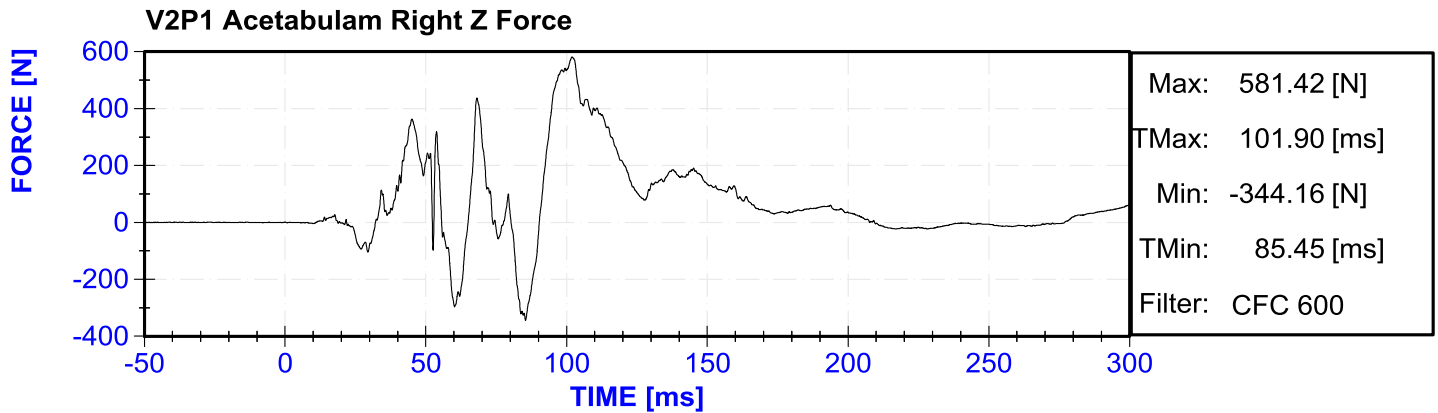


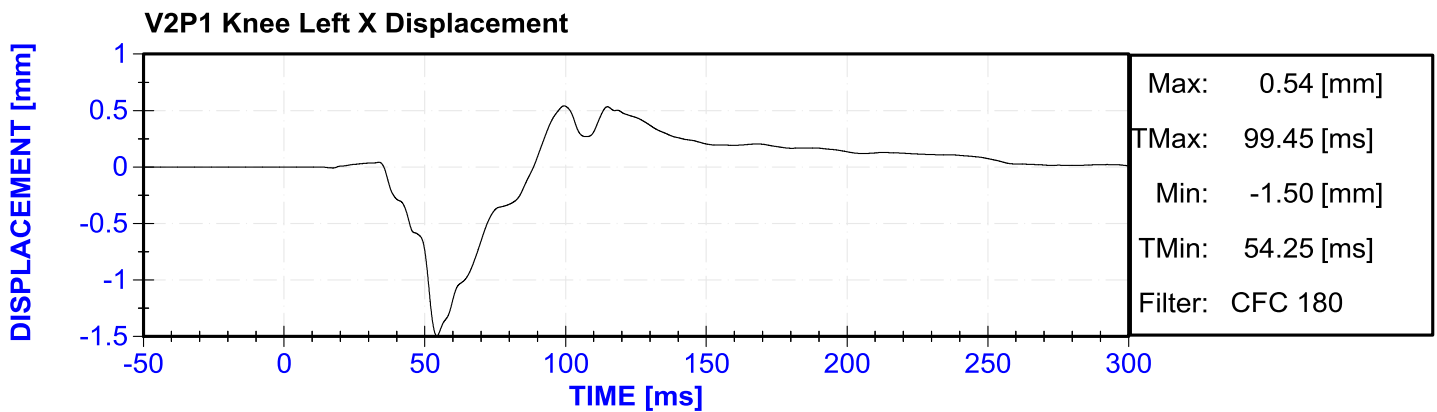
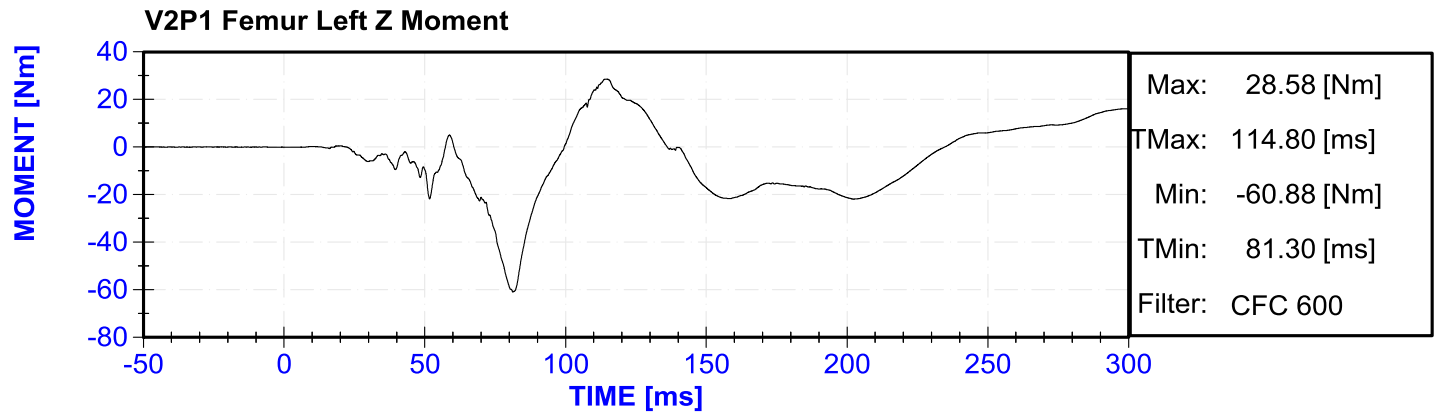
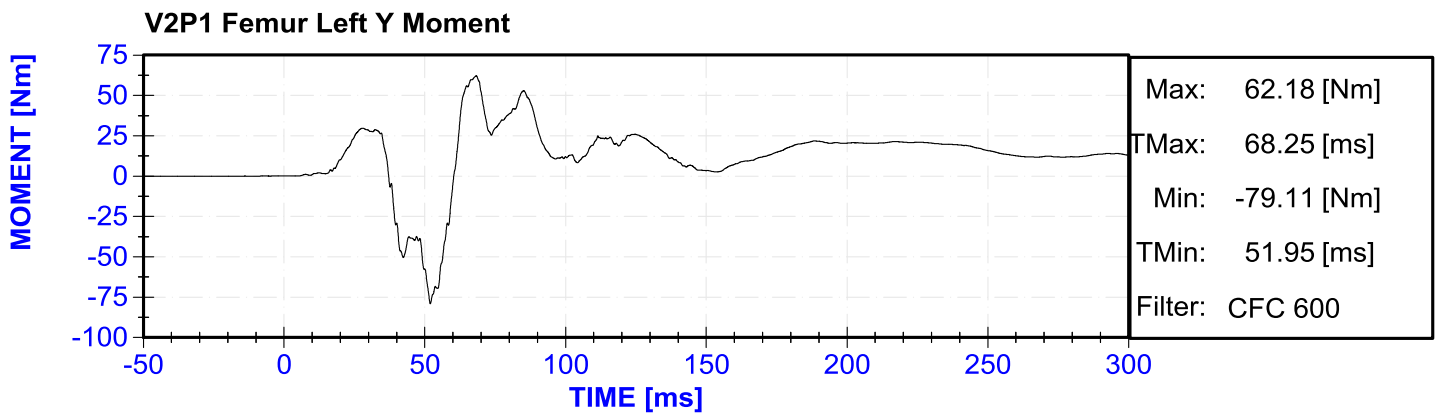
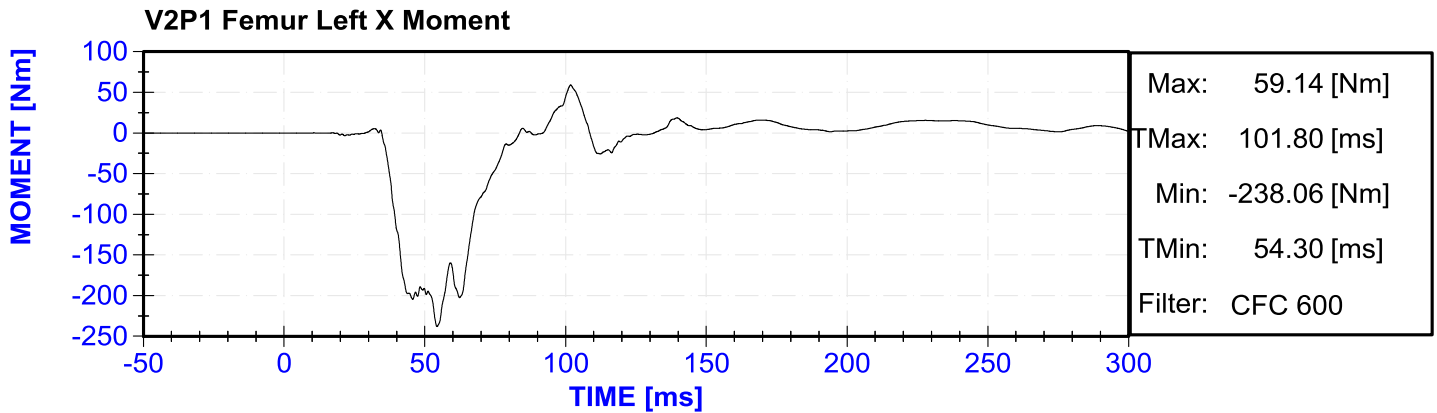


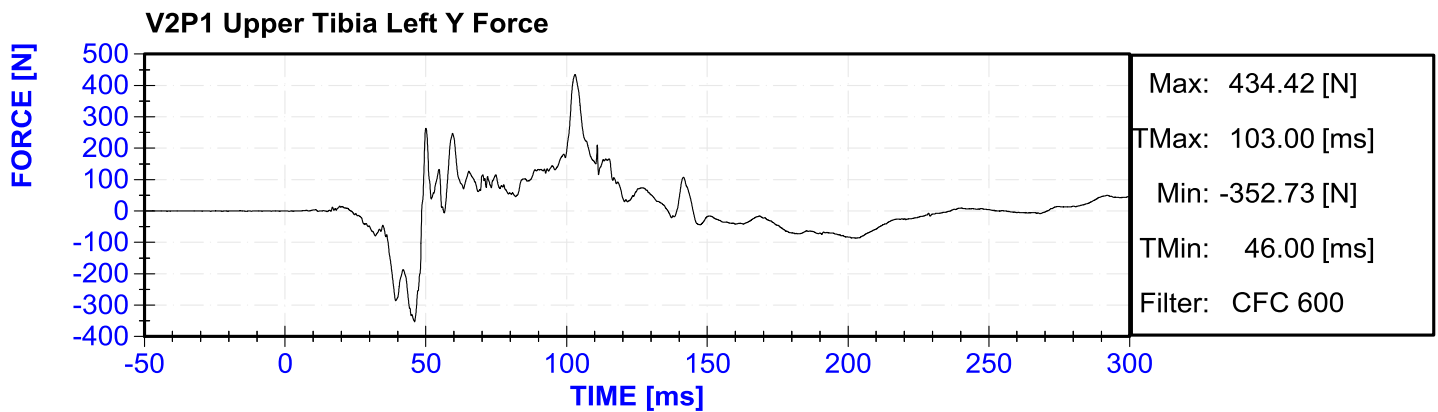
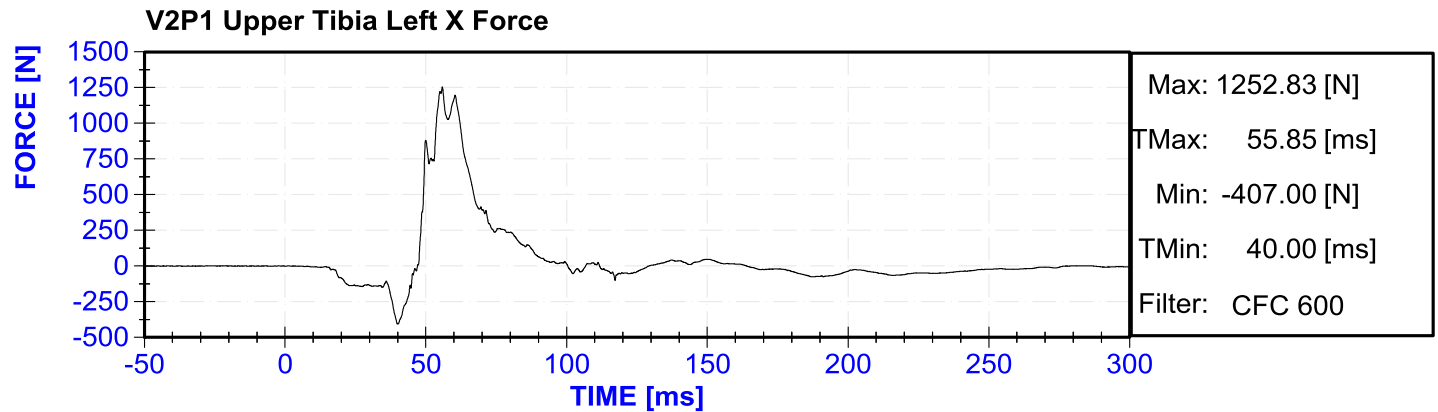
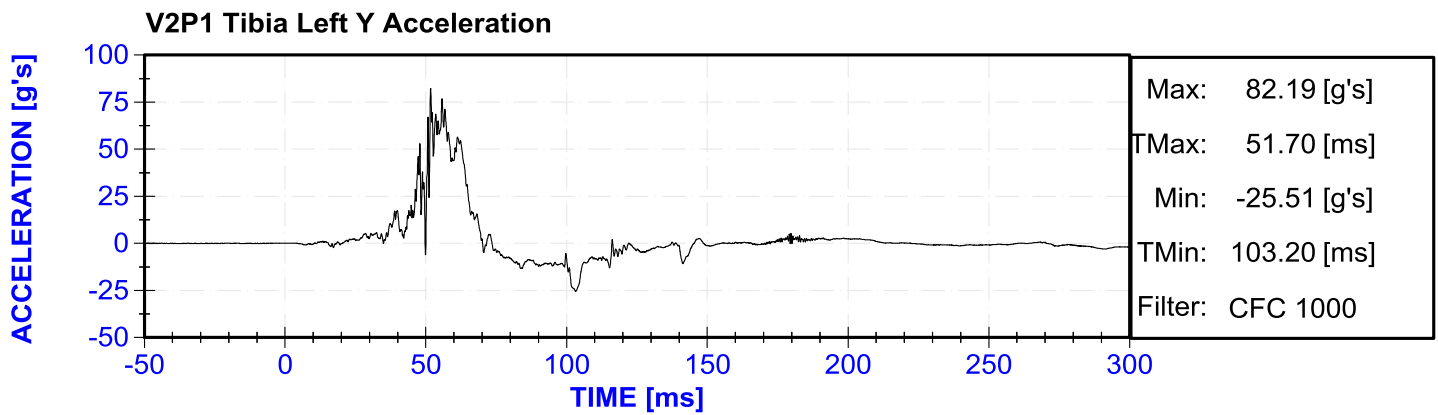
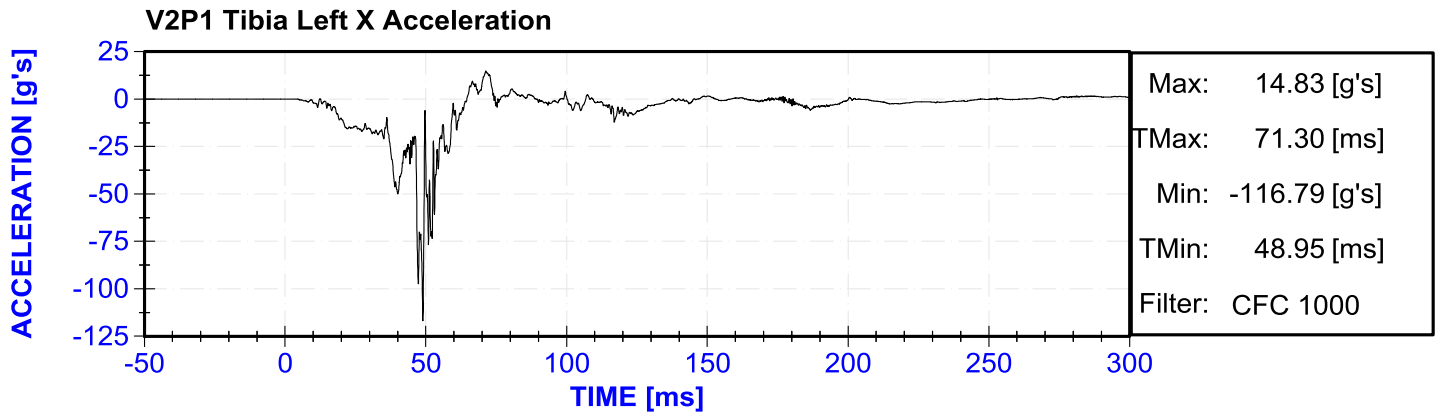


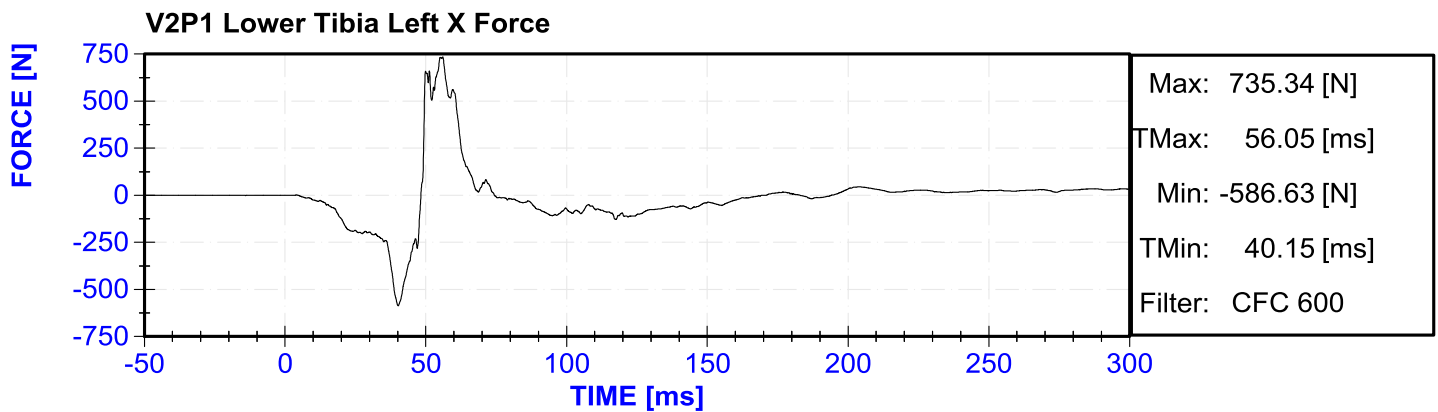
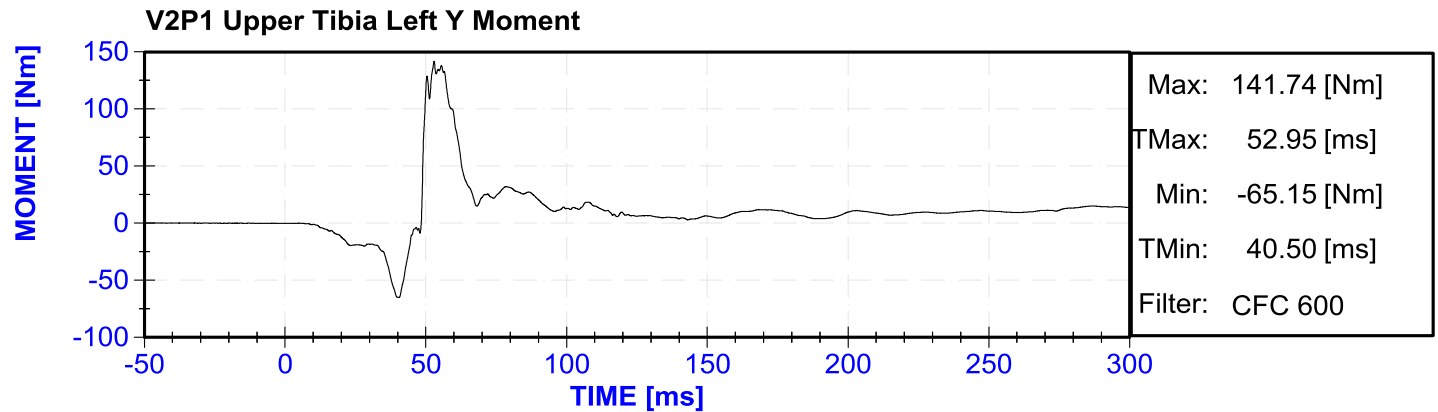
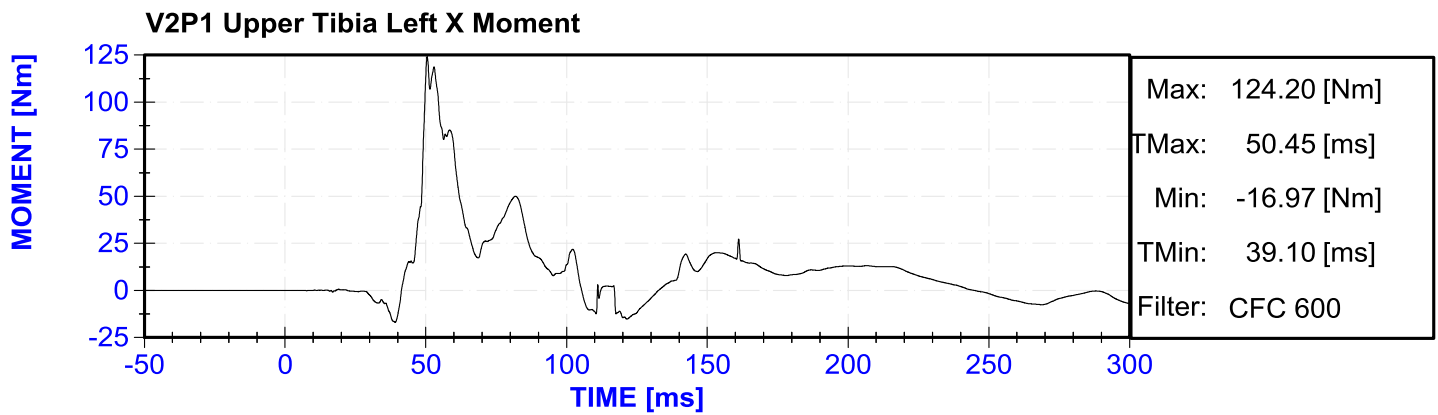
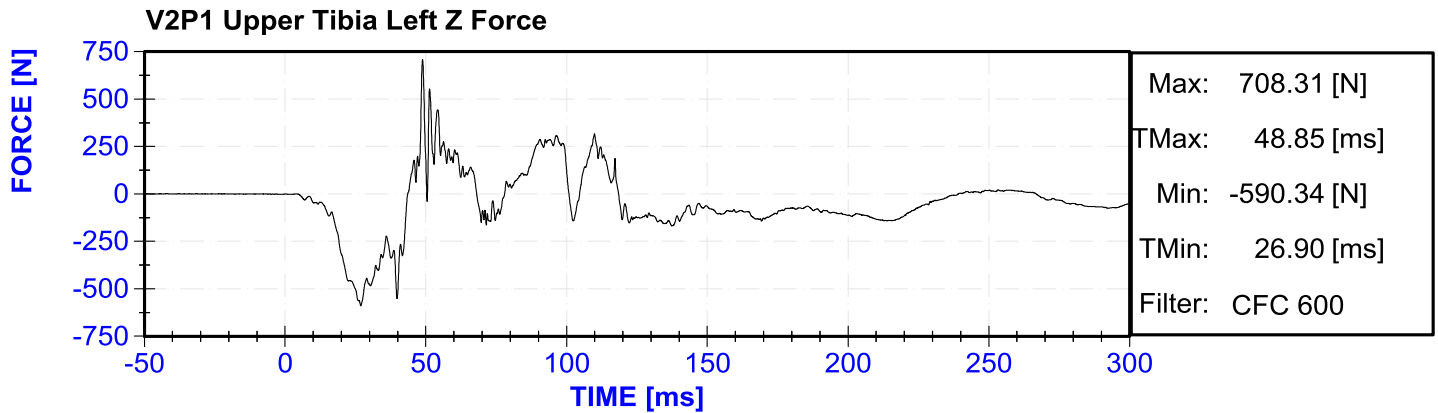


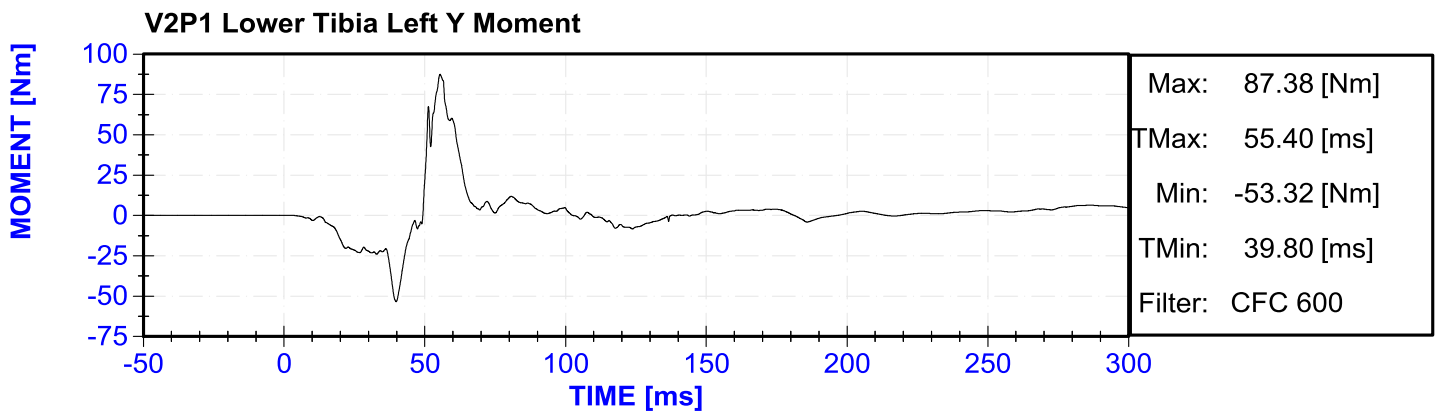
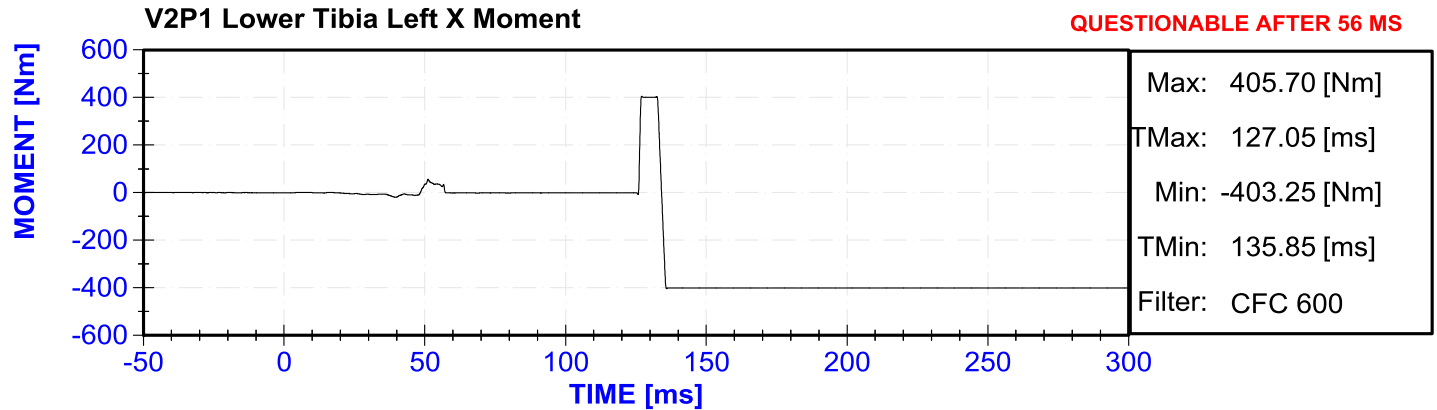
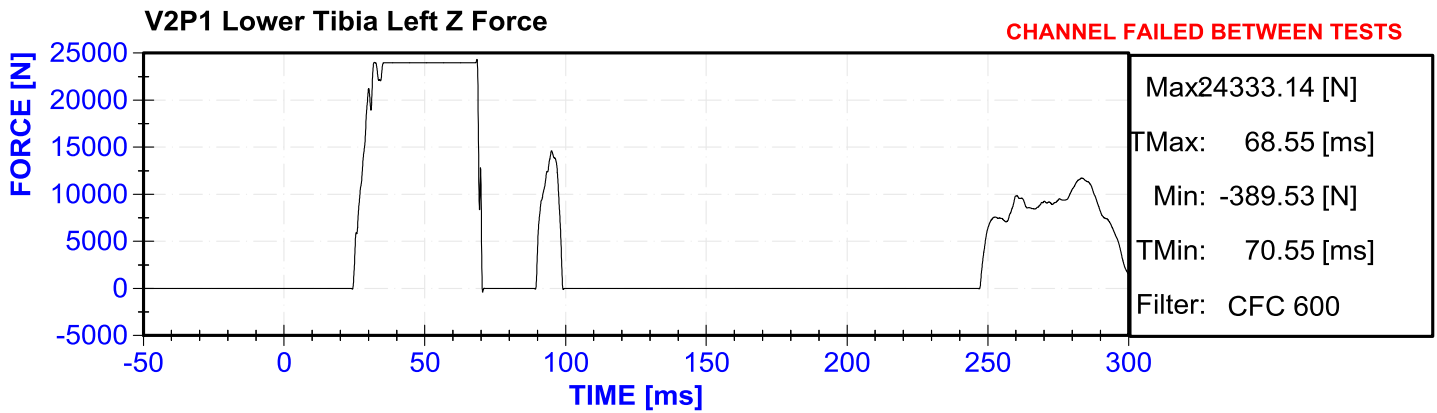
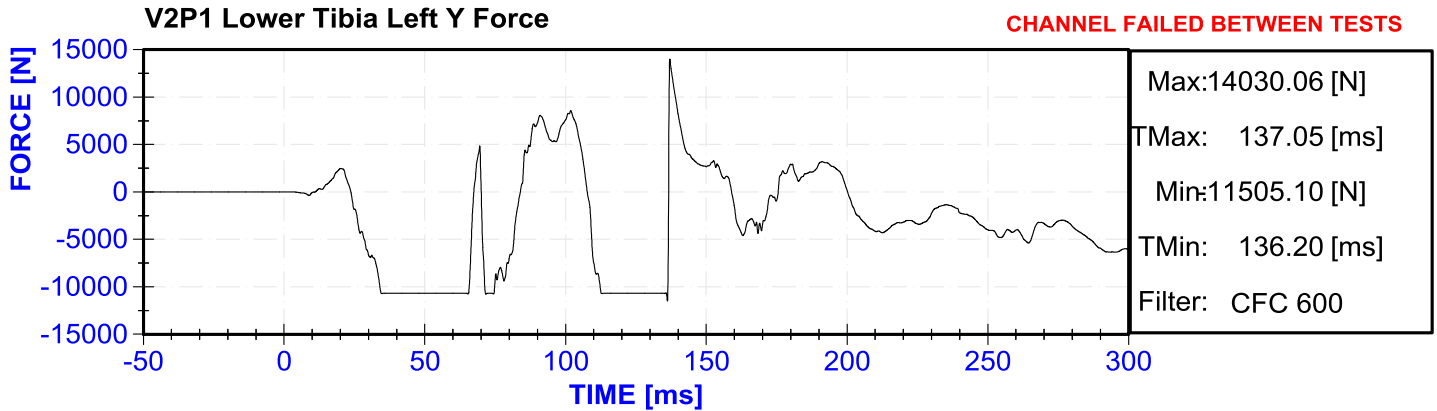


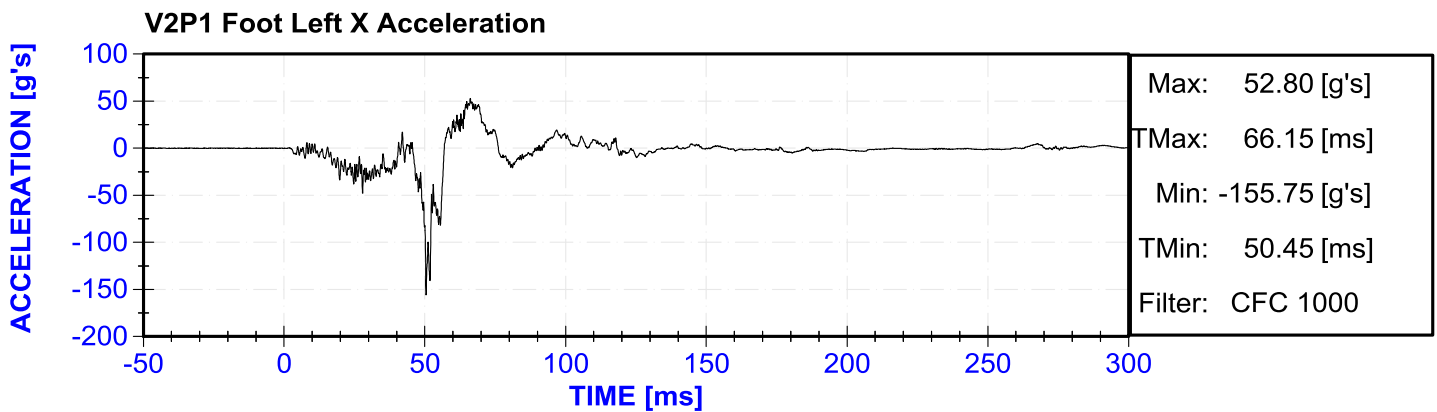
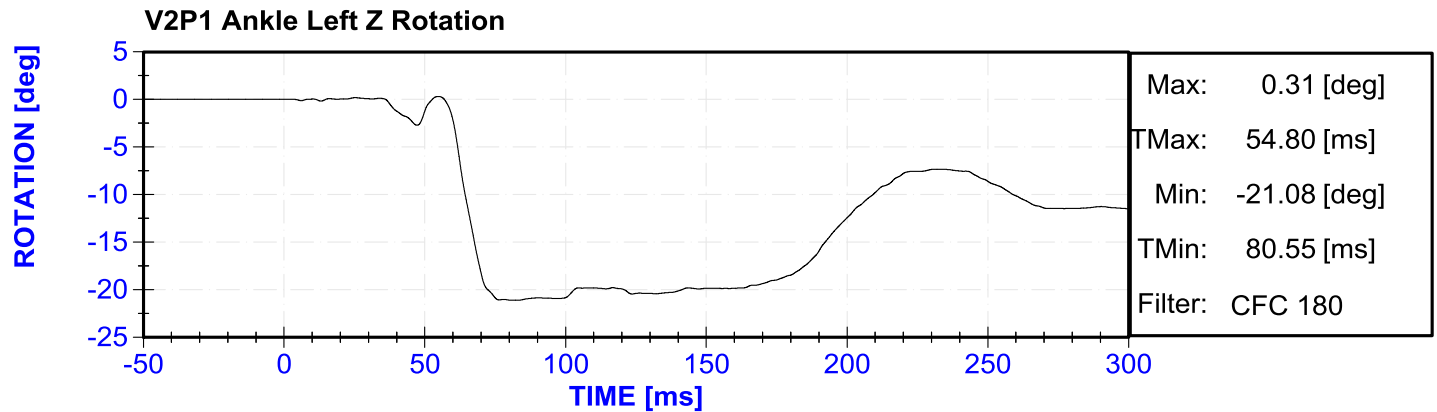
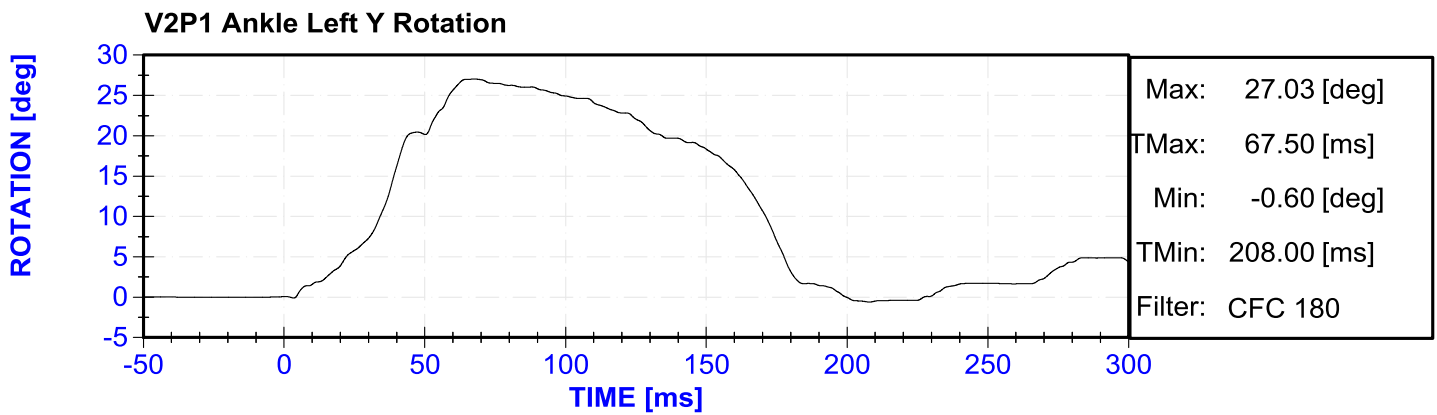
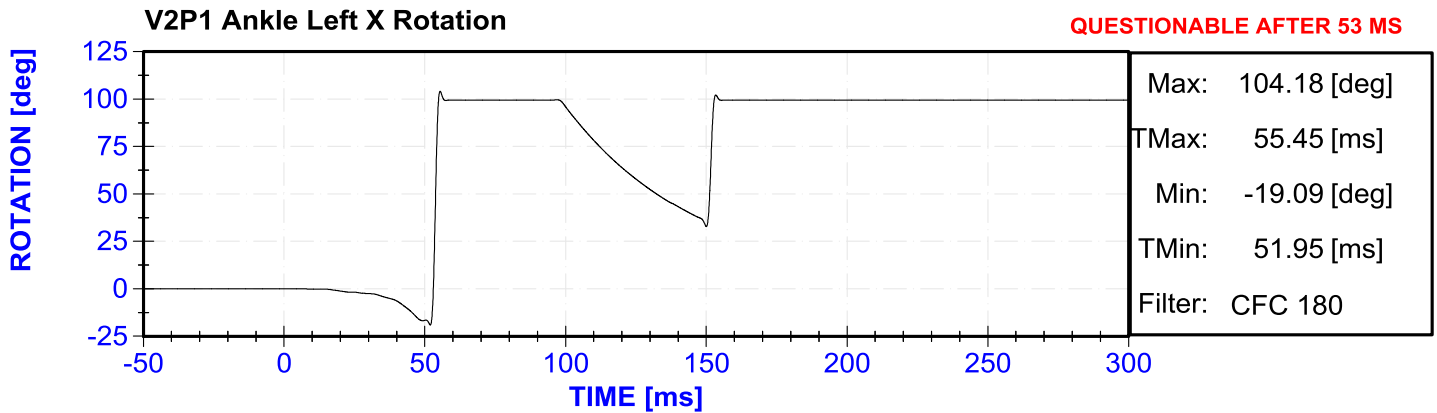


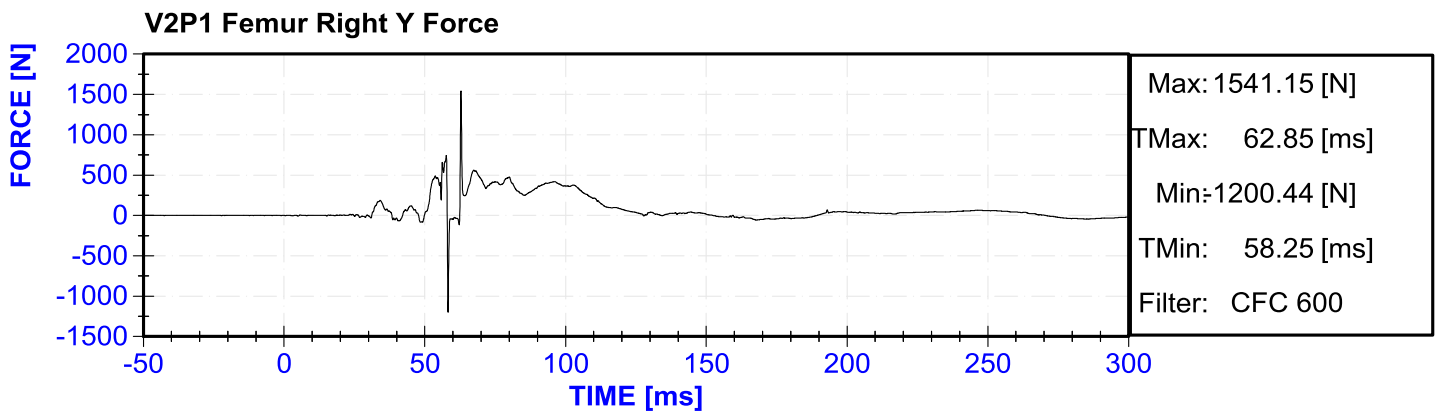
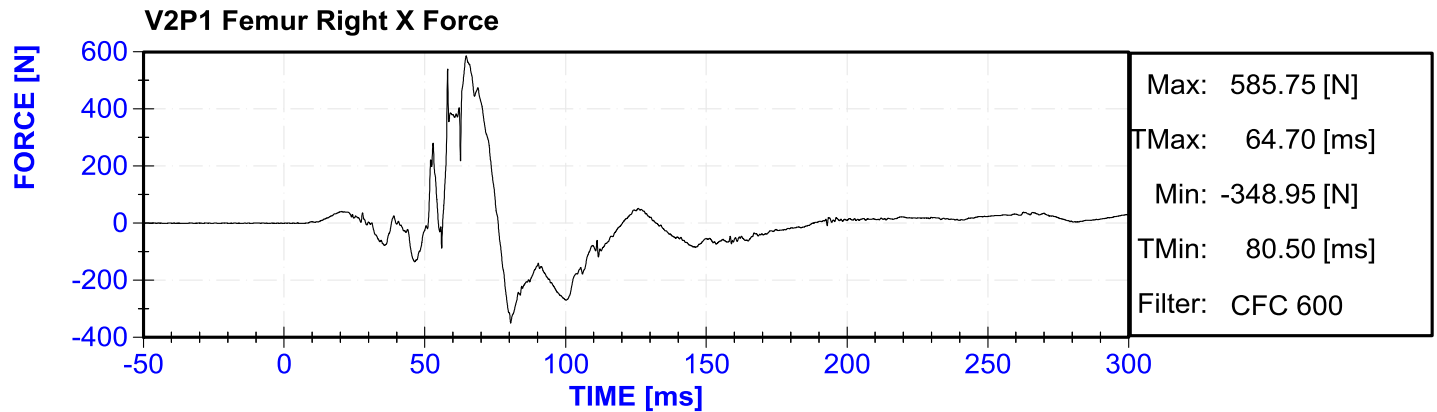
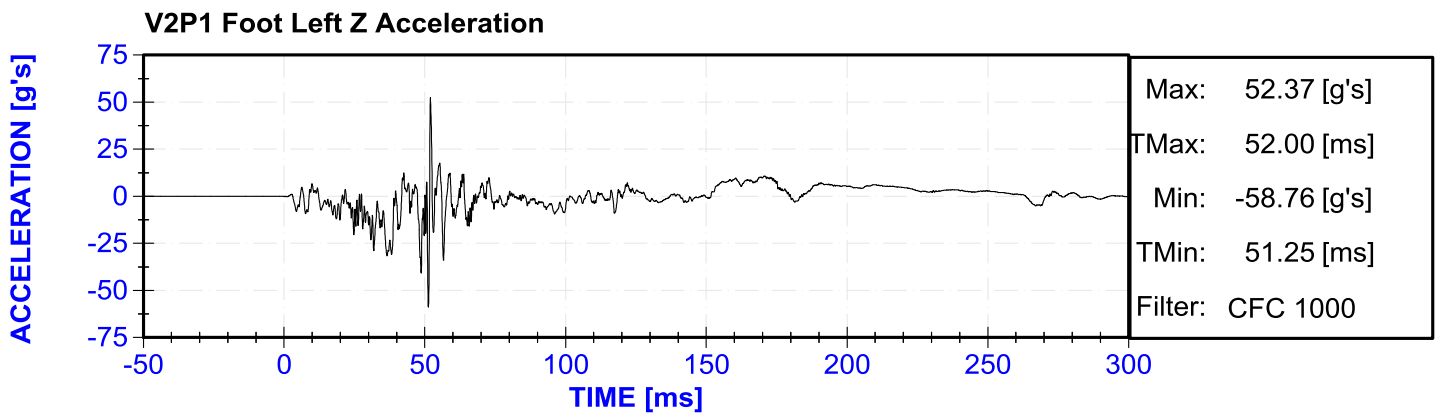
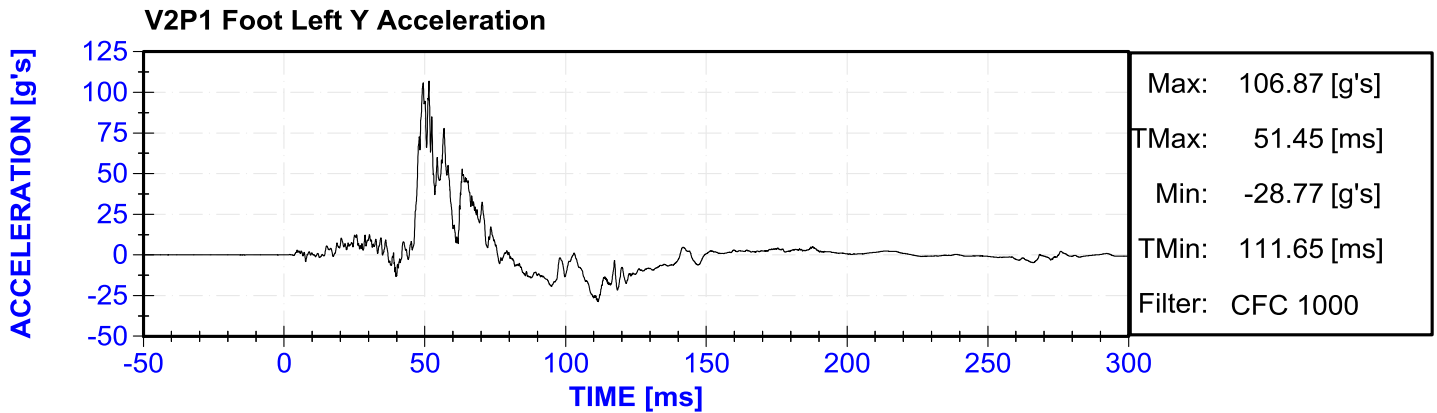


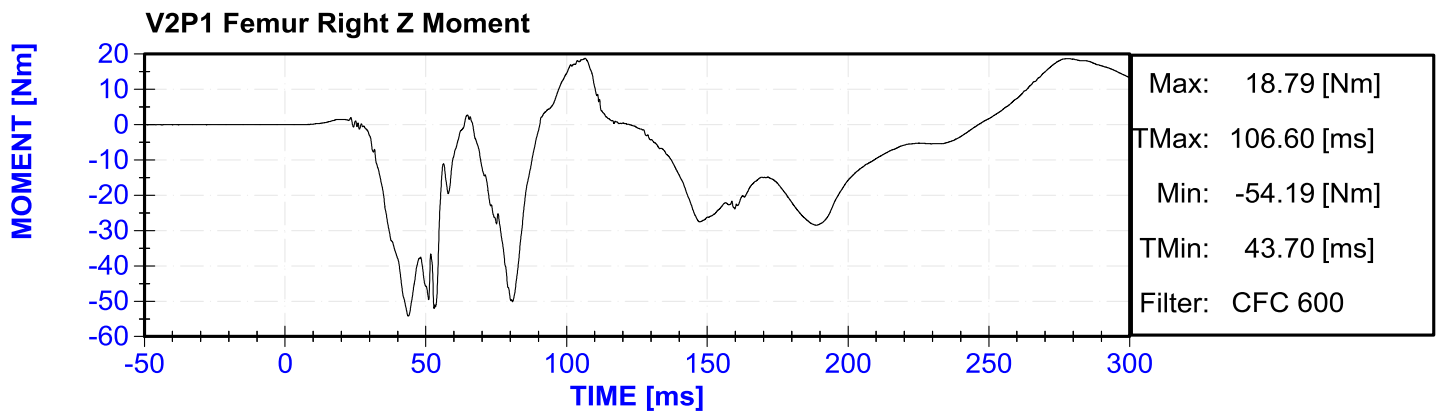
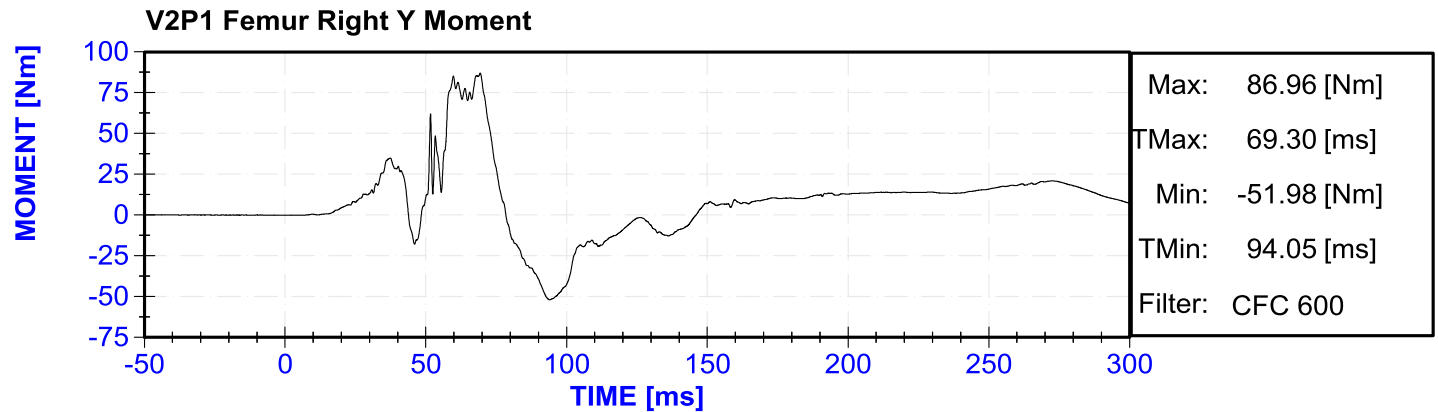
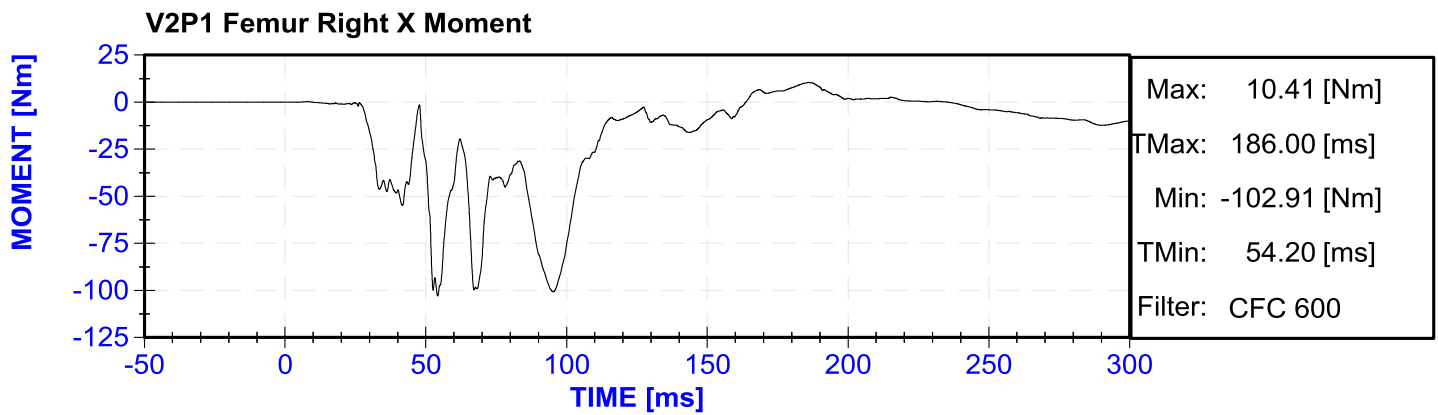
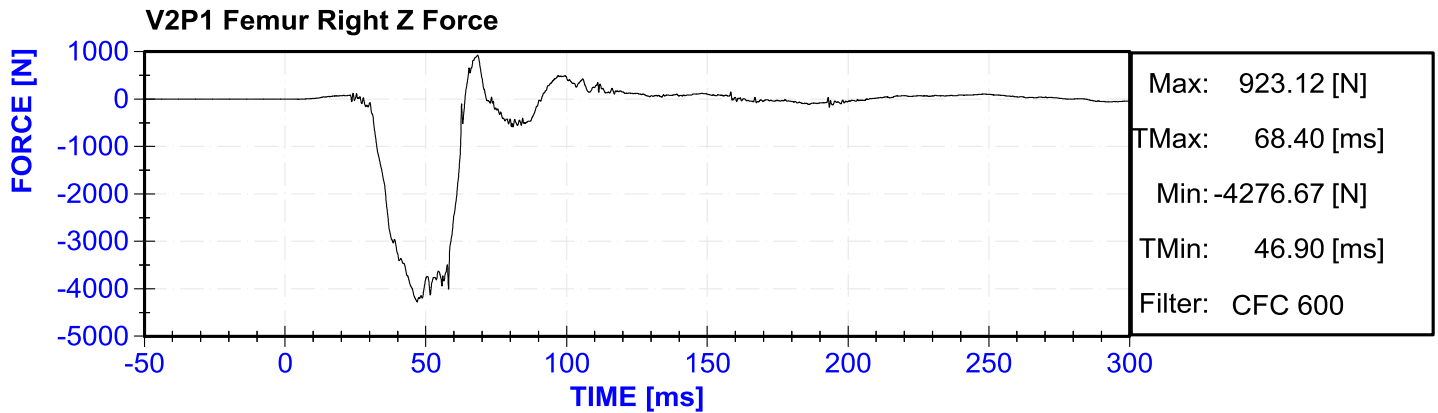


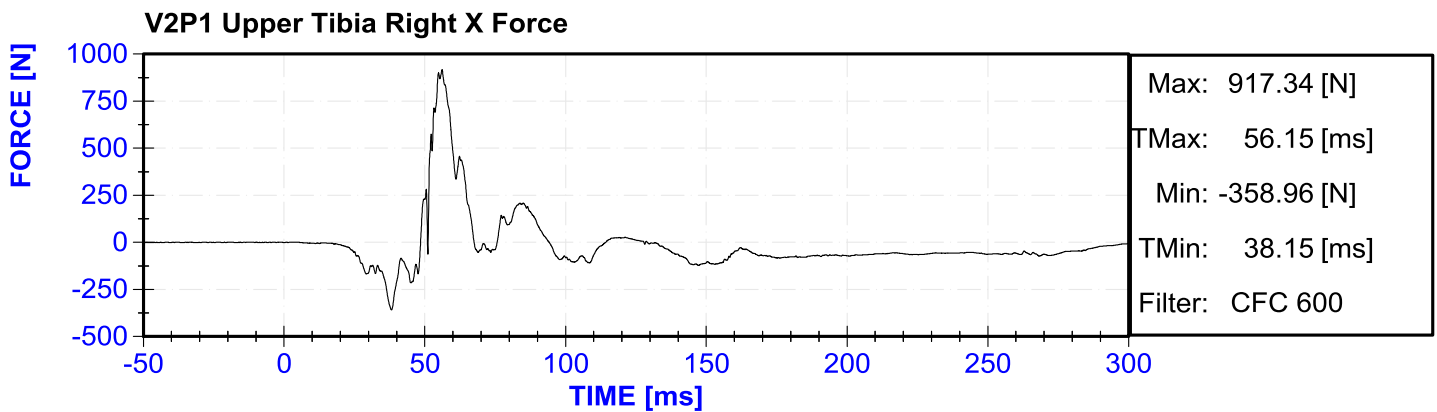
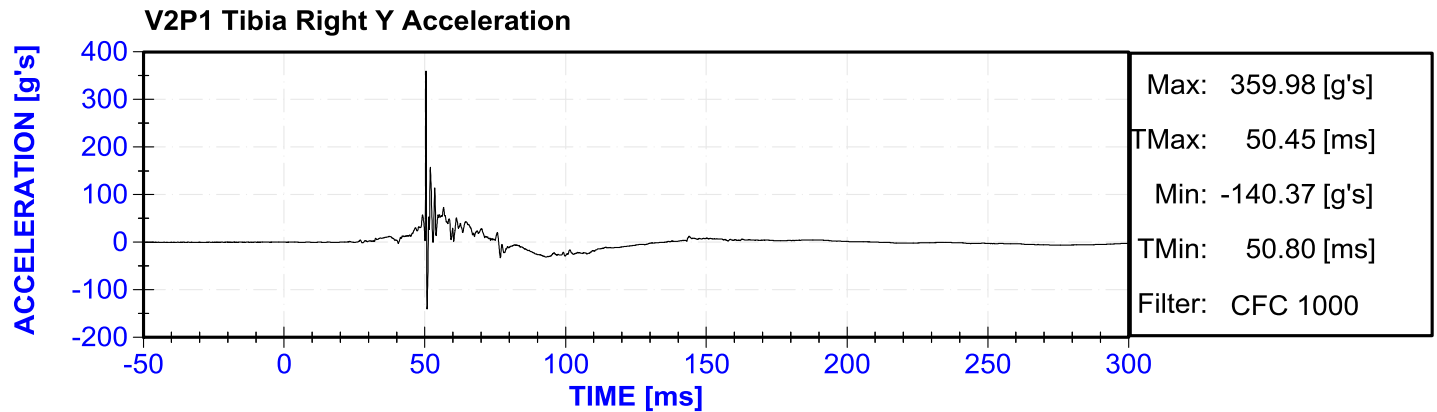
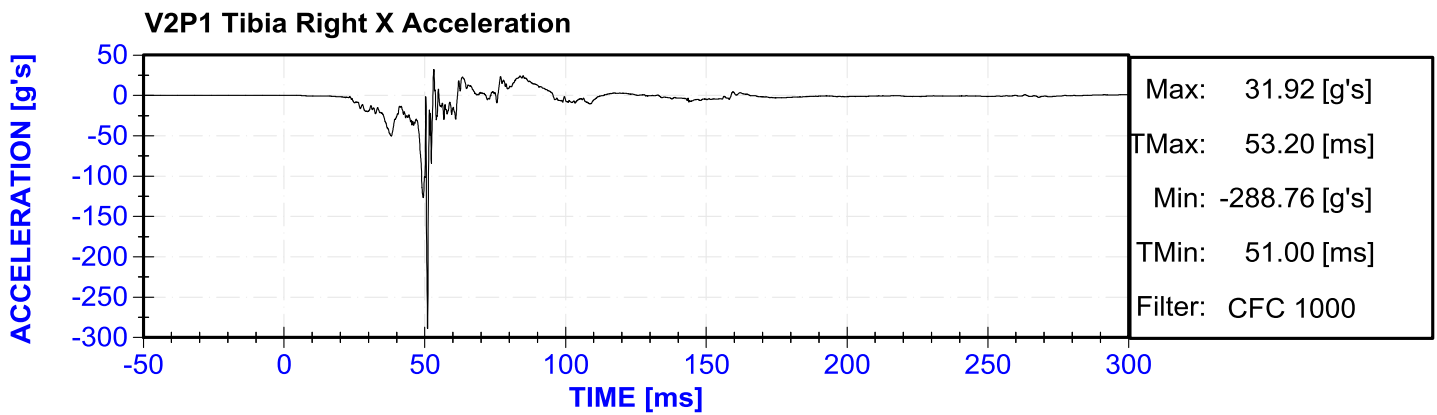
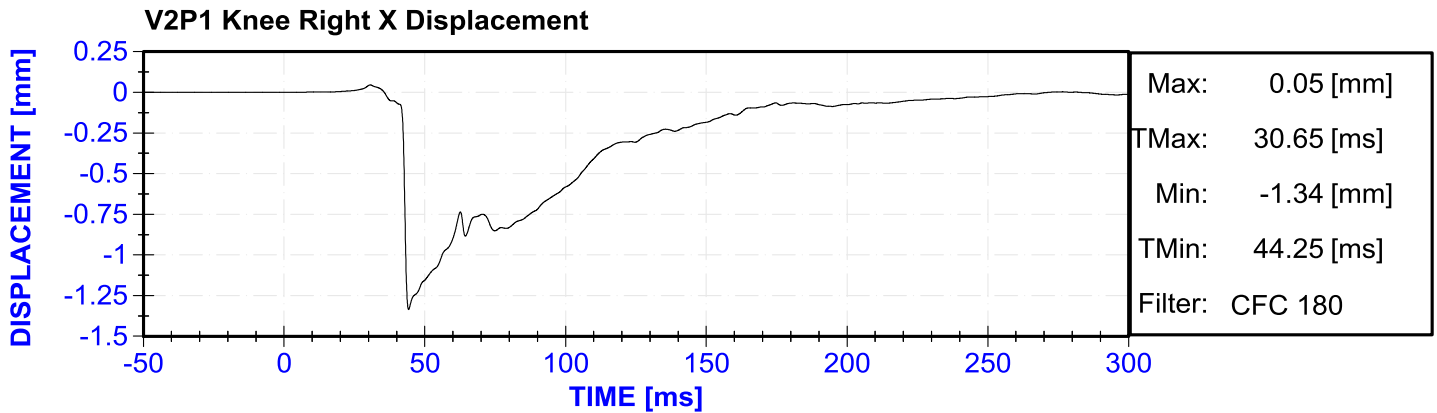


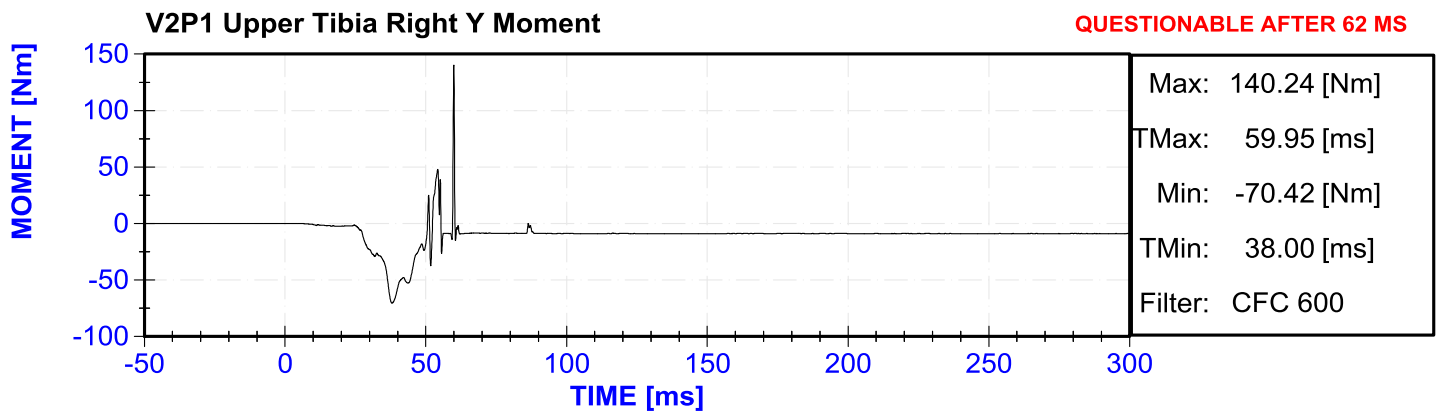
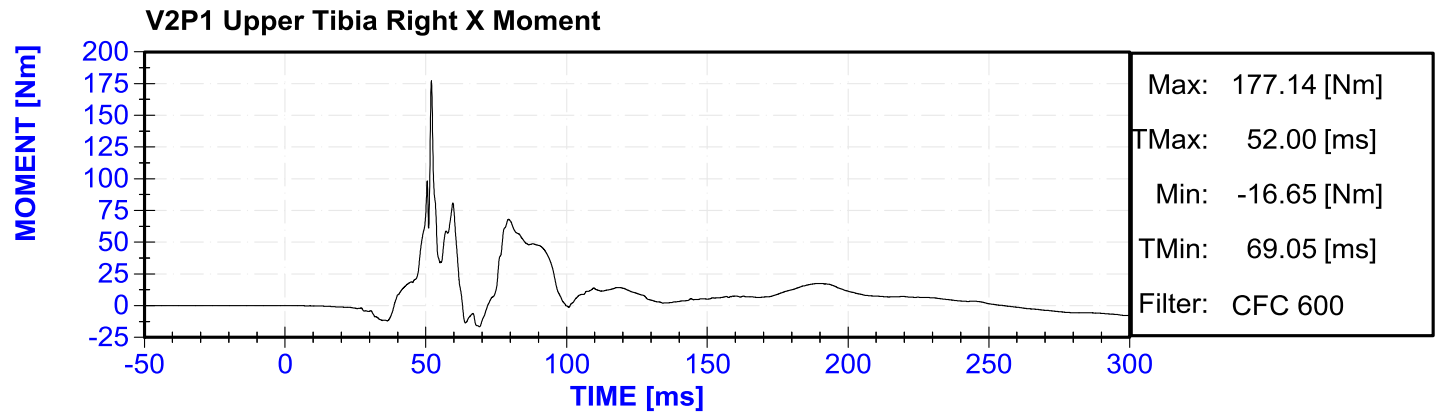
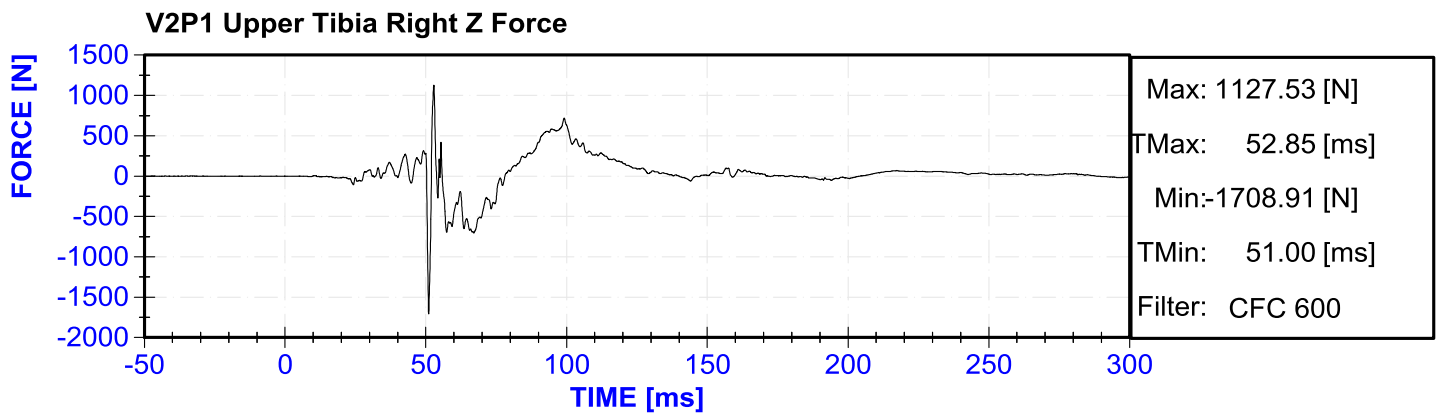
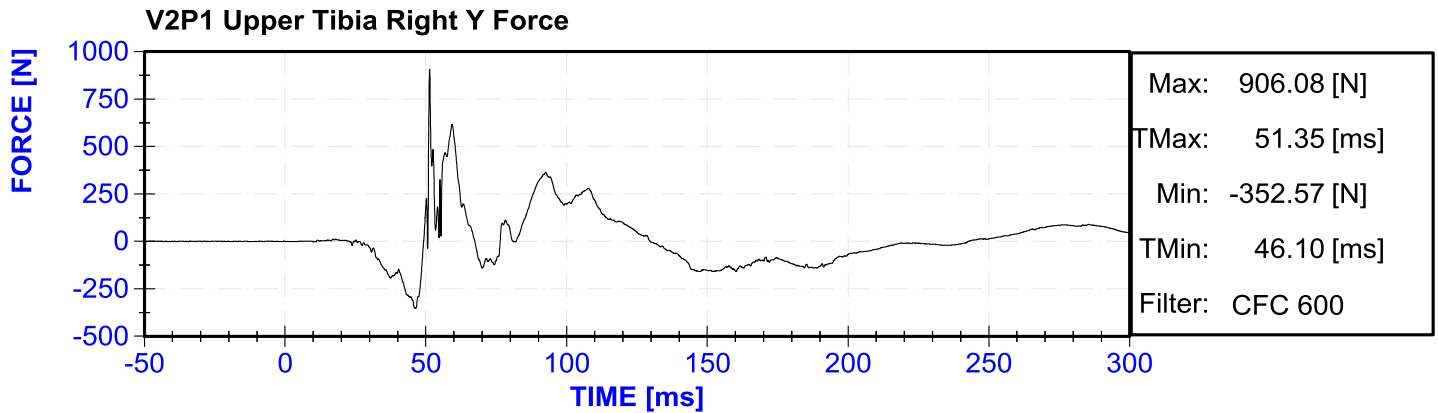


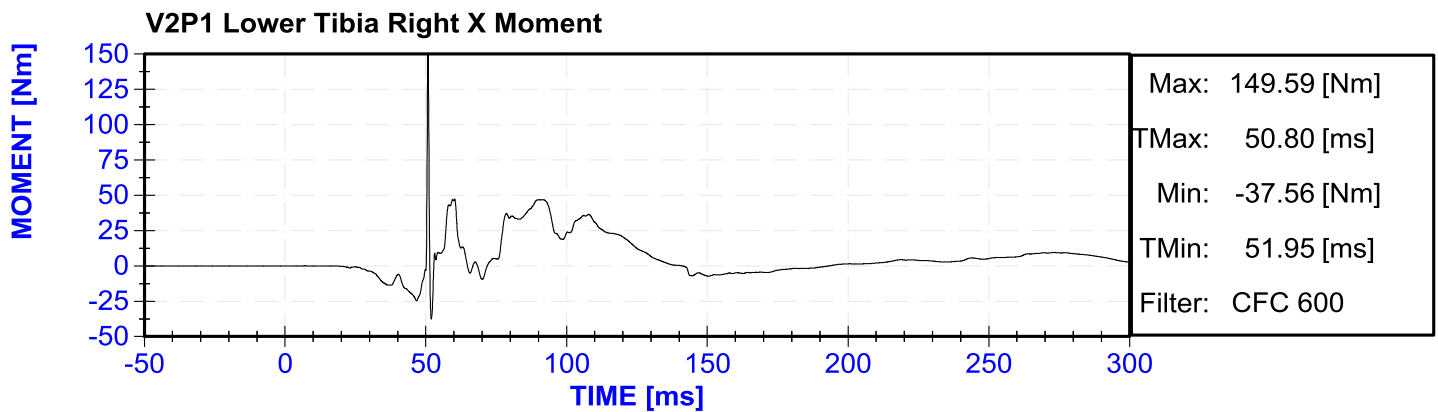
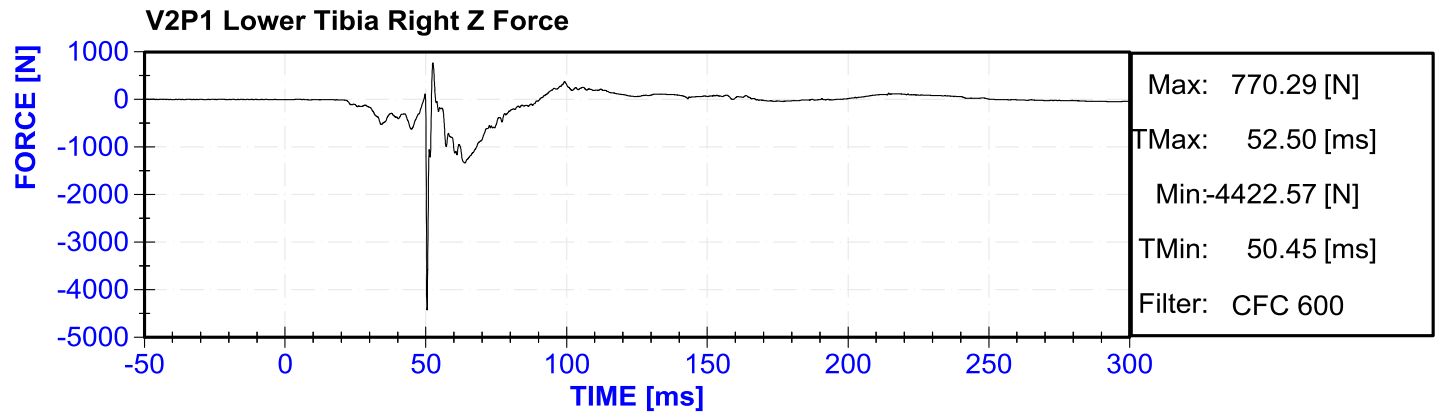
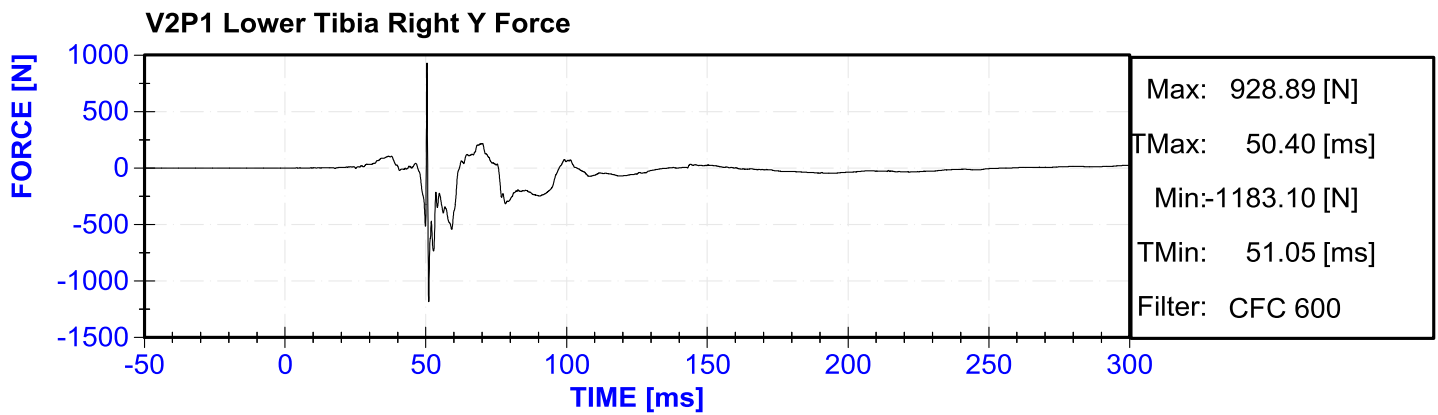
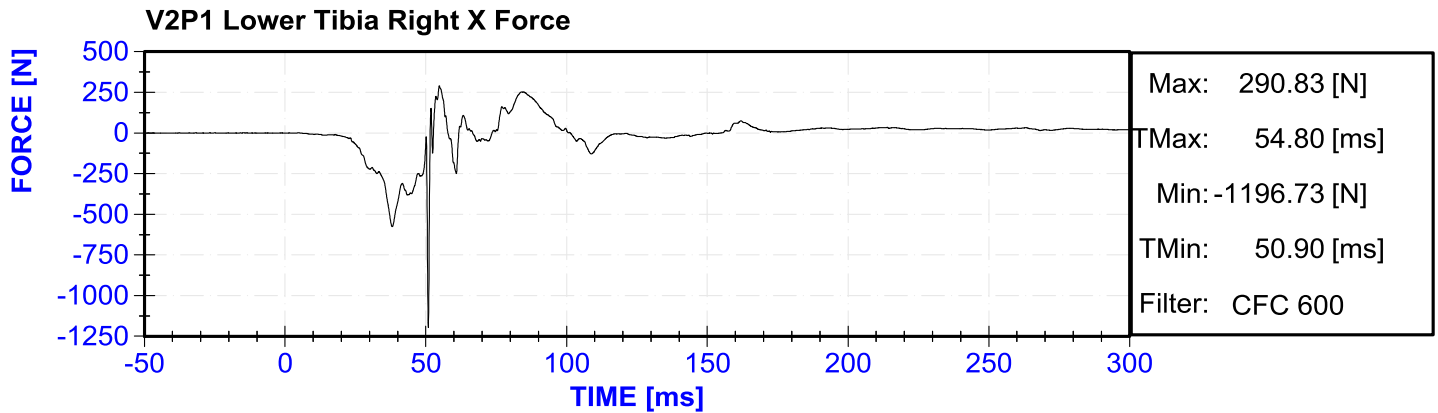


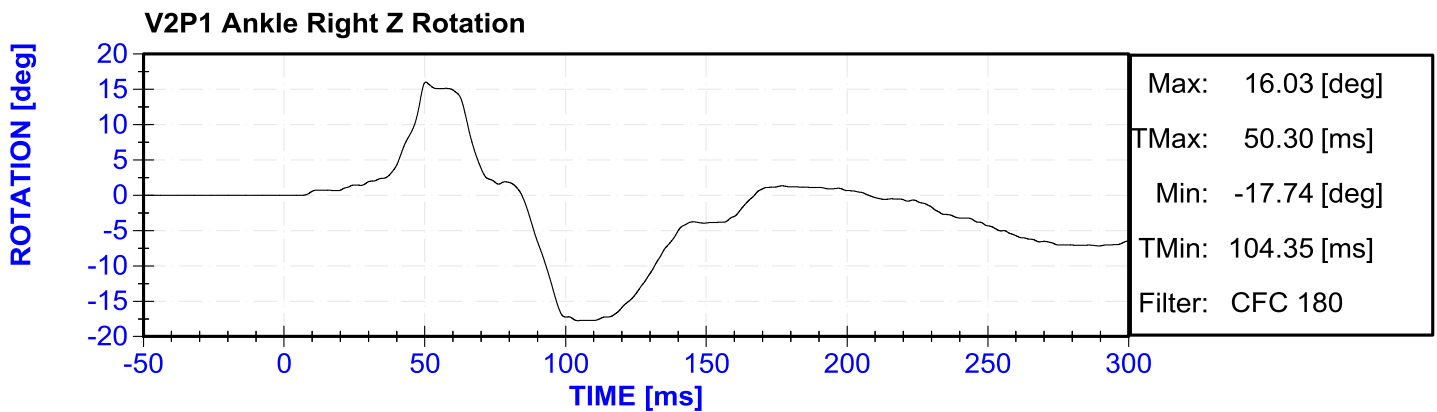
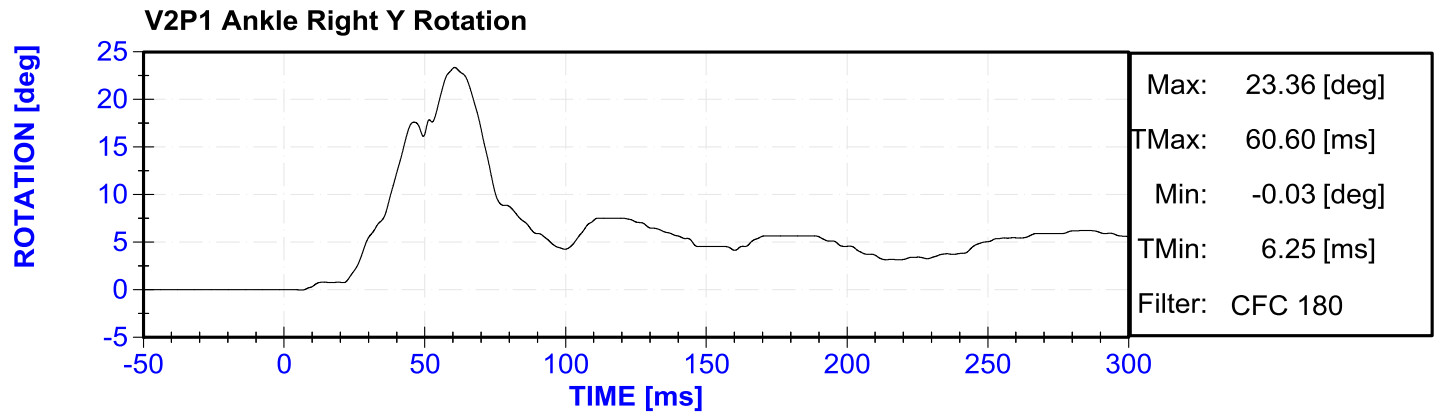
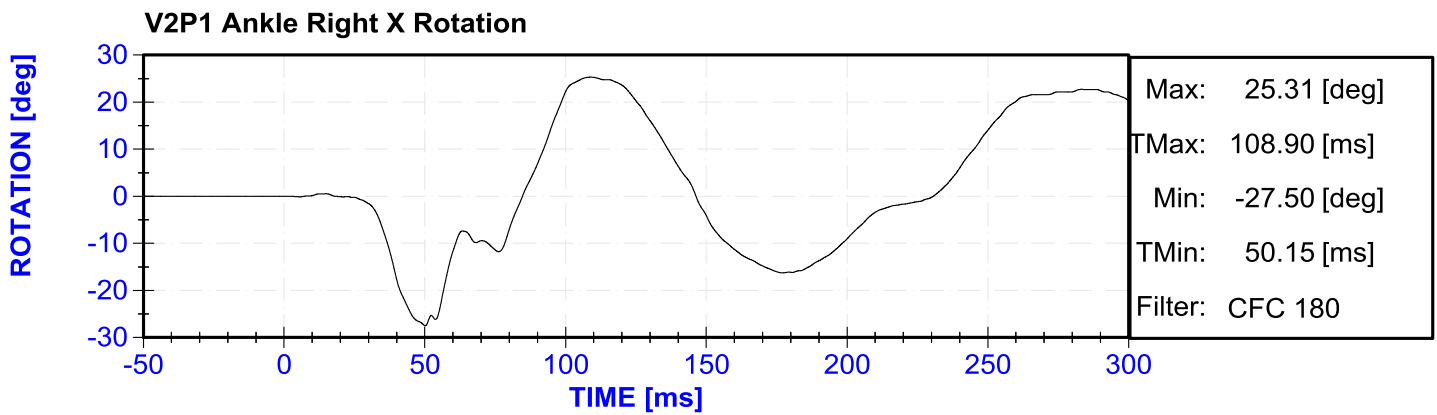
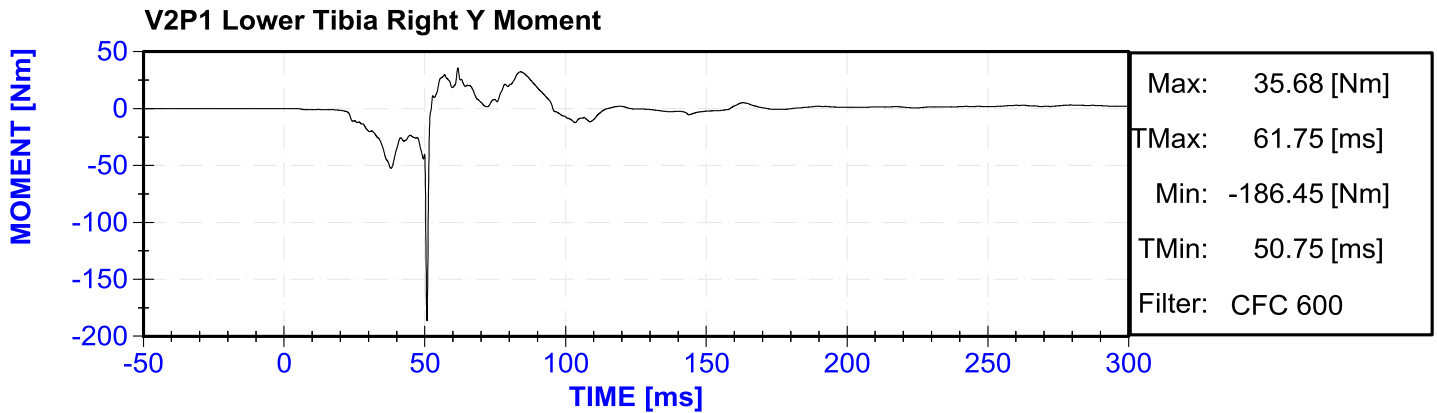


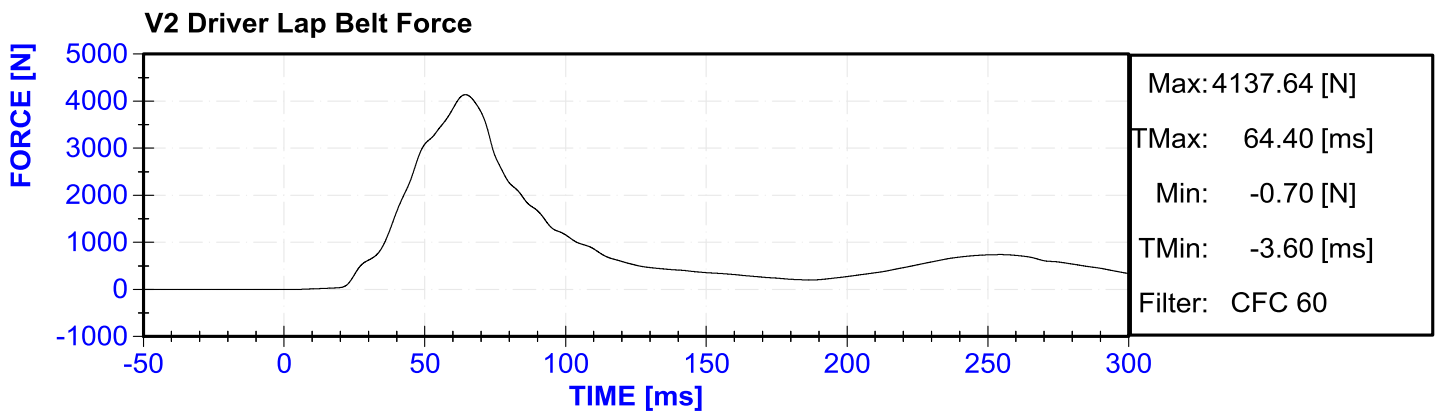
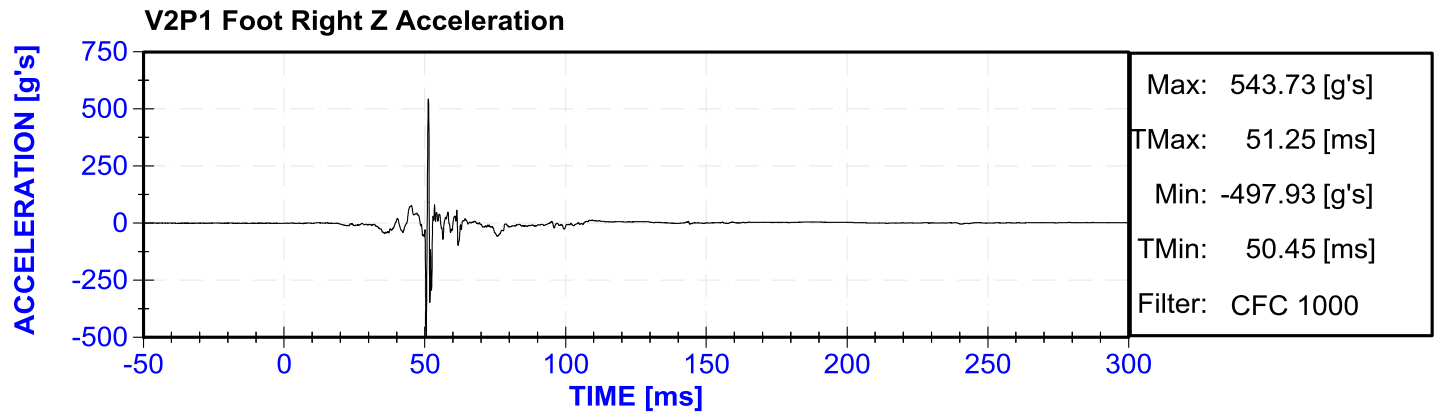
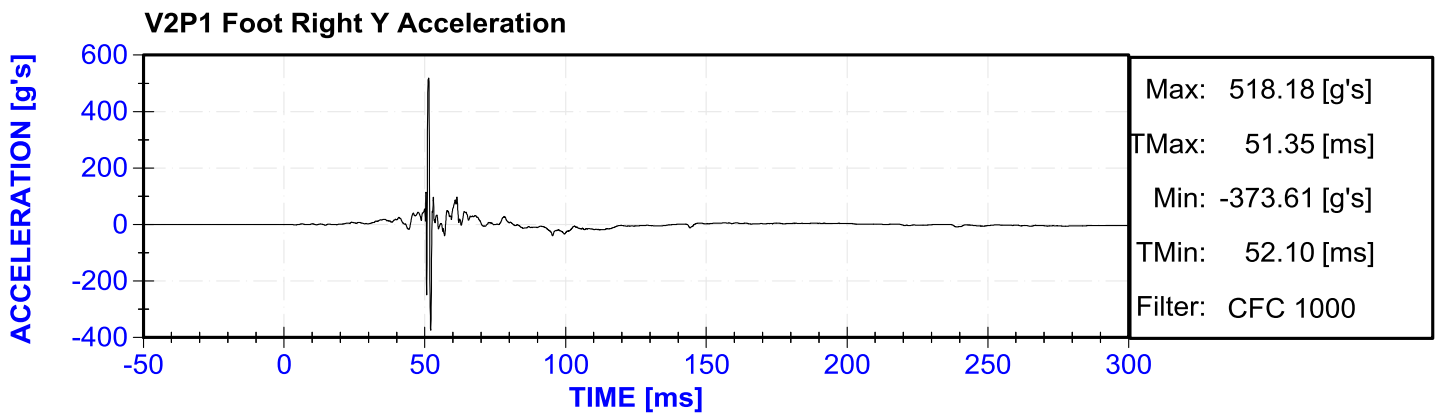
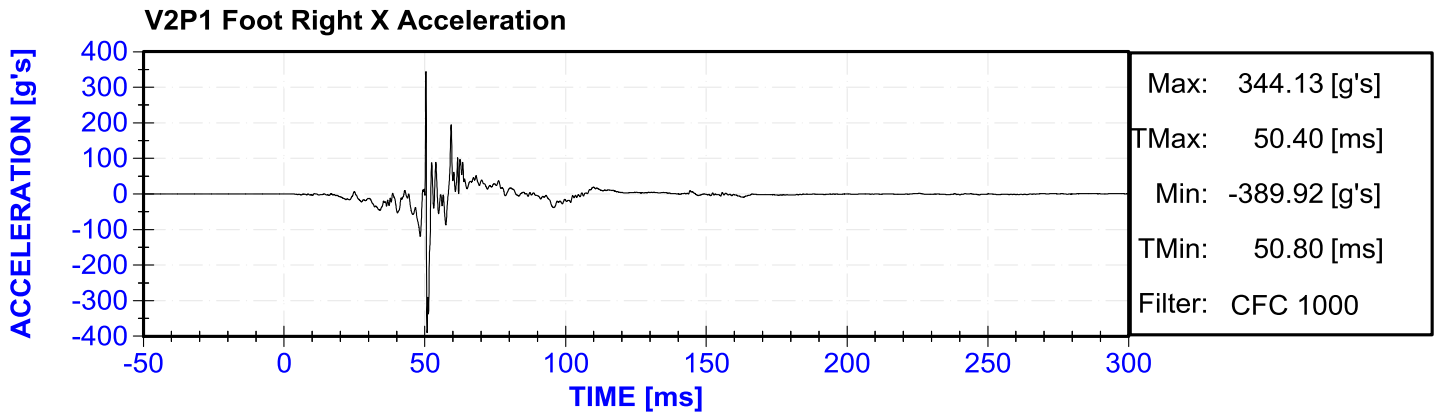


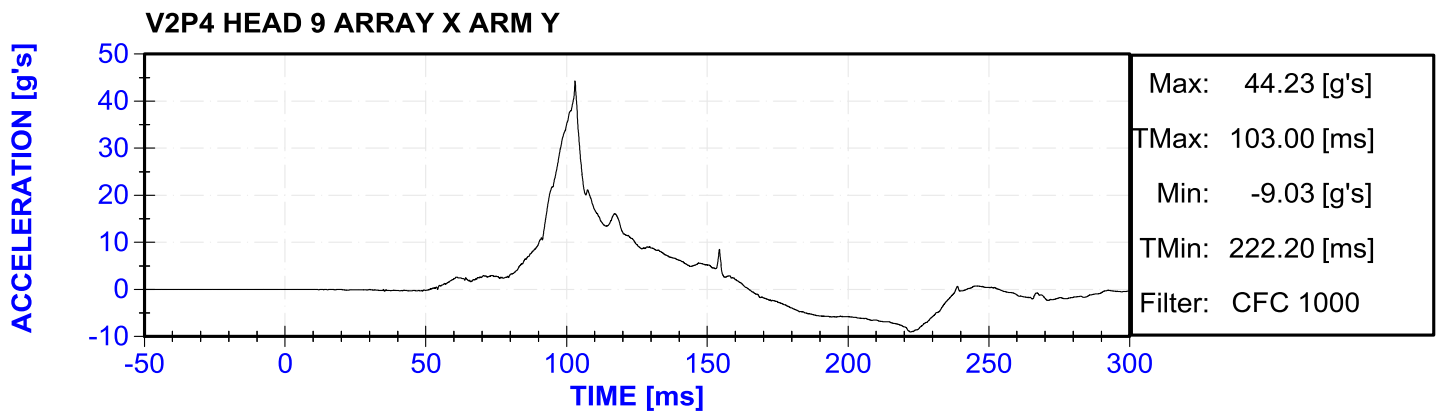
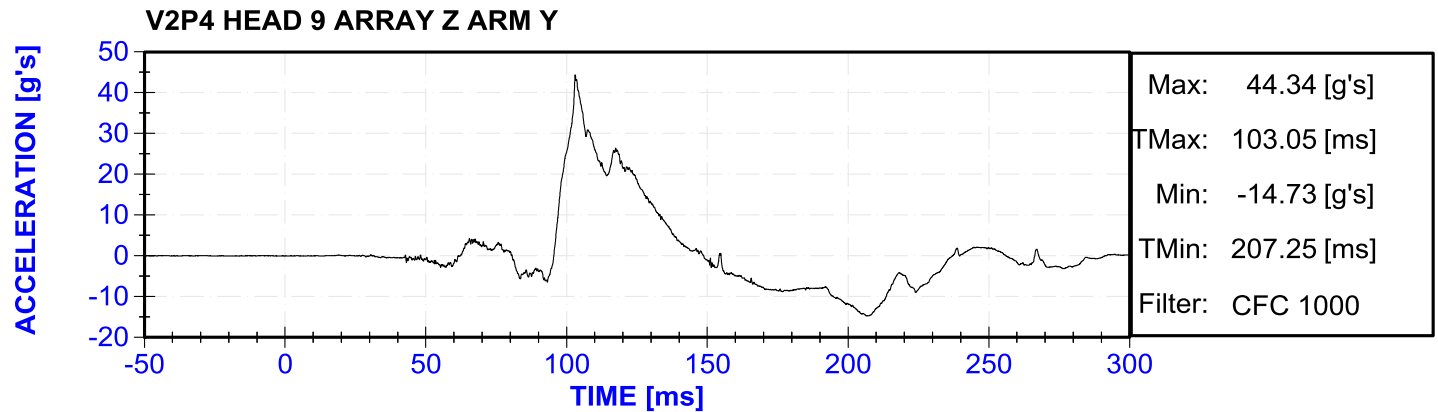
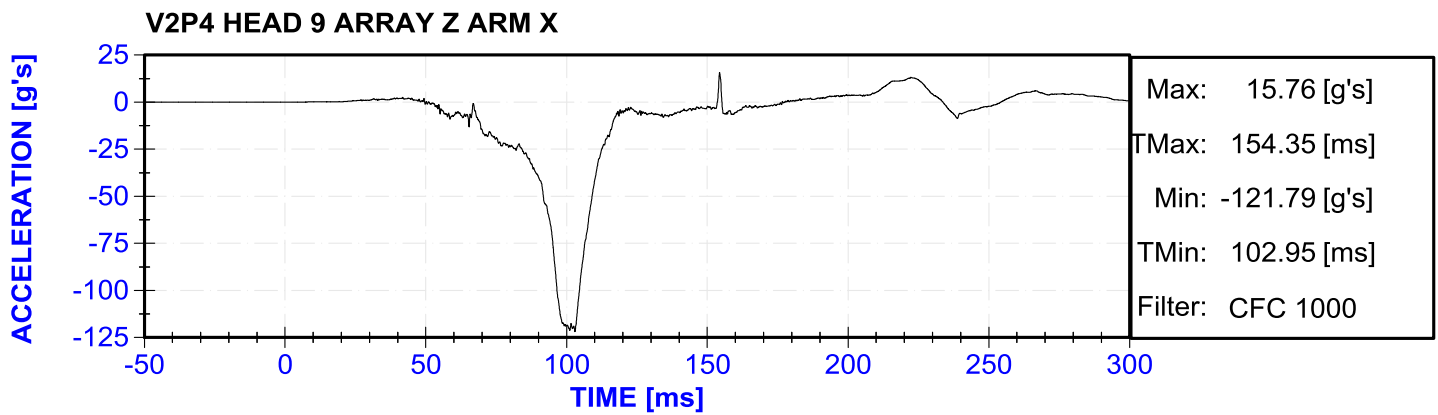
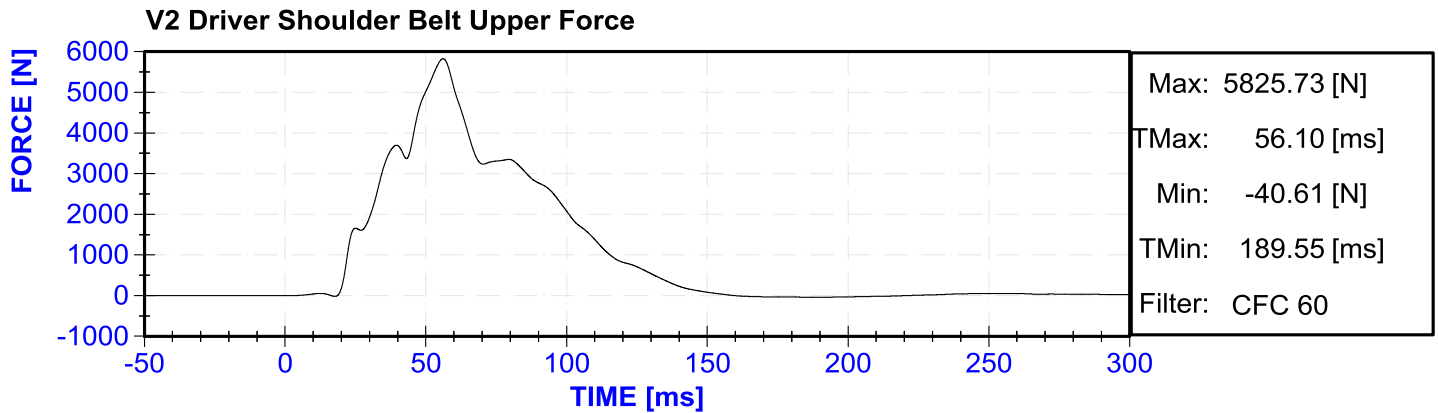


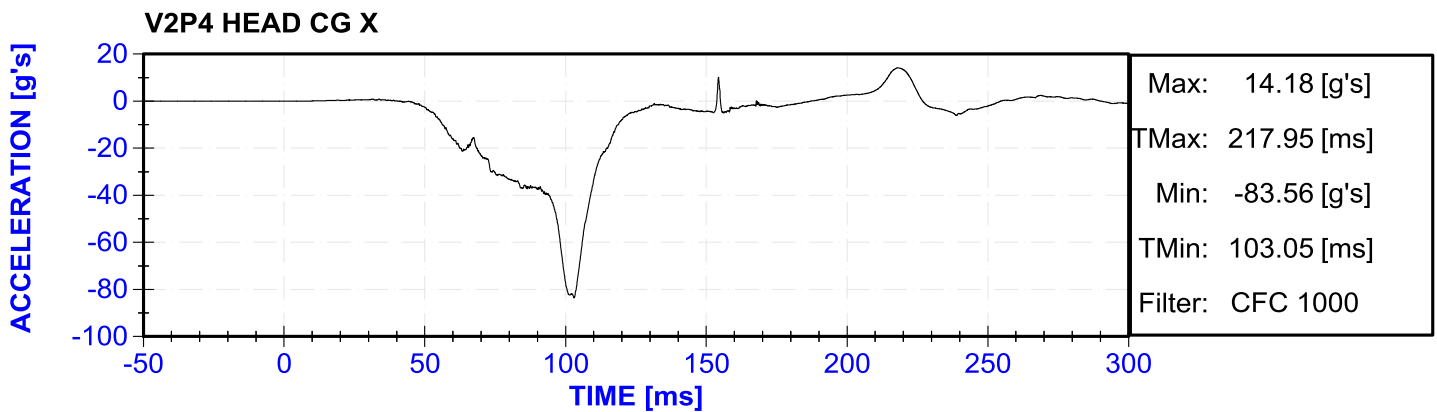
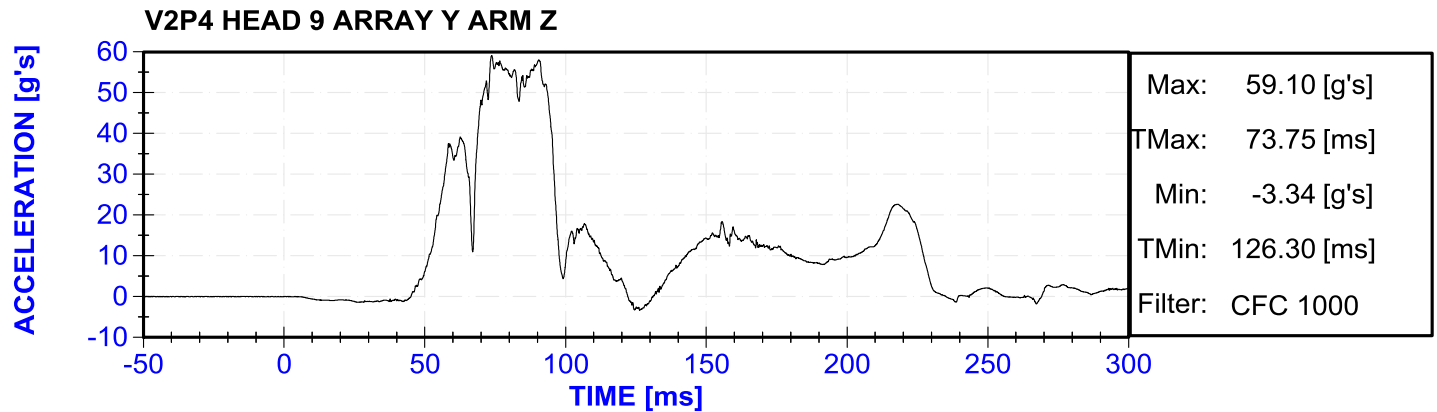
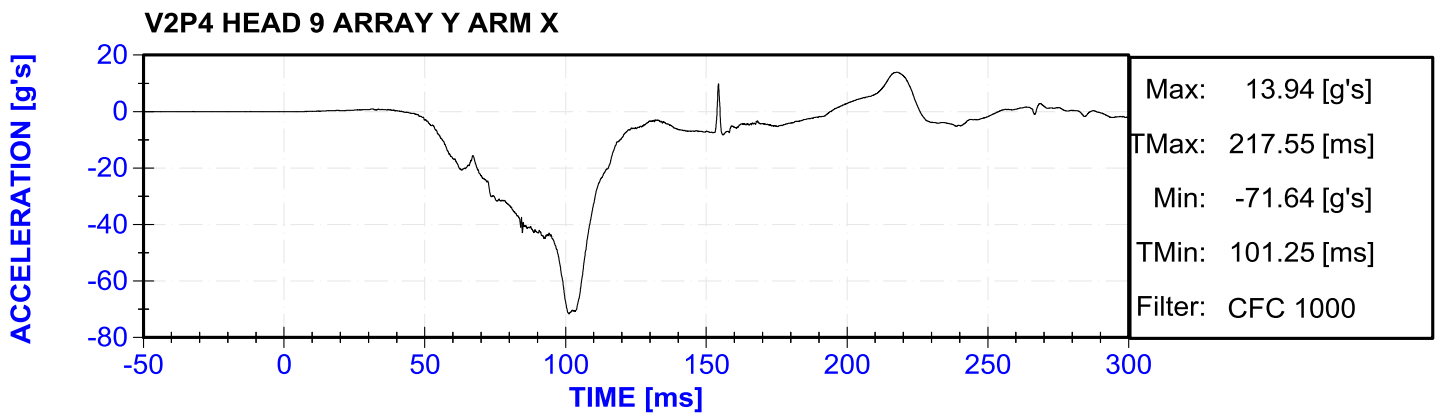
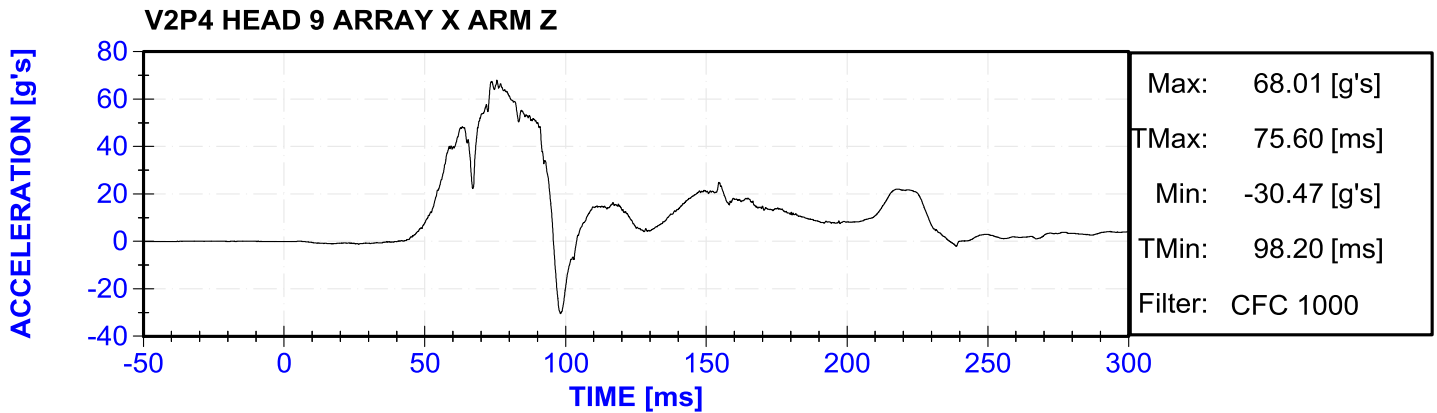


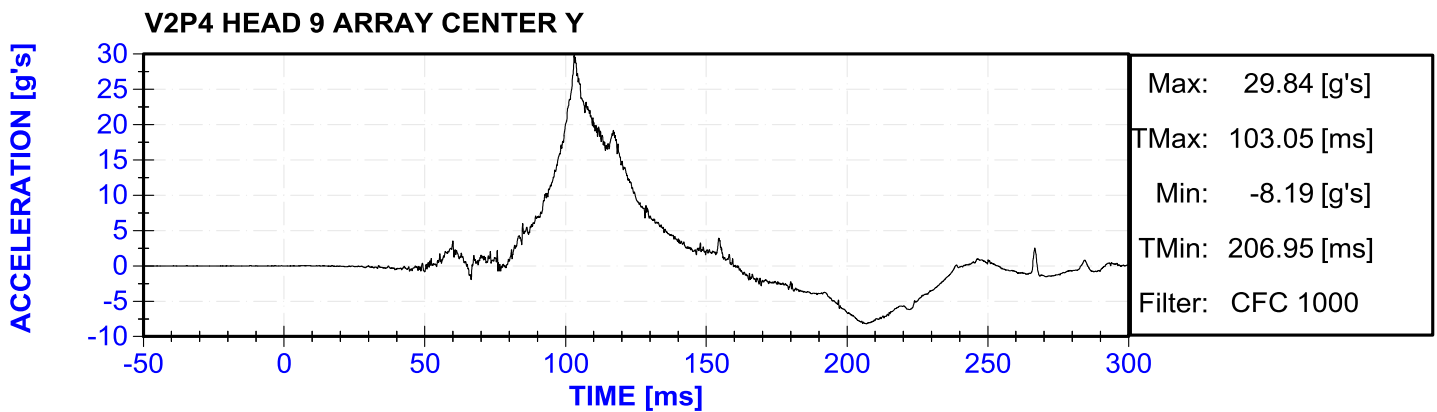
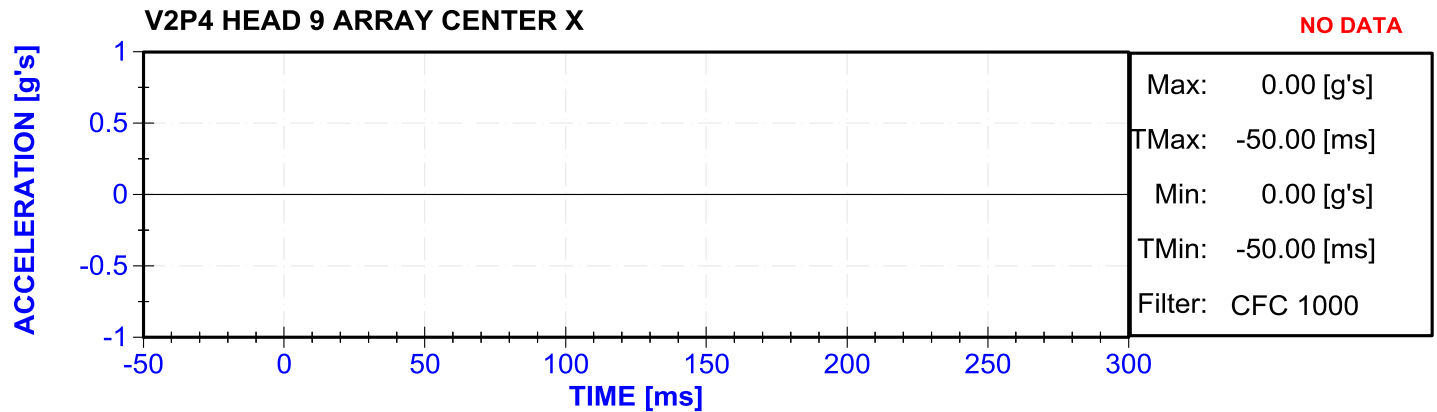
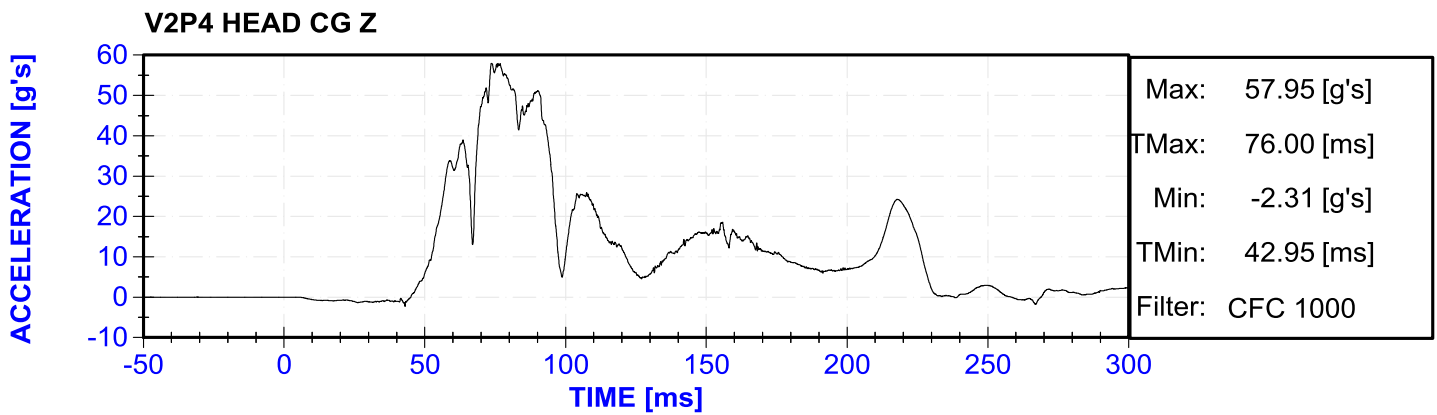
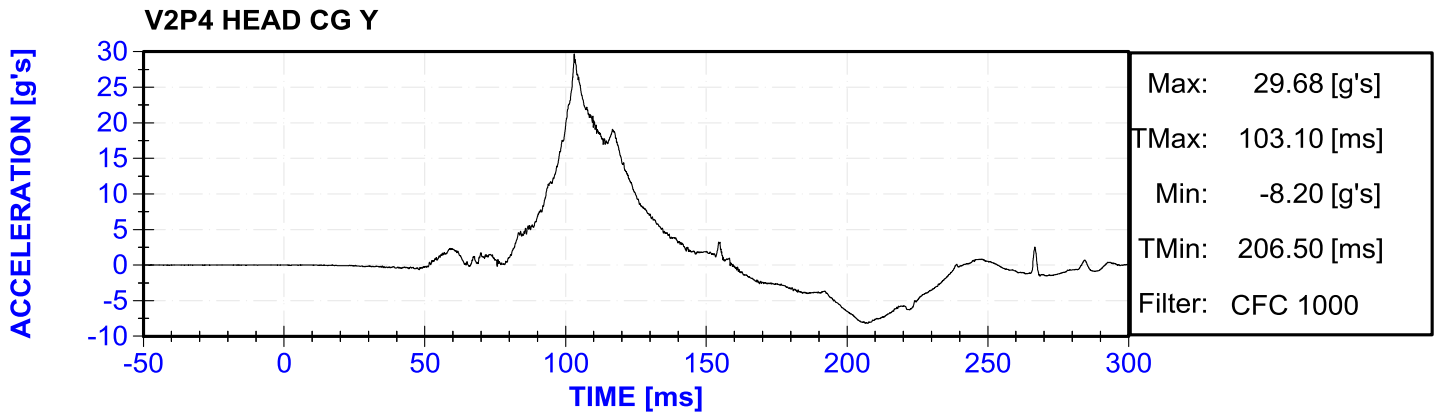


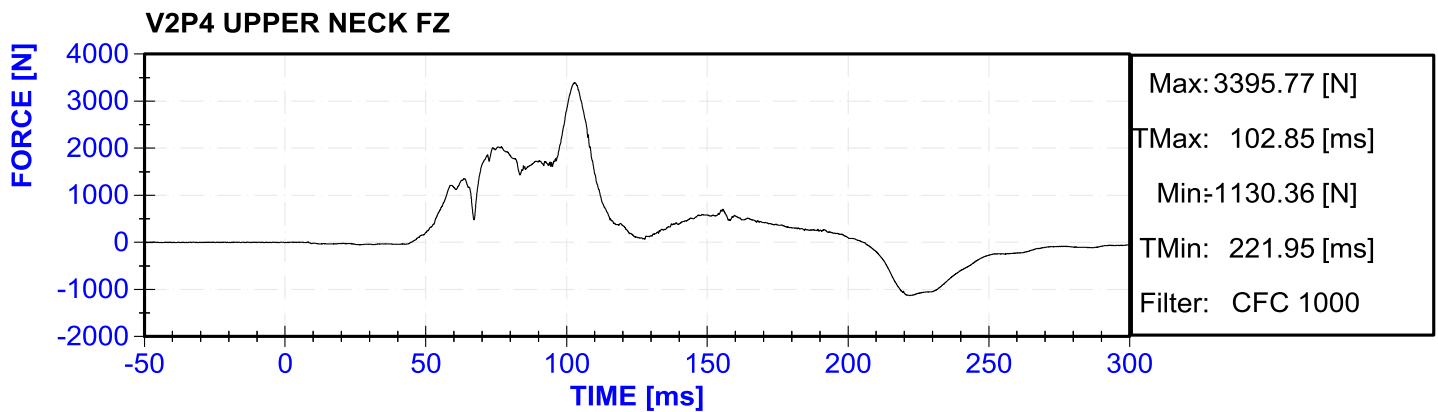
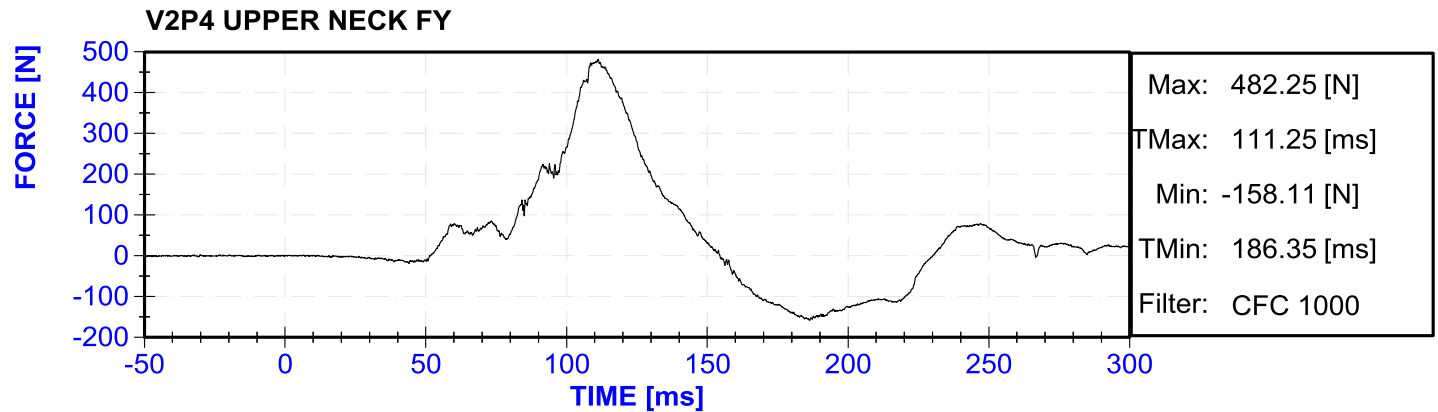
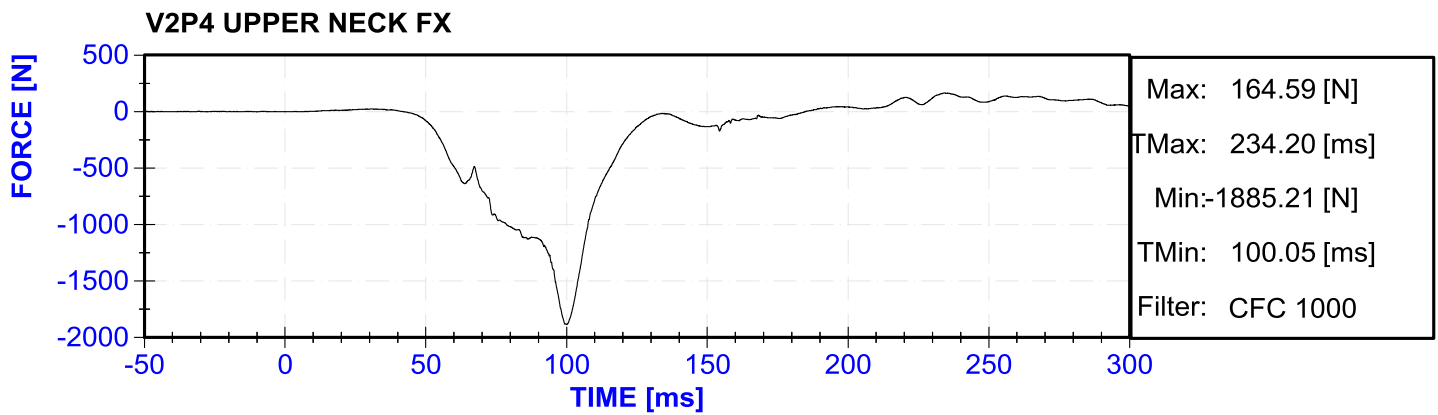
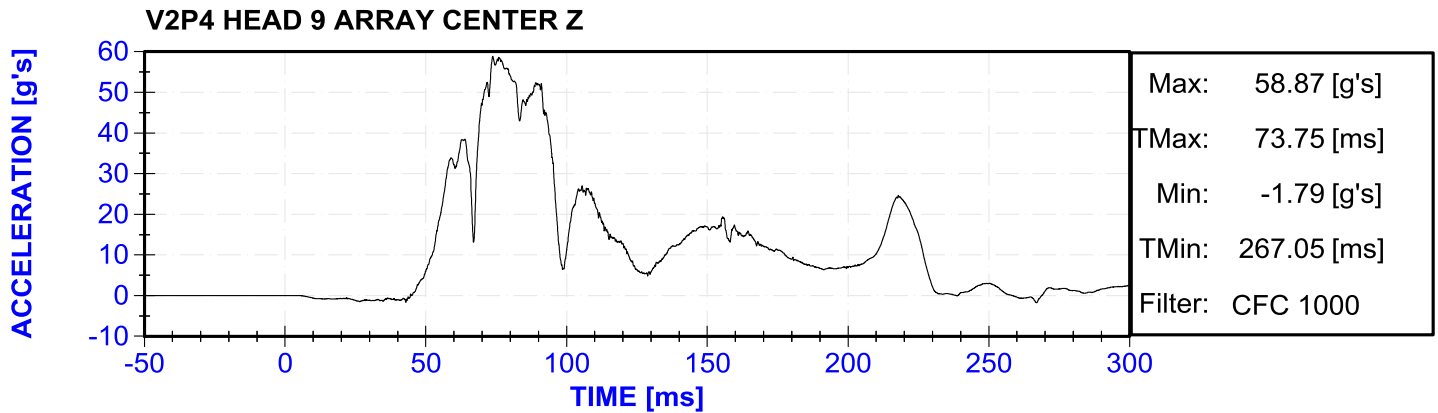


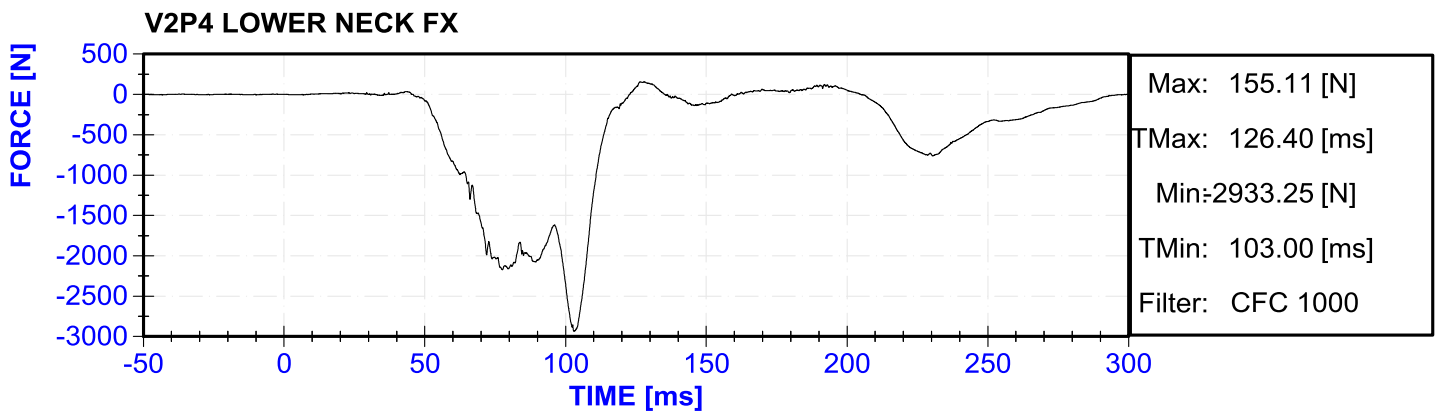
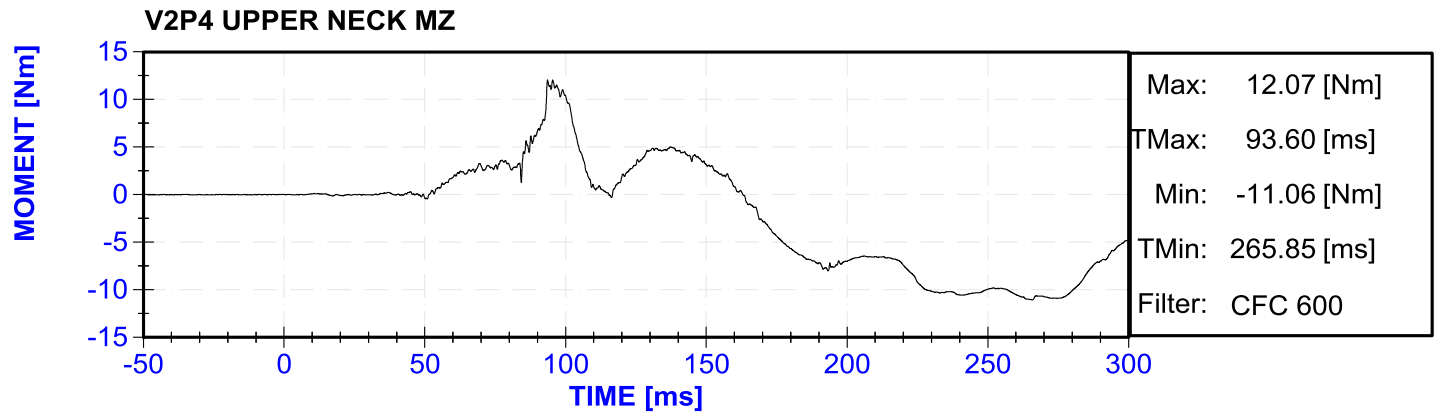
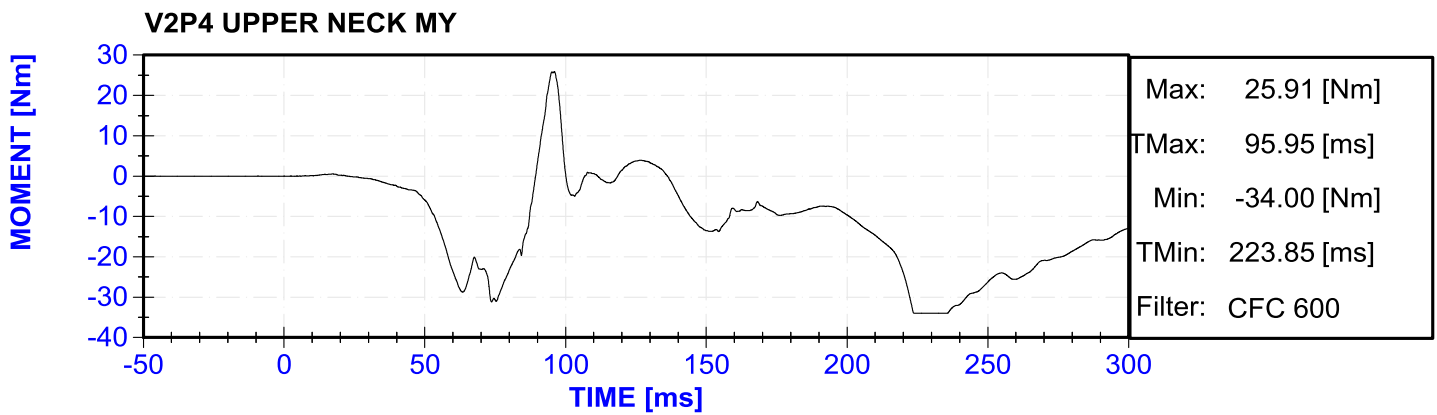
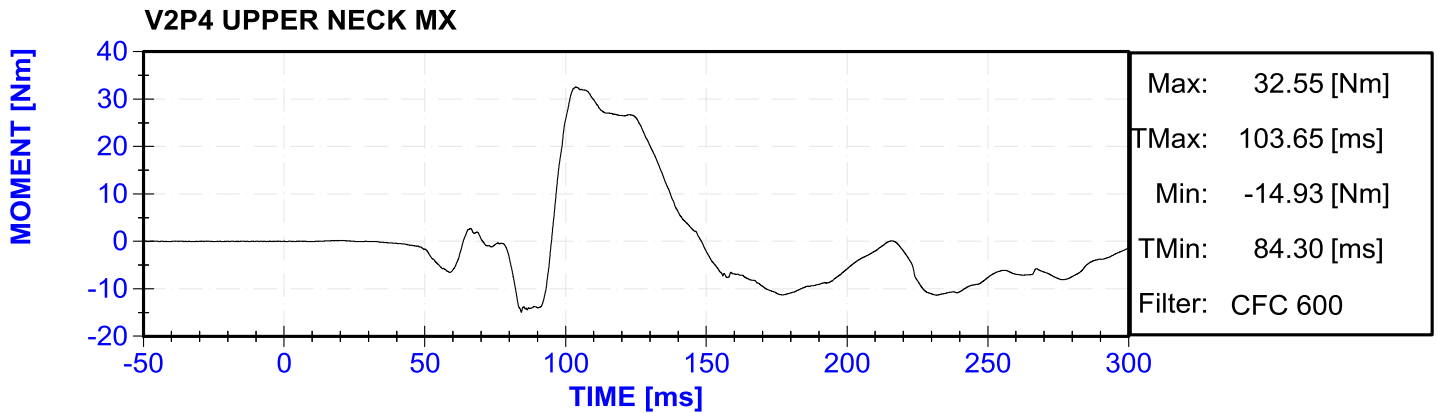


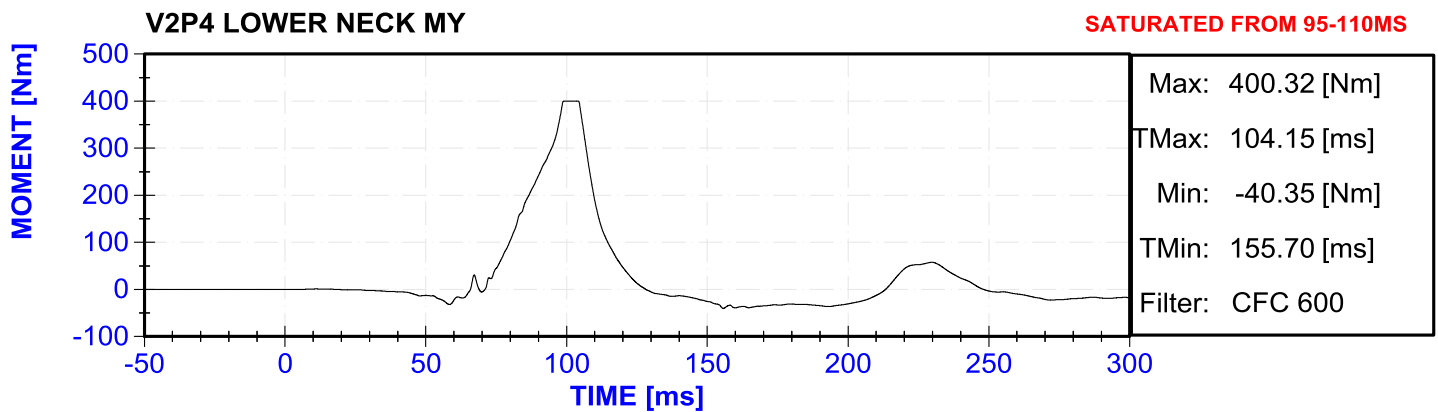
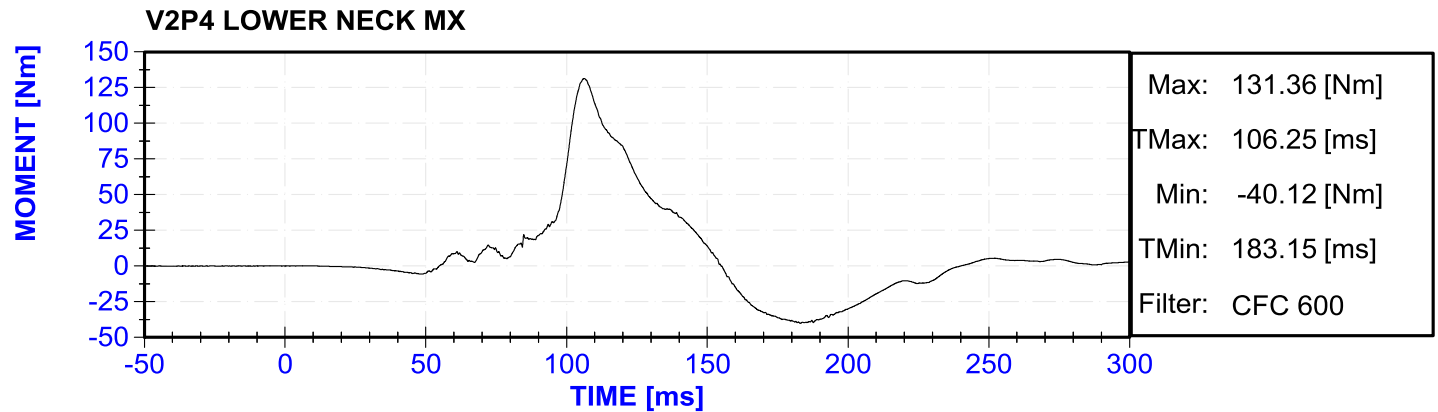
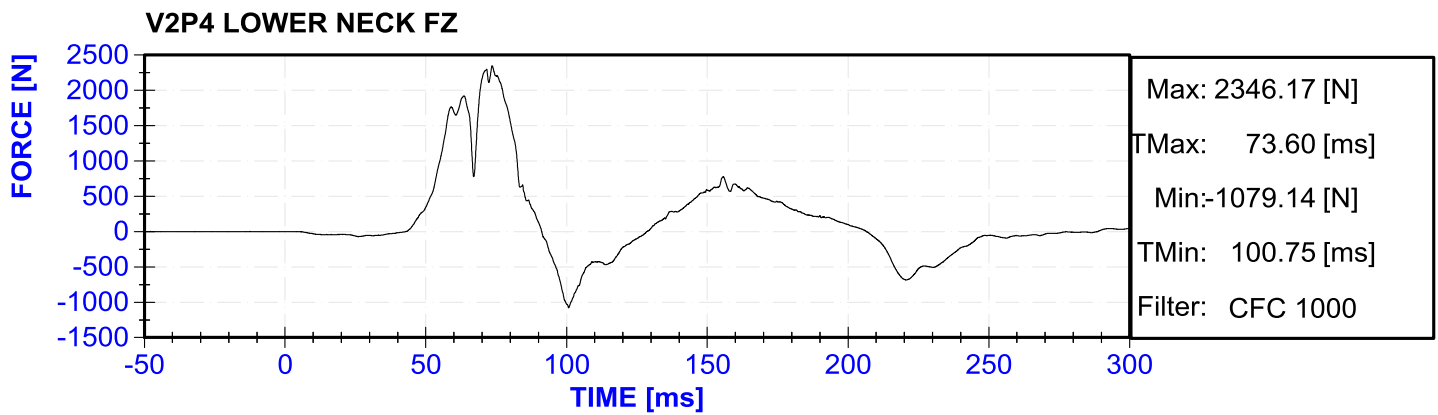
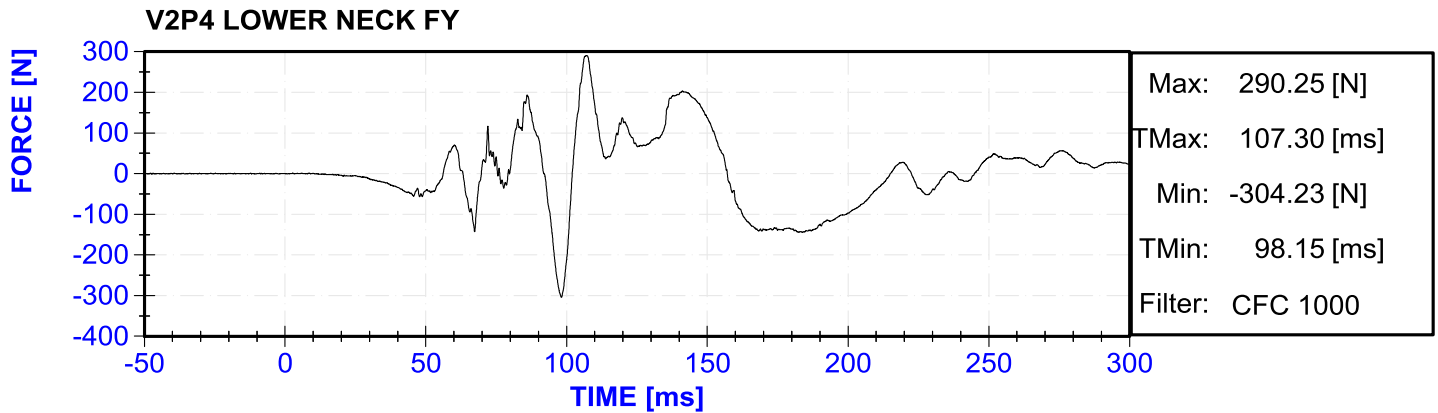


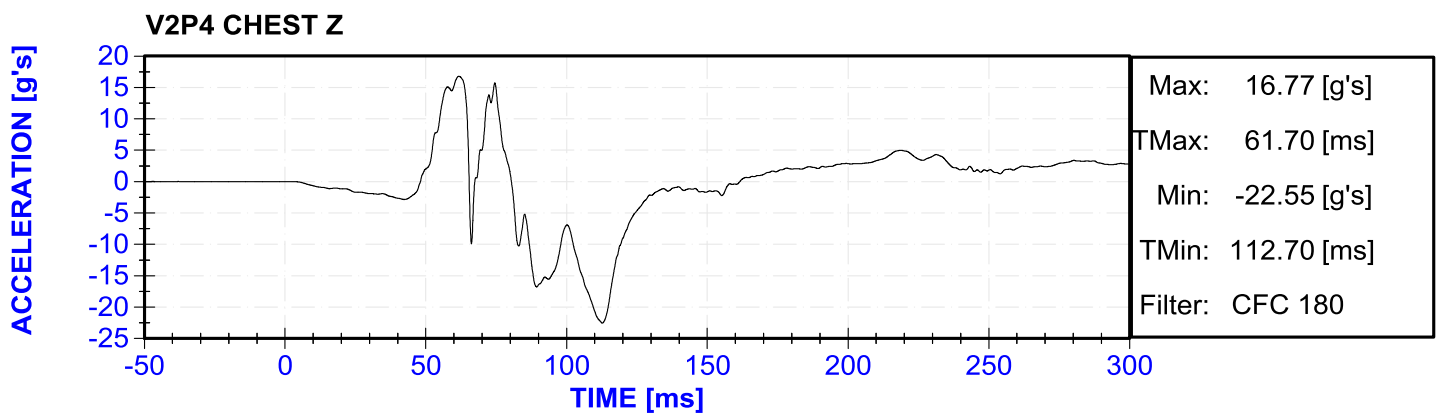
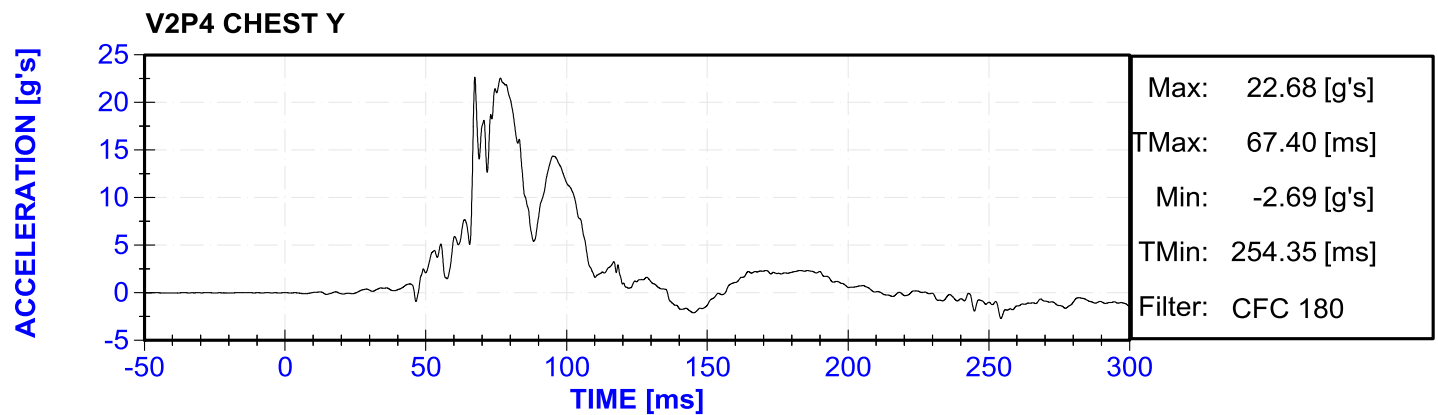
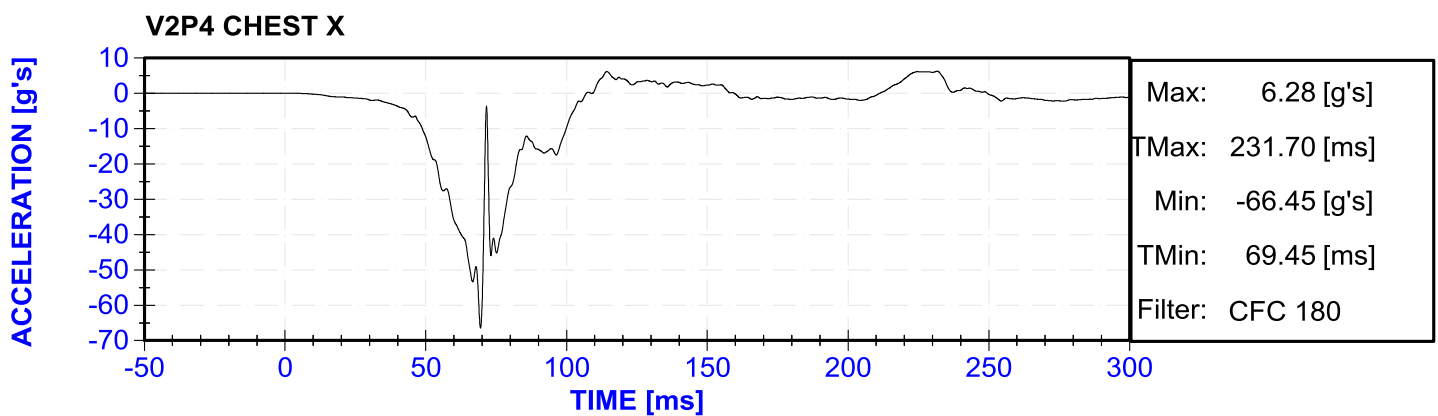
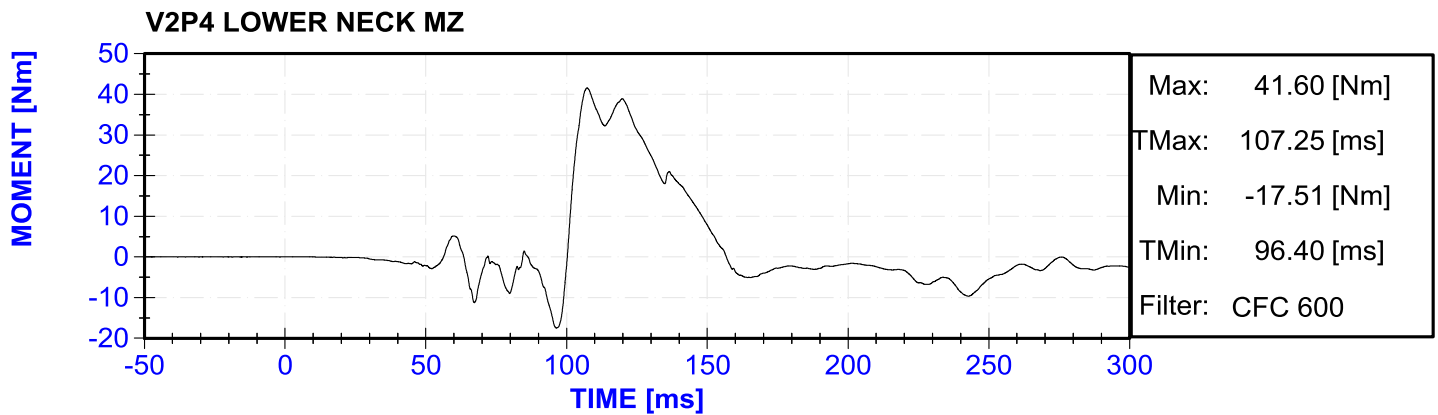


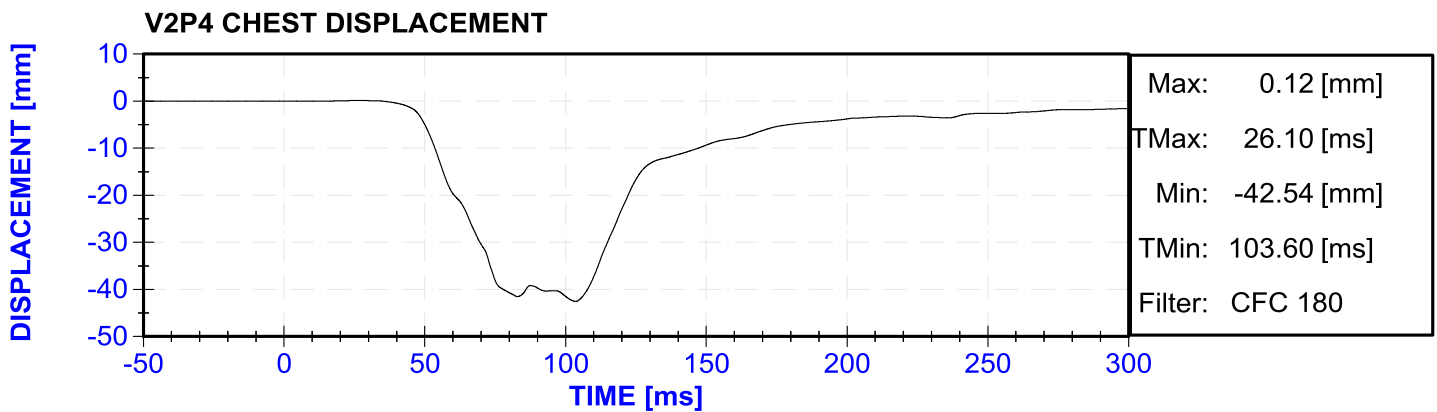
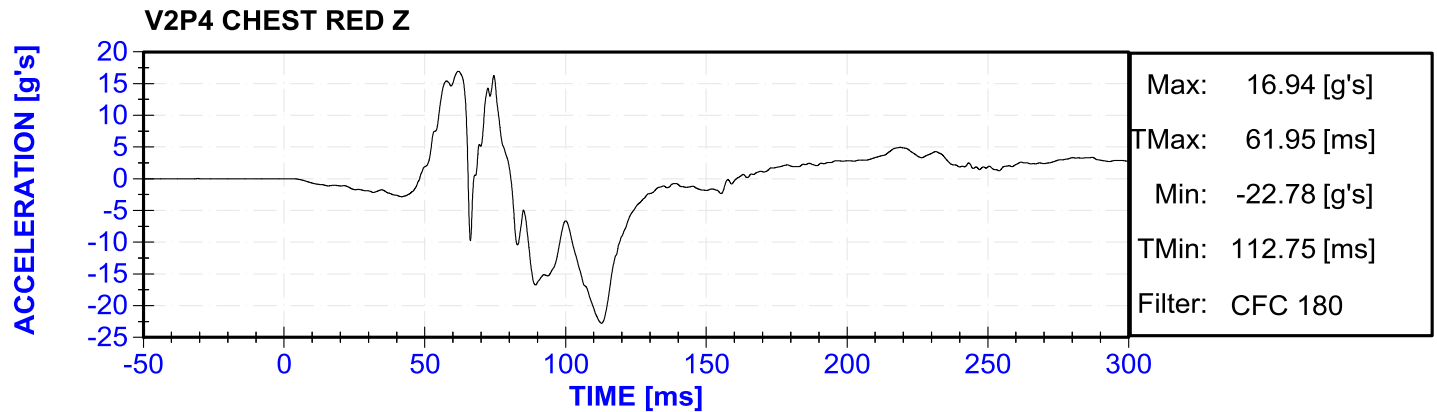
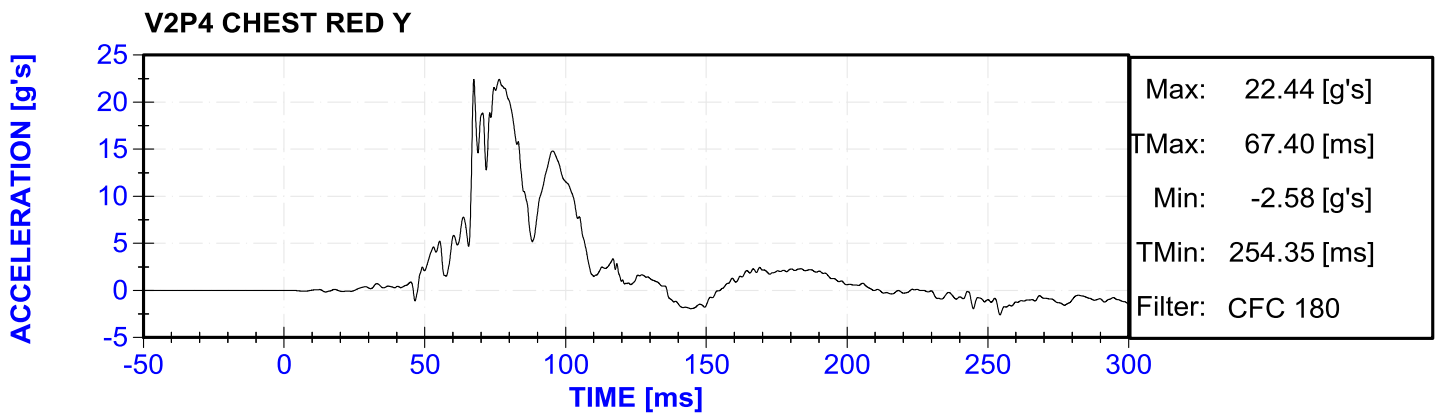
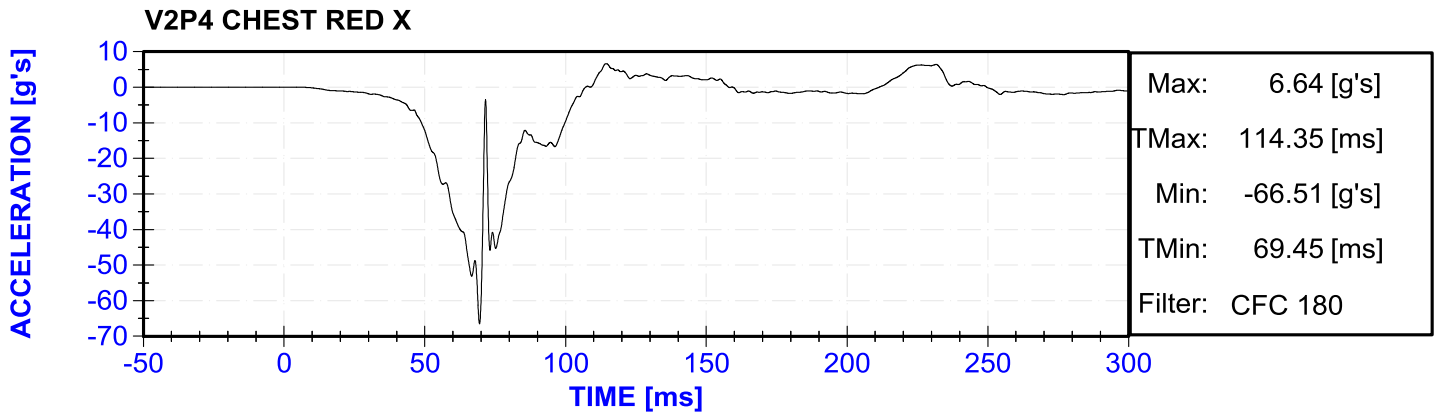


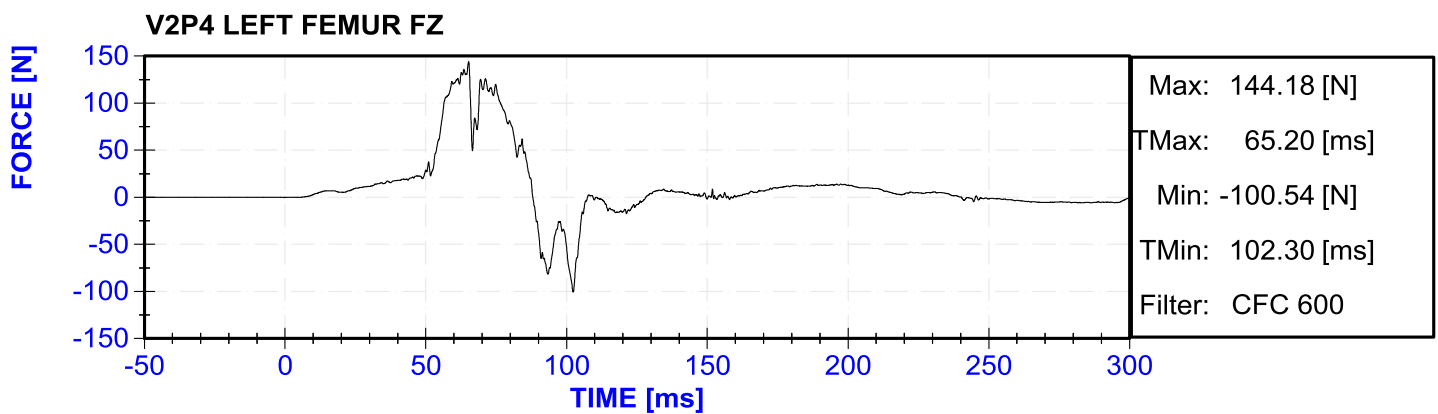
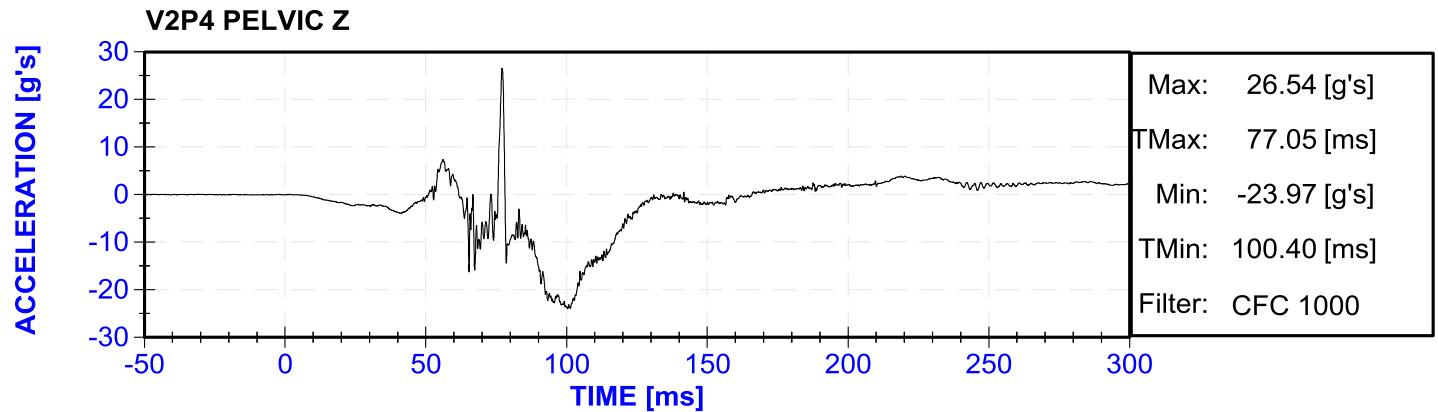
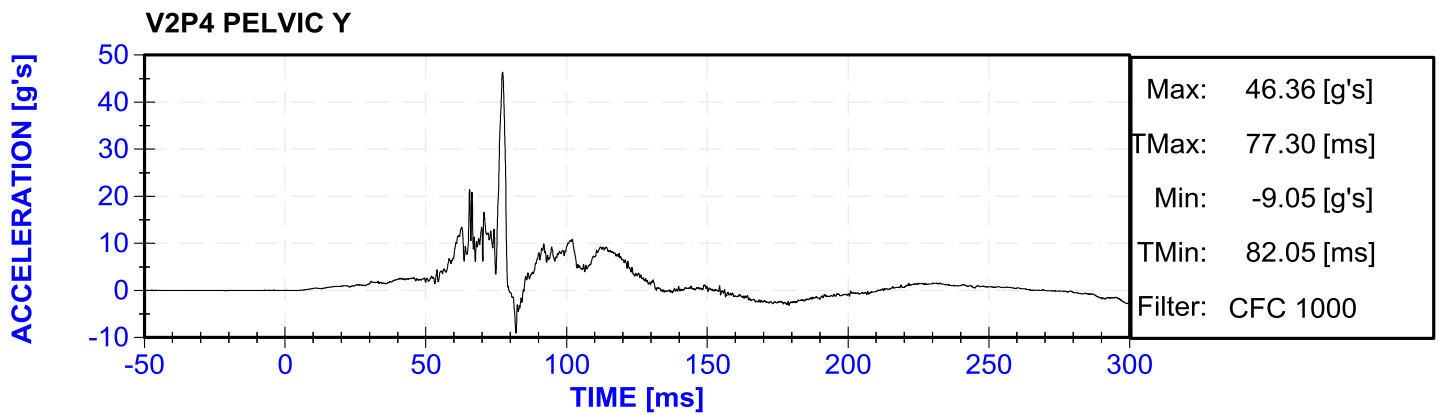
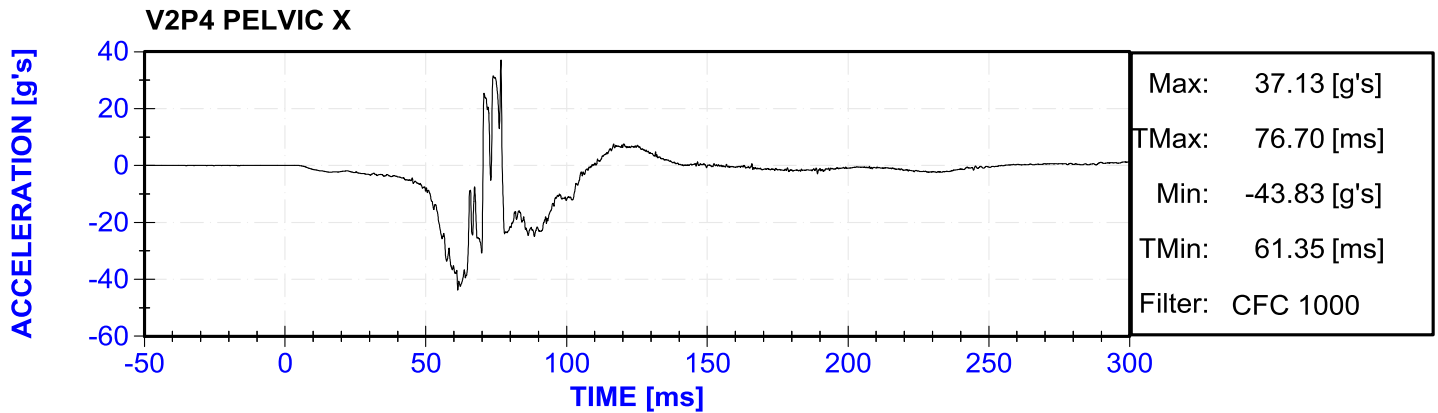


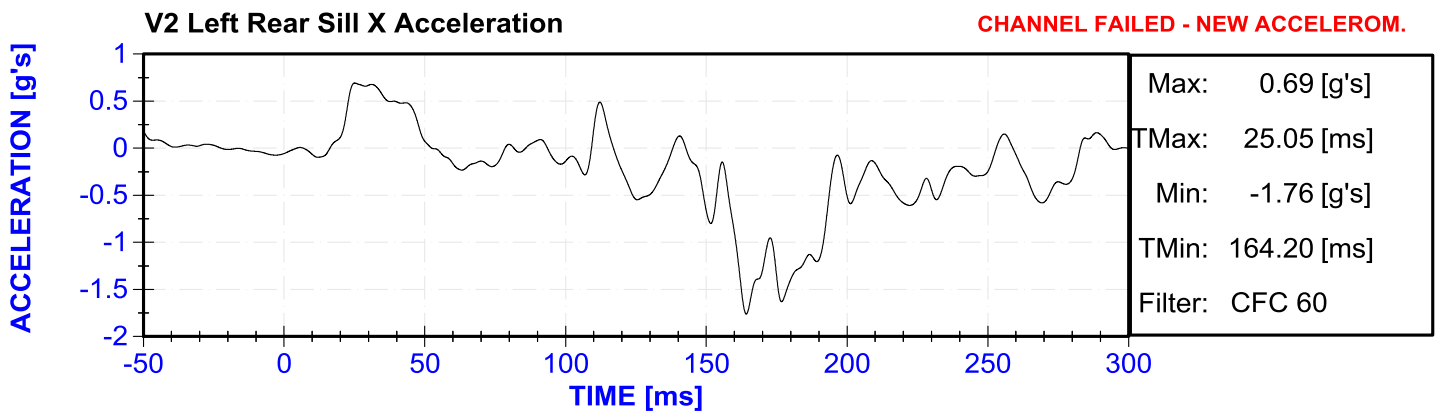
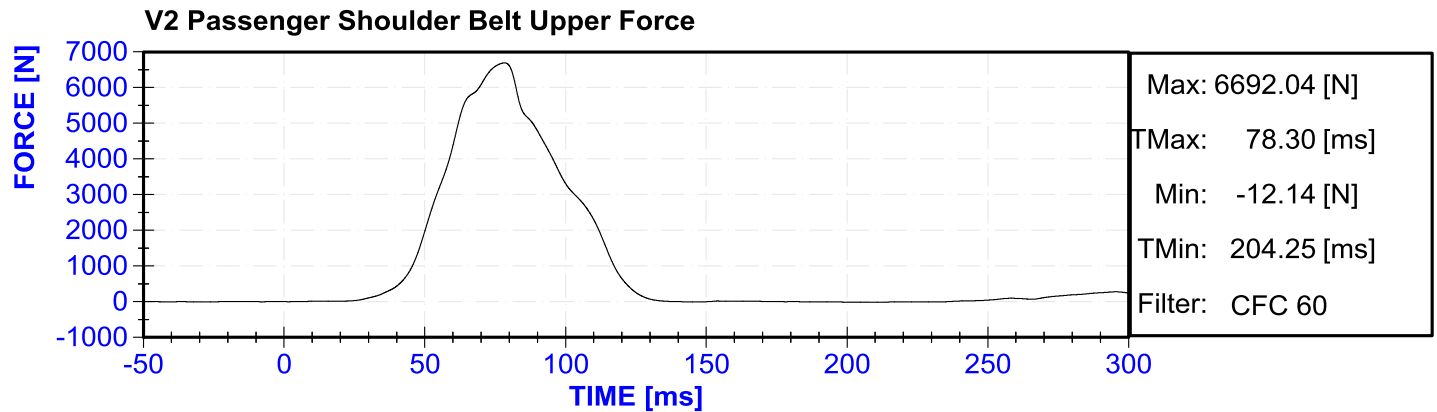
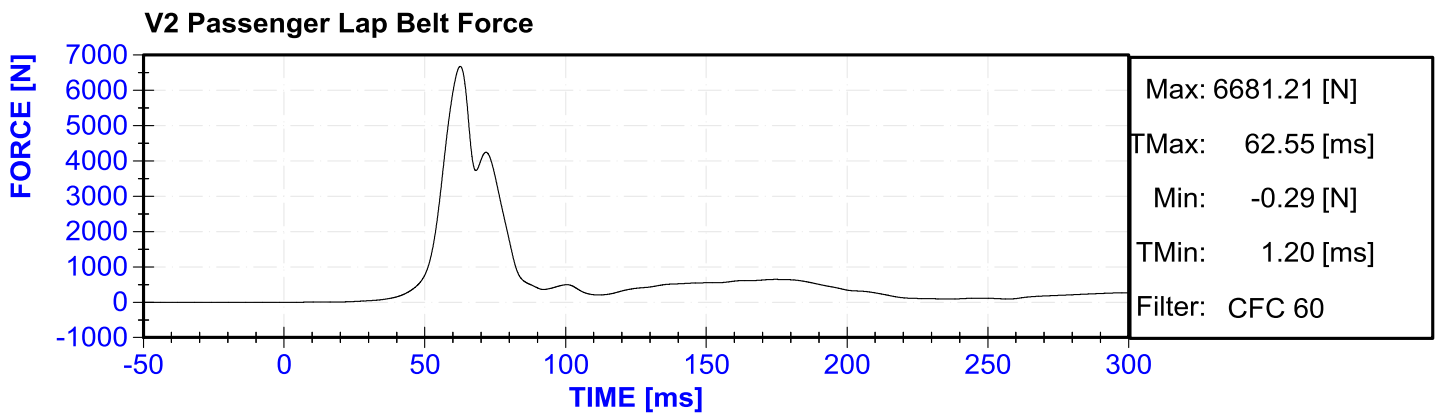
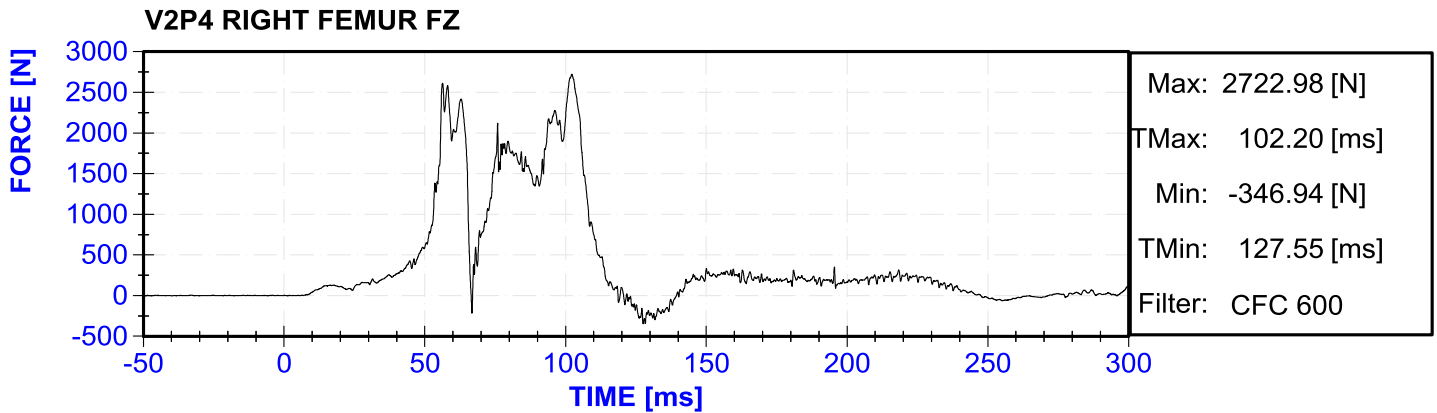


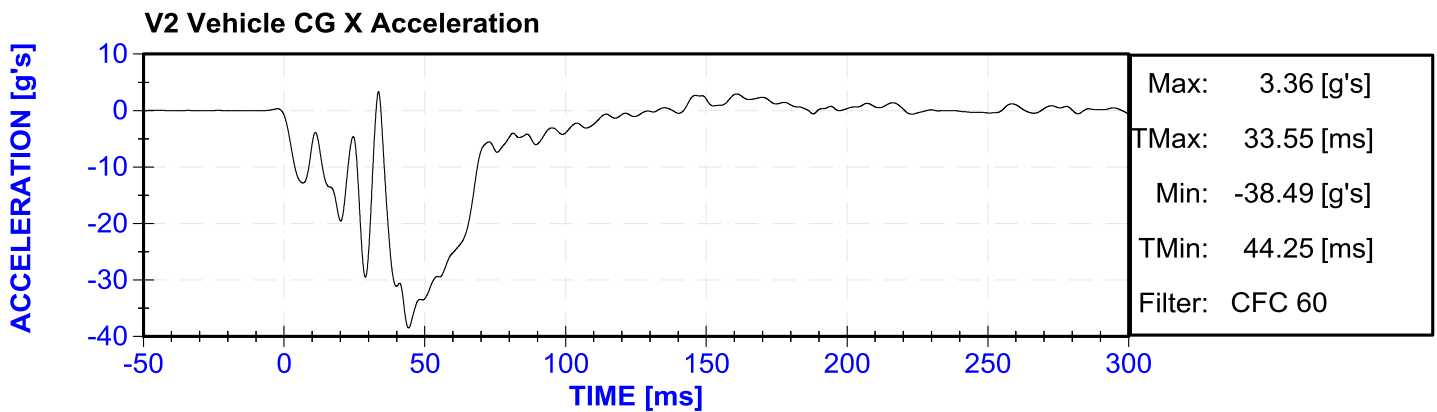
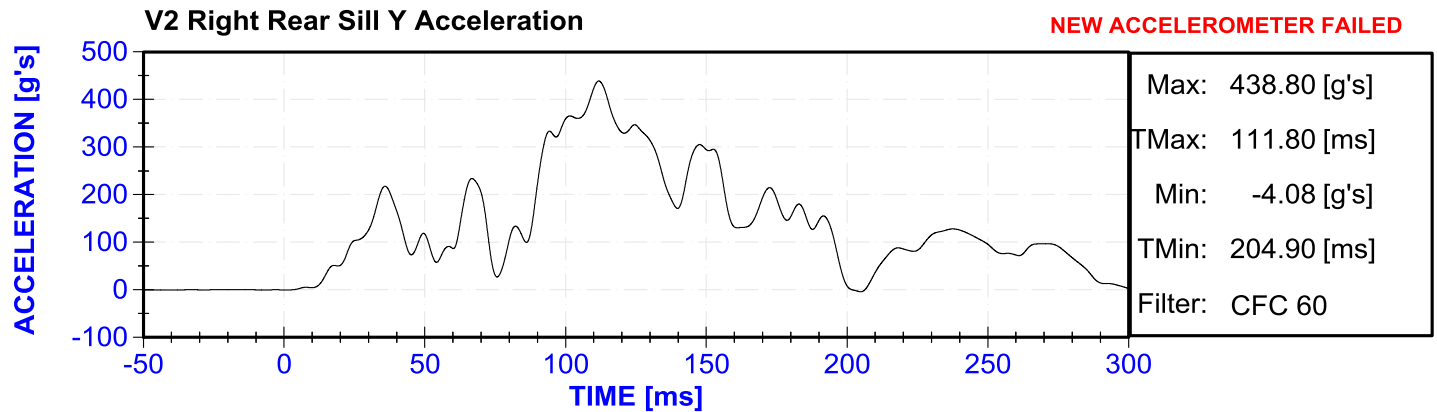
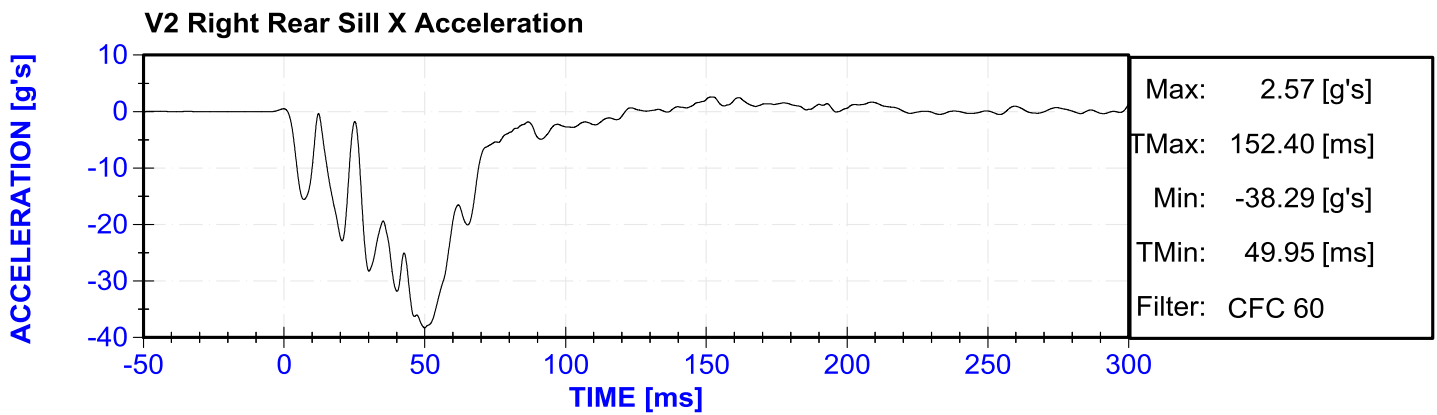
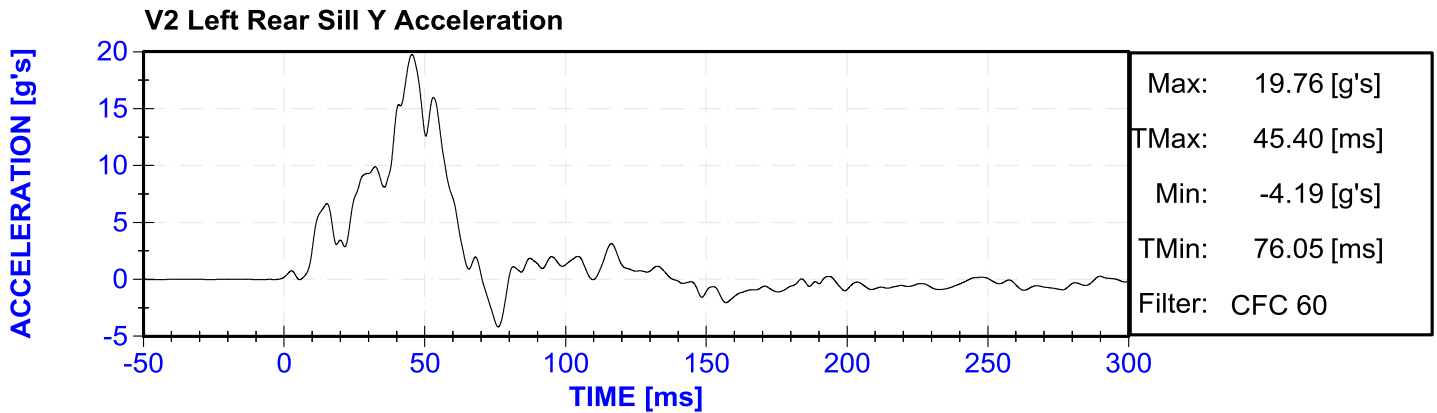


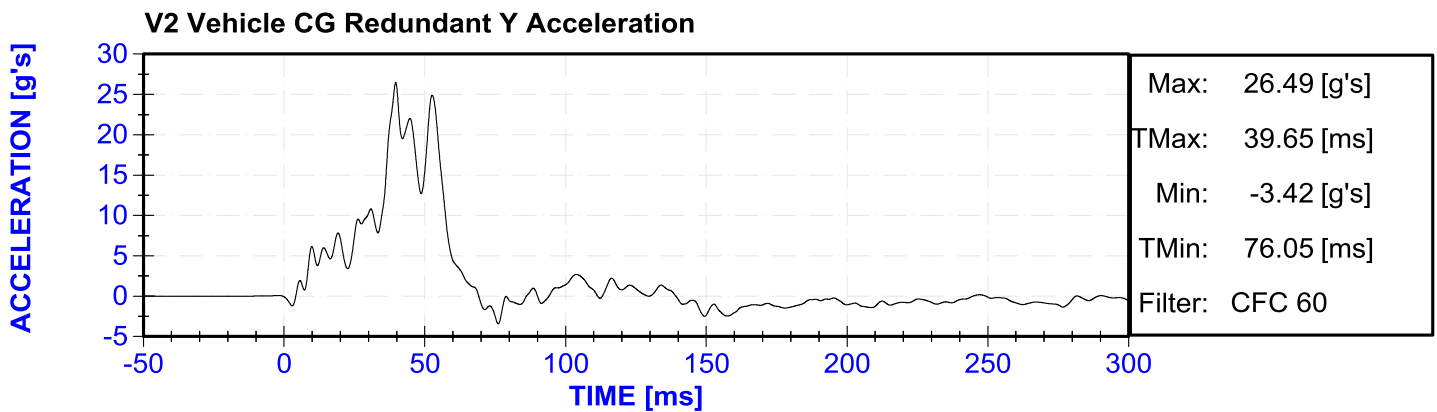
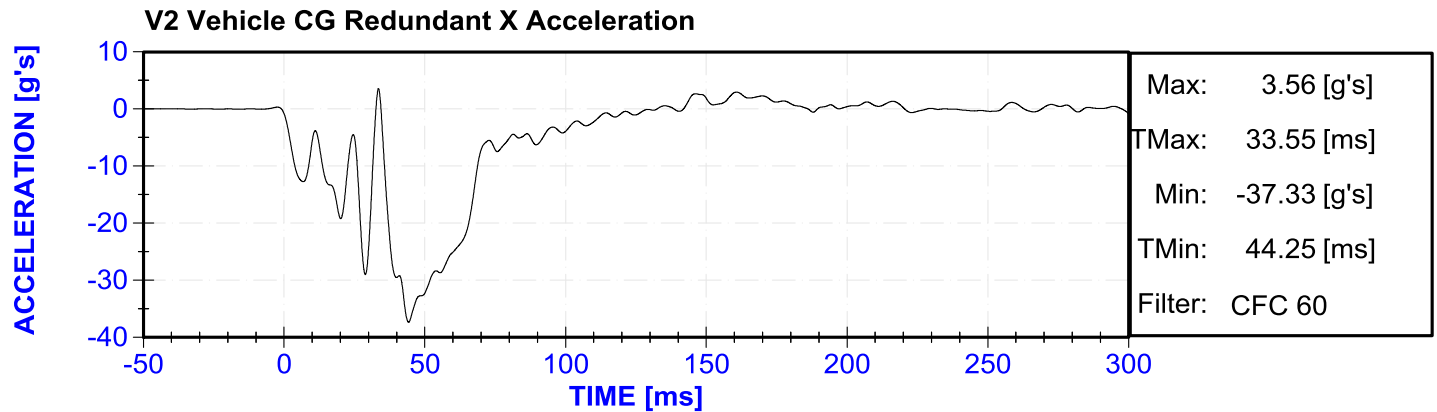
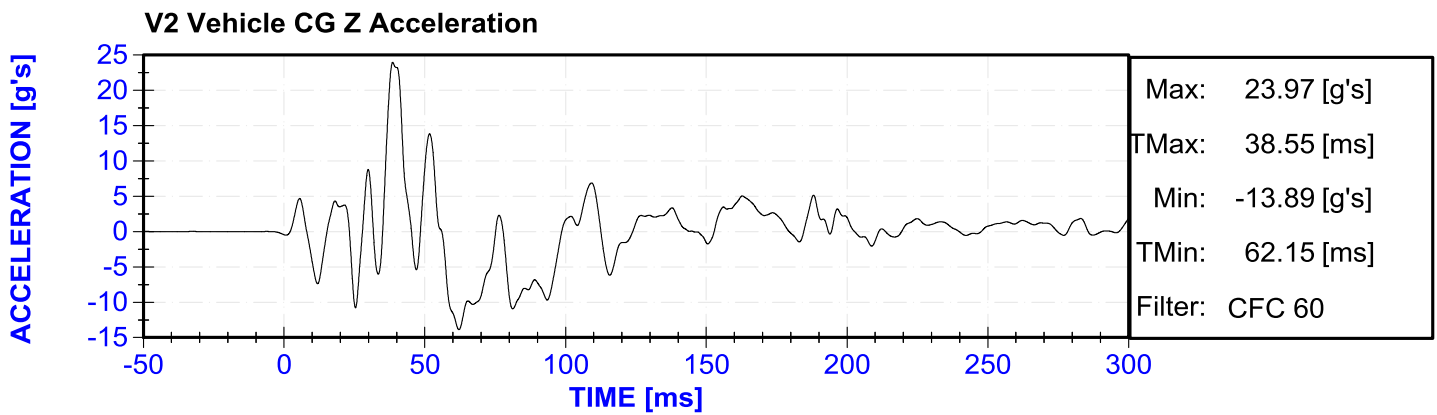
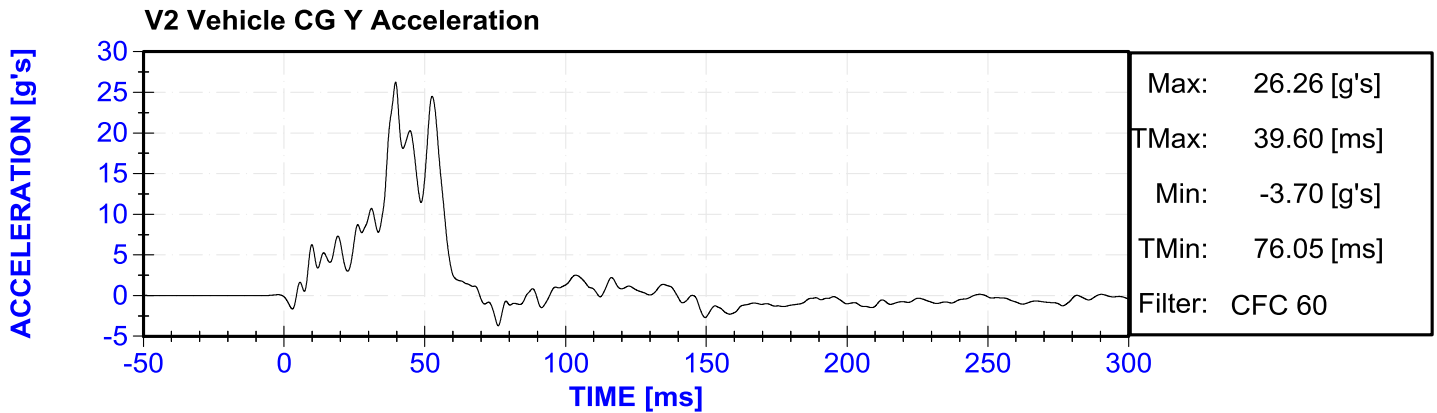


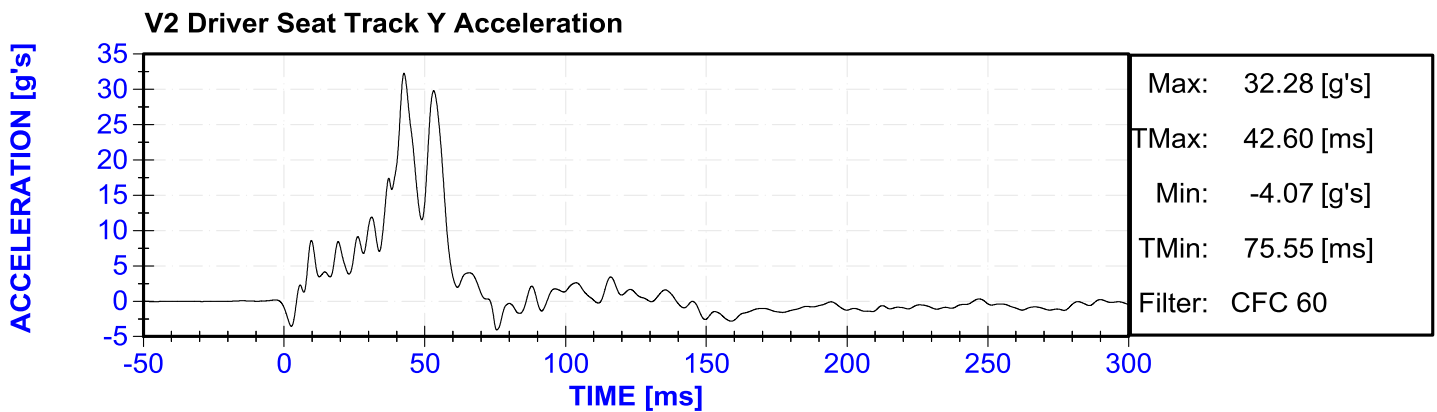
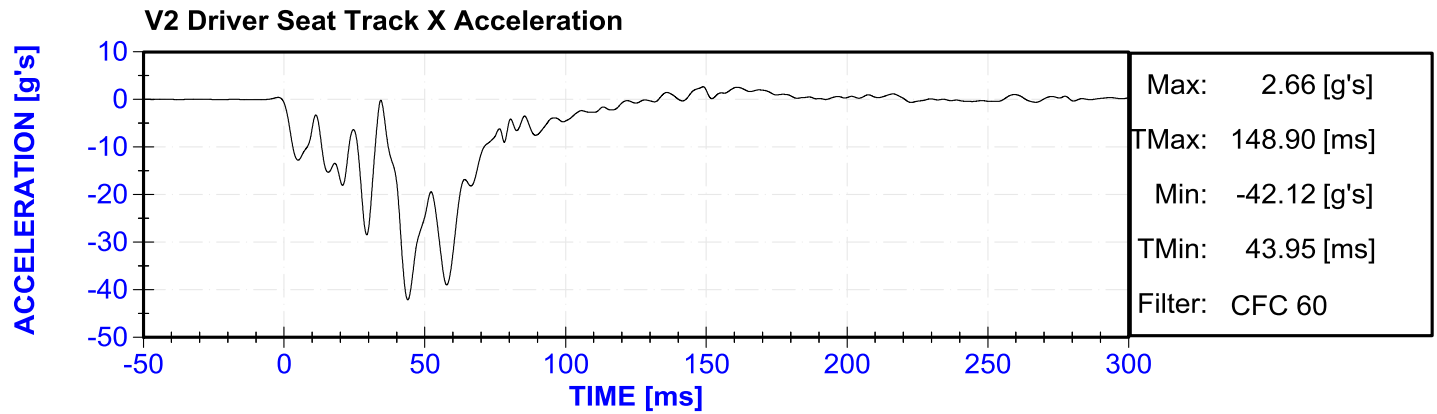
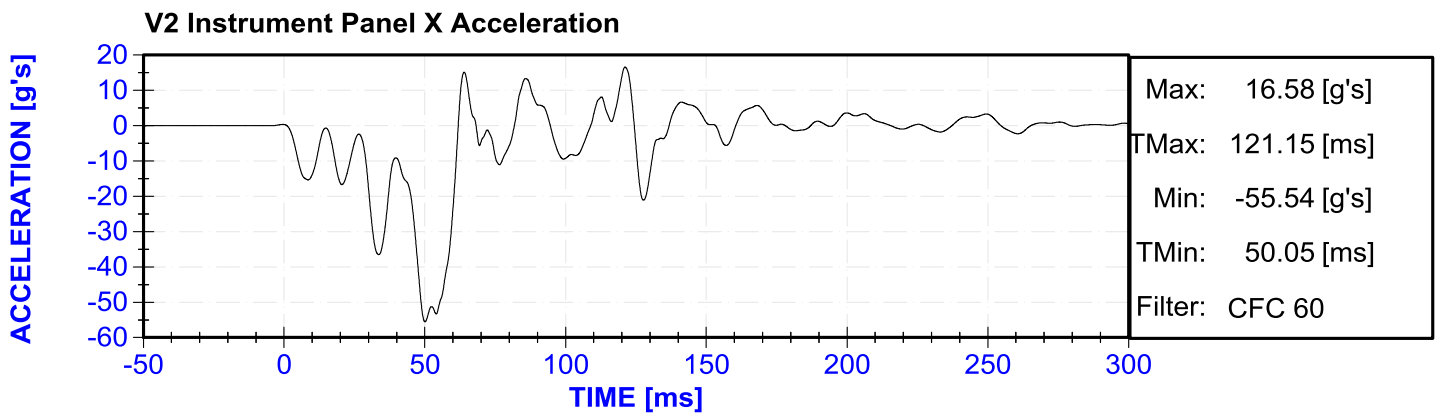
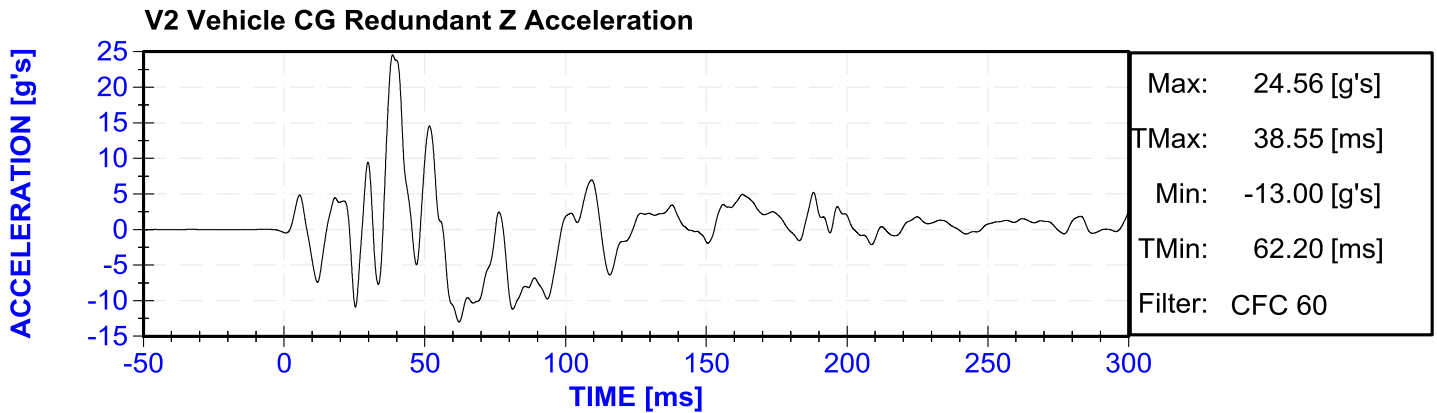


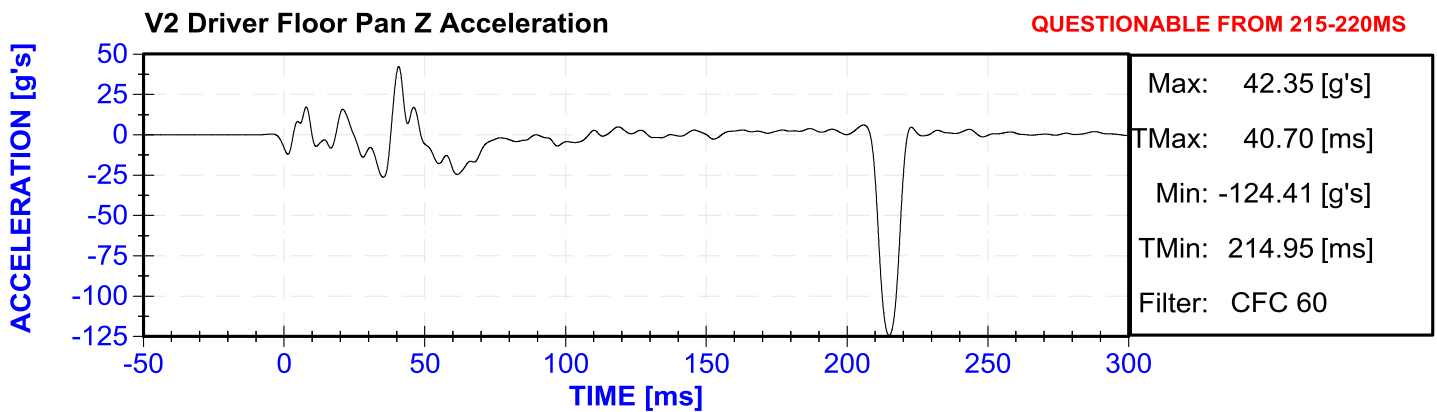
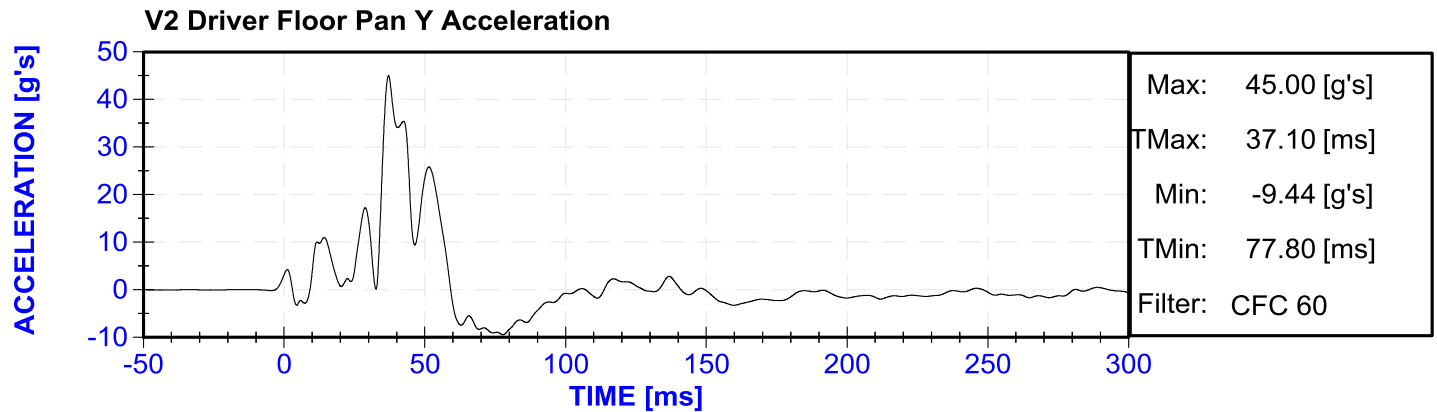
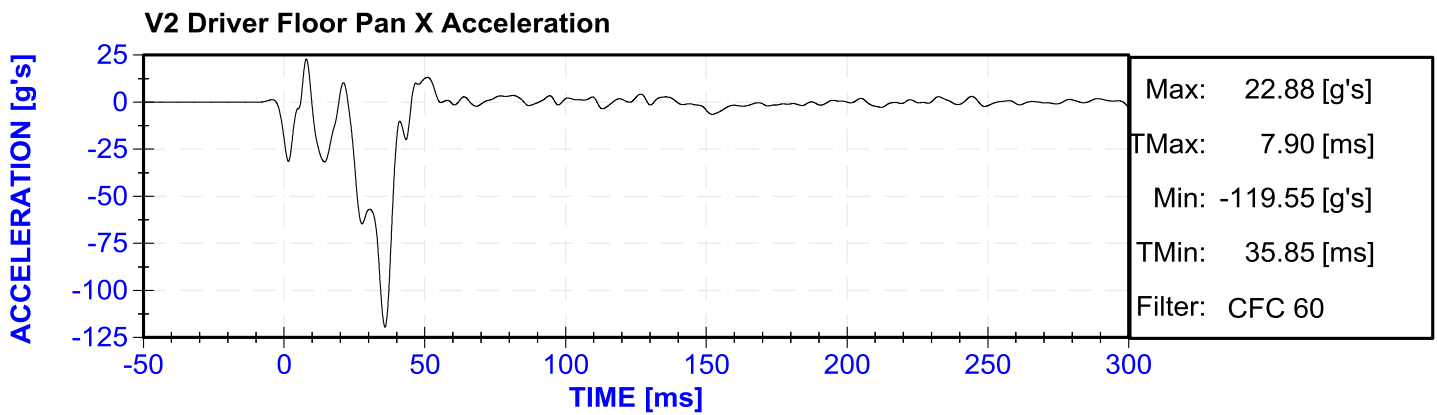
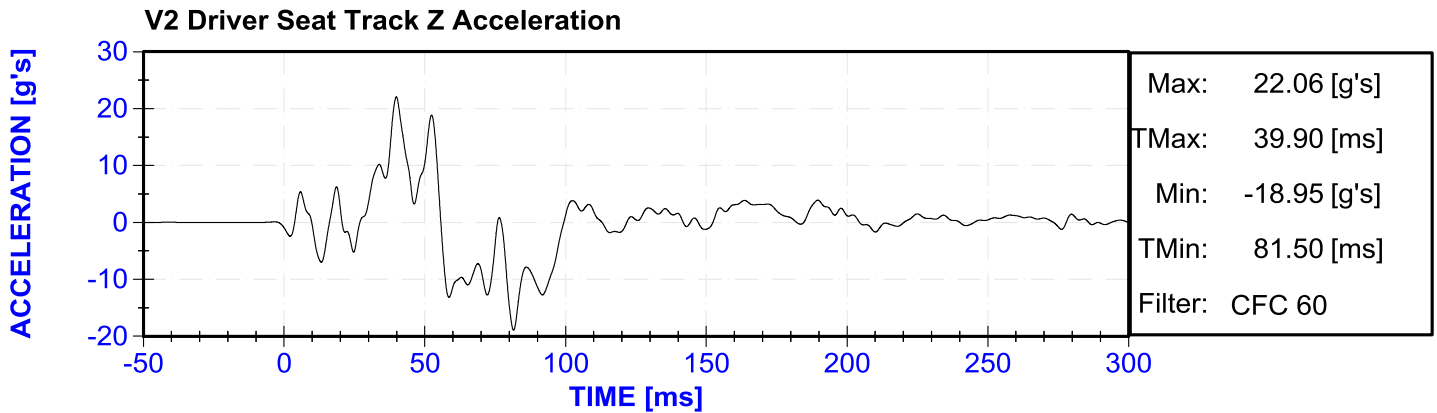


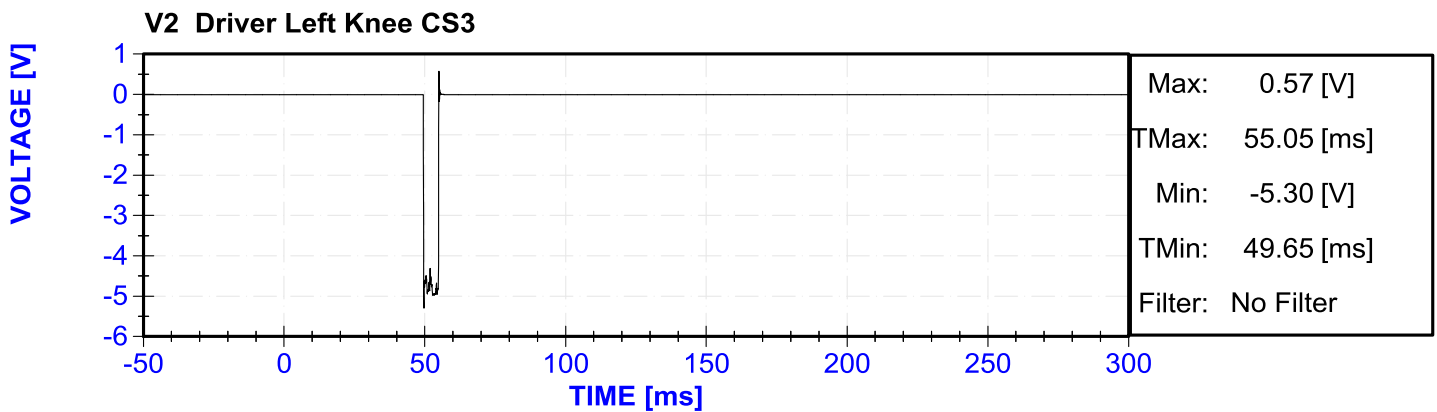
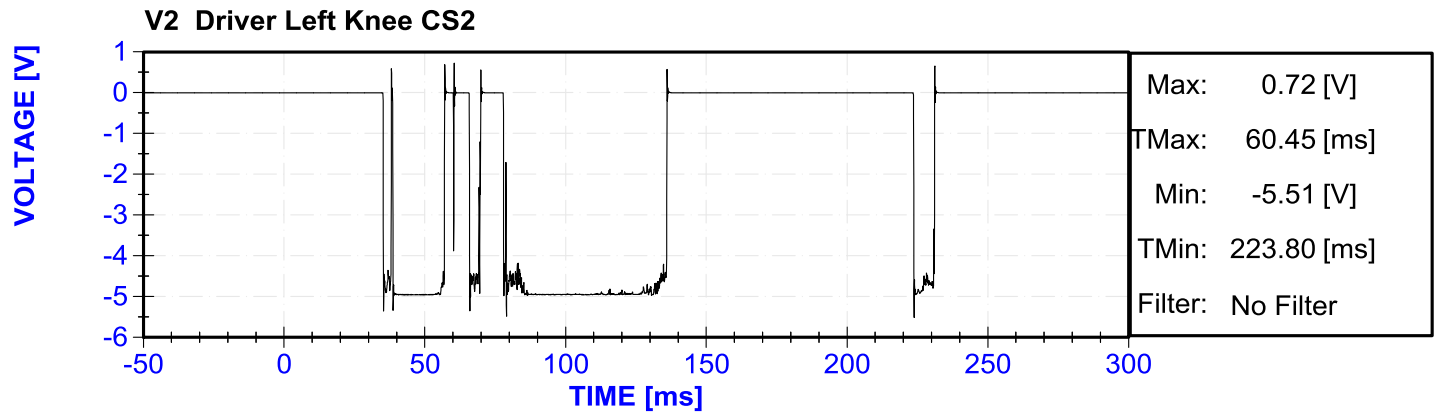
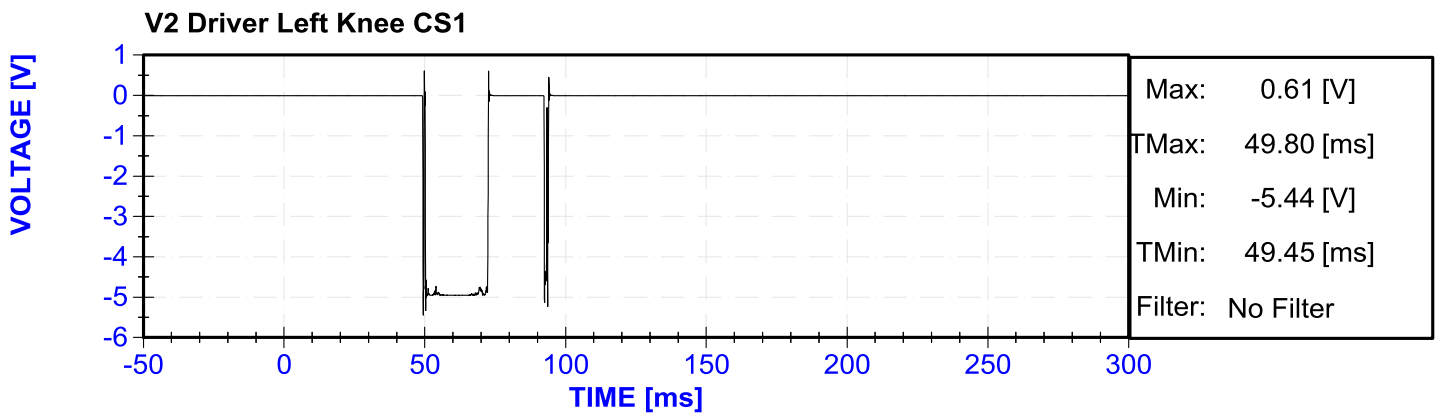
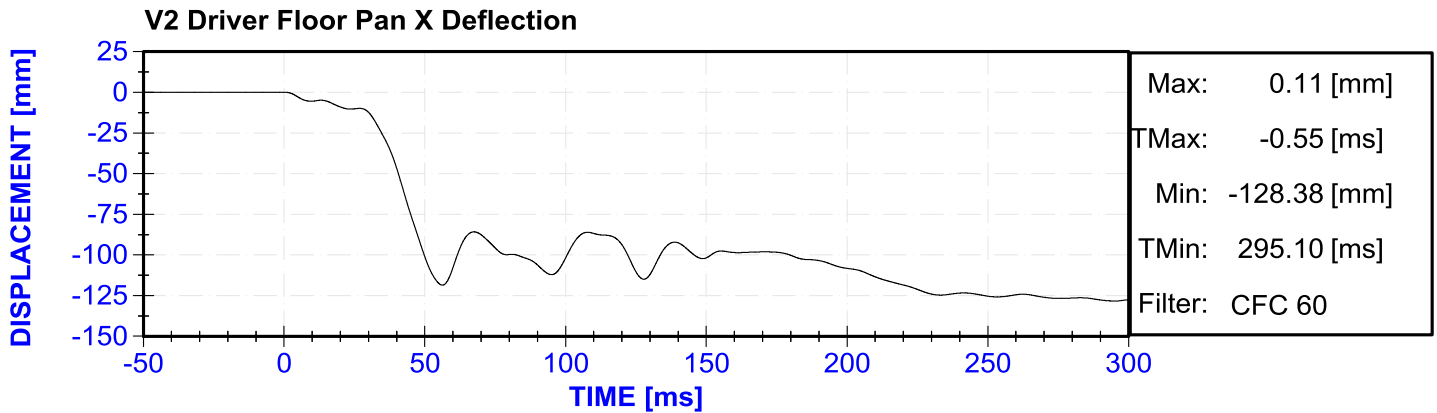


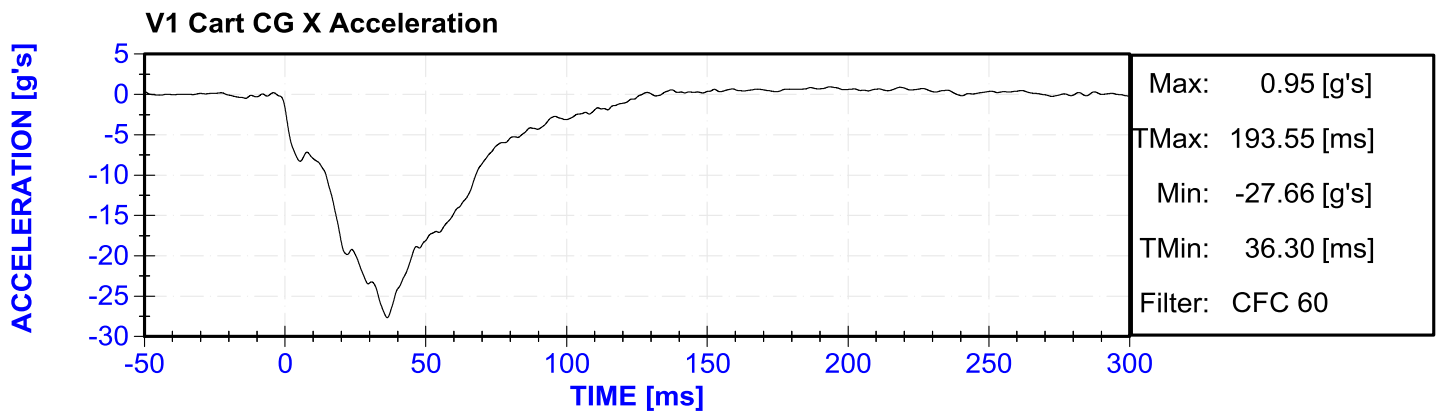
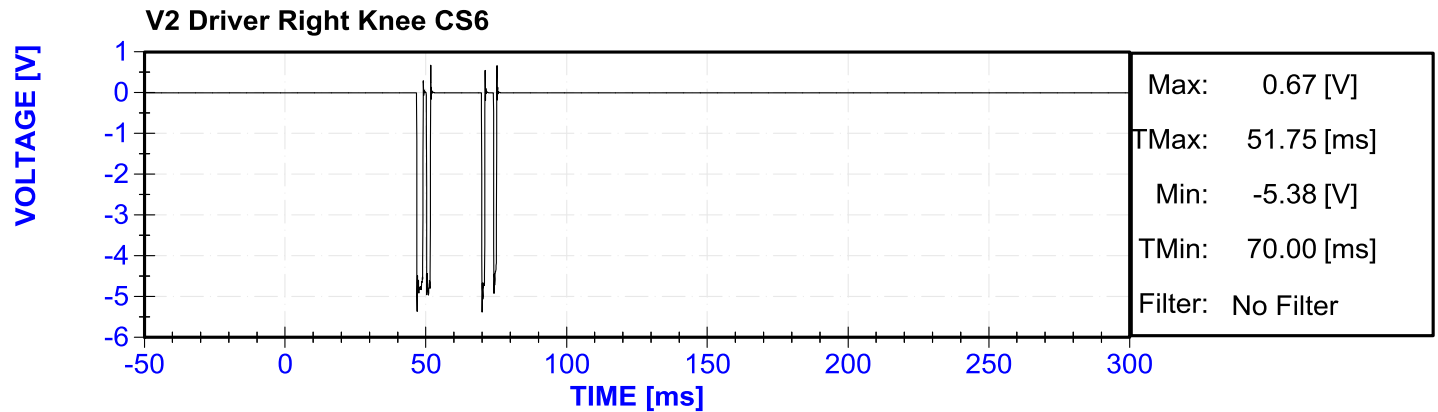
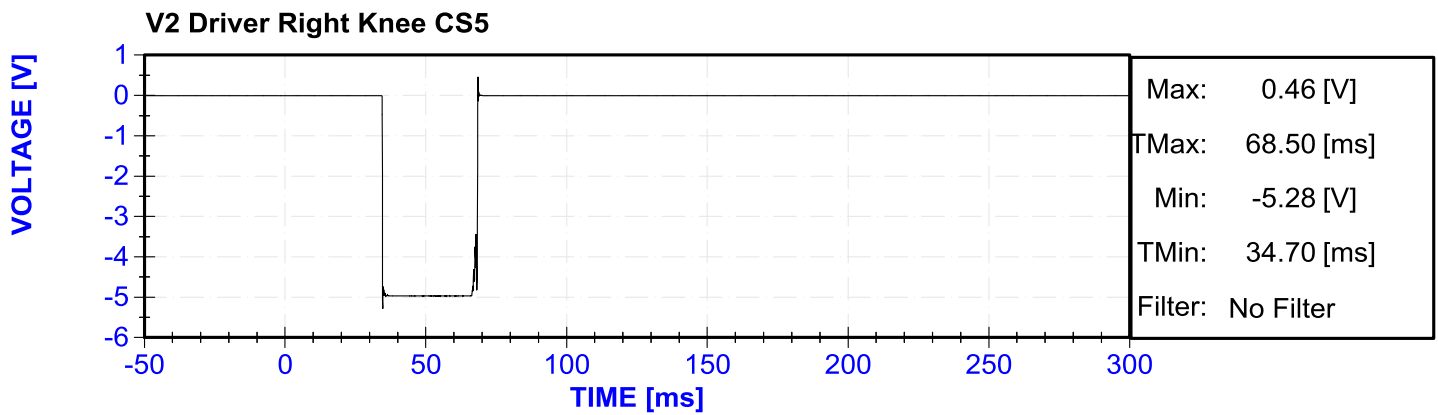
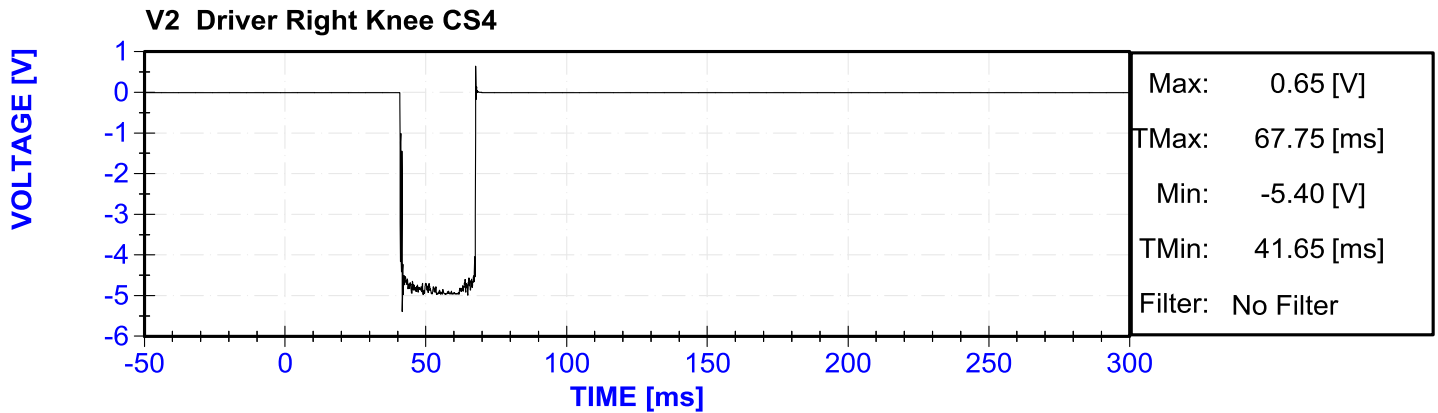


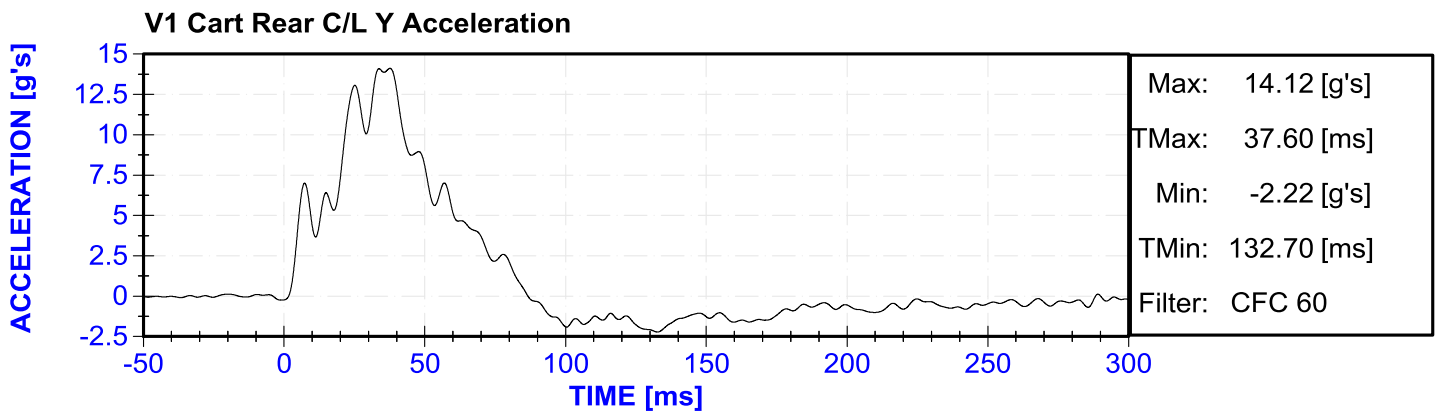
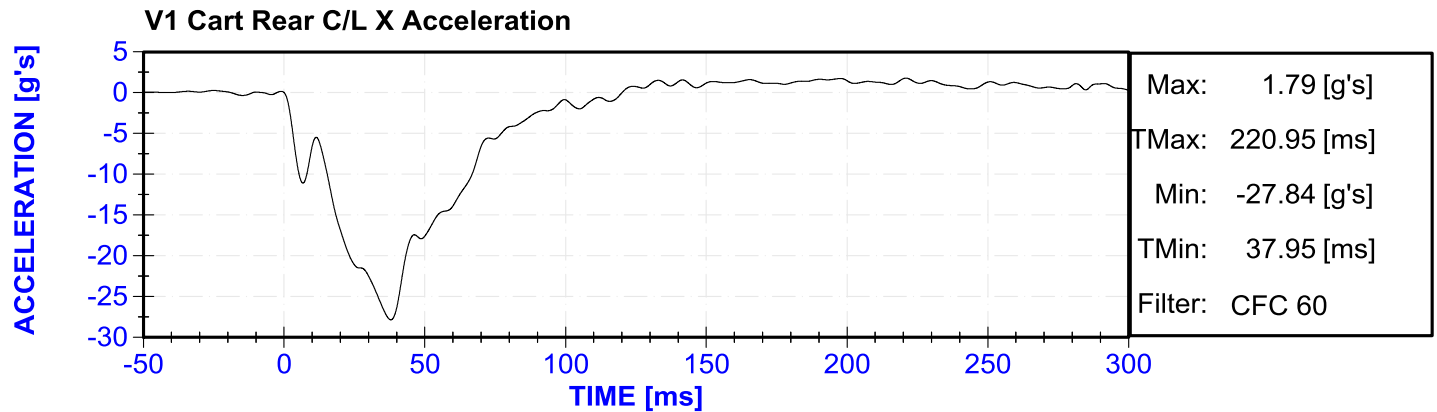
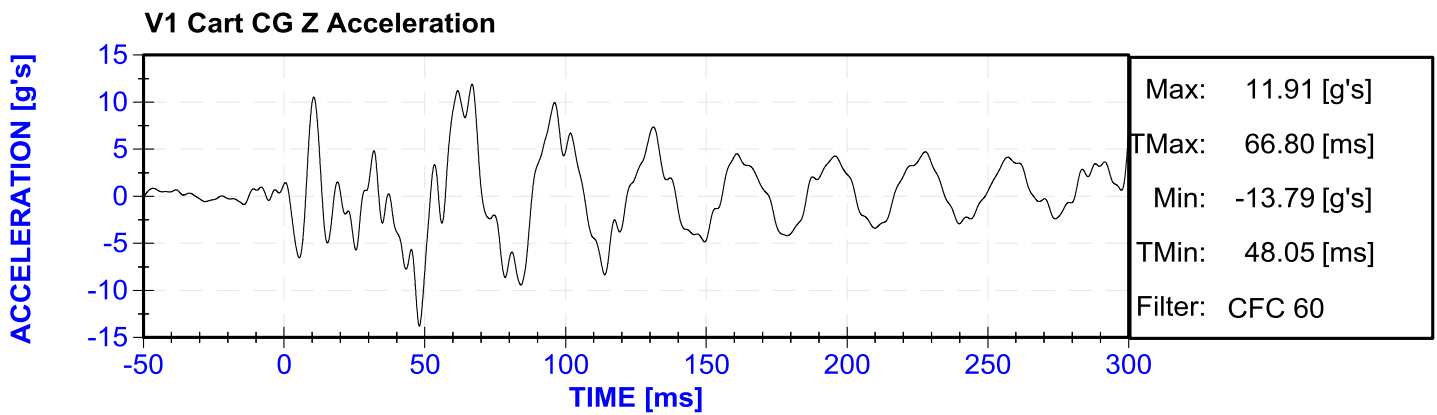
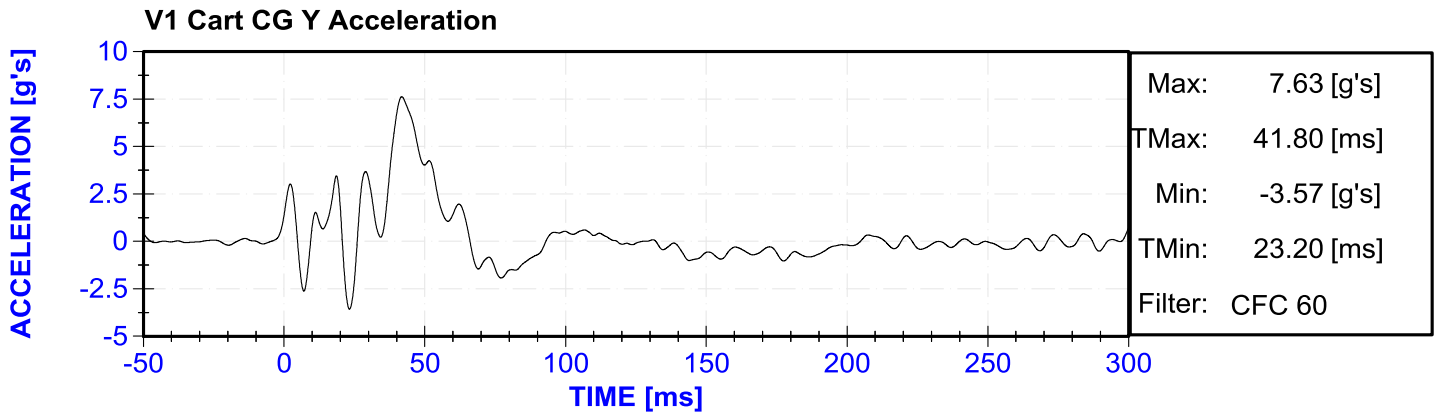


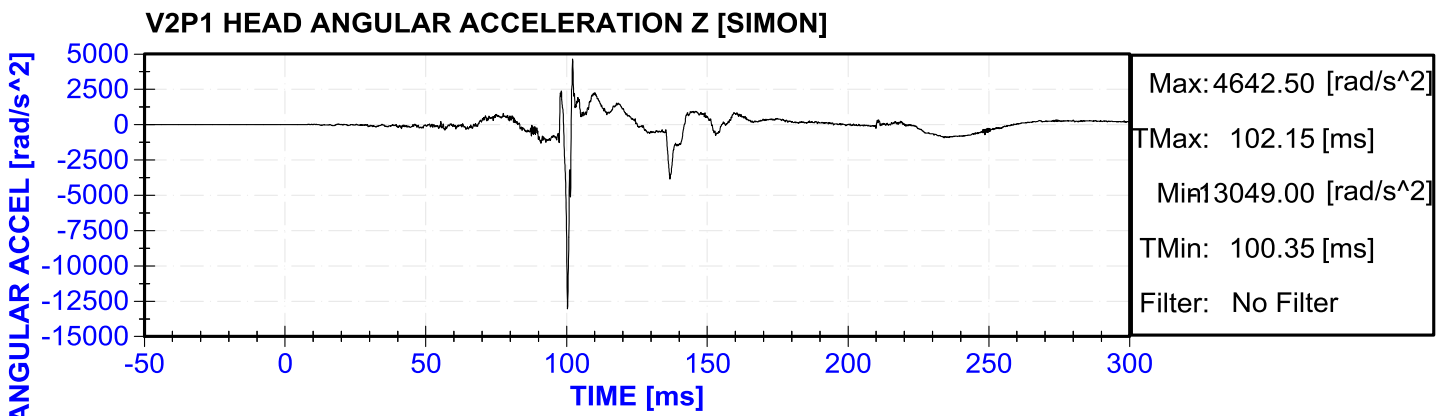
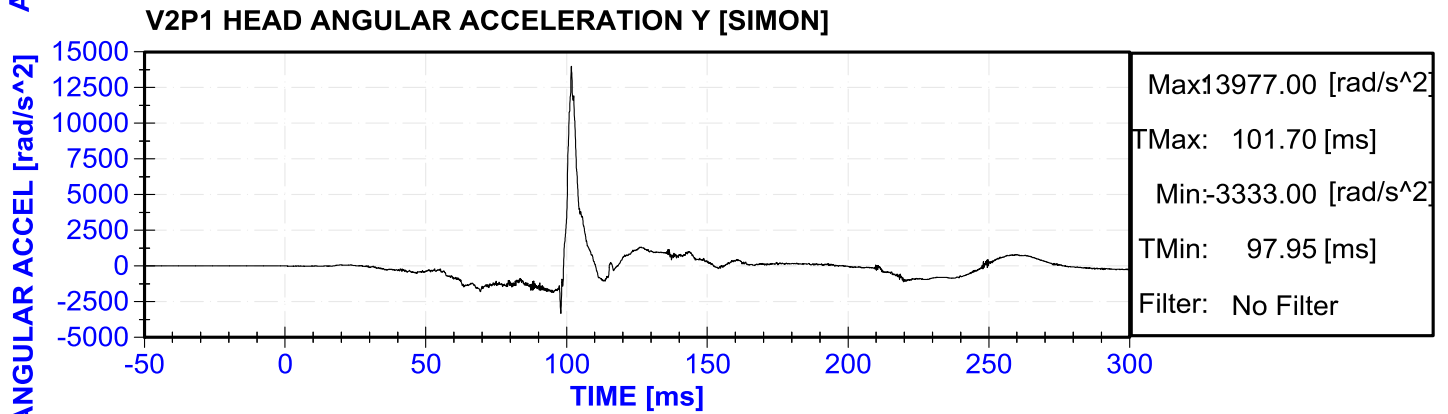
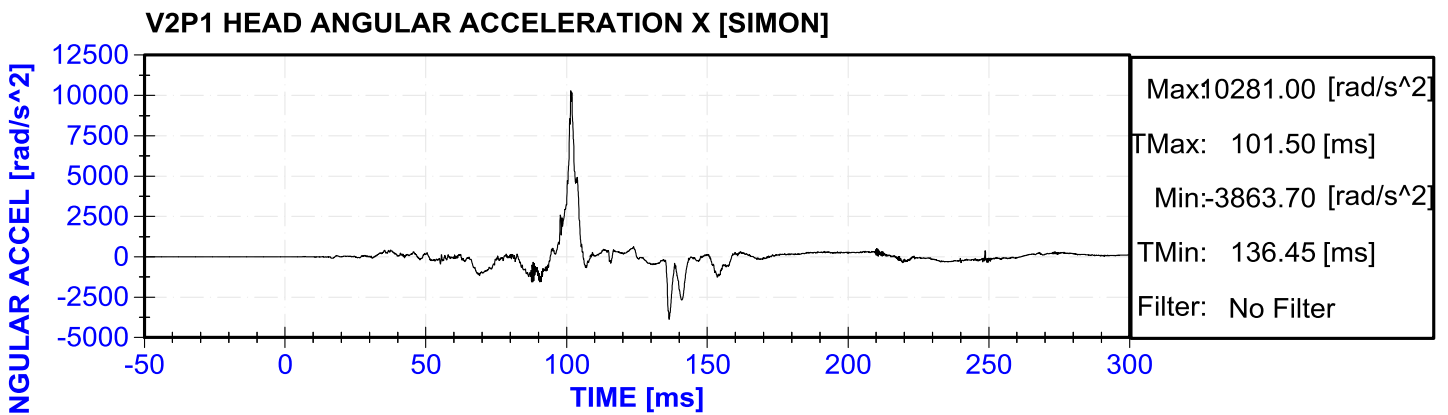
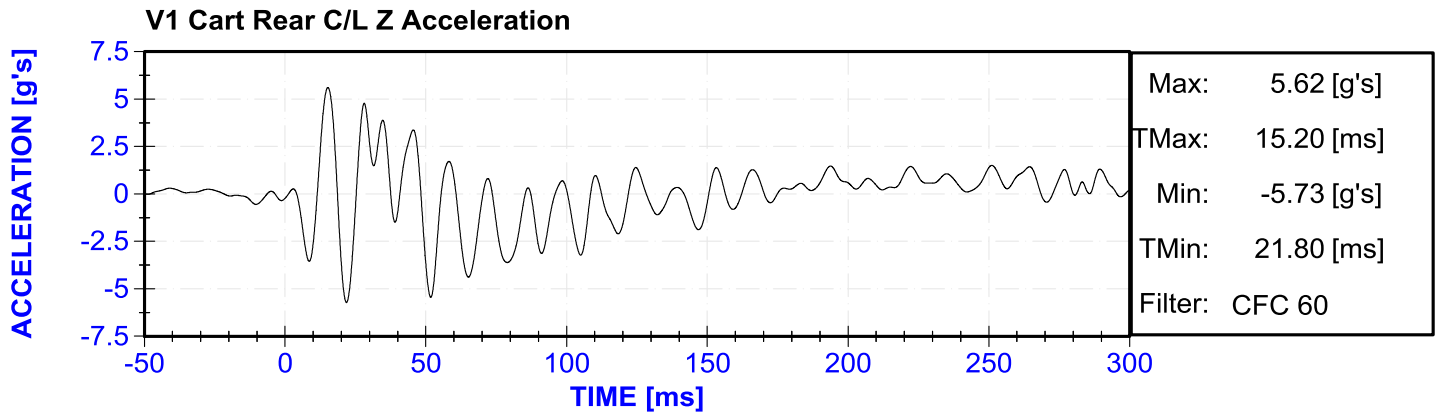


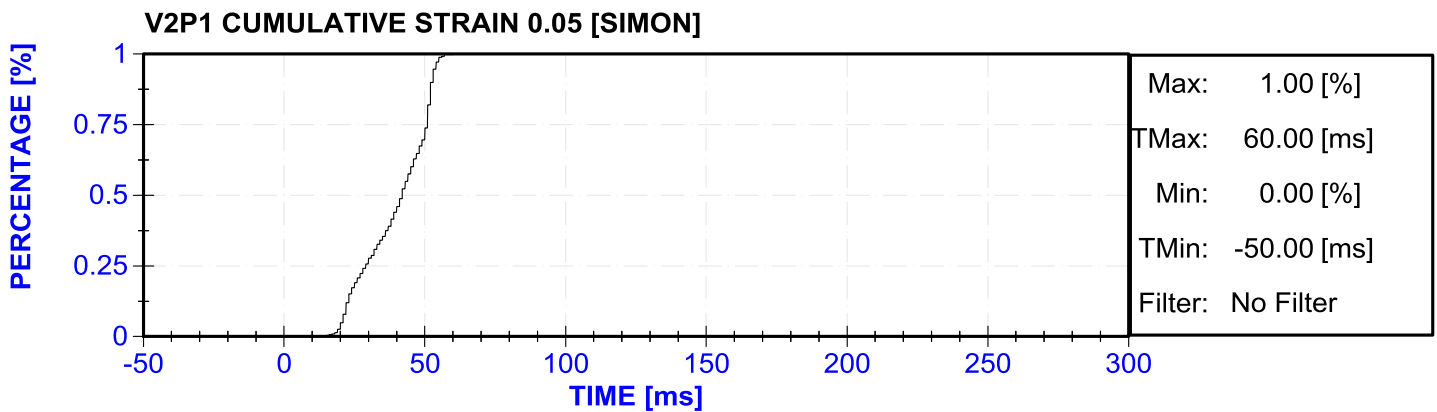
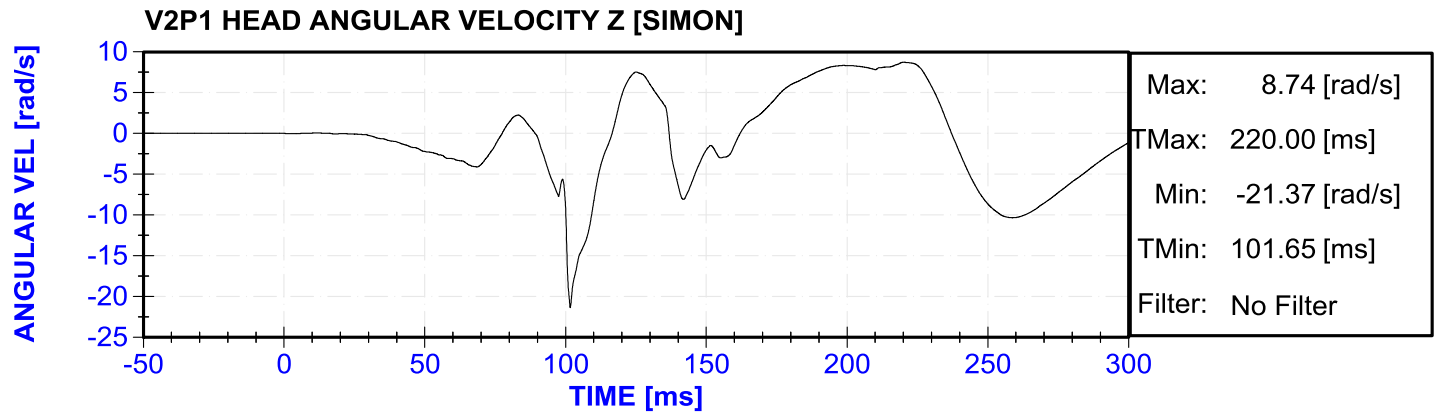
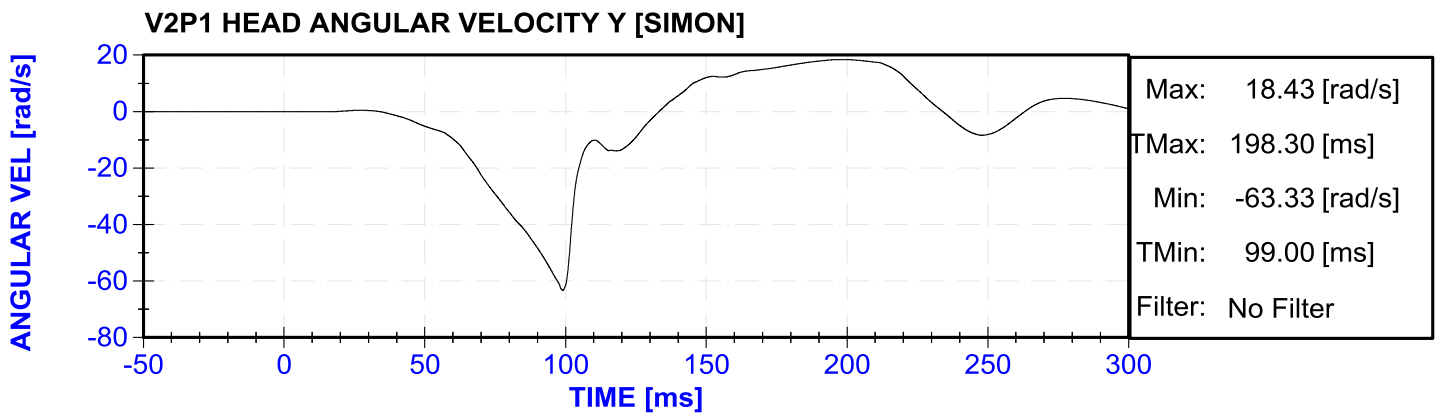
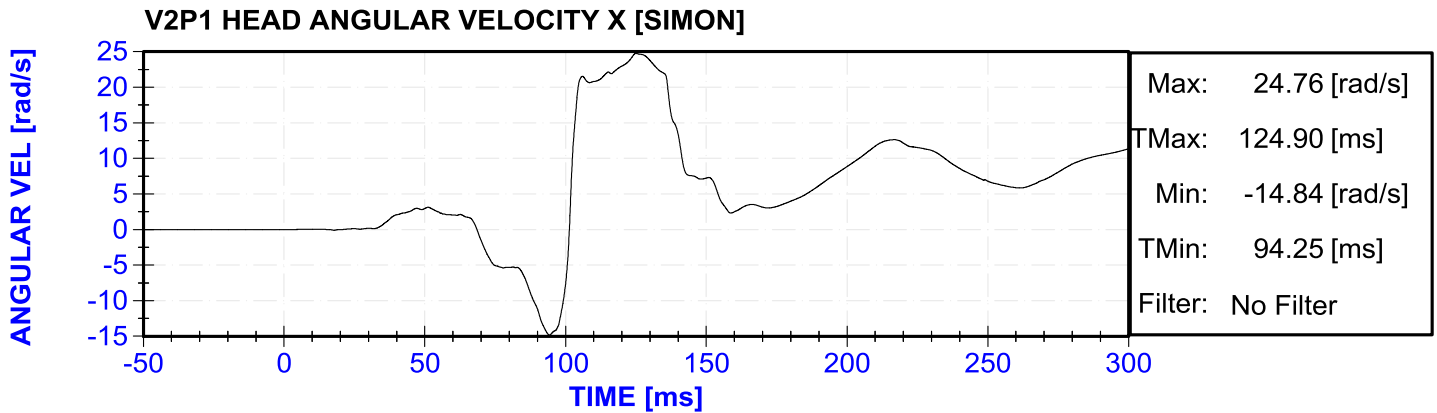


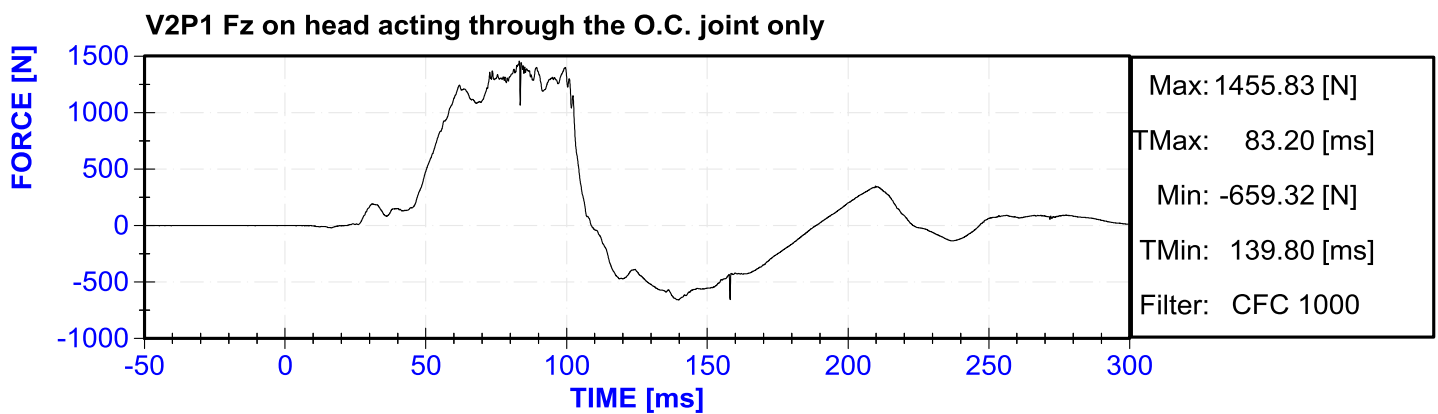
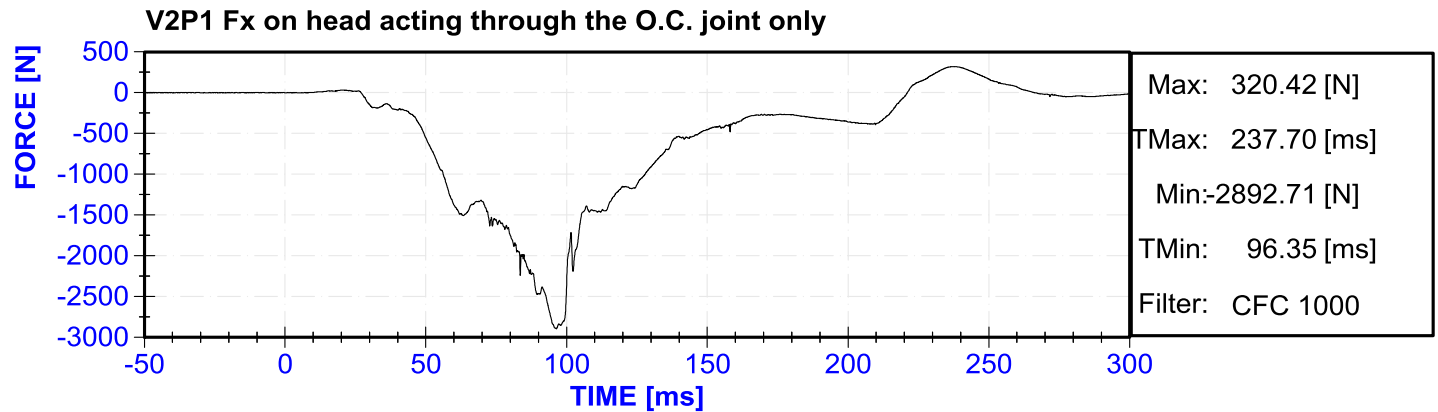
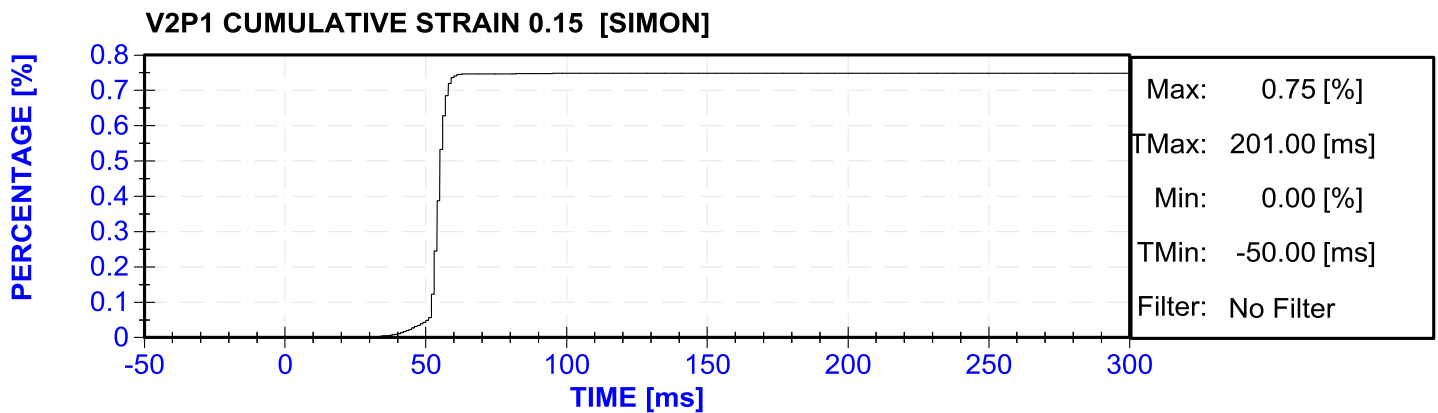
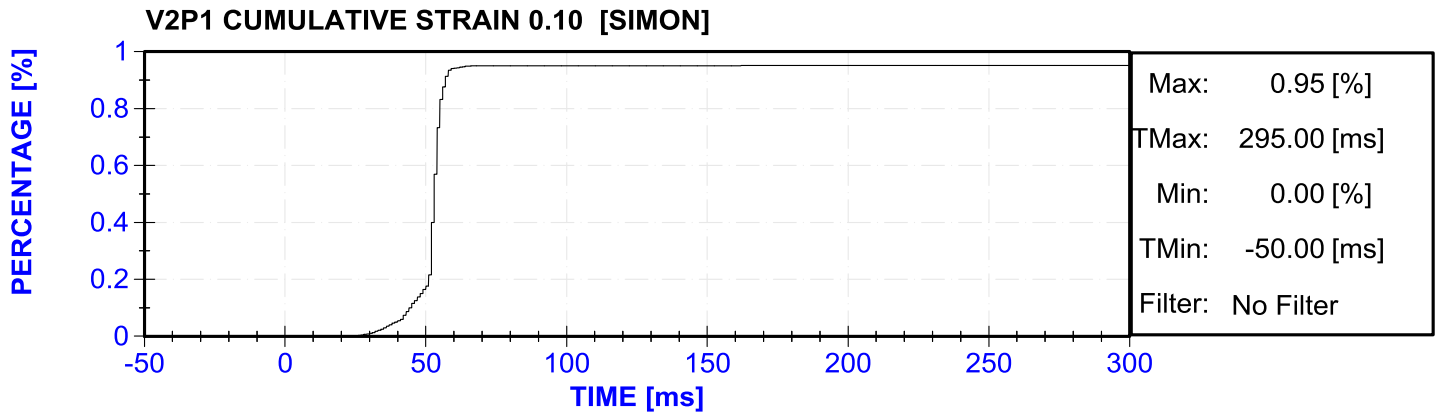


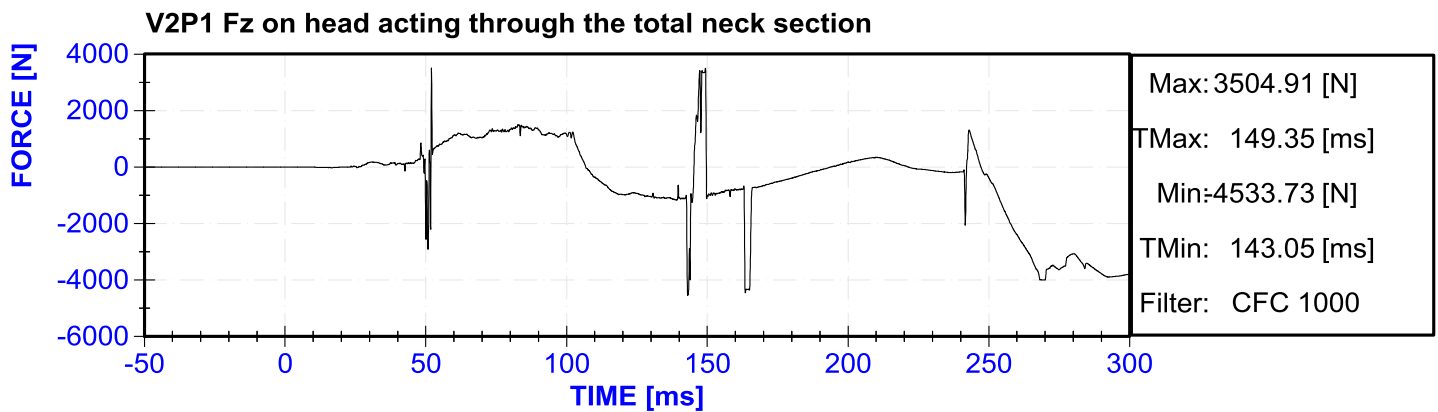
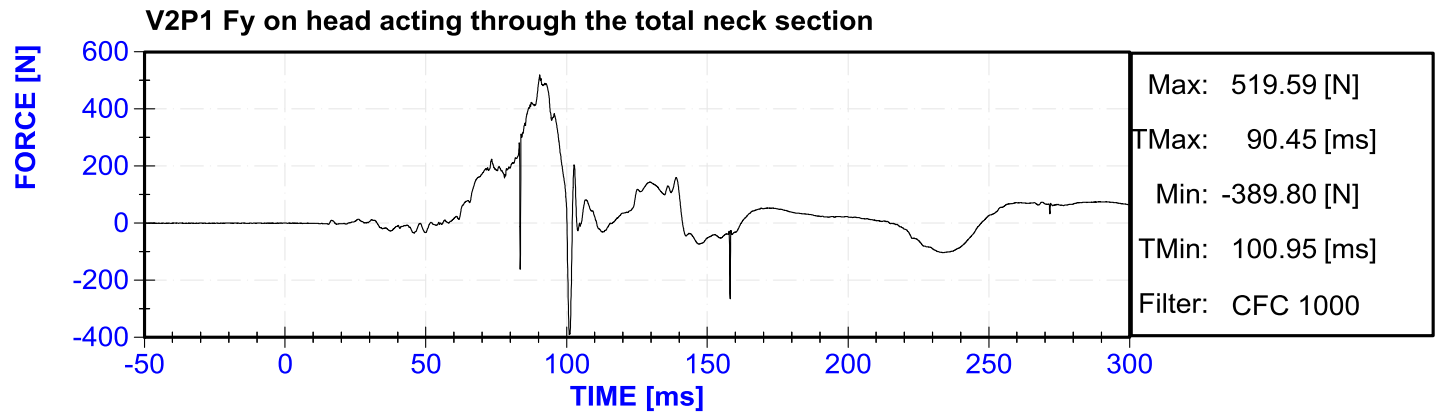
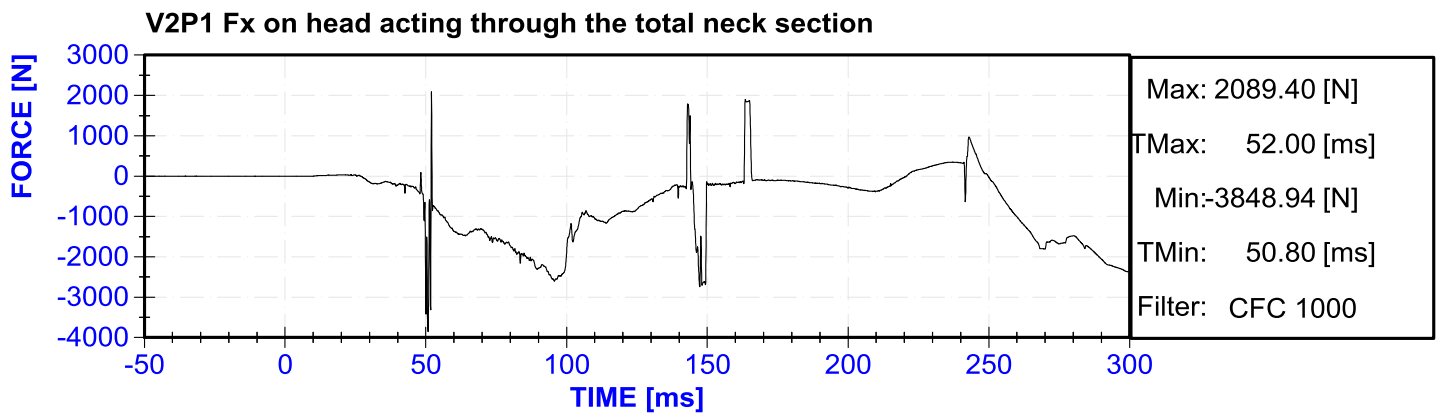
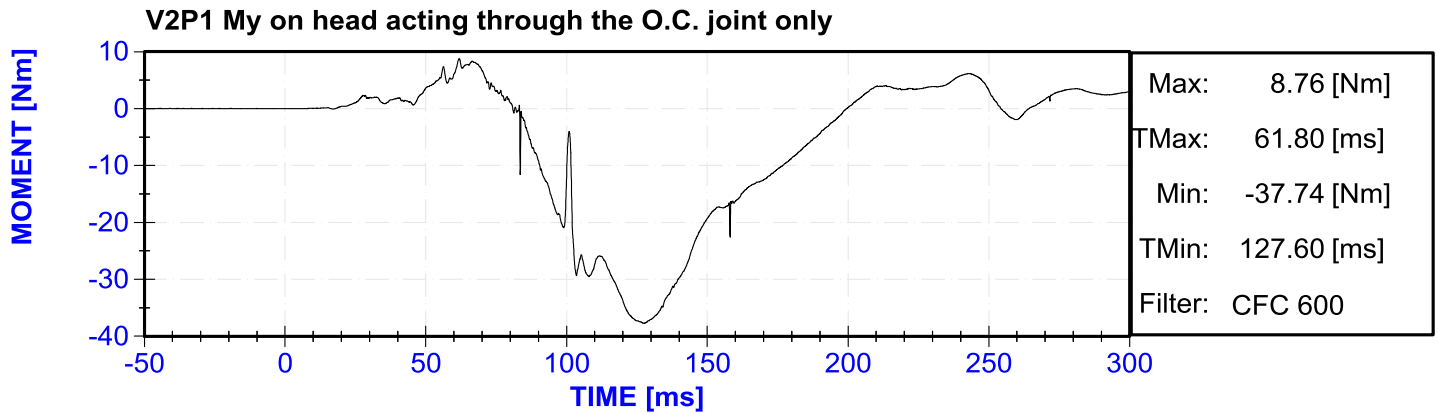




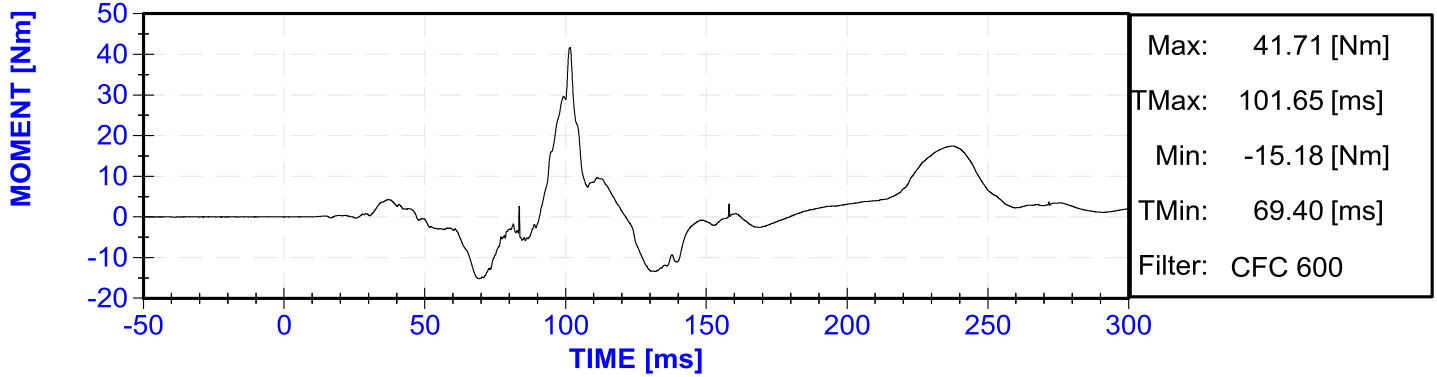




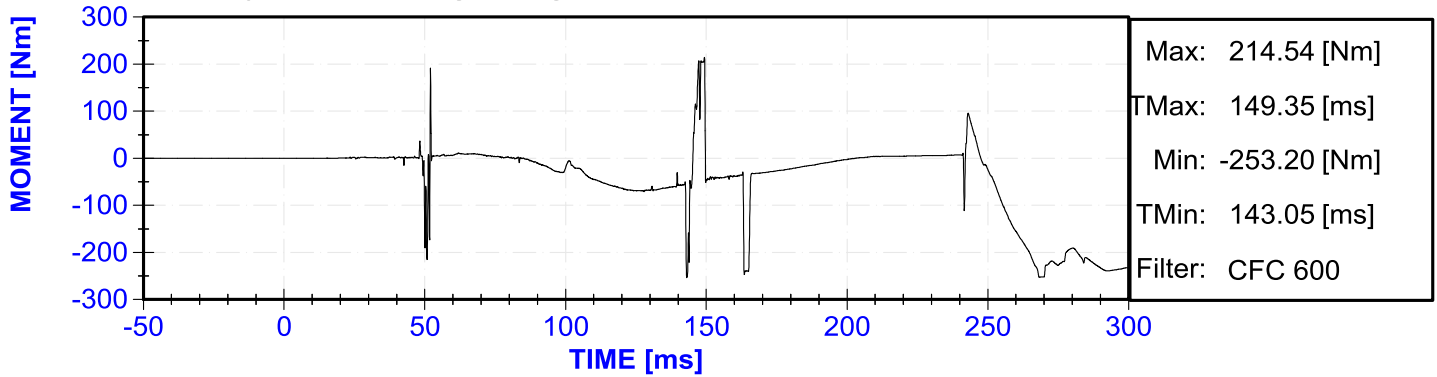




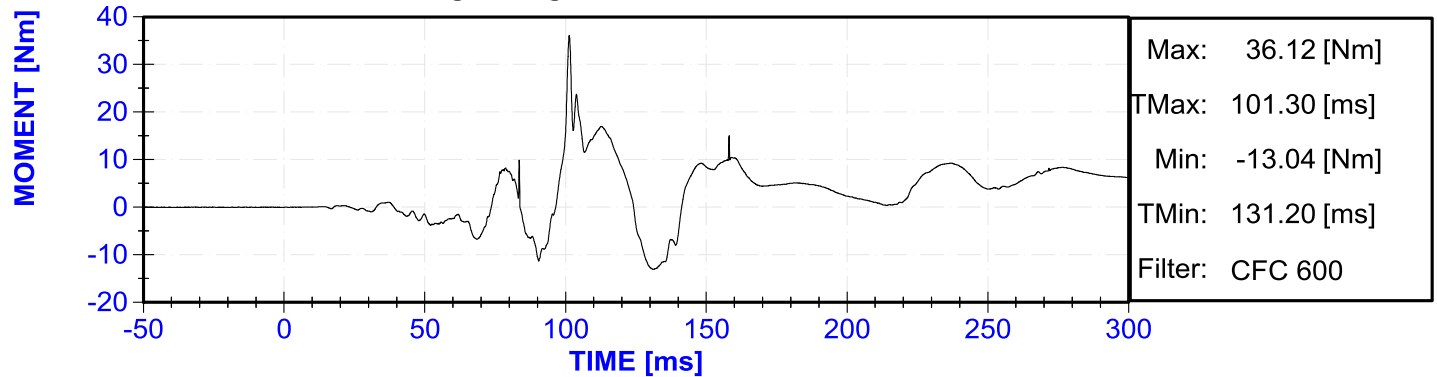
V2P1 Mx on head acting through the total neck section



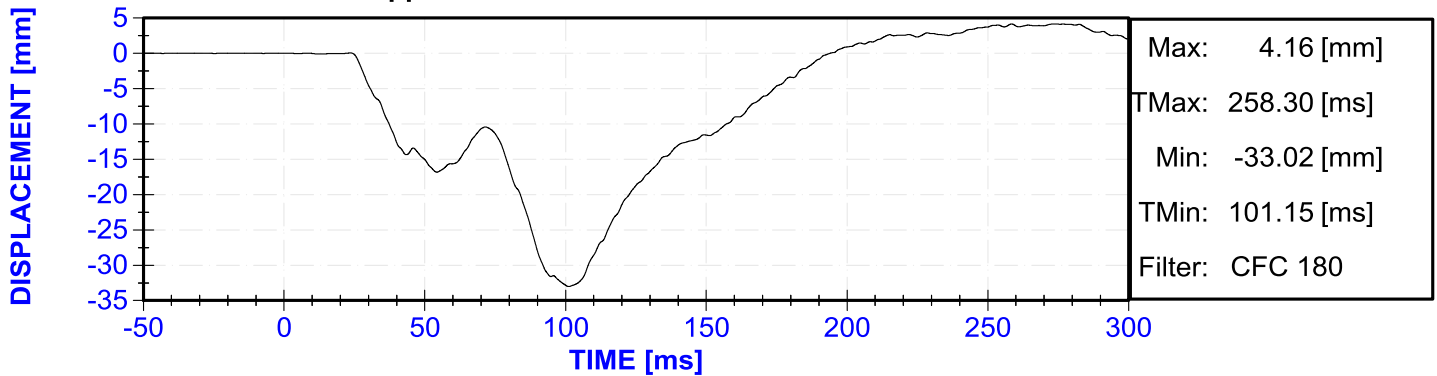
V2P1 My on head acting through the total neck section

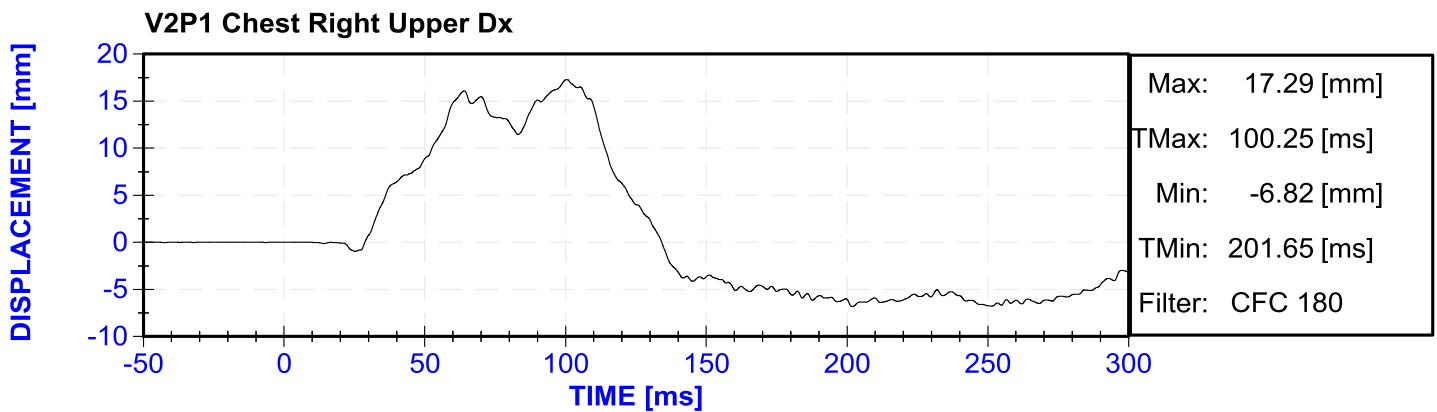
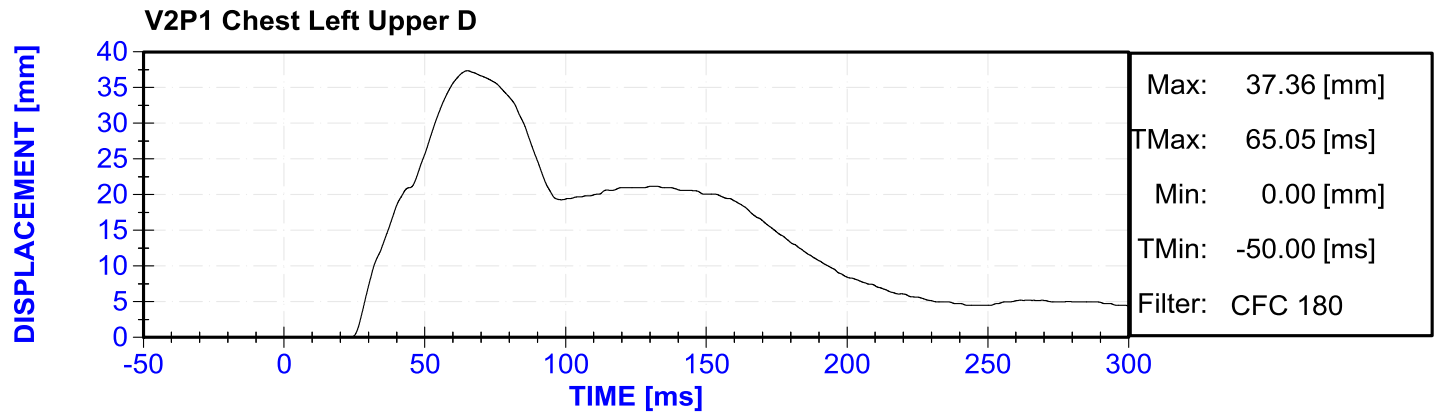
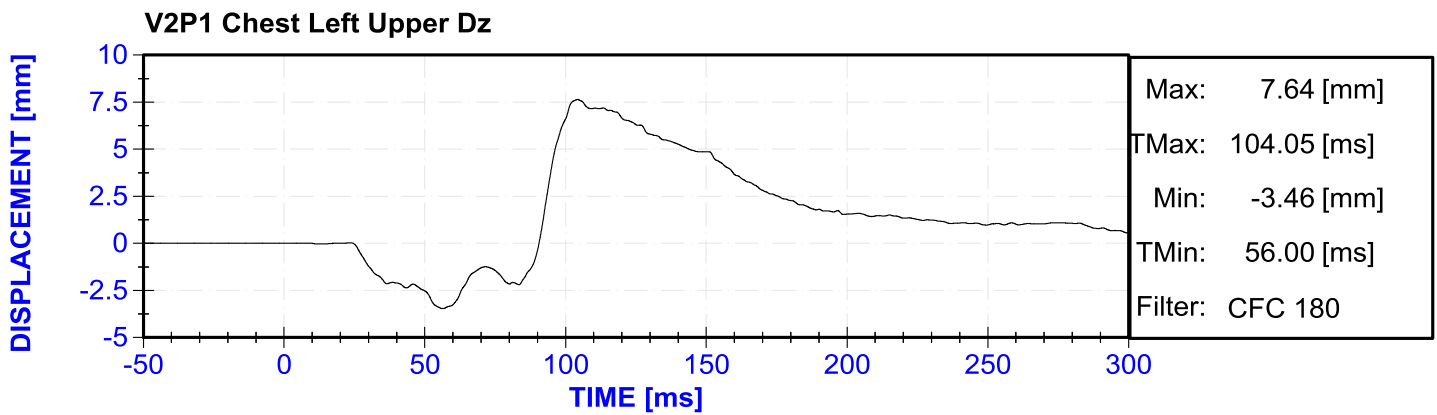
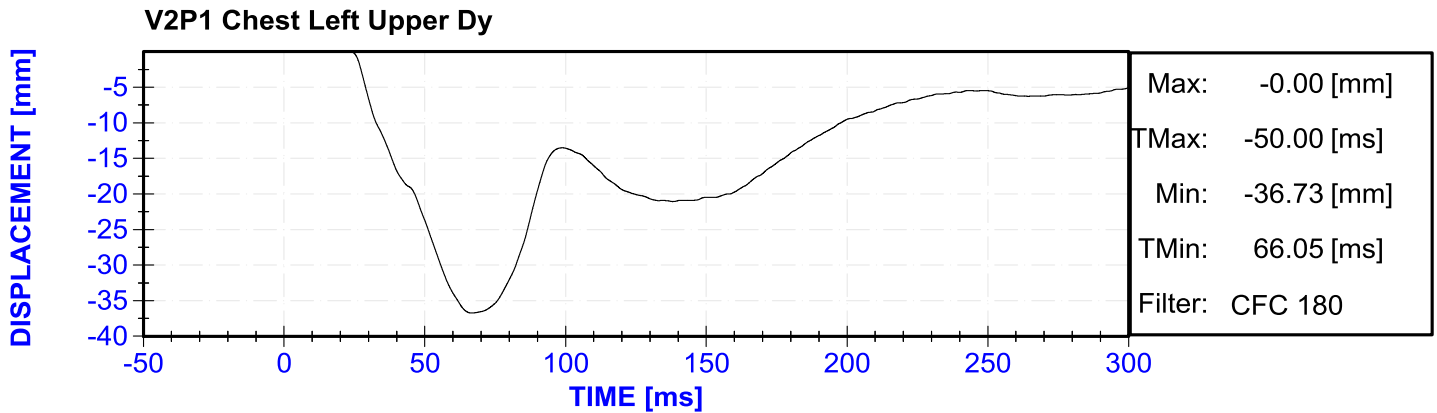


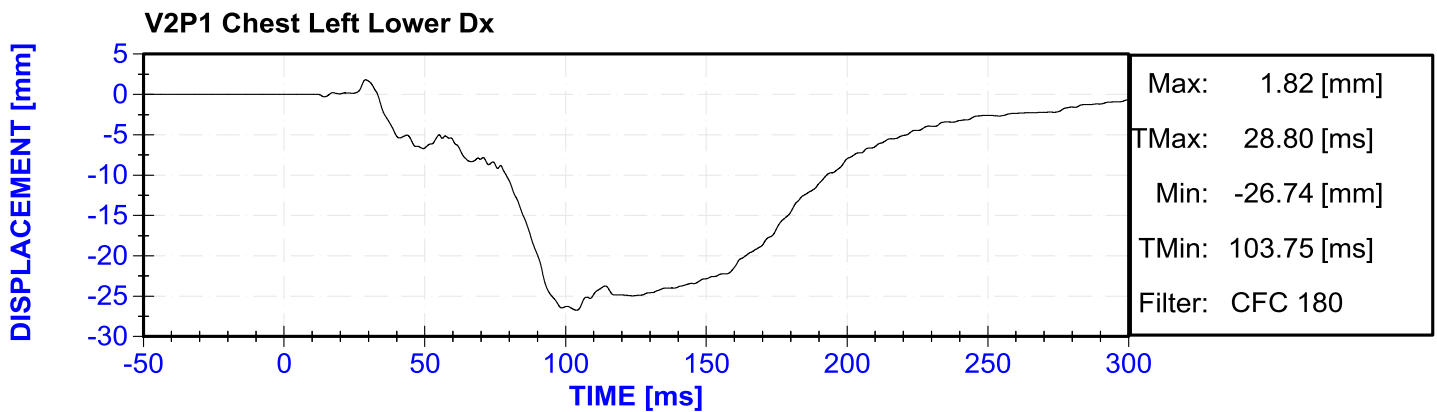
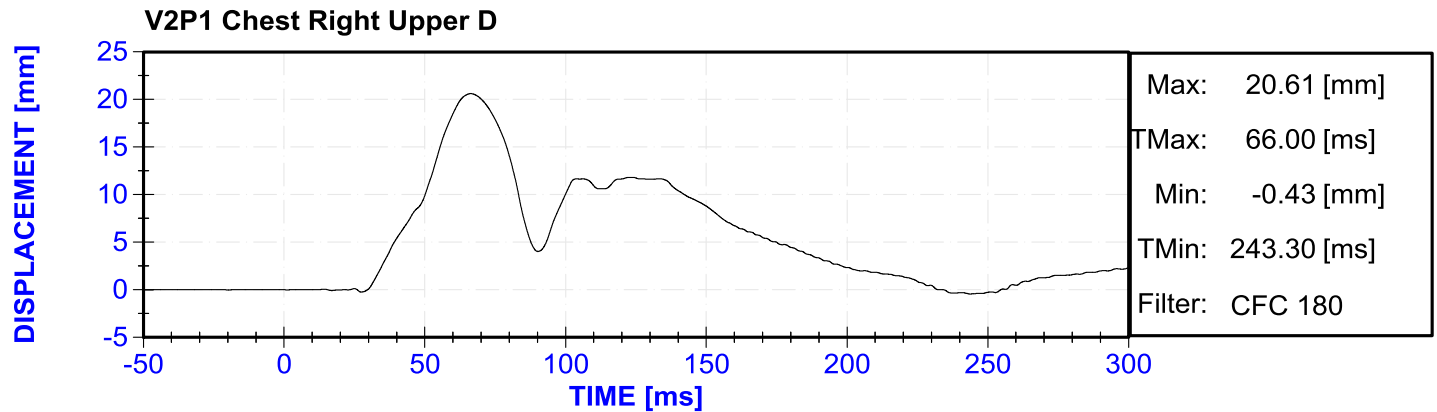
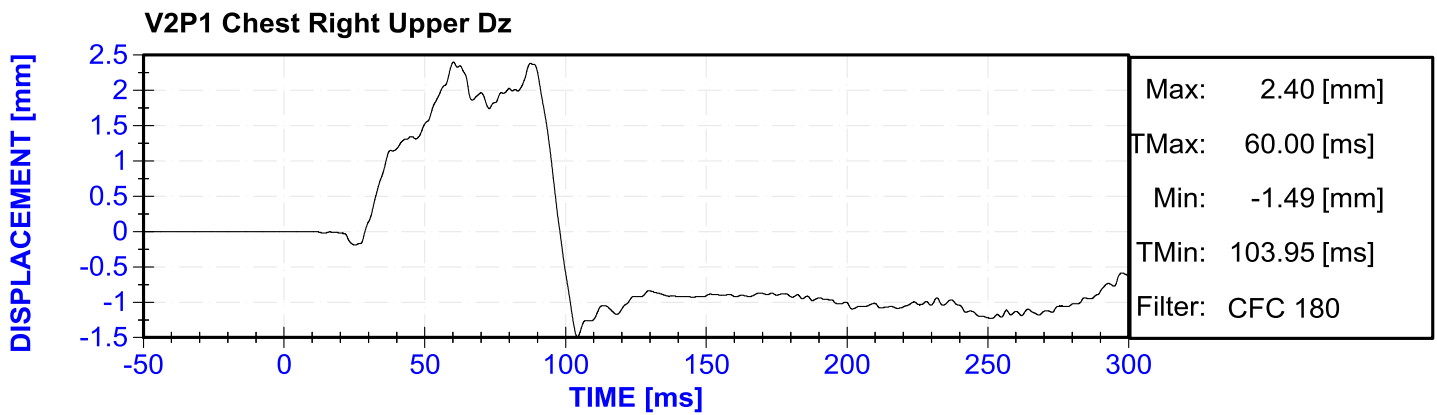
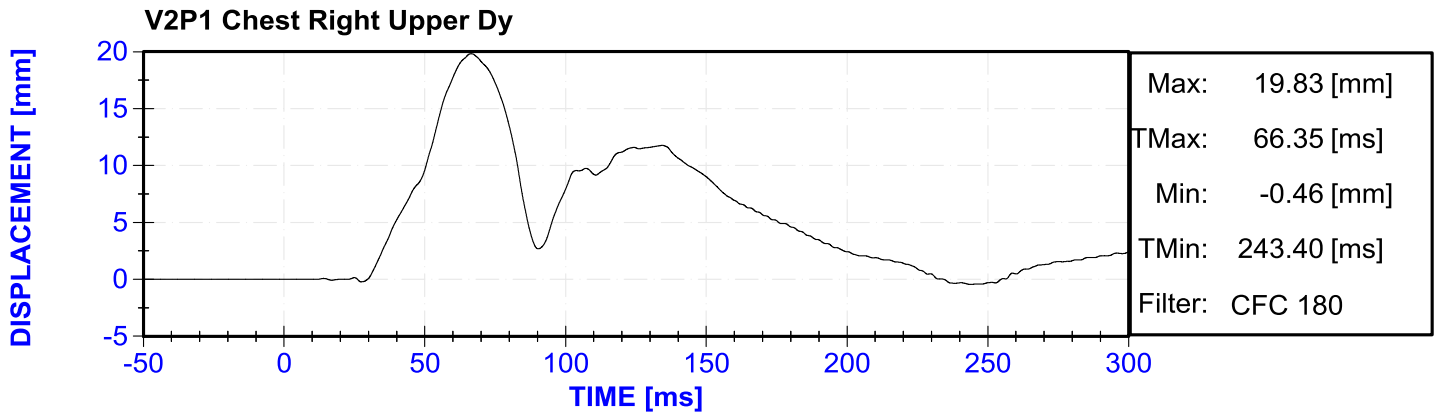
V2P1 Mz on head acting through the total neck section

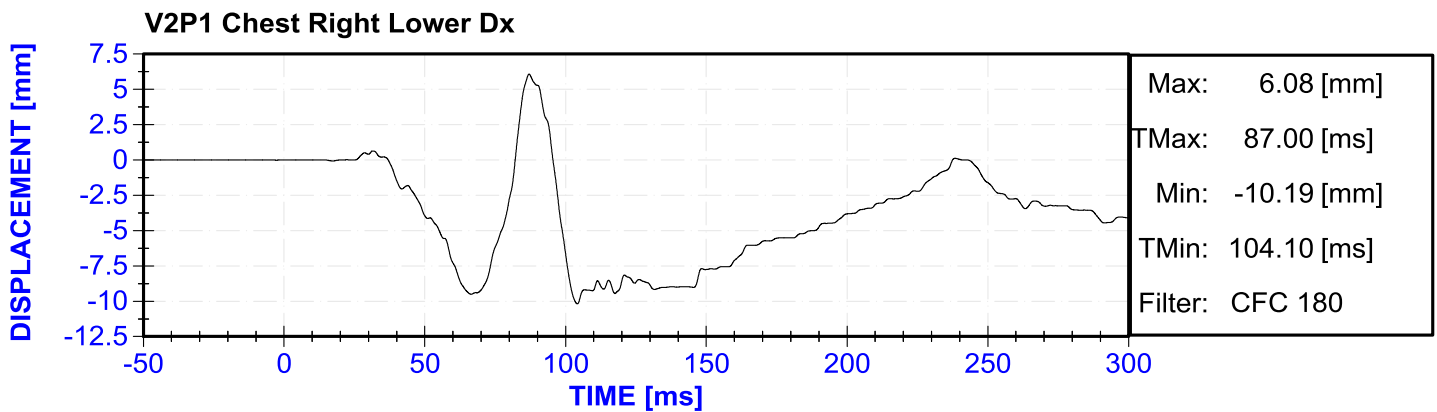
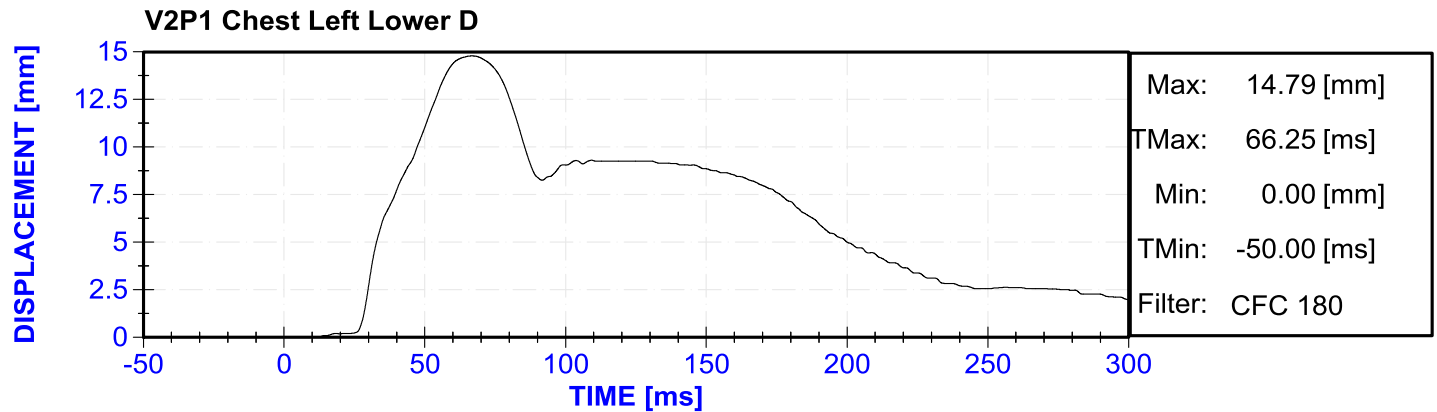
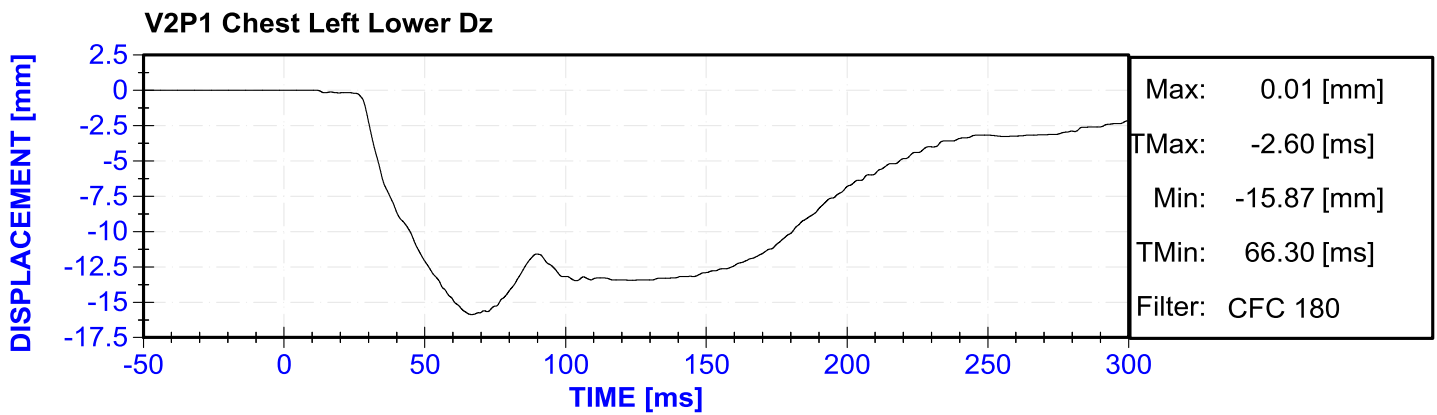
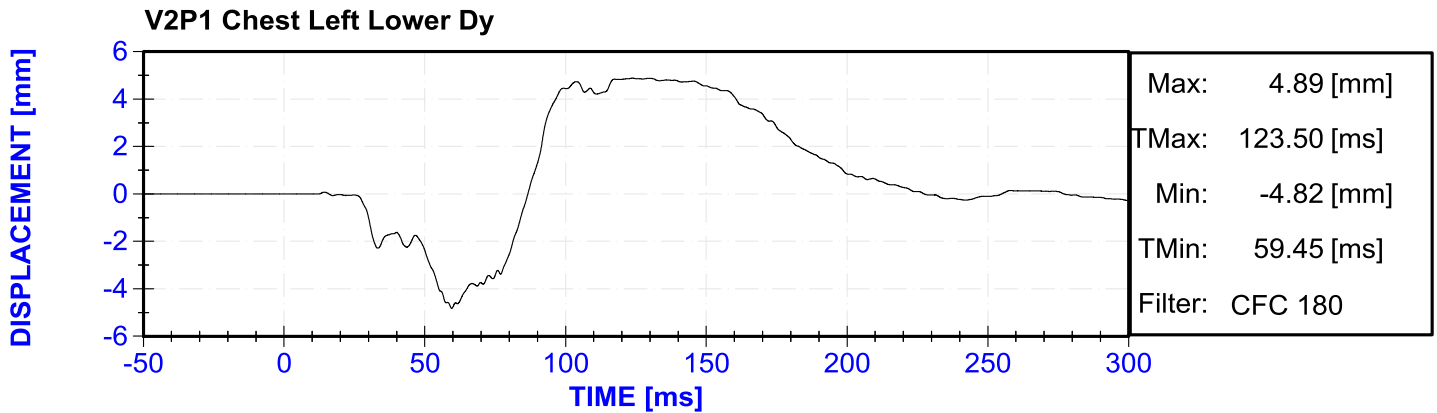


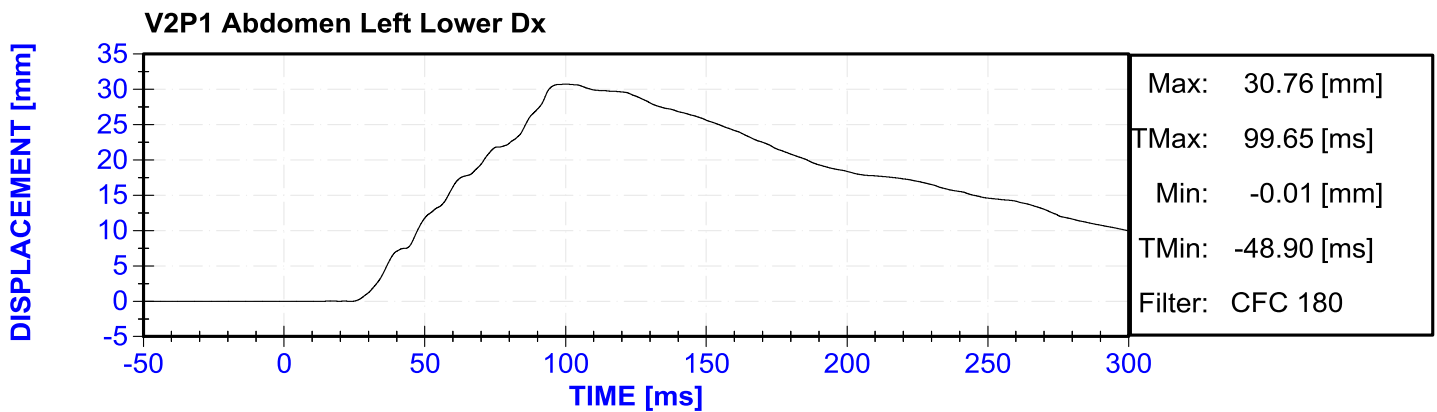
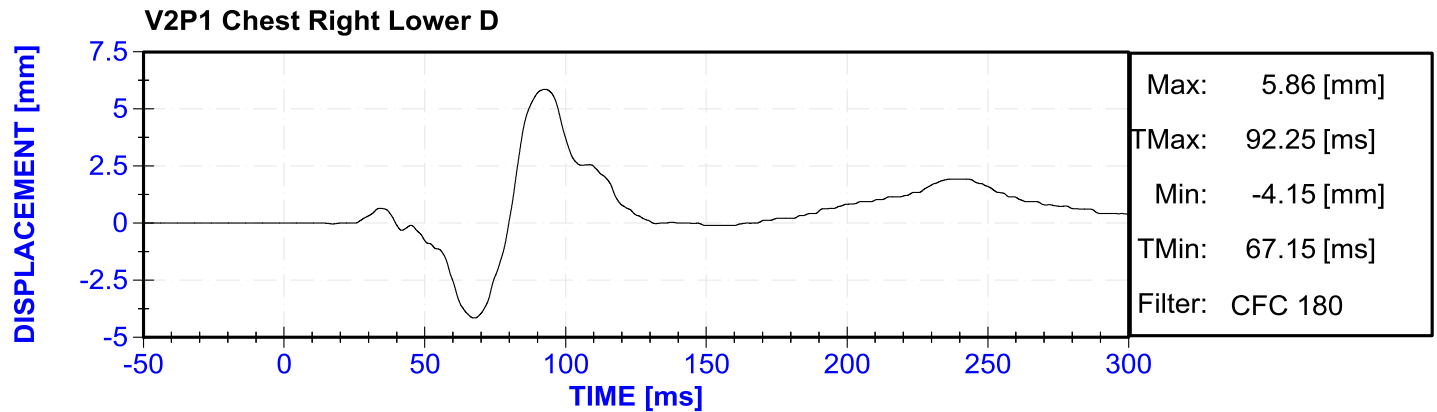
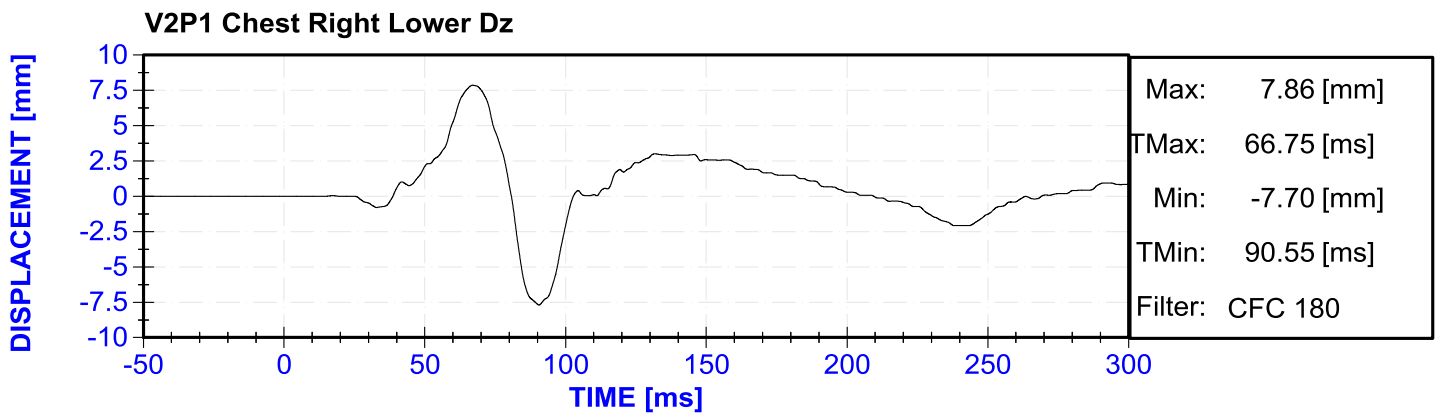
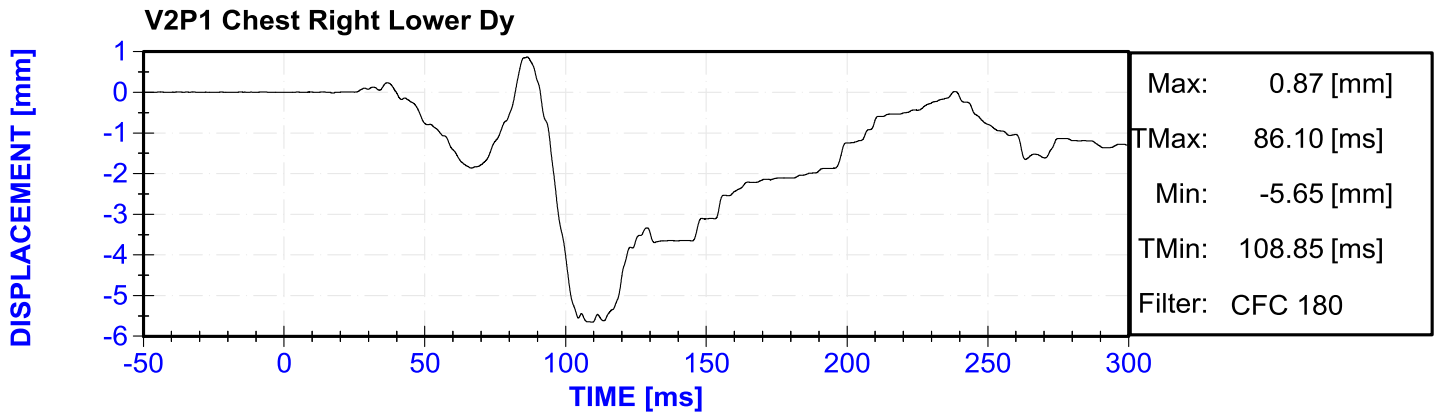
V2P1 Chest Left Upper Dx

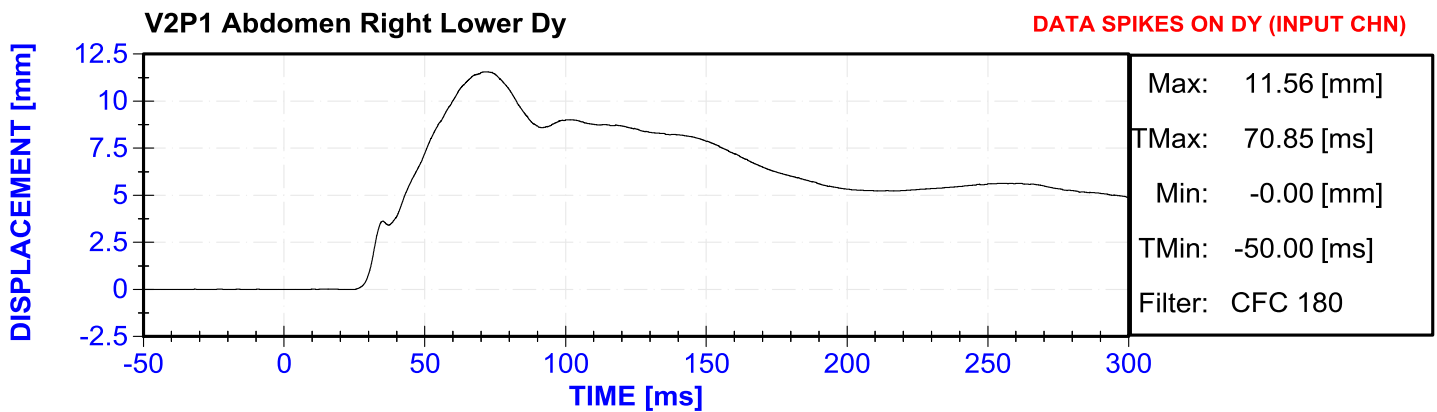
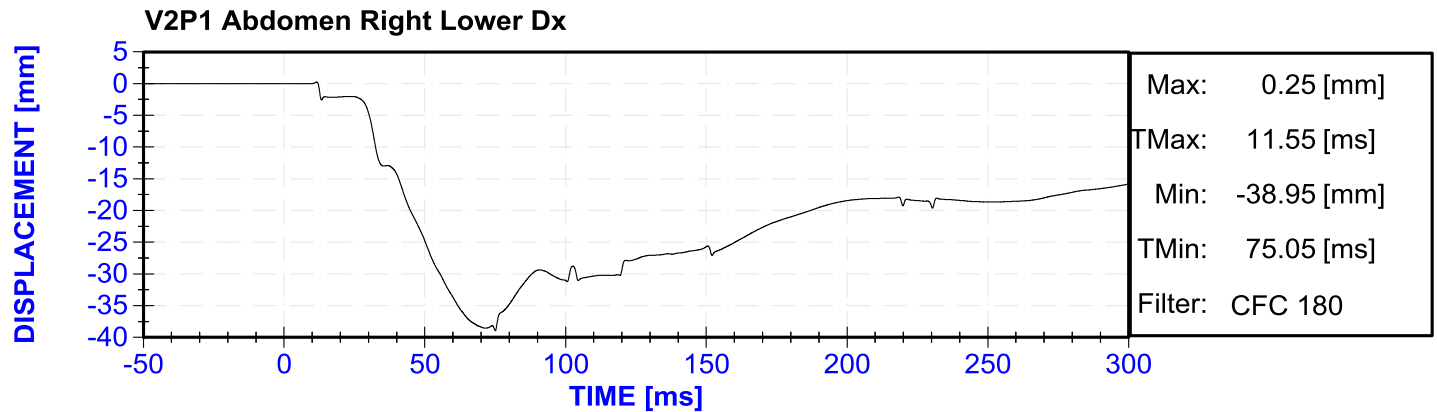
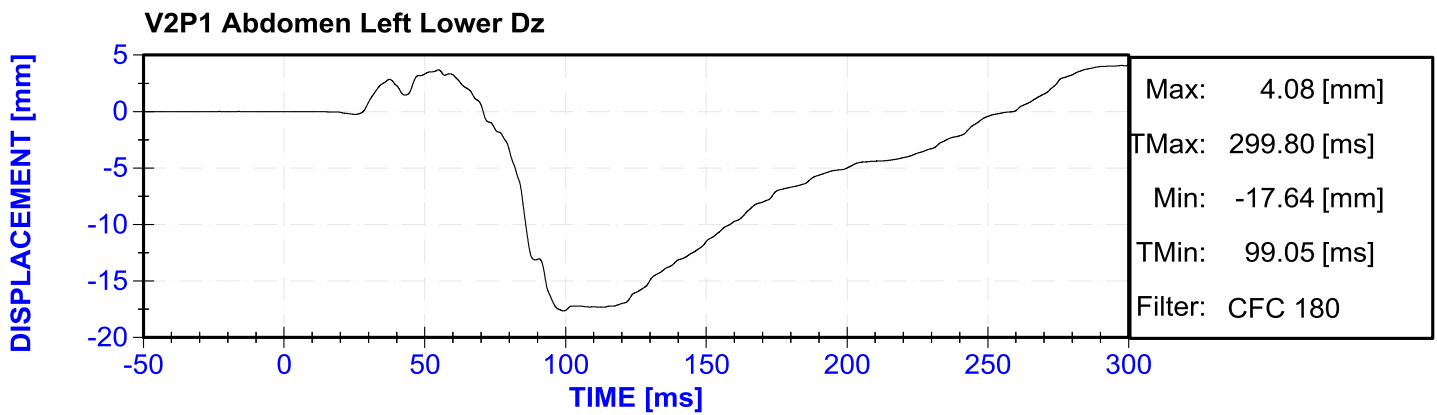
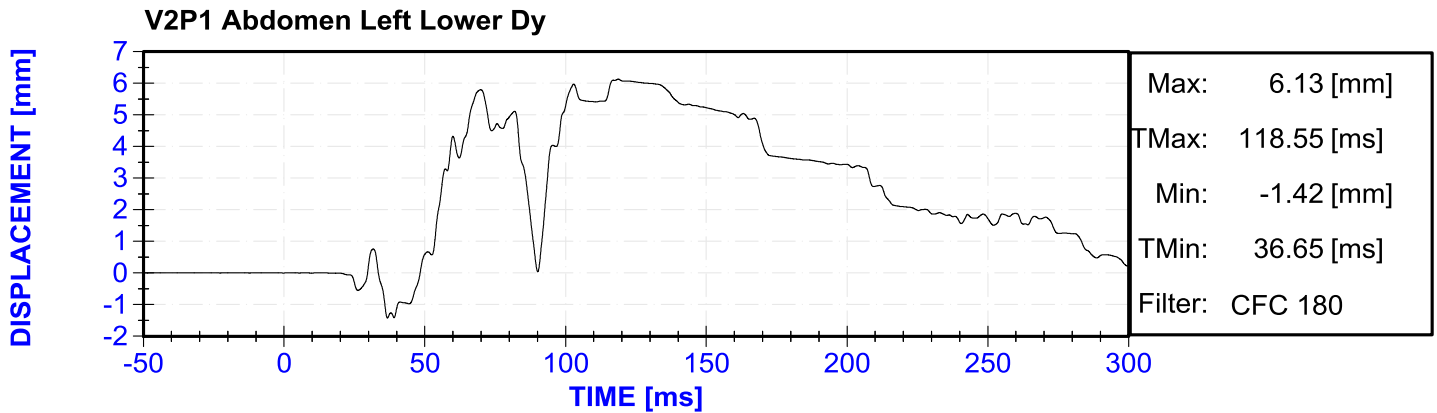


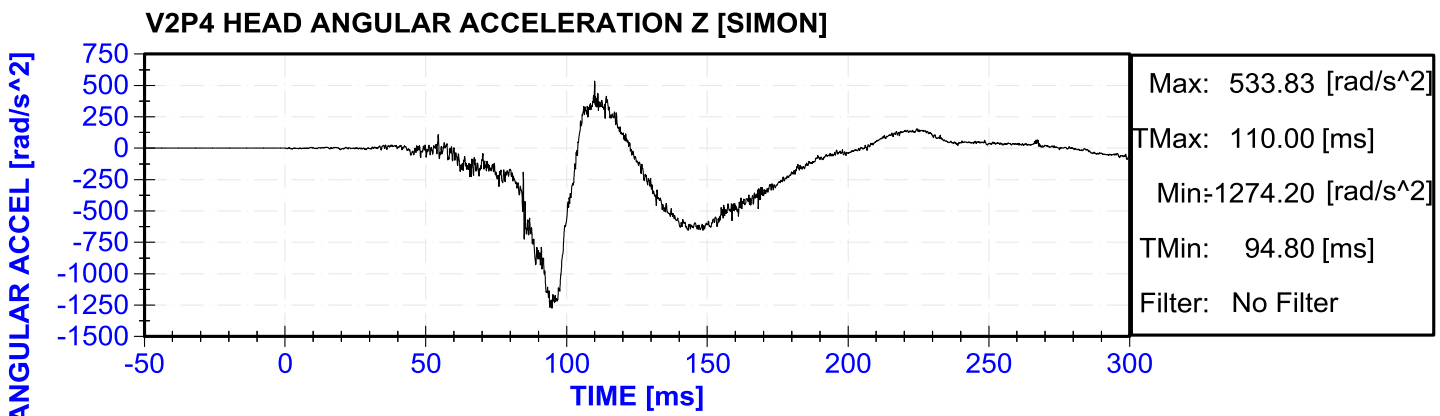
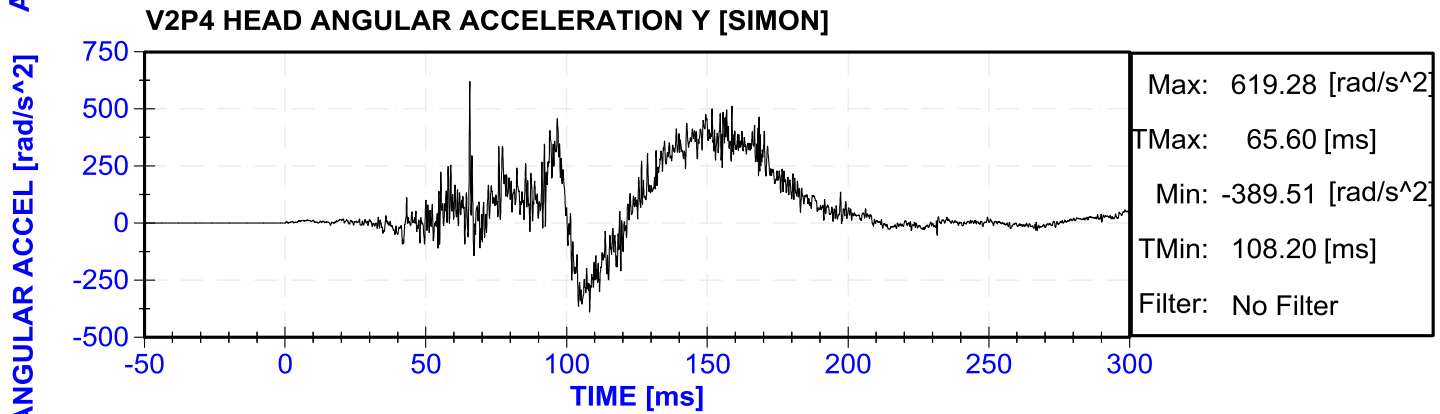
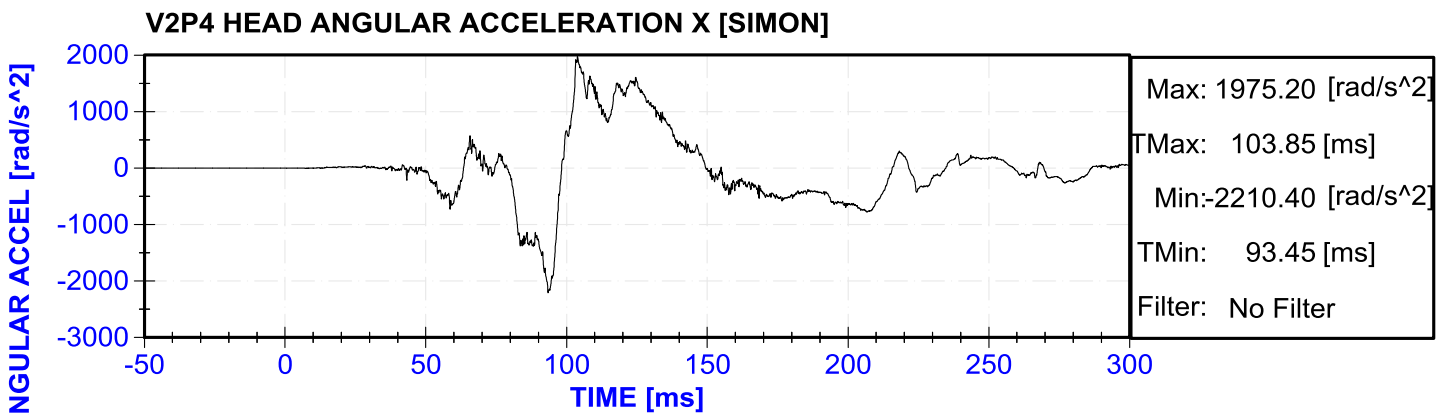
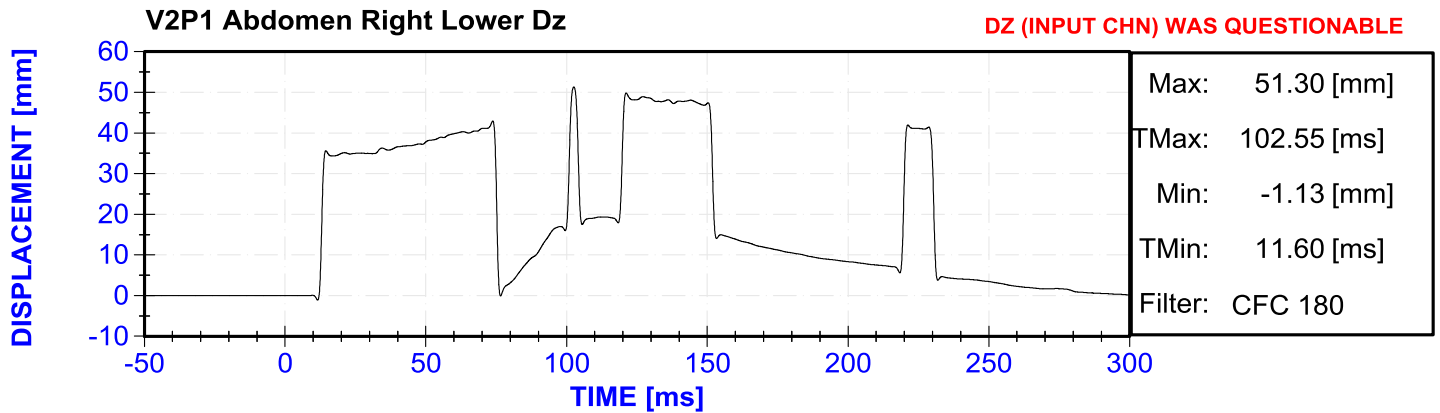


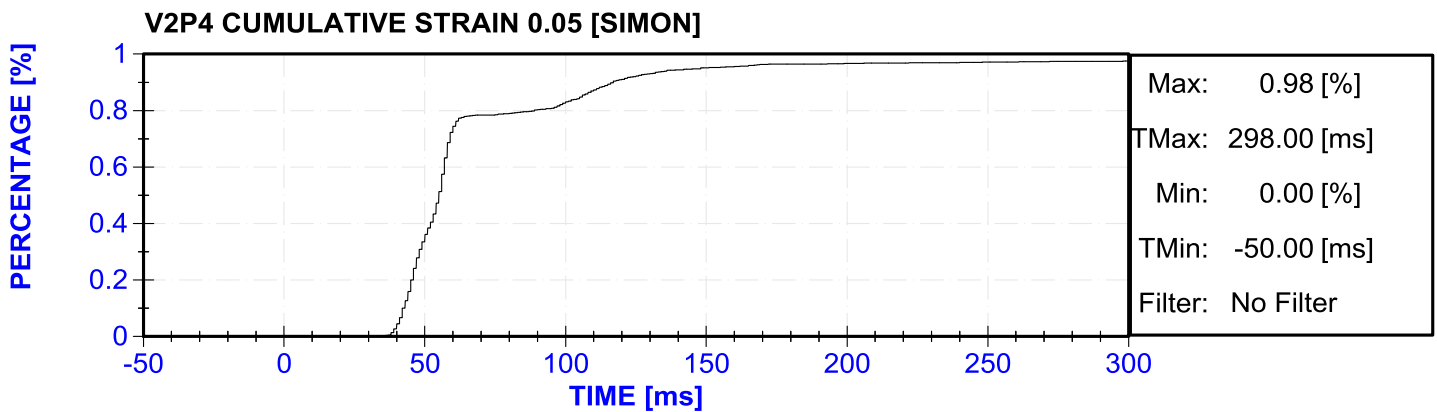
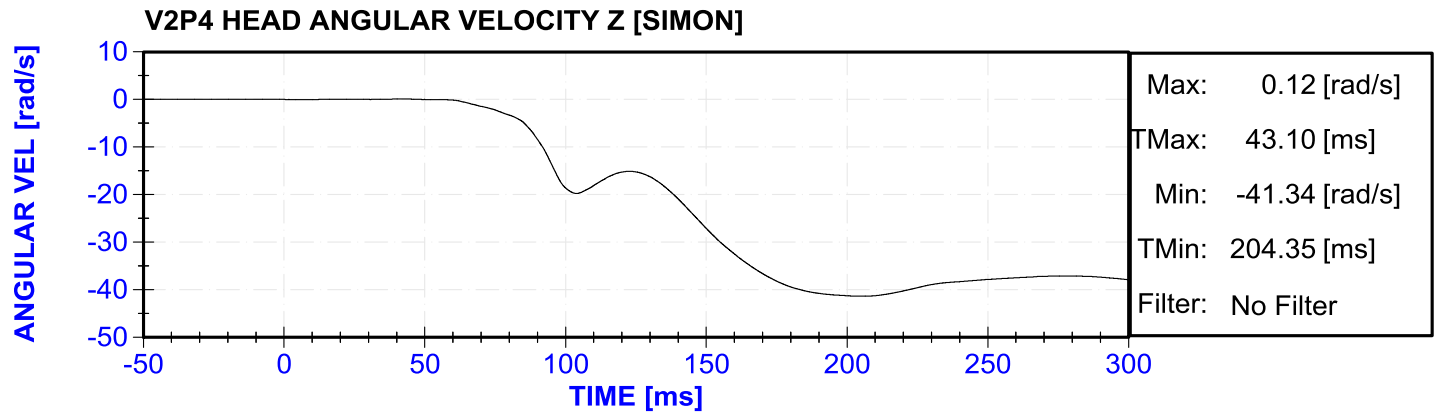
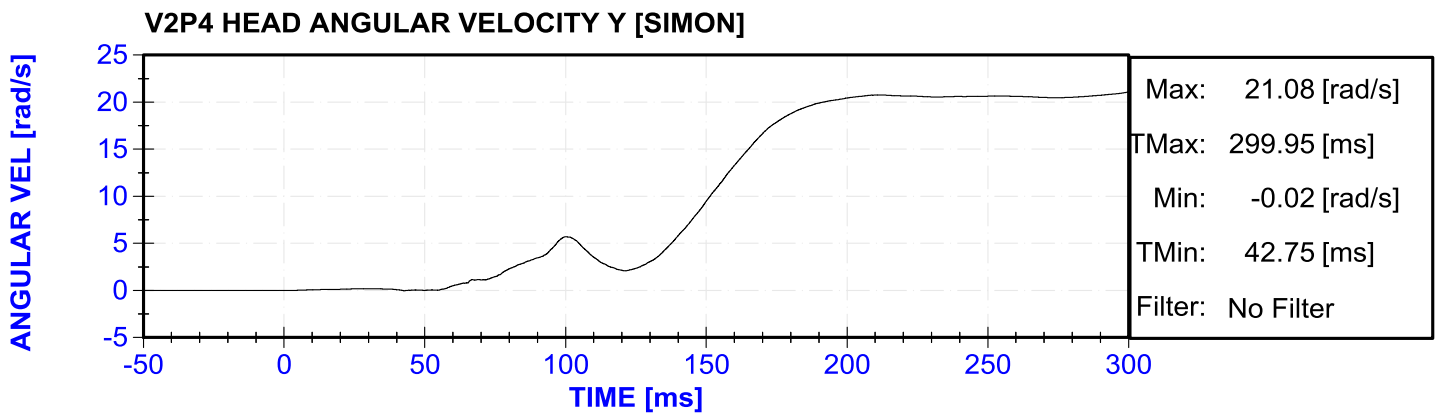
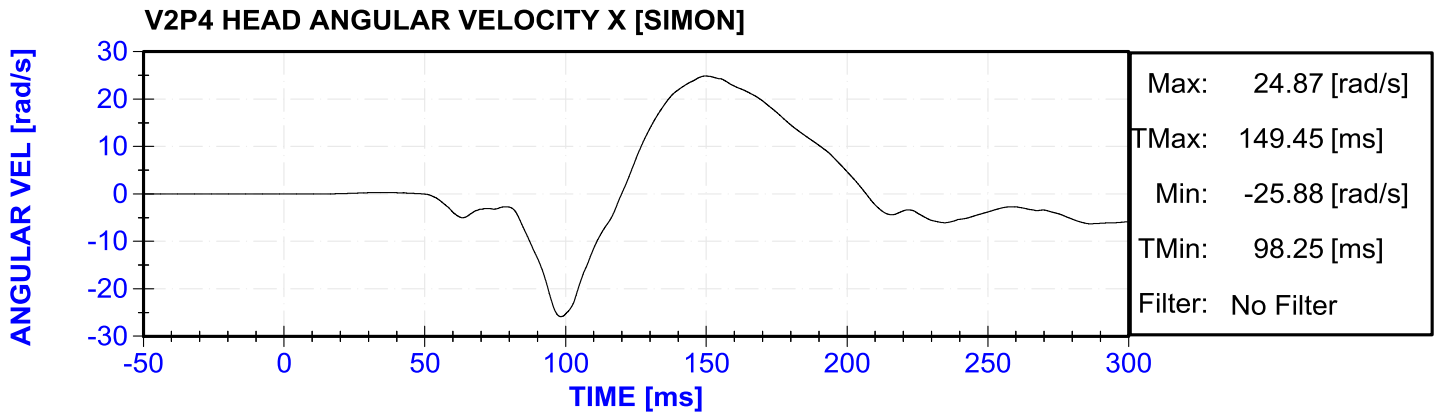


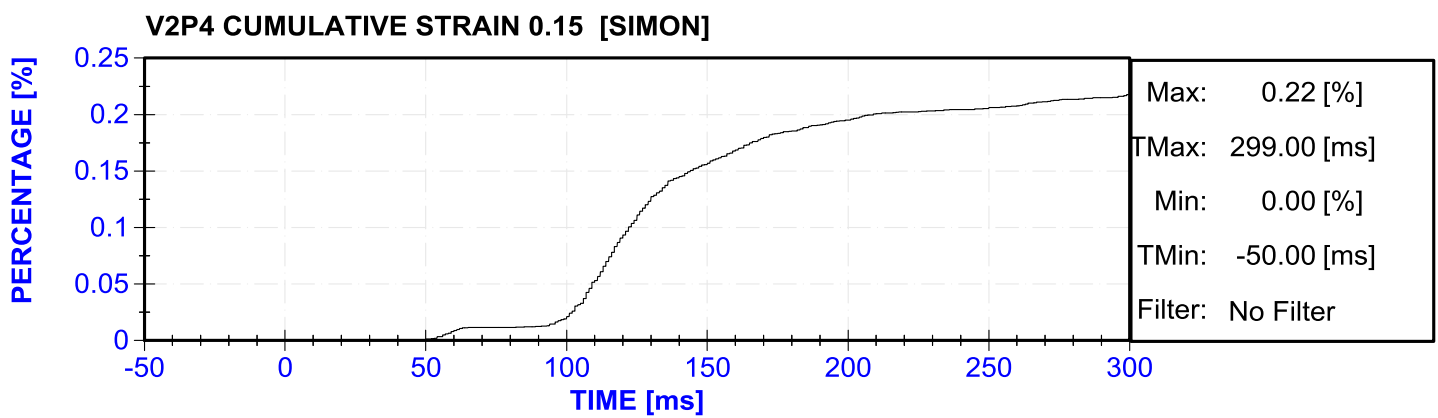
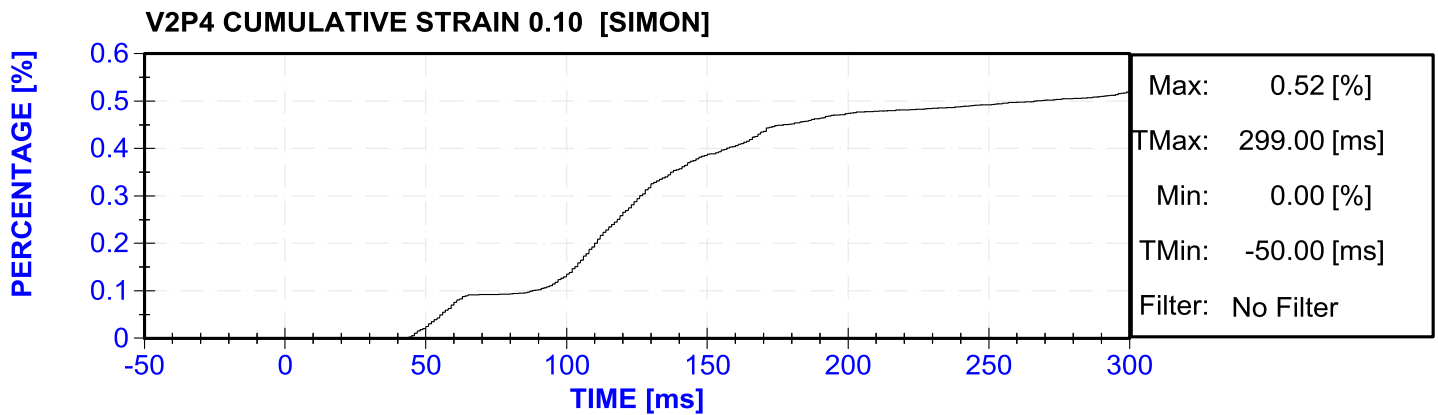












APPENDIX C

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

TABLE OF CONTENT		
No.		Page
Table1	Dummy Information	C-3
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Table 4	THOR Pre-Test Inspection Checklist	C-4
Table 5	THOR Post-Test Inspection Checklist	C-9
	Dummy Calibration Plots	C-14

Table 1 – Dummy Information

TYPE	DESCRIPTION	SERIAL NUMBER
THOR Hybrid III	50 TH Male 5 th Female	006 421

Table 2 – THOR6 Set File

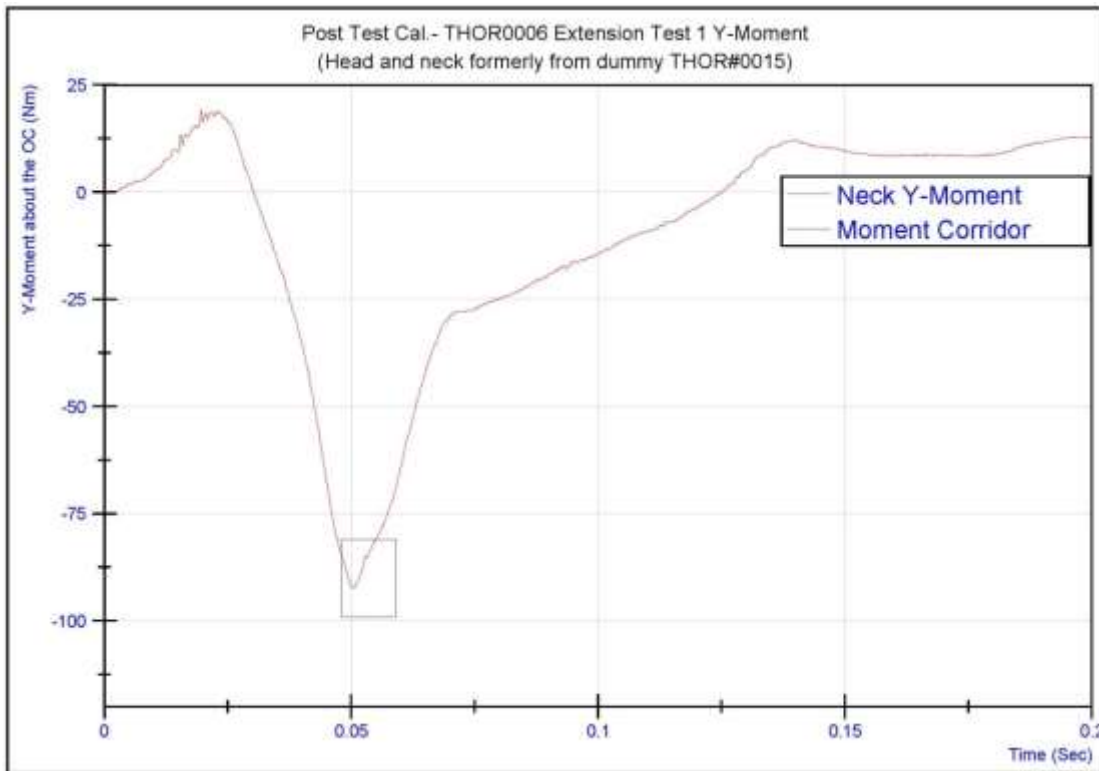
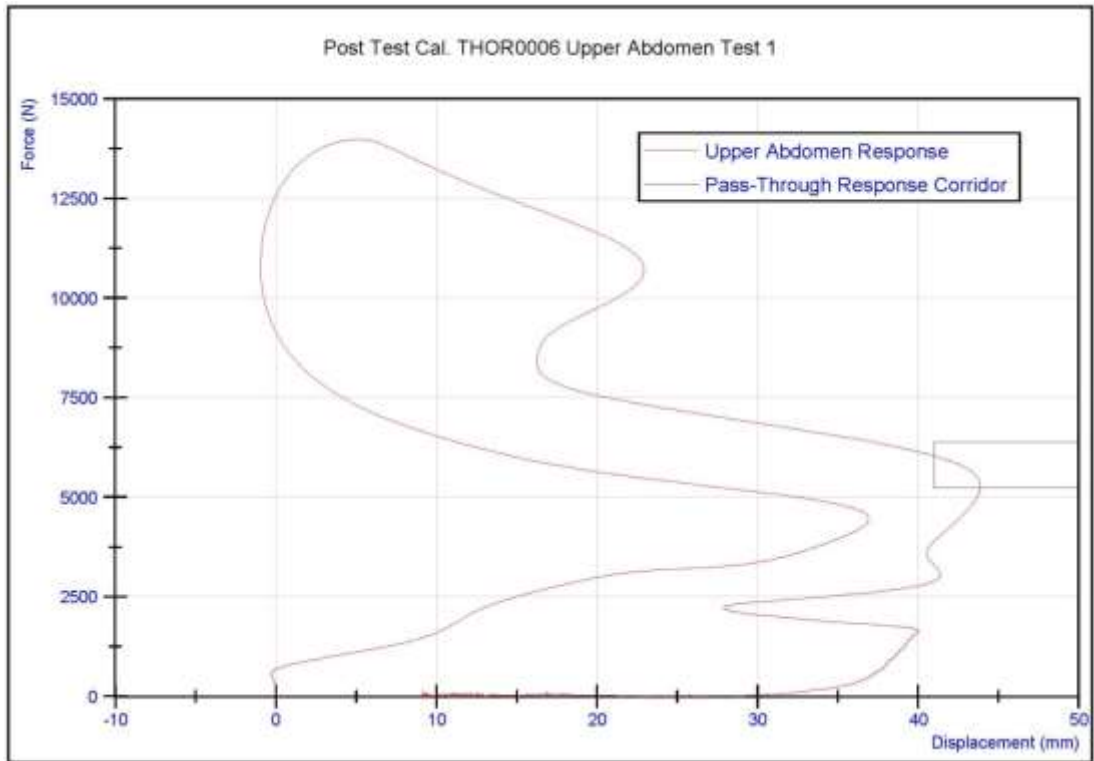
LFTX	LFTY	LFTZ	RFTX	RFTY	RFTZ
Left Ankle X Rotation	Left Ankle Y Rotation	Left Ankle Z Rotation	Right Ankle X Rotation	Right Ankle X Rotation	Right Ankle X Rotation
1.47553	13.11333	2.986433	3.001167	8.345867	36.7335

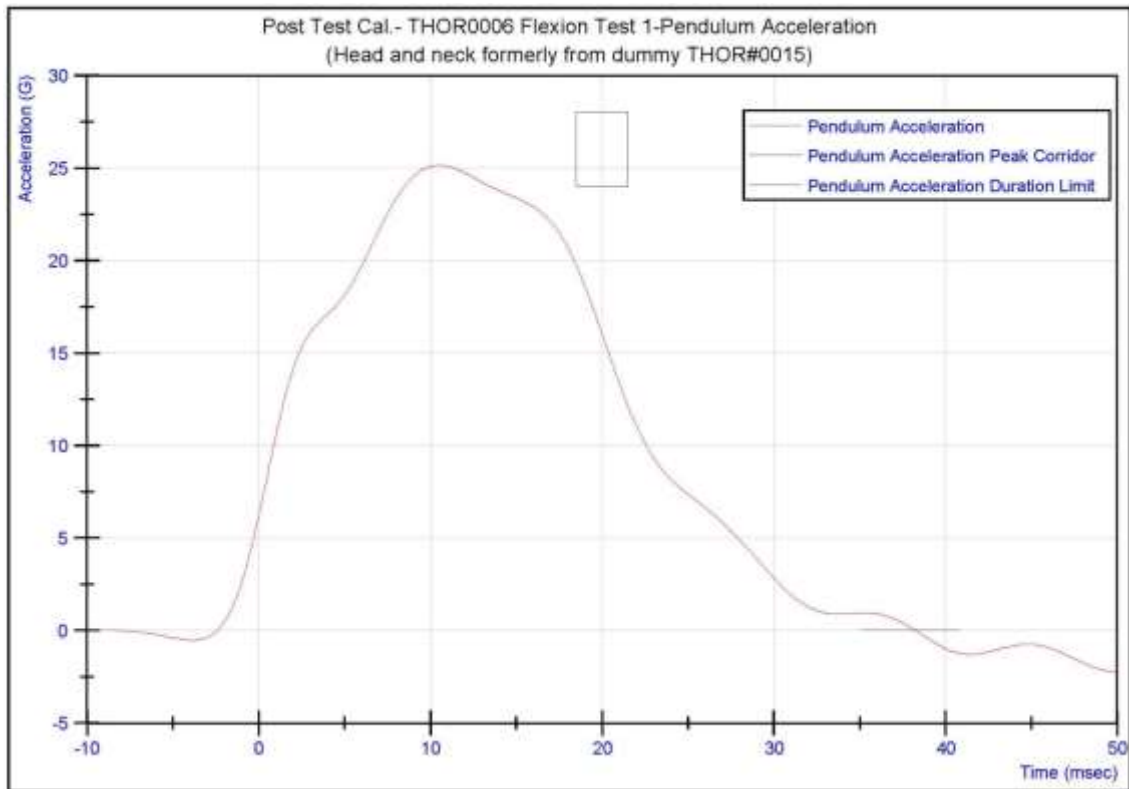
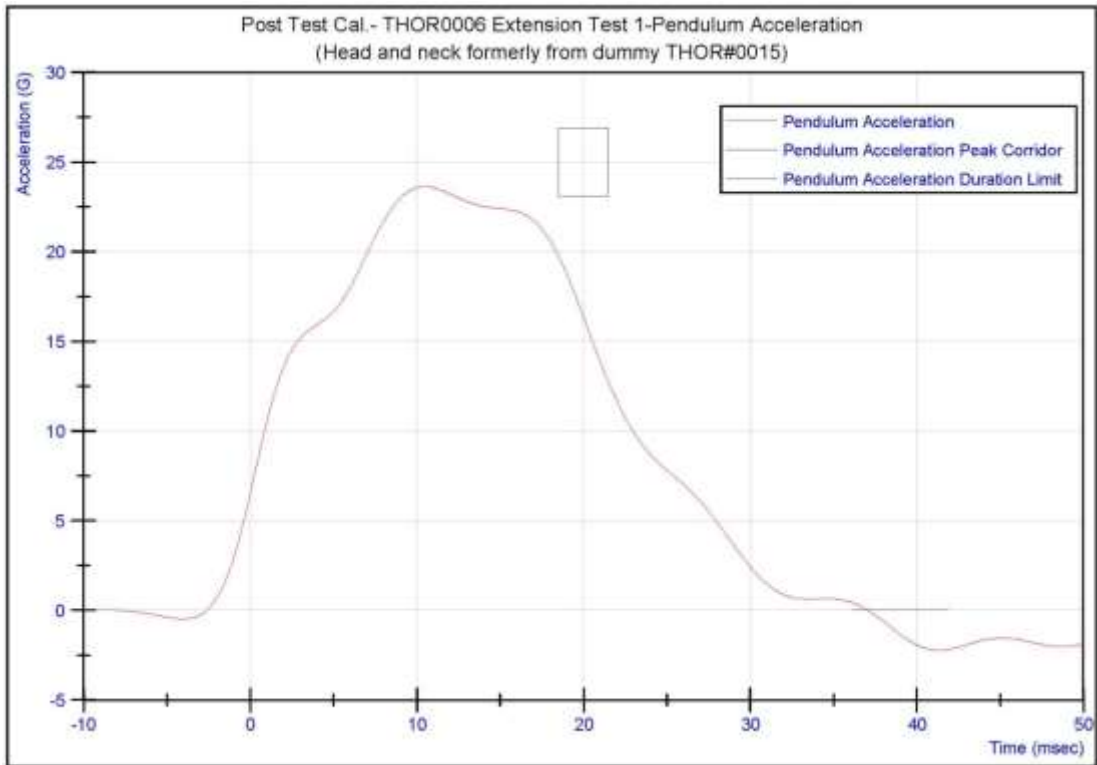
Table 3 - THOR Dummy Initial SetUp Information

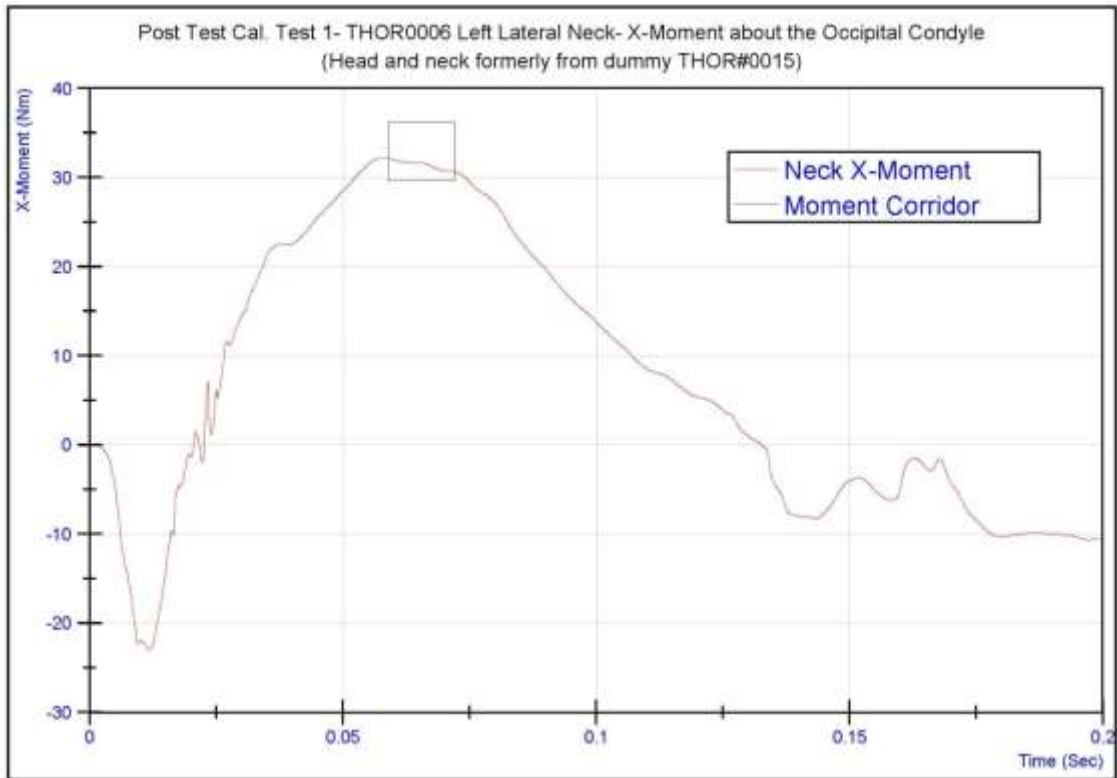
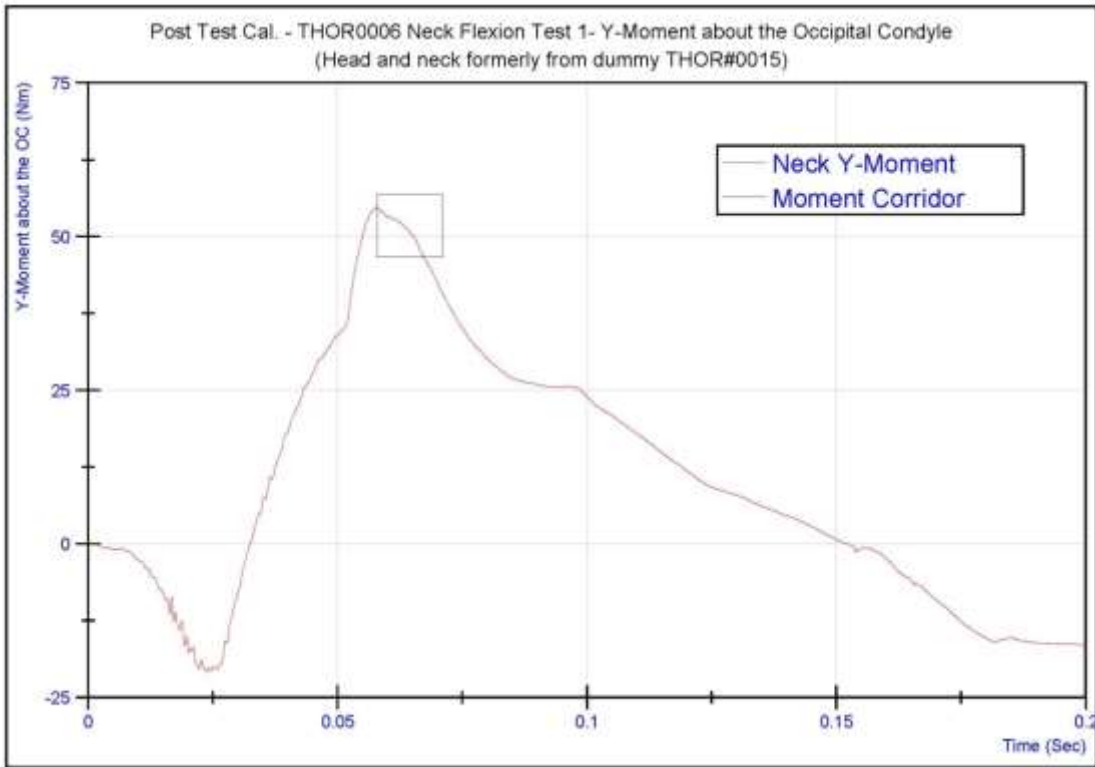
THOR – NT S/N: 0006									Sensitivit y (JAR)	Sensitivit y (GESAC)	Setup Angle (GESAC)
Sensor	Description/ Axis	MFG	Capacit y	Unit 1	Unit 2	Range	Direction	CF C	V/Unit -1	V/Unit-1	Degrees
NKCRP	Upper Right Base	Contelec S/N 001	318	deg	mV	2000	Rear +	180	3.18451	3.18451	-1.462
Thorax CRUX	Upper Right Mid	Contelec S/N 307	318	deg	mV	2000	Rear +	180	3.1923	3.1923	-88.721
Thorax CRUX	Upper Right Elbow	Contelec S/N 003	318	deg	mV	2000	Rear +	180	3.15174	3.15174	85.449
Thorax CRUX	Upper Left Base	Contelec S/N 040	318	deg	mV	2000	Rear +	180	3.14021	3.14021	-4.697
Thorax CRUX	Upper Left Mid	Contelec S/N 041	318	deg	mV	2000	Rear +	180	3.13326	3.13326	99.189
Thorax CRUX	Upper Left Elbow	Contelec S/N 529	318	deg	mV	2000	Rear +	180	3.14537	3.14537	-91.362
Thorax CRUX	Lower Right Base	Contelec S/N 043	318	deg	mV	2000	Rear +	180	3.1615	3.1615	2.0640
Thorax CRUX	Lower Right Mid	Contelec S/N 706	318	deg	mV	2000	Rear +	180	3.04839	3.04839	70.639
Thorax CRUX	Lower Right Elbow	Contelec S/N 559	318	deg	mV	2000	Rear +	180	3.19115	3.19115	15.895
Thorax CRUX	Lower Left Base	Contelec S/N 023	318	deg	mV	2000	Rear +	180	3.12781	3.12781	6.628
Thorax CRUX	Lower Left Mid	Contelec S/N 357	318	deg	mV	2000	Rear +	180	3.12211	3.12211	-87.755
Thorax CRUX	Lower left Elbow	Contelec S/N 317	318	deg	mV	2000	Rear +	180	3.15098	3.15098	46.700
Thorax CRUX	Right Abdomen X	Space-Age S/N 14486	101.6	mm	mV		Rear +	180	9.4366	9.4366	132.99
DGSP	Right Abdomen Y	Contelec S/N 104	318	deg	mV	1000	Rear +	180	2.915	2.915	2.70
DGSP	Right Abdomen Z	Contelec S/N 361	318	deg	mV	1000	Rear +	180	3.12438	3.12438	-20.03
DGSP	Left Abdomen X	Space-Age S/N 256	101.6	mm	mV	10000	Rear +	180	9.37504	9.37504	135.16
DGSP	Left Abdomen Y	Contelec S/N 107	318	deg	mV	1000	Rear +	180	2.922	2.922	-3.48
DGSP	Left Abdomen Z	Contelec S/N 410	318	deg	mV	1000	Rear +	180	3.19551	3.19551	-3.27
DGSP	Upper Right Base	Contelec S/N 001	318	deg	mV	2000	Rear +	180	3.18451	3.18451	-1.462

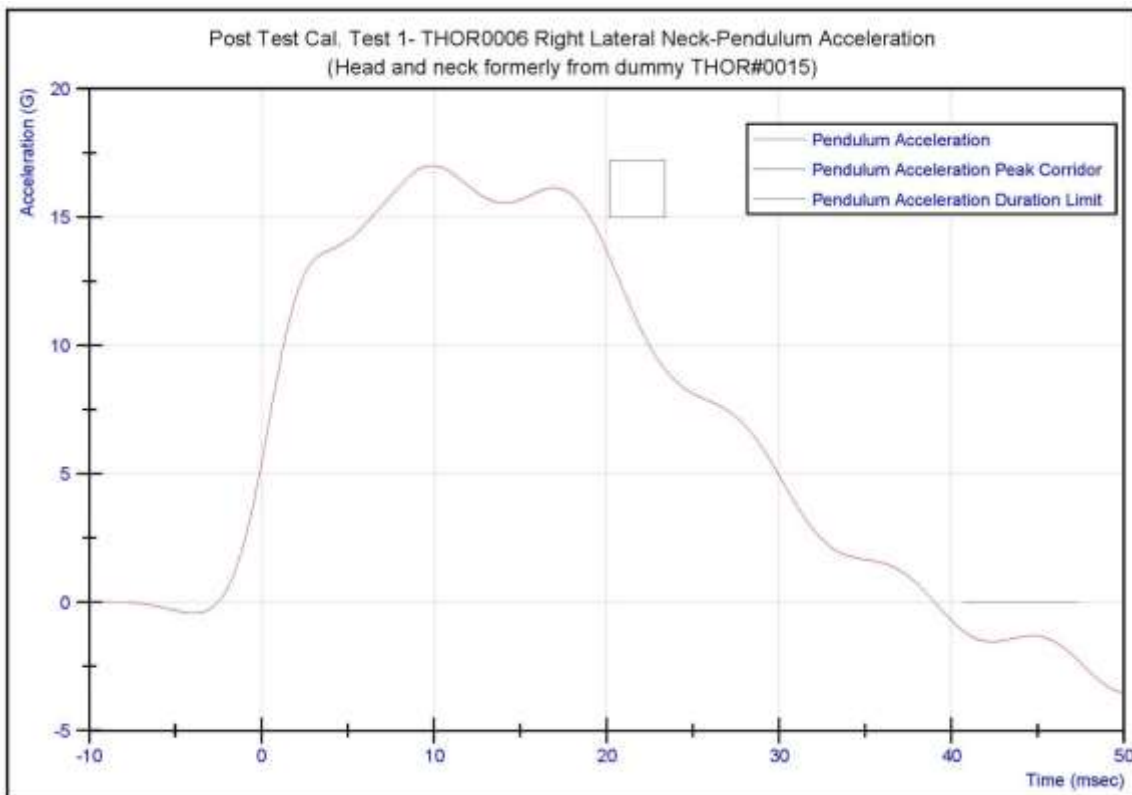
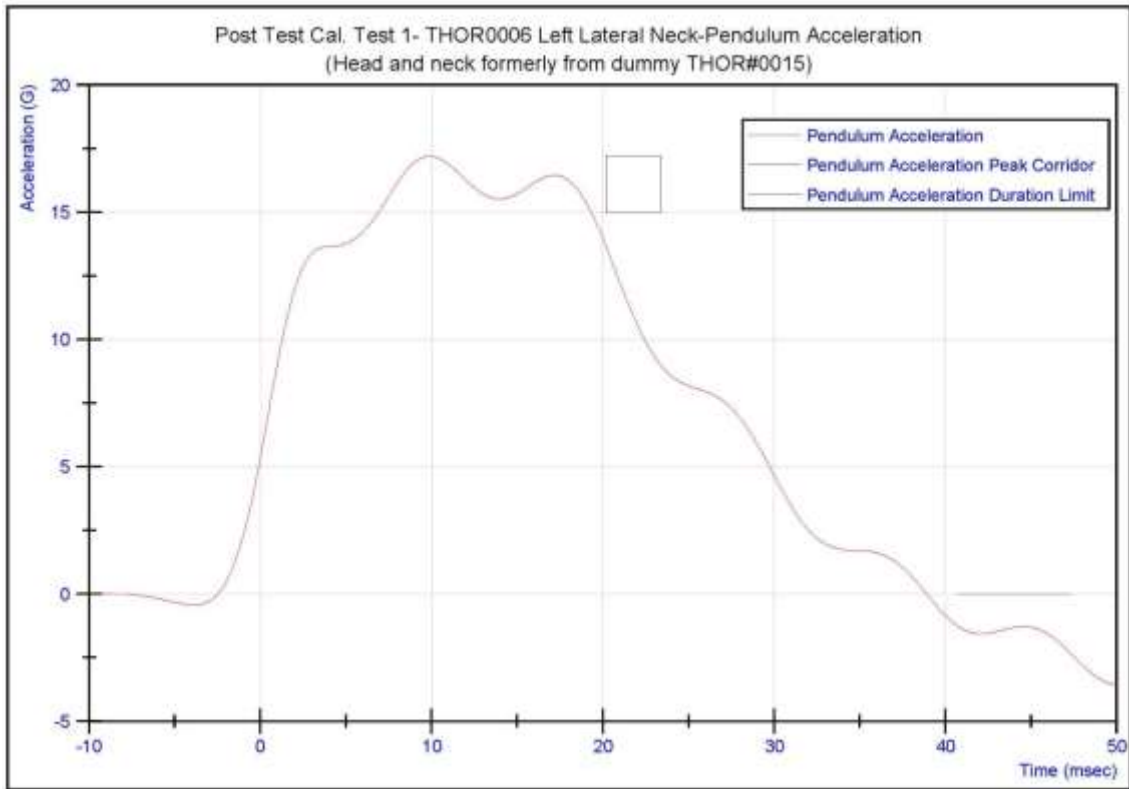
Table 4&5 – Pre and Post Test Thor Inspection was not required for this test as per SOW

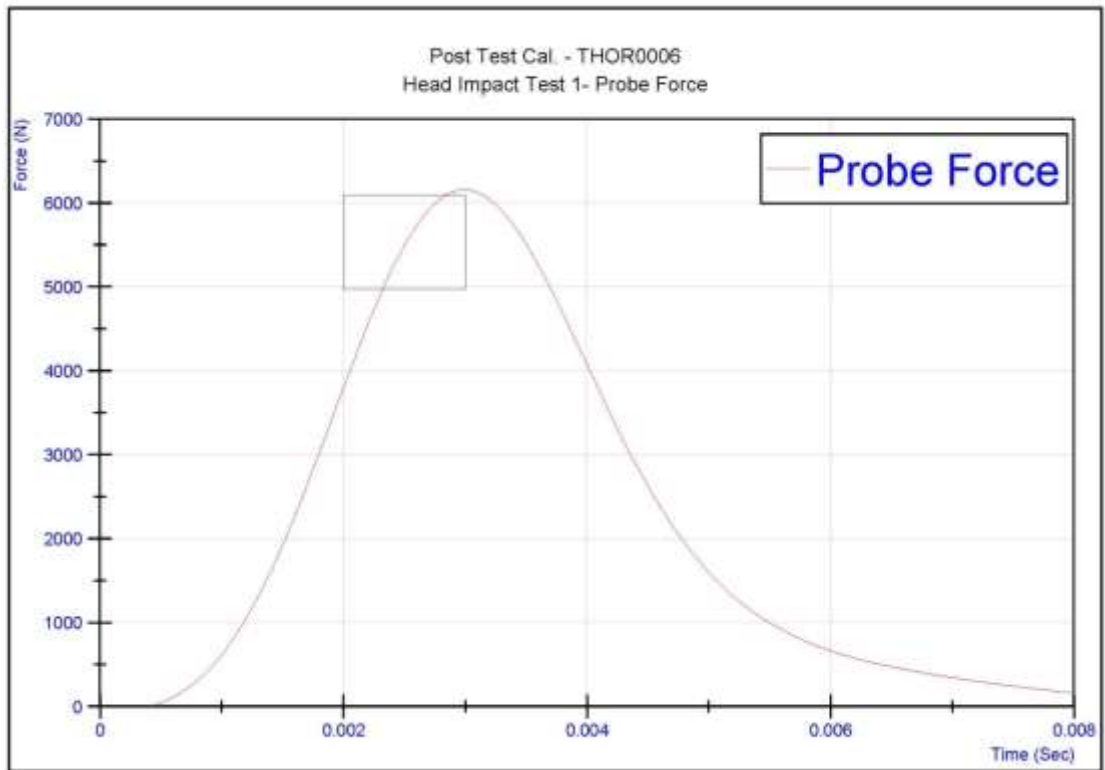
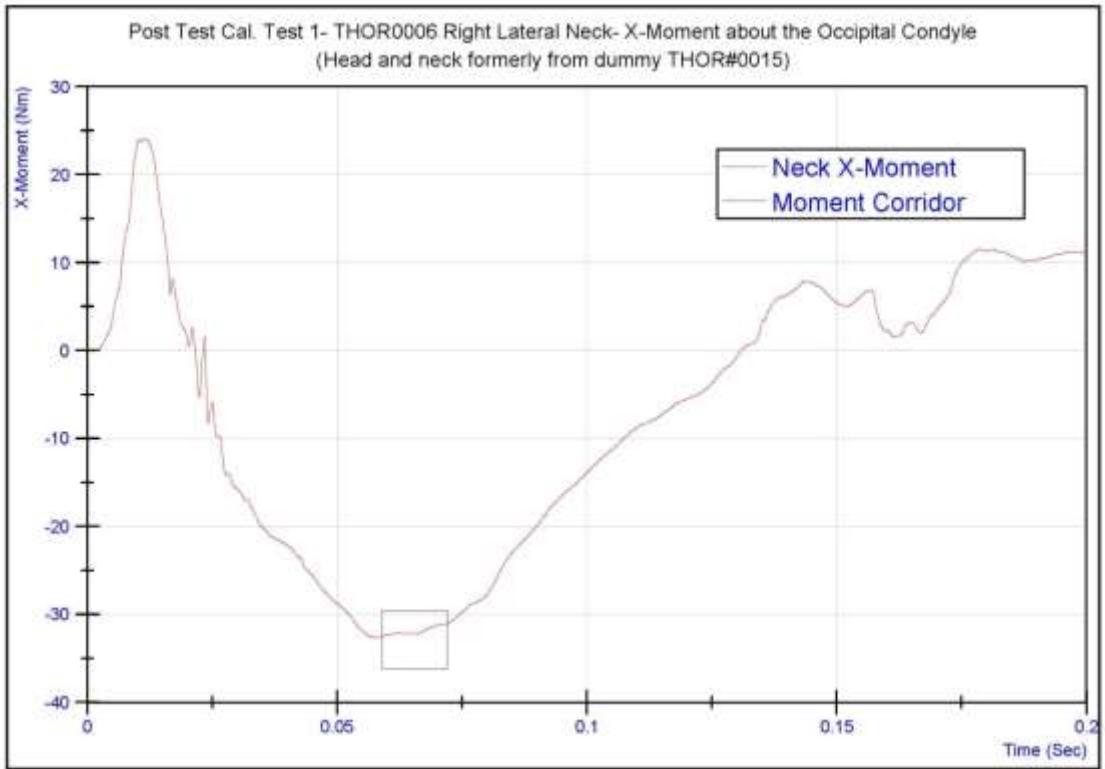
Dummy Calibration Plots



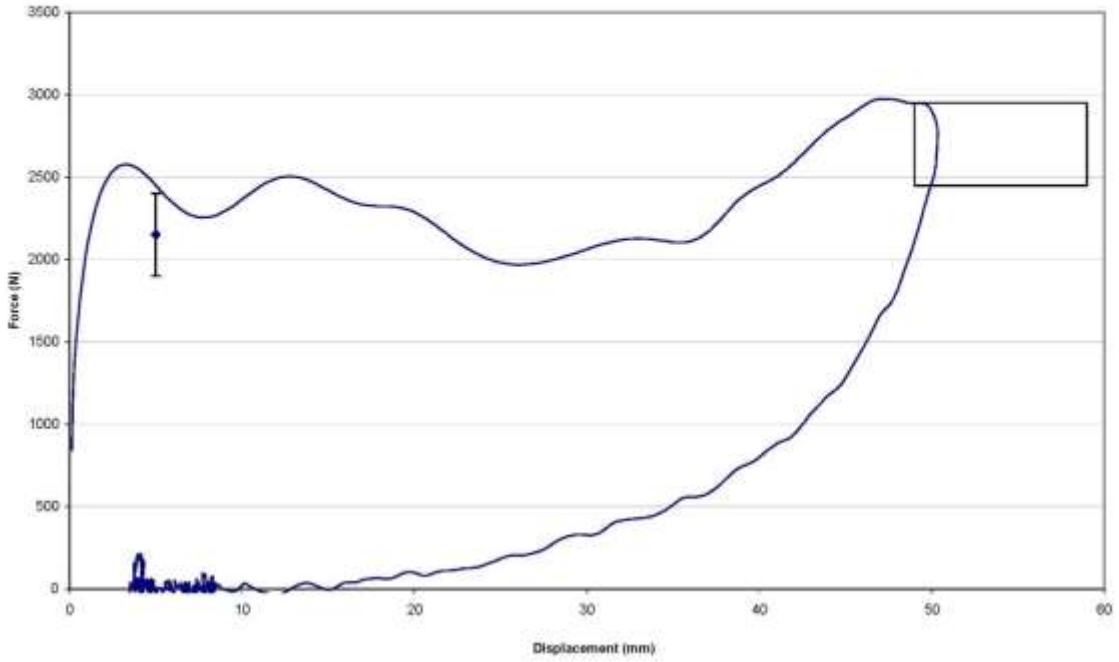




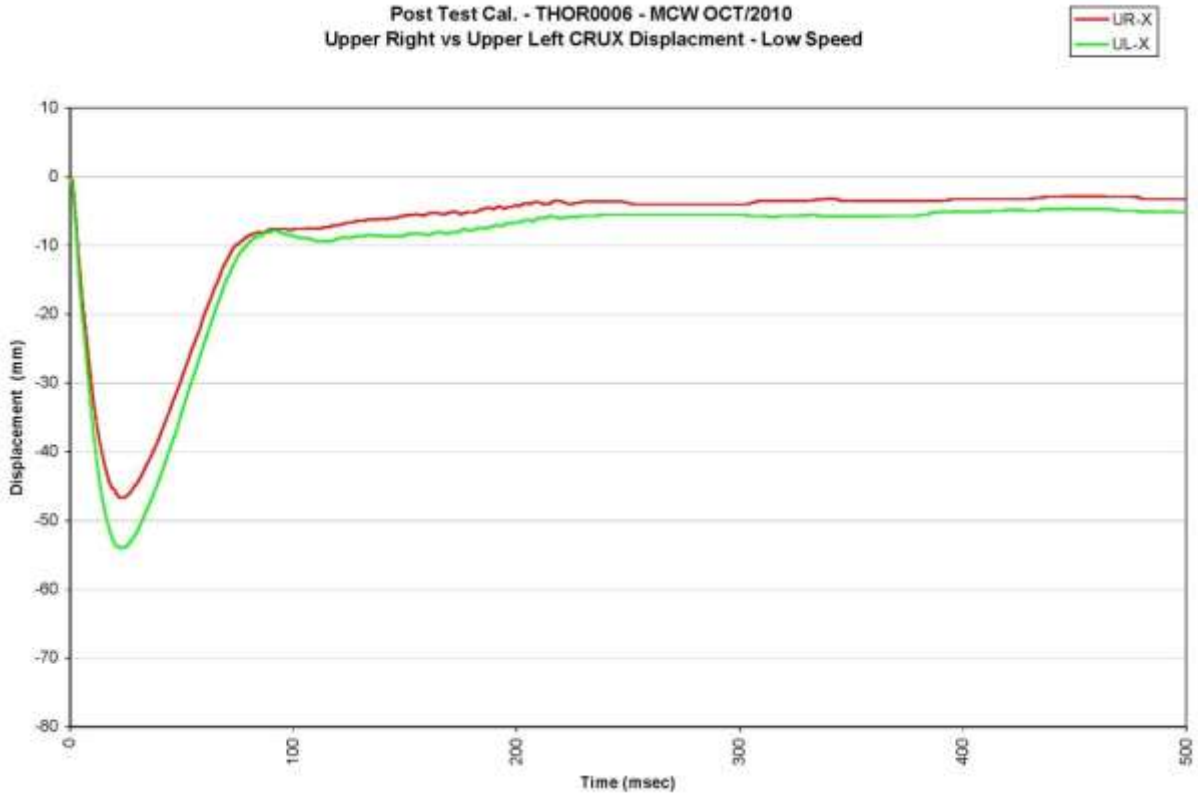




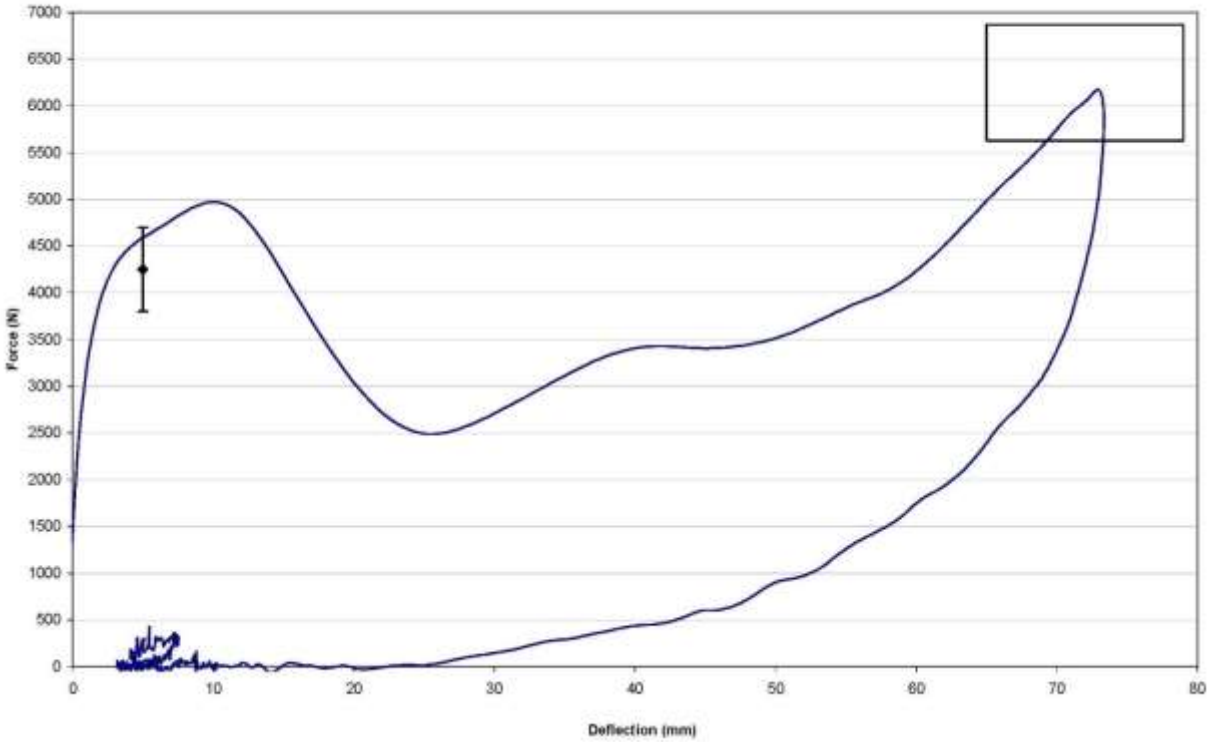
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Upper Thorax Kroell Response - Low Speed



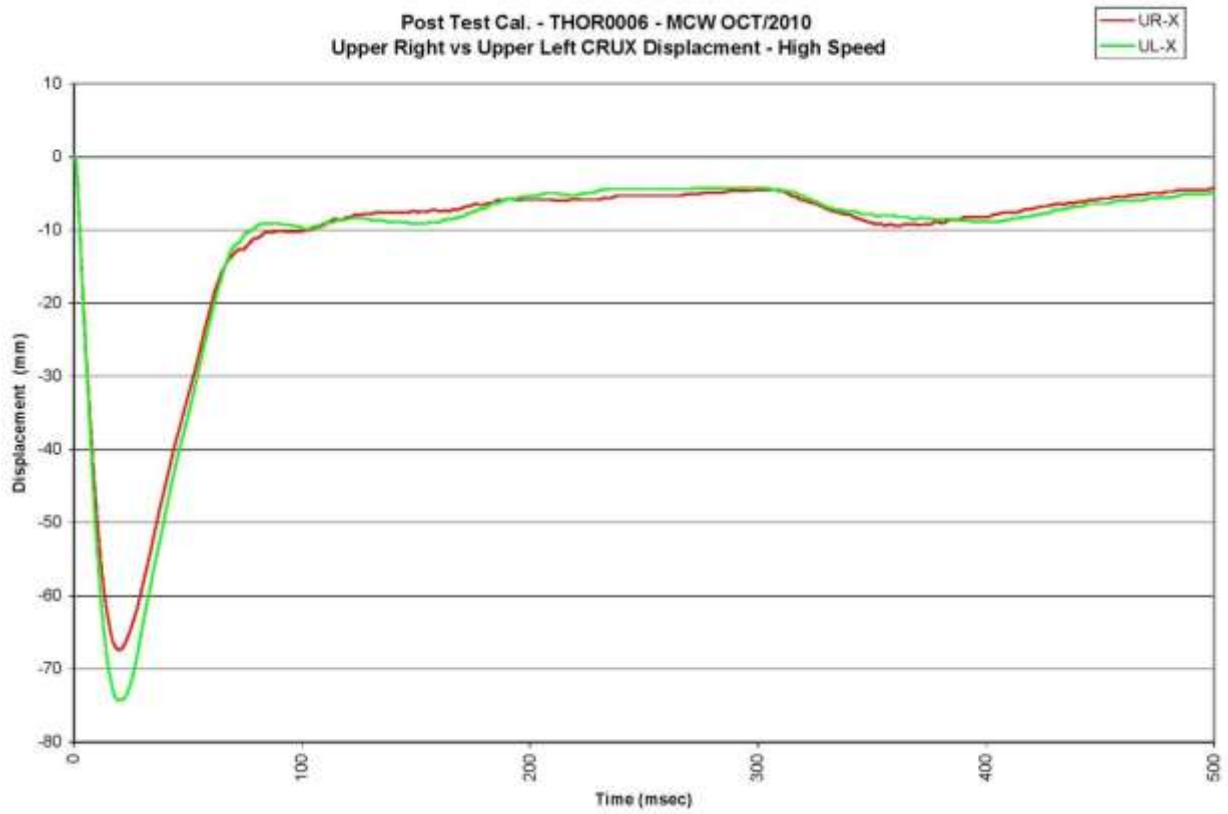
Post Test Cal. - THOR0006 - MCW OCT/2010
Upper Right vs Upper Left CRUX Displacement - Low Speed



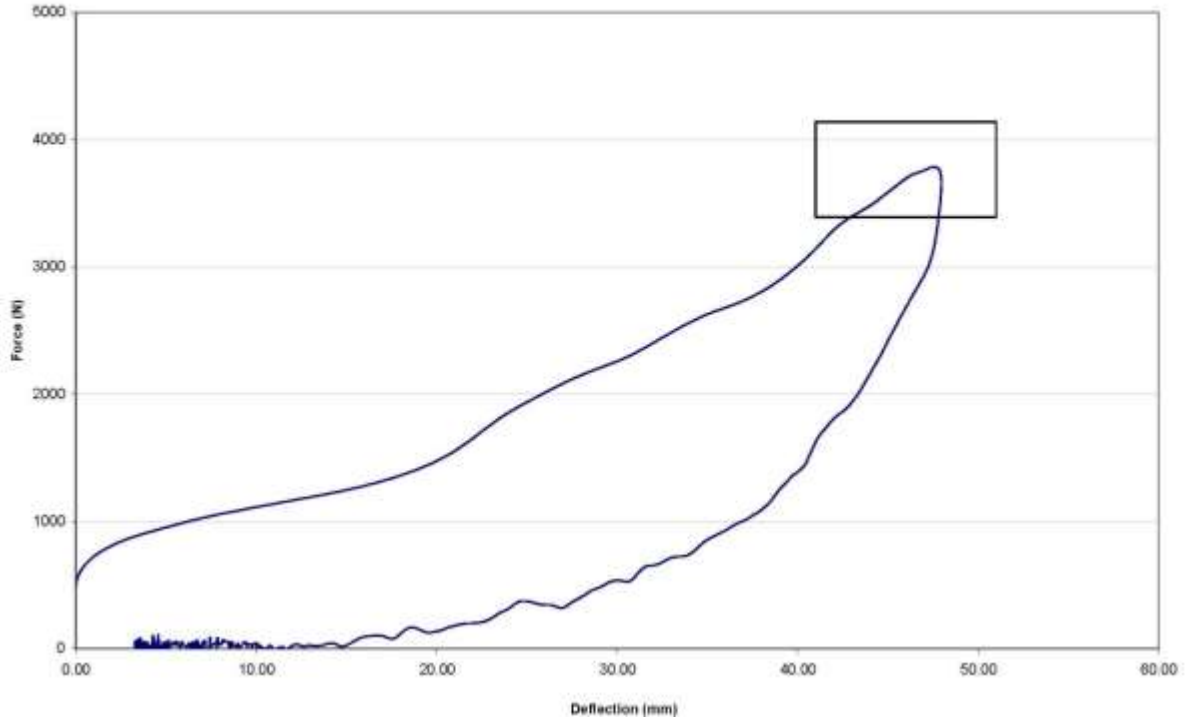
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Upper Thorax Kroell Response - High Speed



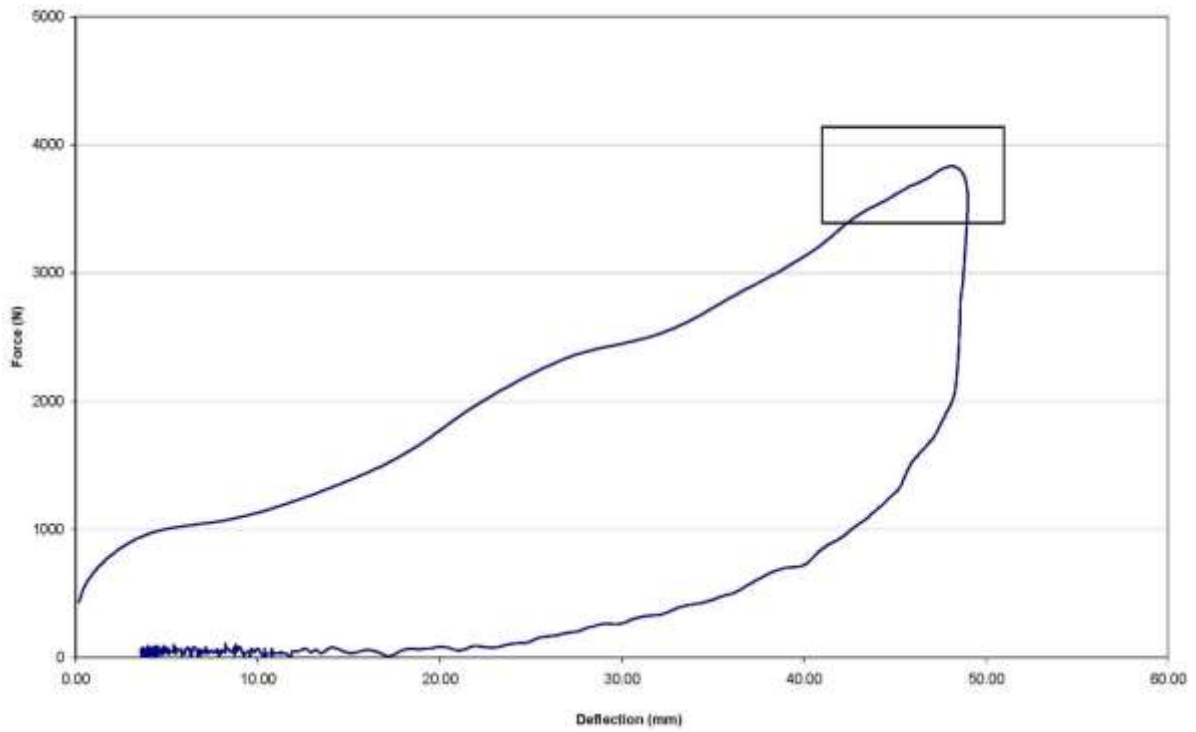
Post Test Cal. - THOR0006 - MCW OCT/2010
Upper Right vs Upper Left CRUX Displacment - High Speed



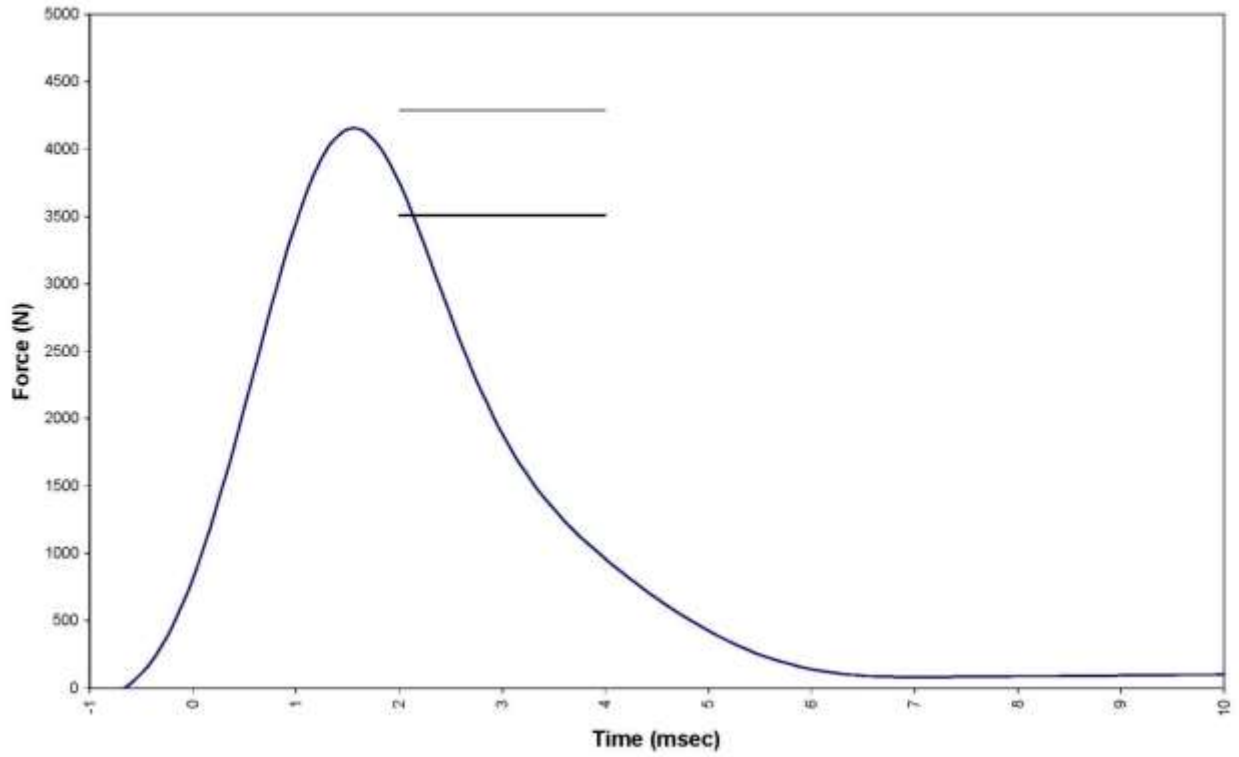
Post Test Cal. - THOR0006
Lower Left 15 Degree Oblique Thorax Response- MCW - OCT2010



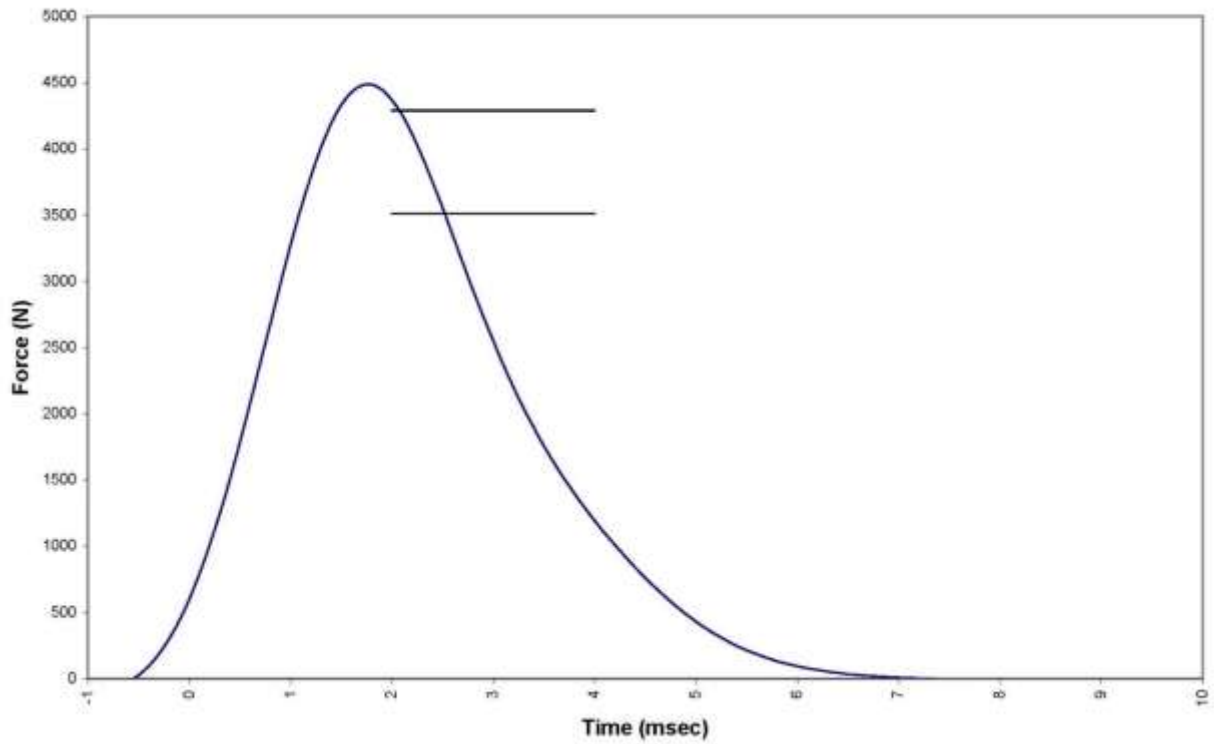
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Thor T10006 Left Knee Cert

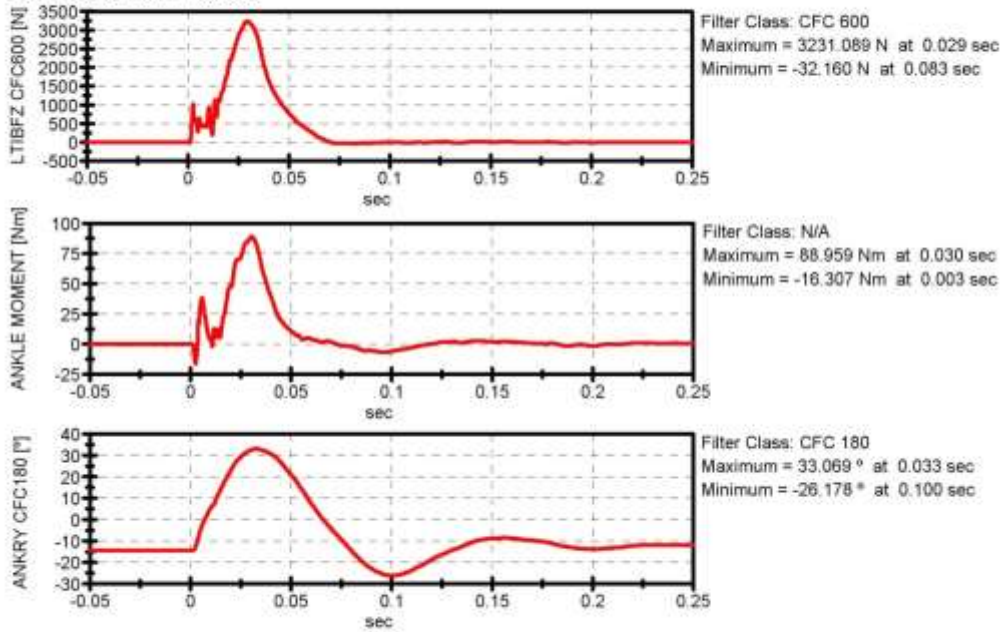


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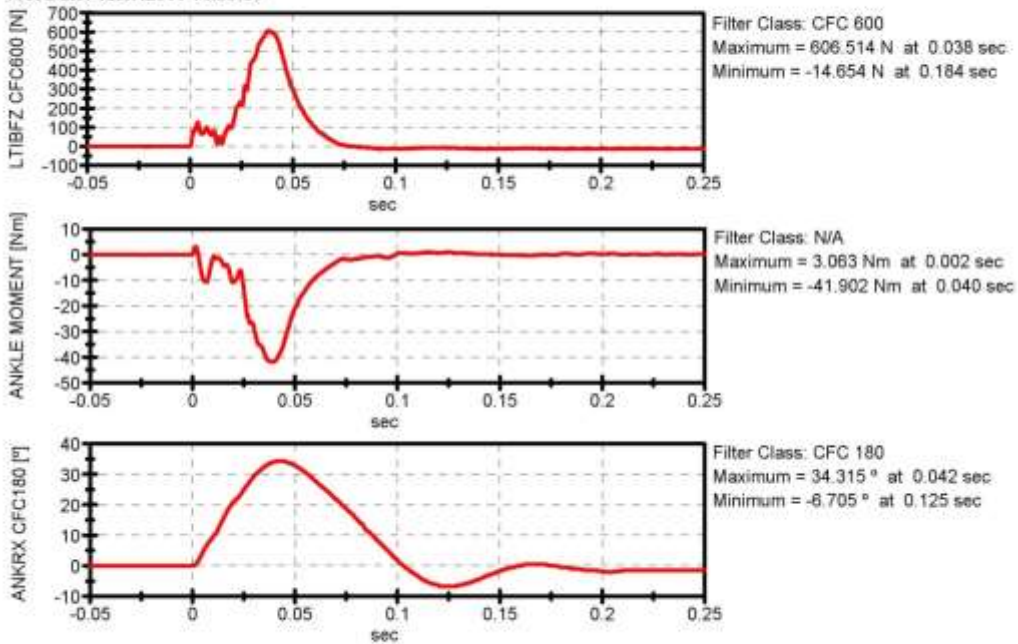


LEG S/N: LX103 / LX104

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 Test Date: 12.07.2011 13:03:52



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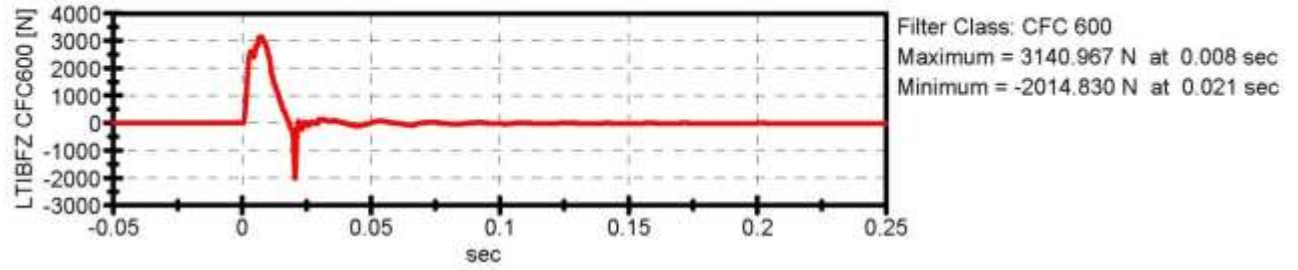


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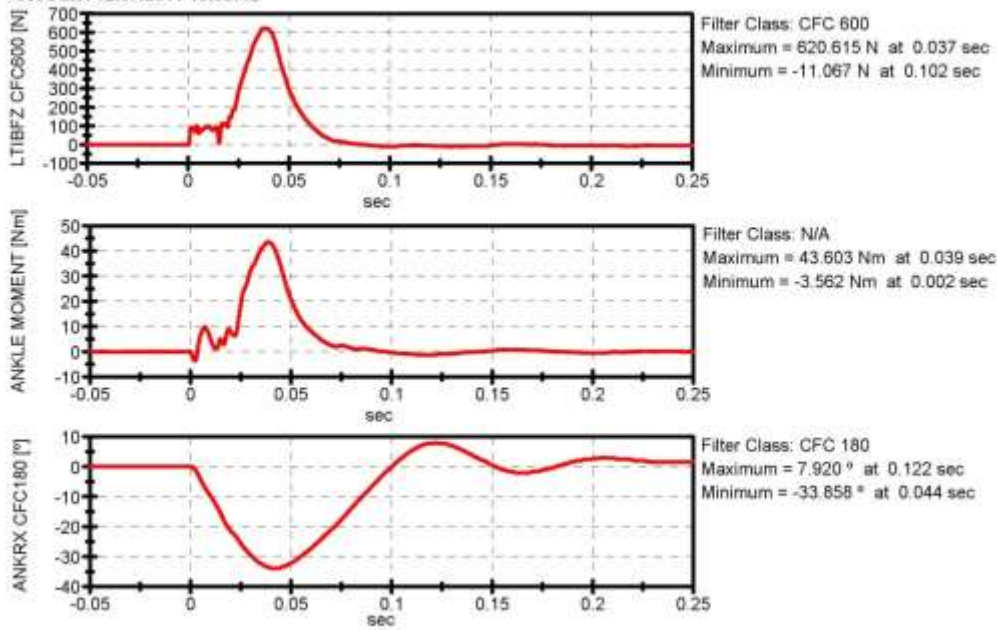
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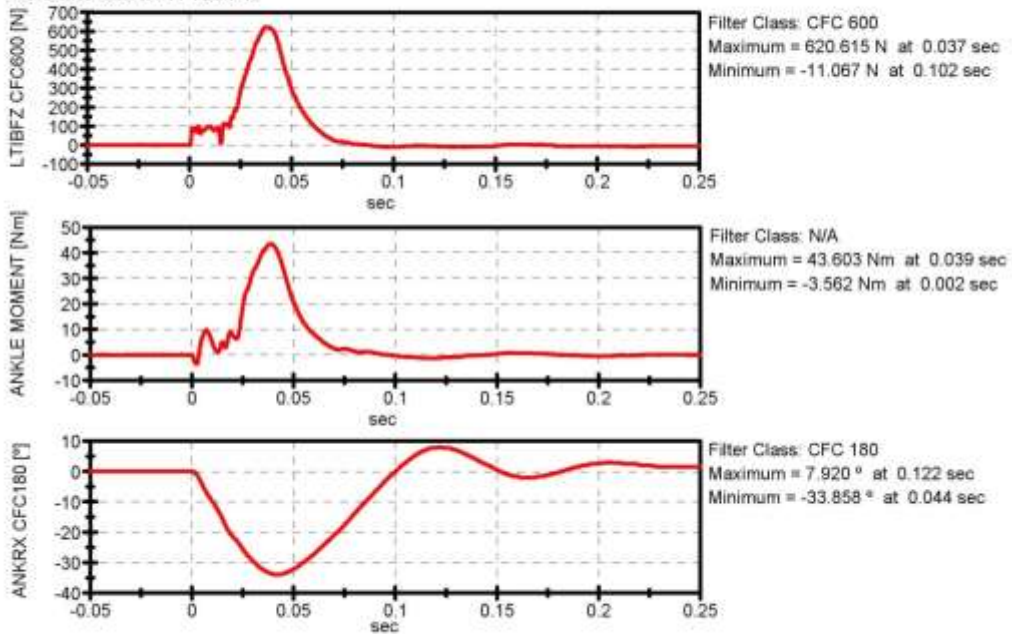
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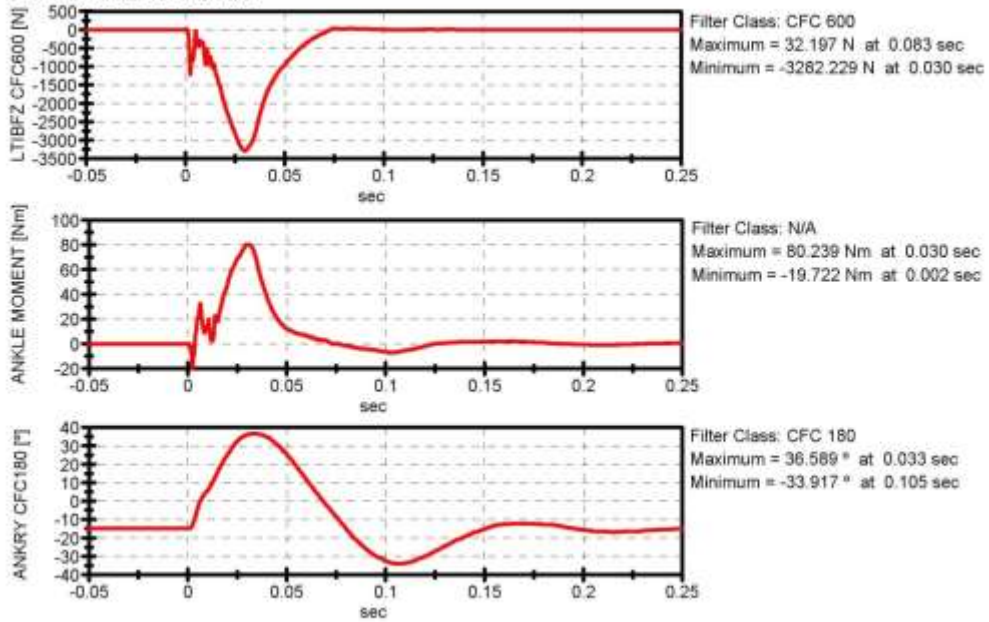
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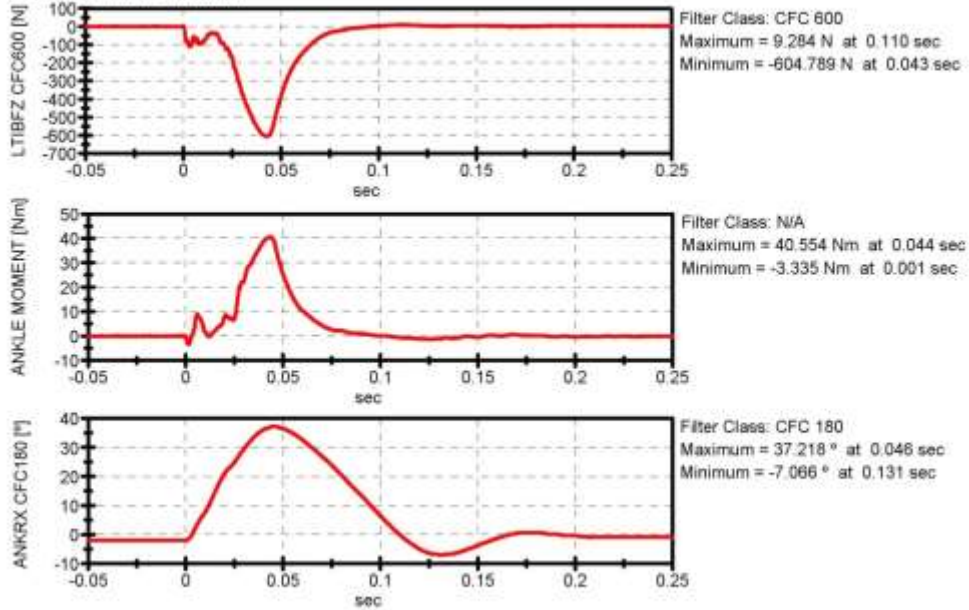
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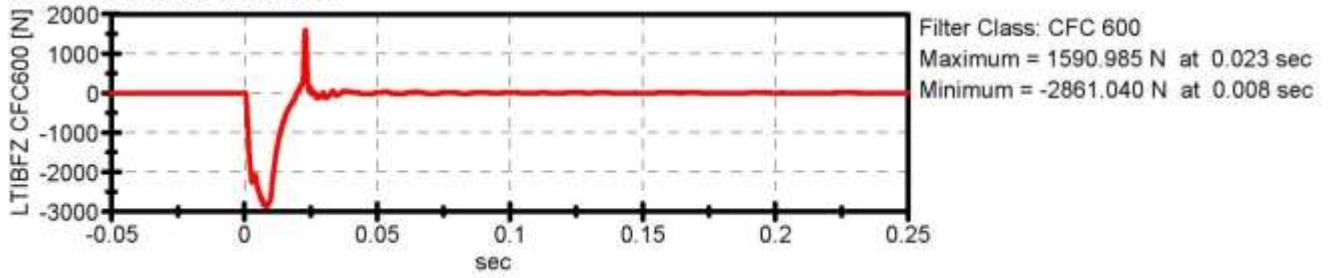
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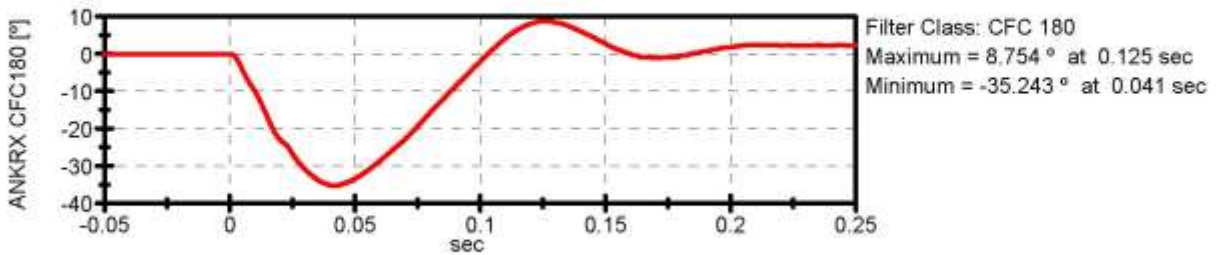
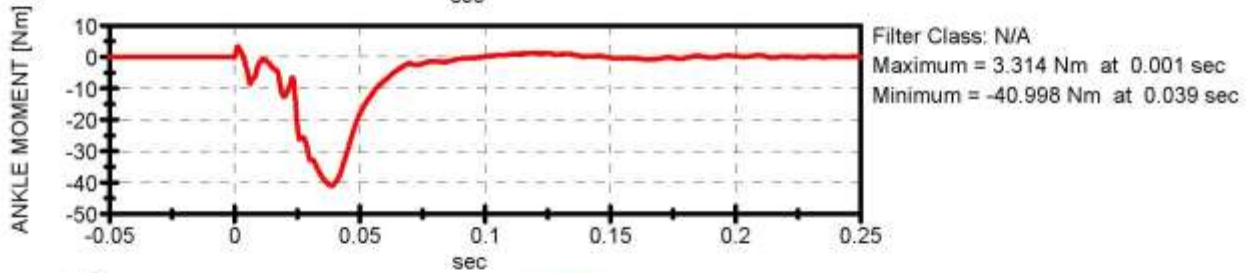
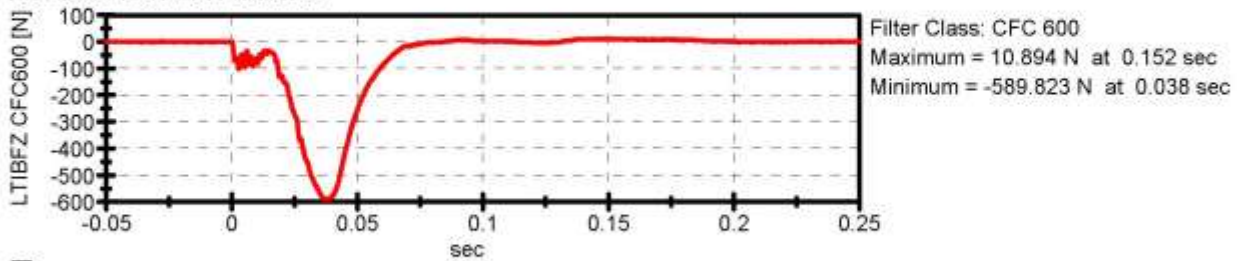
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Test Performer: Vehicle Research and Test Center
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 Test Date: 12.07.2011 10:26:09



Test Performer: Vehicle Research and Test Center
 Test Type: Inversion
 Test Name: LX104L_2011_07_12_INVER_01
 Test Date: 12.07.2011 08:18:46



APPENDIX D:

Positioning Procedure for rear seat Part 572O 5th female ATD

The rear seat 5th female was positioned using a combination of the FMVSS 214D side impact and FMVSS 208 seating procedures.

The lateral seat centerline was determined by following the FMVSS 214D seating procedures for the rear seat.. Once the Part 572O 5th female dummy was located on the lateral centerline, the dummy was positioned following FMVSS 208 as if it were in the front seating position. The legs would be positioned at the 120 degree angle and the pelvis would be pushed back against the seatback until the calves contacted the seat cushion. If the seatback was adjustable, the seatback would be raised to level the head. The 5th female dummy used in this test series had a lower neck transducer which prevented using the neck bracket as an adjustment to level the head.

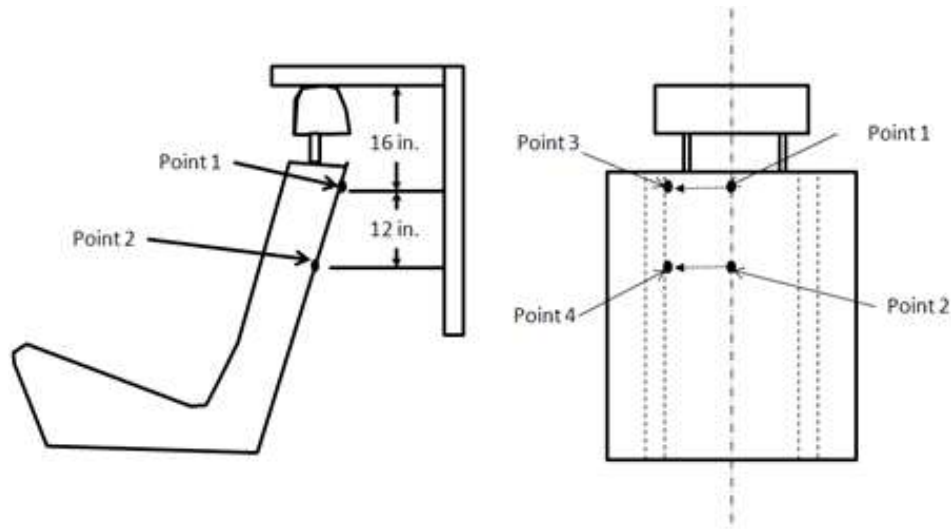
APPENDIX E:
CMM MEASUREMENT PROCEDURES

SECTION E.1

SEAT BACK MEASUREMENT PROCEDURE

The following procedure was used in obtaining the required seat back measurements, please see the below diagram for additional clarification:

1. Measure Points 3 and 4 on the using the following method after positioning the dummy and head restraint:
2. Place a level at the center of the head restraint and make sure it is level to the horizontal
3. Measure down 16 inches from the bottom of the level in the vertical direction
4. Project a line in the longitudinal direction until contact with seat and mark point 1 with a marker
5. Project another line in the longitudinal direction until contact with seat and mark point 2 with a marker
6. Push on the seat fabric at point 1 and determine if there is any structure. Do not push in the longitudinal direction more than an inch
7. If no structure found push on the seat cloth and move in the lateral direction toward the outboard of the seat until seat structure is found
8. Cut a slit in the seat fabric
9. Mark Point 3 at the begin on the structure and measure the point
10. Perform the same procedure to determine Point 4 using Point 2



SECTION E.2

DOOR SILL INTRUSION MEASUREMENT PROCEDURE

The following procedure was conducted in order to obtain the required door sill intrusion measurements for this test. Please see the below picture for further clarifications:

1. Put steering wheel in center position. Create a horizontal plane (plane 1) that passes through the center of the steering wheel.
2. Point 1: Mark the sheet metal at the intersection of plane 1 and the outer edge of rubber part of the door sill running down the A-pillar.
3. Point 22: Mark the sheet metal at the intersection of plane 1 and the outer edge of rubber part of the door sill running down the B-pillar.
4. Mark 20 evenly spaced points between points 1 and 22 along the outer edge of the rubber door sill on the sheet metal. (A tape measure can be used to mark these points).
5. Mark 20 evenly spaced points between points 22 and 1 along the outer edge of the rubber door sill on the sheet metal. (A tape measure can be used to mark these points).
6. Measure points using CMM
7. Record in the appropriate data sheet and calculate the difference by subtracting the post-test minus the pre-test. A picture with the points labeled shall be included on the data sheet. All points shall be visible in the pictures.
8. Repeat on the passenger door.



SECTION E.3

VEHICLE EXTERIOR CRUSH PROFILE PROCEDURE

1. Expose the bumper beam and level the vehicle such that all attitudes are within 5 mm.
2. Cross section A-A is defined as a horizontal plane passing through the center of the front bumper beam at the centerline of the vehicle (Figure F.3.1). Record the height of this plane (d_1) and take enough points at this height to create an exterior cross-section of the vehicle.
3. Perform the same procedure for cross-section B-B. Cross section B-B is defined as a plane passing through the top the upper radiator support.
4. Post-test put the vehicle back to its original coordinate system (Figure F.3.2). Take enough points at the height of d_1 and d_2 to create a post-test cross-section A-A and B-B. There can be more points measured posttest than pre-test (Figure F.3.3). Record these points in the appropriate data sheet.

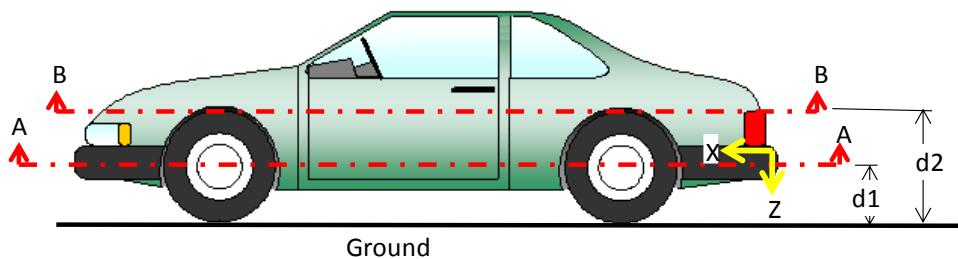


Figure F.3.1 - Pre-Test Cross-Sections

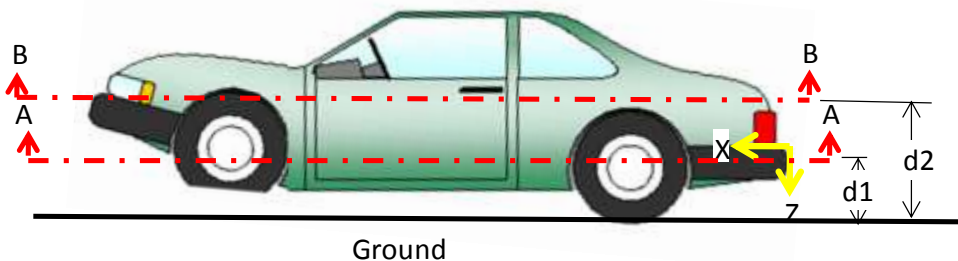


Figure F.3.2 - Post-Test Cross-Sections

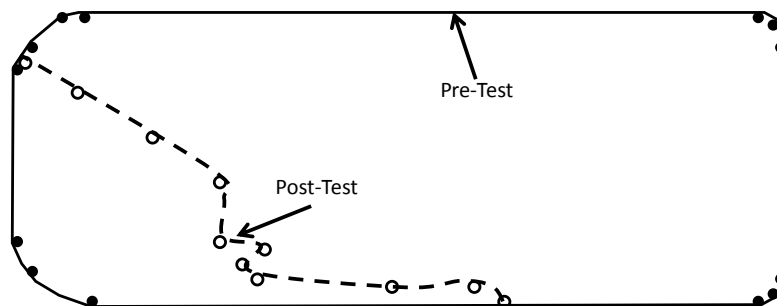


Figure F.3.3 - Plot of Cross-Section