

REPORT NUMBER: R&D-CAL-11-009

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

**2011 FORD EXPLORER
56 MPH, 15° ANGLE, 35% OVERLAP**

**TEST DATE: SEPTEMBER 27, 2011
NHTSA NO: RB0223**

**PREPARED BY:
CALSPAN CORPORATION
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FINAL REPORT SUBMITTED

FEBRUARY 16, 2012

**PREPARED FOR:
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NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
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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 90.12 kph into a stationary 2011 Ford Explorer utility vehicle. 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 September 27, 2011. The impact velocity of the vehicle was 89.72 km/h, and the ambient temperature at the barrier face at the time of impact was 35.5°C. The target vehicle post-test maximum crush was 420 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>703.11</td> <td>N/A</td> <td>700</td> <td>105.32</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>-55.10</td> <td>mm</td> <td>52</td> <td>-24.15</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td>1</td> <td>0.83</td> <td>N/A</td> <td>1</td> <td>0.62</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4,170</td> <td>6912.82</td> <td>N</td> <td>2,620</td> <td>1307.83</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4,000</td> <td>-6683.25</td> <td>N</td> <td>2,520</td> <td>-405.31</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10,008</td> <td>-3123.73</td> <td>N</td> <td>6,805</td> <td>-188.07</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10,008</td> <td>-2688.99</td> <td>N</td> <td>6,805</td> <td>-624.40</td> </tr> </tbody> </table>							Measurement Description	Driver ATD			Pass. ATD			Units	Threshold	Result	Units	Threshold	Result	Head Injury Criteria (HIC ₁₅)	N/A	700	703.11	N/A	700	105.32	Maximum Chest Compression	mm	63	-55.10	mm	52	-24.15	Nij	N/A	1	0.83	N/A	1	0.62	Neck Tension	N	4,170	6912.82	N	2,620	1307.83	Neck Compression	N	4,000	-6683.25	N	2,520	-405.31	Left Femur Force	N	10,008	-3123.73	N	6,805	-188.07	Right Femur Force	N	10,008	-2688.99	N	6,805	-624.40
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Test Program:	R&D 56mph 15 angle, 35% Offset	Test Date	9/27/2011

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SECTION 1

PURPOSE

Test Vehicle:	<u>2011 Ford Explorer</u>	NHTSA No:	<u>RB0223</u>
Test Program:	<u>R&D 56mph 15 angle, 35% Offset</u>	Test Date	<u>9/27/2011</u>

This 90.12 km/h (56 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.

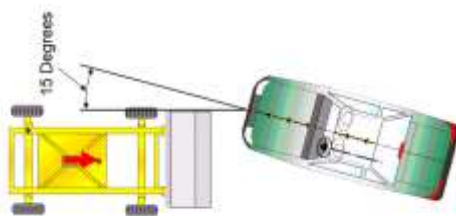
This test was conducted in accordance with the instructions set forth by NHTSA for a 15°, 35% offset moving barrier to vehicle impact, outlined in Task Order (TO) DTNH22-10-D-00155. Data was obtained indicant of Federal Motor Vehicle Safety Standard (FMVSS) 208-Occupant Crash Protection, FMVSS 212-Windshield 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>2011 Ford Explorer</u>	NHTSA No:	<u>RB0223</u>
Test Program:	<u>R&D 56mph 15 angle, 35% Offset</u>	Test Date	<u>9/27/2011</u>

A 2011 Ford Explorer Utility Vehicle was impacted on the left front corner by an Research Moving Deformable Barrier (RMDB). This test vehicle was stationary and positioned at a target angle of 15° and at a target offset of 35% to the forward line of motion of the RMDB. The RMDB was towed down the test track in a full forward direction, without any crabbing, and the targeted impact velocity was 90.12 km/h (56 mph). The test vehicle mass was 2363.0 kg (5196 lbs), and the RMDB mass was 2486.2 kg (5481 lbs). The test was conducted by Calspan Corporation on September 27, 2011.



The test was documented by one (1) real time and Fifteen (15) 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.: 007) was seated in the left front (driver's) seating position and one Part 572O 5% adult female (HIII 5th) ATD (Serial No. 070) 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 using 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, a dual stage frontal airbag, as well as a curtain and seat mounted side airbag. The left rear passenger was restrained with a 3-point inflatable seat belt and side curtain airbag.

SECTION 2 (CONTINUED)

SUMMARY OF TEST

Test Vehicle:	<u>2011 Ford Explorer</u>	NHTSA No:	<u>RB0223</u>
Test Program:	<u>R&D 56mph 15 angle, 35% Offset</u>	Test Date	<u>9/27/2011</u>

One Hundred and Ninety Eight (198) channels of data from the two ATD's, test vehicle and RMDB were collected using a Kayser-Threde and Slice data acquisition system. Appendix B contains dummy data plots, as well as vehicle and RMDB response data plots. There was 72.4% total windshield retention, with 52.5% and 92.2% retention on the left and right sides respectively. There appeared to be hood intrusion into the lower left corner of windshield below the protected zone. The maximum static crush of the vehicle was 420 mm at C1 to the left of the vehicle's centerline. The maximum crush of the lower bumper beam was 538 mm at C2 of the lower bumper beam, to the left of vehicle's centerline. Full vehicle measurements are presented in Section 3 of this report. All four vehicle doors remained closed and latched during the test. All four doors were operational after the test.

Structure observations include the following:

- Left front wheel well crushed up in to the A Pillar.
- Radiator support beam was crushed and measurement points were unrecoverable post-test.

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

- Head contacted the steering wheel airbag, curtain airbag, and door frame.
- Torso contacted the torso airbag
- Chest contacted the airbag
- Both the left and right knees contacted the knee bolster.

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

- Head contacted the curtain airbag, seatbelt airbag, chest, C-Pillar and seatback
- Torso contacted the seatbelt airbag and passenger's side door
- Knees impacted the seat back of the driver seat.

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

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
RMDB Velocity at Impact	km/h	89.72
RMDB Test Weight	kg	2491
RMDB Maximum Static Crush	mm	240 (R6,C10)
Vehicle Test Weight	kg	2363
Actual Vehicle Angle	°	15°
Vehicle Maximum Static Crush	mm	420 mm to left centerline
Vertical Offset from Target Point	mm	6 (Above)
Lateral Offset from Target Point	mm	25 (Left)
Number of Data Channels		198
Number of Real-Time Cameras		1
Number of High-Speed Cameras		15

DUMMY CONTACTS

	Driver	Picture Ref.	Passenger	Picture Ref.
Dummy Type	Thor 007, 50% Male	N/A	5% Female, HIII 070	N/A
Head Contact	Steering wheel Airbag, Curtain Airbag, and door frame	A-37 A-48	Curtain Airbag, Seatbelt Airbag, Chest, Seatback, and Interior C-Pillar	A-49 A-52 A-58
Upper Torso Contact	Front Airbag and Torso Airbag	-	Seatbelt Airbag and Passenger's Door	-
Lower Torso Contact	Torso Airbag	A-46 A-47	Seatbelt Airbag	-
Left Knee Contact	Bolster	A-45	Driver Seatback	A-59
Right Knee Contact	Bolster	A-44	Driver Seatback	A-59

Data Anomalies:

V2P1 NECK UPPER FZ	-> Channel failed
V2P1 NECK SPRING LOAD CELL - FRONT	-> Noise on data 7-194 ms
V2P1 ABDOMEN LEFT RZ	-> spikes on data 74 - 164ms
V2P1 ABDOMEN RIGHT IRTRACC DX	-> questionable - data noise
V2P1 T1 ACCEL AZ	-> questionable spikes 138-162ms
V2P1 SPINE LOWER MY	-> questionable - noise on data
V2P1 RIGHT ILIAC FX	-> questionable after 44 ms -noise
V2P1 RIGHT ILIAC MY	-> Channel failed
V2P1 LEFT FEMUR FX	-> questionable magnitude
V2P1 LEFT FEMUR MX	-> questionable data
V2P1 LEFT FEMUR MY	-> questionable - large pre-test offset
V2P1 TIBIA LEFT UPPER FZ	-> questionable data
V2P1 ANKLE LEFT POT X	-> questionable 47-62 and 166-184
V2P1 TIBIA RIGHT LOWER MY	-> questionable after 151 ms
V2P4 LOWER NECK MZ	-> questionable after 34 ms
V2 VEHICLE CG Z	-> questionable after 67 ms
V2 VEHICLE CG RX	-> questionable after 54 ms

SECTION 2 (CONTINUED)
PRELIMINARY INJURY SUMMARY: Driver

Test Vehicle: 2011 Ford Explorer - Utility Vehicle NHTSA No.: RB0223
 Test Program: Research and Development Narrow Offset Test Date: 9/27/2011

Driver: Thor Serial No. 007 Injury Summary

	Nomenclature	Units	Source	Max	Min
Head	Head Rotational Acceleration X	rad/s ²	SIMon	197947.38	-121702.62
	Head Rotational Acceleration Y	rad/s ²	SIMon	145981.07	-190208.93
	Head Rotational Acceleration Z	rad/s ²	SIMon	237292.04	-235407.96
	Head Rotational Acceleration Resultant	rad/s ²	Compute	313935.78	
	Head Rotational Velocity X	rad/s	SIMon	27.43	-41.67
	Head Rotational Velocity Y	rad/s	SIMon	22.79	-34.14
	Head Rotational Velocity Z	rad/s	SIMon	49.52	-20.39
	Head Rotational Velocity Resultant	rad/s	Compute	63.61	
	36 ms HIC		Compute	703.11	
	15 ms HIC		Compute	703.11	
	Head Resultant CG Acceleration, 3 ms Clip	g	Compute	95.62	
	Skull fracture correlate	-	SIMon	125.31	
	Cumulative strain (Tolerance = 0.05)	-	SIMon	1.00	0.00
	Cumulative strain (Tolerance = 0.10)	-	SIMon	0.89	0.00
	Cumulative strain (Tolerance = 0.15)	-	SIMon	0.54	0.00
Neck	UNLC Transferred to OC, Neck System, FX	N	1000	311.99	-896.39
	UNLC Neck System Tension, FZ	N	1000	6912.82 ⁽¹⁾	
	UNLC Neck System Compression, FZ	N	1000		-6683.25 ⁽¹⁾
	UNLC Transferred to OC, Neck System Flexion, MY	N-m	Thortest	2.47	
	UNLC Transferred to OC, Neck System Extension, MY	N-m	Thortest		-19.53
	NIJ		Compute	0.83	
	On head acting through total neck section, FX	N	Thortest	100.58	-616.59
	On head acting through total neck section, FY	N	Thortest	520.50	-201.48
	On head acting through total neck section, FZ	N	Thortest	6893.32 ⁽¹⁾	-6524.31 ⁽¹⁾
	On head acting through total neck section, MX	N-m	Thortest	24.29	-12.87
	On head acting through total neck section, MY	N-m	Thortest	25.35	-10.26
	On head acting through total neck section, MZ	N-m	Thortest	10.63	-38.67
	On head acting through O.C. joint only, FX	N	Thortest	99.37 ⁽²⁾	-866.56 ⁽²⁾
	On head acting through O.C. joint only, FZ	N	Thortest	6114.01 ⁽¹⁾	-5860.68 ⁽¹⁾
On head acting through O.C. joint only, MY	N-m	Thortest	2.47	-19.53	
Chest	Upper Left Crux X – deflection	mm	Thortest	0.64	-23.49
	Upper Left Crux Y – deflection	mm	Thortest	9.82	-4.29
	Upper Left Crux Z – deflection	mm	Thortest	21.51	-7.49
	Upper Left Crux D – deflection	mm	Thortest	0.95	-23.14
	Upper Right Crux X – deflection	mm	Thortest	0.05	-39.36
	Upper Right Crux Y – deflection	mm	Thortest	4.02	-11.12
	Upper Right Crux Z – deflection	mm	Thortest	20.41	-17.18
	Upper Right Crux D – deflection	mm	Thortest	0.05	-38.07

SECTION 2 (CONTINUED)
PRELIMINARY INJURY SUMMARY: Driver

Test Vehicle: 2011 Ford Explorer - Utility Vehicle NHTSA No.: RB0223
 Test Program: Research and Development Narrow Offset Test Date: 9/27/2011
Driver: Thor Serial No. 007 Injury Summary

	Nomenclature	Units	Source	Max	Min	
Chest (Con't)	Lower Left Crux X – deflection	mm	Thortest	1.07	-14.64	
	Lower Left Crux Y – deflection	mm	Thortest	8.43	-9.50	
	Lower Left Crux Z – deflection	mm	Thortest	14.82	-0.81	
	Lower Left Crux D – deflection	mm	Thortest	1.47	-14.44	
	Lower Right Crux X – deflection	mm	Thortest	0.12	-55.47	
	Lower Right Crux Y – deflection	mm	Thortest	11.56	-9.88	
	Lower Right Crux Z – deflection	mm	Thortest	11.41	-3.37	
	Lower Right Crux D – deflection	mm	Thortest	0.12	-55.10	
		Chest CG Acceleration, 3 ms clip	g	Compute	40.59	
Abdomen	Lower Left X – deflection	mm	Thortest	0.02	-41.74	
	Lower Left Y – deflection	mm	Thortest	10.27	-0.00	
	Lower Left Z – deflection	mm	Thortest	13.52 ⁽³⁾	-1.42 ⁽³⁾	
		Left Viscous Criterion Based on X - deflection		Compute	0.33 ⁽³⁾	
	Lower Right X – deflection	mm	Thortest	243.39 ⁽⁴⁾	-56.19 ⁽⁴⁾	
	Lower Right Y – deflection	mm	Thortest	6.72	-16.23	
	Lower Right Z – deflection	mm	Thortest	12.92	-12.06	
		Right Viscous Criterion Based on X - deflection		Compute	83.78 ⁽⁴⁾	
Spine	Upper Spine (T1) AX	g	180	6.11	-35.42	
	Upper Spine (T1) AY	g	180	10.59	-7.08	
	Upper Spine (T1) AZ	g	180	25.21 ⁽⁵⁾	-6.02 ⁽⁵⁾	
		Upper Spine (T1) Resultant	g	Compute	41.76 ⁽⁵⁾	
	Middle Spine (T6) AX	g	180	10.86	-44.36	
	Middle Spine (T6) AY	g	180	19.24	-5.06	
	Middle Spine (T6) AZ	g	180	6.68	-9.23	
		Middle Spine (T6) Resultant	g	Compute	44.75	
Pelvis	Pelvis CG Resultant Acceleration	g	Compute	48.28		
Acetabulum	Left FX force	N	600	920.71	-1331.23	
	Left FY force	N	600	364.54	-850.99	
	Left FZ force	N	600	1023.44	-786.16	
		Left Acetabulum Resultant	N	Compute	1538.53	
	Right FX force	N	600	633.32	-632.23	
	Right FY force	N	600	312.13	-1375.58	
	Right FZ force	N	600	590.32	-206.41	
		Right Acetabulum Resultant	N	Compute	1457.84	

SECTION 2 (CONTINUED)
PRELIMINARY INJURY SUMMARY: Driver Legs

Test Vehicle: 2011 Ford Explorer - Utility Vehicle NHTSA No.: RB0223
 Test Program: Research and Development Narrow Offset Test Date: 9/27/2011
Driver: Thor Serial No. 007 Injury Summary

	Nomenclature	Units	Source	Max	Min
Knee	Left Knee Displacement, DX	mm	180	1.58	-11.93
	Right Knee Displacement, DX	mm	180	1.67	-8.66
Femur	Left Femur Force, FZ	N	600	290.39	-3123.73
	Left Femur Moment, MX	N-m	600	34.21 ⁽⁶⁾	-188.82 ⁽⁶⁾
	Left Femur Moment, MY	N-m	600	0.41 ⁽⁷⁾	-98.06 ⁽⁷⁾
	Left Femur Res (MX / MY only, not MZ)	N-m	Compute	188.82 ^(6,7)	
	Right Femur Force, FZ	N	600	373.88	-2688.99
	Right Femur Moment, MX	N-m	600	20.54	-106.28
	Right Femur Moment, MY	N-m	600	52.55	-14.42
	Right Femur Res (MX / MY only, not MZ)	N-m	Compute	118.30	
	Tibia	Left Upper Tibia, FZ	N	600	8439.51 ⁽⁸⁾
Left Upper Tibia, MY		N-m	600	118.17	-83.77
Left Upper Tibia, Index			Compute	0.50 ⁽⁸⁾	
Right Upper Tibia, FZ		N	600	171.35	-1139.16
Right Upper Tibia, MY		N-m	600	77.63	-31.71
Right Upper Tibia, Index			Compute	0.53	
Left Lower Tibia, FZ		N	600	614.25	-2779.81
Left Lower Tibia, MY		N-m	600	66.49	-147.25
Left Lower Tibia, Index			Compute	0.85	
Right Lower Tibia, FZ		N	600	270.98	-1813.18
Right Lower Tibia, MY		N-m	600	48.11 ⁽⁹⁾	-68.10 ⁽⁹⁾
Right Lower Tibia, Index			Compute	0.46 ⁽⁹⁾	
Ankle		Left Ankle Rotation, RX	Deg	180	22.82 ⁽¹⁰⁾
	Left Ankle Rotation, RY	Deg	180	31.48	-5.30
	Right Ankle Rotation, RX	Deg	180	34.49	-23.32
	Right Ankle Rotation, RY	Deg	180	19.30	-16.07

Anomalies

- (1) Channel Failed
- (2) Noise between 7-194 ms
- (3) Spikes on the data 74 - 164ms
- (4) Questionable Data after 10ms – noise
- (5) Questionable Spikes 138-162ms
- (6) Questionable Data
- (7) Questionable – had a large pre-test offset
- (8) Questionable data
- (9) Questionable data after 151 ms
- (10) Questionable between 47-62 and 166-184 ms

SECTION 2 (CONTINUED)
PRELIMINARY INJURY SUMMARY

Test Vehicle: 2011 Ford Explorer - Utility Vehicle NHTSA No.: RB0223
 Test Program: Research and Development Narrow Offset Test Date: 9/27/2011
Left Rear Passenger: H3 Serial No. 070 Injury Summary

	Nomenclature	Source	Max	Min
Head	Angular acceleration (rad/sec^2) - X	SIMon	1686.90	-1290.50
	Angular acceleration (rad/sec^2) - Y	SIMon	987.42	-263.54
	Angular acceleration (rad/sec^2) - Z	SIMon	406.93	-765.32
	Angular acceleration - resultant (rad/sec^2)	SIMon	1904.55	
	Angular velocity (rad/sec) - X	SIMon	21.01	-2.86
	Angular velocity (rad/sec) - Y	SIMon	26.24	-0.03
	Angular velocity (rad/sec) - Z	SIMon	0.15	-27.26
	Angular velocity - resultant (rad/sec)	SIMon	37.88	
	36 ms HIC	Compute	193.91	
	15 ms HIC	Compute	105.32	
	Skull fracture correlate	SIMon	34.56	
	Cumulative strain (Tolerance = 0.05)	SIMon	0.91	
	Cumulative strain (Tolerance = 0.10)	SIMon	0.34	
	Cumulative strain (Tolerance = 0.15)	SIMon	0.12	
	Head resultant CG acceleration, 3 ms clip (g's)	Compute	37.26	
Neck	Upper Neck Tension (N) Fz	1000	1307.83	
	Upper Neck Compression (N) Fz	1000		-405.31
	Upper Neck NTF	Compute	0.31	
	Upper Neck NTE	Compute	0.62	
	Upper Neck NCF	Compute	0.01	
	Upper Neck NCE	Compute	0.40	
Chest	Chest Deflection (mm)	600	0.01	-24.15
	Upper Left Chest X (mm)	Compute	0.00	-19.80
	Upper Left Chest Y (mm)	Compute	9.18	-2.85
	Upper Right Chest X (mm)	Compute	0.00	-30.50
	Upper Right Chest Y (mm)	Compute	13.46	-1.85
	Lower Left Chest X (mm)	Compute	0.12	-12.08
	Lower Left Chest Y (mm)	Compute	14.27	-1.77
	Lower Right Chest X (mm)	Compute	0.00	-23.08
	Lower Right Chest Y (mm)	Compute	20.01	-0.69
	Chest CG acceleration, 3 ms clip, (G's)	Compute	40.53	
Femur	Right Fz Force (N)	600	3620.12	-624.40
	Left Fz Force (N)	600	3559.58	-188.07
Anomalies				
None				

SECTION 3

DATA SHEETS

Test Vehicle:	<u>2011 Ford Explorer</u>	NHTSA No:	<u>RB0223</u>
Test Program:	<u>R&D 56mph 15 angle, 35% Offset</u>	Test Date	<u>9/27/2011</u>

<u>Data Sheet No.</u>		<u>Page No.</u>
1	General Test and Vehicle Parameter Data	3-2
2	Seat Adjustment, Fuel System, and Steering Wheel	3-6
3	Dummy Longitudinal Clearance Dimensions	3-9
4	Dummy Lateral Clearance Dimensions	3-11
5	Seat Belt Positioning Data	3-12
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DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	<u>2011 Ford Explorer</u>	NHTSA No:	<u>RB0223</u>
Test Program:	<u>R&D 56mph 15 angle, 35% Offset</u>	Test Date	<u>9/27/2011</u>

TEST VEHICLE INFORMATION

NHTSA No.	RB0223
Make	Ford
Model	Explorer
Body Style	Utility Vehicle
Year	2011
VIN	1FMHK7D8XBGA75834
Color	Dark blue
Delivery Date	6/3/2011
Odometer Reading (mi)	35
Odometer Reading (km)	56.3
Dealer	DeLacy Ford
Transmission	6-Speed Automatic
Final Drive	Front Wheel Drive
Type/No. Cylinders	V6
Engine Disp. (L)	3.5
Engine Placement	Lateral
Roof Rack	Yes
Sunroof/T-Top	Yes
Tinted Glass	Yes
Traction Control	No
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	No
Pass. Side Airbag	No
Pass. Head Airbag	No
Pass. Curtain Airbag	No
Pretensioners	No
Load Limiters	No
Bucket Seats	No
Air Cond.	No
AM/FM CD	No
Tilt Steering	Yes
Automatic Door Locks	No
Power Windows	Yes
Power Seats	Yes
Other	--
Other	--

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

DATA FROM CERTIFICATION LABEL

Manufactured By	Ford Motor Co	GVWR (kg)	2,794
Date of Manufacture	5/11	GAWR Front (kg)	1,397
		GAWR Rear (kg)	1,497

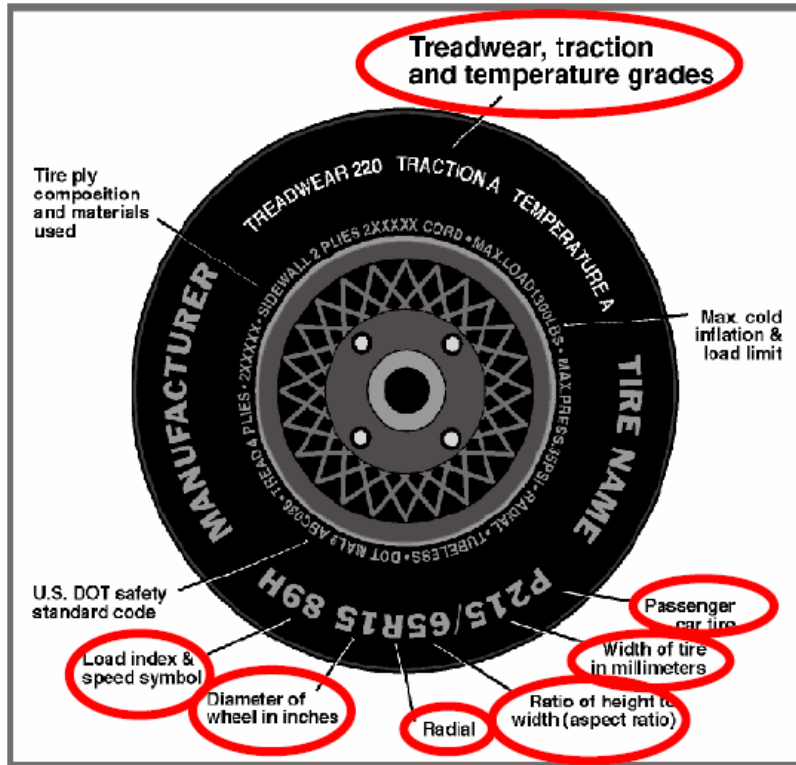
VEHICLE SEATING AND WEIGHT CAPACITY

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Split Bench	Bench	
Number of Occupants	2	3	2	7
Capacity Wt. (VCW) (kg)				697
Cargo Wt. (RCLW) (kg)				136

DATA SHEET NO. 1 (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011



Measured Parameter	Front	Rear
Maximum Tire Pressure	350	350
Cold Pressure (kPa)	240	240
Recommended Tire Size	P255/50R20	P255/50R20
Tire Size on Vehicle	P255/50R20	P255/50R20
Tire Manufacturer	Hankook	Hankook
Tire Model	Optimo H426	Optimo H426
Treadwear	440	440
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	2 Steel, 2 Polyester, 2 Nylon	2 Steel, 2 Polyester, 2 Nylon
Tire Plies Body	2 Polyester	2 Polyester
Load Index/Speed Symbol	104H	104H
Tire Material	Rubber	Rubber
DOT Safety Code Right	5MYPPDLH0811	5MYPPDLH0811
DOT Safety Code Left	5MYPPDLH0811	5MYPPDLH0811

DATA SHEET NO. 1 (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	579.5	478		635.5	578	
Right	kg	573	451.5		603.5	546	
Ratio	%	55	45		52	48	
Totals	kg	1152.5	929.5	2082	1239	1124	2363

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	2082
Weight of 1 P572E ATD & 1 P572O ATD	kg	153.54
Rated Cargo/Luggage Weight (RCLW)	kg	136.0
Calculated Vehicle Target Weight (TVTWTW)	kg	2371.54

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	832	835	867	868	1279
As Tested	mm	821	829	833	838	1362
Post Test	mm	-	-	-	-	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2,864
Total Vehicle Length at Left Side	mm	4,902
Total Vehicle Length at Centerline	mm	5,010
Total Vehicle Length at Right Side	mm	4,902
Weight of Ballast in Cargo Area	kg	86
Weight of Vehicle Components Removed	kg	0
Amount of Stoddard Solvent in Fuel Tank	L	64.7

LIST OF COMPONENTS REMOVED TO MEET TEST WEIGHT: NONE

MASS OF BALLAST ADDED (KG) 86

DATA SHEET NO.1 (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	<u>2011 Ford Explorer</u>	NHTSA No:	<u>RB0223</u>
Test Program:	<u>R&D 56mph 15 angle, 35% Offset</u>	Test Date	<u>9/27/2011</u>

TARGET VEHICLE STRUCTURAL MEASUREMENT

	Elements	Pre-Test (mm)
1	Total Length	5010
2	Total Width	1974
3	Bumper Top Height	-64
4	Bumper Bottom Height	132
5	Longitudinal Member Top Height	-53
6	Distance Between Longitudinal Members	1200
7	Longitudinal Member Width	104
8	Engine Top Height	-389
9	Engine Bottom Height	336
10	Engine and Gearbox Width	730
11	Front Bumper-Engine Distance	488
12	Front Shock Absorber Fixing Height	-411
13	Bonnet Leading Edge Height	-400
14	Front Shock Absorber Fixing Width	1266
15	Front Bumper – Front Axle Distance	966
16	Front Axle – A Pillar Distance	531
17	A- Pillar – B-Pillar Distance	1102
18	B-Pillar – Rear Axle Distance	1230
19	B-Pillar – C-Pillar Distance	1123
20	Roof Sill Bottom Height	-966
21	Roof Sill Top Height	-1085
22	Floor Sill Bottom Height	251
23	Floor Sill Top Height	124

*Origin is defined as center of rear most point of rear bumper

DATA SHEET NO. 2

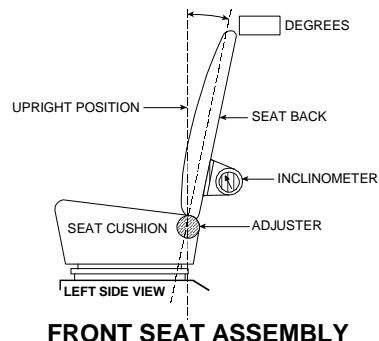
SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

NOMINAL DESIGN RIDING POSITION

Inclinometer was zeroed on the door sill, then placed on the head rest post to measure the set angle, according to form 1.

	Deg.
Driver seat back angle:	16.7
Passenger seat back angle:	17.7



SEAT FORE/AFT POSITIONS

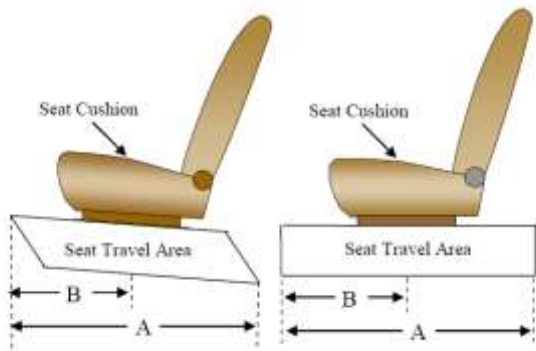
Seat was set to full forward, full up and marked. Then moved to the full rear, full down position, and marked. Mid point was measured, and seat was set to full down, mid position, as per form 1.

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	334	167
Passenger Seat	Fixed	Fixed

SEAT BELT UPPER ANCHORAGE

Belt anchorages were moved along the full range of motion, and marked on the B-pillar to their respective possible positions. Photographic evidence can be found in appendix A of this report.

	Total # of Positions	Placed in Position #
Driver Seat	4	0 (Uppermost)
Passenger Seat	Fixed	Fixed

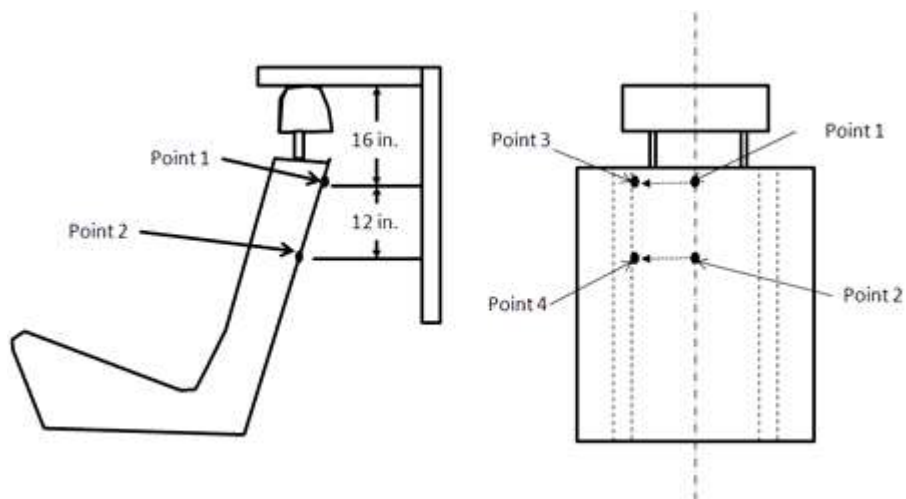


DATA SHEET NO. 2 (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle:	<u>2011 Ford Explorer</u>	NHTSA No:	<u>RB0223</u>
Test Program:	<u>R&D 56mph 15 angle, 35% Offset</u>	Test Date	<u>9/27/2011</u>

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	2336.323	-499.97	-476.619
Point 4	2426.912	-541.464	-170.857

See Appendix F.1 for detailed description of the CMM measurement procedure

DATA SHEET NO. 2 (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

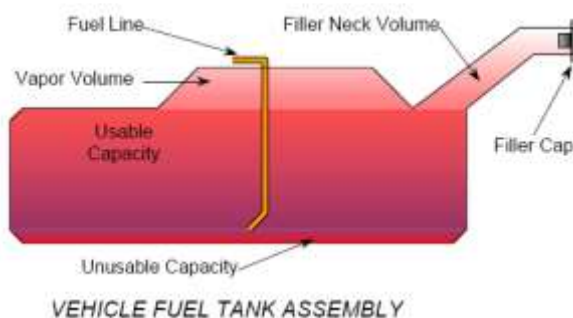
Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	70.4
Usable Capacity of "Optional Tank"	
92%-94% of Usable Capacity	64.7
Actual Amount of Solvent Used	64.7
1/3 of Usable Capacity	23.4

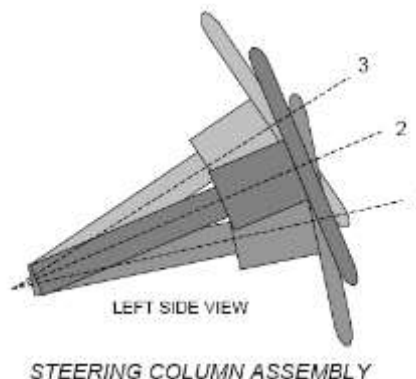
FUEL SYSTEM

Electric fuel pump is located by the right rear wheel and operates with the ignition in the 'on' position and the engine running.



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.



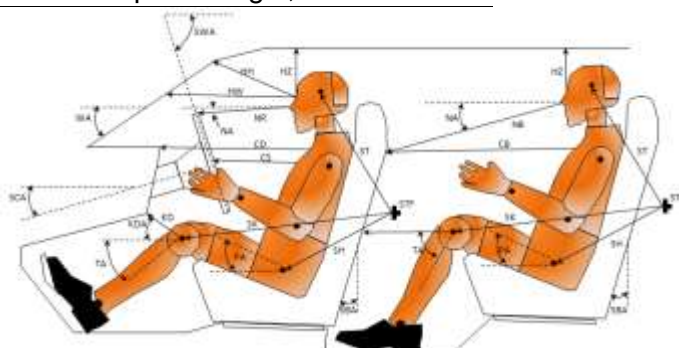
STEERING COLUMN POSITIONS

	Degrees	Fore/Aft Position (mm)
Lowermost position No. 1	60.3	
Geometric center position No. 2	63.2	
Uppermost position No. 3	66.0	
Telescoping Steering Wheel Travel		50
Test Position	63.2	25

DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011



Code	Measurement Description	Driver		Left Rear Passenger	
		Length (mm)	Angle(°)	Length (mm)	Angle (°)
WA°	Windshield Angle		-30.5		
SWA°	Steering Wheel Angle		26.7		
SCA°	Steering Column Angle		-26.8		
SA°	Seat Back Angle (on headrest post)		16.5		17.3
HZ	Head to Roof (Z)	216	90	293	90
HH	Head to Header	442	22.6		
HW	Head to Windshield	748	0		
NR/NB	Nose to Rim/Seat Back	442	-12.1	532	-12.0
CD/CB	Chest to Dash/Seat Back	603		560	
CS	Chest to Steering Hub	368	-13.8		
RA	Rim to Abdomen	168	0		
KDL/KBL	Left Knee to Dash/Seat Back	138	26.8	235	16.4
KDR/KBR	Right Knee to Dash/Seat Back	106	24.7	235	19.7
PA°	Pelvic Angle		-24.1		19.2
TA°	Tibia Angle		-50.8		-78.6
SK	Striker to Knee	618	-2	840	-15.4
ST	Striker to Head	610	80	445	44.3
SH	Striker to H-Point	273	-35.2	416	-33
HAX°	Head Angle X		0.0		
HAY°	Head Angle Y		4.8		
NAX°	Neck Angle X		-0.5		
NAY°	Neck Angle Y		-0.3		
TAX°	T Angle X		15.3		
TAY°	T Angle Y		0.4		
LAX°	Lumbar Angle (X)		-0.5		
LAY°	Lumbar Angle (Y)		22.3		

DATA SHEET NO. 3 (CONTINUED)

DUMMY CMM MEASUREMENTS

Test Vehicle:	2011 Ford Explorer	NHTSA No:	RB0223
Test Program:	R&D 56mph 15 angle, 35% Offset	Test Date:	9/27/2011

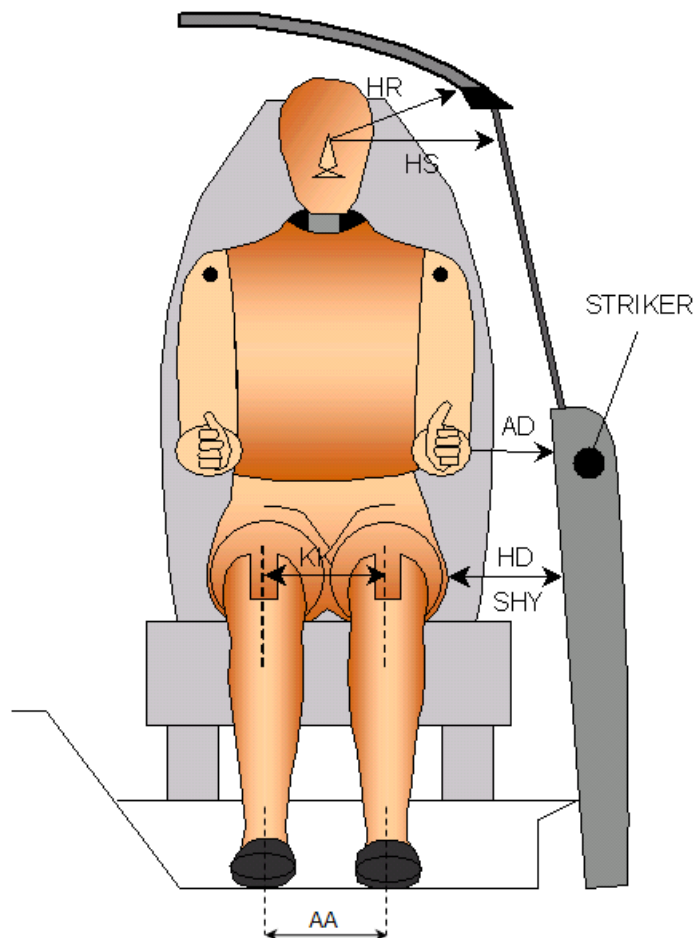
Description	Units	Driver			Left Rear Passenger		
		X	Y	Z	X	Y	Z
Striker (Driver/Passenger)	mm	2494.6	-858.2	-235.8	1379.8	-853.7	-428.5
Head CG	mm	2591.8	-454.5	-798.6	1687.1	-462.9	-728.3
Bridge of Nose	mm	2693.5	-380.0	-798.1	1777.3	-391.9	-725.0
Tip of Nose	mm	2690.1	-379.5	-745.1	1801.1	-390.5	-702.4
Shoulder Bolt	mm	2610.1	-559.9	-544.0	1675.7	-544.2	-496.0
Tip of Chin	mm	2683.7	-378.1	-667.1	1786.1	-390.8	-627.3
H-point	mm	2727.6	-574.0	-101.7	1762.1	-509.6	-193.2
Left Knee	mm	3120.4	-579.3	-244.5	2181.0	-503.8	-190.3
Right Knee	mm	3144.6	-283.1	-261.2	2185.8	-335.9	-184.4
Left Ankle	mm	3390.5	-543.7	76.3	2265.8	-513.6	129.0
Right Ankle	mm	3379.9	-273.3	88.8	2267.3	-347.2	134.0
Left Heel	mm	3353.3	-525.5	200.2	2186.5	-491.0	213.9
Right Heel	mm	3362.1	-231.0	228.0	2182.4	-330.3	213.8
Driver's Outboard Seat Anchor Bolt	mm	3022.6	-583.4	176.0			
Outboard Head Restraint Post	mm	2358.2	-462.8	-631.6	1459.0	-450.9	-667.6
Top of Head Restraint*	mm	2392.1	-378.7	-887.1	1497.2	-391.6	-873.4
Center of Steering Wheel	mm	3033.7	-385.3	-496.9			

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:	2011 Ford Explorer	NHTSA No:	RB0223
Test Program:	R&D 56mph 15 angle, 35% Offset	Test Date	9/27/2011

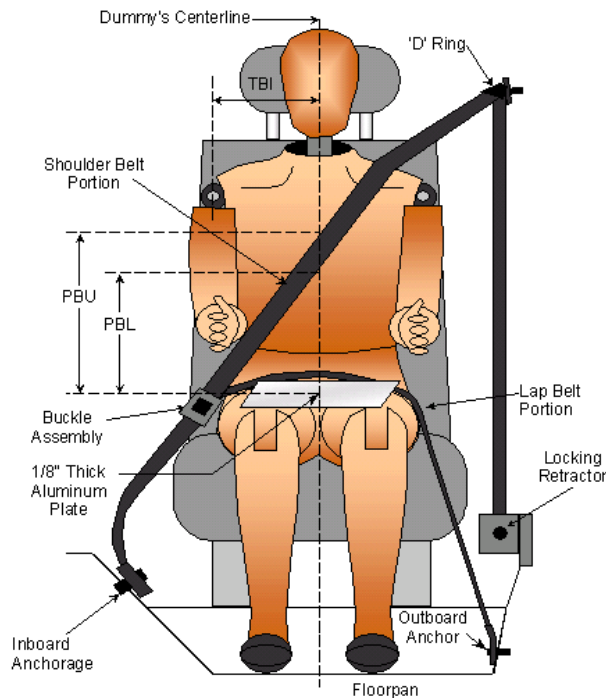


Code	Description	Units	Driver (P1)	Passenger (P4)
AD	Arm to Door	mm	188	108
HD	H-Point to Door	mm	160	215
HR	Head to Side Header	mm	626	311
HS	Head to Side Window	mm	422	422
KK	Knee to Knee	mm	295	168
SHY	Striker to H-Point (Y Direction)	mm	290	340
AA	Ankle to Ankle	mm	275	170

DATA SHEET NO. 5

SEAT BELT POSITIONING DATA

Test Vehicle:	2011 Ford Explorer	NHTSA No:	RB0223
Test Program:	R&D 56mph 15 angle, 35% Offset	Test Date	9/27/2011



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU — Top surface of aluminum plate to belt upper edge	mm	325	315
PBL — Top surface of aluminum plate to belt lower edge	mm	248	240

BELT LENGTH DATA

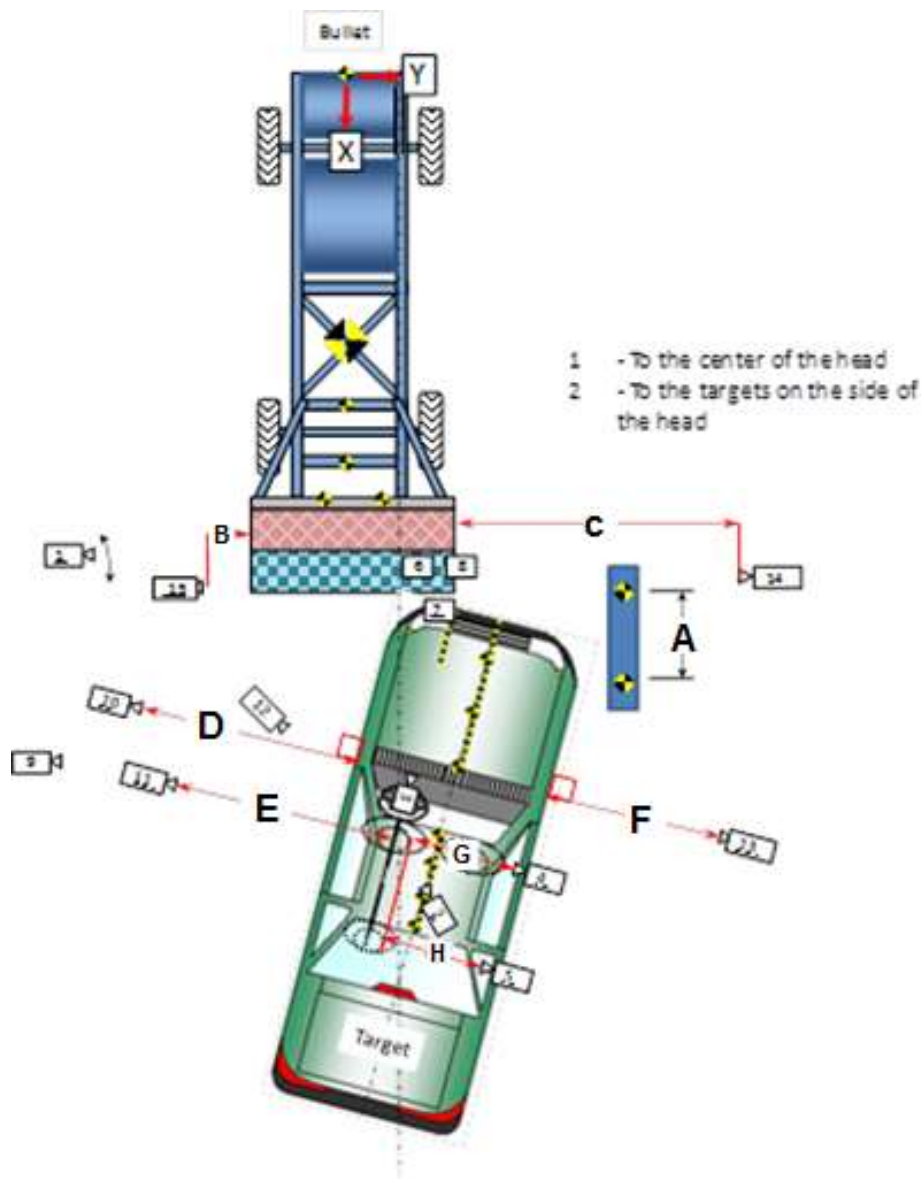
Measurement Description	Units	Driver	Passenger
Shoulder belt length as measured on ATD	mm	958	950
Lap Belt Length as measured on ATD	mm	620	715
Remainder of belt on reel	mm	822	735
Total belt length for continuous webbing systems	mm	2,400	2,400

DATA SHEET NO. 6

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

Horizontal Location



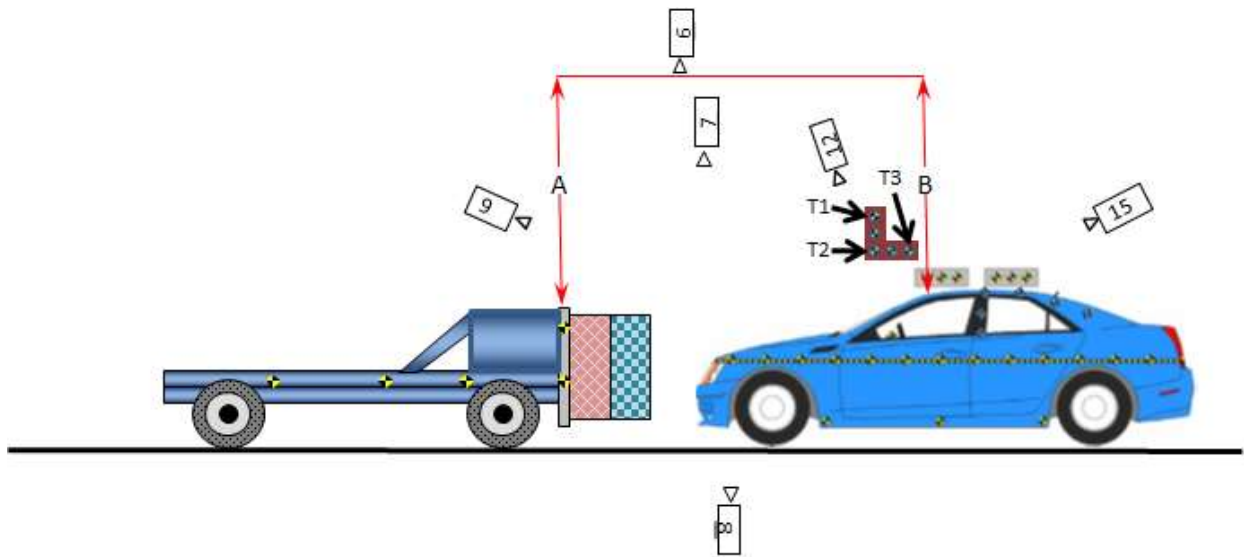
A	mm	915
B	mm	N/A
C	mm	N/A
D	mm	9010
E	mm	9280
F	mm	7870
G	mm	942
H	mm	955

DATA SHEET NO. 6 (CONTINUED)

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

Horizontal Location



	Units	Value
A	mm	4104
B	mm	3326

DATA SHEET NO. 6 (CONTINUED)

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

CAMERA LOCATIONS

No.	Camera View	Location (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Side View	8468	5787	708	-	-
2	Onboard Driver Over Shoulder	8328	625	1530	25	500
3	Onboard Driver Lower Leg	6008	530	470	6.5	500
4	Onboard Driver Perpendicular	7048	1450	1130	12.5	500
5	Onboard Left Rear Passenger Perpendicular	7988	1190	1130	12.5	500
6	Overall Top View	6519	-616	5340	14	1000
7	Zoomed Top View	4630	1123	3866	24	1000
8	Pit Front	-	-	-	-	-
9	Overall Left Side	7089	9430	1370	24	1000
10	Target Vehicle Left Side	5702	9502	1430	24	1000
11	Driver's Motion	5738	8000	1295	50	1000
12	Look Down Driver's Motion	7718	2260	3380	28	1000
13	Target Vehicle Right Side	9128	9436	1529	24	1000
14	Bullet Vehicle Left Side	4918	-9968	1384	28	1000
15	Bullet Vehicle Right Side	4820	9013	1334	28	1000
16	Onboard RMDB	4789	500	1718	13	1000

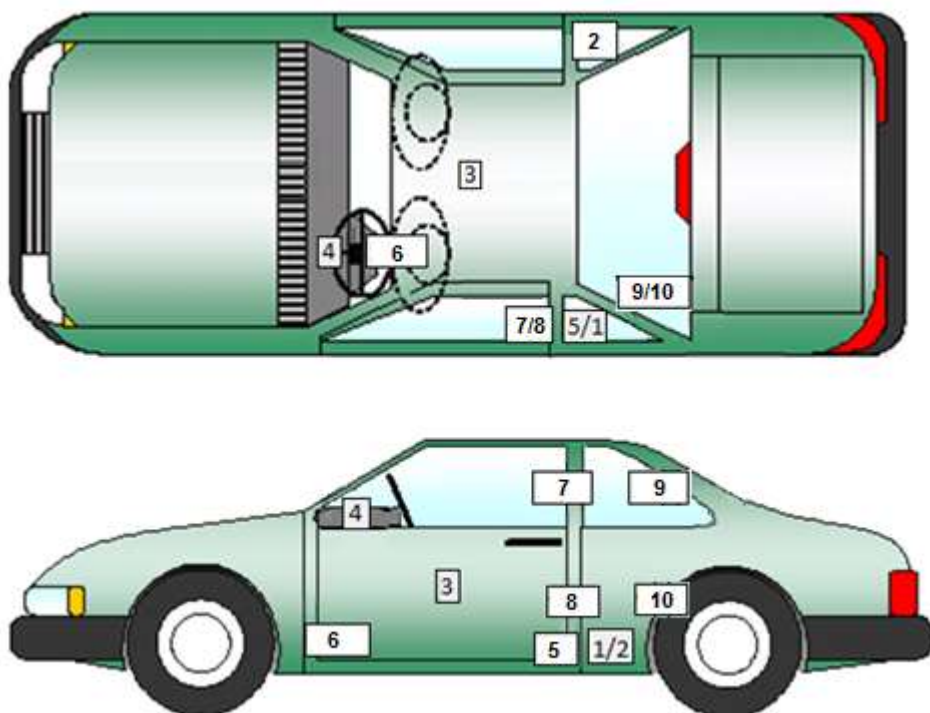
Reference point: center most rearward point of the RMDB when in contact with the Target Vehicle):

- +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:	2011 Ford Explorer	NHTSA No:	RB0223
Test Program:	R&D 56mph 15 angle, 35% Offset	Test Date	9/27/2011



Accelerometer Location	Axes	Units	Location		
			X	Y	Z
Left Rear Sill	X,Y	mm	2275	-665	185
Right Rear Sill	X,Y	mm	2219	674	157
Vehicle CG	X, Y, Z	mm	3063	110	113
Driver Seat Track	X	mm	2588	-519	107
Instrument Panel	X, Y, Z	mm	3166	-22	-315
Behind Brake Pedal	X, Y, Z	mm	3709	-386	95

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: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

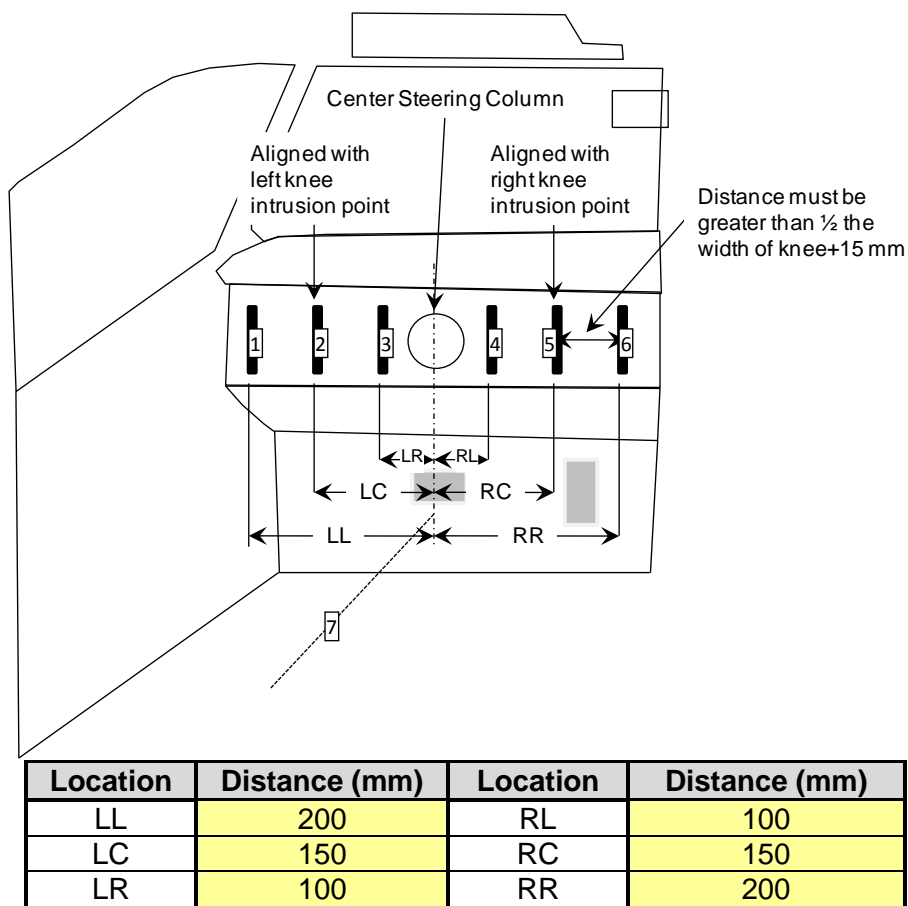
VEHICLE INSTRUMENTATION DATA

Loc.	Description	Axes	Units	Positive Direction		Negative Direction	
				Max	Time (ms)	Max	Time (ms)
1	Left Rear Cross Member	X	G	8.05	9.95	-45.90	36.80
		Y	G	18.91	47.35	-4.25	4.00
2	Right Rear Cross Member	X	G	0.65	1.10	-41.56	39.70
		Y	G	22.13	50.10	-2.67	81.40
3	Vehicle CG	X	G	1.91	127.85	-46.52	44.50
		Y	G	40.27	41.70	-7.28	5.90
		Z	G	54.13	299.95	-15.70	64.80
4	Instrument Panel	X	G	34.07	61.05	-73.81	53.00
5	Driver Seat Track	X	G	4.24	88.90	-45.58	46.00
		Y	G	23.66	46.75	-9.44	4.85
		Z	G	31.43	64.35	-17.27	57.65
6	Behind Brake Pedal	X	G	33.47	8.55	-140.71	40.50
		Y	G	67.22	39.25	-16.08	33.50
		Z	G	27.80	28.05	-16.86	23.00
7	Driver Shoulder Belt		N	5327.72	63.10	-60.35	6.70
8	Driver Lap Belt		N	3976.97	68.00	-12.69	8.20
9	Passenger Shoulder Belt		N	6200.68	78.15	-2.93	3.75
10	Passenger Lap Belt		N	6183.50	72.80	-0.75	1.75

DATA SHEET NO. 7 (CONTINUED)

VEHICLE INSTRUMENTATION DATA

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011



VEHICLE INSTRUMENTATION DATA

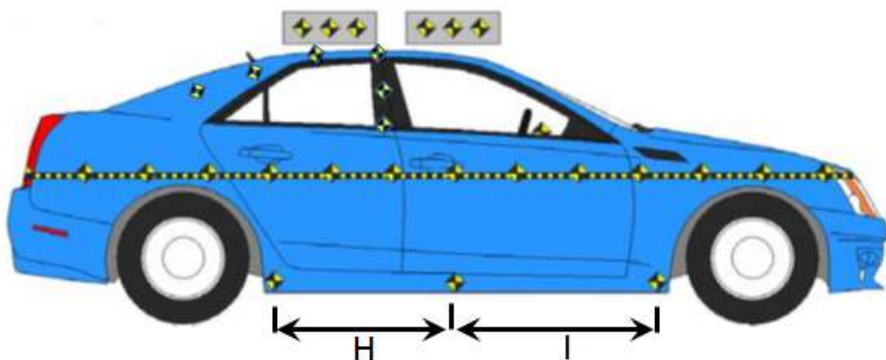
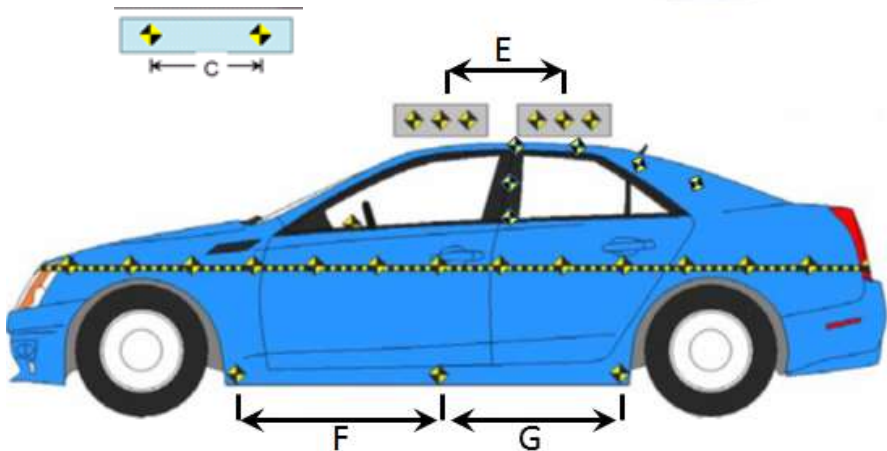
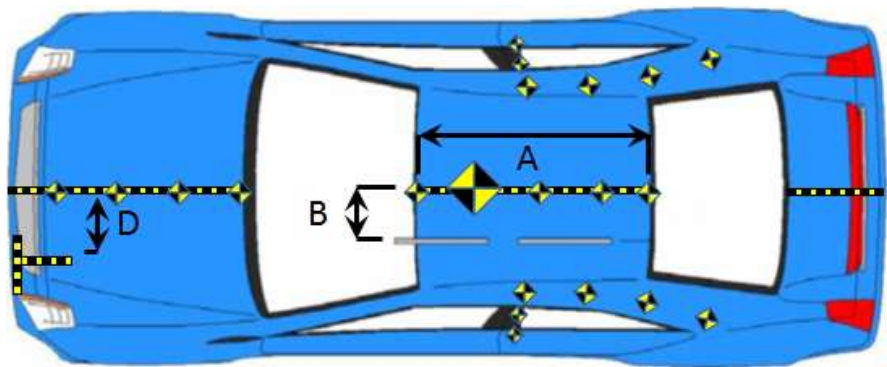
Loc.	Description		Positive Direction		Negative Direction	
			Max	Time (ms)	Max	Time (ms)
1	Left knee contact switch (LL) (ms)	*	0	-50	-1	25.40
2	Left knee contact switch (LC) (ms)	*	0	-50	-1	40.35
3	Left knee contact switch (LR) (ms)	*	0	-50	-1	40.40
4	Right knee contact switch (RL) (ms)	*	0	-50	-1	40.10
5	Right knee contact switch (RC) (ms)	*	0	-50	-1	41.00
6	Right knee contact switch (RR) (ms)	*	0	-50	0	-50
7	Toe pan string pot (mm)		0.209	1.10	-221.100	54.250

* The measurement indicates the initial time the voltage changed

DATA SHEET NO. 8

VEHICLE PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

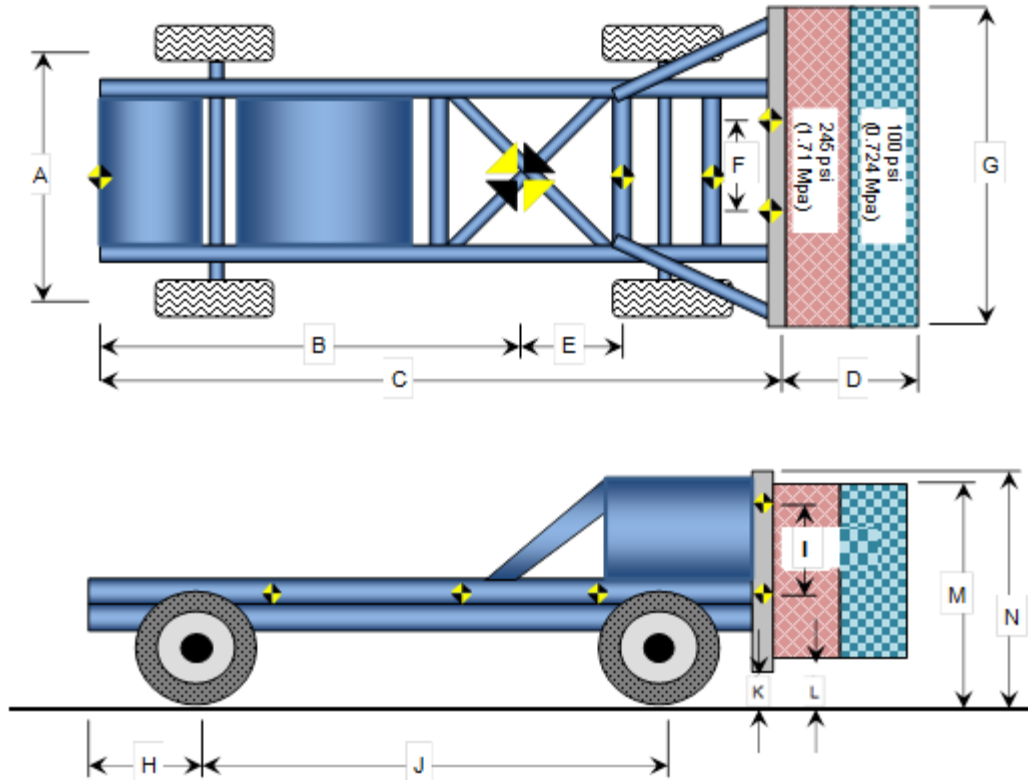


Item	Units	Value
A	mm	610
B	mm	446
C	mm	915
D	mm	300
E	mm	1221
F	mm	977
G	mm	970
H	mm	981
I	mm	975

DATA SHEET NO. 8 (CONTINUED)

RMDB PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011



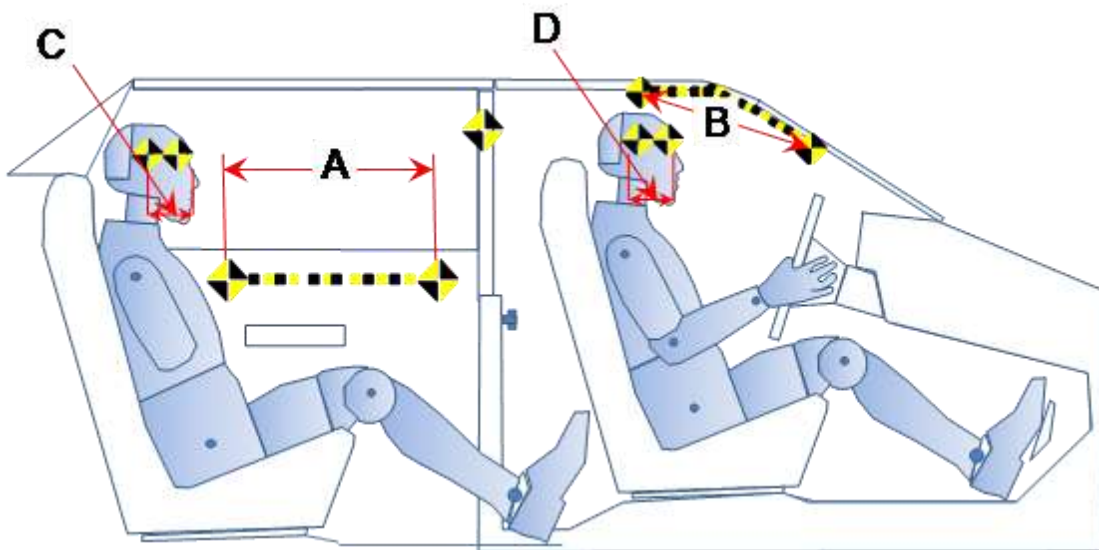
Item	Units	Value
A	mm	1550
B	mm	2215
C	mm	3940
D	mm	606
E	mm	1185
F	mm	1130
G	mm	2210
H	mm	795
I	mm	500
J	mm	2585
K	mm	90
L	mm	98
M	mm	1055
N	mm	1190

	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			1286

DATA SHEET NO. 8 (CONTINUED)

DUMMY PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011



Item	Units	Value
A	mm	305
B	mm	305
C	mm	50
D	mm	50

DATA SHEET NO. 9

TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

INSTRUMENTATION

Driver Dummy Accelerometers	119
Passenger Dummy Accelerometers	34
Vehicle Structure Accelerometers	16
Total	169

CAMERA COVERAGE

High-Speed Vehicle Onboard	4
High-Speed Offboard	11
Real-Time Panning	1
Total	16

DATA SHEET NO. 10

POST TEST OBSERVATIONS

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

TEST DUMMY INFORMATION AND CONTACT

Description	Driver	Picture Ref.	Passenger	Picture Ref.
Dummy Type	THOR 50 th Male	N/A	HIII 5 th Female	N/A
Dummy Serial No.	0007	N/A	070	N/A
Lower Leg Type	THOR-FLX Lower Leg	N/A	HIII Lower Leg	N/A
Lower Leg Serial No.	LX036 / LX034	N/A		N/A
Head Contact	Steering wheel Airbag, Curtain Airbag, and door frame	A-37 A-48	Curtain Airbag, Seatbelt Airbag, Chest, Seatback, and Interior C-Pillar	A-49 A-52 A-58
Upper Torso Contact	Steering wheel Airbag and Torso Airbag	-	Seatbelt Airbag and Passenger's Door	-
Lower Torso Contact	Torso Airbag	A-46 A-47	Seatbelt Airbag	-
Left Knee Contact	Knee Bolster	A-45	Driver Seatback	A-59
Right Knee Contact	Knee Bolster	A-44	Driver Seatback	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	Rolled down, shattered	Rolled Down, Shattered

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions	Picture Ref
Windshield Damage	Shattered, some separation in front of Driver	A-21
Window Damage	Shattered, Rolled down	A-36 / A-51
Other Notable Effects	None	-

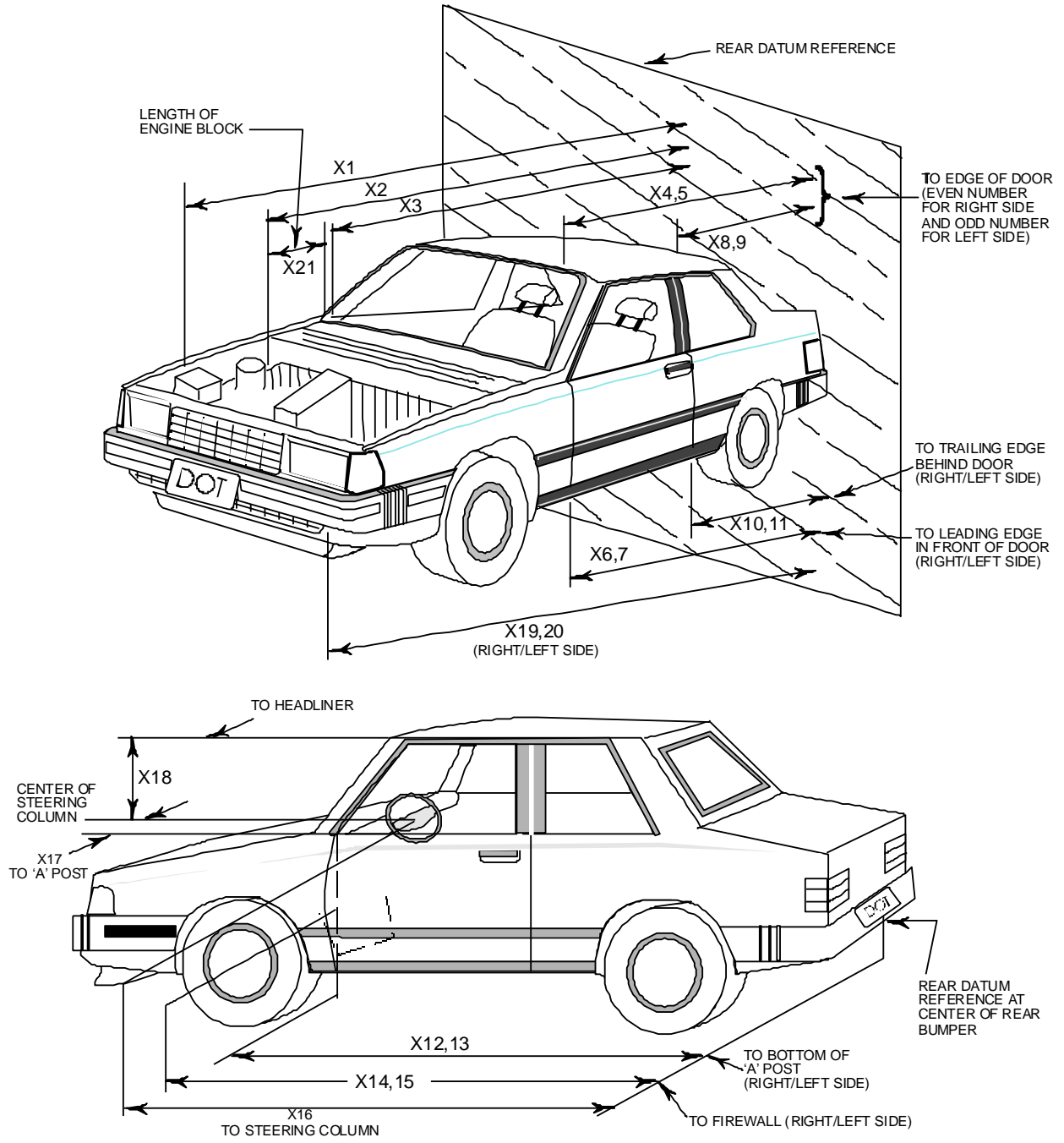
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Driver (Occupant 1)		Passenger (Occupant 2)	
	Installed	Operated	Installed	Operated
Front Airbag	Yes	Yes	No	
Combination Head/Torso Airbag	Yes	Yes	No	
Curtain (or other Head) Airbag	Yes	Yes	Yes	Yes
Knee Airbag	No	No	No	No
Seat Belt Pretensioner	Yes	Yes	No	No
Seat Belt Load Limiter	Yes	Yes	No	No

DATA SHEET NO. 11

VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011



DATA SHEET NO. 11 (CONTINUED)

VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

No.	Measurement Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	5010	4688*	322*
2	Rear Surface of Vehicle (RSOV) to Front of Engine	4522	4405	117
3	RSOV to Firewall	4045	3909	137
4	RSOV to Upper Leading Edge of Right Door	3511	3501	9
5	RSOV to Upper Leading Edge of Left Door	3510	3499	12
6	RSOV to Lower Leading Edge of Right Door	3486	3480	6
7	RSOV to Lower Leading Edge of Left Door	3484	3469	14
8	RSOV to Upper Trailing Edge of Right Door	2414	2408	6
9	RSOV to Upper Trailing Edge of Left Door	2413	2404	9
10	RSOV to Lower Trailing Edge of Right Door	2459	2455	4
11	RSOV to Lower Trailing Edge of Left Door	2459	2442	16
12	RSOV to Bottom of "A" Post of Right Side	3490	3635	-146
13	RSOV to Bottom of "A" Post of Left Side	3488	3634	-146
14	RSOV to Firewall, Right Side	4079	4068	11
15	RSOV to Firewall, Left Side	4078	3887	191
16	RSOV to Steering Column	3034	3011	23
17	Center of Steering Column to "A" Post	310	277	33
18	Center of Steering Column to Headliner	462	462	-1
19	RSOV to Right Side of Front Bumper	4954	4848*	106*
20	RSOV to Left Side of Front Bumper	4958	4450*	507*
21	Length of Engine Block	560	436	124
RD	RSOV to Right Side of Dash Panel	3213	3188	25
CD	RSOV to Center of Dash Panel	3282	3230	53
LD	RSOV to Left Side of Dash Panel	3219	3175	44

All Dimensions in mm

*Measurements approximate, plastic may have fallen off vehicle

DATA SHEET NO. 12

ACCIDENT INVESTIGATION DIVISION DATA

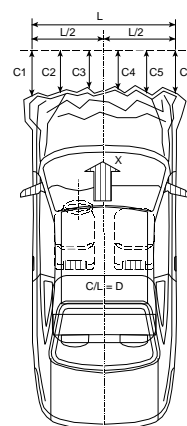
Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

VEHICLE INFORMATION

VIN: 1FMHK7D8XBGA75834 Wheelbase: 2868
 Vehicle Size Category: Passenger Test Weight (kg): 2363

ACCELEROMETER DATA

Accelerometer Locations: Data Sheet No.7 Linearity: >99%
 Cal. Procedure/Interval: Shaker table 180 days
 Integration Algorithm: Trapezoidal
 Impact Velocity (km/h): 90.12
 Velocity Change (km/h): 90.12



CRUSH PROFILE

Collision Deformation Classification : 11FYEW3
 Midpoint of Damage: C2
 Damage Region Length (mm): 1497
 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	4813	4393	420
C2	Crush zone 2 at left side	mm	4958	4557	401
C3	Crush zone 3 at left side	mm	4996	4630	366
C4	Crush zone 4 at right side	mm	4995	4792	203
C5	Crush zone 5 at right side	mm	4954	4912	42
C6	Crush zone 6 at right side	mm	4798	4810	-12
L	C1 to C6	mm	1497	1374	123

CRUSH MEASUREMENTS: WITH BUMPER COVER REMOVED

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	4894.5	4458.2	-162.2
C2	Crush zone 2 at left side	mm	4942.6	4410.3	-128.4
C3	Crush zone 3 at left side	mm	4967.6	4543.1	-123.2
C4	Crush zone 4 at right side	mm	4967.2	4679.7	-104.9
C5	Crush zone 5 at right side	mm	4943.1	4793.5	-86.8
C6	Crush zone 6 at right side	mm	4893.1	4887.2	-75.0
L	C1 to C6	mm	1150	904	246

DATA SHEET NO. 13

VEHICLE INTRUSION MEASUREMENTS

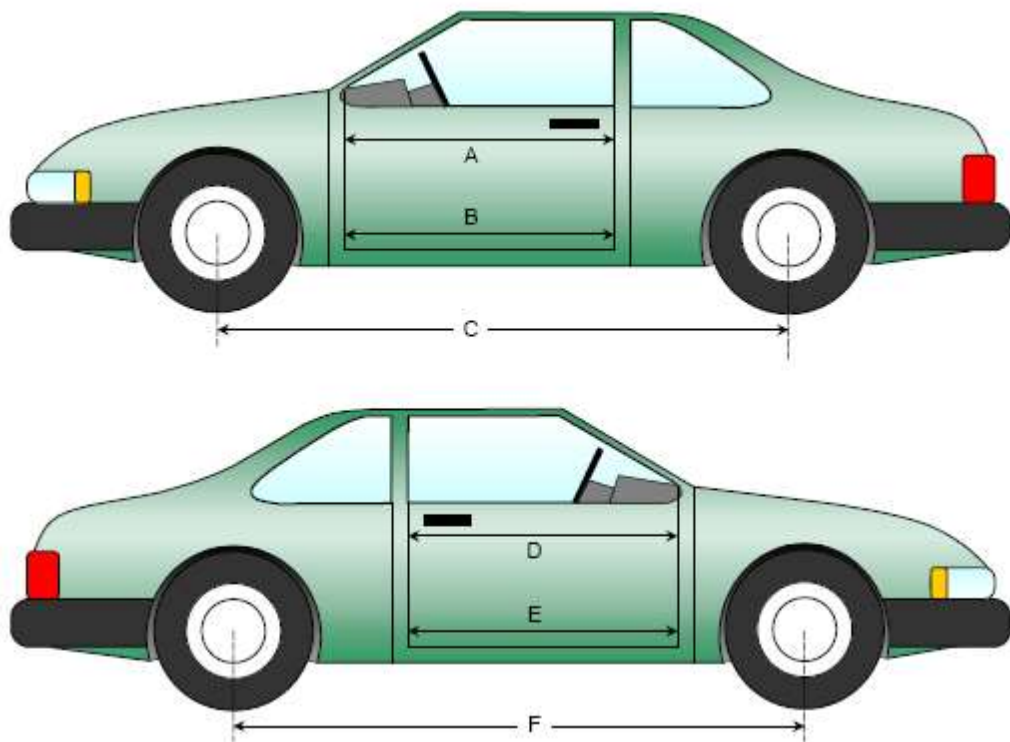
Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	965	950	-15
B	Left Side Lower	mm	856	845	-11
D	Right Side Upper	mm	967	967	0
E	Right Side Lower	mm	860	860	0

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2862	2738	-124
F	Right Side Wheelbase	mm	2865	2887	22



DATA SHEET NO.13 (CONTINUED)

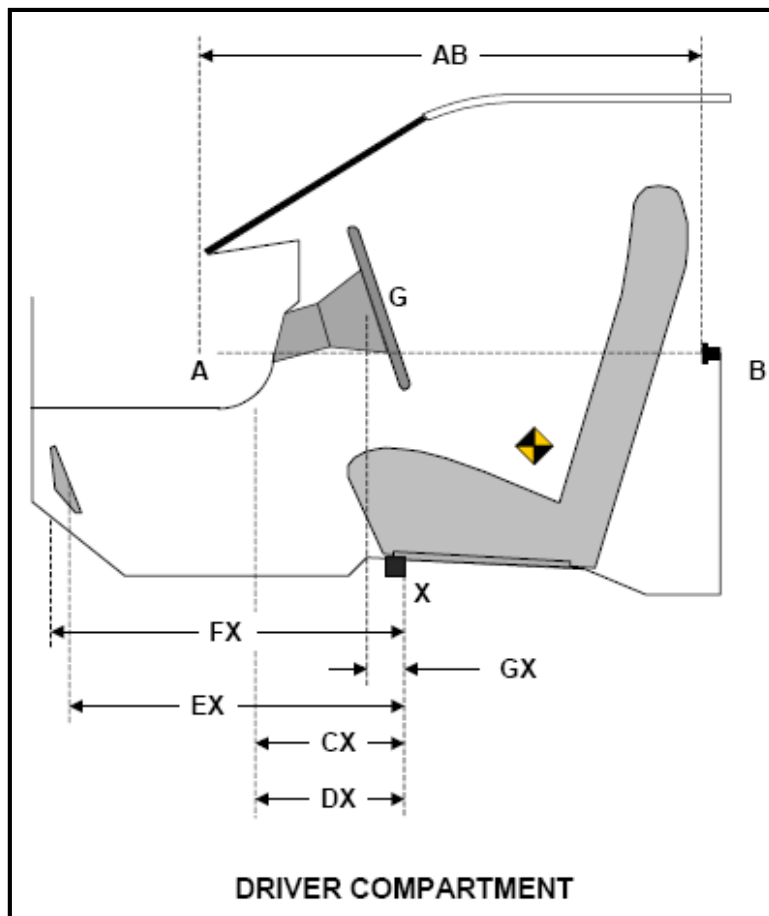
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	810	804	-6
CX	Left Knee Bolster to X	mm	270	199	-72
DX	Right Knee Bolster to X	mm	266	206	-60
EX	Brake Pedal to X	mm	474	450	-24
FX	Foot Rest to X	mm	559	527	-32
GX	Center of Steering Column Wheel Hub to X	mm	11	-7	-18

X = Front of Seat Track (Stationary)

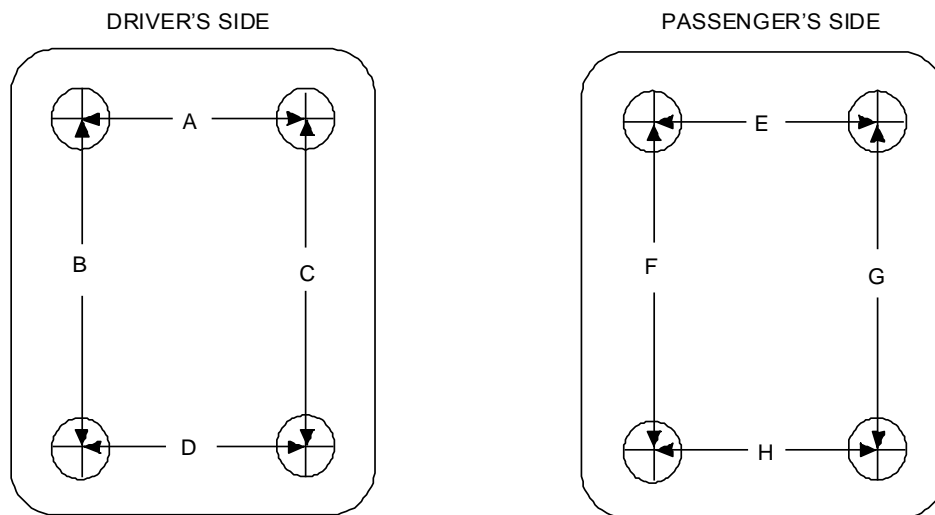


DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle:	<u>2011 Ford Explorer</u>	NHTSA No:	<u>RB0223</u>
Test Program:	<u>R&D 56mph 15 angle, 35% Offset</u>	Test Date	<u>9/27/2011</u>

TOP VIEW THROUGH FLOOR PAN



UNDERBODY FLOORBOARD DEFORMATION

Measurement	Pre-Test	Post-Test	Difference
A	428	425	2
B	329	325	4
C	294	285	9
D	484	485	-1
E	378	382	-4
F	372	370	2
G	335	333	2
H	445	442	3

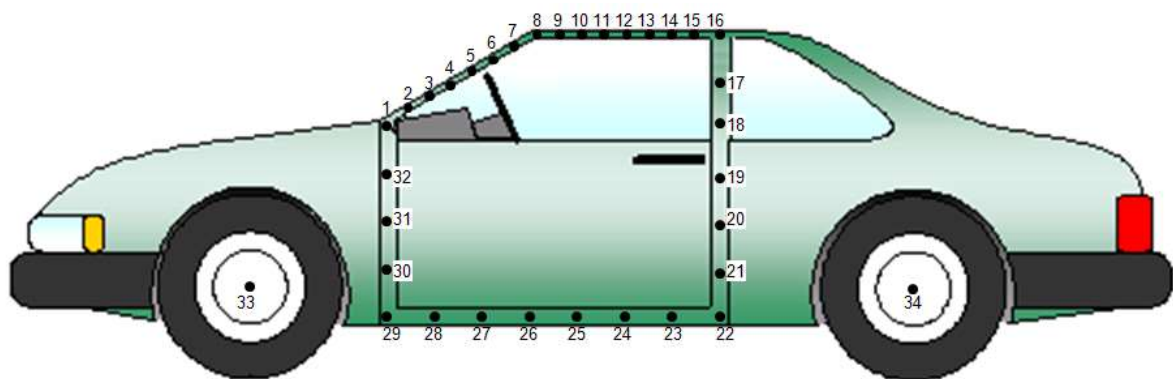
All units in millimeters

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

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 F.2 for detailed procedure to measure required Door sill intrusion.

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

DRIVER SIDE DOOR SILL INTRUSIONS

Pt.	Pre-Test			Post-Test			Difference		
	X	Y	Z	X	Y	Z	X	Y	Z
1	3395	-809	-619	3390	-796	-600	-5	14	18
2	3356	-794	-682	3353	-787	-665	-2	7	16
3	3305	-781	-729	3302	-773	-714	-3	8	15
4	3244	-769	-767	3243	-762	-750	-1	7	17
5	3180	-755	-805	3179	-748	-790	-1	7	15
6	3117	-741	-843	3117	-733	-828	0	8	15
7	3055	-727	-878	3055	-718	-864	0	9	14
8	2991	-712	-912	2992	-703	-900	1	9	13
9	2927	-696	-945	2928	-687	-933	1	9	12
10	2860	-682	-974	2862	-673	-963	2	9	11
11	2791	-672	-994	2792	-664	-983	1	9	11
12	2718	-668	-1004	2720	-660	-994	2	8	10
13	2643	-667	-1008	2646	-660	-999	3	8	10
14	2569	-667	-1011	2571	-660	-1002	2	7	10
15	3395	-809	-619	3390	-796	-600	-5	14	18
16	3356	-794	-682	3353	-787	-665	-2	7	16
17	3305	-781	-729	3302	-773	-714	-3	8	15
18	3244	-769	-767	3243	-762	-750	-1	7	17
19	3180	-755	-805	3179	-748	-790	-1	7	15
20	3117	-741	-843	3117	-733	-828	0	8	15
21	3055	-727	-878	3055	-718	-864	0	9	14
22	2991	-712	-912	2992	-703	-900	1	9	13
23	2927	-696	-945	2928	-687	-933	1	9	12
24	2860	-682	-974	2862	-673	-963	2	9	11
25	2791	-672	-994	2792	-664	-983	1	9	11
26	2718	-668	-1004	2720	-660	-994	2	8	10
27	2643	-667	-1008	2646	-660	-999	3	8	10
28	2569	-667	-1011	2571	-660	-1002	2	7	10
29	2495	-667	-1012	2496	-661	-1002	1	6	10
30	2423	-672	-1007	2424	-666	-998	1	6	9
31	2409	-764	-829	2410	-758	-822	1	6	7
32	2429	-842	-647	2430	-836	-639	2	6	8

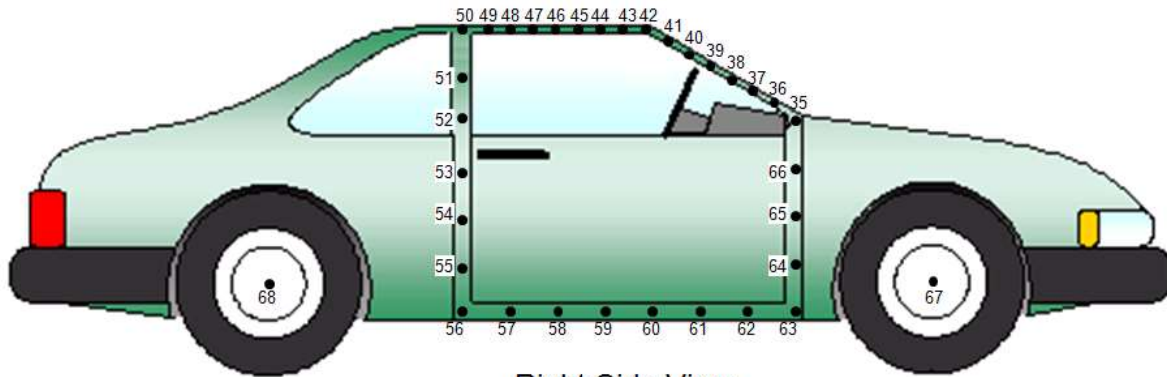
Note: See appendix F.2 for detailed procedure to measure required Door sill intrusion

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

PASSENGER SIDE DOOR SILL INTRUSIONS



Right 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 F.2 for detailed procedure to measure required Door sill intrusion.

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

PASSENGER SIDE DOOR SILL INTRUSION

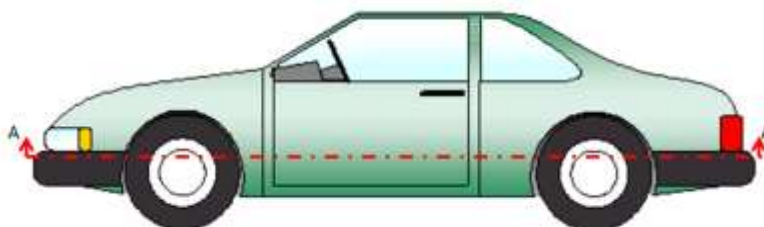
Pt.	Pre-Test			Post-Test			Difference		
	X	Y	Z	X	Y	Z	X	Y	Z
35	3395	810	-614	3383	802	-612	-12	-8	1
36	3357	795	-676	3343	787	-675	-13	-9	2
37	3302	782	-724	3288	772	-723	-14	-10	1
38	3243	770	-763	3229	760	-760	-14	-10	3
39	3180	757	-799	3167	747	-797	-13	-10	2
40	3119	744	-834	3106	733	-832	-13	-11	3
41	3056	730	-868	3043	719	-867	-13	-11	2
42	2996	715	-904	2985	705	-902	-11	-10	2
43	2932	700	-936	2919	690	-933	-13	-10	3
44	2863	686	-966	2850	676	-963	-13	-10	3
45	2792	675	-989	2778	666	-986	-14	-9	3
46	2721	670	-1000	2706	663	-998	-14	-8	2
47	2649	669	-1005	2635	663	-1003	-14	-6	2
48	3395	810	-614	3383	802	-612	-12	-8	1
49	3357	795	-676	3343	787	-675	-13	-9	2
50	3302	782	-724	3288	772	-723	-14	-10	1
51	3243	770	-763	3229	760	-760	-14	-10	3
52	3180	757	-799	3167	747	-797	-13	-10	2
53	3119	744	-834	3106	733	-832	-13	-11	3
54	3056	730	-868	3043	719	-867	-13	-11	2
55	2996	715	-904	2985	705	-902	-11	-10	2
56	2932	700	-936	2919	690	-933	-13	-10	3
57	2863	686	-966	2850	676	-963	-13	-10	3
58	2792	675	-989	2778	666	-986	-14	-9	3
59	2721	670	-1000	2706	663	-998	-14	-8	2
60	2649	669	-1005	2635	663	-1003	-14	-6	2
61	2577	669	-1007	2563	664	-1006	-14	-5	1
62	2499	669	-1010	2485	665	-1007	-15	-3	3
63	2421	676	-996	2408	674	-995	-12	-2	2
64	2408	763	-829	2394	762	-829	-14	-1	1
65	2430	838	-652	2414	837	-653	-16	-1	-1
66	2448	895	-474	2434	894	-470	-14	-2	4

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

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle:	2011 Ford Explorer	NHTSA No:	RB0223
Test Program:	R&D 56mph 15 angle, 35% Offset	Test Date	9/27/2011



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	795.9	989.1	-33.8	1	823.9	-991.4	-72.0
2	679.1	959.8	-33.3	2	496.9	-909.8	-55.9
3	486.3	911.0	-35.6	3	308.6	-847.0	-44.8
4	296.7	846.4	-28.4	4	208.4	-784.3	-40.1
5	219.1	798.8	-27.2	5	146.1	-706.4	-32.2
6	162.8	739.9	-28.8	6	105.2	-618.5	-25.5
7	119.6	661.3	-29.9	7	50.2	-440.7	-11.6
8	63.9	492.3	-23.0	8	7.2	-151.8	7.6
9	20.0	215.0	-23.8	9	2.4	2.5	20.4
10	6.4	0.0	-18.1	10	22.4	301.5	19.2
11	14.0	-129.6	-24.4	11	94.1	645.6	39.4
12	43.1	-378.0	-22.9	12	143.7	696.3	44.5
13	95.4	-595.2	-25.1	13	214.6	787.2	47.2
14	145.4	-707.5	-29.8	14	347.1	858.6	49.4
15	185.4	-762.0	-27.5	15	760.0	975.5	41.0
16	246.9	-812.8	-25.5	16	1565.4	994.7	12.3
17	358.8	-865.6	-27.5	17	1730.4	995.1	15.0
18	481.3	-903.0	-23.2	18	2027.3	992.6	5.7
19	588.0	-932.1	-24.0	19	2348.1	994.5	0.2

Note: See appendix F.3 for a detailed procedure on how to measure vehicle exterior crush profile

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle:	2011 Ford Explorer	NHTSA No:	RB0223
Test Program:	R&D 56mph 15 angle, 35% Offset	Test Date	9/27/2011

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

Pt.	Pre-Test			Pt.	Post-Test		
	X	Y	Z		X	Y	Z
20	794.0	-985.0	-23.6	20	2443.7	994.4	0.1
21	3666.4	-1003.1	-53.5	21	2455.1	1005.6	-8.0
22	3486.6	-985.8	-48.9	22	2775.5	1005.1	-14.4
23	3285.8	-973.7	-46.8	23	3208.9	1000.2	-28.1
24	3125.1	-977.6	-46.2	24	3450.6	1006.9	-30.2
25	2982.5	-980.5	-46.6	25	3518.8	1021.5	-32.6
26	2837.1	-982.5	-45.7	26	3668.3	1029.5	-40.4
27	2645.2	-984.0	-44.7	27	4434.6	1022.1	-71.9
28	2489.7	-984.3	-43.9	28	4430.8	943.2	-76.8
29	2417.7	-985.3	-43.5	29	4434.0	790.5	-83.6
30	2255.5	-987.4	-42.8	30	4482.7	728.6	-92.5
31	2073.5	-988.9	-42.1	31	4589.5	678.9	-100.9
32	1812.3	-992.2	-40.2	32	4676.1	679.8	-100.4
33	1651.1	-998.9	-40.3	33	4687.7	574.5	-106.9
34	1543.1	-1001.4	-42.3	34	4815.0	506.5	-112.5
35	4409.8	-976.6	-45.9	35	4838.5	393.5	-123.0
36	4551.6	-931.8	-55.2	36	4657.9	60.4	-130.0
37	4628.2	-874.6	-54.5	37	4429.9	-181.3	-134.5
38	4776.6	-768.7	-57.5	38	4379.1	-347.9	-151.0
39	4860.2	-683.3	-59.6	39	4441.4	-369.8	-150.2
40	4927.0	-560.9	-59.7	40	4490.7	-442.0	-156.0
41	4960.4	-433.9	-58.7	41	4502.0	-547.4	-157.6
42	4976.4	-333.6	-54.1	42	4352.4	-547.4	-152.9
43	4995.2	-106.9	-62.5	43	4289.4	-560.0	-150.2
44	4997.6	-3.9	-65.6	44	4119.3	-512.6	-137.0
45	4992.2	165.1	-55.8	45	4037.1	-533.9	-143.4
46	4971.0	366.6	-59.0	46	4155.4	-671.4	-155.1
47	4922.6	566.4	-60.7	47	4195.3	-815.0	-167.4
48	4873.6	659.7	-59.5	48	4144.3	-899.5	-164.2
49	4810.2	733.5	-63.1	49	4127.2	-910.3	-167.0
50	4711.7	813.8	-59.3	50	3814.2	-905.2	-158.4
51	4609.1	886.5	-53.0	51	3667.1	-921.5	-158.0
52	4555.9	927.5	-53.7	52	3605.5	-990.1	-161.9
53	4414.6	973.4	-52.2	53	3557.0	-1002.8	-158.8

Note: See appendix F.3 for a detailed procedure on how to measure vehicle exterior crush profile

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

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

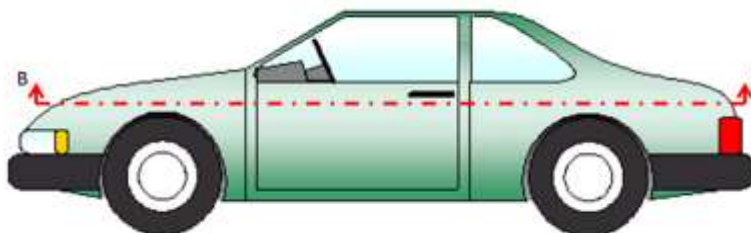
Pt.	Pre-Test			Pt.	Post-Test		
	X	Y	Z		X	Y	Z
54	3667.7	1000.5	-46.7	54	3564.7	-1009.6	-160.7
55	3573.2	996.2	-49.2	55	3514.9	-990.1	-156.0
56	3507.7	987.5	-51.1	56	3327.9	-980.5	-147.4
57	3273.4	976.7	-45.8	57	2963.9	-980.0	-141.4
58	3000.4	982.9	-47.0	58	2689.7	-976.8	-135.2
59	2694.3	987.9	-40.5	59	2438.5	-967.9	-125.2
60	2455.9	989.7	-38.2	60	2233.4	-968.4	-119.8
61	2127.2	991.6	-41.3	61	1866.1	-968.0	-110.4
62	1906.7	992.4	-40.3	62	1659.4	-997.3	-106.0
63	1645.7	1000.8	-46.0	63	1502.0	-1002.4	-99.0
64	795.9	989.1	-33.8				

Note: See appendix F.3 for a detailed procedure on how to measure vehicle exterior crush profile

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011



Page 3-15: Please change text below figure:

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	990.1	995.2	-245.2	1	1022.4	-992.2	-273.8
2	843.6	975.9	-242.9	2	883.3	-976.7	-267.3
3	701.7	938.3	-246.3	3	582.4	-906.9	-255.2
4	544.8	899.7	-249.5	4	368.1	-845.3	-247.5
5	399.8	860.5	-245.5	5	311.4	-806.0	-239.4
6	323.7	821.6	-246.6	6	231.9	-690.6	-234.3
7	257.6	746.6	-242.6	7	177.2	-528.1	-222.5
8	209.7	652.1	-244.4	8	113.5	-129.0	-197.5
9	147.2	426.1	-242.1	9	110.6	120.0	-190.0
10	110.7	179.5	-241.0	10	133.0	406.4	-173.1
11	94.9	-1.6	-245.6	11	147.4	503.9	-166.9
12	110.2	-171.6	-241.5	12	192.1	665.2	-158.0
13	141.1	-389.6	-237.8	13	203.0	684.7	-158.3
14	183.0	-565.2	-239.6	14	271.0	796.2	-150.9
15	264.8	-752.1	-242.1	15	373.6	858.8	-150.3
16	319.6	-814.5	-241.8	16	528.7	901.5	-153.2
17	399.4	-857.6	-239.4	17	724.3	959.6	-154.4
18	523.5	-892.5	-246.4	18	943.8	997.4	-167.7

Note: See appendix F.3 for a detailed procedure on how to measure vehicle exterior crush profile

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle:	2011 Ford Explorer	NHTSA No:	RB0223
Test Program:	R&D 56mph 15 angle, 35% Offset	Test Date	9/27/2011

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

Pt.	Pre-Test			Pt.	Post-Test		
	X	Y	Z		X	Y	Z
19	746.9	-948.4	-241.2	19	1393.4	1005.9	-176.1
20	781.8	-957.0	-266.8	20	1598.0	1001.4	-177.2
21	951.6	-989.4	-245.2	21	1812.1	980.9	-187.1
22	1080.2	-999.8	-242.9	22	2122.5	983.5	-192.6
23	1235.6	-1004.0	-246.3	23	2443.3	986.4	-200.1
24	1342.8	-1003.2	-249.5	24	2450.8	996.9	-201.0
25	1467.8	-999.8	-245.5	25	2730.6	996.6	-207.9
26	1645.0	-985.7	-246.6	26	3228.7	1002.0	-220.0
27	1758.0	-978.7	-242.6	27	3523.3	1004.5	-232.2
28	1959.8	-979.0	-244.4	28	3838.4	1026.9	-240.9
29	2132.8	-980.7	-242.1	29	4161.0	1014.2	-249.3
30	2289.2	-981.9	-241.0	30	4226.7	1014.1	-256.0
31	2561.5	-983.6	-245.6	31	4351.1	988.7	-265.5
32	2721.9	-983.2	-241.5	32	4466.7	925.0	-269.3
33	2896.5	-982.6	-237.8	33	4487.1	839.3	-274.8
34	3062.6	-981.4	-239.6	34	4526.4	824.4	-272.9
35	3273.1	-978.5	-242.1	35	4523.0	761.8	-278.6
36	3499.0	-975.6	-241.8	36	4485.9	598.6	-288.8
37	3664.2	-986.7	-239.4	37	4621.9	494.8	-301.7
38	3841.4	-999.7	-246.4	38	4710.7	463.1	-305.4
39	4059.7	-997.7	-241.2	39	4717.3	362.7	-310.3
40	4100.1	-996.2	-260.6	40	4625.7	286.9	-314.1
41	4240.1	-985.5	-265.9	41	4494.7	63.8	-315.4
42	4350.4	-965.9	-268.1	42	4363.6	-81.8	-319.7
43	4472.7	-897.1	-270.9	43	4199.6	-228.8	-320.8
44	4600.9	-818.9	-271.8	44	4132.6	-255.9	-320.9
45	4640.0	-789.5	-270.9	45	4205.6	-408.9	-332.4
46	4824.3	-571.2	-287.4	46	4037.3	-403.6	-313.0
47	4868.4	-471.3	-277.2	47	4000.6	-515.9	-324.2
48	4911.2	-309.0	-275.0	48	3948.3	-593.4	-332.3
49	4930.2	-126.2	-275.0	49	3912.0	-718.5	-339.0
50	4948.1	-107.4	-286.0	50	3881.3	-750.9	-343.2
51	4955.2	-5.4	-282.4	51	3889.0	-776.2	-343.4
52	4948.1	103.5	-283.2	52	3837.2	-857.0	-346.1

Note: See appendix F.3 for a detailed procedure on how to measure vehicle exterior crush profile

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

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

Pt.	Pre-Test			Pt.	Post-Test		
	X	Y	Z		X	Y	Z
53	4929.9	119.5	-277.1	53	3669.2	-825.8	-346.3
54	4914.3	281.5	-276.9	54	3719.2	-946.9	-347.7
55	4868.3	465.4	-275.5	55	3668.5	-835.5	-353.4
56	4829.3	566.0	-283.4	56	3624.8	-911.0	-345.8
57	4648.6	778.1	-268.5	57	3528.9	-956.5	-347.9
58	4492.5	885.4	-266.3	58	3530.2	-963.4	-337.2
59	4355.3	961.8	-270.0	59	3513.6	-976.5	-338.5
60	4240.2	981.2	-271.0	60	3227.5	-980.2	-326.8
61	4027.8	999.1	-271.0	61	2799.4	-979.4	-318.3
62	3857.6	1000.1	-267.6	62	2438.5	-976.4	-314.1
63	3660.3	988.4	-267.4	63	2432.4	-972.8	-314.8
64	3354.6	976.6	-259.0	64	2024.3	-973.4	-295.3
65	3046.2	981.9	-260.3	65	1652.5	-977.7	-289.9
66	2743.5	984.1	-259.5	66	1301.0	-997.9	-274.3
68	2132.2	981.8	-252.5	68	1022.4	-992.2	-273.8
69	1825.7	979.8	-252.0				
70	1523.4	999.4	-253.7				
71	1215.4	1004.3	-250.9				
72	1013.8	997.9	-249.2				
73	990.1	995.2	-245.2				

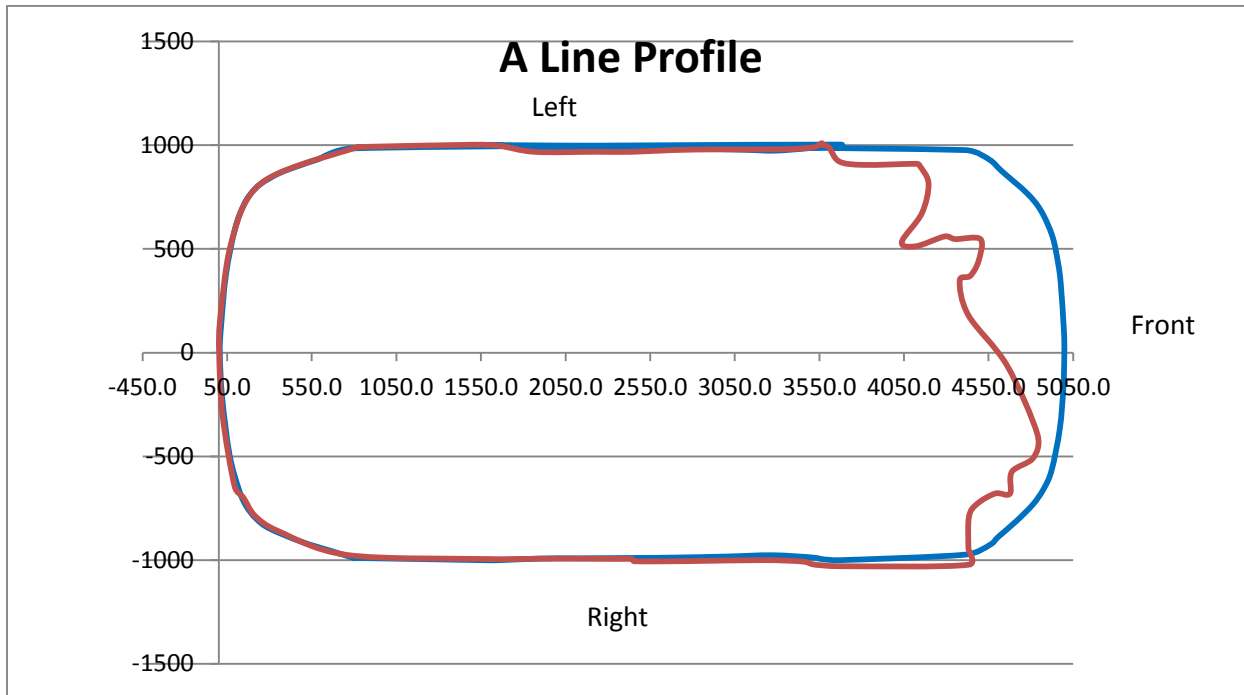
Note: See appendix F.3 for a detailed procedure on how to measure vehicle exterior crush profile

DATA SHEET NO.13 (CONTINUED)

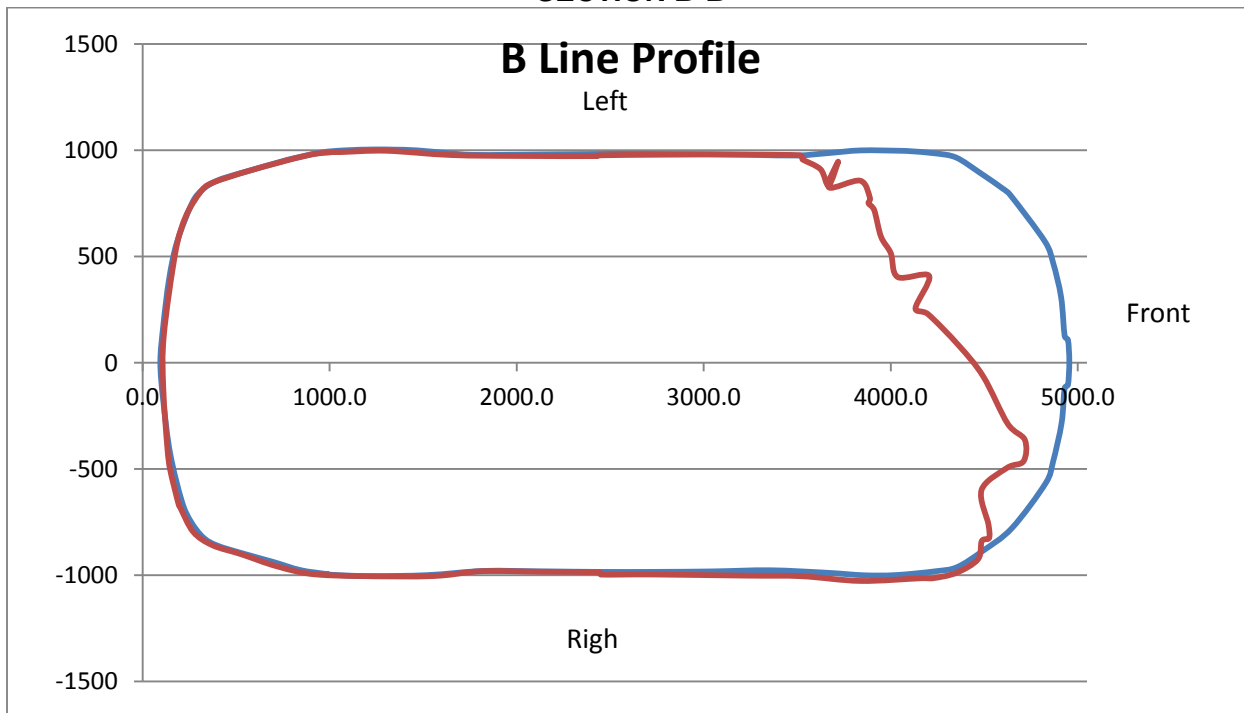
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

SECTION A-A



SECTION B-B



DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Left Profile of the Dash



Points	Pre-Test (mm)			Post-Test (mm)			Difference (mm)		
	X	Y	Z	X	Y	Z	X	Y	Z
LB3	3383.7	-529.3	-108.3	3304.5	-513.9	-97.4	-79.1	15.4	10.9
LB2	3351.9	-528.3	-148.8	3273.8	-513.6	-139.8	-78.0	14.7	9.0
LB1	3321.2	-527.8	-189.8	3244.8	-514.6	-179.7	-76.5	13.2	10.1
DIPL	3293.0	-527.0	-228.7	3216.7	-514.4	-220.0	-76.3	12.6	8.7
LT1	3264.6	-526.5	-272.1	3189.8	-515.9	-264.7	-74.8	10.7	7.4
LT2	3239.7	-526.4	-317.5	3167.7	-517.5	-310.1	-71.9	8.9	7.3
LT3	3218.0	-526.5	-361.2	3145.5	-542.1	-357.7	-72.6	-15.6	3.6
LT4	3228.0	-525.1	-408.3	3157.0	-532.4	-406.6	-71.0	-7.3	1.7
LT5	3257.9	-524.8	-445.5	3186.7	-527.5	-444.7	-71.1	-2.7	0.8
LT6	3302.3	-528.1	-434.4	3229.7	-529.8	-435.2	-72.6	-1.7	-0.8
LT7	3357.3	-531.7	-421.7	3290.0	-516.0	-411.6	-67.3	15.7	10.1
LT8	3366.1	-530.2	-469.1	3303.5	-526.4	-460.2	-62.6	3.8	8.9
LT9	3357.1	-533.9	-518.5	3297.4	-530.4	-508.4	-59.7	3.5	10.1
LT10	3325.0	-526.0	-553.1	3248.0	-526.4	-554.6	-77.0	-0.4	-1.4
LT11	3296.4	-527.5	-592.1	3235.0	-520.3	-579.5	-61.3	7.3	12.5
LT12	3383.7	-529.3	-108.3	3304.5	-513.9	-97.4	-79.1	15.4	10.9

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 F.4 for a detailed procedure on how to measure the required profile dash.

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

Right Profile of the Dash



Points	Pre-Test (mm)			Post-Test (mm)			Difference (mm)		
	X	Y	Z	X	Y	Z	X	Y	Z
RB3	3381.9	-231.9	-107.6	3316.7	-218.9	-119.5	-65.2	13.0	-11.8
RB2	3350.1	-231.2	-145.9	3285.2	-219.1	-156.7	-64.9	12.1	-10.8
RB1	3319.3	-230.7	-186.0	3254.1	-219.2	-198.1	-65.1	11.5	-12.0
DIPR	3288.6	-230.3	-228.5	3223.7	-222.1	-240.9	-64.9	8.3	-12.5
RT1	3262.6	-231.3	-267.7	3198.7	-222.0	-277.5	-63.8	9.2	-9.8
RT2	3236.1	-229.8	-310.1	3172.6	-223.5	-320.8	-63.5	6.2	-10.8
RT3	3210.4	-229.8	-353.1	3160.3	-215.4	-353.4	-50.1	14.4	-0.3
RT4	3231.1	-230.6	-399.8	3167.6	-212.2	-406.0	-63.5	18.4	-6.2
RT5	3259.5	-230.8	-441.9	3180.1	-234.2	-447.0	-79.5	-3.5	-5.1
RT6	3303.5	-216.9	-464.5	3221.8	-217.4	-468.5	-81.7	-0.5	-4.0
RT7	3342.2	-211.5	-488.6	3259.9	-209.5	-494.0	-82.3	1.9	-5.4
RT8	3331.3	-229.9	-540.5	3251.7	-227.5	-544.3	-79.6	2.4	-3.8
RT9	3302.8	-229.7	-577.8	3242.9	-220.6	-577.0	-59.9	9.1	0.8
RT10	3349.9	-230.3	-591.4	3289.5	-219.0	-594.1	-60.4	11.3	-2.7
RT11	3401.0	-236.5	-592.5	3340.1	-224.9	-600.8	-61.0	11.6	-8.3
RT12	3381.9	-231.9	-107.6	3316.7	-218.9	-119.5	-65.2	13.0	-11.8

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

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

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

	Points	Pre-Test (mm)			Post-Test (mm)			Difference (mm)		
		X	Y	Z	X	Y	Z	X	Y	Z
Lower Bumper Beam	1	4823.3	-400.4	-251.3	*	*	*	*	*	*
	2	4840.1	-241.4	-251.5	*	*	*	*	*	*
	3	4842.7	-82.3	-250.4	*	*	*	*	*	*
	4	4839.1	77.8	-249.5	*	*	*	*	*	*
	5	4833.6	237.7	-248.9	*	*	*	*	*	*
	6	4822.2	397.1	-248.0	*	*	*	*	*	*
Upper Bumper Beam	1	4898.7	-576.5	-38.9	4467.2	-400.0	-159.8	-431.5	176.5	-120.9
	2	4946.2	-348.2	-36.3	4408.6	-253.8	-167.3	-537.6	94.4	-131.0
	3	4970.4	-116.0	-34.4	4539.7	-85.2	-144.3	-430.7	30.7	-109.9
	4	4968.9	116.0	-32.8	4682.6	97.9	-136.6	-286.3	-18.1	-103.9
	5	4943.6	346.5	-30.6	4800.6	299.1	-121.7	-143.0	-47.4	-91.1
	6	4895.6	573.5	-27.9	4895.9	509.5	-100.3	0.3	-64.0	-72.4
Upper Radiator Support	1	4894.5	-575.2	92.9	4458.2	-401.3	-69.3	-436.3	173.9	-162.2
	2	4942.6	-348.6	95.6	4410.3	-272.2	-32.8	-532.3	76.4	-128.4
	3	4967.6	-119.7	97.1	4543.1	-100.1	-26.1	-424.6	19.6	-123.2
	4	4967.2	108.7	98.2	4679.7	81.6	-6.8	-287.4	-27.1	-104.9
	5	4943.1	337.5	98.7	4793.5	282.5	11.9	-149.6	-55.0	-86.8
	6	4893.1	574.5	99.2	4887.2	503.6	24.2	-5.9	-70.9	-75.0

*Points unrecoverable post-test, therefore not measured

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

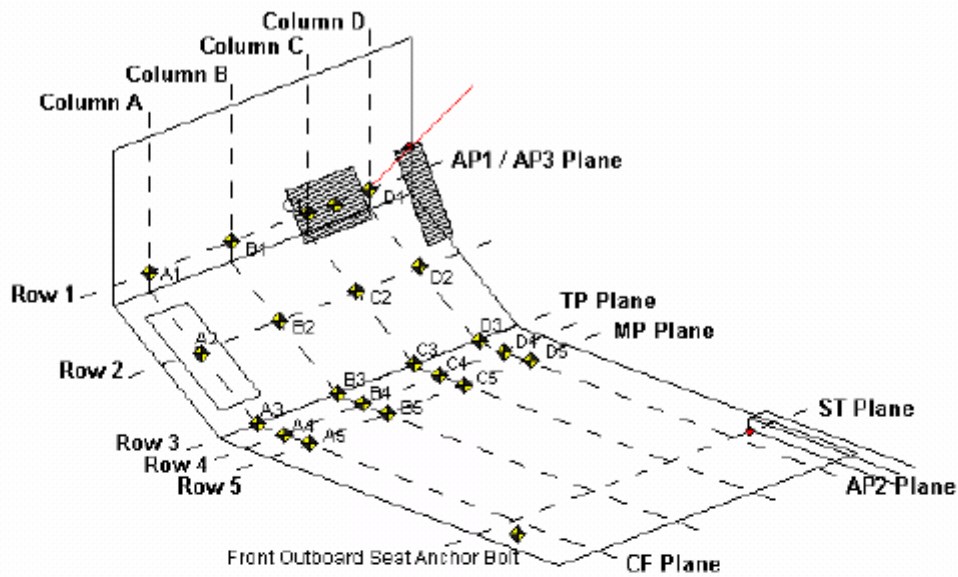
+Y - From left side of the vehicle to the right side of the vehicle

+Z - From the top of the vehicle to the bottom of the vehicle

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle:	2011 Ford Explorer	NHTSA No:	RB0223
Test Program:	R&D 56mph 15 angle, 35% Offset	Test Date	9/27/2011



- 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: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

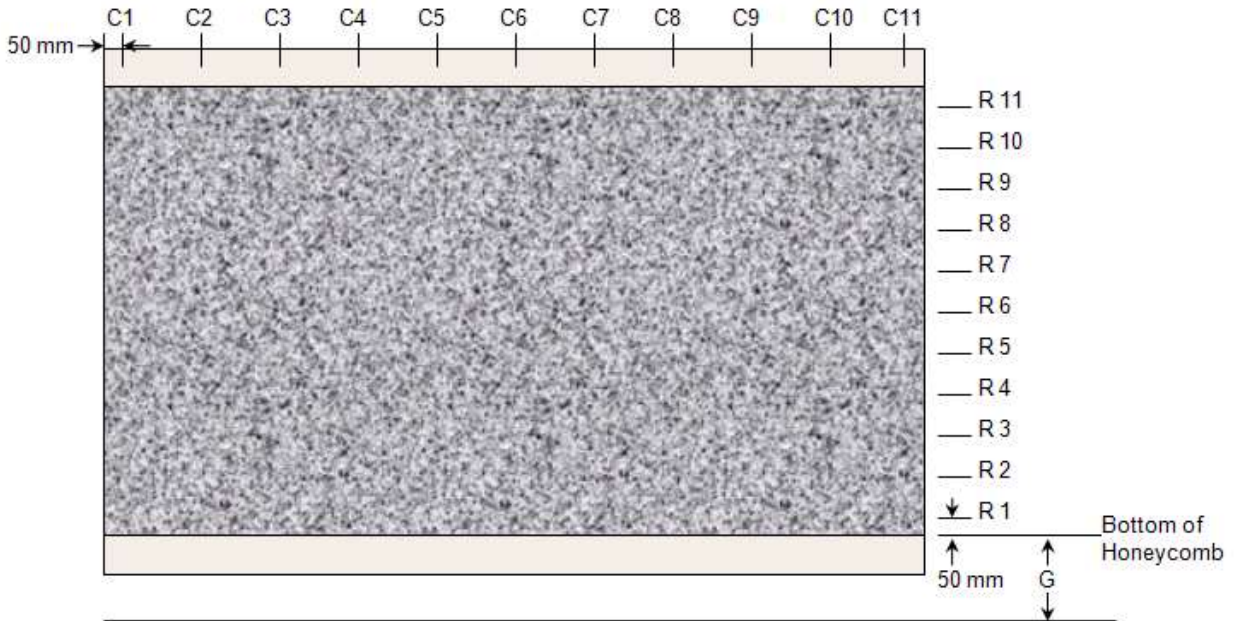
Intrusion Location	Pre-Test (mm)			Post-Test (mm)			Difference (mm)		
	X	Y	Z	X	Y	Z	X	Y	Z
A1	3582	-576	125	3545	-571	127	-37	5	2
B1	3674	-465	127	3586	-436	100	-88	29	-27
C1	3718	-338	126	3656	-311	94	-63	27	-32
D1	3695	-215	131	3644	-189	99	-51	26	-32
A2	3547	-588	210	3520	-575	211	-27	13	1
B2	3627	-467	206	3578	-443	189	-49	24	-17
C2	3629	-339	199	3572	-317	165	-57	21	-34
D2	3633	-210	195	3585	-184	164	-49	25	-31
A3	3526	-595	260	3510	-577	259	-16	18	-1
B3	3534	-467	256	3506	-447	255	-28	20	-2
C3	3532	-338	251	3516	-317	253	-17	21	2
D3	3539	-212	252	3513	-190	239	-26	22	-12
A4	3433	-590	263	3423	-572	274	-9	19	10
B4	3438	-465	260	3427	-448	260	-11	17	-1
C4	3438	-336	260	3430	-320	244	-8	16	-16
D4	3440	-210	260	3430	-195	234	-11	15	-27
A5	3342	-585	271	3337	-569	270	-5	16	-1
B5	3344	-458	271	3337	-444	261	-7	14	-10
C5	3350	-334	261	3341	-318	246	-9	16	-15
D5	3351	-206	262	3341	-191	238	-10	15	-24
Brake Pedal	3497	-374	74	3468	-401	101	-29	-27	27
IP Left	3293	-527	-229	3217	-514	-220	-76	13	9
IP Right	3289	-230	-228	3224	-222	-241	-65	8	-12
Steering Column	3034	-385	-497	3011	-403	-484	-23	-18	13
Front Outboard Bolt	3023	-583	176	3018	-579	176	-5	4	0

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: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011



Ground

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
R11	910mm	0.7	2.9	4.0	3.0	3.5	3.6	3.5	13.3	8.7	9.6	18.0
R10	824mm	0.6	1.0	0.9	0.6	0.8	0.9	2.1	17.9	16.1	13.3	53.8
R9	738mm	0.9	0.6	0.6	0.5	0.3	0.5	3.7	14.9	23.2	22.8	101.0
R8	652mm	0.9	0.5	0.4	0.4	0.1	0.2	0.3	5.6	43.4	65.2	147.4
R7	566mm	0.8	0.4	0.4	0.3	0.3	0.2	2.2	2.8	108.6	140.5	188.9
R6	480mm	0.8	0.4	0.5	0.5	0.7	0.4	34.4	4.9	105.2	240.0	234.5
R5	384mm	0.8	0.7	0.6	0.6	0.6	0.5	51.8	14.1	91.5	112.3	217.5
R4	308mm	0.7	0.7	0.7	0.7	0.7	0.6	50.6	30.7	74.8	90.6	205.6
R3	222mm	0.6	0.9	0.9	1.1	0.7	0.7	50.6	47.3	76.9	126.8	199.0
R2	136mm	0.5	1.1	1.4	1.4	1.2	0.7	70.2	64.3	83.3	54.7	161.5
R1	50mm	0.2	1.1	1.5	1.4			92.2	57.6	53.9	25.8	90.7

DATA SHEET NO. 15

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

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

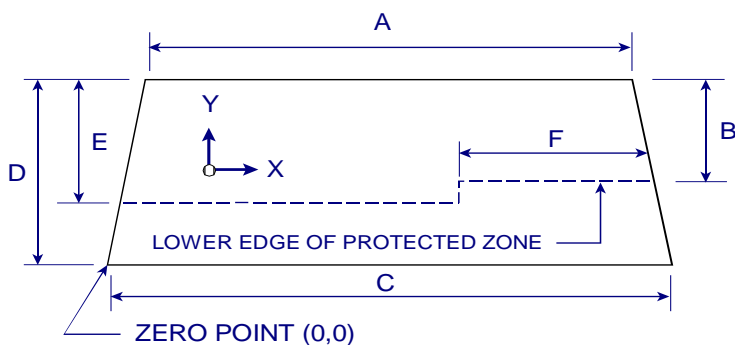
A rubber gasket holds the windshield in place around all the edges.

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	2280	1197.5	52.5%
Right Side	2280	2102.5	92.2%
Total	4560	3300	72.4%



Pre-Test		
Item	Units	Value
A	mm	1400
B	mm	590
C	mm	1645
D	mm	776
E	mm	585
F	mm	475

AREAS OF PROTECTED ZONE FAILURES

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

- No Penetration

X	Y

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

- Hood Penetration

X	Y
1485	62

DATA SHEET NO. 15 (CONTINUED)

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

Test Vehicle: 2011 Ford Explorer NHTSA No: RB0223
Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 35.5°C Test Time: 5:30 PM

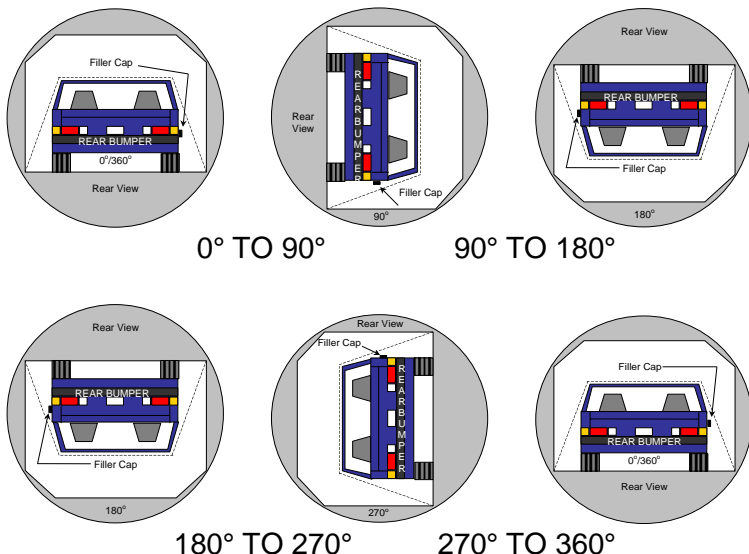
Stoddard Solvent Spillage Measurements

- 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: 2011 Ford Explorer NHTSA No: RB0223
 Test Program: R&D 56mph 15 angle, 35% Offset Test Date: 9/27/2011



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°	65	300	365
90° to 180°	61	300	361
180° to 270°	70	300	370
270° to 360°	63	300	363

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>2011 Ford Explorer</u>	NHTSA No:	<u>RB0223</u>
Test Program:	<u>R&D 56mph 15 angle, 35% Offset</u>	Test Date	<u>9/27/2011</u>

Not Available

APPENDIX A
PHOTOGRAPHS

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4	Test Vehicle Tire Placard	A-8
5	Pre-Test Front View of Test Vehicle	A-9
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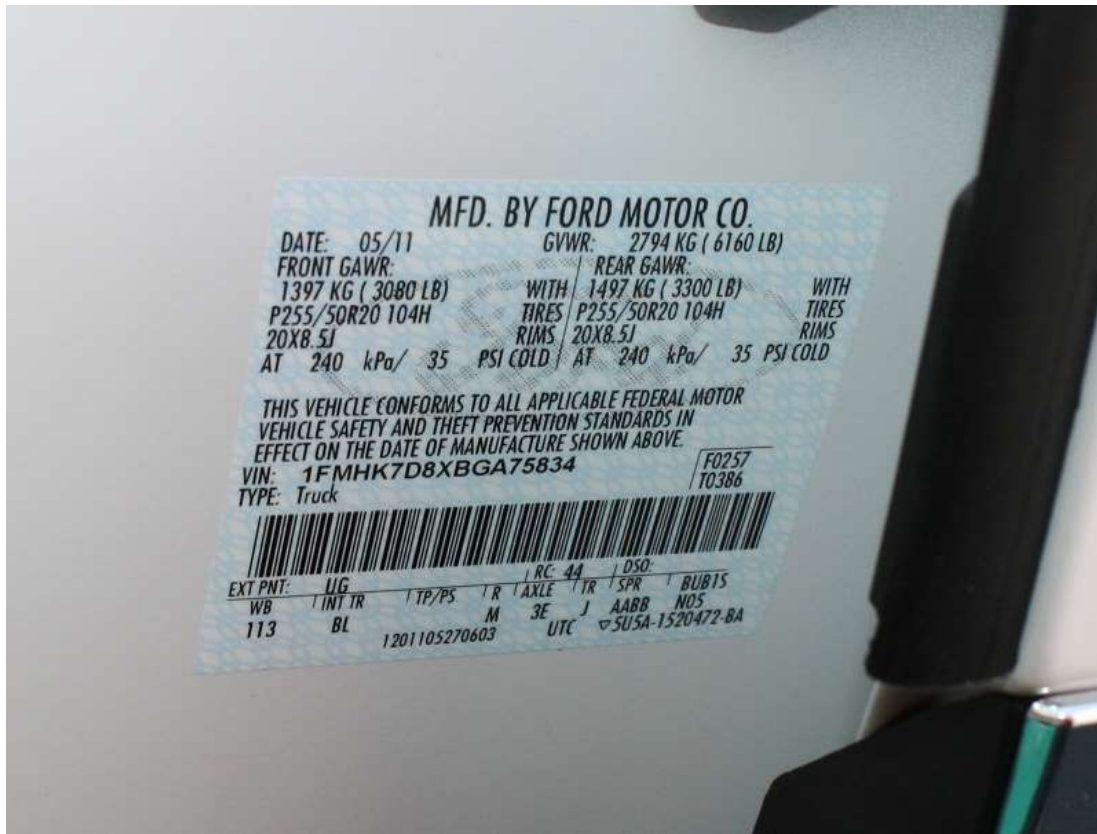
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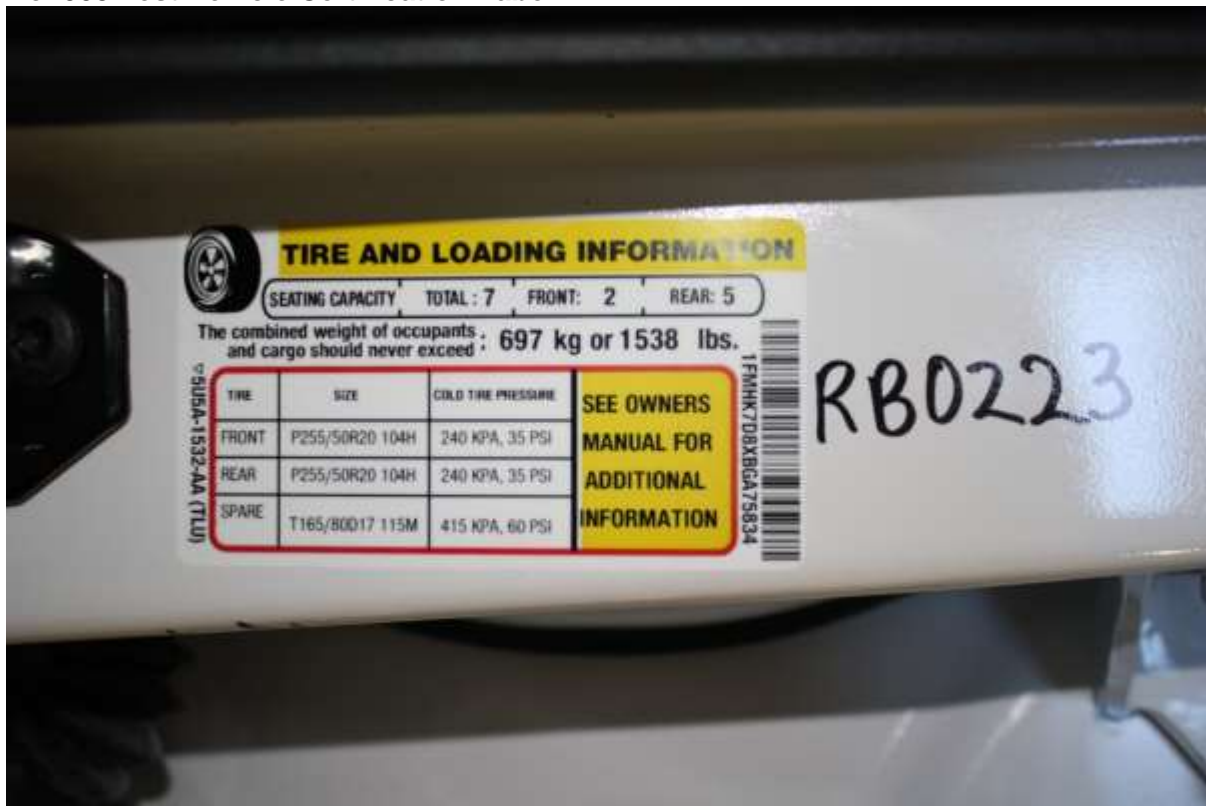
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No. 002 As Delivered Left Rear 3-4 View of Test Vehicle



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



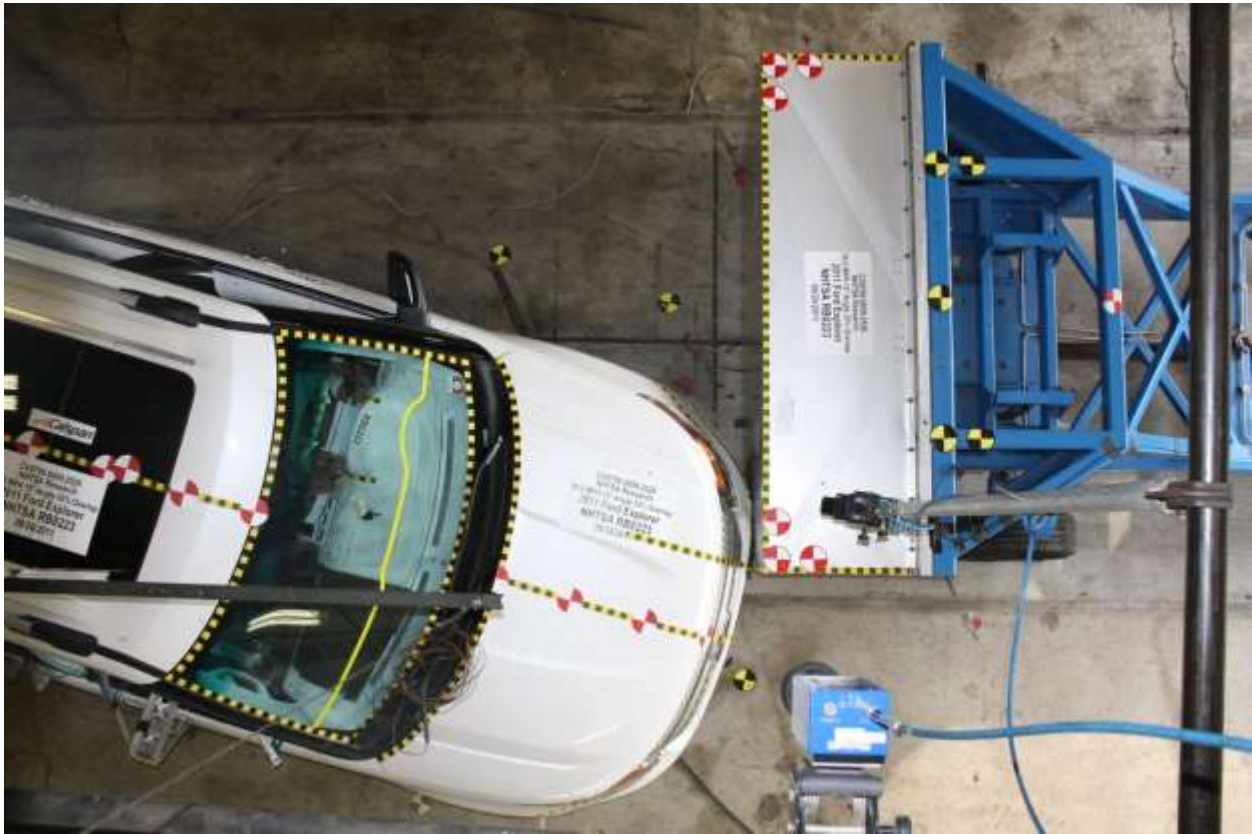
No. 016 Post-Test Right Side View of Test Vehicle



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 RMDB 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 (Wrong Placard)



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



No. 032 Pre-Test View of Passenger Inner Door Panel (Wrong Placard)



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



No. 034 Pre-Test Frontal View of Driver Seat pan (Wrong placard)



No. 035 Pre-Test Frontal View of Driver Seat back (wrong placard)



No. 036 Pre-Test Frontal View of Left Rear Seat pan (wrong placard)



No. 037 Pre-Test Frontal View of Left Rear Seat back (wrong placard)



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



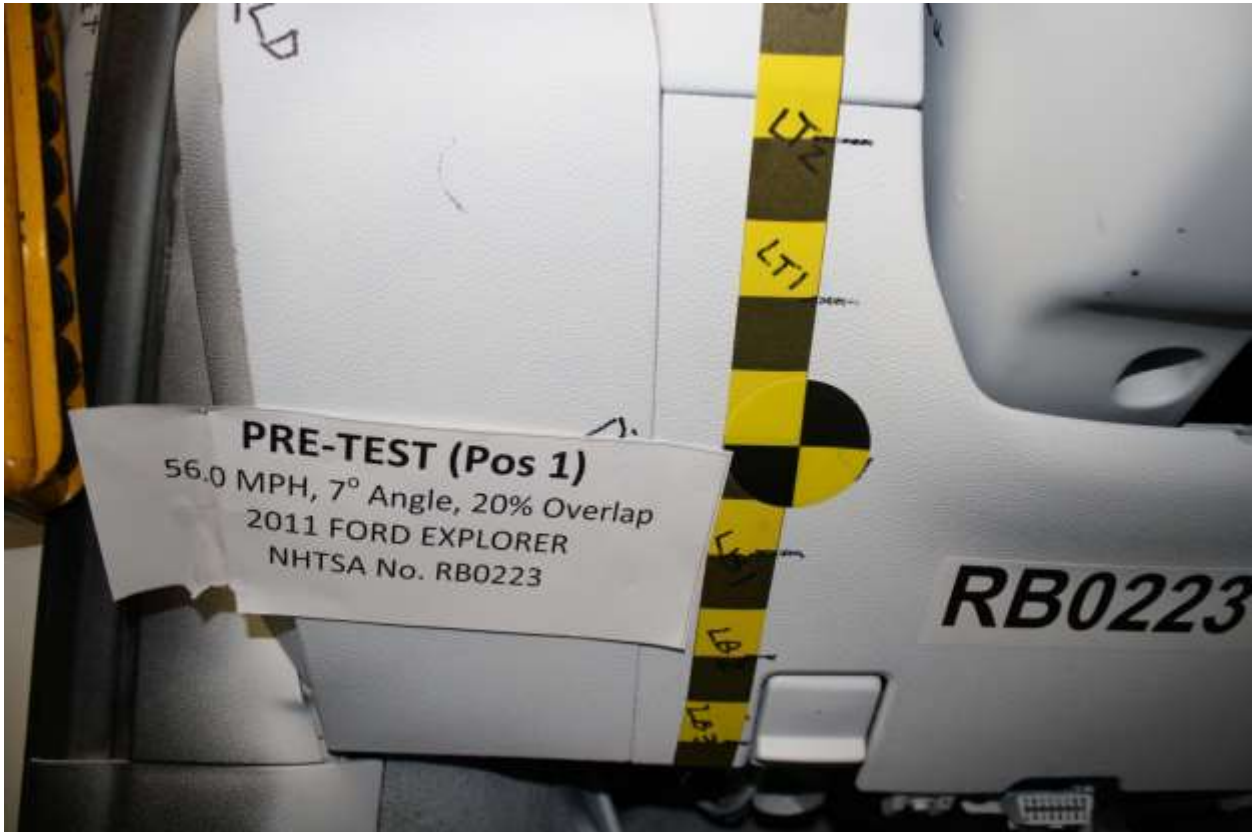
No. 039 Post-Test Overall View of Driver Knee Bolsters



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 (wrong placard)



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 (wrong placard)



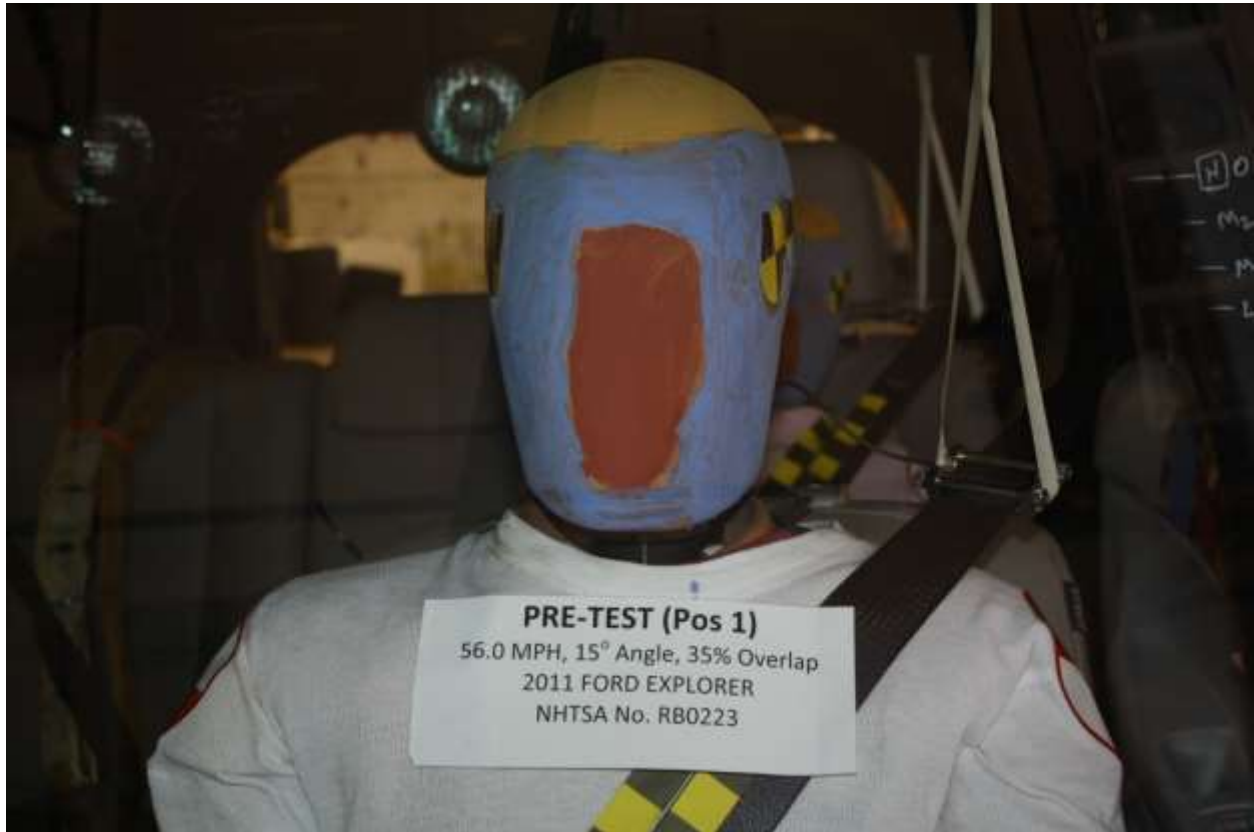
No. 051 Post-Test View of Driver Floor pan at Left sill level



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

Photo Not Available

No. 055 Post-Test Driver Dummy Front Windshield View

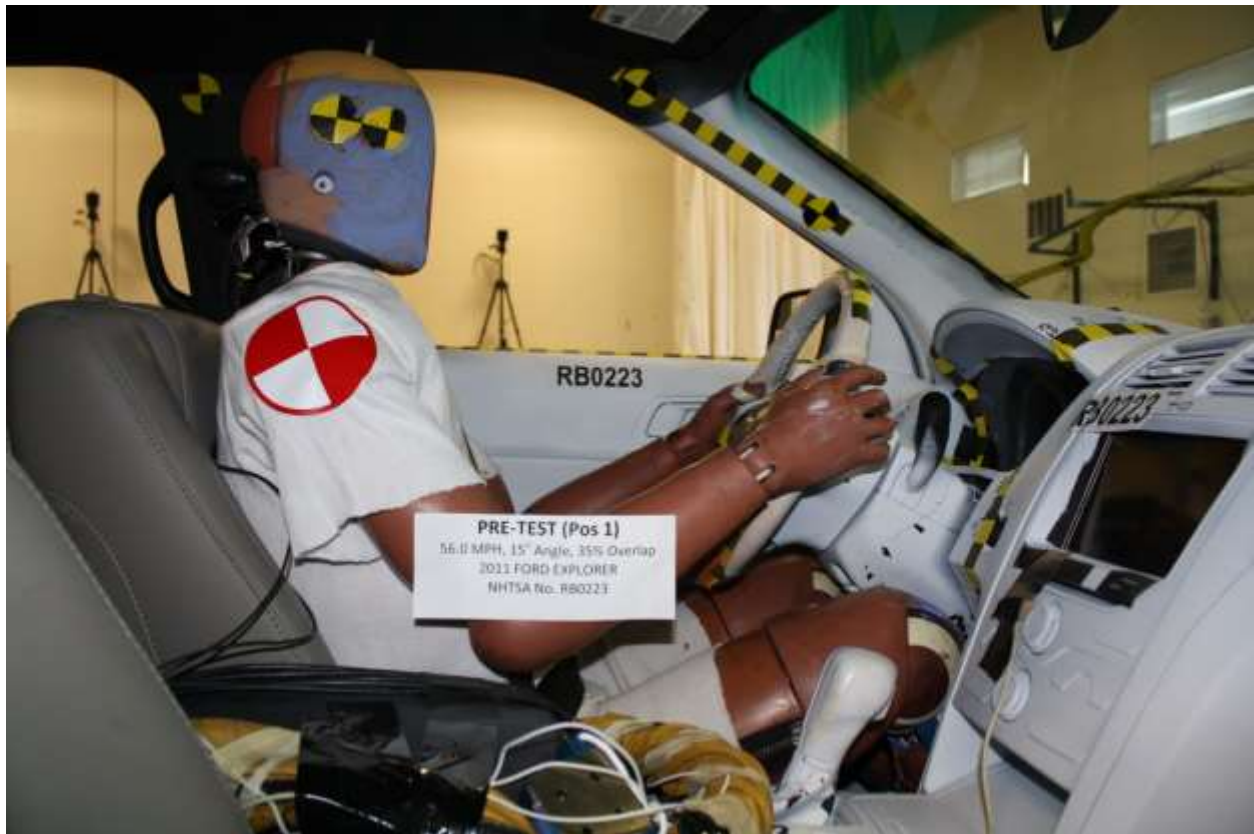
No. 055 Post-Test Driver Dummy Front Windshield View



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



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



PRE-TEST (Pos 1)
56.0 MPH, 15° Angle, 35% Overlap
2011 FORD EXPLORER
NHTSA No. RB0223

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



POST-TEST (Pos 1)
56.0 MPH, 15° Angle, 35% Overlap
2011 FORD EXPLORER
NHTSA No. RB0223

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



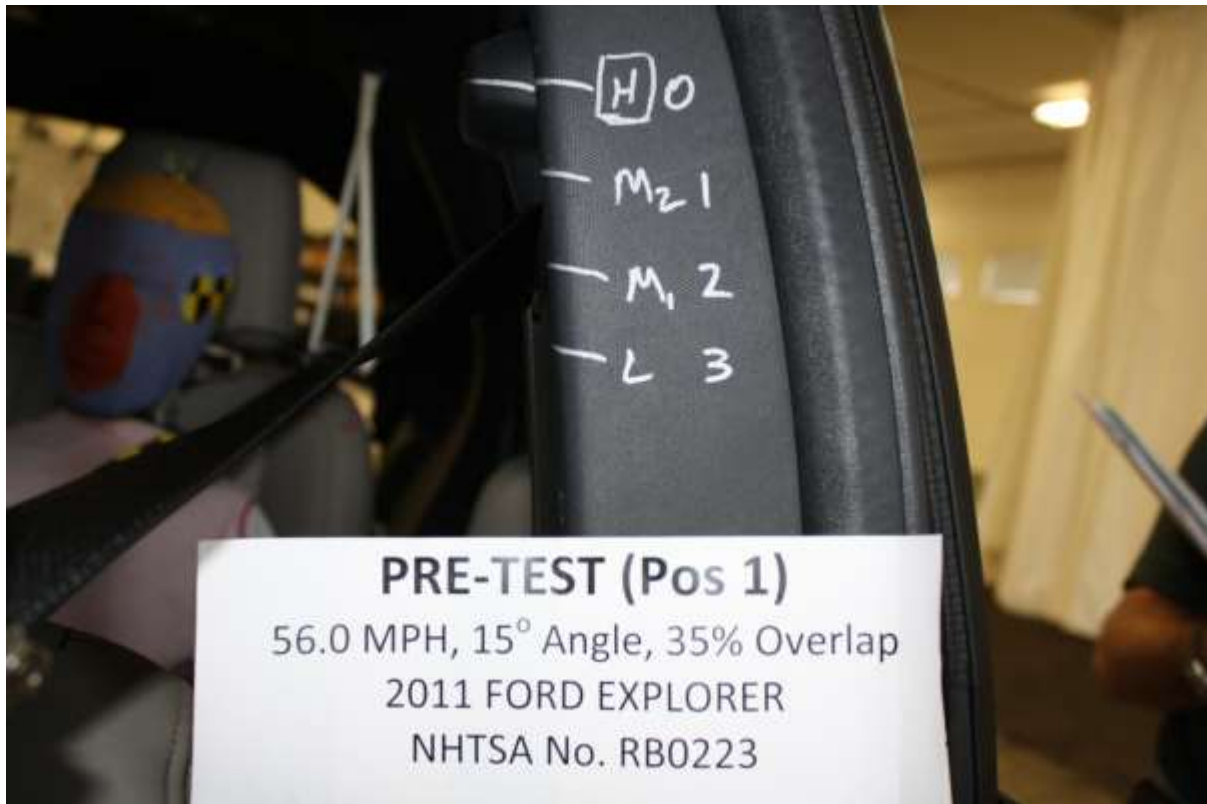
No. 065 Pre-Test Driver Seat Back Position with Level or Inclinometer



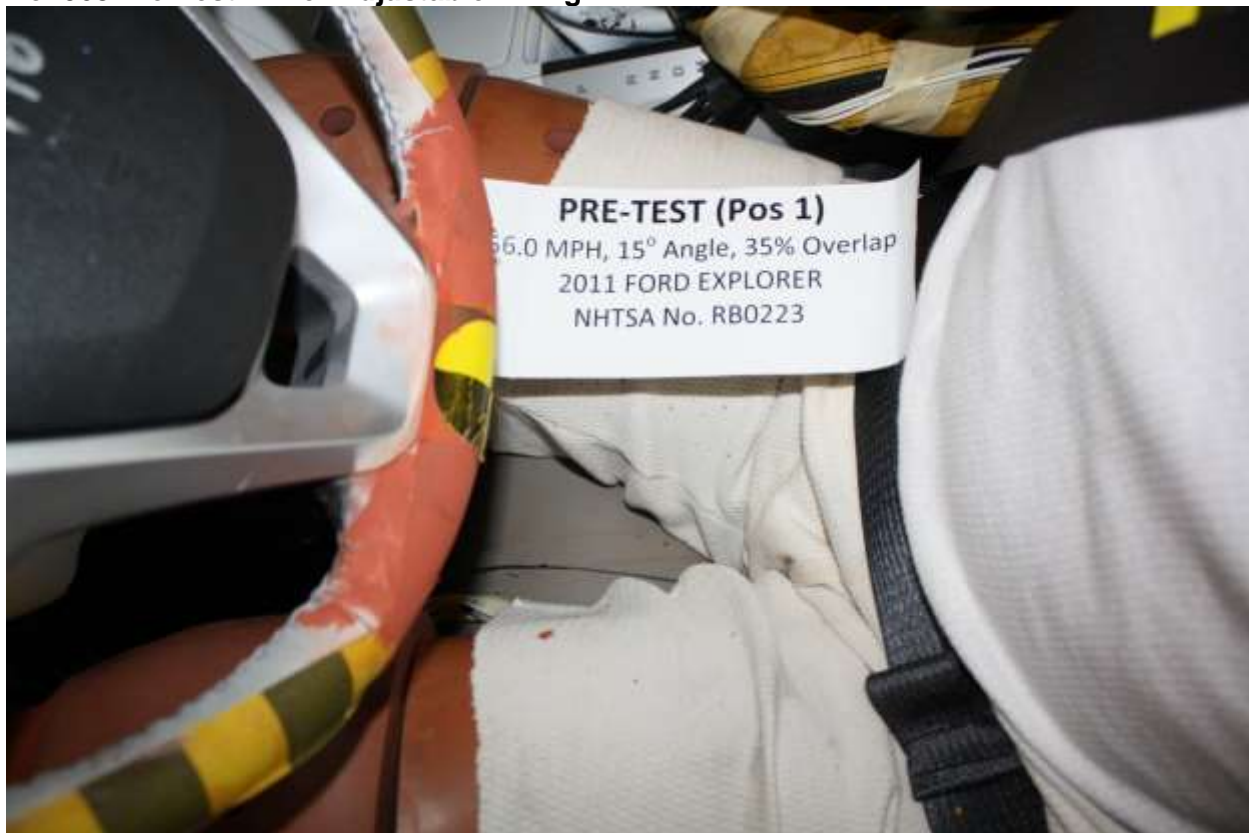
No. 066 Pre-Test Driver Seat Fore Aft Markings



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



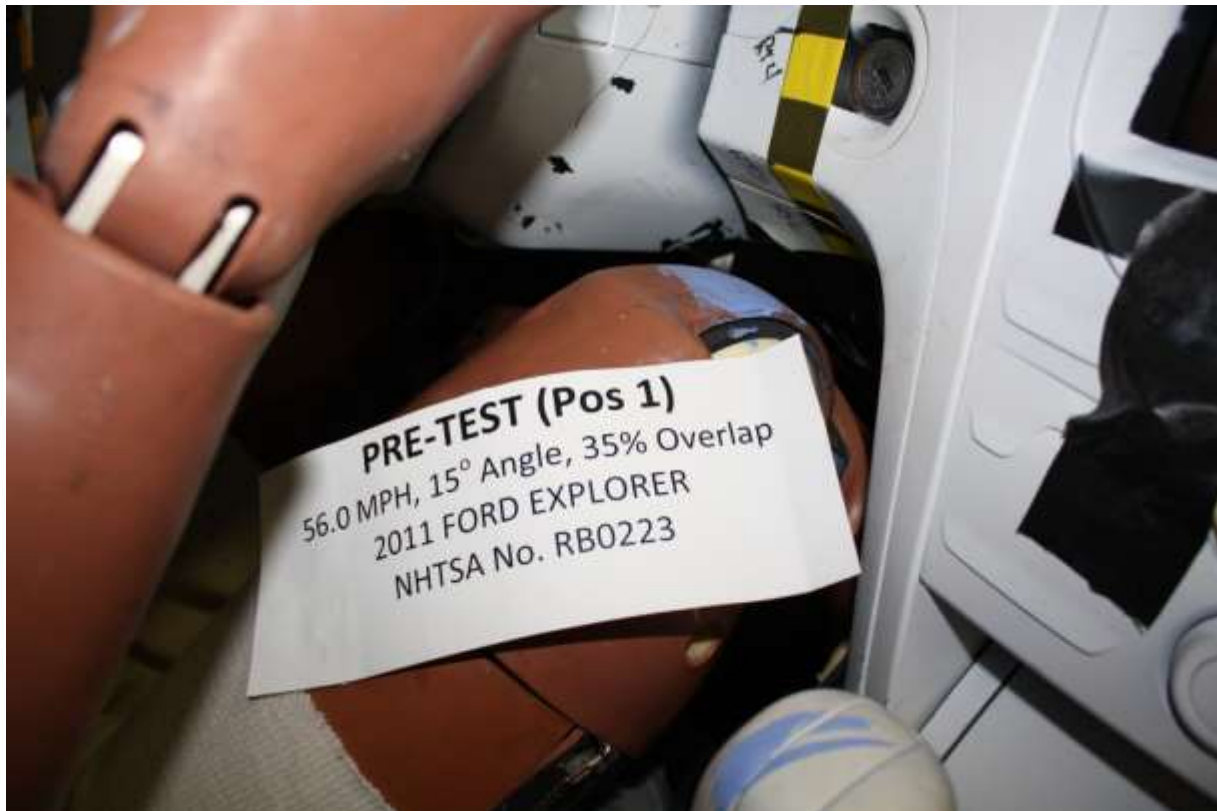
No. 070 Pre-Test View of Parking Brake



No. 071 Pre-Test Driver Dummy Feet



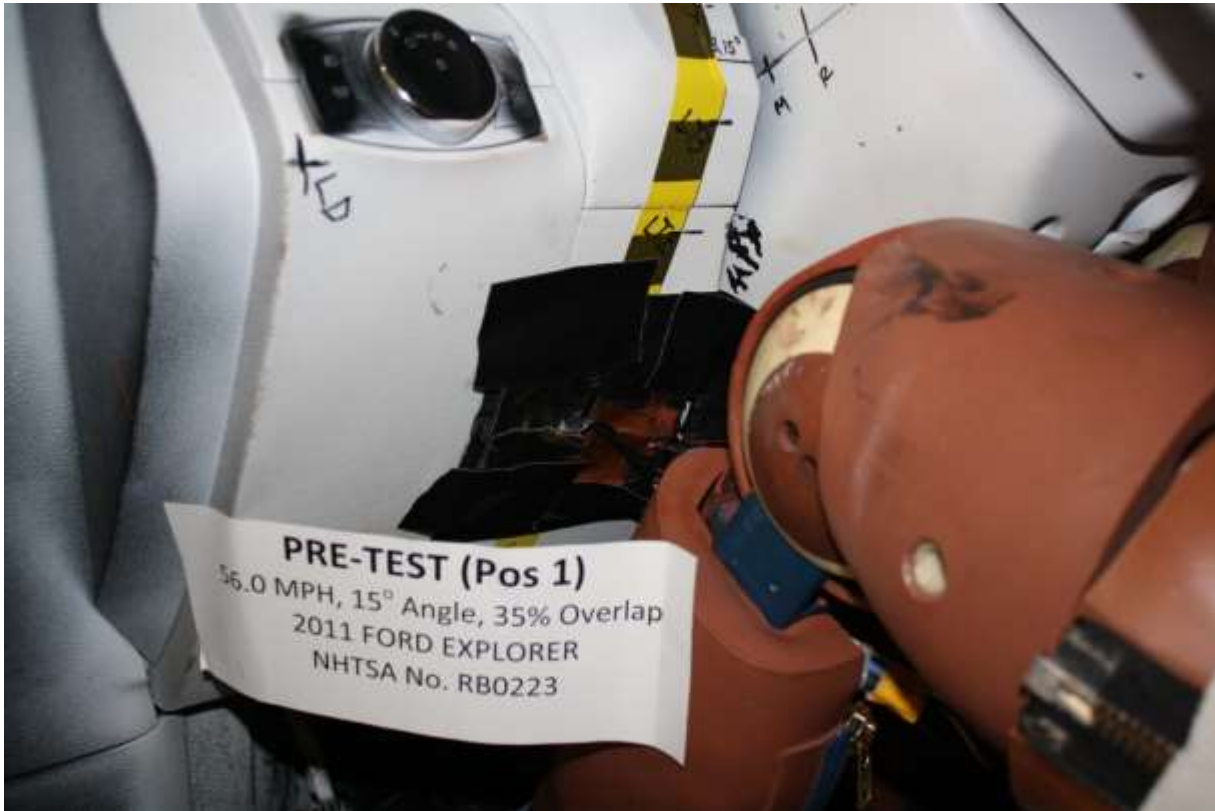
No. 072 Post-Test Driver Dummy Feet



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



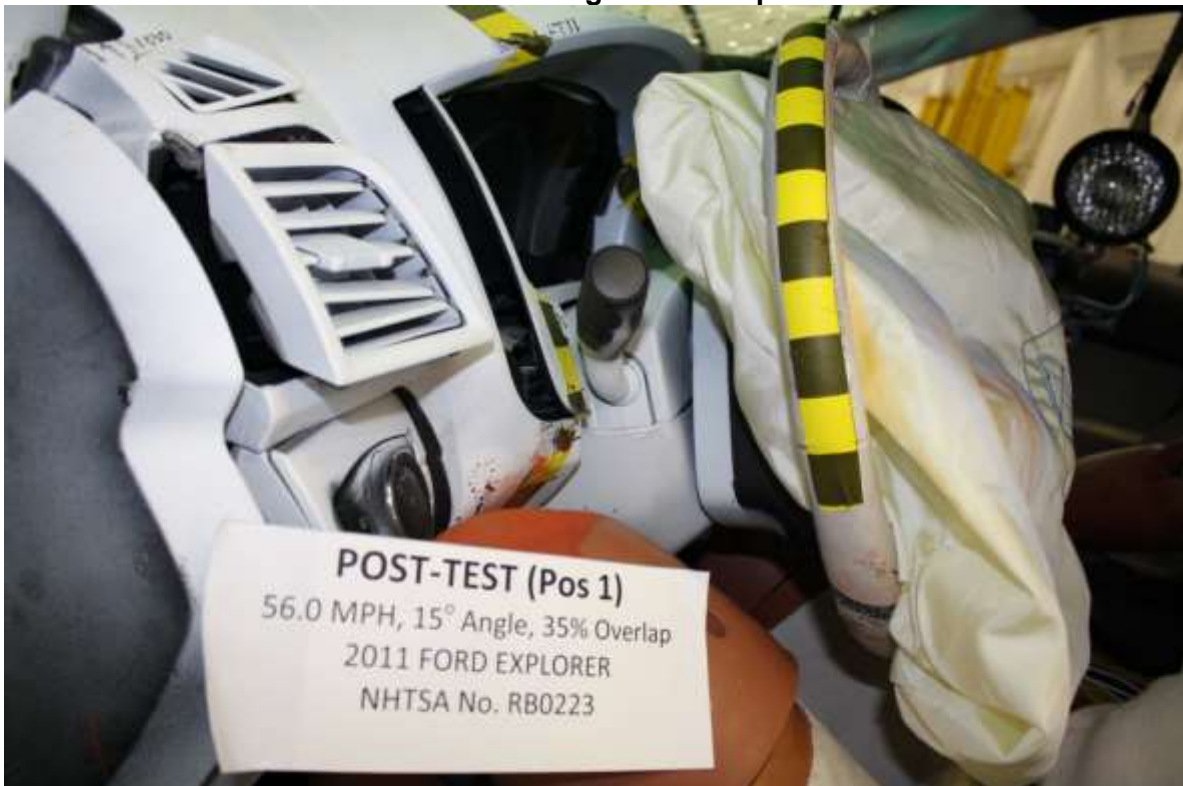
No. 077 Pre-Test View of Driver Dummy Abdomen



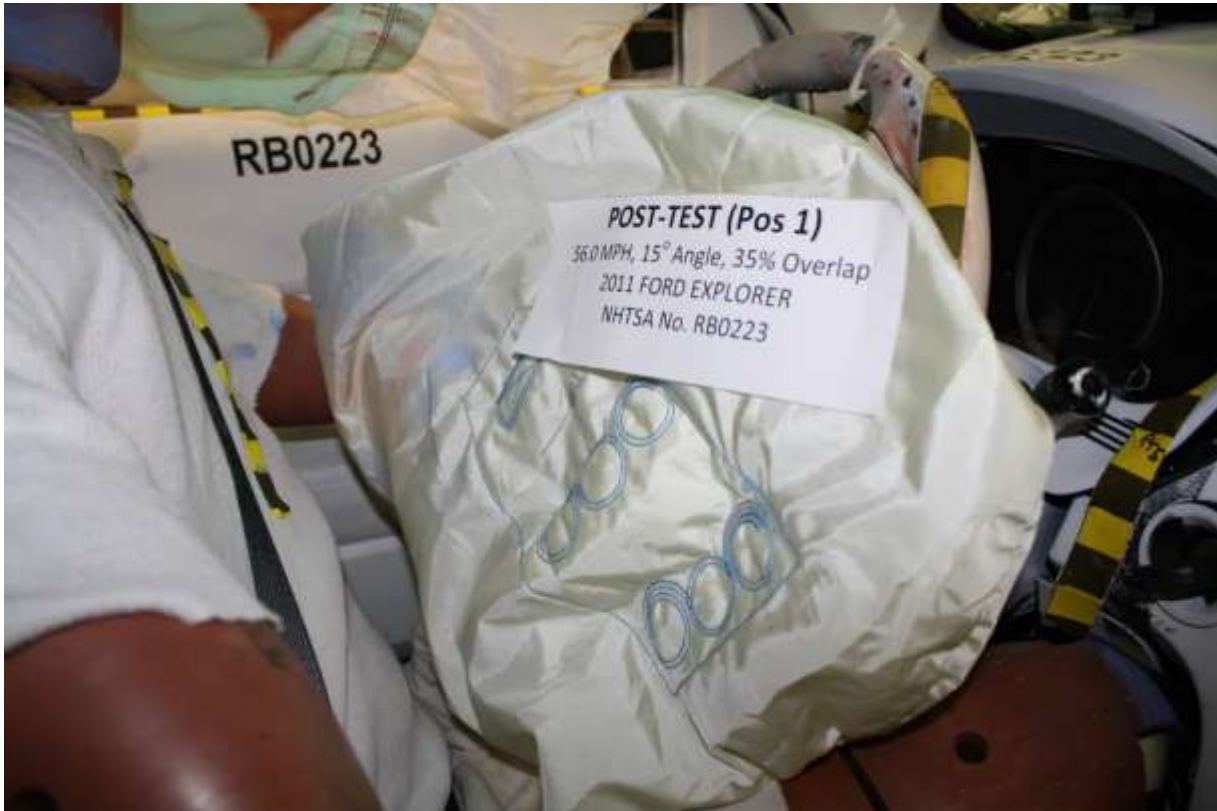
No. 078 Post-Test View of Driver Dummy Abdomen



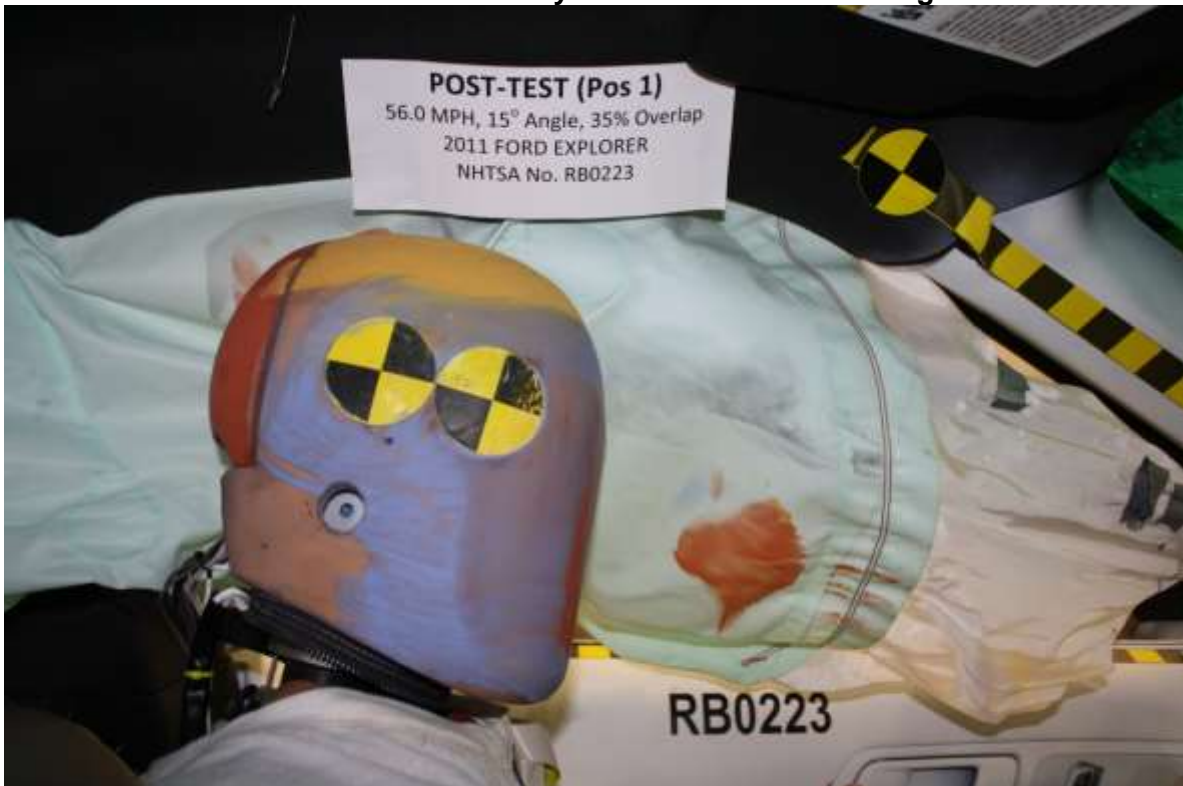
No. 079 Pre-Test Left Side View of Steering Wheel set position



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



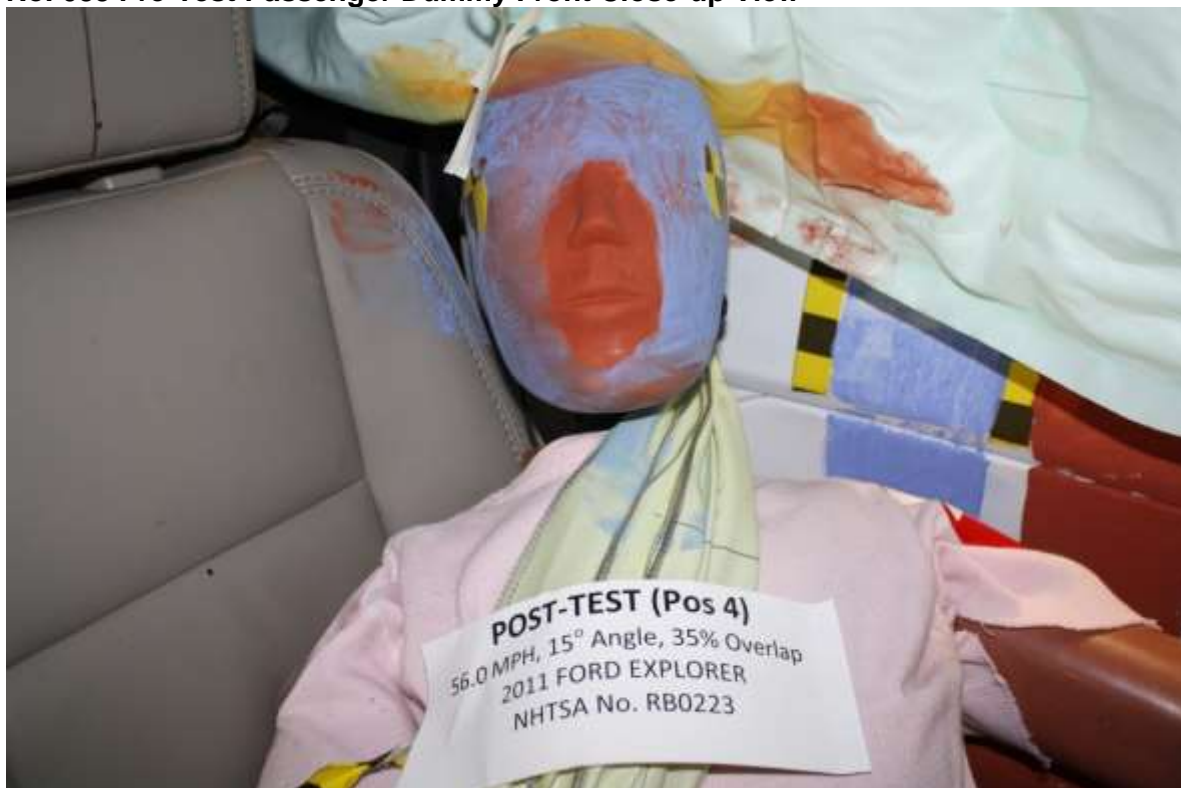
No. 081 Post-Test View of Driver Dummy Head Contact with Airbag



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



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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



No. 090 Post-Test Right Side View of Passenger Dummy and Interior



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



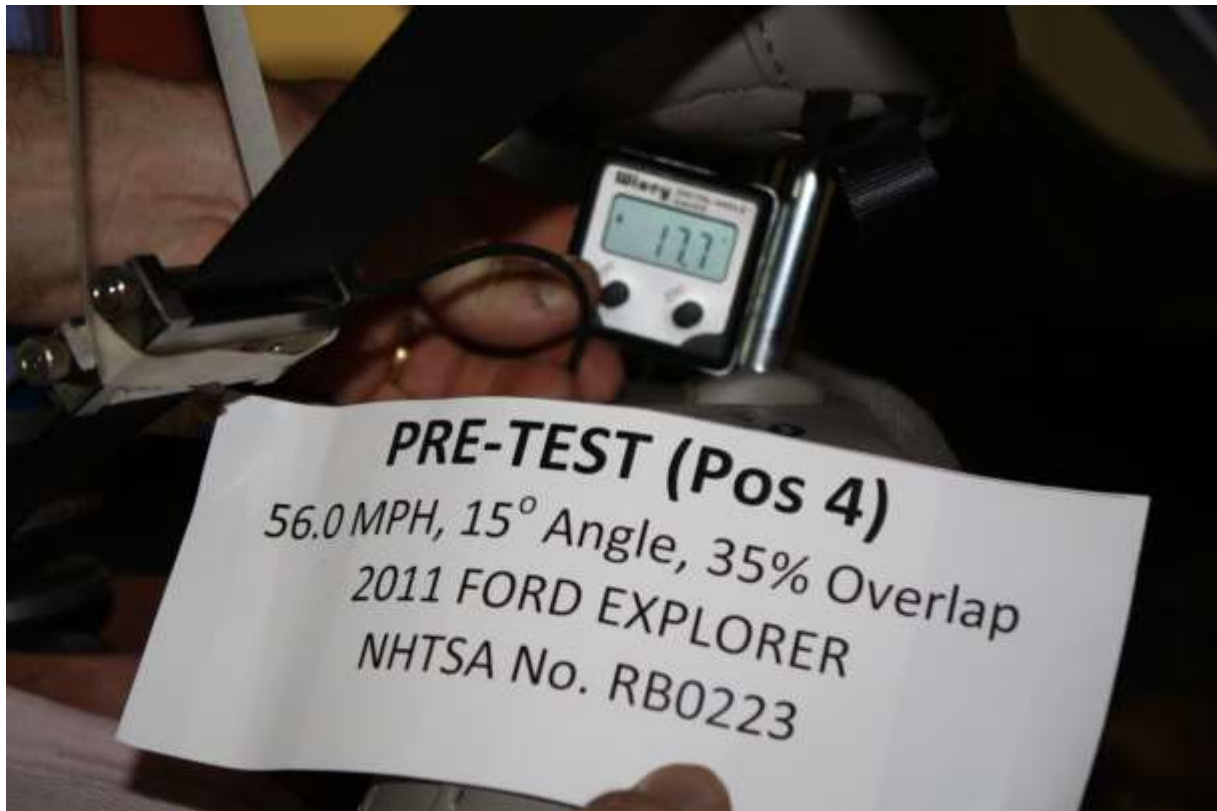
No. 092 Post-Test View of Passenger Dummy Door Clearance



No. 093 Pre-Test Passenger View Showing Head Level (wrong placard)



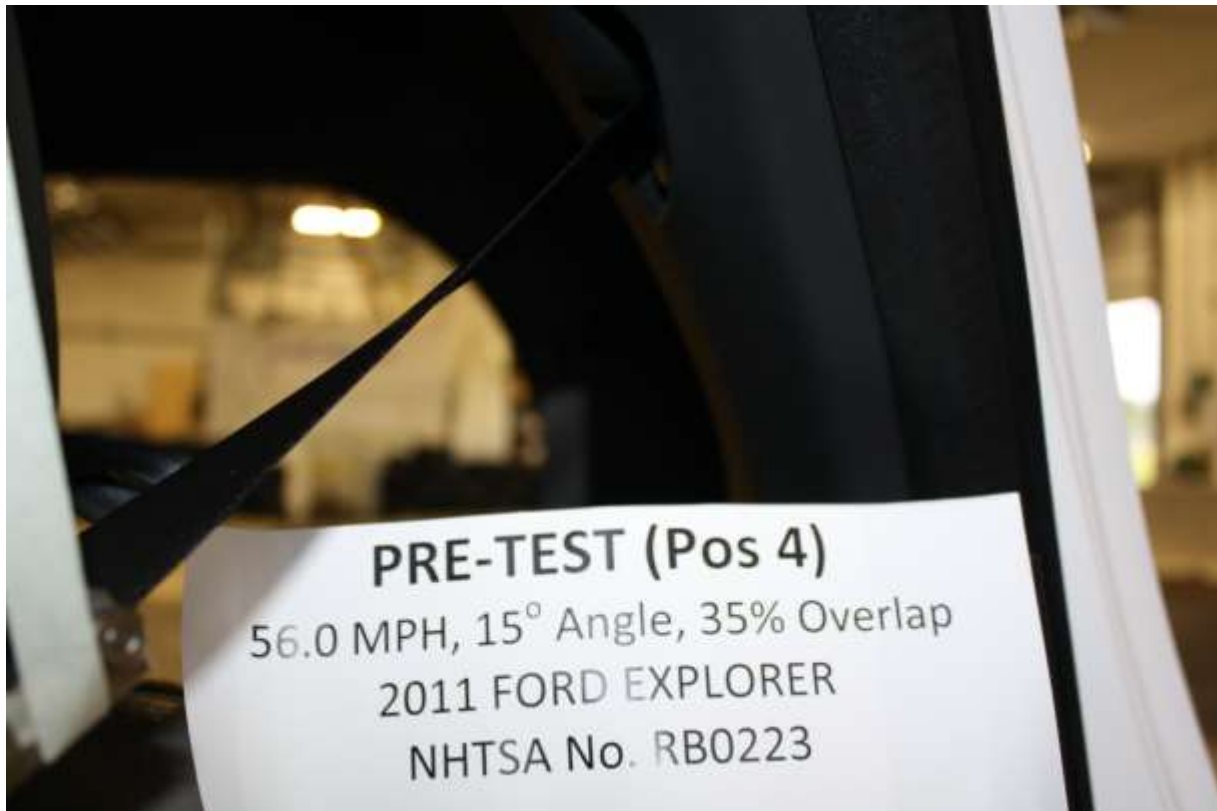
No. 094 Pre-Test Passenger Seat Fore-Aft Markings



No. 095 Pre-Test Passenger Seat Back Angle



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



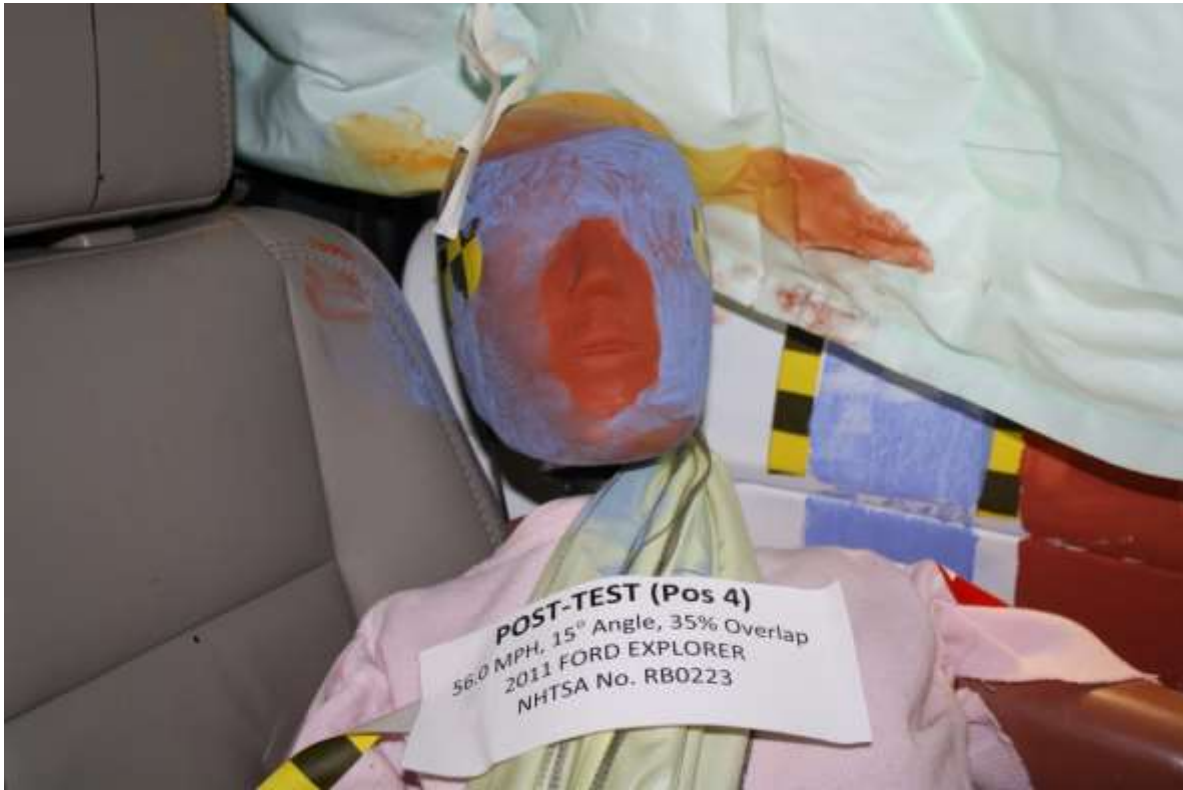
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No. 098 Pre-Test View of Passenger Dummy Feet



No. 099 Post-Test View of Passenger Dummy Feet



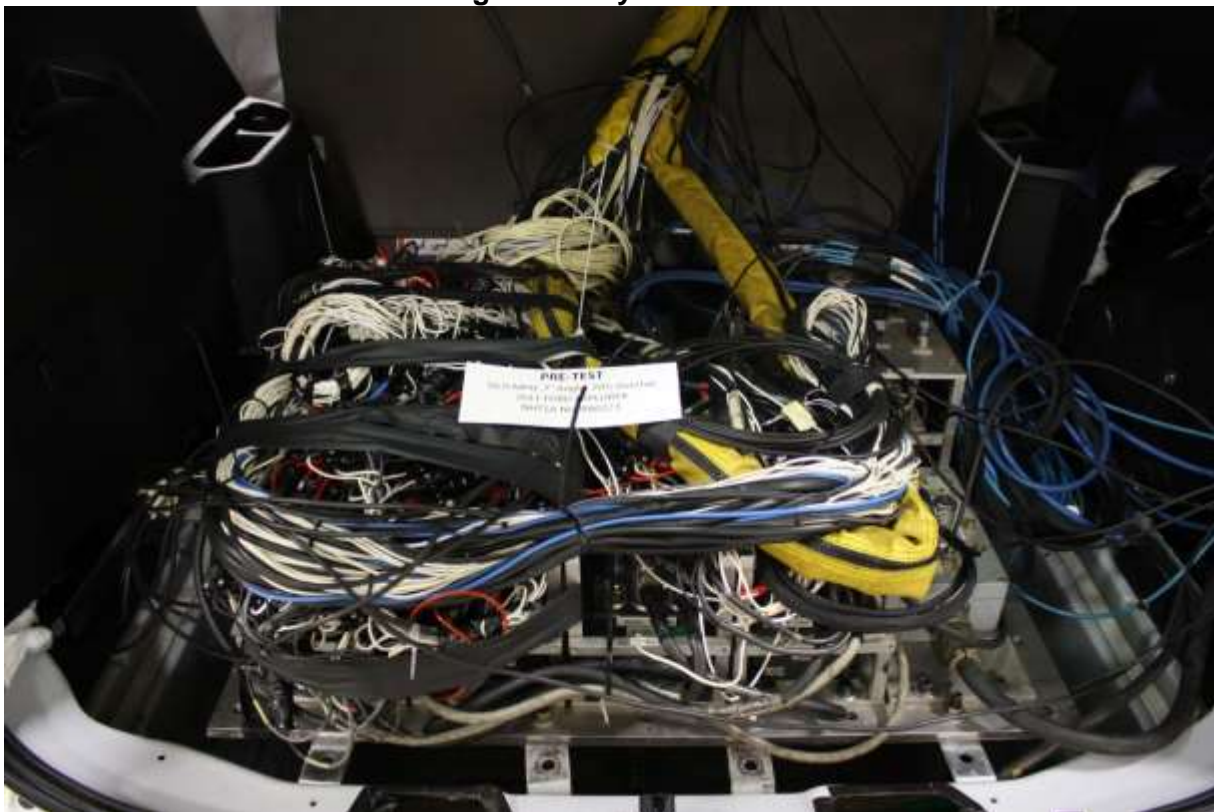
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No. 110 Post-Test View of Front Underbody (perpendicular to vehicle)



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



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



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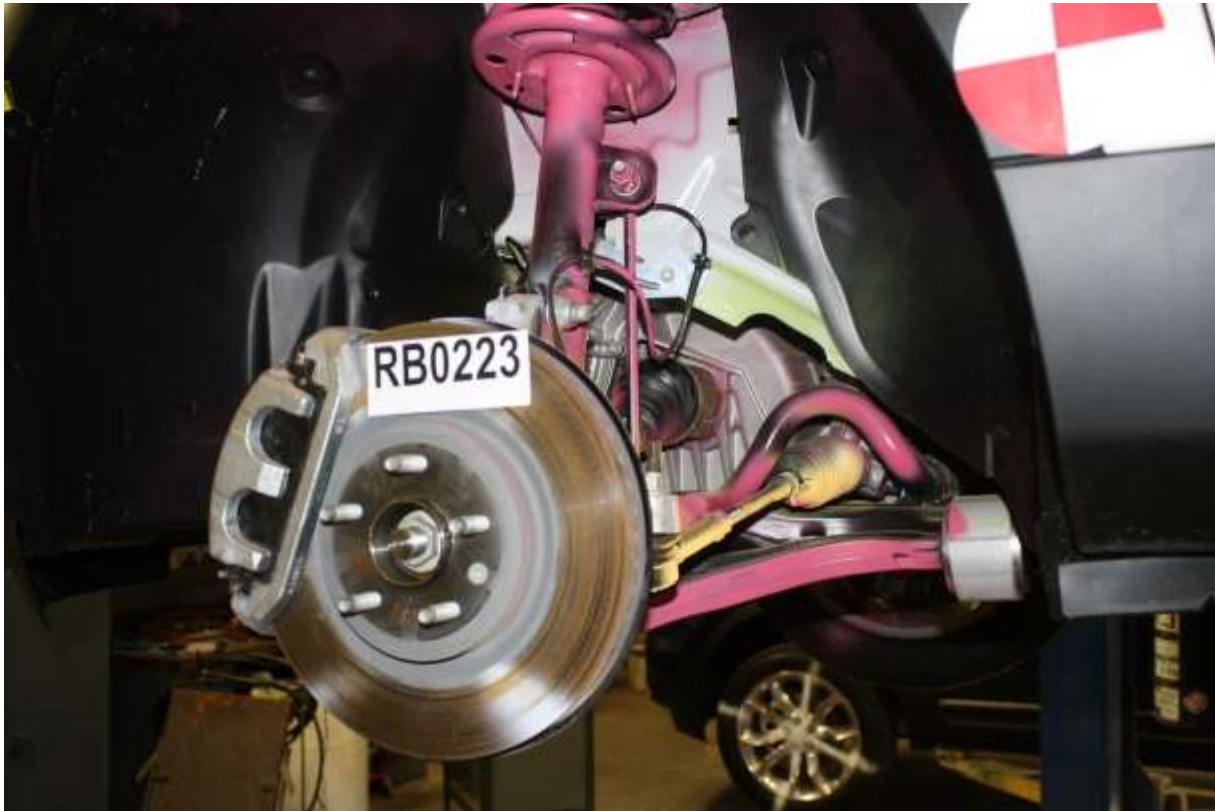
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Photo Not Available

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No. 127 Post-Test View of Windshield Separation



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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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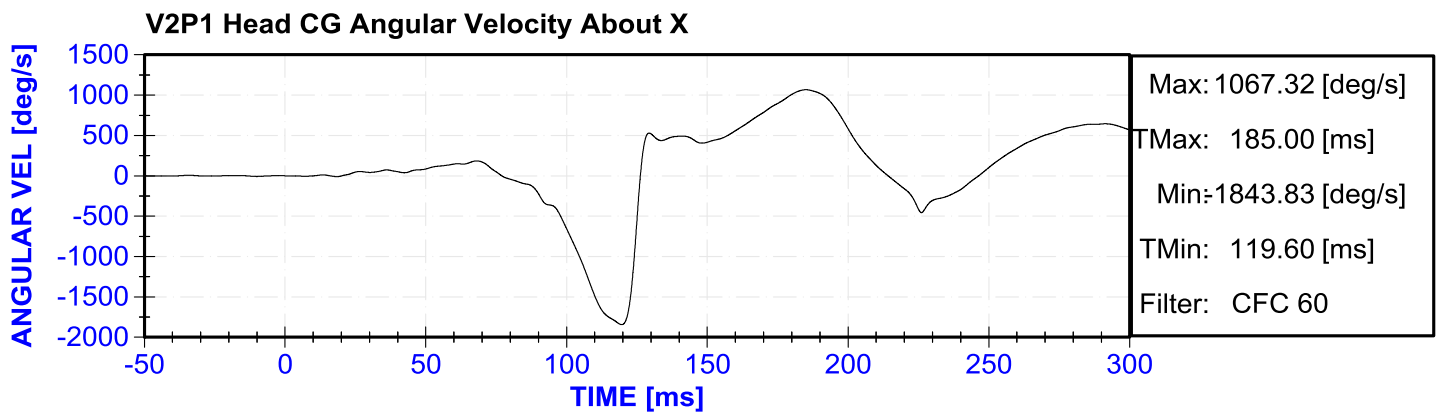
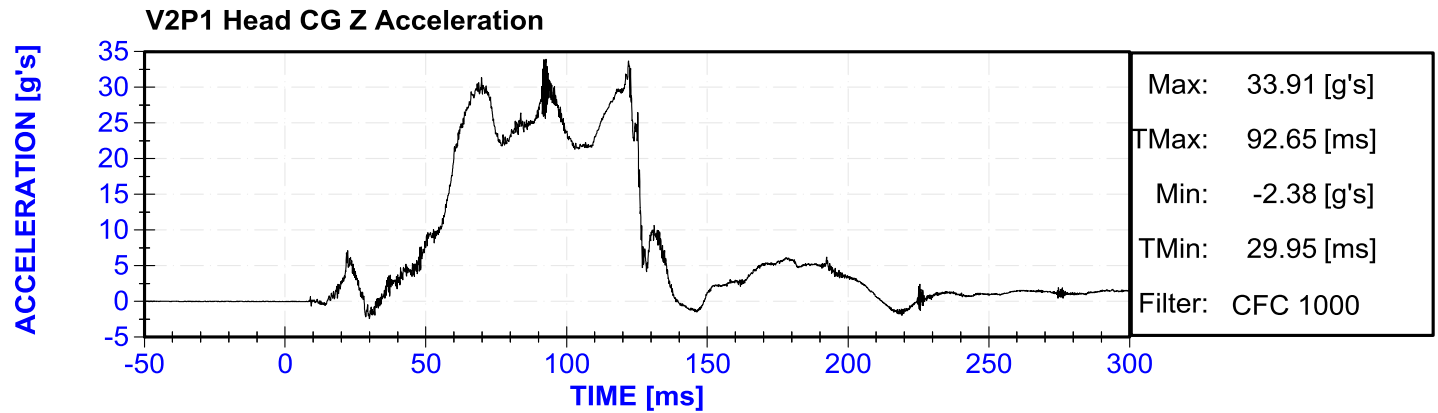
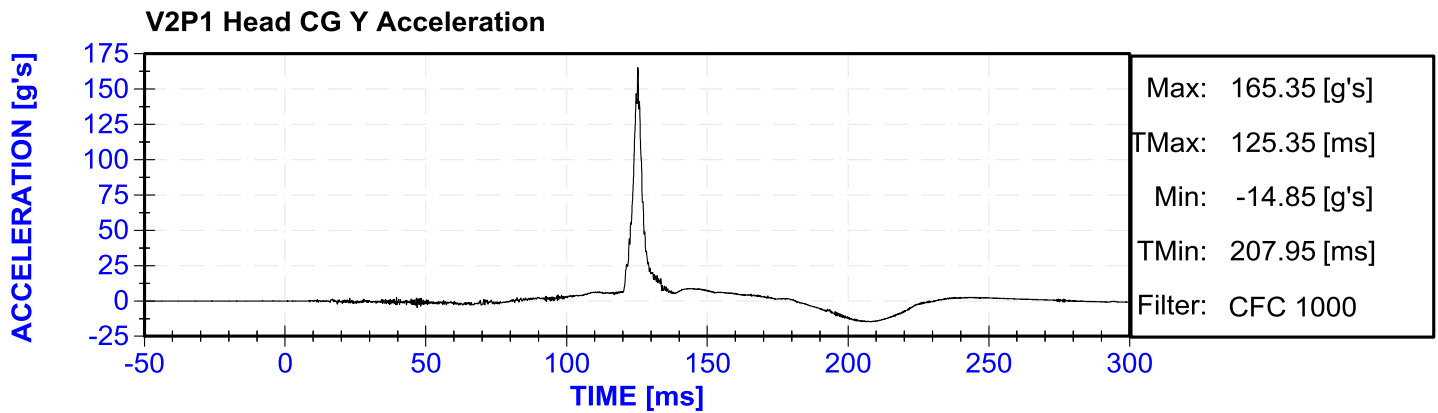
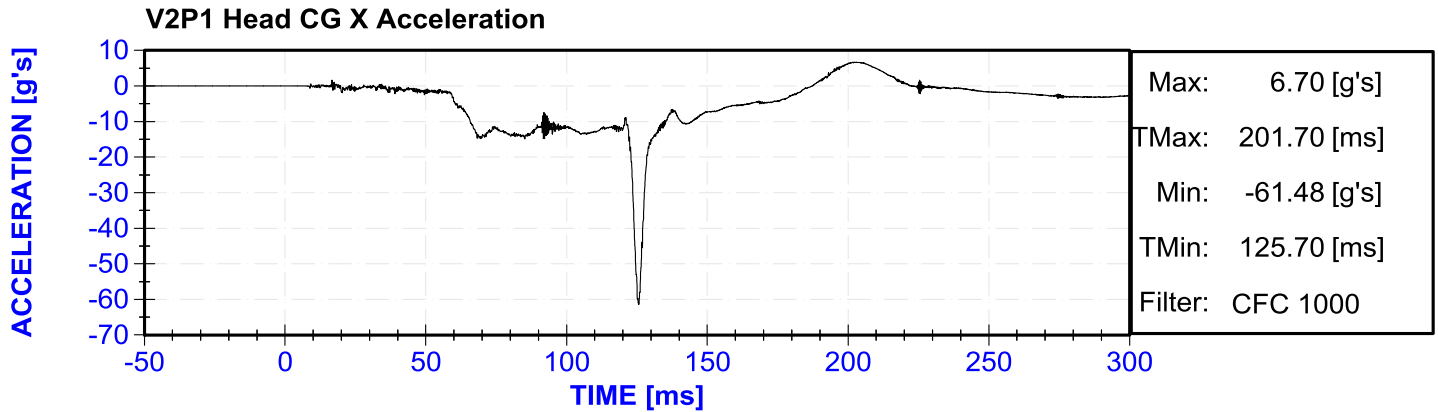
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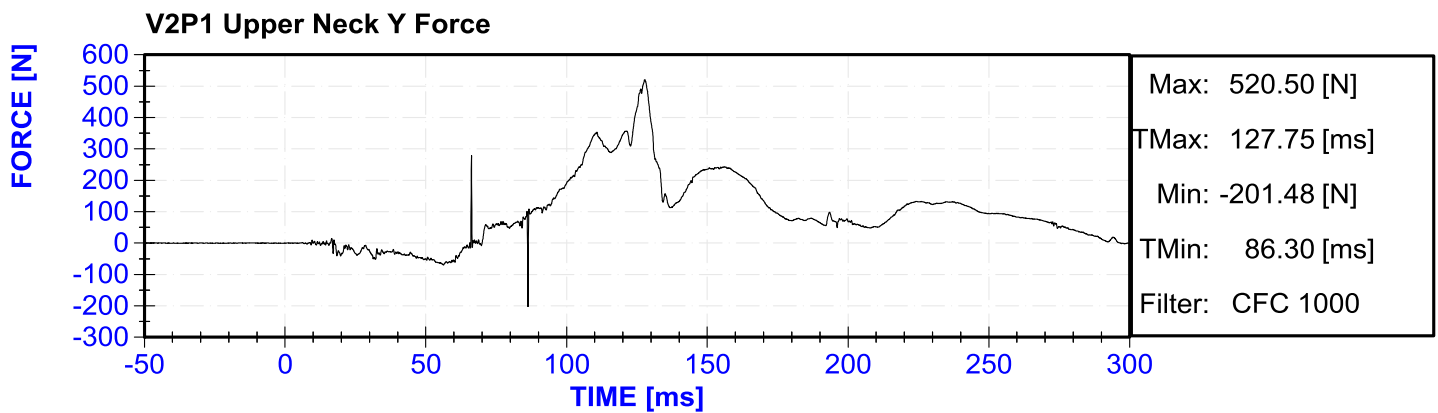
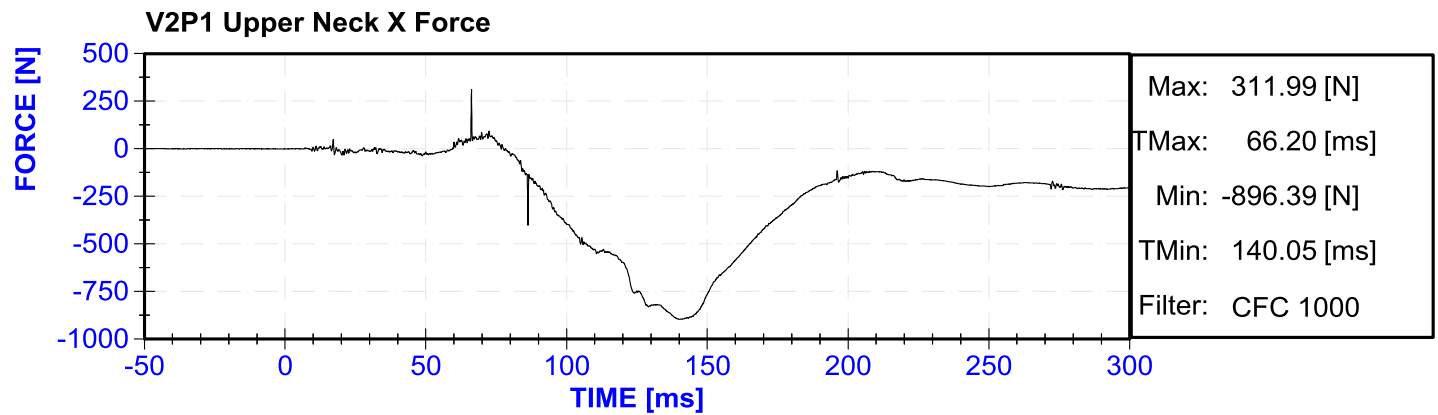
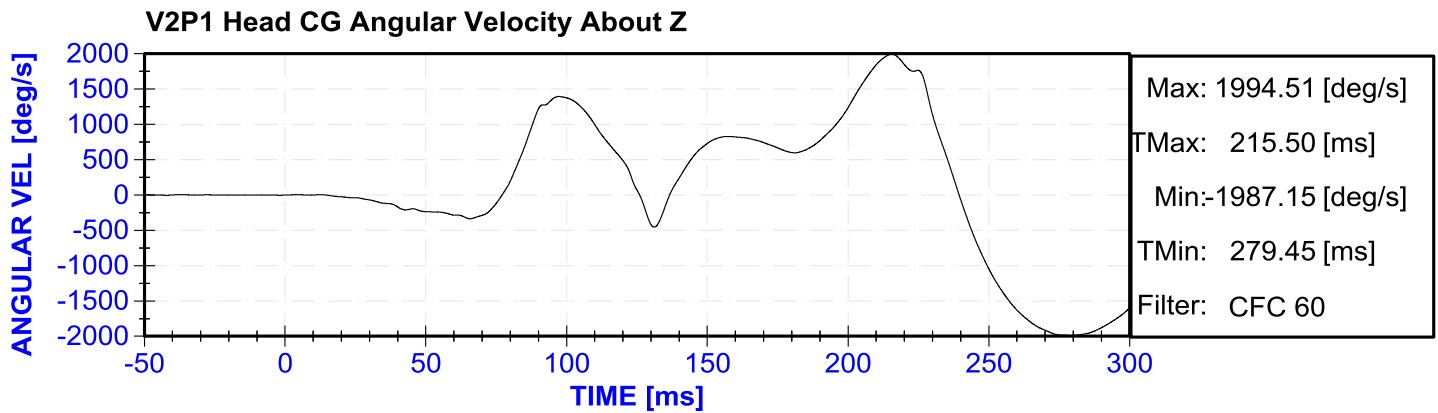
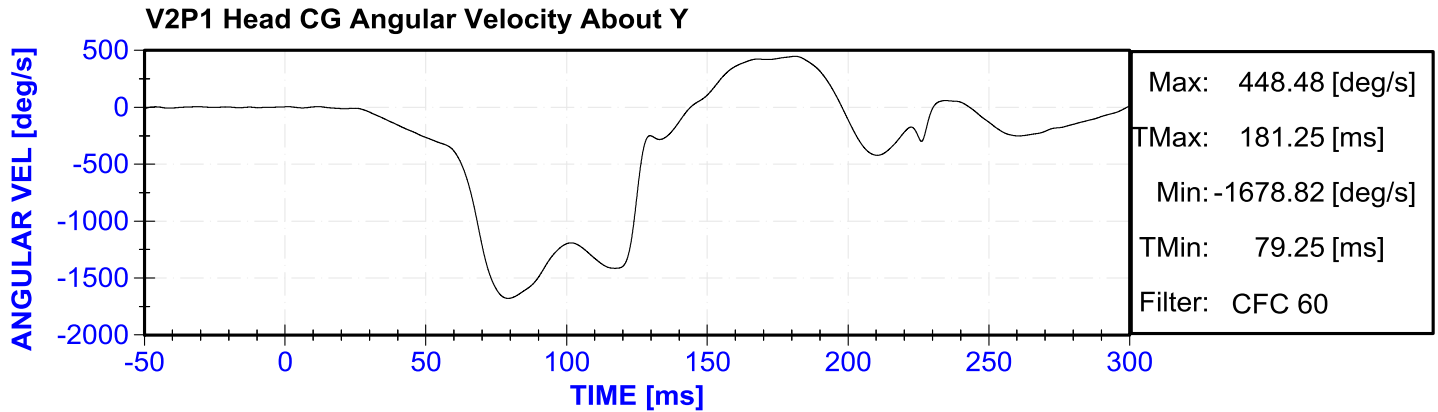
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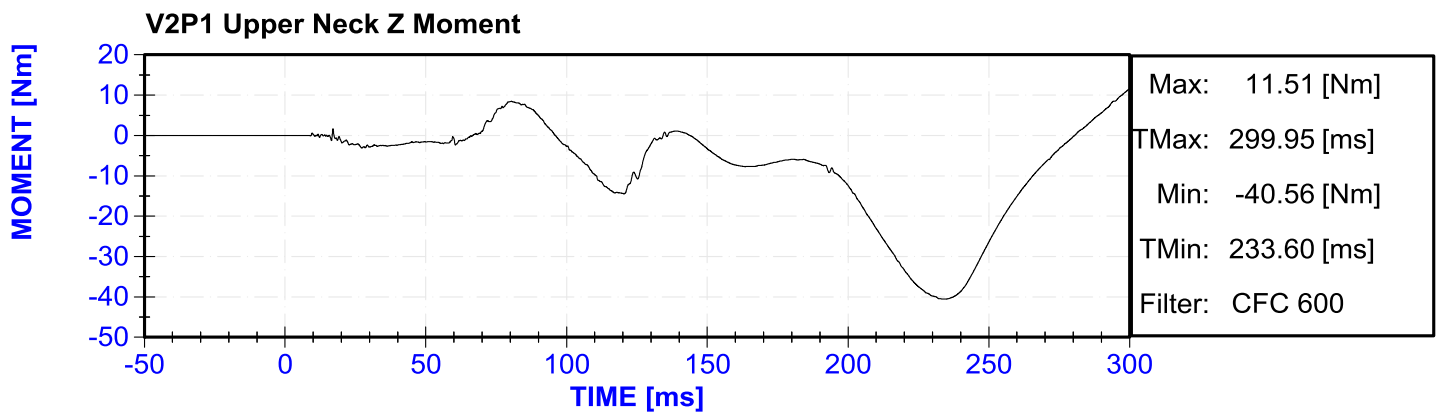
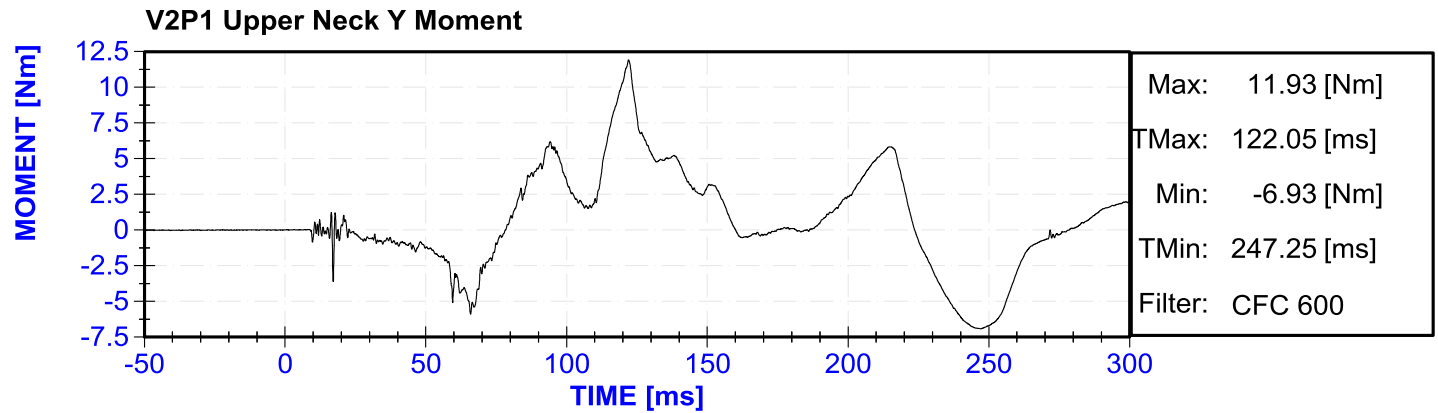
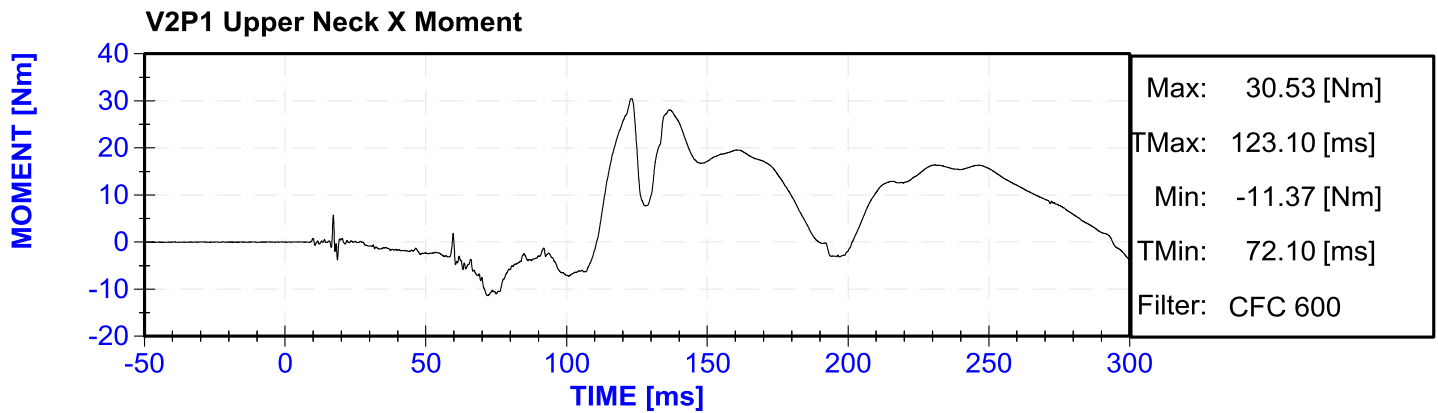
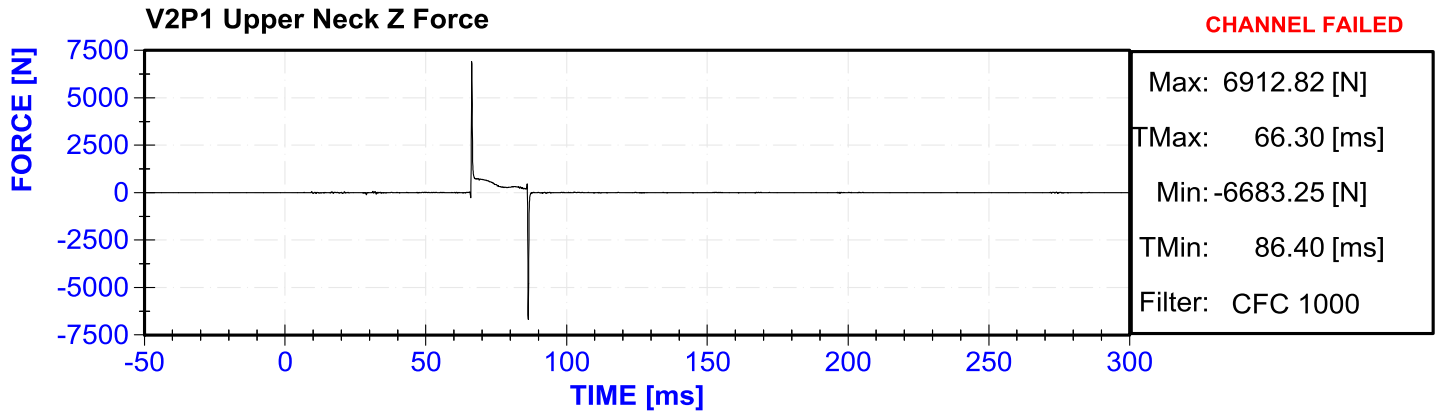
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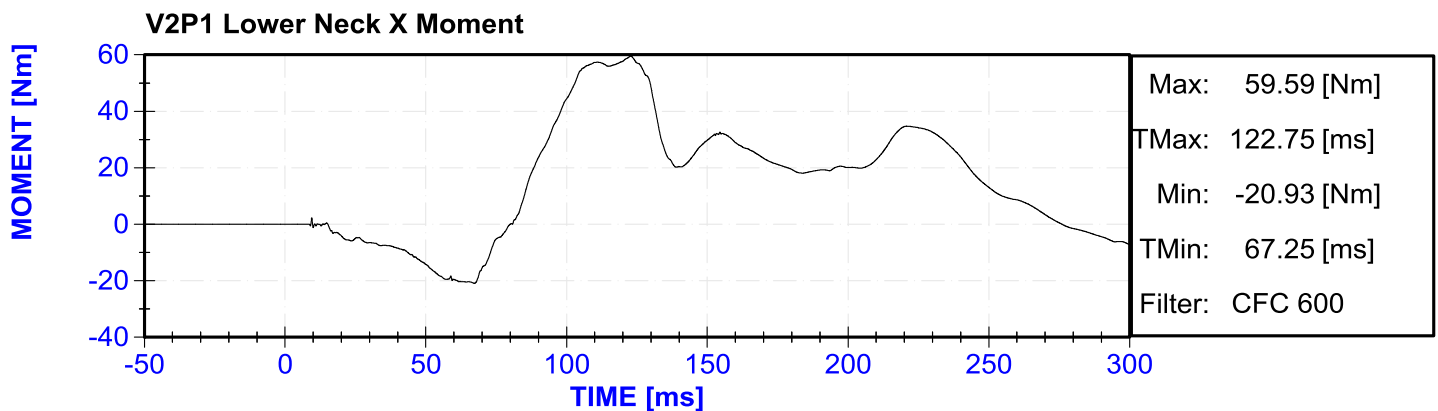
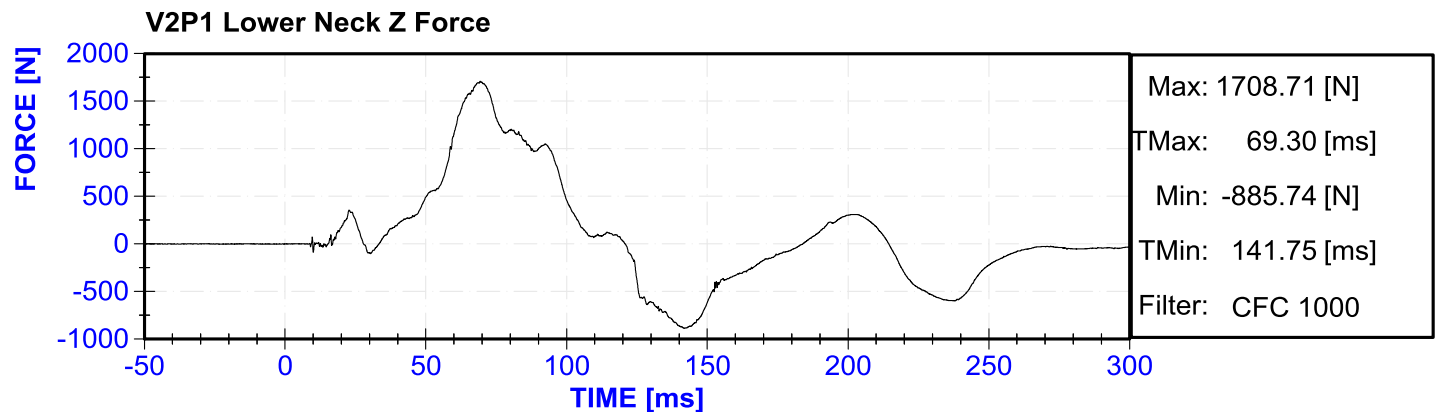
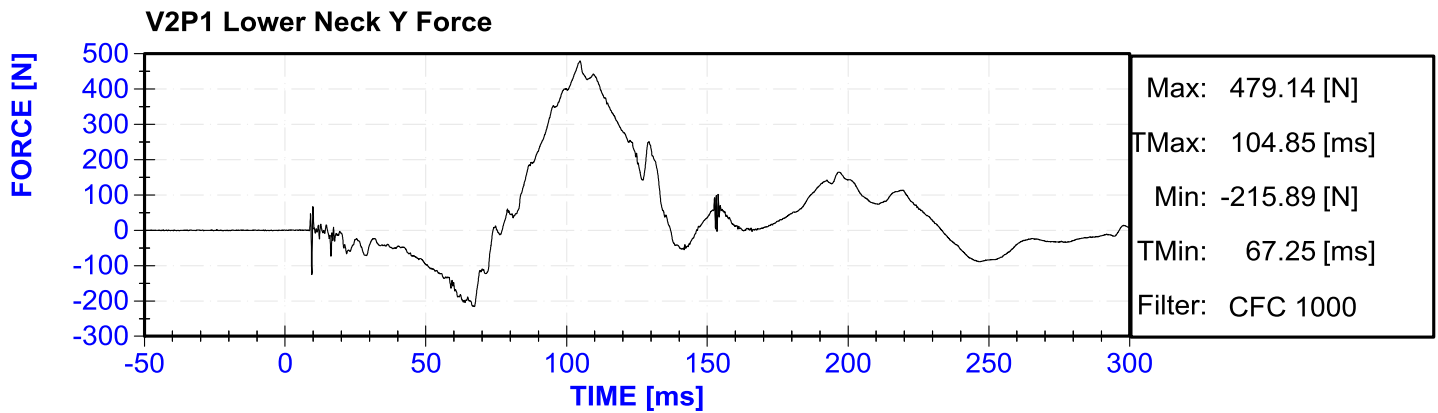
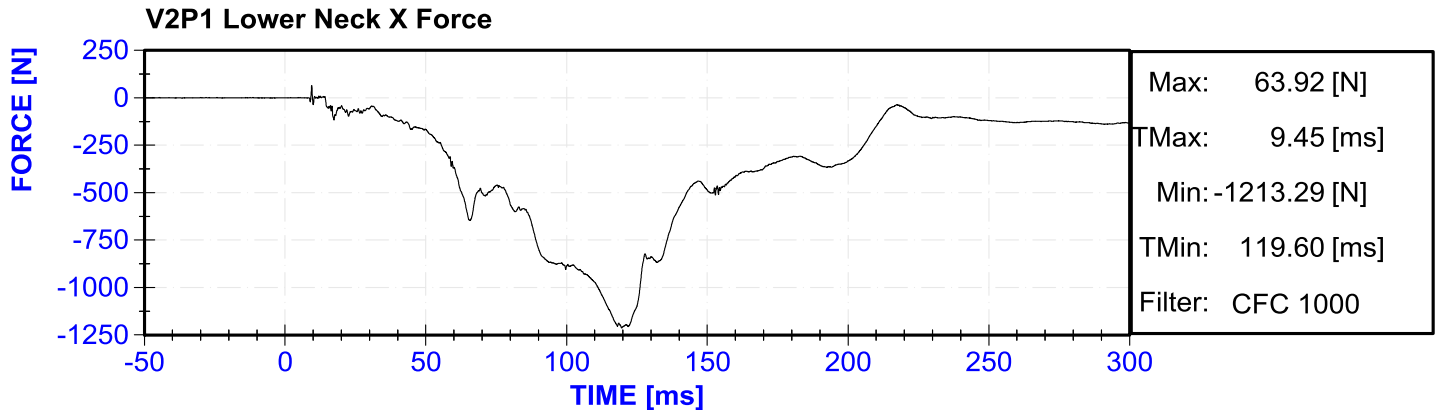
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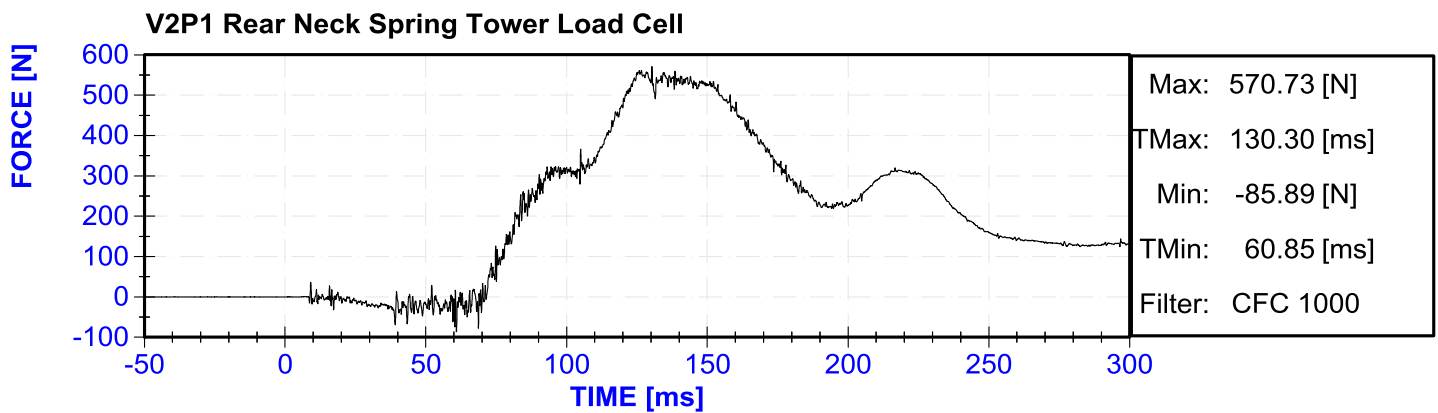
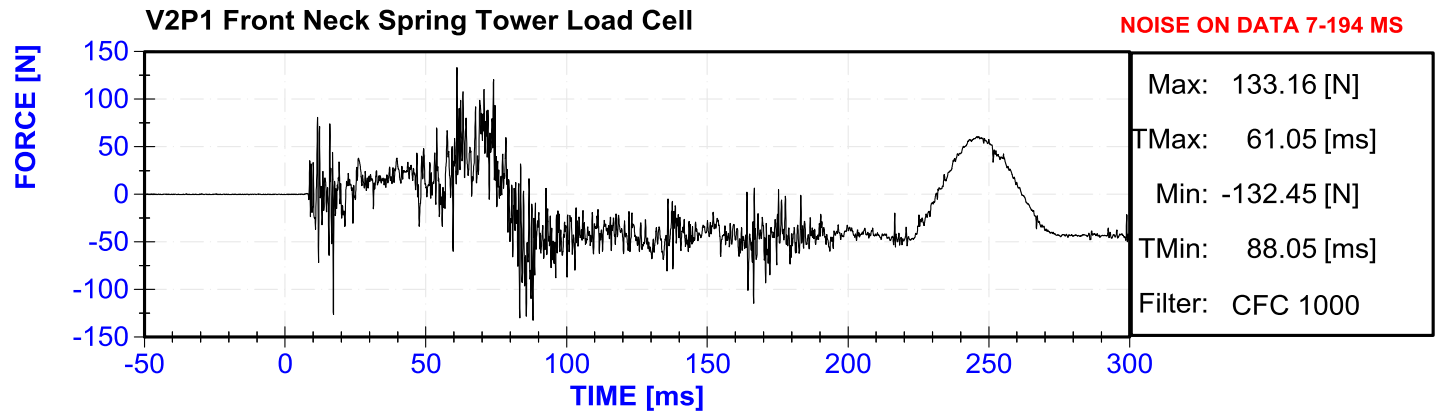
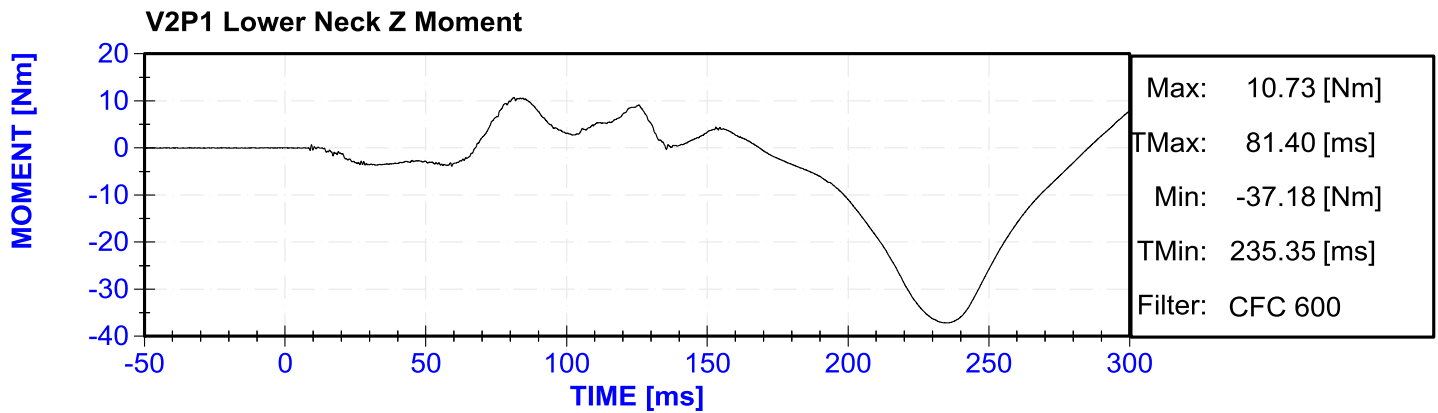
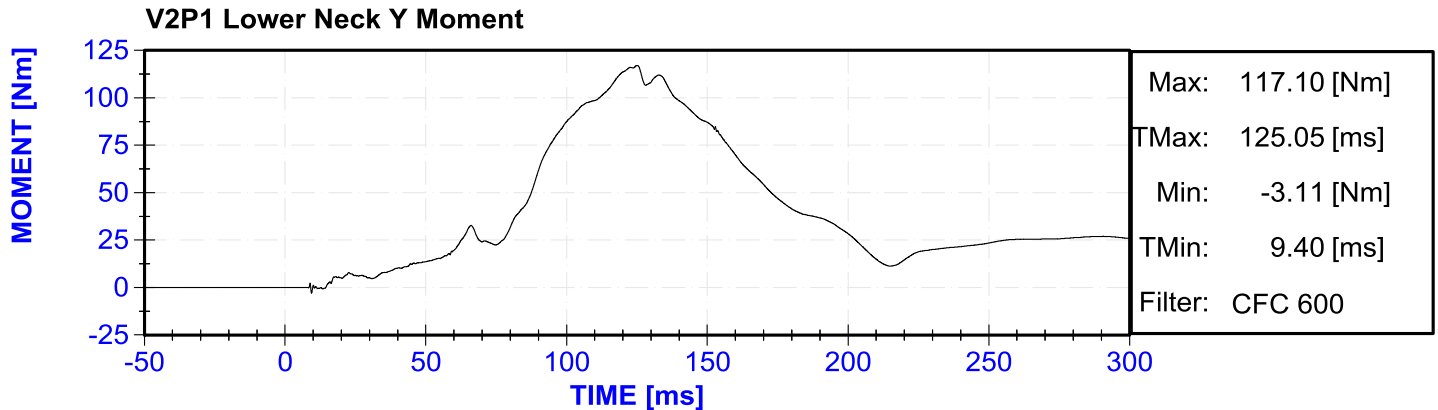
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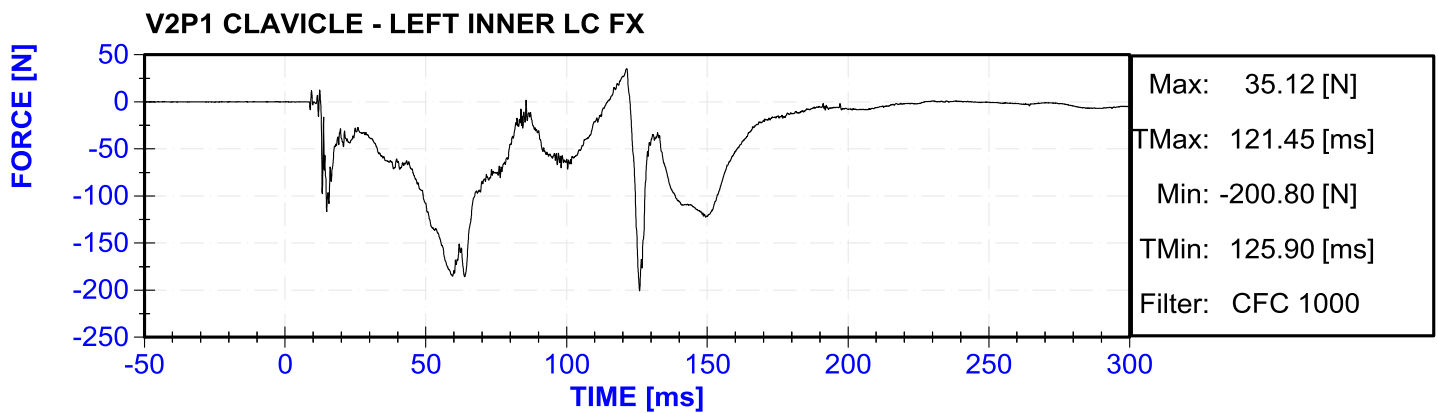
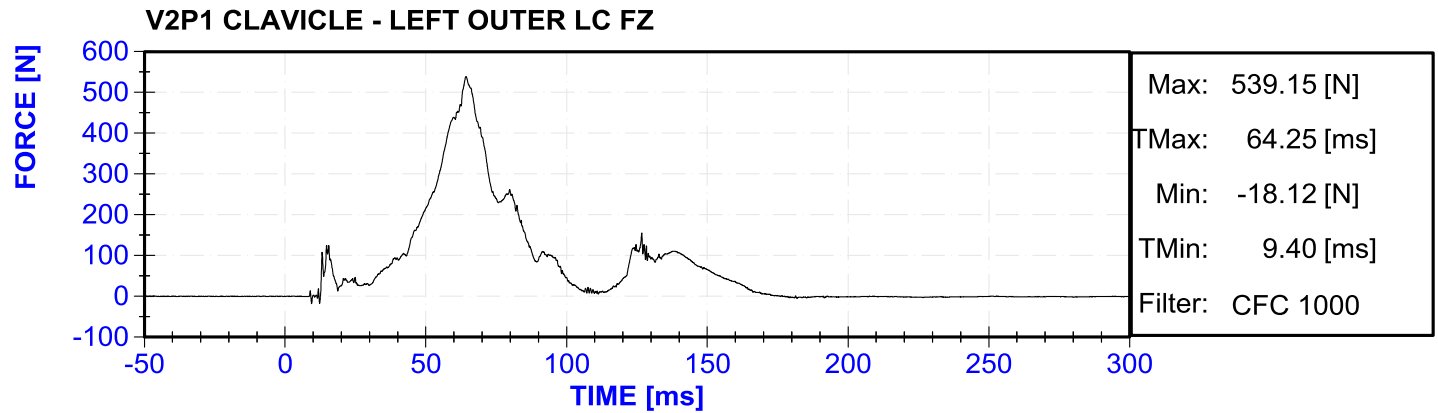
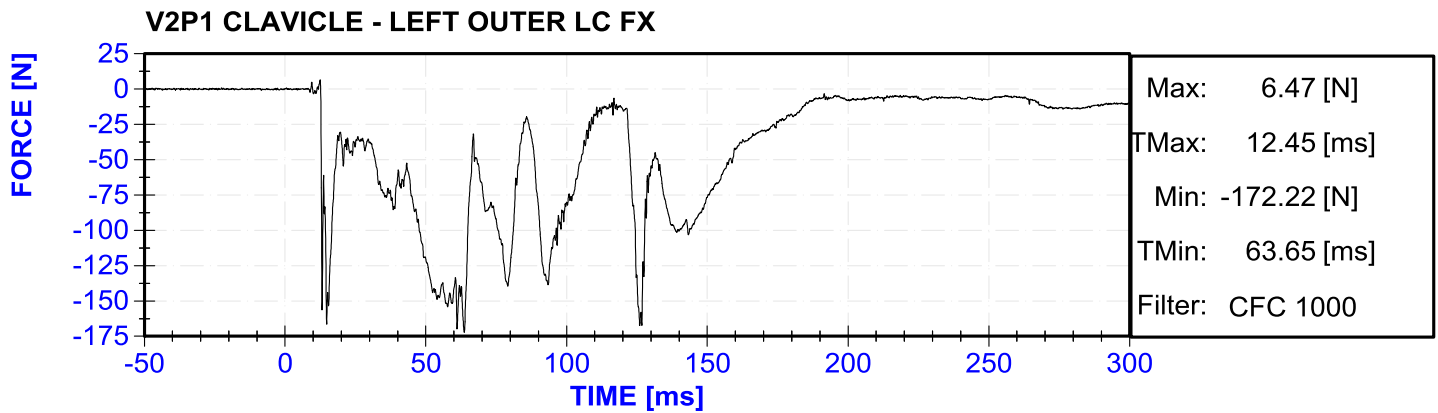
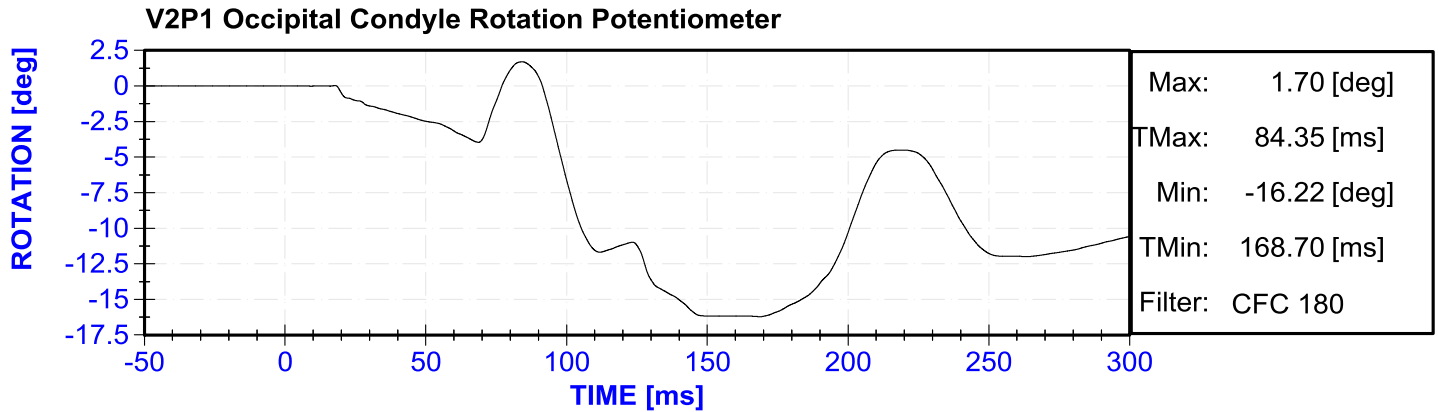


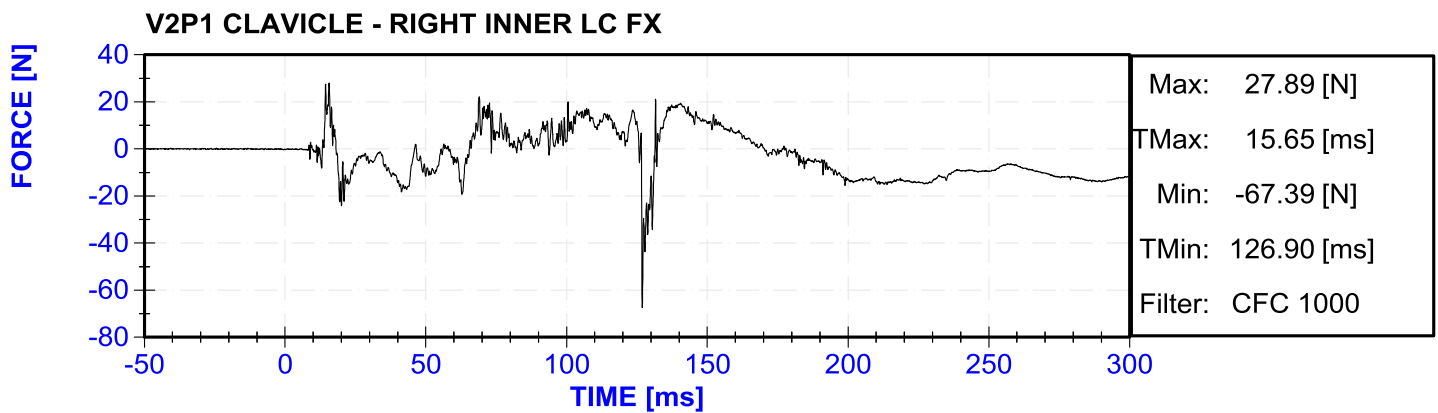
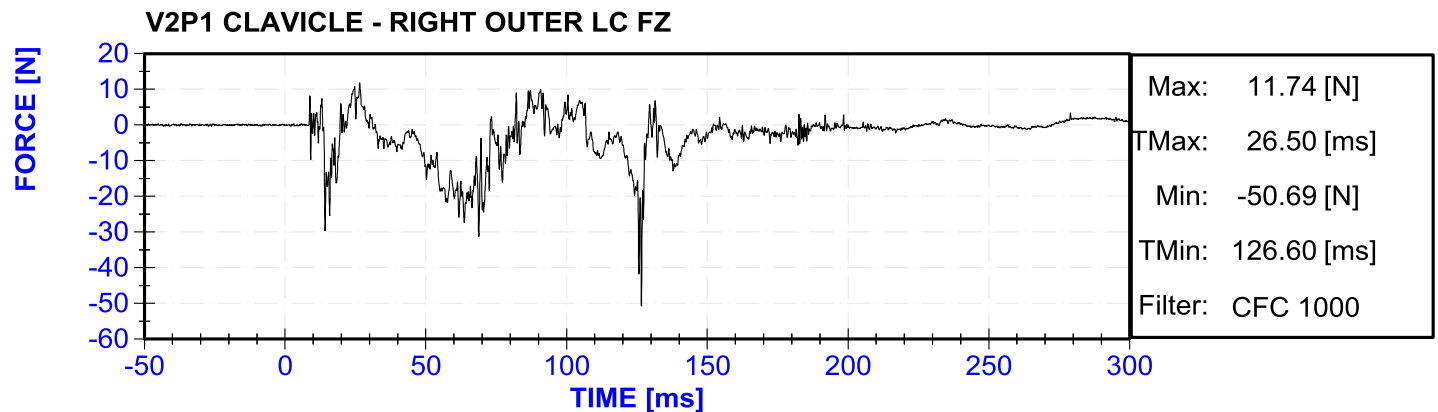
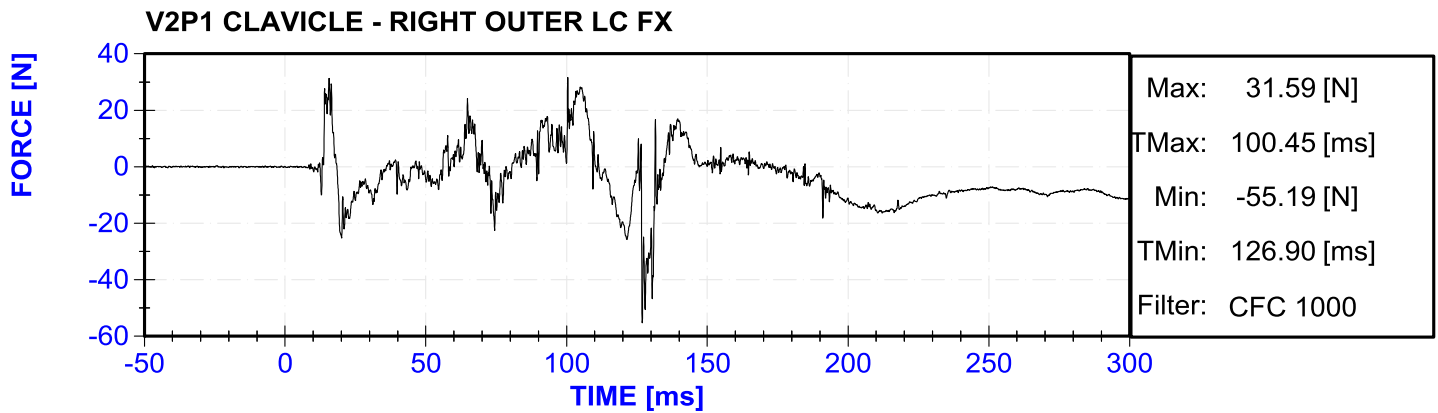
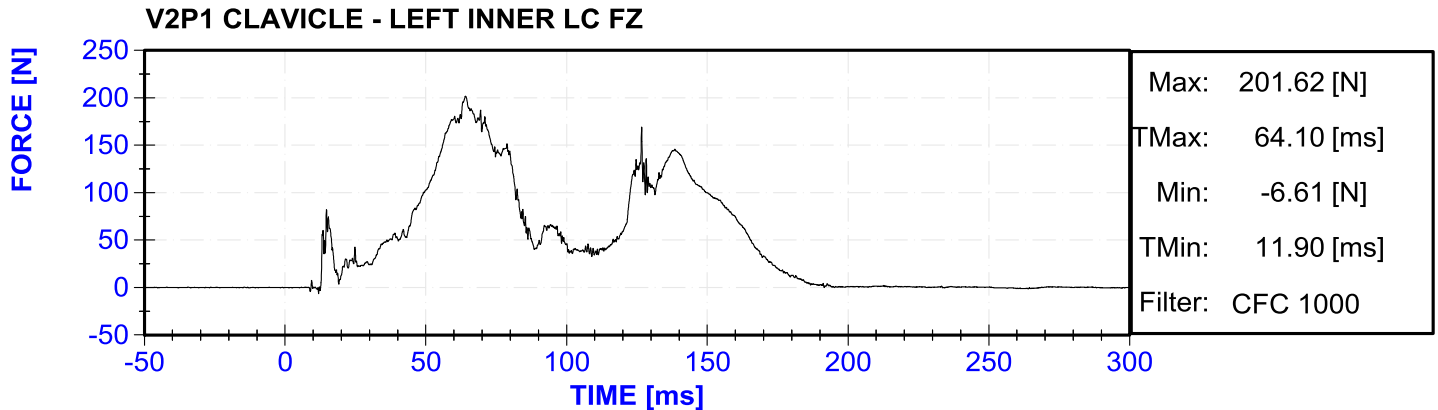


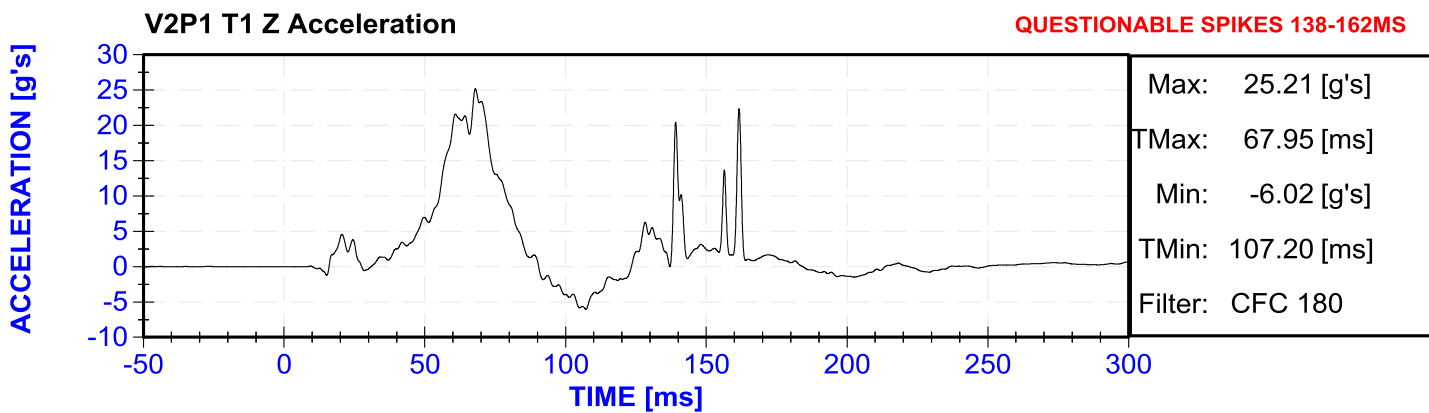
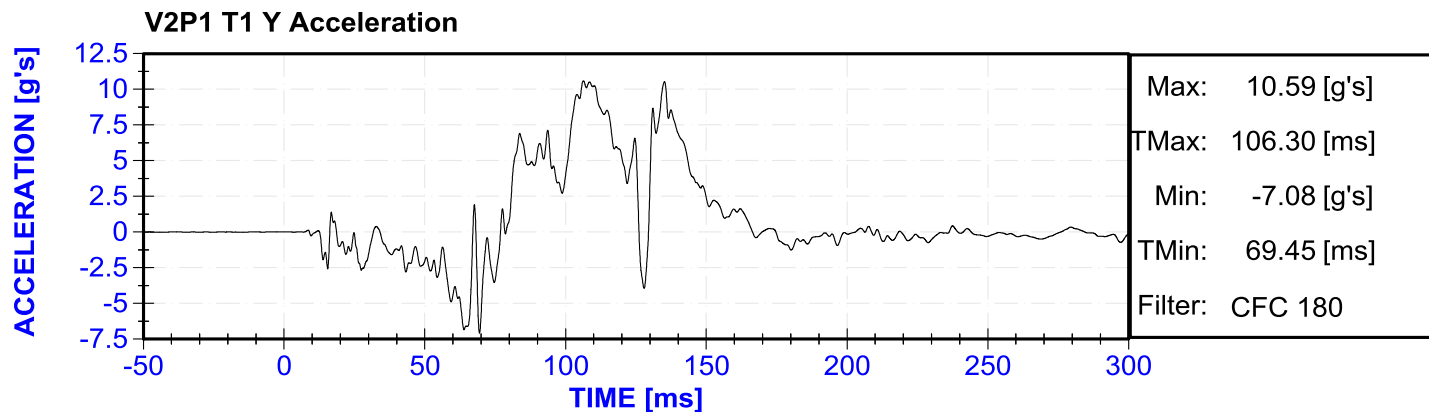
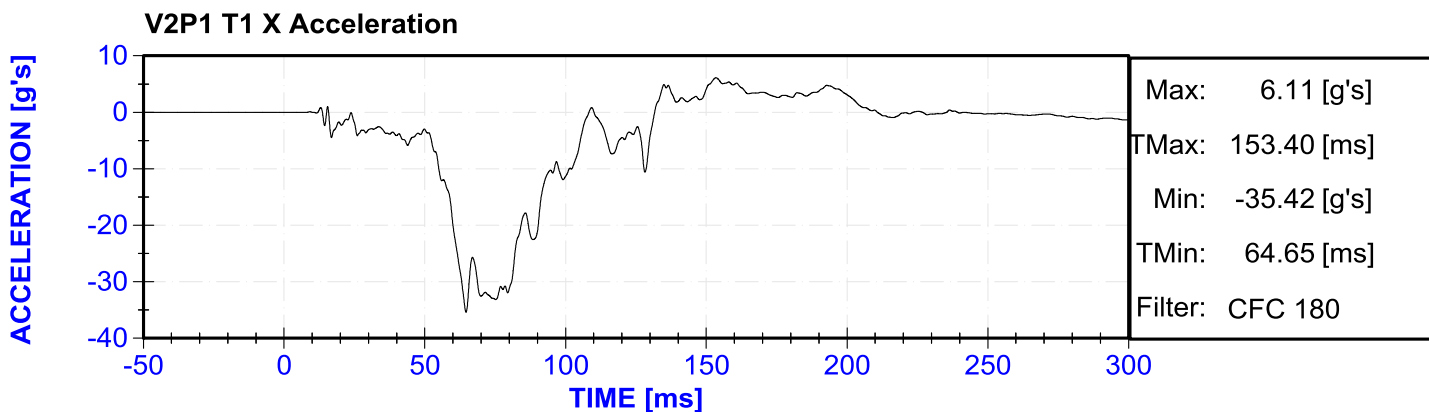
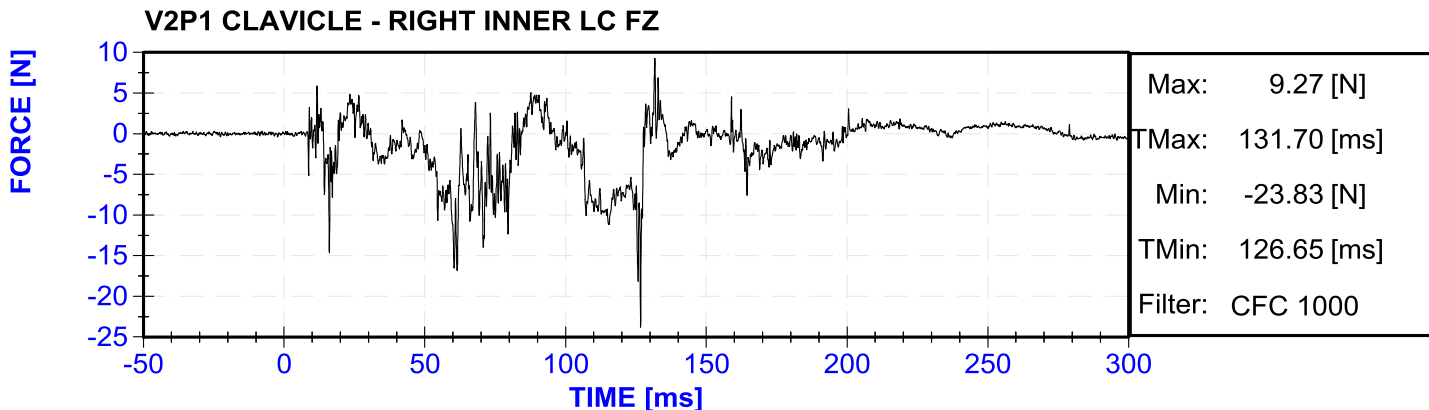


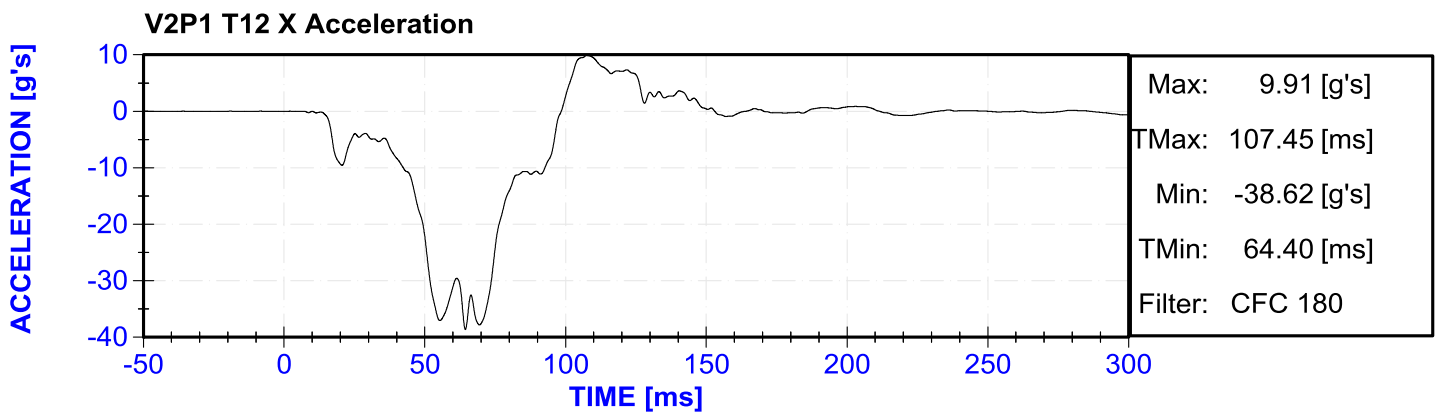
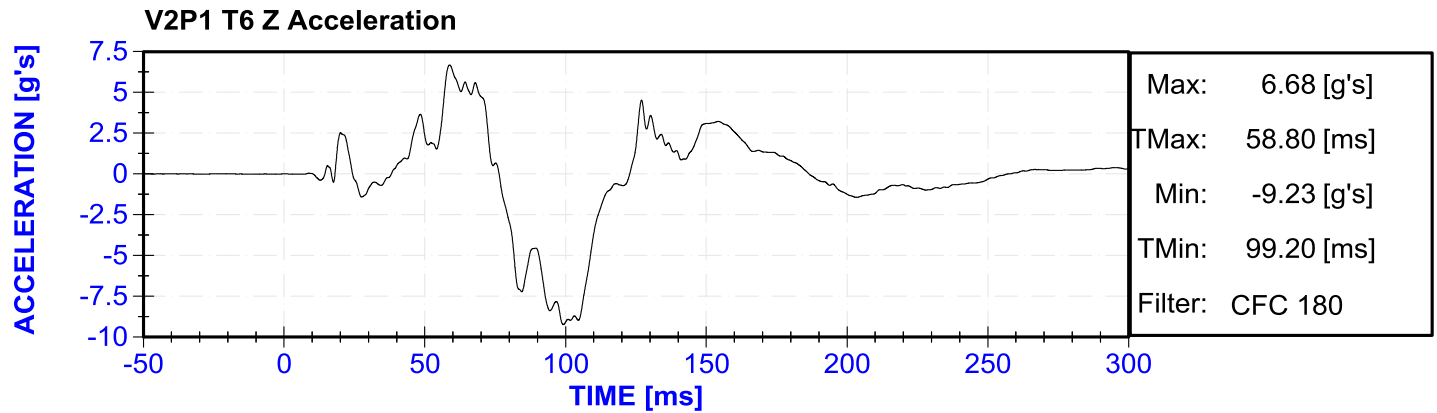
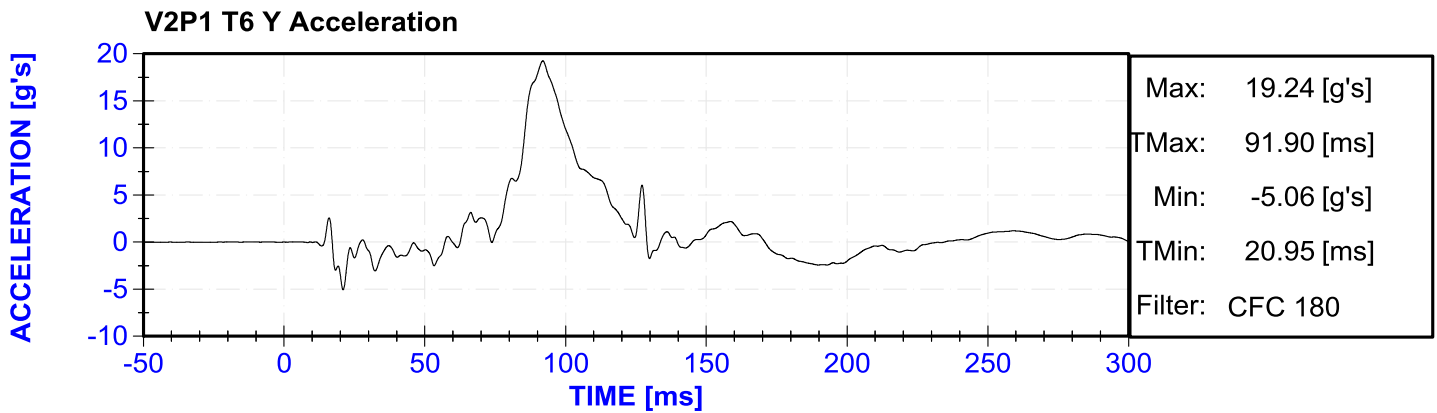
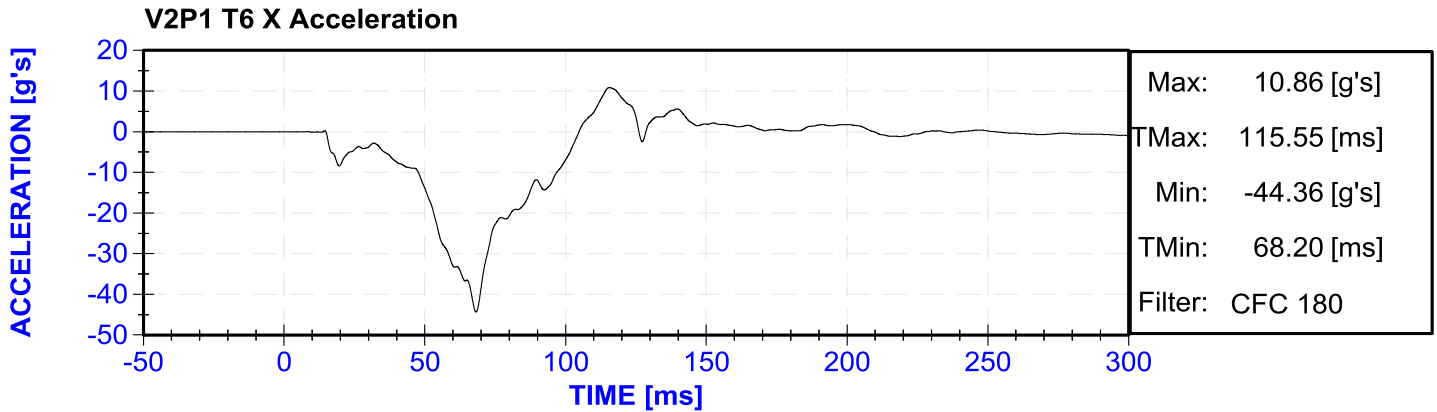


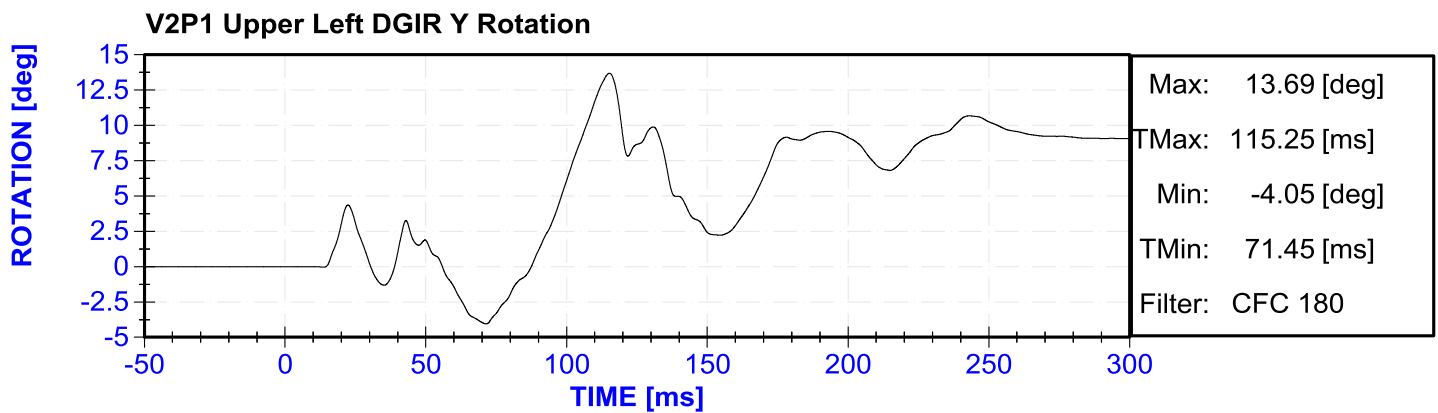
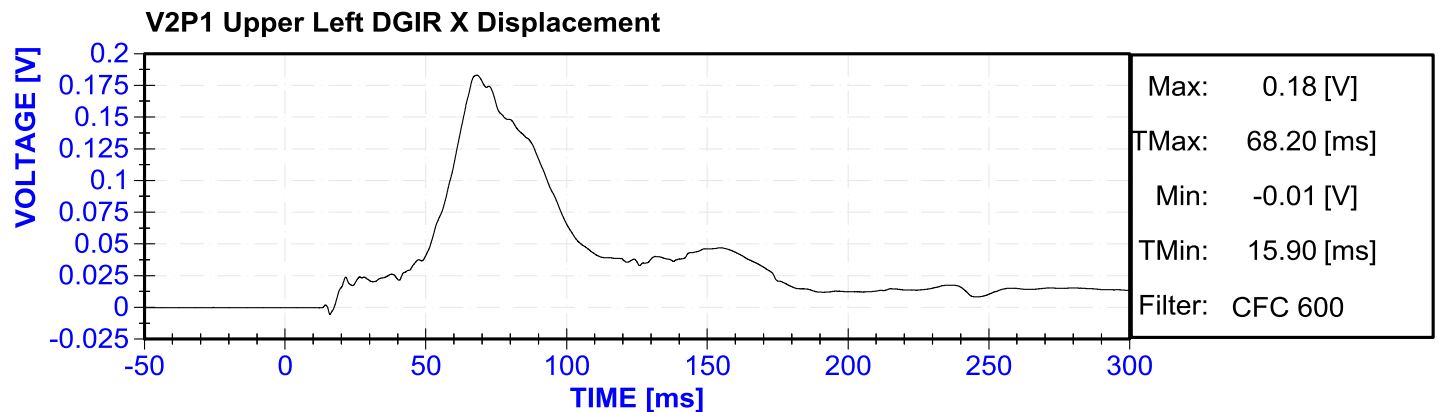
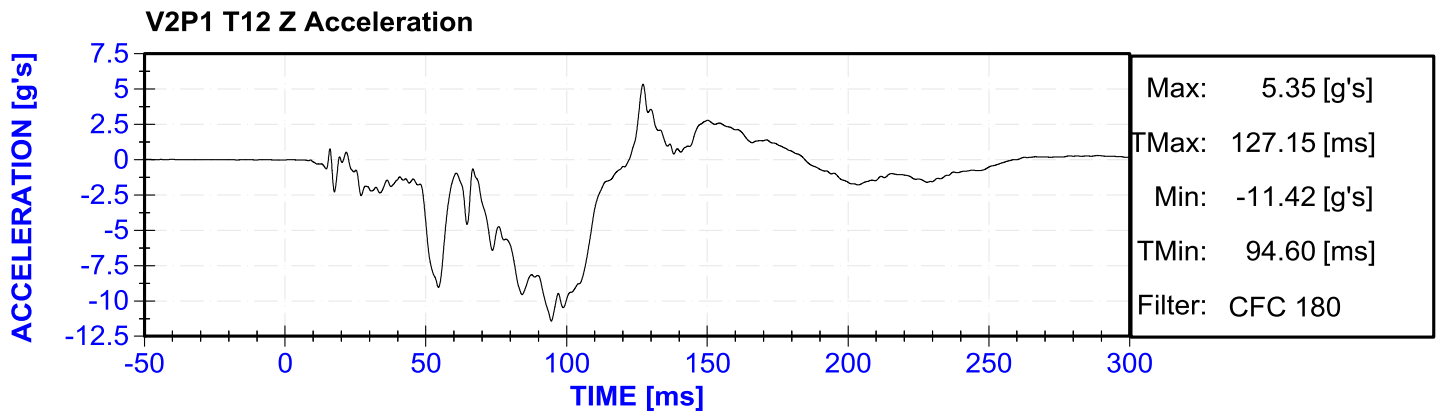
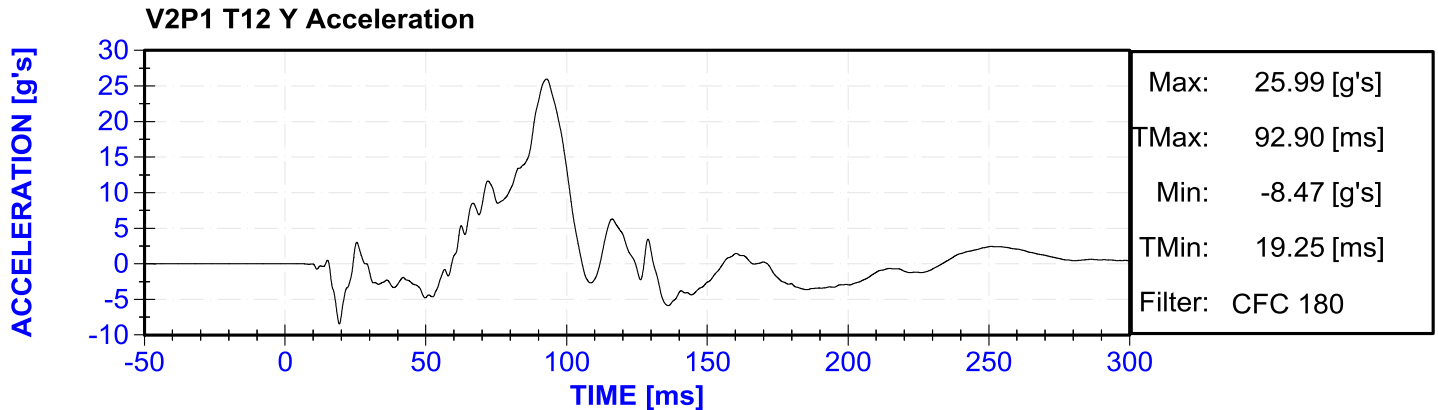


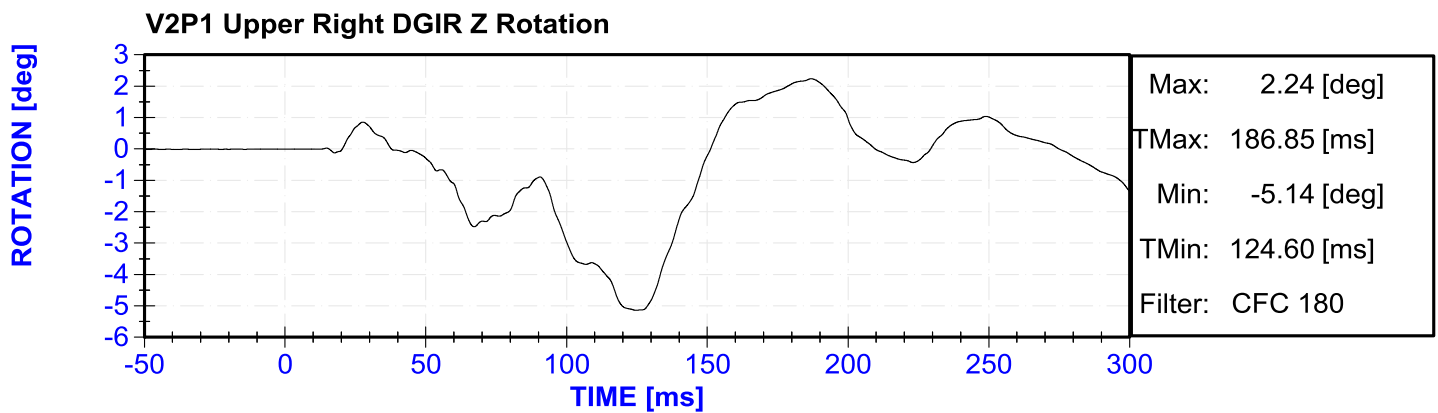
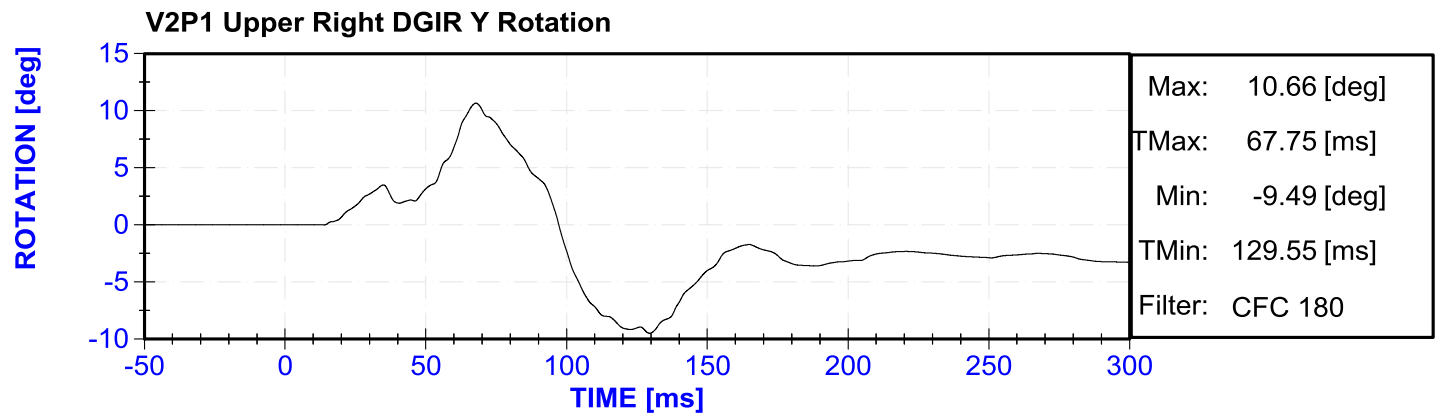
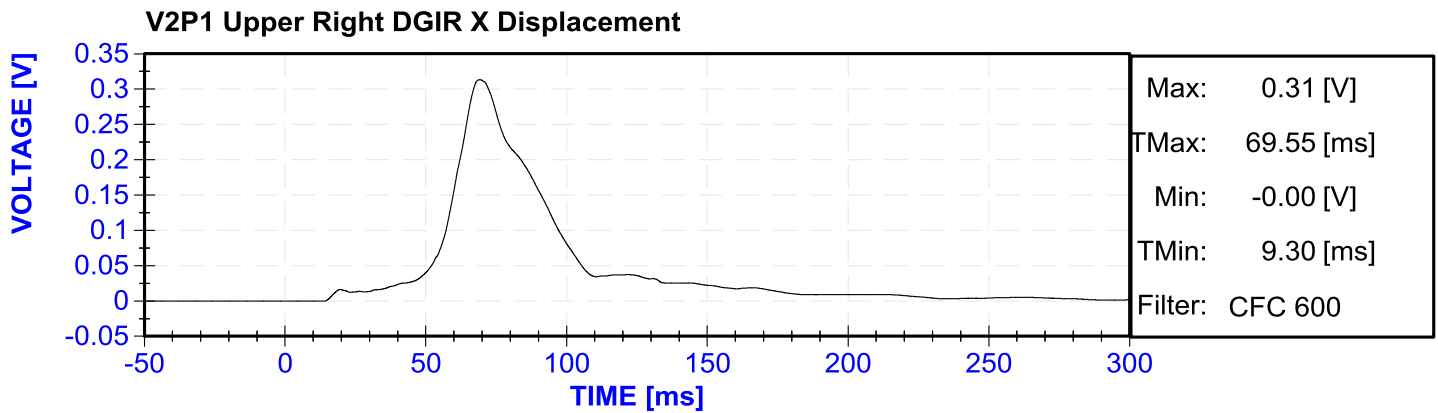
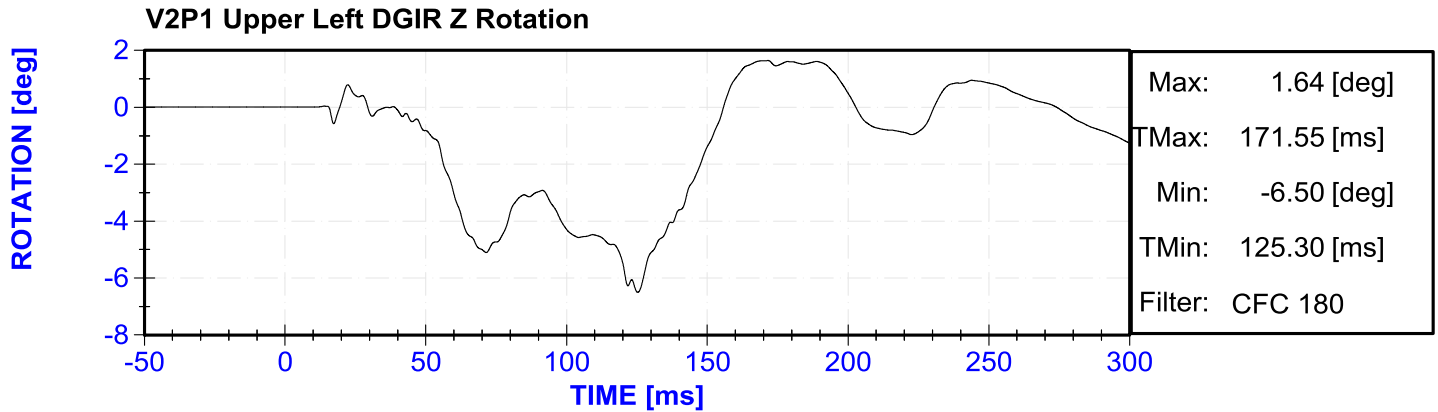


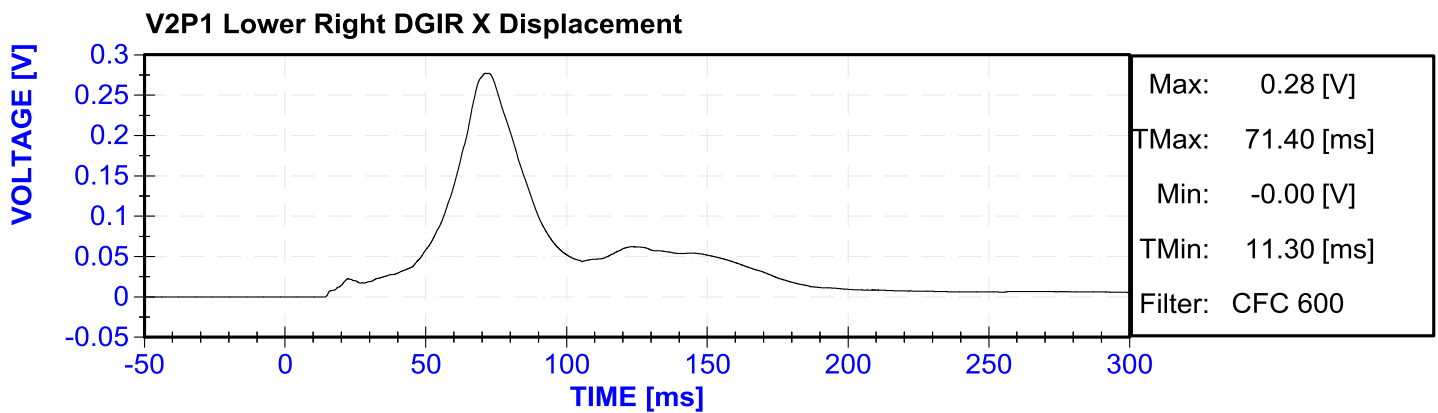
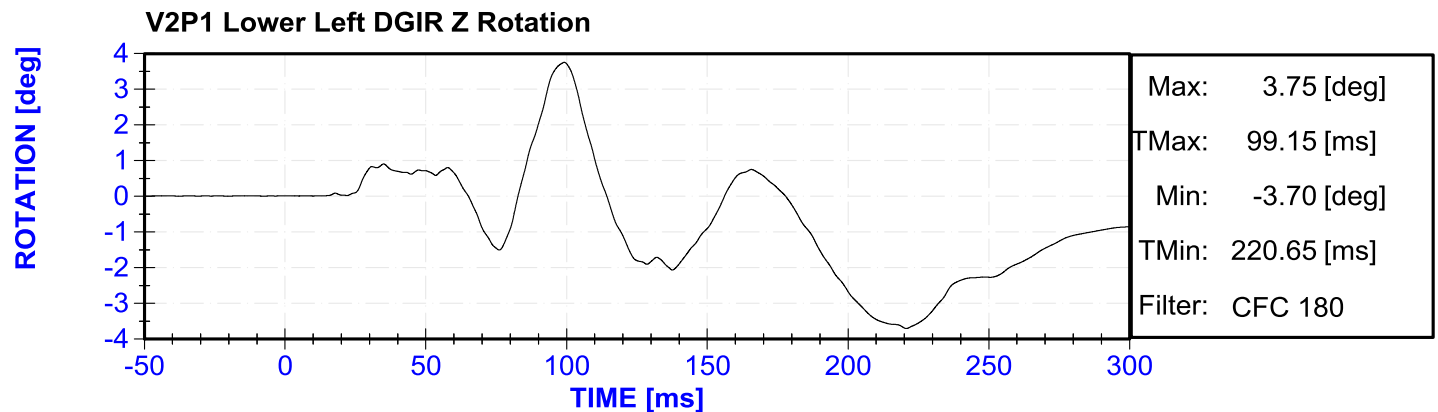
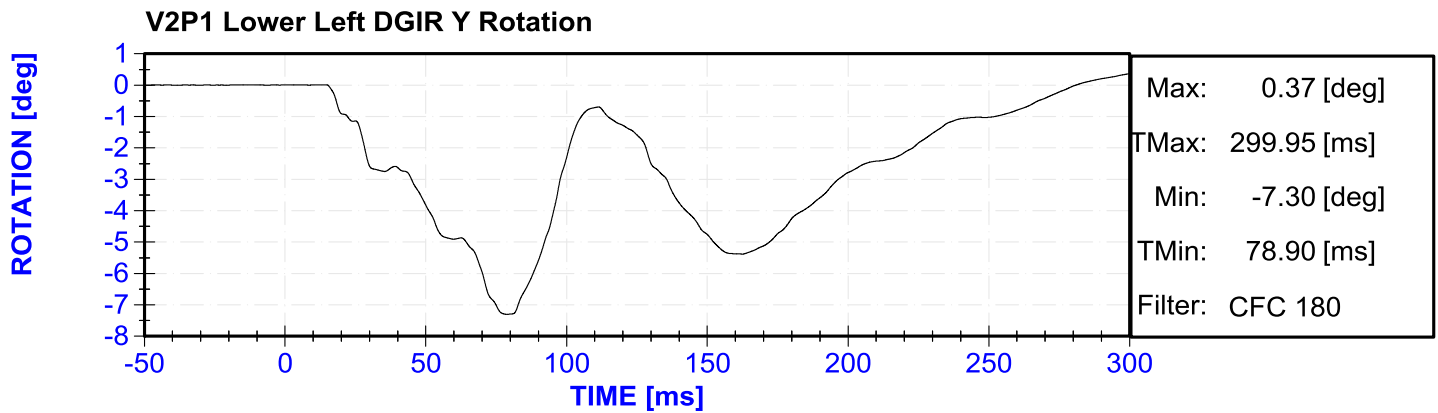
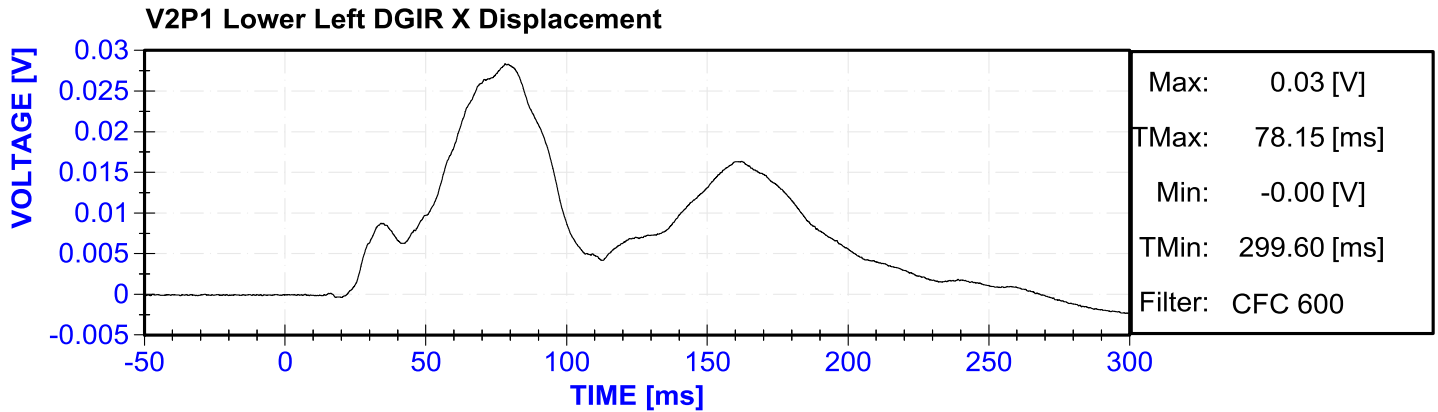


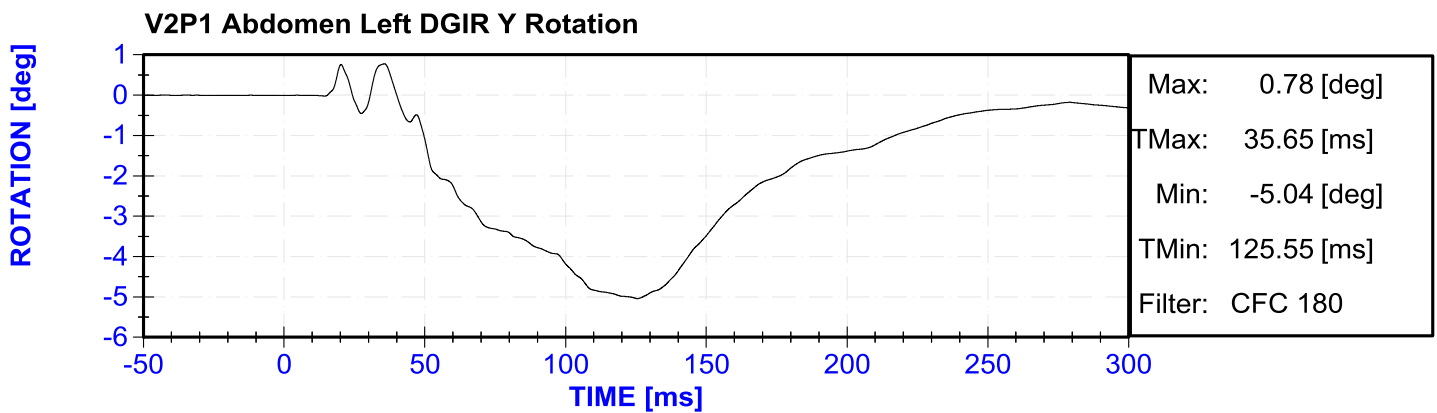
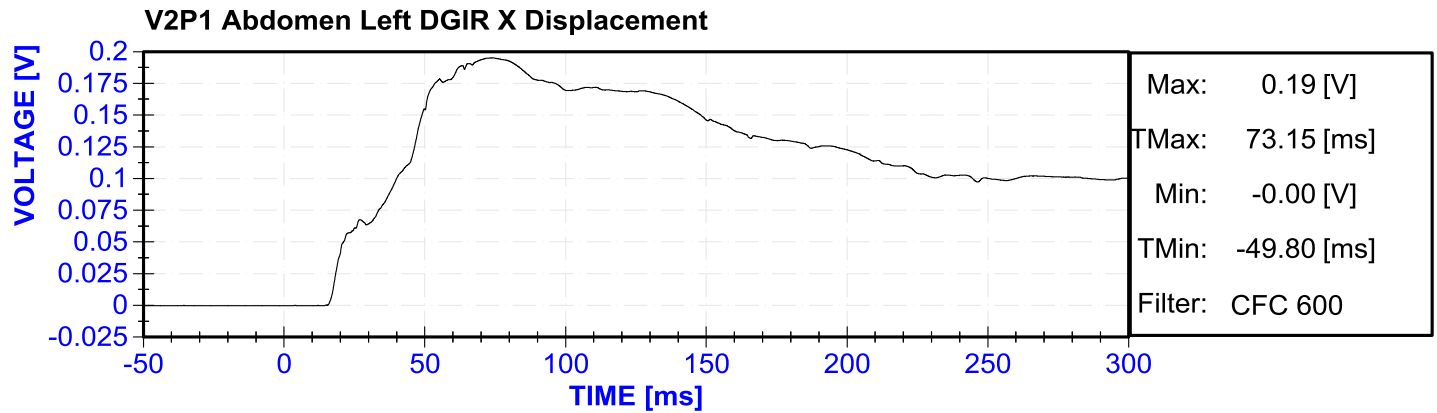
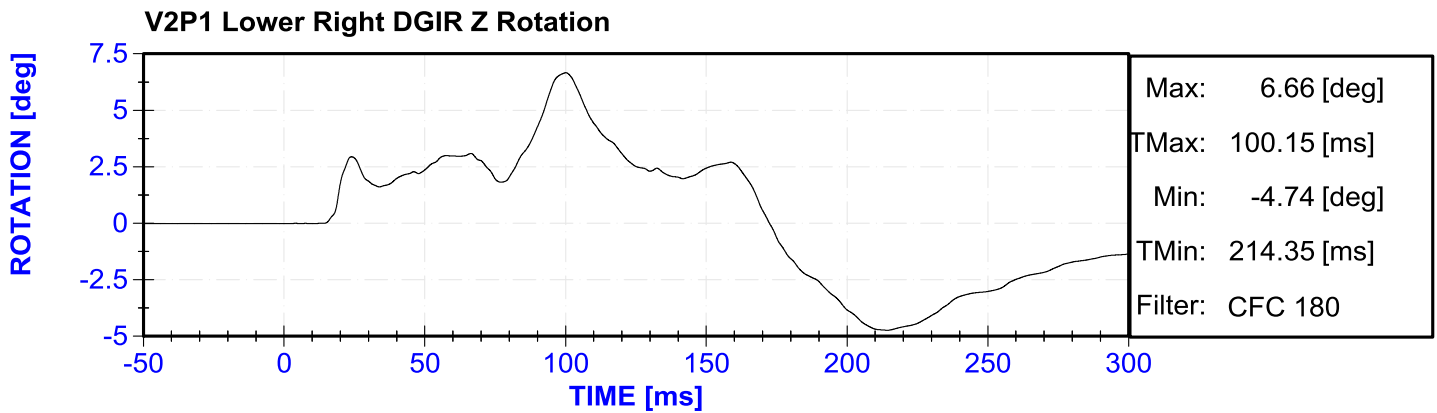
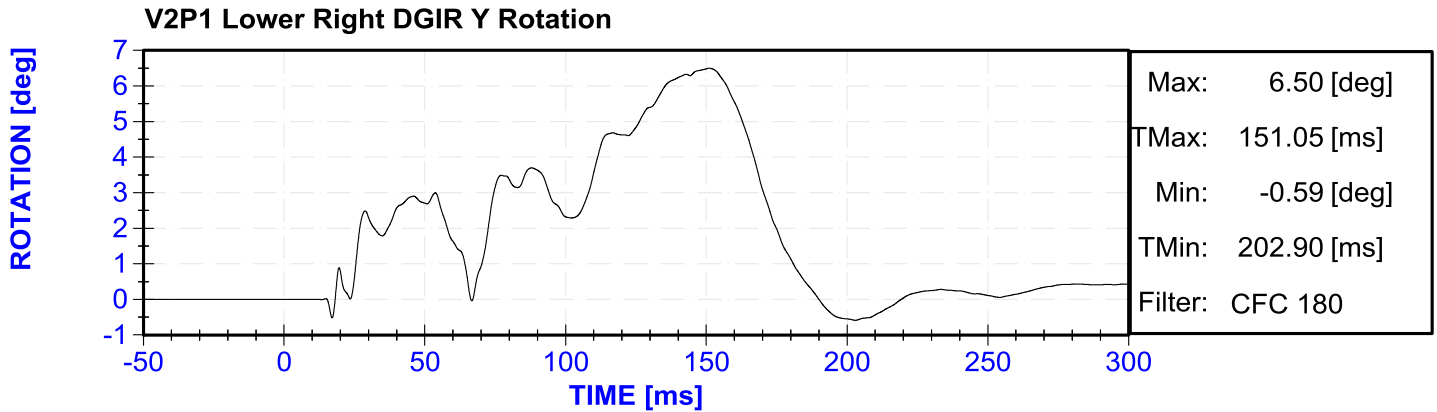


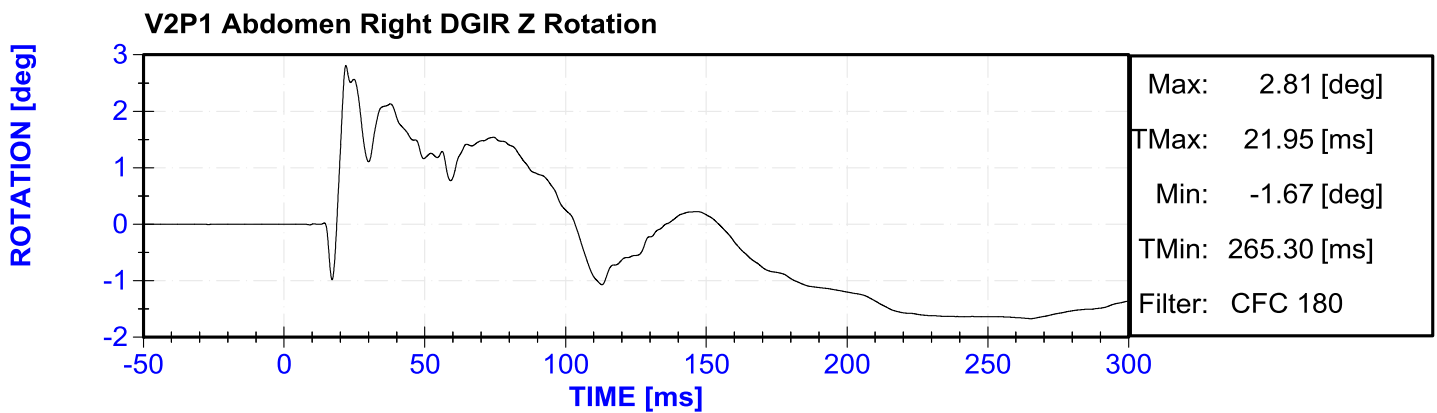
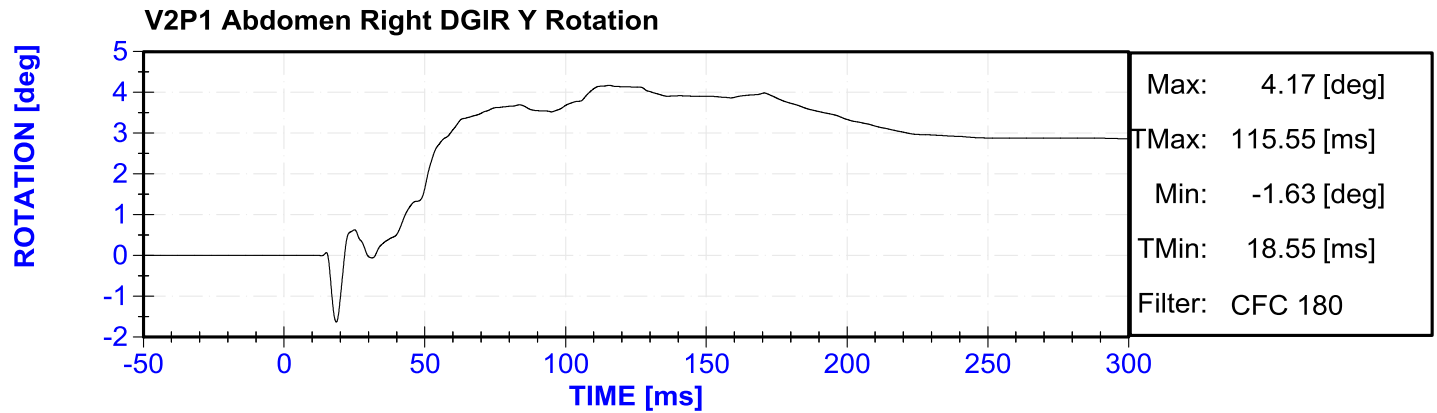
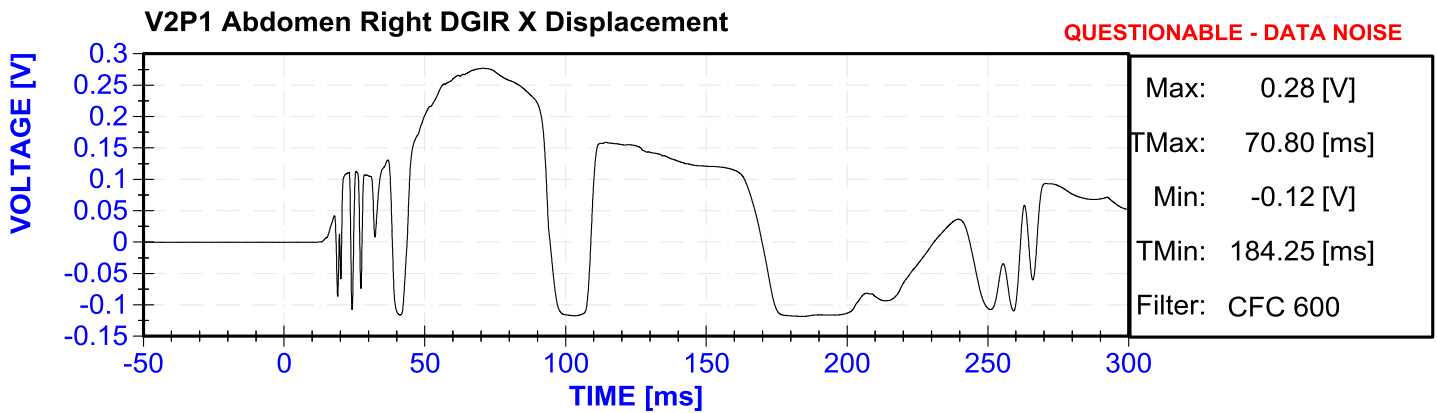
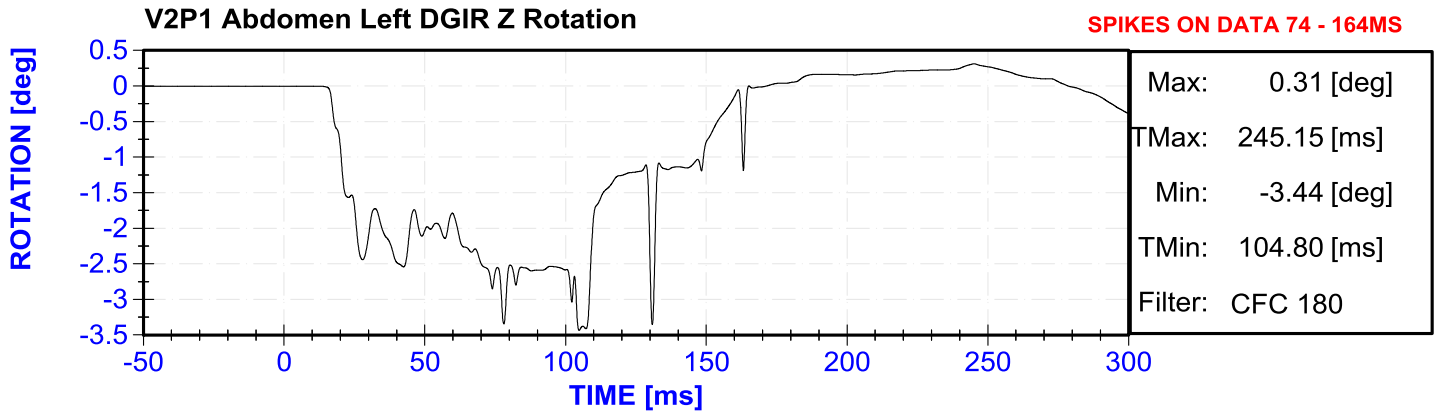


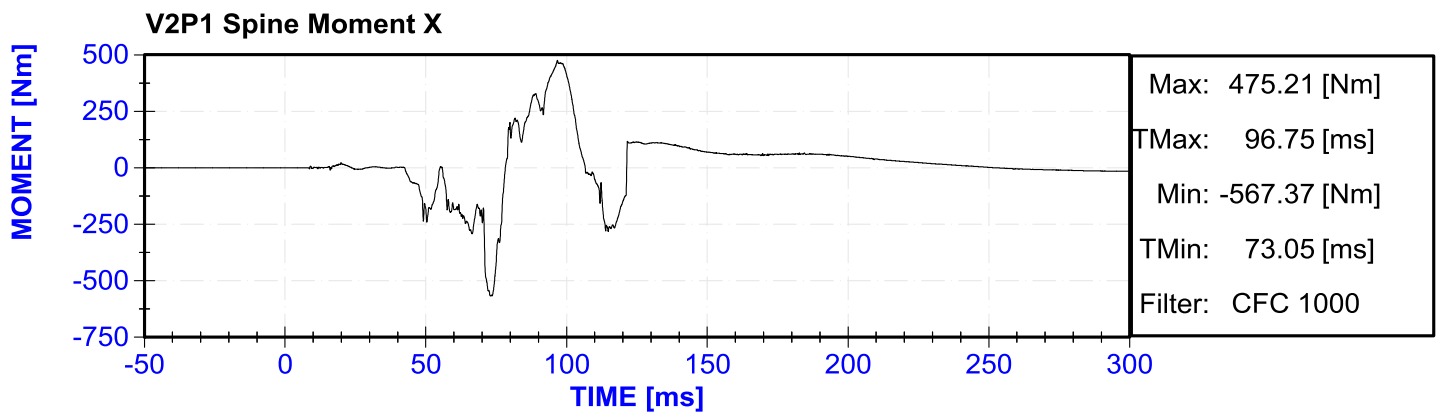
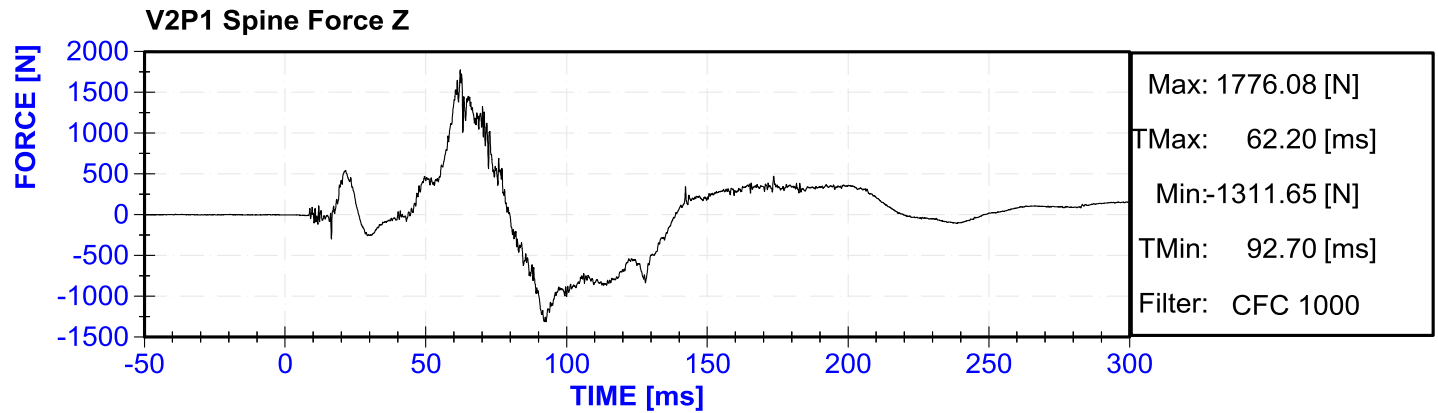
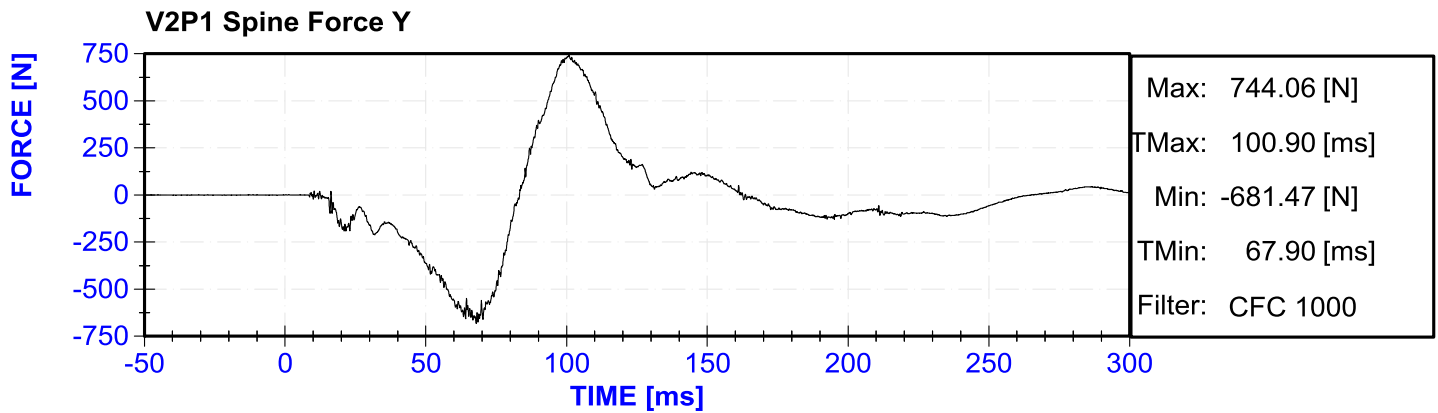
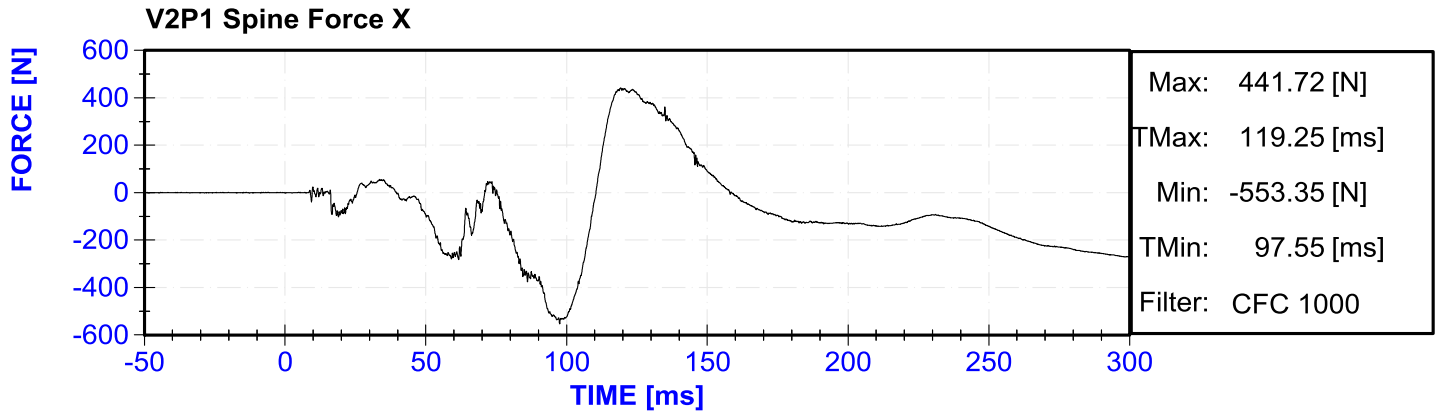


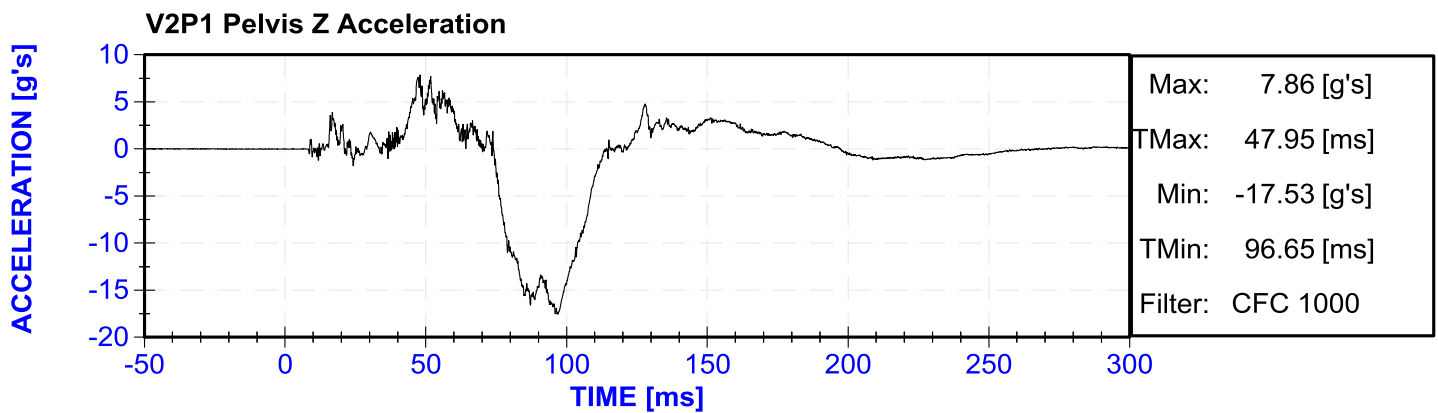
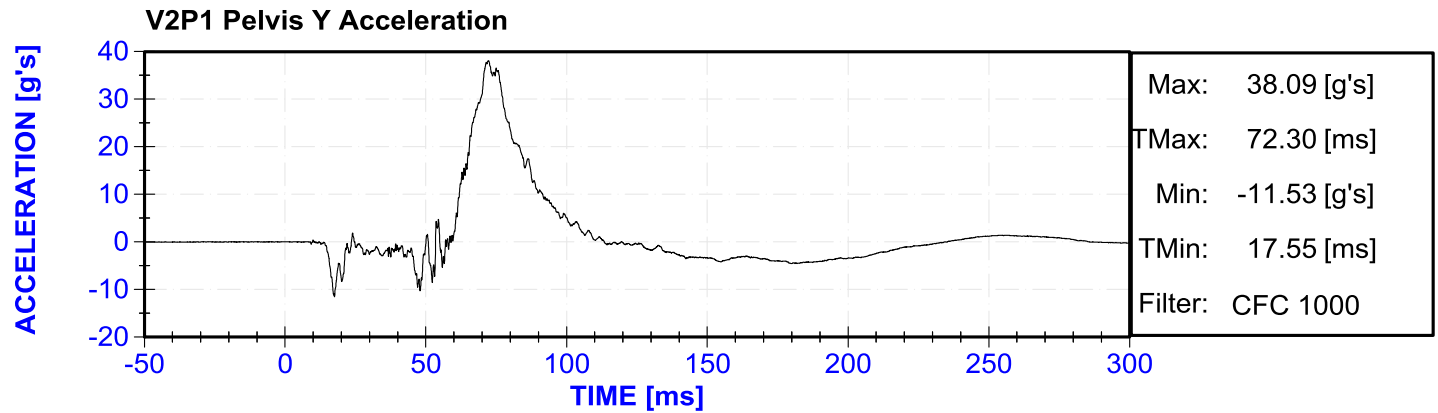
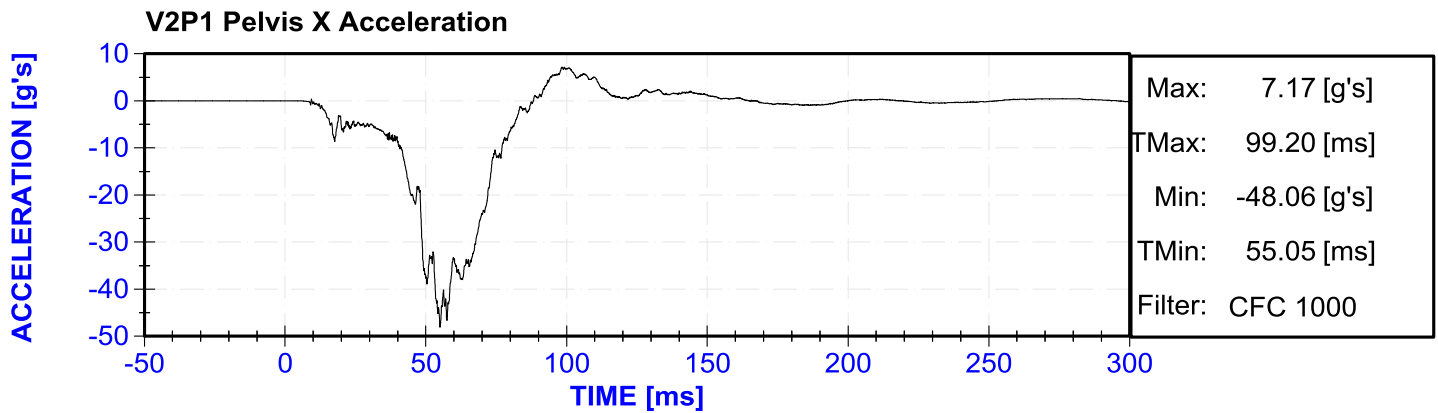
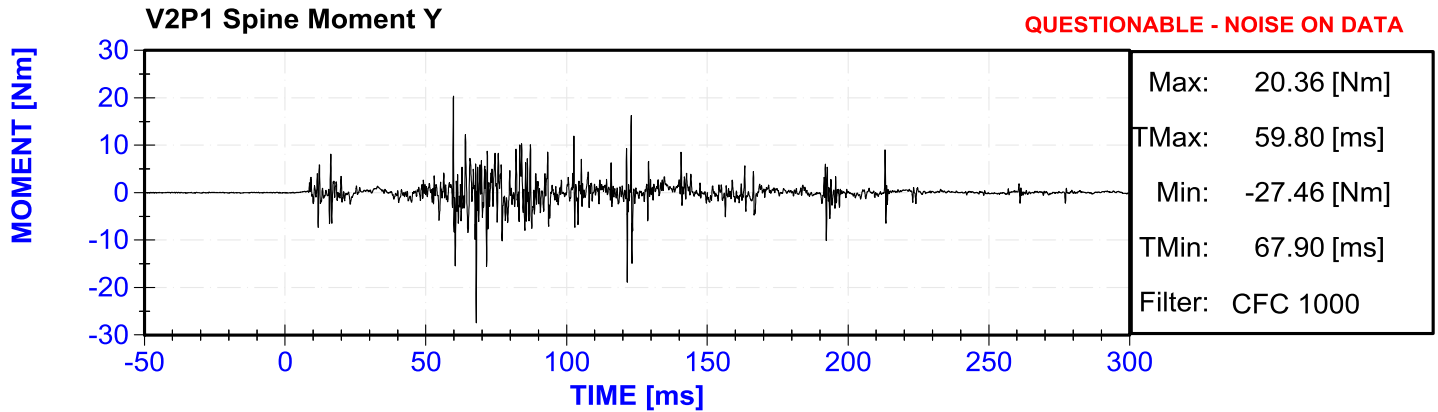


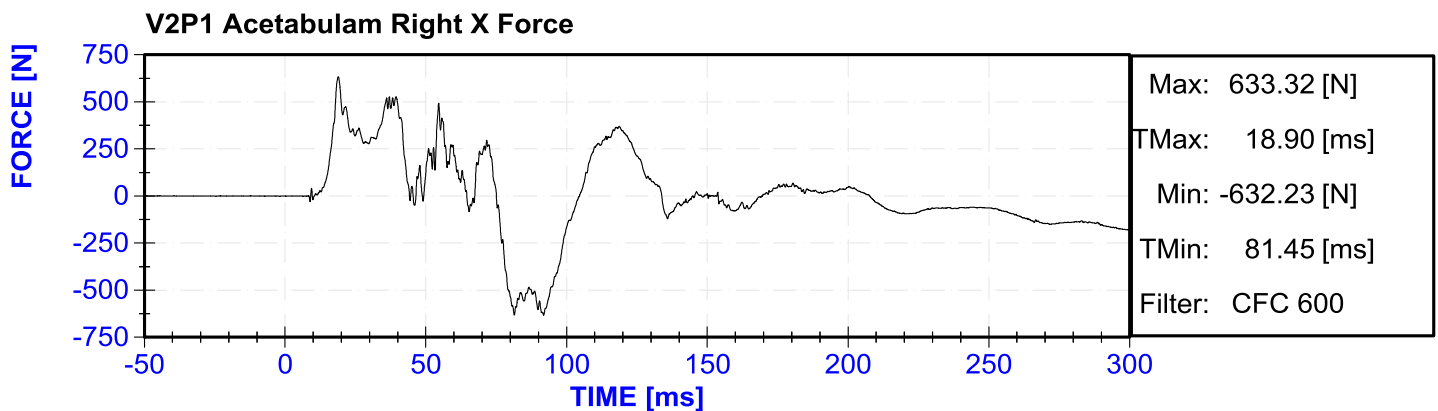
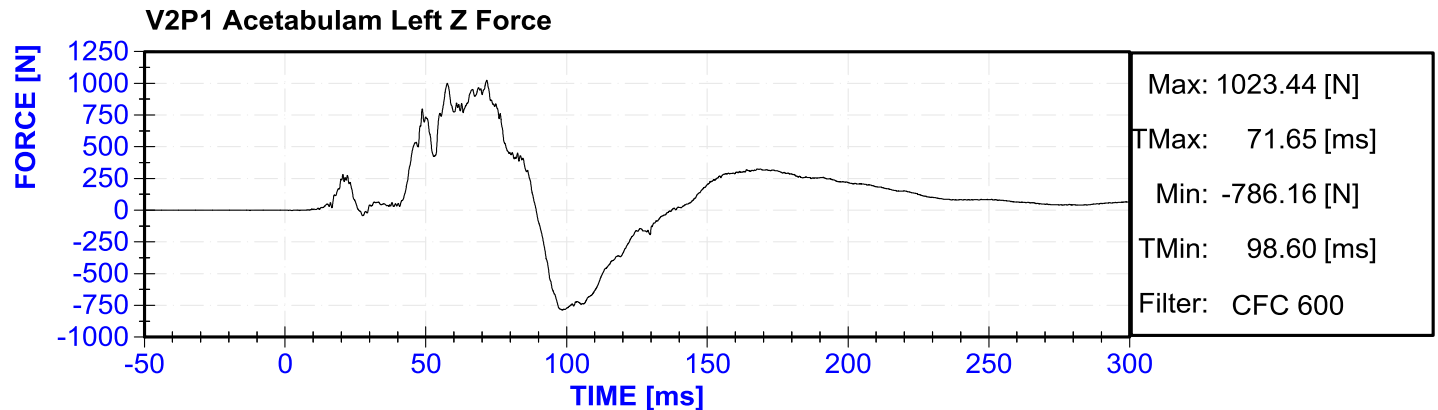
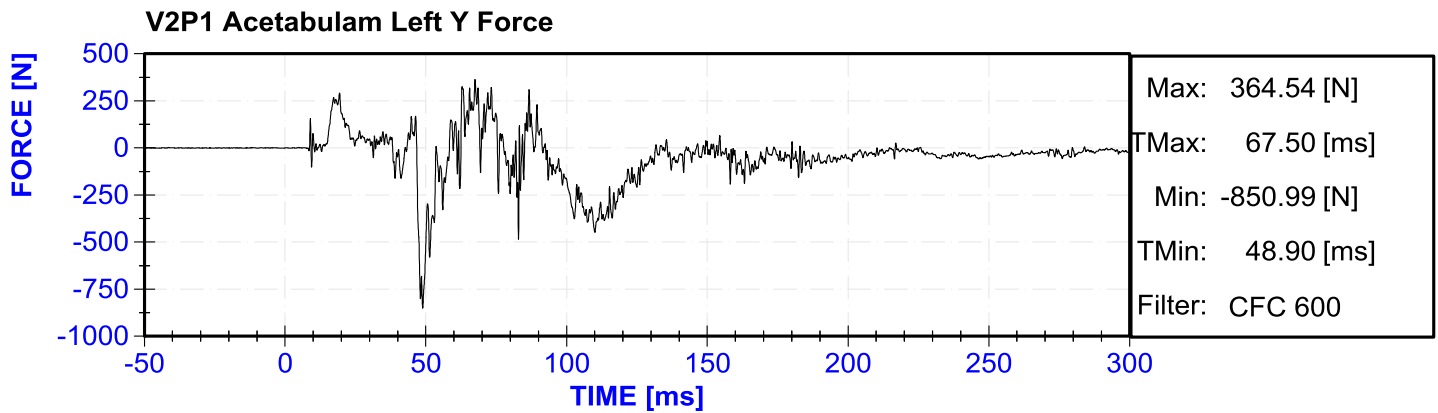
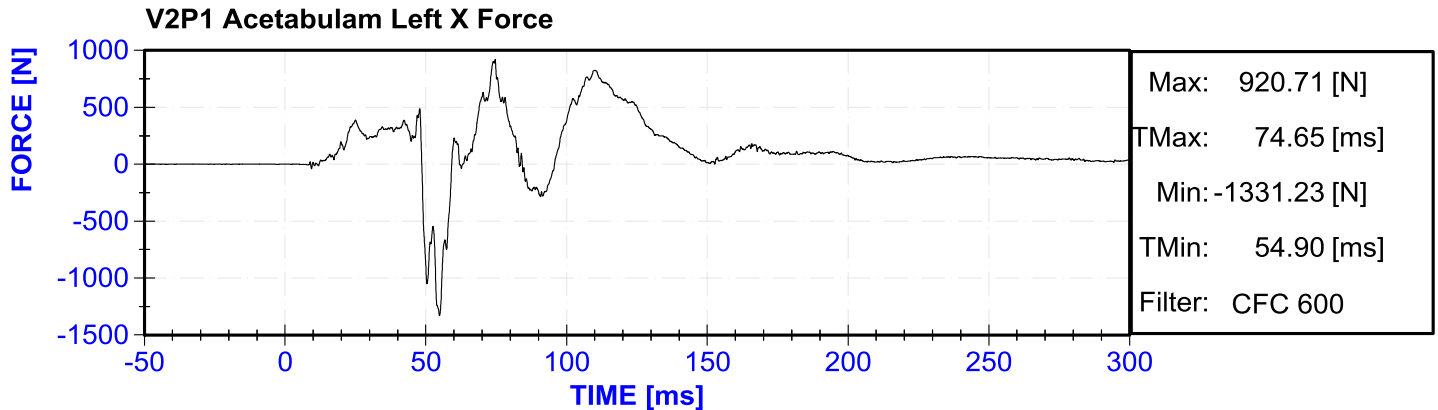


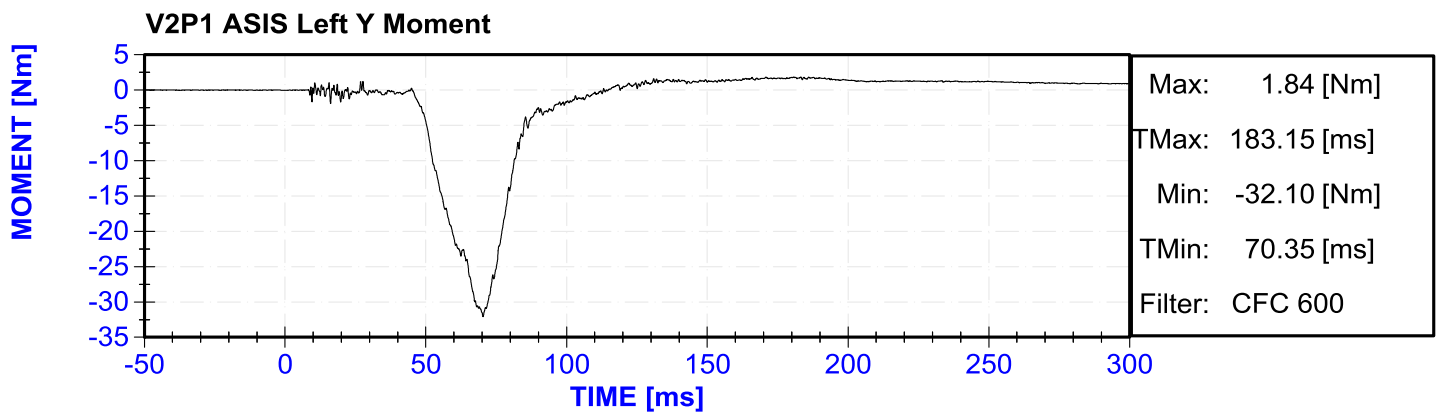
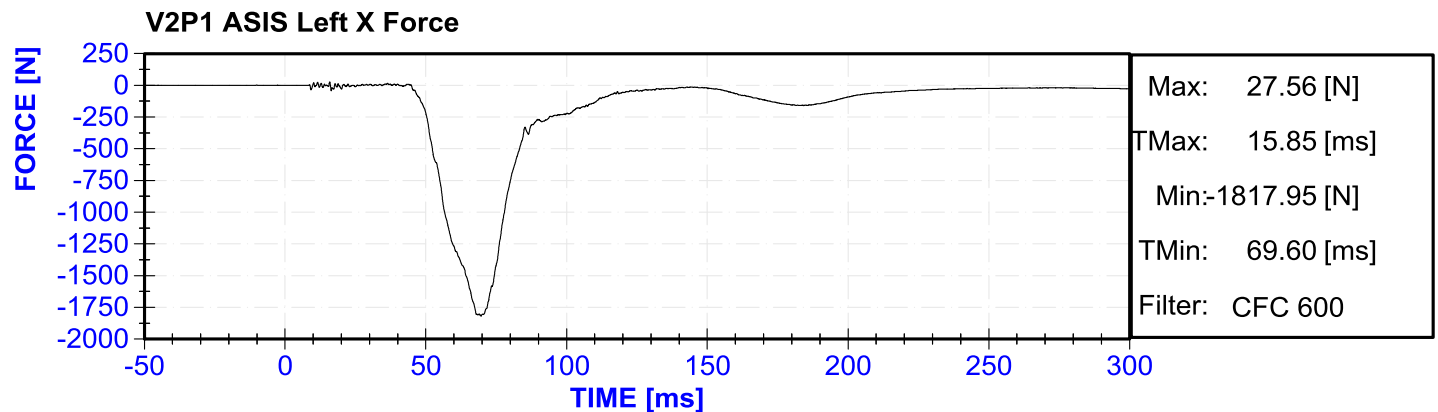
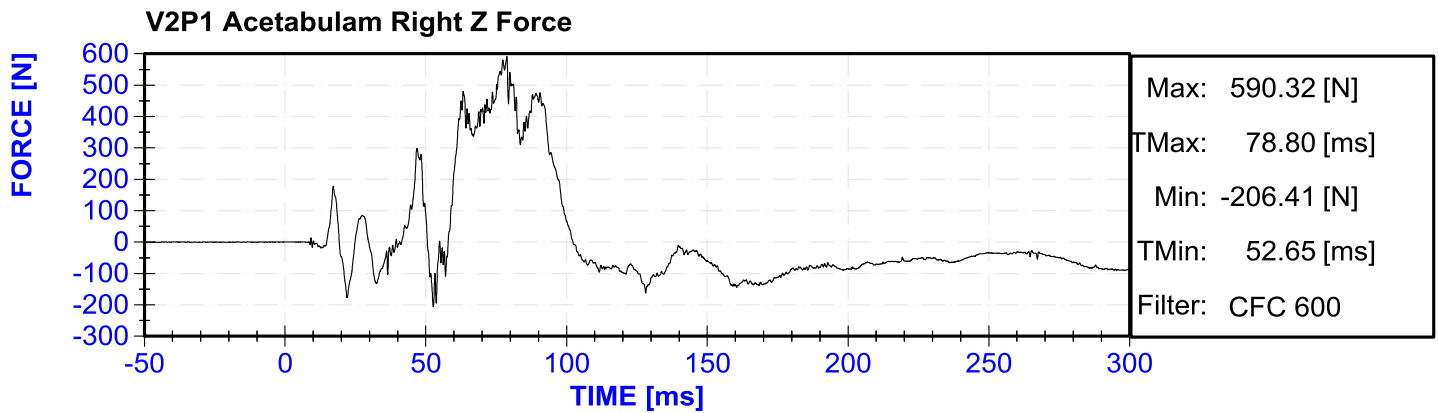
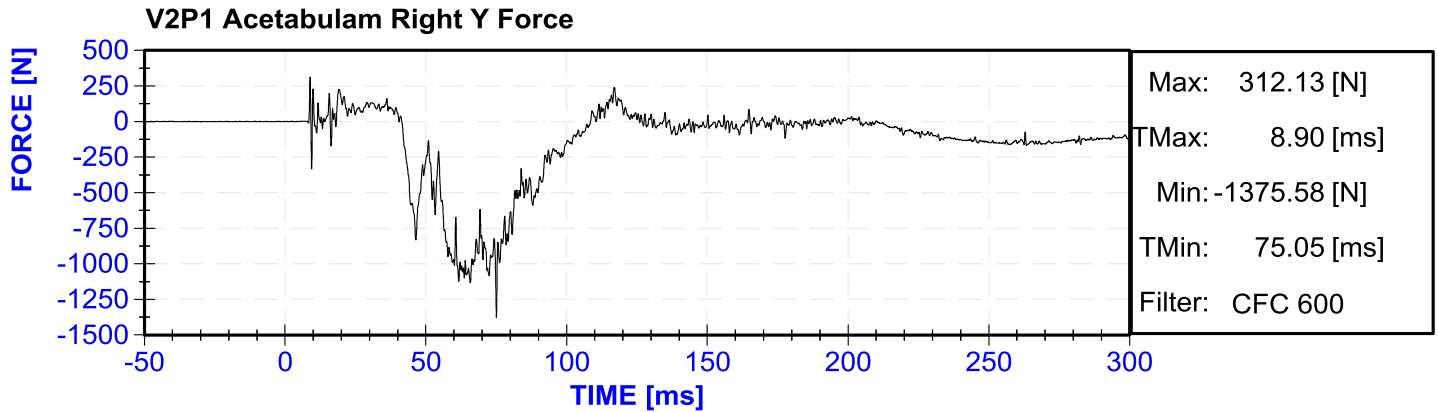


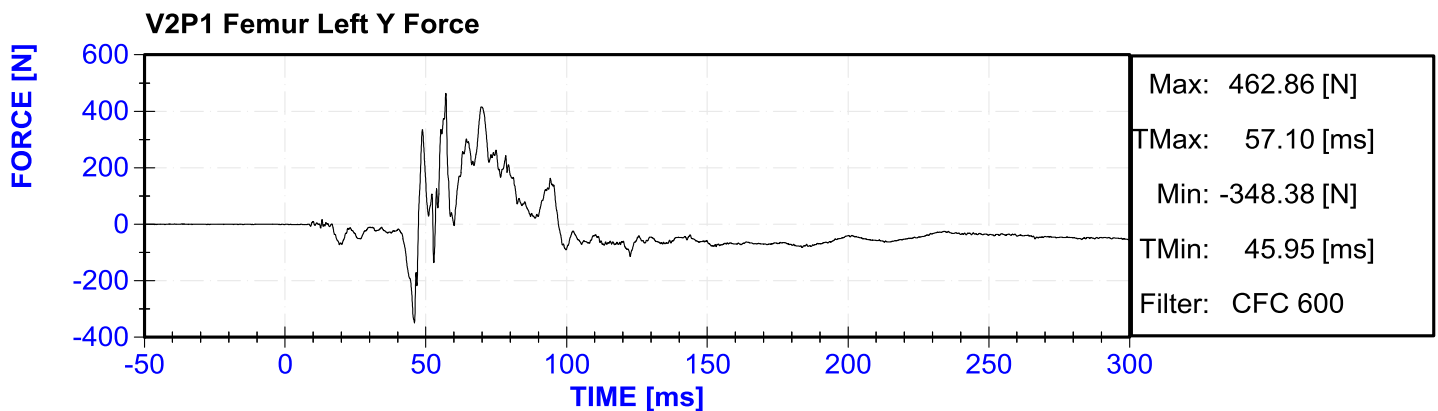
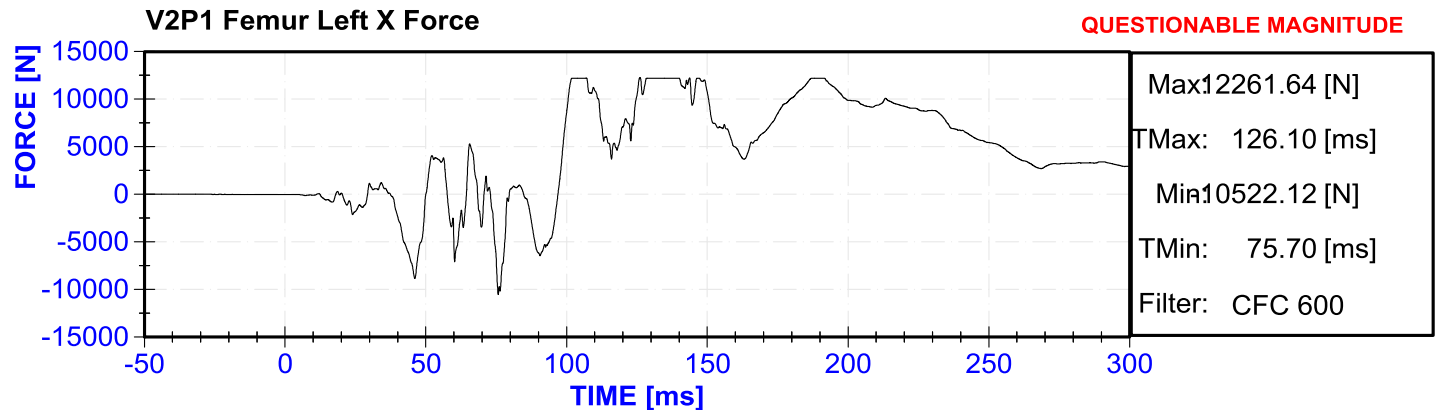
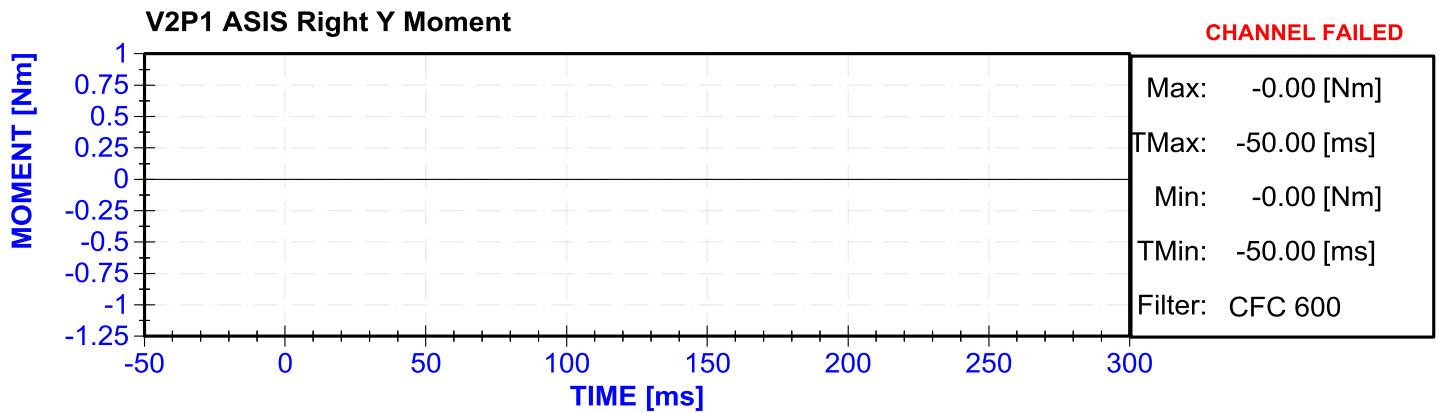
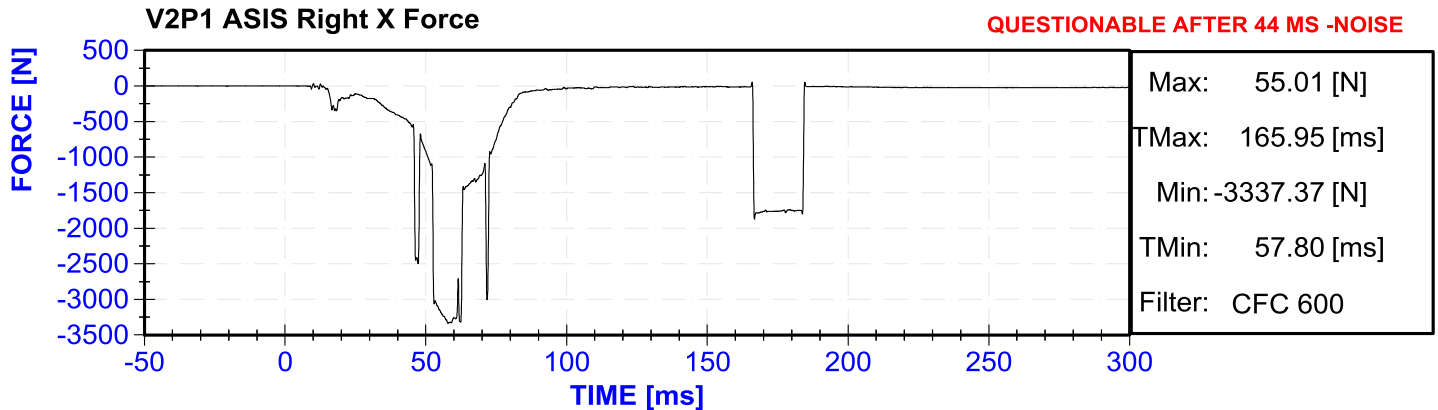


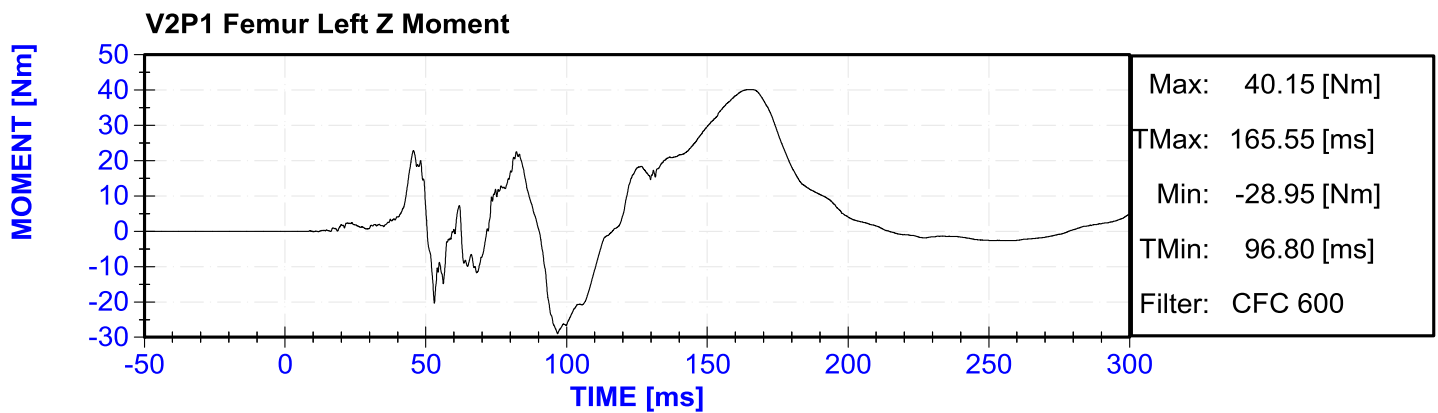
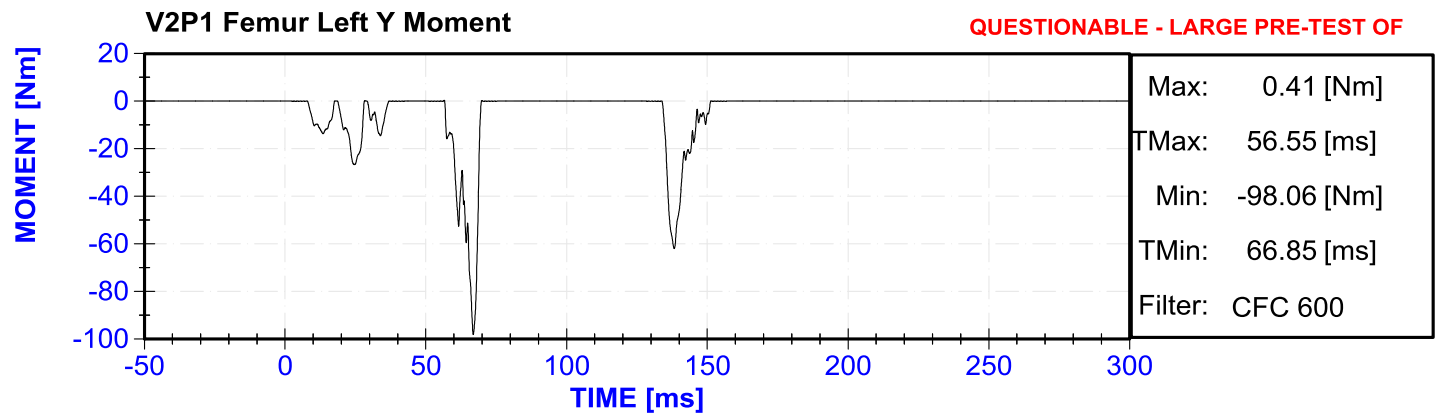
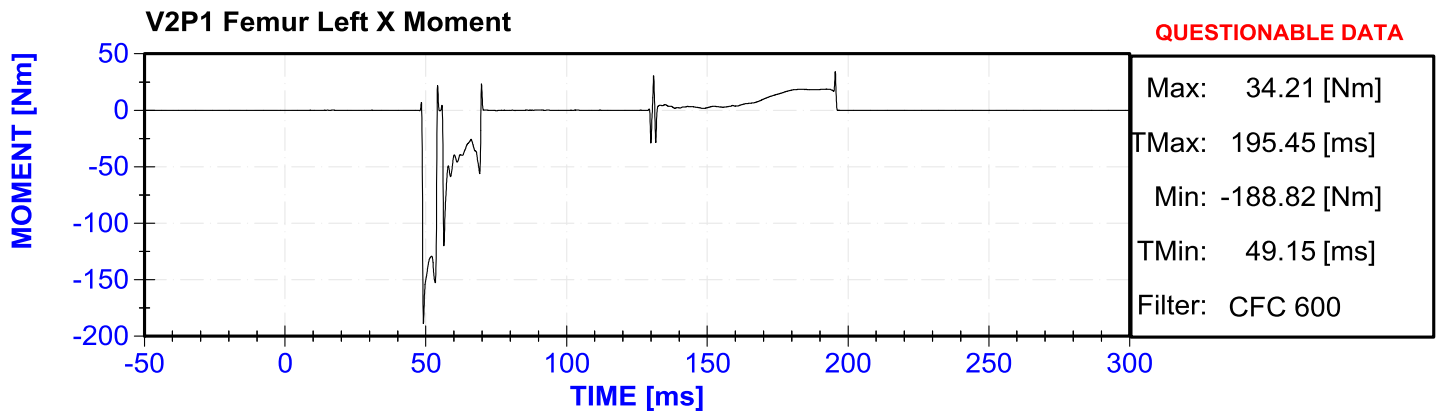
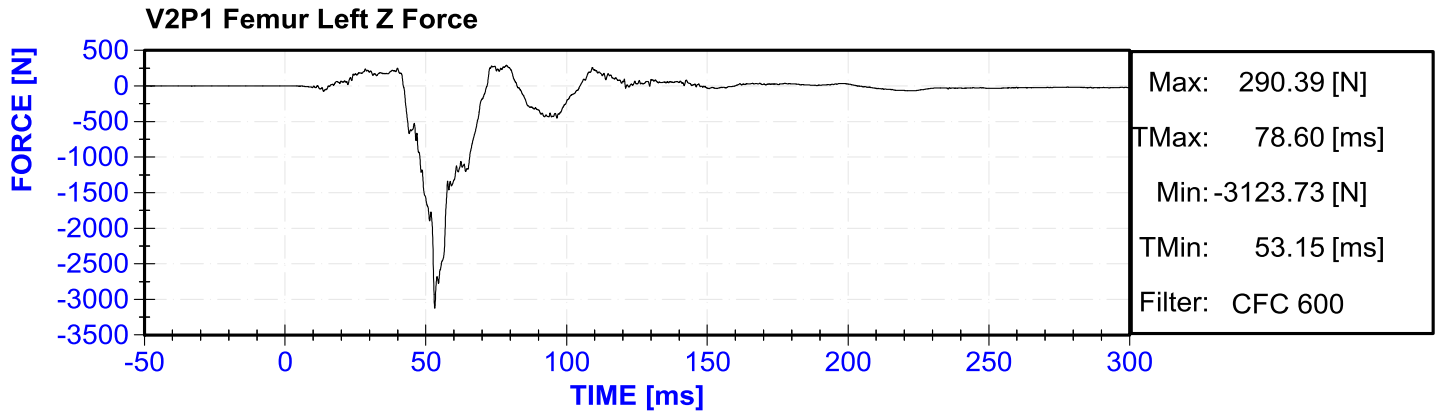


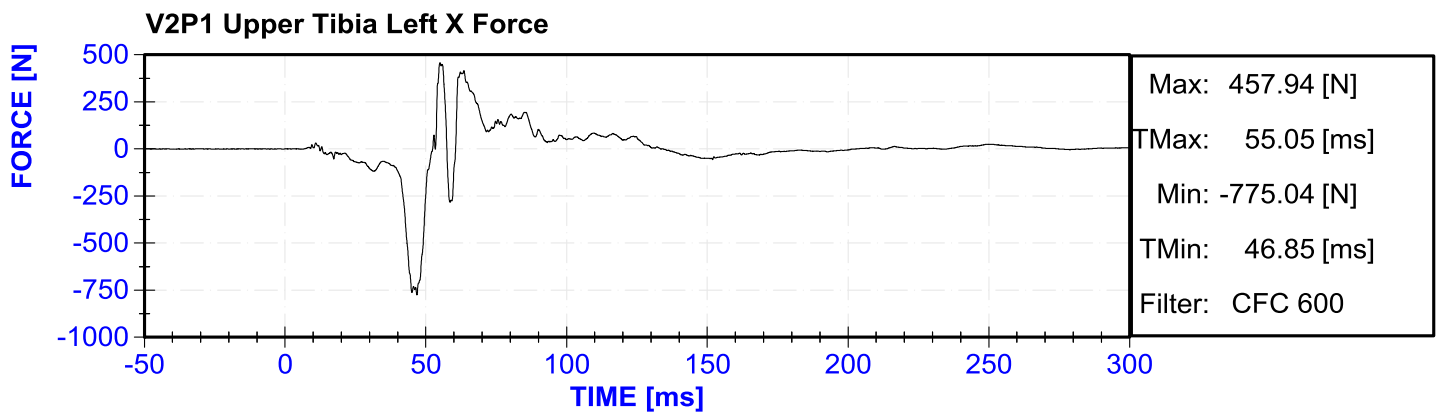
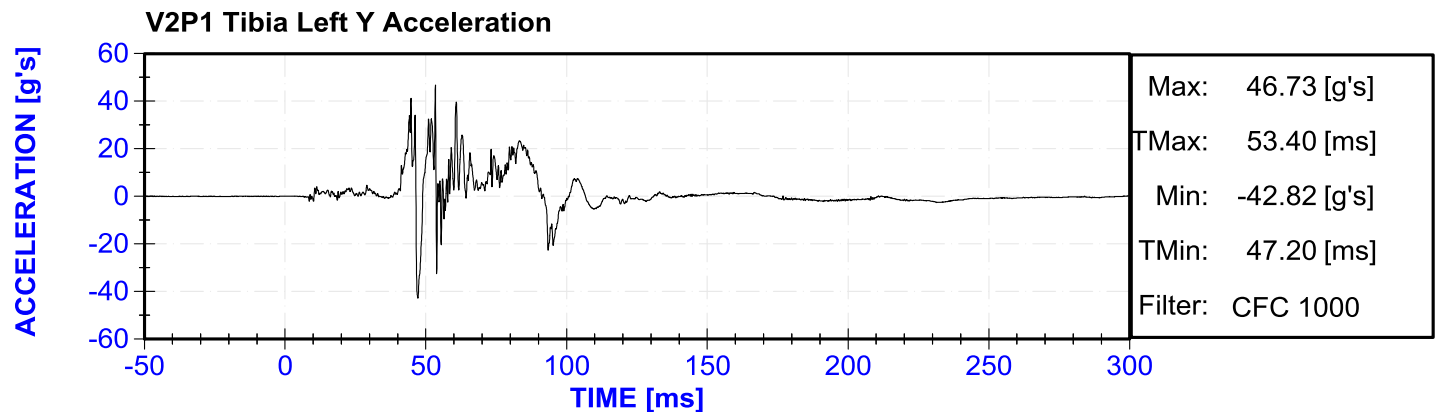
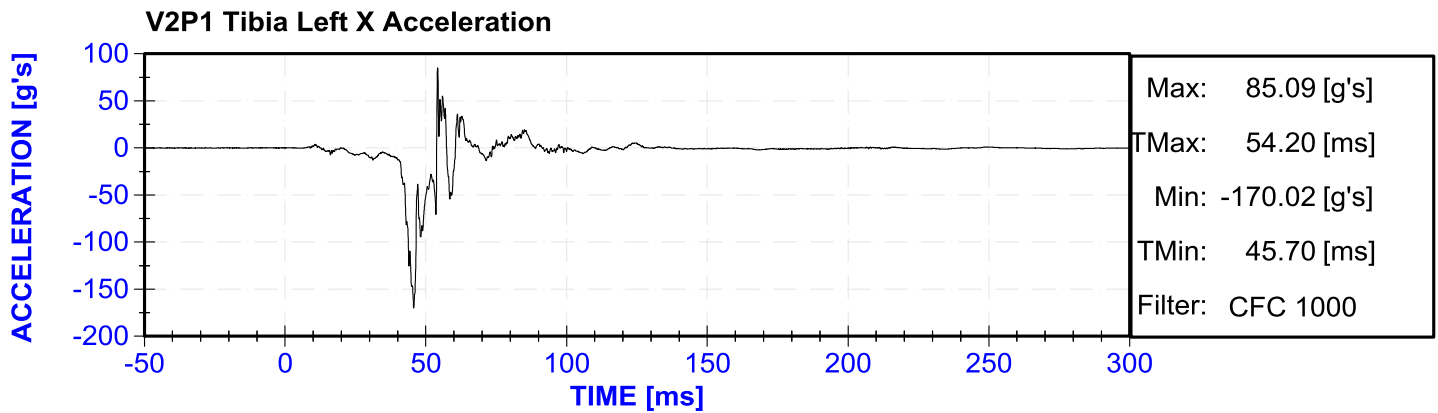
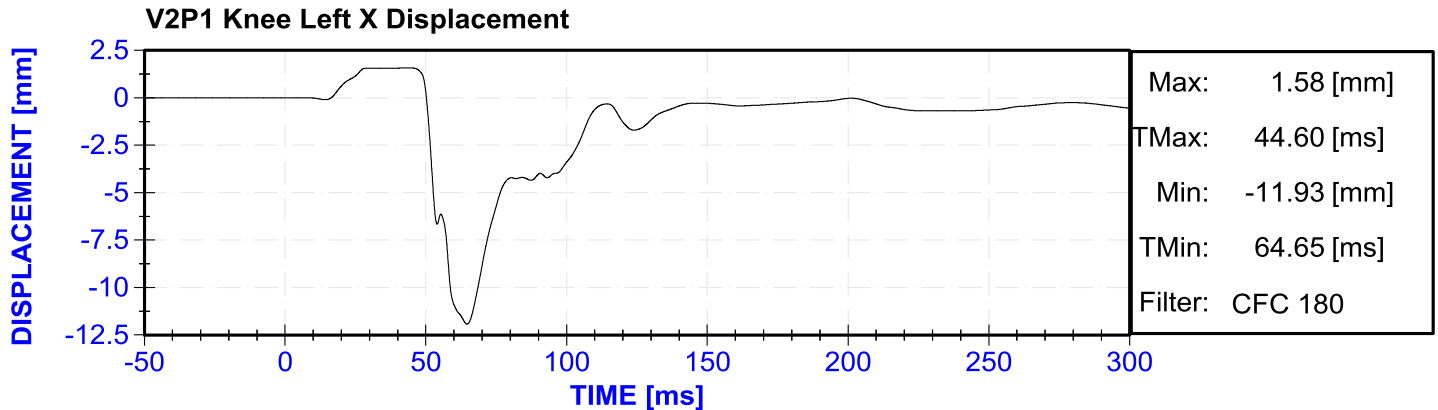


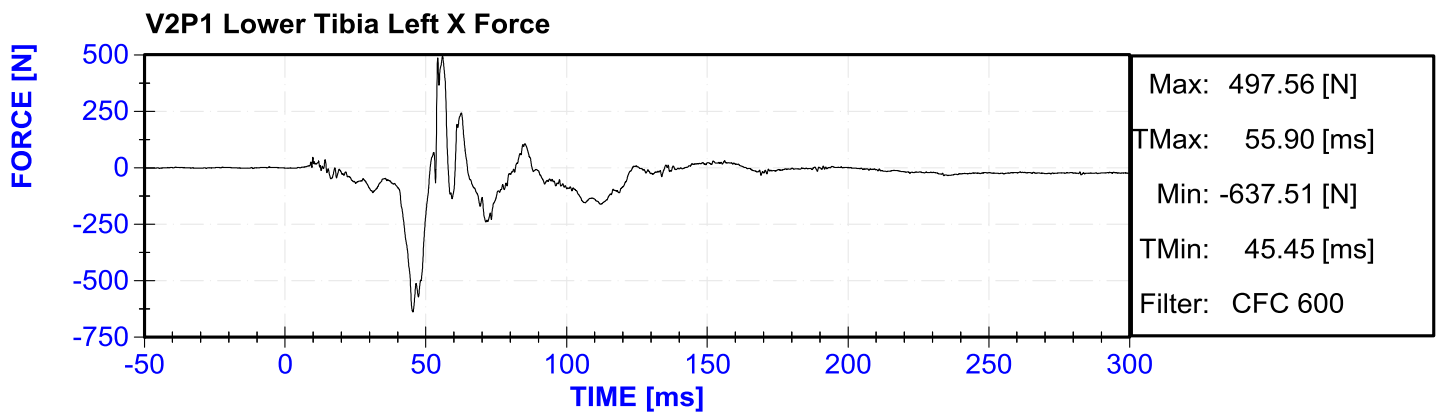
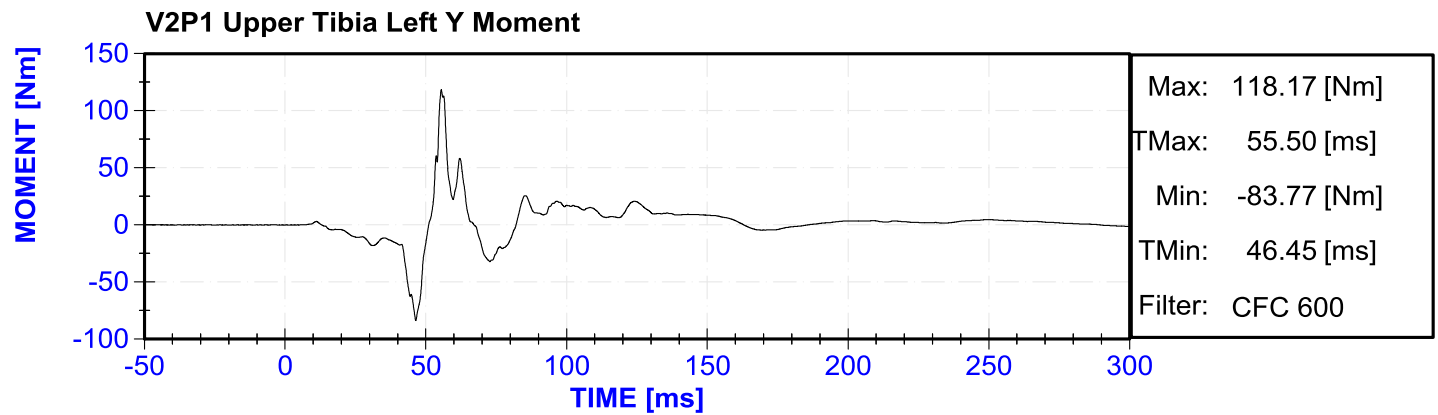
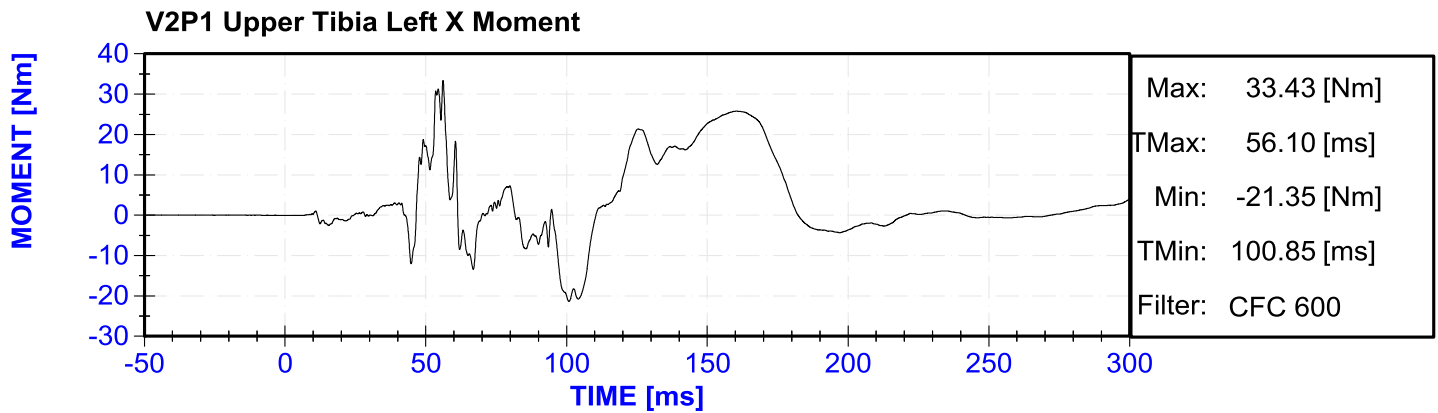
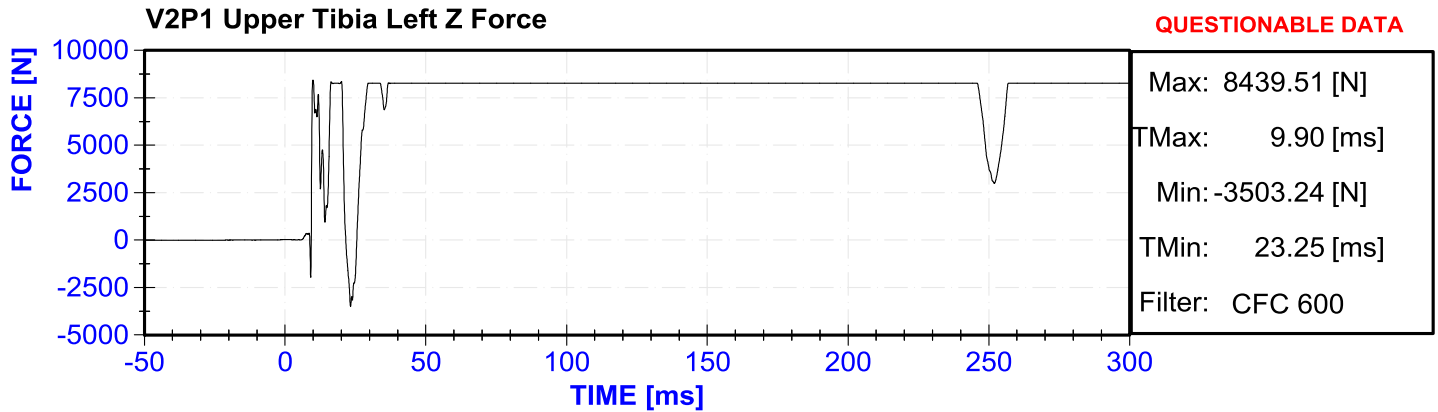


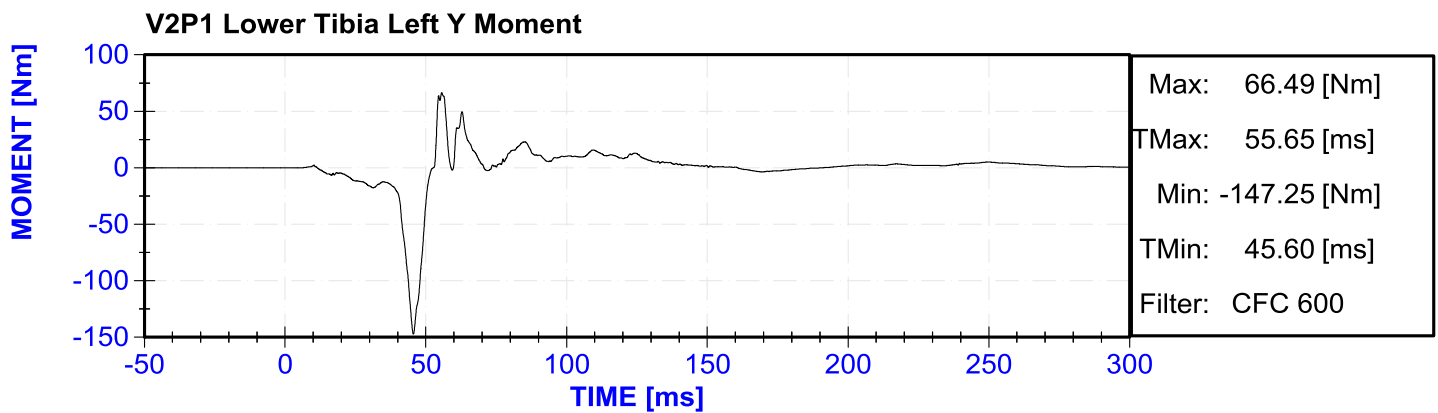
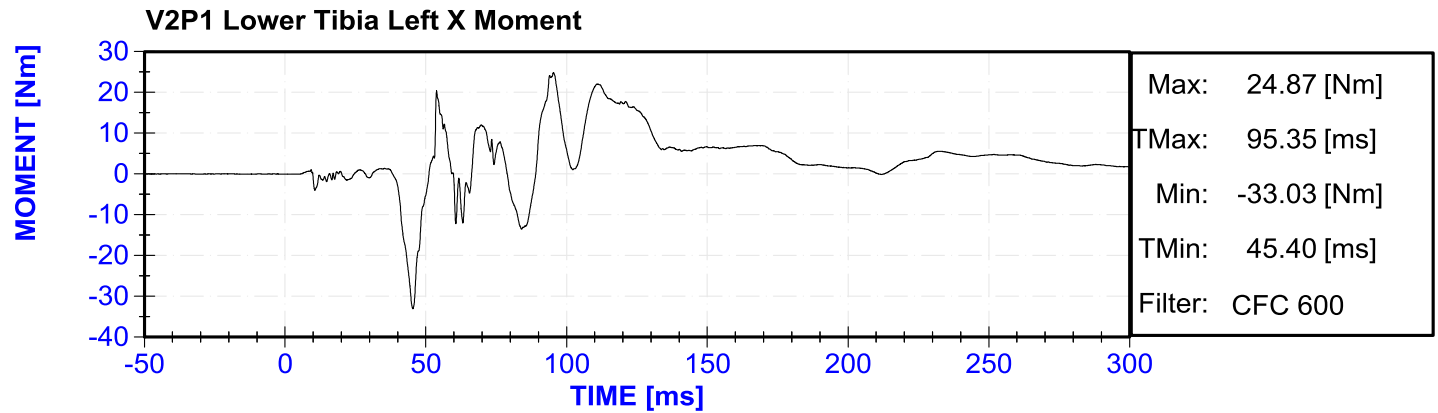
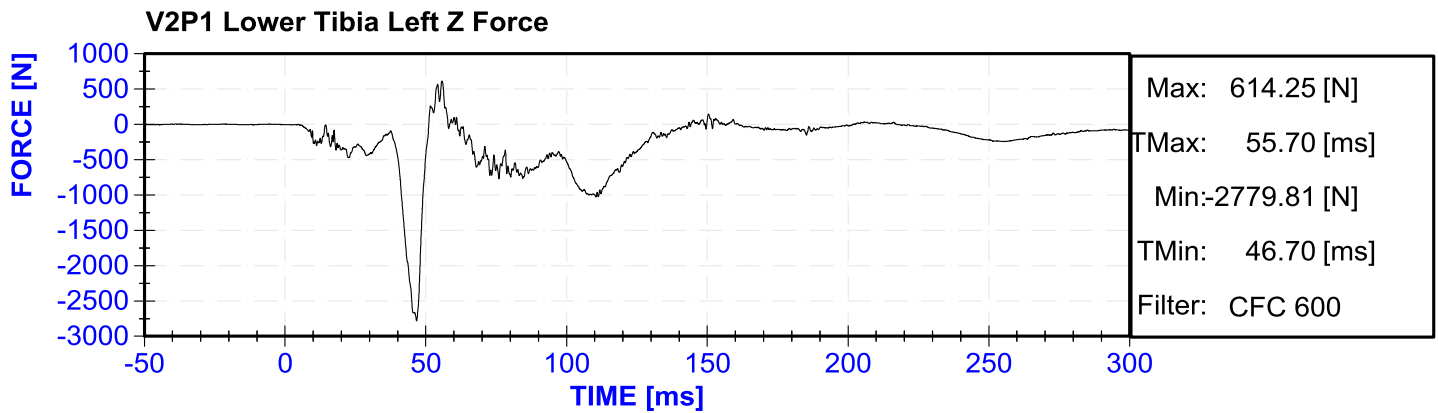
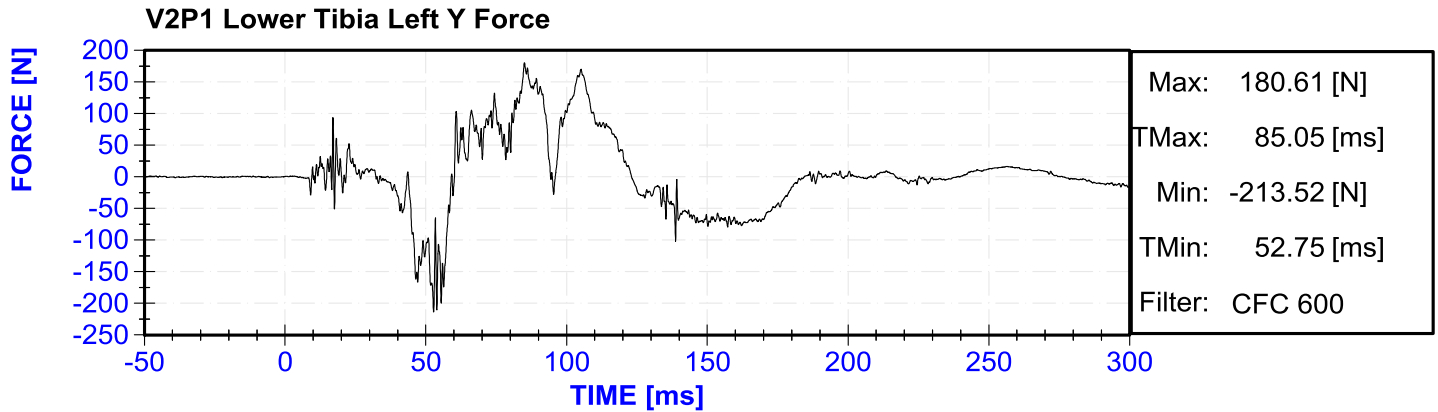


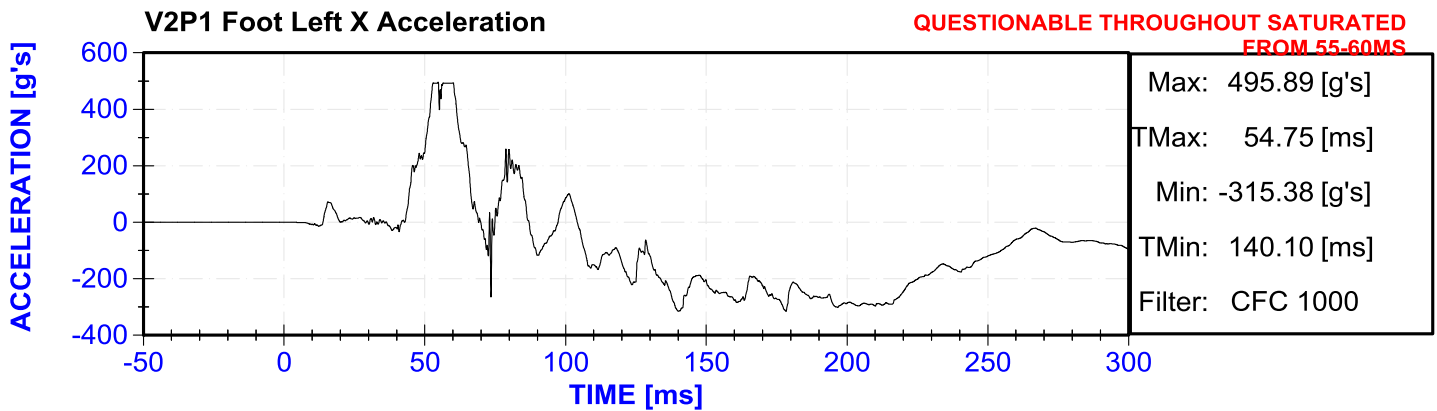
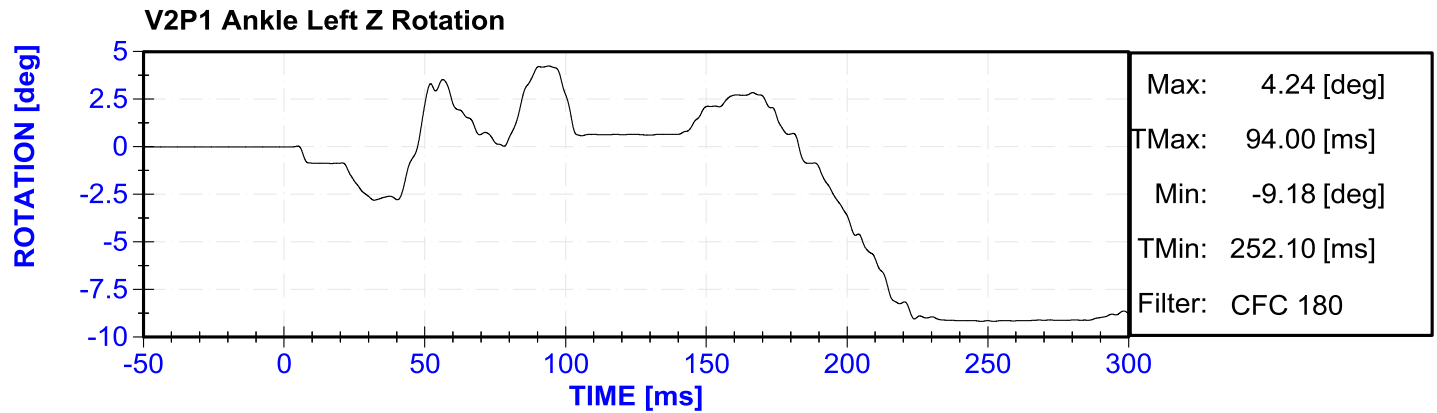
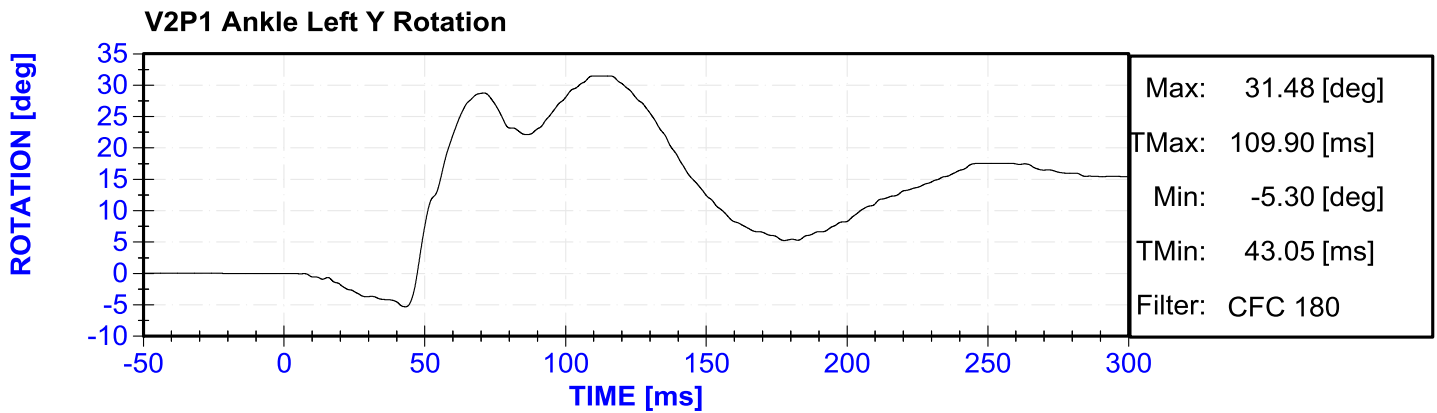
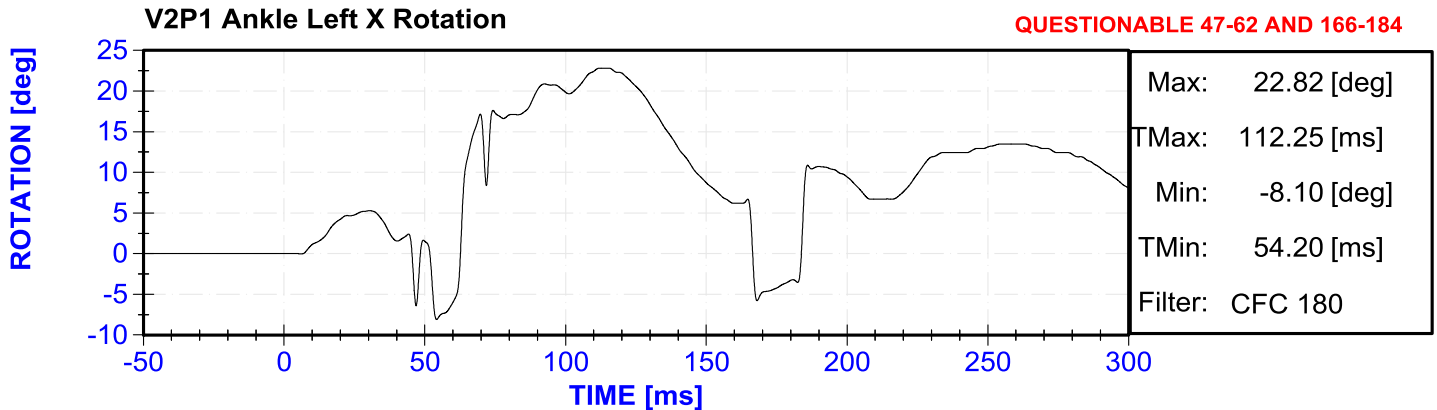


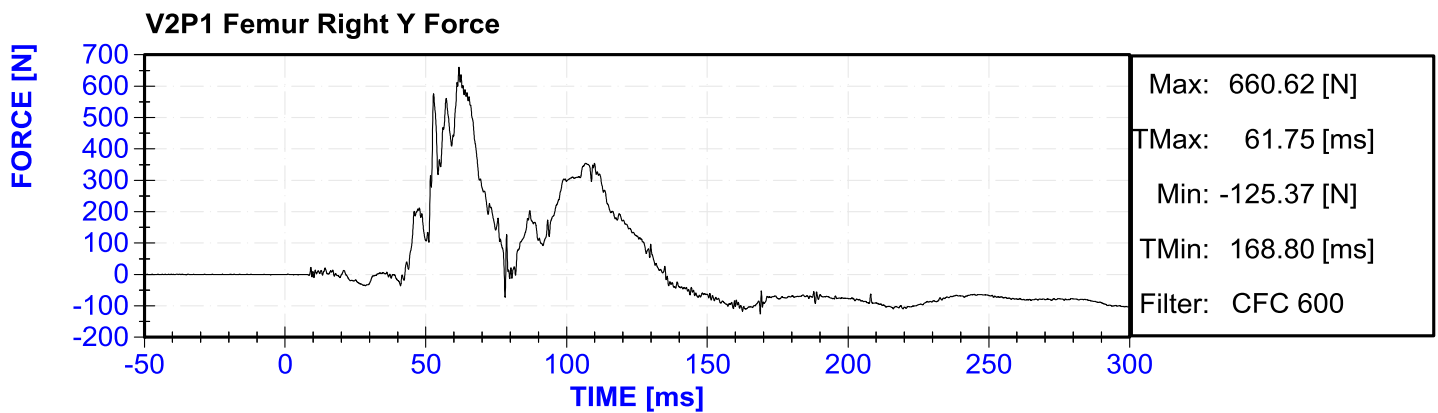
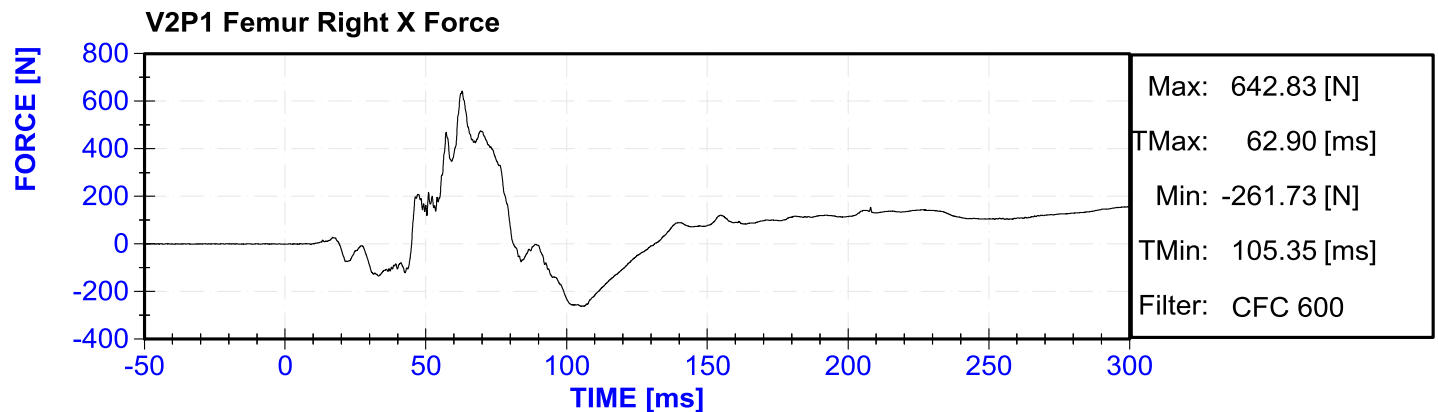
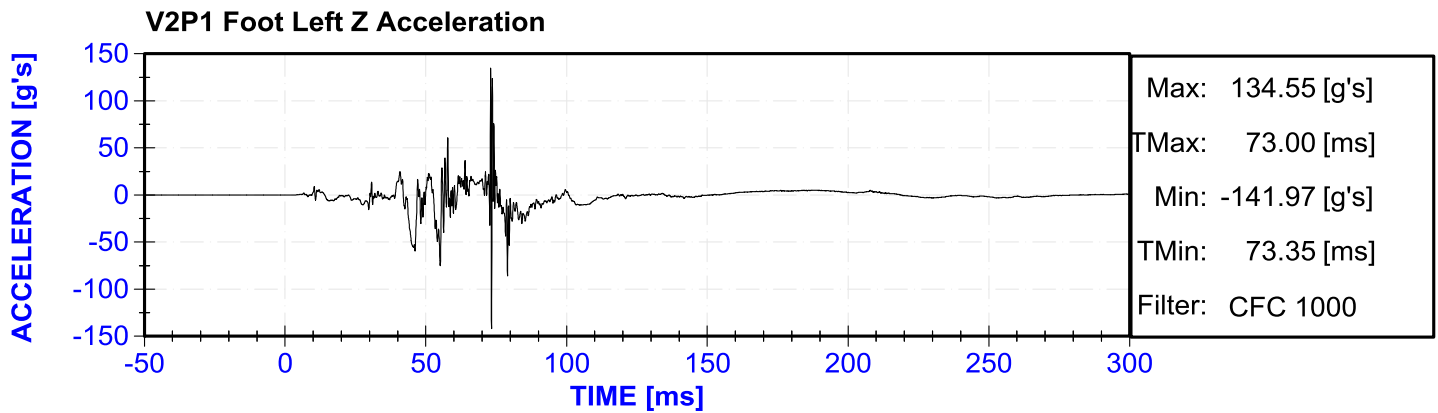
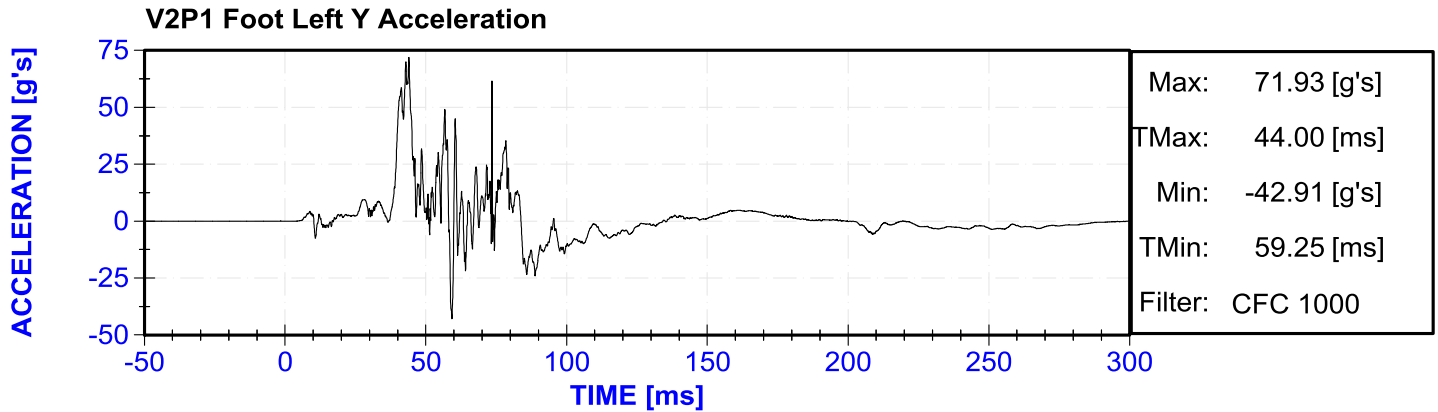


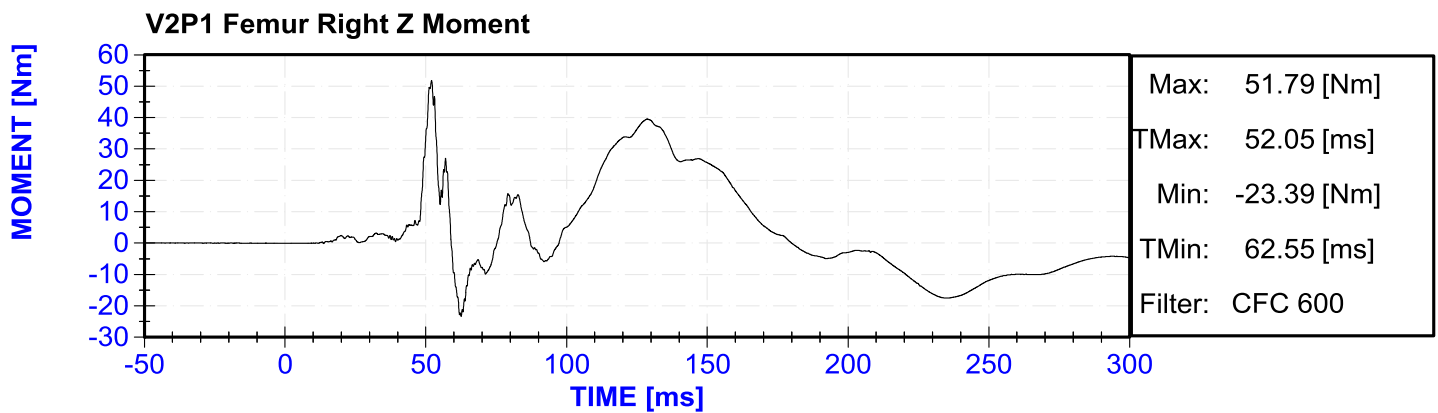
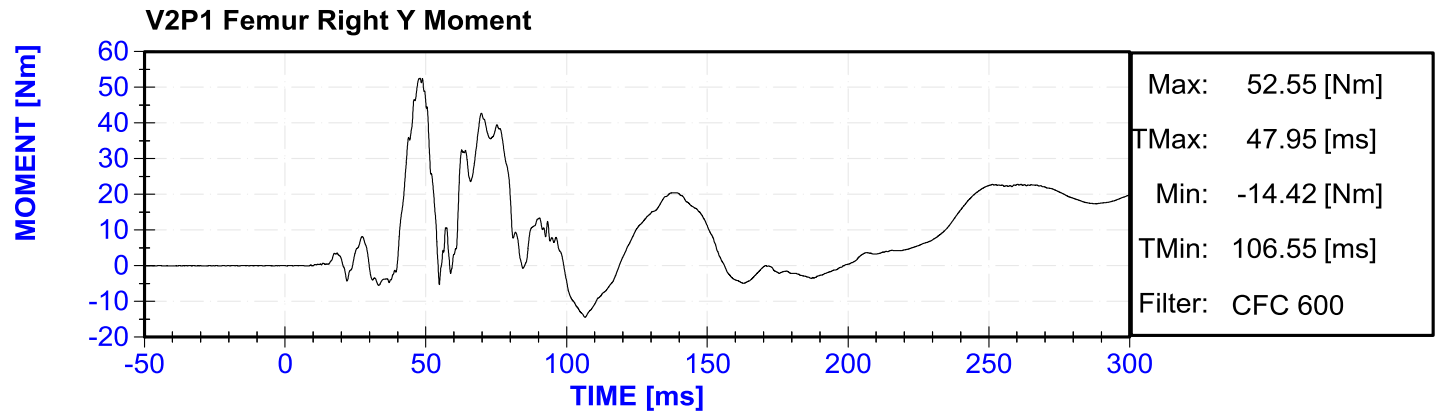
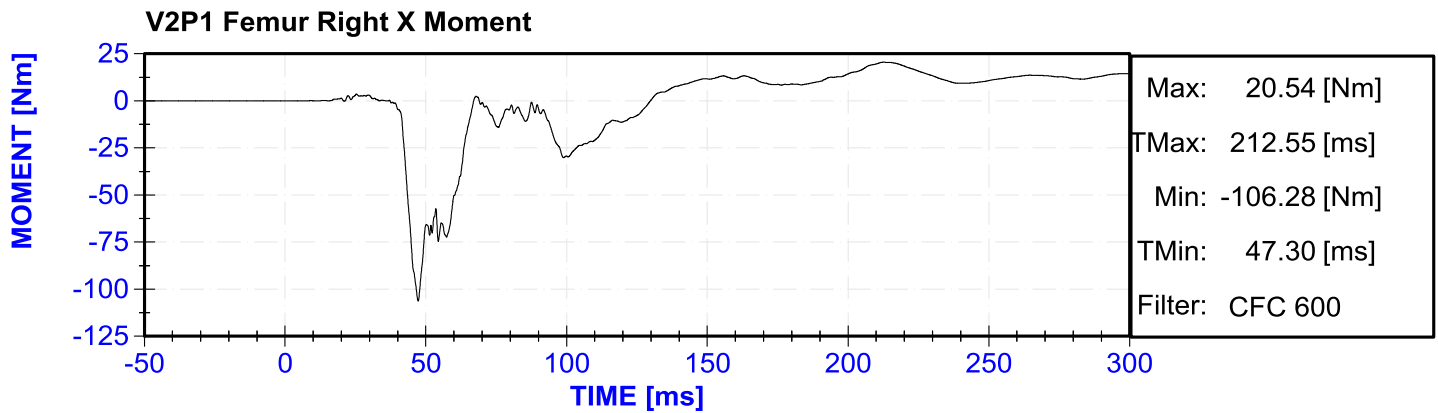
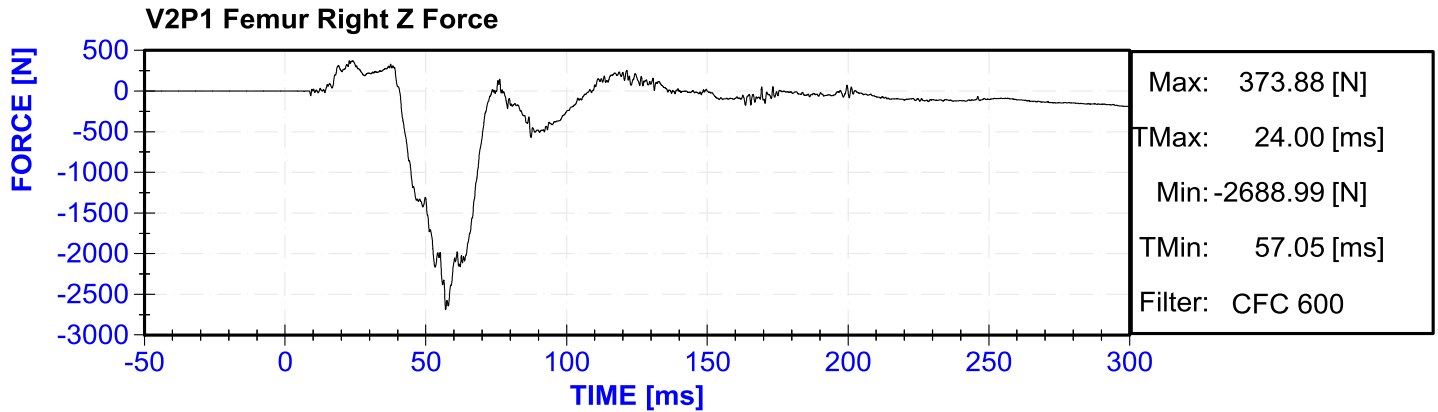


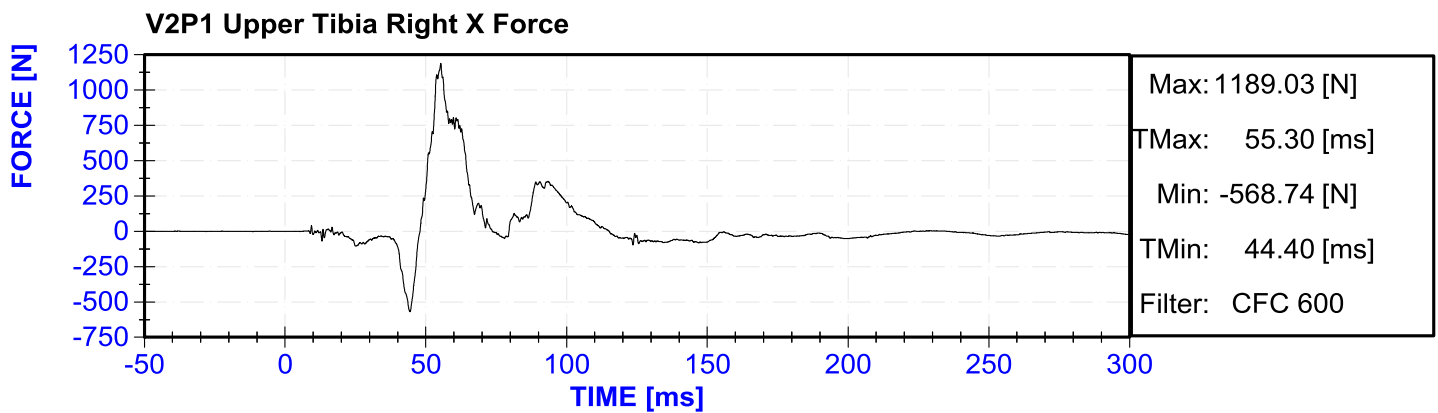
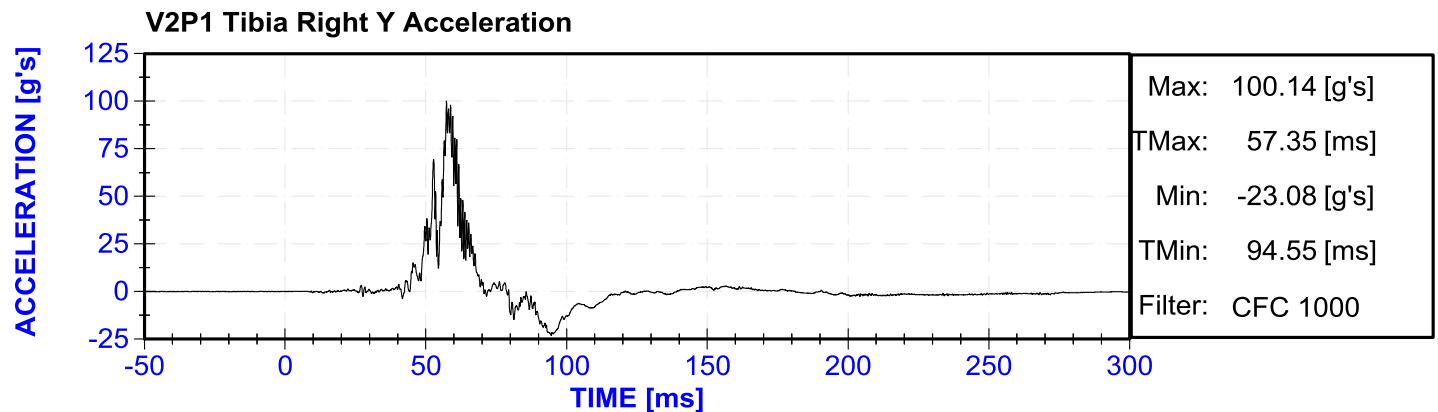
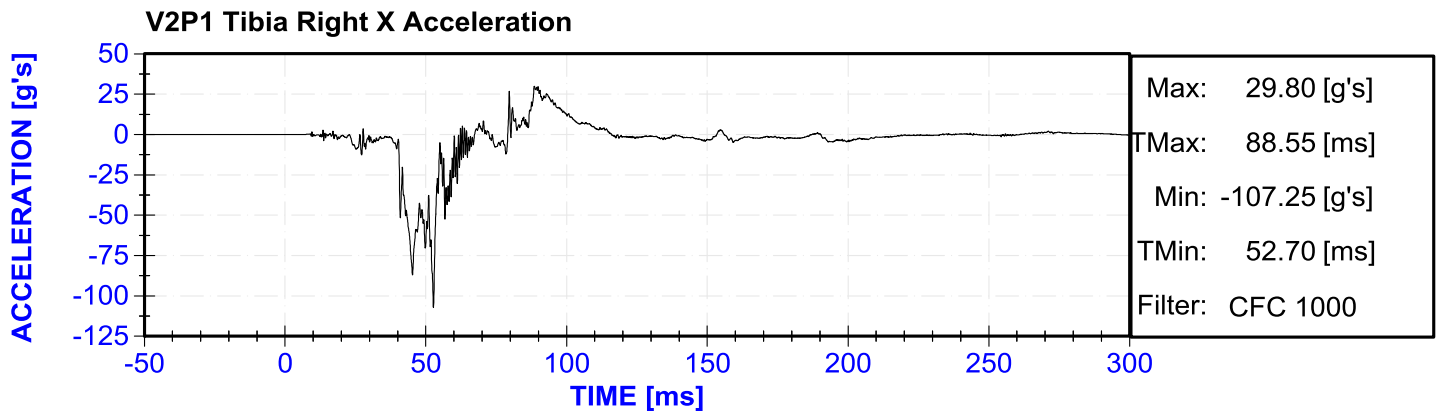
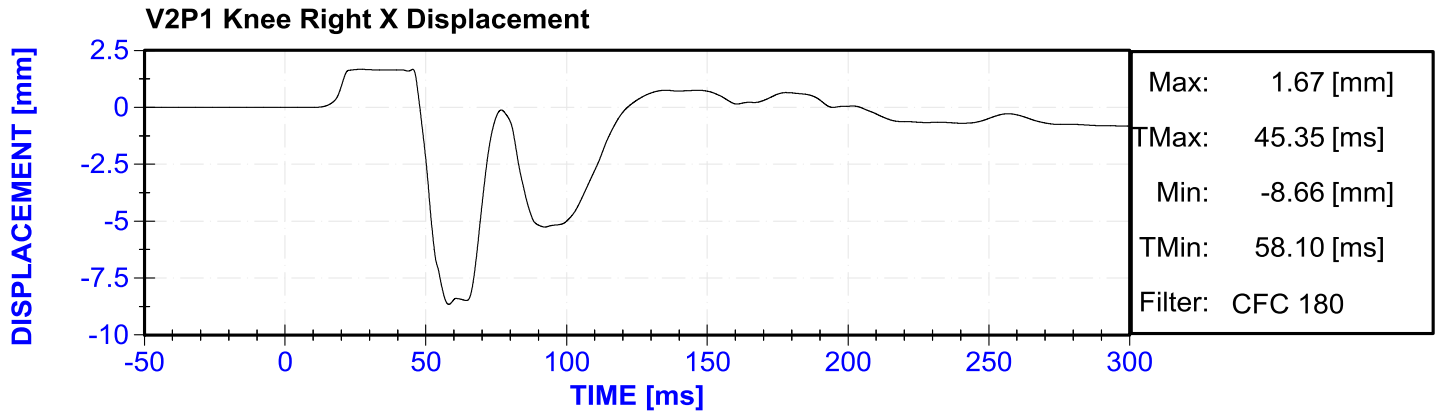


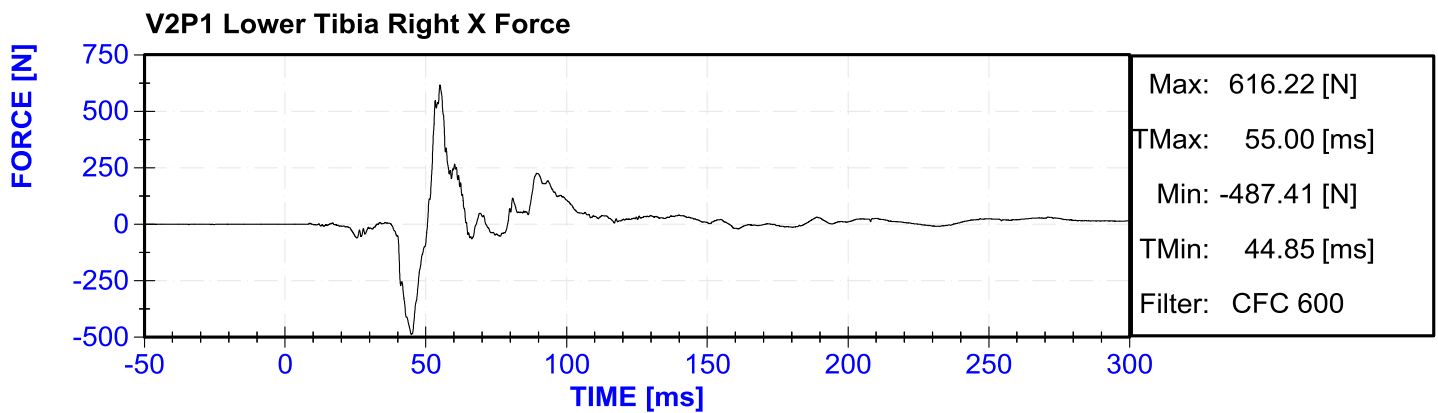
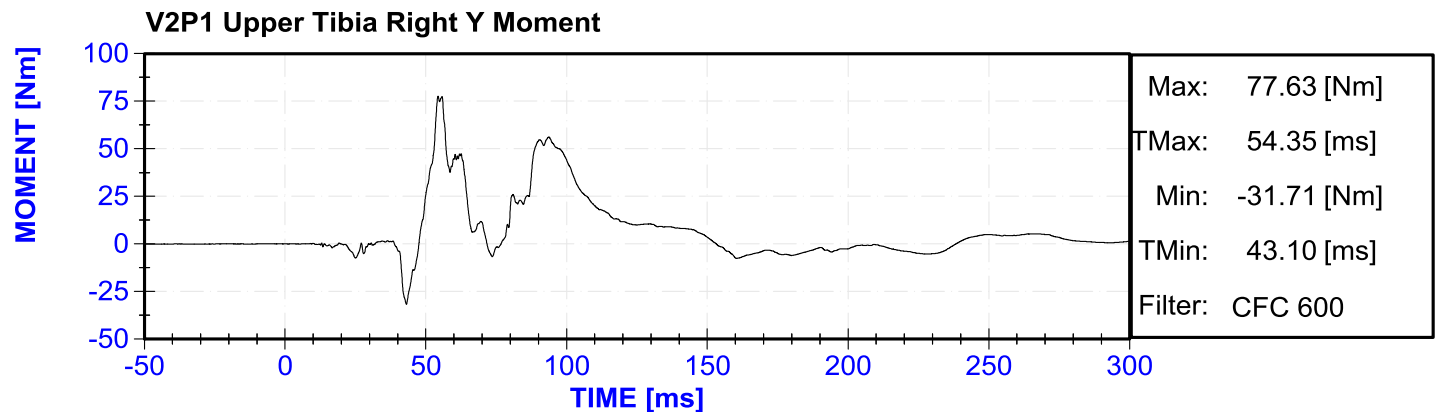
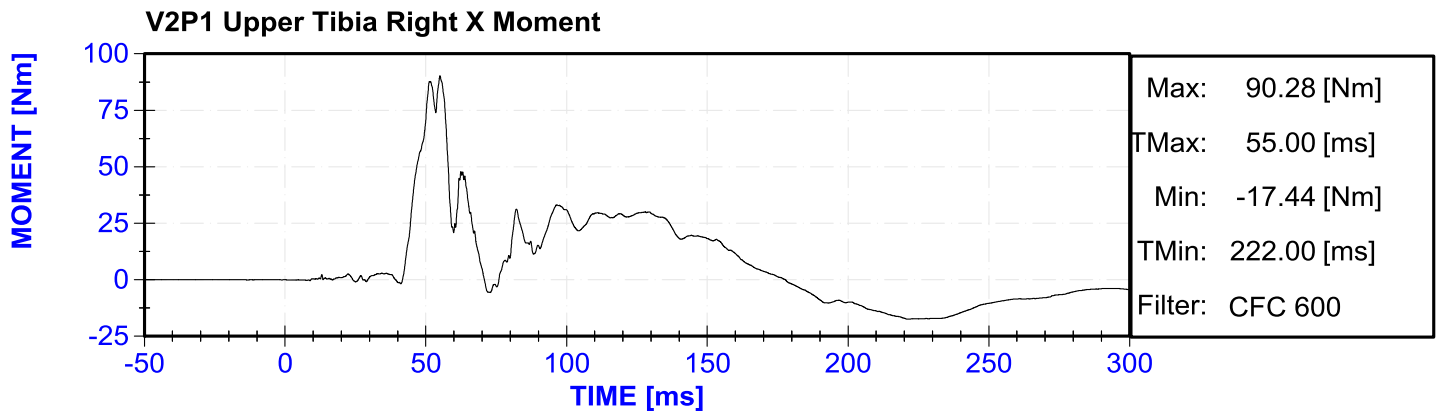
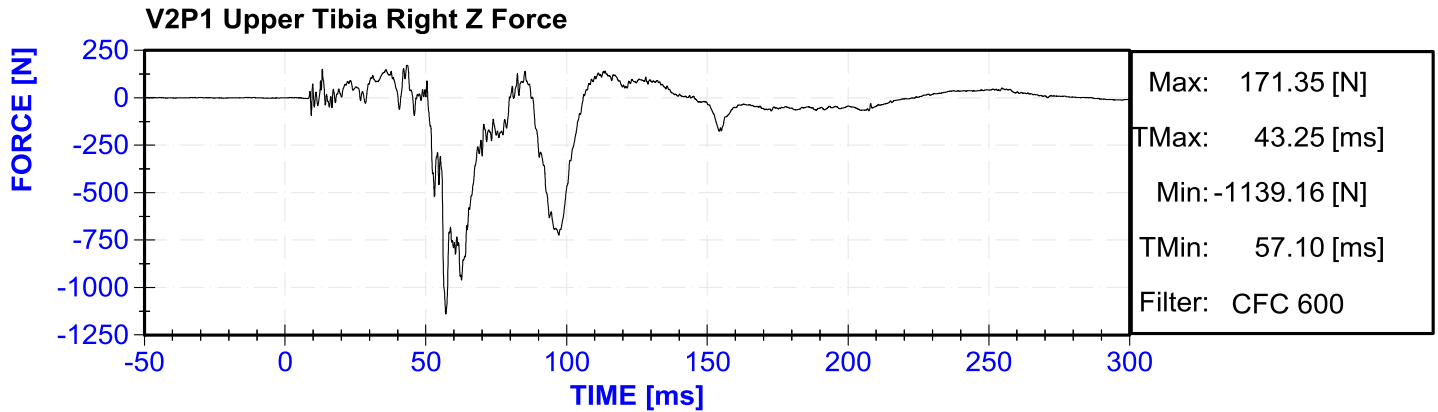


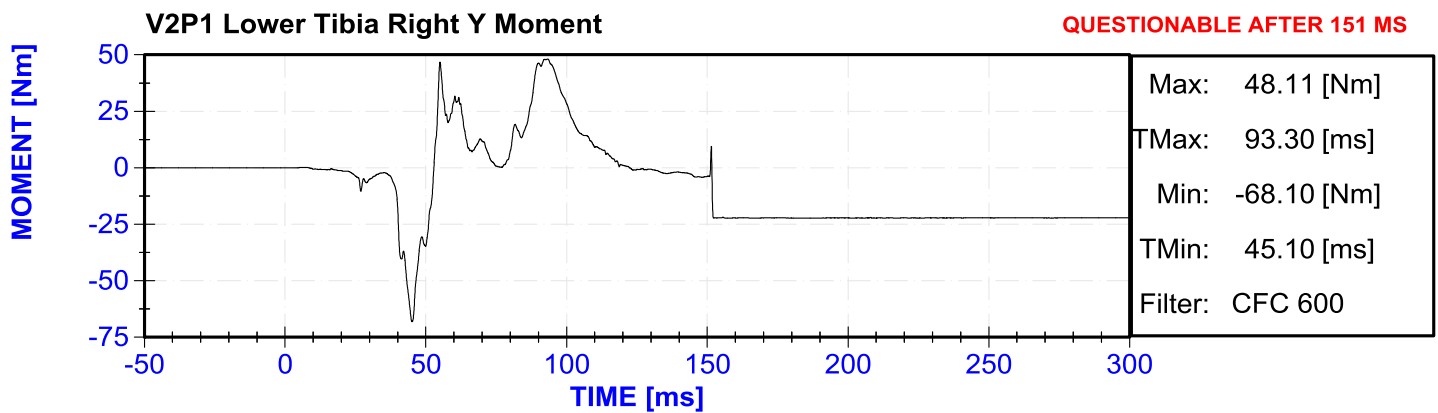
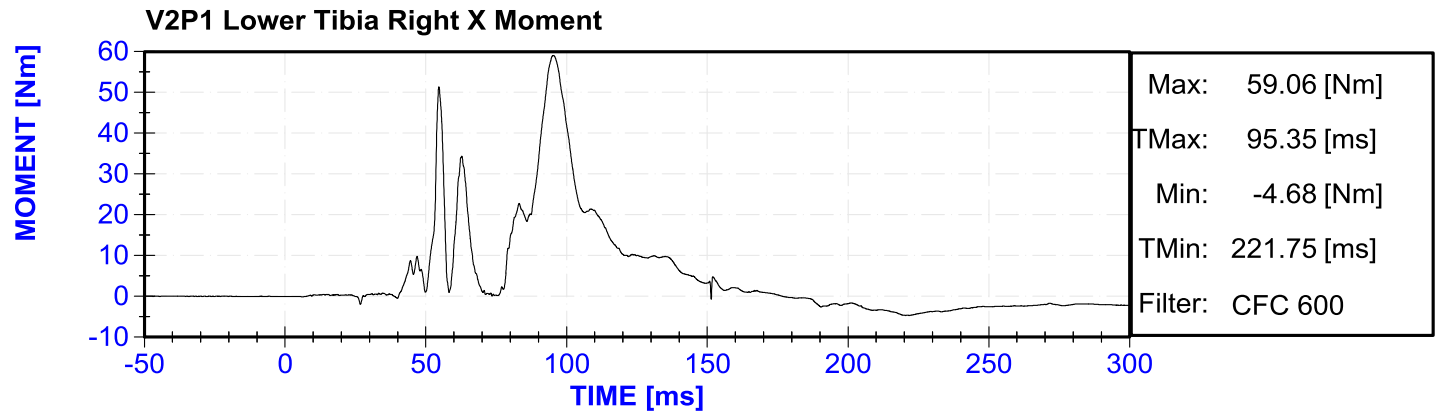
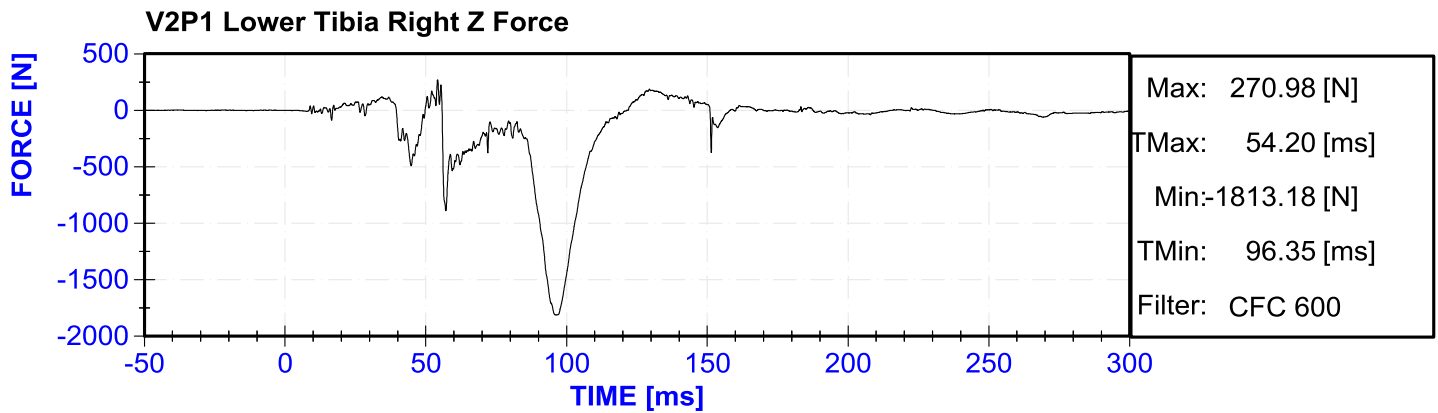
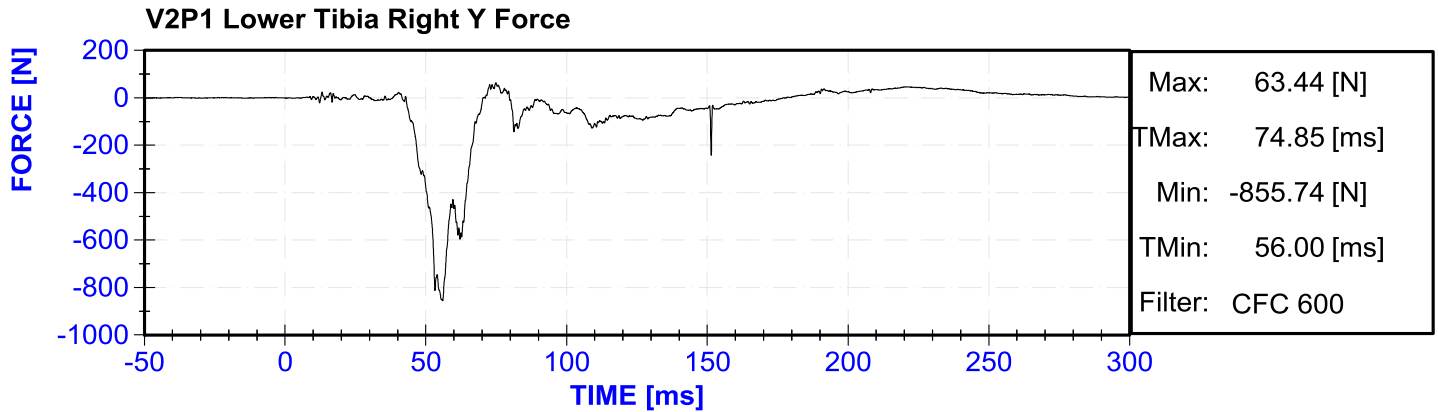


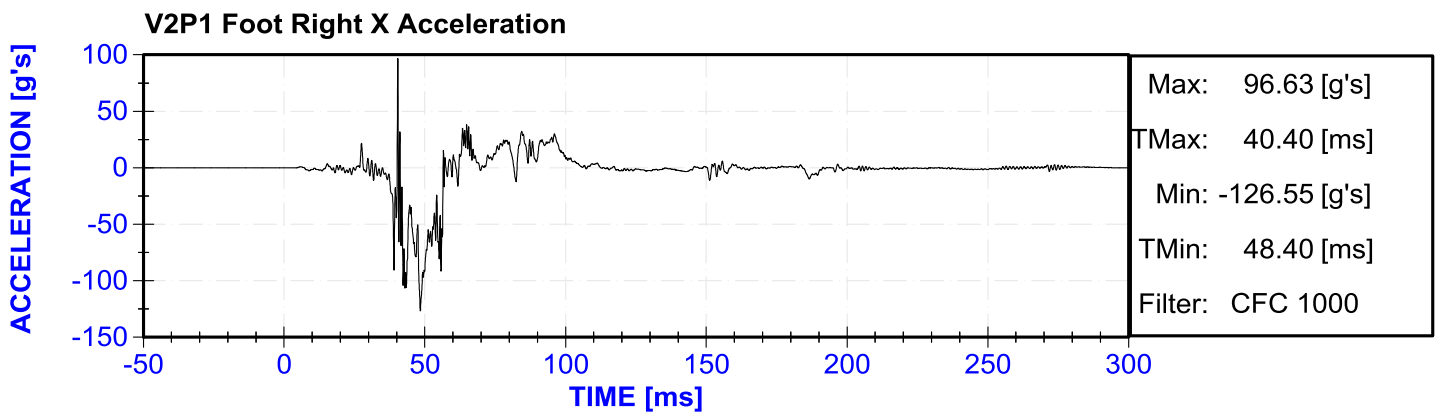
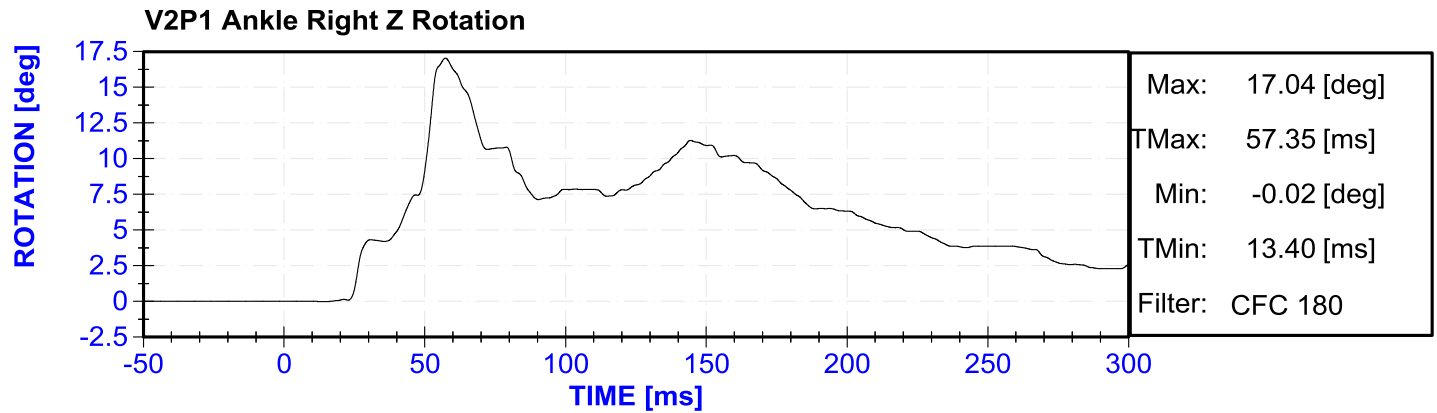
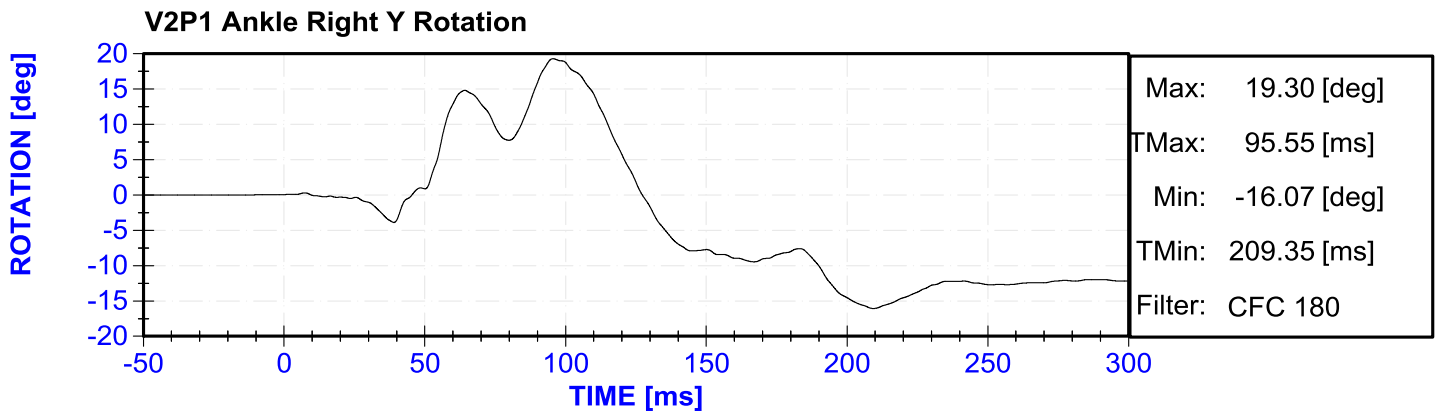
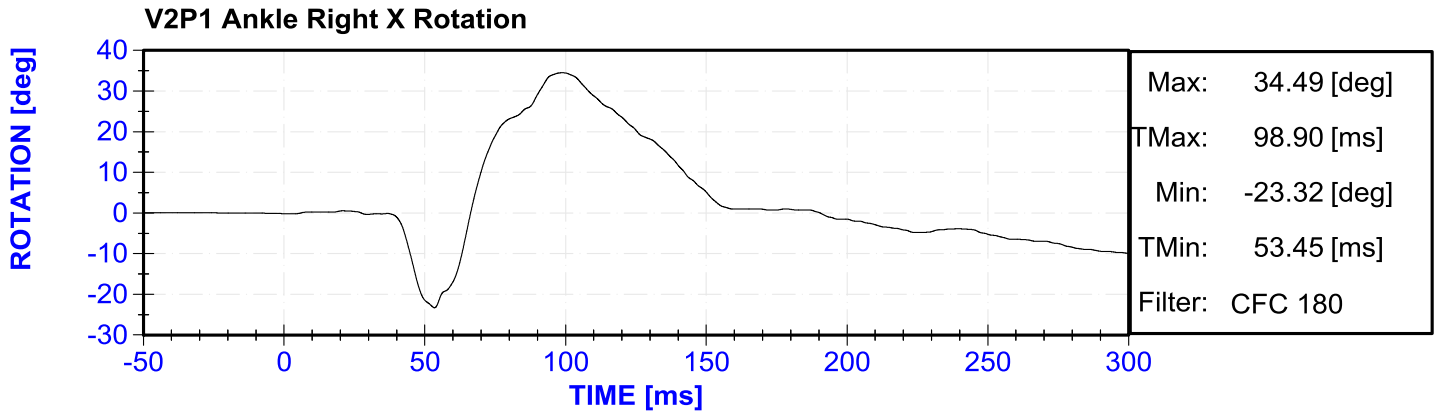


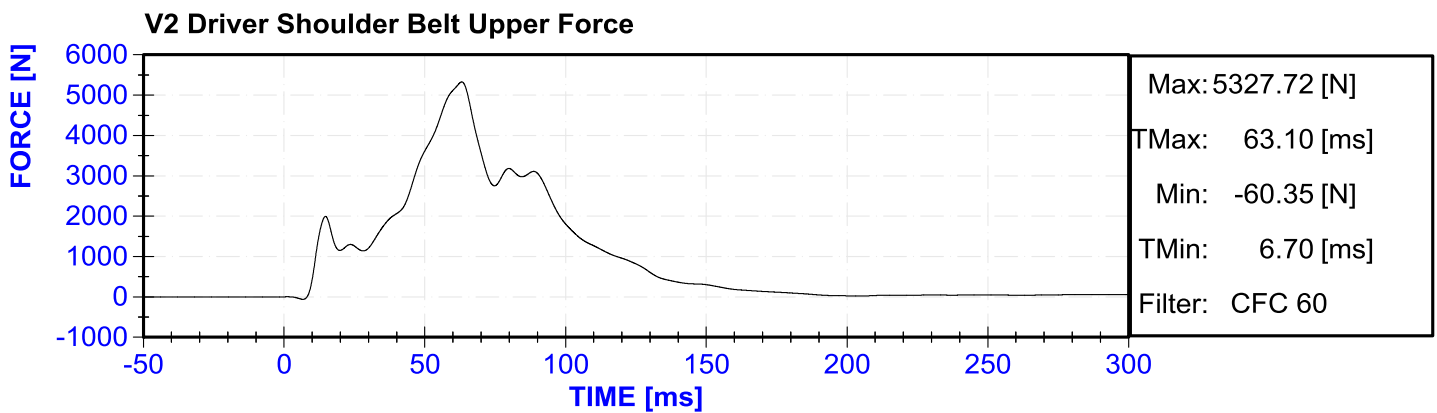
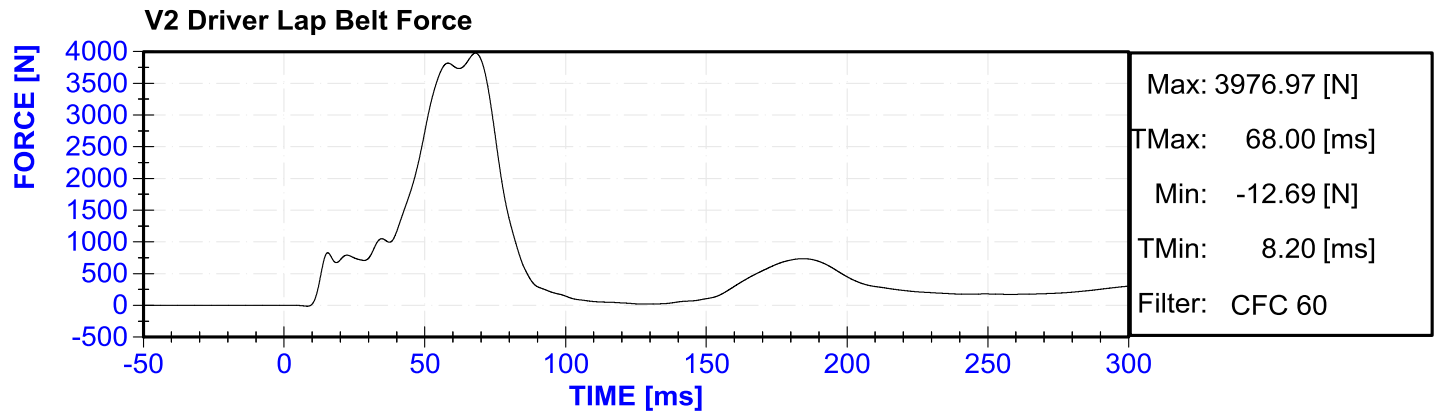
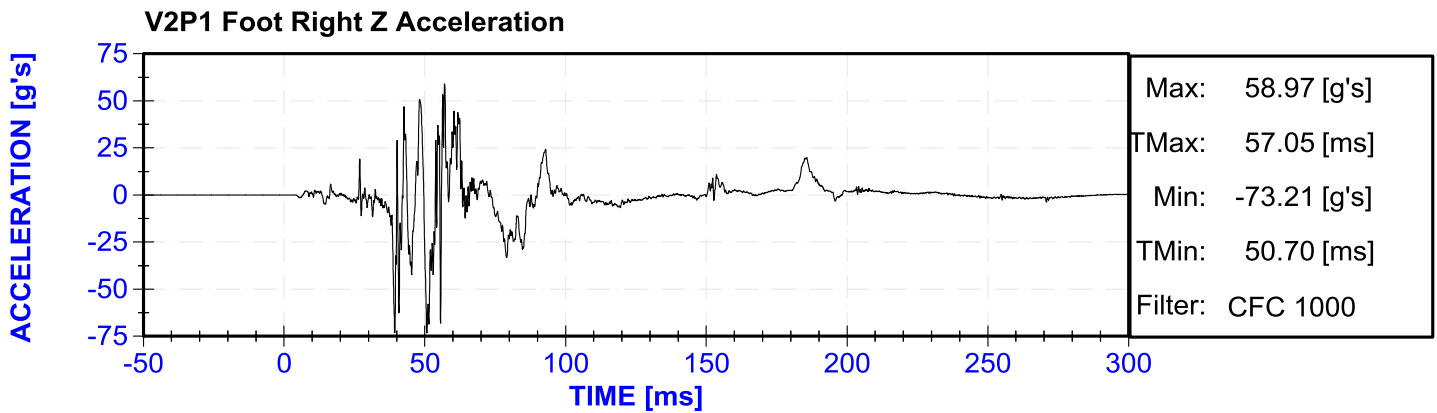
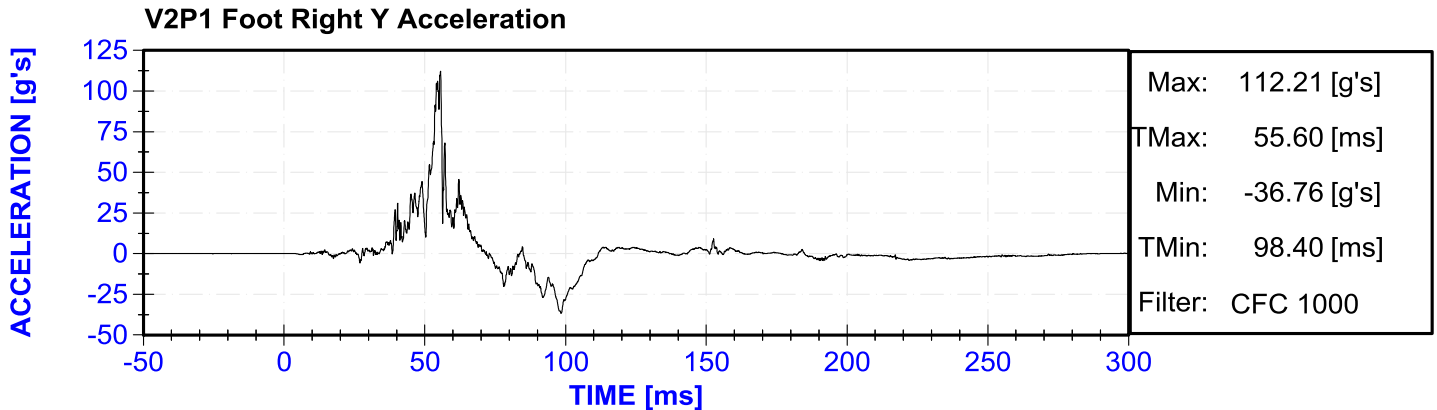


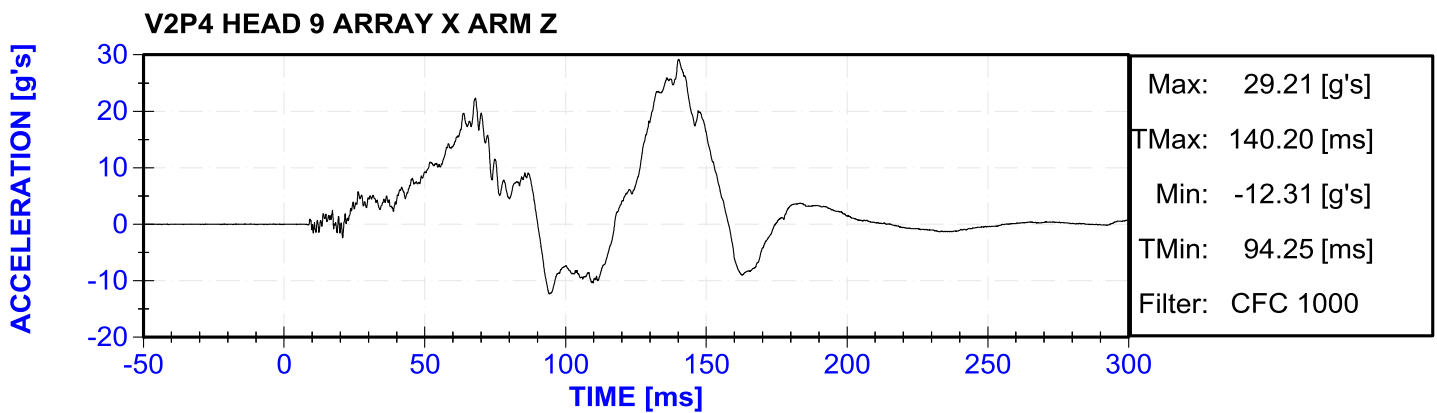
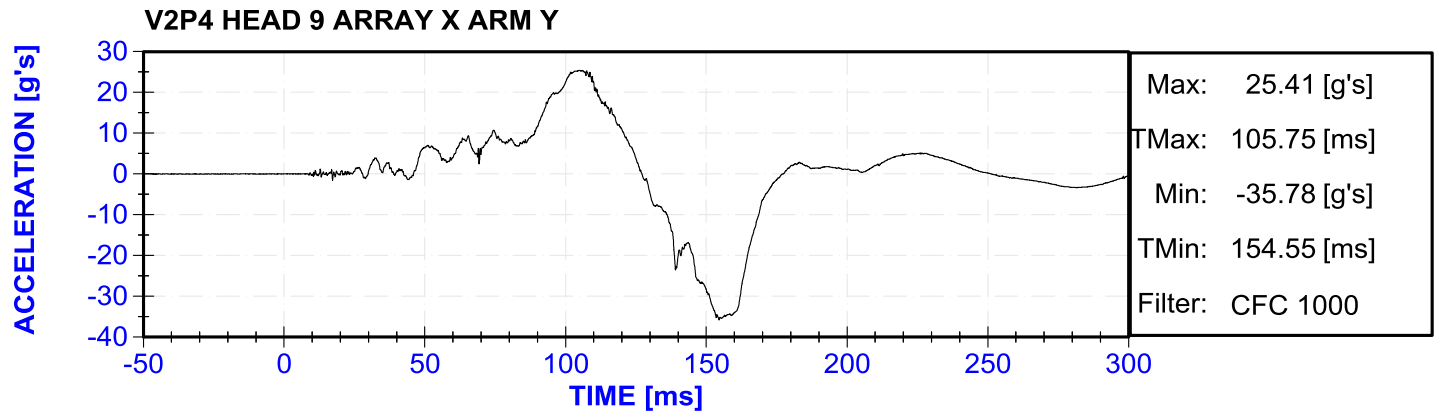
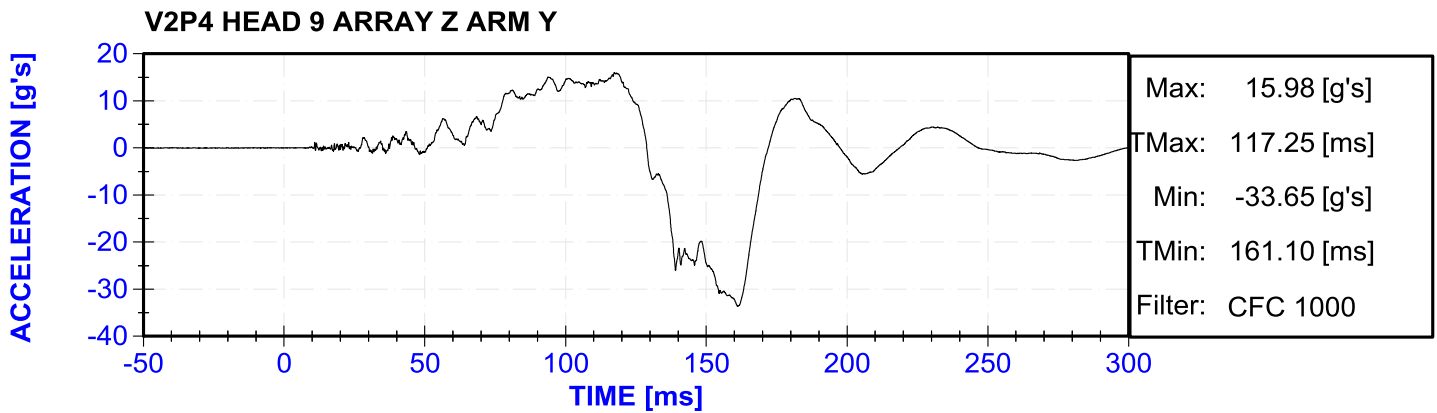
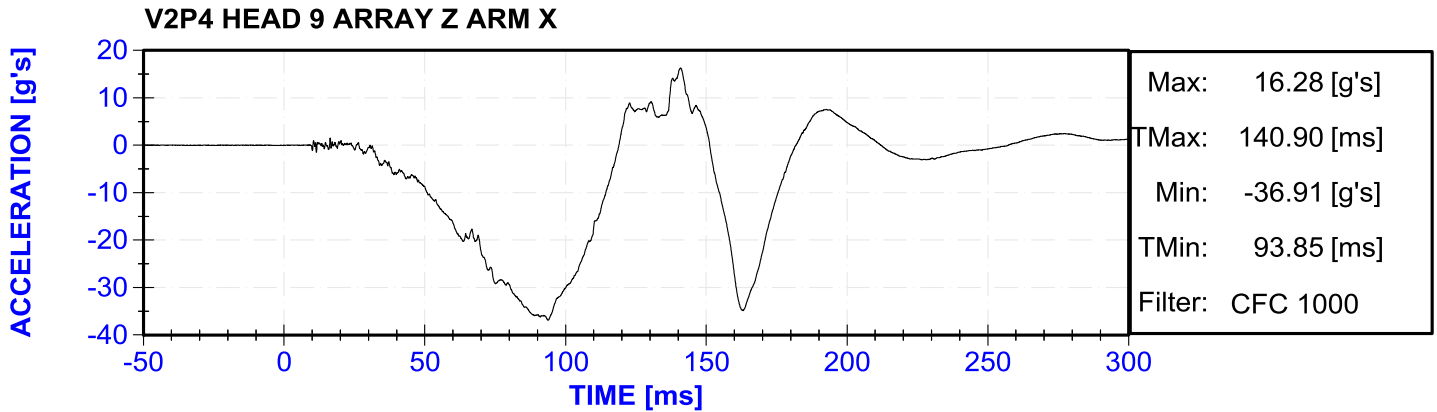


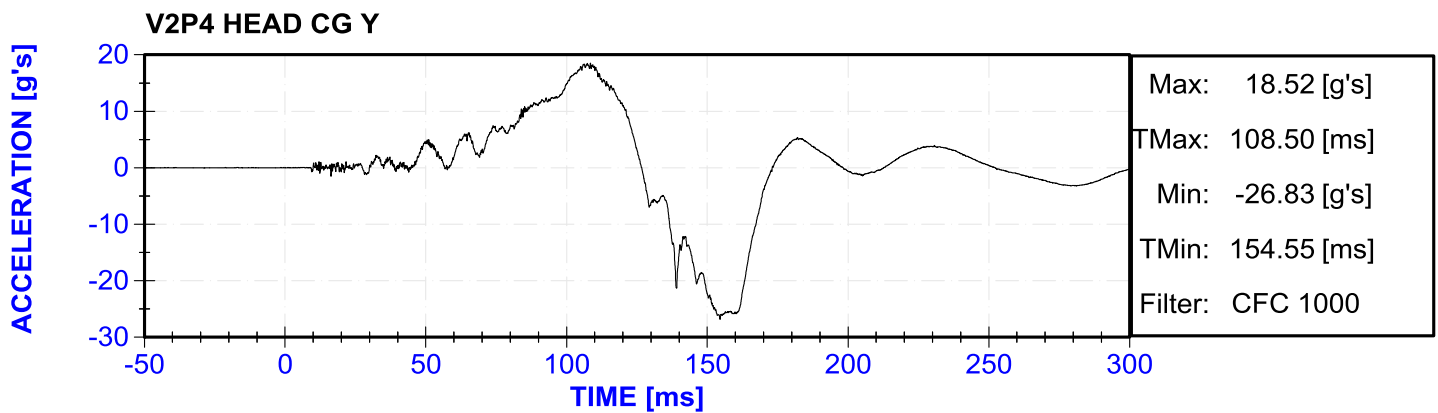
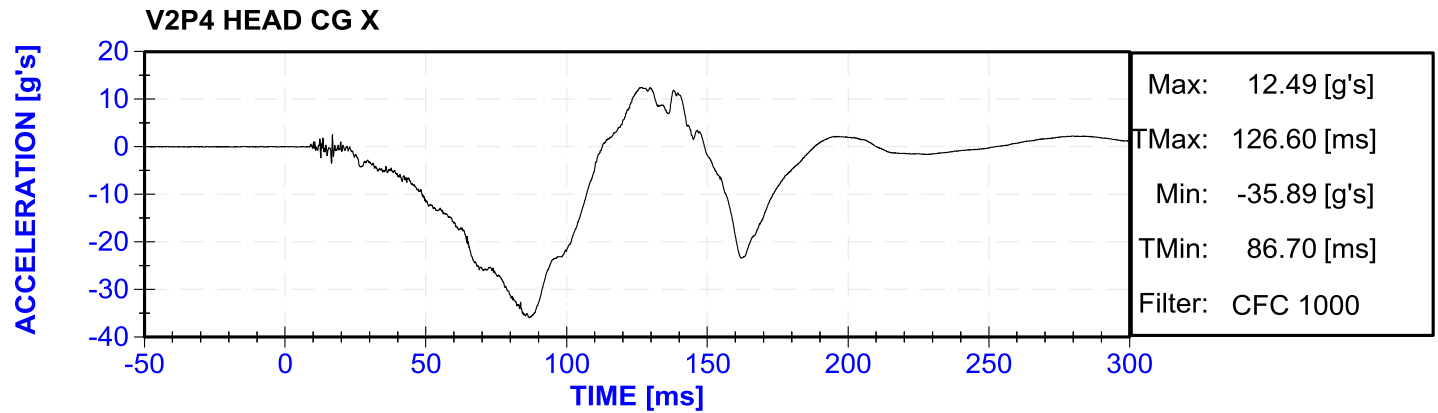
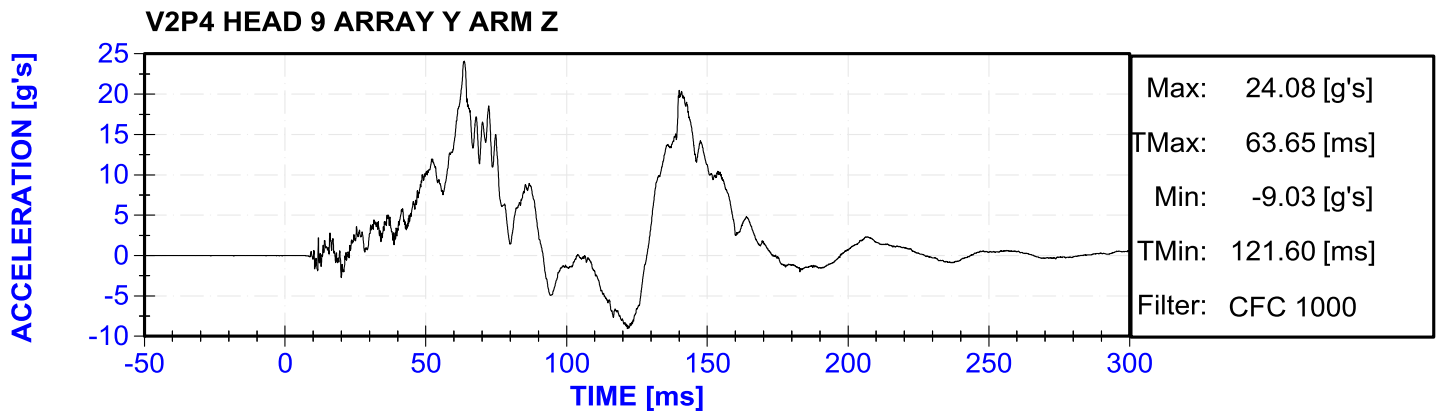
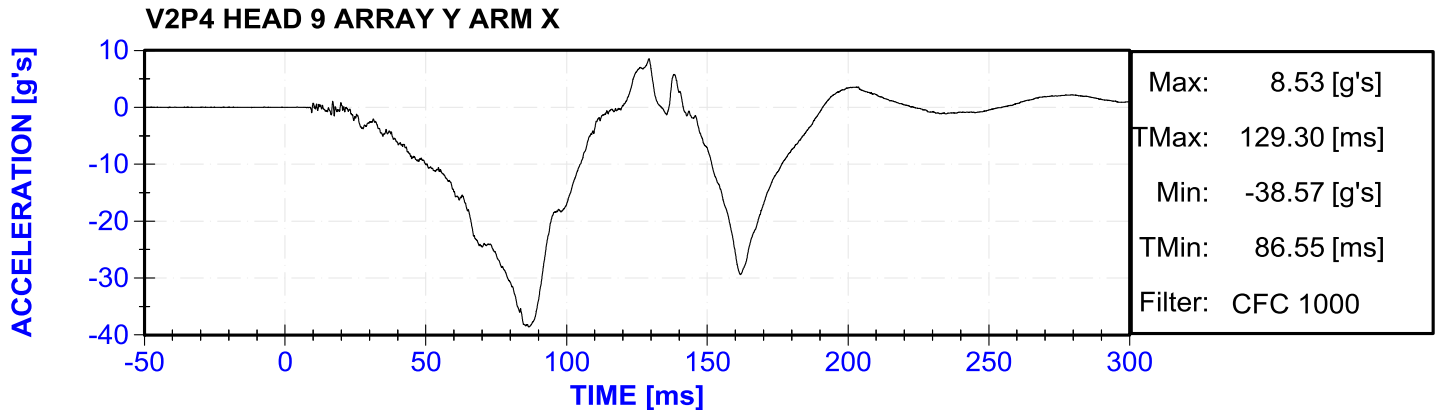


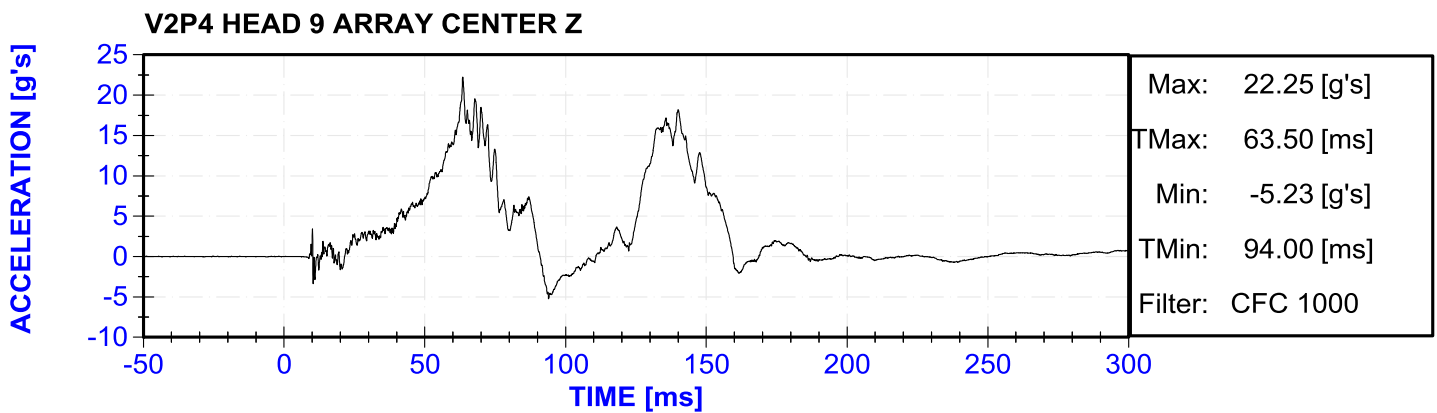
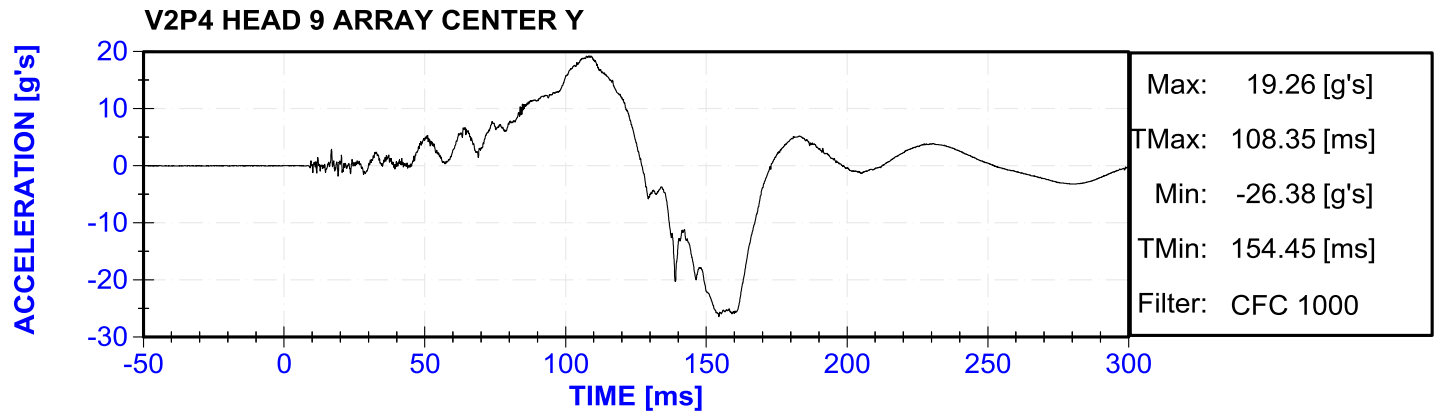
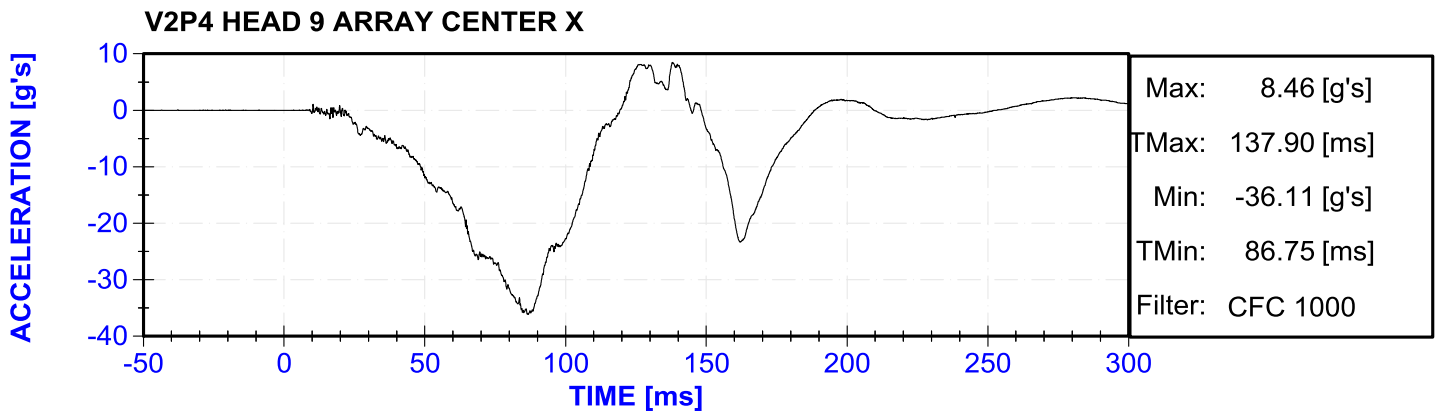
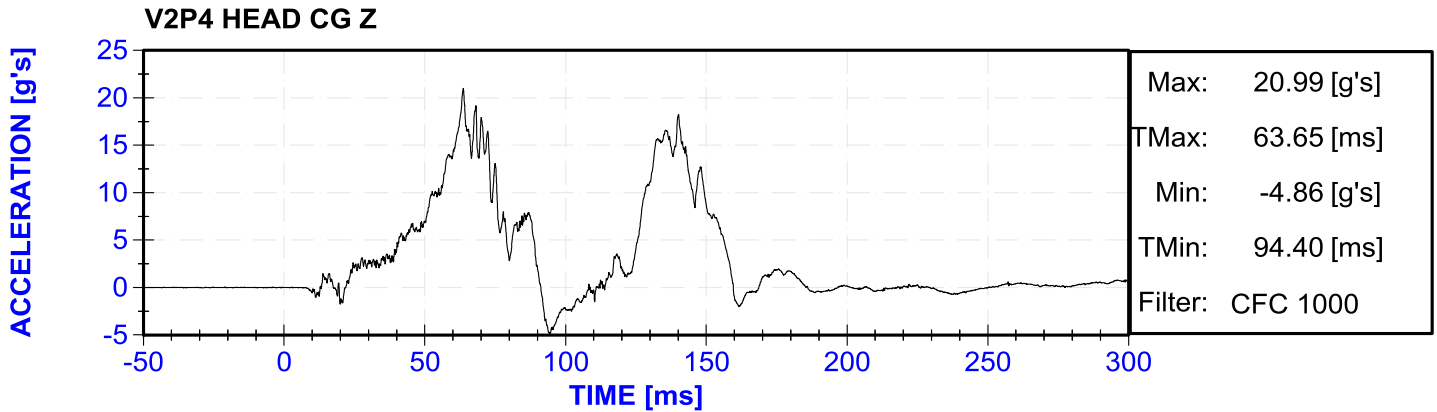


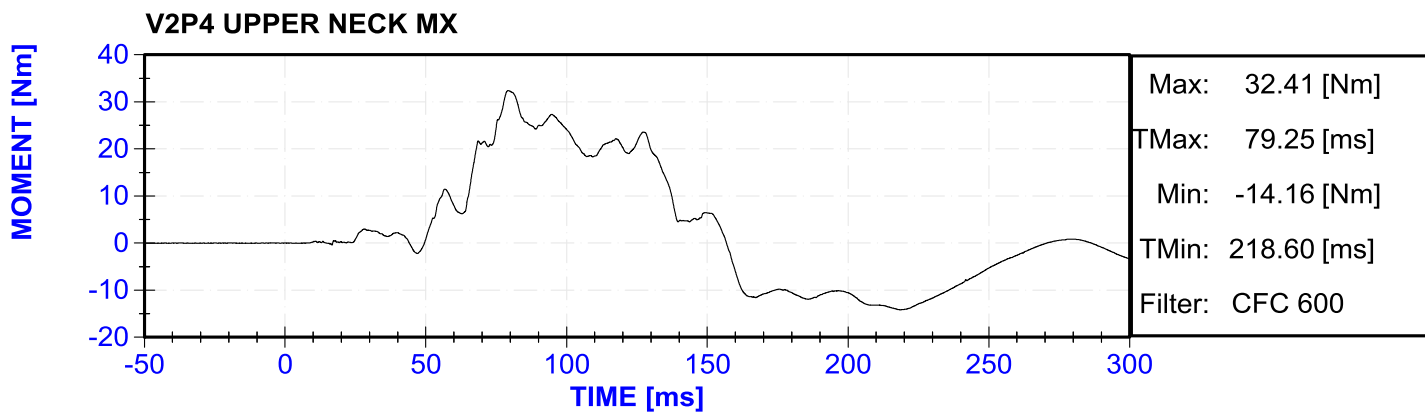
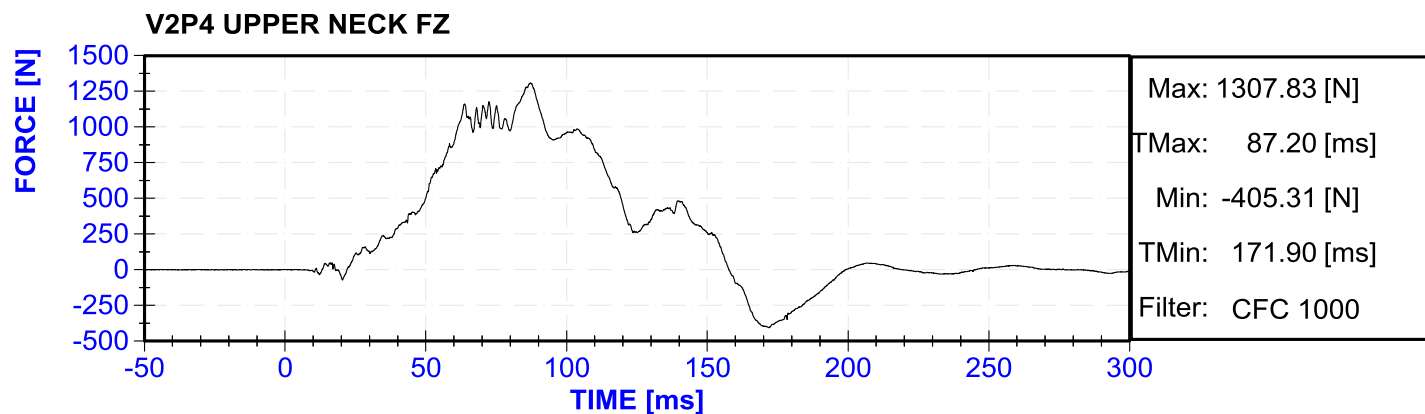
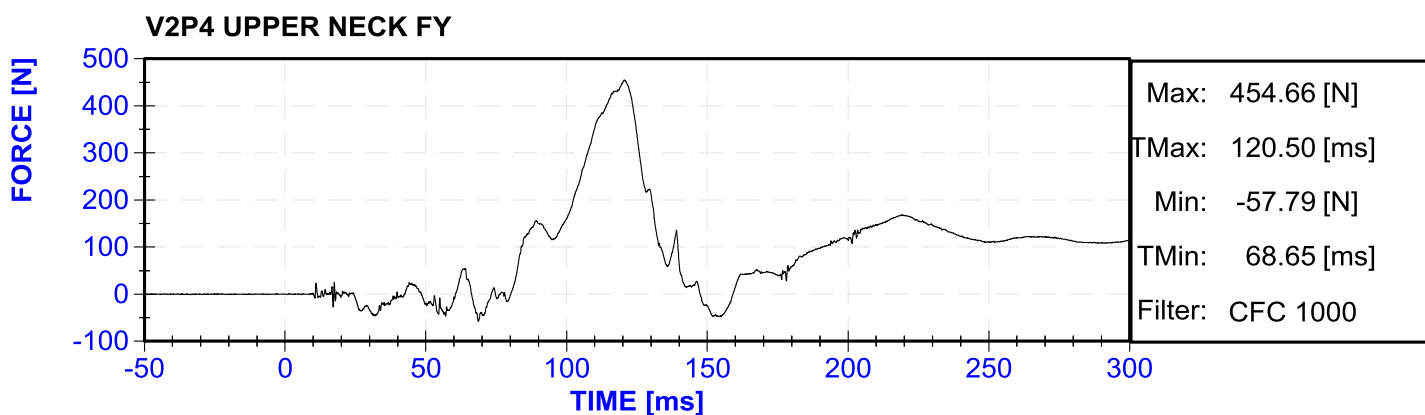
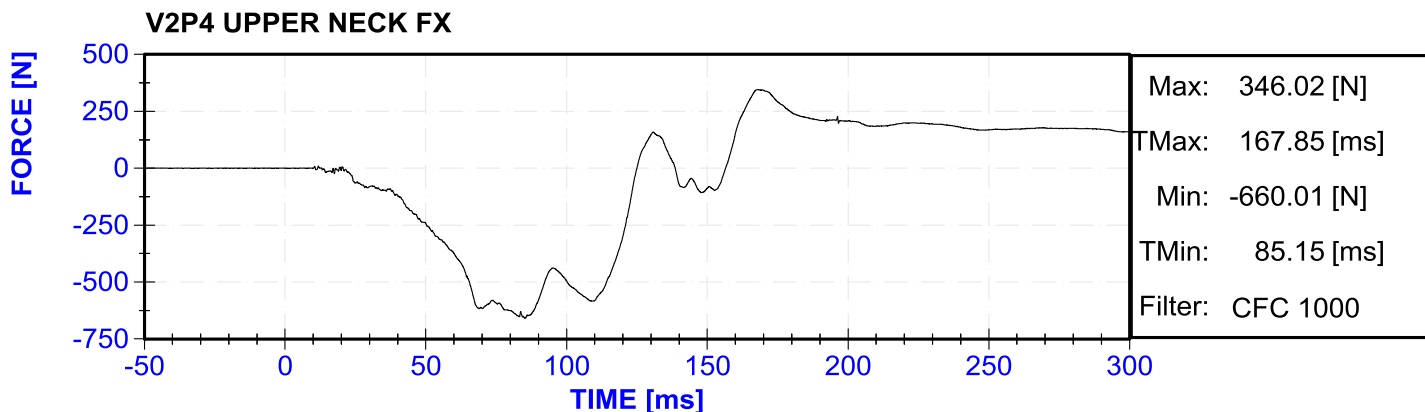


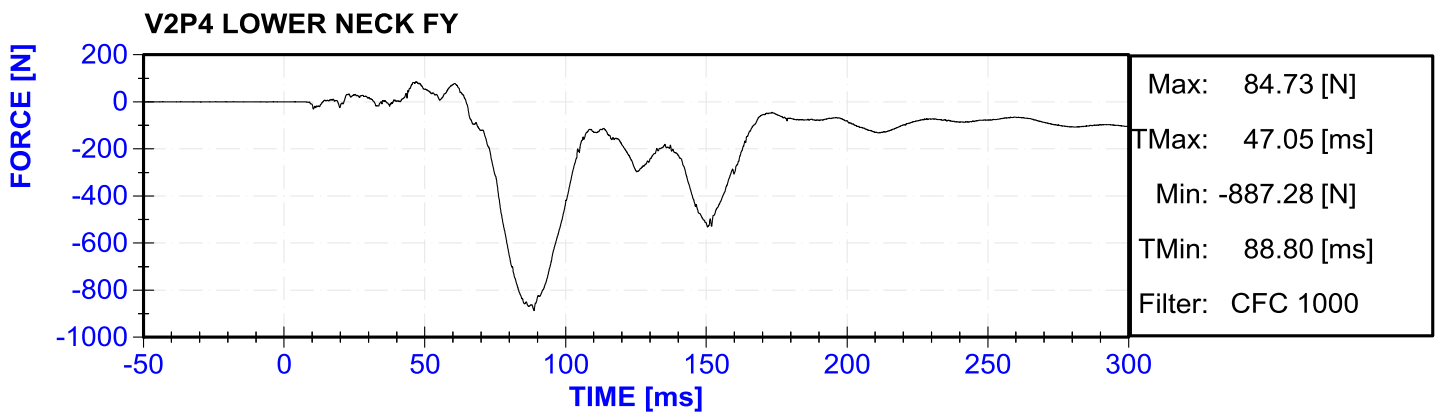
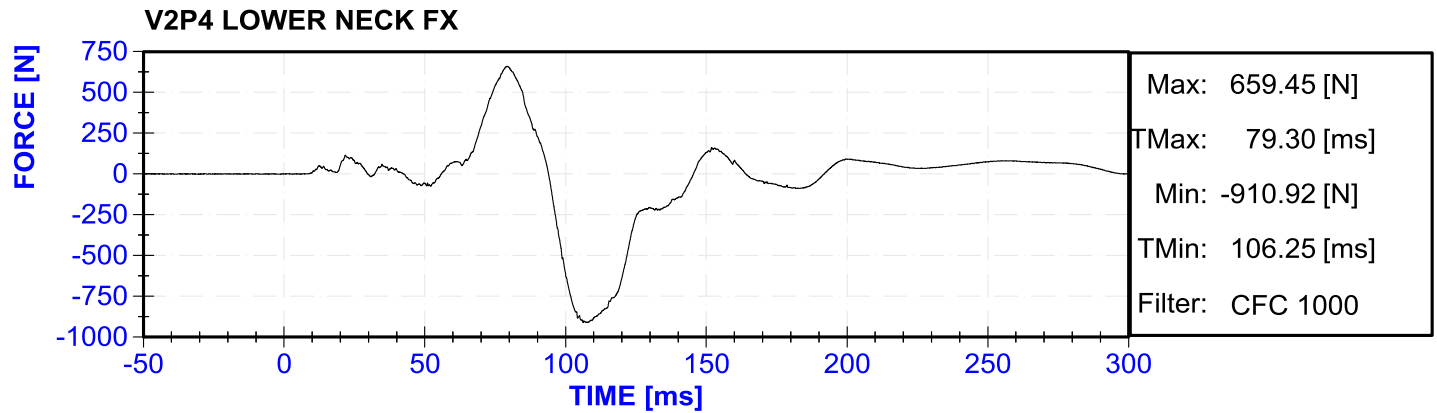
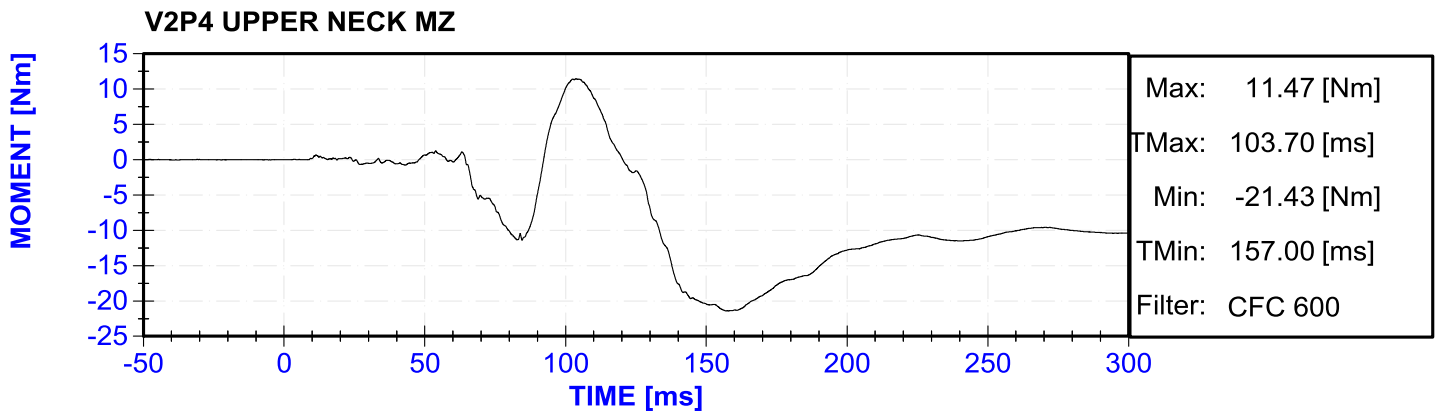
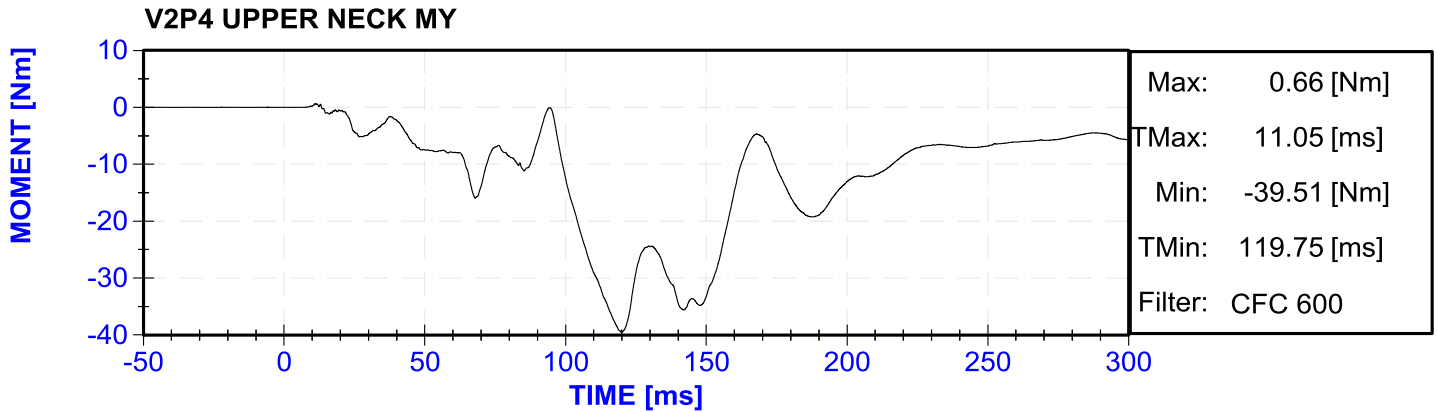


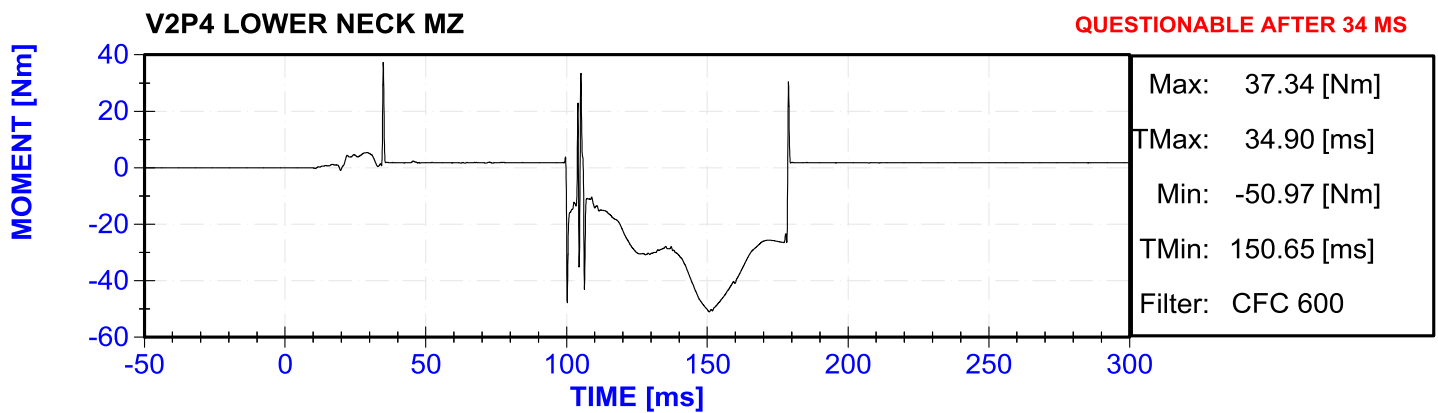
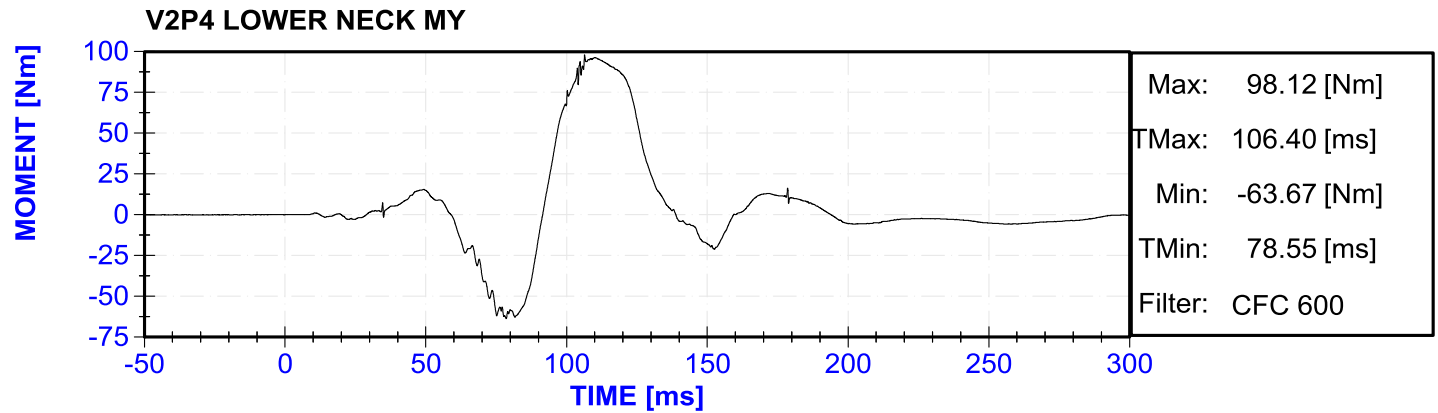
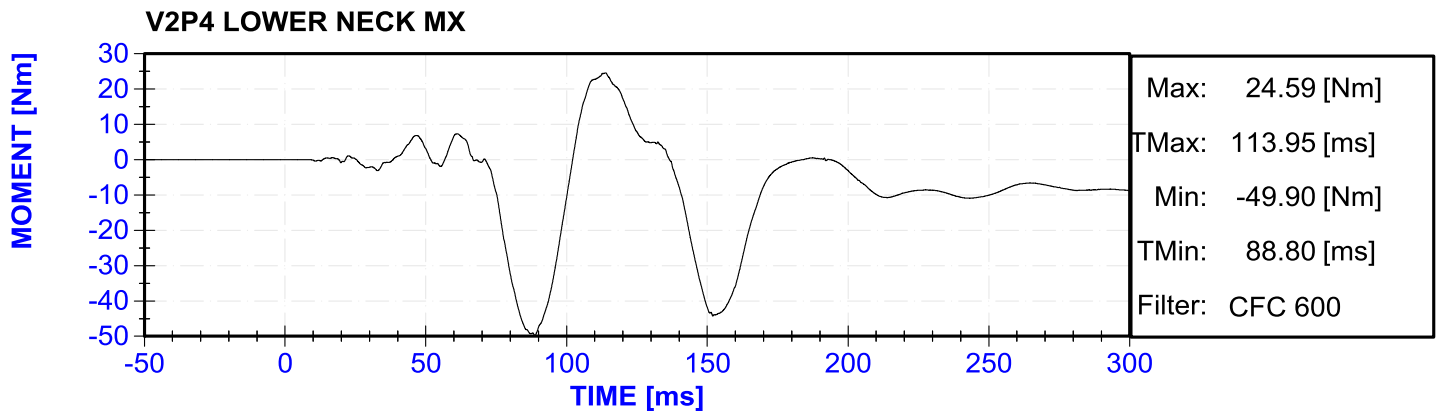
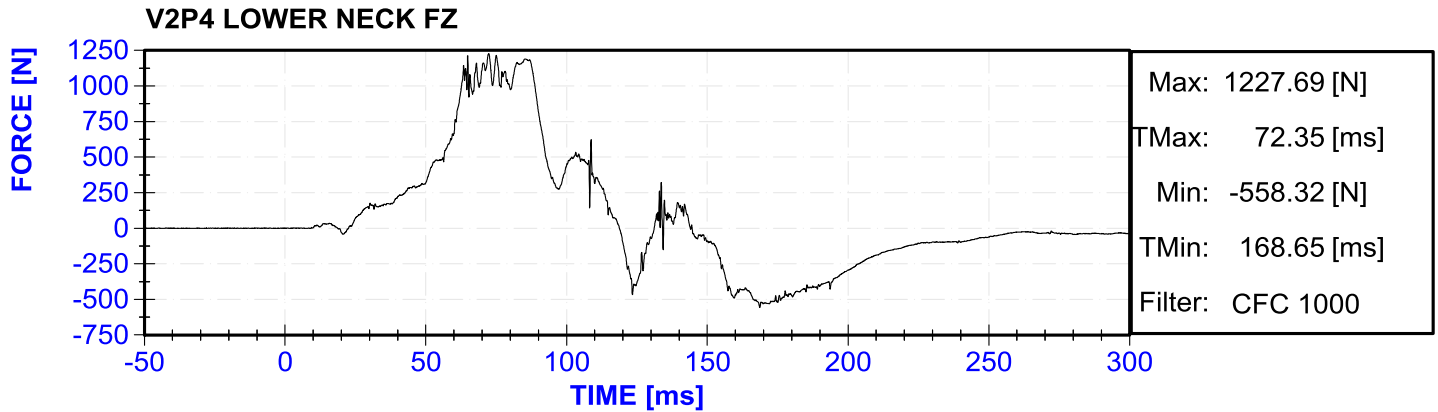


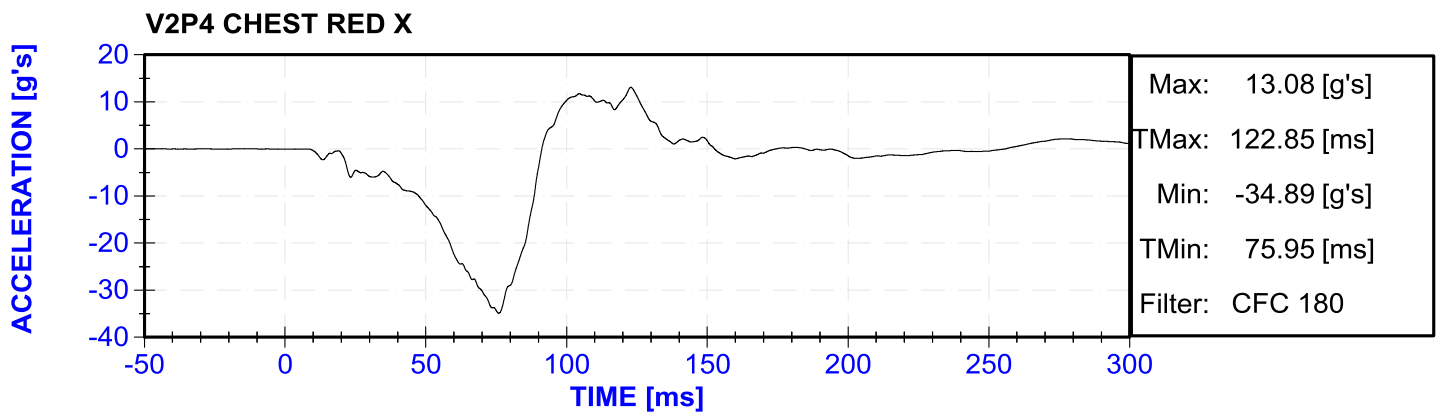
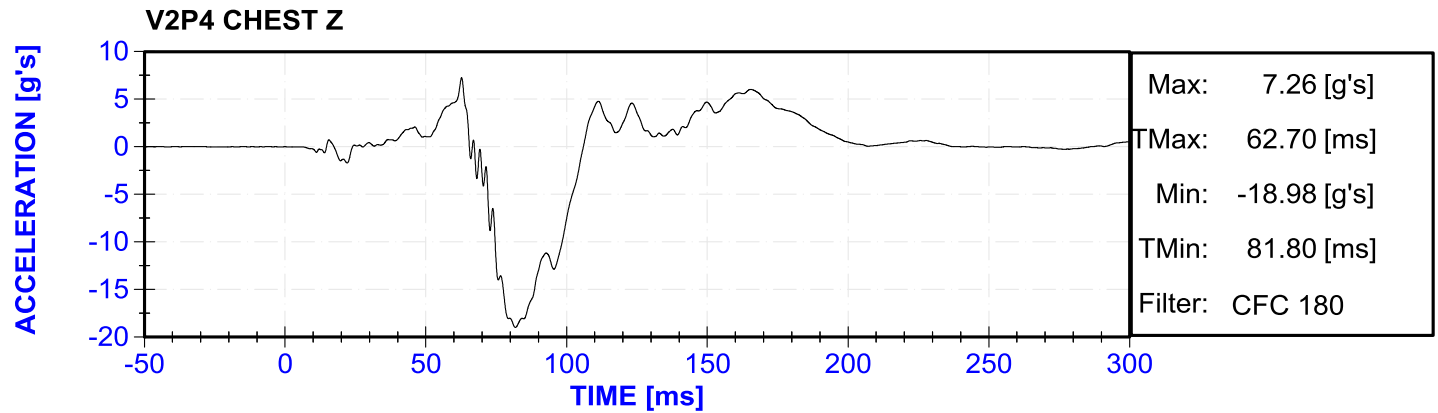
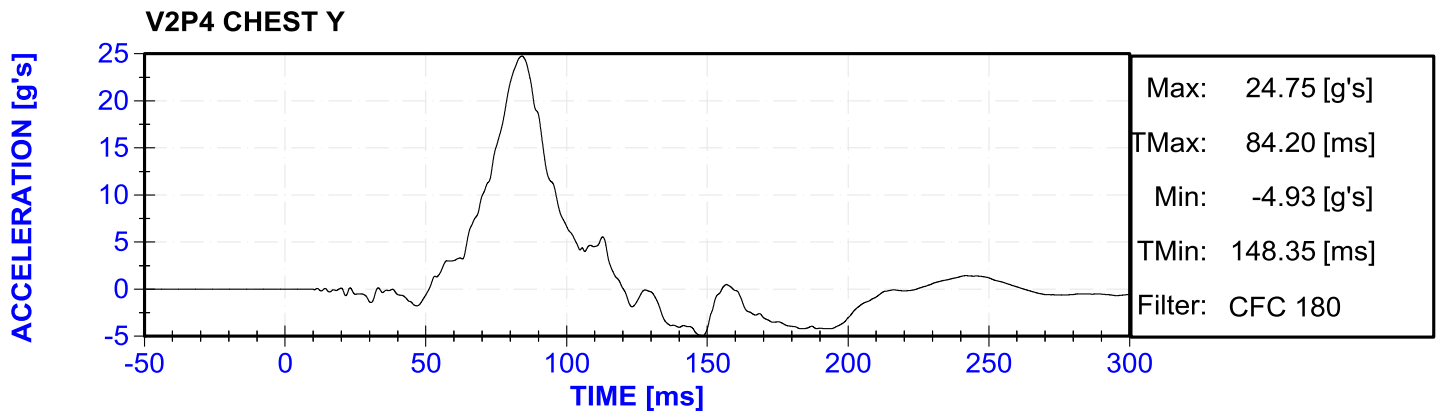
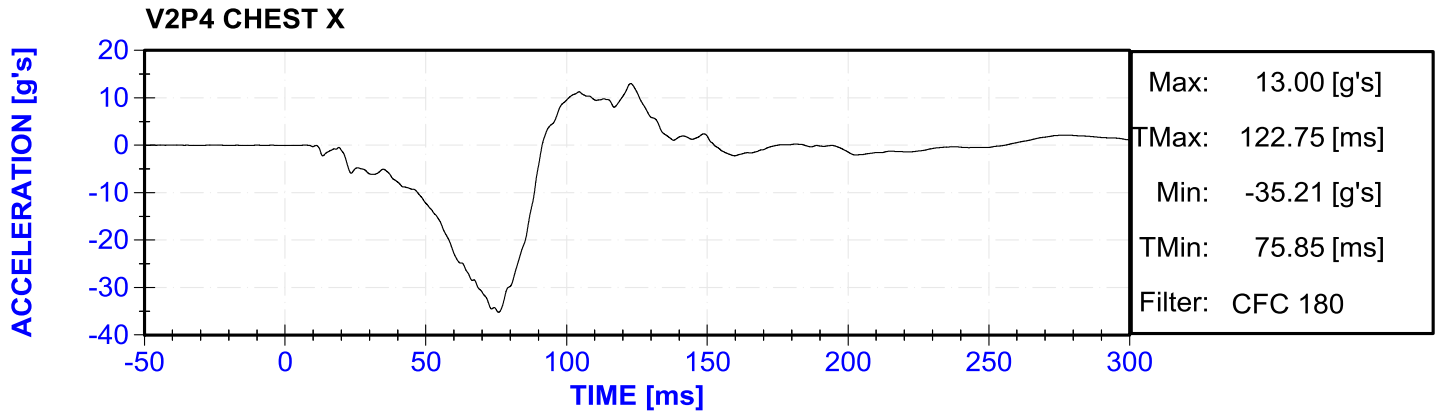


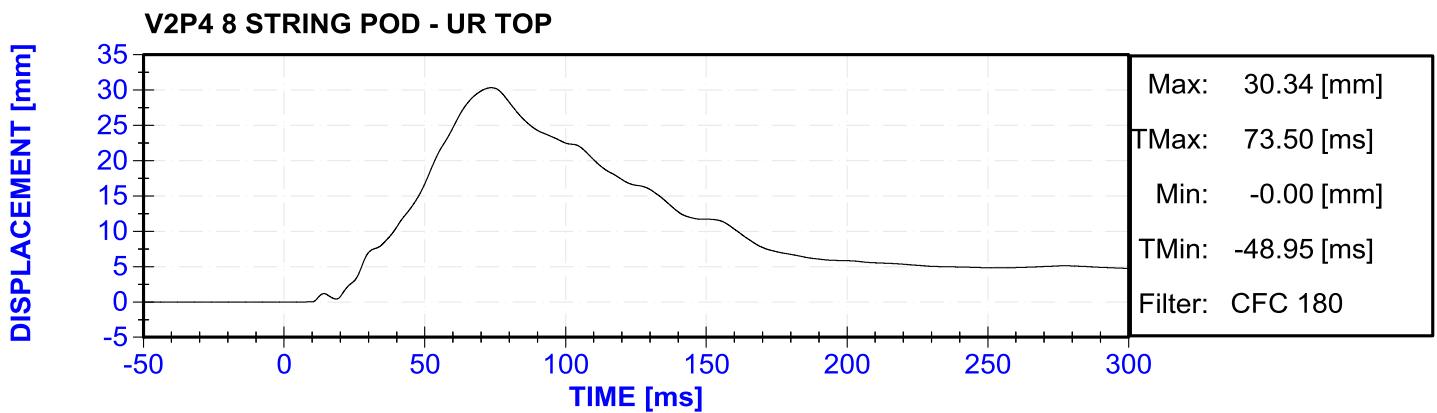
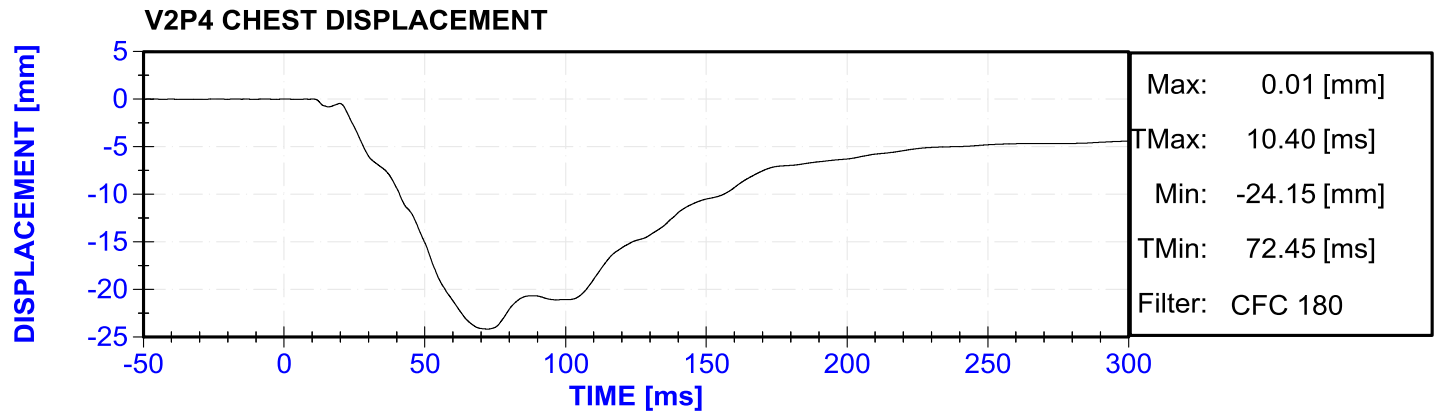
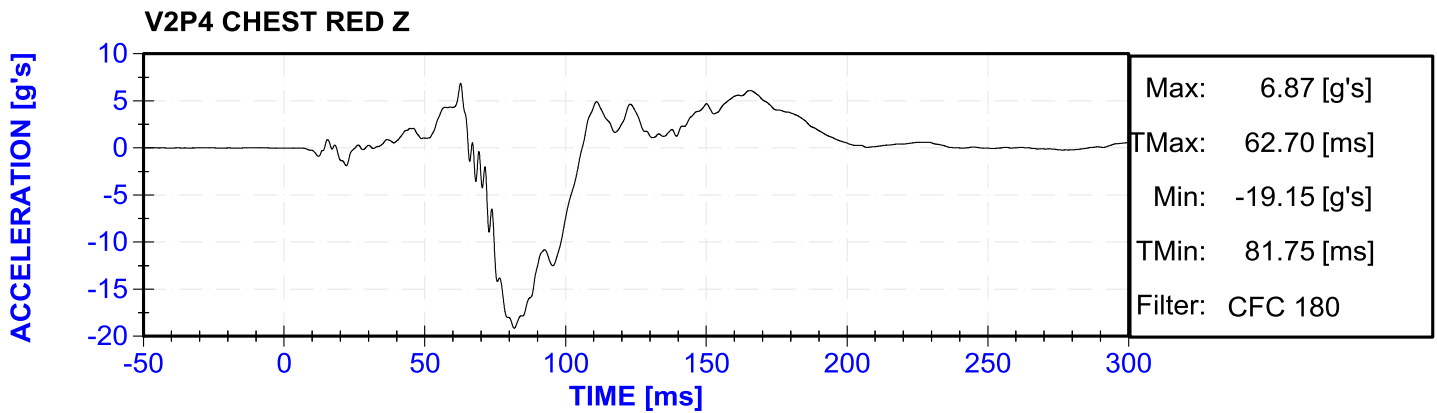
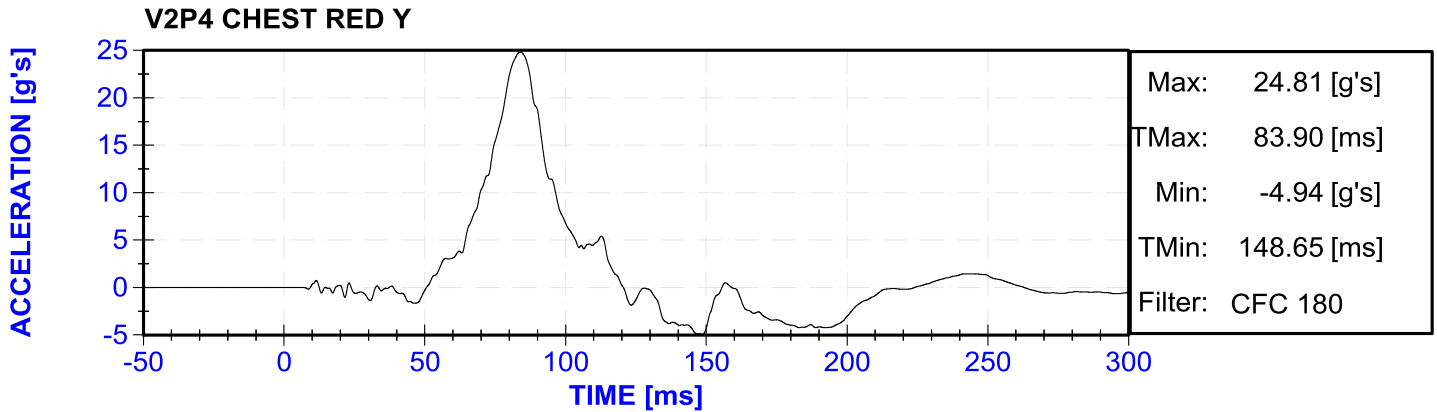


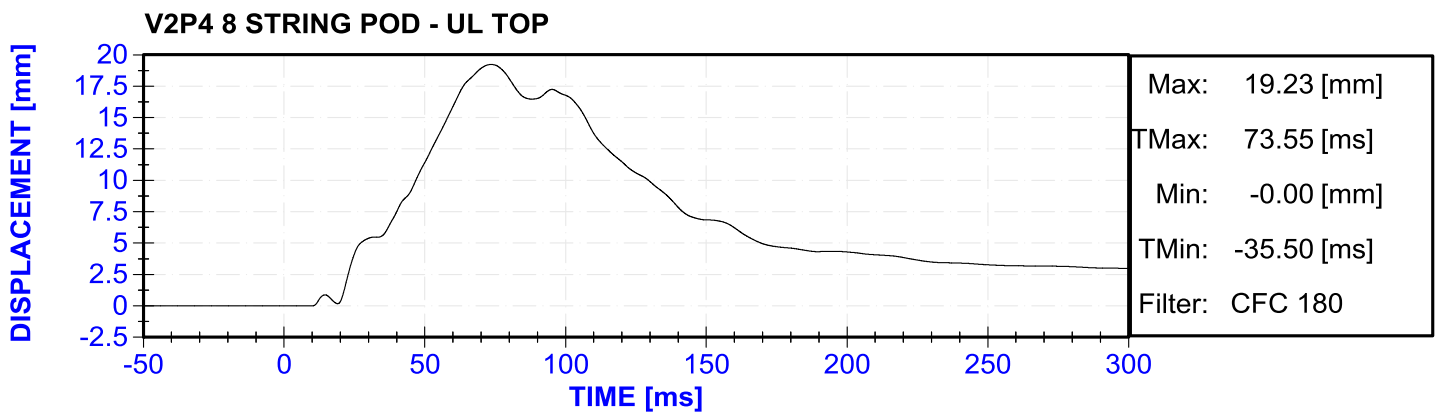
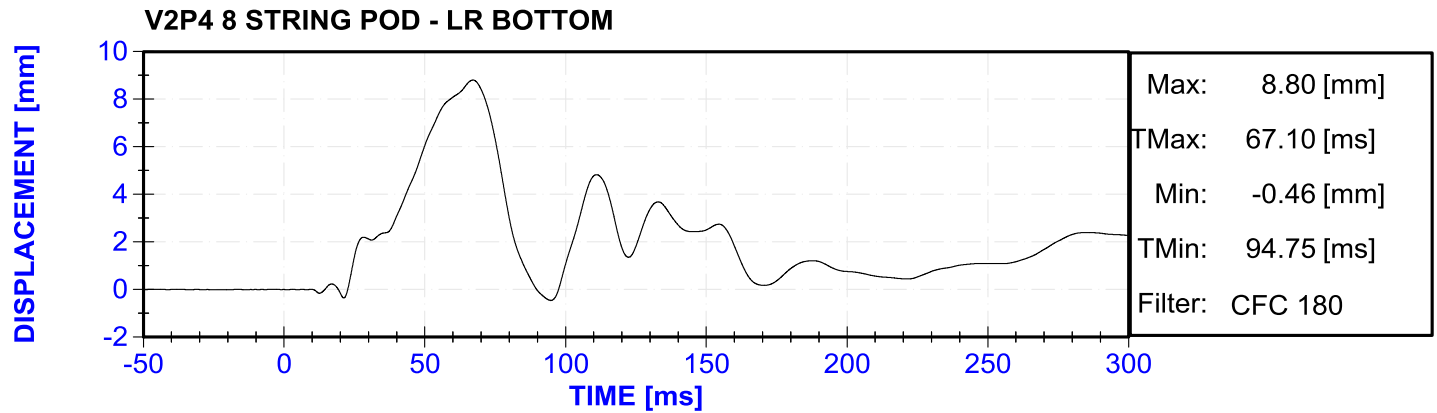
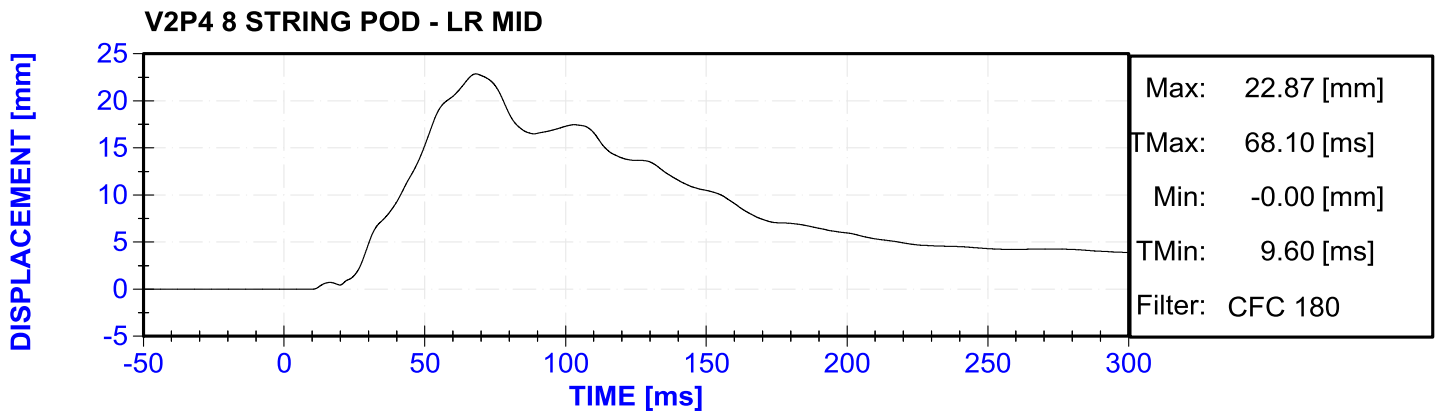
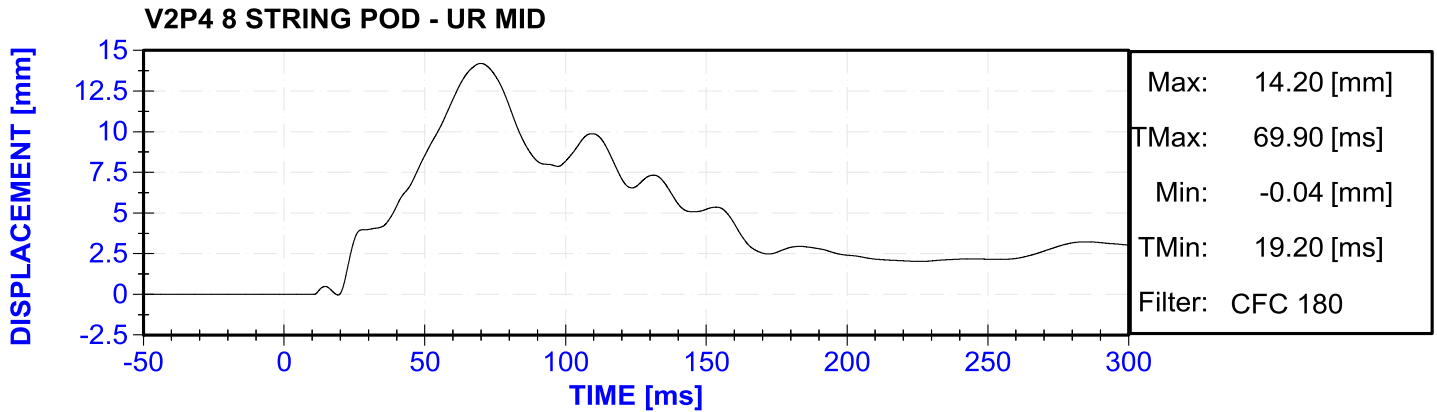


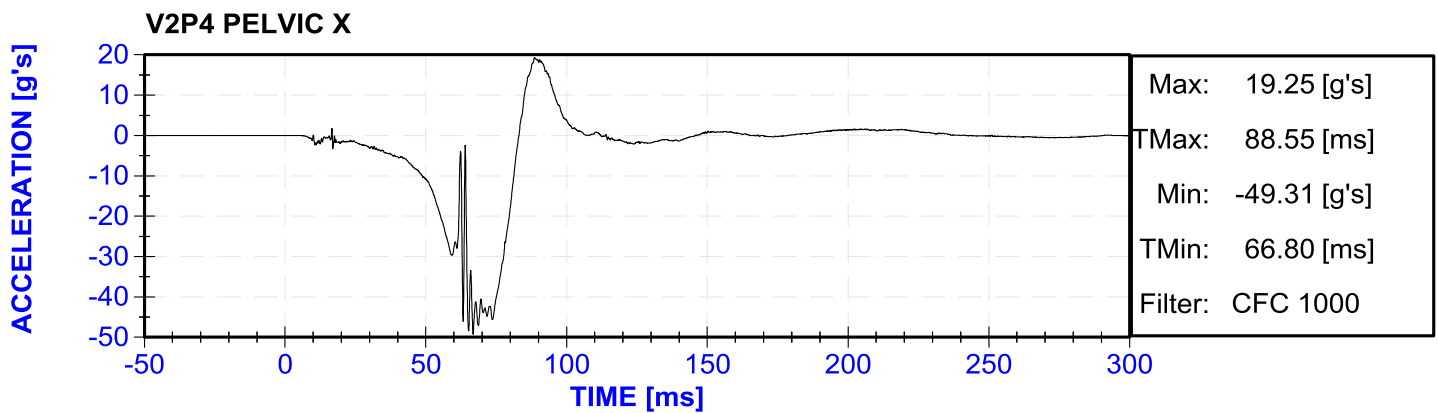
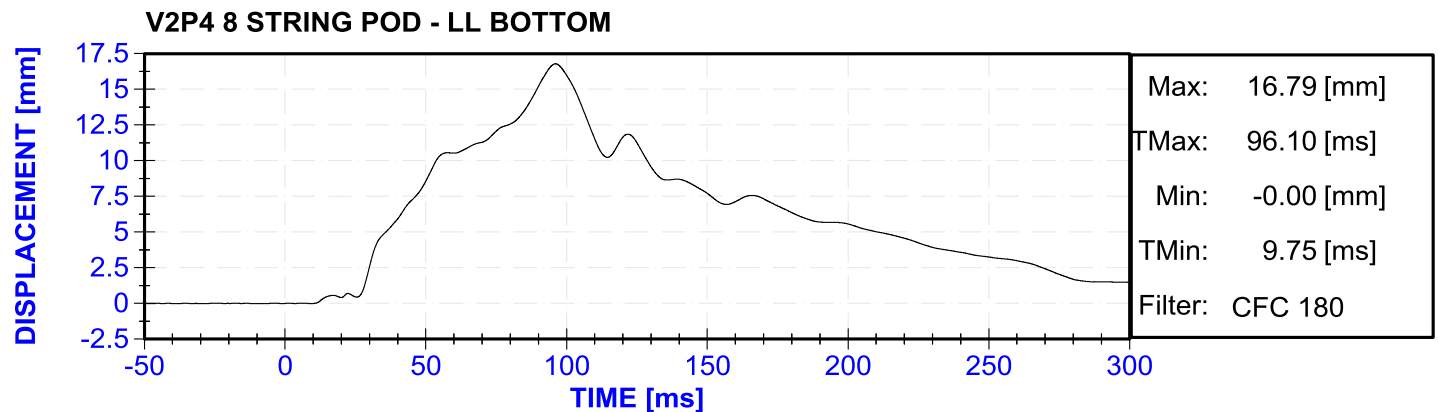
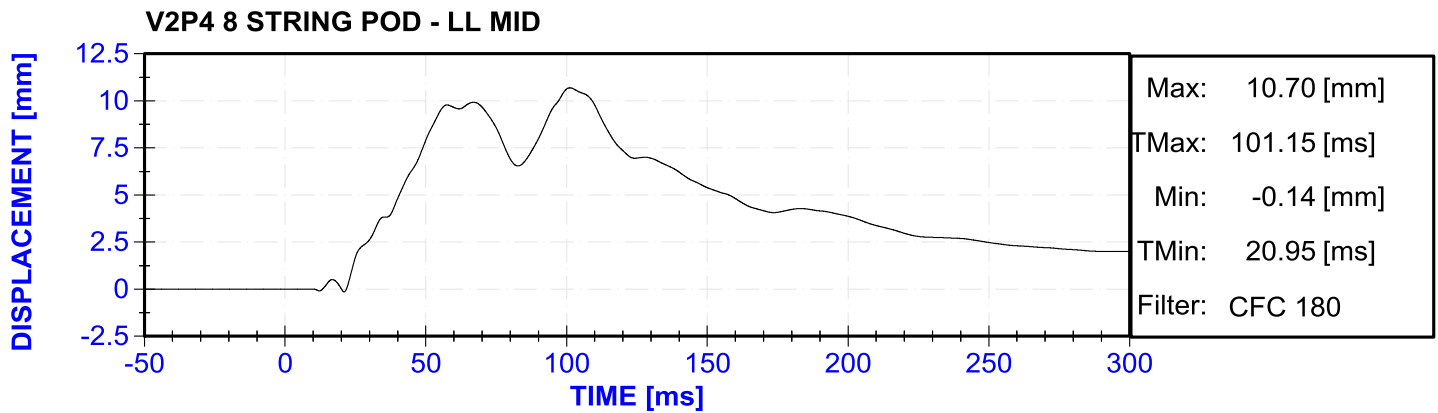
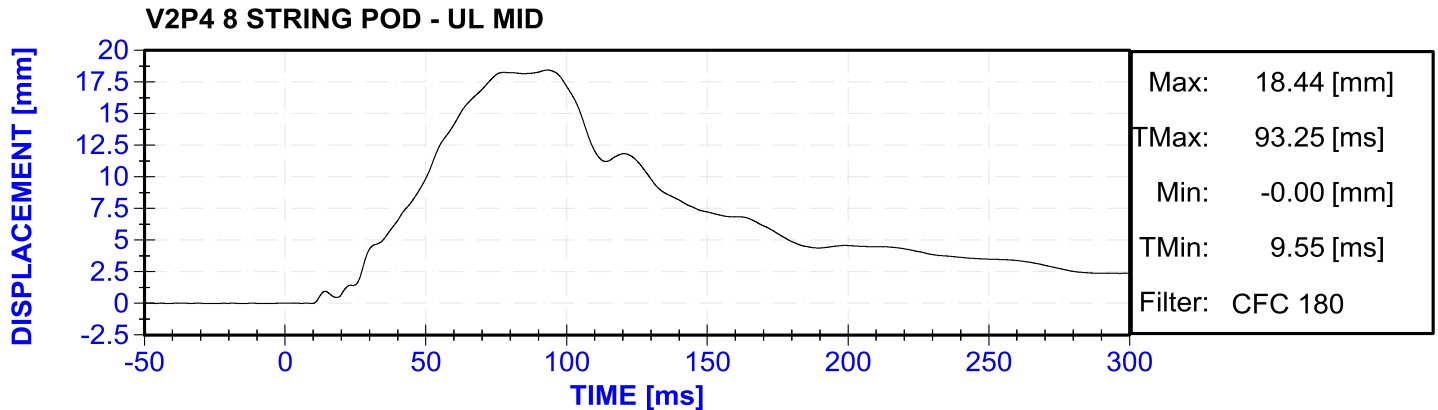


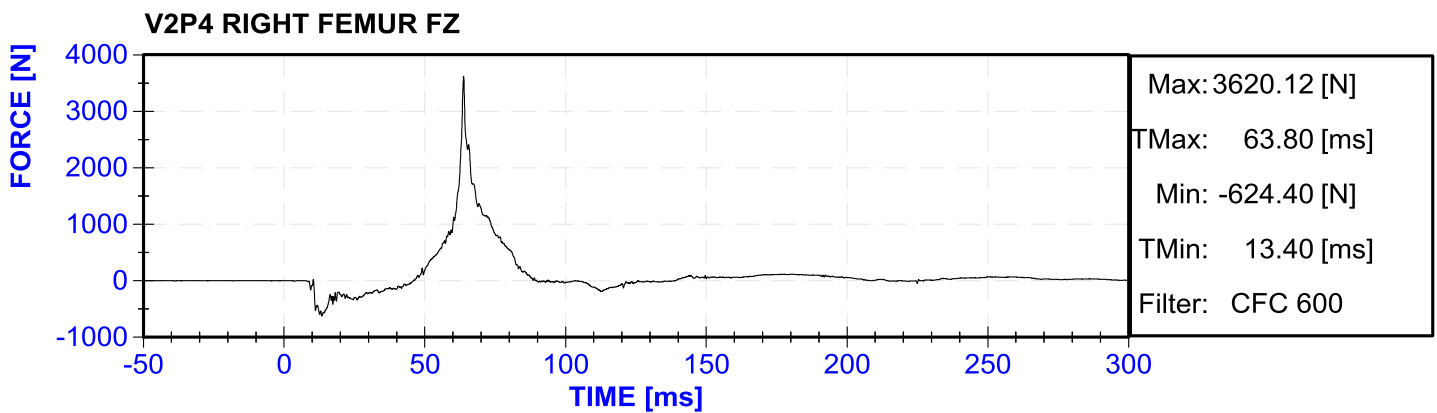
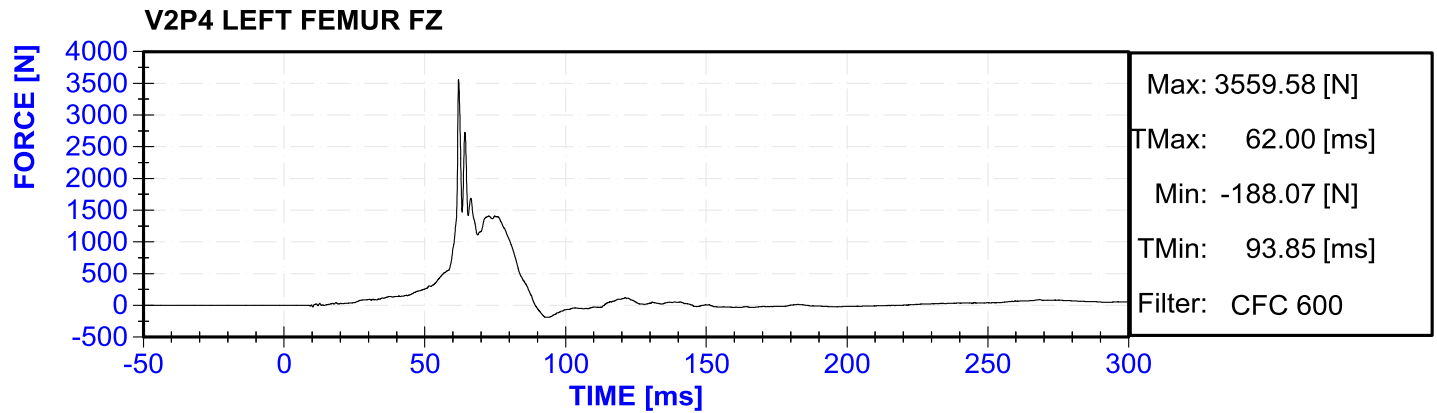
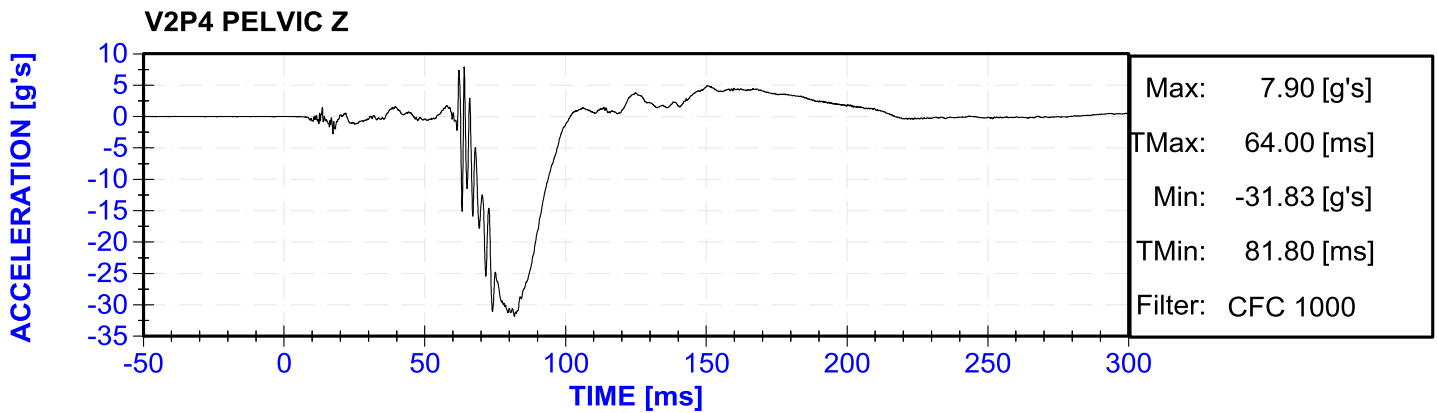
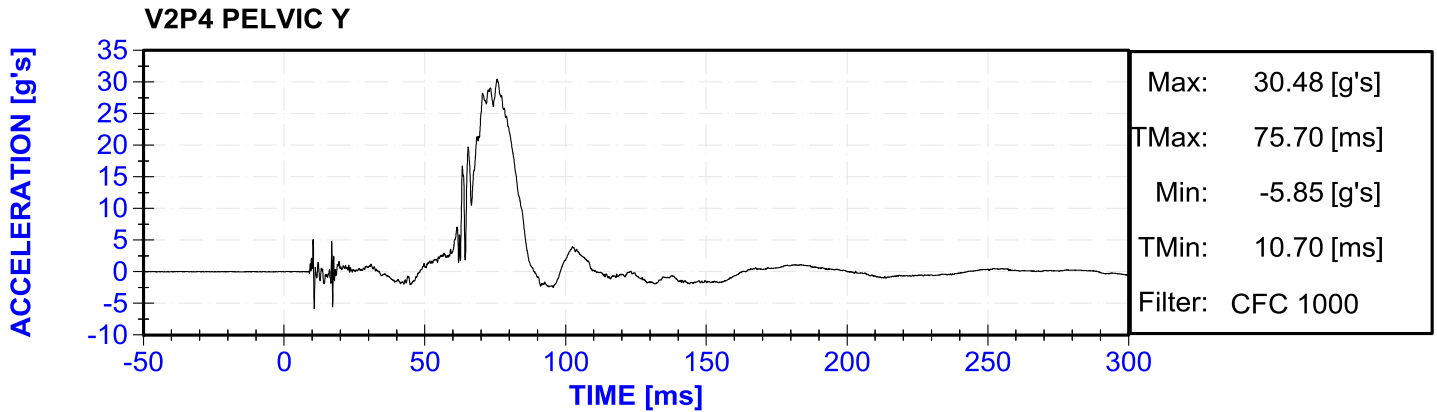




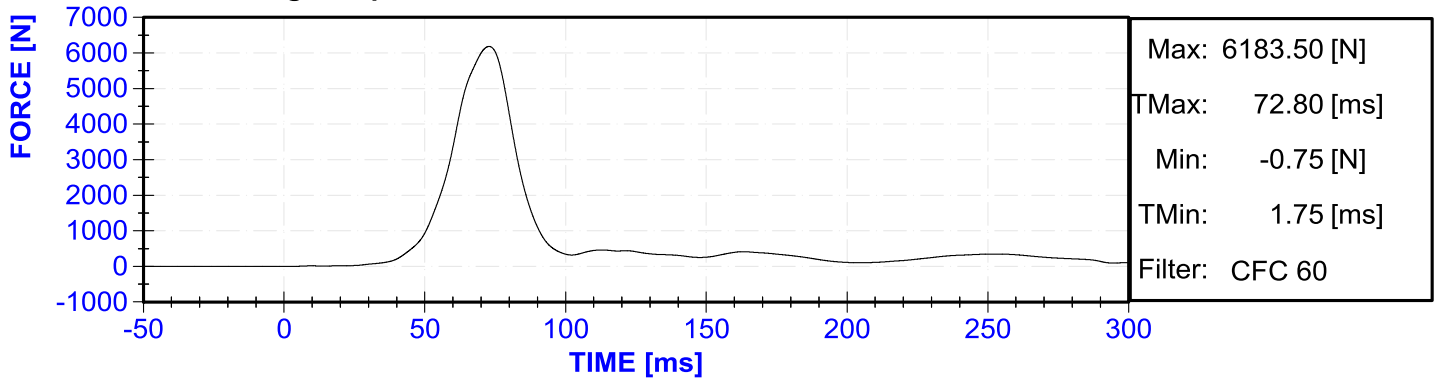




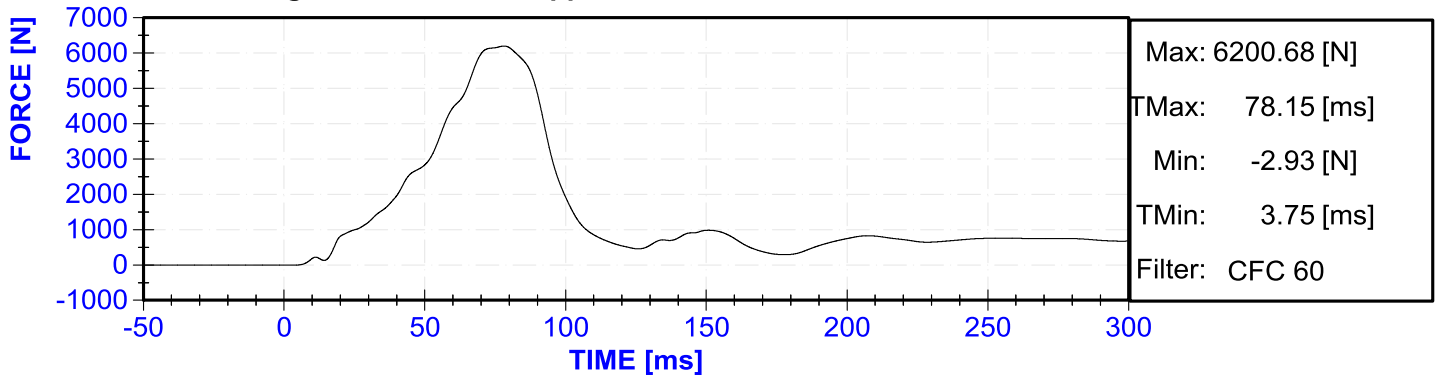




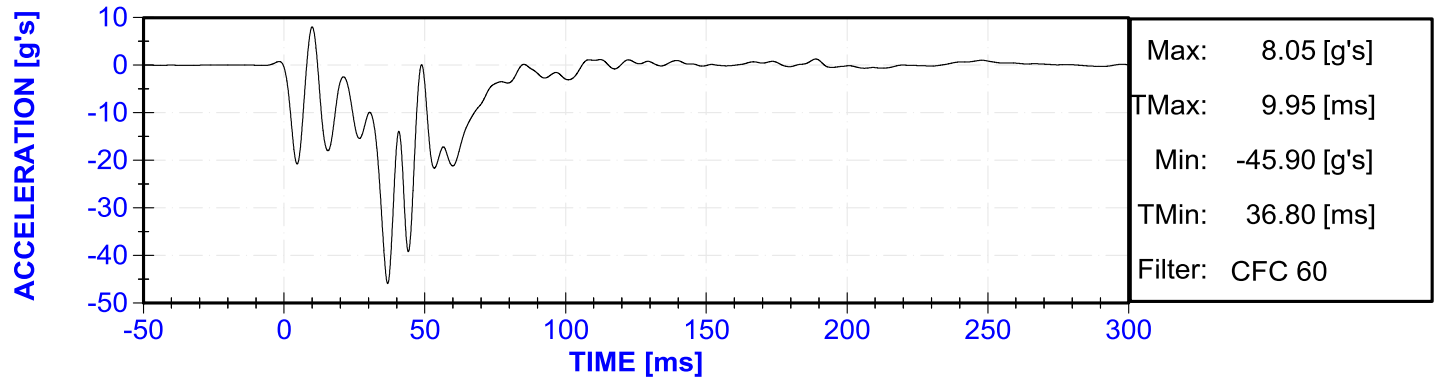
V2 Passenger Lap Belt Force



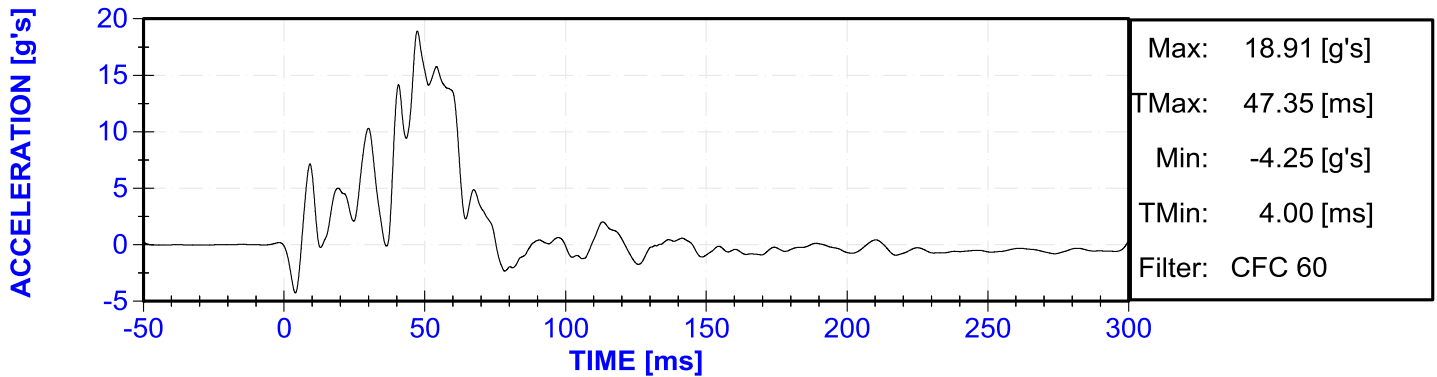
V2 Passenger Shoulder Belt Upper Force

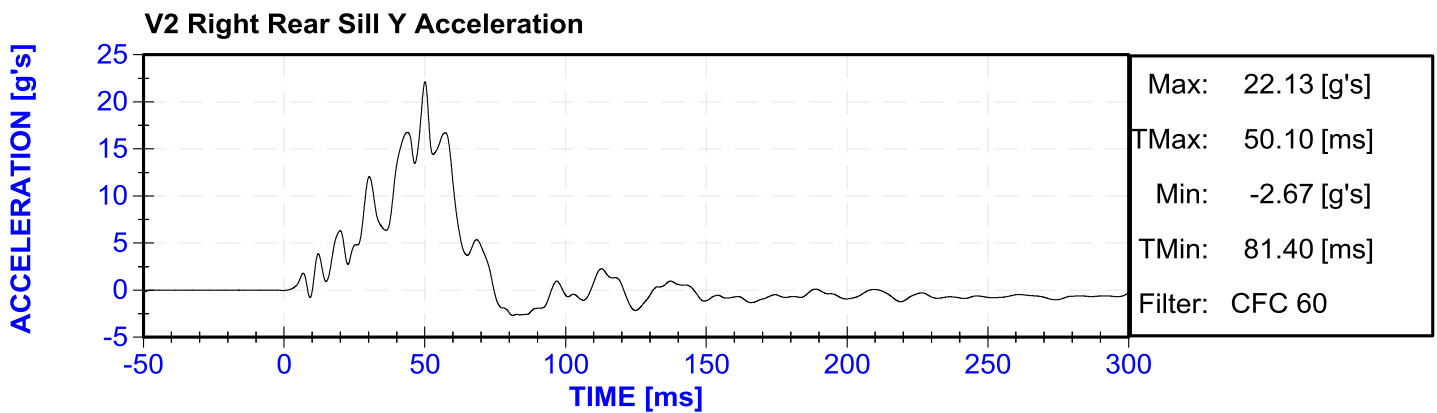
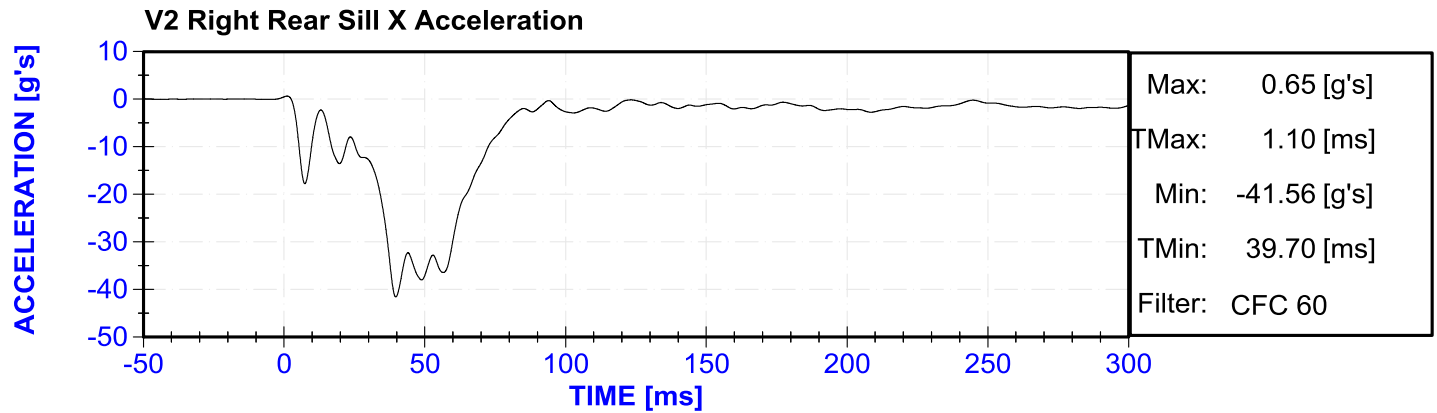
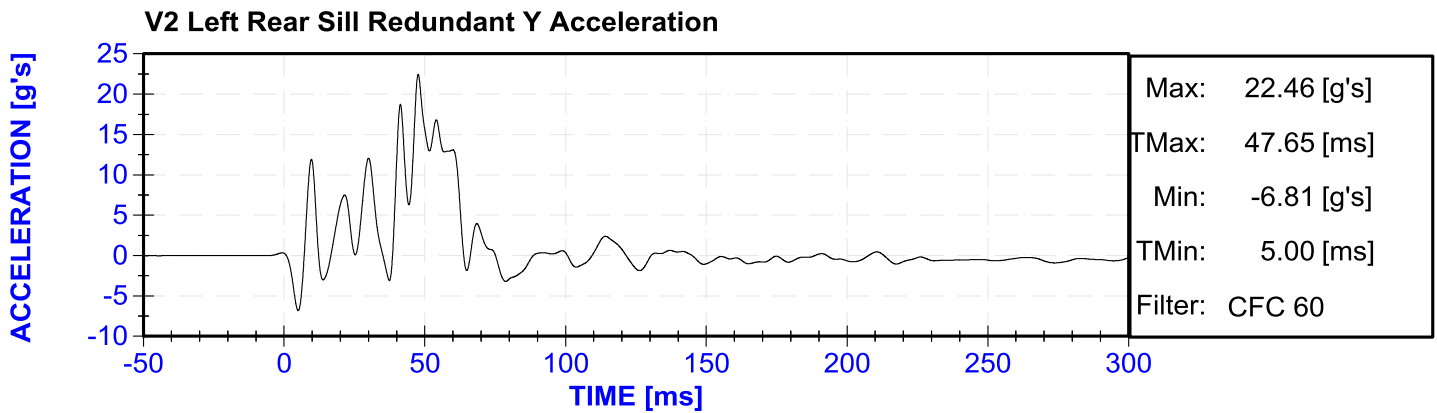
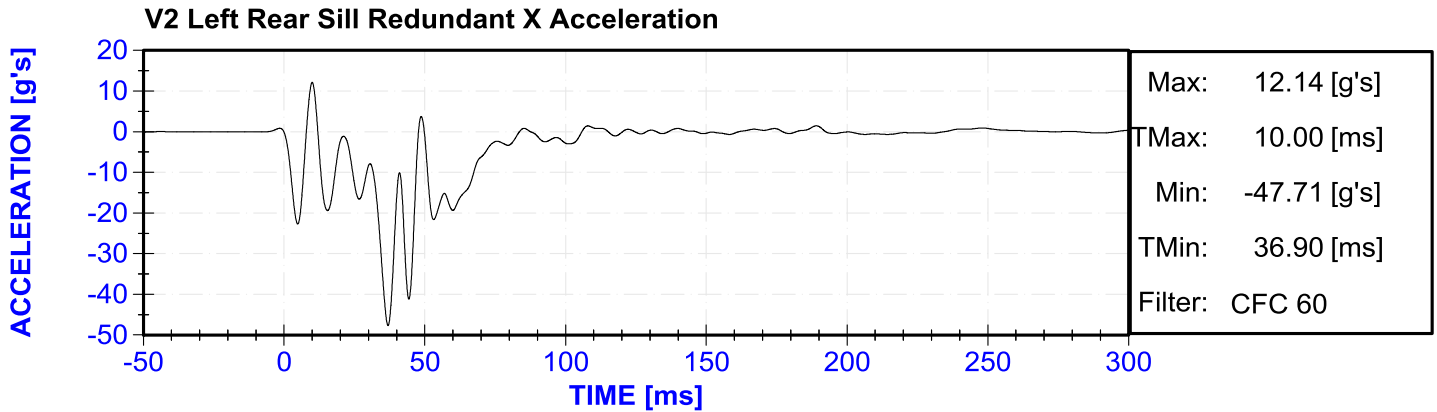


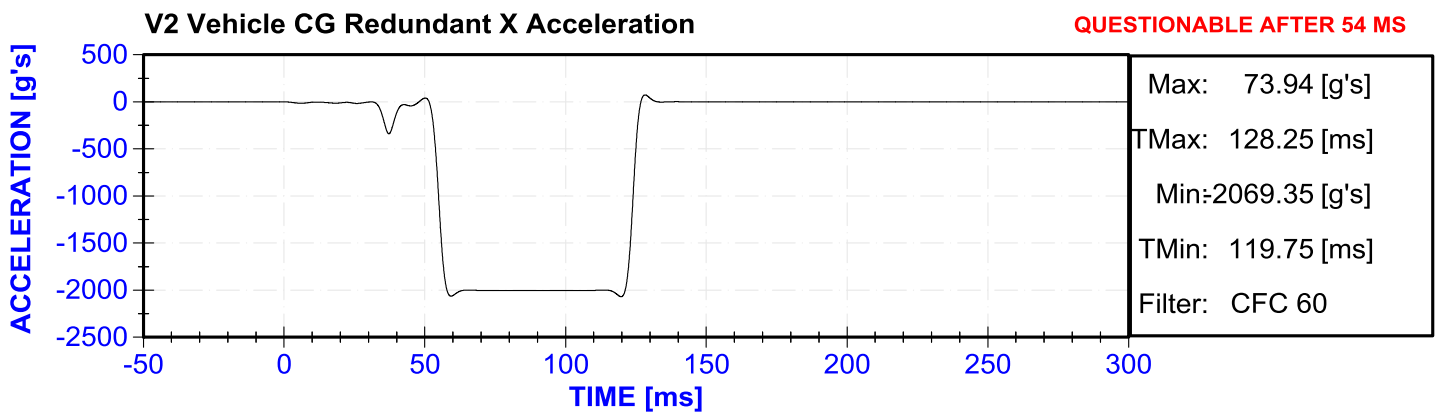
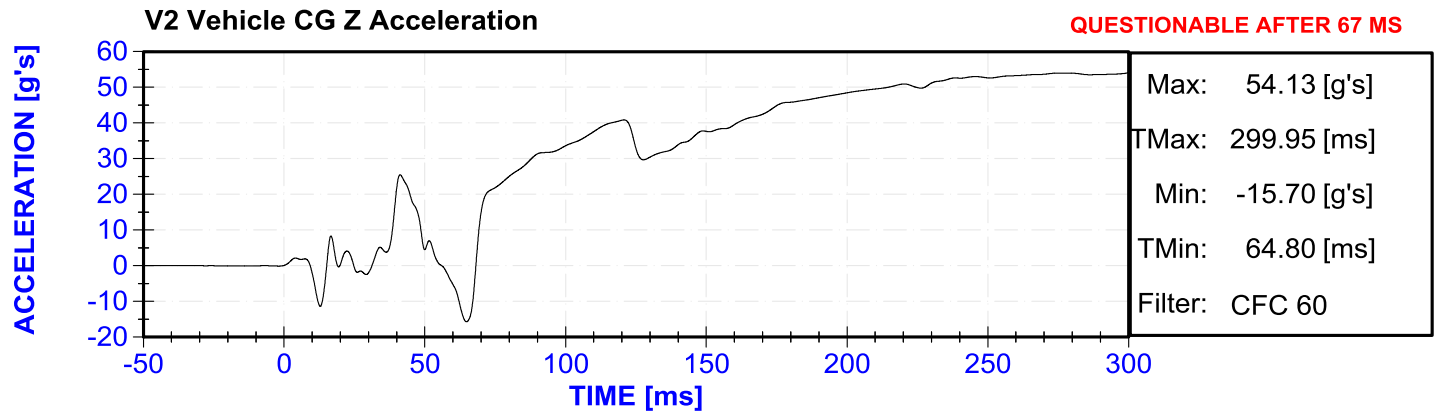
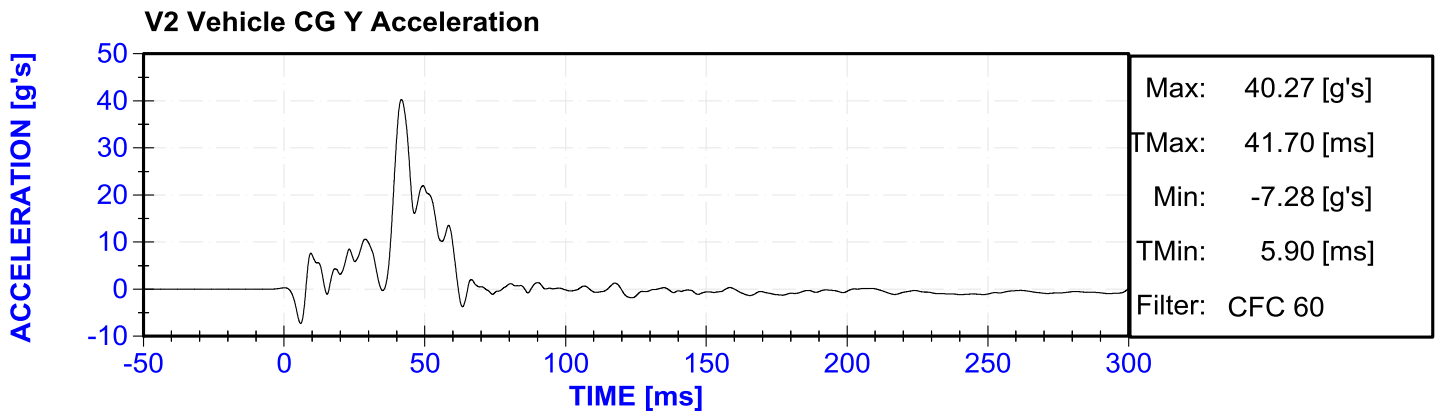
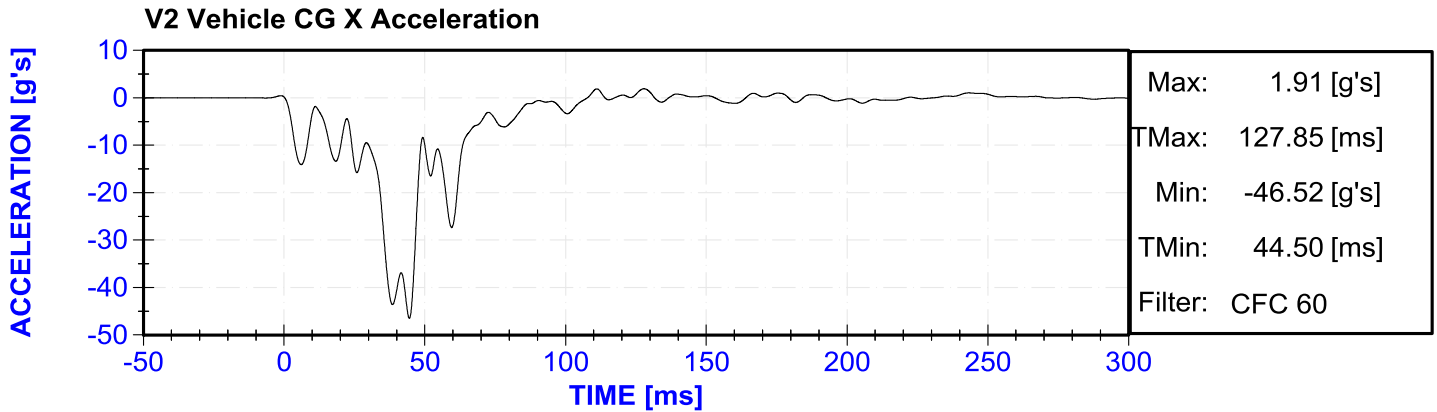
V2 Left Rear Sill X Acceleration

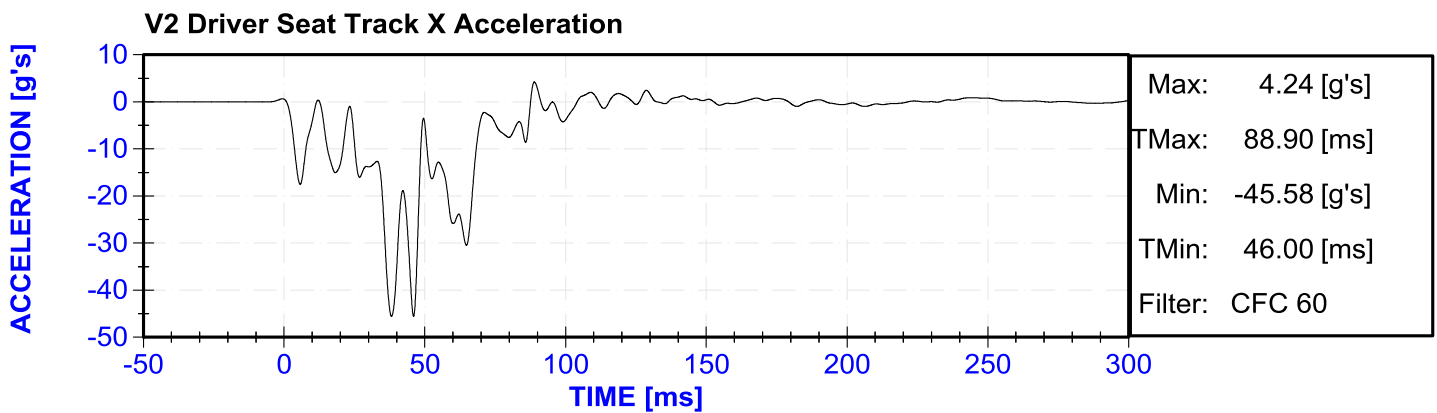
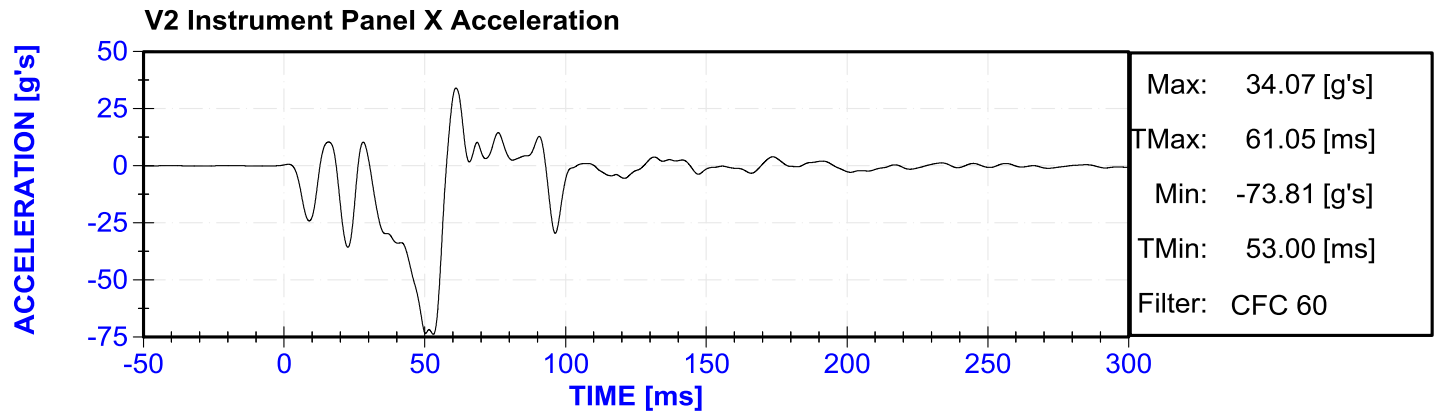
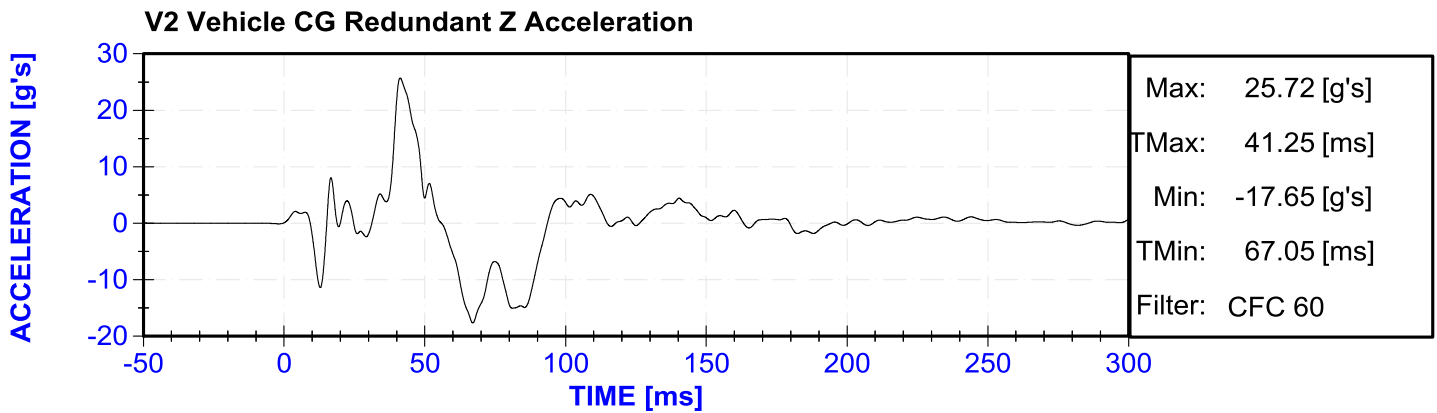
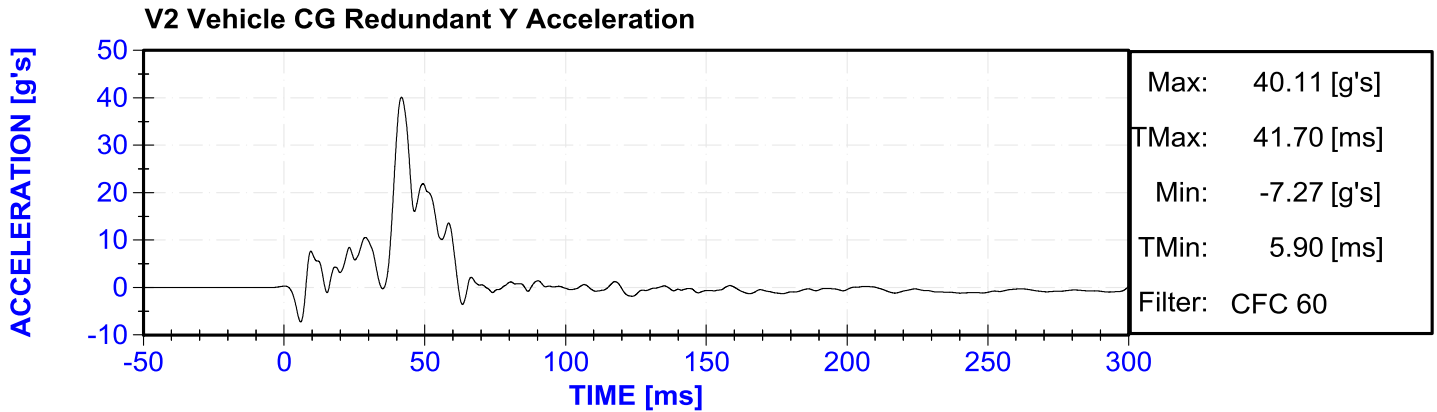


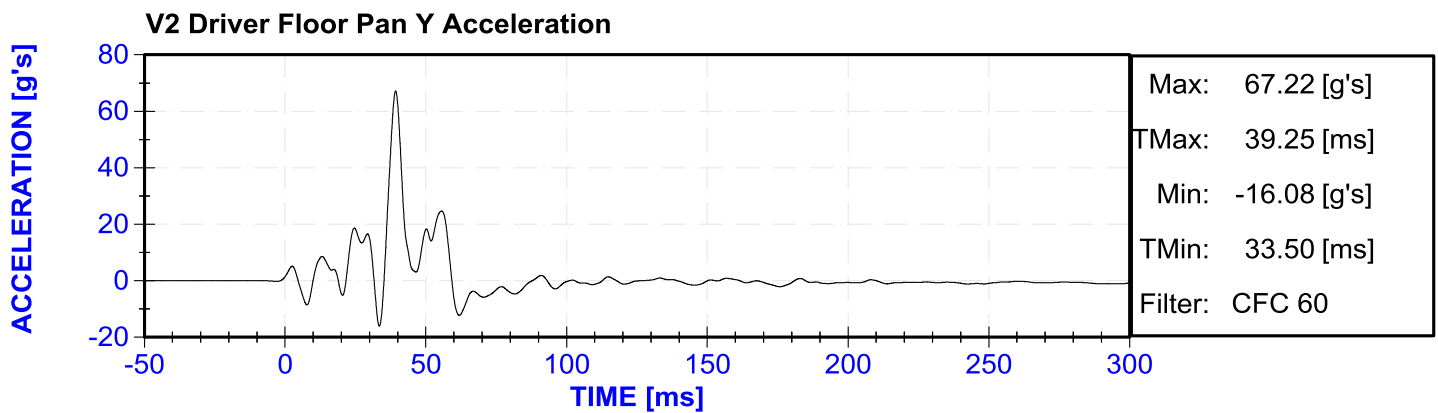
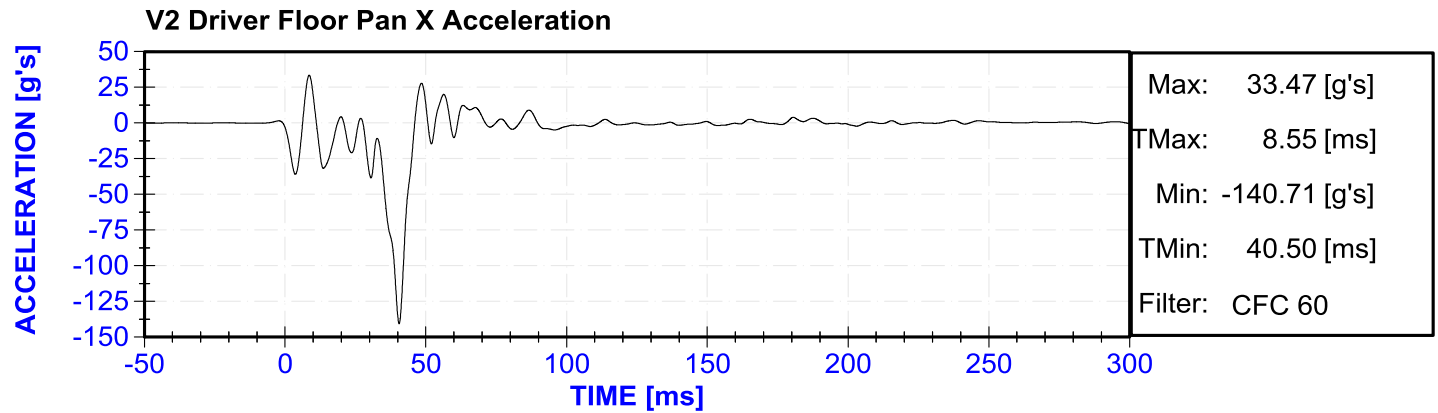
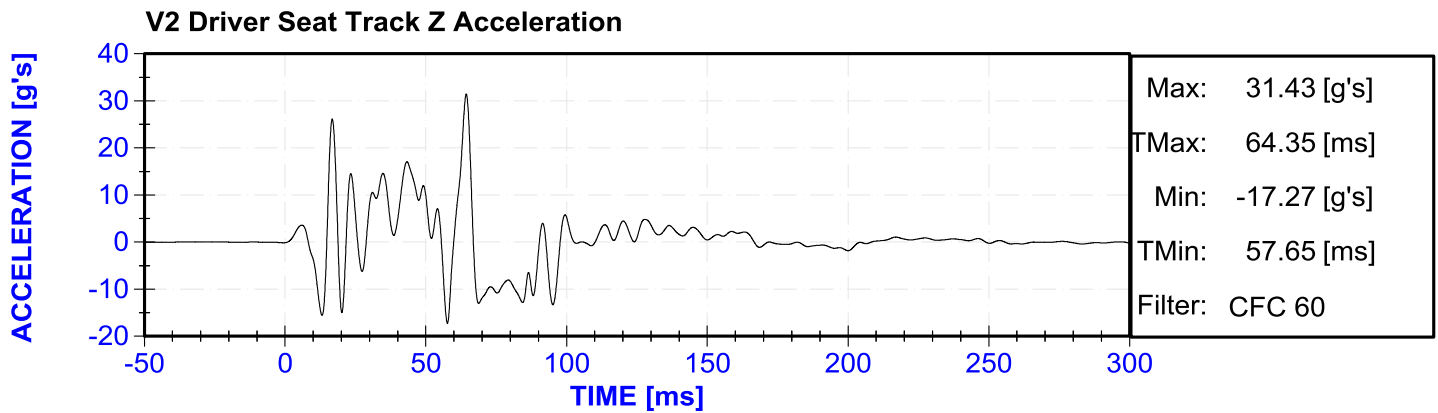
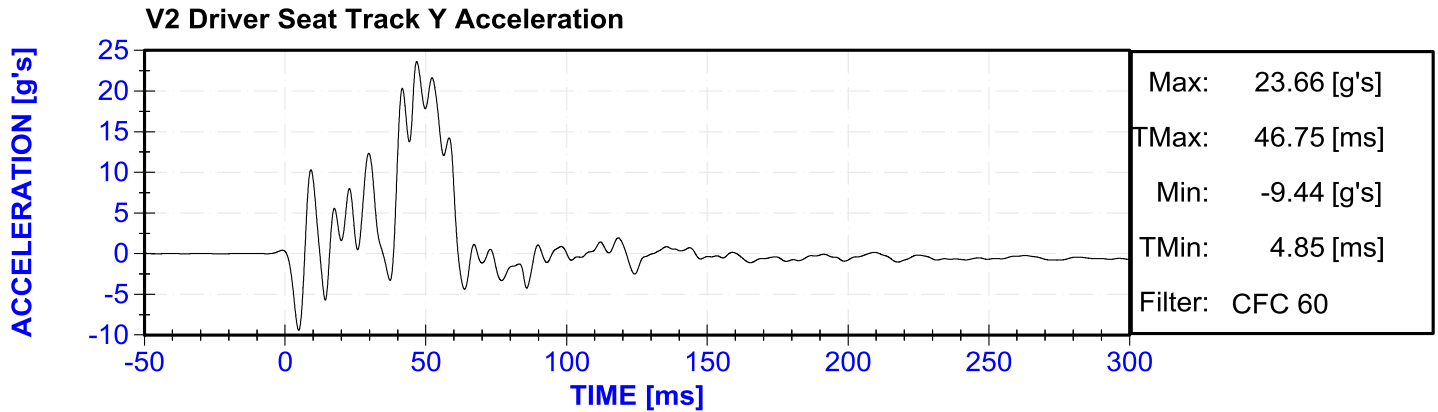
V2 Left Rear Sill Y Acceleration

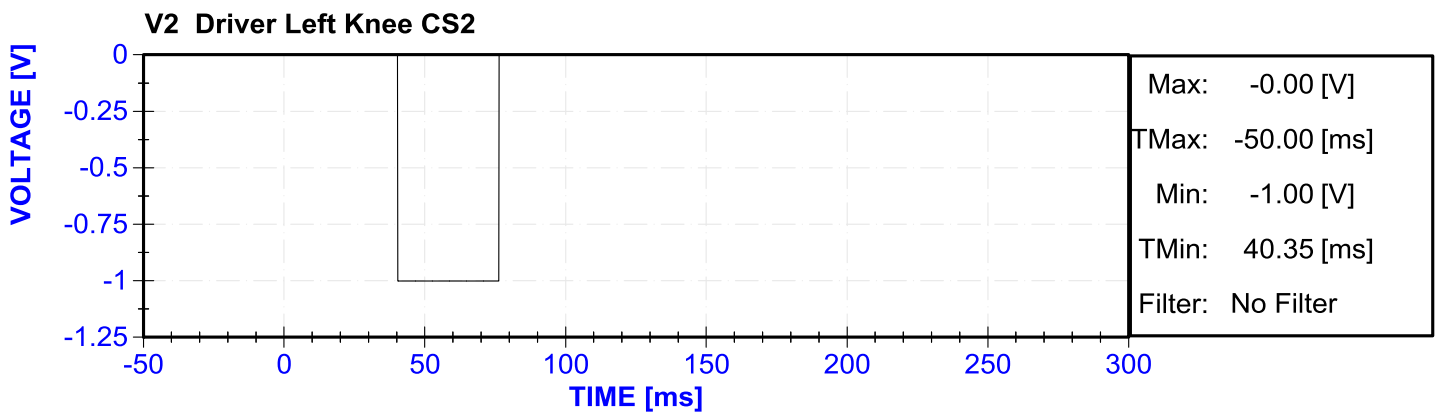
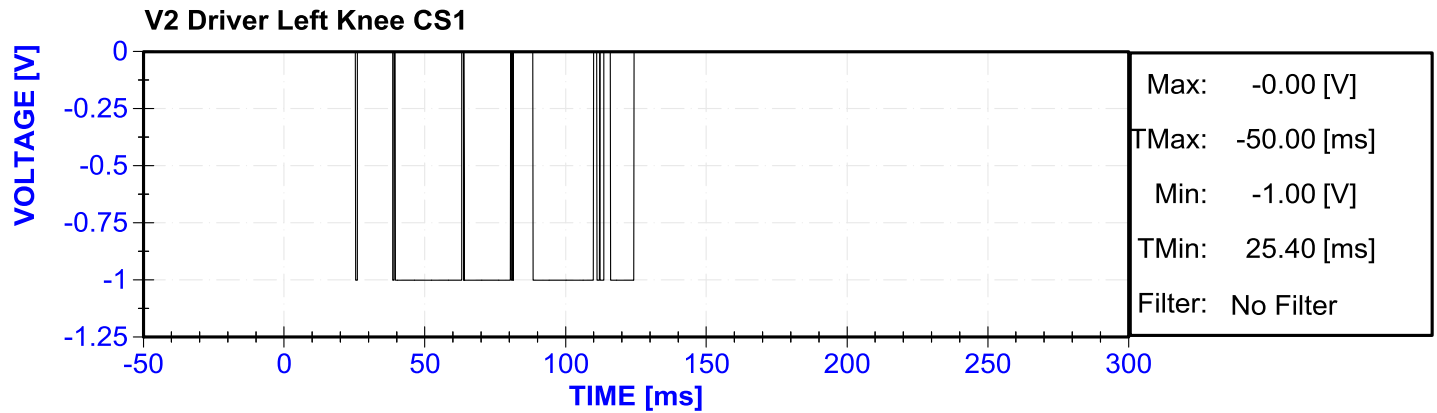
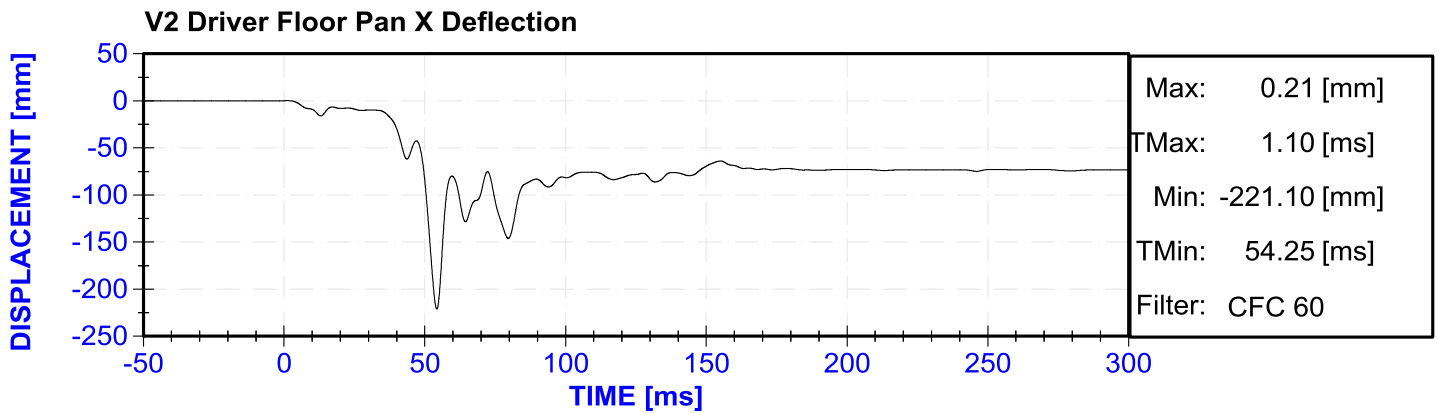
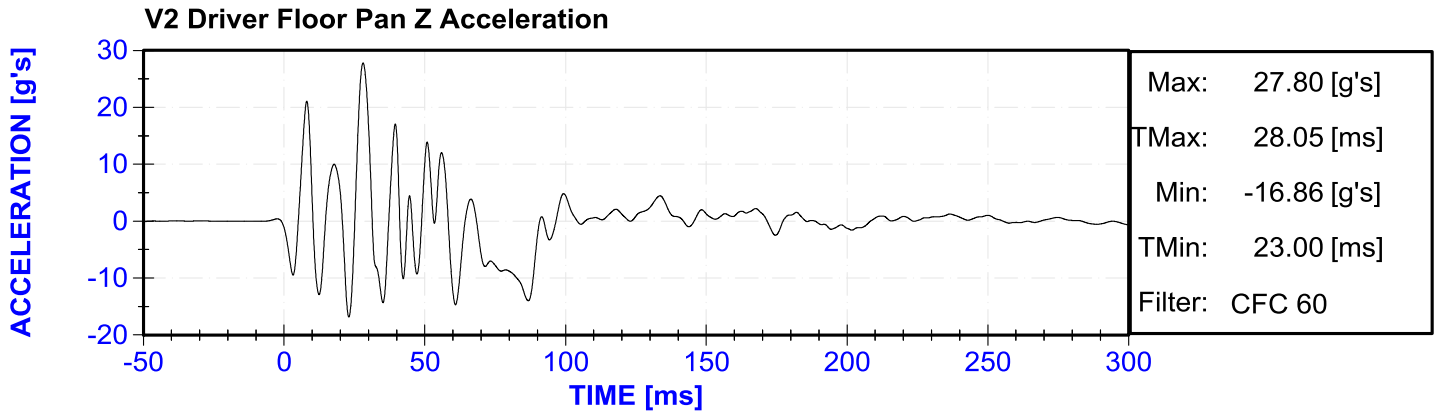


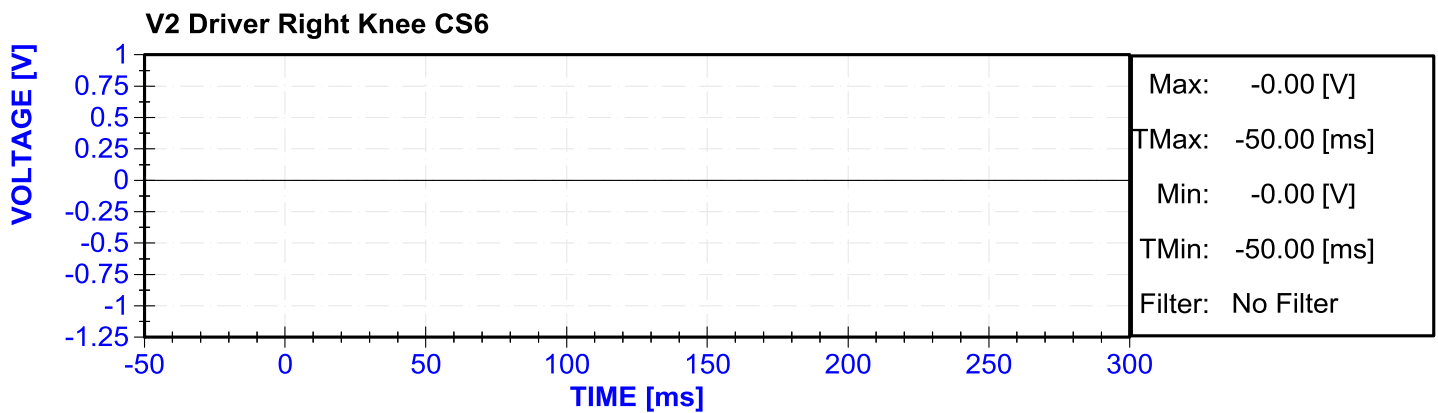
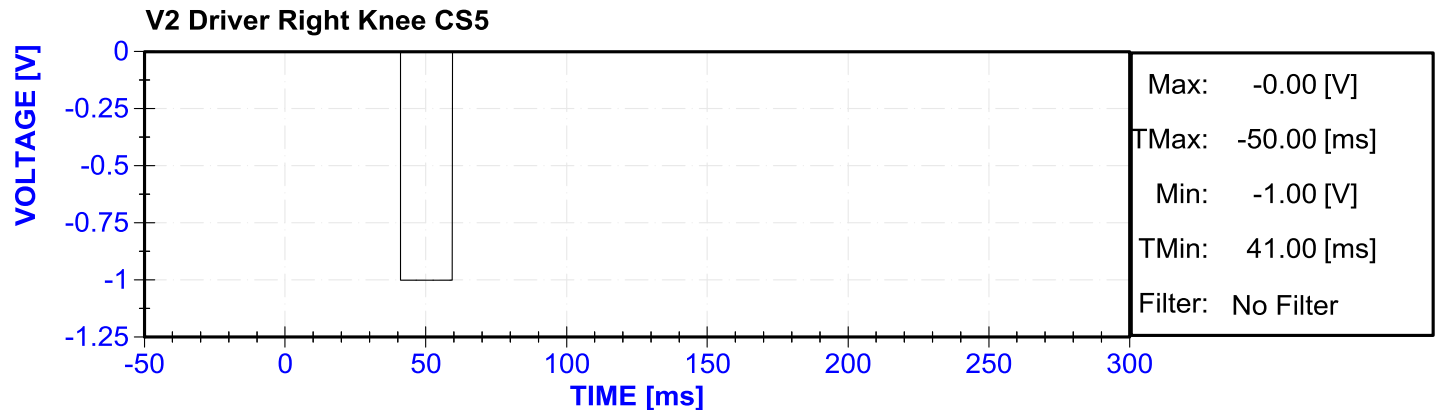
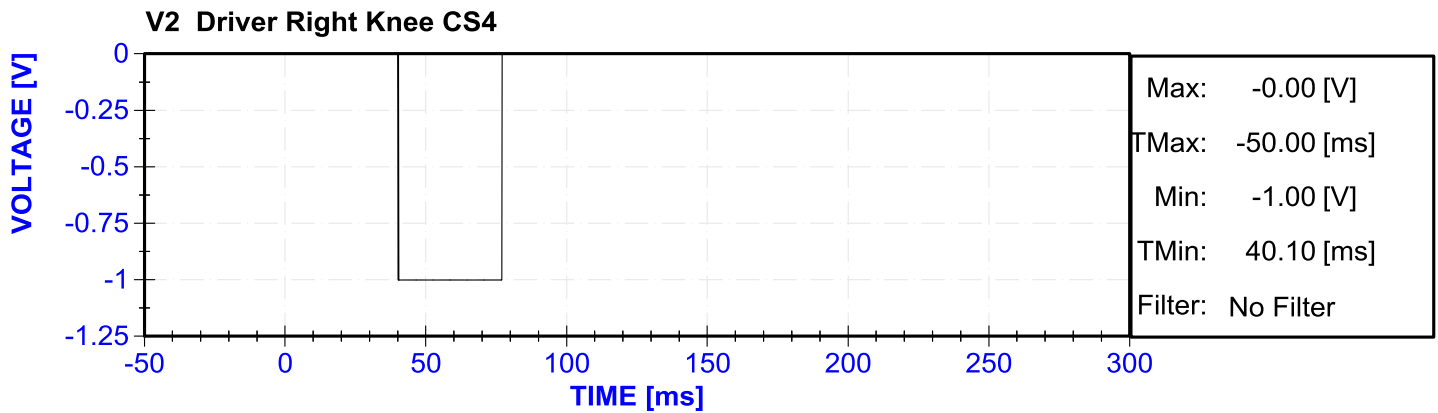
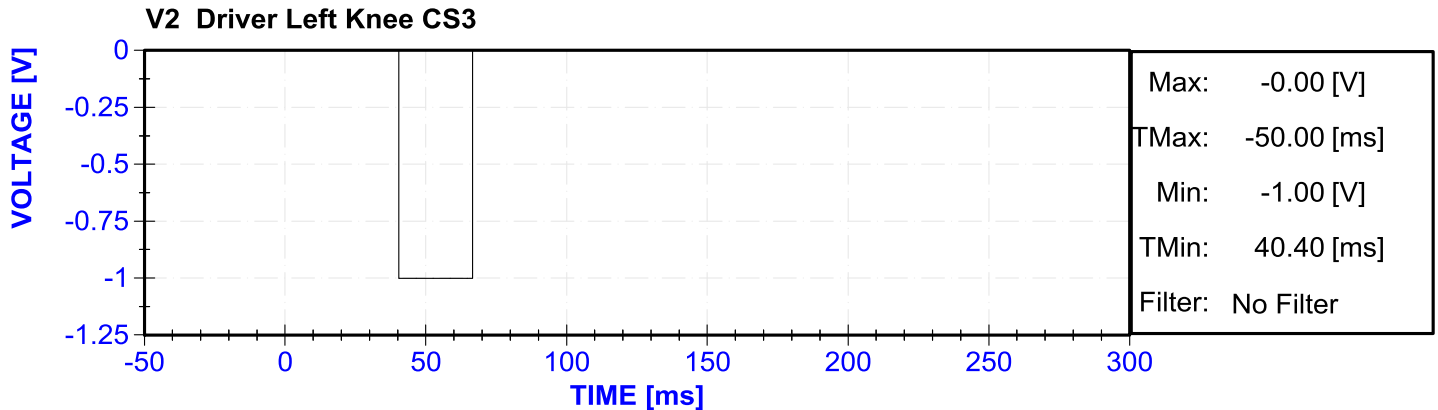


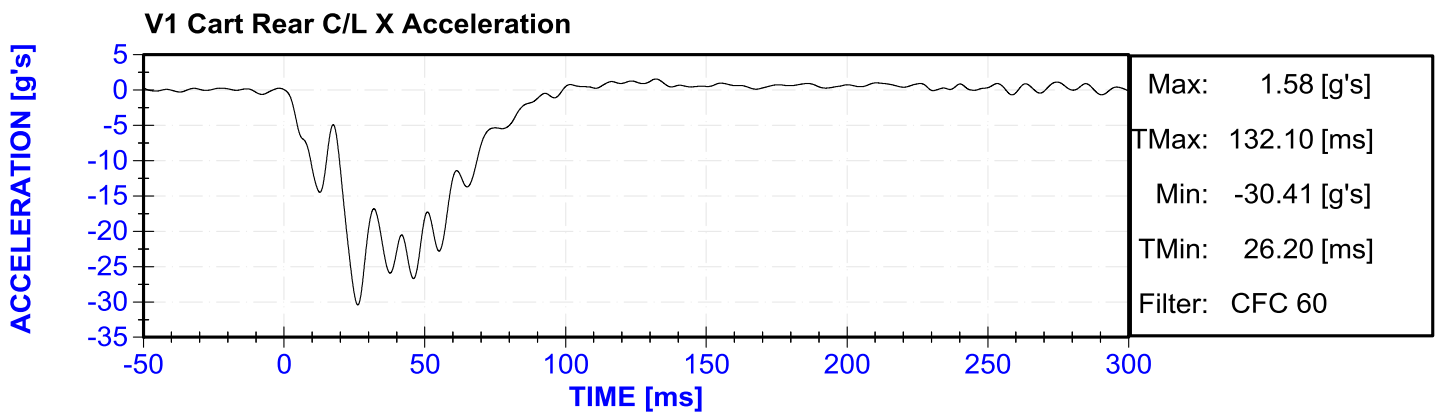
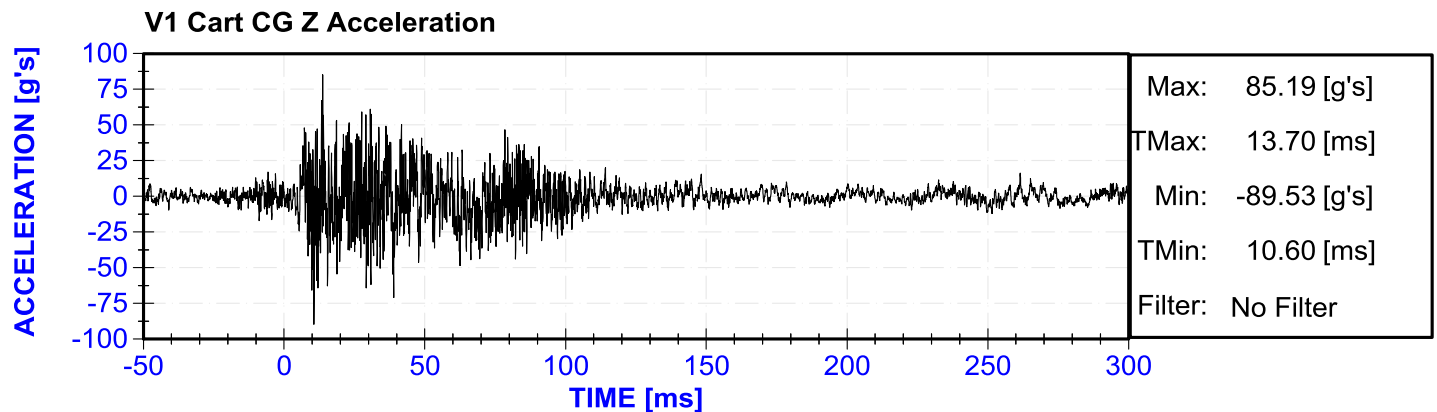
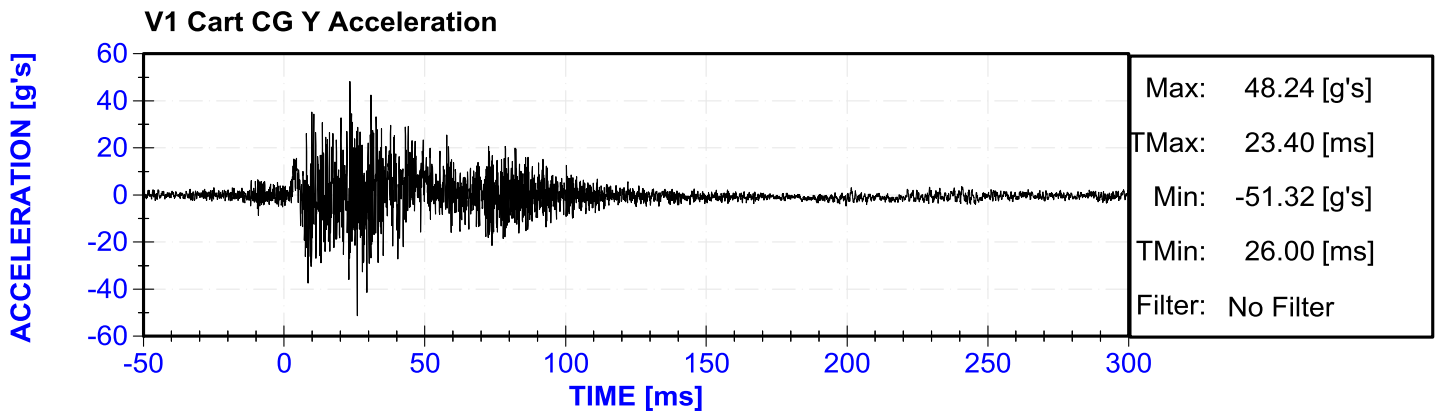
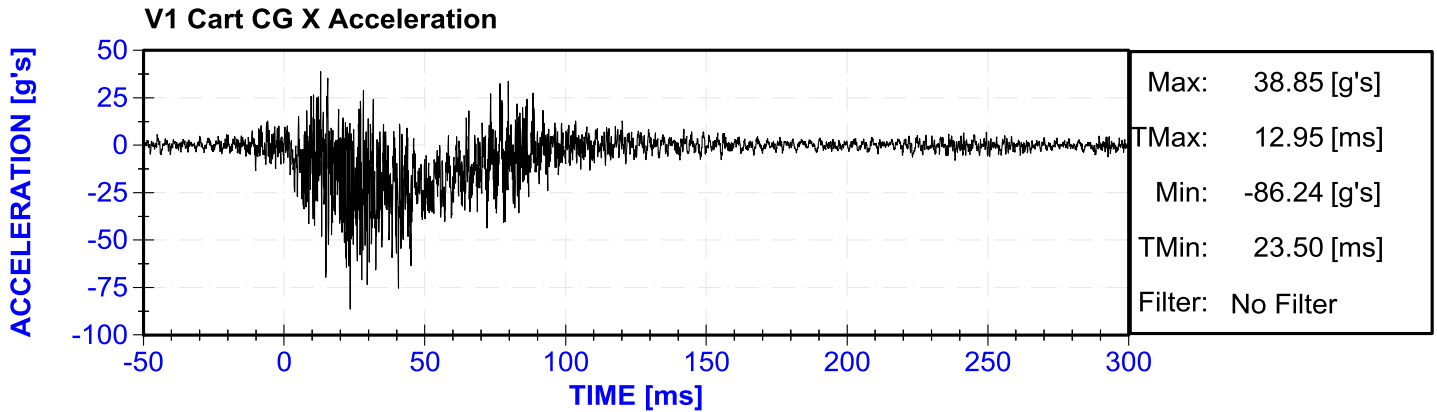


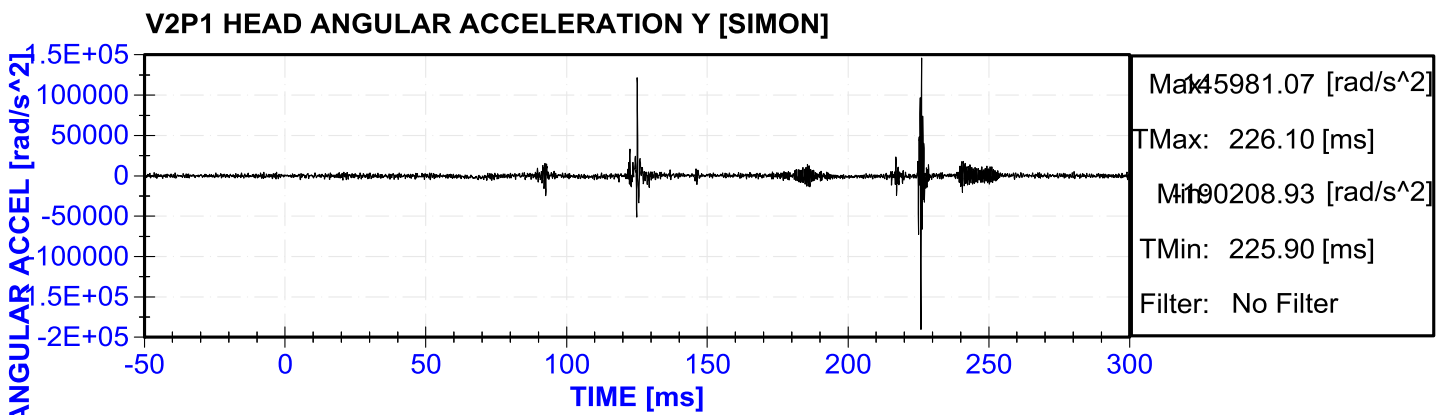
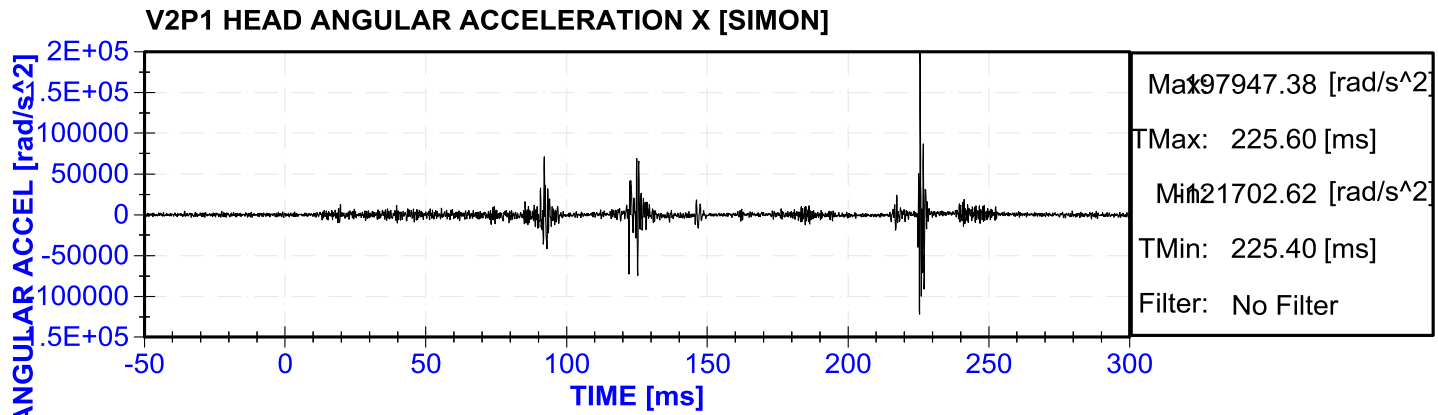
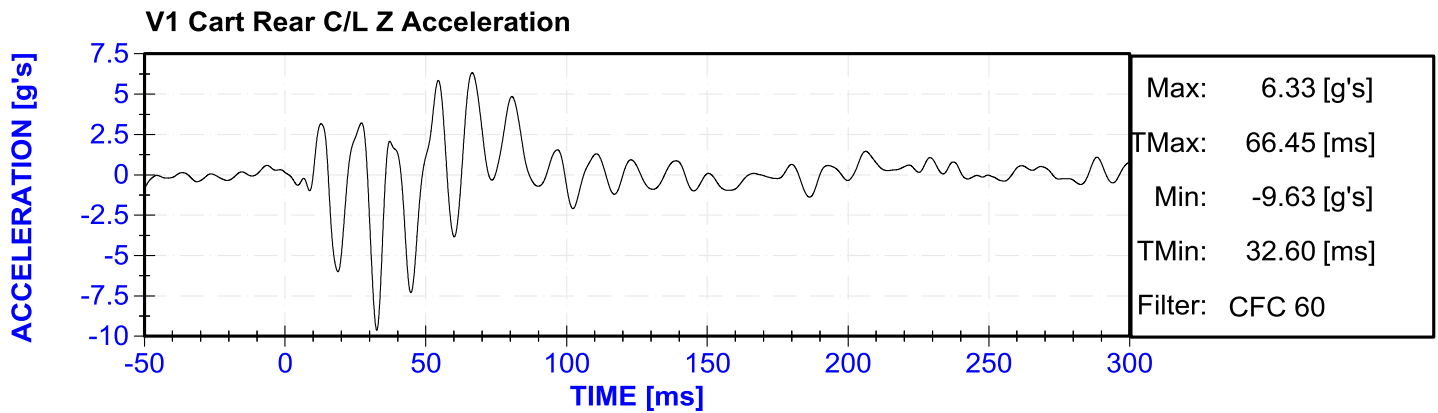
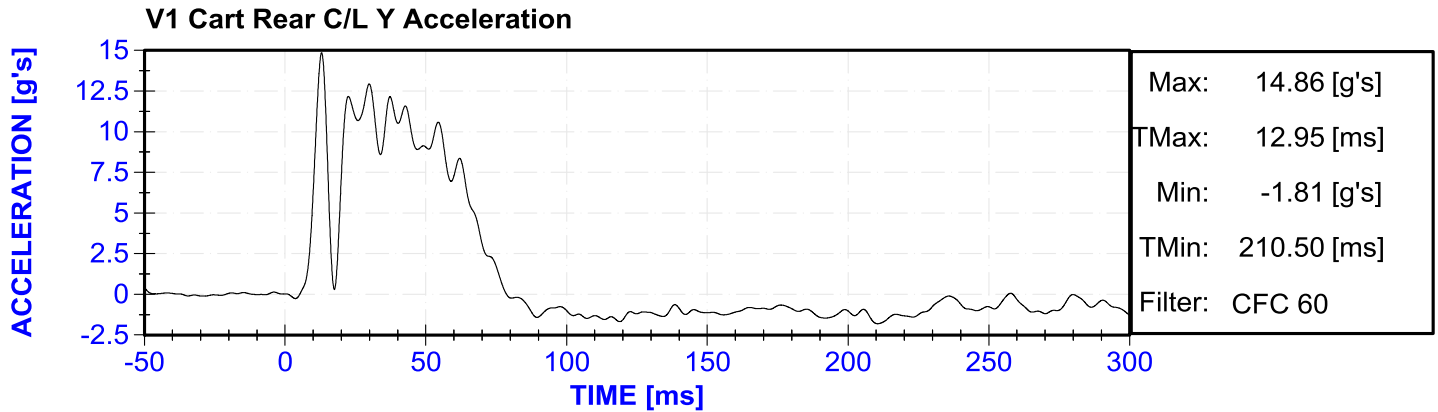




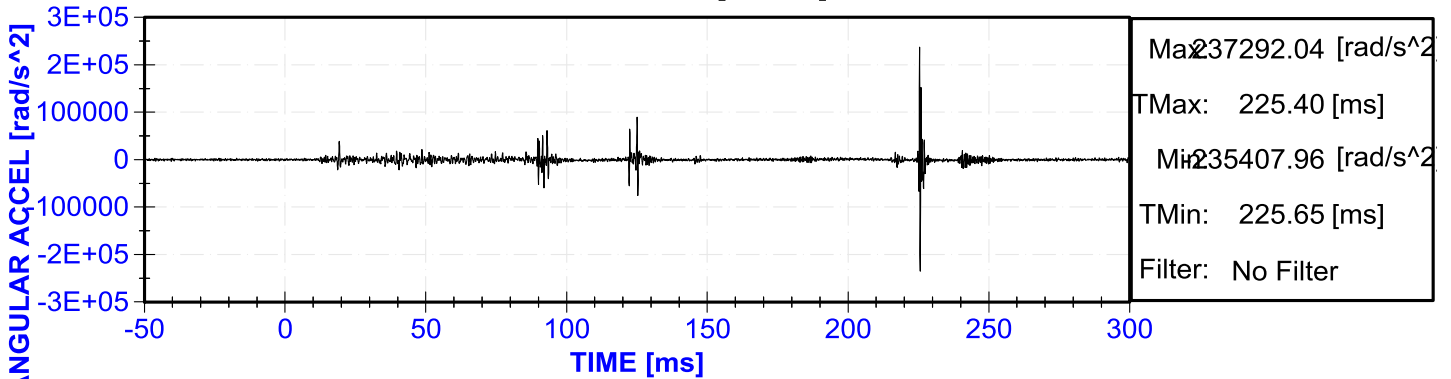




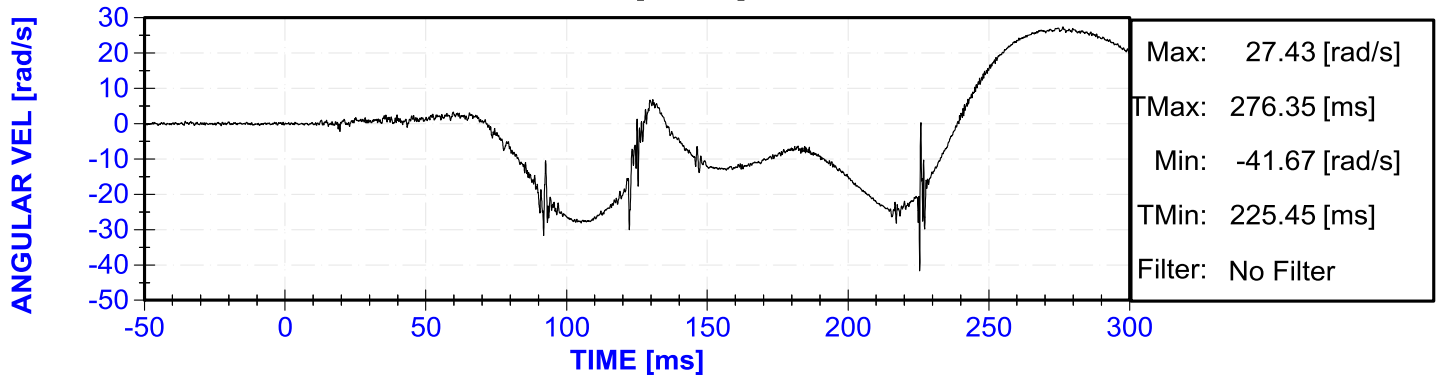




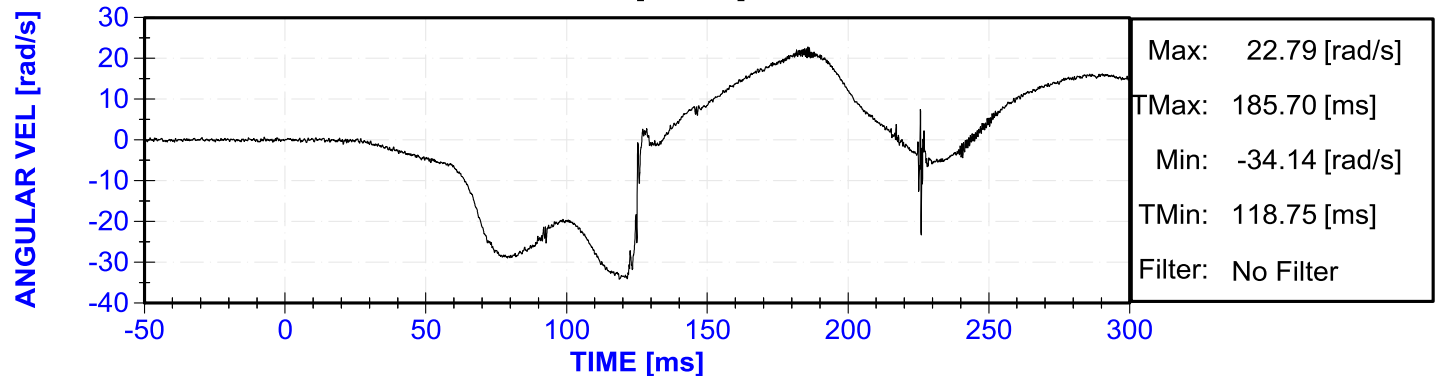
V2P1 HEAD ANGULAR ACCELERATION Z [SIMON]



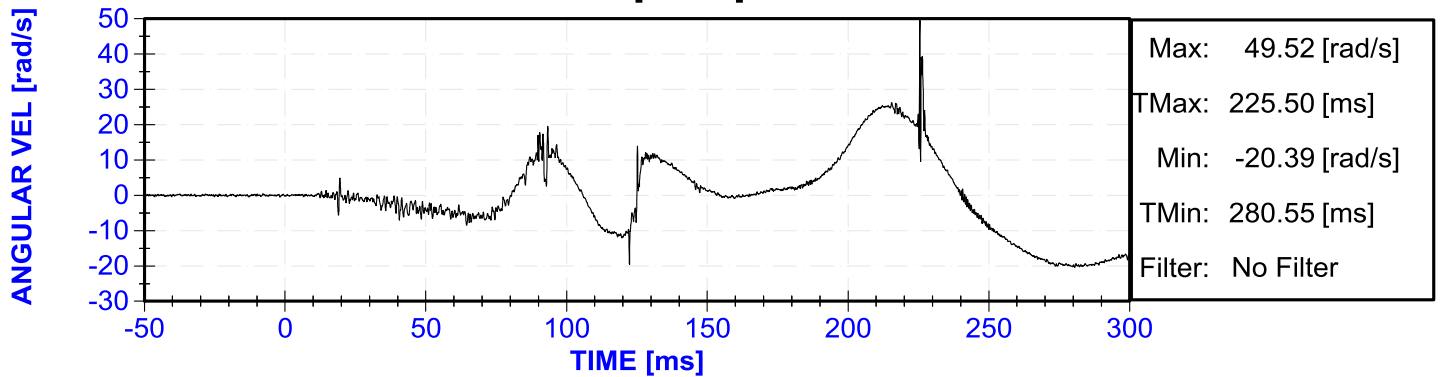
V2P1 HEAD ANGULAR VELOCITY X [SIMON]

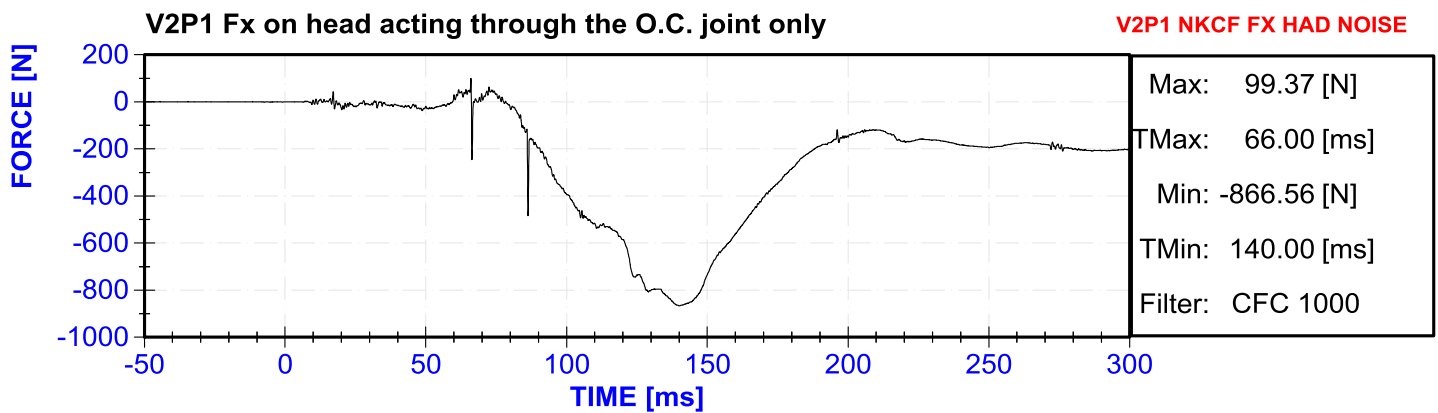
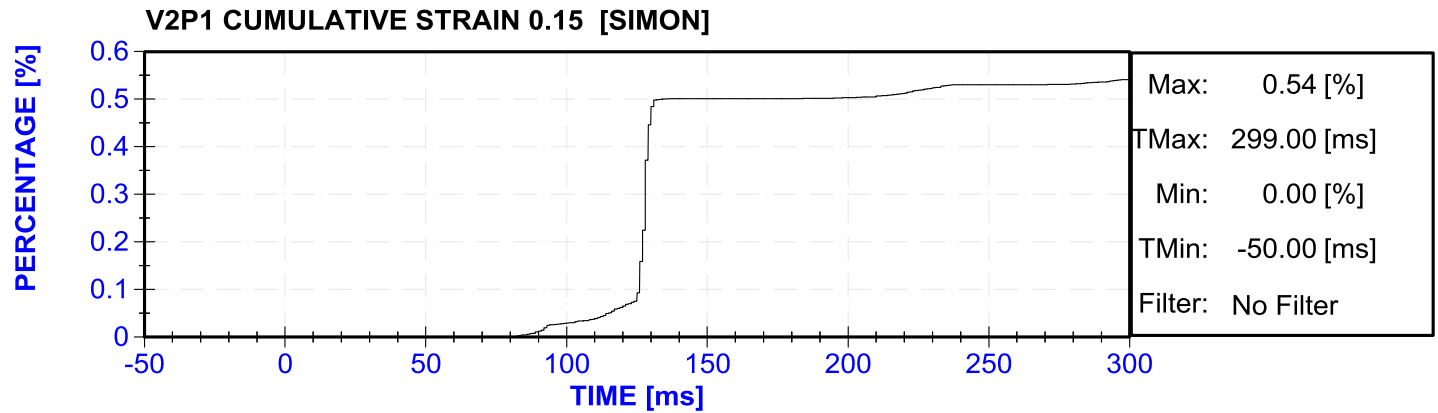
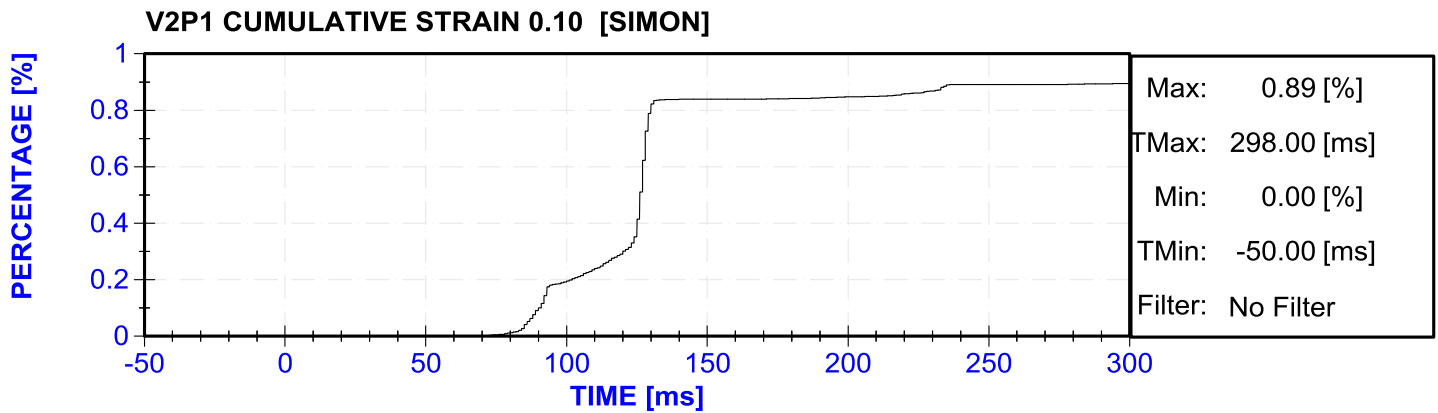
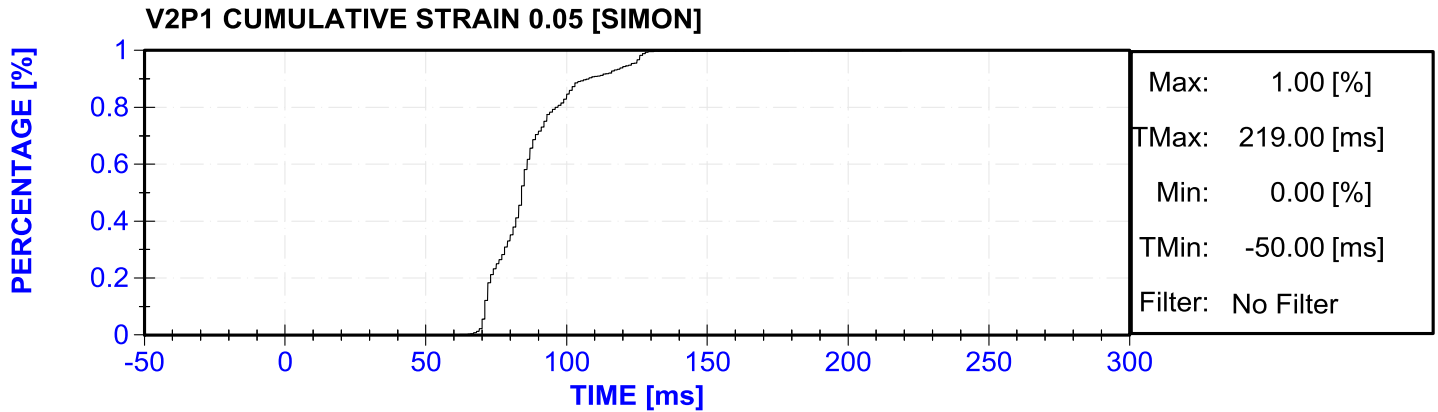


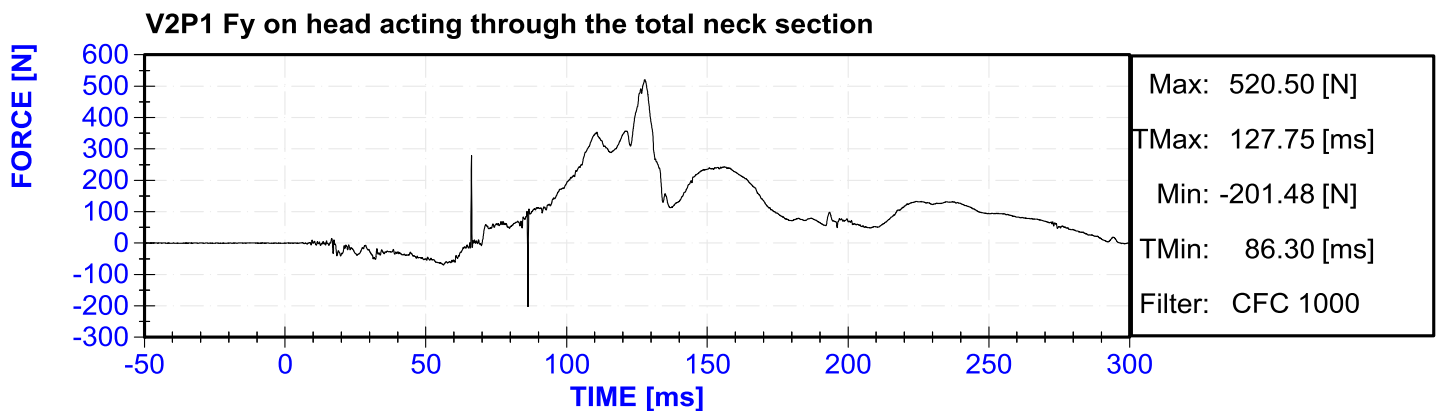
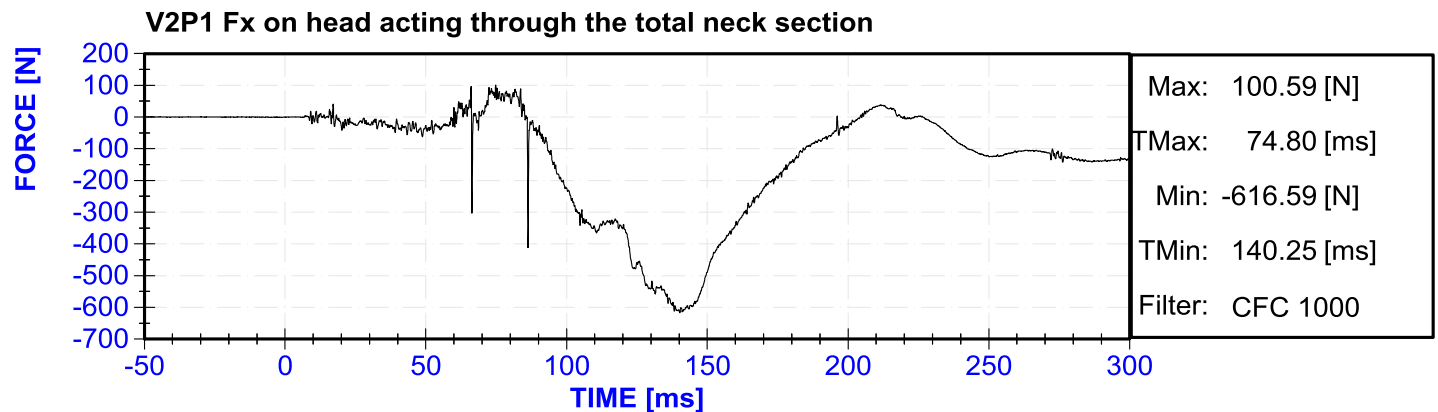
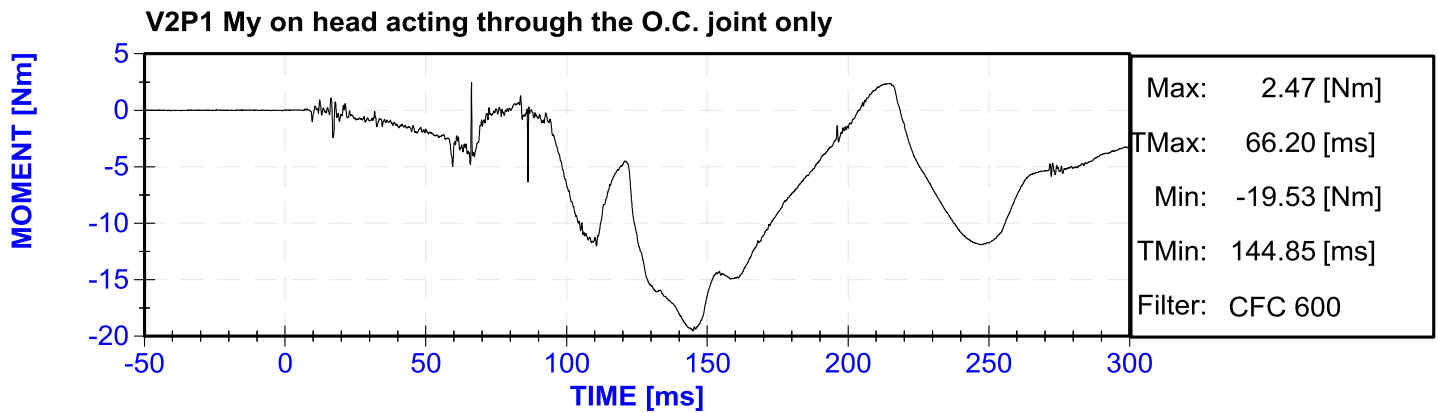
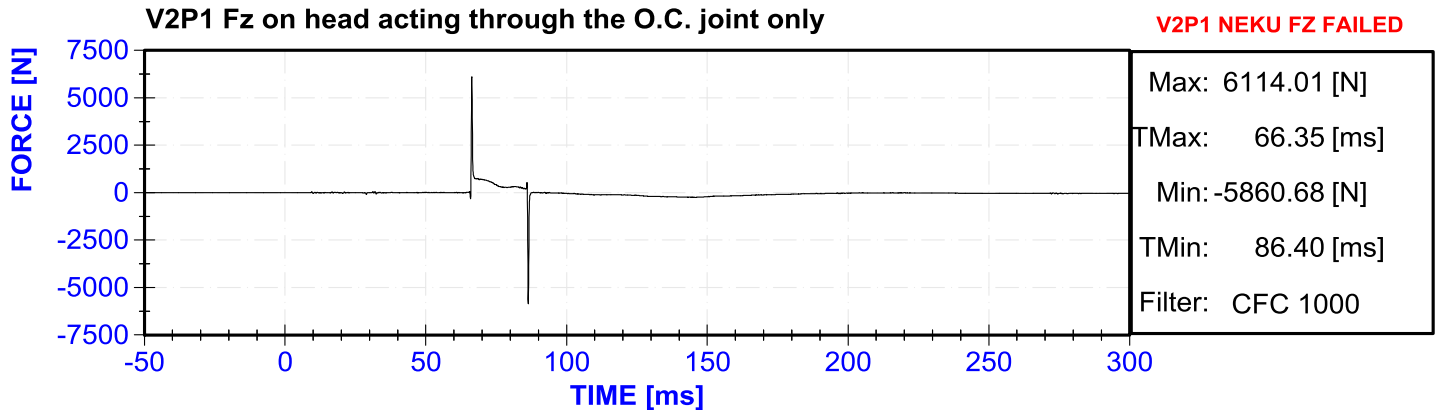
V2P1 HEAD ANGULAR VELOCITY Y [SIMON]

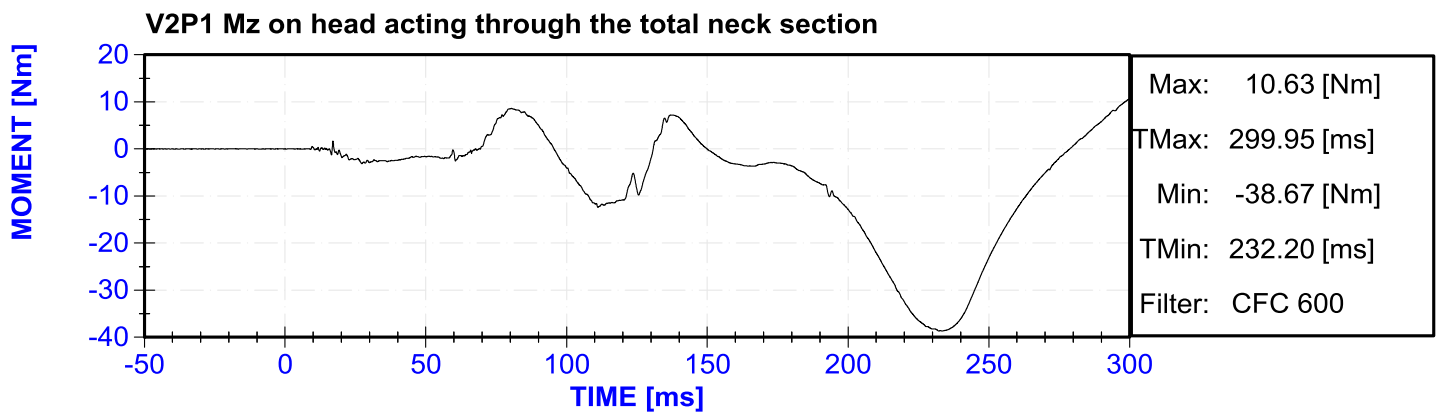
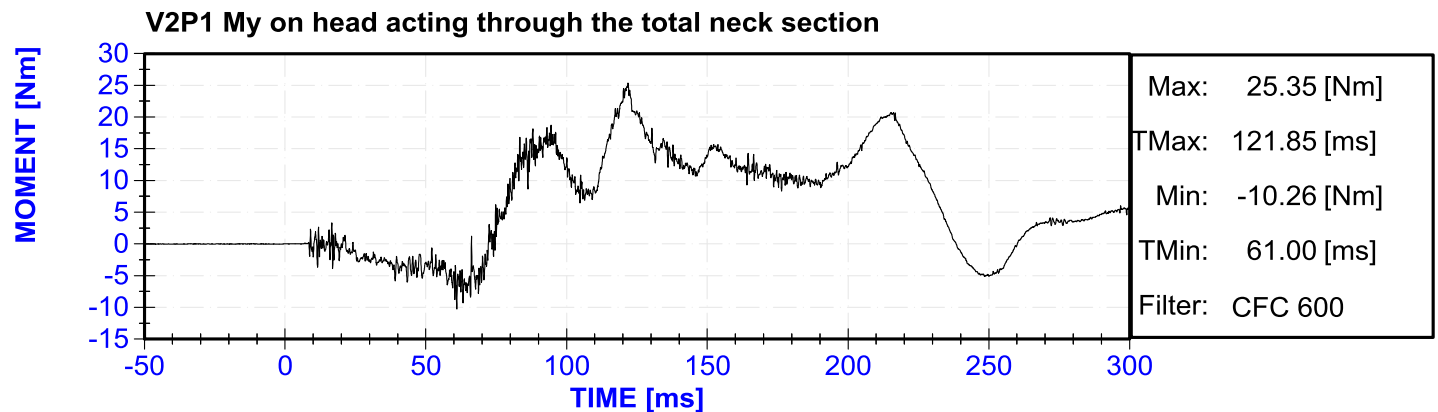
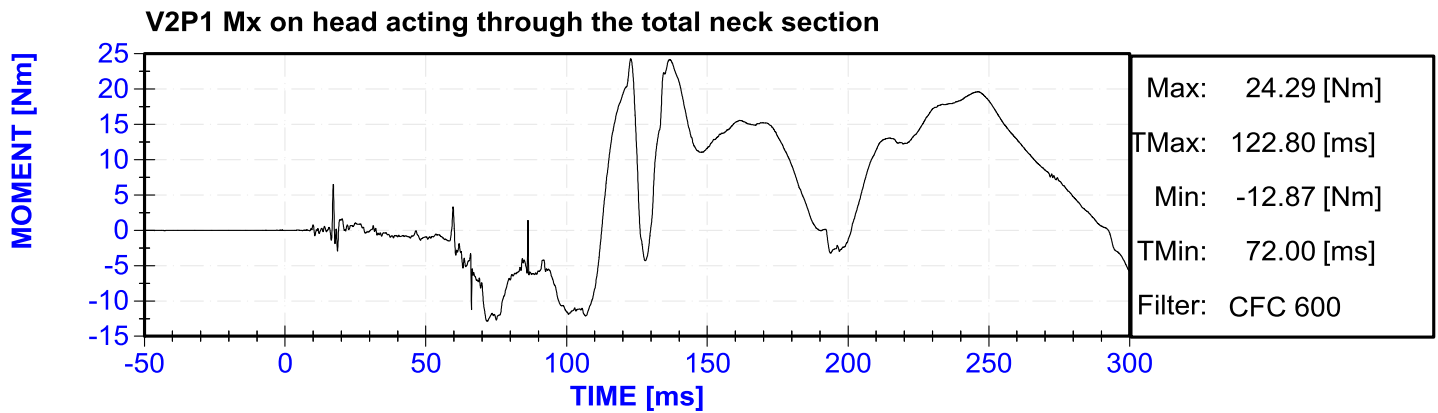
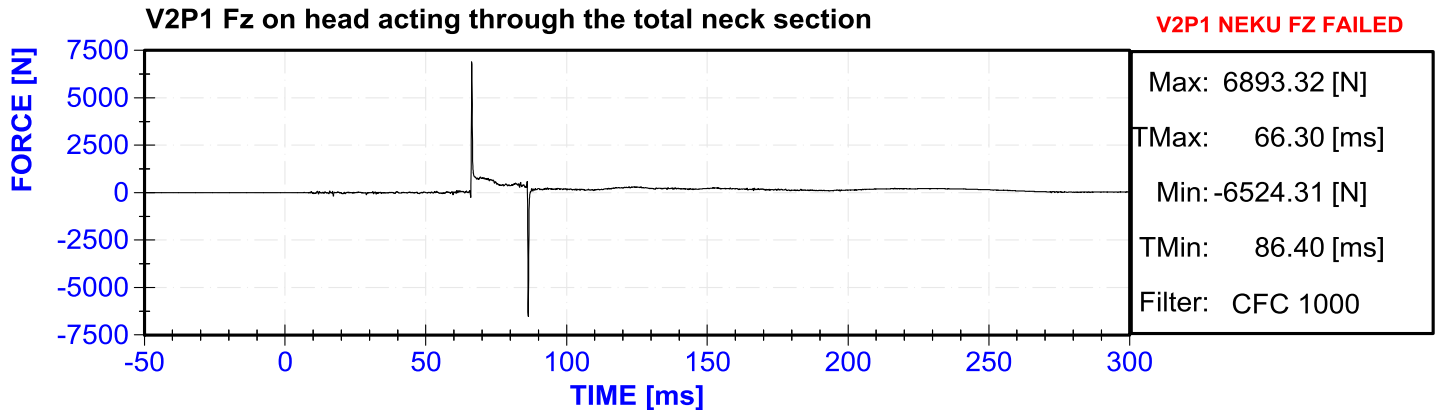


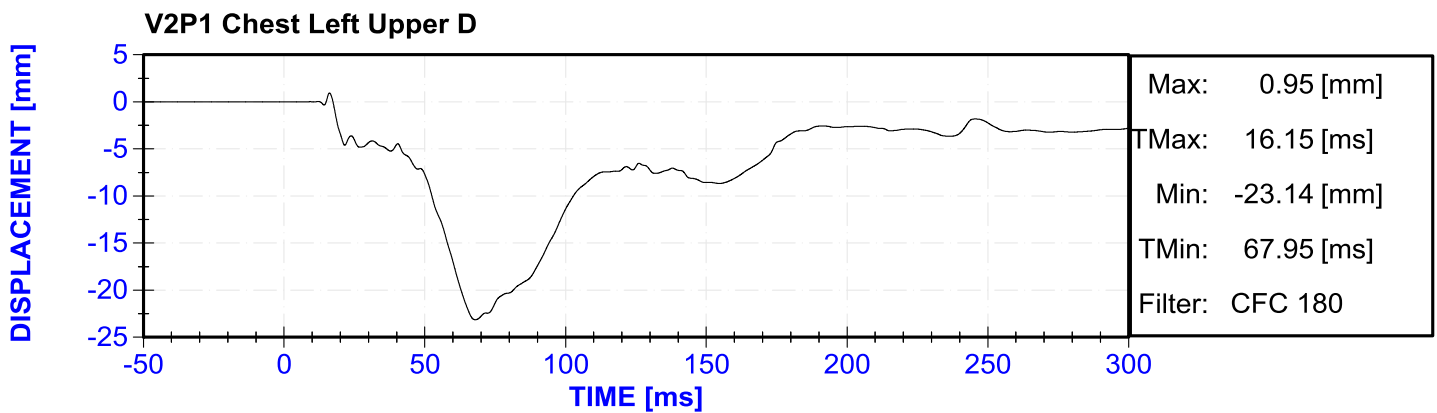
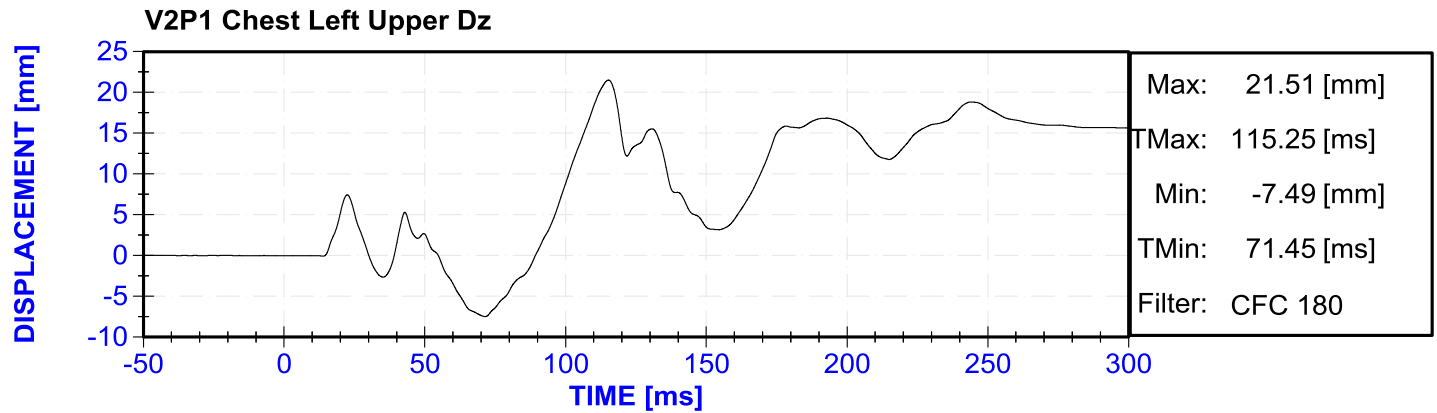
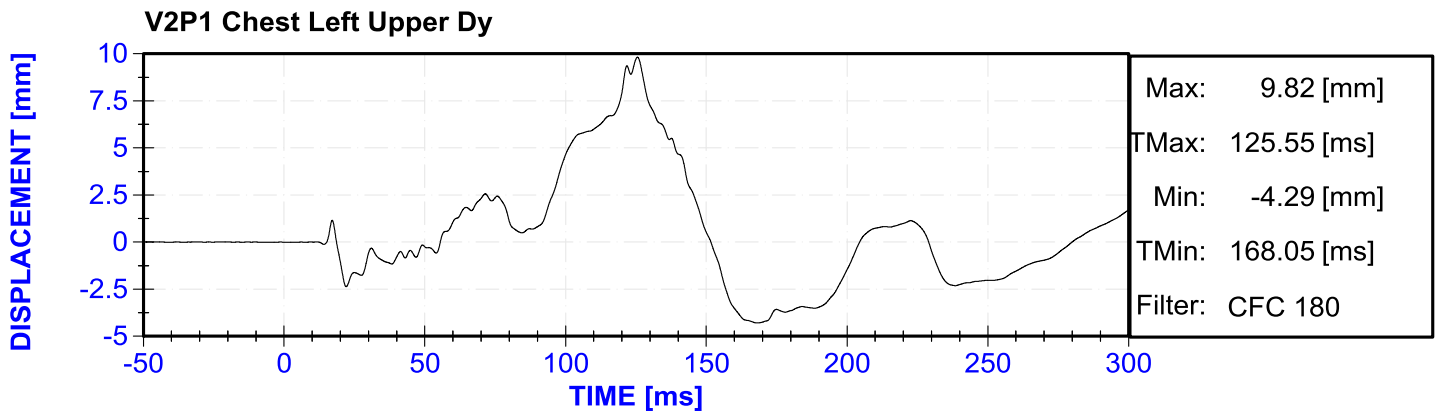
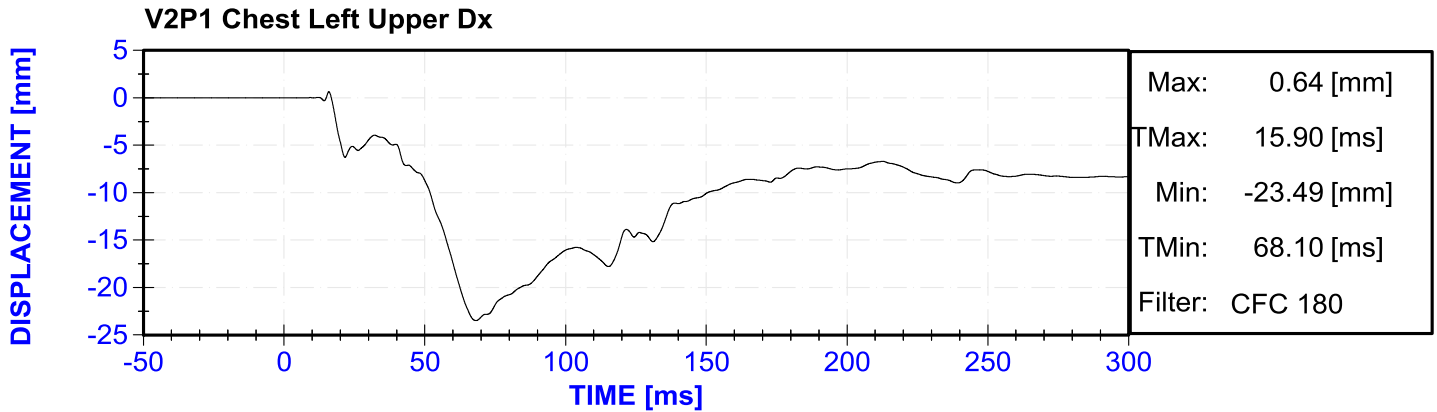
V2P1 HEAD ANGULAR VELOCITY Z [SIMON]

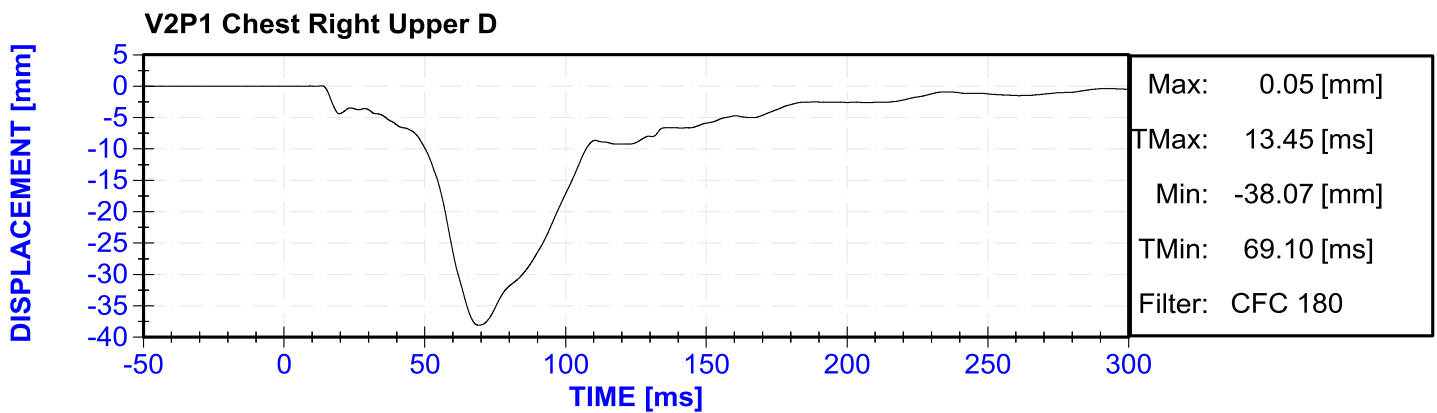
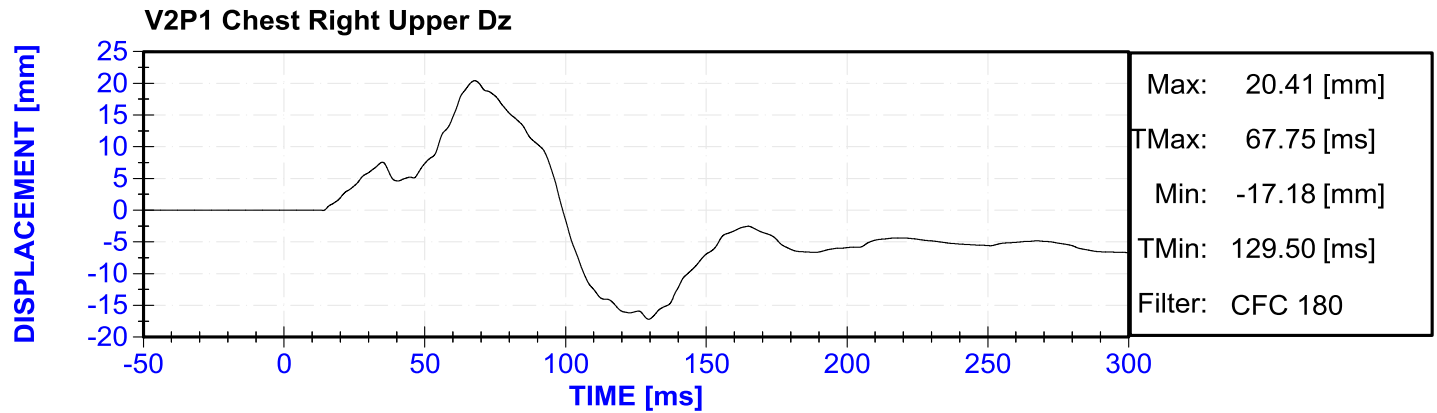
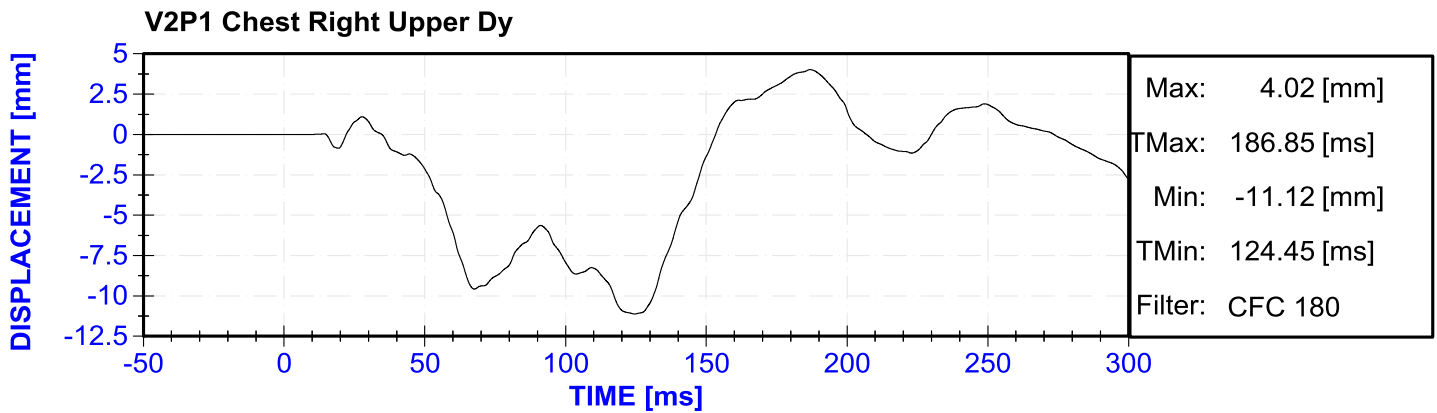
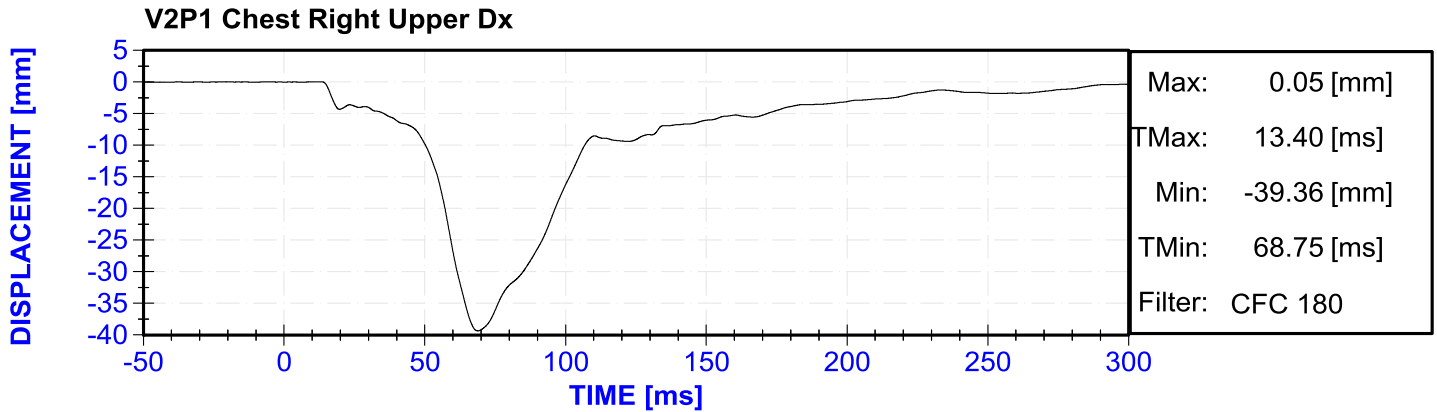


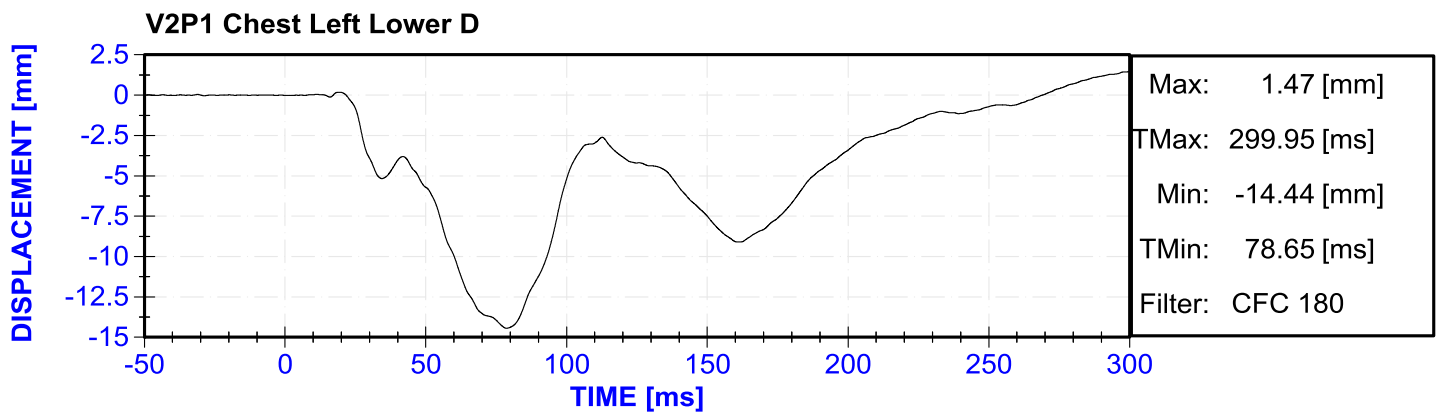
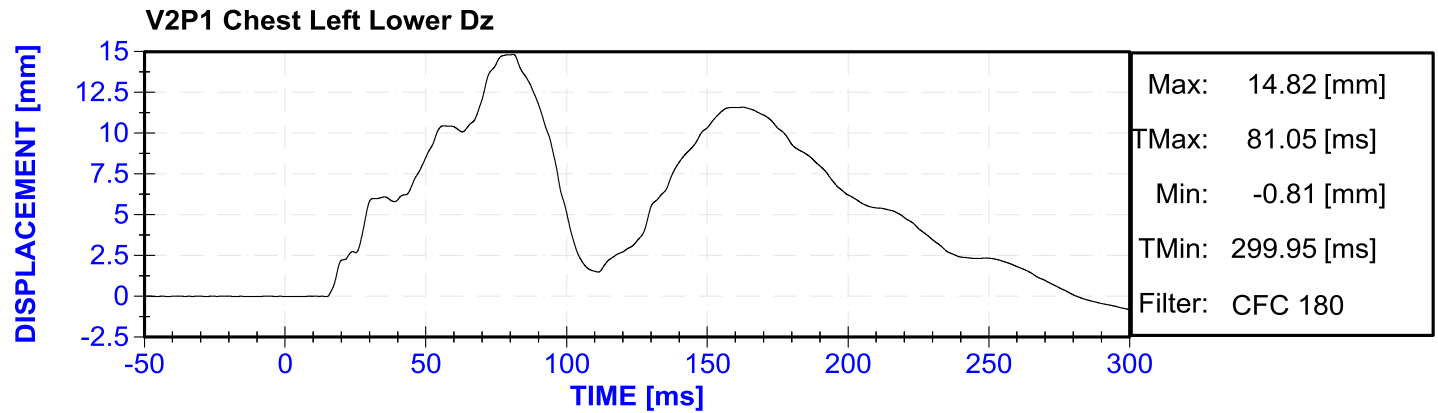
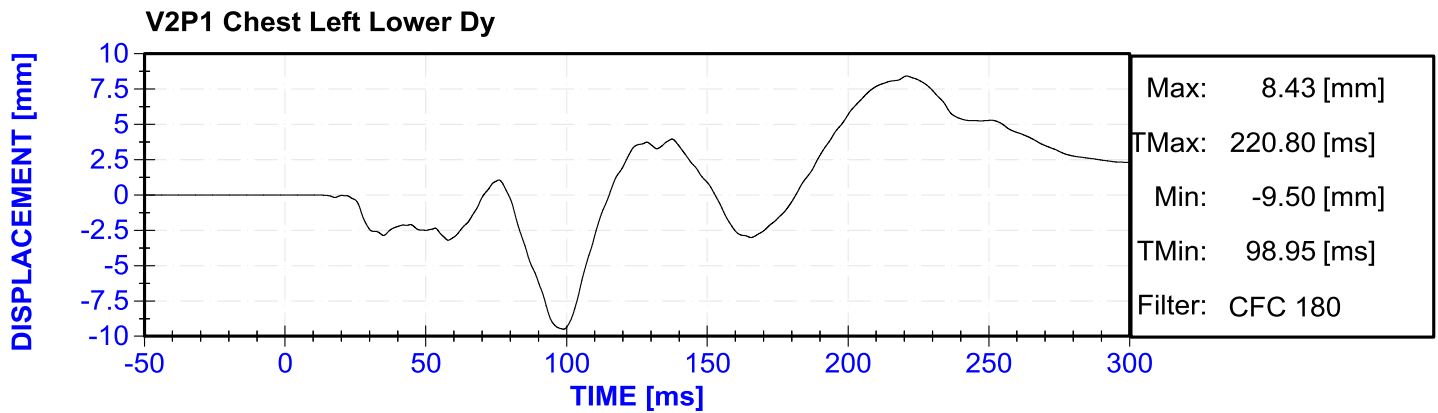
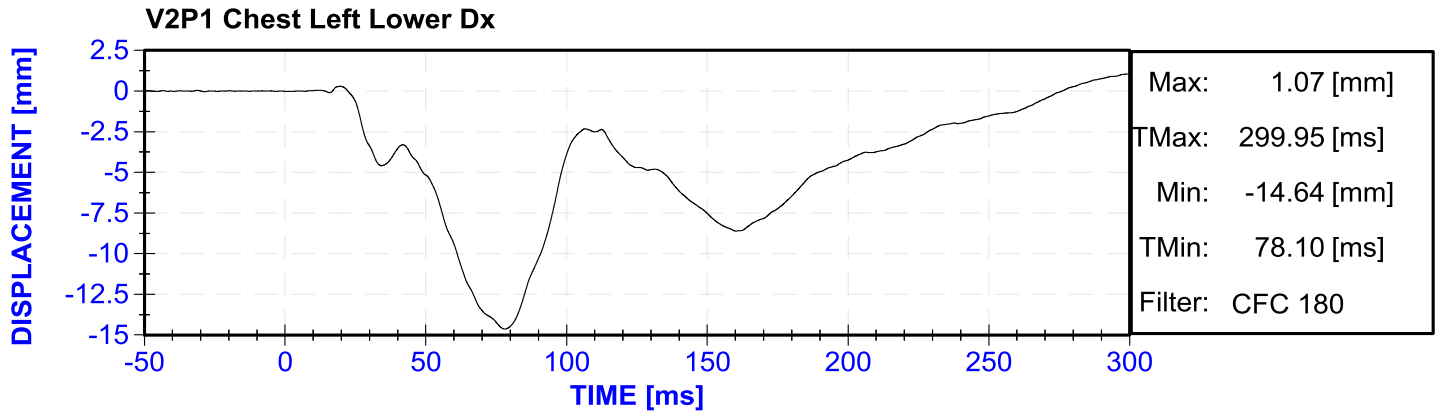


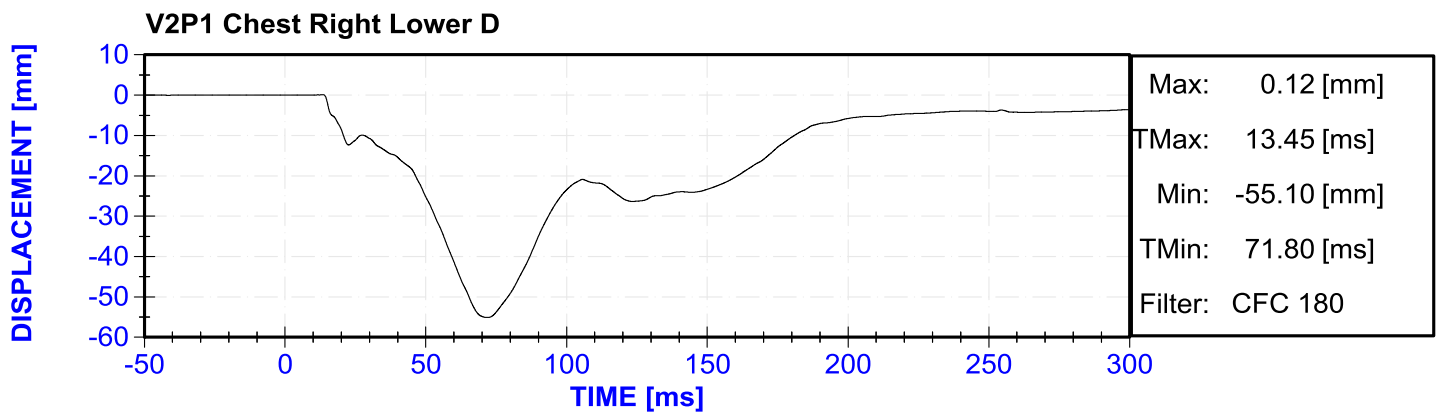
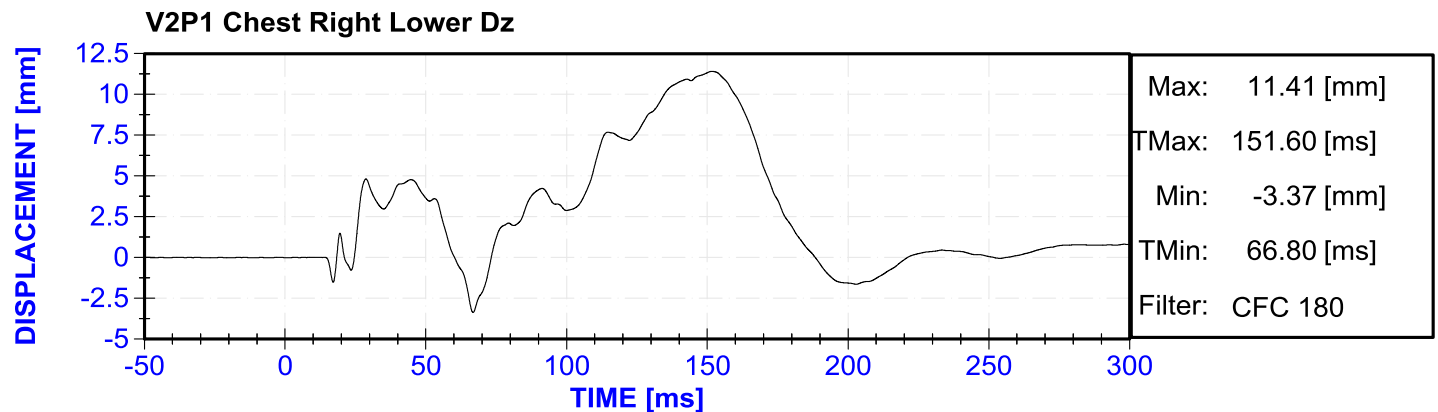
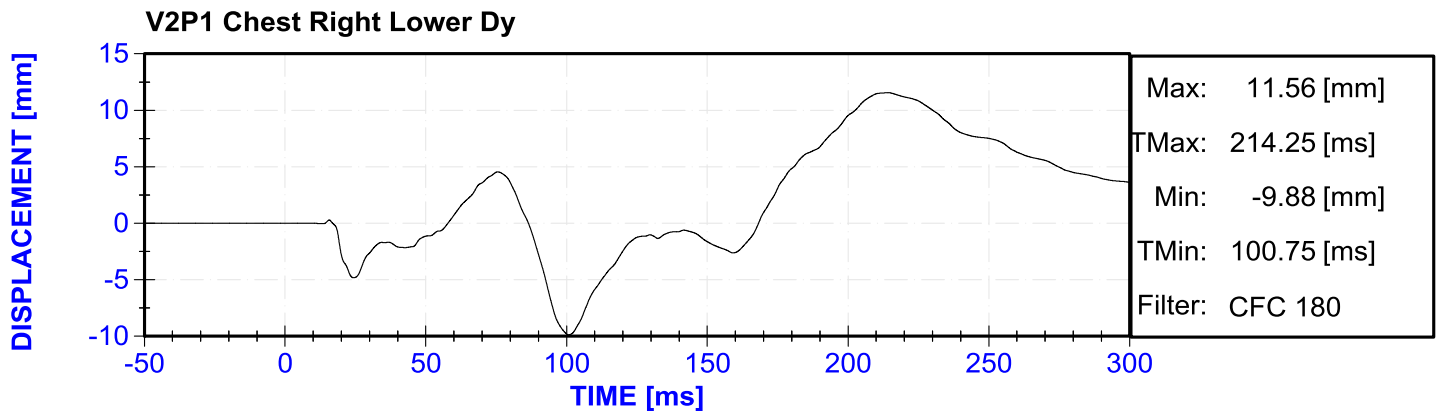
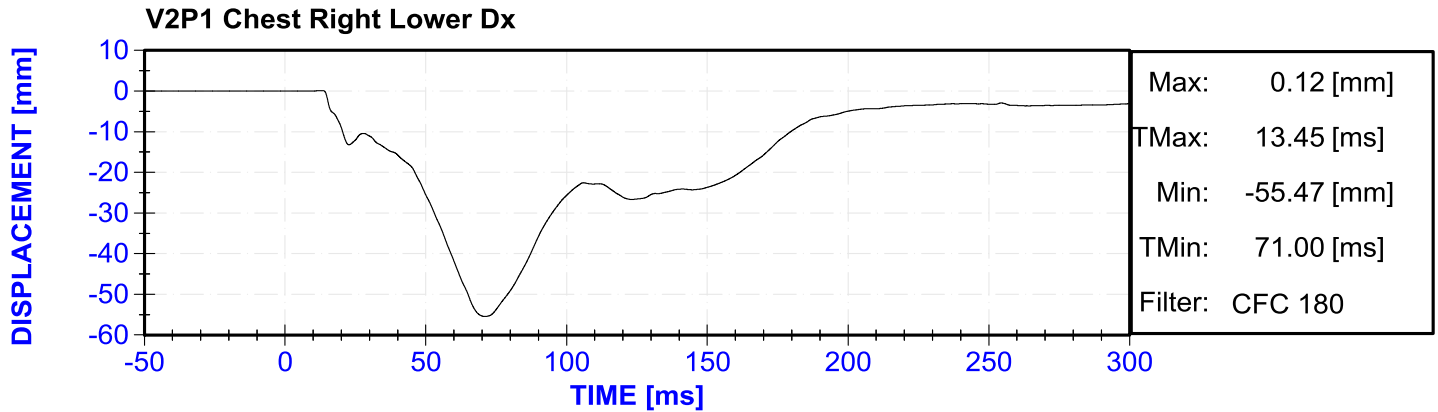


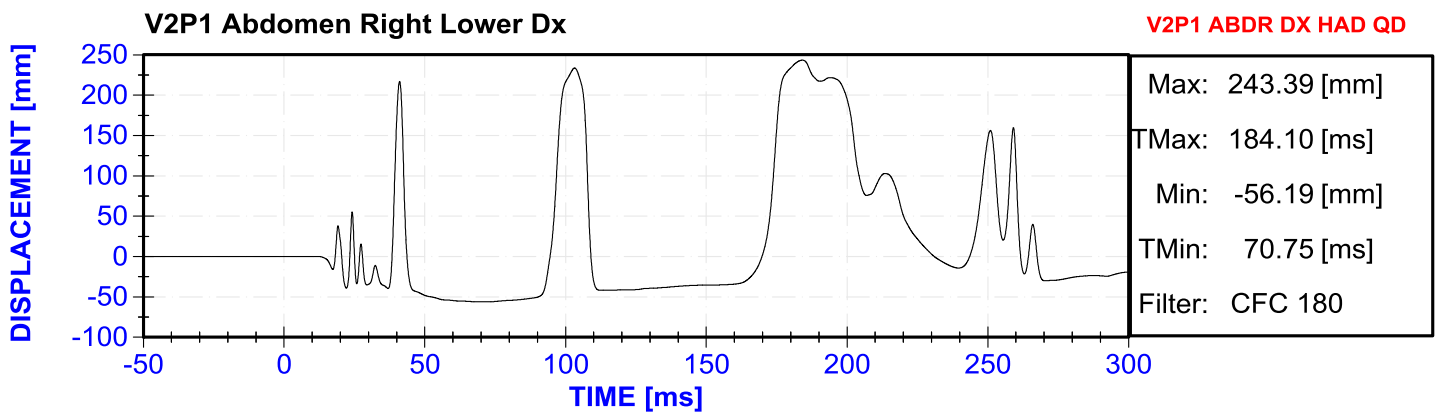
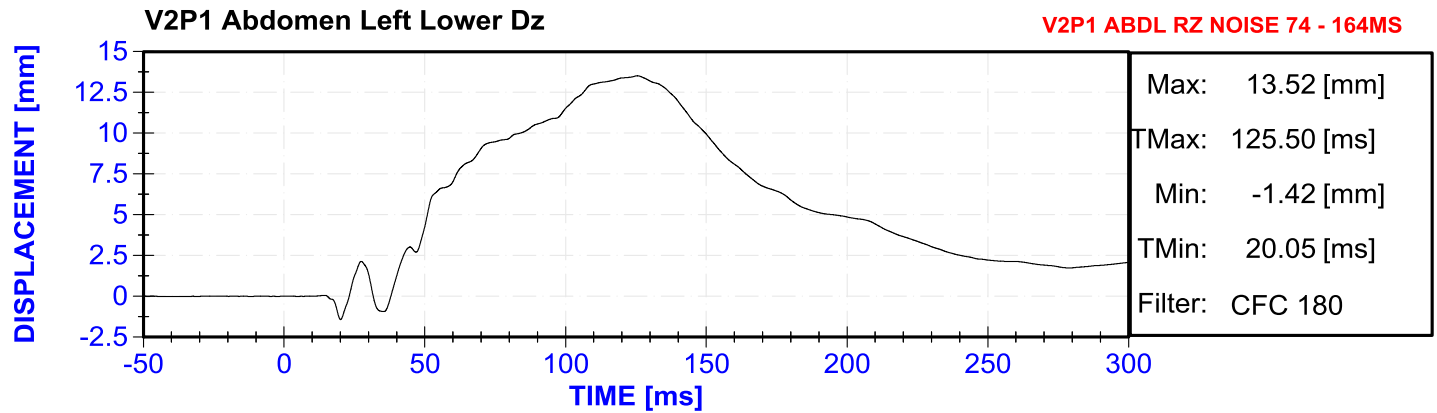
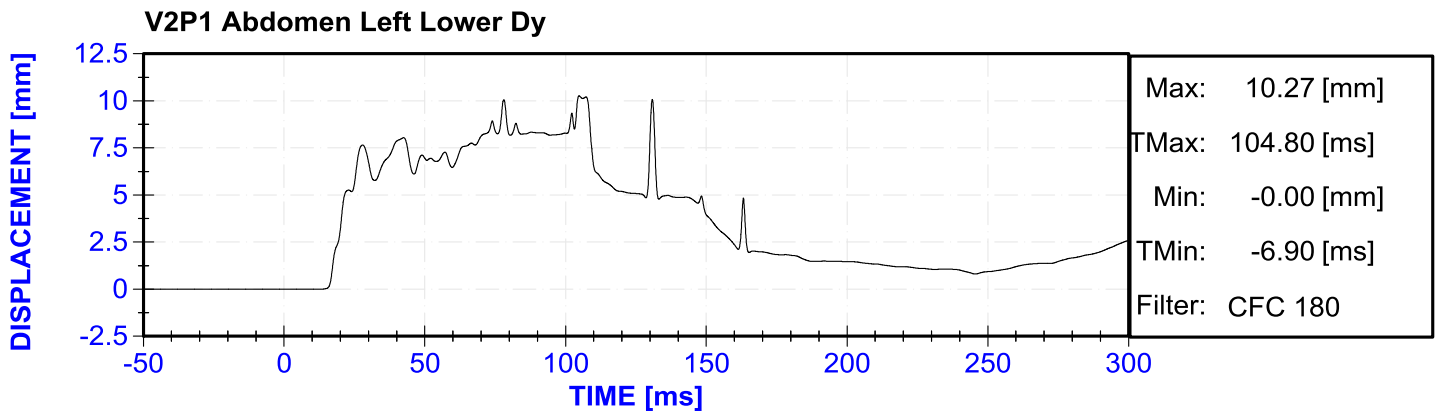
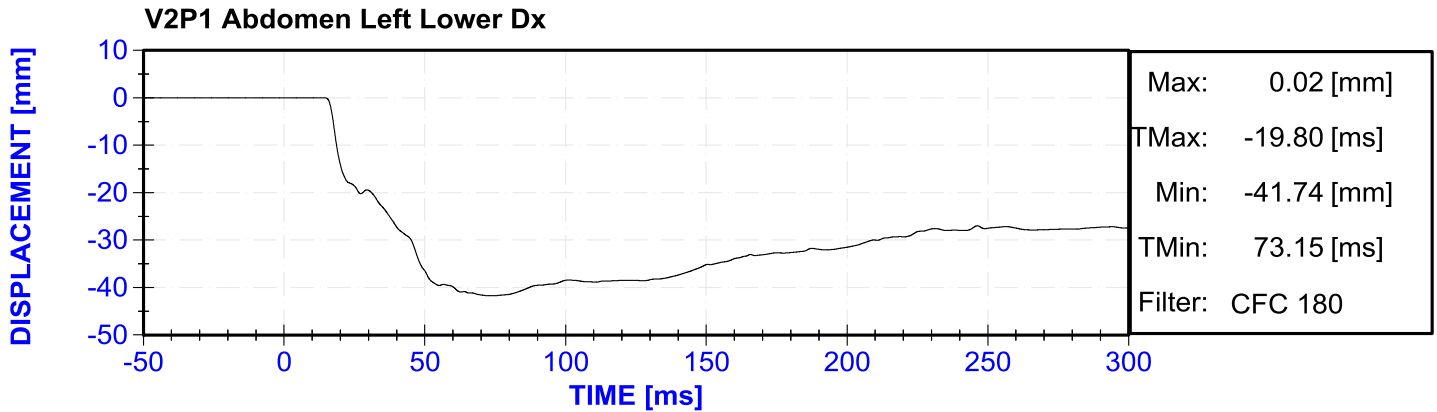


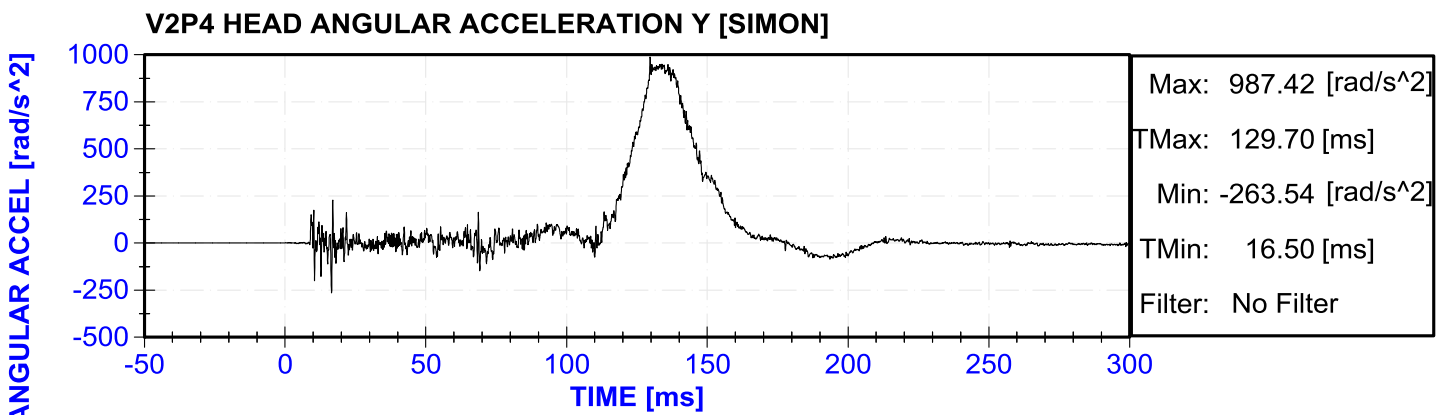
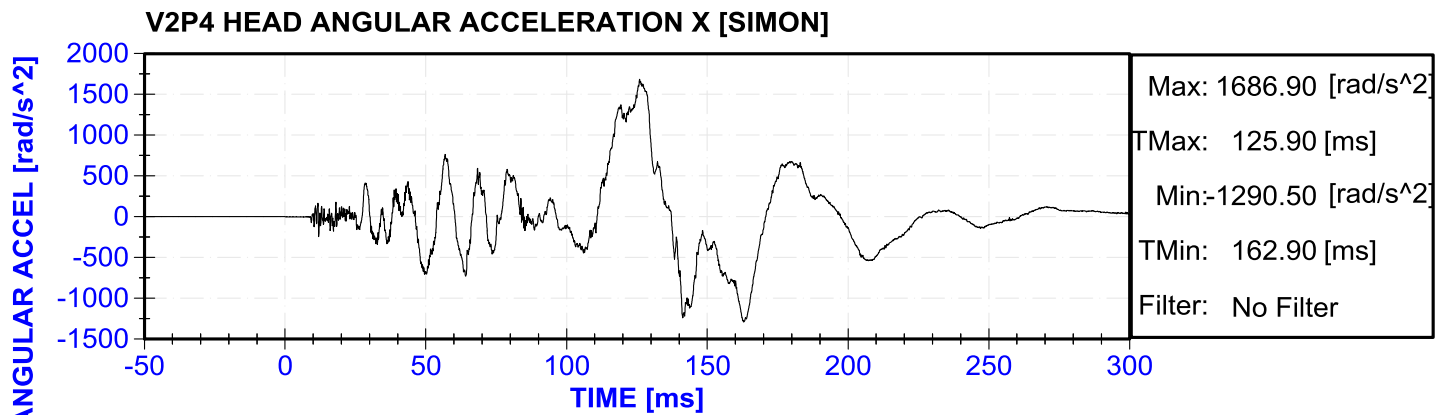
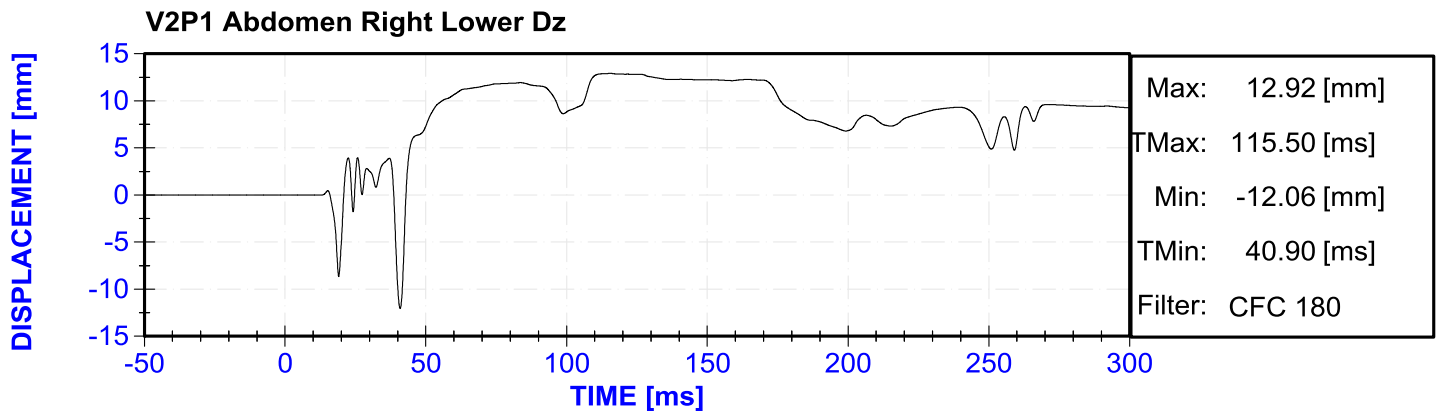
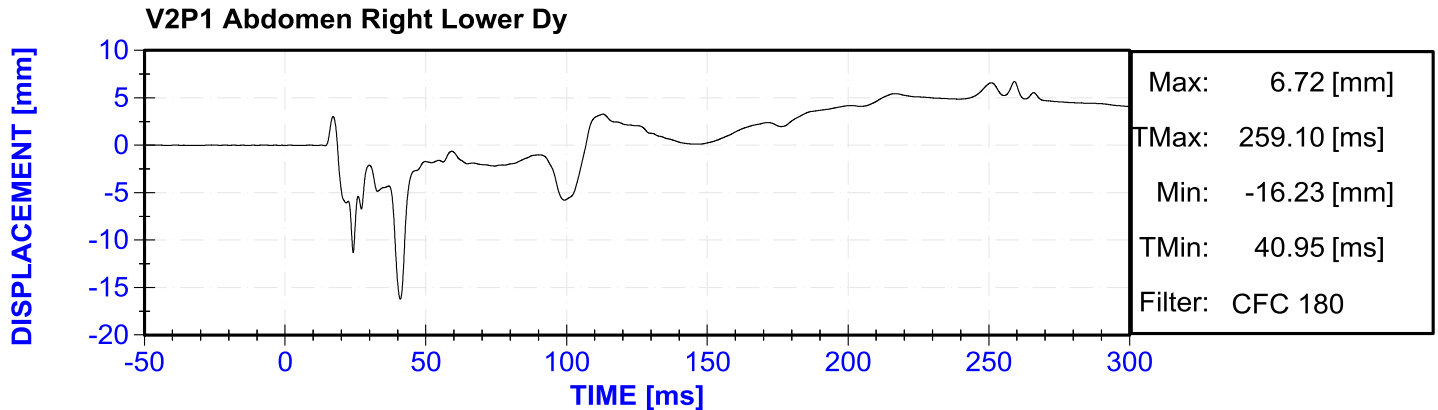


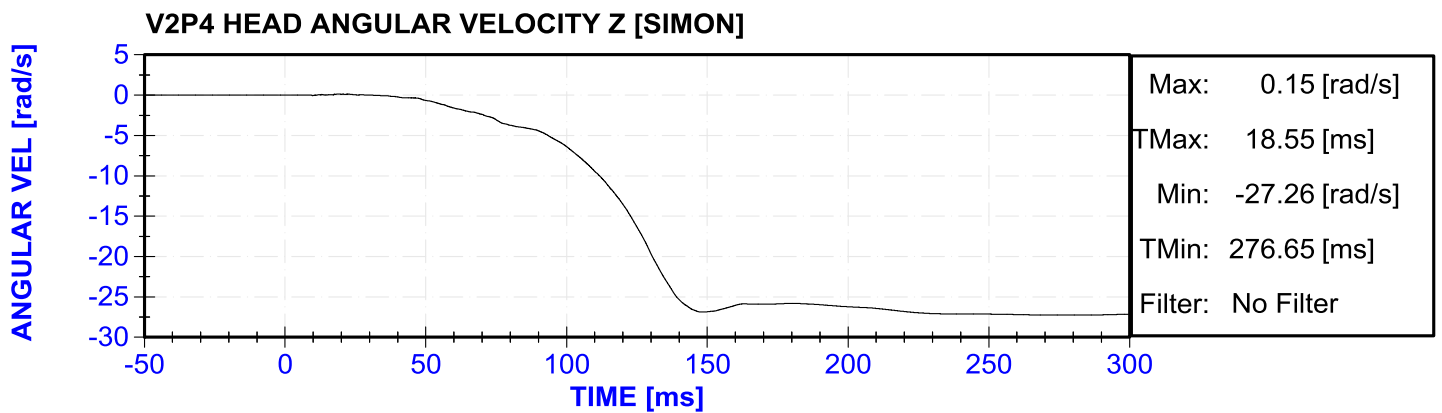
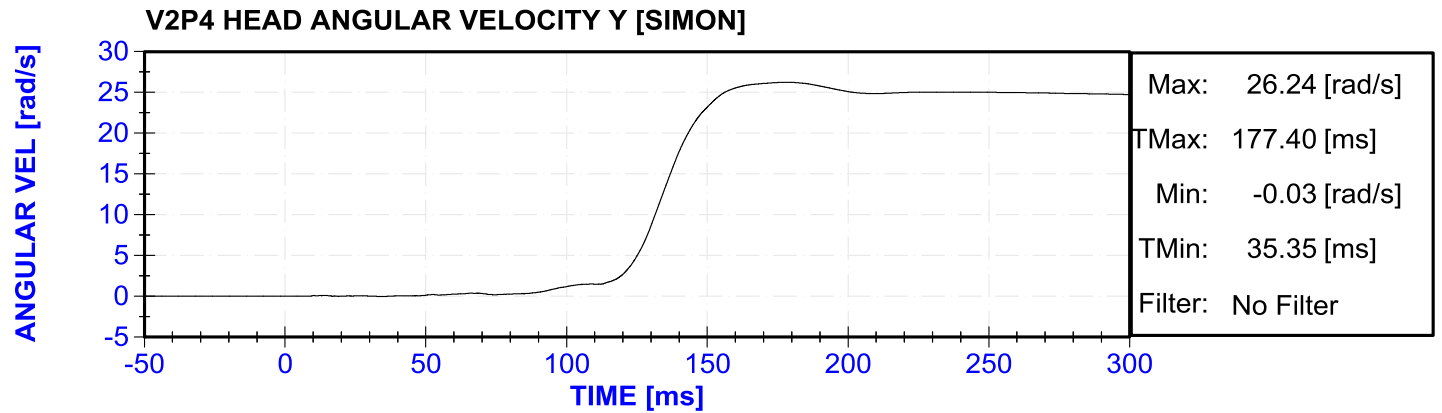
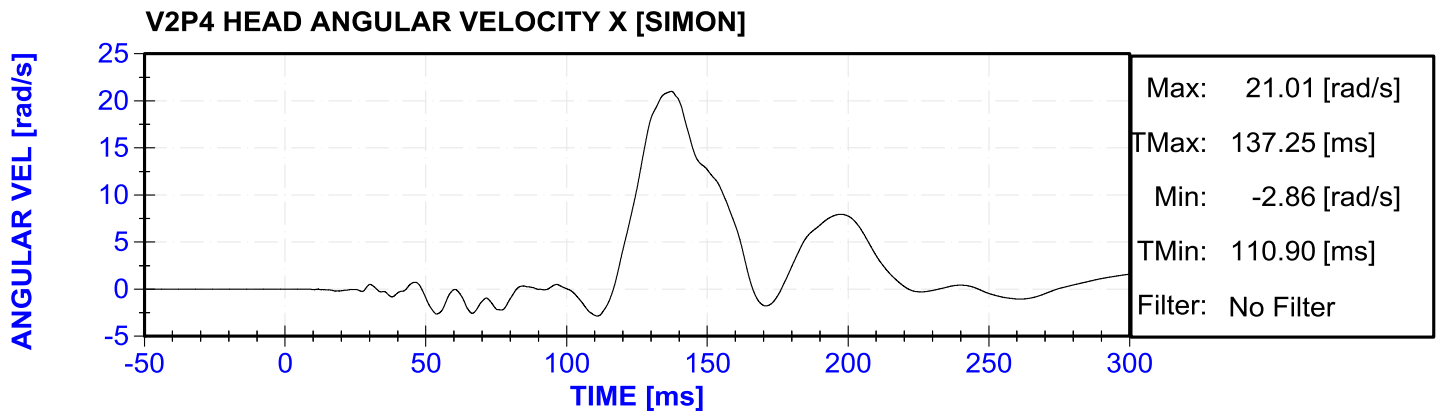
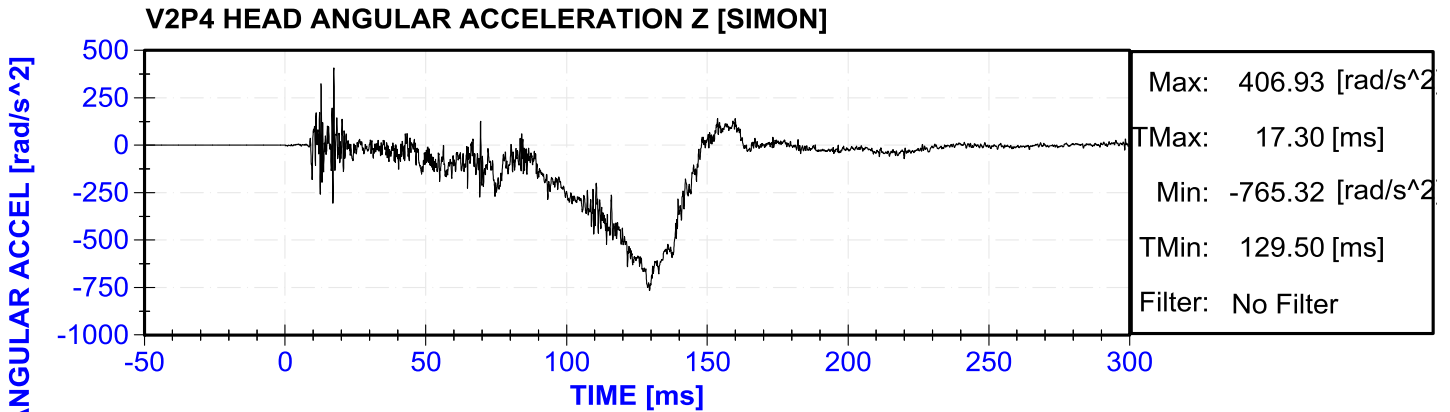


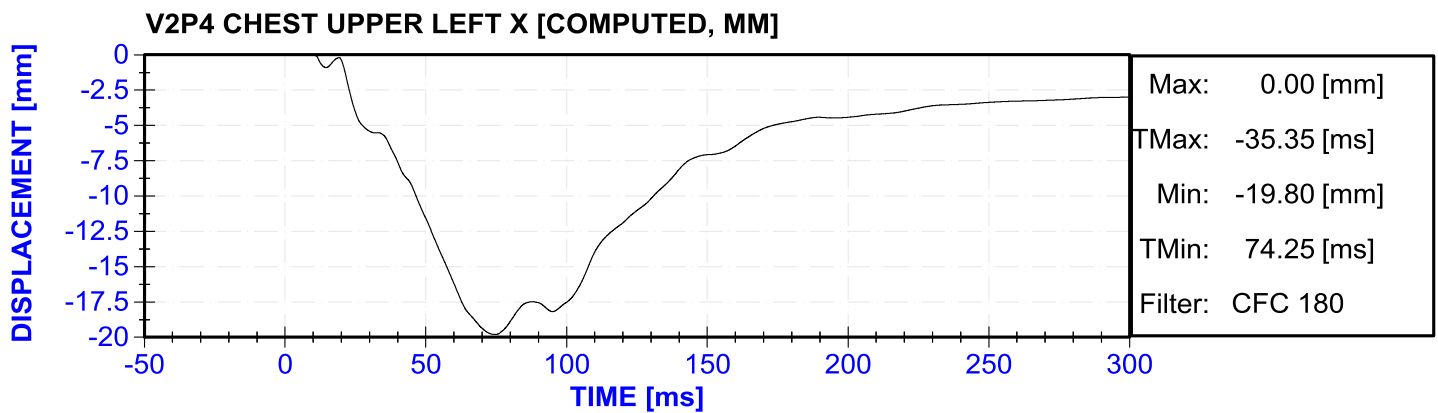
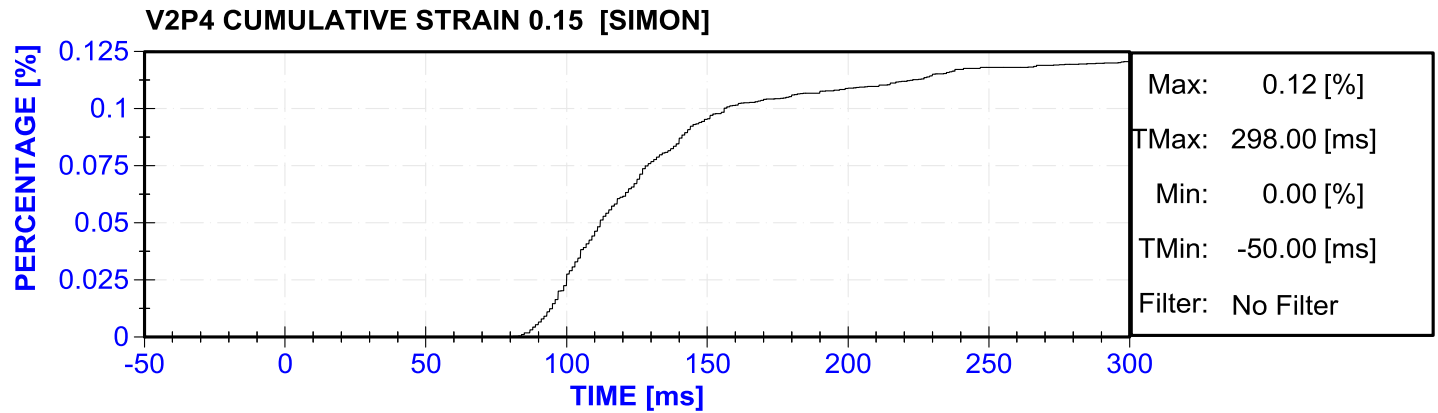
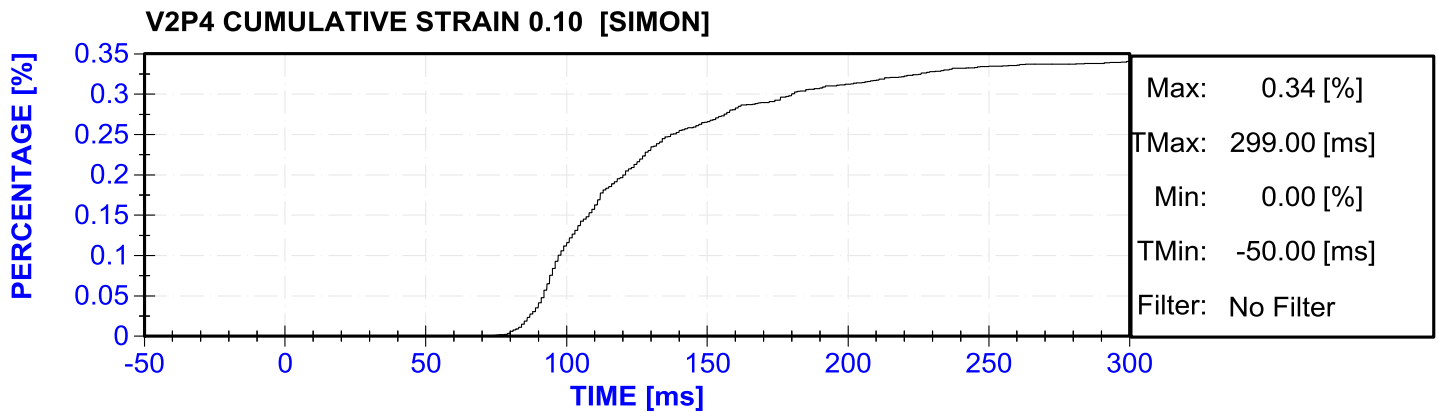
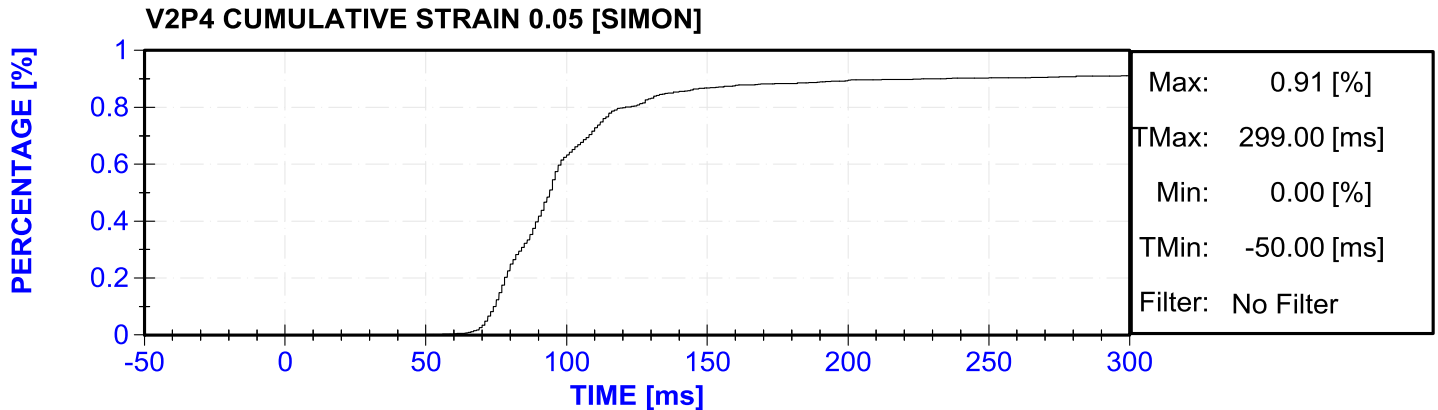


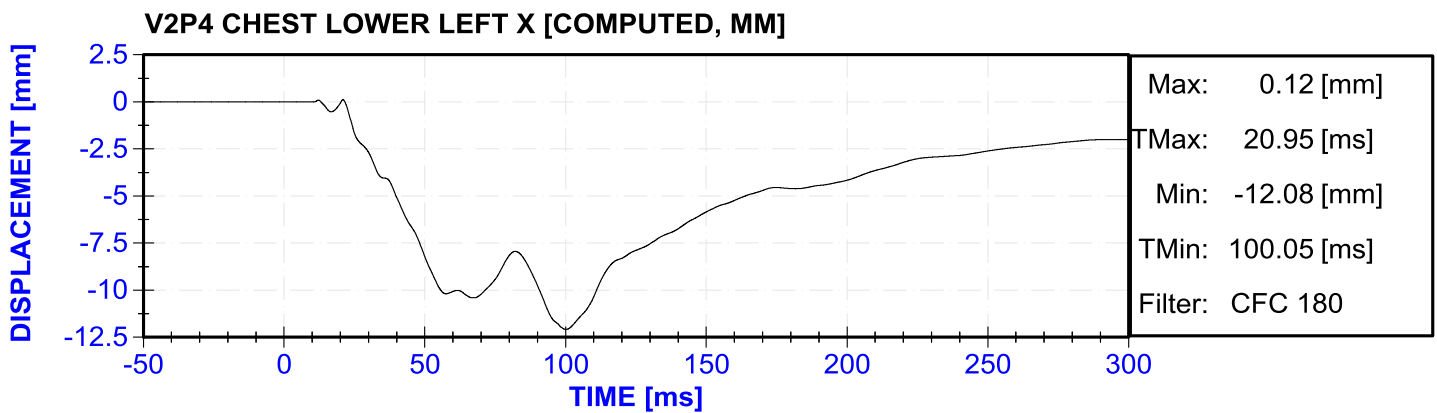
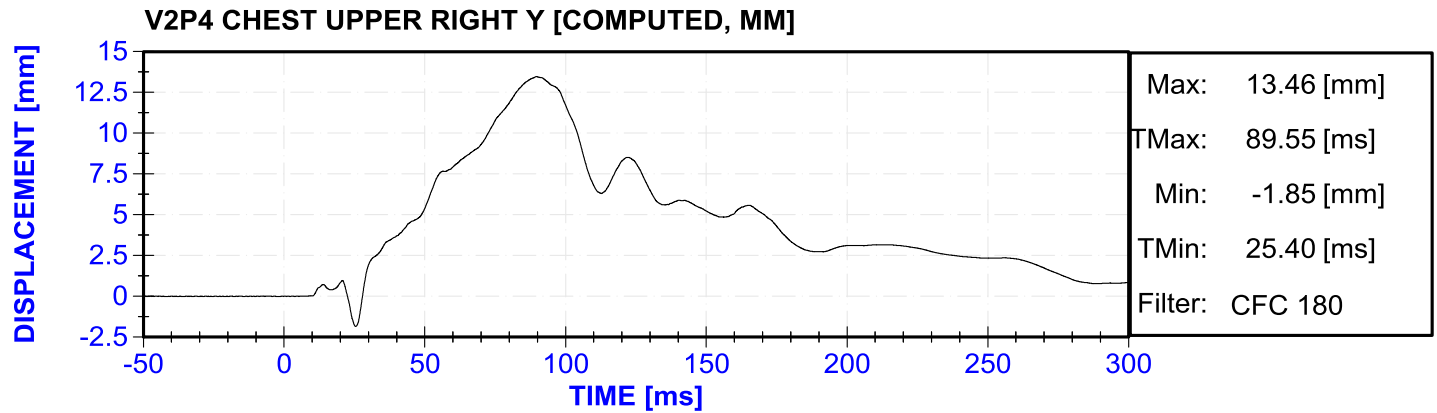
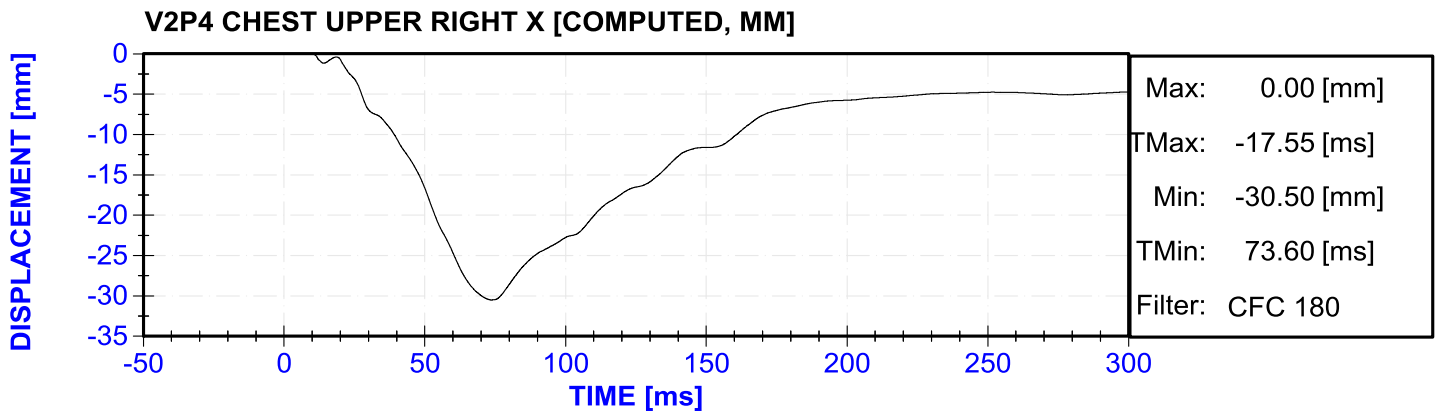
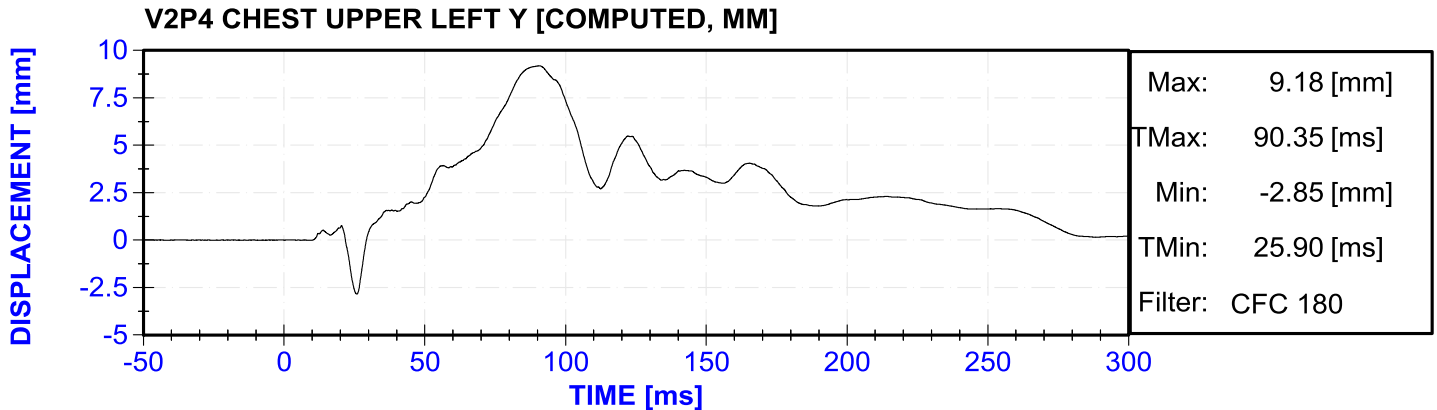


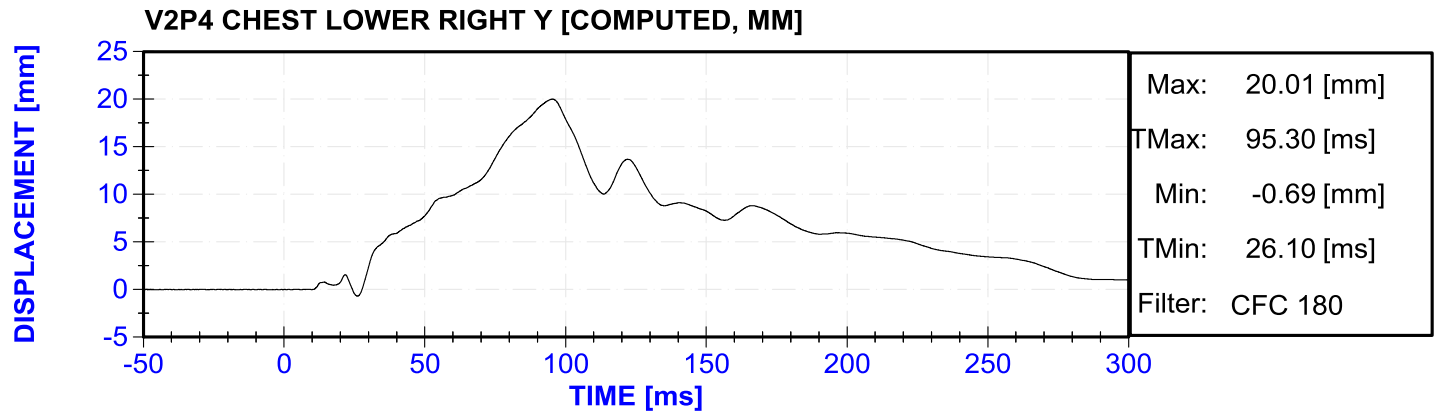
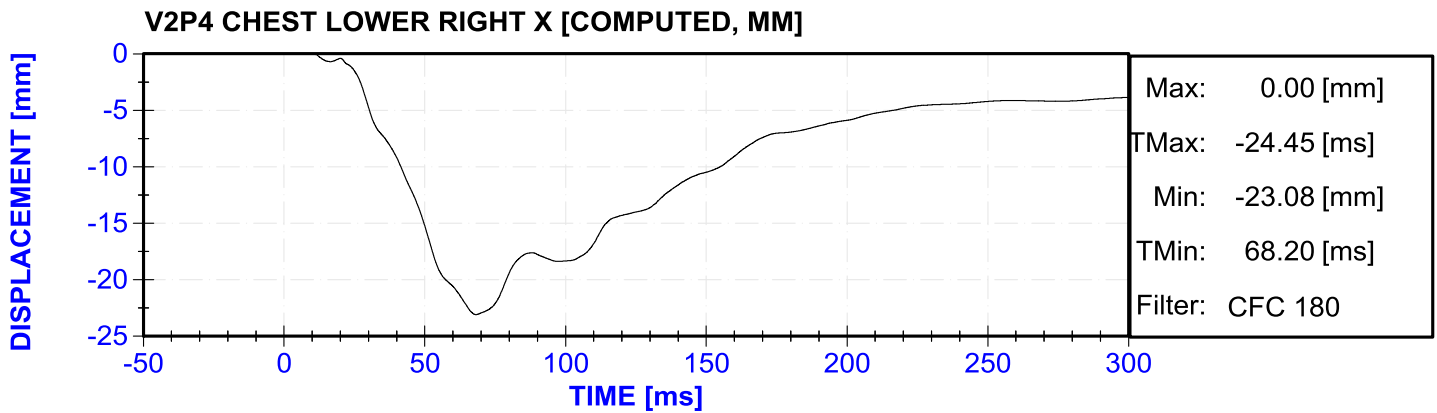
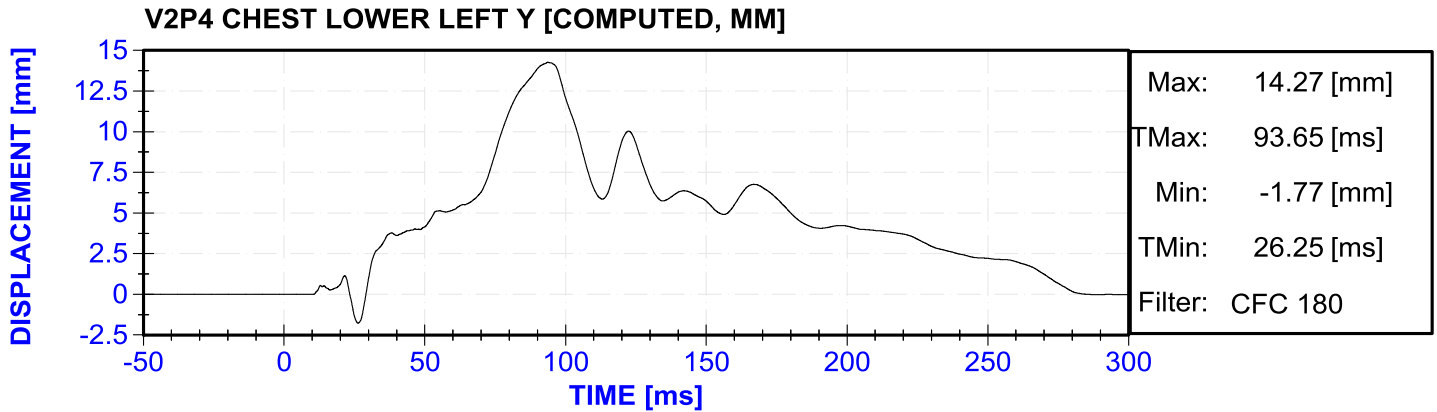












APPENDIX C

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

TABLE OF CONTENT

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Table 1 – Dummy Information

TYPE	DESCRIPTION	SERIAL NUMBER
THOR Hybrid III	50 TH Male 5 th Female	0007

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
-2.3995	11.422	-0.65837	-3.56913	8.69623	47.566

Table 3 - THOR Dummy Initial SetUp Information

THOR – MK S/N: 0007									Sensitivit y (JARI)	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										
Thorax CRUX	Upper Right Mid										
Thorax CRUX	Upper Right Elbow										
Thorax CRUX	Upper Left Base										
Thorax CRUX	Upper Left Mid										
Thorax CRUX	Upper Left Elbow										
Thorax CRUX	Lower Right Base										
Thorax CRUX	Lower Right Mid										
Thorax CRUX	Lower Right Elbow										
Thorax CRUX	Lower Left Base										
Thorax CRUX	Lower Left Mid										
Thorax CRUX	Lower left Elbow										
Thorax CRUX	Right Abdomen X										
DGSP	Right Abdomen Y										
DGSP	Right Abdomen Z										
DGSP	Left Abdomen X										
DGSP	Left Abdomen Y										
DGSP	Left Abdomen Z										
DGSP	Upper Right Base										

**Table 5 – Pre-Test Inspection
THOR Inspection Checklist**

Date: July 25, 2011
NHTSA Representative: James Saunders
Witness(es):
Inspection type (circle one): PRE POST
Dummy S/N: 007
Dummy Description: THOR
Date of last Certification or Inspection: Post Test 7 – July 5, 2011
<u>Tests conducted since last full certification or inspection:</u> Three tests were completed since the last full certification
<u>Known errors in data channels (no data, clipping, unexpected drops):</u>
<u>Physical evidence of damage:</u>
<u>Anecdotal evidence of damage:</u>
<u>Equipment delivered to Borrower:</u>

HEAD	
<input checked="" type="radio"/> Y / <input type="radio"/> N	Rear head cap mounts securely to head
<input checked="" type="radio"/> Y / <input type="radio"/> N	Head skin fits securely over skull
<input checked="" type="radio"/> Y / <input type="radio"/> N	Head skin shows no sign of tears or damage
<input checked="" type="radio"/> Y / <input type="radio"/> N	Interior components of skull cavity (ballast, accelerometer mount, accelerometers) securely attached
<input checked="" type="radio"/> Y / <input type="radio"/> N	Head securely mounted to OC joint
OTHER	
NECK	
<input checked="" type="radio"/> Y / <input type="radio"/> N	Neck cables slide freely through holes in neck plates
<input checked="" type="radio"/> Y / <input type="radio"/> N	Neck cables show no sign of fraying, broken strands, or kinking
Y / <input checked="" type="radio"/> N	No evidence of debonding between neck pucks and plates If N – indicate which interface (where plate/puck 1 attach to upper neck load cell): - Between puck 4&5 posterior
Y / <input checked="" type="radio"/> N	No evidence of debonding or permanent compression in neck soft stop assemblies - Front anterior neck's soft stop is loose
<input checked="" type="radio"/> Y / <input type="radio"/> N	Neck securely attached to upper neck load cell
<input checked="" type="radio"/> Y / <input type="radio"/> N	Neck securely attached to lower neck load cell
<input checked="" type="radio"/> Y / <input type="radio"/> N	Neck pitch change joint mechanism mating teeth are engaged
OTHER	
SPINE	
<input checked="" type="radio"/> Y / <input type="radio"/> N	No evidence of debonding between thoracic spine flex joint and metal plates



Y / N	No evidence of debonding between lumbar spine flex joint and metal plates
<input checked="" type="radio"/> Y / N	Lumbar spine pitch change joint mechanism mating teeth are engaged
OTHER	
SHOULDER	
Y <input checked="" type="radio"/> N	Urethane shoulder pads show no evidence of contact - Slight scuffing on the right shoulder's soft pad
<input checked="" type="radio"/> Y / N	Clavicles securely attached to sternum and shoulder
Y <input checked="" type="radio"/> N	No evidence of debonding, tearing, or permanent compression of posterior soft stops - There is some debonding on top of the left shoulder stop
OTHER	
THORAX	
Y <input checked="" type="radio"/> N	No evidence of contact at top, bottom, or interior faces of rib damping material - Left side of Rib #4 - Right side of Rib #4
Y <input checked="" type="radio"/> N	No evidence of debonding between rib damping material and ribs - Left side of Rib #5 debonding
<input checked="" type="radio"/> Y / N	CRUX anterior arms securely attached to anterior ribs
<input checked="" type="radio"/> Y / N	CRUX posterior arms securely attached to double gimbals, spine
<input checked="" type="radio"/> Y / N	Urethane bib is securely attached to ribs with no sign of tearing or washer penetration
<input checked="" type="radio"/> Y / N	Ribs securely attached to posterior spine
<input checked="" type="radio"/> Y / N	Rib stiffeners show no evidence of bending (no gaps between ribs and stiffeners)
OTHER	
ABDOMEN	
Y <input checked="" type="radio"/> N	No evidence of tearing, cuts, or broken stitches in upper abdomen bag and zipper - Very small tear on the top left side

Y / N	Upper abdomen insert securely attached to spine
<input checked="" type="radio"/> Y / N	Upper abdomen insert shows no evidence of permanent set
<input checked="" type="radio"/> Y / N	No evidence of tearing, cuts, or broken stitches in lower abdomen bag and zipper
<input checked="" type="radio"/> Y / N	Lower abdomen insert securely attached to spine
<input checked="" type="radio"/> Y / N	Lower abdomen insert shows no evidence of permanent set
OTHER	
PELVIS	
<input checked="" type="radio"/> Y / N	Pelvis flesh fits securely over pelvis bones
<input checked="" type="radio"/> Y / N	H-point tool fits securely into hole on both sides of pelvis
OTHER	
FEMUR	
<input checked="" type="radio"/> Y / N	Acetabular load cells firmly attached
<input checked="" type="radio"/> Y / N	Femur load cells firmly attached
<input checked="" type="radio"/> Y / N	No evidence of deformation of knee slider bump stop
Y / <input checked="" type="radio"/> N	No cuts, tears, or scuffing of knee flesh <ul style="list-style-type: none"> - Cuts on the right knee - Scuffs on the left knee - Note THOR SN006 femurs and lower extremities were used for this test
OTHER	

LOWER EXTREMITY (LX)	
<input checked="" type="radio"/> Y / N	Rotational potentiometers in ankle securely attached
<input checked="" type="radio"/> Y / N	Achilles tendon provides resistance to dorsiflexion



Y / N	No evidence of debonding, tearing, or permanent compression of ankle soft stops
OTHER	Left foot skin/flesh is torn at the heel
JACKET	
<input checked="" type="radio"/> Y / N	Rib stiffeners show no sign of permanent deformation
<input checked="" type="radio"/> Y / N	No evidence of tears or holes in jacket fabric, velcro, or zippers
OTHER	

**Table 5 – Post-Test Inspection
THOR Inspection Checklist**

Date: July 28, 2011
NHTSA Representative: James Saunders
Witness(es):
Inspection type (circle one): PRE POST
Dummy S/N: 007
Dummy Description: THOR
Date of last Certification or Inspection:
<u>Tests conducted since last full certification or inspection:</u>
<u>Known errors in data channels (no data, clipping, unexpected drops):</u>
<u>Physical evidence of damage:</u>
<u>Anecdotal evidence of damage:</u>
<u>Equipment delivered to Borrower:</u>

HEAD	
<input checked="" type="radio"/> Y / N	Rear head cap mounts securely to head
<input checked="" type="radio"/> Y / N	Head skin fits securely over skull
<input checked="" type="radio"/> Y / N	Head skin shows no sign of tears or damage
<input checked="" type="radio"/> Y / N	Interior components of skull cavity (ballast, accelerometer mount, accelerometers) securely attached
<input checked="" type="radio"/> Y / N	Head securely mounted to OC joint
OTHER	
NECK	
<input checked="" type="radio"/> Y / N	Neck cables slide freely through holes in neck plates
<input checked="" type="radio"/> Y / N	Neck cables show no sign of fraying, broken strands, or kinking
Y / <input checked="" type="radio"/> N	No evidence of debonding between neck pucks and plates If N – indicate which interface (where plate/puck 1 attach to upper neck load cell): - Between puck 4&5 posterior
Y / <input checked="" type="radio"/> N	No evidence of debonding or permanent compression in neck soft stop assemblies - Front anterior neck's soft stop is loose
<input checked="" type="radio"/> Y / N	Neck securely attached to upper neck load cell
<input checked="" type="radio"/> Y / N	Neck securely attached to lower neck load cell
<input checked="" type="radio"/> Y / N	Neck pitch change joint mechanism mating teeth are engaged
OTHER	
SPINE	
<input checked="" type="radio"/> Y / N	No evidence of debonding between thoracic spine flex joint and metal plates



Y / N	No evidence of debonding between lumbar spine flex joint and metal plates
<input checked="" type="radio"/> Y / N	Lumbar spine pitch change joint mechanism mating teeth are engaged
OTHER	
SHOULDER	
Y <input checked="" type="radio"/> N	Urethane shoulder pads show no evidence of contact - Slight scuffing on the right shoulder's soft pad
<input checked="" type="radio"/> Y / N	Clavicles securely attached to sternum and shoulder
Y <input checked="" type="radio"/> N	No evidence of debonding, tearing, or permanent compression of posterior soft stops - There is some debonding on top of the left shoulder stop
OTHER	
THORAX	
Y <input checked="" type="radio"/> N	No evidence of contact at top, bottom, or interior faces of rib damping material - Left side of Rib #4 - Right side of Rib #4
Y <input checked="" type="radio"/> N	No evidence of debonding between rib damping material and ribs - Left side of Rib #5 debonding
<input checked="" type="radio"/> Y / N	CRUX anterior arms securely attached to anterior ribs
<input checked="" type="radio"/> Y / N	CRUX posterior arms securely attached to double gimbals, spine
<input checked="" type="radio"/> Y / N	Urethane bib is securely attached to ribs with no sign of tearing or washer penetration
<input checked="" type="radio"/> Y / N	Ribs securely attached to posterior spine
<input checked="" type="radio"/> Y / N	Rib stiffeners show no evidence of bending (no gaps between ribs and stiffeners)
OTHER	
ABDOMEN	
Y <input checked="" type="radio"/> N	No evidence of tearing, cuts, or broken stitches in upper abdomen bag and zipper - Very small tear on the top left side

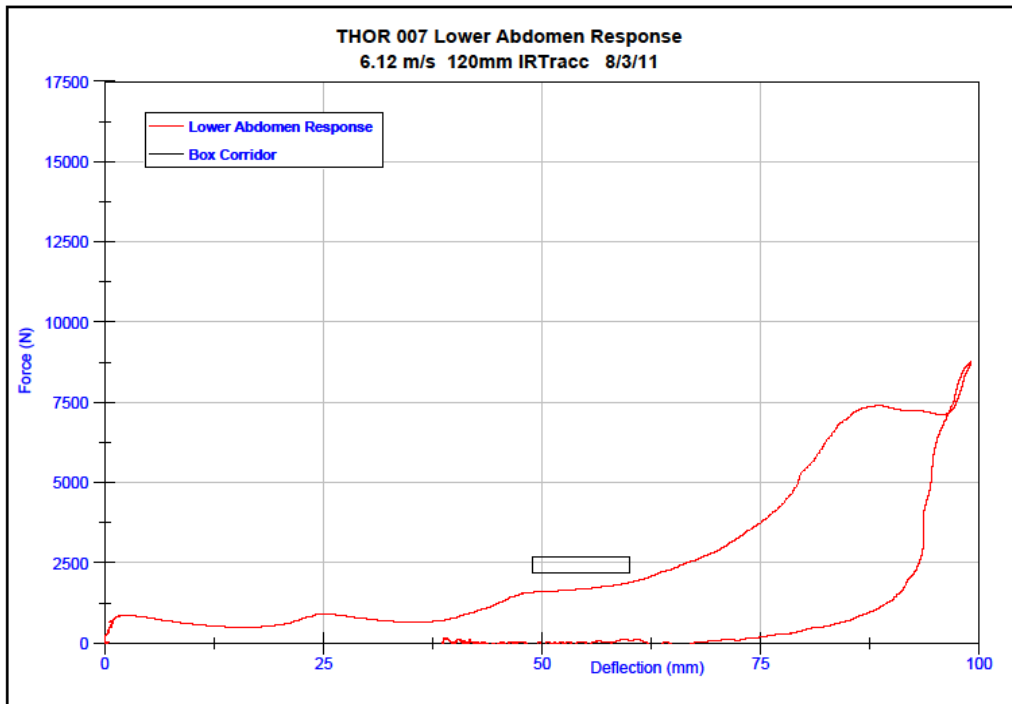
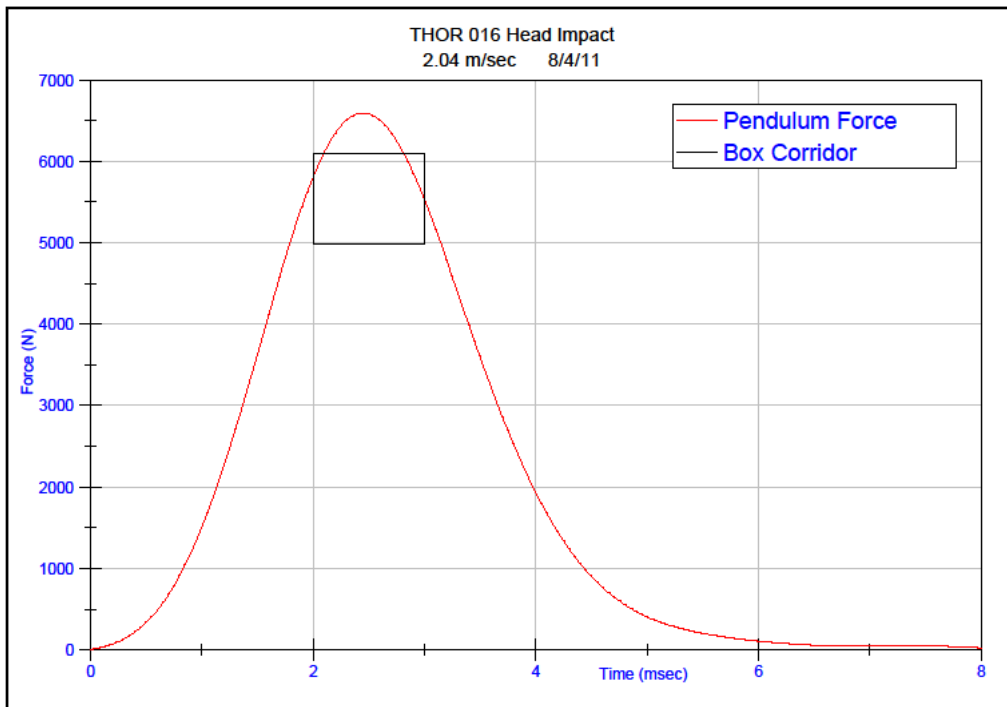
Y / N	Upper abdomen insert securely attached to spine
<input checked="" type="radio"/> Y / N	Upper abdomen insert shows no evidence of permanent set
<input checked="" type="radio"/> Y / N	No evidence of tearing, cuts, or broken stitches in lower abdomen bag and zipper
<input checked="" type="radio"/> Y / N	Lower abdomen insert securely attached to spine
<input checked="" type="radio"/> Y / N	Lower abdomen insert shows no evidence of permanent set
OTHER	
PELVIS	
<input checked="" type="radio"/> Y / N	Pelvis flesh fits securely over pelvis bones
<input checked="" type="radio"/> Y / N	H-point tool fits securely into hole on both sides of pelvis
OTHER	
FEMUR	
<input checked="" type="radio"/> Y / N	Acetabular load cells firmly attached
<input checked="" type="radio"/> Y / N	Femur load cells firmly attached
<input checked="" type="radio"/> Y / N	No evidence of deformation of knee slider bump stop
Y / <input checked="" type="radio"/> N	No cuts, tears, or scuffing of knee flesh <ul style="list-style-type: none"> - Cuts on the right knee - Scuffs on the left knee
OTHER	

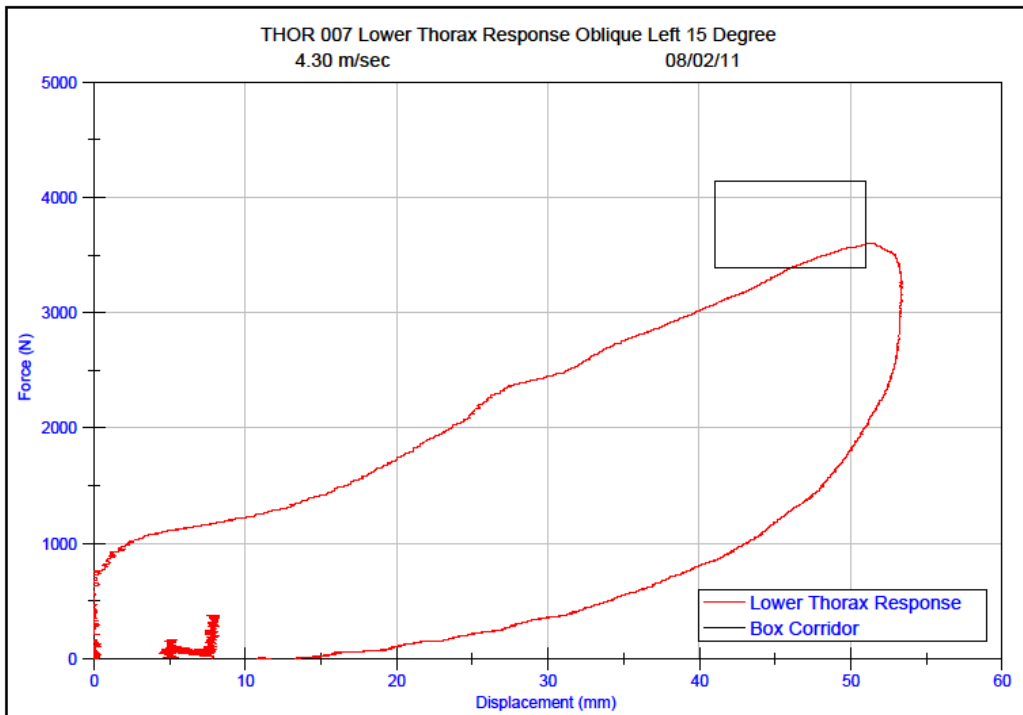
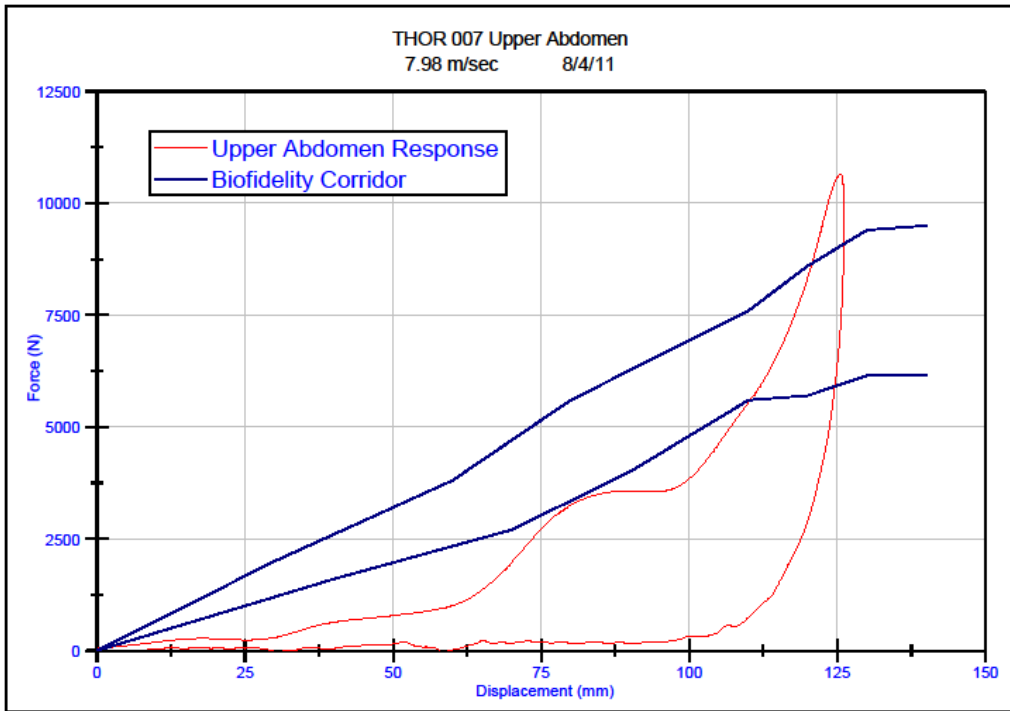
LOWER EXTREMITY (LX)	
<input checked="" type="radio"/> Y / N	Rotational potentiometers in ankle securely attached
<input checked="" type="radio"/> Y / N	Achilles tendon provides resistance to dorsiflexion

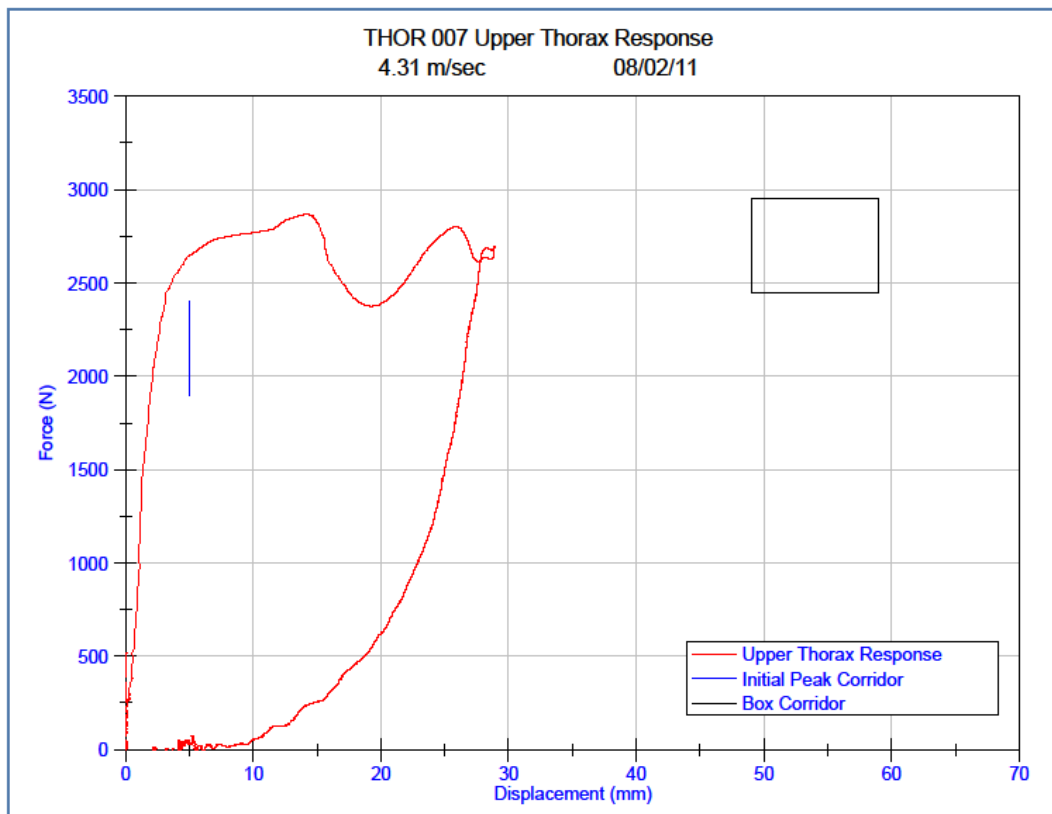
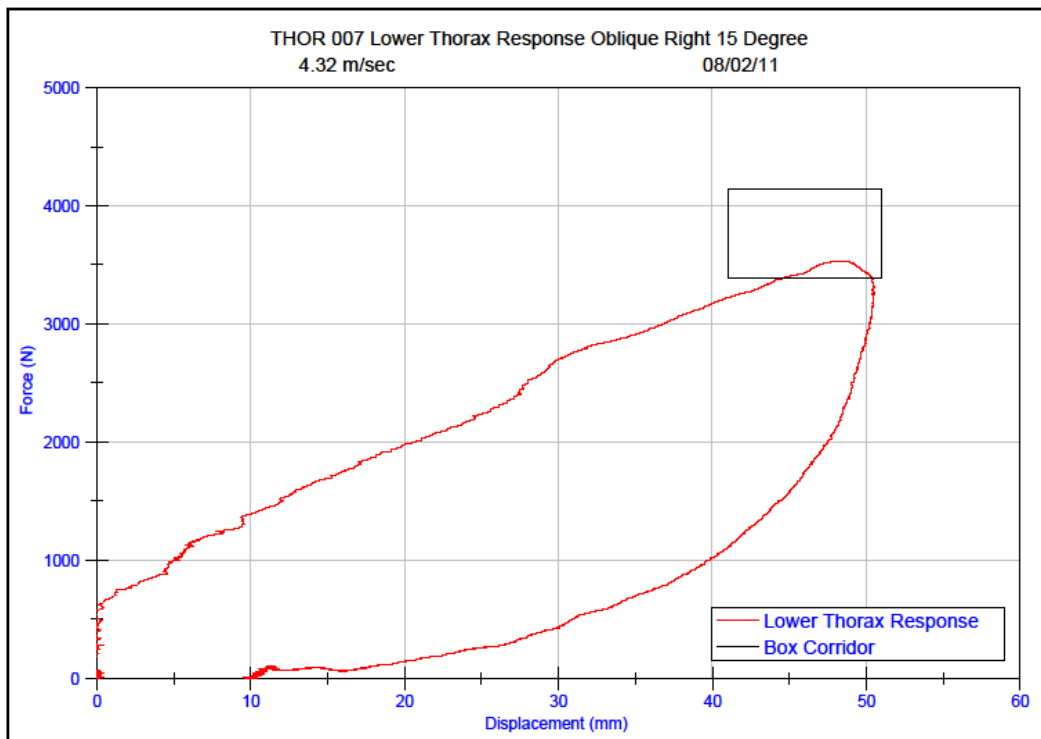


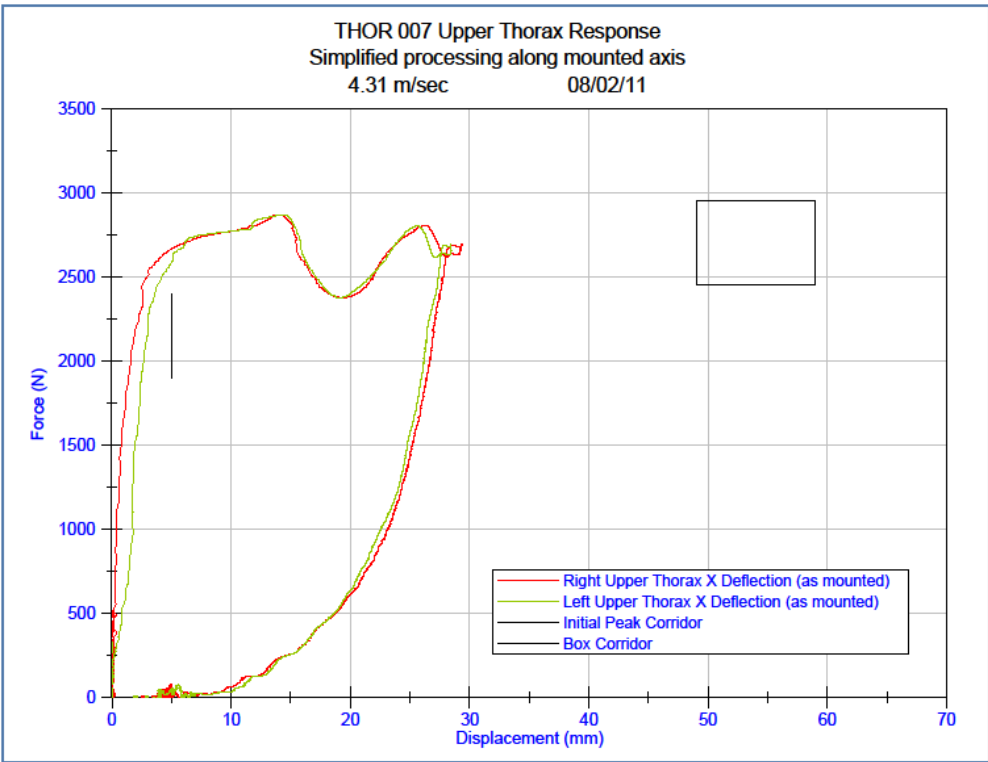
Y / N	No evidence of debonding, tearing, or permanent compression of ankle soft stops
OTHER	Left foot skin/flesh is torn at the heel
JACKET	
<input checked="" type="radio"/> Y / N	Rib stiffeners show no sign of permanent deformation
<input checked="" type="radio"/> Y / N	No evidence of tears or holes in jacket fabric, velcro, or zippers
OTHER	

Dummy Calibration Plots

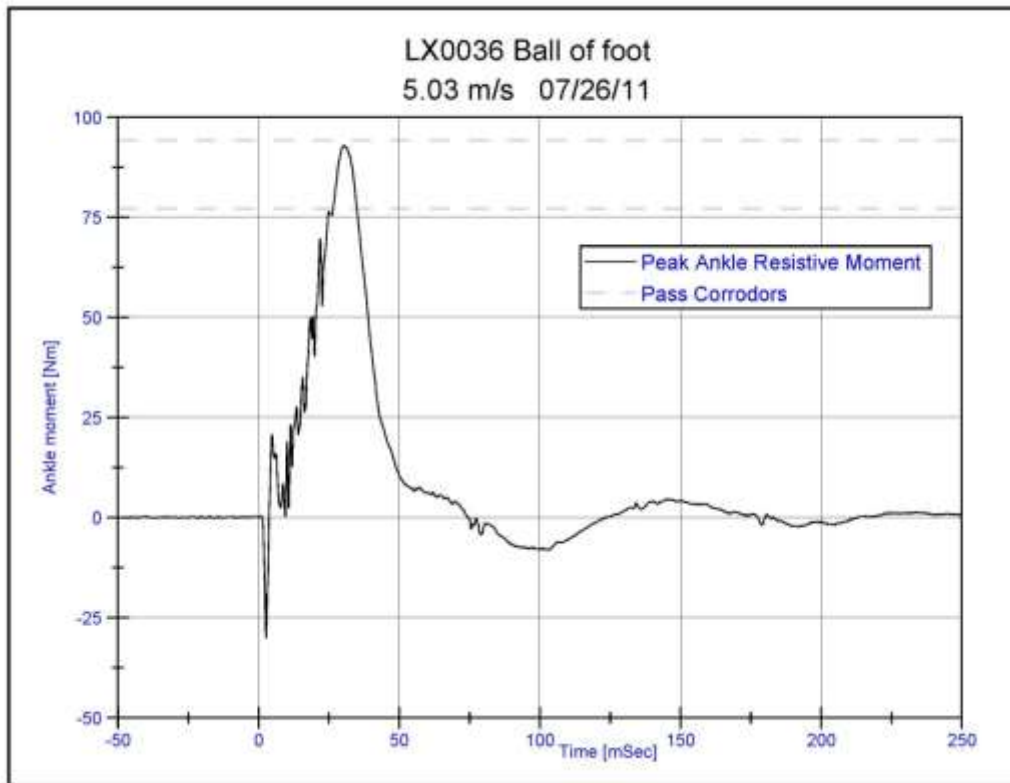
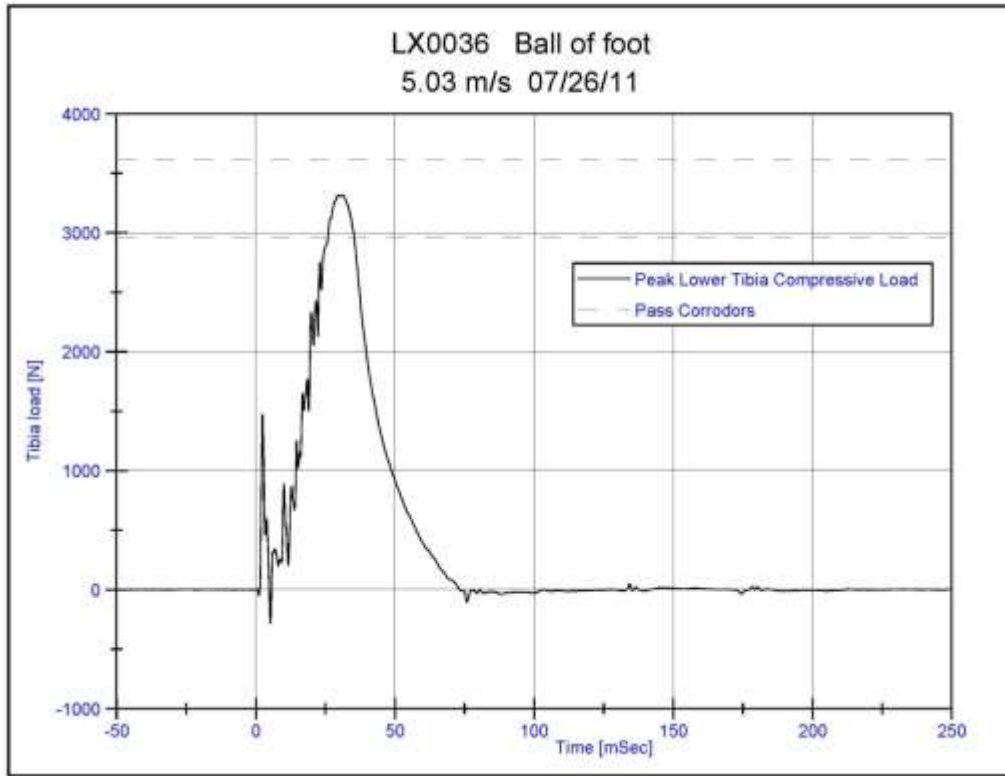


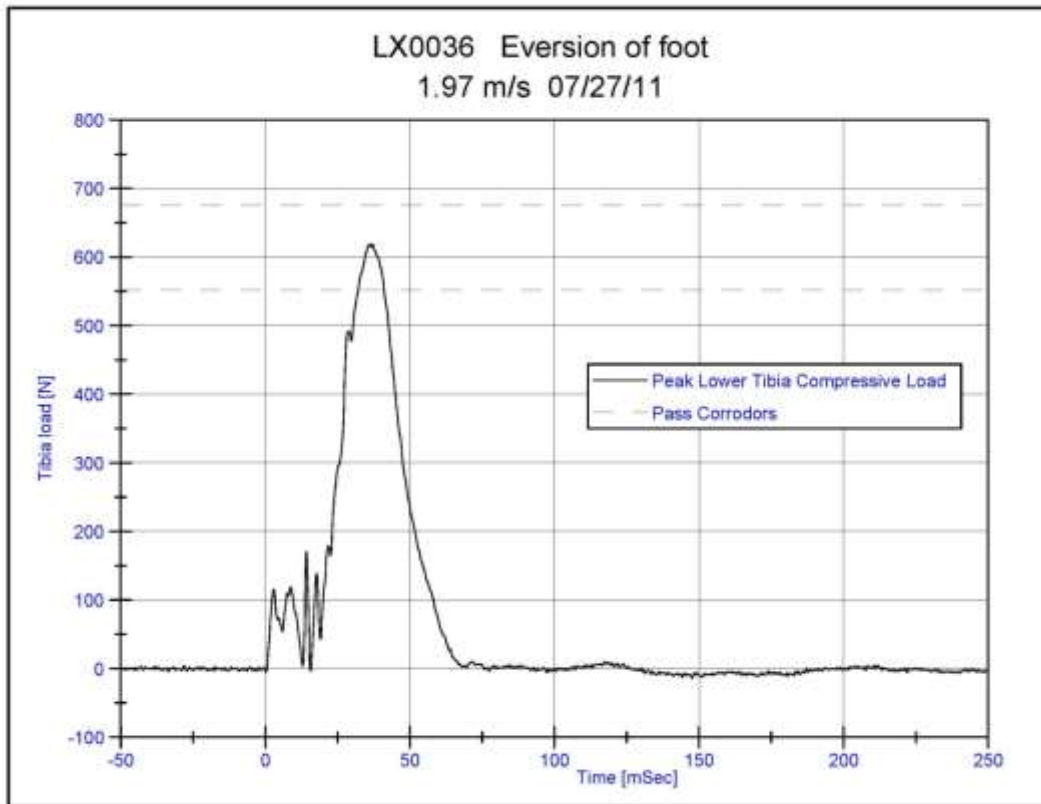
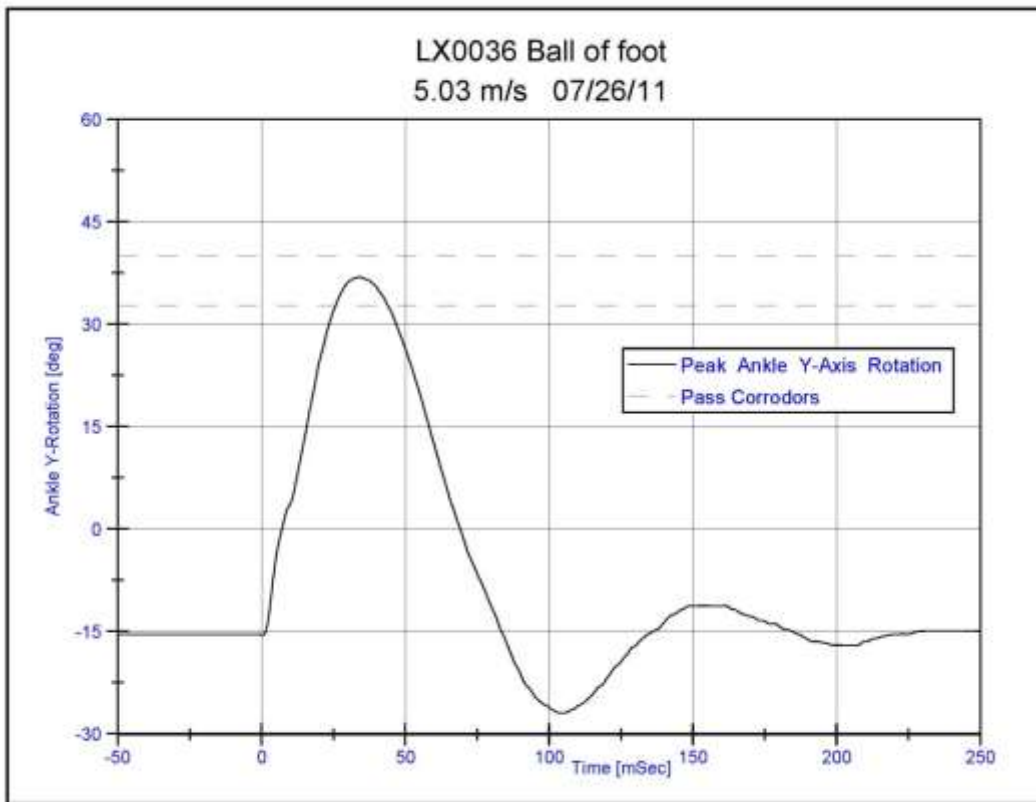


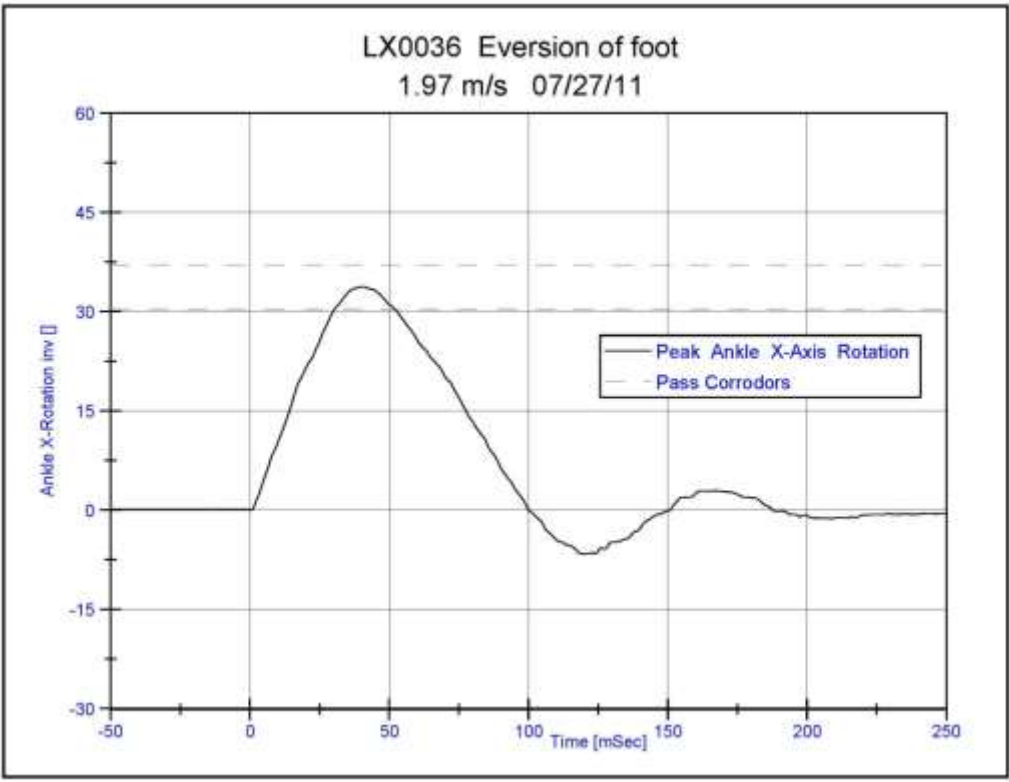
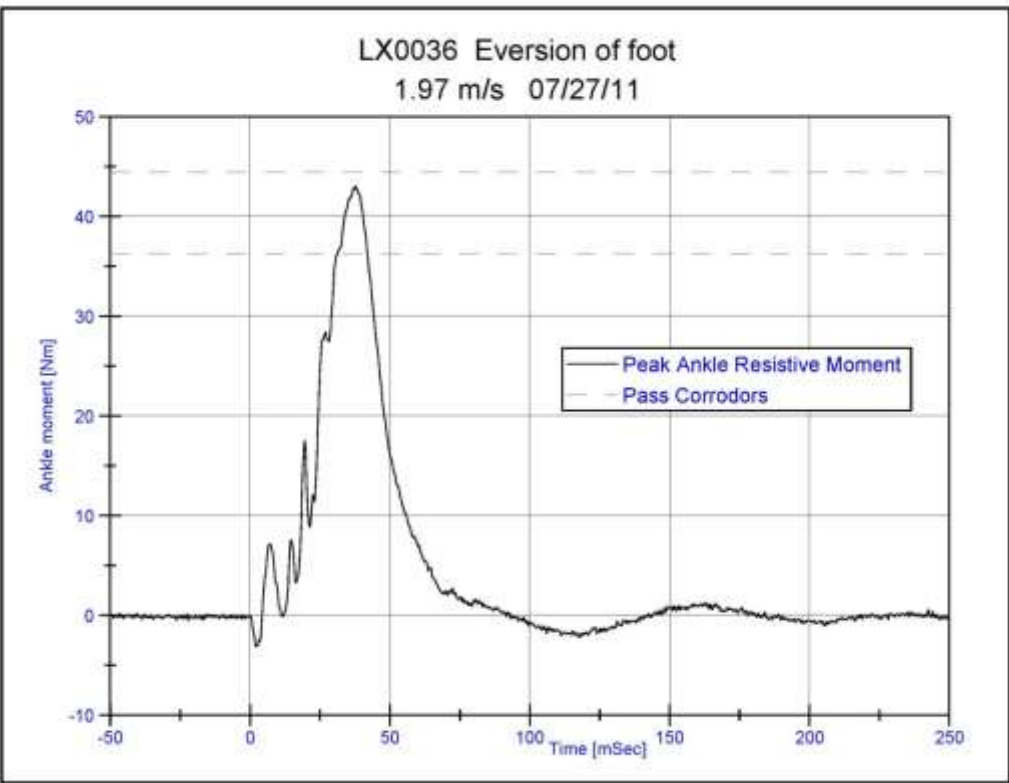


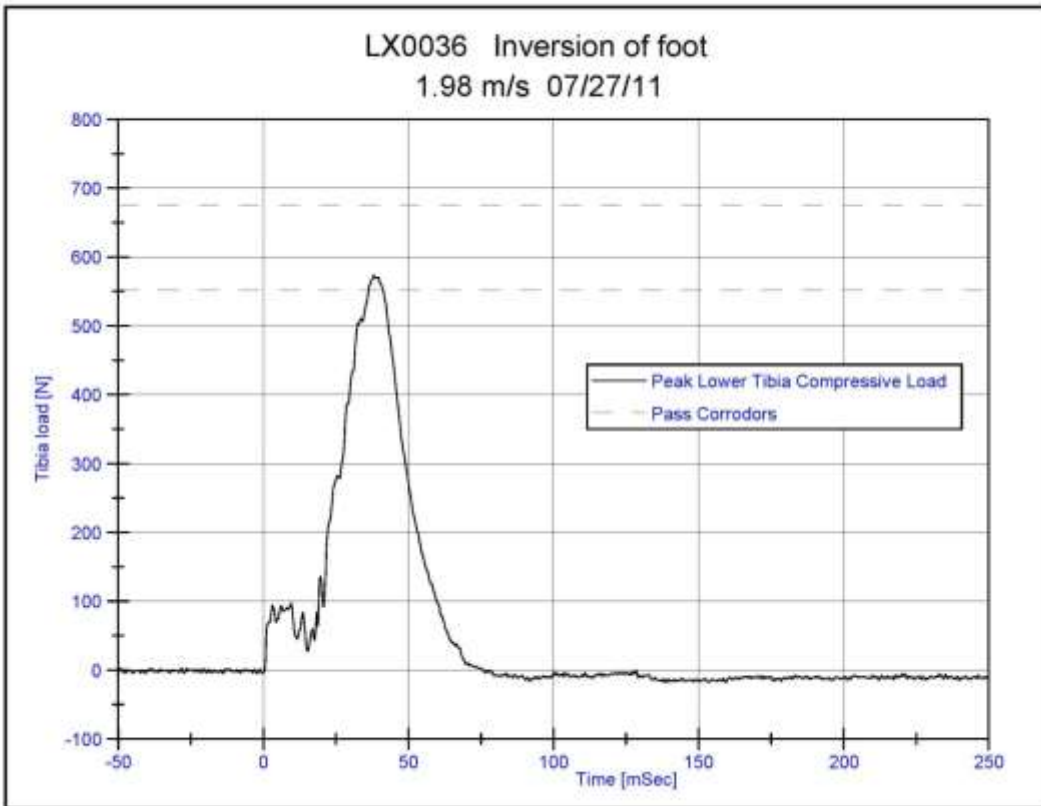
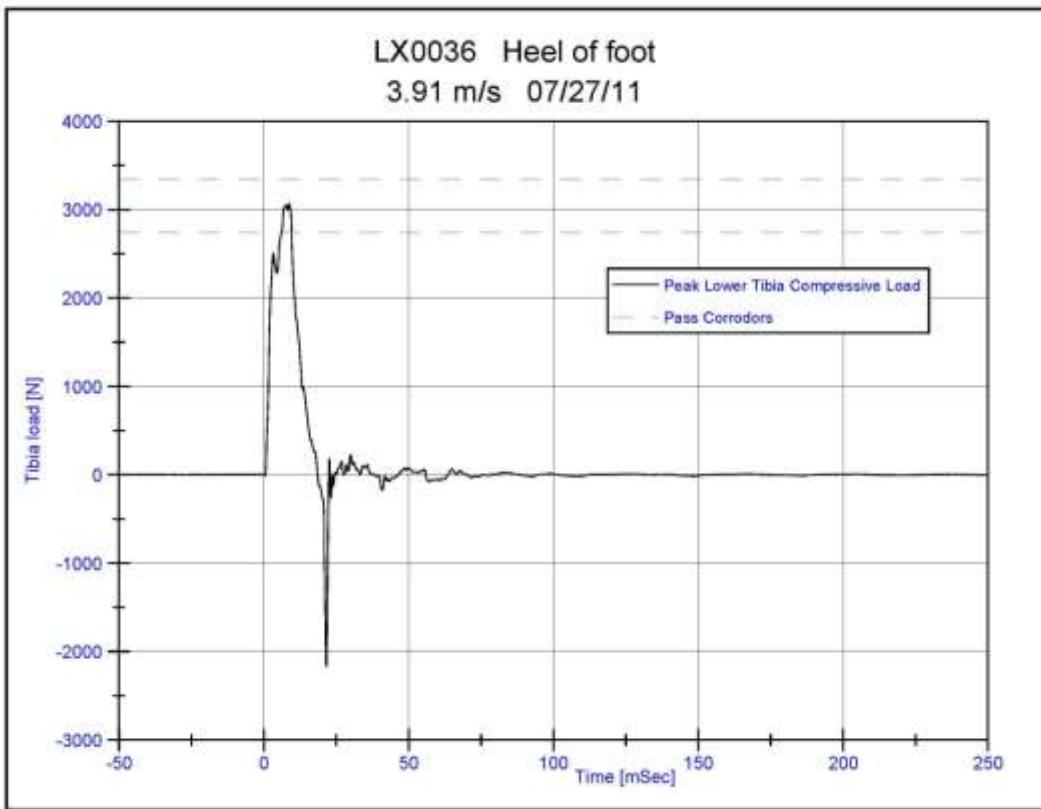


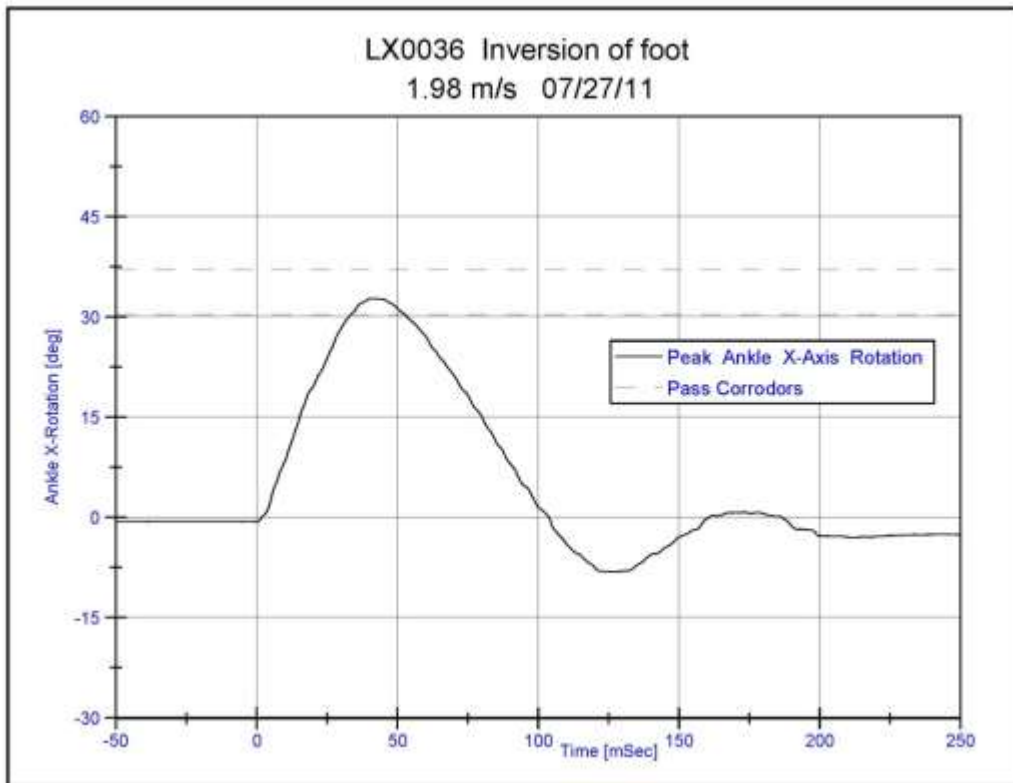
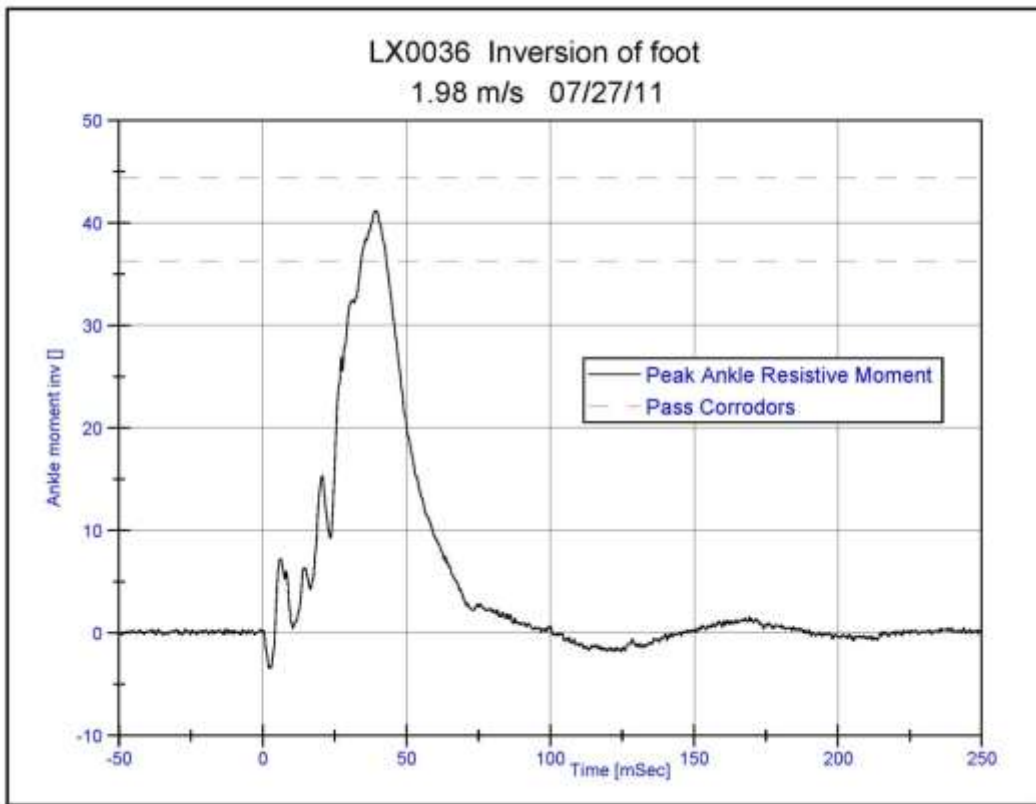
LEG S/N: LX036 / LX037

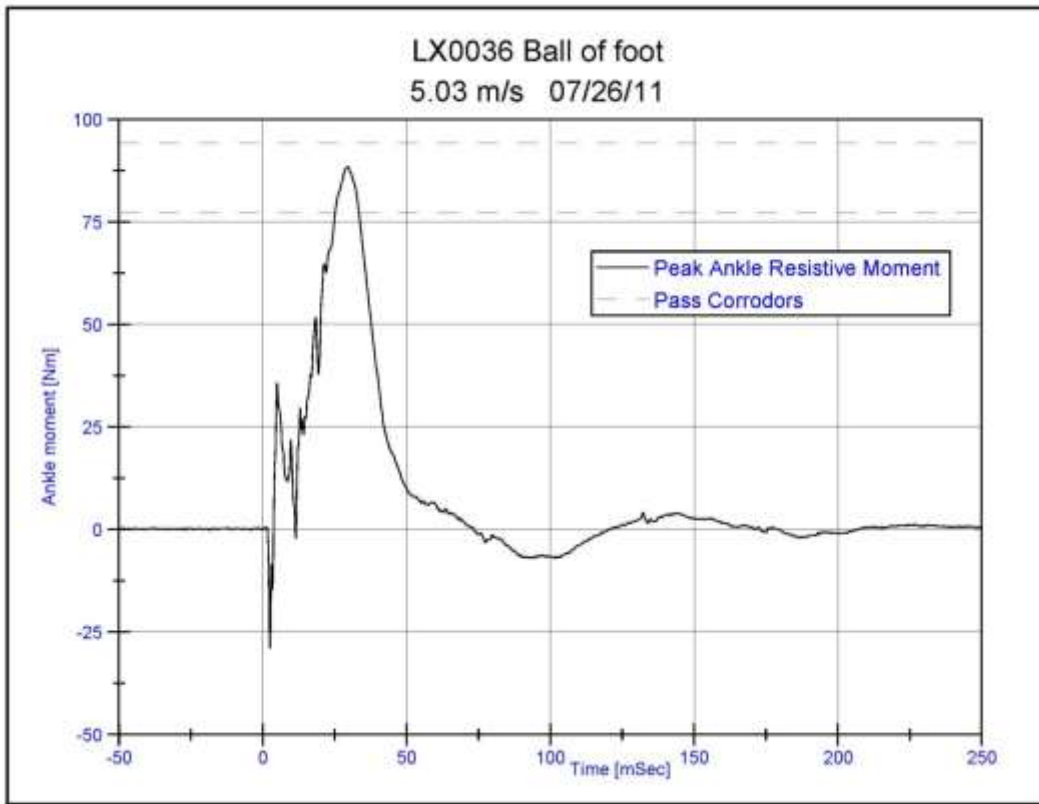
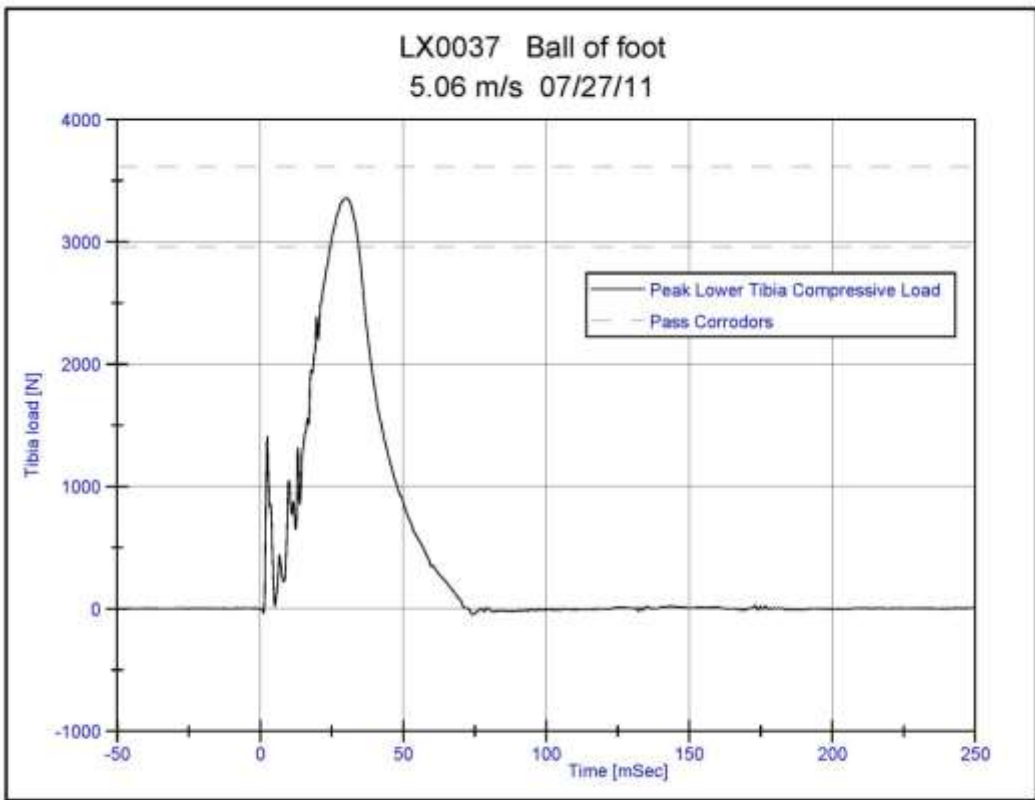


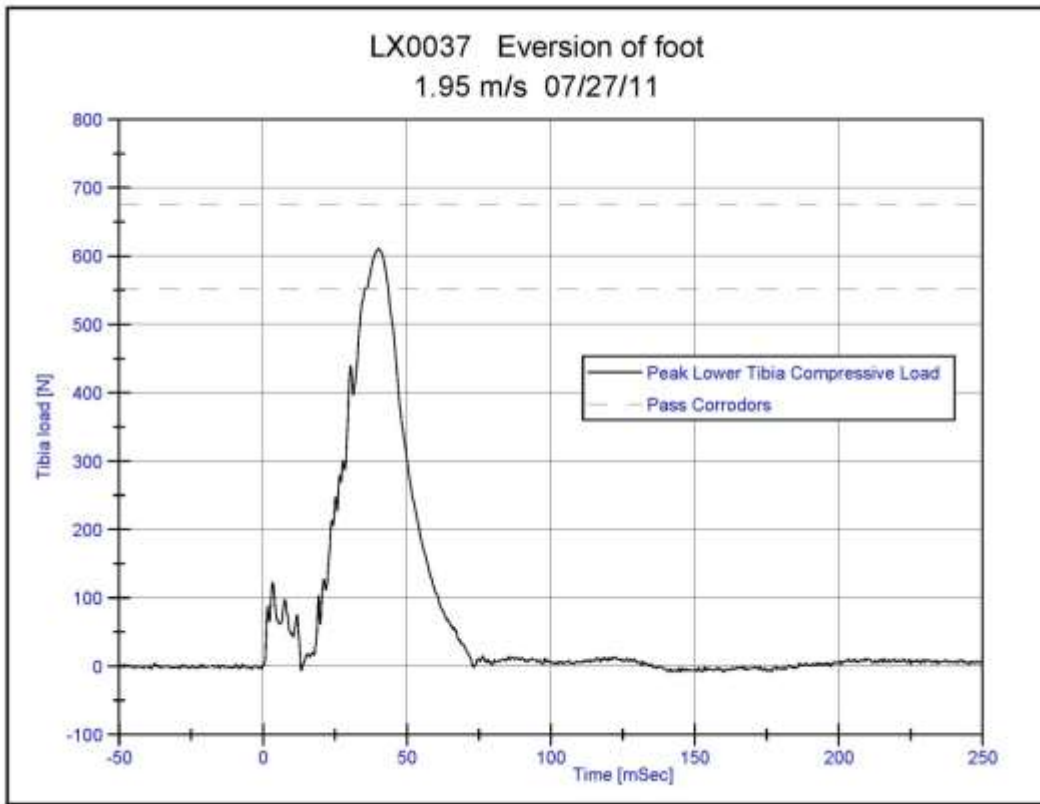
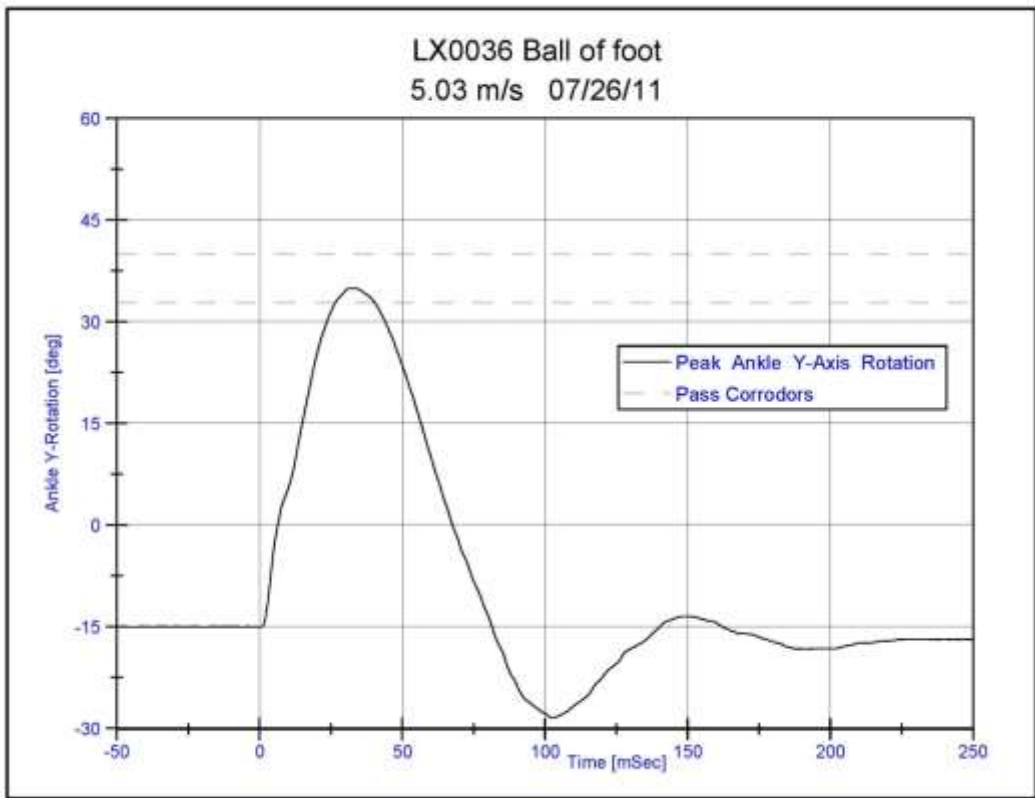


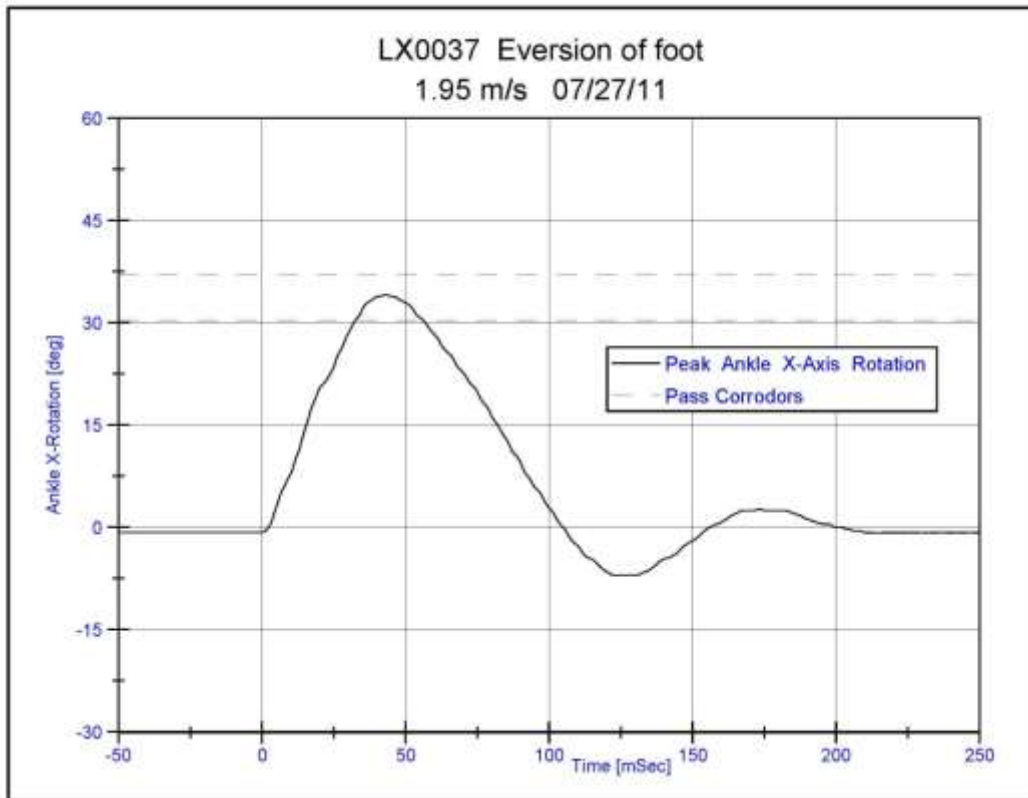
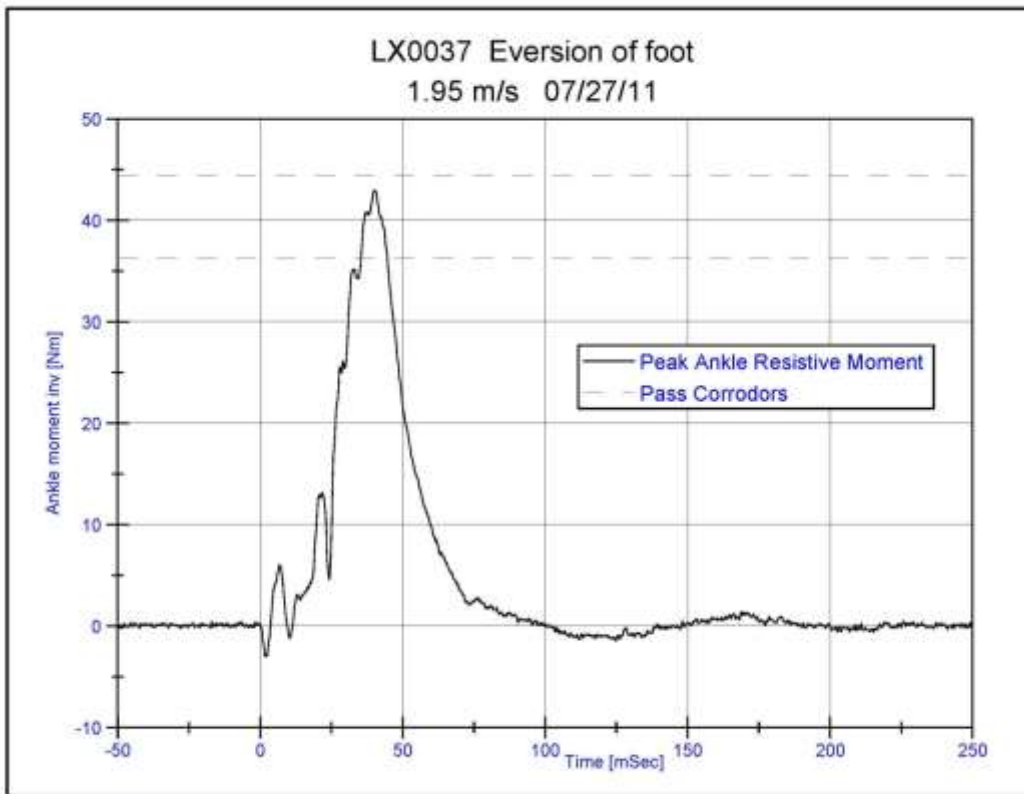


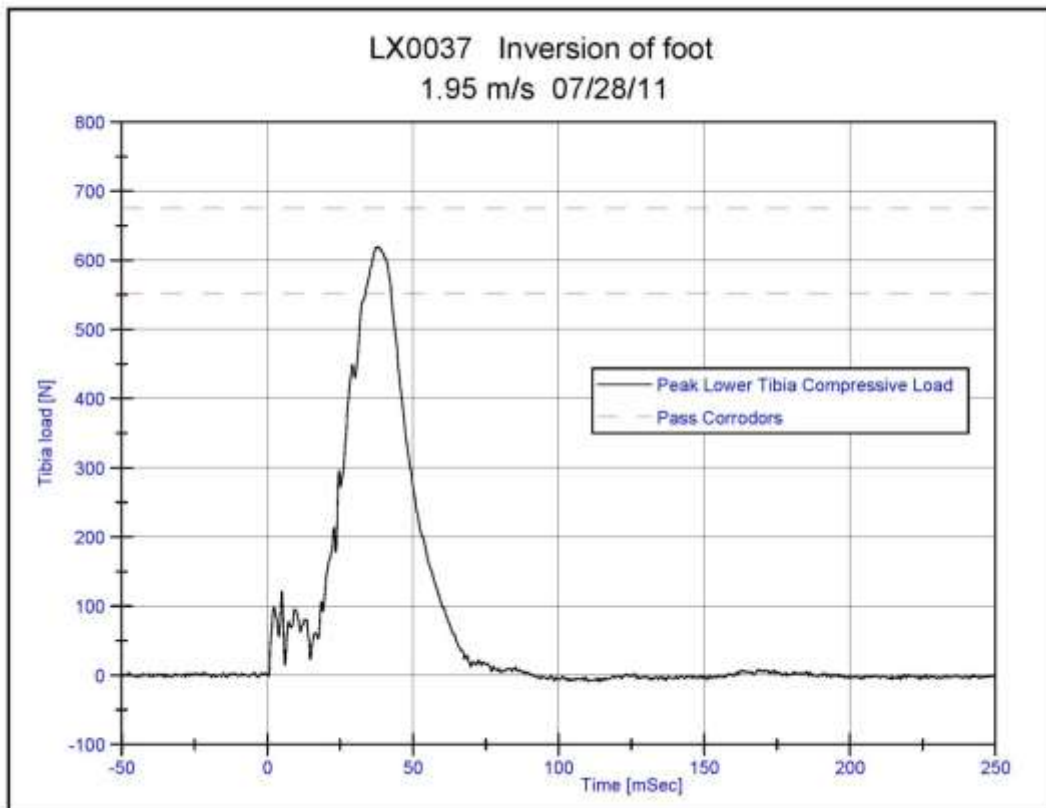
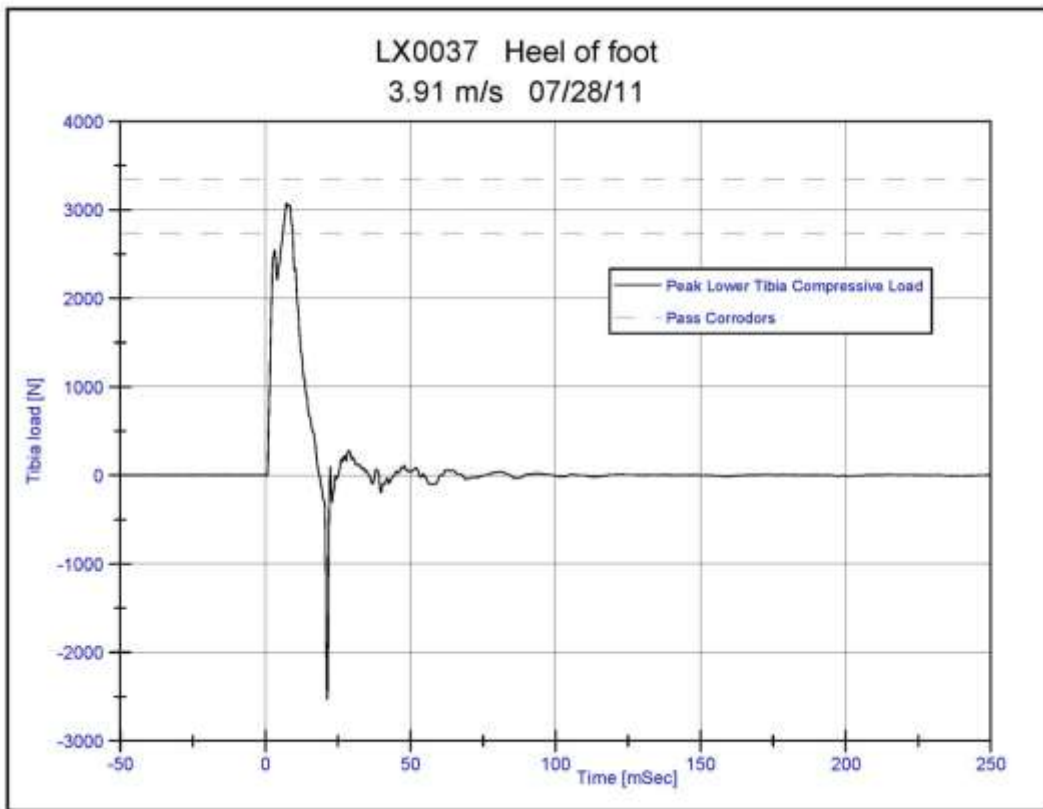


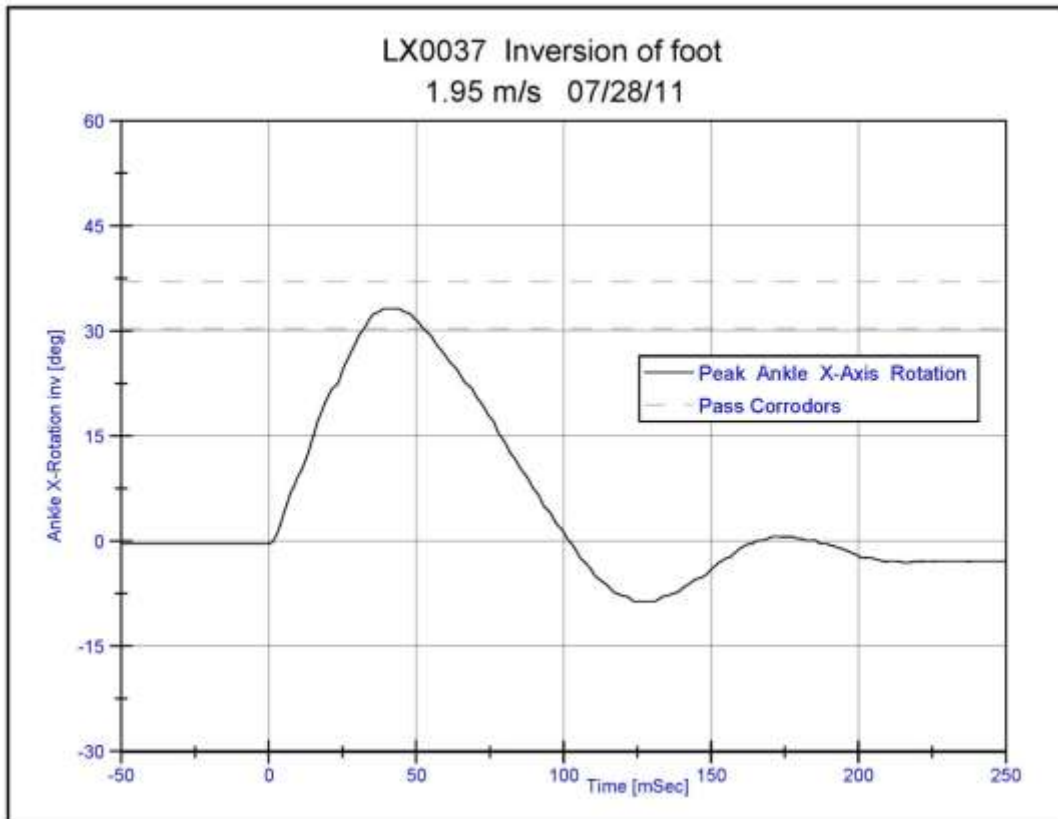
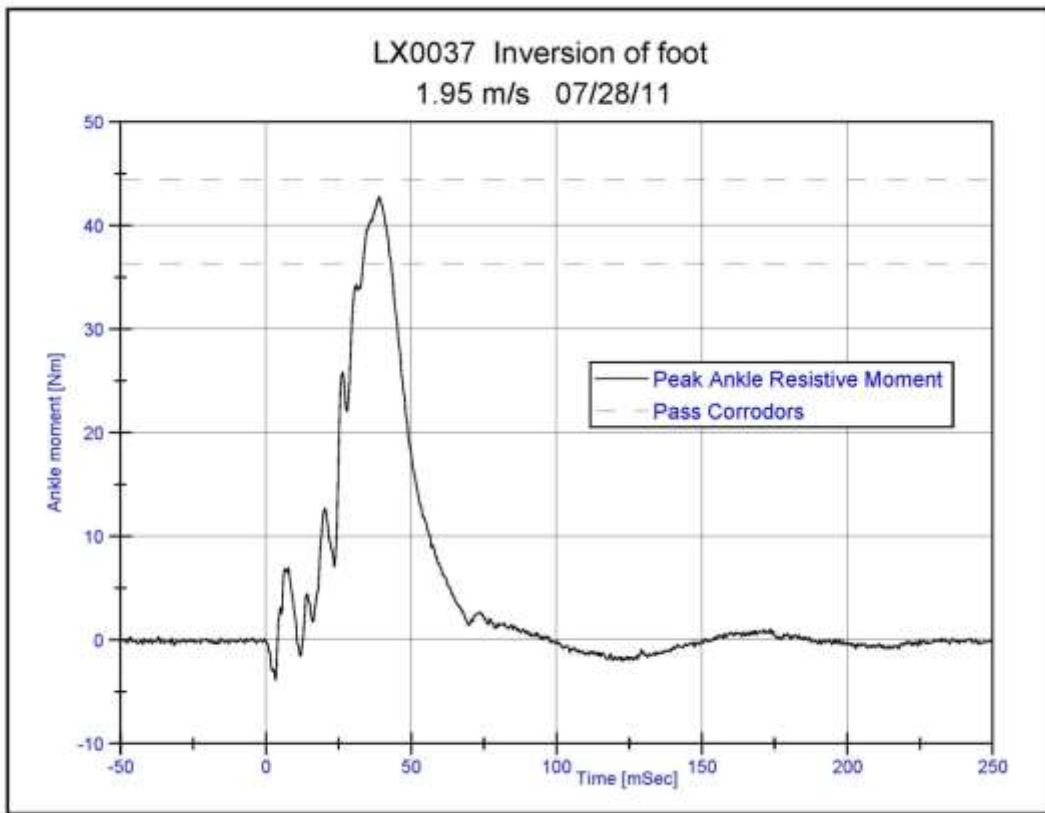












APPENDIX D

Additional Measurements & Data Calculations

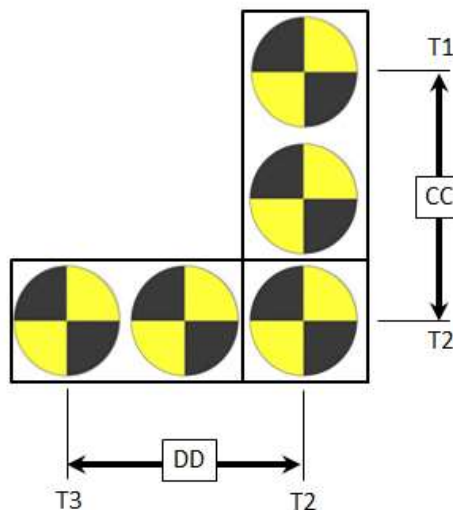
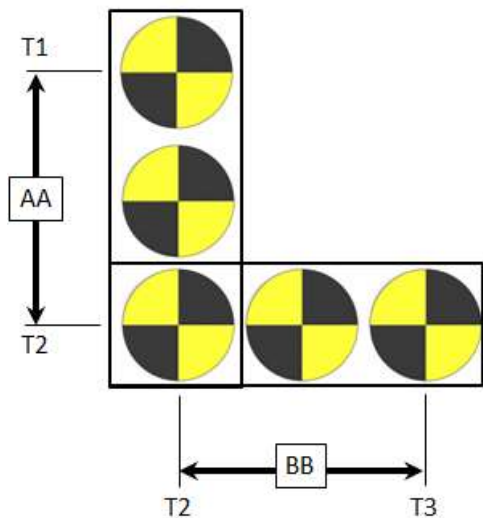
ADDITIONAL TARGETS

Overhead Reference Targets:

AA (T1 to T2)	<u>236</u>	mm
BB (T2 to T3)	<u>234</u>	mm

Ground Reference Targets:

CC (T1 to T2)	<u>235</u>	mm
DD (T2 to T3)	<u>235</u>	mm



APPENDIX E

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 would be 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.

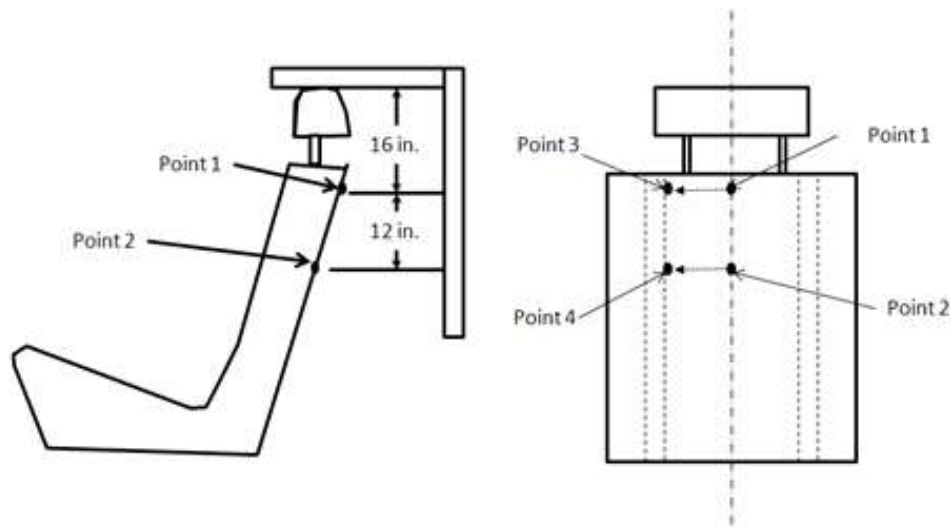
APPENDIX F
CMM MEASUREMENT PROCEDURES

SECTION F.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 F.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 F.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.

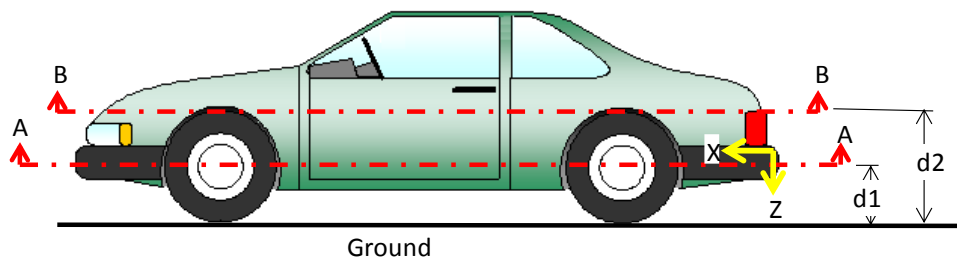


Figure F.3.1 - Pre-Test Cross-Sections

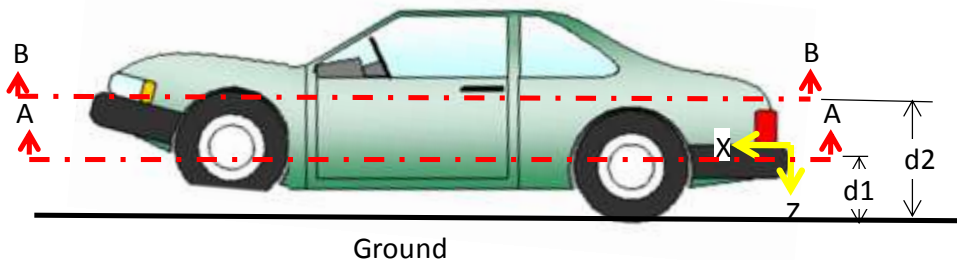


Figure F.3.2 - Post-Test Cross-Sections

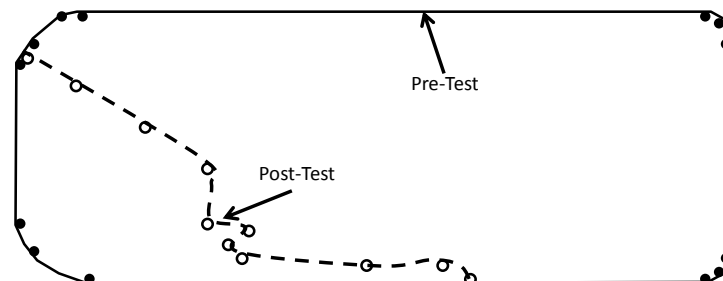


Figure F.3.3 - Plot of Cross-Section

SECTION F.4

DASH PROFILE MEASUREMENT PROCEDURE

The following procedure was used in order to obtain the dash profile measurements required for this test. Please see the diagram on the following page for further clarifications:

1. Left Plane: create a vertical plane that is parallel to the longitudinal axis of the vehicle and is located 150mm to the left of the center of the steering wheel (Figure 31).
2. Left Line: create a line on the IP/Knee Bolster at the intersection of the Left Plane and the IP/KneeBolster
3. L1: create a point on the dash that is located on the Left Line and is 450 mm above the floorboard (with floor mats removed). Note this is the Left IP point for the IP5 file and IP Left in DATA SHEET NO.13 (CONTINUED) - VEHICLE INTRUSION MEASUREMENTS.
4. Lt1: From L1 move up the Left Line 50 mm
5. Lt2: From Lt1 move up the Left Line 50 mm
6. Ltn: Mark points at 50 mm increments along Left Line until the window sill is reached.
7. Lb1: From L1 move down the Left Line 50 mm
8. Lb2: From Lb1 move down the Left Line 50 mm
9. Lbn: Mark points at 50 mm increments along Left Line until the bottom of the IP/Knee Bolster is reached.
10. Right Plane: create a vertical plane that is parallel to the longitudinal axis of the vehicle and is located 150mm to the right of the center of the steering wheel (Figure 31).
11. Right Line: create a line on the IP/Knee Bolster at the intersection of the Right Plane and the IP/KneeBolster
12. R1: create a point on the dash that is located on the Right Line and is 450 mm above the floorboard (with floor mats removed). Note this is the Right IP point for the IP5 file and IP Right in DATA SHEET NO.13 (CONTINUED) - VEHICLE INTRUSION MEASUREMENTS.
13. Rt1: From R1 move up the Right Line 50 mm
14. Rt2: From Rt1 move up the Right Line 50 mm
15. Rtn: Mark points at 50 mm increments along Right Line until the window sill is reached.
16. Rb1: From R1 move down the Right Line 50 mm
17. Rb2: From Rb1 move down the Right Line 50 mm
18. Rbn: Mark points at 50 mm increments along Right Line until the bottom of the IP/Knee Bolster is reached.

19. If dash panel or knee bolster loosens or breaks away in the crash, the post-test measurements are taken by pressing and holding the panel against the underlying structure. 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 picture.

