

REPORT NUMBER: R&D – CAL – 11 – 020

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

**2011 DODGE RAM 1500
56 MPH, 15 DEGREE ANGLE, 35% OVERLAP**

**TEST DATE: SEPTEMBER 16th 2011
NHTSA NO: RB0331**

**PREPARED BY;
CALSPAN CORPORATION
4455 GENESEE, BUFFALO NY**



FINAL REPORT SUBMITTED:

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**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
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FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

COTR, New Car Assessment Program
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16. Abstract A test was conducted in accordance with Task Order 0001 of Contract DTNH22-10-D-00155. The Test consisted of a research moving deformable barrier (RRMDB) traveling at a target speed of 90.12 kph into a stationary four door 2011 Dodge Ram 1500. 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 16, 2011. The impact velocity of the vehicle was 90.93 km/h, and the ambient temperature at the barrier face at the time of impact was 19.4°C. The target vehicle post-test maximum crush was 554 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>455.76</td> <td>N/A</td> <td>700</td> <td>196.03</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>-36.15</td> <td>mm</td> <td>52</td> <td>-30.94</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td>1</td> <td>0.76</td> <td>N/A</td> <td>1</td> <td>0.72</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4,170</td> <td>6079.93</td> <td>N</td> <td>2,620</td> <td>1604.16</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4,000</td> <td>-6220.20</td> <td>N</td> <td>2,520</td> <td>-359.57</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10,008</td> <td>-4800.61</td> <td>N</td> <td>6,805</td> <td>2752.82</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10,008</td> <td>-3447.90</td> <td>N</td> <td>6,805</td> <td>1737.89</td> </tr> </tbody> </table>							Measurement Description	Driver ATD			Pass. ATD			Units	Threshold	Result	Units	Threshold	Result	Head Injury Criteria (HIC ₁₅)	N/A	700	455.76	N/A	700	196.03	Maximum Chest Compression	mm	63	-36.15	mm	52	-30.94	Nij	N/A	1	0.76	N/A	1	0.72	Neck Tension	N	4,170	6079.93	N	2,620	1604.16	Neck Compression	N	4,000	-6220.20	N	2,520	-359.57	Left Femur Force	N	10,008	-4800.61	N	6,805	2752.82	Right Femur Force	N	10,008	-3447.90	N	6,805	1737.89
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TABLE OF CONTENTS

Test Vehicle:	2011 Dodge Ram 1500	NHTSA No:	RB0331
Test Program:	R&D 56mph, 15° angle, 35% offset	Test Date	9/16/2011

Section	Page No.
1 Purpose of Test	1-1
2 Summary of Test	2-1
Crash Vehicle Summary	2-3
Preliminary Injury Summary: Driver Thor Male	2-4
Preliminary Injury Summary: Driver Thor Male Legs	2-6
Preliminary Injury Summary: HIII 5 th Female Rear Passenger	2-7
3 Data Sheets	3-1

Data Sheet No.	Page No.
1 General Test and Vehicle Parameter Data	3-2
2 Seat Adjustment, Fuel System, and Steering Wheel Data	3-6
3 Dummy Longitudinal Clearance Dimensions	3-9
4 Dummy Lateral Clearance Dimensions	3-11
5 Seat Belt Positioning Data	3-12
6 High-Speed Camera Locations and Data	3-13
7 Vehicle Instrumentation Locations	3-16
8 Photographic Reference Target Locations	3-19
9 Test Vehicle Summary of Results	3-22
10 Post-Test Observations	3-23
11 Vehicle Profile Measurements	3-24
12 Accident Investigation Division Data	3-26
13 Vehicle Intrusion Measurements	3-27
14 RMDB Crush Measurements	3-46
15 Summary of FMVSS 212, 219 (Partial), and 301 Data	
Windshield Periphery Measurements	3-47
Fuel System Integrity Post Impact Data	3-48
16 FMVSS 301 Static Rollover Results	3-49
17 Dummy / Vehicle Temperature Stabilization	3-50

Appendix	Page No.
A Photographs	A-1
B Vehicle & Dummy Response Data Traces	B-1
C Part 572 E/O Dummy Calibration and Performance Verification Data Sheets	C-1
D Additional Measurements & Data Calculations	D-1
E Positioning Procedure for Rear Seat Part 572O 5 th Female ATD	E-1
F CMM Measurement Procedures	F-1

SECTION 1

PURPOSE

Test Vehicle:	<u>2011 Dodge Ram 1500</u>	NHTSA No:	<u>RB0331</u>
Test Program:	<u>R&D 56mph, 15° angle, 35% offset</u>	Test Date	<u>9/16/2011</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.

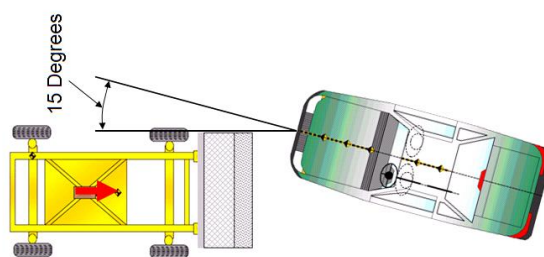
This test was conducted in accordance with the instructions set forth by NHTSA for a 15° angle, 35% offset moving barrier to vehicle impact, outlined in Task Order (TO) DTNH22-10-D-00155. Data was obtained indicant of Federal Motor Vehicle Safety Standard (FMVSS) 208-Occupant Crash Protection, FMVSS 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 Dodge Ram 1500</u>	NHTSA No:	<u>RB0331</u>
Test Program:	<u>R&D 56mph, 15° angle, 35% offset</u>	Test Date	<u>9/16/2011</u>

A 2011 four door Dodge Ram 1500 was impacted on the left front corner by a Research Moving Deformable Barrier. 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 (56.0 mph).



The test vehicle mass was 2611 kg (5756.3 lbs), and the RMDB mass was 2486.2 kg (5481 lbs). The test was conducted by Calspan Corporation on 9/16/11.

The test was documented by one (1) real time and fourteen (14) high-speed video cameras. Camera locations and other pertinent data are located in Data Sheet No. 06 of this report. Pre- and post-test photographs of the test vehicle, the RMDB and the test setup were taken using a digital still camera. Photographic documentation of the test is presented in Appendix A of this report.

One 50% adult male THOR MK (Mod Kit) anthropomorphic test device (ATD) (Serial No.: 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 and a curtain airbag. The left rear passenger was restrained with a 3-point seat belt and a curtain airbag.

SECTION 2 (CONTINUED)

SUMMARY OF TEST

Test Vehicle:	<u>2011 Dodge Ram 1500</u>	NHTSA No:	<u>RB0331</u>
Test Program:	<u>R&D 56mph, 15° angle, 35% offset</u>	Test Date	<u>9/16/2011</u>

One hundred and ninety eight (198) channels of data from the two ATD's, test vehicle and RMDB were collected using Kayser-Threde and Slice data acquisition systems. Appendix B contains dummy data plots, as well as vehicle and RMDB response data plots.

There was 88.7% total windshield retention, with 78.6% and 98.9% retention on the left and right sides respectively. There appeared to be no intrusion into the protected zone of the windshield during any portion of the impact test. The maximum static crush of the vehicle was 554 mm at C1 to the left of the vehicle's centerline. The maximum crush of the underlying structure was 600 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. The left front door was jammed shut, but was able to be opened. The left rear, right front, and right rear doors all remained operational after the test.

Structure observations include the following:

- The A-Pillar and the door sill buckled, causing separation at the top of the door from the vehicle.

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

- Head contacted the steering wheel airbag, as well as the door.
- Torso contacted the front airbag, bottom of the steering wheel, and the door.
- Knees contacted the knee bolster.

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

- Head contacted the headrest on the back of the head and the C-Pillar window frame
- Ankles brushed the driver's seatback.

SECTION 2 (CONTINUED)
CRASH VEHICLE SUMMARY

Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
RMDB Velocity at Impact	km/h	90.3
RMDB Test Weight	kg	2491
RMDB Maximum Static Crush	mm	224.8
Vehicle Test Weight	kg	2611
Actual Vehicle Angle	°	15
Vehicle Maximum Static Crush	mm	554
Vertical Offset from Target Point	mm	4 - Top
Lateral Offset from Target Point	mm	31 - Left
Number of Data Channels		198
Number of Real-Time Cameras		1
Number of High-Speed Cameras		14

DUMMY CONTACTS

	Driver	Picture Ref.	Passenger	Picture Ref.
Dummy Type	50% Male, Thor 007	N/A	5% HIII Female, 070	N/A
Head Contact	Steering wheel airbag	A-37 A-48	Headrest and C-Pillar	A-49 A-52 A-58
Upper Torso Contact	Steering wheel airbag	-	Door frame	-
Lower Torso Contact	None	A-46 A-47	None	-
Left Knee Contact	Knee bolster	A-45	None	A-59
Right Knee Contact	Knee bolster	A-44	None	A-59

Data Anomalies:

V2P1 NECK UPPER FZ	->	Questionable after 96 ms
V2P1 T1 ACCEL AZ	->	Questionable after 20 ms
V2P1 SPINE LOWER MY	->	Questionable after 181 ms
V2P1 LEFT ILIAC MY	->	Noise spikes on data
V2P1 RIGHT ILIAC FX	->	Questionable after 53 ms
V2P1 RIGHT ILIAC MY	->	Channel failed
V2P1 LEFT FEMUR FX	->	Questionable 19-30ms - saturated
V2P1 LEFT FEMUR MY	->	Large pre-test offset
V2P1 TIBIA LEFT x	->	Questionable magnitude
V2P1 TIBIA LEFT y	->	Questionable magnitude
V2P1 TIBIA LEFT UPPER FZ	->	Questionable after 45 ms
V2P1 ANKLE LEFT POT x	->	Questionable between 52-113ms
V2P1 FOOT LEFT x	->	Questionable magnitude
V2P1 TIBIA RIGHT LOWER MY	->	Questionable after 125 ms
V2P1 ANKLE RIGHT POT z	->	Questionable after 82 ms
V2P4 LOWER NECK MZ	->	Channel failed

SECTION 2 (CONTINUED)
PRELIMINARY INJURY SUMMARY: Driver

Test Vehicle: 2011 Dodge Ram 1500ST Truck _____ NHTSA No.: RB0331 _____
 Test Program: Research and Development Left Oblique Offset _____ Test Date: 9/16/2011 _____

Driver: Thor Serial No. 007 Injury Summary

	Nomenclature	Units	Source	Max	Min
Head	Head Rotational Acceleration X	rad/s ²	SIMon	358601.79	-341108.21
	Head Rotational Acceleration Y	rad/s ²	SIMon	206062.23	-196507.77
	Head Rotational Acceleration Z	rad/s ²	SIMon	411528.30	-394121.70
	Head Rotational Acceleration Resultant	rad/s ²	Compute	515033.05	
	Head Rotational Velocity X	rad/s	SIMon	54.42	-61.02
	Head Rotational Velocity Y	rad/s	SIMon	30.09	-52.91
	Head Rotational Velocity Z	rad/s	SIMon	55.11	-71.28
	Head Rotational Velocity Resultant	rad/s	Compute	86.94	
	36 ms HIC		Compute	533.32	
	15 ms HIC		Compute	455.76	
	Head Resultant CG Acceleration, 3 ms Clip	g	Compute	81.79	
	Skull fracture correlate	-	SIMon	70.30	
	Cumulative strain (Tolerance = 0.05)	-	SIMon	1.00	0.00
	Cumulative strain (Tolerance = 0.10)	-	SIMon	0.92	0.00
	Cumulative strain (Tolerance = 0.15)	-	SIMon	0.60	0.00
Neck	UNLC Transferred to OC, Neck System, FX	N	1000	292.12	-1462.58
	UNLC Neck System Tension, FZ	N	1000	6079.93 ⁽¹⁾	
	UNLC Neck System Compression, FZ	N	1000		-6220.20 ⁽¹⁾
	UNLC Transferred to OC, Neck System Flexion, MY	N-m	Thortest	3.67	
	UNLC Transferred to OC, Neck System Extension, MY	N-m	Thortest		-30.96
	NIJ		Compute	0.76	
	On head acting through total neck section, FX	N	Thortest	441.81	-811.46
	On head acting through total neck section, FY	N	Thortest	238.18	-345.30
	On head acting through total neck section, FZ	N	Thortest	6071.51 ⁽¹⁾	-6046.18 ⁽¹⁾
	On head acting through total neck section, MX	N-m	Thortest	4.30	-20.38
	On head acting through total neck section, MY	N-m	Thortest	71.51	-21.79
	On head acting through total neck section, MZ	N-m	Thortest	11.95	-5.23
	On head acting through O.C. joint only, FX	N	Thortest	308.33	-1414.65
	On head acting through O.C. joint only, FZ	N	Thortest	5343.04 ⁽¹⁾	-5474.64 ⁽¹⁾
	On head acting through O.C. joint only, MY	N-m	Thortest	6079.93 ⁽¹⁾	-6220.20 ⁽¹⁾
Chest	Upper Left Crux X – deflection	mm	Thortest	1.20	-18.64
	Upper Left Crux Y – deflection	mm	Thortest	20.48	-3.87
	Upper Left Crux Z – deflection	mm	Thortest	18.08	-0.28
	Upper Left Crux D – deflection	mm	Thortest	1.67	-14.24
	Upper Right Crux X – deflection	mm	Thortest	0.02	-32.26
	Upper Right Crux Y – deflection	mm	Thortest	3.27	-22.92
	Upper Right Crux Z – deflection	mm	Thortest	13.49	-7.75
	Upper Right Crux D – deflection	mm	Thortest	0.02	-33.60

SECTION 2 (CONTINUED)
PRELIMINARY INJURY SUMMARY: Driver

Test Vehicle: 2011 Dodge Ram 1500ST Truck NHTSA No.: RB0331

Test Program: Research and Development Left Oblique Offset Test Date: 9/16/2011

Driver: Thor Serial No. 007 Injury Summary

	Nomenclature	Units	Source	Max	Min	
Chest (Con't)	Lower Left Crux X – deflection	mm	Thortest	2.69	-15.28	
	Lower Left Crux Y – deflection	mm	Thortest	7.22	-5.85	
	Lower Left Crux Z – deflection	mm	Thortest	15.85	-4.36	
	Lower Left Crux D – deflection	mm	Thortest	2.88	-14.59	
	Lower Right Crux X – deflection	mm	Thortest	0.20	-38.06	
	Lower Right Crux Y – deflection	mm	Thortest	5.32	-5.51	
	Lower Right Crux Z – deflection	mm	Thortest	18.18	-6.15	
	Lower Right Crux D – deflection	mm	Thortest	0.66	-36.15	
		Chest CG Acceleration, 3 ms clip	g	Compute	32.26	
Abdomen	Upper Displacement	mm	Thortest	N/A	N/A	
	Lower Left X – deflection	mm	Thortest	0.14	-48.05	
	Lower Left Y – deflection	mm	Thortest	10.47	-0.07	
	Lower Left Z – deflection	mm	Thortest	14.76	-2.37	
		Left Viscous Criterion Based on X - deflection		Compute	0.45	
	Lower Right X – deflection	mm	Thortest	0.02	-53.17	
	Lower Right Y – deflection	mm	Thortest	4.55	-4.97	
	Lower Right Z – deflection	mm	Thortest	9.58	-1.34	
		Right Viscous Criterion Based on X - deflection		Compute	0.96	
Spine	Upper Spine (T1) AX	g	180	7.35	-62.74	
	Upper Spine (T1) AY	g	180	19.39	-18.50	
	Upper Spine (T1) AZ	g	180	0.27 ⁽²⁾	-40.16 ⁽²⁾	
		Upper Spine (T1) Resultant	g	Compute	68.19 ⁽²⁾	
	Middle Spine (T6) AX	g	180	8.10	-33.55	
	Middle Spine (T6) AY	g	180	16.21	-6.93	
	Middle Spine (T6) AZ	g	180	4.58	-11.21	
		Middle Spine (T6) Resultant	g	Compute	34.17	
Pelvis	Pelvis CG Resultant Acceleration	g	Compute	48.53		
Acetabulum	Left FX force	N	600	544.05	-2645.91	
	Left FY force	N	600	743.56	-577.33	
	Left FZ force	N	600	815.24	-276.12	
		Left Acetabulum Resultant	N	Compute	2653.30	
	Right FX force	N	600	338.15	-1786.07	
	Right FY force	N	600	194.71	-1273.71	
	Right FZ force	N	600	595.36	-123.22	
		Right Acetabulum Resultant	N	Compute	1950.67	

SECTION 2 (CONTINUED)
PRELIMINARY INJURY SUMMARY: Driver Legs

Test Vehicle: 2011 Dodge Ram 1500ST Truck NHTSA No.: RB0331

Test Program: Research and Development Left Oblique Offset Test Date: 9/16/2011

Driver: Thor Serial No. 007 Injury Summary

	Nomenclature	Units	Source	Max	Min
Knee	Left Knee Displacement, DX	mm	180	1.76	-3.21
	Right Knee Displacement, DX	mm	180	1.70	-3.75
Femur	Left Femur Force, FZ	N	600	318.85	-4800.61
	Left Femur Moment, MX	N-m	600	34.55	-99.11
	Left Femur Moment, MY	N-m	600	1.01 ⁽³⁾	-280.78 ⁽³⁾
	Left Femur Res (MX / MY only, not MZ)	N-m	Compute	281.25 ⁽³⁾	
	Right Femur Force, FZ	N	600	327.58	-3447.90
	Right Femur Moment, MX	N-m	600	37.52	-149.11
	Right Femur Moment, MY	N-m	600	97.23	-23.20
	Right Femur Res (MX / MY only, not MZ)	N-m	Compute	162.59	
Tibia	Left Upper Tibia, FZ	N	600	8686.84 ⁽⁴⁾	-13620.45 ⁽⁴⁾
	Left Upper Tibia, MY	N-m	600	39.25	-98.91
	Left Upper Tibia, Index		Compute	1.17 ⁽⁴⁾	
	Right Upper Tibia, FZ	N	600	240.52	-756.19
	Right Upper Tibia, MY	N-m	600	38.44	-58.67
	Right Upper Tibia, Index		Compute	0.38	
	Left Lower Tibia, FZ	N	600	80.13	-3263.07
	Left Lower Tibia, MY	N-m	600	26.42	-74.64
	Left Lower Tibia, Index		Compute	0.63	
	Right Lower Tibia, FZ	N	600	218.19	-2526.70
	Right Lower Tibia, MY	N-m	600	31.13 ⁽⁵⁾	-37.95 ⁽⁵⁾
	Right Lower Tibia, Index		Compute	0.47 ⁽⁵⁾	
	Ankle	Left Ankle Rotation, RX	Deg	180	30.05 ⁽⁶⁾
Left Ankle Rotation, RY		Deg	180	30.78	-8.87
Right Ankle Rotation, RX		Deg	180	20.62	-26.32
Right Ankle Rotation, RY		Deg	180	36.14	-0.56

Anomalies

- (1) Upper neck Fz questionable after 96 ms
- (2) Questionable data after 20 ms
- (3) Questionable offset throughout
- (4) Questionable data after 45 ms
- (5) Questionable data after 125 ms
- (6) Questionable data from 52 to 113 ms

**SECTION 2 (CONTINUED)
PRELIMINARY INJURY SUMMARY**

Test Vehicle: 2011 Dodge Ram 1500ST Truck _____ NHTSA No.: RB0331 _____
 Test Program: Research and Development Left Oblique Offset _____ Test Date: 9/16/2011 _____
Left Rear Passenger: H3 Serial No. 070 Injury Summary

	Nomenclature	Source	Max	Min
Head	Angular acceleration (rad/sec^2) - X	SIMon	2152.60	-5713.90
	Angular acceleration (rad/sec^2) - Y	SIMon	427.68	-242.00
	Angular acceleration (rad/sec^2) - Z	SIMon	166.94	-1265.90
	Angular acceleration - resultant (rad/sec^2)	SIMon	5749.28	
	Angular velocity (rad/sec) - X	SIMon	17.73	-14.83
	Angular velocity (rad/sec) - Y	SIMon	23.42	-0.09
	Angular velocity (rad/sec) - Z	SIMon	0.00	-58.16
	Angular velocity - resultant (rad/sec)	SIMon	62.36	
	36 ms HIC	Compute	391.91	
	15 ms HIC	Compute	196.03	
	Skull fracture correlate	SIMon	44.31	
	Cumulative strain (Tolerance = 0.05)	SIMon	0.99	
	Cumulative strain (Tolerance = 0.10)	SIMon	0.74	
	Cumulative strain (Tolerance = 0.15)	SIMon	0.36	
	Head resultant CG acceleration, 3 ms clip (g's)	Compute	52.24	
Neck	Upper Neck Tension (N) Fz	1000	1604.16	
	Upper Neck Compression (N) Fz	1000		-359.57
	Upper Neck NTF	Compute	0.58	
	Upper Neck NTE	Compute	0.72	
	Upper Neck NCF	Compute	0.04	
	Upper Neck NCE	Compute	0.24	
Chest	Chest Deflection (mm)	600	0.00	-30.94
	Upper Left Chest X (mm)	Compute	0.04	-26.61
	Upper Left Chest Y (mm)	Compute	1.03	-6.45
	Upper Right Chest X (mm)	Compute	0.00 ⁽¹⁾	-33.26 ⁽¹⁾
	Upper Right Chest Y (mm)	Compute	5.54 ⁽¹⁾	-11.05 ⁽¹⁾
	Lower Left Chest X (mm)	Compute	0.02	-16.13
	Lower Left Chest Y (mm)	Compute	2.60	-2.72
	Lower Right Chest X (mm)	Compute	0.00	-30.21
	Lower Right Chest Y (mm)	Compute	10.08	-0.16
	Chest CG acceleration, 3 ms clip, (G's)	Compute	33.68	
Femur	Right Fz Force (N)	600	1737.89	-89.30
	Left Fz Force (N)	600	2752.82	-184.55

Anomalies

(1) Questionable data from 70 to 90 ms

SECTION 3

DATA SHEETS

Test Vehicle:	<u>2011 Dodge Ram 1500</u>	NHTSA No:	<u>RB0331</u>
Test Program:	<u>R&D 56mph, 15° angle, 35% offset</u>	Test Date	<u>9/16/2011</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 Data	3-6
3	Dummy Longitudinal Clearance Dimensions	3-9
4	Dummy Lateral Clearance Dimensions	3-11
5	Seat Belt Positioning Data	3-12
6	High-Speed Camera Locations and Data	3-13
7	Vehicle Instrumentation Locations	3-16
8	Photographic Reference Target Locations	3-19
9	Test Vehicle Summary of Results	3-22
10	Post-Test Observations	3-23
11	Vehicle Profile Measurements	3-24
12	Accident Investigation Division Data	3-26
13	Vehicle Intrusion Measurements	3-27
14	RMDB Crush Measurements	3-46
15	Summary of FMVSS 212, 219 (Partial), and 301 Data	
	Windshield Periphery Measurements	3-47
	Fuel System Integrity Post Impact Data	3-48
16	FMVSS 301 Static Rollover Results	3-49
17	Dummy / Vehicle Temperature Stabilization	3-50

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

TEST VEHICLE INFORMATION

NHTSA No.	RB0330
Model Year	2011
Make	Ram
Model	1500 ST
Body Style	Truck
VIN	1D7RB1CP4BS560679
Body Color	Gold/tan/copper
Delivery Date	7/28/2011
Odometer Reading (km/mi)	233.4 km / 145 mi
Dealer	MT Ephraim Chrysler Dodge
Transmission	5-Speed Automatic
Final Drive	Front Wheel Drive
Type/No. Cylinders	V8
Engine Displacement (L)	4.7
Engine Placement	Longitudinal
Roof Rack	No
Sunroof/T-Top	No
Tinted Glass	No
Traction Control	No
Power Brakes	Yes
Front Disc	Yes
Rear Disc	Yes
Other	--

TEST VEHICLE OPTIONS

Anti-Lock Brakes	Yes
All-Wheel Drive	No
Power Steering	Yes
Driver Front Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	No
Driver Torso/Pelvis Airbag	No
Driver Pelvis Airbag	No
Driver Knee Airbag	No
Front Pass. Front Airbag	Yes
Front Pass. Curtain Airbag	Yes
Front Pass. Head/Torso Airbag	No
Front Pass. Torso Airbag	No
Front Pass. Torso/Pelvis Airbag	No
Front Pass. Knee Airbag	No
Pretensioners	Yes
Load Limiters	Yes
Tilt Steering	Yes
Automatic Door Locks	No
Power Windows	Yes
Power Seats	Yes
Air Conditioning	Yes

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

DATA FROM CERTIFICATION LABEL

Manufactured By	Chrysler Group LLC
Date of Manufacture	11/10

GVWR (kg)	3085
GAWR Front (kg)	1679
GAWR Rear (kg)	1770

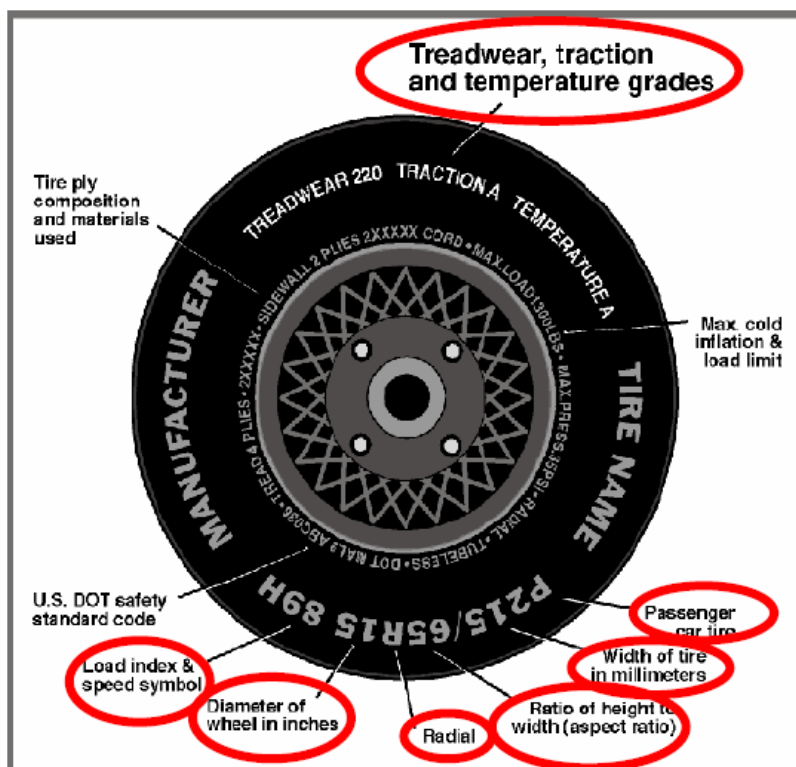
VEHICLE SEATING AND WEIGHT CAPACITY

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Split Bench	Split Bench	N/A	
Number of Occupants	3	3	-	6
Capacity Wt. (VCW) (kg)				765
Cargo Wt. (RCLW) (kg)				136

DATA SHEET NO. 1 (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011



Measured Parameter	Front	Rear
Maximum Tire Pressure	300	300
Cold Pressure (kPa)	276	276
Recommended Tire Size	P265/70R17	P265/70R17
Tire Size on Vehicle	P265/70R17	P265/70R17
Tire Manufacturer	Goodyear	Goodyear
Tire Model	Wrangler SR-A	Wrangler SR-A
Treadwear	500	500
Traction	A	A
Temperature Grades	B	B
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 2 Steel	2 Polyester, 2 Steel
Load Index/Speed Symbol	104H	104H
Tire Material	Rubber	Rubber
DOT Safety Code Right	4BT6EXWR4210	4BT6EXWR4210
DOT Safety Code Left	4BT6EXWR4210	4BT6EXWR4210

DATA SHEET NO. 1 (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	686	500		745	620	
Right	kg	627	513		635.5	610.5	
Ratio	%	56.4%	43.6%		52.9%	47.1%	
Totals	kg	1313	1013	2326	1380.5	1230.5	2611

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	2326
Weight of 1 P572E ATD & 1 P572O ATD	kg	153.54
Rated Cargo/Luggage Weight (RCLW)	kg	136
Calculated Vehicle Target Weight (TVTWT)	kg	2615.54

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	911	914	988	998	1557
As Tested	mm	898	908	953	950	1684
Post Test	mm	-	-	-	-	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	3574
Total Vehicle Length at Left Side	mm	5744
Total Vehicle Length at Centerline	mm	5825
Total Vehicle Length at Right Side	mm	5744
Weight of Ballast in Cargo Area	kg	63.6
Weight of Vehicle Components Removed	kg	0
Amount of Stoddard Solvent in Fuel Tank	L	90.5

LIST OF COMPONENTS REMOVED TO MEET TEST WEIGHT: None

MASS OF BALLAST ADDED (kg) 63.6

DATA SHEET NO.1 (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

TARGET VEHICLE STRUCTURAL MEASUREMENT

	Elements	Pre-Test (mm)
1	Total Length	5825
2	Total Width	2019
3	Bumper Top Height	-128
4	Bumper Bottom Height	109
5	Longitudinal Member Top Height	-61
6	Distance Between Longitudinal Members	925
7	Longitudinal Member Width	72
8	Engine Top Height	-604
9	Engine Bottom Height	43
10	Engine and Gearbox Width	672
11	Front Bumper-Engine Distance	778
12	Front Shock Absorber Fixing Height	-118
13	Bonnet Leading Edge Height	-569
14	Front Shock Absorber Fixing Width	892
15	Front Bumper – Front Axle Distance	1021
16	Front Axle – A Pillar Distance	537
17	A- Pillar – B-Pillar Distance	1147
18	B-Pillar – Rear Axle Distance	1893
19	B-Pillar – C-Pillar Distance	1011
20	Roof Sill Bottom Height	-1211
21	Roof Sill Top Height	-1244
22	Floor Sill Bottom Height	35
23	Floor Sill Top Height	0

DATA SHEET NO. 2

SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL

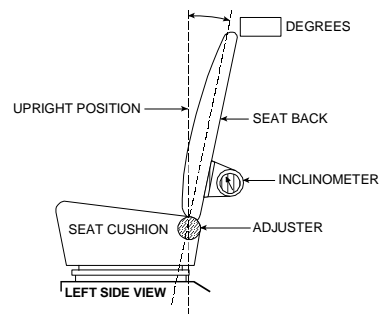
Test Vehicle: 2011 Dodge Ram 1500
 Test Program: R&D 56mph, 15° angle, 35% offset

NHTSA No: RB0331
 Test Date: 9/16/2011

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:	5.4
Passenger seat back angle:	Fixed



FRONT SEAT ASSEMBLY

SEAT FORE/AFT POSITIONS

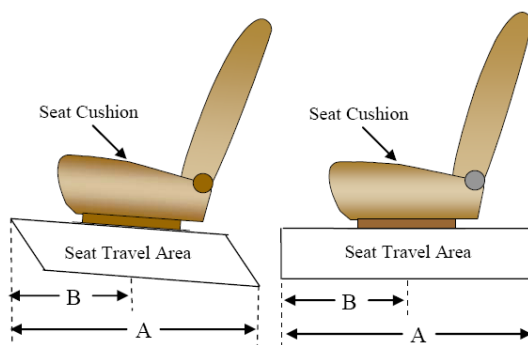
Seat was set to full forward, full up and marked. Then moved to the full rear, full down position, and marked. Mid point was measured, and seat was set to full down, mid position, as per form 1.

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	24	12
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	5	2 (0 = Uppermost)
Passenger Seat	Fixed	Fixed

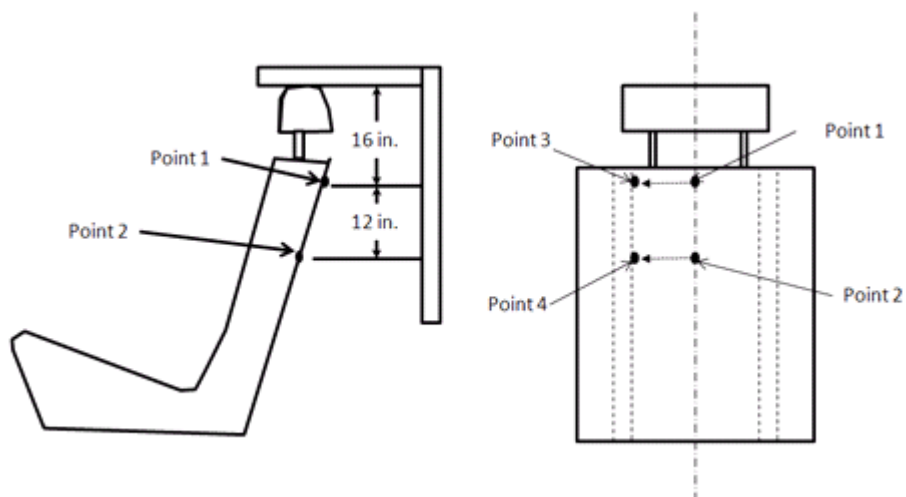


DATA SHEET NO. 2 (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle:	2011 Dodge Ram 1500	NHTSA No:	RB0331
Test Program:	R&D 56mph, 15° angle, 35% offset	Test Date	9/16/2011

SEAT BACK MEASUREMENT POINTS



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

	X	Y	Z
Point 3	2978.683	-656.899	-719.749
Point 4	3115.991	-661.802	-422.086

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

DATA SHEET NO. 2 (CONTINUED)

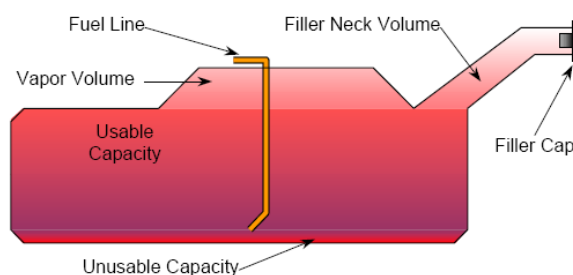
SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	98.41
Usable Capacity of "Optional Tank"	
92%-94% of Usable Capacity	90.5
Actual Amount of Solvent Used	90.5
1/3 of Usable Capacity	32.8

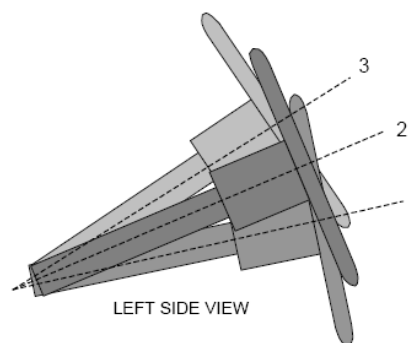
Electric fuel pump located at the top of the tank, Blue/Red wire (+) Black wire (-)



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

A level line was drawn on the steering wheel and an inclinometer was used to determine the angle of adjustment. The steering column was then moved full in and full out. Positions were marked and the steering wheel was set to the geometric center of its possible movement. – Was set at detent 5 from 1 as the lowermost.



STEERING COLUMN ASSEMBLY

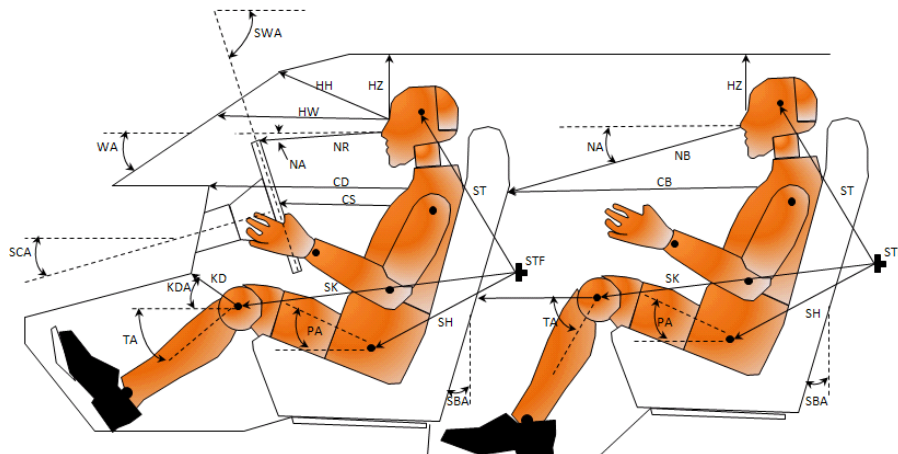
STEERING COLUMN POSITIONS

	Degrees	Fore/Aft Position (mm)
Lowermost position No. 1	75.4	
Geometric center position No. 2	66.85	
Uppermost position No. 3	58.3	
Telescoping Steering Wheel Travel		
Test Position	66	

DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011



Code	Measurement Description	Driver		Left Rear Passenger	
		Length (mm)	Angle(°)	Length (mm)	Angle (°)
WA°	Windshield Angle		-32.2		
SWA°	Steering Wheel Angle		66		
SCA°	Steering Column Angle		-18		
SA°	Seat Back Angle (on headrest post)		5.2		5.8
HZ	Head to Roof (Z)	215	90	331	90
HH	Head to Header	472	13.7		
HW	Head to Windshield	708	0		
NR/NB	Nose to Rim/Seat Back	490	-13.6	606	-10.8
CD/CB	Chest to Dash/Seat Back	635		623	
CS	Chest to Steering Hub	435	-18.3		
RA	Rim to Abdomen	190	0		
KDL/KBL	Left Knee to Dash/Seat Back	138	25	321	18.6
KDR/KBR	Right Knee to Dash/Seat Back	110	25	318	20.6
PA°	Pelvic Angle		-23.5		20.4
TA°	Tibia Angle		-53		-72.3
SK	Striker to Knee	614	5.4	572	-1.6
ST	Striker to Head	688	83.6	592	-79.8
SH	Striker to H-Point	195	-8	147	-3
HAX°	Head Angle X		0.5		
HAY°	Head Angle Y		3.6		
NAX°	Neck Angle X		0.6		
NAY°	Neck Angle Y		0.8		
TAX°	T6 Angle X		16.2		
TAY°	T6 Angle Y		0.8		
LAX°	T12 Lumbar Angle (X)		-0.7		
LAY°	T12 Lumbar Angle (Y)		23.2		

DATA SHEET NO. 3 (CONTINUED)

DUMMY CMM MEASUREMENTS

Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

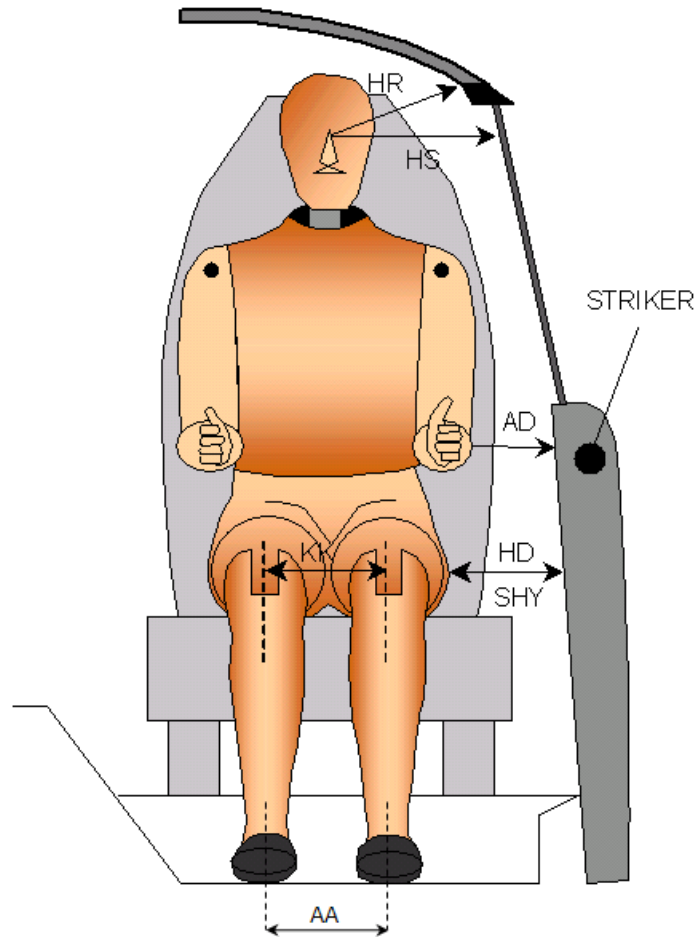
Description	Units	Driver			Left Rear Passenger		
		X	Y	Z	X	Y	Z
Striker (Driver/Passenger)	mm	3188.52	-	-	2160.584	-917.82	-
Head CG	mm	3246.311	-	-	2265.256	-	-
Bridge of Nose	mm	3343.369	-	-	2351.973	-	-
Tip of Nose	mm	3340.633	-	-	2258.776	-	-
Shoulder Bolt	mm	3284.983	-	-	2359.09	-	-
Tip of Chin	mm	3334.801	-	-	2345.404	-	-
H-point	mm	3406.826	-	-	2763.974	-	-
Left Knee	mm	3817.901	-	-	2763.013	-	-
Right Knee	mm	3818.352	-	-	2862.023	-	-
Left Ankle	mm	4107.054	-	-	2865.484	-	-
Right Ankle	mm	4074.329	-	-	2782.974	-	-
Left Heel	mm	4089.271	-	-	2781.604	-	-
Right Heel	mm	4067.001	-	-	2160.584	-	-
Driver's Outboard Seat Anchor Bolt	mm	3697.808	-	-			
Outboard Head Restraint Post	mm	3010.995	-	-	2068.895	-	-
Top of Head Restraint*	mm	3081.583	-	-	2118.451	-	-
Center of Steering Wheel	mm	3740.919	-	-			

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 Dodge Ram 1500	NHTSA No:	RB0331
Test Program:	R&D 56mph, 15° angle, 35% offset	Test Date	9/16/2011

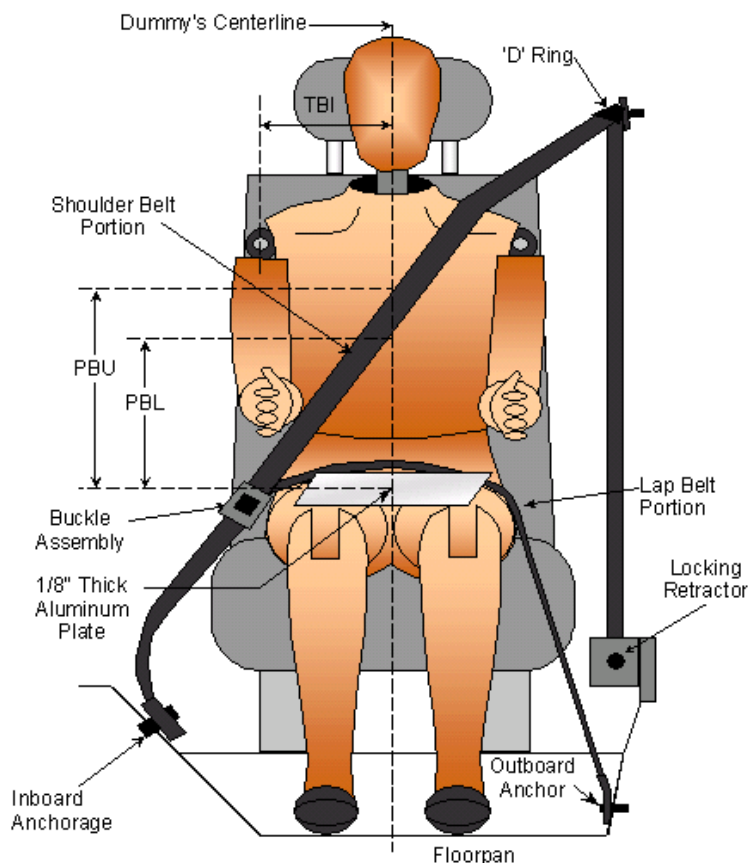


Code	Description	Units	Driver (P1)	Passenger (P4)
AD	Arm to Door	mm	122	90
HD	H-Point to Door	mm	125	200
HR	Head to Side Header	mm	183	270
HS	Head to Side Window	mm	340	360
KK	Knee to Knee	mm	280	168
SHY	Striker to H-Point (Y Direction)	mm	220	320
AA	Ankle to Ankle	mm	280	168

DATA SHEET NO. 5

SEAT BELT POSITIONING DATA

Test Vehicle:	2011 Dodge Ram 1500	NHTSA No:	RB0331
Test Program:	R&D 56mph, 15° angle, 35% offset	Test Date	9/16/2011



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU — Top surface of aluminum plate to belt upper edge	mm	364	300
PBL — Top surface of aluminum plate to belt lower edge	mm	280	225

BELT LENGTH DATA

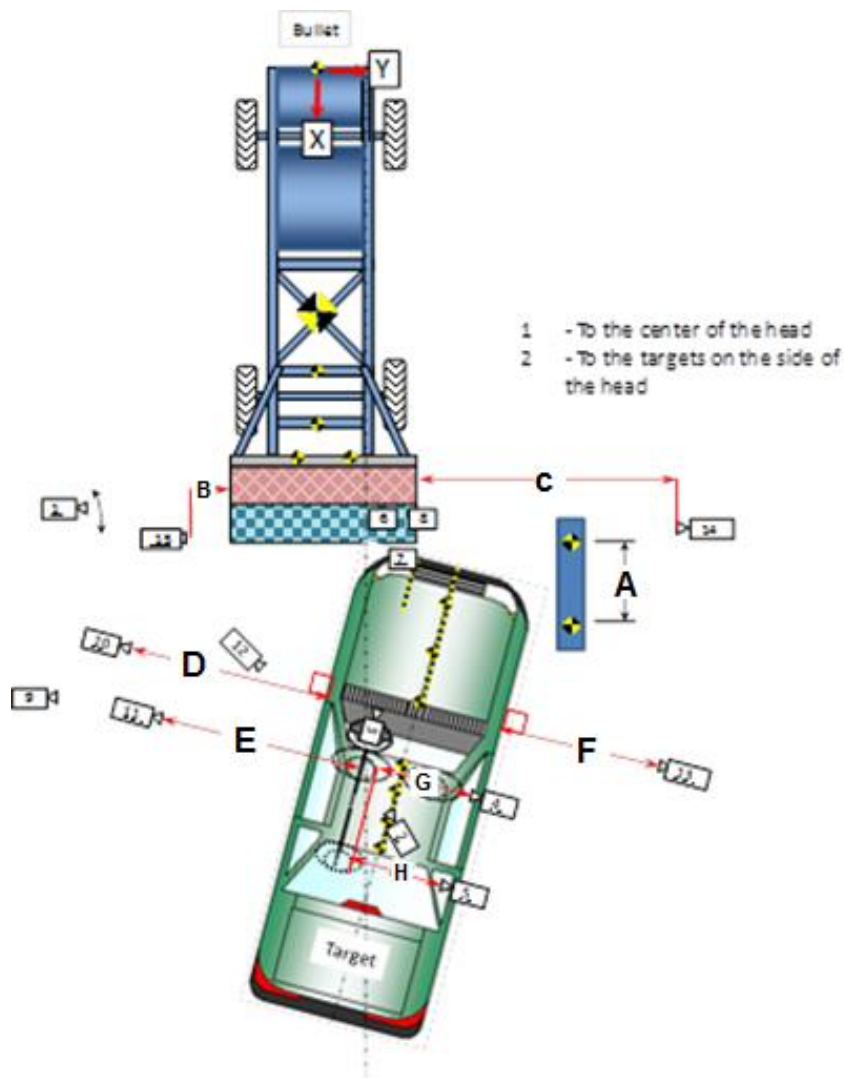
Measurement Description	Units	Driver	Passenger
Shoulder belt length as measured on ATD	mm	862	790
Lap Belt Length as measured on ATD	mm	935	750
Remainder of belt on reel	mm	1003	860
Total belt length for continuous webbing systems	mm	2800	2400

DATA SHEET NO. 6

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle:	2011 Dodge Ram 1500	NHTSA No:	RB0331
Test Program:	R&D 56mph, 15° angle, 35% offset	Test Date	9/16/2011

Horizontal Location



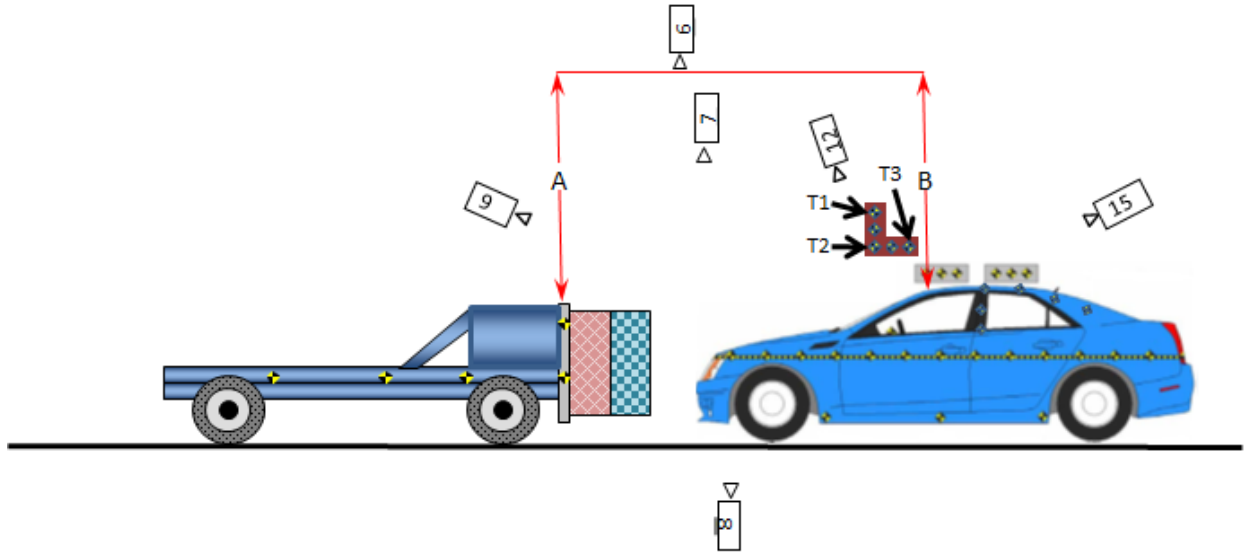
A	mm	915
B	mm	
C	mm	
D	mm	9130
E	mm	9814
F	mm	8221
G	mm	1050
H	mm	1055

DATA SHEET NO. 6 (CONTINUED)

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

Horizontal Location



	Units	Value
A	mm	3856
B	mm	3201

DATA SHEET NO. 6 (CONTINUED)

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

CAMERA LOCATIONS

No.	Camera View	Location (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Side View					
2	Onboard Driver Over Shoulder	3271	-459	1726	12.5	500
3	Onboard Driver Lower Leg	1845	-429	553	6.5	500
4	Onboard Driver Perpendicular	2487	1465	1249	12.5	500
5	Onboard Left Rear Passenger Perpendicular	3394	1268	1288	12.5	500
6	Overall Top View	1981	-746	5149	14	1000
7	Zoomed Top View	0	1143	3707	24	1000
8	Pit Front					
9	Ladder Front	-224	9874	2882	24	1000
10	Target Vehicle Left Side	838	9061	1326	28	1000
11	Driver's Motion	1132	9437	1463	50	1000
12	Look Down Driver's Motion	3149	2417	3380	13	1000
13	Target Vehicle Right Side	9714	9619	1572	24	1000
14	Bullet Vehicle Left Side					
15	Ladder Rear	4119	9924	3089	24	1000
16	Onboard RMDB	272	534	2066	13	1000

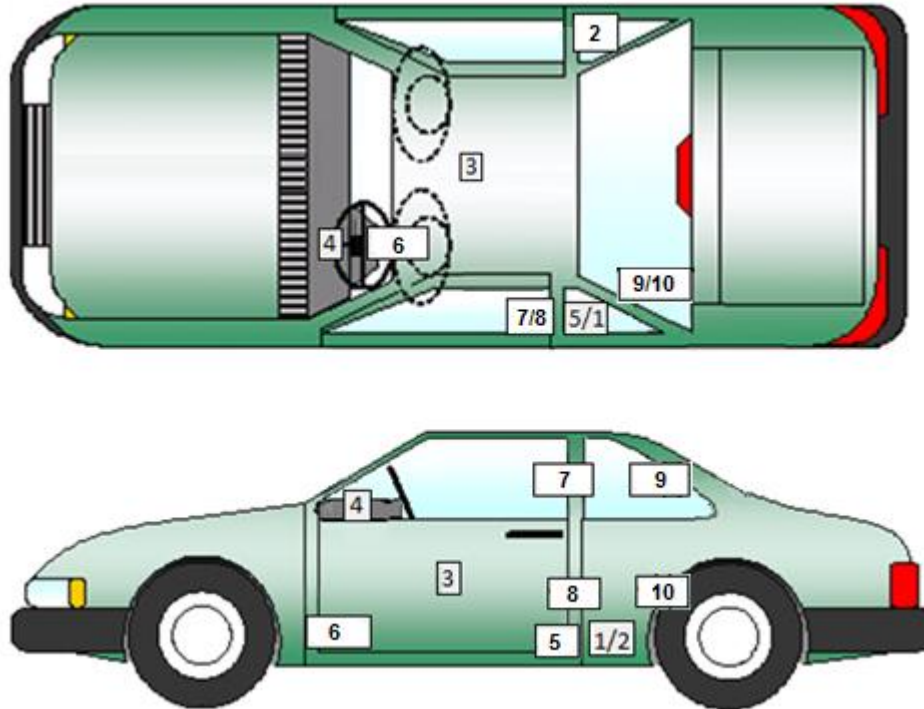
Reference point: center most rearward point of the RMDB when in contact with the Target Vehicle):

- +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 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011



Accelerometer Location	Axes	Units	Location		
			X	Y	Z
Left Rear Sill	X,Y	mm	2629	-702	-15
Right Rear Sill	X,Y	mm	2629	731	-32
Vehicle CG	X, Y, Z	mm	3852	146	-135
Driver Seat Track	X	mm	3886	-3	-625
Instrument Panel	X, Y, Z	mm	3138	-460	-15
Behind Brake Pedal	X, Y, Z	mm	4499	-516	-198

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 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

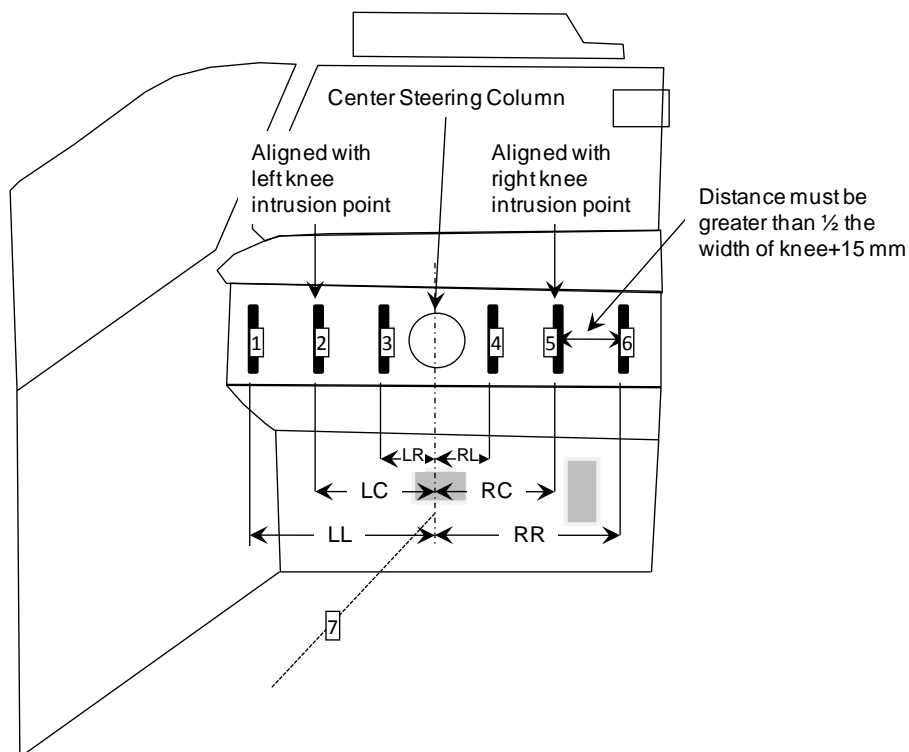
VEHICLE INSTRUMENTATION DATA

Loc.	Description	Axes	Units	Positive Direction		Negative Direction	
				Max	Time (ms)	Max	Time (ms)
1	Left Rear Cross Member	X	G	2.29	167.35	-20.64	44.50
		Y	G	14.98	64.55	-2.59	137.30
2	Right Rear Cross Member	X	G	0.82	171.75	-34.70	54.40
		Y	G	14.81	59.60	-5.82	33.45
3	Vehicle CG	X	G	2.14	171.05	-35.11	55.25
		Y	G	38.38	63.50	-10.81	34.20
		Z	G	71.26	51.75	-52.41	70.85
4	Instrument Panel	X	G	37.47	94.70	-119.94	65.60
5	Driver Seat Track	X	G	2.02	167.20	-21.95	49.05
		Y	G	22.70	58.45	-2.83	9.25
		Z	G	19.66	33.05	-15.85	80.25
6	Behind Brake Pedal	X	G	42.71	39.60	-74.96	55.55
		Y	G	55.49	55.70	-18.86	40.90
		Z	G	31.61	37.30	-77.72	56.65
7	Driver Shoulder Belt		N	4940.99	64.00	-8.12	159.10
8	Driver Lap Belt		N	2126.70	56.75	-1.07	-8.90
9	Passenger Shoulder Belt		N	5402.73	80.90	-4.92	230.05
10	Passenger Lap Belt		N	4236.08	58.60	-1.86	-29.65

DATA SHEET NO. 7 (CONTINUED)

VEHICLE INSTRUMENTATION DATA

Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011



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

VEHICLE INSTRUMENTATION DATA

Loc.	Description		Positive Direction		Negative Direction	
			Max	Time (ms)	Max	Time (ms)
1	Left knee contact switch (LL) (ms)	*				105.55
2	Left knee contact switch (LC) (ms)	*				64.05
3	Left knee contact switch (LR) (ms)	*				45.6
4	Right knee contact switch (RL) (ms)	*				No contact
5	Right knee contact switch (RC) (ms)	*				37.5
6	Right knee contact switch (RR) (ms)	*				61.2
7	Toe pan string pot (mm)		0.029	1.15	-71.002	97.55

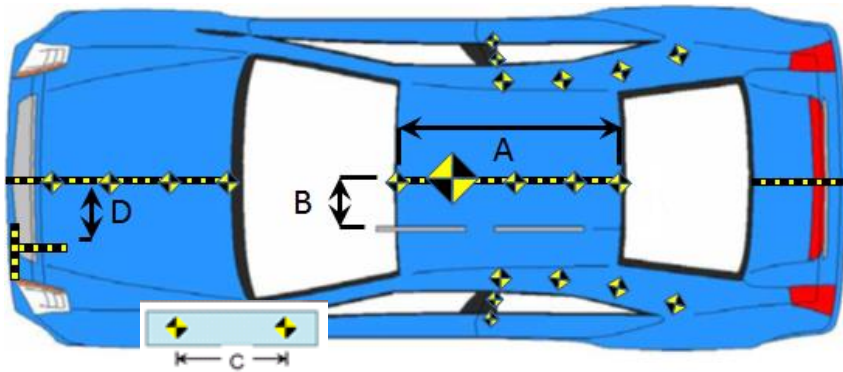
* The measurement indicates the initial time the voltage changed

DATA SHEET NO. 8

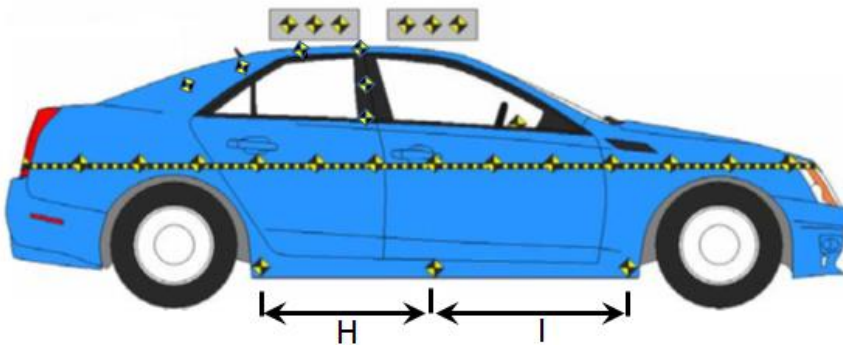
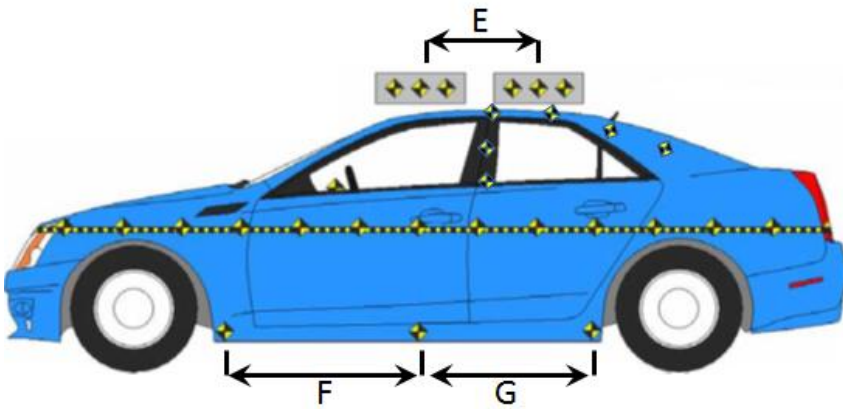
VEHICLE PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2011 Dodge Ram 1500
 Test Program: R&D 56mph, 15° angle, 35% offset

NHTSA No: RB0331
 Test Date: 9/16/2011



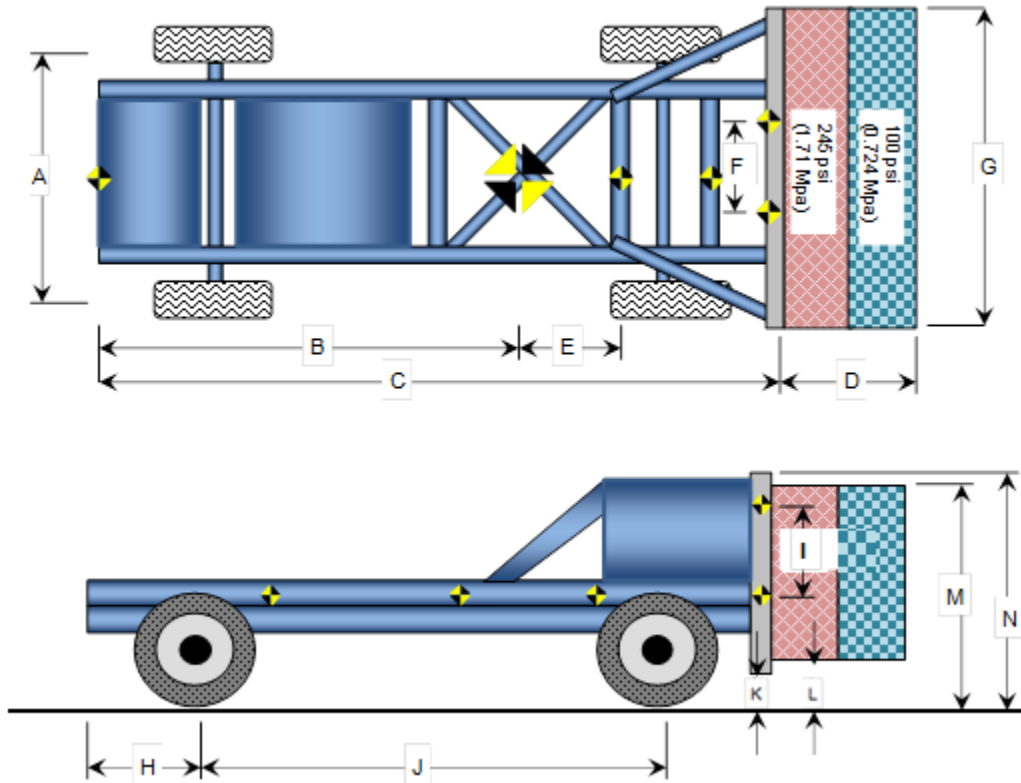
Item	Units	Value
A	mm	610
B	mm	450
C	mm	915
D	mm	303
E	mm	3361
F	mm	1232
G	mm	1253
H	mm	1220
I	mm	1253



DATA SHEET NO. 8 (CONTINUED)

RMDB PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011



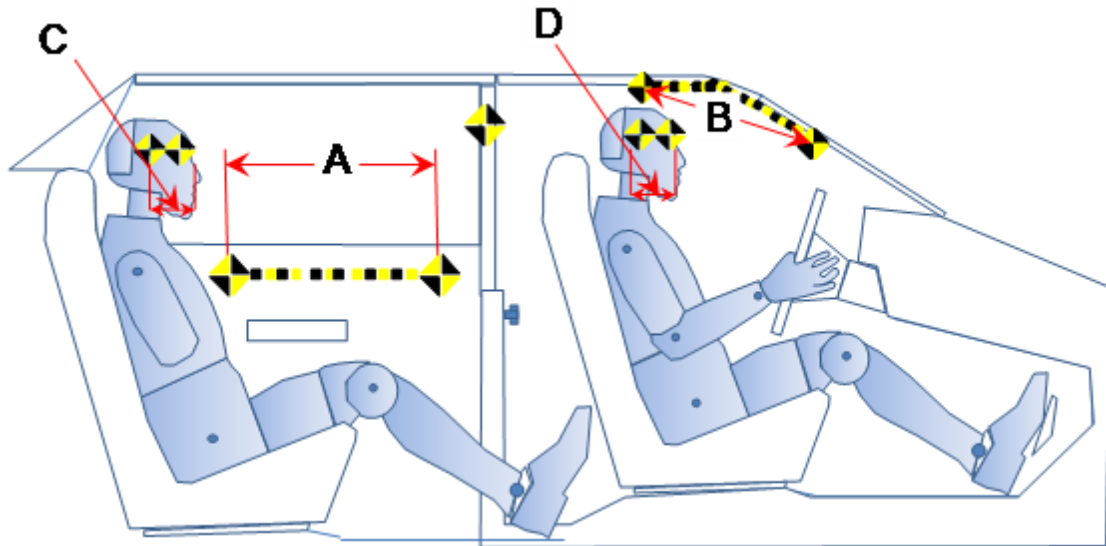
Item	Units	Value
A	mm	1550
B	mm	2215
C	mm	3940
D	mm	606
E	mm	1185
F	mm	1130
G	mm	2210
H	mm	795
I	mm	500
J	mm	2585
K	mm	90
L	mm	98
M	mm	1055
N	mm	1190

	Units	Front Axle	Rear Axle	Total
Left	kg	779.3	470.4	1249.7
Right	kg	749.3	487.2	1236.5
Ratio	%	61.5%	38.5%	100%
Total	kg	1528.6	957.6	2486.2
CG After of Front Axle	mm			1285.6

DATA SHEET NO. 8 (CONTINUED)

DUMMY PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011



Item	Units	Value
A	mm	305
B	mm	305
C	mm	52
D	mm	51

DATA SHEET NO. 9

TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

INSTRUMENTATION

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

CAMERA COVERAGE

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

DATA SHEET NO. 10

POST TEST OBSERVATIONS

Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

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.	LX0036/0037	N/A	-	N/A
Head Contact	Steering wheel Airbag and the Driver's Side Door	A-37 A-48	C-Pillar and the bottom of the passengers window frame	A-49 A-52 A-58
Upper Torso Contact	Driver's Side Door	-	Passenger's Side Door	-
Lower Torso Contact	None	A-46 A-47	None	-
Left Knee Contact	Knee Bolster	A-45	None	A-59
Right Knee Contact	Knee Bolster	A-44	None	A-59

DOOR OPENING AND SEAT TRACK INFORMATION

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

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions	Picture Ref
Windshield Damage	Cracks throughout the windshield	A-21
Window Damage	None	A-36 / A-51
Other Notable Effects	-	-

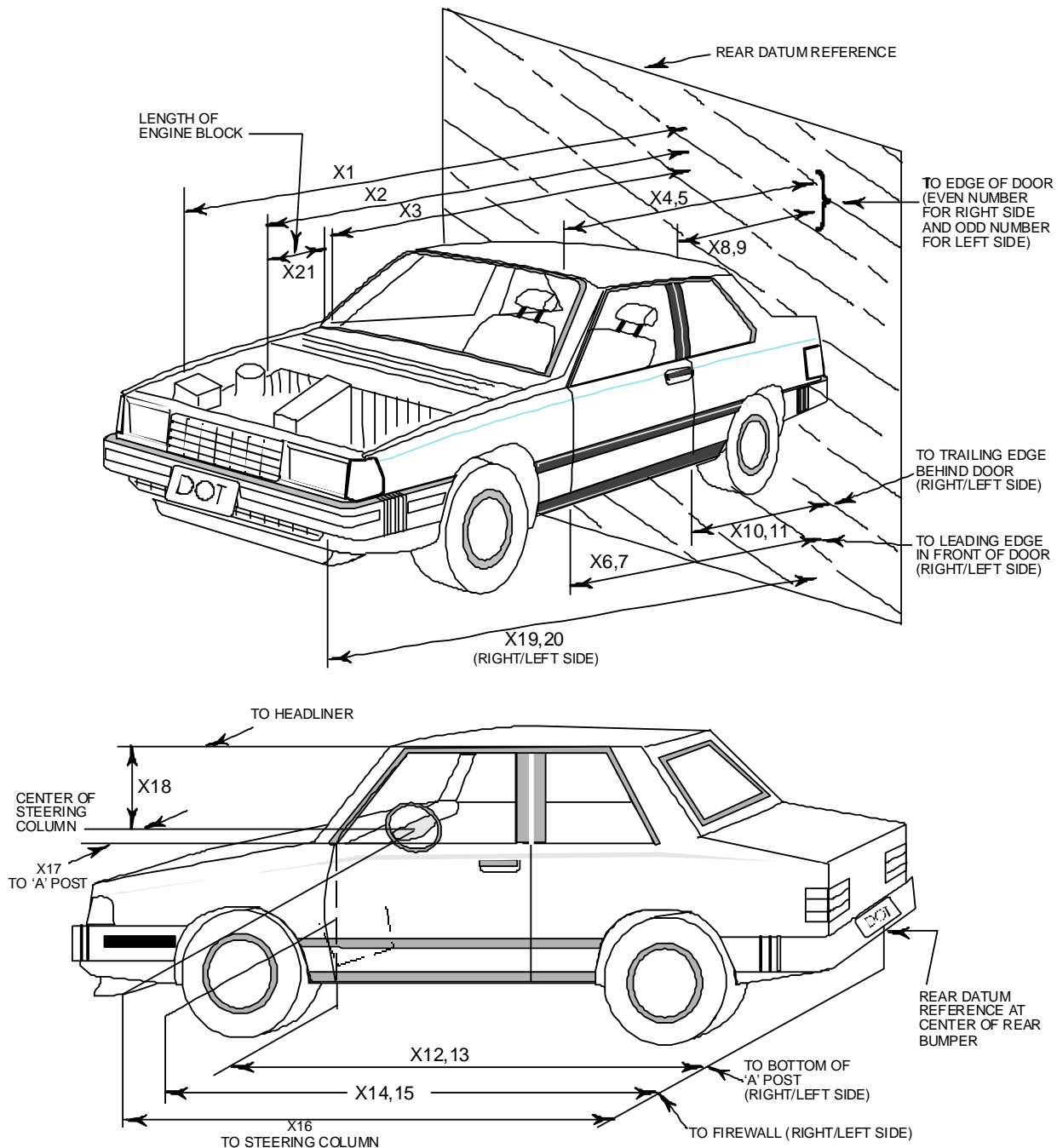
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Driver (Occupant 1)		Passenger (Occupant 2)	
	Installed	Operated	Installed	Operated
Front Airbag	Yes	Yes		
Combination Head/Torso Airbag	No	No		
Curtain (or other Head) Airbag	Yes	No	Yes	No
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 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011



DATA SHEET NO. 11 (CONTINUED)

VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

No.	Measurement Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	5825	5425	400
2	Rear Surface of Vehicle (RSOV) to Front of Engine	5048	4940	108
3	RSOV to Firewall	4664	4556	108
4	RSOV to Upper Leading Edge of Right Door	4255	4230	25
5	RSOV to Upper Leading Edge of Left Door	4258	4233	25
6	RSOV to Lower Leading Edge of Right Door	4193	4173	20
7	RSOV to Lower Leading Edge of Left Door	4195	4193	2
8	RSOV to Upper Trailing Edge of Right Door	3127	3101	27
9	RSOV to Upper Trailing Edge of Left Door	3129	3114	15
10	RSOV to Lower Trailing Edge of Right Door	3129	3107	22
11	RSOV to Lower Trailing Edge of Left Door	3127	3127	0
12	RSOV to Bottom of "A" Post of Right Side	4256	4229	27
13	RSOV to Bottom of "A" Post of Left Side	4258	4225	33
14	RSOV to Firewall, Right Side	4649	4622	28
15	RSOV to Firewall, Left Side	4652	4576	76
16	RSOV to Steering Column	3741	3640	101
17	Center of Steering Column to "A" Post	267	205	62
18	Center of Steering Column to Headliner	458	544	-86
19	RSOV to Right Side of Front Bumper	27	21	6
20	RSOV to Left Side of Front Bumper	25	15	10
21	Length of Engine Block	318	323	-5
RD	RSOV to Right Side of Dash Panel	3958	3926	32
CD	RSOV to Center of Dash Panel	3899	3841	58
LD	RSOV to Left Side of Dash Panel	3961	3922	39

All Dimensions in mm

DATA SHEET NO. 12

ACCIDENT INVESTIGATION DIVISION DATA

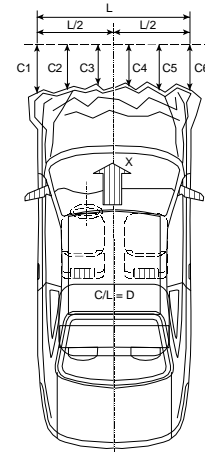
Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

VEHICLE INFORMATION

VIN: 1D7RB1CP2BS560581 Wheelbase: 3574
 Vehicle Size Category: Passenger - Truck Test Weight (kg): 2611

ACCELEROMETER DATA

Accelerometer Locations: Data Sheet No.7 Linearity: 99%
 Cal. Procedure/Interval: Calspan / 6 Months
 Integration Algorithm: Trapezoidal
 Impact Velocity (km/h): 90.93
 Velocity Change (km/h): _____
 Time of Separation (msec): _____



CRUSH PROFILE

Collision Deformation Classification : 11FLEW3
 Midpoint of Damage: C2
 Damage Region Length (mm): 1472
 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	5707	5153	554
C2	Crush zone 2 at left side	mm	5794	5285	509
C3	Crush zone 3 at left side	mm	5820	5277	543
C4	Crush zone 4 at right side	mm	5819	5550	269
C5	Crush zone 5 at right side	mm	5791	5762	29
C6	Crush zone 6 at right side	mm	5705	5824	-119
L	C1 to C6	mm	1472	1035	436

CRUSH MEASUREMENTS: WITH BUMPER COVER REMOVED

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	5692	5152	540
C2	Crush zone 2 at left side	mm	5776	5176	600
C3	Crush zone 3 at left side	mm	5804	5262	541
C4	Crush zone 4 at right side	mm	5803	5543	261
C5	Crush zone 5 at right side	mm	5775	5725	50
C6	Crush zone 6 at right side	mm	5694	5798	-105
L	C1 to C6	mm	1442	1011	431

DATA SHEET NO. 13

VEHICLE INTRUSION MEASUREMENTS

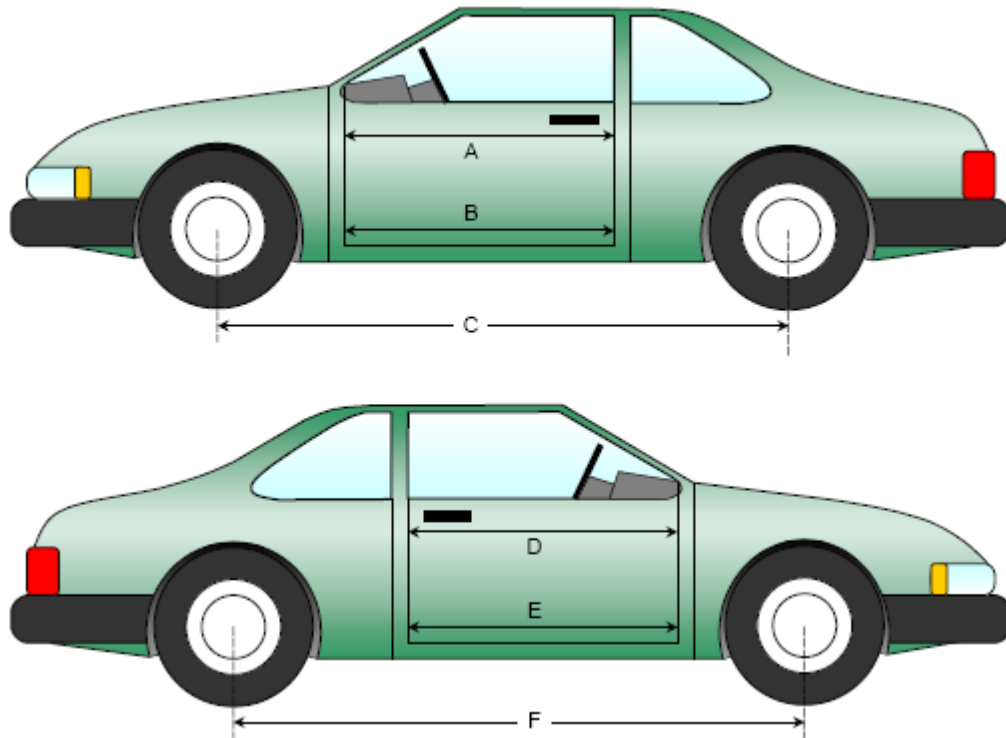
Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	971	949	-22
B	Left Side Lower	mm	938	927	-11
D	Right Side Upper	mm	970	970	0
E	Right Side Lower	mm	940	941	0

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	3578	3336	-242
F	Right Side Wheelbase	mm	3571	3500	-71



DATA SHEET NO.13 (CONTINUED)

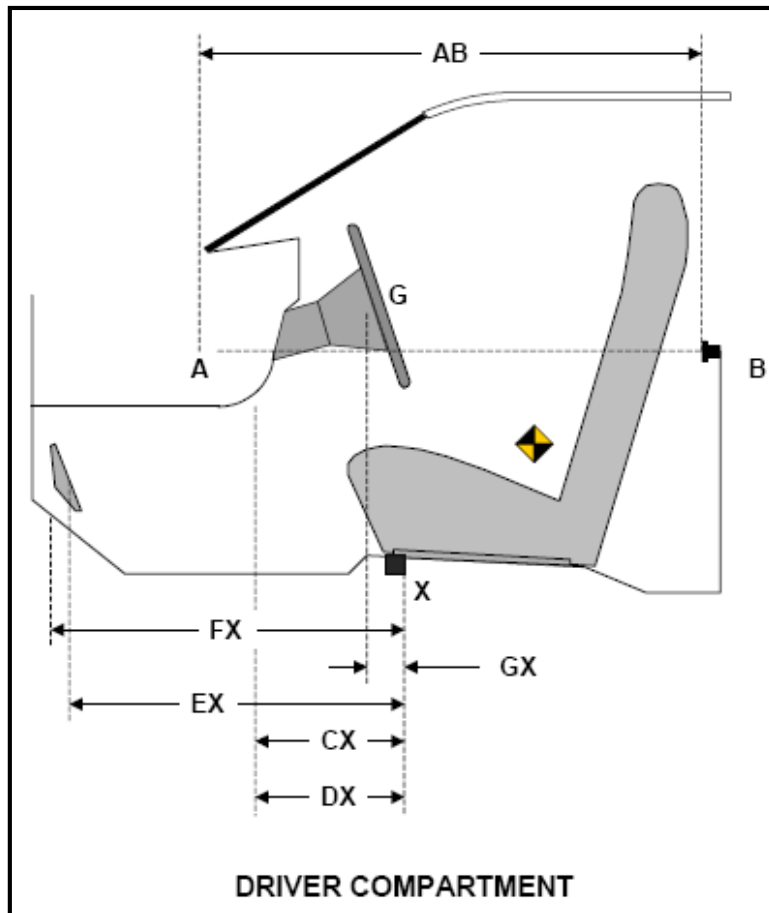
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	785	780	-4
CX	Left Knee Bolster to X	mm	273	280	7
DX	Right Knee Bolster to X	mm	254	252	-1
EX	Brake Pedal to X	mm	506	448	-58
FX	Foot Rest to X	mm	612	561	-51
GX	Center of Steering Column Wheel Hub to X	mm	42	-39	-81

X = Front of Seat Track (Stationary)

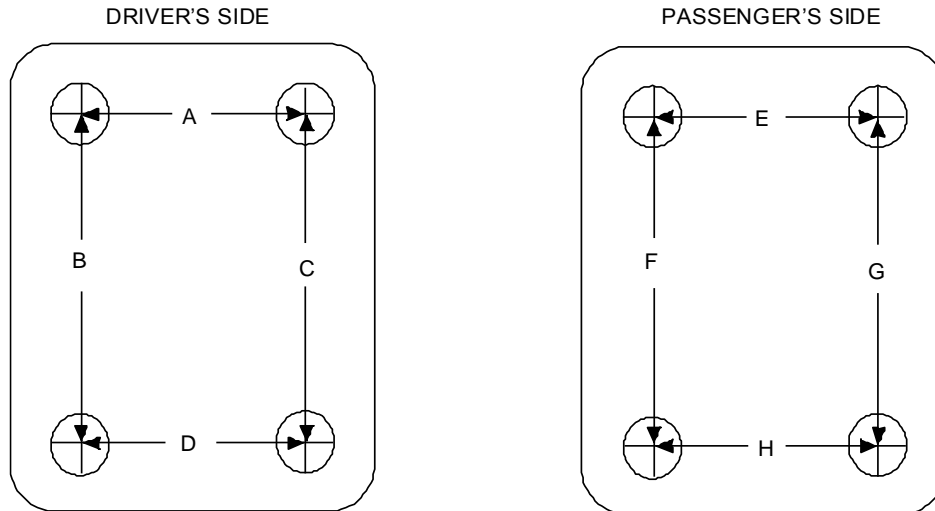


DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

TOP VIEW THROUGH FLOOR PAN



UNDERBODY FLOORBOARD DEFORMATION

Measurement	Pre-Test	Post-Test	Difference
A	427	422	5
B	200	193	7
C	203	198	4
D	433	432	2
E	297	292	5
F	322	320	2
G	322	311	11
H	500	500	0

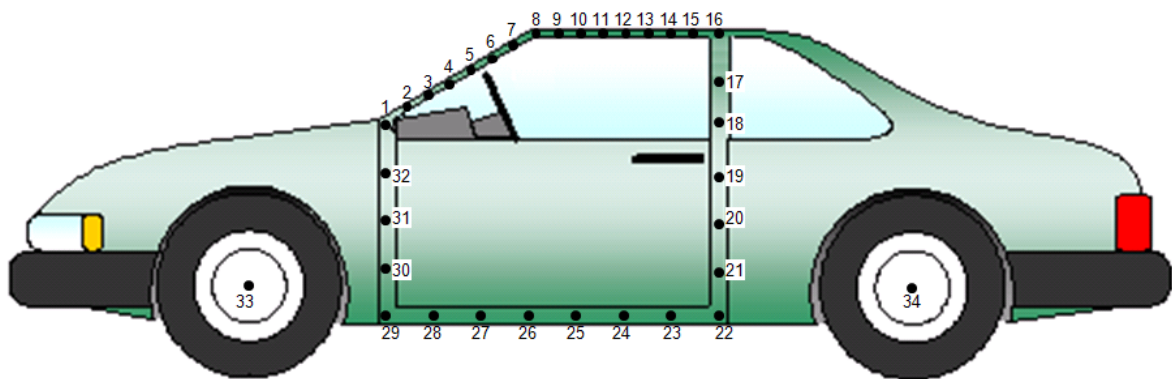
All units in millimeters

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

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 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

DRIVER SIDE DOOR SILL INTRUSIONS

Pt.	Pre-Test			Post-Test			Difference		
	X	Y	Z	X	Y	Z	X	Y	Z
1	4166.9	-870.7	-789.6	4133.5	-870.8	-835.4	-33	0	-46
2	4118.2	-854.7	-847.4	4087.3	-852.6	-894.5	-31	2	-47
3	4064.8	-834.3	-899.9	4037.8	-832.4	-952.2	-27	2	-52
4	4007.0	-823.1	-952.1	3981.2	-817.1	-1002.3	-26	6	-50
5	3945.6	-808.4	-999.1	3921.9	-802.1	-1052.0	-24	6	-53
6	3882.9	-793.1	-1044.7	3860.7	-785.8	-1099.1	-22	7	-54
7	3820.9	-777.6	-1086.6	3799.5	-767.8	-1140.5	-21	10	-54
8	3755.6	-760.7	-1125.8	3737.9	-751.9	-1184.2	-18	9	-58
9	3690.1	-746.4	-1160.7	3676.1	-731.7	-1224.0	-14	15	-63
10	3619.6	-735.4	-1191.5	3601.8	-721.7	-1245.0	-18	14	-53
11	3544.6	-727.0	-1210.1	3526.9	-715.2	-1260.7	-18	12	-51
12	3468.8	-723.1	-1221.1	3450.4	-710.2	-1266.1	-18	13	-45
13	3390.7	-720.2	-1225.6	3371.5	-707.4	-1266.3	-19	13	-41
14	3312.8	-722.1	-1232.7	3293.4	-708.3	-1267.4	-19	14	-35
15	3234.6	-719.8	-1234.7	3214.8	-707.8	-1265.8	-20	12	-31
16	3153.6	-720.3	-1229.5	3135.5	-706.8	-1258.0	-18	13	-28
17	3148.6	-815.0	-1036.8	3132.5	-799.3	-1063.9	-16	16	-27
18	3172.1	-879.4	-832.3	3159.0	-862.6	-860.5	-13	17	-28
19	3190.0	-901.7	-622.4	3179.5	-886.8	-649.3	-10	15	-27
20	3184.9	-910.6	-406.9	3177.4	-896.1	-433.2	-7	15	-26
21	3217.3	-904.2	-194.8	3212.7	-890.4	-221.9	-5	14	-27
22	3245.5	-921.1	18.3	3243.8	-906.4	-12.9	-2	15	-31
23	3380.4	-902.2	45.8	3379.2	-886.3	16.2	-1	16	-30
24	3518.0	-897.7	54.2	3515.4	-880.8	21.2	-3	17	-33
25	3656.7	-898.2	57.3	3655.0	-879.9	20.3	-2	18	-37
26	3795.6	-895.4	59.4	3793.6	-876.1	18.5	-2	19	-41
27	3934.4	-896.1	63.3	3933.6	-875.9	19.1	-1	20	-44
28	4069.7	-894.9	58.8	4066.0	-875.8	17.6	-4	19	-41
29	4135.2	-893.0	15.6	4128.7	-872.7	-30.4	-7	20	-46
30	4165.7	-903.9	-136.9	4152.6	-888.2	-186.9	-13	16	-50
31	4169.2	-900.4	-355.8	4145.4	-893.2	-402.1	-24	7	-46
32	4173.2	-897.0	-570.5	4139.2	-895.7	-619.7	-34	1	-49

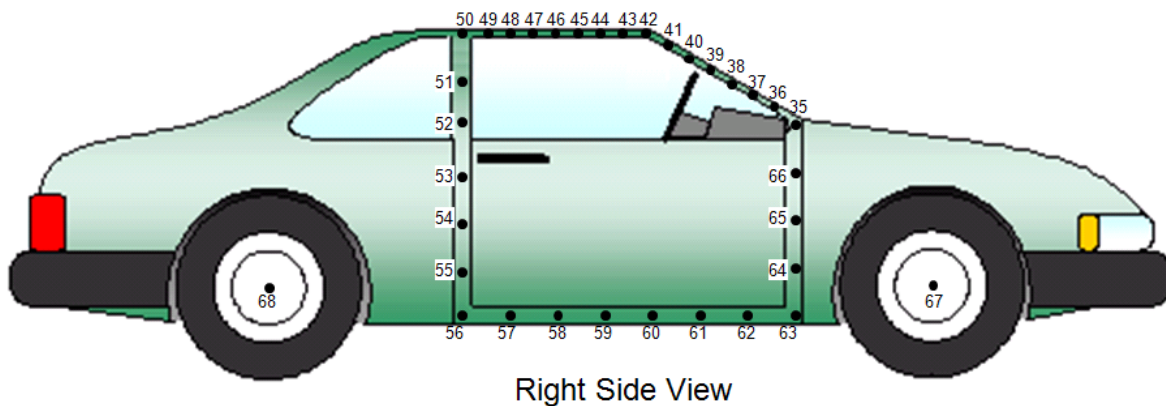
Note: Please see Appendix F.2 for a detailed procedure on how to measure the required door sill intrusions.

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

PASSENGER SIDE DOOR SILL INTRUSIONS



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

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

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle:	2011 Dodge Ram 1500	NHTSA No:	RB0331
Test Program:	R&D 56mph, 15° angle, 35% offset	Test Date	9/16/2011

PASSENGER SIDE DOOR SILL INTRUSION

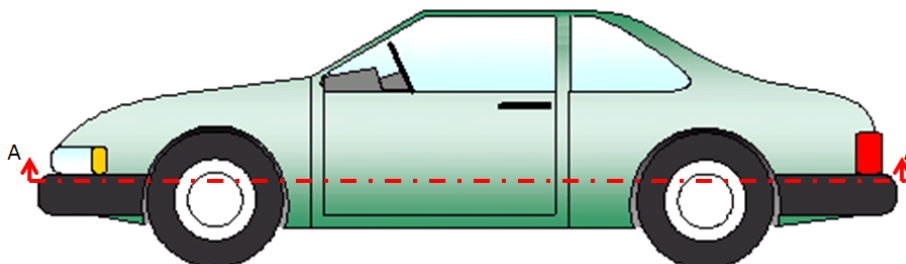
Pt.	Pre-Test			Post-Test			Difference		
	X	Y	Z	X	Y	Z	X	Y	Z
33	4159.1	855.4	-806.8	4133.9	872.1	-821.0	-25	17	-14
34	4109.4	837.9	-871.0	4083.5	852.4	-883.8	-26	15	-13
35	4049.8	820.9	-925.4	4025.9	834.7	-935.0	-24	14	-10
36	3983.8	804.2	-973.5	3958.9	817.1	-982.9	-25	13	-9
37	3921.2	788.8	-1022.0	3894.5	800.6	-1032.0	-27	12	-10
38	3856.8	772.4	-1067.7	3830.1	783.6	-1076.7	-27	11	-9
39	3790.9	755.9	-1112.2	3764.0	766.7	-1121.4	-27	11	-9
40	3721.1	739.5	-1153.6	3693.8	749.8	-1162.6	-27	10	-9
41	3649.3	725.1	-1185.4	3621.7	735.5	-1192.5	-28	10	-7
42	3571.4	715.4	-1211.7	3543.5	726.2	-1218.5	-28	11	-7
43	3490.2	709.7	-1225.2	3461.5	720.9	-1232.0	-29	11	-7
44	3407.6	708.0	-1234.2	3379.0	719.6	-1240.5	-29	12	-6
45	3323.3	707.6	-1238.8	3296.0	719.3	-1244.1	-27	12	-5
46	3245.7	707.6	-1243.3	3216.8	719.6	-1248.8	-29	12	-5
47	3178.6	707.4	-1246.3	3150.3	719.4	-1250.7	-28	12	-4
48	3114.1	708.0	-1248.2	3085.8	719.5	-1252.0	-28	12	-4
49	3137.9	802.3	-1047.3	3111.0	815.4	-1052.9	-27	13	-6
50	3158.4	870.6	-842.7	3131.8	886.5	-847.8	-27	16	-5
51	3180.1	897.4	-624.8	3154.5	915.6	-631.9	-26	18	-7
52	3177.4	932.0	-413.5	3149.5	954.3	-419.5	-28	22	-6
53	3200.2	909.2	-201.7	3180.1	931.9	-209.9	-20	23	-8
54	3233.8	915.2	4.7	3210.9	940.0	-1.5	-23	25	-6
55	3371.8	889.0	39.0	3351.2	913.7	31.4	-21	25	-8
56	3510.7	888.9	49.9	3490.6	917.0	41.3	-20	28	-9
57	3652.7	888.3	52.3	3631.5	917.0	42.2	-21	29	-10
58	3791.1	887.2	54.9	3770.3	919.2	43.7	-21	32	-11
59	3933.7	882.9	57.3	3912.4	916.0	45.2	-21	33	-12
60	4071.8	882.8	51.6	4052.7	916.8	37.5	-19	34	-14
61	4134.4	880.5	5.1	4114.0	915.7	-9.6	-20	35	-15
62	4159.7	883.6	-192.5	4137.3	915.1	-204.9	-22	32	-12
63	4162.2	878.4	-391.8	4138.6	905.3	-406.2	-24	27	-14
64	4164.8	871.4	-592.5	4140.1	893.6	-604.3	-25	22	-12

Note: Please see Appendix F.2 for a detailed procedure on how to measure the required door sill intrusions.

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011



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	757.3	-982.6	-135.1	1	661.5	-976.5	-135.6
2	399.0	-965.5	-145.7	2	402.9	-963.0	-139.3
3	363.2	-978.8	-137.9	3	351.3	-977.1	-138.2
4	128.0	-936.6	-139.3	4	110.0	-931.2	-136.0
5	73.0	-898.1	-132.8	5	66.3	-900.3	-135.0
6	47.3	-836.8	-133.4	6	32.0	-801.5	-134.1
7	24.9	-601.0	-133.2	7	6.0	-388.6	-137.0
8	13.3	-334.6	-131.2	8	6.0	-326.0	-131.6
9	143.0	-249.0	-134.2	9	134.2	-246.9	-134.8
10	146.3	-5.3	-139.5	10	137.7	1.1	-140.1
11	142.7	246.2	-137.3	11	135.5	247.8	-142.1
12	16.2	320.8	-127.4	12	5.6	327.3	-127.9
13	27.3	598.3	-130.5	13	20.7	604.7	-130.7
14	58.4	855.9	-129.5	14	49.5	848.7	-134.2
15	85.6	902.4	-128.6	15	77.4	902.4	-130.3
16	125.9	929.2	-129.6	16	124.0	933.3	-132.8
17	363.5	974.5	-131.2	17	361.6	976.0	-130.3
18	410.0	964.1	-132.5	18	415.8	966.6	-132.1
19	759.3	983.2	-131.1	19	756.5	985.5	-130.7
20	1697.6	986.4	-132.7	20	1697.3	988.8	-135.3
21	1990.5	965.9	-133.9	21	1986.5	966.0	-132.7
22	2026.8	947.2	-139.6	22	2004.6	955.8	-129.7
23	2066.5	977.7	-133.5	23	2046.9	992.6	-135.3

Note: Please 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 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

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

Pt.	Pre-Test			Pt.	Post-Test		
	X	Y	Z		X	Y	Z
24	2371.4	988.5	-134.1	24	2110.1	1000.3	-132.7
25	2855.2	993.7	-132.7	25	2576.2	1011.8	-135.8
26	3141.8	994.4	-134.3	26	2970.9	1017.6	-144.9
27	3573.4	992.1	-136.8	27	3106.6	1017.3	-143.0
28	3603.1	994.2	-138.1	28	3117.8	1028.9	-142.5
29	3930.3	994.2	-140.8	29	3557.6	1025.1	-149.4
30	4229.9	994.1	-140.6	30	3583.5	1021.0	-127.3
31	4379.0	992.9	-140.2	31	3860.6	1017.7	-118.6
32	5237.5	981.1	-145.4	32	4248.1	1021.0	-121.8
33	5492.1	933.9	-130.8	33	4332.7	1021.4	-118.9
34	5655.8	802.4	-104.7	34	4477.7	1005.4	-122.8
35	5742.6	668.0	-96.5	35	4680.2	1144.1	-121.5
36	5799.8	388.8	-84.0	36	4933.8	1224.7	-117.0
37	5826.2	1.5	-83.9	37	5046.6	1059.2	-115.8
38	5810.8	-334.3	-82.2	38	5222.1	996.4	-122.7
39	5752.6	-647.9	-81.0	39	5559.7	1147.1	-116.0
40	5635.8	-828.9	-85.0	40	5593.6	1124.0	-111.4
41	5542.7	-915.9	-88.8	41	5745.8	990.6	-112.6
42	5257.5	-984.7	-88.8	42	5781.8	909.5	-113.5
43	4381.1	-997.6	-137.4	43	5813.2	720.7	-114.8
44	4235.1	-997.5	-137.8	44	5788.7	563.8	-113.5
45	3714.9	-998.8	-136.2	45	5733.0	363.4	-114.2
46	3292.9	-1001.9	-130.5	46	5702.0	294.7	-124.7
47	2963.8	-1002.6	-134.3	47	5473.9	200.2	-132.2
48	2915.8	-994.7	-130.9	48	5181.3	92.2	-132.5
49	2433.5	-991.2	-132.9	49	5282.0	17.5	-130.5
50	2086.0	-981.6	-131.0	50	5275.7	-79.7	-131.3
51	2016.6	-943.5	-140.9	51	5220.6	-162.5	-134.7
52	1986.6	-977.3	-134.7	52	5125.9	-374.8	-135.1
53	1694.6	-991.1	-136.6	53	4975.8	-431.7	-136.6
54	757.3	-982.6	-135.1	54	4904.3	-511.3	-140.3
				55	4851.2	-647.7	-143.3
				56	4815.6	-705.6	-143.5
				57	4754.2	-676.4	-142.8
				58	4458.5	-778.5	-144.2
				59	4358.2	-866.3	-147.9

Note: Please 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 Dodge Ram 1500 NHTSA No: RB0331
Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

VEHICLE EXTERIOR CRUSH PROFILE SECTION A-A (CONTINUED)

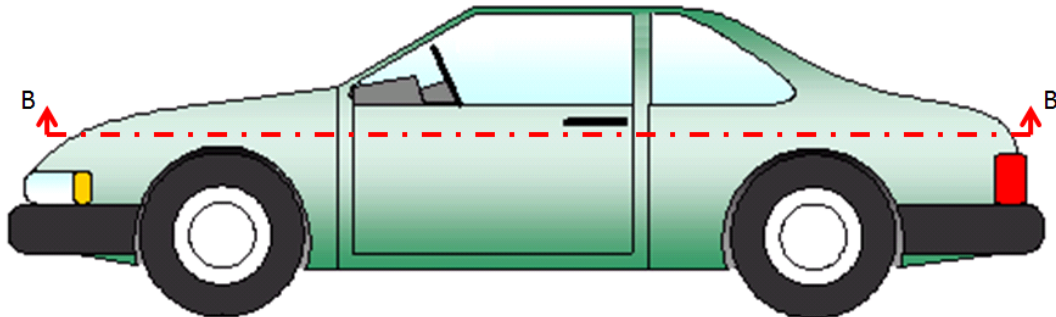
Pt.	Post-Test		
	X	Y	Z
60	4317.4	-891.7	-148.1
61	4244.2	-986.5	-148.7
62	4219.4	-976.5	-146.1
63	3658.3	-980.1	-147.7
64	3297.8	-985.8	-148.1
65	2935.1	-989.8	-150.7
66	2301.6	-992.2	-151.5
67	2065.2	-979.6	-146.0
68	2017.0	-936.4	-147.5
69	1981.4	-995.7	-148.9
70	1700.1	-1010.3	-150.9

Note: Please 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 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011



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

VEHICLE EXTERIOR CRUSH PROFILE SECTION B-B

Pt.	Pre-Test			Pt.	Post-Test		
	X	Y	Z		X	Y	Z
1	812.3	-1001.6	-527.2	1	813.8	-999.7	-526.9
2	533.9	-989.7	-526.1	2	432.2	-983.1	-525.5
3	319.0	-977.6	-524.9	3	301.2	-974.7	-522.8
4	204.5	-963.0	-523.0	4	148.2	-912.7	-526.0
5	162.8	-935.7	-523.3	5	124.4	-816.3	-527.3
6	133.2	-877.6	-529.0	6	103.0	-396.2	-533.6
7	123.0	-797.6	-528.8	7	81.3	-4.0	-526.6
8	101.1	-396.0	-529.7	8	108.6	477.0	-517.1
9	80.0	-4.5	-528.1	9	144.6	890.0	-528.1
10	107.1	457.6	-516.3	10	186.2	948.6	-527.6
11	130.5	796.5	-525.1	11	260.0	973.0	-522.0
12	151.8	904.4	-528.6	12	486.5	985.2	-523.6
13	176.0	937.7	-528.8	13	794.2	998.1	-522.7
14	229.2	965.8	-523.6	14	830.0	999.3	-523.3
15	331.1	975.1	-521.8	15	842.4	1000.1	-522.4
16	672.8	991.2	-523.8	16	1099.1	1006.6	-519.9
17	805.7	995.6	-523.0	17	1407.9	1007.6	-516.7
18	842.6	998.1	-522.2	18	1718.2	999.2	-513.2
19	1342.2	1005.9	-518.2	19	1978.7	977.1	-514.3
20	1764.5	995.2	-518.3	20	1986.1	966.2	-511.8
21	1976.4	978.9	-515.3	21	2025.8	1000.1	-518.0

Note: Please 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 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

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

Pt.	Pre-Test			Pt.	Post-Test		
	X	Y	Z		X	Y	Z
22	2002.8	950.2	-512.1	22	2257.1	1016.4	-511.4
23	2054.6	989.8	-520.1	23	2604.1	1025.2	-510.7
24	2114.5	996.4	-519.4	24	2925.1	1018.5	-511.8
25	2779.1	995.3	-525.0	25	3115.6	1015.2	-508.3
26	3150.9	991.9	-522.5	26	3123.1	1021.9	-508.6
27	3575.2	985.6	-528.5	27	3230.7	1025.1	-508.4
28	3601.1	987.9	-527.6	28	3484.5	1025.3	-504.0
29	3998.1	992.9	-529.1	29	3601.7	1024.1	-504.2
30	4271.2	997.5	-532.6	30	3659.4	1018.4	-518.1
31	4758.2	989.8	-535.2	31	4155.8	1023.2	-518.9
32	4995.0	961.8	-536.5	32	4455.3	1031.3	-516.1
33	5197.8	904.3	-539.3	33	4756.4	1037.0	-514.7
34	5290.1	854.0	-542.7	34	5063.6	1029.4	-514.7
35	5308.4	840.9	-541.9	35	5312.7	992.6	-510.4
36	5495.6	718.4	-537.9	36	5412.8	934.4	-516.6
37	5646.9	614.6	-525.5	37	5494.4	860.9	-508.9
38	5666.9	547.0	-534.7	38	5546.3	752.6	-507.4
39	5728.4	277.5	-543.8	39	5556.4	693.9	-513.0
40	5747.2	1.6	-542.2	40	5629.0	667.0	-511.3
41	5695.3	-470.9	-532.0	41	5631.5	618.3	-512.3
42	5667.2	-549.2	-533.7	42	5559.1	602.1	-511.7
43	5581.9	-676.3	-523.3	43	5606.3	540.3	-513.7
44	5361.1	-827.3	-529.3	44	5602.6	464.2	-512.6
45	5245.2	-886.3	-535.0	45	5361.8	463.2	-513.8
46	5125.2	-932.4	-534.9	46	5217.0	285.5	-517.6
47	5095.3	-942.6	-534.2	47	5328.1	189.3	-522.7
48	4971.9	-971.2	-531.1	48	5141.5	219.3	-517.7
49	4796.0	-993.3	-528.9	49	5036.1	108.5	-522.5
50	4535.4	-1003.1	-526.6	50	5072.5	53.0	-528.8
51	4262.2	-1002.8	-528.8	51	5022.8	-12.9	-524.3
52	3888.8	-998.2	-526.2	52	4916.9	-94.6	-525.4
53	3489.7	-996.0	-525.9	53	4804.1	-147.1	-529.3
54	3138.9	-1000.8	-523.6	54	4794.7	-206.0	-521.3
55	3022.1	-1002.9	-522.4	55	4898.9	-292.7	-534.5
56	2962.5	-996.7	-520.9	56	4681.7	-393.4	-497.3
57	2643.4	-998.7	-520.6	57	4809.6	-520.3	-529.3

Note: Please 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 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

VEHICLE EXTERIOR CRUSH PROFILE SECTION B-B (CONTINUED)

Pt.	Pre-Test			Pt.	Post-Test		
	X	Y	Z		X	Y	Z
58	2273.1	-997.8	-527.7	58	4689.8	-690.4	-536.5
59	2053.5	-990.9	-524.8	59	4516.5	-796.2	-538.9
60	2005.3	-956.9	-516.8	60	4393.7	-984.8	-541.0
61	1969.4	-986.9	-523.3	61	4309.3	-921.4	-528.7
62	1544.0	-1007.9	-525.8	62	4244.0	-1026.5	-543.0
63	1128.3	-1007.5	-527.8	63	4215.6	-1001.7	-542.8
64	850.5	-1000.9	-527.8	64	3835.7	-1004.7	-540.4
65	812.3	-1001.6	-527.2	65	3483.4	-995.7	-543.9
				66	3136.0	-991.7	-544.2
				67	2837.8	-994.7	-544.7
				68	2567.8	-998.0	-545.5
				69	2265.4	-1000.9	-545.5
				70	2057.3	-995.1	-543.9
				71	2006.0	-959.6	-542.0
				72	1979.5	-1001.8	-544.7
				73	1569.6	-1025.5	-544.2
				74	1546.2	-1026.5	-543.7
				75	1208.0	-1028.6	-546.7
				76	861.2	-1022.6	-546.7

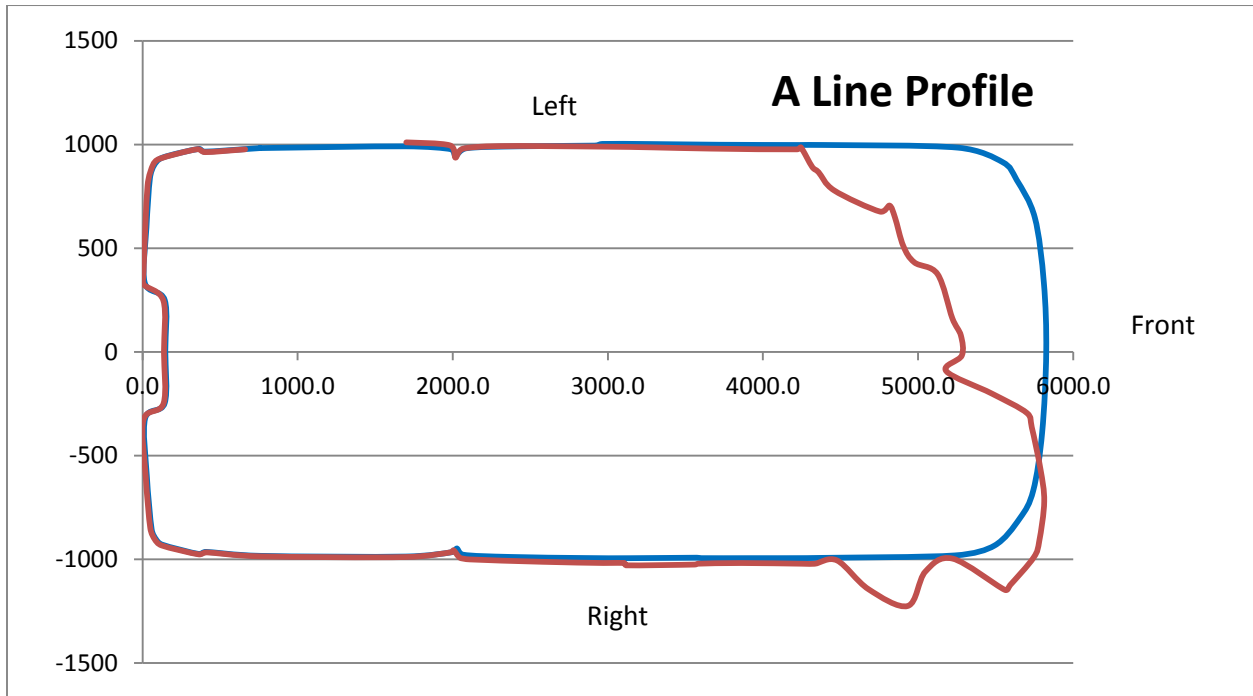
Note: Please see Appendix F.3 for a detailed procedure on how to measure vehicle exterior crush profile

DATA SHEET NO.13 (CONTINUED)

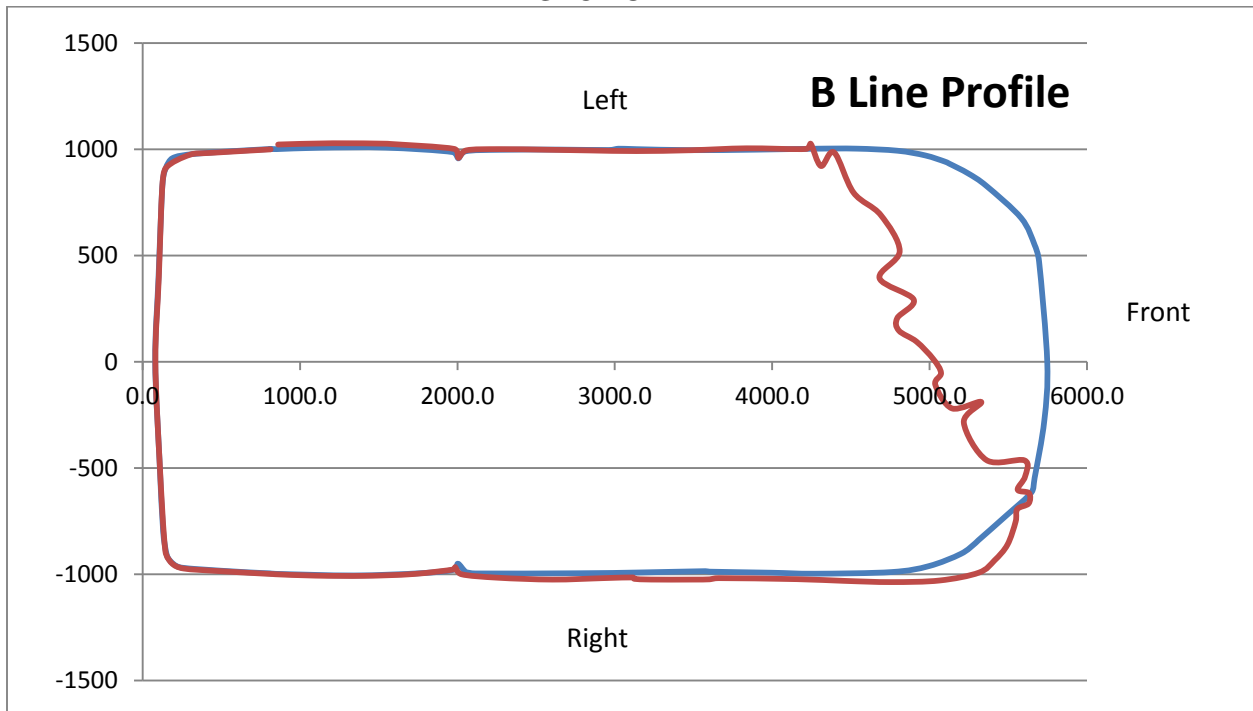
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle:	<u>2011 Dodge Ram 1500</u>	NHTSA No:	<u>RB0331</u>
Test Program:	<u>R&D 56mph, 15° angle, 35% offset</u>	Test Date	<u>9/16/2011</u>

SECTION A-A



SECTION B-B



DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle:	2011 Dodge Ram 1500	NHTSA No:	RB0331
Test Program:	R&D 56mph, 15° angle, 35% offset	Test Date	9/16/2011

Left Profile of the Dash



Points	Pre-Test (mm)			Post-Test (mm)			Difference (mm)		
	X	Y	Z	X	Y	Z	X	Y	Z
LB3	4066.0	-630.0	-318.0	4069.4	-632.6	-373.9	3.4	-2.6	-56.0
LB2	4028.1	-630.9	-352.9	4028.3	-632.3	-403.2	0.3	-1.5	-50.2
LB1	3999.6	-630.5	-392.4	3992.9	-631.9	-437.8	-6.7	-1.4	-45.4
DIPL	3971.5	-629.0	-438.3	3959.3	-631.8	-476.3	-12.2	-2.8	-37.9
LT1	3948.9	-631.7	-482.1	3927.7	-636.8	-513.1	-21.3	-5.1	-31.0
LT2	3944.2	-631.9	-534.0	3906.7	-640.5	-559.8	-37.4	-8.6	-25.8
LT3	3972.4	-630.8	-571.3	3918.8	-644.7	-604.2	-53.5	-13.9	-33.0
LT4	3987.6	-629.4	-615.5	3906.8	-649.7	-671.1	-80.9	-20.3	-55.6
LT5	4011.5	-628.8	-657.1	3932.6	-643.9	-709.5	-78.8	-15.2	-52.4
LT6	4059.2	-627.6	-653.0	4001.3	-612.8	-719.8	-57.9	14.8	-66.8
LT7	4075.6	-629.4	-701.8	4030.8	-612.2	-760.0	-44.8	17.2	-58.3
LT8	4085.0	-627.6	-749.0	4051.2	-617.1	-792.7	-33.8	10.5	-43.8

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

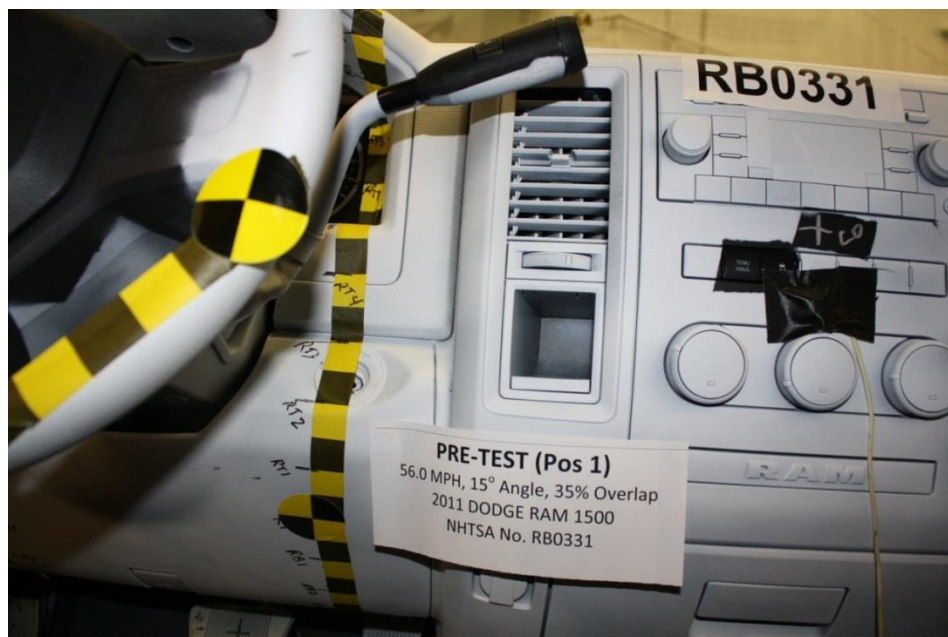
Note: Please see Appendix F.4 for a detailed procedure for how to measure the required profile dash

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

Right Profile of the Dash



Points	Pre-Test (mm)			Post-Test (mm)			Difference (mm)		
	X	Y	Z	X	Y	Z	X	Y	Z
RB3	4046.5	-329.8	-319.9	4029.8	-335.0	-358.7	-16.7	-5.2	-38.8
RB2	4008.0	-331.4	-355.1	3991.4	-336.8	-392.1	-16.6	-5.3	-37.0
RB1	3979.1	-331.8	-395.8	3960.6	-338.2	-433.1	-18.5	-6.3	-37.3
DIPR	3952.3	-333.0	-441.0	3931.2	-339.4	-479.7	-21.1	-6.4	-38.7
RT1	3930.4	-331.2	-484.4	3909.2	-337.2	-516.4	-21.2	-6.0	-32.0
RT2	3929.5	-328.8	-533.1	3890.5	-333.5	-563.9	-39.0	-4.7	-30.8
RT3	3961.2	-327.8	-569.9	3902.3	-325.6	-611.2	-58.9	2.2	-41.2
RT4	3971.7	-326.7	-618.3	3882.5	-345.1	-660.4	-89.2	-18.5	-42.1
RT5	3997.9	-329.7	-656.7	3912.1	-342.3	-692.8	-85.8	-12.6	-36.1
RT6	4051.0	-328.6	-649.5	3955.4	-339.9	-679.3	-95.6	-11.3	-29.8
RT7	4070.1	-325.5	-690.3	3996.6	-324.7	-708.0	-73.5	0.8	-17.6
RT8	4081.4	-325.7	-739.0	4022.7	-321.8	-753.8	-58.6	3.9	-14.8

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: Please see Appendix F.4 for a detailed procedure for how to measure the required profile dash

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

	Points	Pre-Test (mm)			Post-Test (mm)			Difference (mm)		
		X	Y	Z	X	Y	Z	X	Y	Z
Lower Bumper Beam	1	5691.5	-725.1	212.1	5152.0	-298.7	45.1	-540	426	-167
	2	5775.9	-449.4	211.8	5176.3	-29.6	56.9	-600	420	-155
	3	5803.7	-151.1	209.2	5262.3	128.9	86.1	-541	280	-123
	4	5803.1	148.4	208.1	5542.6	213.0	140.8	-261	65	-67
	5	5774.9	443.6	208.4	5725.3	436.2	175.6	-50	-7	-33
	6	5693.8	717.4	196.1	5798.4	712.2	167.2	105	-5	-29
Upper Bumper Beam	1	5707.9	-740.4	-35.6	5141.7	-312.8	-198.0	-566	428	-162
	2	5794.2	-450.8	-36.8	5275.6	-35.5	-194.4	-519	415	-158
	3	5821.4	-145.0	-38.2	5291.9	127.1	-153.0	-530	272	-115
	4	5820.5	146.2	-37.6	5559.2	225.3	-100.1	-261	79	-63
	5	5791.0	448.8	-39.0	5763.4	433.1	-70.8	-28	-16	-32
	6	5705.6	735.5	-41.3	5824.0	728.5	-68.4	118	-7	-27
Upper Radiator Support	1	5537.4	-465.8	-512.1	4922.7	-18.1	-637.4	-615	448	-125
	2	5554.8	-274.1	-554.0	5100.3	60.5	-688.3	-454	335	-134
	3	5572.8	-134.5	-552.6	5234.9	102.7	-685.6	-338	237	-133
	4	5566.9	140.5	-554.4	5426.6	266.6	-657.0	-140	126	-103
	5	5556.3	272.7	-556.3	5469.7	386.9	-629.7	-87	114	-73
	6	5538.7	468.9	-515.5	5527.3	553.4	-543.0	-11	85	-28

*Points unrecoverable, support beam was destroyed in crash

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

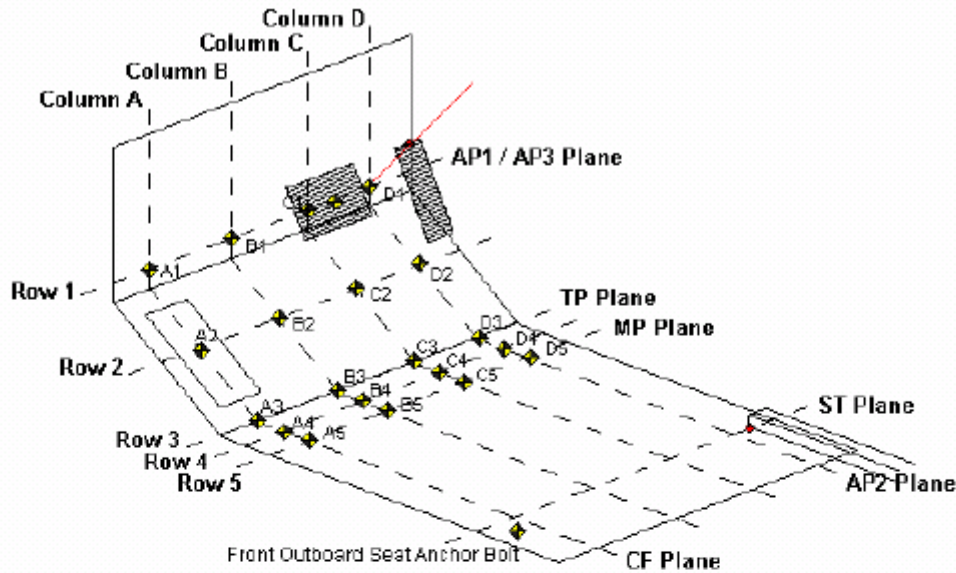
+Y - From left side of the vehicle to the right side of the vehicle

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

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle:	2011 Dodge Ram 1500	NHTSA No:	RB0331
Test Program:	R&D 56mph, 15° angle, 35% offset	Test Date	9/16/2011



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 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

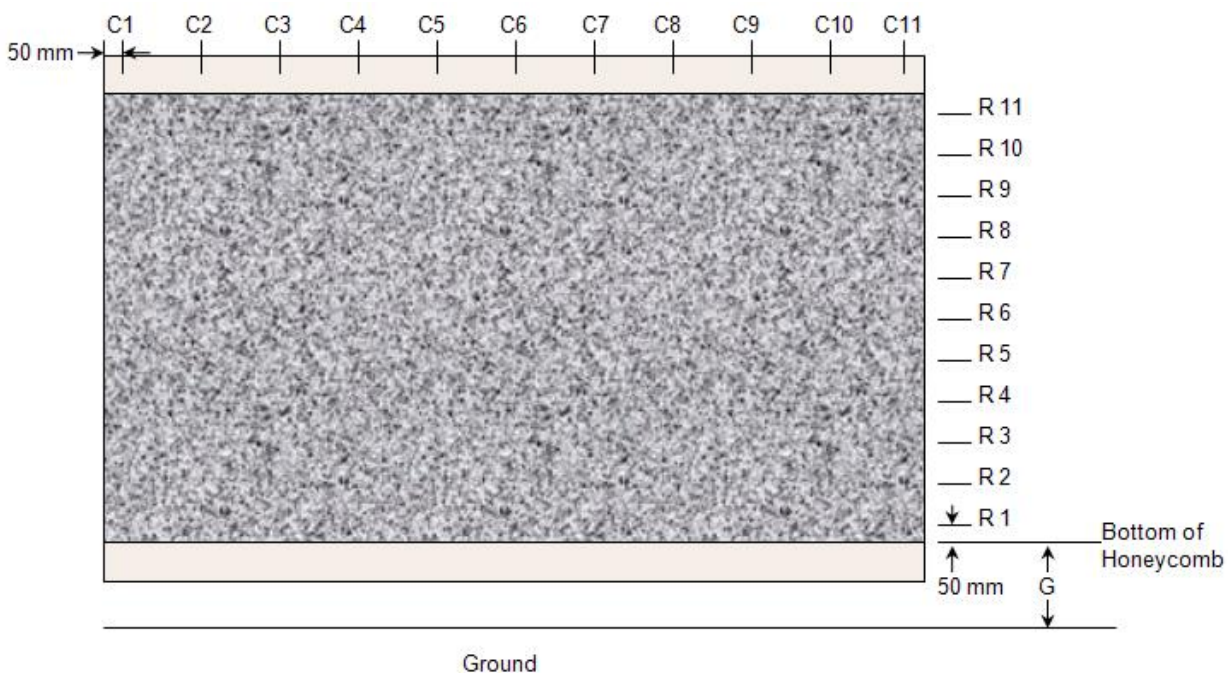
Intrusion Location	Pre-Test (mm)			Post-Test (mm)			Difference (mm)		
	X	Y	Z	X	Y	Z	X	Y	Z
A1	4382.9	-700.8	-150.7	4286.5	-660.3	-242.1	-96.4	40.4	-91.4
B1	4471.6	-566.0	-148.0	4366.3	-525.4	-259.6	-105.3	40.6	-111.6
C1	4488.7	-447.1	-145.7	4423.5	-423.6	-236.8	-65.1	23.5	-91.1
D1	4383.3	-299.3	-146.9	4348.5	-260.4	-189.2	-34.8	38.9	-42.3
A2	4310.3	-704.8	-54.3	4239.8	-666.9	-128.9	-70.5	37.9	-74.7
B2	4305.6	-578.5	-48.4	4263.5	-548.1	-102.2	-42.1	30.4	-53.8
C2	4305.1	-454.9	-48.0	4275.8	-428.5	-91.6	-29.3	26.3	-43.6
D2	4306.2	-318.4	-49.8	4269.6	-293.2	-104.3	-36.5	25.2	-54.5
A3	4224.8	-704.4	-10.7	4193.7	-673.3	-51.7	-31.1	31.1	-41.1
B3	4228.7	-584.8	-10.5	4205.4	-557.1	-43.1	-23.3	27.7	-32.6
C3	4228.0	-453.9	-9.9	4208.8	-425.3	-38.6	-19.3	28.6	-28.7
D3	4227.0	-319.0	-7.8	4206.8	-290.3	-38.7	-20.2	28.7	-30.9
A4	4137.2	-706.1	30.1	4127.8	-677.2	16.8	-9.4	28.9	-13.3
B4	4137.2	-589.9	27.0	4125.1	-563.5	11.0	-12.1	26.4	-15.9
C4	4138.3	-460.7	26.3	4126.0	-432.6	9.8	-12.3	28.1	-16.5
D4	4133.6	-330.0	27.5	4119.3	-302.9	8.1	-14.3	27.0	-19.4
A5	4043.7	-703.2	29.0	4035.2	-676.6	25.1	-8.5	26.6	-3.9
B5	4043.1	-595.1	26.0	4033.4	-568.3	19.9	-9.7	26.8	-6.1
C5	4043.4	-461.6	25.7	4032.4	-435.8	13.8	-11.0	25.8	-11.9
D5	4043.7	-325.0	25.8	4032.2	-299.6	6.3	-11.5	25.4	-19.5
Brake Pedal	4204.5	-473.8	-201.8	4127.3	-485.1	-236.4	-77.2	-11.3	-34.6
IP Left	3971.5	-629.0	-438.3	3959.3	-631.8	-476.3	-12.2	-2.8	-37.9
IP Right	3952.3	-333.0	-441.0	3931.2	-339.4	-479.7	-21.1	-6.4	-38.7
Steering Column	3740.8	-481.9	-714.8	3640.0	-542.7	-676.5	-100.8	-60.8	38.2
Front Outboard Bolt	3698.6	-658.8	-53.7	3678.9	681.5	-62.6	-19.7	1340.3	-8.8

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

DATA SHEET NO.14

RMDB CRUSH MEASUREMENTS

Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011



BARRIER X-CRUSH

		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
		50 mm	260 mm	470 mm	680 mm	890 mm	1100 mm	1310 mm	1520 mm	1730 mm	1940 mm	2150 mm
R11	910mm	1.6	3.7	5.8	4.4	5.5	20.0	94.3	70.6	49.6	67.6	132.4
R10	824mm	1.1	1.5	1.8	2.0	2.3	8.5	47.5	27.7	13.7	78.9	153.6
R9	738mm	0.9	0.9	1.1	1.5	1.7	5.7	3.8	17.1	19.5	99.6	173.3
R8	652mm	0.7	0.4	0.8	1.2	1.5	1.9	2.6	7.1	41.8	133.8	181.1
R7	566mm	0.2	-0.2	0.4	0.7	1.1	1.6	6.0	6.8	73.5	127.9	163.3
R6	480mm	-0.3	-0.6	-0.2	0.3	0.8	1.3	55.0	14.5	90.2	217.1	224.8
R5	384mm	-0.9	-1.0	-0.6	0.0	0.4	0.7	91.0	15.7	86.5	193.9	171.3
R4	308mm	-1.5	-1.4	-1.0	-0.3	0.0	0.7	118.3	24.6	100.4	175.5	99.9
R3	222mm	-1.8	-1.4	-1.1	-0.4	-0.1	0.6	140.2	34.3	76.7	44.5	72.2
R2	136mm	-3.4	-2.9	-1.9	-1.2	-1.0	-0.4	146.2	19.3	62.9	64.2	70.5
R1	50mm	-3.6	-2.7	-1.5	-0.9	*	*	142.9	24.6	2.5	14.8	34.8

*Barrier was cut to clear rail and defined points were unmeasurable

DATA SHEET NO. 15

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

Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
 Test Program: R&D 56mph, 15° angle, 35% offset Test Date: 9/16/2011

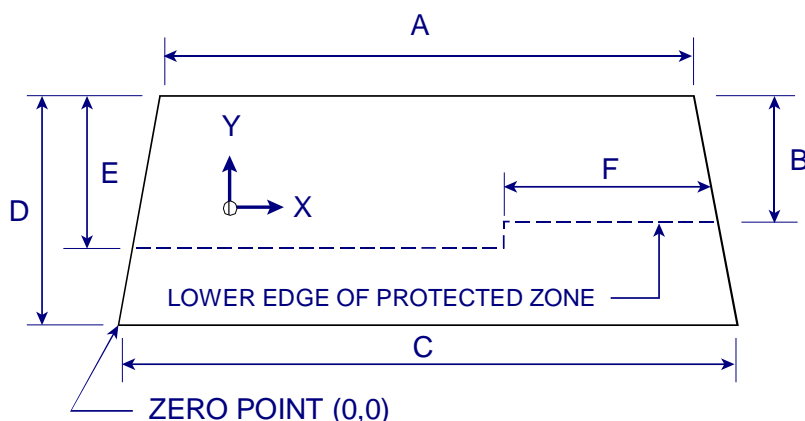
Please provide windshield mounting details. Windshield bonded in place with urethane sealant.

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: 19.4°C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2250	1767	78.6
Right Side	2250	2225	98.9
Total	4500	3992	88.7



Item	Units	Value
A	mm	1400
B	mm	432
C	mm	1650
D	mm	725
E	mm	492
F	mm	488

AREAS OF PROTECTED ZONE FAILURES

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

X	Y

- No penetration in protected zone

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

X	Y

DATA SHEET NO. 15 (CONTINUED)

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

Test Vehicle: 2011 Dodge Ram 1500 NHTSA No: RB0331
Test Program: R&D 56mph, 15° angle, 35% offset Test Date 9/16/2011

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 19.4°C

Test Time: 4:35 PM

Stoddard Solvent Spillage Measurements

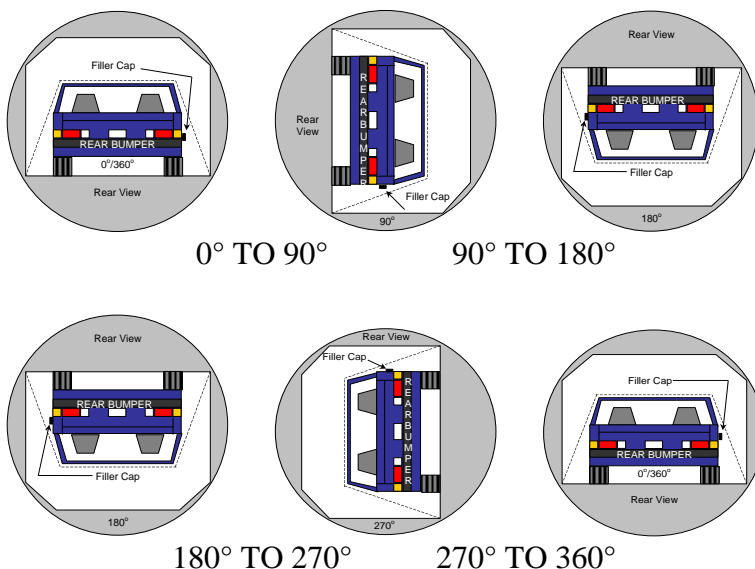
- A. From impact until vehicle motion ceases: 0 oz.
(maximum allowable = 1 oz.)
- B. For the 5-minute period after motion ceases: 0 oz.
(maximum allowable = 5 oz.)
- C. For the following 25 minutes: 0 oz..
(maximum allowable = 1 oz./minute)
- D. Spillage: 0 oz.

DATA SHEET NO. 16

FMVSS 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2011 Dodge Ram 1500
 Test Program: R&D 56mph, 15° angle, 35% offset

NHTSA No: RB0331
 Test Date: 9/16/2011



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: None

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	67	300	367
90° to 180°	67	300	367
180° to 270°	62	300	362
270° to 360°	71	300	371

FMVSS 301 SPILLAGE TABLE

Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0° to 90°	0	0		
90° to 180°	0	0		
180° to 270°	0	0		
270° to 360°	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 Dodge Ram 1500</u>	NHTSA No:	<u>RB0331</u>
Test Program:	<u>R&D 56mph, 15° angle, 35% offset</u>	Test Date	<u>9/16/2011</u>

Picture not available.

APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS		
No.		Page
1	As Delivered Right Front 3-4 View of Test Vehicle	A-7
2	As Delivered Left Rear 3-4 View of Test Vehicle	A-7
3	Test Vehicle Certification Label	A-8
4	Test Vehicle Tire Placard	A-8
5	Pre-Test Front View of Test Vehicle	A-9
6	Post-Test Front View of Test Vehicle	A-9
7	Pre-Test Left Front 3-4 View of Test Vehicle	A-10
8	Post-Test Left Front 3-4 View of Test Vehicle	A-10
9	Pre-Test Left Side View of Test Vehicle	A-11
10	Post-Test Left Side View of Test Vehicle	A-11
11	Pre-Test Left Rear 3-4 View of Test Vehicle	A-12
12	Post-Test Left Rear 3-4 View of Test Vehicle	A-12
13	Pre-Test Rear View of Test Vehicle	A-13
14	Post-Test Rear View of Test Vehicle	A-13
15	Pre-Test Right Side View of Test Vehicle	A-14
16	Post-Test Right Side View of Test Vehicle	A-14
17	Pre-Test Right Front 3-4 View of Test Vehicle	A-15
18	Post-Test Right Front 3-4 View of Test Vehicle	A-15
19	Pre-Test Overhead View of RRMDB against target vehicle at ideal Impact Point	A-16
20	Pre-Test Left Side View of RRMDB against target vehicle at ideal Impact Point	A-16
21	Pre-Test Right Side View of RRMDB against target vehicle at ideal Impact Point	A-17
22	Pre-Test Close-up View of Impact Point	A-18
23	Post-Test Close-up View of Impact Point	A-18
24	Pre-Test Close-up View of Left Front Door Latch	A-19
25	Post-Test Close-up View of Left Front Door Latch	A-19
26	Pre-Test Close-up View of Left Rear Door Latch	A-20
27	Post-Test Close-up View of Left Rear Door Latch	A-20
28	Pre-Test Windshield View	A-21
29	Post-Test Windshield View	A-21

30	Pre-Test View of Driver Inner Door Panel	A-22
31	Post-Test View of Driver Inner Door Panel	A-22
32	Pre-Test View of Passenger Inner Door Panel	A-23
33	Post-Test View of Passenger Inner Door Panel	A-23
34	Pre-Test Frontal View of Driver Seat pan	A-24
35	Pre-Test Frontal View of Driver Seat back	A-24
36	Pre-Test Frontal View of Left Rear Seat pan	A-25
37	Pre-Test Frontal View of Left Rear Seat back	A-25
38	Pre-Test Overall View of Driver Knee Bolsters	A-26
39	Post-Test Overall View of Driver Knee Bolsters	A-26
40	Pre-Test Overall View of Driver Knee Bolsters with panel removed	A-27
41	Post-Test Overall View of Driver Knee Bolsters with panel removed	A-27
42	Pre-Test Left Side View of Driver Knee Bolsters	A-28
43	Post-Test Left Side View of Driver Knee Bolsters	A-28
44	Pre-Test Left Side View of Driver Knee Bolsters with panel removed	A-29
45	Post-Test Left Side View of Driver Knee Bolsters with panel removed	A-29
46	Pre-Test Right Side View of Driver Knee Bolsters	A-30
47	Post-Test Right Side View of Driver Knee Bolsters	A-30
48	Pre-Test Right Side View of Driver Knee Bolster with panel removed	A-31
49	Post-Test Right Side View of Driver Knee Bolster with panel removed	A-31
50	Pre-Test View of Driver Floor pan at Left sill level	A-32
51	Post-Test View of Driver Floor pan at Left sill level	A-32
52	Pre-Test View of Driver Floor pan at Mid seat level	A-33
53	Post-Test view of Driver Floor pan at Mid seat level	A-33
54	Pre-Test Driver Dummy Front Windshield View	A-34
55	Post-Test Driver Dummy Front Windshield View	A-34
56	Pre-Test Left Side View of Driver Dummy and Interior	A-35
57	Post-Test Left Side View of Driver Dummy and Interior	A-35
58	Pre-Test Left Side Driver Dummy Window View	A-36
59	Post-Test Left Side Driver Dummy Window View	A-36
60	Pre-Test Right Side View of Driver Dummy and Interior	A-37
61	Post-Test Right Side View of Driver Dummy and Interior	A-37

62	Pre-Test View of Driver Dummy Door Clearance	A-38
63	Post-Test View of Driver Dummy Door Clearance	A-38
64	Pre-Test Driver Seat Back Position markings	A-39
65	Pre-Test Driver Seat Back Position with Level or Inclinator	A-39
66	Pre-Test Driver Seat Fore Aft Markings	A-40
67	Post-Test Driver Seat Fore Aft Markings	A-40
68	Pre-Test Driver Adjustable D-ring	A-41
69	Pre-Test Overhead View of Driver Dummy Thighs in seat	A-41
70	Pre-Test View of Parking Brake	A-42
71	Pre-Test Driver Dummy Feet	A-43
72	Post-Test Driver Dummy Feet	A-43
73	Pre-Test View of Driver Dummy Right Knee and Bolster	A-44
74	Post-Test View of Driver Dummy Right Knee and Bolster	A-44
75	Pre-Test View of Driver Dummy Left Knee and Bolster	A-45
76	Post-Test View of Driver Dummy Left Knee and Bolster	A-45
77	Pre-Test View of Driver Dummy Abdomen	A-46
78	Post-Test View of Driver Dummy Abdomen	A-46
79	Pre-Test Left Side View of Steering Wheel set position	A-47
80	Post-Test Left Side View of Steering Wheel set position	A-47
81	Post-Test View of Driver Dummy Head Contact with Airbag	A-48
82	Post-Test View of Driver Dummy Head Contact with Vehicle Interior (a, b, c, etc)	A-48
83	Pre-Test Passenger Dummy Front Close-up View	A-49
84	Post-Test Passenger Dummy Front Close-up View	A-49
85	Pre-Test Left Side Passenger Dummy and Interior View	A-50
86	Post-Test Left Side Passenger Dummy and Interior View	A-50
87	Pre-Test Left Side Passenger Dummy Window View	A-51
88	Post-Test Left Side Passenger Dummy Window View	A-51
89	Pre-Test Right Side View of Passenger Dummy and Interior	A-52
90	Post-Test Right Side View of Passenger Dummy and Interior	A-52
91	Pre-Test View of Passenger Dummy Door Clearance	A-53
92	Post-Test View of Passenger Dummy Door Clearance	A-53

93	Pre-Test Passenger View Showing Head Level	A-54
94	Pre-Test Passenger Seat Fore-Aft Markings	A-54
95	Pre-Test Passenger Seat Back Angle	A-55
96	Pre-Test Overhead View of Passenger Dummy Thighs on seat	A-55
97	Pre-Test Passenger Adjustable D-ring	A-56
98	Pre-Test View of Passenger Dummy Feet	A-57
99	Post-Test View of Passenger Dummy Feet	A-57
100	Post-Test View of Passenger Dummy Head contact with Airbag	A-58
101	Post-Test View of Passenger Dummy Head contact with Interior (a,b,c)	A-58
102	Post-Test View of Passenger Dummy Knee Contact with Seatback	A-59
103	Pre-Test Ballast Locations	A-59
104	Post-Test Speed Trap Readout	A-60
105	Pre-Test View of Fuel Filler Cap	A-61
106	Post-Test View of Fuel Filler Cap	A-61
107	Pre-Test Engine Compartment View	A-62
108	Post-Test Engine Compartment View	A-62
109	Pre-Test View of Front Underbody (perpendicular to vehicle)	A-63
110	Post-Test View of Front Underbody (perpendicular to vehicle)	A-63
111	Pre-Test View of Overall Underbody (perpendicular to vehicle)	A-64
112	Post-Test View of Overall Underbody (perpendicular to vehicle)	A-64
113	Pre-Test View of Steering rack and or sway bar	A-65
114	Post-Test View of Steering rack and or sway bar	A-65
115	Pre-Test Close up of Bumper and Crush Initiators	A-66
116	Post-Test View of Front Sub-Frame Deformation	A-66
117	Pre-Test Frame Rail with tire removed	A-67
118	Post-Test Frame Rail with tire removed	A-67
119	Pre-Test View of Wheel Well with tire removed	A-68
120	Post-Test View of Wheel Well with tire removed	A-68
121	Post-Test View of Door Sill with door open	A-69
122	Post-Test View of Deformation of A pillar	A-69
123	Post-Test View of Deformation of B pillar	A-70
124	Post-Test View of Deformation of C pillar	A-70

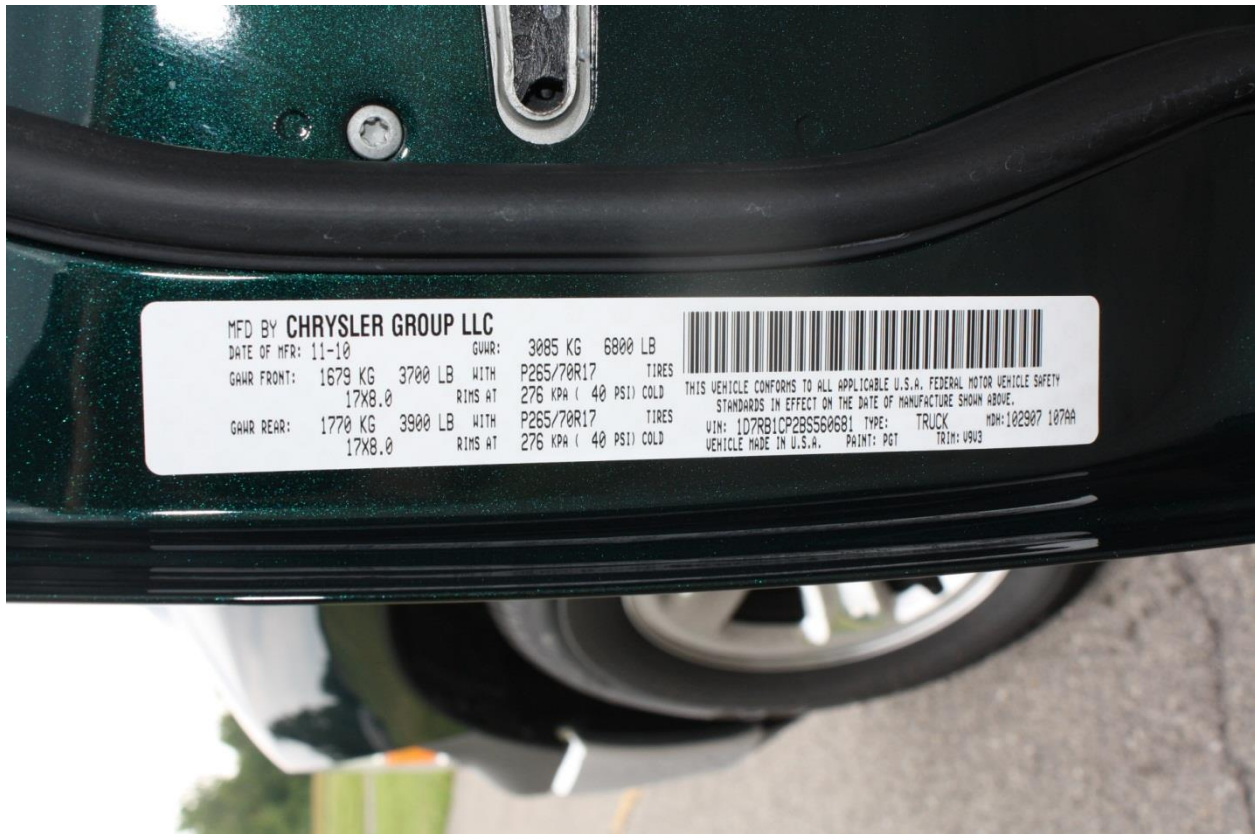
125	Post-Test View of Wheel and or Tire Deformation	A-71
126	Post-Test View of Deformation of Rocker or Post	A-71
127	Post-Test View of Windshield Separation	A-72
128	Pre-Test Left Side View of RRMDB	A-73
129	Post-Test Left Side View of RRMDB	A-73
130	Pre-Test Right Side View of RRMDB	A-74
131	Post-Test Right Side View of RRMDB	A-74
132	Pre-Test Top View of RRMDB	A-75
133	Post-Test Top View of RRMDB	A-75
134	Pre-Test Front View of RRMDB	A-76
135	Post-Test Front View of RRMDB	A-76
136	Vehicle at 0 Degrees on Static Rollover Device	A-77
137	Vehicle at 90 Degrees on Static Rollover Device	A-77
138	Vehicle at 180 Degrees on Static Rollover Device	A-78
139	Vehicle at 270 Degrees on Static Rollover Device	A-78
140	Vehicle at 360 Degrees on Static Rollover Device	A-79



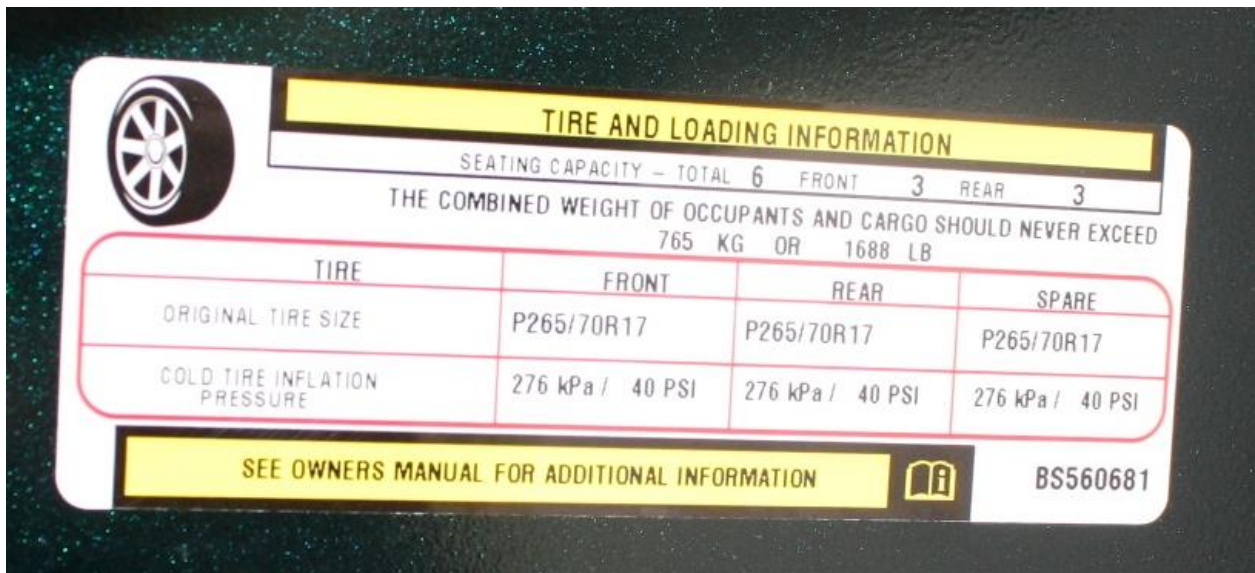
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No. 002 As Delivered Left Rear 3-4 View of Test Vehicle



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 RRMDB against target vehicle at ideal Impact Point



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



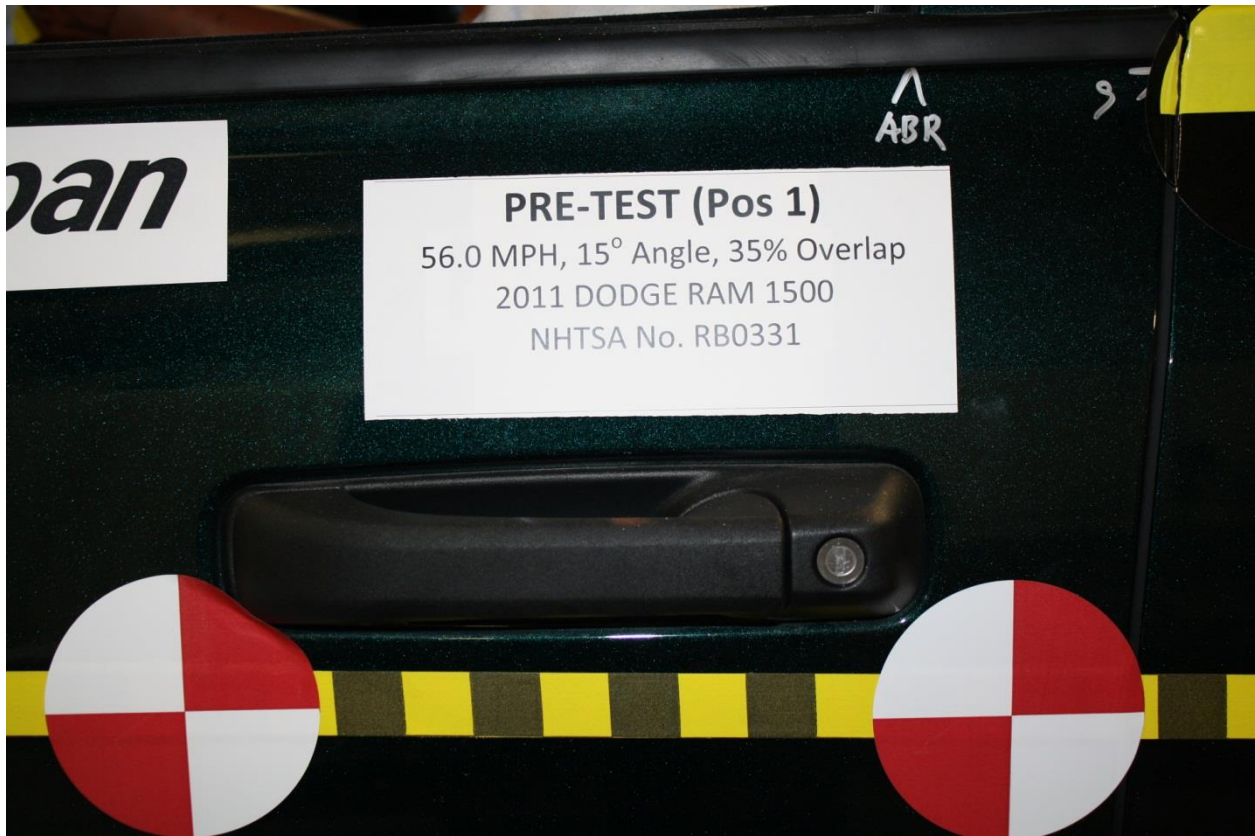
No. 021 Pre-Test Right Side View of RRMDB against target vehicle at ideal Impact Point



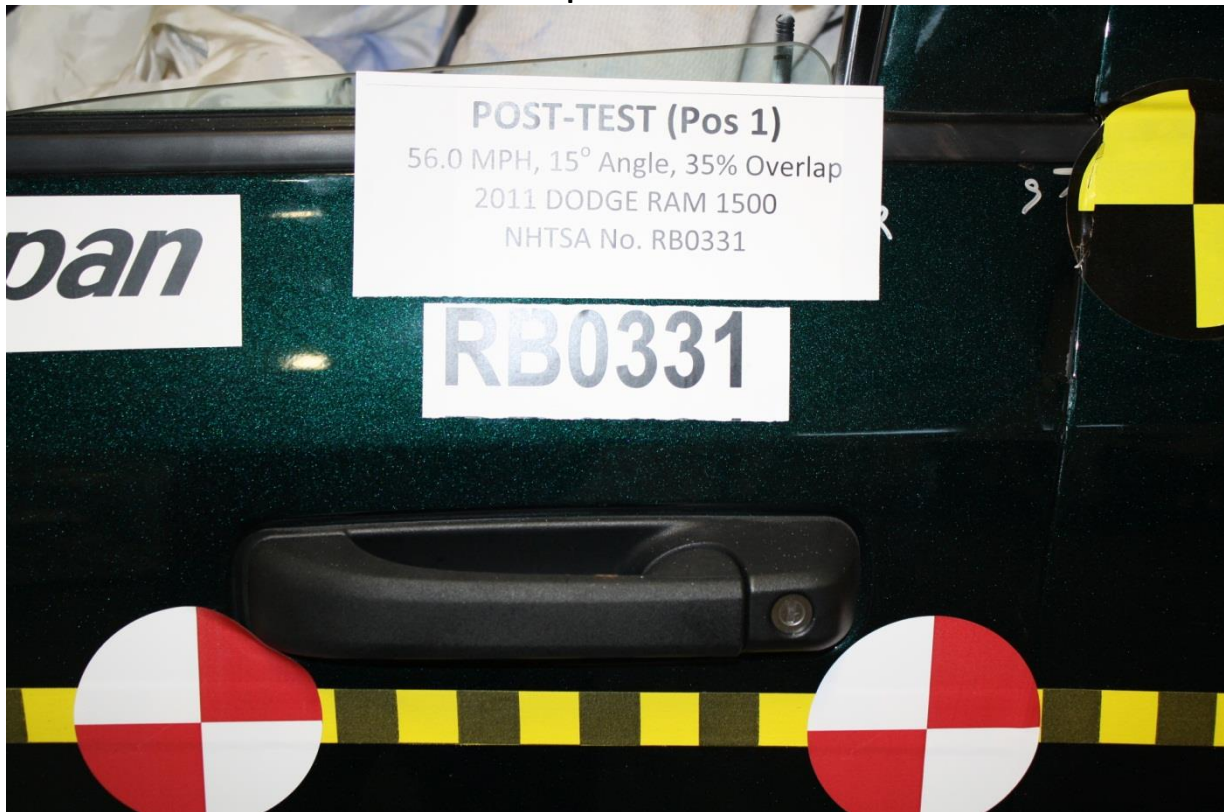
No. 022 Pre-Test Close-up View of Impact Point



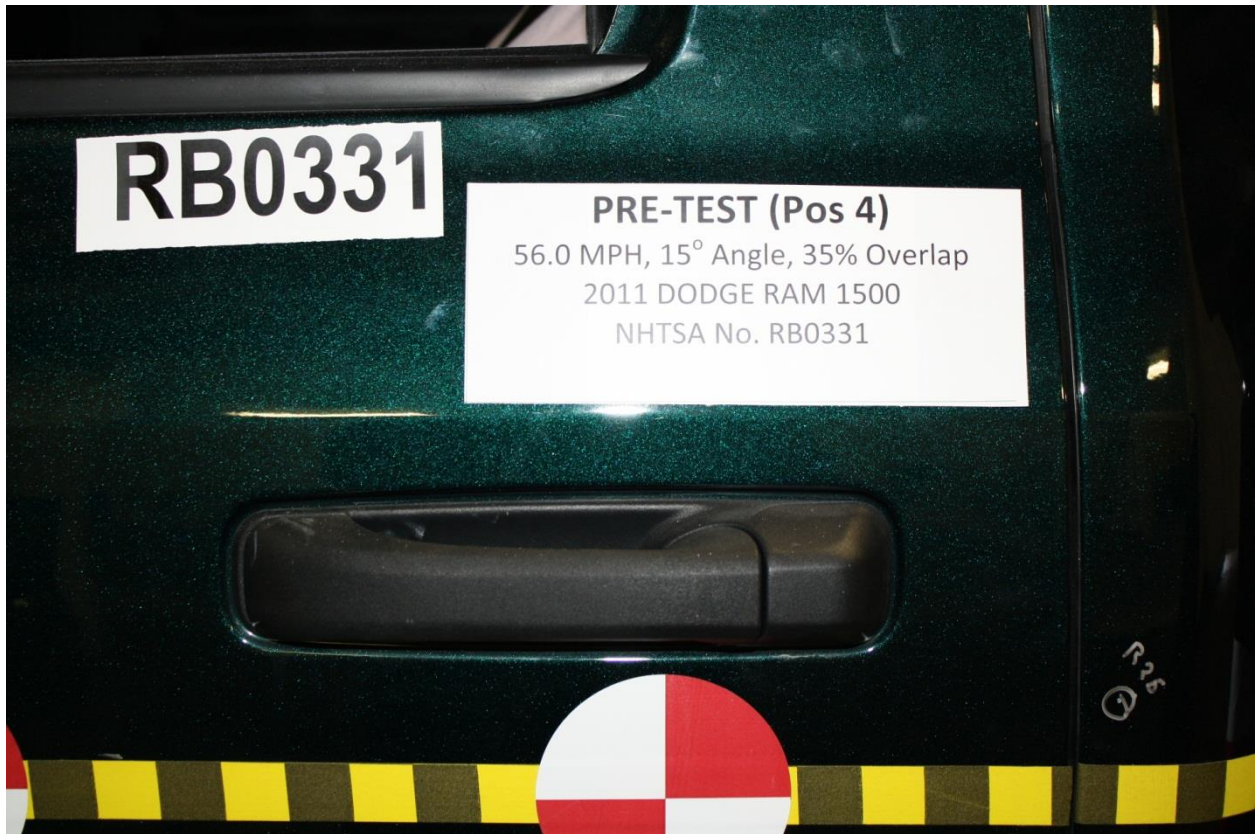
No. 023 Post-Test Close-up View of Impact Point



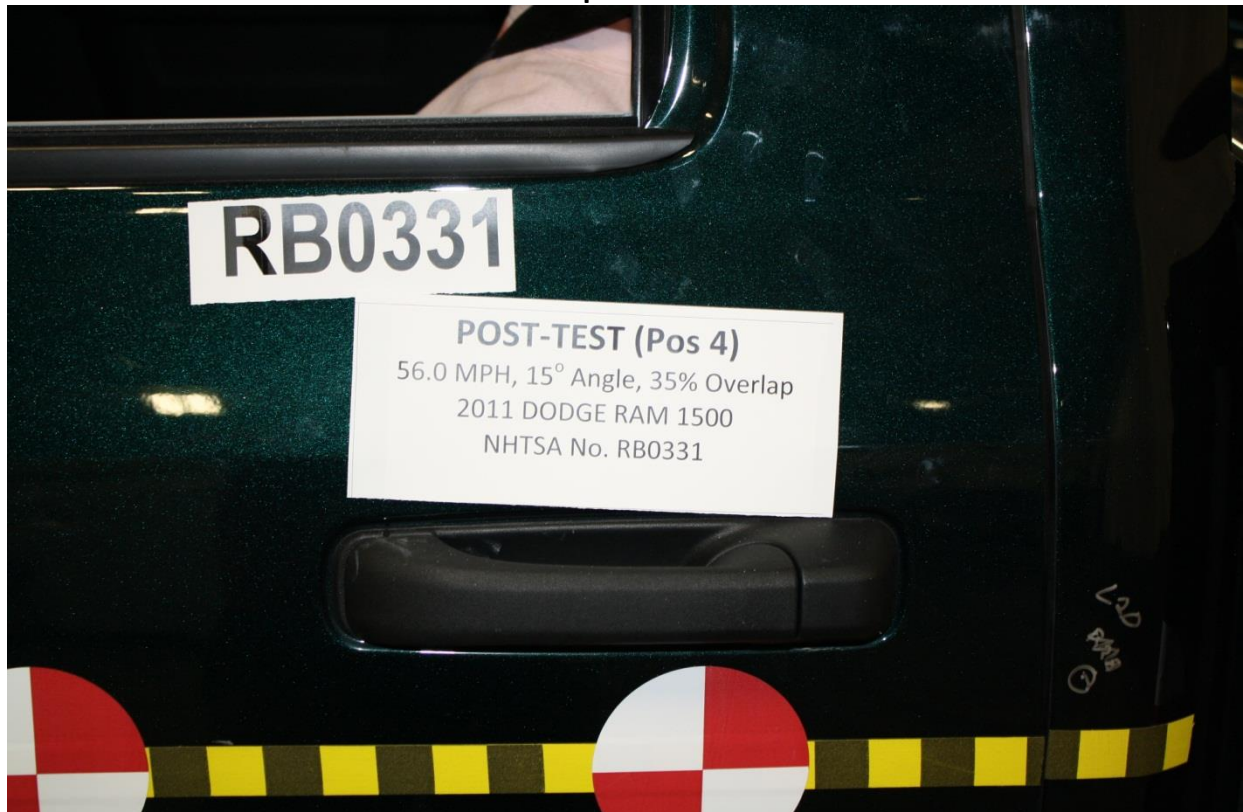
No. 024 Pre-Test Close-up View of Left Front Door Latch



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



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



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



No. 028 Pre-Test Windshield View



No. 029 Post-Test Windshield View



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



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



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



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



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



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



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



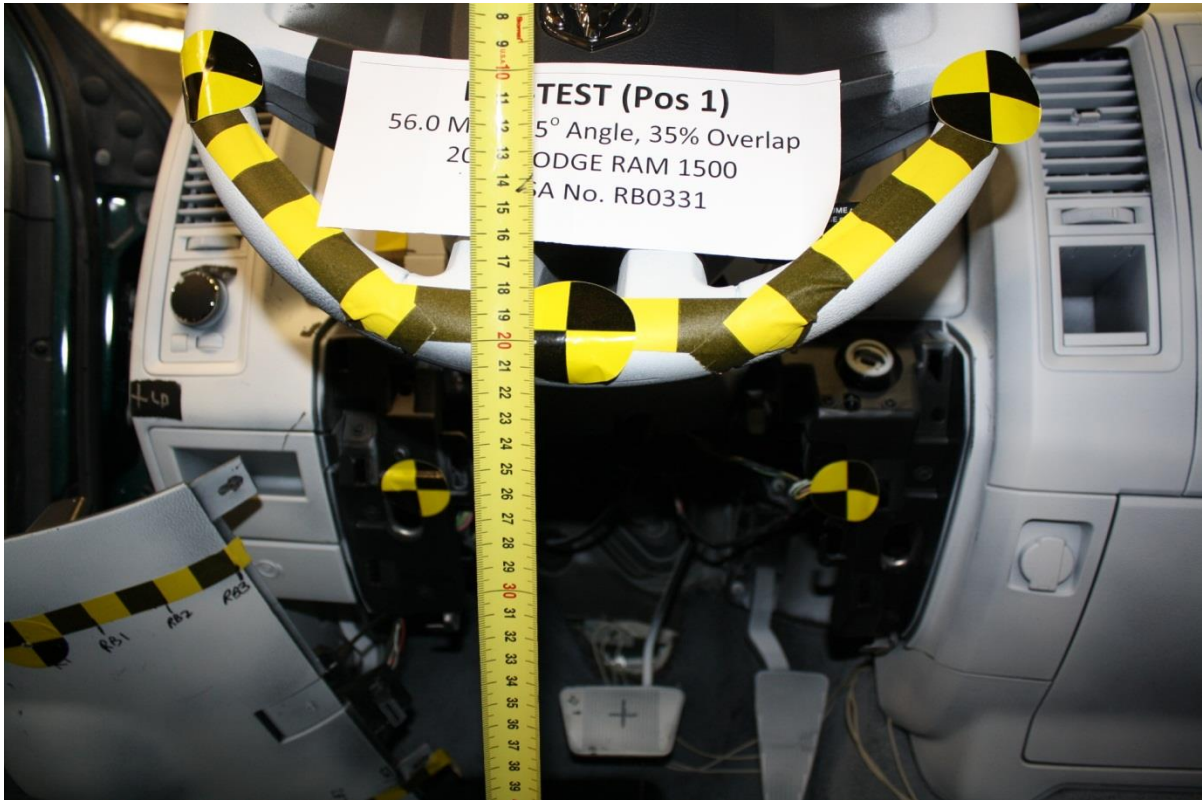
No. 037 Pre-Test Frontal View of Left Rear Seat back



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



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



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



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



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



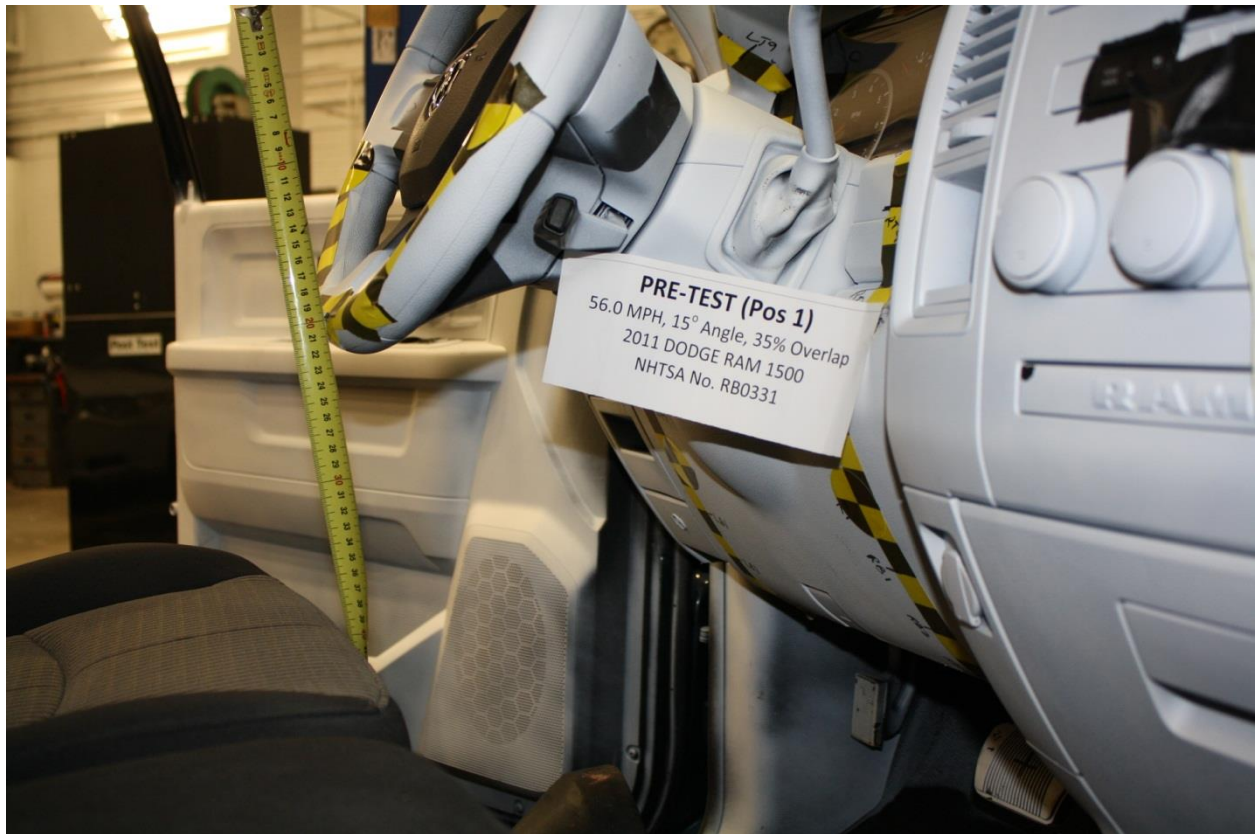
No. 043 Post-Test Left Side View of Driver Knee Bolsters



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



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



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



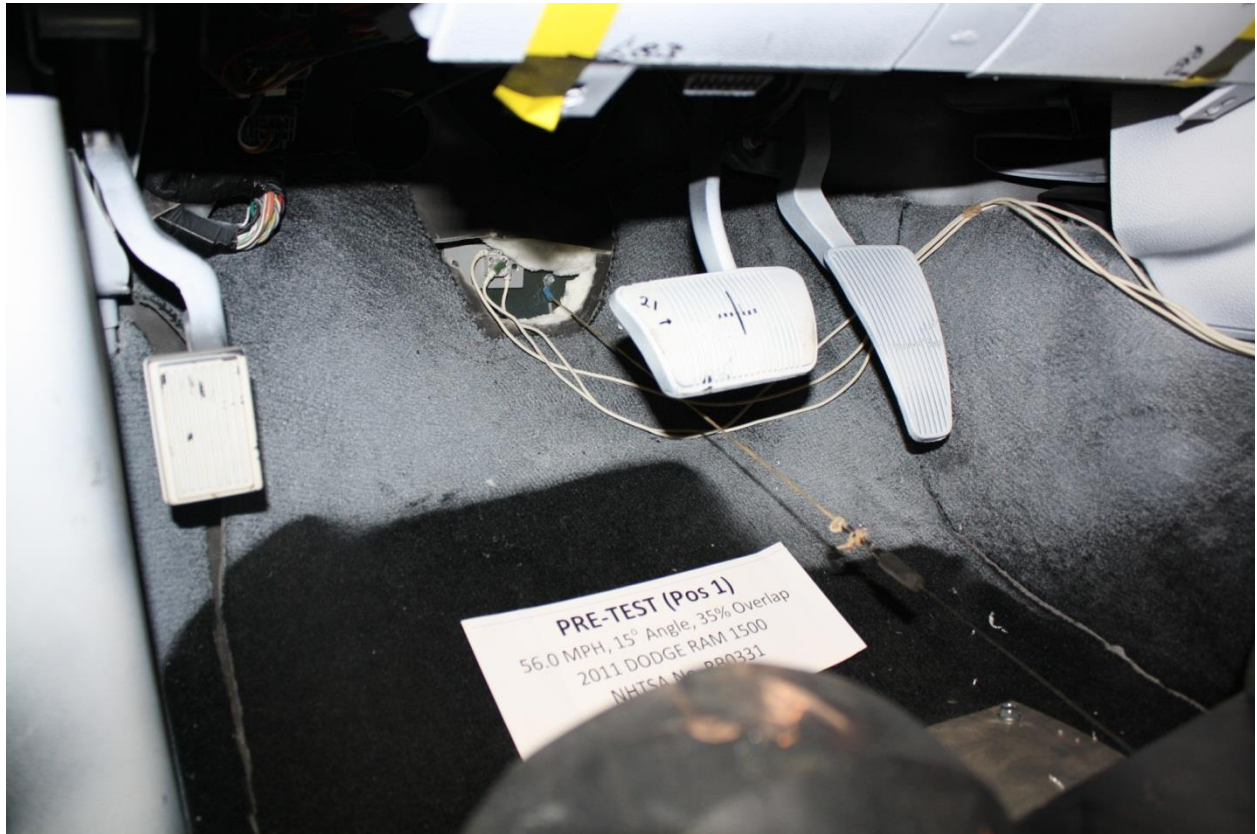
No. 047 Post-Test Right Side View of Driver Knee Bolsters



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



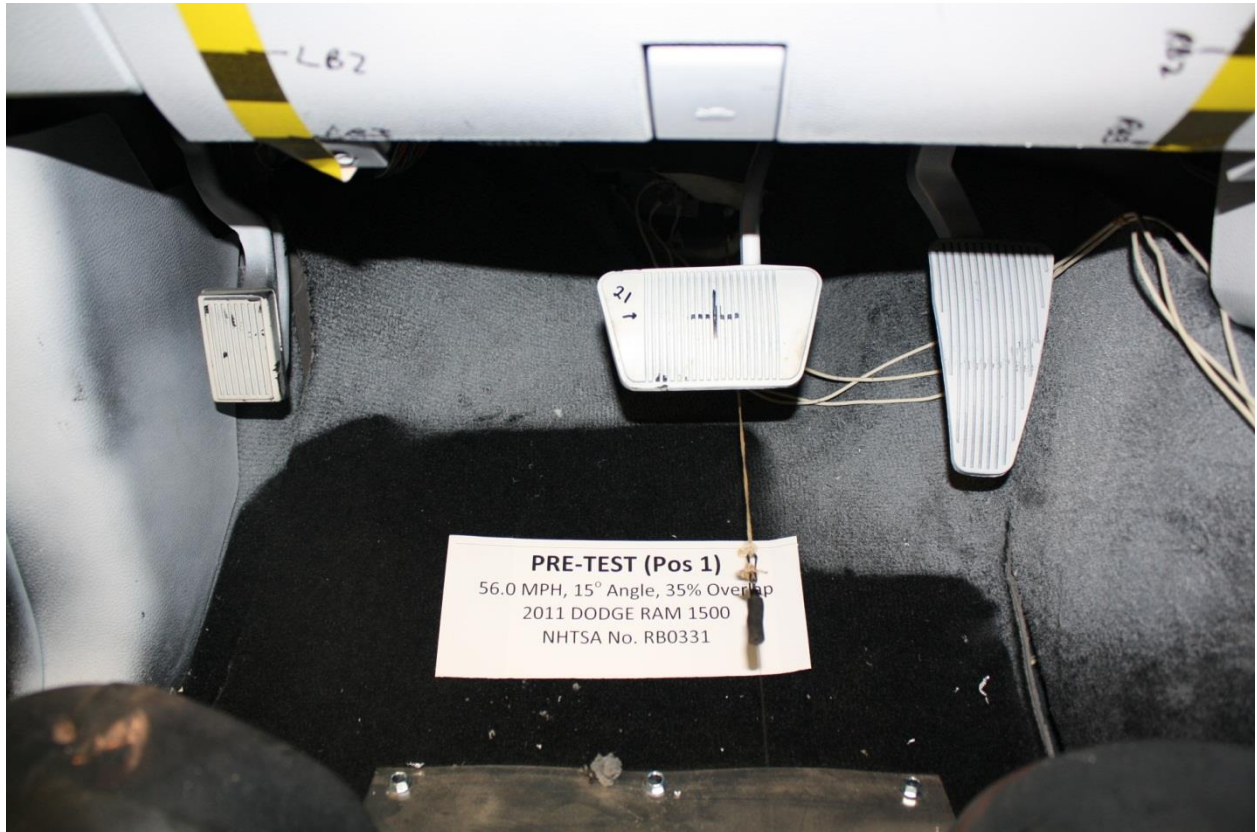
No. 049 Post-test right side view of driver knee bolster with panel removed



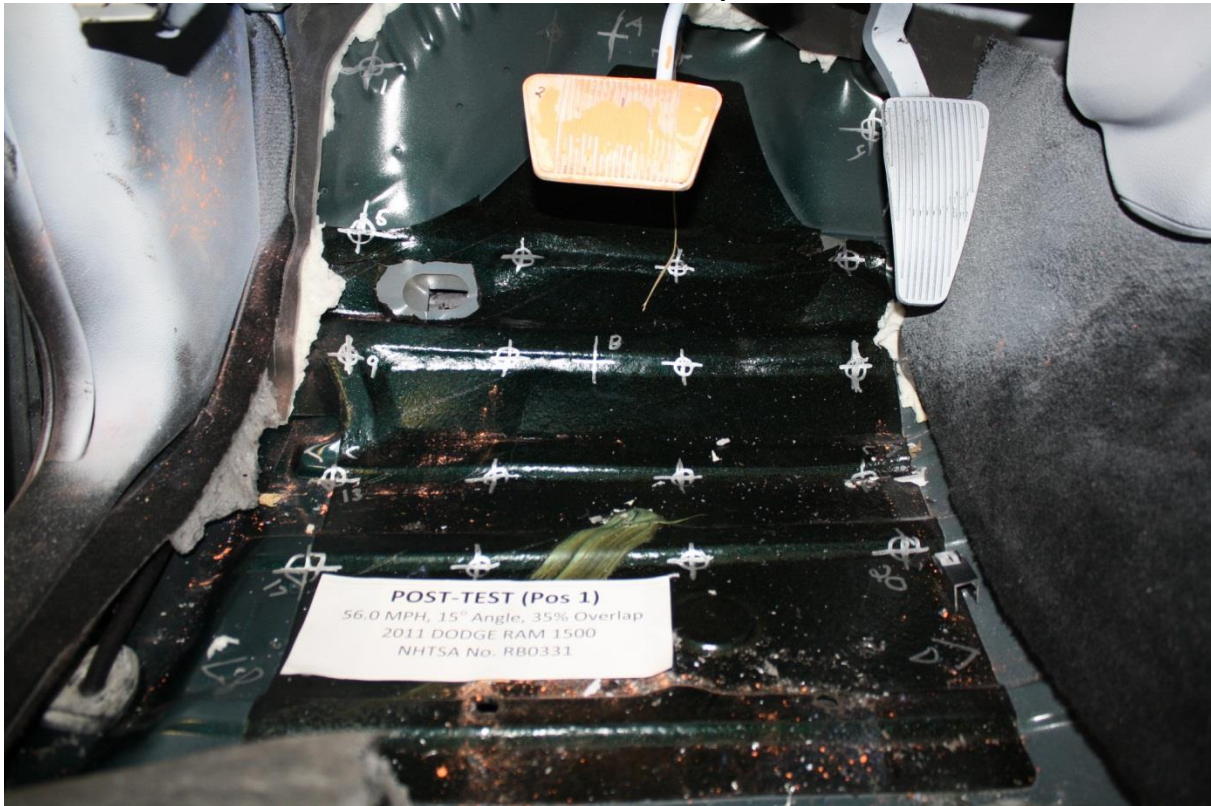
No. 050 Pre-Test View of Driver Floor pan at Left sill level



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



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



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



No. 054 Pre-Test Driver Dummy Front Windshield View



No. 055 Post-Test Driver Dummy Front Windshield View



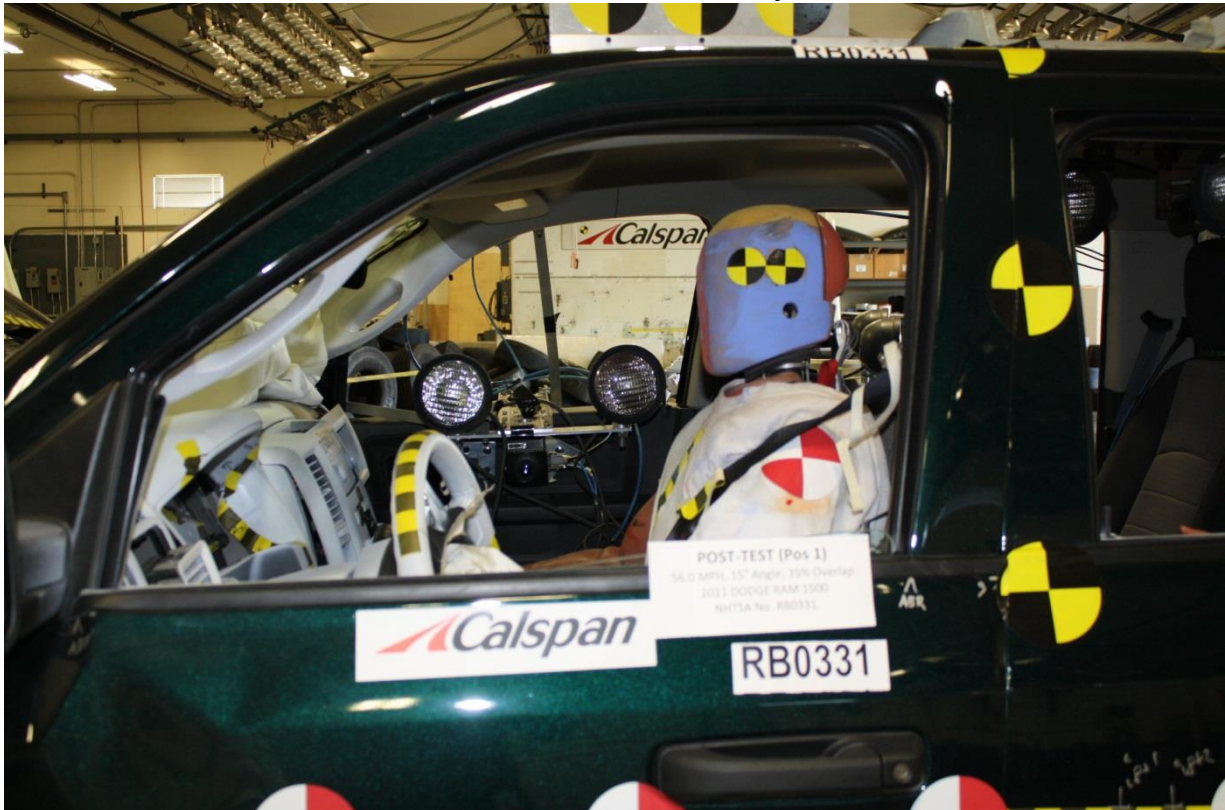
No. 056 Pre-Test Left Side View of Driver Dummy and Interior



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



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



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



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



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



PRE-TEST (Pos 1)
56.0 MPH, 15° Angle, 35% Overlap
2011 DODGE RAM 1500
NHTSA No. RB0331

Calspan

RB0331

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

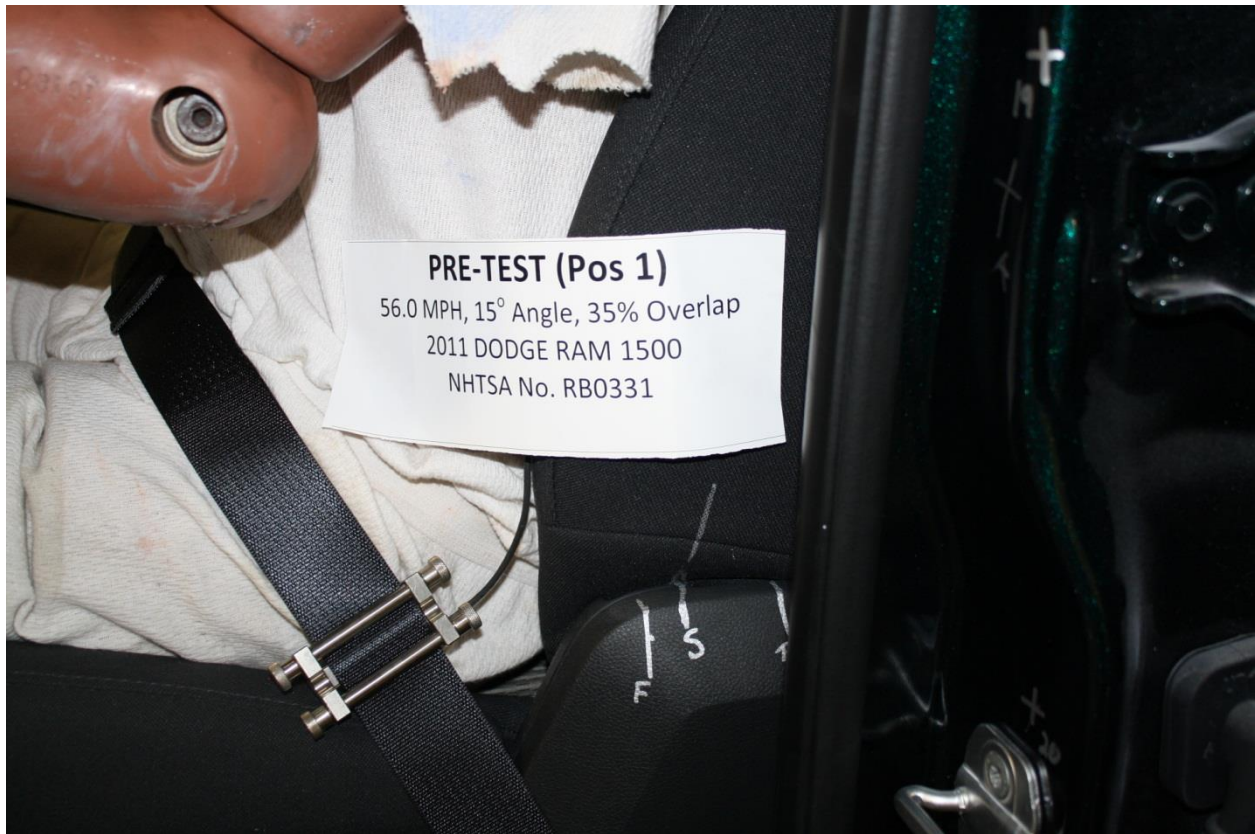


POST-TEST (Pos 1)
56.0 MPH, 15° Angle, 35% Overlap
2011 DODGE RAM 1500
NHTSA No. RB0331

Calspan

RB0331

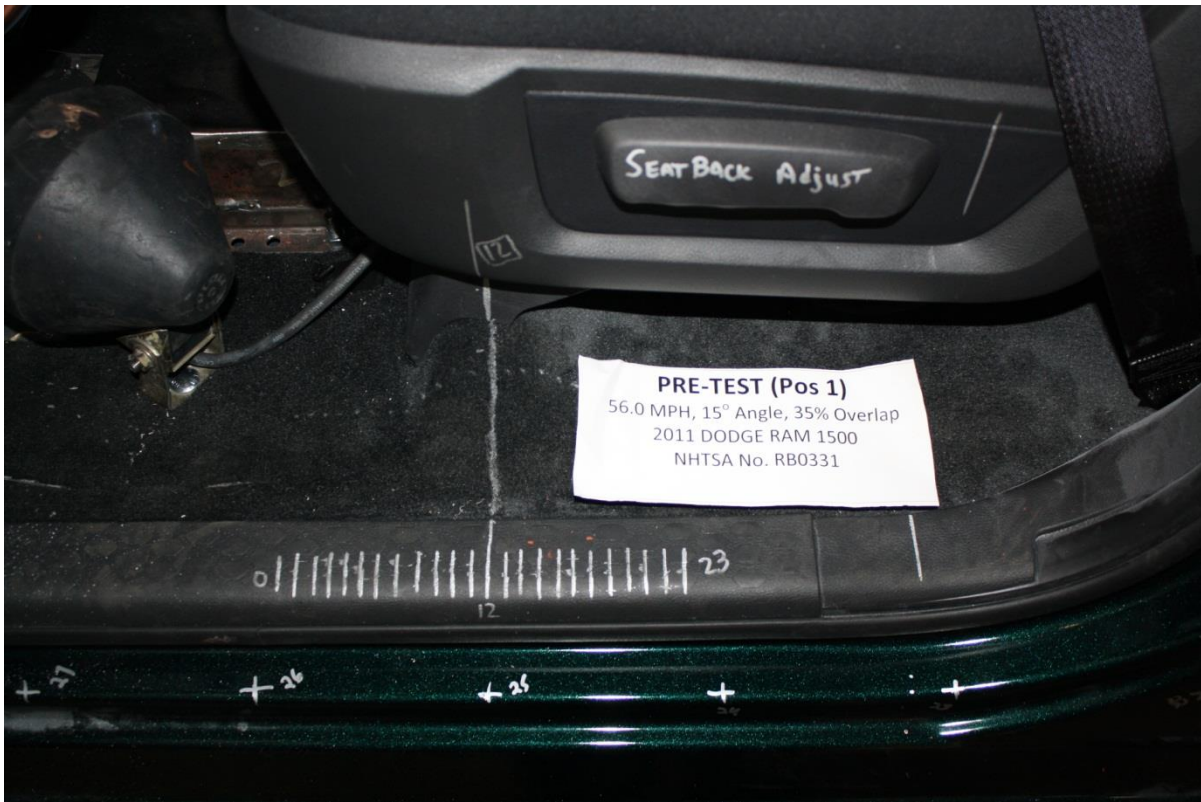
No. 063 Post-Test View of Driver Dummy Door Clearance



No. 064 Pre-Test Driver Seat Back Position markings



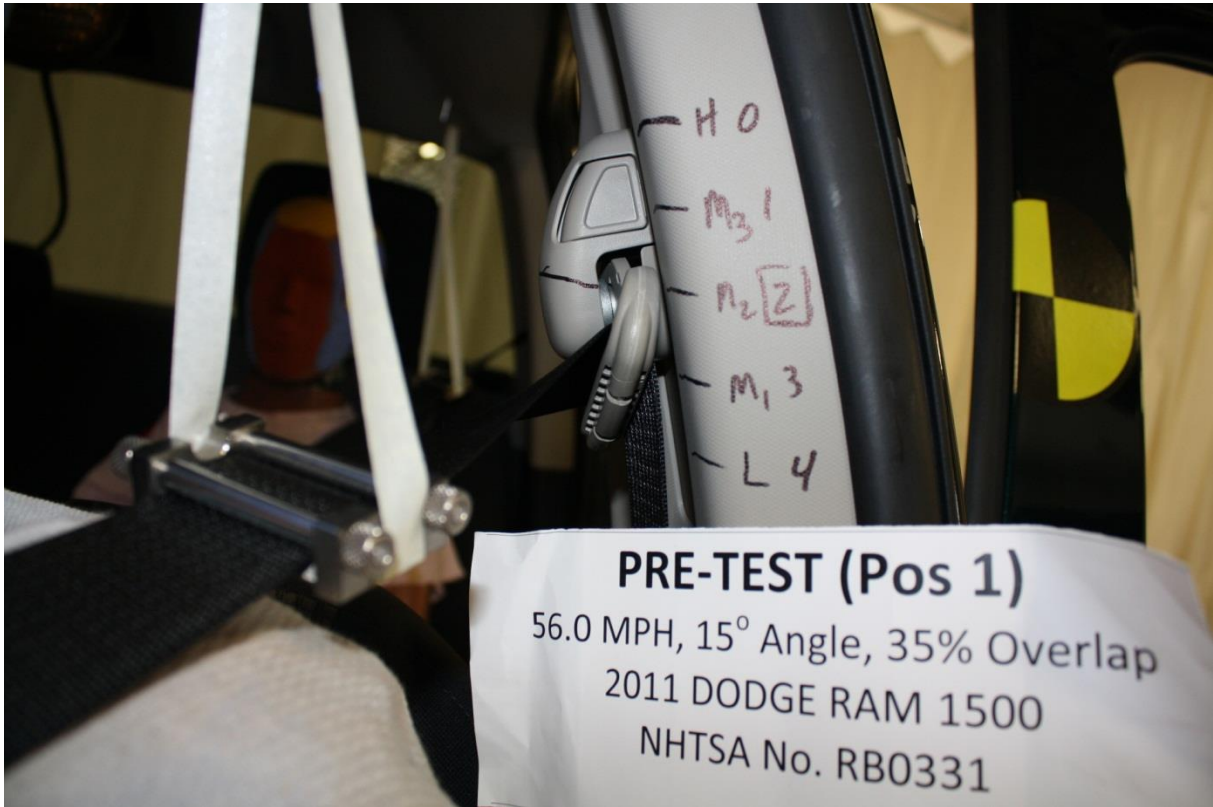
No. 065 Pre-Test Driver Seat Back Position with Level or Inclinometer



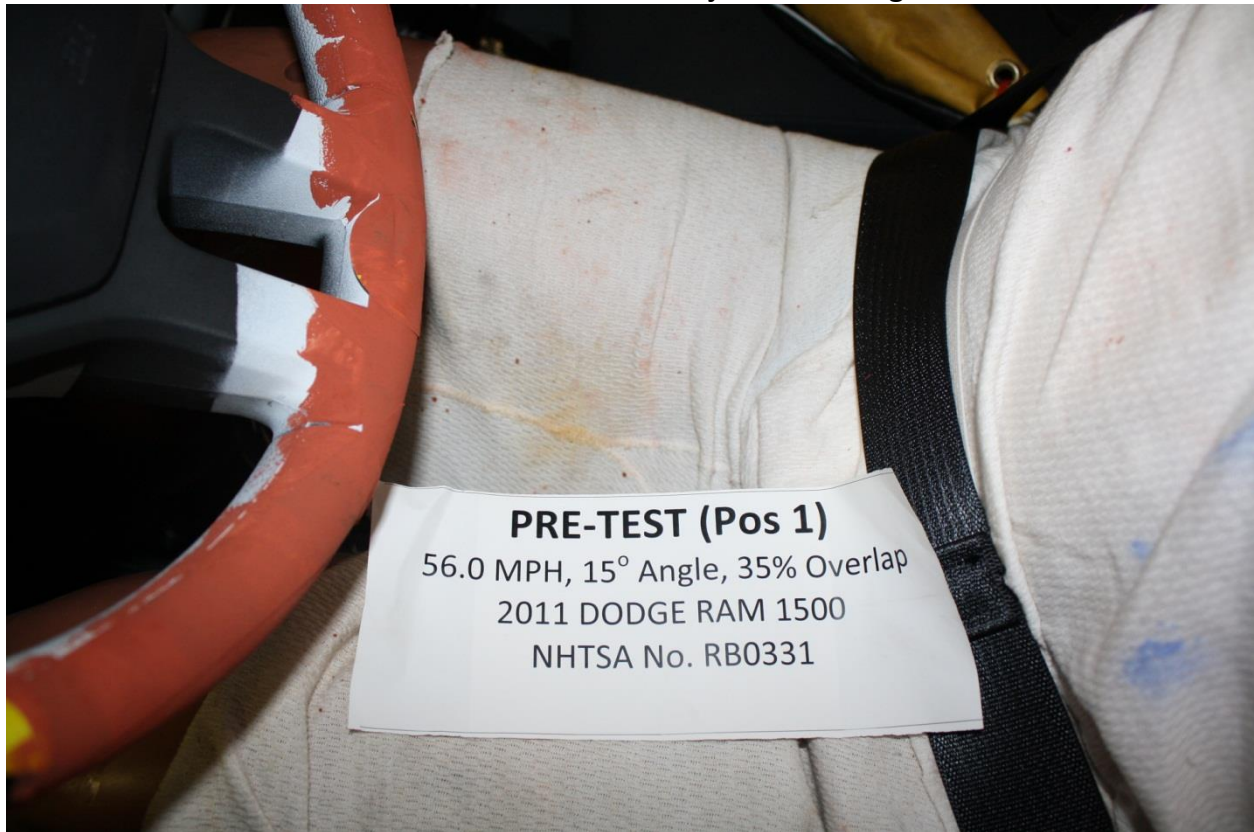
No. 066 Pre-Test Driver Seat Fore Aft Markings



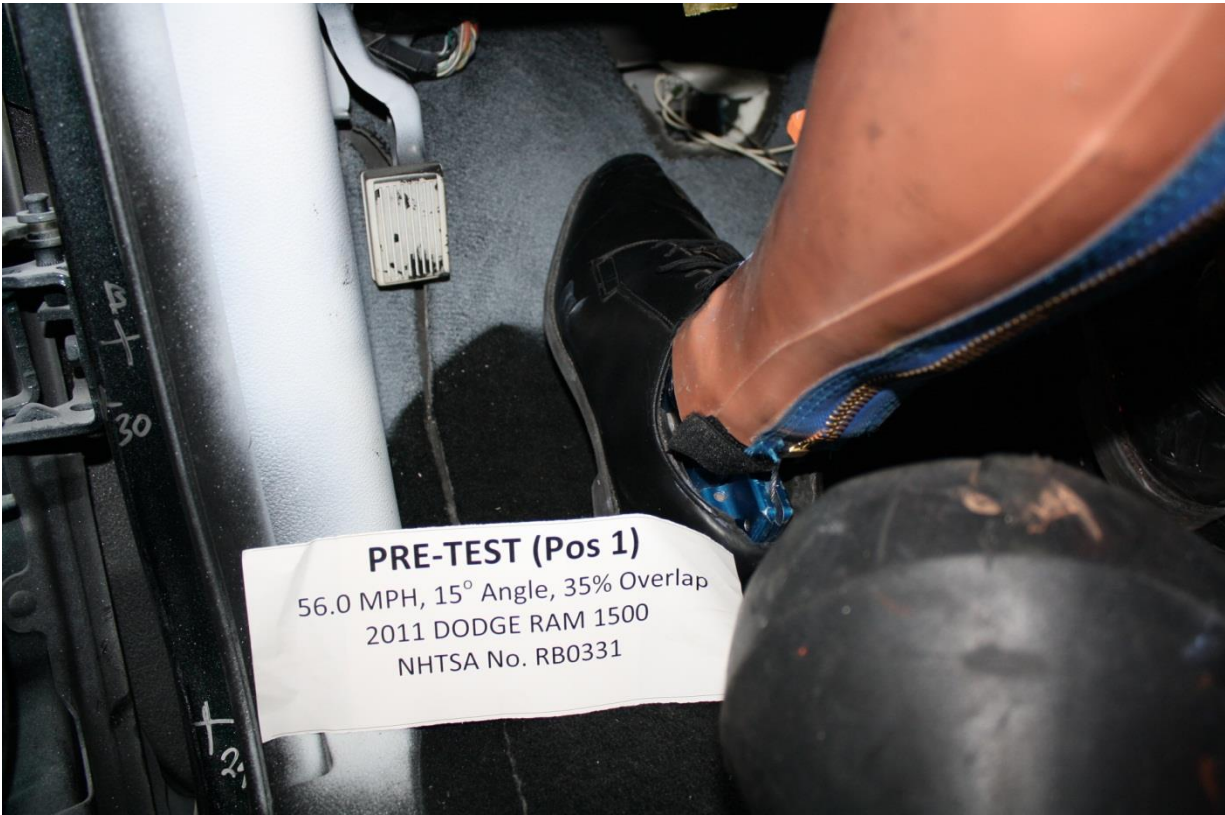
No. 067 Post-Test Driver Seat Fore Aft Markings



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



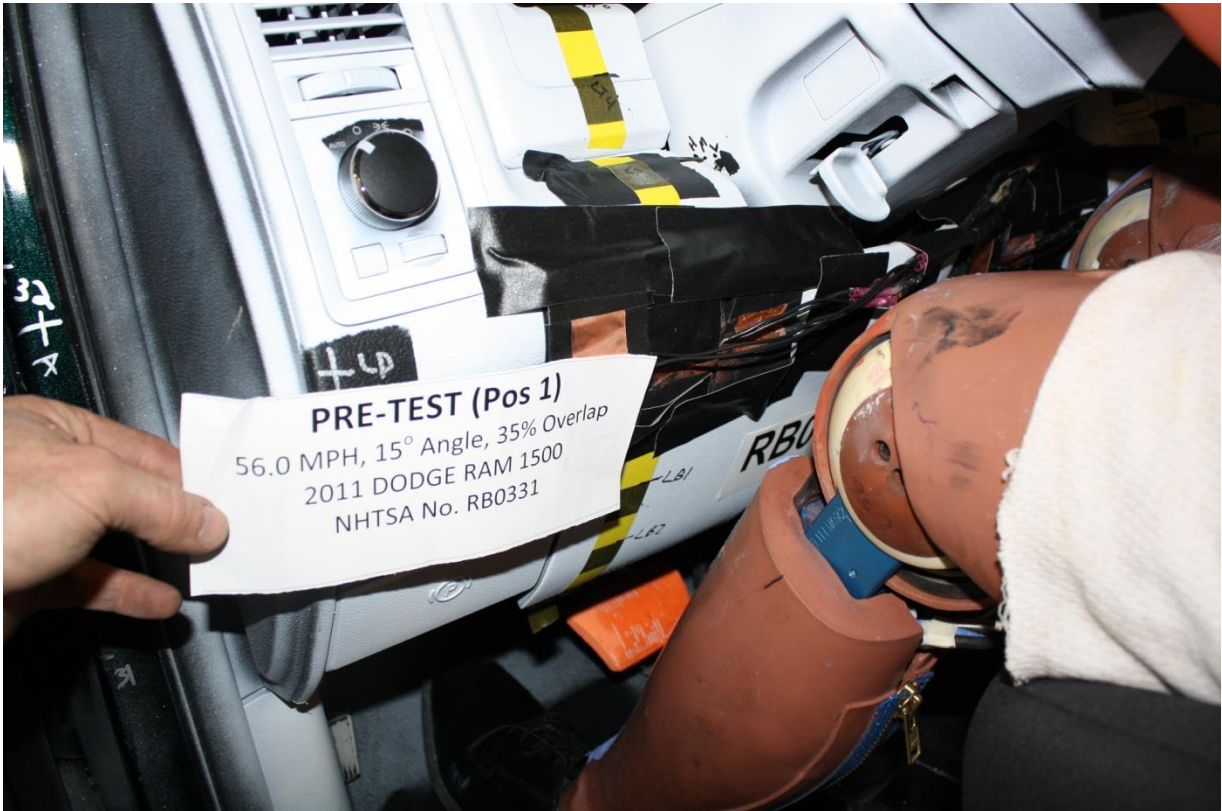
No. 072 Post-Test Driver Dummy Feet



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

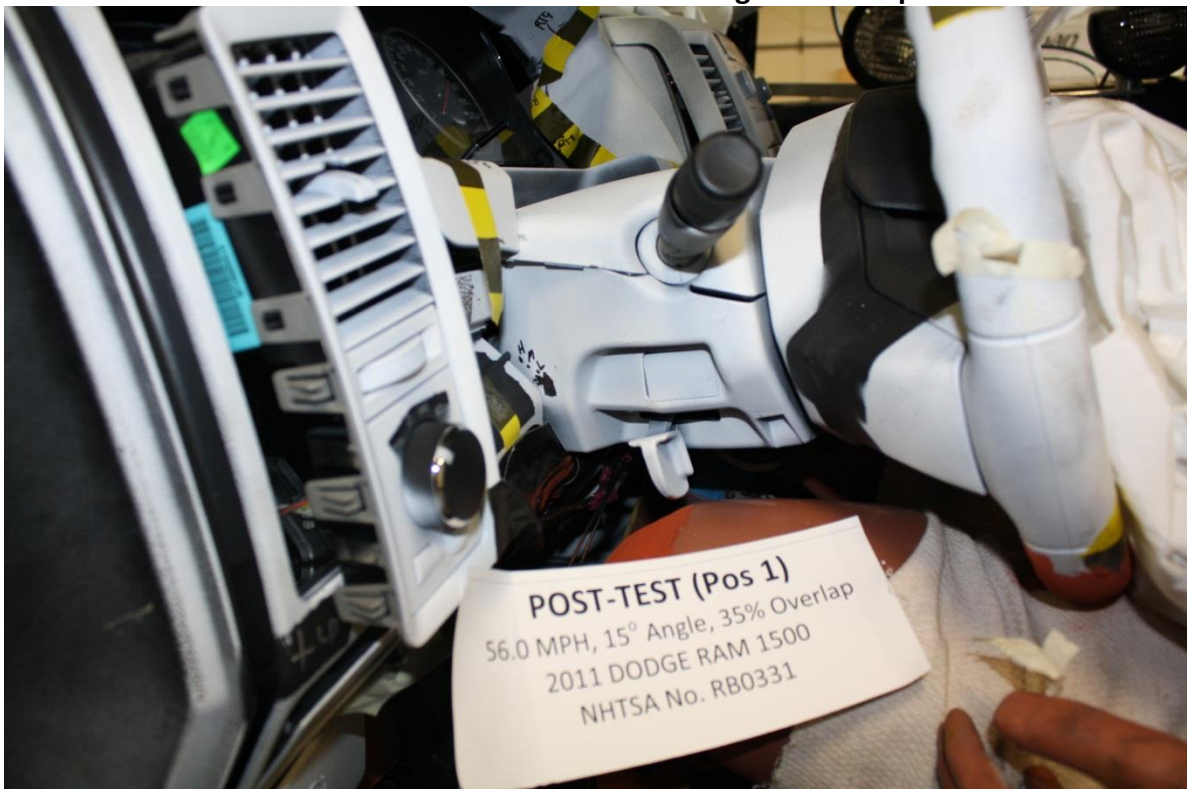


No. 078 Post-Test View of Driver Dummy Abdomen



PRE-TEST (Pos 1)
56.0 MPH, 15° Angle, 35% Overlap
2011 DODGE RAM 1500
NHTSA No. RB0331

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

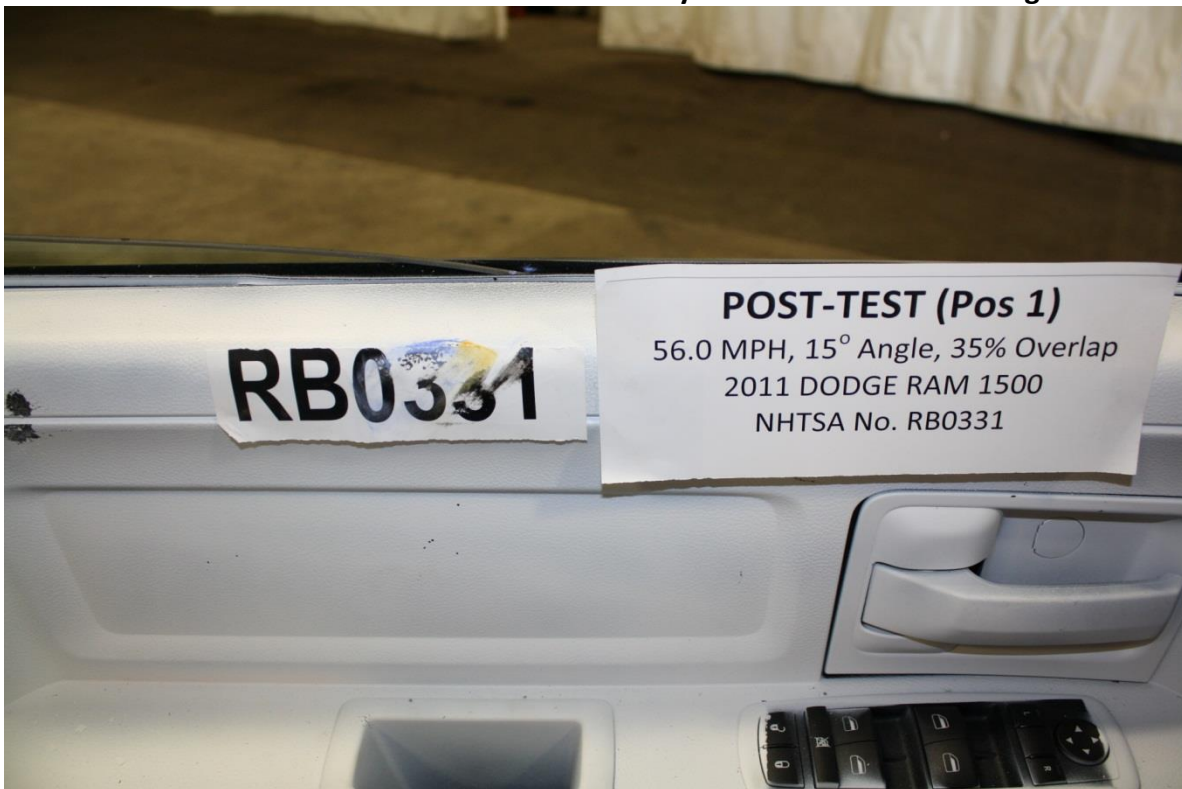


POST-TEST (Pos 1)
56.0 MPH, 15° Angle, 35% Overlap
2011 DODGE RAM 1500
NHTSA No. RB0331

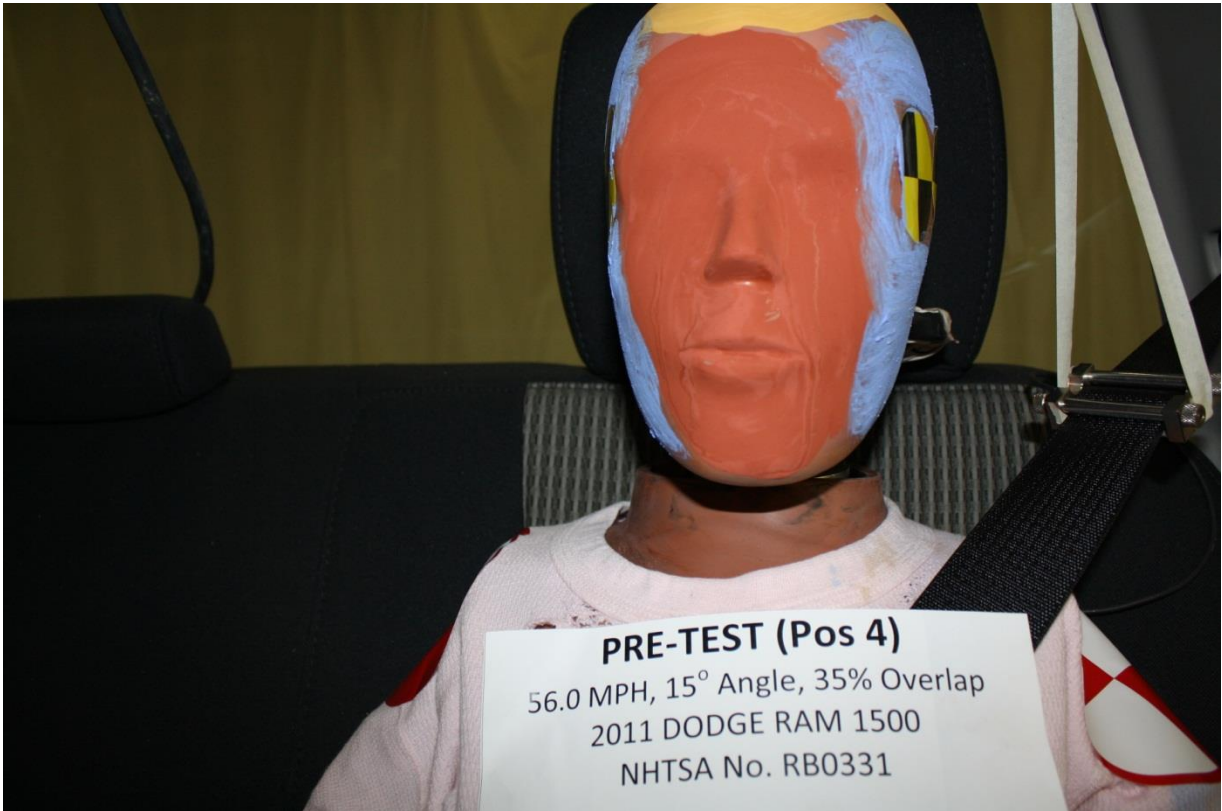
No. 080 Post-Test Left Side View of Steering Wheel set position



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



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



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



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



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



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



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



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



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



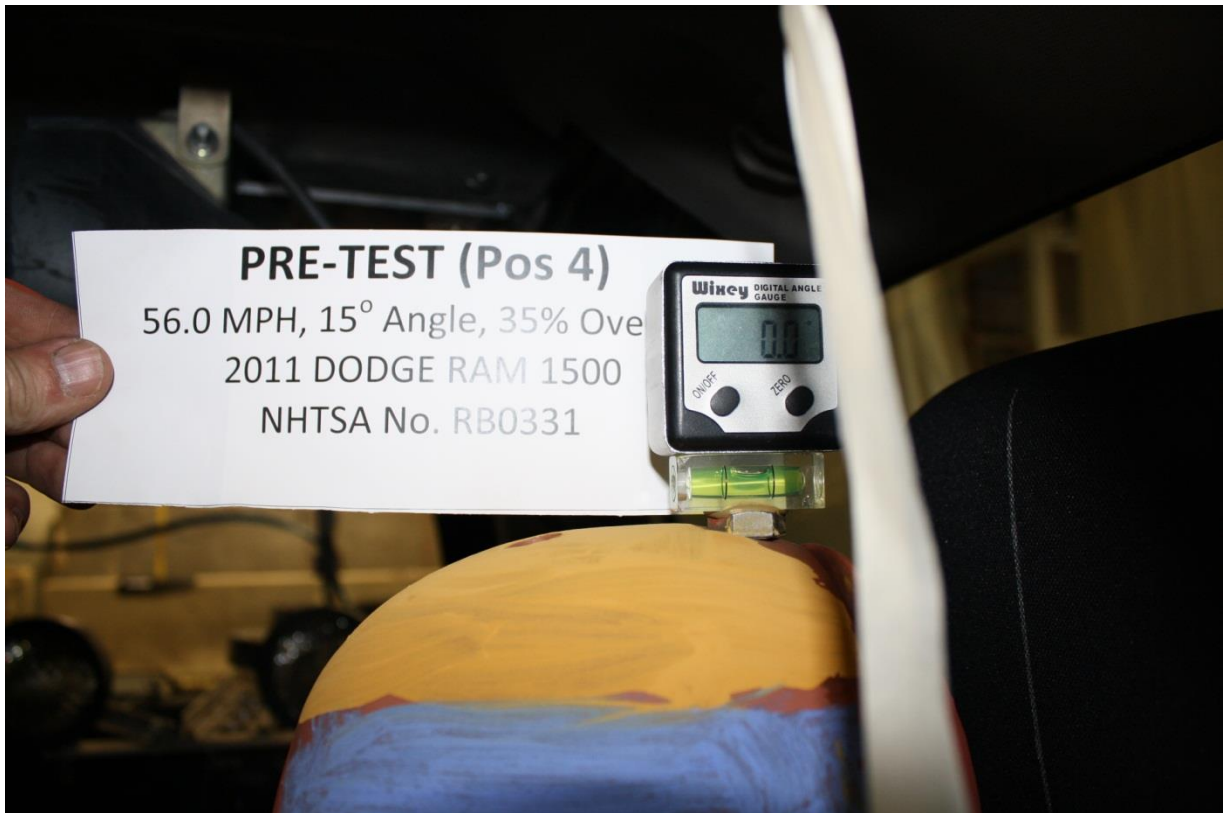
No. 090 Post-Test Right Side View of Passenger Dummy and Interior



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

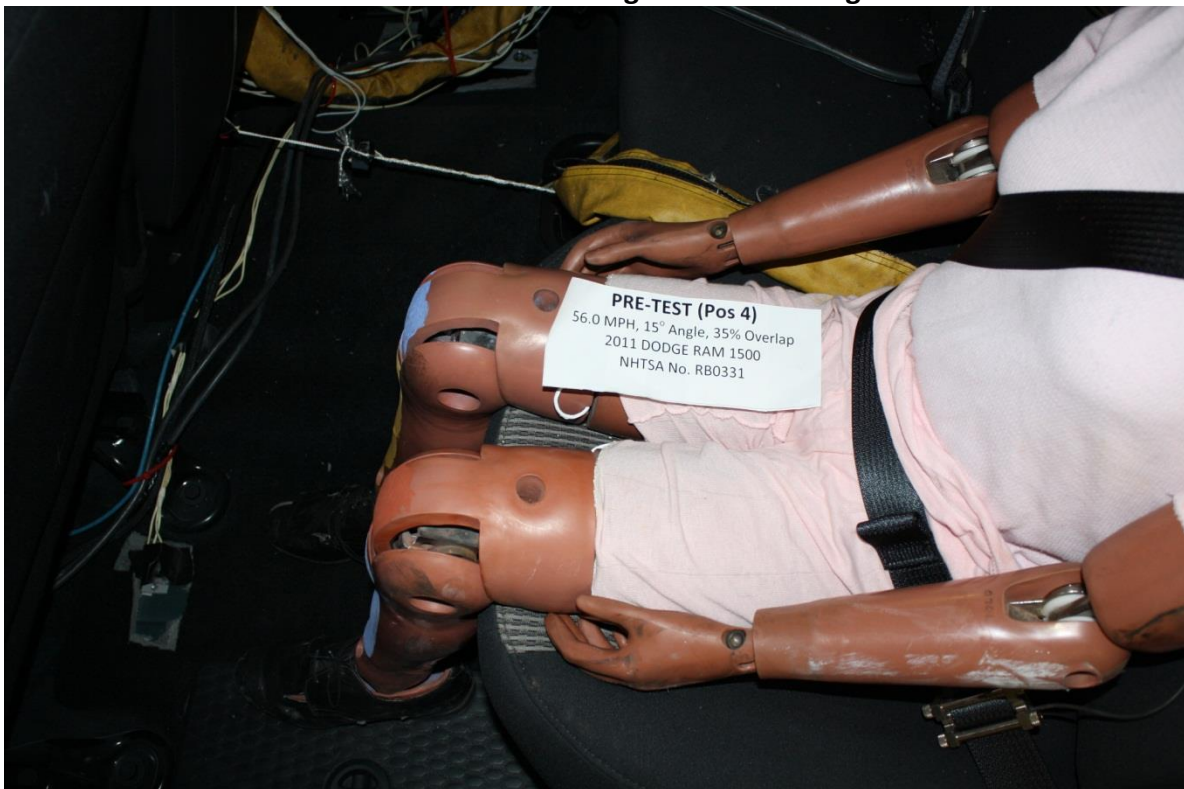
Photo Not Applicable

passenger seat is fixed

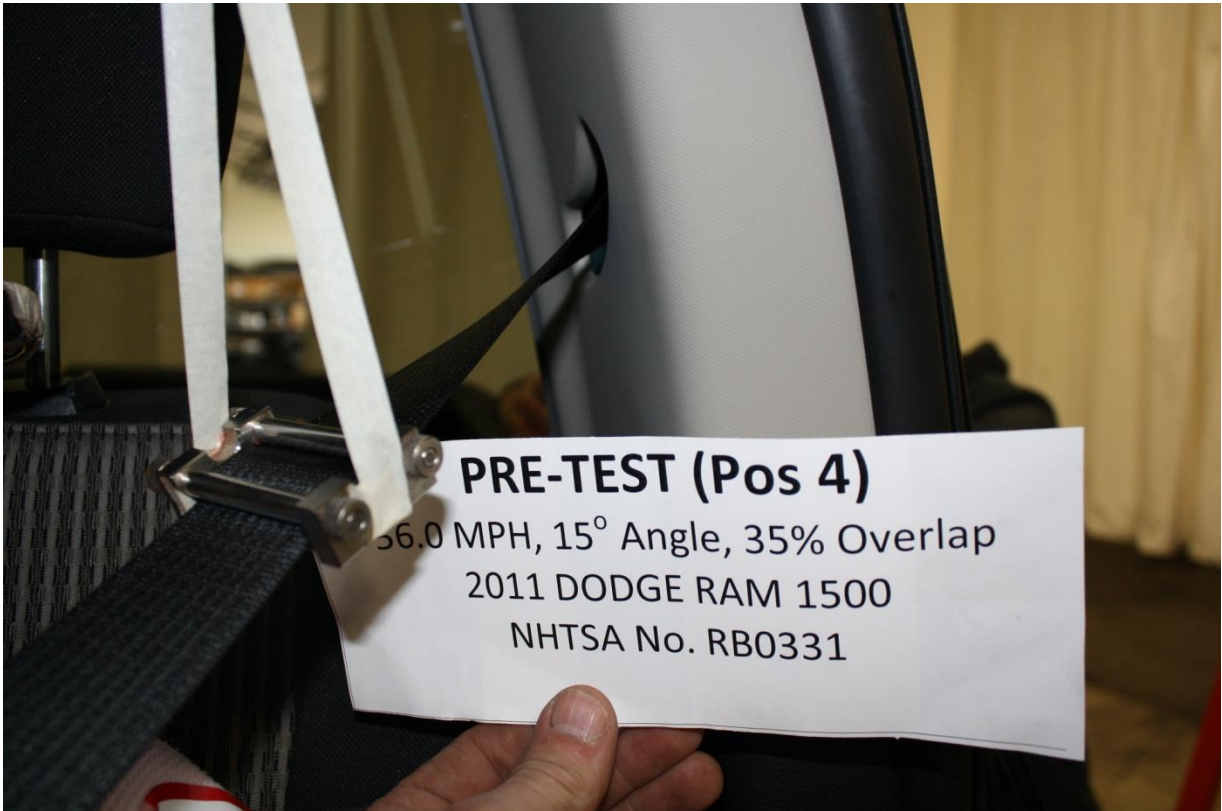
No. 094 Pre-Test Passenger Seat Fore-Aft Markings



No. 095 Pre-Test Passenger Seat Back Angle



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

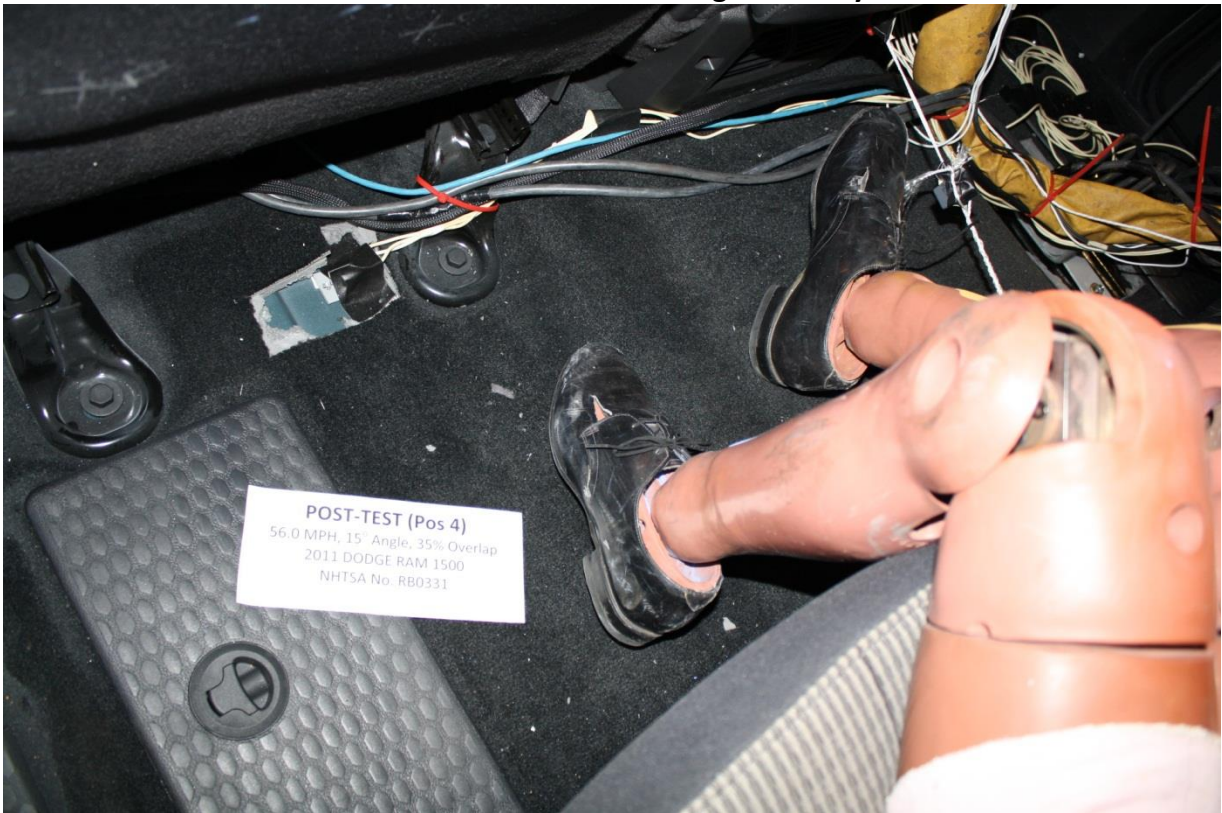


No. 097 Pre-Test Passenger Adjustable D-ring



PRE-TEST (Pos 4)
56.0 MPH, 15° Angle, 35% Overlap
2011 DODGE RAM 1500
NHTSA No. RB0331

No. 098 Pre-Test View of Passenger Dummy Feet



POST-TEST (Pos 4)
56.0 MPH, 15° Angle, 35% Overlap
2011 DODGE RAM 1500
NHTSA No. RB0331

No. 099 Post-Test View of Passenger Dummy Feet

Photo Not Applicable

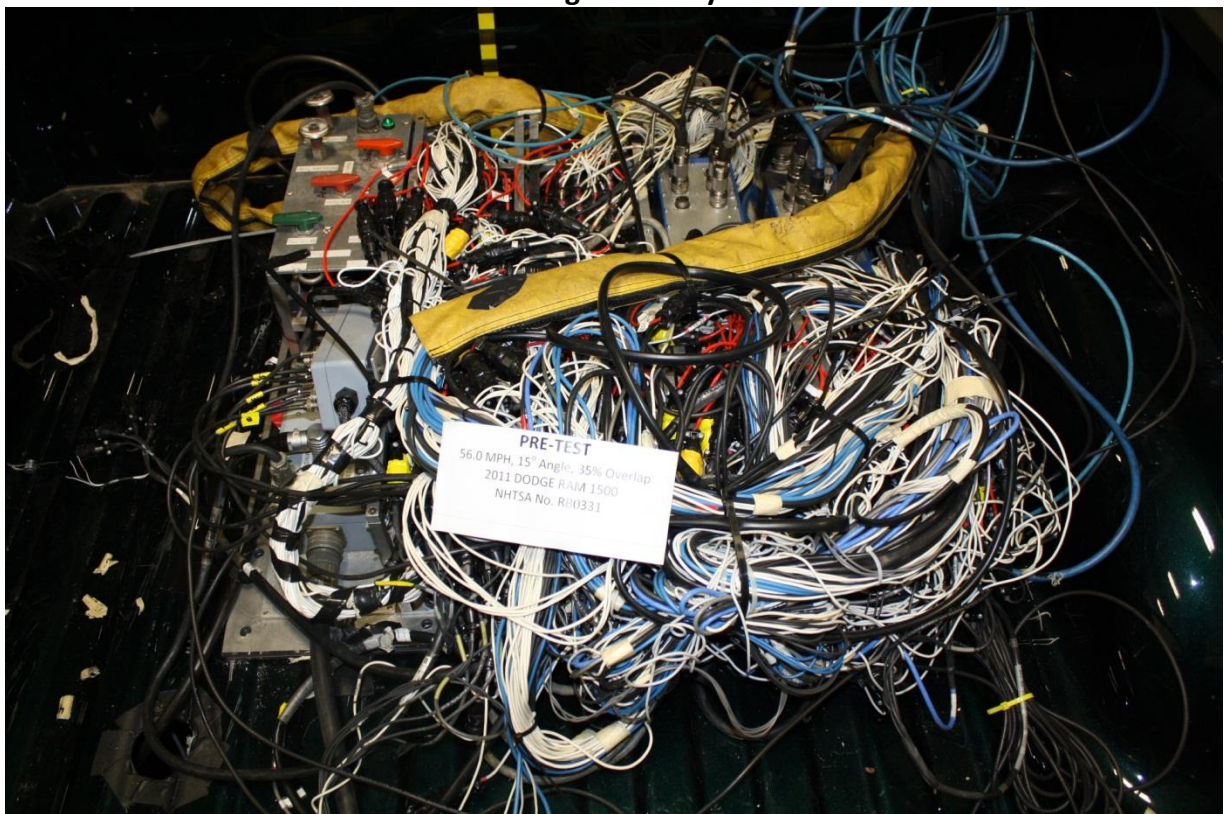
No. 100 Post-Test View of Passenger Dummy Head contact with Airbag



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



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



No. 103 Pre-Test Ballast Locations



No. 104 Post-Test Speed Trap Readout



No. 105 Pre-Test View of Fuel Filler Cap



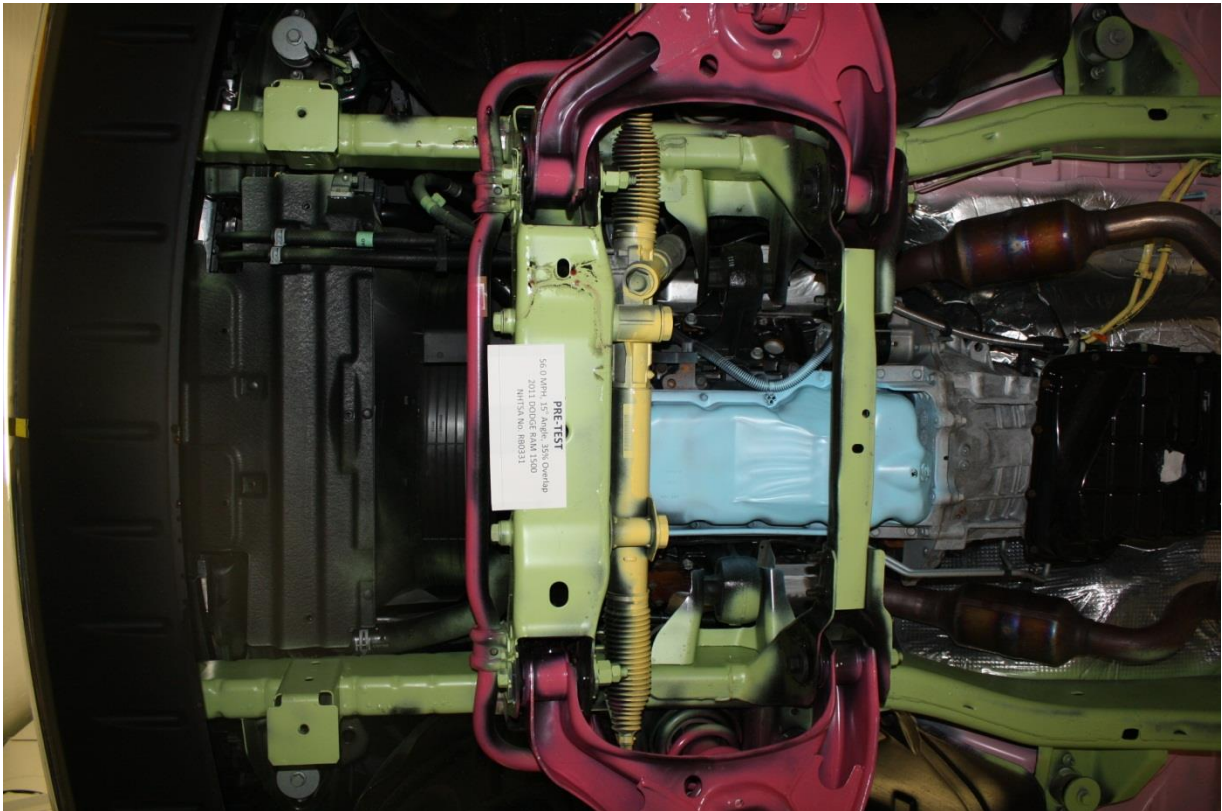
No. 106 Post-Test View of Fuel Filler Cap



No. 107 Pre-Test Engine Compartment View



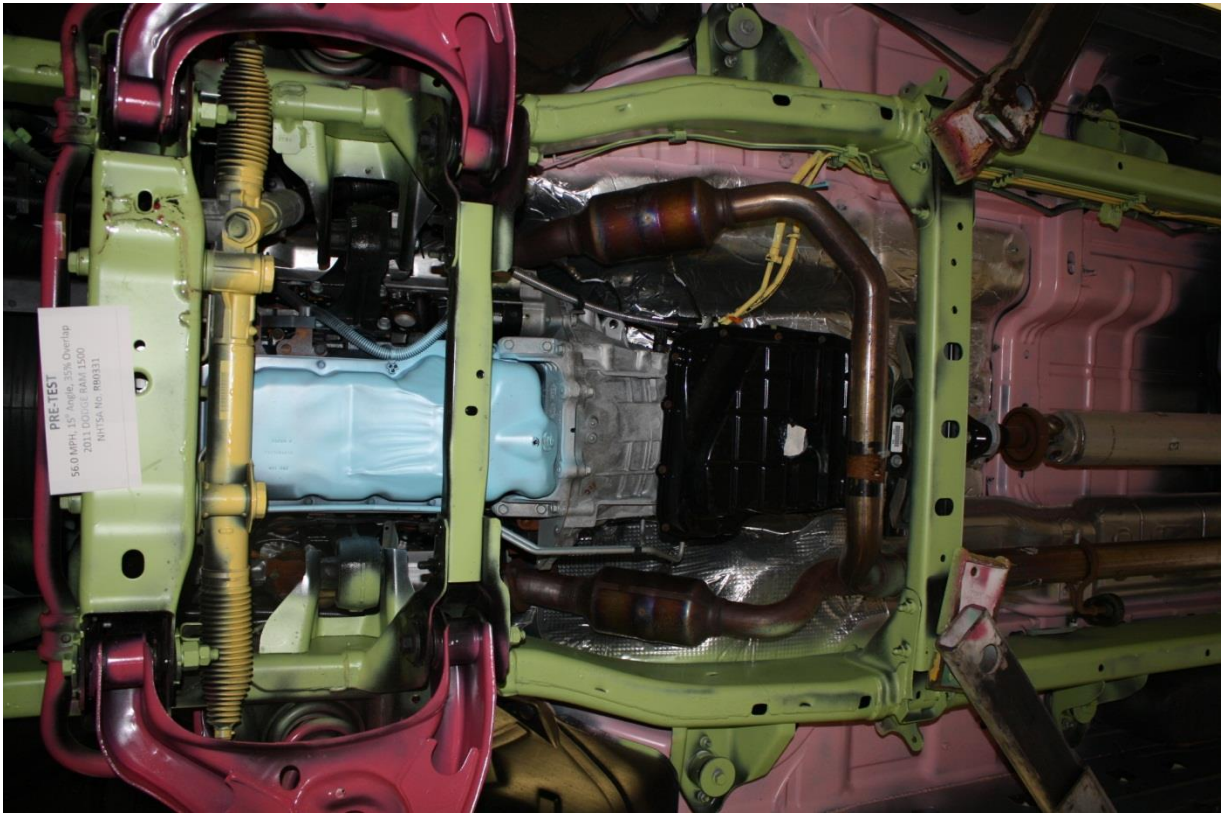
No. 108 Post-Test Engine Compartment View



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



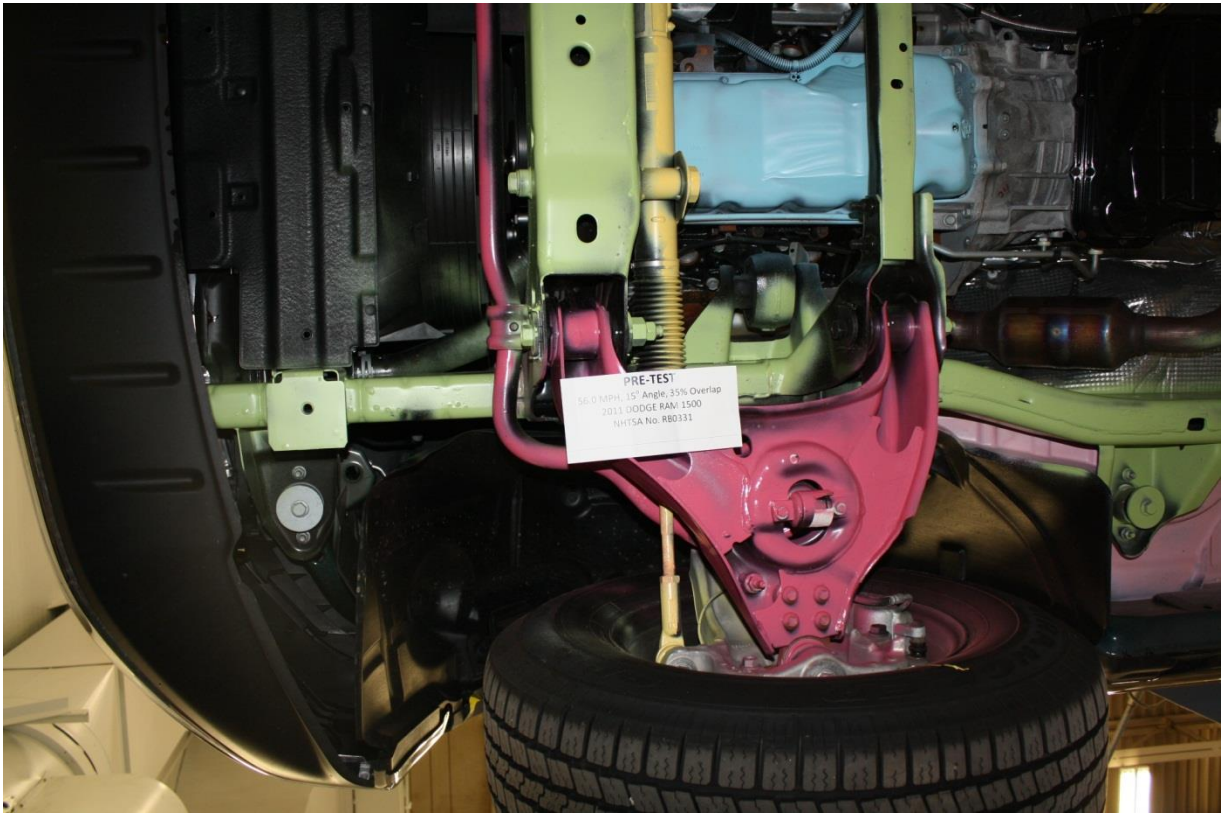
No. 110 Post-Test View of Front Underbody (perpendicular to vehicle)



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



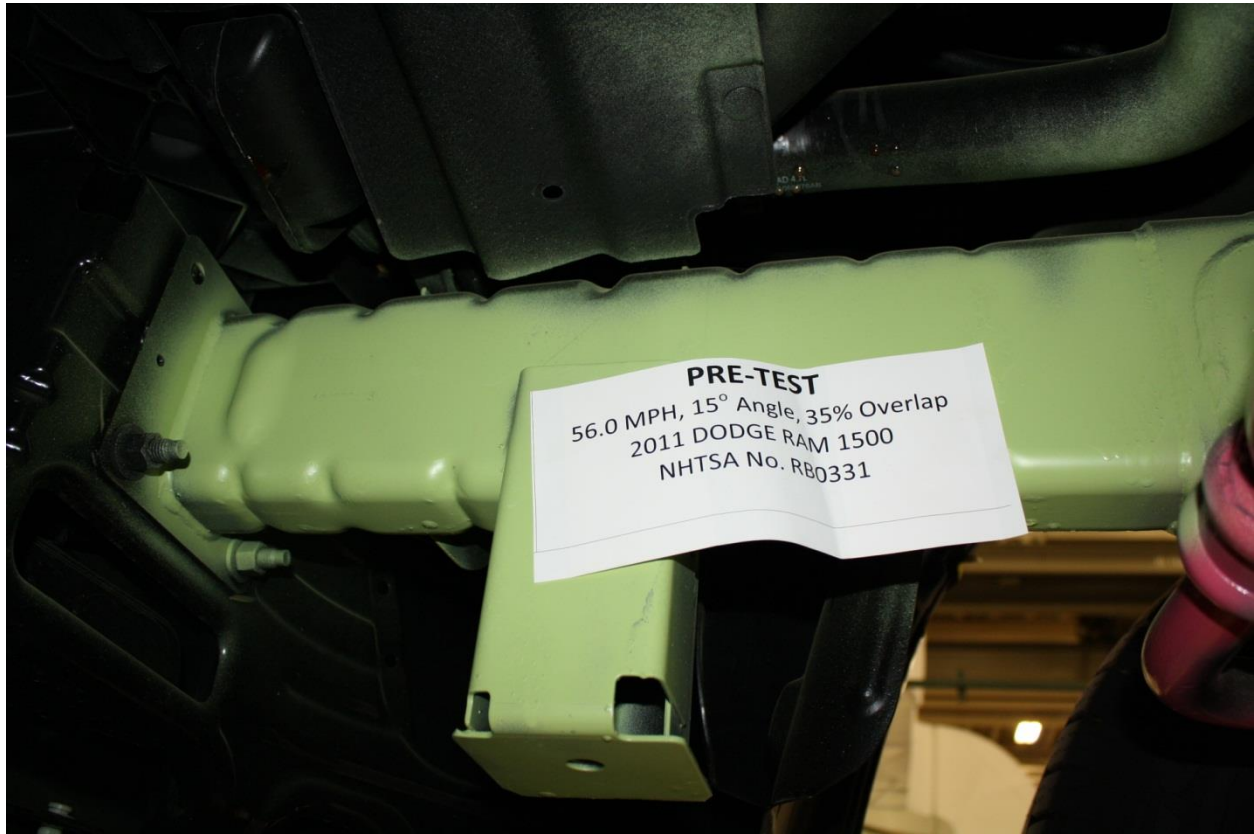
No. 112 Post-Test View of Overall Underbody (perpendicular to vehicle)



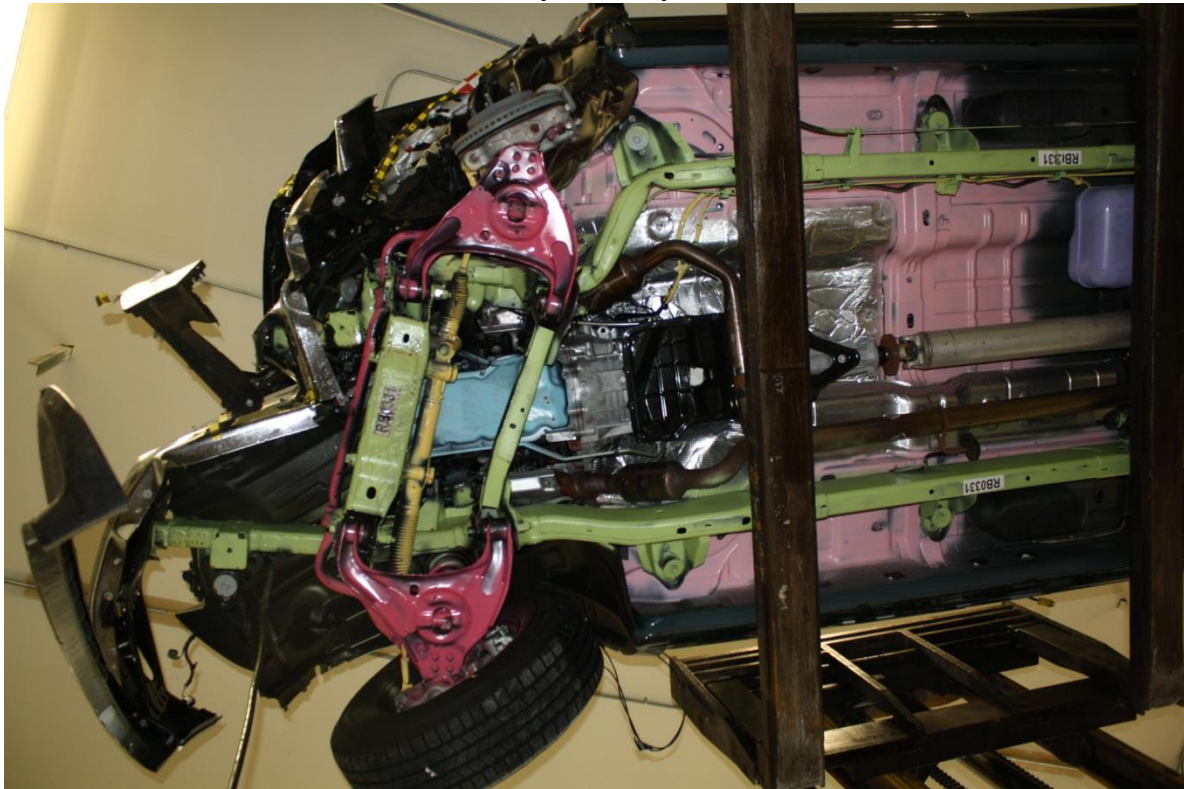
No. 113 Pre-Test View of Steering rack and or sway bar



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



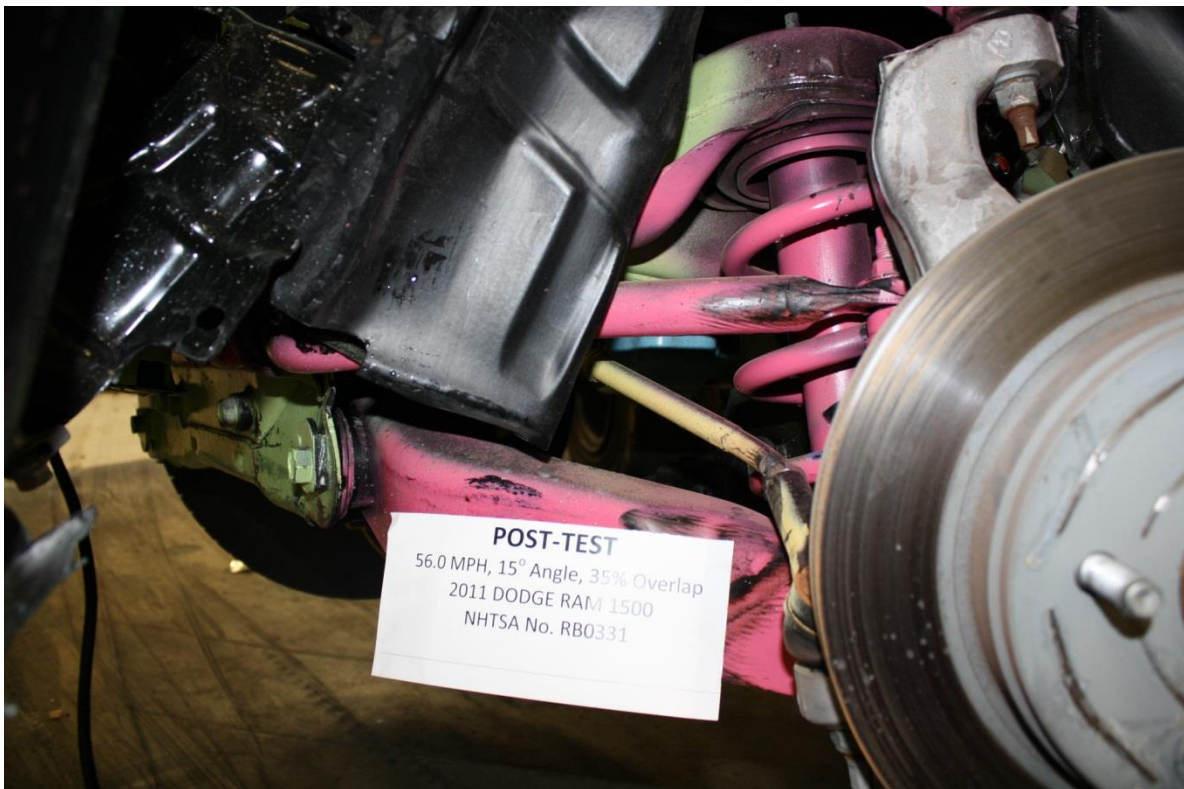
No. 115 Pre-Test Close up of Bumper and Crush Initiators



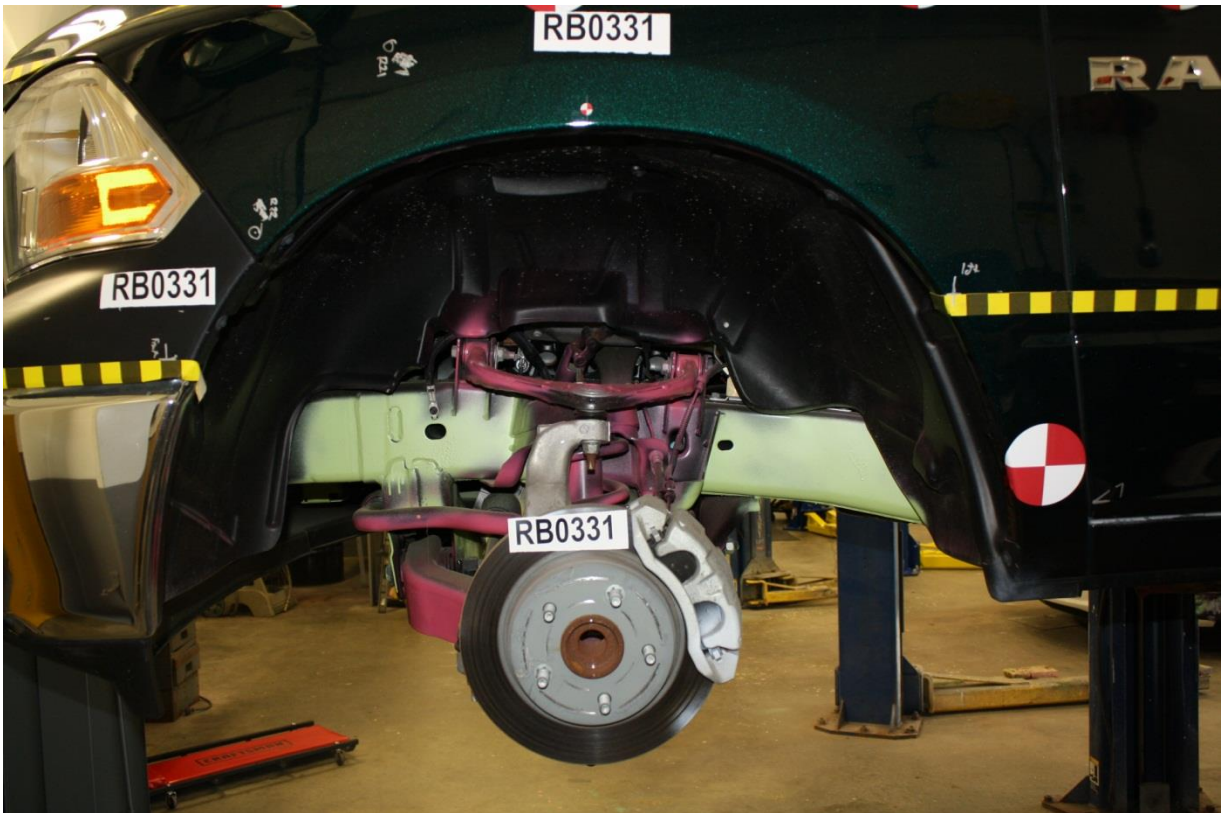
No. 116 Post-Test View of Front Sub-Frame Deformation



No. 117 Pre-Test Frame Rail with tire removed



No. 118 Post-Test Frame Rail with tire removed



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



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



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



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



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



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



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



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



No. 127 Post-Test View of Windshield Separation



No. 128 Pre-Test Left Side View of RRMDB



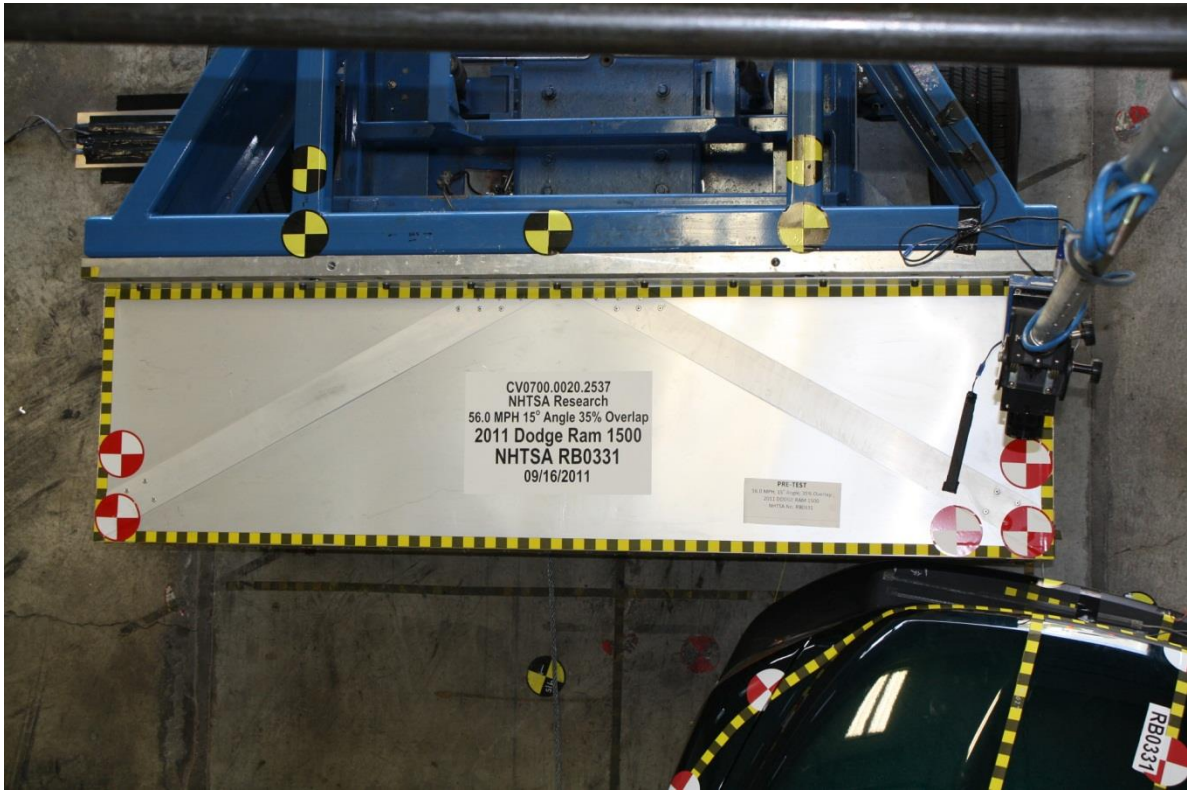
No. 129 Post-Test Left Side View of RRMDB



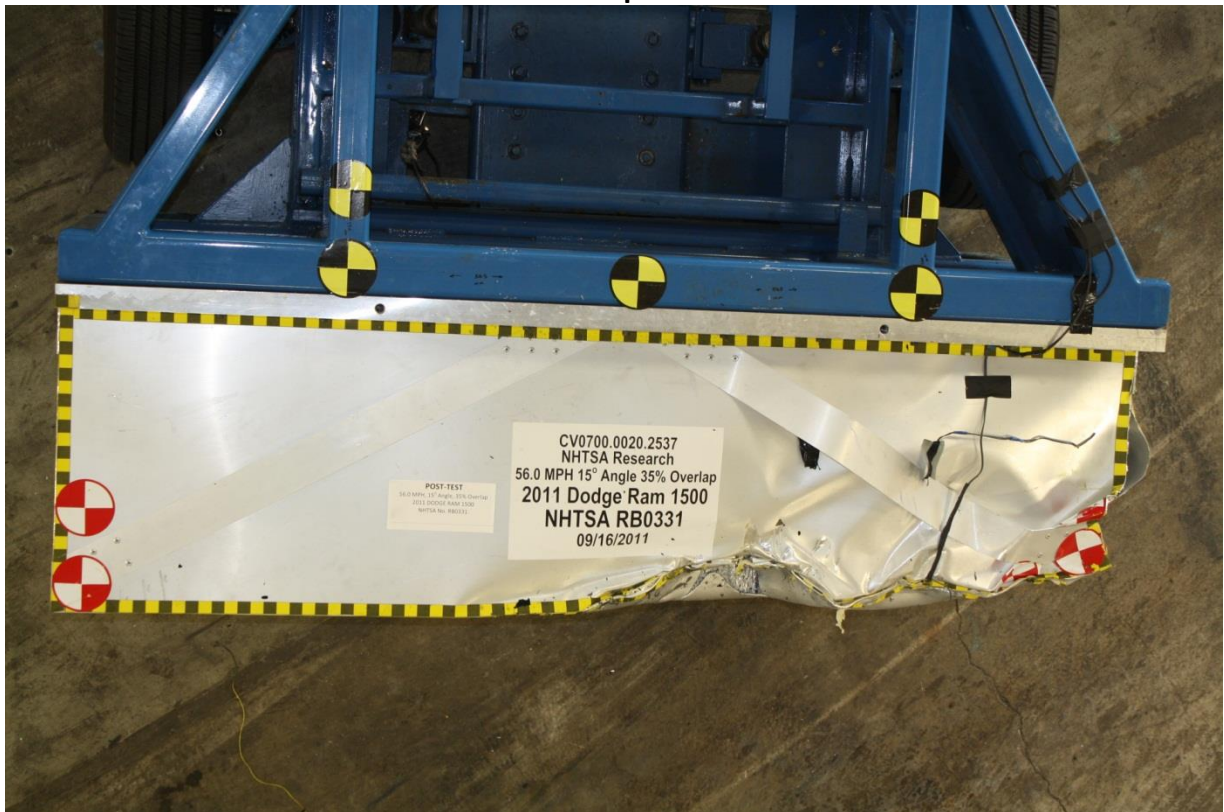
No. 130 Pre-Test Right Side View of RRMDB



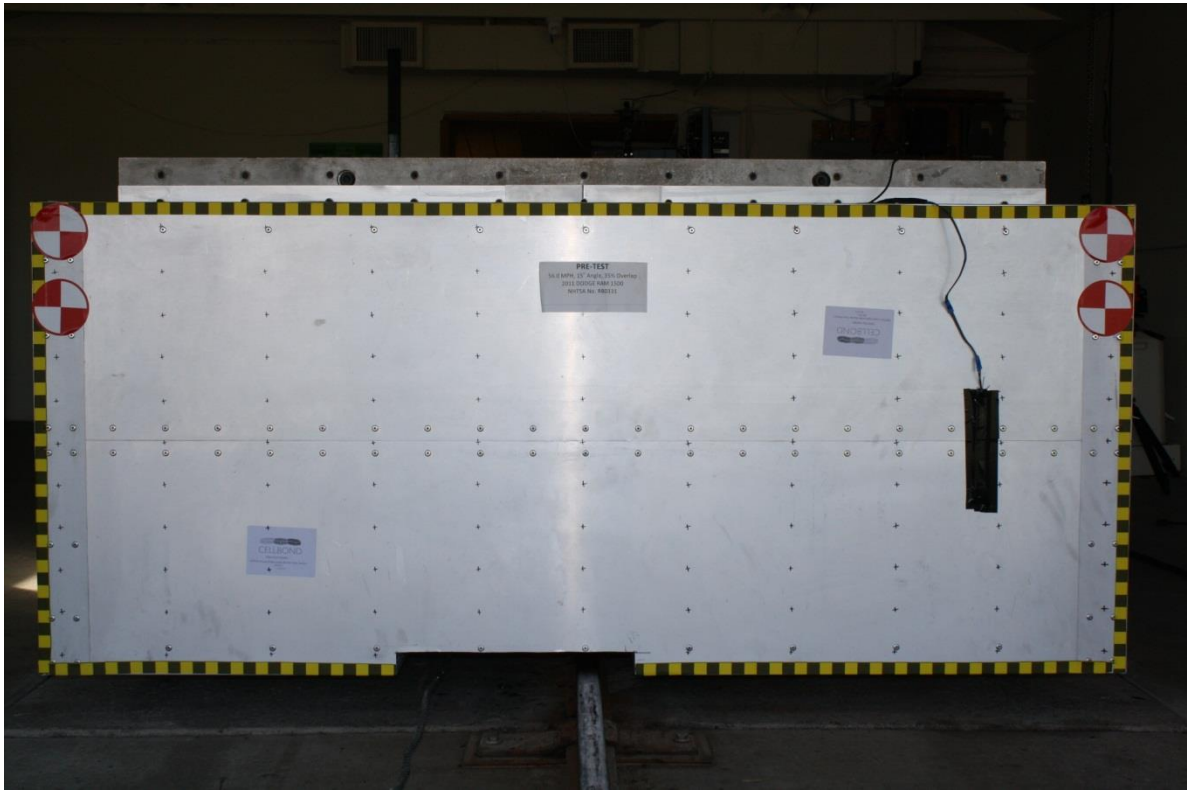
No. 131 Post-Test Right Side View of RRMDB



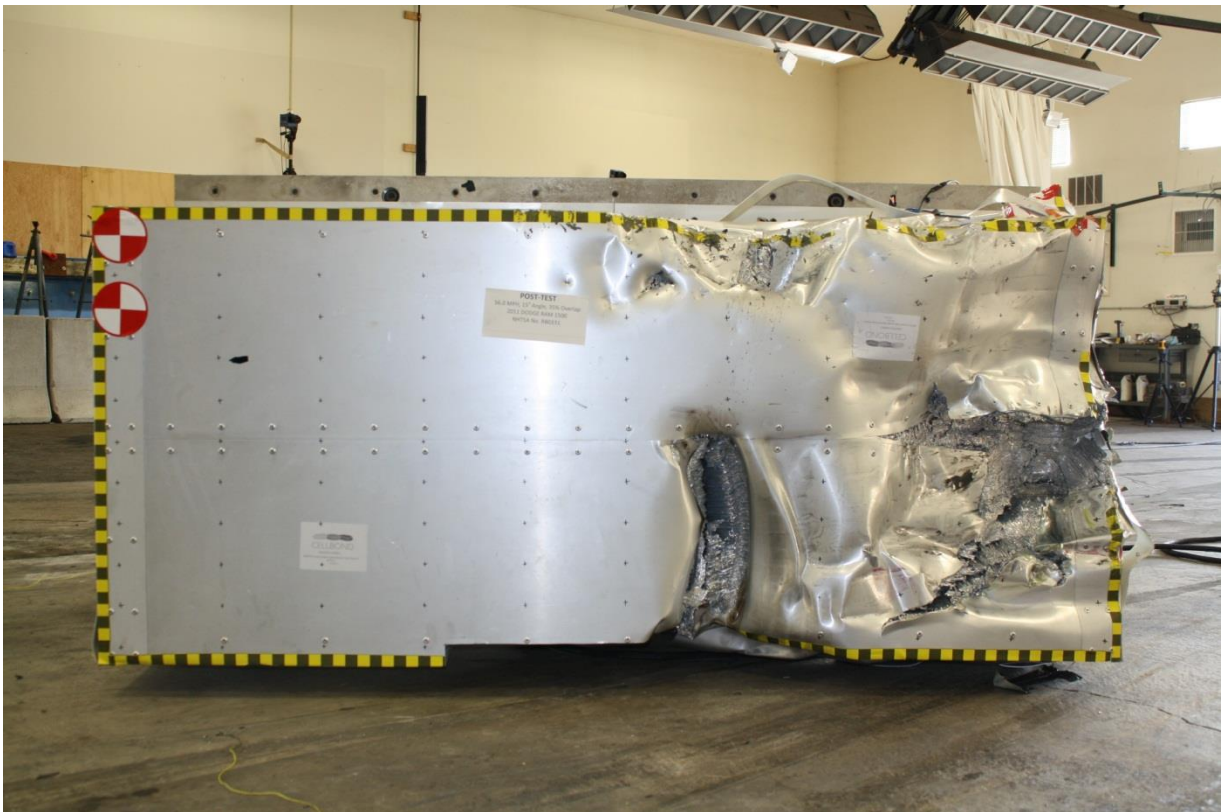
No. 132 Pre-Test Top View of RRMDB



No. 133 Post-Test Top View of RRMDB



No. 134 Pre-Test Front View of RRMDB



No. 135 Post-Test Front View of RRMDB



No. 136 Vehicle at 0 Degrees on Static Rollover Device



No. 137 Vehicle at 90 Degrees on Static Rollover Device



No. 138 Vehicle at 180 Degrees on Static Rollover Device



No. 139 Vehicle at 270 Degrees on Static Rollover Device



No. 140 Vehicle at 360 Degrees on Static Rollover Device

**APPENDIX B
VEHICLE & DUMMY RESPONSE DATA TRACES**

Table of Data Plots

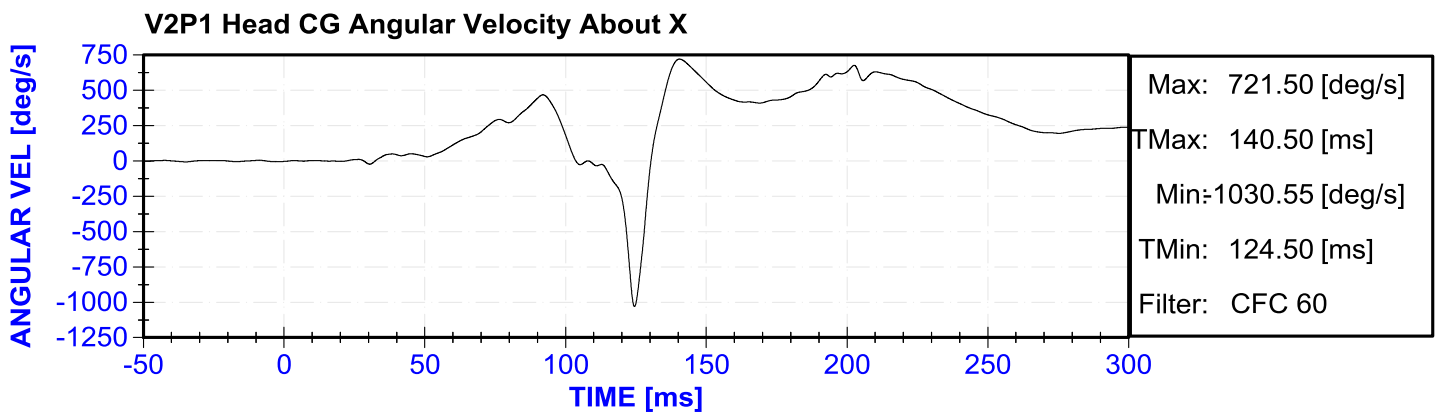
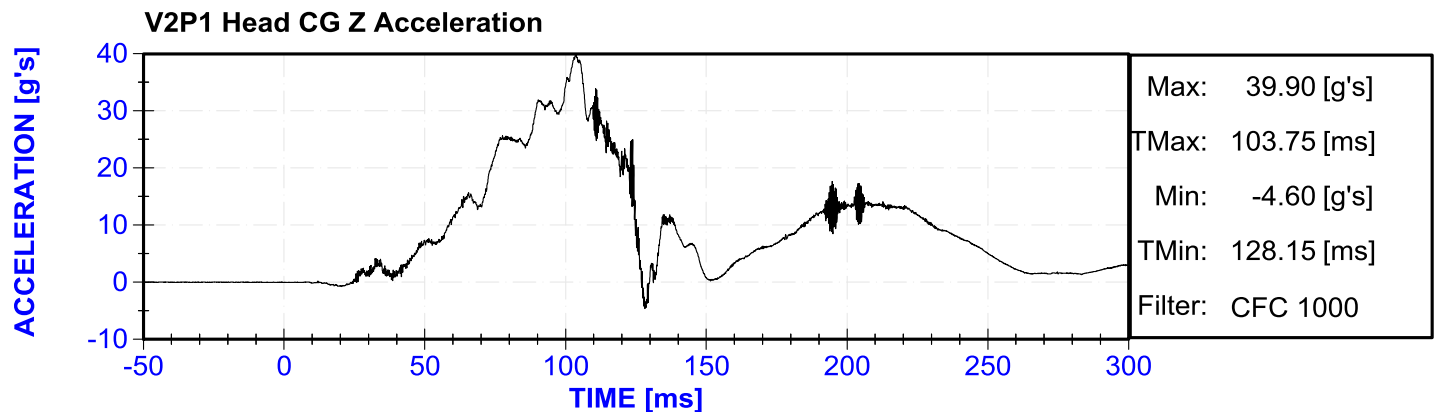
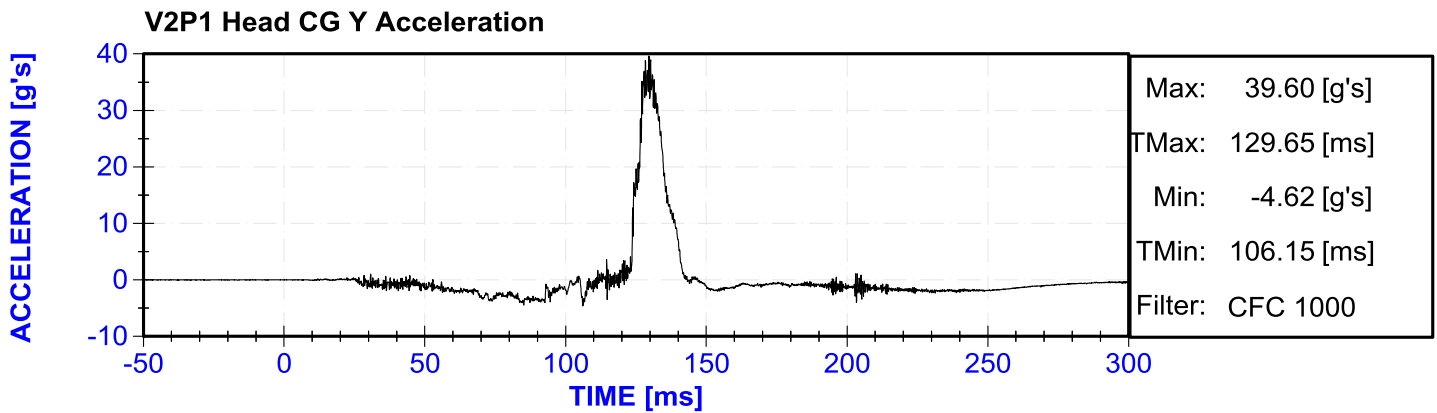
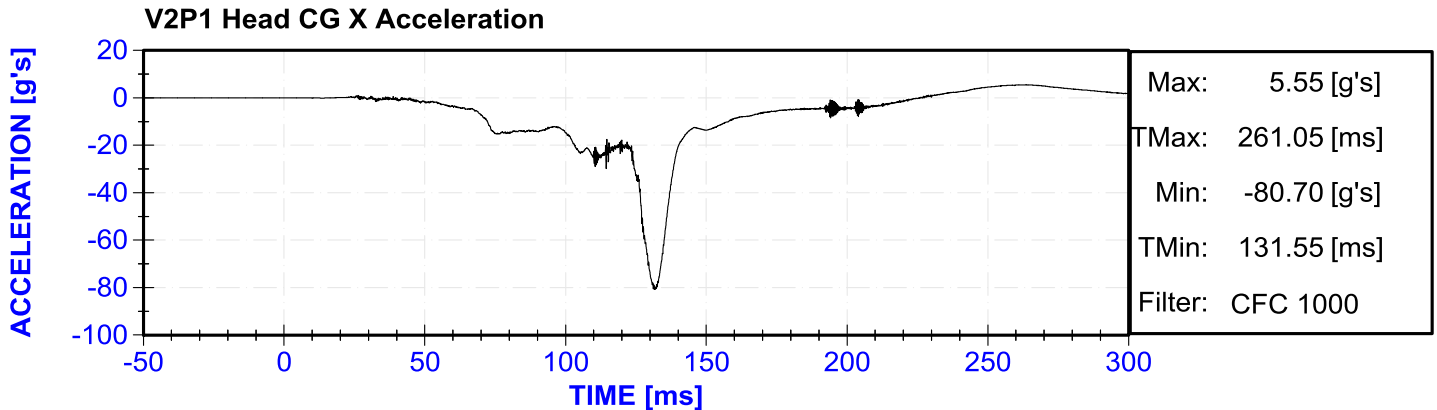
No.	Description	Page
Plot 1	V2P1 Head CG X Acceleration	B-7
Plot 2	V2P1 Head CG Y Acceleration	B-7
Plot 3	V2P1 Head CG Z Acceleration	B-7
Plot 4	V2P1 Head CG Angular Velocity About X	B-7
Plot 5	V2P1 Head CG Angular Velocity About Y	B-8
Plot 6	V2P1 Head CG Angular Velocity About Z	B-8
Plot 7	V2P1 Upper Neck X Force	B-8
Plot 8	V2P1 Upper Neck Y Force	B-8
Plot 9	V2P1 Upper Neck Z Force	B-9
Plot 10	V2P1 Upper Neck X Moment	B-9
Plot 11	V2P1 Upper Neck Y Moment	B-9
Plot 12	V2P1 Upper Neck Z Moment	B-9
Plot 13	V2P1 Lower Neck X Force	B-10
Plot 14	V2P1 Lower Neck Y Force	B-10
Plot 15	V2P1 Lower Neck Z Force	B-10
Plot 16	V2P1 Lower Neck X Moment	B-10
Plot 17	V2P1 Lower Neck Y Moment	B-11
Plot 18	V2P1 Lower Neck Z Moment	B-11
Plot 19	V2P1 Front Neck Spring Tower Load Cell	B-11
Plot 20	V2P1 Rear Neck Spring Tower Load Cell	B-11
Plot 21	V2P1 Occipital Condyle Rotation Potentiometer	B-12
Plot 22	V2P1 CLAVICLE - LEFT OUTER LC FX	B-12
Plot 23	V2P1 CLAVICLE - LEFT OUTER LC FZ	B-12
Plot 24	V2P1 CLAVICLE - LEFT INNER LC FX	B-12
Plot 25	V2P1 CLAVICLE - LEFT INNER LC FZ	B-13
Plot 26	V2P1 CLAVICLE - RIGHT OUTER LC FX	B-13
Plot 27	V2P1 CLAVICLE - RIGHT OUTER LC FZ	B-13
Plot 28	V2P1 CLAVICLE - RIGHT INNER LC FX	B-13
Plot 29	V2P1 CLAVICLE - RIGHT INNER LC FZ	B-14
Plot 30	V2P1 T1 X Acceleration	B-14
Plot 31	V2P1 T1 Y Acceleration	B-14
Plot 32	V2P1 T1 Z Acceleration	B-14
Plot 33	V2P1 T6 X Acceleration	B-15
Plot 34	V2P1 T6 Y Acceleration	B-15
Plot 35	V2P1 T6 Z Acceleration	B-15
Plot 36	V2P1 T12 X Acceleration	B-15
Plot 37	V2P1 T12 Y Acceleration	B-16
Plot 38	V2P1 T12 Z Acceleration	B-16
Plot 39	V2P1 Upper Left DGIR X Displacement	B-16
Plot 40	V2P1 Upper Left DGIR Y Rotation	B-16
Plot 41	V2P1 Upper Left DGIR Z Rotation	B-17
Plot 42	V2P1 Upper Right DGIR X Displacement	B-17
Plot 43	V2P1 Upper Right DGIR Y Rotation	B-17
Plot 44	V2P1 Upper Right DGIR Z Rotation	B-17
Plot 45	V2P1 Lower Left DGIR X Displacement	B-18
Plot 46	V2P1 Lower Left DGIR Y Rotation	B-18
Plot 47	V2P1 Lower Left DGIR Z Rotation	B-18
Plot 48	V2P1 Lower Right DGIR X Displacement	B-18
Plot 49	V2P1 Lower Right DGIR Y Rotation	B-19
Plot 50	V2P1 Lower Right DGIR Z Rotation	B-19
Plot 51	V2P1 Abdomen Left DGIR X Displacement	B-19
Plot 52	V2P1 Abdomen Left DGIR Y Rotation	B-19
Plot 53	V2P1 Abdomen Left DGIR Z Rotation	B-20

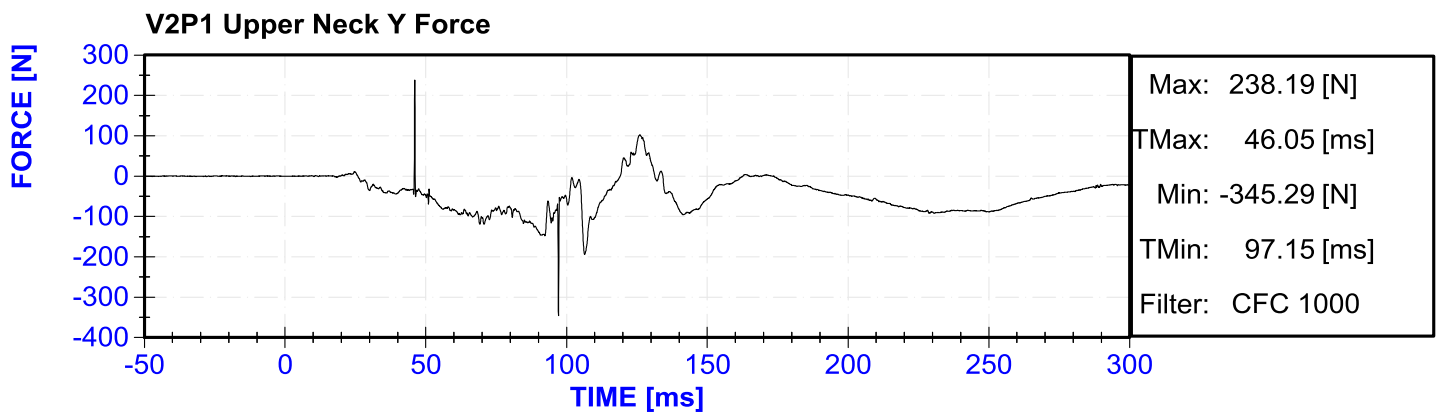
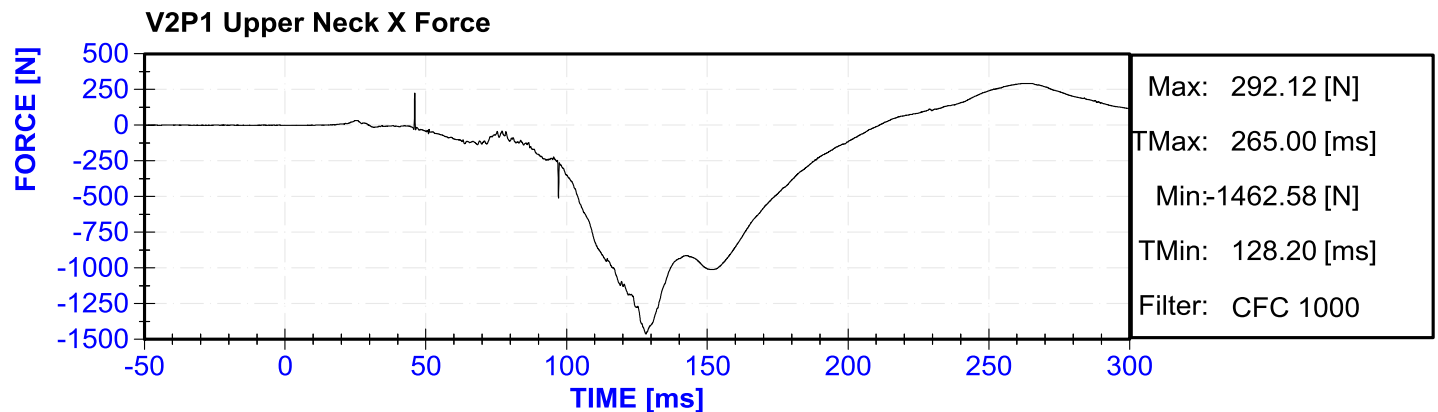
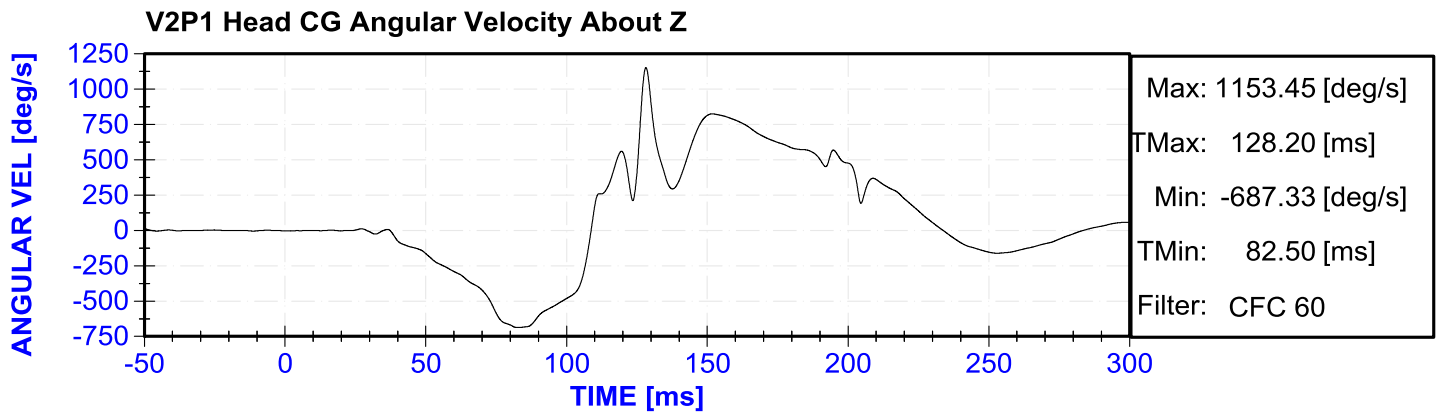
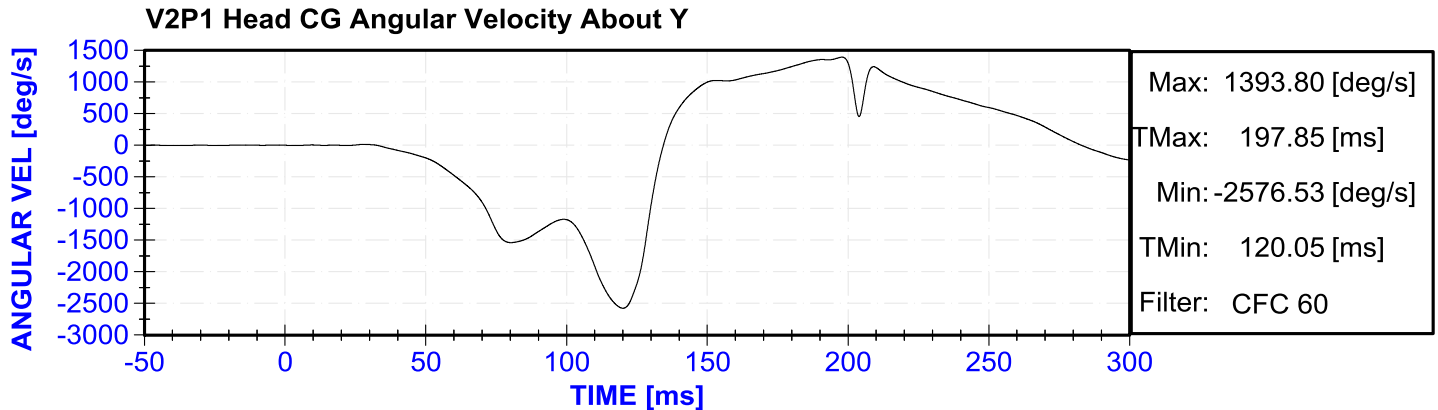
Plot 54	V2P1 Abdomen Right DGIR X Displacement	B-20
Plot 55	V2P1 Abdomen Right DGIR Y Rotation	B-20
Plot 56	V2P1 Abdomen Right DGIR Z Rotation	B-20
Plot 57	V2P1 Spine Force X	B-21
Plot 58	V2P1 Spine Force Y	B-21
Plot 59	V2P1 Spine Force Z	B-21
Plot 60	V2P1 Spine Moment X	B-21
Plot 61	V2P1 Spine Moment Y	B-22
Plot 62	V2P1 Pelvis X Acceleration	B-22
Plot 63	V2P1 Pelvis Y Acceleration	B-22
Plot 64	V2P1 Pelvis Z Acceleration	B-22
Plot 65	V2P1 Acetabulam Left X Force	B-23
Plot 66	V2P1 Acetabulam Left Y Force	B-23
Plot 67	V2P1 Acetabulam Left Z Force	B-23
Plot 68	V2P1 Acetabulam Right X Force	B-23
Plot 69	V2P1 Acetabulam Right Y Force	B-24
Plot 70	V2P1 Acetabulam Right Z Force	B-24
Plot 71	V2P1 ASIS Left X Force	B-24
Plot 72	V2P1 ASIS Left Y Moment	B-24
Plot 73	V2P1 ASIS Right X Force	B-25
Plot 74	V2P1 ASIS Right Y Moment	B-25
Plot 75	V2P1 Femur Left X Force	B-25
Plot 76	V2P1 Femur Left Y Force	B-25
Plot 77	V2P1 Femur Left Z Force	B-26
Plot 78	V2P1 Femur Left X Moment	B-26
Plot 79	V2P1 Femur Left Y Moment	B-26
Plot 80	V2P1 Femur Left Z Moment	B-26
Plot 81	V2P1 Knee Left X Displacement	B-27
Plot 82	V2P1 Tibia Left X Acceleration	B-27
Plot 83	V2P1 Tibia Left Y Acceleration	B-27
Plot 84	V2P1 Upper Tibia Left X Force	B-27
Plot 85	V2P1 Upper Tibia Left Z Force	B-28
Plot 86	V2P1 Upper Tibia Left X Moment	B-28
Plot 87	V2P1 Upper Tibia Left Y Moment	B-28
Plot 88	V2P1 Lower Tibia Left X Force	B-28
Plot 89	V2P1 Lower Tibia Left Y Force	B-29
Plot 90	V2P1 Lower Tibia Left Z Force	B-29
Plot 91	V2P1 Lower Tibia Left X Moment	B-29
Plot 92	V2P1 Lower Tibia Left Y Moment	B-29
Plot 93	V2P1 Ankle Left X Rotation	B-30
Plot 94	V2P1 Ankle Left Y Rotation	B-30
Plot 95	V2P1 Ankle Left Z Rotation	B-30
Plot 96	V2P1 Foot Left X Acceleration	B-30
Plot 97	V2P1 Foot Left Y Acceleration	B-31
Plot 98	V2P1 Foot Left Z Acceleration	B-31
Plot 99	V2P1 Femur Right X Force	B-31
Plot 100	V2P1 Femur Right Y Force	B-31
Plot 101	V2P1 Femur Right Z Force	B-32
Plot 102	V2P1 Femur Right X Moment	B-32
Plot 103	V2P1 Femur Right Y Moment	B-32
Plot 104	V2P1 Femur Right Z Moment	B-32
Plot 105	V2P1 Knee Right X Displacement	B-33
Plot 106	V2P1 Tibia Right X Acceleration	B-33
Plot 107	V2P1 Tibia Right Y Acceleration	B-33
Plot 108	V2P1 Upper Tibia Right X Force	B-33

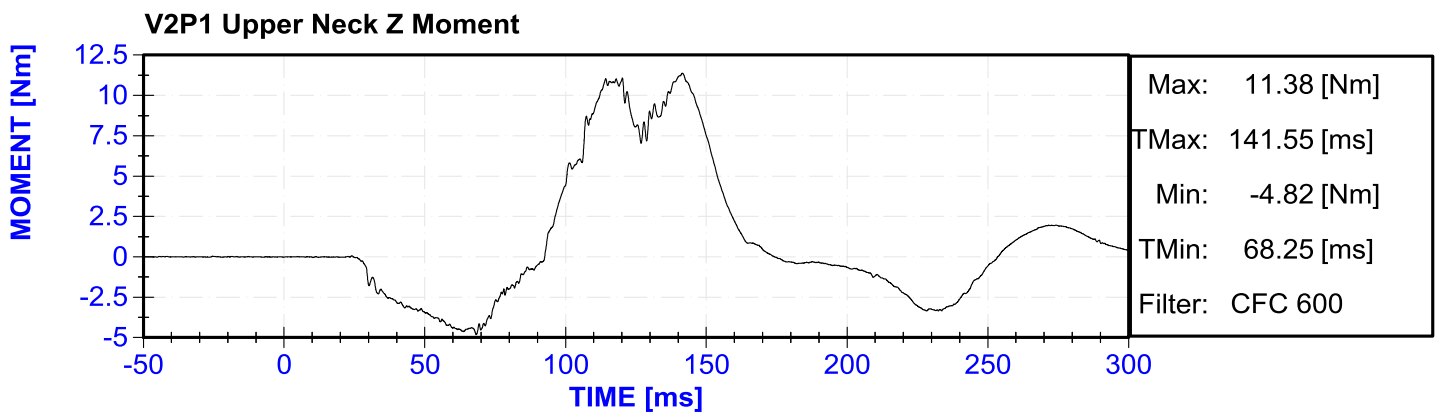
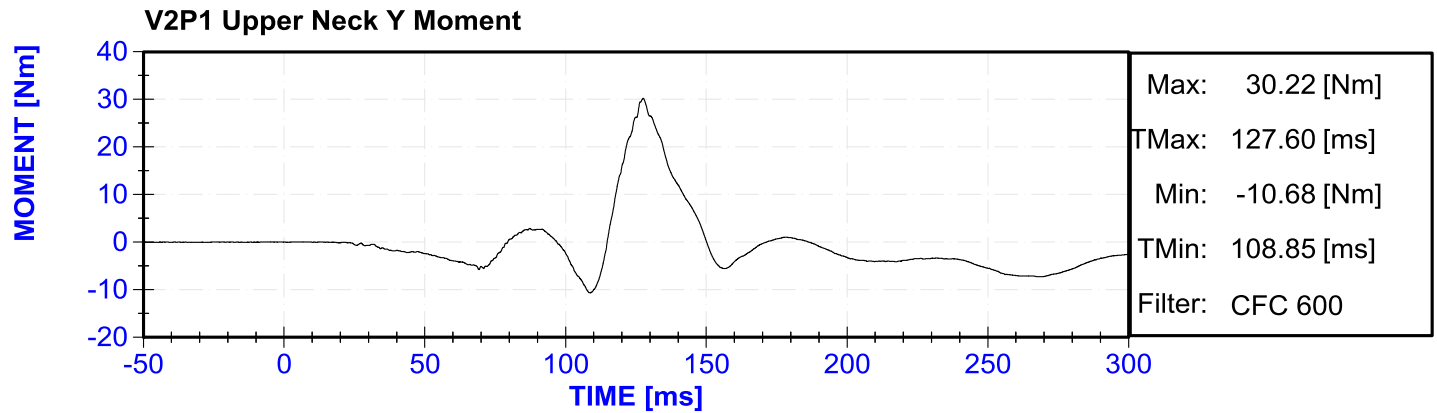
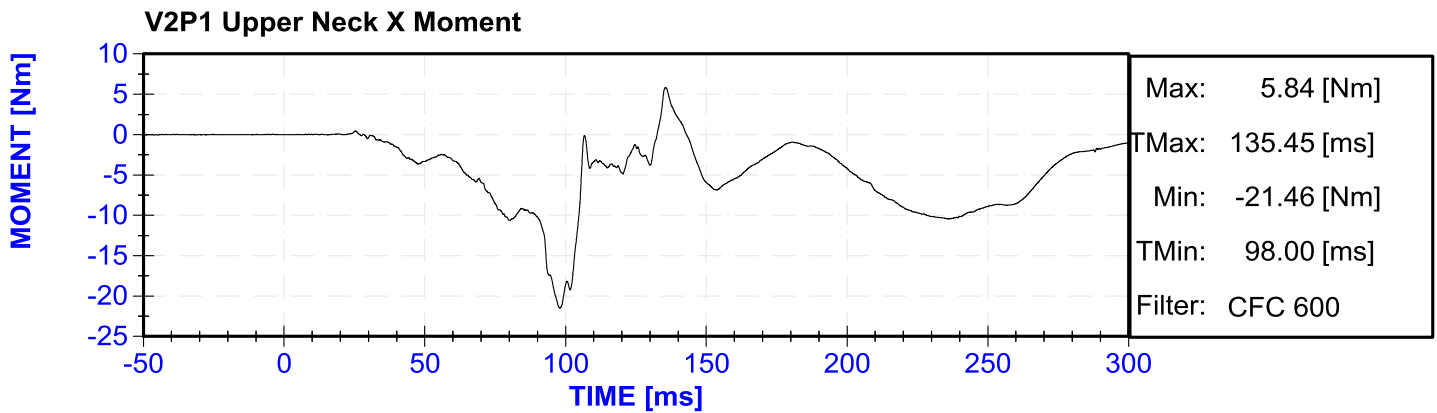
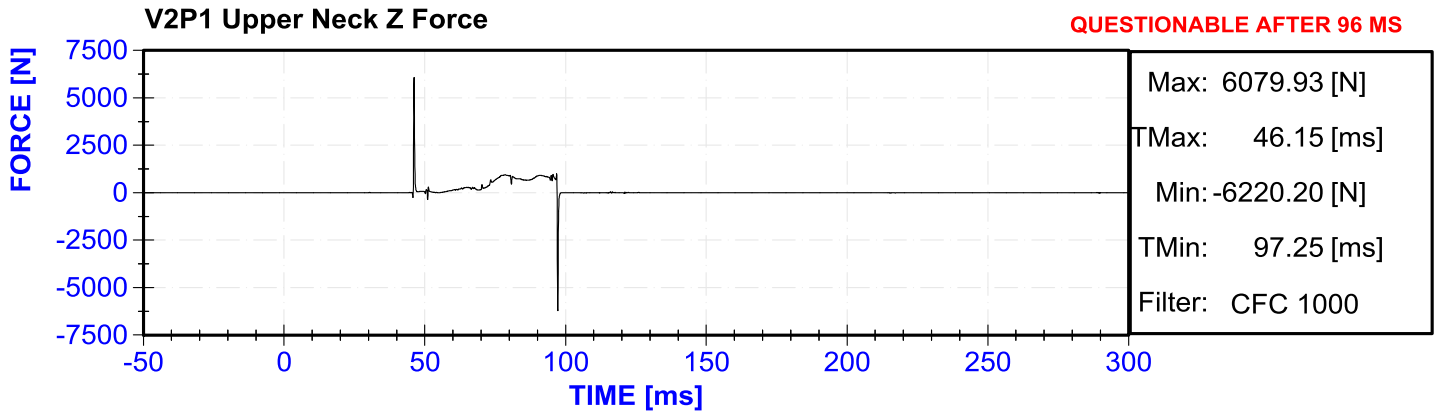
Plot 109	V2P1 Upper Tibia Right Z Force	B-34
Plot 110	V2P1 Upper Tibia Right X Moment	B-34
Plot 111	V2P1 Upper Tibia Right Y Moment	B-34
Plot 112	V2P1 Lower Tibia Right X Force	B-34
Plot 113	V2P1 Lower Tibia Right Y Force	B-35
Plot 114	V2P1 Lower Tibia Right Z Force	B-35
Plot 115	V2P1 Lower Tibia Right X Moment	B-35
Plot 116	V2P1 Lower Tibia Right Y Moment	B-35
Plot 117	V2P1 Ankle Right X Rotation	B-36
Plot 118	V2P1 Ankle Right Y Rotation	B-36
Plot 119	V2P1 Ankle Right Z Rotation	B-36
Plot 120	V2P1 Foot Right X Acceleration	B-36
Plot 121	V2P1 Foot Right Y Acceleration	B-37
Plot 122	V2P1 Foot Right Z Acceleration	B-37
Plot 123	V2 Driver Lap Belt Force	B-37
Plot 124	V2 Driver Shoulder Belt Upper Force	B-37
Plot 125	V2P4 HEAD 9 ARRAY Z ARM X	B-38
Plot 126	V2P4 HEAD 9 ARRAY Z ARM Y	B-38
Plot 127	V2P4 HEAD 9 ARRAY X ARM Y	B-38
Plot 128	V2P4 HEAD 9 ARRAY X ARM Z	B-38
Plot 129	V2P4 HEAD 9 ARRAY Y ARM X	B-39
Plot 130	V2P4 HEAD 9 ARRAY Y ARM Z	B-39
Plot 131	V2P4 HEAD CG X	B-39
Plot 132	V2P4 HEAD CG Y	B-39
Plot 133	V2P4 HEAD CG Z	B-40
Plot 134	V2P4 HEAD 9 ARRAY CENTER X	B-40
Plot 135	V2P4 HEAD 9 ARRAY CENTER Y	B-40
Plot 136	V2P4 HEAD 9 ARRAY CENTER Z	B-40
Plot 137	V2P4 UPPER NECK FX	B-41
Plot 138	V2P4 UPPER NECK FY	B-41
Plot 139	V2P4 UPPER NECK FZ	B-41
Plot 140	V2P4 UPPER NECK MX	B-41
Plot 141	V2P4 UPPER NECK MY	B-42
Plot 142	V2P4 UPPER NECK MZ	B-42
Plot 143	V2P4 LOWER NECK FX	B-42
Plot 144	V2P4 LOWER NECK FY	B-42
Plot 145	V2P4 LOWER NECK FZ	B-43
Plot 146	V2P4 LOWER NECK MX	B-43
Plot 147	V2P4 LOWER NECK MY	B-43
Plot 148	V2P4 LOWER NECK MZ	B-43
Plot 149	V2P4 CHEST X	B-44
Plot 150	V2P4 CHEST Y	B-44
Plot 151	V2P4 CHEST Z	B-44
Plot 152	V2P4 CHEST RED X	B-44
Plot 153	V2P4 CHEST RED Y	B-45
Plot 154	V2P4 CHEST RED Z	B-45
Plot 155	V2P4 CHEST DISPLACEMENT	B-45
Plot 156	V2P4 8 STRING POD - UR TOP	B-45
Plot 157	V2P4 8 STRING POD - UR MID	B-46
Plot 158	V2P4 8 STRING POD - LR MID	B-46
Plot 159	V2P4 8 STRING POD - LR BOTTOM	B-46
Plot 160	V2P4 8 STRING POD - UL TOP	B-46
Plot 161	V2P4 8 STRING POD - UL MID	B-47
Plot 162	V2P4 8 STRING POD - LL MID	B-47
Plot 163	V2P4 8 STRING POD - LL BOTTOM	B-47

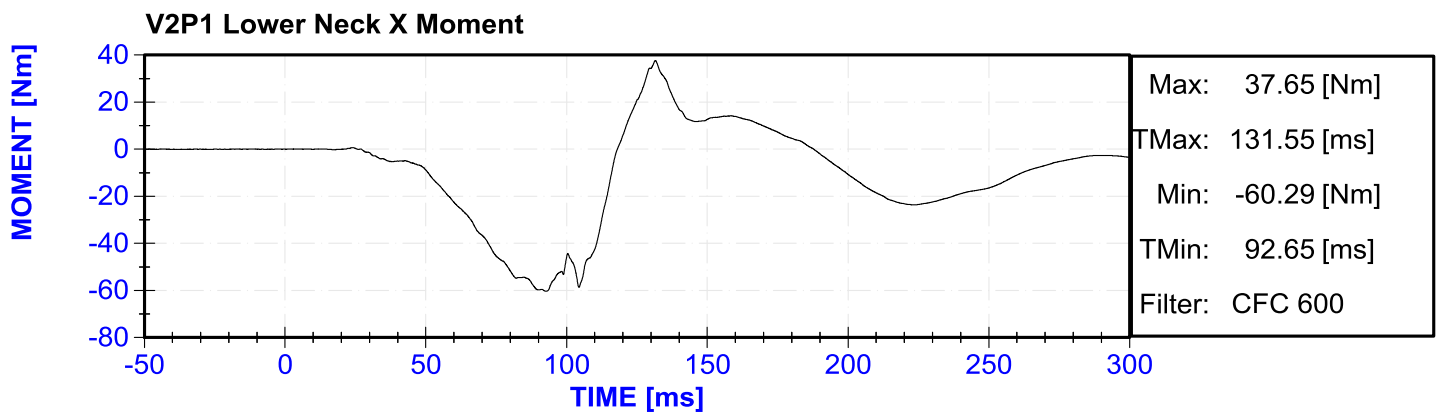
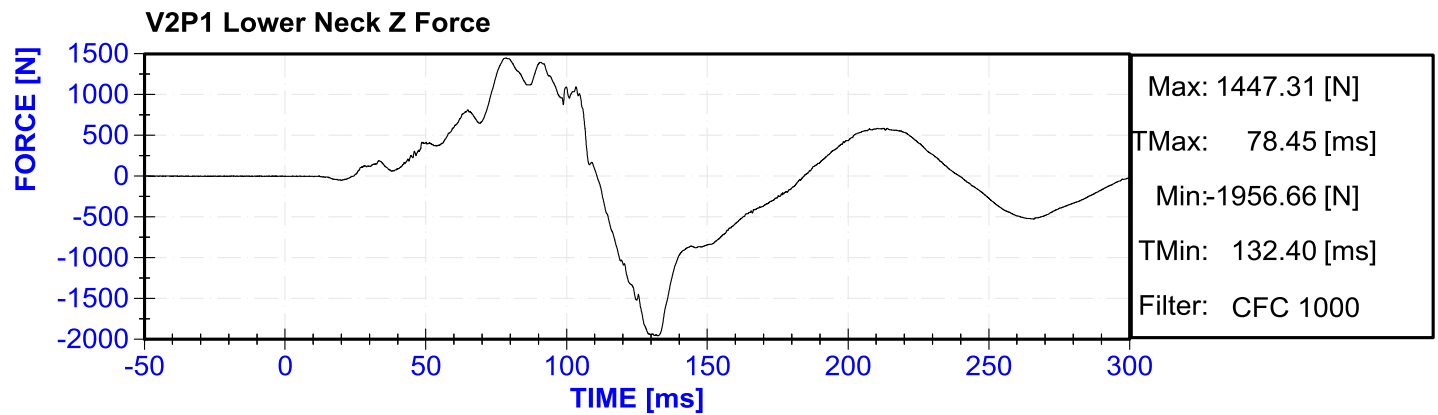
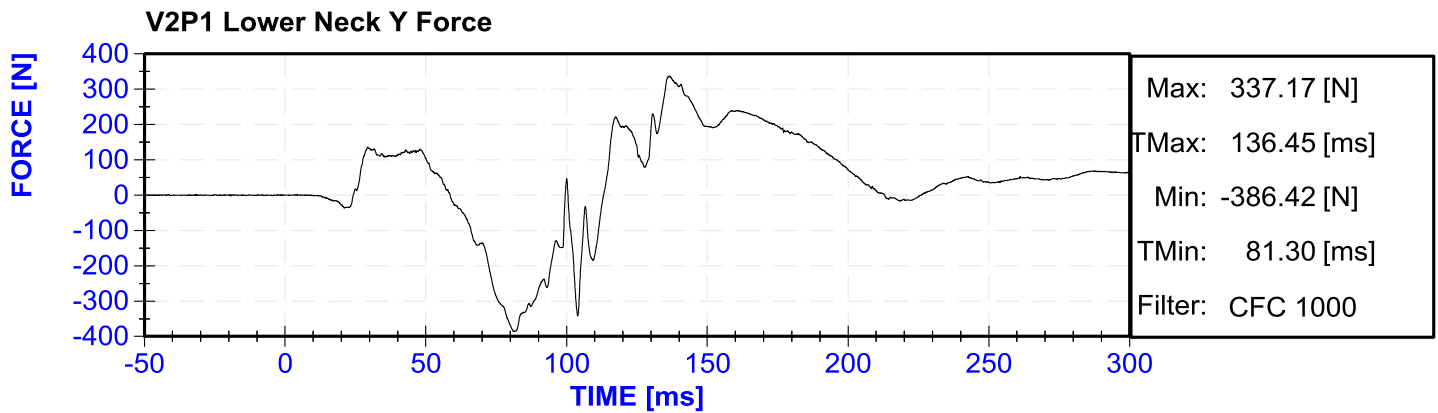
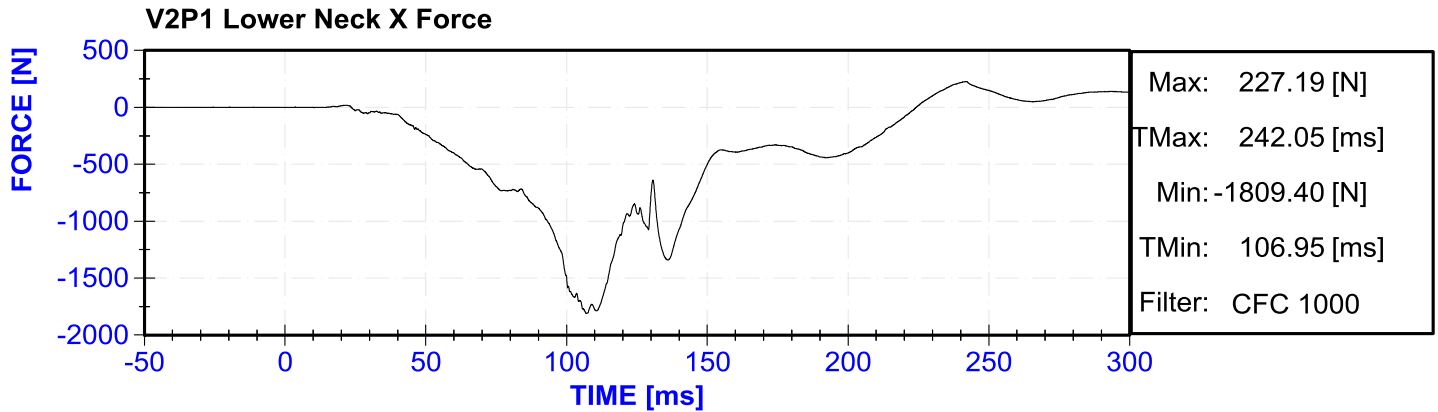
Plot 164	V2P4 PELVIC X	B-47
Plot 165	V2P4 PELVIC Y	B-48
Plot 166	V2P4 PELVIC Z	B-48
Plot 167	V2P4 LEFT FEMUR FZ	B-48
Plot 168	V2P4 RIGHT FEMUR FZ	B-48
Plot 169	V2 Passenger Lap Belt Force	B-49
Plot 170	V2 Passenger Shoulder Belt Upper Force	B-49
Plot 171	V2 Left Rear Sill X Acceleration	B-49
Plot 172	V2 Left Rear Sill Y Acceleration	B-49
Plot 173	V2 Left Rear Sill Redundant X Acceleration	B-50
Plot 174	V2 Left Rear Sill Redundant Y Acceleration	B-50
Plot 175	V2 Right Rear Sill X Acceleration	B-50
Plot 176	V2 Right Rear Sill Y Acceleration	B-50
Plot 177	V2 Vehicle CG X Acceleration	B-51
Plot 178	V2 Vehicle CG Y Acceleration	B-51
Plot 179	V2 Vehicle CG Z Acceleration	B-51
Plot 180	V2 Vehicle CG Redundant X Acceleration	B-51
Plot 181	V2 Vehicle CG Redundant Y Acceleration	B-52
Plot 182	V2 Vehicle CG Redundant Z Acceleration	B-52
Plot 183	V2 Instrument Panel X Acceleration	B-52
Plot 184	V2 Driver Seat Track X Acceleration	B-52
Plot 185	V2 Driver Seat Track Y Acceleration	B-53
Plot 186	V2 Driver Seat Track Z Acceleration	B-53
Plot 187	V2 Driver Floor Pan X Acceleration	B-53
Plot 188	V2 Driver Floor Pan Y Acceleration	B-53
Plot 189	V2 Driver Floor Pan Z Acceleration	B-54
Plot 190	V2 Driver Floor Pan X Deflection	B-54
Plot 191	V2 Driver Left Knee CS1	B-54
Plot 192	V2 Driver Left Knee CS2	B-54
Plot 193	V2 Driver Left Knee CS3	B-55
Plot 194	V2 Driver Right Knee CS4	B-55
Plot 195	V2 Driver Right Knee CS5	B-55
Plot 196	V2 Driver Right Knee CS6	B-55
Plot 197	V1 Cart CG X Acceleration	B-56
Plot 198	V1 Cart CG Y Acceleration	B-56
Plot 199	V1 Cart CG Z Acceleration	B-56
Plot 200	V1 Cart Rear C/L X Acceleration	B-56
Plot 201	V1 Cart Rear C/L Y Acceleration	B-57
Plot 202	V1 Cart Rear C/L Z Acceleration	B-57
Plot 203	V2P1 HEAD ANGULAR ACCELERATION X [SIMON]	B-57
Plot 204	V2P1 HEAD ANGULAR ACCELERATION Y [SIMON]	B-57
Plot 205	V2P1 HEAD ANGULAR ACCELERATION Z [SIMON]	B-58
Plot 206	V2P1 HEAD ANGULAR VELOCITY X [SIMON]	B-58
Plot 207	V2P1 HEAD ANGULAR VELOCITY Y [SIMON]	B-58
Plot 208	V2P1 HEAD ANGULAR VELOCITY Z [SIMON]	B-58
Plot 209	V2P1 CUMULATIVE STRAIN 0.05 [SIMON]	B-59
Plot 210	V2P1 CUMULATIVE STRAIN 0.10 [SIMON]	B-59
Plot 211	V2P1 CUMULATIVE STRAIN 0.15 [SIMON]	B-59
Plot 212	V2P1 Fx on head acting through the O.C. joint only	B-59
Plot 213	V2P1 Fz on head acting through the O.C. joint only	B-60
Plot 214	V2P1 My on head acting through the O.C. joint only	B-60
Plot 215	V2P1 Fx on head acting through the total neck section	B-60
Plot 216	V2P1 Fy on head acting through the total neck section	B-60
Plot 217	V2P1 Fz on head acting through the total neck section	B-61
Plot 218	V2P1 Mx on head acting through the total neck section	B-61

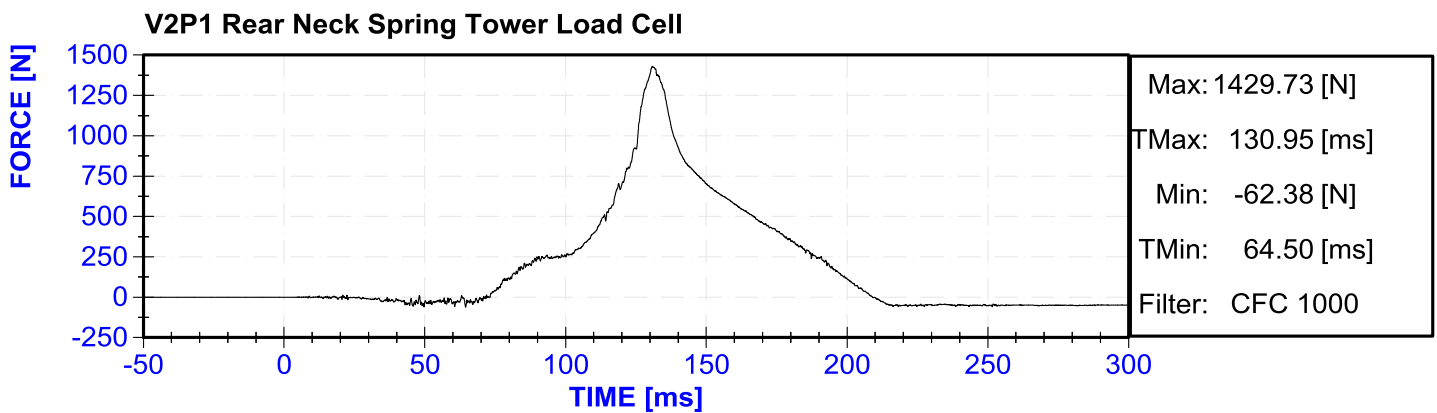
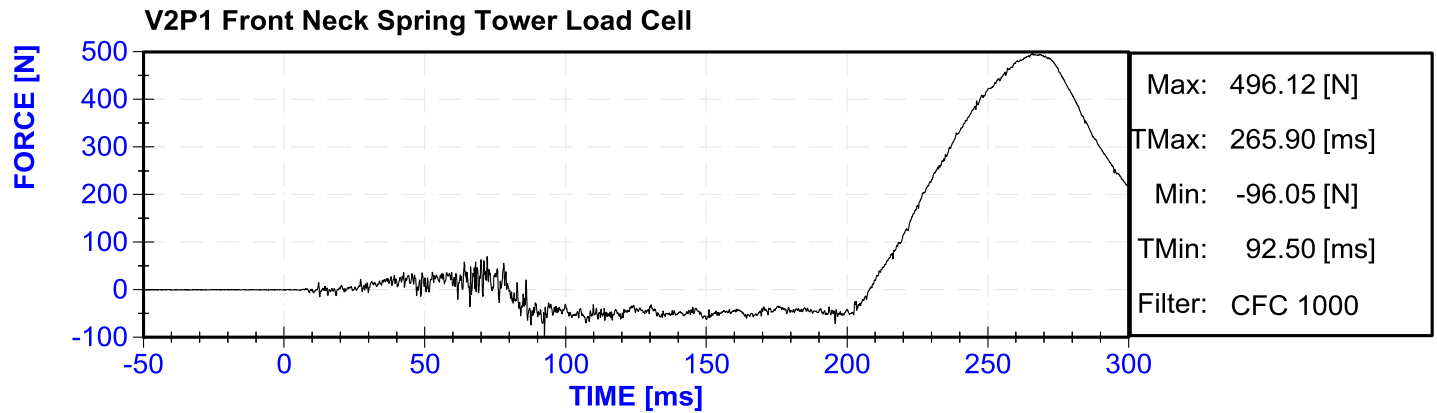
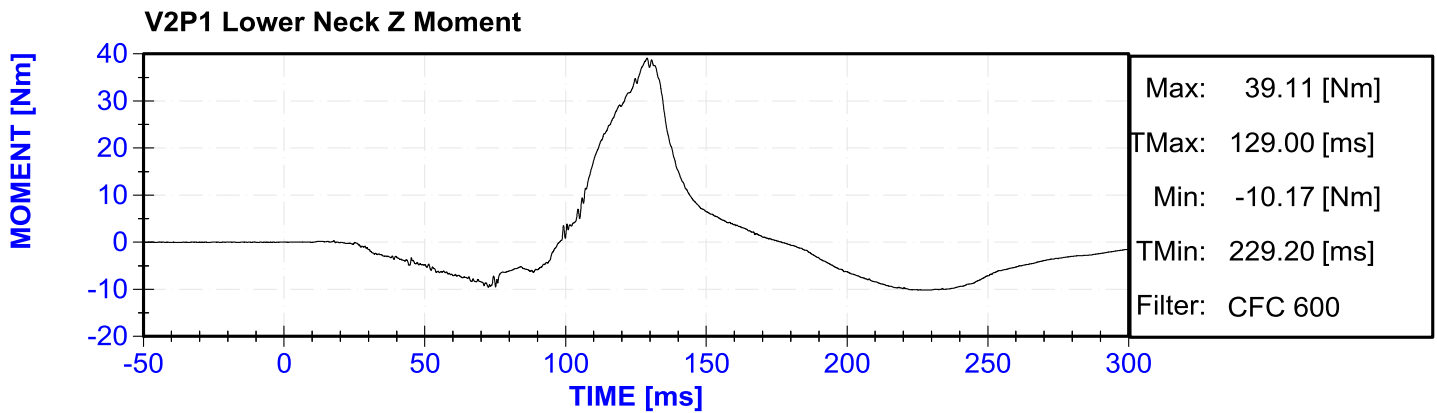
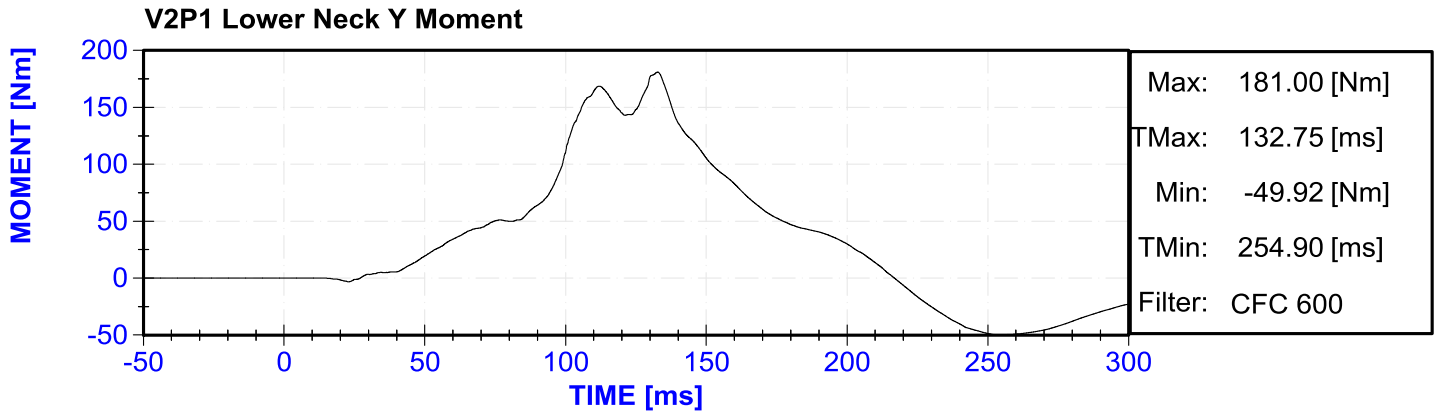
Plot 219	V2P1 My on head acting through the total neck section	B-61
Plot 220	V2P1 Mz on head acting through the total neck section	B-61
Plot 221	V2P1 Chest Left Upper Dx	B-62
Plot 222	V2P1 Chest Left Upper Dy	B-62
Plot 223	V2P1 Chest Left Upper Dz	B-62
Plot 224	V2P1 Chest Left Upper D	B-62
Plot 225	V2P1 Chest Right Upper Dx	B-63
Plot 226	V2P1 Chest Right Upper Dy	B-63
Plot 227	V2P1 Chest Right Upper Dz	B-63
Plot 228	V2P1 Chest Right Upper D	B-63
Plot 229	V2P1 Chest Left Lower Dx	B-64
Plot 230	V2P1 Chest Left Lower Dy	B-64
Plot 231	V2P1 Chest Left Lower Dz	B-64
Plot 232	V2P1 Chest Left Lower D	B-64
Plot 233	V2P1 Chest Right Lower Dx	B-65
Plot 234	V2P1 Chest Right Lower Dy	B-65
Plot 235	V2P1 Chest Right Lower Dz	B-65
Plot 236	V2P1 Chest Right Lower D	B-65
Plot 237	V2P1 Abdomen Left Lower Dx	B-66
Plot 238	V2P1 Abdomen Left Lower Dy	B-66
Plot 239	V2P1 Abdomen Left Lower Dz	B-66
Plot 240	V2P1 Abdomen Right Lower Dx	B-66
Plot 241	V2P1 Abdomen Right Lower Dy	B-67
Plot 242	V2P1 Abdomen Right Lower Dz	B-67
Plot 243	V2P4 HEAD ANGULAR ACCELERATION X [SIMON]	B-67
Plot 244	V2P4 HEAD ANGULAR ACCELERATION Y [SIMON]	B-67
Plot 245	V2P4 HEAD ANGULAR ACCELERATION Z [SIMON]	B-68
Plot 246	V2P4 HEAD ANGULAR VELOCITY X [SIMON]	B-68
Plot 247	V2P4 HEAD ANGULAR VELOCITY Y [SIMON]	B-68
Plot 248	V2P4 HEAD ANGULAR VELOCITY Z [SIMON]	B-68
Plot 249	V2P4 CUMULATIVE STRAIN 0.05 [SIMON]	B-69
Plot 250	V2P4 CUMULATIVE STRAIN 0.10 [SIMON]	B-69
Plot 251	V2P4 CUMULATIVE STRAIN 0.15 [SIMON]	B-69
Plot 252	V2P4 CHEST UPPER LEFT X [COMPUTED, MM]	B-69
Plot 253	V2P4 CHEST UPPER LEFT Y [COMPUTED, MM]	B-70
Plot 254	V2P4 CHEST UPPER RIGHT X [COMPUTED, MM]	B-70
Plot 255	V2P4 CHEST UPPER RIGHT Y [COMPUTED, MM]	B-70
Plot 256	V2P4 CHEST LOWER LEFT X [COMPUTED, MM]	B-70
Plot 257	V2P4 CHEST LOWER LEFT Y [COMPUTED, MM]	B-71
Plot 258	V2P4 CHEST LOWER RIGHT X [COMPUTED, MM]	B-71
Plot 259	V2P4 CHEST LOWER RIGHT Y [COMPUTED, MM]	B-71

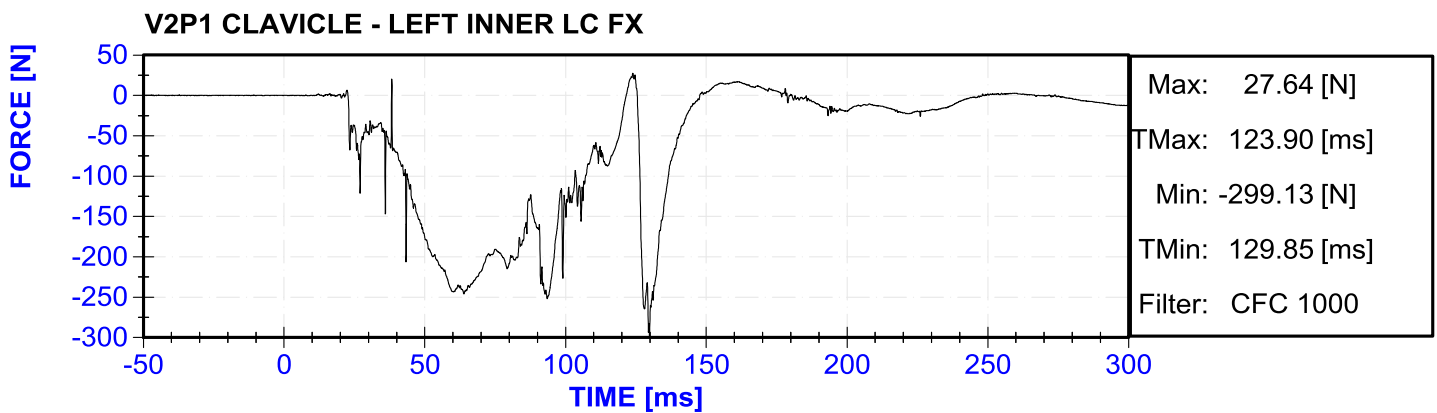
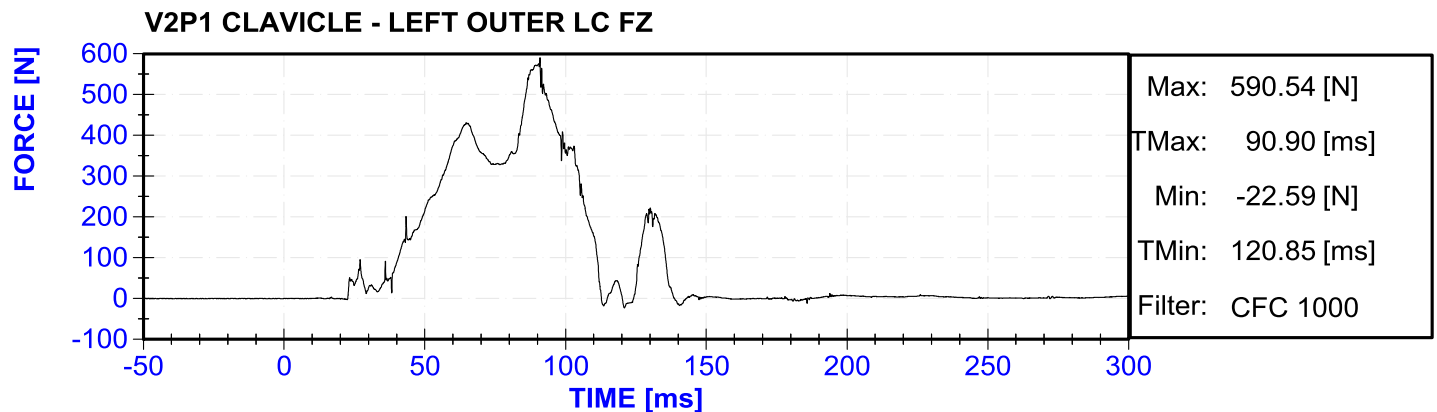
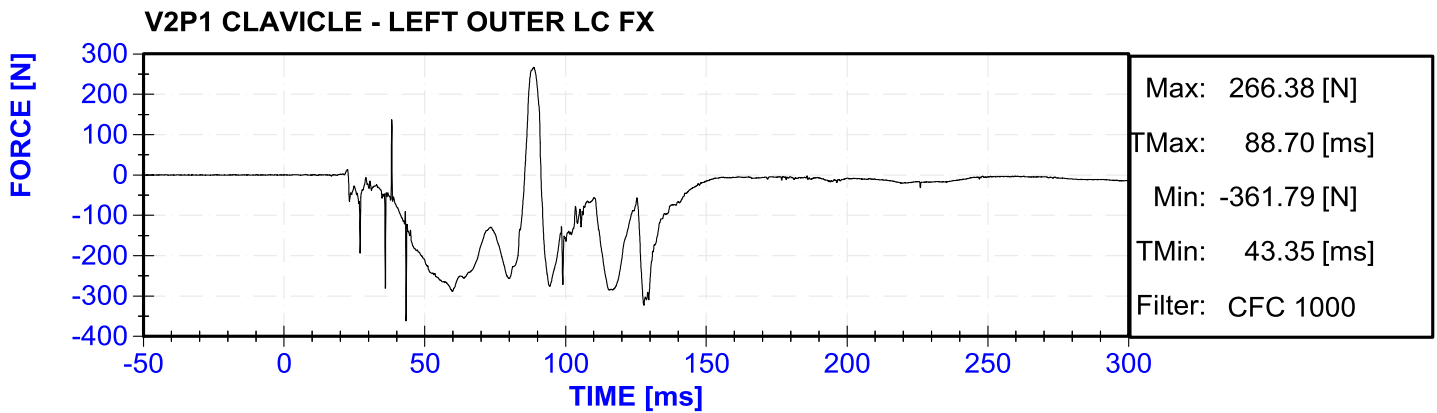
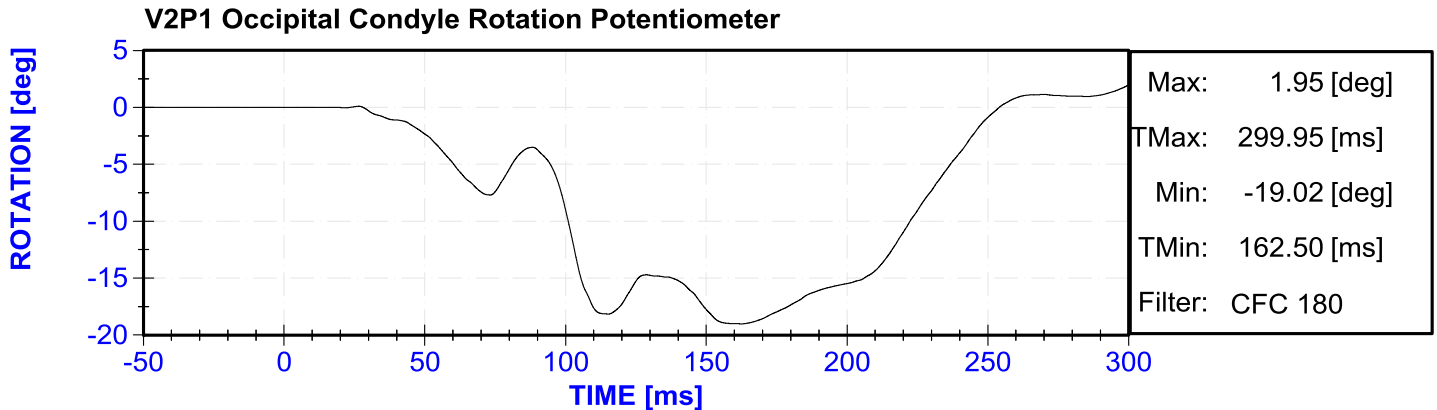


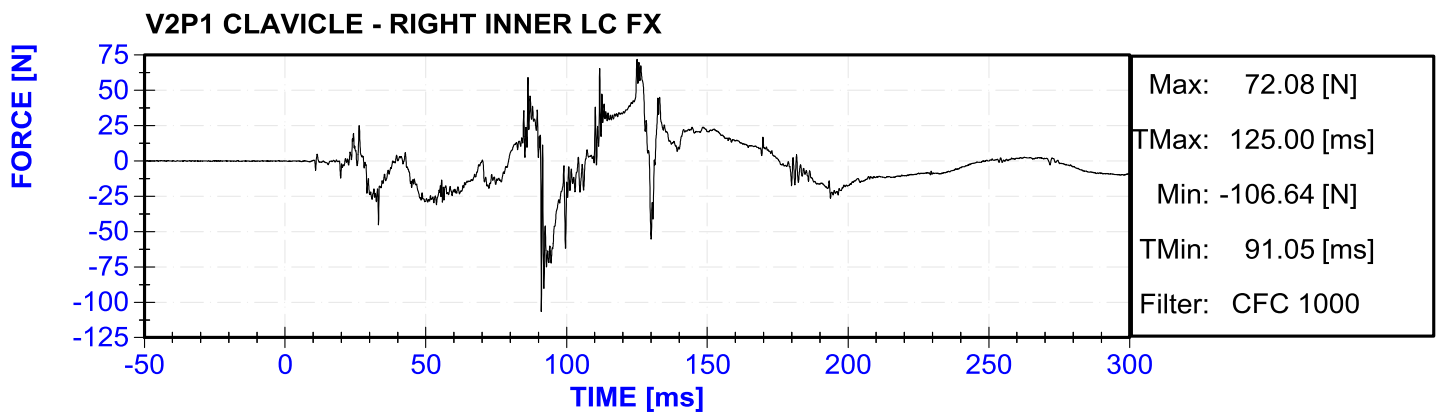
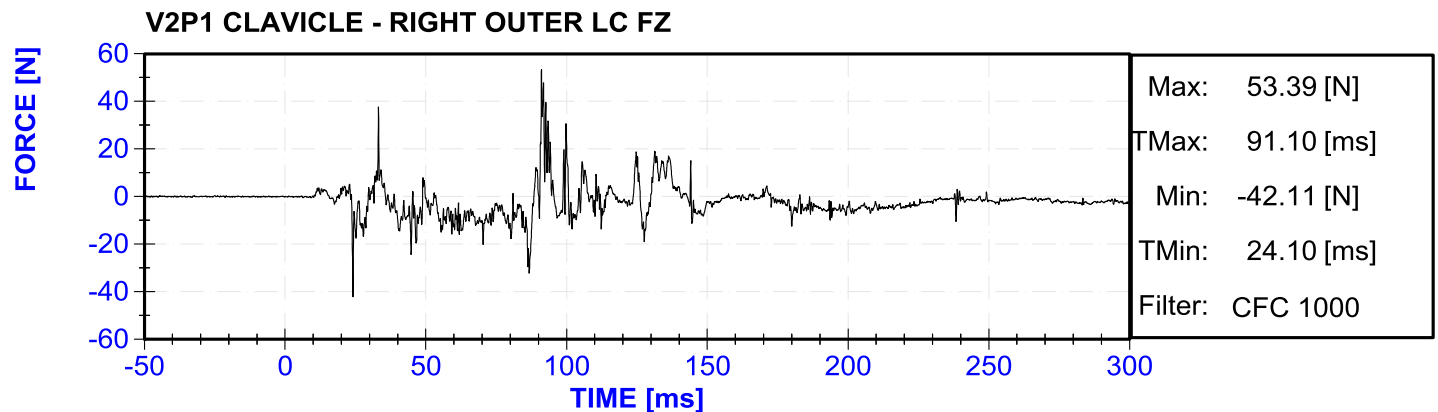
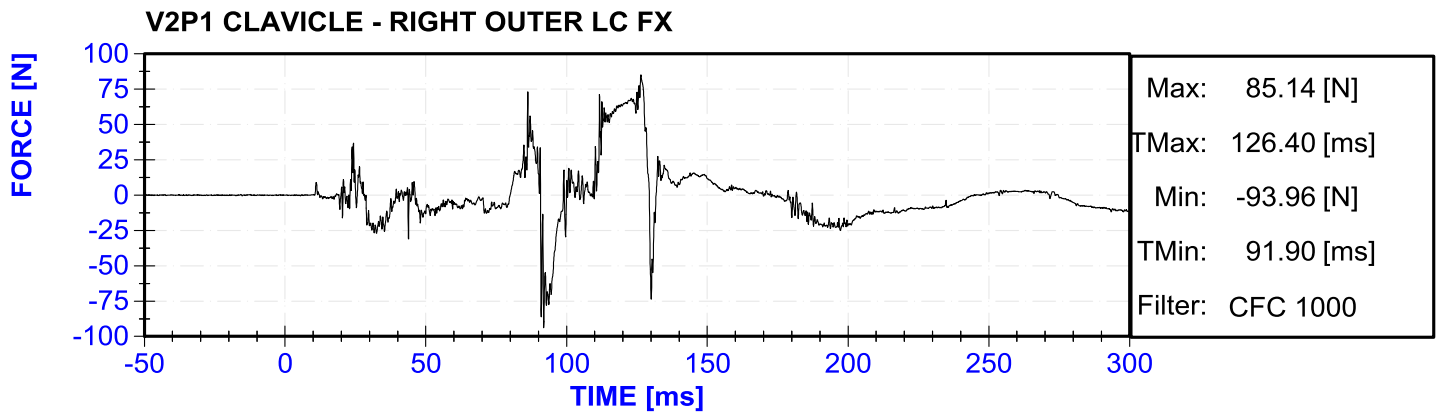
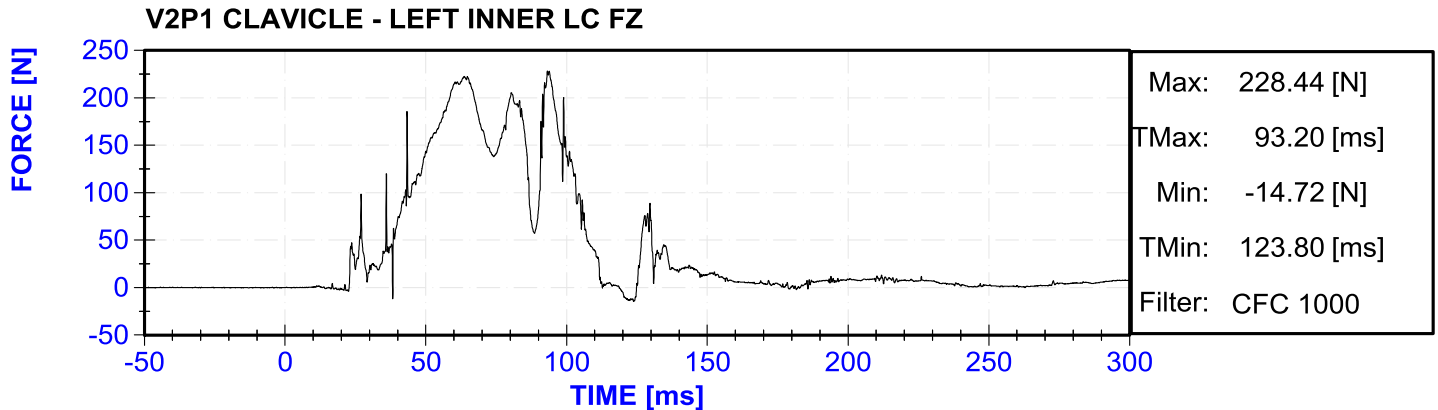


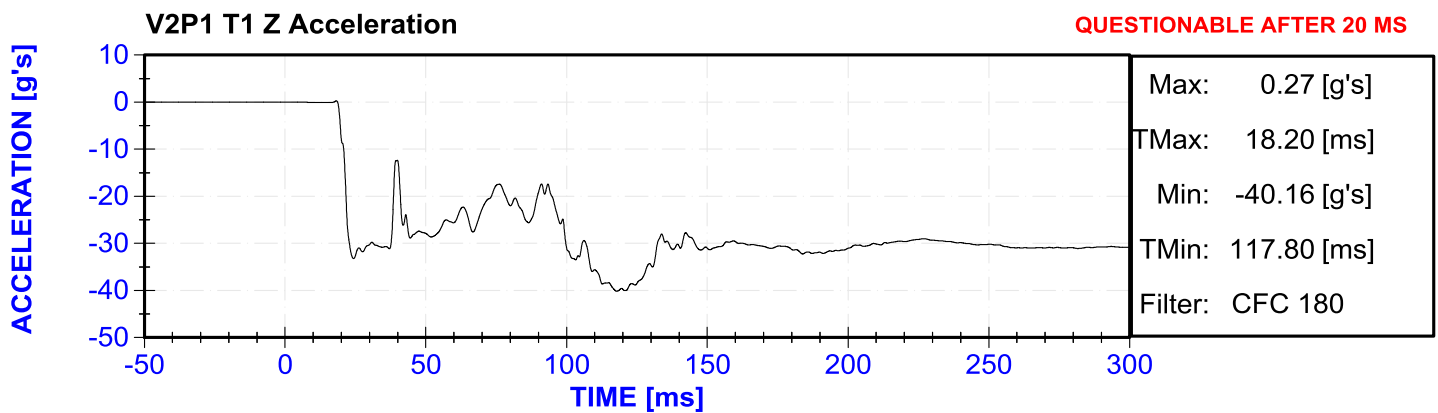
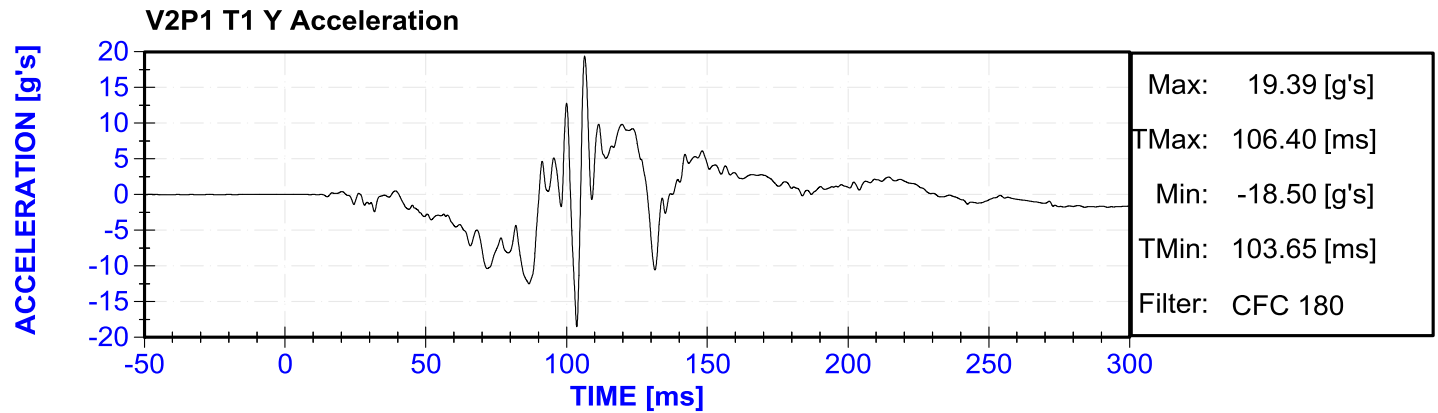
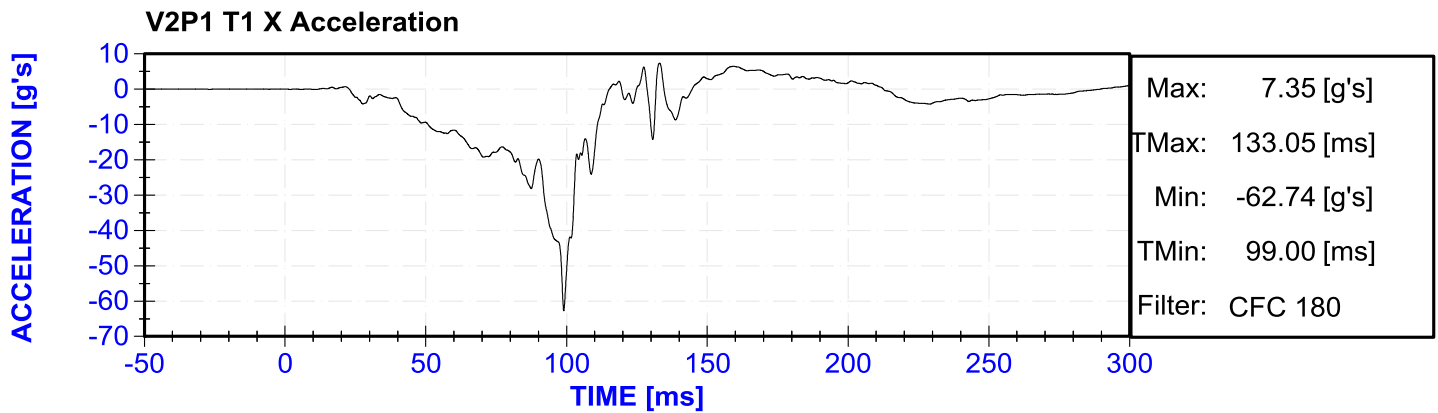
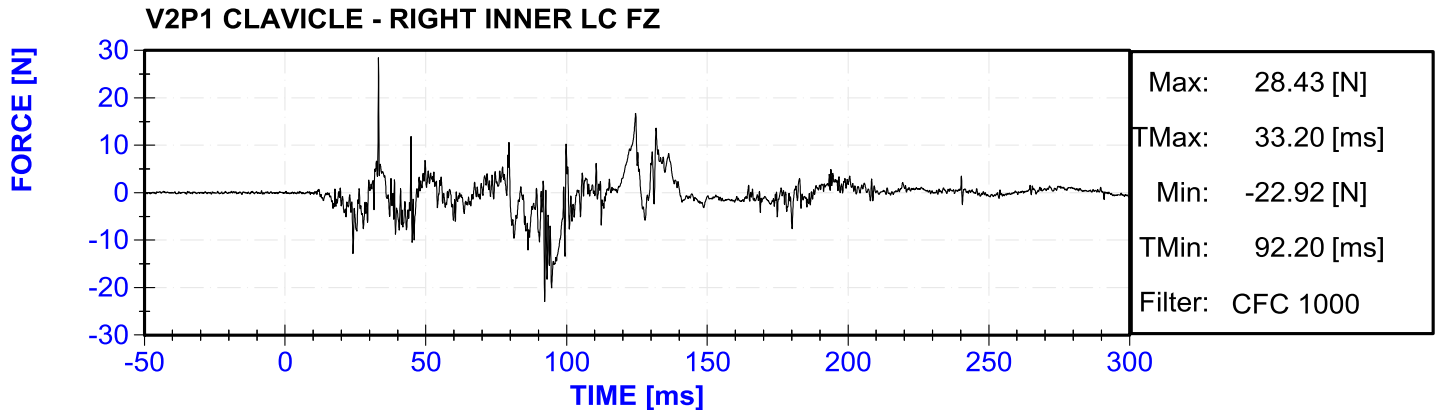


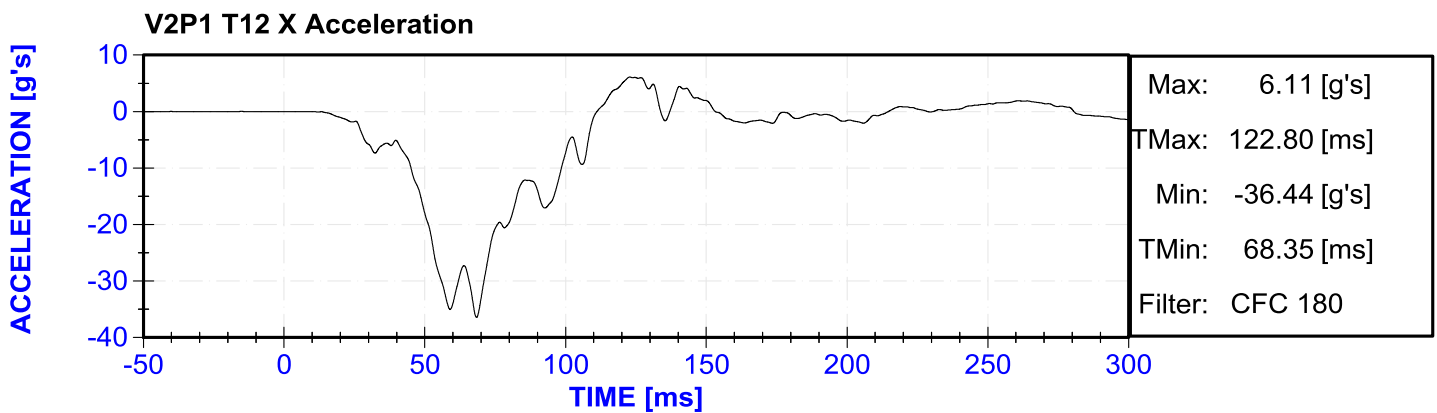
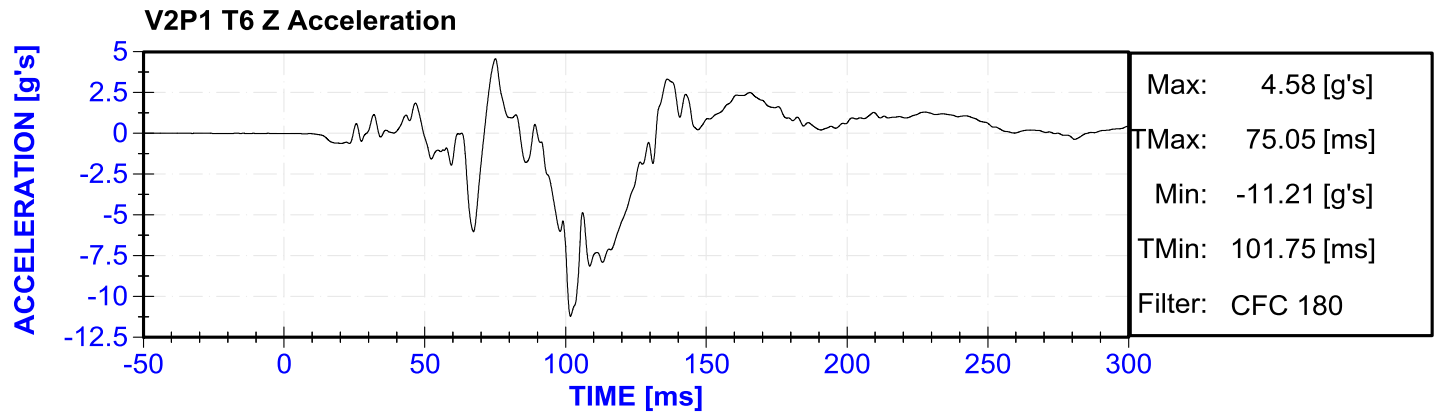
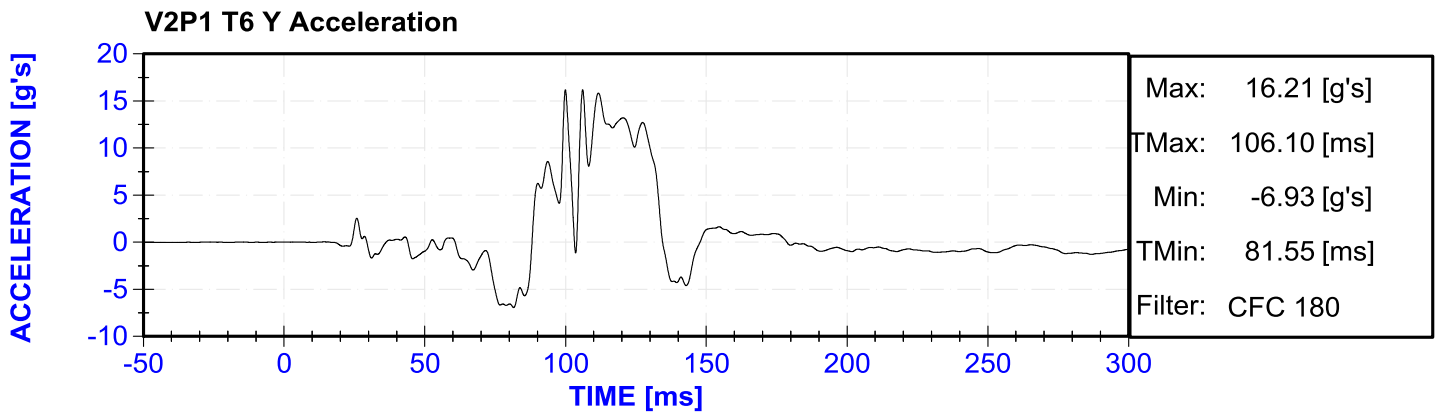
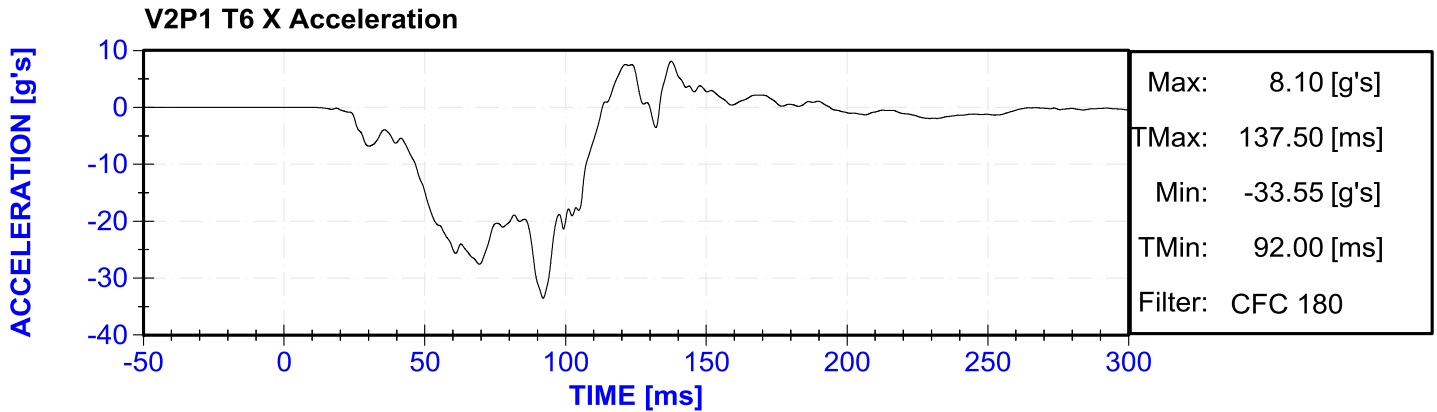


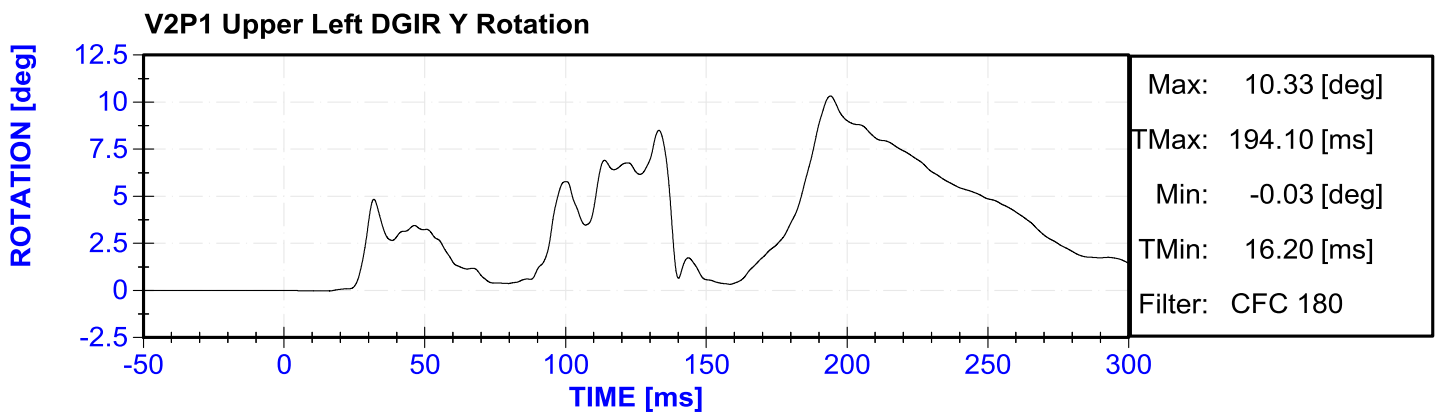
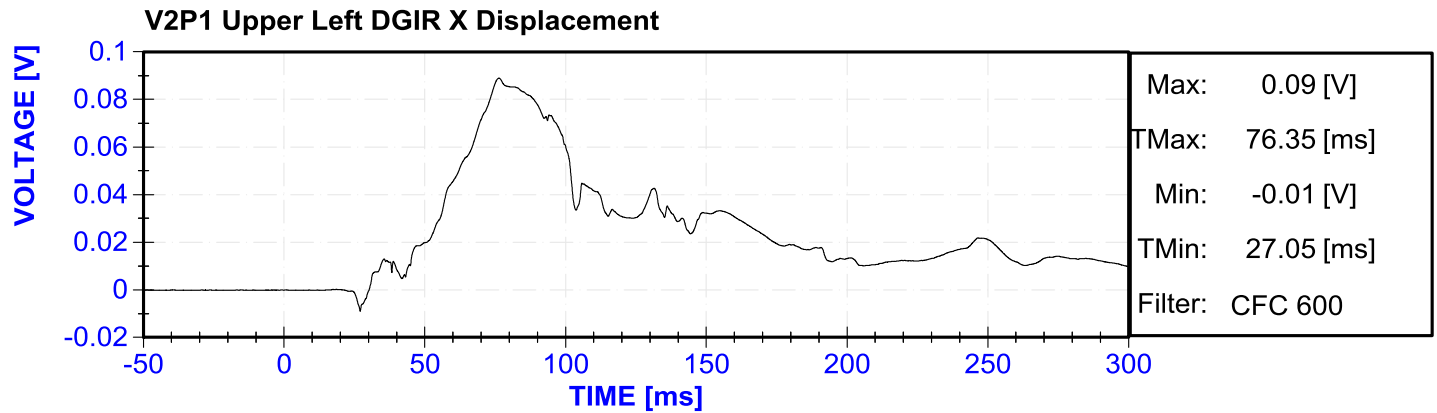
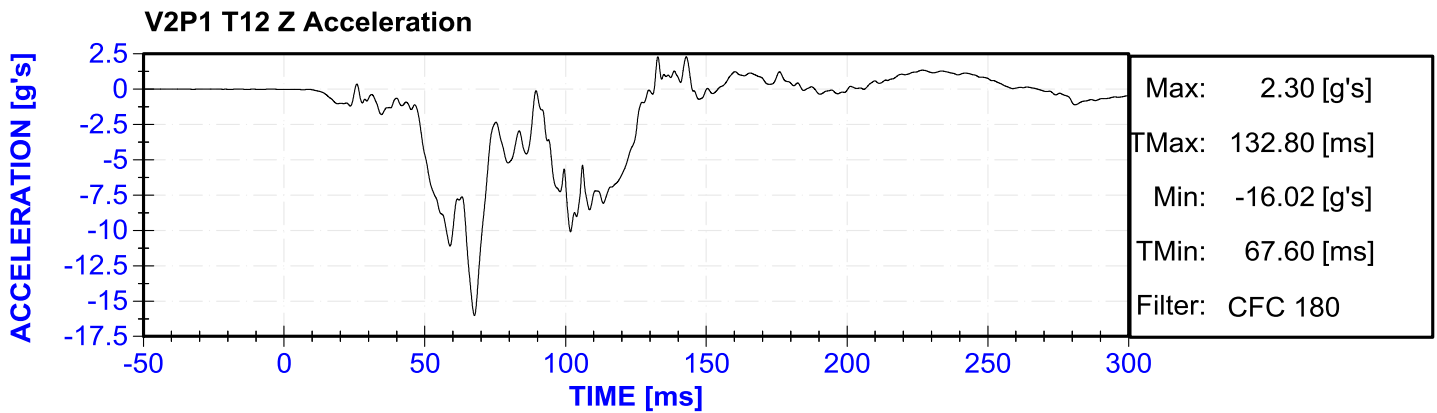
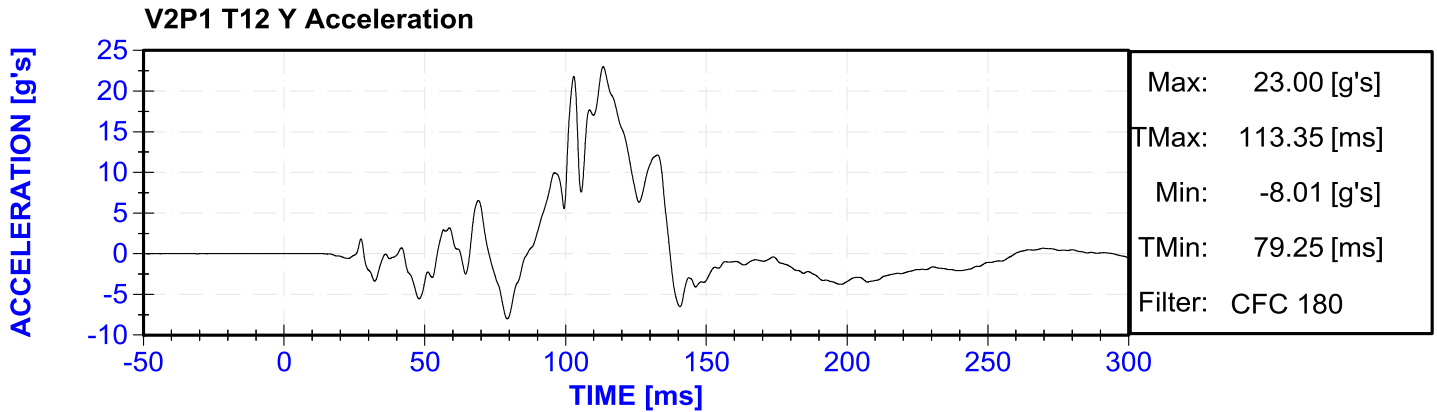


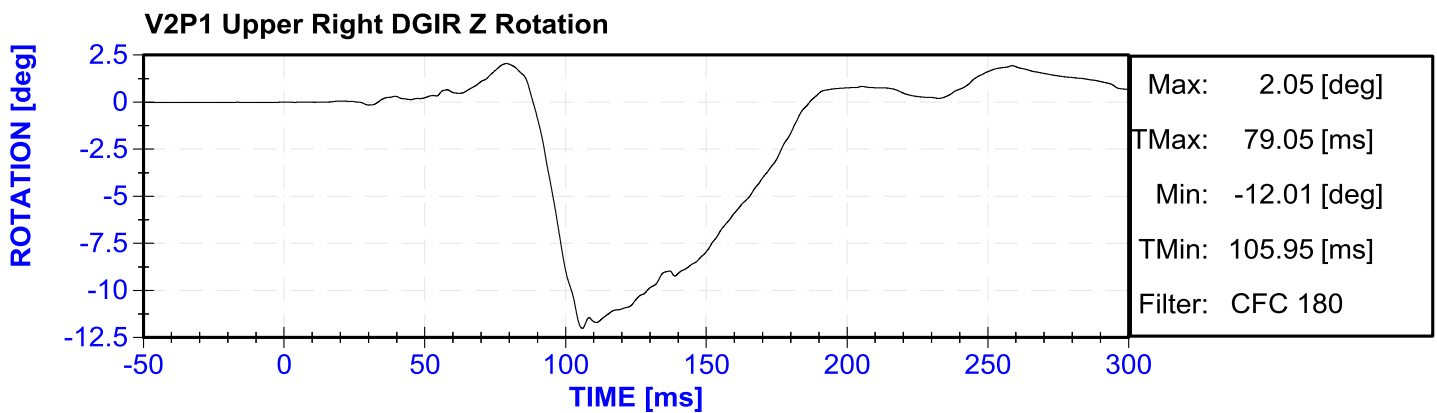
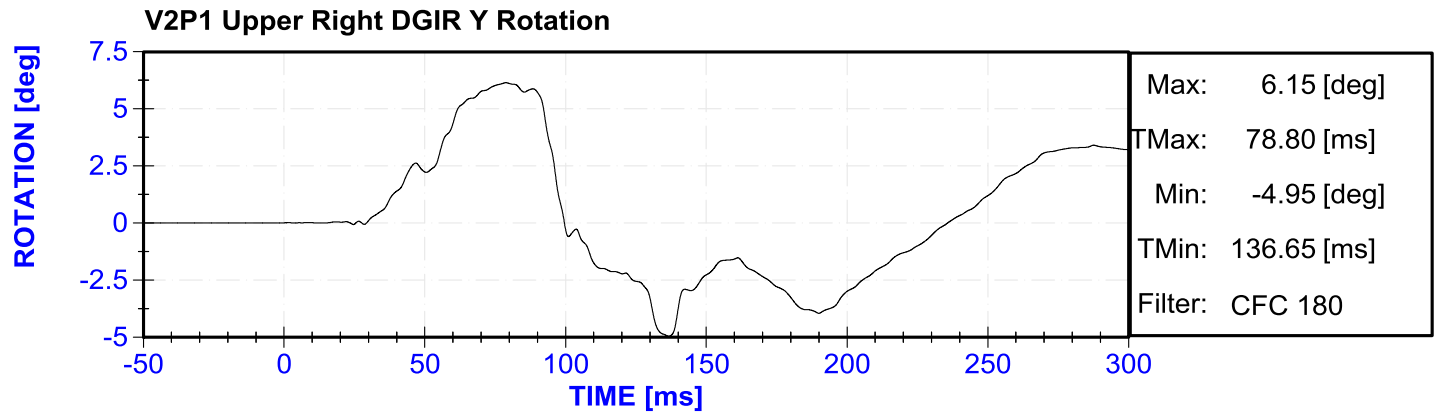
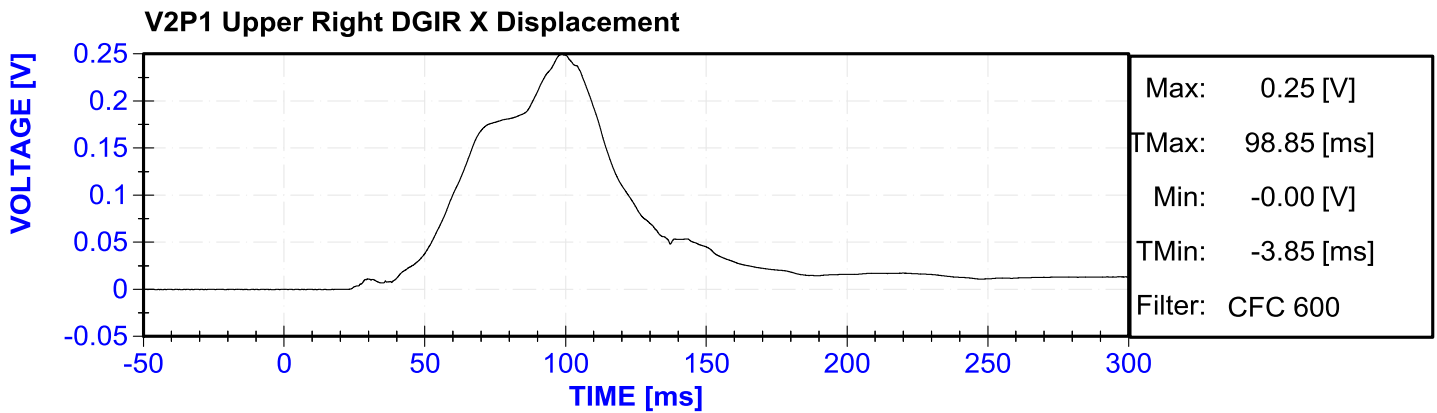
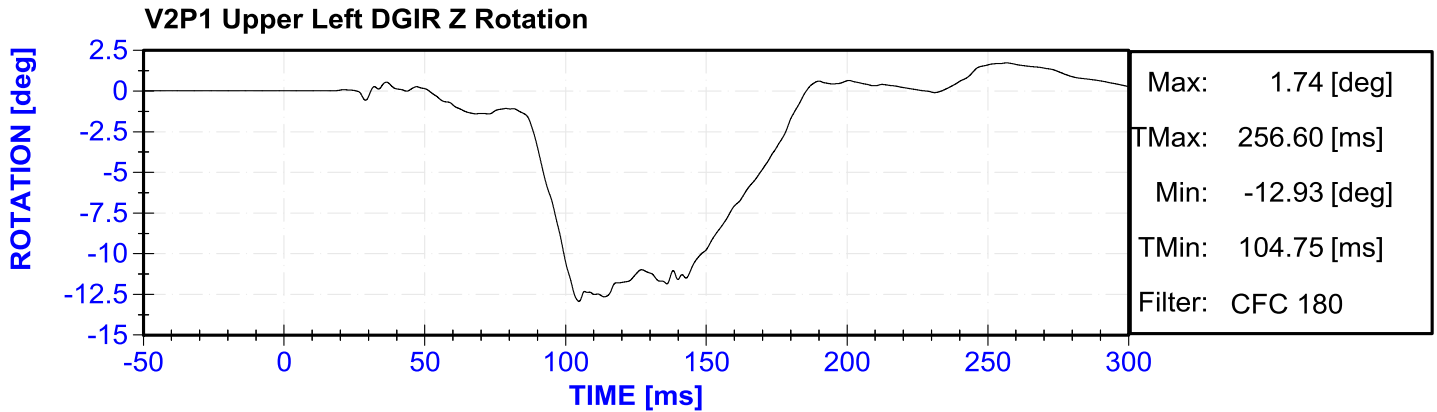


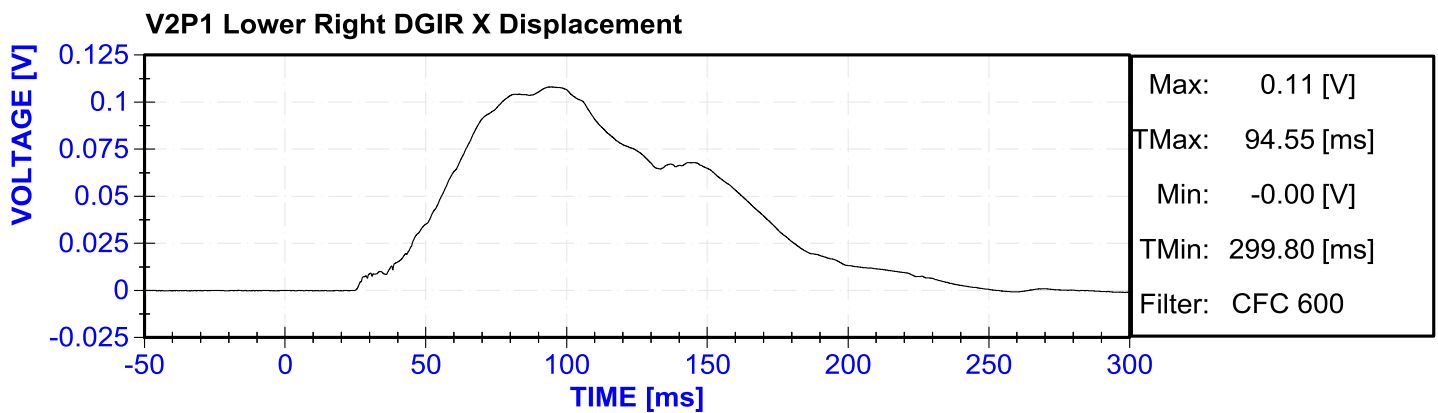
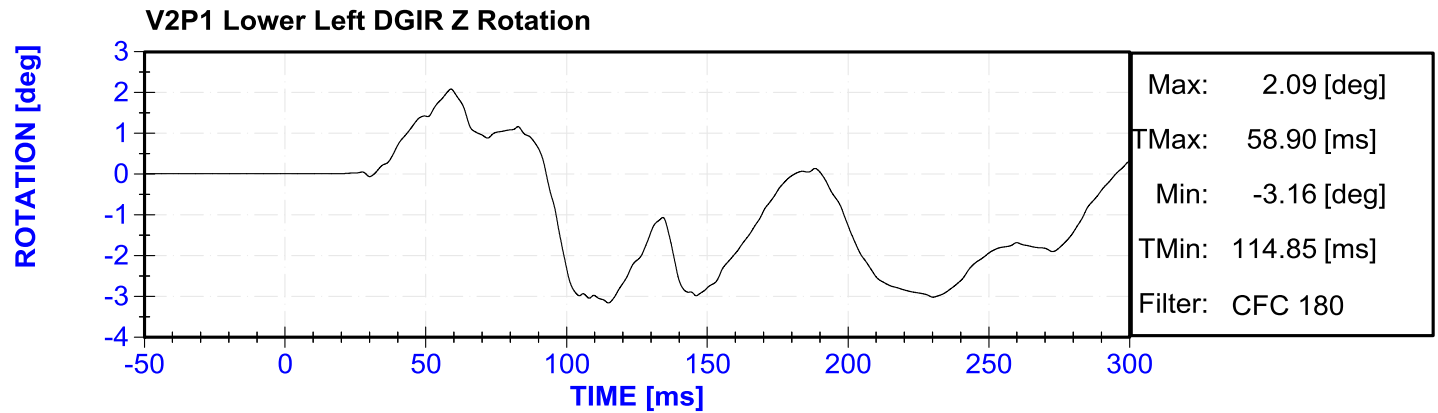
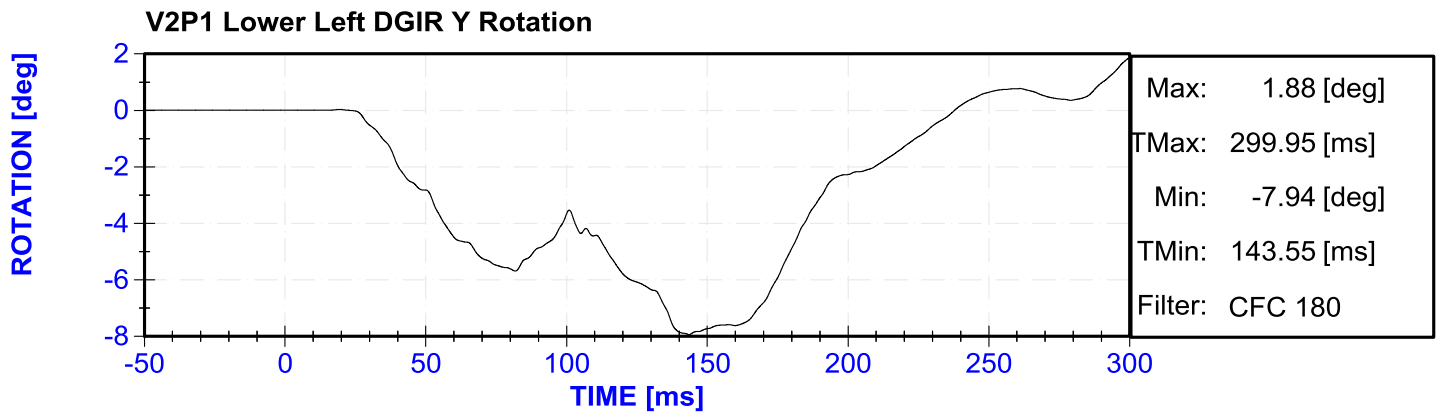
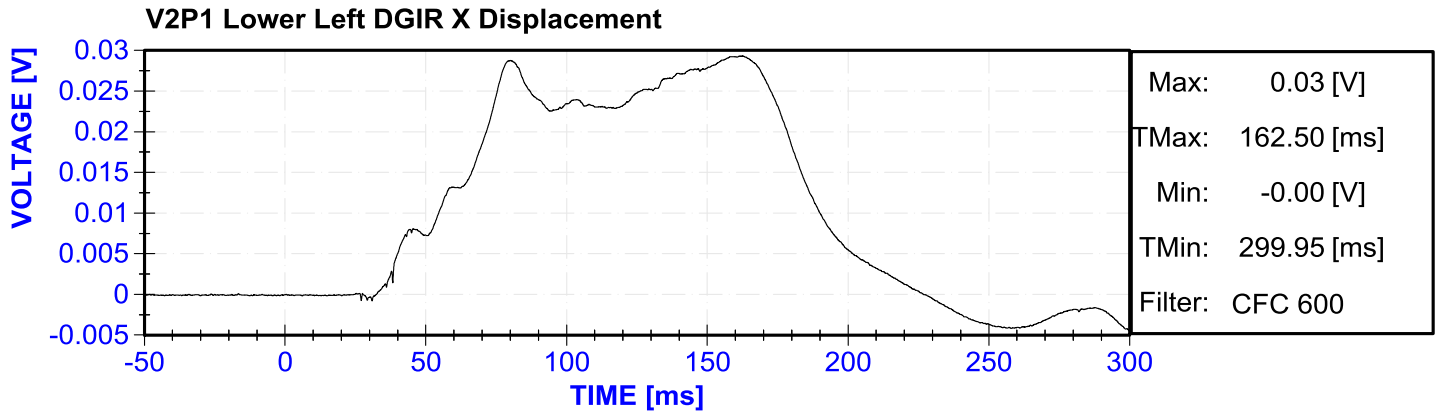


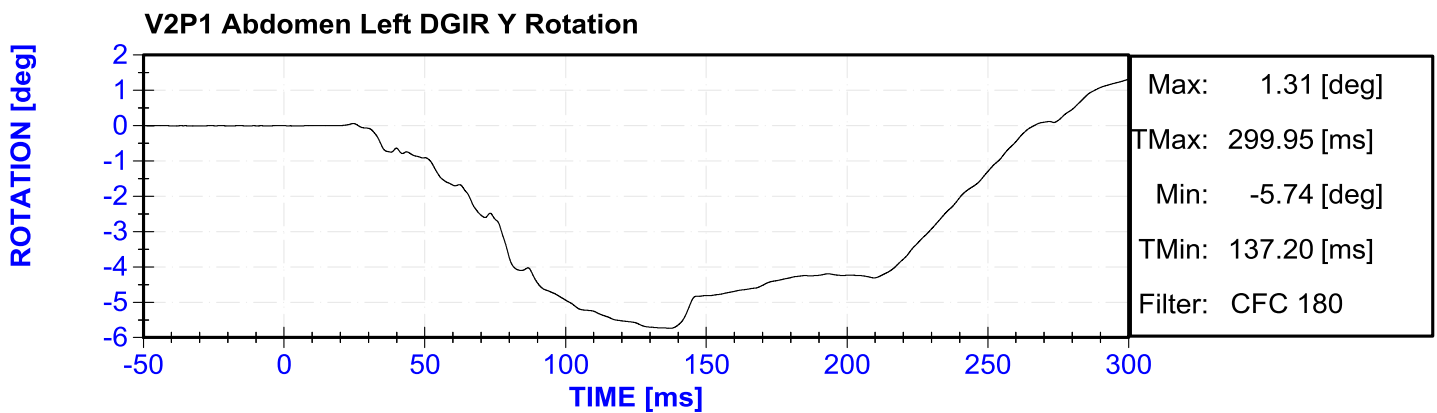
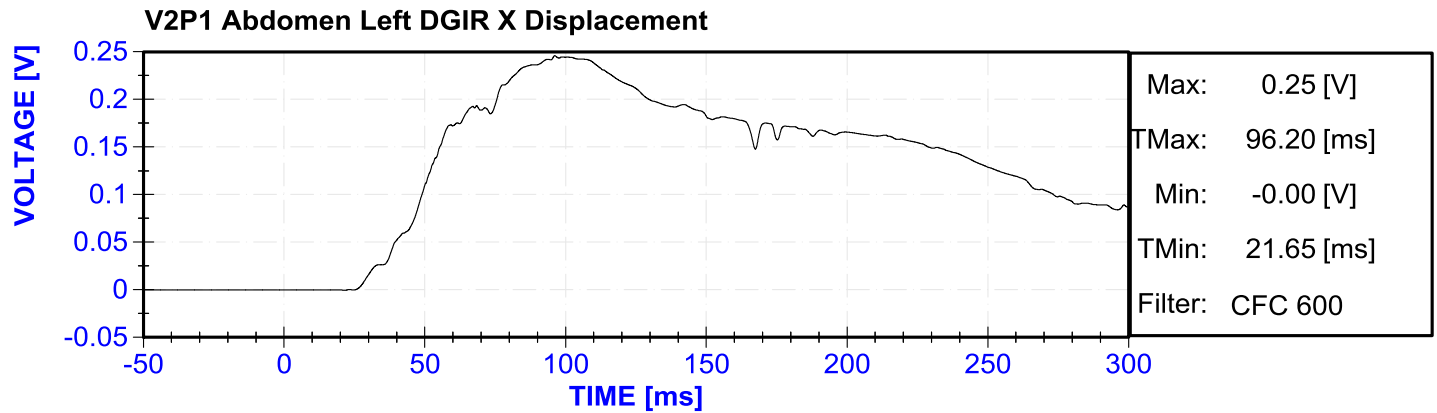
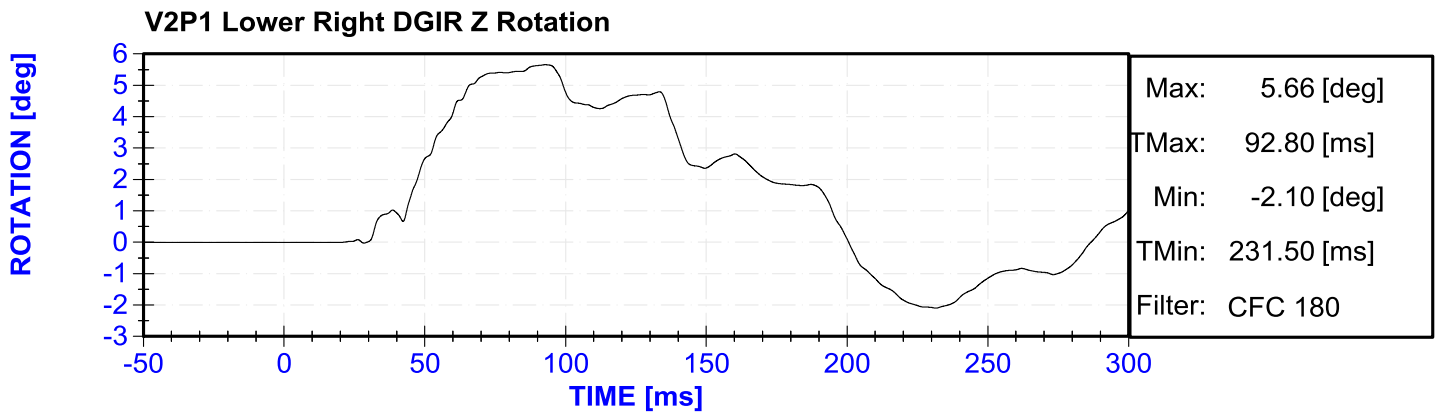
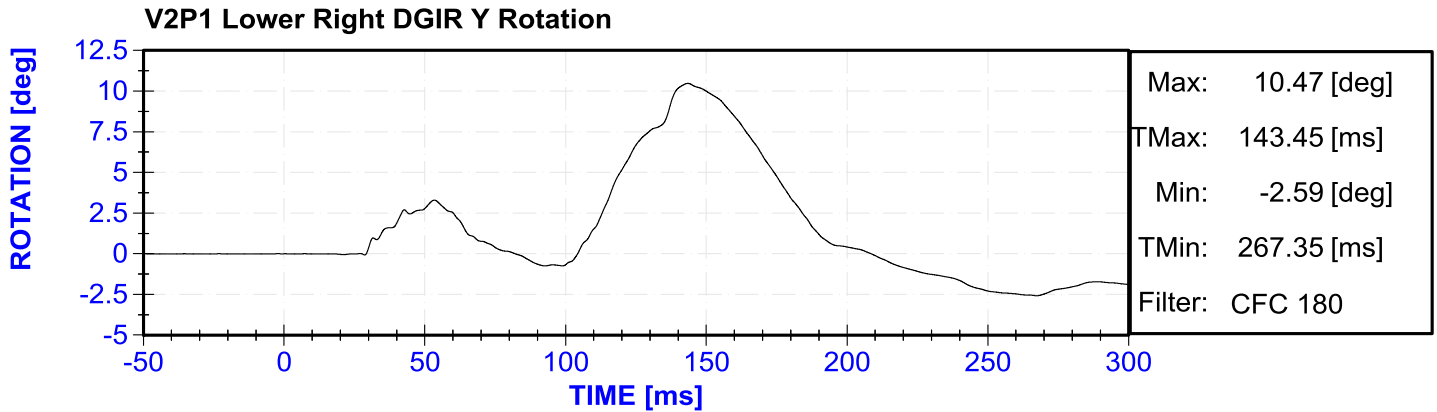


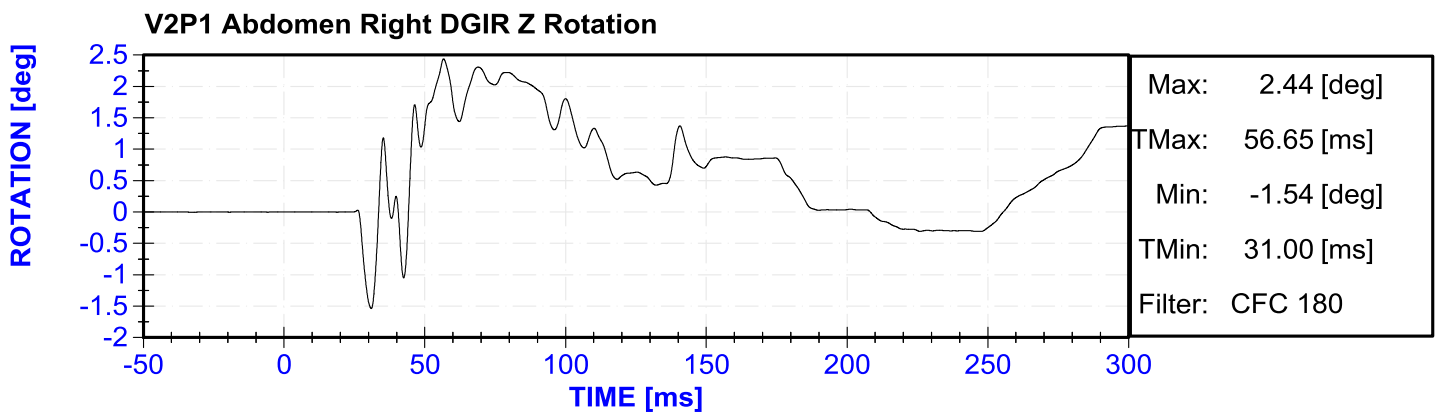
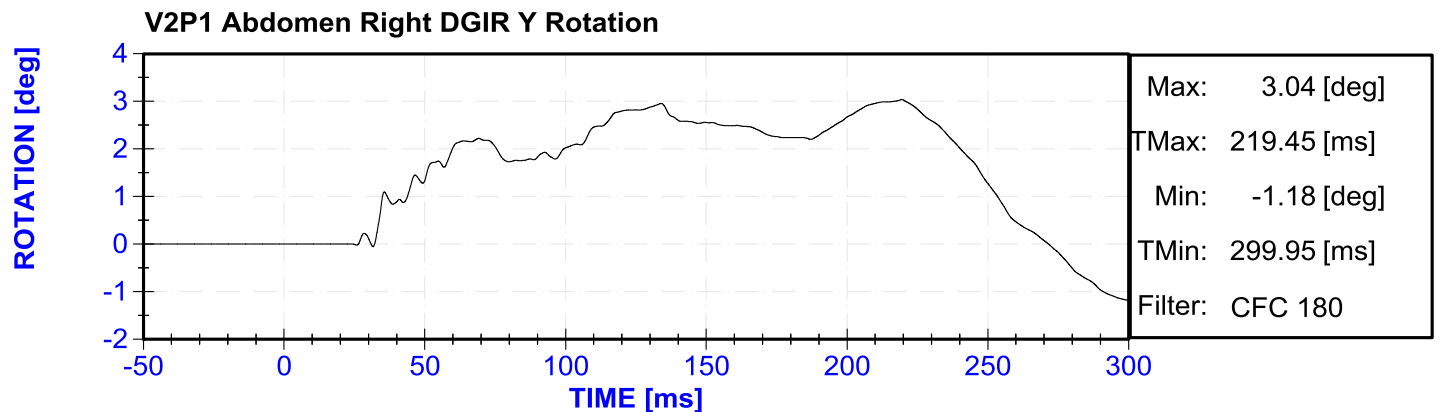
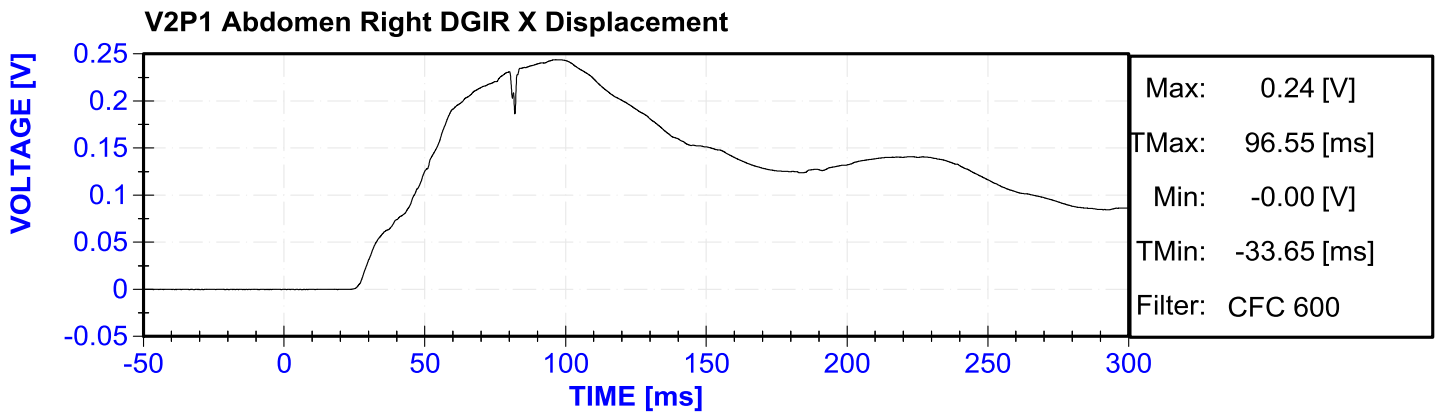
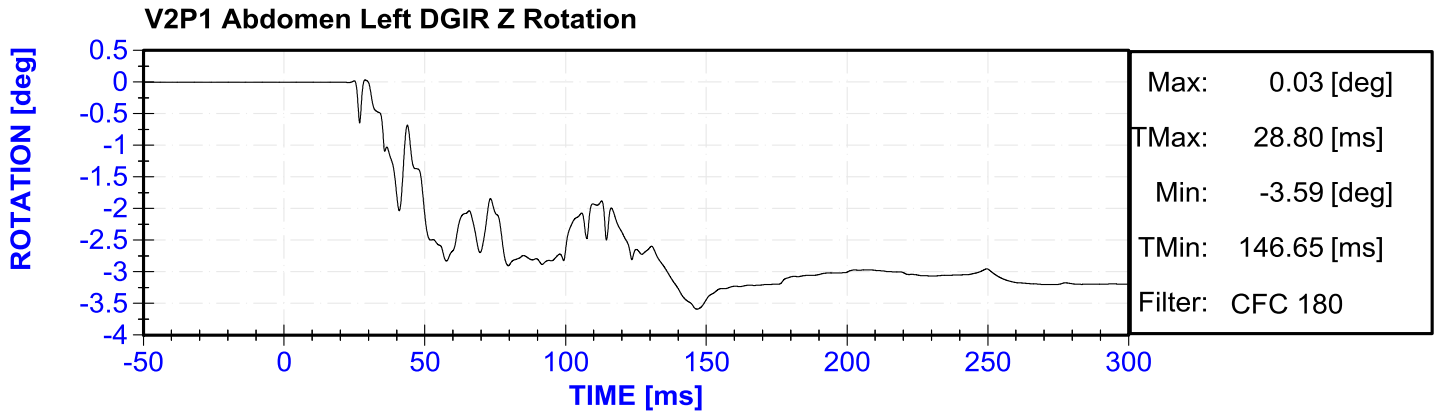


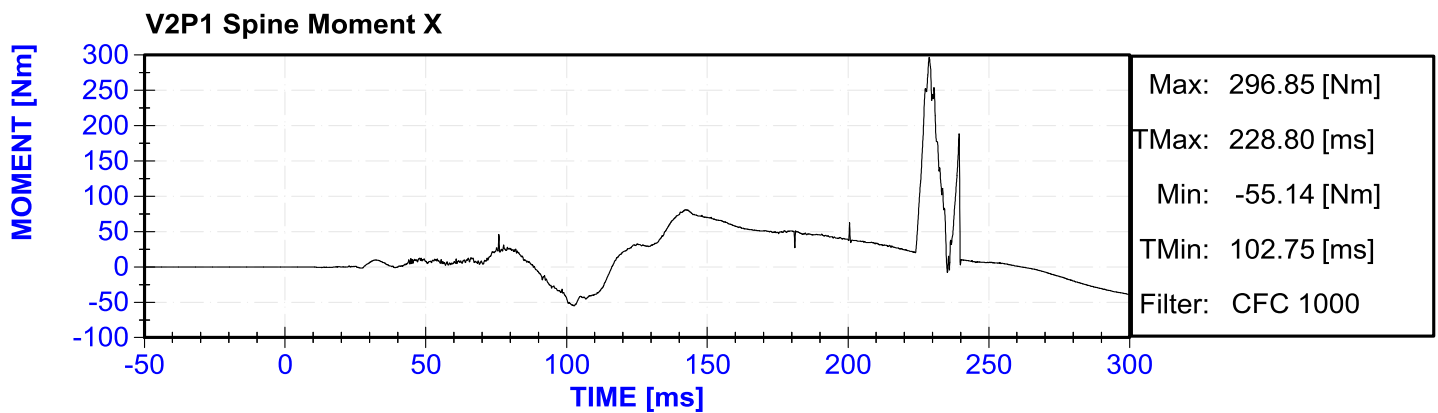
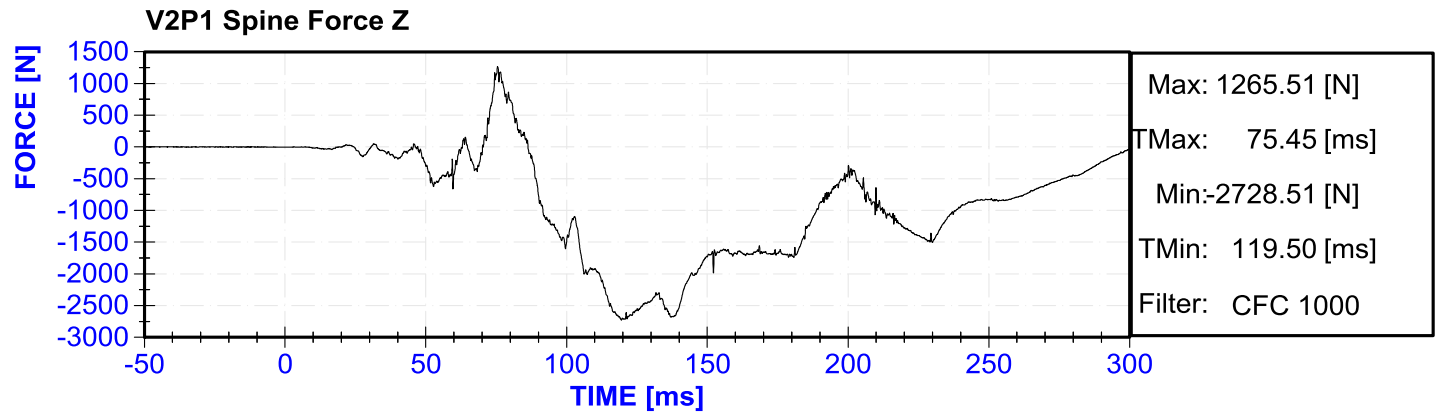
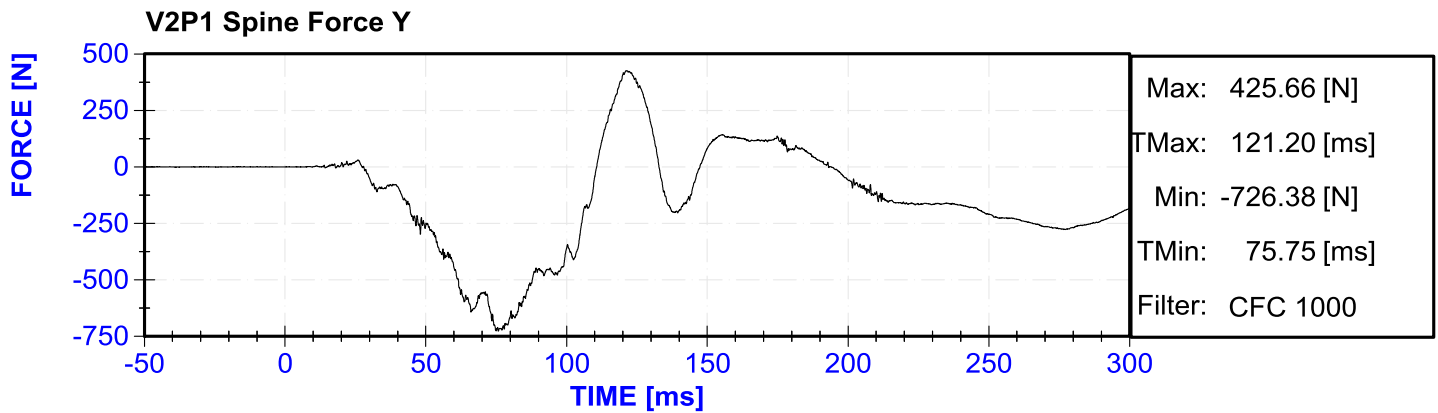
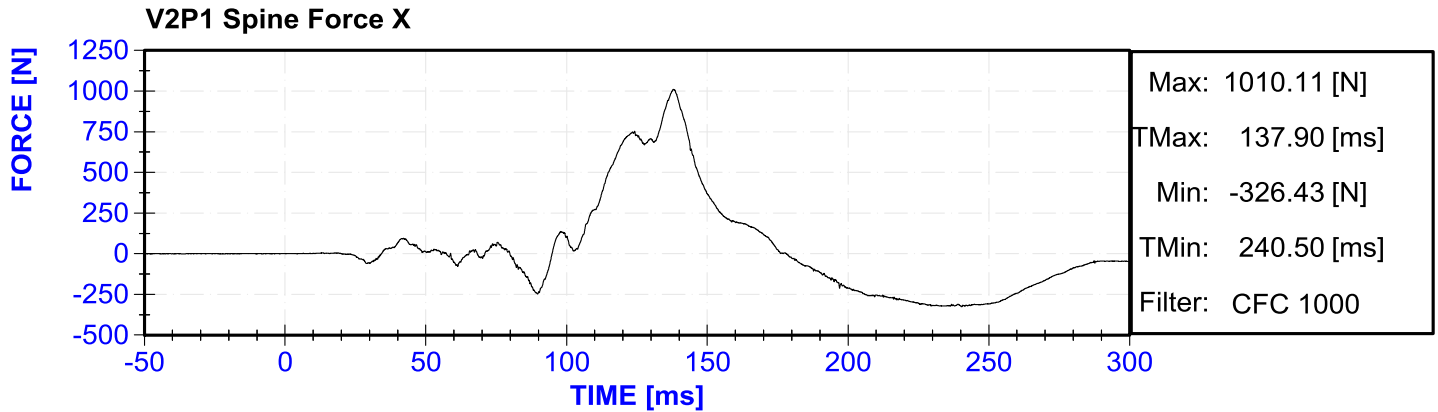


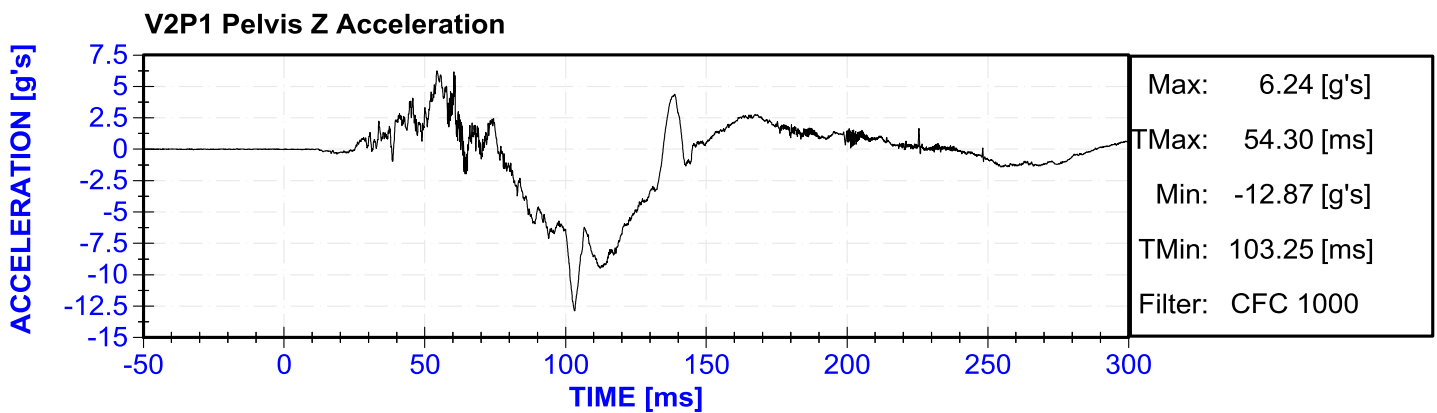
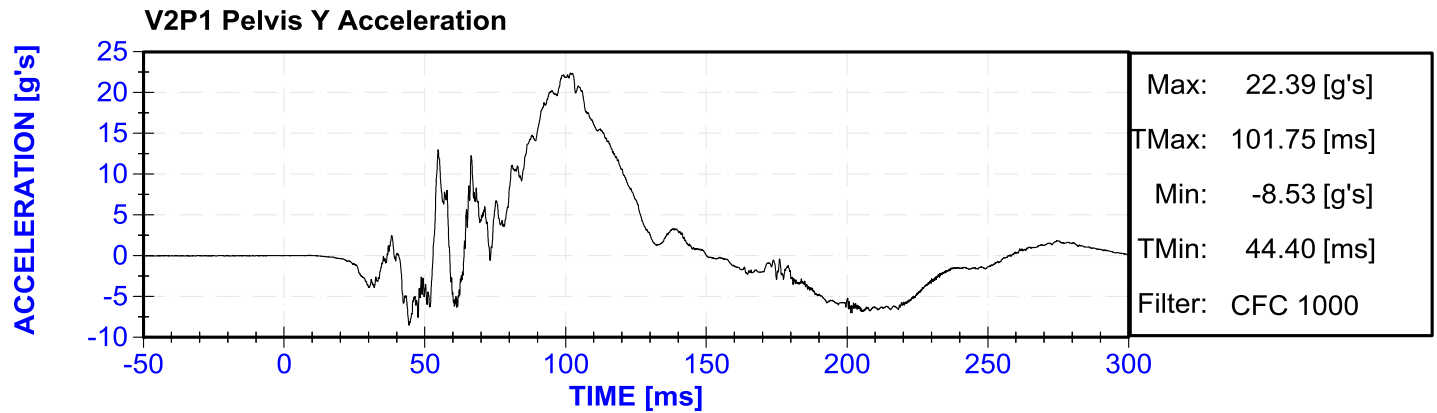
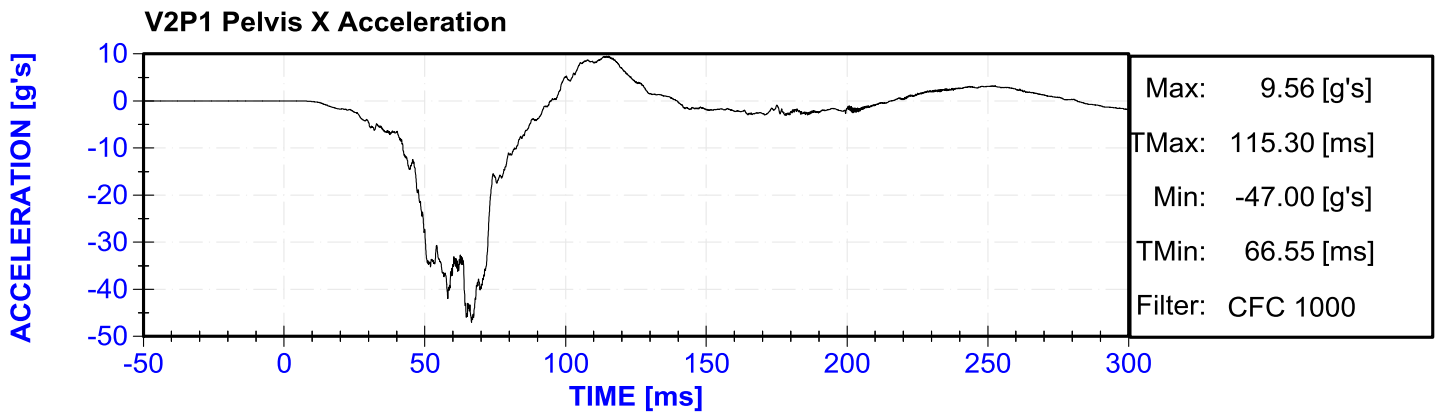
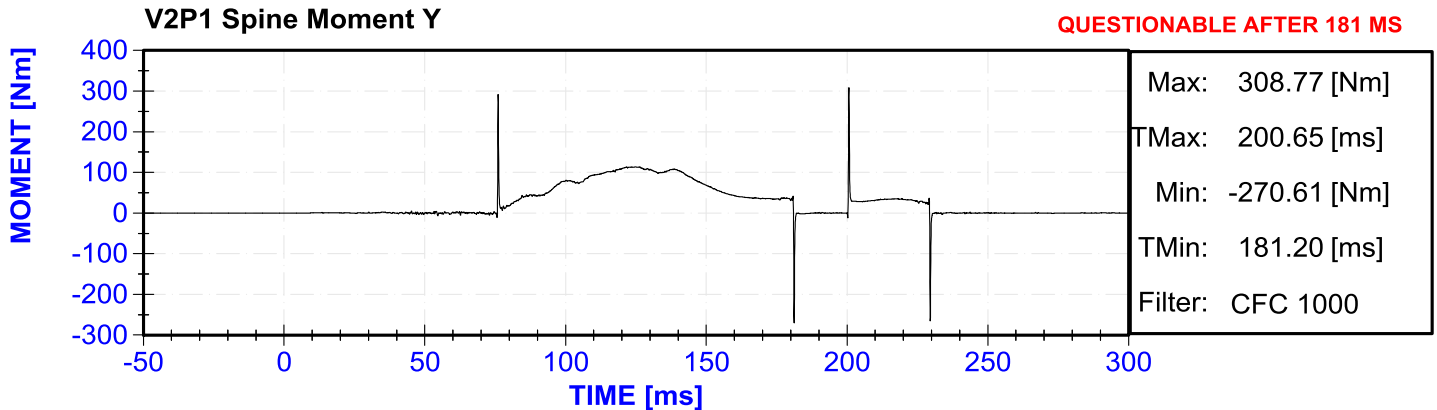


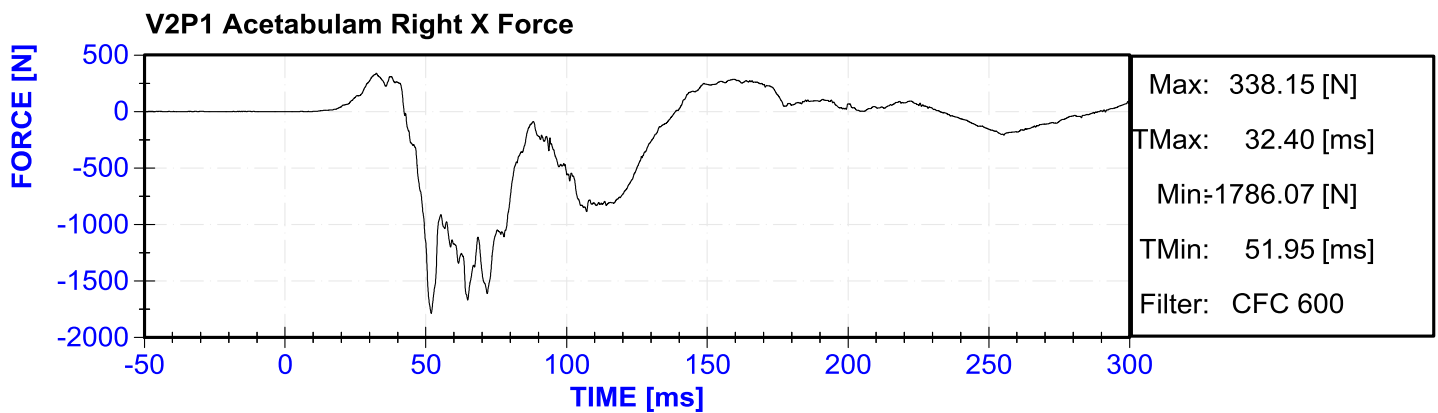
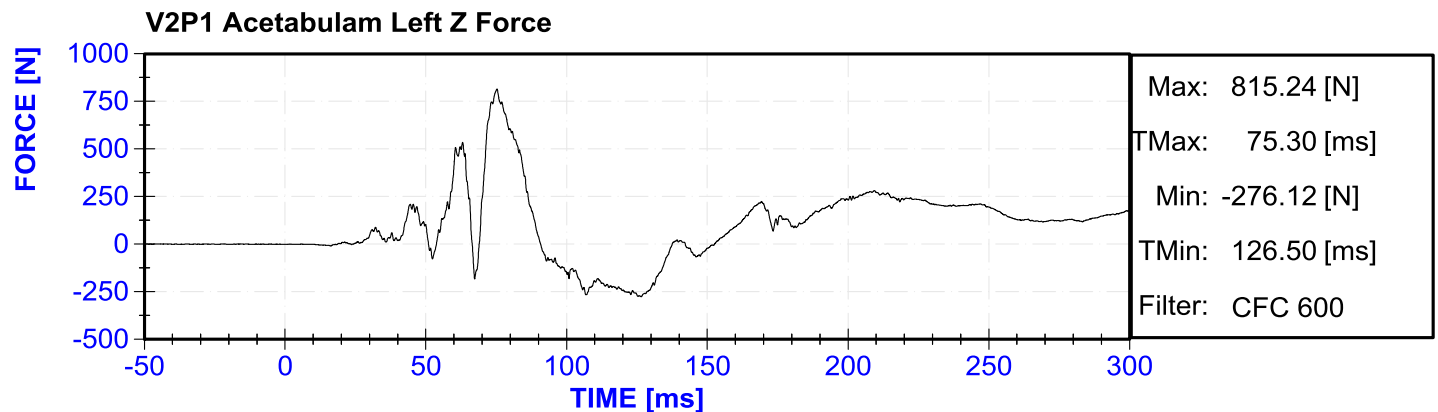
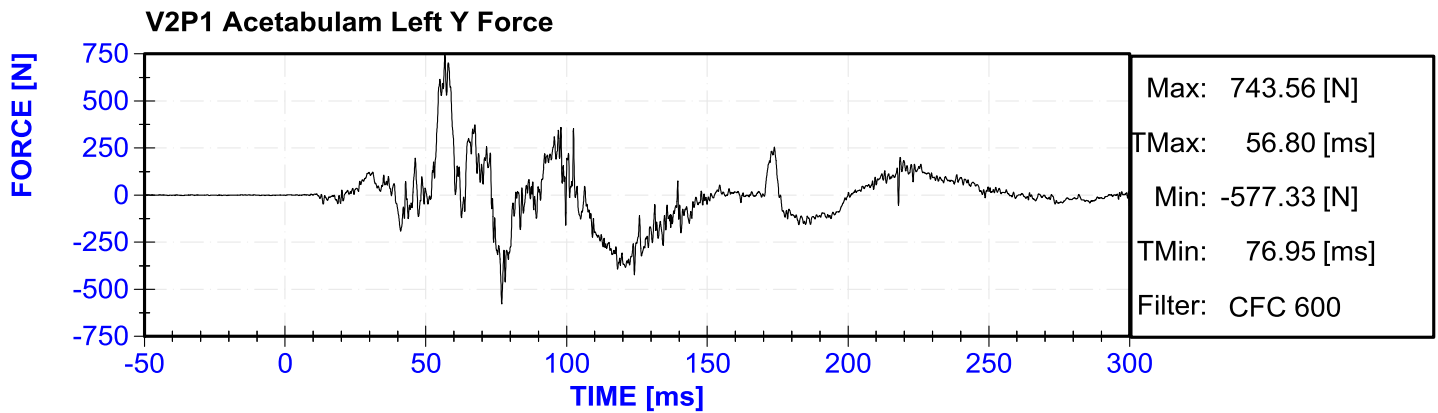
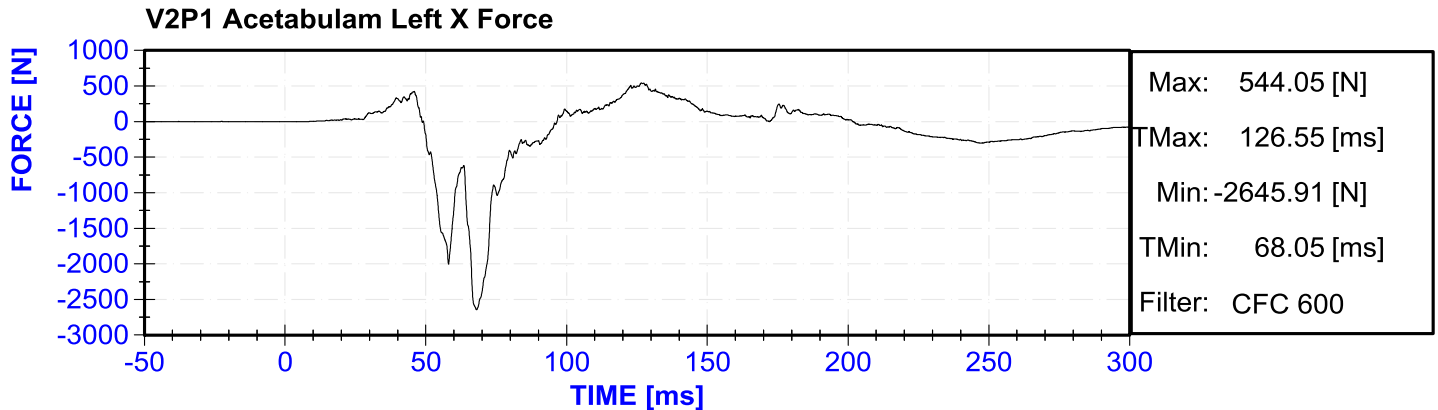


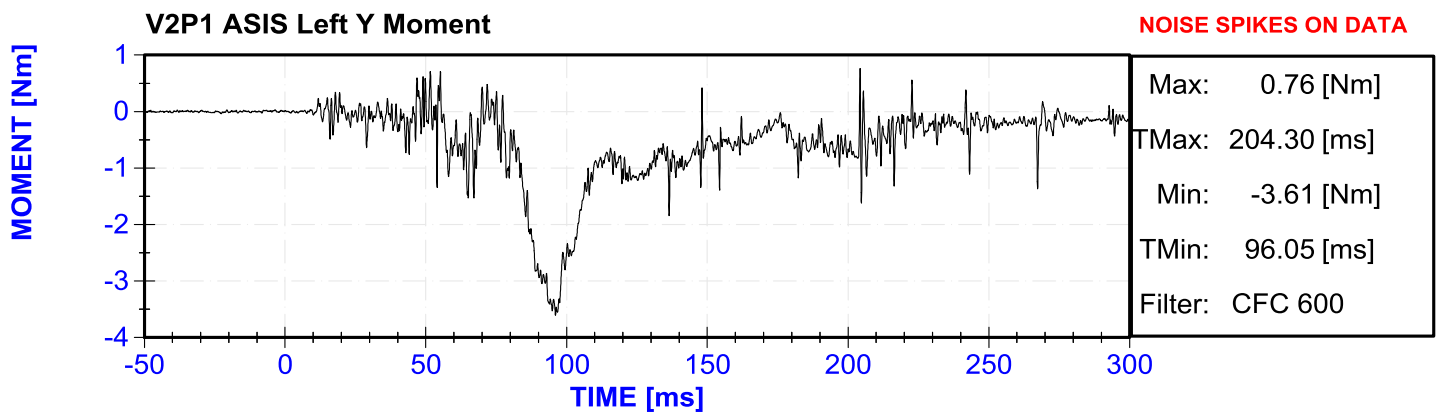
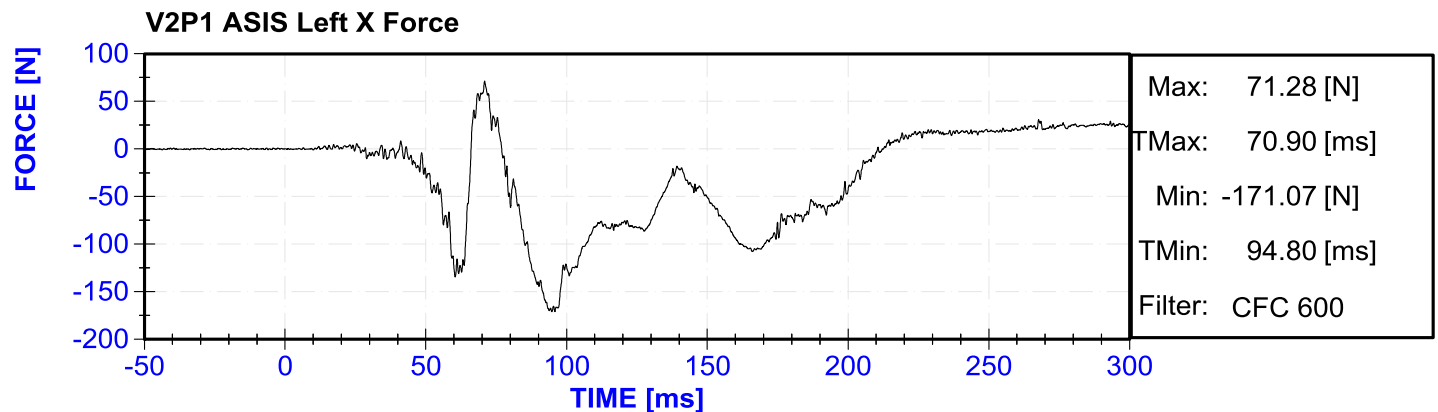
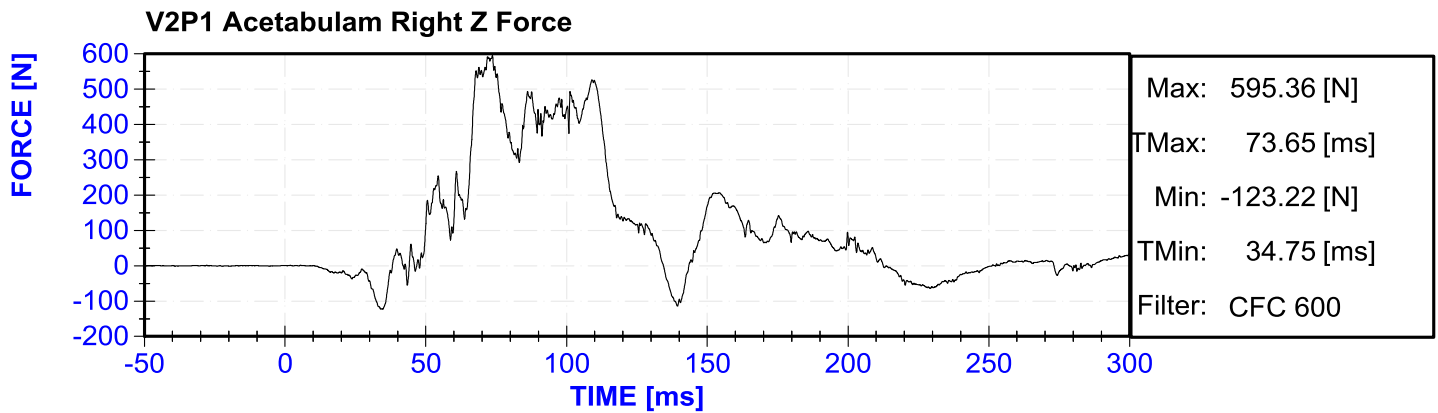
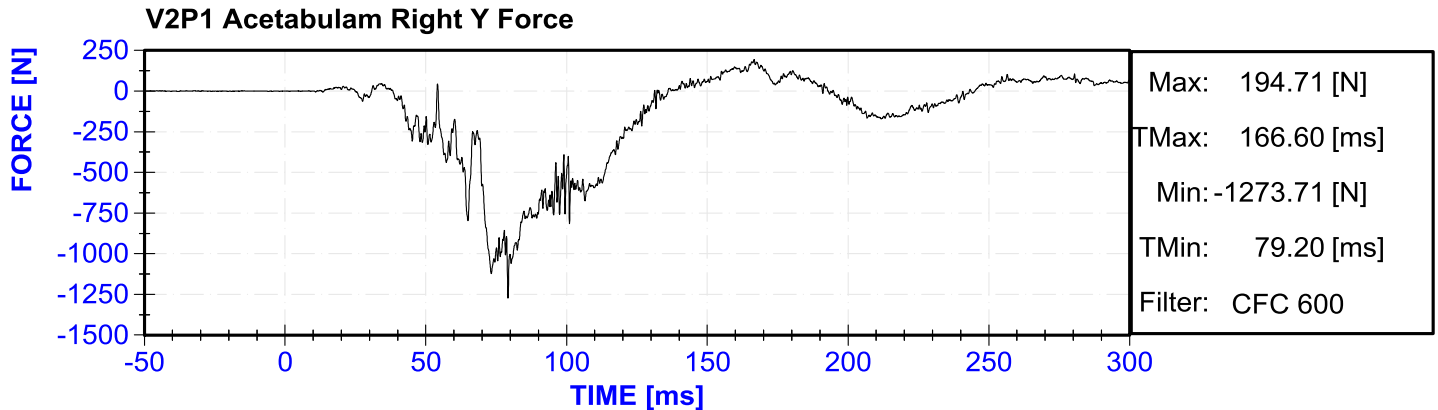


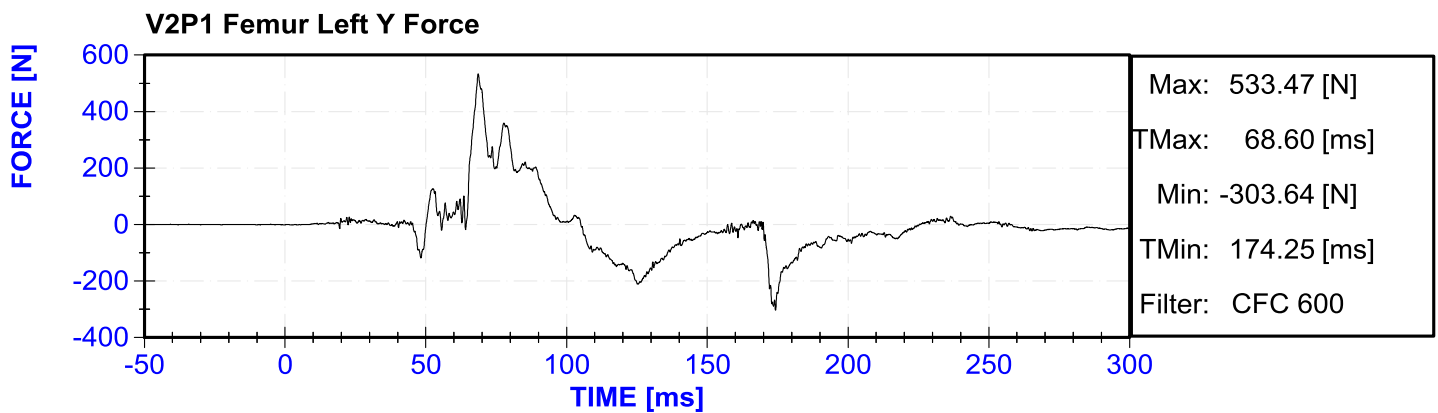
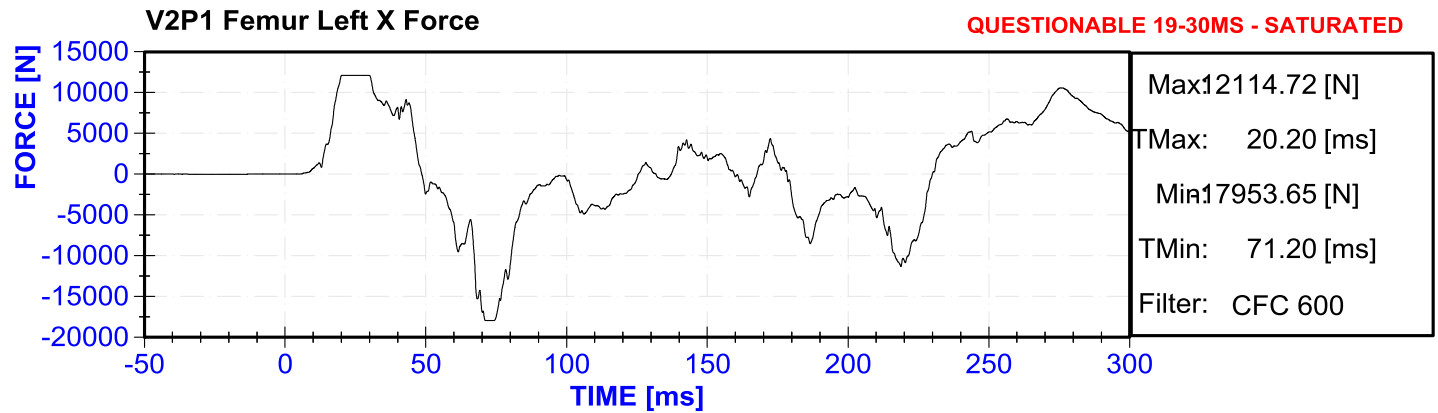
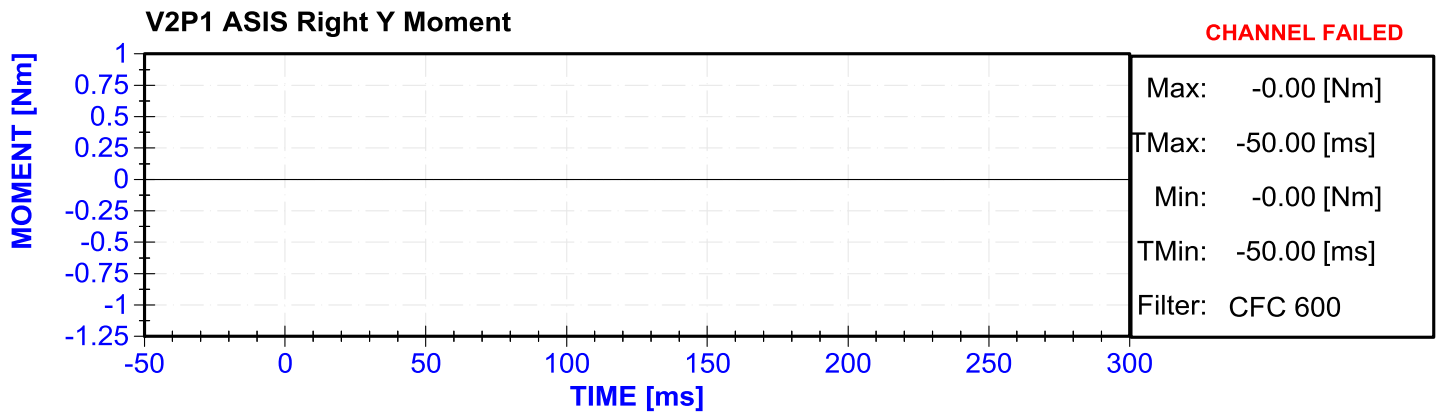
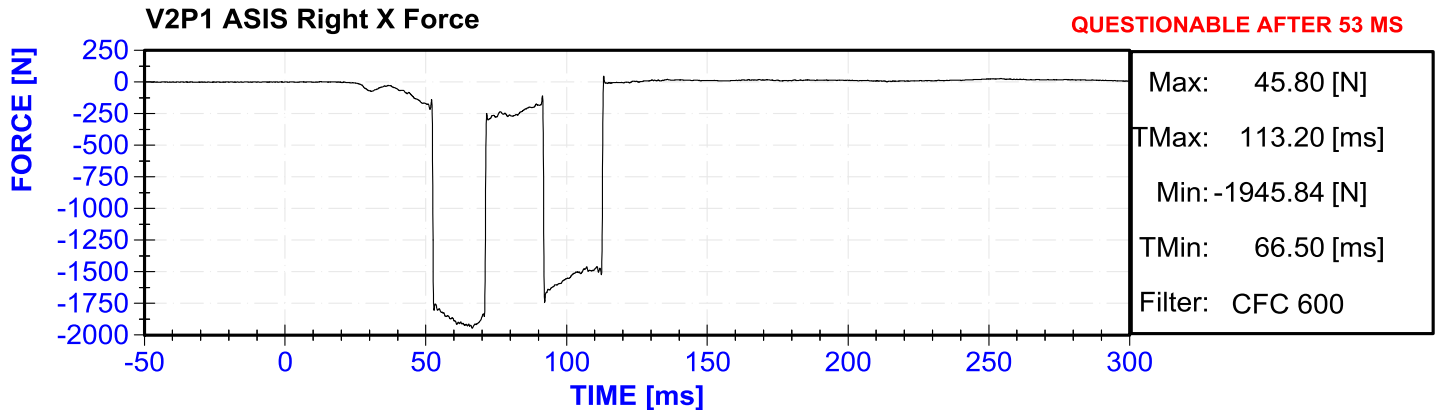


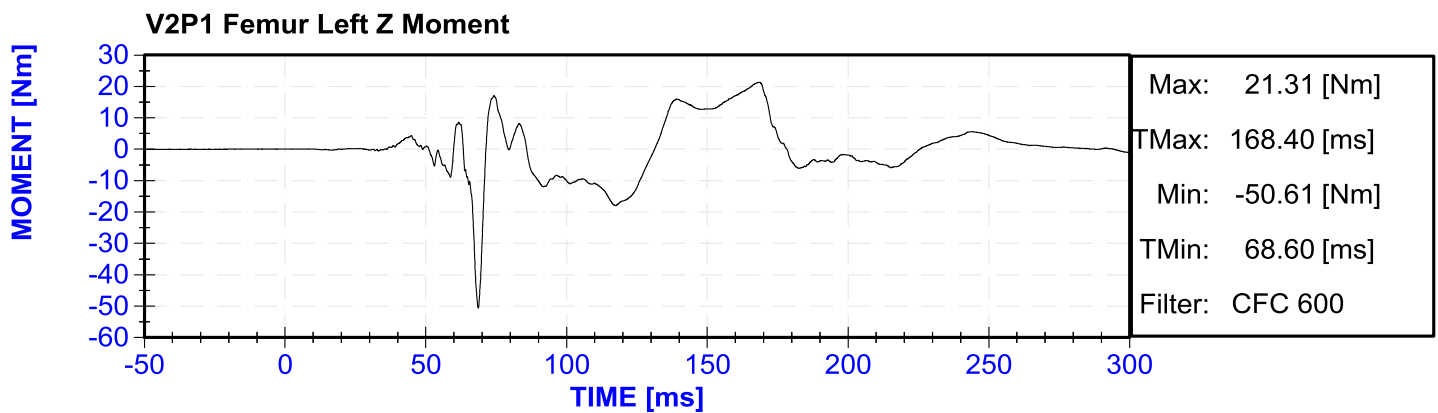
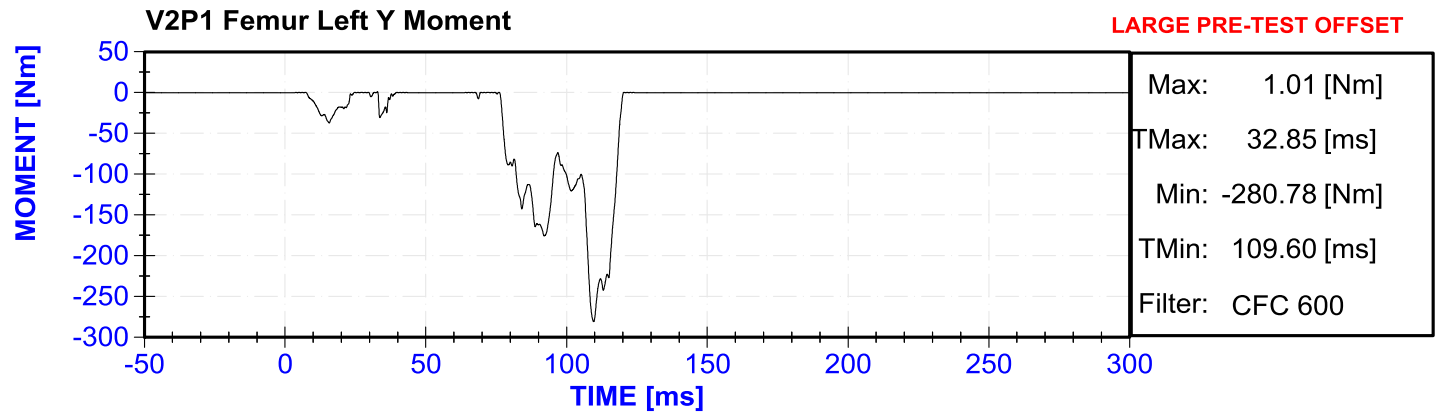
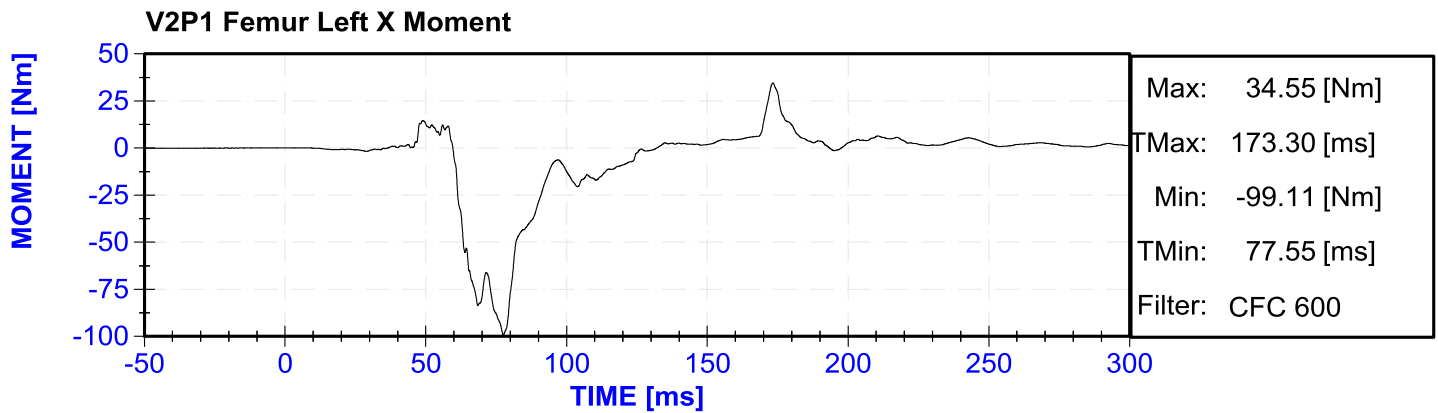
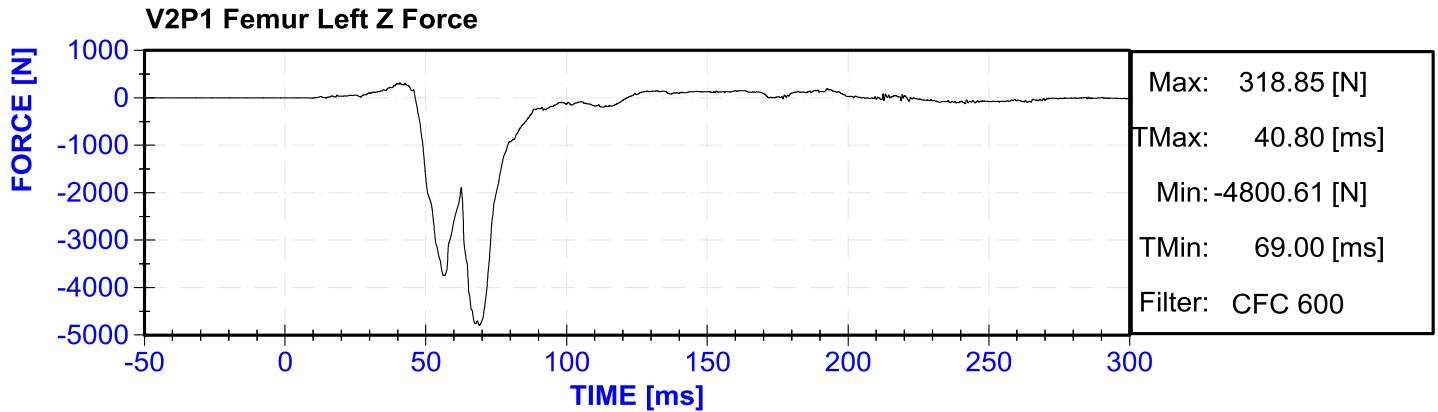


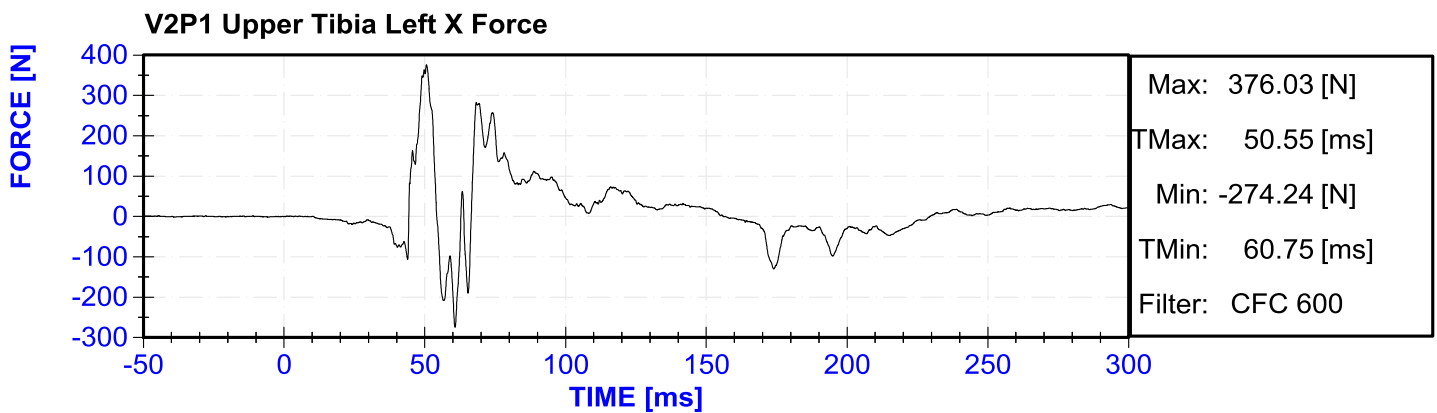
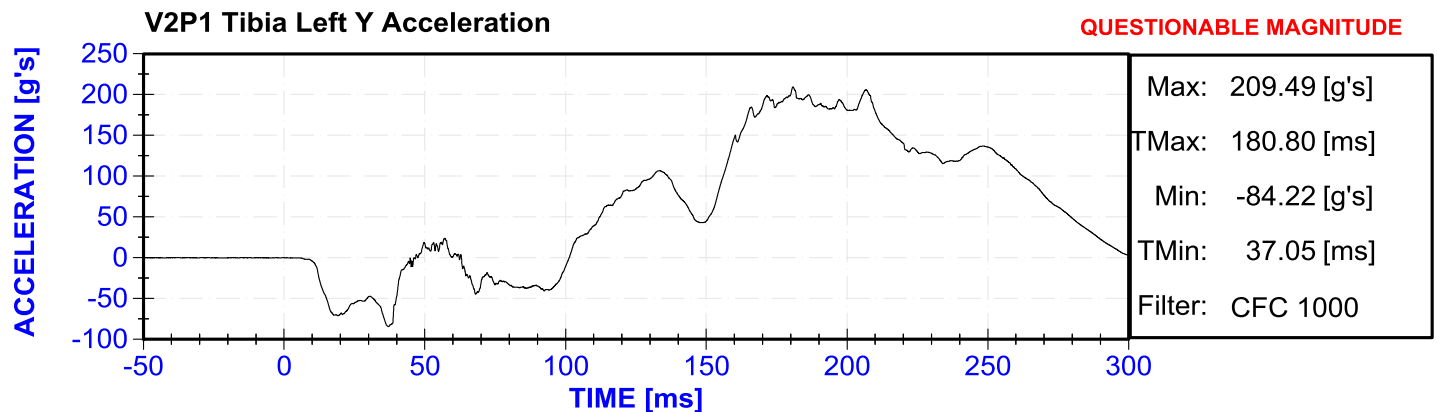
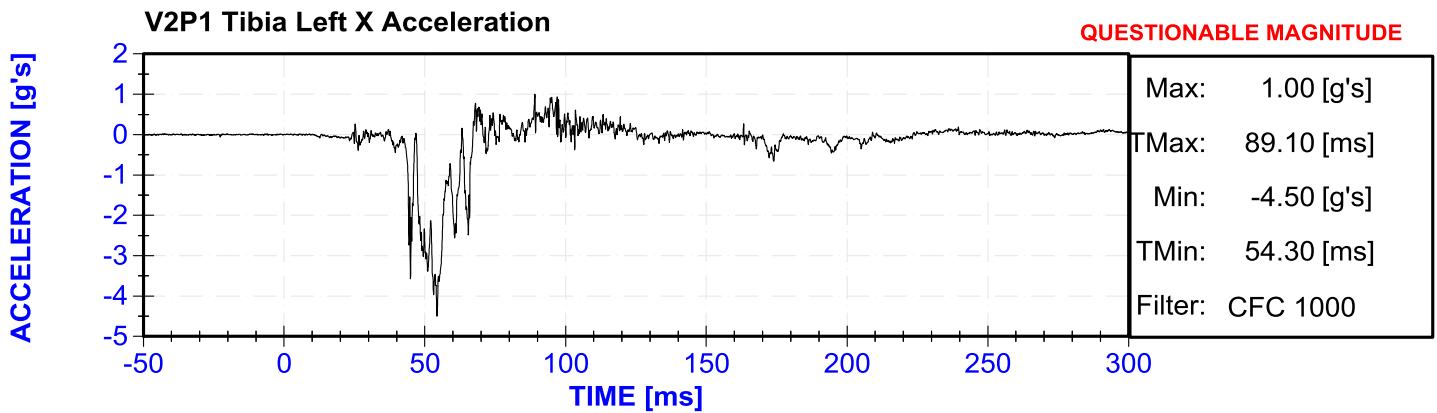
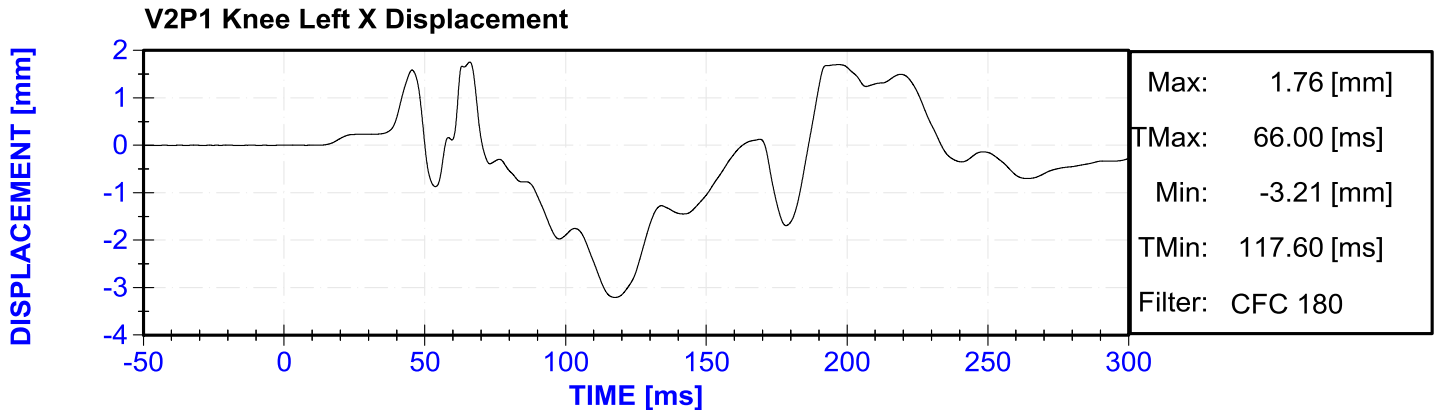


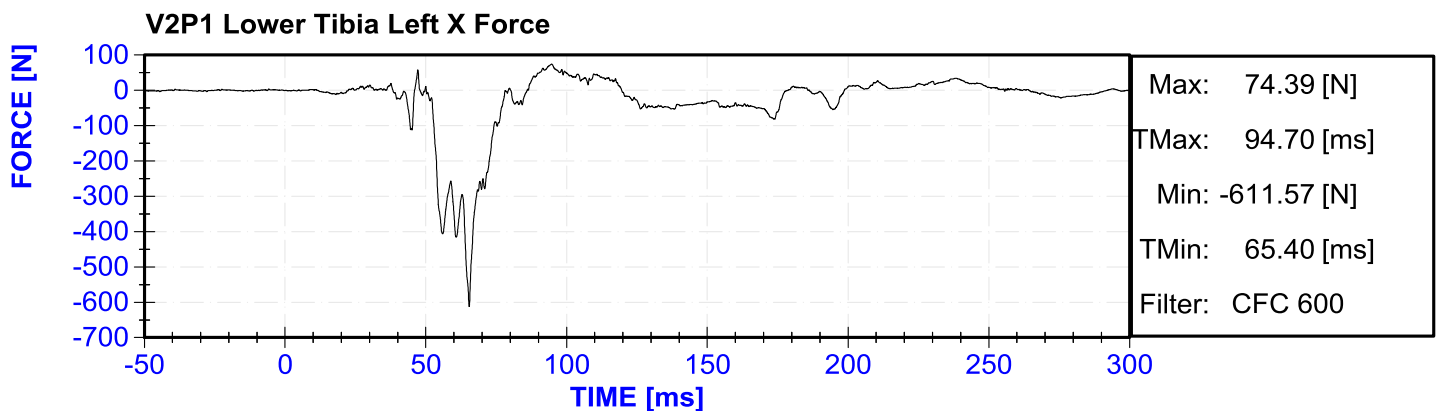
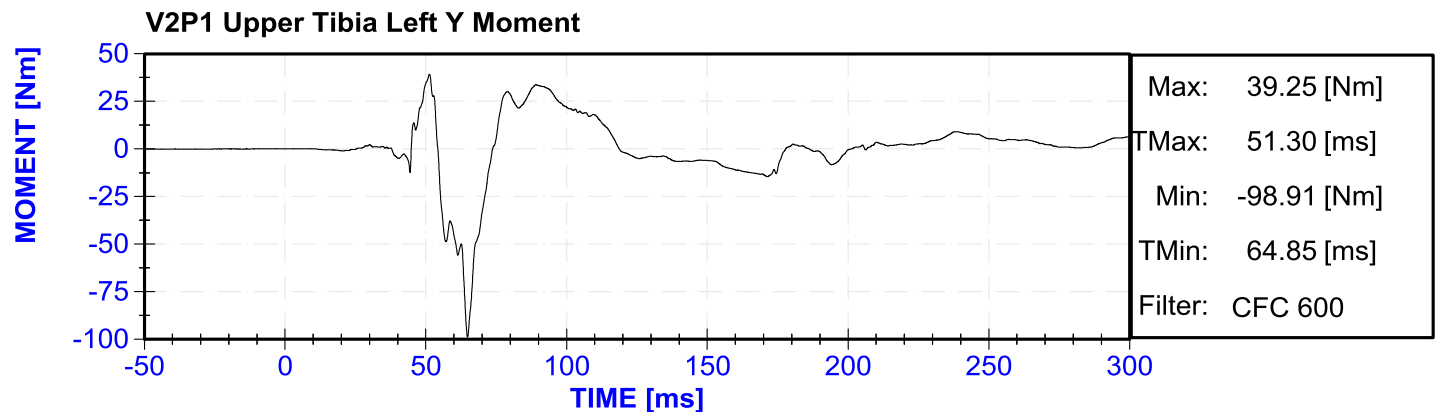
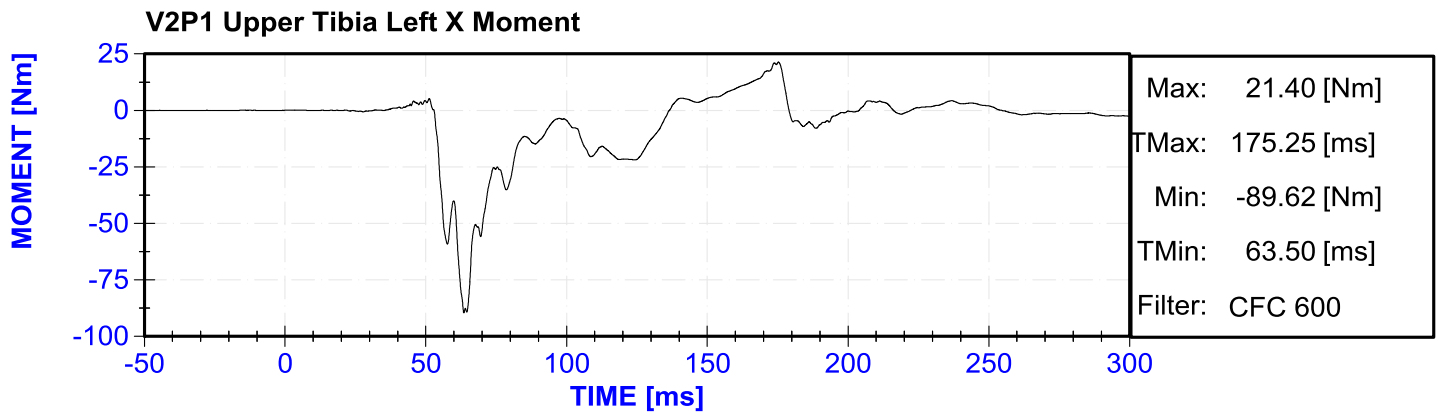
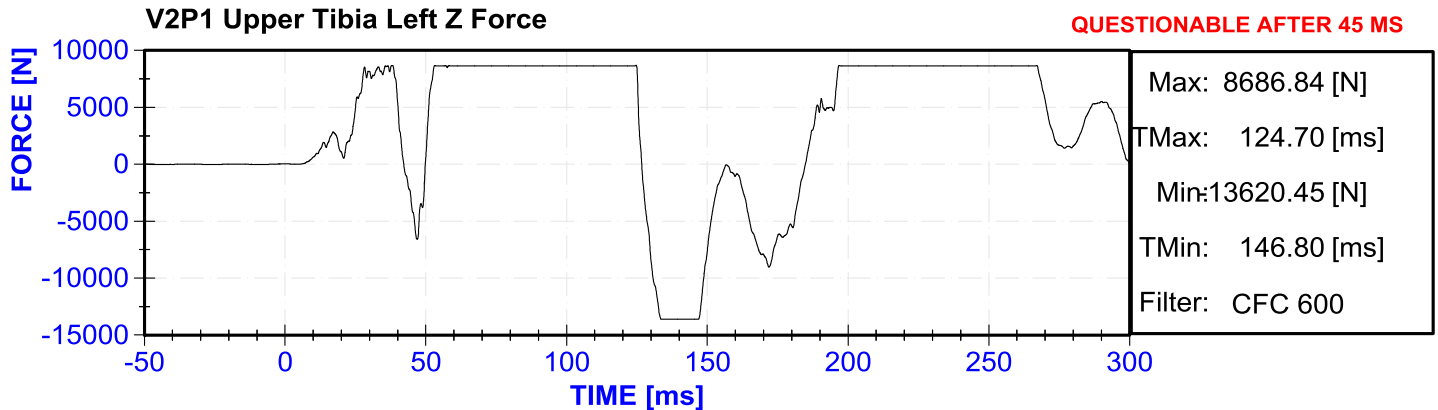


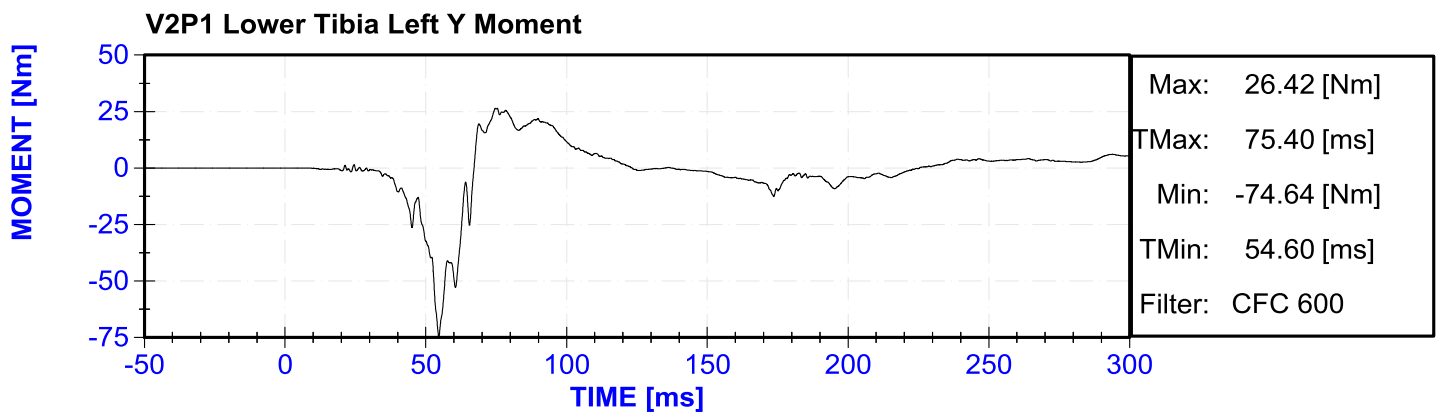
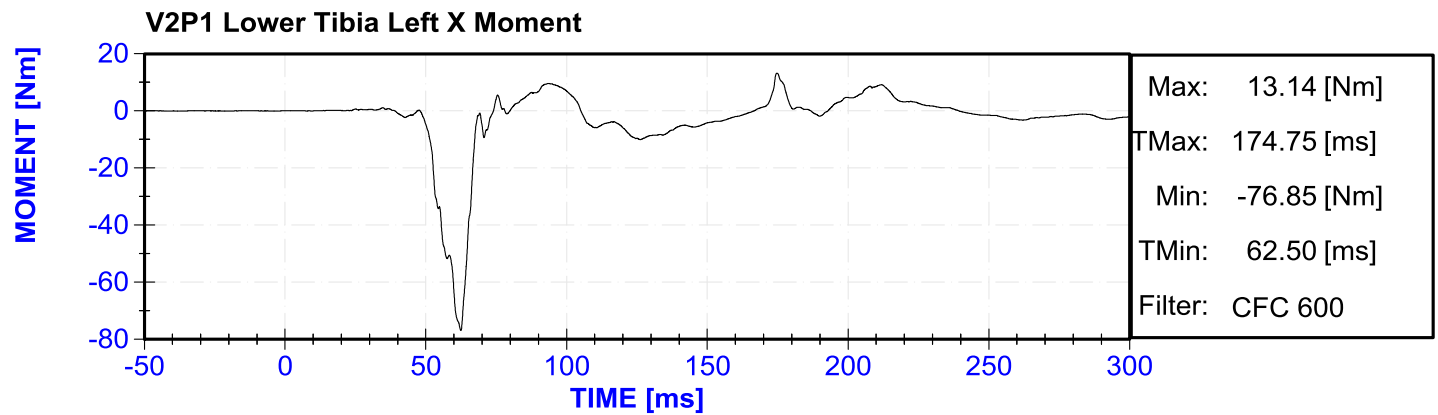
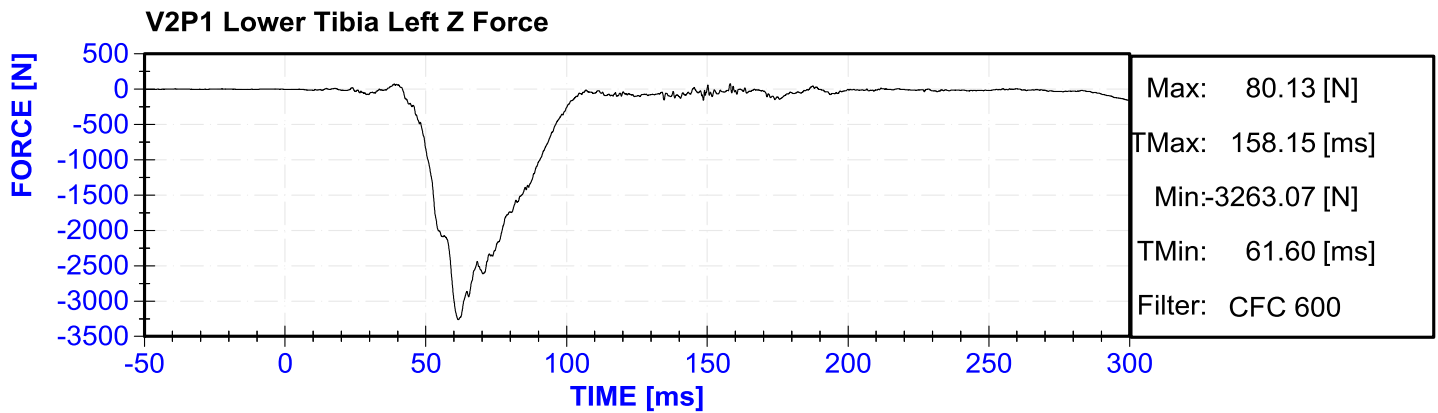
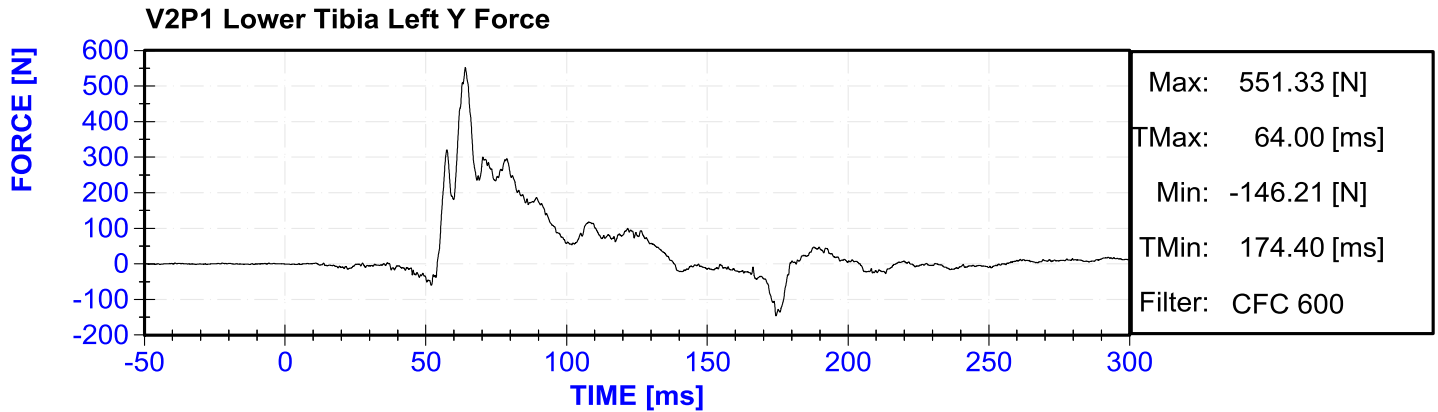


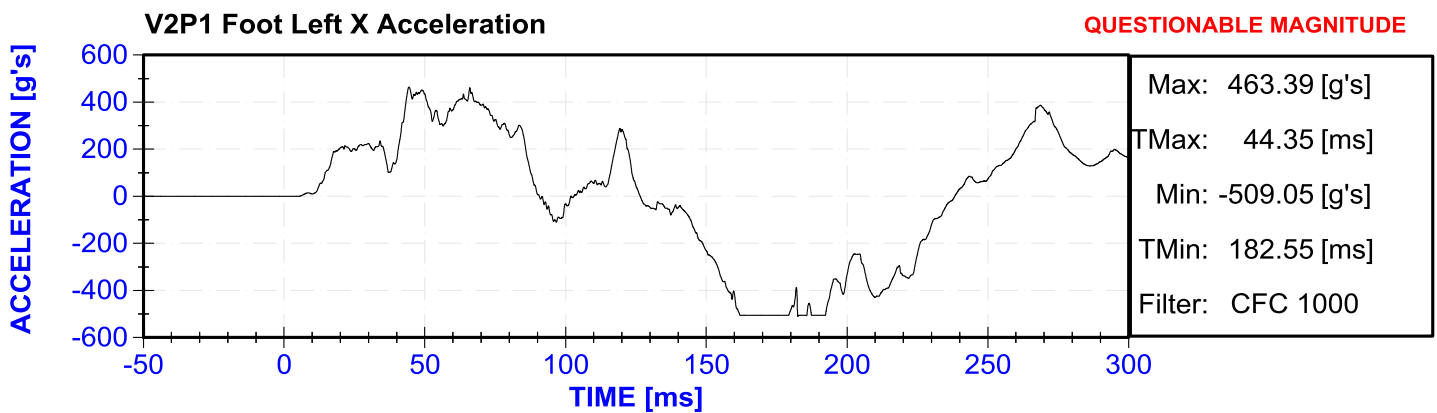
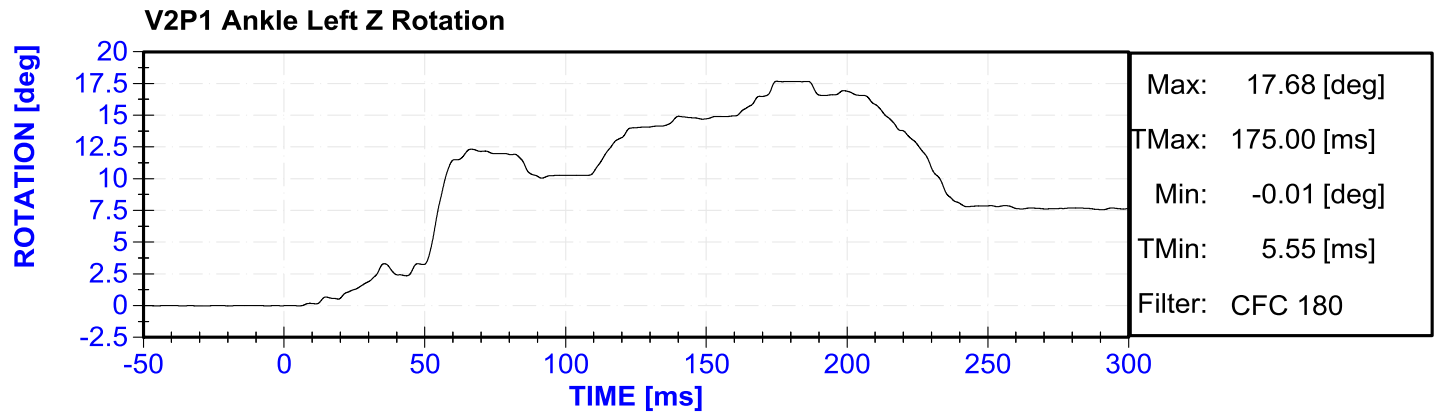
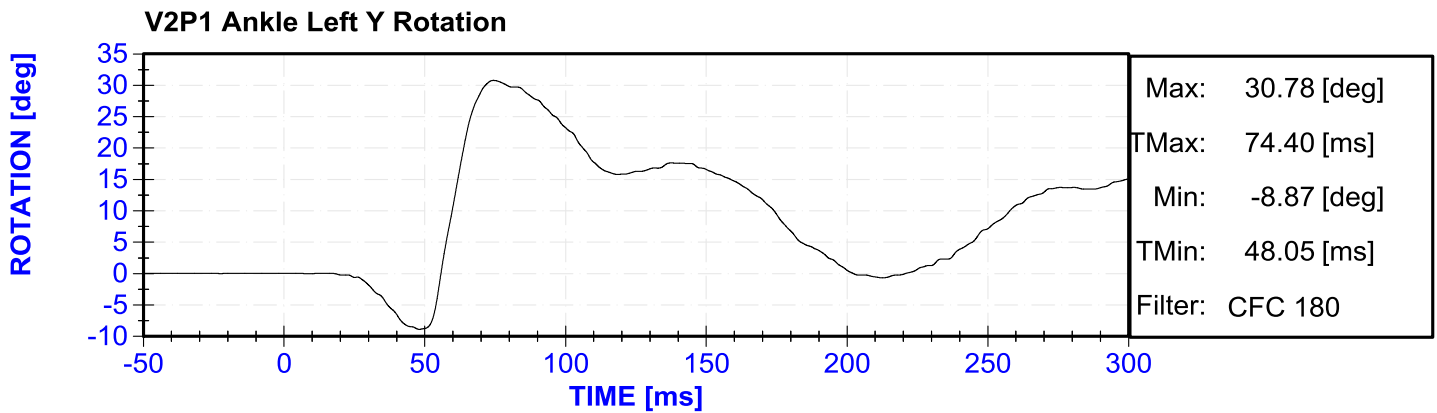
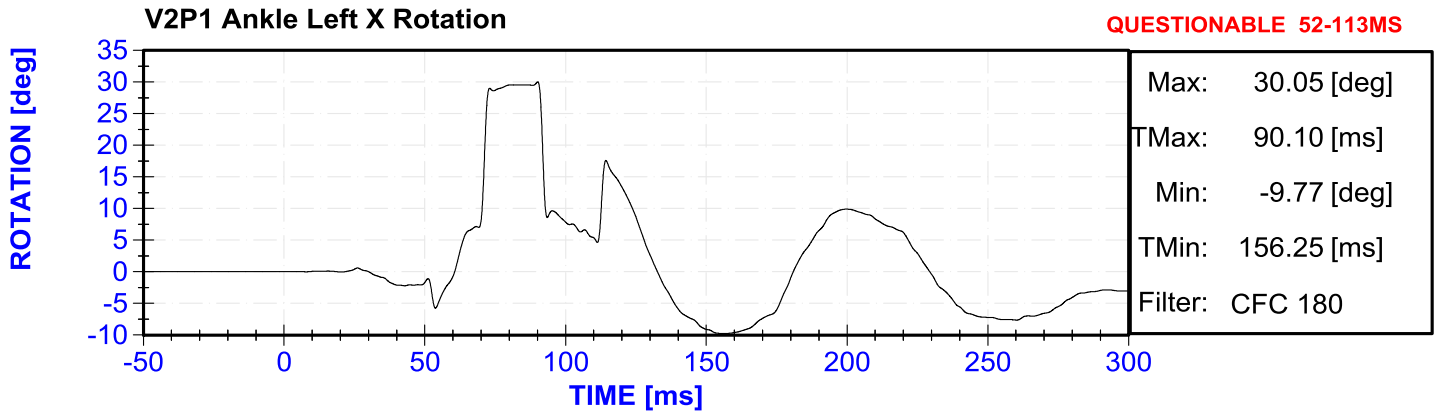


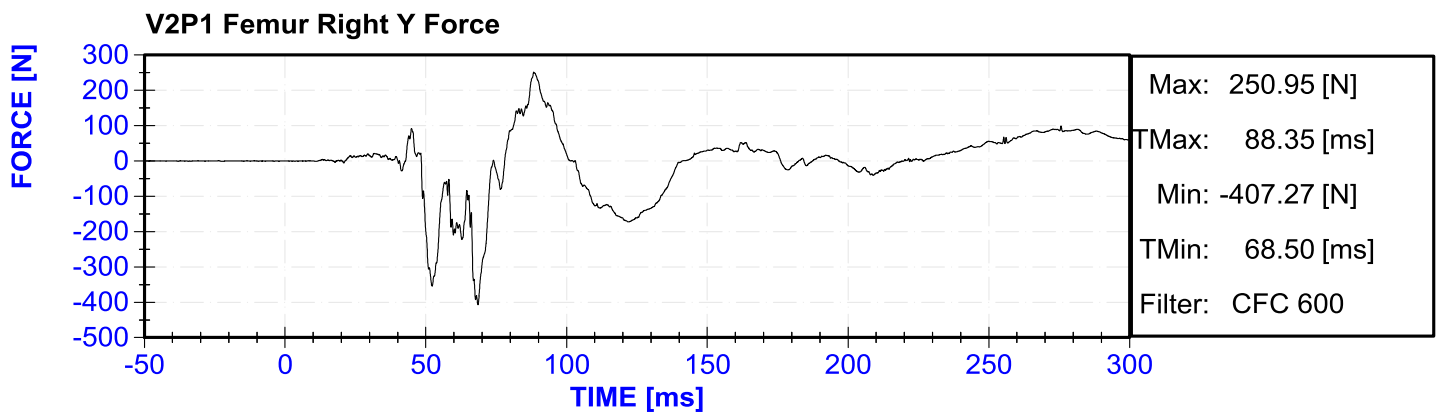
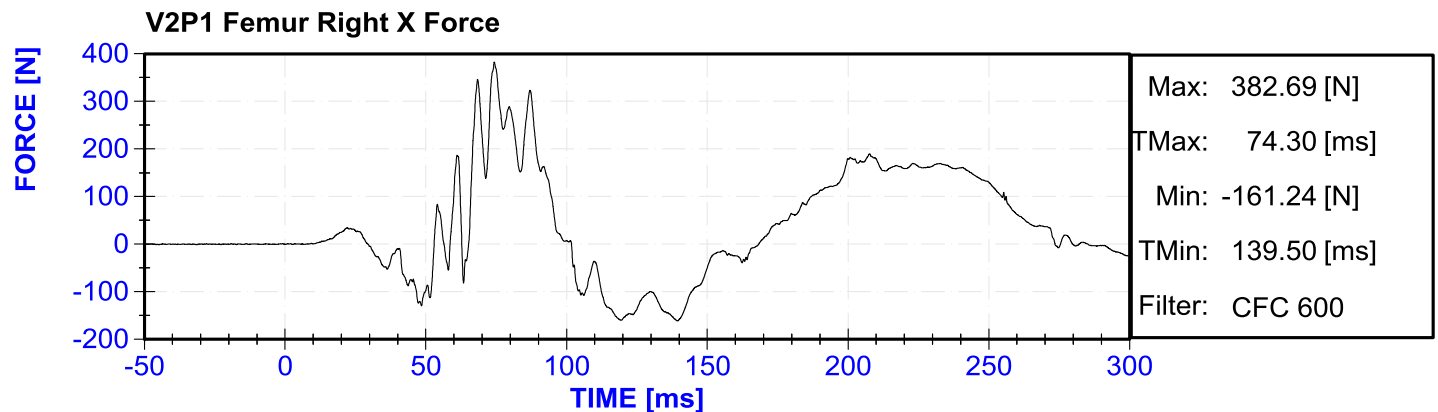
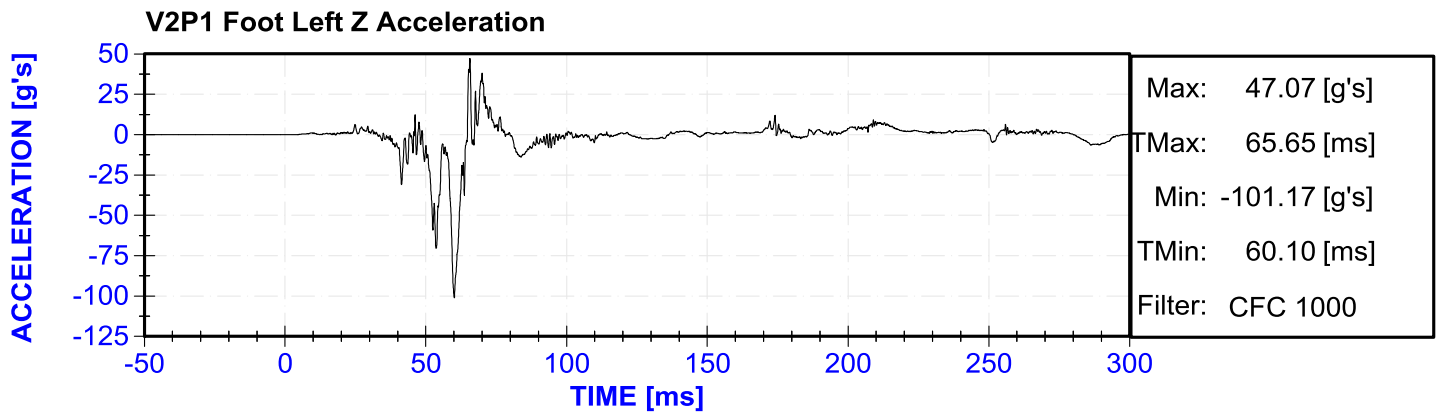
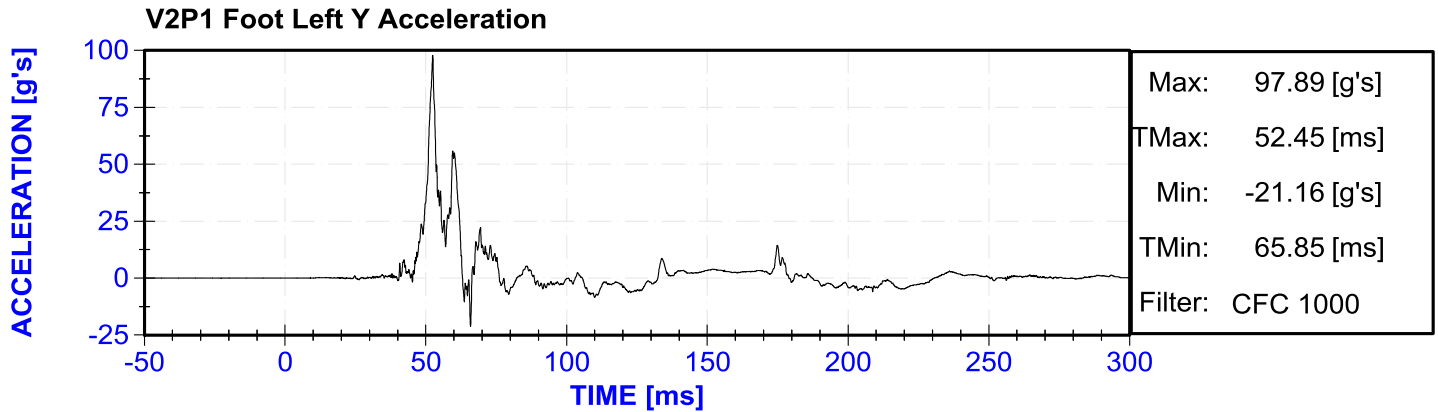


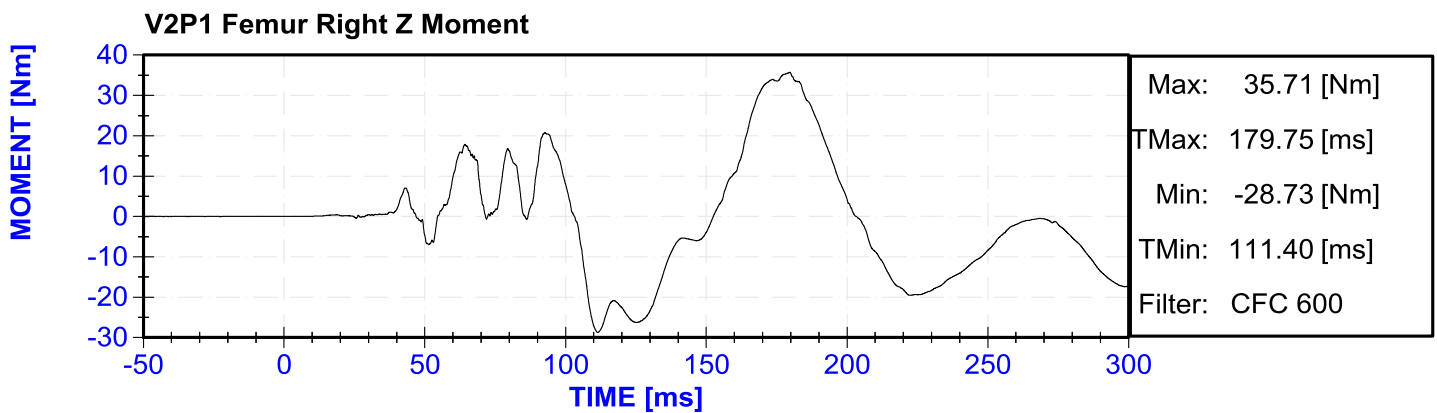
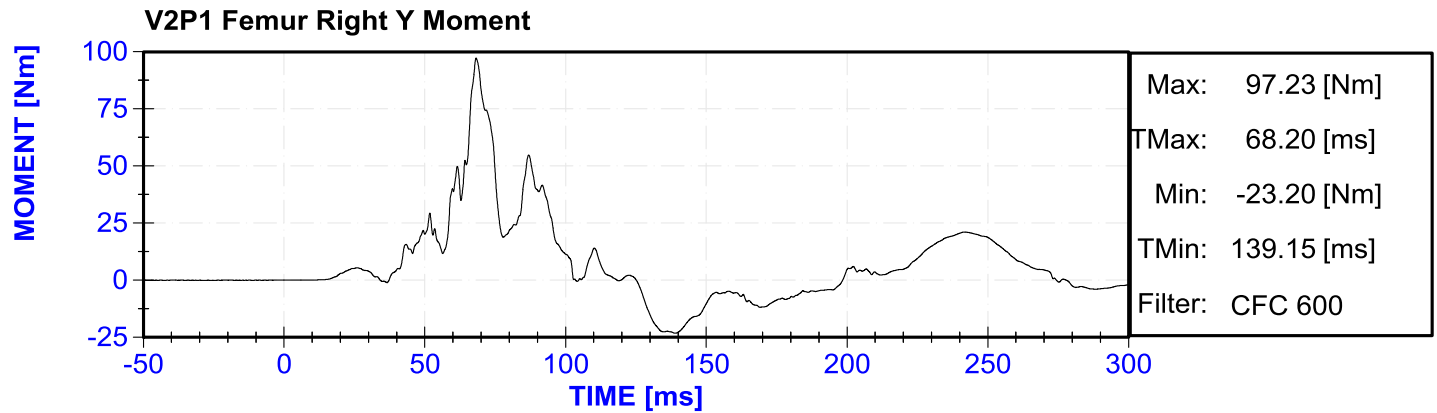
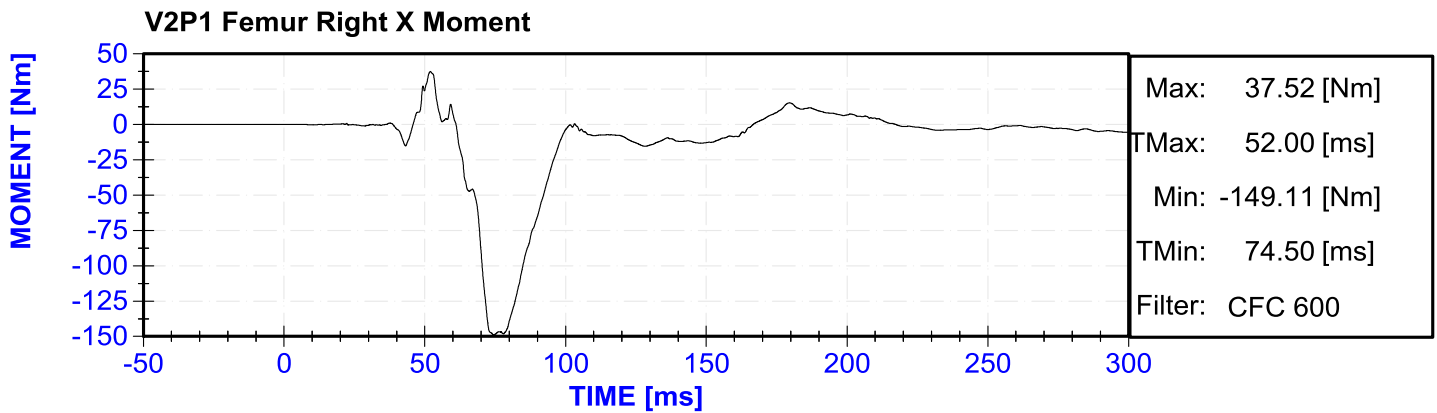
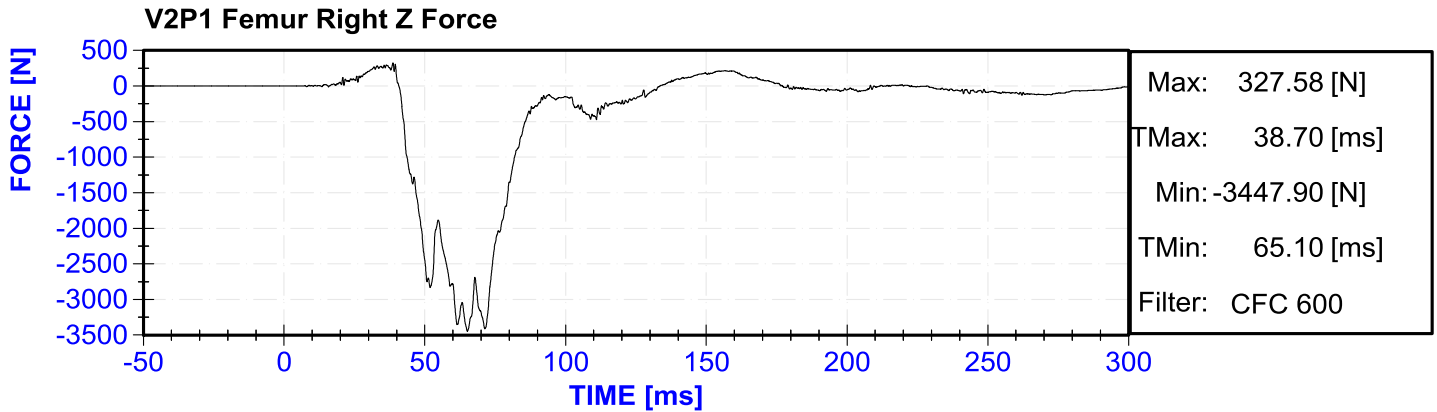


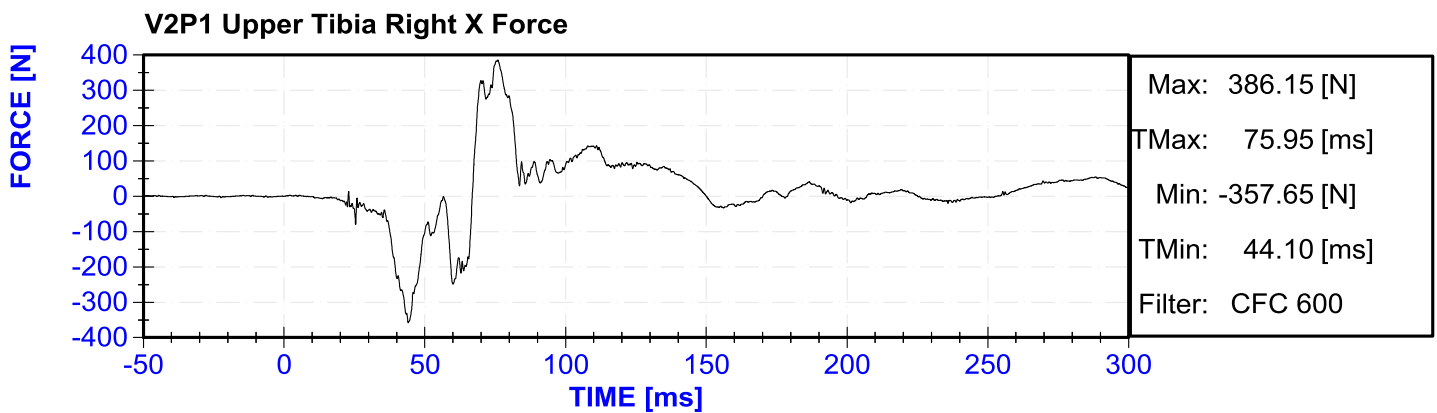
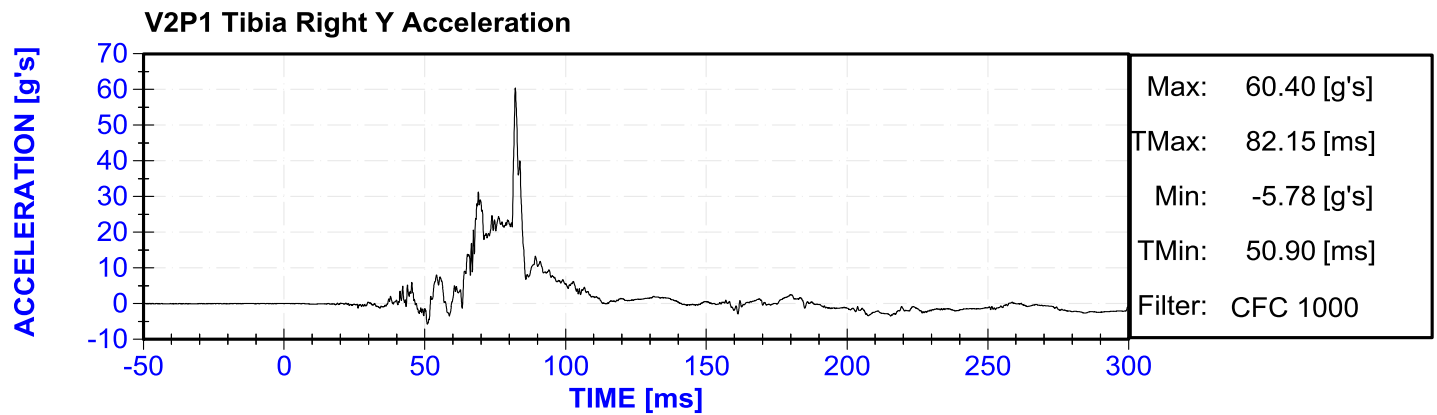
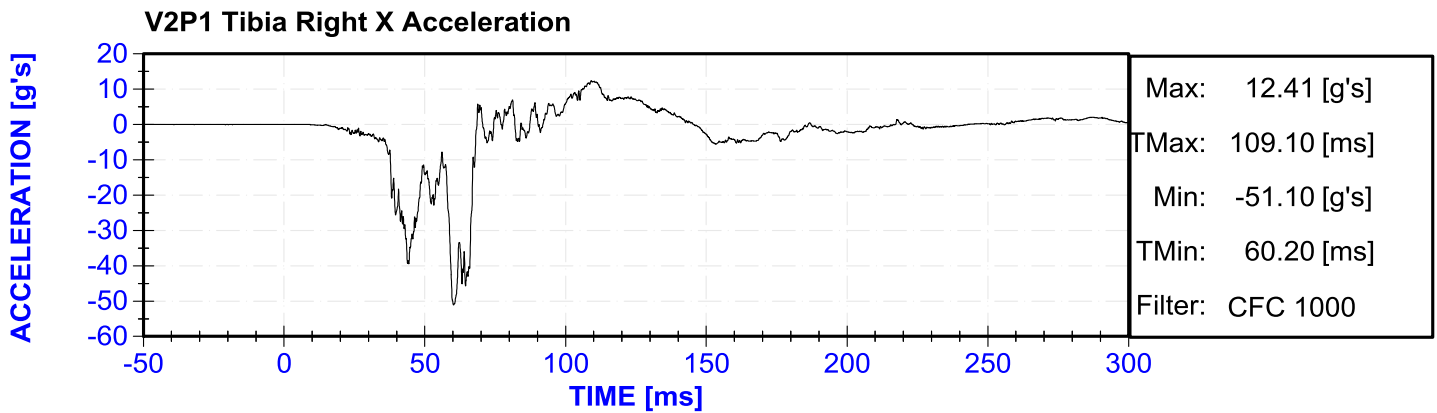
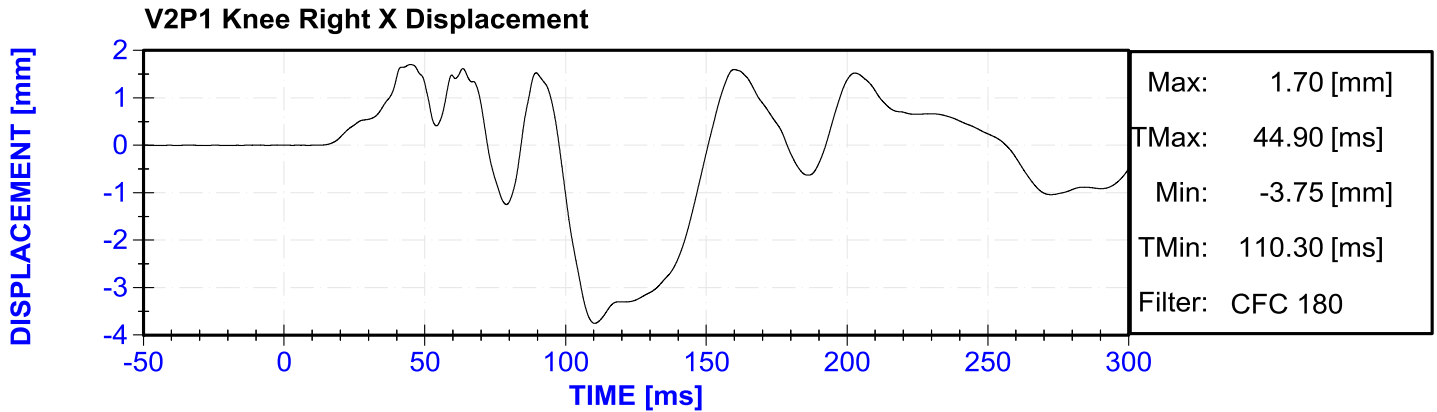


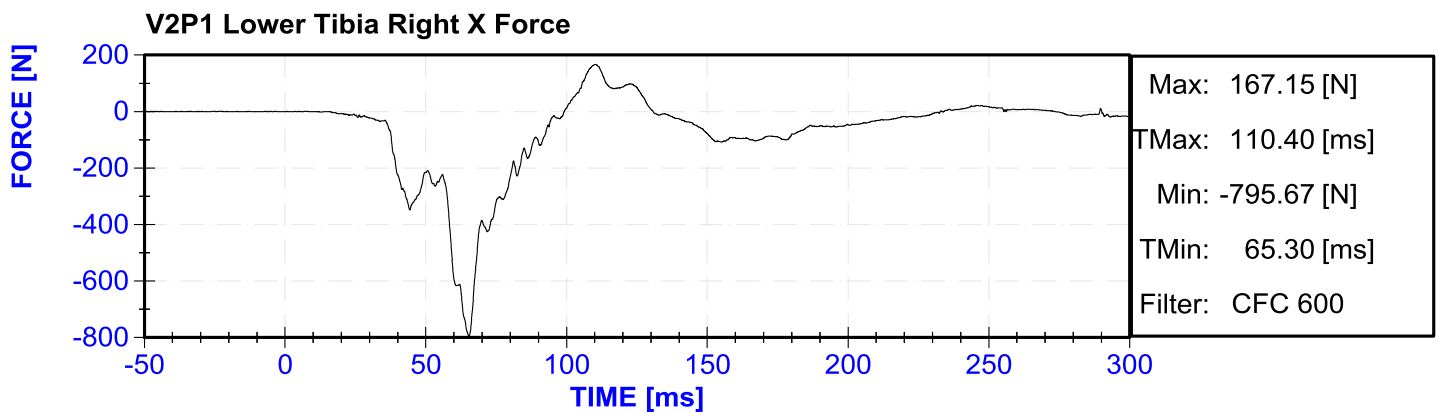
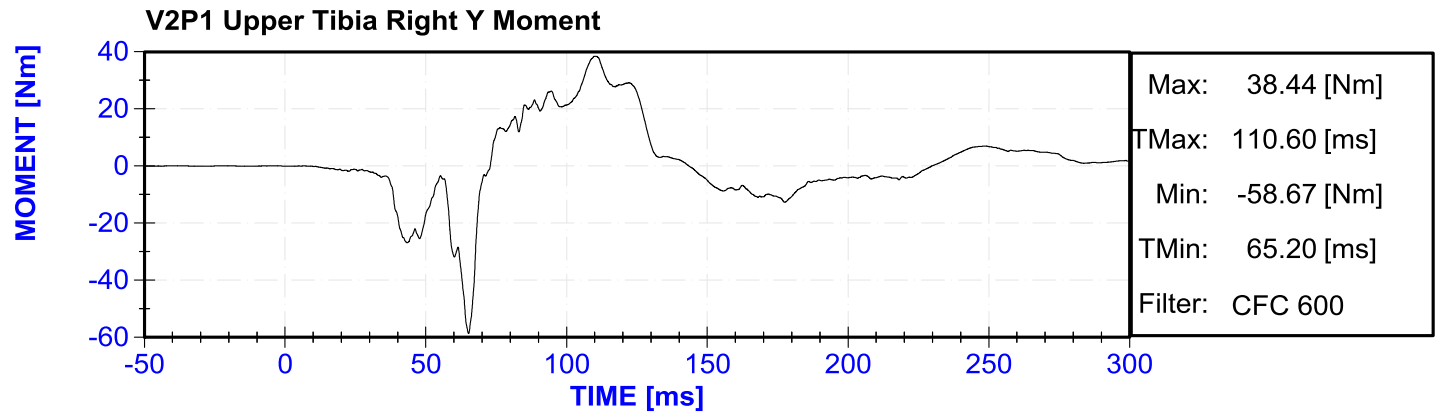
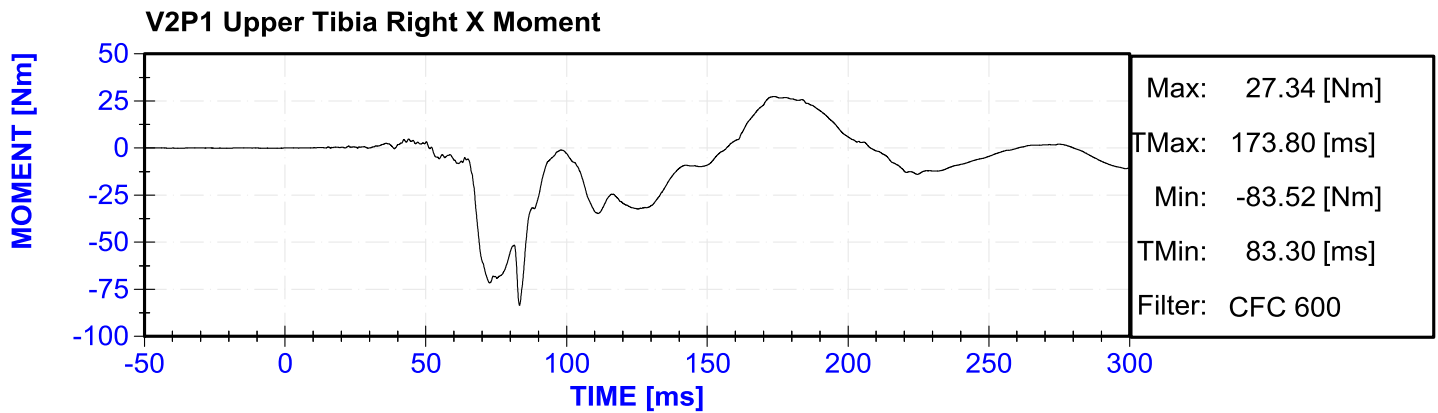
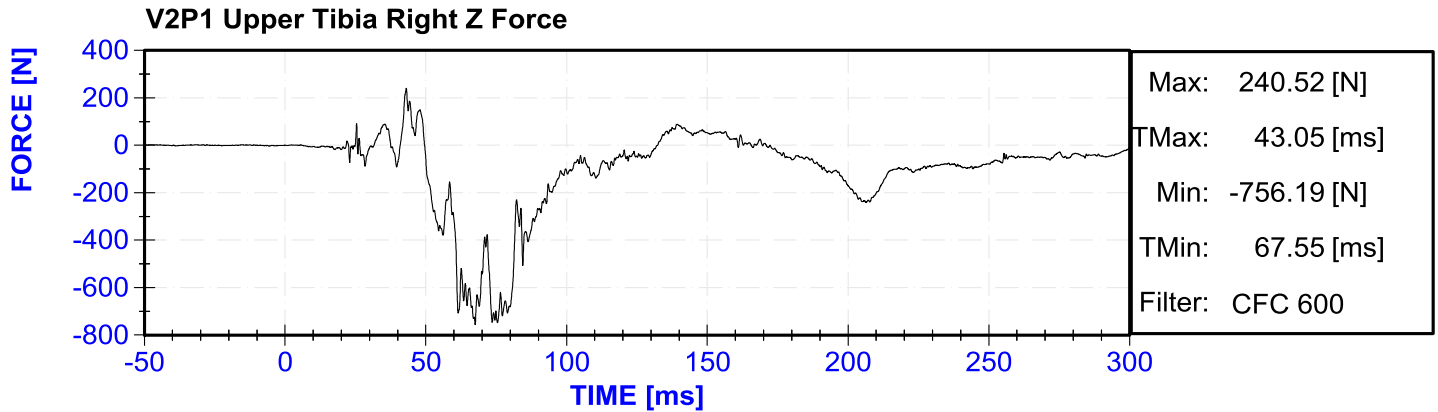


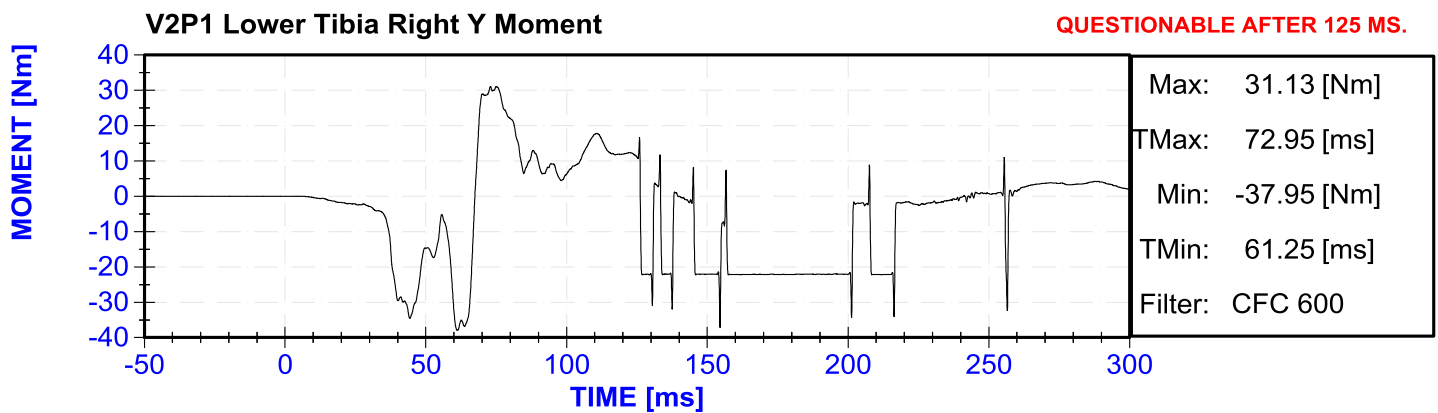
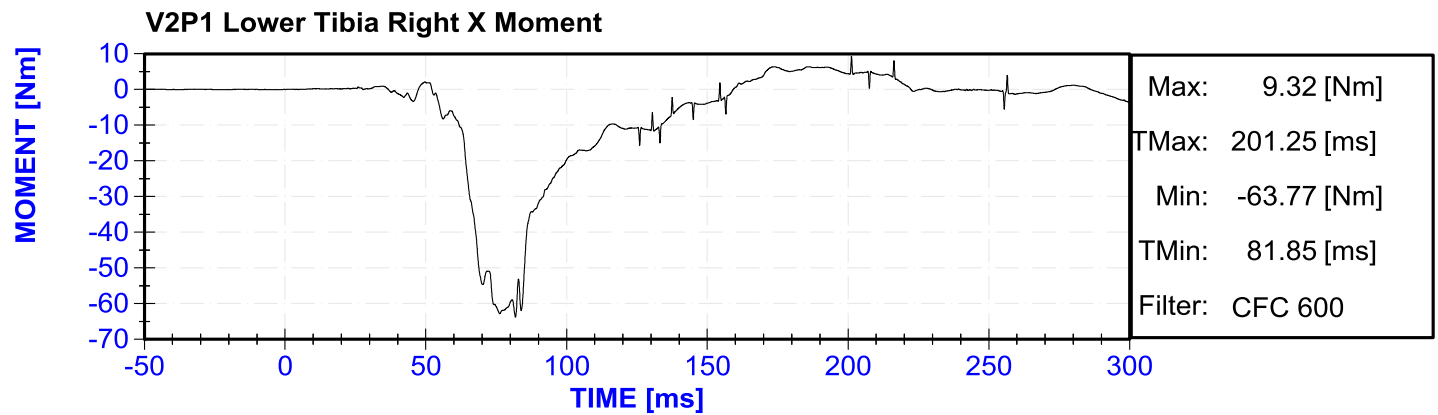
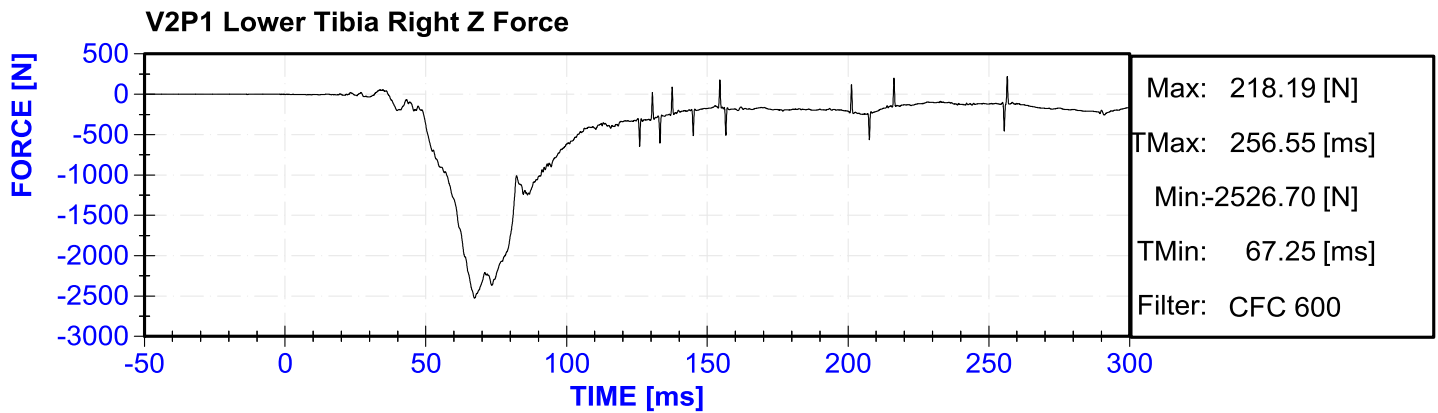
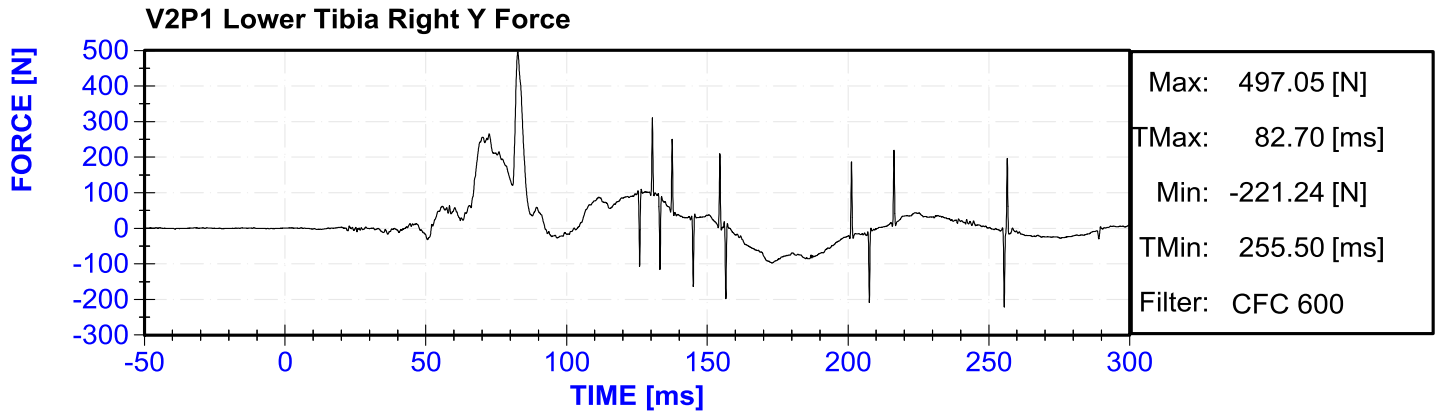


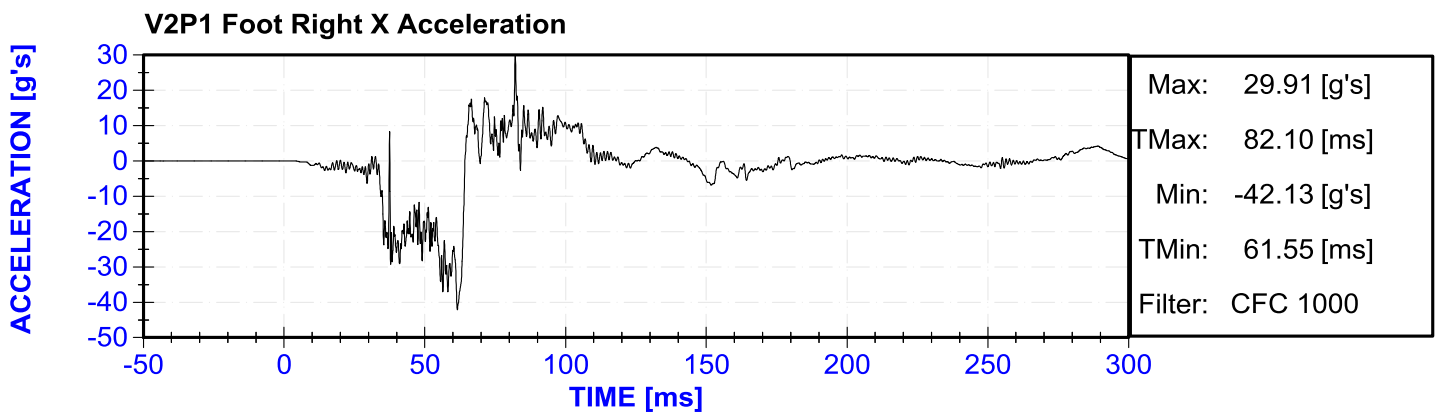
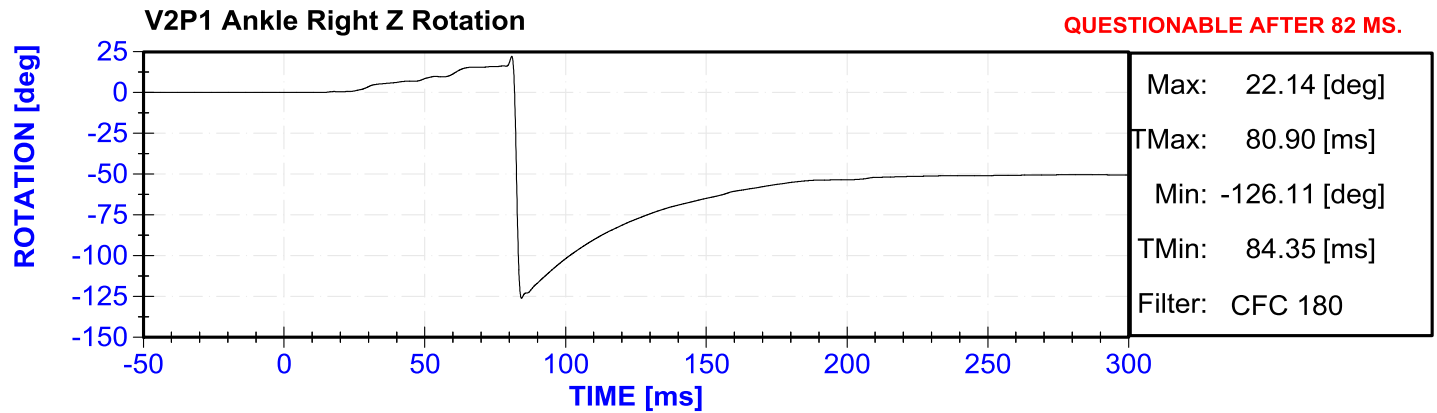
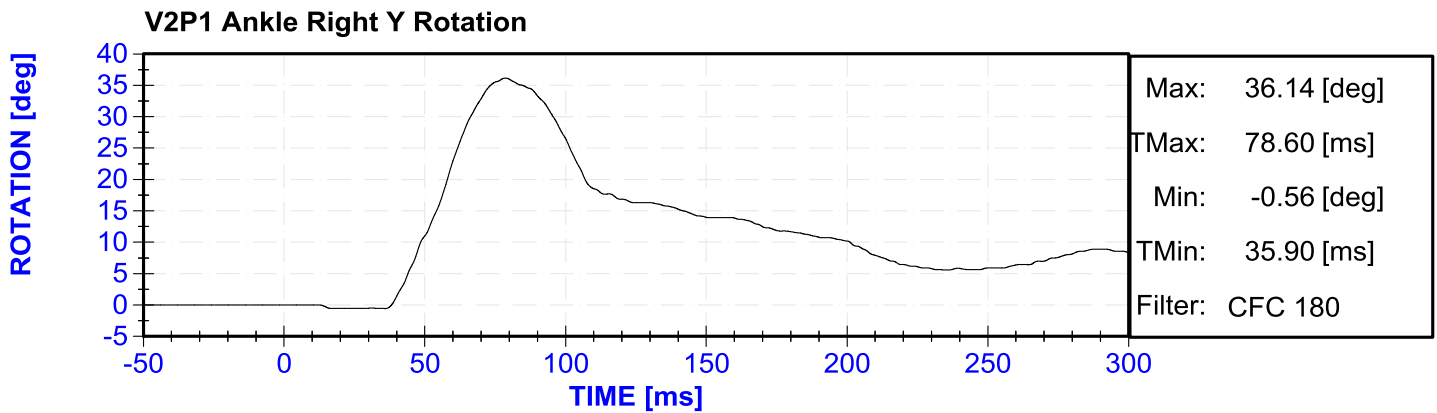
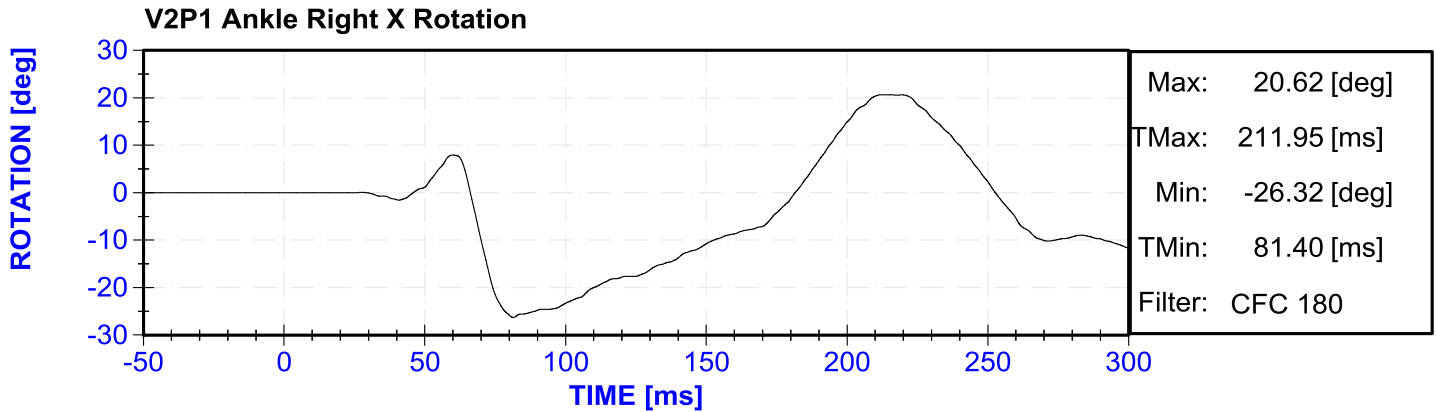


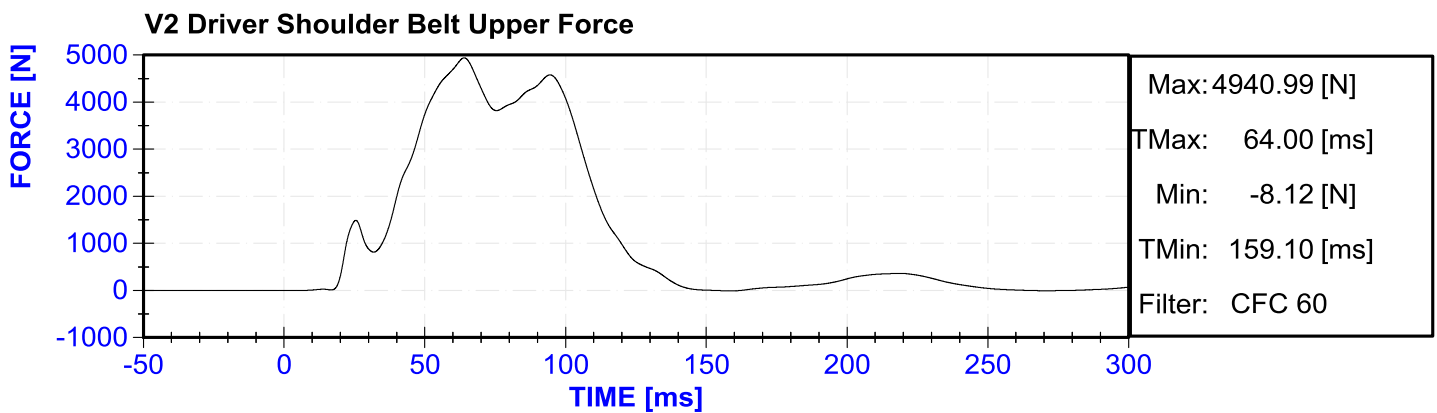
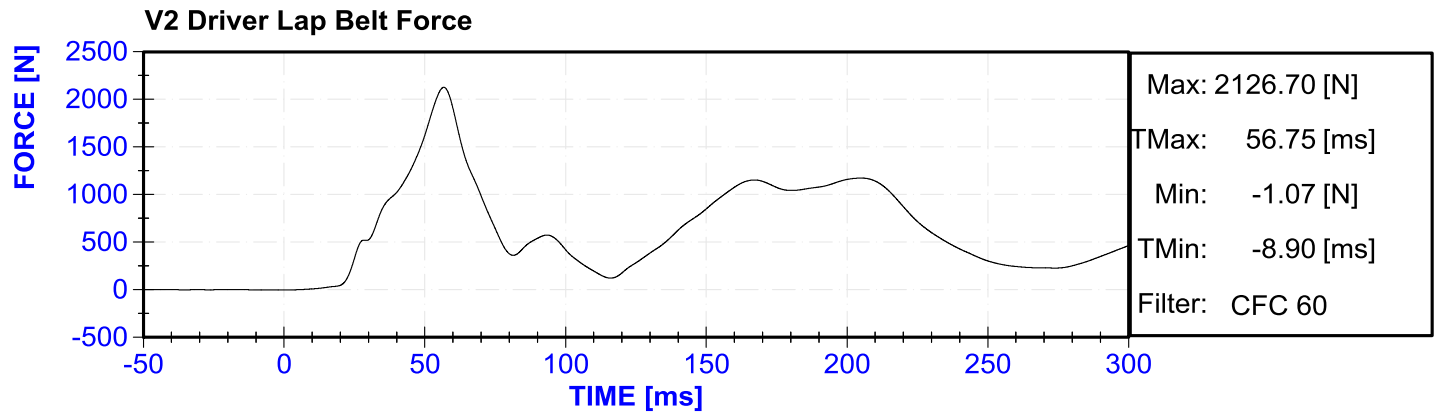
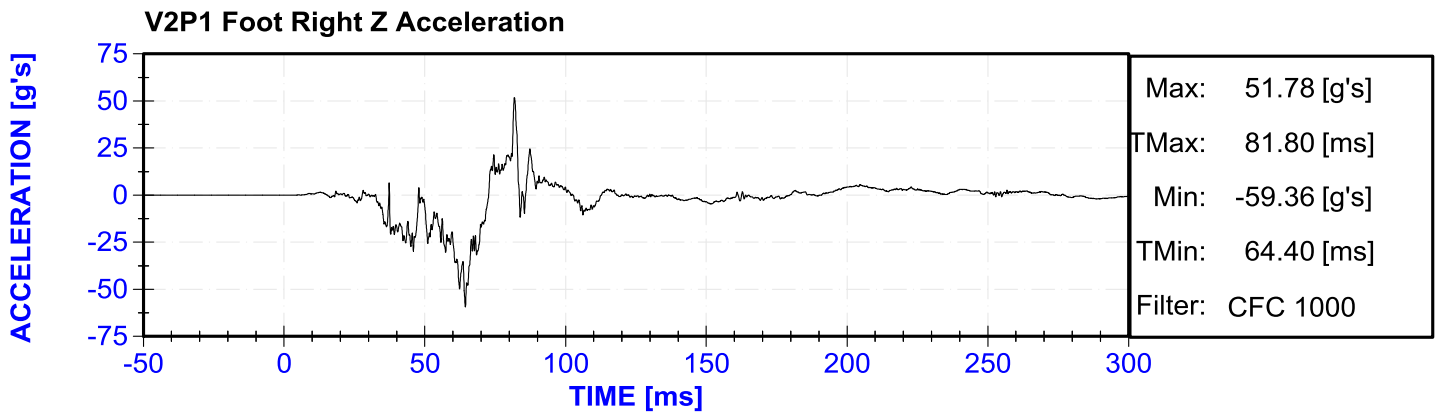
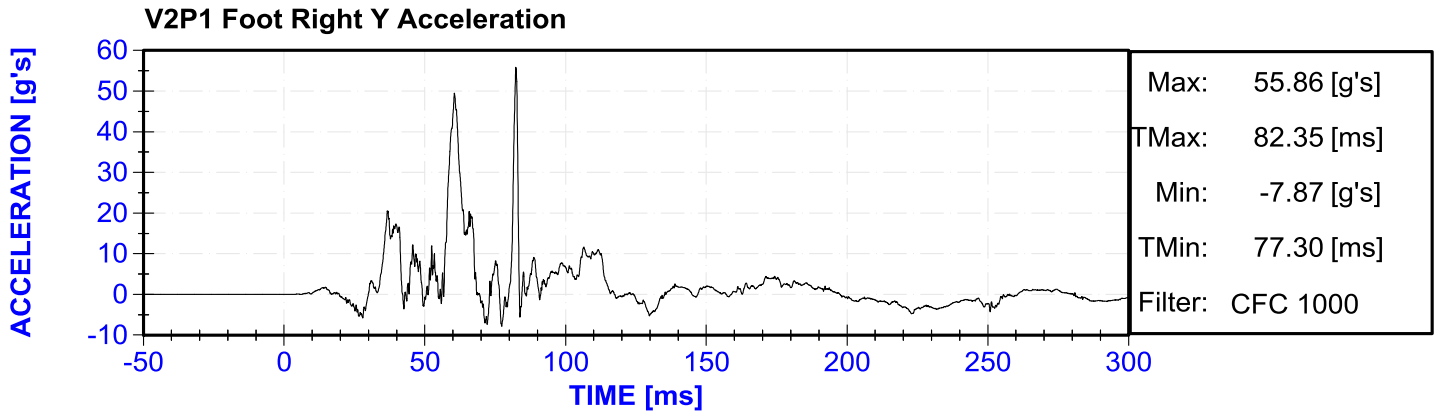


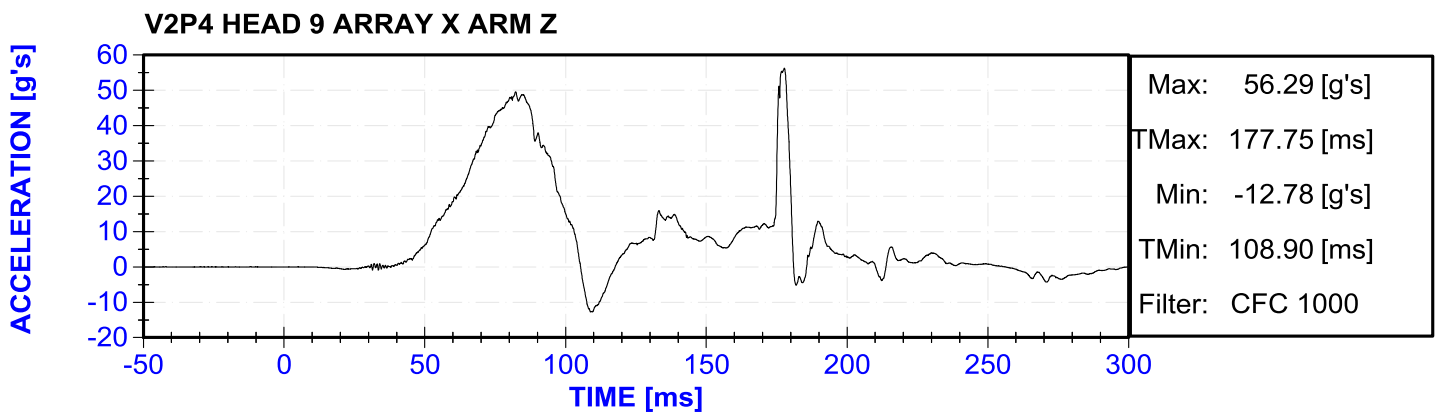
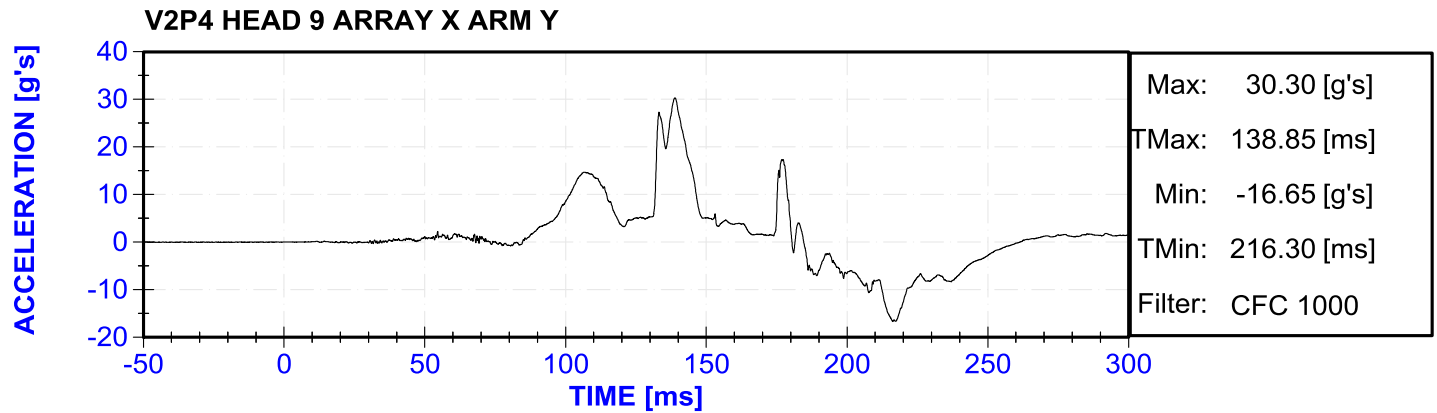
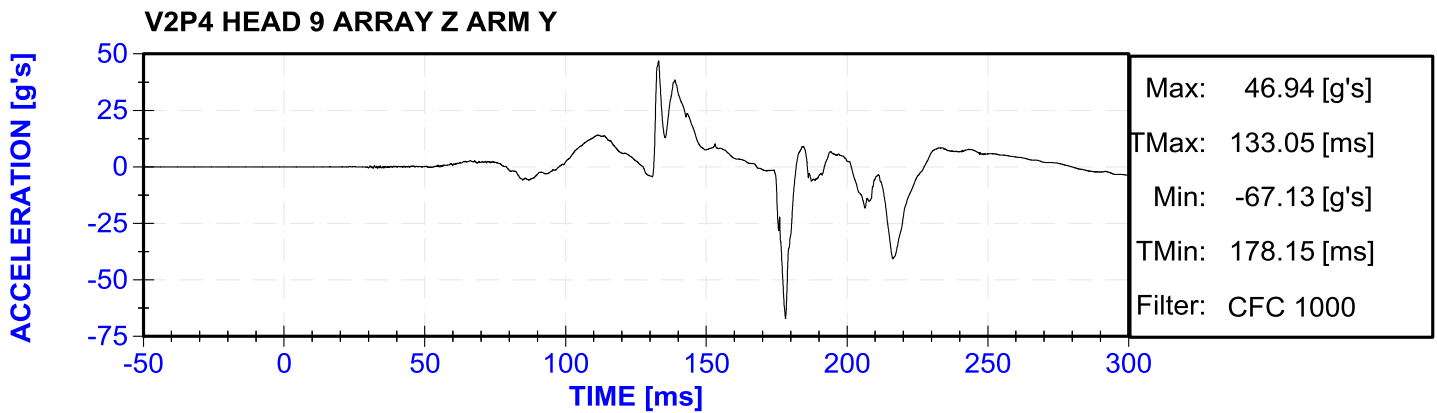
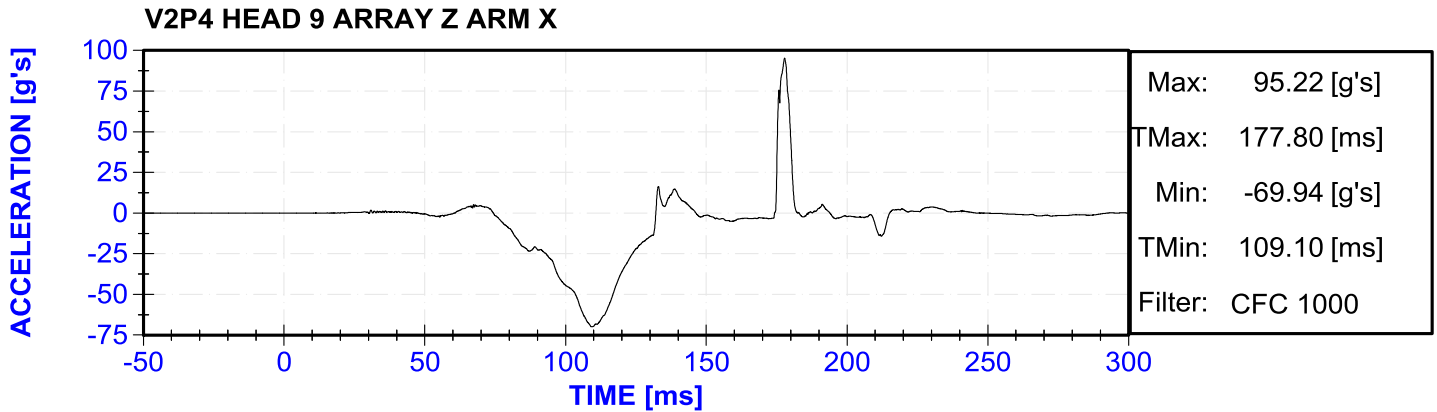


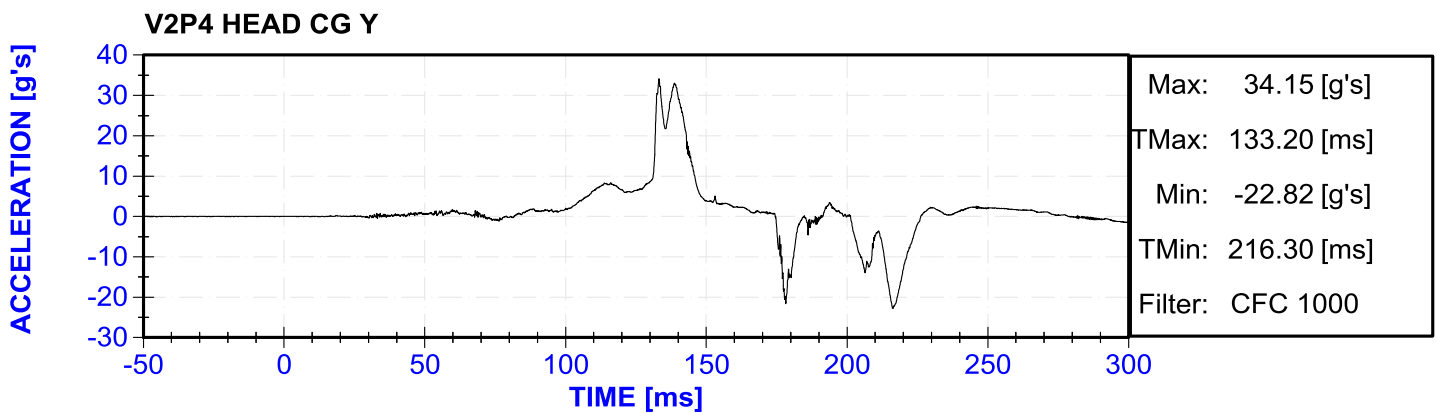
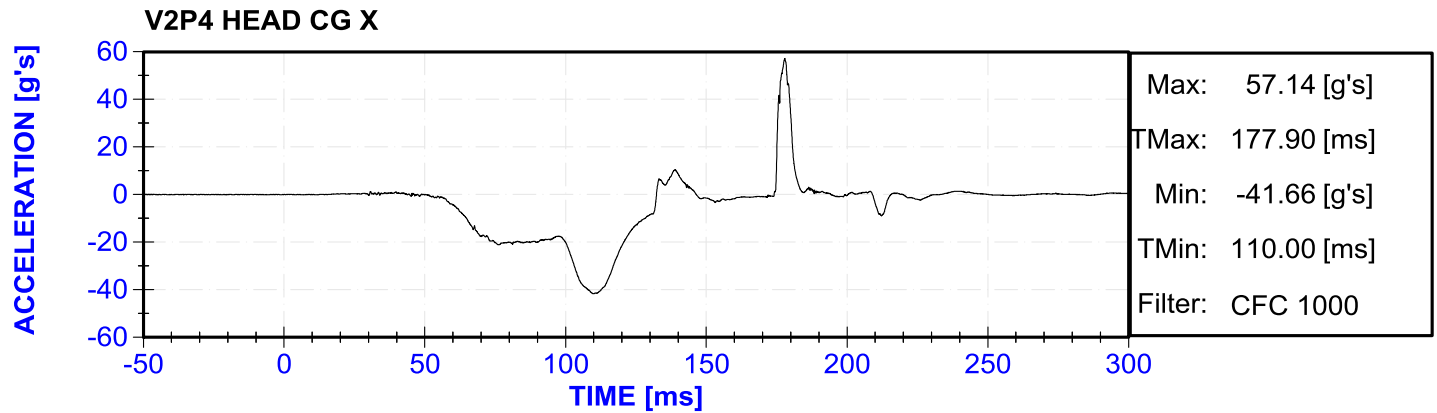
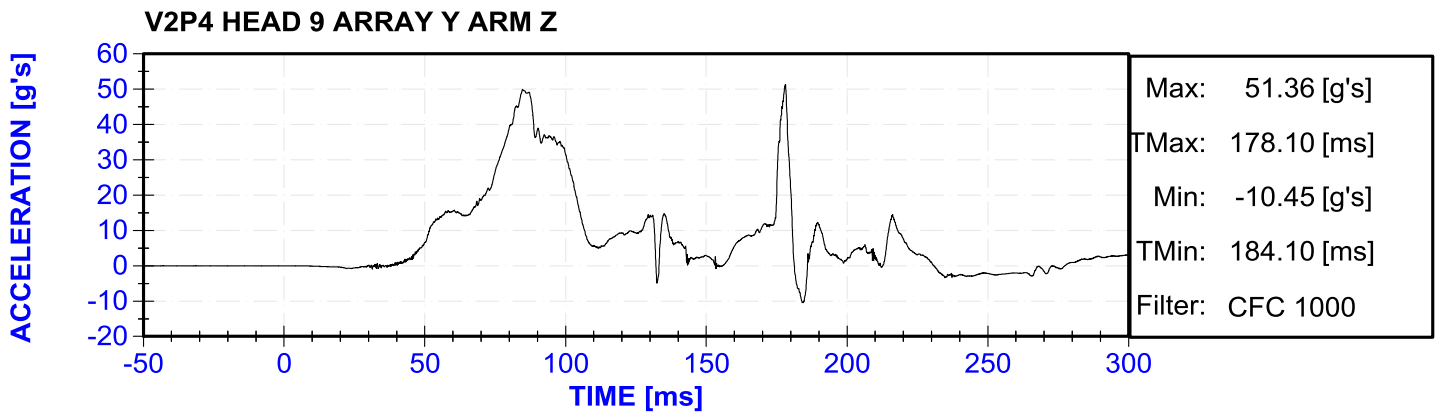
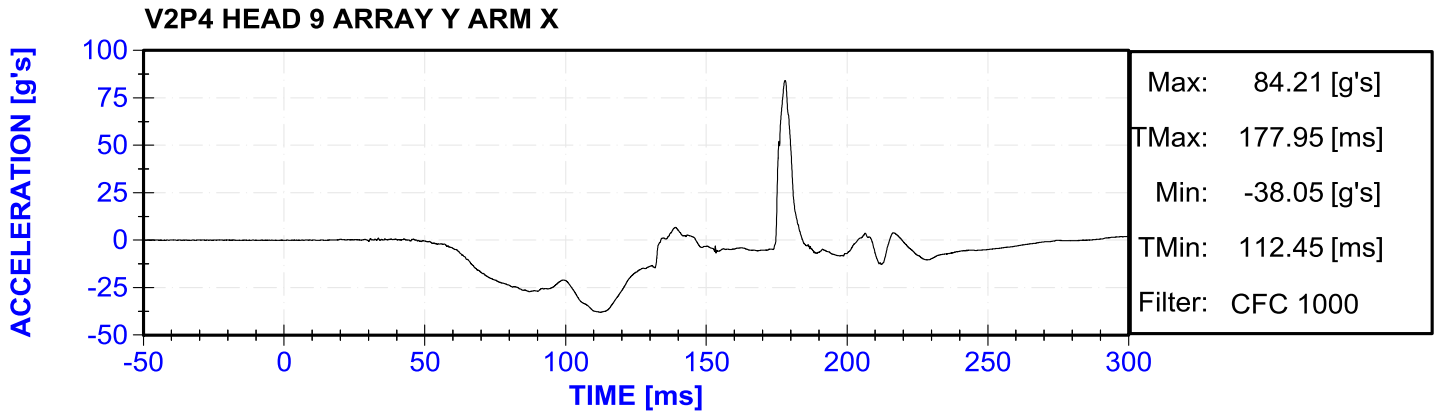


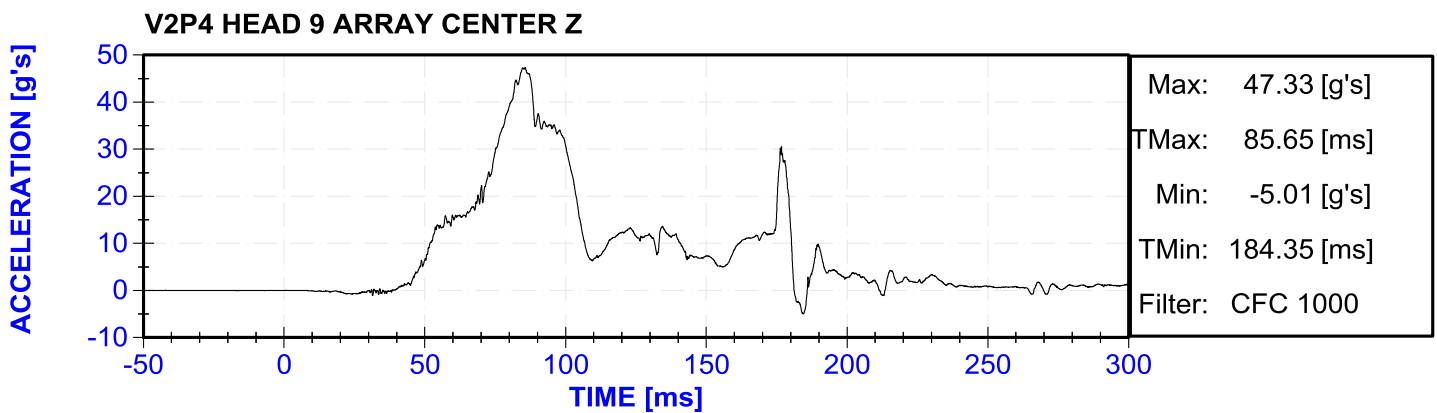
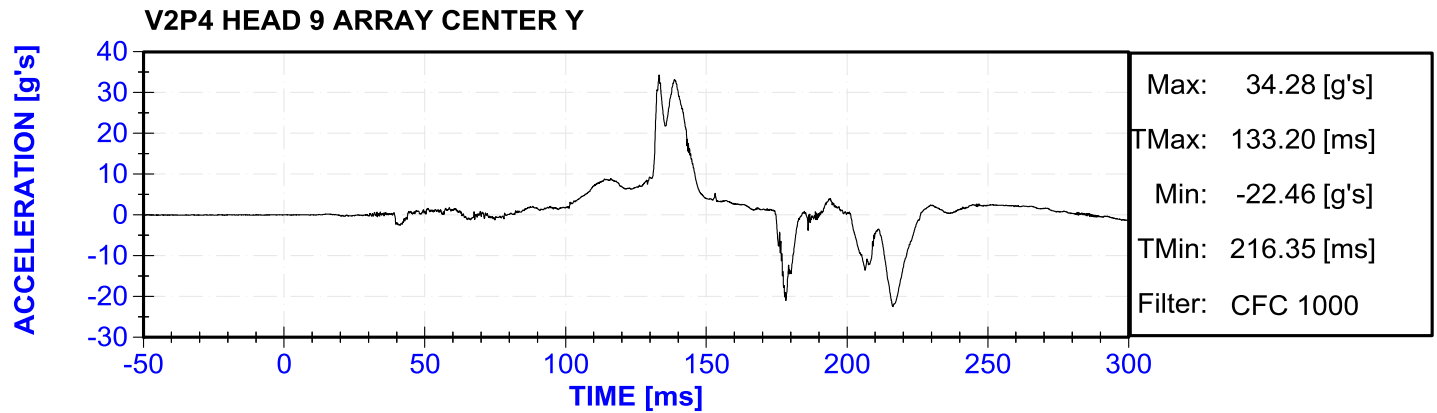
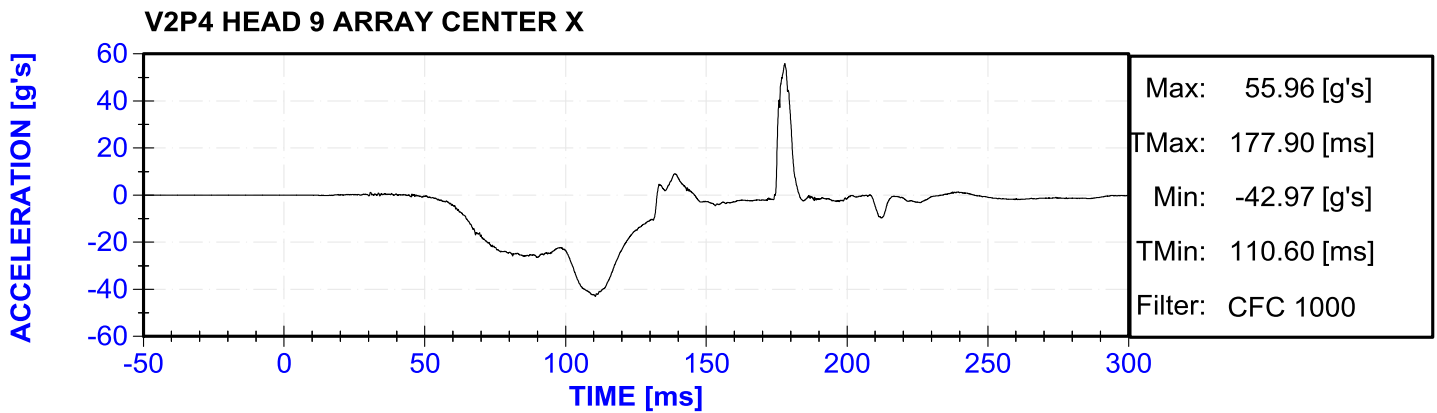
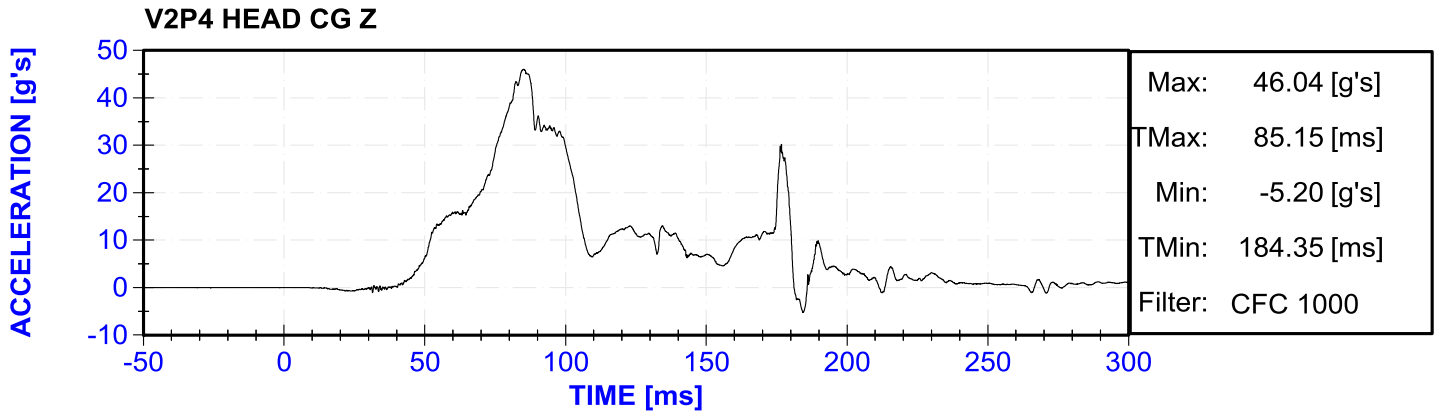


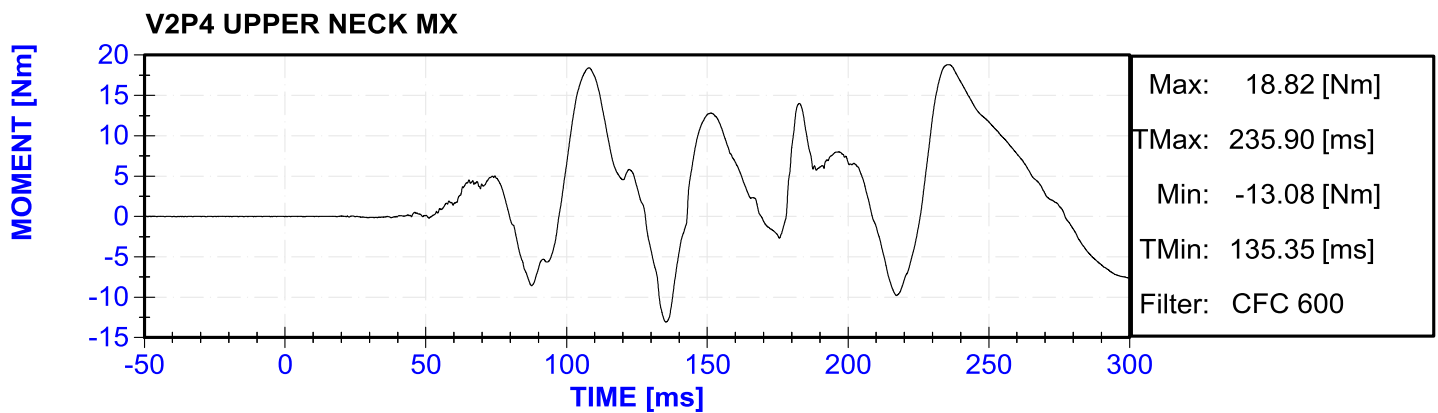
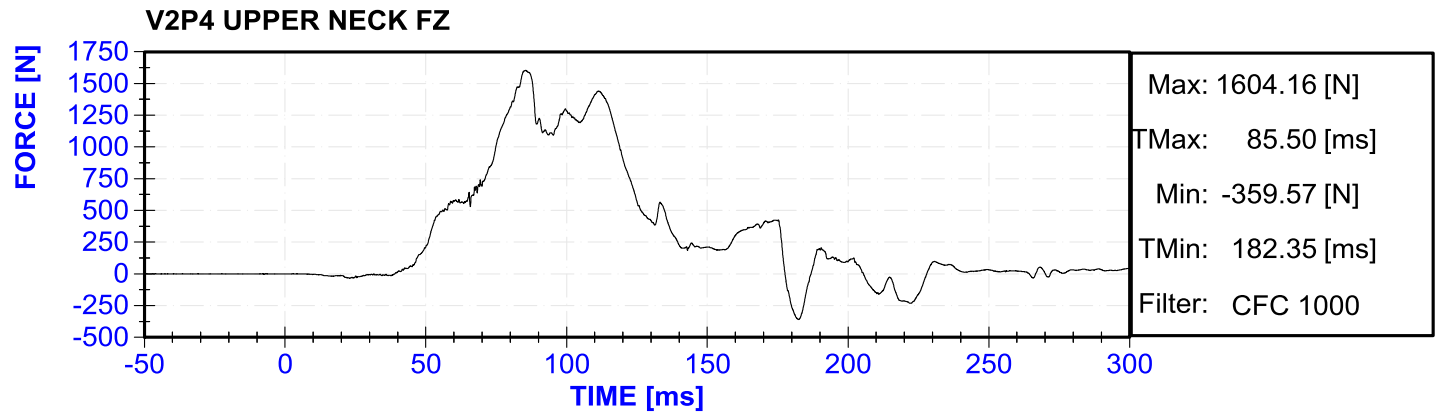
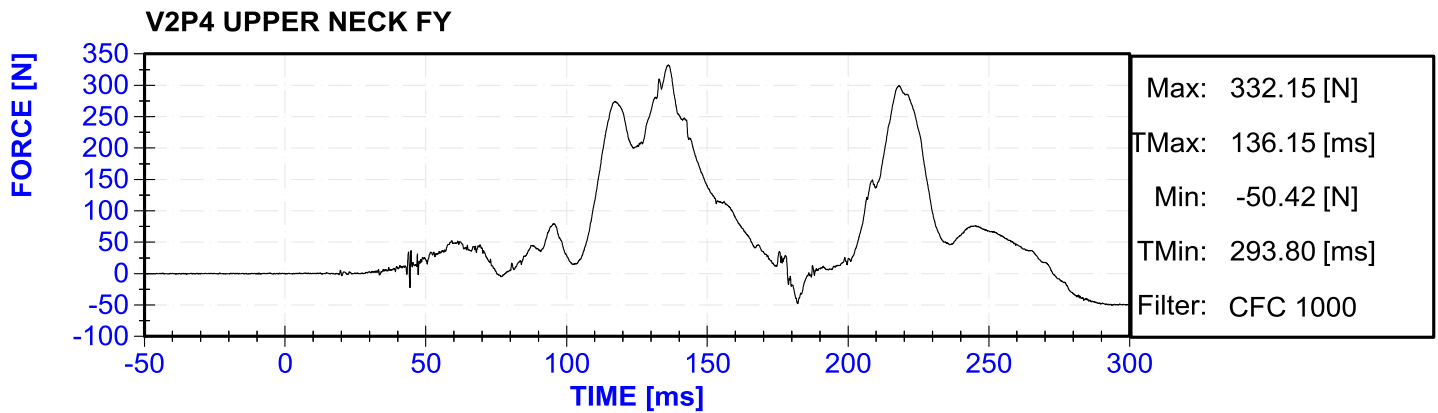
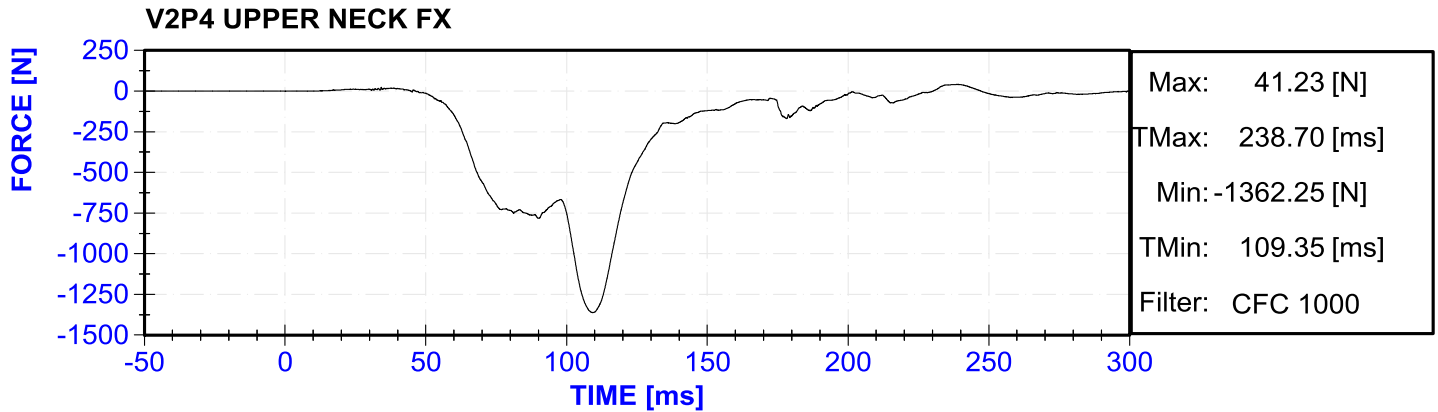


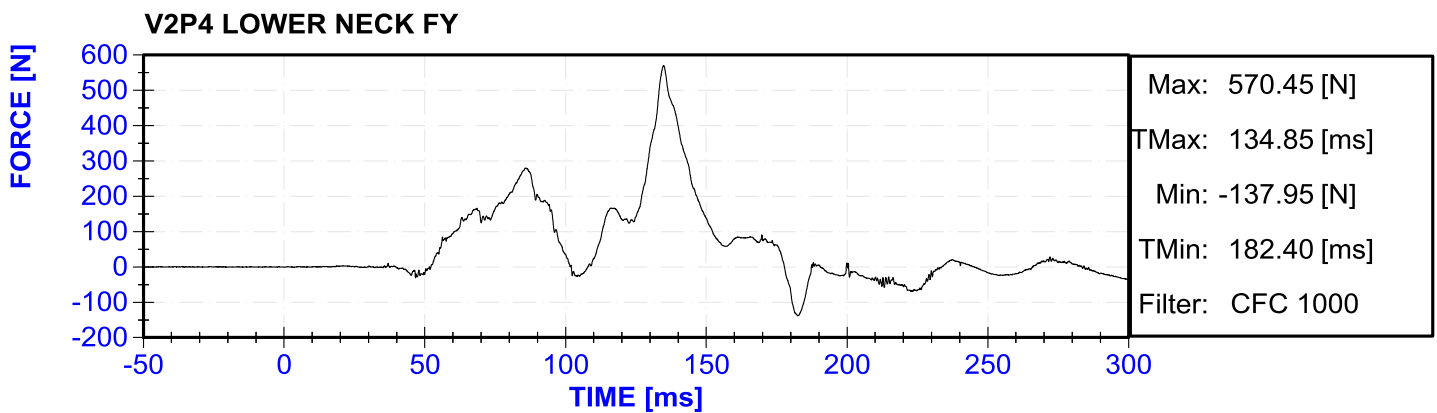
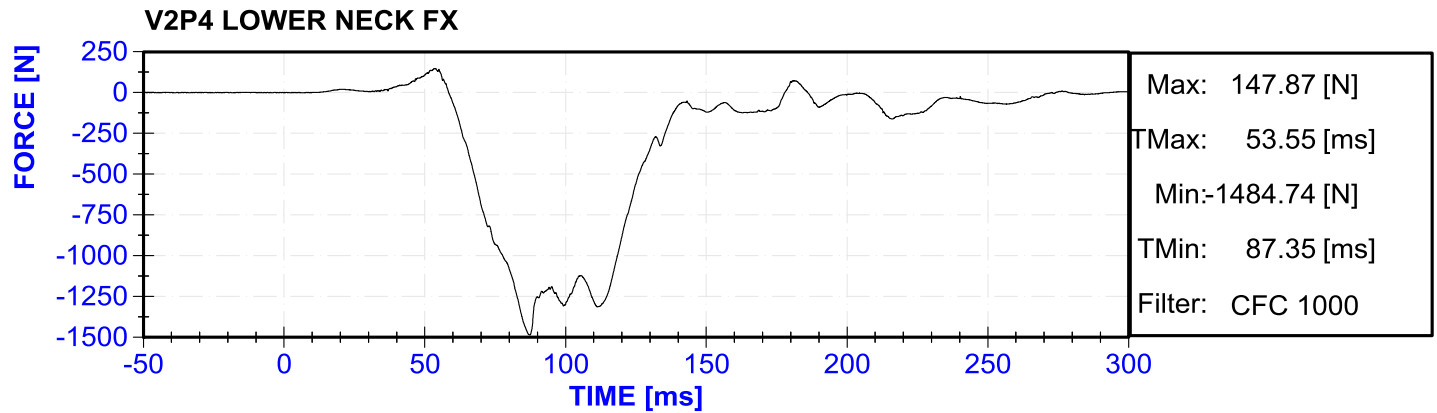
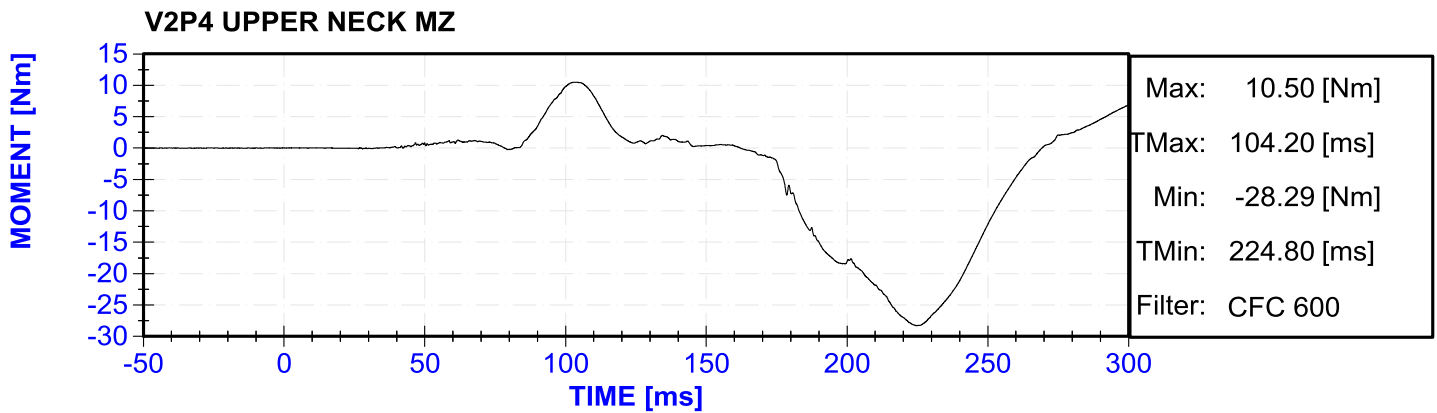
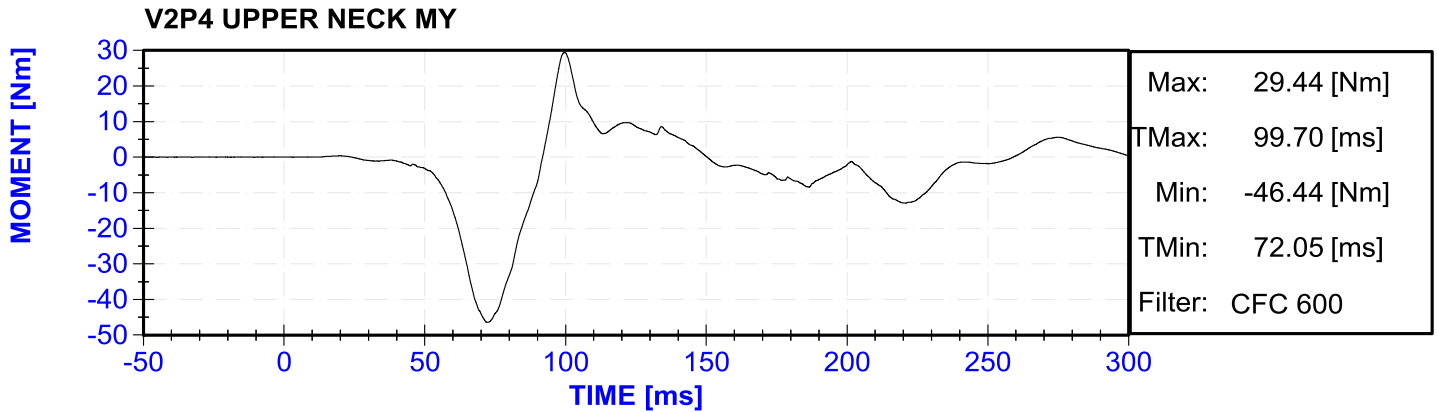


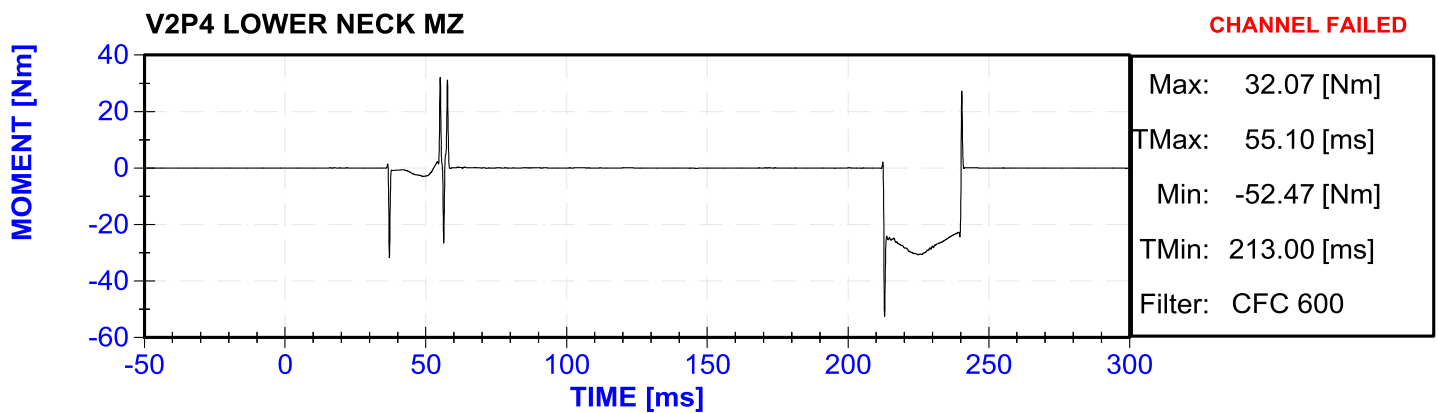
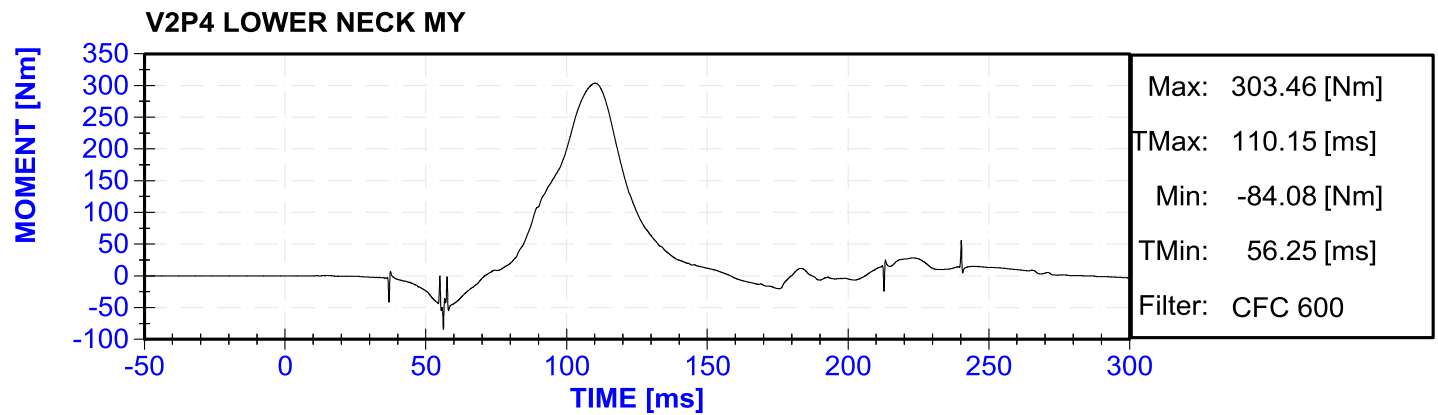
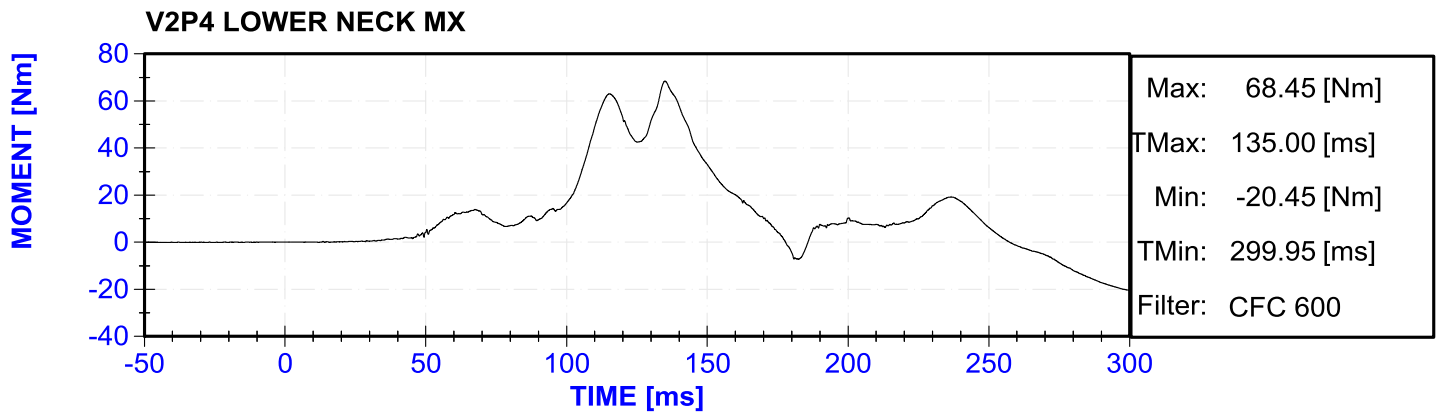
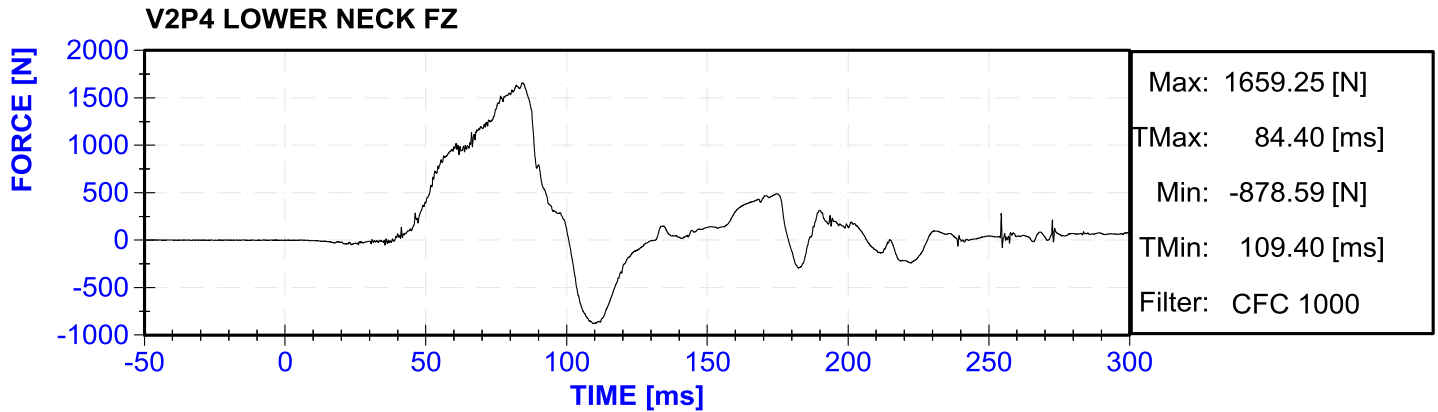


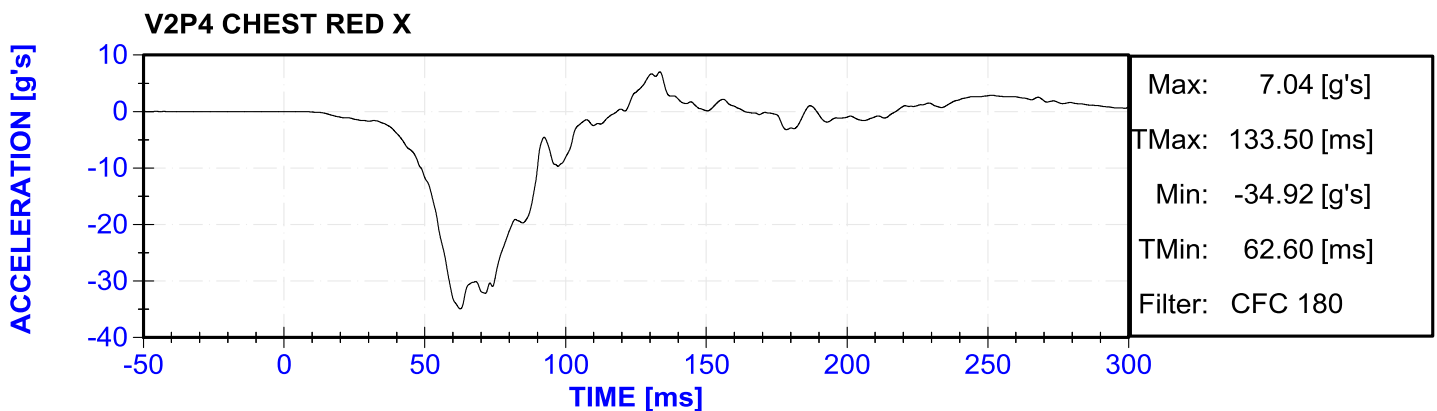
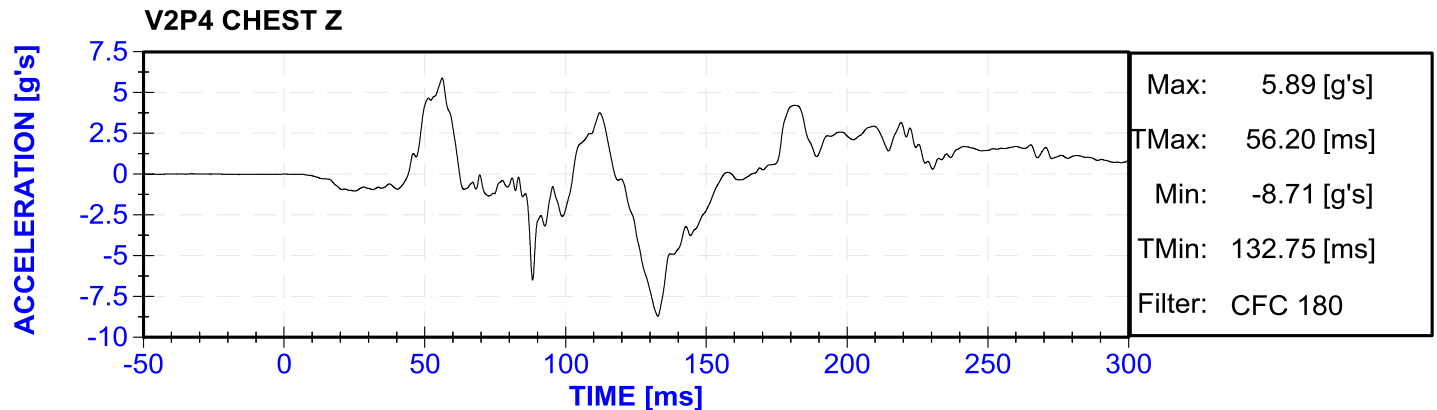
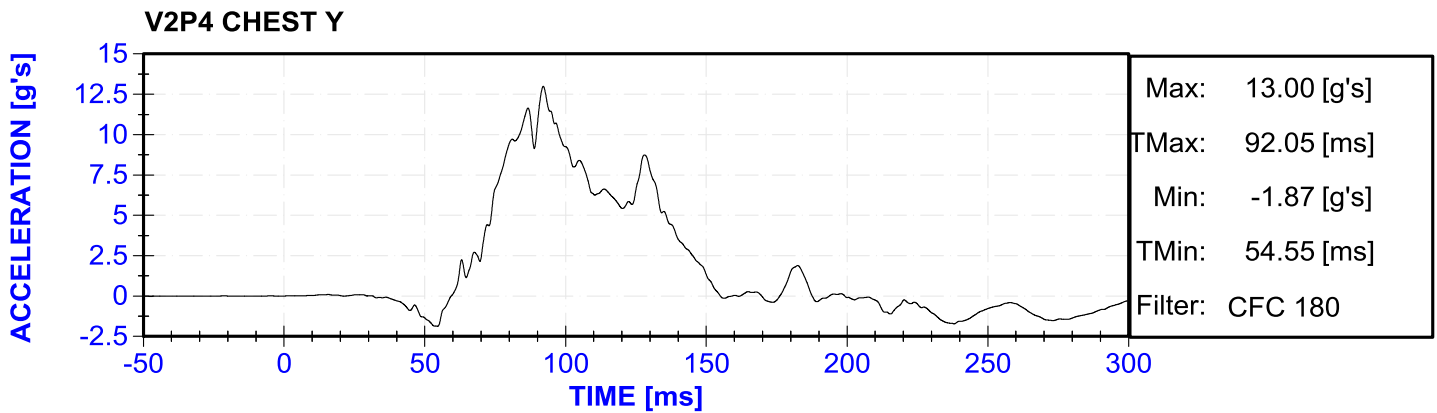
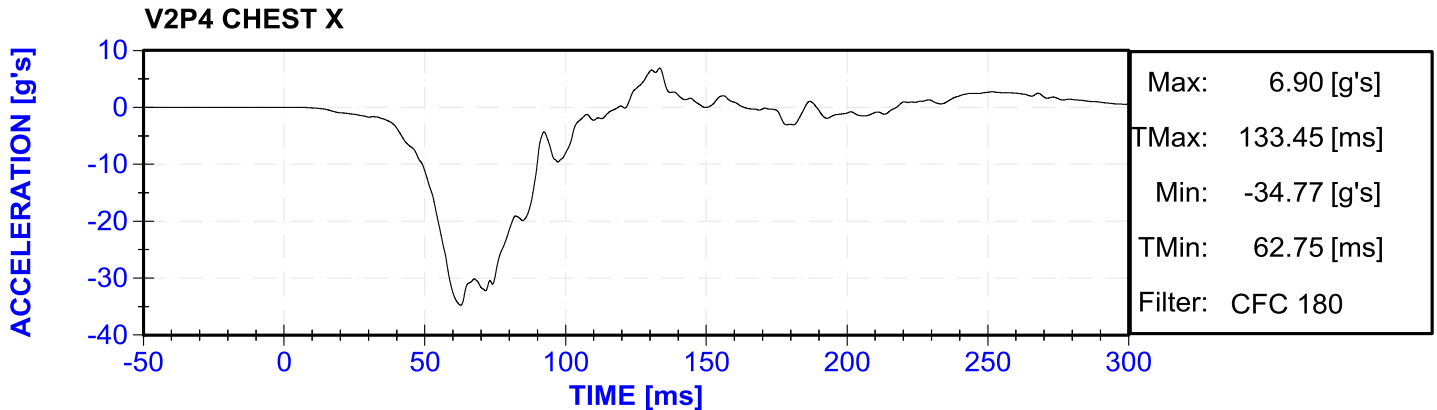


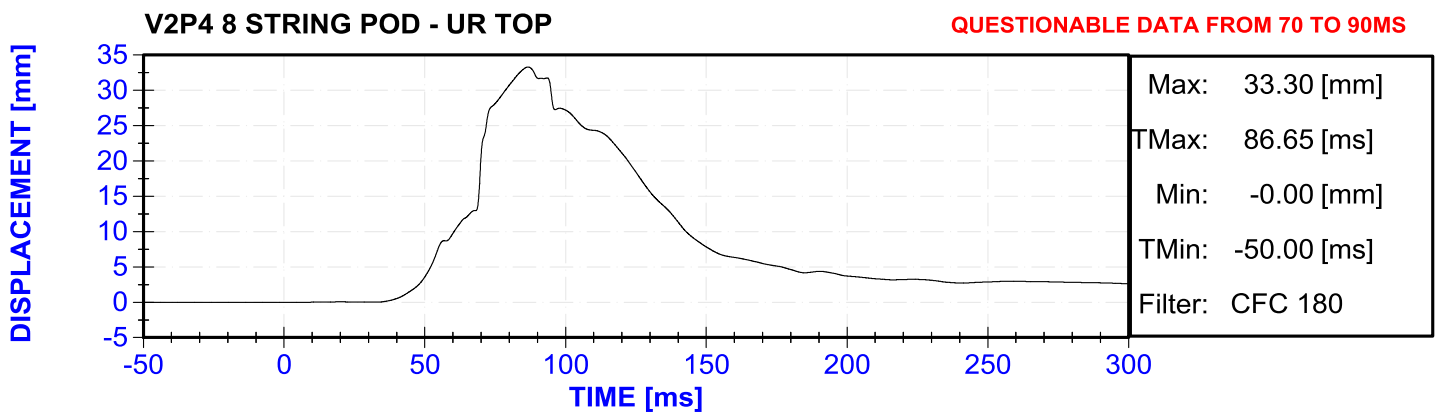
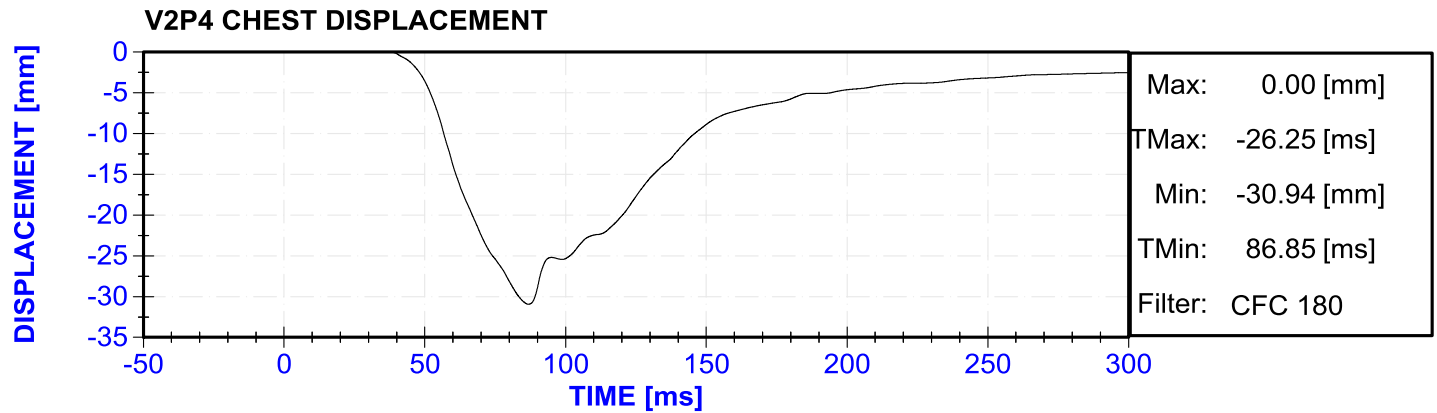
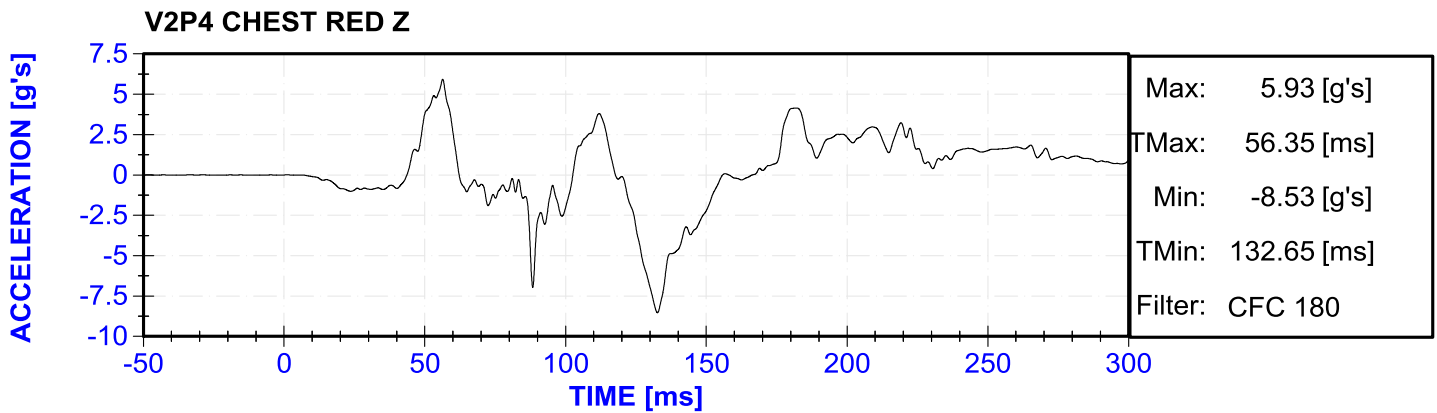
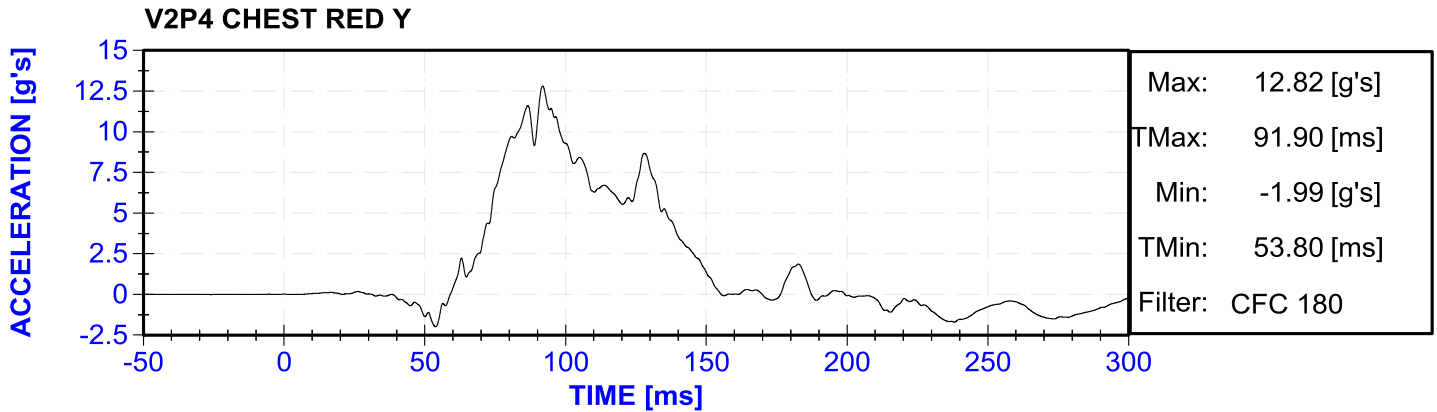


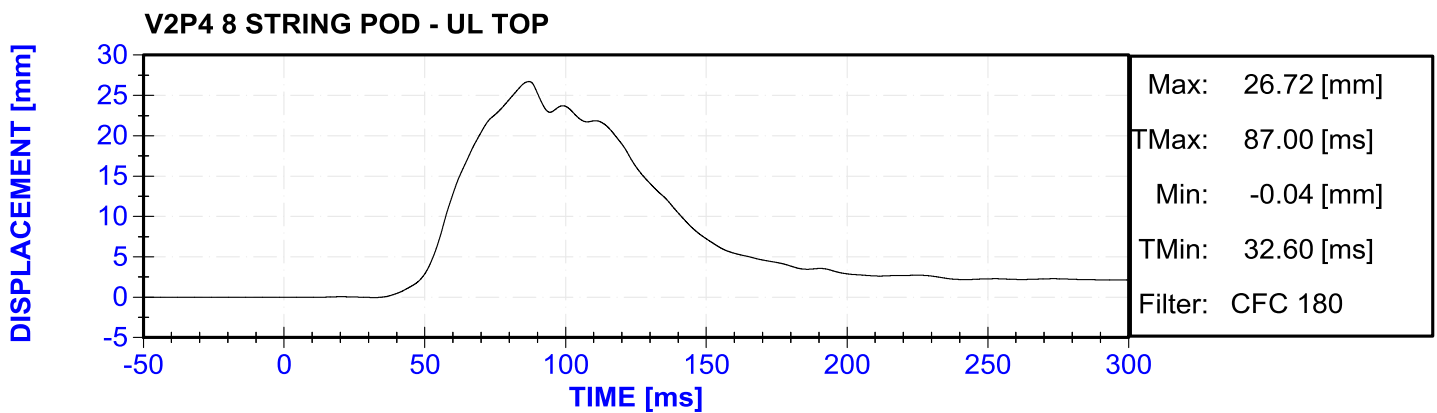
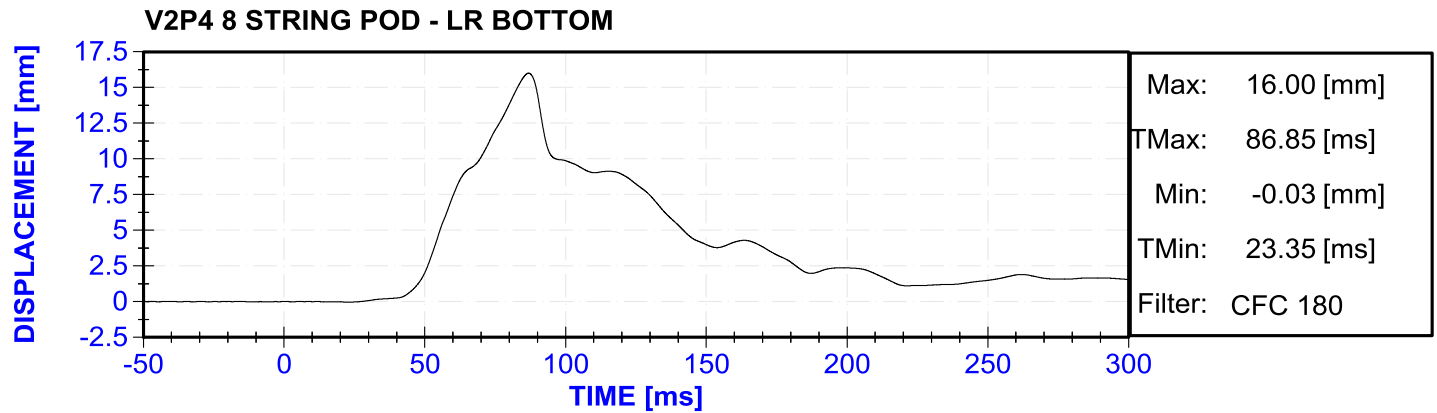
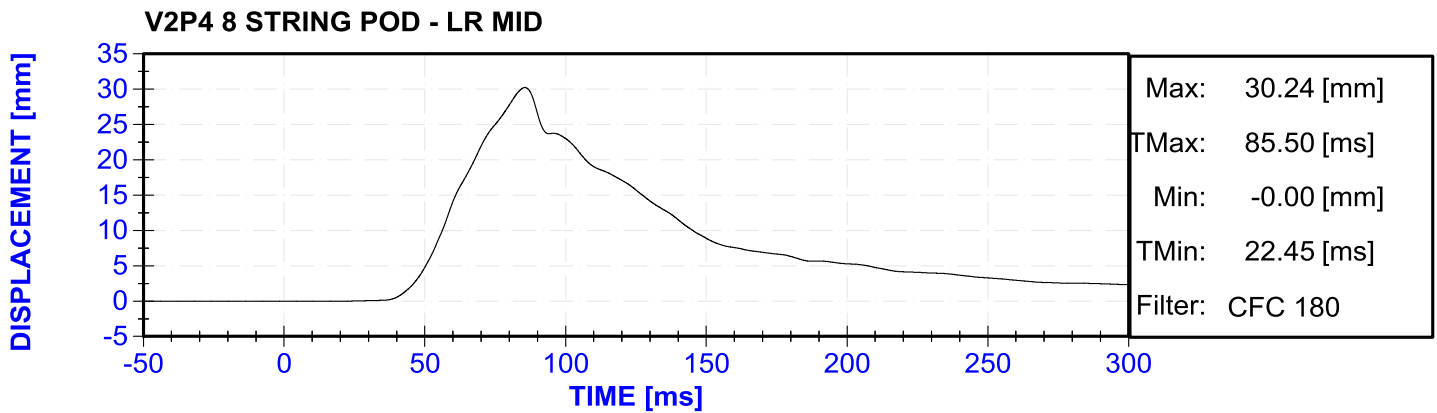
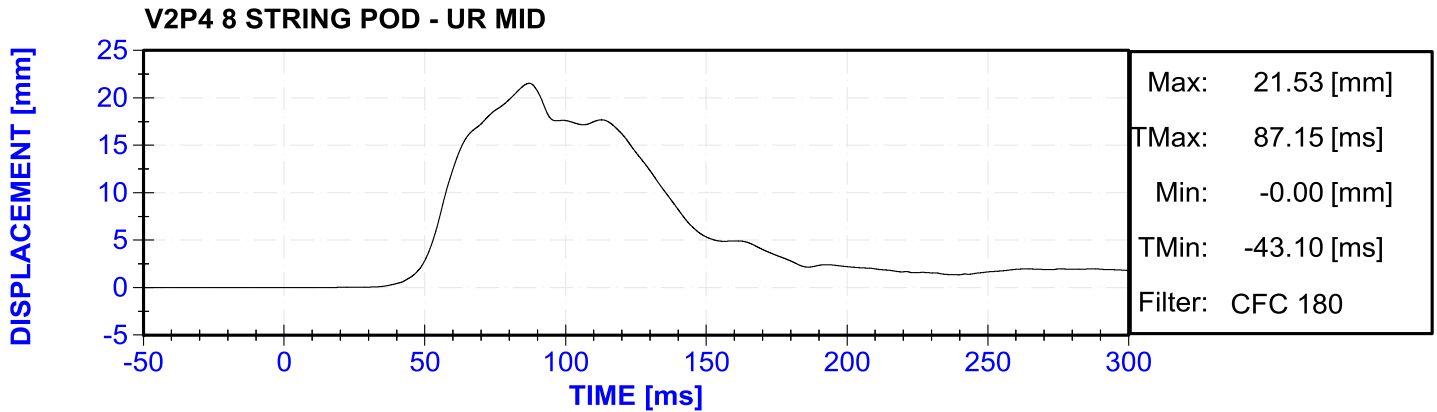


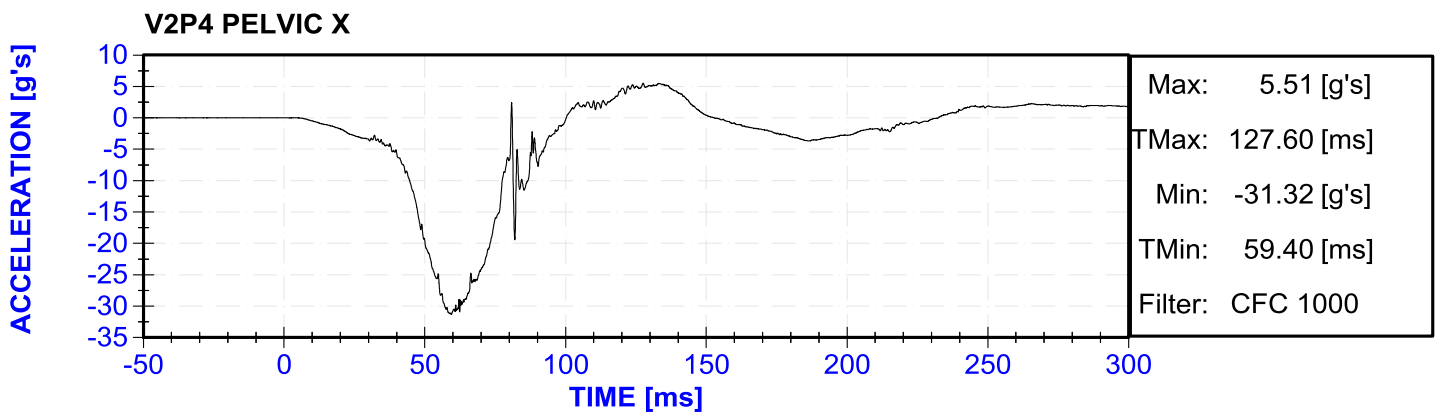
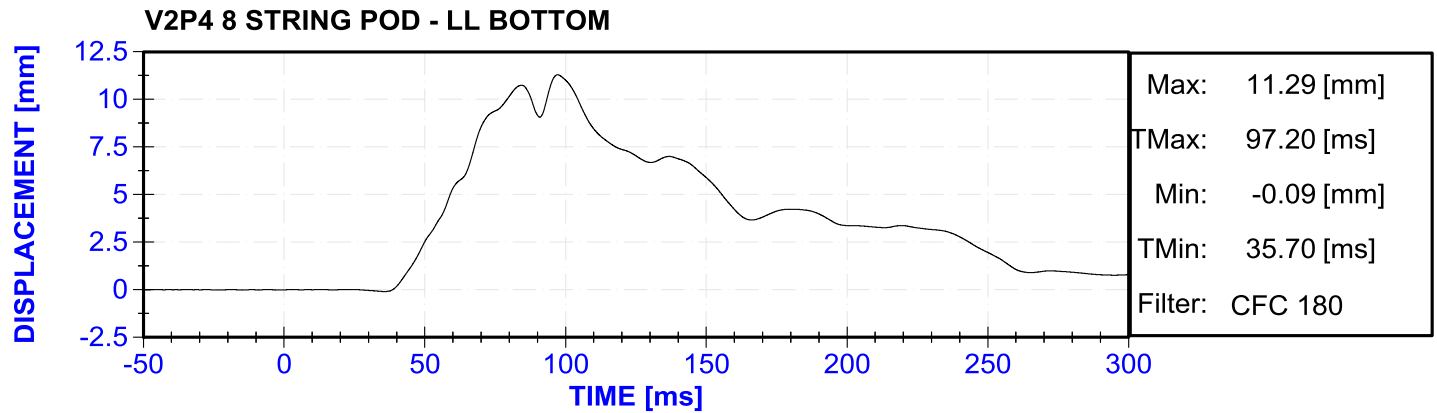
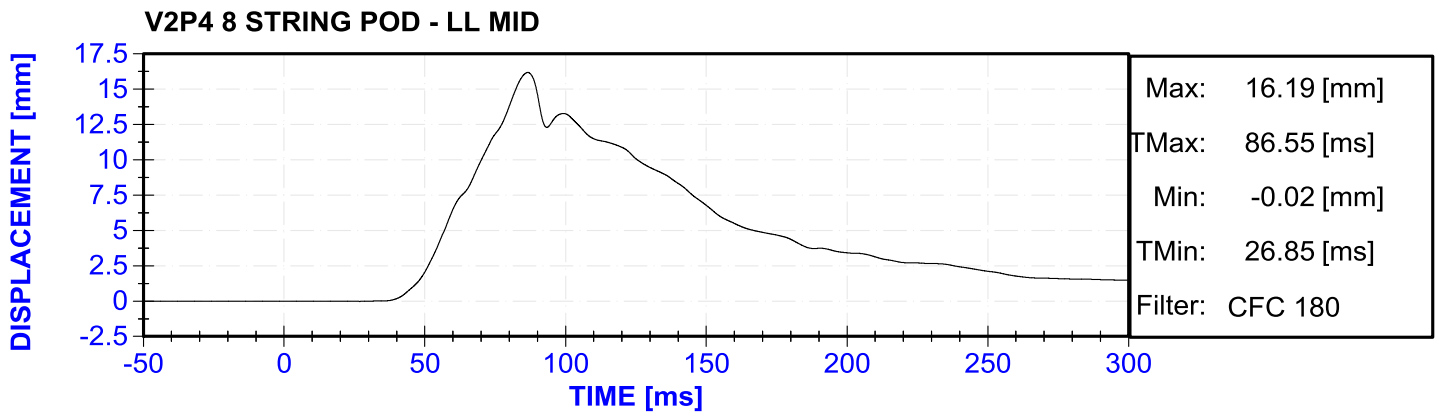
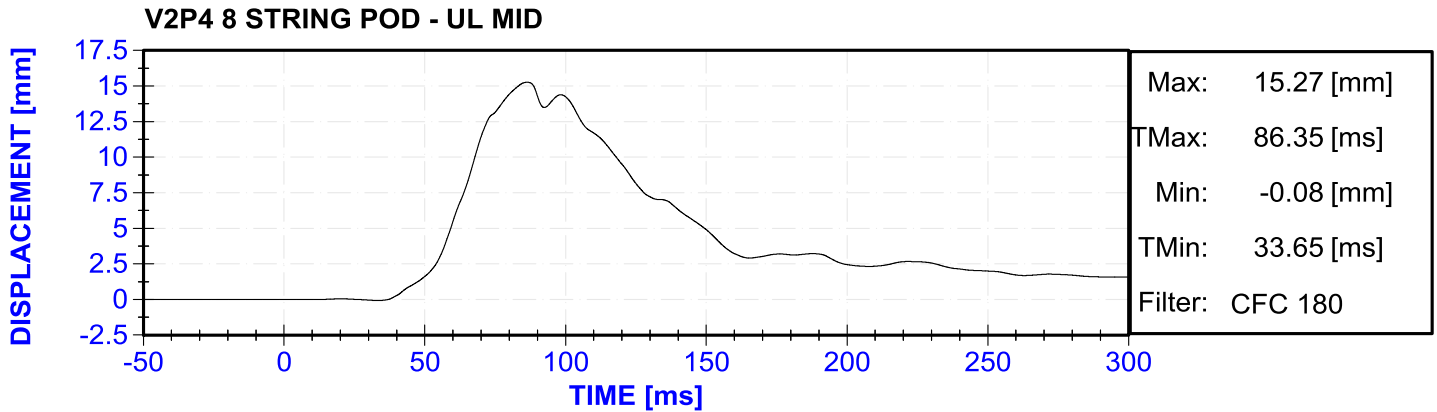


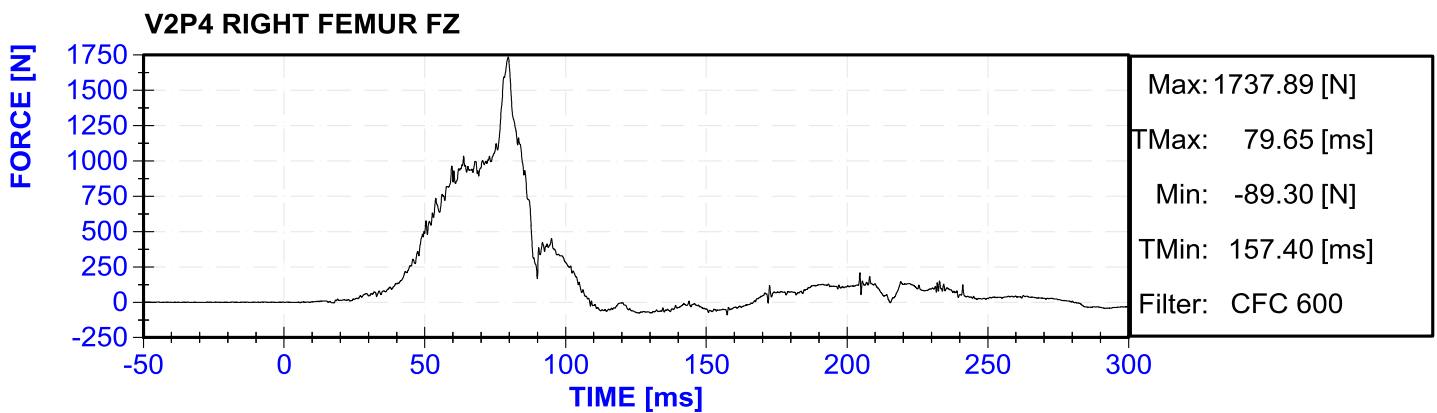
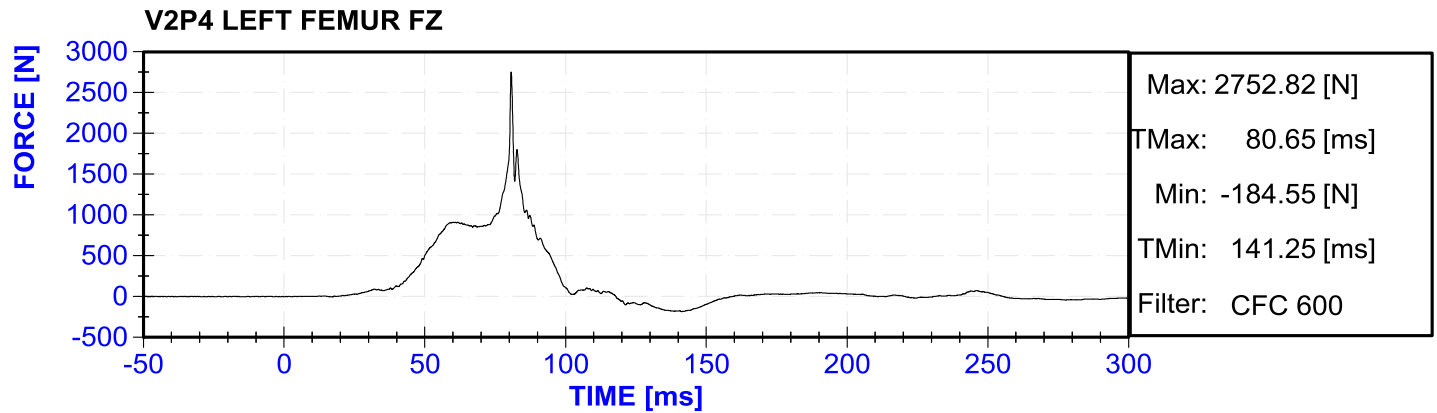
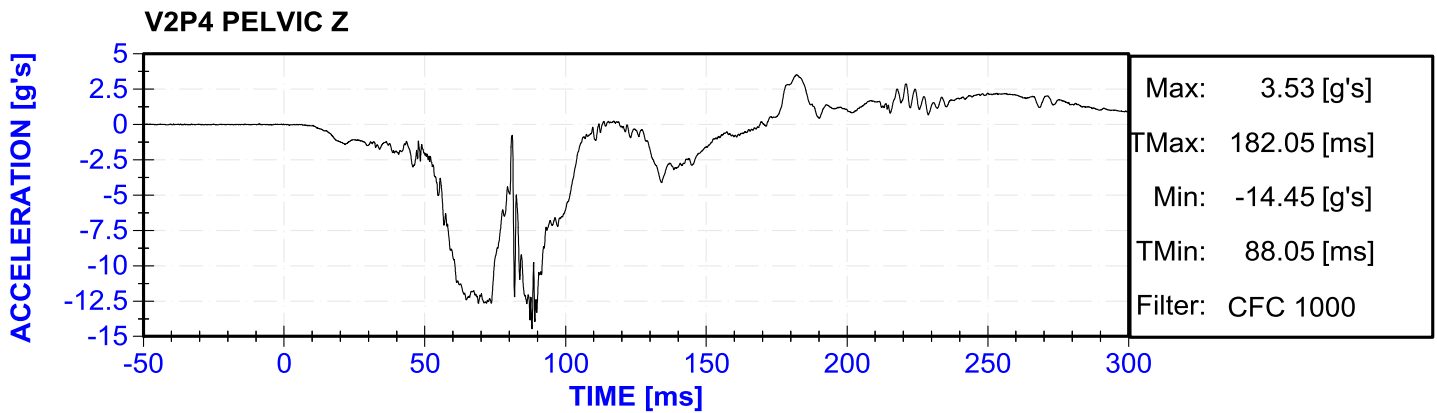
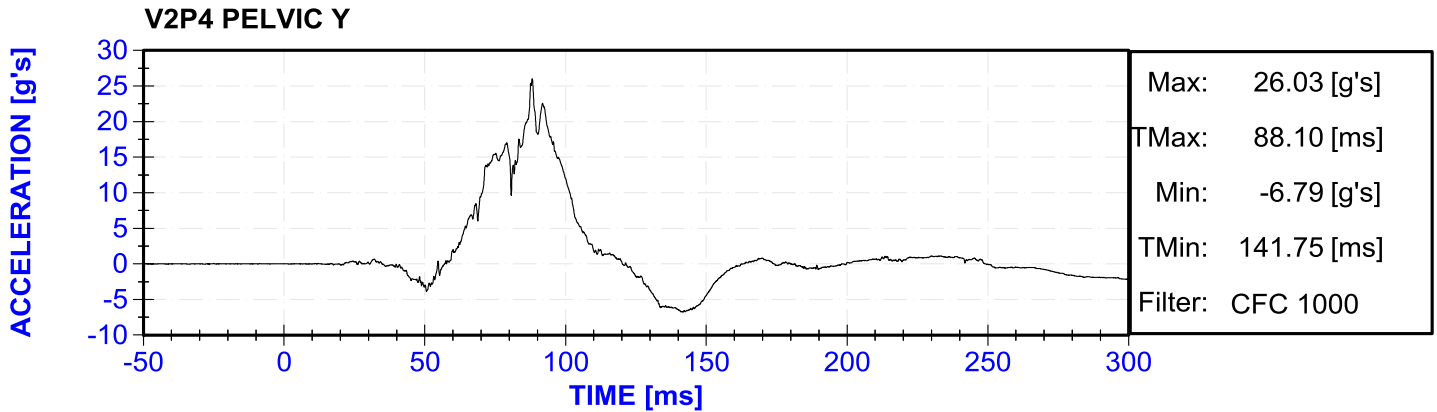




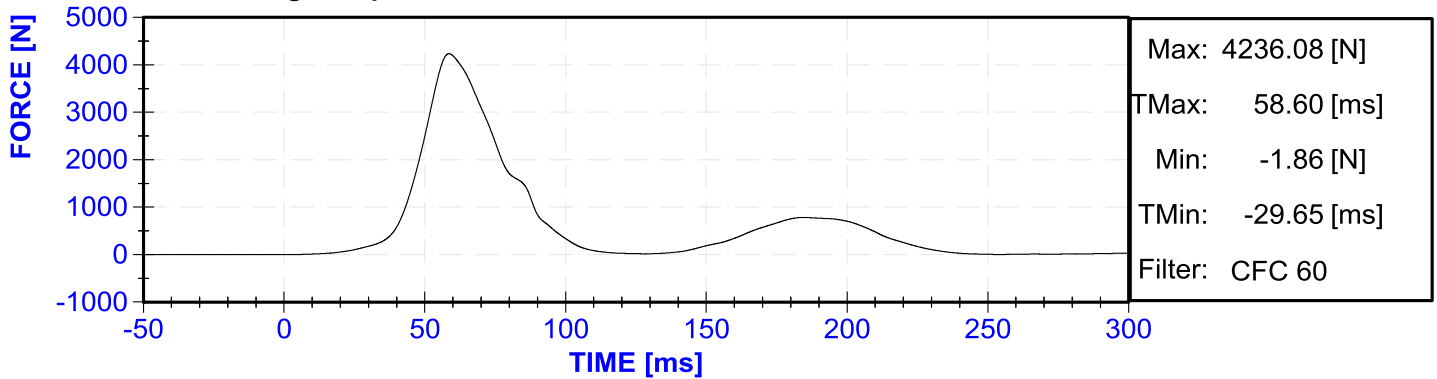




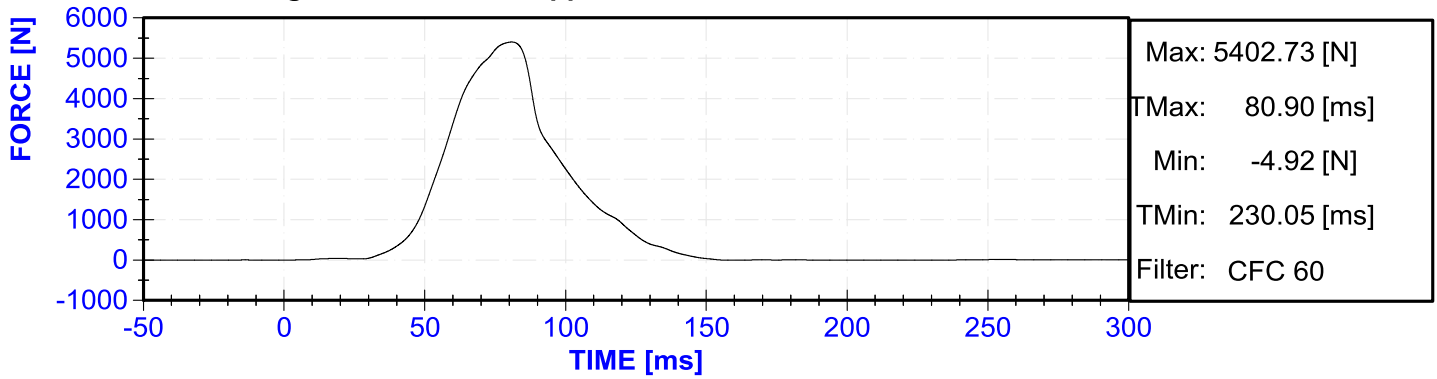




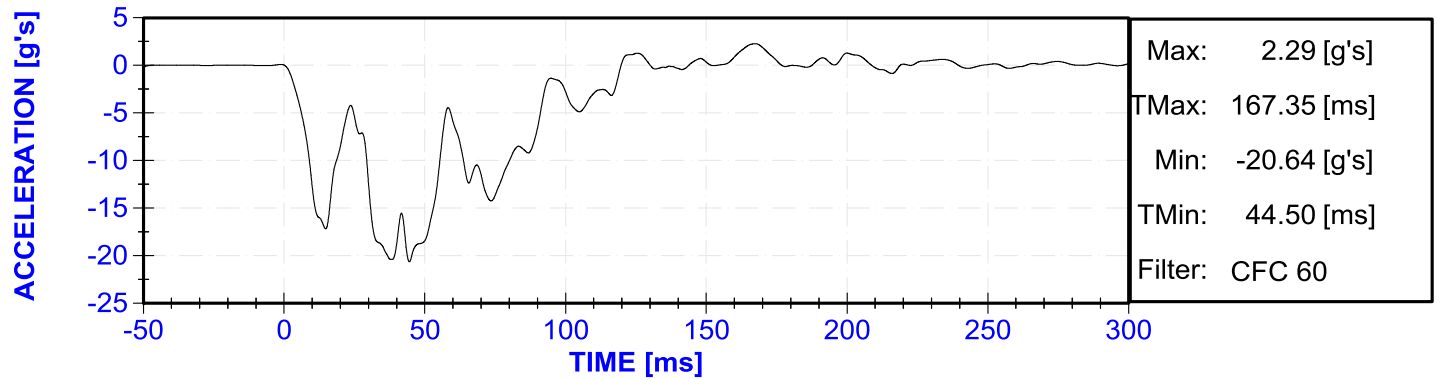
V2 Passenger Lap Belt Force



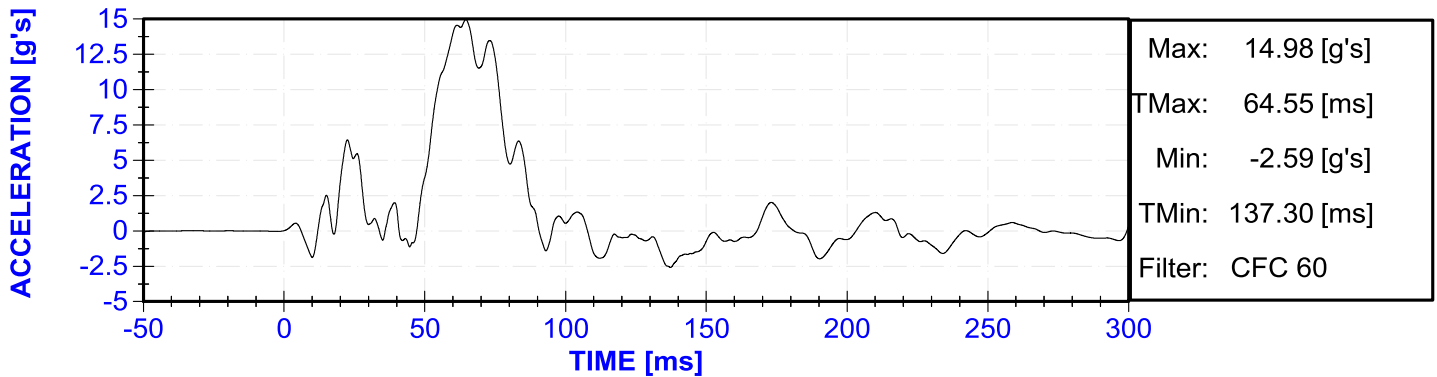
V2 Passenger Shoulder Belt Upper Force

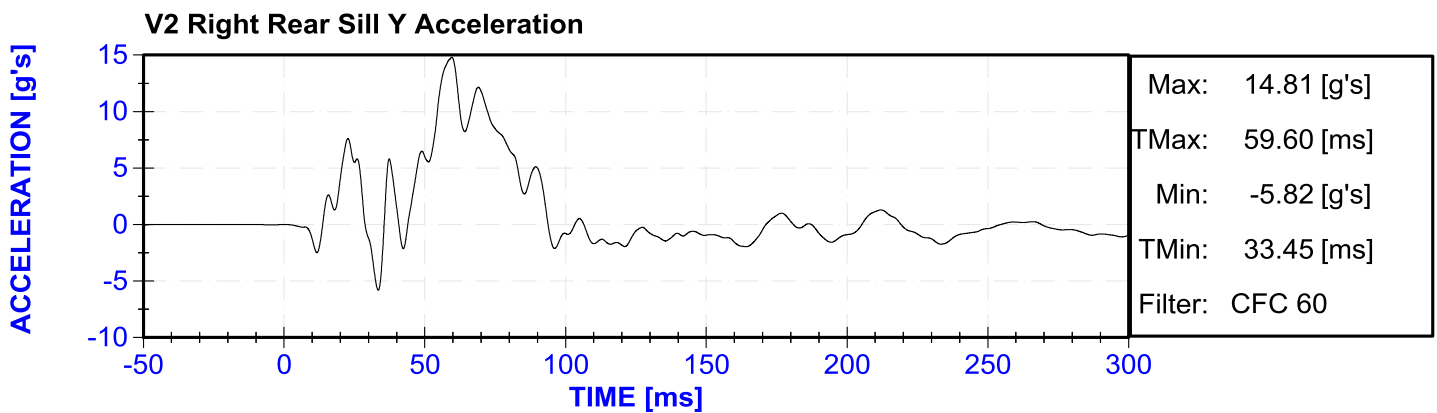
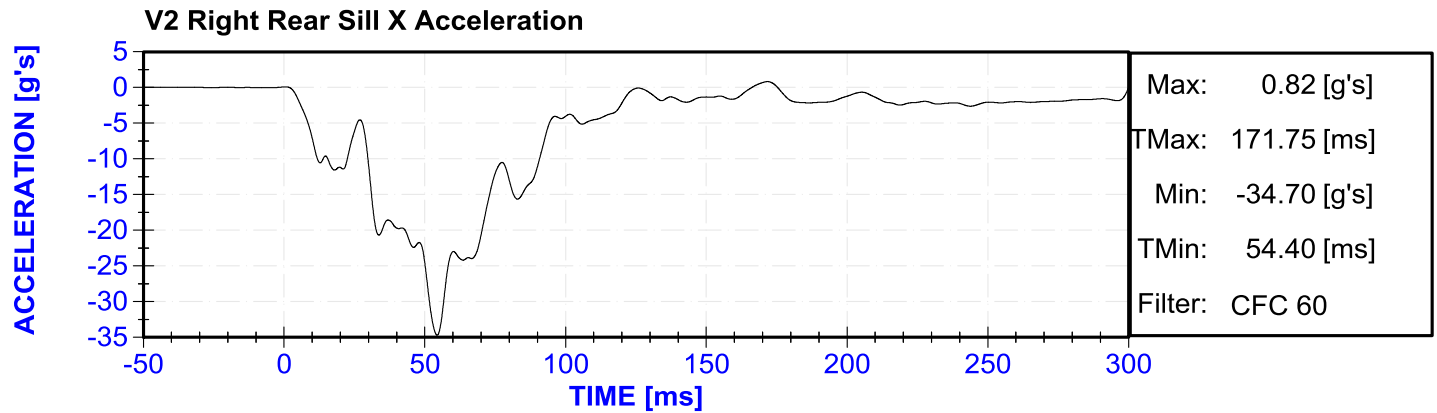
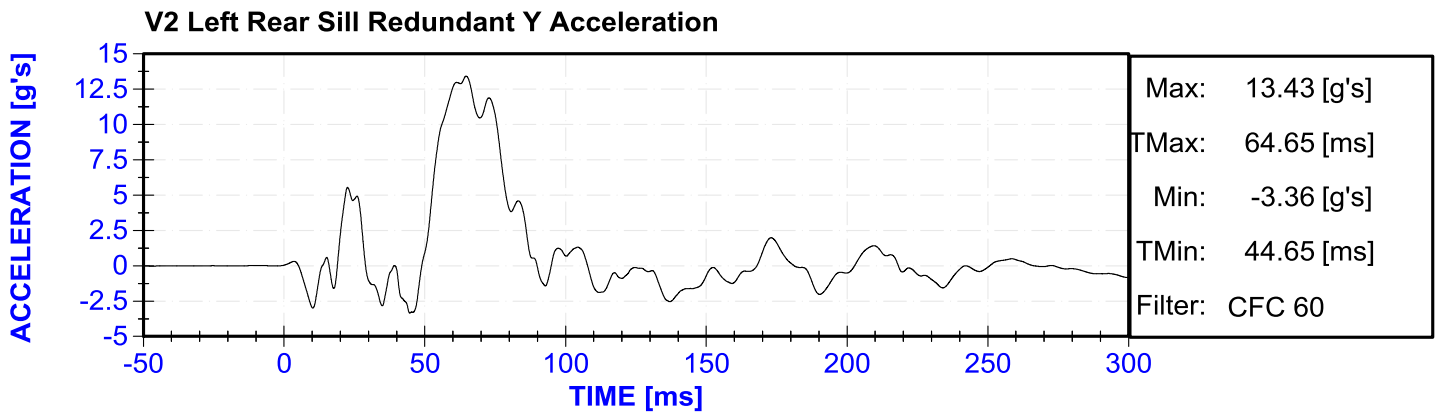
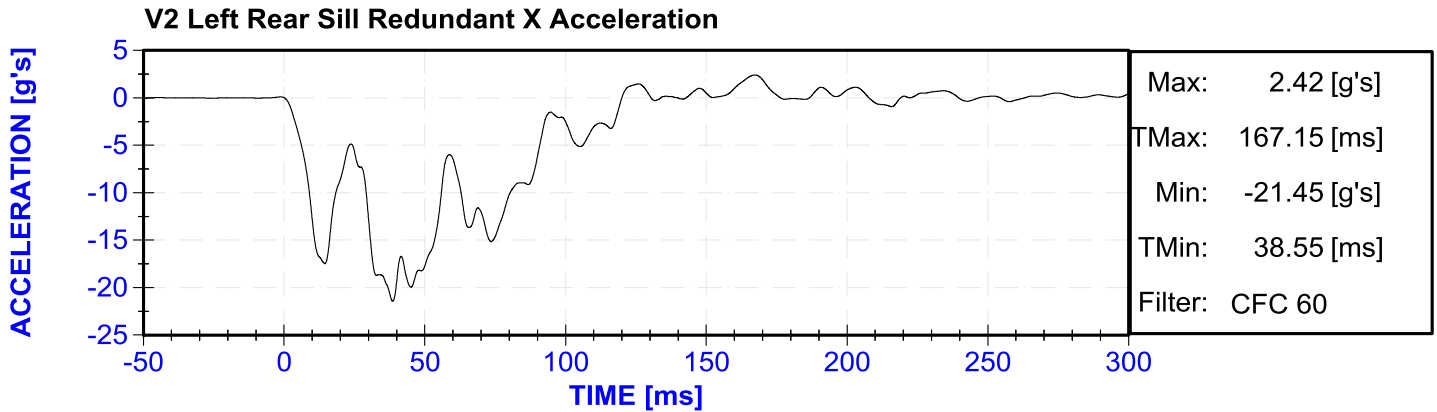


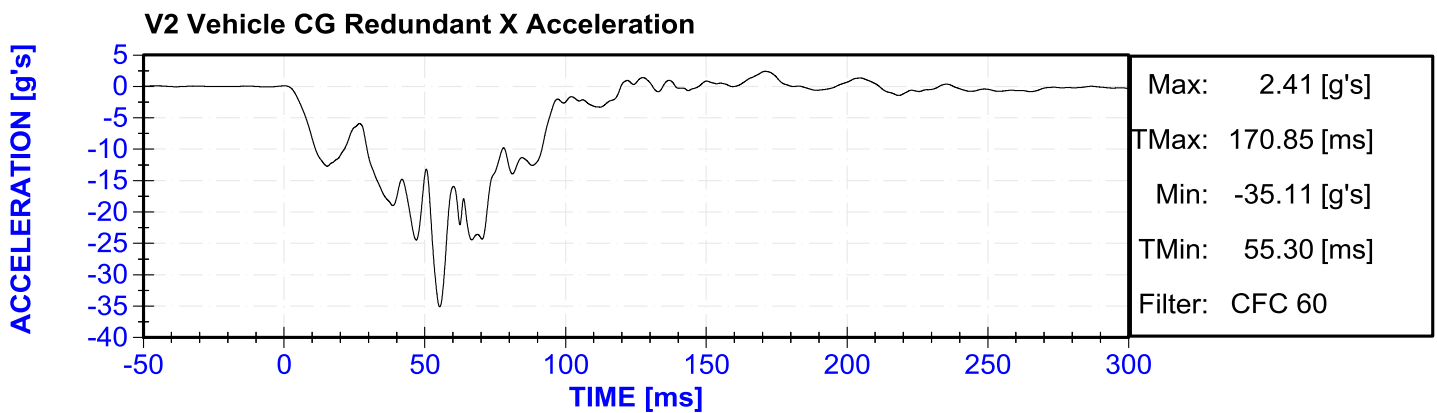
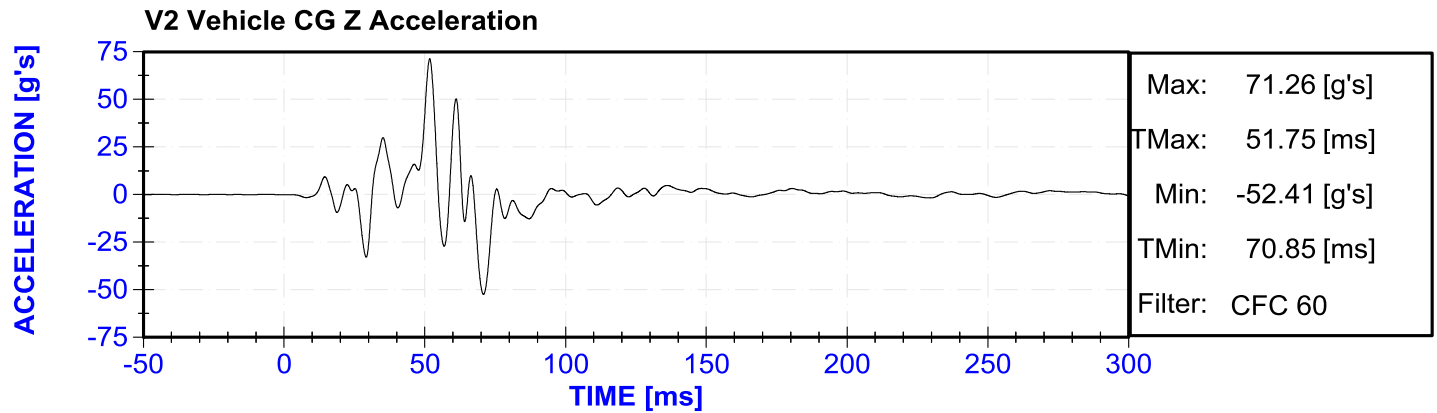
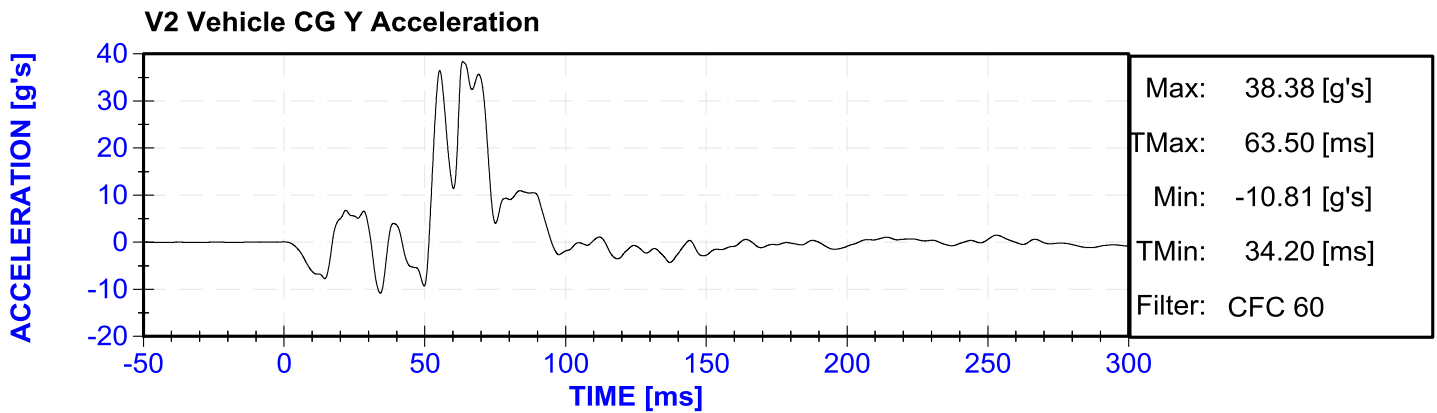
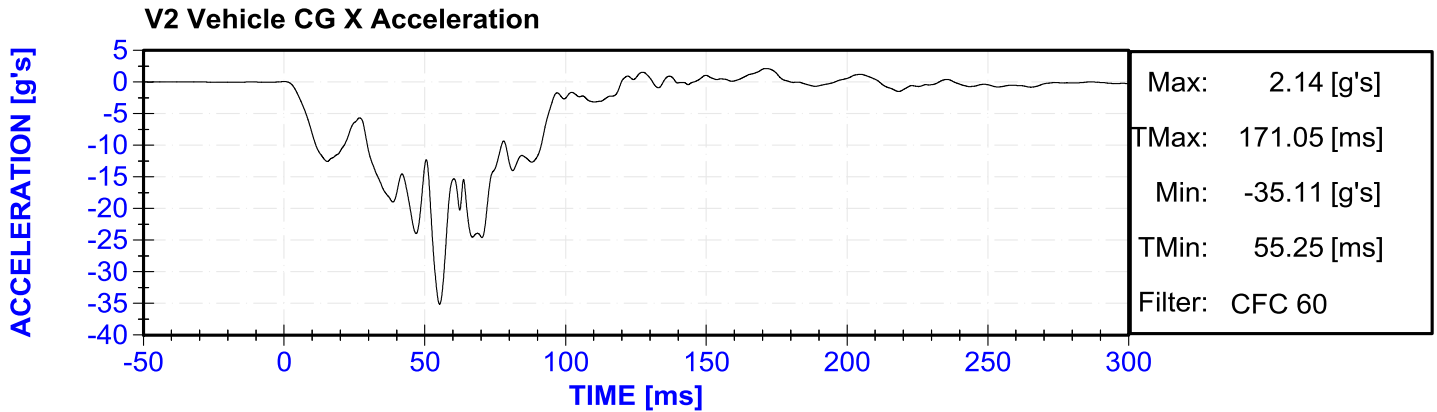
V2 Left Rear Sill X Acceleration

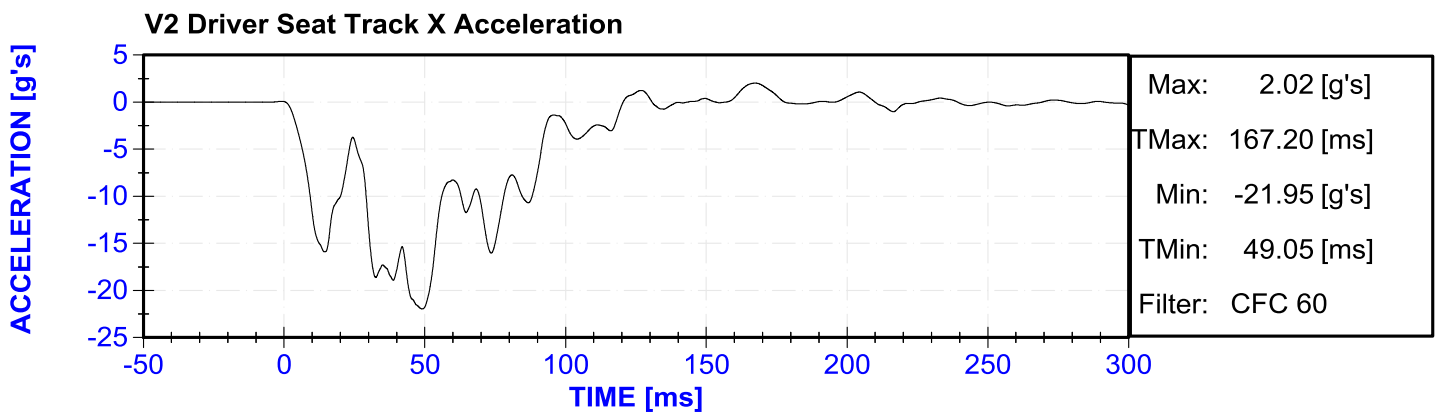
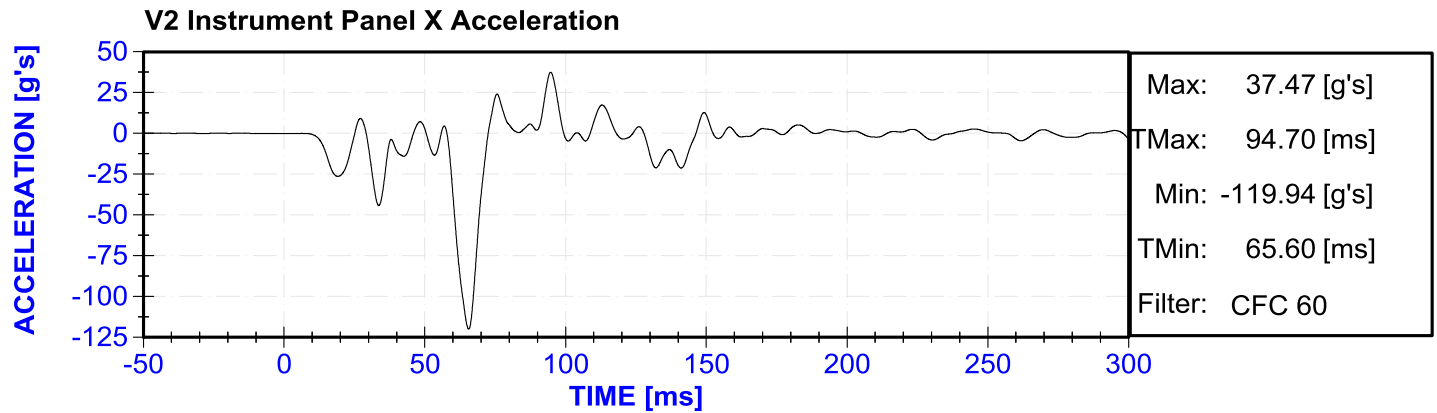
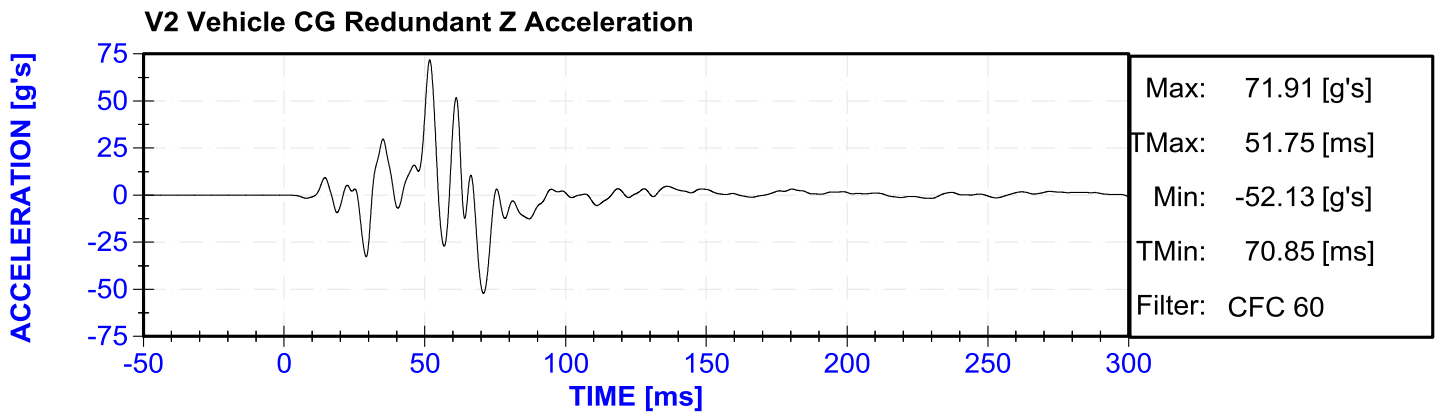
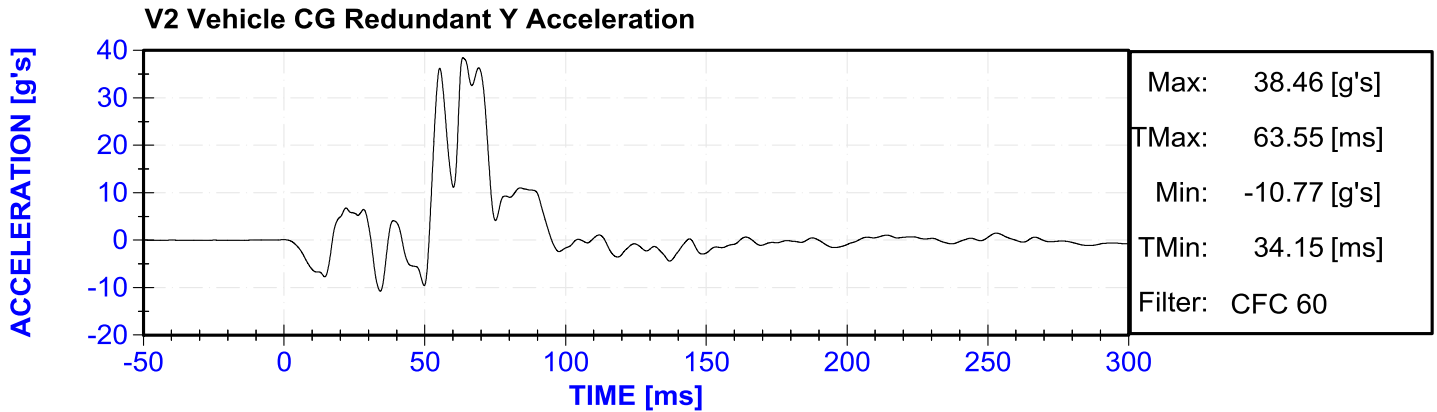


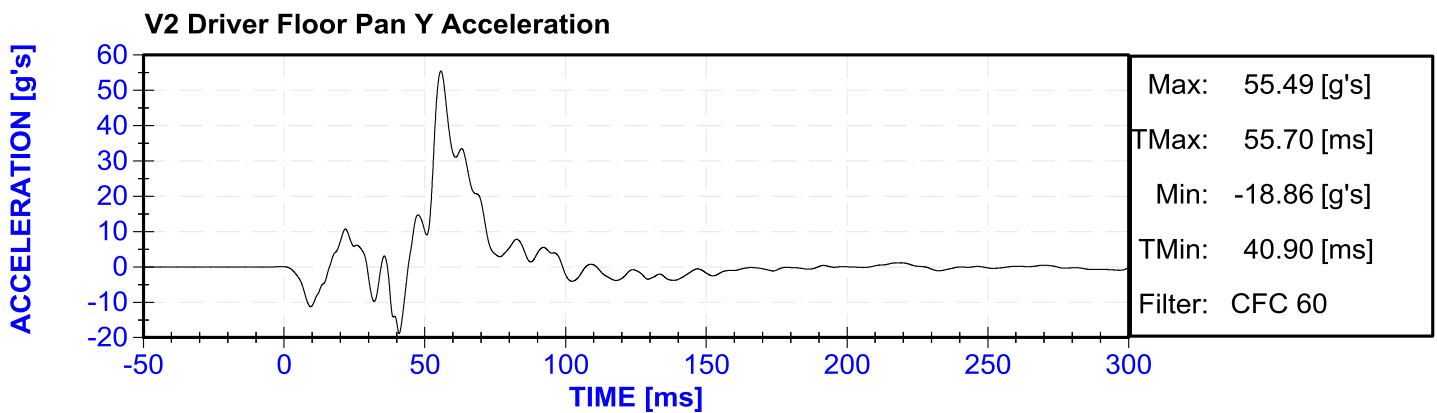
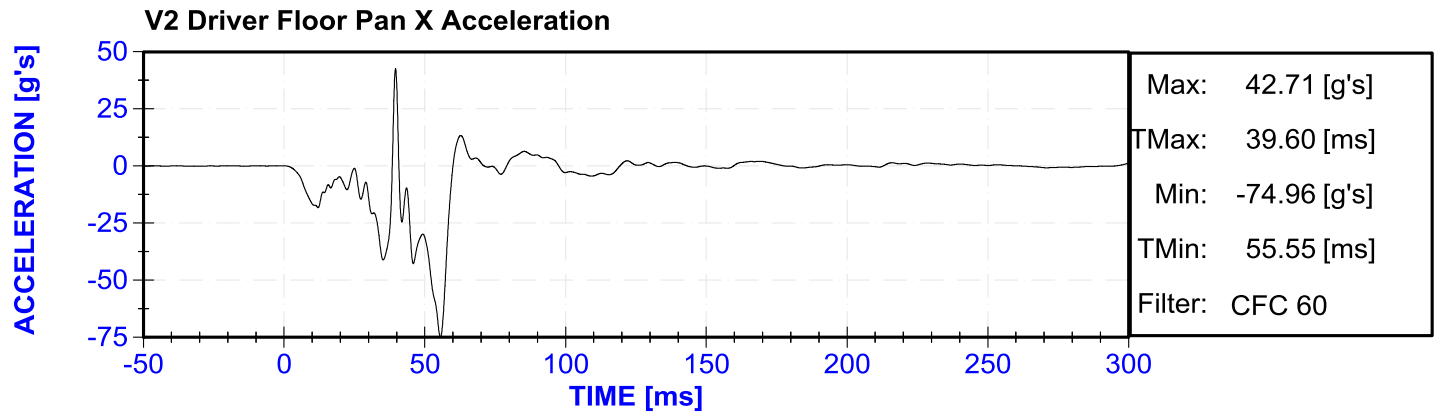
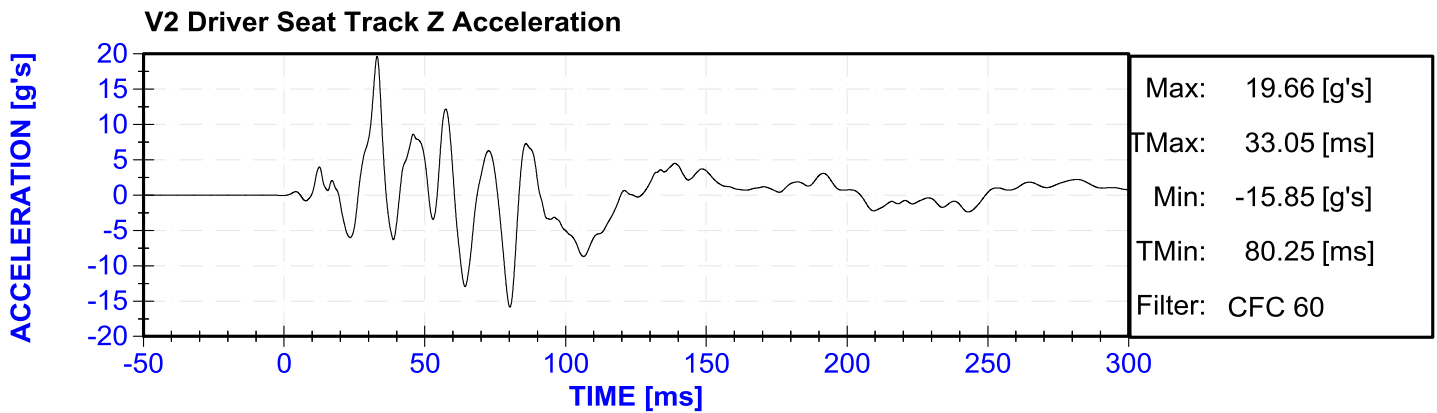
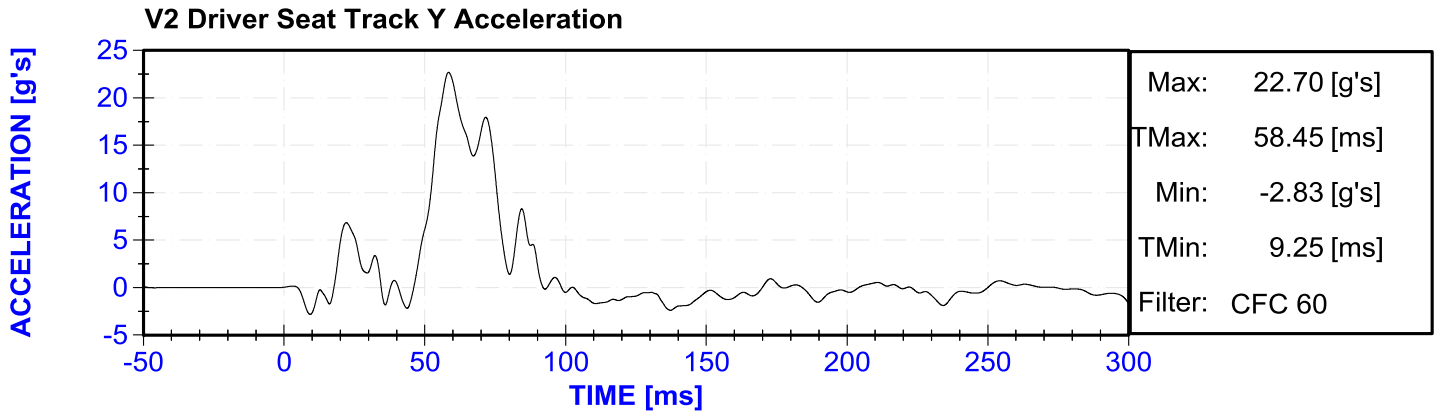
V2 Left Rear Sill Y Acceleration

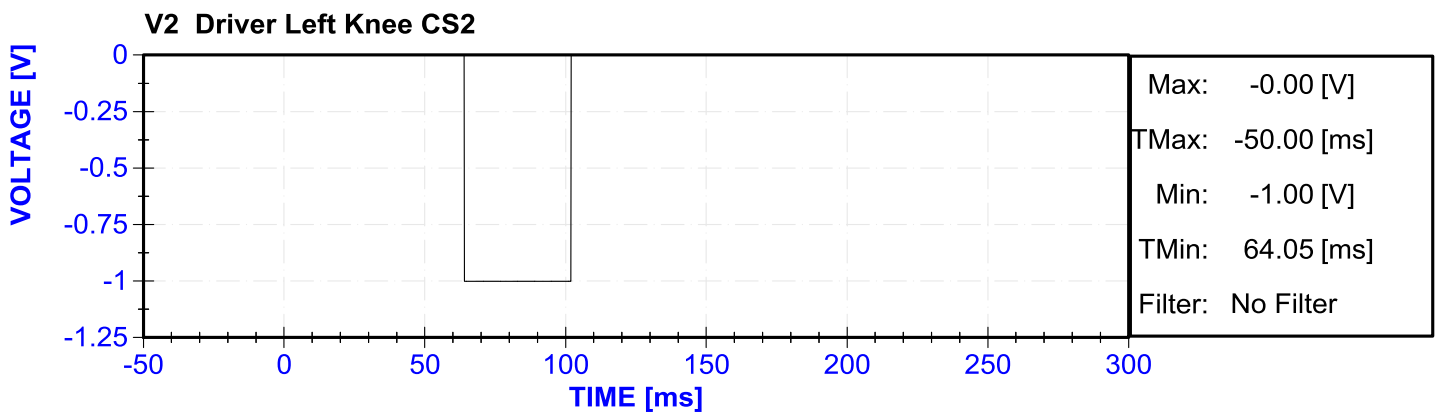
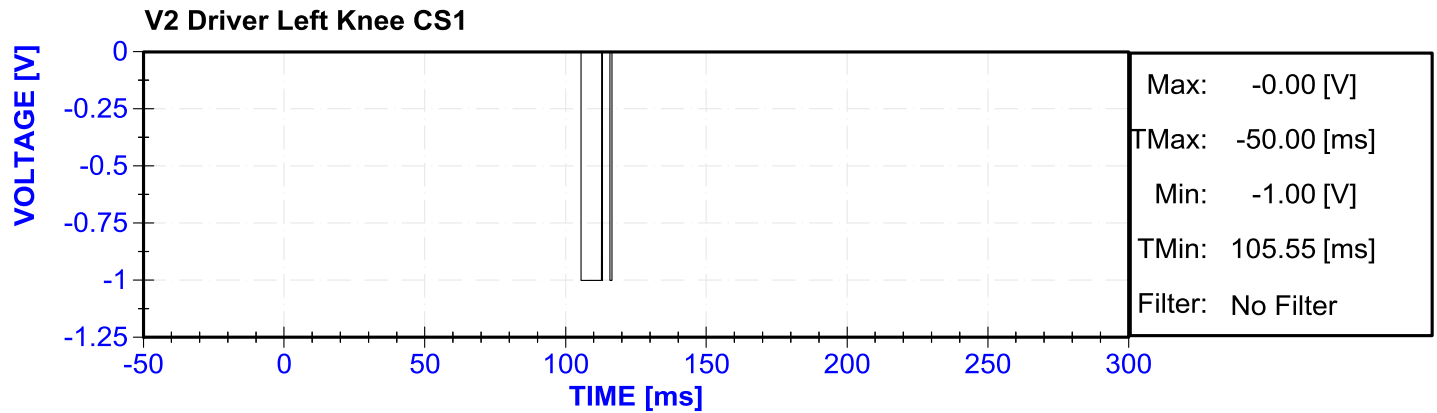
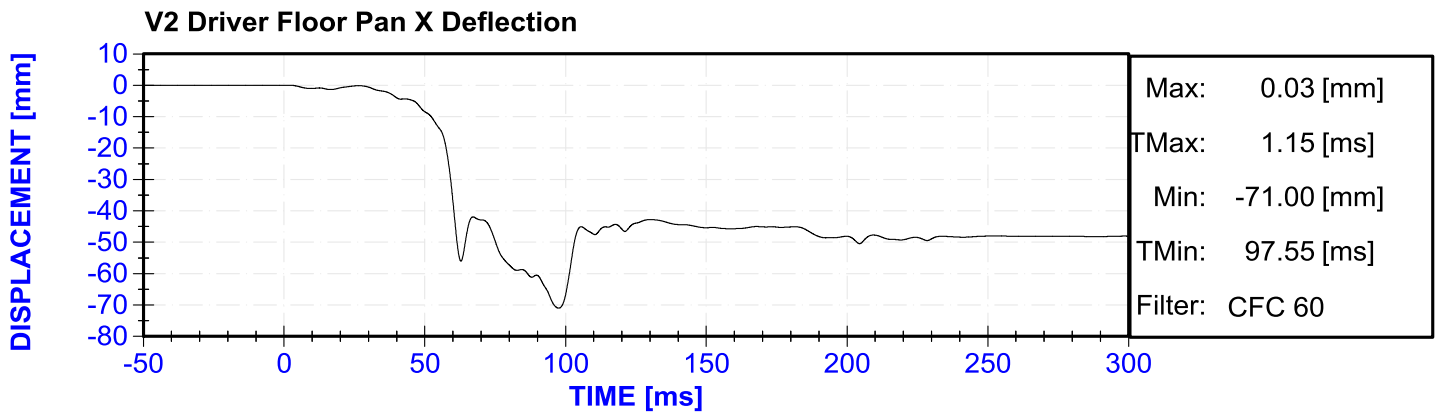
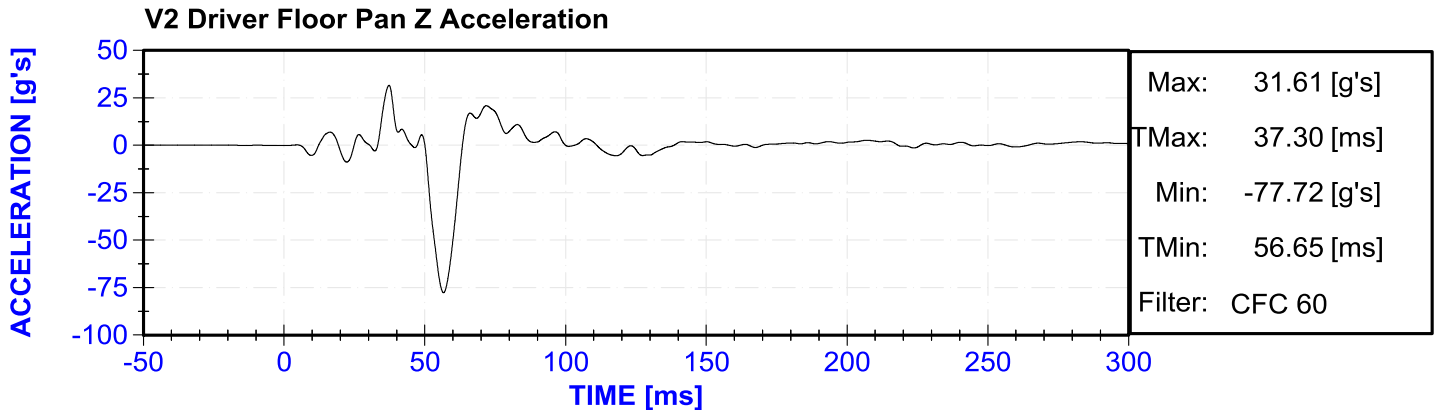


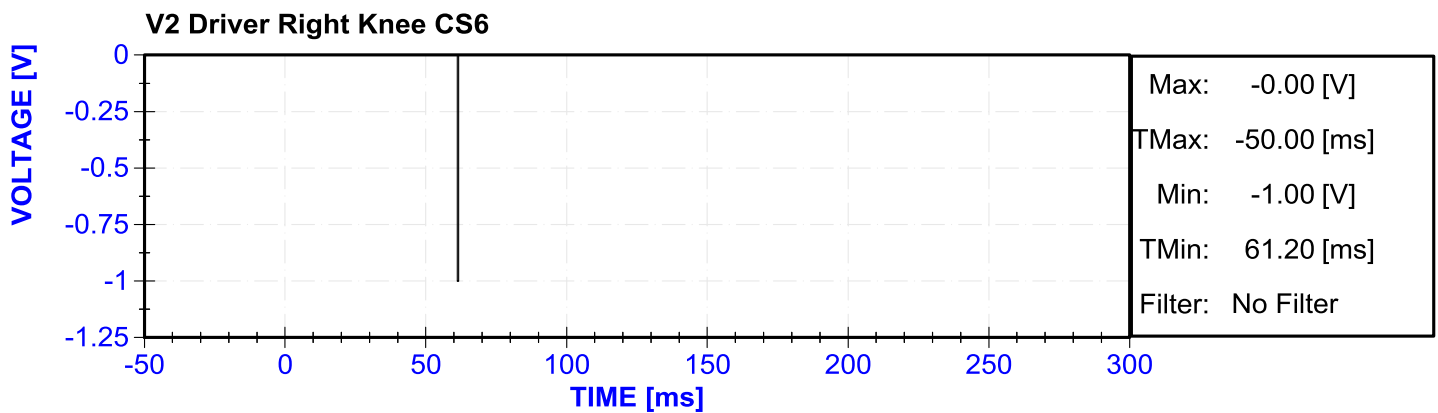
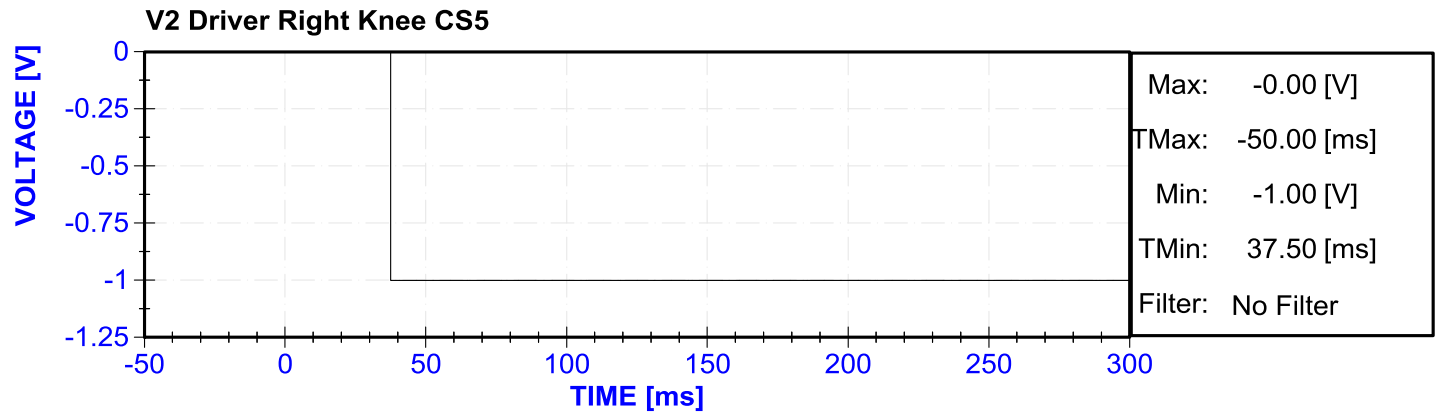
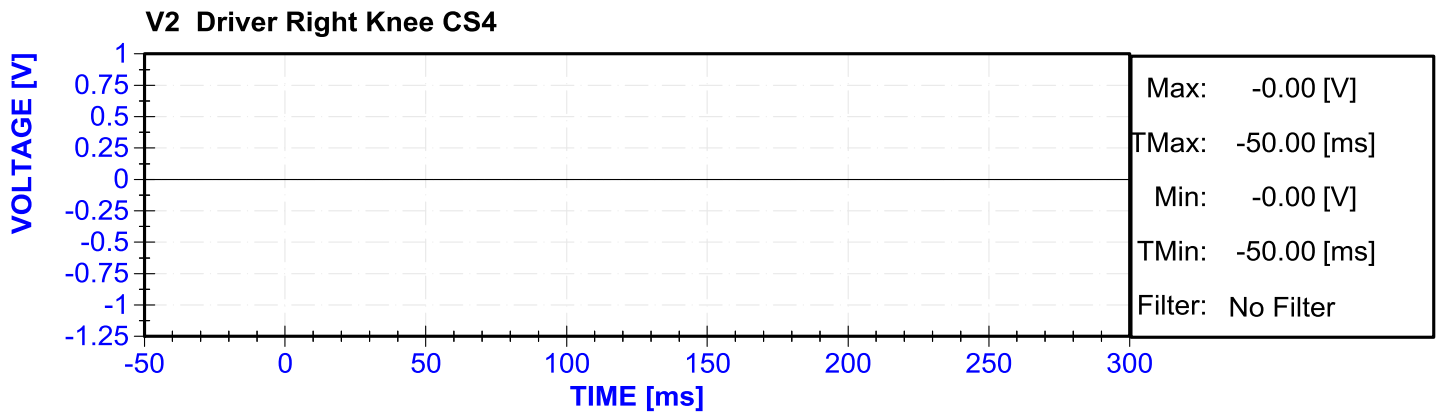
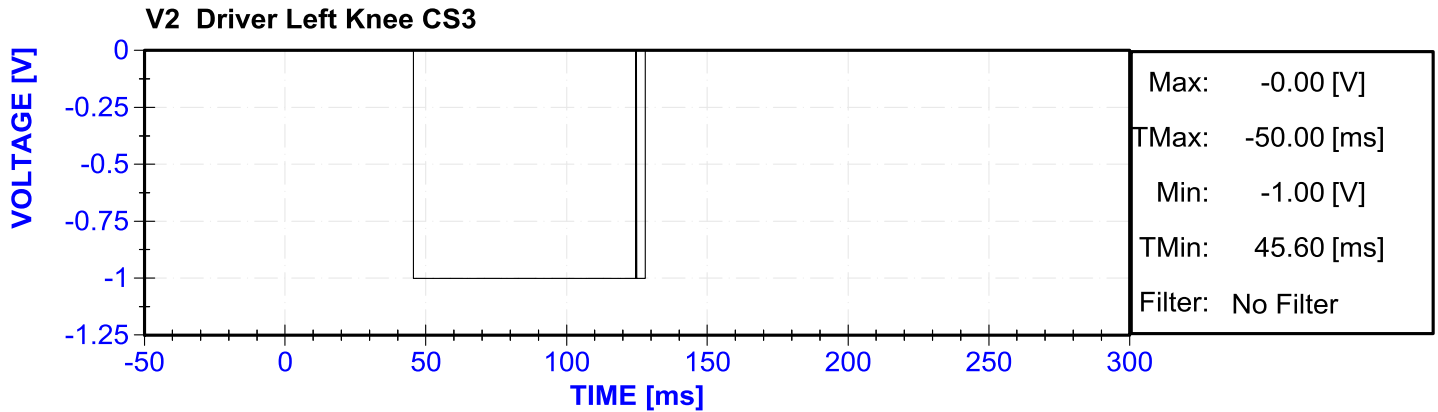


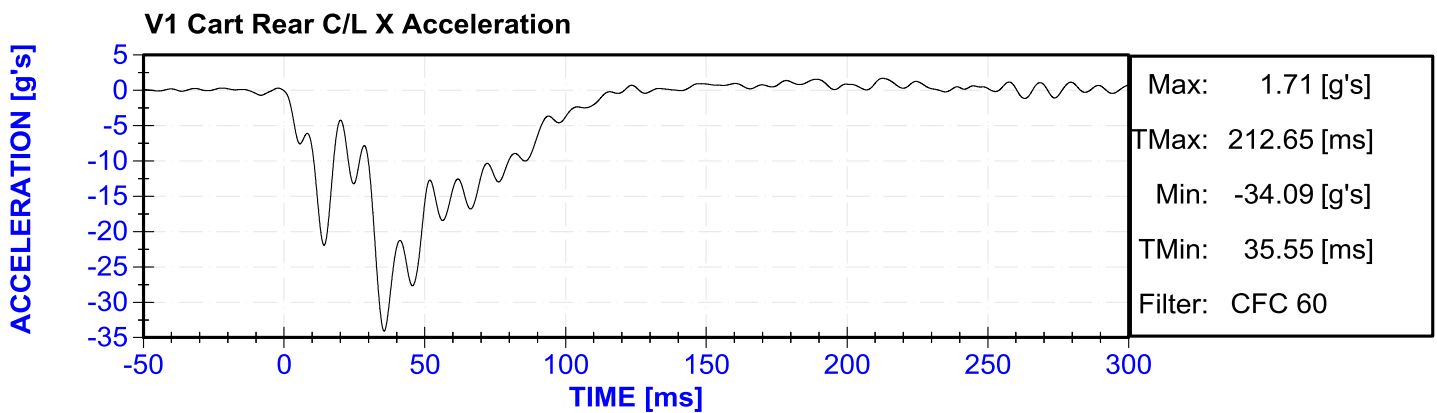
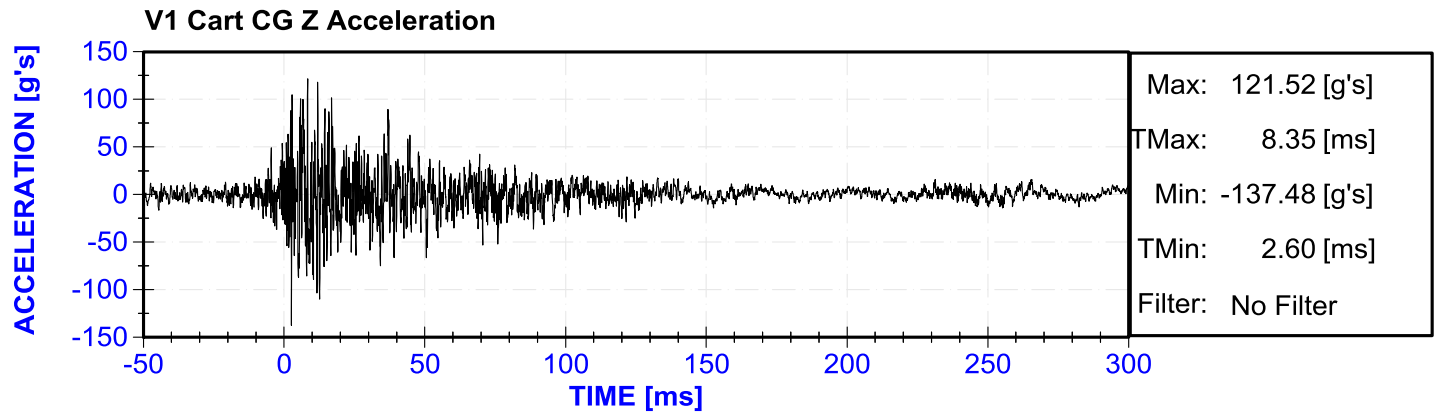
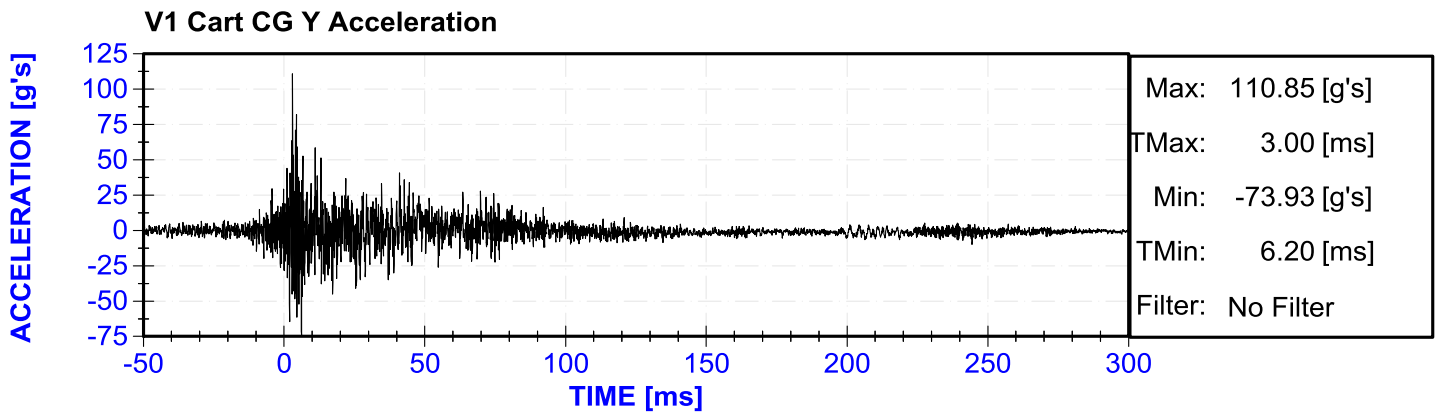
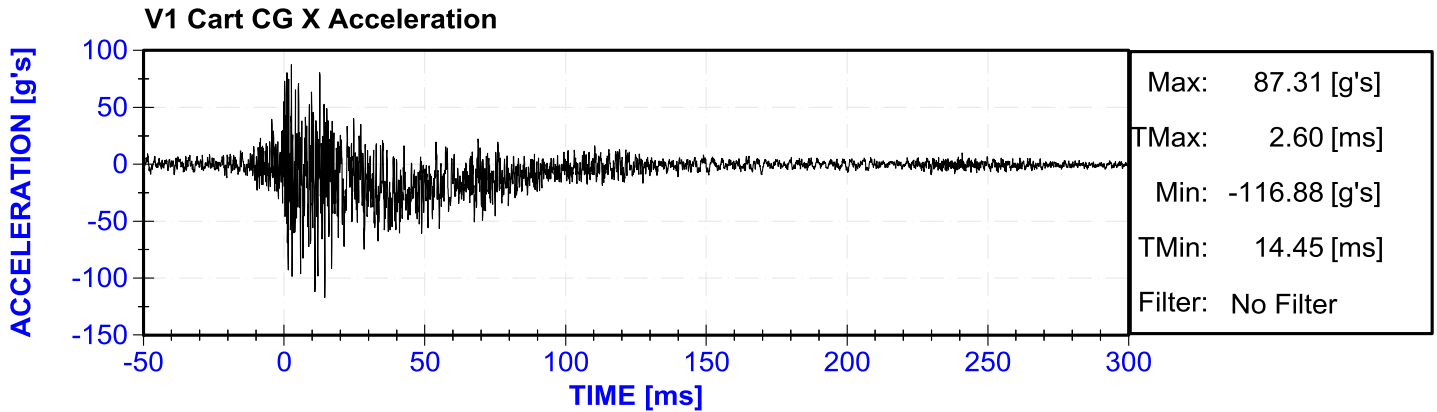


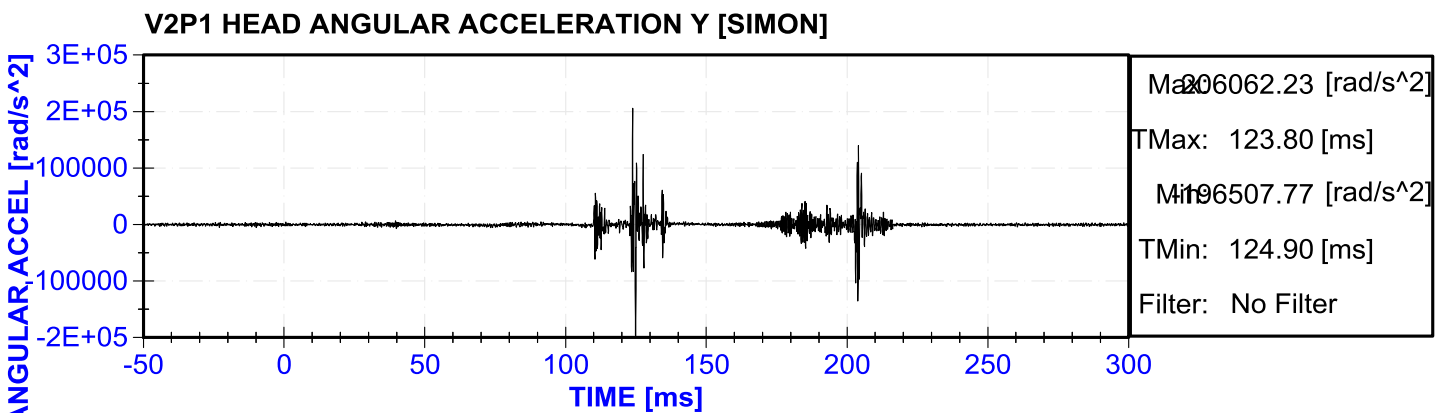
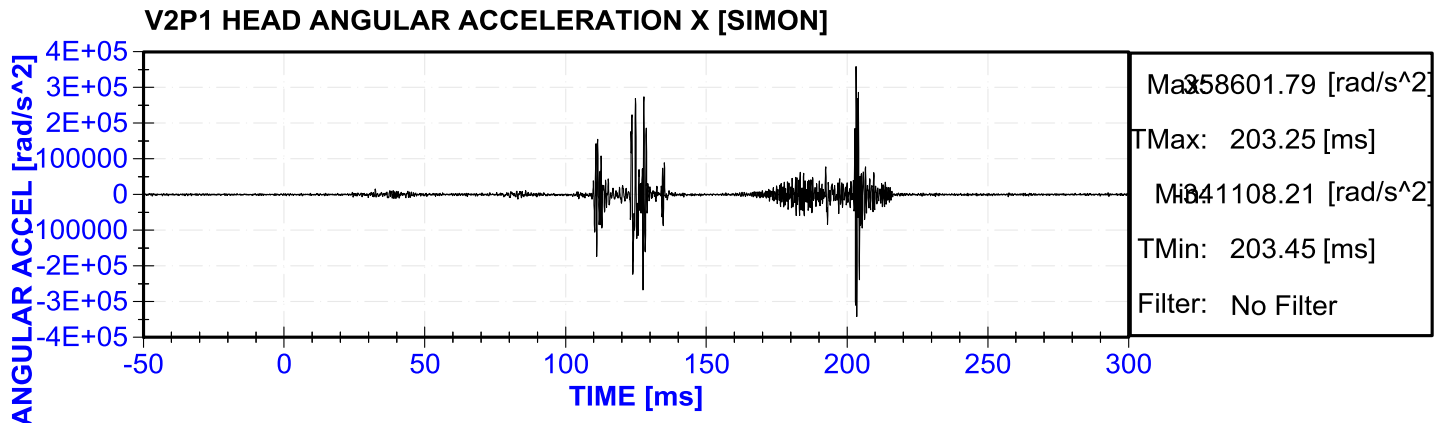
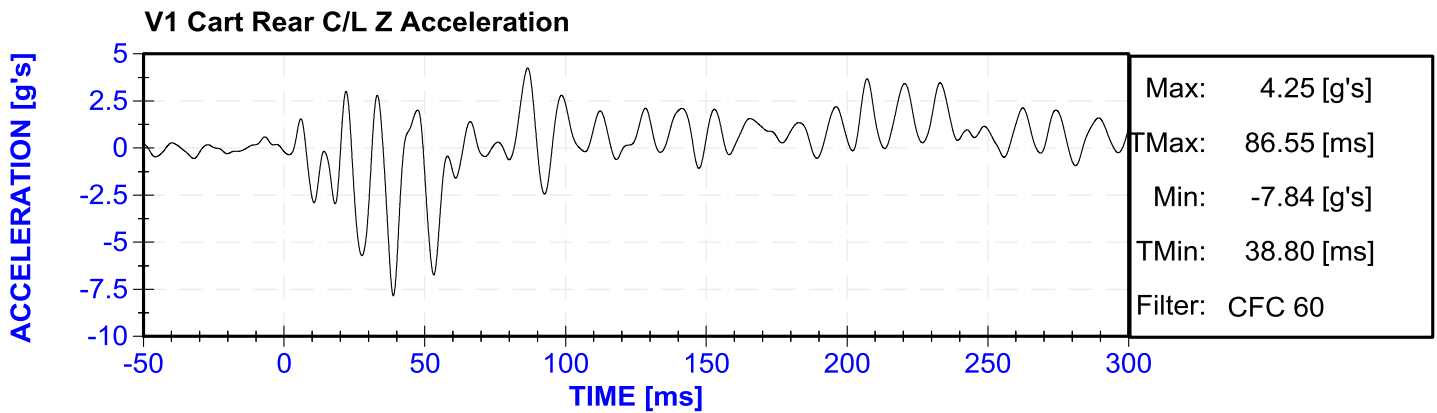
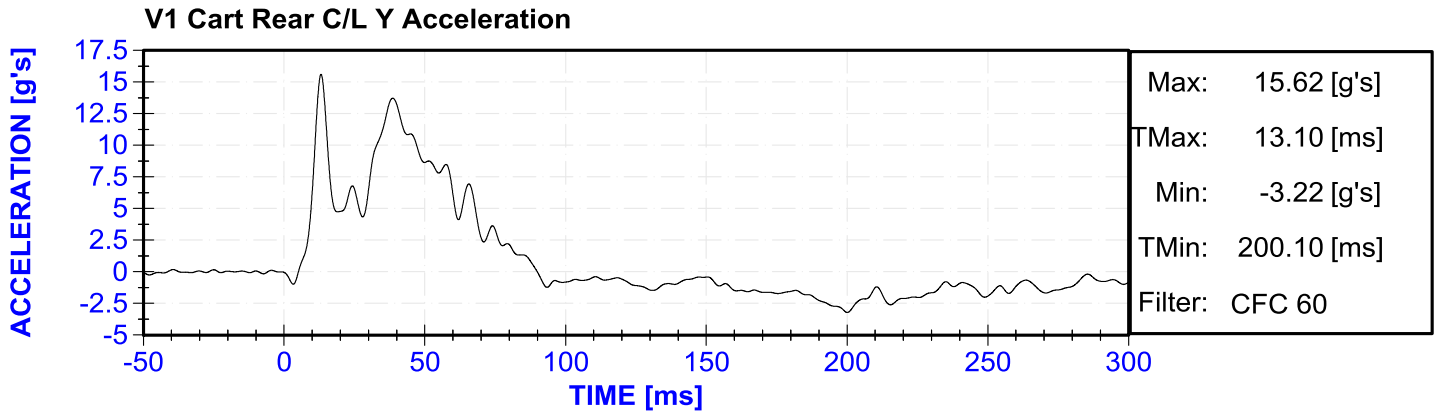




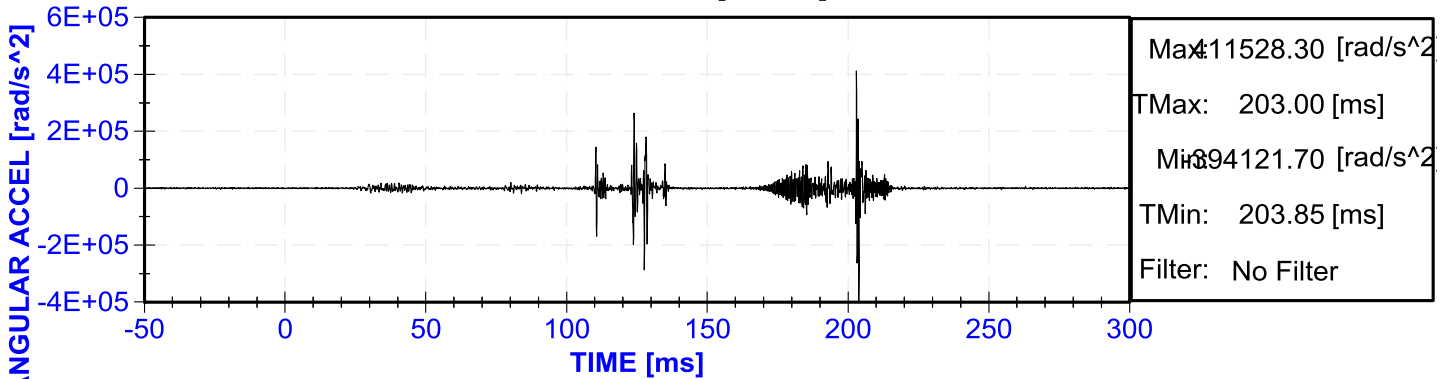




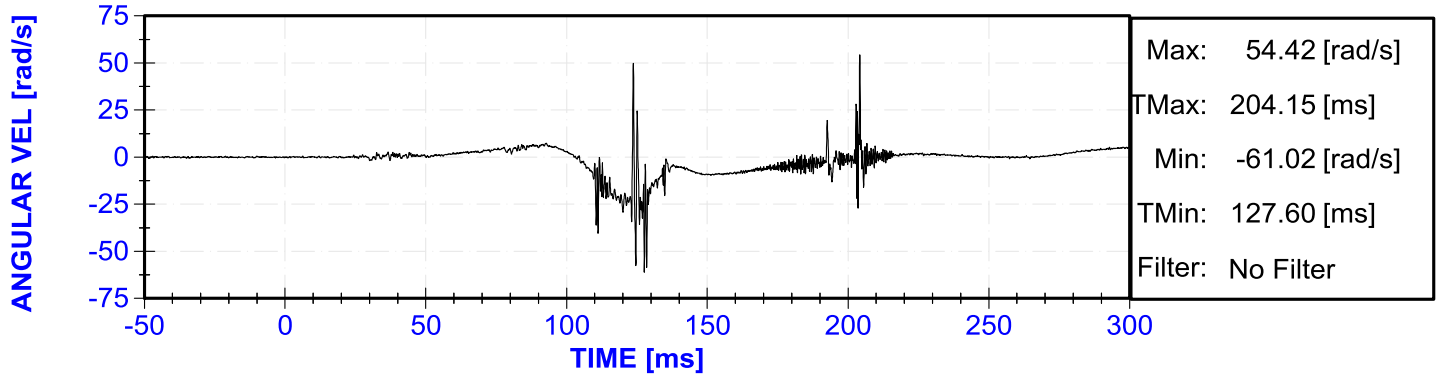




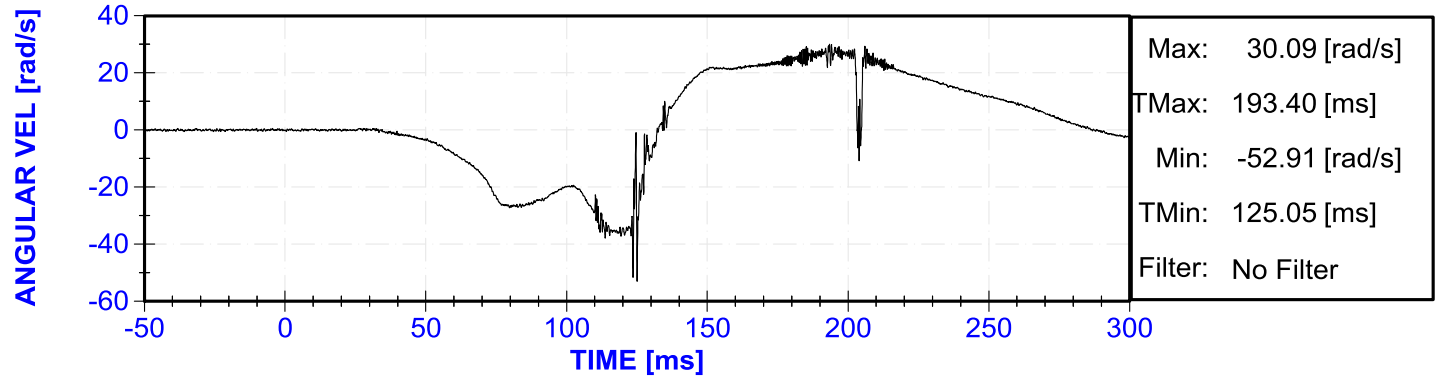
V2P1 HEAD ANGULAR ACCELERATION Z [SIMON]



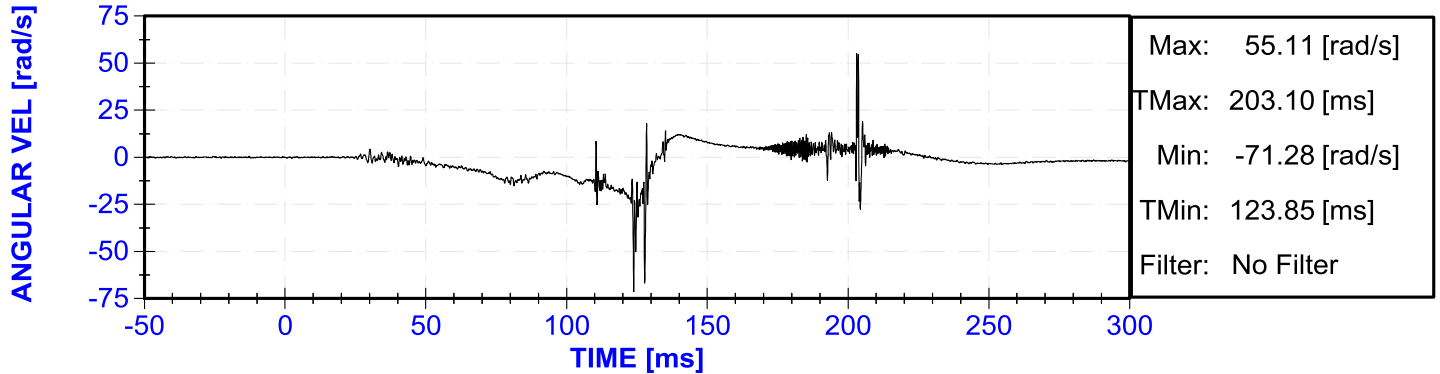
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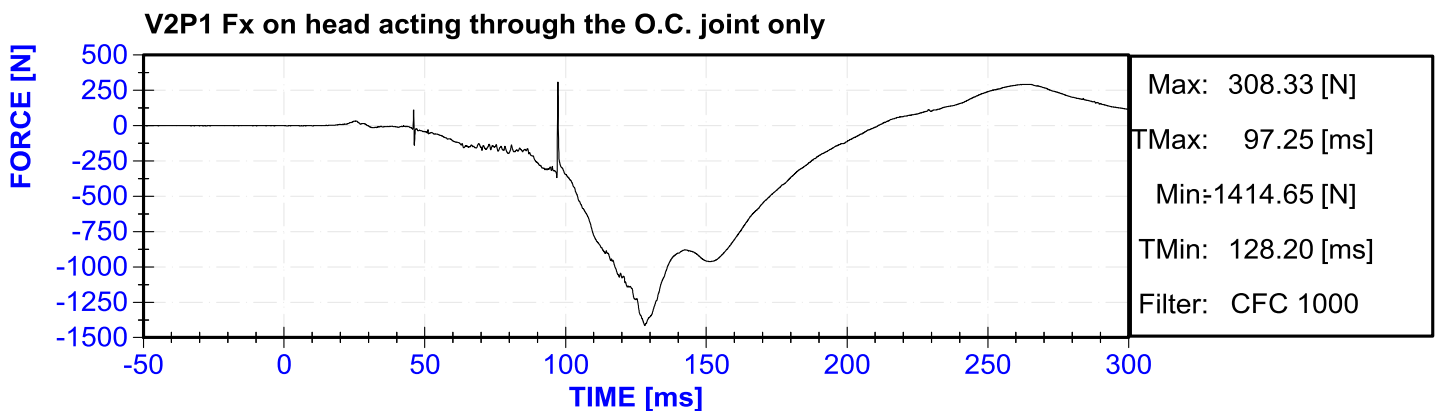
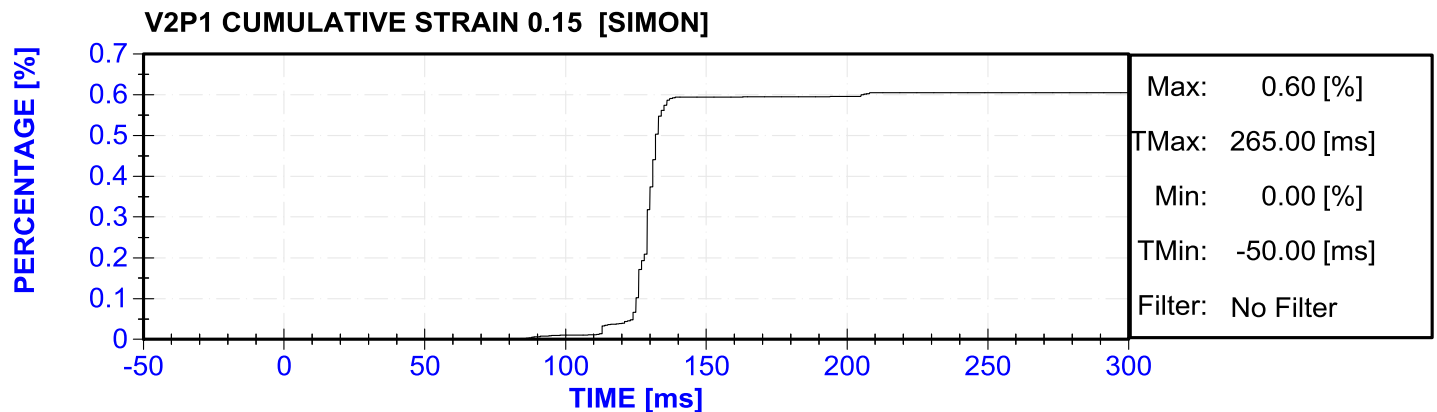
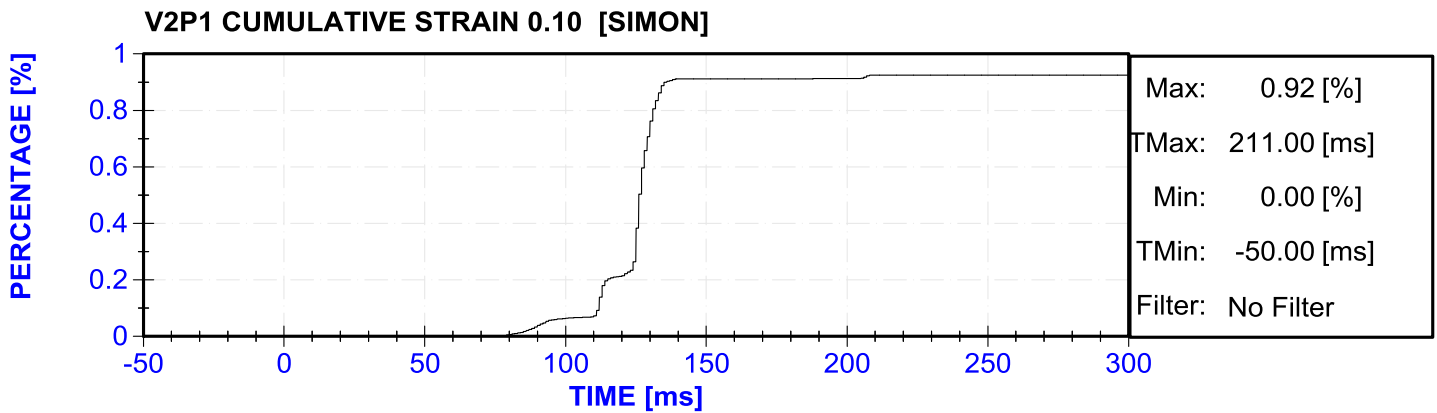
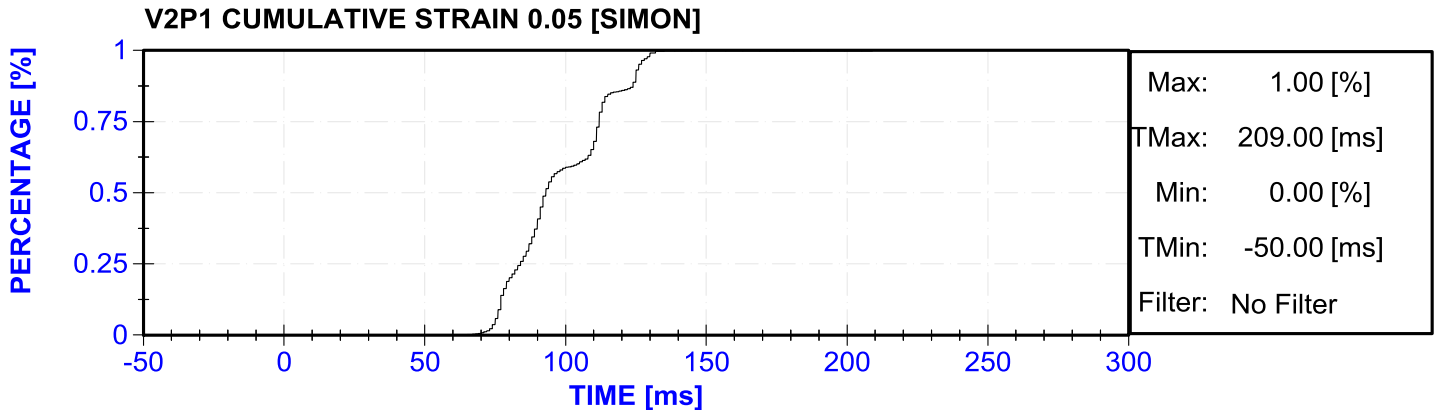


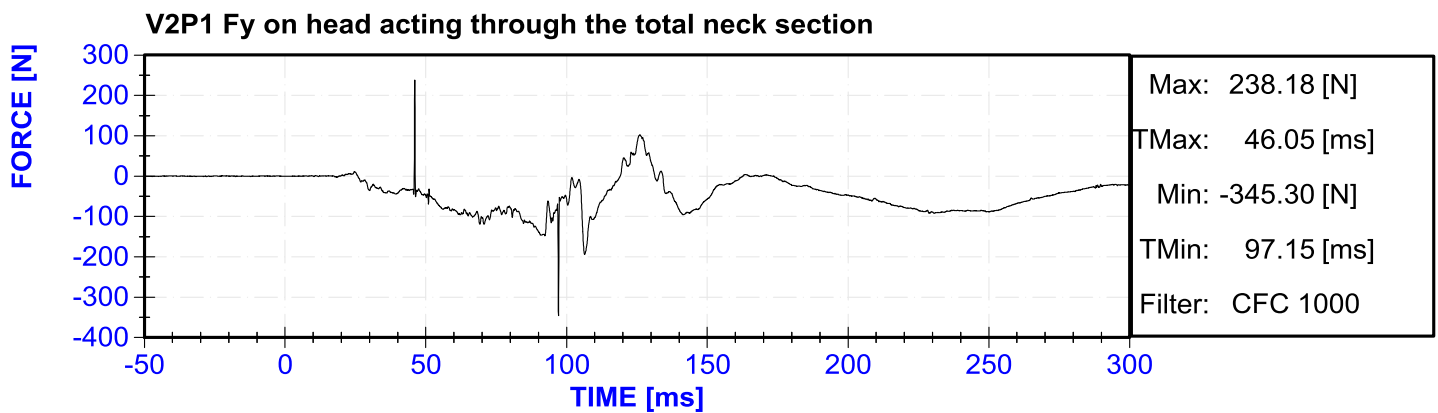
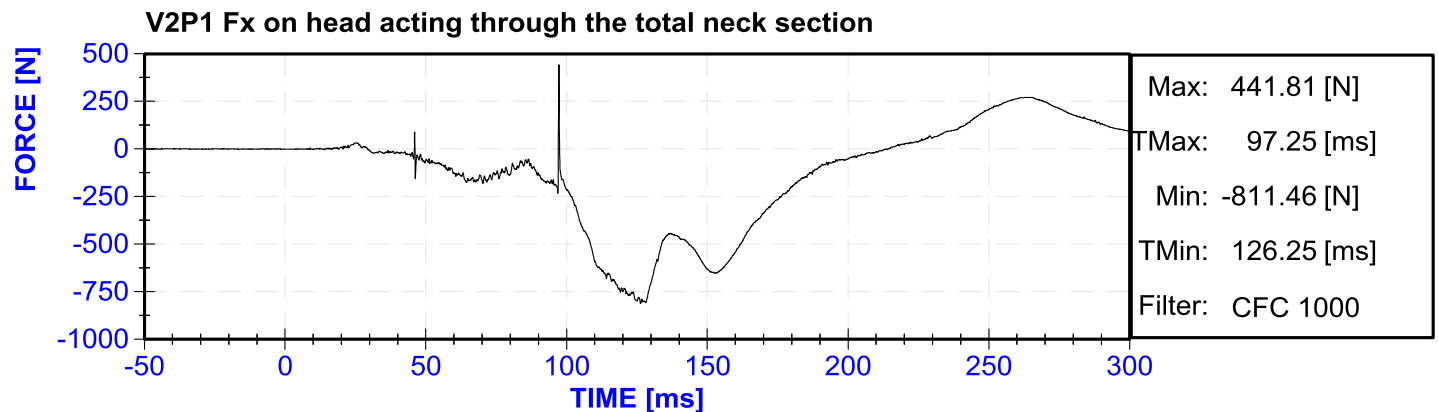
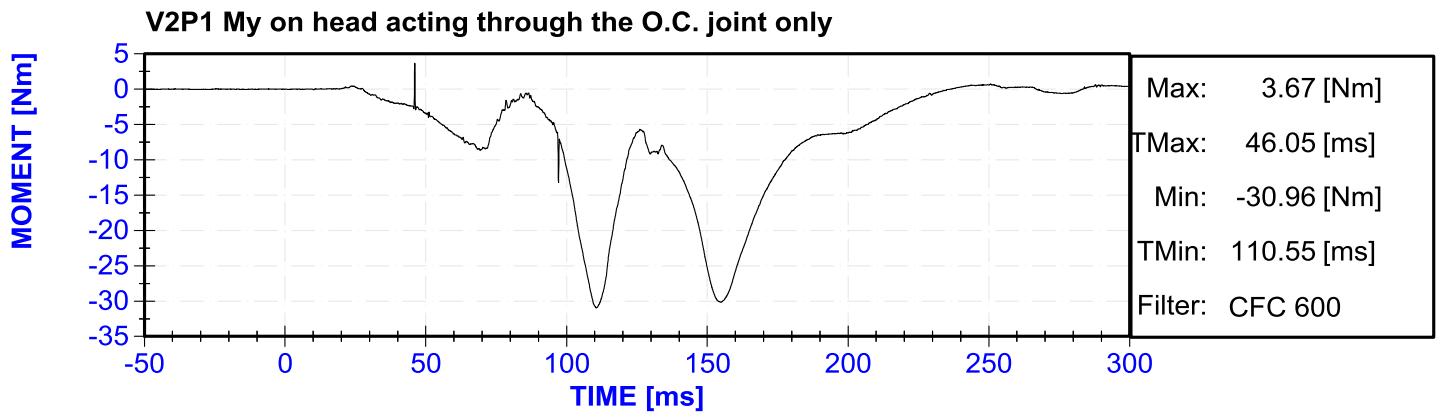
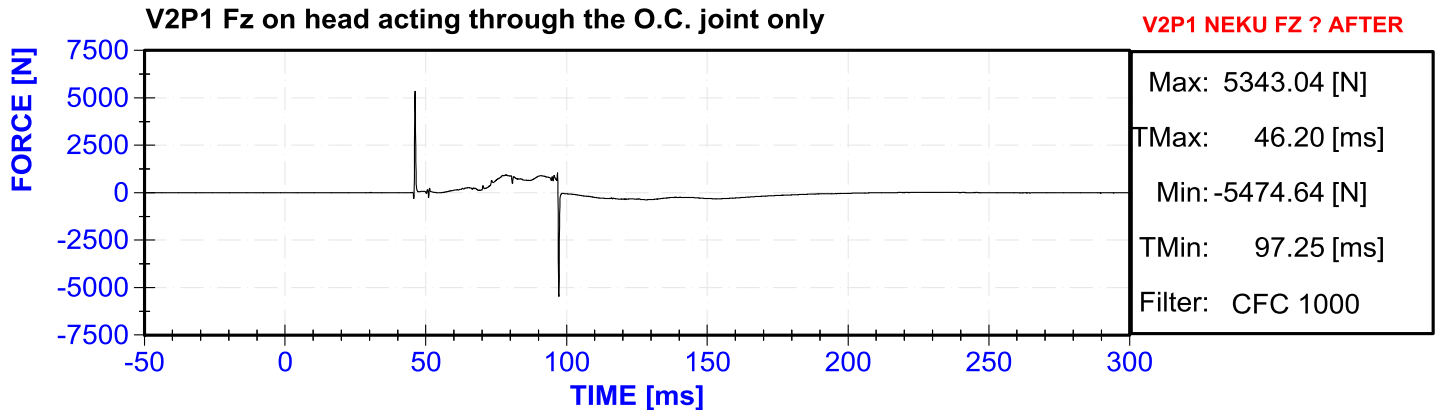
V2P1 HEAD ANGULAR VELOCITY Y [SIMON]

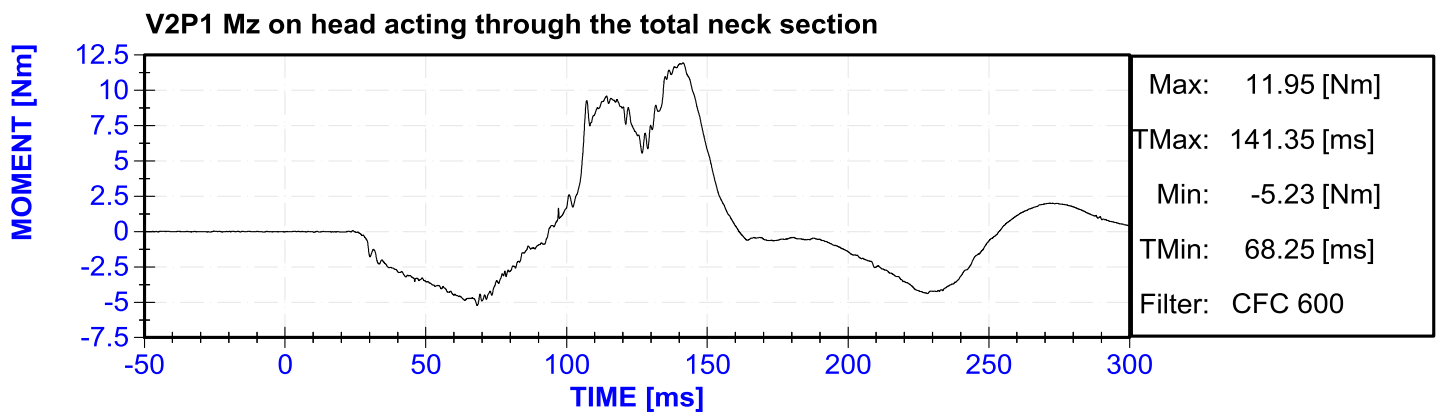
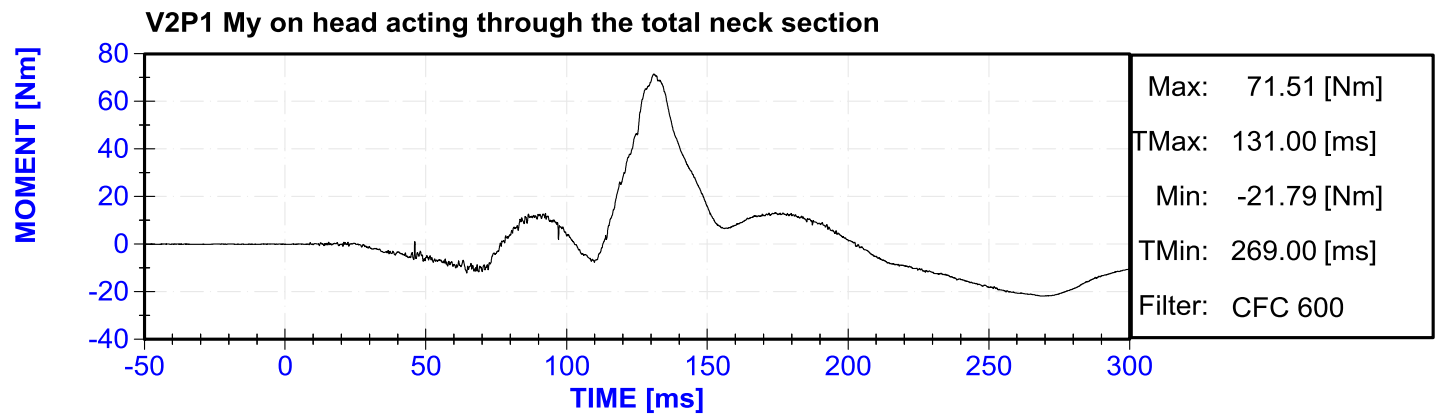
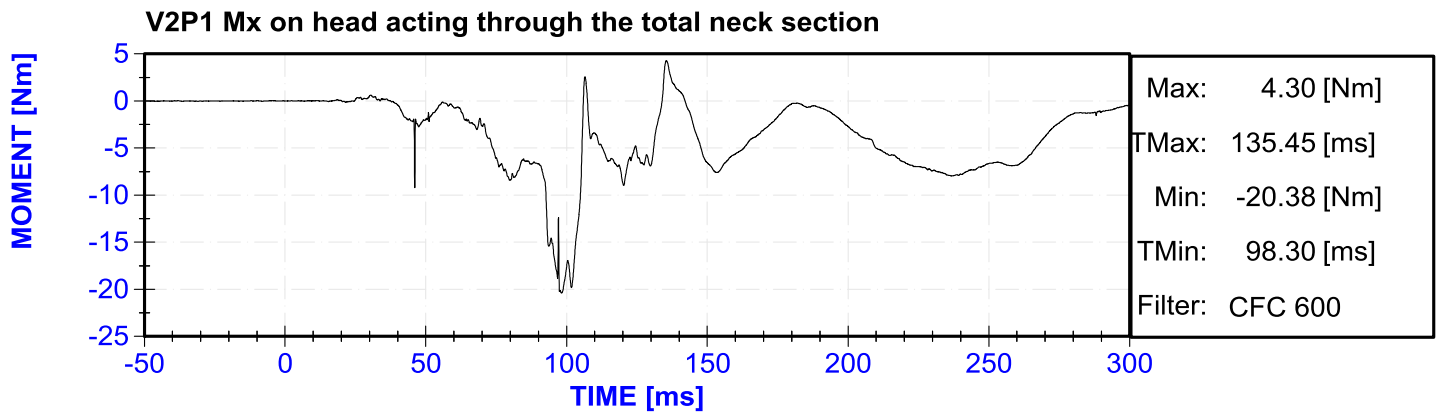
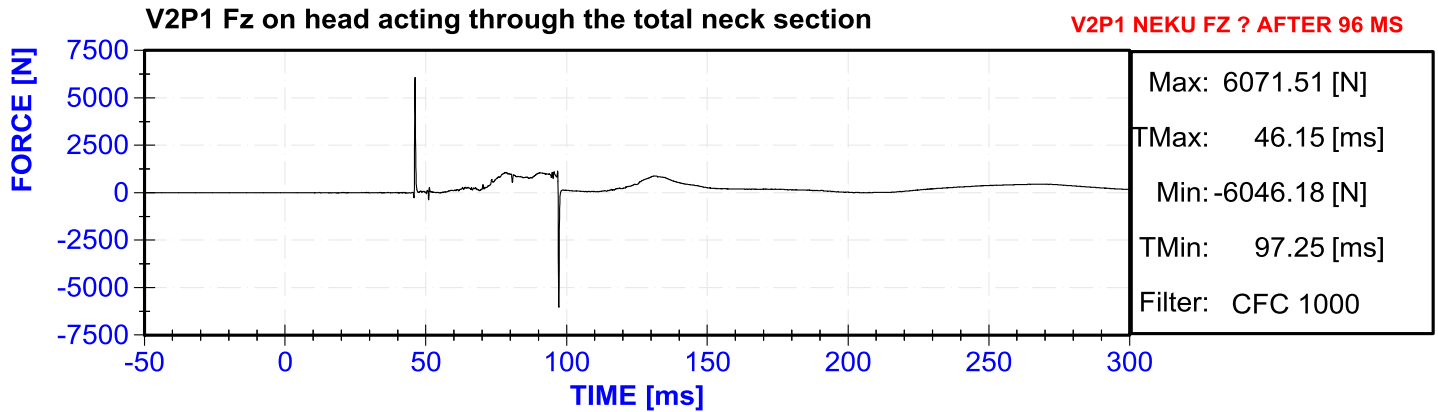


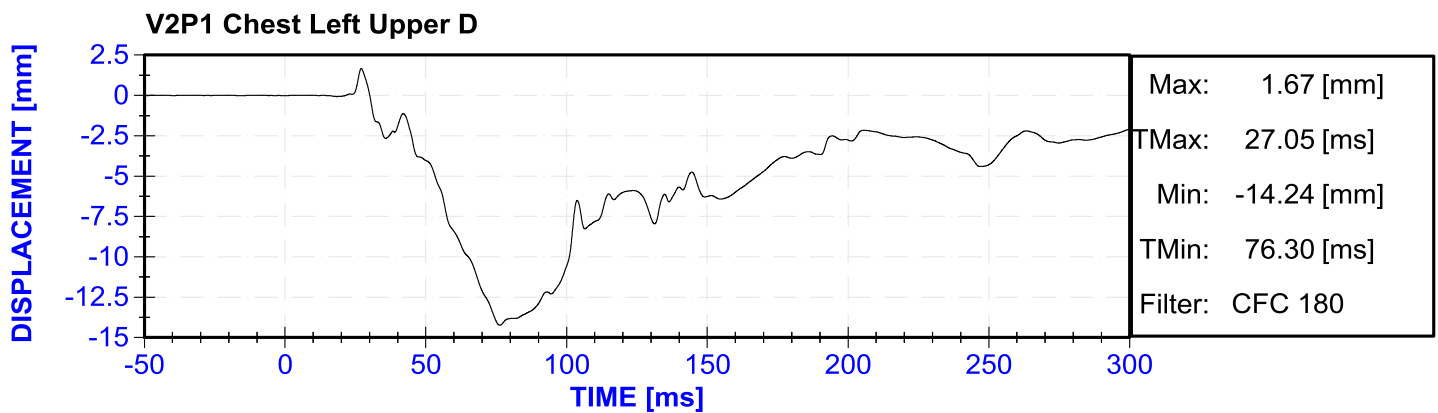
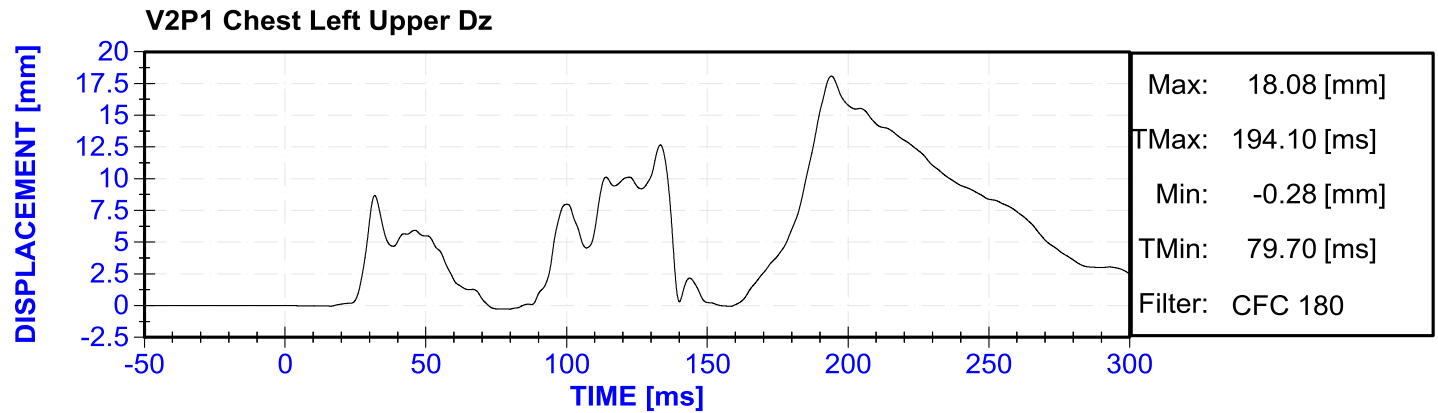
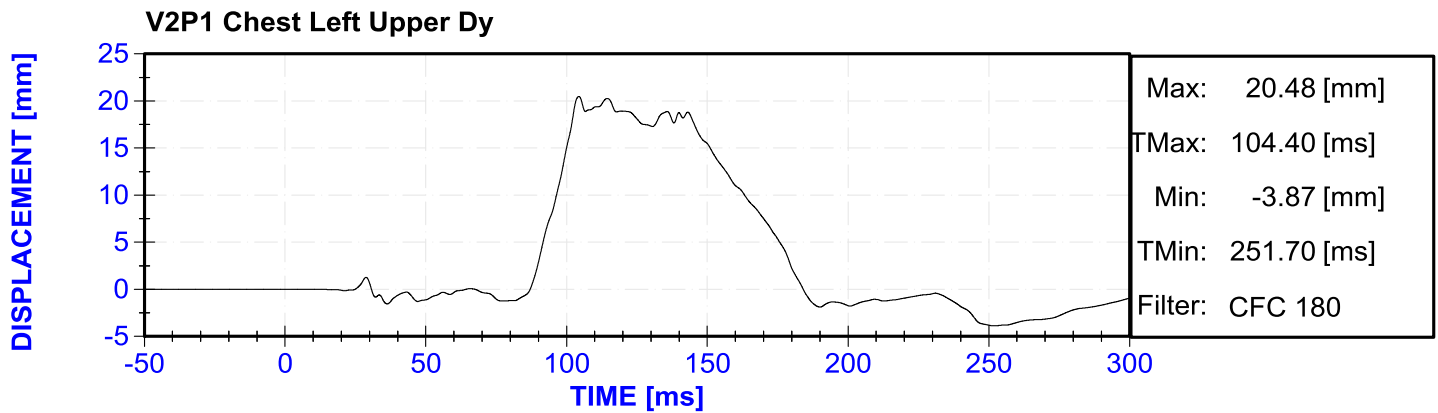
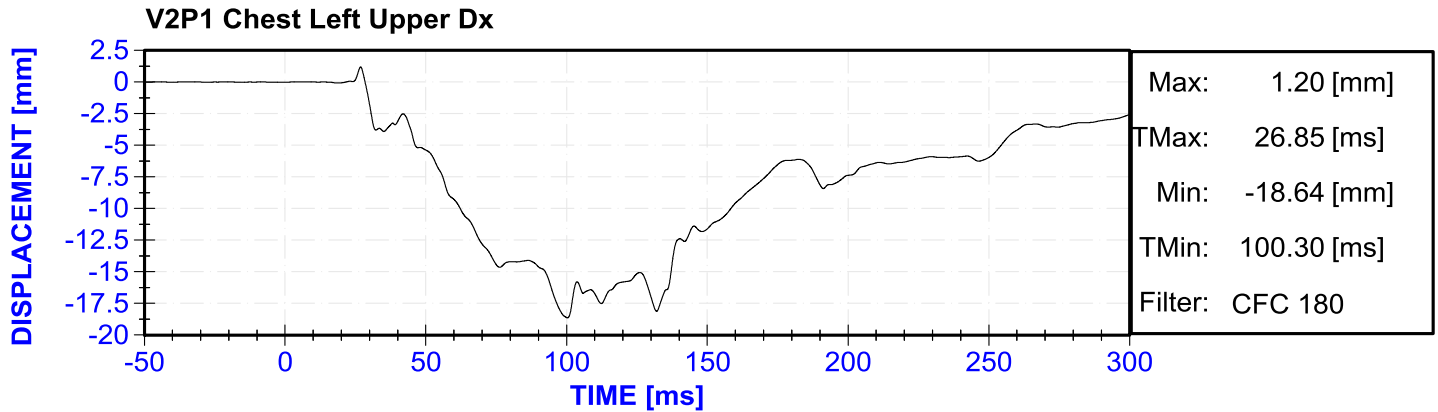
V2P1 HEAD ANGULAR VELOCITY Z [SIMON]

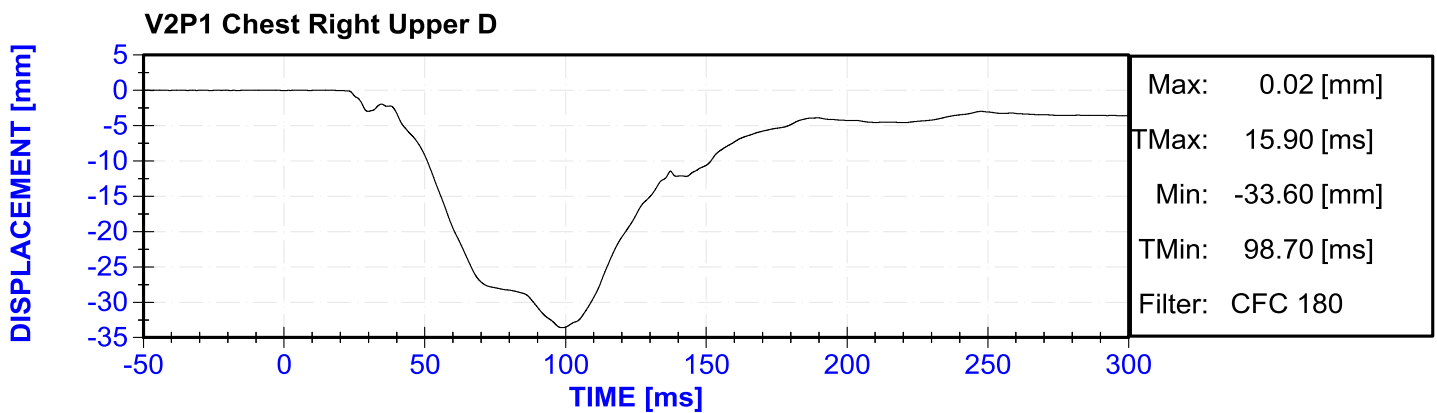
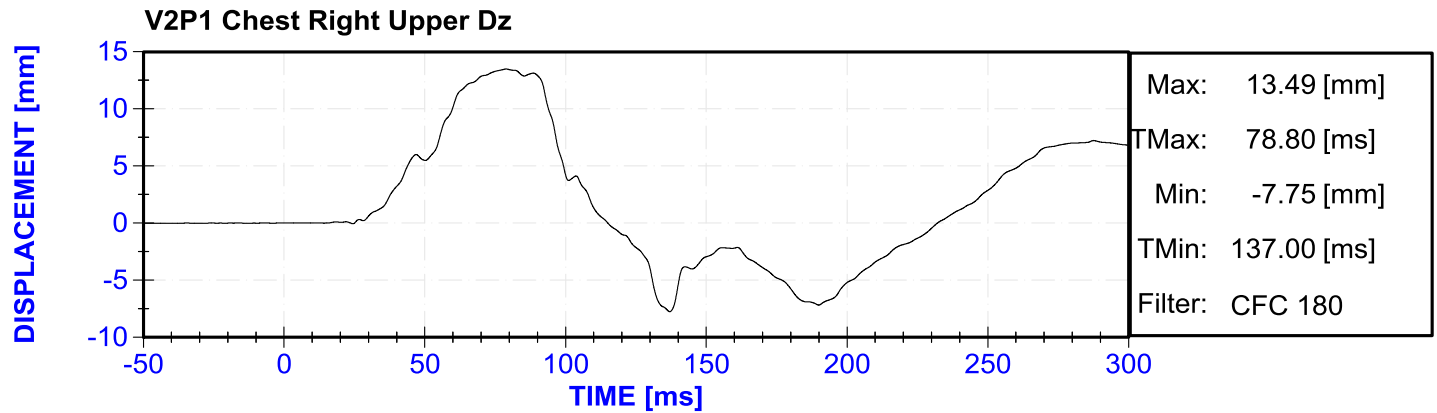
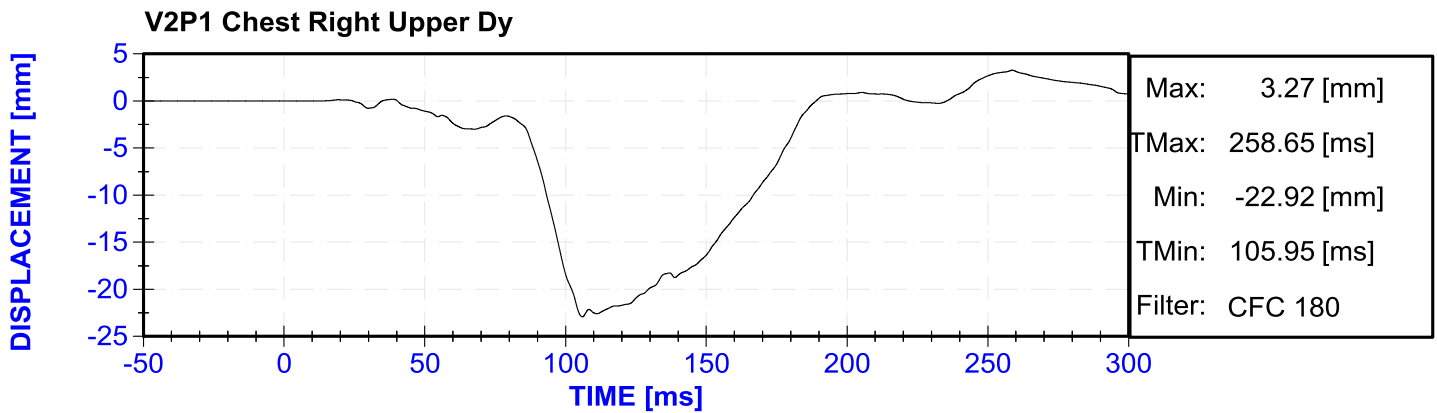
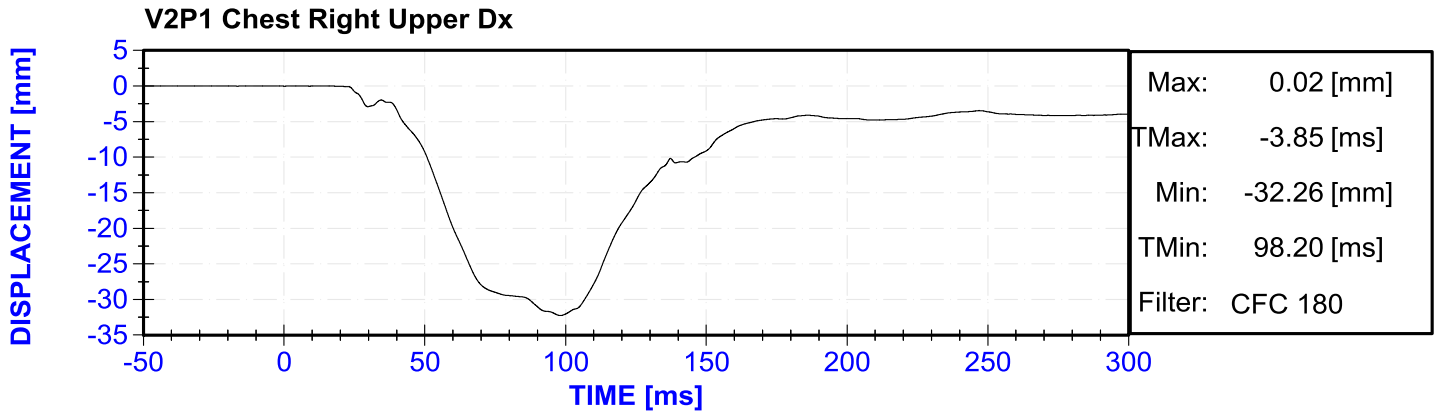


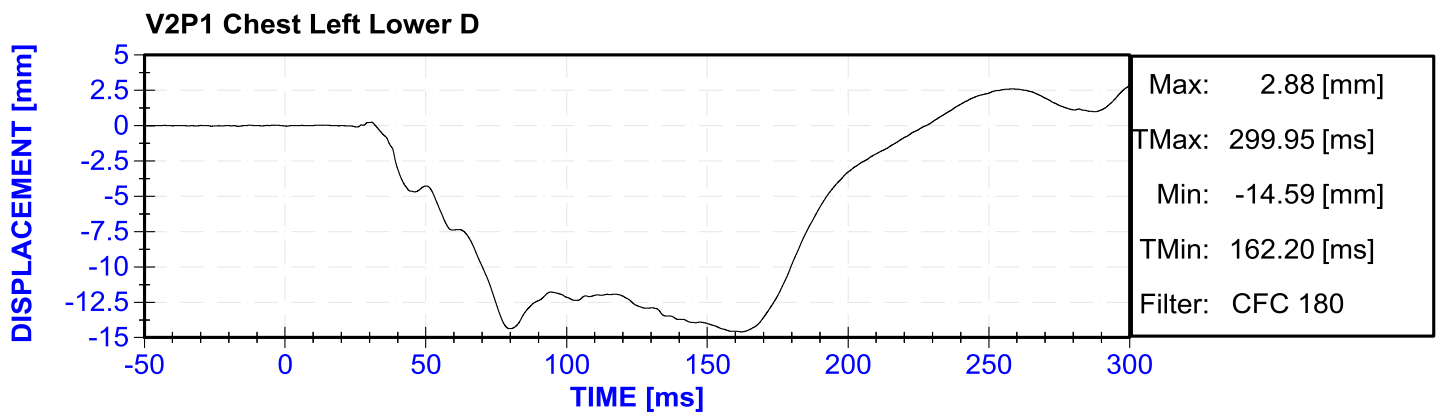
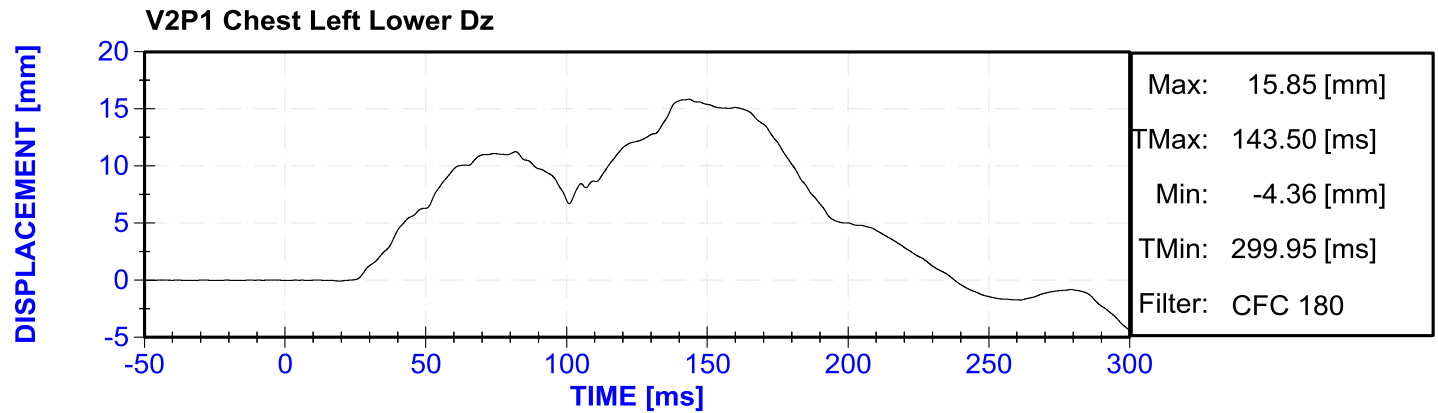
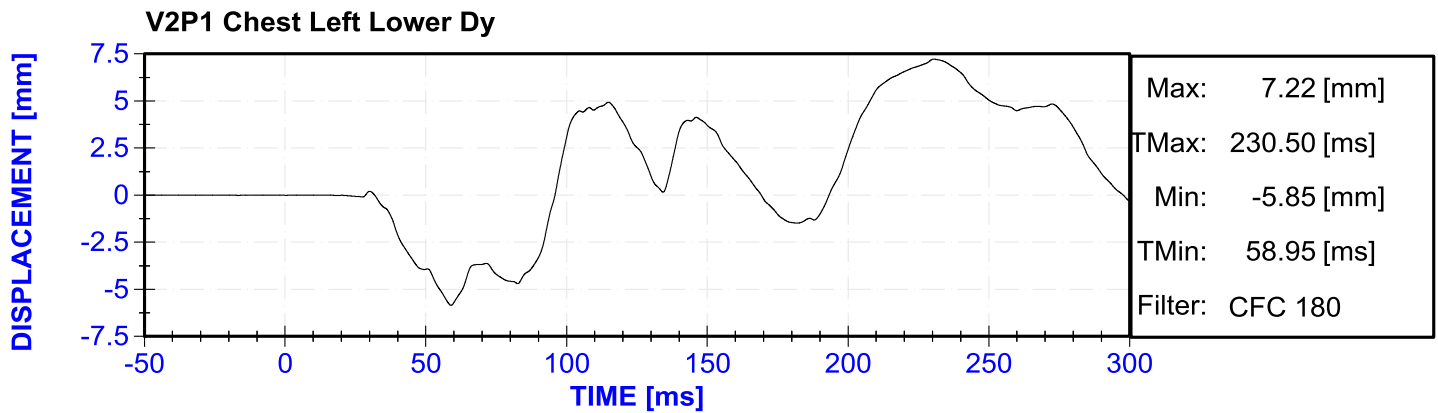
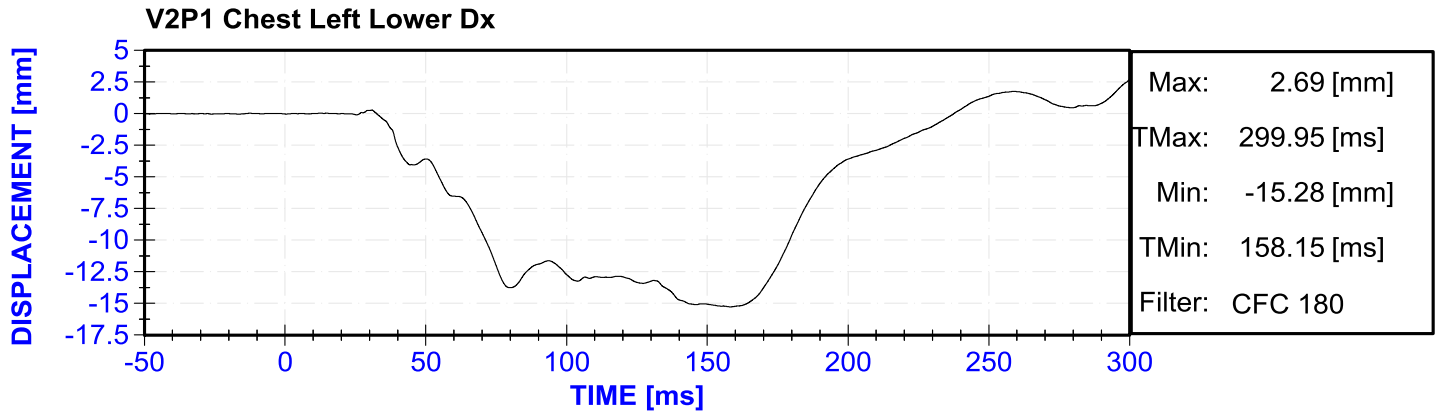


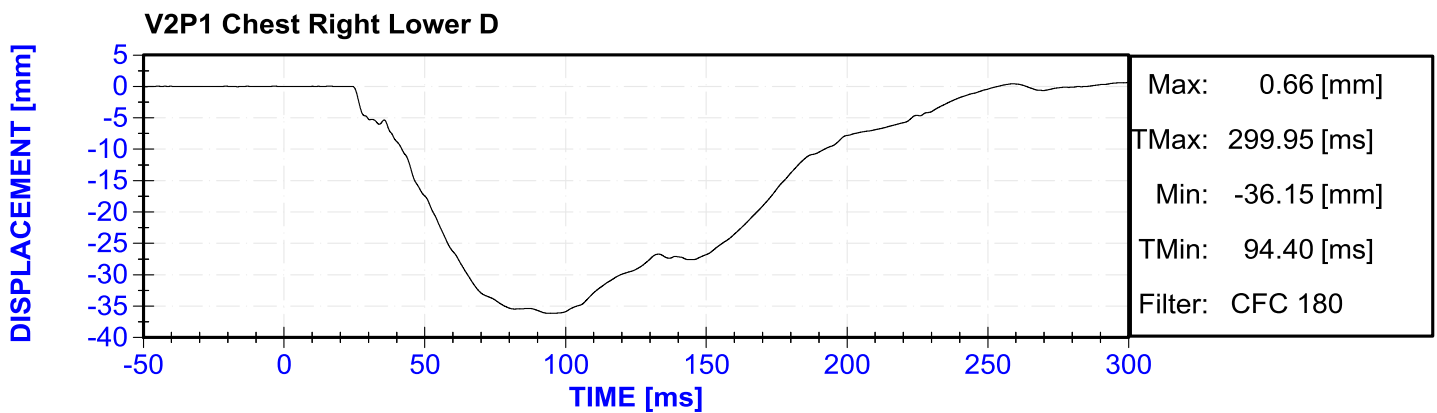
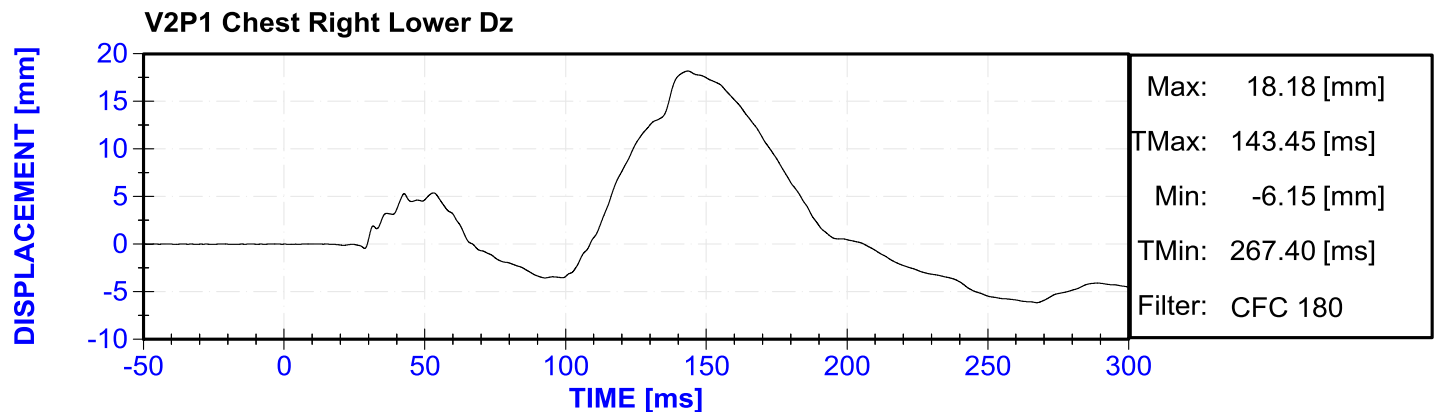
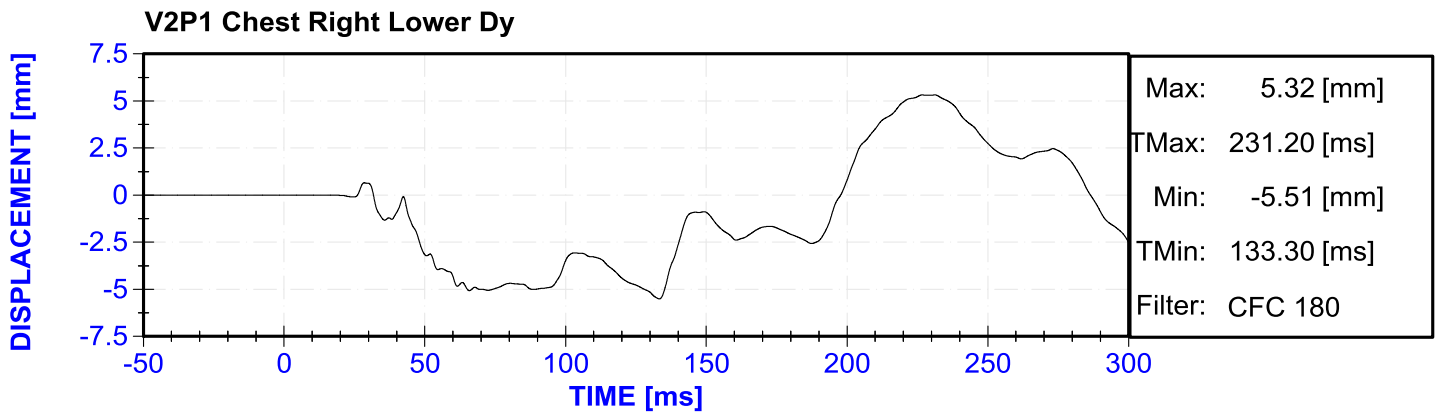
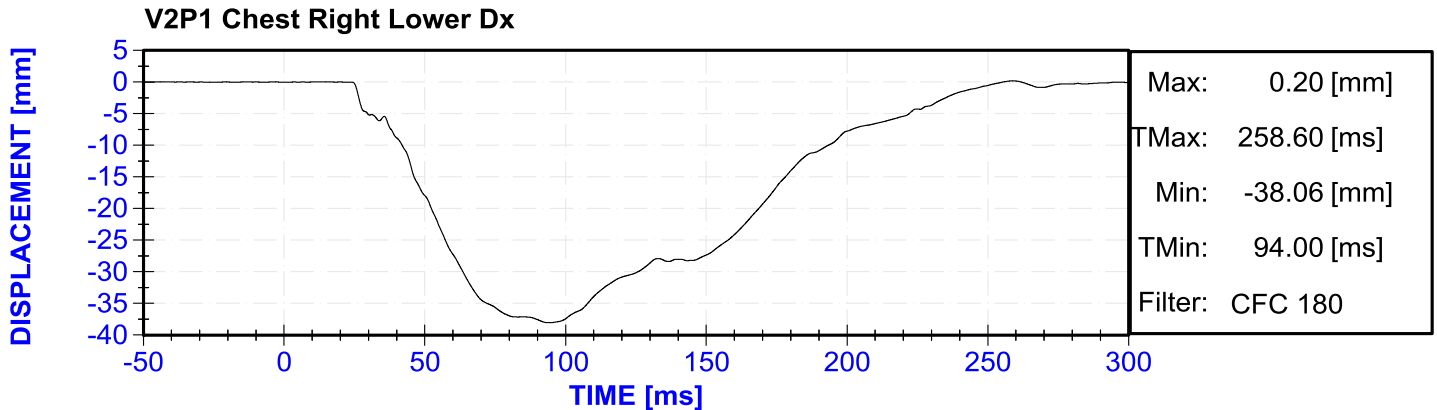


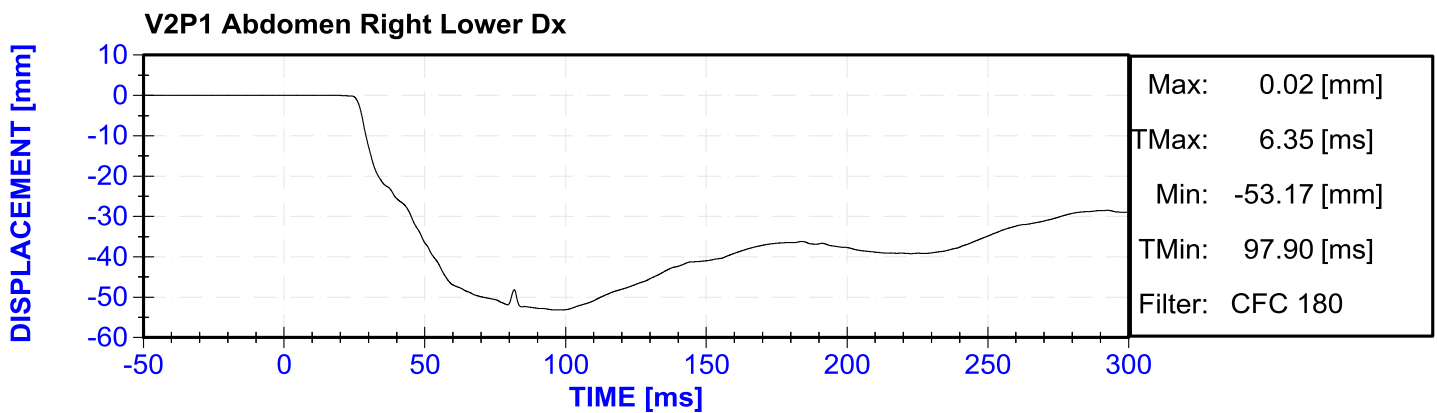
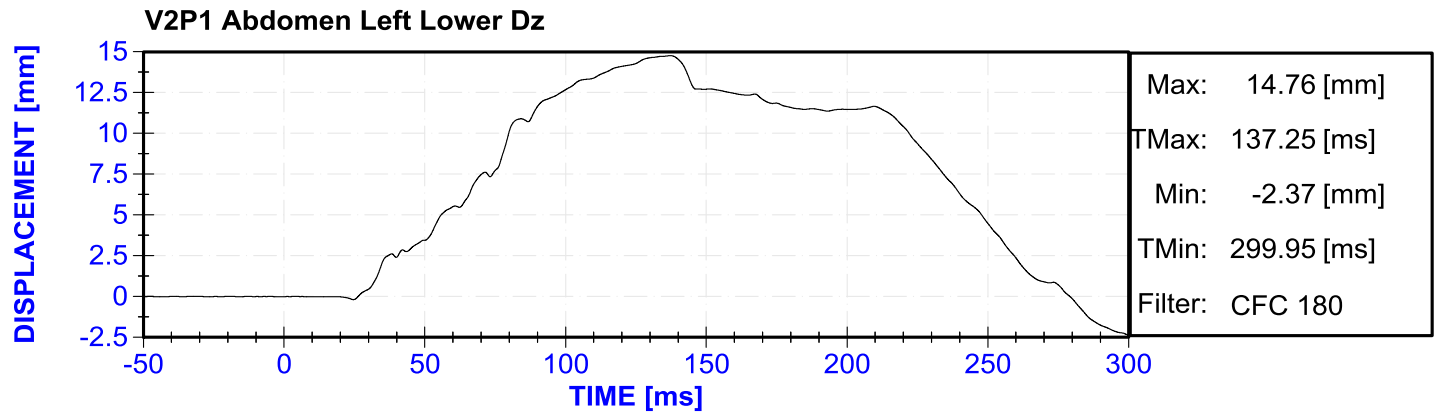
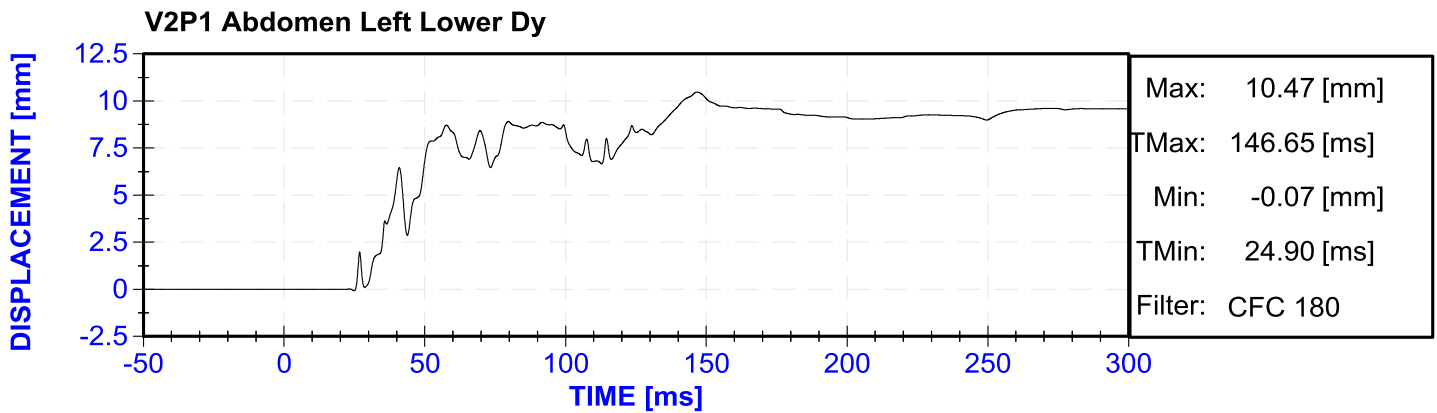
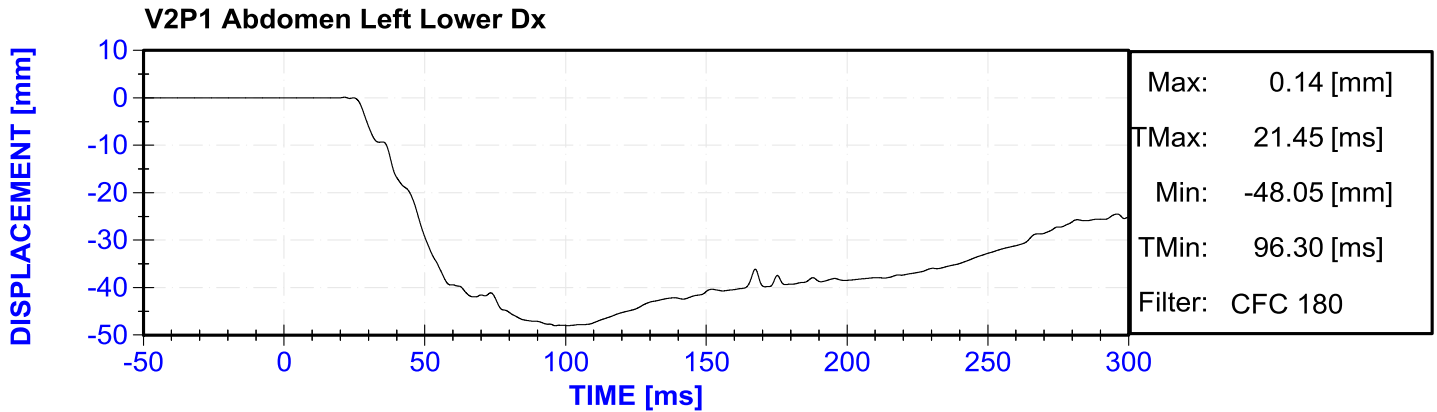


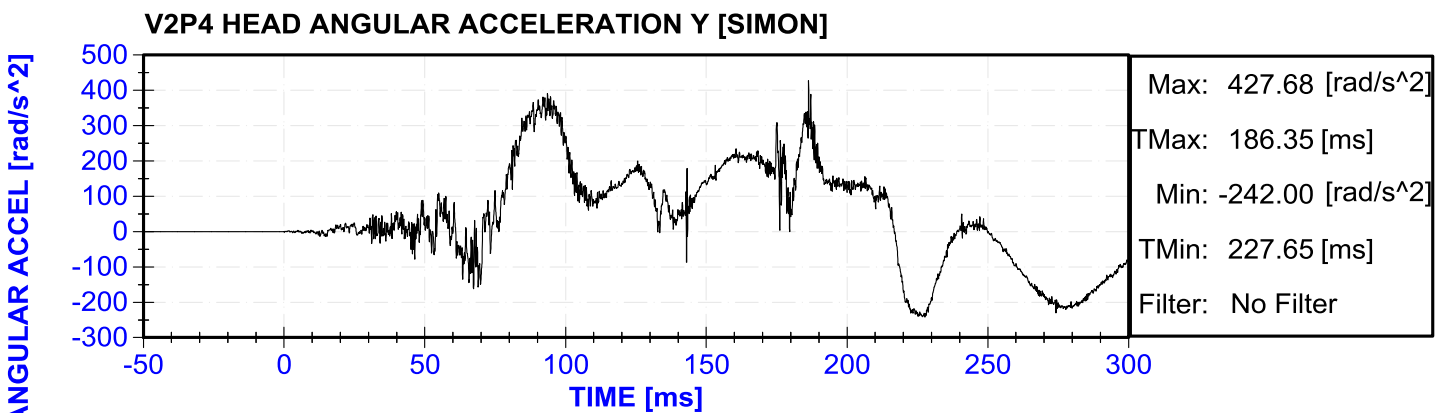
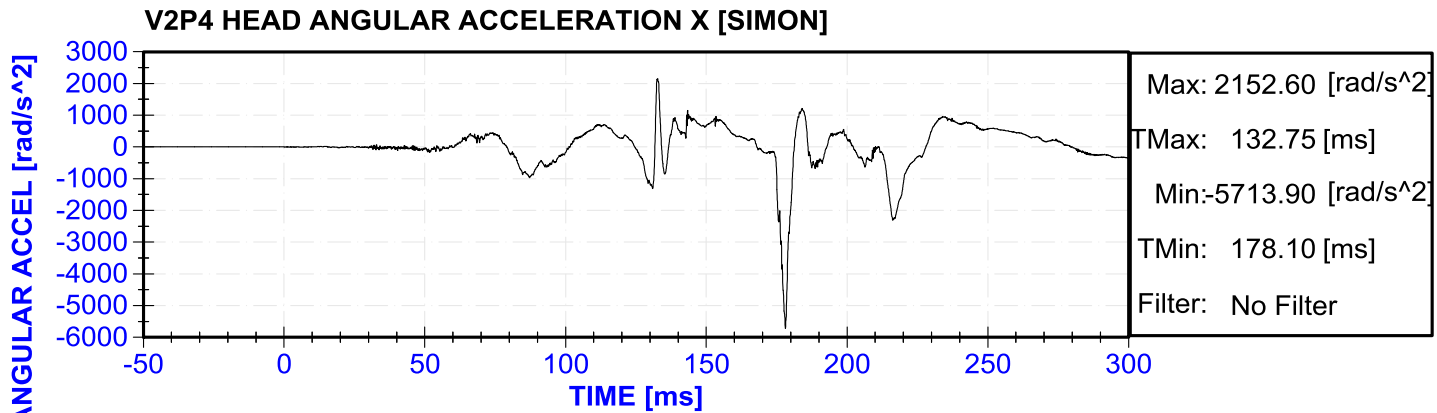
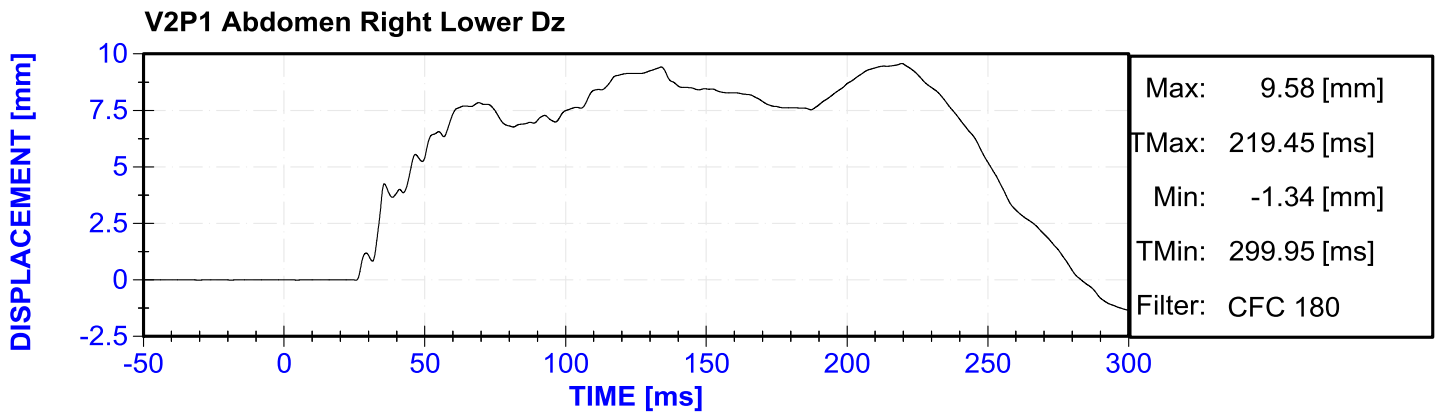
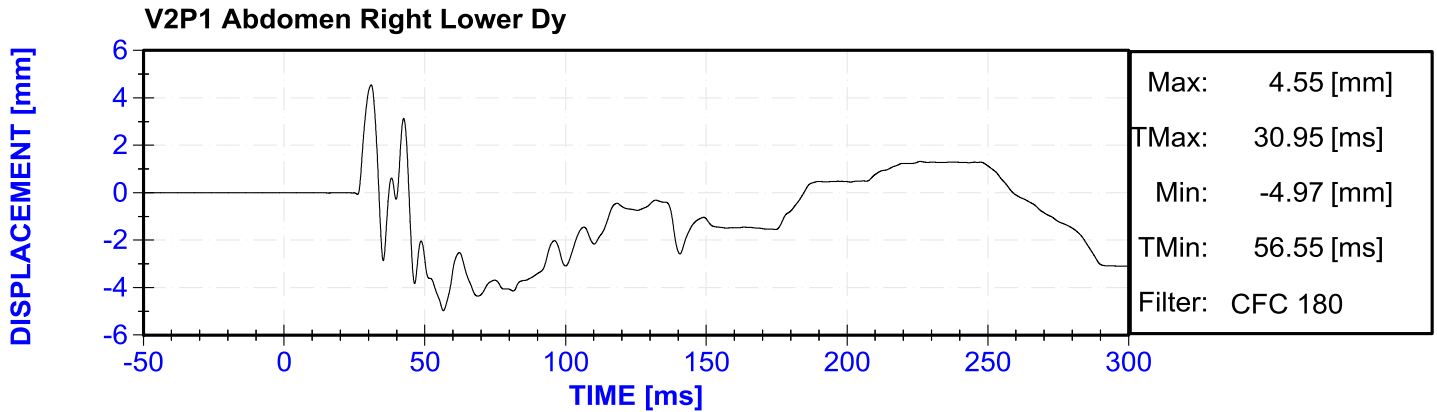


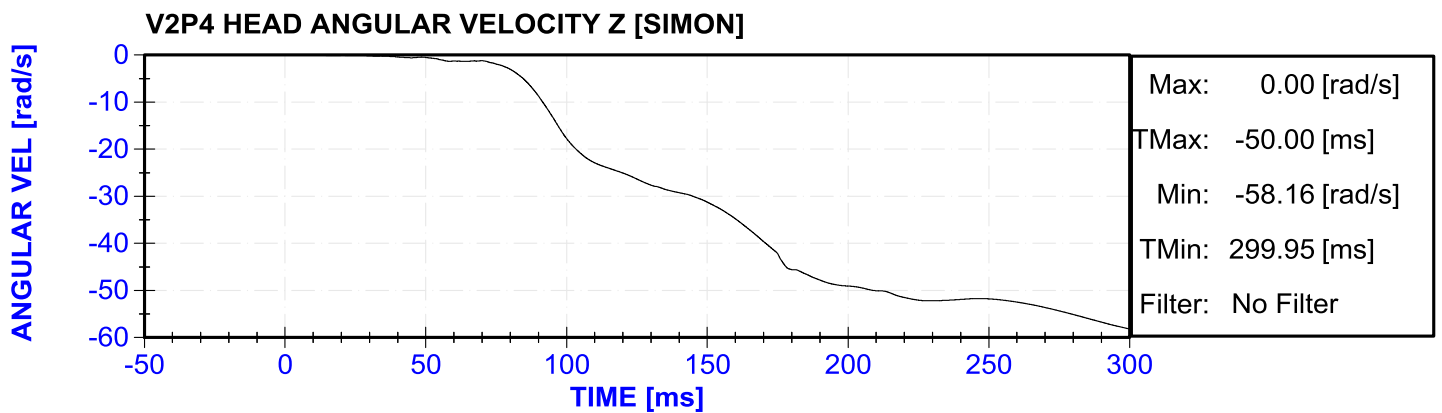
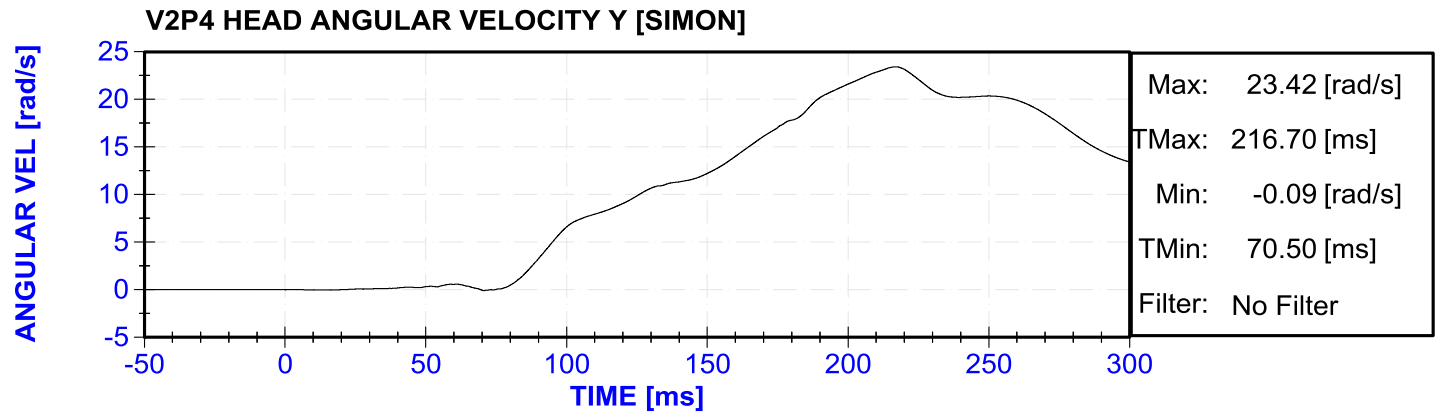
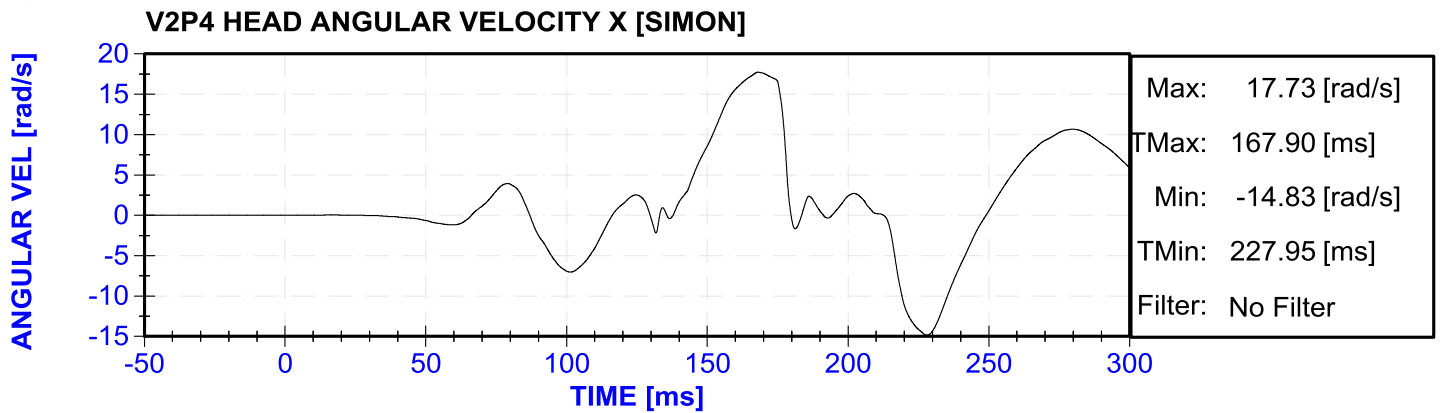
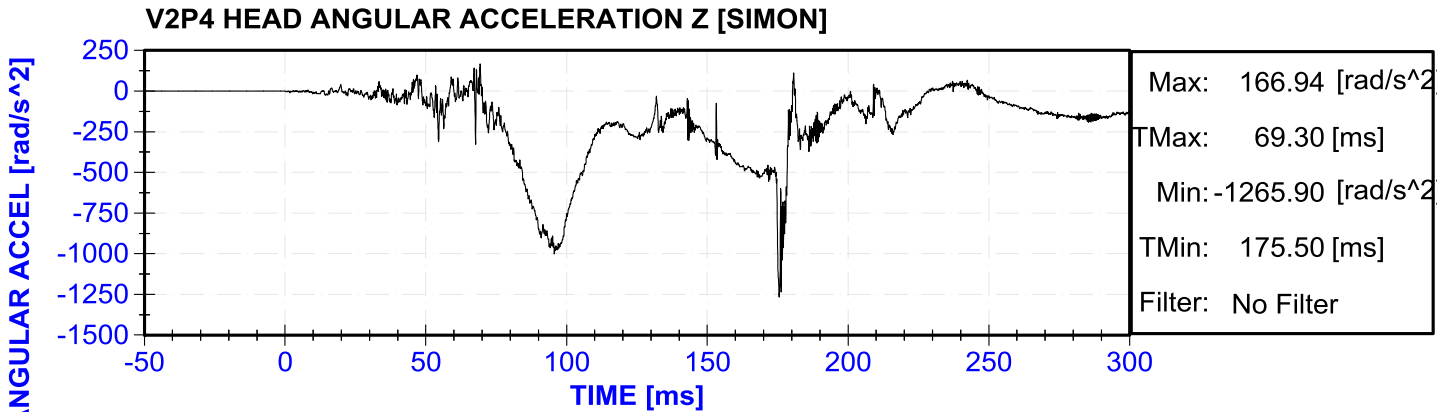


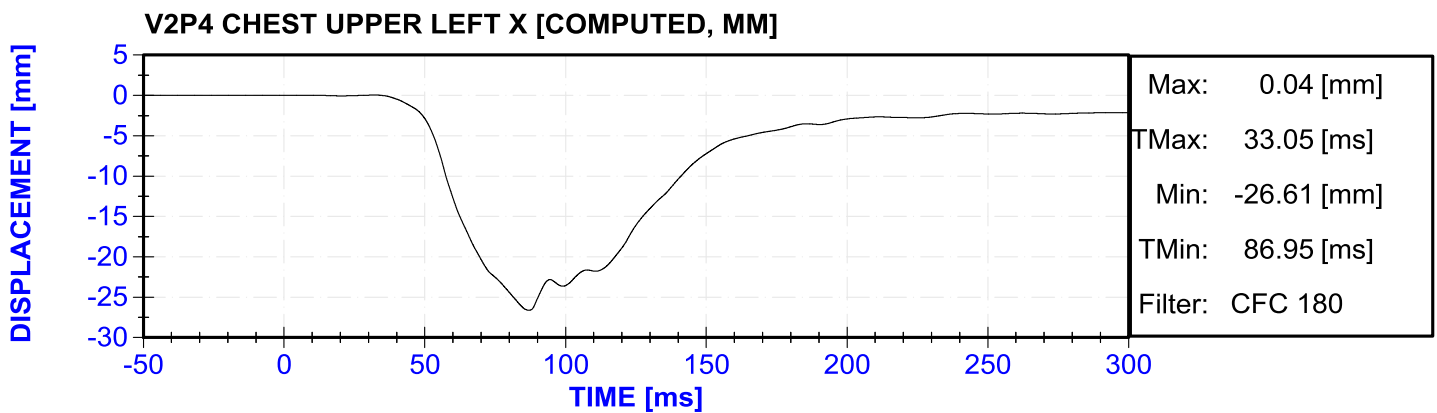
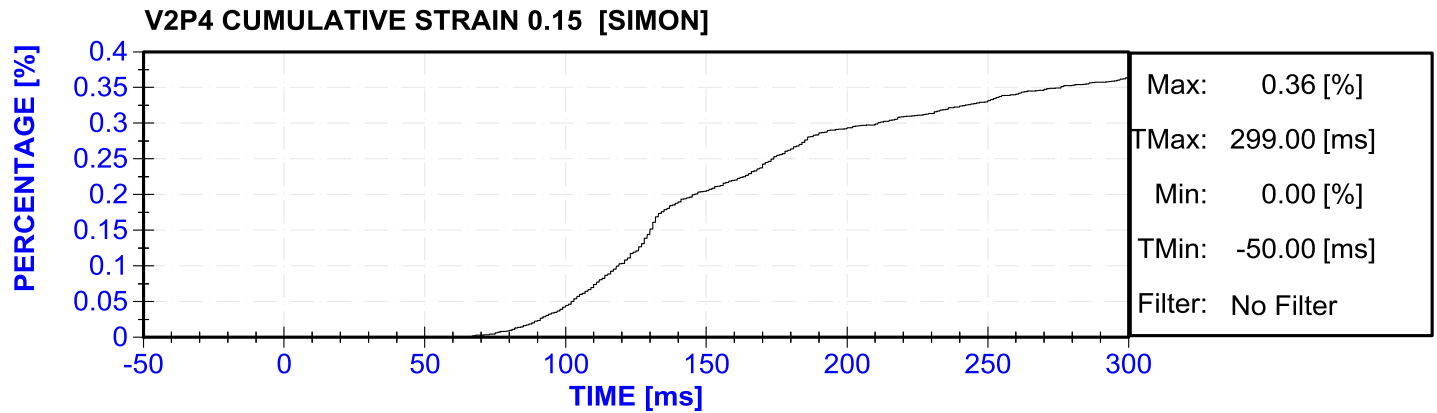
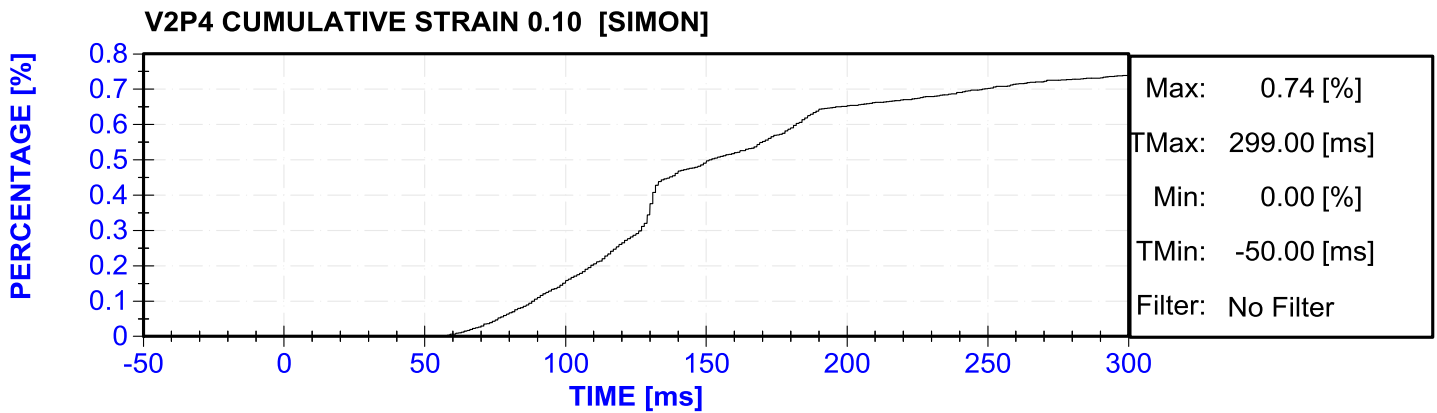
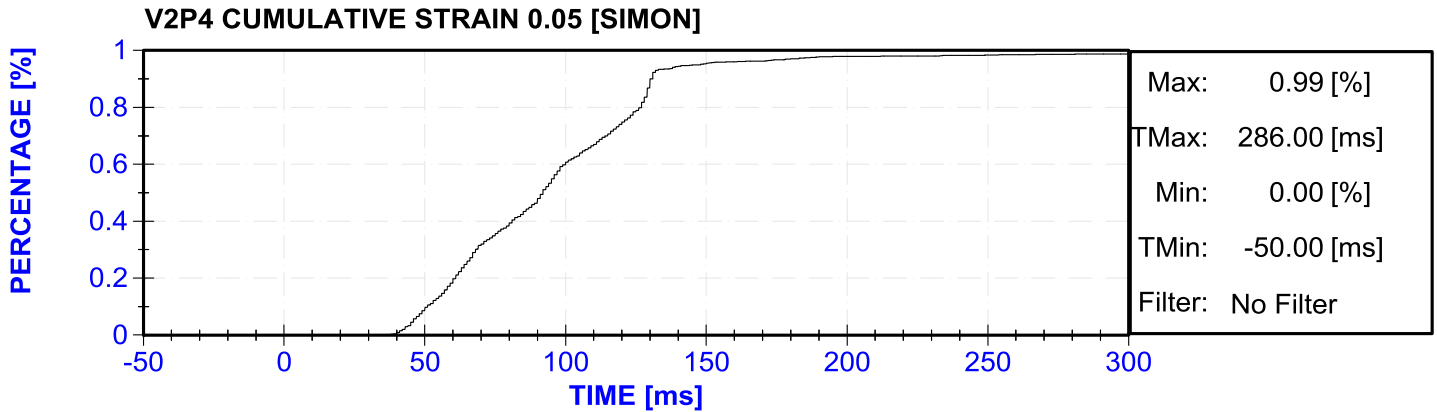


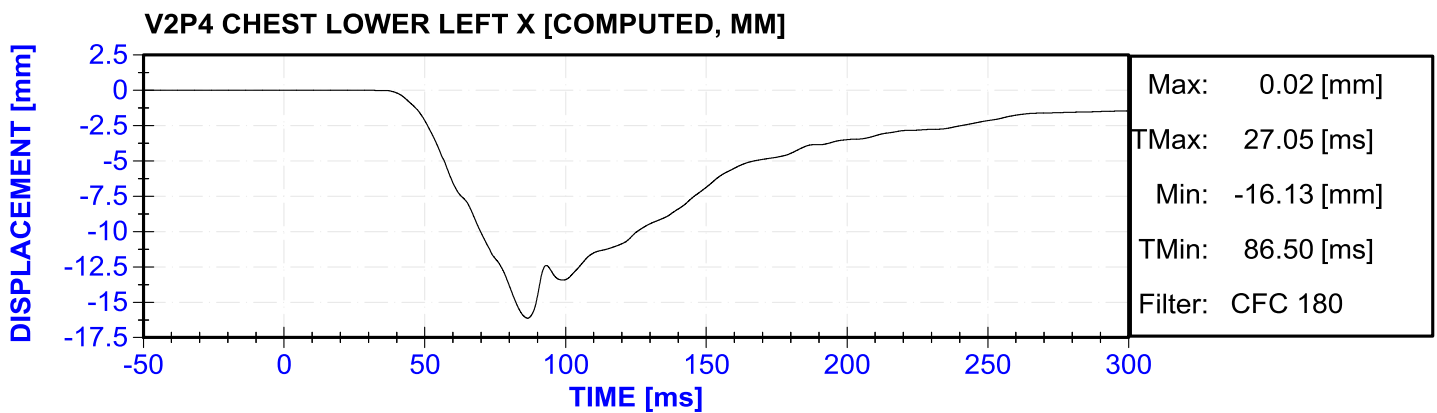
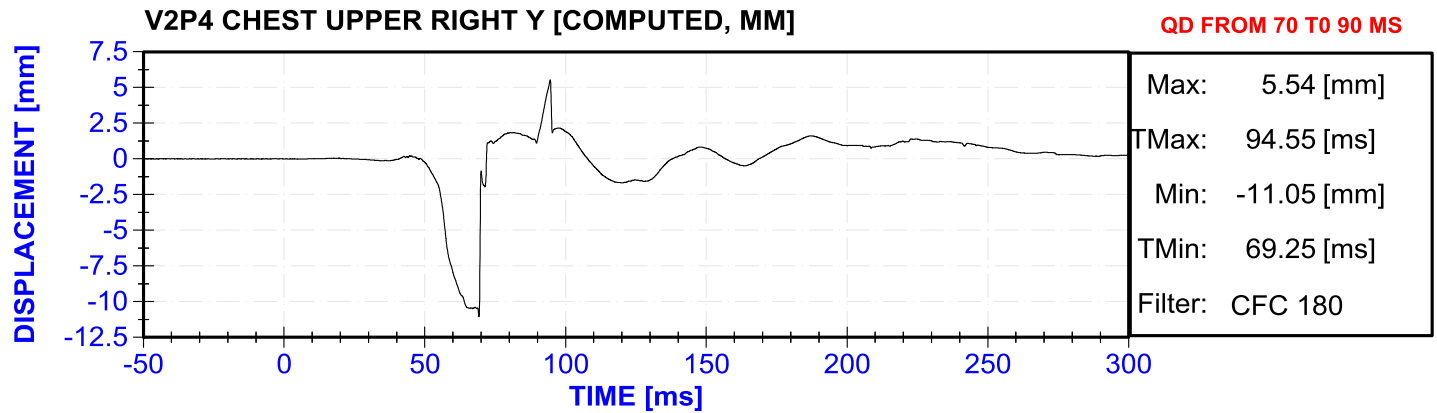
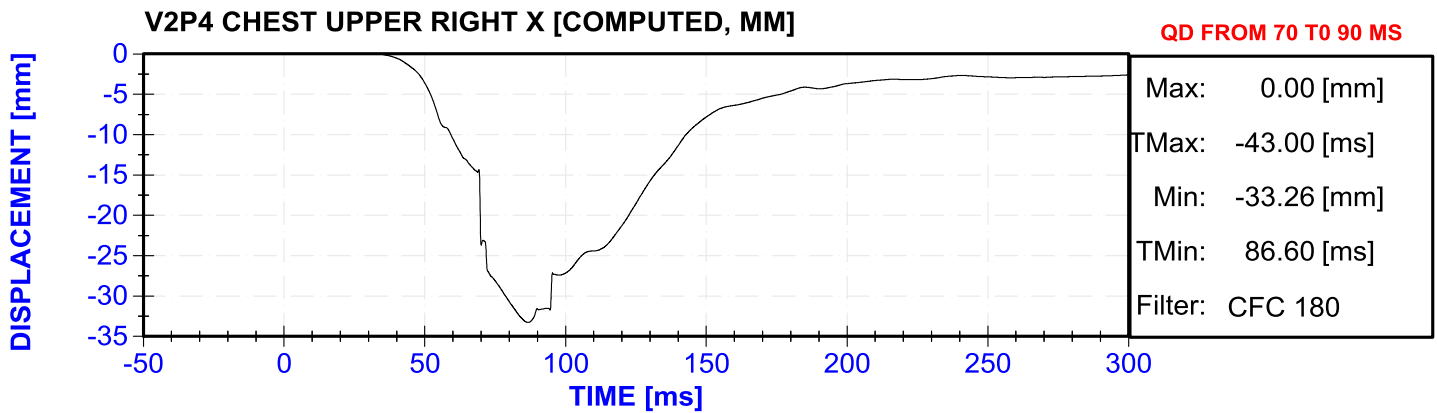
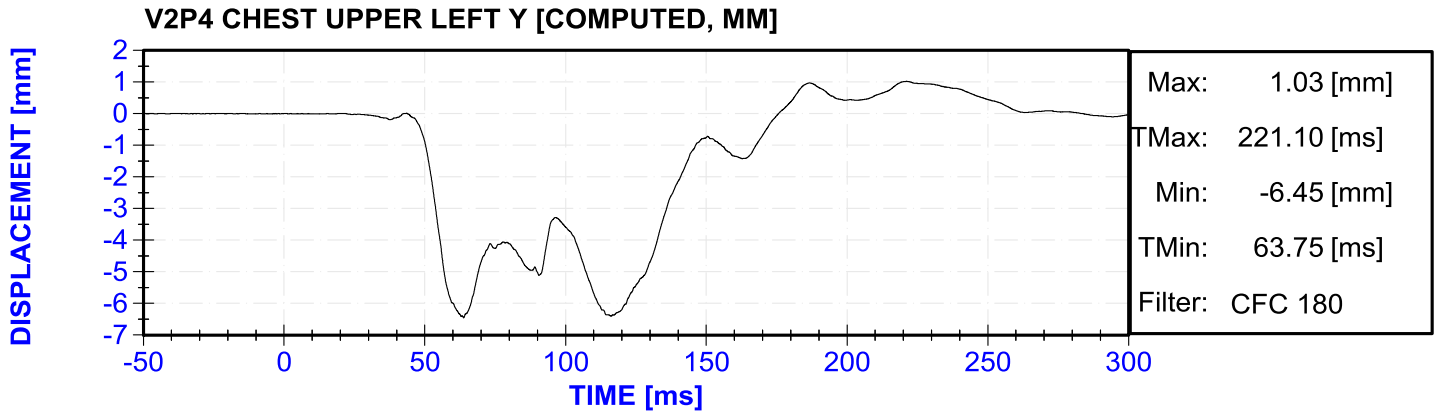


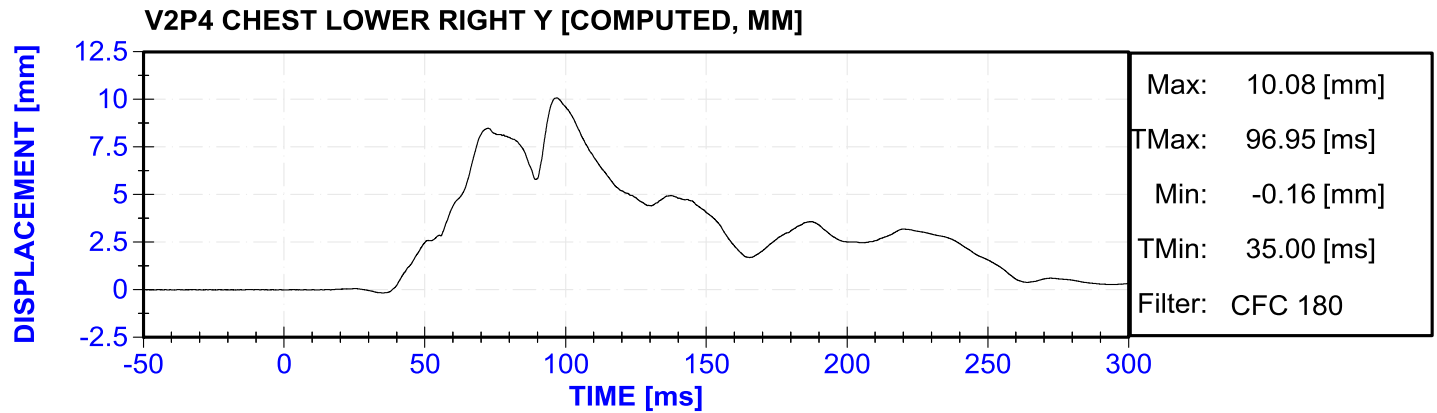
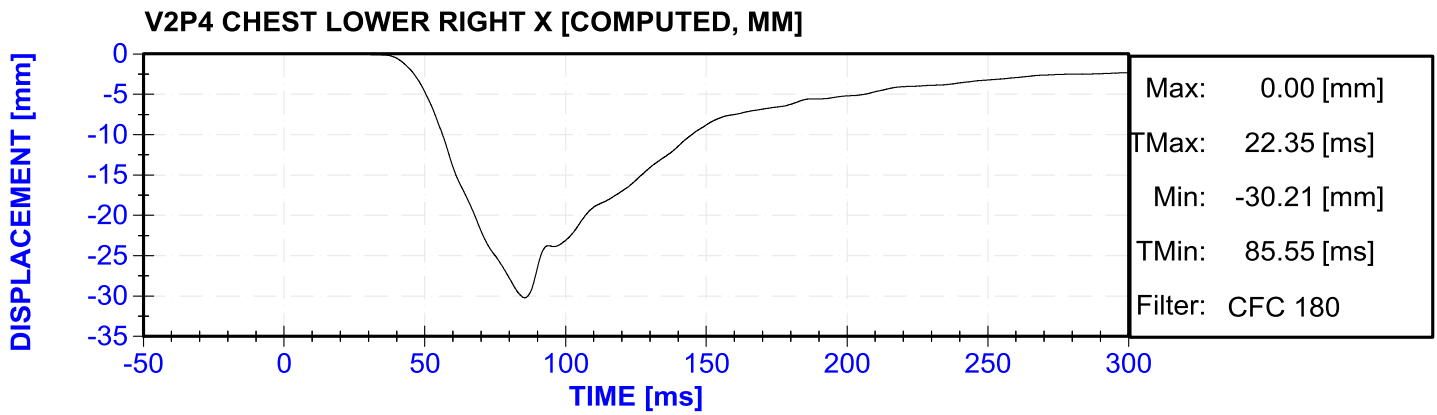
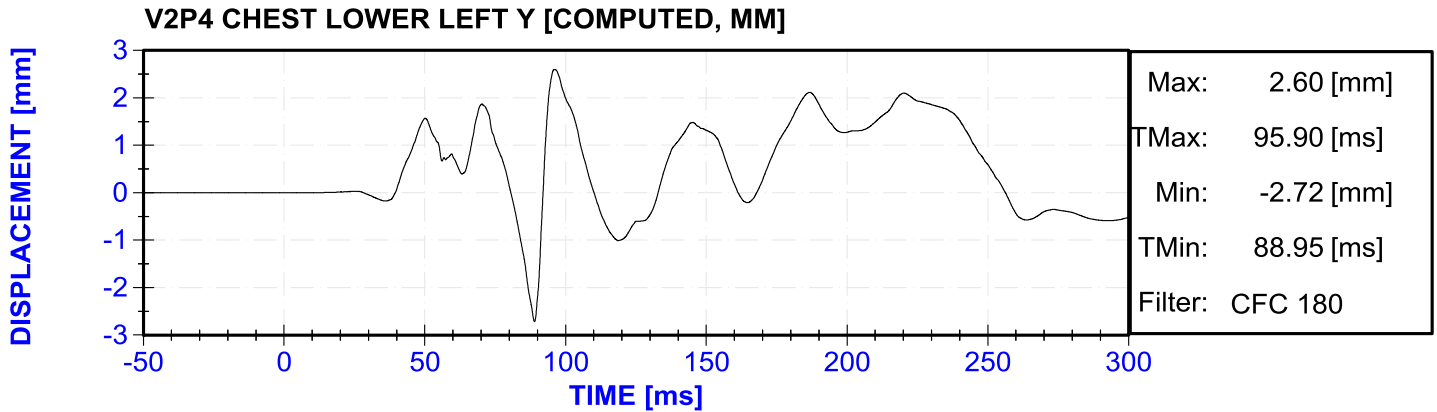












APPENDIX C

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

TABLE OF CONTENT

No.		Page
Table1	Dummy Information	C-3
Table 2	THOR 6 File Set	C-3
Table 3	THOR Dummy Initial Set-Up Information	C-3
4	THOR Post Inspection Checklist	C-4

Table 1 – Dummy Information

TYPE	DESCRIPTION	SERIAL NUMBER
THOR Hybrid III	50 TH Male 5 th Female	0007 070

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
3.98577	13.869	-34.481	0.30868	10.848	-58.84

Table 3 - THOR Dummy Initial SetUp Information

THOR – NT S/N: 0007									Sensitivit y (JARI)	Sensitivit y (GESAC)	Setup Angle (GESAC)
Sensor	Description/ Axis	MFG	Capacity	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										

PRE-TEST

THOR Inspection Checklist

Date: September 15, 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: 9/15/2011
<u>Tests conducted since last full certification or inspection:</u> Dodge Ram 1500 RB0330
<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
Y / <input checked="" type="radio"/> N	Head skin shows no sign of tears or damage <ul style="list-style-type: none"> Gouge left side of the forehead
<input checked="" type="radio"/> Y / <input type="radio"/> N	Interior components of skull cavity (ballast, accelerometer mount, accelerometers) securely attached
Y / <input checked="" type="radio"/> N	Head securely mounted to OC joint <ul style="list-style-type: none"> OC Joint wobbles, otherwise firmly attached
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): <ul style="list-style-type: none"> Debonding between pecks 4-5, rear surface
Y / <input checked="" type="radio"/> N	No evidence of debonding or permanent compression in neck soft stop assemblies <ul style="list-style-type: none"> Front soft stop debonding
<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 <ul style="list-style-type: none"> • Scuffing on both pads
<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 <ul style="list-style-type: none"> • Left Shoulder soft stop slightly debonding
OTHER	
THORAX	
Y <input checked="" type="radio"/> N	No evidence of contact at top, bottom, or interior faces of rib damping material <ul style="list-style-type: none"> • Contact on interior of rib #4, both sides
<input checked="" type="radio"/> Y / N	No evidence of debonding between rib damping material and ribs
<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
Y <input checked="" type="radio"/> N	Rib stiffeners show no evidence of bending (no gaps between ribs and stiffeners) <ul style="list-style-type: none"> • Right side rib #5 • Left rib #7
OTHER	

ABDOMEN	
Y <input checked="" type="radio"/> N	No evidence of tearing, cuts, or broken stitches in upper abdomen bag and zipper <ul style="list-style-type: none"> • Small tear in the top left corner
<input checked="" type="radio"/> Y / N	Upper abdomen insert securely attached to spine



Y / N	Upper abdomen insert shows no evidence of permanent set
Y / <input checked="" type="radio"/> N	No evidence of tearing, cuts, or broken stitches in lower abdomen bag and zipper <ul style="list-style-type: none"> • Broken stitches on the top right side
<input checked="" type="radio"/> / N	Lower abdomen insert securely attached to spine
<input checked="" type="radio"/> / N	Lower abdomen insert shows no evidence of permanent set
OTHER	
PELVIS	
<input checked="" type="radio"/> / N	Pelvis flesh fits securely over pelvis bones
<input checked="" type="radio"/> / N	H-point tool fits securely into hole on both sides of pelvis
OTHER	
FEMUR	
<input checked="" type="radio"/> / N	Acetabular load cells firmly attached
<input checked="" type="radio"/> / N	Femur load cells firmly attached
<input checked="" type="radio"/> / 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"> • Both knees show cuts and scuffs, loose fitting
OTHER	Left Femur still wobbly

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

Y / N	No evidence of debonding, tearing, or permanent compression of ankle soft stops
OTHER	Using intermediate tibia "bone" from LX-104
JACKET	
<input checked="" type="radio"/> Y / N	Rib stiffeners show no sign of permanent deformation
Y / <input checked="" type="radio"/> N	No evidence of tears or holes in jacket fabric, velcro, or zippers <ul style="list-style-type: none"> • Tearing of stitches around front collar
OTHER	

POST-TEST

THOR Inspection Checklist

Date: September 17, 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: 9/17/2011	
<u>Tests conducted since last full certification or inspection:</u> Dodge Ram 1500 RB0331	
<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
Y / <input checked="" type="radio"/> N	Head skin shows no sign of tears or damage <ul style="list-style-type: none"> Gouge left side of the forehead
<input checked="" type="radio"/> Y / <input type="radio"/> N	Interior components of skull cavity (ballast, accelerometer mount, accelerometers) securely attached
Y / <input checked="" type="radio"/> N	Head securely mounted to OC joint <ul style="list-style-type: none"> OC Joint wobbles, otherwise firmly attached
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): <ul style="list-style-type: none"> Debonding between pecks 4-5, rear surface
Y / <input checked="" type="radio"/> N	No evidence of debonding or permanent compression in neck soft stop assemblies <ul style="list-style-type: none"> Front soft stop debonding
<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 <ul style="list-style-type: none"> • Scuffing on both pads
<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 <ul style="list-style-type: none"> • Left Shoulder soft stop slightly debonding
OTHER	
THORAX	
Y <input checked="" type="radio"/> N	No evidence of contact at top, bottom, or interior faces of rib damping material <ul style="list-style-type: none"> • Contact on interior of rib #4, both sides
<input checked="" type="radio"/> Y / N	No evidence of debonding between rib damping material and ribs
<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
Y <input checked="" type="radio"/> N	Rib stiffeners show no evidence of bending (no gaps between ribs and stiffeners) <ul style="list-style-type: none"> • Right side rib #5 • Left rib #7
OTHER	

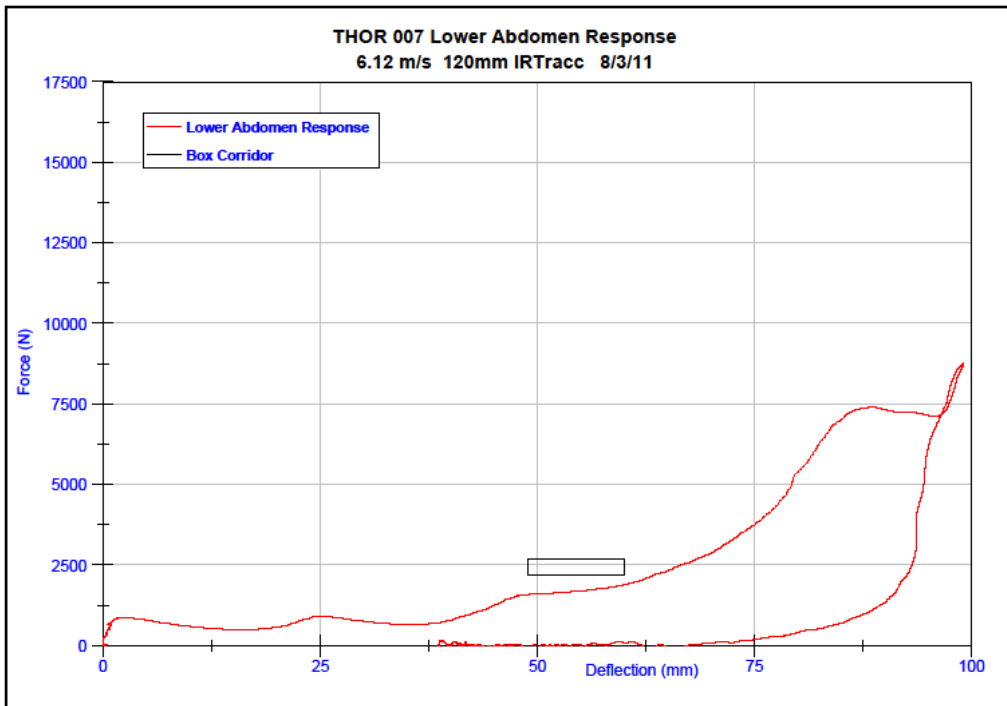
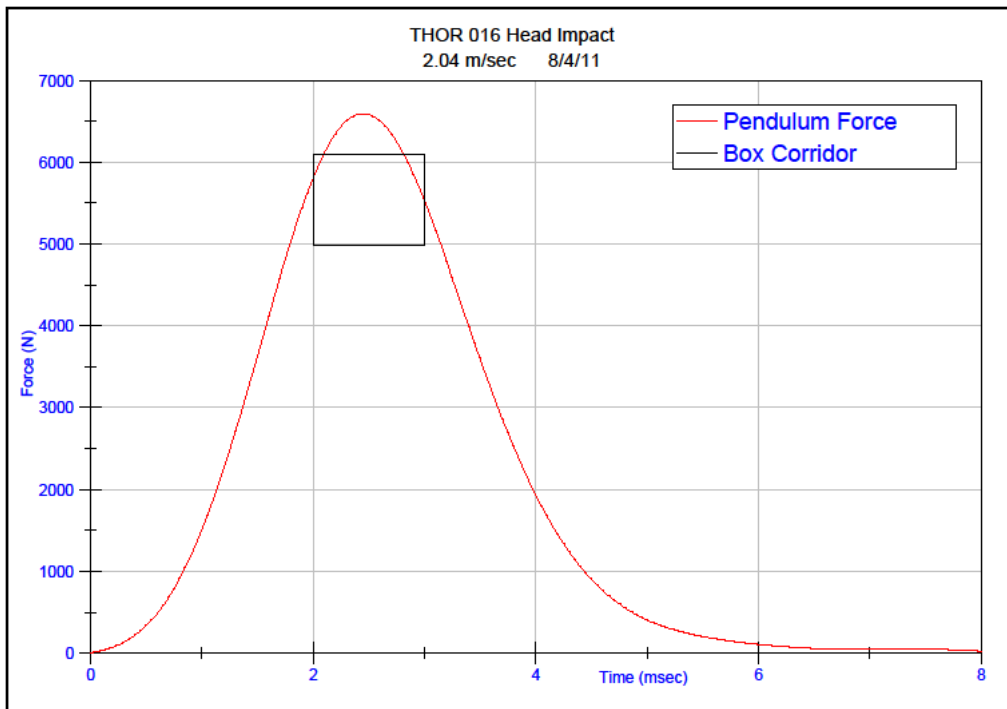
ABDOMEN	
Y <input checked="" type="radio"/> N	No evidence of tearing, cuts, or broken stitches in upper abdomen bag and zipper <ul style="list-style-type: none"> • Small tear in the top left corner
<input checked="" type="radio"/> Y / N	Upper abdomen insert securely attached to spine

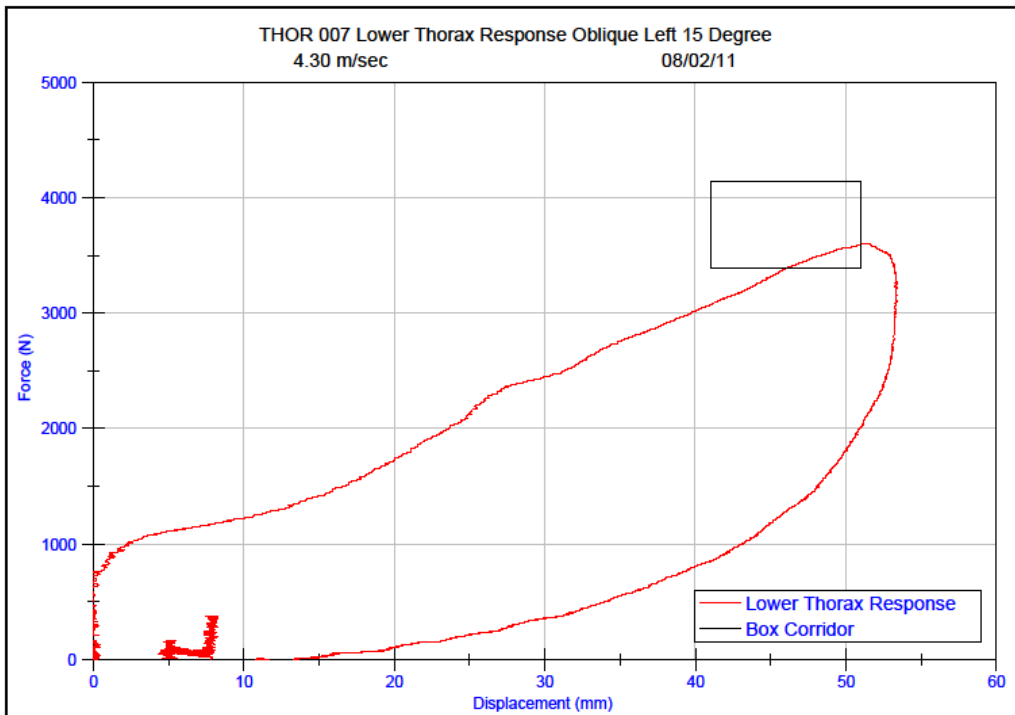
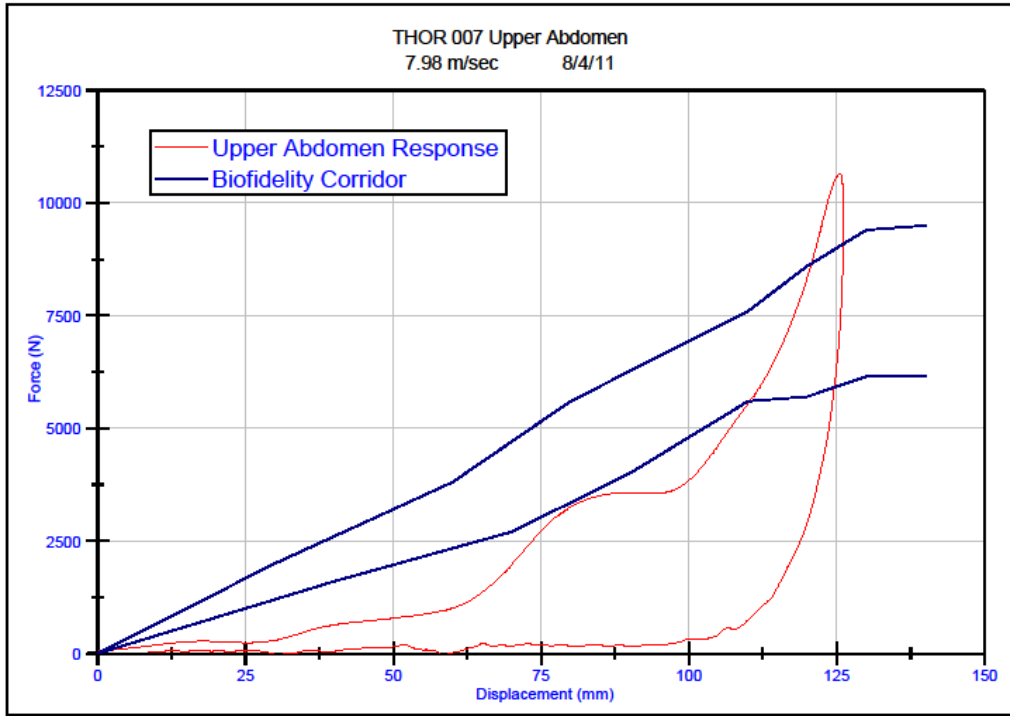


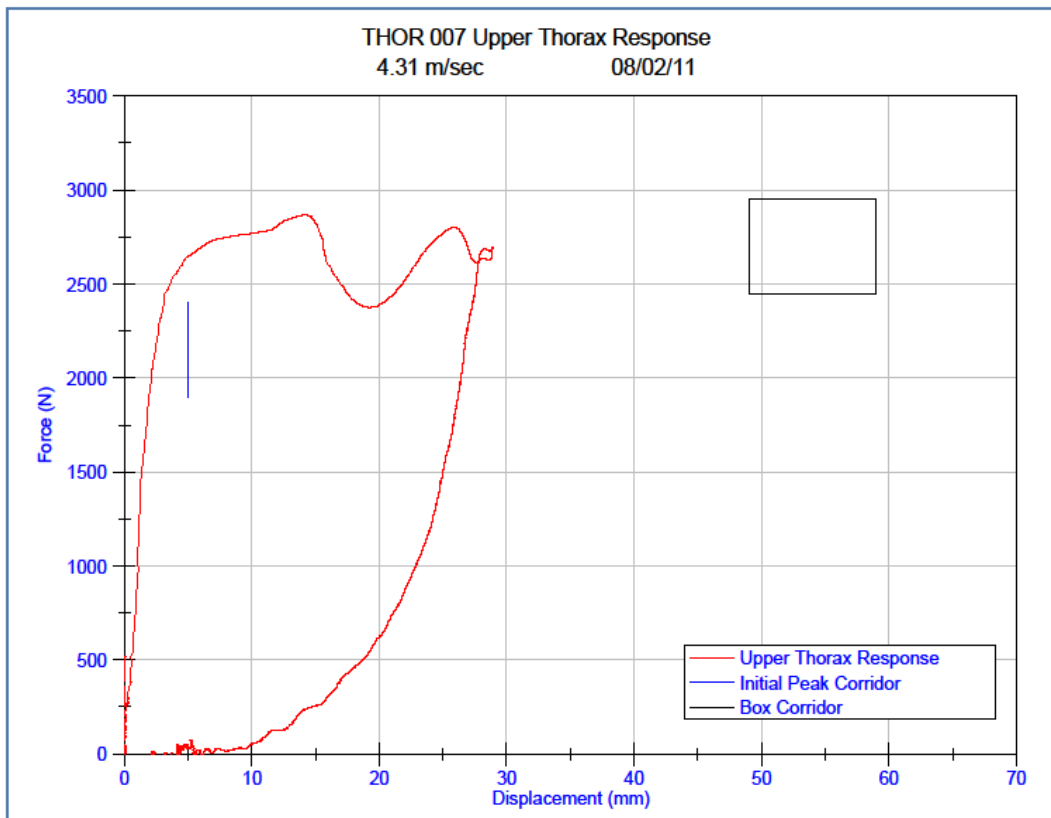
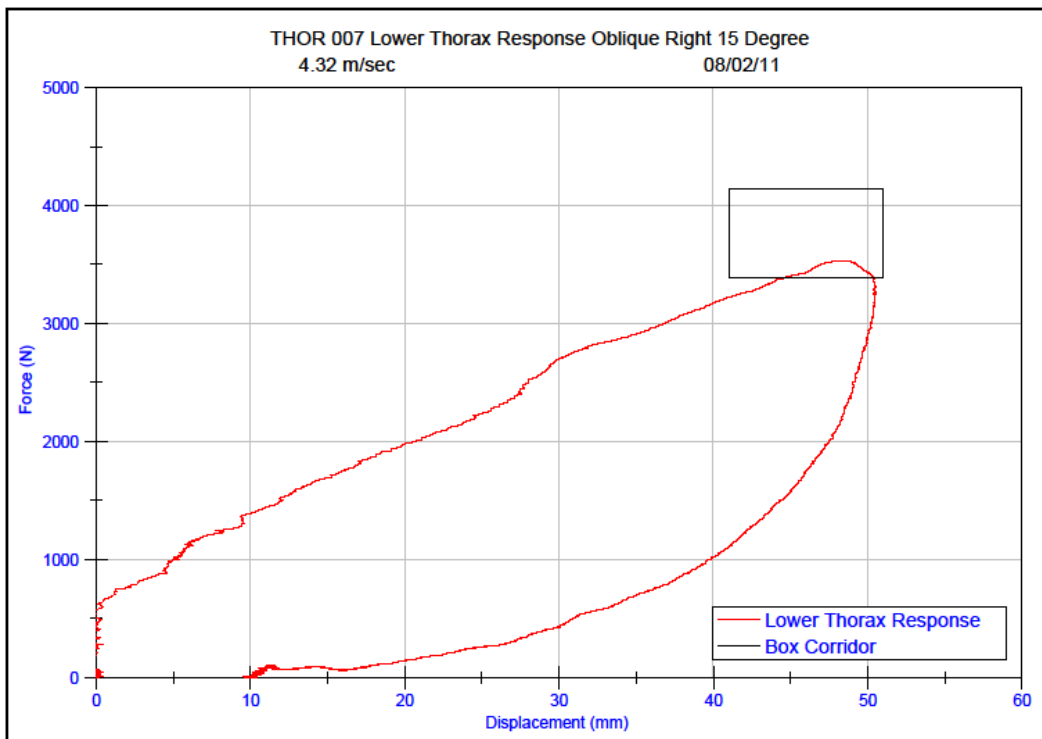
Y / N	Upper abdomen insert shows no evidence of permanent set
Y / <input checked="" type="radio"/> N	No evidence of tearing, cuts, or broken stitches in lower abdomen bag and zipper <ul style="list-style-type: none"> Broken stitches on the top right side
<input checked="" type="radio"/> / N	Lower abdomen insert securely attached to spine
<input checked="" type="radio"/> / N	Lower abdomen insert shows no evidence of permanent set
OTHER	
PELVIS	
<input checked="" type="radio"/> / N	Pelvis flesh fits securely over pelvis bones
<input checked="" type="radio"/> / N	H-point tool fits securely into hole on both sides of pelvis
OTHER	
FEMUR	
<input checked="" type="radio"/> / N	Acetabular load cells firmly attached
<input checked="" type="radio"/> / N	Femur load cells firmly attached
<input checked="" type="radio"/> / 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"> Both knees show cuts and scuffs, loose fitting
OTHER	Left Femur still wobbly
LOWER EXTREMITY (LX)	
<input checked="" type="radio"/> / N	Rotational potentiometers in ankle securely attached
<input checked="" type="radio"/> / N	Achilles tendon provides resistance to dorsiflexion

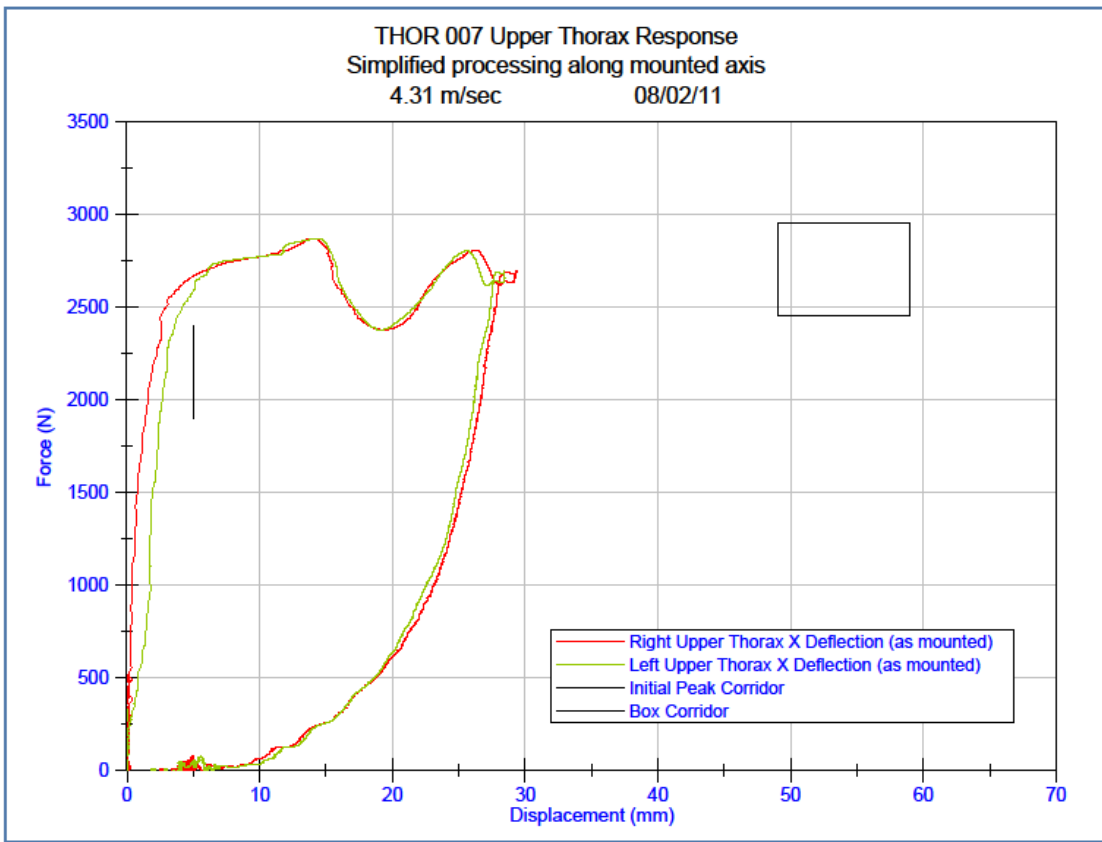
Y / N	No evidence of debonding, tearing, or permanent compression of ankle soft stops
OTHER	
JACKET	
<input checked="" type="radio"/> Y / N	Rib stiffeners show no sign of permanent deformation
Y / <input checked="" type="radio"/> N	No evidence of tears or holes in jacket fabric, velcro, or zippers <ul style="list-style-type: none"> • Tearing of stitches around front collar
OTHER	

Dummy Calibration Plots

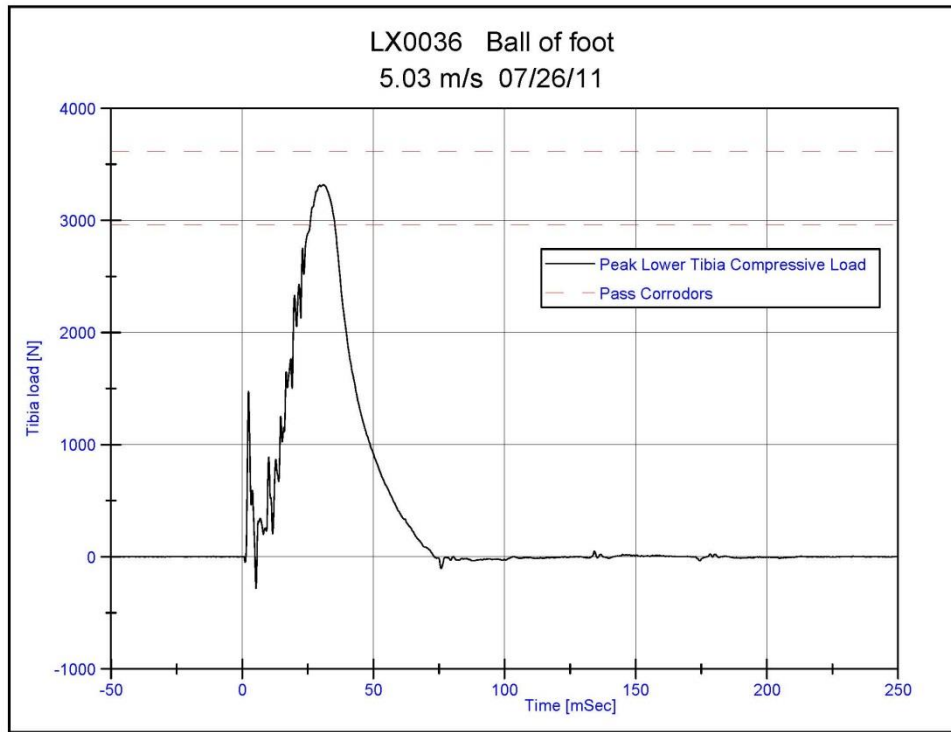


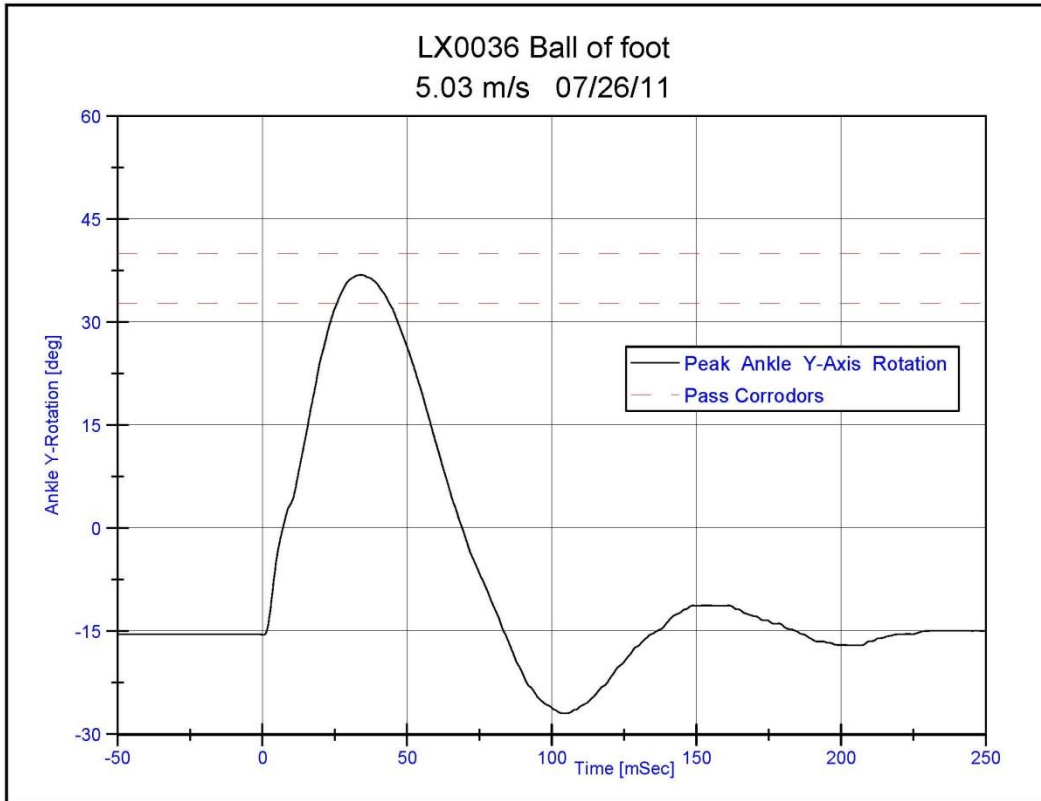
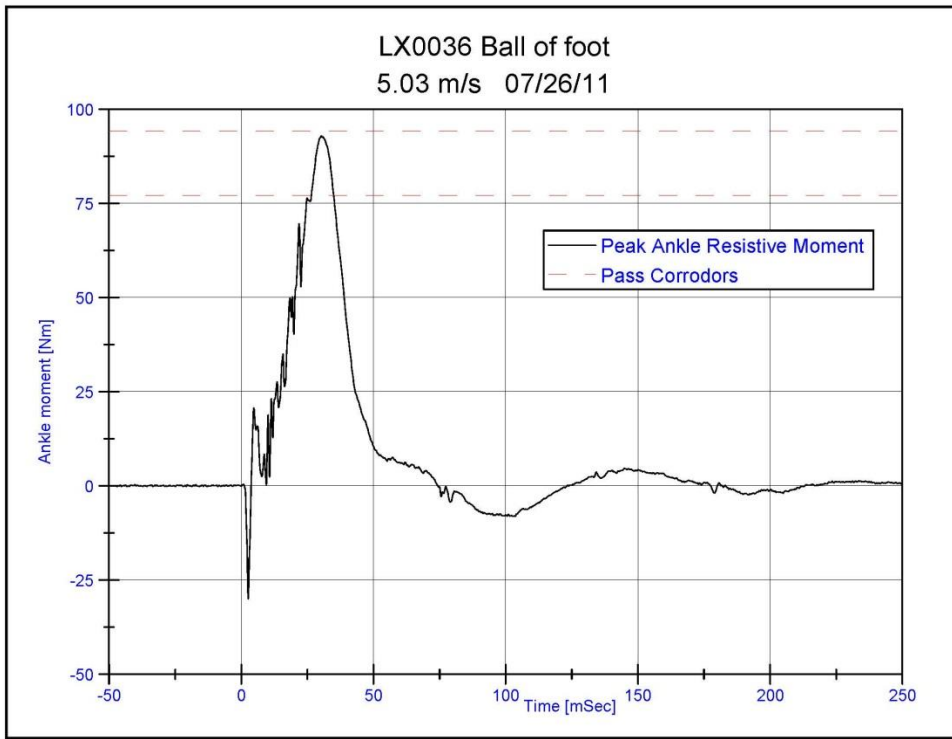


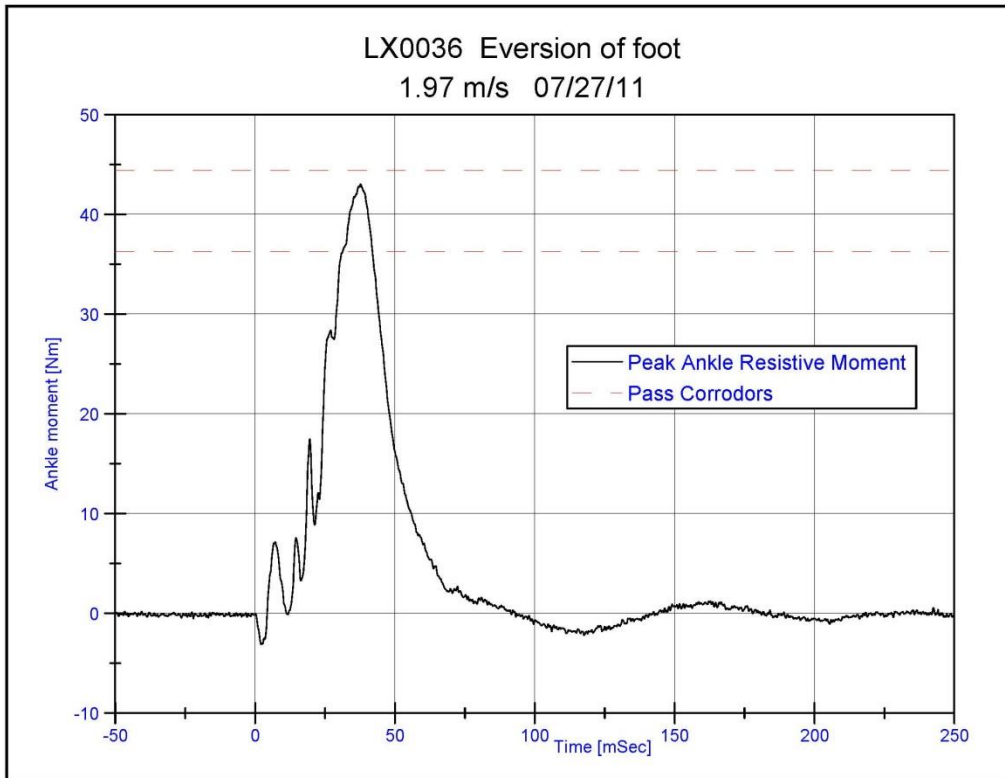
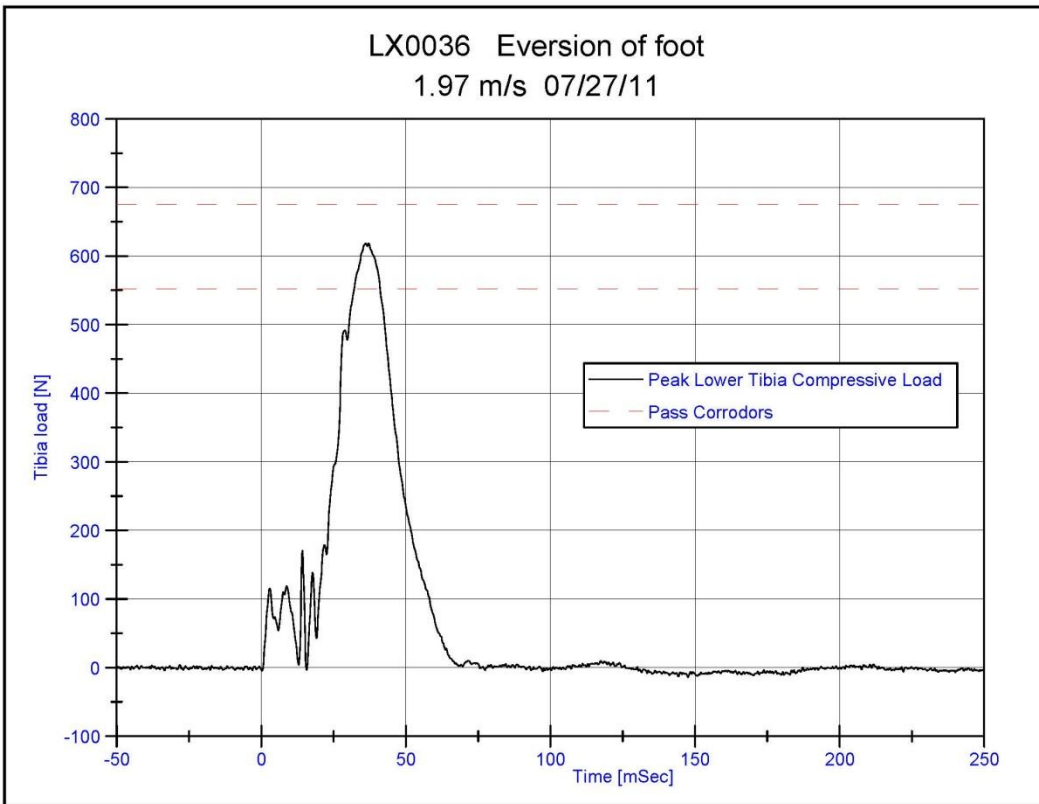


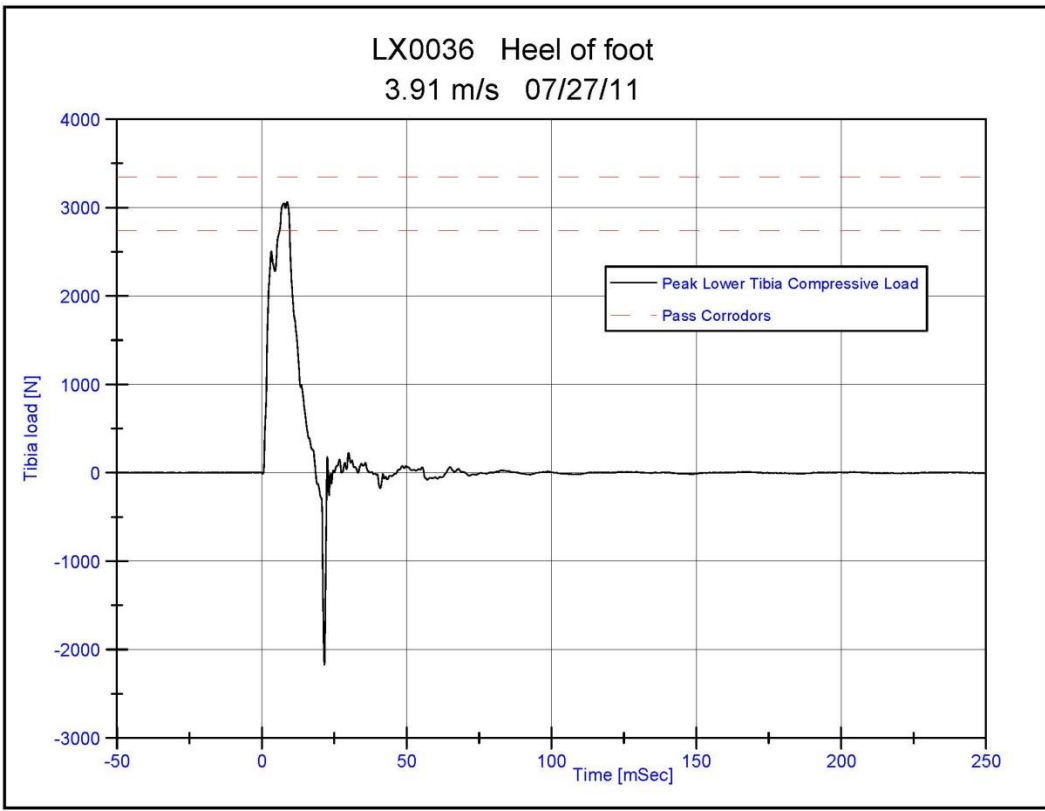
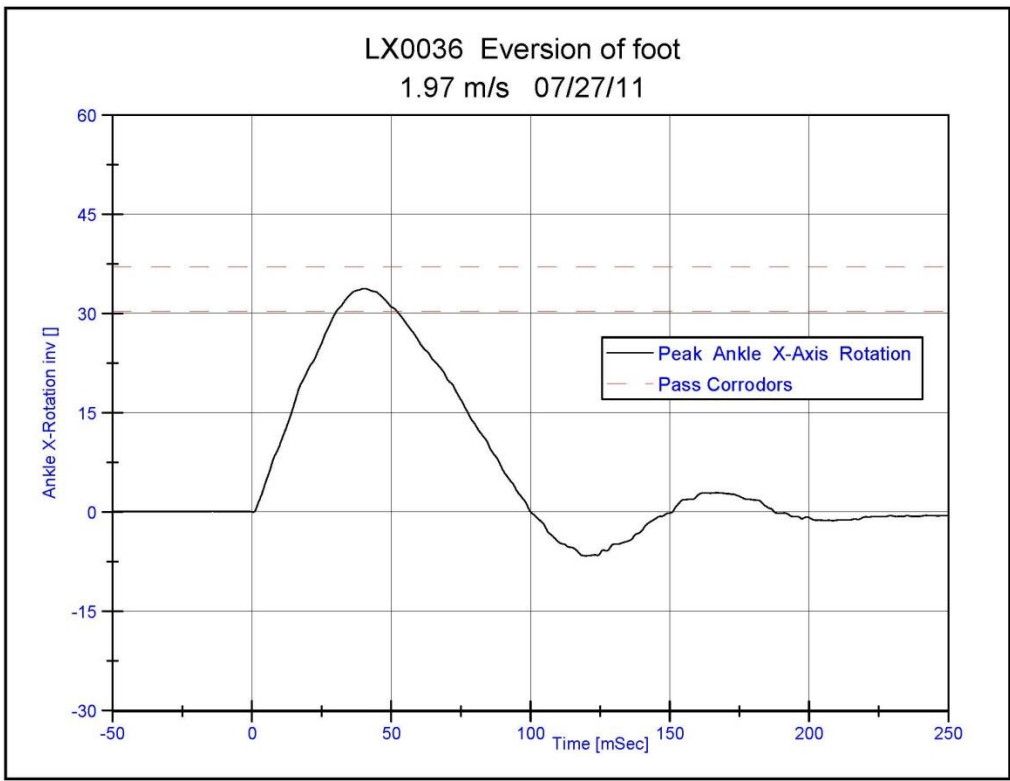


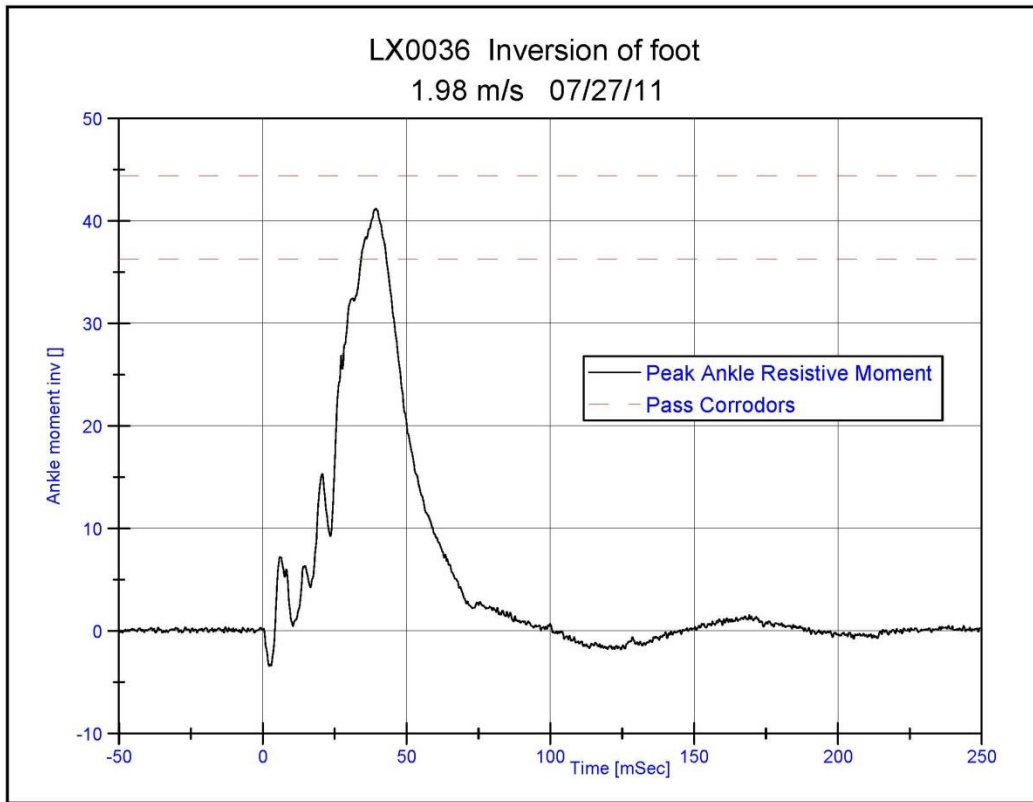
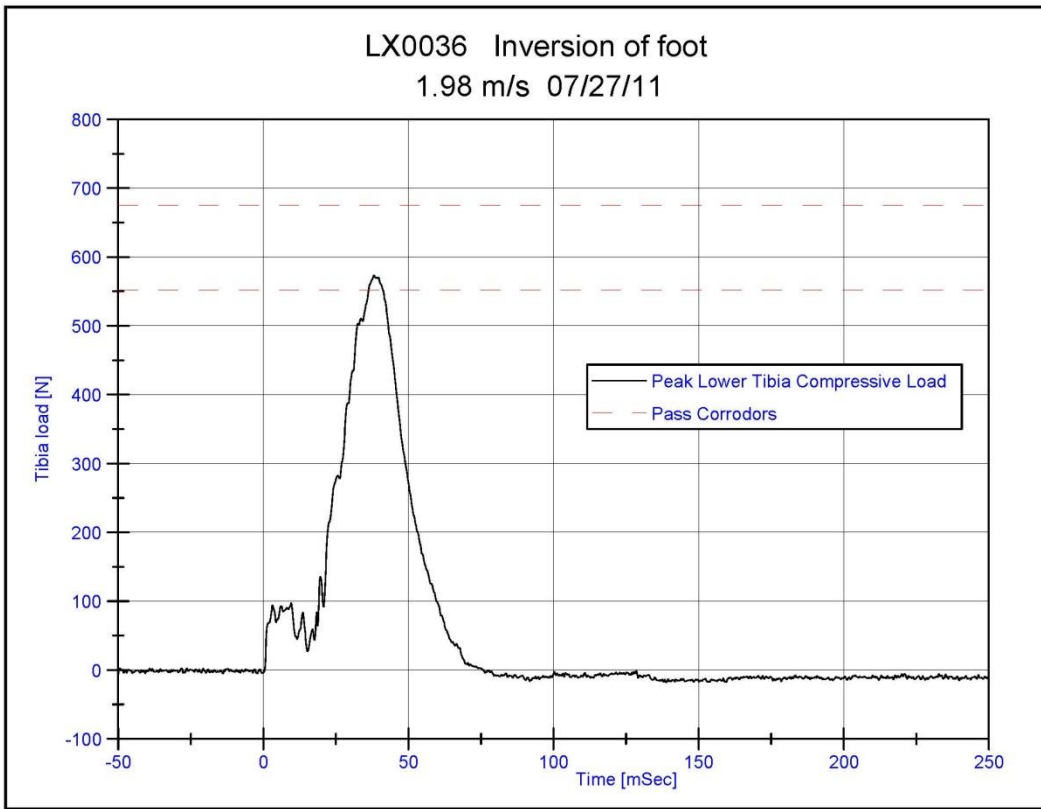
LEG S/N: LX036/ LX037

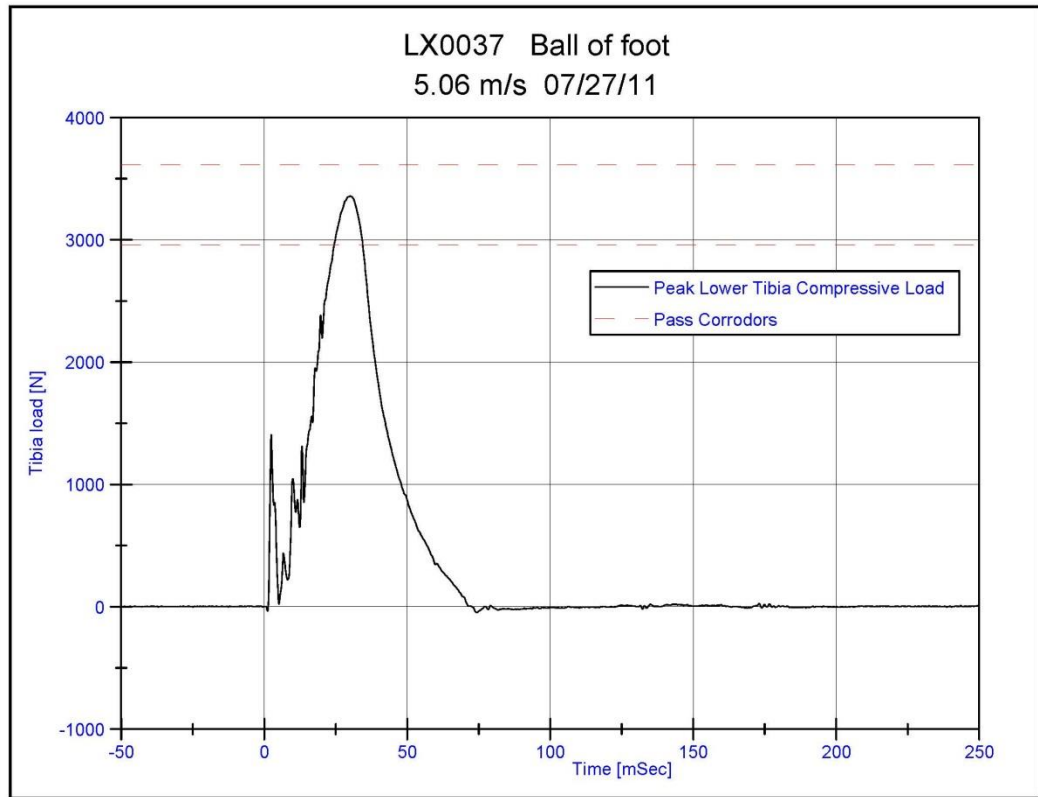
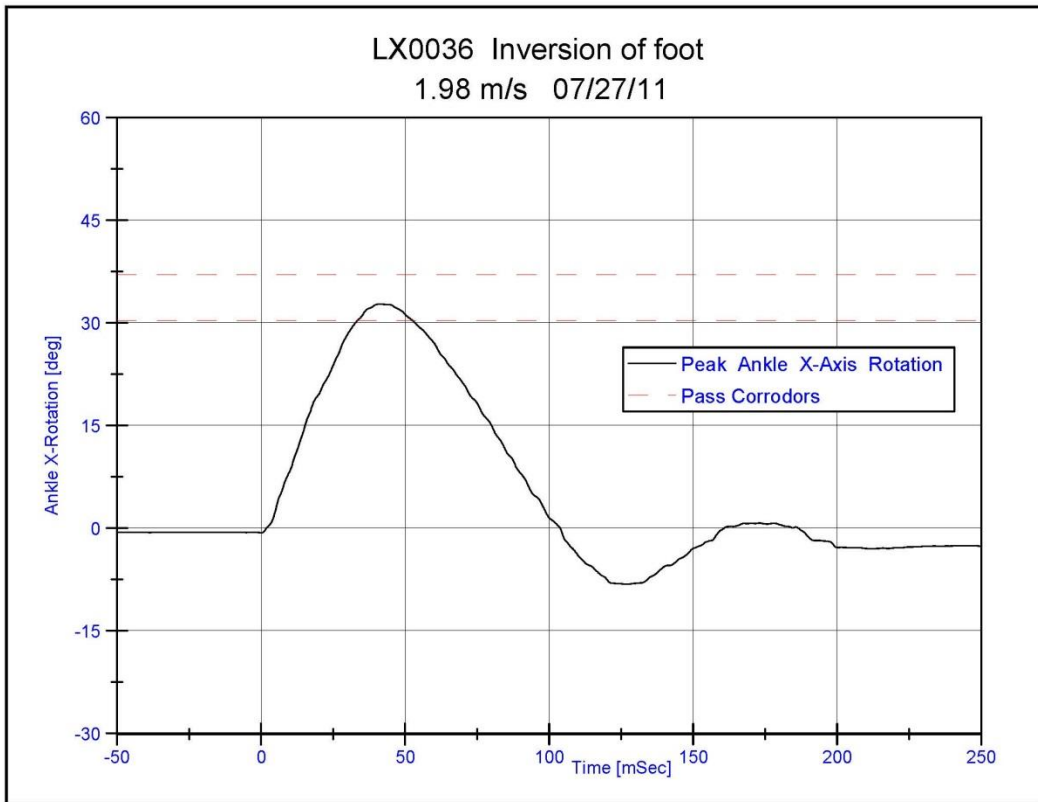


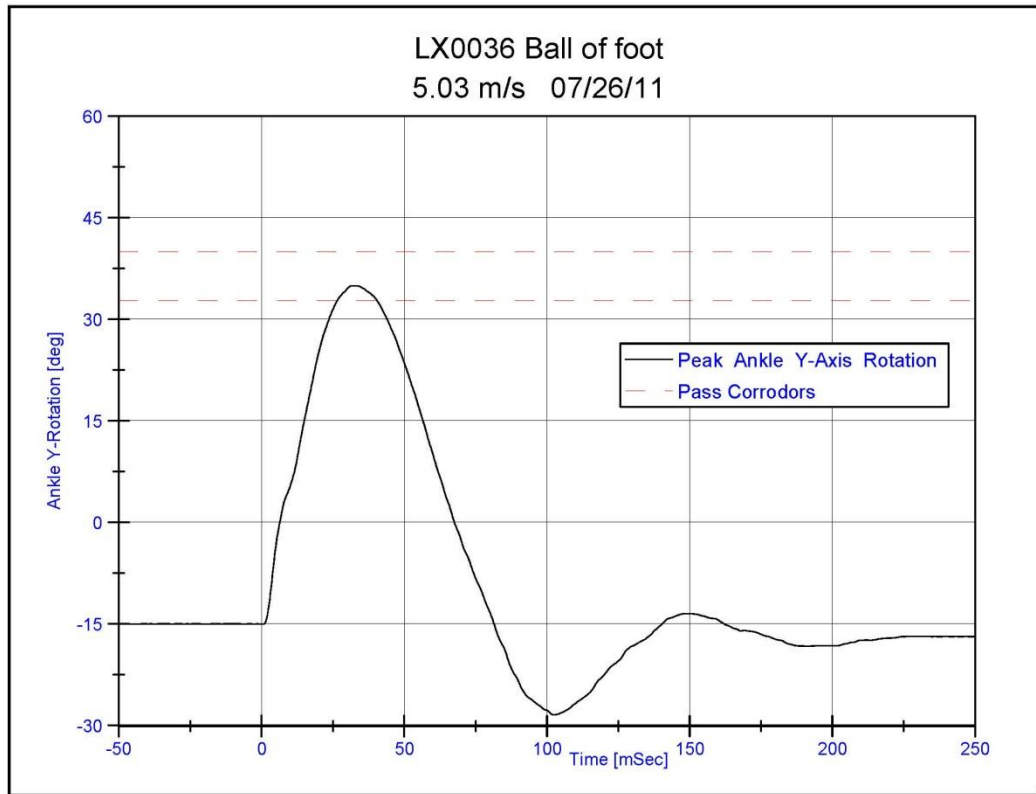
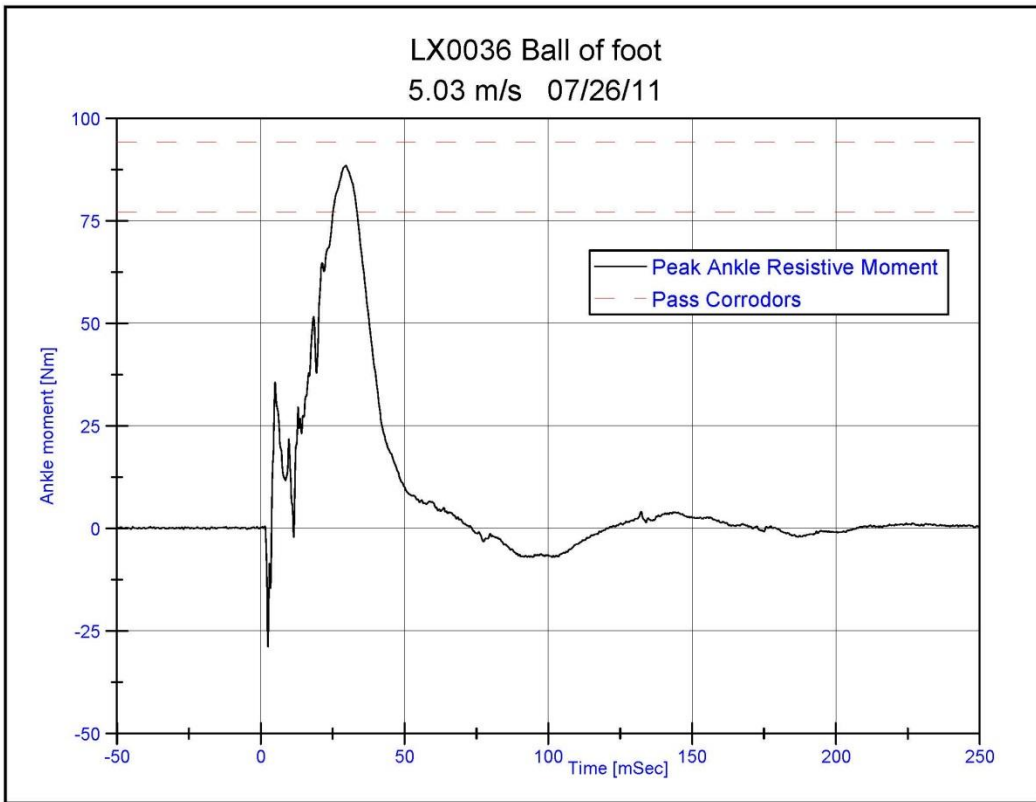


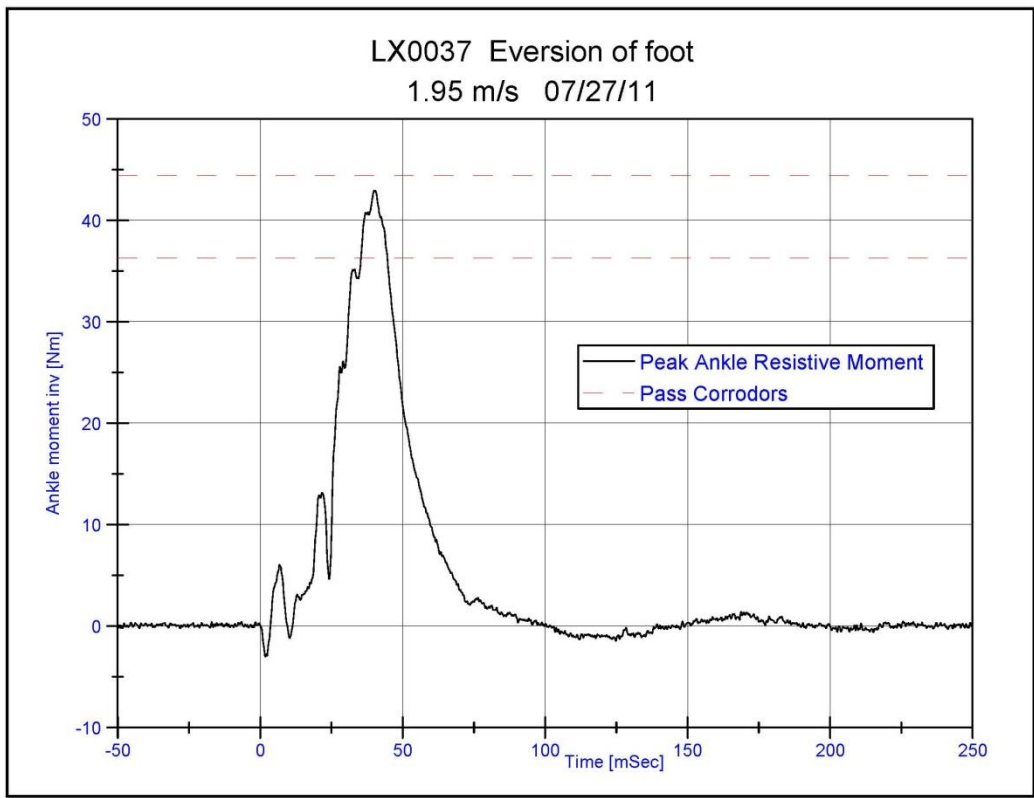
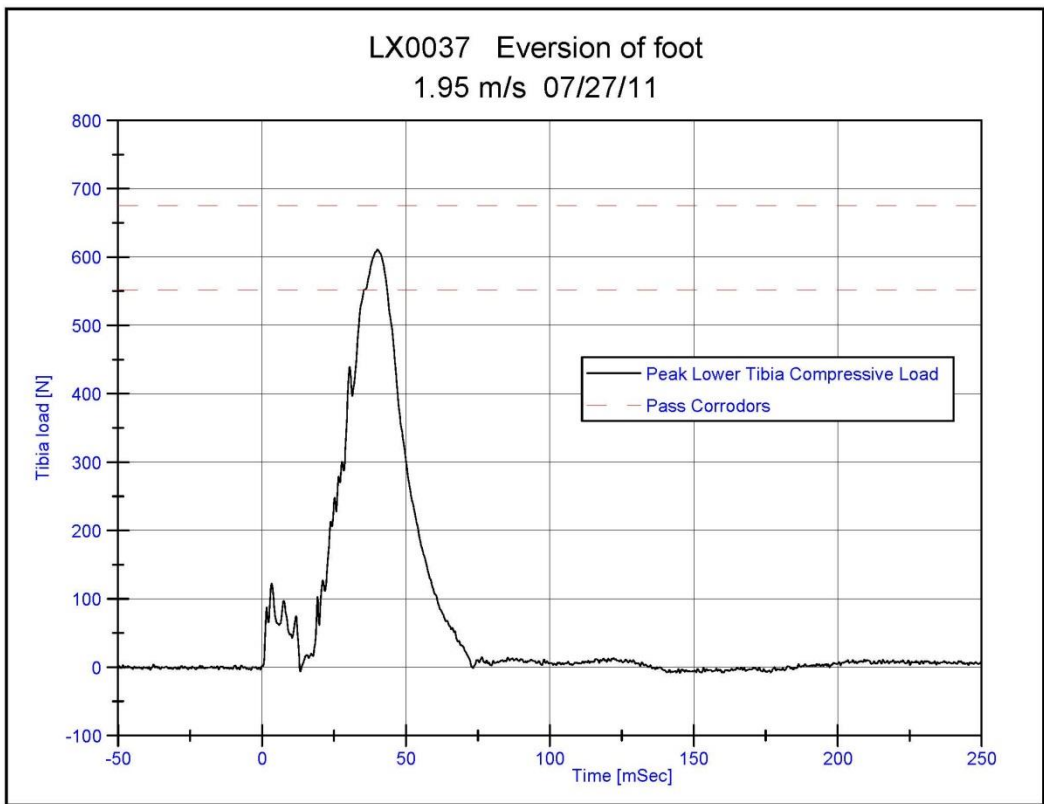


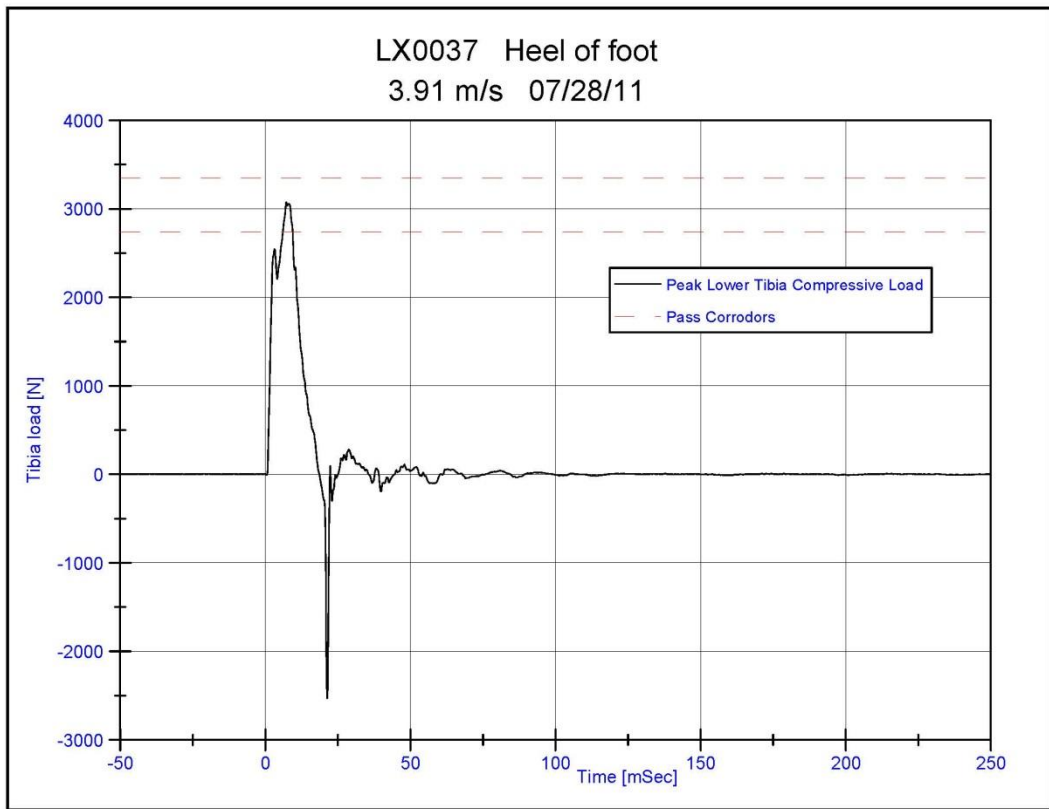
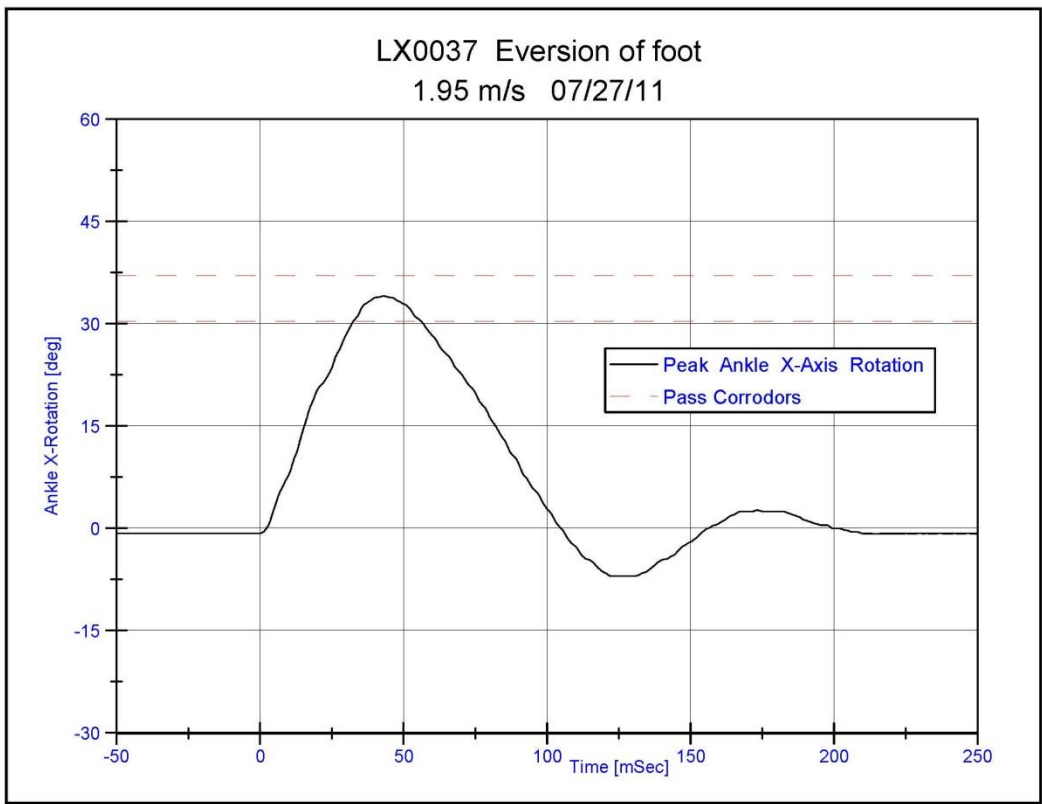


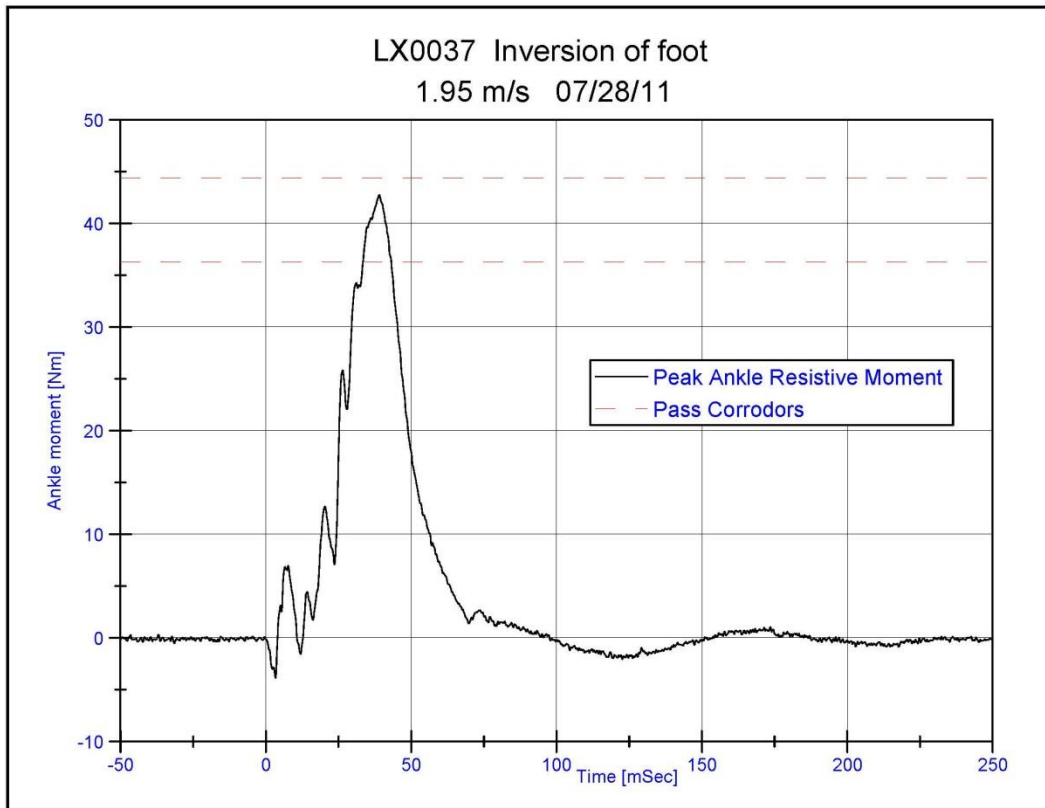
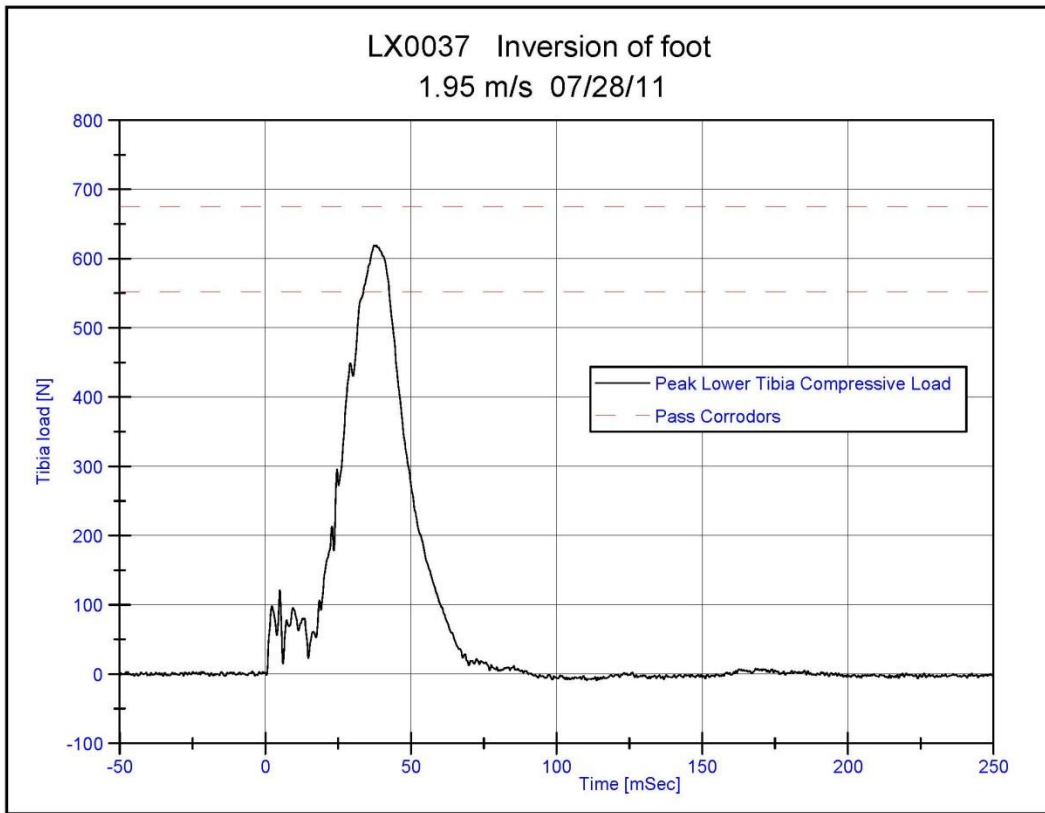


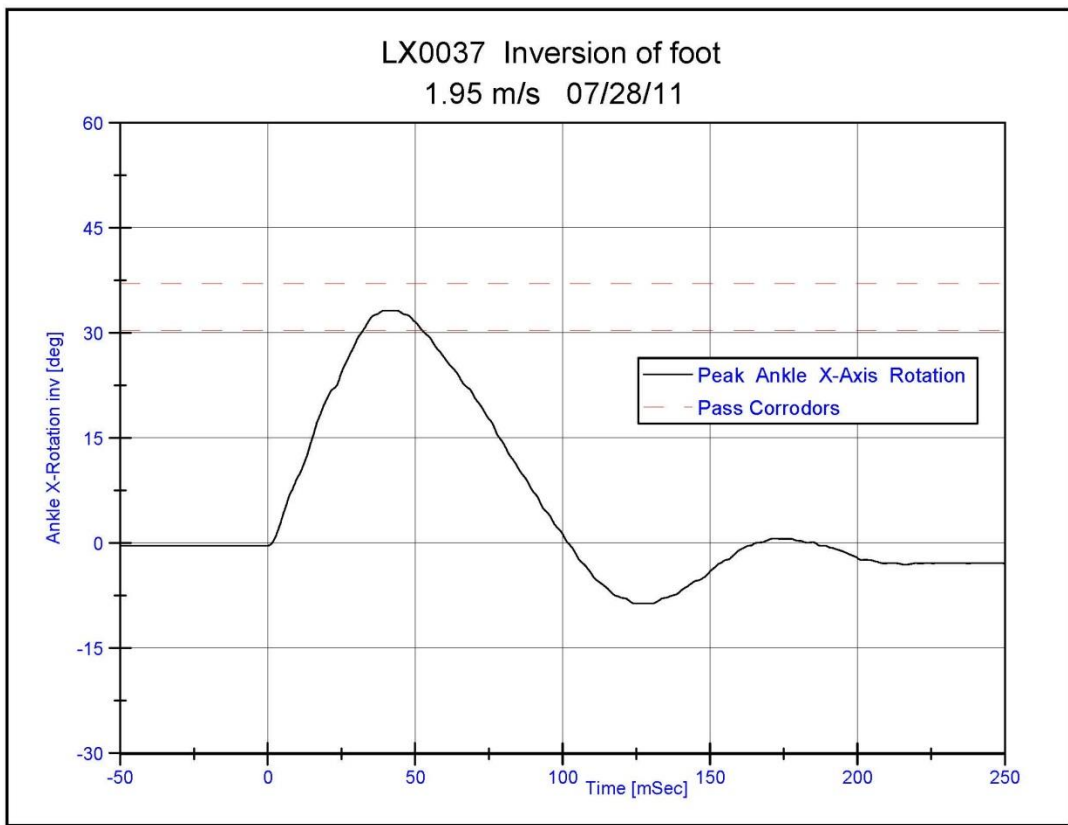












APPENDIX D

ADDITIONAL MEASUREMENTS & DATA CALCULATIONS

ADDITIONAL TARGETS

Overhead Reference Targets:

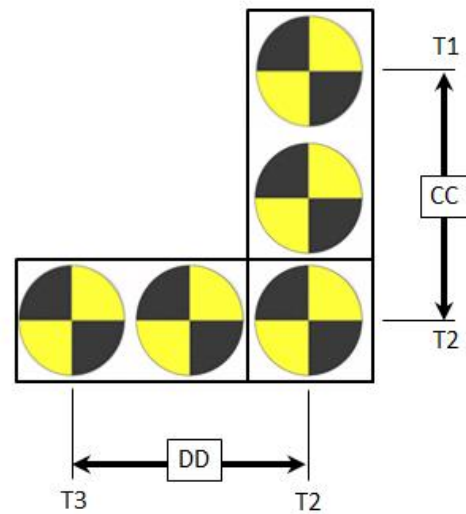
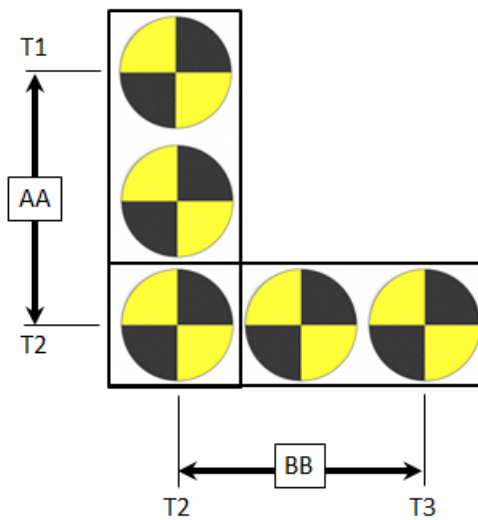
AA (T1 to T2) 236 mm

BB (T2 to T3) 234 mm

Ground Reference Targets:

CC (T1 to T2) 236 mm

DD (T2 to T3) 236 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:

Measure Points 3 and 4 on the using the following method after positioning the dummy and head restraint:

Place a level at the center of the head restraint and make sure it is level to the horizontal
Measure down 16 inches from the bottom of the level in the vertical direction

Project a line in the longitudinal direction until contact with seat and mark point 1 with a marker
Project another line in the longitudinal direction until contact with seat and mark point 2 with a marker

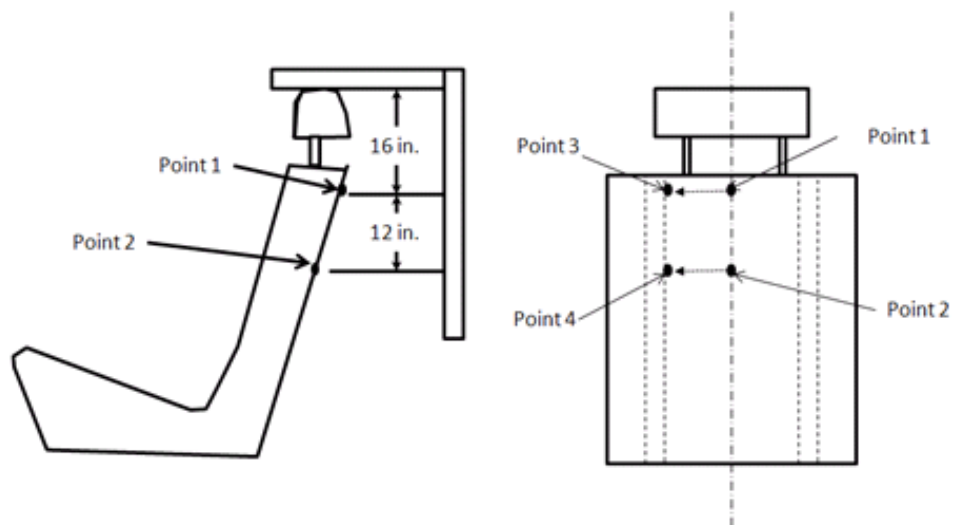
Push on the seat fabric at point 1 and determine if there is any structure. Do not push in the longitudinal direction more than an inch

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

Cut a slit in the seat fabric

Mark Point 3 at the begin on the structure and measure the point

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.

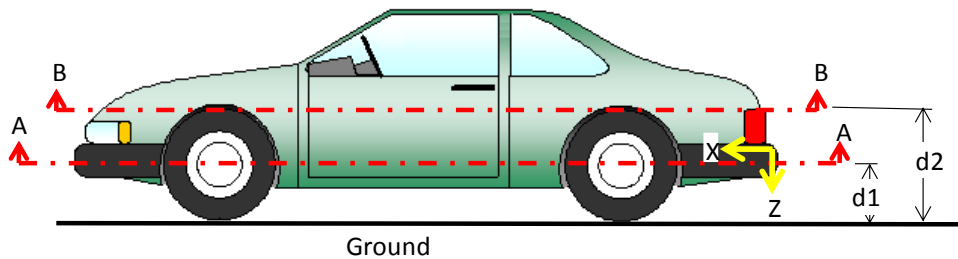


Figure F.3.1 - Pre-Test Cross-Sections

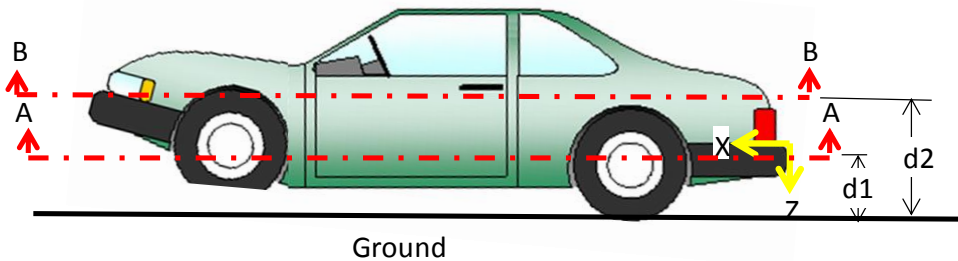


Figure F.3.2 - Post-Test Cross-Sections

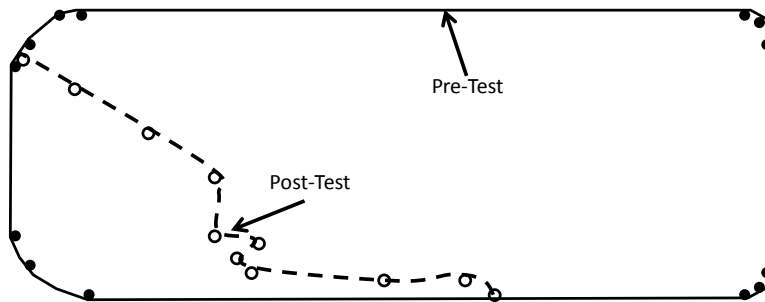


Figure F.3.3 - Plot of Cross-Section

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.

