REPORT NUMBER: R&D – CAL – 11 – 001

MOVING BARRIER TO VEHICLE CRASH TESTING IN SUPPORT OF NHTSA FRONTAL OBLIQUE OFFSET PROGRAM RESEARCH MOVING DEFORMABLE BARRIER INTO LEFT FRONT OF A

2007 Ford Taurus Four Door Sedan
15^{o} VEHICLE ANGLE AND 35% OVERLAP

TEST DATE: FEBRUARY 23, 2011
NHTSA NO: R70218

Prepared By;
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FINAL REPORT

March 17, 2011

PREPARED FOR:
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NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
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Prepared by:  Date: March 17, 2011

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FINAL REPORT ACCEPTANCE BY OCWS:

_____

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

Date: _____

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COTR, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

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16. Abstract

A test was conducted in accordance with Task Order 0001 of Contract DTNH22-10-D-00155. The test consisted of a research moving deformable barrier (RMDB), traveling at a targeted speed of 97.2kph, impacting a stationary 2007 Ford Taurus Four Door Sedan. The objective of this test series is to obtain a ΔV of 90.12 kph in the struck vehicle. The Ford Taurus was positioned 15 degrees relative to the moving barrier and the barrier impacted 35 percent of the left side of the vehicle. This 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 February 23, 2011.

The impact velocity of the RMDB was 97.88 km/h. The target vehicle post-test maximum crush was 791 mm of the Vehicle's bumper. The test vehicle's performance is as follows:

Measurement Description	Driver ATD			Pass. ATD		
	Units	Threshold	Result	Units	Threshold	Result
Head Injury Criteria (HIC_{15})	N/A	700	233.27	N/A	700	475.33
Maximum Chest Compression	mm	63	-35.83	mm	52	-34.99
Nij	N/A	1	0.38	N/A	1	0.94
Neck Tension	N	4,170	2311.60	N	2,620	3176.58
Neck Compression	N	4,000	-335.92	N	2,520	-1136.72
Left Femur Force	N	10,008	-3538.14	N	6,805	-233.03
Right Femur Force	N	10,008	-7555.38	N	6,805	-209.09

17. Key Words 2007 Ford Taurus NHTSA No. R70218 15o , 35% Offset	97.2 km/h / 60.4 mph Oblique Small Overlap Offset THOR THOR-NT	*18. Distribution Statement* Copies of this report are available from: NHTSA Technical Reference Division National Highway Traffic Safety Admin. 1200 New Jersey Ave SE Washington, DC 20590

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TABLE OF CONTENTS

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

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 5th 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
	Dummy CMM Measurement	3-10
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 Accelerometer Locations	3-15
	Vehicle Instrumentation Data	3-16
8	Photographic Reference Target Locations	3-18
9	Test Vehicle Summary of Results	3-21
10	Post-Test Observations	3-22
11	Vehicle Profile Measurements	3-23
12	Accident Investigation Division Data	3-25
13	Vehicle Intrusion Measurements	3-26
14	Deformable Barrier Crush Measurements	3-41
15	Summary of FMVSS 212, 219 (Partial), and 301 Data	
	Windshield Periphery Measurements	3-42
	Fuel System Integrity Post Impact Data	3-43
16	FMVSS 301 Static Rollover Results	3-44
17	Dummy/Vehicle Temperature Stabilization Chart	3-45

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	Positioning Procedure for Rear Seat Part 572O 5th Female ATD	D-1
E	CMM Measurement Procedures	E-1

SECTION 1

PURPOSE OF TEST

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15º / 35% Frontal Oblique	Test Date	2/23/2011

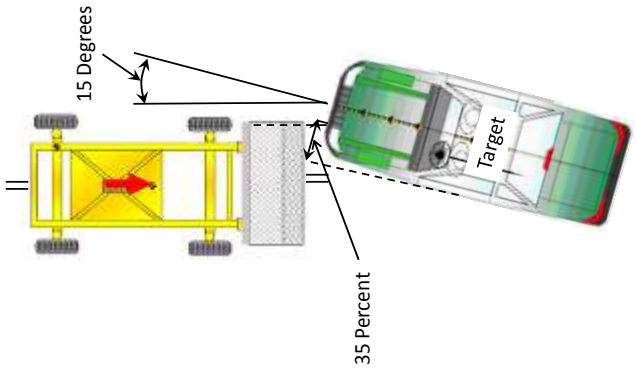
This 97.2 km/h (60.4 mph) moving deformable barrier into a vehicle test is part of Frontal Oblique Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-10-D-00155. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for research and development purposes.

This test was conducted in accordance with the instructions set forth by NHTSA for a 15º, 35% offset moving deformable barrier to vehicle impact, outlined in Task Order (TO) 0001 of 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 0001 of DTNH22-10-D-00155.

SECTION 2
SUMMARY OF TEST

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

A 2007 Ford Taurus Four Door Sedan was impacted on the left front corner by a research moving deformable barrier (RMDB). The test vehicle was stationary and positioned at a target angle of 15° and a target offset of 35% to the line of forward motion of the RMDB. The RMDB was towed down the test track in a full forward direction, without any crabbing, and the targeted impact velocity of 97.2 km/h (60.4 mph) into the test vehicle. The test vehicle mass was 1728 kg and the RMDB mass was 2385 kg (5259 lbs). The test was conducted by Calspan Corporation on February 23, 2011.



The test was documented by 1 real time and 14 high-speed video cameras. Camera locations and other pertinent data are located in Data Sheet No. 6 of this report. Pre- and post-test photographs of the test vehicle, 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.: 0006) was seated in the left front (driver's) seating position and one Part 572O 5% adult female (HIII 5th) ATD (Serial No. 0147) 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 and a dual stage frontal airbag. The left rear passenger was restrained with a 3-point seat belt. The driver head restraint was removed prior to the test.

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

One hundred and eighty five (185) channels of data from the two ATD's, test vehicle and MDB were collected using a Kayser-Threde data acquisition system. Appendix B contains dummy data plots, as well as vehicle and MDB response data plots.

There was 86% total windshield retention, with 100% and 71% 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 796 mm at C2 to the left of the vehicle's centerline. The maximum crush of the lower bumper beam was 702 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 as a result of the impact. All other doors remained operational. There was no separation of the sill from the vehicle structure during this collision. Review of the high speed video indicates the driver air bag cover starts to move/open at 20 ms.

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

- Head contacted the frontal airbag and upper window frame
- Chest contacted the frontal airbag
- Left and right knees contacted the knee bolster.

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

- Head contacted the chest and the seatback
- Lower legs contacted the driver's seatback.

SECTION 2 (CONTINUED)

CRASH VEHICLE SUMMARY

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
RMDB Velocity at Impact	km/h	97.88
RMDB Test Weight	kg	2385.44
RMDB Maximum Static Crush	mm	323
Vehicle Test Weight	kg	1728
Actual Vehicle Angle	°	-
Vehicle Maximum Static Crush	mm	791 mm to left centerline
Vertical Offset from Target Point	mm	11 Above
Lateral Offset from Target Point	mm	7 Left
Number of Data Channels		137
Number of Real-Time Cameras		1
Number of High-Speed Cameras		14

DUMMY CONTACTS

	Driver	Picture Ref.	Passenger	Picture Ref.
Dummy Type/ Serial No.	THOR 50th Male S/N 0006	A-34	HIII 5th Female S/N 143	A-49
Head Contact	Airbag, Upper Window Frame	A-47	Chest, Seatback	A-57
Upper Torso Contact	Airbag	A-45	None	-
Lower Torso Contact	Airbag	A-45	None	-
Left Knee Contact	Lower Dash Panel	A-28	Driver Seatback	A-57
Right Knee Contact	Lower Dash Panel	A-30	Driver Seatback	A-57

Data Anamolies:

P1 Driver

- V2P1 HEAD 9 ARRAY CENTER Z ->Noise spike at 78 ms
- V2P1 TIBIA LEFT Y ->Channel Failure after 63ms
- V2P1 ANKLE LEFT POT X ->Questionable Data after 40ms
- V2P1 FOOT LEFT Z ->Questionable Data after 45ms
- V2P1 TIBIA RIGHT UPPER MY ->Questionable after 53 ms

P4 Passenger

- V2P4 HEAD 9 ARRAY CENTER X ->No Data
- V2P4 LOWER NECK FX ->Noise Spikes after 167 ms

Vehicle Instrumentation

- V2 RIGHT REAR SILL X ->Questionable after 108 ms
- V2 RIGHT REAR SILL Y ->Questionable after 112 ms
- V2 VEHICLE CG X ->Questionable after 5 ms
- V2 VEHICLE CG Y ->Noise at 53, 67 and 85 ms
- V2 VEHICLE CG Z ->Noise spikes - plastic surface
- V2 DRIVER SEAT TRACK X ->Questionable data - scale
- V2 VEHICLE CG RX ->No Data
- V2 VEHICLE CG RY ->No Data
- V2 VEHICLE CG RZ ->No Data.

PRELIMINARY INJURY SUMMARY: Driver

Test Vehicle: 2007 Ford Taurus 4 Door Sedan NHTSA No.: R70218

Test Program: Research and Development Narrow Offset Test Date: 2/23/2011

Driver: HF Serial No. 006 Injury Summary

	Nomenclature	Units	Source	Max	Min
Head	Head Rotational Acceleration X	rad/s^2	SIMon	2117.90	-16545.00
	Head Rotational Acceleration Y	rad/s^2	SIMon	15672.00	-1136.80
	Head Rotational Acceleration Z	rad/s^2	SIMon	1921.00	-3658.10
	Head Rotational Acceleration Resultant	rad/s^2	Compute	22813.89	
	Head Rotational Velocity X	rad/s	SIMon	8.02	-26.83
	Head Rotational Velocity Y	rad/s	SIMon	28.25	-15.92
	Head Rotational Velocity Z	rad/s	SIMon	22.24	-11.57
	Head Rotational Velocity Resultant	rad/s	Compute	33.93	
	36 ms HIC		Compute	274.24	
	15 ms HIC		Compute	233.27	
	Head Resultant CG Acceleration, 3 ms Clip	g	Compute	53.35	
	Skull fracture correlate	-	SIMon	51.83	
	Cumulative strain (Tolerance = 0.05)	-	SIMon	1.00	0.00
	Cumulative strain (Tolerance = 0.10)	-	SIMon	0.68	0.00
	Cumulative strain (Tolerance = 0.15)	-	SIMon	0.24	0.00
Neck	UNLC Transferred to OC, Neck System, FX	N	1000	105.82	-637.47
	UNLC Neck System Tension, FZ	N	1000	2311.60	
	UNLC Neck System Compression, FZ	N	1000		-335.92
	UNLC Transferred to OC, Neck System Flexion, MY	N-m	Thortest	2.01	
	UNLC Transferred to OC, Neck System Extension, MY	N-m	Thortest		-8.75
	NIJ		Compute	0.38	
	On head acting through total neck section, FX	N	Thortest	165.36	-1668.67
	On head acting through total neck section, FY	N	Thortest	454.40	-118.45
	On head acting through total neck section, FZ	N	Thortest	1629.03	-387.31
	On head acting through total neck section, MX	N-m	Thortest	25.03	-20.46
	On head acting through total neck section, MY	N-m	Thortest	23.07	-14.59
	On head acting through total neck section, MZ	N-m	Thortest	29.52	-15.90
	On head acting through O.C. joint only, FX	N	Thortest	245.97	-1699.36
	On head acting through O.C. joint only, FZ	N	Thortest	1568.46	-645.49
	On head acting through O.C. joint only, MY	N-m	Thortest	2.01	-8.75
Chest	Upper Left Crux X – deflection	mm	Thortest	2.47	-23.19
	Upper Left Crux Y – deflection	mm	Thortest	3.48	-17.27
	Upper Left Crux Z – deflection	mm	Thortest	8.80	-2.28
	Upper Left Crux D – deflection	mm	Thortest	3.37	-20.19
	Upper Right Crux X – deflection	mm	Thortest	0.01	-38.43
	Upper Right Crux Y – deflection	mm	Thortest	3.31	-27.61
	Upper Right Crux Z – deflection	mm	Thortest	22.64	-2.26
	Upper Right Crux D – deflection	mm	Thortest	0.01	-35.83

PRELIMINARY INJURY SUMMARY: Driver

Test Vehicle: 2007 Ford Taurus 4 Door Sedan NHTSA No.: R70218
Test Program: Research and Development Narrow Offset Test Date: 2/23/2011

Driver: HF Serial No. 006 Injury Summary

	Nomenclature	Units	Source	Max	Min
Chest (Con't)	Lower Left Crux X – deflection	mm	Thortest	1.13	-1.34
	Lower Left Crux Y – deflection	mm	Thortest	2.42	-2.67
	Lower Left Crux Z – deflection	mm	Thortest	5.97	-24.50
	Lower Left Crux D – deflection	mm	Thortest	14.06	-3.17
	Lower Right Crux X – deflection	mm	Thortest	19.17	-4.68
	Lower Right Crux Y – deflection	mm	Thortest	0.01	-24.39
	Lower Right Crux Z – deflection	mm	Thortest	6.00	-5.28
	Lower Right Crux D – deflection	mm	Thortest	3.11	-0.01
	Chest CG Acceleration, 3 ms clip	g	Compute	48.58	
Abdomen	Upper Displacement	mm	Thortest	12.641	0.009
	Lower Left X – deflection	mm	Thortest	10.28	-6.27
	Lower Left Y – deflection	mm	Thortest	18.87	-19.57
	Lower Left Z – deflection	mm	Thortest	0.01	-30.47
	Left Viscous Criterion Based on X - deflection		Compute	0.04	
	Lower Right X – deflection	mm	Thortest	4.64	-15.33
	Lower Right Y – deflection	mm	Thortest	5.18	-31.70
	Lower Right Z – deflection	mm	Thortest	38.18	-23.06
	Right Viscous Criterion Based on X - deflection		Compute	0.48	
Spine	Upper Spine (T1) AX	g	180	5.59	-54.06
	Upper Spine (T1) AY	g	180	19.32	-8.97
	Upper Spine (T1) AZ	g	180	27.20	-21.05
	Upper Spine (T1) Resultant	g	Compute	54.72	
	Middle Spine (T6) AX	g	180	14.39	-49.14
	Middle Spine (T6) AY	g	180	30.68	-6.36
	Middle Spine (T6) AZ	g	180	17.43	-7.67
	Middle Spine (T6) Resultant	g	Compute	51.68	
Pelvis	Pelvis CG Resultant Acceleration	g	Compute	50.22	
Acetabulum	Left FX force	N	600	285.30	-2881.81
	Left FY force	N	600	1723.00	-136.02
	Left FZ force	N	600	74.12	-2911.76
	Left Acetabulum Resultant	N	Compute	4298.21	
	Right FX force	N	600	654.16	-2786.32
	Right FY force	N	600	3427.53	-602.20
	Right FZ force	N	600	407.91	-1073.25
	Right Acetabulum Resultant	N	Compute	4474.15	

PRELIMINARY INJURY SUMMARY: Driver Legs

Test Vehicle: 2007 Ford Taurus 4 Door Sedan NHTSA No.: R70218
Test Program: Research and Development Narrow Offset Test Date: 2/23/2011

Driver: HF Serial No. 006 Injury Summary

	Nomenclature	Units	Source	Max	Min
Knee	Left Knee Displacement, DX	mm	180	0.40	-1.44
	Right Knee Displacement, DX	mm	180	0.26	-0.81
Femur	Left Femur Force, FZ	N	600	270.65	-3538.14
	Left Femur Moment, MX	N-m	600	3.68	-159.17
	Left Femur Moment, MY	N-m	600	39.89	-44.91
	Left Femur Res (MX / MY only, not MZ)	N-m	Compute	160.93	
	Right Femur Force, FZ	N	600	309.98	-7555.38
	Right Femur Moment, MX	N-m	600	245.18	-3.56
	Right Femur Moment, MY	N-m	600	137.92	-67.54
	Right Femur Res (MX / MY only, not MZ)	N-m	Compute	280.89	
Tibia	Left Upper Tibia, FZ	N	600	1103.12	-388.37
	Left Upper Tibia, MY	N-m	600	86.25	-143.66
	Left Upper Tibia, Index		Compute	0.63	
	Right Upper Tibia, FZ	N	600	566.13	-1500.70
	Right Upper Tibia, MY	N-m	600	10.43(1)	-141.21(1)
	Right Upper Tibia, Index		Compute	0.63(1)	
	Left Lower Tibia, FZ	N	600	255.55	-1054.19
	Left Lower Tibia, MY	N-m	600	70.29	-89.76
	Left Lower Tibia, Index		Compute	0.44	
	Right Lower Tibia, FZ	N	600	69.61	-2192.53
	Right Lower Tibia, MY	N-m	600	19.79	-144.14
	Right Lower Tibia, Index		Compute	0.76	
Ankle	Left Ankle Rotation, RX	Deg	180	2.15(2)	-110.98(2)
	Left Ankle Rotation, RY	Deg	180	29.92	-0.03
	Right Ankle Rotation, RX	Deg	180	6.27	-35.81
	Right Ankle Rotation, RY	Deg	180	34.01	-8.06

Anomalies

(1) Questionable data after 53 ms
(2) Questionable data after 40 ms

Test Vehicle: 2007 Ford Taurus 4 Door Sedan NHTSA No.: R70218
Test Program: Research and Development Narrow Offset Test Date: 2/23/2011

Right Back Passenger: HF Serial No. 421 Injury Summary

	Nomenclature	Source	Max	Min
Head	Angular acceleration (rad/sec^2) - X	simon	2183.60	-2179.60
	Angular acceleration (rad/sec^2) - Y	simon	567.84	-294.65
	Angular acceleration (rad/sec^2) - Z	simon	482.98	-1023.10
	Angular acceleration - resultant (rad/sec^2)	simon	2328.42	
	Angular velocity (rad/sec) - X	simon	21.70	-8.85
	Angular velocity (rad/sec) - Y	simon	16.49	-0.40
	Angular velocity (rad/sec) - Z	simon	0.32	-59.74
	Angular velocity - resultant (rad/sec)	simon	64.24	
	36 ms HIC	Compute	980.99	
	15 ms HIC	Compute	475.33	
	Skull fracture correlate	Simon	63.15	
	Cumulative strain (Tolerance = 0.05)	Simon	0.99	
	Cumulative strain (Tolerance = 0.10)	Simon	0.77	
	Cumulative strain (Tolerance = 0.15)	Simon	0.40	
	Head resultant CG acceleration, 3 ms clip (g's)	Compute	69.40	
Neck	Upper Neck Tension (N) Fz	1000	3176.70	
	Upper Neck Compression (N) Fz	1000		-1136.61
	Upper Neck NTF	Compute	0.94	
	Upper Neck NTE	Compute	0.39	
	Upper Neck NCF	Compute	0.49	
	Upper Neck NCE	Compute	0.02	
Chest	Chest Deflection (mm)	600	0.01	-34.99
	Chest CG acceleration, 3 ms clip, (G's)	Compute	36.25	
Femur	Right Fz Force (N)	600	1130.98	-209.09
	Left Fz Force (N)	600	1139.53	-233.03

SECTION 3

DATA SHEETS

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

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
	Dummy CMM Measurement	3-10
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 Accelerometer Locations	3-15
	Vehicle Instrumentation Data	3-16
8	Photographic Reference Target Locations	3-18
9	Test Vehicle Summary of Results	3-21
10	Post-Test Observations	3-22
11	Vehicle Profile Measurements	3-23
12	Accident Investigation Division Data	3-25
13	Vehicle Intrusion Measurements	3-26
14	Deformable Barrier Crush Measurements	3-41
15	Summary of FMVSS 212, 219 (Partial), and 301 Data	
	Windshield Periphery Measurements	3-42
	Fuel System Integrity Post Impact Data	3-43
16	FMVSS 301 Static Rollover Results	3-44
17	Dummy/Vehicle Temperature Stabilization Chart	3-45

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

TEST VEHICLE INFORMATION

NHTSA No.	R70218
Make	Ford
Model	Taurus
Body Style	Four Door Sedan
VIN	1FAFP53U57A163982
Color	Light blue
Delivery Date	11/2/2010
Odometer Reading (mi)	36060
Odometer Reading (km)	58032.9
Dealer	Glen Campbell
Transmission	4-Speed Automatic
Final Drive	Front Wheel Drive
Type/No. Cyl	V6
Engine Disp. (L)	3.0
Engine Placement	Transverse
Roof Rack	No
Sunroof/T-Top	No
Tinted Glass	No
Traction Control	No
Power Brakes	Yes
Front Disc	Yes
Rear Disc	Yes

TEST VEHICLE OPTIONS

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

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

DATA FROM CERTIFICATION LABEL

Manufactured By	Ford Motor Company
Date of Manufacture	08/06

GVWR (kg)	2,125
GAWR Front (kg)	1,158
GAWR Rear (kg)	967

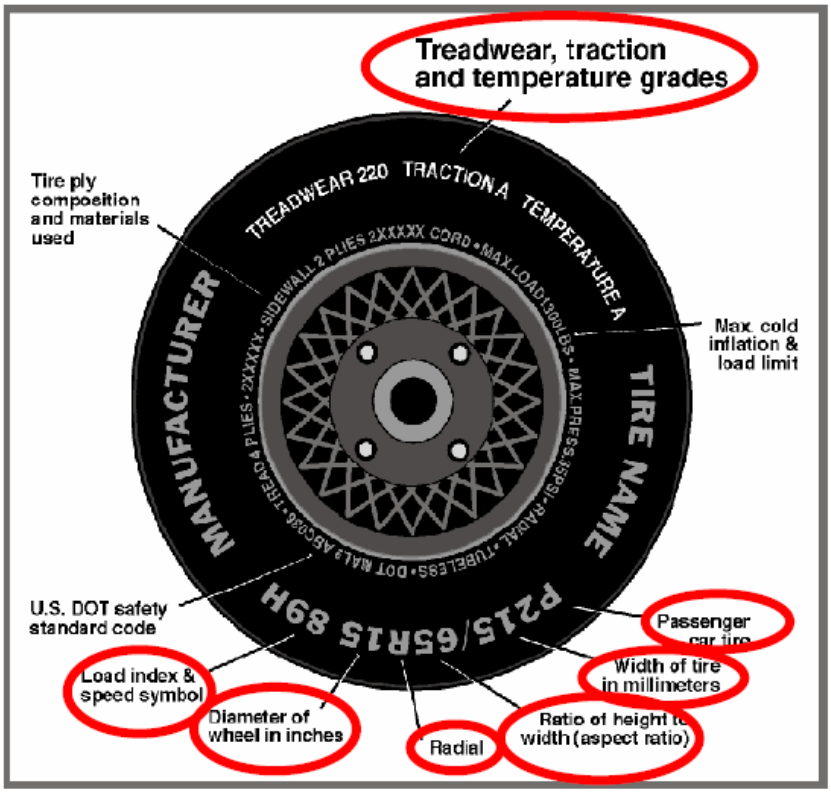
VEHICLE SEATING AND WEIGHT CAPACITY

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Split Bench	Bench	NA	
Number of Occupants	3	3		6
Capacity Wt. (VCW) (kg)				498
Cargo Wt. (RCLW) (kg)				90

DATA SHEET NO. 1 (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	2007 Ford Taurus Four Door Sedan	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011



Measured Parameter	Front	Rear
Maximum Tire Pressure	300	300
Cold Pressure (kPa)	205	205
Recommended Tire Size	P215/60R16	P215/60R16
Tire Size on Vehicle	P215/60R16	P215/60R16
Tire Manufacturer	Firestone	Firestone
Tire Model	FR380	FR380
Treadwear	400	400
Traction	A	A
Temperature Grades	B	B
Tire Plies Sidewall	1 Polyester	1 Polyester
Tire Plies Body	1 Polyester, 2 Steel	1 Polyester, 2 Steel
Load Index/Speed Symbol	94S	94S
Tire Material	Rubber	Rubber
DOT Safety Code Right	N/A	N/A
DOT Safety Code Left	N/A	N/A

DATA SHEET NO. 1 (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15º / 35% Frontal Oblique	Test Date	2/23/2011

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	478.0	273.0		518.0	381.0	
Right	kg	488.5	260.5		476.0	353.0	
Ratio	%	64	36		58	42	
Totals	kg	966.5	533.5	1,500.0	994.0	734.0	1,728.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1500.0
Weight of 1 P572E ATD & 1 P572O ATD	kg	153.5
Rated Cargo/Luggage Weight (RCLW)	kg	68.04
Calculated Vehicle Target Weight (TVTW)	kg	1721.6

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	720	725	712	704	977
As Tested	mm	710	725	649	646	1167
Post Test	mm	-	732	643	738	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2,748
Total Vehicle Length at Left Side	mm	4,921
Total Vehicle Length at Centerline	mm	5,028
Total Vehicle Length at Right Side	mm	4,920
Weight of Ballast in Cargo Area	kg	25.0
Weight of Vehicle Components Removed	kg	0.0
Amount of Stoddard Solvent in Fuel Tank	L	63.6

LIST OF COMPONENTS REMOVED TO MEET TEST WEIGHT:

No components were removed in order to meet the required test weight

DATA SHEET NO.1 (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15º / 35% Frontal Oblique	Test Date	2/23/2011

TARGET VEHICLE STRUCTURAL MEASUREMENT

	Elements	Pre-Test (mm)
1	Total Length	5,028
2	Total Width	1,866
3	Bumper Top Height	558
4	Bumper Bottom Height	249
5	Longitudinal Member Top Height	519
6	Distance Between Longitudinal Members	1,184
7	Longitudinal Member Width	106
8	Engine Top Height	881
9	Engine Bottom Height	182
10	Engine and Gearbox Width	627
11	Front Bumper-Engine Distance	638
12	Front Shock Absorber Fixing Height	859
13	Bonnet Leading Edge Height	734
14	Front Shock Absorber Fixing Width	1,116
15	Front Bumper – Front Axle Distance	1,055
16	Front Axle – A Pillar Distance	507
17	A-Pillar – B-Pillar Distance	1,092
18	B-Pillar – Rear Axle Distance	1,157
19	B-Pillar – C-Pillar Distance	1,248
20	Roof Sill Bottom Height	1,289
21	Roof Sill Top Height	1,367
22	Floor Sill Bottom Height	246
23	Floor Sill Top Height	369

DATA SHEET NO. 2

SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL

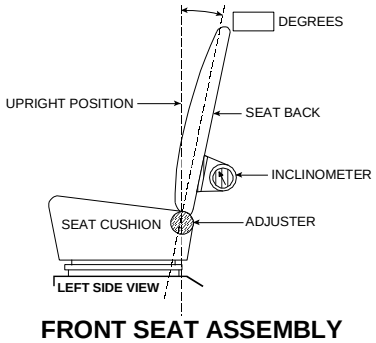
Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

NORMAL DESIGN RIDING POSITION

Driver seat: The driver seat back was positioned according to the Nominal Design Riding position listed in FORM 1. Seat back angle was measured on the longitudinal member of the seatback.

Passenger Seat: The passenger seat back was not adjustable

	Deg.
Driver Seat Back Angle	26.3
Passenger Seat Back Angle	25.6



FRONT SEAT ASSEMBLY

SEAT FORE/AFT POSITIONS

The driver's seat was positioned at the mid-point of fore/aft travel. The passenger's seat track was not adjustable in the Fore/Aft direction.

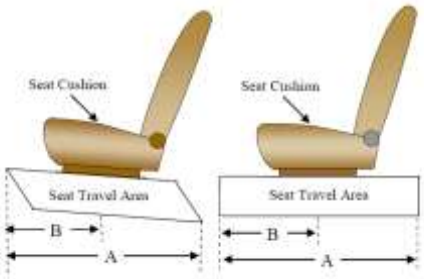
.

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	13 detents	6
Passenger Seat	Fixed	N/A

SEAT BELT UPPER ANCHORAGES

The driver's upper seat belt anchorage was place in the uppermost (position 0) of five Possible positions. The rear seat passenger's upper belt anchorage was not adjustable.

	Total # of Positions	Placed in Position #
Driver Seat	5	0
Passenger Seat	NA	NA

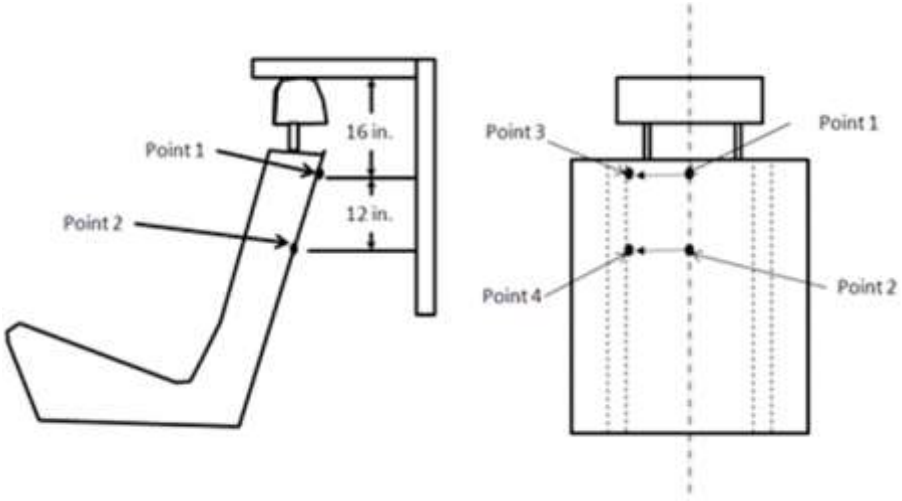


DATA SHEET NO. 2 (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15º / 35% Frontal Oblique	Test Date	2/23/2011

Seat Back Measurement Points



	X	Y	Z
Point 3	2323	-578	-303
Point 4	2447	-593	-9

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

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

DATA SHEET NO. 2 (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

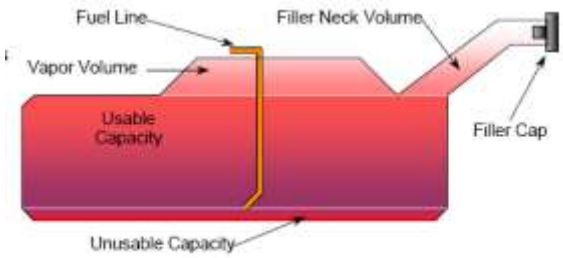
Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	68.9
Usable Capacity of "Optional Tank"	
92%-94% of Usable Capacity	63.4 - 64.8
Actual Amount of Solvent Used	63.6
1/3 of Usable Capacity	23.0

FUEL PUMP

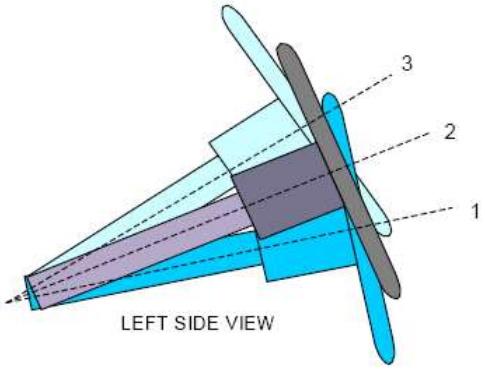
Fuel evacuated according to the specifications provided by the manufacturer in Form 1



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

The steering wheel was adjusted to the midpoint of tilt angle range. This vehicle did not have a telescoping wheel



STEERING COLUMN ASSEMBLY

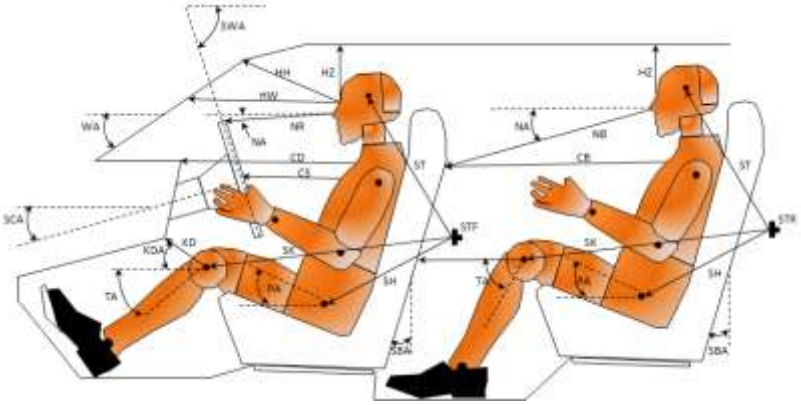
STEERING COLUMN POSITIONS

	Degrees	Fore/Aft Position (mm)
Lowermost position No. 1	76.2	
Geometric center position No. 2	68.7	
Uppermost position No. 3	60.6	
Telescoping Steering Wheel Travel		NA
Test Position	68.7	NA

DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011



Code	Measurement Description	Driver		Left Rear Passenger	
		Length (mm)	Angle(°)	Length (mm)	Angle (°)
WA°	Windshield Angle		25.4		
SWA°	Steering Wheel Angle		68.3		
SCA°	Steering Column Angle		19.0		
SA°	Seat Back Angle (on headrest post)		22.0		25.6
HZ	Head to Roof (Z)	149	90.0	310	90.0
HH	Head to Header	346	18.5		
HW	Head to Windshield	610	0.0		
NR/NB	Nose to Rim/Seat Back	436	14.5	698	8.8
CD/CB	Chest to Dash/Seat Back	574		730	
CS	Chest to Steering Hub	322	0.0		
RA	Rim to Abdomen	186	0.0		
KDL/KBL	Left Knee to Dash/Seat Back	121	26.0	352	13.0
KDR/KBR	Right Knee to Dash/Seat Back	85	26.0	328	12.5
PA°	Pelvic Angle		23.8		25.4
TA°	Tibia Angle		62.0		58.4
SK	Striker to Knee	615	5.6	680	58.5
ST	Striker to Head	561	83.2	320	65.0
SH	Striker to H-Point	356	-23.5	400	-41.0
HAX°	Head Angle X		-55.7		
HAY°	Head Angle Y		4.9		
NAX°	Neck Angle X		-2.9		
NAY°	Neck Angle Y		-5.3		
TAX°	T Angle X		-37.0		
TAY°	T Angle Y		38.8		
LAX°	Lumbar Angle (X)		-11.0		
LAY°	Lumbar Angle (Y)		33.8		

DATA SHEET NO. 3 (CONTINUED)

DUMMY CMM MEASUREMENTS

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

Description	Units	Driver			Left Rear Passenger		
		X	Y	Z	X	Y	Z
Striker (Driver/Passenger)	mm	2449	-794	-88	1427	-787	-286
Head CG	mm	2515	-470	-645	1531	-358	-610
Bridge of Nose	mm	2620	-397	-638	1629	-352	-530
Tip of Nose	mm	2624	-399	-600	1655	-351	-503
Shoulder Bolt	mm	2539	-571	-386	1561	-515	-281
Tip of Chin	mm	2627	-400	-522	1650	-355	-430
H-point	mm	2675	-613	54	1745	-512	44
Left Knee	mm	3080	-539	-123	2127	-436	-87
Right Knee	mm	3103	-167	-70	2126	-268	-92
Left Ankle	mm	3353	-538	174	2258	-448	172
Right Ankle	mm	3416	-215	159	2267	-257	182
Left Heel	mm	3356	-566	334	2214	-471	288
Right Heel	mm	3398	-203	341	2210	-269	271
Driver's Outboard Seat Anchor Bolt	mm	2921	-568	295			
Outboard Head Restraint Post	mm	2322	-456	-425	-	-	-
Top of Head Restraint*	mm	-	-	-	-	-	-
Center of Steering Wheel	mm	2998	-363	-341			

*Driver Head restraint was removed at COTR's request; This vehicle did not have a rear seat passenger head restraint

Reference point: Rear most center of the top of rear bumper beam

+X - From the rear of the vehicle to the front of the vehicle

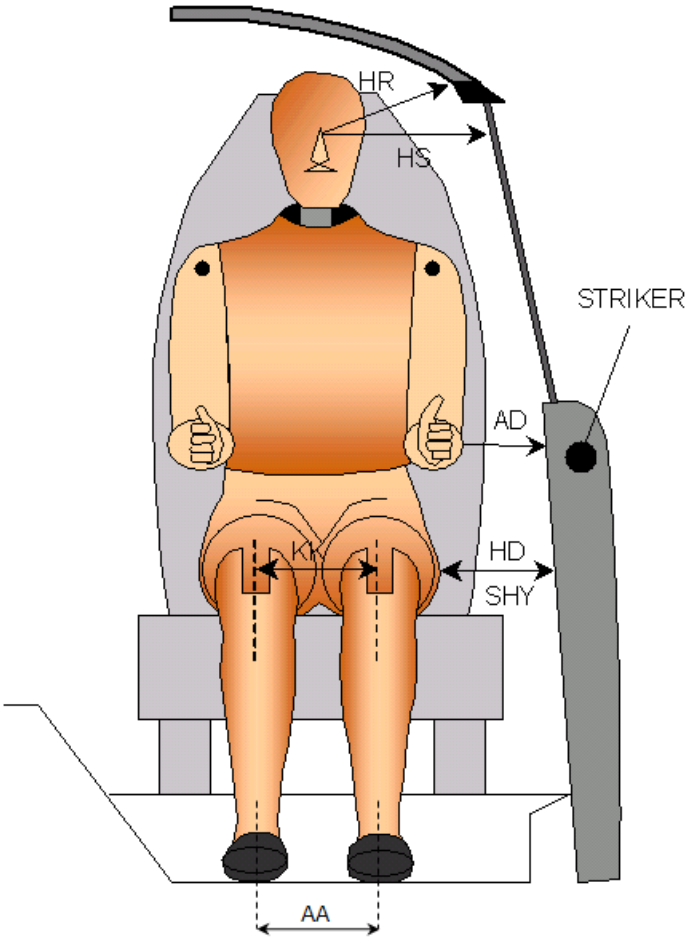
+Y - From left side of the vehicle to the right side of the vehicle

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

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

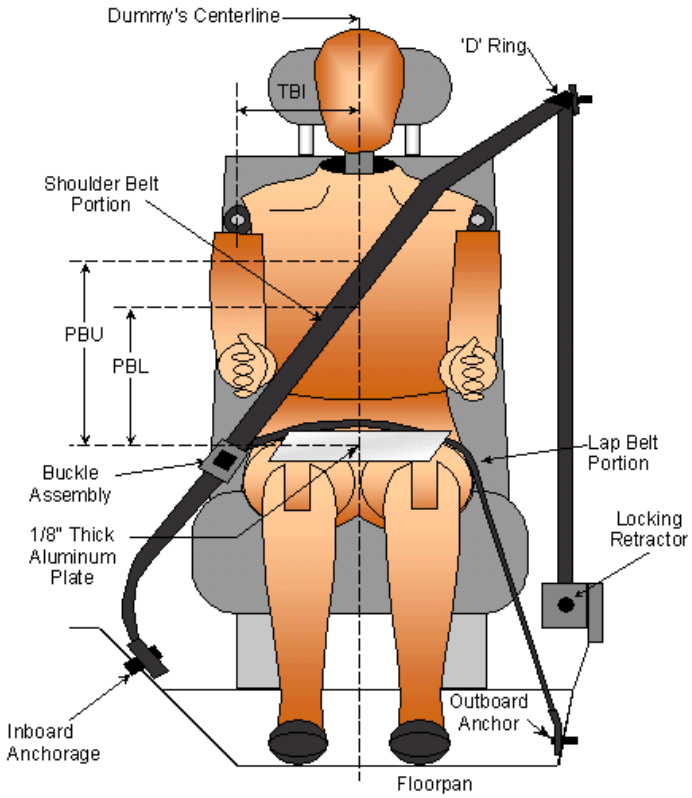


Code	Description	Units	Driver (P1)	Passenger (P4)
AD	Arm to Door	mm	111	119
HD	H-Point to Door	mm	141	208
HR	Head to Side Header	mm	157	256
HS	Head to Side Window	mm	301	390
KK	Knee to Knee	mm	374	230
SHY	Striker to H-Point (Y Direction)	mm	181	330
AA	Ankle to Ankle	mm	345	190

DATA SHEET NO. 5

SEAT BELT POSITIONING DATA

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver (P1)	Passenger (P4)
PBU — Top surface of aluminum plate to belt upper edge	mm	362	300
PBL — Top surface of aluminum plate to belt lower edge	mm	270	219

BELT LENGTH DATA

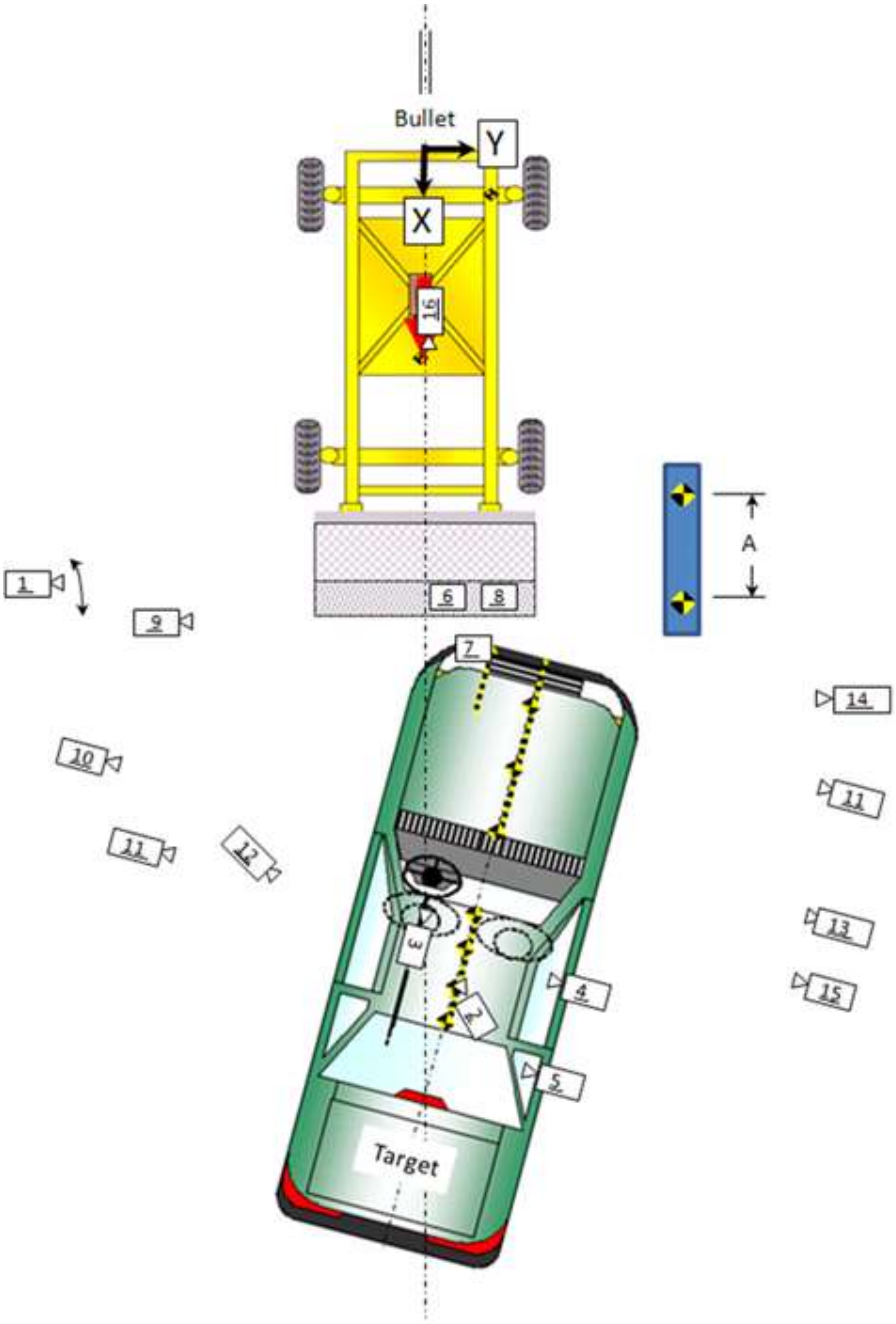
Measurement Description	Units	Driver (P1)	Passenger (P4)
Shoulder belt length as measured on ATD	mm	810	880
Lap Belt Length as measured on ATD	mm	860	860
Remainder of belt on reel	mm	225	200
Total belt length for continuous webbing systems	mm	1,895	1,940

DATA SHEET NO. 6

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

HORIZONTAL LOCATION



A	mm	NA
B	mm	NA
C	mm	NA
D	mm	NA
E	mm	NA
F	mm	NA
G	mm	NA
H	mm	NA

DATA SHEET NO. 6 (CONTINUED)

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

CAMERA LOCATIONS

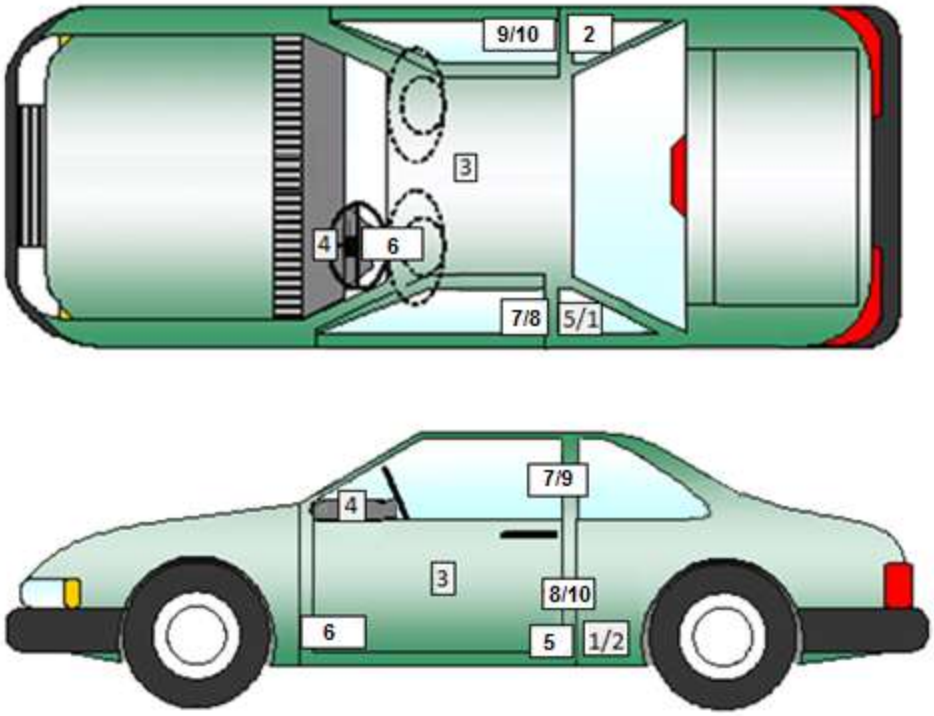
No.	Camera View	Location (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Side View	-	-	-	-	-
2	Onboard Driver Over Shoulder	3340	295	1360	12.5	500
3	Onboard Driver Lower Leg	1920	370	330	6.5	500
4	Onboard Driver Perpendicular	2170	660	920	12.5	500
5	Onboard Left Rear Passenger Perpendicular	3090	680	940	12.5	500
6	Overall Top View	570	40	5300	14	1000
7	Zoomed Top View	2270	0	5300	24	1000
8	Pit Front	-	-	-	-	-
9	Overall Left Side	-230	-8660	1455	24	1000
10	Target Vehicle Left Side	420	-8540	1340	24	1000
11	Driver's Motion	140	-3610	1385	50	1000
12	Look Down Driver's Motion	-	-	-	24	1000
13	Target Vehicle Right Side	9580	5210	1430	50	1000
14	Bullet Vehicle Left Side	4580	-4310	1465	24	1000
15	Bullet Vehicle Right Side	1230	8550	1350	24	1000
16	Above RMDB	NA	NA	NA	NA	NA

* COORDINATES
(At the center most rearward point of the RMDB when in contact with the Target Vehicle):
Reference Point:
+X = from back of RMDB to front of RMDB
+Y = right of monorail center
+Z = up from ground

DATA SHEET NO. 7

VEHICLE ACCELEROMETER DATA

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011



Accelerometer Location	Axes	Units	Location		
			X	Y	Z
Left Rear Sill	X,Y	mm	2142	589	240
Right Rear Sill	X,Y	mm	2142	-589	240
Vehicle CG	X, Y, Z	mm	3026	-9	342
Instrument Panel	X	mm	3210	11	947
Driver Seat Track	X, Y, Z	mm	2539	-533	262
Brake Pedal	X, Y, Z	mm	3649	-157	344

Reference point: Rear most center of the top of rear bumper beam

+X - From the rear of the vehicle to the front of the vehicle

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

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

DATA SHEET NO. 7 (CONTINUED)

VEHICLE INSTRUMENTATION DATA

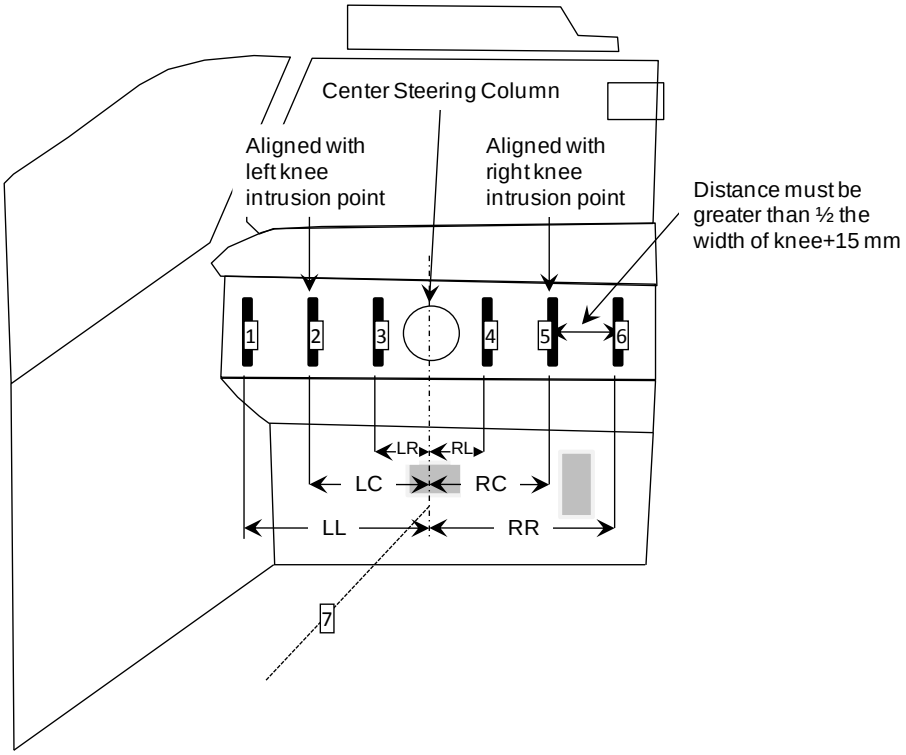
Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

Loc.	Description	Axes	Units	Positive Direction		Negative Direction	
				Max	Time (ms)	Max	Time (ms)
1	Left Rear Cross Member	X	G	1.69	178.60	-27.39	64.60
		Y	G	26.74	50.15	-6.71	78.85
2	Right Rear Cross Member	X	G	10.26	201.45	-104.57	125.30
		Y	G	67.69	59.80	-40.54	133.50
3	Vehicle CG	X	G	12.44	58.70	-286.71	53.40
		Y	G	247.93	53.20	-61.99	68.40
		Z	G	133.35	53.10	-175.76	66.95
4	Instrument Panel	X	G	57.11	58.05	-67.72	46.45
5	Driver Seat Track	X	G	45.51	14.90	-575.35	105.15
		Y	G	31.60	45.95	-6.79	75.45
		Z	G	17.46	59.05	-15.09	65.75
6	Behind Brake Pedal	X	G	48.31	77.55	-110.99	43.55
		Y	G	53.99	143.55	-15.69	78.35
		Z	G	49.31	88.50	-31.21	33.10
7	Driver Shoulder Belt		N	5245.34	67.80	-9.35	6.15
8	Driver Lap Belt		N	2627.78	47.75	-183.94	120.90
9	Passenger Shoulder Belt		N	6464.28	88.15	-226.68	15.70
10	Passenger Lap Belt		N	4342.36	89.05	-0.67	0.25

DATA SHEET NO. 7 (CONTINUED)

VEHICLE INSTRUMENTATION DATA

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15º / 35% Frontal Oblique	Test Date	2/23/2011



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 (mm)	Time (ms)	Max (mm)	Time (ms)
1	Left knee contact switch (LL)	*	0	-44.35	-5.51	40.80
2	Left knee contact switch (LC)	*	0	-44.00	-5.45	36.50
3	Left knee contact switch (LR)	*	0.59	56.35	-5.28	56.95
4	Right knee contact switch (RL)	*	0.56	65.90	-5.06	60.05
5	Right knee contact switch (RC)	*	0.69	62.75	-5.19	30.10
6	Right knee contact switch (RR)	*	0.68	70.55	-5.61	28.55
7	Toepan String Pot (mm)		0.26	32.70	-245.08	84.95

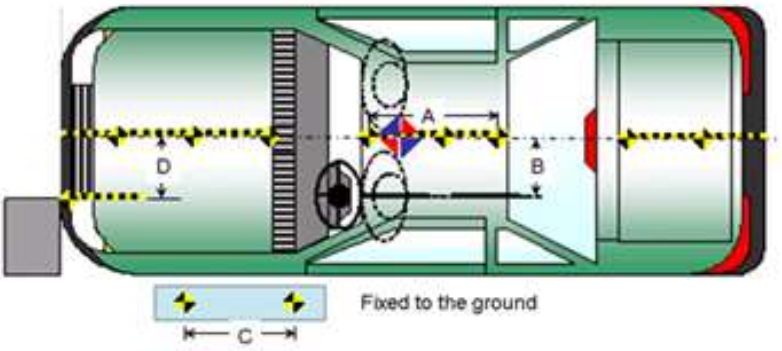
* The measurement indicates the initial time the voltage changed

DATA SHEET NO. 8

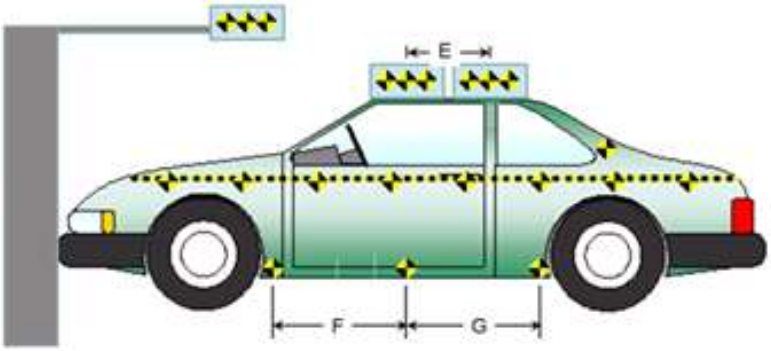
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15º / 35% Frontal Oblique	Test Date	2/23/2011

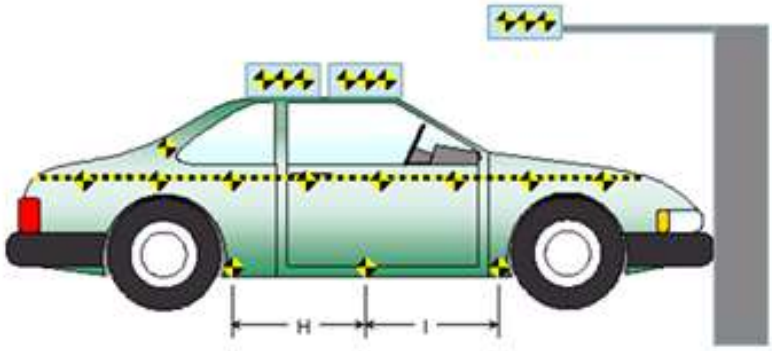
Item	Units	Value
A	mm	610
B	mm	363
C	mm	610
D	mm	280
E	mm	1074
F	mm	940
G	mm	943
H	mm	943
I	mm	944



Top View



Left Side View



Right Side View

DATA SHEET NO. 8 (CONTINUED)

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

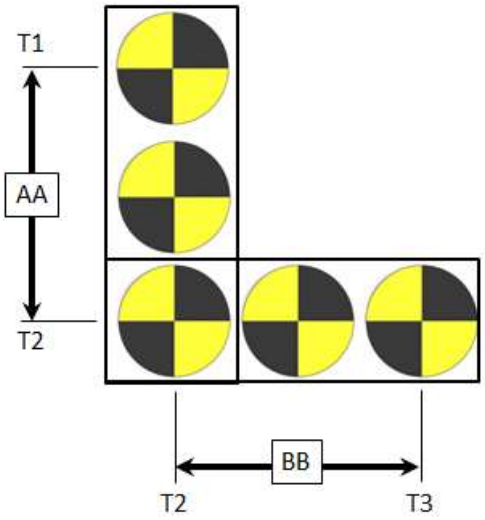
Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

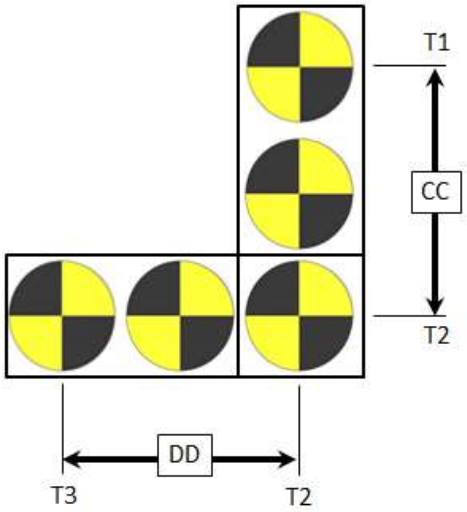
Overhead Reference Targets:

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

Ground Reference Targets:

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

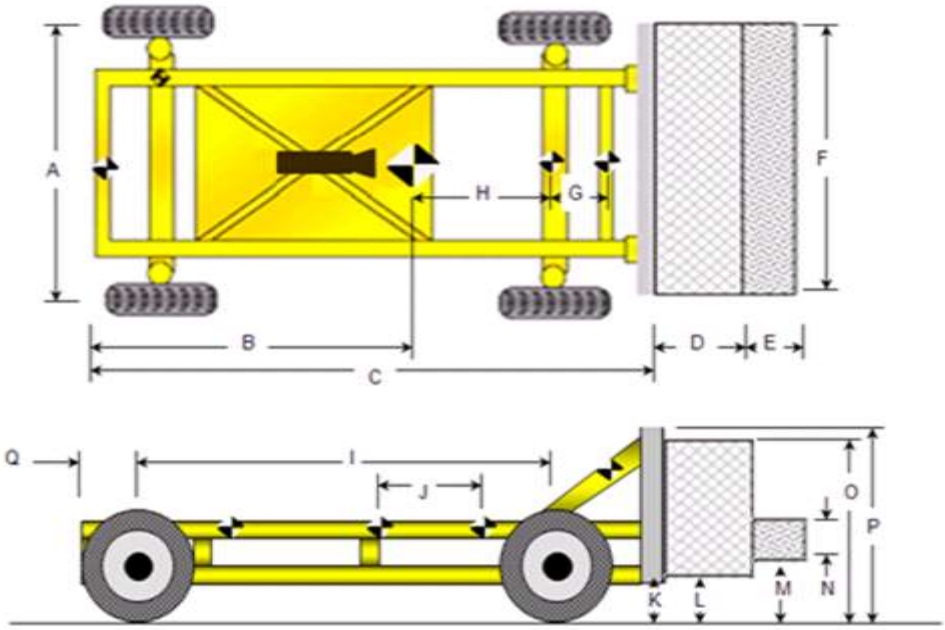




DATA SHEET NO. 8 (CONTINUED)

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011



Item	Units	Value	Item	Units	Value
A	mm	1900	J	mm	701
B	mm	2057	K	mm	134
C	mm	3505	L	mm	209
D	mm	610	M	mm	-
E	mm	-	N	mm	-
F	mm	2200	O	mm	1159
G	mm	686	P	mm	1234
H	mm	953	Q	mm	838
I	mm	2590			

DATA SHEET NO. 9

TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

INSTRUMENTATION

Driver Dummy Channels	119
Passenger Dummy Channels	34
Belt load cells	4
Contact Switches	6
Vehicle Structure Accelerometers	14
RMDB Vehicle Accelerometers	6
Total	185

CAMERA COVERAGE

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

DATA SHEET NO. 10

POST TEST OBSERVATIONS

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

TEST DUMMY INFORMATION AND CONTACT

Description	Driver	Picture Ref.	Rear Passenger	Picture Ref.
Dummy Type/Serial No.	THOR-NT 50th 0006	A-34	Hybrid III 5th 0147	A-49
Lower Leg Type/ Serial No.	FLX Lower Leg LX103/104	-	HIII Lower Leg	-
Head Contact	Airbag, Upper Window Frame	A-47	Chest, Seatback	A-57
Upper Torso Contact	Airbag	A-45	None	-
Lower Torso Contact	Airbag	A-45	None	-
Left Knee Contact	Lower Dash Panel	A-28	Driver's Seatback	A-57
Right Knee Contact	Lower Dash Panel	A-30	Driver's Seatback	A-57

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Rear Passenger
Locked/Unlocked Doors	Unlocked	Unlocked
Front Door Opening	Jammed Shut	Closed & Operational
Rear Door Opening	Closed & Operational	Closed & Operational
Seat Track Shift (mm)	5mm	NA
Seat Back Failure	None	None
Glazing Damage	None	None

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions	Picture Ref.
Windshield Damage	Laminate torn along lower right corner	A-70
Window Damage	none	-
Other Notable Effects	Right front door exterior panel deformation	A-14

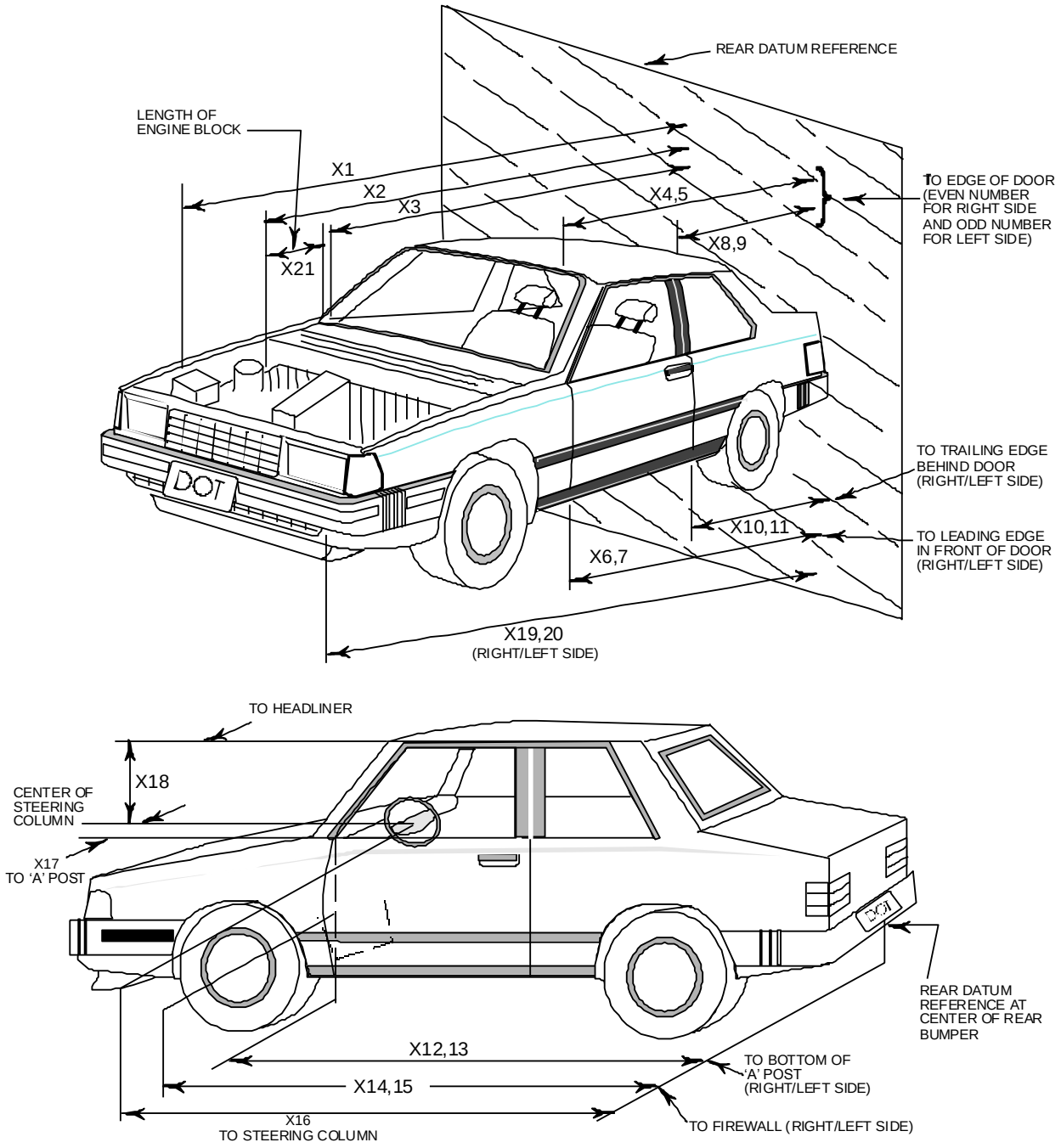
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Driver (Occupant 1)		Rear Passenger (Occupant 2)	
	Installed	Operated	Installed	Operated
Front Airbag	Yes	Yes	No	NA
Knee Airbag	No	NA	No	NA
Side Airbag	No	NA	No	NA
Seat Belt Pretensioner	Yes	Yes	No	NA
Seat Belt Load Limiter	Yes	Yes	No	NA
Other				

DATA SHEET NO. 11

VEHICLE PROFILE MEASUREMENTS

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15º / 35% Frontal Oblique	Test Date	2/23/2011



DATA SHEET NO. 11 (CONTINUED)

VEHICLE PROFILE MEASUREMENTS

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

No.	Measurement Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	5,028	4,511	-517
2*	Rear Surface of Vehicle (RSOV) to Front of Engine	4,390	-	-
3*	RSOV to Firewall	3,929	-	-
4	RSOV to Upper Leading Edge of Right Door	3,461	3,446	-15
5	RSOV to Upper Leading Edge of Left Door	3,466	3,460	-6
6	RSOV to Lower Leading Edge of Right Door	3,444	3,429	-15
7	RSOV to Lower Leading Edge of Left Door	3,446	3,441	-5
8	RSOV to Upper Trailing Edge of Right Door	2,388	2,376	-12
9	RSOV to Upper Trailing Edge of Left Door	2,388	2,417	-29
10	RSOV to Lower Trailing Edge of Right Door	2,372	2,359	-13
11	RSOV to Lower Trailing Edge of Left Door	2,372	2,363	-9
12	RSOV to Bottom of “A” Post of Right Side	3,514	3,477	-36
13	RSOV to Bottom of “A” Post of Left Side	3,513	3,415	-98
14*	RSOV to Firewall, Right Side	3,889	-	-
15*	RSOV to Firewall, Left Side	3,896	-	-
16	RSOV to Steering Column	2,998	2,882	-116
17	Center of Steering Column to “A” Post	284	302	18
18	Center of Steering Column to Headliner	393	356	-37
19	RSOV to Right Side of Front Bumper	4,290	4,730	440
20	RSOV to Left Side of Front Bumper	4,921	3,740	-1181
21	Length of Engine Block	431	431	0
RD	RSOV to Right Side of Dash Panel	3,120	3,114	-6
CD	RSOV to Center of Dash Panel	3,187	3,075	-112
LD	RSOV to Left Side of Dash Panel	3,126	2,967	-160

*Some measurement locations were inaccessible after the crash

All Dimensions in mm

DATA SHEET NO. 12

ACCIDENT INVESTIGATION DIVISION DATA

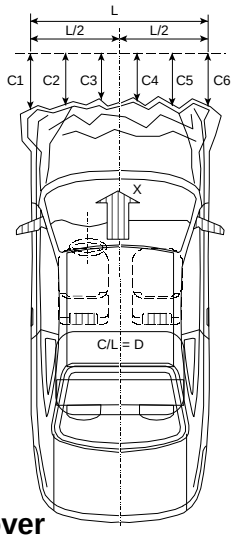
Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15º / 35% Frontal Oblique	Test Date	2/23/2011

VEHICLE INFORMATION

VIN:	1FAFP53U57A163982	Wheelbase:	2748
Vehicle Size Category:	Passenger	Test Weight (kg):	1728

ACCELEROMETER DATA

Accelerometer Locations:	Data Sheet No.7	Linearity:	>99%
Cal. Procedure/Interval:	Calspan Procedure/ 6 month		
Integration Algorithm:	Trapezoidal		
Impact Velocity (km/h):	97.88		
Velocity Change (km/h):	32.00		



CRUSH PROFILE

Collision Deformation Classification :	12FYEW4
Midpoint of Damage:	N/A
Damage Region Length (mm):	1428
Impact Mode:	Offset Frontal

Crush Measurements: With Bumper Cover

No.	Measurement Description	Units	Pre-Test	Post-Test*	Difference
C1	Crush zone 1 at left side	mm	4,839	4,220	-619
C2	Crush zone 2 at left side	mm	4,971	4,175	-796
C3	Crush zone 3 at left side	mm	5,023	4,379	-644
C4	Crush zone 4 at right side	mm	5,023	4,568	-455
C5	Crush zone 5 at right side	mm	4,970	4,745	-225
C6	Crush zone 6 at right side	mm	4,835	4,875	40
L	C1 to C6	mm	1,428	945	-483

* Post-test measurements reflect the absence of the bumper cover which was no longer present after the crash occurred. Post-test measurements were taken on the upper bumper beam.

Crush Measurements: With Bumper Cover Removed

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	4,825	4,220	-605
C2	Crush zone 2 at left side	mm	4,887	4,175	-712
C3	Crush zone 3 at left side	mm	4,901	4,379	-522
C4	Crush zone 4 at right side	mm	4,900	4,568	-332
C5	Crush zone 5 at right side	mm	4,884	4,745	-138
C6	Crush zone 6 at right side	mm	4,823	4,875	52
L	C1 to C6	mm	945	945	0

DATA SHEET NO. 13

VEHICLE INTRUSION MEASUREMENTS

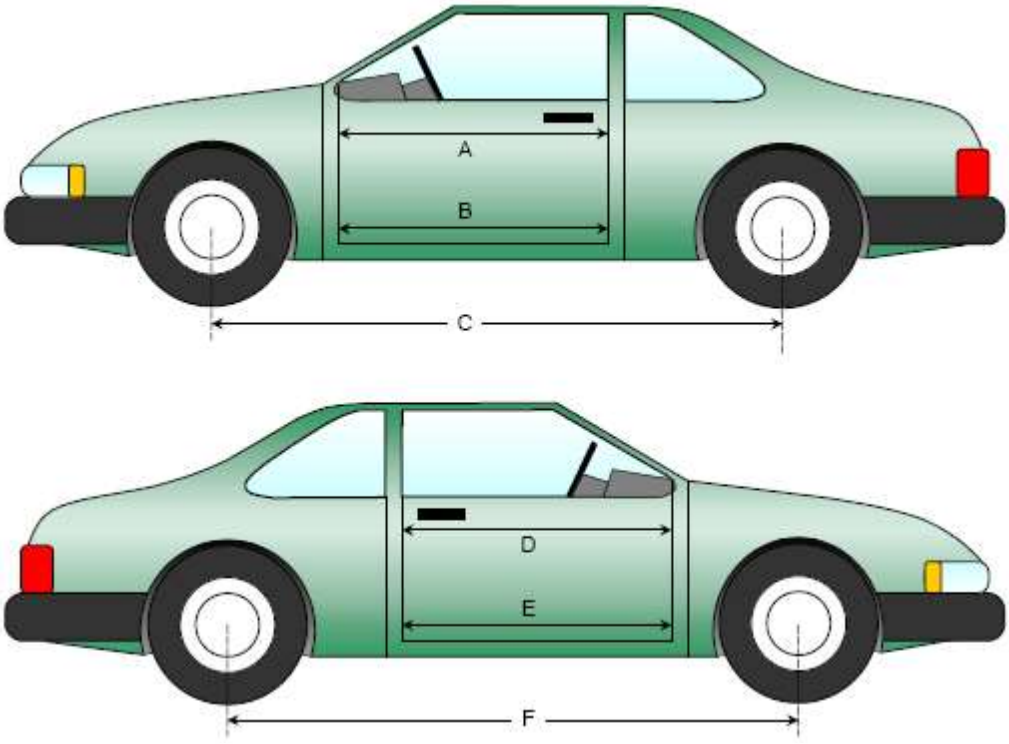
Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	955	846	-109
B	Left Side Lower	mm	920	828	-92
D	Right Side Upper	mm	955	932	-23
E	Right Side Lower	mm	919	906	-13

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2,756	2,499	-257
F	Right Side Wheelbase	mm	2,739	2,751	12



DATA SHEET NO.13 (CONTINUED)

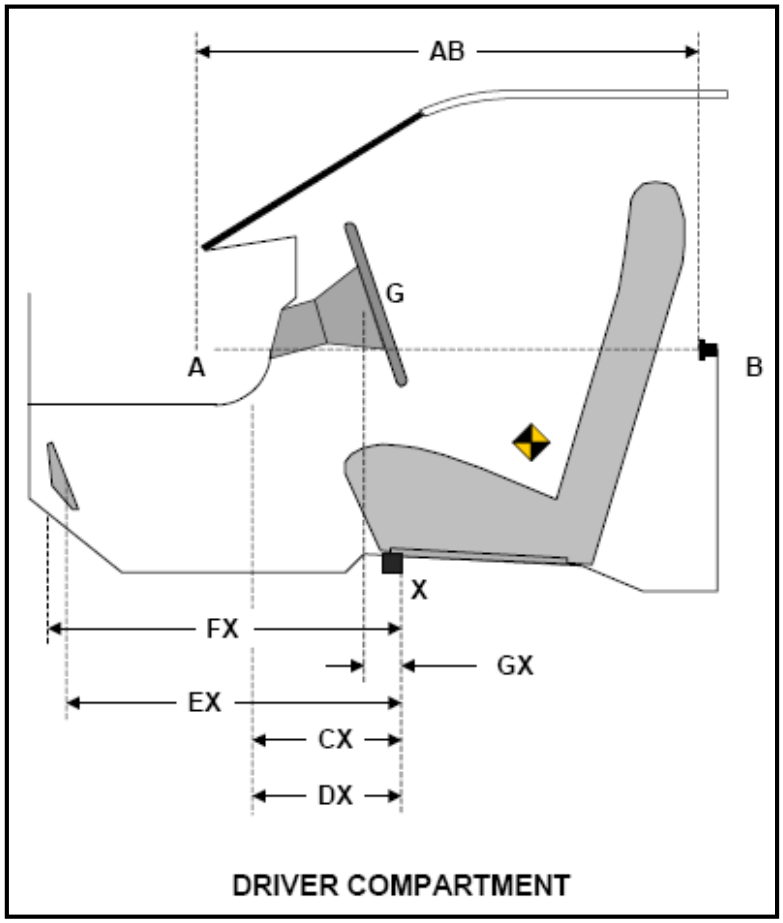
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	798	713	-86
CX	Left Knee Bolster to X	mm	258	211	-47
DX	Right Knee Bolster to X	mm	257	234	-23
EX	Brake Pedal to X	mm	562	373	-189
FX	Foot Rest to X	mm	590	484	-106
GX	Center of Steering Column Wheel Hub to X	mm	78	-34	-112

X = Front of Seat Track (Stationary)

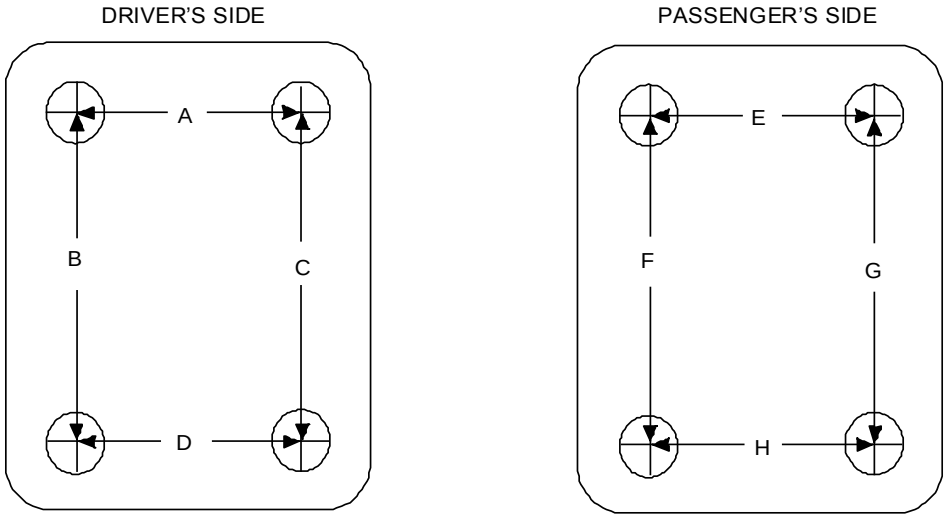


DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

TOP VIEW THROUGH FLOOR PAN



UNDERBODY FLOORBOARD DEFORMATION

Measurement	Pre-Test	Post-Test	Difference
A	453	463	10
B	395	368	-27
C	299	263	-35
D	399	414	16
E	434	-	-
F	365	-	-
G	273	-	-
H	635	-	-

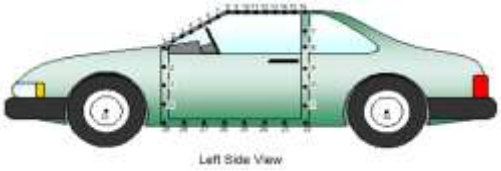
All units in millimeters

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

DRIVER SIDE DOOR SILL INTRUSION



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

Pt.	Pre-Test			Post-Test			Difference		
	X	Y	Z	X	Y	Z	X	Y	Z
1	3480	-801	953	3385	-769	924	-94	32	-29
2	3416	-780	1005	3327	-747	980	-89	33	-25
3	3350	-760	1049	3276	-732	1027	-75	29	-21
4	3286	-740	1091	3224	-719	1084	-62	21	-7
5	3219	-721	1131	3170	-706	1142	-50	15	11
6	3155	-703	1168	3116	-695	1195	-39	7	27
7	3083	-681	1208	3055	-683	1252	-28	-2	44
8	3015	-661	1243	2996	-669	1306	-19	-8	62
9	2950	-639	1276	2940	-655	1353	-10	-16	76
10	2878	-618	1308	2875	-637	1400	-3	-19	92
11	2805	-597	1337	2803	-618	1431	-2	-20	94
12	2729	-586	1356	2725	-603	1441	-5	-17	84
13	2652	-576	1373	2646	-588	1444	-5	-12	72
14	2544	-562	1393	2538	-565	1445	-7	-3	52
15	2437	-557	1403	2433	-547	1437	-5	10	33
16	2320	-561	1404	2322	-552	1421	2	8	17
17	2349	-691	1250	2286	-770	1243	-62	-78	-7
18	2382	-787	1079	2368	-847	1076	-14	-60	-3
19	2410	-888	911	2436	-930	915	26	-42	3
20	2429	-914	722	2442	-951	728	13	-37	6
21	2421	-931	518	2420	-942	525	-1	-11	7
22	2446	-894	324	2438	-906	337	-8	-12	13
23	2607	-902	341	2598	-908	340	-9	-6	-1
24	2766	-897	339	2755	-901	331	-10	-4	-8
25	2926	-895	342	2915	-895	324	-11	-1	-18
26	3090	-887	337	3079	-885	312	-11	2	-25
27	3251	-881	336	3241	-874	302	-10	8	-34
28	3404	-878	339	3404	-867	303	0	11	-37
29	3547	-886	334	3437	-795	284	-109	91	-50
30	3549	-901	507	3442	-811	517	-107	89	10
31	3556	-900	709	3390	-829	697	-166	70	-12
32	3547	-876	855	3451	-865	809	-96	11	-46

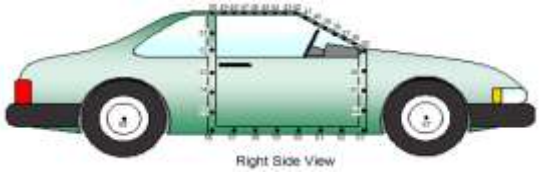
Note: Please see Appendix E.2 for a detailed procedure used to measure the required door sill intrusions

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

PASSENGER SIDE DOOR SILL INTRUSION



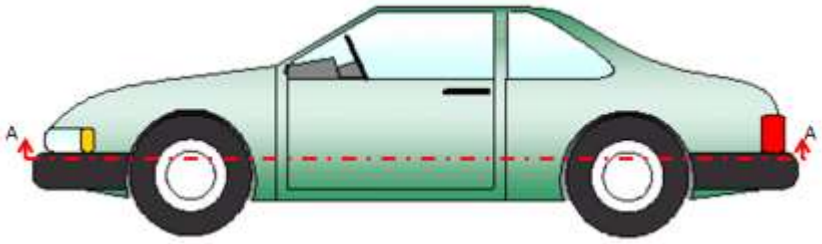
Reference point: Rear most center of the top of rear bumper beam
+X - From the rear of the vehicle to the front of the vehicle
+Y - From left side of the vehicle to the right side of the vehicle
+Z – From the top of the vehicle to the bottom of the vehicle

Pt.	Pre-Test			Post-Test			Difference		
	X	Y	Z	X	Y	Z	X	Y	Z
35	3479	805	939	3443	866	950	-36	61	11
36	3414	784	993	3383	827	1001	-31	43	7
37	3346	762	1044	3321	787	1047	-25	26	3
38	3275	739	1092	3259	752	1094	-16	12	2
39	3205	719	1135	3191	725	1132	-14	5	-2
40	3134	701	1174	3122	695	1173	-12	-6	-2
41	3063	678	1215	3057	662	1213	-6	-16	-2
42	2988	654	1253	2987	627	1249	-1	-27	-5
43	2913	628	1291	2913	607	1283	-1	-21	-8
44	2838	605	1323	2838	586	1317	0	-19	-7
45	2761	580	1354	2760	564	1347	-1	-16	-7
46	2684	581	1366	2682	566	1359	-2	-14	-8
47	2600	577	1378	2598	564	1371	-1	-13	-7
48	2510	576	1386	2511	563	1381	1	-13	-5
49	2422	568	1396	2423	559	1391	0	-10	-4
50	2330	553	1411	2328	545	1409	-2	-9	-2
51	2341	685	1261	2330	688	1257	-11	4	-3
52	2374	781	1089	2363	788	1086	-11	7	-3
53	2414	877	917	2404	886	917	-10	9	0
54	2427	911	735	2416	927	737	-10	17	2
55	2419	928	535	2406	962	541	-13	34	5
56	2416	899	336	2403	933	337	-13	34	1
57	2584	906	356	2569	950	359	-15	44	2
58	2740	897	344	2725	947	346	-15	50	2
59	2896	890	338	2882	947	344	-15	57	6
60	3054	886	340	3038	949	344	-16	62	5
61	3209	873	325	3195	943	333	-15	71	8
62	3366	865	320	3352	942	329	-14	77	8
63	3524	867	313	3508	945	328	-15	78	15
64	3530	897	481	3509	974	498	-21	77	17
65	3541	896	654	3509	985	674	-32	89	20
66	3536	879	840	3484	979	854	-53	100	14

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

DATA SHEET NO.13 (CONTINUED)

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011



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 INTRUSION MEASUREMENTS
Section A-A

Pt.	Pre-Test			Pt.	Post-Test		
	X	Y	Z		X	Y	Z
1	593	852	-19	1	652	859	-25
2	741	873	-21	2	743	871	-24
3	890	893	-23	3	891	891	-23
4	1498	920	-31	4	1497	919	-30
5	1646	918	-30	5	1644	920	-33
6	1796	918	-29	6	1793	918	-33
7	1948	917	-34	7	1945	918	-32
8	2098	916	-33	8	2094	918	-33
9	2252	917	-31	9	2251	920	-33
10	2407	917	-32	10	2397	932	-37
11	2562	915	-33	11	2546	917	-28
12	2709	912	-35	12	2692	912	-30
13	2859	910	-35	13	2843	925	-35
14	3013	907	-33	14	2995	937	-39
15	3162	904	-35	15	3145	950	-40
16	3317	901	-35	16	3299	962	-38
17	3470	899	-34	17	3448	977	-44
18	3617	899	-31	18	3585	972	-59
19	4383	852	-32	19	4188	919	-52
20	4540	822	-36	20	4311	770	-63
21	4699	747	27	21	4452	659	-78
22	4801	661	55	22	4616	624	-64
23	4870	523	66	23	4730	613	-89

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

DATA SHEET NO.13 (CONTINUED)

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

VEHICLE INTRUSION MEASUREMENTS
Section A-A (Continued)

Pt.	Pre-Test			Pt.	Post-Test		
	X	Y	Z		X	Y	Z
24	4885	373	69	24	4879	581	-96
25	4895	223	71	25	4810	434	-110
26	4900	72	68	26	4715	317	-108
27	4899	-79	72	27	4607	194	-117
28	4894	-231	67	28	4511	90	-118
29	4886	-380	63	29	4376	-47	-122
30	4871	-533	64	30	4205	-193	-128
31	4799	-649	48	31	4098	-287	-100
32	4700	-737	15	32	4176	-335	-133
33	4603	-811	-32	33	4229	-379	-154
34	4402	-849	-29	34	4252	-459	-176
35	4262	-876	-30	35	4129	-493	-177
36	3647	-907	-32	36	3946	-427	-157
37	3494	-902	-28	37	3843	-501	-152
38	3349	-906	-30	38	3740	-644	-159
39	3196	-909	-30	39	3490	-754	-74
40	3046	-912	-31	40	3498	-930	26
41	2895	-916	-30	41	3354	-938	23
42	2745	-919	-29	42	3202	-942	10
43	2593	-922	-32	43	3070	-945	-4
44	2445	-925	-30	44	2918	-947	-16
45	2292	-924	-29	45	2752	-946	-22
46	2142	-924	-31	46	2601	-945	-29
47	1994	-924	-28	47	2450	-944	-40
48	1846	-924	-28	48	2290	-925	-42
49	1692	-923	-30	49	2139	-927	-42
50	1517	-927	-36	50	1993	-930	-41
51	790	-883	-31	51	1847	-933	-41
52	642	-862	-34	52	1691	-935	-40
53	495	-840	-34	53	1520	-928	-42
54	343	-812	-32	54	796	-890	-42
55	168	-751	-32	55	651	-870	-43
56	69	-576	-27	56	502	-848	-47
57	35	-422	-28	57	352	-822	-43
58	17	-267	-28	58	174	-761	-44
59	10	-111	-25	59	74	-589	-38
60	8	47	-24	60	40	-433	-38

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

DATA SHEET NO.13 (CONTINUED)

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

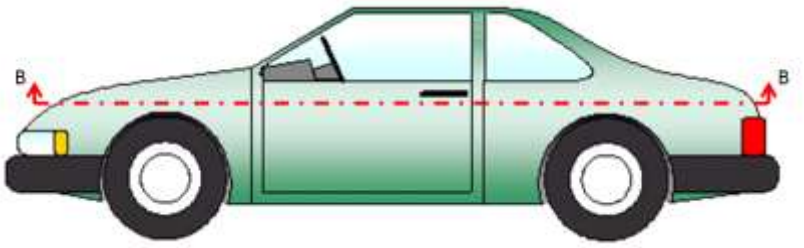
VEHICLE INTRUSION MEASUREMENTS
Section A-A (Continued)

Pt.	Pre-Test			Pt.	Post-Test		
	X	Y	Z		X	Y	Z
61	14	207	-23	61	20	-277	-39
62	28	359	-22	62	10	-124	-42
63	54	515	-23	63	10	32	-34
64	115	687	-21	64	15	195	-35
65	297	794	-19	65	28	350	-36
66	446	824	-16	66	55	505	-31
				67	114	675	-32
				68	299	785	-32
				69	407	809	-39

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

DATA SHEET NO.13 (CONTINUED)

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011



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 INTRUSION MEASUREMENTS
Section B-B

Pt.	Pre-Test			Pt.	Post-Test		
	X	Y	Z		X	Y	Z
1	591	836	-201	1	600	837	-199
2	743	859	-199	2	744	858	-201
3	892	876	-202	3	892	875	-204
4	1042	893	-202	4	1042	892	-205
5	1193	904	-203	5	1192	904	-205
6	1343	910	-202	6	1342	909	-204
7	1494	913	-203	7	1492	914	-207
8	1646	913	-202	8	1643	916	-206
9	1797	915	-202	9	1792	919	-207
10	1945	916	-204	10	2094	920	-206
11	2097	918	-204	11	2246	920	-209
12	2252	918	-207	12	2397	920	-210
13	2403	921	-209	13	2547	914	-203
14	2557	923	-204	14	2690	880	-196
15	2706	919	-203	15	2841	904	-208
16	2857	917	-205	16	2988	925	-210
17	3010	916	-206	17	3138	945	-212
18	3164	914	-205	18	3290	966	-214
19	3316	910	-207	19	3443	985	-217
20	3465	905	-207	20	3573	982	-226
21	3615	899	-206	21	3720	941	-239
22	3769	893	-202	22	3863	895	-255
23	3921	882	-207	23	4014	889	-285
24	4073	867	-204	24	4224	929	-175

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

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

VEHICLE INTRUSION MEASUREMENTS
Section B-B (Continued)

Pt.	Pre-Test			Pt.	Post-Test		
	X	Y	Z		X	Y	Z
25	4222	844	-203	25	4315	814	-186
26	4371	808	-204	26	4334	721	-197
27	4510	745	-202	27	4406	667	-193
28	4568	614	-156	28	4453	606	-204
29	4640	483	-148	29	4437	530	-209
30	4702	355	-146	30	4442	448	-195
31	4714	203	-145	31	4598	401	-224
32	4719	56	-146	32	4596	309	-228
33	4727	-90	-147	33	4534	237	-229
34	4714	-235	-146	34	4416	89	-235
35	4699	-394	-147	35	4291	-79	-240
36	4614	-490	-142	36	4252	-92	-238
37	4573	-615	-157	37	4092	-104	-227
38	4531	-743	-203	38	3998	-151	-246
39	4402	-810	-198	39	4001	-233	-254
40	4256	-844	-200	40	3959	-290	-255
41	4107	-867	-199	41	3913	-357	-228
42	3956	-883	-200	42	3877	-423	-263
43	3807	-891	-201	43	3834	-486	-265
44	3658	-902	-208	44	3745	-538	-265
45	3498	-908	-207	45	3687	-646	-272
46	3350	-913	-208	46	3556	-681	-276
47	3200	-916	-207	47	3492	-808	-224
48	3050	-919	-209	48	3368	-955	-152
49	2897	-920	-208	49	3216	-964	-172
50	2747	-922	-211	50	3067	-966	-177
51	2598	-927	-210	51	2914	-971	-193
52	2448	-924	-210	52	2764	-971	-196
53	2296	-923	-208	53	2617	-971	-210
54	2146	-923	-211	54	2467	-969	-216
55	1994	-920	-205	55	2298	-924	-226
56	1846	-920	-210	56	2144	-925	-226
57	1694	-919	-210	57	1995	-926	-220
58	1543	-917	-211	58	1844	-927	-219
59	1393	-914	-215	59	1695	-929	-224
60	1242	-911	-215	60	1543	-929	-224
61	1092	-902	-211	61	1395	-930	-226

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

DATA SHEET NO.13 (CONTINUED)

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15^{o} / 35% Frontal Oblique	Test Date	2/23/2011

VEHICLE INTRUSION MEASUREMENTS
Section B-B (Continued)

Pt.	Pre-Test			Pt.	Post-Test		
	X	Y	Z		X	Y	Z
62	944	-887	-208	62	1251	-916	-224
63	794	-870	-213	63	1107	-908	-224
64	646	-849	-212	64	952	-894	-220
65	499	-823	-211	65	807	-878	-221
66	355	-787	-213	66	655	-858	-222
67	236	-695	-211	67	519	-835	-227
68	175	-556	-209	68	506	-833	-221
69	162	-407	-200	69	362	-797	-225
70	151	-255	-201	70	244	-707	-219
71	158	-103	-202	71	175	-546	-221
72	157	48	-198	72	137	-462	-272
73	152	197	-204	73	113	-260	-246
74	161	348	-199	74	105	-111	-238
75	163	499	-196	75	109	191	-222
76	209	643	-198	76	120	334	-235
77	308	754	-199	77	165	488	-203
78	444	806	-197	78	210	632	-207
				79	306	743	-209
				80	444	796	-209

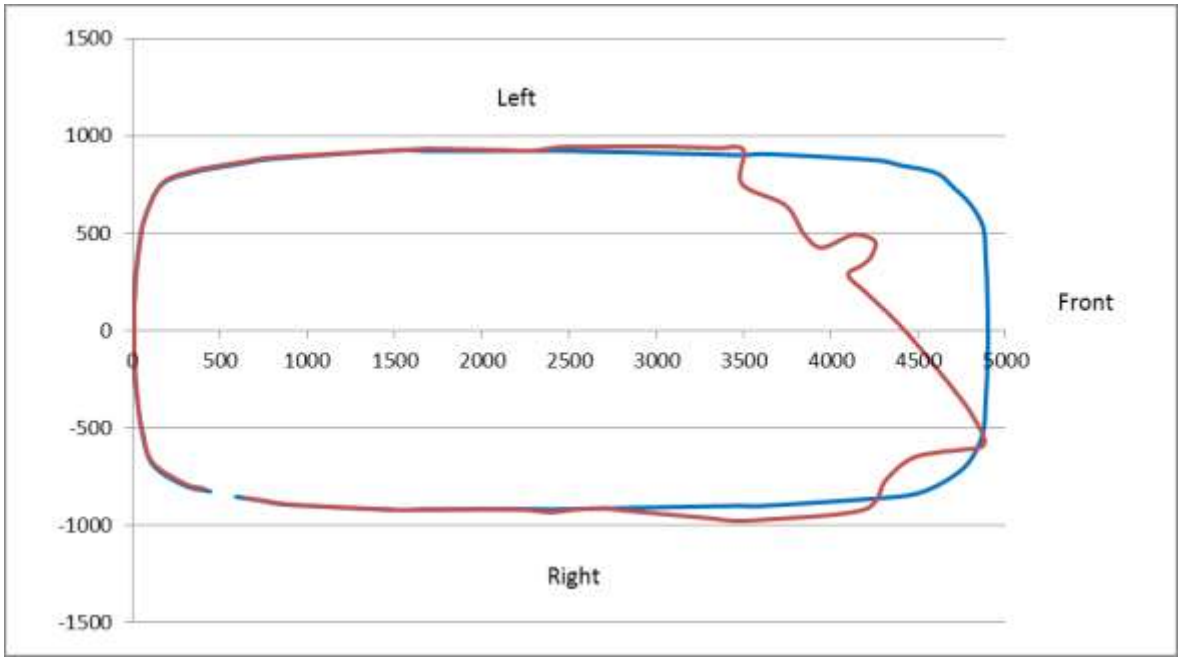
Note: See Appendix E.3 for a detailed procedure on how to measure the required vehicle exterior crush profile.

DATA SHEET NO.13 (CONTINUED)

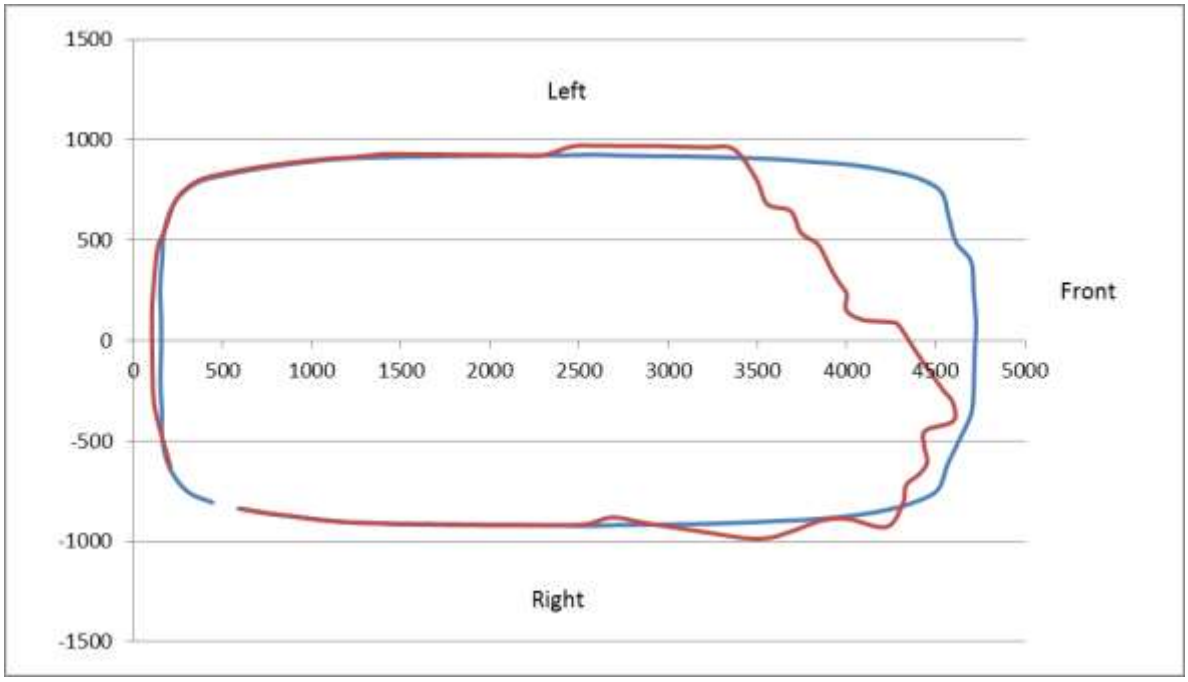
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

A-LINE PROFILE
SECTION A-A



B-LINE PROFILE
SECTION B-B



DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

	Points	Pre-Test (mm)			Post-Test (mm)			Difference (mm)		
		X	Y	Z	X	Y	Z	X	Y	Z
Lower Bumper Beam	1	4821	-656	170	4260	-390	-69	-561	266	-239
	2	4882	-398	176	4180	-227	-3	-702	171	-180
	3	4896	-124	177	4387	-56	-10	-510	68	-187
	4	4895	149	177	4582	139	-7	-314	-11	-185
	5	4879	411	186	4756	334	0	-124	-77	-186
	6	4818	661	187	4890	555	15	72	-106	-171
Upper Bumper Beam	1	4825	-650	58	4220	-367	-172	-605	283	-230
	2	4887	-392	63	4175	-220	-115	-712	172	-179
	3	4901	-122	66	4379	-43	-123	-522	80	-189
	4	4900	150	67	4568	152	-118	-332	2	-186
	5	4884	417	71	4745	353	-112	-138	-64	-183
	6	4823	661	68	4875	570	-100	52	-91	-168
Upper Radiator Support	1	4526	-639	-176	3879	-281	-335	-646	357	-159
	2	4700	-387	-150	3998	-143	-246	-702	244	-96
	3	4741	-138	-139	4212	-112	-320	-529	26	-181
	4	4743	149	-137	4382	90	-370	-361	-59	-232
	5	4694	406	-146	4543	290	-303	-151	-115	-158
	6	4517	640	-168	4392	585	-270	-125	-55	-103

Reference point: Rear most center of the top of rear bumper beam

+X - From the rear of the vehicle to the front of the vehicle

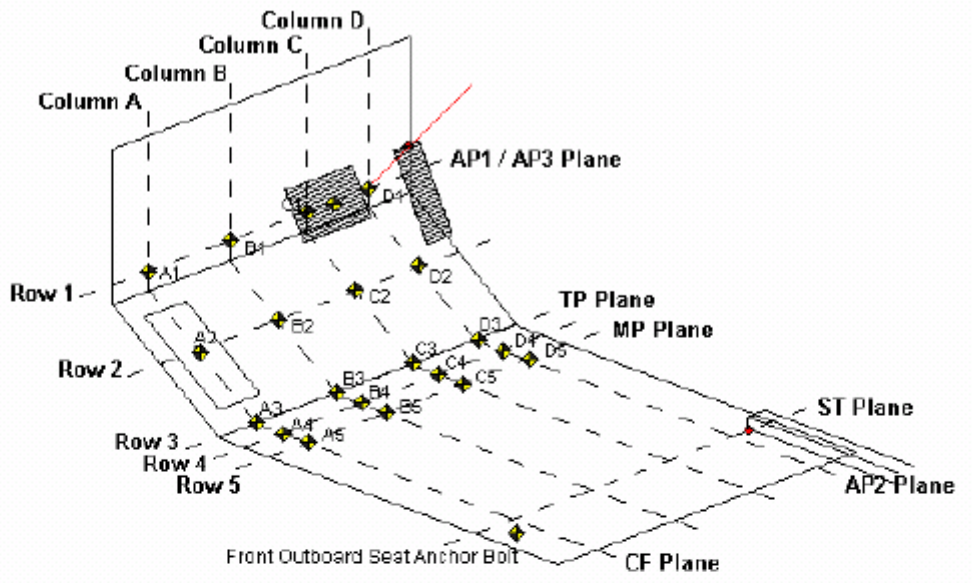
+Y - From left side of the vehicle to the right side of the vehicle

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

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011



AP1: Y-Z Plane passing through D1

AP2: X-Z Plane passing through D1

AP3: X-Y plane passing through D1

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

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

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

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

Column A: intersection of vehicle and CF plane

Column D: Intersection of vehicle and AP2 plane

Row 1: intersection of the vehicle and the AP3 Plane

Row 3: intersection of the vehicle and TP plane

Row 5: intersection of the vehicle and MP plane

Row 2: evenly spaced between row 1 and 3

Row 4: evenly spaced between row 3 and 5

DATA SHEET NO.13 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

Intrusion Location	Pre-Test (mm)			Post-Test (mm)			Difference (mm)		
	X	Y	Z	X	Y	Z	X	Y	Z
A1	3651	-352	262	3518	-254	211	-133	98	51
B1	3486	-369	257	3386	-278	361	-100	91	-104
C1	3545	-573	227	3406	-474	231	-139	99	-4
D1	3660	-423	348	3514	-318	199	-146	105	149
A2	3655	-279	219	3521	-179	216	-134	100	3
B2	3649	-157	223	3521	-55	225	-128	102	-2
C2	3511	-577	233	3400	-484	302	-111	93	-69
D2	3594	-426	230	3470	-329	279	-124	97	-49
A3	3582	-287	282	3470	-189	287	-112	98	-5
B3	3576	-155	283	3473	-54	306	-103	101	-23
C3	3481	-583	288	3391	-493	360	-90	90	-72
D3	3488	-438	290	3391	-345	363	-97	93	-73
A4	3482	-299	333	3381	-206	361	-101	93	-28
B4	3478	-164	348	3365	-73	345	-113	91	3
C4	3420	-586	349	3333	-495	368	-87	91	-19
D4	3413	-442	350	3319	-353	380	-94	89	-30
A5	3407	-302	338	3306	-215	378	-101	87	-40
B5	3396	-177	349	3294	-98	341	-102	79	8
C5	3366	-588	353	3280	-493	360	-86	95	-7
D5	3357	-445	349	3269	-360	396	-88	85	-47
Brake Pedal	3483	-157	230	3289	-363	128	-194	-206	102
IP Left	-	-	-	3127	-468	-141	-	-	-
IP Right	-	-	-	3151	-171	-110	-	-	-
Steering Column	2998	-363	-341	2882	-373	-455	-116	-10	114
Front Outboard Bolt	2921	-568	295	2916	-553	300	-5	15	-5

*Pre-test measurements of the instrument panel were not taken.

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

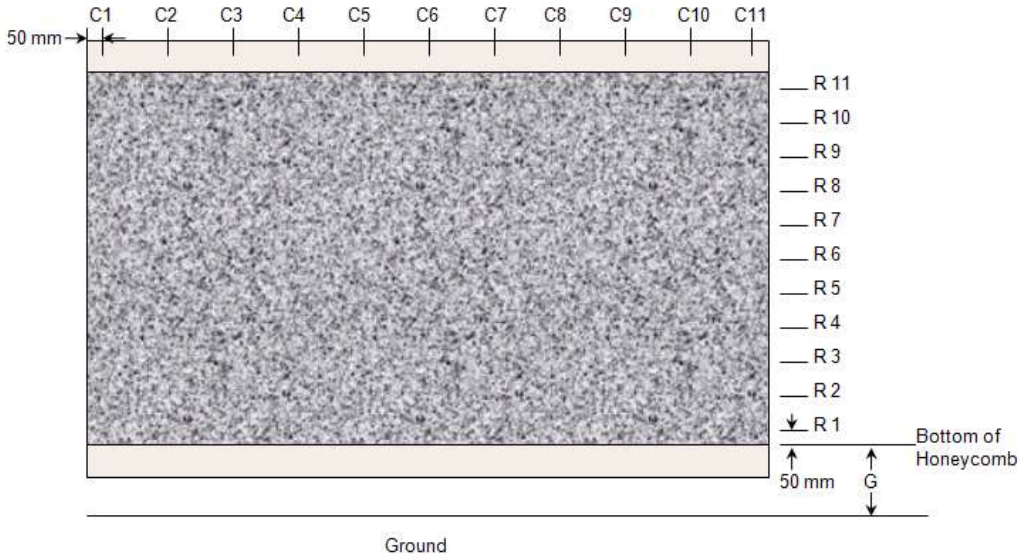
+Y - From left side of the vehicle to the right side of the vehicle

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

DATA SHEET NO.14

DEFORMABLE BARRIER CRUSH MEASUREMENTS

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011



Barrier Crush (X-direction only)

		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
		50 mm	260 mm	470 mm	680 mm	890 mm	1100 mm	1310 mm	1520 mm	1730 mm	1940 mm	2150 mm
R11	910mm	0	1	1	2	2	2	3	3	3	3	6
R10	824mm	0	1	1	1	2	2	3	3	3	4	18
R9	738mm	0	0	1	1	2	2	2	16	5	6	36
R8	652mm	0	0	1	1	1	2	3	11	34	8	61
R7	566 mm	-1	0	0	1	1	1	4	5	32	17	84
R6	480mm	-1	-1	0	0	1	1	2	7	88	28	210
R5	384mm	-1	-1	0	0	0	1	1	15	74	155	258
R4	308mm	-1	-1	-1	0	0	1	1	45	70	305	302
R3	222mm	-2	-1	-1	0	0	0	1	84	70	321	323
R2	136mm	-2	-2	-1	-1	0	0	19	116	42	329	303
R1	50 mm	-2	-2	-1	-1	0	0	42	149	61	359	293

DATA SHEET NO. 15

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

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

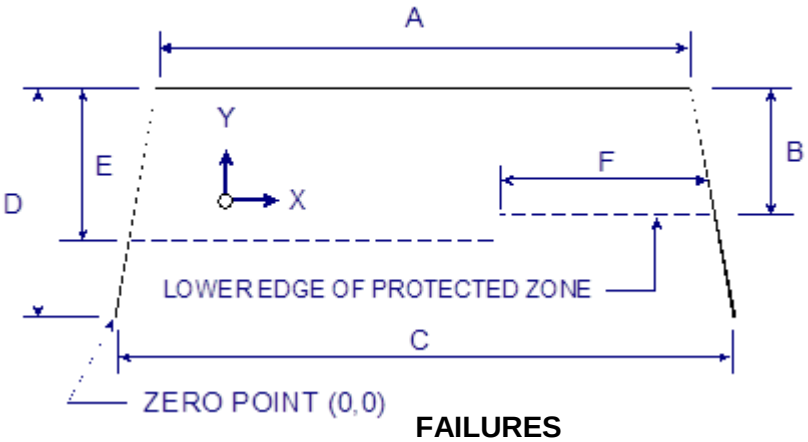
A 0.8 mm trim surrounds the top and side of windshield while a plastic shroud is on the bottom. The standard requires that the post-test retention measurement be a minimum of 75% of the pre-test total periphery measurement for vehicles not equipped with occupant passive restraints and 50% for each side of the windshield for vehicles which are equipped with occupant passive restraints.

Temperature of windshield molding during test: 21.3°C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2,214	2,214	100%
Right Side	2,214	1,574	71%
Total	4,428	3788	86%

Item	Units	Value
A	mm	1170
B	mm	380
C	mm	1618
D	mm	820
E	mm	428
F	mm	705



AREAS OF PROTECTED ZONE

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.

FAILURES

X	Y
-	-
-	-
-	-
-	-

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

X	Y
-	-
-	-
-	-
-	-

DATA SHEET NO. 15 (CONTINUED)

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

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 22° C Test Time: 3:00 PM

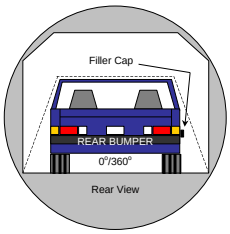
Stoddard Solvent Spillage Measurements

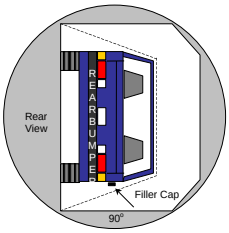
A.	From impact until vehicle motion ceases: (Maximum allowable = 1 oz.)	0	oz
B.	For the 5-minute period after motion ceases: (Maximum allowable = 5 oz.	0	oz
C.	For the following 25 minutes: (Maximum allowable = 1 oz./minute	0	oz
D.	Spillage	0	oz

DATA SHEET NO. 16

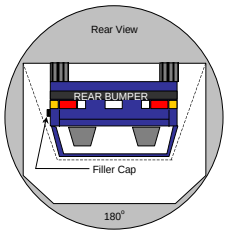
FMVSS 301 STATIC ROLLOVER RESULTS

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15º / 35% Frontal Oblique	Test Date	2/23/2011

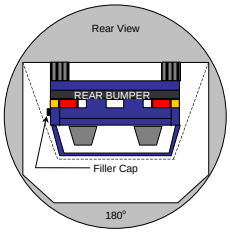




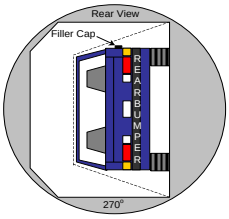
0° TO 90°



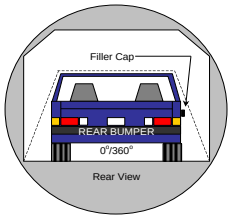
90° TO 180°



180° TO 270°



270° TO 360°



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°	77	300	377
90° to 180°	65	300	365
180° to 270°	59	300	359
270° to 360°	73	300	373

FMVSS 301 SPILLAGE TABLE

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

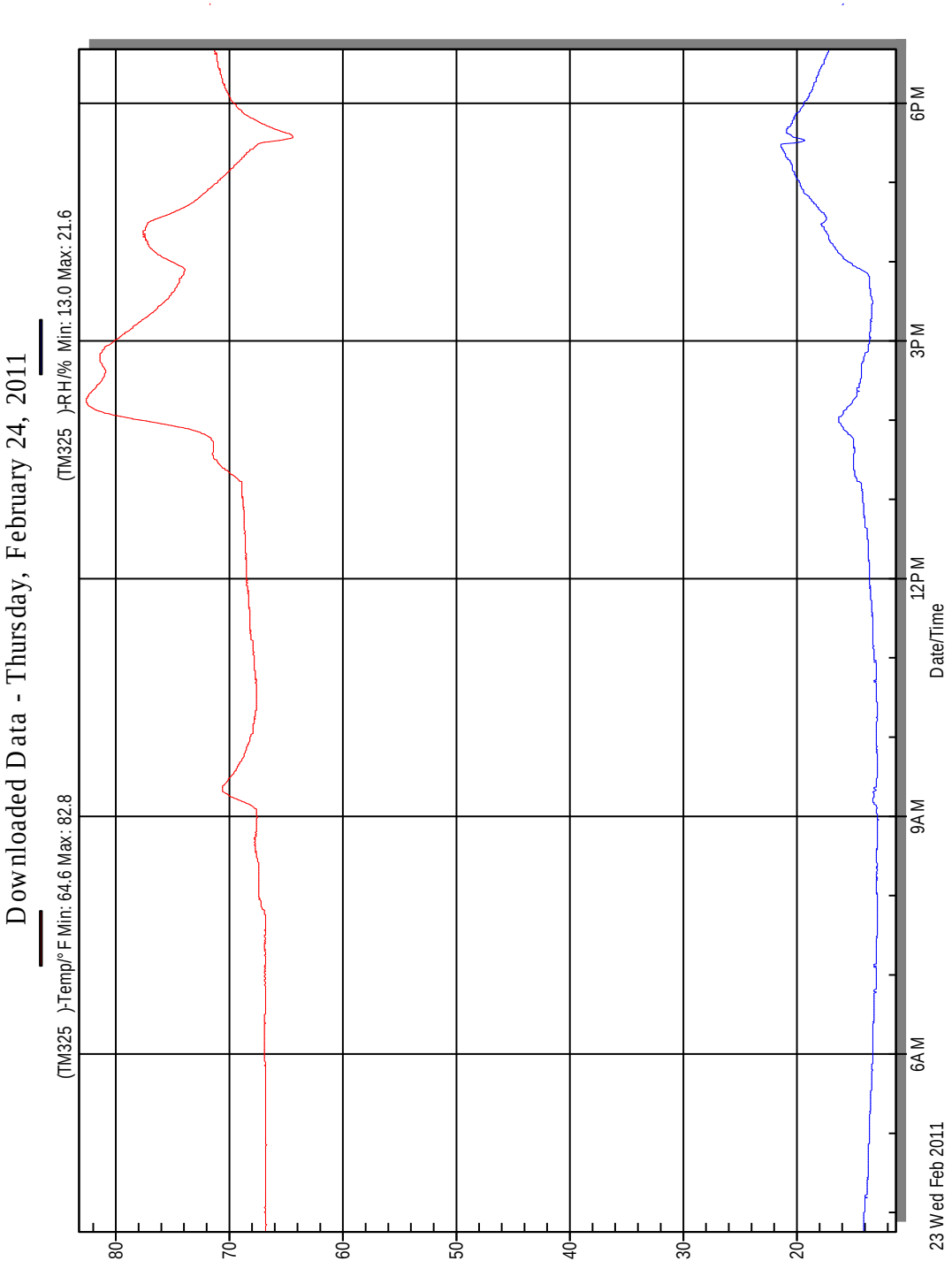
SOLVENT SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0° to 90°	
90° to 180°	
180° to 270°	
270° to 360°	

DATA SHEET NO. 17

DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle:	2007 Ford Taurus	NHTSA No:	R70218
Test Program:	15° / 35% Frontal Oblique	Test Date	2/23/2011



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 RMDB against target vehicle at ideal Impact Point	A-16
20	Pre-Test Left Side View of RMDB against target vehicle at ideal Impact Point	A-16
21	Pre-Test Right Side View of RMDB against target vehicle at ideal Impact Point	A-17
22	Pre-Test Close-up View of Impact Point	A-17
23	Post-Test Close-up View of Impact Point	A-18
24	Pre-Test Close-up View of Left Front Door Latch	A-18
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-19
27	Post-Test Close-up View of Left Rear Door Latch	A-20
28	Pre-Test Windshield View	A-20
29	Post-Test Windshield View	A-21

30	Pre-Test View of Driver Inner Door Panel	A-21
31	Post-Test View of Driver Inner Door Panel	A-22
32	Pre-Test View of Passenger Inner Door Panel	A-22
33	Post-Test View of Passenger Inner Door Panel	A-23
34	Pre-Test Frontal View of Driver Seat pan	A-23
35	Pre-Test Frontal View of Driver Seat back	A-24
36	Pre-Test Frontal View of Left Rear Seat pan	A-24
37	Pre-Test Frontal View of Left Rear Seat back	A-25
38	Pre-Test Overall View of Driver Knee Bolsters	A-25
39	Post-Test Overall View of Driver Knee Bolsters	A-26
40	Pre-Test Overall View of Driver Knee Bolsters with panel removed	A-26
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-27
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-28
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-29
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-30
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-31
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-32
53	Post-Test view of Driver Floor pan at Mid seat level	A-33
54	Pre-Test Driver Dummy Front Windshield View	A-33
55	Post-Test Driver Dummy Front Windshield View	A-34
56	Pre-Test Left Side View of Driver Dummy and Interior	A-34
57	Post-Test Left Side View of Driver Dummy and Interior	A-35
58	Pre-Test Left Side Driver Dummy Window View	A-35
59	Post-Test Left Side Driver Dummy Window View	A-36
60	Pre-Test Right Side View of Driver Dummy and Interior	A-36

61	Post-Test Right Side View of Driver Dummy and Interior	A-37
62	Pre-Test View of Driver Dummy Door Clearance	A-37
63	Post-Test View of Driver Dummy Door Clearance	A-38
64	Pre-Test Driver Seat Back Position markings	A-38
65	Pre-Test Driver Seat Back Position with Level or Inclinometer	A-39
66	Pre-Test Driver Seat Fore Aft Markings	A-39
67	Post-Test Driver Seat Fore Aft Markings	A-40
68	Pre-Test Driver Adjustable D-ring	A-40
69	Pre-Test Overhead View of Driver Dummy Thighs in seat	A-41
70	Pre-Test View of Parking Brake	A-41
71	Pre-Test Driver Dummy Feet	A-42
72	Post-Test Driver Dummy Feet	A-42
73	Pre-Test View of Driver Dummy Right Knee and Bolster	A-43
74	Post-Test View of Driver Dummy Right Knee and Bolster	A-43
75	Pre-Test View of Driver Dummy Left Knee and Bolster	A-44
76	Post-Test View of Driver Dummy Left Knee and Bolster	A-44
77	Pre-Test View of Driver Dummy Abdomen	A-45
78	Post-Test View of Driver Dummy Abdomen	A-45
79	Pre-Test Left Side View of Steering Wheel set position	A-46
80	Post-Test Left Side View of Steering Wheel set position	A-46
81	Post-Test View of Driver Dummy Head Contact with Airbag	A-47
82	Post-Test View of Driver Dummy Head Contact with Vehicle Interior	A-47
83	Pre-Test Passenger Dummy Front Close-up View	A-48
84	Post-Test Passenger Dummy Front Close-up View	A-48
85	Pre-Test Left Side Passenger Dummy and Interior View	A-49
86	Post-Test Left Side Passenger Dummy and Interior View	A-49
87	Pre-Test Left Side Passenger Dummy Window View	A-50
88	Post-Test Left Side Passenger Dummy Window View	A-50
89	Pre-Test Right Side View of Passenger Dummy and Interior	A-51
90	Post-Test Right Side View of Passenger Dummy and Interior	A-51
91	Pre-Test View of Passenger Dummy Door Clearance	A-52

92	Post-Test View of Passenger Dummy Door Clearance	A-52
93	Pre-Test Passenger View Showing Head Level	A-53
94	Pre-Test Passenger Seat Fore-Aft Markings	A-53
95	Pre-Test Passenger Seat Back Angle	A-54
96	Pre-Test Overhead View of Passenger Dummy Thighs on seat	A-54
97	Pre-Test Passenger Adjustable D-ring	A-55
98	Pre-Test View of Passenger Dummy Feet	A-55
99	Post-Test View of Passenger Dummy Feet	A-56
100	Post-Test View of Passenger Dummy Head contact with Airbag	A-56
101	Post-Test View of Passenger Dummy Head contact with Interior	A-57
102	Post-Test View of Passenger Dummy Knee Contact with Seatback	A-57
103	Pre-Test Ballast Locations	A-58
104	Post-Test Speed Trap Readout	A-58
105	Pre-Test View of Fuel Filler Cap	A-59
106	Post-Test View of Fuel Filler Cap	A-59
107	Pre-Test Engine Compartment View	A-60
108	Post-Test Engine Compartment View	A-60
109	Pre-Test View of Front Underbody (perpendicular to vehicle)	A-61
110	Post-Test View of Front Underbody (perpendicular to vehicle)	A-61
111	Pre-Test View of Overall Underbody (perpendicular to vehicle)	A-62
112	Post-Test View of Overall Underbody (perpendicular to vehicle)	A-62
113	Pre-Test View of Steering rack and or sway bar	A-63
114	Post-Test View of Steering rack and or sway bar	A-63
115	Pre-Test Close up of Bumper and Crush Initiators	A-64
116	Post-Test View of Front Sub-Frame Deformation	A-64
117	Pre-Test Frame Rail with tire removed	A-65
118	Post-Test Frame Rail with tire removed	A-65
119	Pre-Test View of Wheel Well with tire removed	A-66
120	Post-Test View of Wheel Well with tire removed	A-66
121	Post-Test View of Door Sill with door open	A-67
122	Post-Test View of Deformation of A pillar	A-67

123	Post-Test View of Deformation of B pillar	A-68
124	Post-Test View of Deformation of C pillar	A-68
125	Post-Test View of Wheel and or Tire Deformation	A-69
126	Post-Test View of Deformation of Rocker or Post	A-69
127	Post-Test View of Windshield Separation	A-70
128	Pre-Test Left Side View of RMDB	A-70
129	Post-Test Left Side View of RMDB	A-71
130	Pre-Test Right Side View of RMDB	A-71
131	Post-Test Right Side View of RMDB	A-72
132	Pre-Test Top View of RMDB	A-72
133	Post-Test Top View of RMDB	A-73
134	Pre-Test Front View of RMDB	A-73
135	Post-Test Front View of RMDB	A-74
136	Vehicle at 0 Degrees on Static Rollover Device	A-74
137	Vehicle at 90 Degrees on Static Rollover Device	A-75
138	Vehicle at 180 Degrees on Static Rollover Device	A-75
139	Vehicle at 270 Degrees on Static Rollover Device	A-76
140	Vehicle at 360 Degrees on Static Rollover Device	A-76



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



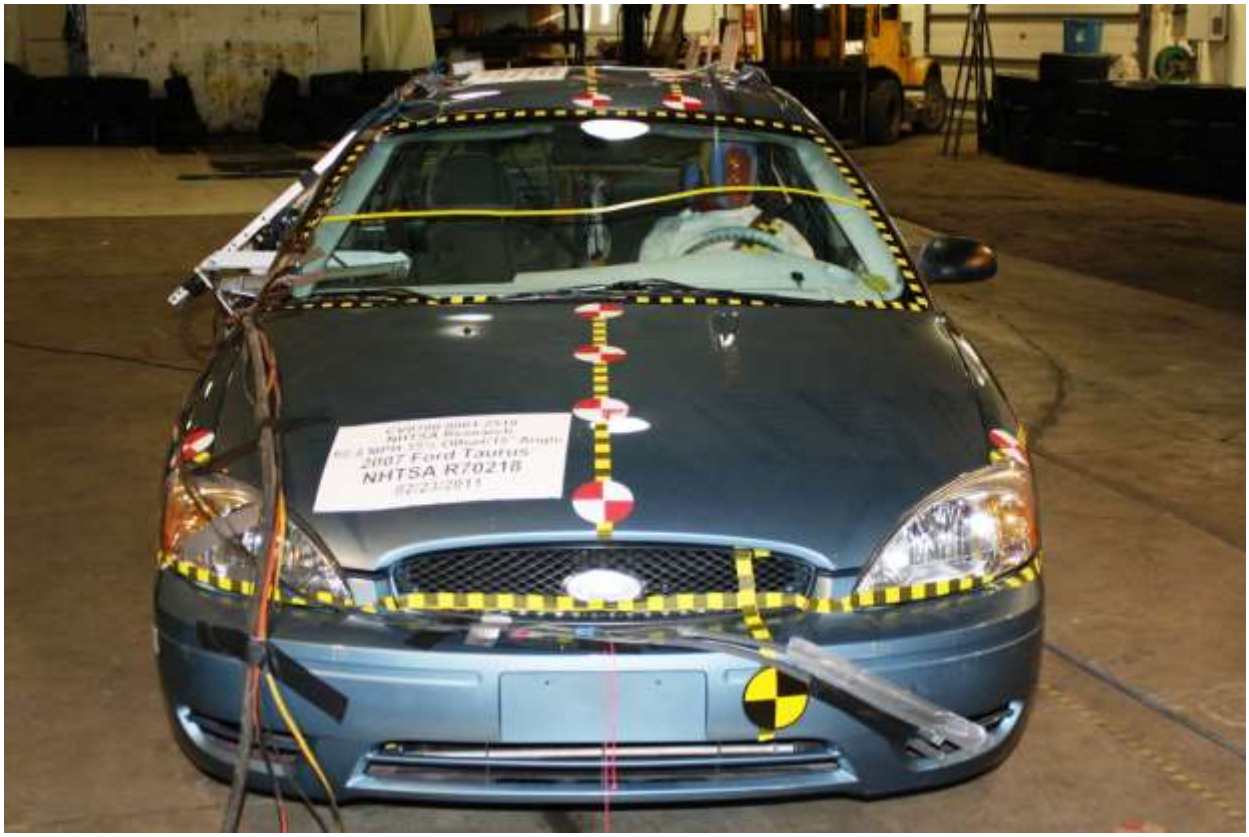
No. 002 As Delivered Left Rear 3-4 View of Test Vehicle



No. 003 Test Vehicle Certification Label



No. 004 Test Vehicle Tire Placard



No. 005 Pre-Test Front View of Test Vehicle



No. 006 Post-Test Front View of Test Vehicle



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



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



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



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



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



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



No. 013 Pre-Test Rear View of Test Vehicle

Photo Not Available

No. 014 Post-Test Rear View of Test Vehicle



No. 015 Pre-Test Right Side View of Test Vehicle



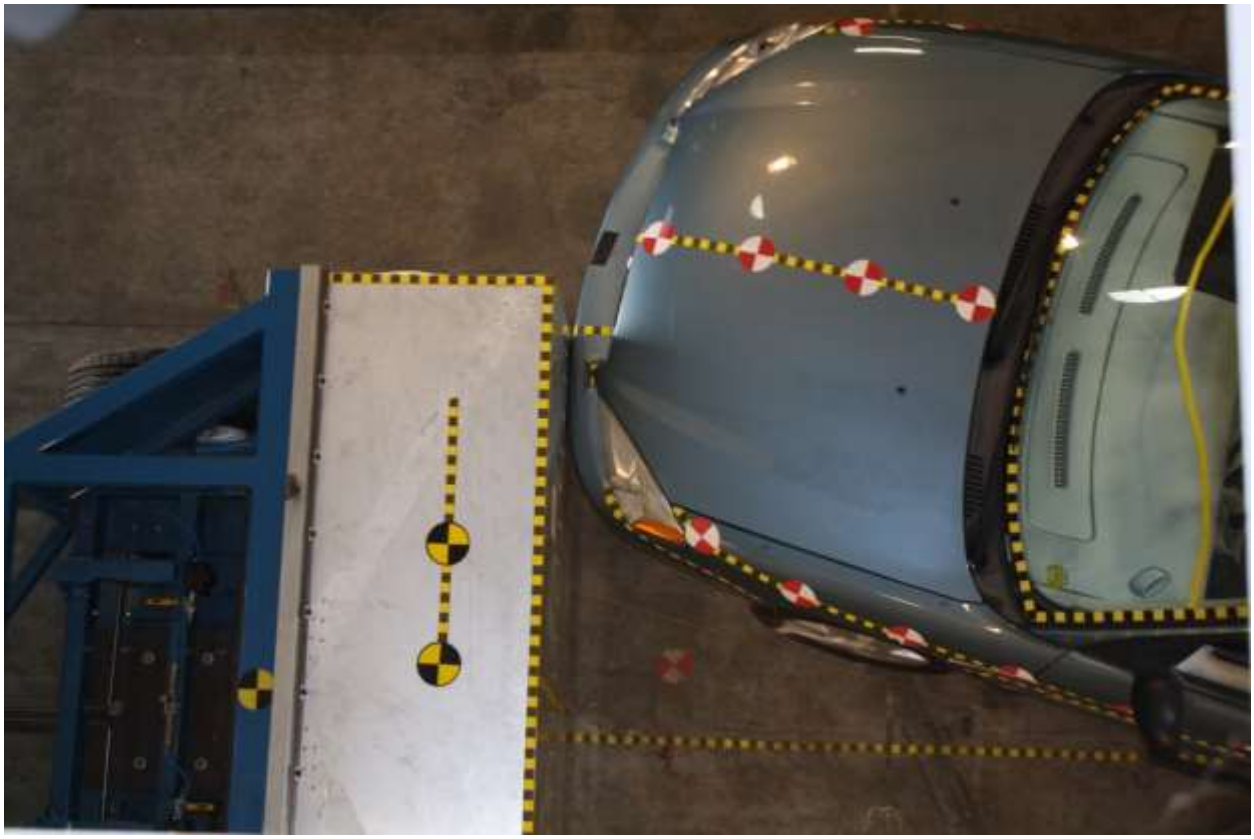
No. 016 Post-Test Right Side View of Test Vehicle



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



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



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



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



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



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



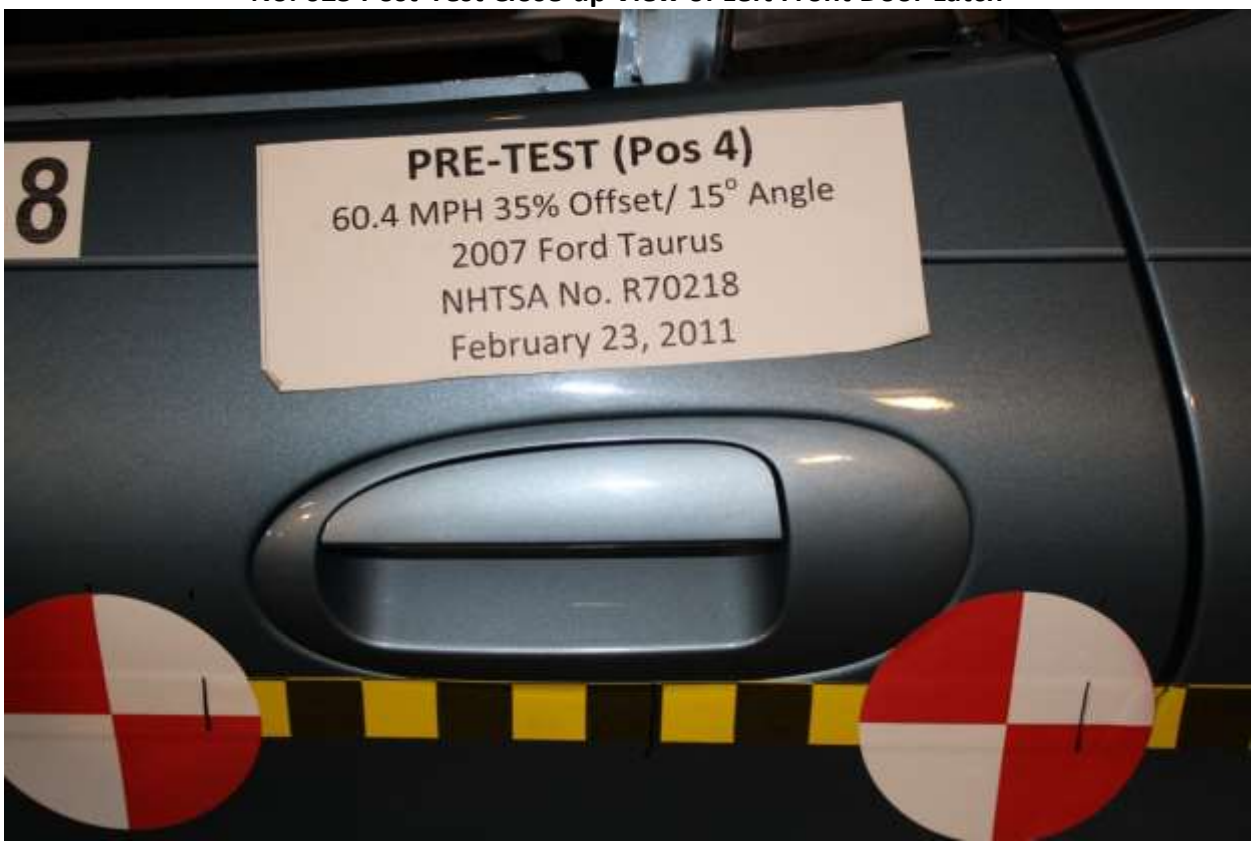
No. 023 Post-Test Close-up View of Impact Point



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



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



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



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



No. 028 Pre-Test Windshield View

Photo Not Available

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 Close Up

Photo Not Available

No. 055 Post- test Driver Dummy Front Windshield View Close Up



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

Photo Not Available

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



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



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



No. 064 Pre-Test Driver Seat Back Position markings



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



No. 066 Pre-Test Driver Seat Fore Aft Markings



No. 067 Post-Test Driver Seat Fore Aft Markings



No. 068 Pre-Test Driver Adjustable D-ring



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



No. 070 Pre-Test View of Parking Brake



No. 071 Pre-Test Driver Dummy Feet



No. 072 Post-Test Driver Dummy Feet



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



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



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



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



No. 077 Pre-Test View of Driver Dummy Abdomen



No. 078 Post-Test View of Driver Dummy Abdomen



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



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



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



No. 082 Post-Test View of Driver Dummy Head Contact with Vehicle Interior



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



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



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



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



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



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



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

Photo Not Available

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

Photo Not Available

No. 093 Pre-Test Passenger View Showing Head Level



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



No. 095 Pre-Test Passenger Seat Back Angle



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

Photo Not Applicable

No. 097 Pre-Test Passenger Adjustable D-ring



No. 098 Pre-Test View of Passenger Dummy Feet



No. 099 Post-Test View of Passenger Dummy Feet

Photo Not Applicable

Airbag Not Installed

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

Photo Not Available

No. 105 Pre-Test View of Fuel Filler Cap



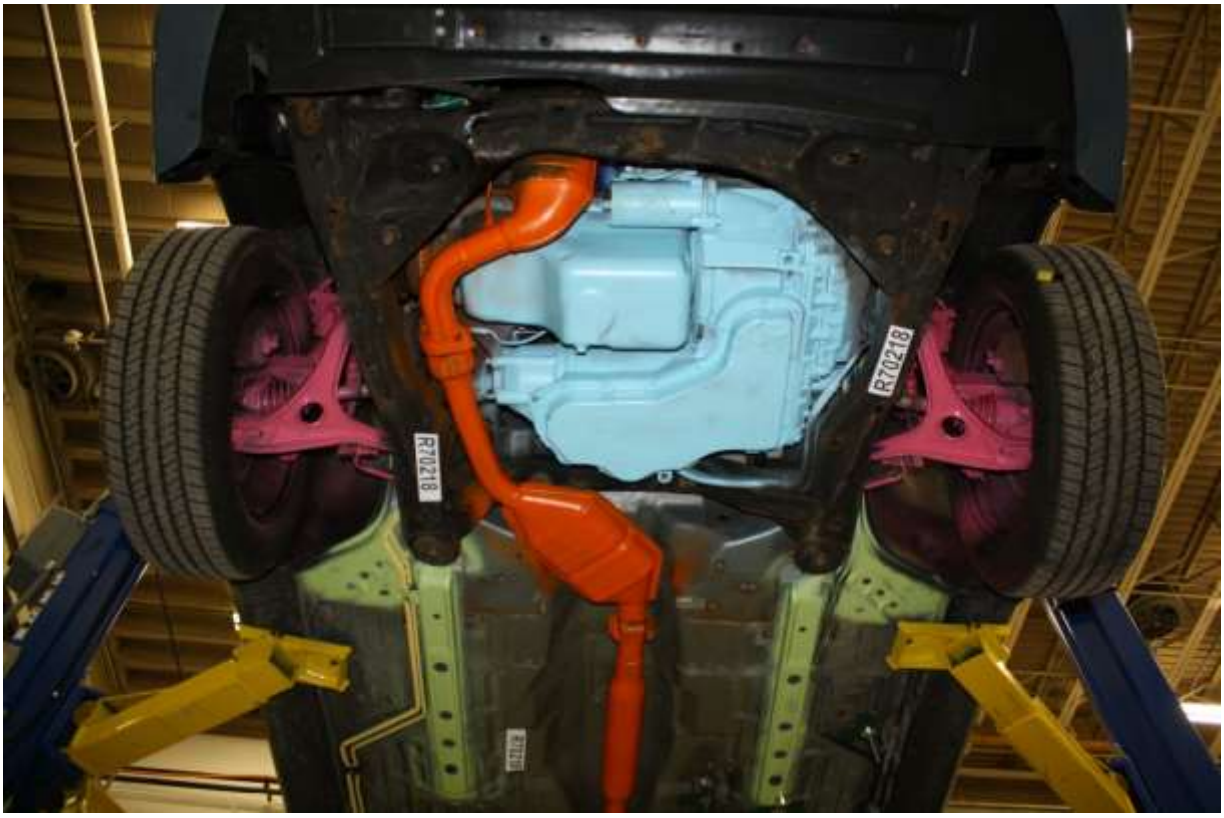
No. 106 Post-Test View of Fuel Filler Cap

Photo Not Available

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)

Photo Not Available

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 RMDB



No. 129 Post-Test Left Side View of RMDB



No. 130 Pre-Test Right Side View of RMDB



No. 131 Post-Test Right Side View of RMDB



No. 132 Pre-Test Top View of RMDB



No. 133 Post-Test Top View of RMDB



No. 134 Pre-Test Front View of RMDB



No. 135 Post-Test Front View of RMDB



No. 136 Vehicle at 0 Degrees on Static Rollover Device



No. 137 Vehicle at 90 Degrees on Static Rollover Device



No. 138 Vehicle at 180 Degrees on Static Rollover Device



No. 139 Vehicle at 270 Degrees on Static Rollover Device



No. 140 Vehicle at 360 Degrees on Static Rollover Device

APPENDIX B
VEHICLE & DUMMY RESPONSE DATA TRACES

Table of Data Plots

No.	Description	Page
Plot 1	V2P1 HEAD 9 ARRAY X ARM Y	B-7
Plot 2	V2P1 HEAD 9 ARRAY X ARM Z	B-7
Plot 3	V2P1 HEAD 9 ARRAY Y ARM X	B-7
Plot 4	V2P1 HEAD 9 ARRAY Y ARM Z	B-7
Plot 5	V2P1 HEAD 9 ARRAY Z ARM X	B-8
Plot 6	V2P1 HEAD 9 ARRAY Z ARM Y	B-8
Plot 7	V2P1 Head CG X Acceleration	B-8
Plot 8	V2P1 Head CG Y Acceleration	B-8
Plot 9	V2P1 Head CG Z Acceleration	B-9
Plot 10	V2P1 HEAD 9 ARRAY CENTER X	B-9
Plot 11	V2P1 HEAD 9 ARRAY CENTER Y	B-9
Plot 12	V2P1 HEAD 9 ARRAY CENTER Z	B-9
Plot 13	V2P1 Upper Neck X Force	B-10
Plot 14	V2P1 Upper Neck Y Force	B-10
Plot 15	V2P1 Upper Neck Z Force	B-10
Plot 16	V2P1 Upper Neck X Moment	B-10
Plot 17	V2P1 Upper Neck Y Moment	B-11
Plot 18	V2P1 Upper Neck Z Moment	B-11
Plot 19	V2P1 Lower Neck X Force	B-11
Plot 20	V2P1 Lower Neck Y Force	B-11
Plot 21	V2P1 Lower Neck Z Force	B-12
Plot 22	V2P1 Lower Neck X Moment	B-12
Plot 23	V2P1 Lower Neck Y Moment	B-12
Plot 24	V2P1 Lower Neck Z Moment	B-12
Plot 25	V2P1 Front Neck Spring Tower Load Cell	B-13
Plot 26	V2P1 Rear Neck Spring Tower Load Cell	B-13
Plot 27	V2P1 Occipital Condyle Rotation Potentiometer	B-13
Plot 28	V2P1 T1 X Acceleration	B-13
Plot 29	V2P1 T1 Y Acceleration	B-14
Plot 30	V2P1 T1 Z Acceleration	B-14
Plot 31	V2P1 T6 X Acceleration	B-14
Plot 32	V2P1 T6 Y Acceleration	B-14
Plot 33	V2P1 T6 Z Acceleration	B-15
Plot 34	V2P1 CHEST LEFT UPPER CB	B-15
Plot 35	V2P1 CHEST LEFT UPPER CM	B-15
Plot 36	V2P1 CHEST LEFT UPPER CE	B-15
Plot 37	V2P1 CHEST RIGHT UPPER CB	B-16
Plot 38	V2P1 CHEST RIGHT UPPER CM	B-16
Plot 39	V2P1 CHEST RIGHT UPPER CE	B-16
Plot 40	V2P1 CHEST LEFT LOWER CB	B-16
Plot 41	V2P1 CHEST LEFT LOWER CM	B-17
Plot 42	V2P1 CHEST LEFT LOWER CE	B-17
Plot 43	V2P1 CHEST RIGHT LOWER CB	B-17
Plot 44	V2P1 CHEST RIGHT LOWER CM	B-17
Plot 45	V2P1 CHEST RIGHT LOWER CE	B-18
Plot 46	V2P1 ABDOMEN UPPER DX	B-18
Plot 47	V2P1 ABDOMEN LEFT DX	B-18
Plot 48	V2P1 ABDOMEN LEFT DY	B-18
Plot 49	V2P1 ABDOMEN LEFT DZ	B-19
Plot 50	V2P1 ABDOMEN RIGHT DX	B-19
Plot 51	V2P1 ABDOMEN RIGHT DY	B-19
Plot 52	V2P1 ABDOMEN RIGHT DZ	B-19
Plot 53	V2P1 T12 X Acceleration	B-20
Plot 54	V2P1 T12 Y Acceleration	B-20
Plot 55	V2P1 T12 Z Acceleration	B-20
Plot 56	V2P1 Spine Force X	B-20

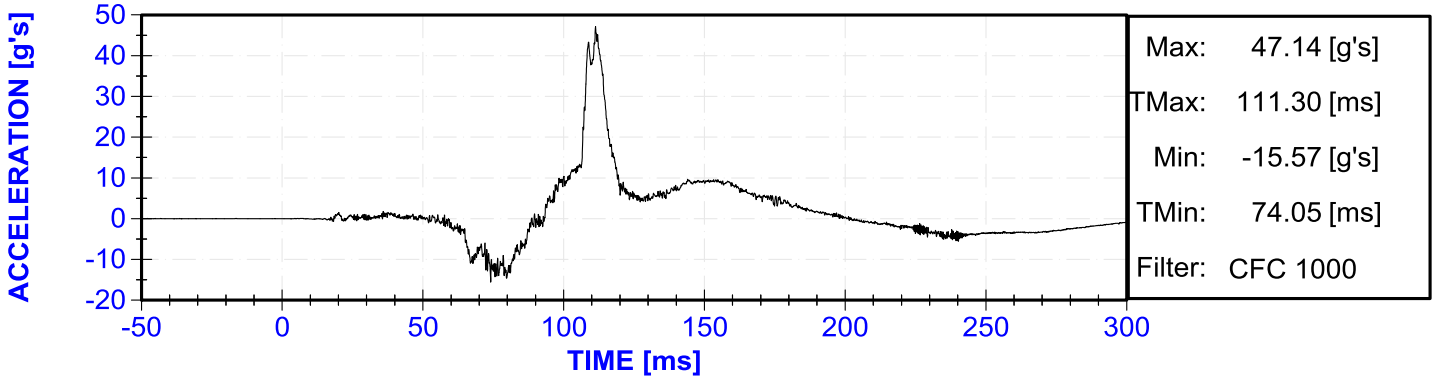
Plot 57	V2P1 Spine Force Y	B-21
Plot 58	V2P1 Spine Force Z	B-21
Plot 59	V2P1 Spine Moment X	B-21
Plot 60	V2P1 Spine Moment Y	B-21
Plot 61	V2P1 Pelvis X Acceleration	B-22
Plot 62	V2P1 Pelvis Y Acceleration	B-22
Plot 63	V2P1 Pelvis Z Acceleration	B-22
Plot 64	V2P1 Acetabulam Left X Force	B-22
Plot 65	V2P1 Acetabulam Left Y Force	B-23
Plot 66	V2P1 Acetabulam Left Z Force	B-23
Plot 67	V2P1 Acetabulam Right X Force	B-23
Plot 68	V2P1 Acetabulam Right Y Force	B-23
Plot 69	V2P1 Acetabulam Right Z Force	B-24
Plot 70	V2P1 Femur Left X Force	B-24
Plot 71	V2P1 Femur Left Y Force	B-24
Plot 72	V2P1 Femur Left Z Force	B-24
Plot 73	V2P1 Femur Left X Moment	B-25
Plot 74	V2P1 Femur Left Y Moment	B-25
Plot 75	V2P1 Femur Left Z Moment	B-25
Plot 76	V2P1 Knee Left X Displacement	B-25
Plot 77	V2P1 Tibia Left X Acceleration	B-26
Plot 78	V2P1 Tibia Left Y Acceleration	B-26
Plot 79	V2P1 Upper Tibia Left X Force	B-26
Plot 80	V2P1 Upper Tibia Left Y Force	B-26
Plot 81	V2P1 Upper Tibia Left Z Force	B-27
Plot 82	V2P1 Upper Tibia Left X Moment	B-27
Plot 83	V2P1 Upper Tibia Left Y Moment	B-27
Plot 84	V2P1 Lower Tibia Left X Force	B-27
Plot 85	V2P1 Lower Tibia Left Y Force	B-28
Plot 86	V2P1 Lower Tibia Left Z Force	B-28
Plot 87	V2P1 Lower Tibia Left X Moment	B-28
Plot 88	V2P1 Lower Tibia Left Y Moment	B-28
Plot 89	V2P1 Ankle Left X Rotation	B-29
Plot 90	V2P1 Ankle Left Y Rotation	B-29
Plot 91	V2P1 Ankle Left Z Rotation	B-29
Plot 92	V2P1 Foot Left X Acceleration	B-29
Plot 93	V2P1 Foot Left Y Acceleration	B-30
Plot 94	V2P1 Foot Left Z Acceleration	B-30
Plot 95	V2P1 Femur Right X Force	B-30
Plot 96	V2P1 Femur Right Y Force	B-30
Plot 97	V2P1 Femur Right Z Force	B-31
Plot 98	V2P1 Femur Right X Moment	B-31
Plot 99	V2P1 Femur Right Y Moment	B-31
Plot 100	V2P1 Femur Right Z Moment	B-31
Plot 101	V2P1 Knee Right X Displacement	B-32
Plot 102	V2P1 Tibia Right X Acceleration	B-32
Plot 103	V2P1 Tibia Right Y Acceleration	B-32
Plot 104	V2P1 Upper Tibia Right X Force	B-32
Plot 105	V2P1 Upper Tibia Right Y Force	B-33
Plot 106	V2P1 Upper Tibia Right Z Force	B-33
Plot 107	V2P1 Upper Tibia Right X Moment	B-33
Plot 108	V2P1 Upper Tibia Right Y Moment	B-33
Plot 109	V2P1 Lower Tibia Right X Force	B-34
Plot 110	V2P1 Lower Tibia Right Y Force	B-34
Plot 111	V2P1 Lower Tibia Right Z Force	B-34
Plot 112	V2P1 Lower Tibia Right X Moment	B-34
Plot 113	V2P1 Lower Tibia Right Y Moment	B-35
Plot 114	V2P1 Ankle Right X Rotation	B-35

Plot 115	V2P1 Ankle Right Y Rotation	B-35
Plot 116	V2P1 Ankle Right Z Rotation	B-35
Plot 117	V2P1 Foot Right X Acceleration	B-36
Plot 118	V2P1 Foot Right Y Acceleration	B-36
Plot 119	V2P1 Foot Right Z Acceleration	B-36
Plot 120	V2 Driver Lap Belt Force	B-36
Plot 121	V2 Driver Shoulder Belt Upper Force	B-37
Plot 122	V2P4 HEAD 9 ARRAY Z ARM X	B-37
Plot 123	V2P4 HEAD 9 ARRAY Z ARM Y	B-37
Plot 124	V2P4 HEAD 9 ARRAY X ARM Y	B-37
Plot 125	V2P4 HEAD 9 ARRAY X ARM Z	B-38
Plot 126	V2P4 HEAD 9 ARRAY Y ARM X	B-38
Plot 127	V2P4 HEAD 9 ARRAY Y ARM Z	B-38
Plot 128	V2P4 HEAD CG X	B-38
Plot 129	V2P4 HEAD CG Y	B-39
Plot 130	V2P4 HEAD CG Z	B-39
Plot 131	V2P4 HEAD 9 ARRAY CENTER X	B-39
Plot 132	V2P4 HEAD 9 ARRAY CENTER Y	B-39
Plot 133	V2P4 HEAD 9 ARRAY CENTER Z	B-40
Plot 134	V2P4 UPPER NECK FX	B-40
Plot 135	V2P4 UPPER NECK FY	B-40
Plot 136	V2P4 UPPER NECK FZ	B-40
Plot 137	V2P4 UPPER NECK MX	B-41
Plot 138	V2P4 UPPER NECK MY	B-41
Plot 139	V2P4 UPPER NECK MZ	B-41
Plot 140	V2P4 LOWER NECK FX	B-41
Plot 141	V2P4 LOWER NECK FY	B-42
Plot 142	V2P4 LOWER NECK FZ	B-42
Plot 143	V2P4 LOWER NECK MX	B-42
Plot 144	V2P4 LOWER NECK MY	B-42
Plot 145	V2P4 LOWER NECK MZ	B-43
Plot 146	V2P4 CHEST X	B-43
Plot 147	V2P4 CHEST Y	B-43
Plot 148	V2P4 CHEST Z	B-43
Plot 149	V2P4 CHEST RED X	B-44
Plot 150	V2P4 CHEST RED Y	B-44
Plot 151	V2P4 CHEST RED Z	B-44
Plot 152	V2P4 CHEST DISPLACEMENT	B-44
Plot 153	V2P4 PELVIC X	B-45
Plot 154	V2P4 PELVIC Y	B-45
Plot 155	V2P4 PELVIC Z	B-45
Plot 156	V2P4 LEFT FEMUR FZ	B-45
Plot 157	V2P4 RIGHT FEMUR FZ	B-46
Plot 158	V2 Passenger Lap Belt Force	B-46
Plot 159	V2 Passenger Shoulder Belt Upper Force	B-46
Plot 160	V2 Left Rear Sill X Acceleration	B-46
Plot 161	V2 Left Rear Sill Y Acceleration	B-47
Plot 162	V2 Right Rear Sill X Acceleration	B-47
Plot 163	V2 Right Rear Sill Y Acceleration	B-47
Plot 164	V2 Vehicle CG X Acceleration	B-47
Plot 165	V2 Vehicle CG Y Acceleration	B-48
Plot 166	V2 Vehicle CG Z Acceleration	B-48
Plot 167	V2 Vehicle CG Redundant X Acceleration	B-48
Plot 168	V2 Vehicle CG Redundant Y Acceleration	B-48
Plot 169	V2 Vehicle CG Redundant Z Acceleration	B-49
Plot 170	V2 Instrument Panel X Acceleration	B-49
Plot 171	V2 Driver Seat Track X Acceleration	B-49
Plot 172	V2 Driver Seat Track Y Acceleration	B-49

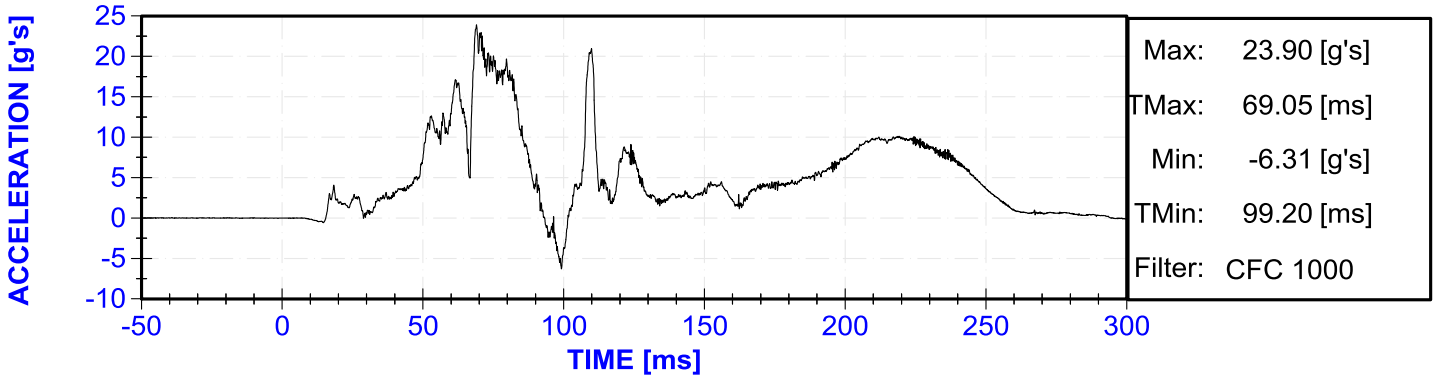
Plot 173	V2 Driver Seat Track Z Acceleration	B-50
Plot 174	V2 Driver Floor Pan X Acceleration	B-50
Plot 175	V2 Driver Floor Pan Y Acceleration	B-50
Plot 176	V2 Driver Floor Pan Z Acceleration	B-50
Plot 177	V2 Driver Floor Pan X Deflection	B-51
Plot 178	V2 DRIVER LEFT KNEE CS1	B-51
Plot 179	V2 DRIVER LEFT KNEE CS2	B-51
Plot 180	V2 DRIVER LEFT KNEE CS3	B-51
Plot 181	V2 DRIVER RIGHT KNEE CS1	B-52
Plot 182	V2 DRIVER RIGHT KNEE CS2	B-52
Plot 183	V2 DRIVER RIGHT KNEE CS3	B-52
Plot 184	V1 CG X	B-52
Plot 185	V1 CG Y	B-53
Plot 186	V1 CG Z	B-53
Plot 187	V1 Cart Rear C/L X Acceleration	B-53
Plot 188	V1 Cart Rear C/L Y Acceleration	B-53
Plot 189	V1 Cart Rear C/L Z Acceleration	B-54
Plot 190	V2P1 HEAD ANGULAR ACCELERATION X [SIMON]	B-54
Plot 191	V2P1 HEAD ANGULAR ACCELERATION Y [SIMON]	B-54
Plot 192	V2P1 HEAD ANGULAR ACCELERATION Z [SIMON]	B-54
Plot 193	V2P1 HEAD ANGULAR VELOCITY X [SIMON]	B-55
Plot 194	V2P1 HEAD ANGULAR VELOCITY Y [SIMON]	B-55
Plot 195	V2P1 HEAD ANGULAR VELOCITY Z [SIMON]	B-55
Plot 196	V2P1 CUMULATIVE STRAIN 0.05 [SIMON]	B-55
Plot 197	V2P1 CUMULATIVE STRAIN 0.10 [SIMON]	B-56
Plot 198	V2P1 CUMULATIVE STRAIN 0.15 [SIMON]	B-56
Plot 199	V2P1 Fx on head acting through the O.C. joint only	B-56
Plot 200	V2P1 Fz on head acting through the O.C. joint only	B-56
Plot 201	V2P1 My on head acting through the O.C. joint only	B-57
Plot 202	V2P1 Fx on head acting through the total neck section	B-57
Plot 203	V2P1 Fy on head acting through the total neck section	B-57
Plot 204	V2P1 Fz on head acting through the total neck section	B-57
Plot 205	V2P1 Mx on head acting through the total neck section	B-58
Plot 206	V2P1 My on head acting through the total neck section	B-58
Plot 207	V2P1 Mz on head acting through the total neck section	B-58
Plot 208	V2P1 Chest Left Upper Dx	B-58
Plot 209	V2P1 Chest Left Upper Dy	B-59
Plot 210	V2P1 Chest Left Upper Dz	B-59
Plot 211	V2P1 Chest Left Upper D	B-59
Plot 212	V2P1 Chest Right Upper Dx	B-59
Plot 213	V2P1 Chest Right Upper Dy	B-60
Plot 214	V2P1 Chest Right Upper Dz	B-60
Plot 215	V2P1 Chest Right Upper D	B-60
Plot 216	V2P1 Chest Left Lower Dx	B-60
Plot 217	V2P1 Chest Left Lower Dy	B-61
Plot 218	V2P1 Chest Left Lower Dz	B-61
Plot 219	V2P1 Chest Left Lower D	B-61
Plot 220	V2P1 Chest Right Lower Dx	B-61
Plot 221	V2P1 Chest Right Lower Dy	B-62
Plot 222	V2P1 Chest Right Lower Dz	B-62
Plot 223	V2P1 Chest Right Lower D	B-62
Plot 224	V2P1 Abdomen Left Lower Dx	B-62
Plot 225	V2P1 Abdomen Left Lower Dy	B-63
Plot 226	V2P1 Abdomen Left Lower Dz	B-63
Plot 227	V2P1 Abdomen Right Lower Dx	B-63
Plot 228	V2P1 Abdomen Right Lower Dy	B-63
Plot 229	V2P1 Abdomen Right Lower Dz	B-64
Plot 230	V2P4 HEAD ANGULAR ACCELERATION X [SIMON]	B-64

Plot 231	V2P4 HEAD ANGULAR ACCELERATION Y [SIMON]	B-64
Plot 232	V2P4 HEAD ANGULAR ACCELERATION Z [SIMON]	B-64
Plot 233	V2P4 HEAD ANGULAR VELOCITY X [SIMON]	B-65
Plot 234	V2P4 HEAD ANGULAR VELOCITY Y [SIMON]	B-65
Plot 235	V2P4 HEAD ANGULAR VELOCITY Z [SIMON]	B-65
Plot 236	V2P4 CUMULATIVE STRAIN 0.05 [SIMON]	B-65
Plot 237	V2P4 CUMULATIVE STRAIN 0.10 [SIMON]	B-66
Plot 238	V2P4 CUMULATIVE STRAIN 0.15 [SIMON]	B-66

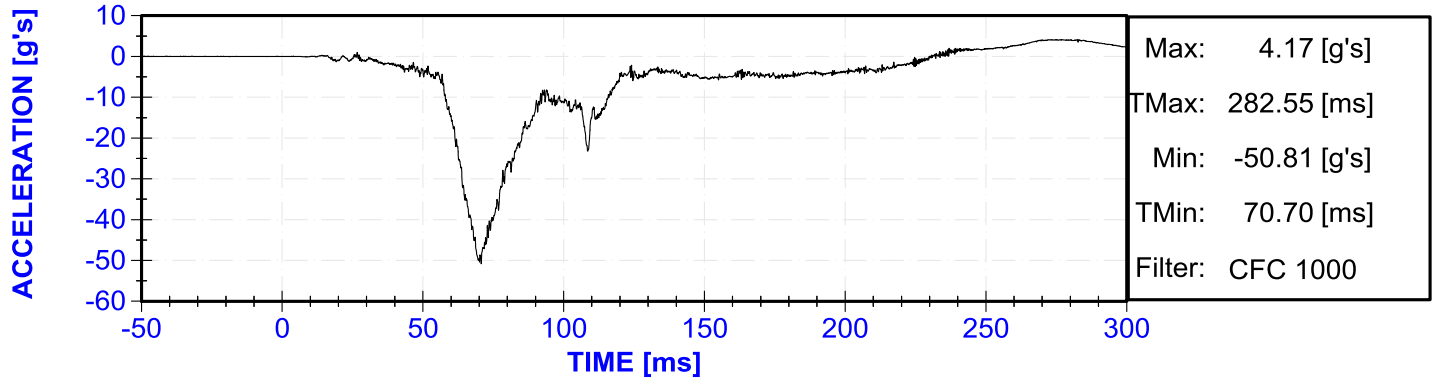
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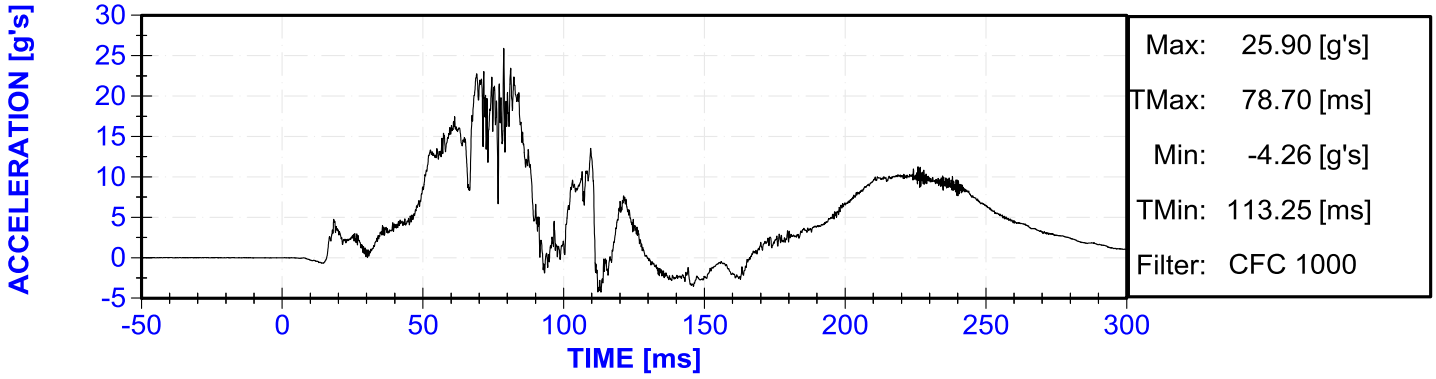
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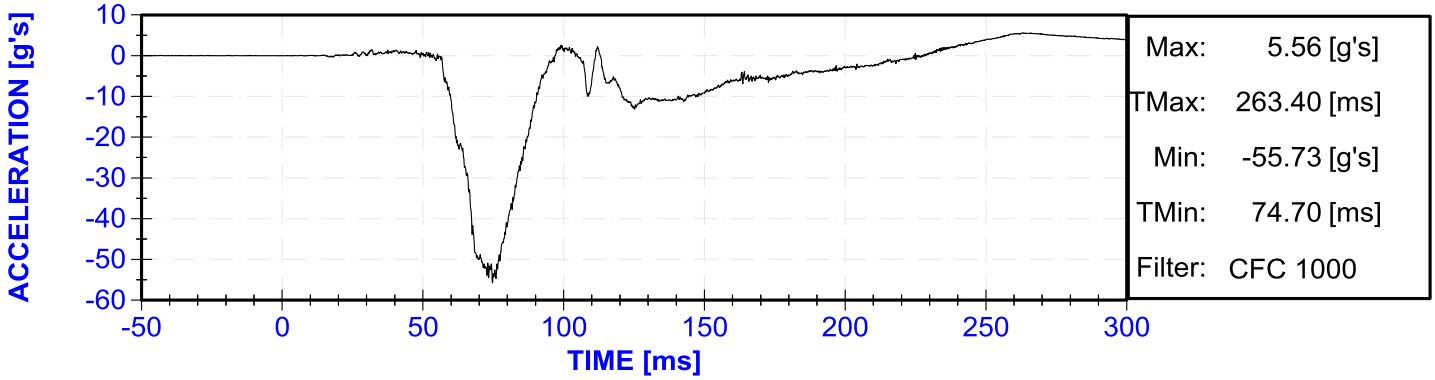
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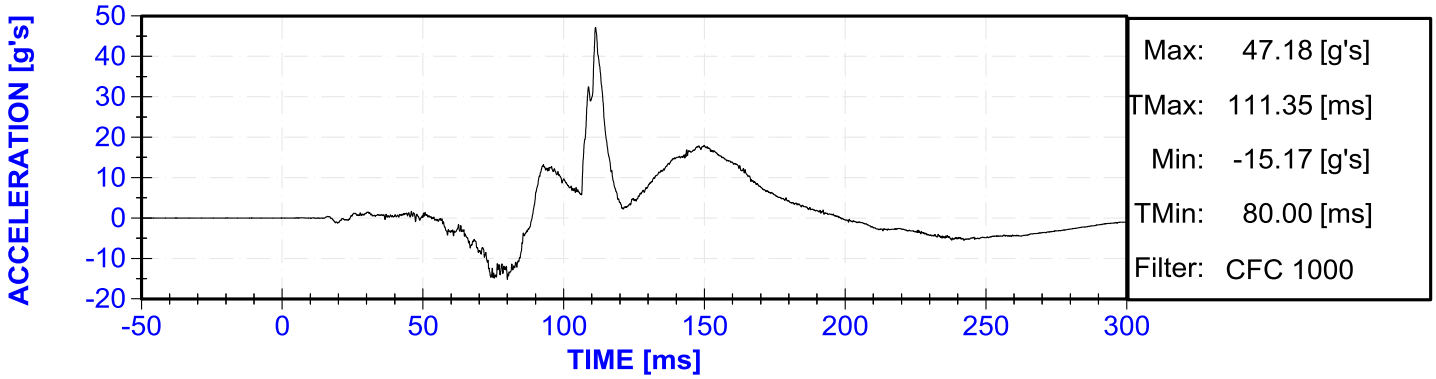
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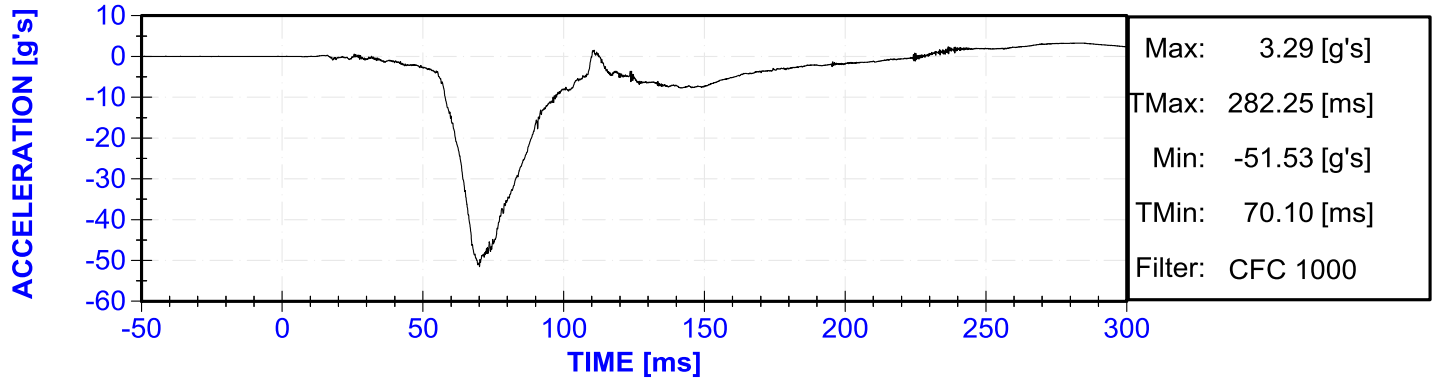
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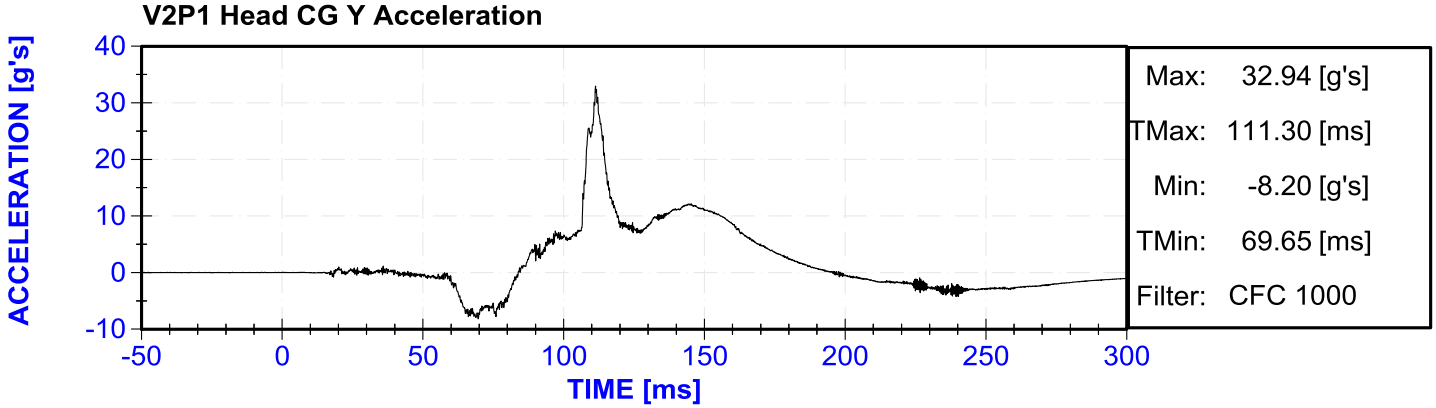
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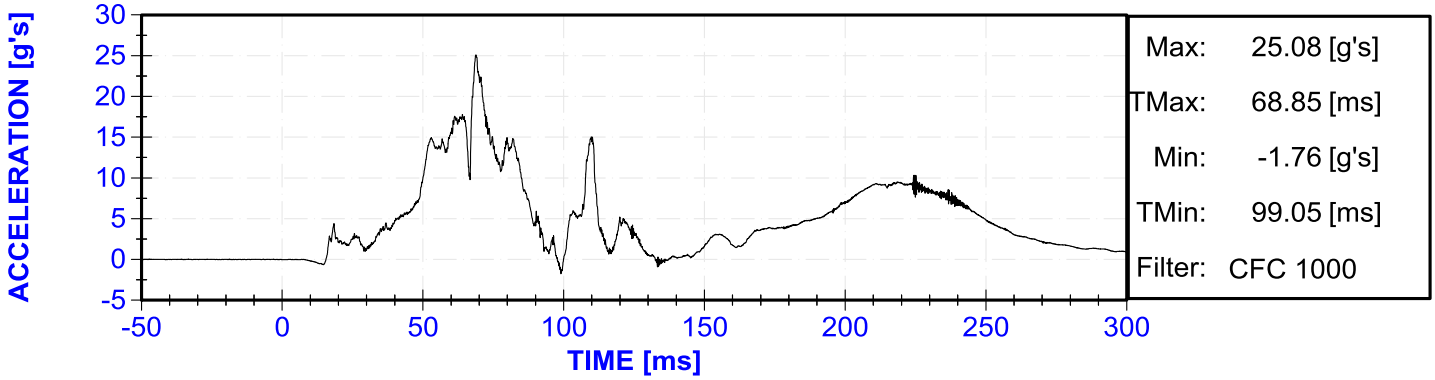
V2P1 Head CG X Acceleration



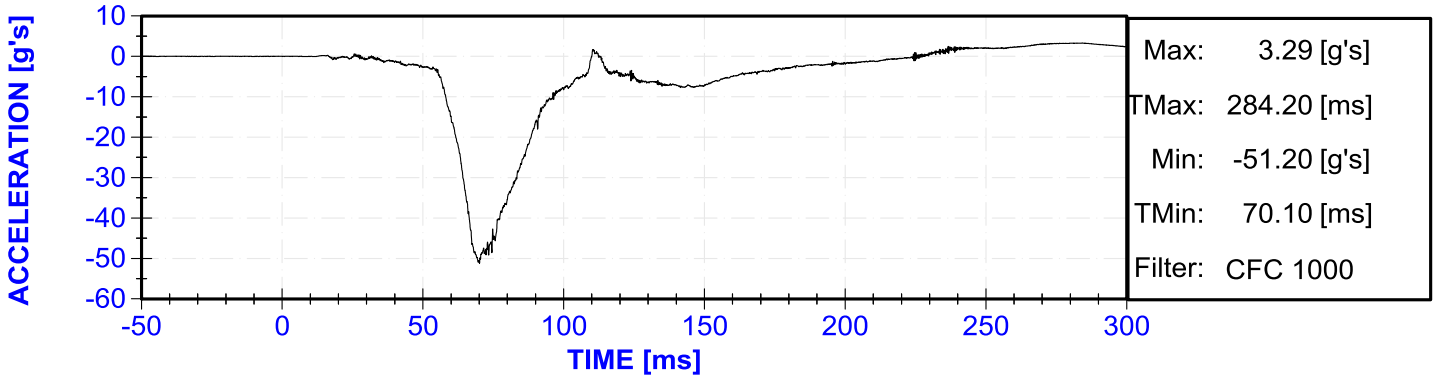
V2P1 Head CG Y Acceleration



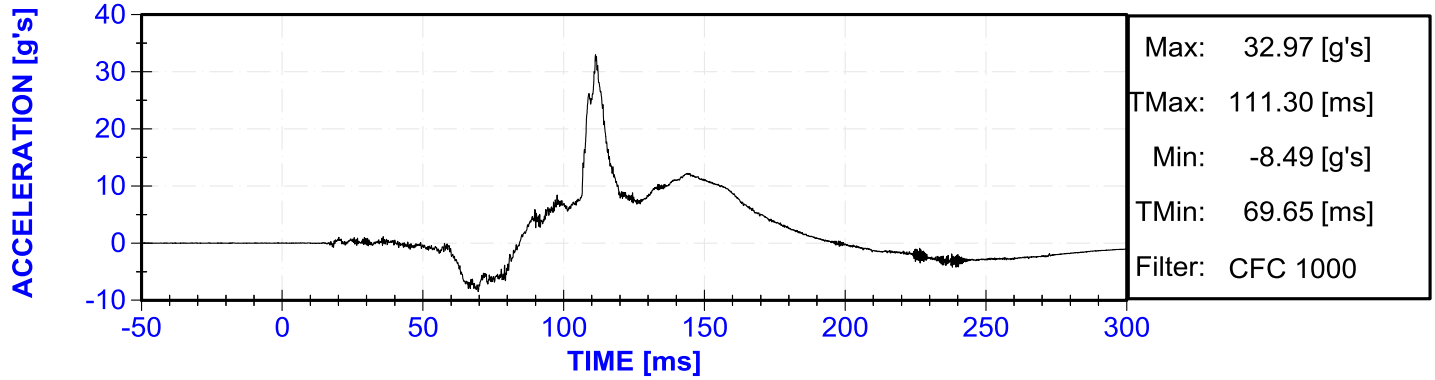
V2P1 Head CG Z Acceleration



V2P1 HEAD 9 ARRAY CENTER X

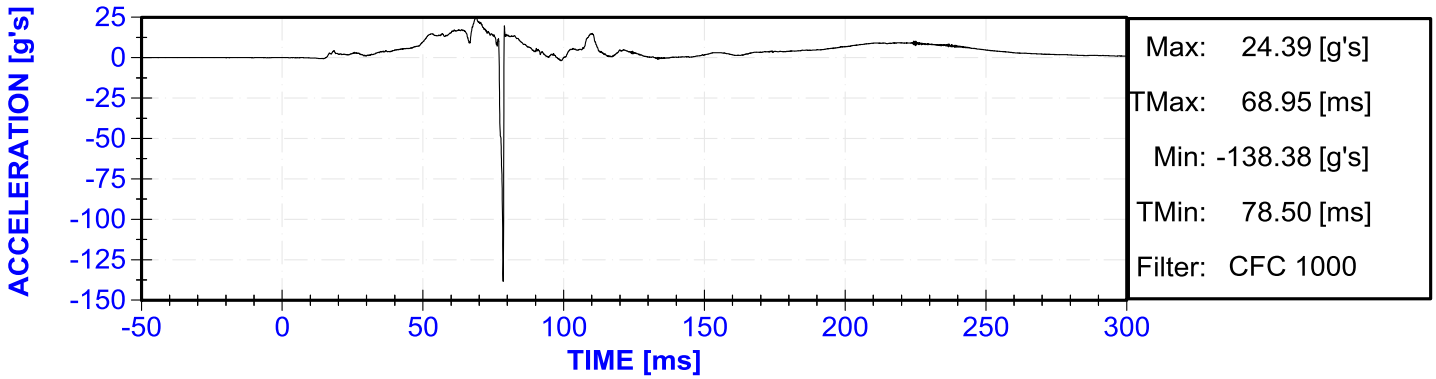


V2P1 HEAD 9 ARRAY CENTER Y

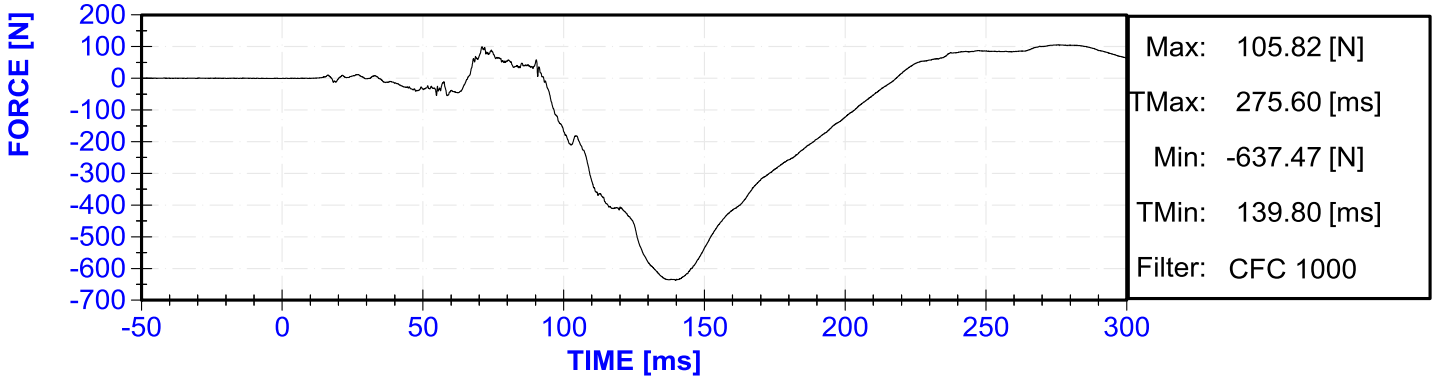


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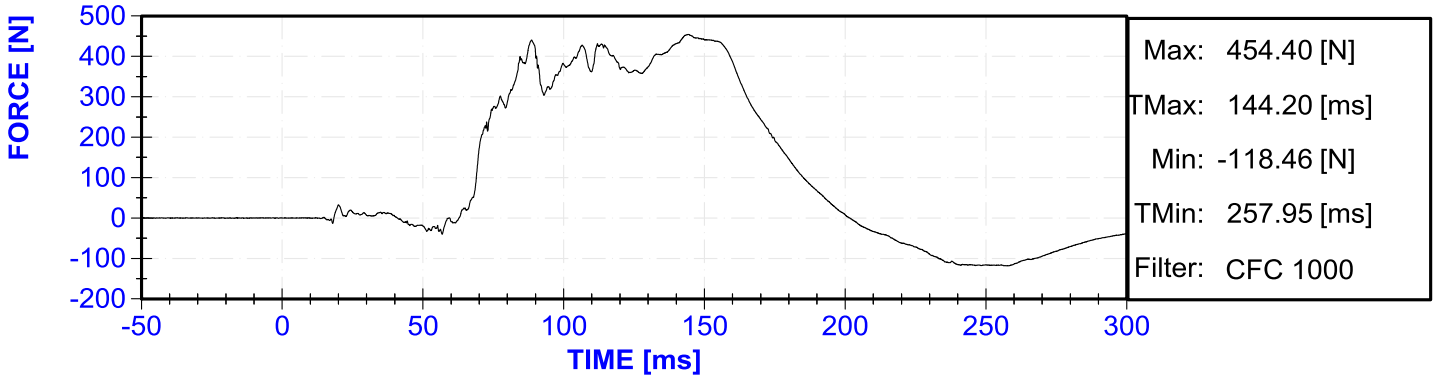
NOISE SPIKE AT 78 MS



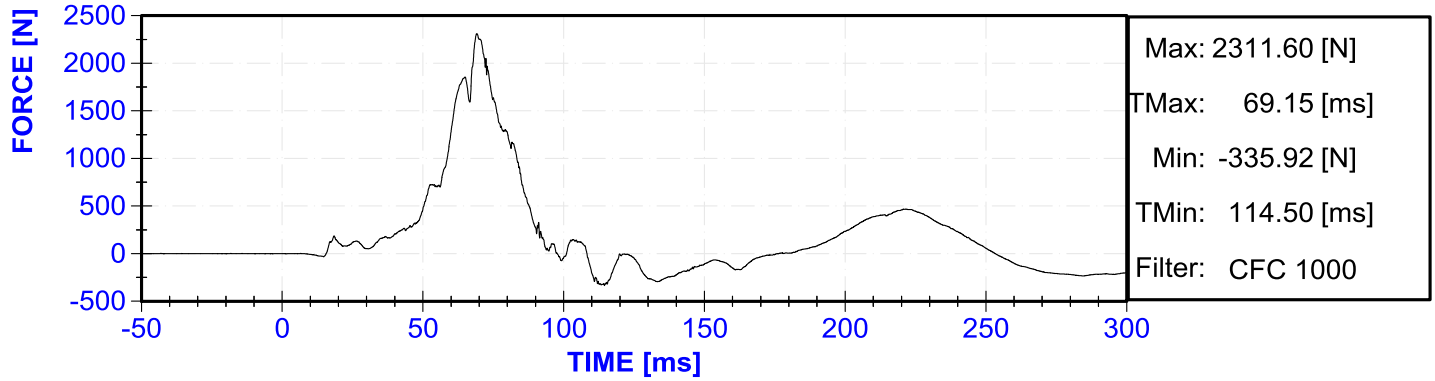
V2P1 Upper Neck X Force



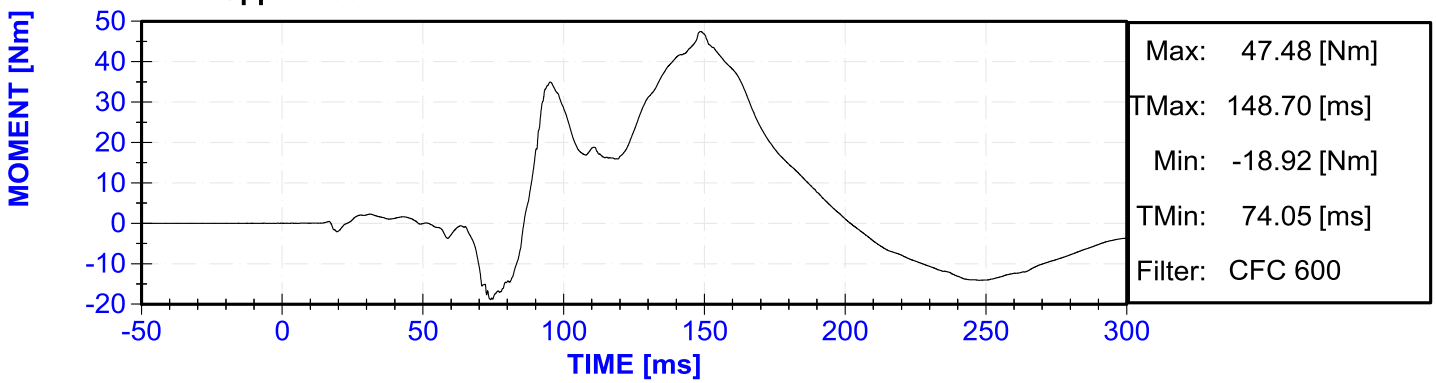
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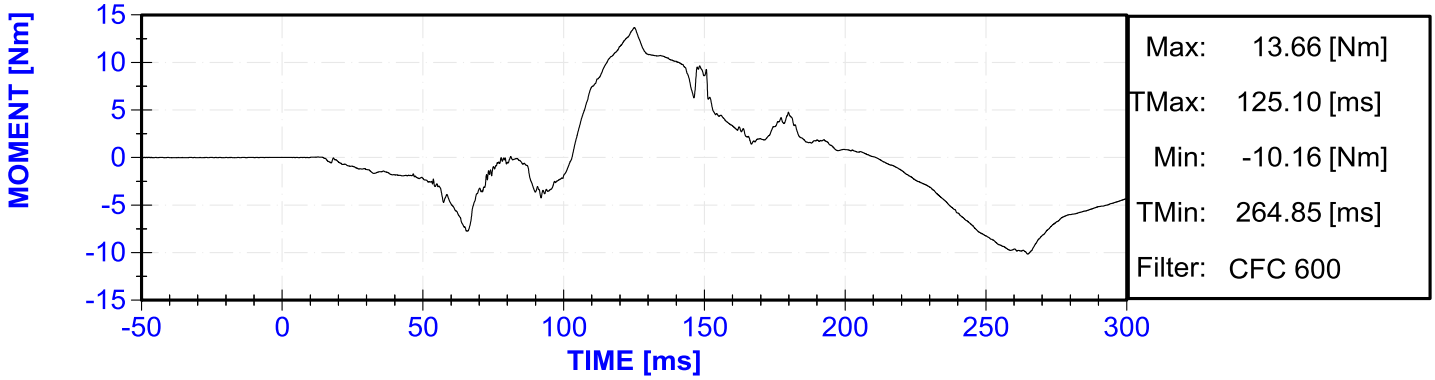
V2P1 Upper Neck Z Force



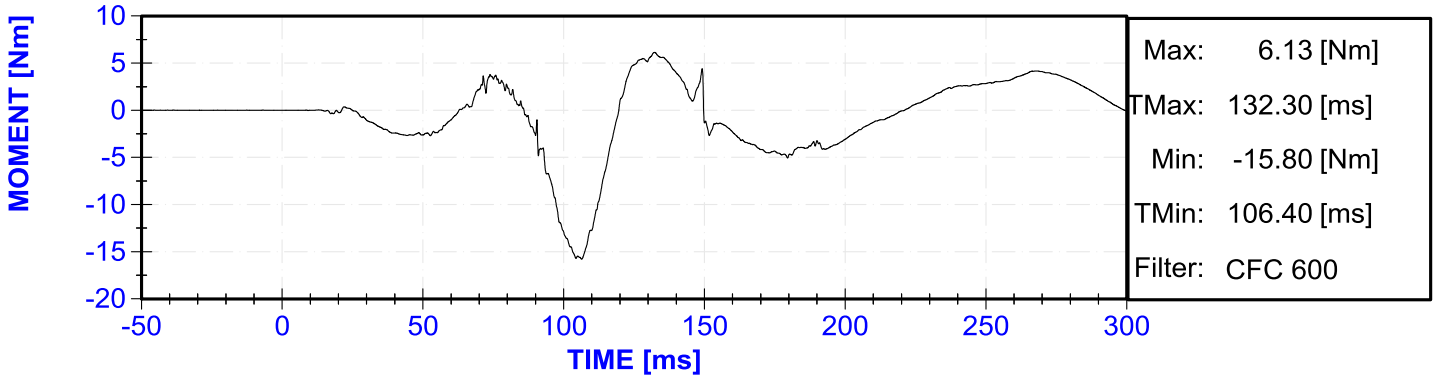
V2P1 Upper Neck X Moment



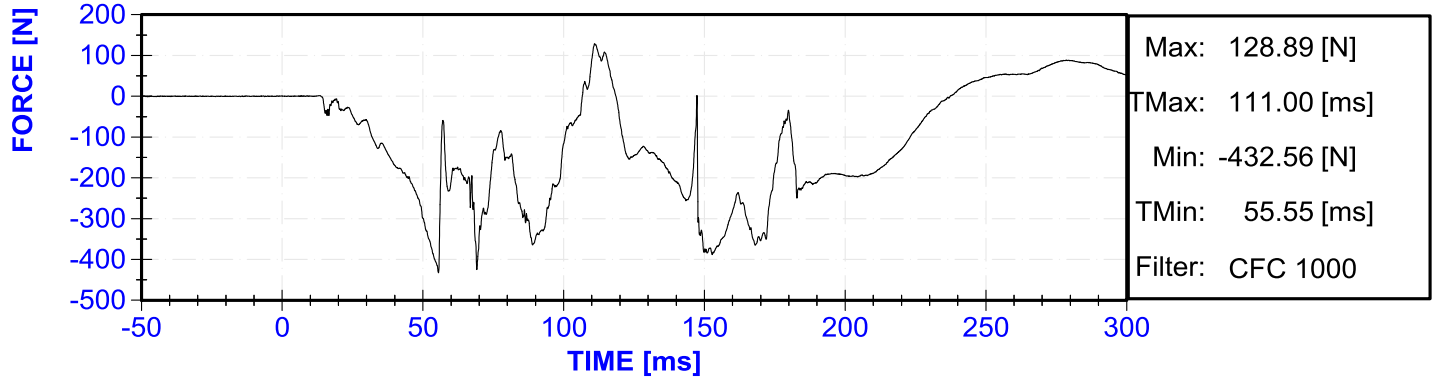
V2P1 Upper Neck Y Moment



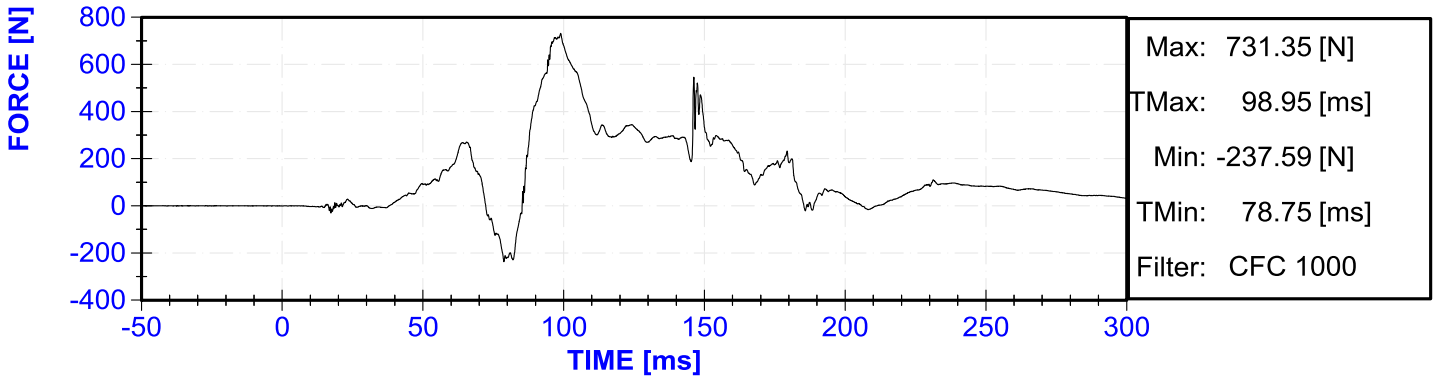
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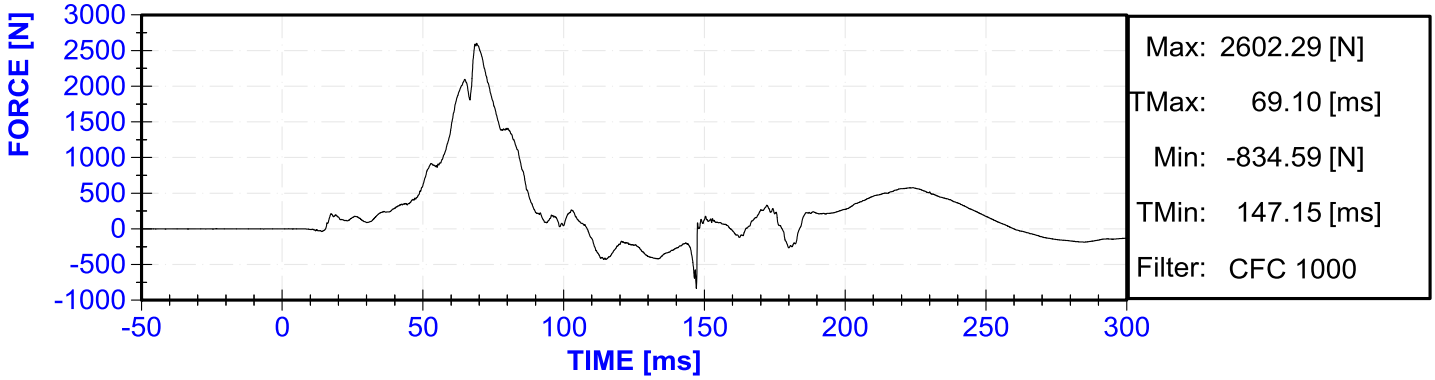
V2P1 Lower Neck X Force



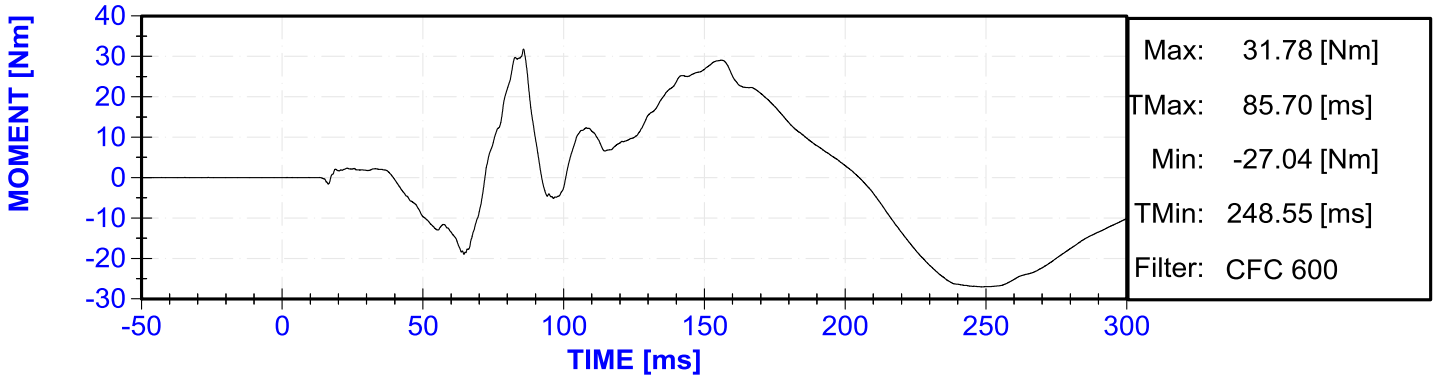
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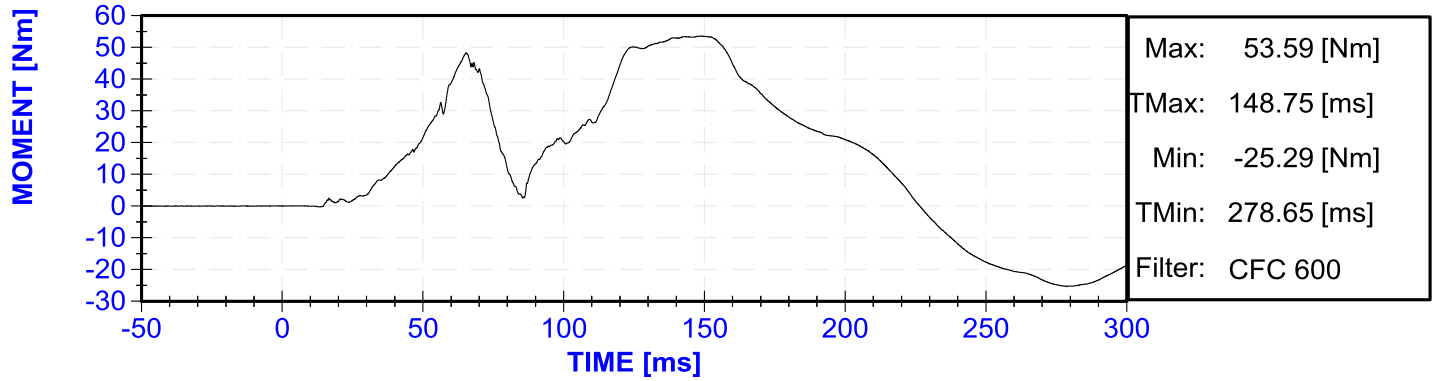
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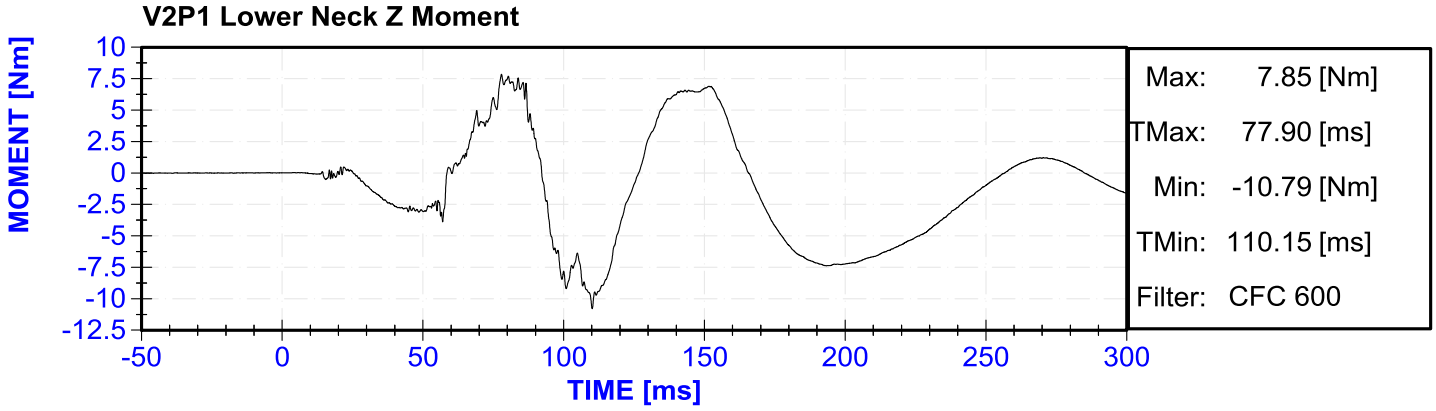
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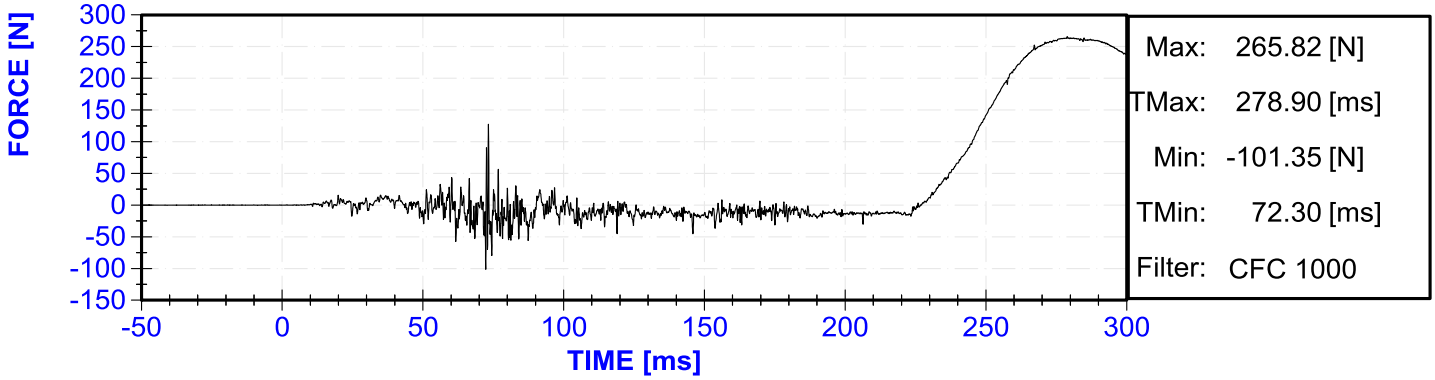
V2P1 Lower Neck Y Moment



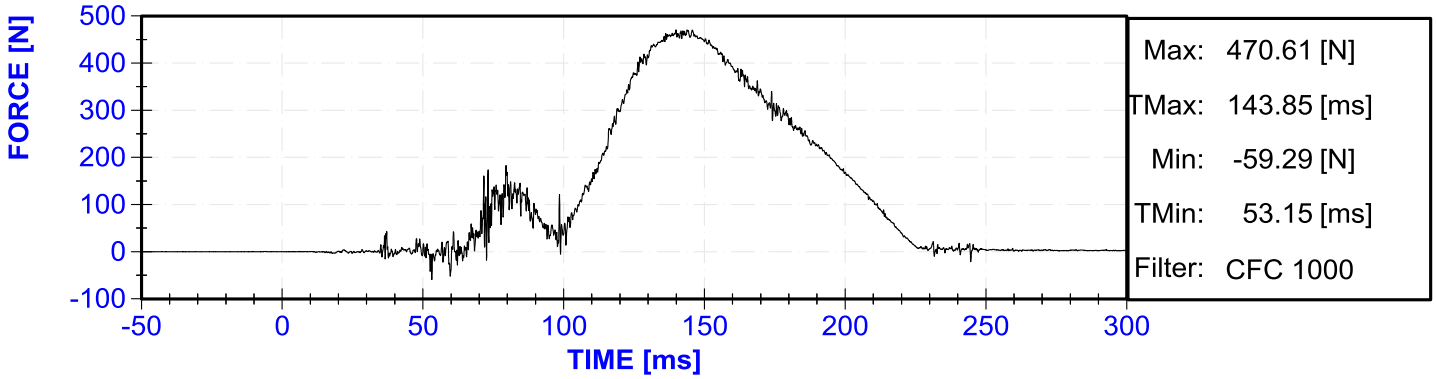
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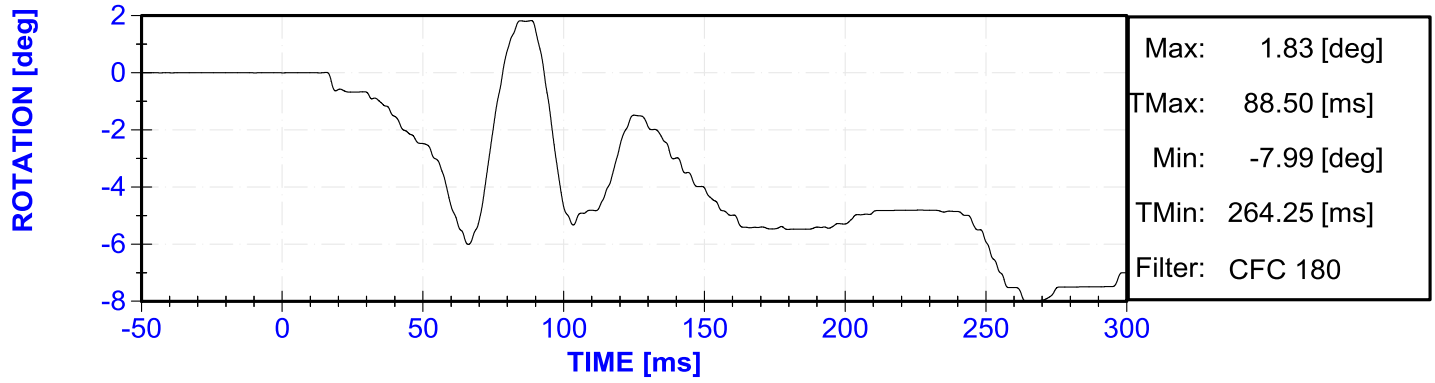
V2P1 Front Neck Spring Tower Load Cell



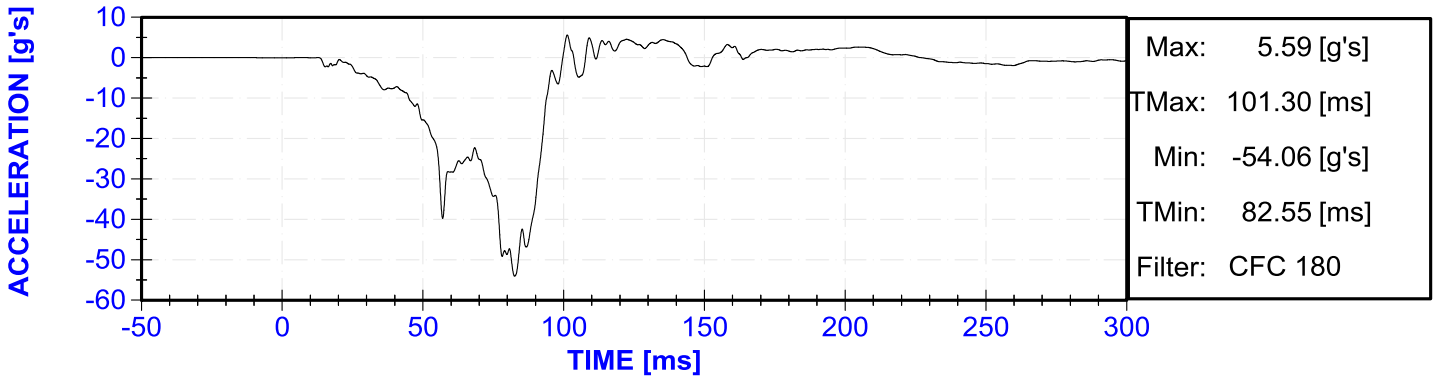
V2P1 Rear Neck Spring Tower Load Cell



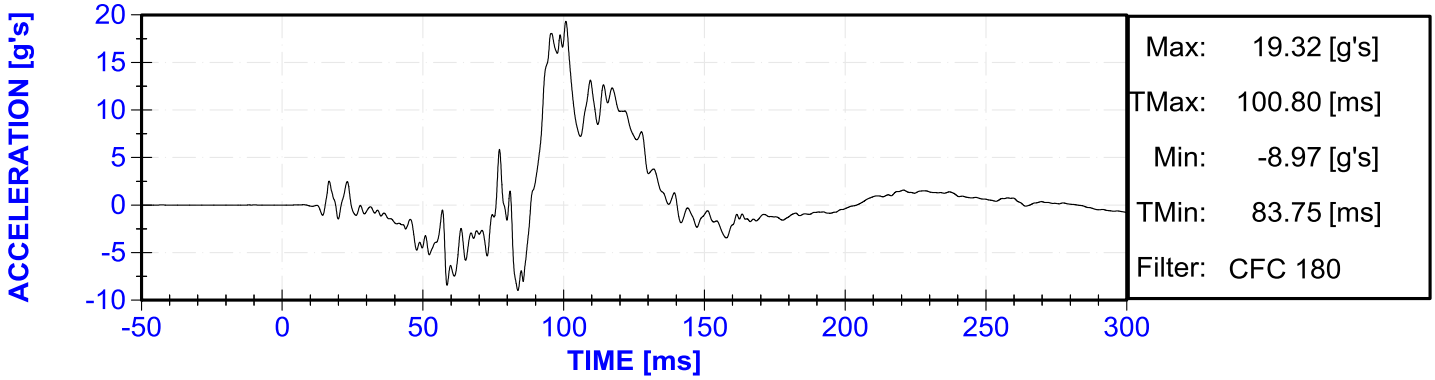
V2P1 Occipital Condyle Rotation Potentiometer



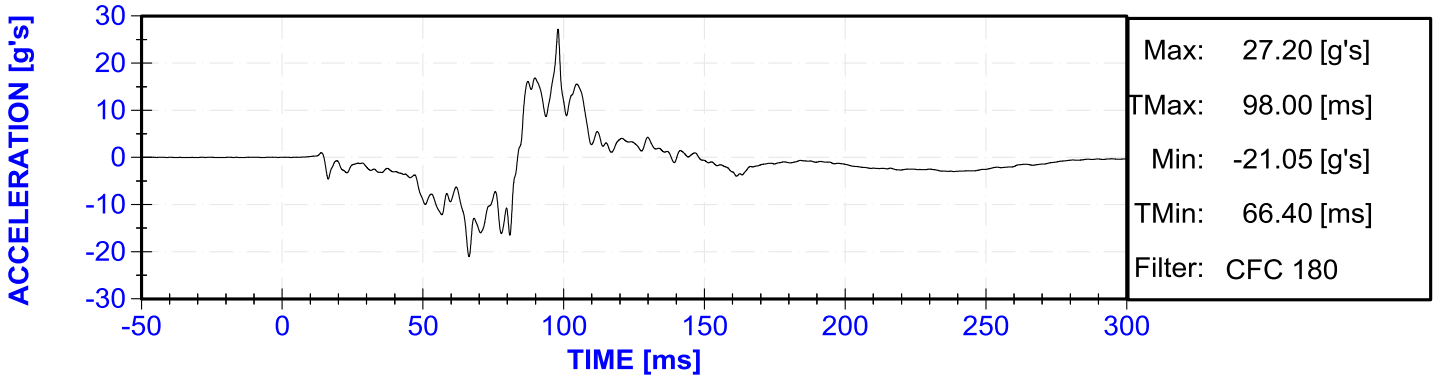
V2P1 T1 X Acceleration



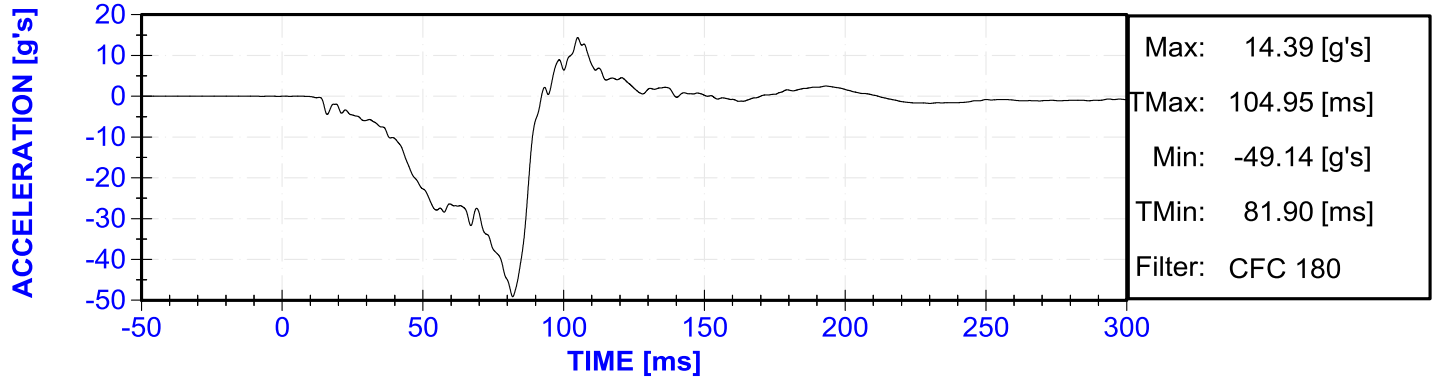
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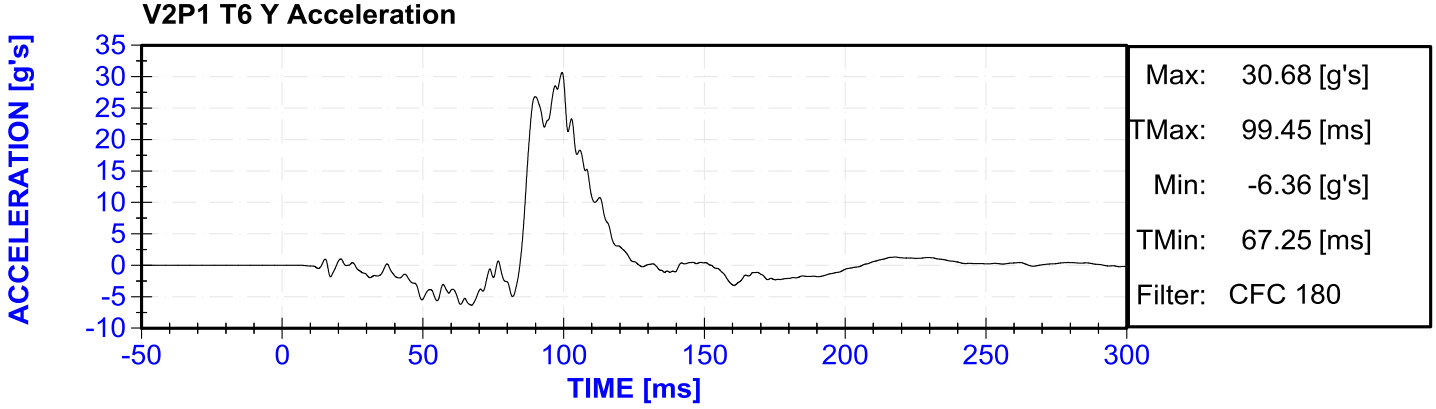
V2P1 T1 Z Acceleration



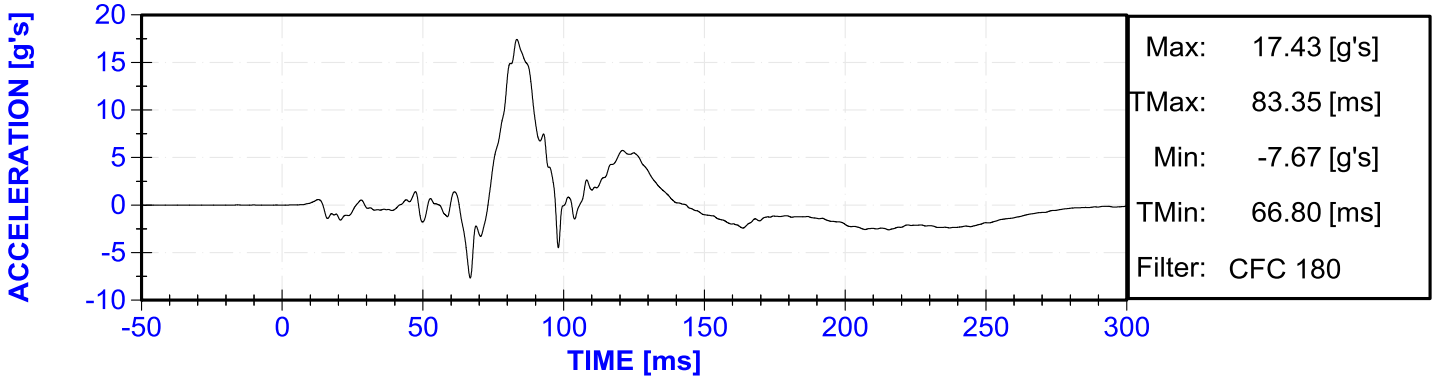
V2P1 T6 X Acceleration



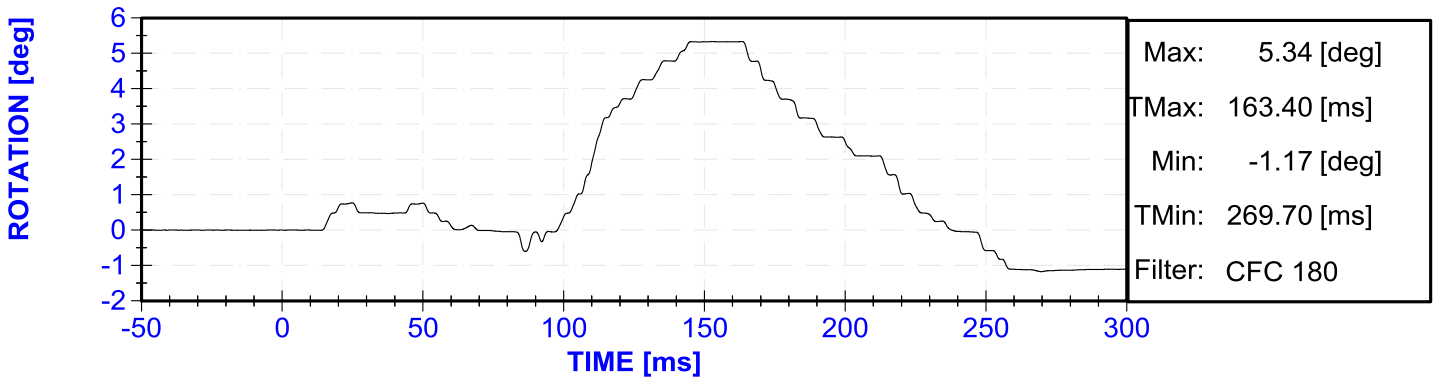
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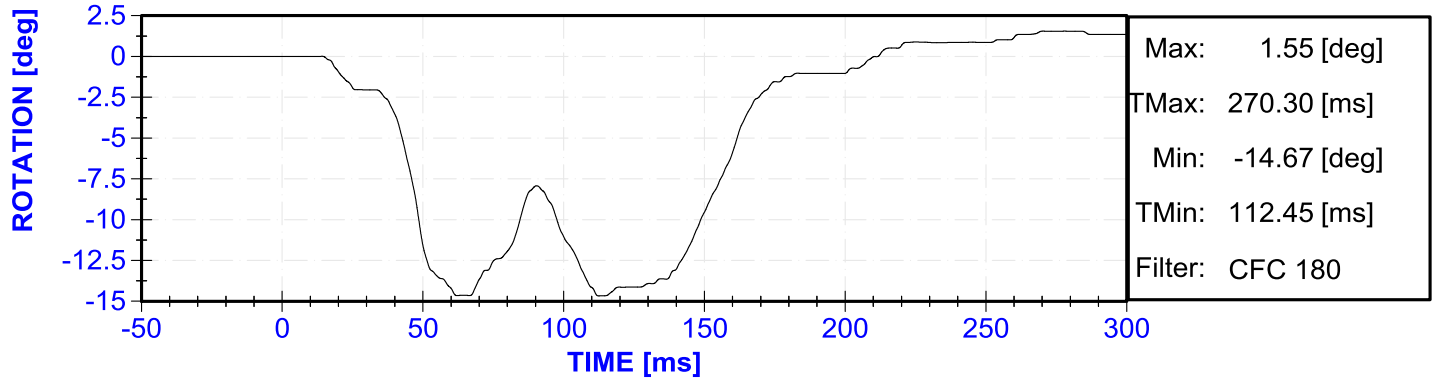
V2P1 T6 Z Acceleration



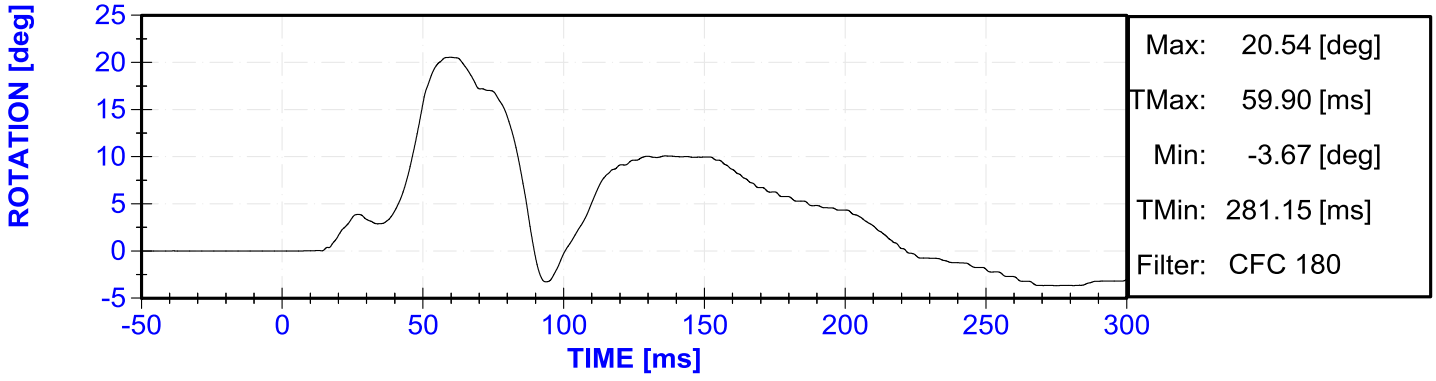
V2P1 CHEST LEFT UPPER CB



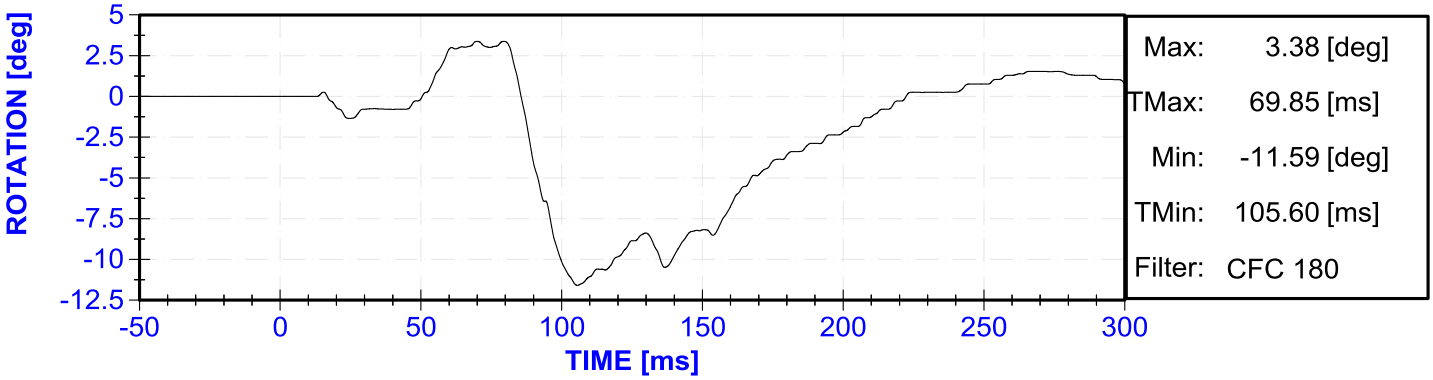
V2P1 CHEST LEFT UPPER CM



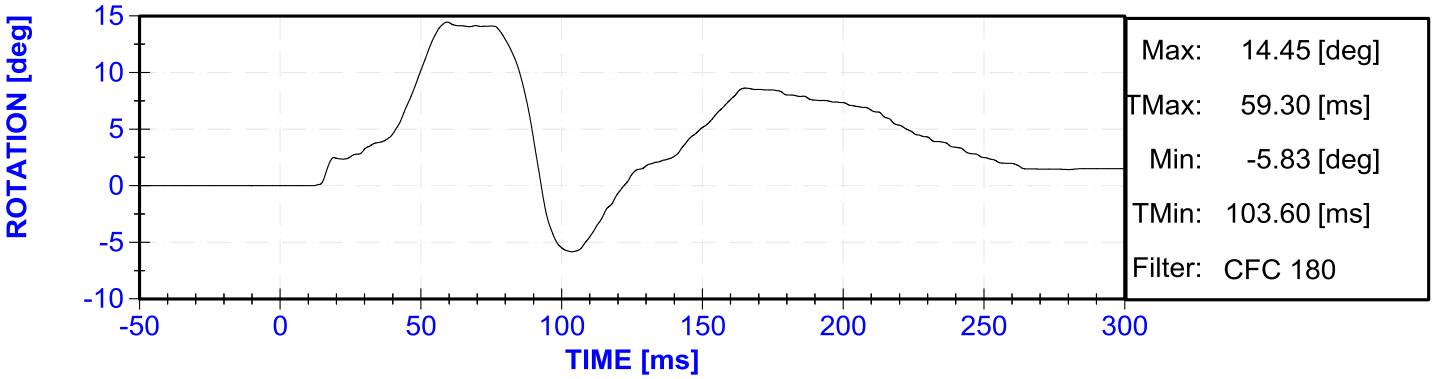
V2P1 CHEST LEFT UPPER CE



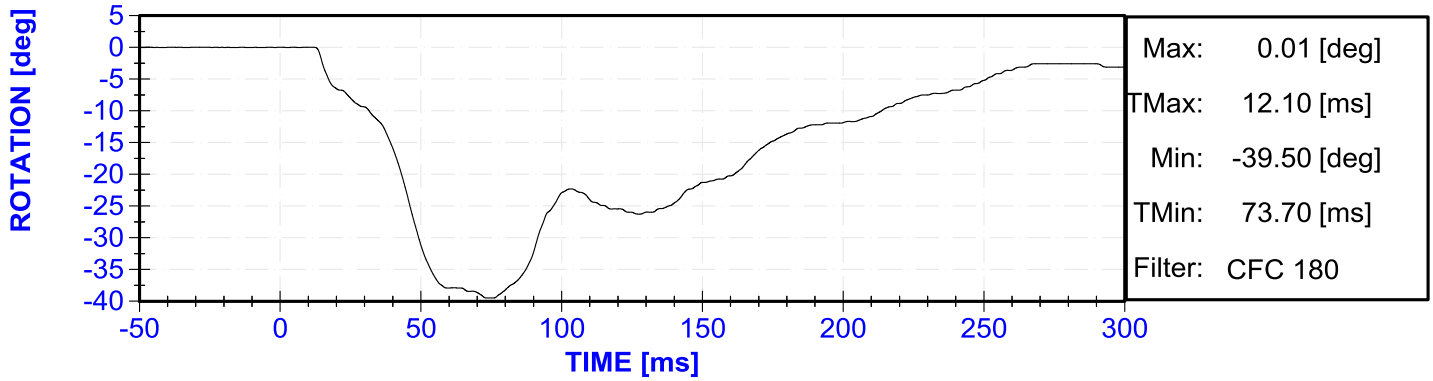
V2P1 CHEST RIGHT UPPER CB



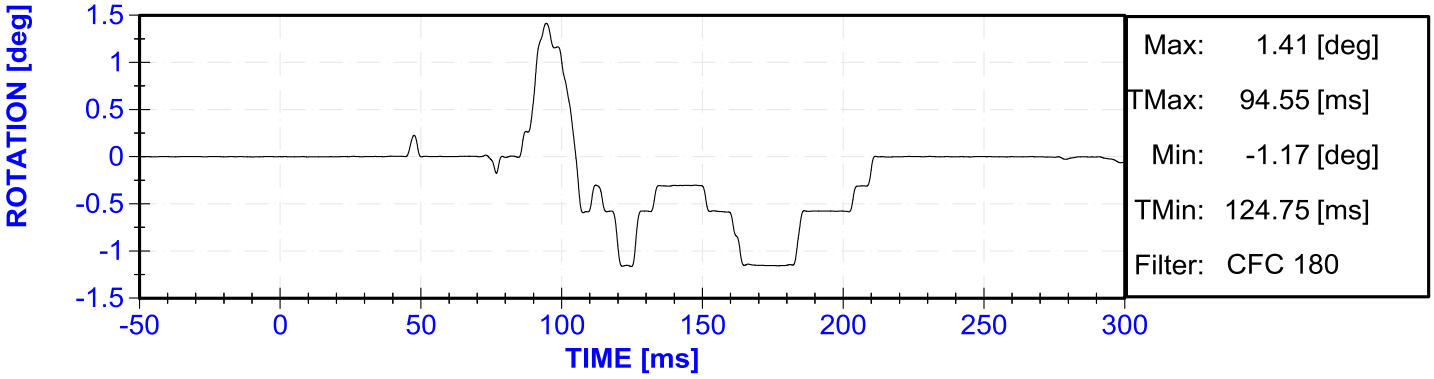
V2P1 CHEST RIGHT UPPER CM



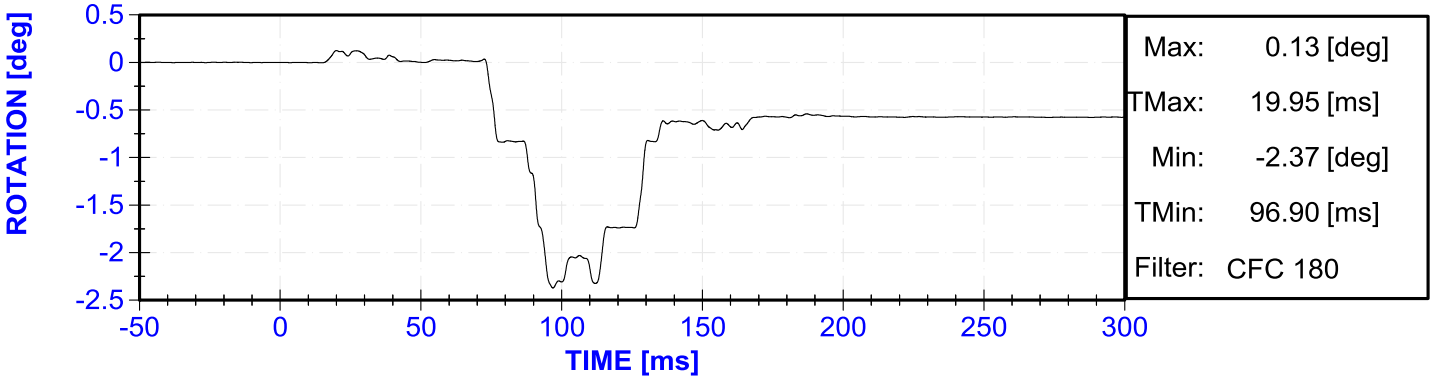
V2P1 CHEST RIGHT UPPER CE



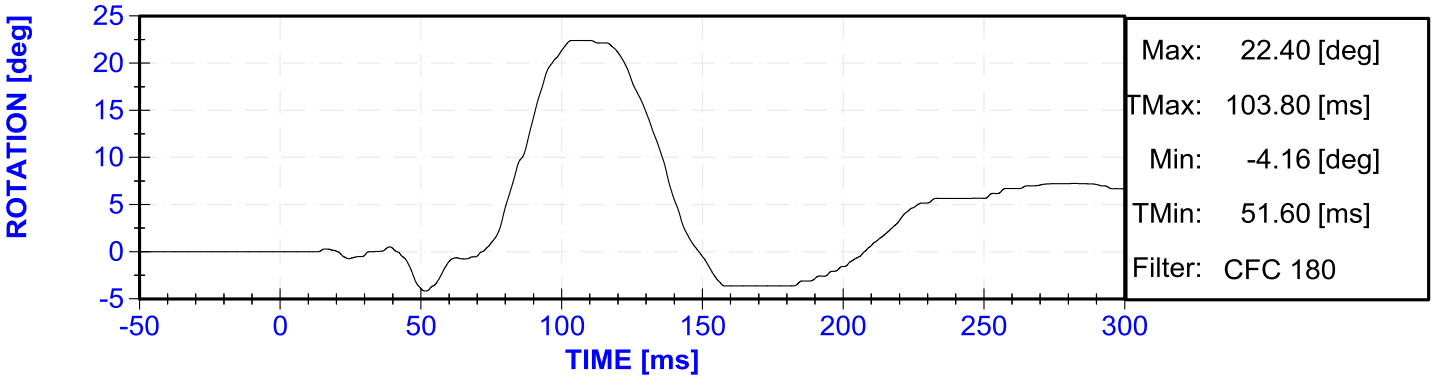
V2P1 CHEST LEFT LOWER CB



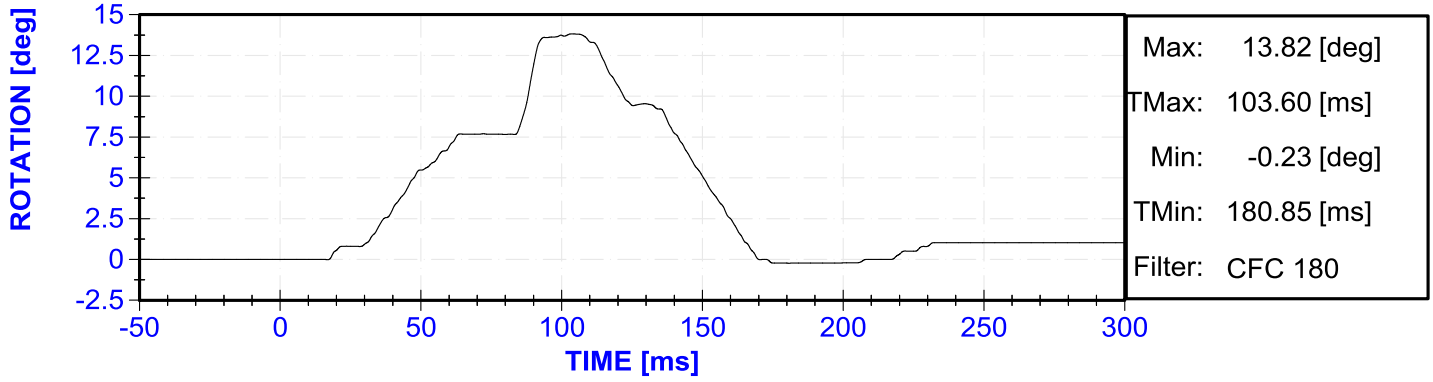
V2P1 CHEST LEFT LOWER CM



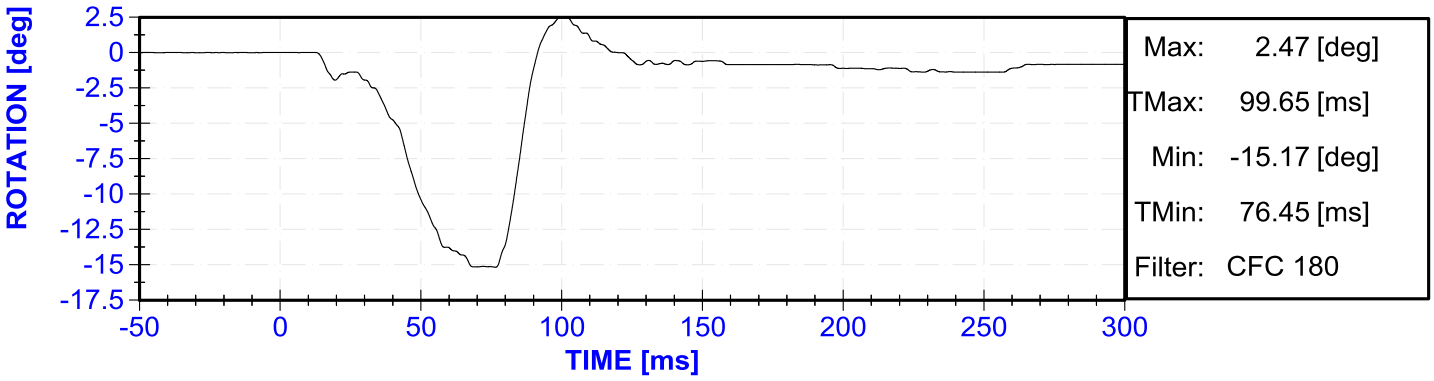
V2P1 CHEST LEFT LOWER CE



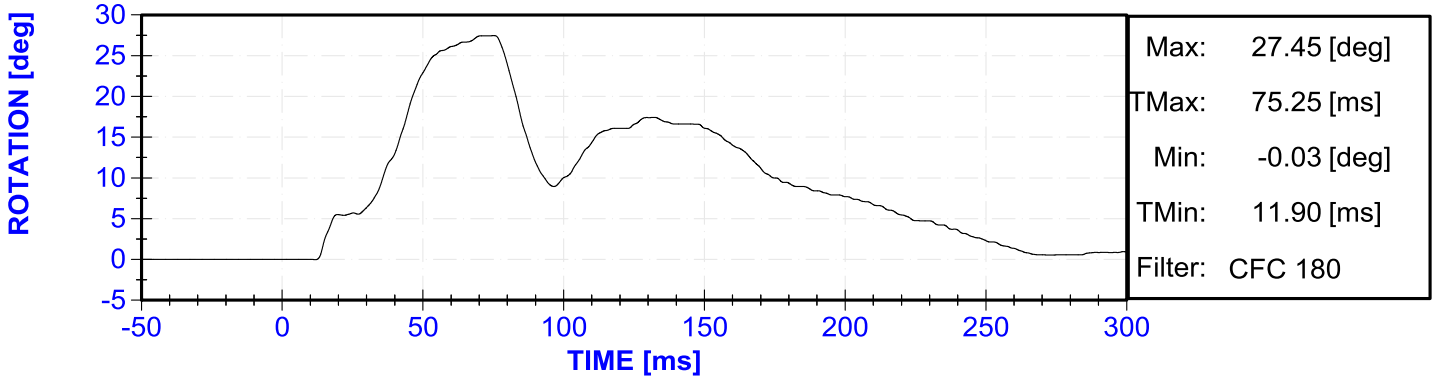
V2P1 CHEST RIGHT LOWER CB



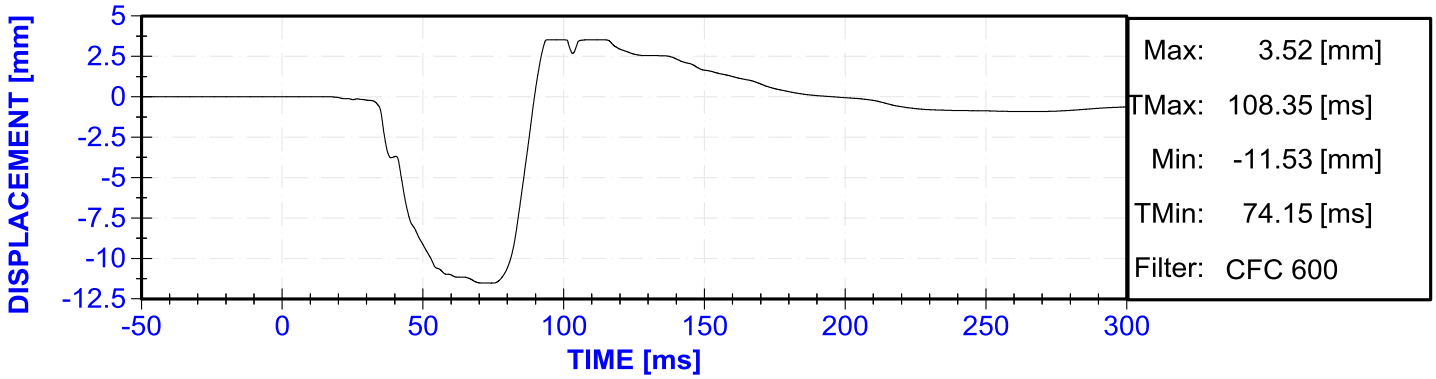
V2P1 CHEST RIGHT LOWER CM



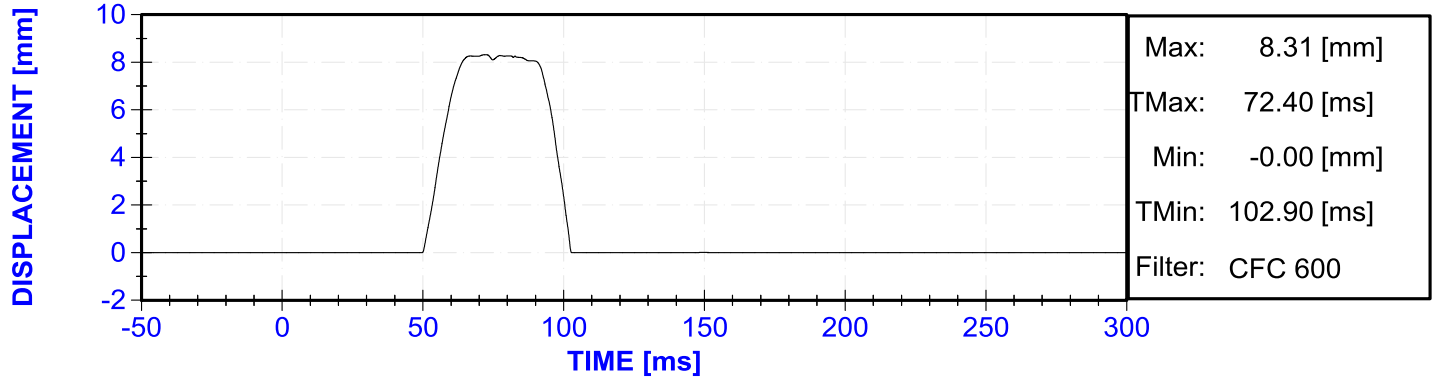
V2P1 CHEST RIGHT LOWER CE



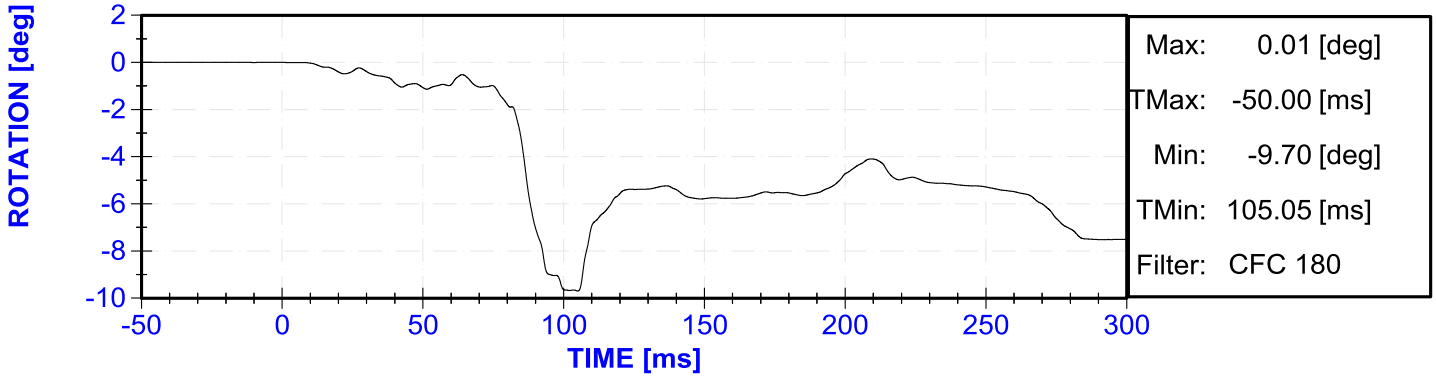
V2P1 ABDOMEN UPPER DX



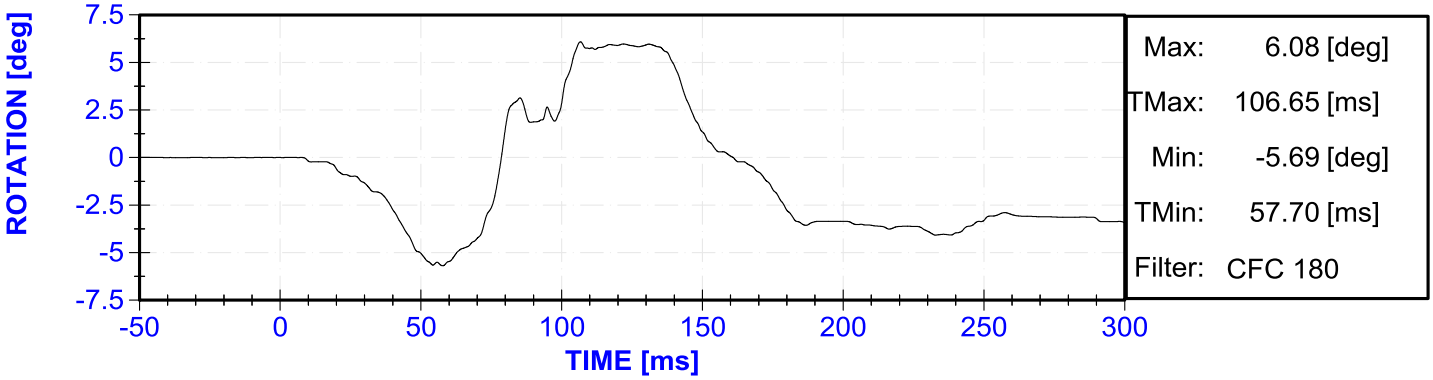
V2P1 ABDOMEN LEFT DX



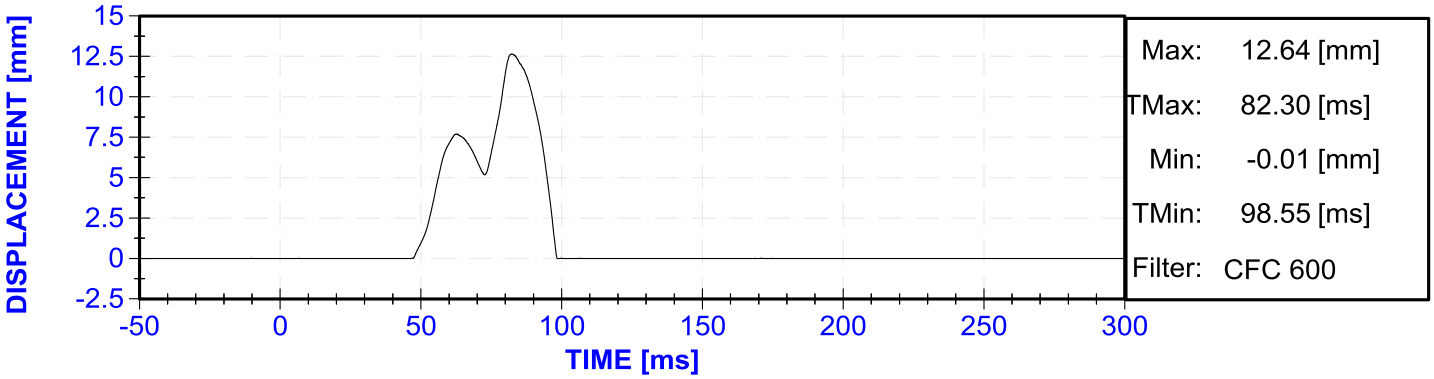
V2P1 ABDOMEN LEFT DY



V2P1 ABDOMEN LEFT DZ

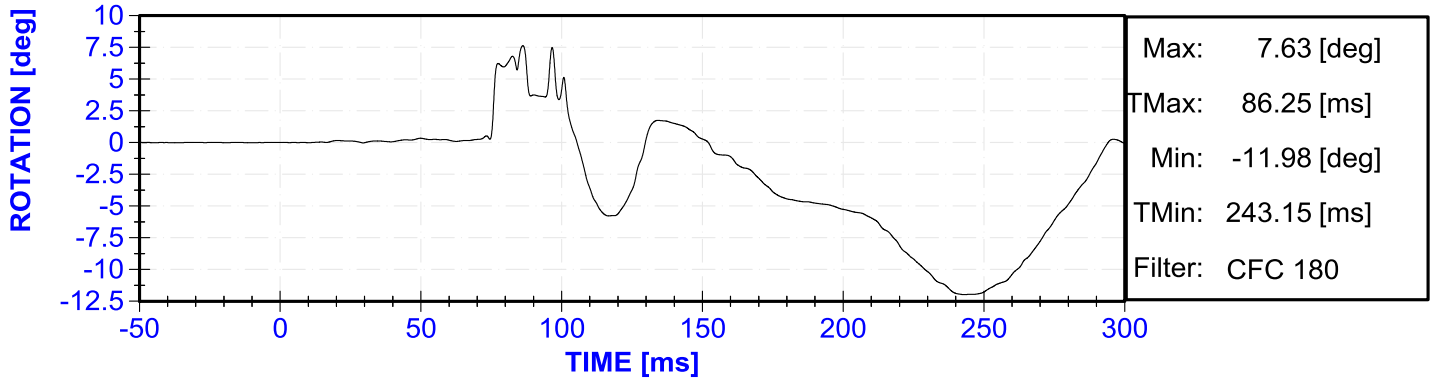


V2P1 ABDOMEN RIGHT DX

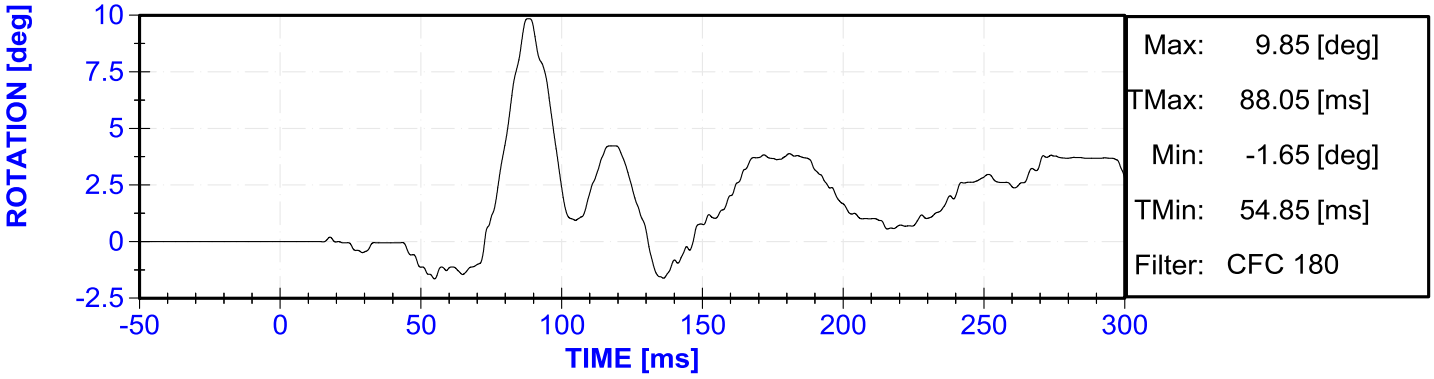


V2P1 ABDOMEN RIGHT DY

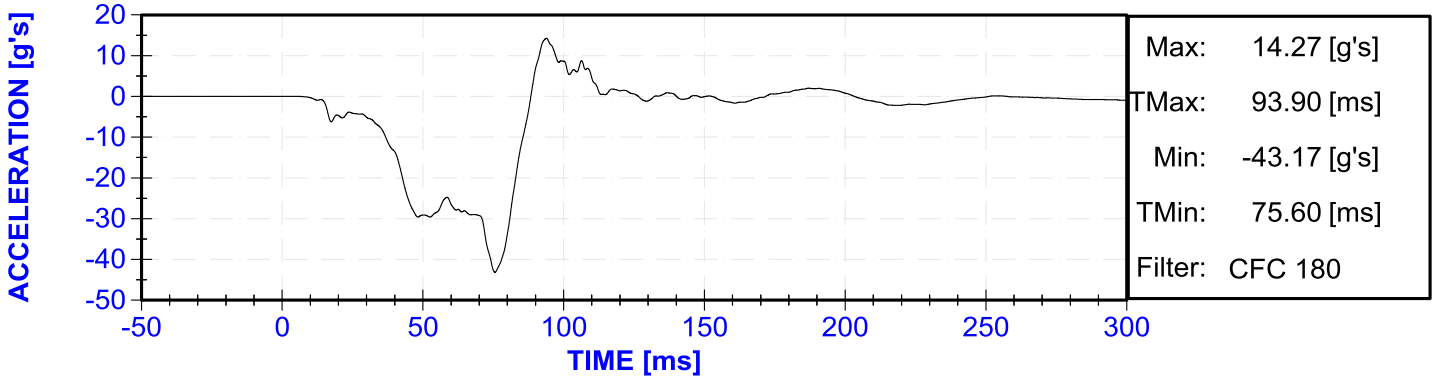
QUESTIONABLE FROM 50-110MS



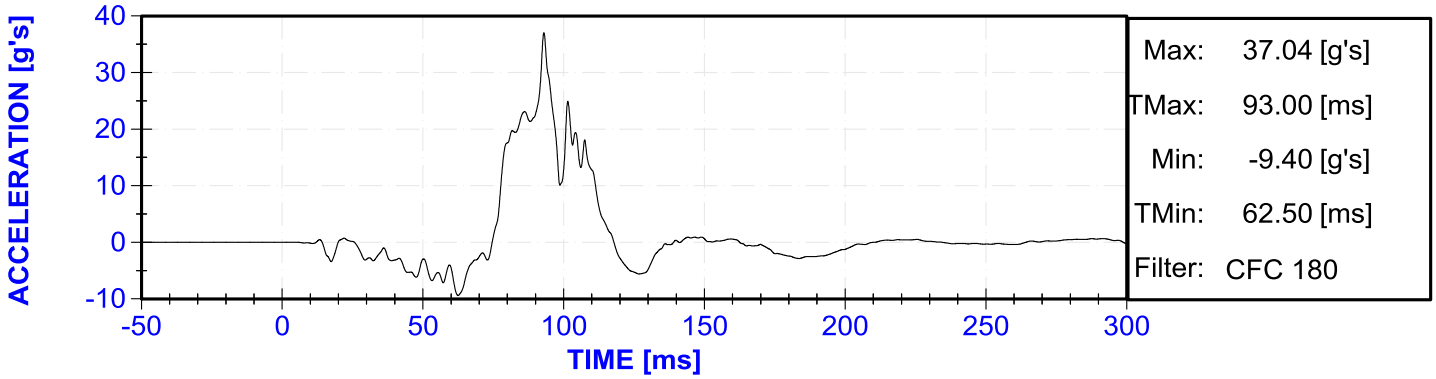
V2P1 ABDOMEN RIGHT DZ



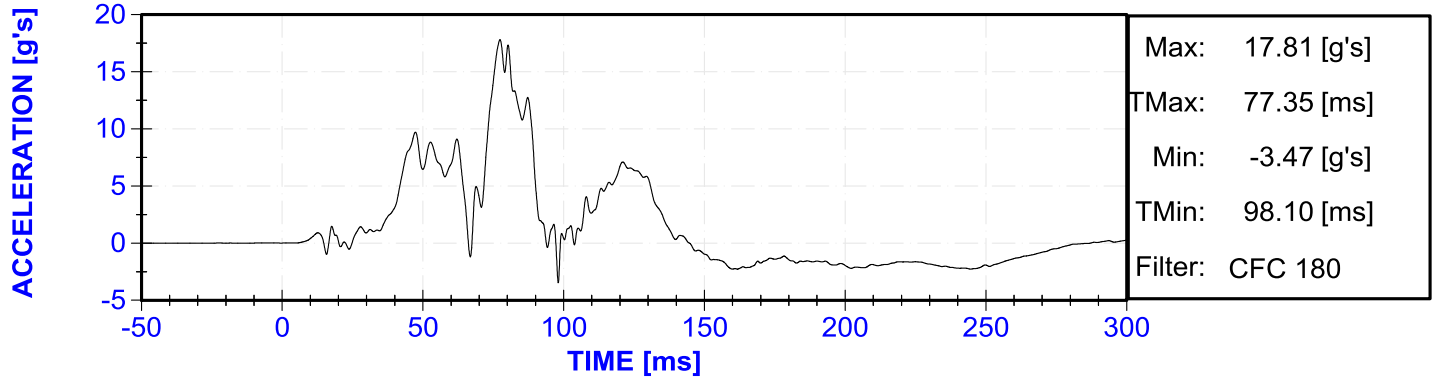
V2P1 T12 X Acceleration



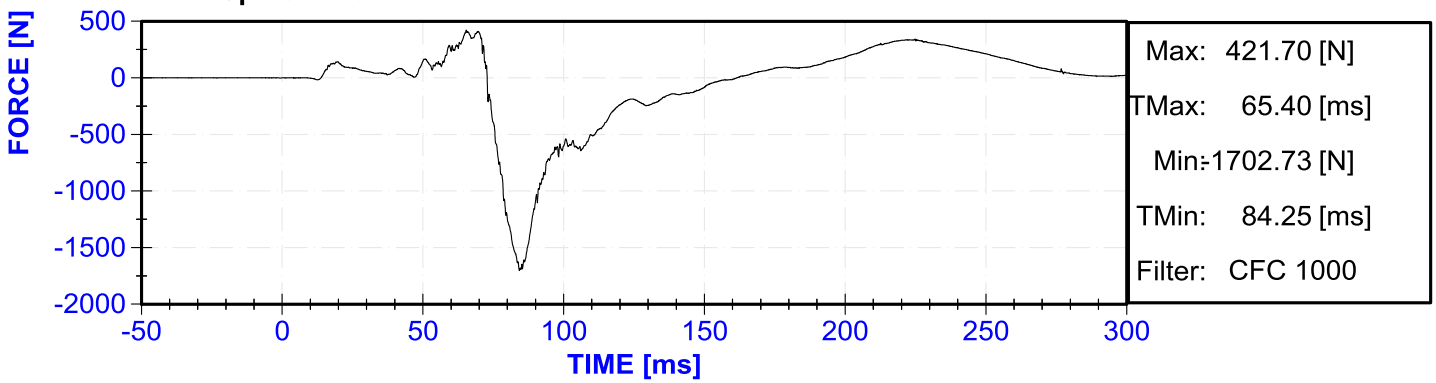
V2P1 T12 Y Acceleration



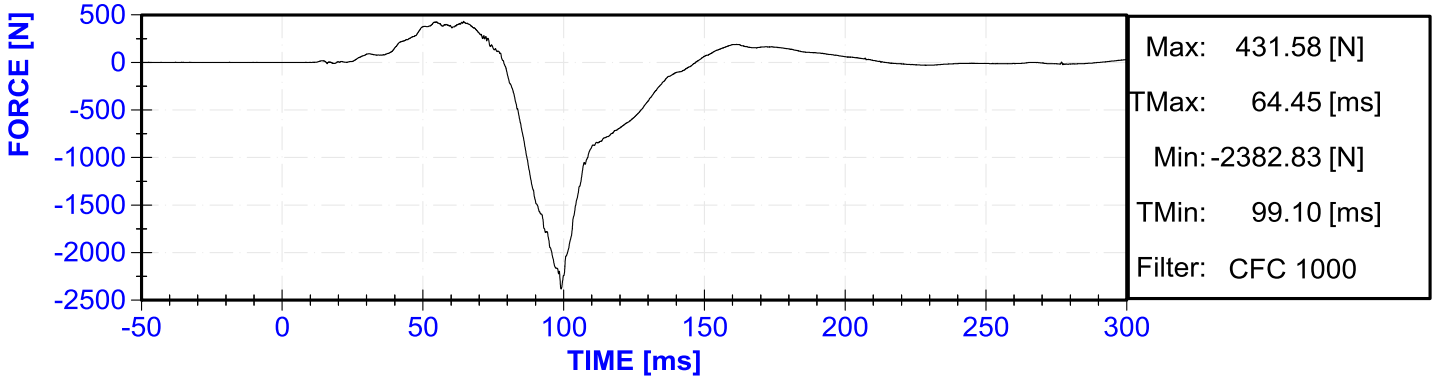
V2P1 T12 Z Acceleration



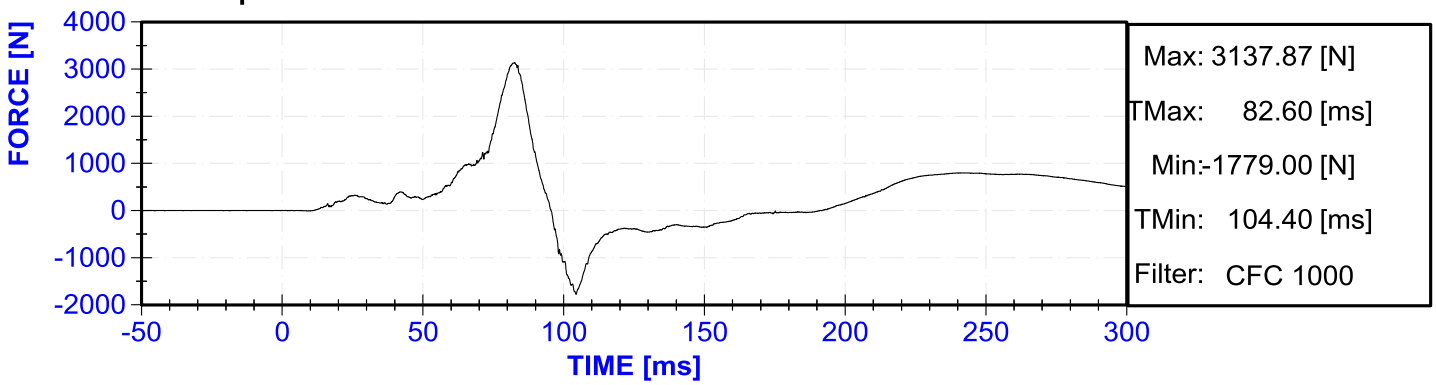
V2P1 Spine Force X



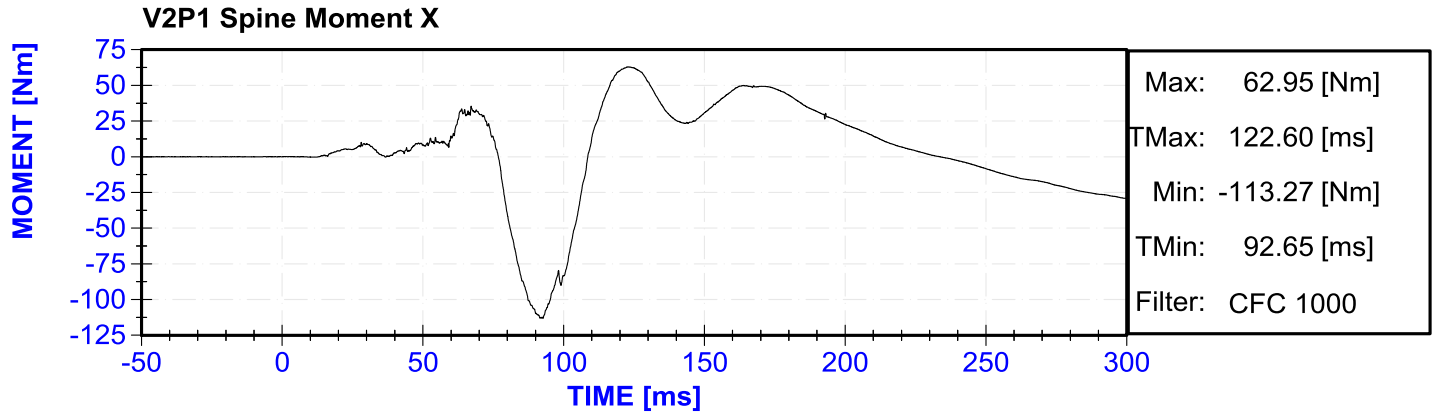
V2P1 Spine Force Y



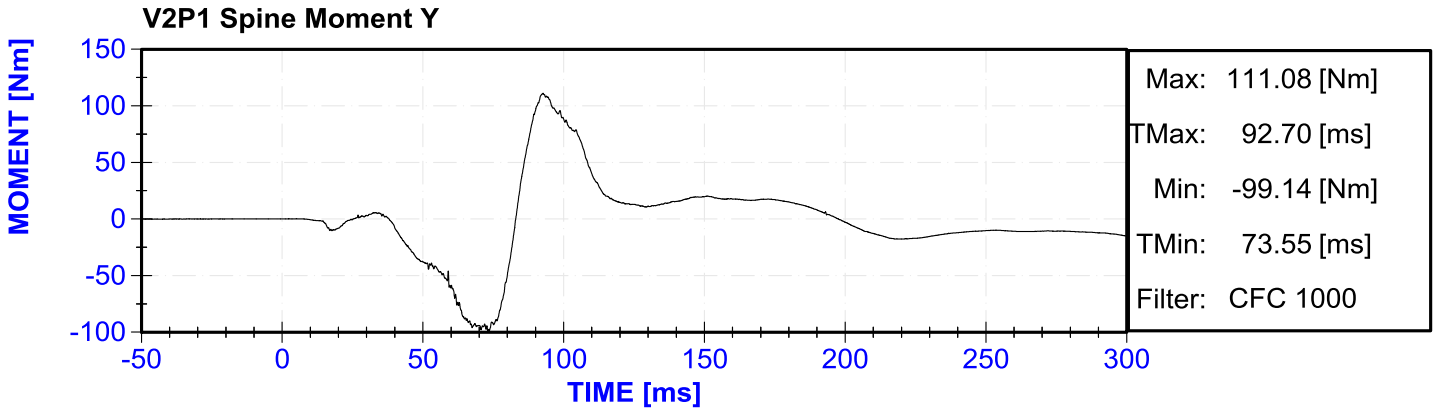
V2P1 Spine Force Z



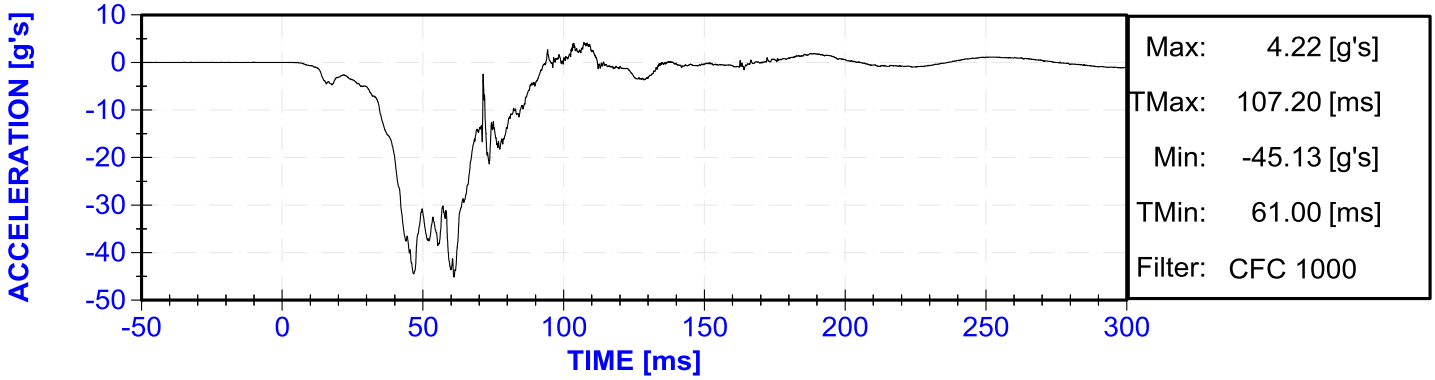
V2P1 Spine Moment X



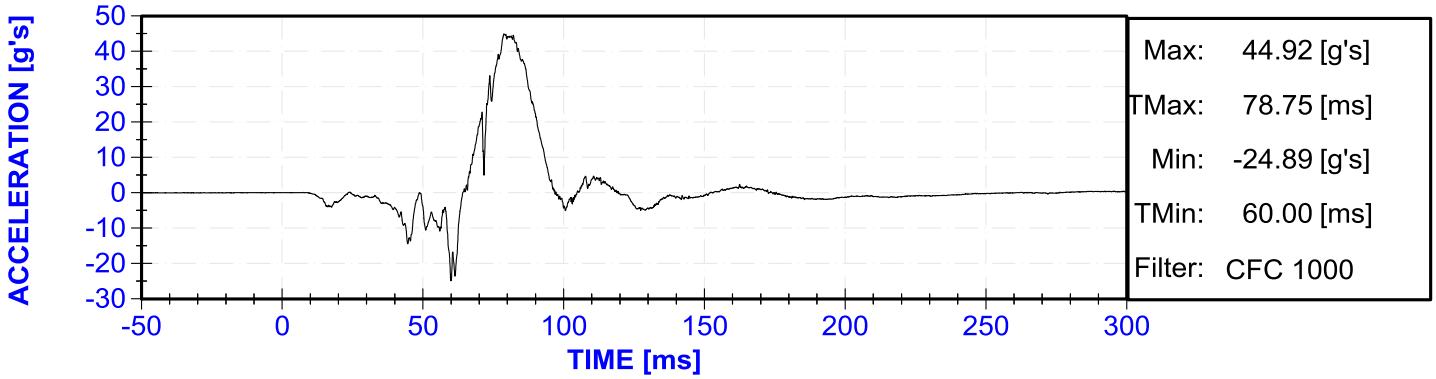
V2P1 Spine Moment Y



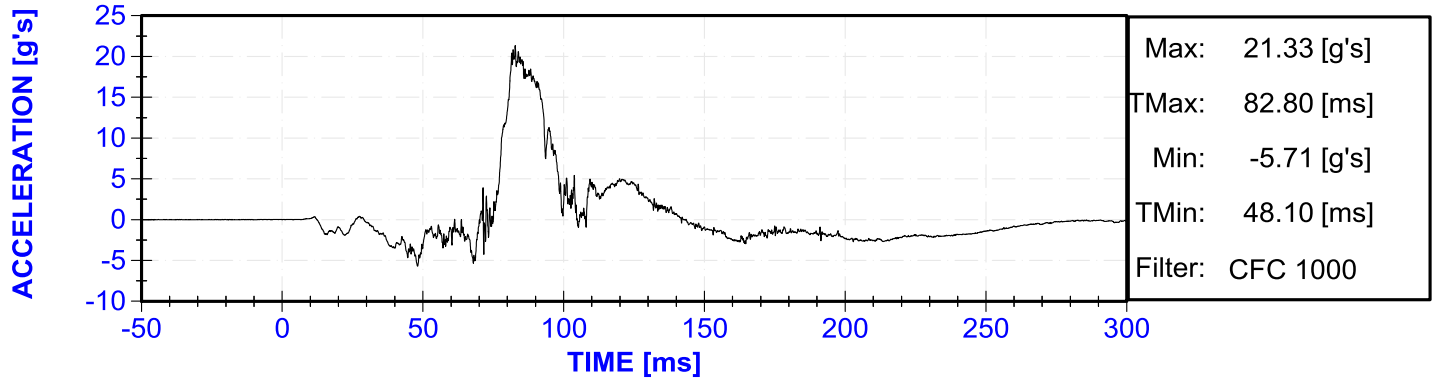
V2P1 Pelvis X Acceleration



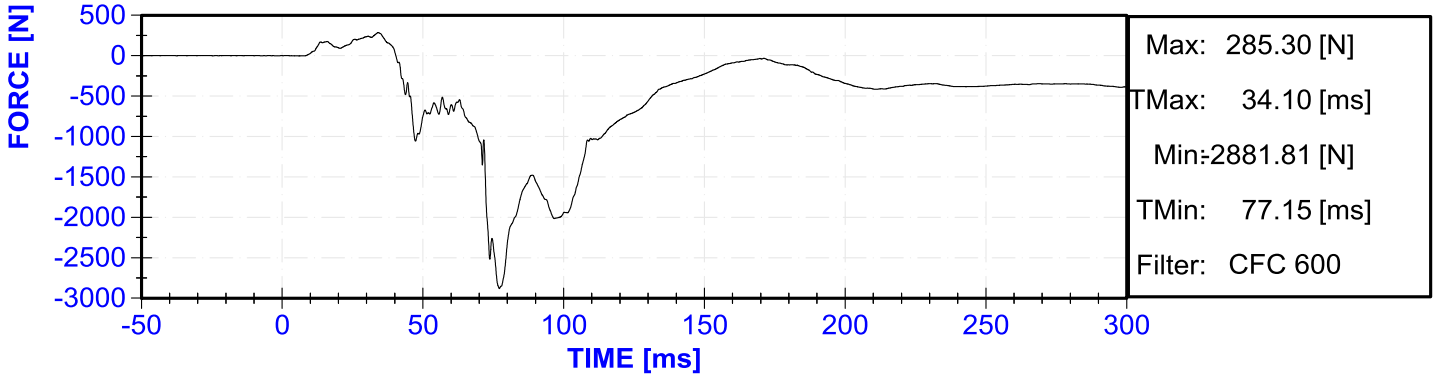
V2P1 Pelvis Y Acceleration



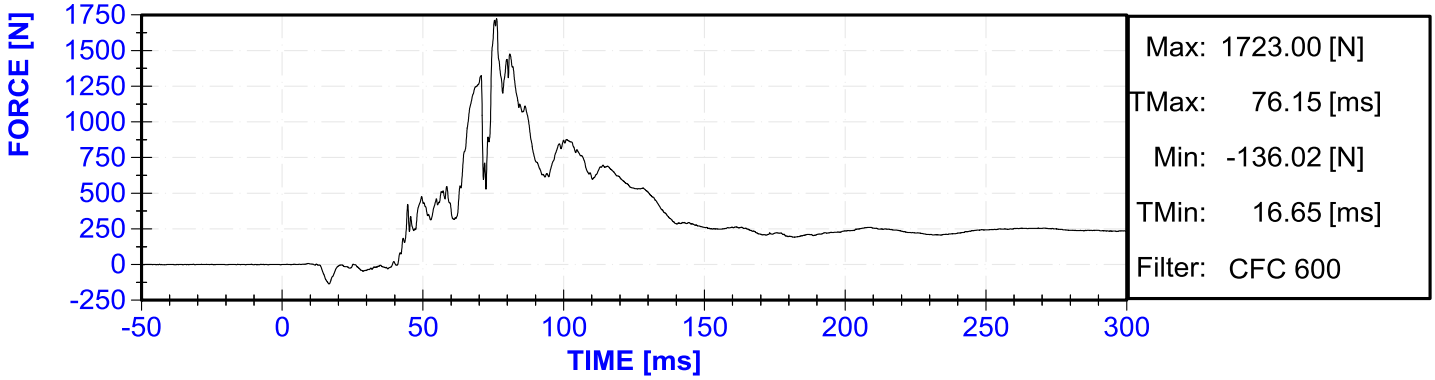
V2P1 Pelvis Z Acceleration



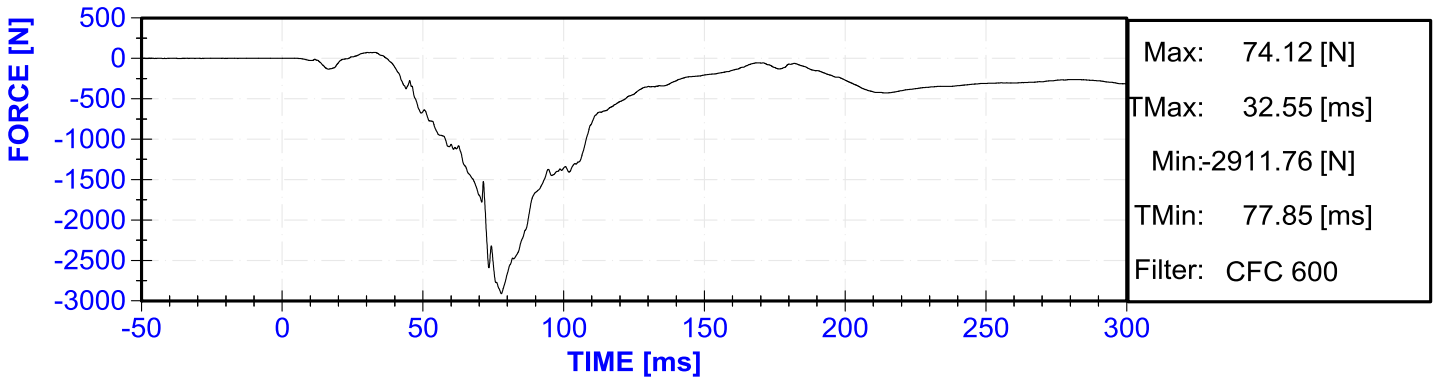
V2P1 Acetabulam Left X Force



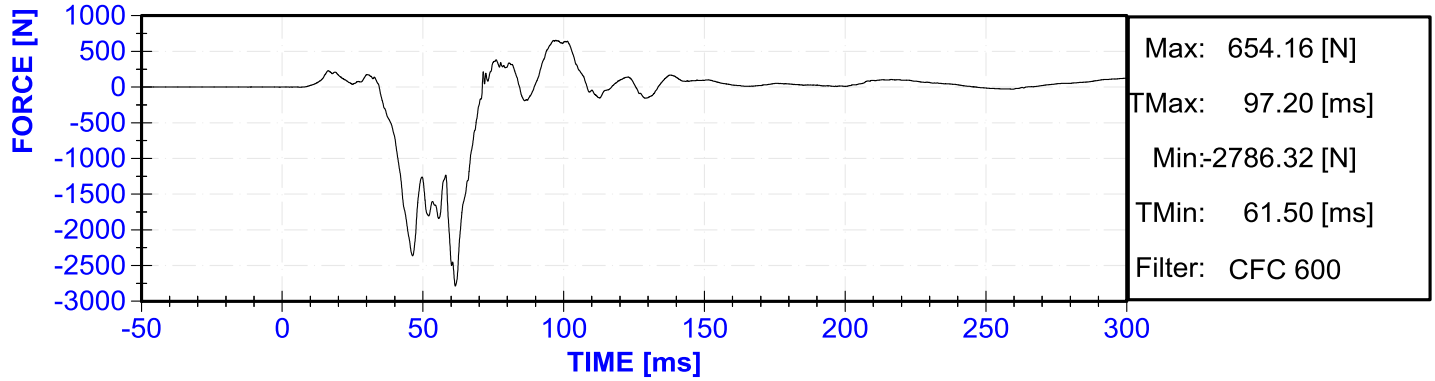
V2P1 Acetabulam Left Y Force



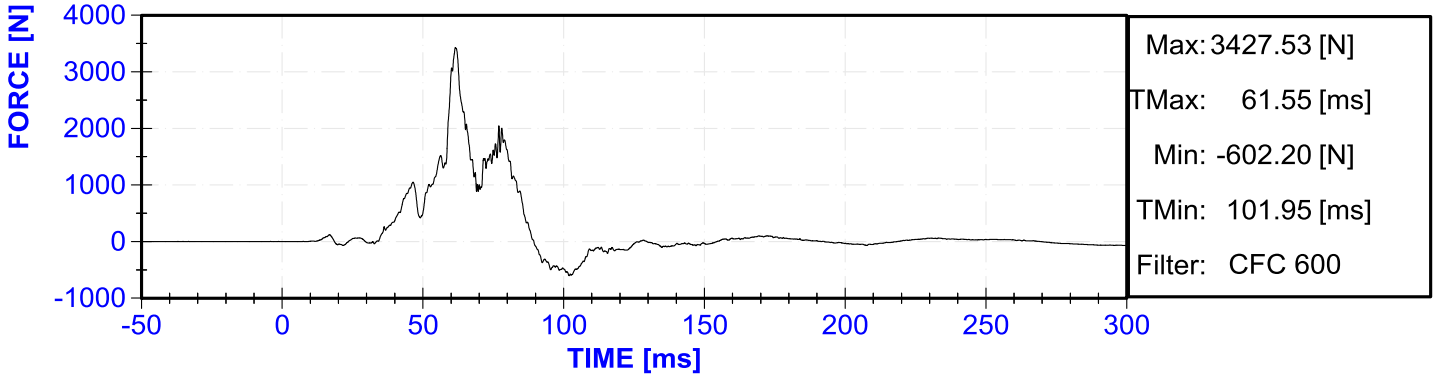
V2P1 Acetabulam Left Z Force



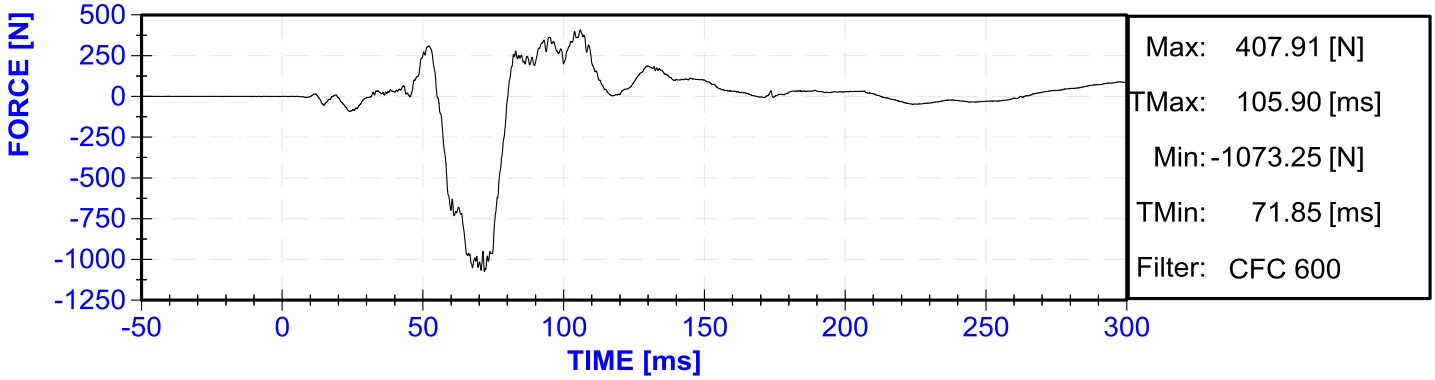
V2P1 Acetabulam Right X Force



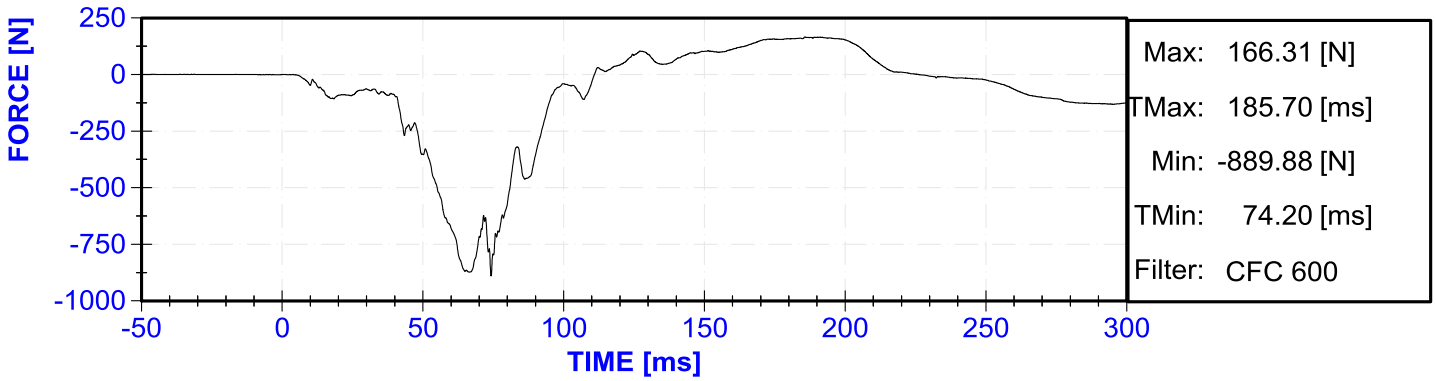
V2P1 Acetabulam Right Y Force



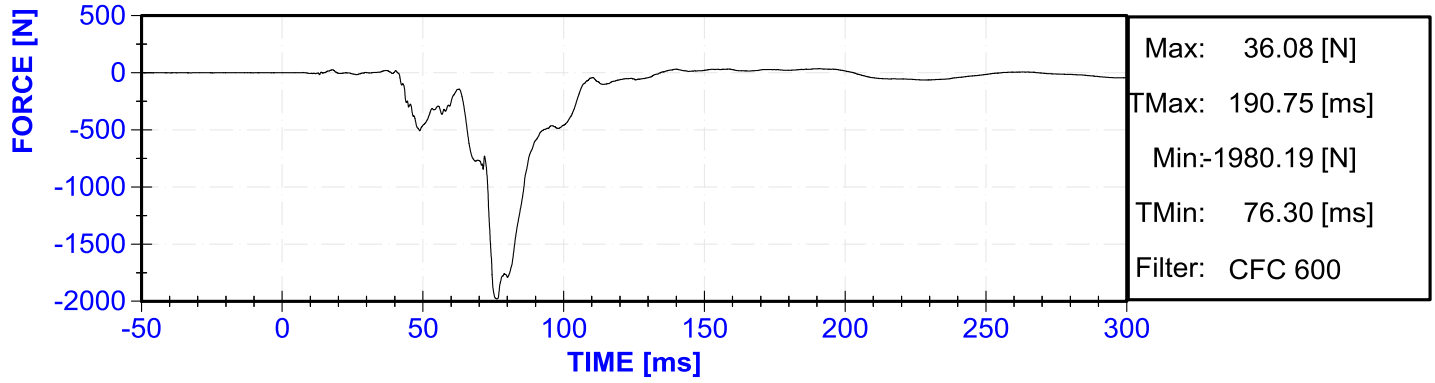
V2P1 Acetabulam Right Z Force



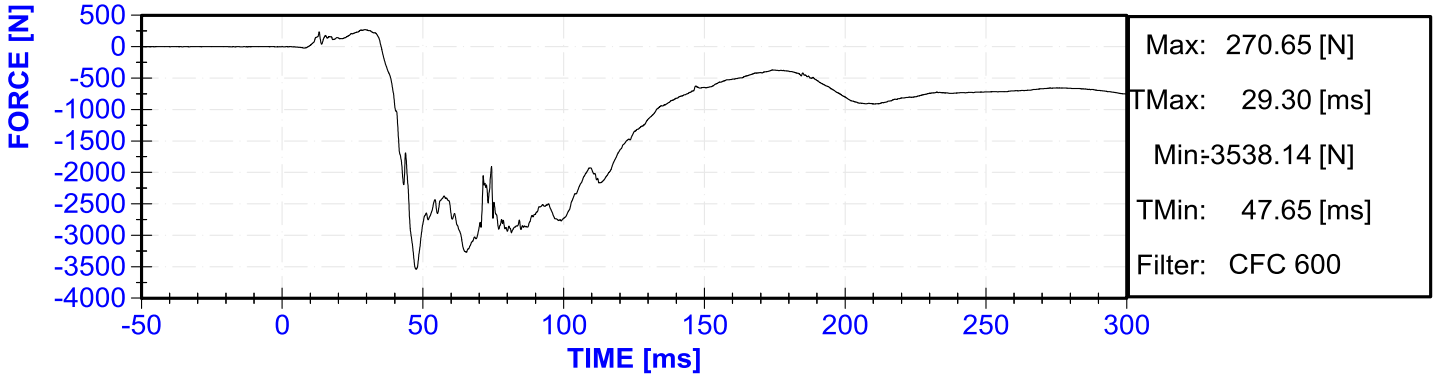
V2P1 Femur Left X Force



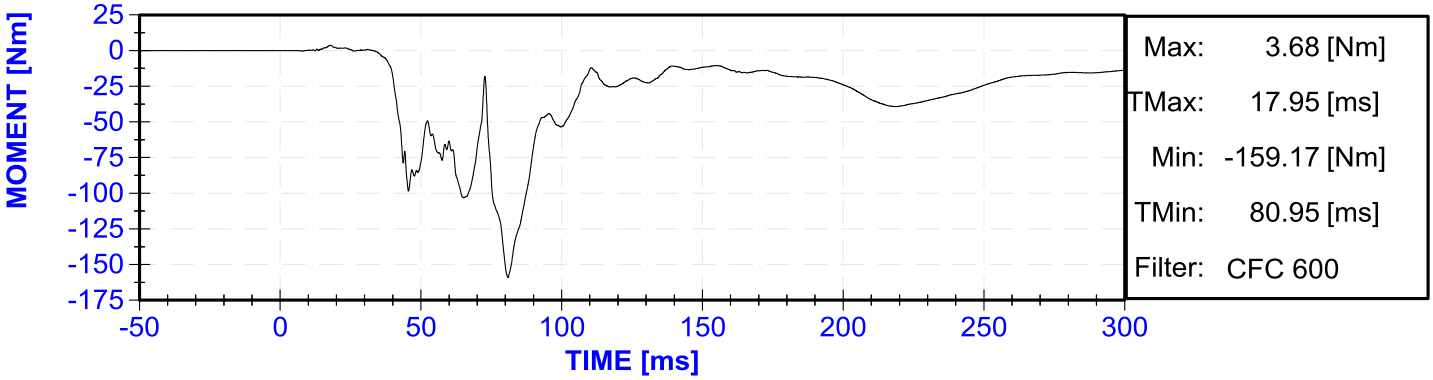
V2P1 Femur Left Y Force



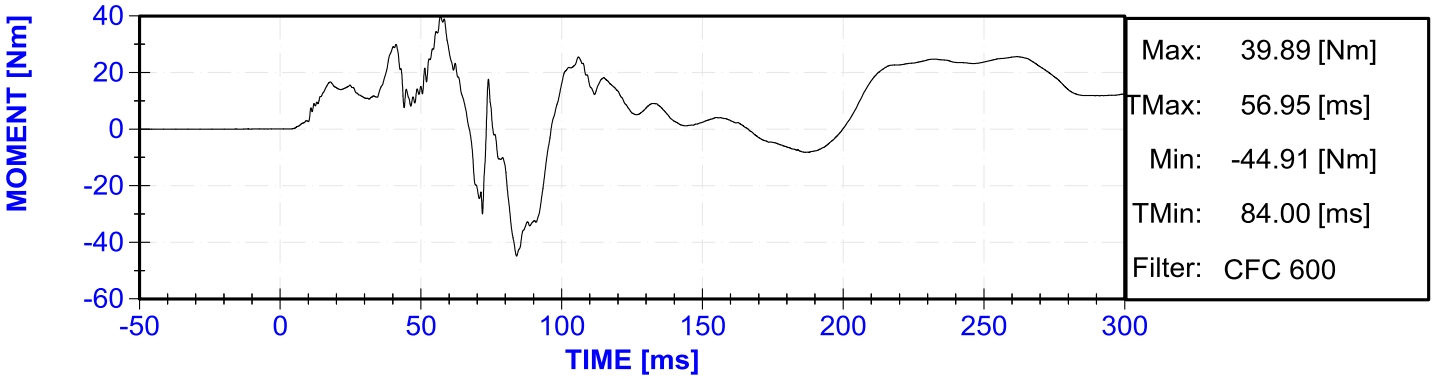
V2P1 Femur Left Z Force



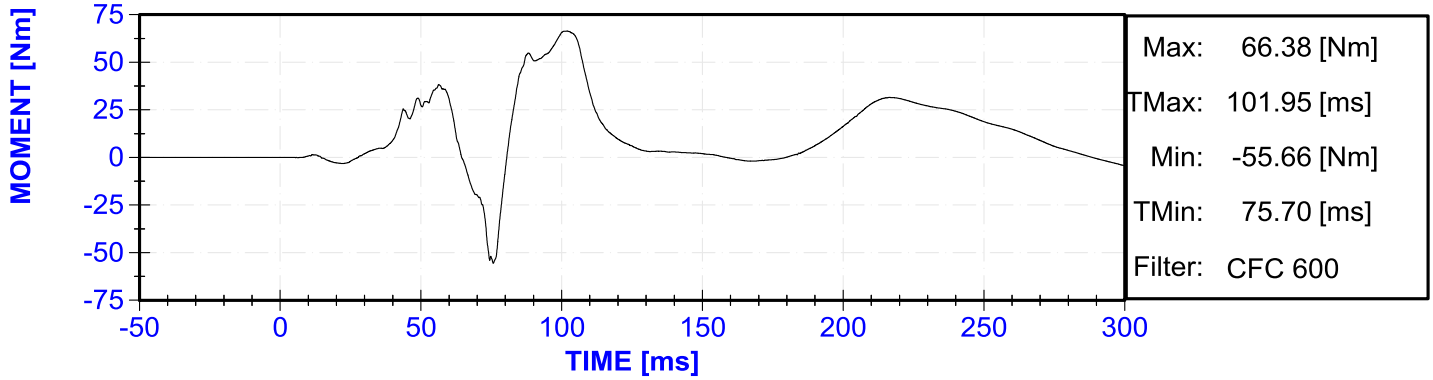
V2P1 Femur Left X Moment



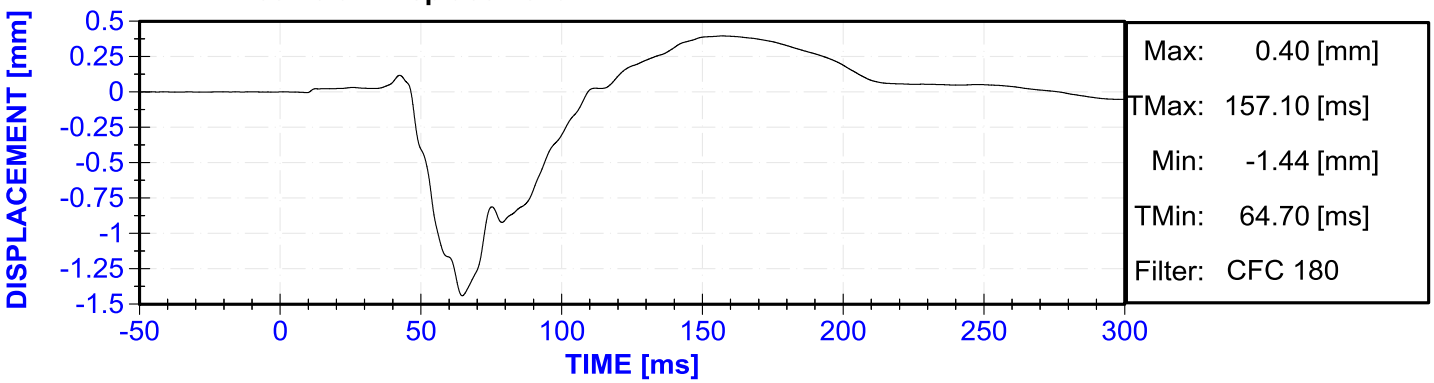
V2P1 Femur Left Y Moment



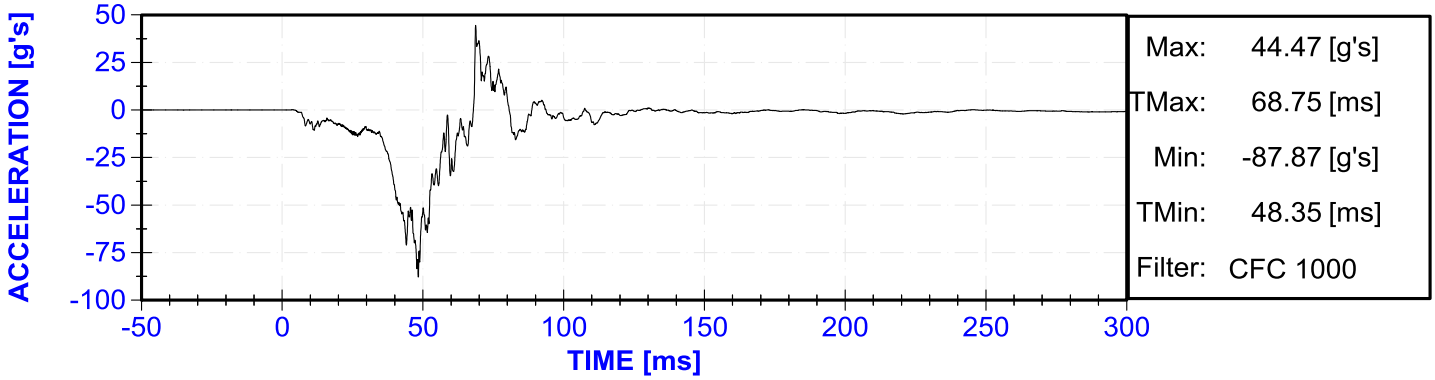
V2P1 Femur Left Z Moment



V2P1 Knee Left X Displacement

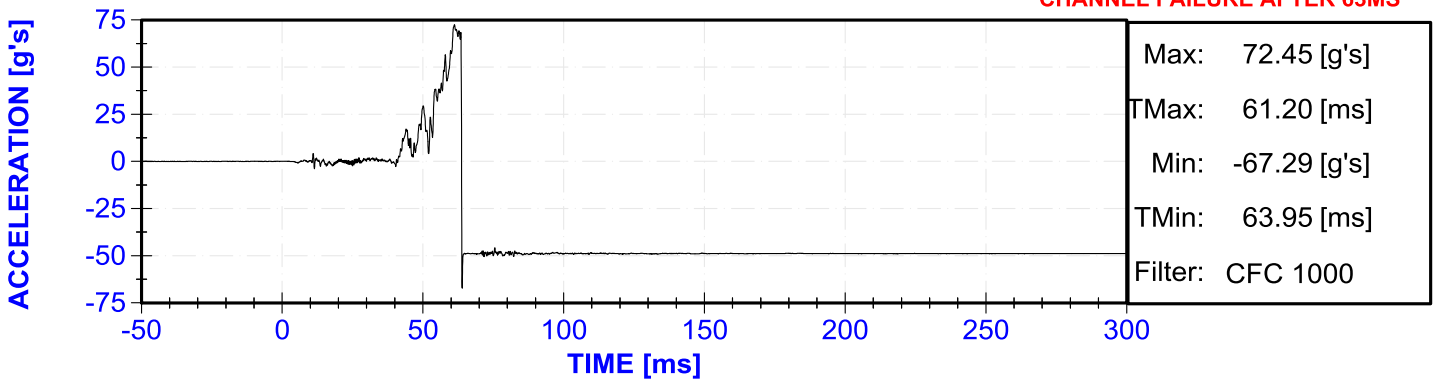


V2P1 Tibia Left X Acceleration

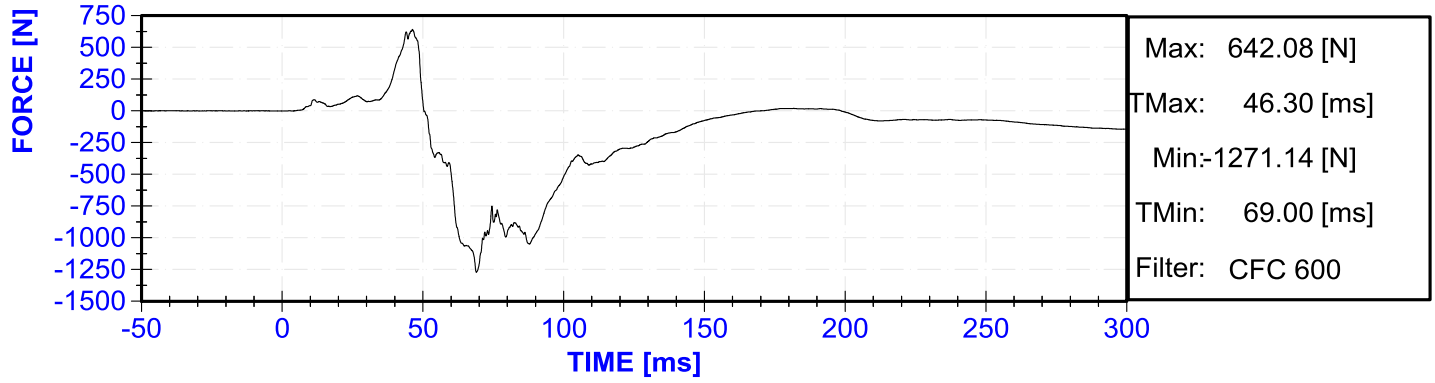


V2P1 Tibia Left Y Acceleration

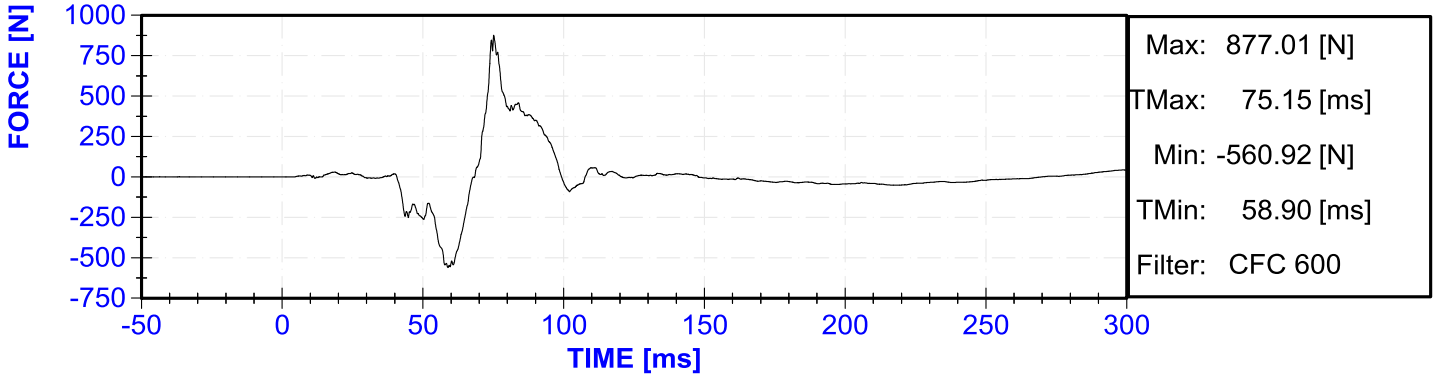
CHANNEL FAILURE AFTER 63MS



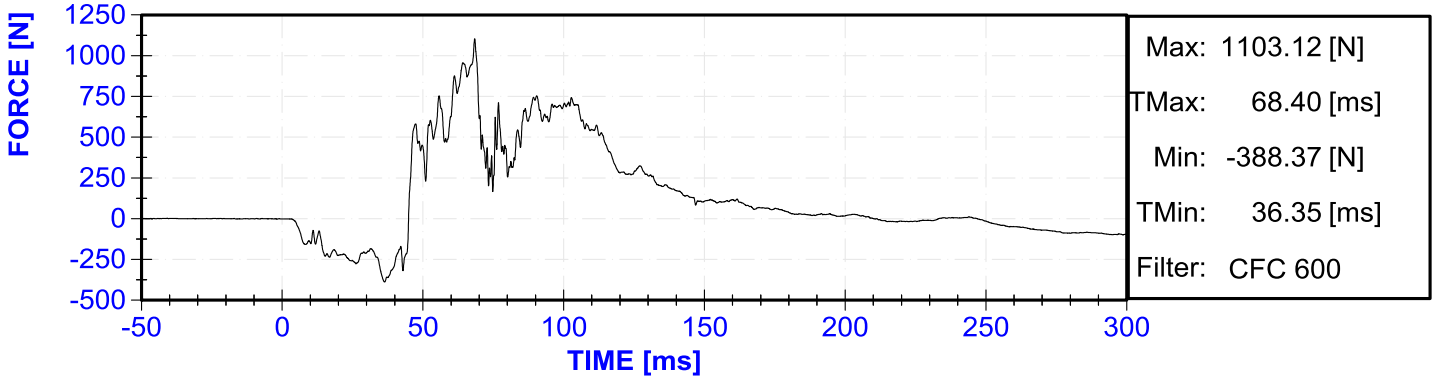
V2P1 Upper Tibia Left X Force



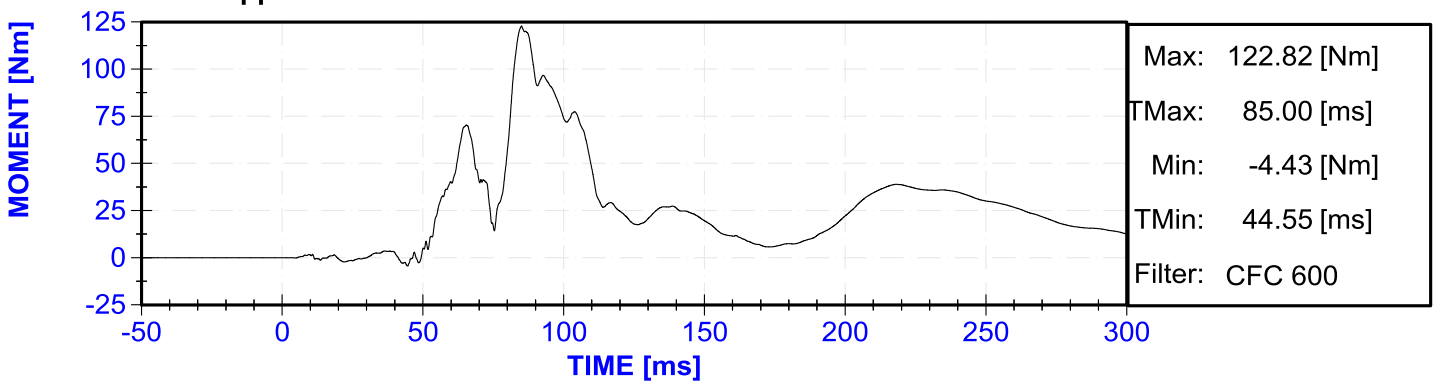
V2P1 Upper Tibia Left Y Force



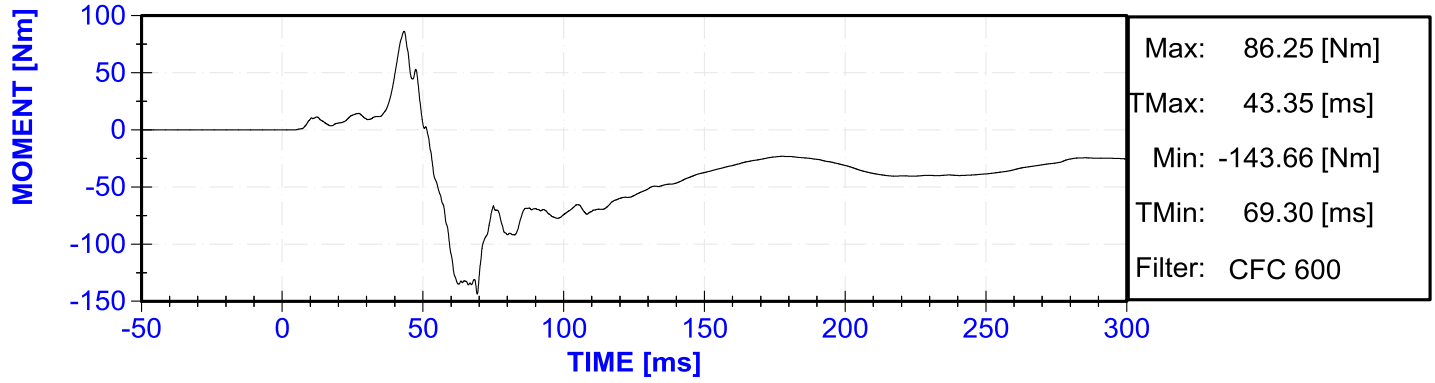
V2P1 Upper Tibia Left Z Force



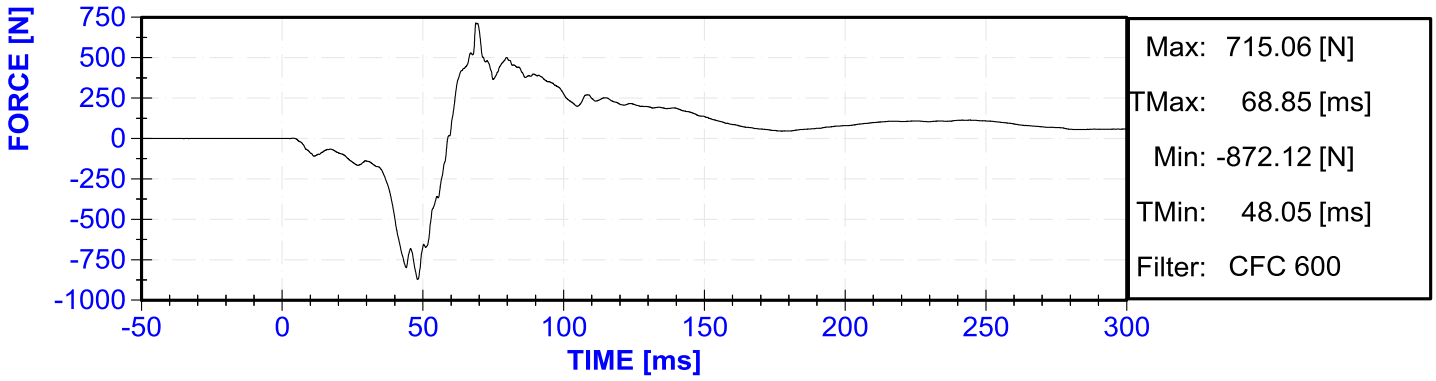
V2P1 Upper Tibia Left X Moment



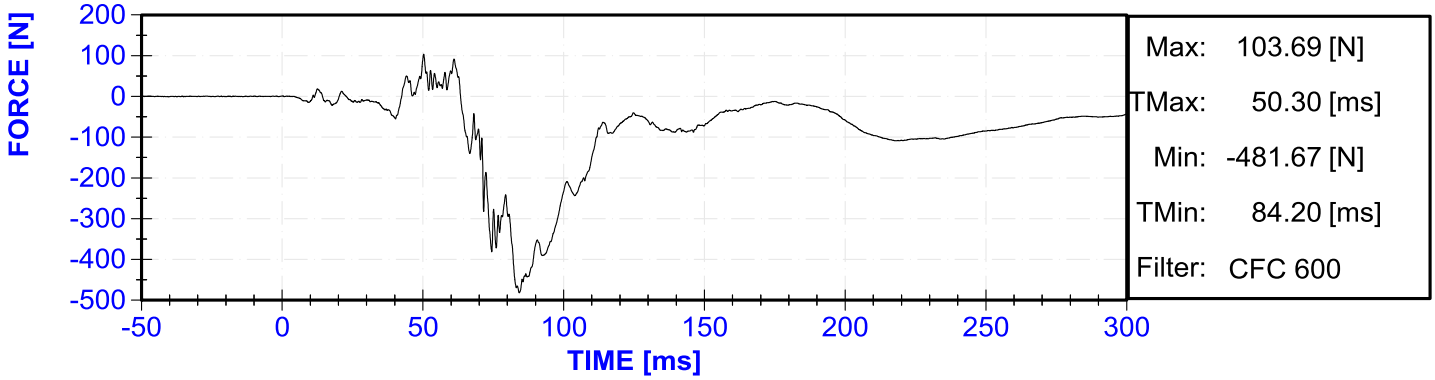
V2P1 Upper Tibia Left Y Moment



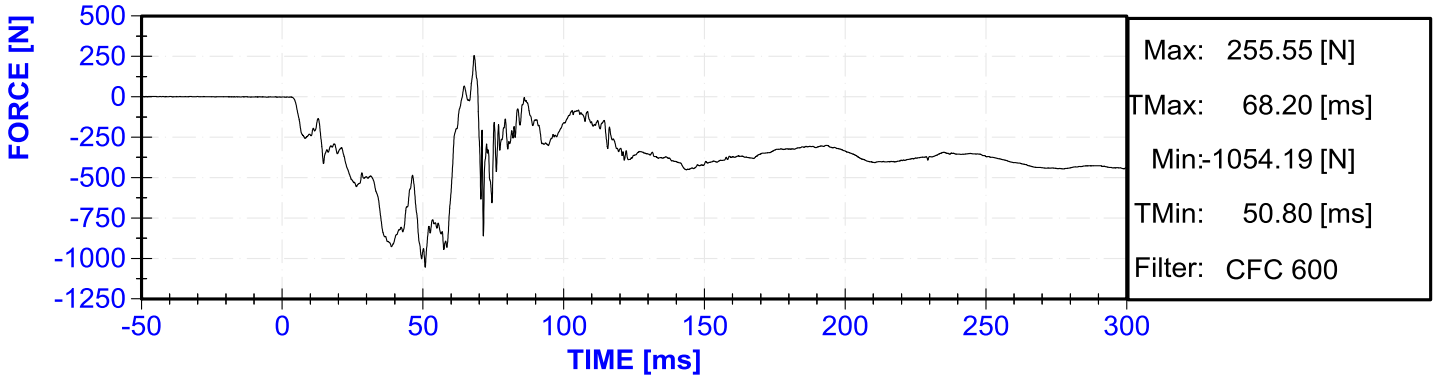
V2P1 Lower Tibia Left X Force



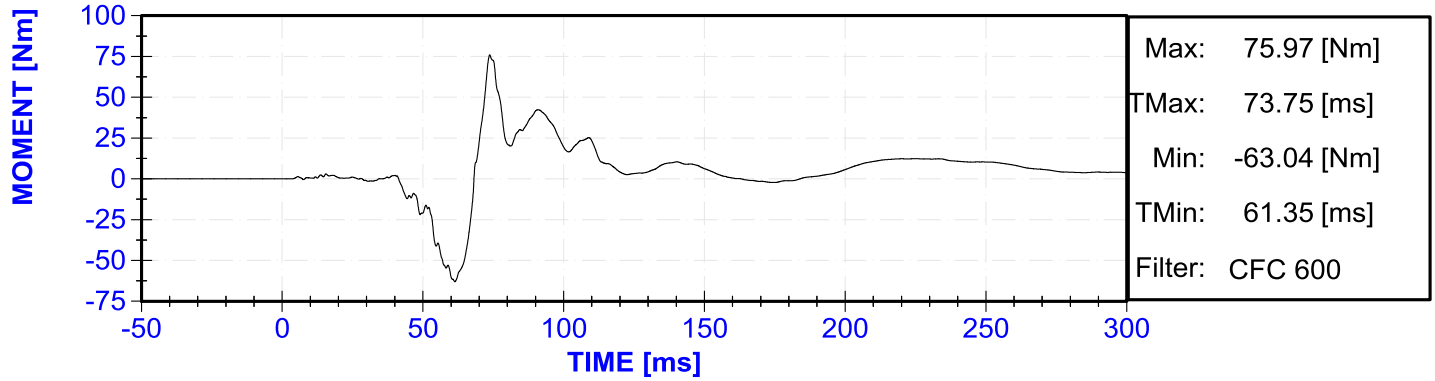
V2P1 Lower Tibia Left Y Force



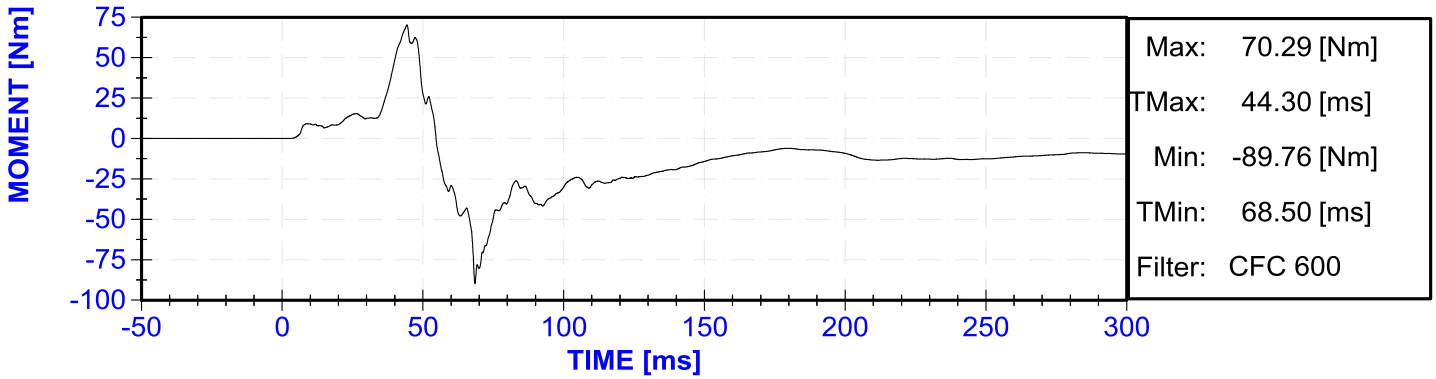
V2P1 Lower Tibia Left Z Force



V2P1 Lower Tibia Left X Moment

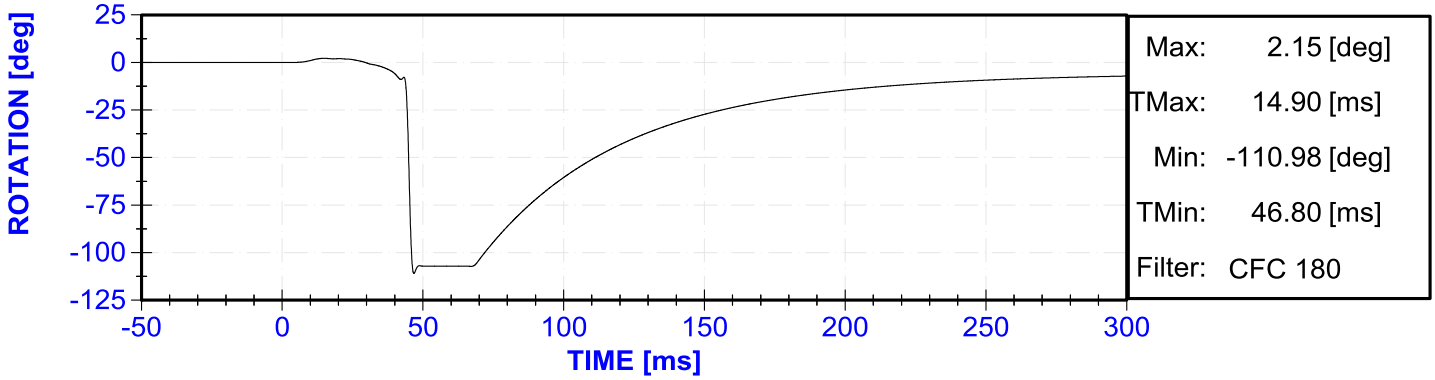


V2P1 Lower Tibia Left Y Moment

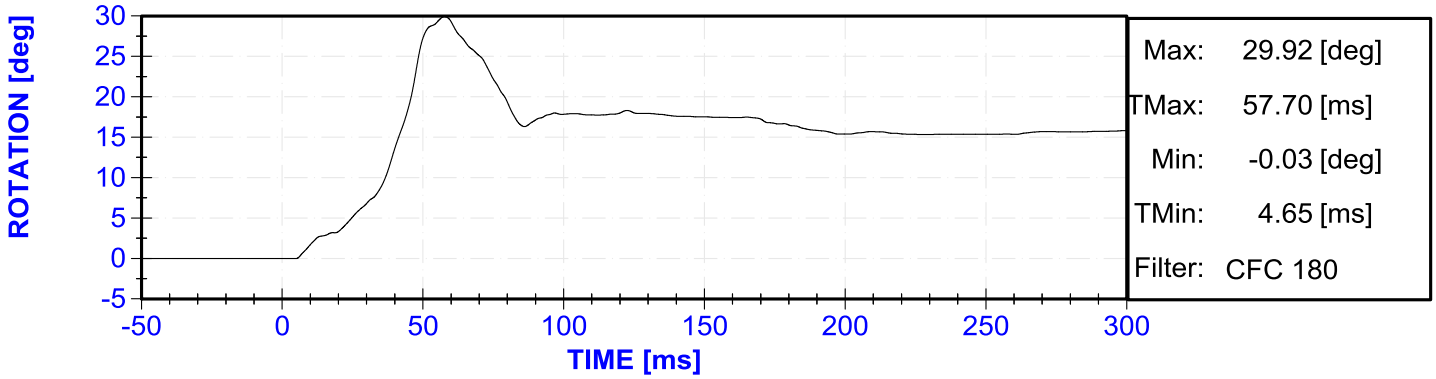


V2P1 Ankle Left X Rotation

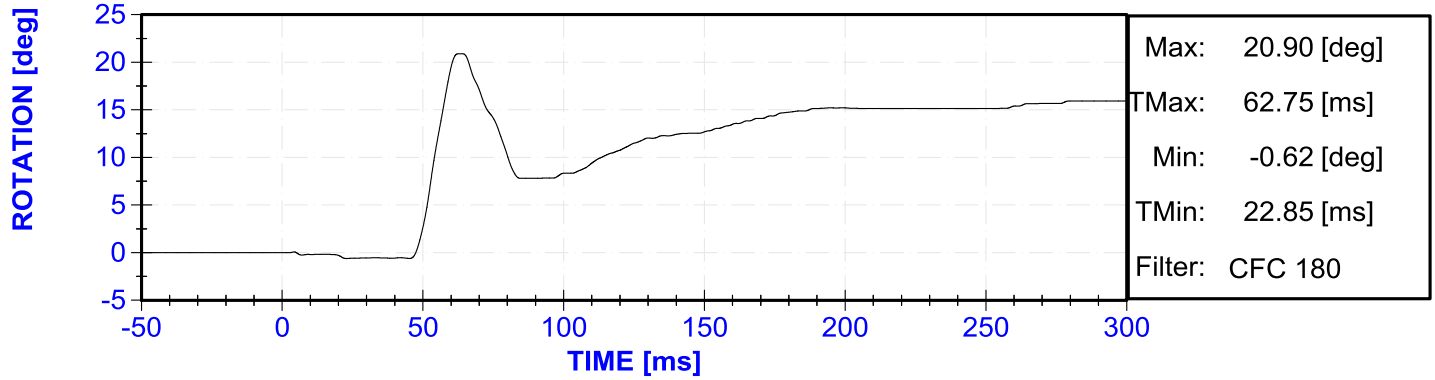
QUESTIONABLE DATA AFTER 40MS



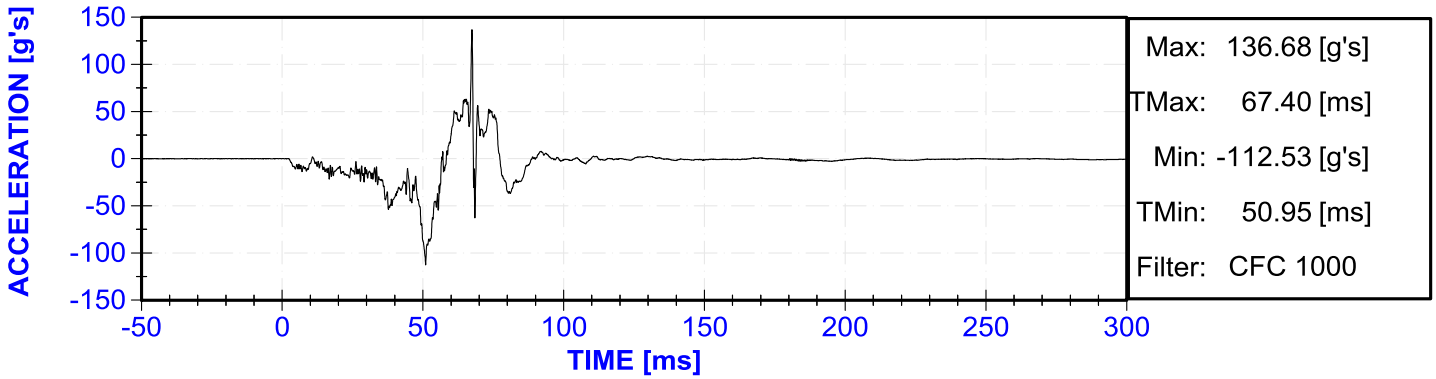
V2P1 Ankle Left Y Rotation



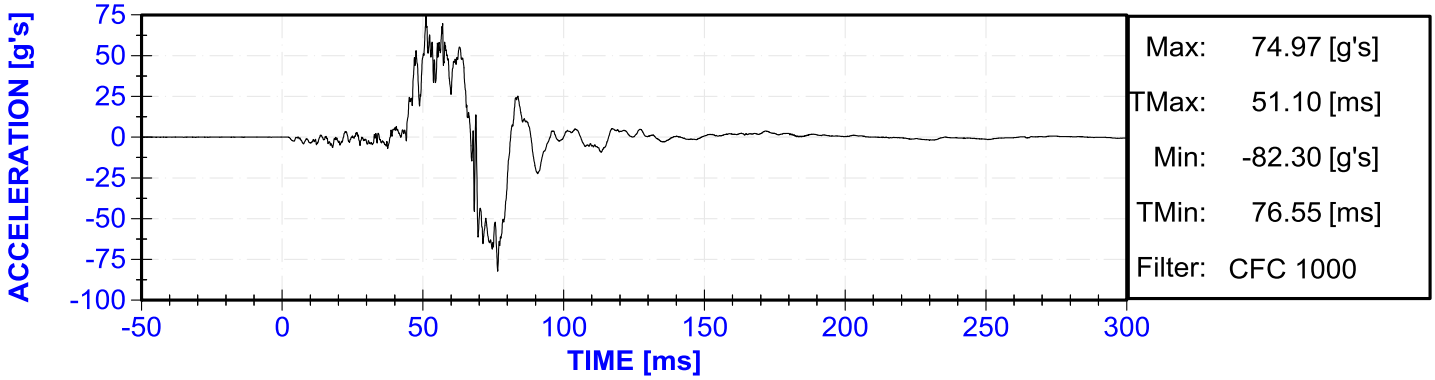
V2P1 Ankle Left Z Rotation



V2P1 Foot Left X Acceleration

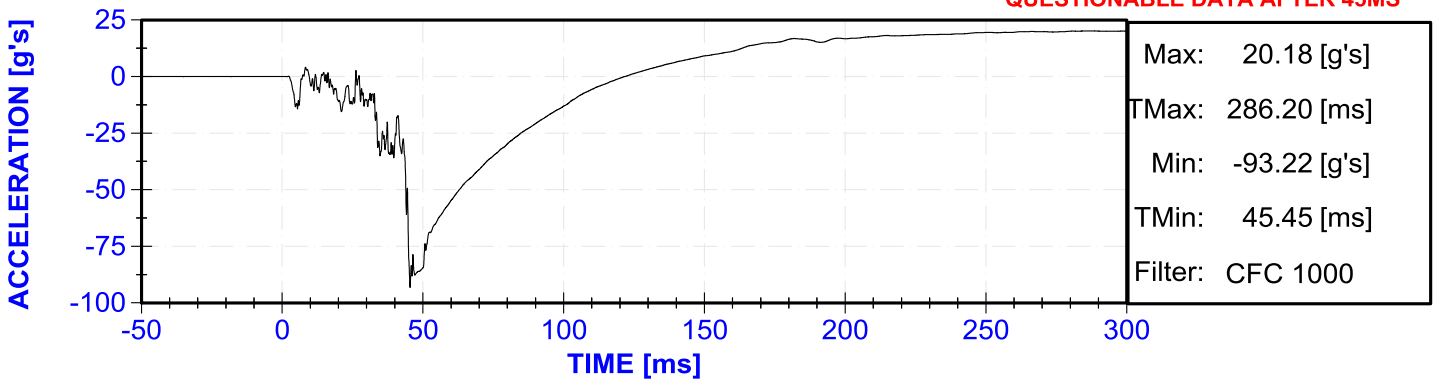


V2P1 Foot Left Y Acceleration

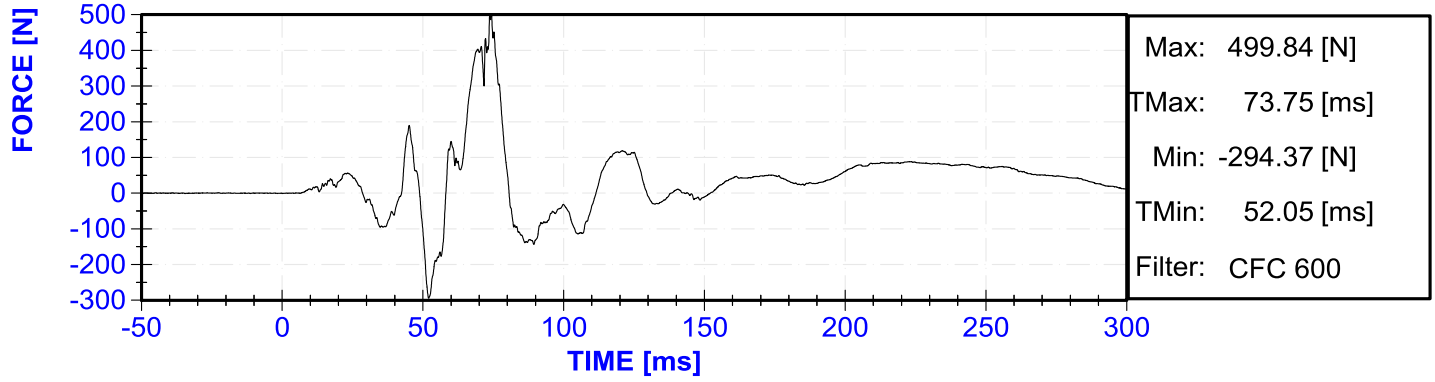


V2P1 Foot Left Z Acceleration

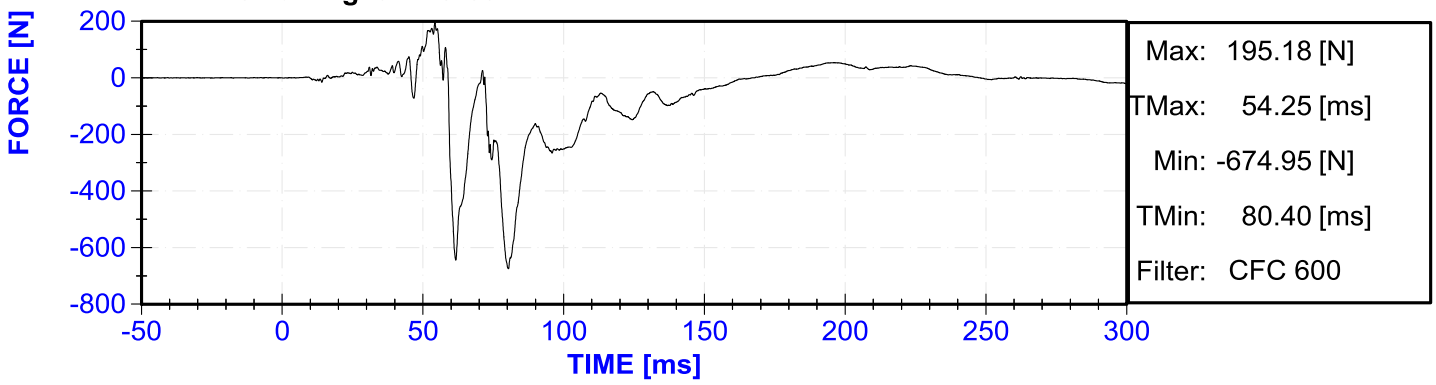
QUESTIONABLE DATA AFTER 45MS



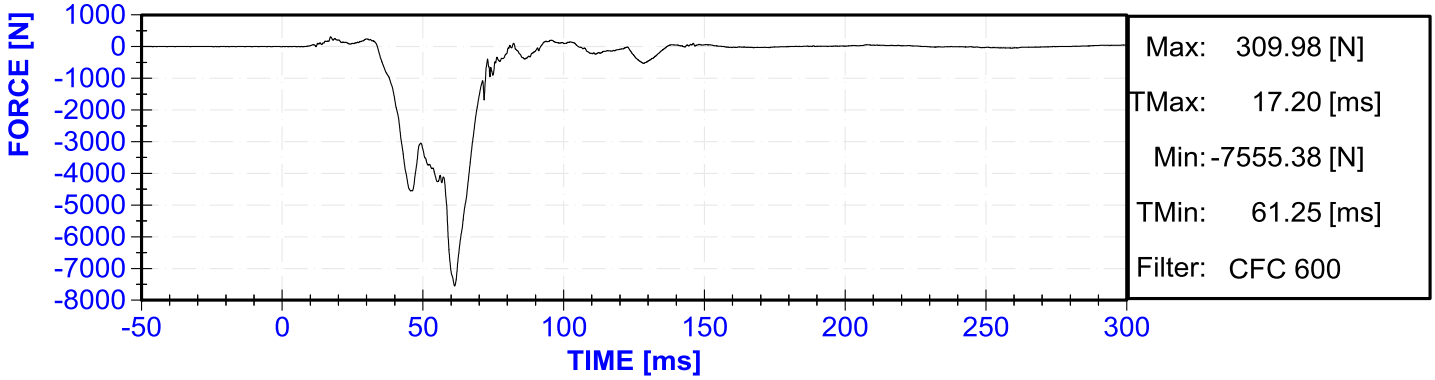
V2P1 Femur Right X Force



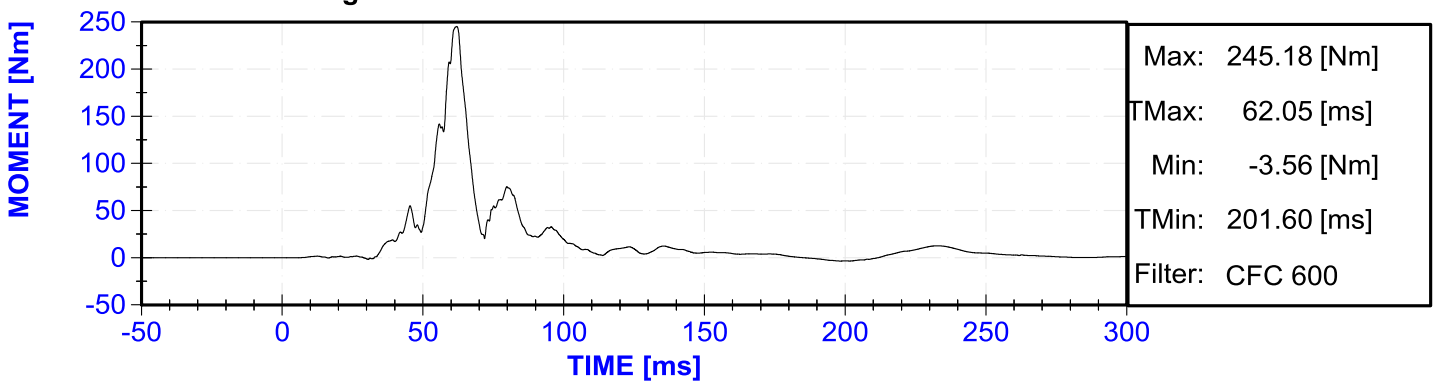
V2P1 Femur Right Y Force



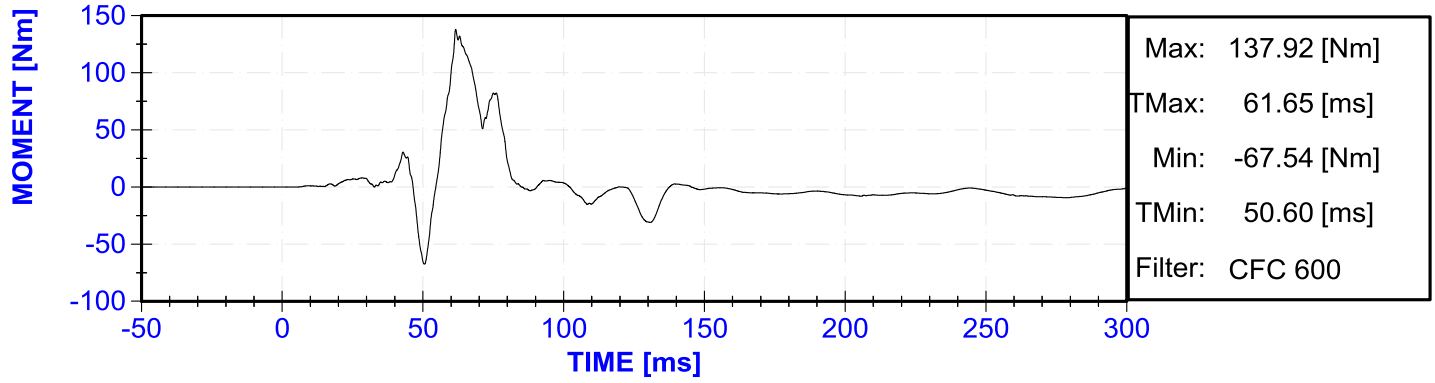
V2P1 Femur Right Z Force



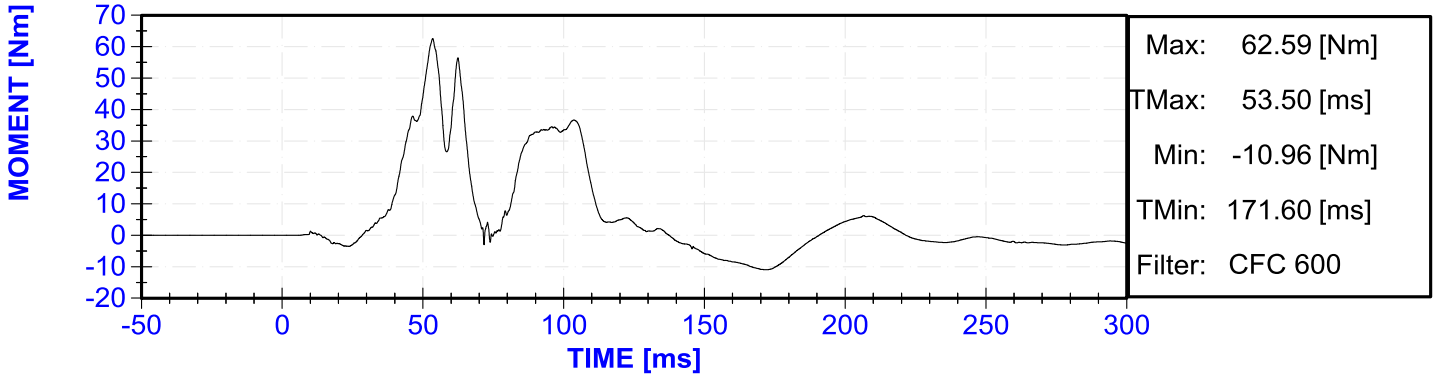
V2P1 Femur Right X Moment



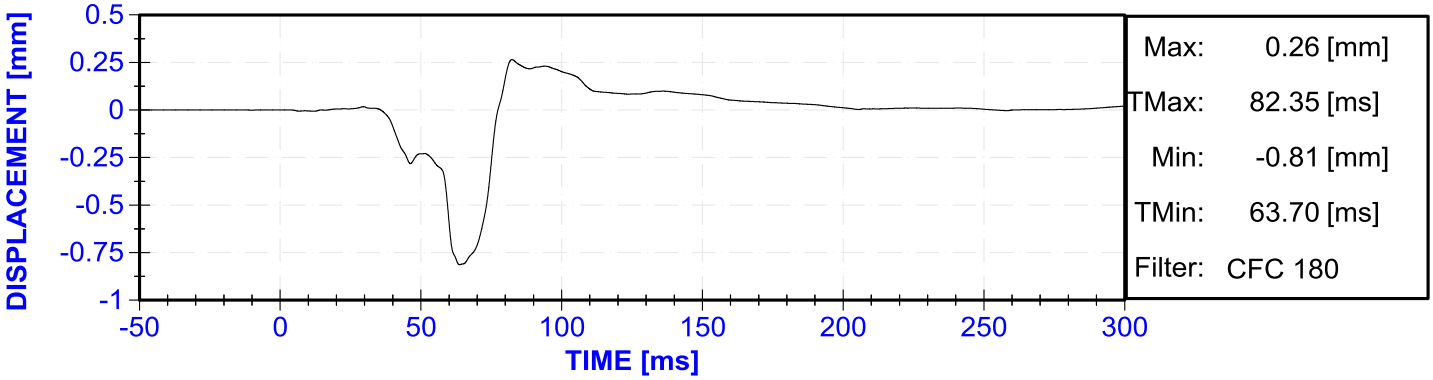
V2P1 Femur Right Y Moment



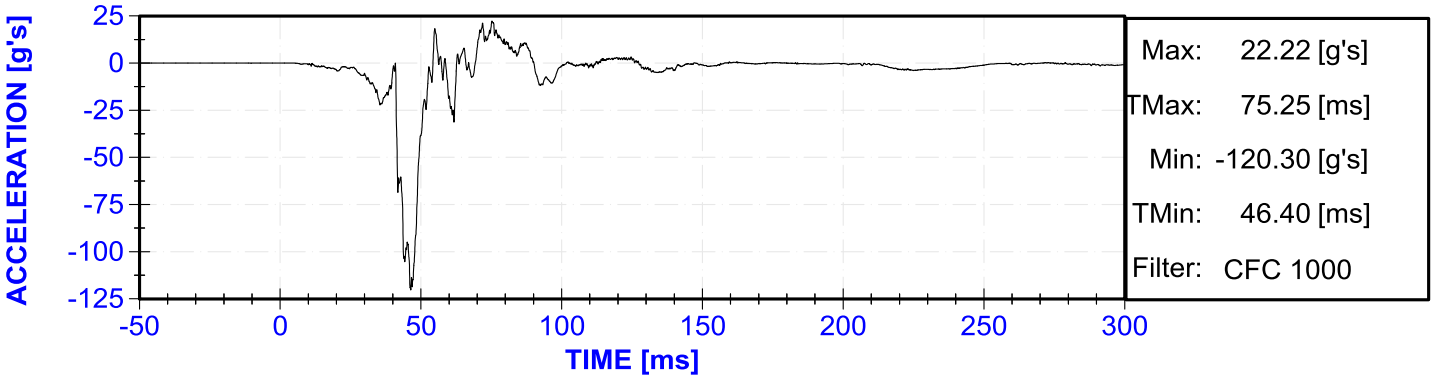
V2P1 Femur Right Z Moment



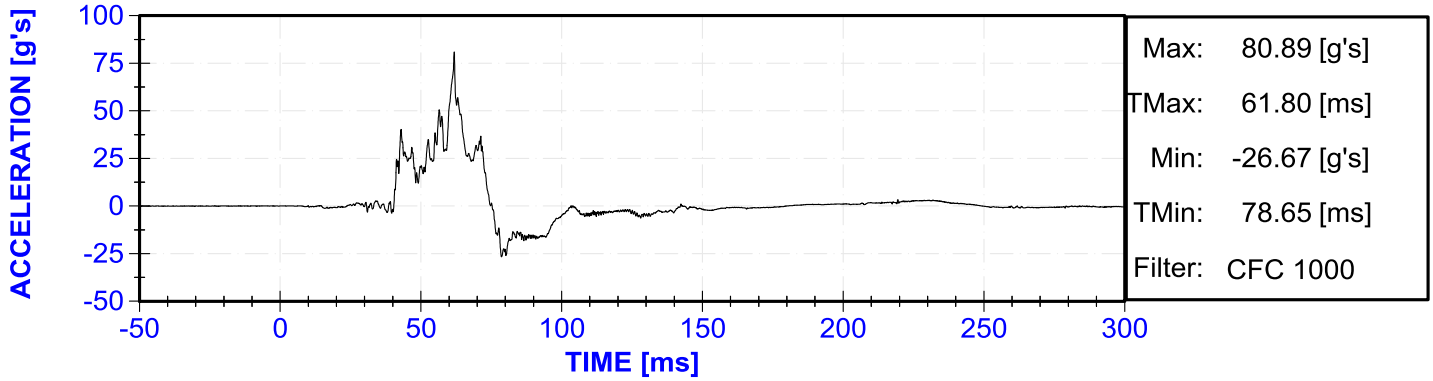
V2P1 Knee Right X Displacement



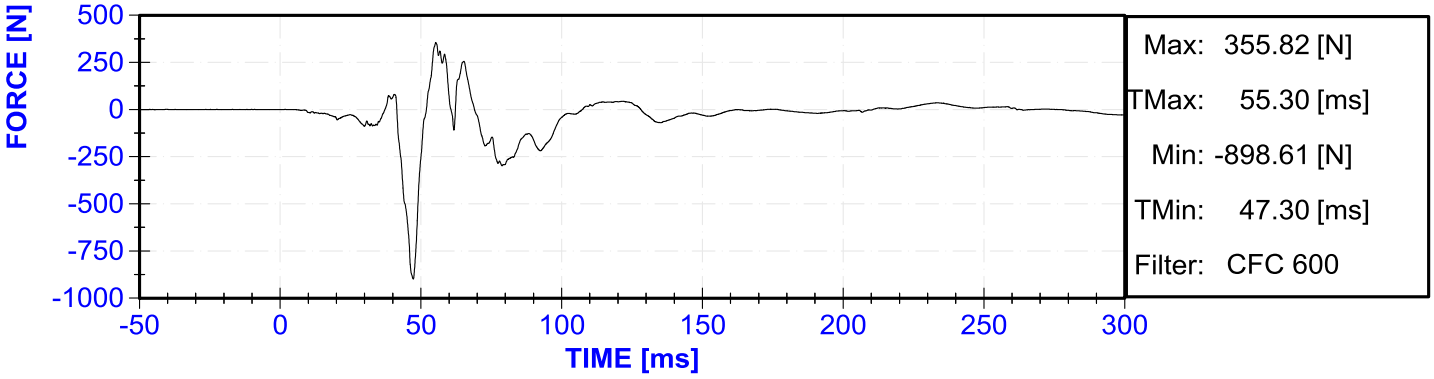
V2P1 Tibia Right X Acceleration



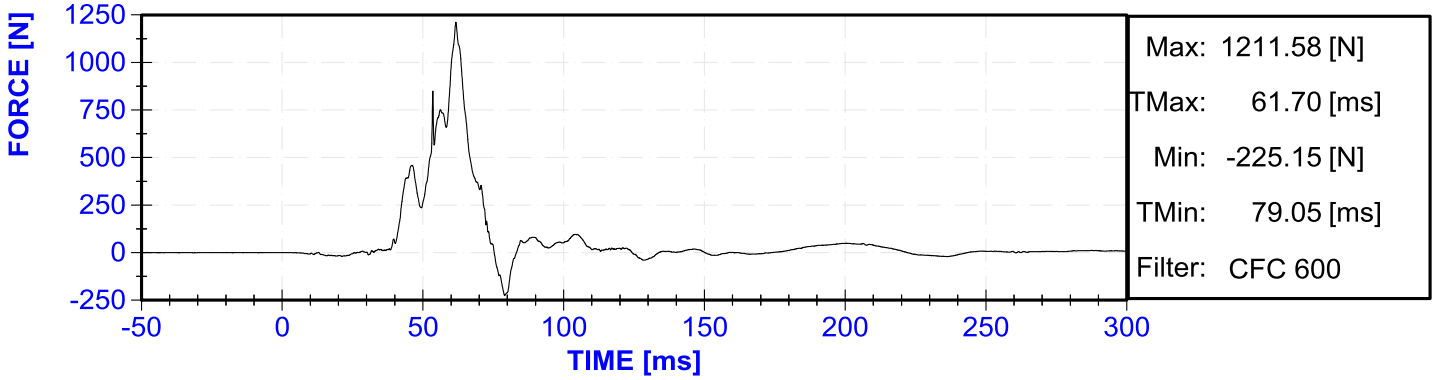
V2P1 Tibia Right Y Acceleration



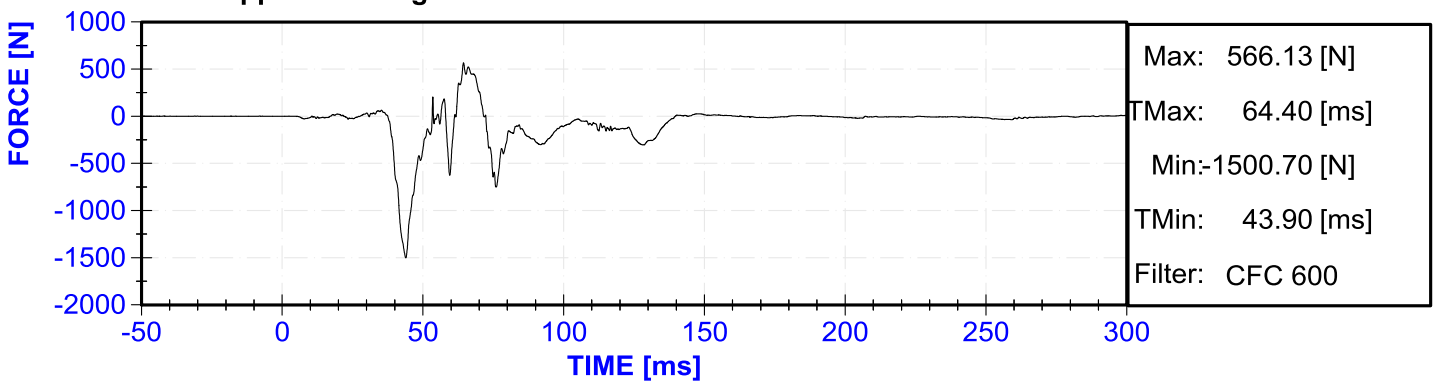
V2P1 Upper Tibia Right X Force



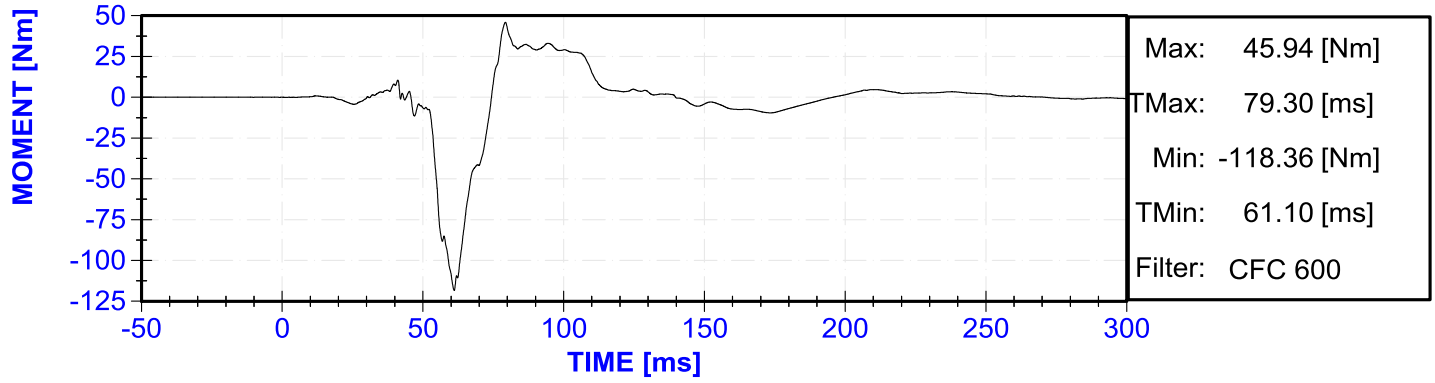
V2P1 Upper Tibia Right Y Force



V2P1 Upper Tibia Right Z Force

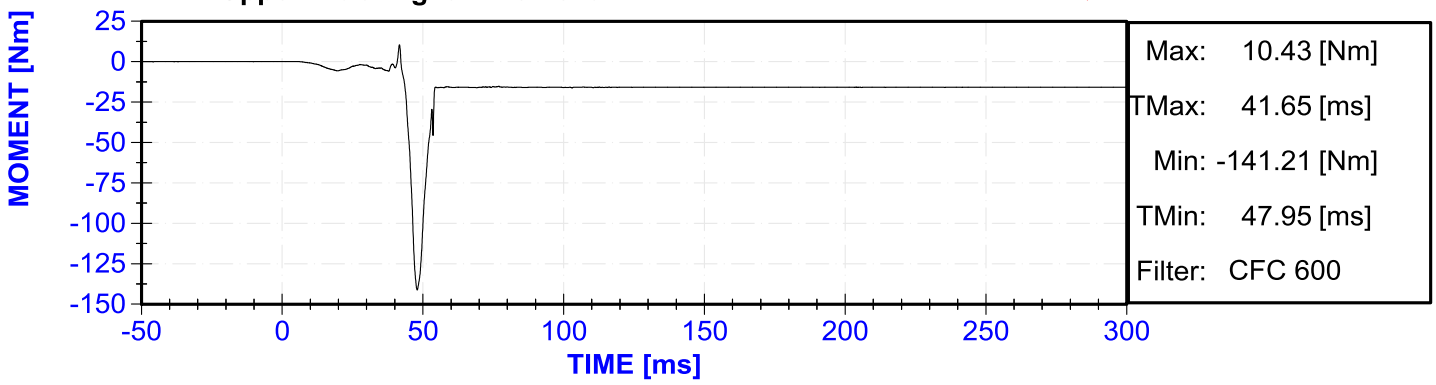


V2P1 Upper Tibia Right X Moment

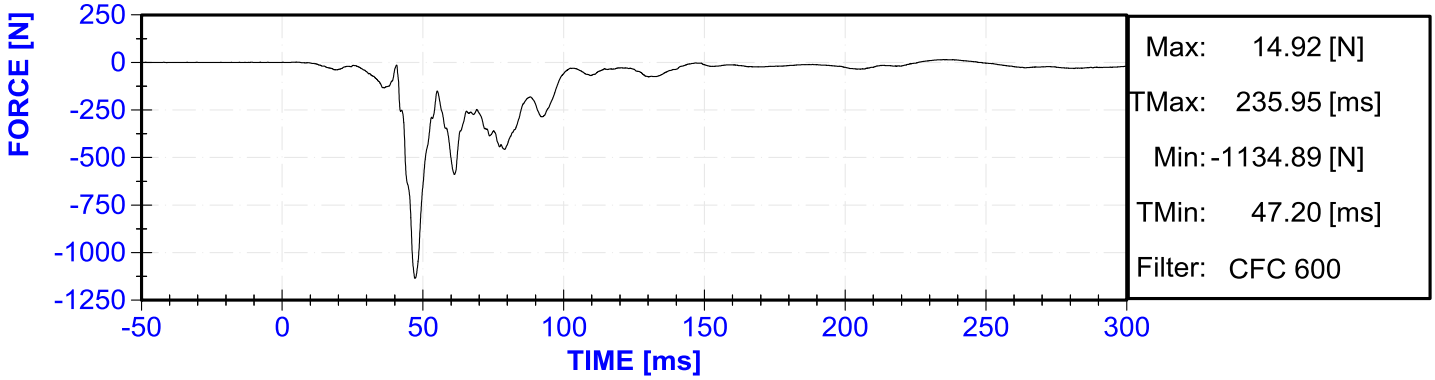


V2P1 Upper Tibia Right Y Moment

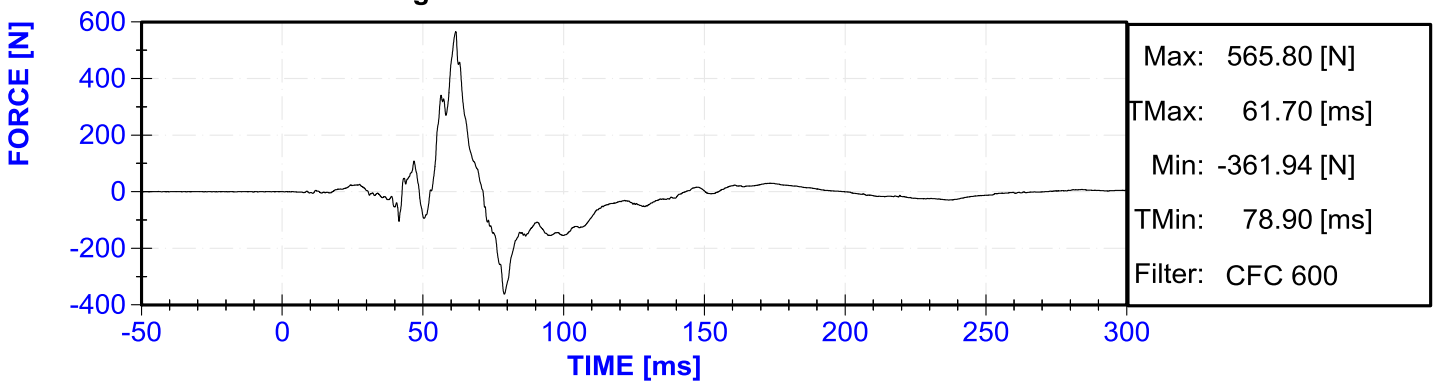
QUESTIONABLE AFTER 53 MS



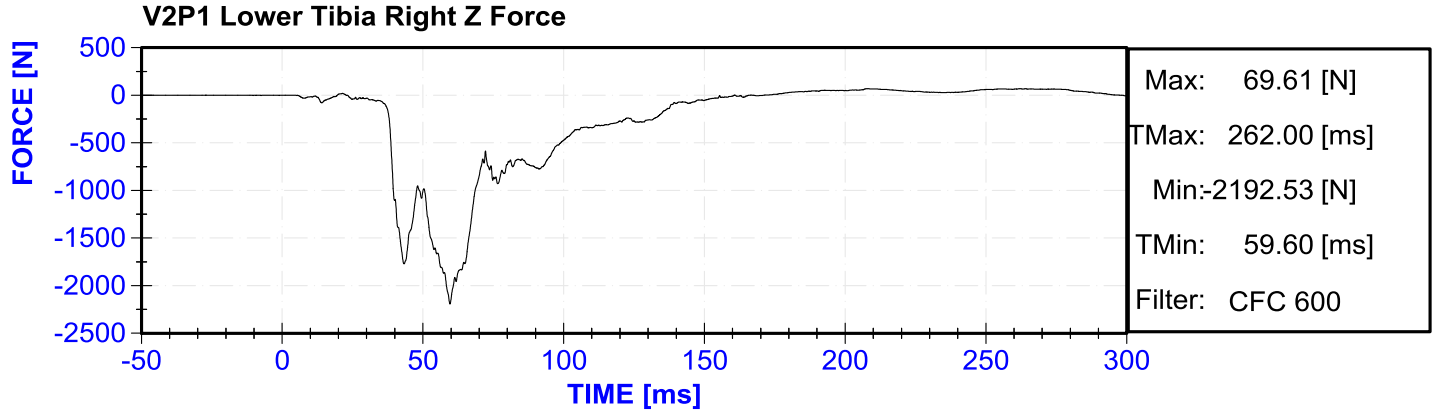
V2P1 Lower Tibia Right X Force



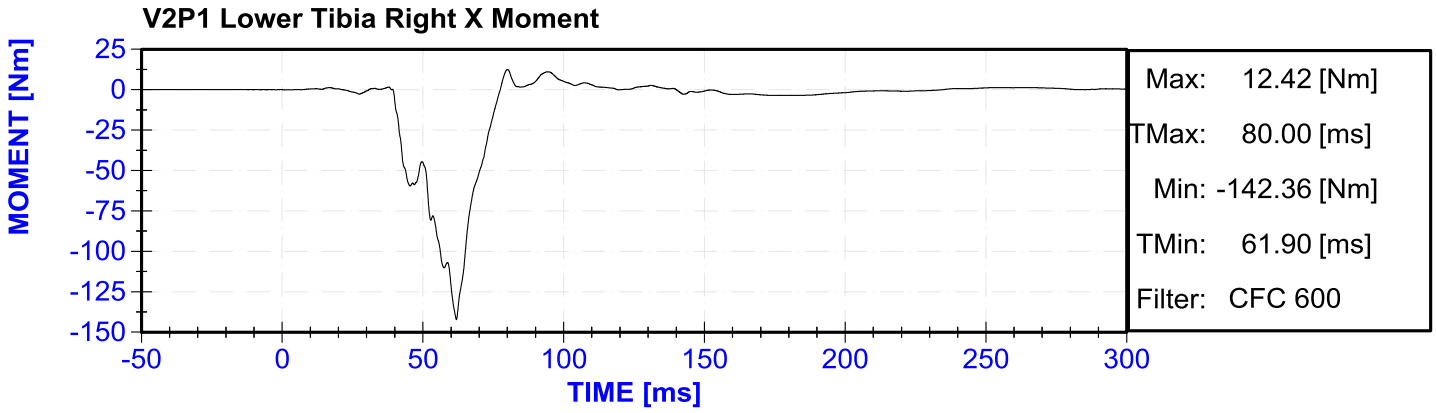
V2P1 Lower Tibia Right Y Force



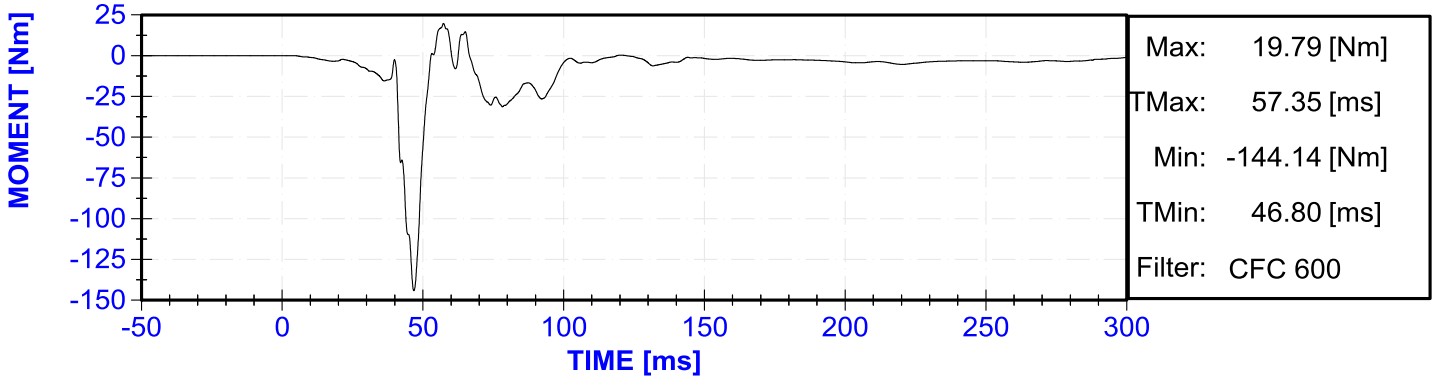
V2P1 Lower Tibia Right Z Force



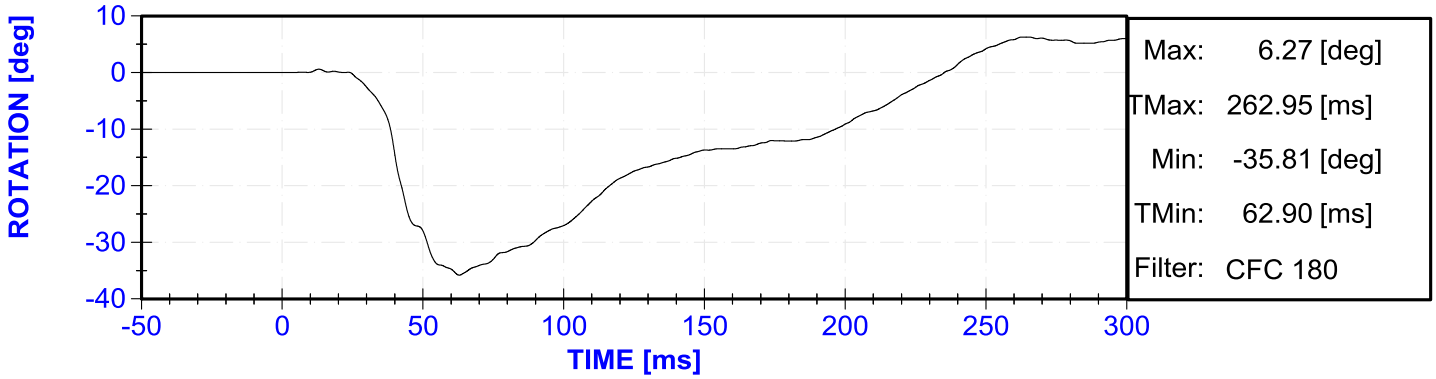
V2P1 Lower Tibia Right X Moment



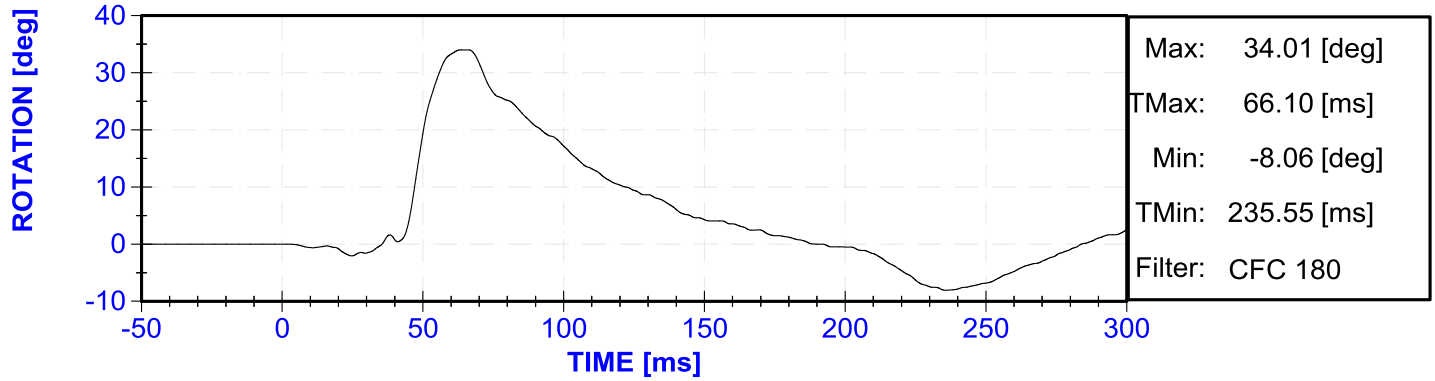
V2P1 Lower Tibia Right Y Moment



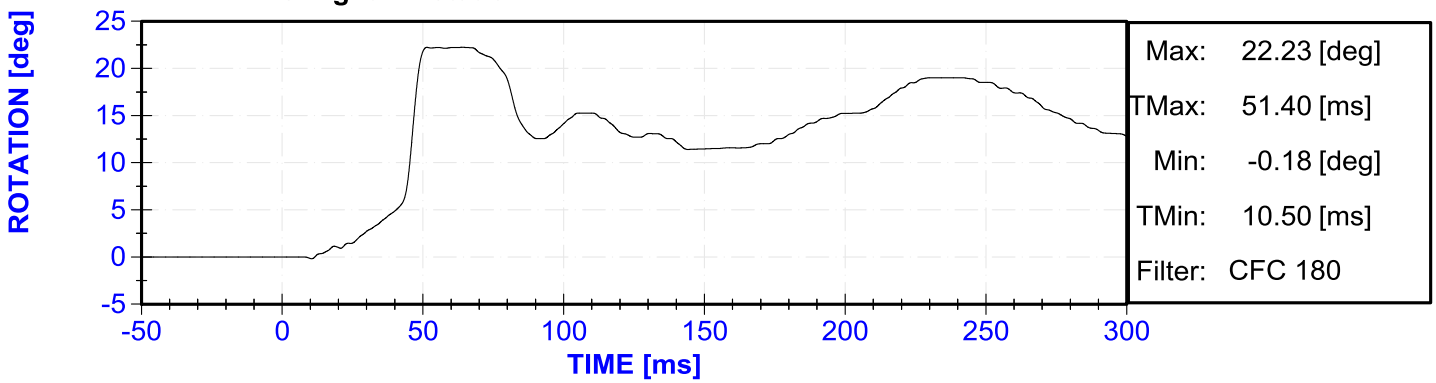
V2P1 Ankle Right X Rotation



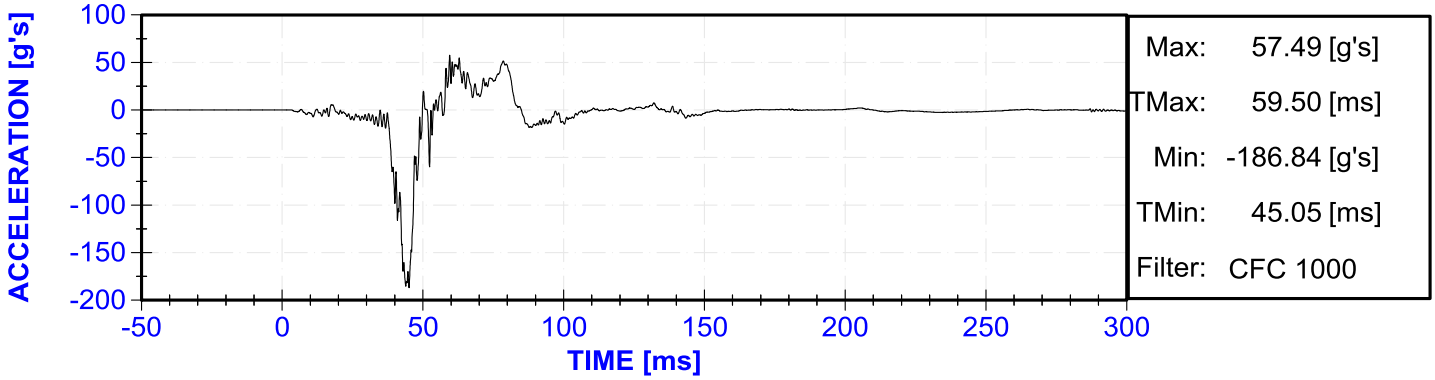
V2P1 Ankle Right Y Rotation



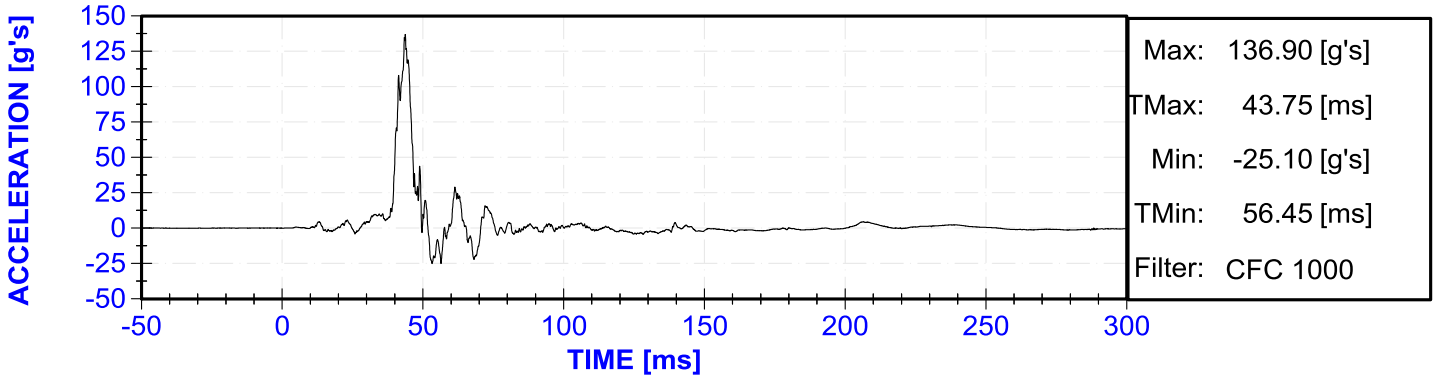
V2P1 Ankle Right Z Rotation



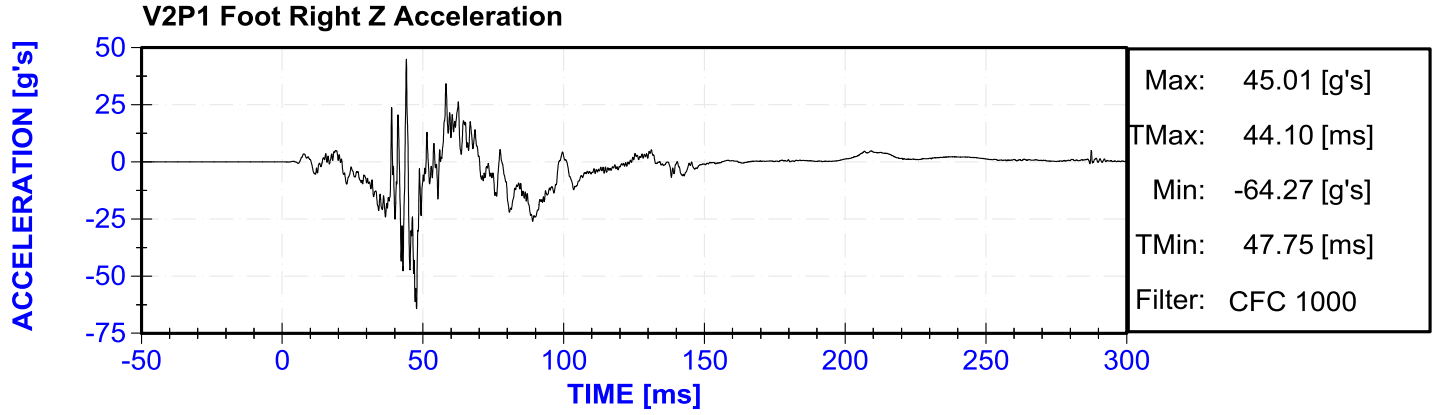
V2P1 Foot Right X Acceleration



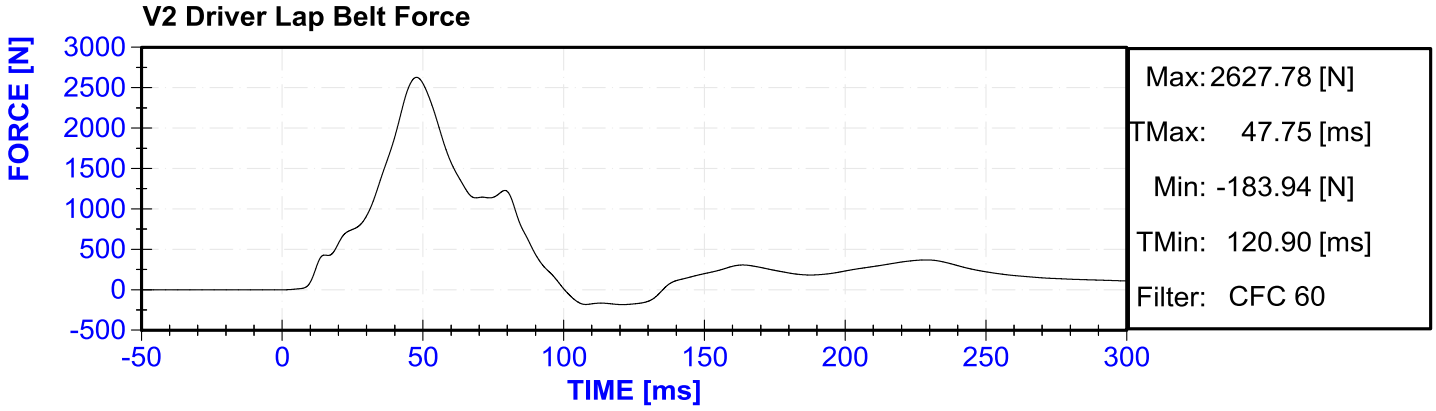
V2P1 Foot Right Y Acceleration



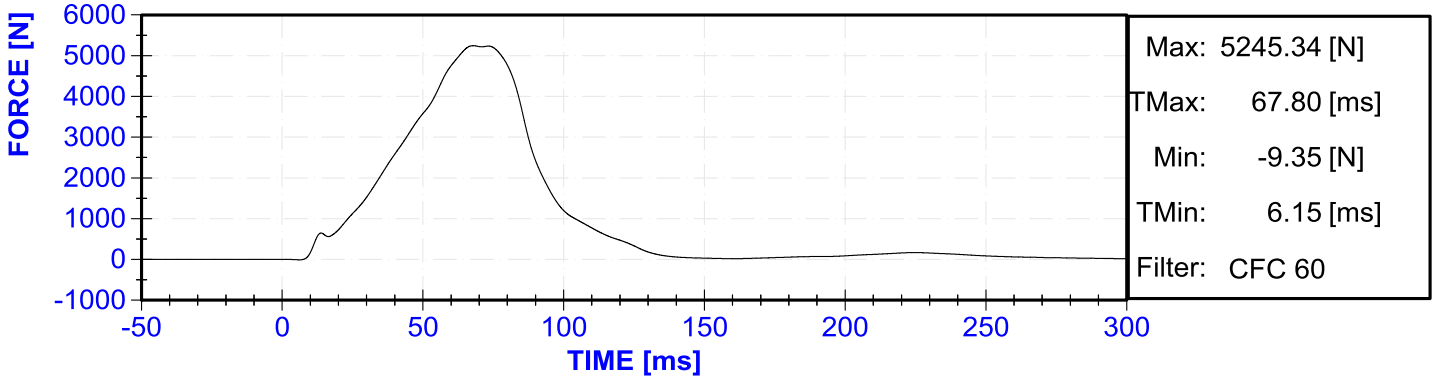
V2P1 Foot Right Z Acceleration



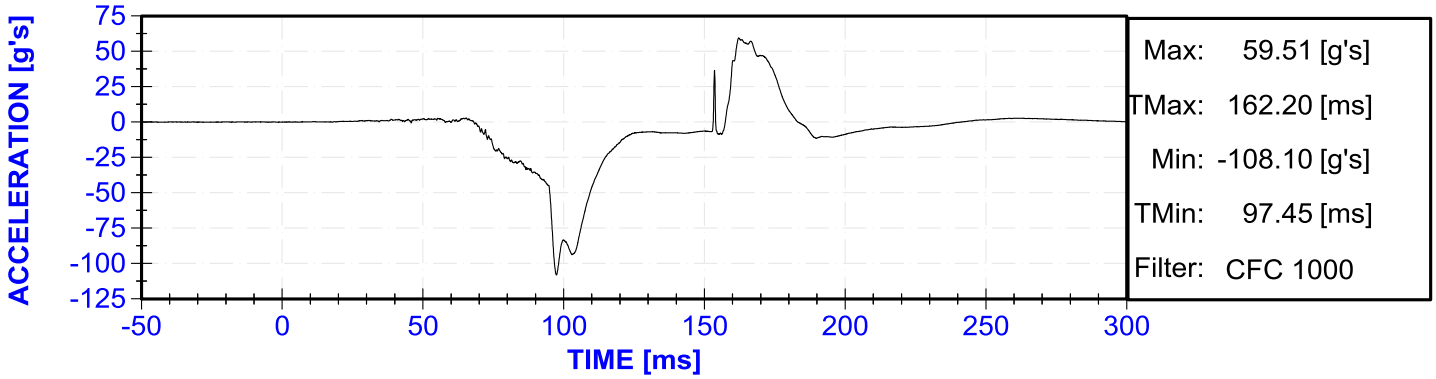
V2 Driver Lap Belt Force



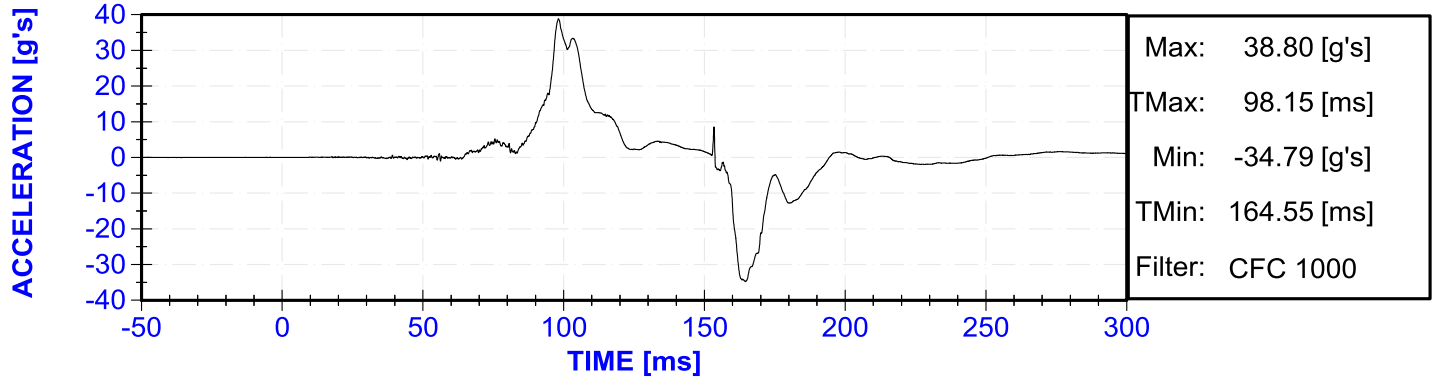
V2 Driver Shoulder Belt Upper Force



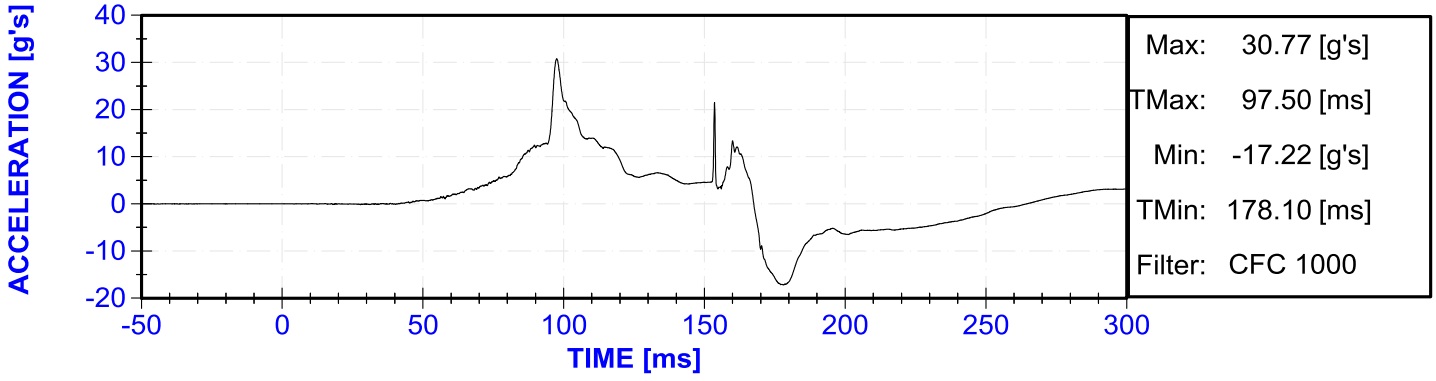
V2P4 HEAD 9 ARRAY Z ARM X



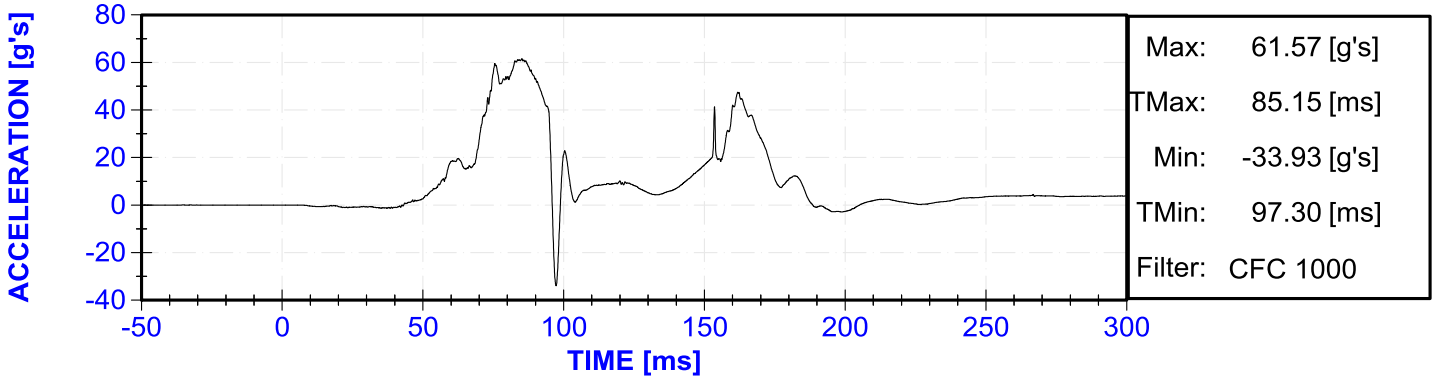
V2P4 HEAD 9 ARRAY Z ARM Y



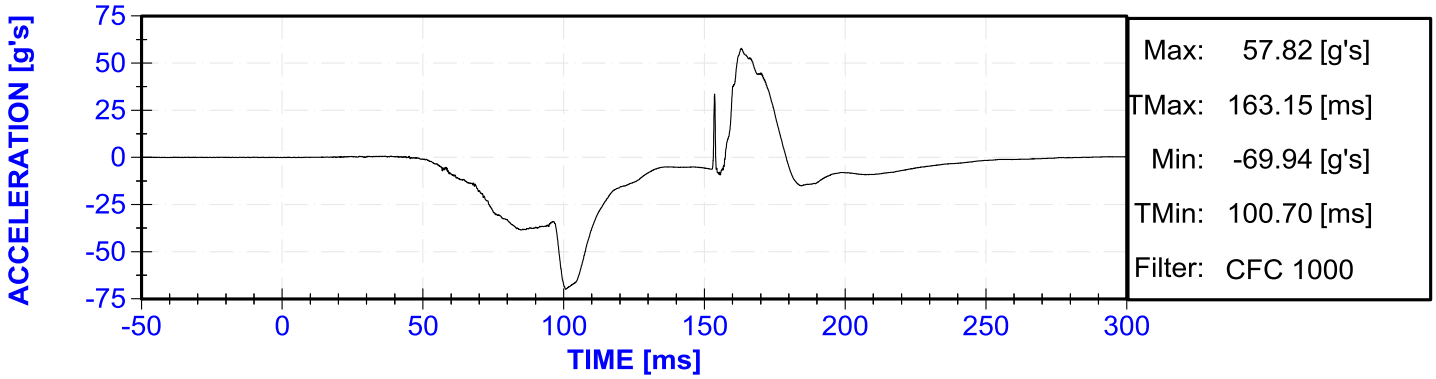
V2P4 HEAD 9 ARRAY X ARM Y



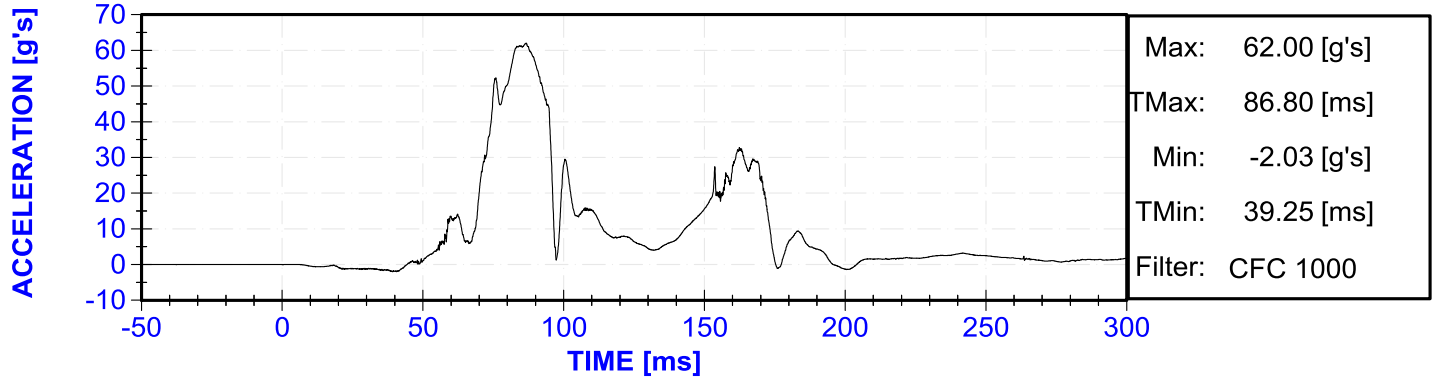
V2P4 HEAD 9 ARRAY X ARM Z



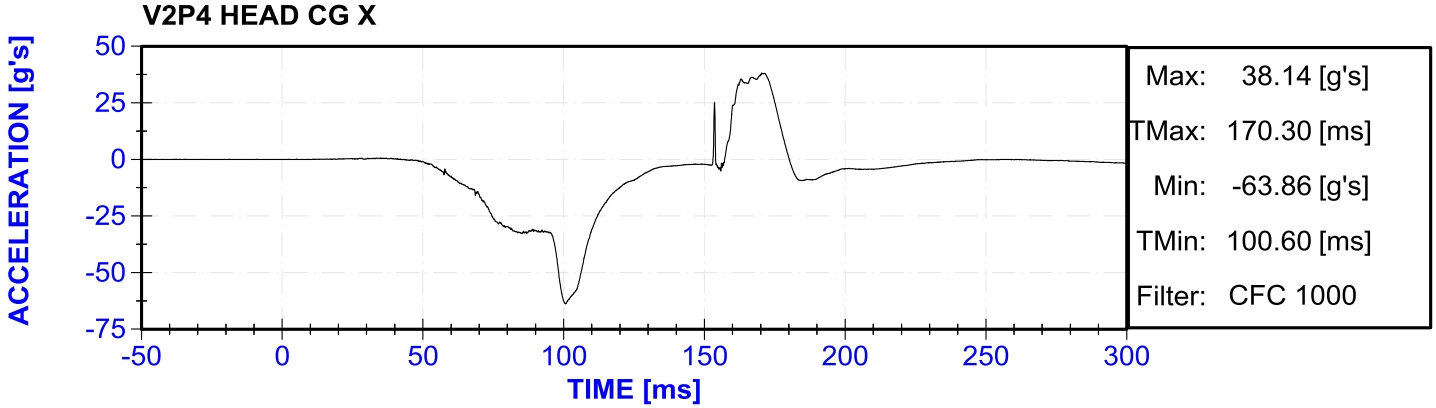
V2P4 HEAD 9 ARRAY Y ARM X



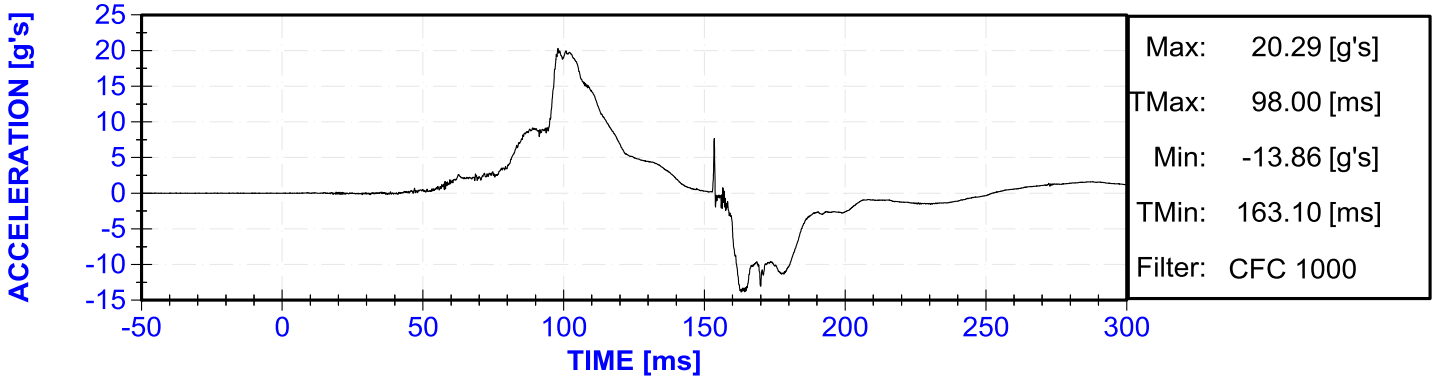
V2P4 HEAD 9 ARRAY Y ARM Z



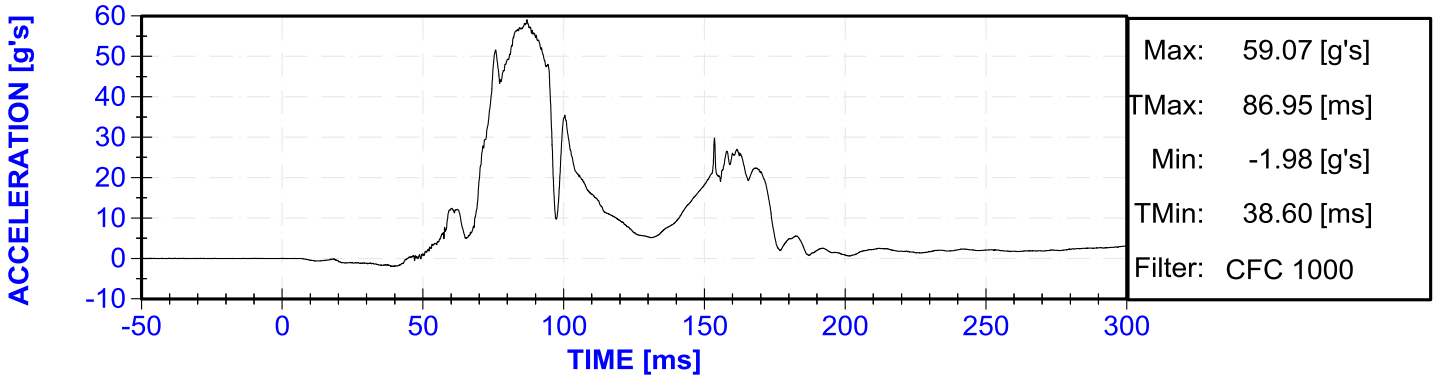
V2P4 HEAD CG X



V2P4 HEAD CG Y

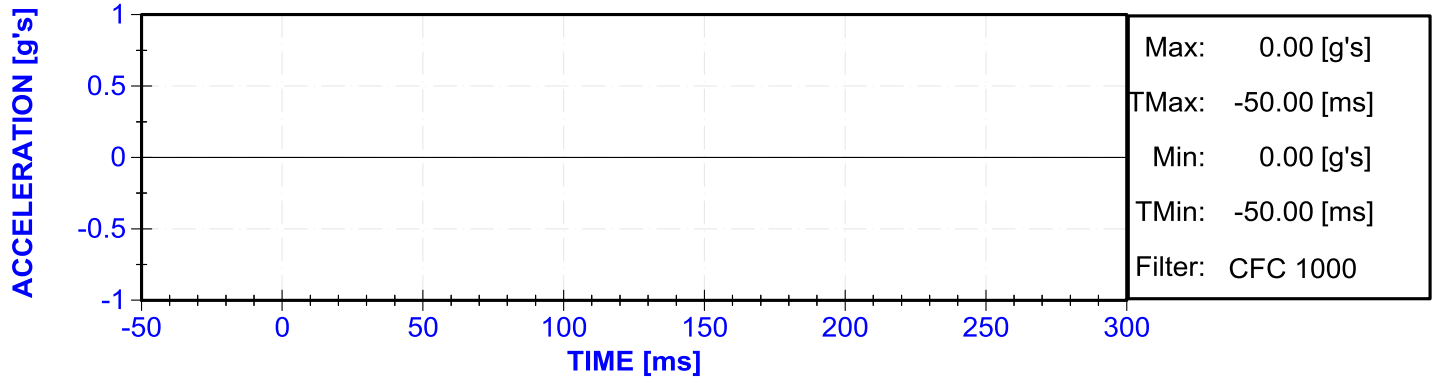


V2P4 HEAD CG Z

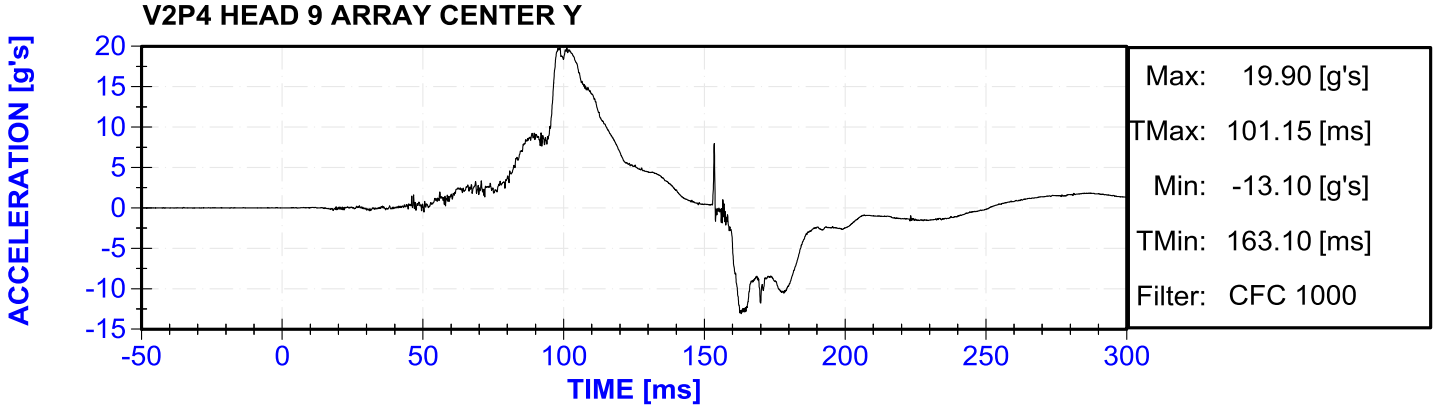


V2P4 HEAD 9 ARRAY CENTER X

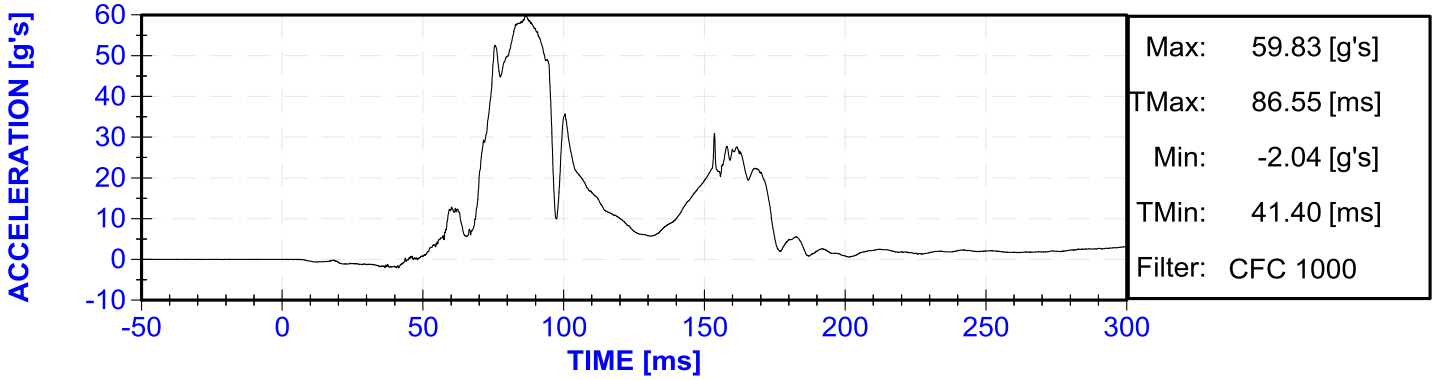
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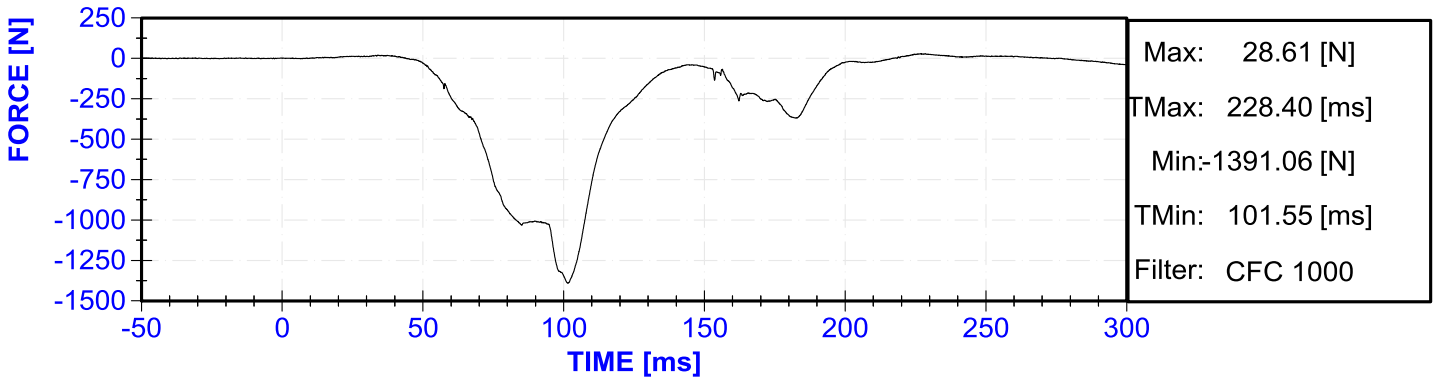
V2P4 HEAD 9 ARRAY CENTER Y



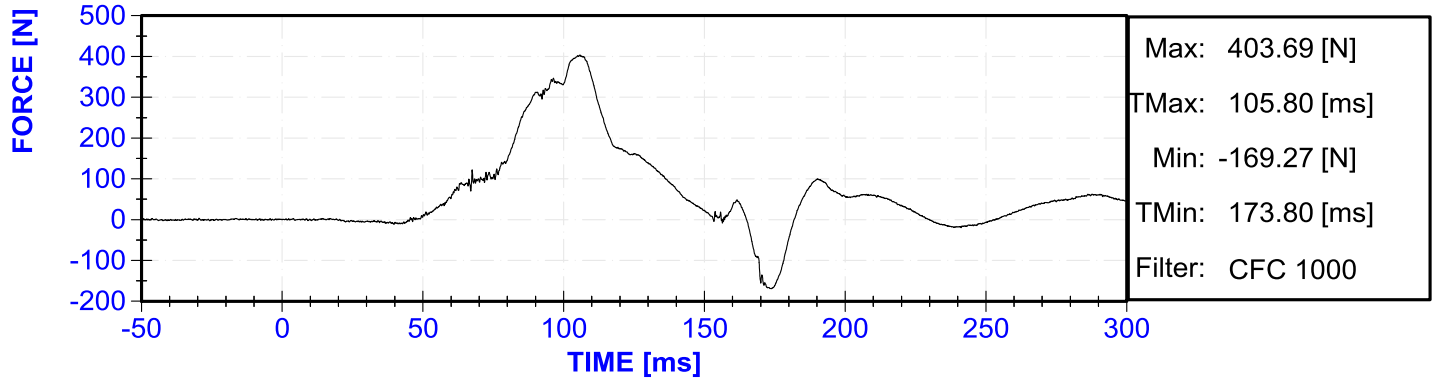
V2P4 HEAD 9 ARRAY CENTER Z



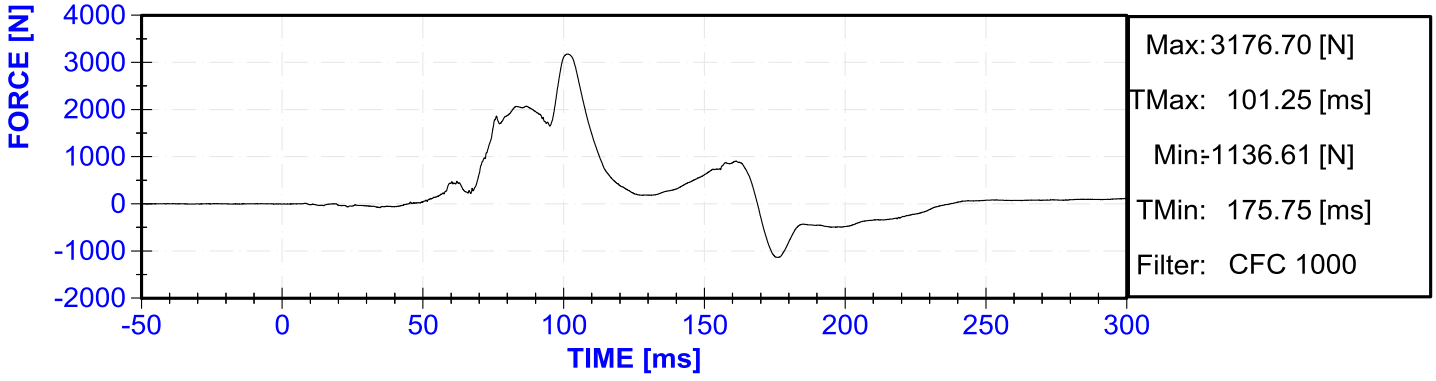
V2P4 UPPER NECK FX



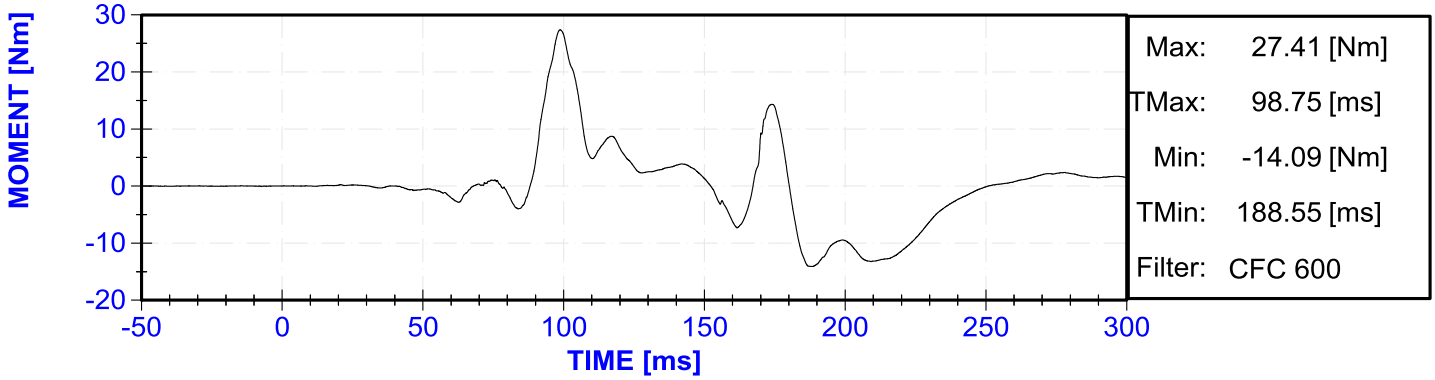
V2P4 UPPER NECK FY



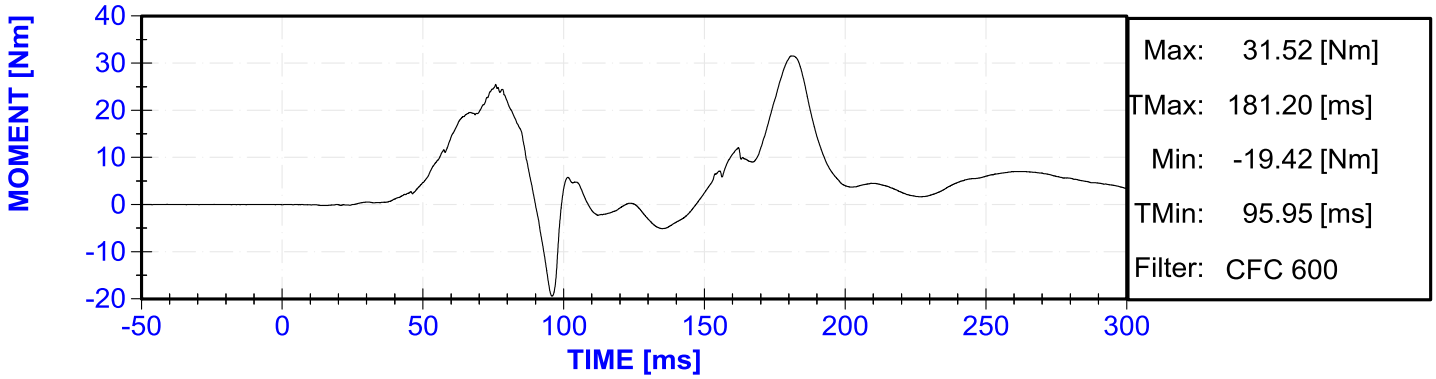
V2P4 UPPER NECK FZ



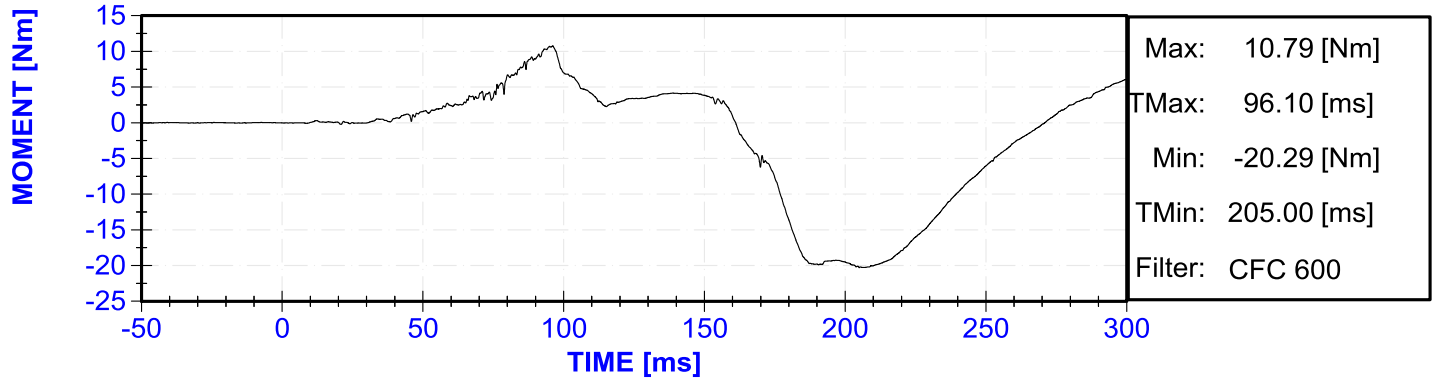
V2P4 UPPER NECK MX



V2P4 UPPER NECK MY

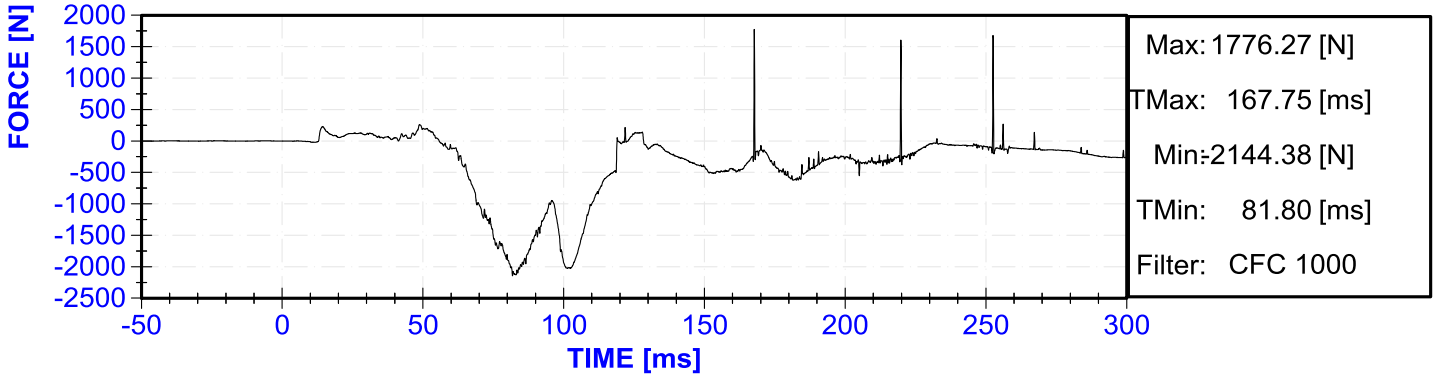


V2P4 UPPER NECK MZ

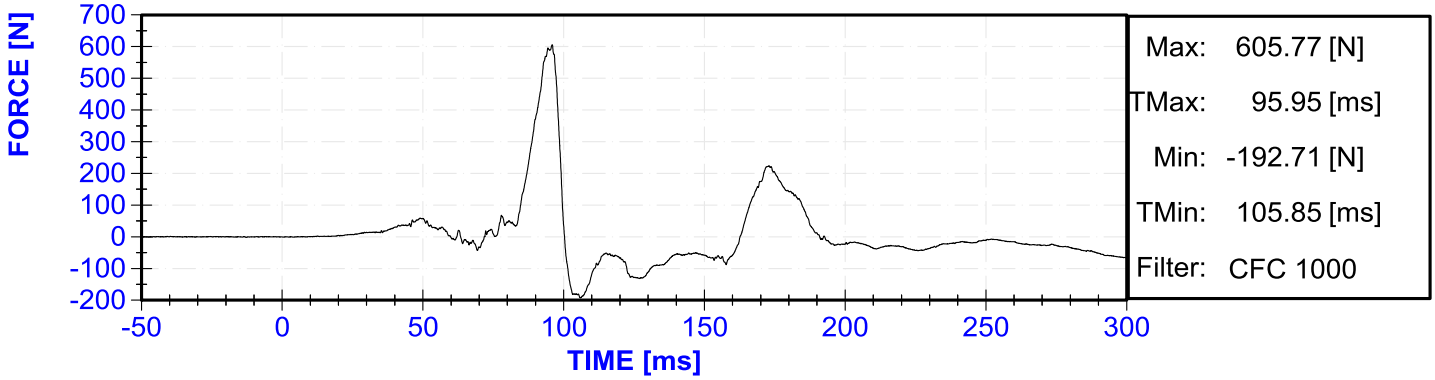


V2P4 LOWER NECK FX

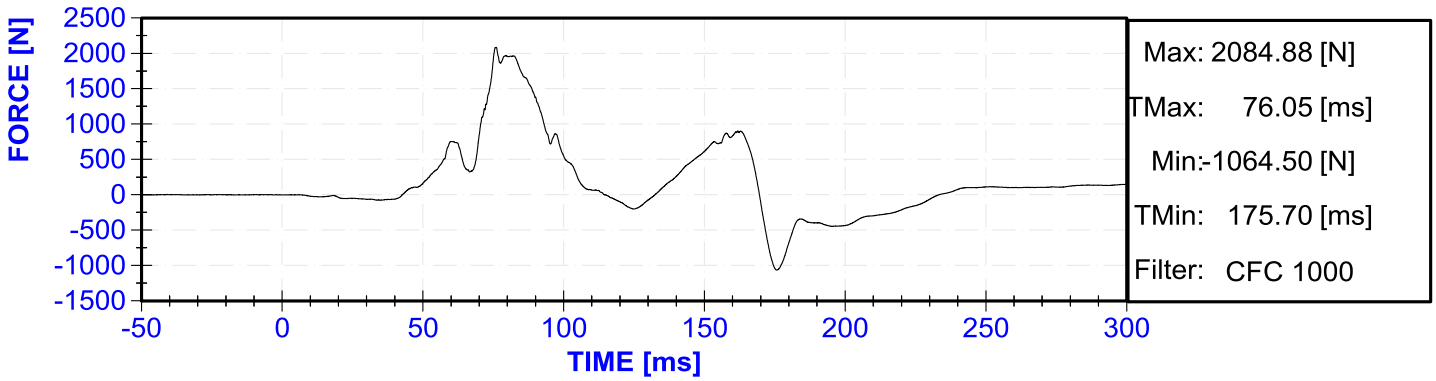
NOISE SPIKES AFTER 167 MS



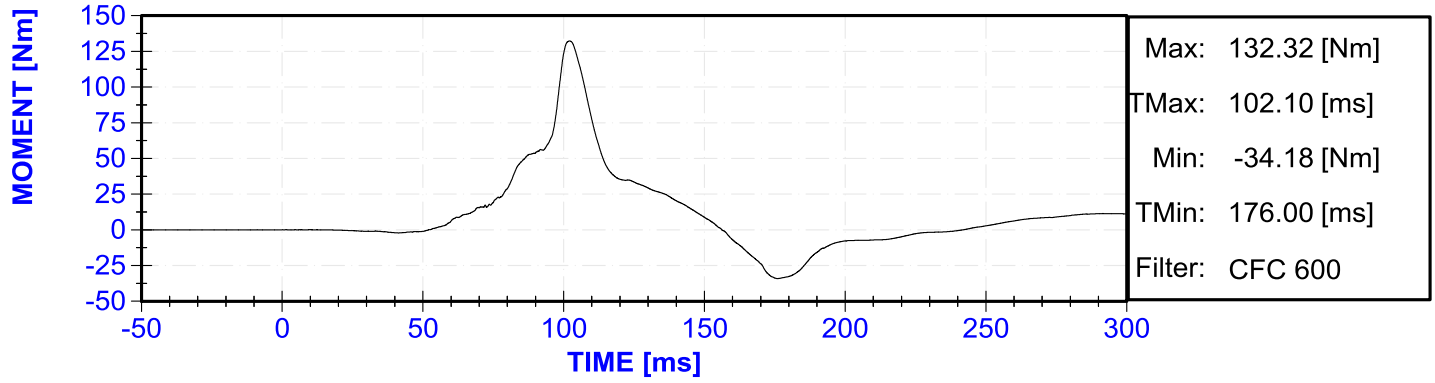
V2P4 LOWER NECK FY



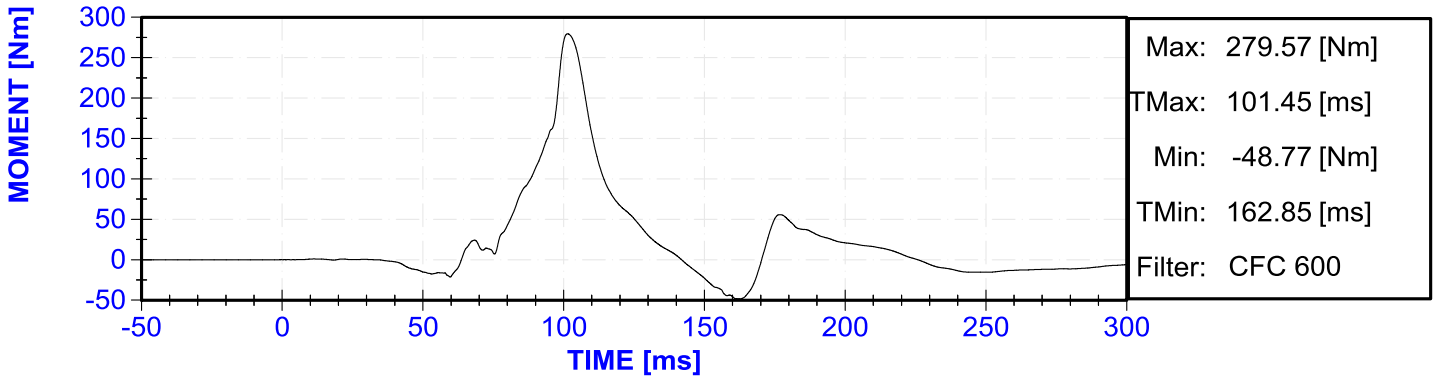
V2P4 LOWER NECK FZ



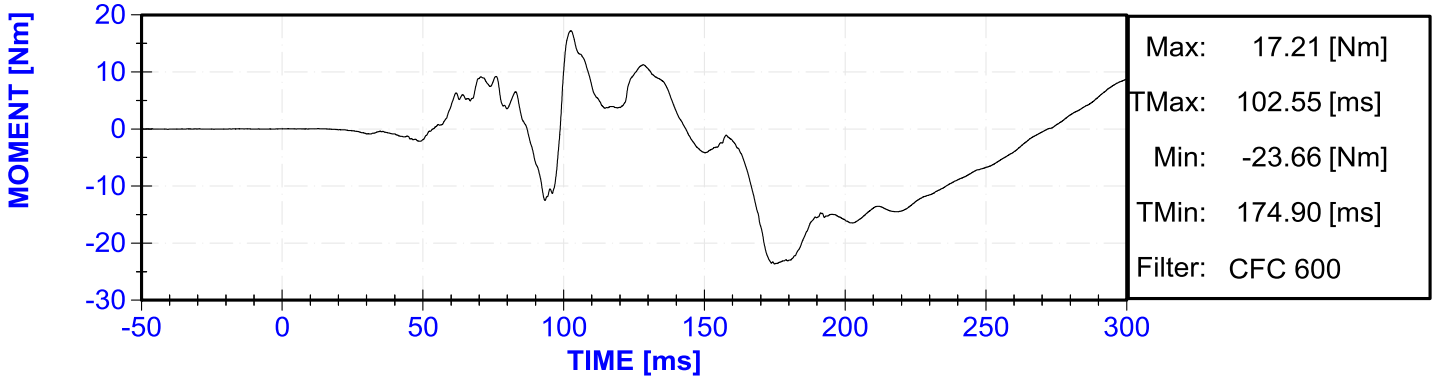
V2P4 LOWER NECK MX



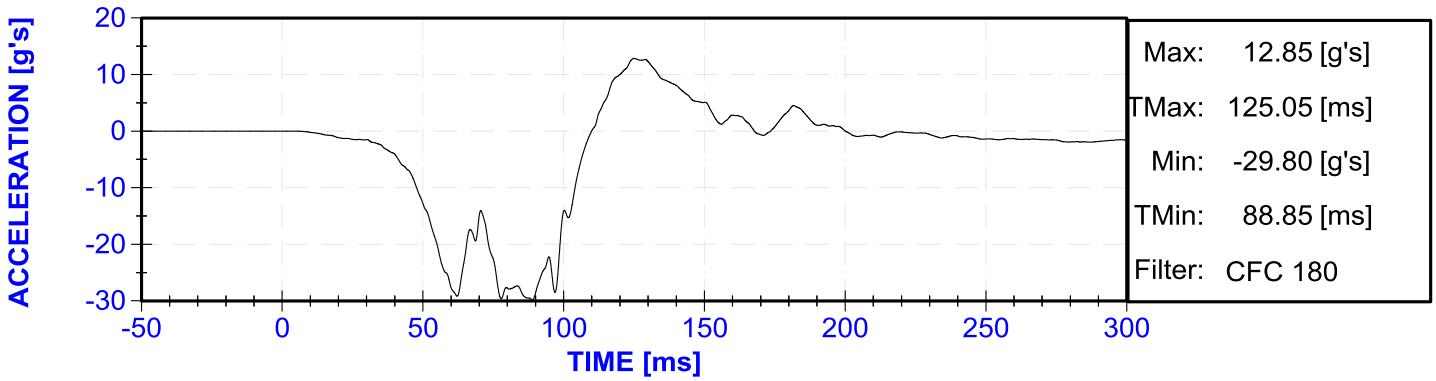
V2P4 LOWER NECK MY



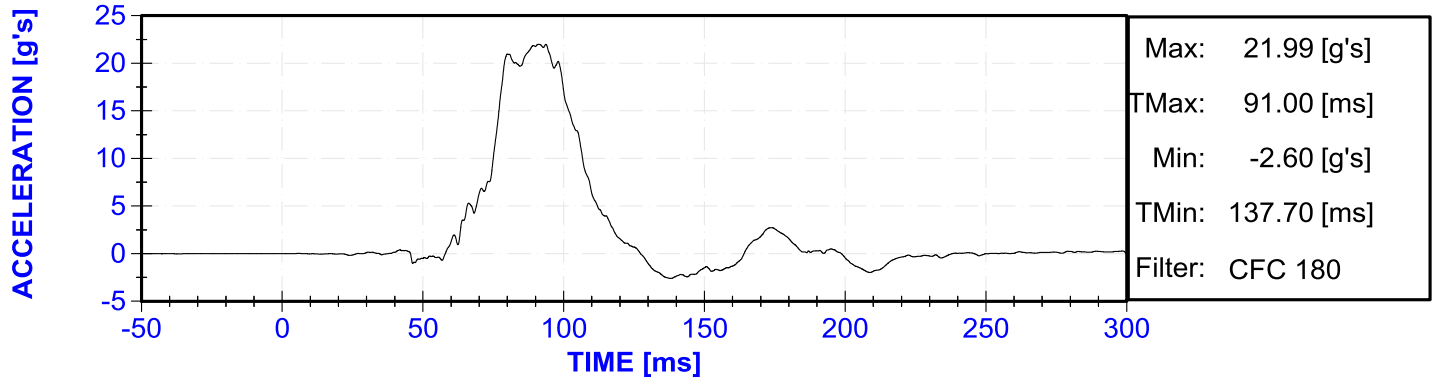
V2P4 LOWER NECK MZ



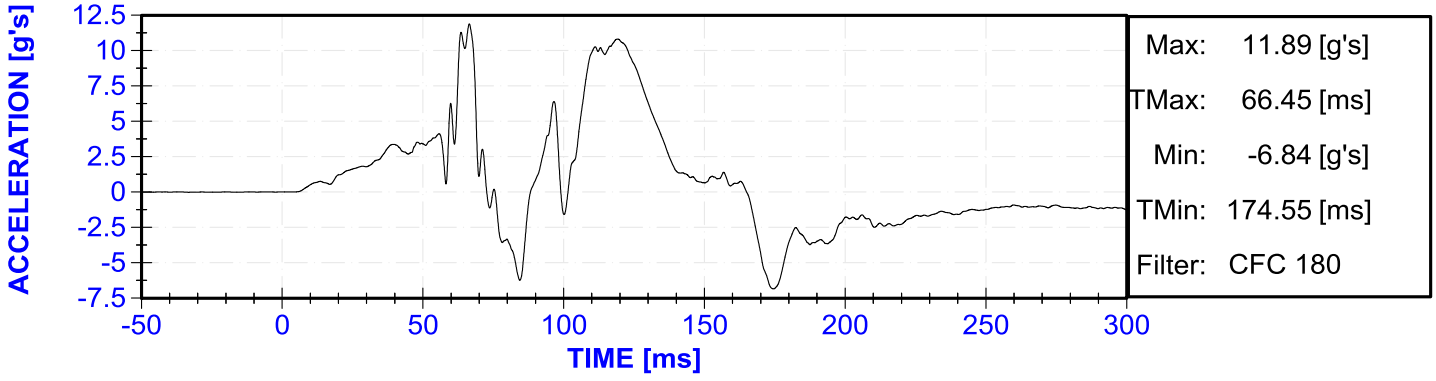
V2P4 CHEST X



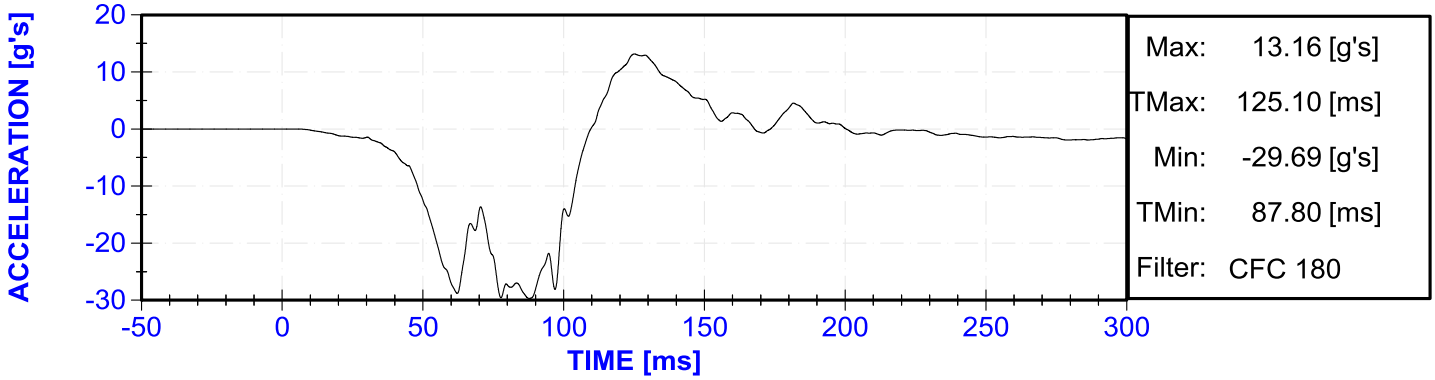
V2P4 CHEST Y



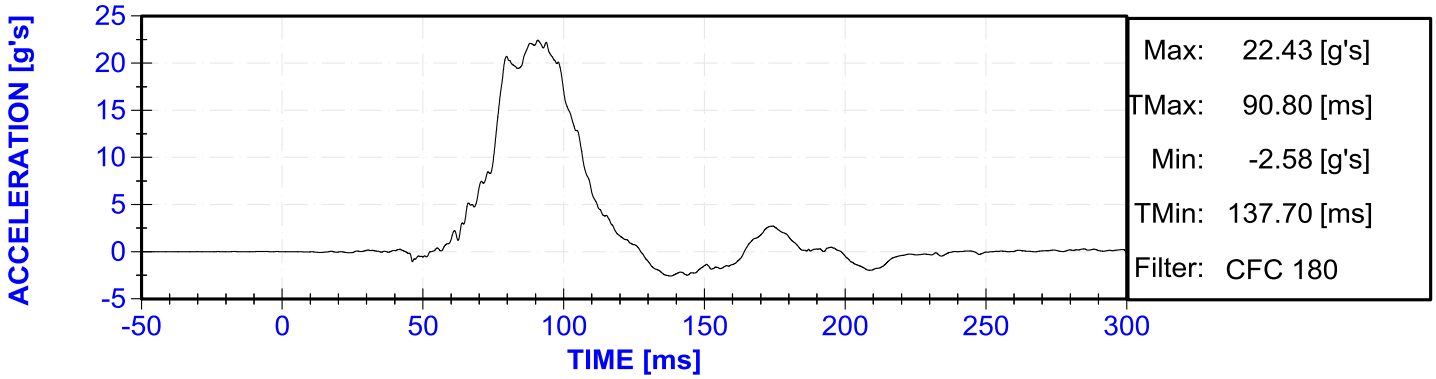
V2P4 CHEST Z



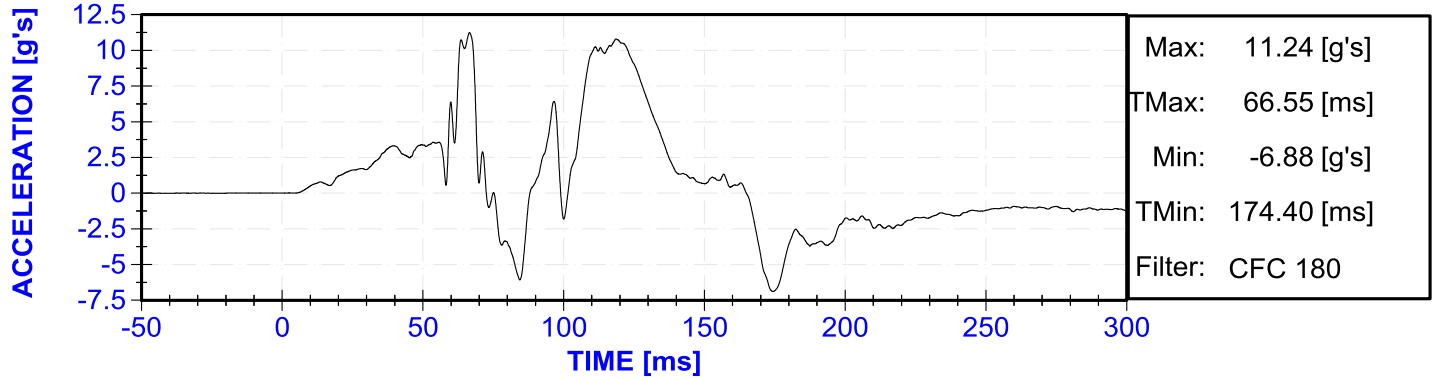
V2P4 CHEST RED X



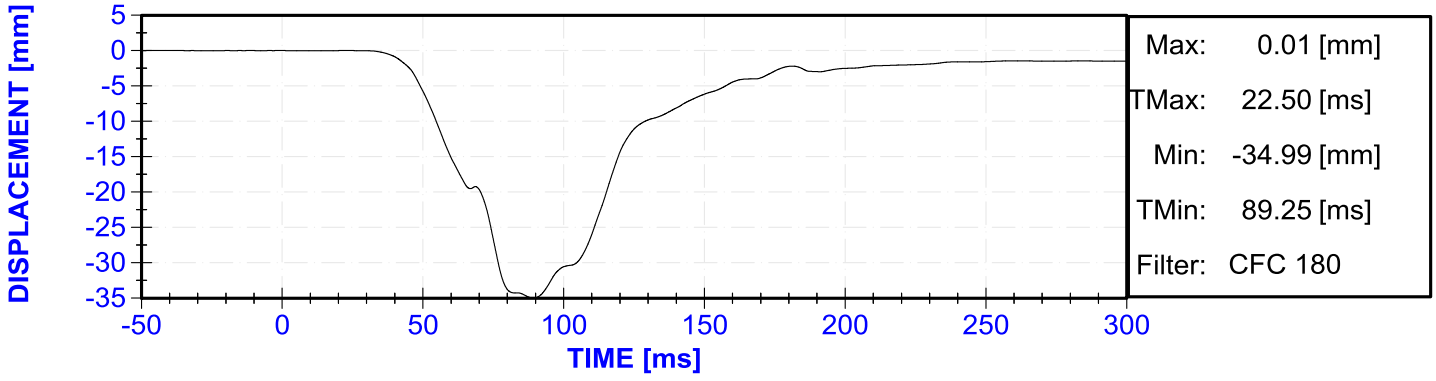
V2P4 CHEST RED Y



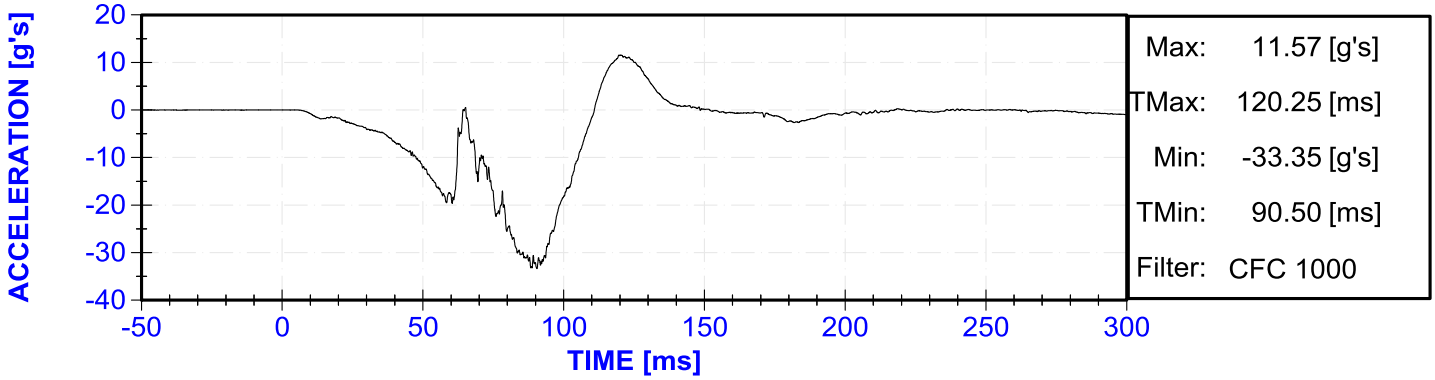
V2P4 CHEST RED Z



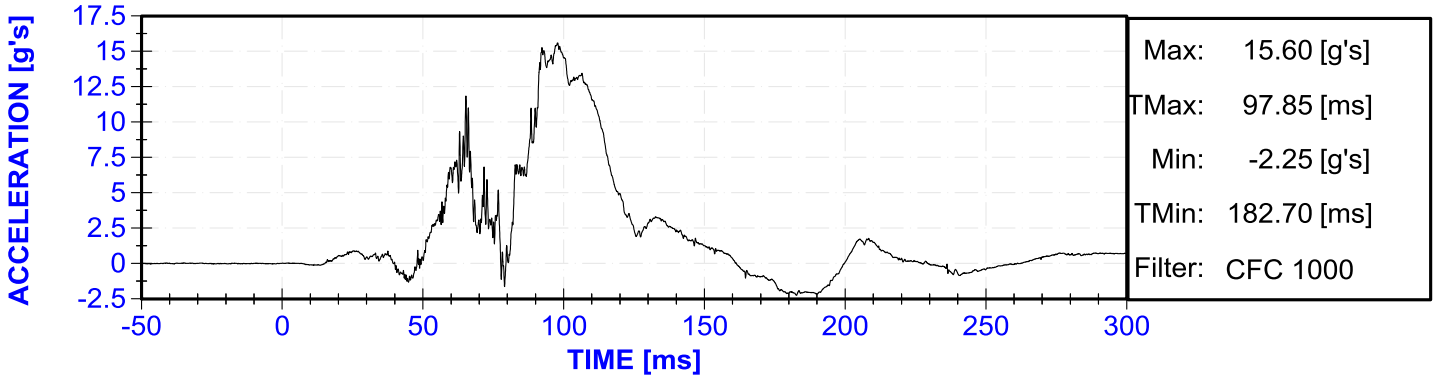
V2P4 CHEST DISPLACEMENT



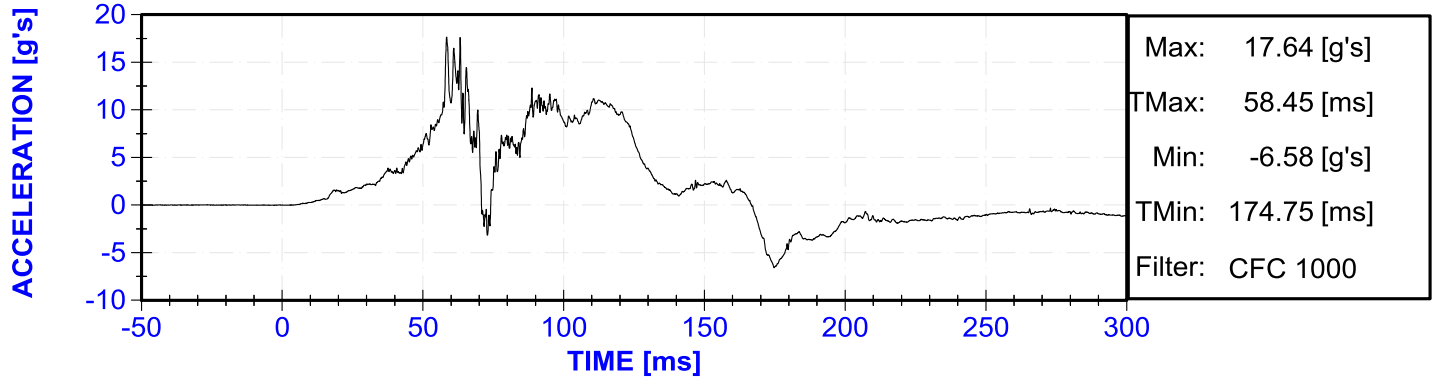
V2P4 PELVIC X



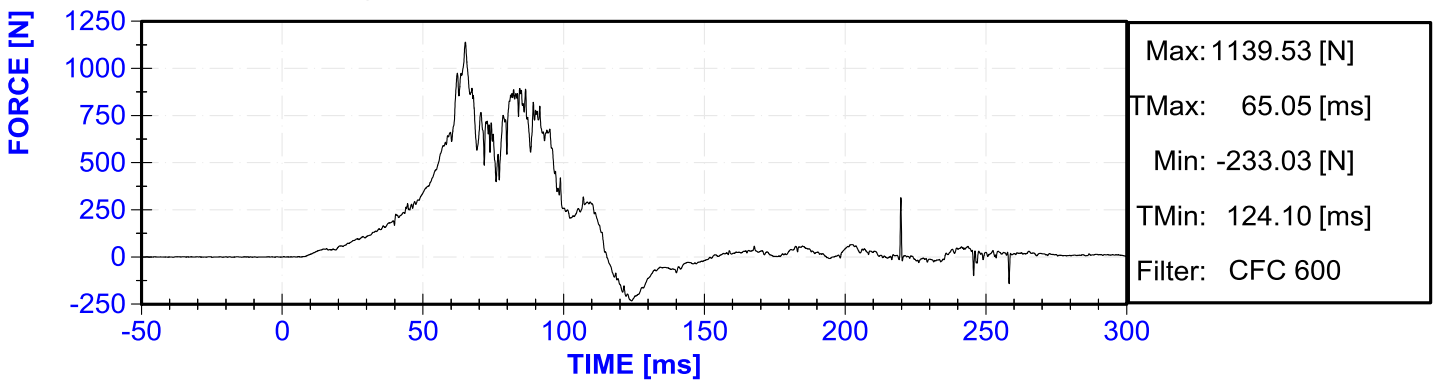
V2P4 PELVIC Y



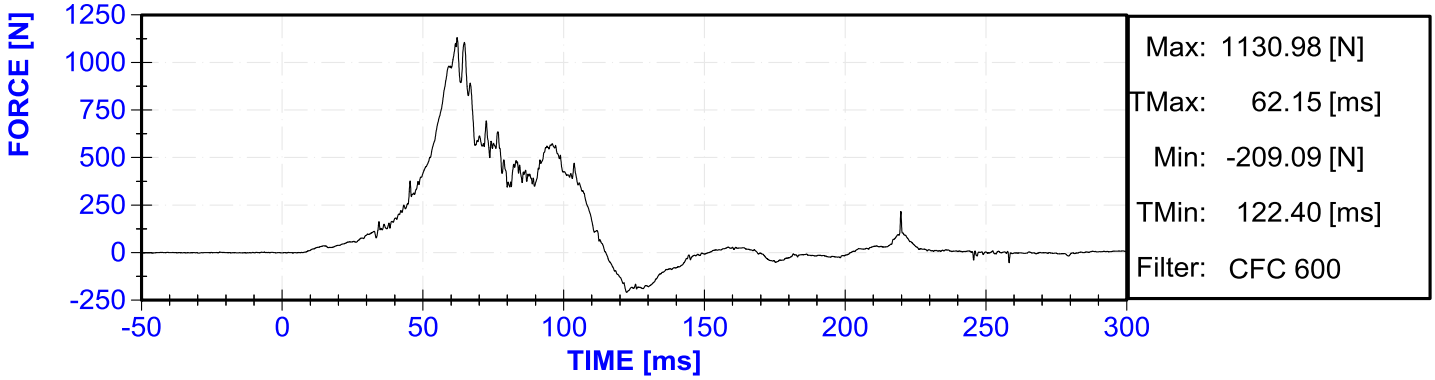
V2P4 PELVIC Z



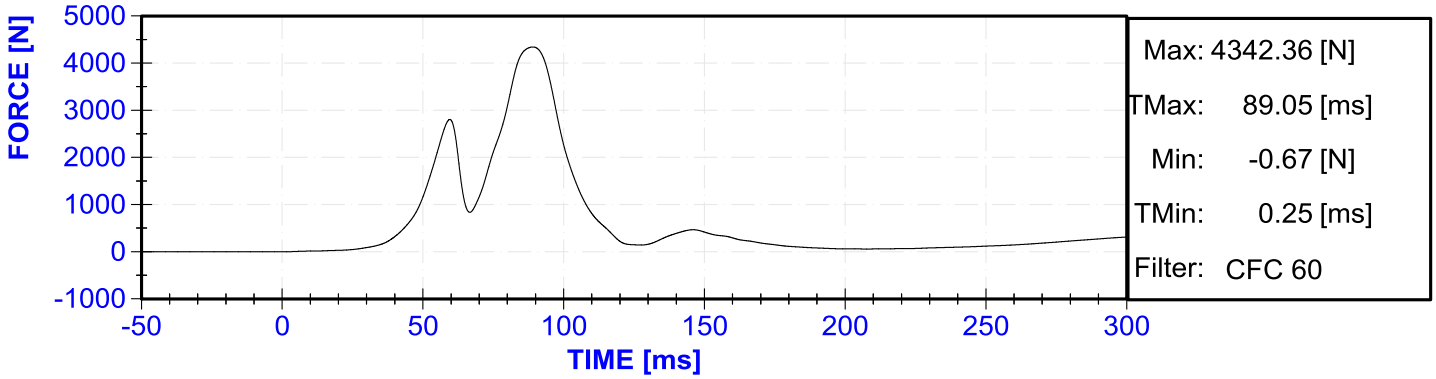
V2P4 LEFT FEMUR FZ



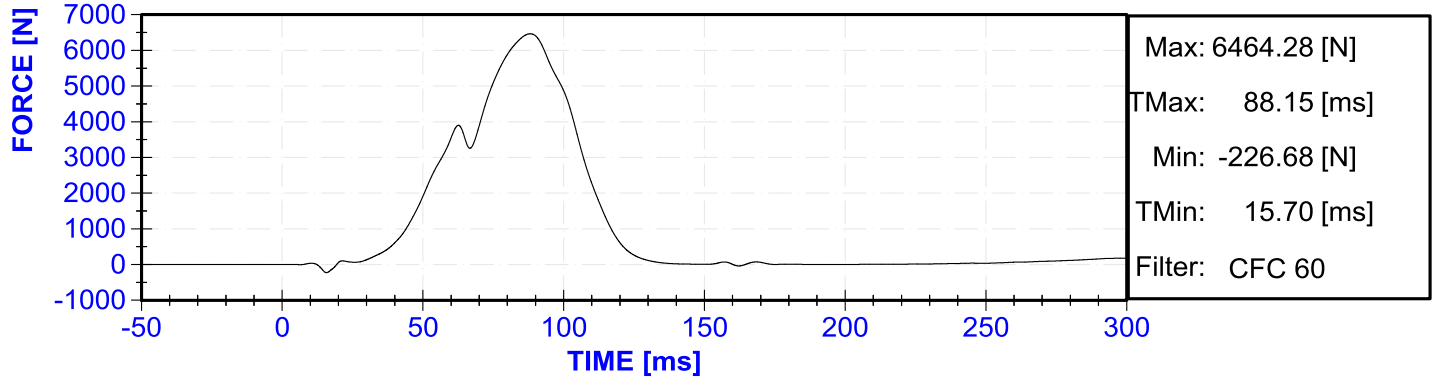
V2P4 RIGHT FEMUR FZ



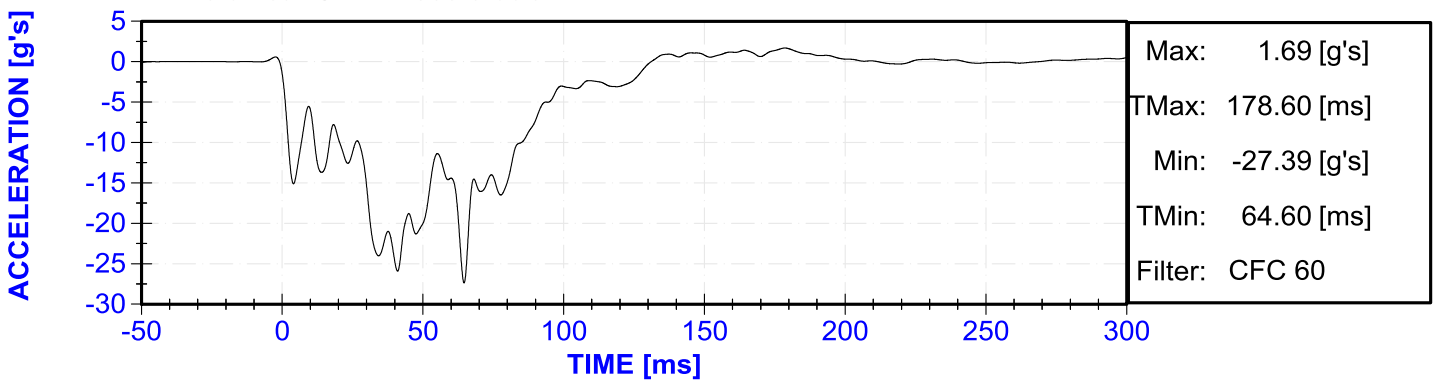
V2 Passenger Lap Belt Force



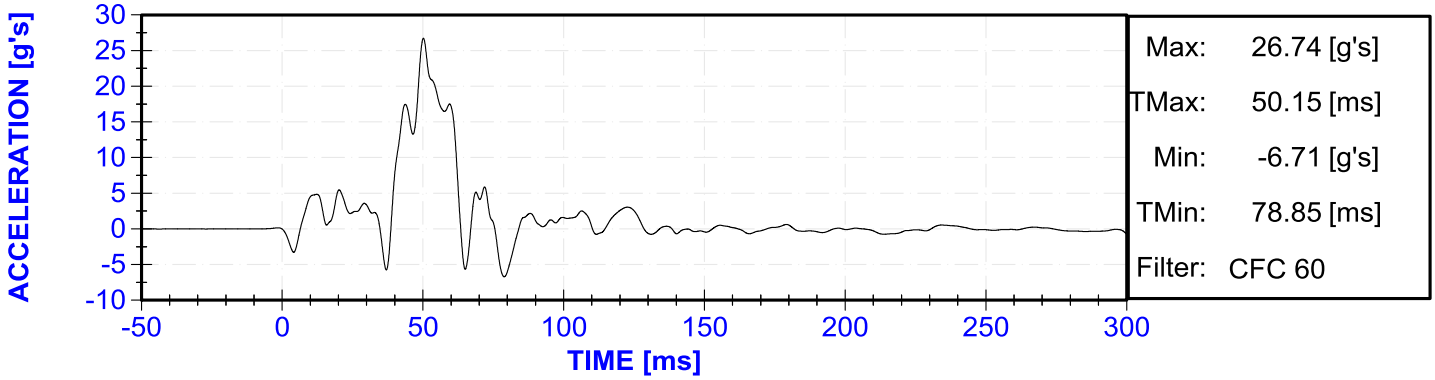
V2 Passenger Shoulder Belt Upper Force



V2 Left Rear Sill X Acceleration



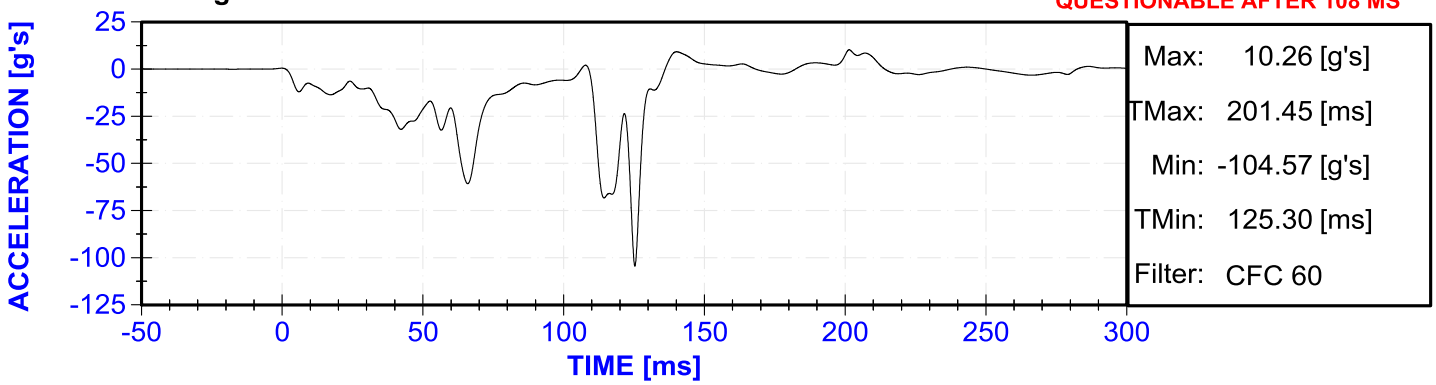
V2 Left Rear Sill Y Acceleration



Max:	26.74 [g's]
TMax:	50.15 [ms]
Min:	-6.71 [g's]
TMin:	78.85 [ms]
Filter:	CFC 60

V2 Right Rear Sill X Acceleration

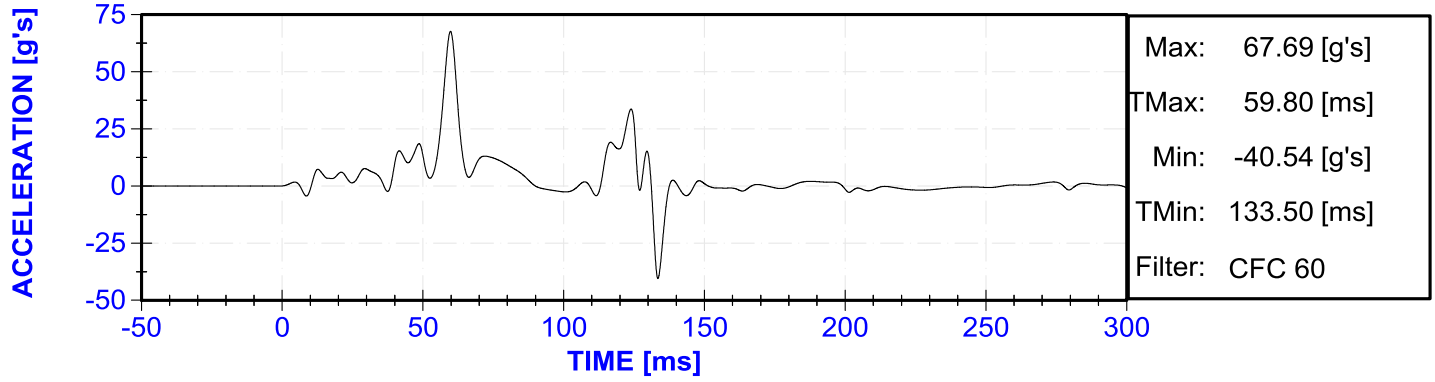
QUESTIONABLE AFTER 108 MS



Max:	10.26 [g's]
TMax:	201.45 [ms]
Min:	-104.57 [g's]
TMin:	125.30 [ms]
Filter:	CFC 60

V2 Right Rear Sill Y Acceleration

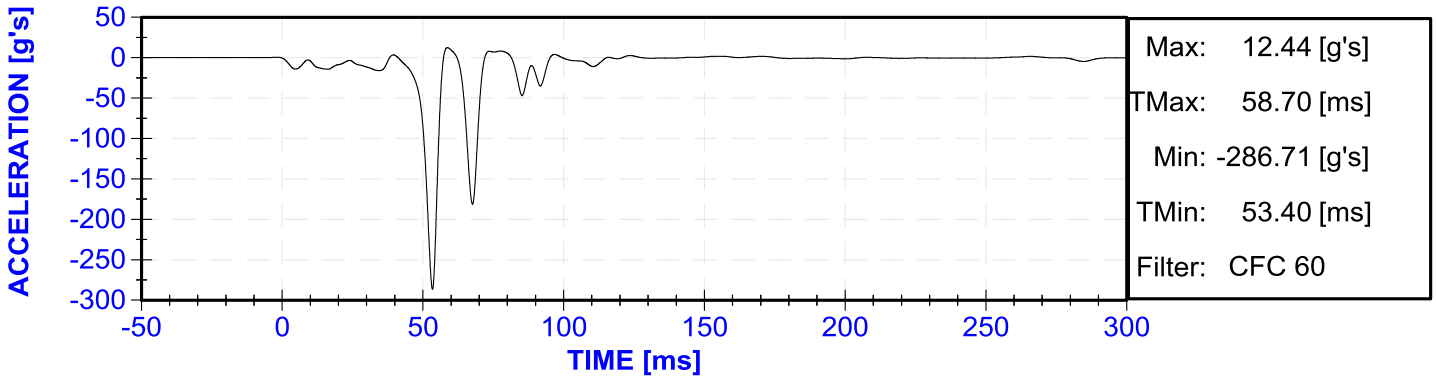
QUESTIONABLE AFTER 112 MS



Max:	67.69 [g's]
TMax:	59.80 [ms]
Min:	-40.54 [g's]
TMin:	133.50 [ms]
Filter:	CFC 60

V2 Vehicle CG X Acceleration

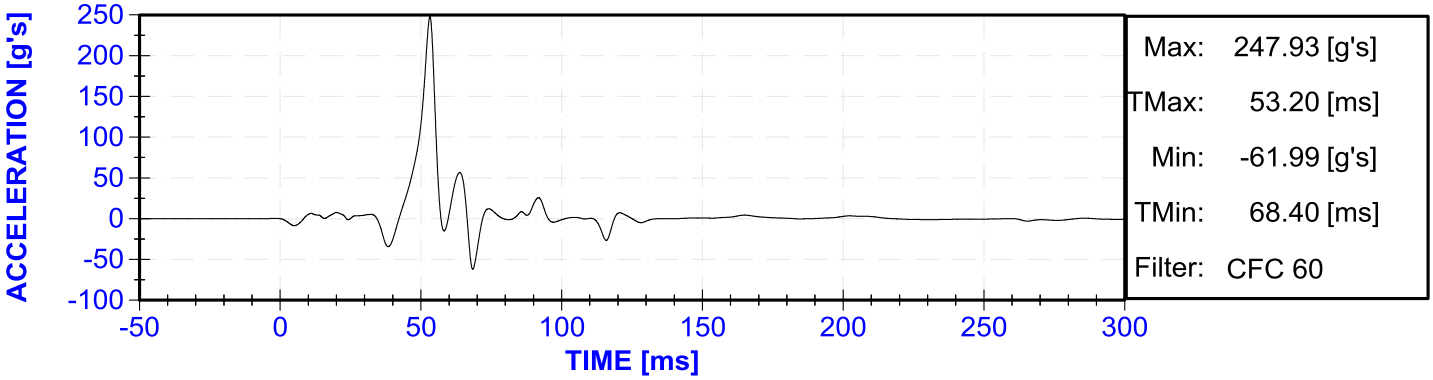
QUESTIONABLE SPIKES THROUGHOUT



Max:	12.44 [g's]
TMax:	58.70 [ms]
Min:	-286.71 [g's]
TMin:	53.40 [ms]
Filter:	CFC 60

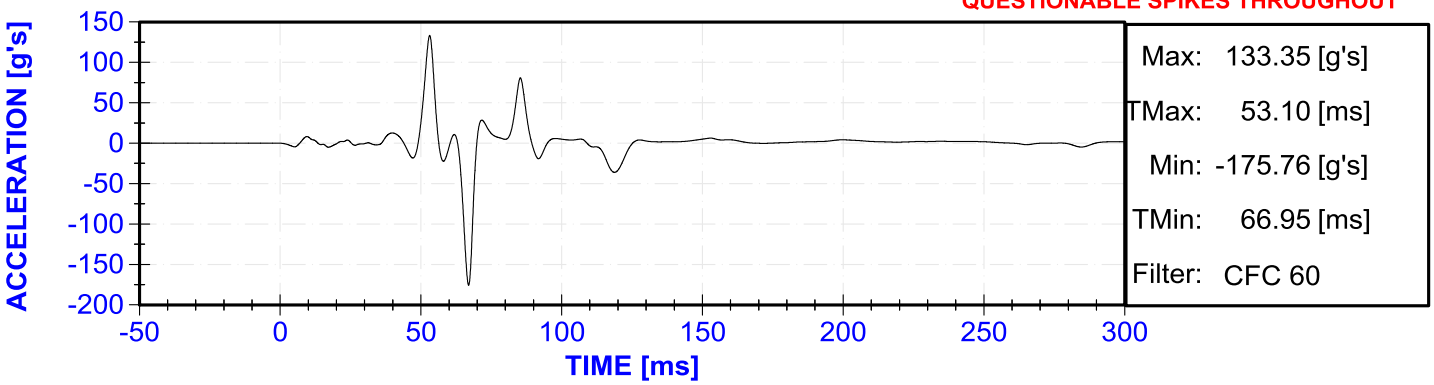
V2 Vehicle CG Y Acceleration

QUESTIONABLE SPIKES THROUGHOUT



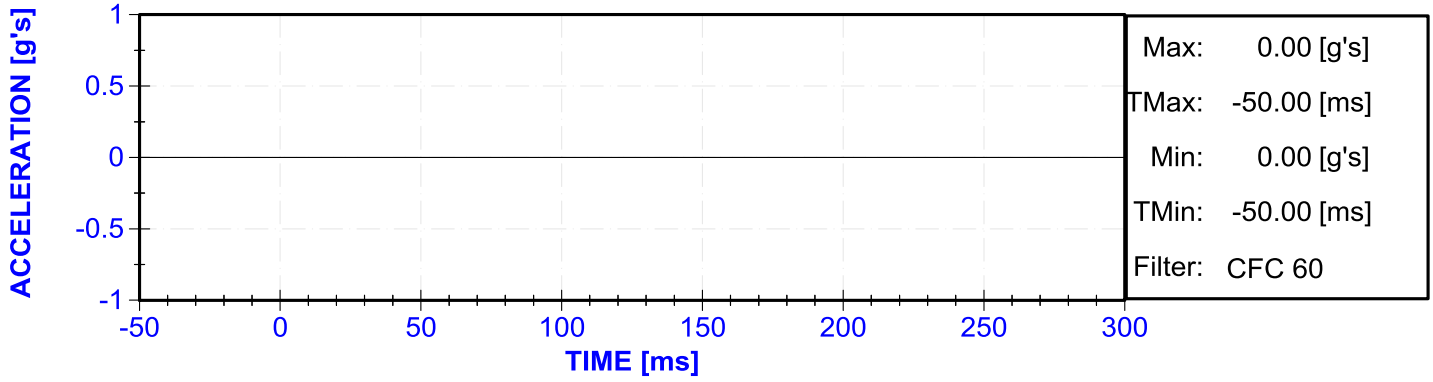
V2 Vehicle CG Z Acceleration

QUESTIONABLE SPIKES THROUGHOUT



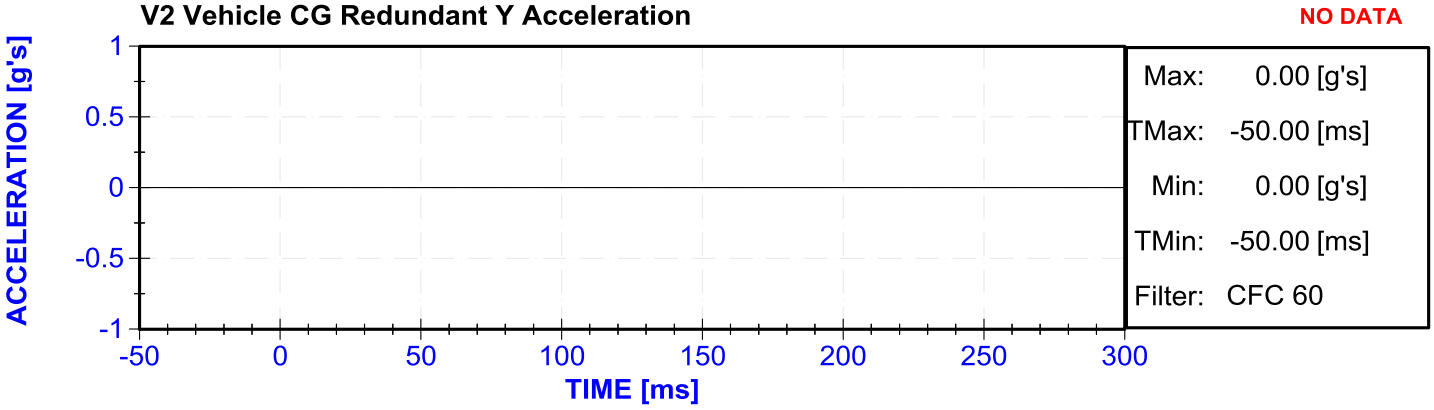
V2 Vehicle CG Redundant X Acceleration

NO DATA



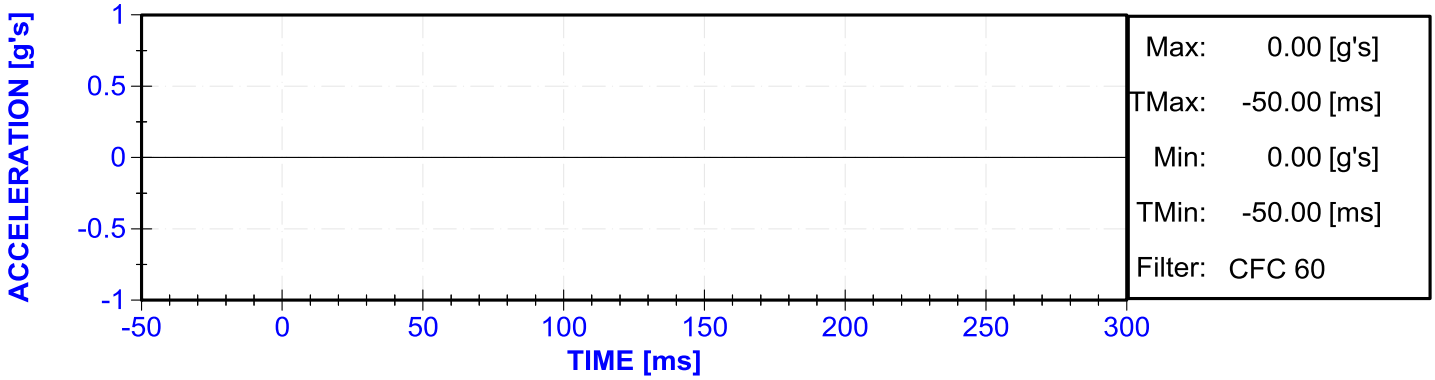
V2 Vehicle CG Redundant Y Acceleration

NO DATA

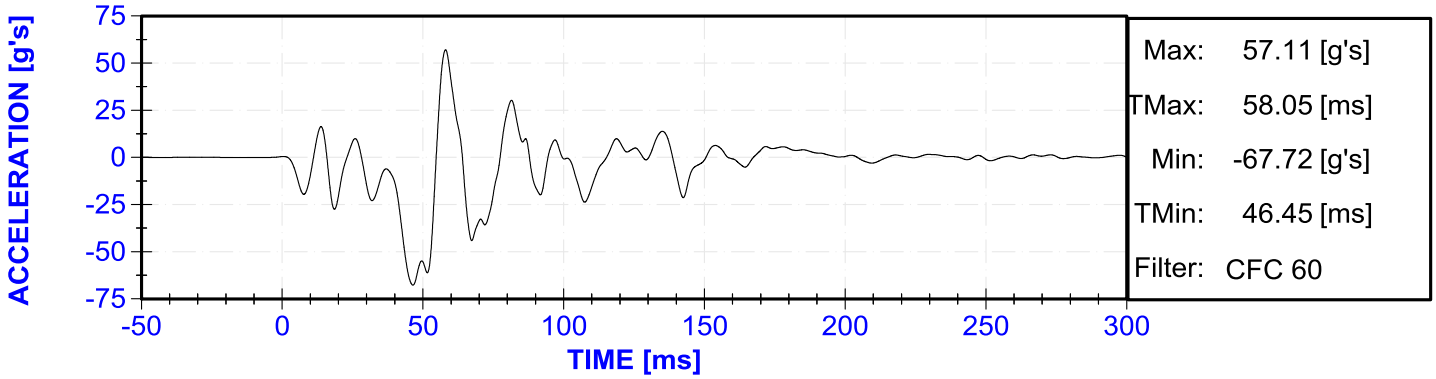


V2 Vehicle CG Redundant Z Acceleration

NO DATA

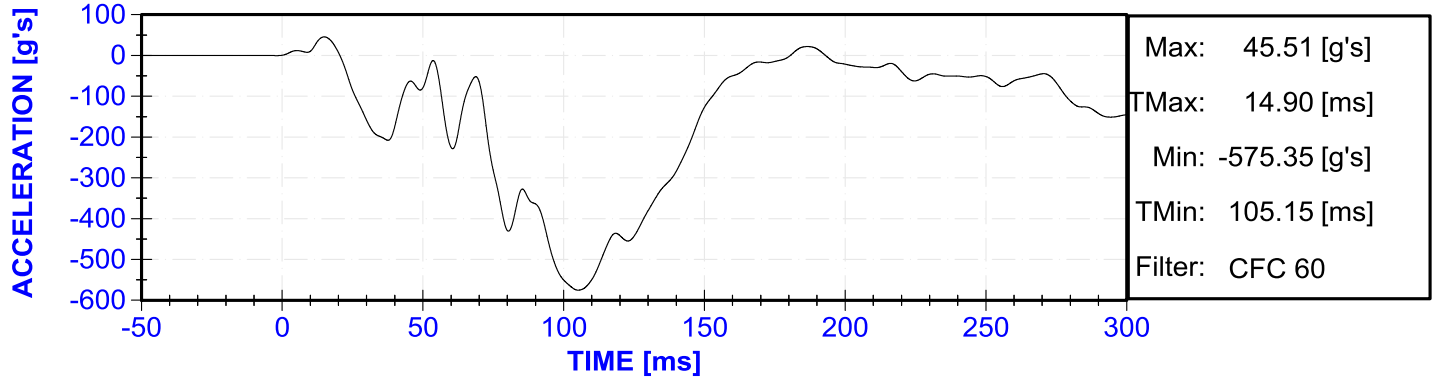


V2 Instrument Panel X Acceleration

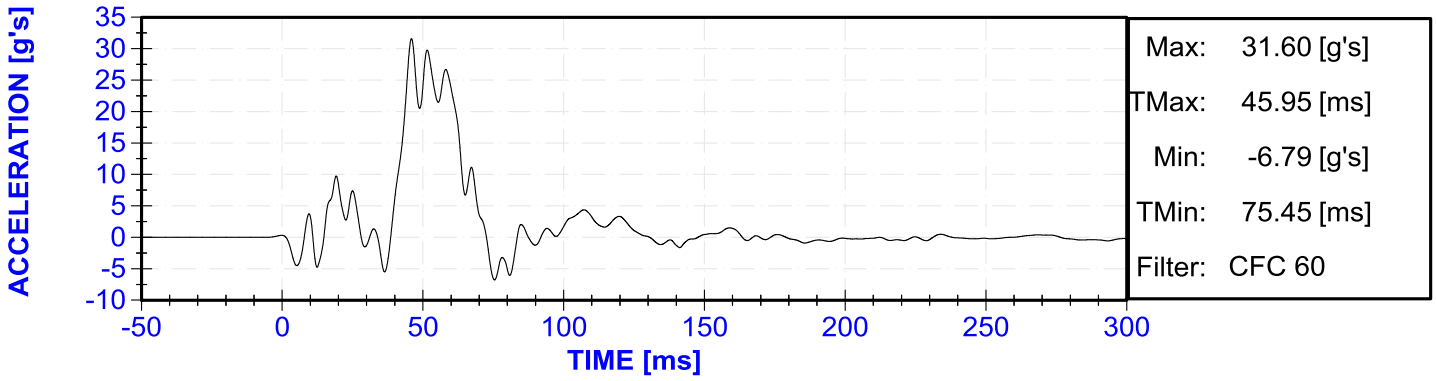


V2 Driver Seat Track X Acceleration

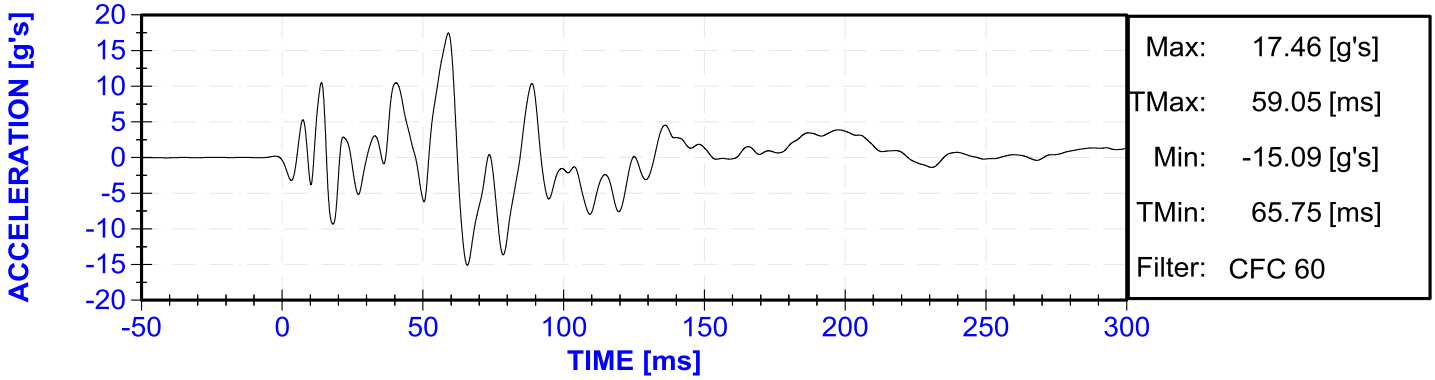
QUESTIONABLE DATA - SCALE



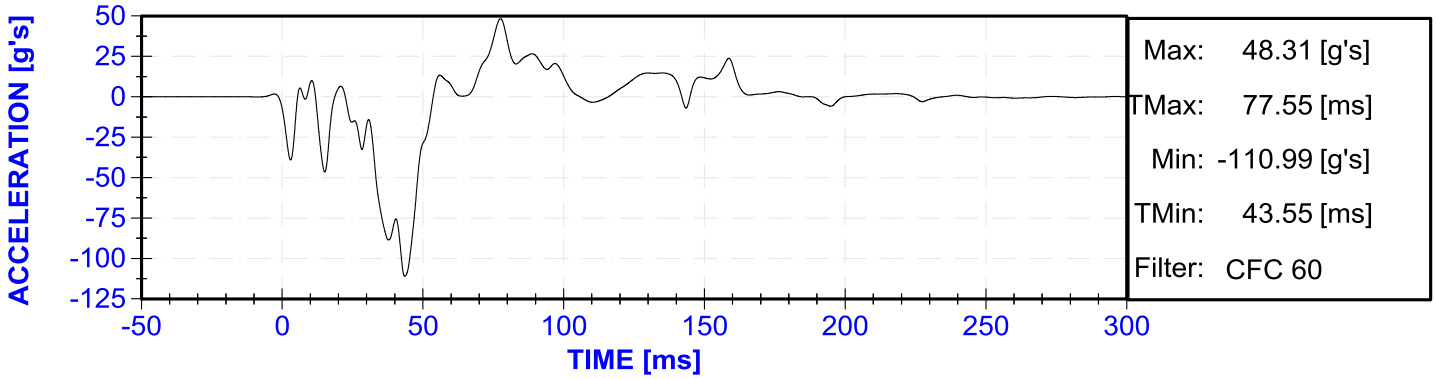
V2 Driver Seat Track Y Acceleration



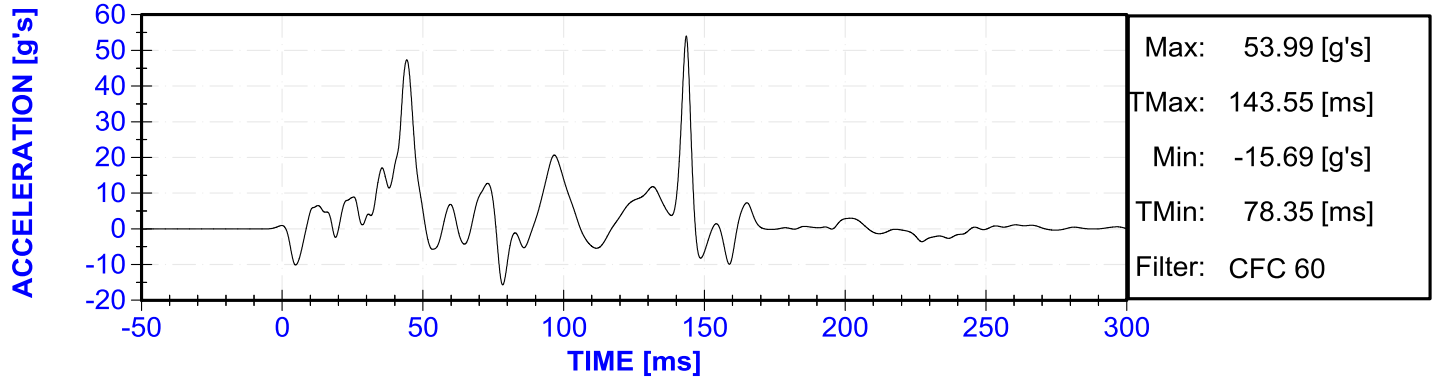
V2 Driver Seat Track Z Acceleration



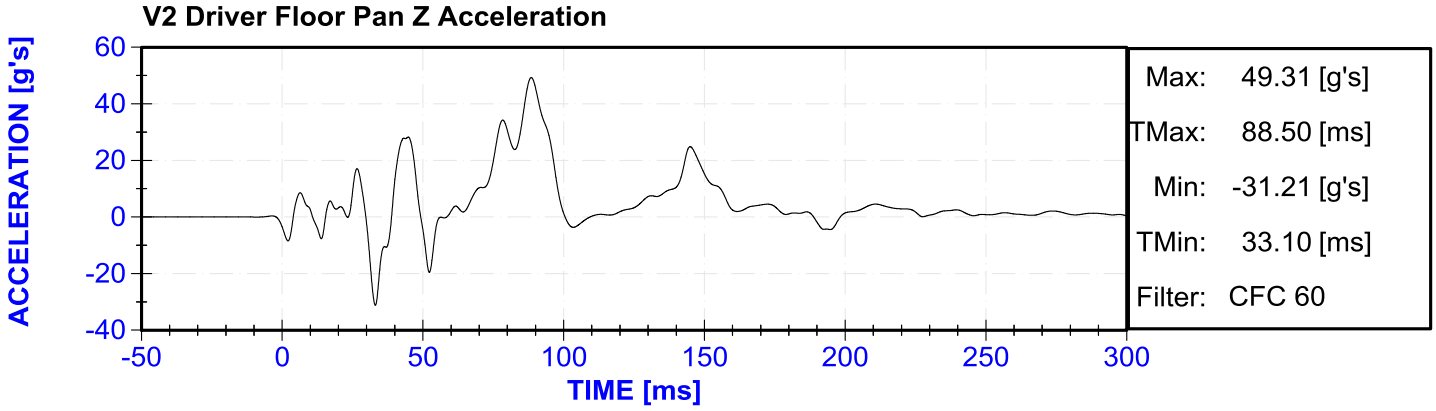
V2 Driver Floor Pan X Acceleration



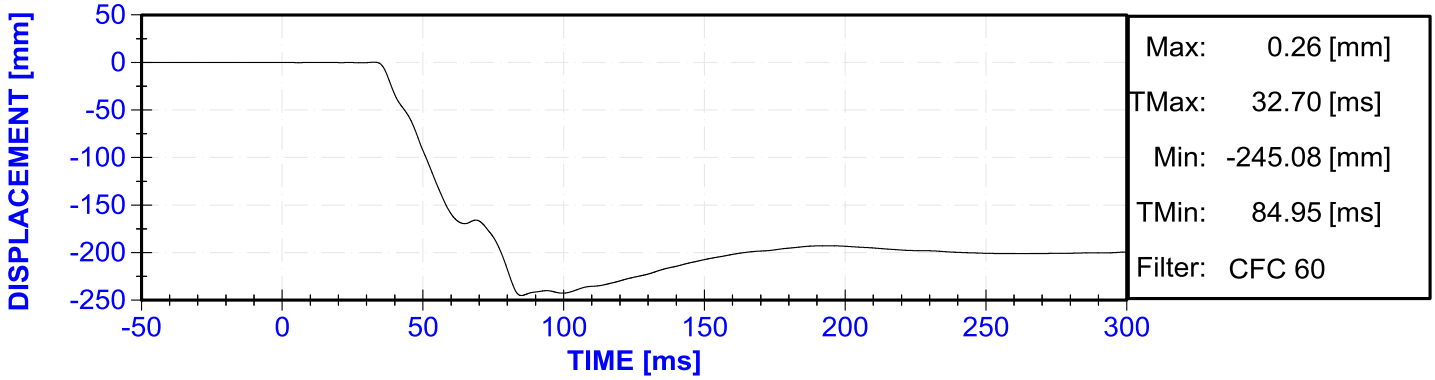
V2 Driver Floor Pan Y Acceleration



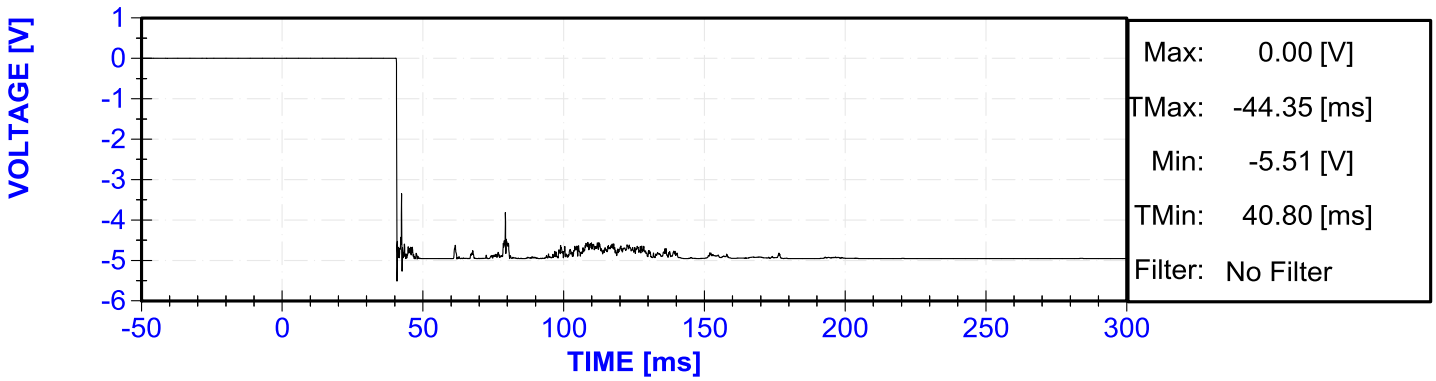
V2 Driver Floor Pan Z Acceleration



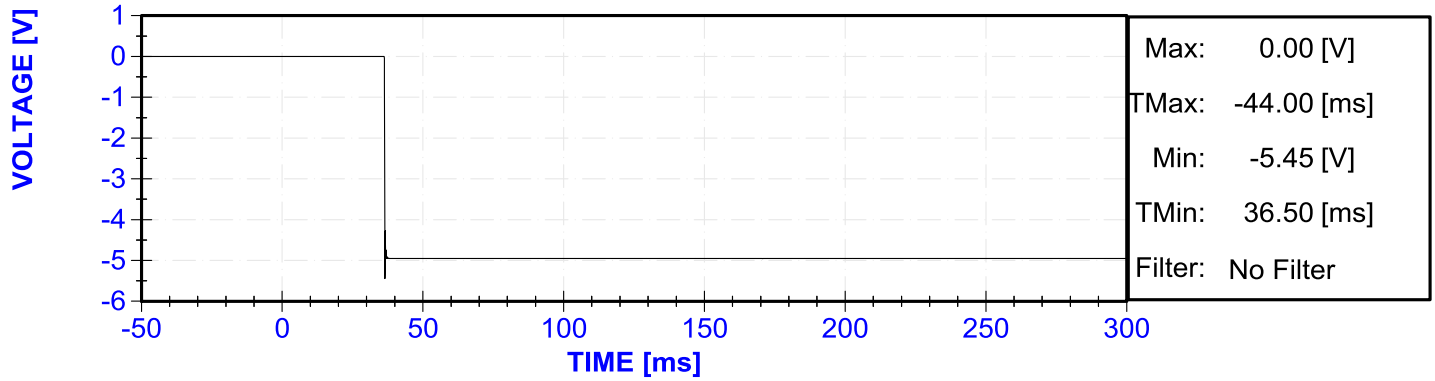
V2 Driver Floor Pan X Deflection



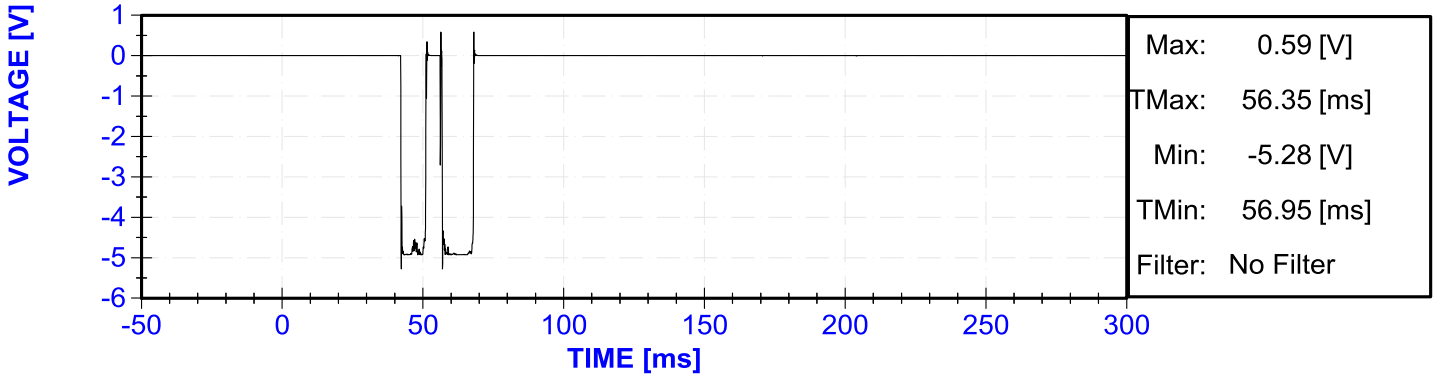
V2 DRIVER LEFT KNEE CS1



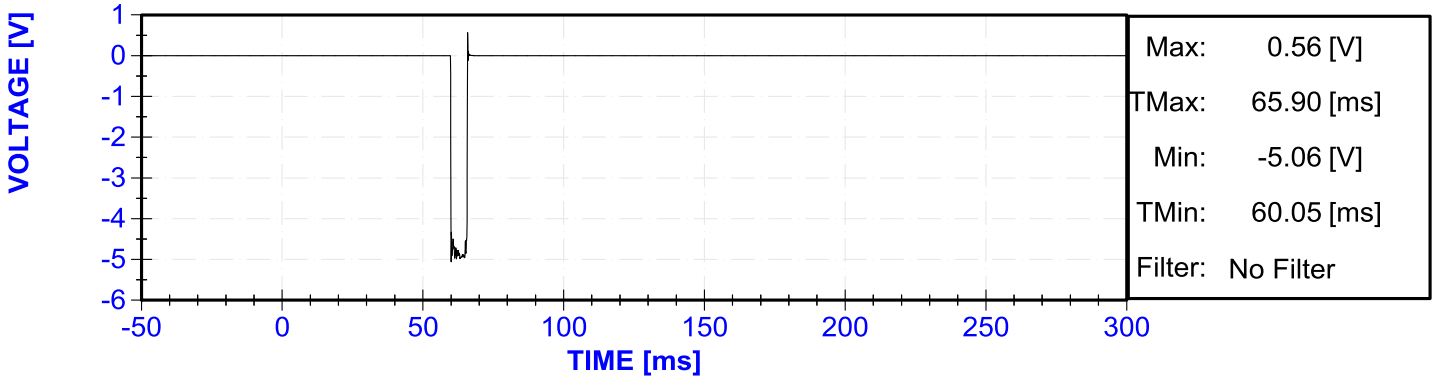
V2 DRIVER LEFT KNEE CS2



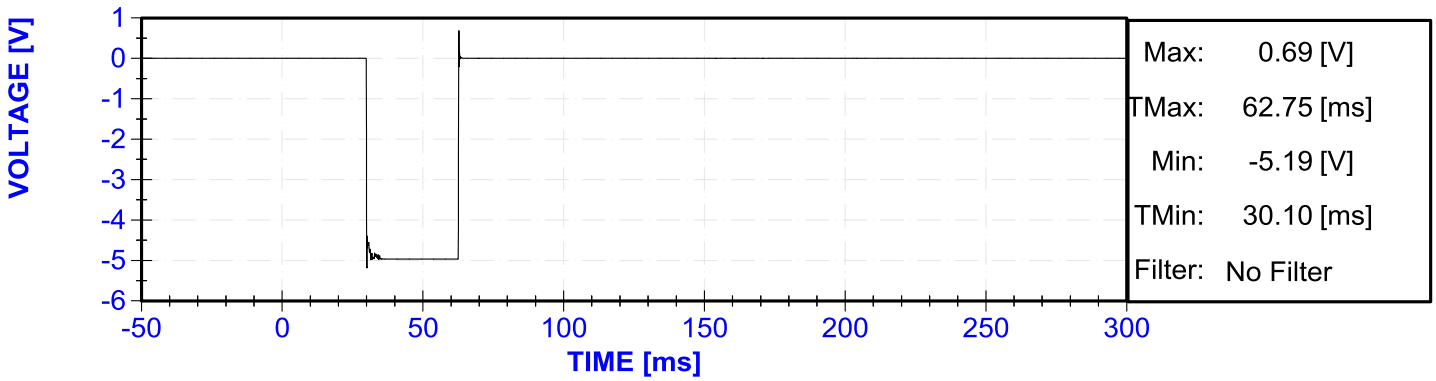
V2 DRIVER LEFT KNEE CS3



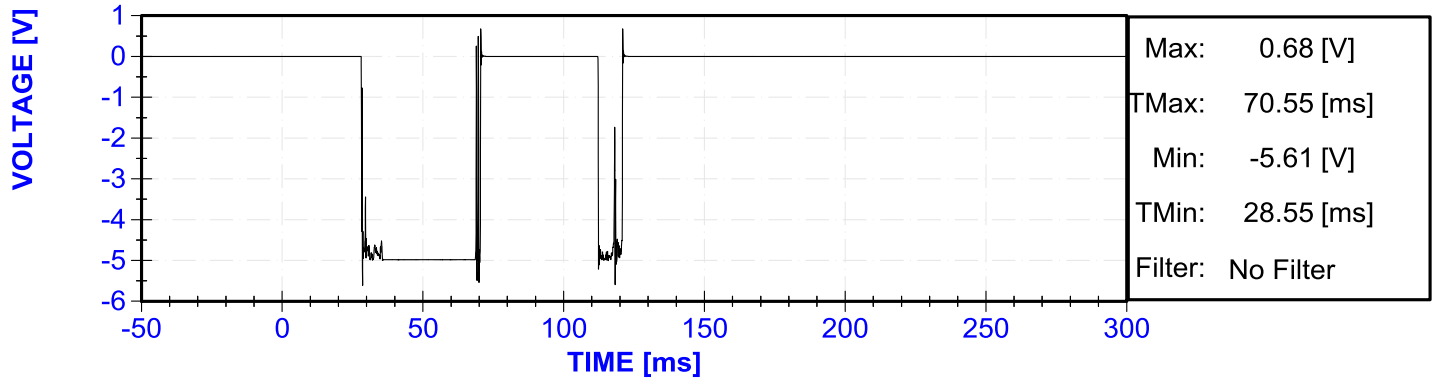
V2 DRIVER RIGHT KNEE CS1



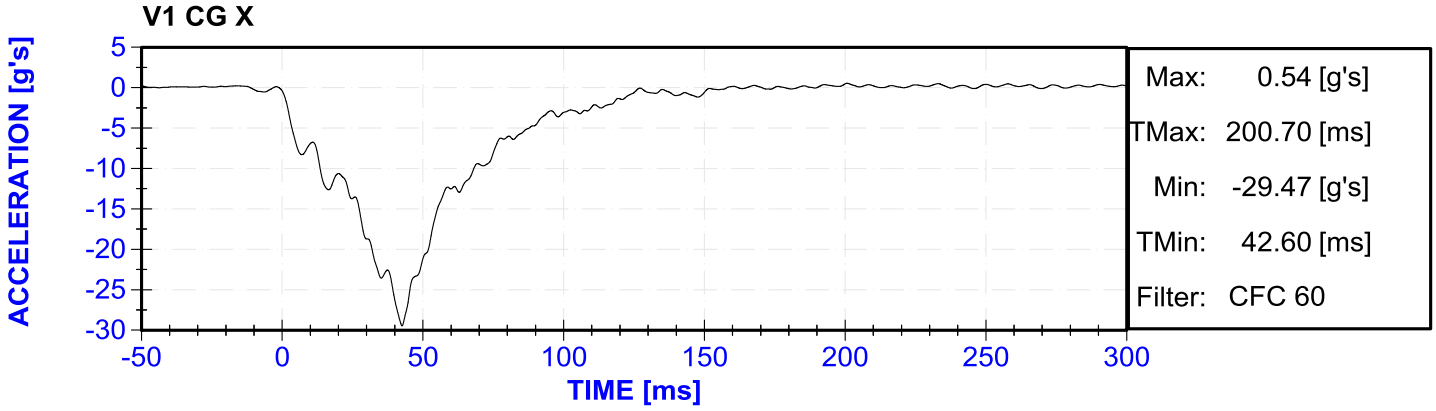
V2 DRIVER RIGHT KNEE CS2

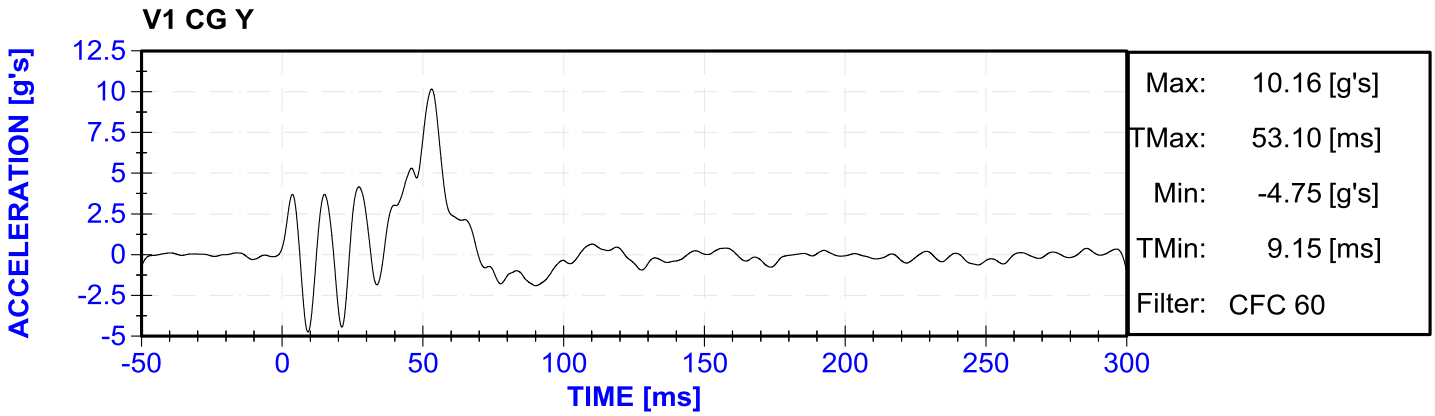


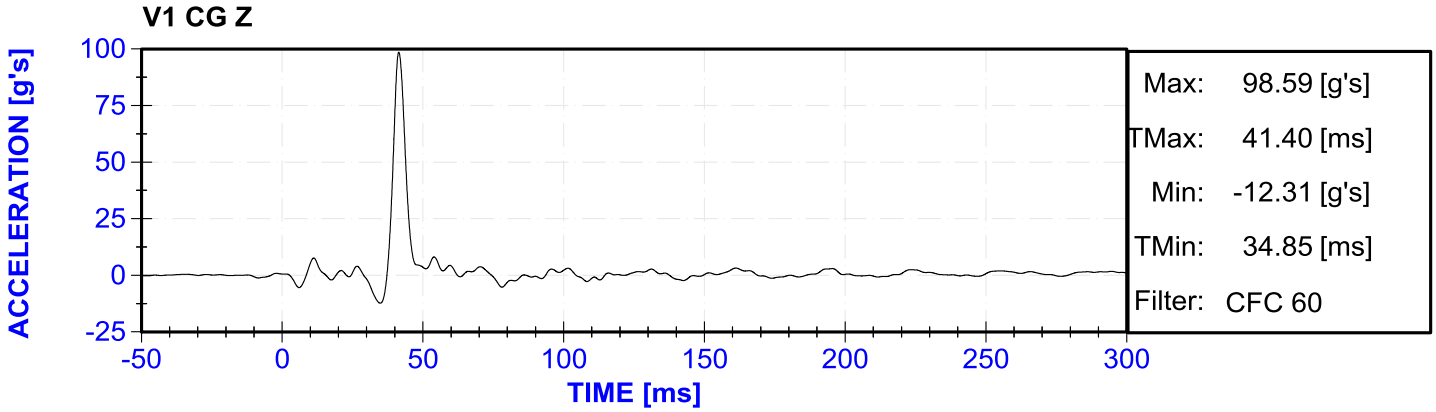
V2 DRIVER RIGHT KNEE CS3

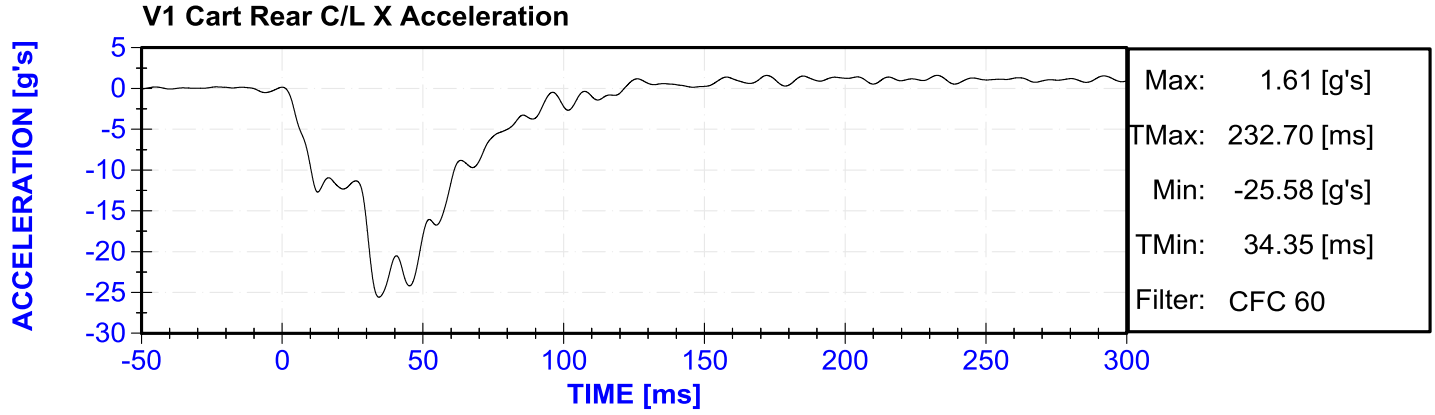


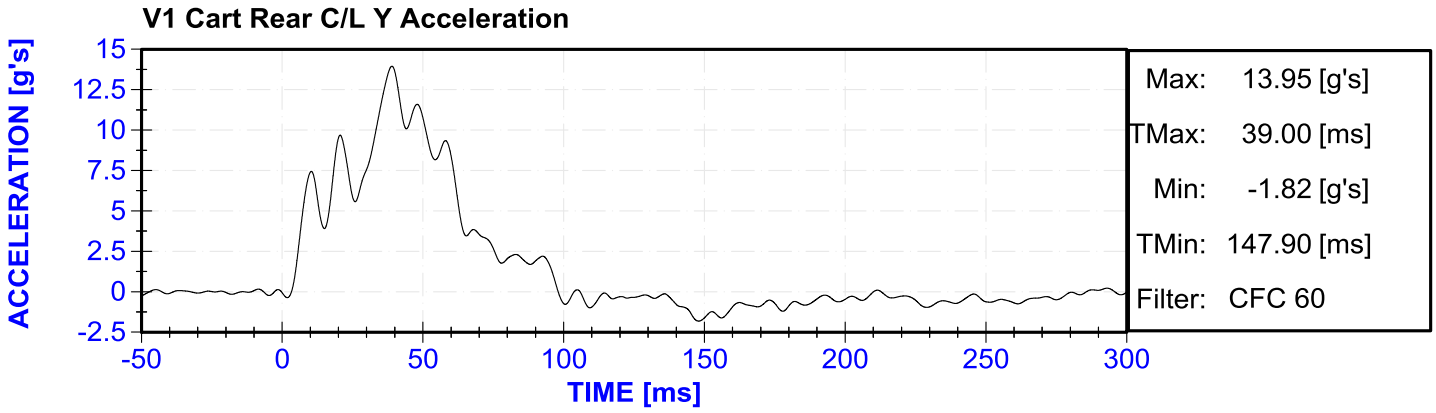
V1 CG X



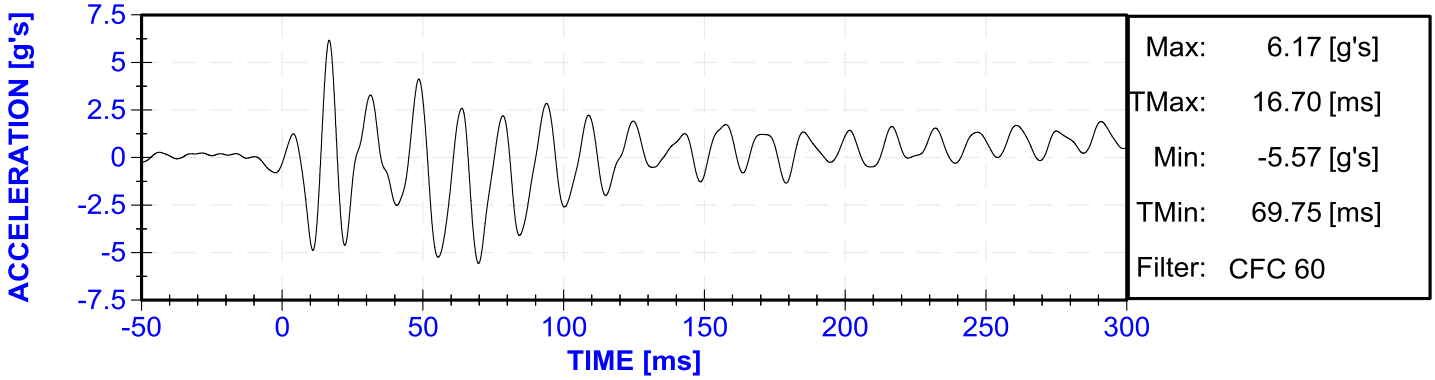

V1 CG Y
ACCELERATION [g's]
12.5
10
7.5
5
2.5
0
-2.5
-5
-50
0
50
100
150
200
250
300
TIME [ms]
Max: 10.16 [g's]
TMax: 53.10 [ms]
Min: -4.75 [g's]
TMin: 9.15 [ms]
Filter: CFC 60


V1 CG Z
ACCELERATION [g's]
100
75
50
25
0
-25
-50
0
50
100
150
200
250
300
TIME [ms]
Max: 98.59 [g's]
TMax: 41.40 [ms]
Min: -12.31 [g's]
TMin: 34.85 [ms]
Filter: CFC 60

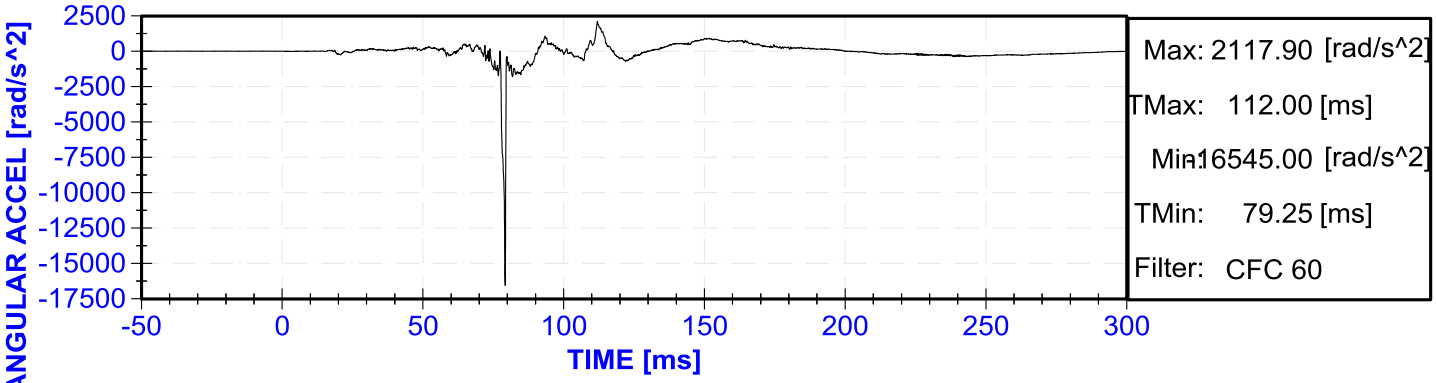

V1 Cart Rear C/L X Acceleration
ACCELERATION [g's]
5
0
-5
-10
-15
-20
-25
-30
-50
0
50
100
150
200
250
300
TIME [ms]
Max: 1.61 [g's]
TMax: 232.70 [ms]
Min: -25.58 [g's]
TMin: 34.35 [ms]
Filter: CFC 60


V1 Cart Rear C/L Y Acceleration
ACCELERATION [g's]
15
12.5
10
7.5
5
2.5
0
-2.5
-50
0
50
100
150
200
250
300
TIME [ms]
Max: 13.95 [g's]
TMax: 39.00 [ms]
Min: -1.82 [g's]
TMin: 147.90 [ms]
Filter: CFC 60

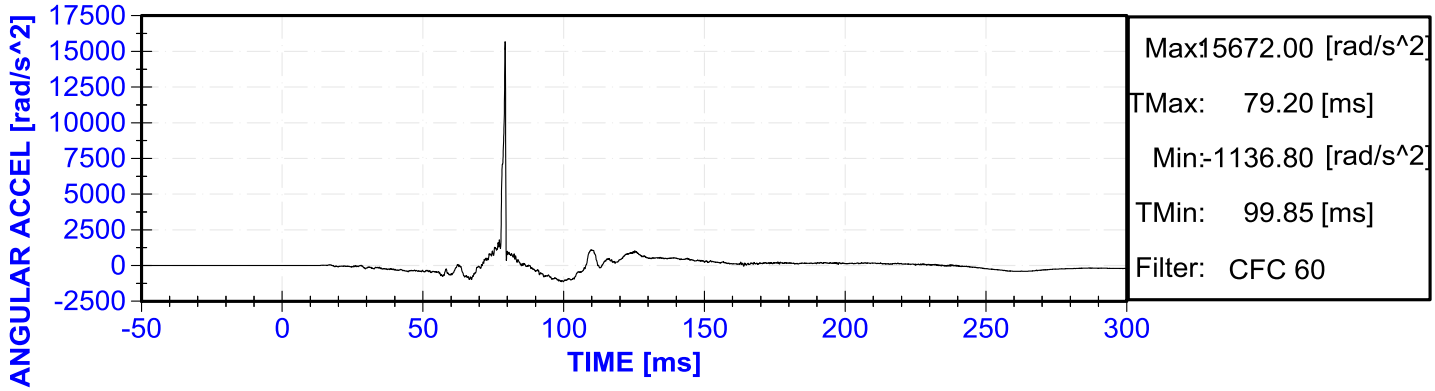
V1 Cart Rear C/L Z Acceleration



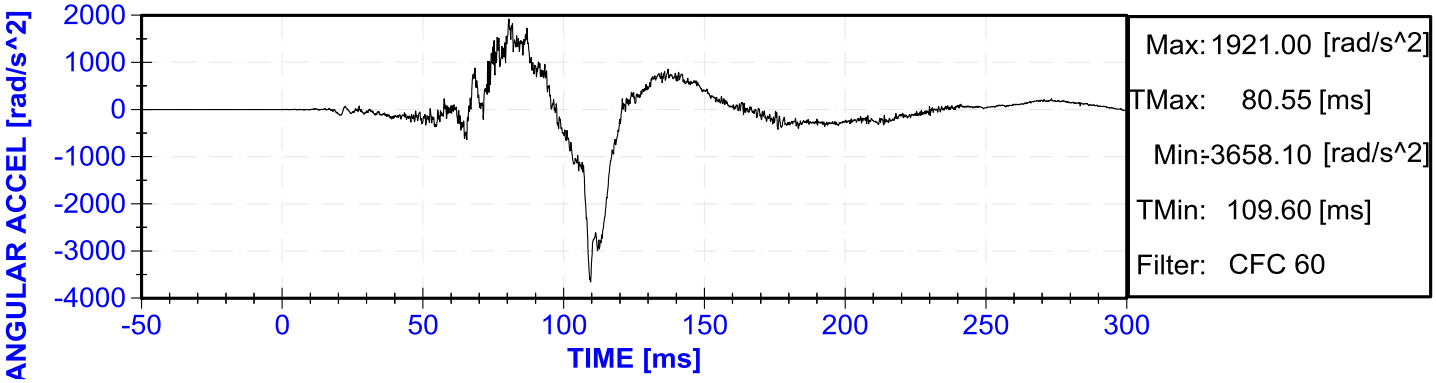
V2P1 HEAD ANGULAR ACCELERATION X [SIMON]



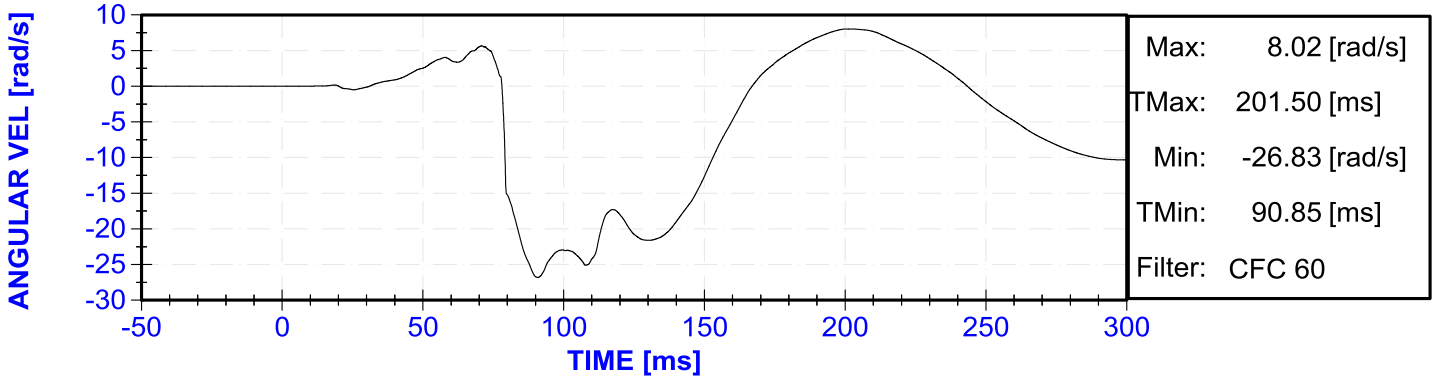
V2P1 HEAD ANGULAR ACCELERATION Y [SIMON]



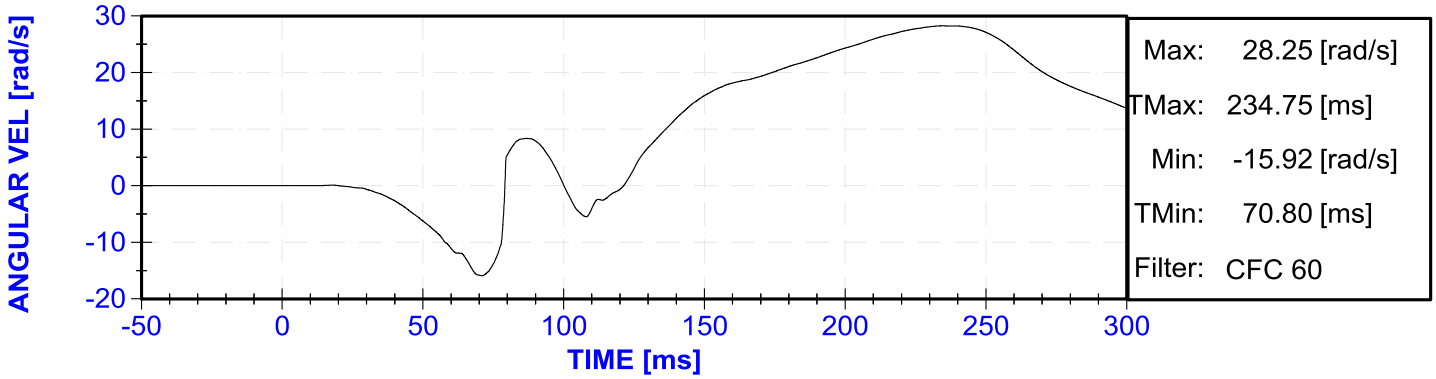
V2P1 HEAD ANGULAR ACCELERATION Z [SIMON]



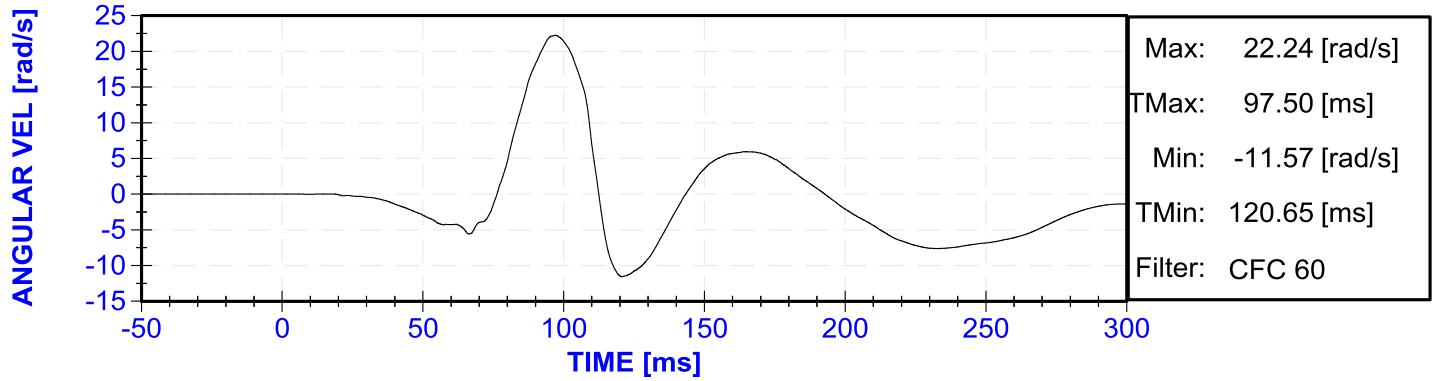
V2P1 HEAD ANGULAR VELOCITY X [SIMON]



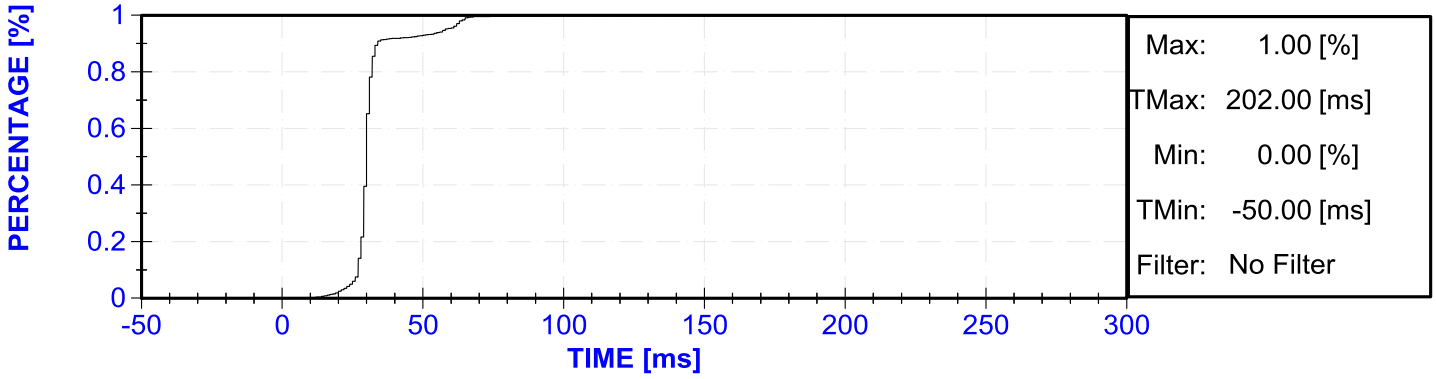
V2P1 HEAD ANGULAR VELOCITY Y [SIMON]



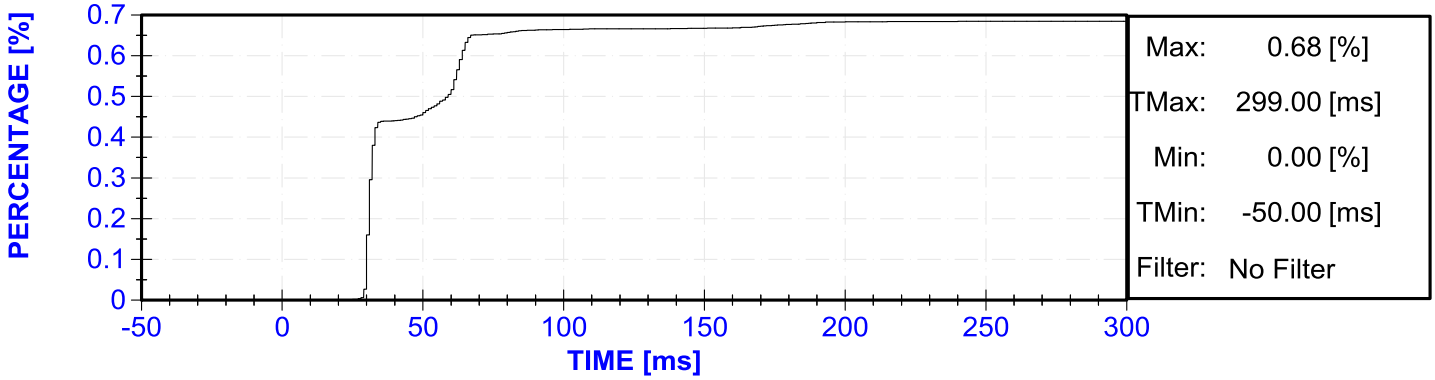
V2P1 HEAD ANGULAR VELOCITY Z [SIMON]



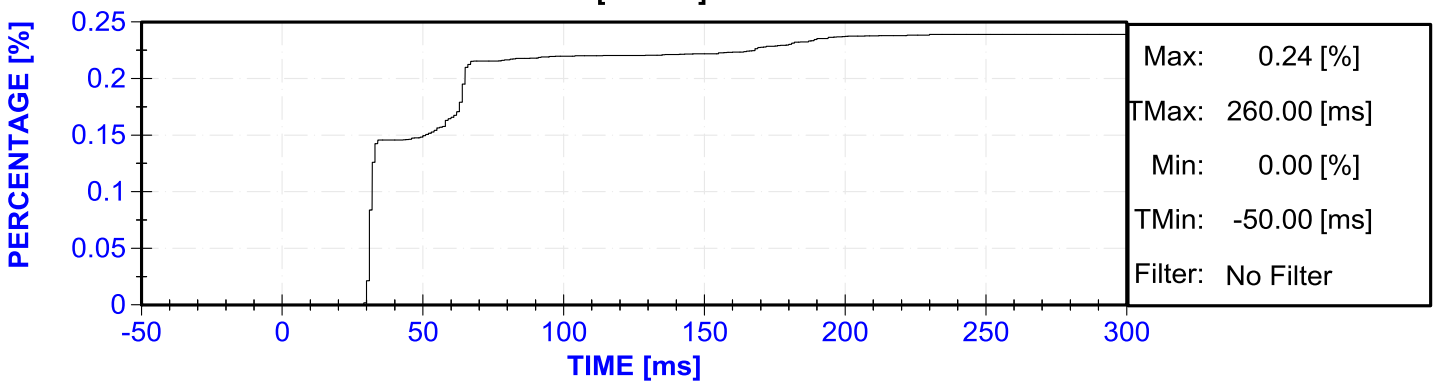
V2P1 CUMULATIVE STRAIN 0.05 [SIMON]



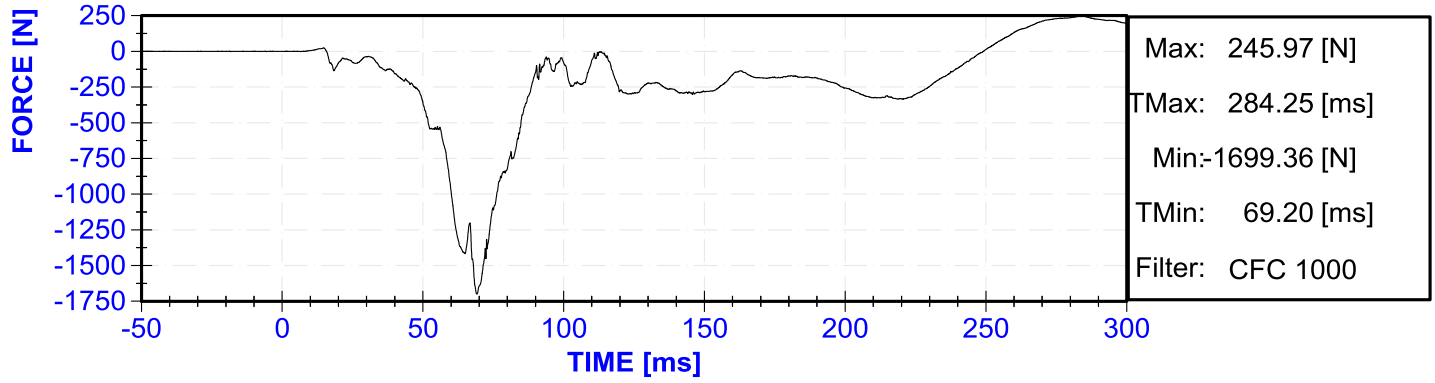
V2P1 CUMULATIVE STRAIN 0.10 [SIMON]



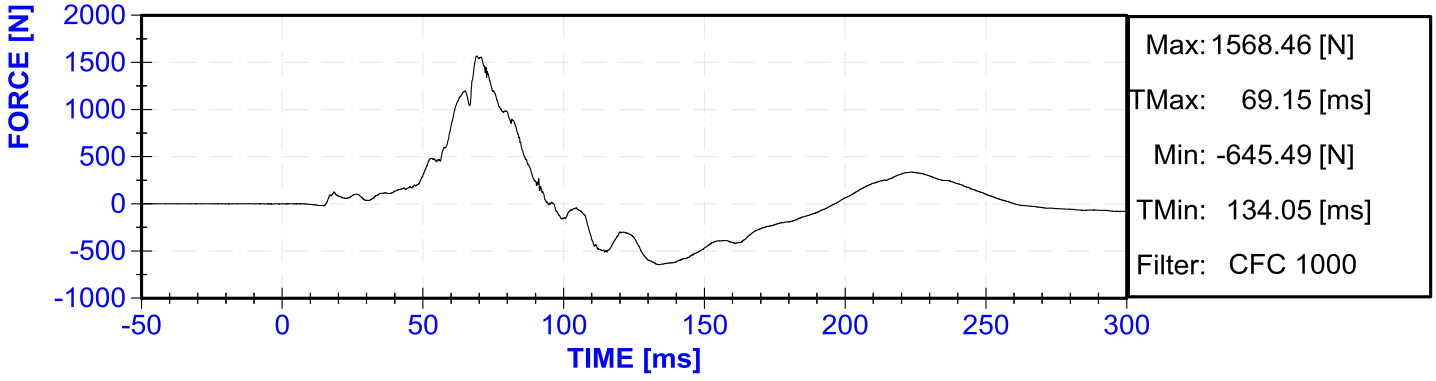
V2P1 CUMULATIVE STRAIN 0.15 [SIMON]



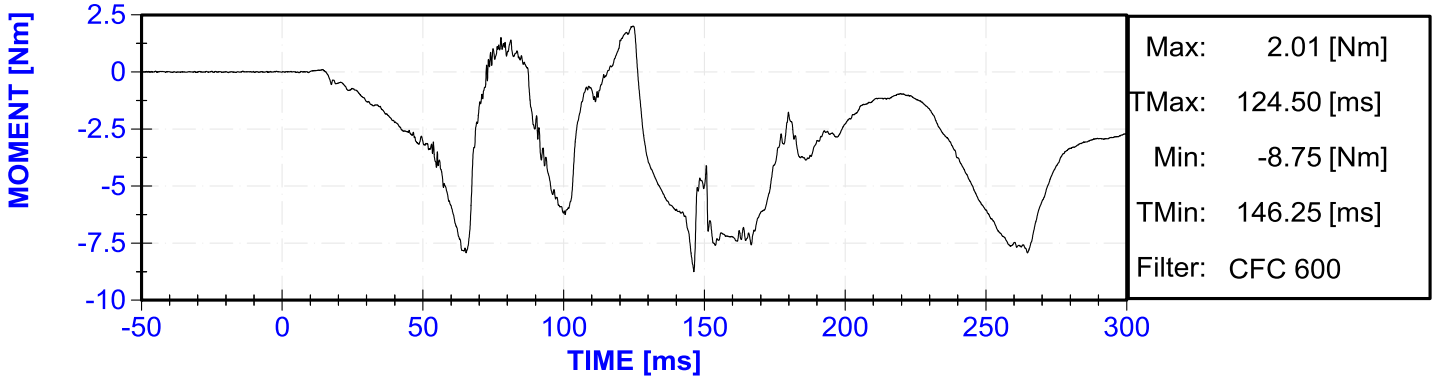
V2P1 Fx on head acting through the O.C. joint only



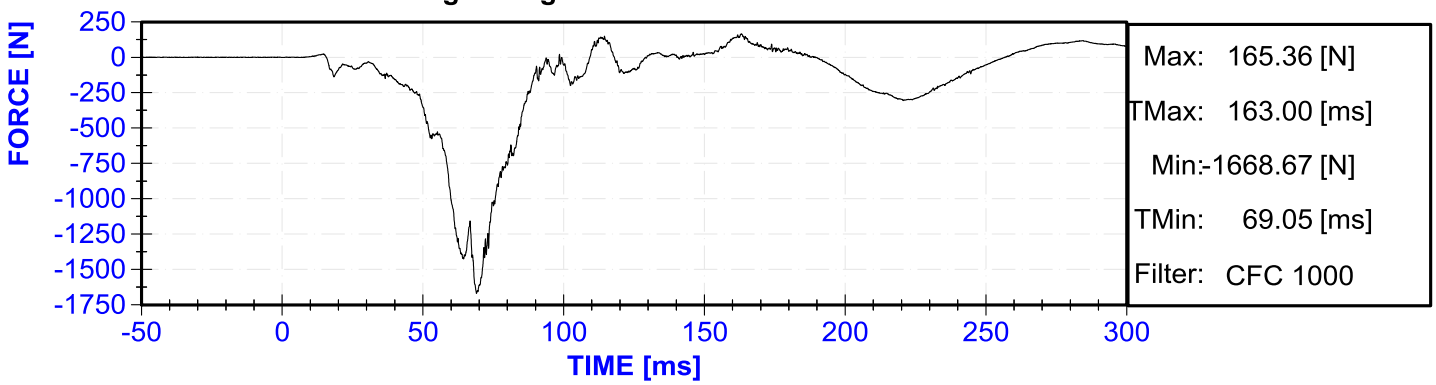
V2P1 Fz on head acting through the O.C. joint only



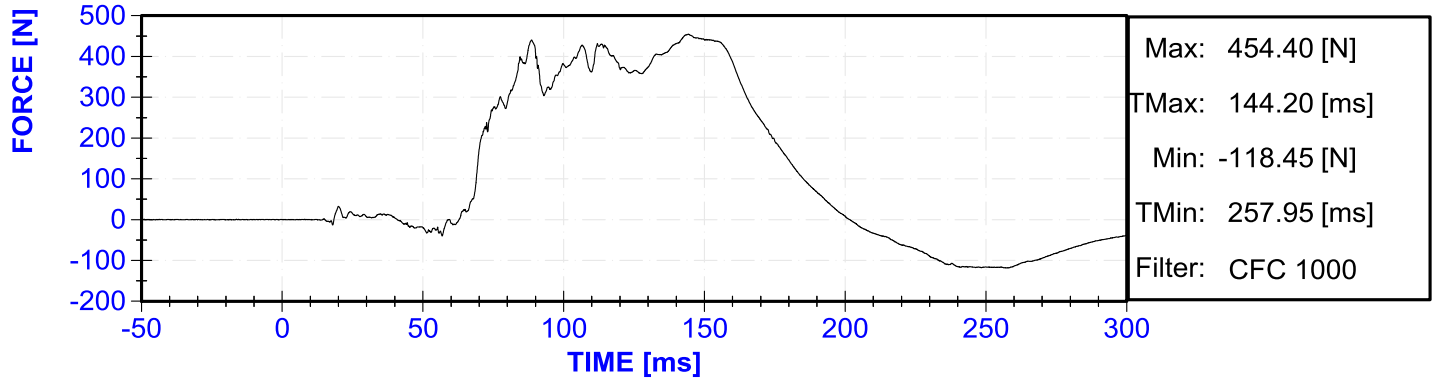
V2P1 My on head acting through the O.C. joint only



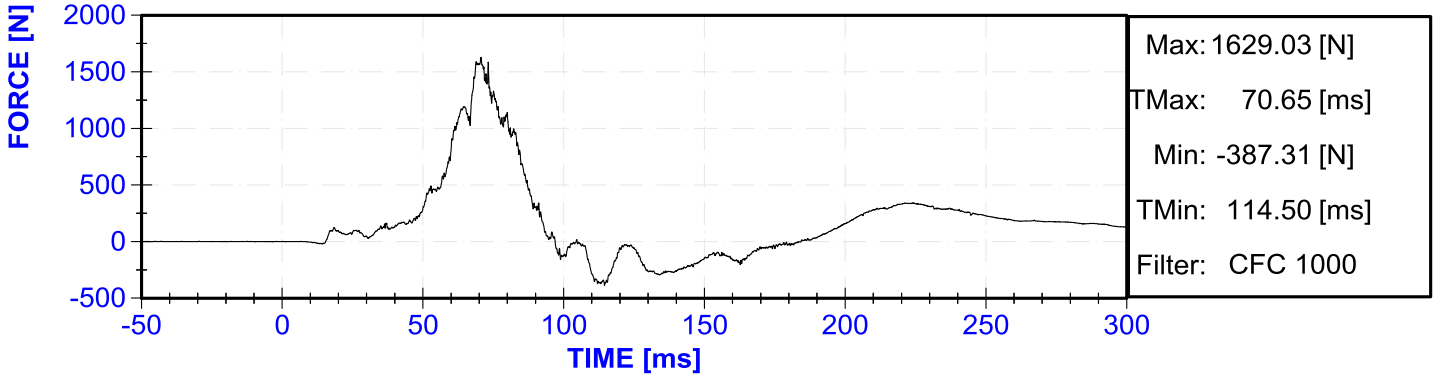
V2P1 Fx on head acting through the total neck section



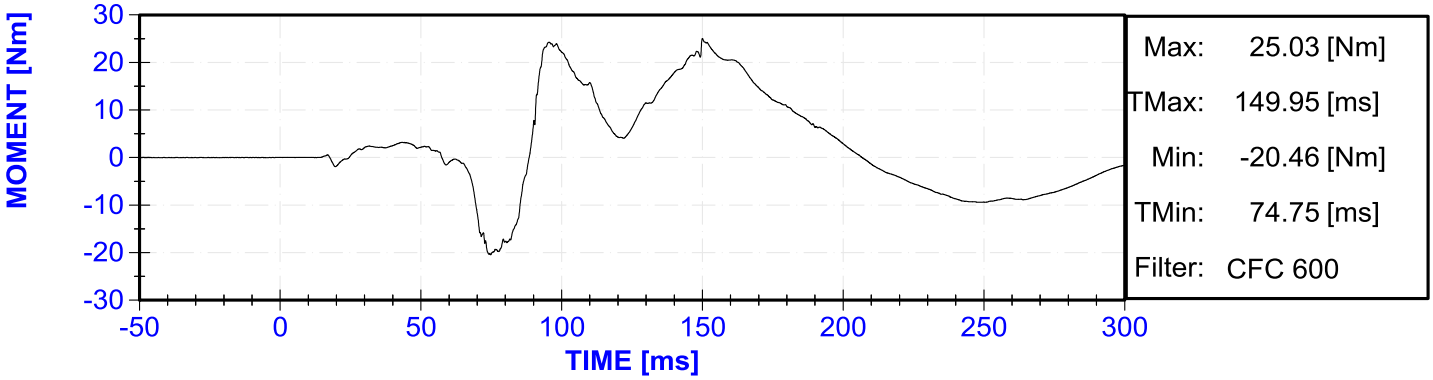
V2P1 Fy on head acting through the total neck section



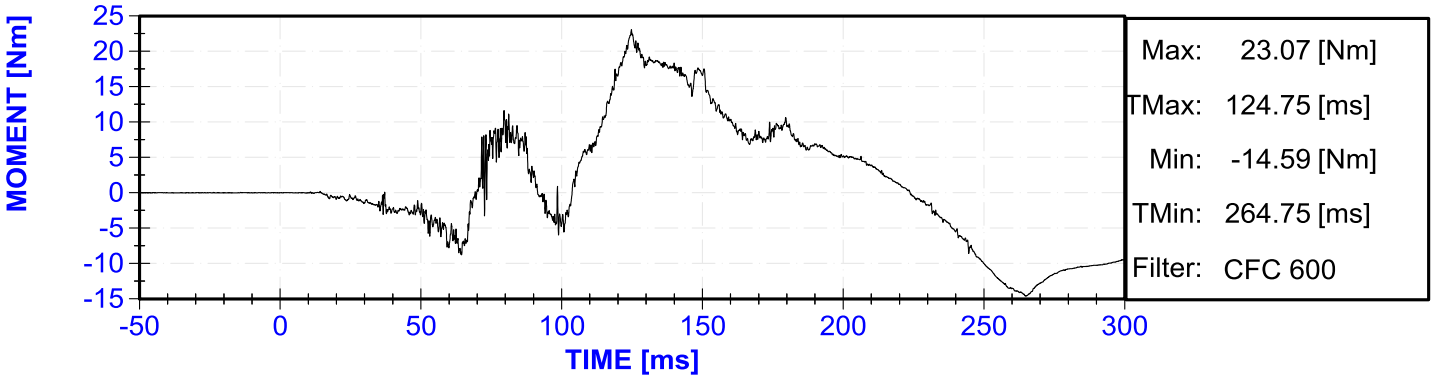
V2P1 Fz on head acting through the total neck section



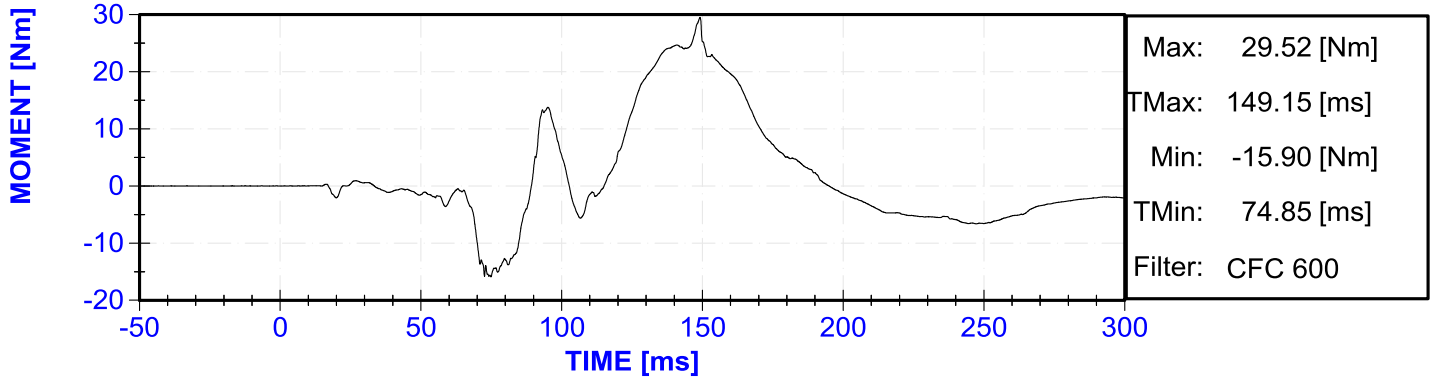
V2P1 Mx on head acting through the total neck section



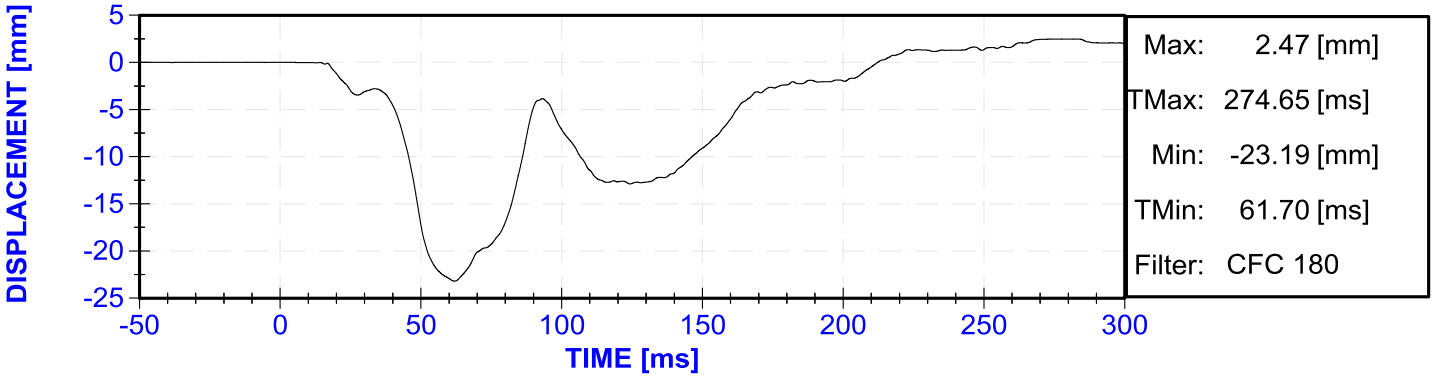
V2P1 My on head acting through the total neck section



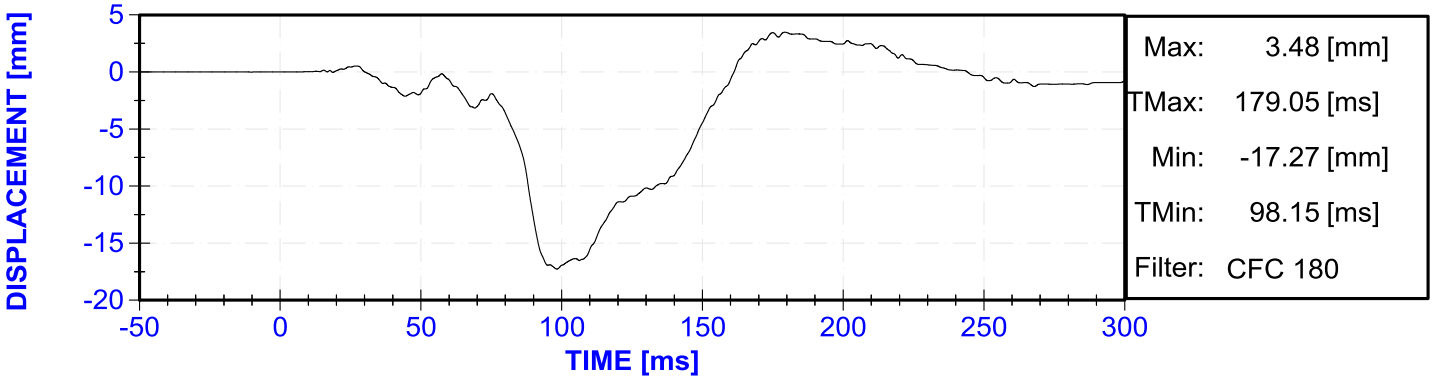
V2P1 Mz on head acting through the total neck section



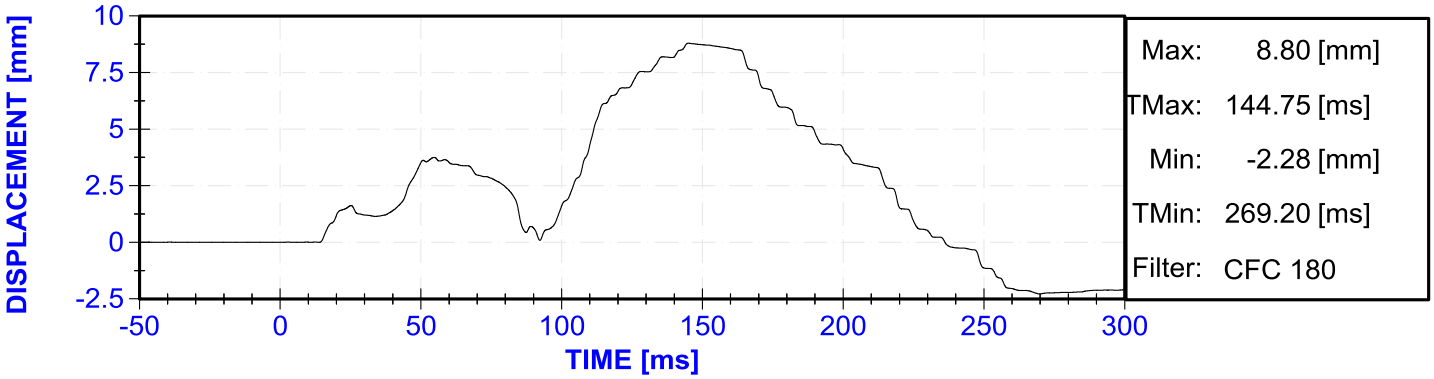
V2P1 Chest Left Upper Dx



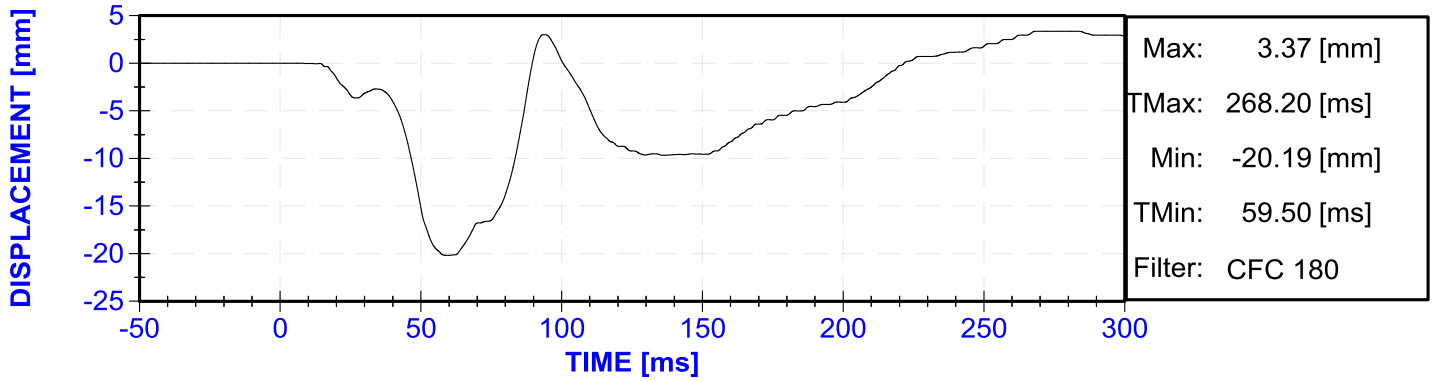
V2P1 Chest Left Upper Dy



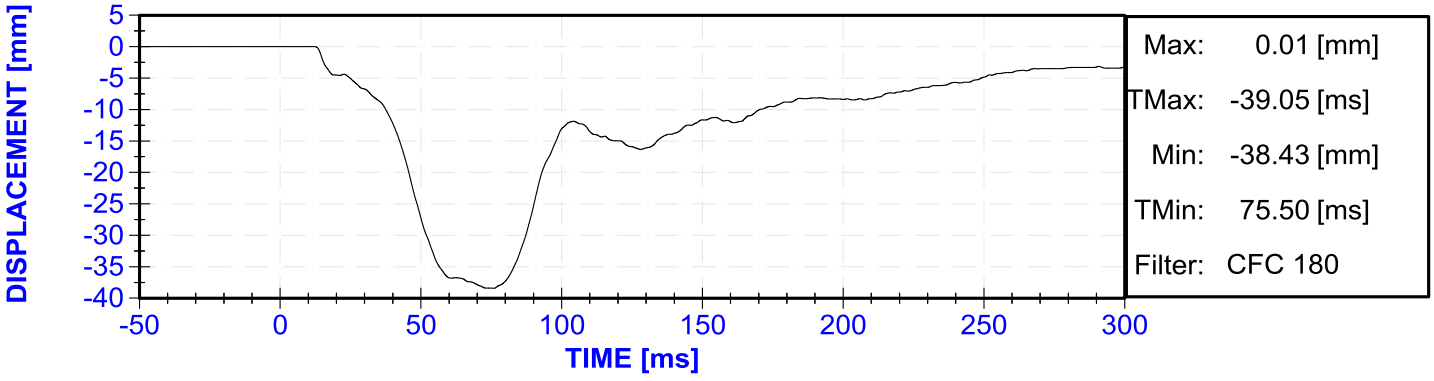
V2P1 Chest Left Upper Dz



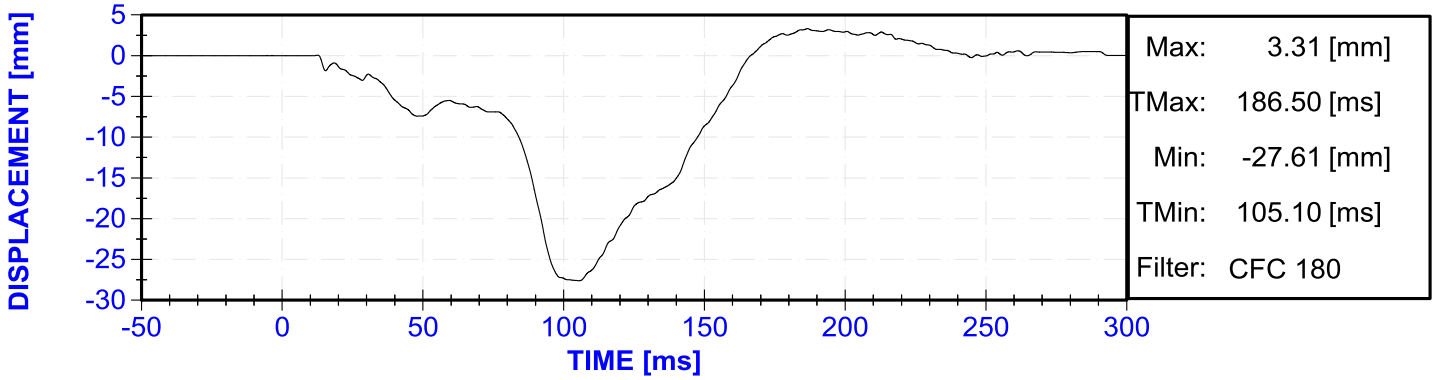
V2P1 Chest Left Upper D



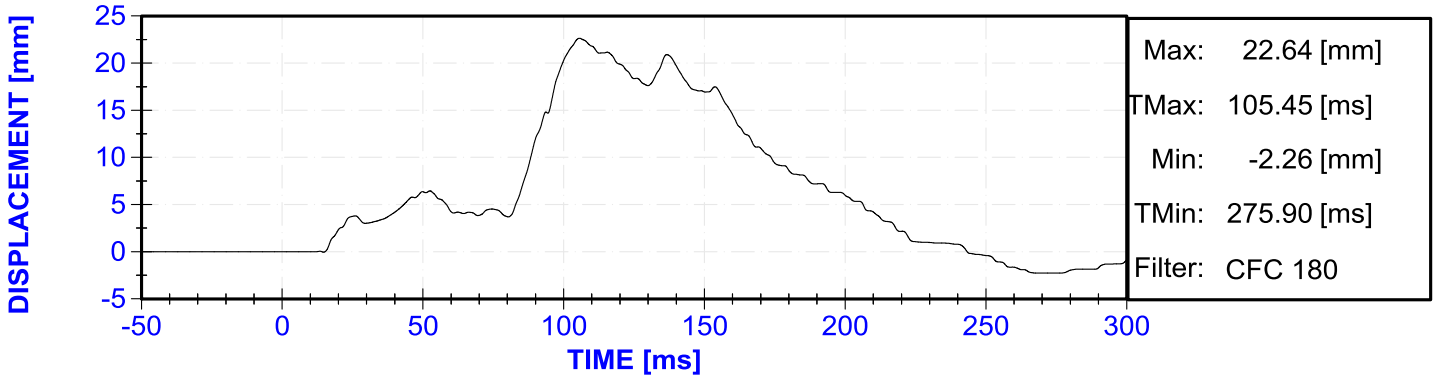
V2P1 Chest Right Upper Dx



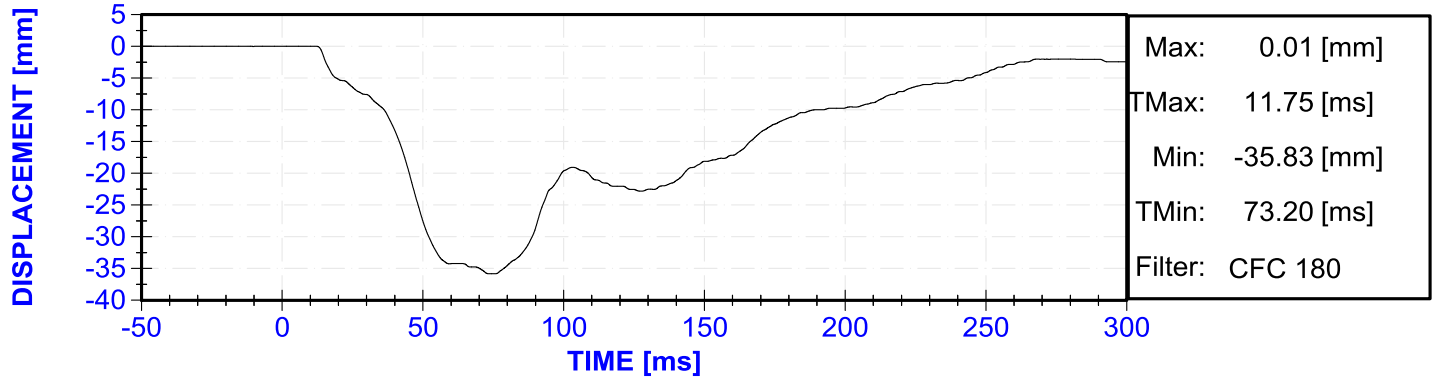
V2P1 Chest Right Upper Dy



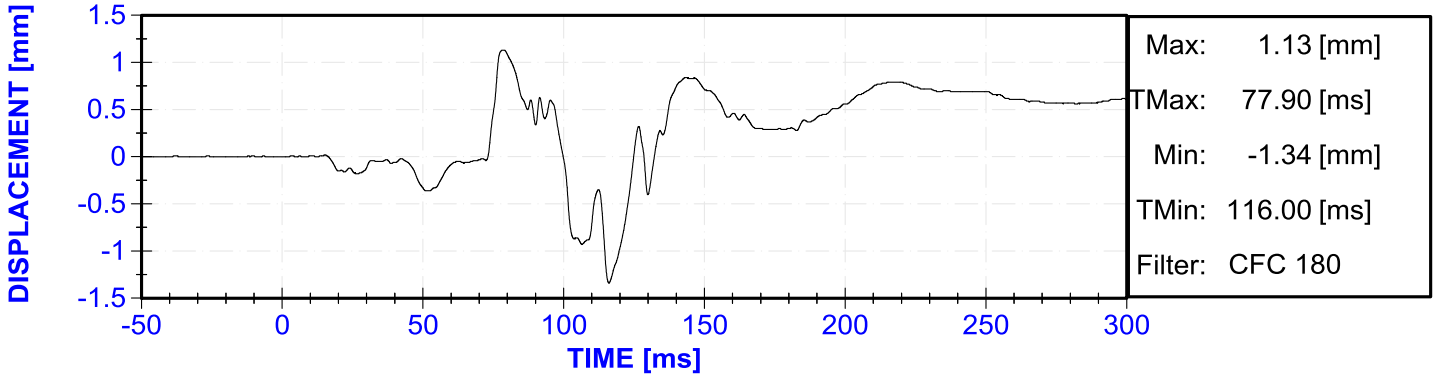
V2P1 Chest Right Upper Dz



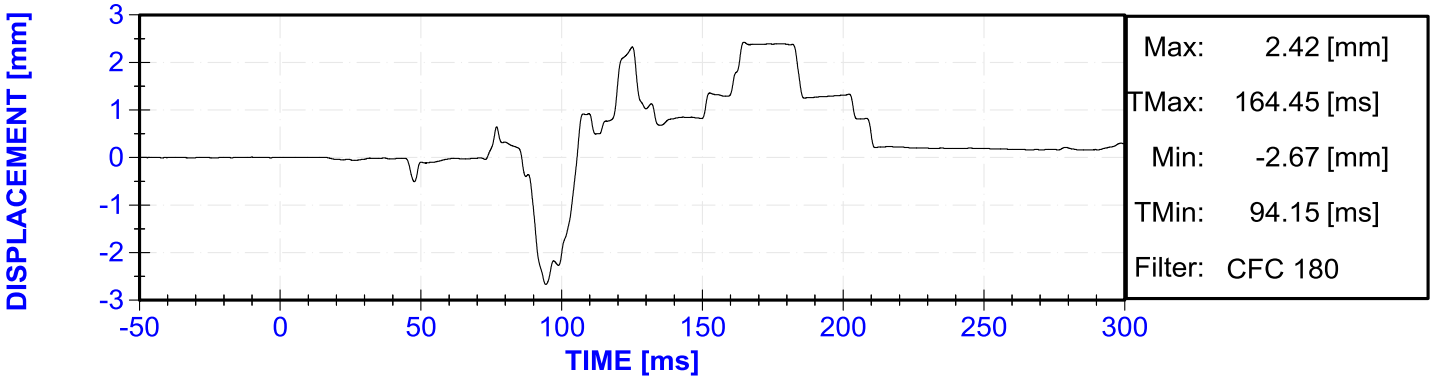
V2P1 Chest Right Upper D



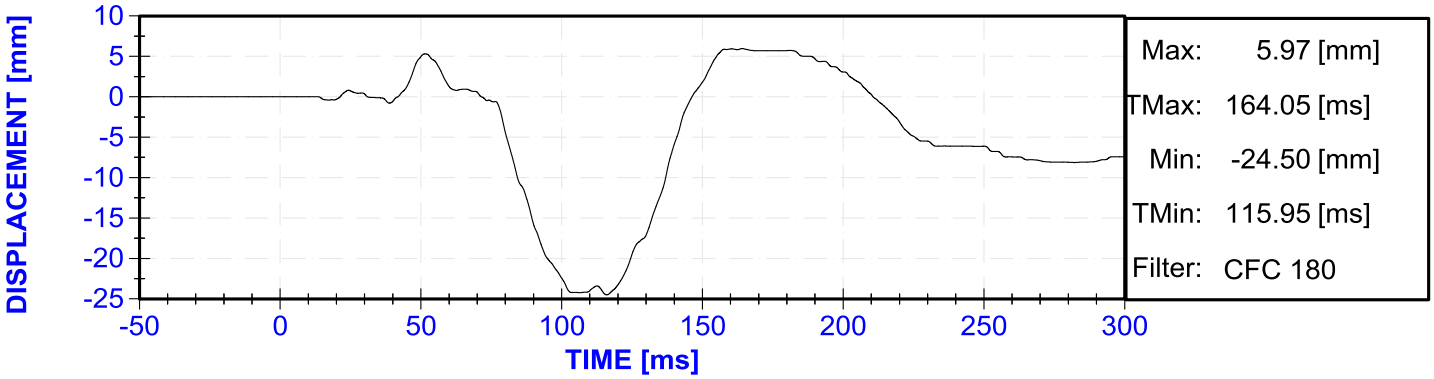
V2P1 Chest Left Lower Dx



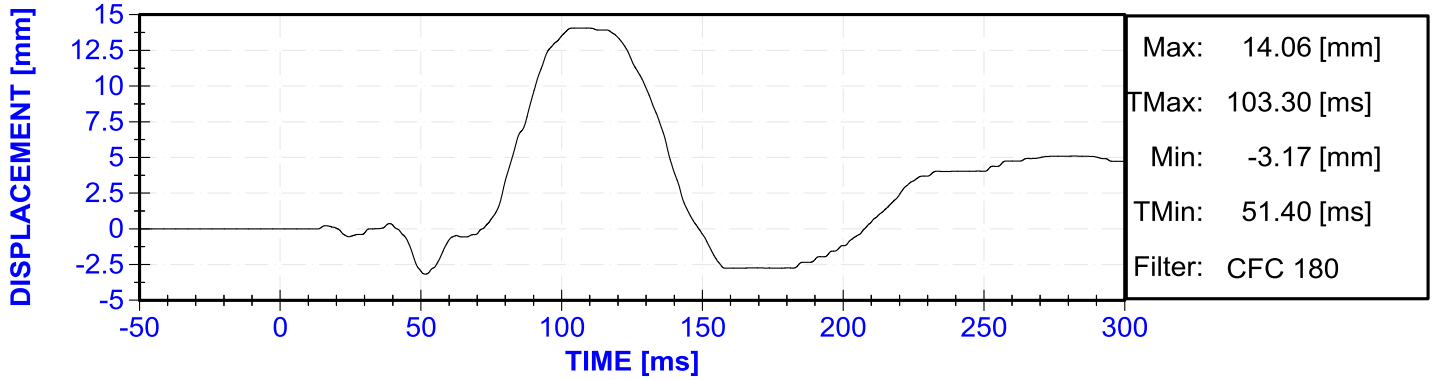
V2P1 Chest Left Lower Dy



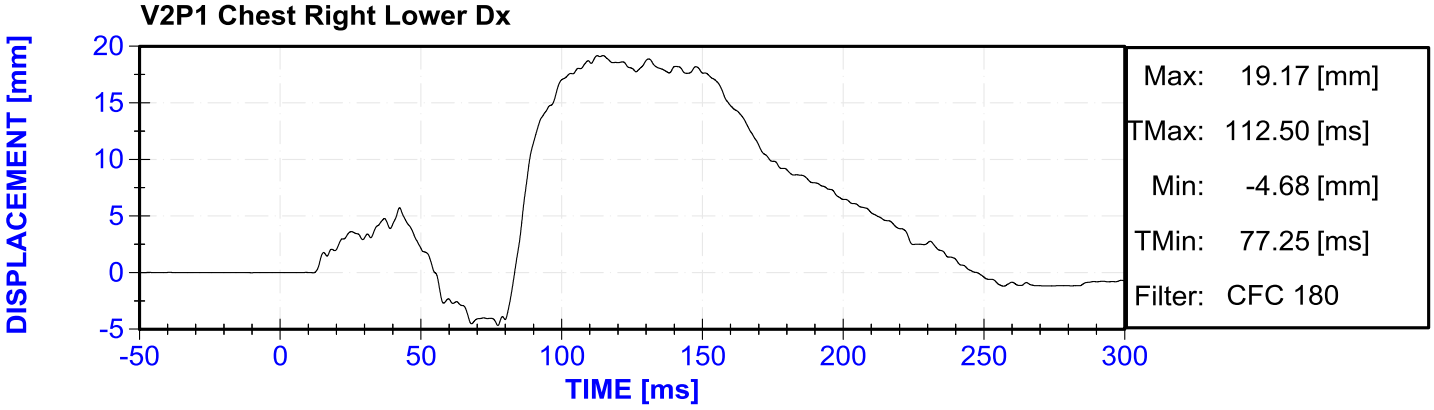
V2P1 Chest Left Lower Dz



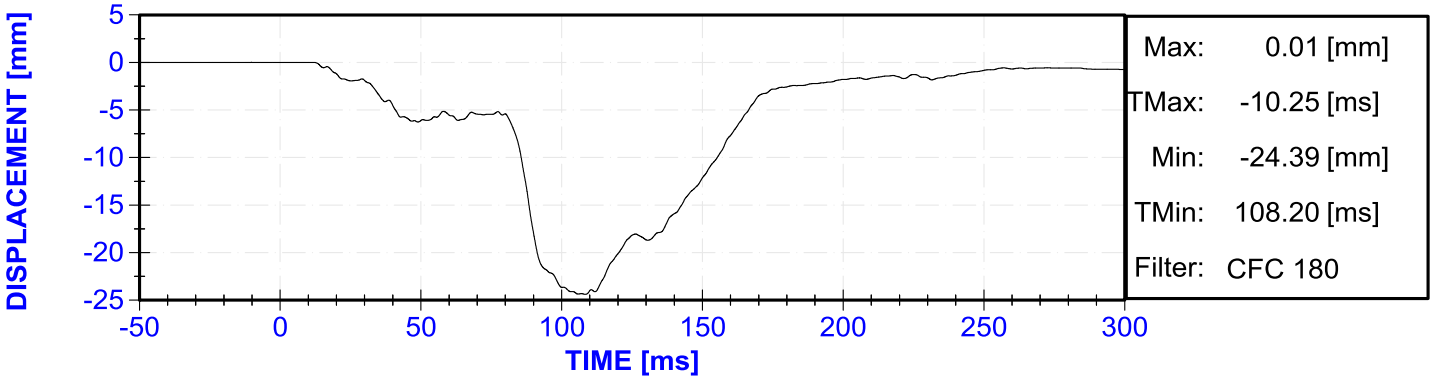
V2P1 Chest Left Lower D



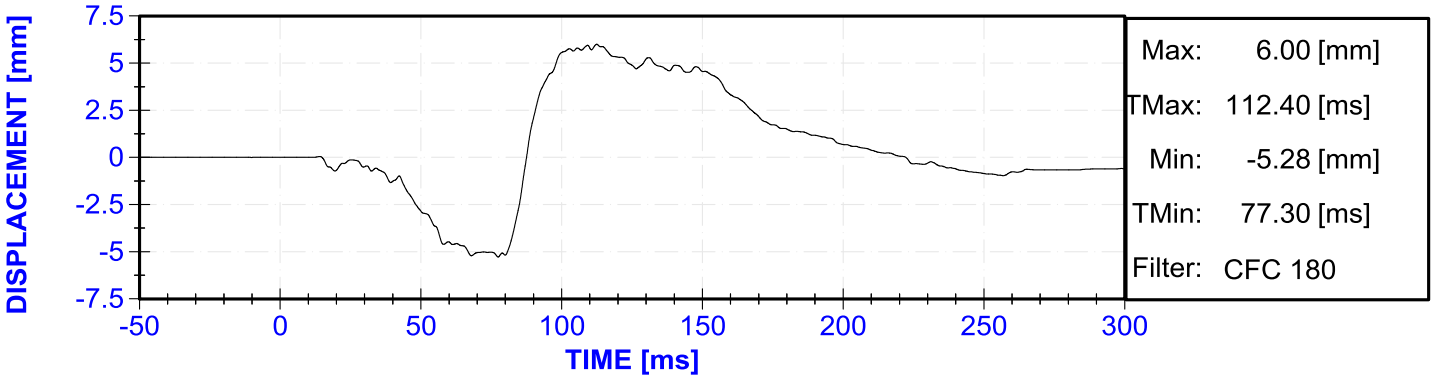
V2P1 Chest Right Lower Dx



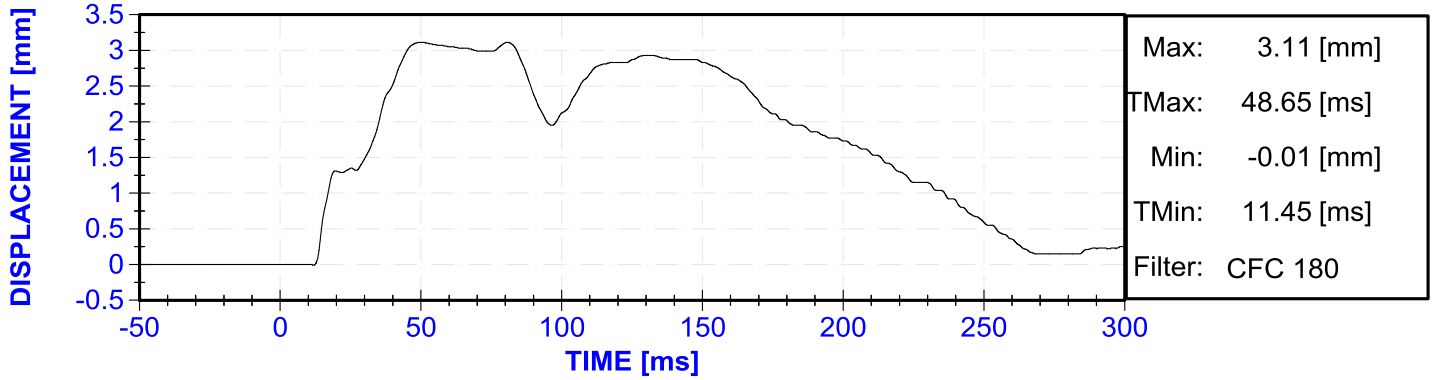
V2P1 Chest Right Lower Dy



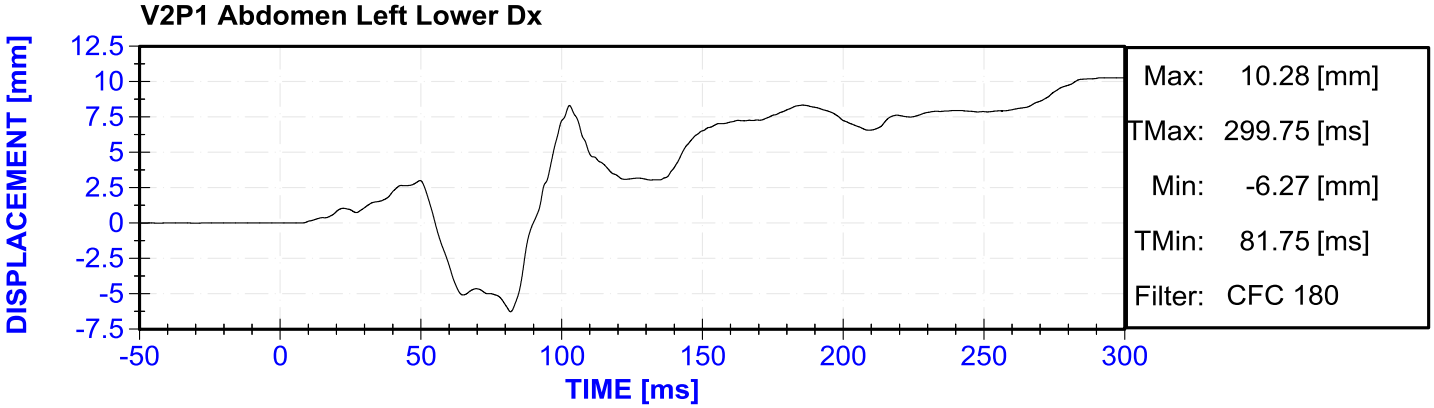
V2P1 Chest Right Lower Dz



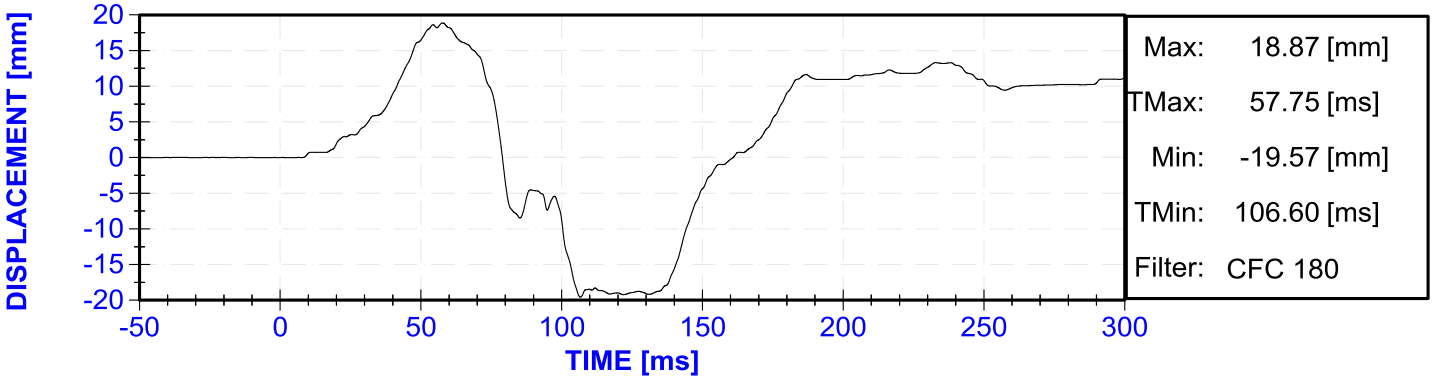
V2P1 Chest Right Lower D



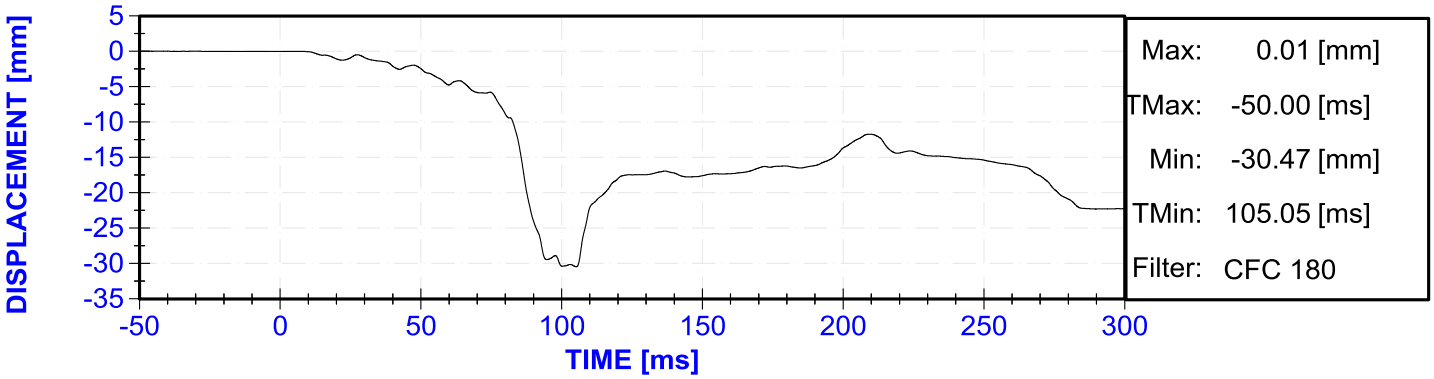
V2P1 Abdomen Left Lower Dx



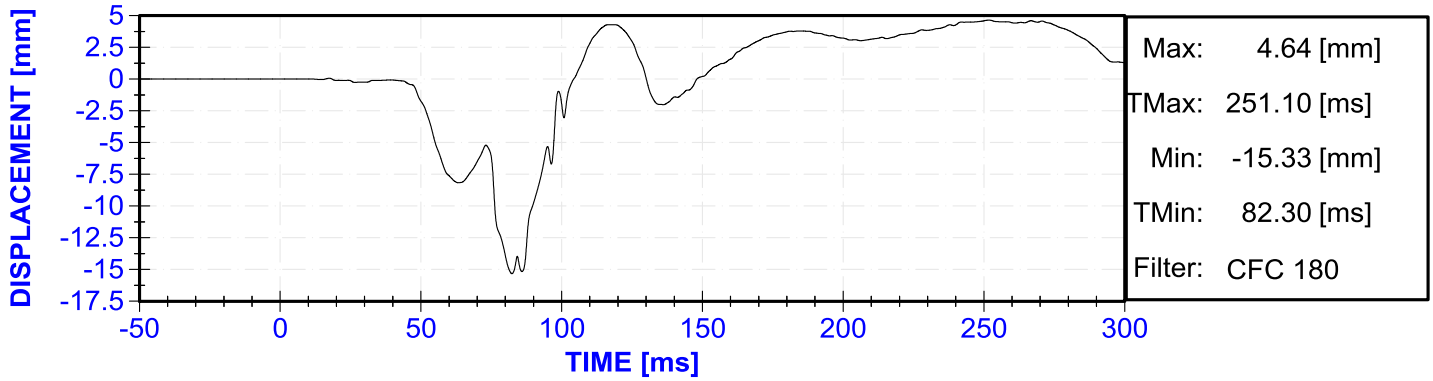
V2P1 Abdomen Left Lower Dy



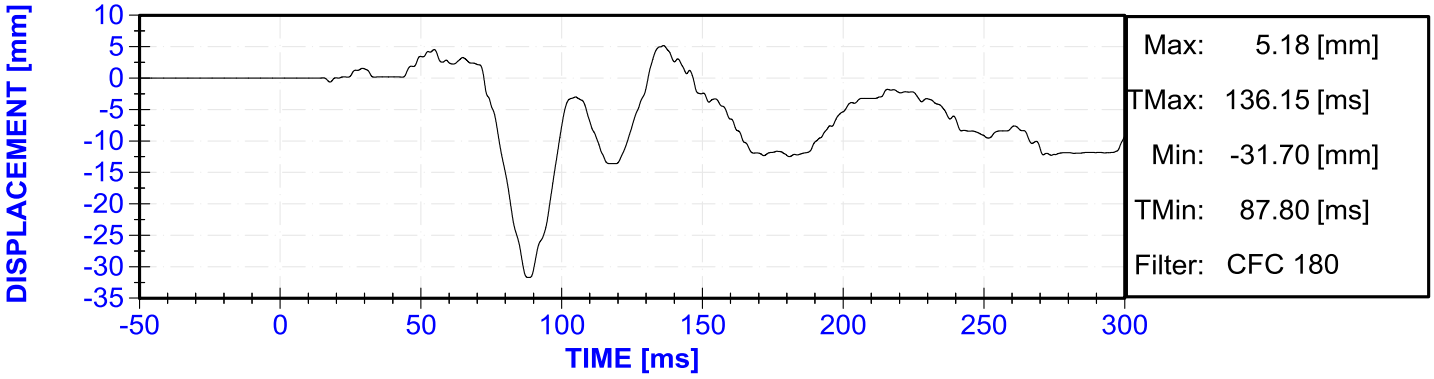
V2P1 Abdomen Left Lower Dz



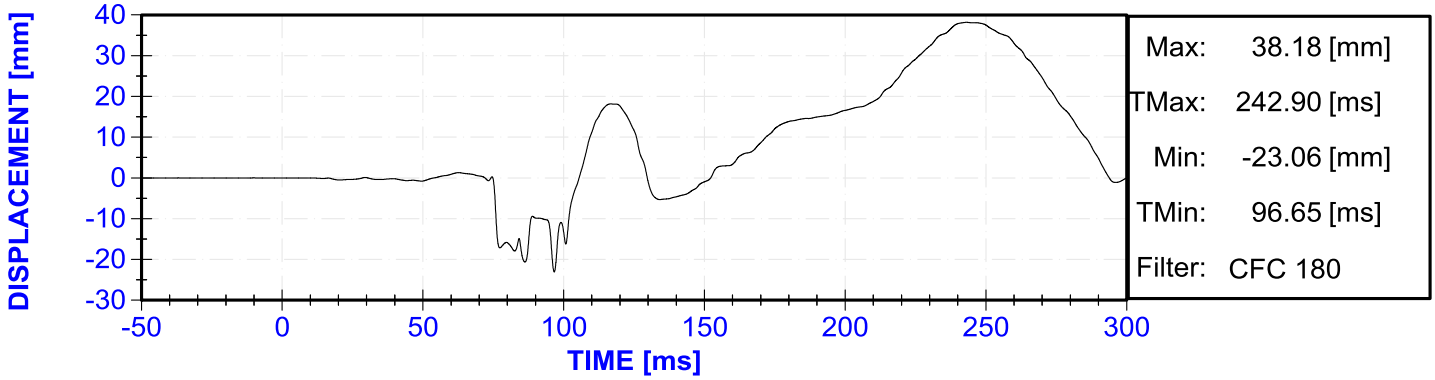
V2P1 Abdomen Right Lower Dx



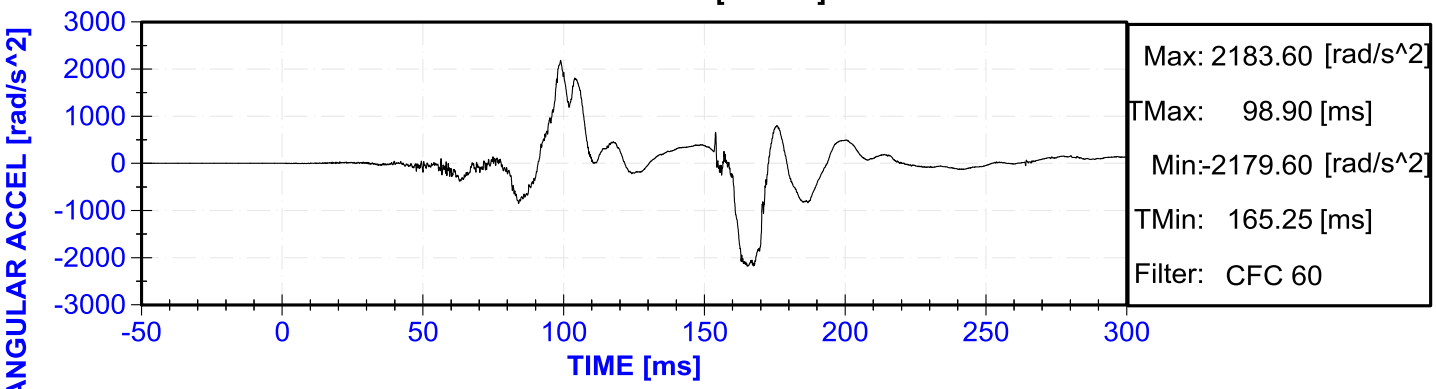
V2P1 Abdomen Right Lower Dy



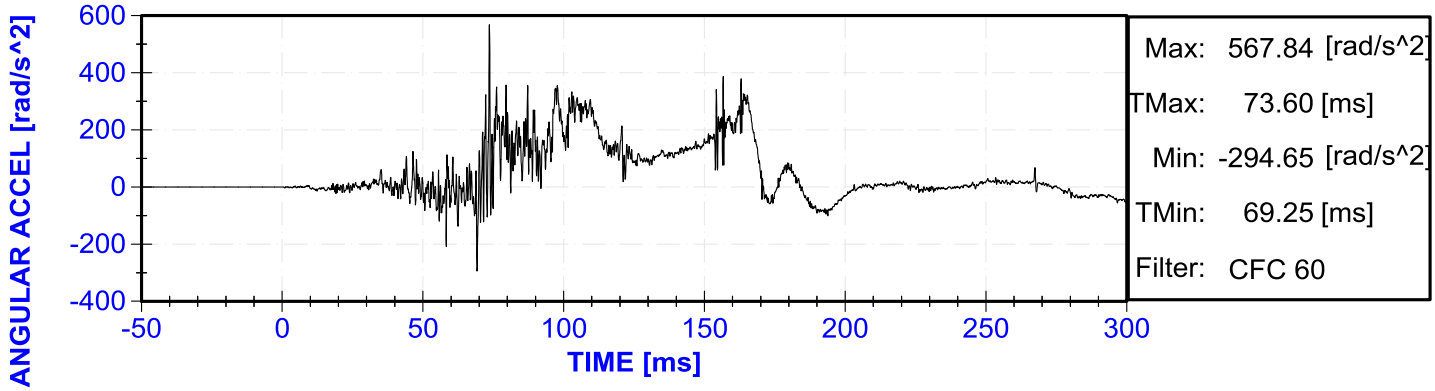
V2P1 Abdomen Right Lower Dz



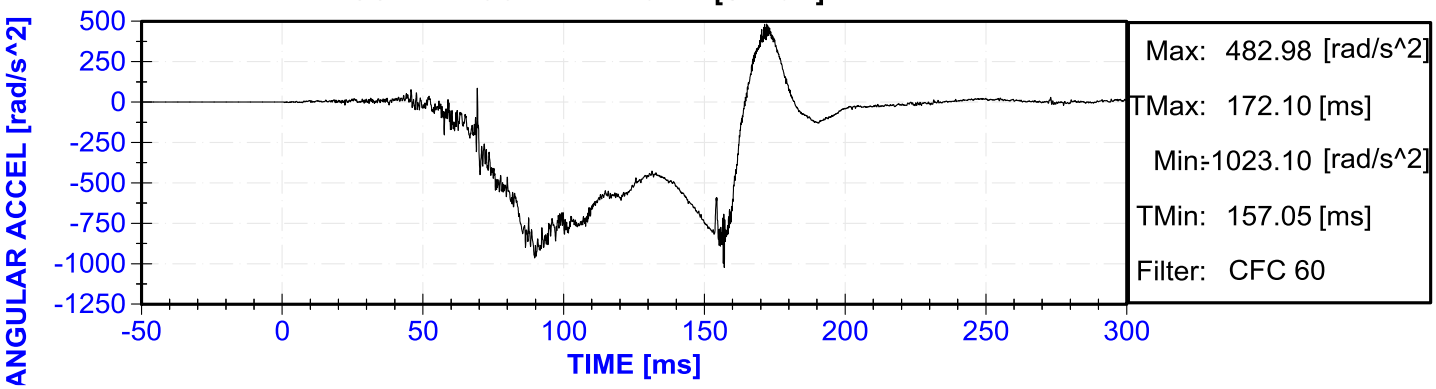
V2P4 HEAD ANGULAR ACCELERATION X [SIMON]



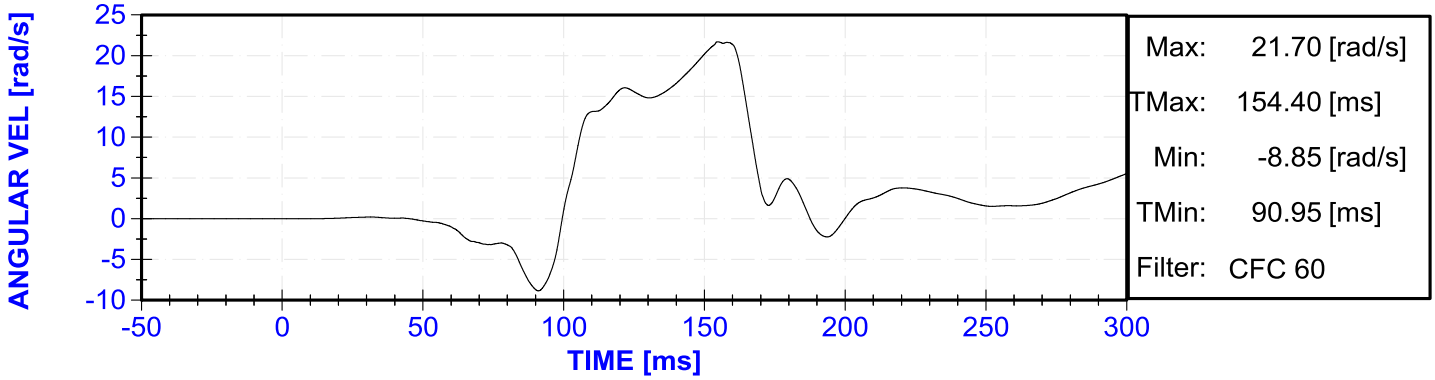
V2P4 HEAD ANGULAR ACCELERATION Y [SIMON]



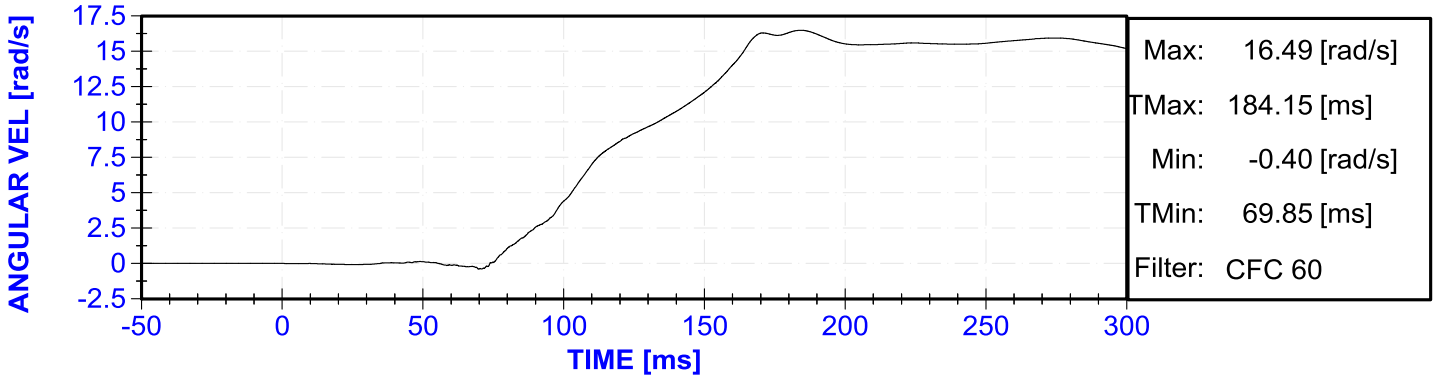
V2P4 HEAD ANGULAR ACCELERATION Z [SIMON]



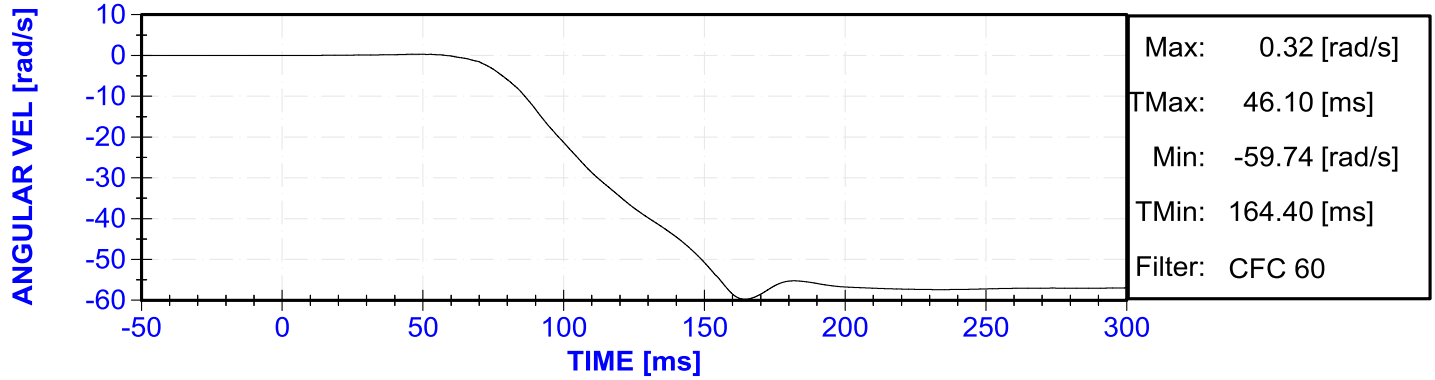
V2P4 HEAD ANGULAR VELOCITY X [SIMON]



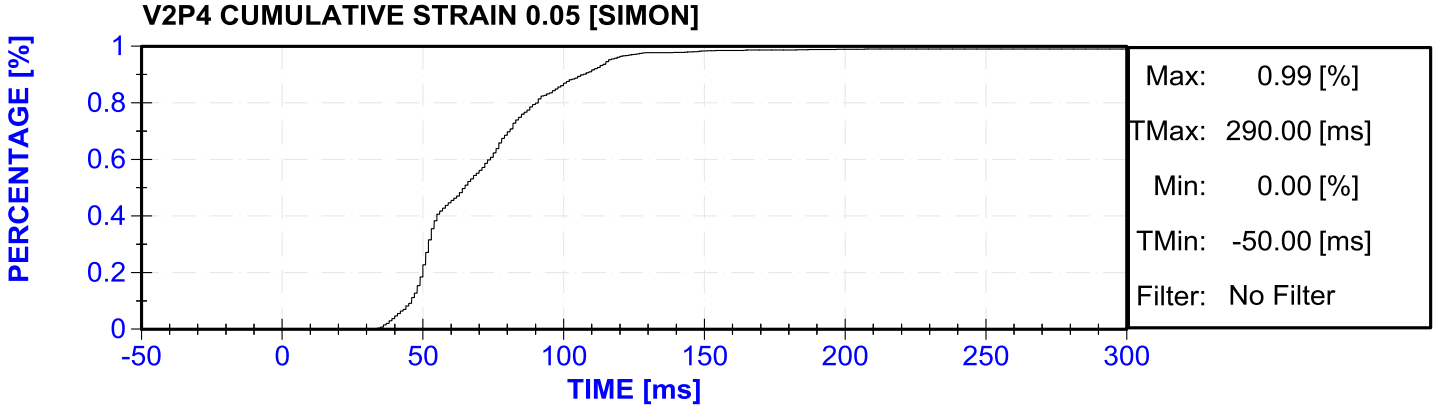
V2P4 HEAD ANGULAR VELOCITY Y [SIMON]



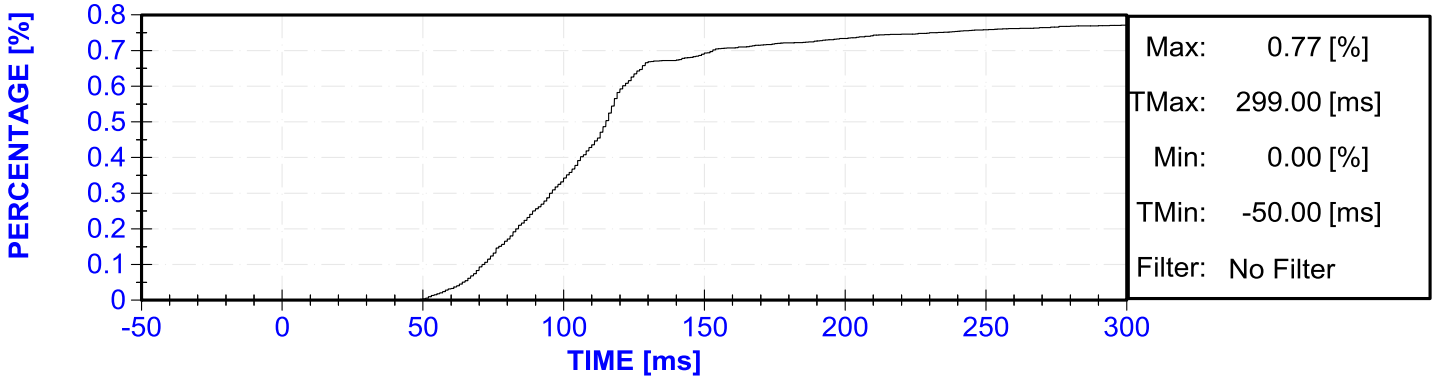
V2P4 HEAD ANGULAR VELOCITY Z [SIMON]



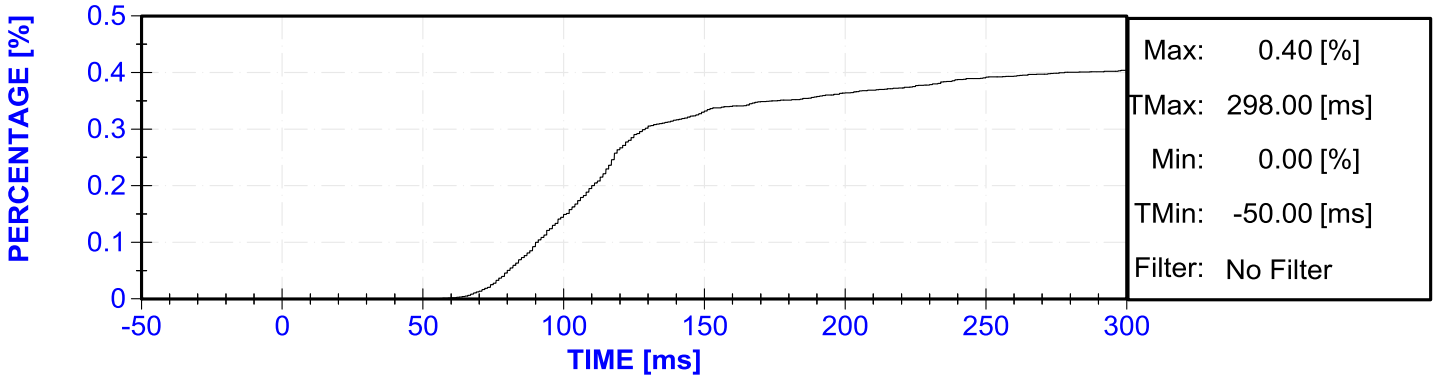
V2P4 CUMULATIVE STRAIN 0.05 [SIMON]



V2P4 CUMULATIVE STRAIN 0.10 [SIMON]



V2P4 CUMULATIVE STRAIN 0.15 [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
Table 4	THOR Pre-Test Inspection Checklist	C-4
Table 5	THOR Post-Test Inspection Checklist	C-9
	Dummy Calibration Plots	C-14

Table 1 – Dummy Information

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

Table 2 - THOR-6 Set File

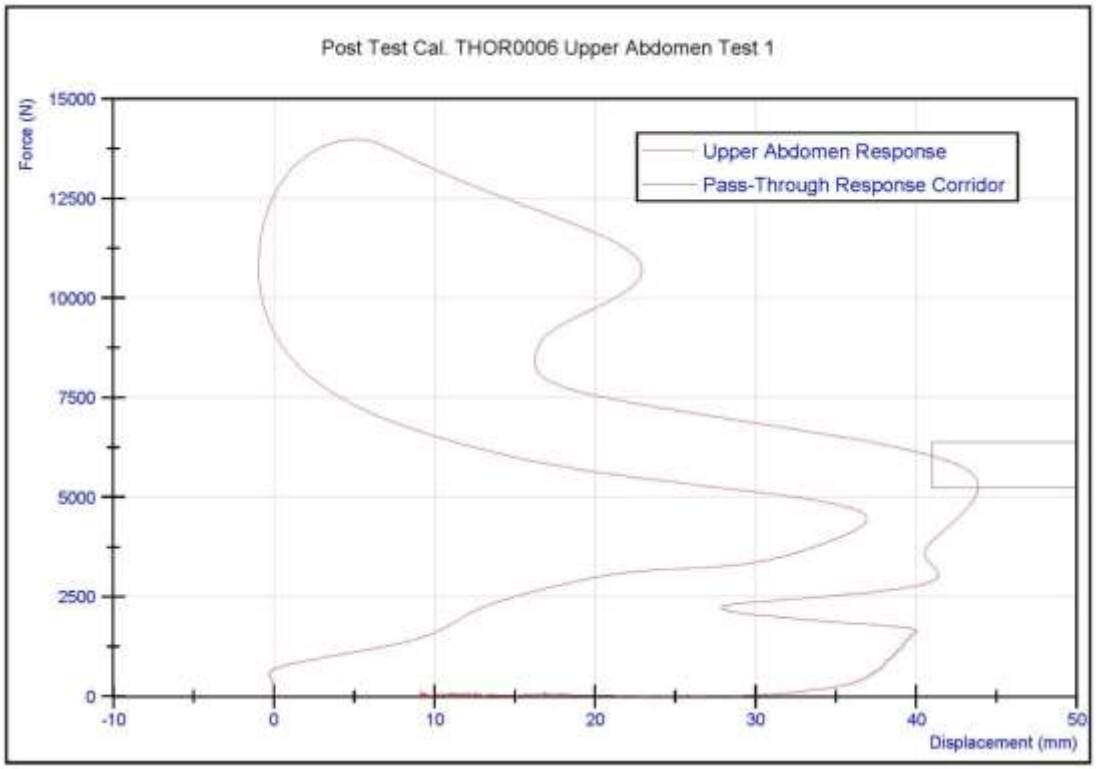
LFTX	LFTY	LFTZ	RFTX	RFTY	RFTZ
Left Ankle X Rotation	Left Ankle Y Rotation	Left Ankle Z Rotation	Right Ankle X Rotation	Right Ankle Y Rotation	Right Ankle Z Rotation
1.475533	13.11333	2.986433	3.001167	8.345867	36.7335

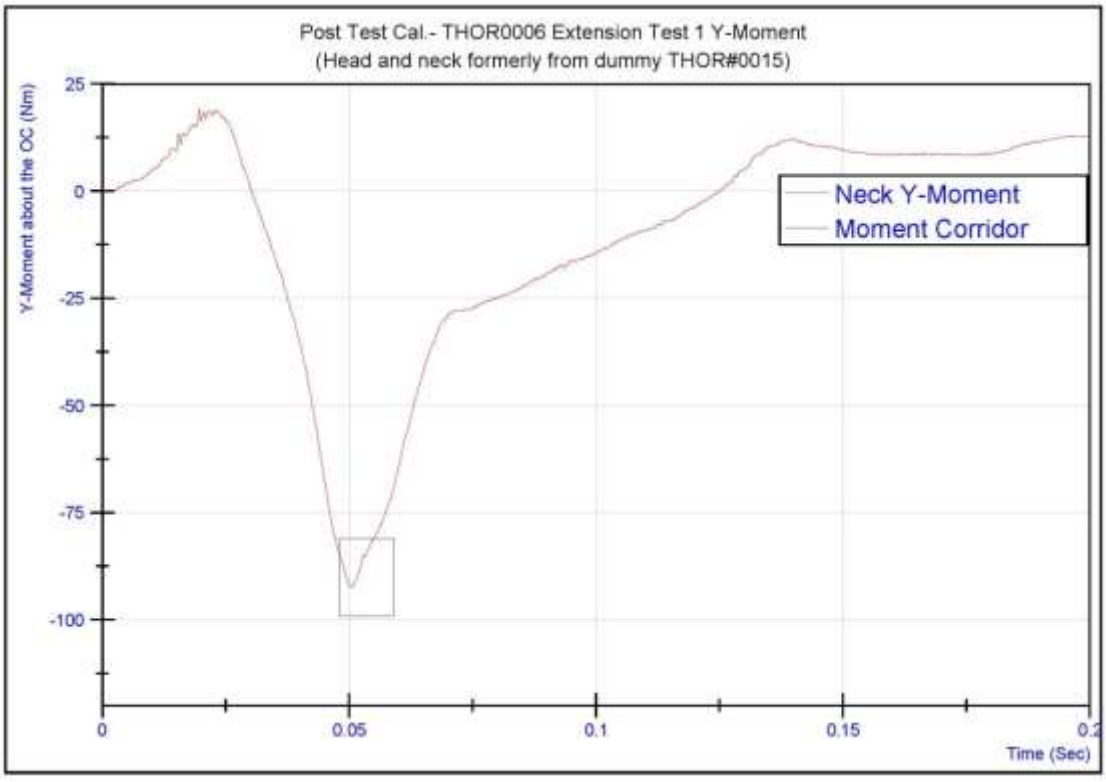
Table 3 – THOR Dummy Initial SetUP Information

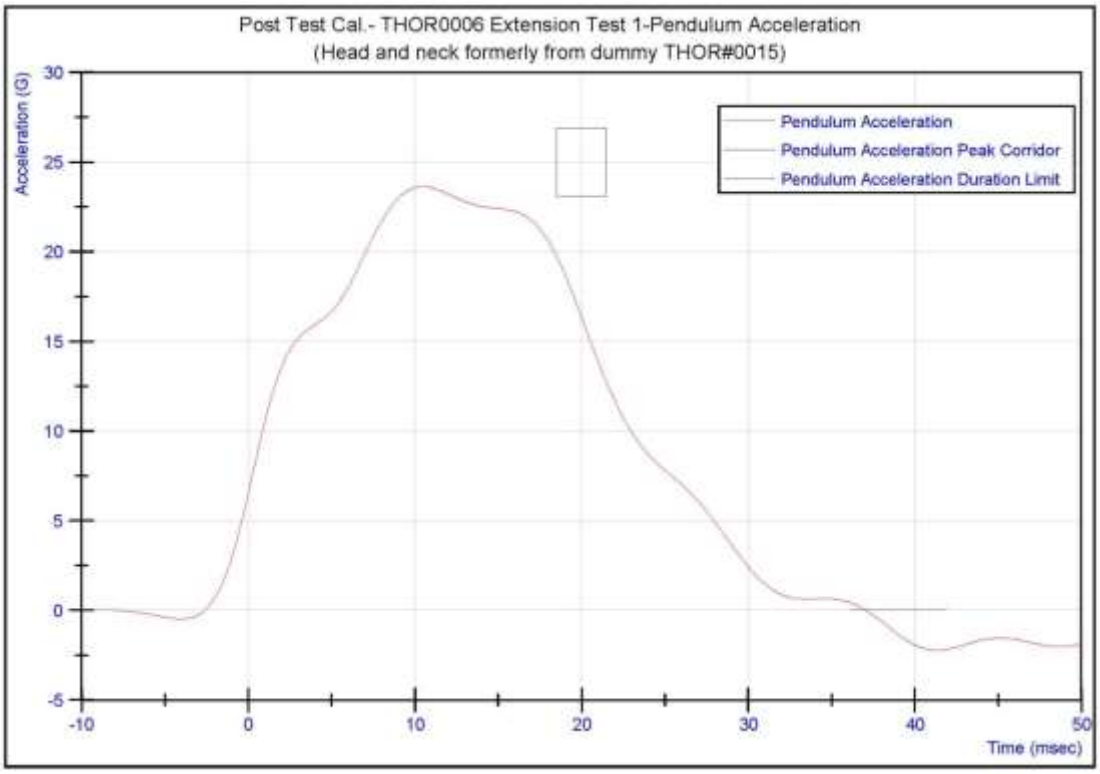
			THOR-NT S/N 0006						Sensitivity (JARI)	Sensitivity (GESAC)	Setup Angle (GESAC)
Sensor	**Description /Axis**	**Mfg**	**Capacity**	**Unit-1**	**Unit-2**	**Range**	**Direction**	**CFC**	**V/Unit-1**	**V/Unit-1**	**Degrees**
NKCRP	Occipital Condyle	Contelec S/N 441	318	deg	mV	1000	Rear +	180	3.16653	3.16653	0
Thorax CRUX	Upper Right Base	Contelec S/N 001	318	deg	mV	2000	Rear +	180	3.18451	3.18451	-1.462
Thorax CRUX	Upper Right Mid	Contelec S/N 307	318	deg	mV	2000	Rear +	180	3.1923	3.1923	-88.721
Thorax CRUX	Upper Right Elbow	Contelec S/N 003	318	deg	mV	2000	Rear +	180	3.15174	3.15174	85.449
Thorax CRUX	Upper Left Base	Contelec S/N 040	318	deg	mV	2000	Rear +	180	3.14021	3.14021	-4.697
Thorax CRUX	Upper Left Mid	Contelec S/N 041	318	deg	mV	2000	Rear +	180	3.13326	3.13326	99.189
Thorax CRUX	Upper Left Elbow	Contelec S/N 529	318	deg	mV	2000	Rear +	180	3.14537	3.14537	-91.362
Thorax CRUX	Lower Right Base	Contelec S/N 043	318	deg	mV	2000	Rear +	180	3.1615	3.1615	2.0640
Thorax CRUX	Lower Right Mid	Contelec S/N 706	318	deg	mV	2000	Rear +	180	3.04839	3.04839	70.639
Thorax CRUX	Lower Right Elbow	Contelec S/N 559	318	deg	mV	2000	Rear +	180	3.19115	3.19115	15.895
Thorax CRUX	Lower Left Base	Contelec S/N 023	318	deg	mV	2000	Rear +	180	3.12781	3.12781	6.628
Thorax CRUX	Lower Left Mid	Contelec S/N 357	318	deg	mV	2000	Rear +	180	3.12211	3.12211	-87.755
Thorax CRUX	Lower left Elbow	Contelec S/N 317	318	deg	mV	2000	Rear +	180	3.15098	3.15098	46.700
DGSP	Right Abdomen X	Space-Age S/N 14486	101.6	mm	mV		Rear +	180	9.4366	9.4366	132.99
DGSP	Right Abdomen Y	Contelec S/N 104	318	deg	mV	1000	Rear +	180	2.915	2.915	2.70
DGSP	Right Abdomen Z	Contelec S/N 361	318	deg	mV	1000	Rear +	180	3.12438	3.12438	-20.03
DGSP	Left Abdomen X	Space-Age S/N 256	101.6	mm	mV	10000	Rear +	180	9.37504	9.37504	135.16
DGSP	Left Abdomen Y	Contelec S/N 107	318	deg	mV	1000	Rear +	180	2.922	2.922	-3.48
DGSP	Left Abdomen Z	Contelec S/N 410	318	deg	mV	1000	Rear +	180	3.19551	3.19551	-3.27

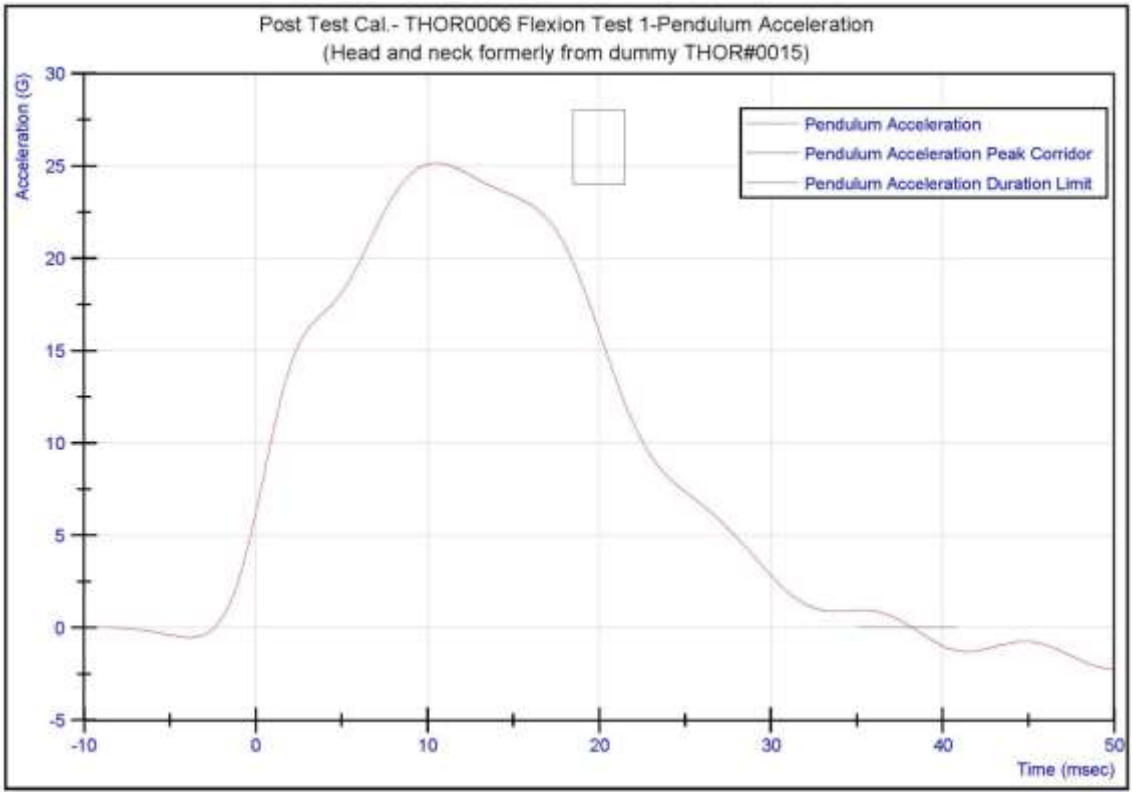
Table 4&5 – Pre and Post Test Thor Inspection was not required for this test as per SOW

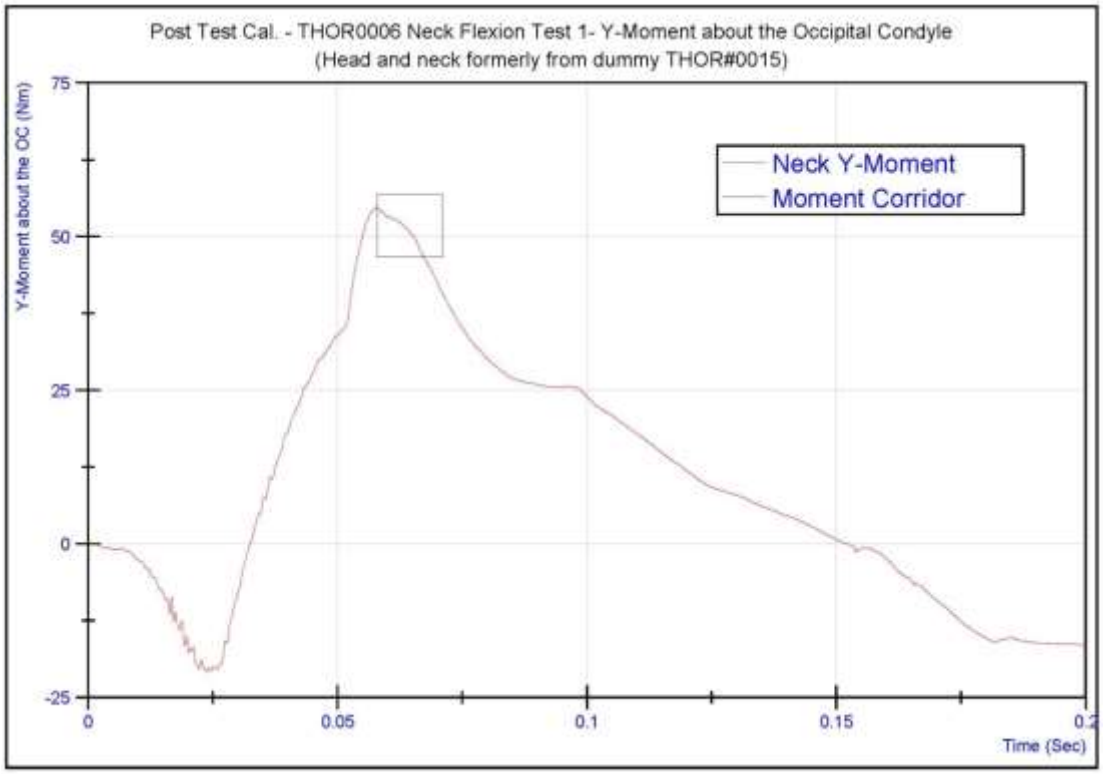
Dummy Calibration Plots

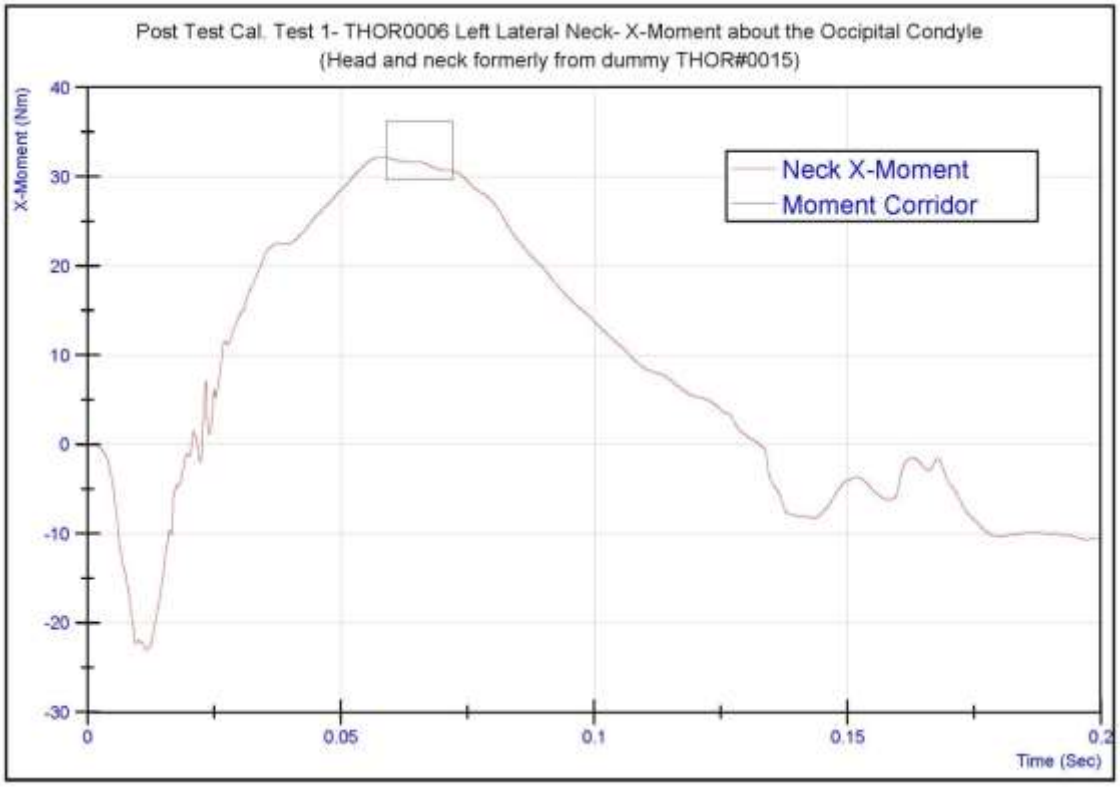

Post Test Cal. THOR0006 Upper Abdomen Test 1
Force (N)
15000
12500
10000
7500
5000
2500
0
-10
0
10
20
30
40
50
Displacement (mm)
Upper Abdomen Response
Pass-Through Response Corridor

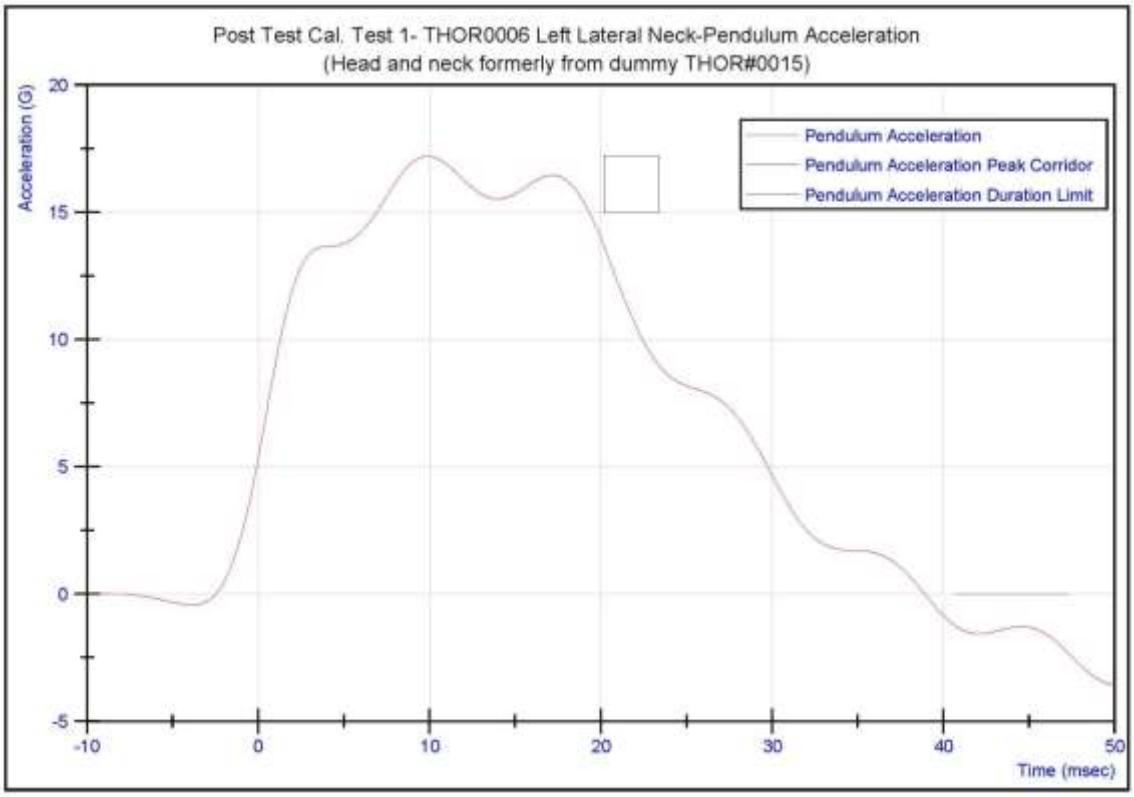

Post Test Cal.- THOR0006 Extension Test 1 Y-Moment
(Head and neck formerly from dummy THOR#0015)
Y-Moment about the OC (Nm)
25
0
-25
-50
-75
-100
0
0.05
0.1
0.15
0.2
Time (Sec)
Neck Y-Moment
Moment Corridor

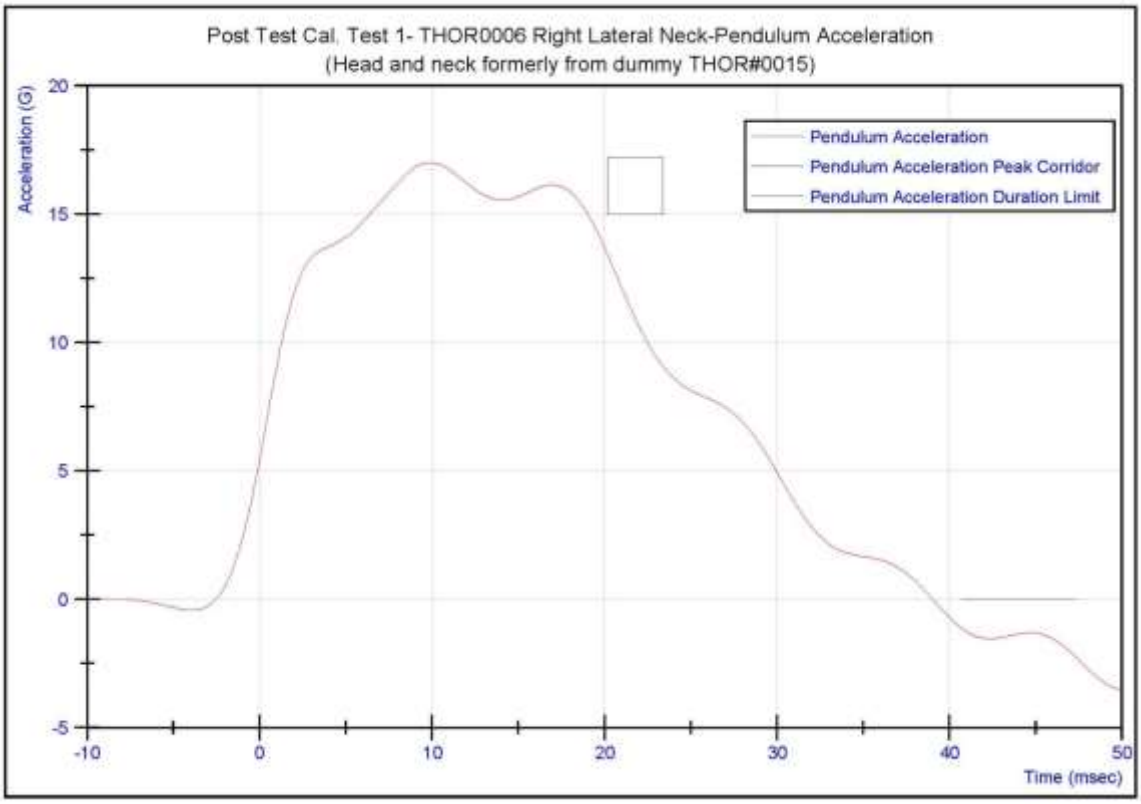

Post Test Cal.- THOR0006 Extension Test 1-Pendulum Acceleration
(Head and neck formerly from dummy THOR#0015)
Acceleration (G)
30
25
20
15
10
5
0
-5
-10
0
10
20
30
40
50
Time (msec)
Pendulum Acceleration
Pendulum Acceleration Peak Corridor
Pendulum Acceleration Duration Limit

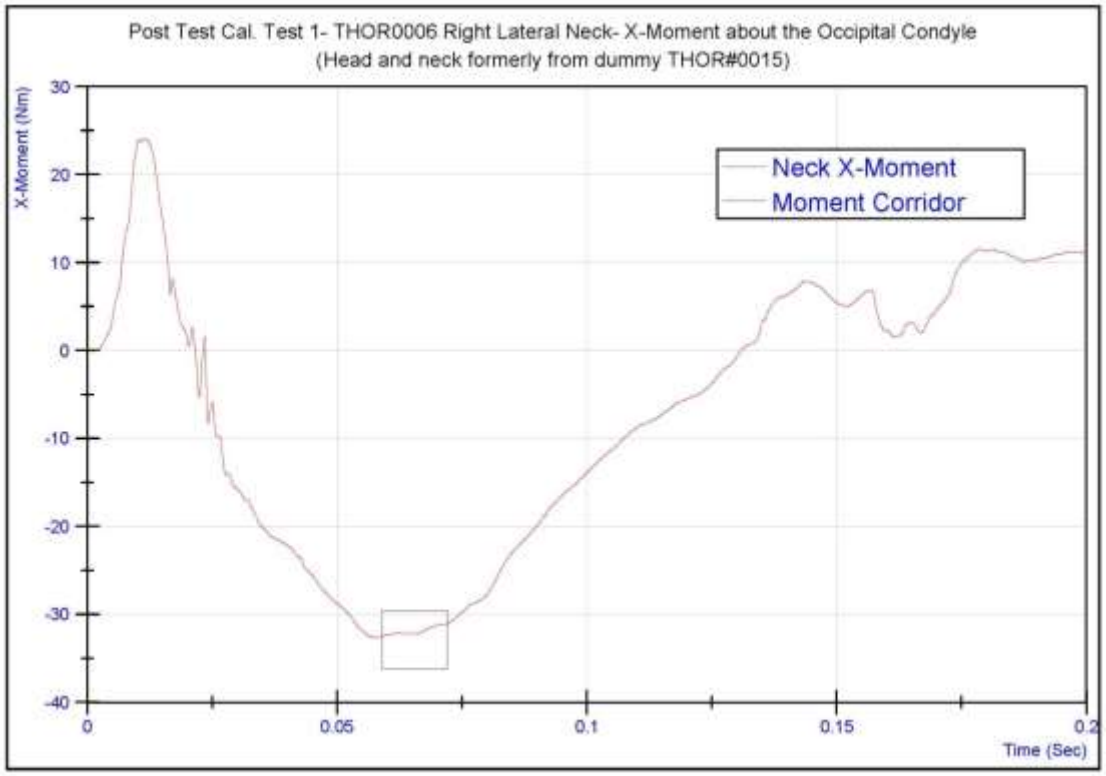

Post Test Cal.- THOR0006 Flexion Test 1-Pendulum Acceleration
(Head and neck formerly from dummy THOR#0015)
Acceleration (G)
30
25
20
15
10
5
0
-5
-10
0
10
20
30
40
50
Time (msec)
Pendulum Acceleration
Pendulum Acceleration Peak Corridor
Pendulum Acceleration Duration Limit

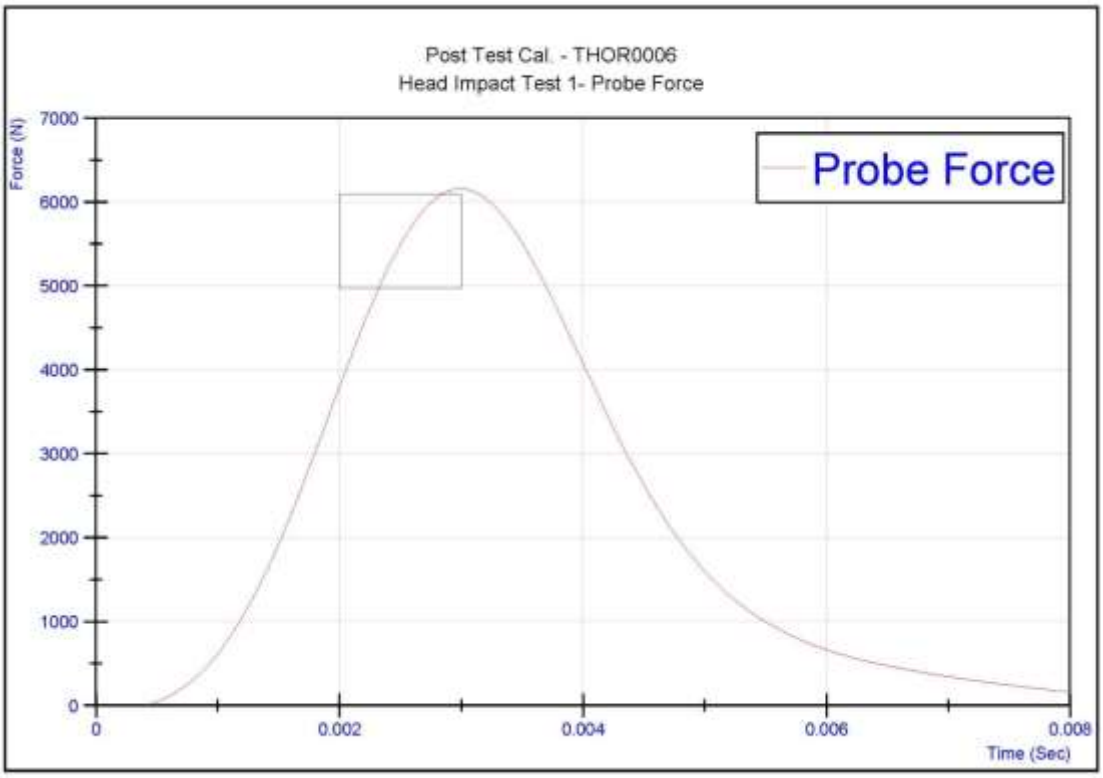

Post Test Cal. - THOR0006 Neck Flexion Test 1- Y-Moment about the Occipital Condyle
(Head and neck formerly from dummy THOR#0015)
Y-Moment about the OC (Nm)
75
50
25
0
-25
0
0.05
0.1
0.15
0.2
Time (Sec)
Neck Y-Moment
Moment Corridor


Post Test Cal. Test 1- THOR0006 Left Lateral Neck- X-Moment about the Occipital Condyle
(Head and neck formerly from dummy THOR#0015)
X-Moment (Nm)
40
30
20
10
0
-10
-20
-30
0
0.05
0.1
0.15
0.2
Time (Sec)
Neck X-Moment
Moment Corridor

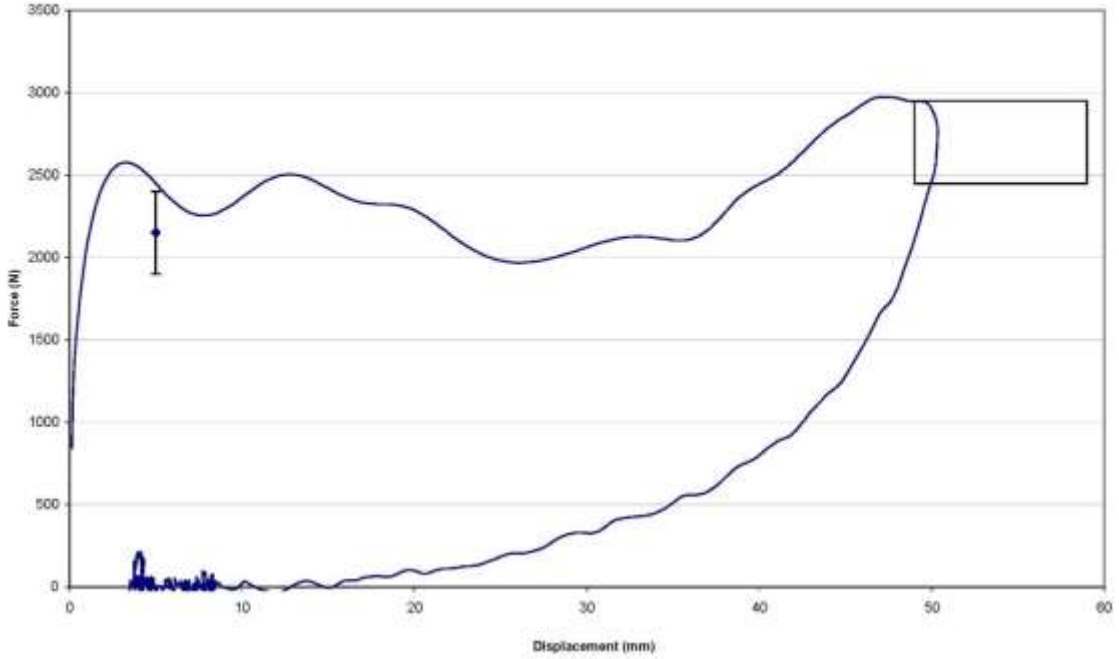

Post Test Cal. Test 1- THOR0006 Left Lateral Neck-Pendulum Acceleration
(Head and neck formerly from dummy THOR#0015)
Acceleration (G)
20
15
10
5
0
-5
-10
0
10
20
30
40
50
Time (msec)
Pendulum Acceleration
Pendulum Acceleration Peak Corridor
Pendulum Acceleration Duration Limit


Post Test Cal. Test 1- THOR0006 Right Lateral Neck-Pendulum Acceleration
(Head and neck formerly from dummy THOR#0015)
Acceleration (G)
20
15
10
5
0
-5
-10
0
10
20
30
40
50
Time (msec)
Pendulum Acceleration
Pendulum Acceleration Peak Corridor
Pendulum Acceleration Duration Limit

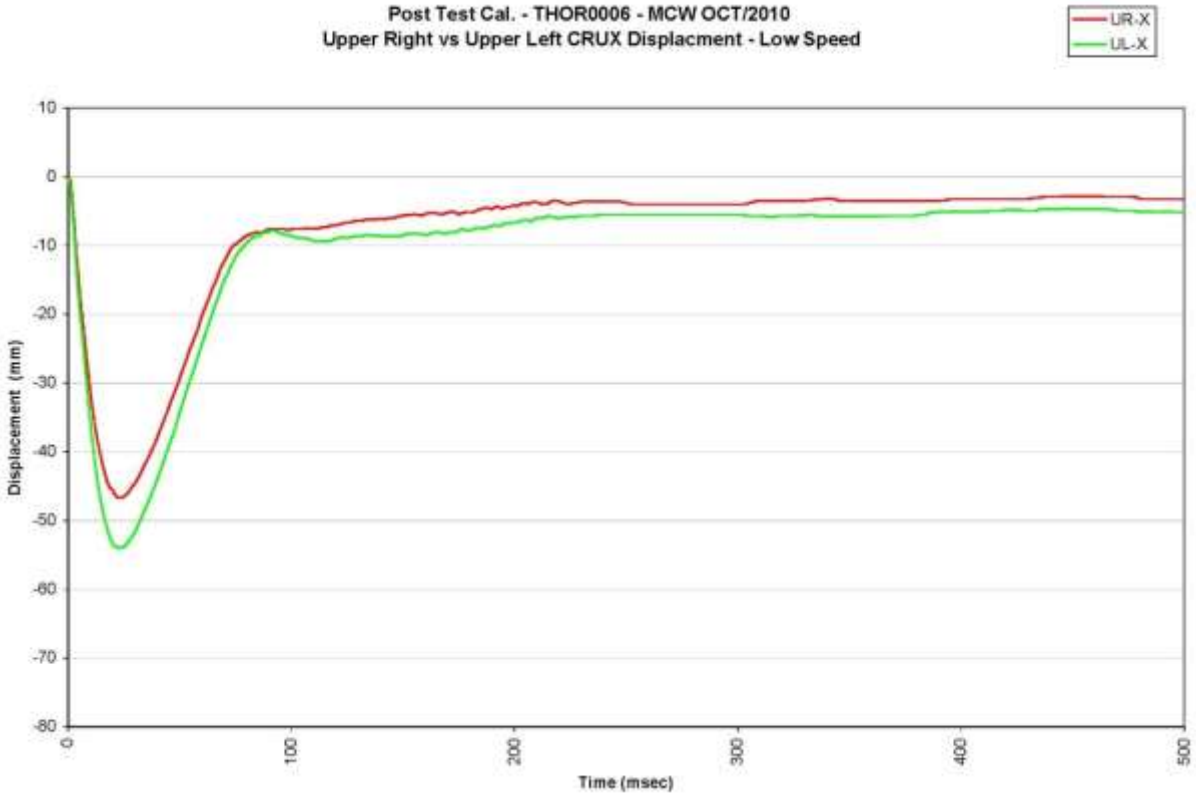

Post Test Cal. Test 1- THOR0006 Right Lateral Neck- X-Moment about the Occipital Condyle
(Head and neck formerly from dummy THOR#0015)
X-Moment (Nm)
30
20
10
0
-10
-20
-30
-40
0
0.05
0.1
0.15
0.2
Time (Sec)
Neck X-Moment
Moment Corridor

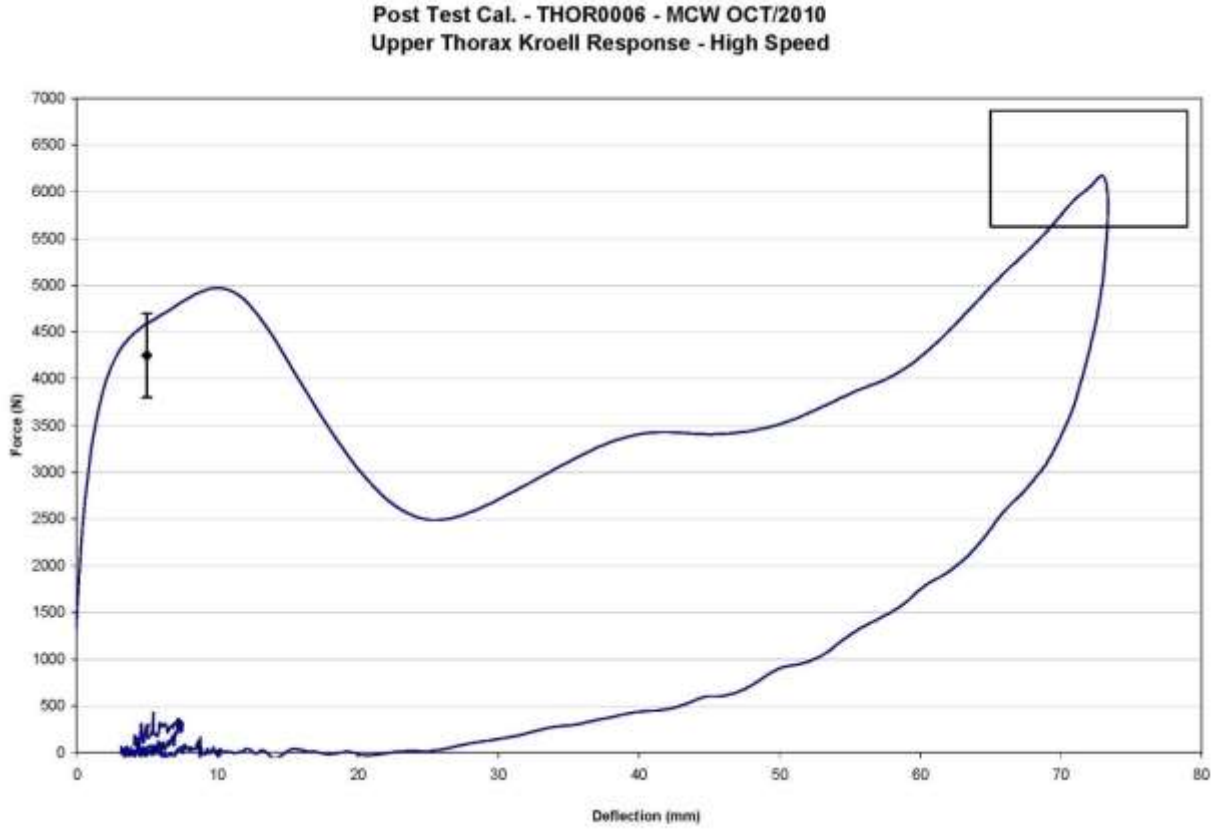

Post Test Cal. - THOR0006
Head Impact Test 1- Probe Force
Force (N)
7000
6000
5000
4000
3000
2000
1000
0
0
0.002
0.004
0.006
0.008
Time (Sec)
Probe Force

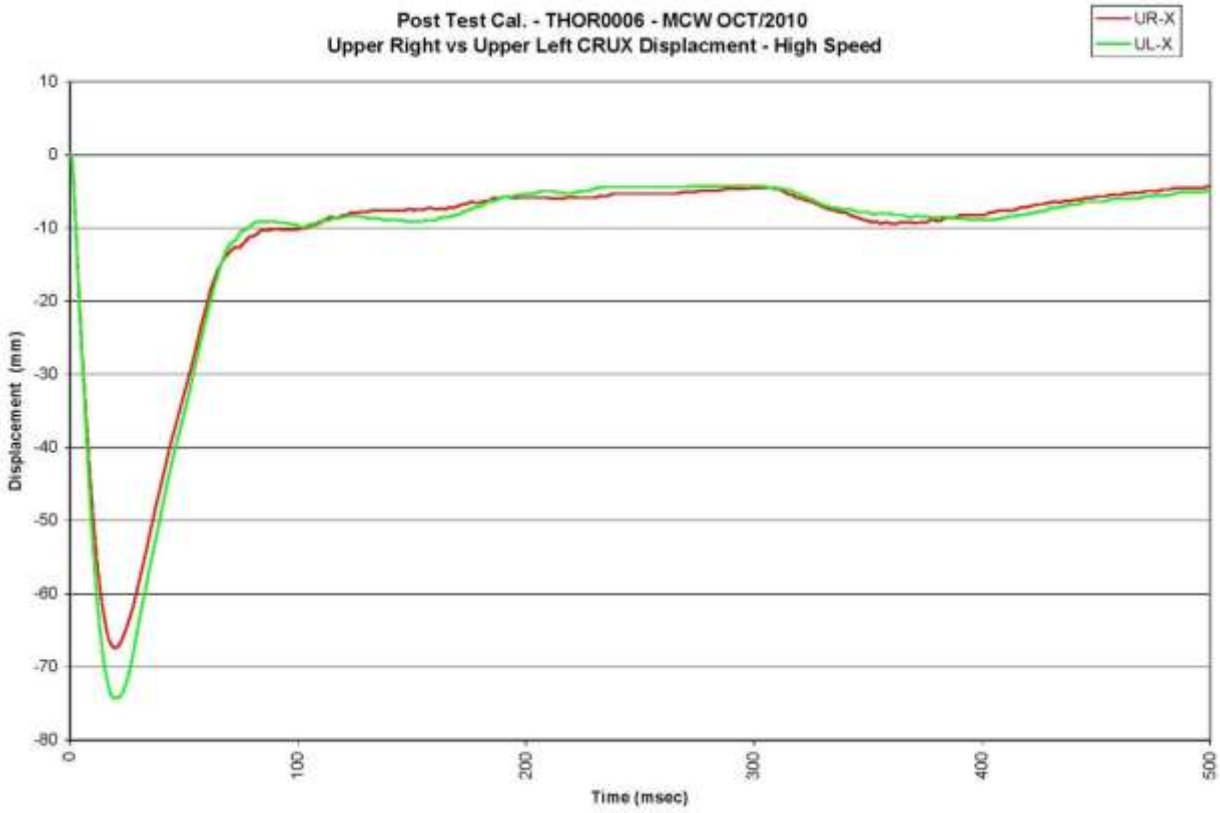
Post Test Cal. - THOR0006 - MCW OCT/2010
Upper Thorax Kroell Response - Low Speed



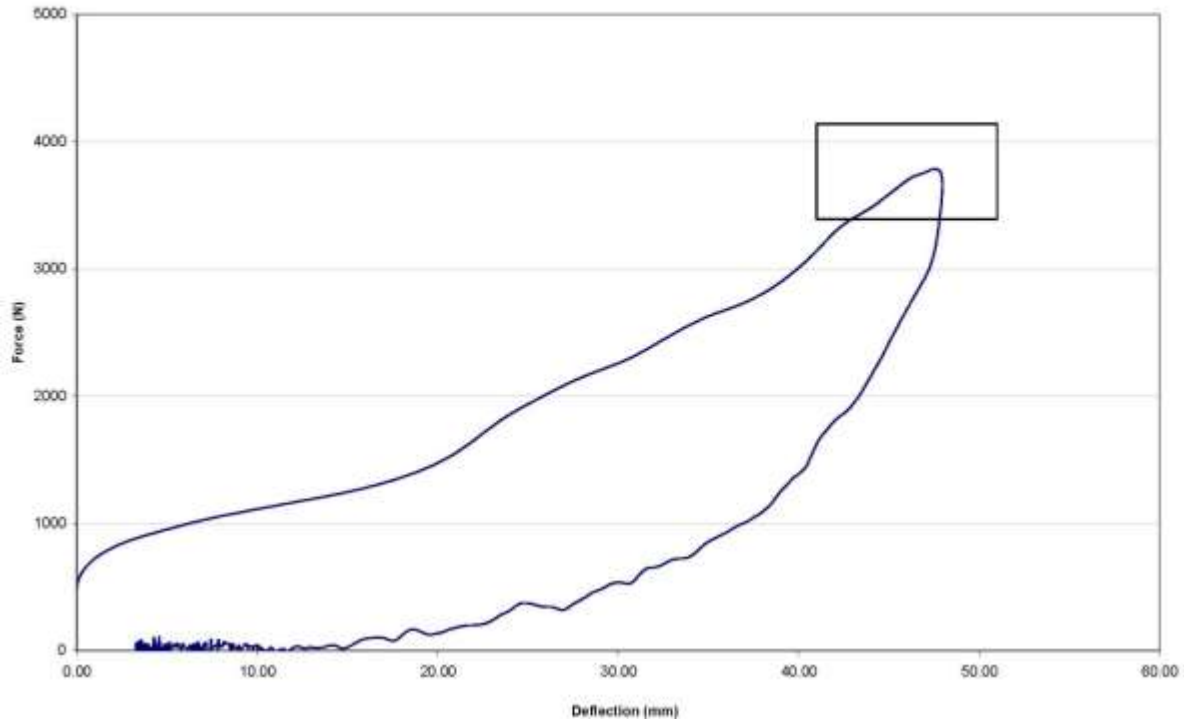
Post Test Cal. - THOR0006 - MCW OCT/2010
Upper Right vs Upper Left CRUX Displacment - Low Speed



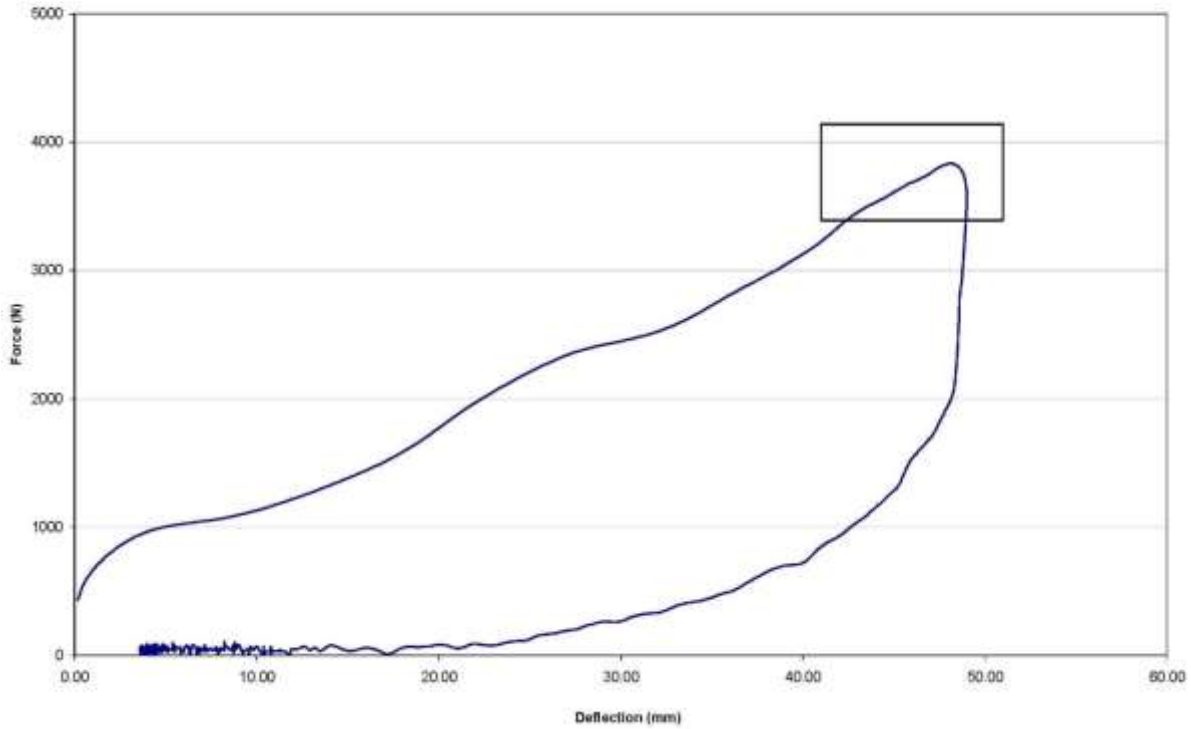

Post Test Cal. - THOR0006 - MCW OCT/2010
Upper Thorax Kroell Response - High Speed
Force (N)
Deflection (mm)

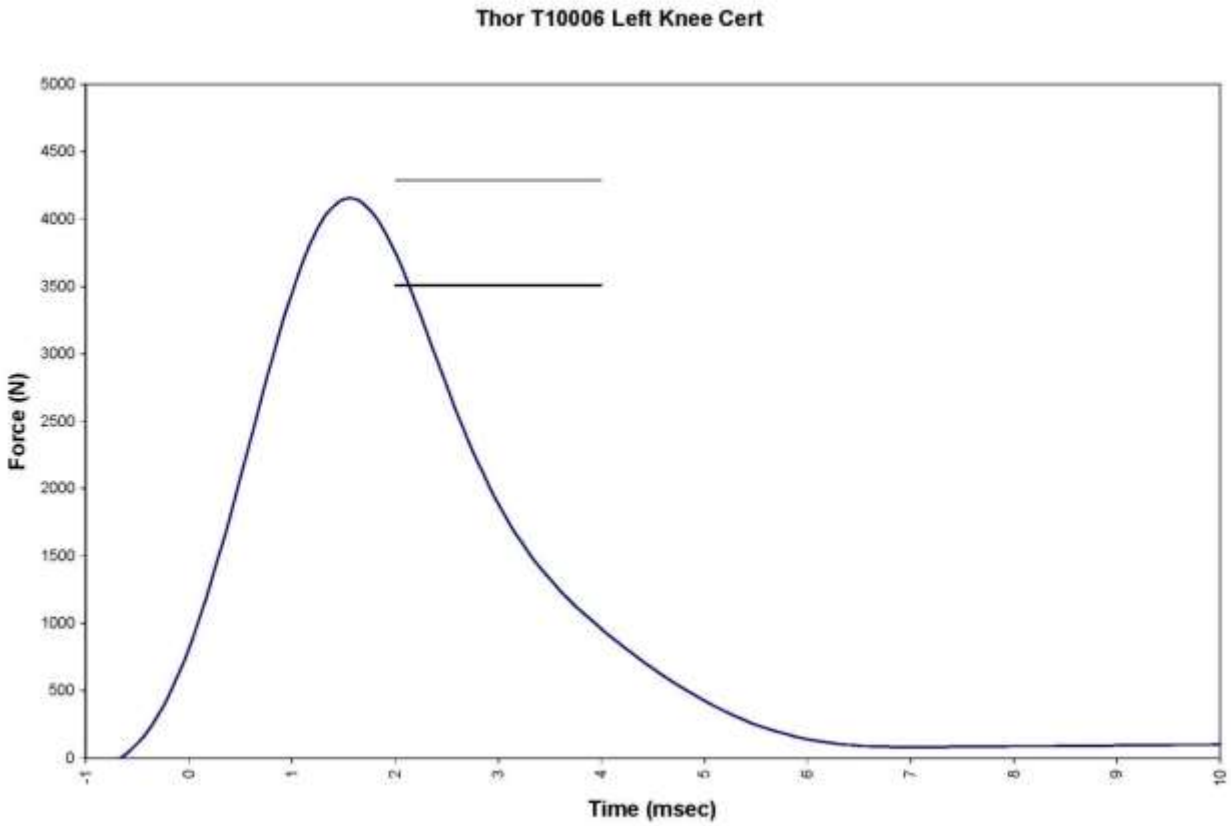

Post Test Cal. - THOR0006 - MCW OCT/2010
Upper Right vs Upper Left CRUX Displacment - High Speed
UR-X
UL-X
Displacement (mm)
Time (msec)

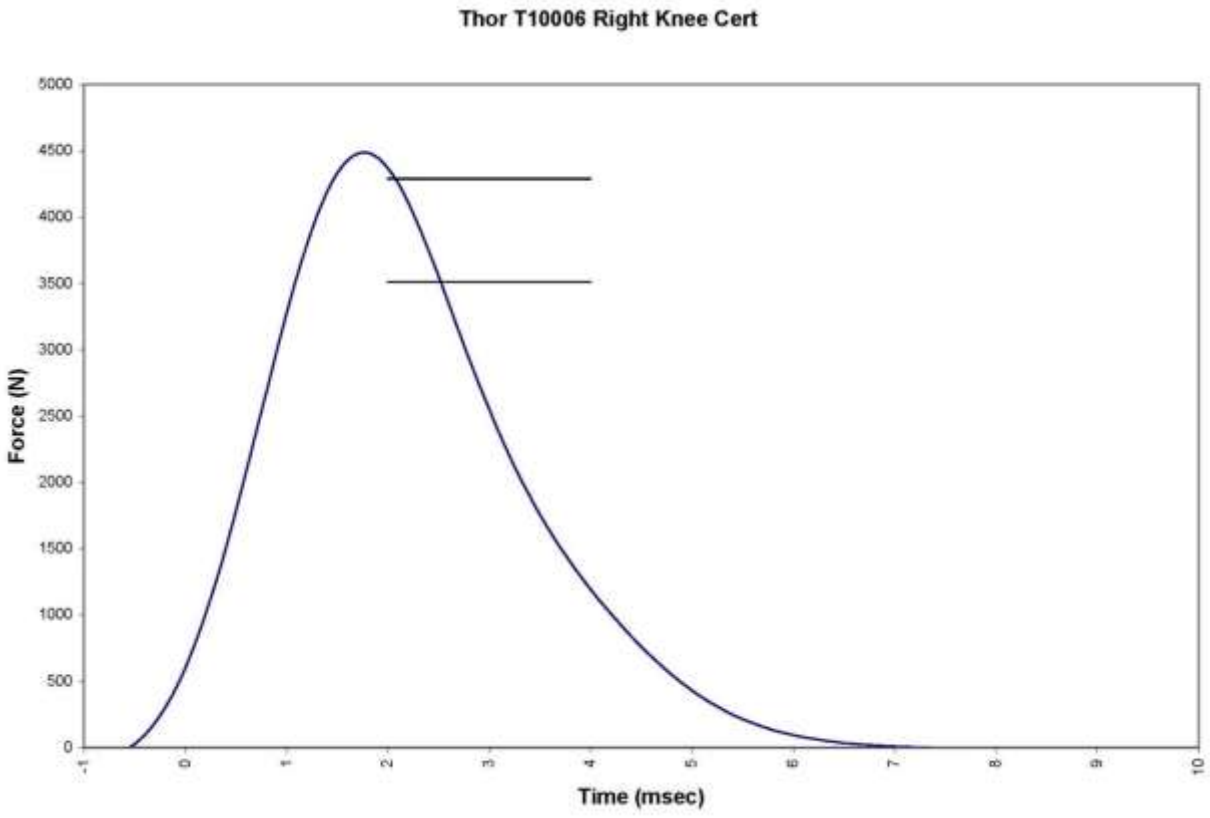
Post Test Cal. - THOR0006
Lower Left 15 Degree Oblique Thorax Response- MCW - OCT2010



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

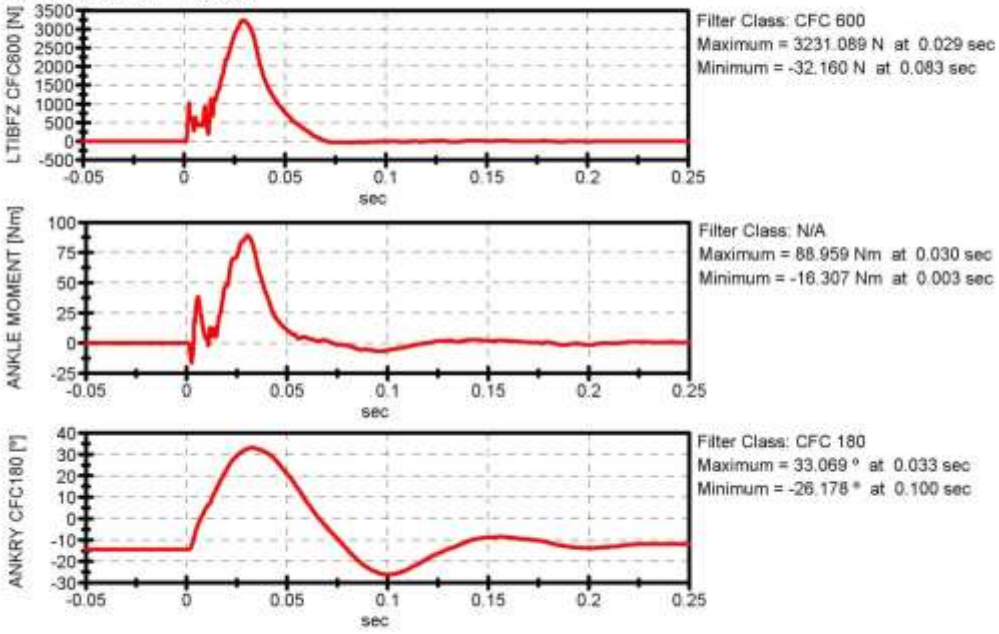




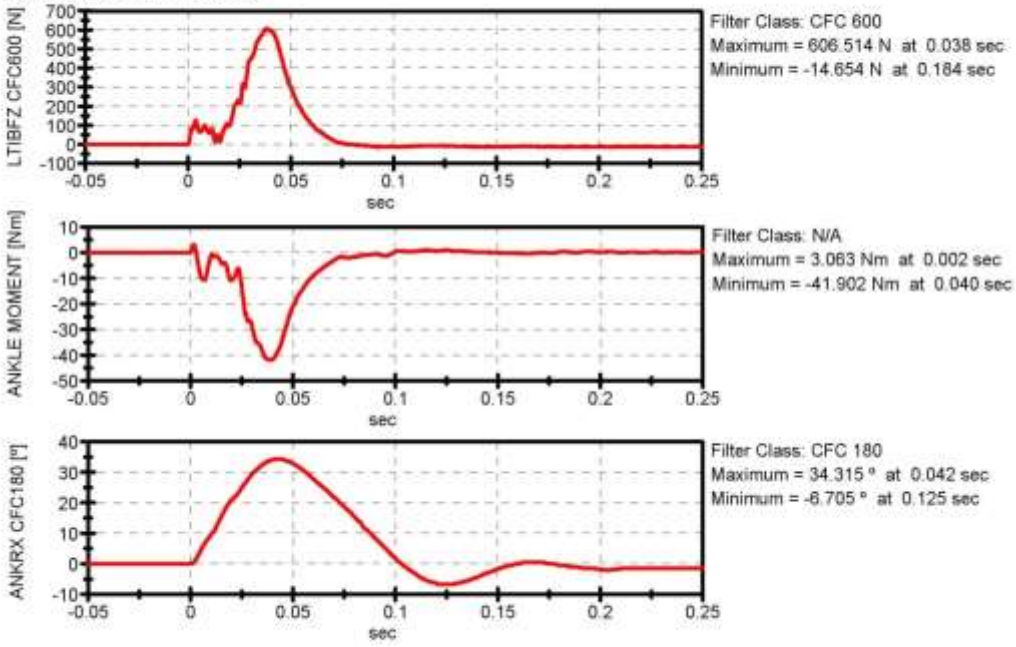


LEG S/N: LX103 / LX104

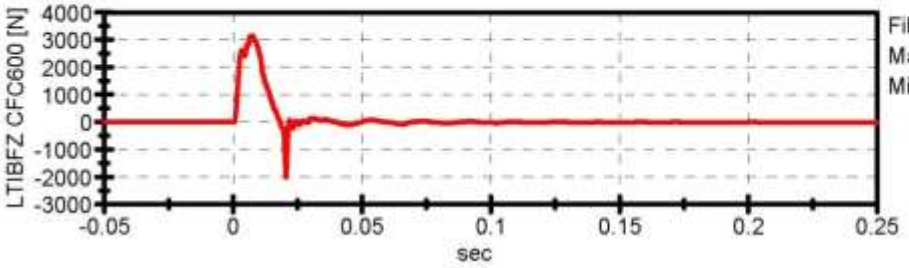
Test Performer: Vehicle Research and Test Center
Test Type: Dorsiflexion/Ball of Foot
Test Name: LX103R_2011_07_12_DORSI_01
Test Date: 12.07.2011 13:03:52



Test Performer: Vehicle Research and Test Center
Test Type: Eversion
Test Name: LX103R_2011_07_12_EVER_01
Test Date: 12.07.2011 14:00:09

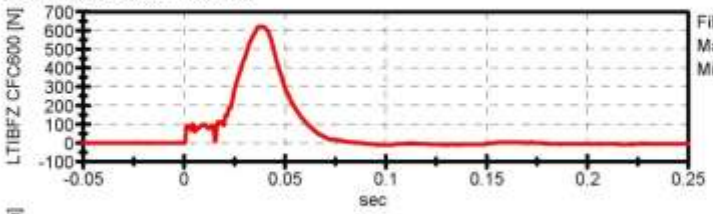


Test Performer: Vehicle Research and Test Center
Test Type: Heel of Foot
Test Name: LX103R_2011_07_12_HEEL_01
Test Date: 12.07.2011 12:23:32

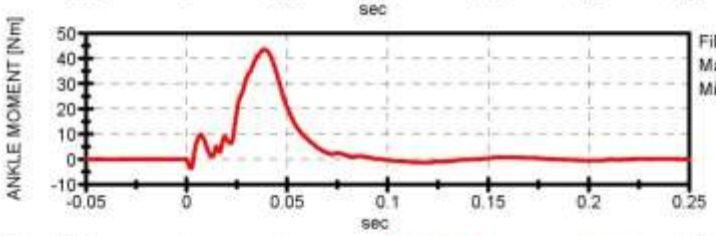


Filter Class: CFC 600
Maximum = 3140.967 N at 0.008 sec
Minimum = -2014.830 N at 0.021 sec

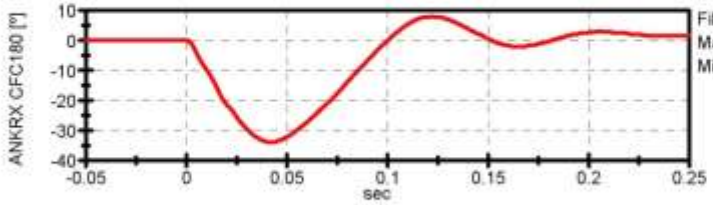
Test Performer: Vehicle Research and Test Center
Test Type: Inversion
Test Name: LX103R_2011_07_12_INVER_01
Test Date: 12.07.2011 13:33:12



Filter Class: CFC 600
Maximum = 620.615 N at 0.037 sec
Minimum = -11.067 N at 0.102 sec

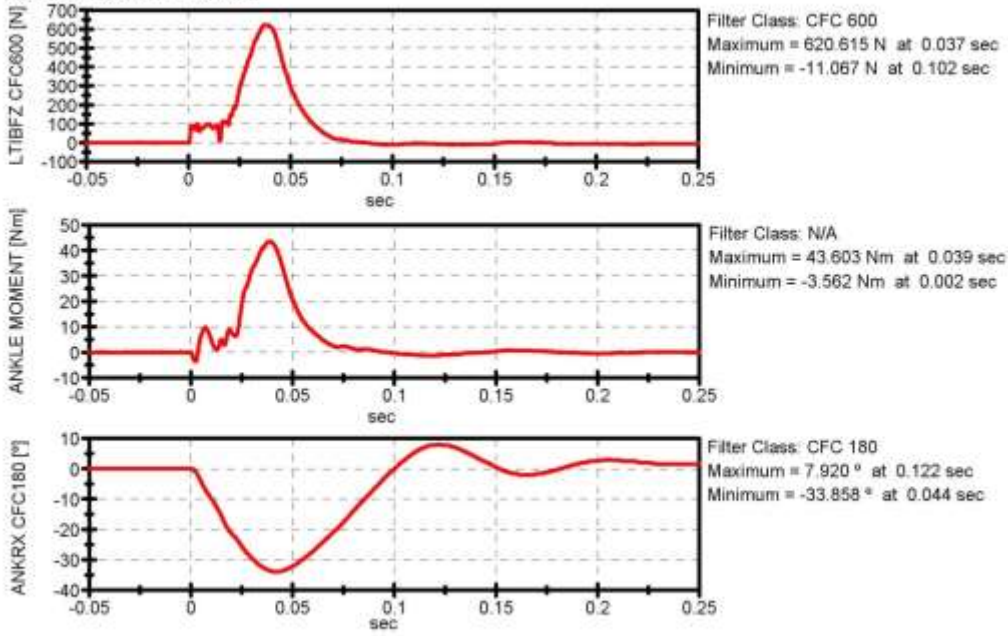


Filter Class: N/A
Maximum = 43.603 Nm at 0.039 sec
Minimum = -3.562 Nm at 0.002 sec

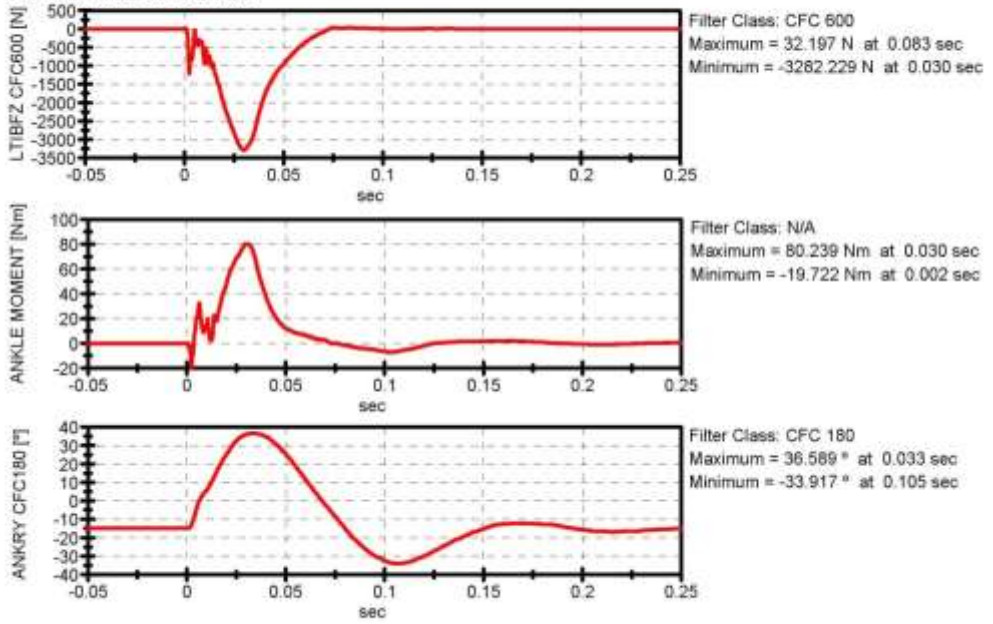


Filter Class: CFC 180
Maximum = 7.920 ° at 0.122 sec
Minimum = -33.858 ° at 0.044 sec

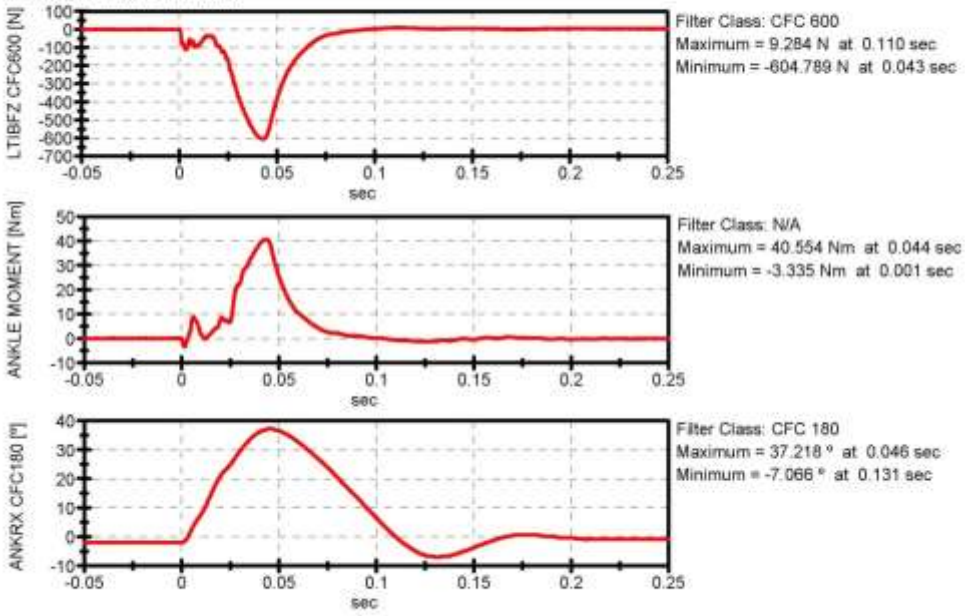
Test Performer: Vehicle Research and Test Center
Test Type: Inversion
Test Name: LX103R_2011_07_12_INVER_01
Test Date: 12.07.2011 13:33:12



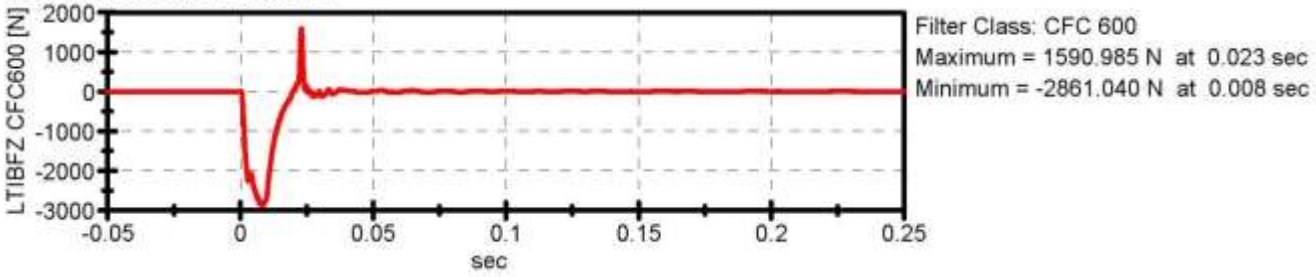
Test Performer: Vehicle Research and Test Center
Test Type: Dorsiflexion/Ball of Foot
Test Name: LX104L_2011_07_11_DORSI_02
Test Date: 12.07.2011 07:30:24



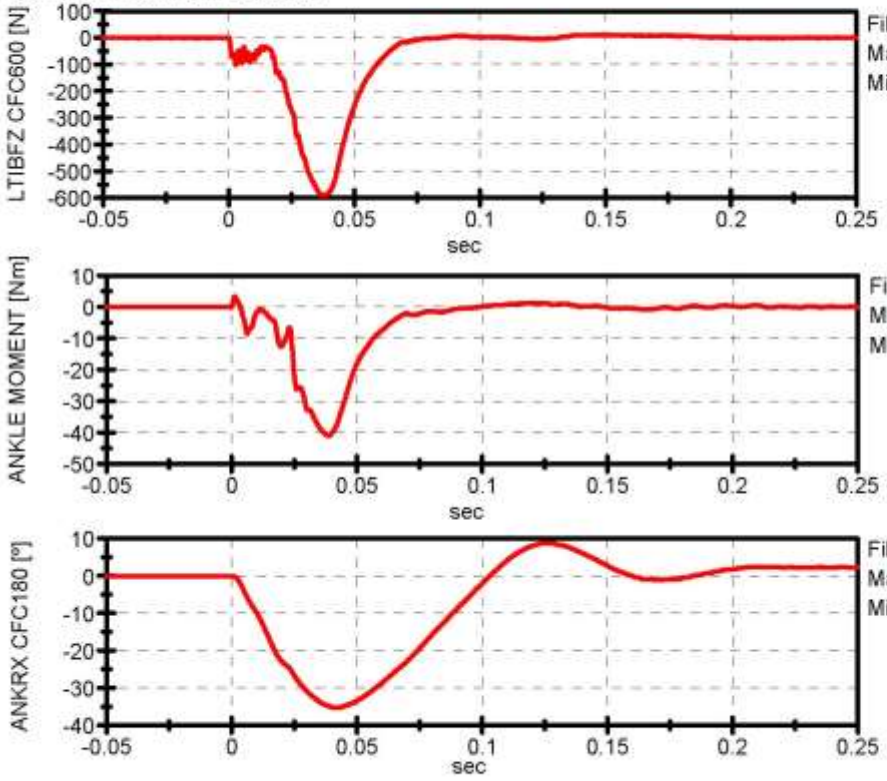
Test Performer: Vehicle Research and Test Center
Test Type: Eversion
Test Name: LX104L_2011_07_12_EVER_01
Test Date: 12.07.2011 08:58:27



Test Performer: Vehicle Research and Test Center
Test Type: Heel of Foot
Test Name: LX104L_2011_07_12_HEEL_01
Test Date: 12.07.2011 10:26:09



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



Filter Class: CFC 600
Maximum = 10.894 N at 0.152 sec
Minimum = -589.823 N at 0.038 sec

Filter Class: N/A
Maximum = 3.314 Nm at 0.001 sec
Minimum = -40.998 Nm at 0.039 sec

Filter Class: CFC 180
Maximum = 8.754 ° at 0.125 sec
Minimum = -35.243 ° at 0.041 sec

APPENDIX D:

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

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

The lateral seat centerline was determined by following the FMVSS 214D seating procedures for the rear seat.. Once the Part 572O 5th female dummy was located on the lateral centerline, the dummy was positioned following FMVSS 208 as if 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 E:

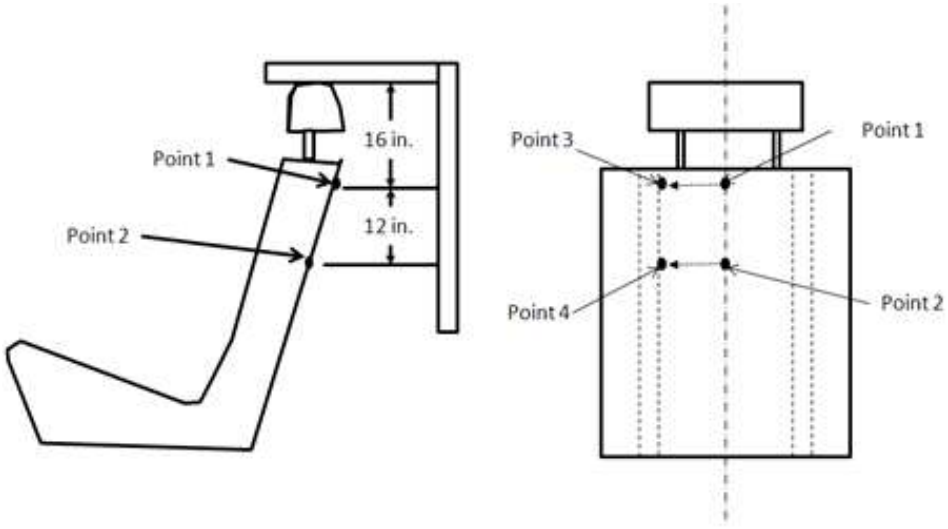
CMM MEASUREMENT PROCEDURES

SECTION E.1

SEAT BACK MEASUREMENT PROCEDURE

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

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



SECTION E.2

DOOR SILL INTRUSION MEASUREMENT PROCEDURE

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

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



SECTION E.3

VEHICLE EXTERIOR CRUSH PROFILE PROCEDURE

1. Expose the bumper beam and level the vehicle such that all attitudes are within 5 mm.

2. Cross section A-A is defined as a horizontal plane passing through the center of the front bumper beam at the centerline of the vehicle (Figure F.3.1). Record the height of this plane (d1) 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 d1 and d2 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.

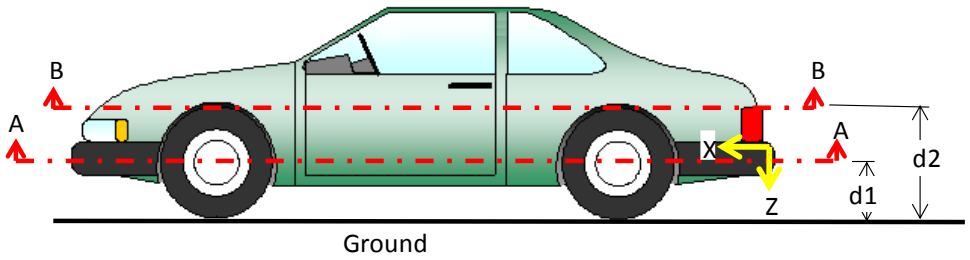


Figure F.3.1 - Pre-Test Cross-Sections

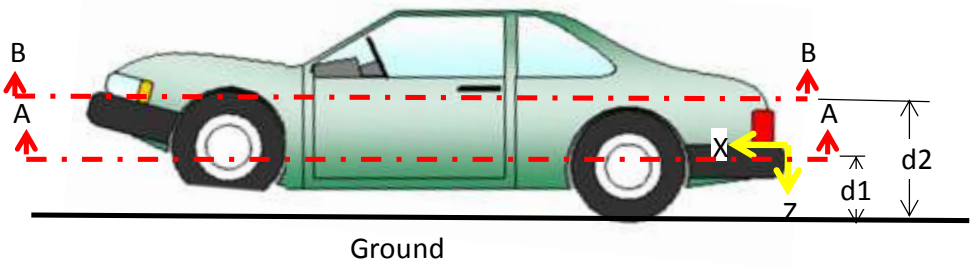


Figure F.3.2 - Post-Test Cross-Sections

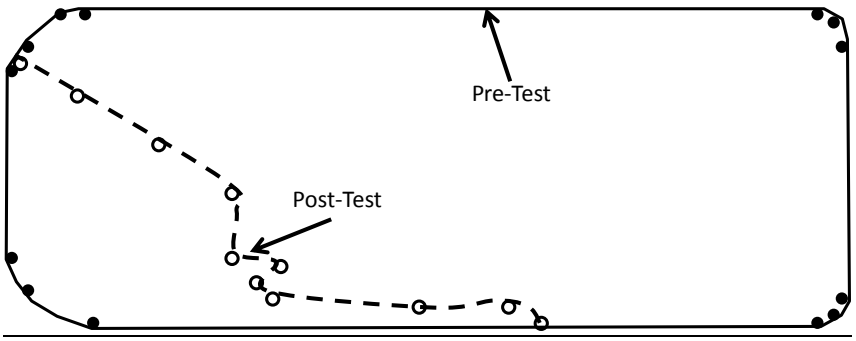


Figure F.3.3 - Plot of Cross-Section