

REPORT NUMBER: NCAP-MGA-2004-011

**NEW CAR ASSESSMENT PROGRAM
FRONTAL BARRIER IMPACT TEST**

**General Motors Corporation
2005 Chevrolet Equinox
NHTSA NUMBER: M50100**

**PREPARED BY:
MGA RESEARCH CORPORATION
5000 WARREN ROAD
BURLINGTON, WI 53105**



Test Date: April 6, 2004

Report Date: April 16, 2004

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
RULEMAKING
OFFICE OF CRASHWORTHINESS STANDARDS
400 SEVENTH STREET, SW, ROOM 5311
WASHINGTON, D.C. 20590**

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Date of Acceptance

COTR, NCAP Frontal Impact Program

Date of Acceptance

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16. <i>Abstract</i> A 35.0 mph (56.3 km/h) frontal barrier impact was conducted on a 2005 Chevrolet Equinox at MGA Research Corporation on April 6, 2004. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and foot well intrusion performance. The impact velocity was 56.3 km/h. The ambient temperature at the barrier face at the time of impact was 21 degrees celsius. The vehicle's maximum post test static crush is 657 mm located at the vehicle centerline. The test vehicle is equipped with a 3-point continuous belt system and an airbag in both front outboard seating positions. With respect to FMVSS 208 "Occupant Crash Protection", the occupant injury criteria summary is as follows: <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="text-align: left;"><u>Measurement Description</u></th> <th style="text-align: left;"><u>Units</u></th> <th style="text-align: left;"><u>Threshold</u></th> <th style="text-align: left;"><u>Driver ATD</u></th> <th style="text-align: left;"><u>Pass. ATD</u></th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC)</td> <td>N/A</td> <td>1000</td> <td>332</td> <td>397</td> </tr> <tr> <td>Max. Thorax Accel. (3msec Clip)</td> <td>G's</td> <td>60</td> <td>39</td> <td>40</td> </tr> <tr> <td>Left Femur Force</td> <td>Newton</td> <td>10009</td> <td>-2323</td> <td>-4463</td> </tr> <tr> <td>Right Femur Force</td> <td>Newton</td> <td>10009</td> <td>-567</td> <td>-1157</td> </tr> </tbody> </table>				<u>Measurement Description</u>	<u>Units</u>	<u>Threshold</u>	<u>Driver ATD</u>	<u>Pass. ATD</u>	Head Injury Criteria (HIC)	N/A	1000	332	397	Max. Thorax Accel. (3msec Clip)	G's	60	39	40	Left Femur Force	Newton	10009	-2323	-4463	Right Femur Force	Newton	10009	-567	-1157
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TABLE OF CONTENTS

<u>Section</u>		<u>Page No</u>
1	Purpose and Summary of the Test	1
2	Occupant and Vehicle Information / Data Sheets	3

<u>Data Sheet No.</u>		<u>Page No.</u>
1	Crash Test Summary	4
2	General Test and Vehicle Parameter Data	5
3	Test Vehicle Tire Information	7
4	Post Impact Data	8
5	Test Vehicle Information	9
6	Dummy Positioning in Vehicle	11
7	Seat Belt Positioning Data	13
8	Vehicle Accelerometer Location and Data Summary	14
9	Hybrid III ATD Injury Criteria and Sensor Data	15
10	Seat Belt Performance Assessment Test Data	18
11	Summary of FMVSS 212 Data	19
12	Windshield Zone Intrusion FMVSS 219 Data	20
13	FMVSS 301 Fuel System Integrity Post Impact Data	21
14	FMVSS 301 Static Rollover Data	22
15	Vehicle Measurements	23
16	Camera Locations	26
17	Photographic Reference Target Locations	28
18	Vehicle Intrusion Measurements	29
19	Load Cell Locations on Fixed Barrier	34
20	Accident Investigation Division Data	35
21	Dummy/Vehicle Temperature Stabilization Chart	36

<u>Appendix</u>		
A	Photographs	A
B	Dummy and Vehicle Response Data Traces	B
C	Dummy Calibration Data Traces and Tables	C
D	Test Equipment and Instrumentation Calibration	D
E	Dummy Head Response Data Traces	E

SECTION 1

PURPOSE AND SUMMARY OF TEST

PURPOSE

This 56.3 km/h frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under contract number DTNH22-01-D-12005. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact in excess of the current 48.3 kph requirements.

SUMMARY

A load cell barrier consisting of 30 load cells was impacted by a 2005 Chevrolet Equinox at a velocity of 56.3 kph. The test was performed at MGA Research Corporation on April 6, 2004. Pre-and post-test photographs of the vehicle and dummies can be found in Appendix A.

One real-time camera and nineteen high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in this report.

Two Part 572E, 50th percentile male anthropomorphic test devices (ATDs), were placed in the driver and right-front passenger seating positions according to dummy placement instructions specified in the Laboratory Indicant Test Procedure.

Both ATDs were fully instrumented with head, chest and pelvis tri-axial accelerometers, chest displacement potentiometer, upper neck transducers, right/left femur load cells, and lower leg instrumentation. The driver (position 1) ATD (Serial No. 065) and right-front passenger (position 2) ATD (Serial No. 066) were calibrated previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C.

The 162 channels of data were recorded on an on-board data acquisition system. Appendix B contains the vehicle, load cell barrier and dummy response data traces.

There was 100 percent windshield retention and no intrusion into the protected zone of the windshield during the event. There was no Stoddard Solvent leakage after the event or during any phase of the static rollover.

The maximum static crush of the vehicle was 657 mm and both the driver and passenger side doors remained closed and latched during the impact event and were operable after the impact.

The driver's head, chest, and abdomen contacted the airbag. The driver's head also contacted the headrest. The driver's knees contacted the bolster. The passenger's head, chest and abdomen contacted the airbag. The passenger's head contacted the headrest. The passenger's knees contacted the glove box.

The occupant data is summarized below:

ATD position	HIC	Clip (g)	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)	Belt Spool (mm)
Driver	332	39	-26	-2323	-567	**
Passenger	397	40	-25	-4463	-1157	**

** Not recorded

TEST NOTES

SECTION 2
OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

Test Vehicle: 2005 Chevrolet Equinox
 Test Program: 35mph Frontal Impact

NHTSA No.: M50100
 Test Date: 04/06/04

CONVERSION FACTORS USED IN THIS REPORT*

Quantity	Typical Application	English Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	mile/h	km/h	1.609
Length or Distance	Measurements	in	mm	25.4
Volume	Fuel Systems	gal	liter	3.785
Volume	Small Fluids	oz	mL	29.573
Pressure	Tire Pressure	lbf/in ²	kPa	7.0
Volume	Liquid	gal	liter	3.785
Temperature	General Use	°F	°C	=(tf -32)/1.8
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf/ft	Nm	1.355

*Based on the Recommended Practice in SAE J916, May 85

**DATA SHEET NO. 1
CRASH TEST SUMMARY**

Test Vehicle: 2005 Chevrolet Equinox
Test Program: 35mph Frontal Impact

NHTSA No.: M50100
Test Date: 04/06/04

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
Velocity at Impact	km/hr	56.3
Test Weight	kg	2015
Average Rebound	mm	1453
Maximum Static Crush	mm	657
Impact Angle	degrees	0

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Locked/Unlocked Doors	Doors were unlocked	Doors were unlocked
Front Door Opening	Door remained closed and latched; Door opened without tools	Door remained closed and latched; Door opened without tools
Rear Door Opening	Door remained closed and latched; Door opened without tools	Door remained closed and latched; Door opened without tools
Seat Track Shift (mm)	0	0
Seat Back Failure	None	None
Glazing Damage	The windshield cracked	

TEST DUMMY INFORMATION

Description	Driver	Passenger
Dummy Type / Serial No.	HIII 50 th / 065	HIII 50 th / 066
Head Contact	Airbag, Headrest	Airbag, Headrest
Chest Contact	Airbag	Airbag
Abdomen Contact	Airbag	Airbag
Left Knee Contact	Knee Bolster	Glove Box
Right Knee Contact	Knee Bolster	Glove Box

16mm MOVIE COVERAGE

High Speed	16
Real Time	1
Total	17

Driver ATD Sensors	48
Passenger ATD Sensors	48
Belt Assessment Sensors	4
Vehicle Structure Accelerometers	9
Rigid Barrier Load Cells	6
Total	115

DATA SHEET NO. 2**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2005 Chevrolet Equinox
 Test Program: 35mph Frontal Impact

NHTSA No.: M50100
 Test Date: 04/06/04

TEST VEHICLE INFORMATION

Manufacturer	General Motors
Model	Equinox
Body Style	SUV
NHTSA No.	M50100
VIN	2CNDL23F756002651
Color	Silver
Delivery Date	3/23/04
Odometer Reading (mile)	36
Dealer	Frank Boucher Chevrolet
Transmission	Automatic
Final Drive	4 wheel
Number of Cylinders	6
Engine Displacement (L)	3.4
Engine Placement	Lateral
Automatic Door Lock (ADL)	No
Owner's Manual Details Instructions on Disabling ADLs	Not Applicable

TEST VEHICLE OPTIONS

Driver Airbag	Yes
Passenger Airbag	Yes
Force Limiter	Yes
Pretensioner	Yes
Power Windows	Yes
Power Steering	Yes
Power Door Locks	Yes
Telescope Wheel	Yes
Air Conditioning	Yes
Power Brakes	Yes
Disc Brakes, Front	Yes
Disc Brakes, Rear	Yes
Anti-lock Brakes	Yes
AM/FM/CD	Yes
Anti-theft System	Yes
Cruise Control	Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	General Motors Corporation	GVWR (kg)	2300
Date of Manufacture	03/04	GAWR Front (kg)	1150
		GAWR Rear (kg)	1150

DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	240	240
Cold Pressure (kPa)	210	210
Recommended Tire Size	P235/65R16	P235/65R16
Tire Size on Vehicle	P235/65R16	P235/65R16
Tire Manufacturer	Bridgestone	Bridgestone

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench		
Number Of Occupants	2	3		5
Capacity Wt. (VCW) (kg)				565.6
Cargo Wt. (RCLW) (kg)				225.4

DATA SHEET NO. 2... (continued)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2005 Chevrolet Equinox
 Test Program: 35mph Frontal Impact

NHTSA No.: M50100
 Test Date: 04/06/04

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	484.9	389.2		531.2	489.4	
Right	kg	483.1	373.3		527.1	466.8	
Ratio	%	55.9	44.1		52.5	47.5	
Totals	kg	968.0	762.5	1730.5	1058.3	956.2	2014.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1730.5
Weight of 2 P572E ATDs	kg	156.0
Rated Cargo/Luggage Weight (RCLW)	kg	136.1
Calculated Vehicle Target Weight (TVTW)	kg	2022.6

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG(aft of front axle)
As Delivered	mm	804	809	824	830	1260
As Tested	mm	790	797	789	795	1358
Post Test	mm	843	861	794	787	

Vehicle Wheelbase (mm): 2860

Weight of Ballast secured in cargo area (kg): 26.8

Vehicle Components Removed: rear interior

Ballast weight does not include instrumentation and data acquisition system.

FUEL SYSTEM DATA

Fuel System Capacity From Owner's Manual (L): 63.6

Usable Capacity Figure Furnished by COTR (L): 63.6

Actual Test Volume (L): 59.8

Test Fluid Type: Stoddard Solvent; Specific Gravity: 0.77

Is Vehicle Fuel Pump Electric or Mechanical? Electric

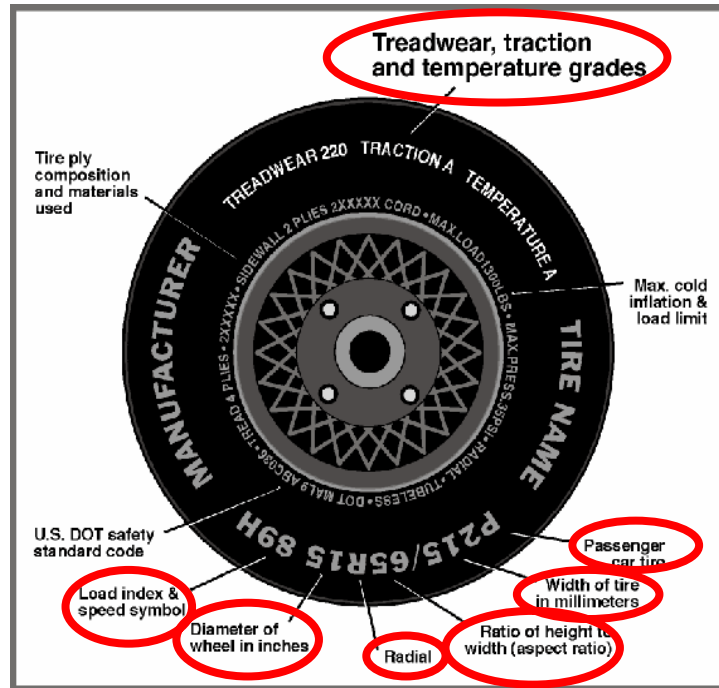
If electric, does pump operate with ignition switch "ON" & engine "OFF"? Yes

DATA SHEET NO. 3
TEST VEHICLE TIRE INFORMATION

Test Vehicle: 2005 Chevrolet Equinox
 Test Program: 35mph Frontal Impact

NHTSA No.: M50100
 Test Date: 04/06/04

Vehicle Year	2005	Vehicle Make	Chevrolet
VIN	2CNDL23F756002651	Vehicle Model	Equinox



	Front	Rear
Tire Manufacturer	Bridgestone	Bridgestone
Tire Name	Dweller H/T	Dweller H/T
Tire Type	Lt Truck	Lt Truck
Tire Width (mm)	235	235
Ratio of Height to Width (aspect ratio)	65	65
Radial	Yes	Yes
Wheel Diameter	16	16
Load Index & Speed Symbol	101S	101S
Treadwear	360	360
Traction Grade	B	B
Temperature Grade	B	B

DATA SHEET NO. 4
POST IMPACT DATA

Test Vehicle: 2005 Chevrolet Equinox
Test Program: 35mph Frontal Impact

NHTSA No.: M50100
Test Date: 04/06/04

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	55.5 – 57.1	56.3
Trap No. 1 Entry Distance	mm	<1524	1300
Trap No. 1 Exit Distance	mm	<1524	300
Trap No. 2 Velocity (Redundant)	km/h	55.5 – 57.1	56.3
Trap No. 2 Entry Distance	mm	<1524	1425
Trap No. 2 Exit Distance	mm	<1524	425

VEHICLE STATIC CRUSH

Measured Parameter	Units	Pre-Test	Post-Test	Difference
Left Side	mm	4735	4091	644
Center	mm	4750	4093	657
Right Side	mm	4735	4082	653

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	1444
Center	mm	1429
Right Side	mm	1486
Average	mm	1453

DATA SHEET NO. 5
TEST VEHICLE INFORMATION

Test Vehicle: 2005 Chevrolet Equinox
Test Program: 35mph Frontal Impact

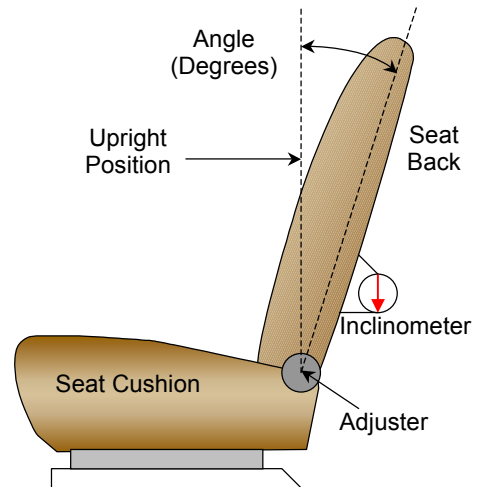
NHTSA No.: M50100
Test Date: 04/06/04

NORMAL DESIGN RIDING POSITION

The driver and passenger seat back is positioned to the manufacturer's designated angle. The procedure is as follows: Measure 4.5 degrees when inclinometer is positioned across head rest support posts.

Driver seat back angle: 5.5° on Head rest post

Passenger seat back angle: 5.0° on Head rest post



FRONT SEAT ASSEMBLY

SEAT FORE/AFT POSITIONS

Adjust the seat in the lowest height position using the manual or power height adjuster. Place seat in full forward (1st position) and mark position relative to a non adjustable point on the car. Place seat in full forward rearward (25th position) and mark position. Bisect the difference. Mid point should be 13th position.

Driver seat fore/aft total travel: 25 positions

Passenger seat fore/aft total travel: 25 positions

Driver seat fore/aft position: 13 of 25 positions

Passenger seat fore/aft position: 13 of 25 positions

DATA SHEET NO. 5... (continued)

TEST VEHICLE INFORMATION

Test Vehicle: 2005 Chevrolet Equinox
Test Program: 35mph Frontal Impact

NHTSA No.: M50100
Test Date: 04/06/04

FUEL TANK CAPACITY DATA

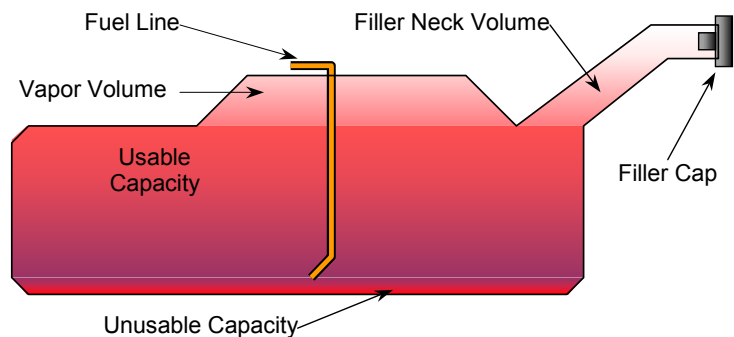
The "Usable Capacity" of the standard equipment fuel tank is: 63.6 liters

The "Usable Capacity" of any optional equipment fuel tank is: N/A liters

The "Usable Capacity" used for certification to FMVSS 301 requirements: 63.6 liters

Actual amount of Stoddard solvent added to vehicle for certification test: 59.8 liters

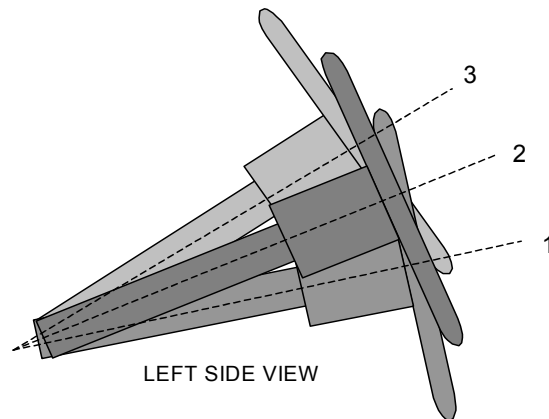
The fuel door is located on the right hand side of the vehicle. The fuel pump will initially operate to charge the fuel lines to the system's working pressure and cycle 'on and off' per system demand.



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

Adjustable steering controls are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions. Measure steering wheel angle at highest and lowest point of column travel and bisect the difference. Mid-span should measure 24 degrees.



STEERING COLUMN ASSEMBLY

Lowermost, Position 1: 22.1°

Geometric Center, Position 2: 24.2°

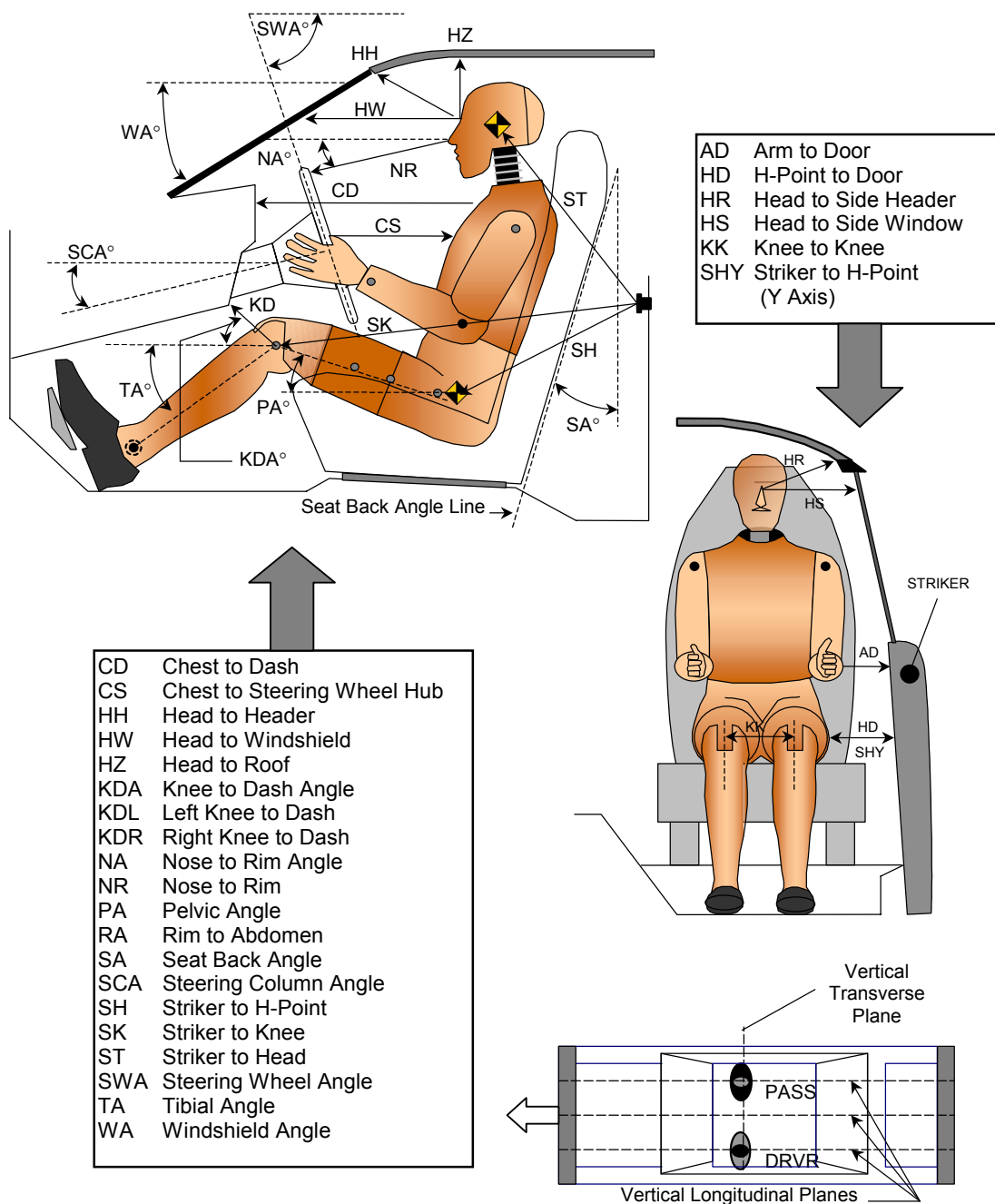
Uppermost, Position 3: 26.0°

DATA SHEET NO. 6 **DUMMY POSITIONING IN VEHICLE**

Test Vehicle: 2005 Chevrolet Equinox
 Test Program: 35mph Frontal Impact

NHTSA No.: M50100
 Test Date: 04/06/04

DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS



DATA SHEET NO. 6... (continued)
DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2005 Chevrolet Equinox
 Test Program: 35mph Frontal Impact

NHTSA No.: M50100
 Test Date: 04/06/04

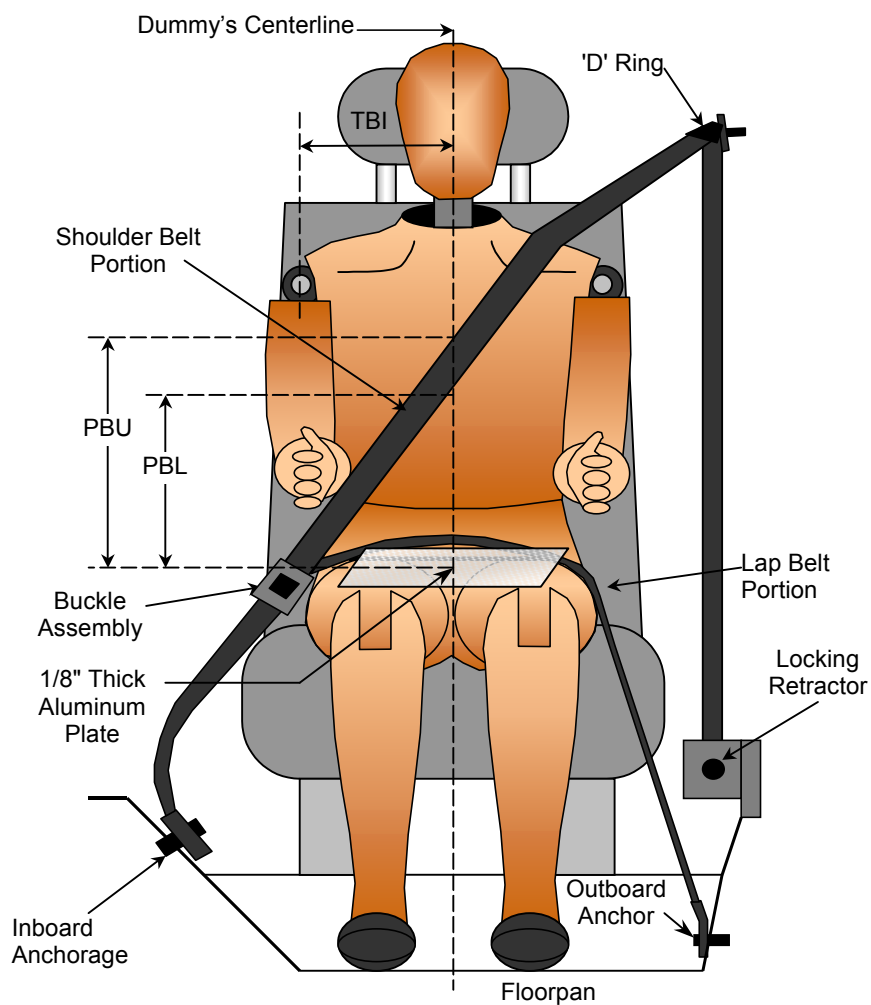
TEST DUMMY POSITION MEASUREMENTS

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA	Windshield Angle		30.7		
SWA	Steering Wheel Angle		65.0		
SCA	Steering Column Angle		23.8		
SA	Seat Back Angle (headrest post)		5.5		5.0
HZ	Head to Roof (Z)	206	90.0	189	90.0
HH	Head to Header	423	17.2	435	16.4
HW	Head to Windshield	678	0.0	651	0.0
HR	Head to Side Header (Y)	201		193	
NR	Nose to Rim	443	10.8		
CD	Chest to Dash	564		586	
CS	Chest to Steering Hub	360	12.8		
RA	Rim to Abdomen	228	0.0		
KDL	Left Knee to Dash	168	31.9	166	
KDR	Right Knee to Dash	174		179	28.1
PA	Pelvic Angle		21.7		24.2
TA	Tibia Angle		43.3		41.4
KK	Knee to Knee (Y)	303		249	
SK	Striker to Knee	571	90.7	562	92.3
ST	Striker to Head	584	5.4	610	5.3
SH	Striker to H-Point	190	110.7	174	105.2
SHY	Striker to H-Point (Y)	236		233	
HS	Head to Side Window	327		329	
HD	H-Point to Door (Y)	129		102	
AD	Arm to Door (Y)	98		102	
AA	Ankle to Ankle	309		188	

DATA SHEET NO. 7 **SEAT BELT POSITIONING DATA**

Test Vehicle: 2005 Chevrolet Equinox
 Test Program: 35mph Frontal Impact

NHTSA No.: M50100
 Test Date: 04/06/04



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
TBI - Dummy centerline to shoulder bolt	mm	170	170
PBU - Top surface of reference to belt upper edge	mm	342	349
PBL - To surface of reference to belt lower edge	mm	260	260

DATA SHEET NO. 8

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

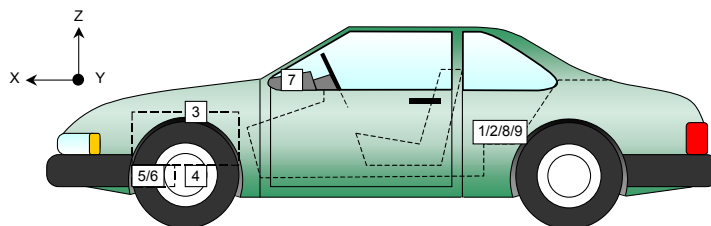
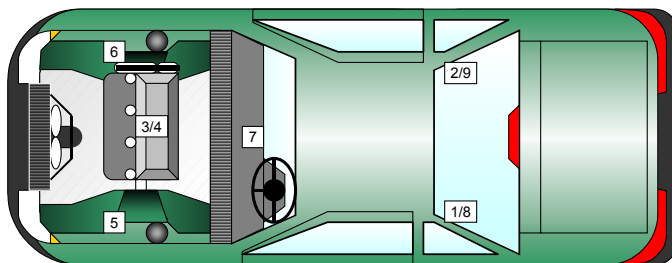
Test Vehicle: 2005 Chevrolet Equinox
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NHTSA No.: M50100
 Test Date: 04/06/04

VEHICLE ACCELEROMETER PEAK DATA AND PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)			Peak Values				
		X	Y	Z	Units	Max	Time	Min	Time
1	Left Rear X-Member X	1642	-565	475	G's	2.1	143	-31.9	68
2	Right Rear X-Member X	1640	565	475	G's	1.9	144	-32.3	75
3	Engine Top X	3895	0	862	G's	36.2	45	-160.1	35
4	Engine Bottom X	3860	124	230	G's	40.8	55	-76.0	35
5	Left Brake Caliper X	3918	-678	272	G's	40.3	82	-82.8	45
6	Right Brake Caliper X	3920	678	272	G's	40.9	76	-105.8	55
7	Instrument Panel X	3215	0	1110	G's	8.5	31	-53.6	35
8	Left Rear X-Member Z	1642	-565	475	G's	11.4	55	-9.5	75
9	Right Rear X-Member Z	1640	565	475	G's	8.7	57	-7.3	32

Reference Points: X - Rear Surface of Vehicle (+ forward)
 Y - Vehicle Centerline (+ to right)
 Z - Ground Plane (+ up)



DATA SHEET NO. 9
HYBRID III ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2005 Chevrolet Equinox
 Test Program: 35mph Frontal Impact

NHTSA No.: M50100
 Test Date: 04/06/04

HEAD PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	0.8	19	-44.3	90	0.4	18	-46.8	96
Head CG	Y	G's	3.0	34	-5.9	62	6.4	75	-6.0	98
Head CG	Z	G's	17.9	95	-3.1	156	30.1	88	-0.9	18
Head CG Resultant	N/A	G's	46.9	88			55.2	96		

CHEST PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	2.2	167	-38.3	78	1.0	166	-40.8	91
Chest CG	Y	G's	1.0	77	-3.0	55	3.2	53	-8.0	90
Chest CG	Z	G's	3.0	48	-7.1	76	6.2	100	-9.3	78
Chest CG Resultant	N/A	G's	38.9	78			41.4	90		

FEMUR PEAK FORCES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Femur	Z	Newtons	600	55	-2323	79	301	113	-4463	79
Right Femur	Z	Newtons	451	39	-567	72	727	57	-1157	81

SEAT BELT SENSOR PEAK VALUES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Lap Belt Force	N/A	Newtons	5334	73			4791	73		
Shoulder Belt Force	N/A	Newtons	5058	88			4938	92		

HEAD INJURY CRITERIA (HIC)

Location	Driver				Passenger			
	HIC	Avg. G's	T ¹	T ²	HIC	Avg. G's	T ¹	T ²
Head CG Primary	331.9	38.5	71.4	107.4	396.9	42.0	79.6	114.3

CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Primary	38.6	76.5	79.5	40.4	88.9	91.9

DATA SHEET NO. 9... (continued)

HYBRID III ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2005 Chevrolet Equinox
Test Program: 35mph Frontal Impact

NHTSA No.: M50100
Test Date: 04/06/04

PELVIC PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	3.0	156	-44.0	79	1.3	169	-46.6	79
Pelvis	Y	G's	2.8	66	-4.1	62	5.2	59	-4.1	96
Pelvis	Z	G's	1.8	166	-28.5	78	4.0	119	-28.5	90

UPPER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	338	90	-369	61	6	17	-377	128
Neck Force	Y	Newtons	77	101	-102	82	101	54	-128	148
Neck Force	Z	Newtons	1036	90	-80	158	1755	89	-37	17
Neck Moment	X	N•m	3.2	146	-17.5	94	12.5	91	-8.2	149
Neck Moment	Y	N•m	36.2	78	-15.5	58	26.7	142	-15.2	95
Neck Moment	Z	N•m	2.7	89	-1.7	49	5.9	129	-6.4	98

FOOT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Foot Aft	X	G's	13.2	82	-67.1	66	10.1	90	-59.5	48
Left Foot Aft	Z	G's	6.9	80	-55.6	65	7.6	82	-40.6	55
Left Foot Fore	Z	G's	42.5	80	-69.0	65	17.5	83	-84.5	55
Right Foot Aft	X	G's	25.1	64	-173.6	55	14.7	91	-66.1	45
Right Foot Aft	Z	G's	13.7	86	-125.8	59	*	*	*	*
Right Foot Fore	Z	G's	20.1	69	-93.4	58	19.3	47	-101.9	72

* No valid data collected

UPPER AND LOWER TIBIA PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Lower Moment	X	N•m	90.7	70	-13.9	37	18.9	104	-3.8	76
Left Lower Moment	Y	N•m	32.2	66	-60.8	80	23.0	54	-41.9	96
Left Lower Force	Z	Newtons	85	150	-1393	75	420	19	-2496	48
Left Upper Moment	X	N•m	35.8	71	-39.6	41	29.3	90	-27.1	41
Left Upper Moment	Y	N•m	22.4	123	-120.2	70	58.7	62	-116.0	76
Left Upper Force	Z	Newtons	108	155	-1748	75	306	20	-2180	94
Right Lower Moment	X	N•m	27.9	59	-55.1	63	20.1	76	-10.0	47
Right Lower Moment	Y	N•m	49.7	58	-133.3	74	42.2	72	-21.8	97
Right Lower Force	Z	Newtons	109	153	-3234	61	99	138	-2789	47
Right Upper Moment	X	N•m	18.2	62	-31.9	89	24.0	49	-34.1	121
Right Upper Moment	Y	N•m	18.1	168	-113.3	59	21.0	167	-91.0	45
Right Upper Force	Z	Newtons	102	165	-2359	61	67	145	-2110	46

DATA SHEET NO. 9... (continued)

HYBRID III ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2005 Chevrolet Equinox
Test Program: 35mph Frontal Impact

NHTSA No.: M50100
Test Date: 04/06/04

CHEST PEAK DISPLACEMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest	X	mm			-26.0	101			-25.3	94

HEAD REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	0.7	17	-44.4	87	0.4	17	-46.6	97
Head CG	Y	G's	1.4	39	-4.1	63	4.8	80	-4.2	106
Head CG	Z	G's	18.1	94	-1.2	161	31.4	88	-0.7	18
Head CG Resultant	N/A	G's	47.1	87			54.4	96		

CHEST REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	2.2	156	-38.9	78	1.0	165	-41.7	91
Chest CG	Y	G's	1.7	76	-3.1	45	3.1	52	-7.9	88
Chest CG	Z	G's	3.2	61	-7.0	76	6.0	99	-9.3	78
Chest CG Resultant	N/A	G's	39.2	78			42.1	91		

REDUNDANT HEAD INJURY CRITERIA (HIC)

Location	Driver				Passenger			
	HIC	Avg.	T ¹	T ²	HIC	Avg.	T ¹	T ²
Head CG Primary Redundant	320.6	38.0	70.8	106.8	389.2	41.5	79.5	114.6

REDUNDANT CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Primary Redundant	38.4	76.2	79.2	40.9	89.1	92.1

DATA SHEET NO. 10**SEAT BELT PERFORMANCE ASSESSMENT TEST DATA**

Test Vehicle: 2005 Chevrolet Equinox
Test Program: 35mph Frontal Impact

NHTSA No.: M50100
Test Date: 04/06/04

SEAT BELT PLACEMENT MEASUREMENTS

Measurement Description	Units	Driver	Passenger
TBI - Dummy centerline to shoulder bolt	mm	170	170
PBU - Top surface of reference to belt upper edge	mm	342	349
PBL - Top surface of reference to belt lower edge	mm	260	260

BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Retractor reel to "D" ring	mm	740	740
Shoulder belt length as measured on ATD	mm	798	792
Lap belt length as measured on ATD	mm	599	614
Remainder of belt on reel	mm	1099	1069
Total belt length for continuous webbing systems	mm	3236	3215

SHOULDER BELT SPOOL-OUT DATA

Measurement Description	Units	Driver	Passenger
As determined mechanically	mm	Not recorded	
As determined electronically	mm	Not recorded	

DATA SHEET NO. 11
SUMMARY OF FMVSS 212 DATA

Test Vehicle: 2005 Chevrolet Equinox
 Test Program: 35mph Frontal Impact

NHTSA No.: M50100
 Test Date: 04/06/04

Windshield Mounting Details:

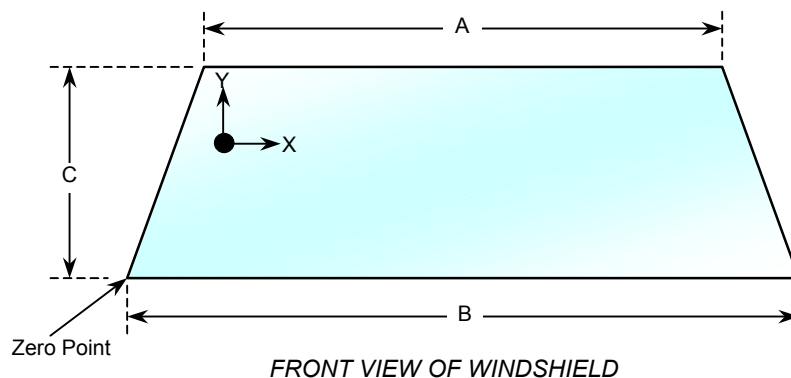
Windshield glass is secured to the vehicle frame with a rubber trim and glue.

The standard requires that the post-test retention measurement be a minimum of 75 percent of the pretest total periphery measurement for vehicles not equipped with occupant passive restraints and 50 percent for each side of the windshield for vehicles, which are equipped with occupant passive restraints.

Temperature of windshield molding during test: 21 °C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% of Retention
Left Side	2172	2172	100
Right Side	2192	2192	100
Total	4364	4364	100



WINDSHIELD DIMENSIONS

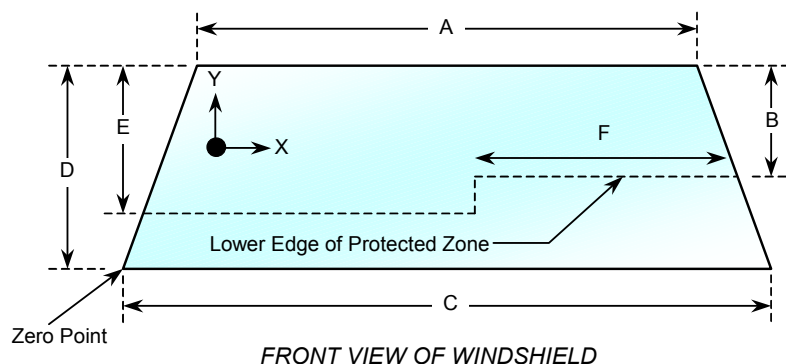
Item	Units	Segment Length	Molding Width
A	mm	1176	20
B	mm	1462	20
C	mm	863	7

DATA SHEET NO. 12

WINDSHIELD ZONE INTRUSION FMVSS 219 (Partial) DATA

Test Vehicle: 2005 Chevrolet Equinox
 Test Program: 35mph Frontal Impact

NHTSA No.: M50100
 Test Date: 04/06/04



Item	Units	Value
A	mm	1176
B	mm	590
C	mm	1462
D	mm	863
E	mm	594
F	mm	434

AREA OF PROTECTED ZONE FAILURES - NONE

- A. Provide coordinates of the area that the protected zone was penetrated more than 0.25 inches by a vehicle component other than one that is normally in contact with the windshield. **None**

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. **None**

X	Y

DATA SHEET NO. 13

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Test Vehicle: 2005 Chevrolet Equinox
Test Program: 35mph Frontal Impact

NHTSA No.: M50100
Test Date: 04/06/04

Temperature at Time of Impact: 21° C

Test Time: 12:03 pm

Stoddard Solvent Spillage Measurements

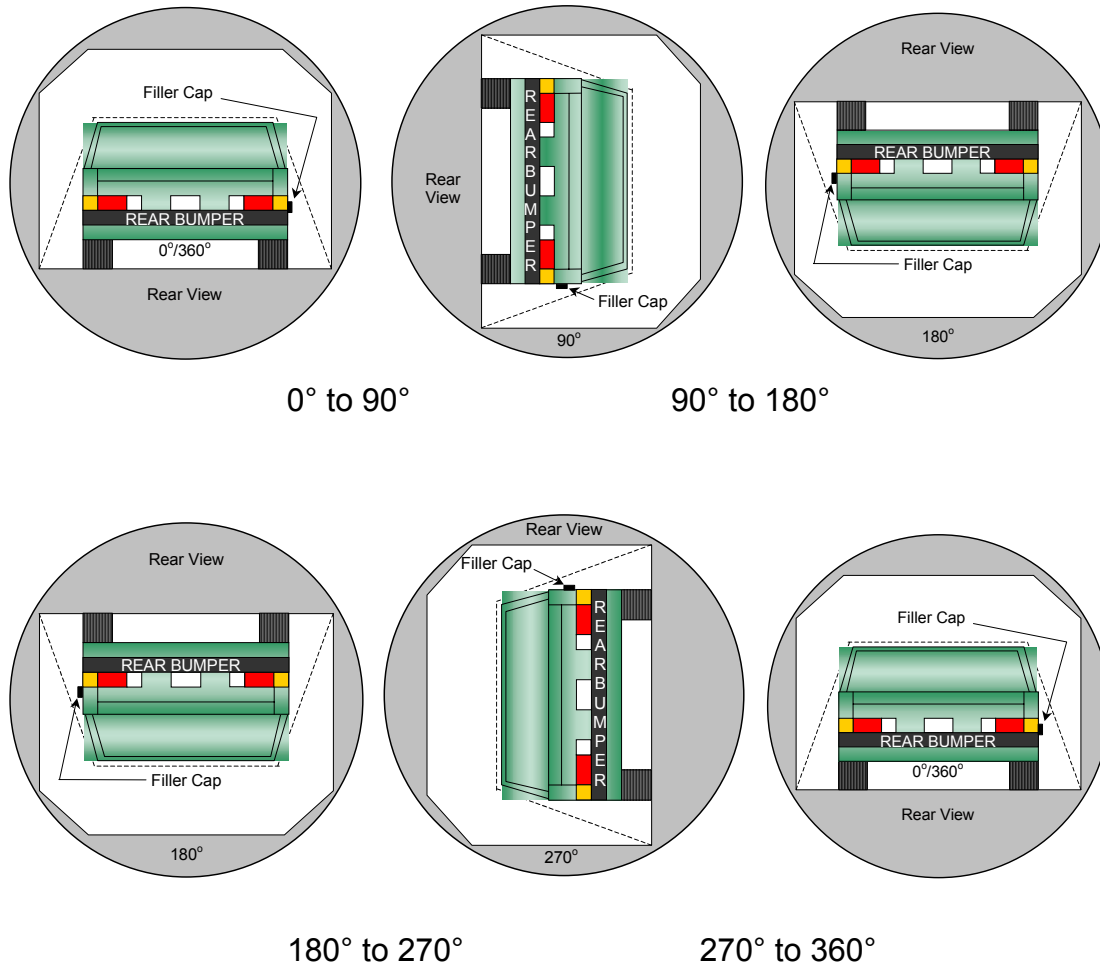
- A. From impact until vehicle motion ceases: 0 oz.
(Maximum Allowable = 1 ounce)
- B. For the 5 minute period after motion ceases: 0 oz.
(Maximum Allowable = 5 ounces)
- C. For the following 25 minutes: 0 oz.
(Maximum Allowable = 1 oz. /minute)
- D. Spillage: None

DATA SHEET NO. 14
FMVSS 301 STATIC ROLLOVER DATA

Test Vehicle: 2005 Chevrolet Equinox
 Test Program: 35mph Frontal Impact

NHTSA No.: M50100
 Test Date: 04/06/04

Test Time: 3:00 pm



1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. Details of Stoddard Solvent spillage locations: None

Test Phase	Rotation Time (sec.)	Hold Time (sec.)	Spillage (oz.)
0° to 90°	166	300	0
90° to 180°	151	300	0
180° to 270°	137	300	0
270° to 360°	162	300	0

DATA SHEET NO. 15
VEHICLE MEASUREMENTS

Test Vehicle: 2005 Chevrolet Equinox
Test Program: 35mph Frontal Impact

NHTSA No.: M50100
Test Date: 04/06/04

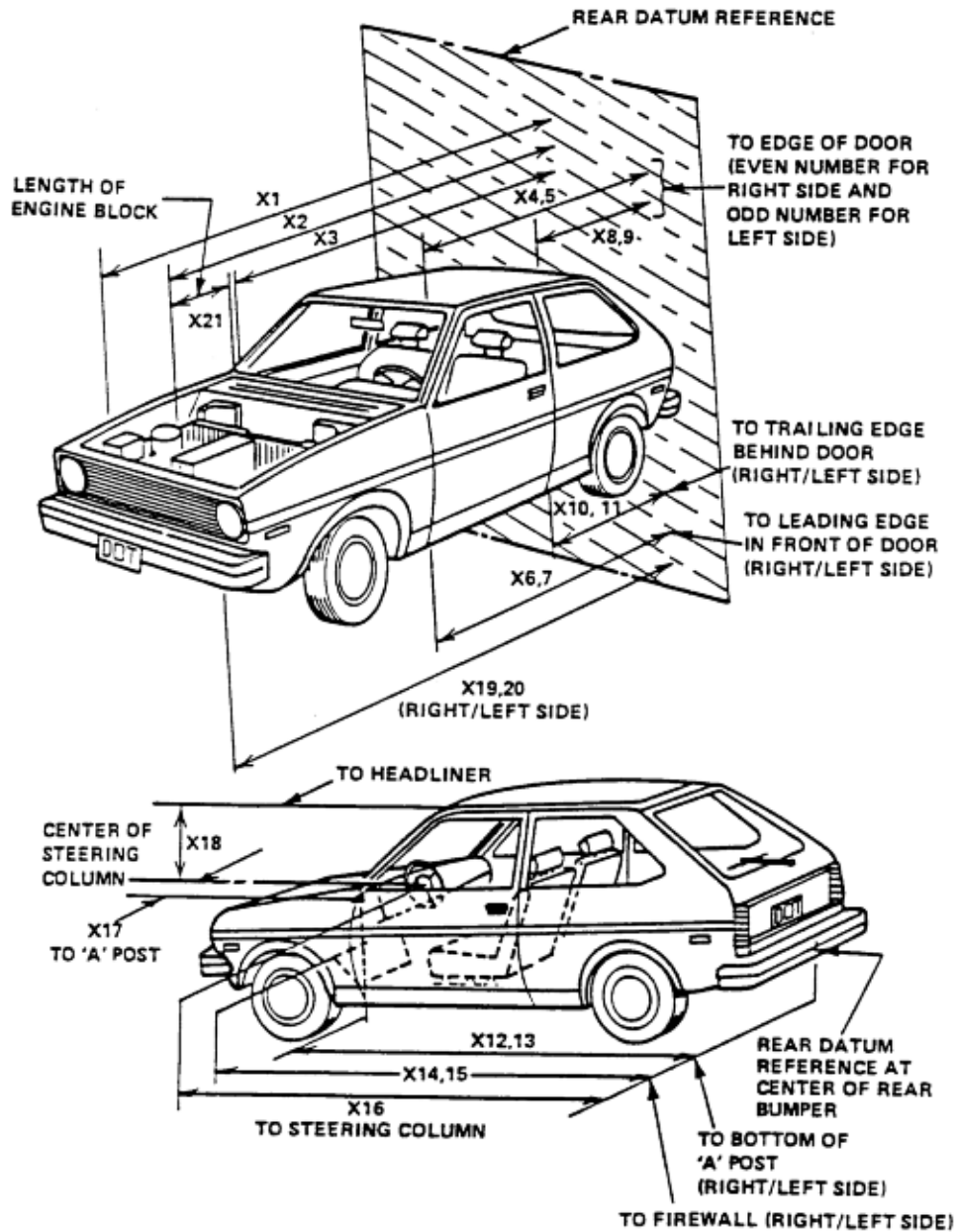
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total length of vehicle at centerline	mm	4750	4093	657
2	RSOV to front of engine	mm	4098	3773	325
3	RSOV to firewall centerline	mm	3759	3691	68
4	RSOV to leading edge of right door	mm	3220	3213	7
5	RSOV to leading edge of left door	mm	3220	3209	11
6	RSOV to lower leading edge of right door	mm	3190	3178	12
7	RSOV to lower leading edge of left door	mm	3190	3174	16
8	RSOV to upper leading edge of right door	mm	2179	2176	3
9	RSOV to upper leading edge of left door	mm	2187	2165	22
10	RSOV to lower trailing edge of right door	mm	2216	2206	10
11	RSOV to lower trailing edge of left door	mm	2218	2204	14
12	RSOV to bottom of right 'A' pillar	mm	3197	3188	9
13	RSOV to bottom of left 'A' pillar	mm	3192	3168	24
14	RSOV to firewall on right side	mm	3704	3694	10
15	RSOV to firewall on left side	mm	3704	3583	121
16	RSOV to steering column	mm	2785	2735	50
17	Center of steering column to left 'A' pillar	mm	445	352	93
18	Center of steering column to headlining	mm	463	376	87
19	RSOV to right side of front bumper	mm	4628	4041	587
20	RSOV to left side of front bumper	mm	4627	4050	577
21	Length of engine block	mm	399	399	0
RD	RSOV to right side of dash panel	mm	3067	3045	22
CD	RSOV to center of dash panel	mm	3098	3082	16
LD	RSOV to left side of dash panel	mm	3055	3044	11

DATA SHEET NO. 15... (continued)

VEHICLE MEASUREMENTS

Test Vehicle: 2005 Chevrolet Equinox
 Test Program: 35mph Frontal Impact

NHTSA No.: M50100
 Test Date: 04/06/04



DATA SHEET NO. 15... (continued)**VEHICLE MEASUREMENTS**

Test Vehicle: 2005 Chevrolet Equinox
Test Program: 35mph Frontal Impact

NHTSA No.: M50100
Test Date: 04/06/04

Target Vehicle Structural Measurement

	Elements	Pre-Test (mm)
1	Total Length	4750
2	Total Width	1805
3	Bumper Top Height	635
4	Bumper Bottom Height	402
5	Longitudinal Member Top Height	305
6	Distance between Longitudinal Members	875
7	Longitudinal Member Width	92
8	Engine Top Height	910
9	Engine Bottom Height	205
10	Engine and gearbox width	830
11	Front bumper-engine distance	585
12	Front shock absorber fixing height	1020
13	Bonnet leading edge height	915
14	Front shock absorber fixing width	1180
15	Front bumper – front axle distance	988
16	Front axle – a pillar distance	412
17	A-pillar – B-pillar distance	990
18	B-Pillar – rear axle distance	1265
19	B-pillar – C-pillar distance	1007
20	Roof sill bottom height	1553
21	Roof sill top height	1625
22	Floor sill bottom height	266
23	Floor sill top height	382

DATA SHEET NO. 16
CAMERA LOCATIONS

Test Vehicle: 2005 Chevrolet Equinox
Test Program: 35mph Frontal Impact

NHTSA No.: M50100
Test Date: 04/06/04

No.	Camera View	Location (mm) *			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Side View				13	24
2	Left Front View	1000	-8000	1540	25	1036
3	Steering Column Top	2000	-8000	1560	25	1015
4	Steering Column Bottom	2000	-8000	1030	25	1000
5	Driver Close-up	1500	-8590	1470	50	1020
6	Driver Angle	4700	-5000	2010	50	1075
7	Left Rear				13	518
8	Right Rear				13	505
9	Right Overall	2000	7300	1540	13	1005
10	Right Passenger Half	1000	8000	1530	25	1020
11	Right Close-up	1570	10220	1420	75	1190
12	Right Angle	4850	5520	2030	50	1036
13	Windshield	390	0	2940	13	1015
14	Top Driver	-70	-448	2265	13	1020
15	Top Passenger	-70	435	2265	13	1026
16	Pit Front	1120	0	-3050	13	1010
17	Pit Rear	3020	0	-3080	13	1005
18	Driver Close-up	560	-9470	1620	50	1000
19	Driver Overall	1760	-8460	1540	24	1000
20	Passenger Close-up	530	9500	1580	50	1000

***COORDINATES:**

- +X = film plane rearward of barrier
- +Y = film plane to right of monorail centerline
- +Z = film plane above ground level

Cameras 18-20 are high speed video cameras.

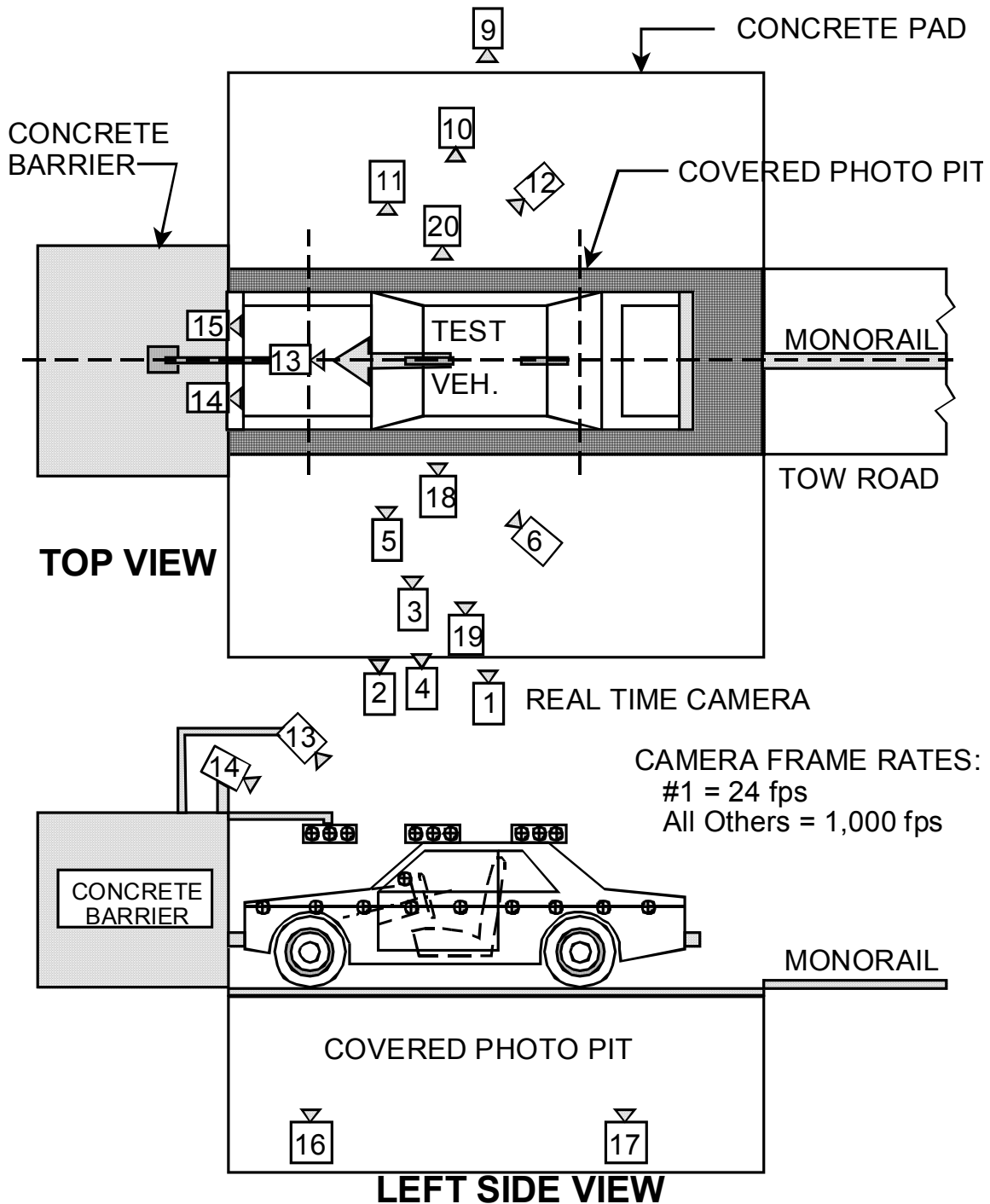
DATA SHEET NO. 16... (continued)

CAMERA LOCATIONS

Test Vehicle: 2005 Chevrolet Equinox
Test Program: 35mph Frontal Impact

NHTSA No.: M50100
Test Date: 04/06/04

CAMERA POSITIONS FOR FRONTAL IMPACTS

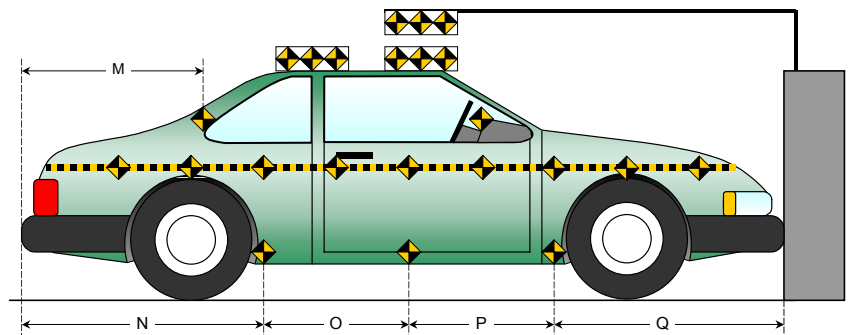
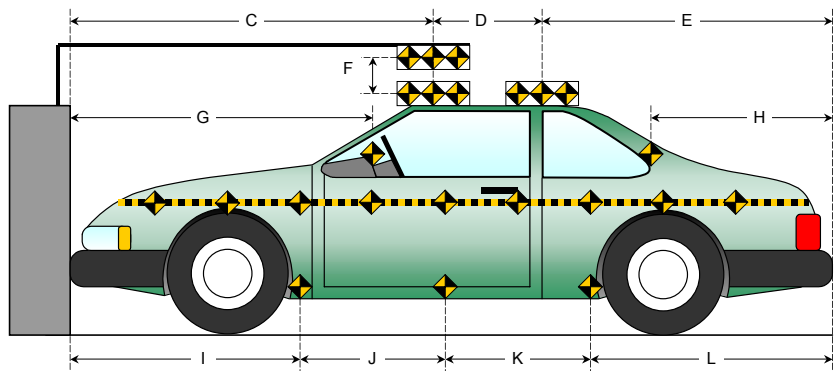
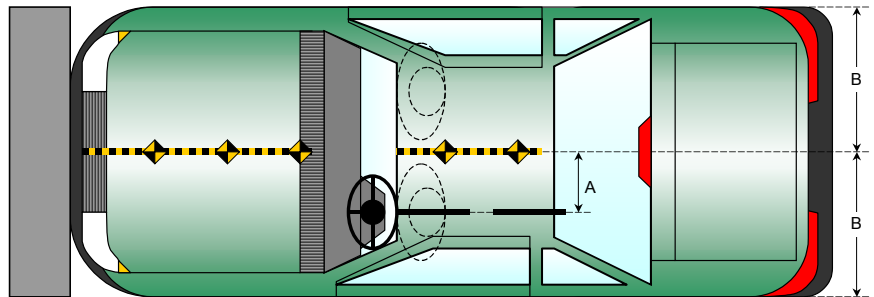


DATA SHEET NO. 17 **PHOTOGRAPHIC REFERENCE TARGET LOCATIONS**

Test Vehicle: 2005 Chevrolet Equinox
 Test Program: 35mph Frontal Impact

NHTSA No.: M50100
 Test Date: 04/06/04

Item	Value
A	369
B	902
C	2396
D	610
E	1744
F	150
G	
H	1245
I	1389
J	970
K	966
L	1425
M	1243
N	1427
O	968
P	965
Q	1390



DATA SHEET NO. 18
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2005 Chevrolet Equinox
 Test Program: 35mph Frontal Impact

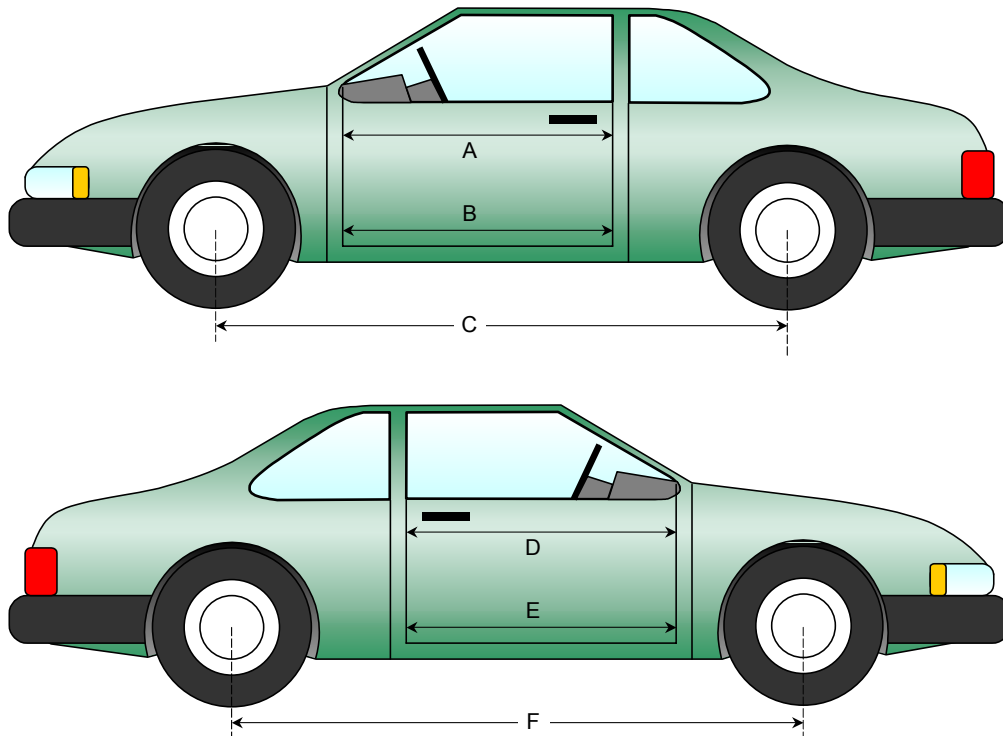
NHTSA No.: M50100
 Test Date: 04/06/04

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	954	952	2
B	Left Side Lower	mm	905	906	-1
D	Right Side Upper	mm	950	949	1
E	Right Side Lower	mm	904	904	0

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2860	2763	97
F	Right Side Wheelbase	mm	2860	2770	90



DATA SHEET NO. 18... (continued)
VEHICLE INTRUSION MEASUREMENTS

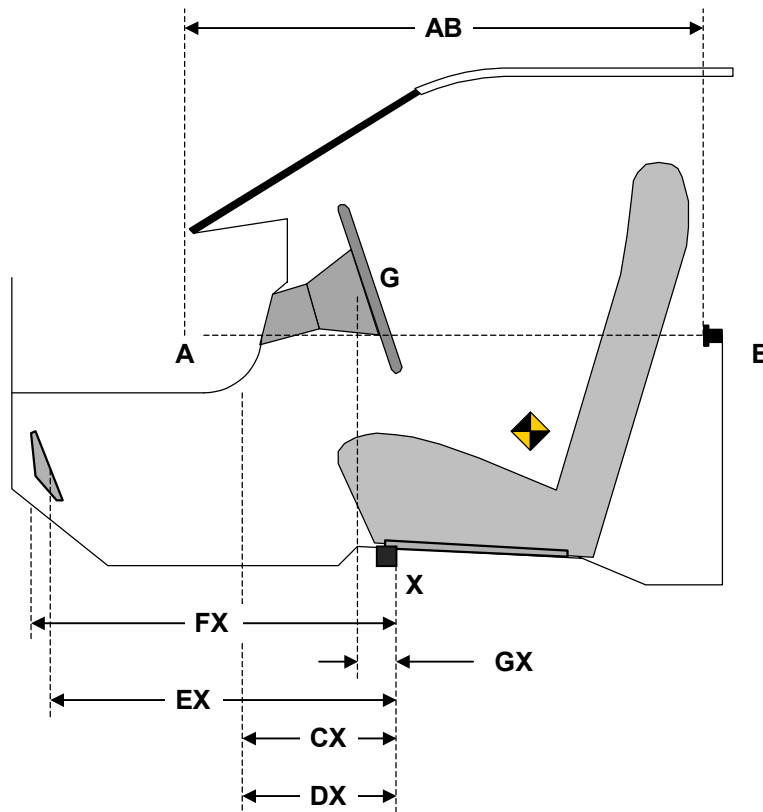
Test Vehicle: 2005 Chevrolet Equinox
 Test Program: 35mph Frontal Impact

NHTSA No.: M50100
 Test Date: 04/06/04

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside window jam)	mm	954	952	2
CX	Left Knee Bolster to X	mm	297	279	18
DX	Right Knee Bolster to X	mm	297	260	37
EX	Brake Pedal to X	mm	595	515	80
FX	Foot Rest to X	mm	615	588	27
GX	Center of Steering Column Wheel Hub to X	mm	114	73	41

X = Front of Seat Track (stationary)



DRIVER COMPARTMENT

DATA SHEET NO. 18... (continued)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2005 Chevrolet Equinox
 Test Program: 35mph Frontal Impact

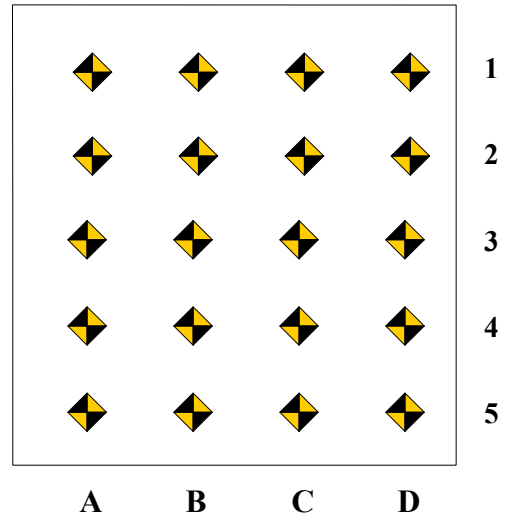
NHTSA No.: M50100
 Test Date: 04/06/04

Measurement reference point for X and Z axis is the forward outboard seat mounting bolt.

Columns A through D are evenly spaced.

Rows 1 and 2 are on the toe kick portion of the floor pan. Rows 3, 4, and 5 are located on the most level portion of the floor pan.

Row 3 will be at the intersection of the toe kick and the level sections of the floor pan.



DRIVER FLOOR PAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1		727	726	723		635	638	629		92	88	94
2		645	660	668		590	594	579		55	66	89
3	567	571	586	571	545	540	561	556	22	31	25	15
4	490	489	494	479	456	435	456	460	34	54	38	19
5	391	397	400	378	350	351	354	355	41	46	46	23

DRIVER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1		-24	-25	-35		-10	-7	-5		-14	-18	-30
2		-105	-109	-113		-75	-105	-100		-30	-4	-13
3	-144	-150	-160	-162	-160	-162	-190	-180	16	12	30	18
4	-166	-160	-170	-168	-207	-218	-204	-194	41	58	34	26
5	-167	-163	-161	-161	-183	-190	-185	-184	16	27	24	23

DATA SHEET NO. 18... (continued)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2005 Chevrolet Equinox
 Test Program: 35mph Frontal Impact

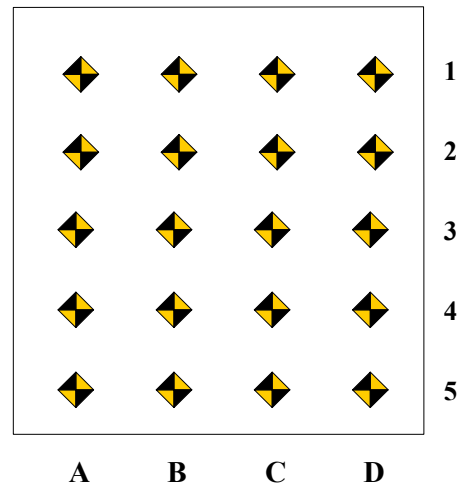
NHTSA No.: M50100
 Test Date: 04/06/04

Measurement reference point for X and Z axis is the forward outboard seat mounting bolt.

Columns A through D are evenly spaced.

Rows 1 and 2 are on the toe kick portion of the floor pan. Rows 3, 4, and 5 are located on the most level portion of the floor pan.

Row 3 will be at the intersection of the toe kick and the level sections of the floor pan.



PASSENGER FLOOR PAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	694	694	689		612	635	641		82	59	48	
2	619	630	620		568	591	585		51	39	35	
3	544	547	543	550	495	501	494	508	49	46	49	42
4	459	462	465	470	405	408	420	419	54	54	45	51
5	355	361	360	362	302	299	300	310	53	62	60	52

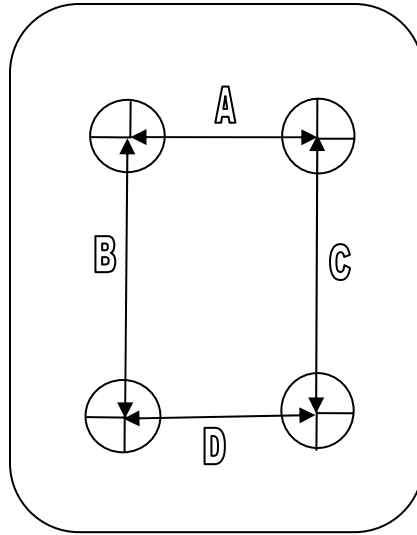
PASSENGER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-54	-51	-44		-22	-26	-31		-32	-25	-13	
2	-111	-107	-105		-115	-116	-113		4	9	8	
3	-161	-158	-155	-165	-181	-184	-166	-175	20	26	11	10
4	-178	-175	-191	-159	-191	-181	-177	-176	13	6	-14	17
5	-177	-174	-170	-158	-183	-174	-169	-156	6	0	-1	-2

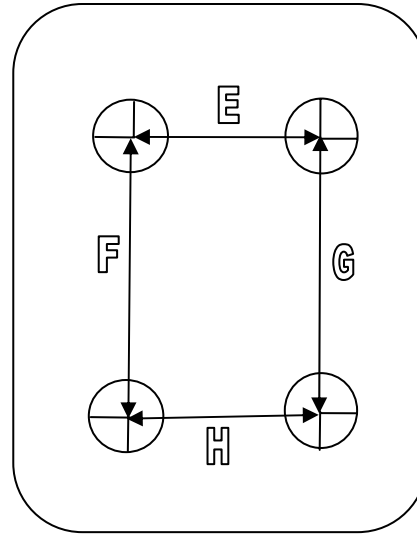
DATA SHEET NO. 18... (continued)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2005 Chevrolet Equinox
 Test Program: 35mph Frontal Impact

NHTSA No.: M50100
 Test Date: 04/06/04



Driver



Passenger

UNDERBODY FLOORBOARD DEFORMATION

Measurement	Pre-Test	Post-Test	Difference
A	103	95	8
B	308	307	1
C	308	307	1
D	143	143	0
E	97	97	0
F	314	310	4
G	314	312	2
H	139	144	-5

DATA SHEET NO. 19

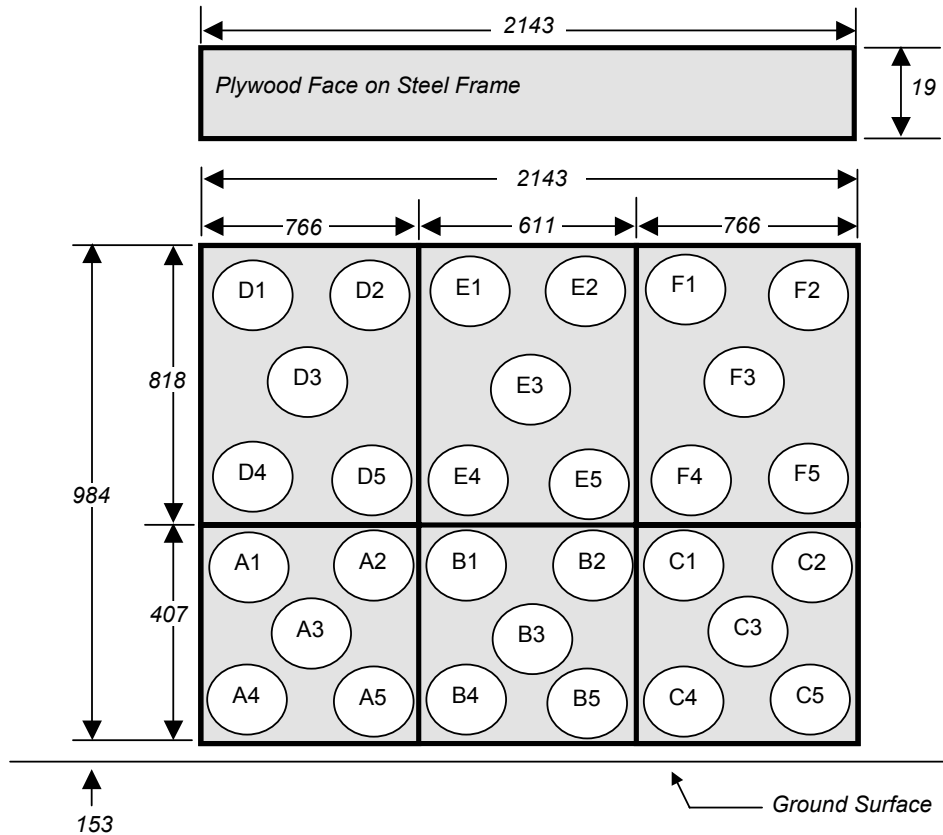
LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2005 Chevrolet Equinox
 Test Program: 35mph Frontal Impact

NHTSA No.: M50100
 Test Date: 04/06/04

30 Load Cell Rigid Barrier

Load Cell Locations on Fixed Barrier



Group 4 D1-D5	Group 5 E1-E5	Group 6 F1-F5
Group 1 A1-A5	Group 2 B1-B5	Group 3 C1-C5

6 Groups of 5 Load Cells Each

The Data is presented in Appendix B with the following requirements:

1. Sum data from 6 groupings shown above (5 cells/group)
2. Sum of left 2 groupings, center 2 groupings and right 2 groupings.
3. Total or sum of all 30 individual load cells.
4. Total versus average rear seat cross member displacement.

DATA SHEET NO. 20**ACCIDENT INVESTIGATION DIVISION DATA**

Test Vehicle: 2005 Chevrolet Equinox
Test Program: 35mph Frontal Impact

NHTSA No.: M50100
Test Date: 04/06/04

VEHICLE INFORMATION

VIN: 2CNDL23F756002651 Wheelbase (mm) : 2860
Vehicle Size Category: SUV Test Weight (kg) : 2014.5

ACCELEROMETER DATA

Accelerometer Locations: As per measurements on Page 14
Cal. Procedure/Interval: MGA procedure / 6 month
Integration Algorithm: Trapezoidal Linearity: > 99%
Impact Velocity (km/h): 56.3
Velocity Change (km/h): 66.1 Time of Separation (msec): 128

CRUSH PROFILE

Collision Deformation Classification: Frontal Midpoint of Damage: Centerline
Damage Region Length (mm): 1220 Impact Mode: Frontal

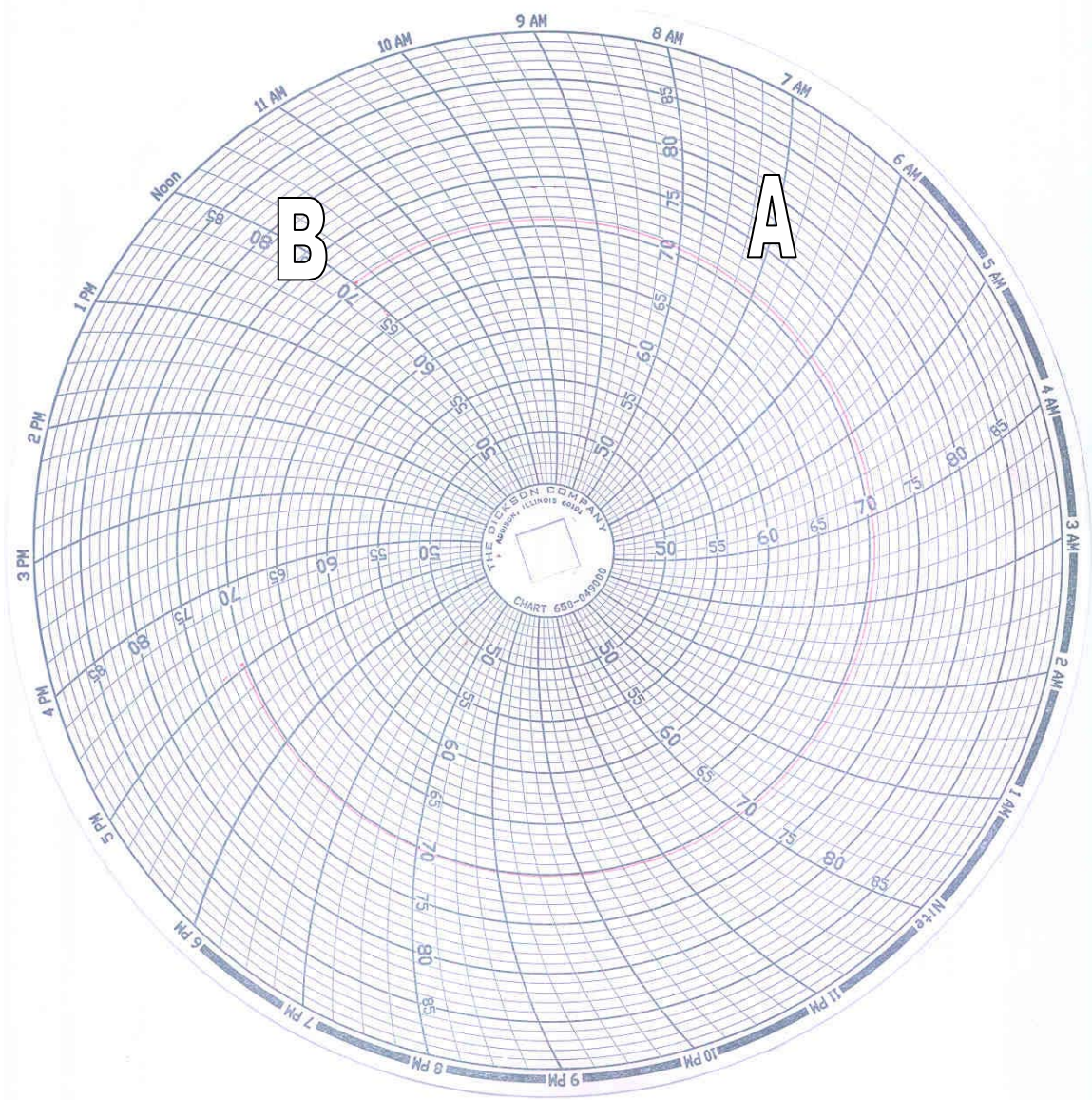
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	4627	4050	577
C2	Crush zone 2 at left side	mm	4698	4070	628
C3	Crush zone 3 at left side	mm	4735	4091	644
C4	Crush zone 4 at right side	mm	4735	4082	653
C5	Crush zone 5 at right side	mm	4698	4051	647
C6	Crush zone 6 at right side	mm	4628	4041	587
L	C1 TO C6	mm	1220	1183	37

DATA SHEET NO. 21

DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2005 Chevrolet Equinox
Test Program: 35mph Frontal Impact

NHTSA No.: M50100
Test Date: 04/06/04



A = Dummies installed in vehicle at 7:00 am

B = Test conducted at 12:03 pm

APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

Page No.

Photo No. 1.	Load Cell Location	A-1
Photo No. 2.	Vehicle Certification Label	A-2
Photo No. 3.	Tire Placard	A-3
Photo No. 4.	Right Front View of Test Vehicle, as received	A-4
Photo No. 5.	Left Rear View of Test Vehicle, as received	A-5
Photo No. 6.	Pre-Test Front View of Test Vehicle	A-6
Photo No. 7.	Post-Test Front View of Test Vehicle	A-7
Photo No. 8.	Pre-Test Left Side View of Test Vehicle	A-8
Photo No. 9.	Post-Test Left Side View of Test Vehicle	A-9
Photo No. 10.	Pre-Test Right Side View of Test Vehicle	A-10
Photo No. 11.	Post-Test Right Side View of Test Vehicle	A-11
Photo No. 12.	Pre-Test Left Rear Three-Quarter View of Test Vehicle	A-12
Photo No. 13.	Post-Test Left Rear Three-Quarter View of Test Vehicle	A-13
Photo No. 14.	Pre-Test Right Front Three-Quarter View of Test Vehicle	A-14
Photo No. 15.	Post-Test Right Front Three-Quarter View of Test Vehicle	A-15
Photo No. 16.	Pre-Test Right Rear Three-Quarter View of Doors Before Impact	A-16
Photo No. 17.	Post-Test Right Rear Three-Quarter View of Doors After Impact	A-17
Photo No. 18.	Pre-Test Left Rear Three-Quarter View of Doors Before Impact	A-18
Photo No. 19.	Post-Test Left Rear Three-Quarter View of Doors After Impact	A-19
Photo No. 20.	Pre-Test Windshield View	A-20
Photo No. 21.	Post-Test Windshield View	A-21
Photo No. 22.	Pre-Test Engine Compartment View	A-22
Photo No. 23.	Post-Test Engine Compartment View	A-23
Photo No. 24.	Pre-Test Fuel Filler Cap View	A-24
Photo No. 25.	Post-Test Fuel Filler Cap View	A-25
Photo No. 26.	Pre-Test Front Underbody View	A-26
Photo No. 27.	Post-Test Front Underbody View	A-27
Photo No. 28.	Pre-Test Mid Underbody	A-28

Page No.

Photo No. 29.	Post-Test Mid Underbody	A-29
Photo No. 30.	Pre-Test Rear Underbody View	A-30
Photo No. 31.	Post-Test Rear Underbody View	A-31
Photo No. 32.	Pre-Test Driver Dummy Front View (head position)	A-32
Photo No. 33.	Post-Test Driver Dummy Front View (head position)	A-33
Photo No. 34.	Pre-Test Driver Dummy Position Left Side View	A-34
Photo No. 35.	Post-Test Driver Dummy Position Left Side View	A-35
Photo No. 36.	Pre-Test Driver Dummy Position Left Side View (Door Open)	A-36
Photo No. 37.	Post-Test Driver Dummy Position Left Side View (Door Open)	A-37
Photo No. 38.	Pre-Test Driver Dummy Feet Position	A-38
Photo No. 39.	Post-Test Driver Dummy Feet Position	A-39
Photo No. 40.	Pre-Test Driver Side Knee Bolster View	A-40
Photo No. 41.	Post-Test Driver Side Knee Bolster View	A-41
Photo No. 42.	Pre-Test Driver Side Floor Pan View	A-42
Photo No. 43.	Post-Test Driver Side Floor Pan View	A-43
Photo No. 44.	Post-Test Driver Dummy Head Contact	A-44
Photo No. 45.	Post-Test Driver Dummy Knee Contact	A-45
Photo No. 46.	Post-Test Driver Dummy Airbag Contact	A-46
Photo No. 47.	Pre-Test Passenger Dummy Front View (head position)	A-47
Photo No. 48.	Post-Test Passenger Dummy Front View (head position)	A-48
Photo No. 49.	Pre-Test Passenger Dummy Position Right Side View	A-49
Photo No. 50.	Post-Test Passenger Dummy Position Right Side View	A-50
Photo No. 51.	Pre-Test Passenger Dummy Position Right Side View (Door Open)	A-51
Photo No. 52.	Post-Test Passenger Dummy Position Right Side View (Door Open)	A-52
Photo No. 53.	Pre-Test Passenger Dummy Feet Position	A-53
Photo No. 54.	Post-Test Passenger Dummy Feet Position	A-54
Photo No. 55.	Pre-Test Passenger Side Knee Bolster View	A-55
Photo No. 56.	Post-Test Passenger Side Knee Bolster View	A-56
Photo No. 57.	Pre-Test Passenger Side Floor Pan View	A-57
Photo No. 58.	Post-Test Passenger Side Floor Pan View	A-58

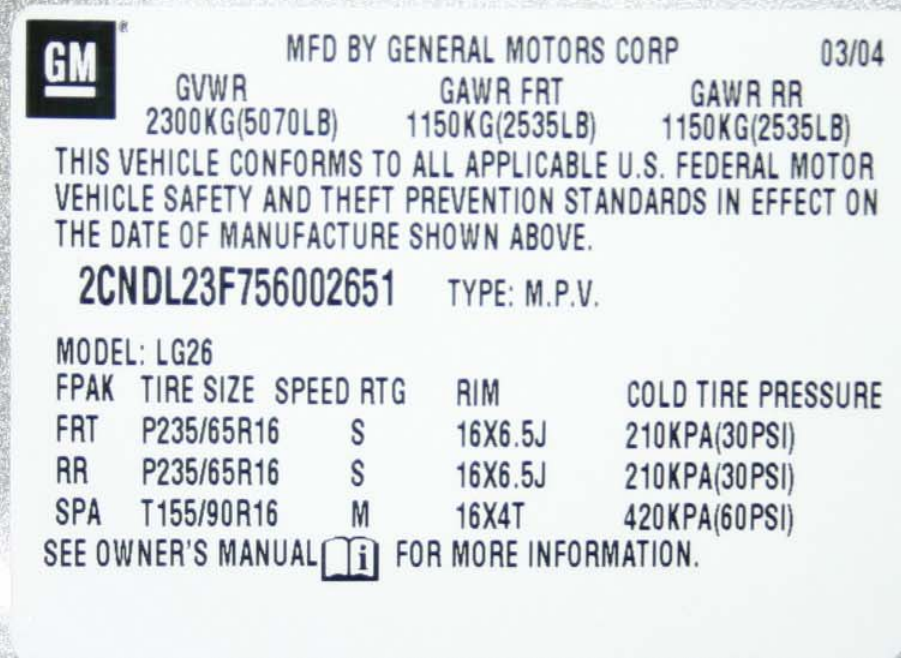
Page No.

Photo No. 59.	Post-Test Passenger Dummy Head Contact	A-59
Photo No. 60.	Post-Test Passenger Dummy Knee Contact	A-60
Photo No. 61.	Post-Test Passenger Dummy Airbag Contact	A-61
Photo No. 62.	Rollover 90 Degrees	A-62
Photo No. 63.	Rollover 180 Degrees	A-63
Photo No. 64.	Rollover 270 Degrees	A-64
Photo No. 65.	Rollover 360 Degrees	A-65
Photo No. 66.	Vehicle Impact	A-66

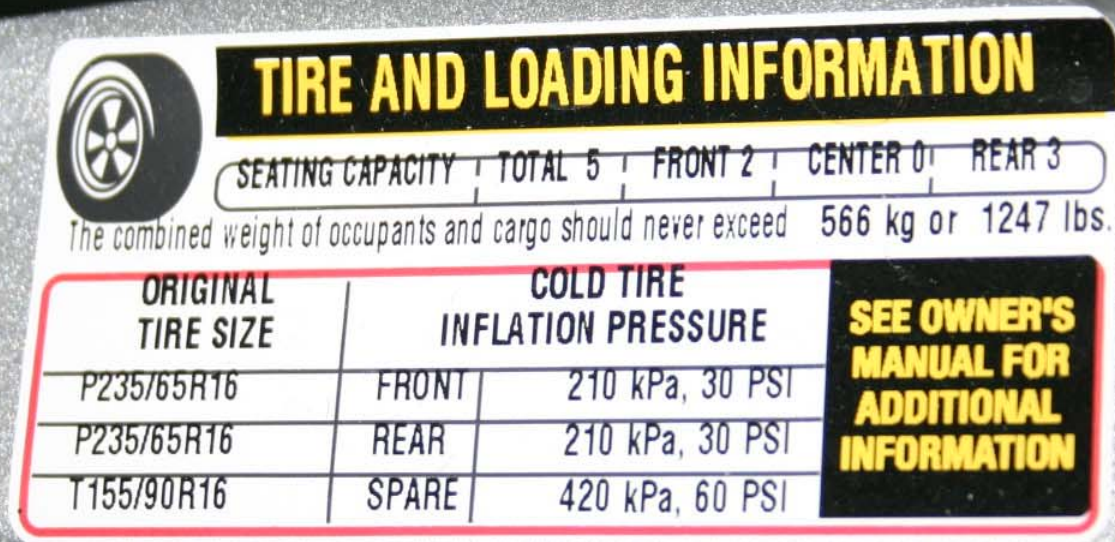
A-1.



Load Cell Location



Vehicle Certification Label



TIRE AND LOADING INFORMATION

 **SEATING CAPACITY** | TOTAL 5 | FRONT 2 | CENTER 0 | REAR 3

The combined weight of occupants and cargo should never exceed 566 kg or 1247 lbs.

ORIGINAL TIRE SIZE	COLD TIRE INFLATION PRESSURE	
P235/65R16	FRONT	210 kPa, 30 PSI
P235/65R16	REAR	210 kPa, 30 PSI
T155/90R16	SPARE	420 kPa, 60 PSI

**SEE OWNER'S
MANUAL FOR
ADDITIONAL
INFORMATION**

Tire Placard



Right Front View of Test Vehicle, as received



Left Rear View of Test Vehicle, as received



Pre-Test Front View of Test Vehicle



Post-Test Front View of Test Vehicle



Pre-Test Left Side View of Test Vehicle



Post-Test Left Side View of Test Vehicle



Pre-Test Right Side View of Test Vehicle



Post-Test Right Side View of Test Vehicle



Pre-Test Left Rear Three-Quarter View of Test Vehicle



Post-Test Left Rear Three-Quarter View of Test Vehicle



Pre-Test Right Front Three-Quarter View of Test Vehicle



Post-Test Right Front Three-Quarter View of Test Vehicle



Pre-Test Right Rear Three-Quarter View of Doors Before Impact



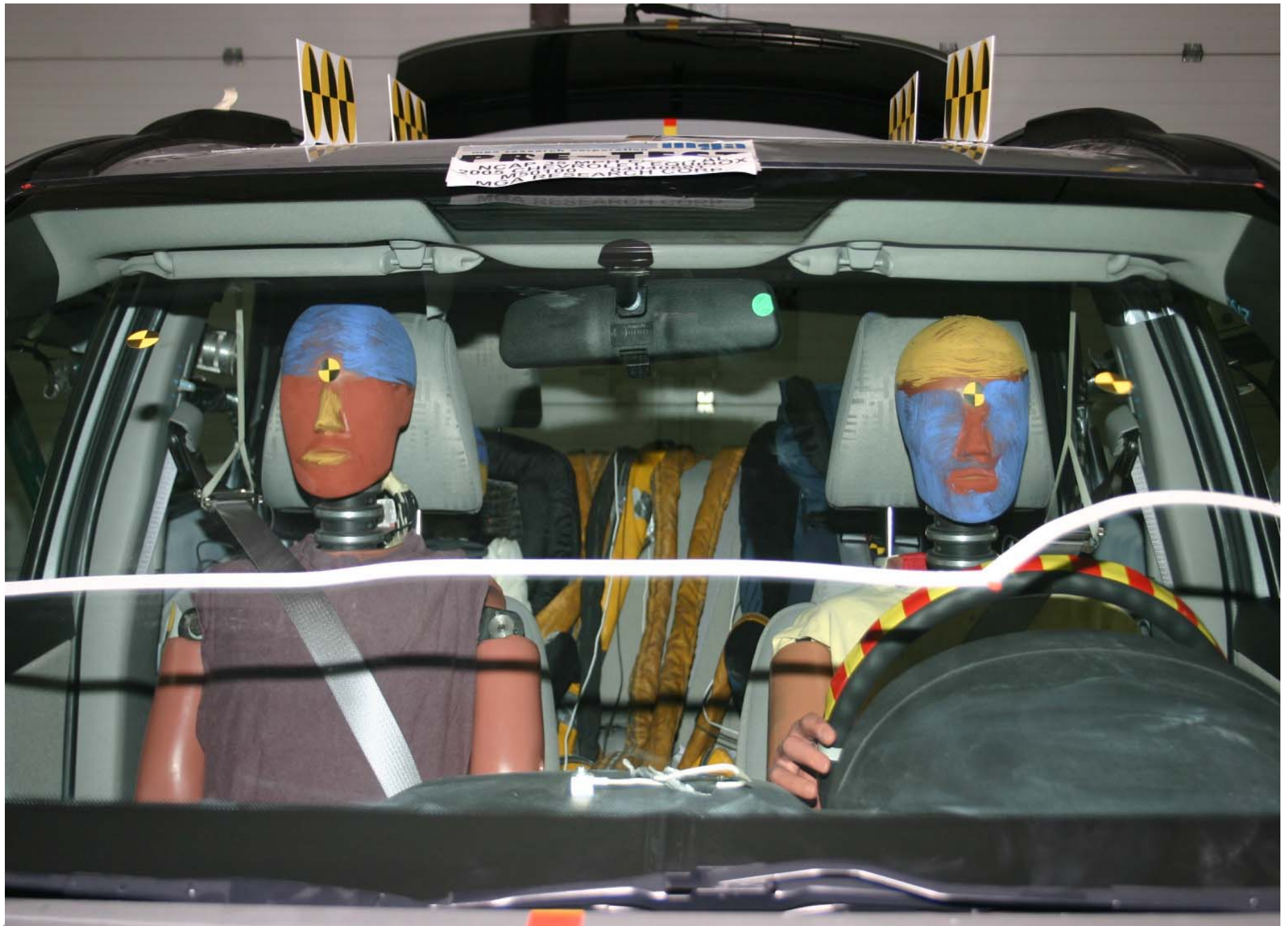
Post-Test Right Rear Three-Quarter View of Doors After Impact



Pre-Test Left Rear Three-Quarter View of Doors Before Impact



Post-Test Left Rear Three-Quarter View of Doors After Impact



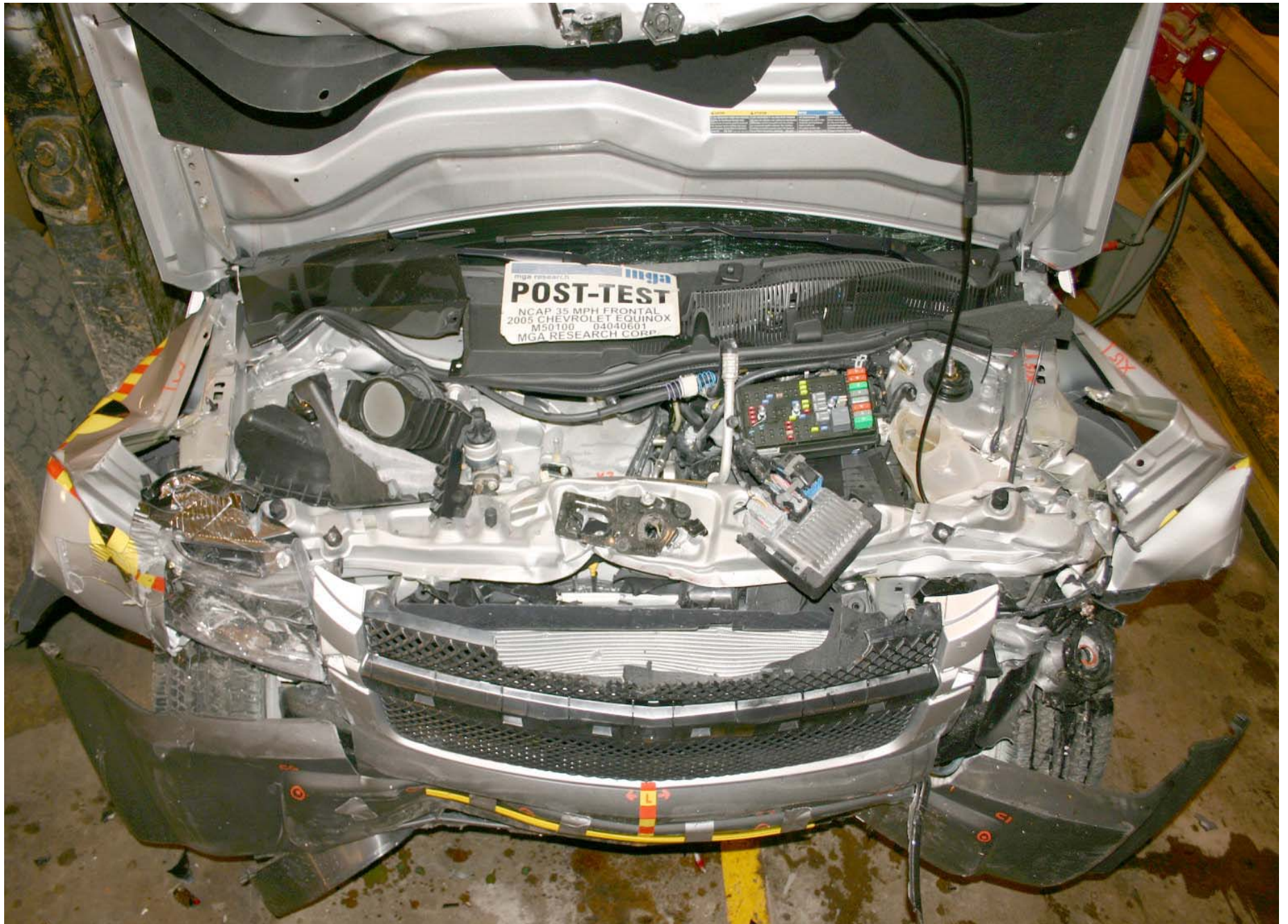
Pre-Test Windshield View



Post-Test Windshield View



Pre-Test Engine Compartment View



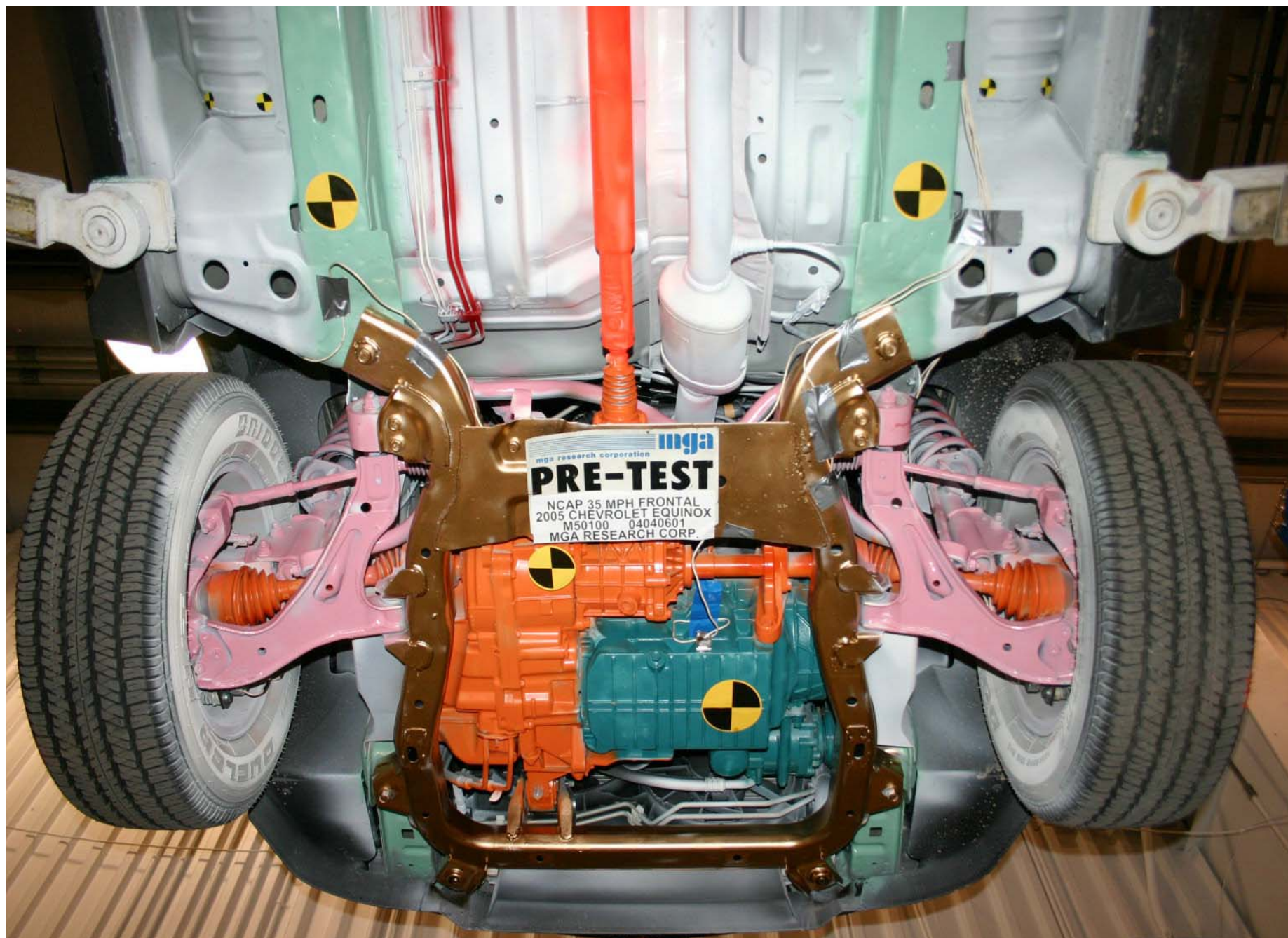
Post-Test Engine Compartment View



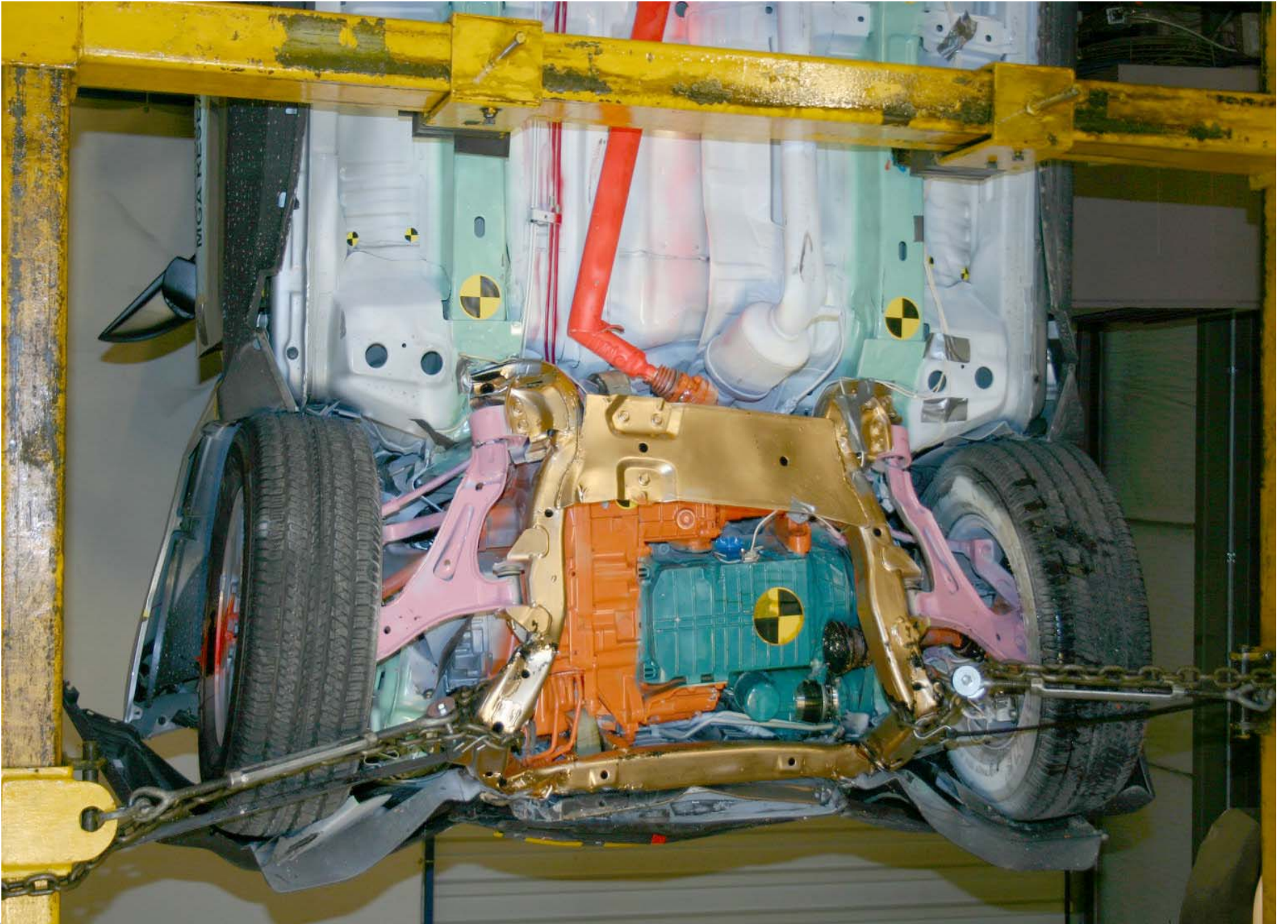
Pre-Test Fuel Filler Cap View



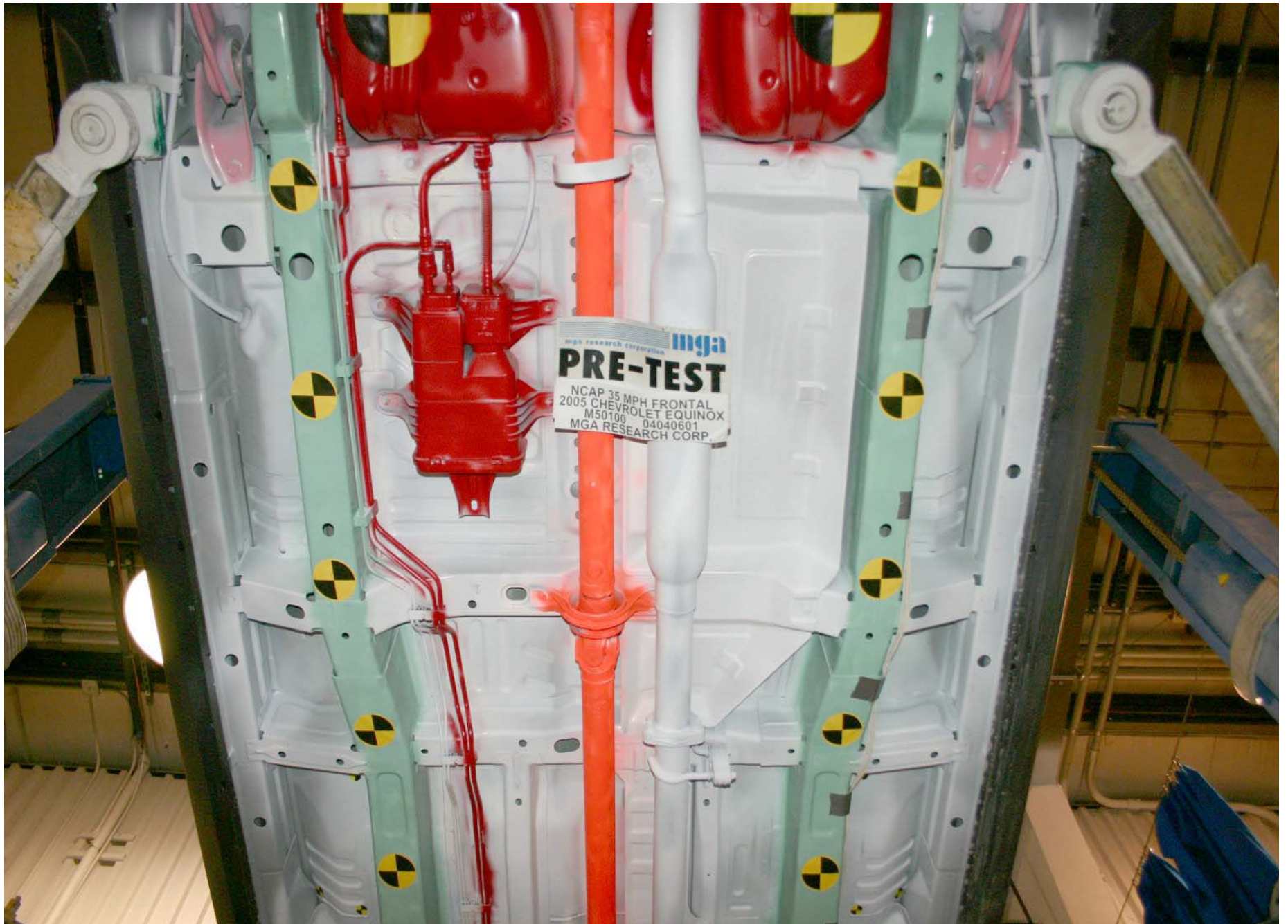
Post-Test Fuel Filler Cap View



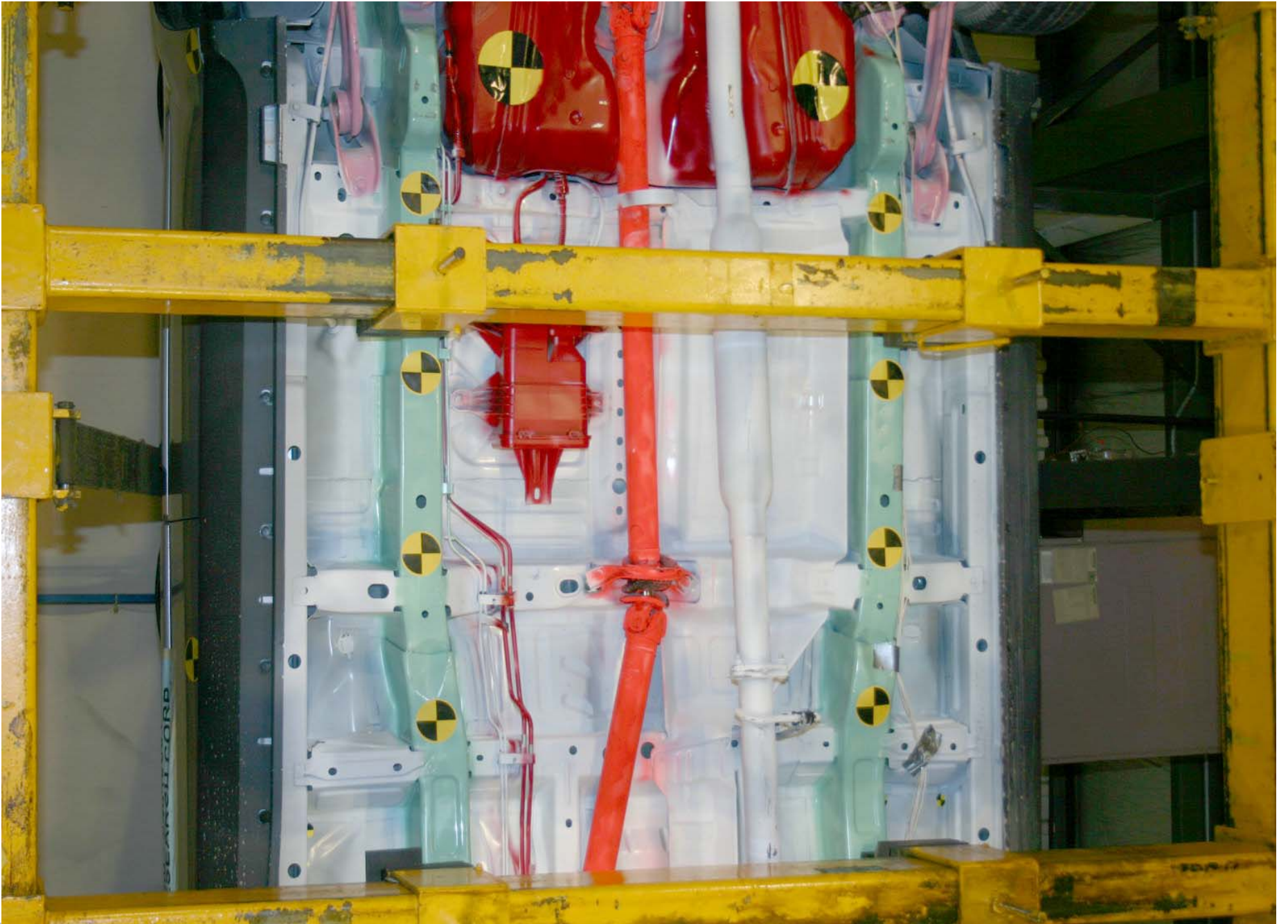
Pre-Test Front Underbody View



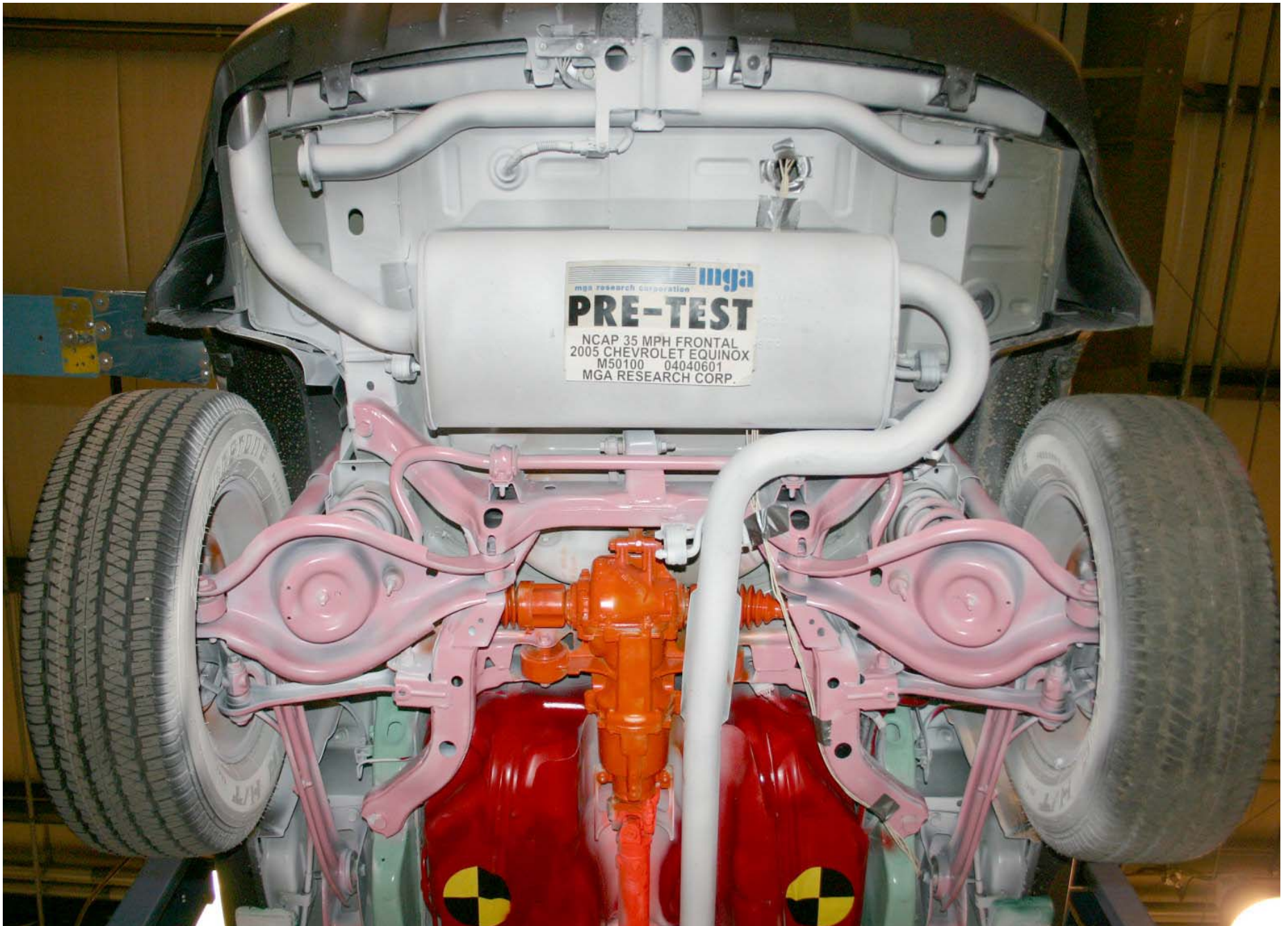
Post-Test Front Underbody View



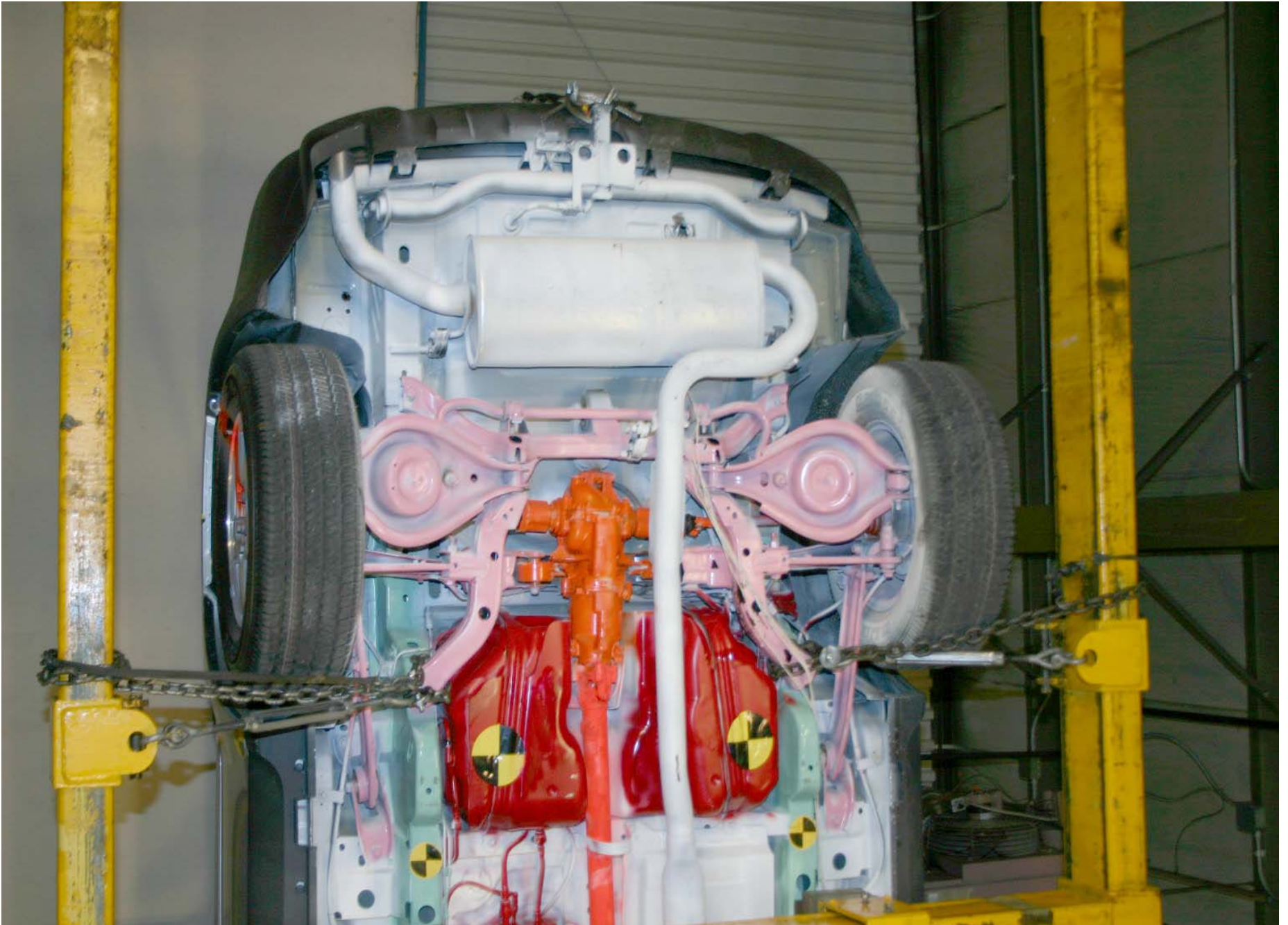
Pre-Test Mid Underbody



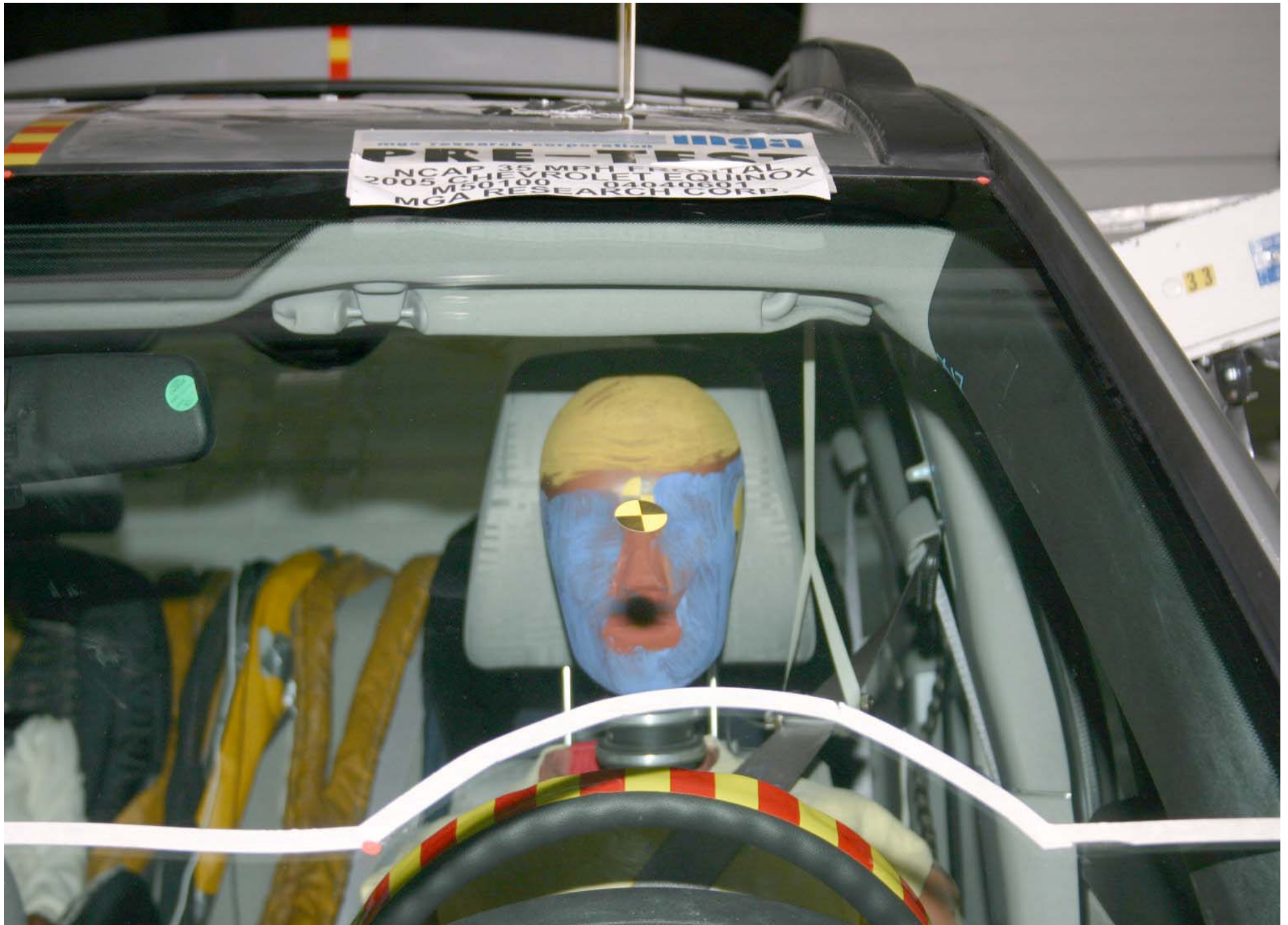
Post-Test Mid Underbody



Pre-Test Rear Underbody View



Post-Test Rear Underbody View



Pre-Test Driver Dummy Front View (head position)



Post-Test Driver Dummy Front View (head position)



Pre-Test Driver Dummy Position Left Side View



Post-Test Driver Dummy Position Left Side View



Pre-Test Driver Dummy Position Left Side View (Door Open)



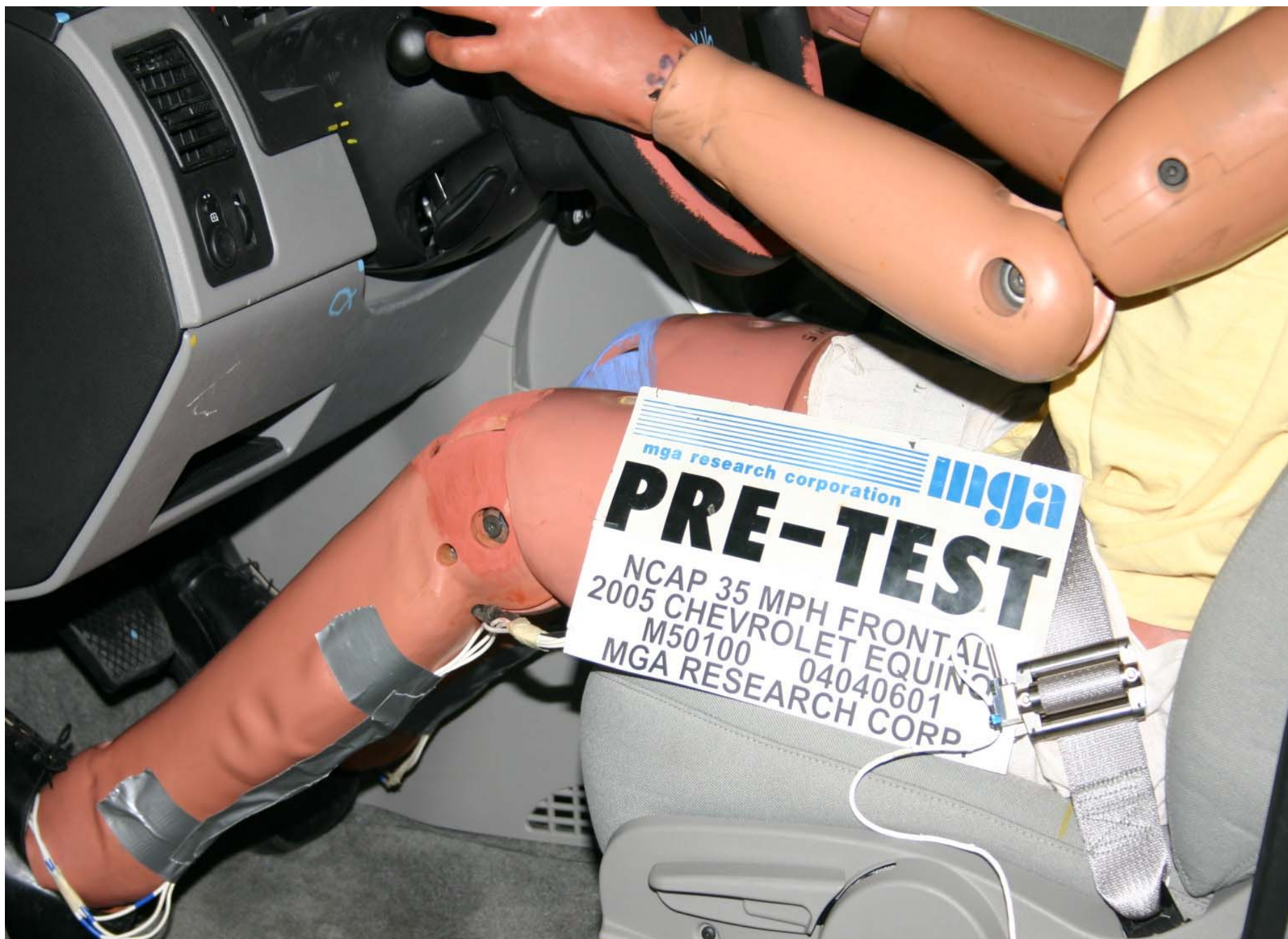
Post-Test Driver Dummy Position Left Side View (Door Open)



Pre-Test Driver Dummy Feet Position



Post-Test Driver Dummy Feet Position



Pre-Test Driver Side Knee Bolster View



Post-Test Driver Side Knee Bolster View



Pre-Test Driver Side Floor Pan View



Post-Test Driver Side Floor Pan View



Post-Test Driver Dummy Head Contact

A-45.



Post-Test Driver Dummy Knee Contact



Post-Test Driver Dummy Airbag Contact



Pre-Test Passenger Dummy Front View (head position)



Post-Test Passenger Dummy Front View (head position)



Pre-Test Passenger Dummy Position Right Side View

A-50.



Post-Test Passenger Dummy Position Right Side View



Pre-Test Passenger Dummy Position Right Side View (Door Open)



Post-Test Passenger Dummy Position Right Side View (Door Open)



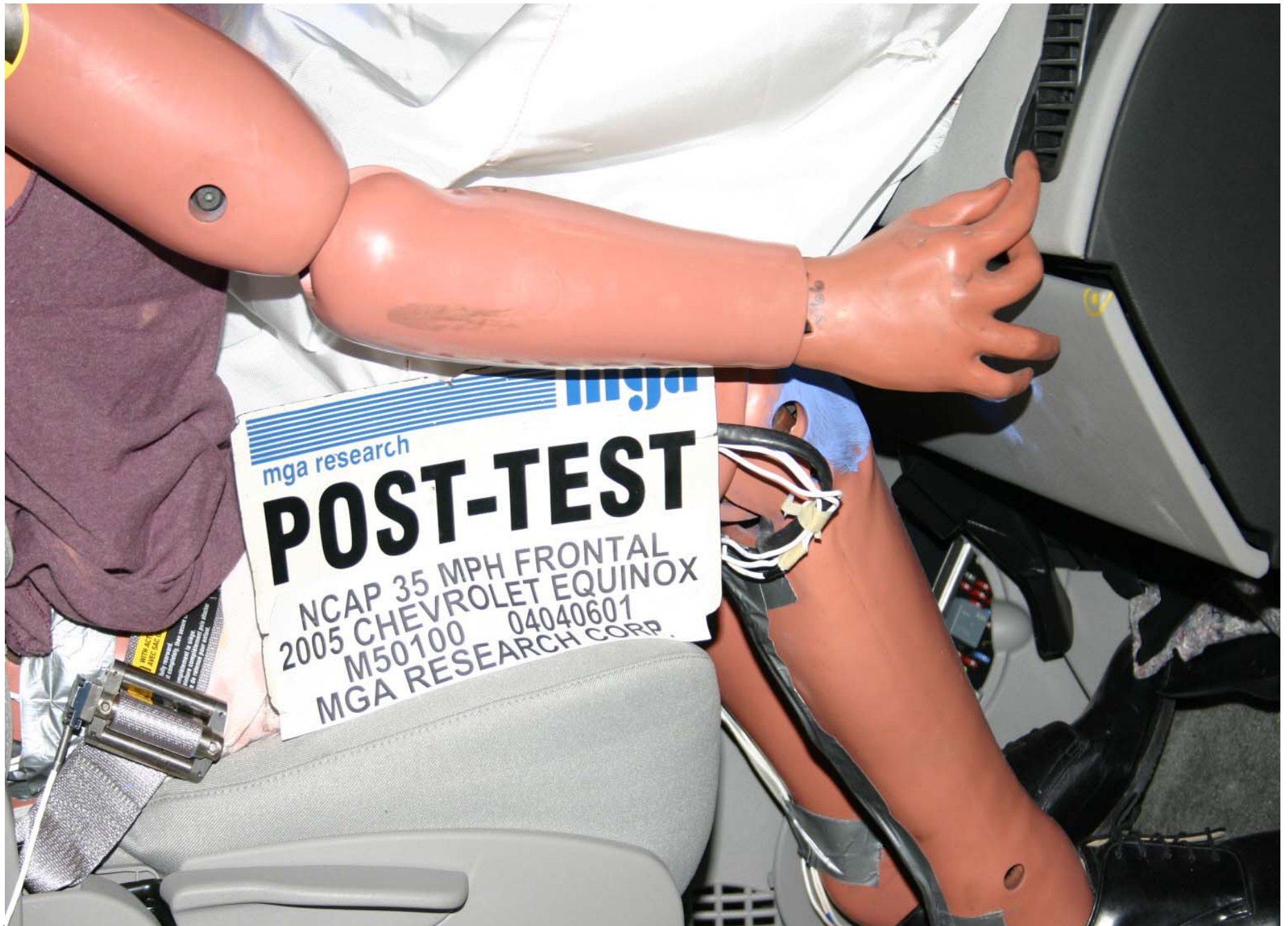
Pre-Test Passenger Dummy Feet Position



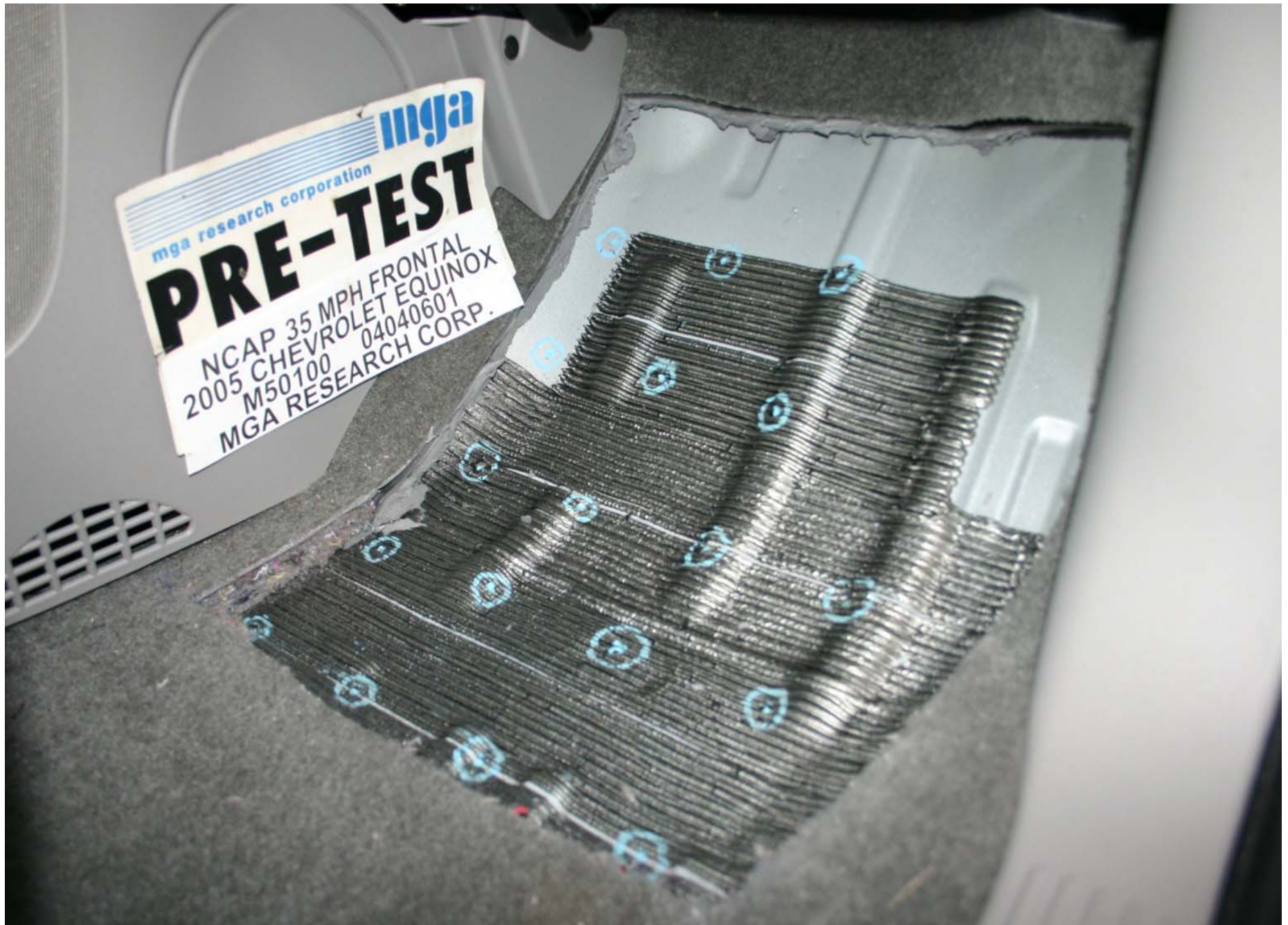
Post-Test Passenger Dummy Feet Position



Pre-Test Passenger Side Knee Bolster View



Post-Test Passenger Side Knee Bolster View



Pre-Test Passenger Side Floor Pan View



Post-Test Passenger Side Floor Pan View



Post-Test Passenger Dummy Head Contact



Post-Test Passenger Dummy Knee Contact



Post-Test Passenger Dummy Airbag Contact



Rollover 90 Degrees



A-63.

Rollover 180 Degrees

A-64.



Rollover 270 Degrees



Rollover 360 Degrees



Vehicle Impact

APPENDIX B

DUMMY AND VEHICLE RESPONSE DATA TRACES

TABLE OF DATA PLOTS

		<u>Page No.</u>
Figure No. 1.	Driver Head X Acceleration vs. Time	B-1
Figure No. 2.	Driver Head Y Acceleration vs. Time	B-1
Figure No. 3.	Driver Head Z Acceleration vs. Time	B-1
Figure No. 4.	Driver Head Resultant Acceleration vs. Time	B-1
Figure No. 5.	Driver Head X Velocity vs. Time	B-2
Figure No. 6.	Driver Head Y Velocity vs. Time	B-2
Figure No. 7.	Driver Head Z Velocity vs. Time	B-2
Figure No. 8.	Driver Head X Redundant Acceleration vs. Time	B-3
Figure No. 9.	Driver Head Y Redundant Acceleration vs. Time	B-3
Figure No. 10.	Driver Head Z Redundant Acceleration vs. Time	B-3
Figure No. 11.	Driver Head Resultant Redundant Acceleration vs. Time	B-3
Figure No. 12.	Driver Head X Redundant Velocity vs. Time	B-4
Figure No. 13.	Driver Head Y Redundant Velocity vs. Time	B-4
Figure No. 14.	Driver Head Z Redundant Velocity vs. Time	B-4
Figure No. 15.	Driver Neck Force X vs. Time	B-5
Figure No. 16.	Driver Neck Force Y vs. Time	B-5
Figure No. 17.	Driver Neck Force Z vs. Time	B-5
Figure No. 18.	Driver Neck Force Resultant vs. Time	B-5
Figure No. 19.	Driver Neck Moment X vs. Time	B-6
Figure No. 20.	Driver Neck Moment Y vs. Time	B-6
Figure No. 21.	Driver Neck Moment Z vs. Time	B-6
Figure No. 22.	Driver Neck Moment Resultant vs. Time	B-6
Figure No. 23.	Driver Chest X Acceleration vs. Time	B-7
Figure No. 24.	Driver Chest Y Acceleration vs. Time	B-7
Figure No. 25.	Driver Chest Z Acceleration vs. Time	B-7
Figure No. 26.	Driver Chest Resultant Acceleration vs. Time	B-7
Figure No. 27.	Driver Chest X Velocity vs. Time	B-8
Figure No. 28.	Driver Chest Y Velocity vs. Time	B-8
Figure No. 29.	Driver Chest Z Velocity vs. Time	B-8

		<u>Page No.</u>
Figure No. 30.	Driver Chest Displacement vs. Time	B-8
Figure No. 31.	Driver Chest X Redundant Acceleration vs. Time	B-9
Figure No. 32.	Driver Chest Y Redundant Acceleration vs. Time	B-9
Figure No. 33.	Driver Chest Z Redundant Acceleration vs. Time	B-9
Figure No. 34.	Driver Chest Resultant Redundant Acceleration vs. Time	B-9
Figure No. 35.	Driver Chest X Redundant Velocity vs. Time	B-10
Figure No. 36.	Driver Chest Y Redundant Velocity vs. Time	B-10
Figure No. 37.	Driver Chest Z Redundant Velocity vs. Time	B-10
Figure No. 38.	Driver Pelvis X Acceleration vs. Time	B-11
Figure No. 39.	Driver Pelvis Y Acceleration vs. Time	B-11
Figure No. 40.	Driver Pelvis Z Acceleration vs. Time	B-11
Figure No. 41.	Driver Pelvis Resultant Acceleration vs. Time	B-11
Figure No. 42.	Driver Pelvis X Velocity vs. Time	B-12
Figure No. 43.	Driver Pelvis Y Velocity vs. Time	B-12
Figure No. 44.	Driver Pelvis Z Velocity vs. Time	B-12
Figure No. 45.	Driver Left Femur Force vs. Time	B-13
Figure No. 46.	Driver Right Femur Force vs. Time	B-13
Figure No. 47.	Driver Shoulder Belt Force vs. Time	B-13
Figure No. 48.	Driver Lap Belt Force vs. Time	B-13
Figure No. 49.	Driver Left Upper Tibia Moment X vs. Time	B-14
Figure No. 50.	Driver Left Upper Tibia Moment Y vs. Time	B-14
Figure No. 51.	Driver Left Upper Tibia Force Z vs. Time	B-14
Figure No. 52.	Driver Left Lower Tibia Moment X vs. Time	B-15
Figure No. 53.	Driver Left Lower Tibia Moment Y vs. Time	B-15
Figure No. 54.	Driver Left Lower Tibia Force Z vs. Time	B-15
Figure No. 55.	Driver Right Upper Tibia Moment X vs. Time	B-16
Figure No. 56.	Driver Right Upper Tibia Moment Y vs. Time	B-16
Figure No. 57.	Driver Right Upper Tibia Force Z vs. Time	B-16
Figure No. 58.	Driver Right Lower Tibia Moment X vs. Time	B-17
Figure No. 59.	Driver Right Lower Tibia Moment Y vs. Time	B-17

		<u>Page No.</u>
Figure No. 60.	Driver Right Lower Tibia Force Z vs. Time	B-17
Figure No. 61.	Driver Left Foot Z – Front Acceleration vs. Time	B-18
Figure No. 62.	Driver Left Ankle X Acceleration vs. Time	B-18
Figure No. 63.	Driver Left Ankle Z Acceleration vs. Time	B-18
Figure No. 64.	Driver Right Foot Z – Front Acceleration vs. Time	B-19
Figure No. 65.	Driver Right Ankle X Acceleration vs. Time	B-19
Figure No. 66.	Driver Right Ankle Z Acceleration vs. Time	B-19
Figure No. 67.	Passenger Head X Acceleration vs. Time	B-20
Figure No. 68.	Passenger Head Y Acceleration vs. Time	B-20
Figure No. 69.	Passenger Head Z Acceleration vs. Time	B-20
Figure No. 70.	Passenger Head Resultant Acceleration vs. Time	B-20
Figure No. 71.	Passenger Head X Velocity vs. Time	B-21
Figure No. 72.	Passenger Head Y Velocity vs. Time	B-21
Figure No. 73.	Passenger Head Z Velocity vs. Time	B-21
Figure No. 74.	Passenger Head X Redundant Acceleration vs. Time	B-22
Figure No. 75.	Passenger Head Y Redundant Acceleration vs. Time	B-22
Figure No. 76.	Passenger Head Z Redundant Acceleration vs. Time	B-22
Figure No. 77.	Passenger Head Resultant Redundant Acceleration vs. Time	B-22
Figure No. 78.	Passenger Head X Redundant Velocity vs. Time	B-23
Figure No. 79.	Passenger Head Y Redundant Velocity vs. Time	B-23
Figure No. 80.	Passenger Head Z Redundant Velocity vs. Time	B-23
Figure No. 81.	Passenger Neck Force X vs. Time	B-24
Figure No. 82.	Passenger Neck Force Y vs. Time	B-24
Figure No. 83.	Passenger Neck Force Z vs. Time	B-24
Figure No. 84.	Passenger Neck Force Resultant vs. Time	B-24
Figure No. 85.	Passenger Neck Moment X vs. Time	B-25
Figure No. 86.	Passenger Neck Moment Y vs. Time	B-25
Figure No. 87.	Passenger Neck Moment Z vs. Time	B-25
Figure No. 88.	Passenger Neck Moment Resultant vs. Time	B-25
Figure No. 89.	Passenger Chest X Acceleration vs. Time	B-26

		<u>Page No.</u>
Figure No. 90.	Passenger Chest Y Acceleration vs. Time	B-26
Figure No. 91.	Passenger Chest Z Acceleration vs. Time	B-26
Figure No. 92.	Passenger Chest Resultant Acceleration vs. Time	B-26
Figure No. 93.	Passenger Chest X Velocity vs. Time	B-27
Figure No. 94.	Passenger Chest Y Velocity vs. Time	B-27
Figure No. 95.	Passenger Chest Z Velocity vs. Time	B-27
Figure No. 96.	Passenger Chest Displacement vs. Time	B-27
Figure No. 97.	Passenger Chest X Redundant Acceleration vs. Time	B-28
Figure No. 98.	Passenger Chest Y Redundant Acceleration vs. Time	B-28
Figure No. 99.	Passenger Chest Z Redundant Acceleration vs. Time	B-28
Figure No. 100.	Passenger Chest Resultant Redundant Acceleration vs. Time	B-28
Figure No. 101.	Passenger Chest X Redundant Velocity vs. Time	B-29
Figure No. 102.	Passenger Chest Y Redundant Velocity vs. Time	B-29
Figure No. 103.	Passenger Chest Z Redundant Velocity vs. Time	B-29
Figure No. 104.	Passenger Pelvis X Acceleration vs. Time	B-30
Figure No. 105.	Passenger Pelvis Y Acceleration vs. Time	B-30
Figure No. 106.	Passenger Pelvis Z Acceleration vs. Time	B-30
Figure No. 107.	Passenger Pelvis Resultant Acceleration vs. Time	B-30
Figure No. 108.	Passenger Pelvis X Velocity vs. Time	B-31
Figure No. 109.	Passenger Pelvis Y Velocity vs. Time	B-31
Figure No. 110.	Passenger Pelvis Z Velocity vs. Time	B-31
Figure No. 111.	Passenger Left Femur Force vs. Time	B-32
Figure No. 112.	Passenger Right Femur Force vs. Time	B-32
Figure No. 113.	Passenger Shoulder Belt Force vs. Time	B-32
Figure No. 114.	Passenger Lap Belt Force vs. Time	B-32
Figure No. 115.	Passenger Left Upper Tibia Moment X vs. Time	B-33
Figure No. 116.	Passenger Left Upper Tibia Moment Y vs. Time	B-33
Figure No. 117.	Passenger Left Upper Tibia Force Z vs. Time	B-33
Figure No. 118.	Passenger Left Lower Tibia Moment X vs. Time	B-34
Figure No. 119.	Passenger Left Lower Tibia Moment Y vs. Time	B-34

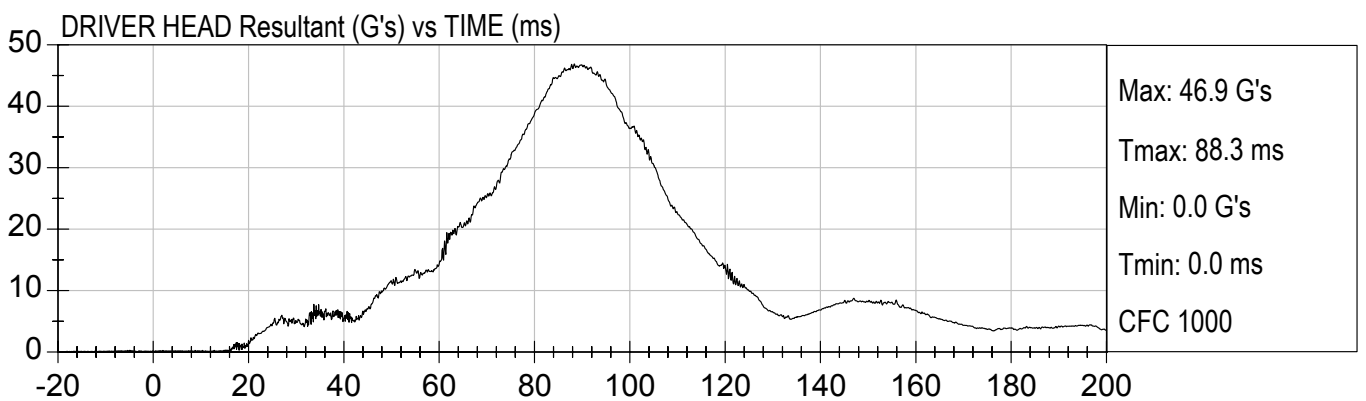
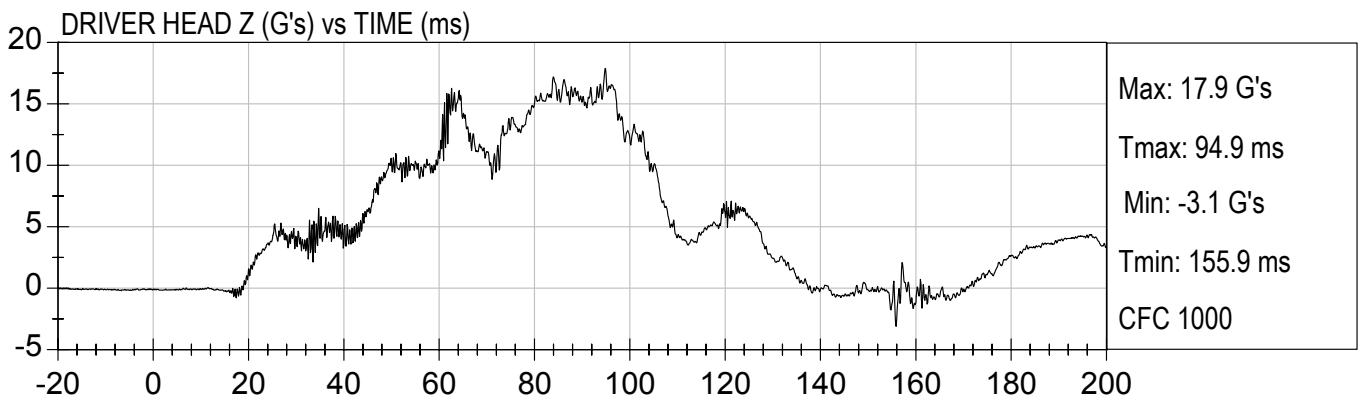
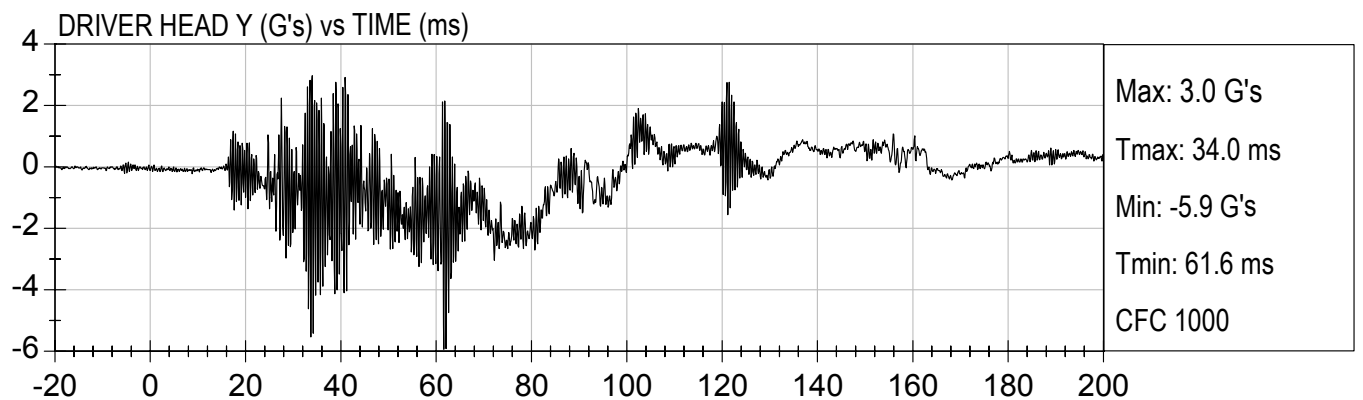
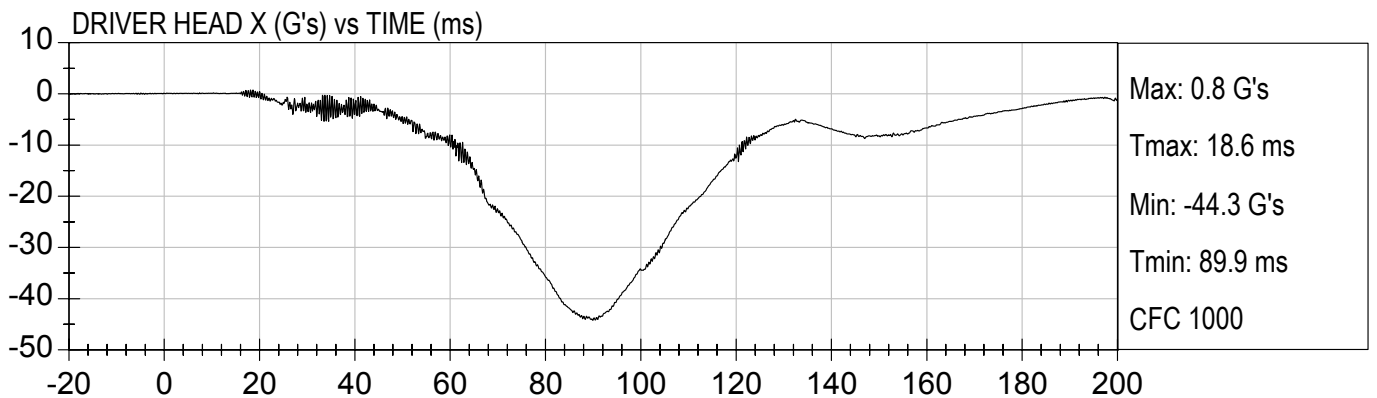
		<u>Page No.</u>
Figure No. 120.	Passenger Left Lower Tibia Force Z vs. Time	B-34
Figure No. 121.	Passenger Right Upper Tibia Moment X vs. Time	B-35
Figure No. 122.	Passenger Right Upper Tibia Moment Y vs. Time	B-35
Figure No. 123.	Passenger Right Upper Tibia Force Z vs. Time	B-35
Figure No. 124.	Passenger Right Lower Tibia Moment X vs. Time	B-36
Figure No. 125.	Passenger Right Lower Tibia Moment Y vs. Time	B-36
Figure No. 126.	Passenger Right Lower Tibia Force Z vs. Time	B-36
Figure No. 127.	Passenger Left Foot Z – Front Acceleration vs. Time	B-37
Figure No. 128.	Passenger Left Ankle X Acceleration vs. Time	B-37
Figure No. 129.	Passenger Left Ankle Z Acceleration vs. Time	B-37
Figure No. 130.	Passenger Right Foot Z – Front Acceleration vs. Time	B-38
Figure No. 131.	Passenger Right Ankle X Acceleration vs. Time	B-38
Figure No. 132.	Passenger Right Ankle Z Acceleration vs. Time	B-38
Figure No. 133.	Left Rear Seat Crossmember X Acceleration vs. Time	B-39
Figure No. 134.	Left Rear Seat Crossmember X Velocity vs. Time	B-39
Figure No. 135.	Left Rear Seat Crossmember X Displacement vs. Time	B-39
Figure No. 136.	Left Rear Seat Crossmember Z Acceleration vs. Time	B-40
Figure No. 137.	Left Rear Seat Crossmember Z Velocity vs. Time	B-40
Figure No. 138.	Left Rear Seat Crossmember Z Displacement vs. Time	B-40
Figure No. 139.	Right Rear Seat Crossmember X Acceleration vs. Time	B-41
Figure No. 140.	Right Rear Seat Crossmember X Velocity vs. Time	B-41
Figure No. 141.	Right Rear Seat Crossmember X Displacement vs. Time	B-41
Figure No. 142.	Right Rear Seat Crossmember Z Acceleration vs. Time	B-42
Figure No. 143.	Right Rear Seat Crossmember Z Velocity vs. Time	B-42
Figure No. 144.	Right Rear Seat Crossmember Z Displacement vs. Time	B-42
Figure No. 145.	Top of Engine X Acceleration vs. Time	B-43
Figure No. 146.	Top of Engine X Velocity vs. Time	B-43
Figure No. 147.	Top of Engine X Displacement vs. Time	B-43
Figure No. 148.	Bottom of Engine X Acceleration vs. Time	B-44
Figure No. 149.	Bottom of Engine X Velocity vs. Time	B-44

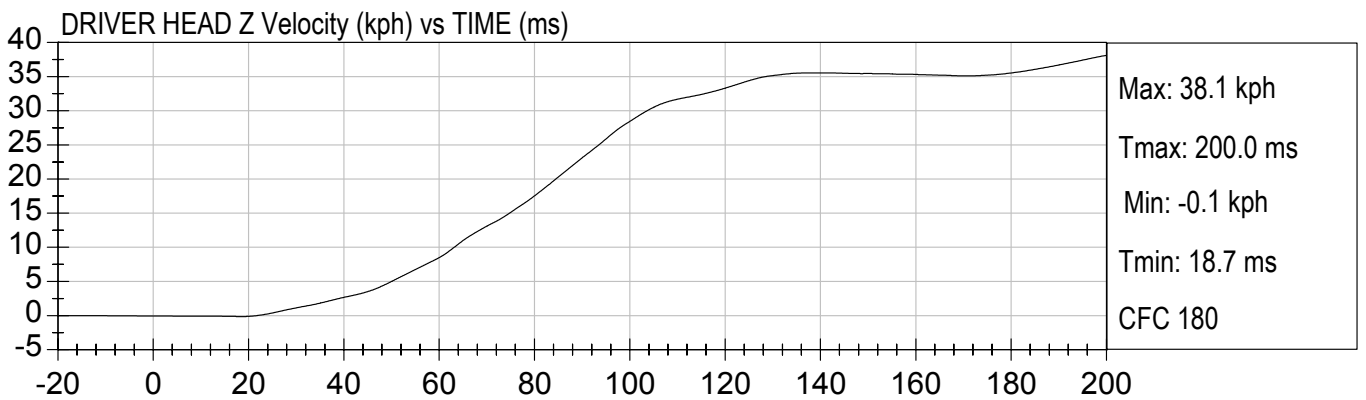
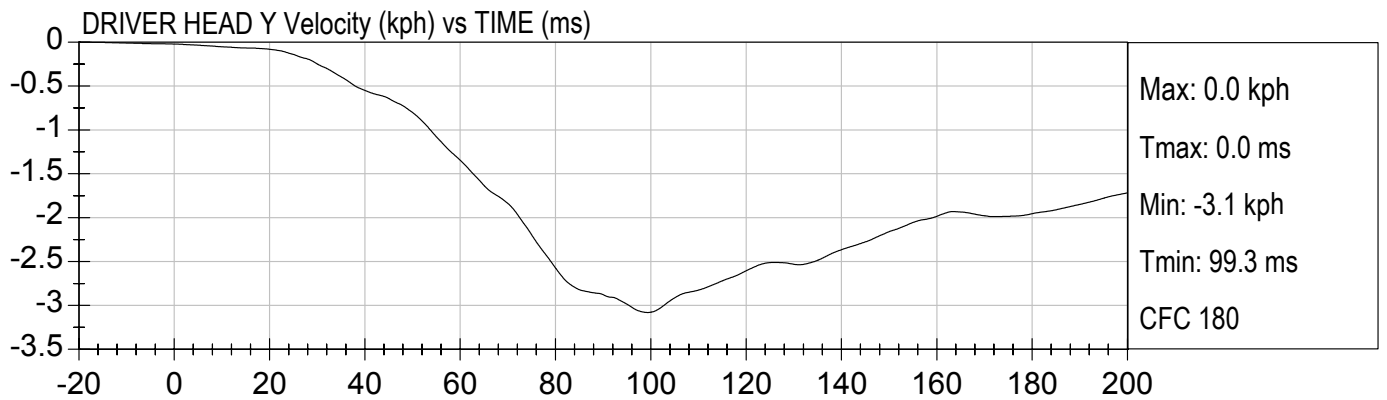
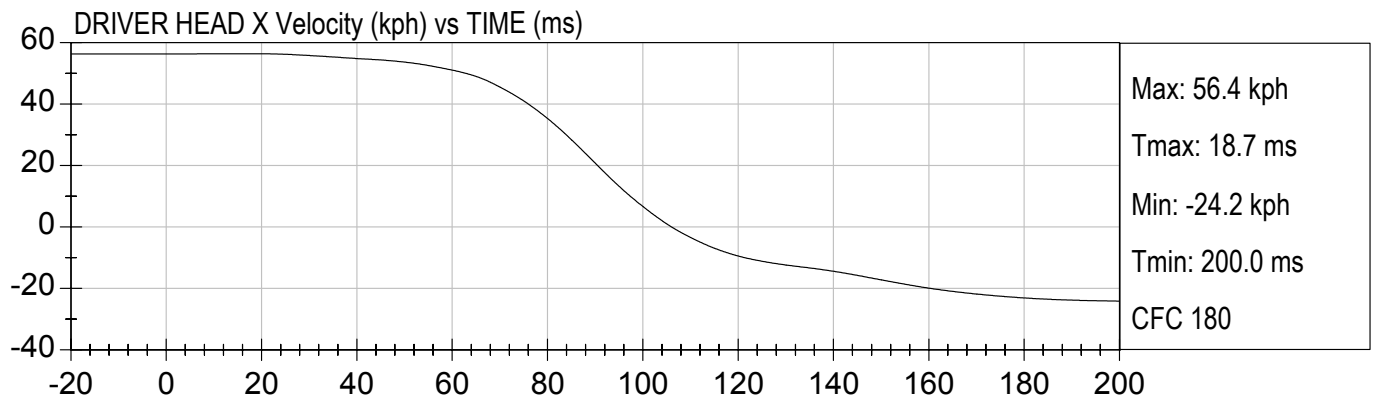
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Figure No. 150.	Bottom of Engine X Displacement vs. Time	B-44
Figure No. 151.	Left Brake Caliper X Acceleration vs. Time	B-45
Figure No. 152.	Left Brake Caliper X Velocity vs. Time	B-45
Figure No. 153.	Left Brake Caliper X Displacement vs. Time	B-45
Figure No. 154.	Right Brake Caliper X Acceleration vs. Time	B-46
Figure No. 155.	Right Brake Caliper X Velocity vs. Time	B-46
Figure No. 156.	Right Brake Caliper X Displacement vs. Time	B-46
Figure No. 157.	Instrument Panel X Acceleration vs. Time	B-47
Figure No. 158.	Instrument Panel X Velocity vs. Time	B-47
Figure No. 159.	Instrument Panel X Displacement vs. Time	B-47
Figure No. 160.	Barrier Force – Upper Left vs. Time	B-48
Figure No. 161.	Barrier Force – Upper Center vs. Time	B-48
Figure No. 162.	Barrier Force – Upper Right vs. Time	B-48
Figure No. 163.	Barrier Force – Lower Left vs. Time	B-49
Figure No. 164.	Barrier Force – Lower Center vs. Time	B-49
Figure No. 165.	Barrier Force – Lower Right vs. Time	B-49
Figure No. 166.	Barrier Force – Sum Left vs. Time	B-50
Figure No. 167.	Barrier Force – Sum Center vs. Time	B-50
Figure No. 168.	Barrier Force – Sum Right vs. Time	B-50
Figure No. 169.	Barrier Force – Sum All vs. Time	B-50
Figure No. 170.	Barrier Force – Sum All vs. Average Seat X-member Displacement	B-51



35MPH FRONTAL IMPACT
2005 CHEVROLET EQUINOX (M50100)

Test Date: 4/6/2004
Speed: 35.0 mph (56.3 km/h)

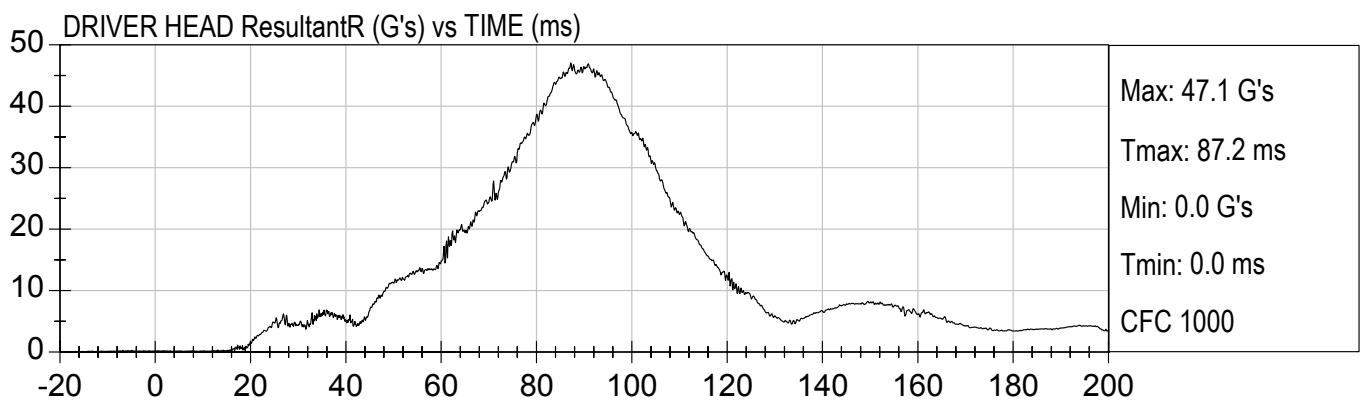
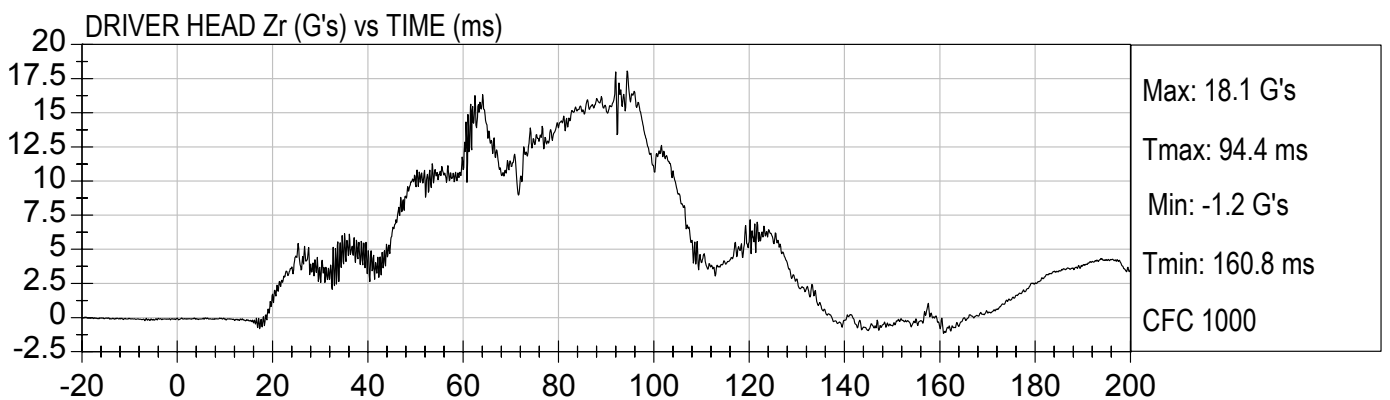
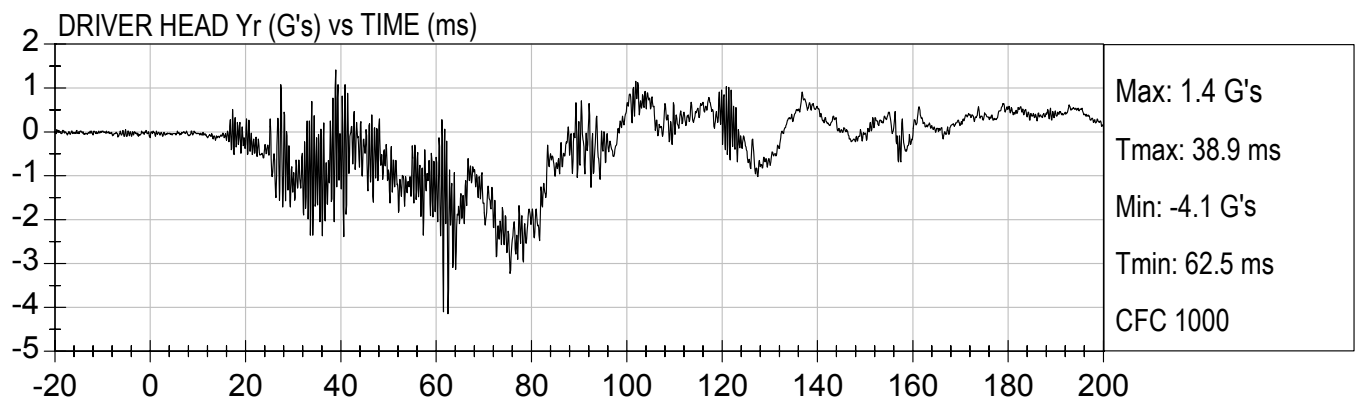
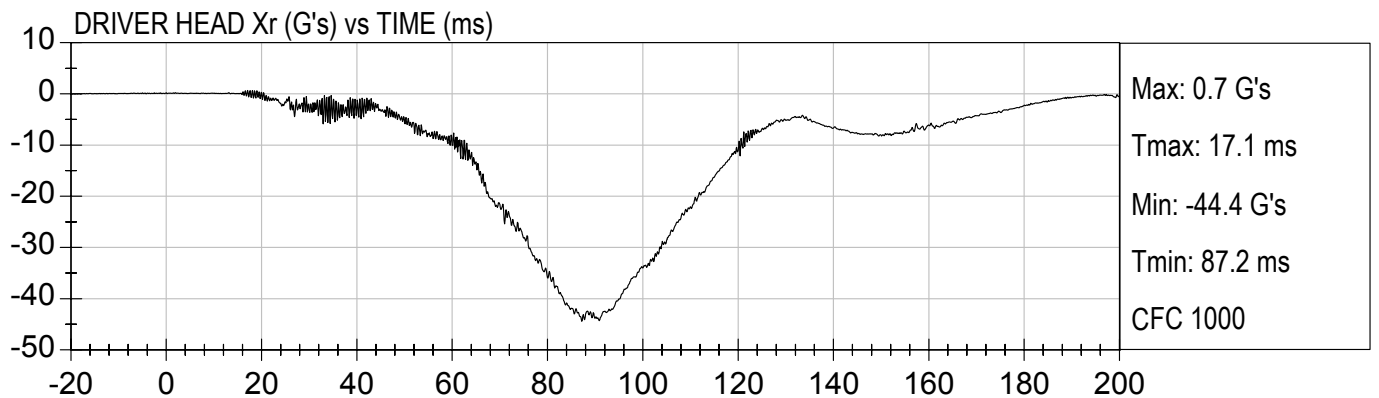


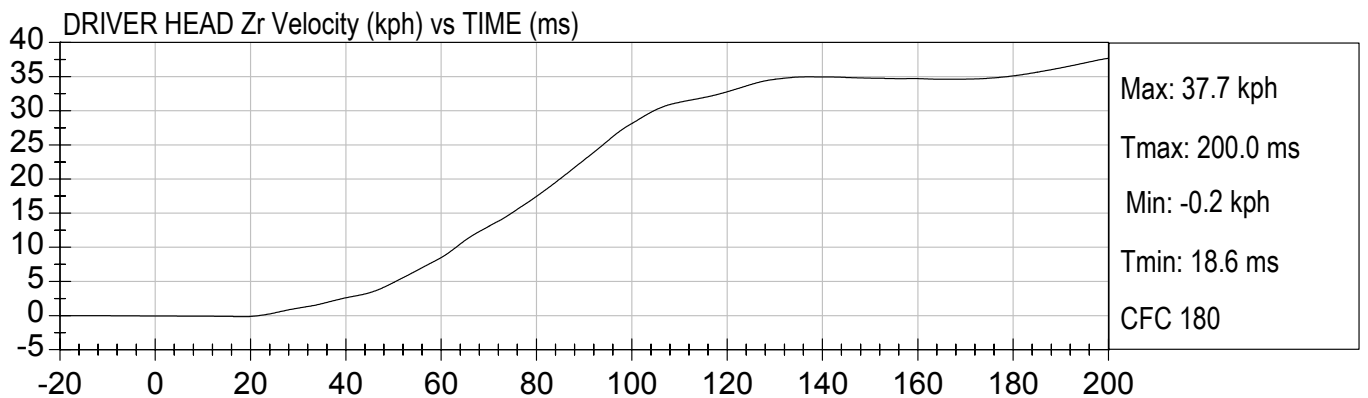
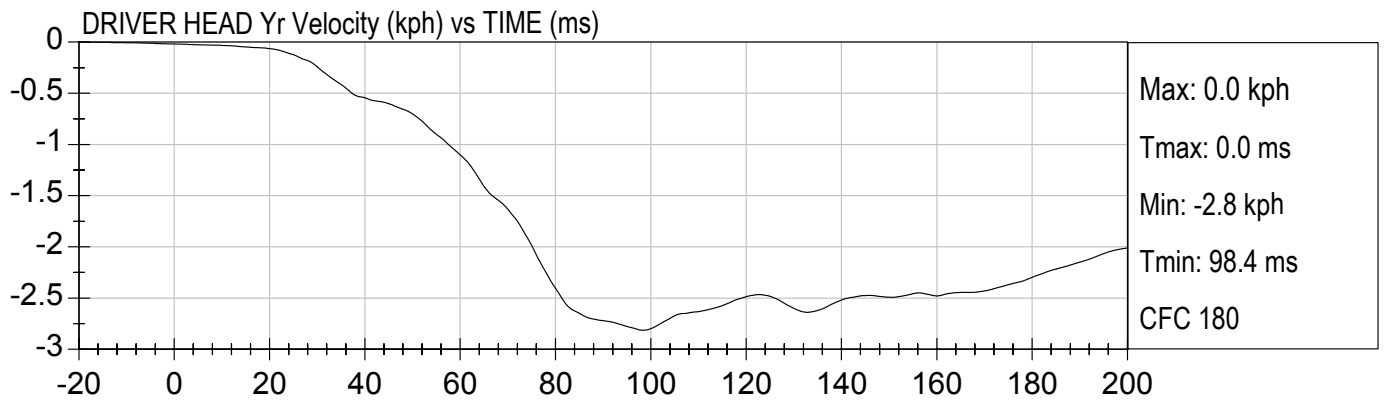
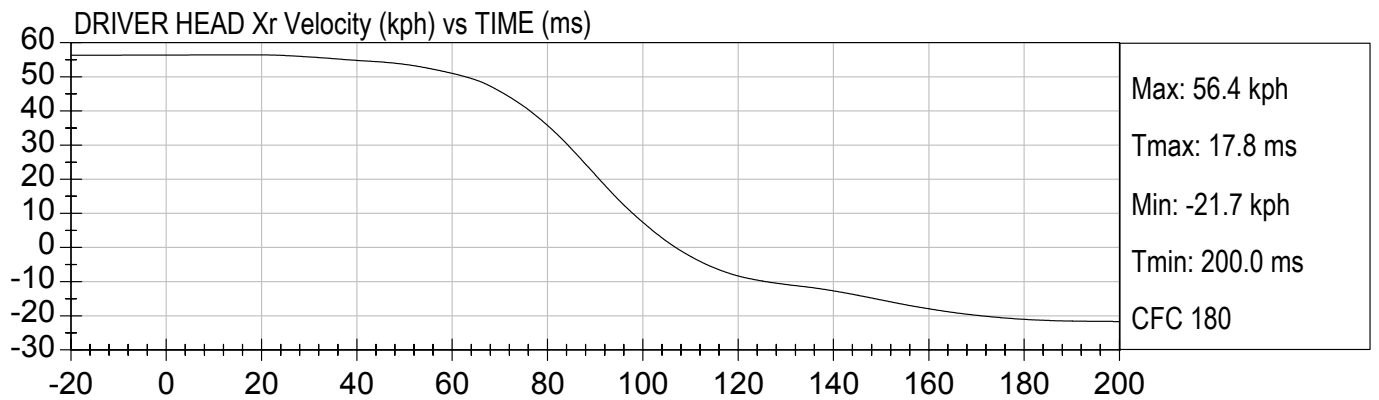




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2005 CHEVROLET EQUINOX (M50100)

Test Date: 4/6/2004
Speed: 35.0 mph (56.3 km/h)

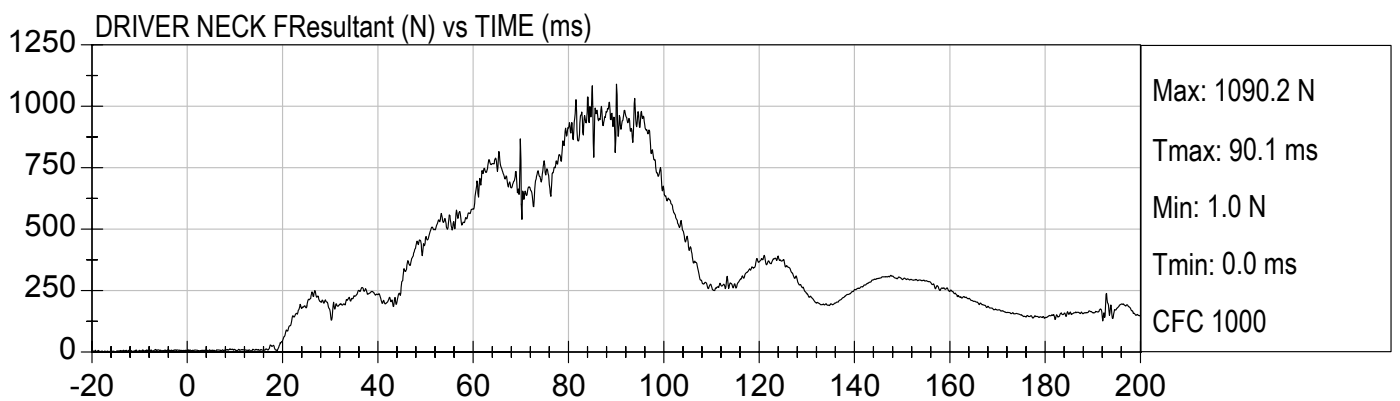
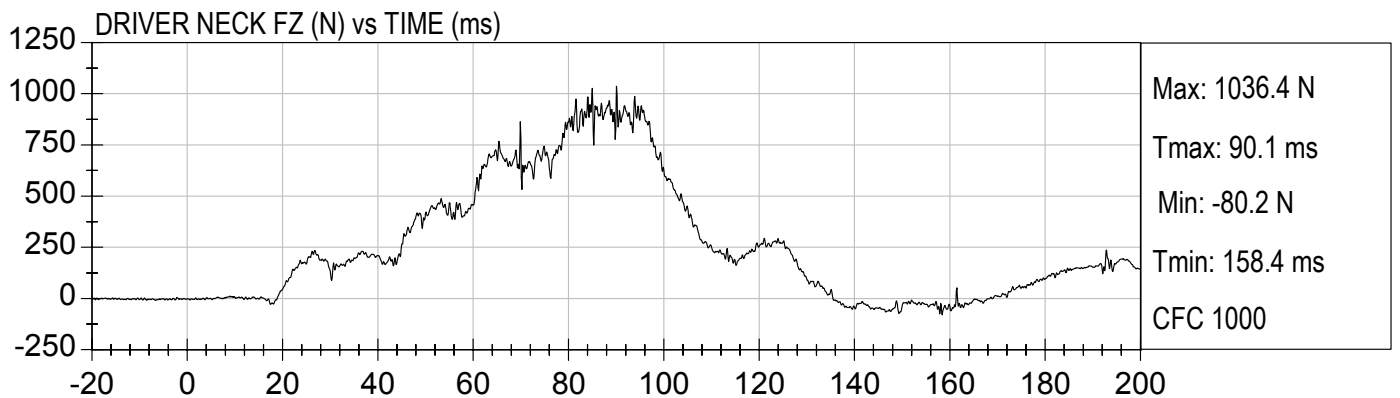
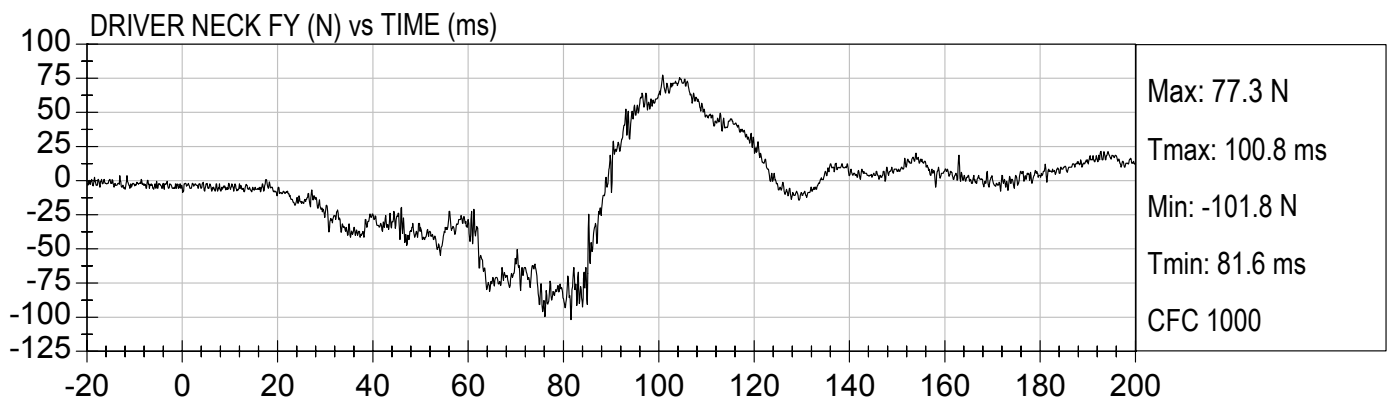
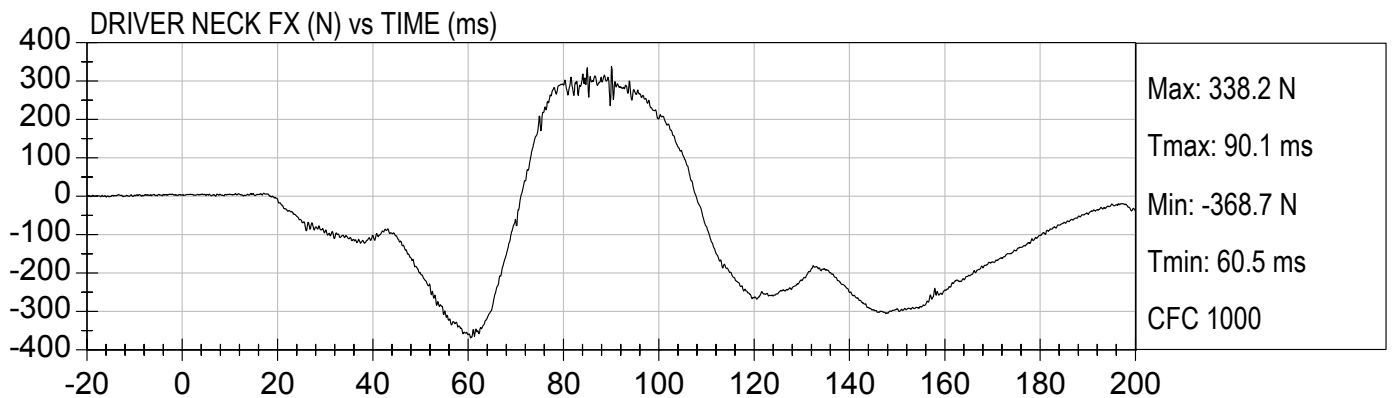






35MPH FRONTAL IMPACT
2005 CHEVROLET EQUINOX (M50100)

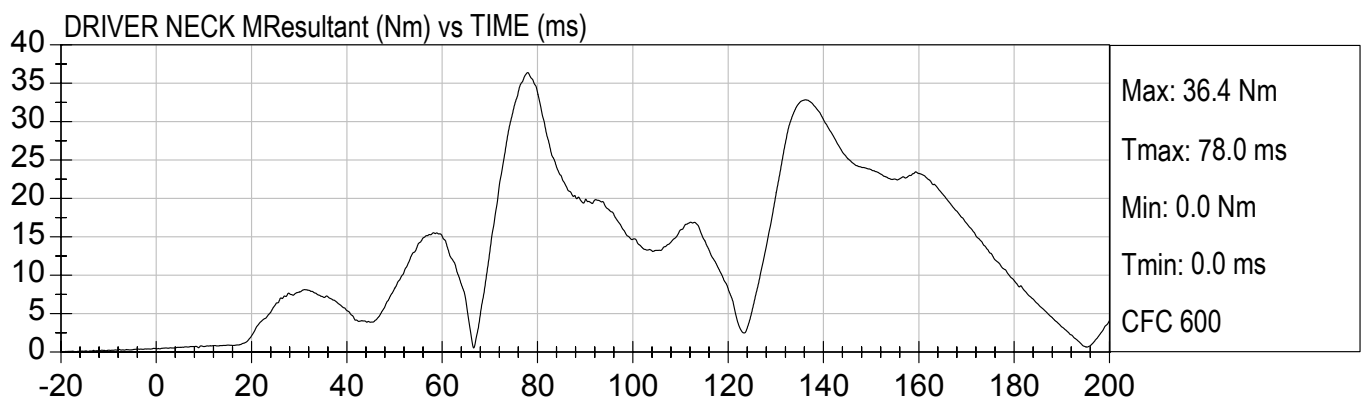
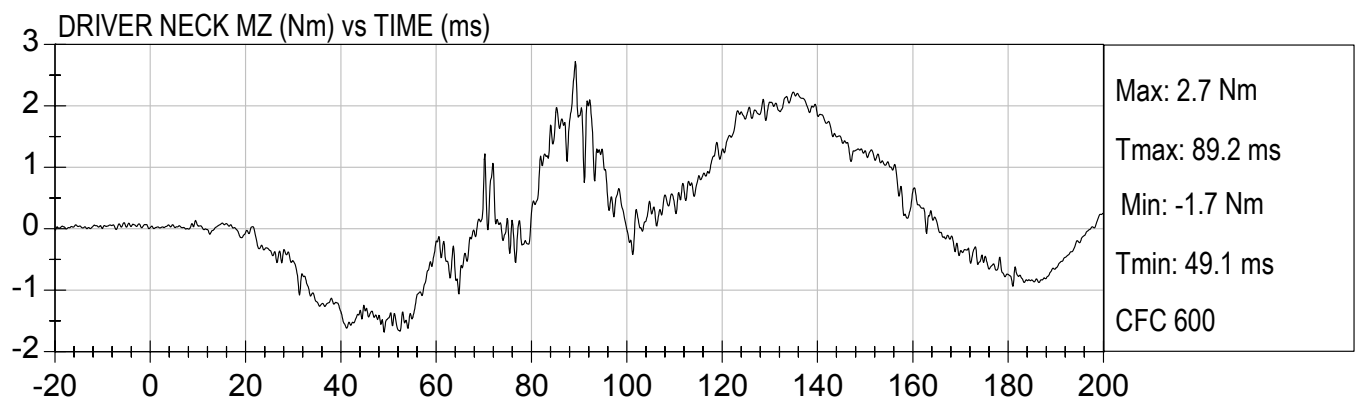
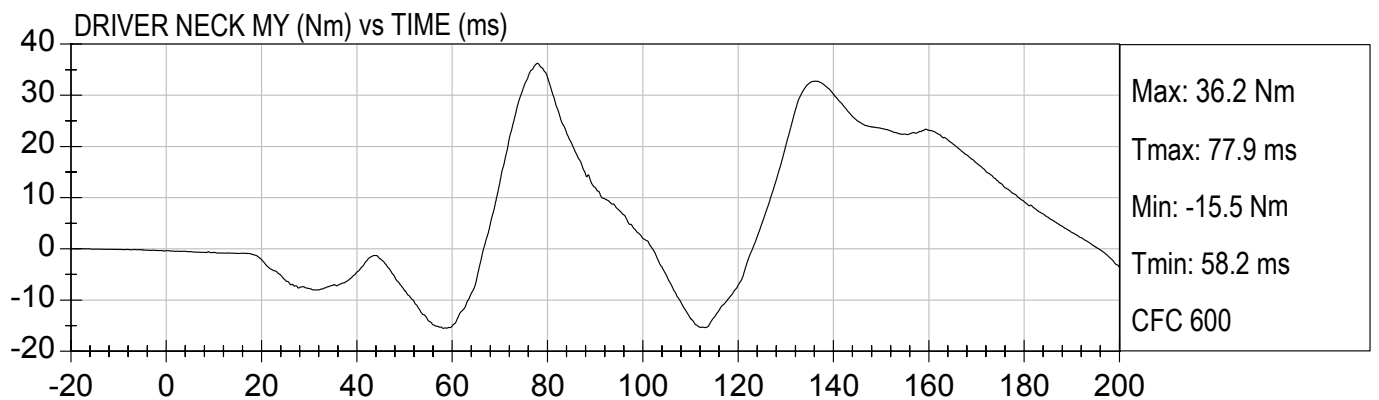
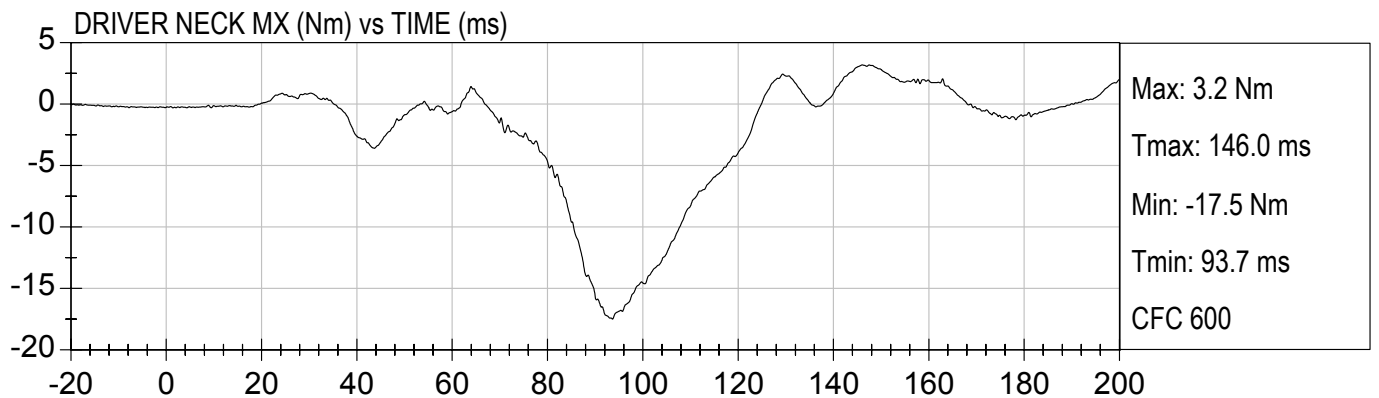
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Speed: 35.0 mph (56.3 km/h)





35MPH FRONTAL IMPACT
2005 CHEVROLET EQUINOX (M50100)

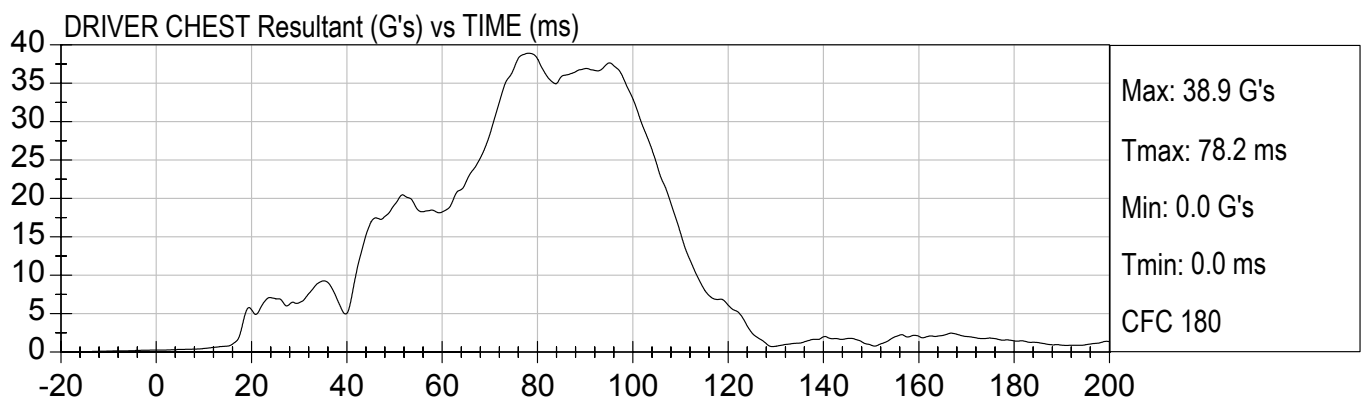
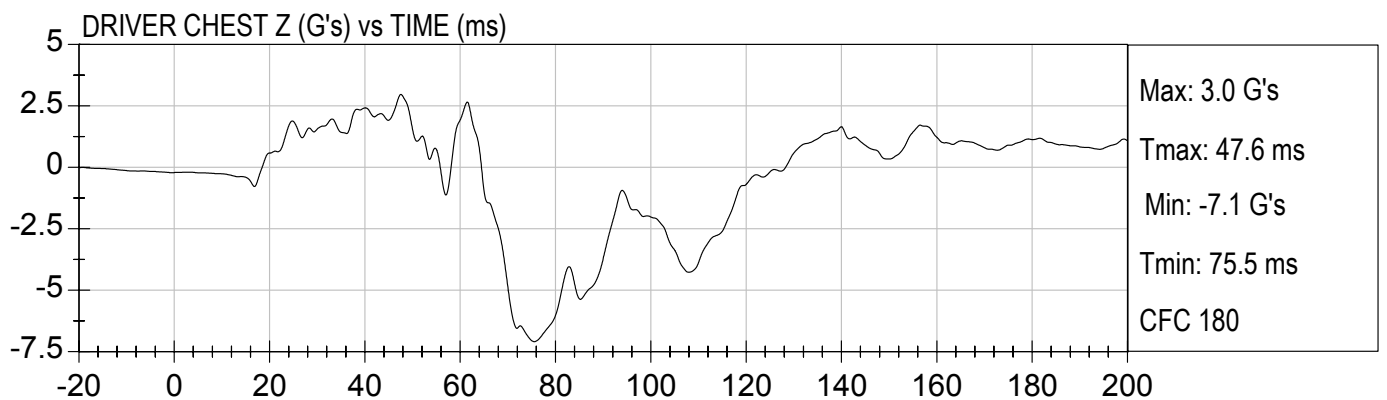
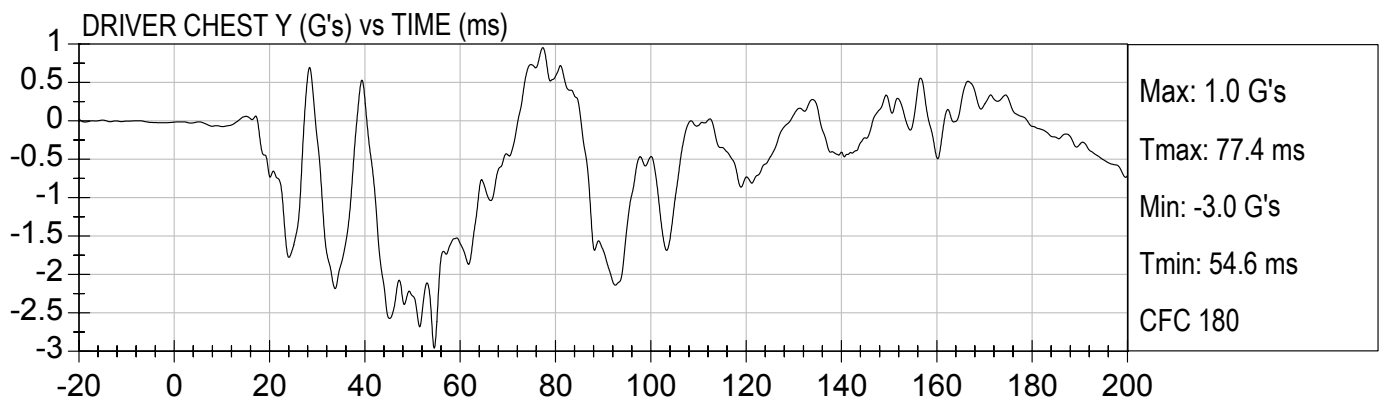
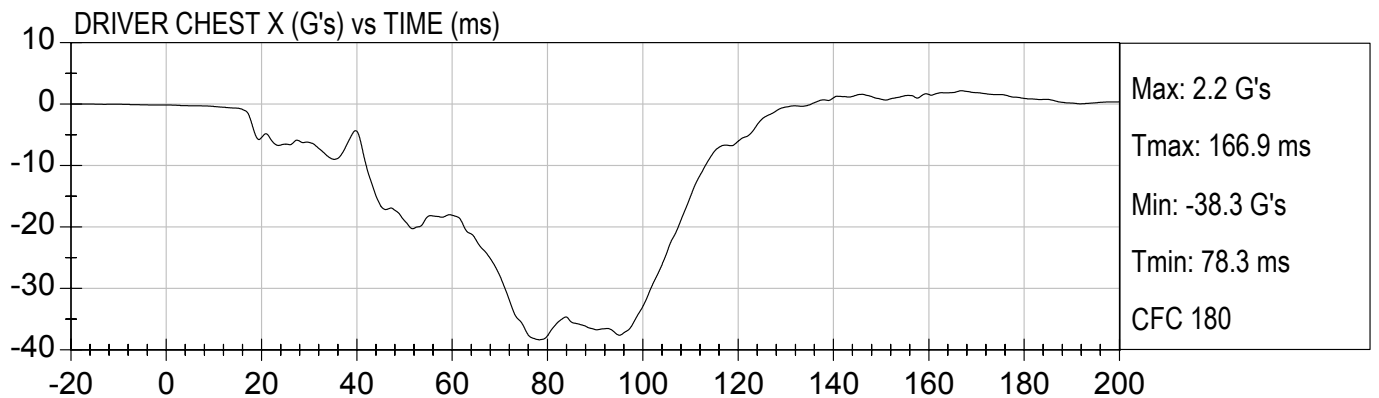
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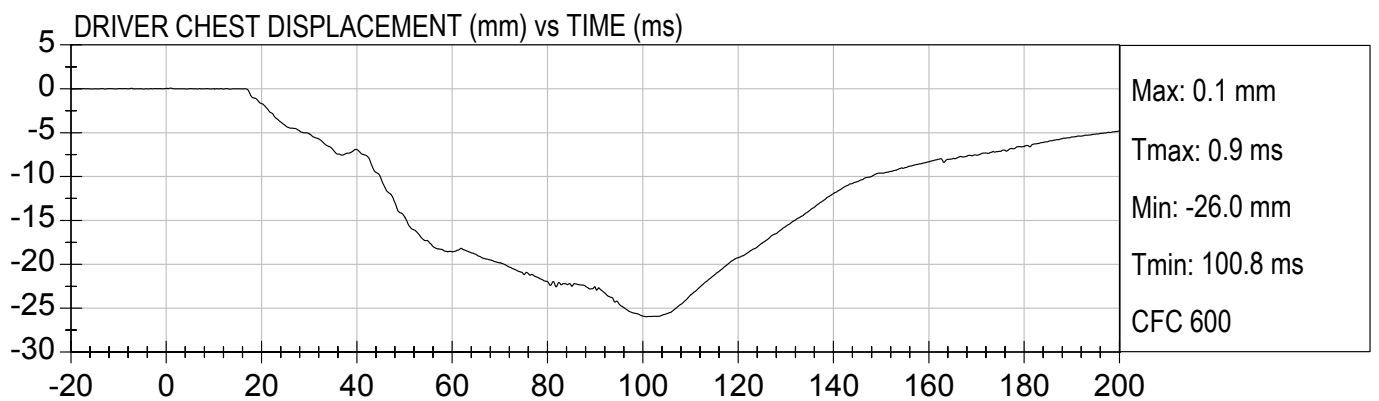
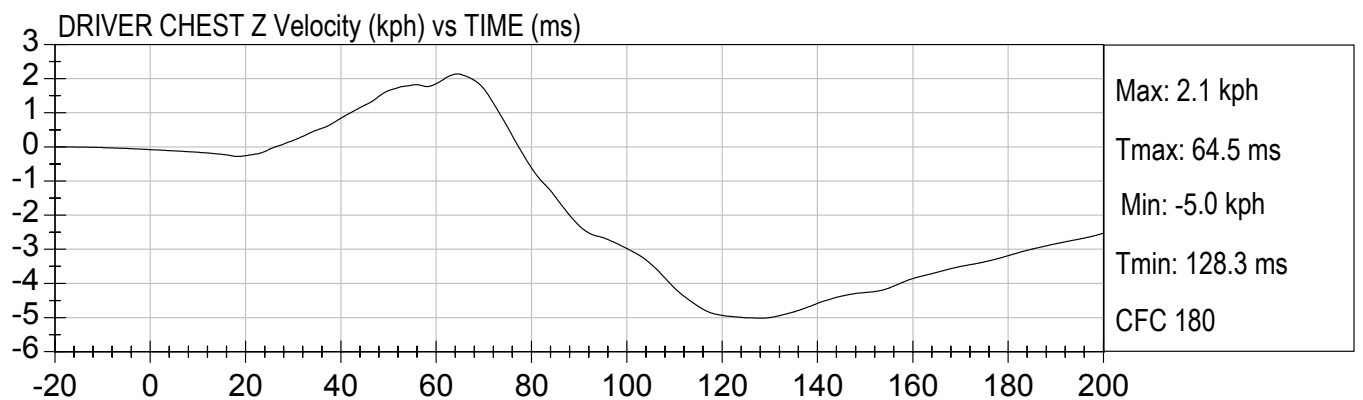
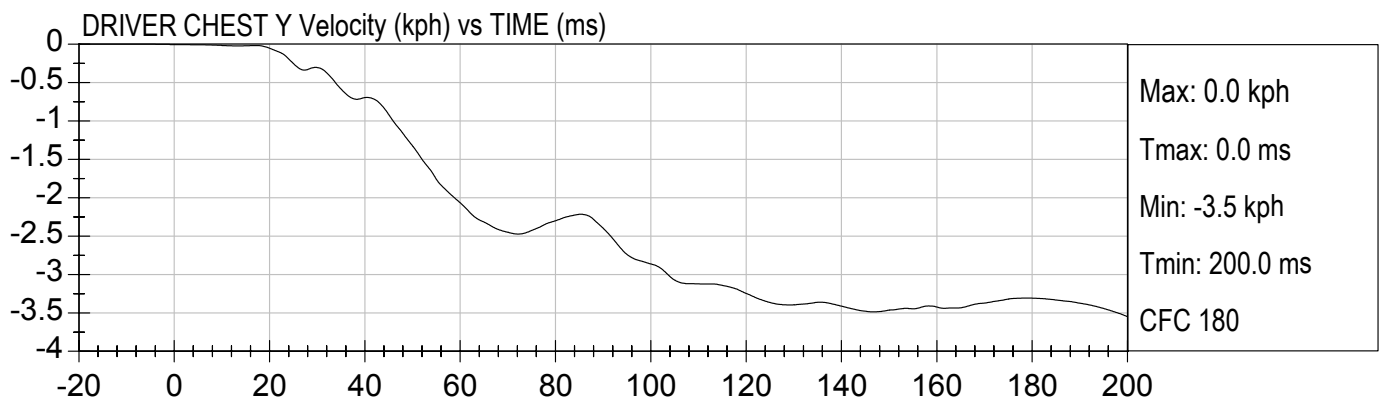
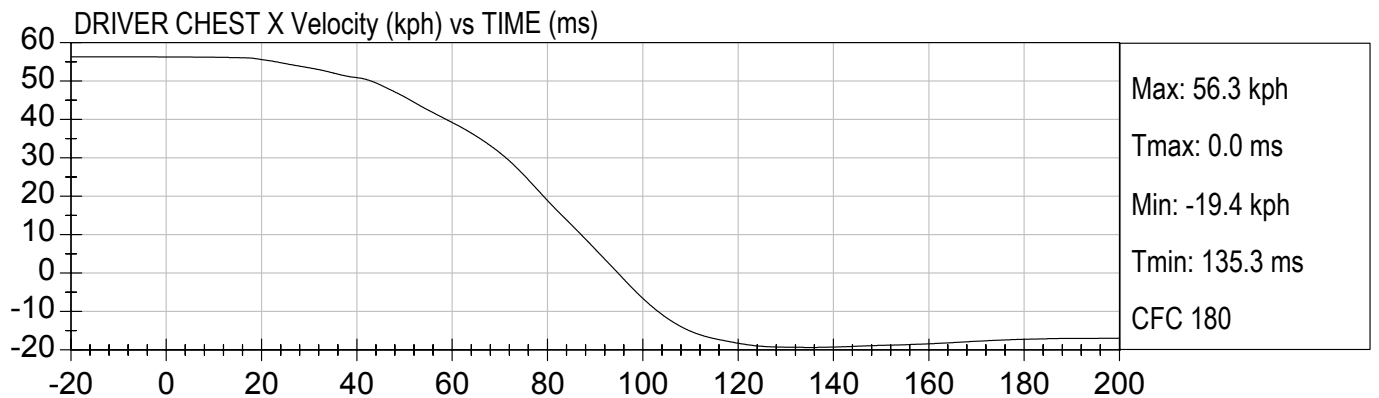


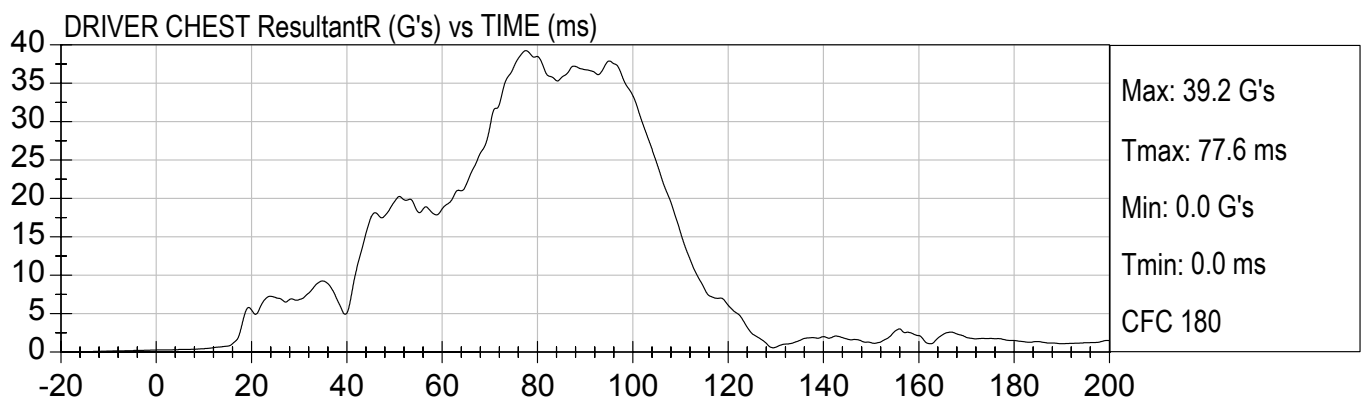
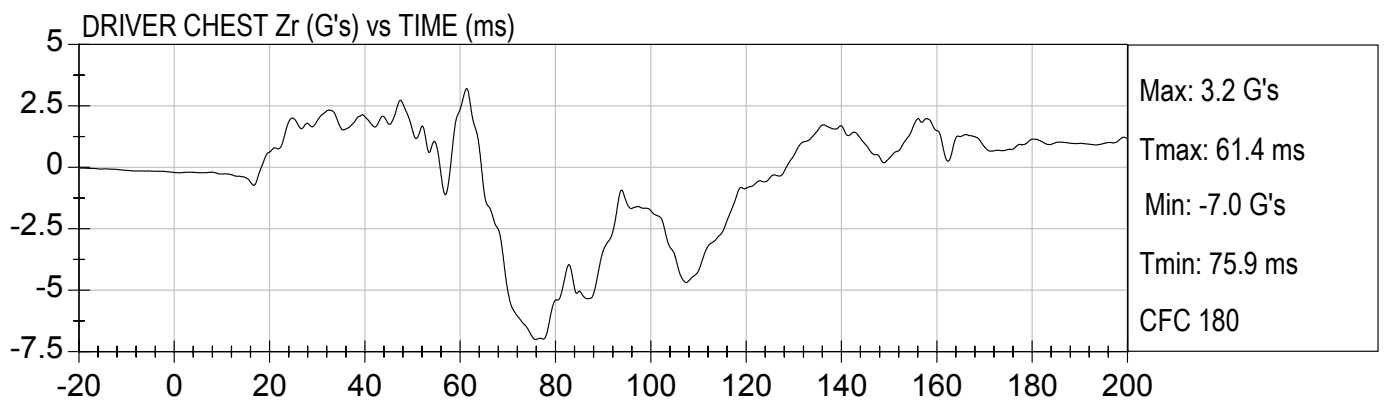
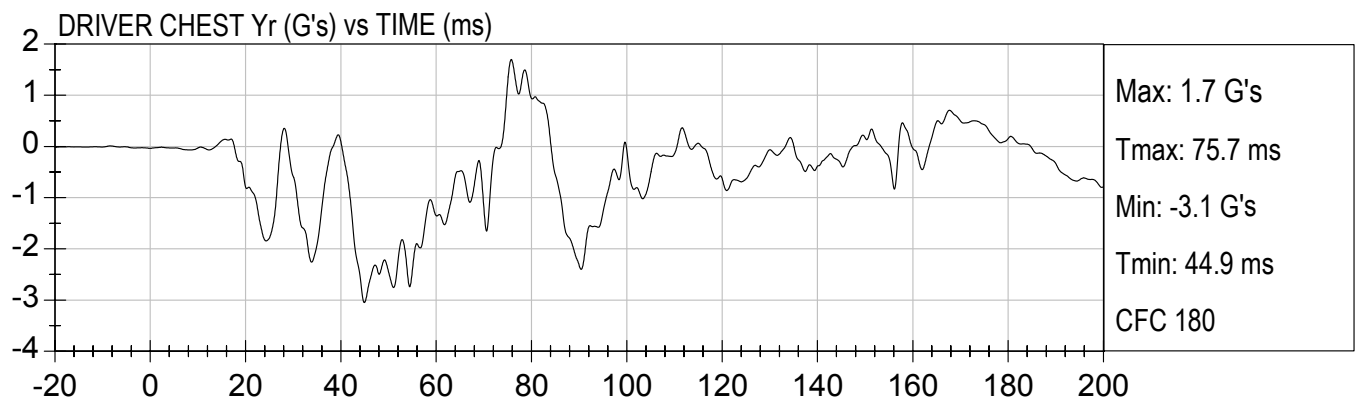
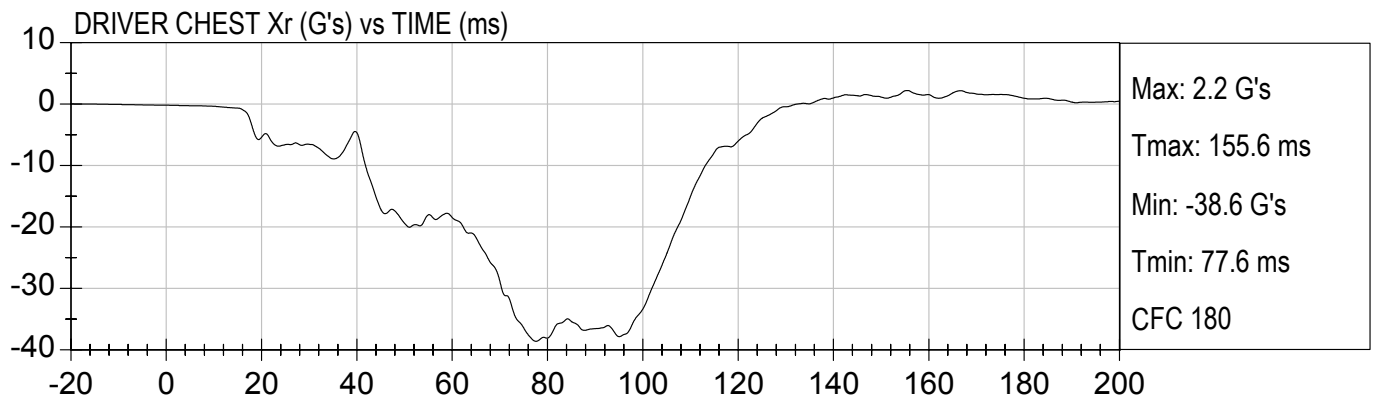


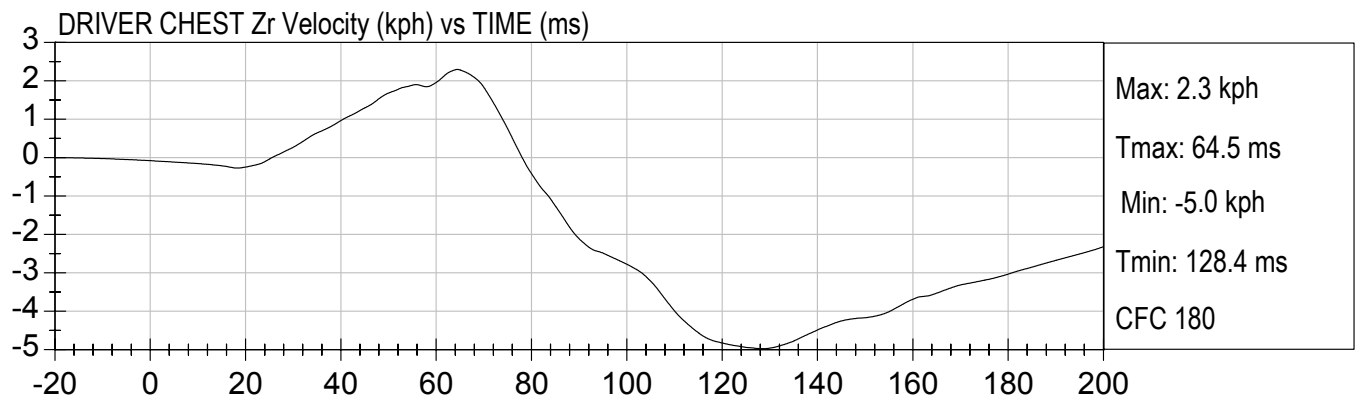
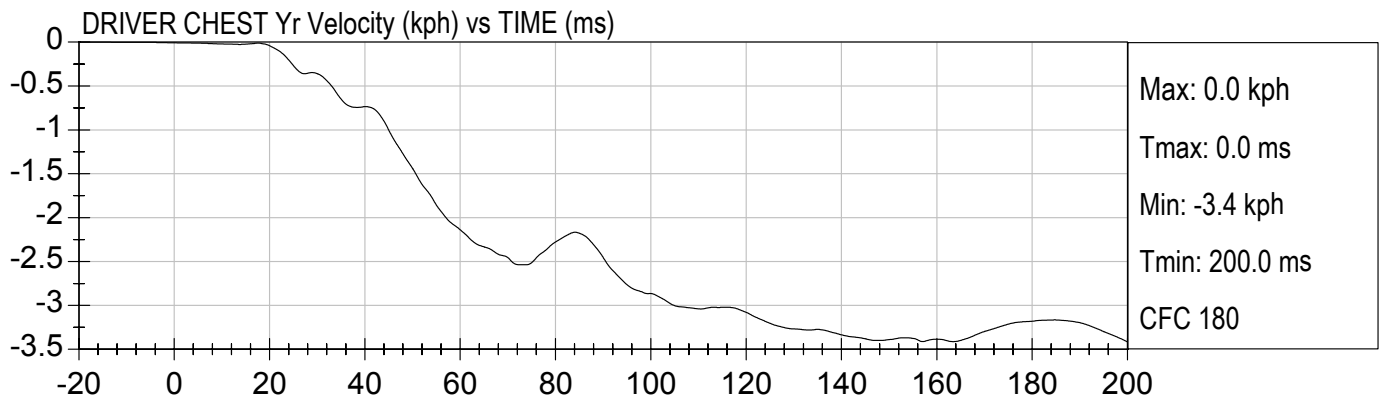
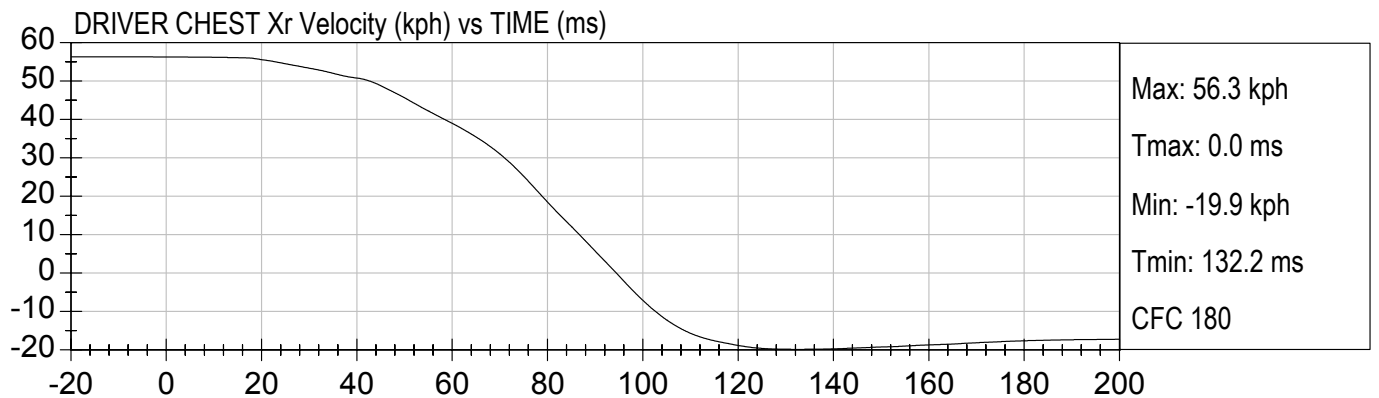
35MPH FRONTAL IMPACT
2005 CHEVROLET EQUINOX (M50100)

Test Date: 4/6/2004
Speed: 35.0 mph (56.3 km/h)





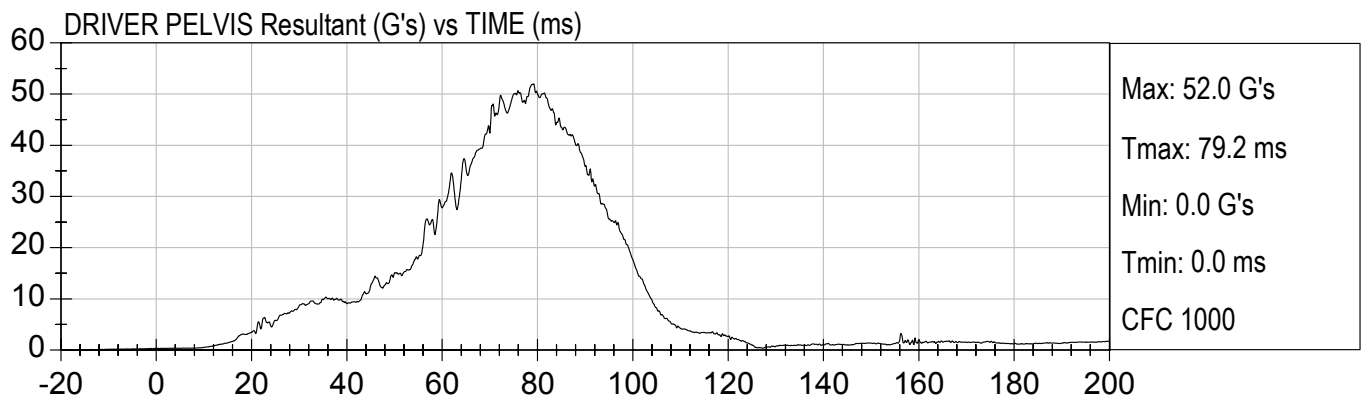
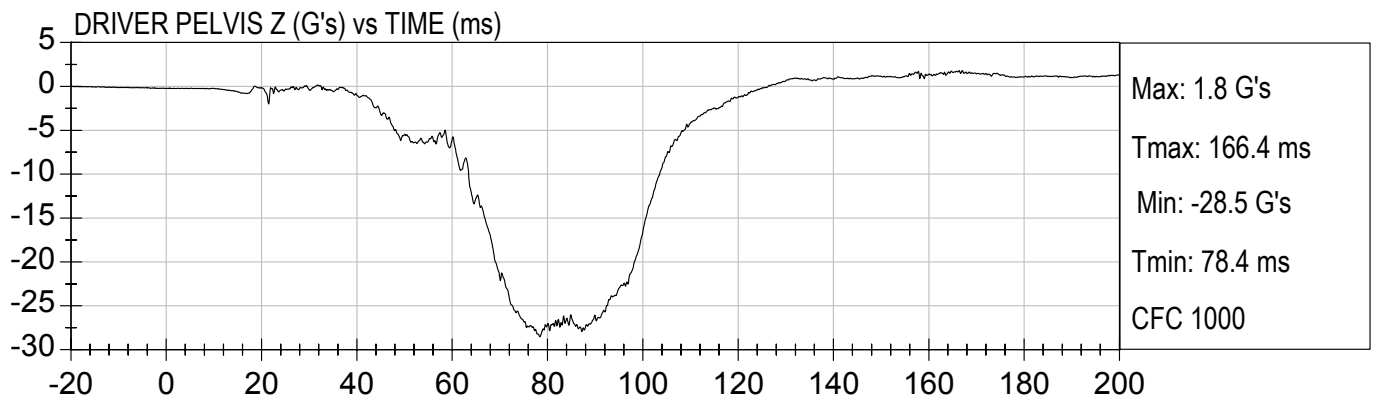
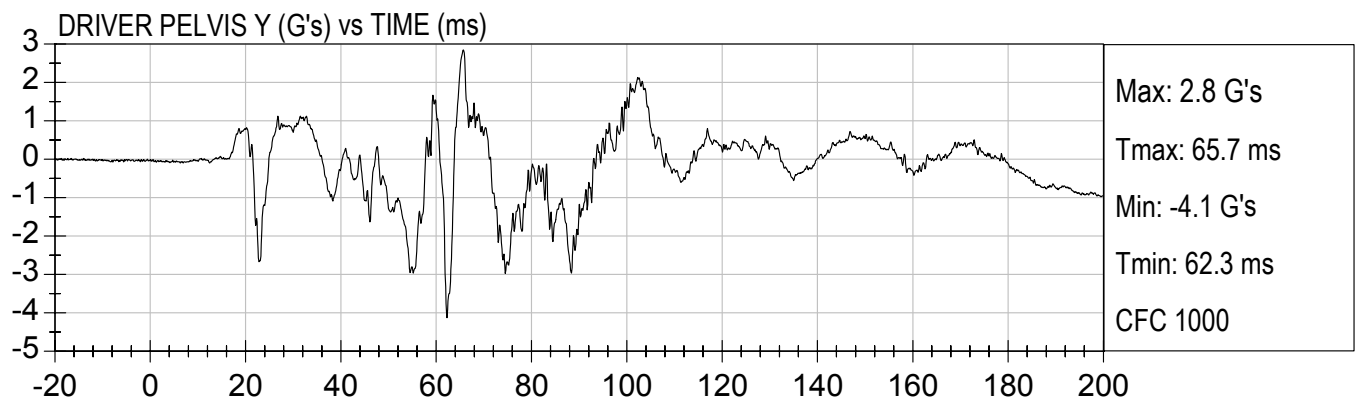
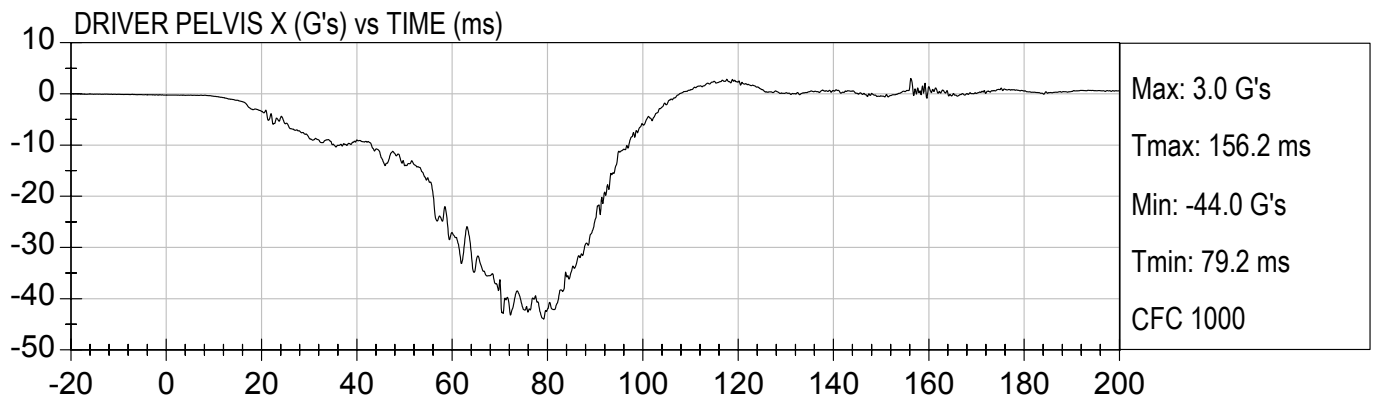






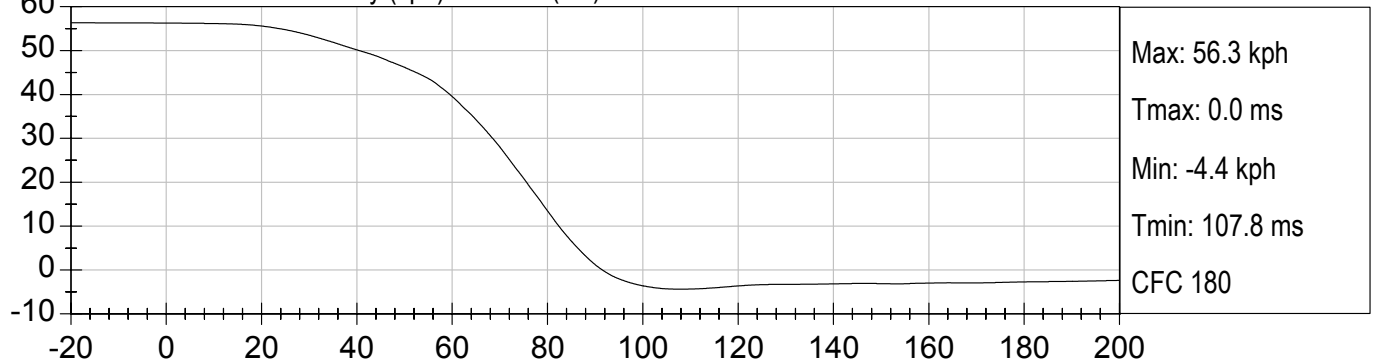
35MPH FRONTAL IMPACT
2005 CHEVROLET EQUINOX (M50100)

Test Date: 4/6/2004
Speed: 35.0 mph (56.3 km/h)

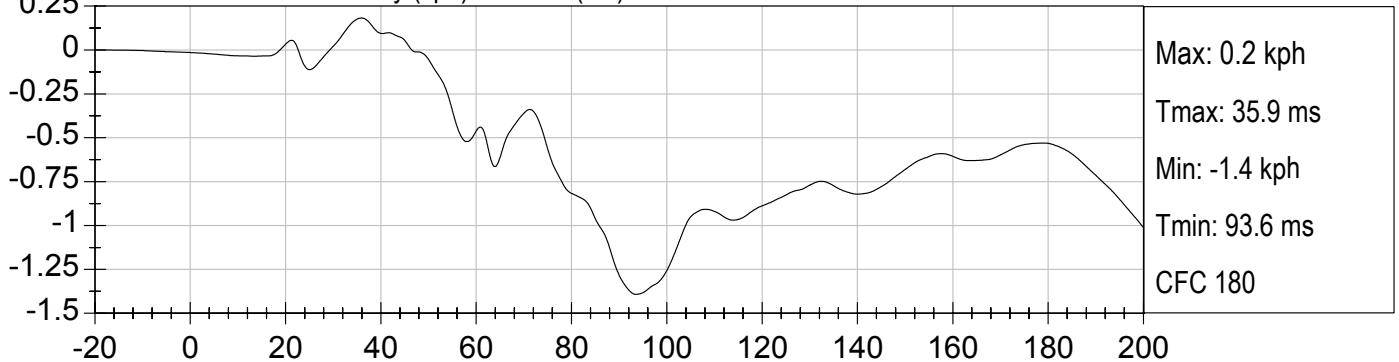




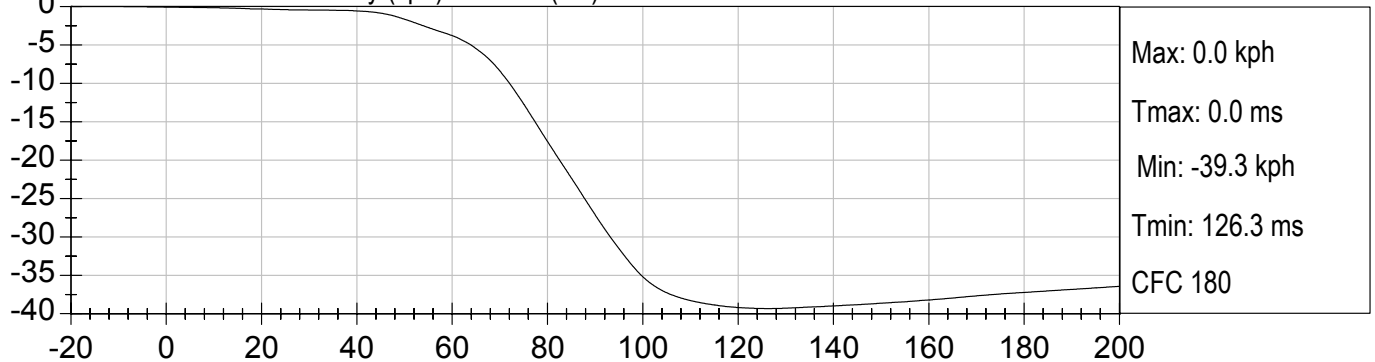
DRIVER PELVIS X Velocity (kph) vs TIME (ms)



DRIVER PELVIS Y Velocity (kph) vs TIME (ms)



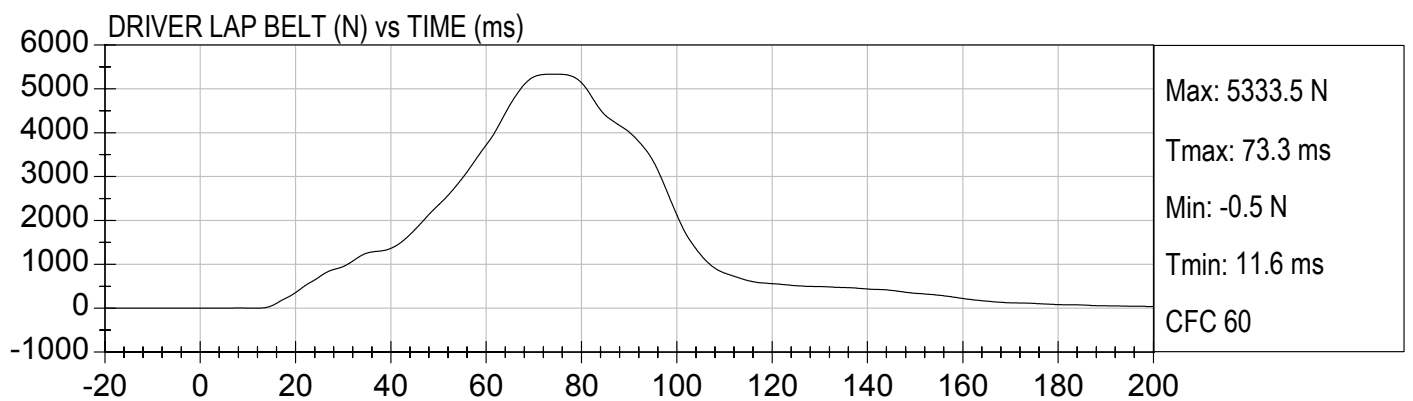
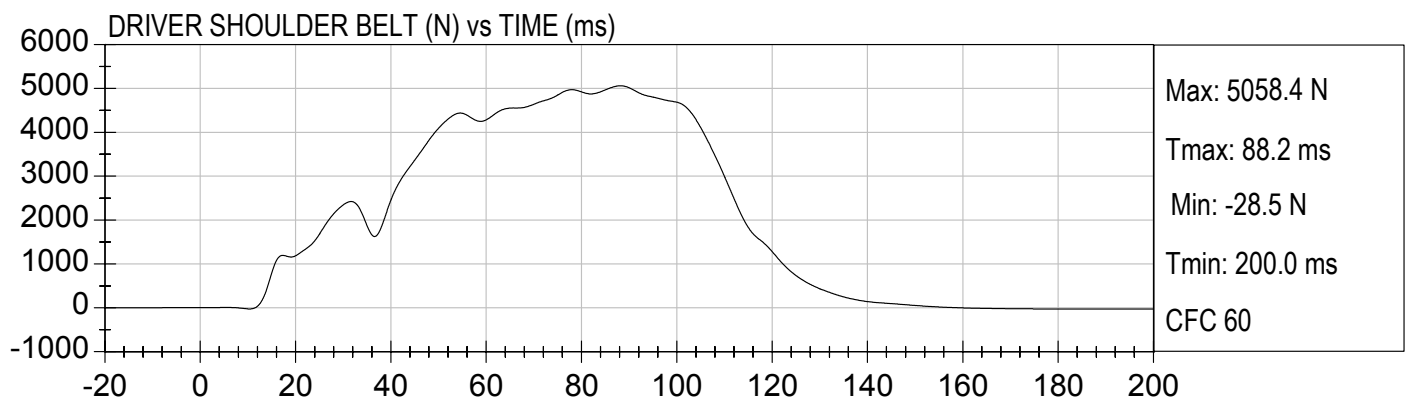
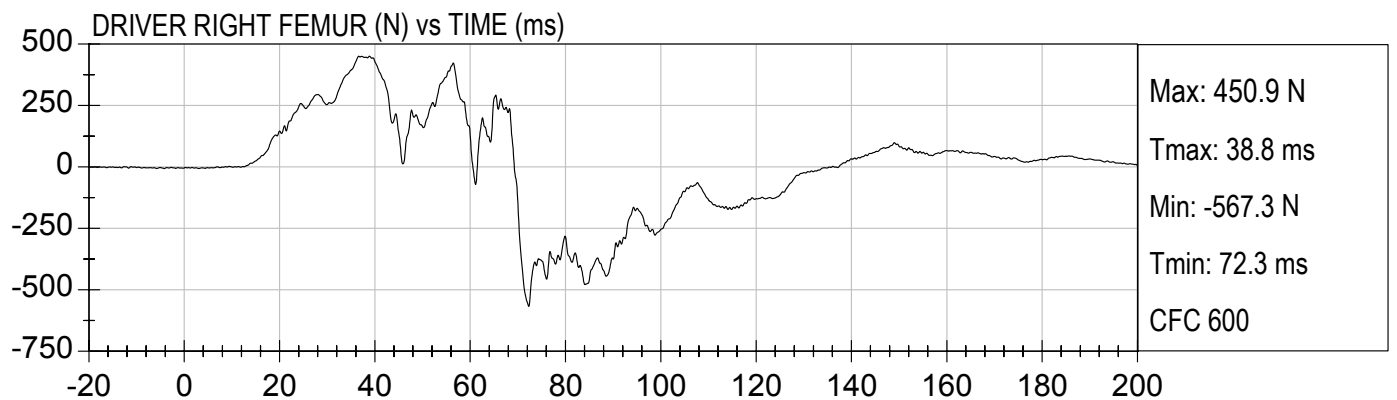
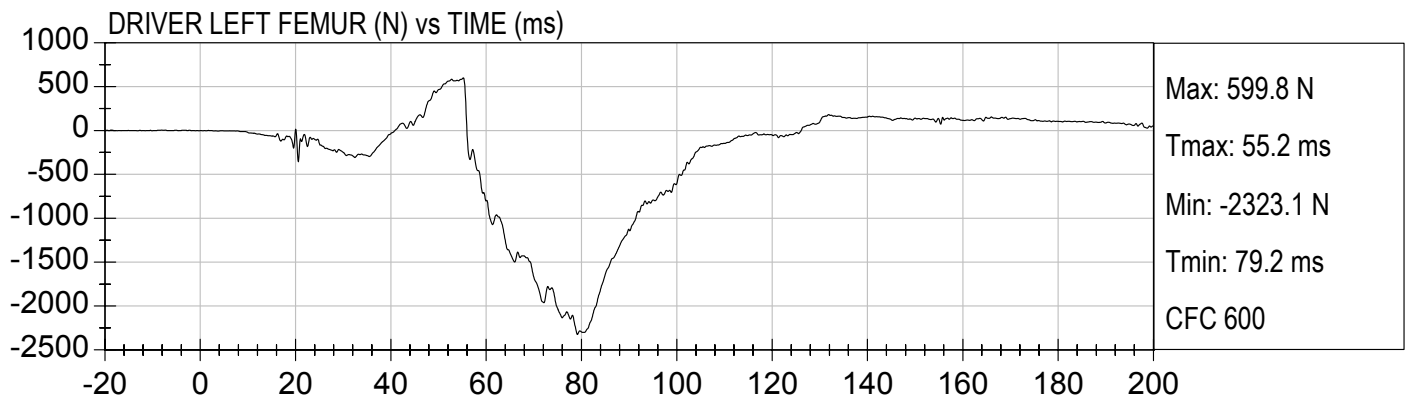
DRIVER PELVIS Z Velocity (kph) vs TIME (ms)





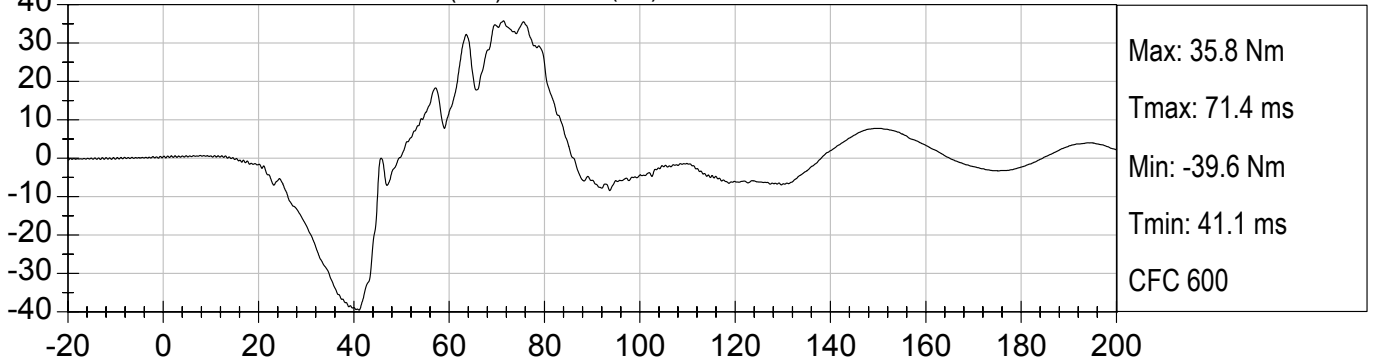
35MPH FRONTAL IMPACT
2005 CHEVROLET EQUINOX (M50100)

Test Date: 4/6/2004
Speed: 35.0 mph (56.3 km/h)

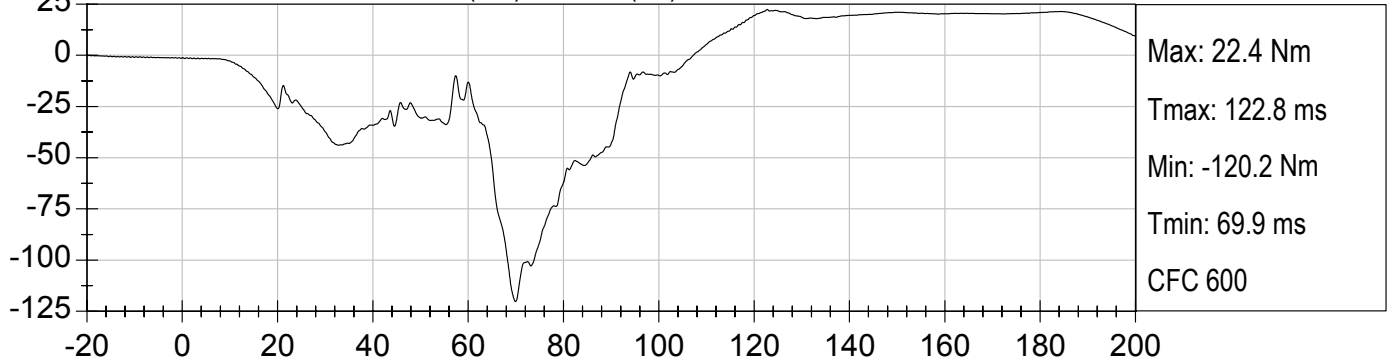




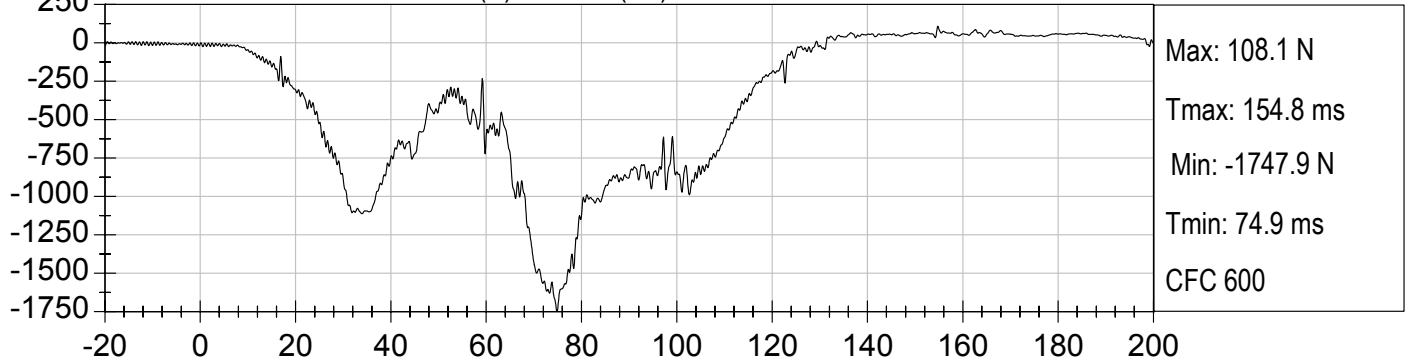
DRIVER LEFT UPPER TIBIA MX (Nm) vs TIME (ms)



DRIVER LEFT UPPER TIBIA MY (Nm) vs TIME (ms)

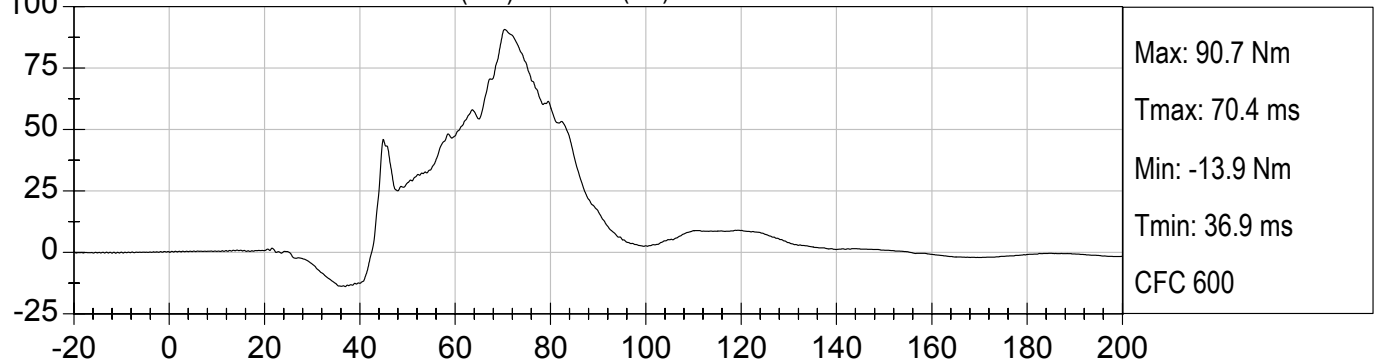


DRIVER LEFT UPPER TIBIA FZ (N) vs TIME (ms)

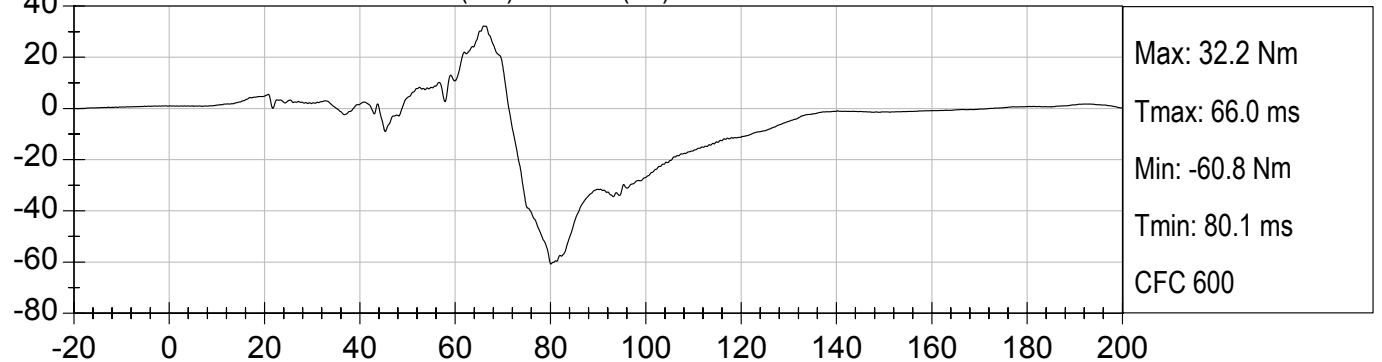




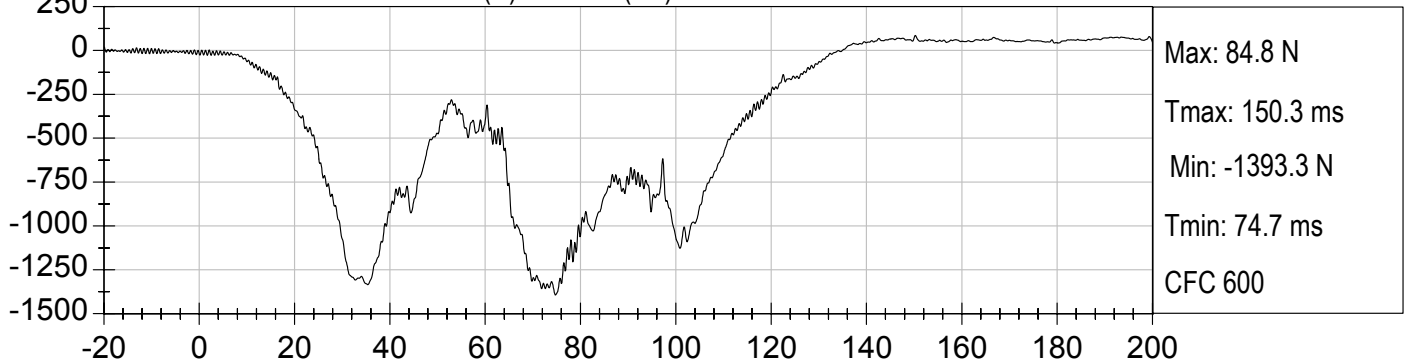
DRIVER LEFT LOWER TIBIA MX (Nm) vs TIME (ms)



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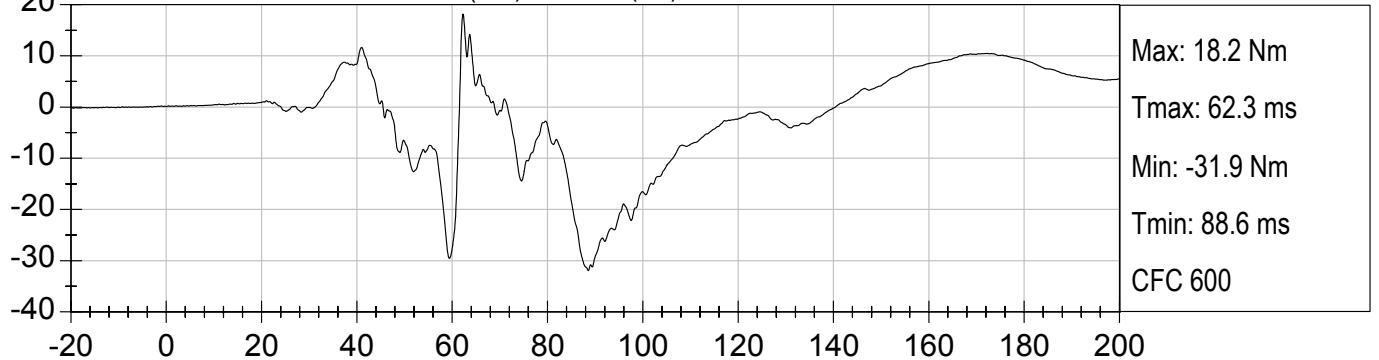


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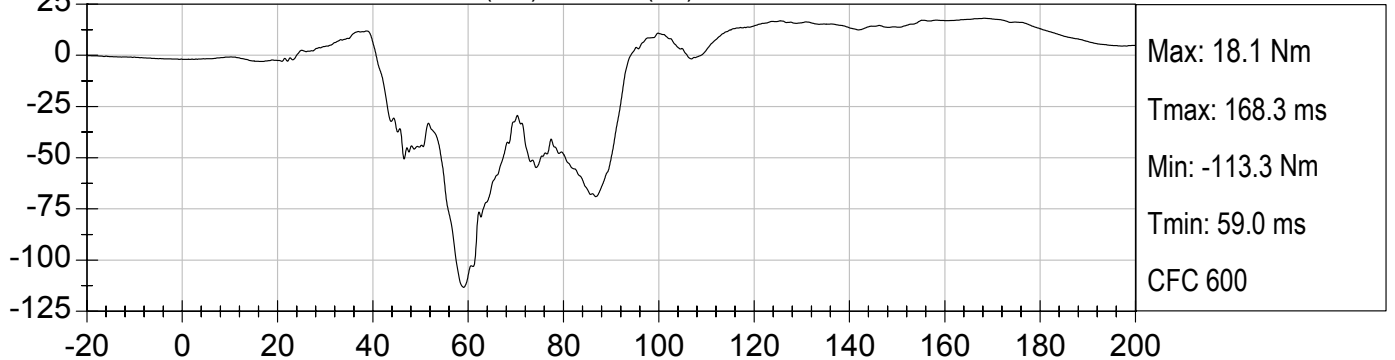




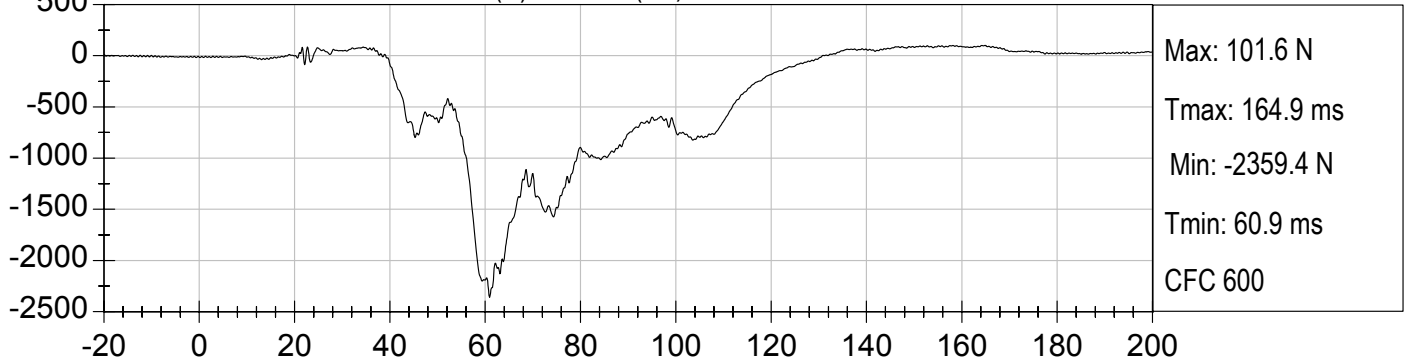
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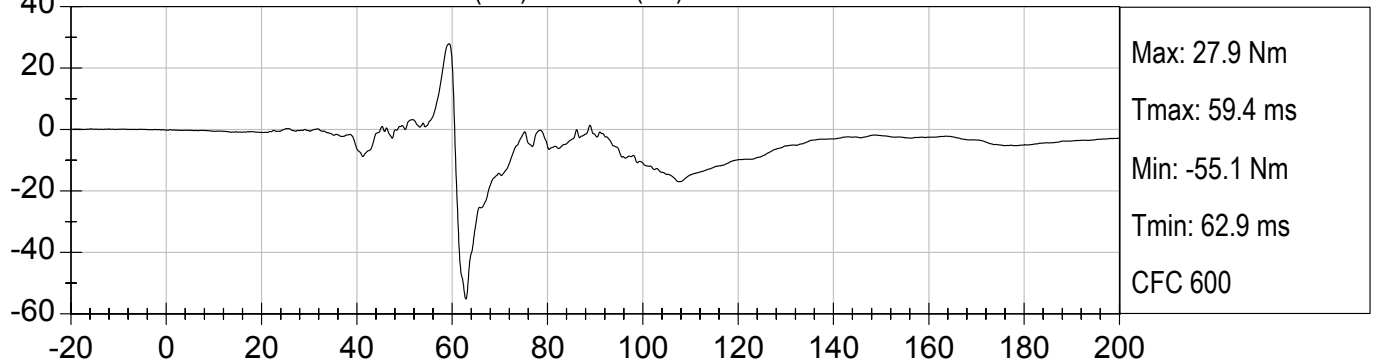


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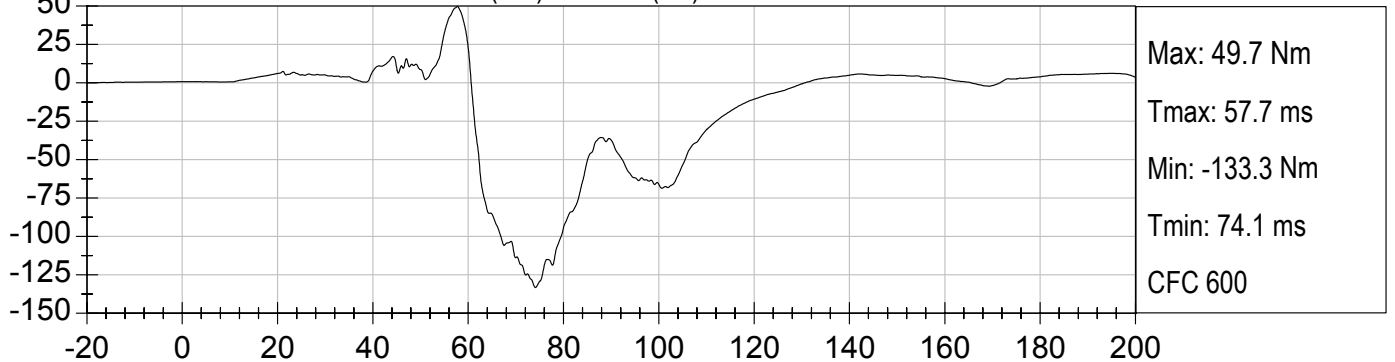




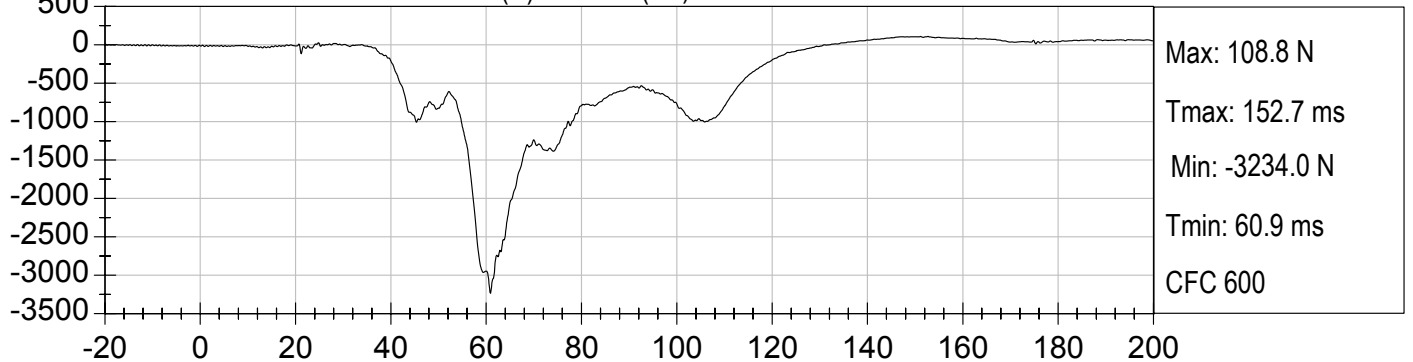
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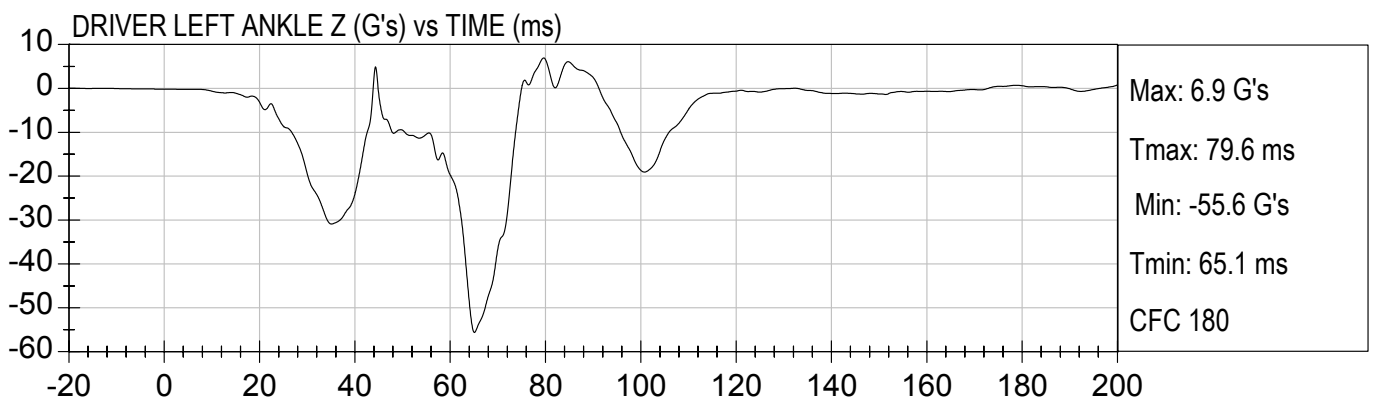
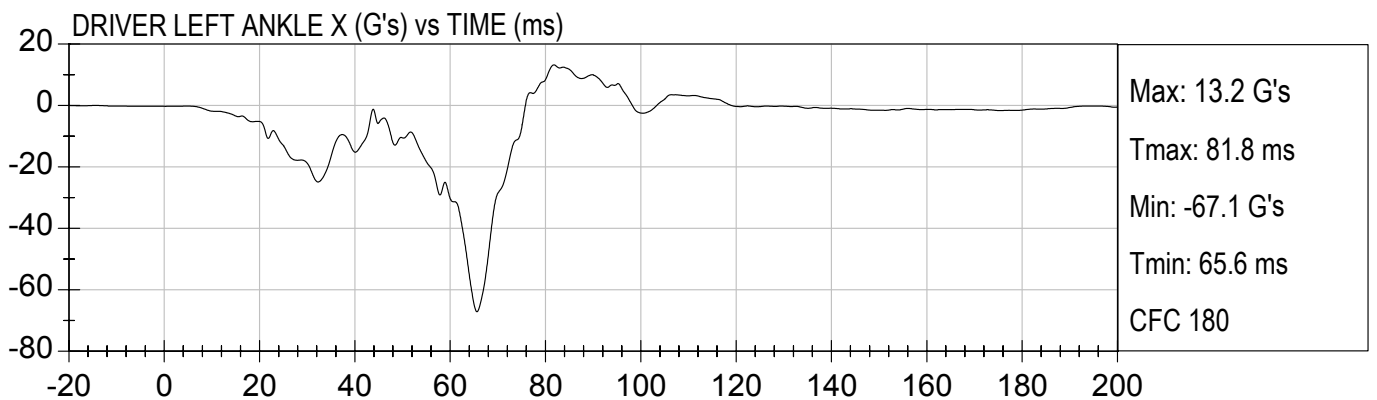
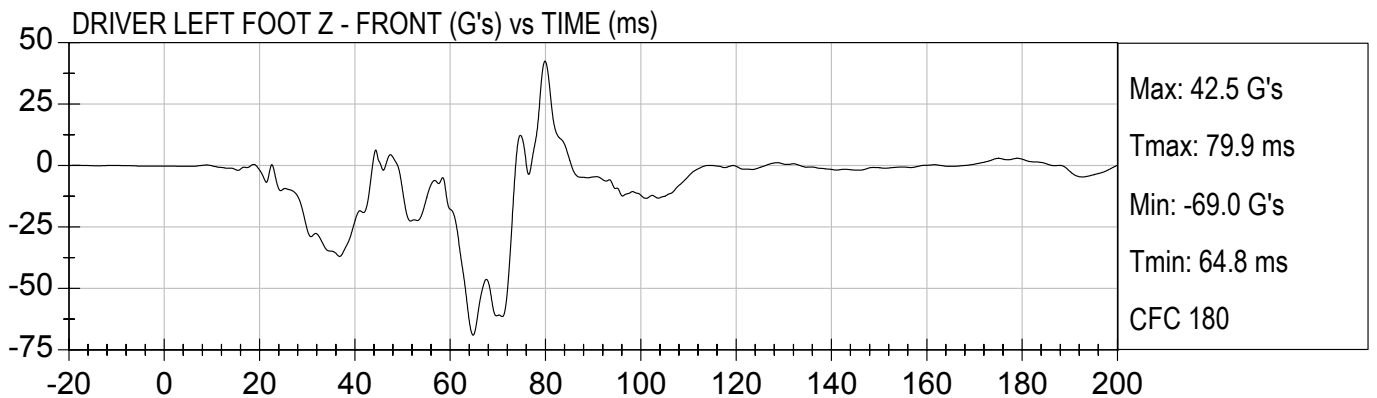


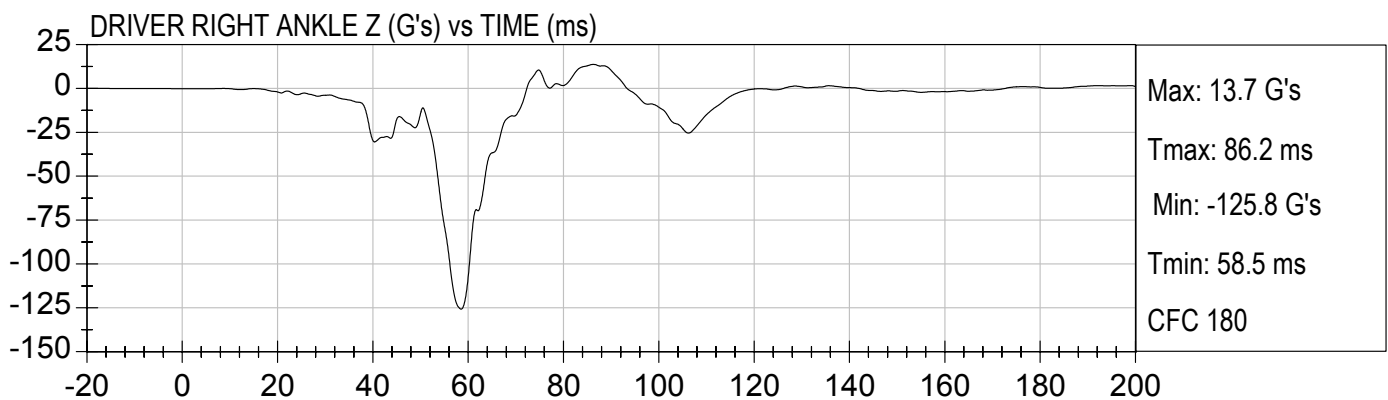
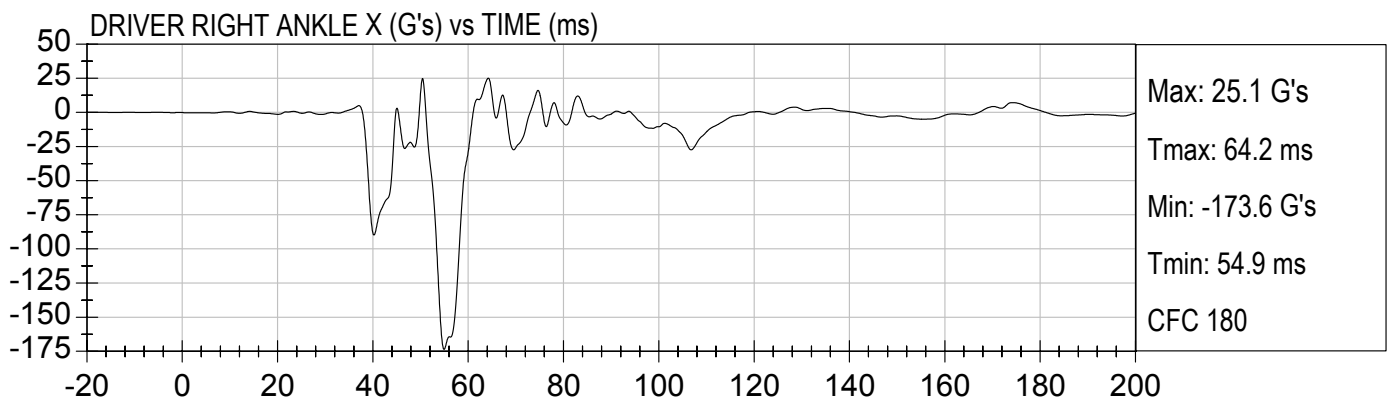
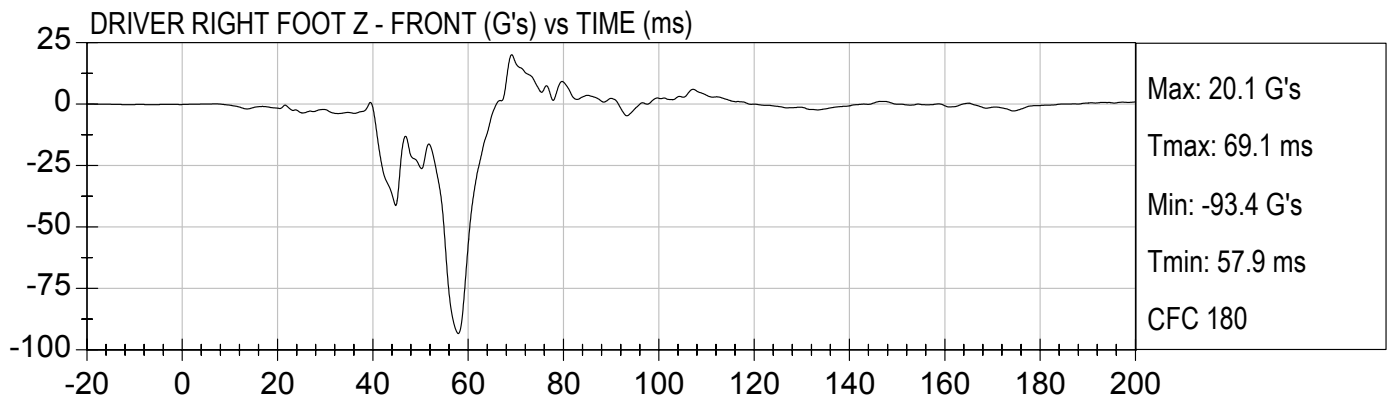
DRIVER RIGHT LOWER TIBIA MY (Nm) vs TIME (ms)



DRIVER RIGHT LOWER TIBIA FZ (N) vs TIME (ms)



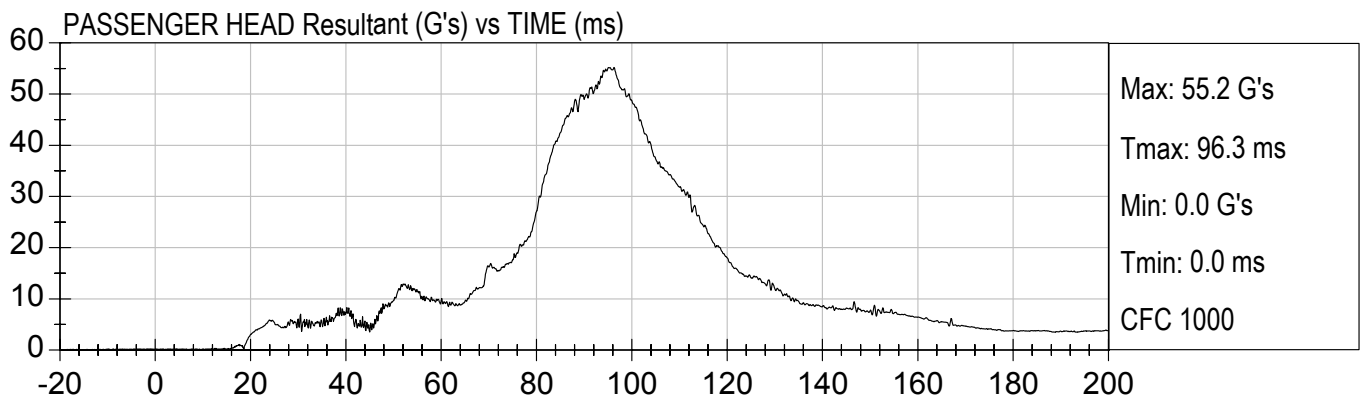
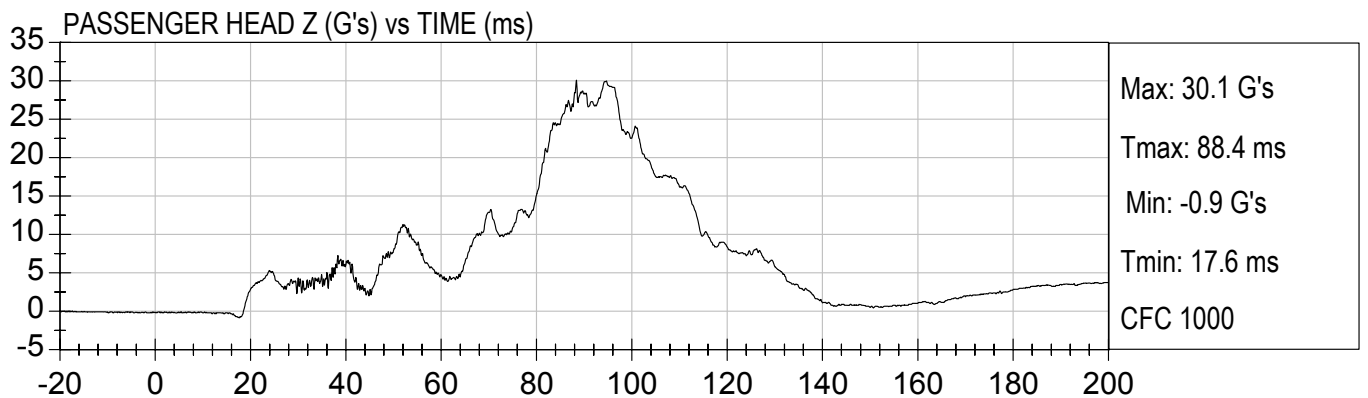
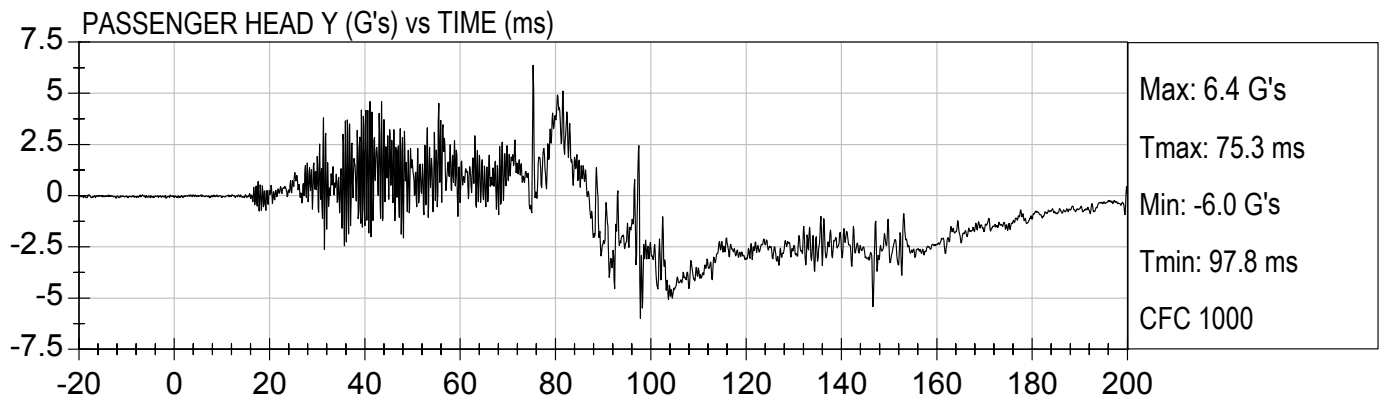
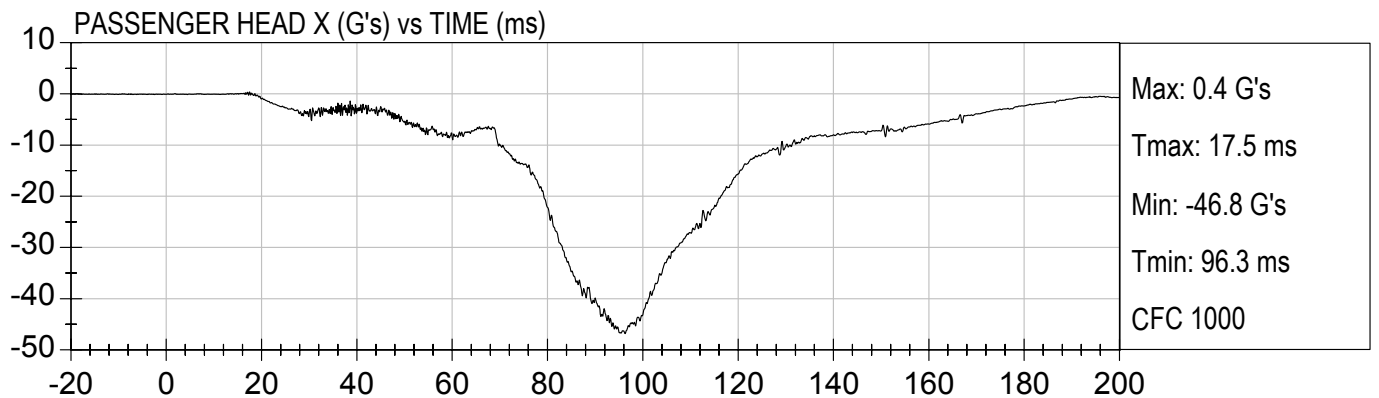


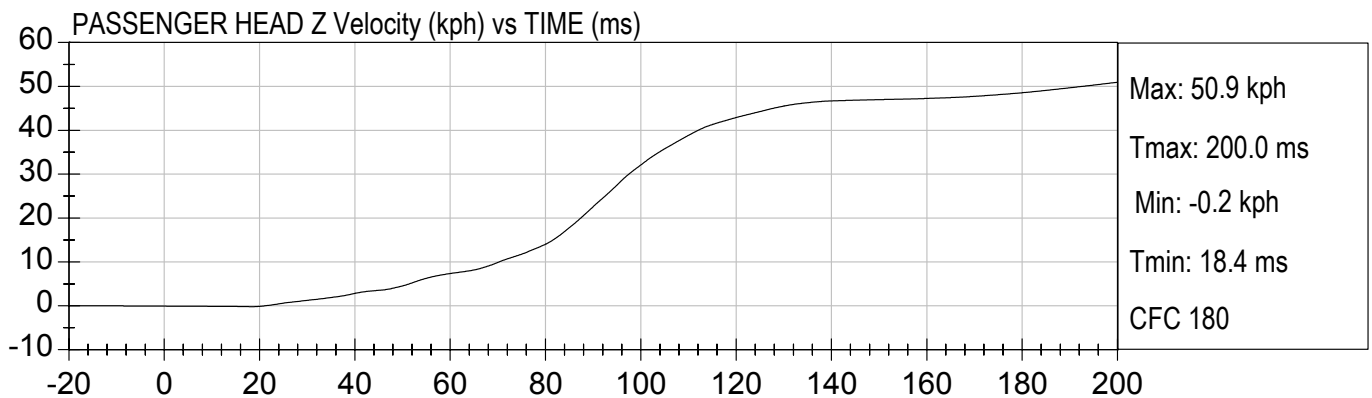
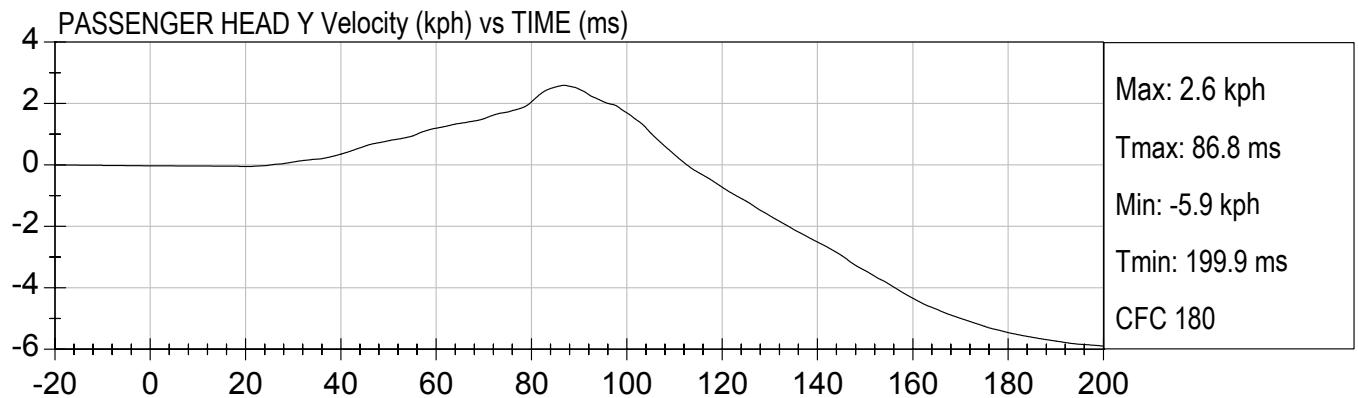
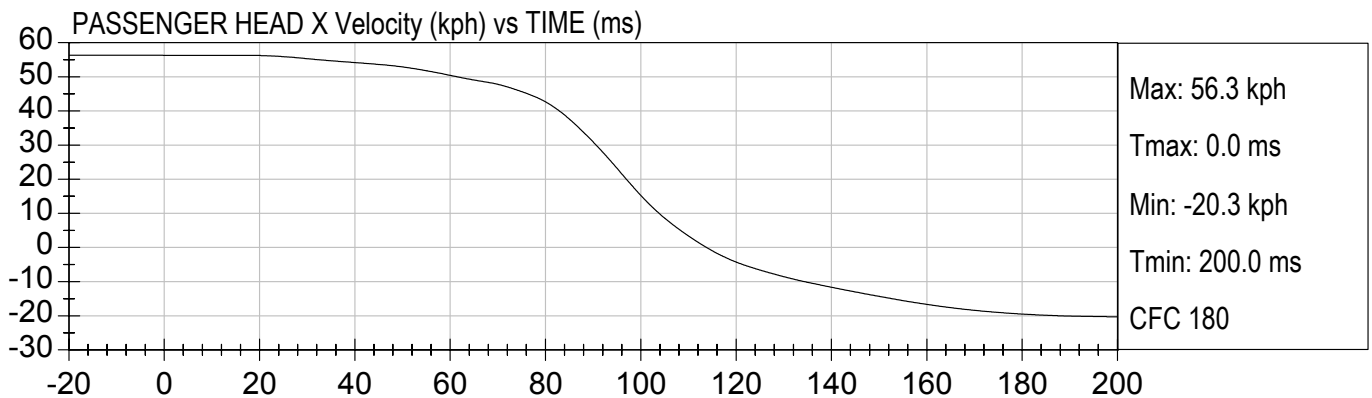




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2005 CHEVROLET EQUINOX (M50100)

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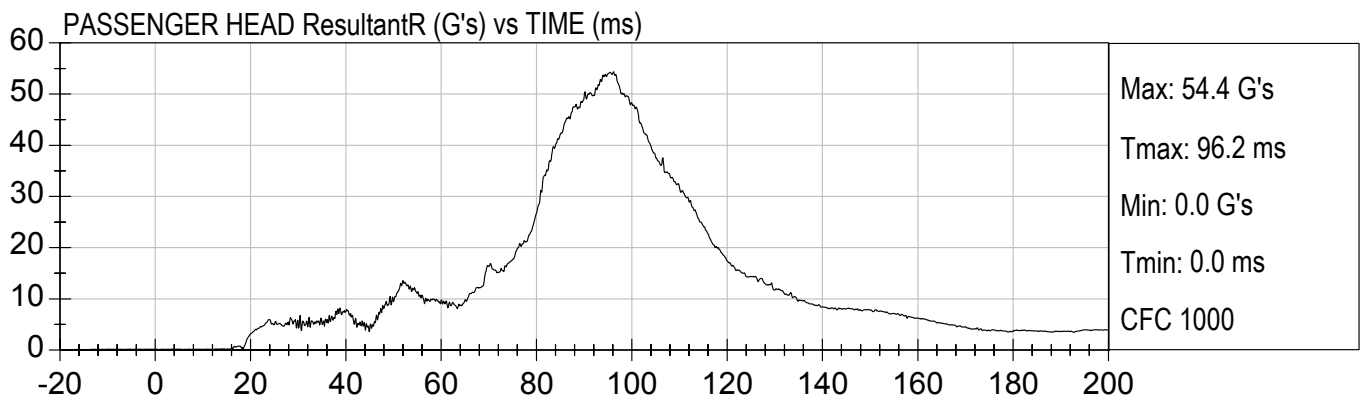
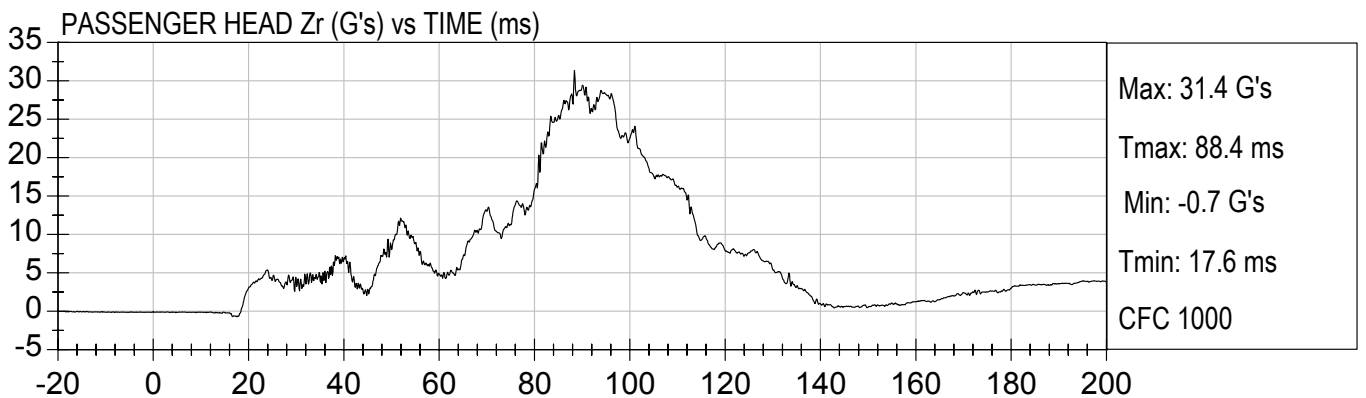
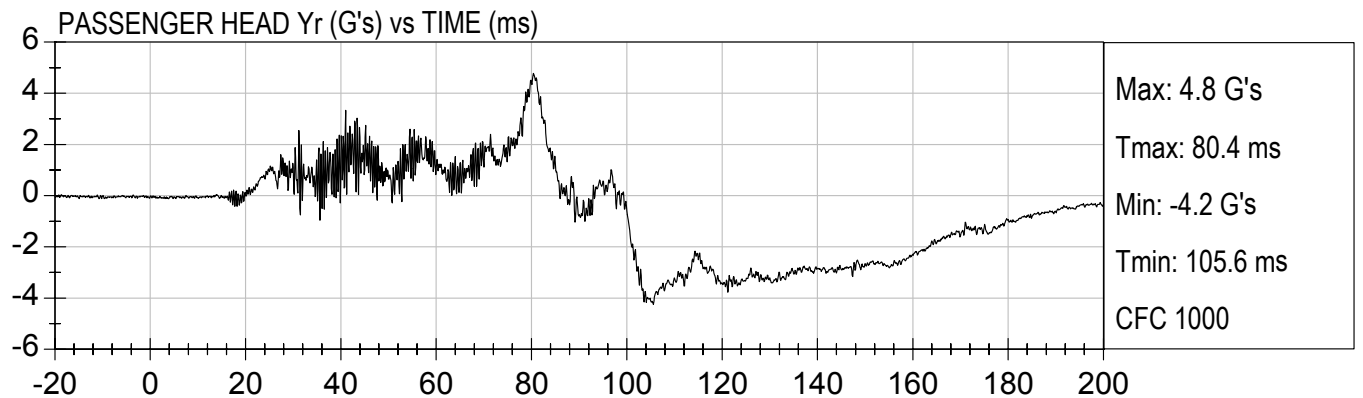
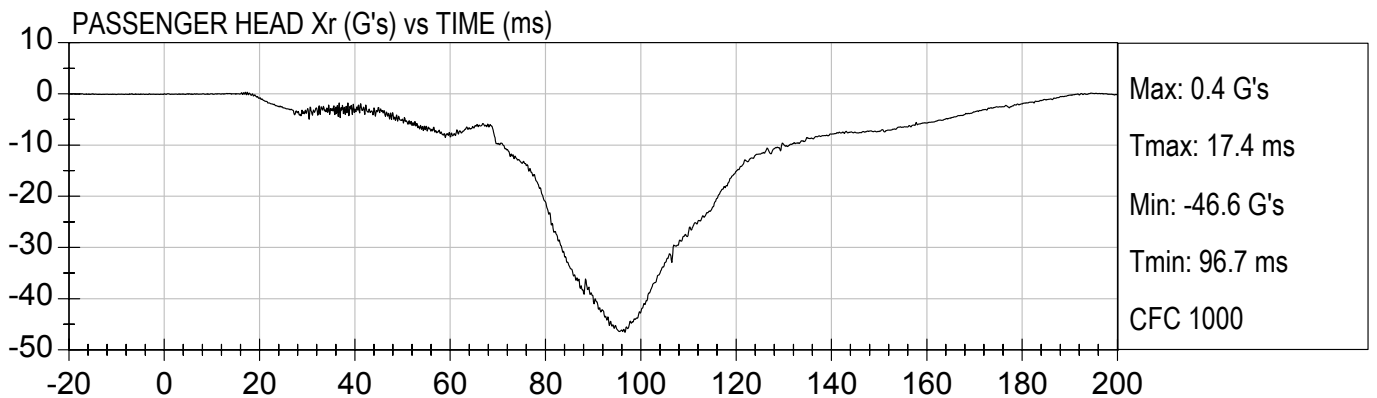


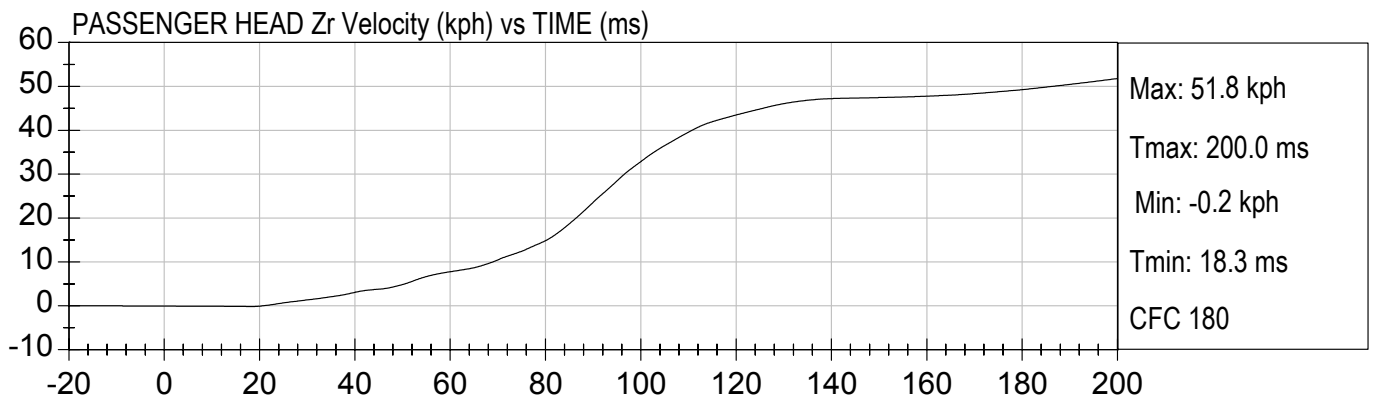
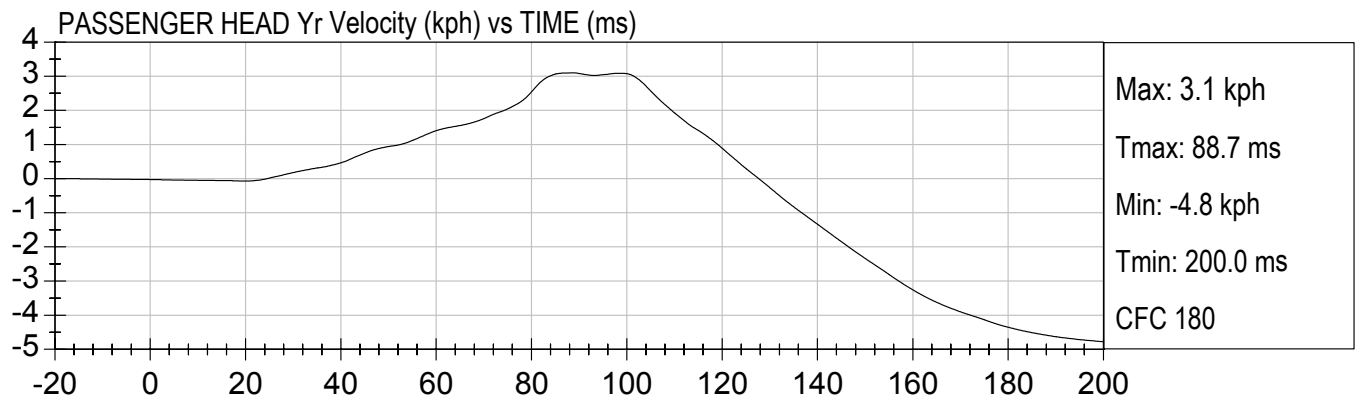
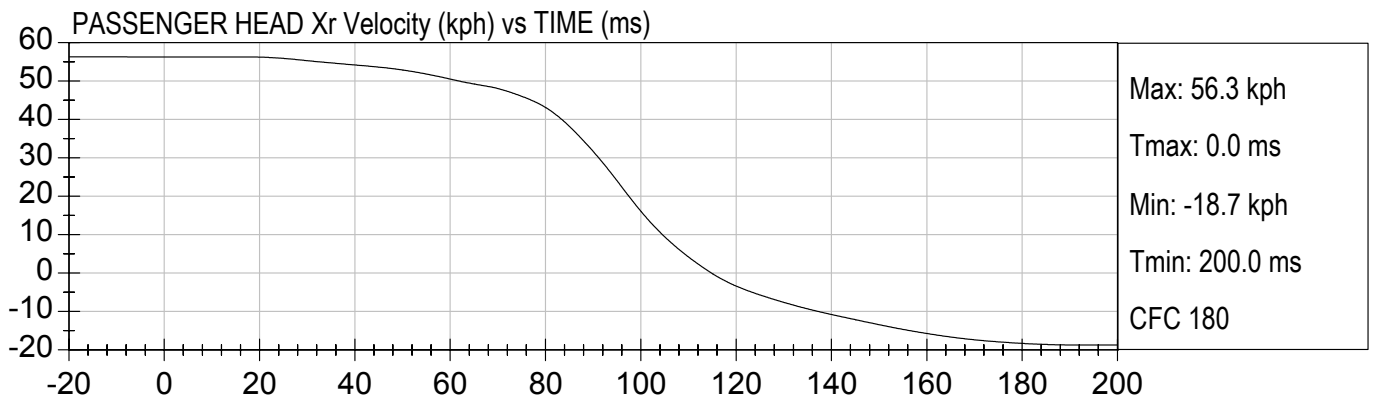




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Test Date: 4/6/2004
Speed: 35.0 mph (56.3 km/h)

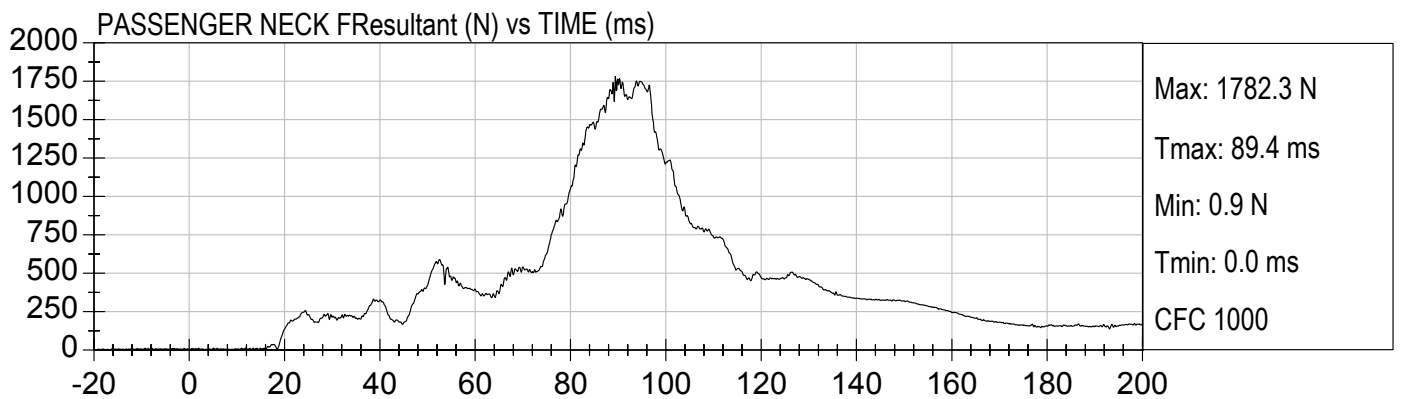
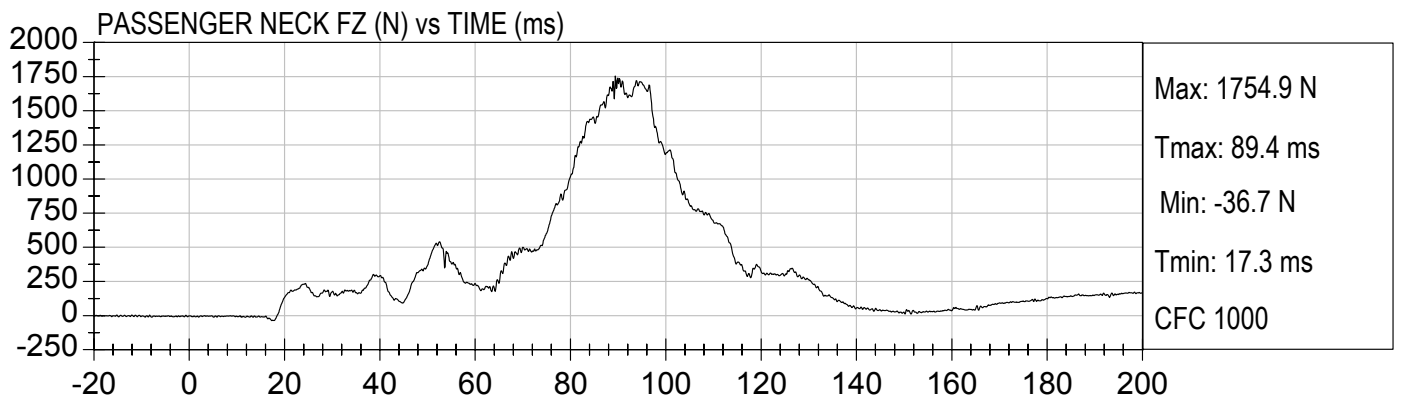
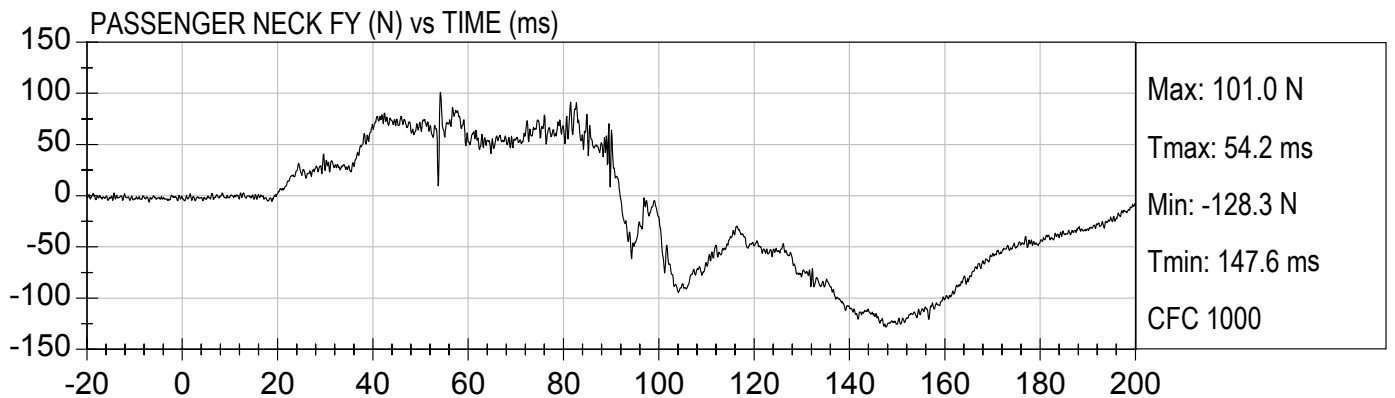
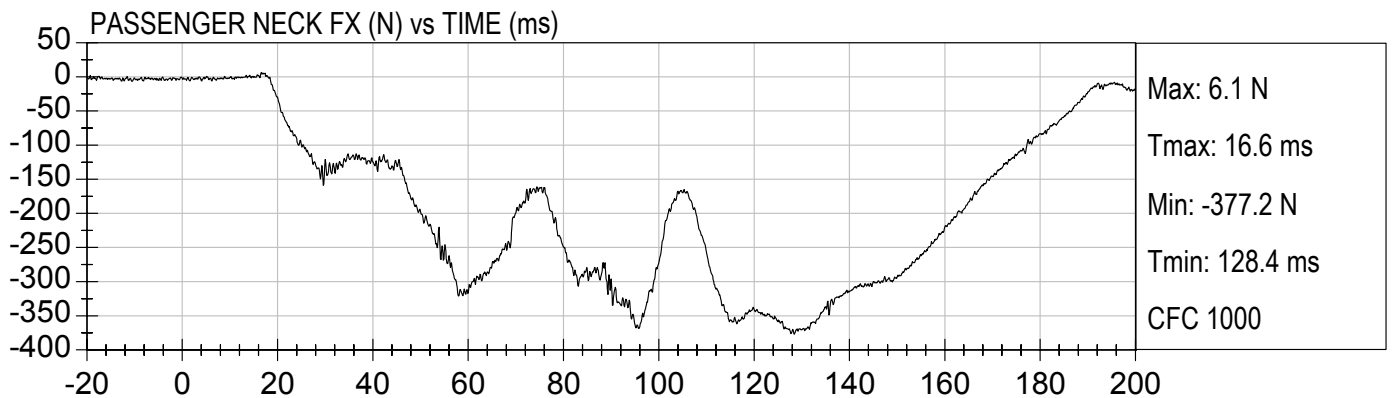






35MPH FRONTAL IMPACT
2005 CHEVROLET EQUINOX (M50100)

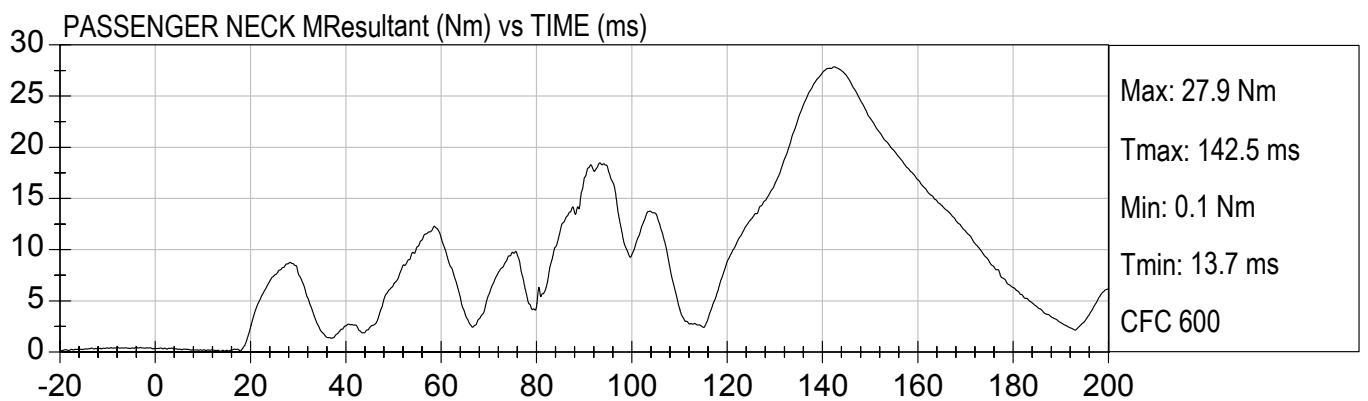
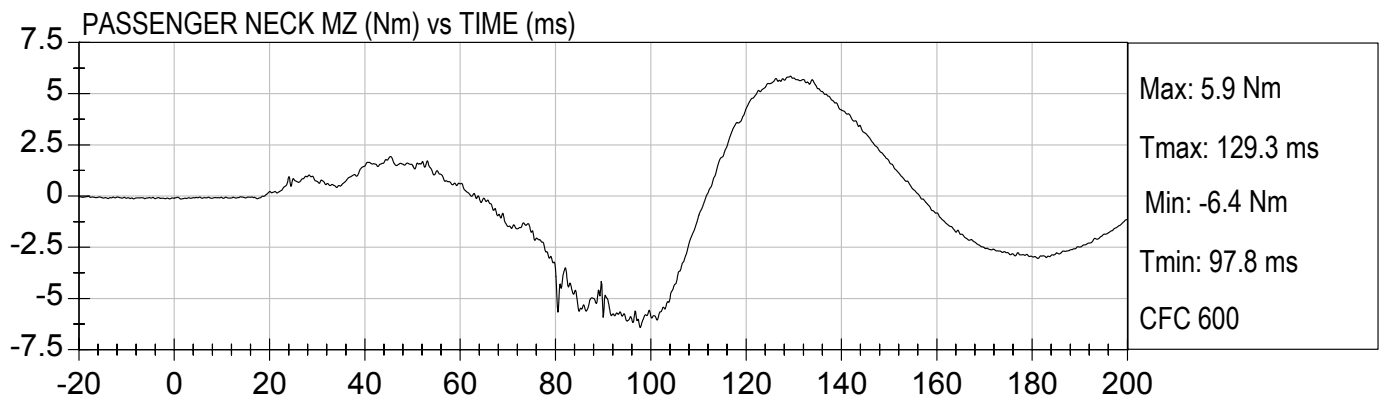
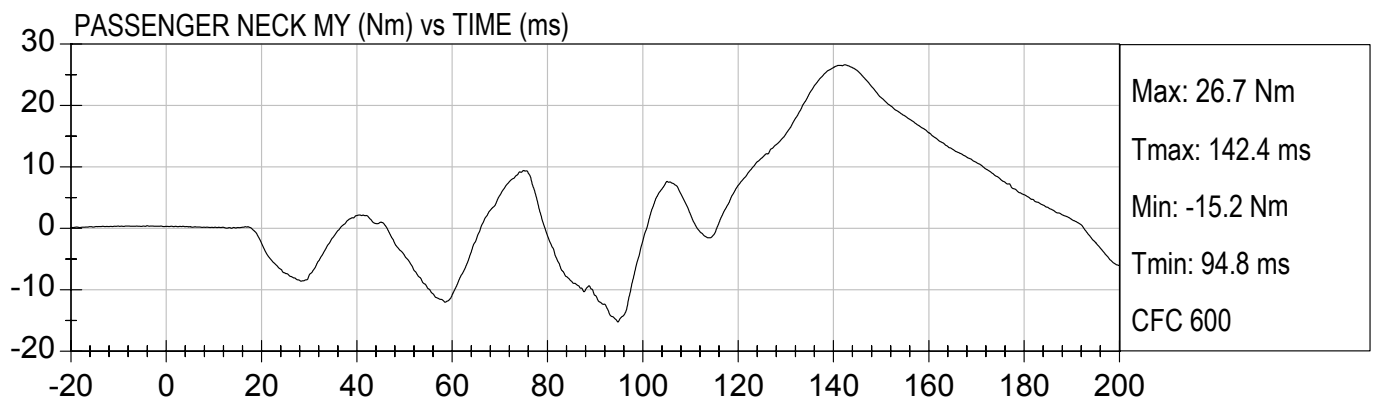
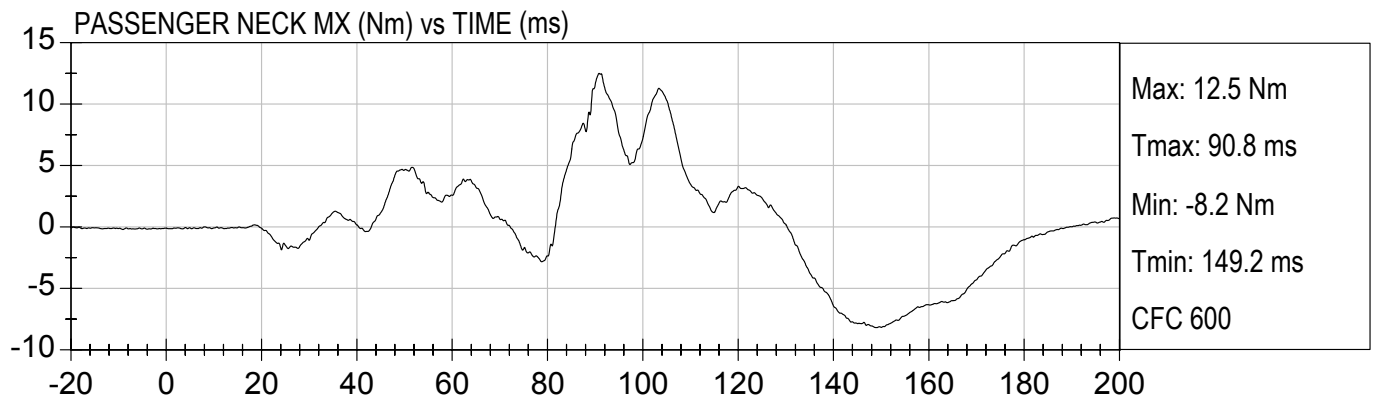
Test Date: 4/6/2004
Speed: 35.0 mph (56.3 km/h)





35MPH FRONTAL IMPACT
2005 CHEVROLET EQUINOX (M50100)

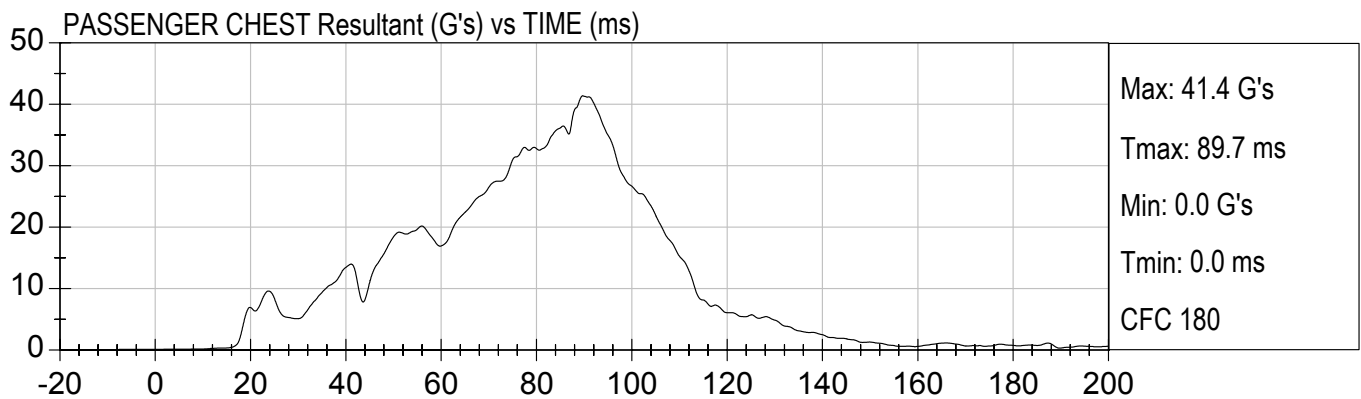
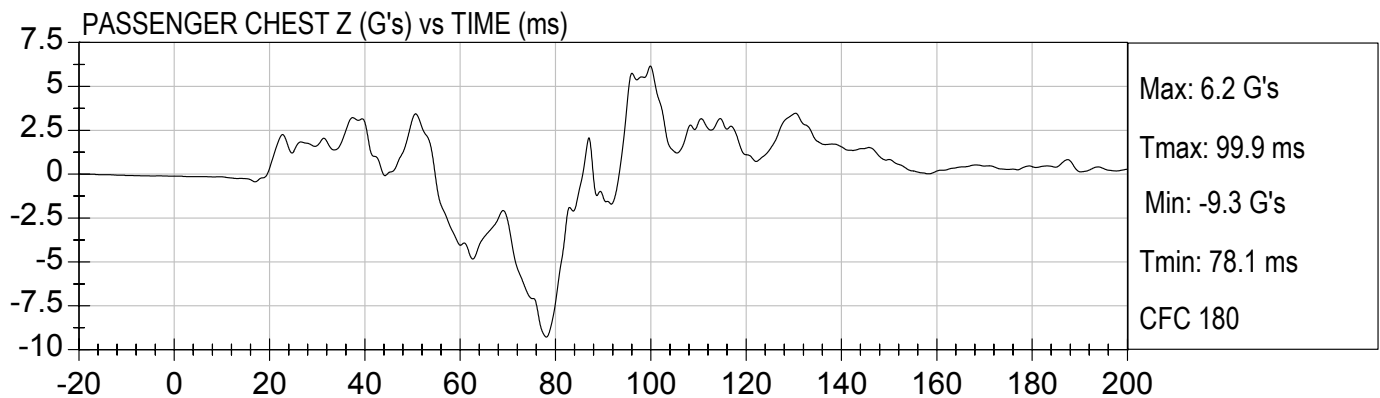
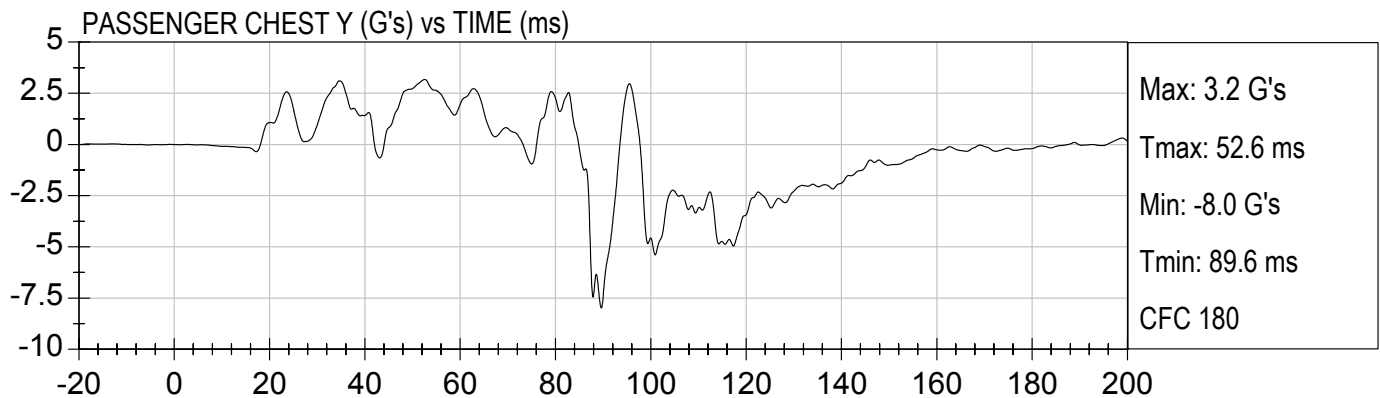
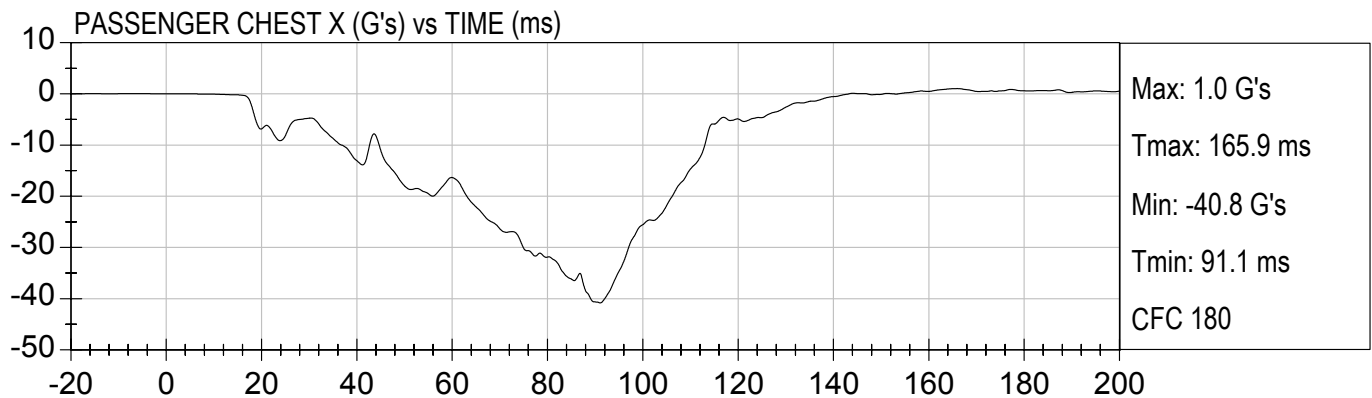
Test Date: 4/6/2004
Speed: 35.0 mph (56.3 km/h)

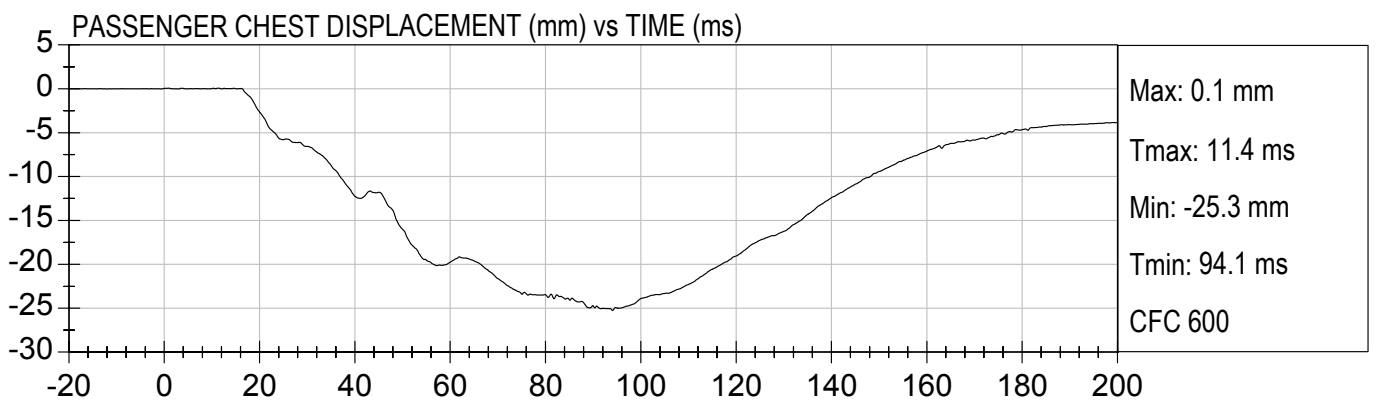
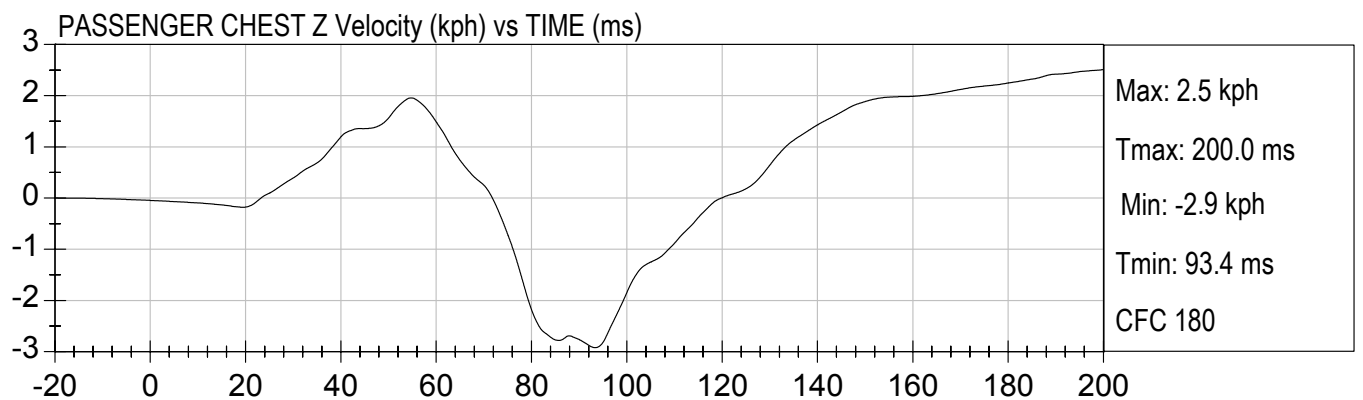
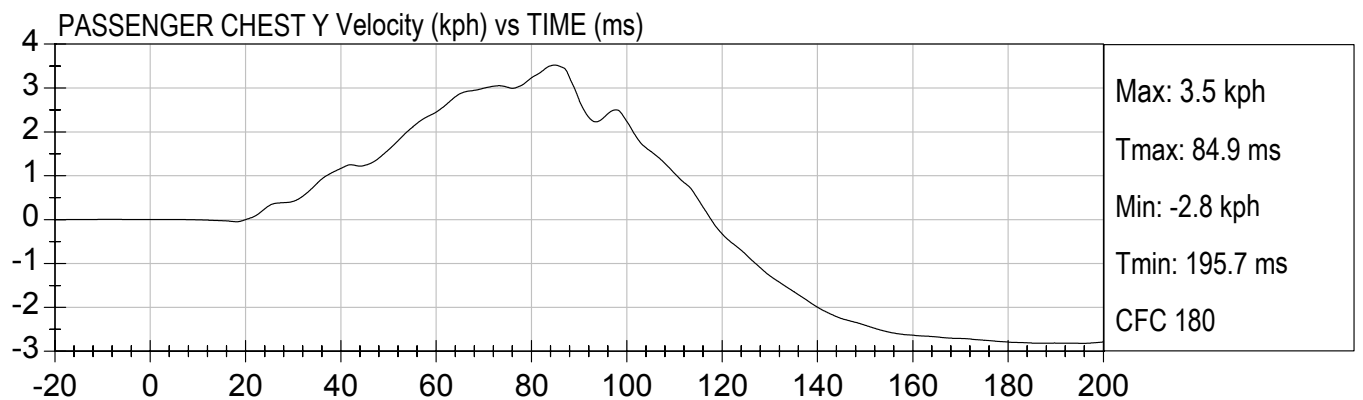
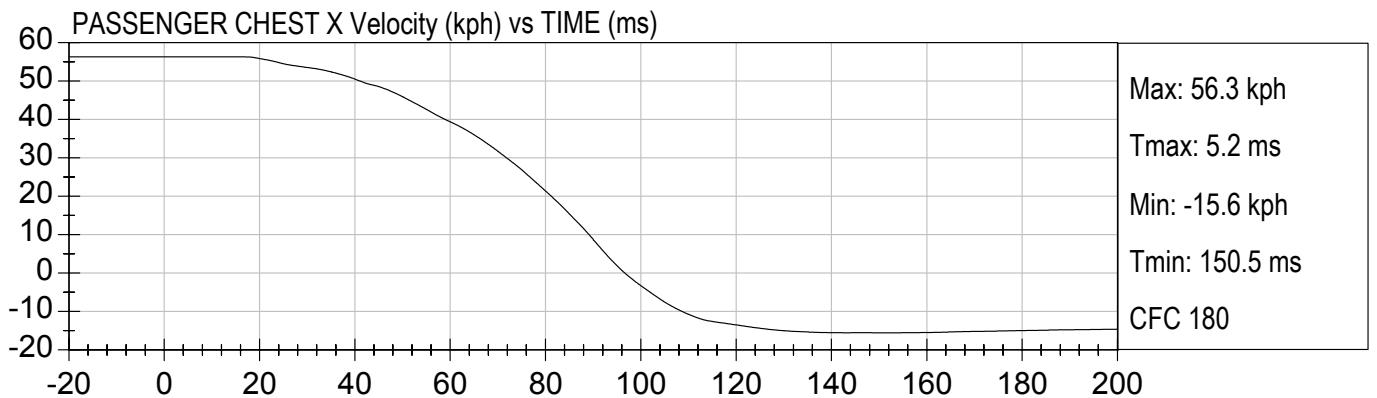




35MPH FRONTAL IMPACT
2005 CHEVROLET EQUINOX (M50100)

Test Date: 4/6/2004
Speed: 35.0 mph (56.3 km/h)

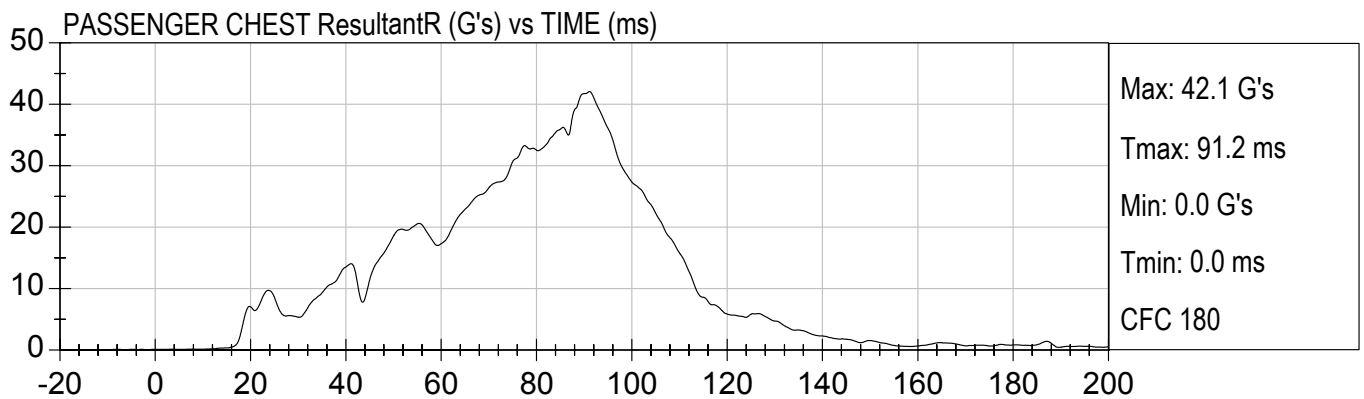
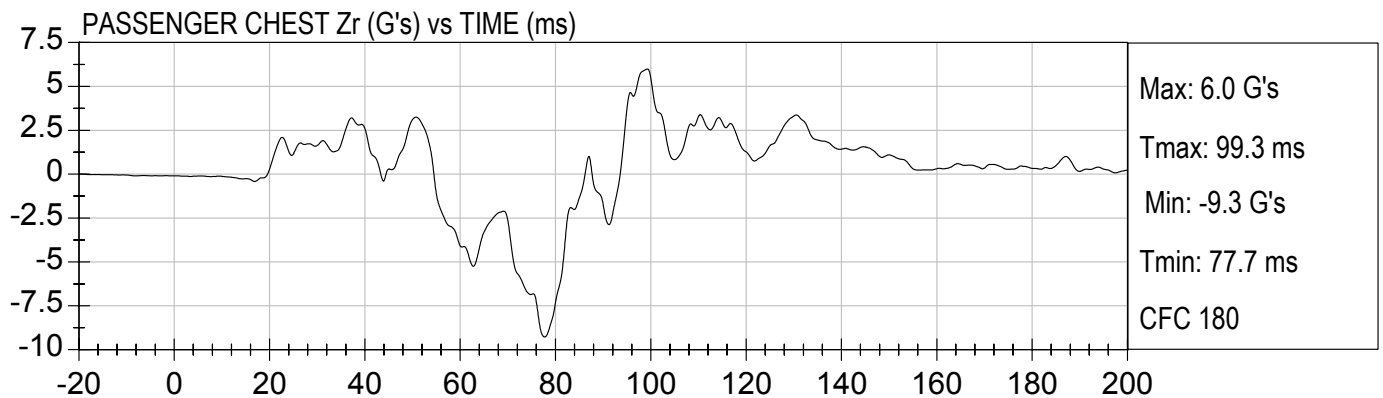
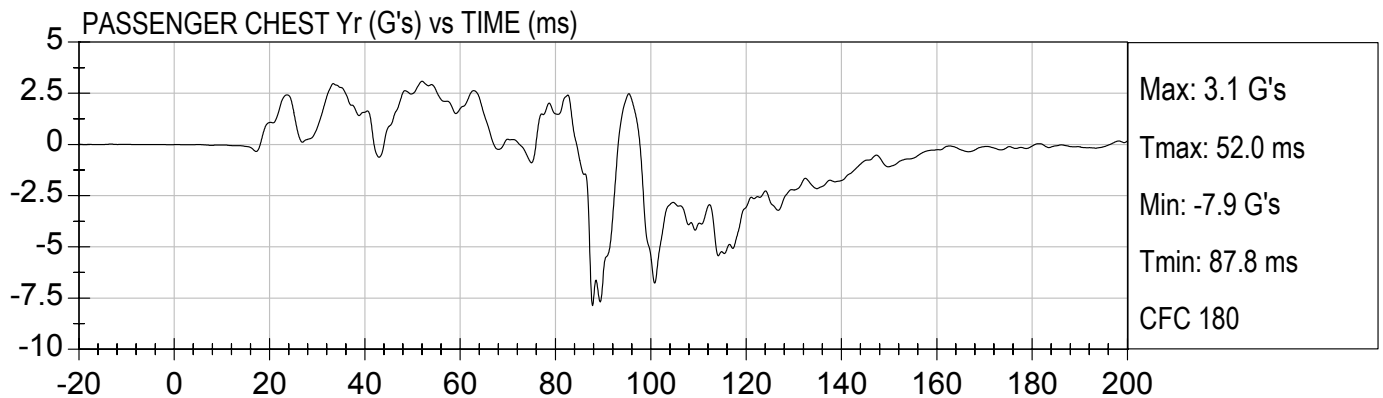
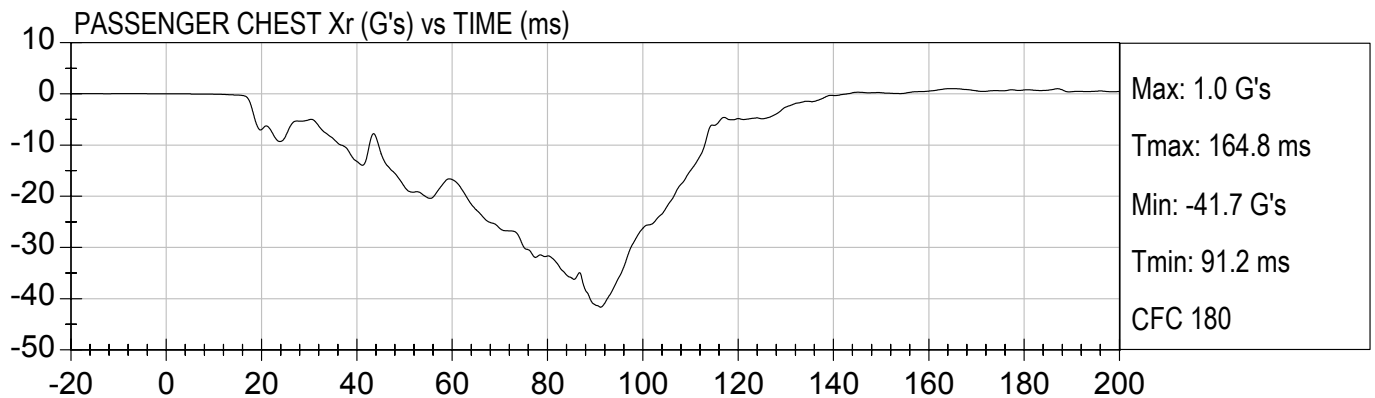


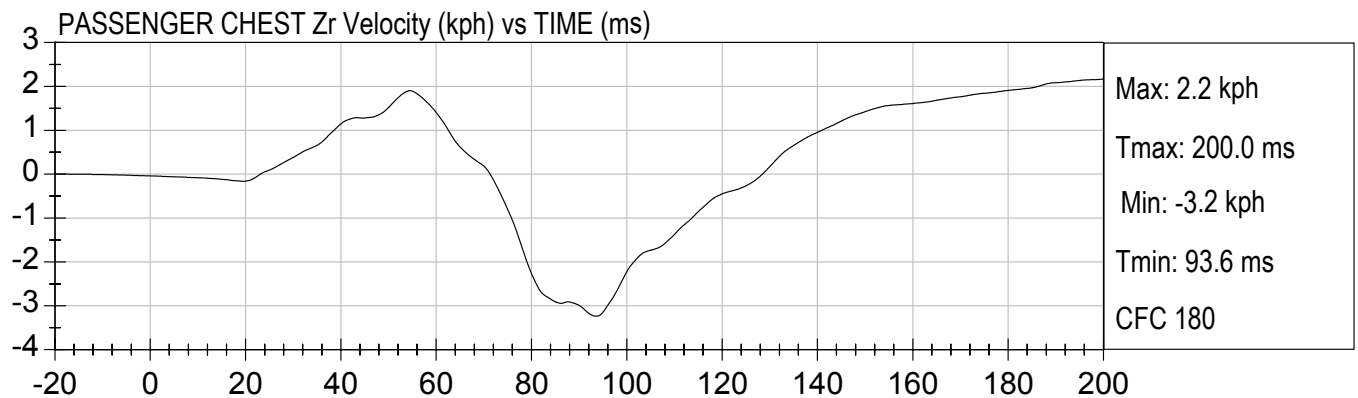
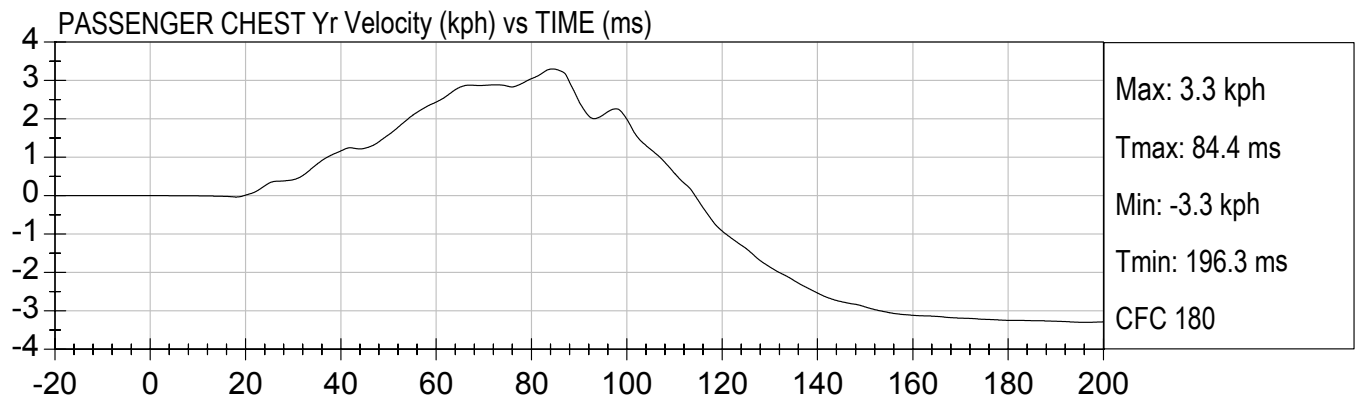
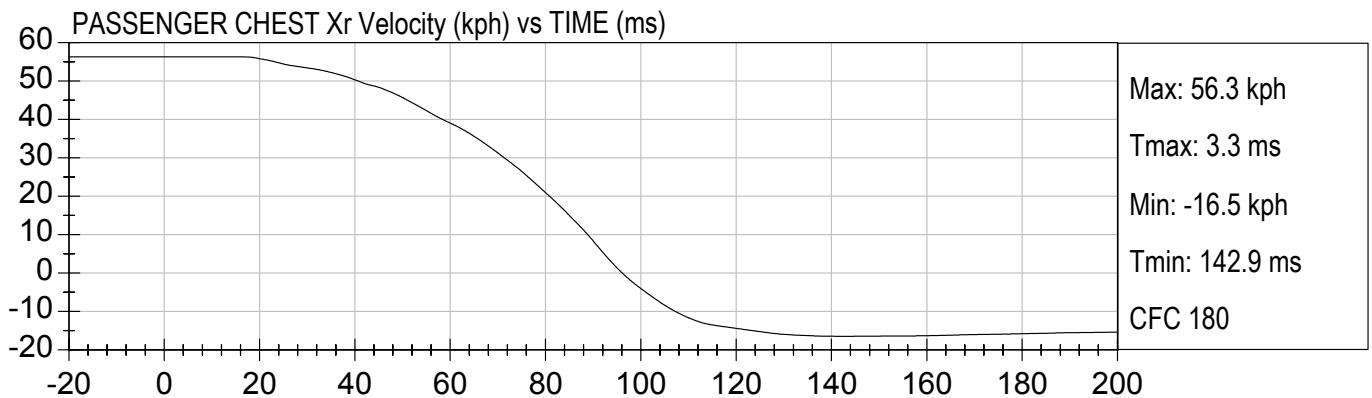




35MPH FRONTAL IMPACT
2005 CHEVROLET EQUINOX (M50100)

Test Date: 4/6/2004
Speed: 35.0 mph (56.3 km/h)

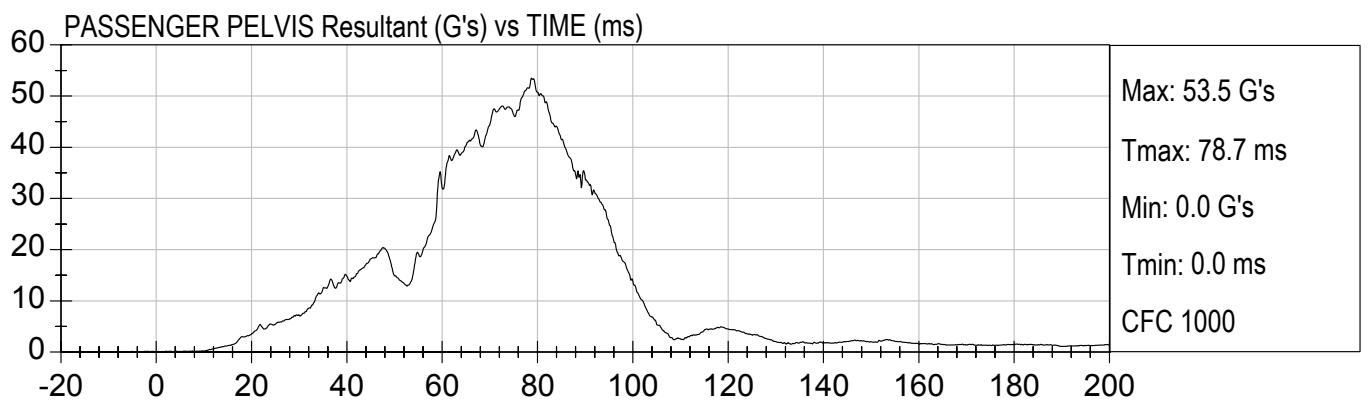
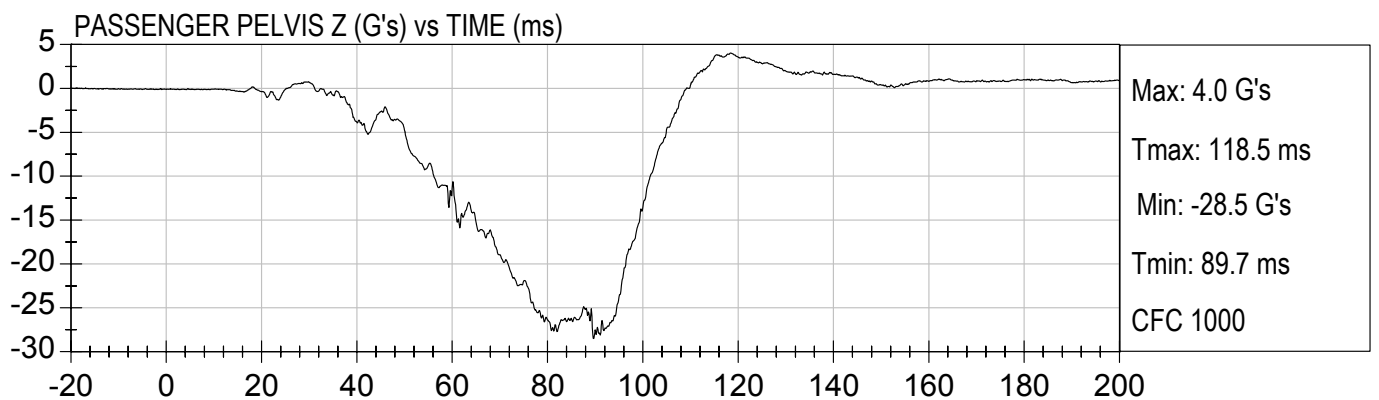
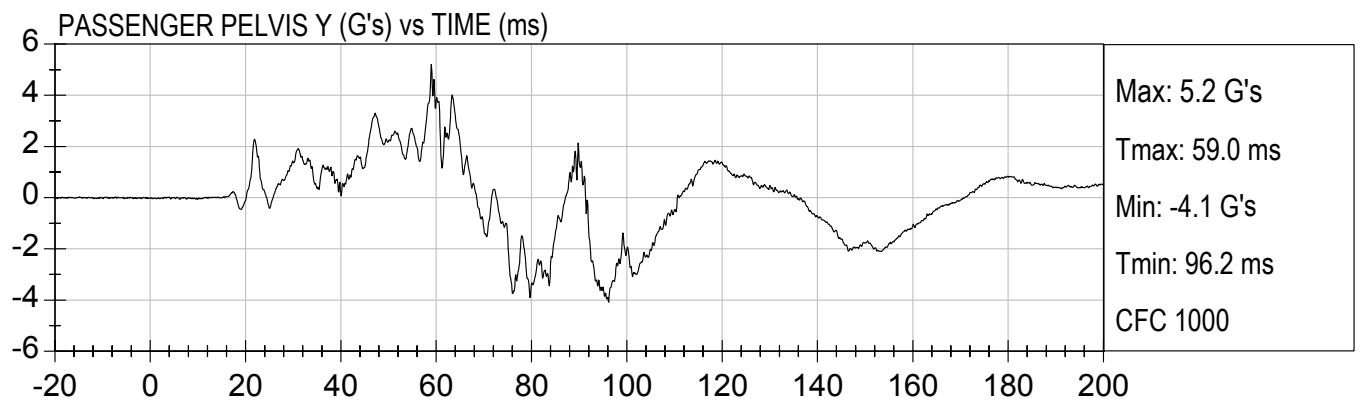
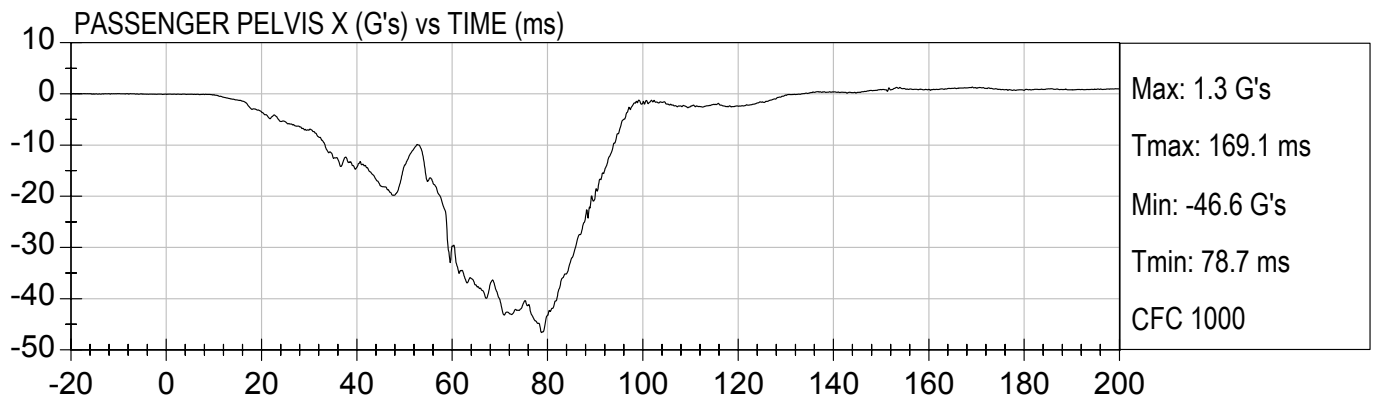


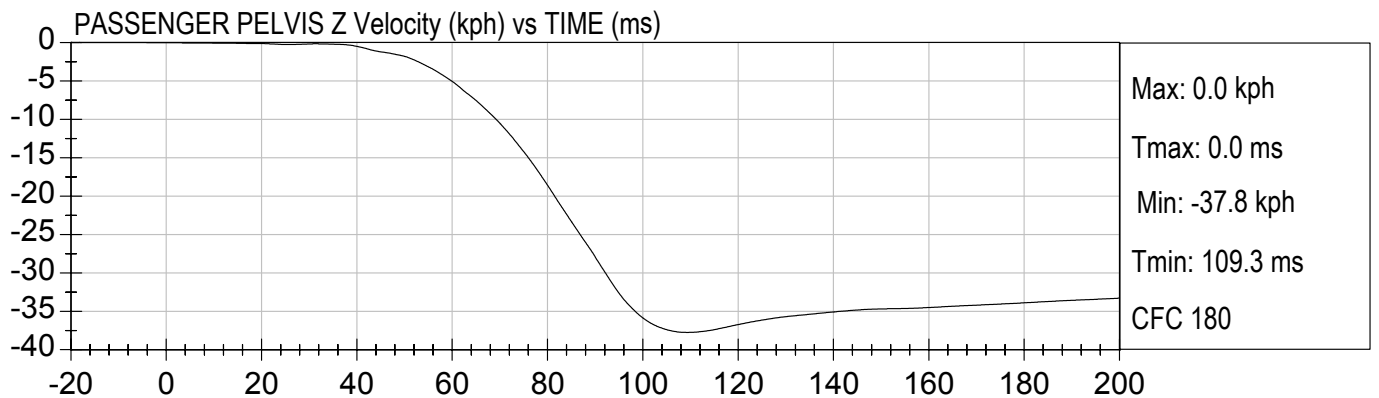
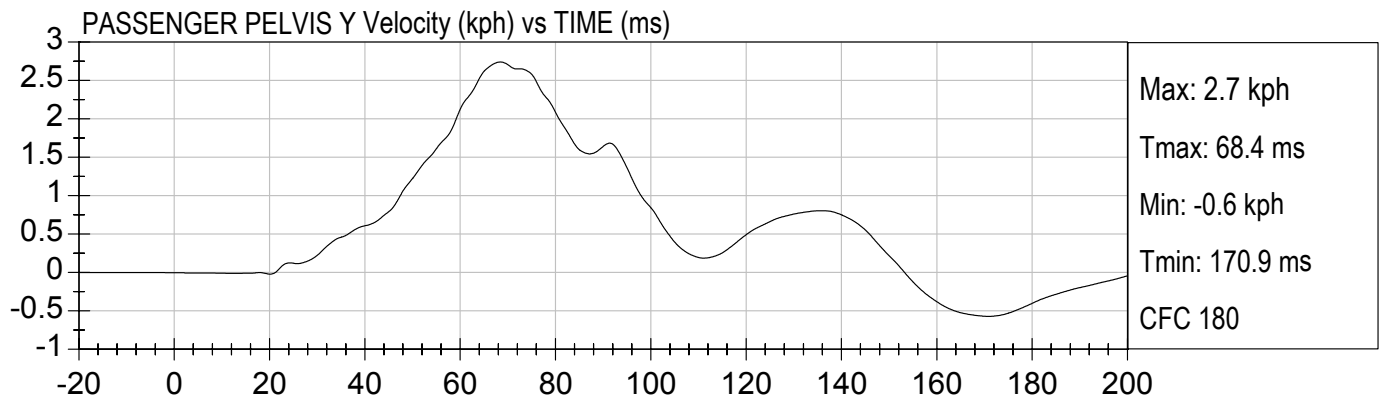
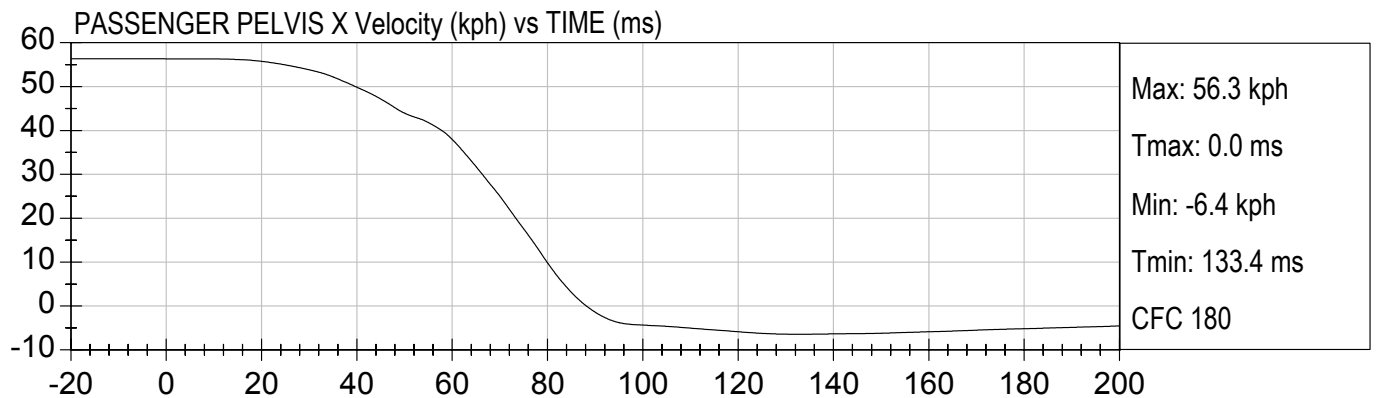




35MPH FRONTAL IMPACT
2005 CHEVROLET EQUINOX (M50100)

Test Date: 4/6/2004
Speed: 35.0 mph (56.3 km/h)

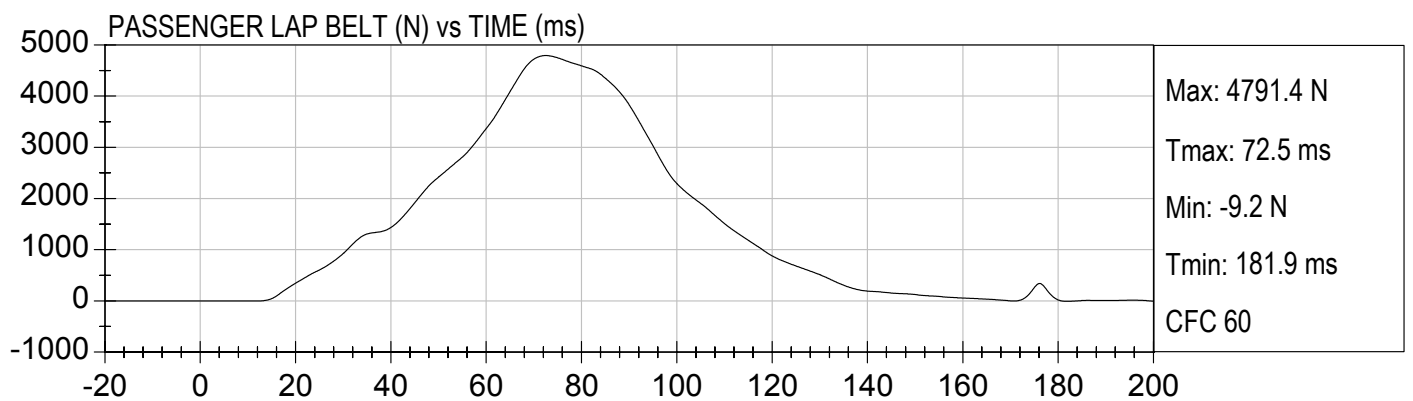
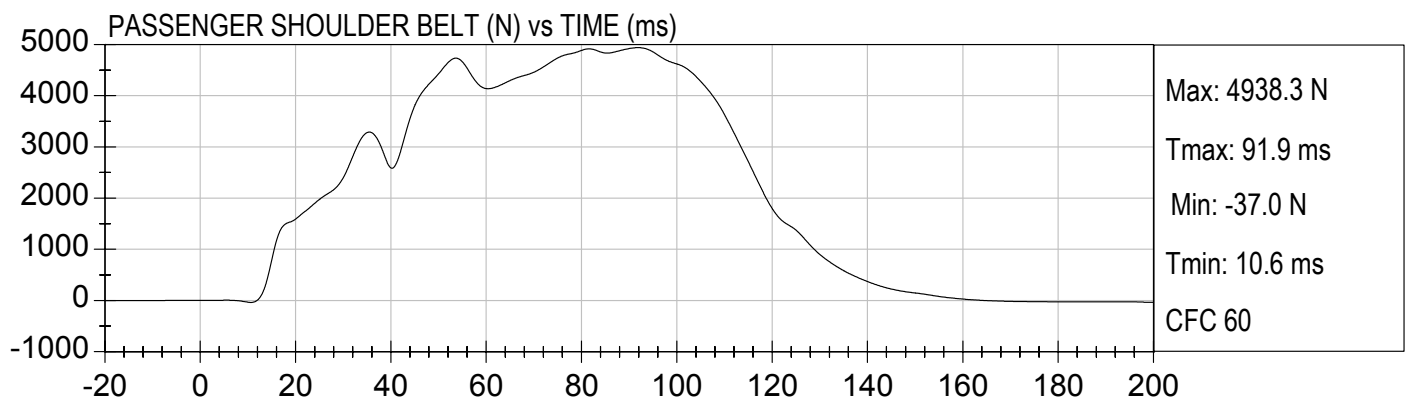
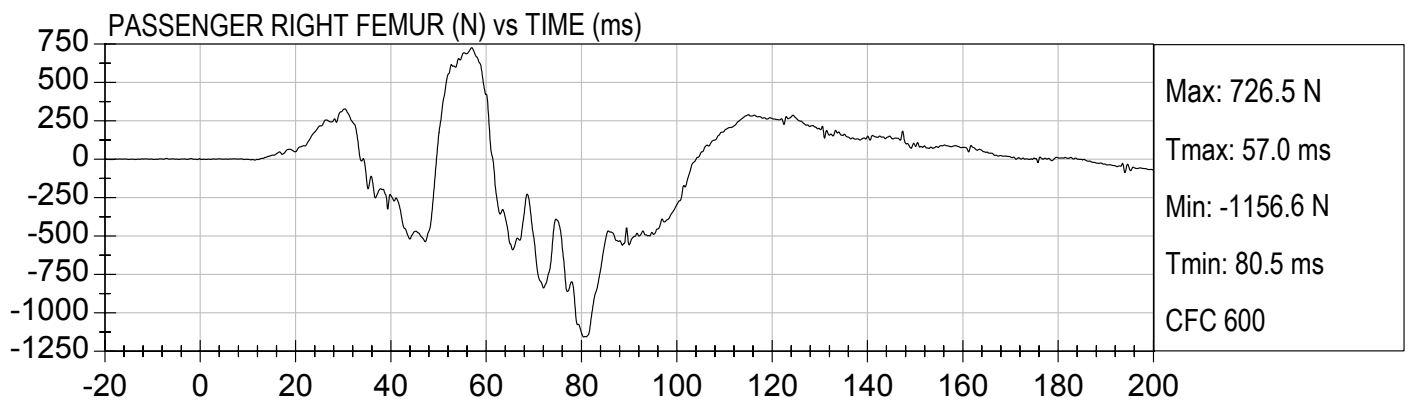
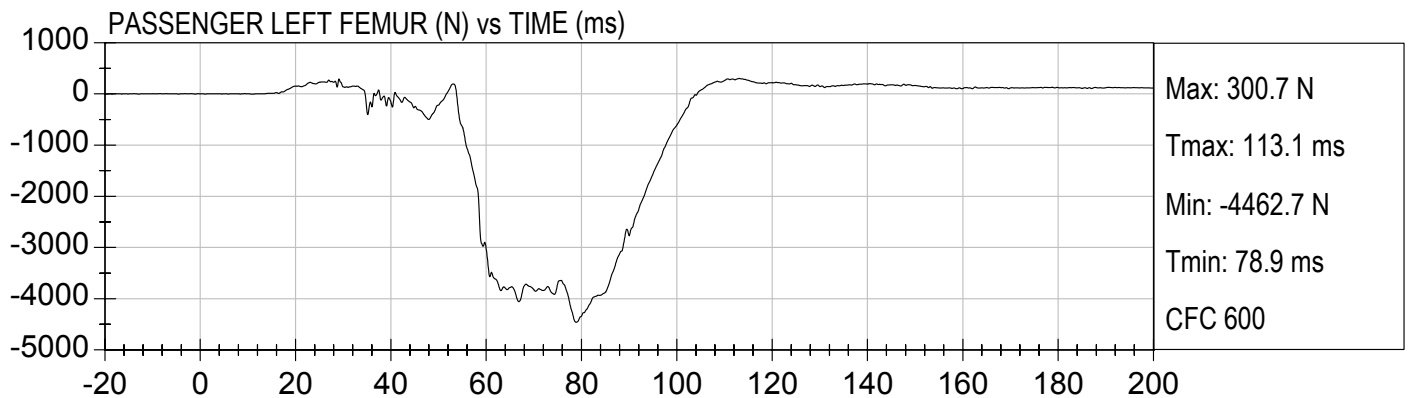






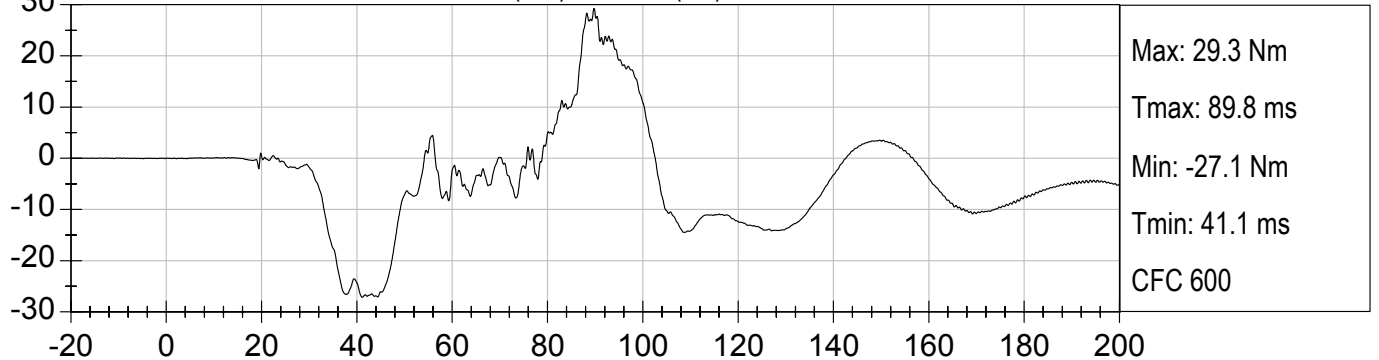
35MPH FRONTAL IMPACT
2005 CHEVROLET EQUINOX (M50100)

Test Date: 4/6/2004
Speed: 35.0 mph (56.3 km/h)

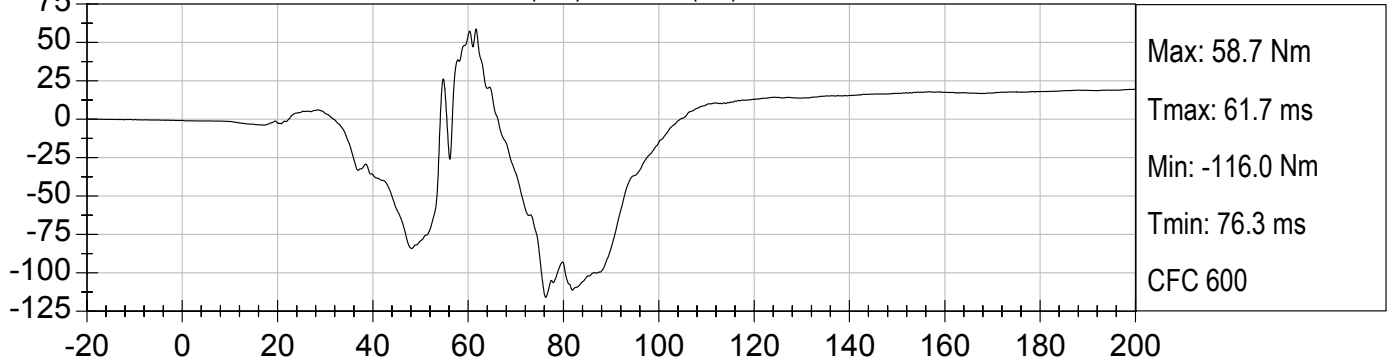




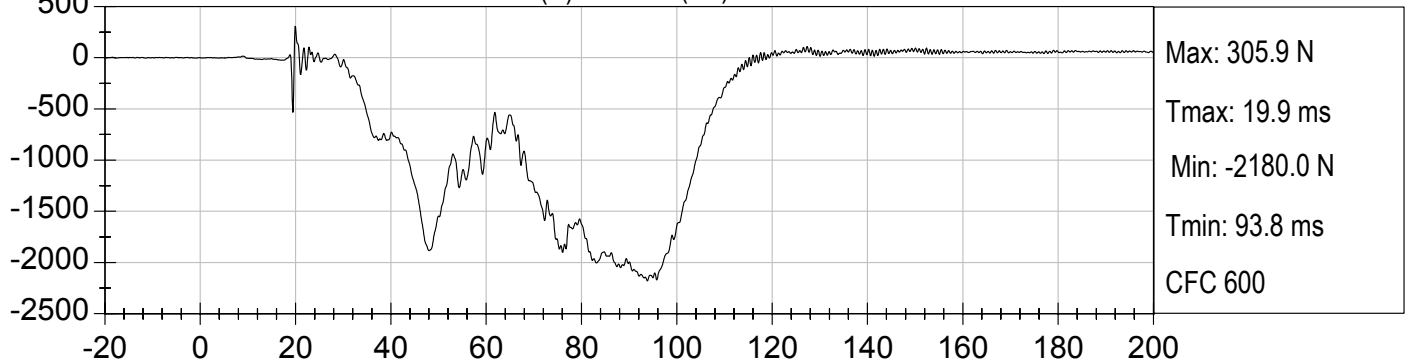
PASSENGER LEFT UPPER TIBIA MX (Nm) vs TIME (ms)



PASSENGER LEFT UPPER TIBIA MY (Nm) vs TIME (ms)

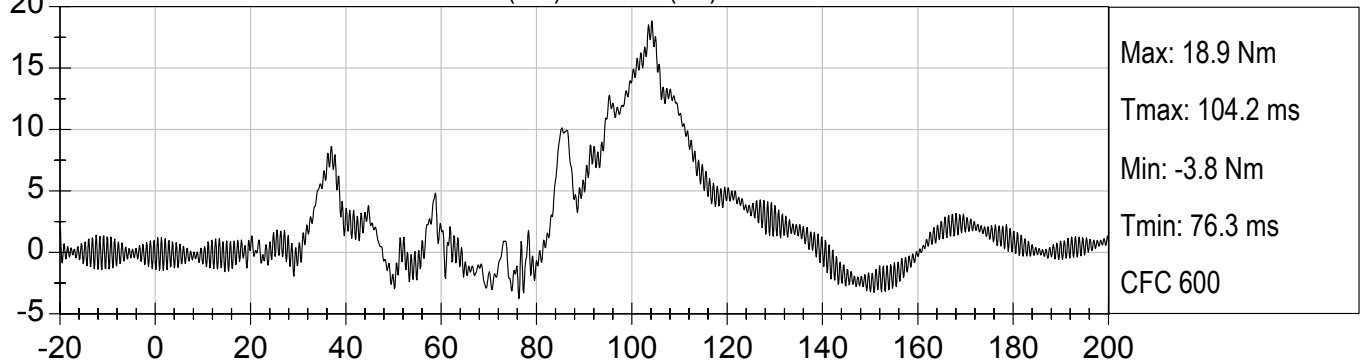


PASSENGER LEFT UPPER TIBIA FZ (N) vs TIME (ms)

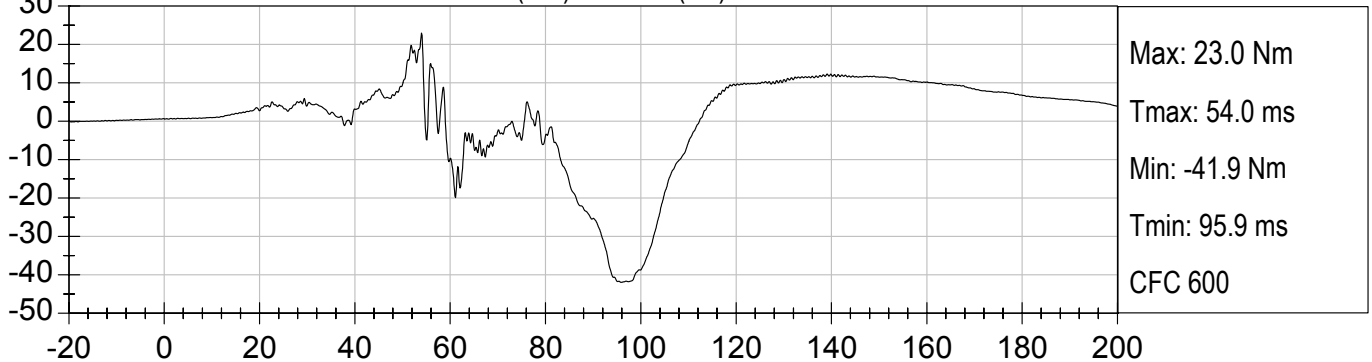




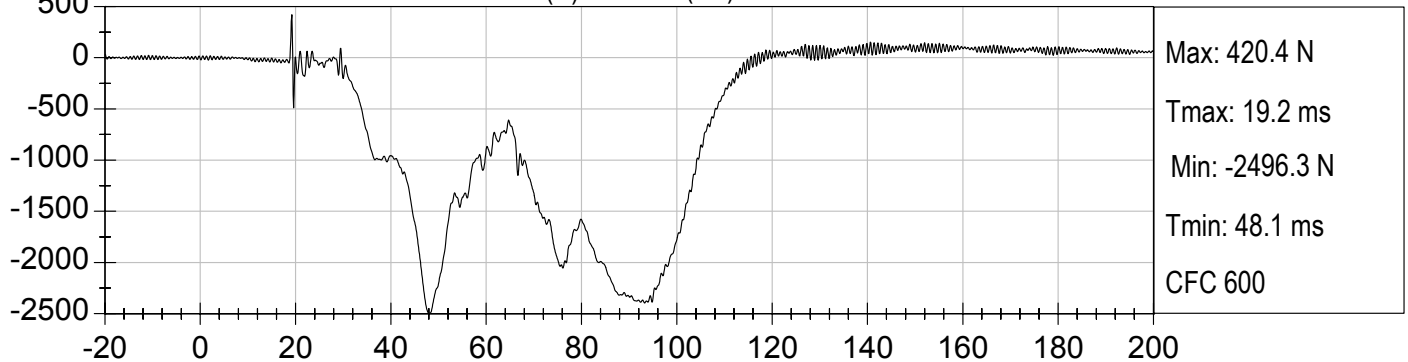
PASSENGER LEFT LOWER TIBIA MX (Nm) vs TIME (ms)



PASSENGER LEFT LOWER TIBIA MY (Nm) vs TIME (ms)

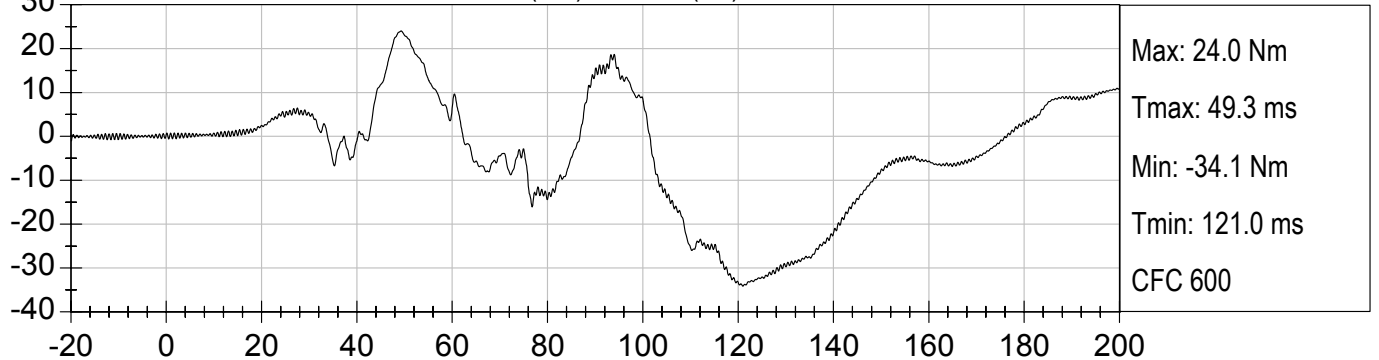


PASSENGER LEFT LOWER TIBIA FZ (N) vs TIME (ms)

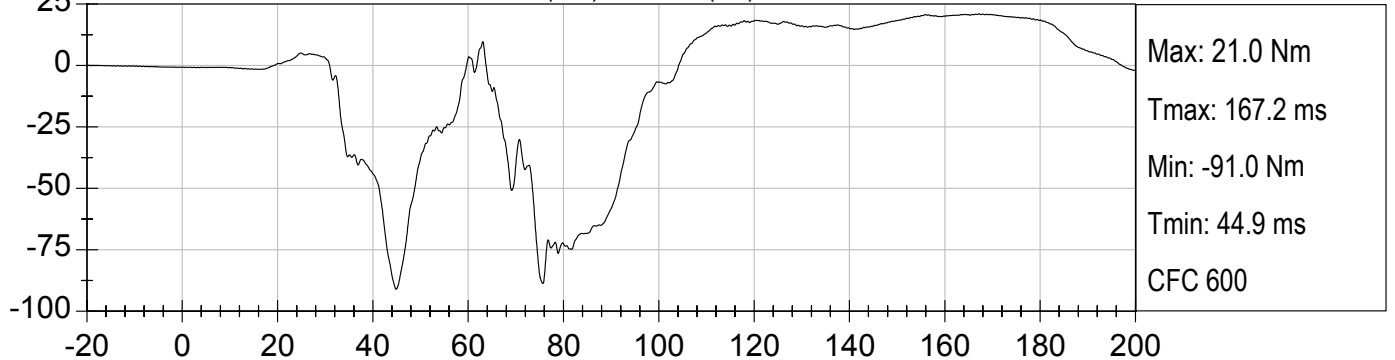




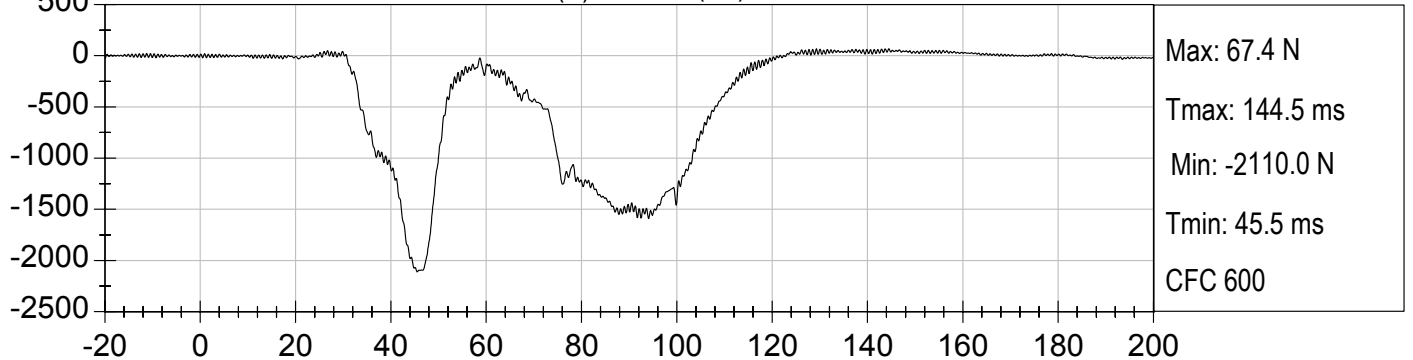
PASSENGER RIGHT UPPER TIBIA MX (Nm) vs TIME (ms)



PASSENGER RIGHT UPPER TIBIA MY (Nm) vs TIME (ms)

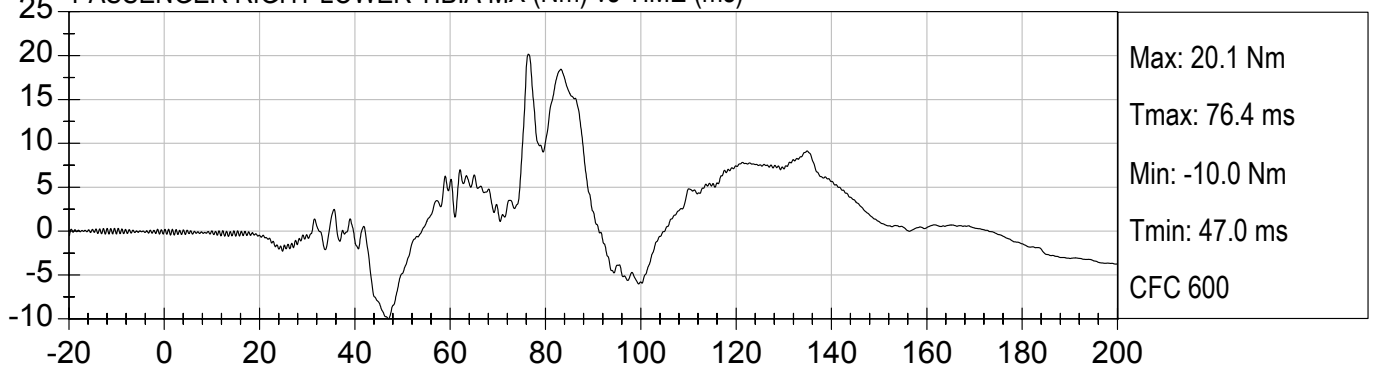


PASSENGER RIGHT UPPER TIBIA FZ (N) vs TIME (ms)

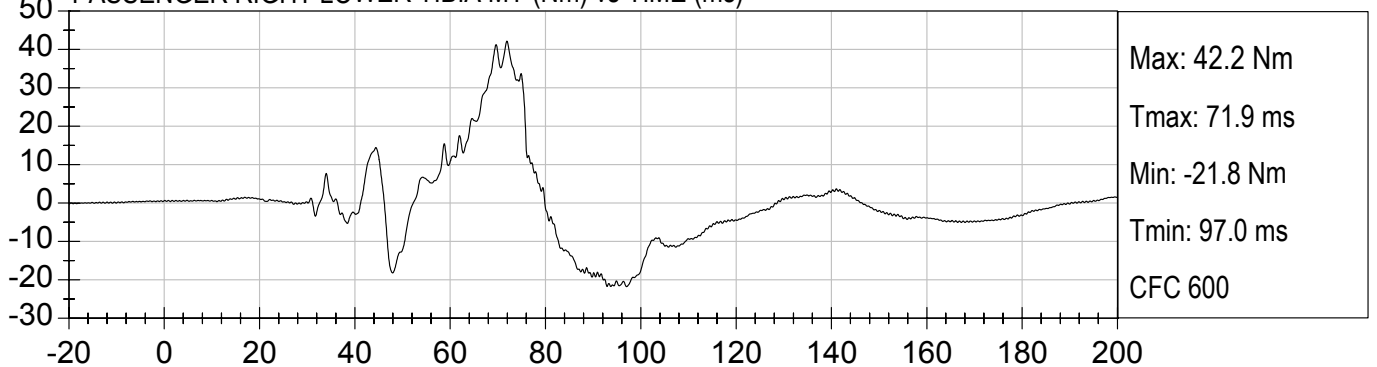




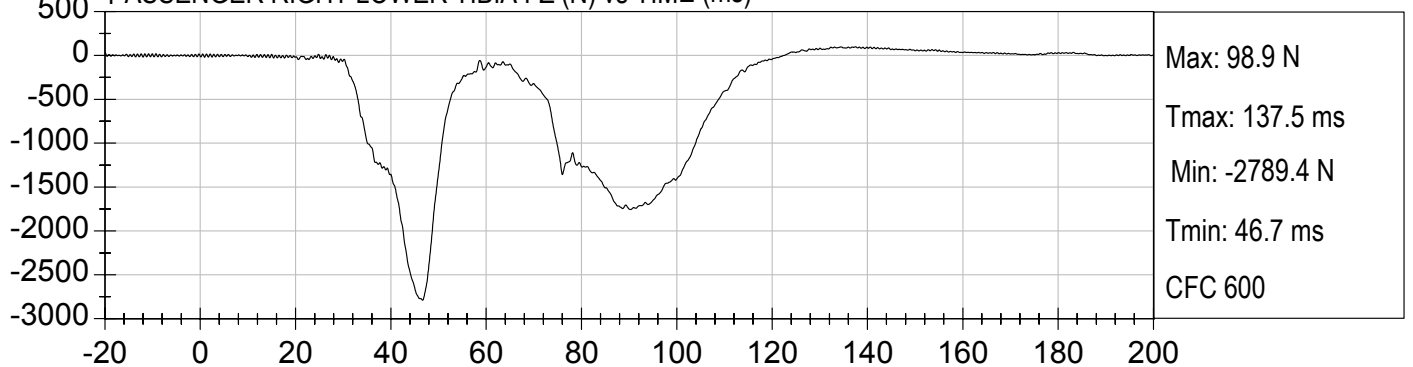
PASSENGER RIGHT LOWER TIBIA MX (Nm) vs TIME (ms)

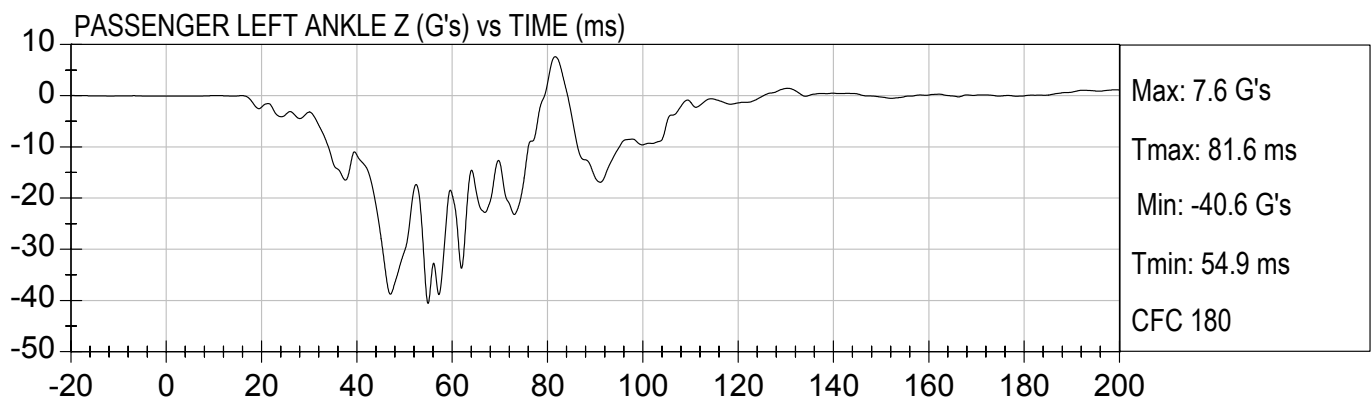
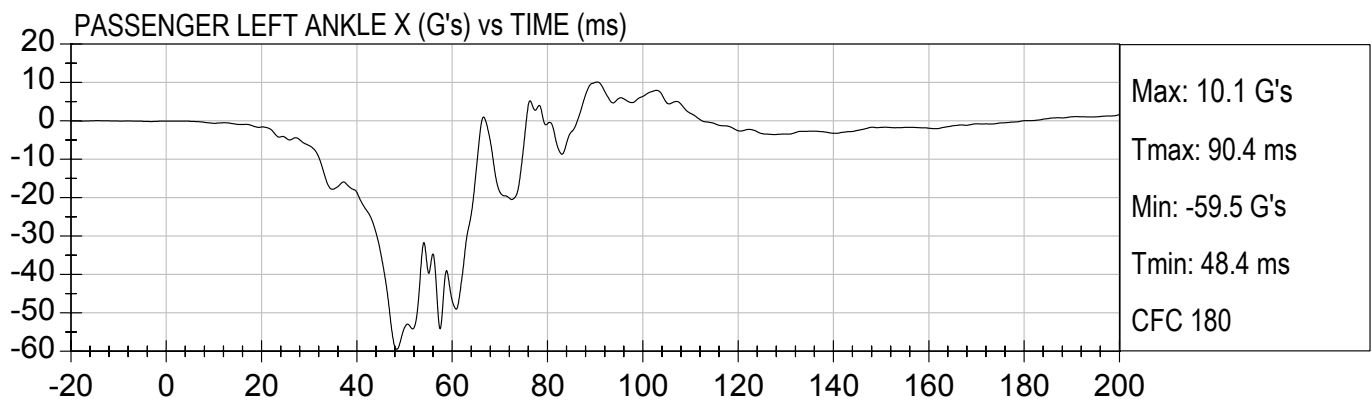
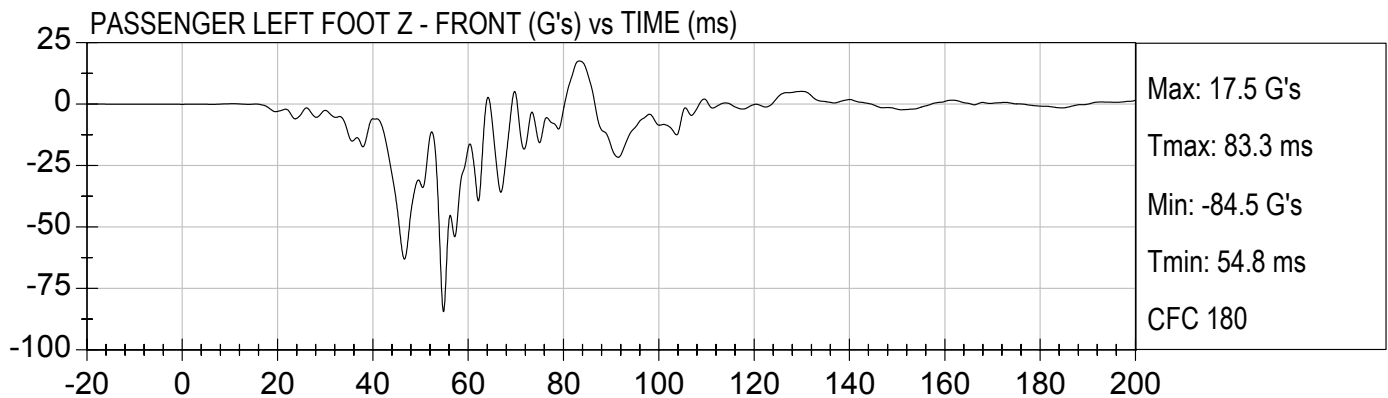


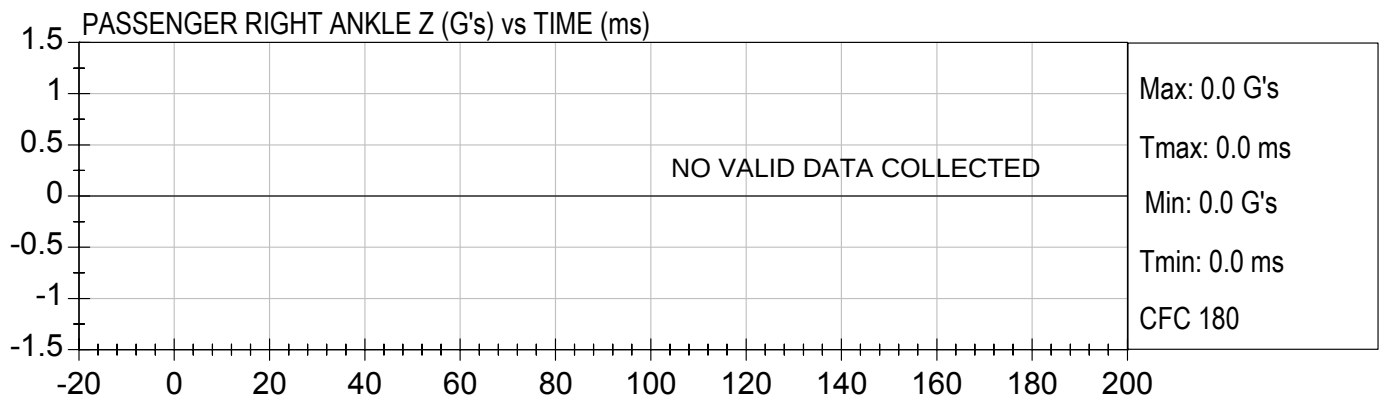
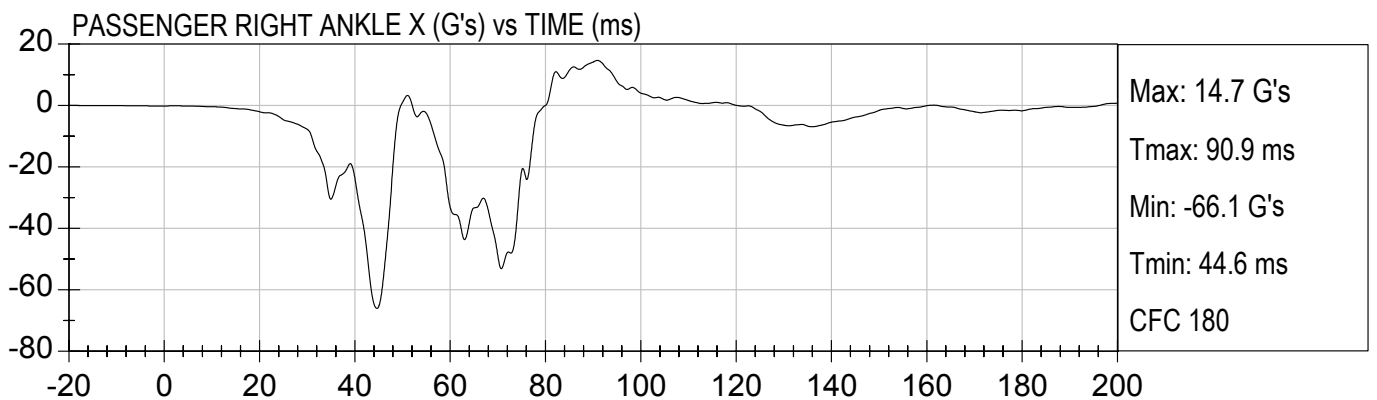
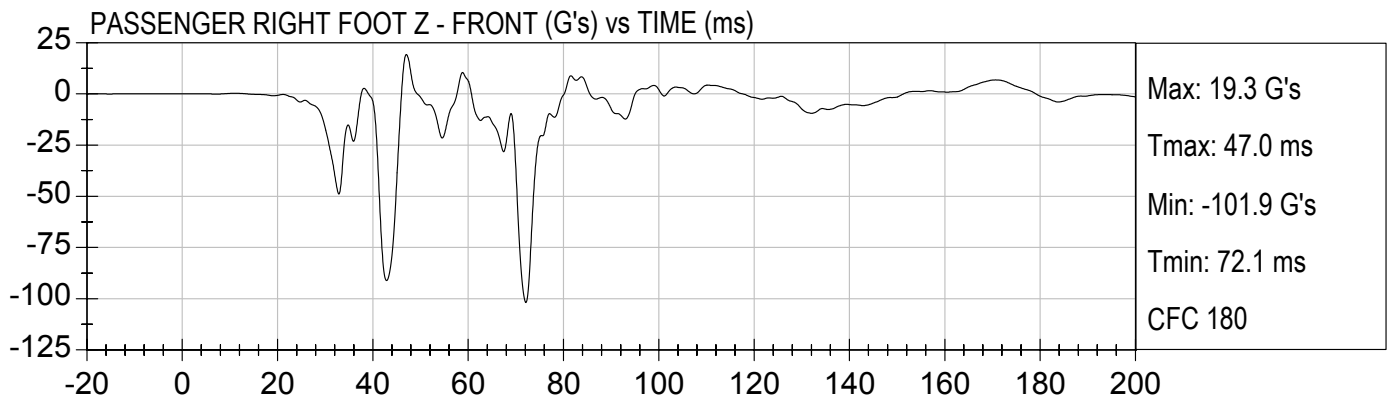
PASSENGER RIGHT LOWER TIBIA MY (Nm) vs TIME (ms)

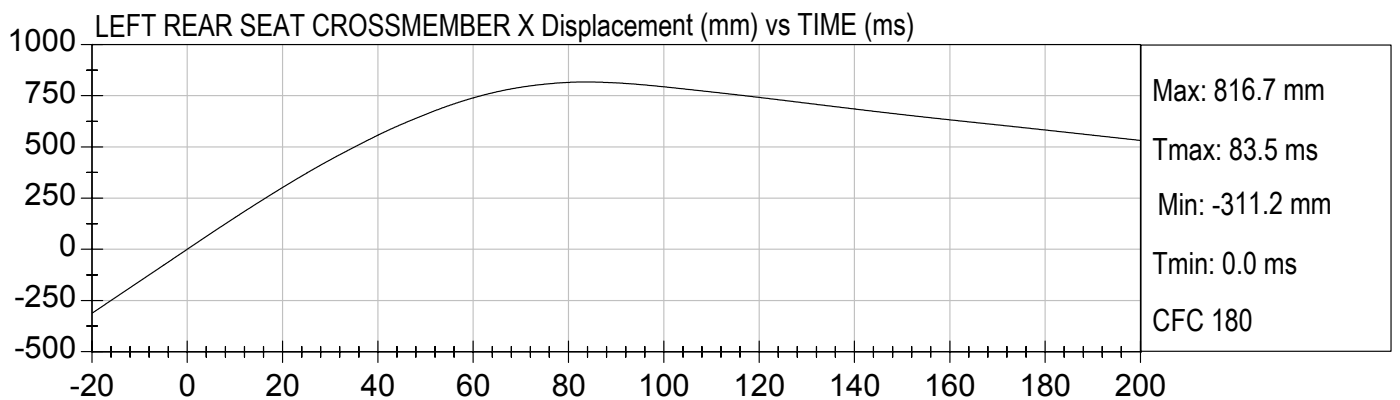
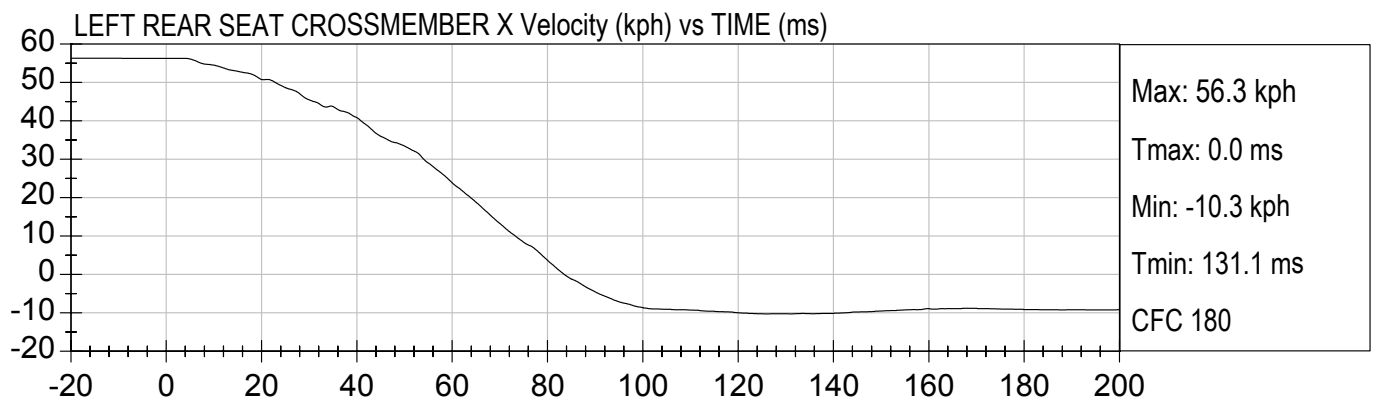
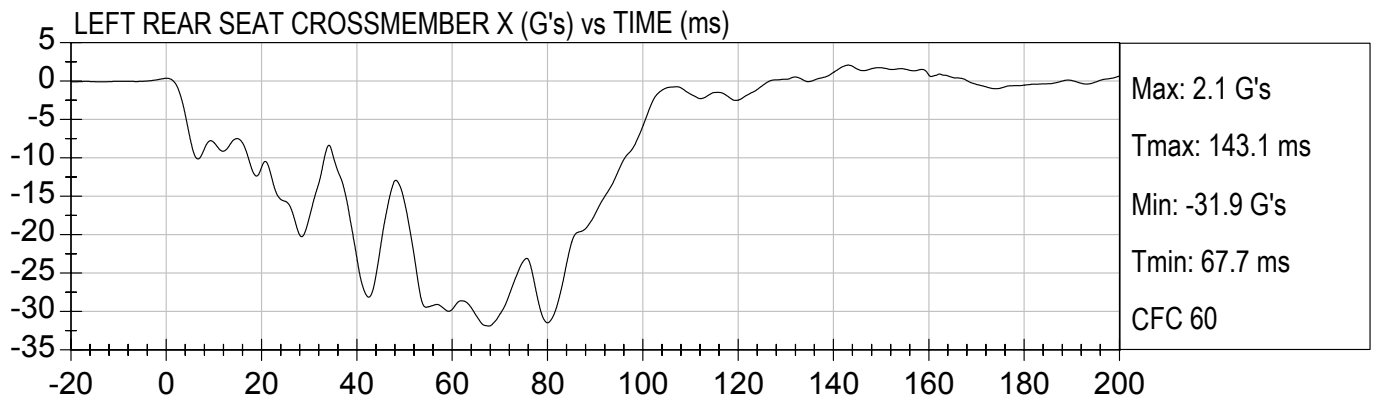


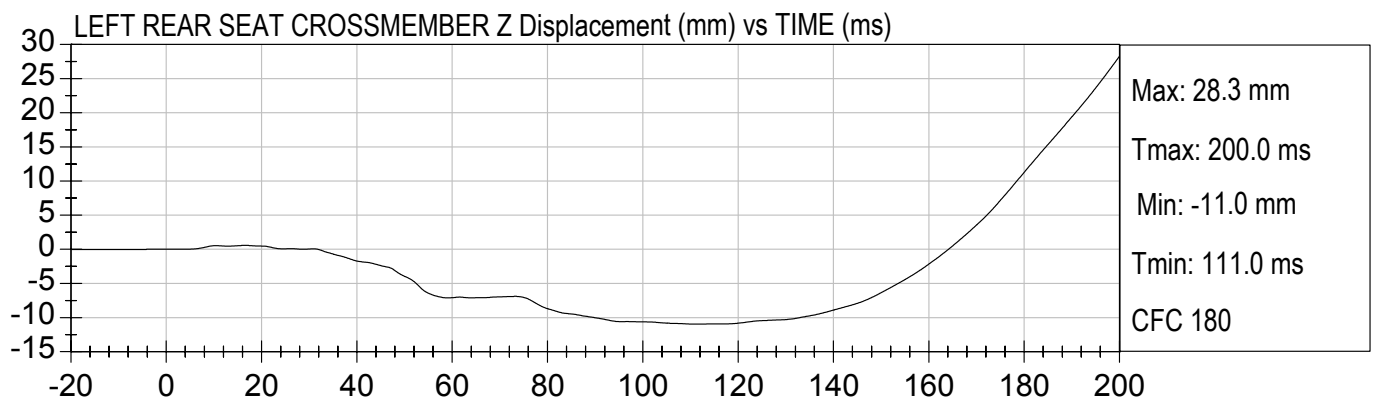
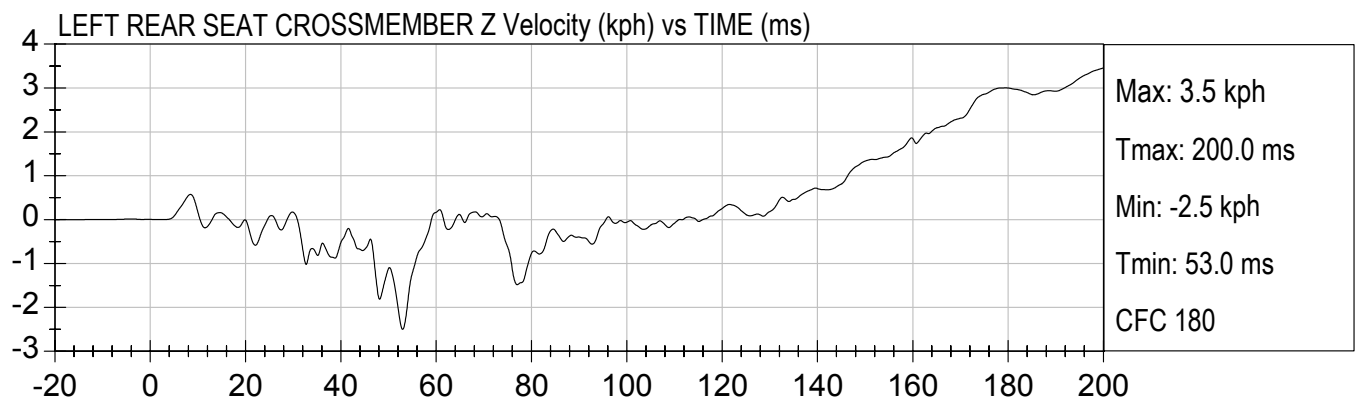
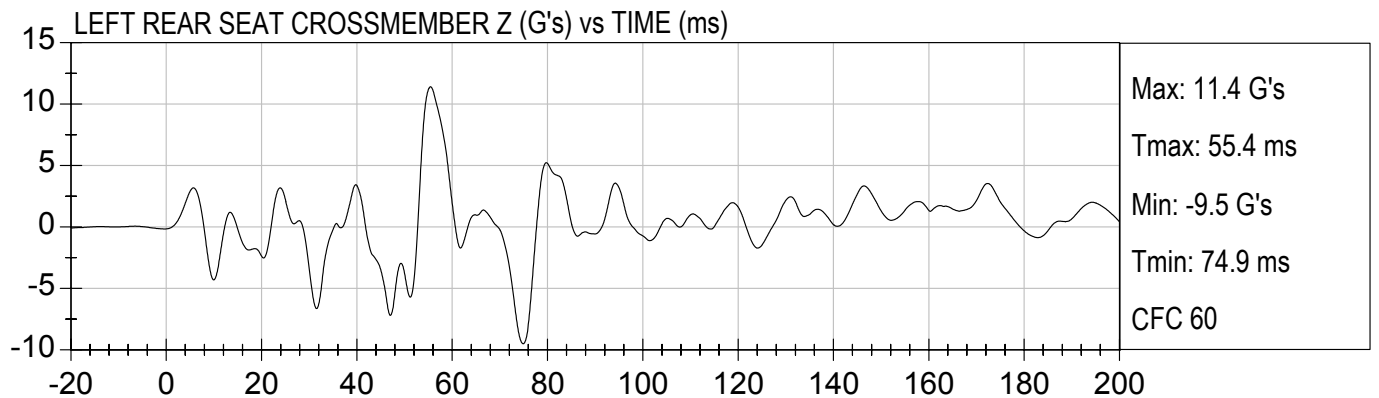
PASSENGER RIGHT LOWER TIBIA FZ (N) vs TIME (ms)

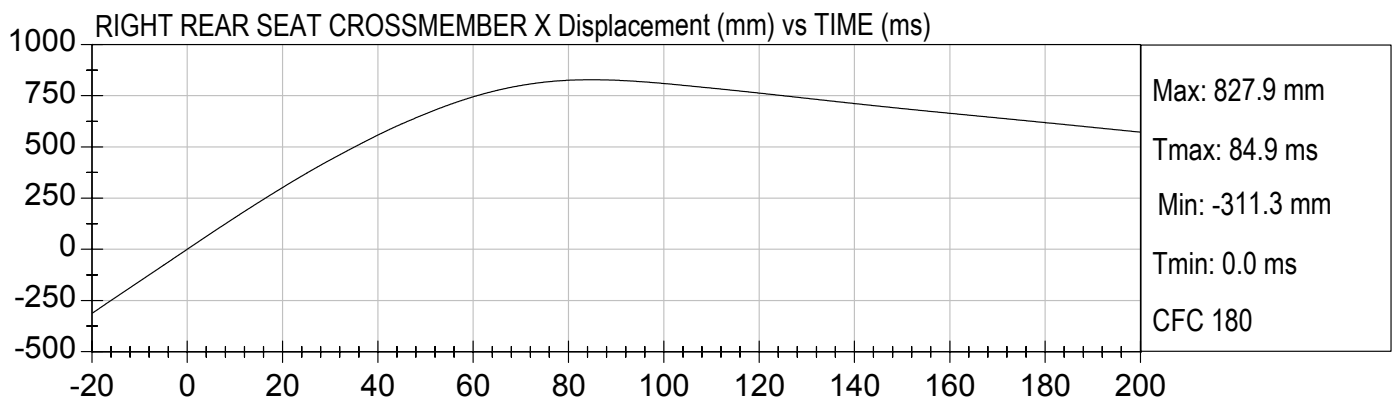
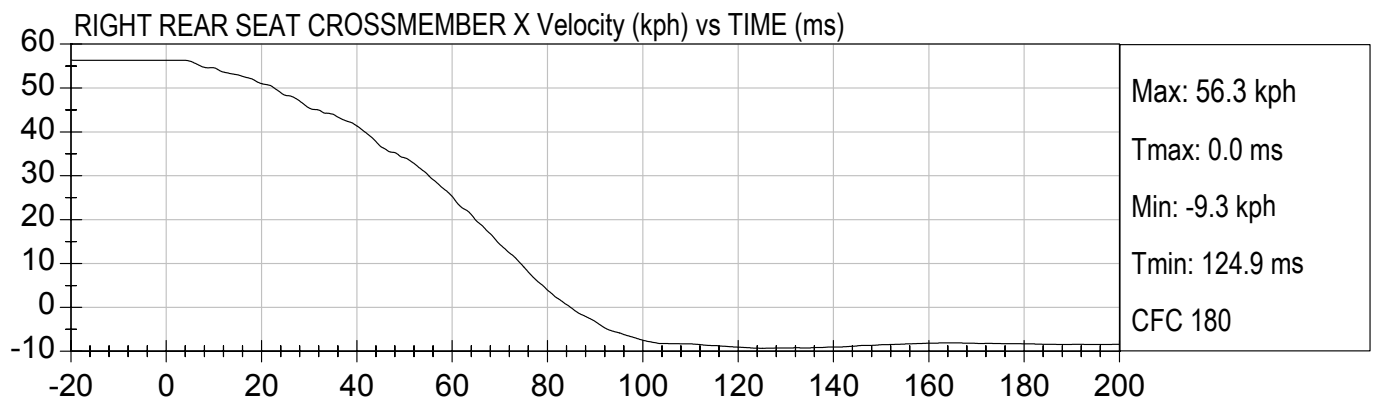
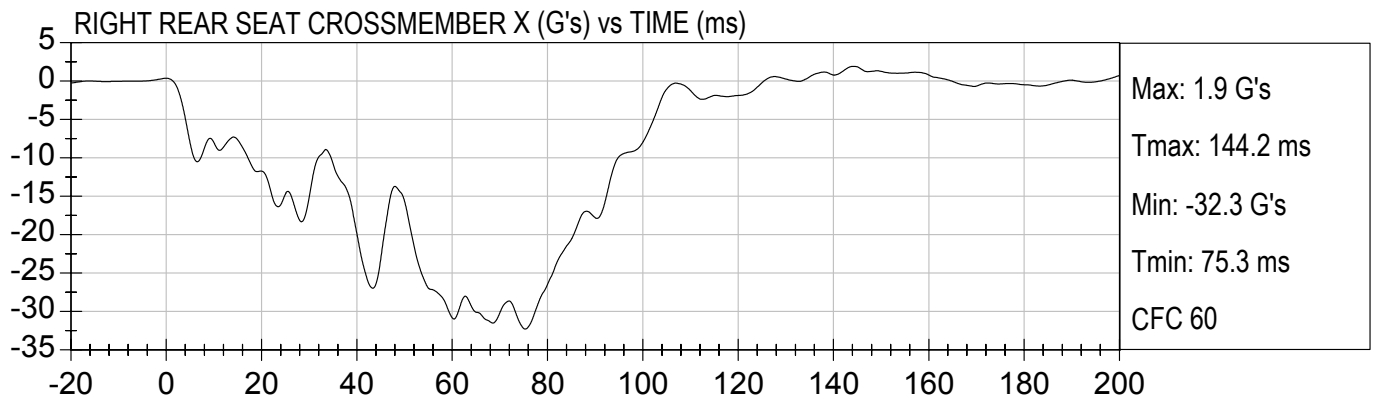


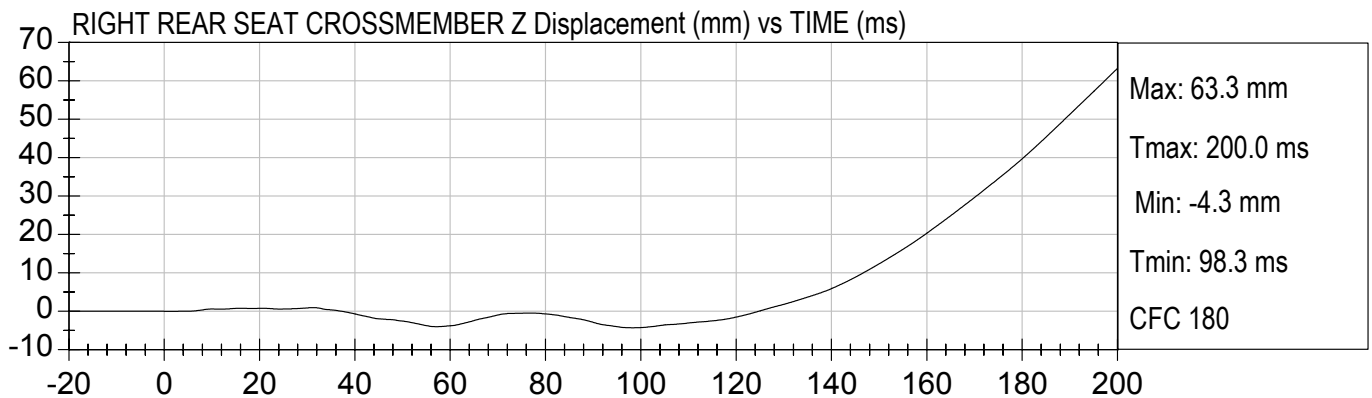
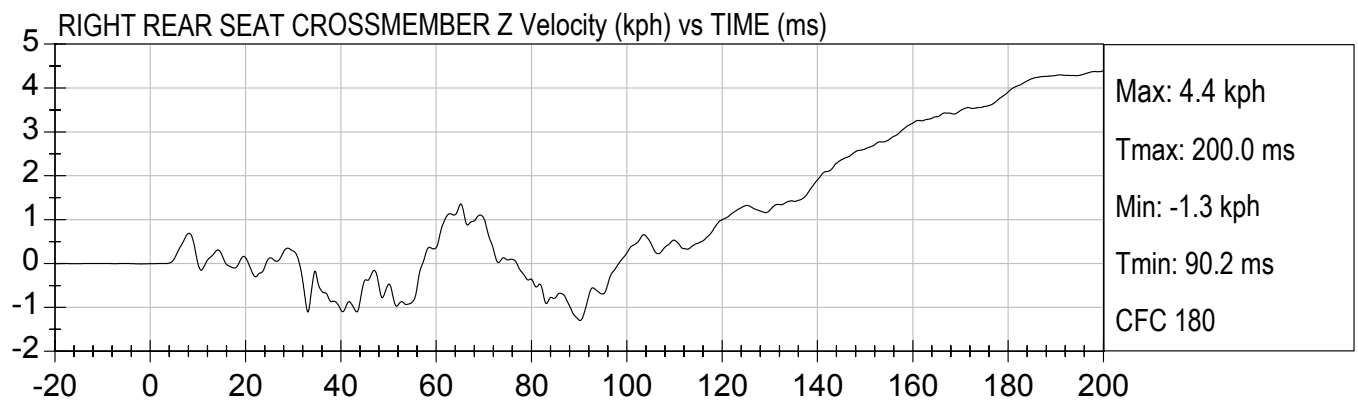
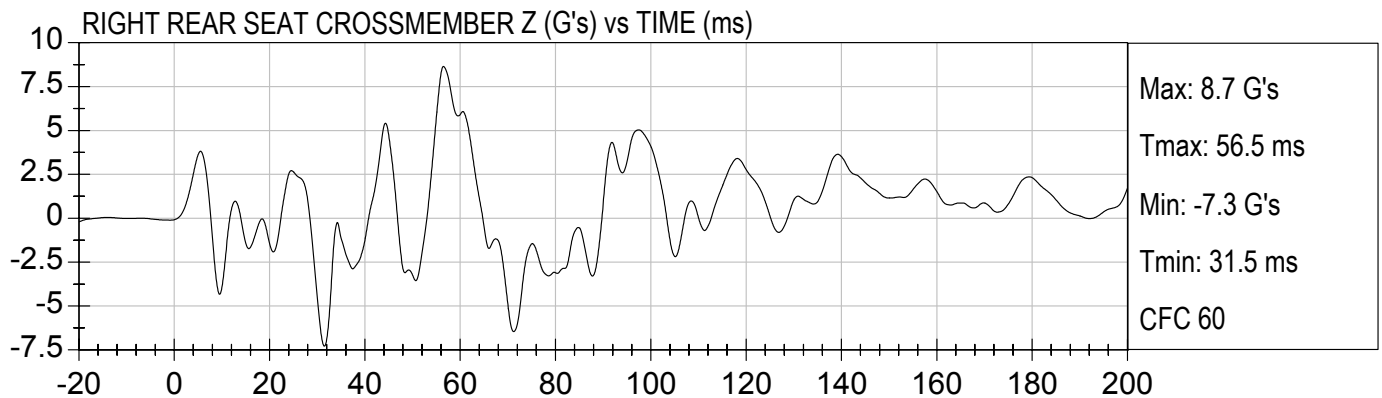


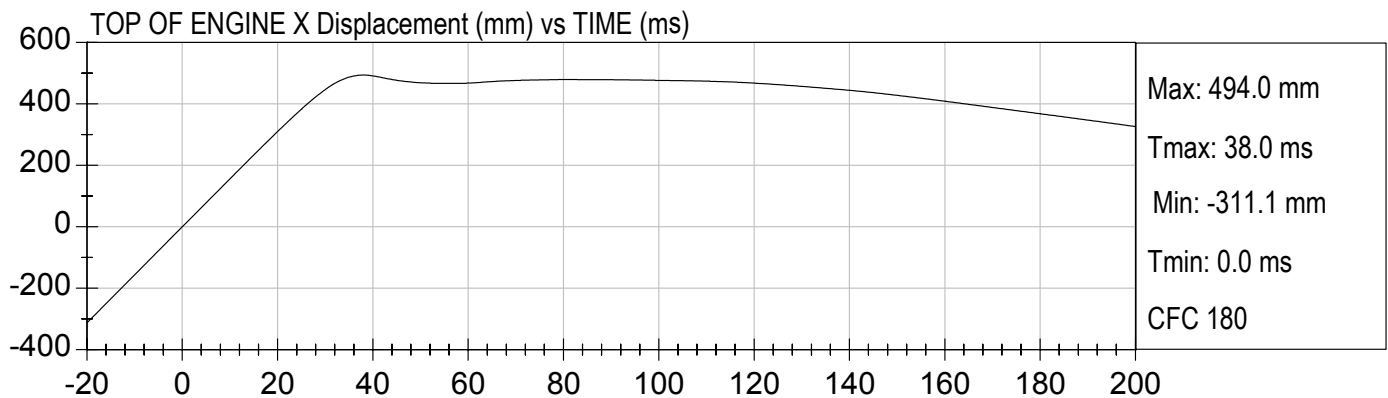
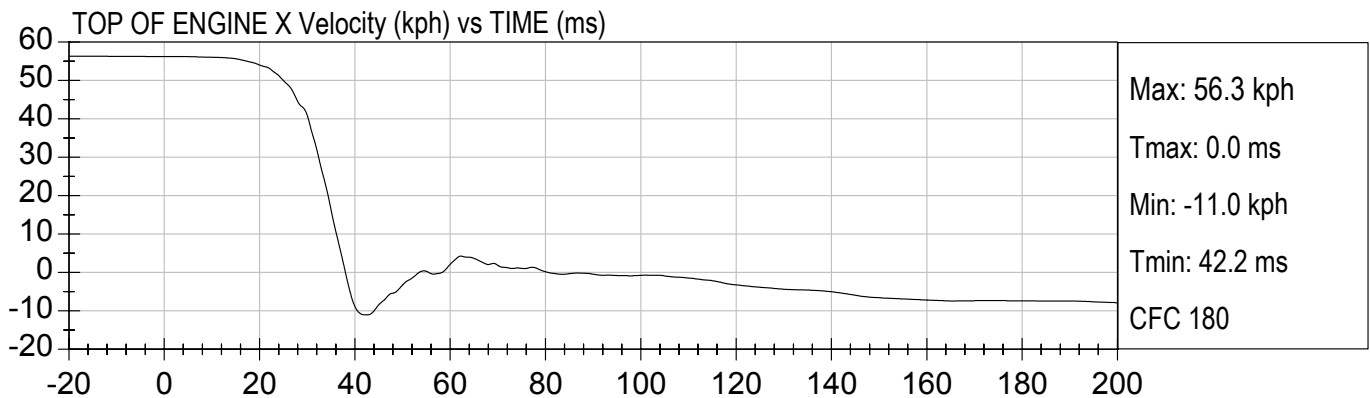
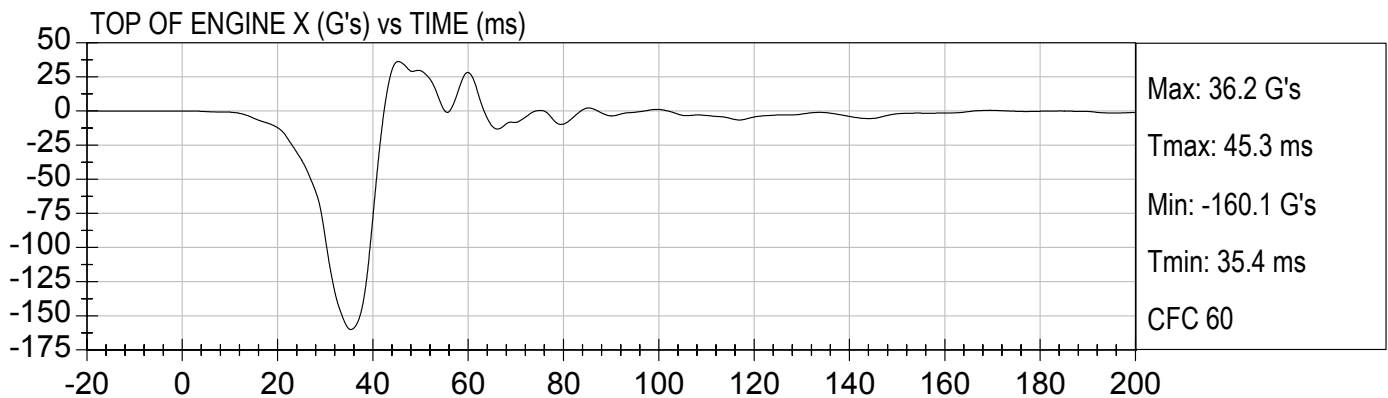


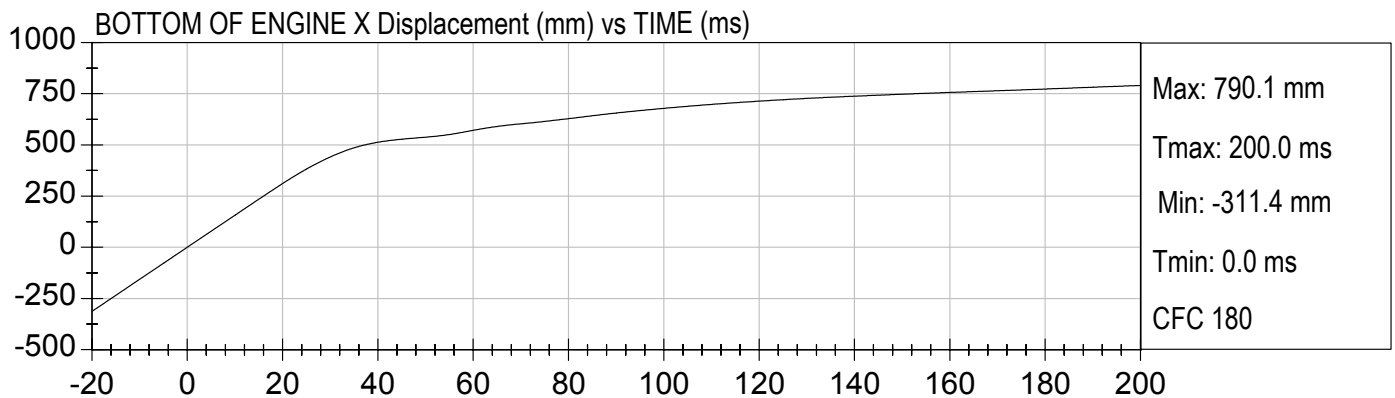
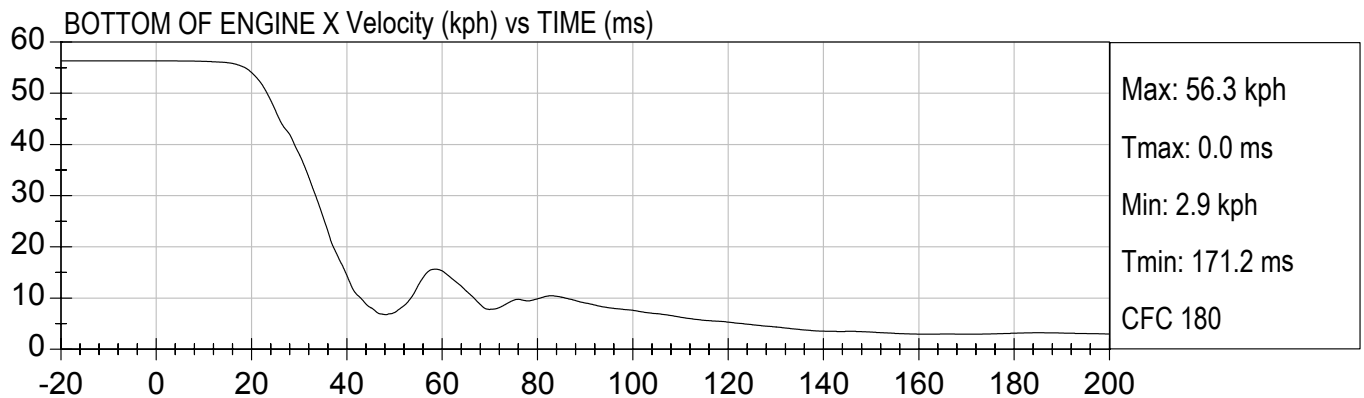
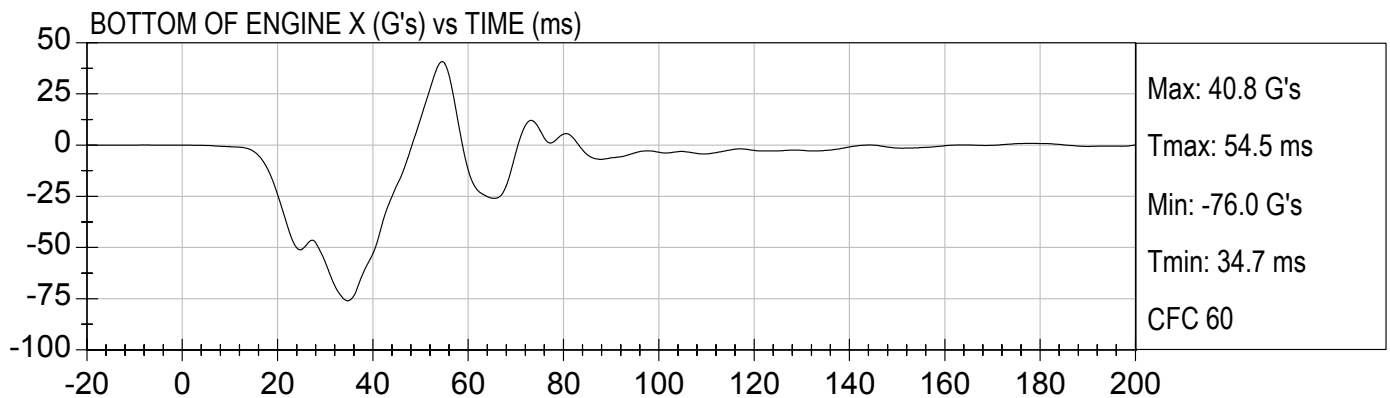


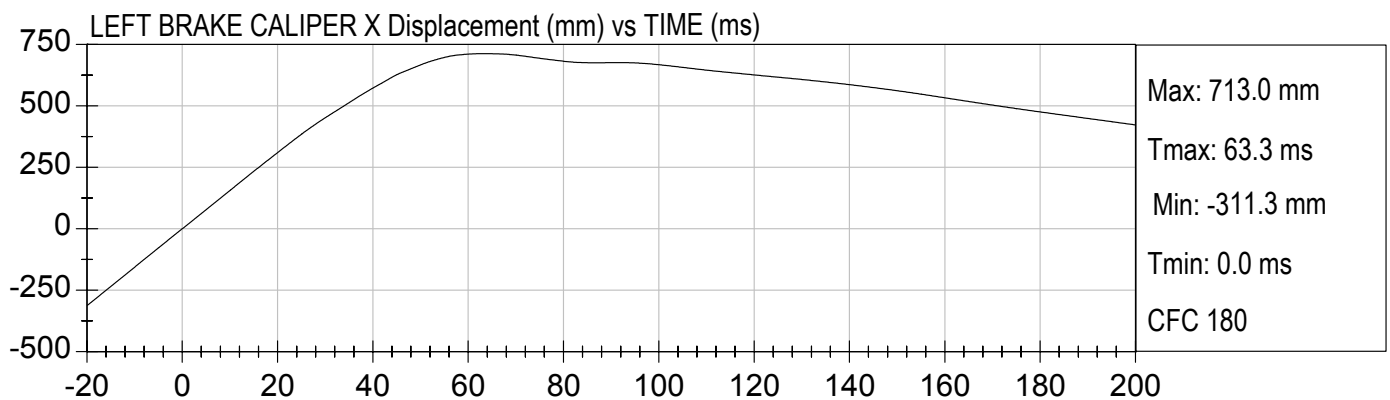
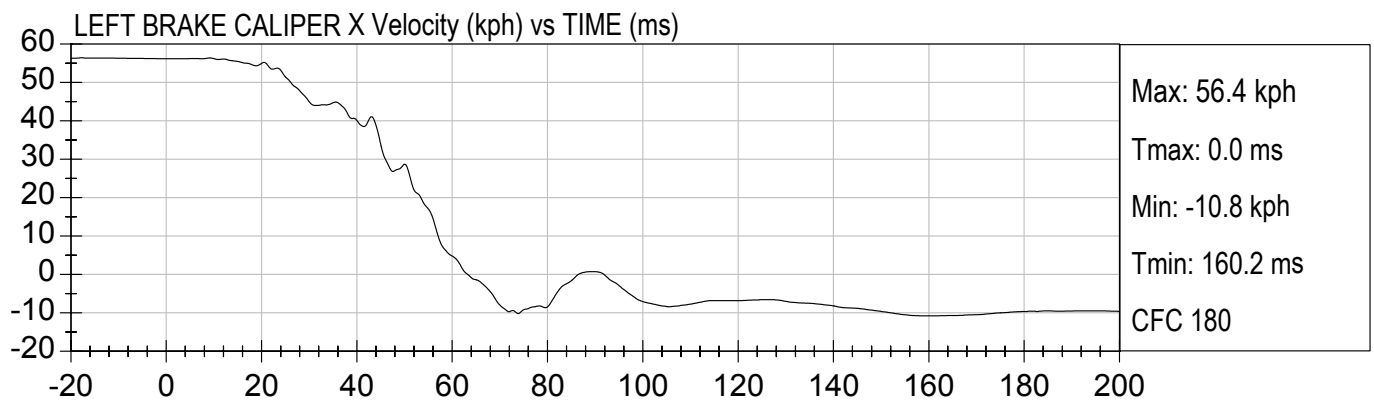
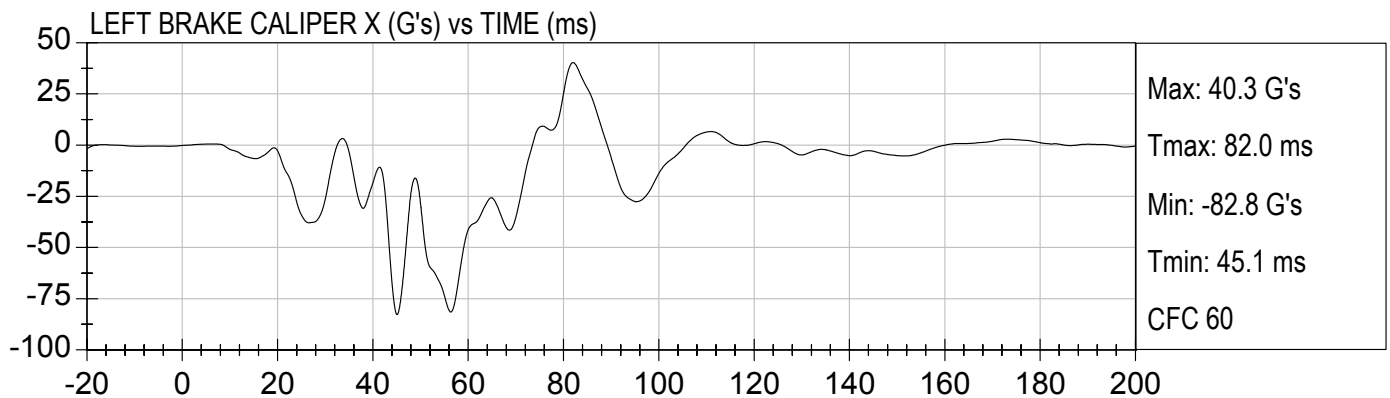


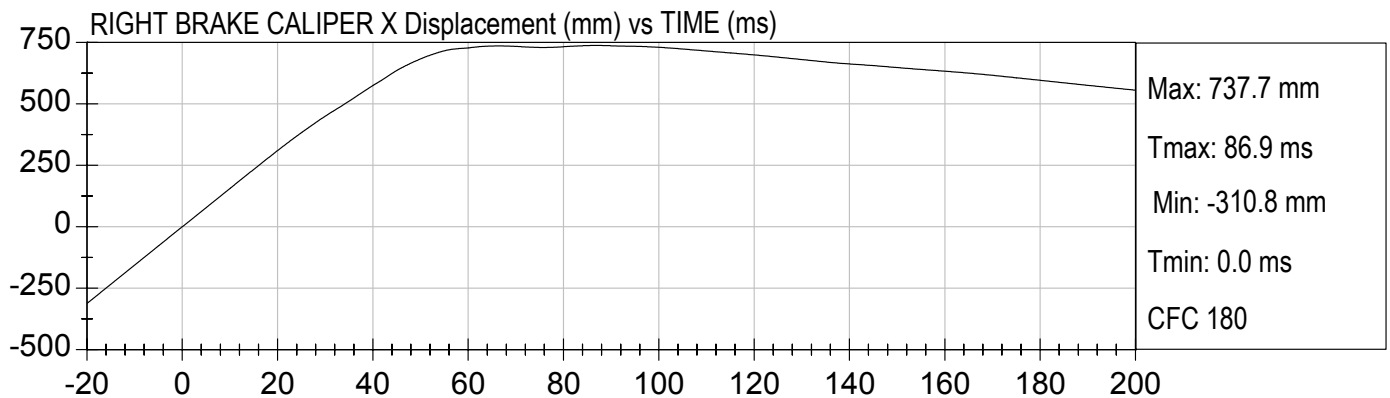
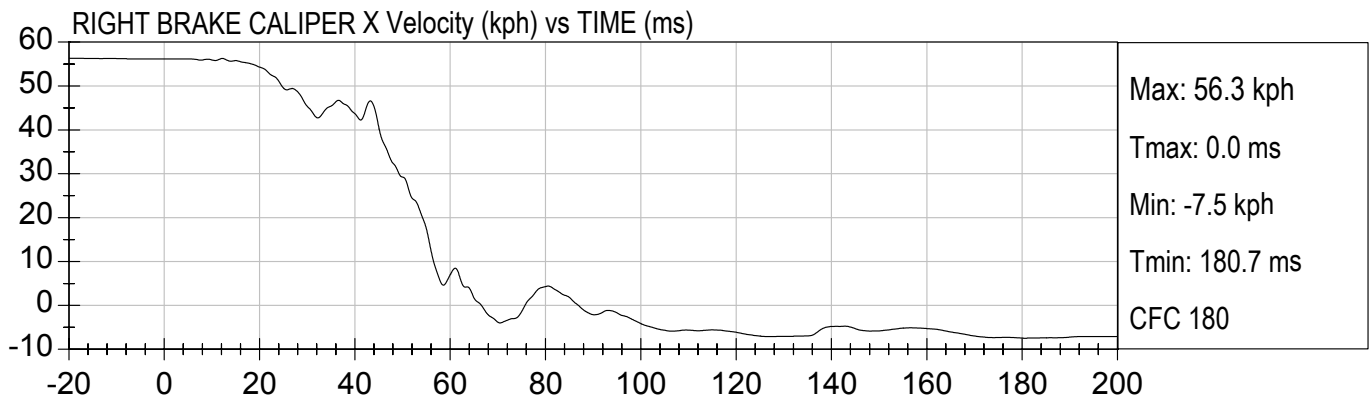
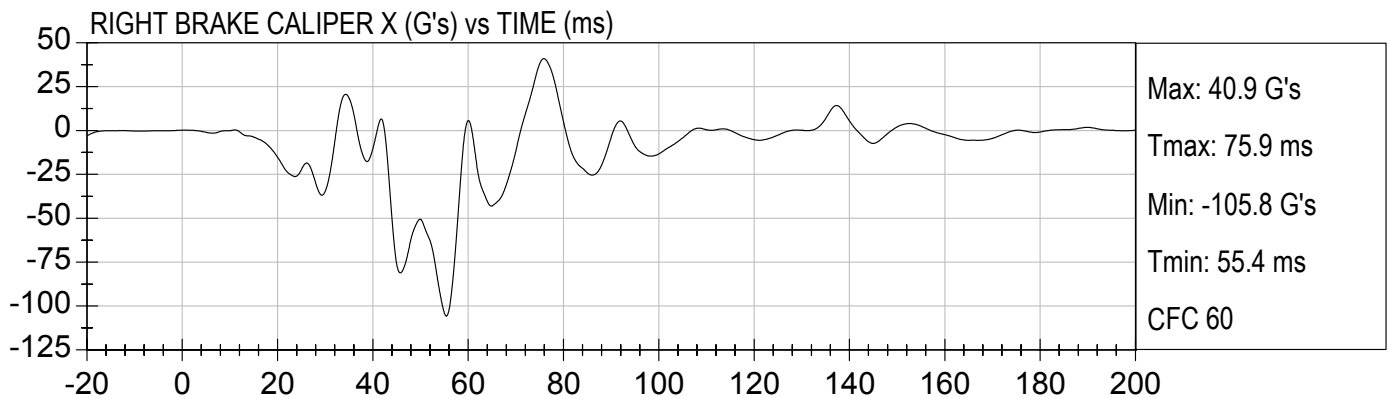


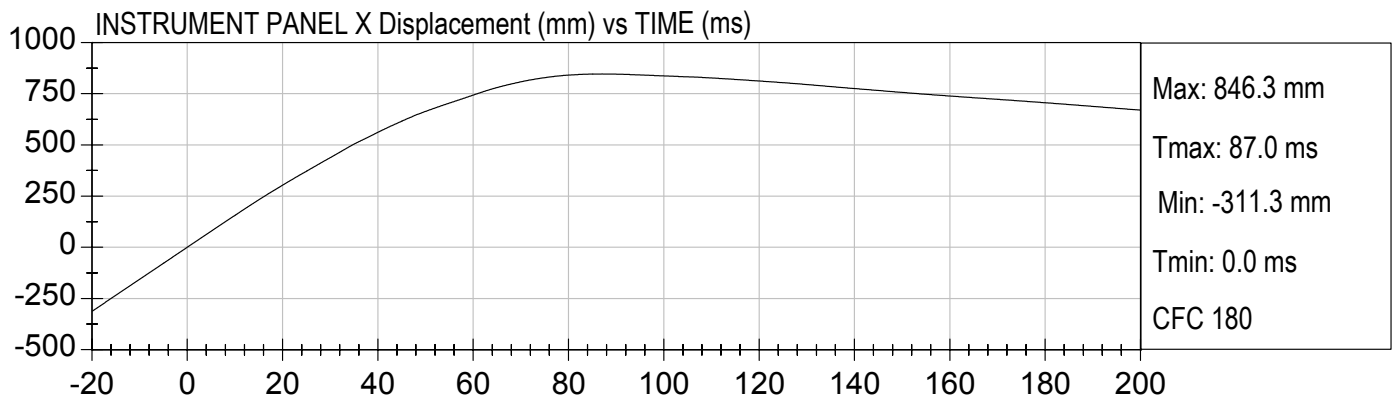
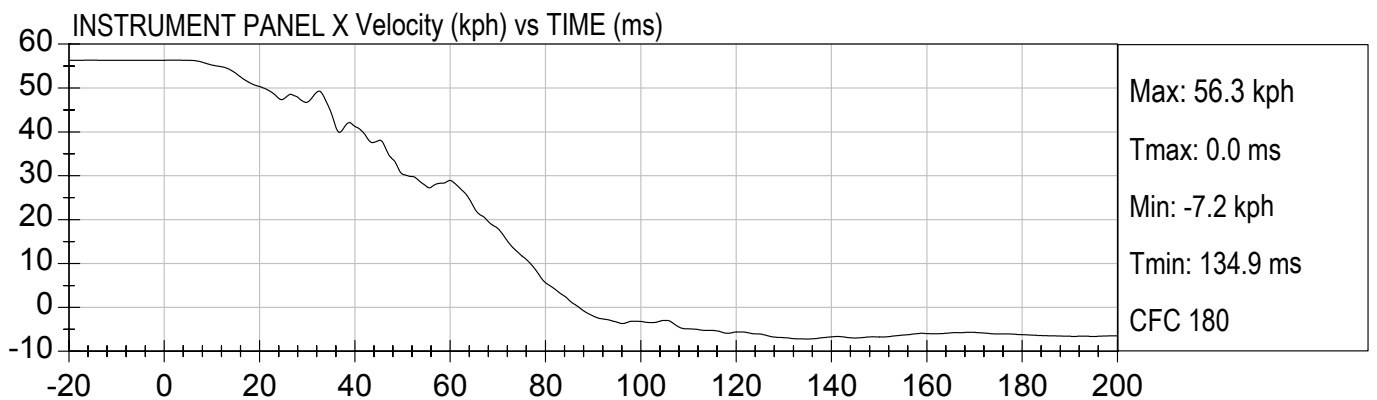
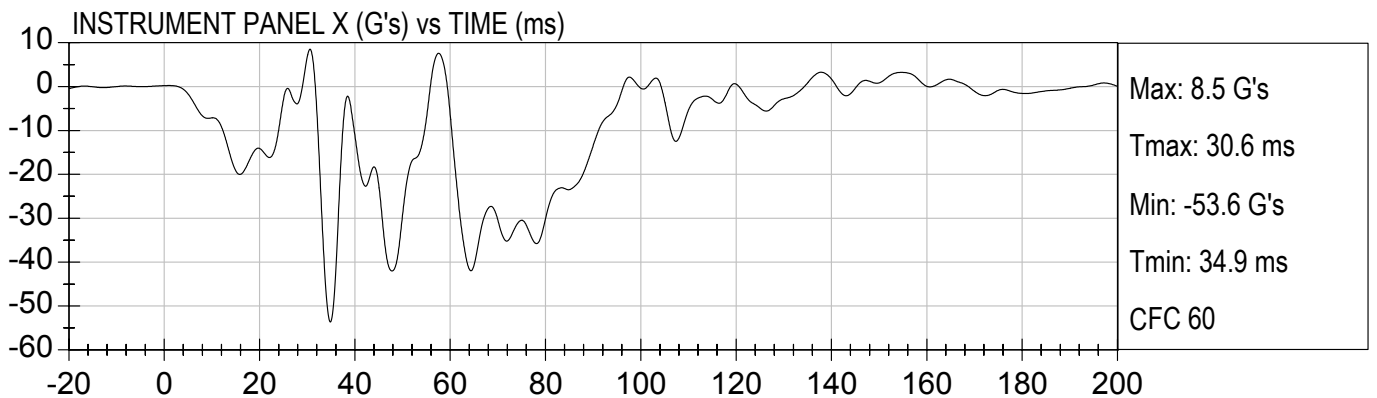


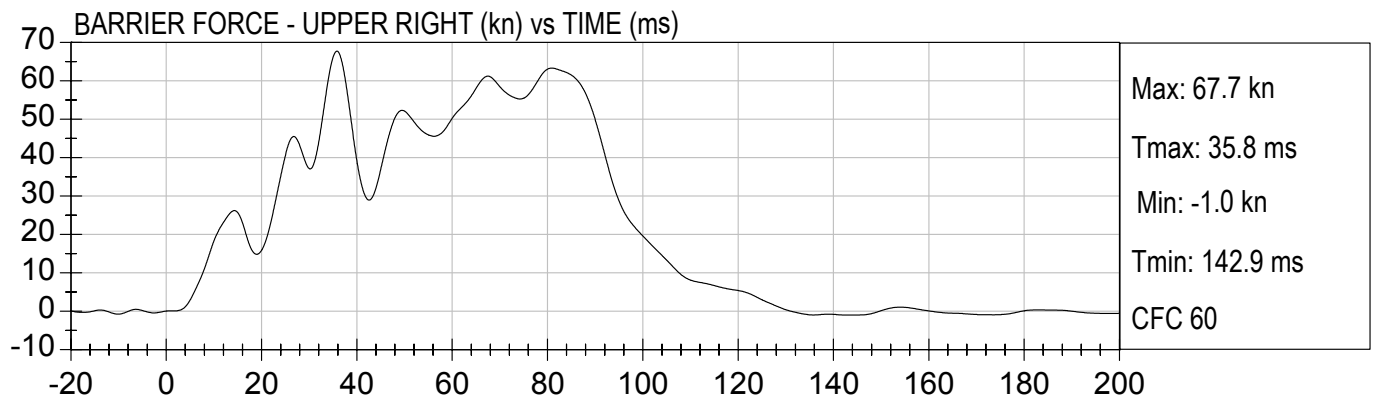
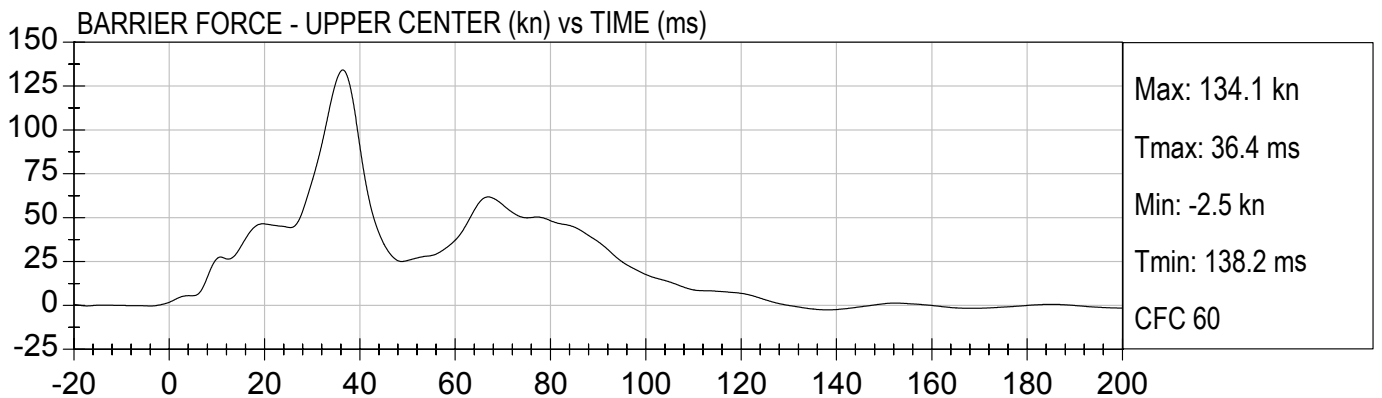
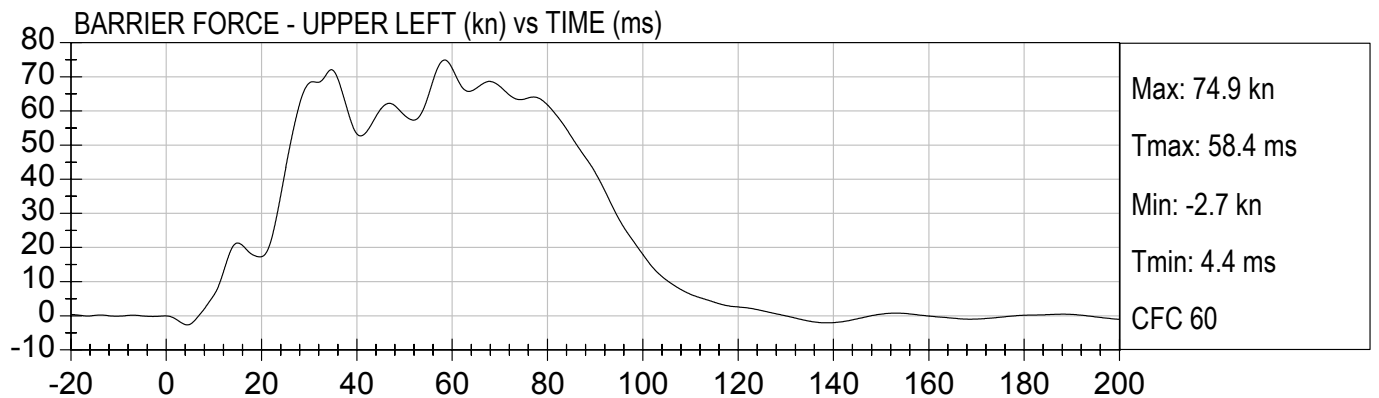






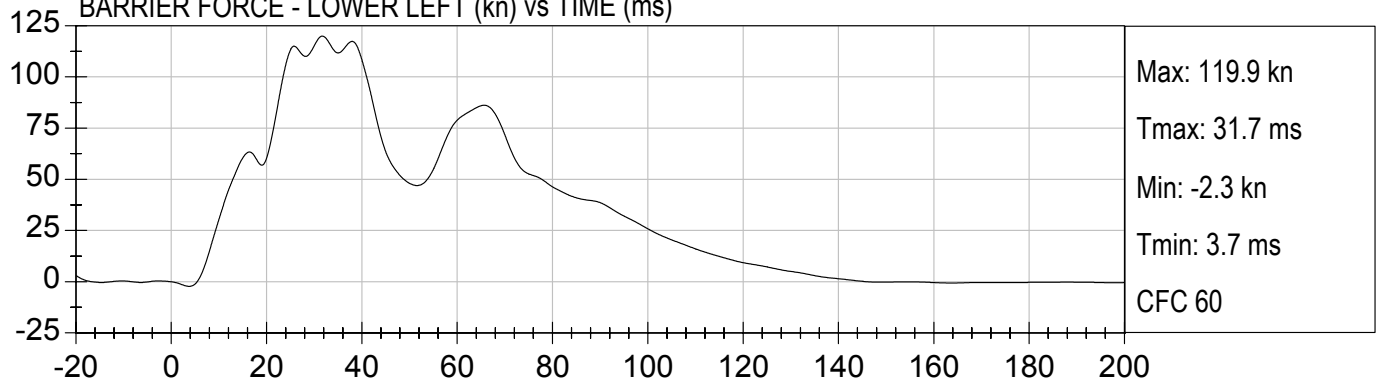




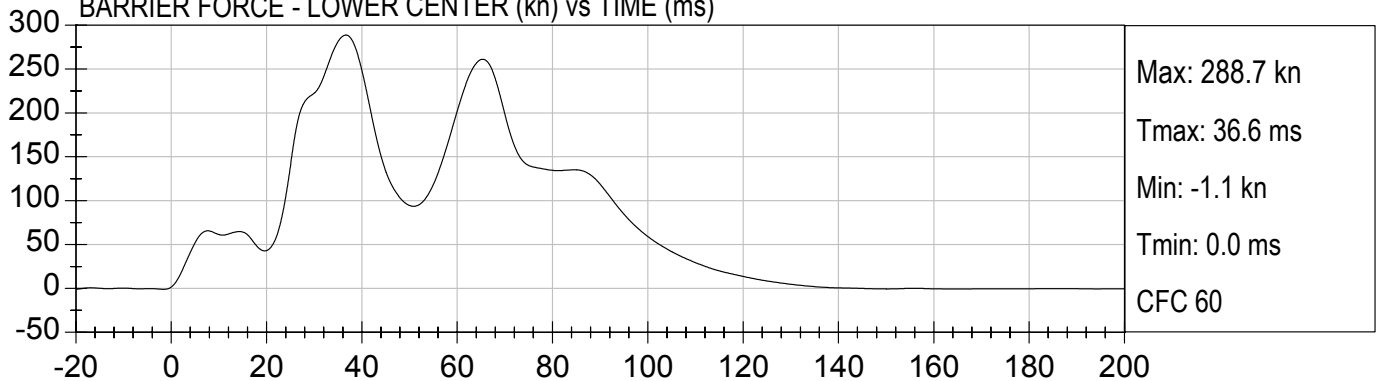




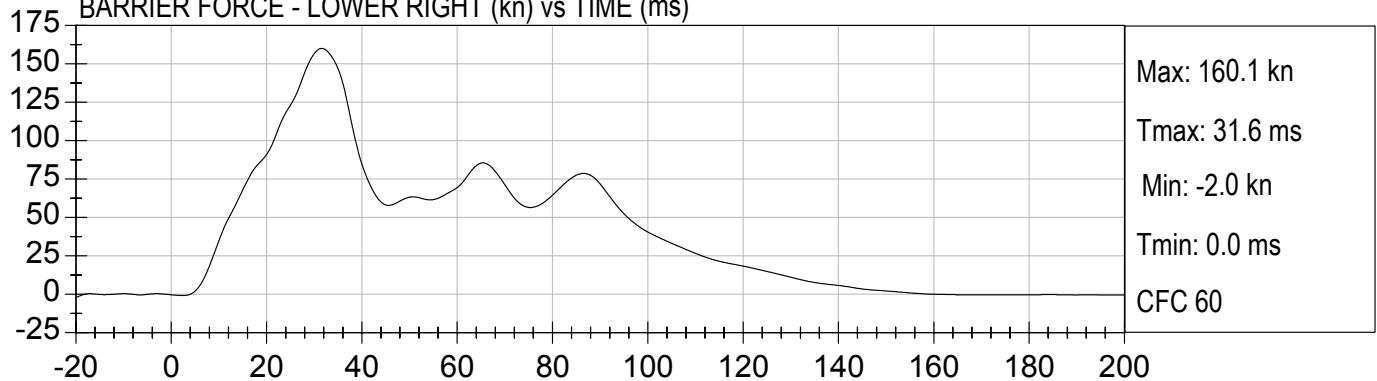
BARRIER FORCE - LOWER LEFT (kn) vs TIME (ms)



BARRIER FORCE - LOWER CENTER (kn) vs TIME (ms)



BARRIER FORCE - LOWER RIGHT (kn) vs TIME (ms)

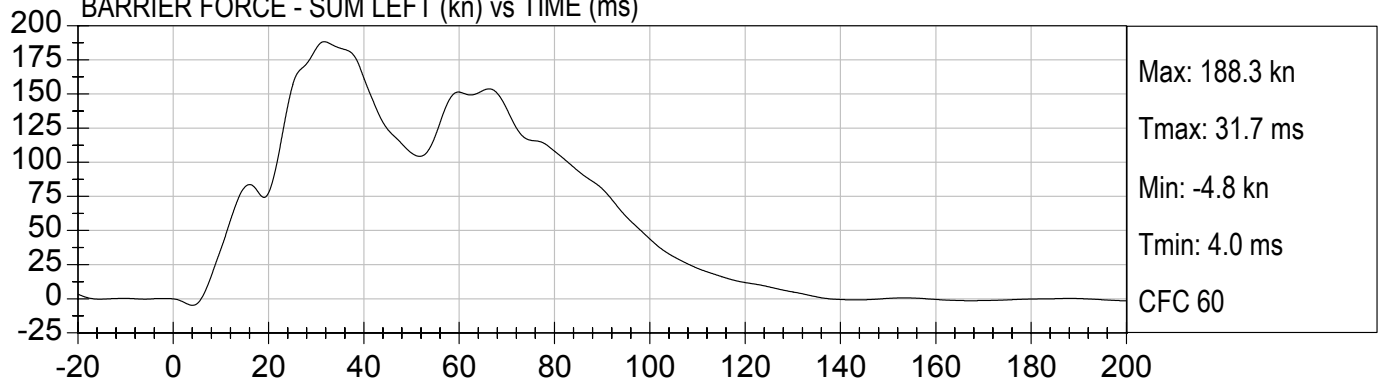




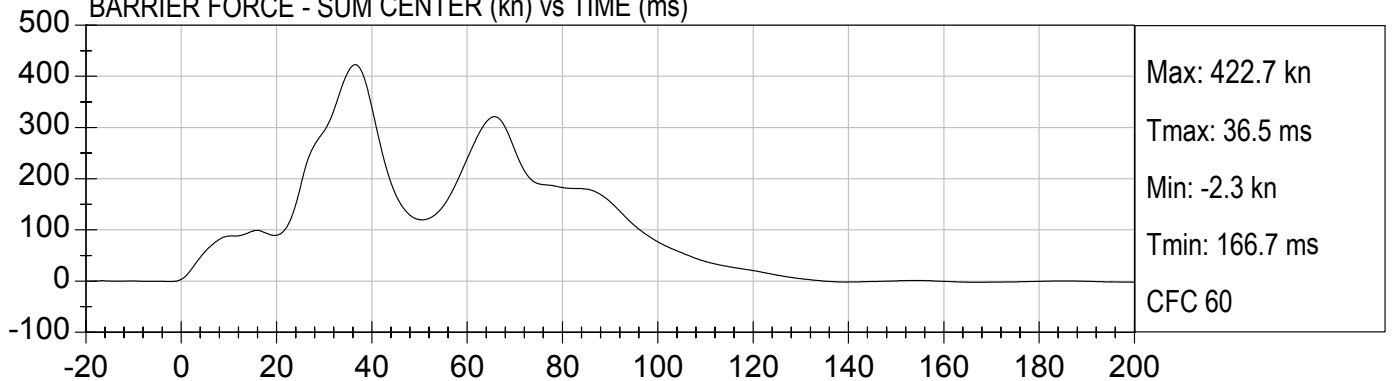
35MPH FRONTAL IMPACT
2005 CHEVROLET EQUINOX (M50100)

Test Date: 4/6/2004
Speed: 35.0 mph (56.3 km/h)

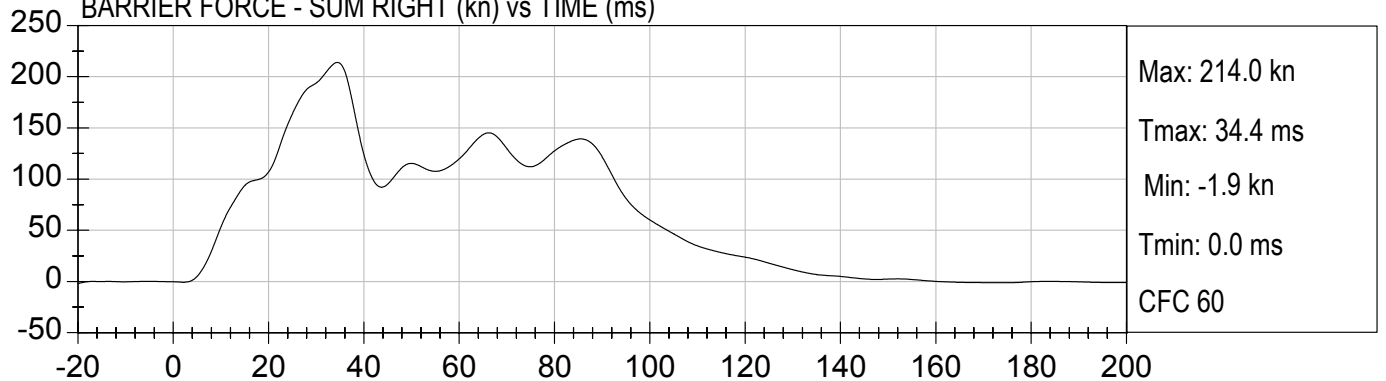
BARRIER FORCE - SUM LEFT (kn) vs TIME (ms)



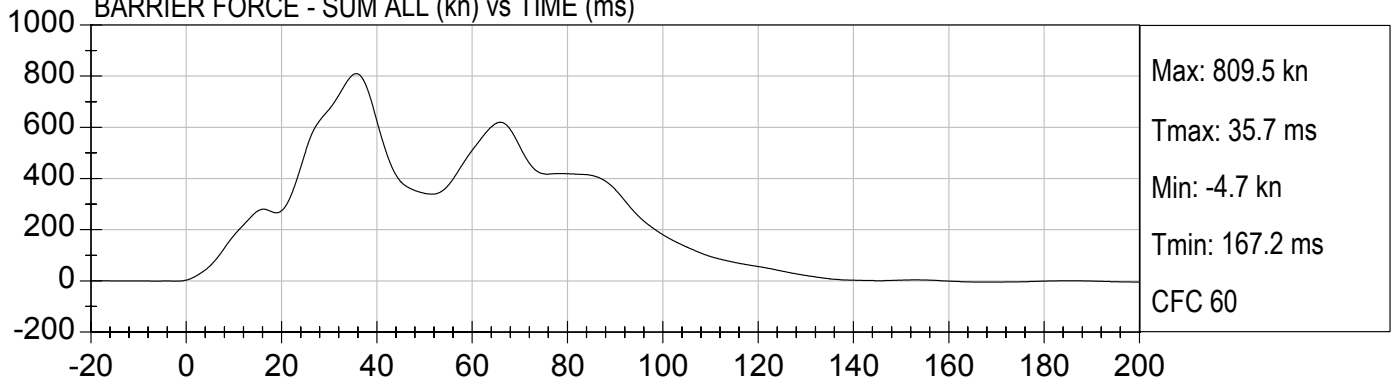
BARRIER FORCE - SUM CENTER (kn) vs TIME (ms)



BARRIER FORCE - SUM RIGHT (kn) vs TIME (ms)



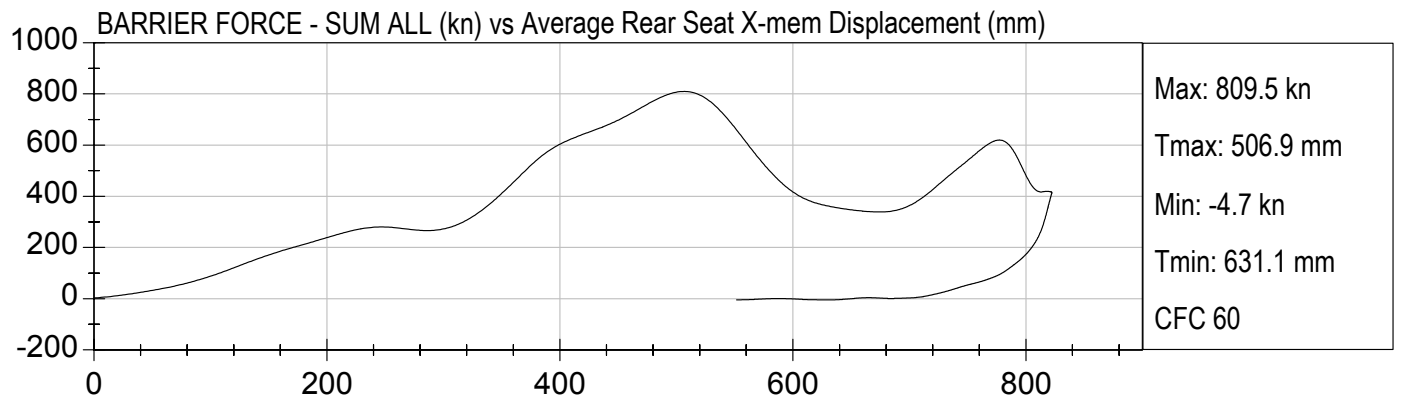
BARRIER FORCE - SUM ALL (kn) vs TIME (ms)





35MPH FRONTAL IMPACT
2005 CHEVROLET EQUINOX (M50100)

Test Date: 4/6/2004
Speed: 35.0 mph (56.3 km/h)



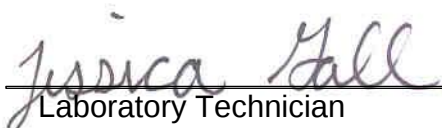
APPENDIX C
DUMMY CALIBRATION DATA TRACES AND TABLES

Hybrid III Calibration Data Sheet
50th Percentile Male
Head Drop Calibration

ATD Serial No: 065

Test I.D: D04541

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	24	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	258.9	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-7.8	Pass
Is Acceleration Unimodal?	Yes/No	< 10% Peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

03/09/2004
Test Date



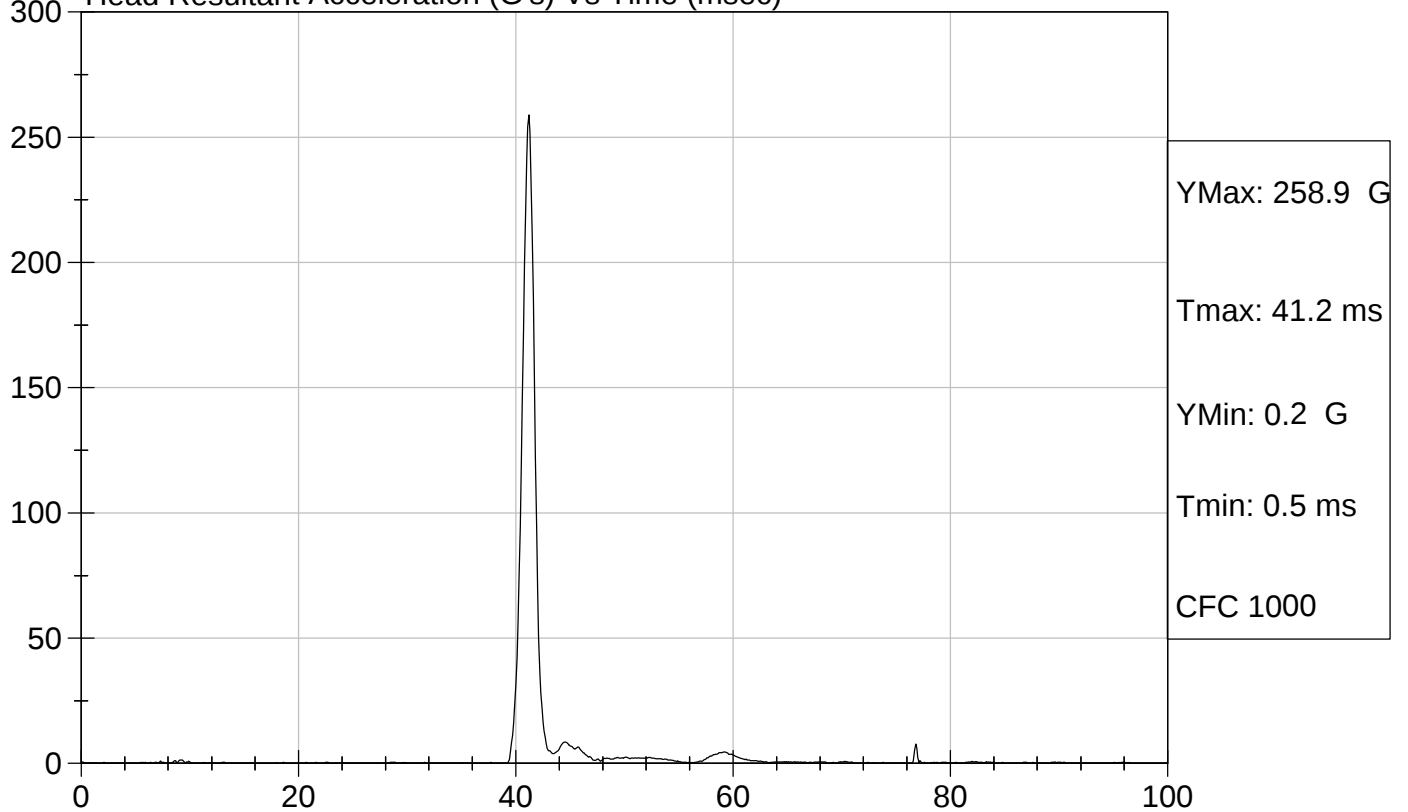
Test Description: Head Drop

Test Date: 03/09/2004

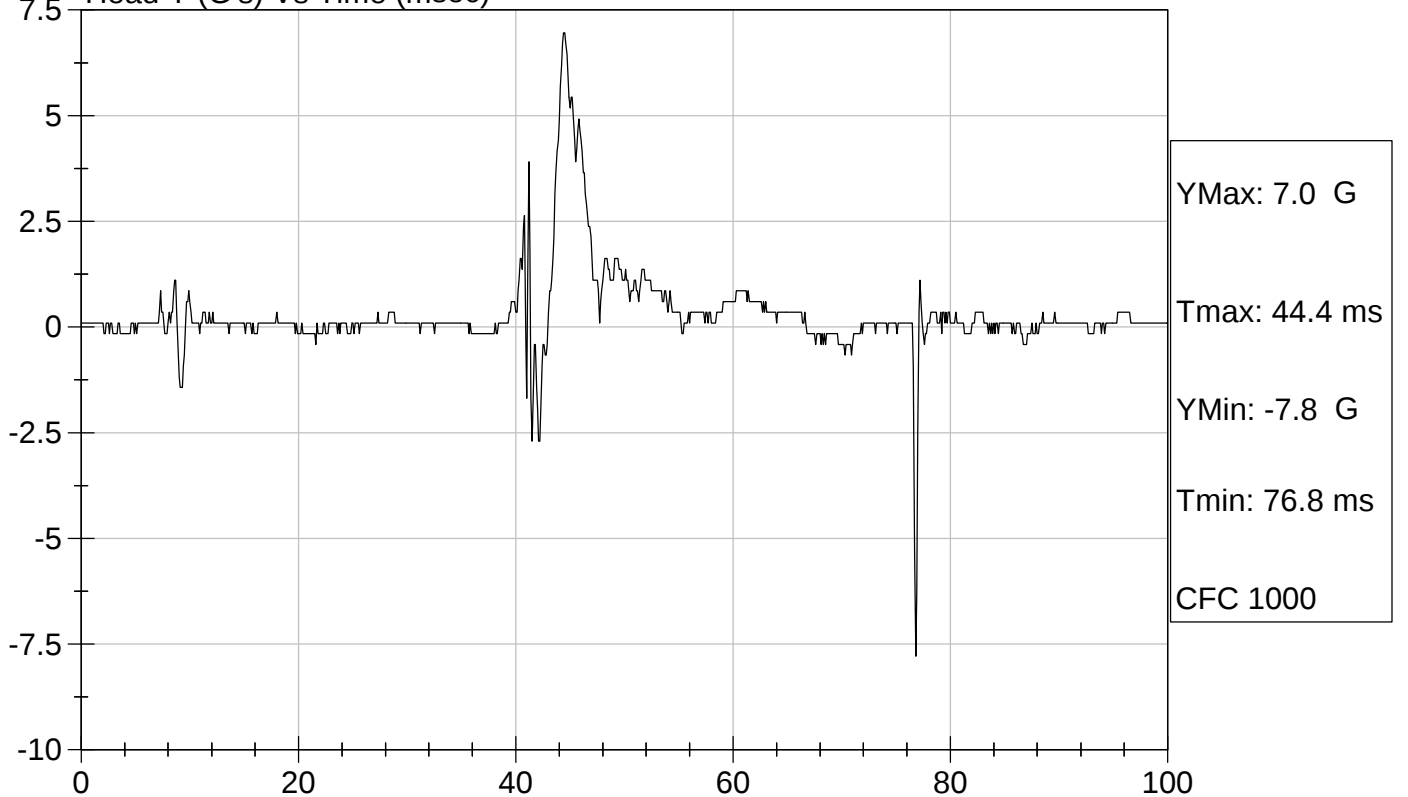
Component: D04541

Speed: 0 ft/s, 0.00 m/s

Head Resultant Acceleration (G's) Vs Time (msec)



Head Y (G's) Vs Time (msec)

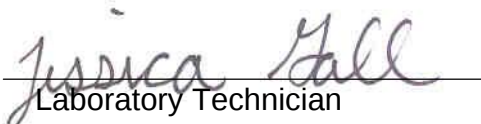


Hybrid III Calibration Data Sheet
50th Percentile Male
Neck Flexion Test

ATD Serial No: 065

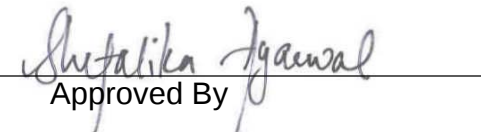
Test I.D: D04542

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity		%	10 to 70	25	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.96	Pass
Pendulum Deceleration	10 msec	G's	22.50 to 27.50	24.08	Pass
	20 msec	G's	17.60 to 22.60	20.59	Pass
	30 msec	G's	12.50 to 18.50	14.78	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 29.0	14.78	Pass
Deceleration Decay Time to Cross 5 G's		msec	34.0 to 42.0	37.7	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	73.1	Pass
	Time	msec	57.0 to 64.0	59.4	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	113.0 to 128.0	117.2	Pass
Moment About Occipital Condyle	Maximum	N m	84.1 to 108.5	89.8	Pass
	Time	msec	47.0 to 58.0	50.0	Pass
Positive Moment Decay Time To Zero Crossing		msec	97.0 to 107.0	105.1	Pass
Overall Test Results					Pass


Laboratory Technician

03/10/2004

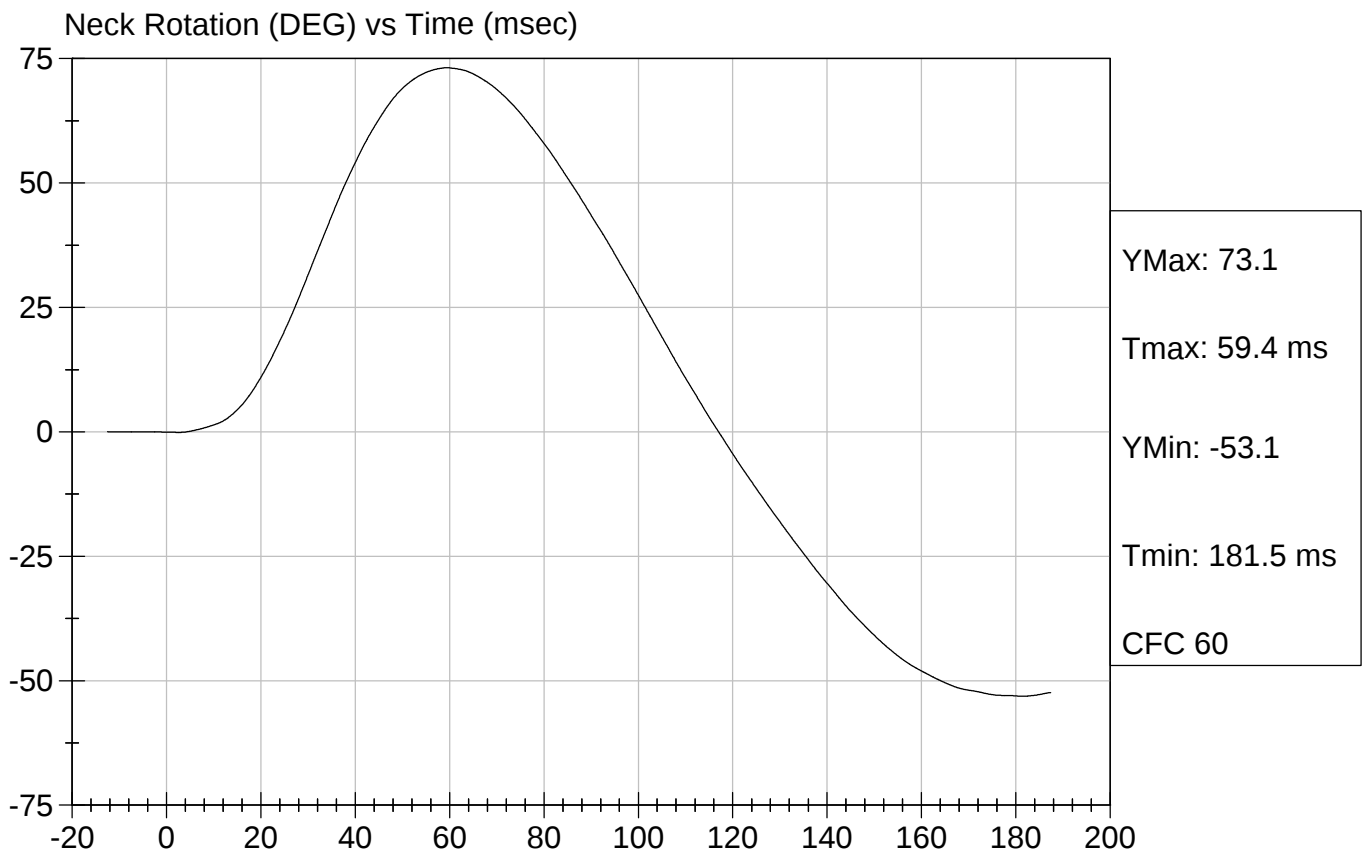
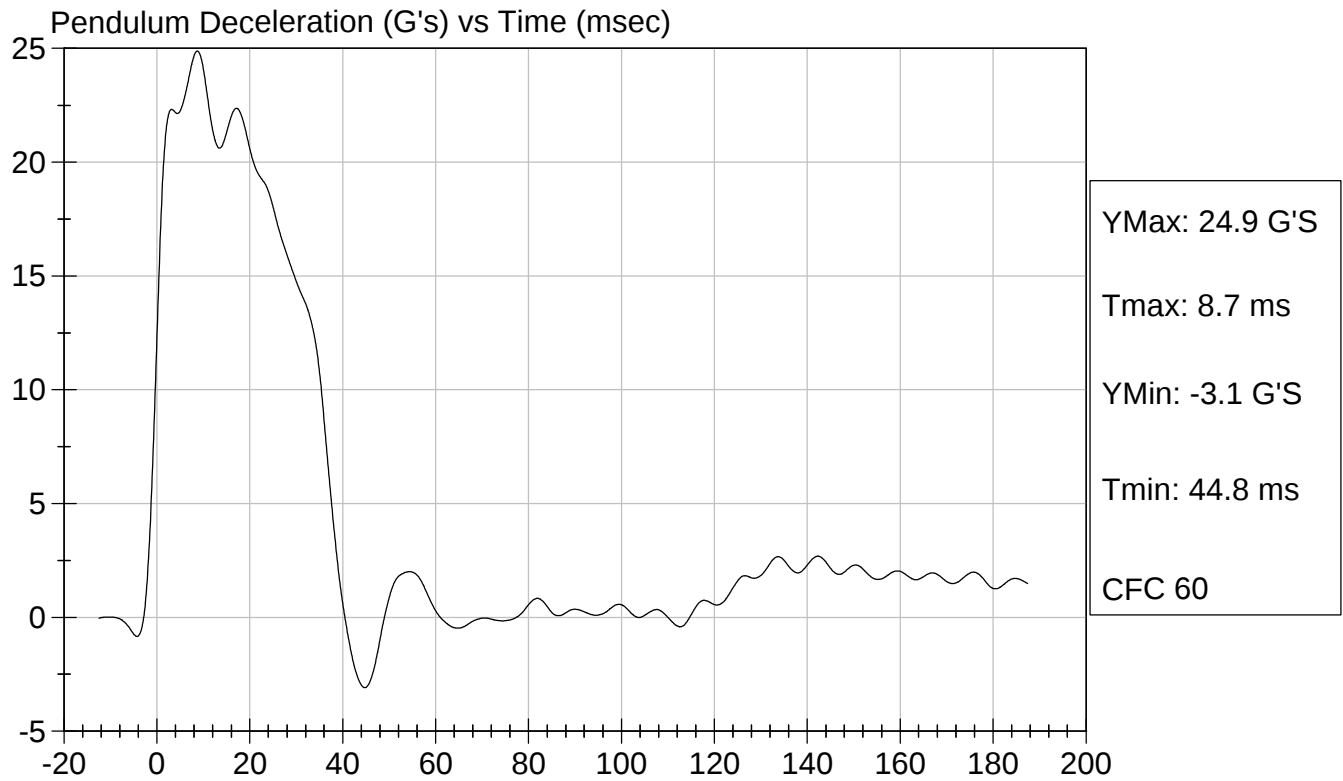
Test Date


Approved By



Test Desc: Neck Flexion
Component ID: D04542

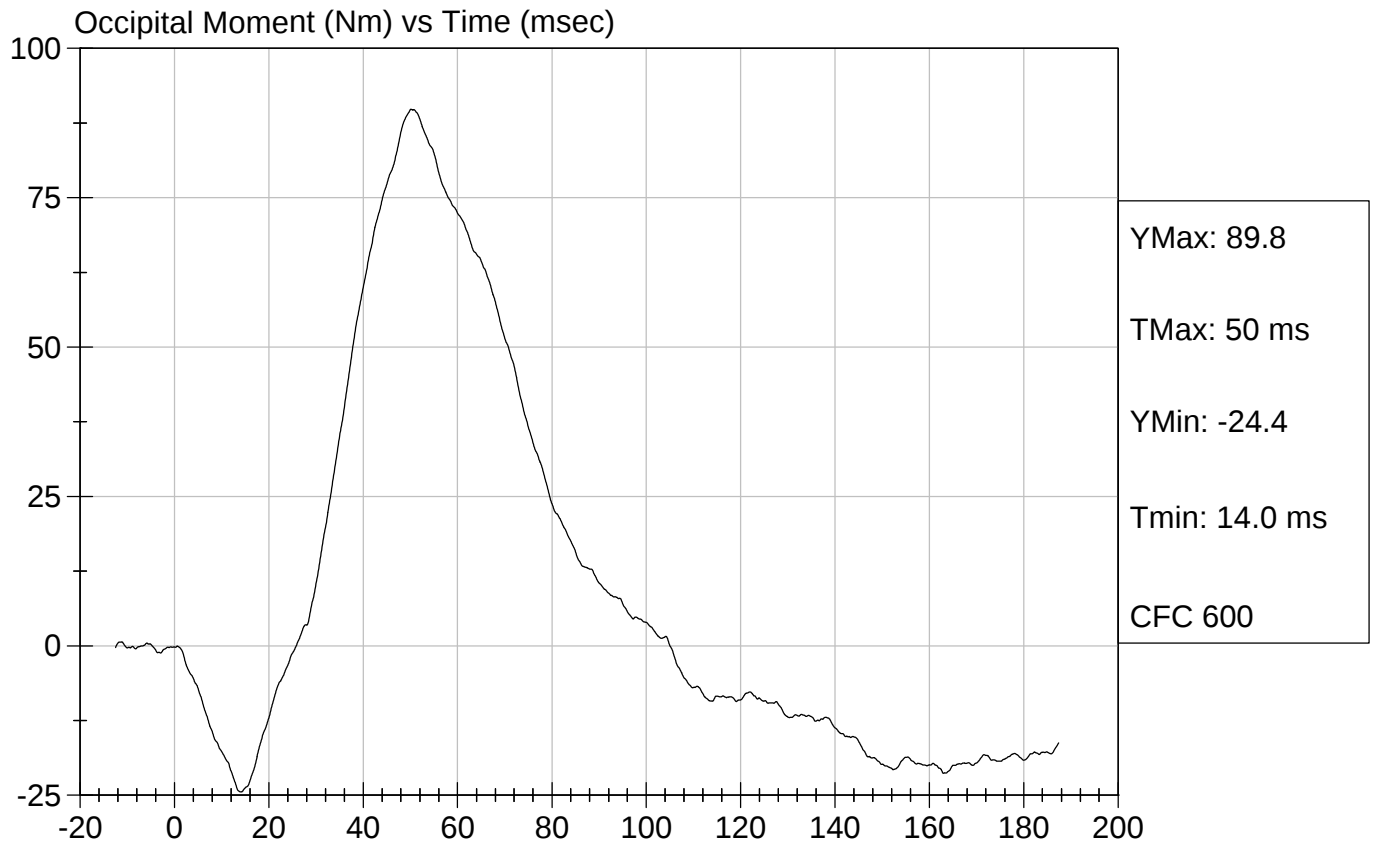
Test Date: 03/10/2004
Speed: 22.83 ft/sec, 6.96 m/sec





Test Desc: Neck Flexion
Component ID: D04542

Test Date: 03/10/2004
Speed: 22.83 ft/sec, 6.96 m/sec

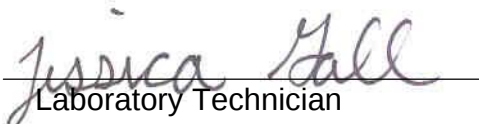


Hybrid III Calibration Data Sheet
50th Percentile Male
Neck Extension Test

ATD Serial No: 065

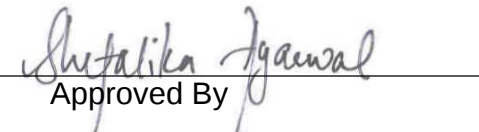
Test I.D: D04543

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity		%	10 to 70	25	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.00	Pass
Pendulum Deceleration	10 msec	G's	17.20 to 21.20	19.50	Pass
	20 msec	G's	14.00 to 19.00	16.50	Pass
	30 msec	G's	11.00 to 16.00	12.03	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 22.0	12.7	Pass
Deceleration Decay Time to Cross 5 G's		msec	38.0 to 46.0	41.0	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	100.5	Pass
	Time	msec	72.0 to 82.0	77.7	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	147.0 to 174.0	156.3	Pass
Moment About Occipital Condyle	Minimum	N m	-52.9 to -79.9	-71.1	Pass
	Time	msec	65.0 to 79.0	72.3	Pass
Negative Moment Decay Time To Zero Crossing		msec	120.0 to 148.0	142.6	Pass
Overall Test Results					Pass


Laboratory Technician

03/10/2004

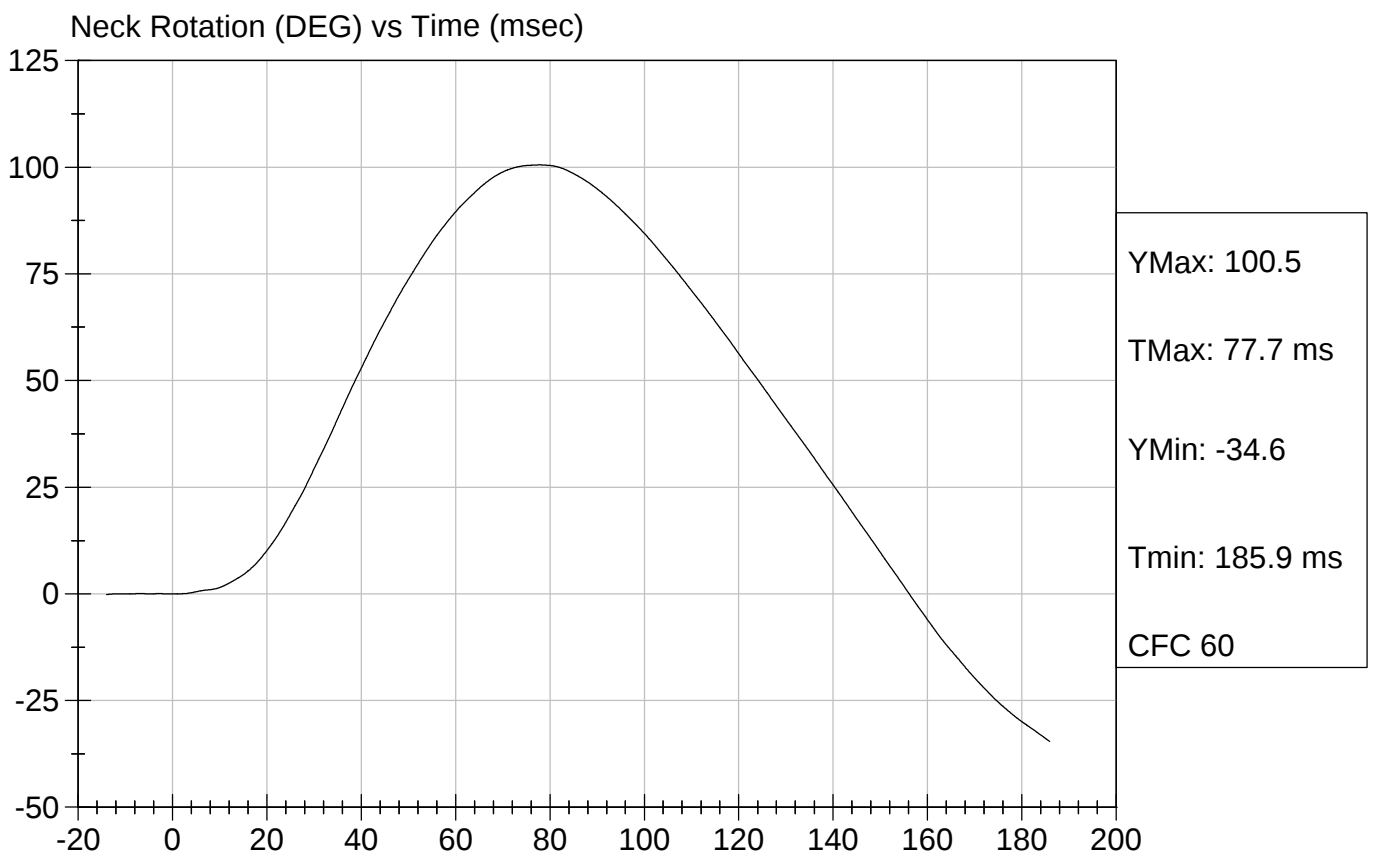
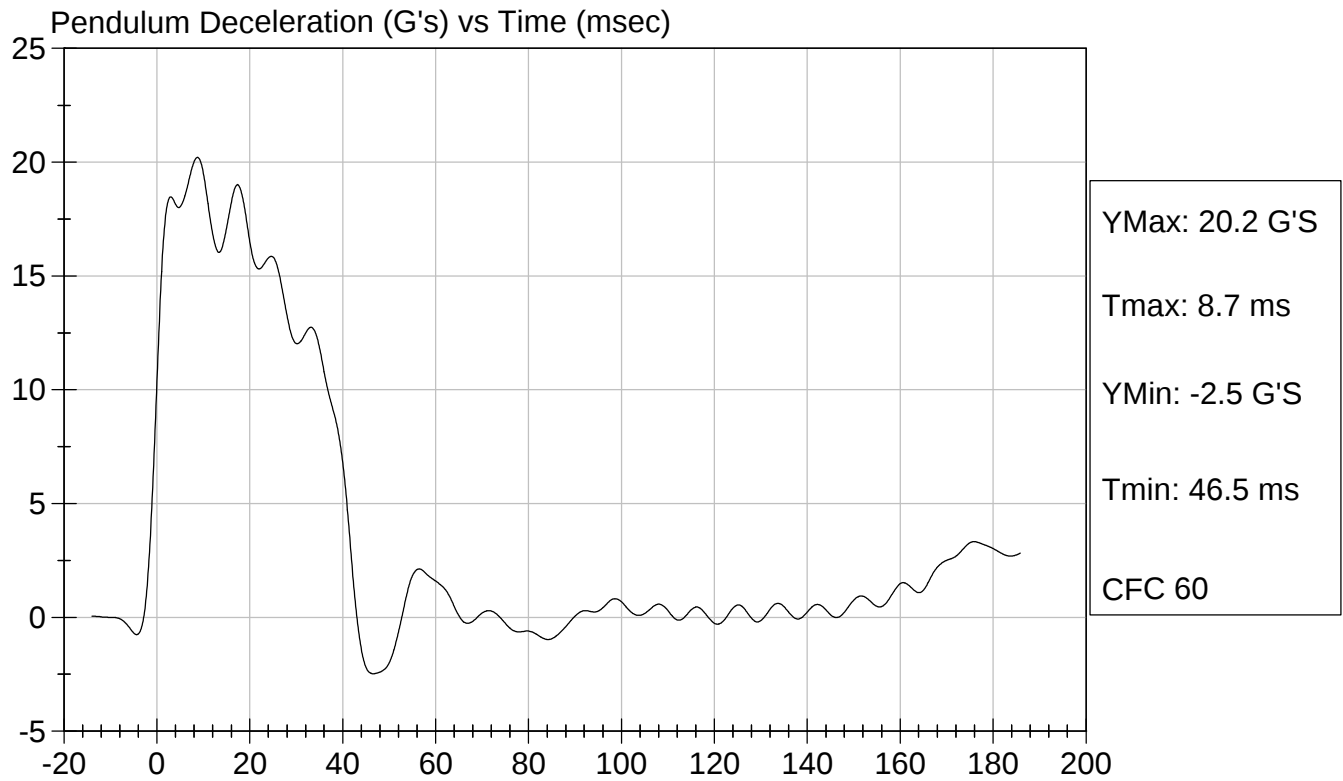
Test Date


Approved By



Test Desc: Neck Extension
Component ID: D04543

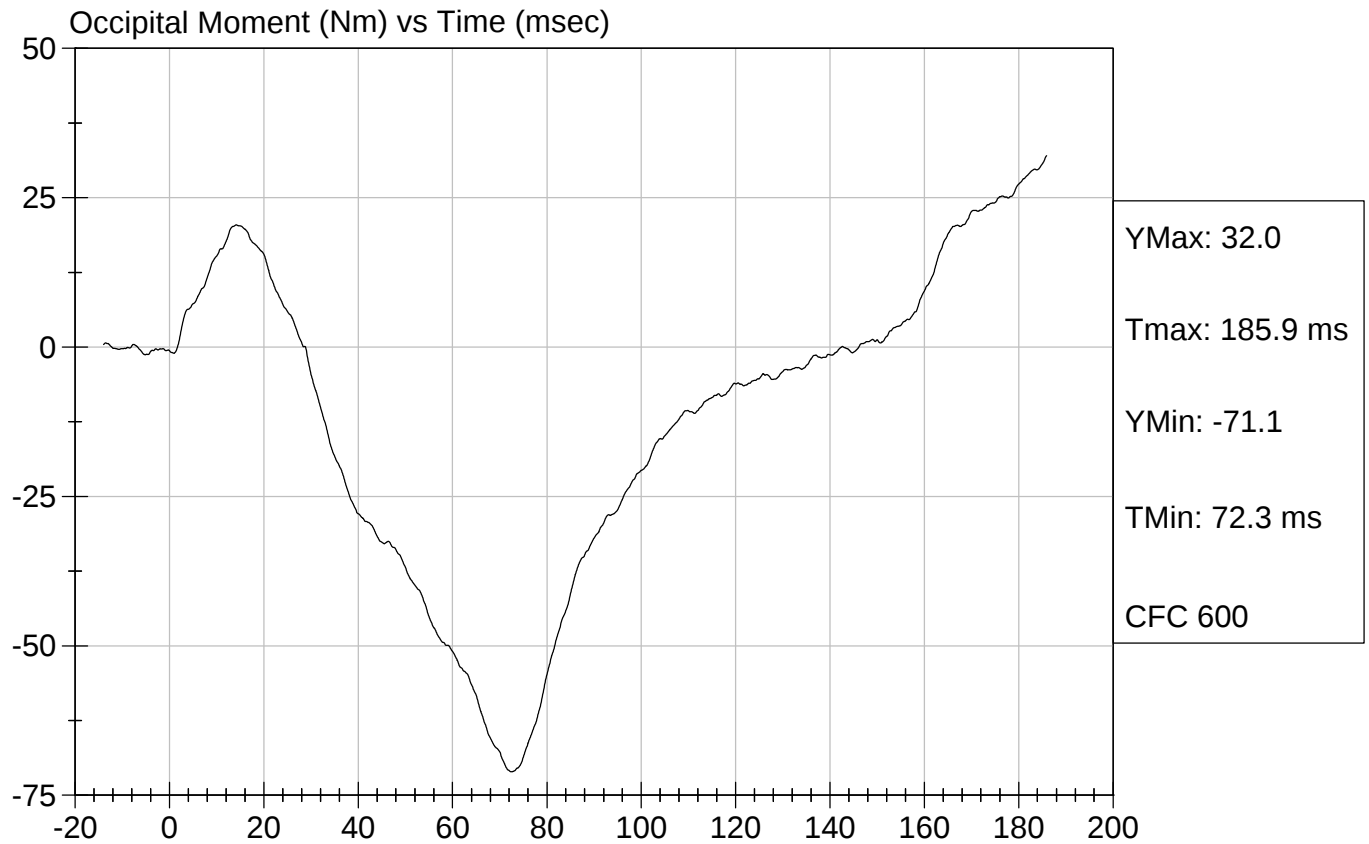
Test Date: 03/10/2004
Speed: 19.67 ft/sec, 6.00 m/sec





Test Desc: Neck Extension
Component ID: D04543

Test Date: 03/10/2004
Speed: 19.67 ft/sec, 6.00 m/sec

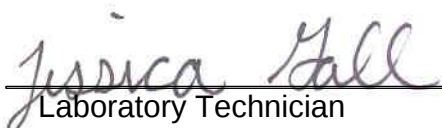


Hybrid III Calibration Data Sheet
50th Percentile Male
Thorax Impact Test

ATD Serial No: 065

Test I.D: D04544

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21	Pass
Laboratory Relative Humidity	%	10 to 70	22	Pass
Probe Velocity	m/s	6.58 to 6.82	6.67	Pass
Peak Probe Force	Newtons	5159 to 5893	5,461	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.38	Pass
Internal Hysteresis	%	69 to 85	70	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

03/15/2004
Test Date

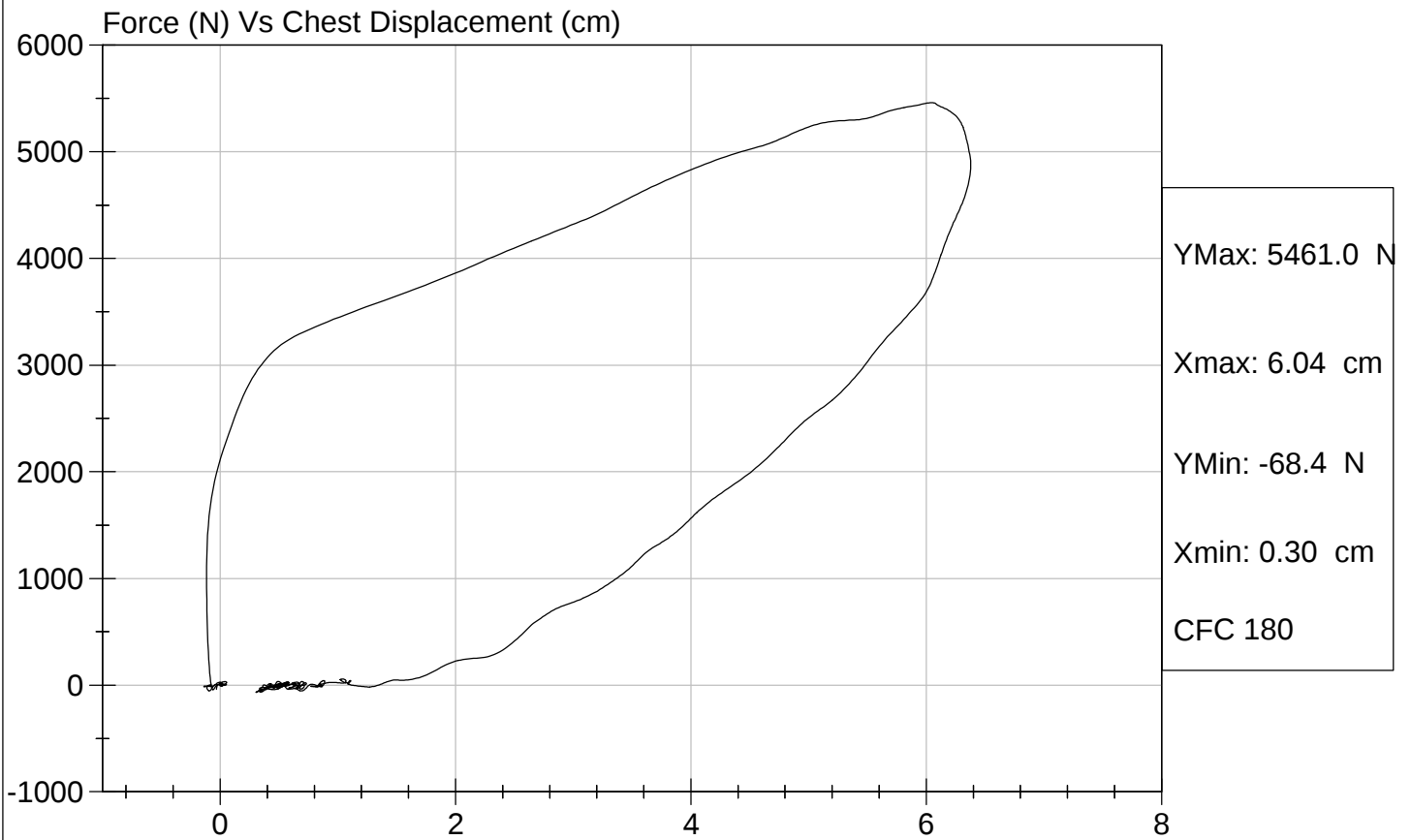


Test Description: Thorax Impact

Test Date: 03/15/2004

Component: D04544

Speed: 21.87 ft/sec, 6.67 m/sec

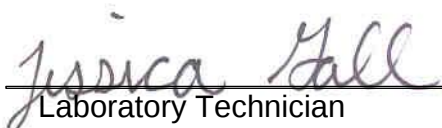


Hybrid III Calibration Data Sheet
50th Percentile Male
Right Knee Impact Test

ATD Serial No: 065

Test I.D: D04545

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	17	Pass
Probe Velocity	m/s	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	4715 to 5782	5,245	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

03/12/2004

Test Date

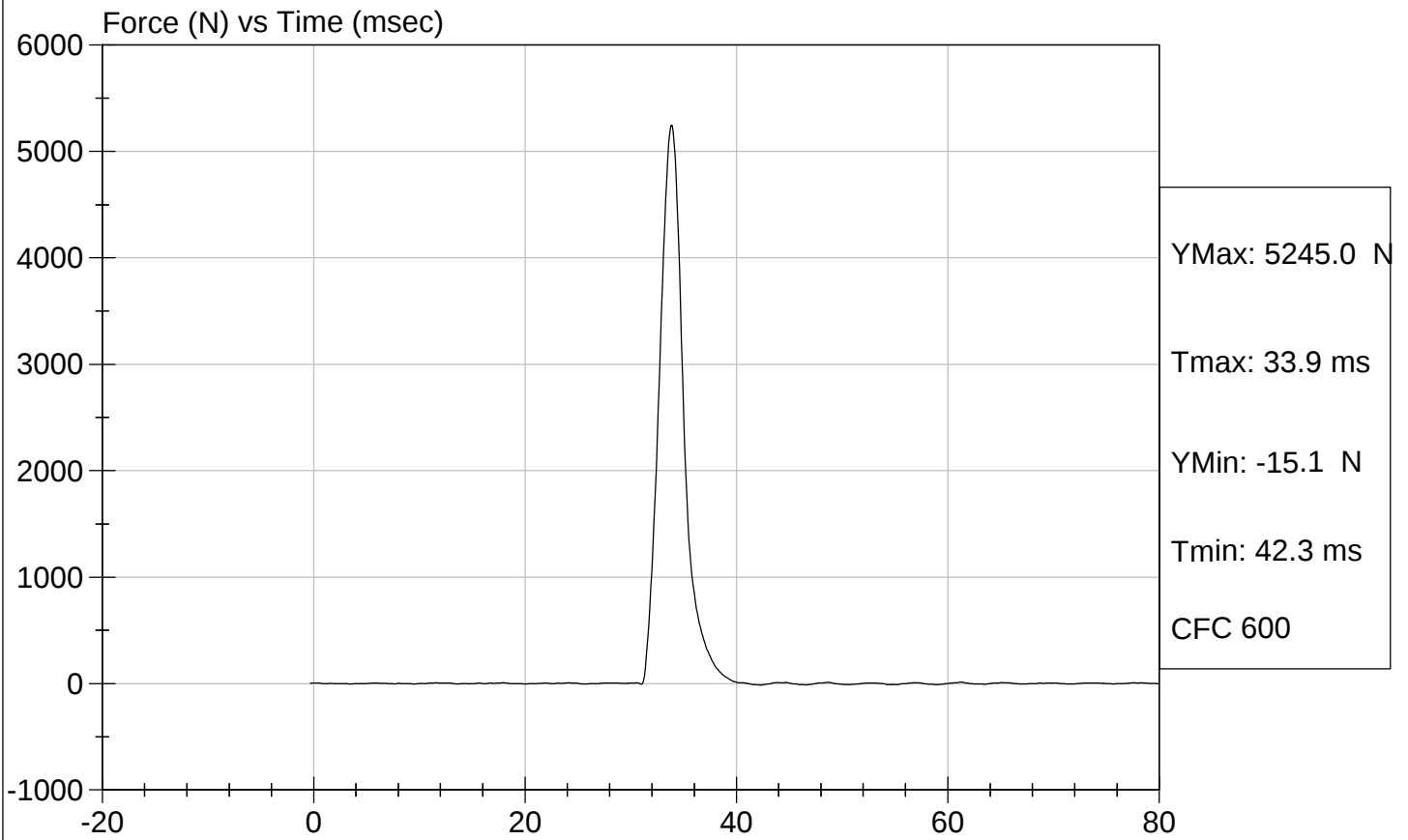


Test Description: Right Knee

Test Date: 03/12/2004

Component: D04545

Speed: 6.85 ft/sec, 2.088 m/sec

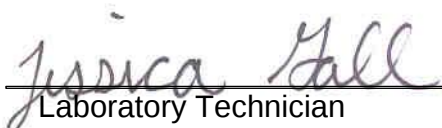


Hybrid III Calibration Data Sheet
50th Percentile Male
Left Knee Impact Test

ATD Serial No: 065

Test I.D: D04546

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	17	Pass
Probe Velocity	m/s	2.07 to 2.13	2.11	Pass
Peak Probe Force	Newtons	4715 to 5782	5,153	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

03/12/2004
Test Date

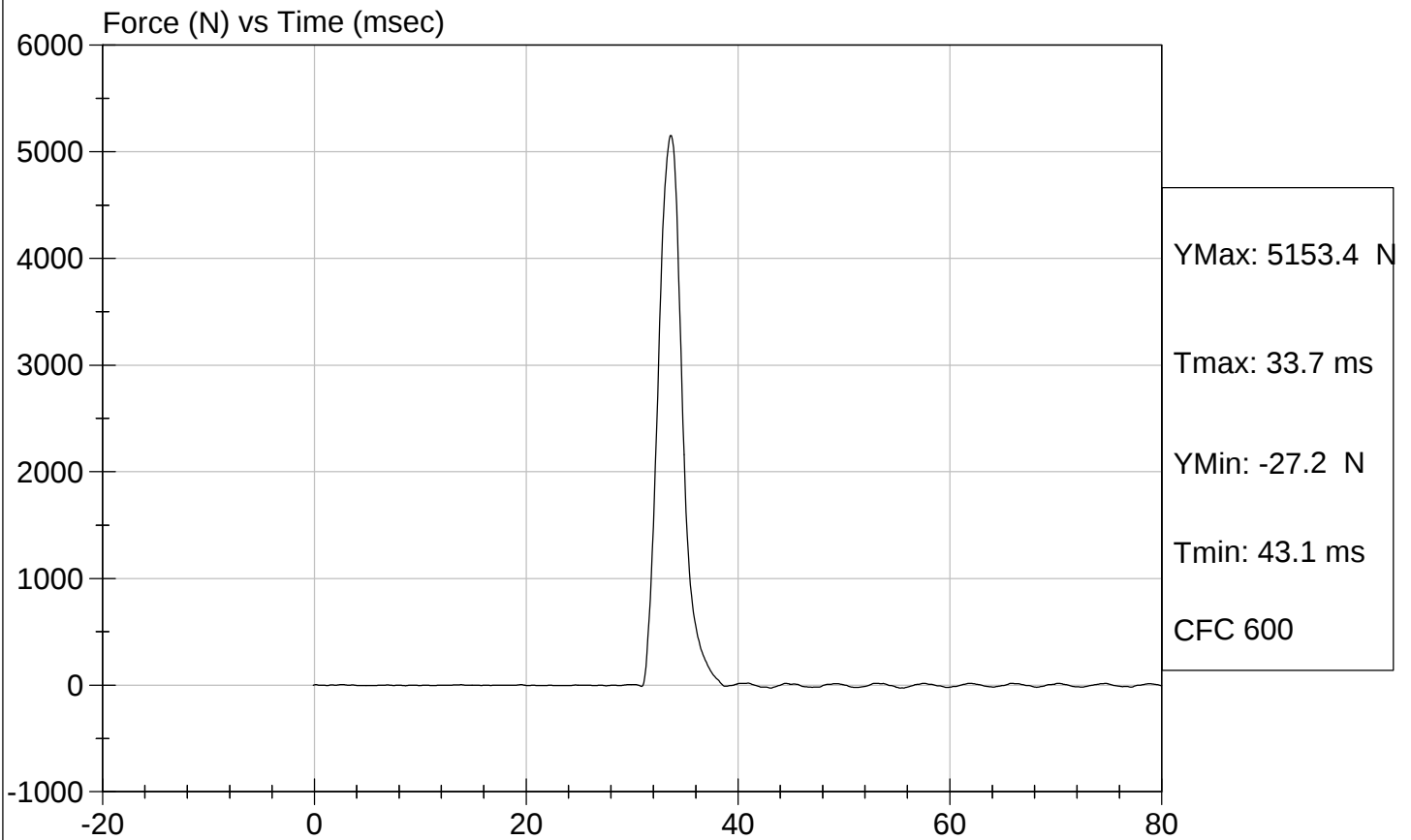


Test Description: Left Knee

Test Date: 03/12/2004

Component: D04546

Speed: 6.92 ft/sec, 2.109 m/sec

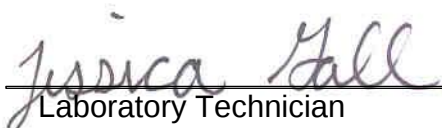


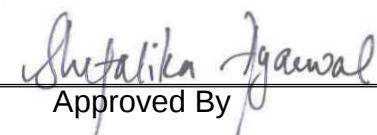
Hybrid III Calibration Data Sheet
50th Percentile Male
Hip-Femur Flexion Test

ATD Serial No: 065

Test I.D: D04549/0

Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.4	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	20	20	Pass
Rotation Rate	deg/sec	5 -10	8	8	Pass
30 Degrees	Nm	94.9 Nm Max	69.9	70.3	Pass
150 ft-lbf / 203.4 Nm	Deg	40- 50 Degree Max Rotation	44	43	Pass
Overall Test Results					Pass


 Laboratory Technician


 Approved By

03/12/2004
 Test Date

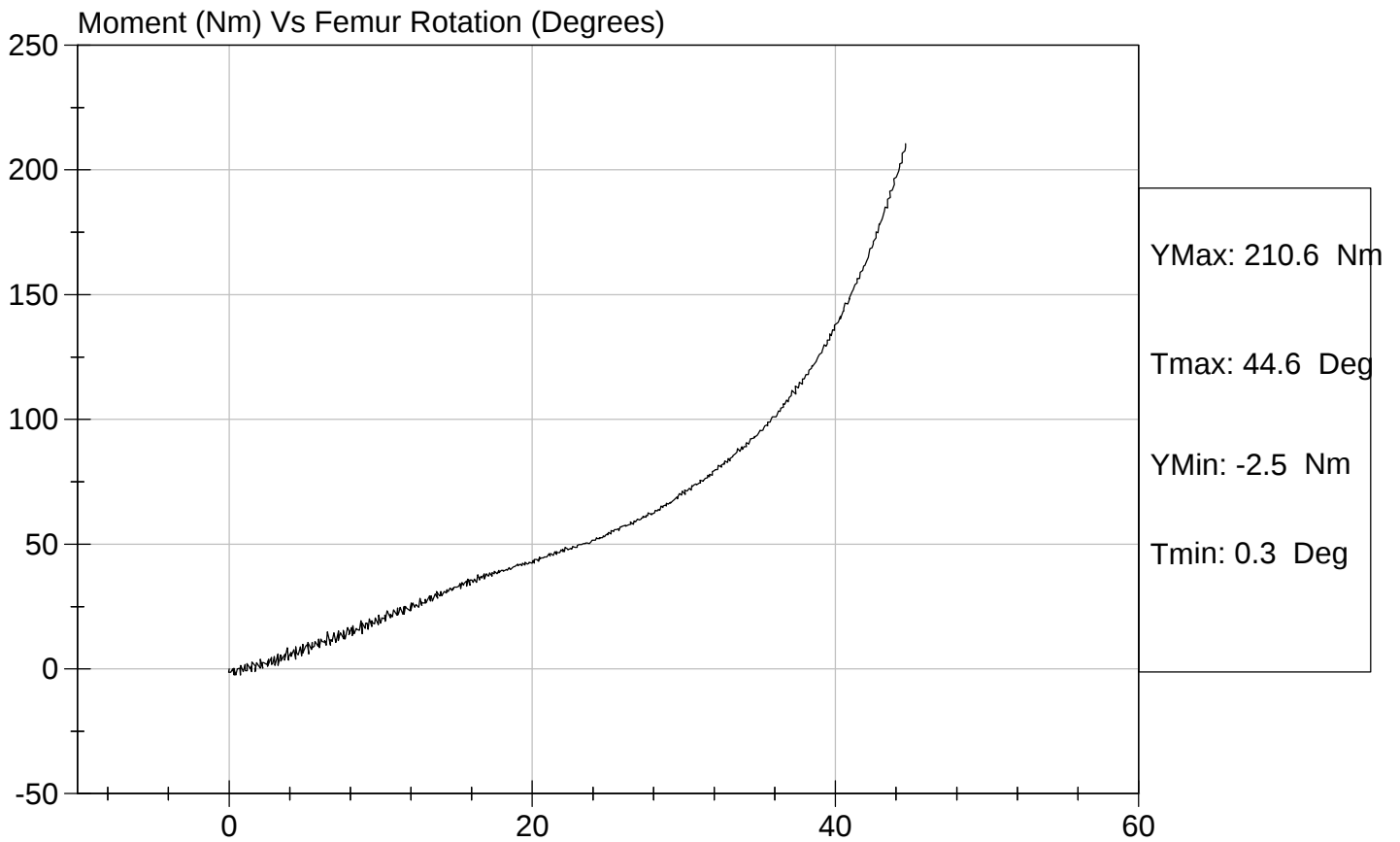


Test Description: Hip Femur Flexion

Test Date: 03/12/2004

Component: D04549

Speed: 0 ft/sec, 0.00 m/sec



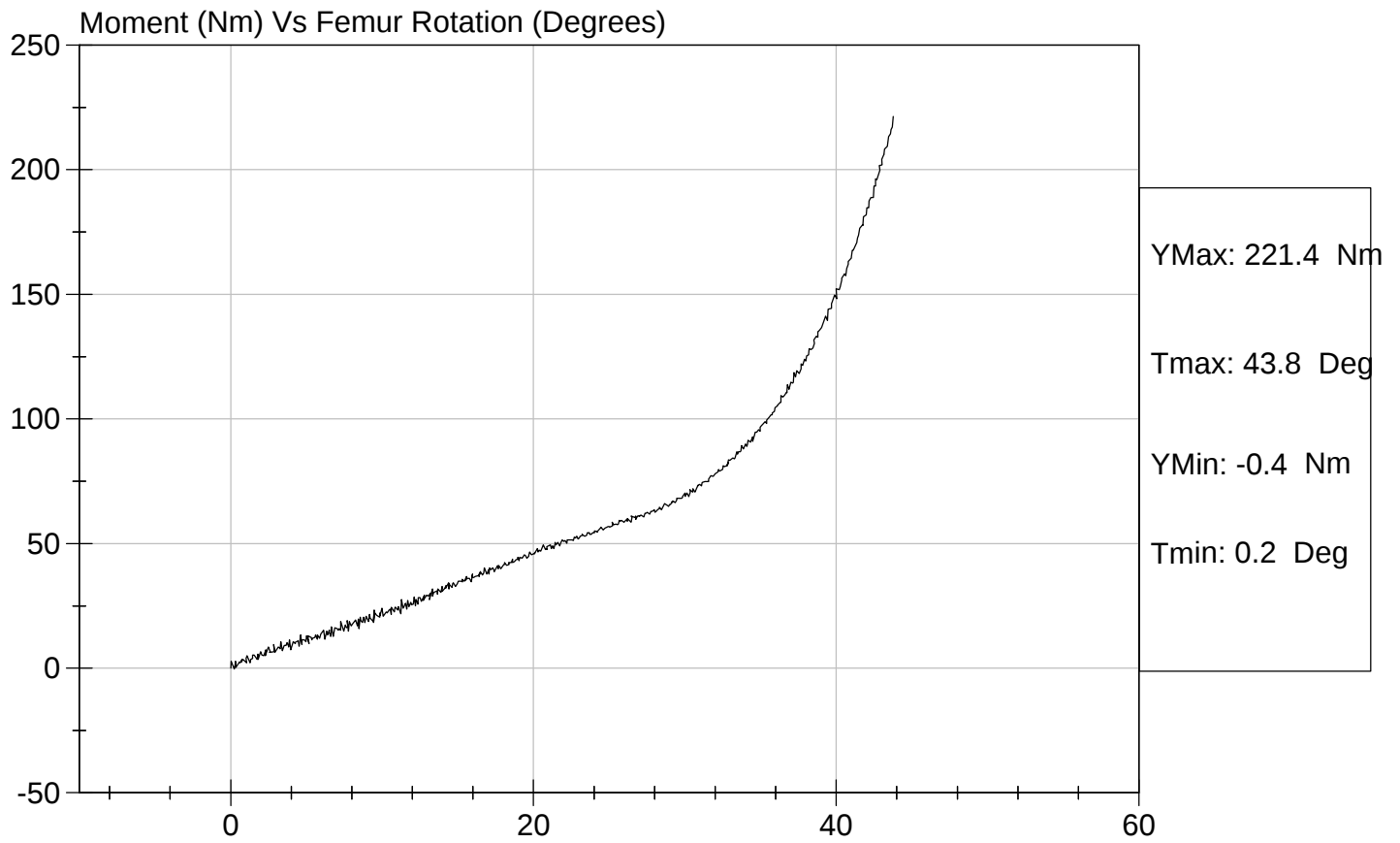


Test Description: Hip Femur Flexion

Test Date: 03/12/2004

Component: D04540

Speed: 0 ft/sec, 0.00 m/sec

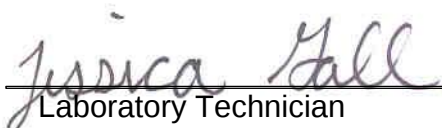


Hybrid III Calibration Data Sheet
50th Percentile Male
Head Drop Calibration

ATD Serial No: 066

Test I.D: D04551

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	24	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	255.4	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	13.1	Pass
Is Acceleration Unimodal?	Yes/No	< 10% Peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

03/09/2004
Test Date



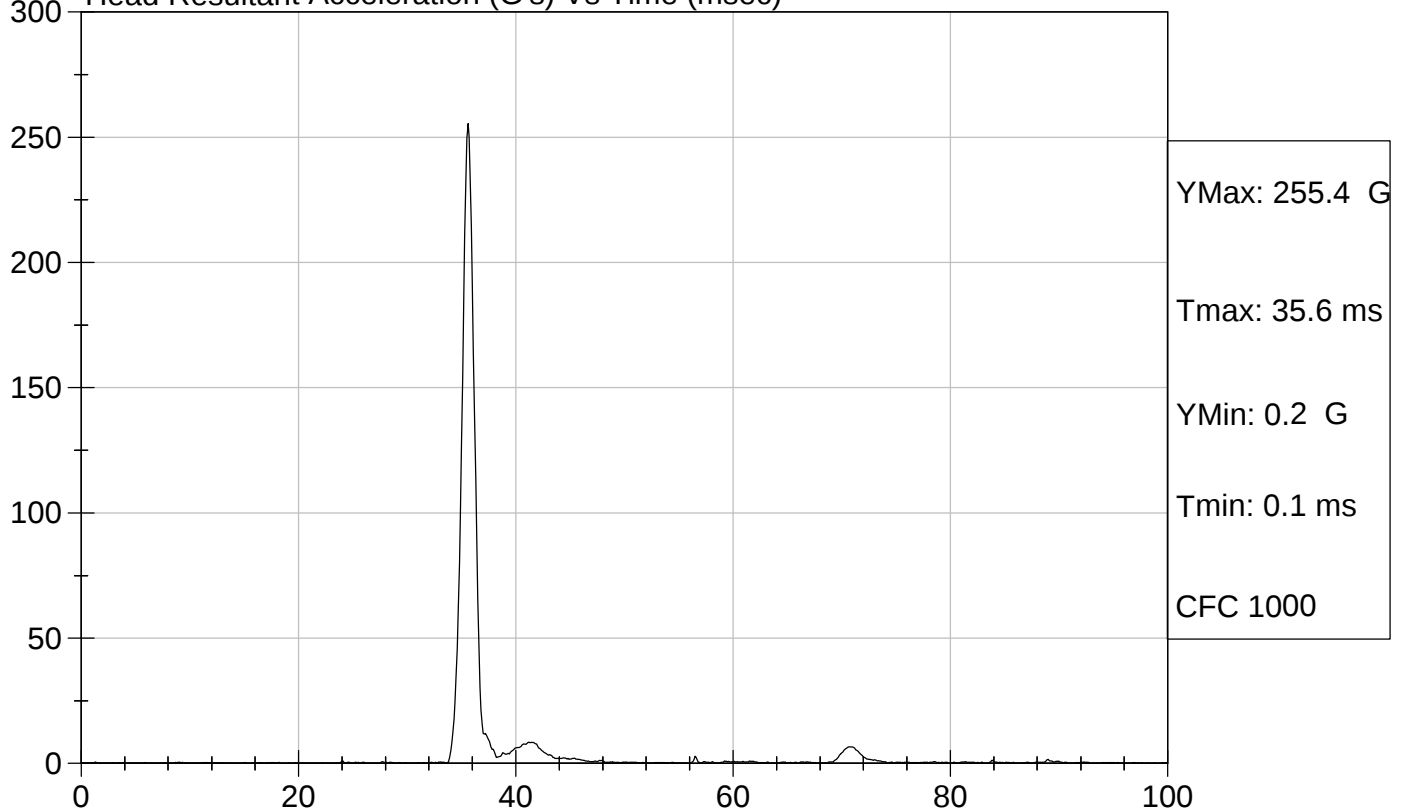
Test Description: Head Drop

Test Date: 03/09/2004

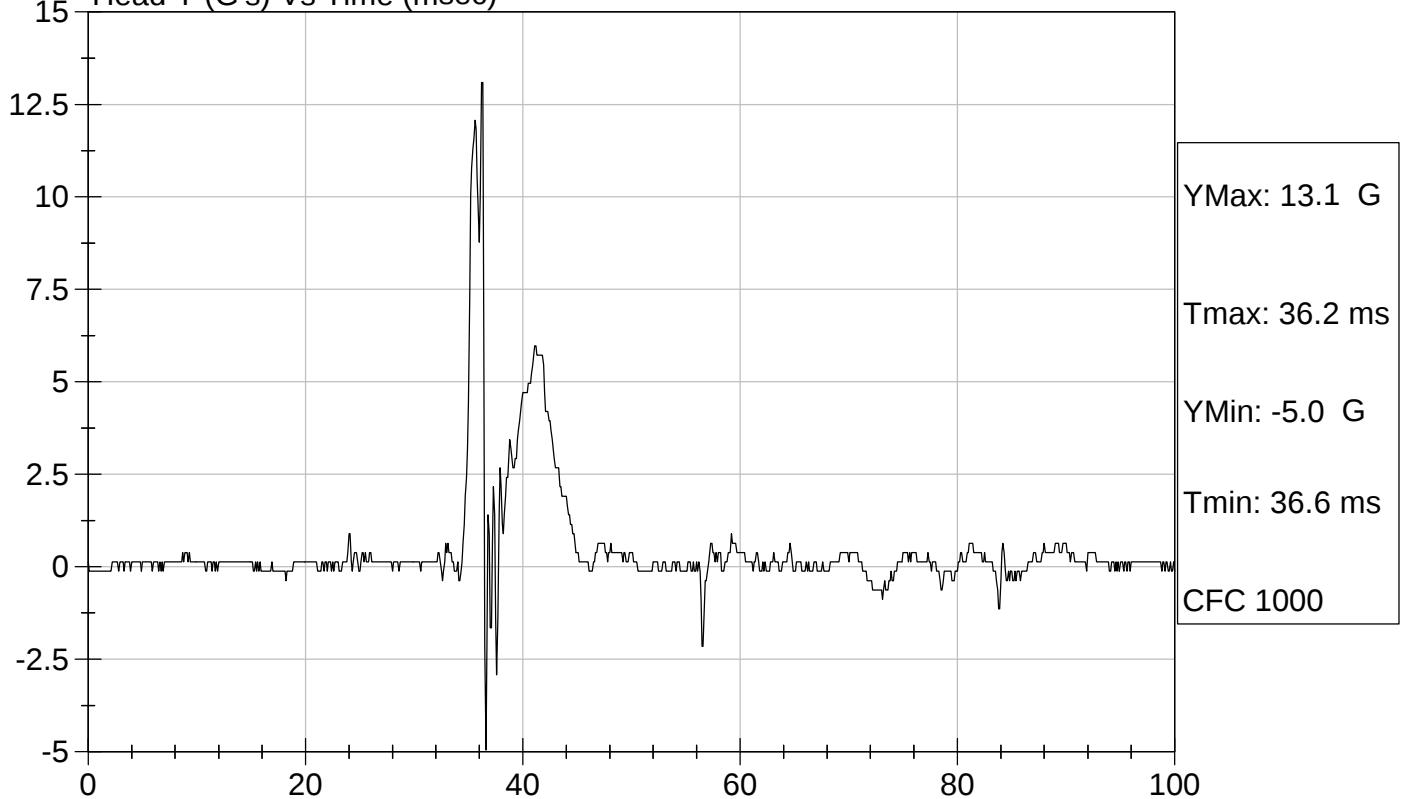
Component: D04551

Speed: 0 ft/s, 0.00 m/s

Head Resultant Acceleration (G's) Vs Time (msec)



Head Y (G's) Vs Time (msec)

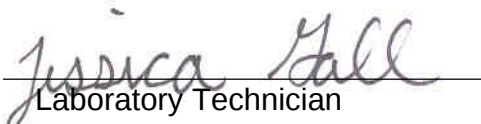


Hybrid III Calibration Data Sheet
50th Percentile Male
Neck Flexion Test

ATD Serial No: 066

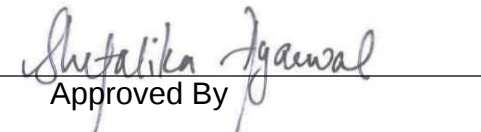
Test I.D: D04552

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	22.	Pass
Laboratory Relative Humidity		%	10 to 70	25	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.01	Pass
Pendulum Deceleration	10 msec	G's	22.50 to 27.50	23.59	Pass
	20 msec	G's	17.60 to 22.60	20.01	Pass
	30 msec	G's	12.50 to 18.50	14.46	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 29.0	14.46	Pass
Deceleration Decay Time to Cross 5 G's		msec	34.0 to 42.0	38.9	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	73.9	Pass
	Time	msec	57.0 to 64.0	60.0	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	113.0 to 128.0	116.4	Pass
Moment About Occipital Condyle	Maximum	N m	84.1 to 108.5	94.9	Pass
	Time	msec	47.0 to 58.0	51.3	Pass
Positive Moment Decay Time To Zero Crossing		msec	97.0 to 107.0	102.8	Pass
Overall Test Results					Pass


 Laboratory Technician

03/10/2004

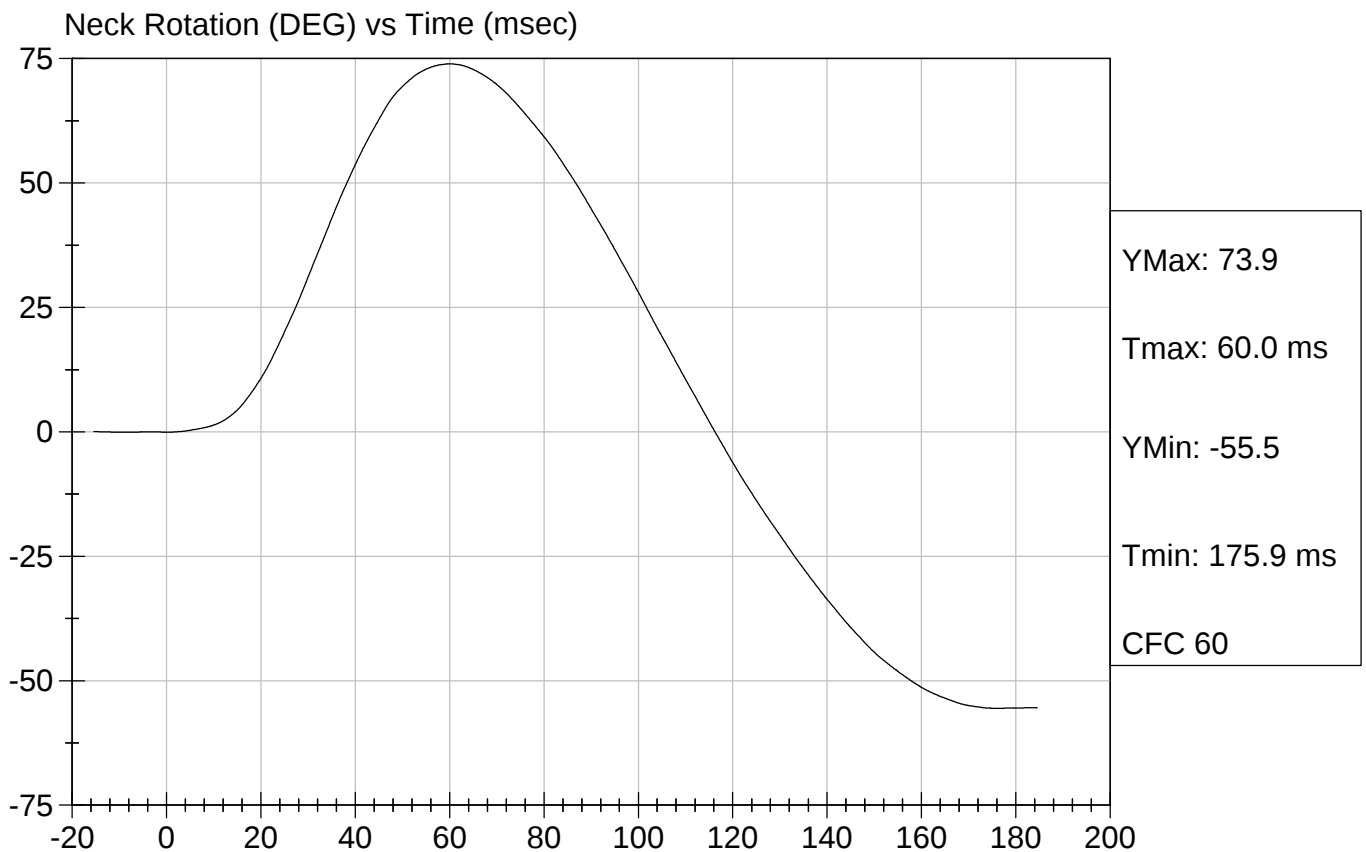
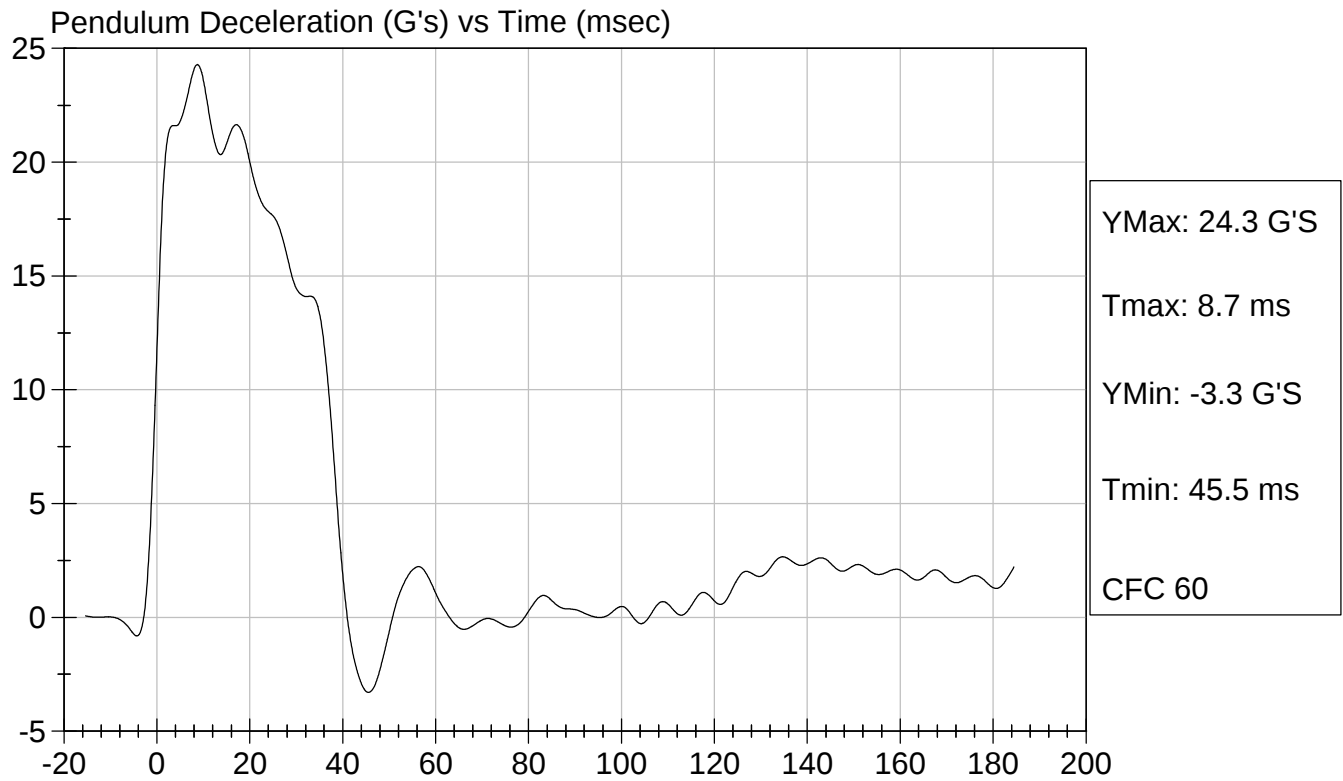
Test Date


 Approved By



Test Desc: Neck Flexion
Component ID: D04552

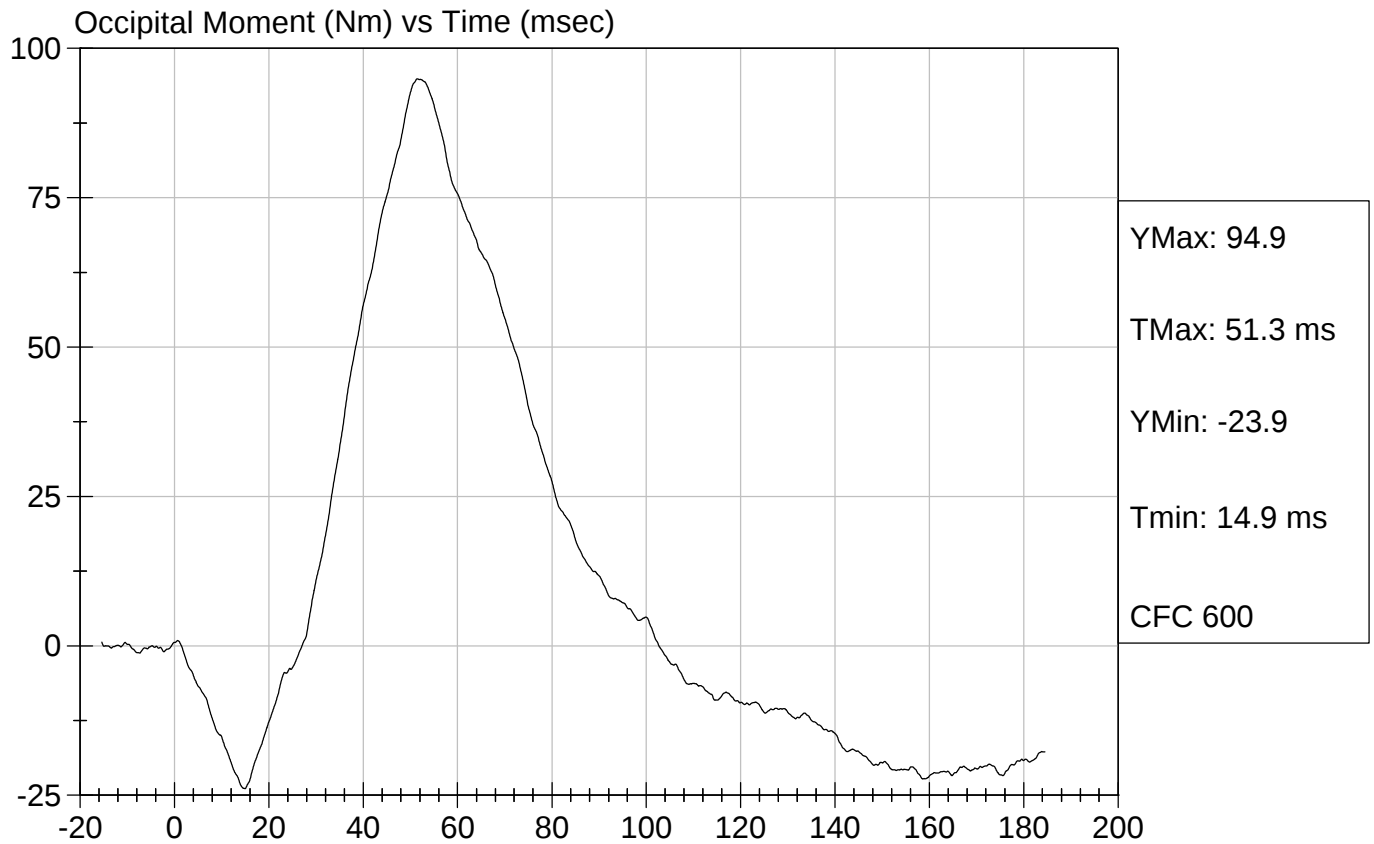
Test Date: 03/10/2004
Speed: 23.01 ft/sec, 7.01 m/sec





Test Desc: Neck Flexion
Component ID: D04552

Test Date: 03/10/2004
Speed: 23.01 ft/sec, 7.01 m/sec

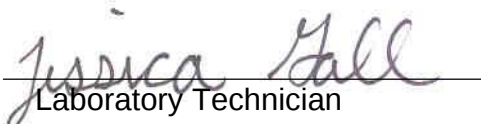


Hybrid III Calibration Data Sheet
50th Percentile Male
Neck Extension Test

ATD Serial No: 066

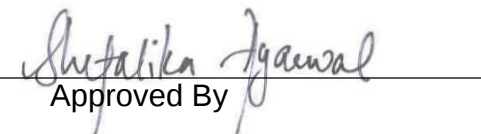
Test I.D: D04553

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21	Pass
Laboratory Relative Humidity		%	10 to 70	24	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.02	Pass
Pendulum Deceleration	10 msec	G's	17.20 to 21.20	19.09	Pass
	20 msec	G's	14.00 to 19.00	16.16	Pass
	30 msec	G's	11.00 to 16.00	13.28	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 22.0	13.3	Pass
Deceleration Decay Time to Cross 5 G's		msec	38.0 to 46.0	42.8	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	97.7	Pass
	Time	msec	72.0 to 82.0	78.9	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	147.0 to 174.0	156.9	Pass
Moment About Occipital Condyle	Minimum	N m	-52.9 to -79.9	-66.7	Pass
	Time	msec	65.0 to 79.0	72.9	Pass
Negative Moment Decay Time To Zero Crossing		msec	120.0 to 148.0	142.1	Pass
Overall Test Results					Pass


Laboratory Technician

03/11/2004

Test Date

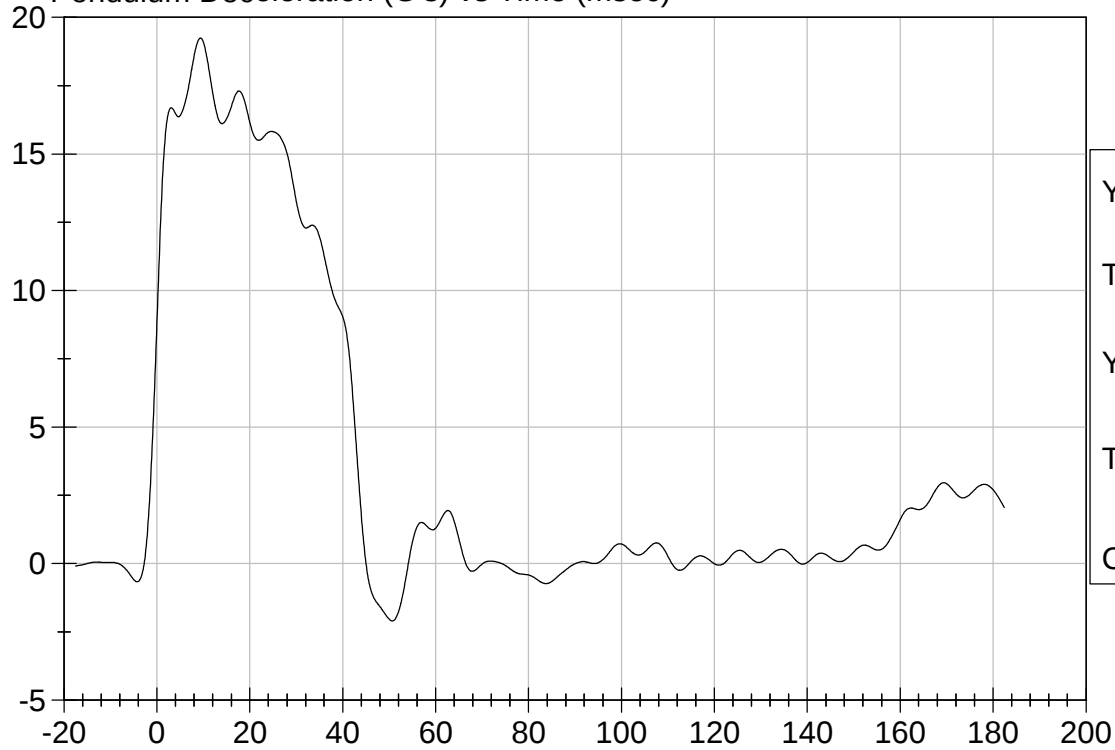

Approved By



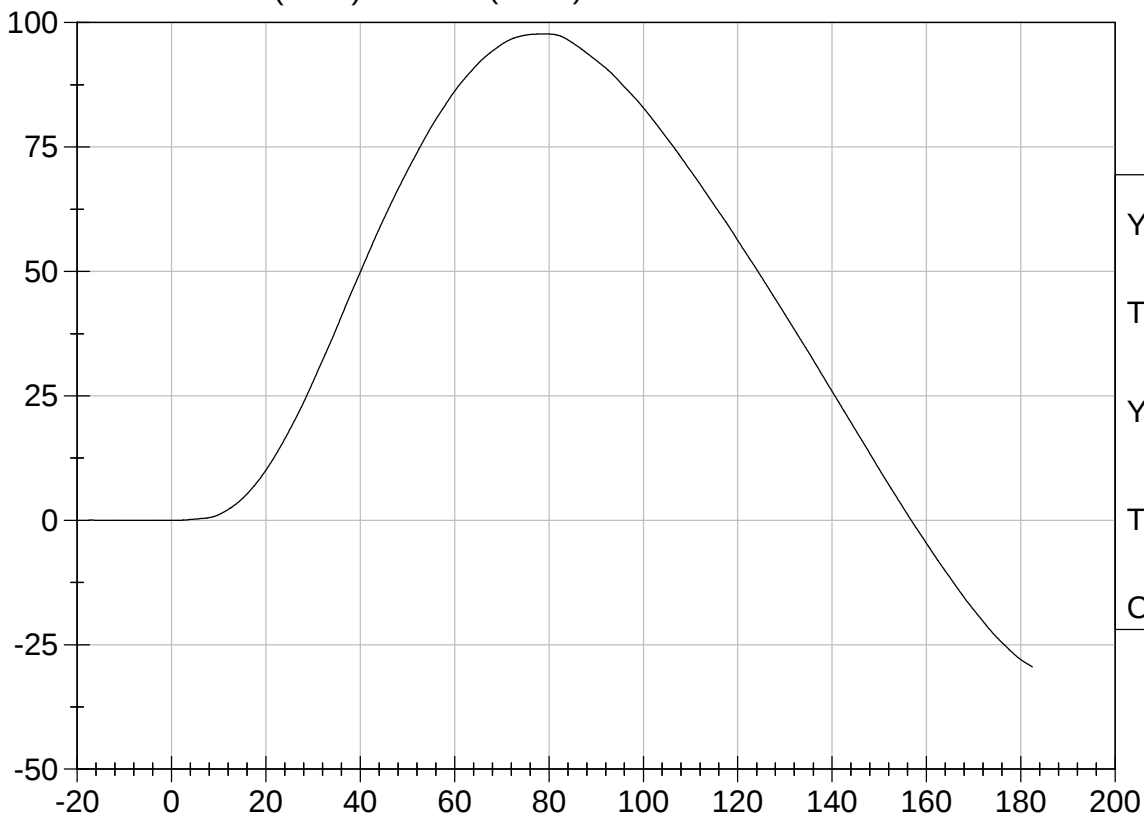
Test Desc: Neck Extension
Component ID: D04553

Test Date: 03/11/2004
Speed: 19.75 ft/sec, 6.02 m/sec

Pendulum Deceleration (G's) vs Time (msec)



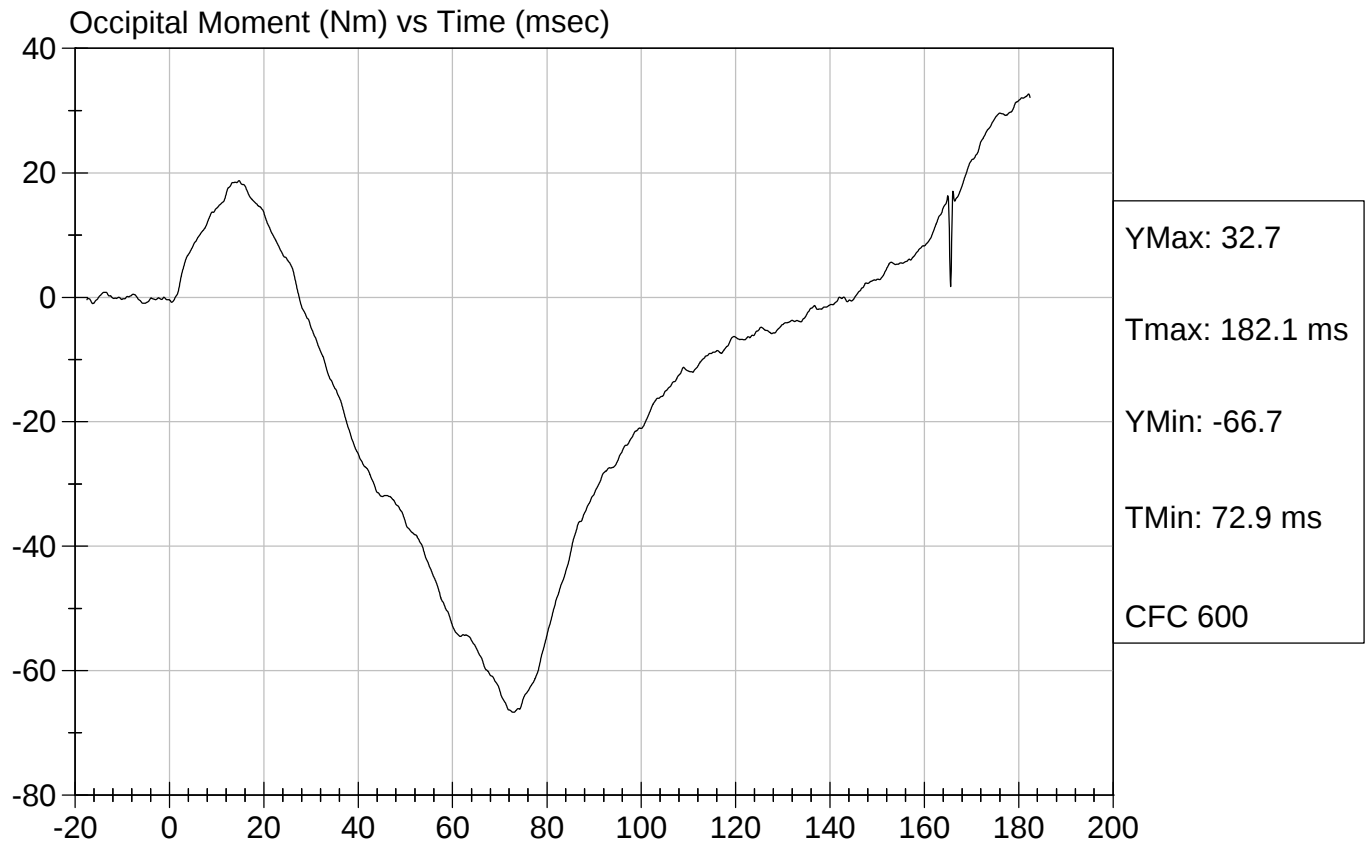
Neck Rotation (DEG) vs Time (msec)





Test Desc: Neck Extension
Component ID: D04553

Test Date: 03/11/2004
Speed: 19.75 ft/sec, 6.02 m/sec



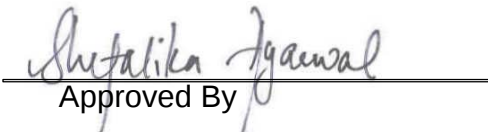
Hybrid III Calibration Data Sheet
50th Percentile Male
Thorax Impact Test

ATD Serial No: 066

Test I.D: D04554

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21	Pass
Laboratory Relative Humidity	%	10 to 70	22	Pass
Probe Velocity	m/s	6.58 to 6.82	6.67	Pass
Peak Probe Force	Newtons	5159 to 5893	5,452	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.63	Pass
Internal Hysteresis	%	69 to 85	71	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

03/15/2004
Test Date

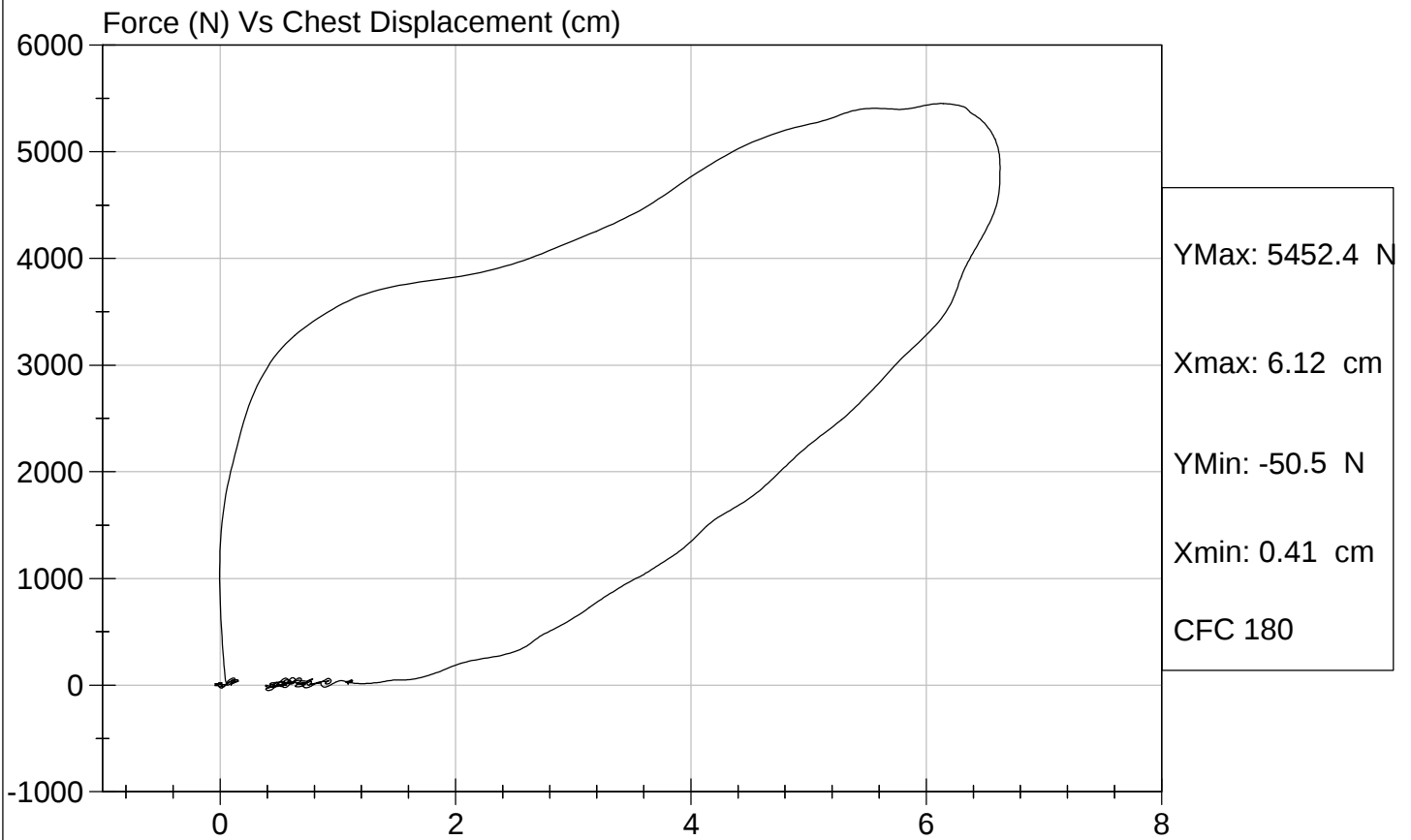


Test Description: Thorax Impact

Test Date: 03/15/2004

Component: D04554

Speed: 21.88 ft/sec, 6.67 m/sec

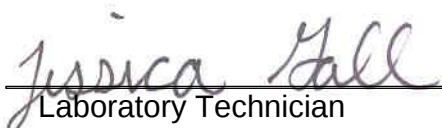


Hybrid III Calibration Data Sheet
50th Percentile Male
Right Knee Impact Test

ATD Serial No: 066

Test I.D: D04555

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	17	Pass
Probe Velocity	m/s	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	4715 to 5782	5,326	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

03/12/2004

Test Date

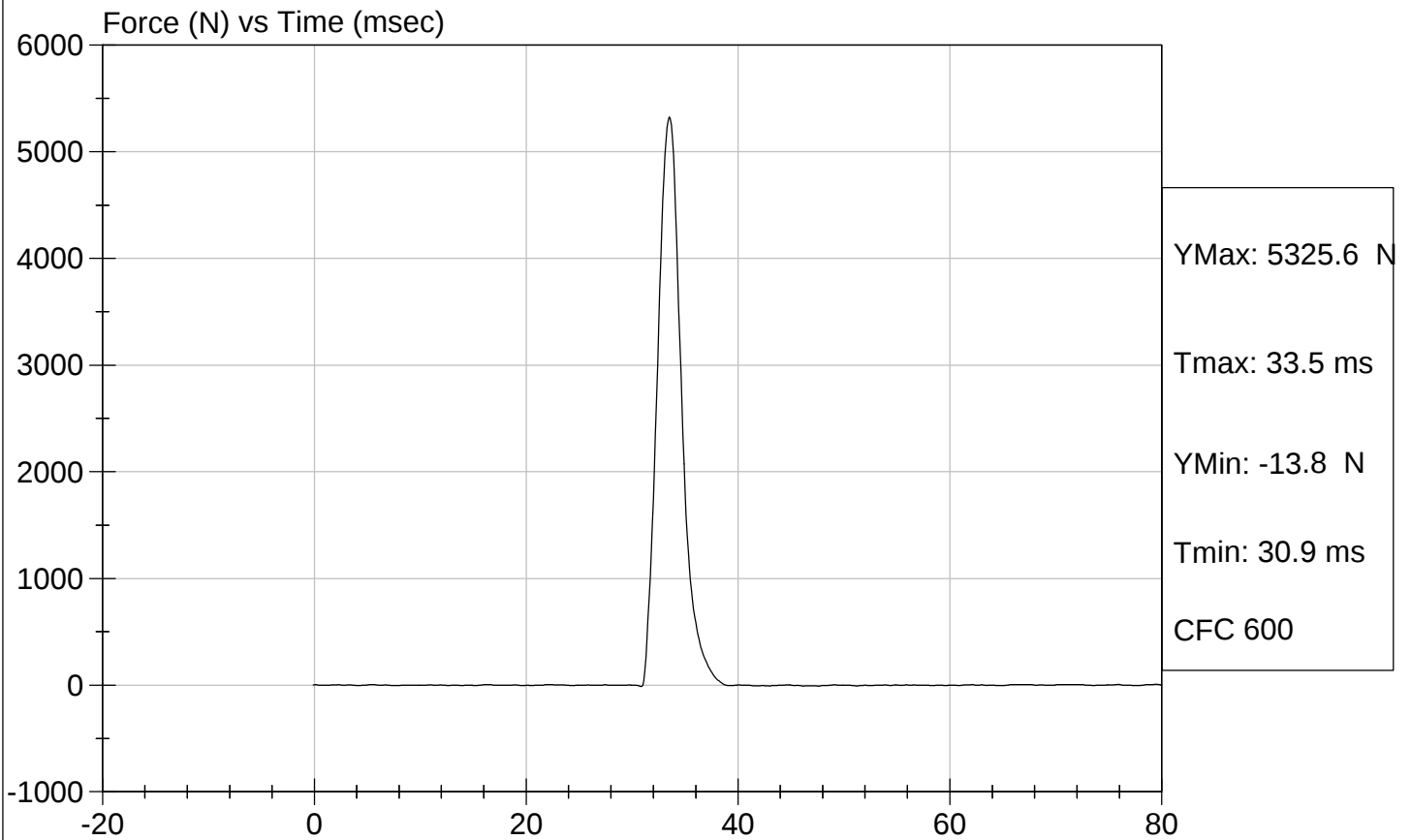


Test Description: Right Knee

Test Date: 03/12/2004

Component: D04555

Speed: 6.84 ft/sec, 2.085 m/sec

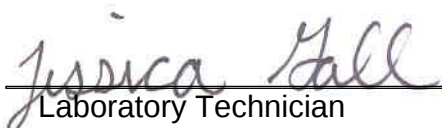


Hybrid III Calibration Data Sheet
50th Percentile Male
Left Knee Impact Test

ATD Serial No: 066

Test I.D: D04556

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	17	Pass
Probe Velocity	m/s	2.07 to 2.13	2.11	Pass
Peak Probe Force	Newtons	4715 to 5782	4,815	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

03/12/2004
Test Date

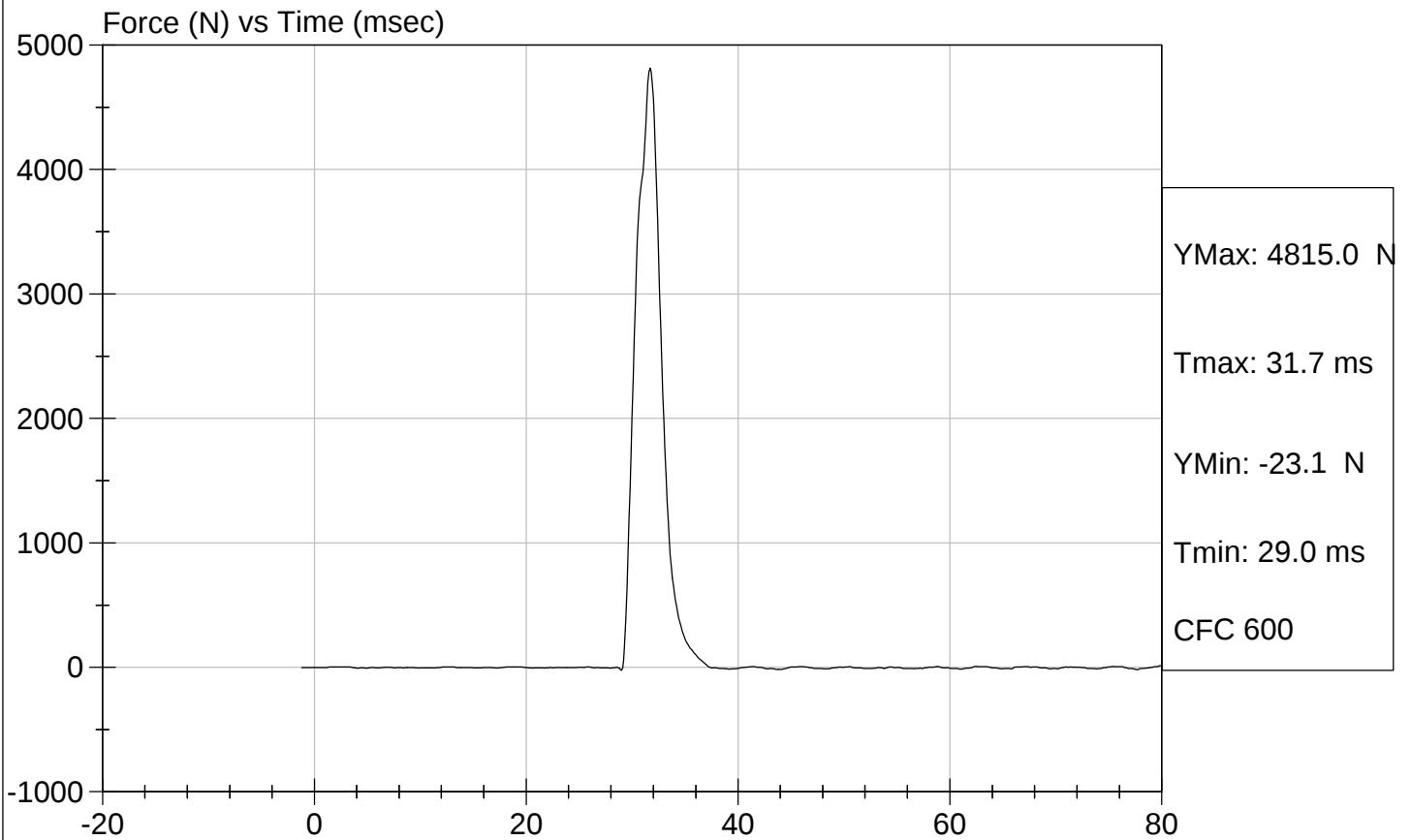


Test Description: Left Knee

Test Date: 03/12/2004

Component: D04556

Speed: 6.93 ft/sec, 2.112 m/sec

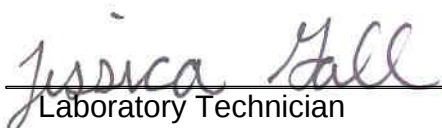


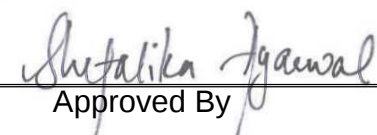
Hybrid III Calibration Data Sheet
50th Percentile Male
Hip-Femur Flexion Test

ATD Serial No: 066

Test I.D: D04559/0

Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.4	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	20	20	Pass
Rotation Rate	deg/sec	5 -10	8	8	Pass
30 Degrees	Nm	94.9 Nm Max	85.6	80.6	Pass
150 ft-lbf / 203.4 Nm	Deg	40- 50 Degree Max Rotation	40	43	Pass
Overall Test Results					Pass


 Laboratory Technician


 Approved By

03/12/2004
 Test Date

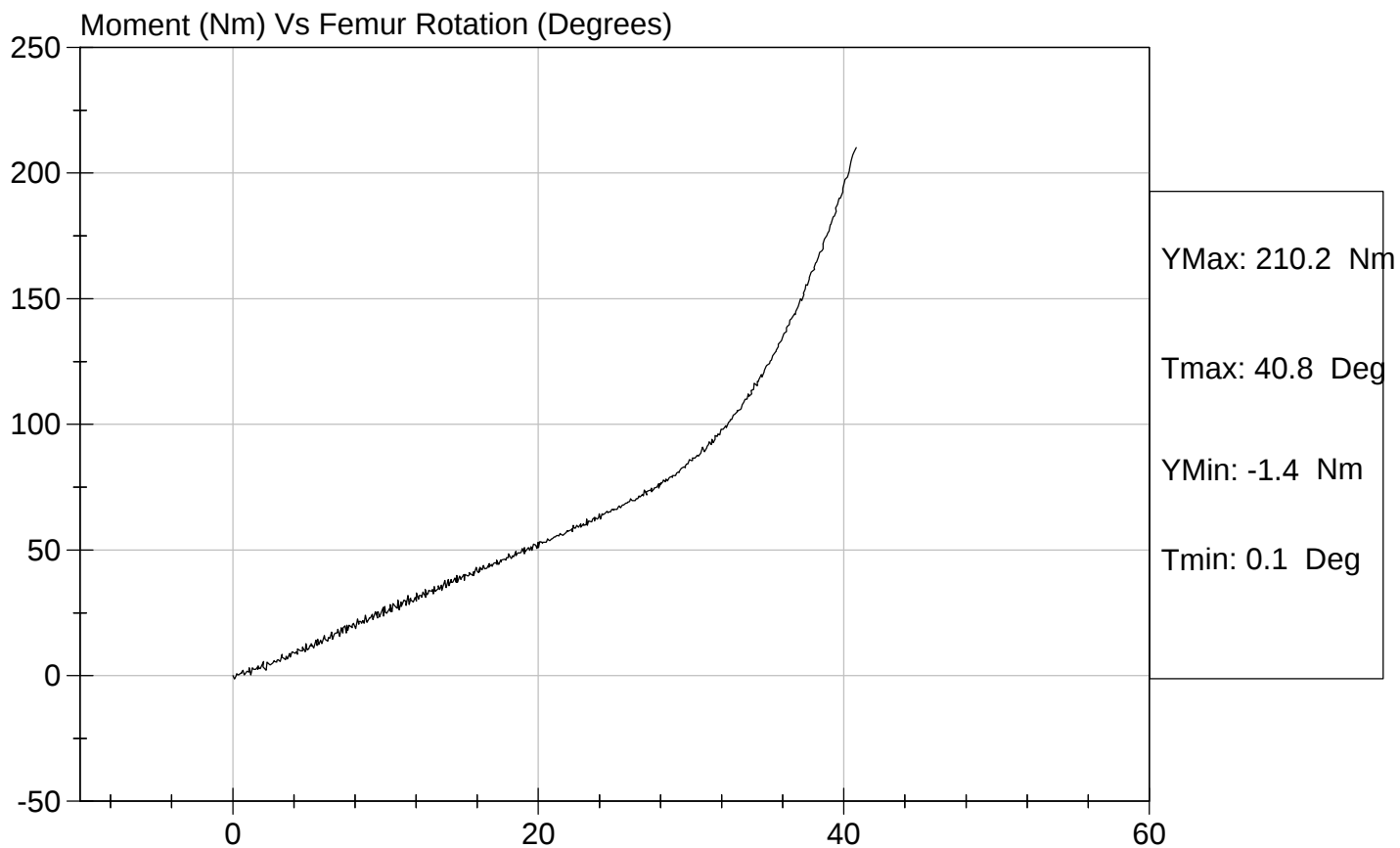


Test Description: Hip Femur Flexion

Test Date: 03/12/2004

Component: D04559

Speed: 0 ft/sec, 0.00 m/sec



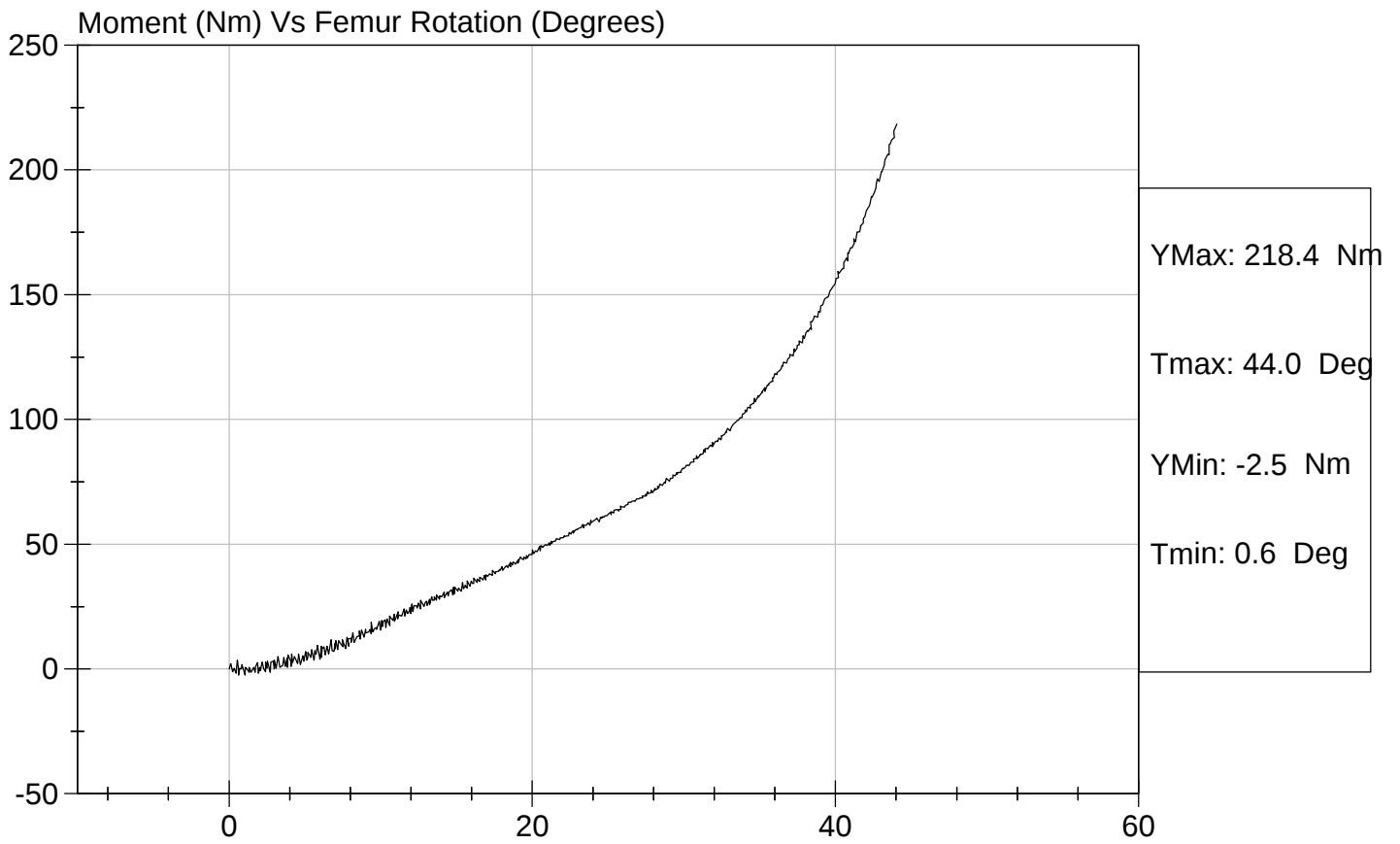


Test Description: Hip Femur Flexion

Test Date: 03/12/2004

Component: D04550

Speed: 0 ft/sec, 0.00 m/sec



APPENDIX D

TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION

INSTRUMENTS FOR DRIVER DUMMY NO. 065

	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	J20580	Endevco	3/31/04
Head Y	J19927	Endevco	3/31/04
Head Z	J23914	Endevco	3/31/04
Head X Redundant	ACC78	Endevco	3/31/04
Head Y Redundant	ACCY3	Endevco	3/31/04
Head Z Redundant	ACCE6	Endevco	3/31/04
Head Y – Front	ALBA7	Endevco	11/10/03
Head Z – Front	AMP82	Endevco	11/10/03
Head X – Left	AKAA6	Endevco	11/10/03
Head Z – Left	AP2C4	Endevco	11/10/03
Head X – Upper	J18953	Endevco	11/10/03
Head Y – Upper	J18843	Endevco	11/10/03
Neck Load Cell	442	Denton	3/08/04
Chest X	J19884	Endevco	3/31/04
Chest Y	ACCW9	Endevco	3/31/04
Chest Z	AAMN8	Endevco	3/31/04
Chest Displacement	065	Servo	3/15/04
Chest X Redundant	J21988	Endevco	3/31/04
Chest Y Redundant	J28986	Endevco	3/31/04
Chest Z Redundant	ACC61	Endevco	3/31/04
Pelvis X	P27024	Endevco	12/05/03
Pelvis Y	P26982	Endevco	12/05/03
Pelvis Z	P26985	Endevco	12/05/03
Left Femur Load Cell	259	Denton	3/01/04
Right Femur Load Cell	256	Denton	3/01/04
Left Upper Tibia Load Cell	105	Denton	3/09/04
Left Lower Tibia Load Cell	133	Denton	3/09/04
Right Upper Tibia Load Cell	103	Denton	3/09/04
Right Lower Tibia Load Cell	134	Denton	3/09/04
Left Foot Z – Front	P27029	Endevco	12/05/03
Left Ankle X	P27001	Endevco	12/05/03
Left Ankle Z	P26993	Endevco	12/06/03
Right Foot Z – Front	J13772	Endevco	10/08/03
Right Ankle X	P22696	Endevco	12/05/03
Right Ankle Z	AJ9D6	Endevco	10/08/03
Shoulder Belt Load Cell	161	Denton	9/18/03
Lap Belt Load Cell	199	Denton	12/09/03

INSTRUMENTS FOR PASSENGER DUMMY NO. 066

	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	ACCY6	Endevco	3/24/04
Head Y	AJ5R0	Endevco	3/24/04
Head Z	AAMW5	Endevco	3/24/04
Head X Redundant	J14235	Endevco	3/24/04
Head Y Redundant	J18724	Endevco	3/24/04
Head Z Redundant	J13941	Endevco	3/24/04
Head Y – Front	AH0D1	Endevco	12/05/03
Head Z – Front	AH0M0	Endevco	12/05/03
Head X – Left	J22034	Endevco	12/05/03
Head Z – Left	ANBP7	Endevco	4/02/04
Head X – Upper	J11014	Endevco	11/10/03
Head Y – Upper	AP2G9	Endevco	12/05/03
Neck Load Cell	443	Denton	3/08/04
Chest X	J13541	Endevco	3/31/04
Chest Y	J20093	Endevco	3/31/04
Chest Z	J19440	Endevco	3/31/04
Chest Displacement	066	Servo	3/15/04
Chest X Redundant	ACCY1	Endevco	3/31/04
Chest Y Redundant	ACCT7	Endevco	3/31/04
Chest Z Redundant	ACCC8	Endevco	3/31/04
Pelvis X	J14-J11	Entran	2/10/04
Pelvis Y	A12-Z08	Entran	2/10/04
Pelvis Z	A12-Z22	Endevco	2/10/04
Left Femur Load Cell	262	Denton	3/01/04
Right Femur Load Cell	261	Denton	3/01/04
Left Upper Tibia Load Cell	109	Denton	3/09/04
Left Lower Tibia Load Cell	138	Denton	3/09/04
Right Upper Tibia Load Cell	106	Denton	3/09/04
Right Lower Tibia Load Cell	135	Denton	3/09/04
Left Foot Z – Front	P27022	Endevco	1/14/04
Left Ankle X	P27009	Endevco	1/14/04
Left Ankle Z	P26983	Endevco	1/14/04
Right Foot Z – Front	A12-Z05	Entran	2/10/04
Right Ankle X	A12-Z06	Entran	2/10/04
Right Ankle Z	A12-Z09	Entran	2/10/04
Shoulder Belt Load Cell	162	Denton	9/18/03
Lap Belt Load Cell	191	Denton	6/09/03

INSTRUMENTS FOR VEHICLE AND LABORATORY

	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Left Rear Seat Crossmember X	E01-F09	Entran	11/11/03
Left Rear Seat Crossmember Z	E01-F04	Entran	11/11/03
Right Rear Seat Crossmember X	K07-R15	Entran	12/10/03
Right Rear Seat Crossmember Z	K20-J10	Entran	12/15/03
Top of Engine X	A08-A13	Entran	3/09/04
Bottom of Engine X	K20-J09	Entran	12/15/03
Left Brake Caliper X	H01-N12	Entran	3/09/04
Right Brake Caliper X	G10-F04	Entran	10/17/03
Instrument Panel X	A27-R06	Entran	3/09/04

Note: All Endevco accelerometers are Model No. 7264-2000
All Entran accelerometers are Model No. EGE-72

APPENDIX E
DUMMY HEAD RESPONSE DATA TRACES

TABLE OF DATA PLOTS

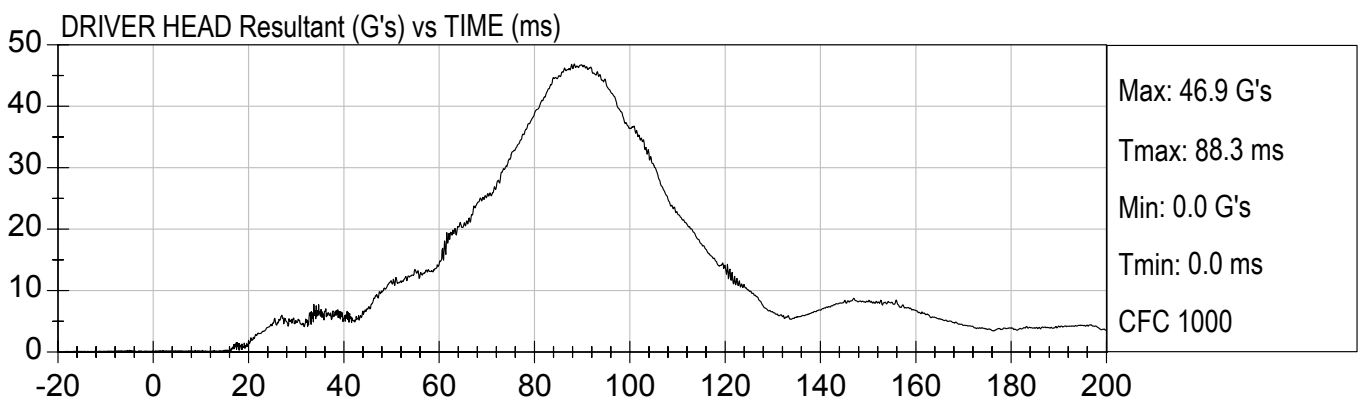
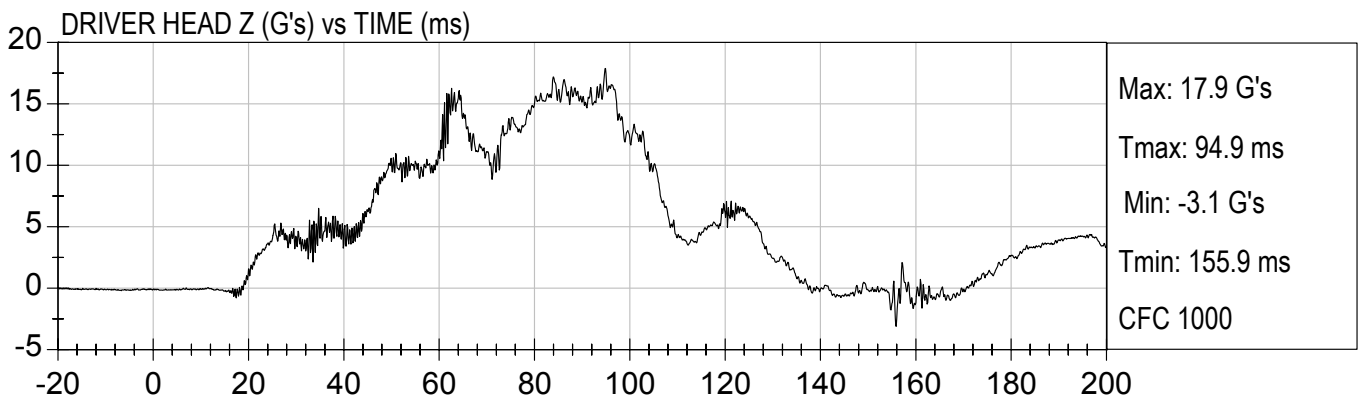
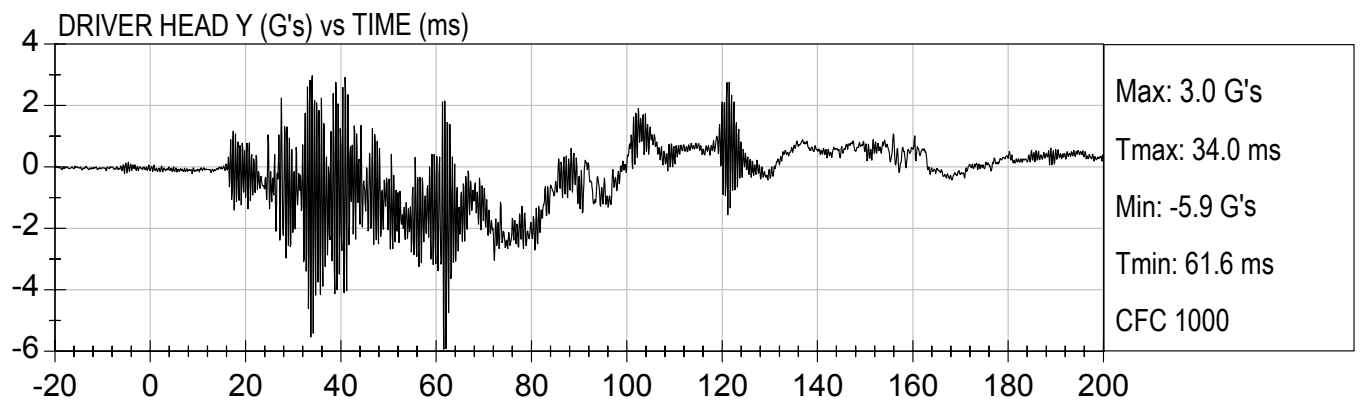
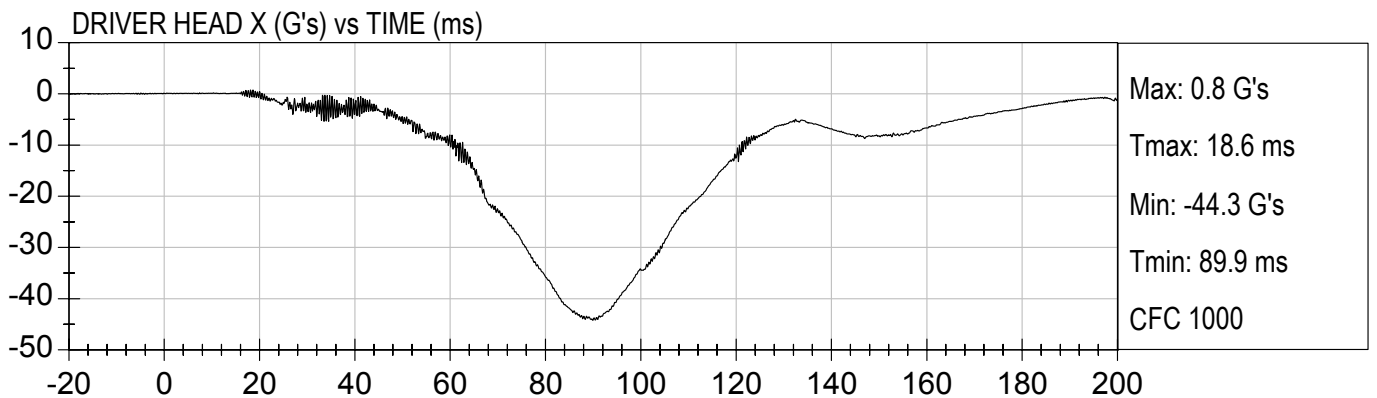
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Figure No. 1.	Driver Head X Acceleration vs. Time	E-1
Figure No. 2.	Driver Head Y Acceleration vs. Time	E-1
Figure No. 3.	Driver Head Z Acceleration vs. Time	E-1
Figure No. 4.	Driver Head Resultant Acceleration vs. Time	E-1
Figure No. 5.	Driver Head X Velocity vs. Time	E-2
Figure No. 6.	Driver Head Y Velocity vs. Time	E-2
Figure No. 7.	Driver Head Z Velocity vs. Time	E-2
Figure No. 8.	Driver Head X Redundant Acceleration vs. Time	E-3
Figure No. 9.	Driver Head Y Redundant Acceleration vs. Time	E-3
Figure No. 10.	Driver Head Z Redundant Acceleration vs. Time	E-3
Figure No. 11.	Driver Head Resultant Redundant Acceleration vs. Time	E-3
Figure No. 12.	Driver Head X Redundant Velocity vs. Time	E-4
Figure No. 13.	Driver Head Y Redundant Velocity vs. Time	E-4
Figure No. 14.	Driver Head Z Redundant Velocity vs. Time	E-4
Figure No. 15.	Driver Head Y – Front Acceleration vs. Time	E-5
Figure No. 16.	Driver Head Z – Front Acceleration vs. Time	E-5
Figure No. 17.	Driver Head Y – Front Velocity vs. Time	E-5
Figure No. 18.	Driver Head Z – Front Velocity vs. Time	E-5
Figure No. 19.	Driver Head X – Left Acceleration vs. Time	E-6
Figure No. 20.	Driver Head Z – Left Acceleration vs. Time	E-6
Figure No. 21.	Driver Head X – Left Velocity vs. Time	E-6
Figure No. 22.	Driver Head Z – Left Velocity vs. Time	E-6
Figure No. 23.	Driver Head X – Upper Acceleration vs. Time	E-7
Figure No. 24.	Driver Head Y – Upper Acceleration vs. Time	E-7
Figure No. 25.	Driver Head X – Upper Velocity vs. Time	E-7
Figure No. 26.	Driver Head Y – Upper Velocity vs. Time	E-7
Figure No. 27.	Passenger Head X Acceleration vs. Time	E-8
Figure No. 28.	Passenger Head Y Acceleration vs. Time	E-8
Figure No. 29.	Passenger Head Z Acceleration vs. Time	E-8

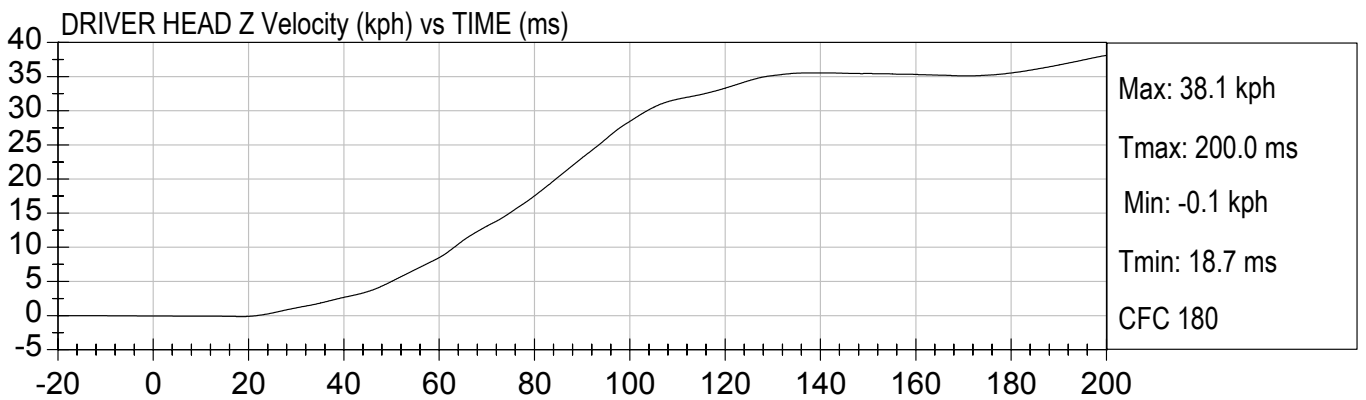
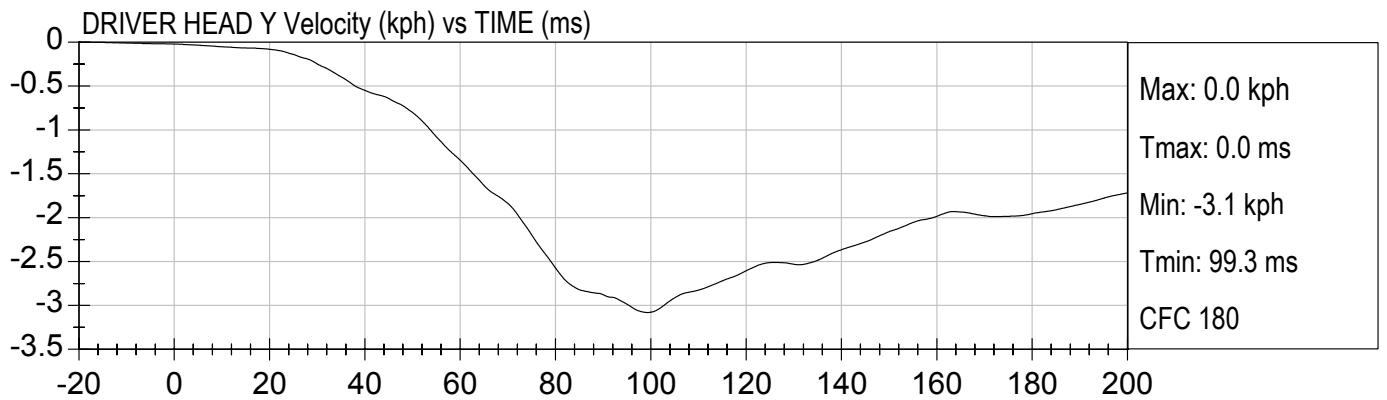
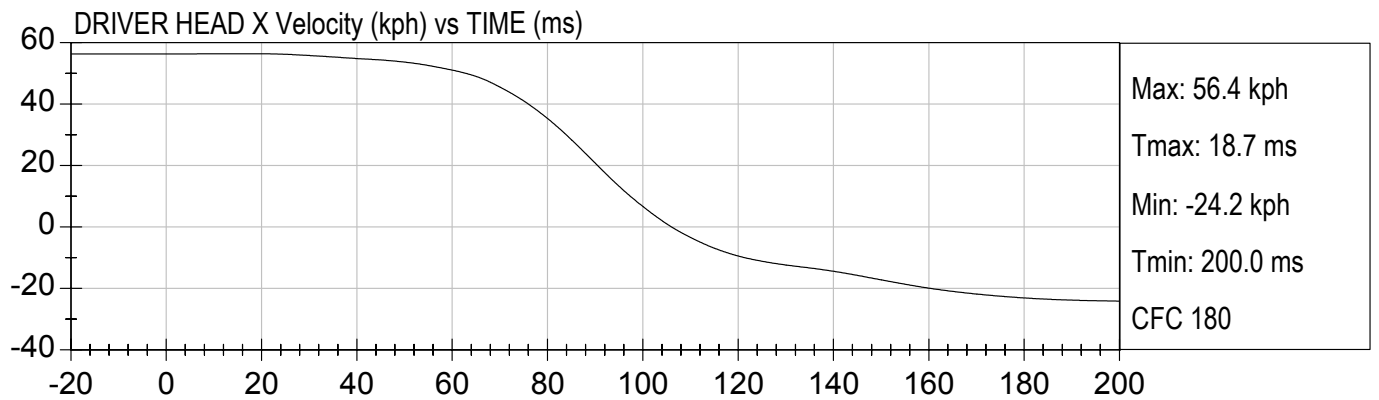
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Figure No. 30.	Passenger Head Resultant Acceleration vs. Time	E-8
Figure No. 31.	Passenger Head X Velocity vs. Time	E-9
Figure No. 32.	Passenger Head Y Velocity vs. Time	E-9
Figure No. 33.	Passenger Head Z Velocity vs. Time	E-9
Figure No. 34.	Passenger Head X Redundant Acceleration vs. Time	E-10
Figure No. 35.	Passenger Head Y Redundant Acceleration vs. Time	E-10
Figure No. 36.	Passenger Head Z Redundant Acceleration vs. Time	E-10
Figure No. 37.	Passenger Head Resultant Redundant Acceleration vs. Time	E-10
Figure No. 38.	Passenger Head X Redundant Velocity vs. Time	E-11
Figure No. 39.	Passenger Head Y Redundant Velocity vs. Time	E-11
Figure No. 40.	Passenger Head Z Redundant Velocity vs. Time	E-11
Figure No. 41.	Passenger Head Y – Front Acceleration vs. Time	E-12
Figure No. 42.	Passenger Head Z – Front Acceleration vs. Time	E-12
Figure No. 43.	Passenger Head Y – Front Velocity vs. Time	E-12
Figure No. 44.	Passenger Head Z – Front Velocity vs. Time	E-12
Figure No. 45.	Passenger Head X – Left Acceleration vs. Time	E-13
Figure No. 46.	Passenger Head Z – Left Acceleration vs. Time	E-13
Figure No. 47.	Passenger Head X – Left Velocity vs. Time	E-13
Figure No. 48.	Passenger Head Z – Left Velocity vs. Time	E-13
Figure No. 49.	Passenger Head X – Upper Acceleration vs. Time	E-14
Figure No. 50.	Passenger Head Y – Upper Acceleration vs. Time	E-14
Figure No. 51.	Passenger Head X – Upper Velocity vs. Time	E-14
Figure No. 52.	Passenger Head Y – Upper Velocity vs. Time	E-14



35MPH FRONTAL IMPACT
2005 CHEVROLET EQUINOX (M50100)

Test Date: 4/6/2004
Speed: 35.0 mph (56.3 km/h)

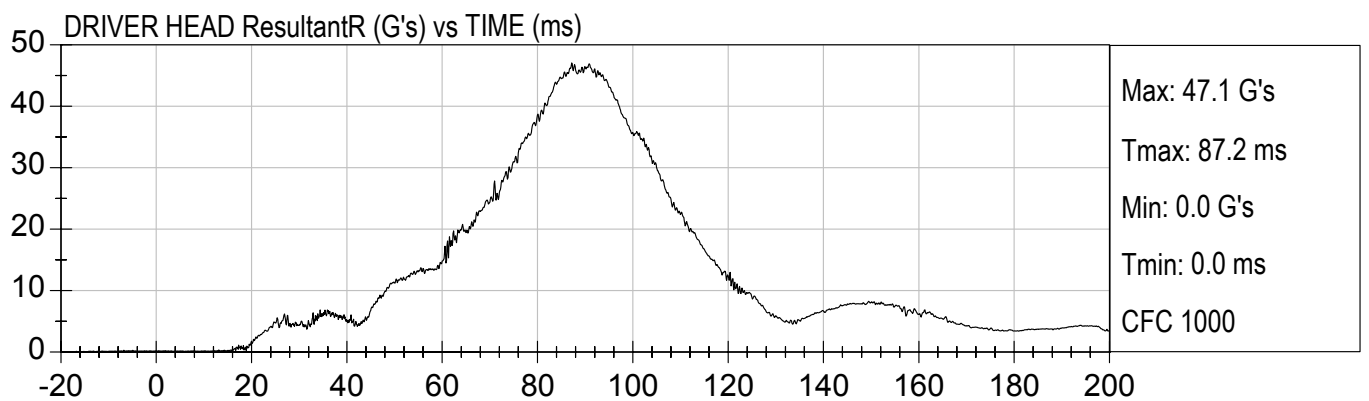
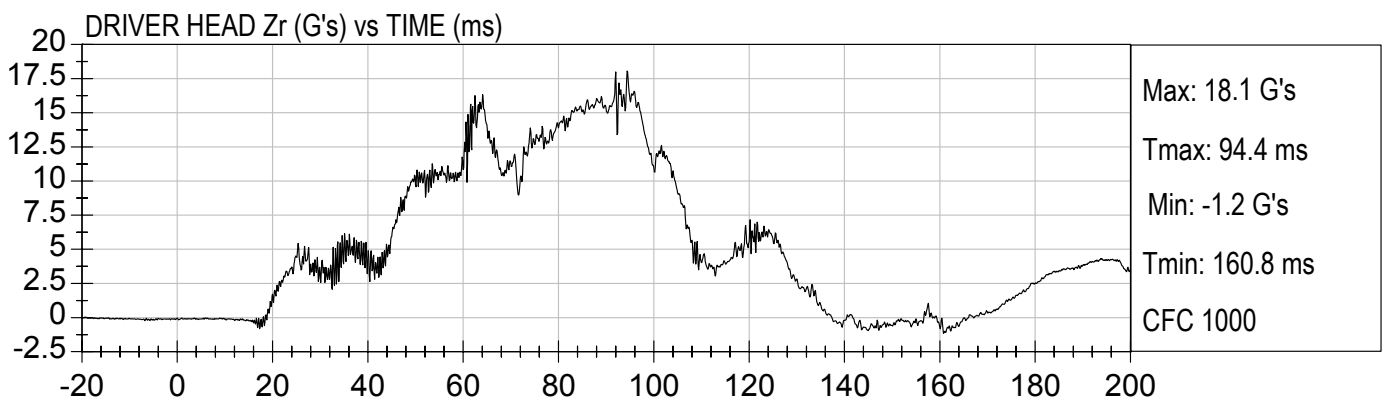
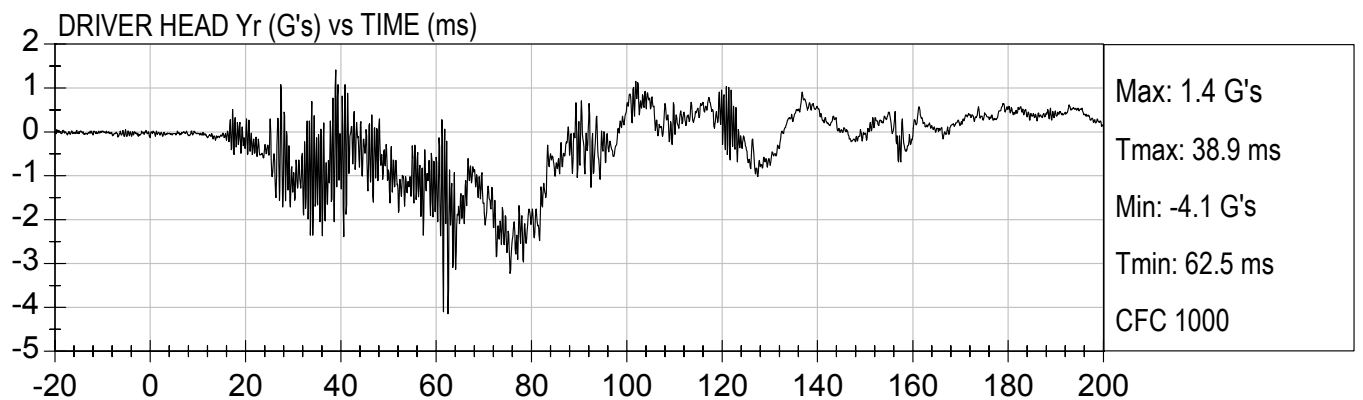
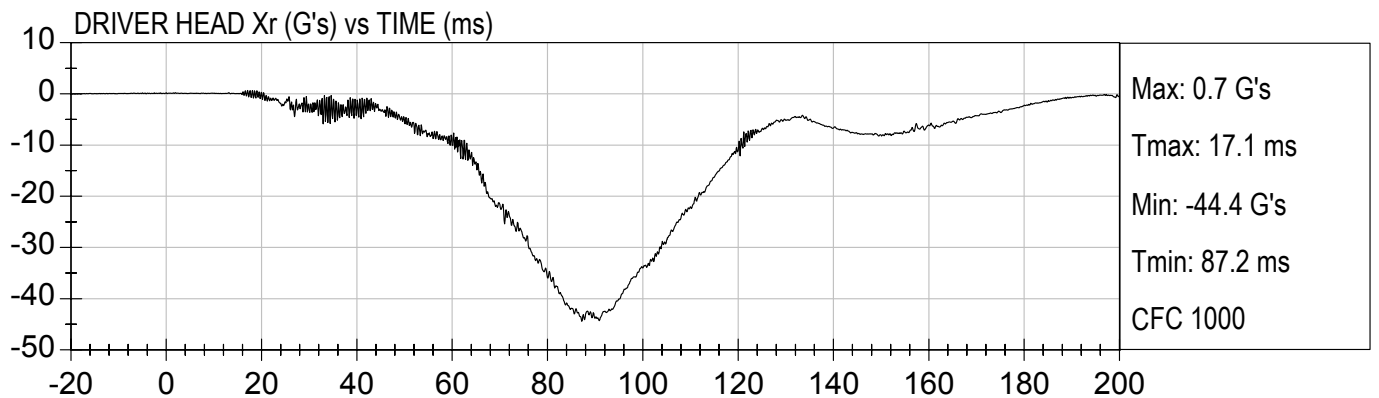




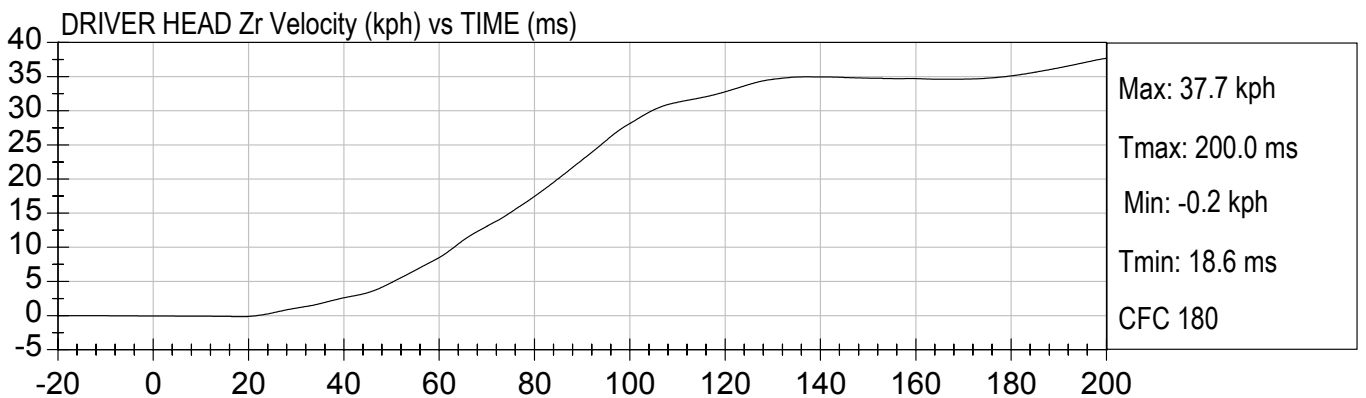
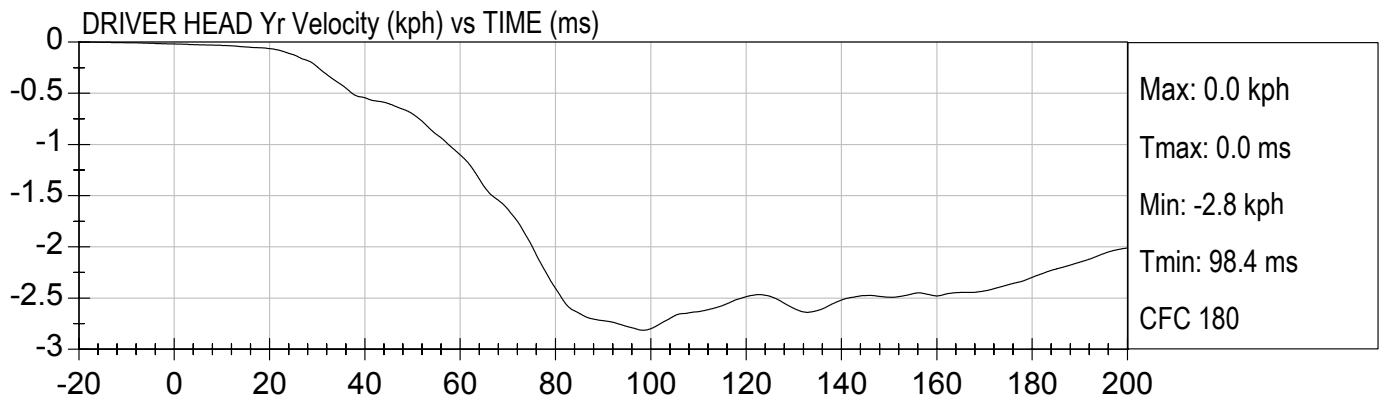
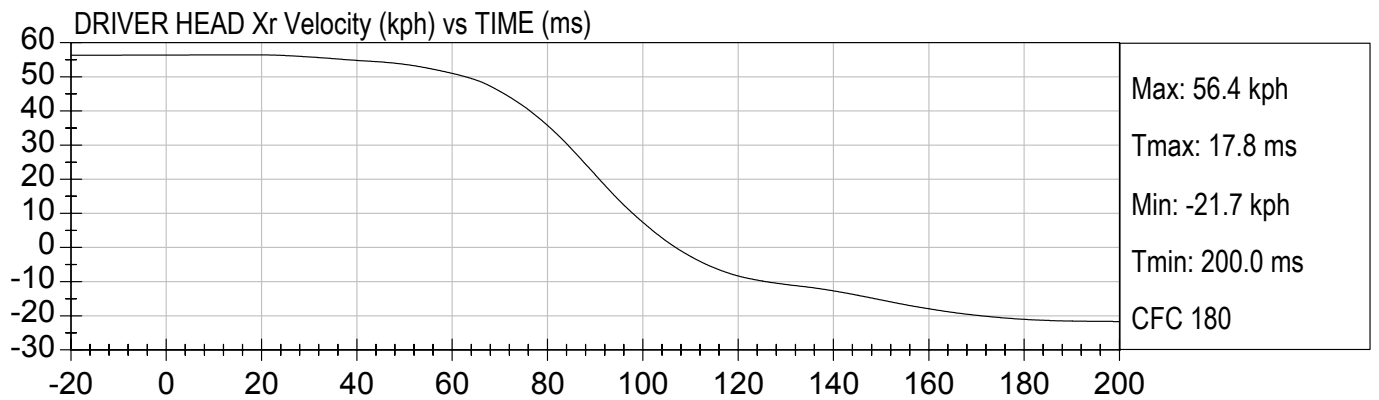


35MPH FRONTAL IMPACT
2005 CHEVROLET EQUINOX (M50100)

Test Date: 4/6/2004
Speed: 35.0 mph (56.3 km/h)



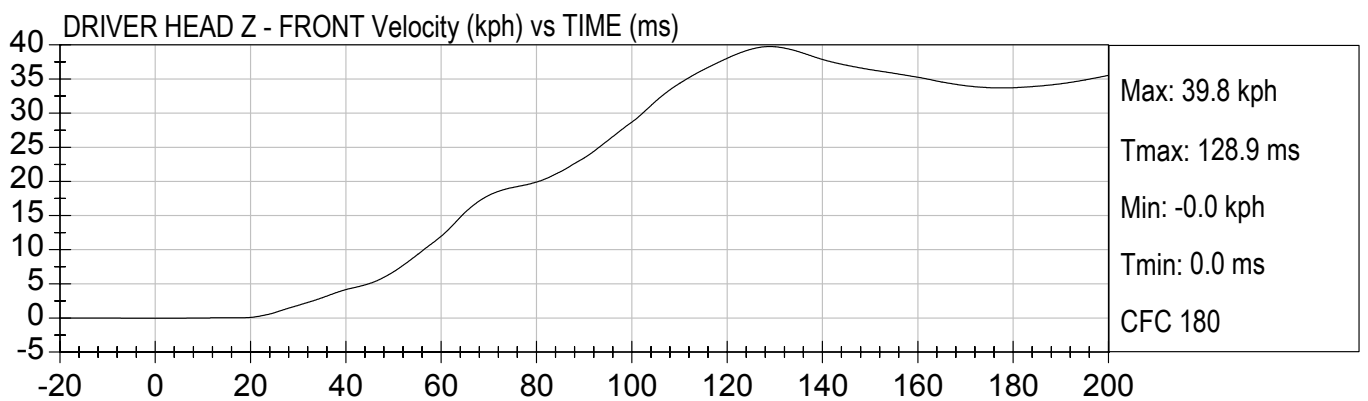
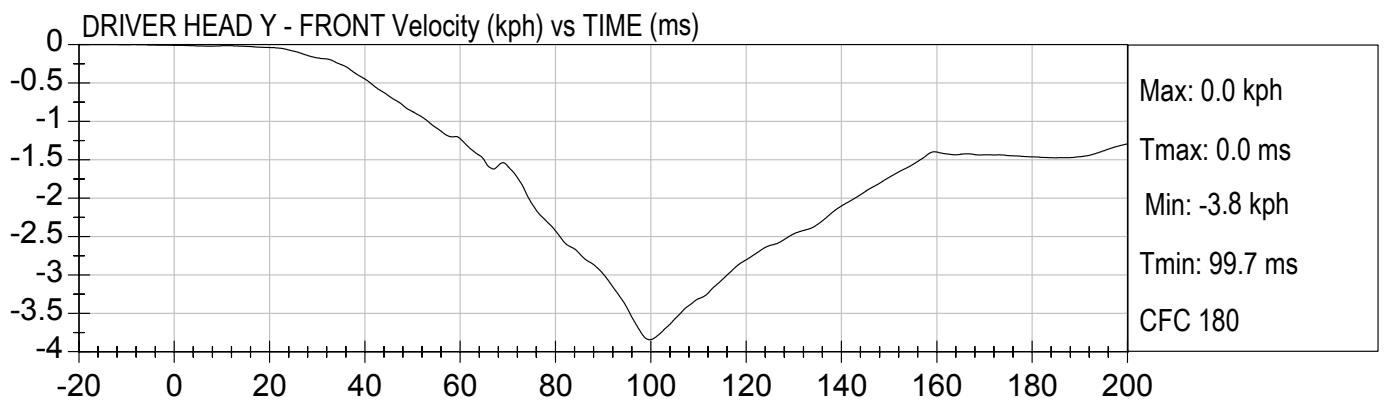
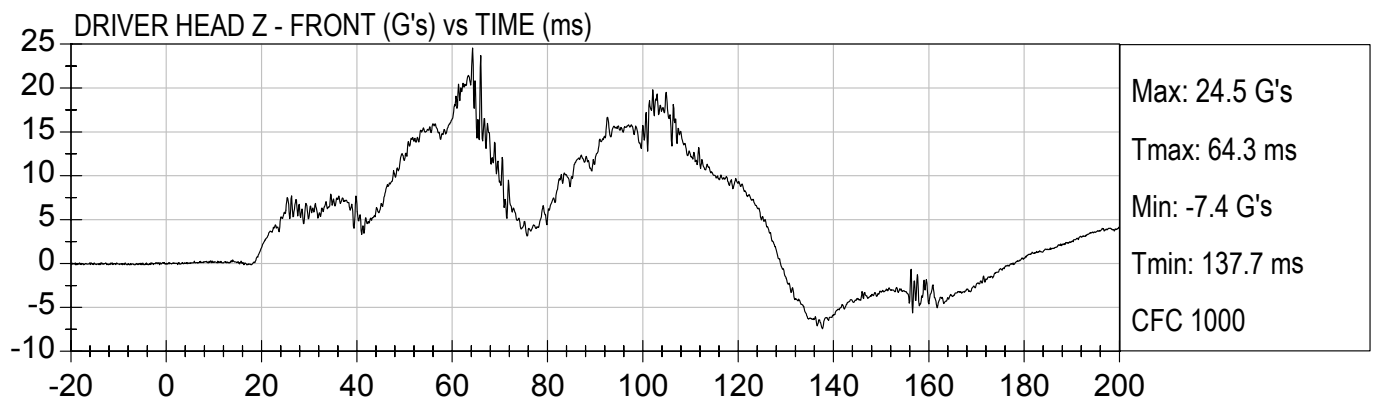
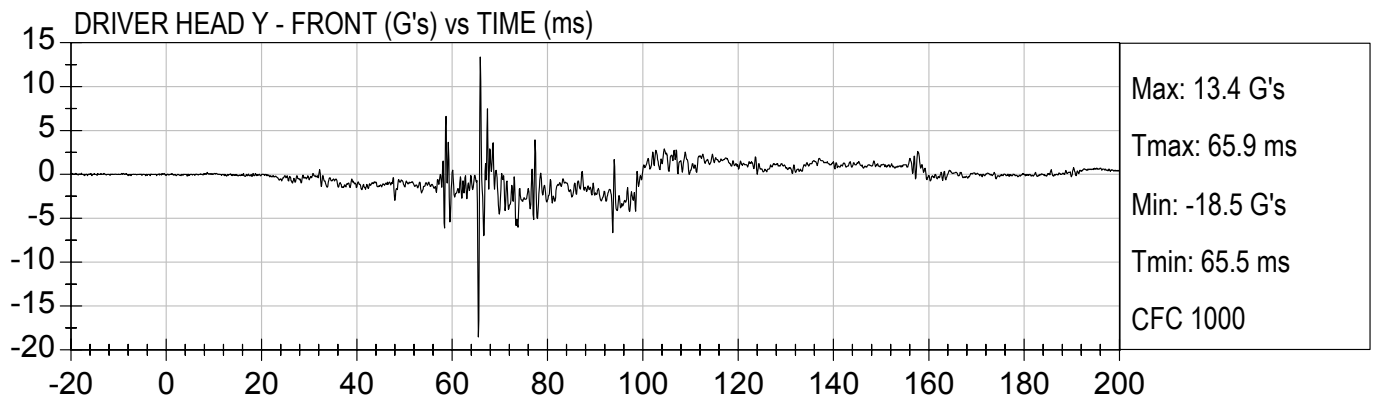
E-3





35MPH FRONTAL IMPACT
2005 CHEVROLET EQUINOX (M50100)

Test Date: 4/6/2004
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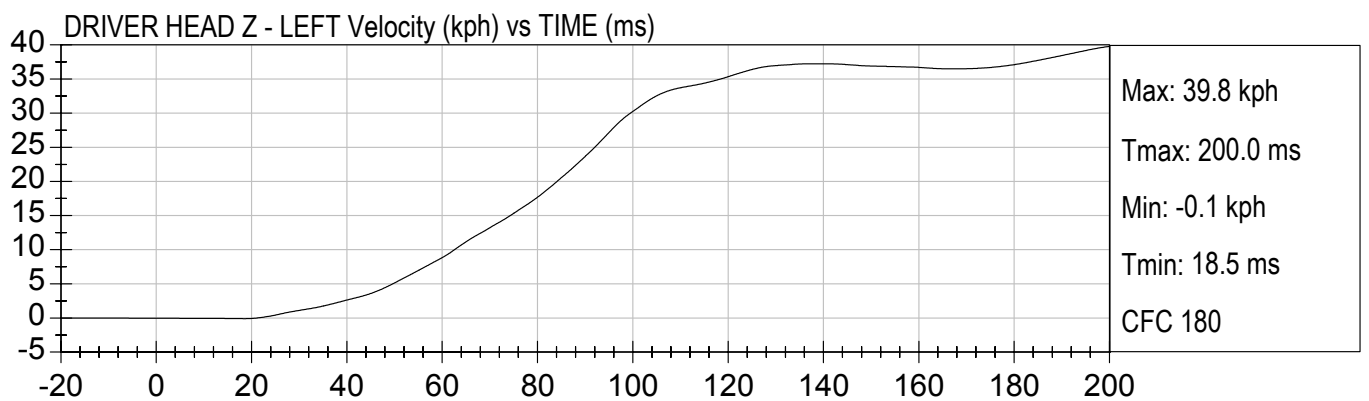
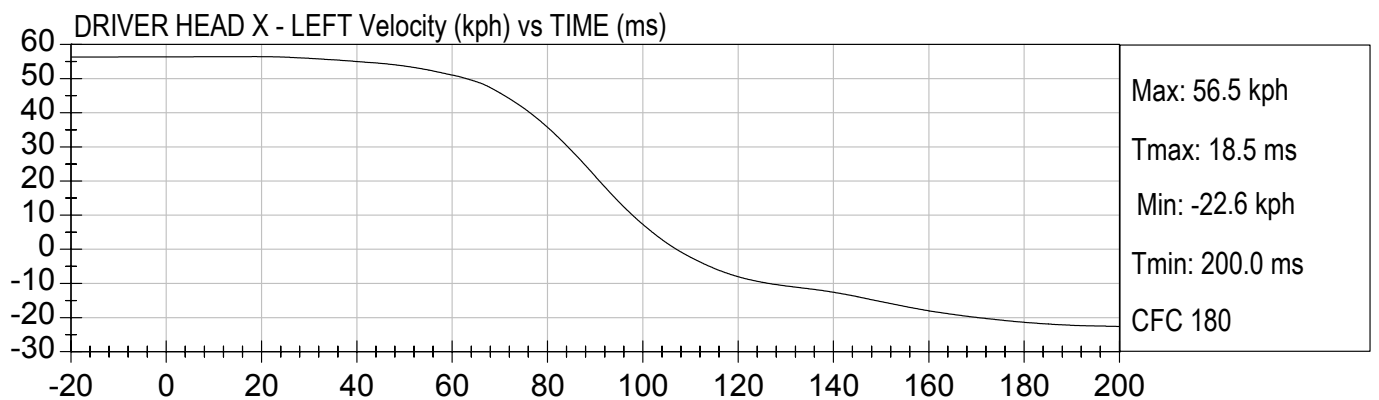
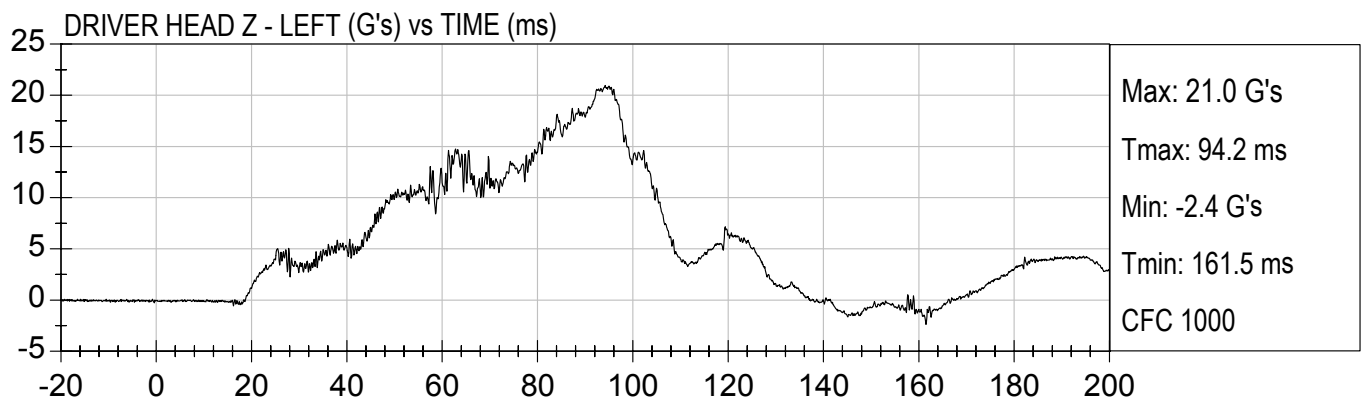
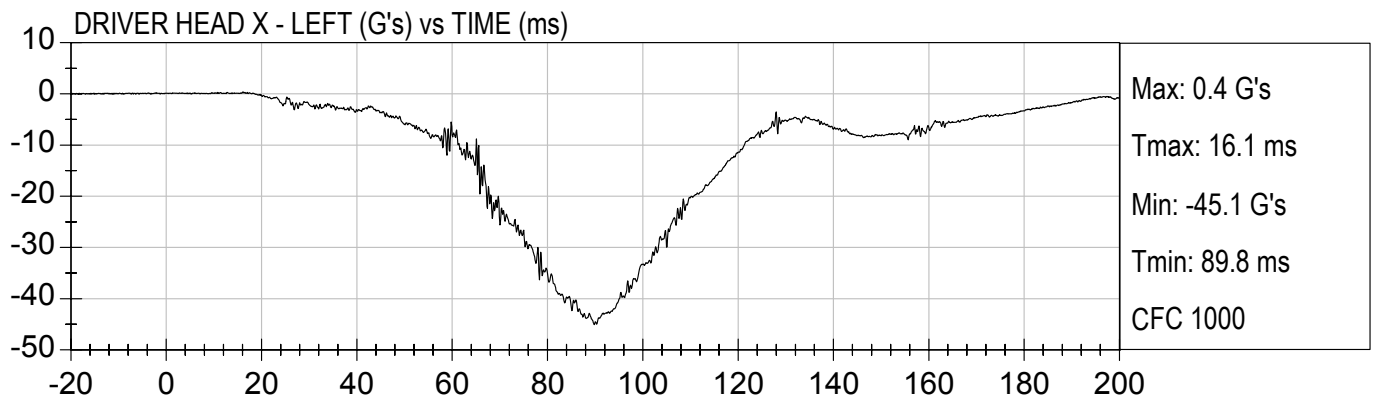


E-5



35MPH FRONTAL IMPACT
2005 CHEVROLET EQUINOX (M50100)

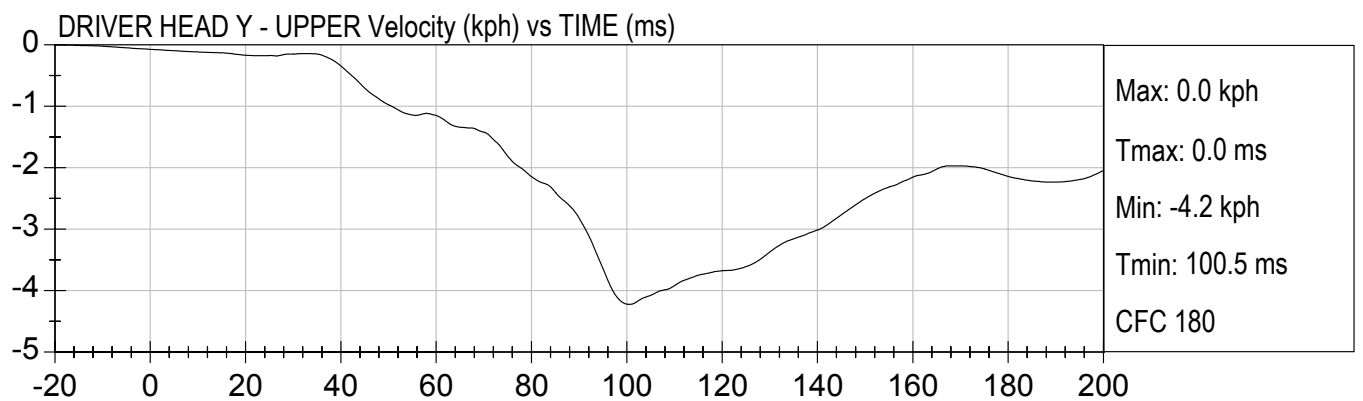
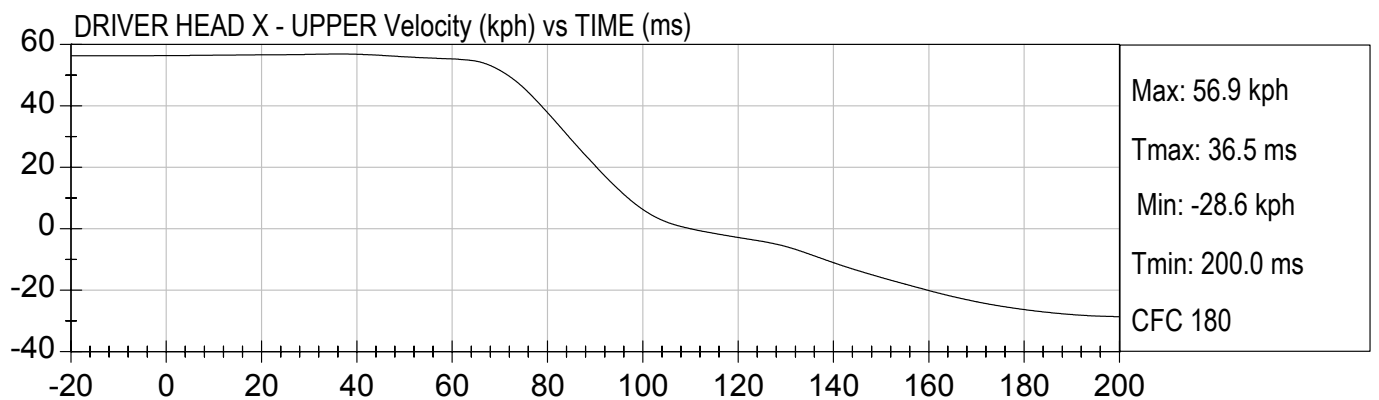
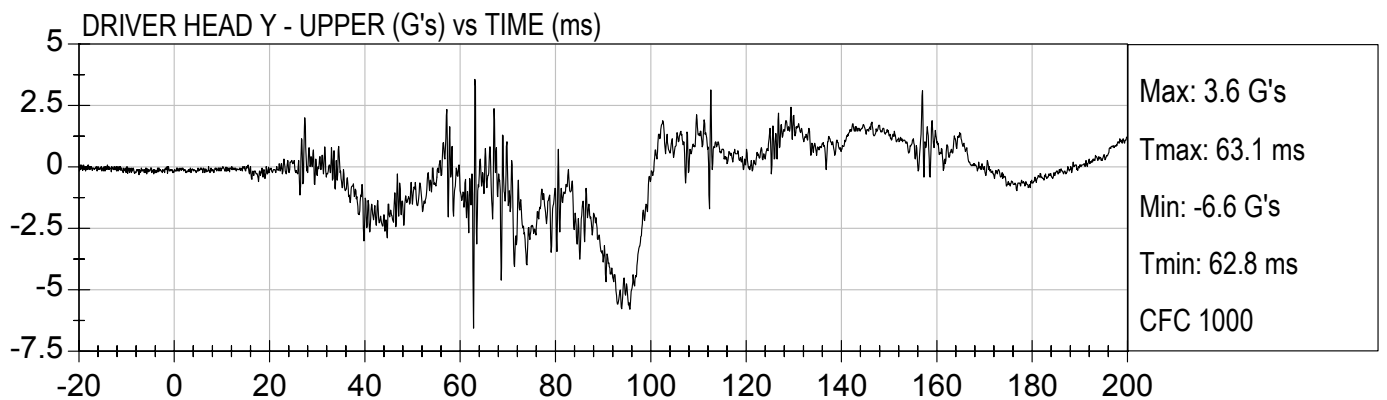
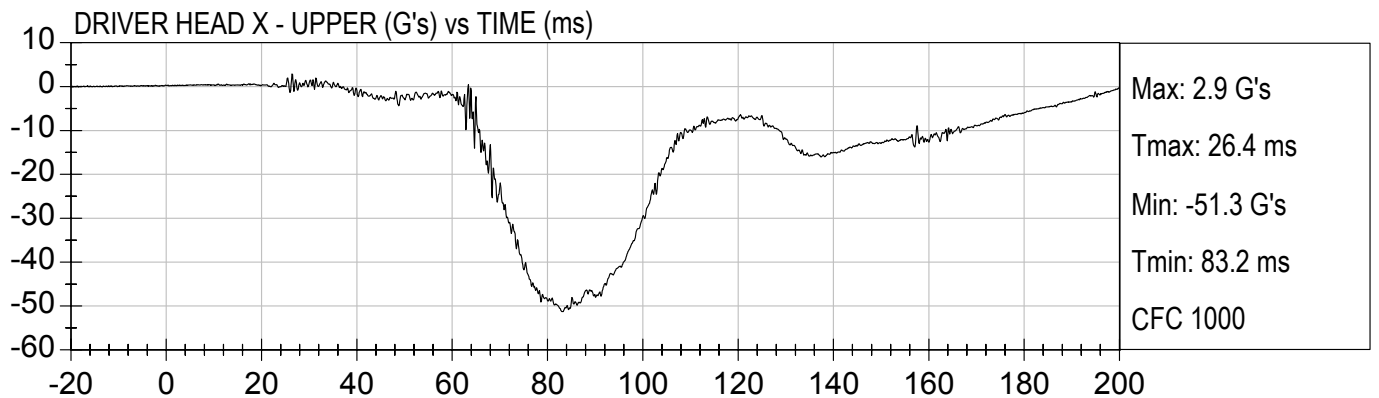
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Speed: 35.0 mph (56.3 km/h)





35MPH FRONTAL IMPACT
2005 CHEVROLET EQUINOX (M50100)

Test Date: 4/6/2004
Speed: 35.0 mph (56.3 km/h)

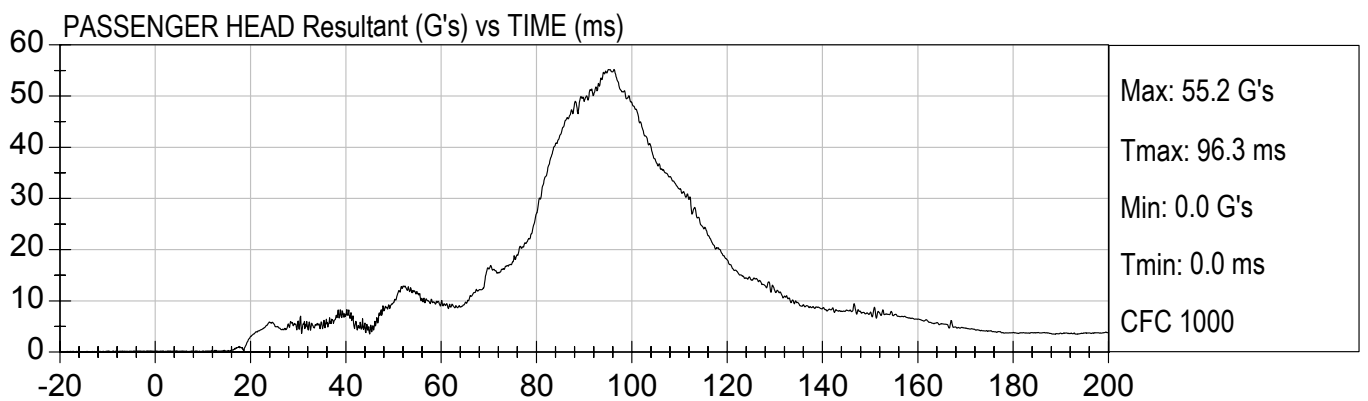
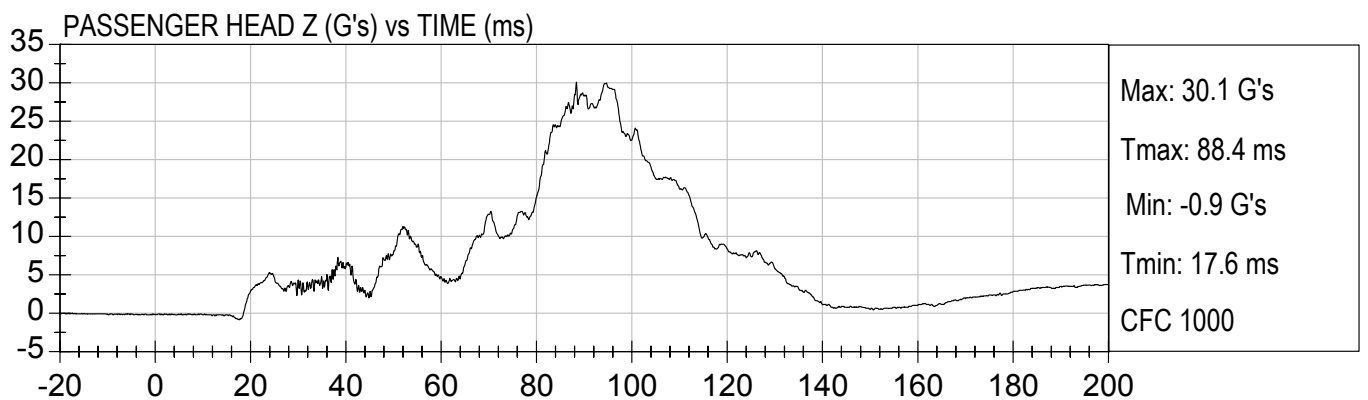
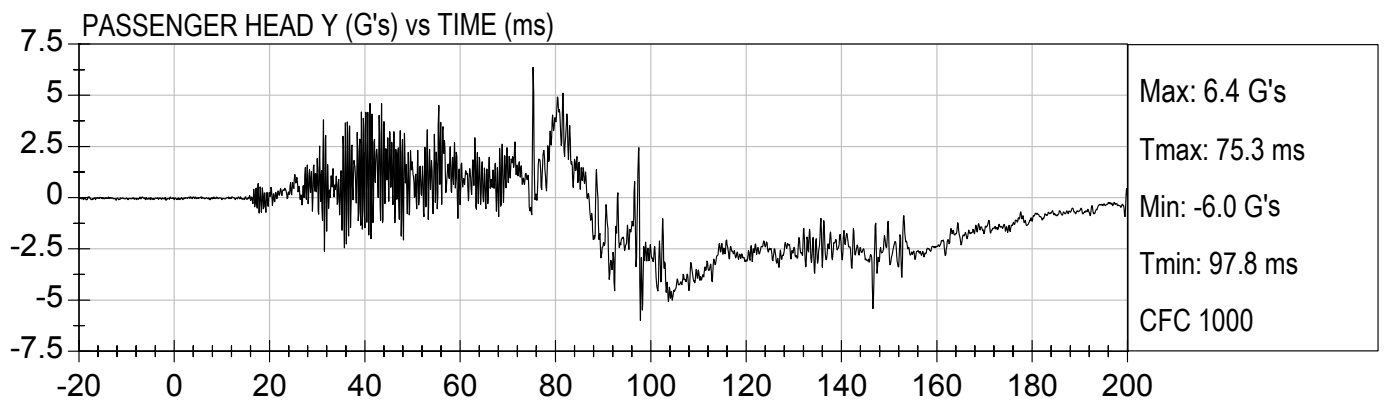
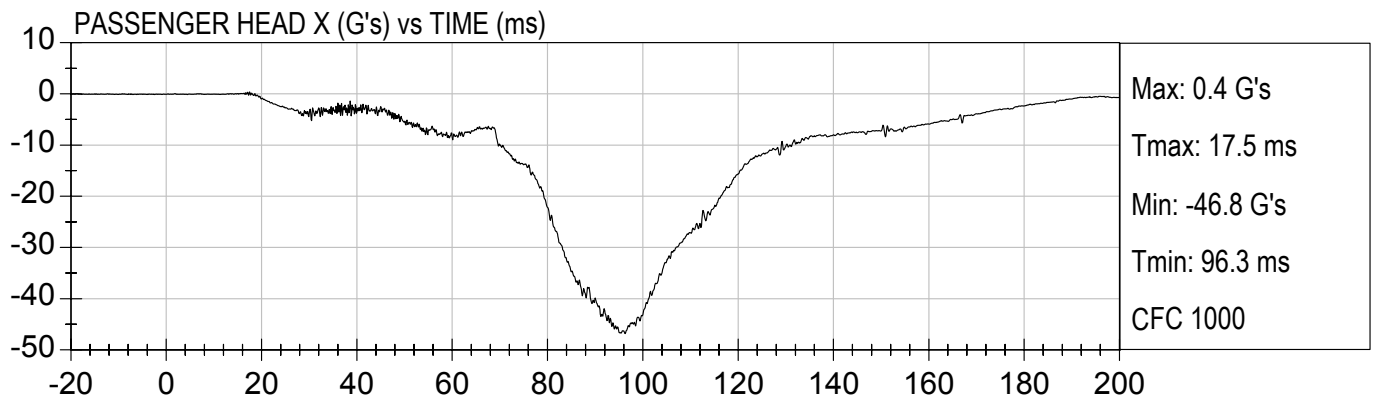


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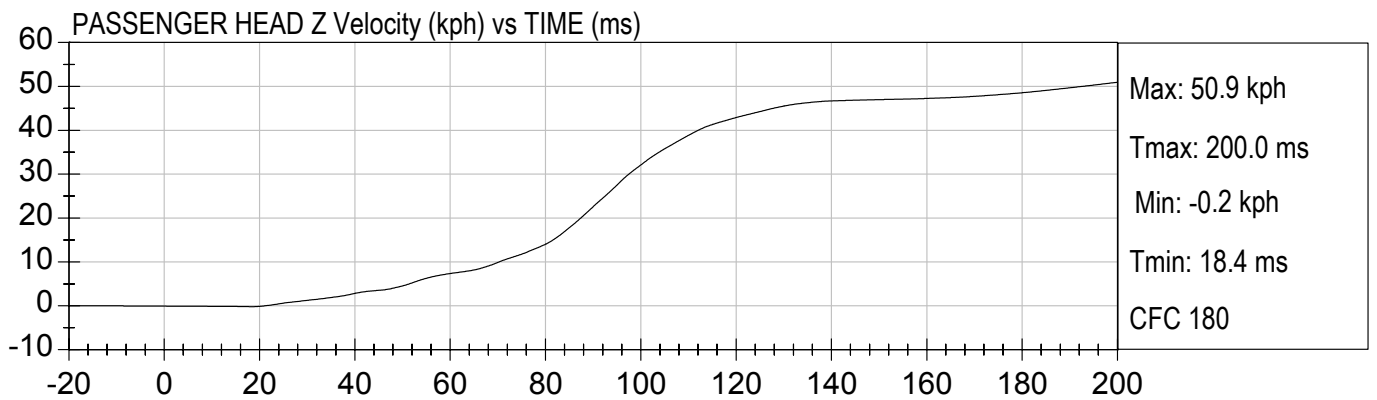
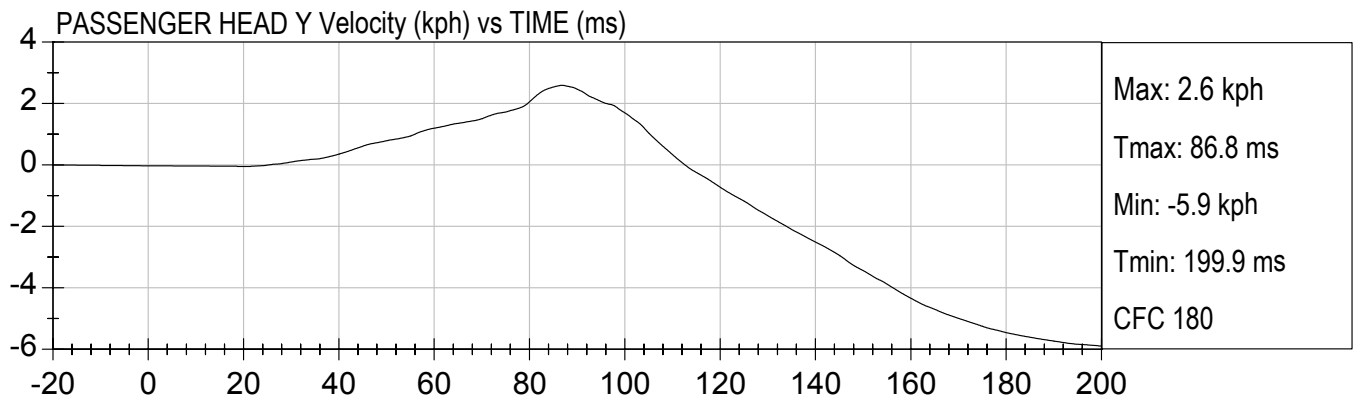
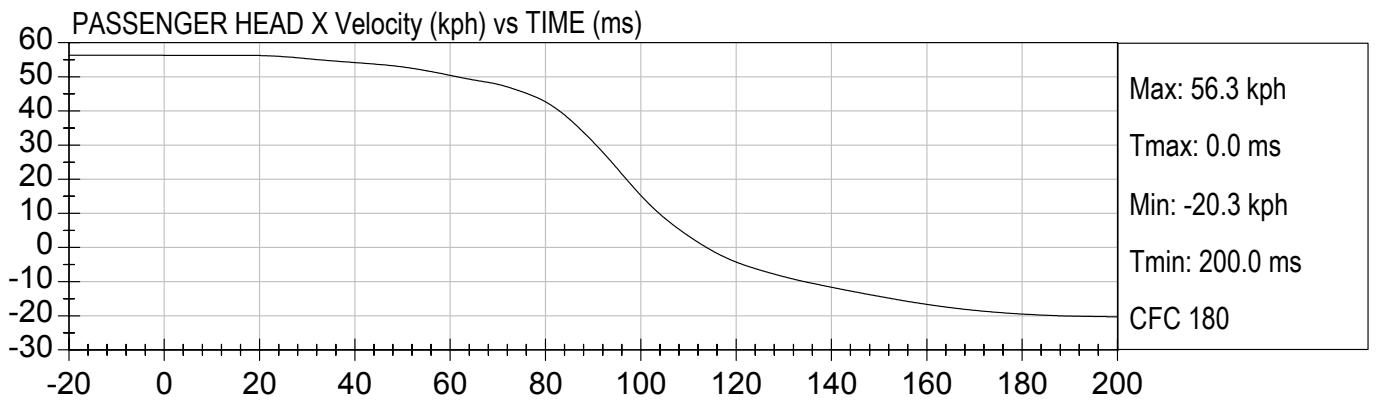


35MPH FRONTAL IMPACT
2005 CHEVROLET EQUINOX (M50100)

Test Date: 4/6/2004
Speed: 35.0 mph (56.3 km/h)



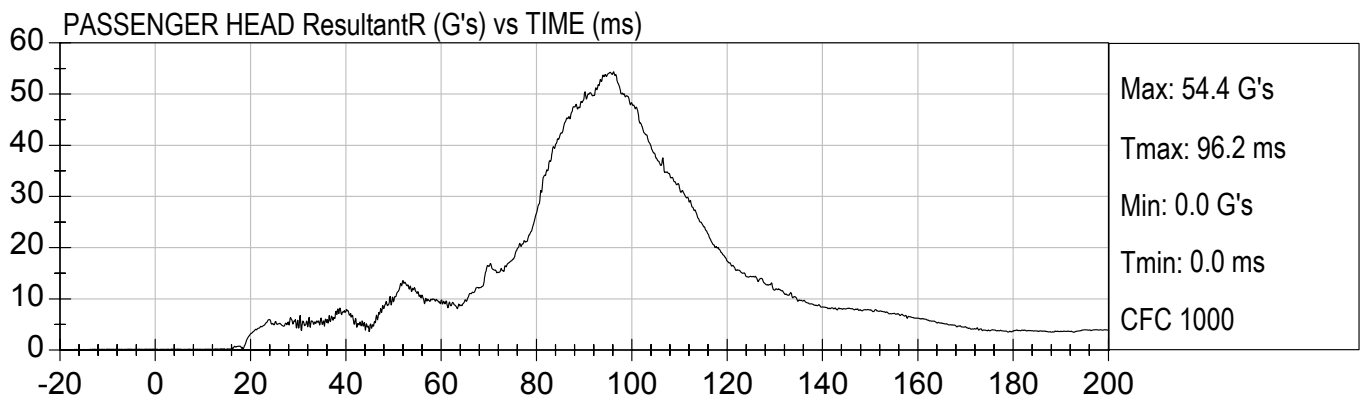
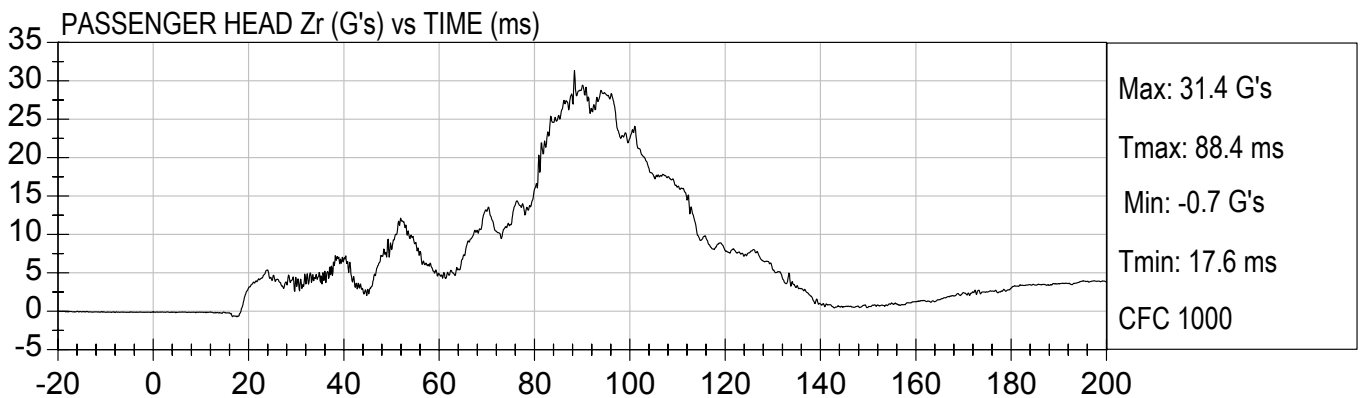
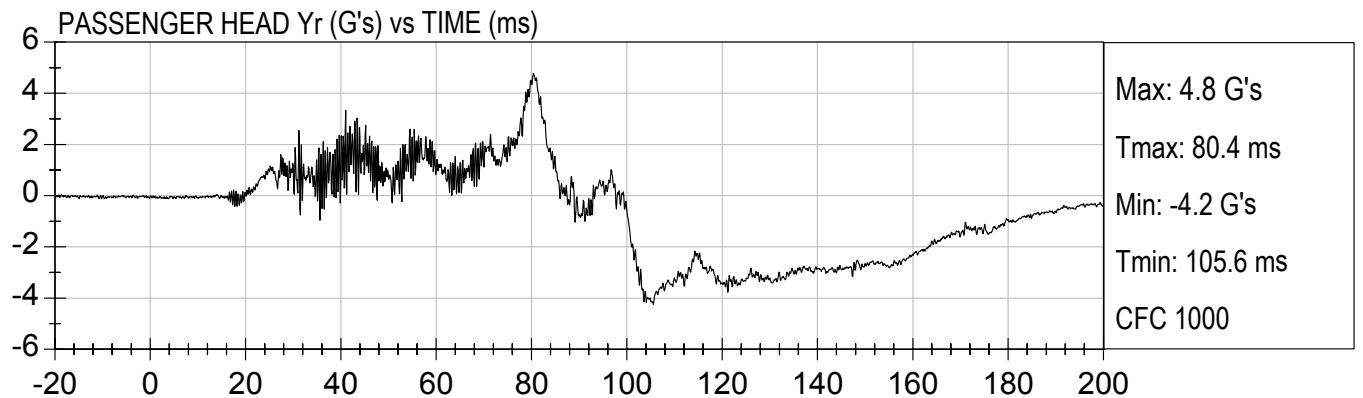
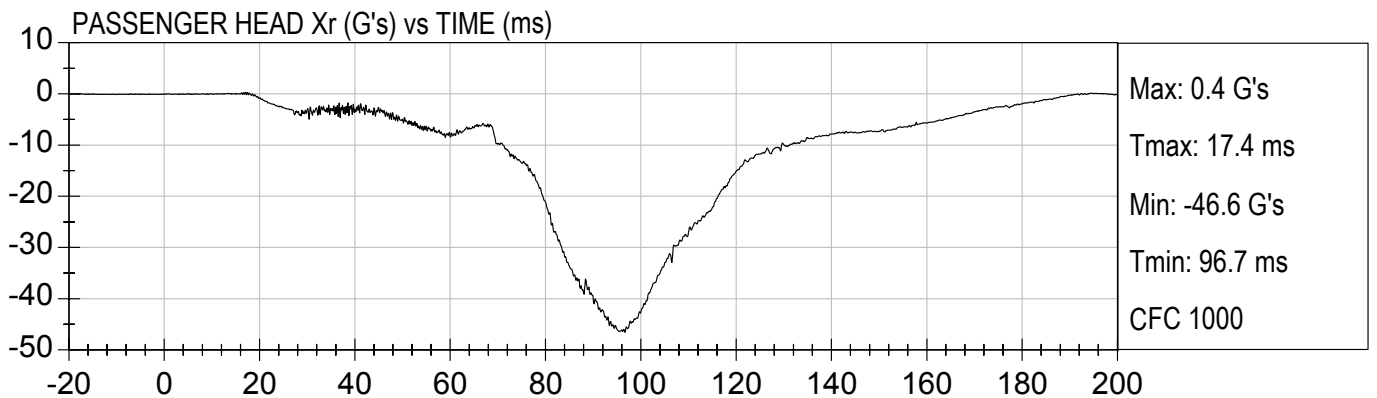
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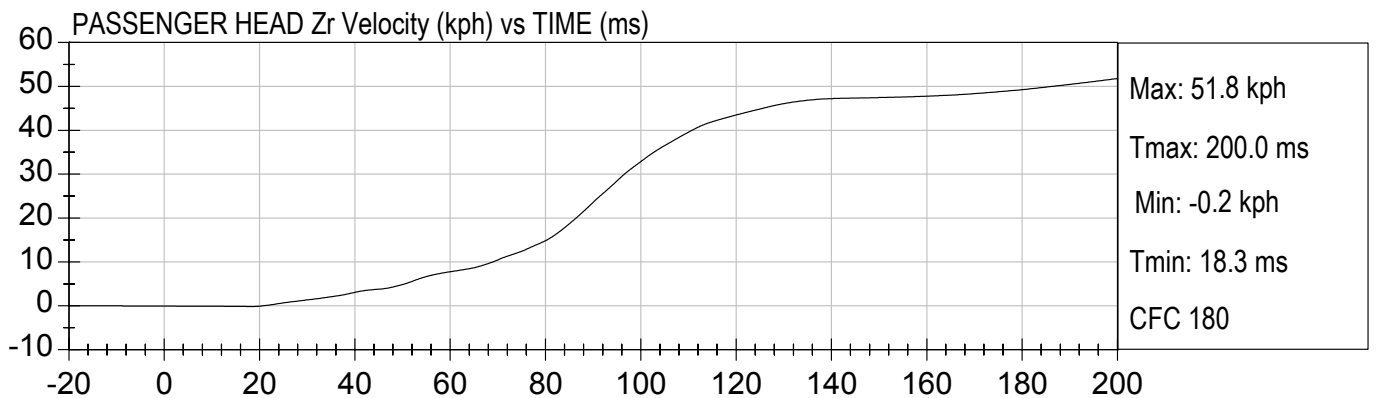
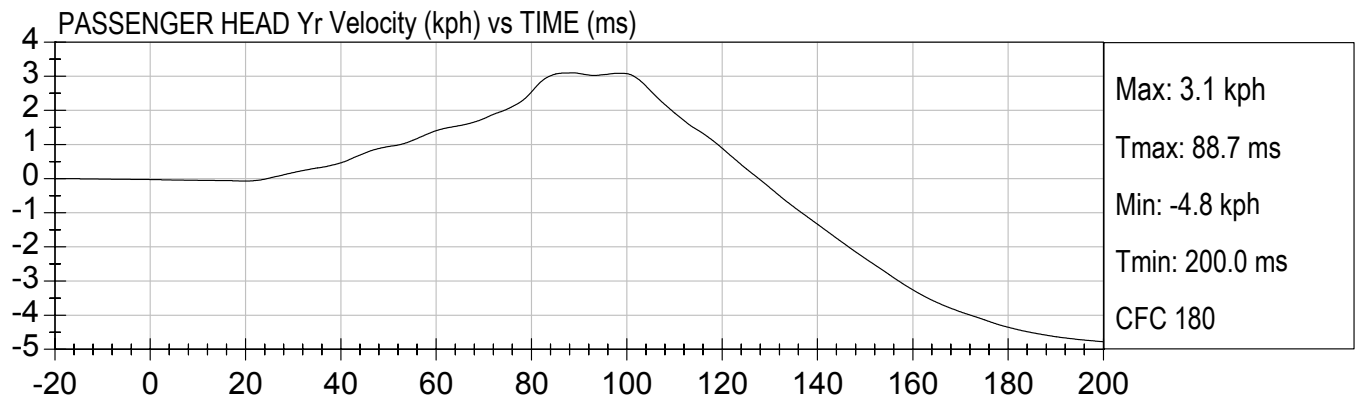
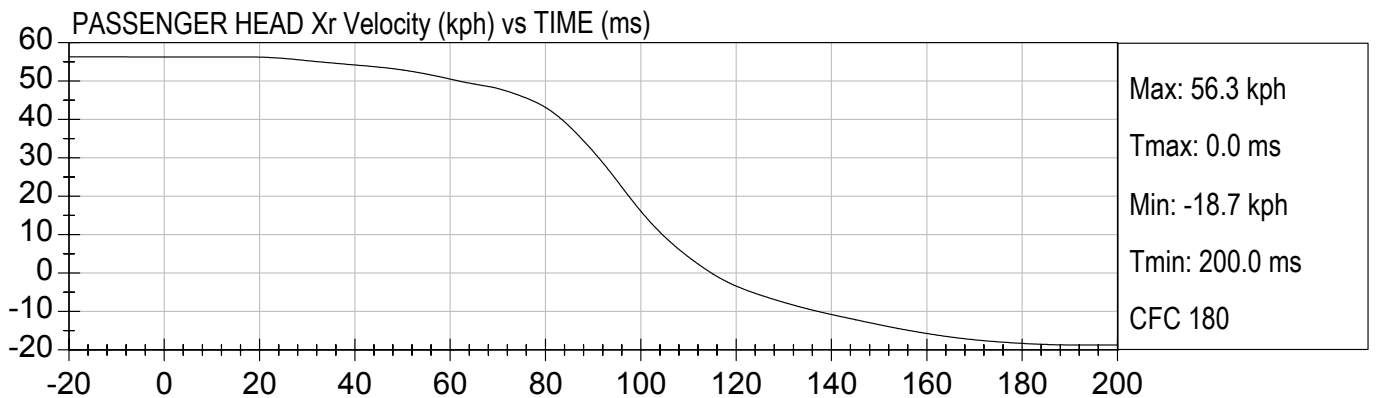




35MPH FRONTAL IMPACT
2005 CHEVROLET EQUINOX (M50100)

Test Date: 4/6/2004
Speed: 35.0 mph (56.3 km/h)







35MPH FRONTAL IMPACT
2005 CHEVROLET EQUINOX (M50100)

Test Date: 4/6/2004
Speed: 35.0 mph (56.3 km/h)

