

REPORT NUMBER: NCAP-MGA-2005-008

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

**DAIMLERCHRYSLER CORPORATION
2005 DODGE DAKOTA CLUB CAB ST
NHTSA NUMBER: M50303**

**PREPARED BY:
MGA RESEARCH CORPORATION
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BURLINGTON, WI 53105**



Test Date: January 4, 2005

Final Report Date: March 9, 2005

FINAL REPORT

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

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Manager, New Car Assessment Program

Date of Acceptance

COTR, NCAP Frontal Impact Program

Date of Acceptance

Technical Report Documentation Page

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16. Abstract A 35.2 mph (56.6 km/h) frontal barrier impact was conducted on a 2005 Dodge Dakota Club Cab ST at MGA Research Corporation on January 04, 2005. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and foot well intrusion performance. The impact velocity was 56.6 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 470 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%; margin-top: 10px; border-collapse: collapse;"> <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>289</td> <td>534</td> </tr> <tr> <td>Max. Thorax Accel. (3ms Clip)</td> <td>G's</td> <td>60</td> <td>34</td> <td>40</td> </tr> <tr> <td>Left Femur Force</td> <td>Newton</td> <td>10009</td> <td>-5206</td> <td>-3224</td> </tr> <tr> <td>Right Femur Force</td> <td>Newton</td> <td>10009</td> <td>-4783</td> <td>-1876</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	289	534	Max. Thorax Accel. (3ms Clip)	G's	60	34	40	Left Femur Force	Newton	10009	-5206	-3224	Right Femur Force	Newton	10009	-4783	-1876
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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 Dodge Dakota Club Cab ST at a velocity of 56.6 kph. The test was performed at MGA Research Corporation on January 04, 2005. Pre-and post-test photographs of the vehicle and dummies can be found in Appendix A.

One real-time camera and fourteen 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. 066) and right-front passenger (position 2) ATD (Serial No. 065) were calibrated previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C.

The 107 channels of data were recorded on an on-board data acquisition system. Appendix B contains the vehicle 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 470 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)
Driver	288.6	33.9	-21.6	-5206	-4783
Passenger	534.1	40.4	-22.5	-3224	-1876

TEST NOTES

The following channels did not collect any data:

Left Rear Crossmember X after 20ms

The total versus average rear seat cross member displacement was not plotted because of the truncated Left Rear Crossmember X.

Due to space constraints, no child dummies or child restraints were placed in the rear seat of the vehicle.

SECTION 2
OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

Test Vehicle: 2005 Dodge Dakota Club Cab ST
 Test Program: 35mph Frontal Impact

NHTSA No.: M50303
 Test Date: 01/04/05

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 Dodge Dakota Club Cab ST
Test Program: 35mph Frontal Impact

NHTSA No.: M50303
Test Date: 01/04/05

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
Velocity at Impact	km/hr	56.6
Test Weight	kg	2228.6
Average Rebound	mm	2963
Maximum Static Crush	mm	470
Impact Angle	degrees	0.0

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	None	

TEST DUMMY INFORMATION

Description	Driver	Passenger
Dummy Type / Serial No.	HIII 50 th / 066	HIII 50 th / 065
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	14
Real Time	1
Total	15

Driver ATD Sensors	42
Passenger ATD Sensors	46
Belt Assessment Sensors	4
Vehicle Structure Accelerometers	9
Total	101

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

Test Vehicle: 2005 Dodge Dakota Club Cab ST
 Test Program: 35mph Frontal Impact

NHTSA No: M50303
 Test Date: 01/04/05

TEST VEHICLE INFORMATION

Manufacturer	DaimlerChrysler Corp
Model	Dodge Dakota Club Cab ST
Body Style	Truck
NHTSA No.	M50303
VIN	1D7HE22K15S181576
Color	Grey
Delivery Date	12/15/04
Odometer Reading (mile)	49
Dealer	Wilde Dodge
Transmission	Automatic
Final Drive	Rear
Number of Cylinders	6
Engine Displacement (L)	3.7
Engine Placement	Longitudinal
Automatic Door Lock (ADL)	No
Owners Manual Details Instructions on Disabling ADLs	NA

TEST VEHICLE OPTIONS

Driver Airbag	Yes
Passenger Airbag	Yes
Force Limiter	Yes
Pretensioner	Yes
Power Windows	No
Power Steering	Yes
Power Door Locks	No
Telescope Wheel	No
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	No
Cruise Control	No

DATA FROM CERTIFICATION LABEL

Manufactured By	DaimlerChrysler Corporation
Date of Manufacture	10/04

GVWR (kg)	2727
GAWR Front (kg)	1407
GAWR Rear (kg)	1727

DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)		
Cold Pressure	240	240
Recommended Tire Size	P245/70R16	P245/70R16
Tire size on Vehicle	P245/70R16	P245/70R16
Tire Manufacturer	Goodyear	Goodyear

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bucket		
Number of Occupants	3	2		5
Capacity Wt. (VCW) (kg)				784
Cargo Wt. (RCLW) (kg)				136.1

DATA SHEET NO. 2... (continued)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2005 Dodge Dakota Club Cab ST
 Test Program: 35mph Frontal Impact

NHTSA No.: M50303
 Test Date: 01/04/05

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	563.4	416.4		599.2	530.7	
Right	kg	550.7	410.5		581.1	517.6	
Ratio	%	57.4	42.6		53.0	47.0	
Totals	kg	1114.1	826.9	1941.0	1180.3	1048.3	2228.6

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1941.0
Weight of 2 P572E ATDs	kg	156.0
Rated Cargo/Luggage Weight (RCLW)	kg	136.1
Calculated Vehicle Target Weight (TVTW)	kg	2233.1

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG(aft of front axle)
As Delivered	mm	845	850	904	910	1421
As Tested	mm	838	848	870	878	1569
Post Test	mm	875	882	855	864	

Vehicle Wheelbase (mm): 3335

Weight of Ballast secured in cargo area (kg): 68.0

Vehicle Components Removed: None

Ballast weight does not include instrumentation and data acquisition system.

FUEL SYSTEM DATA

Fuel System Capacity From Owner's Manual (L): 83.3

Usable Capacity Figure Furnished by COTR (L): 83.3

Actual Test Volume (L): 78.3

Test Fluid Type: Stoddard Solvent; Specific Gravity: 0.77

Is Vehicle Fuel Pump Electric or Mechanical? Electric

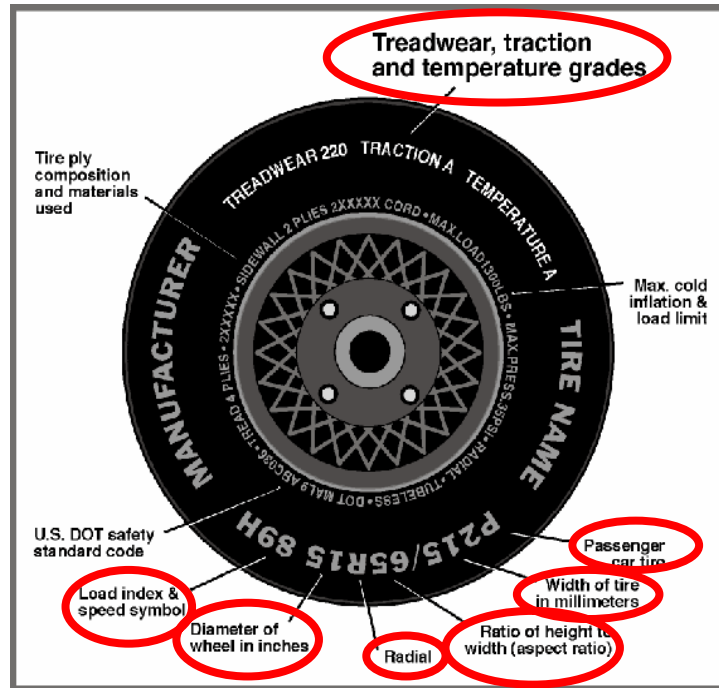
If electric, does pump operate with ignition switch "ON" & engine "OFF"? Yes

DATA SHEET NO. 3
TEST VEHICLE TIRE INFORMATION

Test Vehicle: 2005 Dodge Dakota Club Cab ST
 Test Program: 35mph Frontal Impact

NHTSA No.: M50303
 Test Date: 01/04/05

Vehicle Year	2005	Vehicle Make	Dodge
VIN	1D7HE22K15S181576	Vehicle Model	Dakota Club Cab ST



	Front	Rear
Tire Manufacturer	Goodyear	Goodyear
Tire Name	Wrangler SR-A	Wrangler SR-A
Tire Type	P	P
Tire Width (mm)	245	245
Ratio of Height to Width (aspect ratio)	70	70
Radial	R	R
Wheel Diameter	16	16
Load Index & Speed Symbol	106S	106S
Treadwear	360	360
Traction Grade	A	A
Temperature Grade	B	B

DATA SHEET NO. 4
POST IMPACT DATA

Test Vehicle: 2005 Dodge Dakota Club Cab ST
Test Program: 35mph Frontal Impact

NHTSA No.: M50303
Test Date: 01/04/05

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	55.5 – 57.1	56.6
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	56.6
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	5437	5136	301
Center	mm	5557	5087	470
Right Side	mm	5442	5116	326

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	2930
Center	mm	2995
Right Side	mm	2964
Average	mm	2963

DATA SHEET NO. 5
TEST VEHICLE INFORMATION

Test Vehicle: 2005 Dodge Dakota Club Cab ST
Test Program: 35mph Frontal Impact

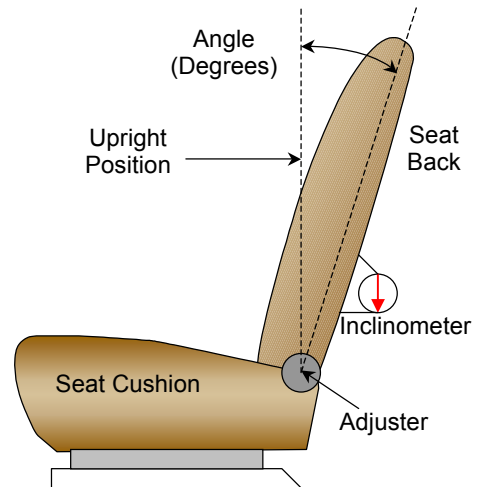
NHTSA No.: M50303
Test Date: 01/04/05

NORMAL DESIGN RIDING POSITION

The driver and passenger seat back is positioned to the manufacturer's designated angle. The procedure is as follows: Cut the trim away from the outboard edge of the seat back of back so that the vertical seat back frame is exposed. Place inclinometer flush against upper half of seat back frame. Second row is non adjustable.

Driver seat back angle: 21.4° on seat frame

Passenger seat back angle: 23.6° on seat frame



FRONT SEAT ASSEMBLY

SEAT FORE/AFT POSITIONS

The driver and the passenger seat were manually operated.

Driver seat fore/aft total travel:	<u>23 notches</u>
Driver seat fore/aft position:	<u>12 of 23 notches</u>
Passenger seat fore/aft total travel:	<u>23 notches</u>
Passenger seat fore/aft position:	<u>12 of 23 notches</u>

DATA SHEET NO. 5... (continued)

TEST VEHICLE INFORMATION

Test Vehicle: 2005 Dodge Dakota Club Cab ST
Test Program: 35mph Frontal Impact

NHTSA No.: M50303
Test Date: 01/04/05

FUEL TANK CAPACITY DATA

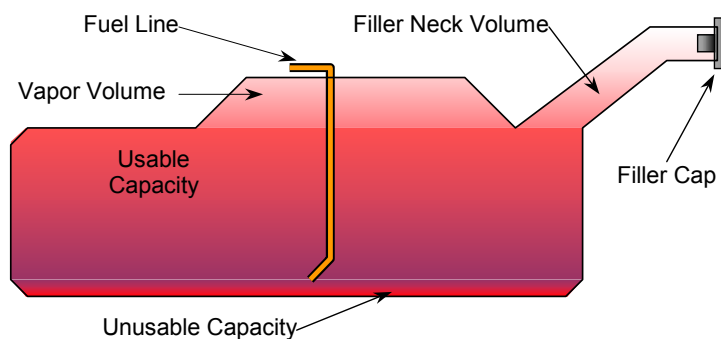
The "Usable Capacity" of the standard equipment fuel tank is: 83.3 liters

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

The "Usable Capacity" used for certification to FMVSS 301 requirements: 83.3 liters

Actual amount of Stoddard solvent added to vehicle for certification test: 78.3 liters

The fuel pump is powered up through the ASD relay, the ASD Relay is energized upon key on for 2 seconds, then only if engine is operating.

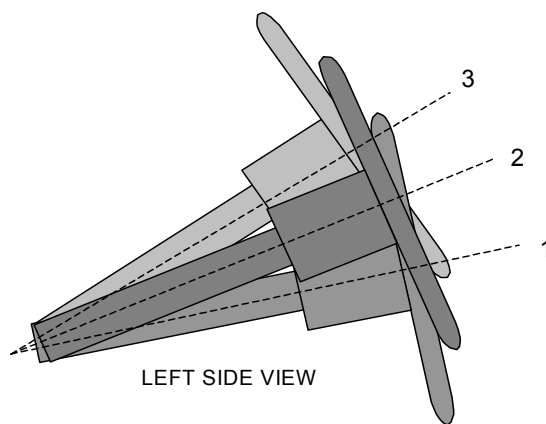


VEHICLE FUEL TANK ASSEMBLY

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.

The steering column was non adjustable.



STEERING COLUMN ASSEMBLY

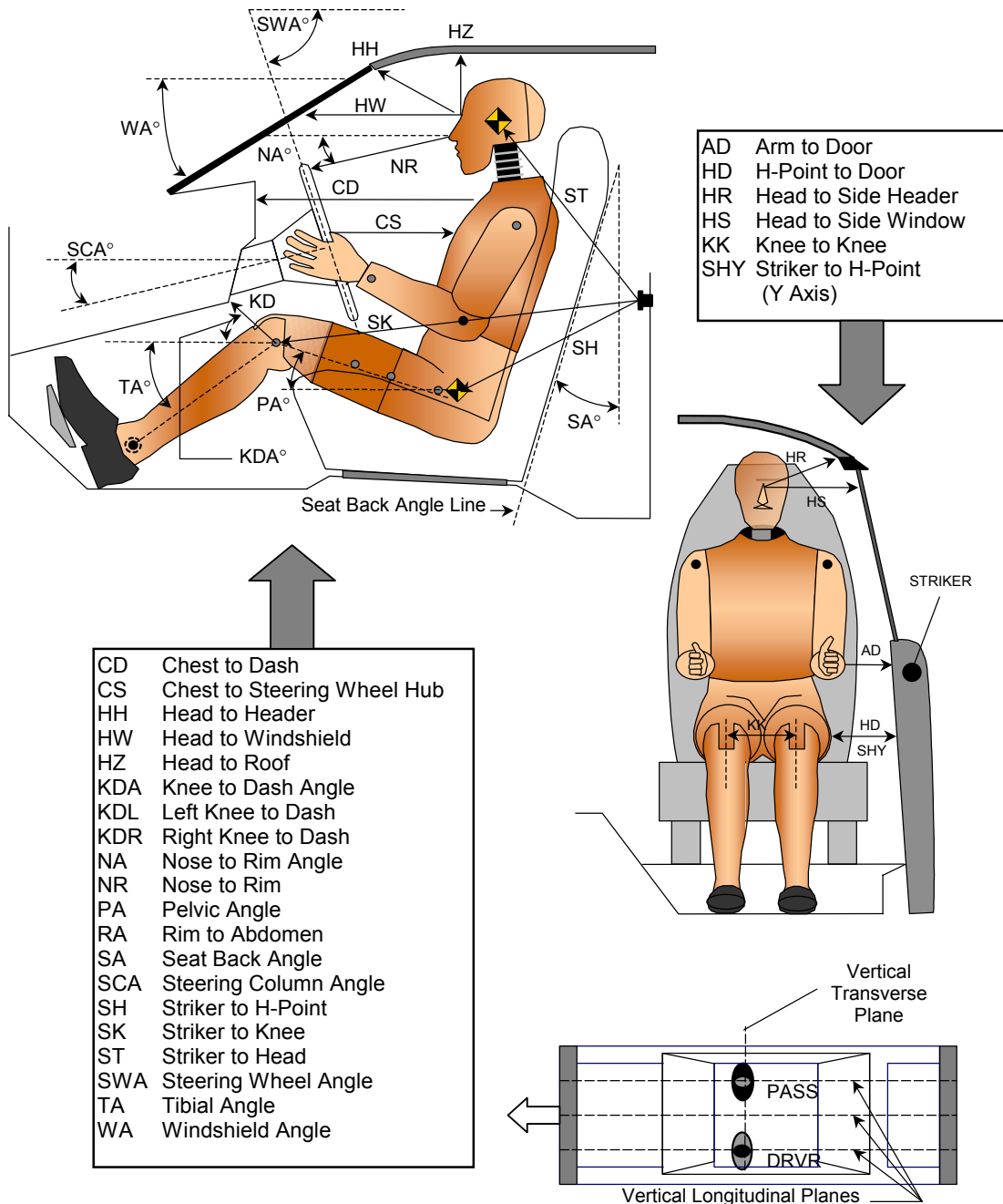
DATA SHEET NO. 6

DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2005 Dodge Dakota Club Cab ST
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NHTSA No.: M50303
 Test Date: 01/04/05

DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS



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

Test Vehicle: 2005 Dodge Dakota Club Cab ST
 Test Program: 35mph Frontal Impact

NHTSA No.: M50303
 Test Date: 01/04/05

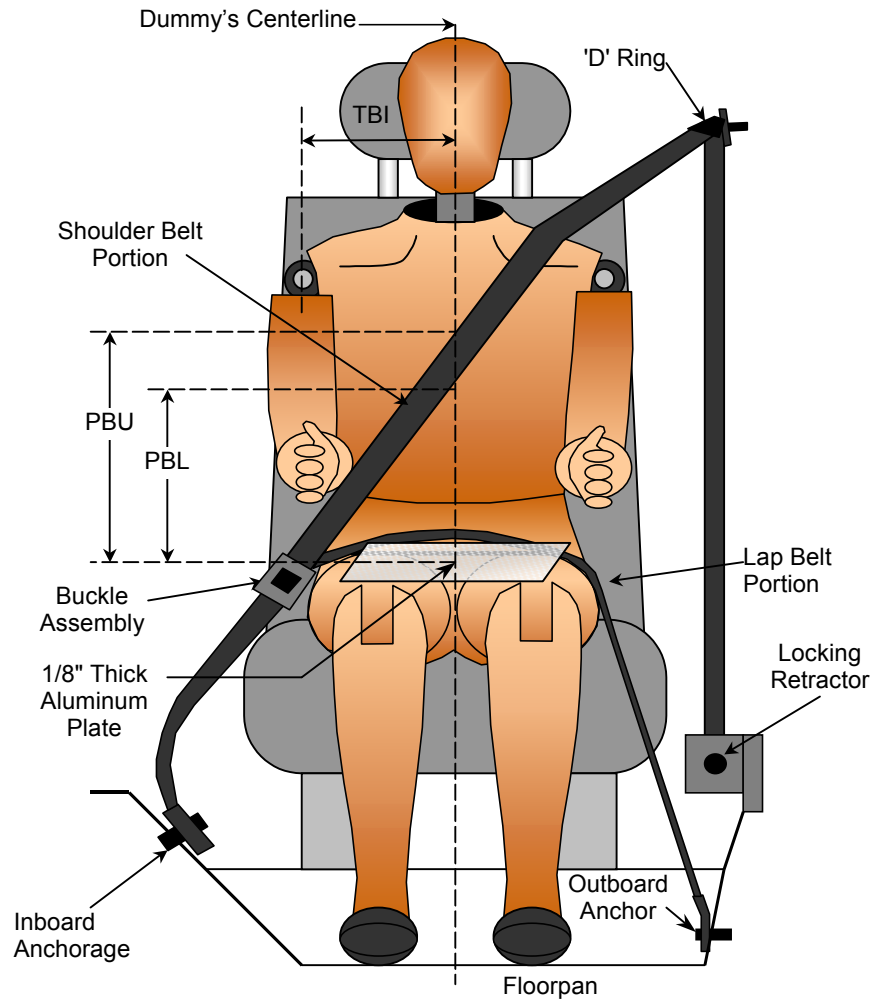
TEST DUMMY POSITION MEASUREMENTS

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA	Windshield Angle		33.9		
SWA	Steering Wheel Angle		66.2		
SCA	Steering Column Angle		23.6		
SA	Seat Back Angle (headrest post)		21.5		23.6
HZ	Head to Roof (Z)	201	90.0	196	90.0
HH	Head to Header	443	12.1	440	13.5
HW	Head to Windshield	644	0.0	631	0.0
HR	Head to Side Header (Y)	177		171	
NR	Nose to Rim	400	16.0		
CD	Chest to Dash	558		568	
CS	Chest to Steering Hub	328	18.9		
RA	Rim to Abdomen	144	0.0		
KDL	Left Knee to Dash	162	20.5	151	
KDR	Right Knee to Dash	146		174	34.1
PA	Pelvic Angle		24.4		22.9
TA	Tibia Angle		51.1		45.5
KK	Knee to Knee (Y)	296		261	
SK	Striker to Knee	590	91.5	605	91.1
ST	Striker to Head	593	5.1	614	9.2
SH	Striker to H-Point	200	107.5	208	100.7
SHY	Striker to H-Point (Y)	255		241	
HS	Head to Side Window	316		324	
HD	H-Point to Door (Y)	190		185	
AD	Arm to Door (Y)	121		107	
AA	Ankle to Ankle	271		170	

DATA SHEET NO. 7
SEAT BELT POSITIONING DATA

Test Vehicle: 2005 Dodge Dakota Club Cab ST
 Test Program: 35mph Frontal Impact

NHTSA No.: M50303
 Test Date: 01/04/05



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	337	339
PBL - To surface of reference to belt lower edge	mm	257	255

DATA SHEET NO. 8

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

Test Vehicle: 2005 Dodge Dakota Club Cab ST
 Test Program: 35mph Frontal Impact

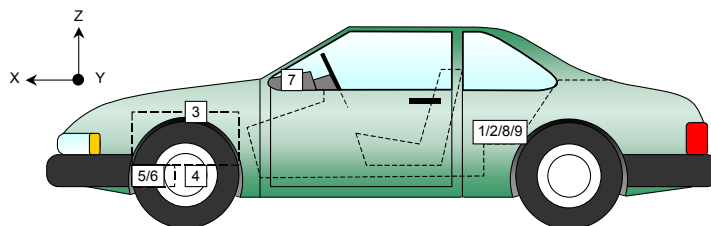
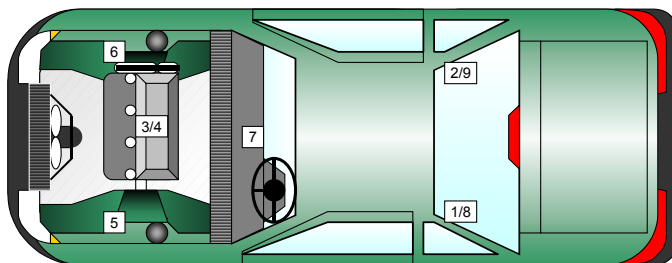
NHTSA No.: M50303
 Test Date: 01/04/05

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	2661	-577	617	G's	*	*	*	*
2	Right Rear X-Member X	2664	577	620	G's	2.3	206	-40.4	63
3	Engine Top X	4606	20	996	G's	16.3	65	-54.4	57
4	Engine Bottom X	4440	-40	363	G's	9.8	68	-63.9	57
5	Left Brake Caliper X	4450	-655	417	G's	13.5	20	-85.0	58
6	Right Brake Caliper X	4454	655	417	G's	27.0	20	-80.5	55
7	Instrument Panel X	3860	10	1262	G's	18.8	95	-50.7	25
8	Left Rear X-Member Z	2661	-577	617	G's	3.7	47	-17.5	69
9	Right Rear X-Member Z	2664	577	620	G's	4.2	120	-15.1	68

* No valid data collected after 20ms

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 Dodge Dakota Club Cab ST
 Test Program: 35mph Frontal Impact

NHTSA No.: M50303
 Test Date: 01/04/05

HEAD PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	5.4	276	-39.8	71	4.4	267	-57.2	80
Head CG	Y	G's	3.8	32	-4.1	26	4.2	27	-5.5	66
Head CG	Z	G's	22.1	75	-1.6	20	30.1	75	-2.5	129
Head CG Resultant	N/A	G's	44.4	71			63.7	81		

CHEST PRIMARY PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	1.3	125	-34.9	51	2.1	300	-43.0	75
Chest CG	Y	G's	4.9	84	-5.5	41	2.9	26	-8.6	87
Chest CG	Z	G's	5.8	87	-8.3	104	12.8	80	-8.3	107
Chest CG Resultant	N/A	G's	34.9	51			43.1	75		

FEMUR PEAK FORCES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Femur	Z	Newtons	186	21	-5206	44	320	27	-3224	53
Right Femur	Z	Newtons	242	29	-4783	49	877	44	-1876	53

SEAT BELT SENSOR PEAK VALUES

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Lap Belt Force	N/A	Newtons	3536	52			6478	51		
Shoulder Belt Force	N/A	Newtons	5200	50			5115	43		

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	288.6	36.4	57.6	93.6	534.1	46.6	65.1	101.1

CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Primary	33.9	49.0	52.0	40.4	73.2	76.2

DATA SHEET NO. 9... (continued)

HYBRID III ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2005 Dodge Dakota Club Cab ST
 Test Program: 35mph Frontal Impact

NHTSA No.: M50303
 Test Date: 01/04/05

PELVIC PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Pelvis	X	G's	6.3	103	-53.3	43	4.7	117	-50.0	51
Pelvis	Y	G's	5.9	43	-5.7	40	13.9	44	-7.9	74
Pelvis	Z	G's	3.0	160	-18.4	62	1.7	257	-20.1	76

UPPER NECK PEAK FORCES AND MOMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Neck Force	X	Newtons	223	77	-606	136	364	90	-405	111
Neck Force	Y	Newtons	128	120	-98	80	160	71	-160	118
Neck Force	Z	Newtons	1066	76	-168	133	1774	76	-348	125
Neck Moment	X	N•m	11.4	58	-3.3	34	6.9	100	-10.5	71
Neck Moment	Y	N•m	43.2	136	-14.6	49	47.6	90	-18.7	65
Neck Moment	Z	N•m	6.0	137	-8.5	91	11.4	103	-5.7	152

FOOT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Left Foot Aft	X	G's	4.5	266	-63.1	43	20.7	82	-57.3	39
Left Foot Aft	Z	G's	17.1	42	-28.5	39	11.6	45	-49.9	40
Left Foot Fore	Z	G's	34.7	35	-110.5	39	32.4	34	-78.3	40
Right Foot Aft	X	G's	16.7	78	-66.2	38	15.8	80	-54.7	38
Right Foot Aft	Z	G's	6.4	46	-45.5	44	5.6	51	-37.1	34
Right Foot Fore	Z	G's	47.1	33	-98.4	43	16.3	51	-54.7	63

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	17.6	69	-14.2	90	18.9	124	-47.6	54
Left Lower Moment	Y	N•m	55.3	46	-92.1	40	17.9	113	-102.4	45
Left Lower Force	Z	Newtons	66	121	-3569	38	164	29	-2820	68
Left Upper Moment	X	N•m	27.2	38	-25.7	48	41.1	81	-15.0	54
Left Upper Moment	Y	N•m	58.6	43	-103.3	39	38.5	80	-25.4	62
Left Upper Force	Z	Newtons	239	120	-3133	42	161	25	-3490	39
Right Lower Moment	X	N•m	71.8	48	-27.2	45	12.0	75	-6.1	109
Right Lower Moment	Y	N•m	18.4	50	-54.9	41	24.2	86	-22.3	63
Right Lower Force	Z	Newtons	67	121	-3088	49	212	109	-3269	36
Right Upper Moment	X	N•m	93.6	47	-20.7	91	16.0	156	-30.9	92
Right Upper Moment	Y	N•m	16.4	292	-99.6	40	23.4	114	-81.2	37
Right Upper Force	Z	Newtons	136	115	-2798	49	464	110	-2523	36

DATA SHEET NO. 9... (continued)

HYBRID III ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2005 Dodge Dakota Club Cab ST
Test Program: 35mph Frontal Impact

NHTSA No.: M50303
Test Date: 01/04/05

CHEST PEAK DISPLACEMENTS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest	X	mm			-21.6	72			-22.5	83

HEAD REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Head CG	X	G's	5.3	275	-38.9	72	4.3	266	-60.0	81
Head CG	Y	G's	3.7	32	-3.8	23	5.0	28.4	-6.4	87
Head CG	Z	G's	20.3	76	-1.7	20	32.6	81	-2.6	129
Head CG Resultant	N/A	G's	42.6	71			66.9	81		

CHEST REDUNDANT PEAK ACCELERATIONS

Location	Axis	Units	Driver				Passenger			
			Max	Time	Min	Time	Max	Time	Min	Time
Chest CG	X	G's	2.1	159	-35.3	74	2.1	299	-44.0	74
Chest CG	Y	G's	5.1	88	-5.5	41	3.3	69	-7.9	85
Chest CG	Z	G's	5.4	84	-8.2	103	12.7	80	-8.3	107
Chest CG Resultant	N/A	G's	35.7	76			44.4	74		

REDUNDANT HEAD INJURY CRITERIA (HIC)

Location	Driver				Passenger			
	HIC	Avg.	T ¹	T ²	HIC	Avg.	T ¹	T ²
Head CG Primary Redundant	260.9	35.0	58.2	94.2	575.3	48.0	64.8	100.8

REDUNDANT CHEST CLIP (3MSEC)

Location	Driver			Passenger		
	CLIP	T ¹	T ²	CLIP	T ¹	T ²
Chest CG Primary Redundant	35.3	73.3	76.3	40.6	72.5	75.5

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

Test Vehicle: 2005 Dodge Dakota Club Cab ST
Test Program: 35mph Frontal Impact

NHTSA No.: M50303
Test Date: 01/04/05

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	337	339
PBL - Top surface of reference to belt lower edge	mm	257	255

BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Shoulder belt length as measured on ATD	mm	757	755
Lap belt length as measured on ATD	mm	681	656
Remainder of belt on reel	mm	1325	1326
Total belt length for continuous webbing systems	mm	2763	2737

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 Dodge Dakota Club Cab ST
 Test Program: 35mph Frontal Impact

NHTSA No.: M50303
 Test Date: 01/04/05

Windshield Mounting Details:

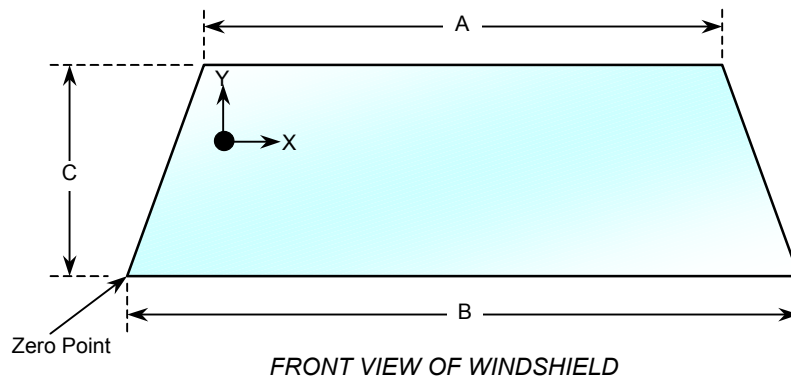
Windshield glass is secured to the vehicle frame with a rubber trim and glue.

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	2063	2063	100
Right Side	2066	2066	100
Total	4129	4129	100



WINDSHIELD DIMENSIONS

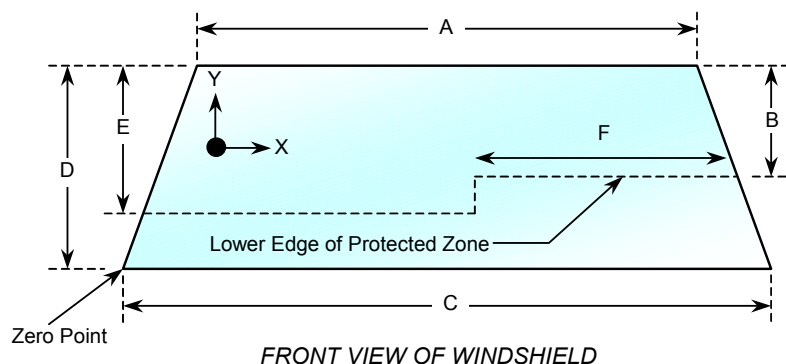
Item	Units	Segment Length	Molding Width
A	mm	1234	0
B	mm	1556	0
C	mm	671	22

DATA SHEET NO. 12

WINDSHIELD ZONE INTRUSION FMVSS 219 (Partial) DATA

Test Vehicle: 2005 Dodge Dakota Club Cab ST
 Test Program: 35mph Frontal Impact

NHTSA No.: M50303
 Test Date: 01/04/05



Item	Units	Value
A	mm	1234
B	mm	427
C	mm	1556
D	mm	671
E	mm	435
F	mm	475

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 Dodge Dakota Club Cab ST

NHTSA No.: M50303

Test Program: 35mph Frontal Impact

Test Date: 01/04/05

Temperature at Time of Impact: 21° C

Test Time: 10:50 am

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)

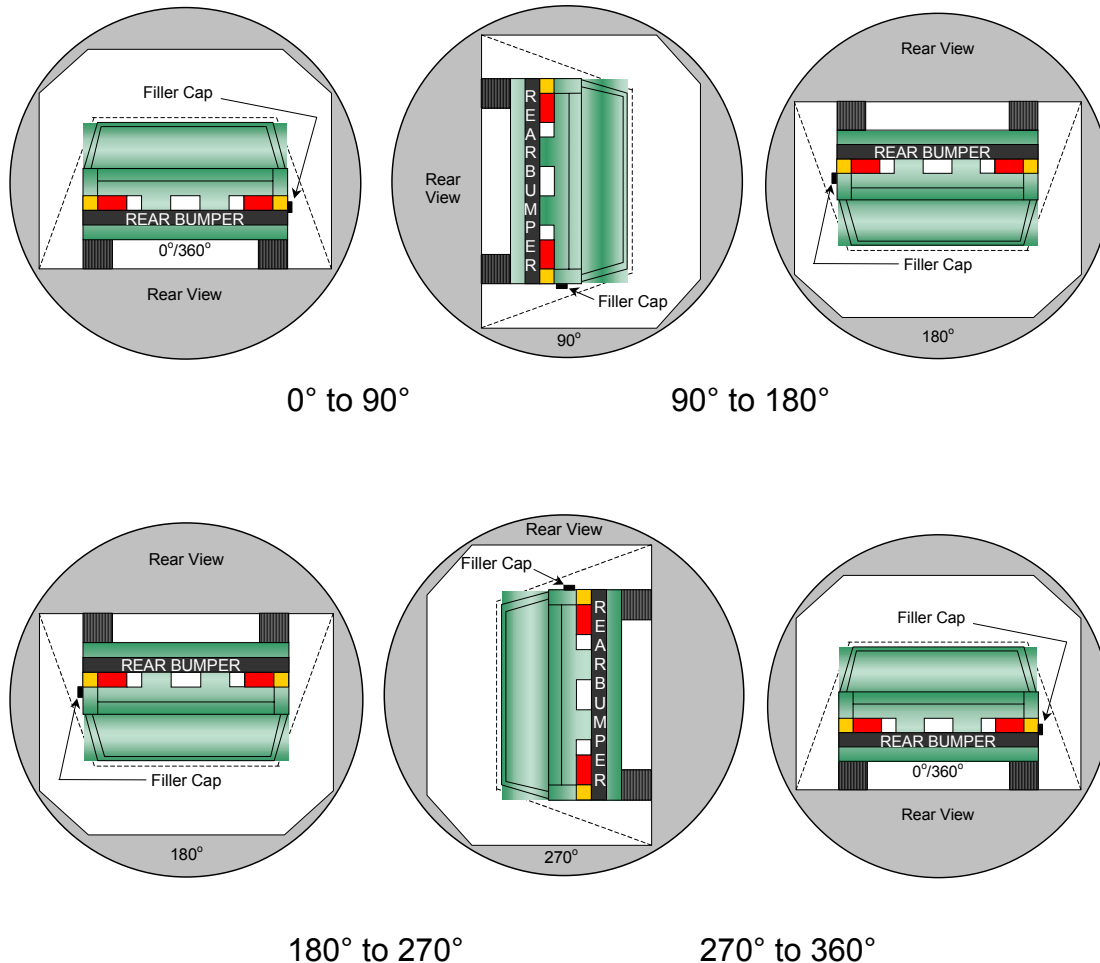
D. Spillage: None

DATA SHEET NO. 14
FMVSS 301 STATIC ROLLOVER DATA

Test Vehicle: 2005 Dodge Dakota Club Cab ST
 Test Program: 35mph Frontal Impact

NHTSA No.: M50303
 Test Date: 01/04/05

Test Time: 10:50 am



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°	173	300	0
90° to 180°	149	300	0
180° to 270°	131	300	0
270° to 360°	157	300	0

DATA SHEET NO. 15
VEHICLE MEASUREMENTS

Test Vehicle: 2005 Dodge Dakota Club Cab ST
Test Program: 35mph Frontal Impact

NHTSA No.: M50303
Test Date: 01/04/05

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total length of vehicle at centerline	mm	5557	5087	470
2	RSOV to front of engine	mm	4733	4736	-3
3	RSOV to firewall centerline	mm	4373	4434	-61
4	RSOV to leading edge of right door	mm	4093	4170	-77
5	RSOV to leading edge of left door	mm	4089	4167	-78
6	RSOV to lower leading edge of right door	mm	4002	4059	-57
7	RSOV to lower leading edge of left door	mm	3997	4066	-69
8	RSOV to upper leading edge of right door	mm	2909	2987	-78
9	RSOV to upper leading edge of left door	mm	2903	2985	-82
10	RSOV to lower trailing edge of right door	mm	2920	2980	-60
11	RSOV to lower trailing edge of left door	mm	2915	2982	-67
12	RSOV to bottom of right 'A' pillar	mm	4003	4063	-60
13	RSOV to bottom of left 'A' pillar	mm	3990	4053	-63
14	RSOV to firewall on right side	mm	4389	4466	-77
15	RSOV to firewall on left side	mm	4385	4471	-86
16	RSOV to steering column	mm	3450	3602	-152
17	Center of steering column to left 'A' pillar	mm	445	442	3
18	Center of steering column to headlining	mm	438	435	3
19	RSOV to right side of front bumper	mm	5442	5116	326
20	RSOV to left side of front bumper	mm	5437	5136	301
21	Length of engine block	mm	400	400	0
RD	RSOV to right side of dash panel	mm	3811	3902	-91
CD	RSOV to center of dash panel	mm	3745	3851	-106
LD	RSOV to left side of dash panel	mm	3805	3896	-91

DATA SHEET NO. 15... (continued)

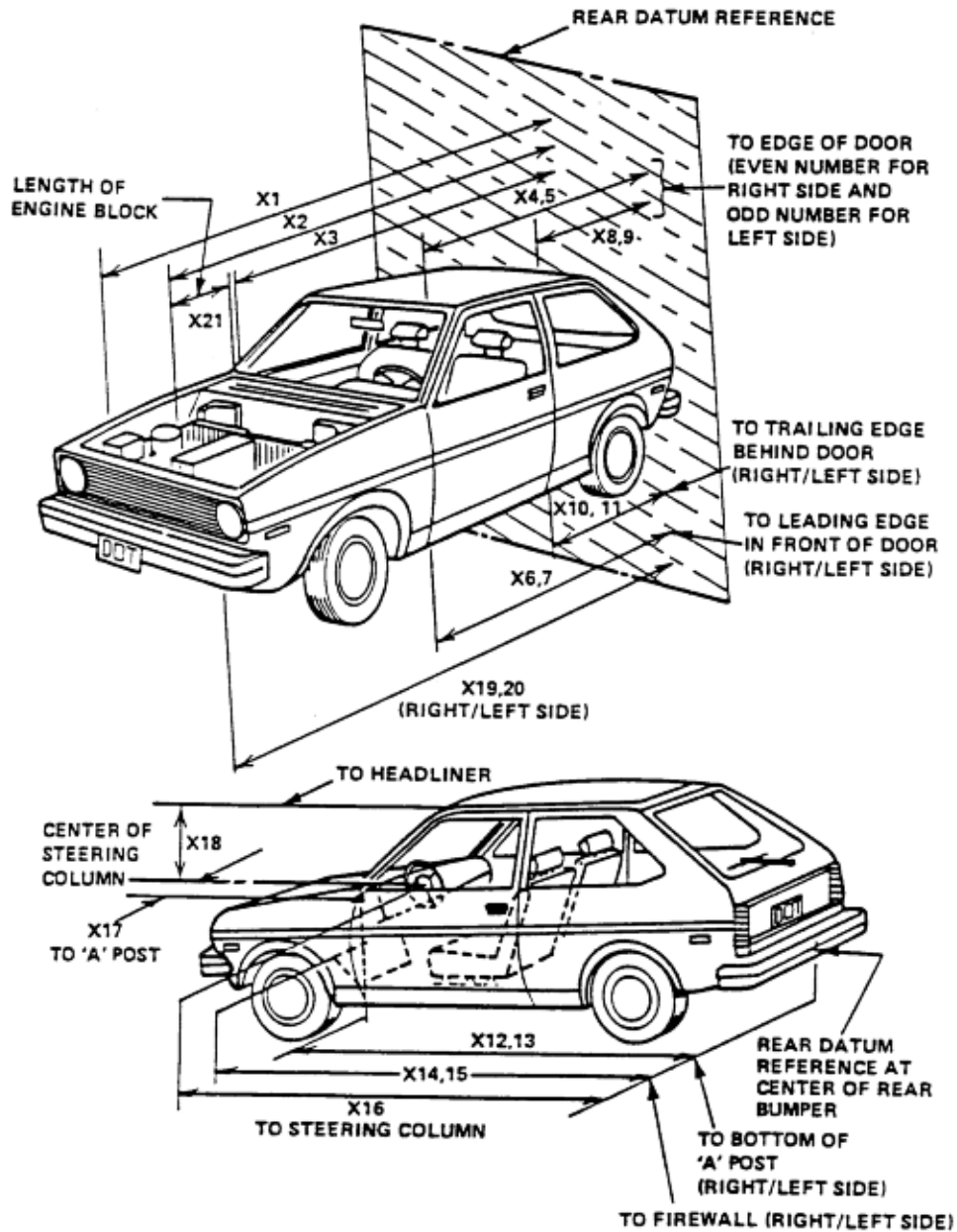
VEHICLE MEASUREMENTS

Test Vehicle: 2005 Dodge Dakota Club Cab ST

NHTSA No.: M50303

Test Program: 35mph Frontal Impact

Test Date: 01/04/05



DATA SHEET NO. 15... (continued)**VEHICLE MEASUREMENTS**Test Vehicle: 2005 Dodge Dakota Club Cab STNHTSA No.: M50303Test Program: 35mph Frontal ImpactTest Date: 01/04/05**Target Vehicle Structural Measurement**

	Elements	Pre-Test (mm)
1	Total Length	5557
2	Total Width	1825
3	Bumper Top Height	625
4	Bumper Bottom Height	403
5	Longitudinal Member Top Height	570
6	Distance between Longitudinal Members	775
7	Longitudinal Member Width	110
8	Engine Top Height	987
9	Engine Bottom Height	304
10	Engine and gearbox width	530
11	Front bumper-engine distance	762
12	Front shock absorber fixing height	705
13	Bonnet leading edge height	678
14	Front shock absorber fixing width	911
15	Front bumper – front axle distance	991
16	Front axle – a pillar distance	463
17	A-pillar – B-pillar distance	1190
18	B-Pillar – rear axle distance	1691
19	B-pillar – C-pillar distance	655
20	Roof sill bottom height	1650
21	Roof sill top height	1689
22	Floor sill bottom height	410
23	Floor sill top height	487

DATA SHEET NO. 16
CAMERA LOCATIONS

Test Vehicle: 2005 Dodge Dakota Club Cab ST
Test Program: 35mph Frontal Impact

NHTSA No.: M50303
Test Date: 01/04/05

No.	Camera View	Location (mm) *			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Side View				13	24
2	Left Front View	970	-9050	1115	24	1000
3	Steering Column Top	2490	-6180	1570	19	1000
4	Steering Column Bottom	2445	-6160	1030	13	1000
5	Driver Close-up	2065	-7760	1295	50	1000
6	Driver Angle	6160	-4820	2160	50	1000
7	On board Driver Side					
8	On board Passenger Side					
9	Right Overall	2415	7880	1346	19	1000
10	Right Passenger Half	1130	8080	1450	19	1000
11	Right Close-up	1740	9110	1463	50	1000
12	Right Angle	6220	5070	2220	50	1000
13	Windshield	-290	0	2795	13	1000
14	Top Driver	70	-460	1750	25	1000
15	Top Passenger	85	460	1765	25	1000
16	Pit Front	1090	0	-3150	24	1000
17	Pit Rear	3410	0	-3150	24	1000

***COORDINATES:**

+X = forward of impact plane
+Y = right of monorail centerline
+Z = above ground level

Cameras 7 & 8 were not used for this test.

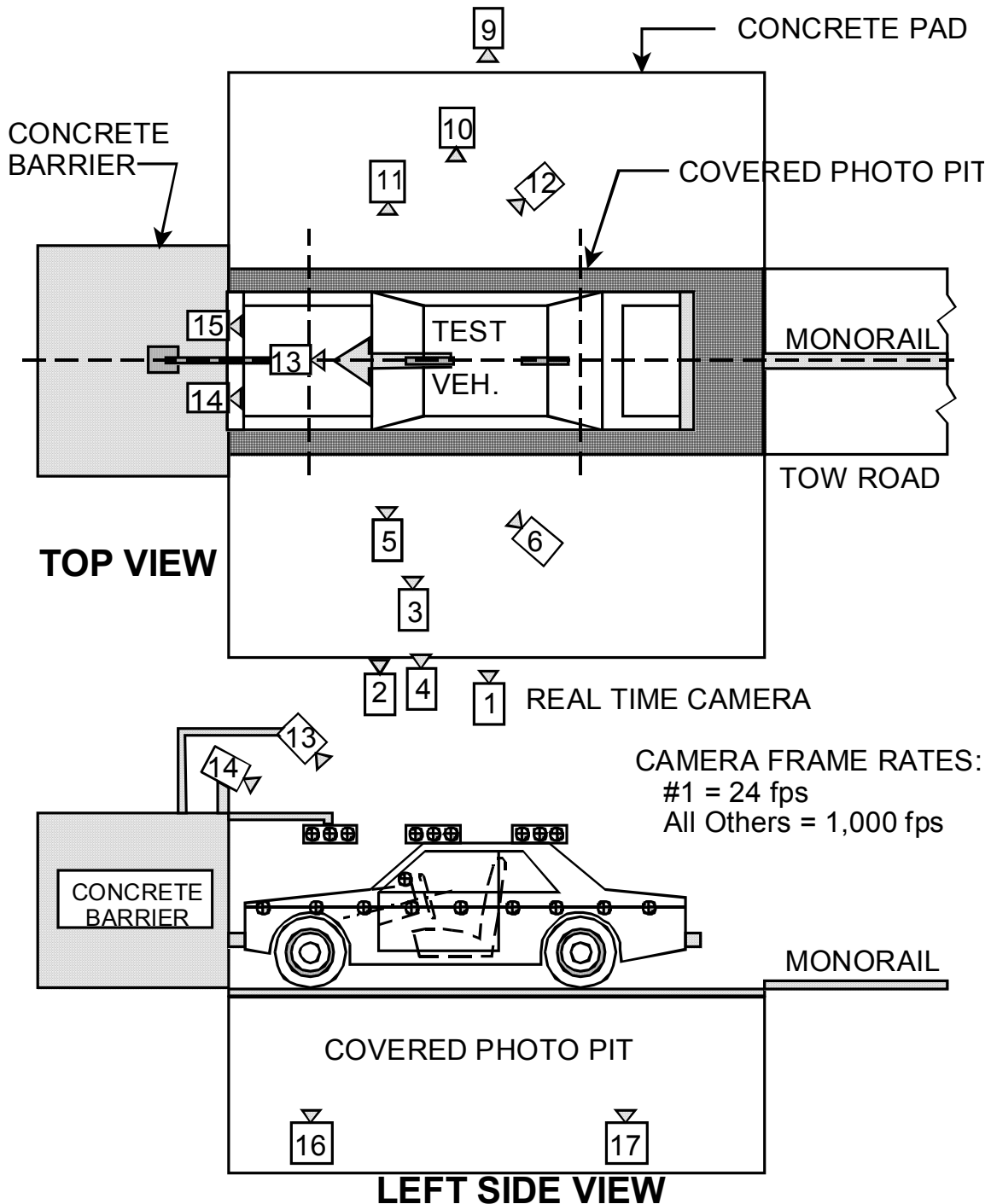
DATA SHEET NO. 16... (continued)

CAMERA LOCATIONS

Test Vehicle: 2005 Dodge Dakota Club Cab ST
Test Program: 35mph Frontal Impact

NHTSA No.: M50303
Test Date: 01/04/05

CAMERA POSITIONS FOR FRONTAL IMPACTS



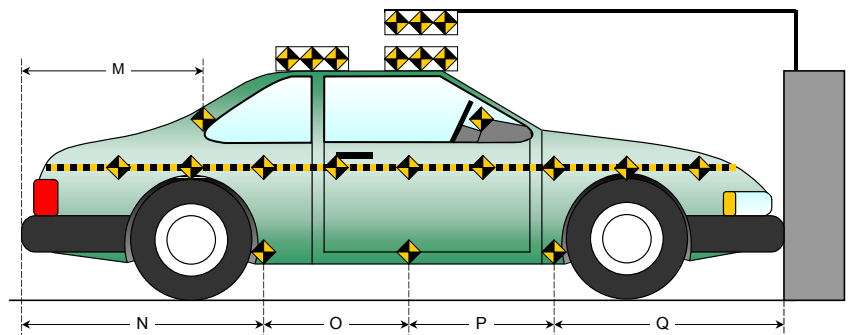
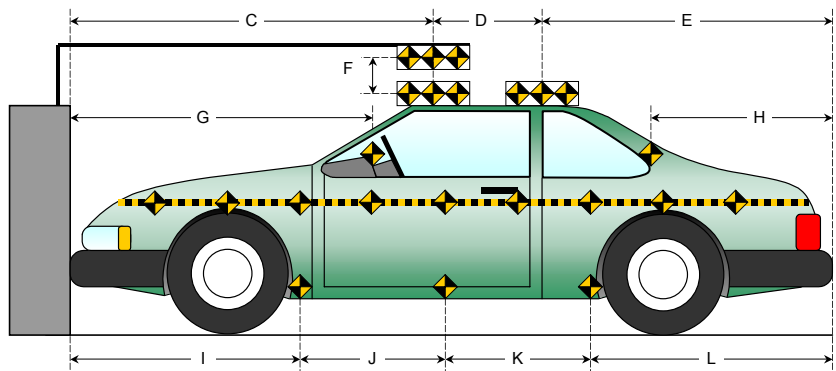
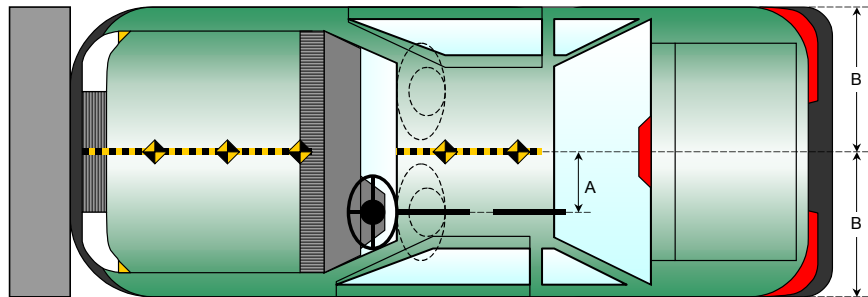
DATA SHEET NO. 17

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2005 Dodge Dakota Club Cab ST
 Test Program: 35mph Frontal Impact

NHTSA No.: M50303
 Test Date: 01/04/05

Item	Value
A	375
B	912
C	2562
D	610
E	2385
F	
G	
H	2324
I	1560
J	1138
K	1133
L	1726
M	2317
N	1711
O	1157
P	1114
Q	1575



DATA SHEET NO. 18
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2005 Dodge Dakota Club Cab ST
 Test Program: 35mph Frontal Impact

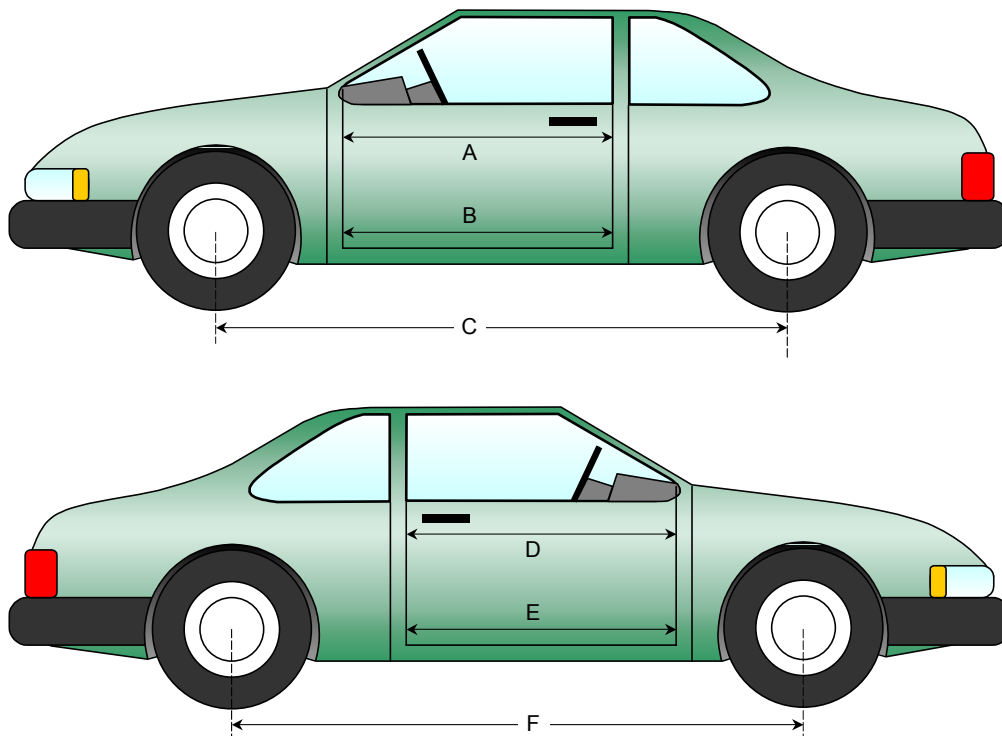
NHTSA No.: M50303
 Test Date: 01/04/05

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	1097	1098	-1
B	Left Side Lower	mm	1080	1080	0
D	Right Side Upper	mm	1092	1094	-2
E	Right Side Lower	mm	1083	1085	-2

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	3340	3325	15
F	Right Side Wheelbase	mm	3340	3334	6



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

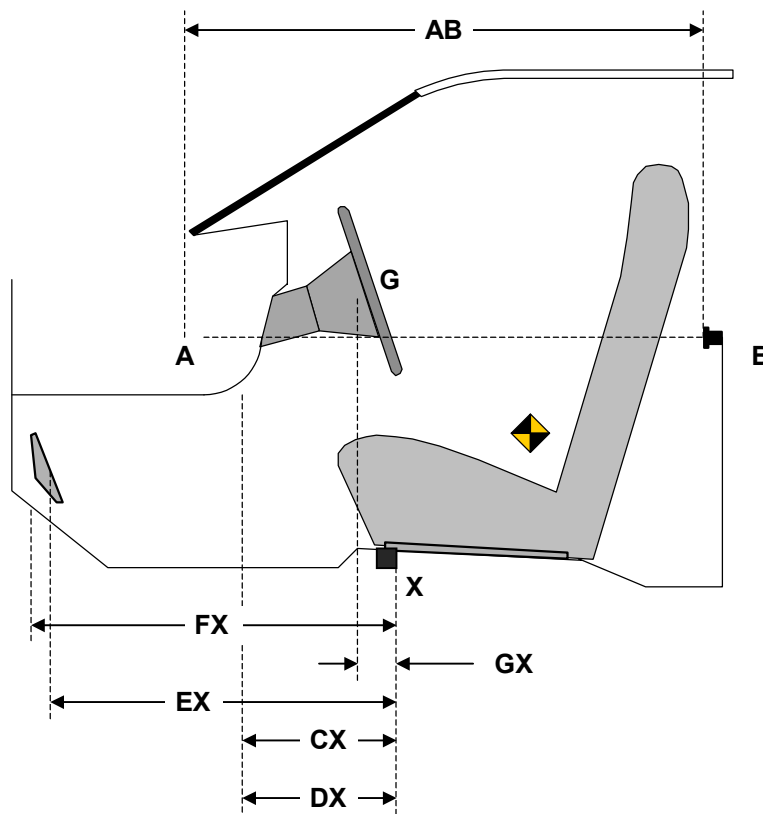
Test Vehicle: 2005 Dodge Dakota Club Cab ST
 Test Program: 35mph Frontal Impact

NHTSA No.: M50303
 Test Date: 01/04/05

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside window jam)	mm	1056	1064	-8
CX	Left Knee Bolster to X	mm	252	291	-39
DX	Right Knee Bolster to X	mm	242	290	-48
EX	Brake Pedal to X	mm	537	559	-22
FX	Foot Rest to X	mm	645	666	-21
GX	Center of Steering Column Wheel Hub to X	mm	10	97	-87

X = Front of Seat Track (stationary)



DRIVER COMPARTMENT

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

Test Vehicle: 2005 Dodge Dakota Club Cab ST
 Test Program: 35mph Frontal Impact

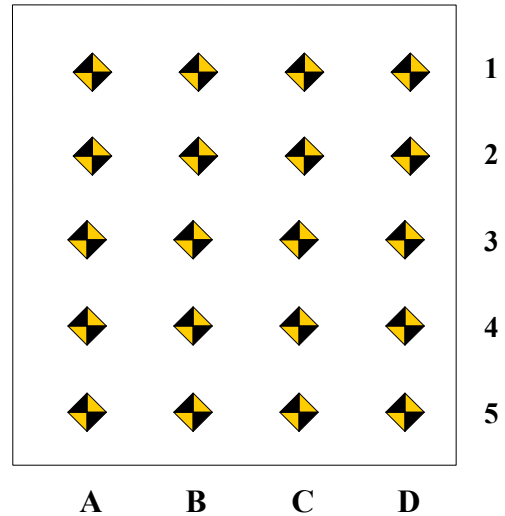
NHTSA No.: M50303
 Test Date: 01/04/05

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	747	778	780	783	745	773	773	769	2	5	7	14
2	693	680	692	692	688	672	679	679	5	8	13	13
3	570	565	576	573	558	552	564	560	12	13	12	13
4	450	450	451	450	440	439	440	438	10	11	11	12
5	325	325	323	324	315	312	311	310	10	13	12	14

DRIVER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	100	57	65	62	80	41	53	57	20	16	12	5
2	-17	-29	-32	-35	-32	-41	-39	-40	15	12	7	5
3	-55	-57	-75	-79	-75	-77	-91	-93	20	20	16	14
4	-120	-117	-120	-120	-118	-115	-117	-122	-2	-2	-3	2
5	-117	-110	-116	-115	-125	-121	-124	-122	8	11	8	7

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

Test Vehicle: 2005 Dodge Dakota Club Cab ST
 Test Program: 35mph Frontal Impact

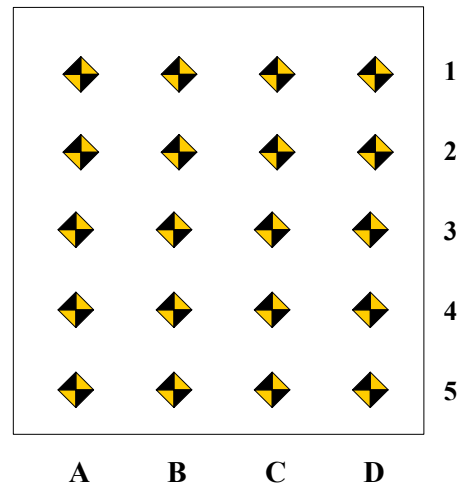
NHTSA No.: M50303
 Test Date: 01/04/05

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

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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	760	760	760	740	740	742	741	726	20	18	19	14
2	670	673	677	672	651	661	666	664	19	12	11	8
3	570	568	568	570	561	561	560	560	9	7	8	10
4	446	448	449	445	438	437	437	435	8	11	12	10
5	320	324	324	321	311	313	311	310	9	11	13	11

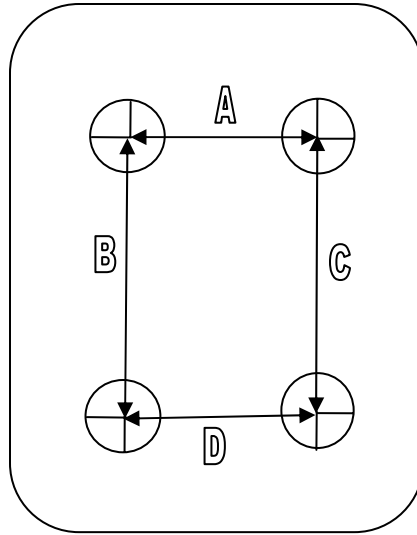
PASSENGER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	108	103	105	115	108	102	101	106	0	1	4	9
2	8	0	0	3	14	-3	-10	-8	-6	3	10	11
3	-53	-57	-55	-52	-71	-81	-78	-75	18	24	23	23
4	-105	-115	-115	-100	-111	-115	-114	-103	6	0	-1	3
5	-100	-110	-104	-89	-109	-121	-116	-96	9	11	12	7

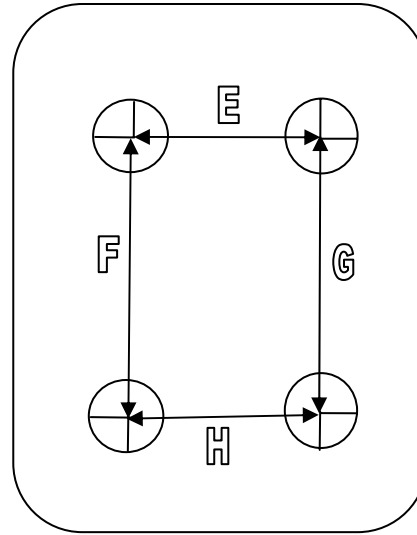
DATA SHEET NO. 18... (continued)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2005 Dodge Dakota Club Cab ST
 Test Program: 35mph Frontal Impact

NHTSA No.: M50303
 Test Date: 01/04/05



Driver



Passenger

UNDERBODY FLOORBOARD DEFORMATION

Measurement	Pre-Test	Post-Test	Difference
A	227	227	0
B	332	325	7
C	333	331	2
D	227	227	0
E	247	247	0
F	417	415	2
G	401	400	1
H	243	235	8

DATA SHEET NO. 19

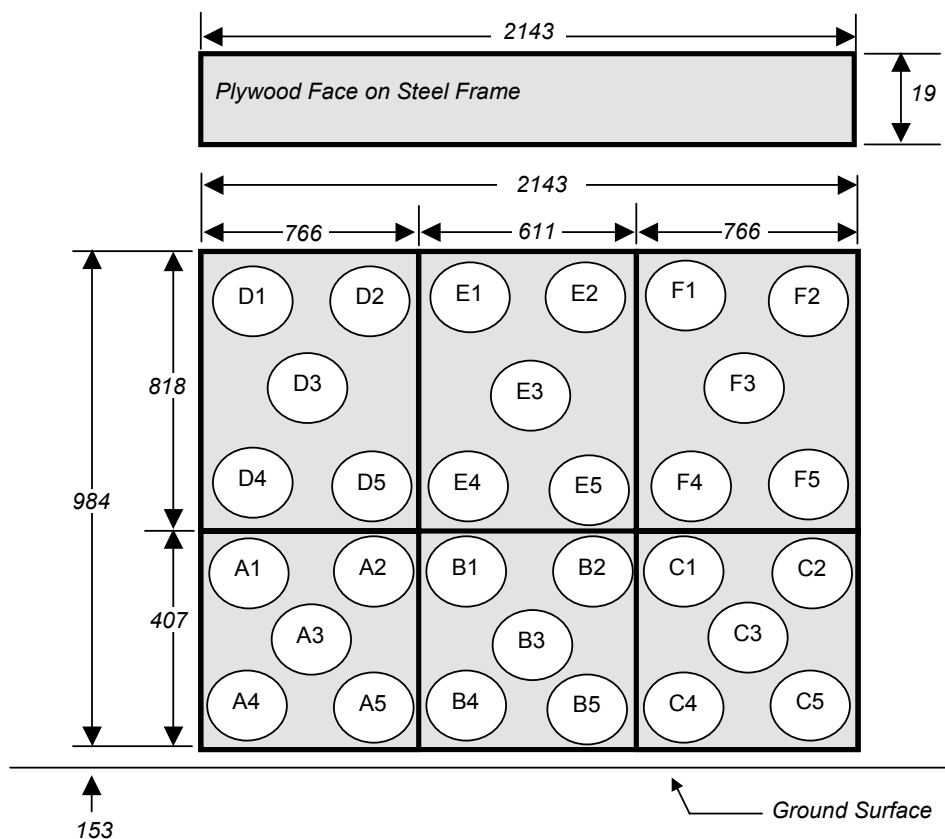
LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2005 Dodge Dakota Club Cab ST
 Test Program: 35mph Frontal Impact

NHTSA No.: M50303
 Test Date: 01/04/05

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.

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

Test Vehicle: 2005 Dodge Dakota Club Cab ST
Test Program: 35mph Frontal Impact

NHTSA No.: M50303
Test Date: 01/04/05

VEHICLE INFORMATION

VIN: 1D7HE22K15S181576 Wheelbase (mm) : 3335
Vehicle Size Category: Truck Test Weight (kg) : 2228.6

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): 56.6
Velocity Change (km/h): 62.6 Time of Separation (msec): 117

CRUSH PROFILE

Collision Deformation Classification: Frontal Midpoint of Damage: Centerline
Damage Region Length (mm): 1371 Impact Mode: Frontal

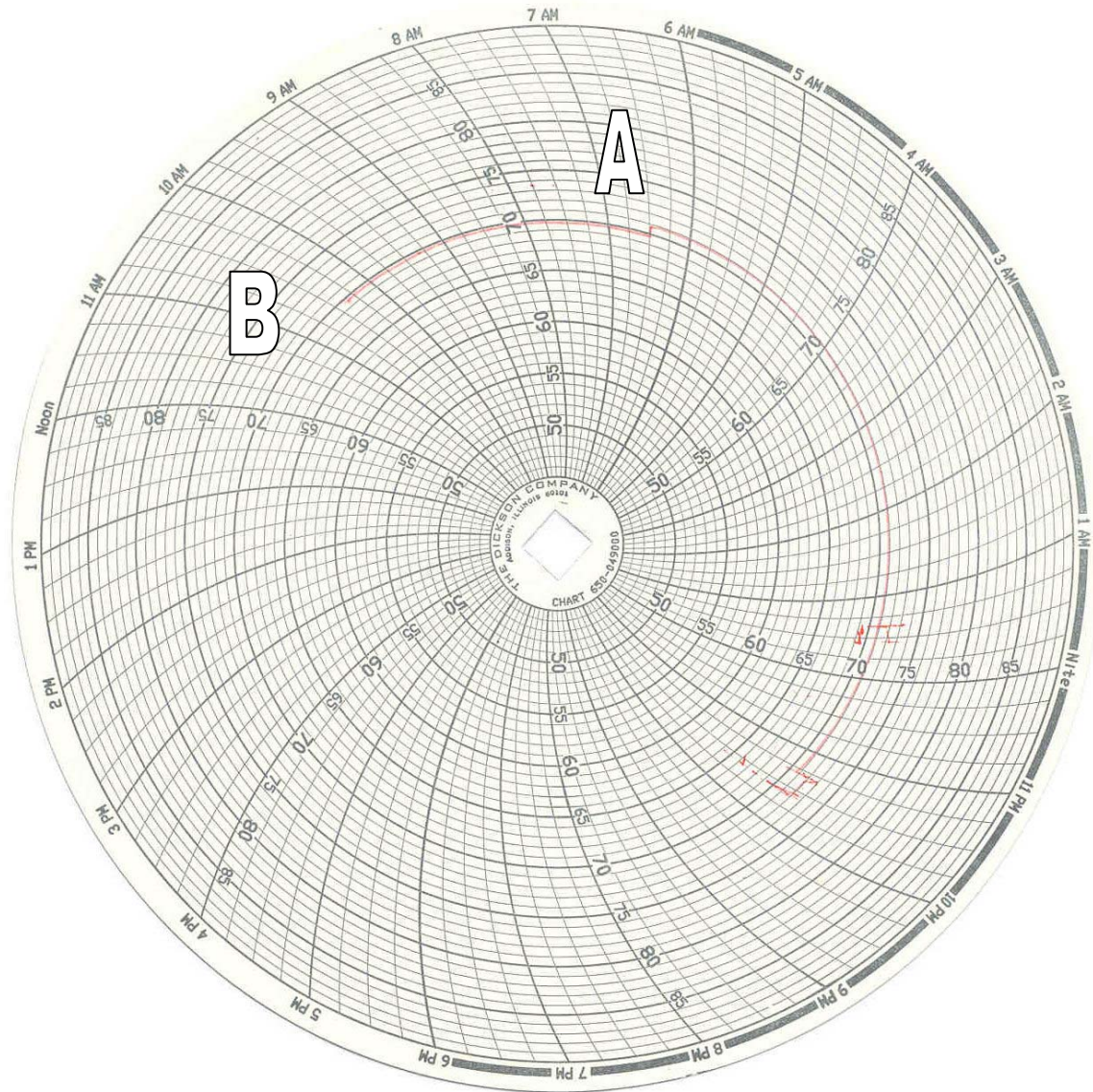
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	5437	5136	301
C2	Crush zone 2 at left side	mm	5496	5062	434
C3	Crush zone 3 at left side	mm	5522	5085	437
C4	Crush zone 4 at right side	mm	5526	5089	437
C5	Crush zone 5 at right side	mm	5499	5071	428
C6	Crush zone 6 at right side	mm	5442	5116	326
L	C1 TO C6	mm	1371	1330	41

DATA SHEET NO. 21

DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2005 Dodge Dakota Club Cab ST
Test Program: 35mph Frontal Impact

NHTSA No.: M50303
Test Date: 01/04/05



A = Dummies installed in vehicle at 7:00 am

B = Test conducted at 10:50 am

APPENDIX A
PHOTOGRAPHS

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MFD BY	DAIMLERCHRYSLER CORPORATION	DATE OF MFR	10-04	GWR	2727 KG(06010 LB)
GWR FRONT	1407 KG(3100 LB)	WITH TIRES	P245/70R16	RIMS AT	16X7.0
GWR REAR	1727 KG(3806 LB)	WITH TIRES	P245/70R16	RIMS AT	16X7.0
				COLD	240 KPA(35 PSI)
				COLD	240 KPA(35 PSI)
THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY AND THEFT PREVENTION STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.					
VIN:	107HE22K15S181576	TYPE:	TRUCK	SINGLE X	DUAL
					
MDH:	101919 172AA	PNT:PDM	VEHICLE MADE IN U.S.A. TRM:P9D5 4648503		

Vehicle Certification Label



TIRE AND LOADING INFORMATION

SEATING CAPACITY – TOTAL 5 FRONT 3 REAR 2

THE COMBINED WEIGHT OF OCCUPANTS AND CARGO SHOULD NEVER EXCEED
784 KG OR 1729 LB

TIRE	FRONT	REAR	SPARE
ORIGINAL TIRE SIZE	P245/70R16	P245/70R16	P245/70R16
COLD TIRE INFLATION PRESSURE	240 kPa, 35 PSI	240 kPa, 35 PSI	240 kPa, 35 PSI

SEE OWNERS MANUAL FOR ADDITIONAL INFORMATION 

5S181576

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

A-8.



Post-Test Left Side View of Test Vehicle

A-9.



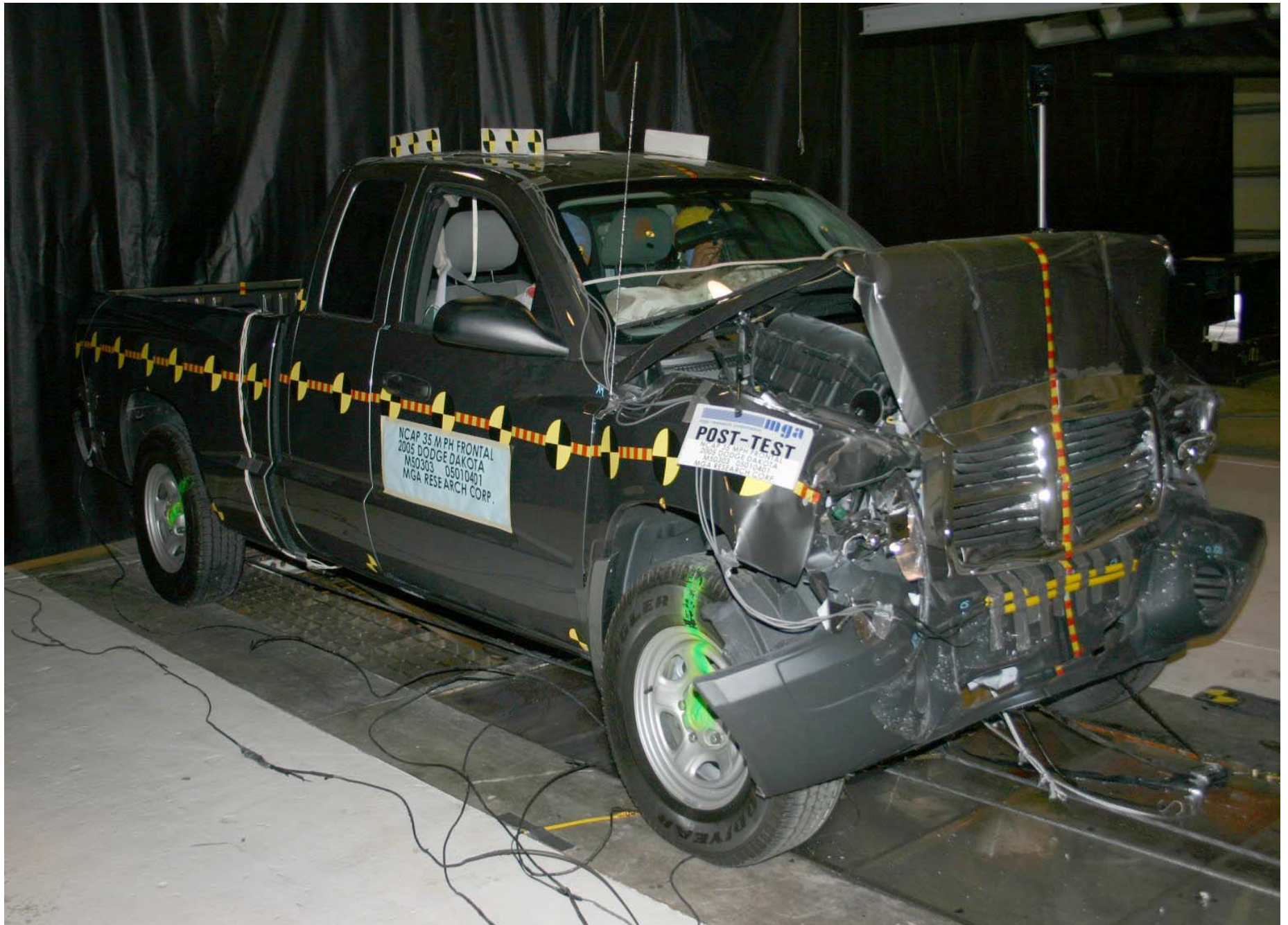
Pre-Test Right Side View of Test Vehicle



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



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



Pre-Test Left Rear Three-Quarter View of Door



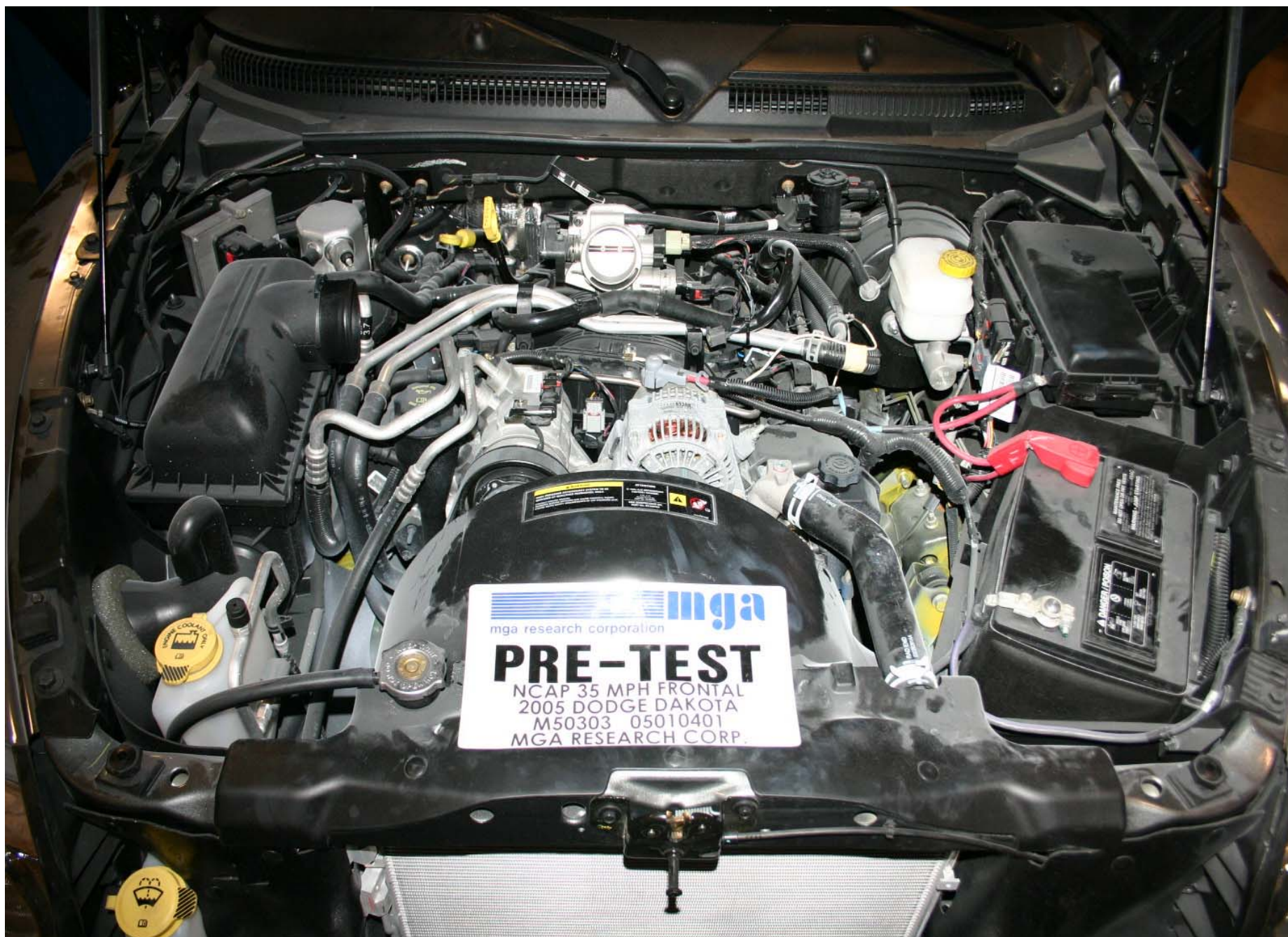
Pre-Test Right Rear Three-Quarter View of Door



Pre-Test Windshield View



Post-Test Windshield View



Pre-Test Engine Compartment View



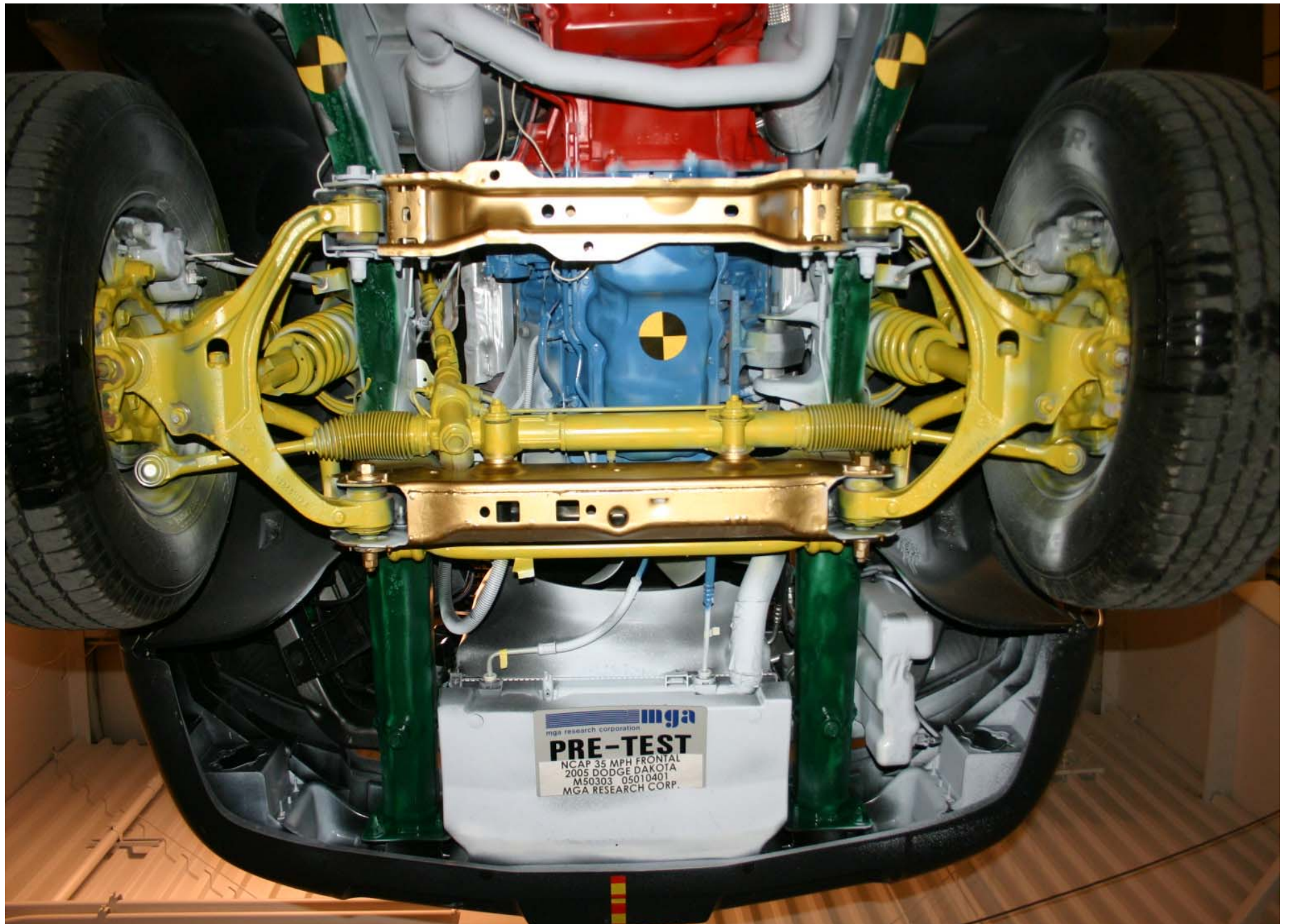
Post-Test Engine Compartment View



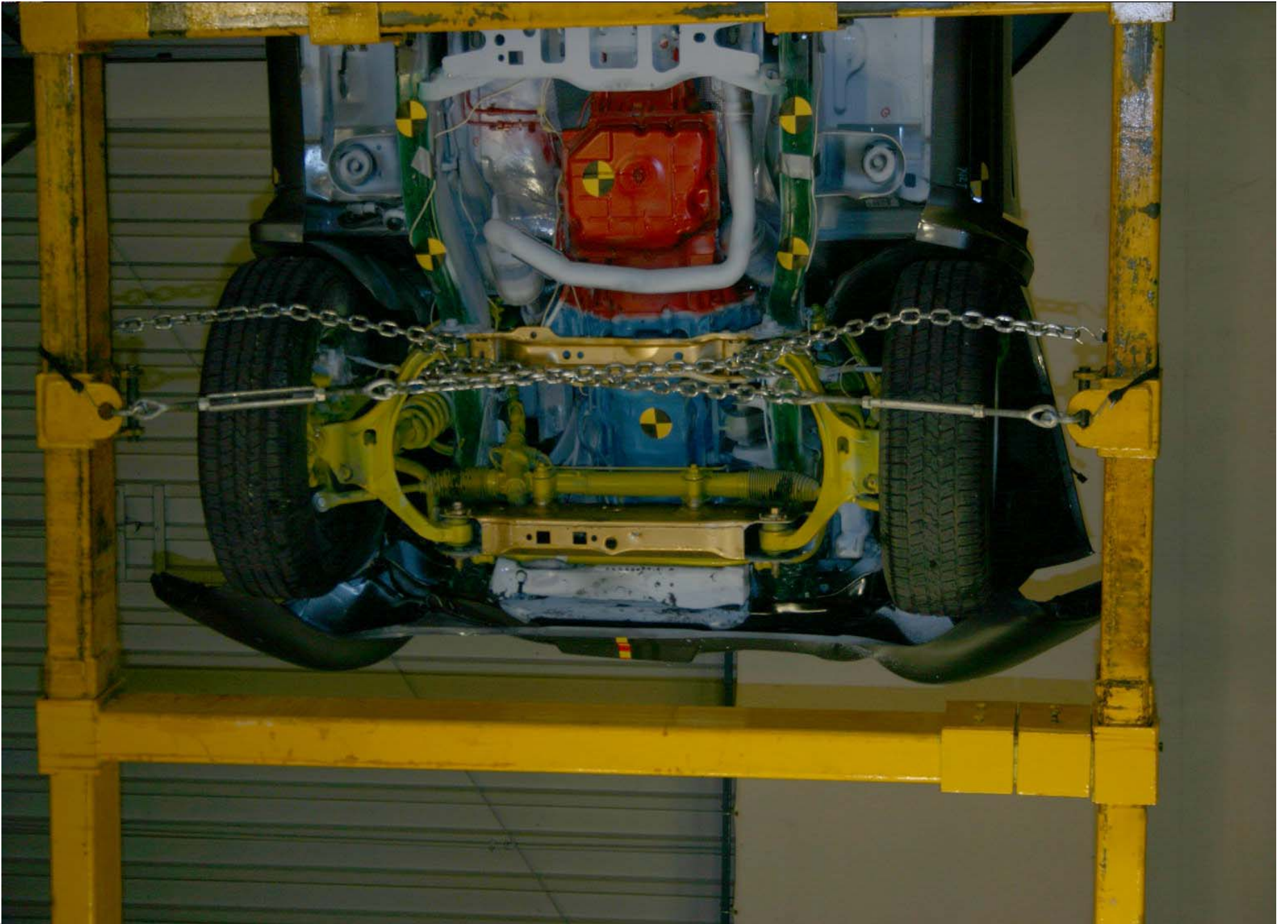
Pre-Test Fuel Filler Cap View



Post-Test Fuel Filler Cap View



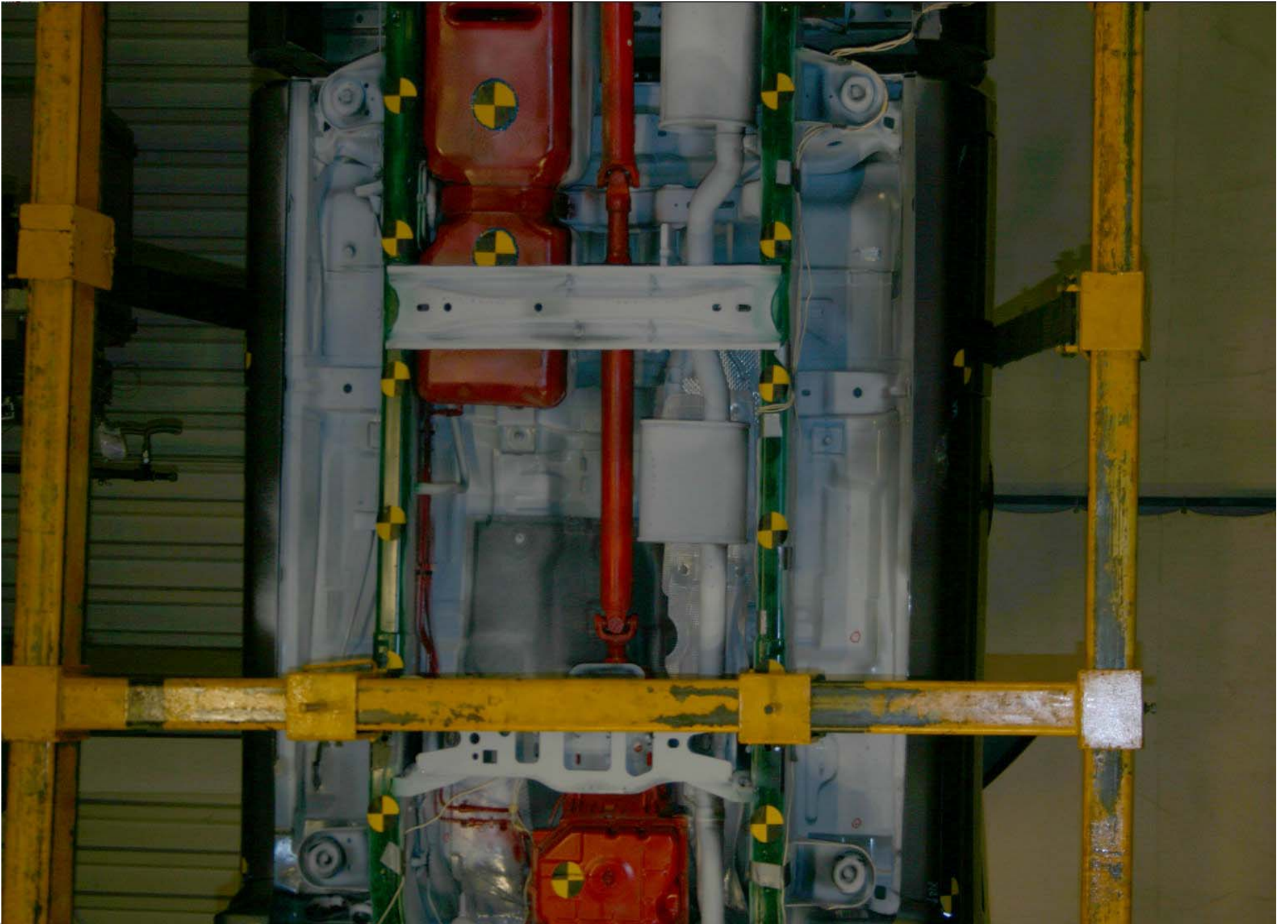
Pre-Test Front Underbody View



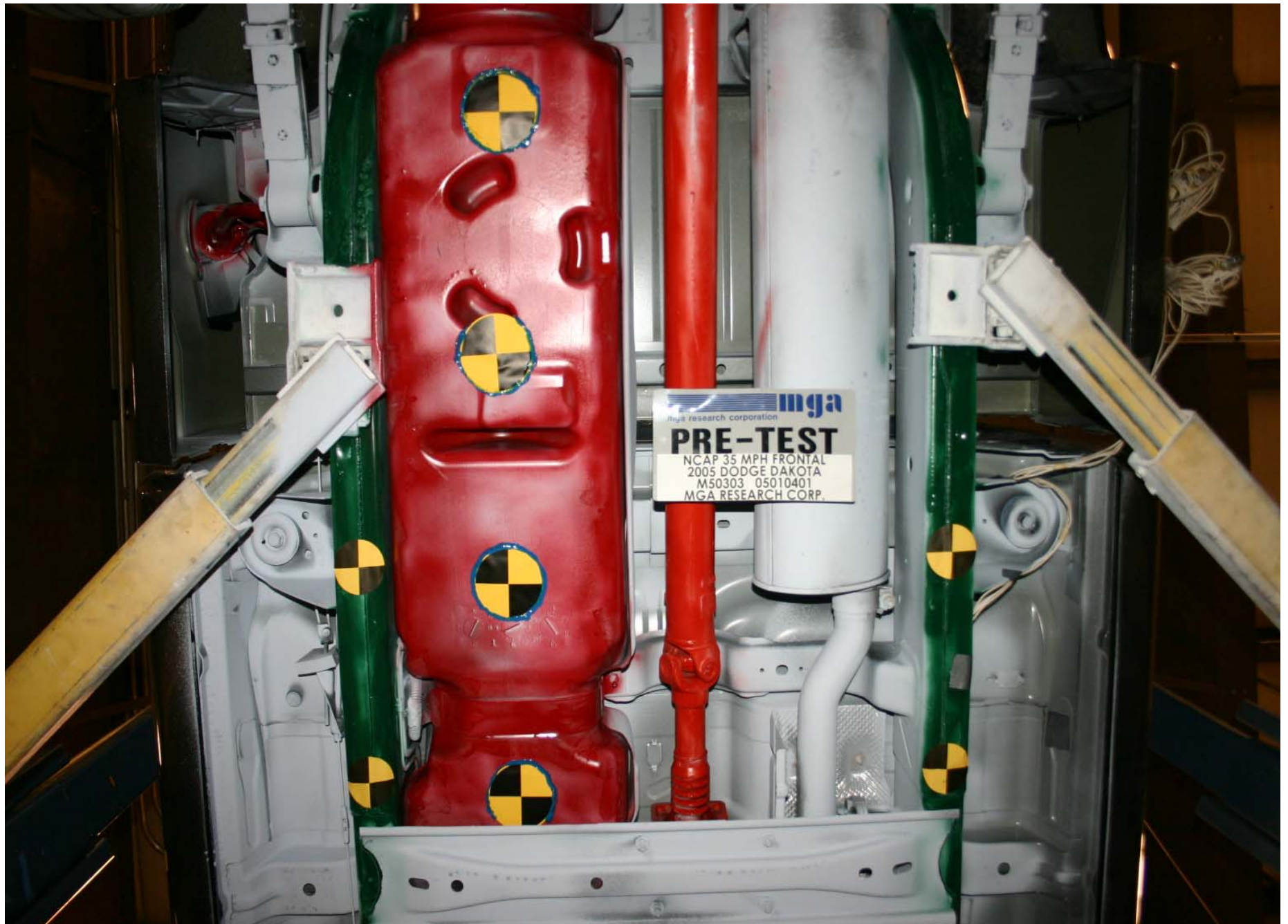
Post-Test Front Underbody View



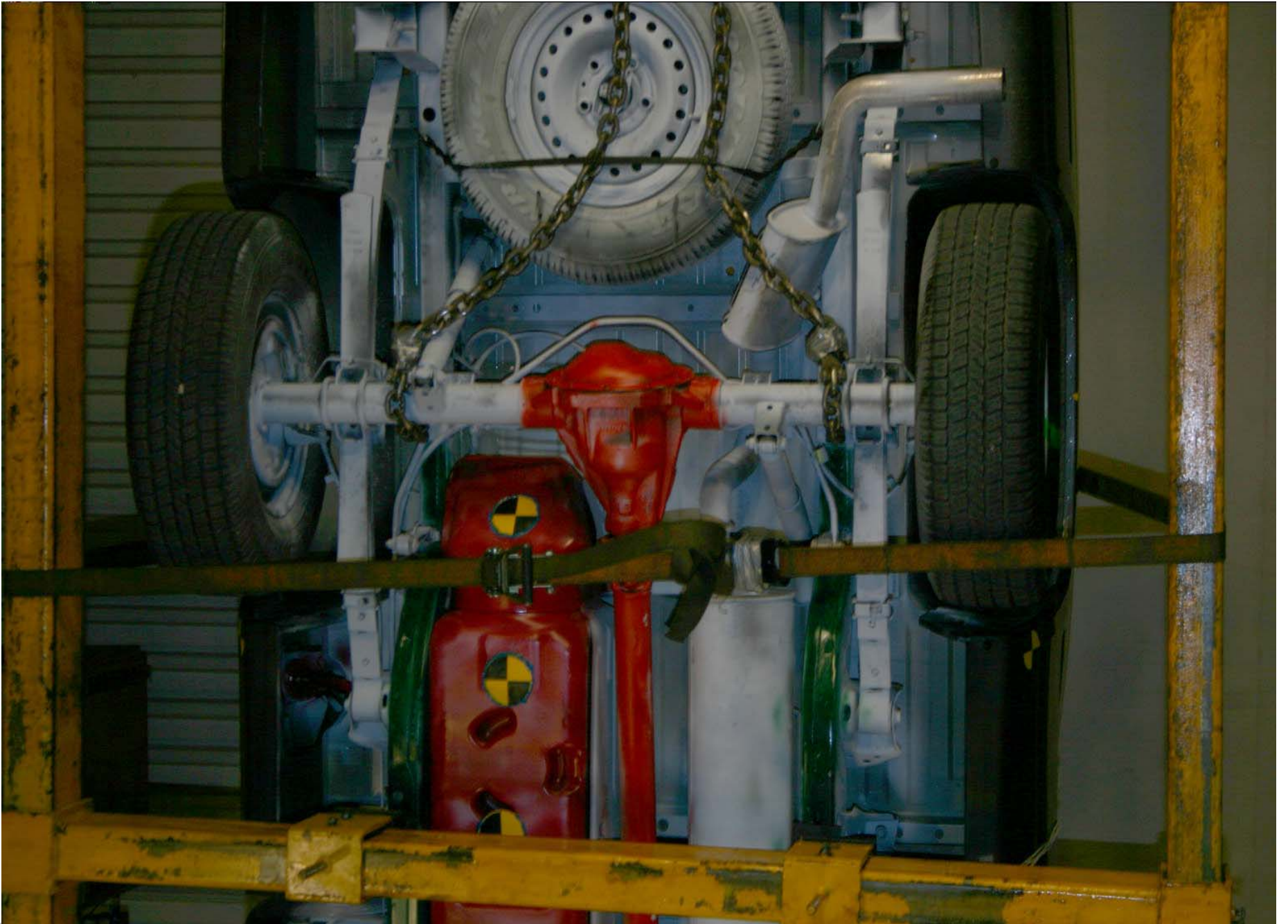
Pre-Test Front Mid Underbody



Post-Test Front Mid Underbody



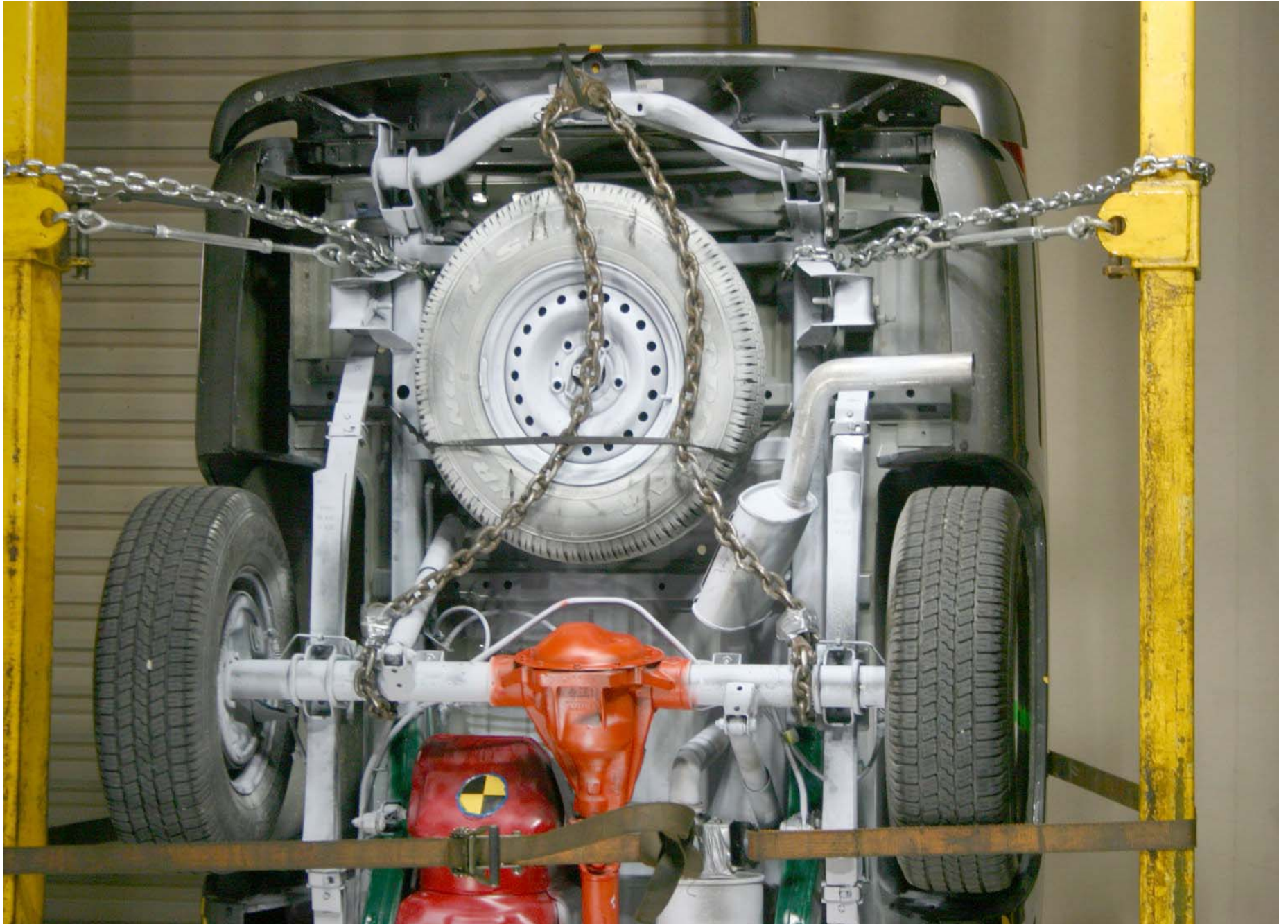
Pre-Test Rear Mid Underbody



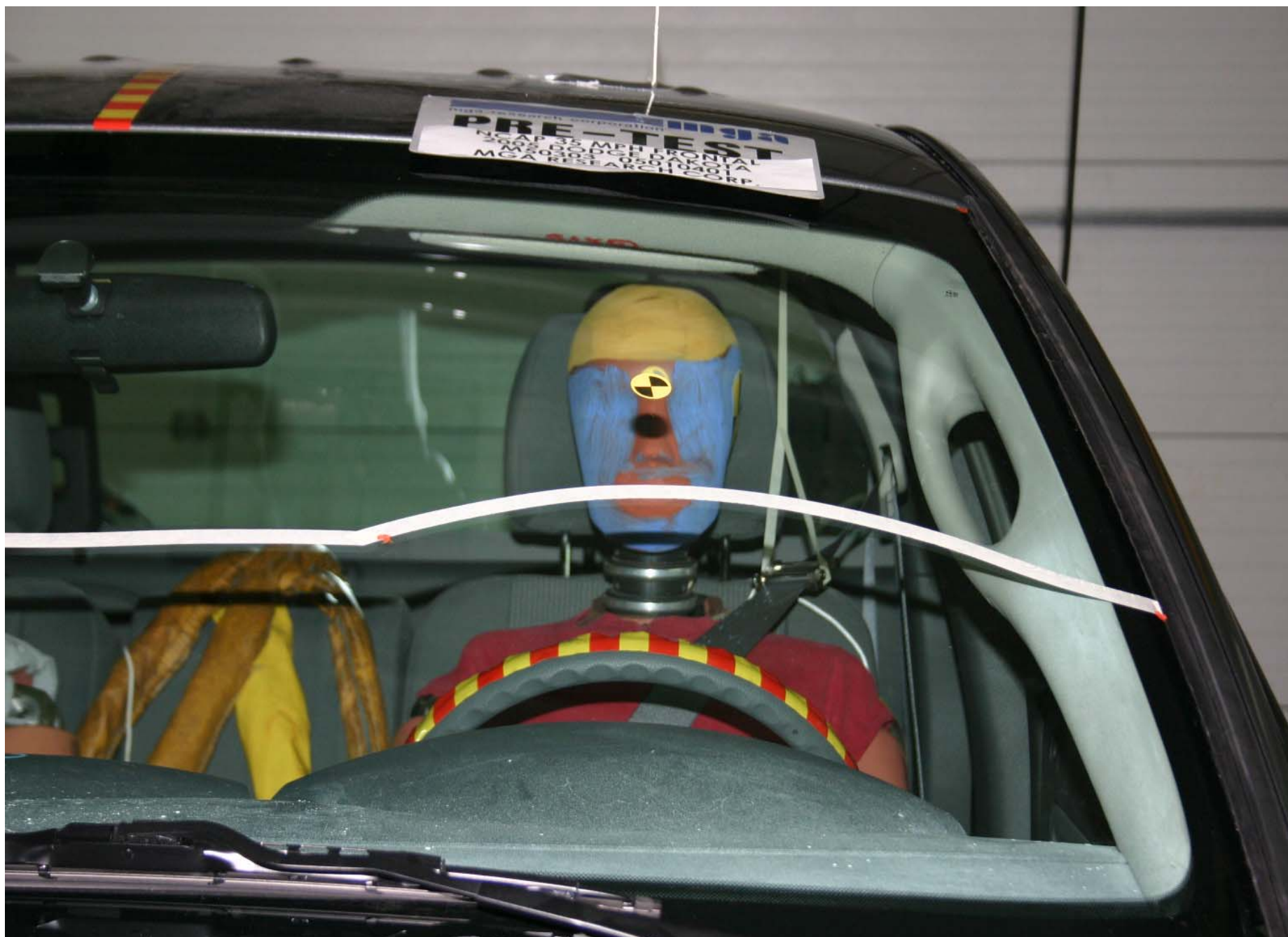
Post-Test Rear Mid Underbody



Pre-Test Rear Underbody View



Post-Test Rear Underbody View



Pre-Test Driver Dummy Front View (head position)



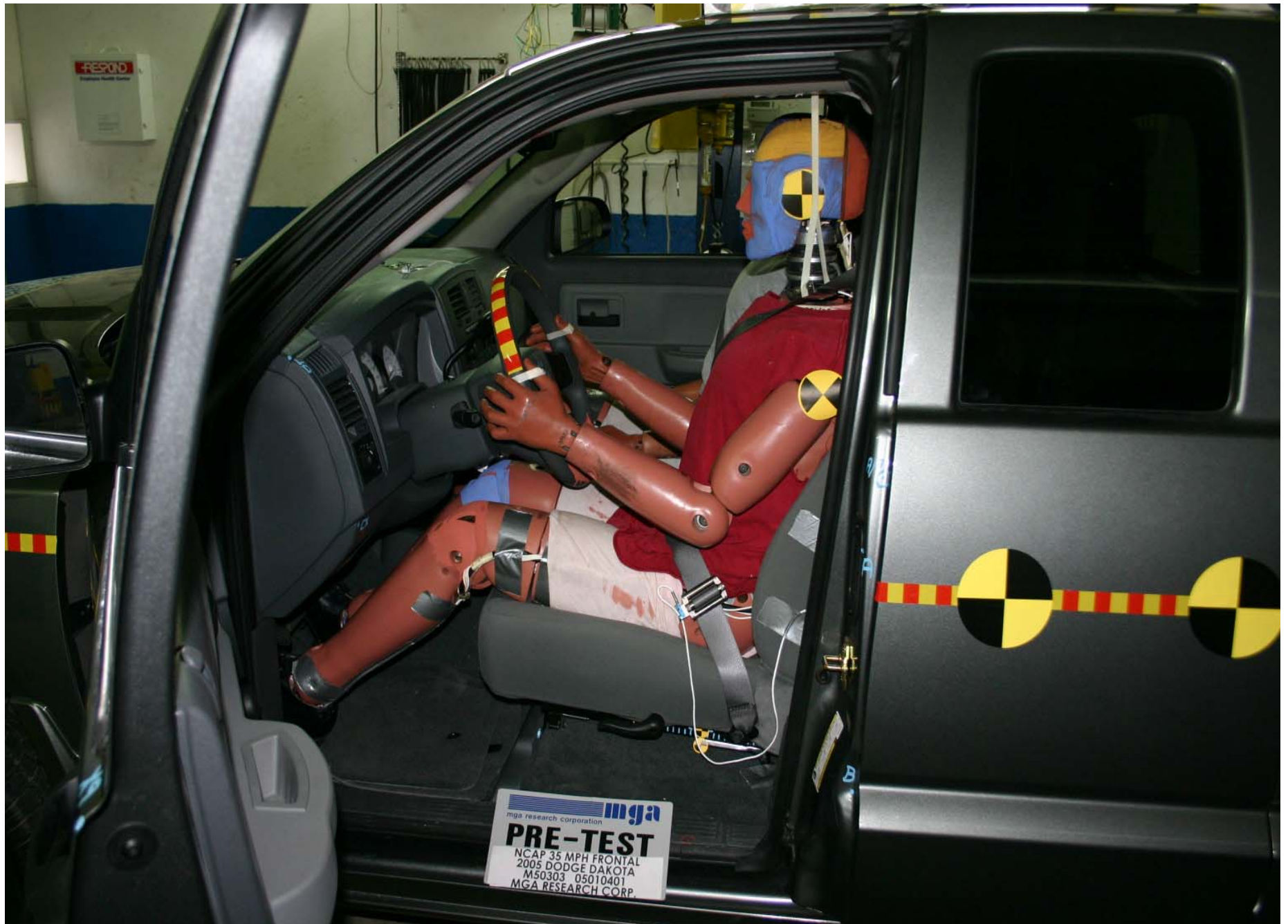
Post-Test Driver Dummy Front View (head position)



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 Seat Position



Post-Test Driver Dummy Seat Position



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



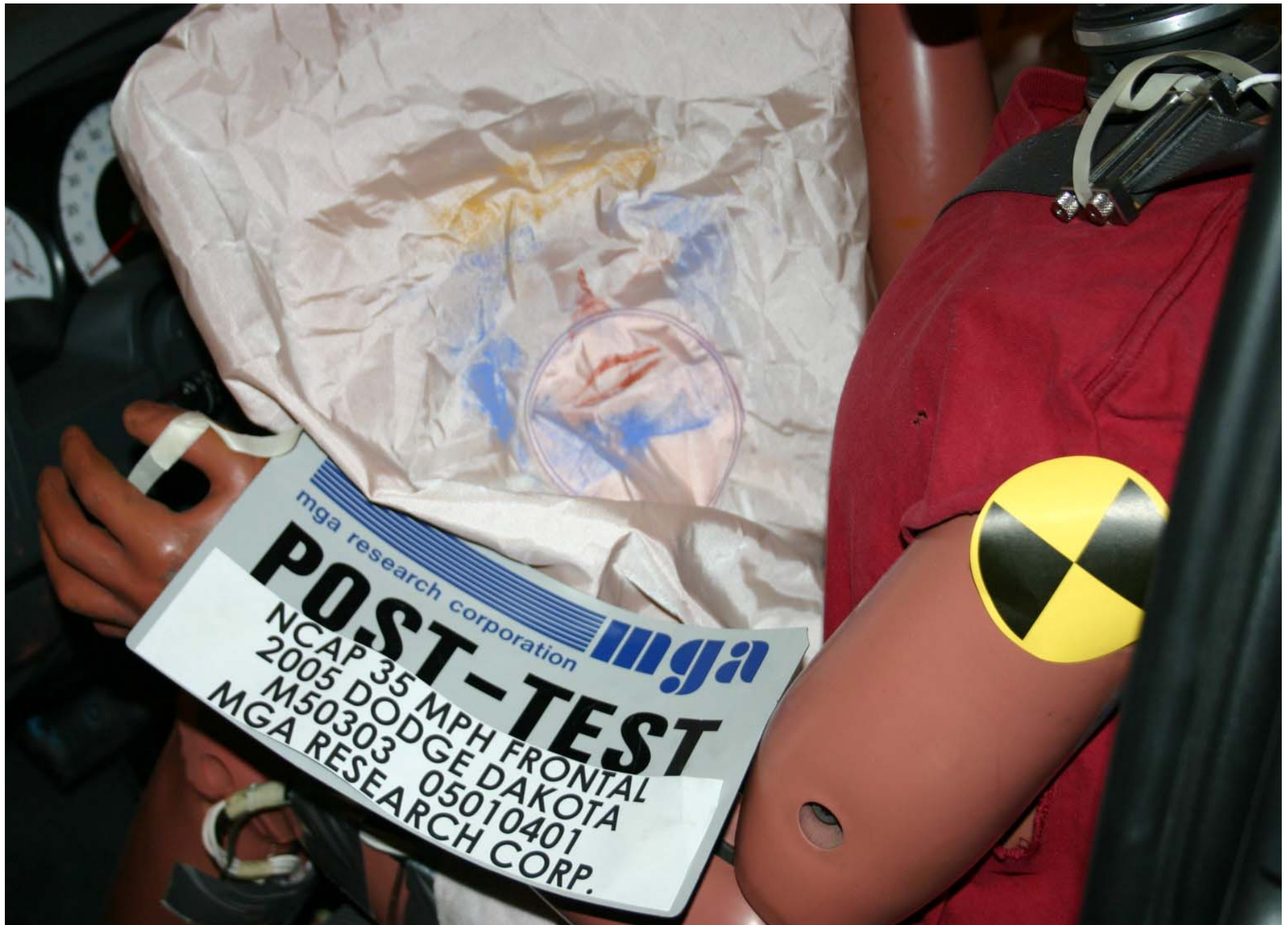
Post-Test Driver Side Floor Pan View



Post-Test Driver Dummy Head Contact



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



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 Seat Position



Post-Test Passenger Dummy Seat Position



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



NCAP 35 M PH FRONTAL
2005 DODGE DAKOTA
M50303 05010401
MGA RESEARCH CORP.

NCAP 35 M PH FRONTAL
2005 DODGE DAKOTA
M50303 05010401
MGA RESEARCH CORP.

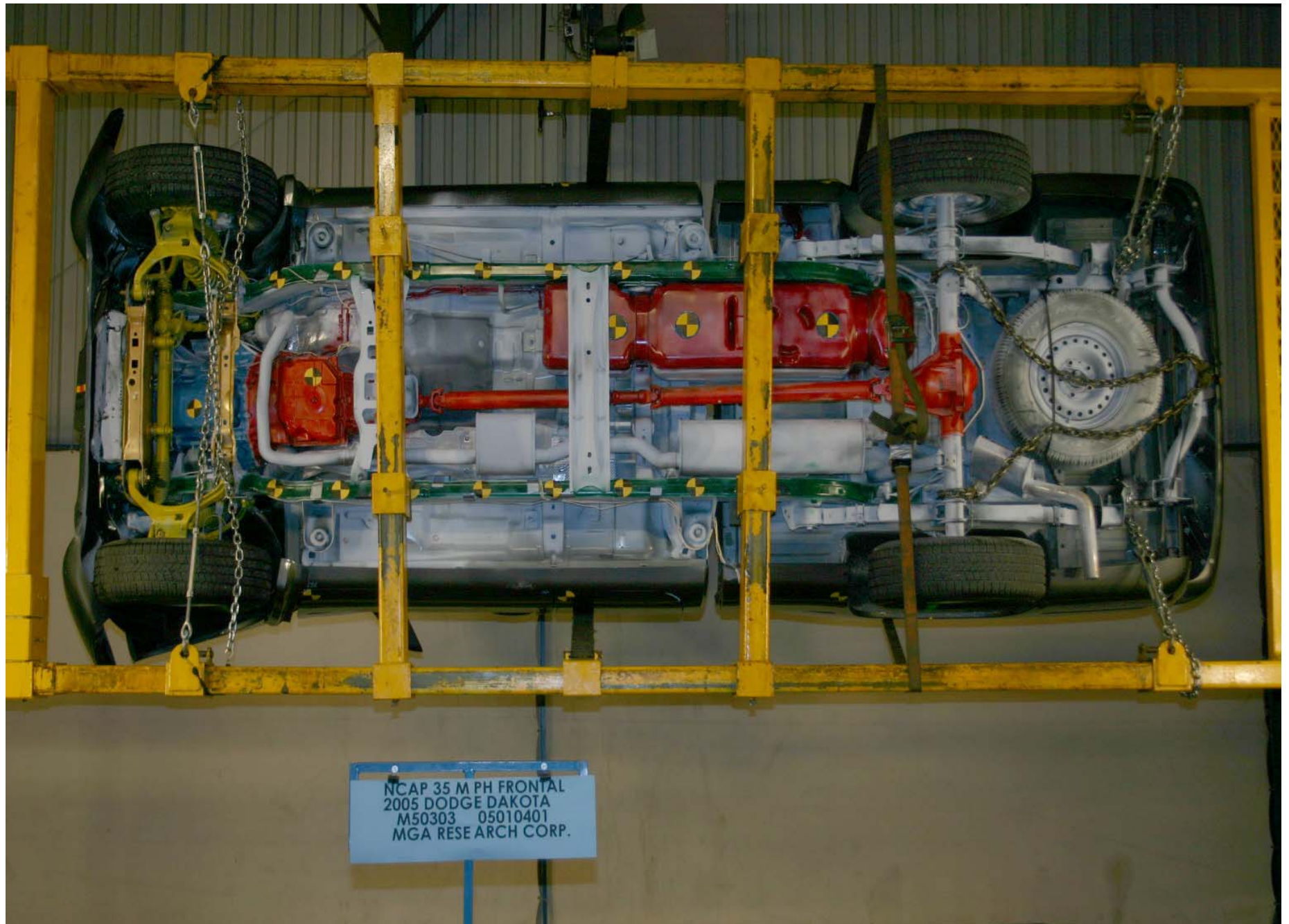
Rollover 90 Degrees



A-66.

Rollover 180 Degrees

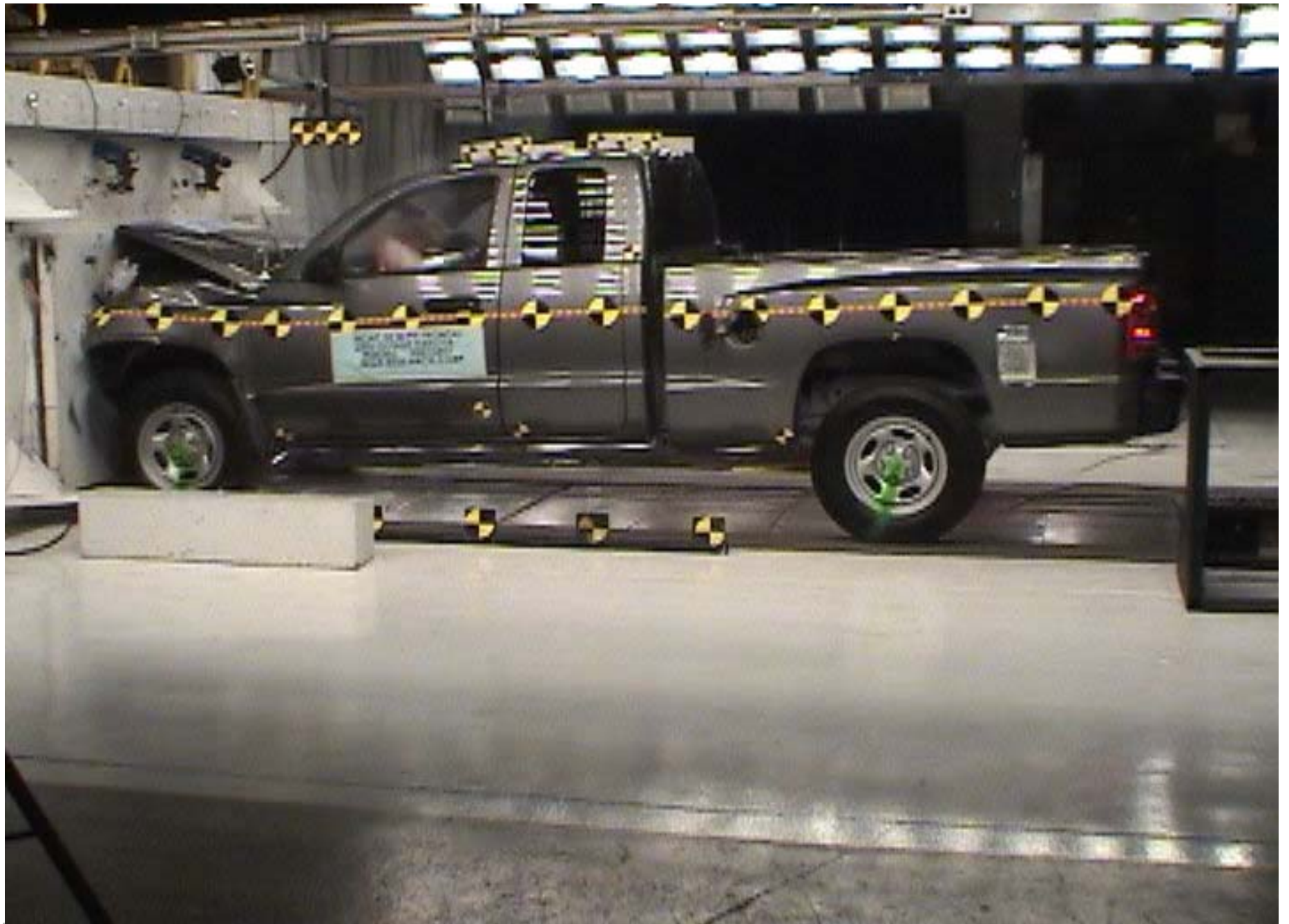
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Rollover 270 Degrees



Rollover 360 Degrees



Vehicle Impact

APPENDIX B

DUMMY AND VEHICLE RESPONSE DATA TRACES

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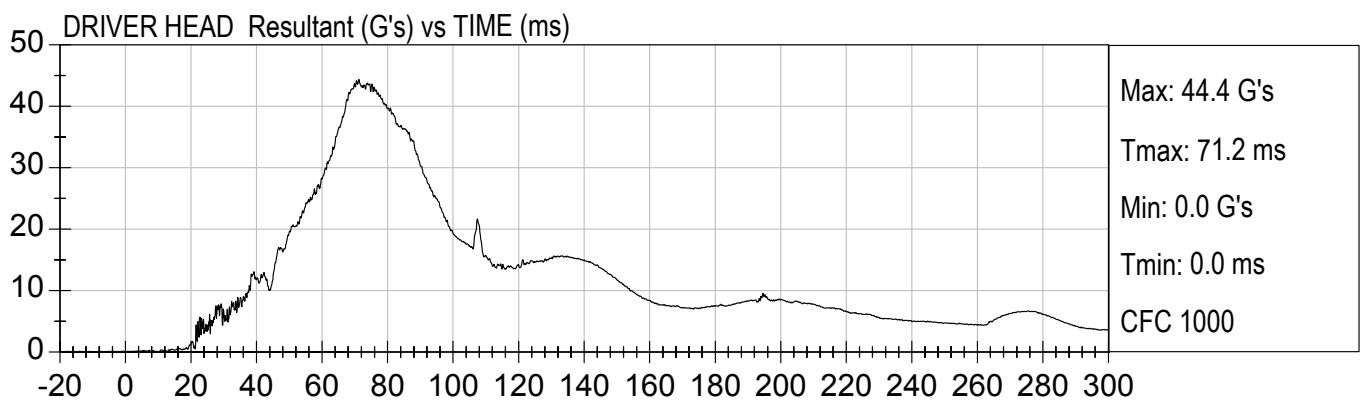
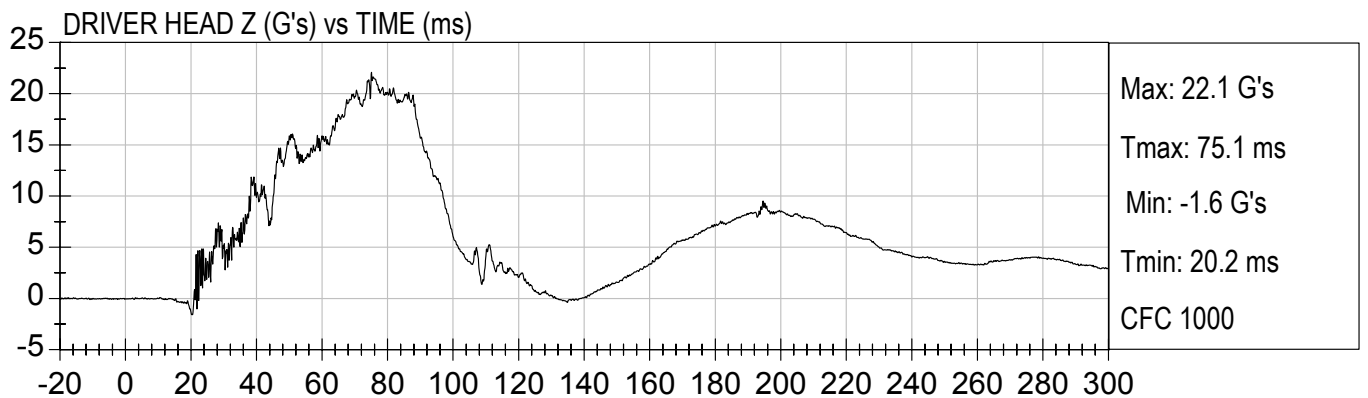
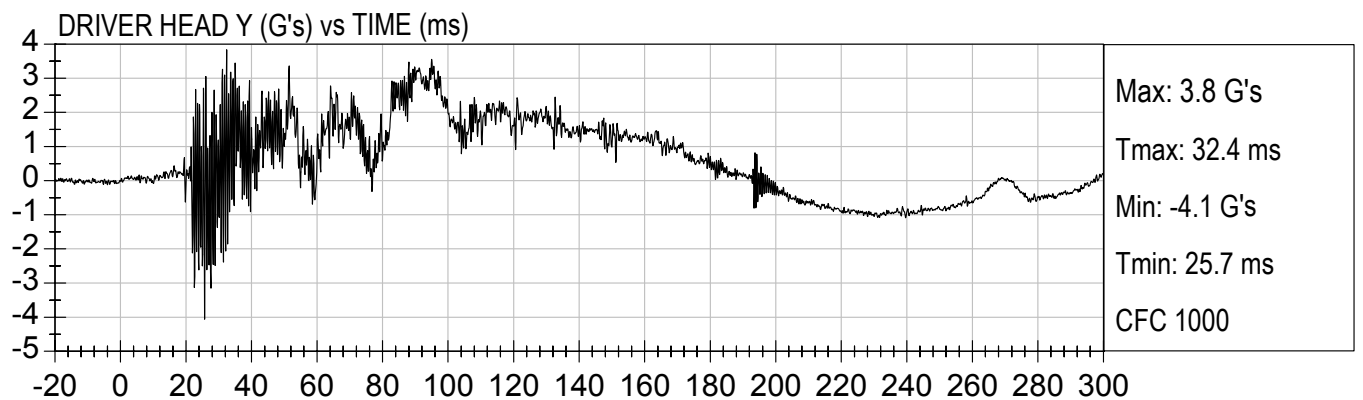
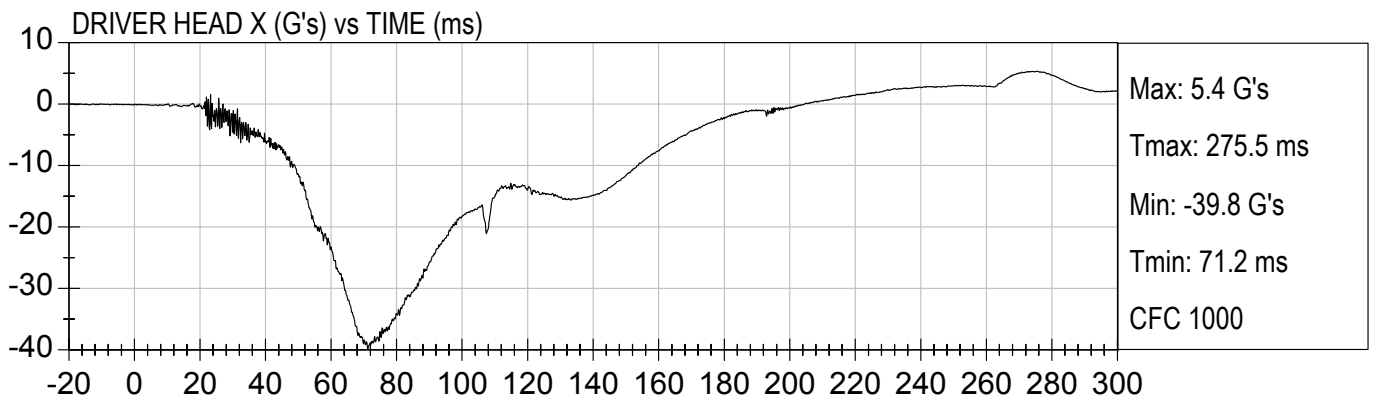
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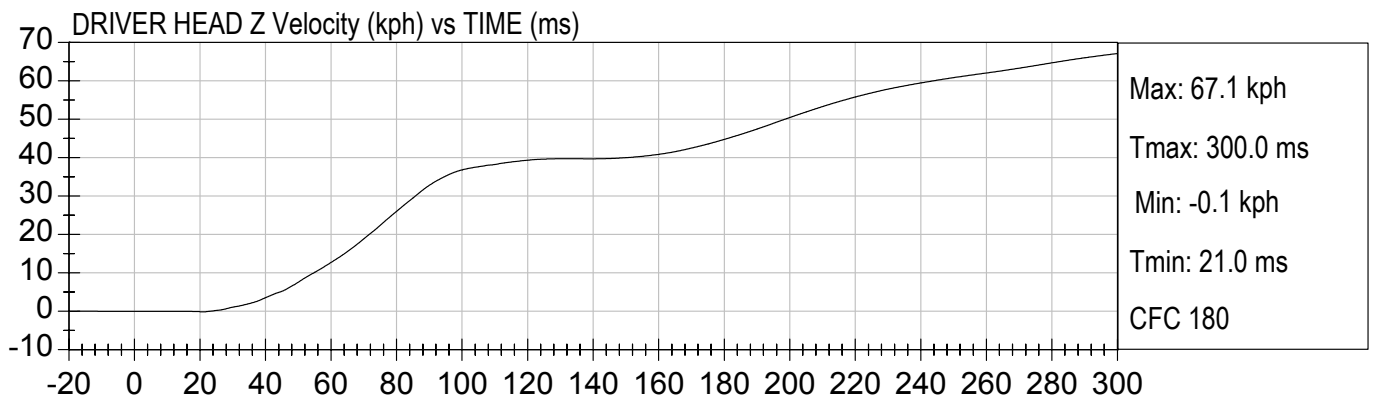
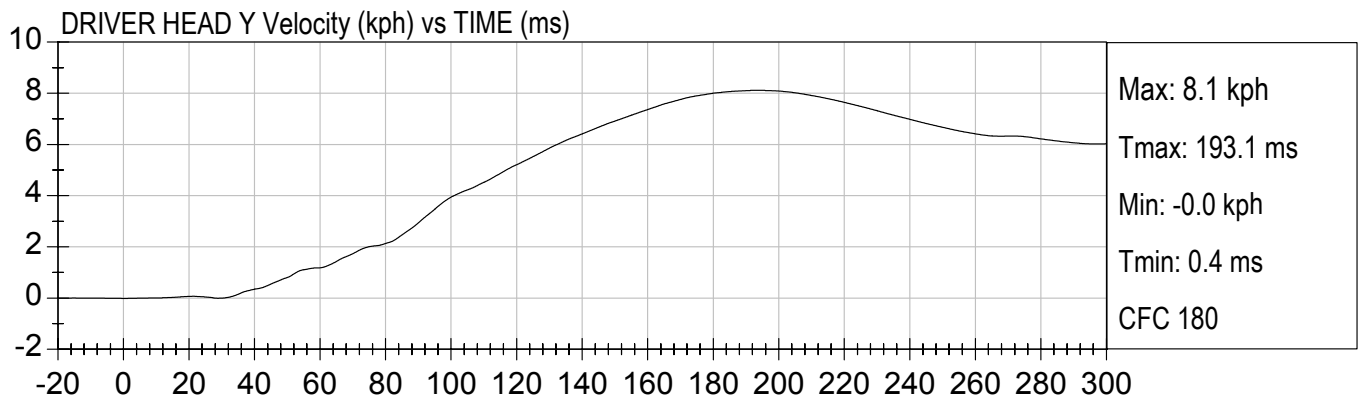
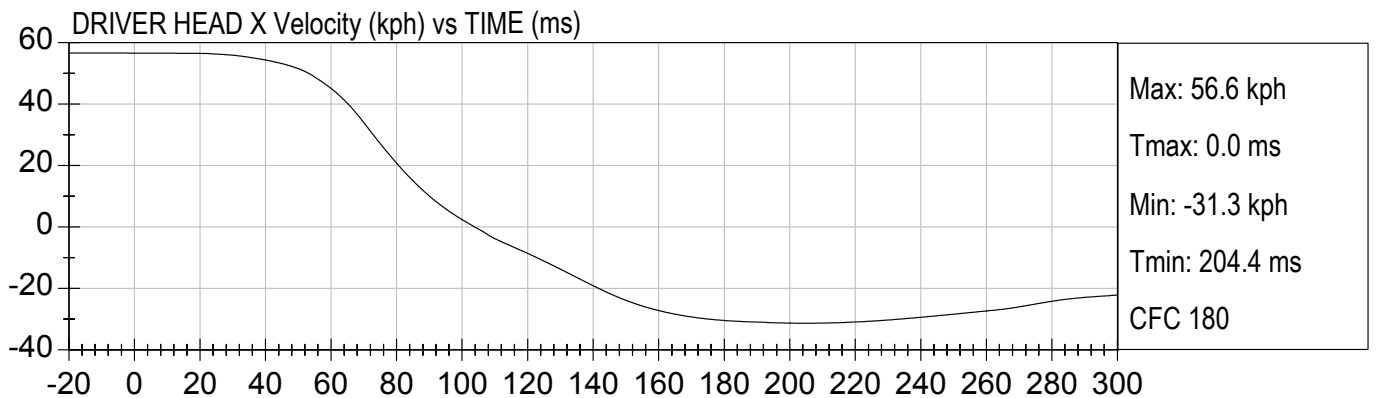
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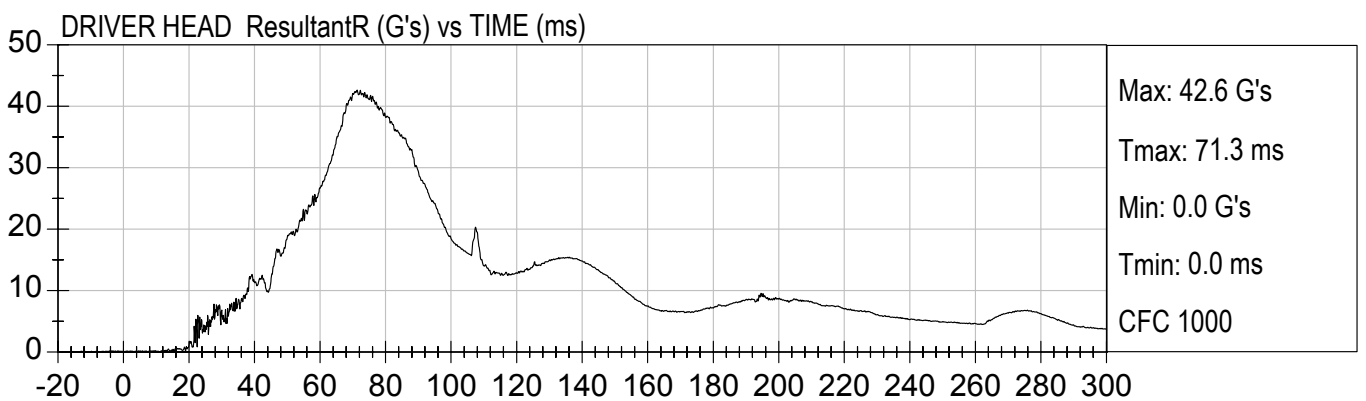
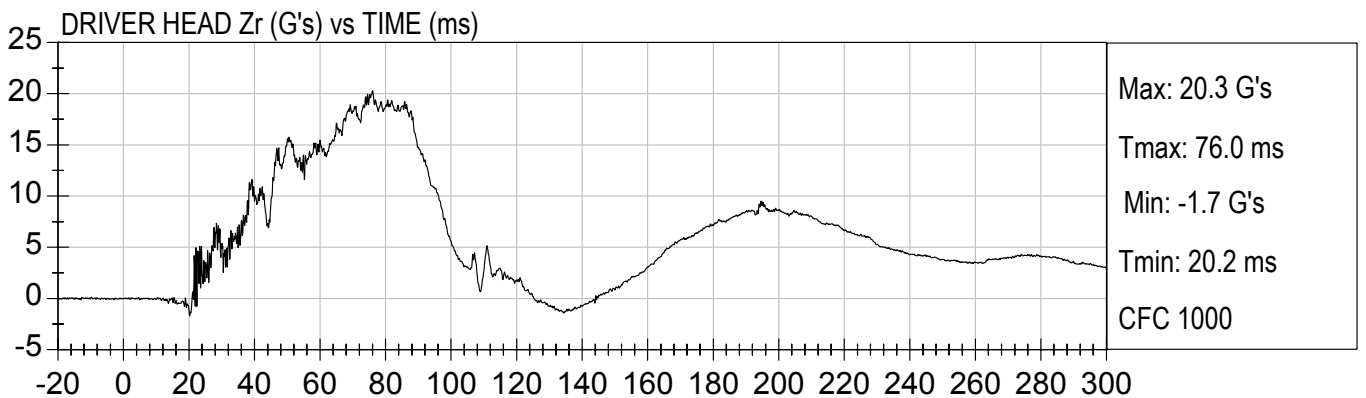
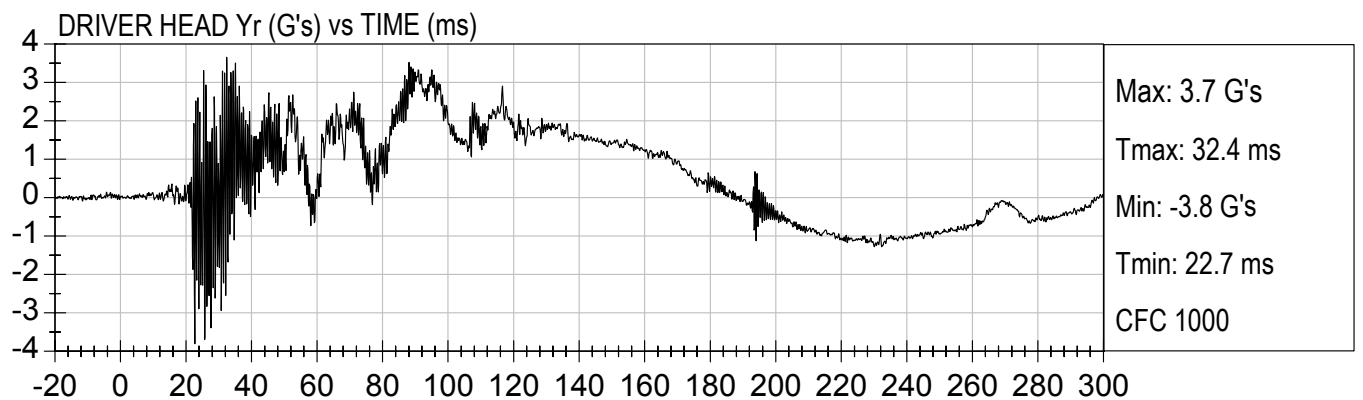
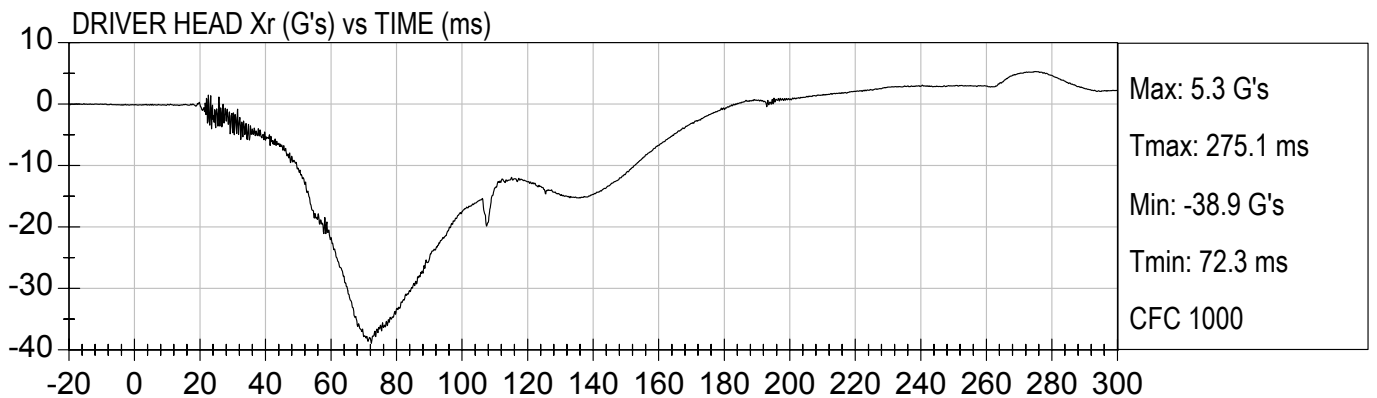
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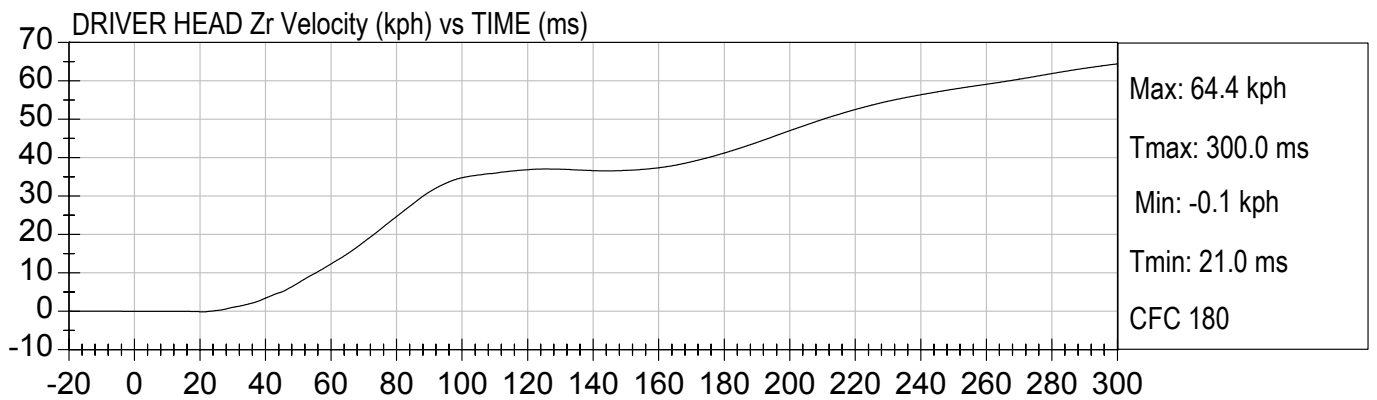
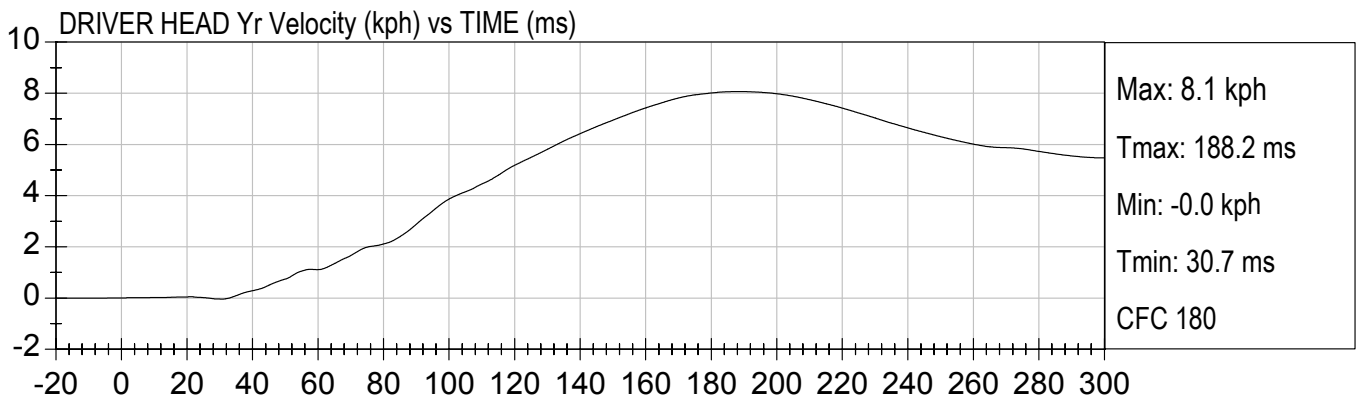
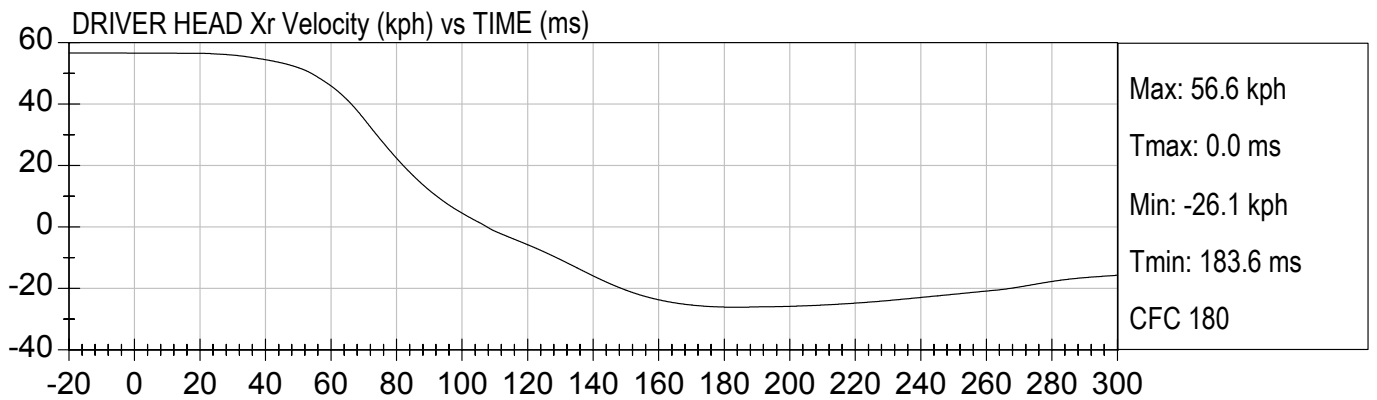
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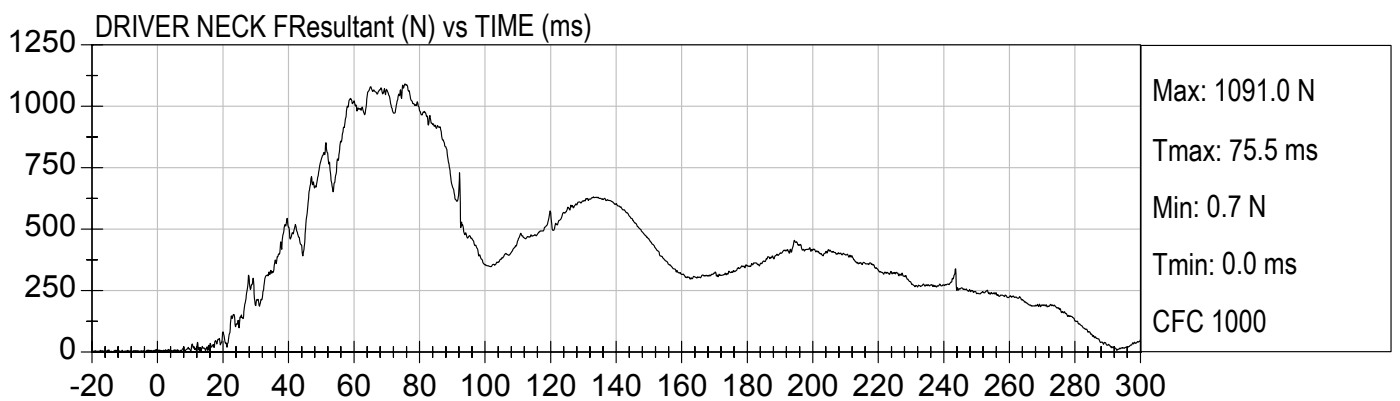
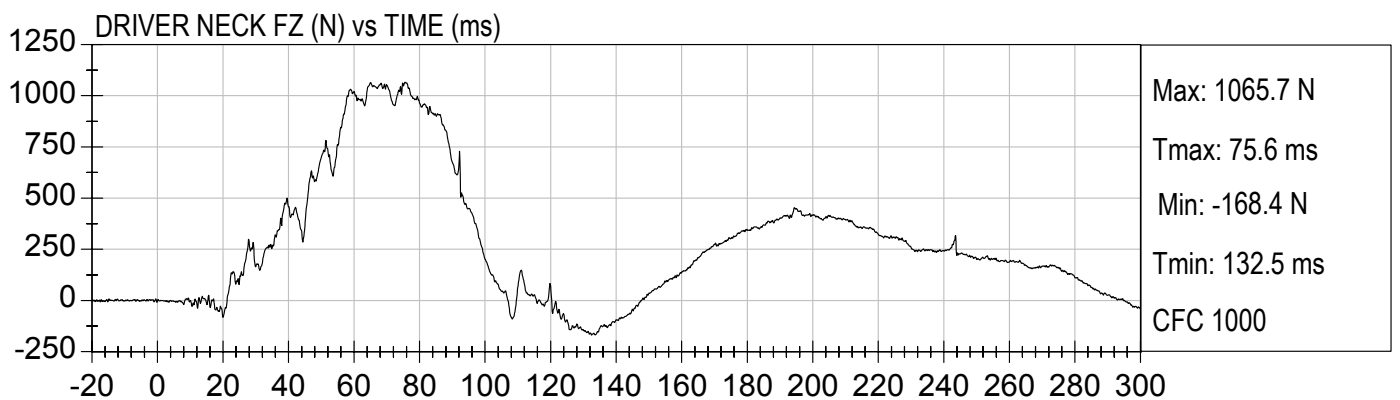
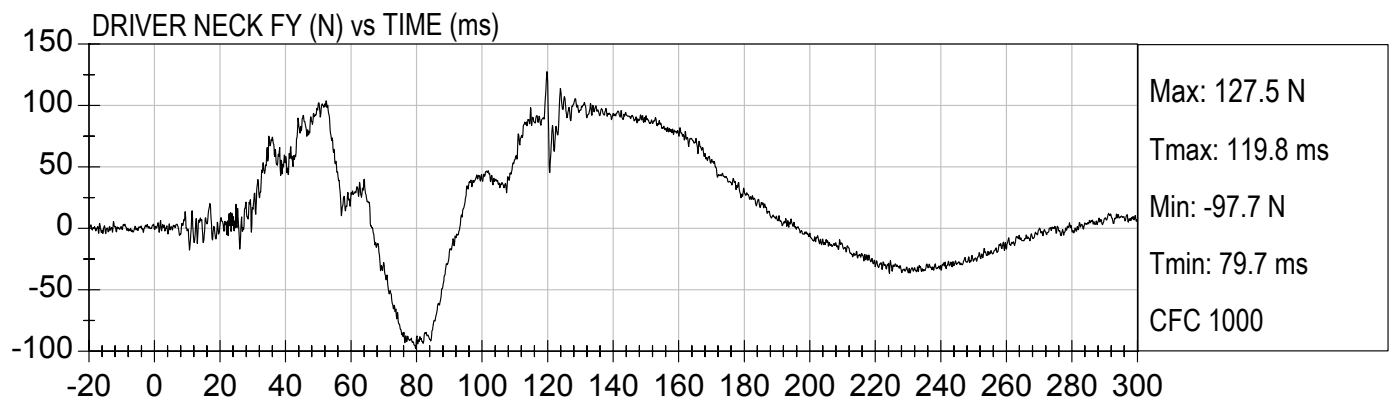
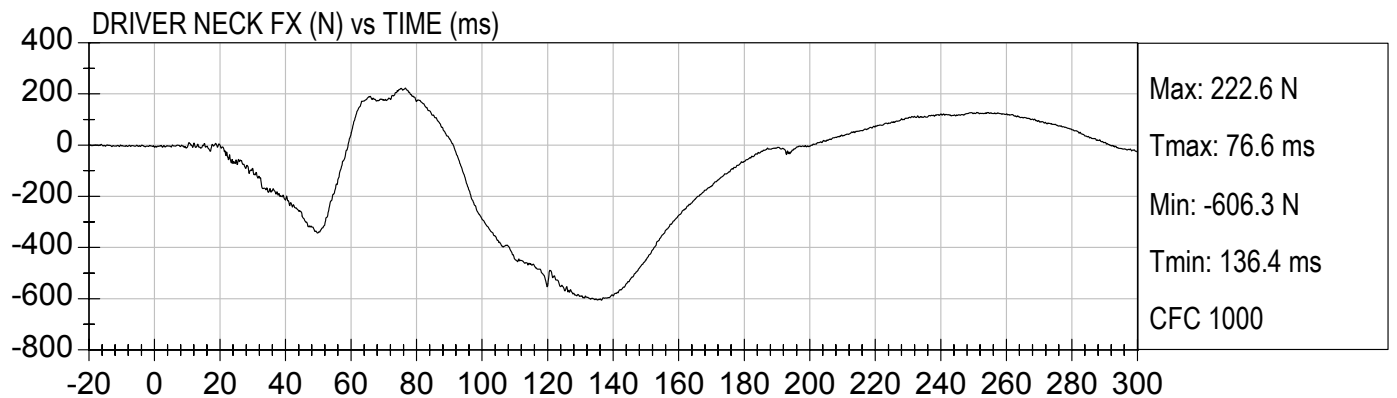
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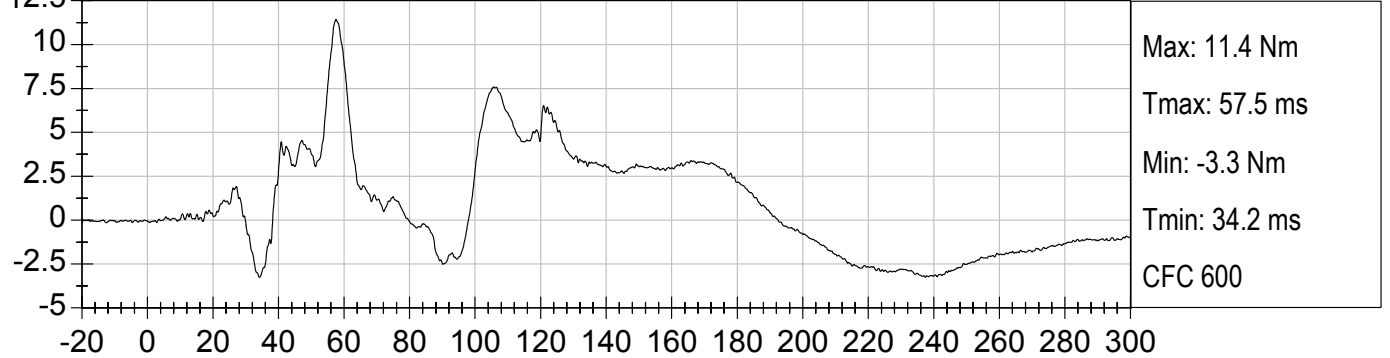




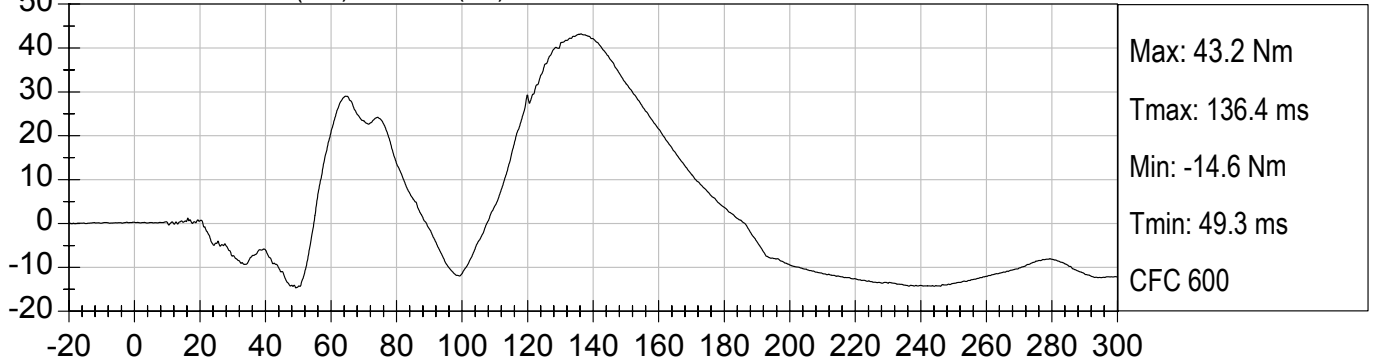




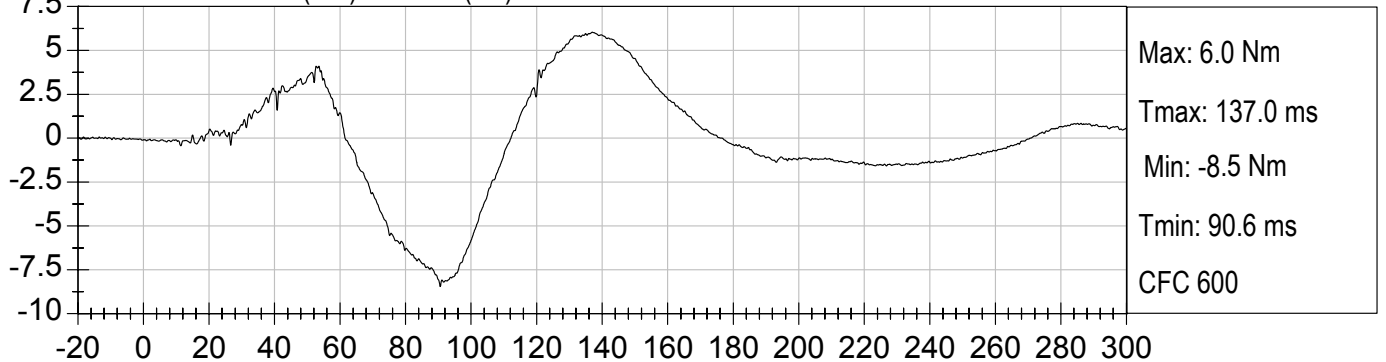
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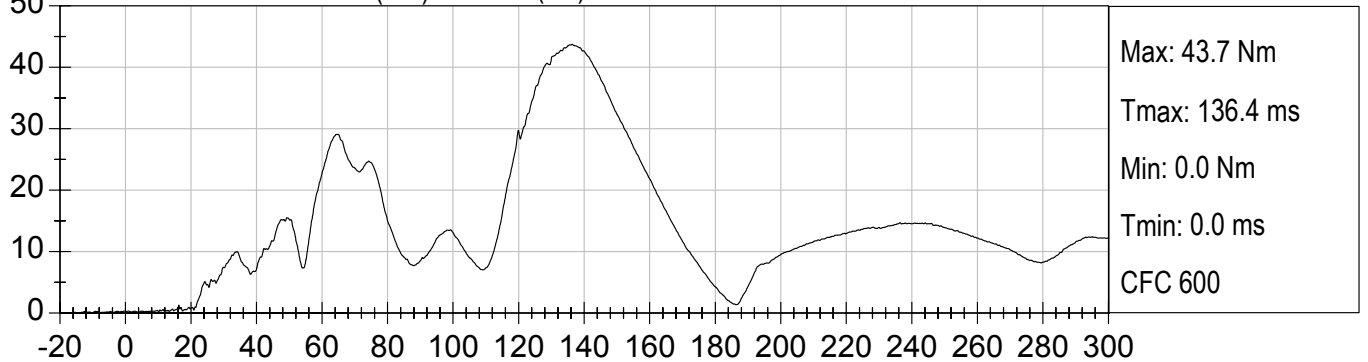
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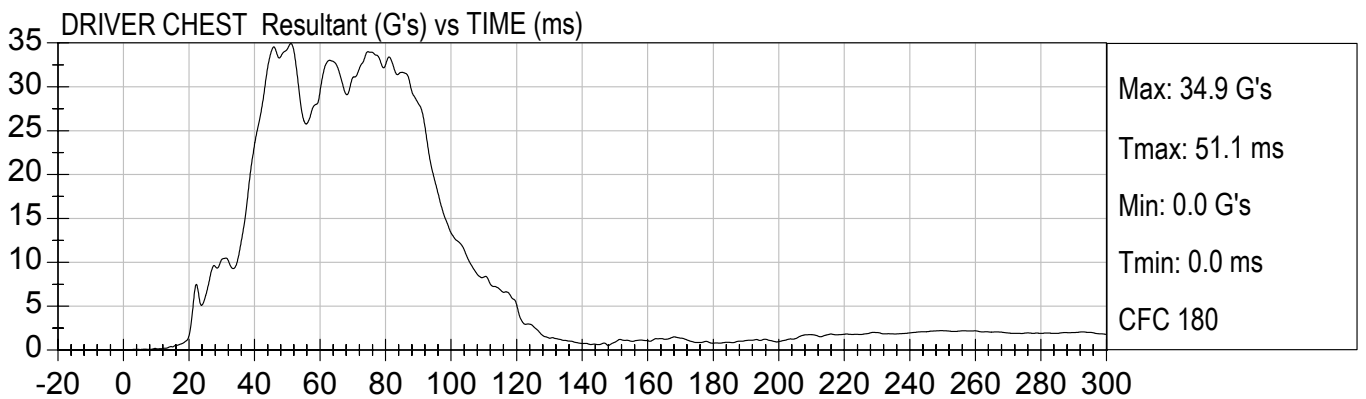
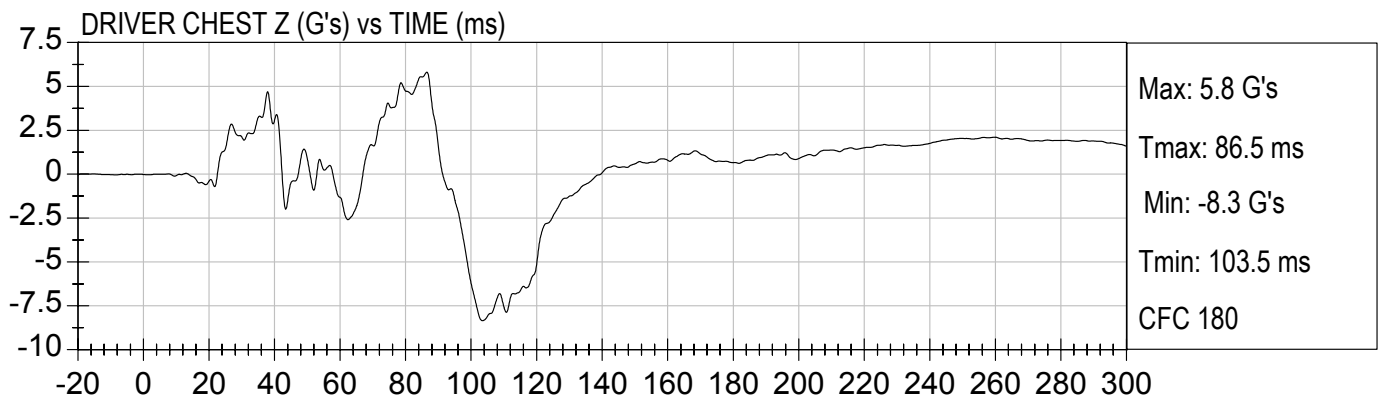
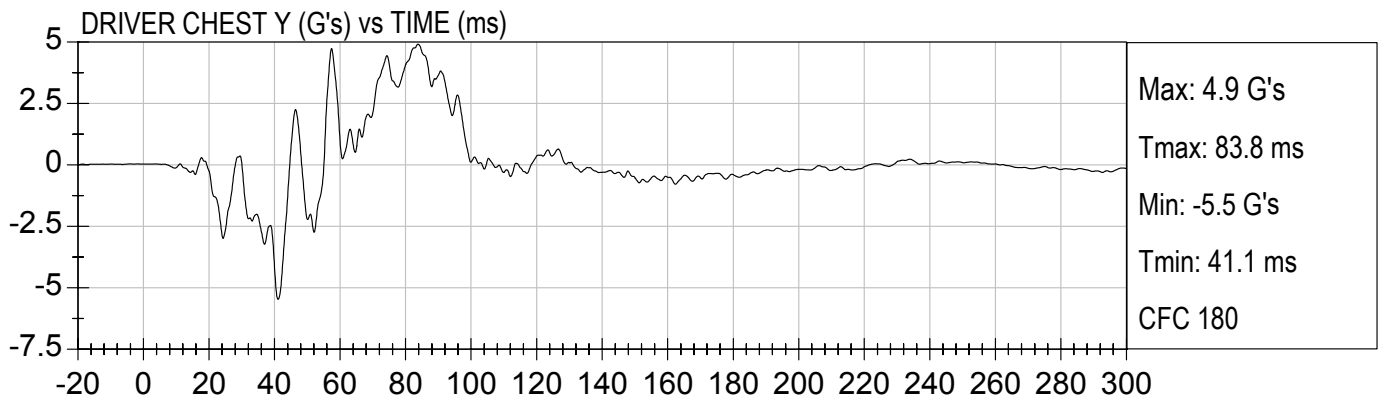
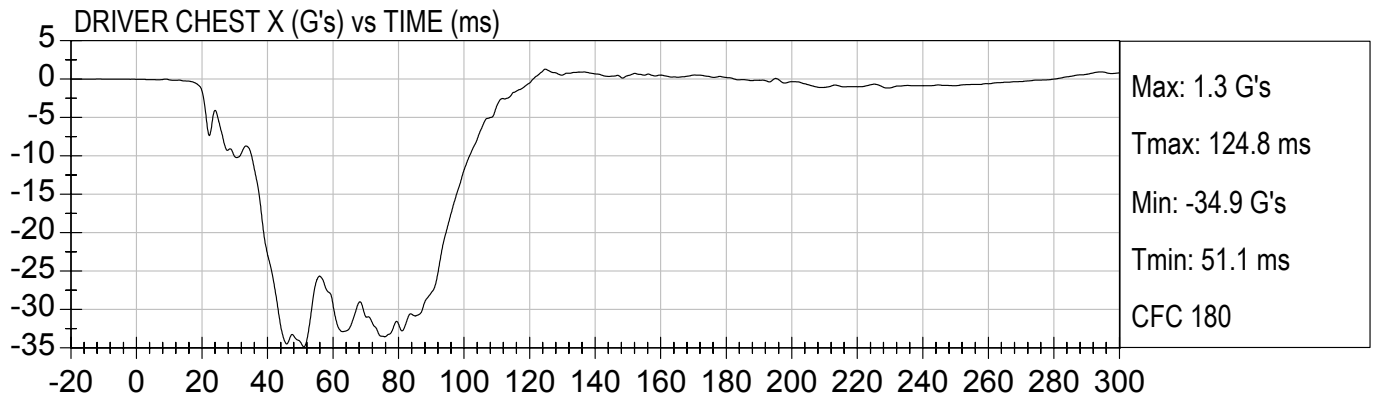


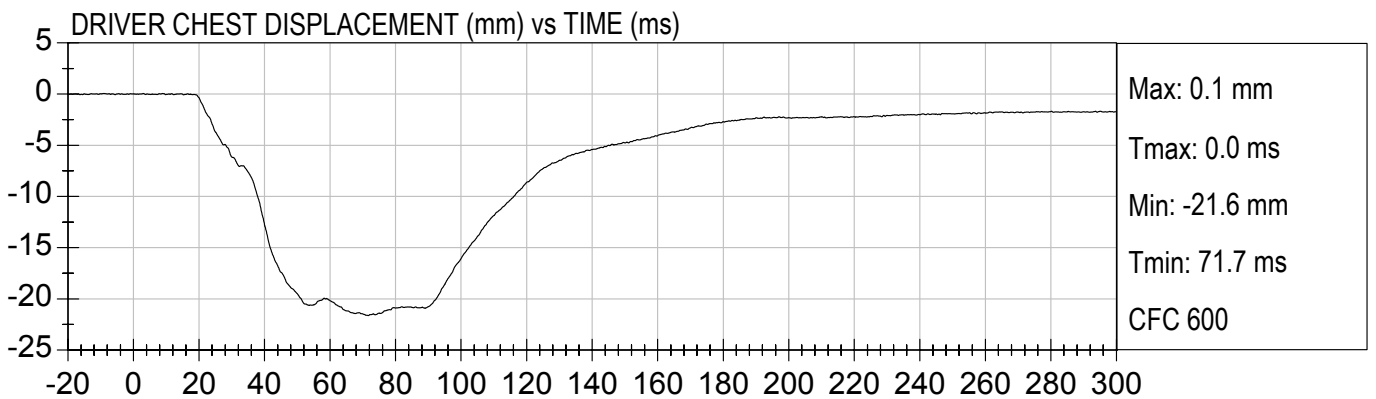
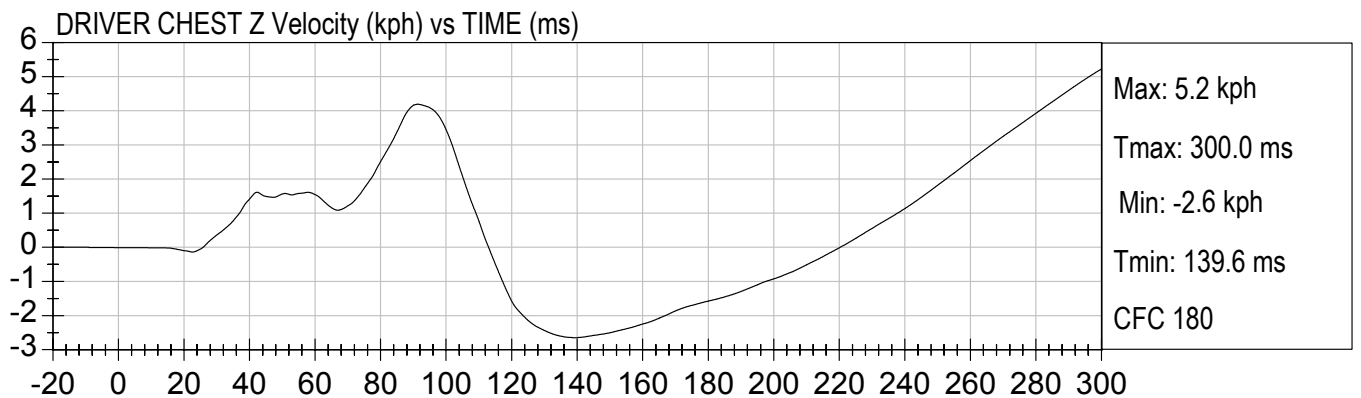
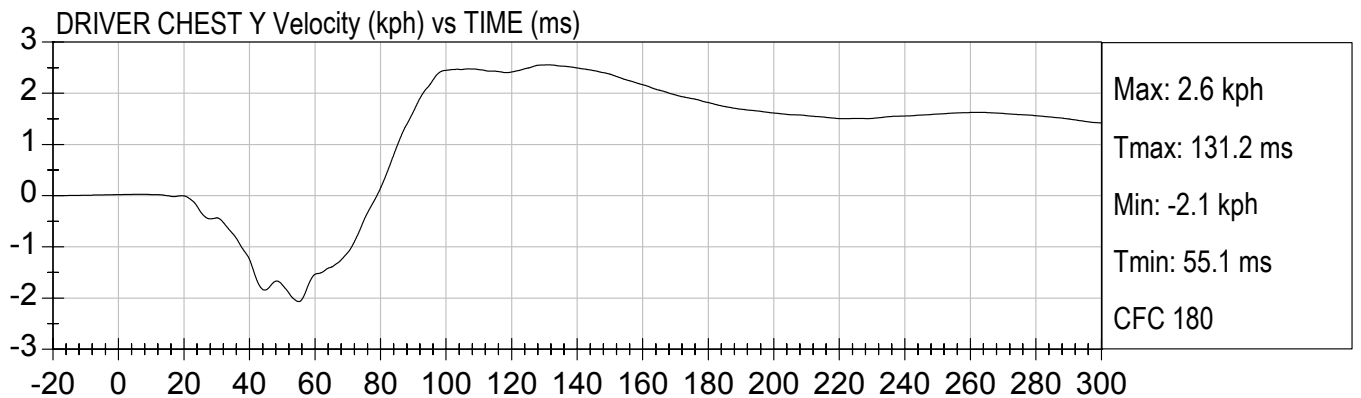
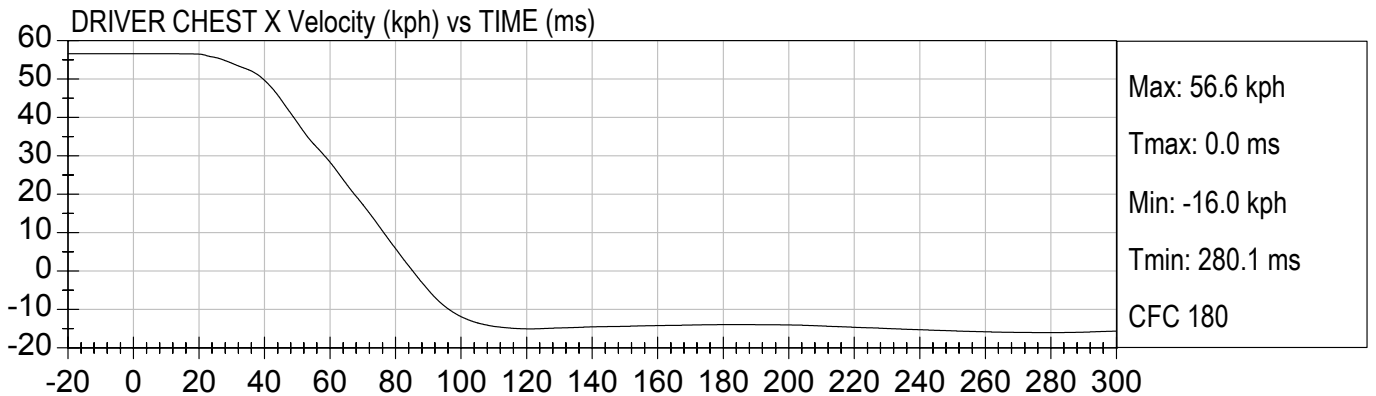
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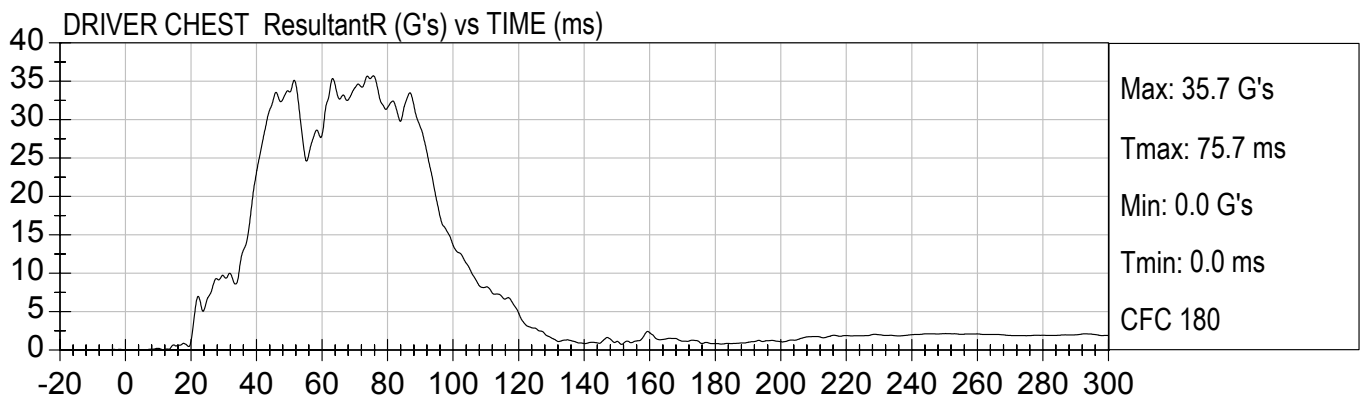
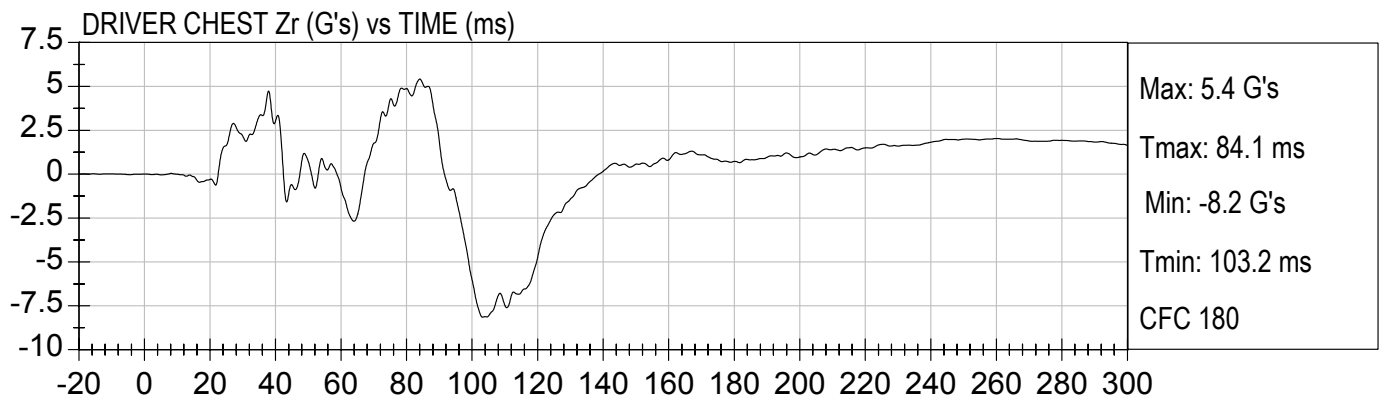
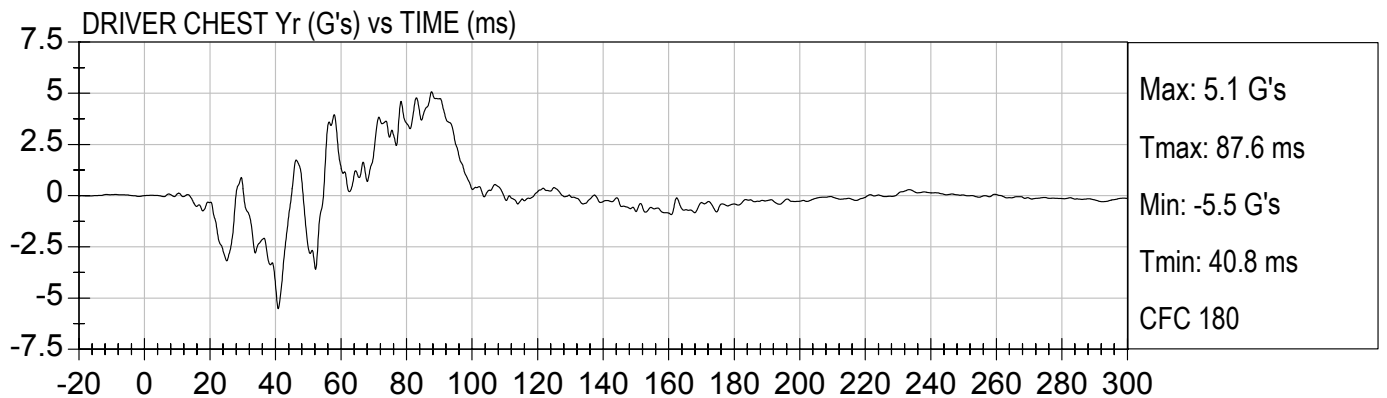
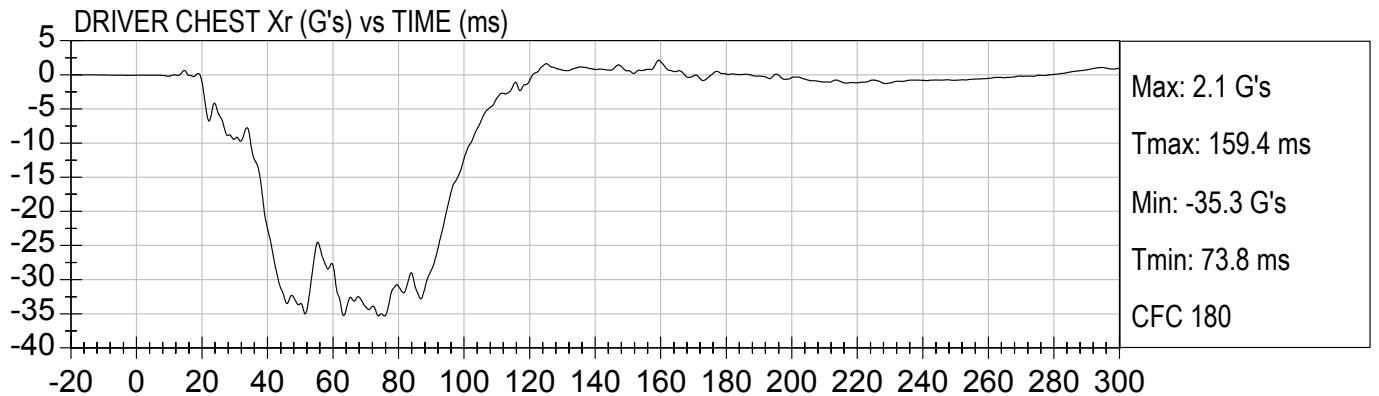


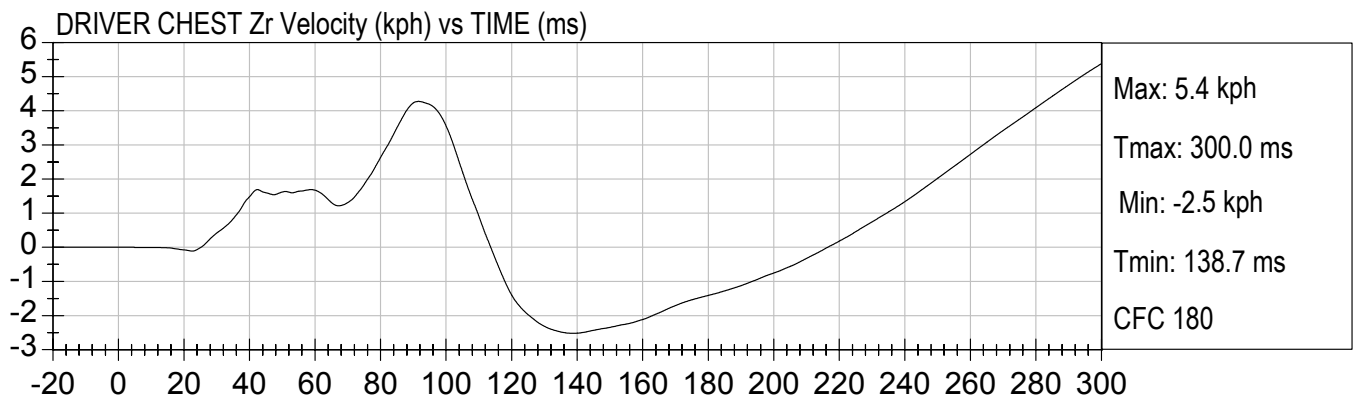
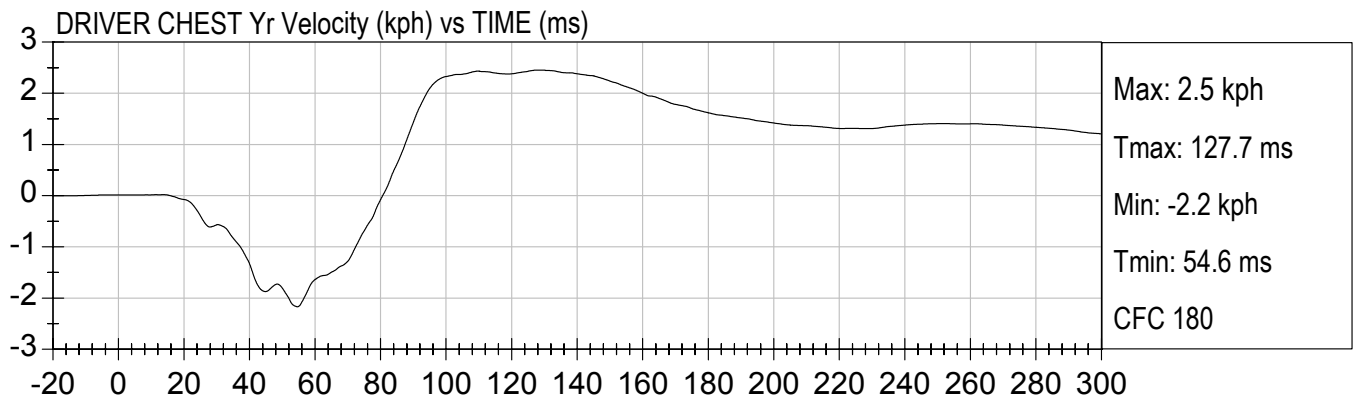
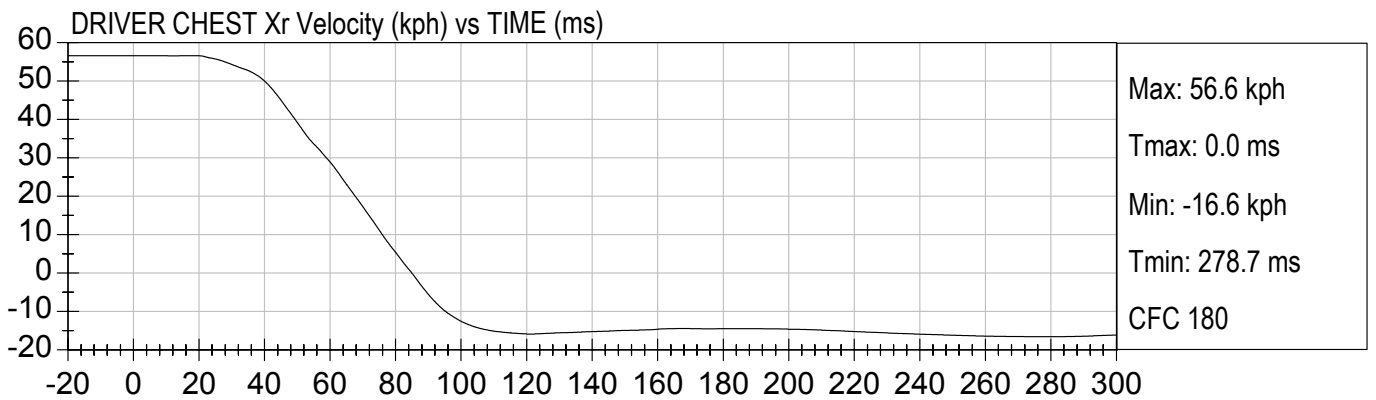
DRIVER NECK MResultant (Nm) vs TIME (ms)

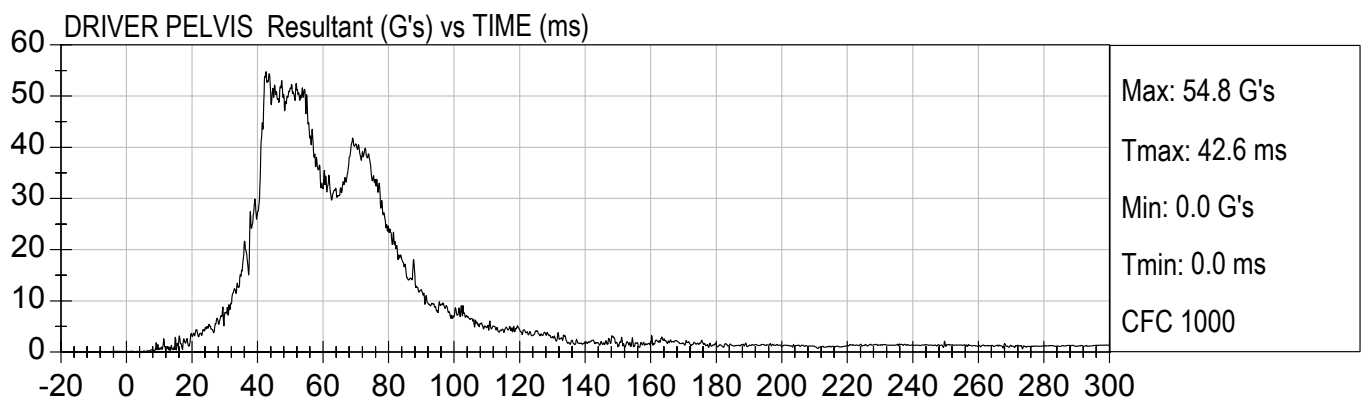
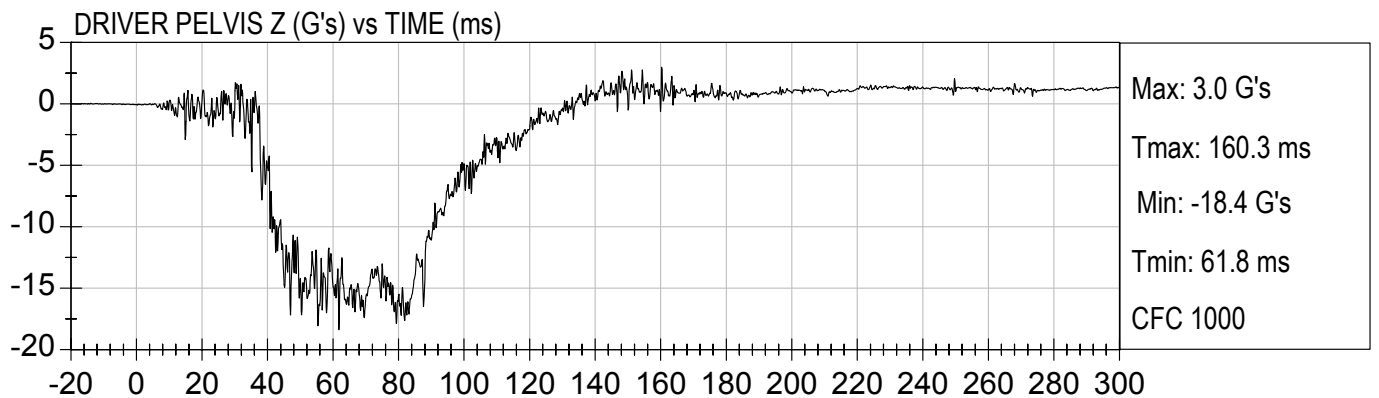
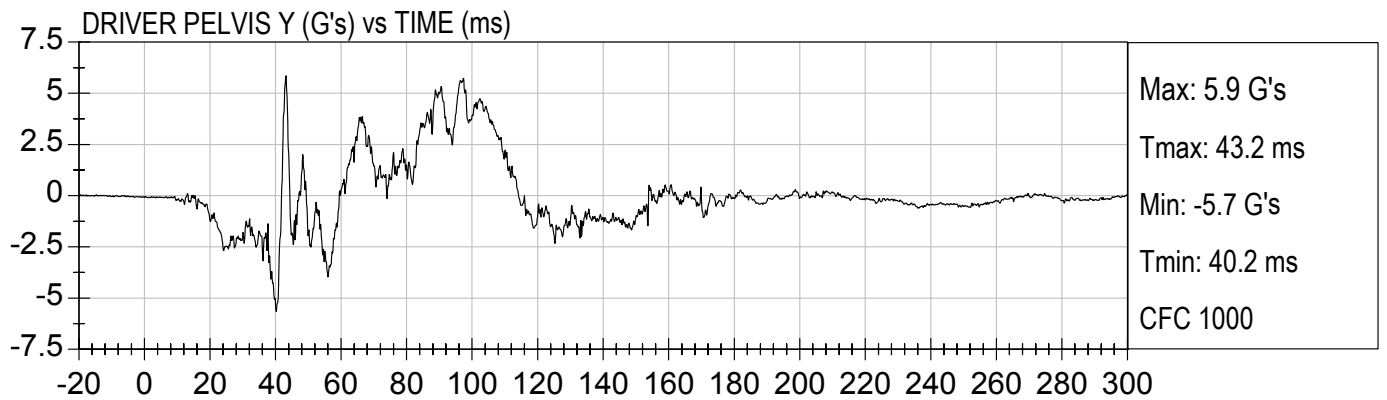
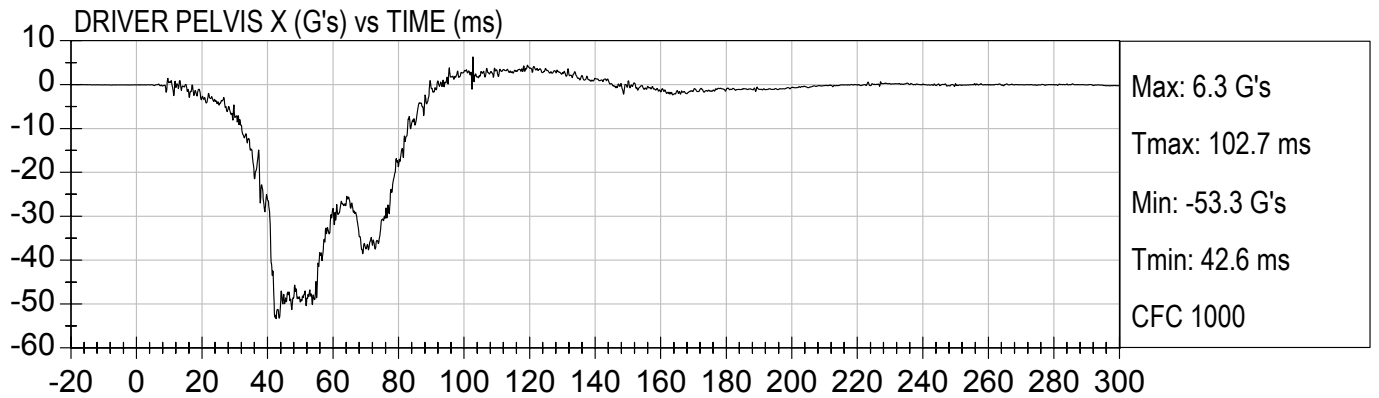


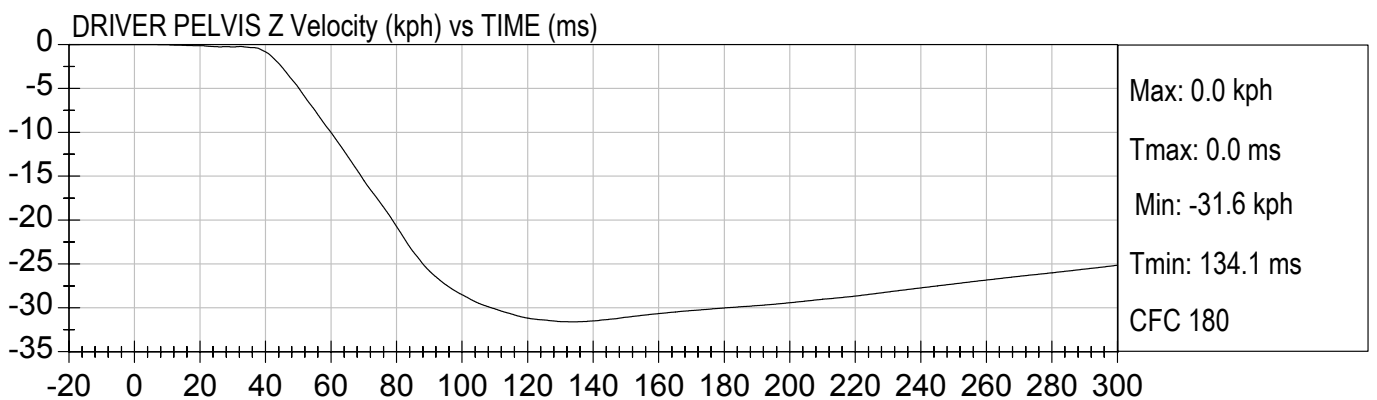
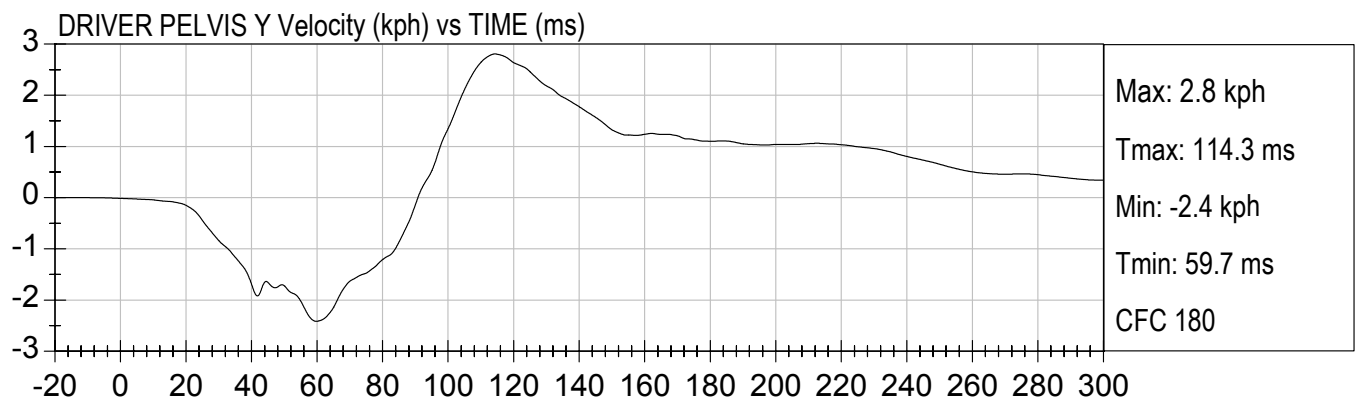
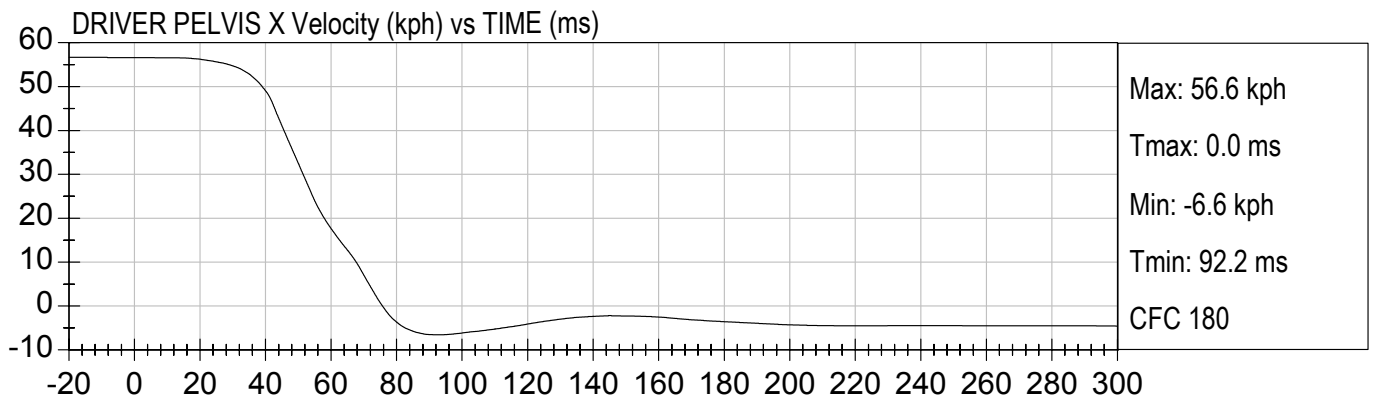


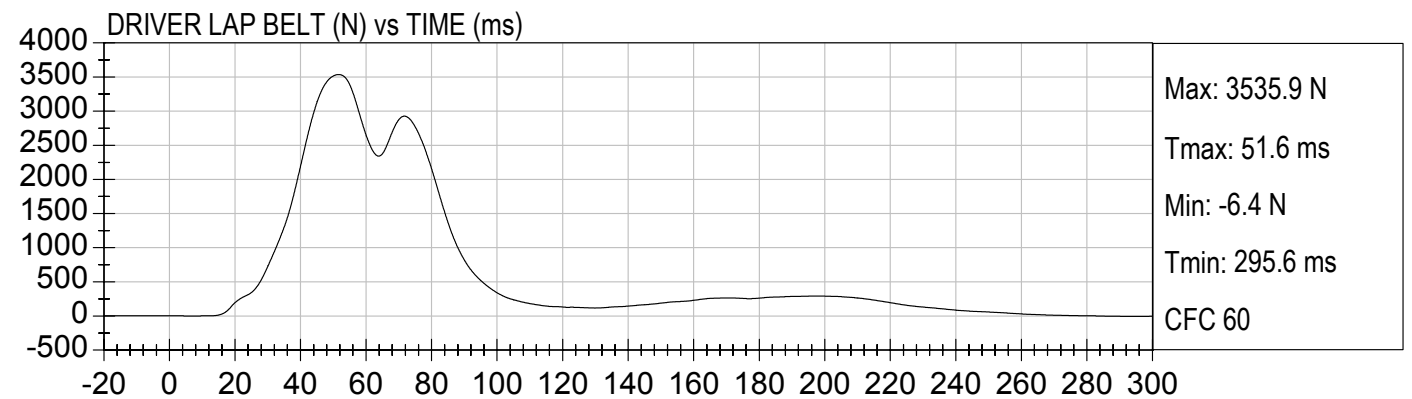
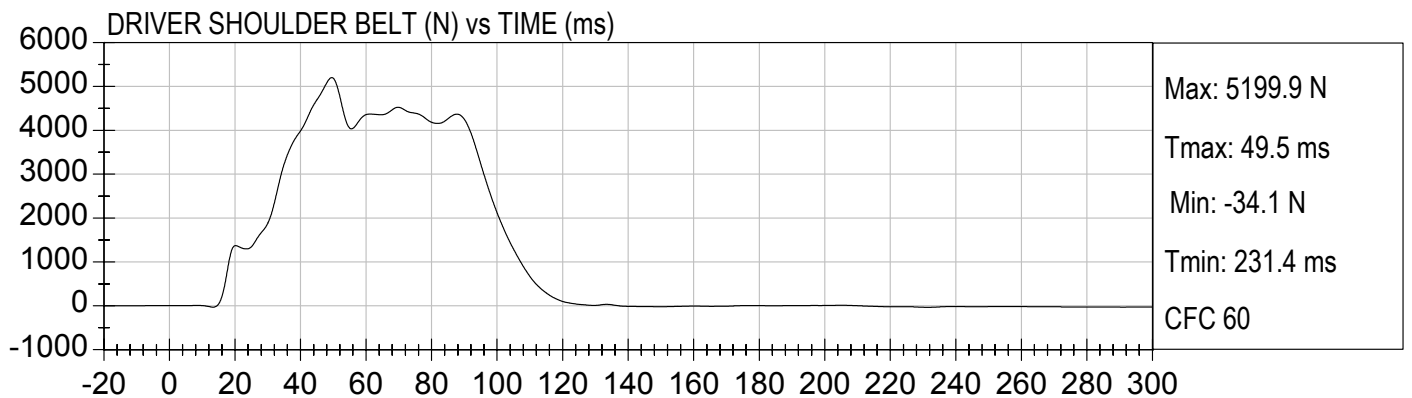
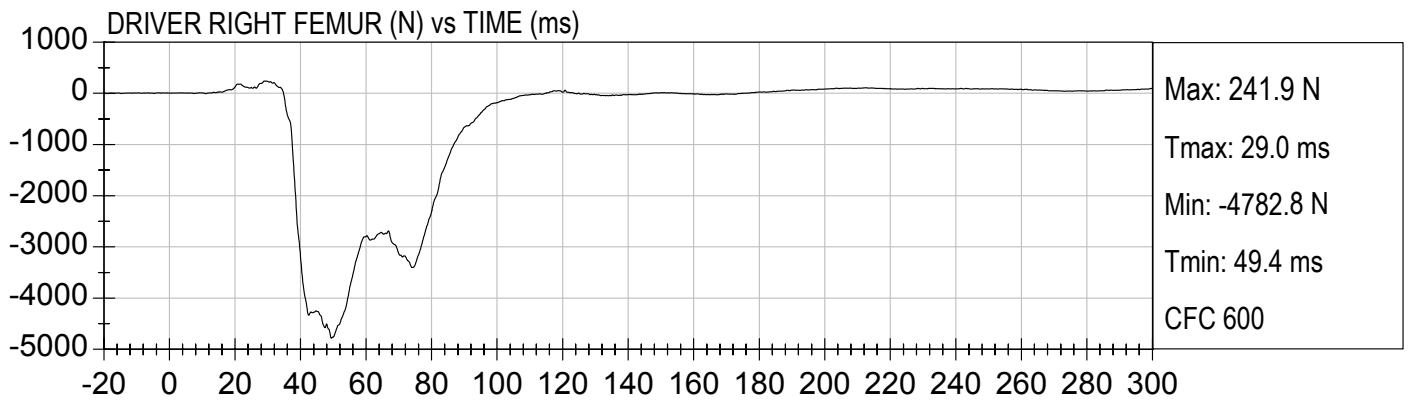
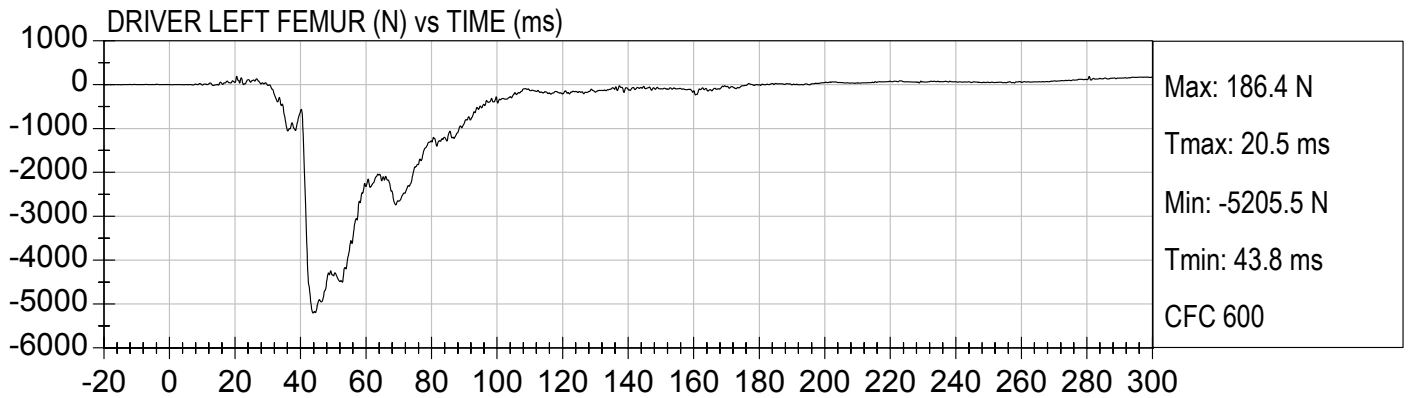


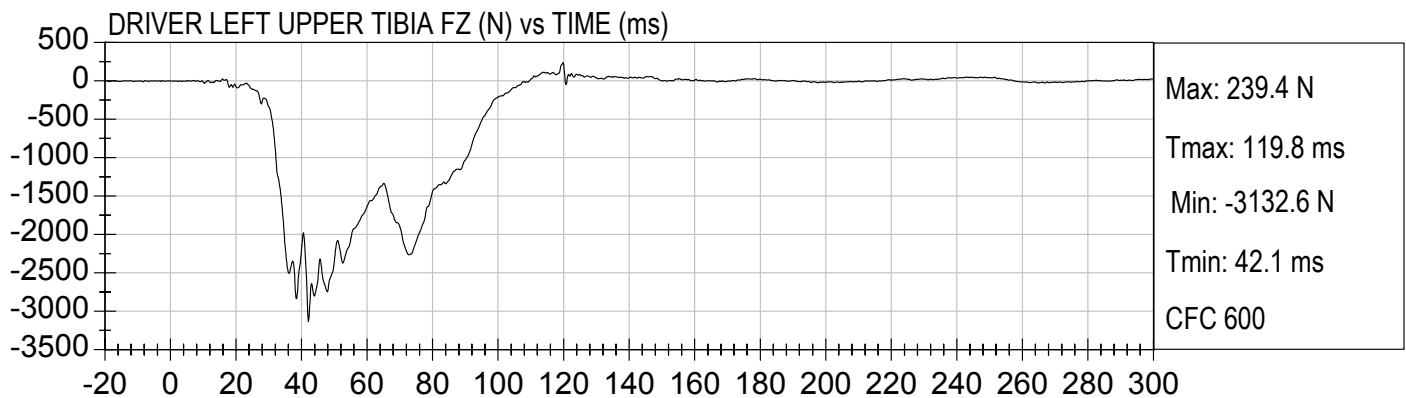
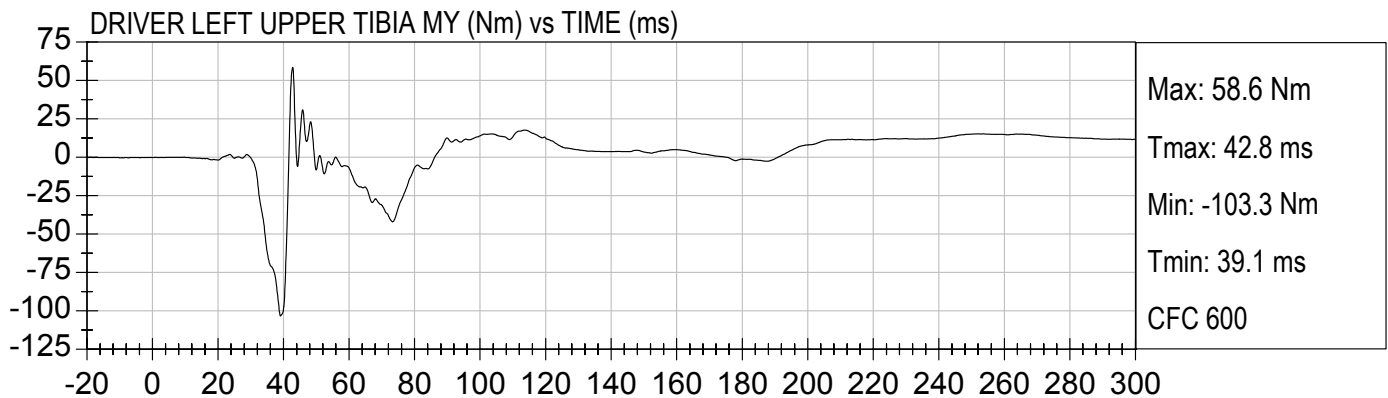
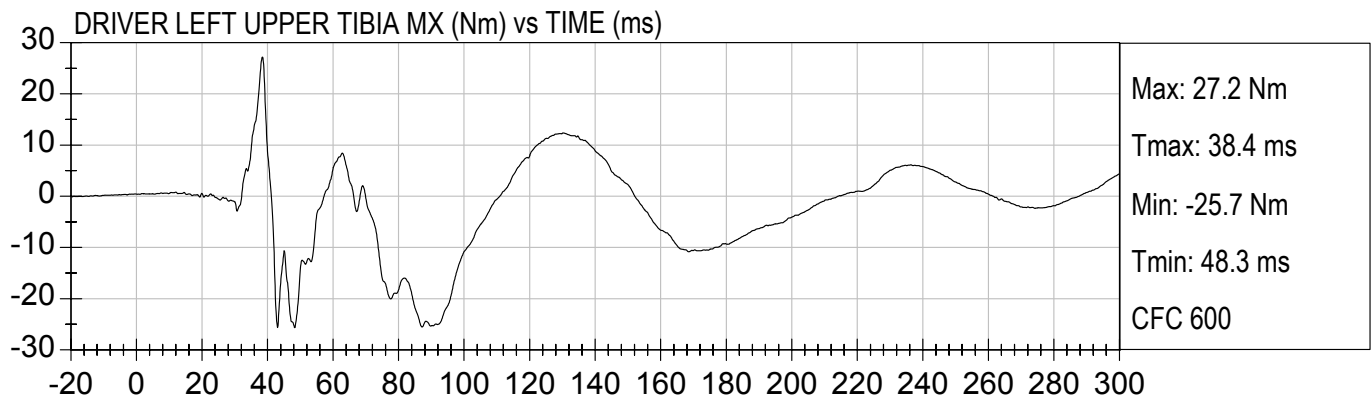






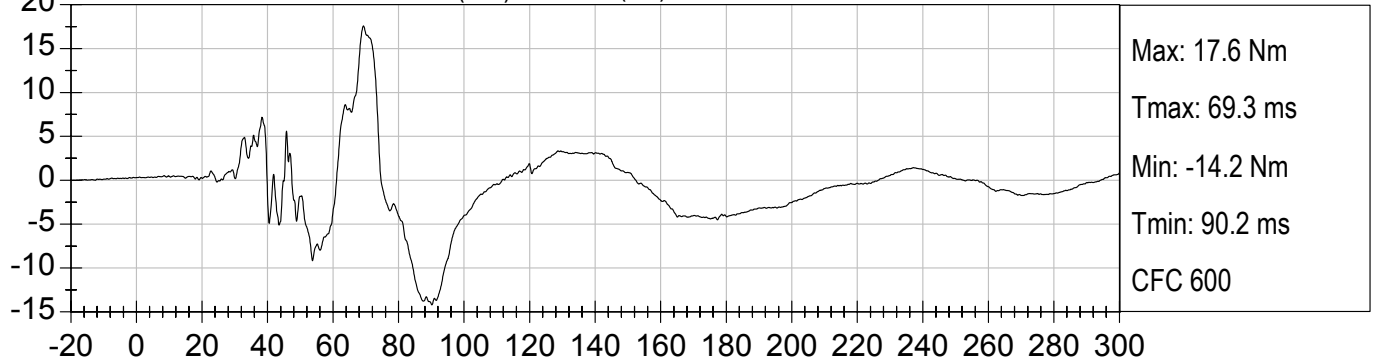




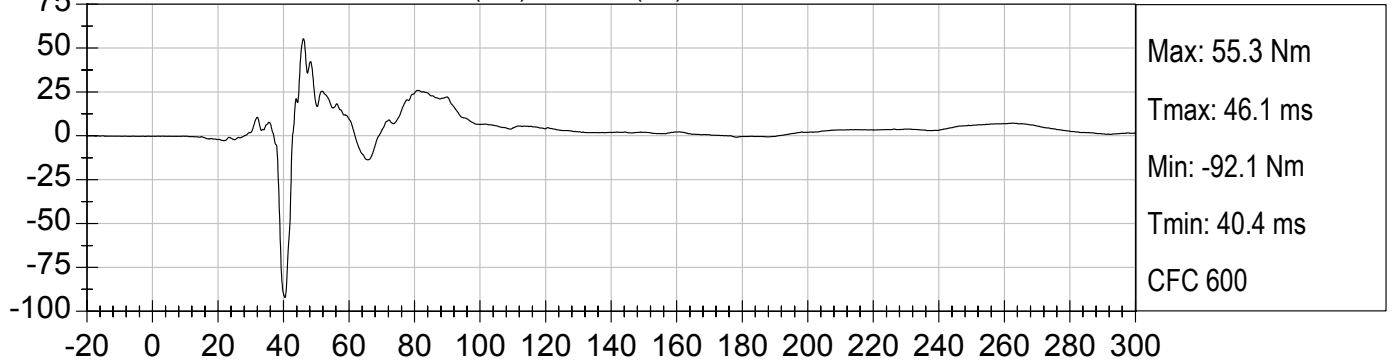




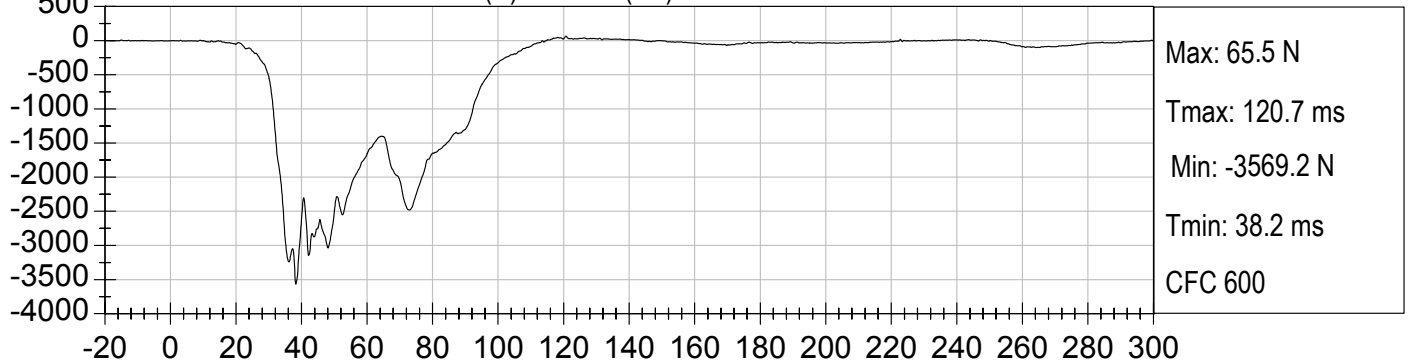
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DRIVER LEFT LOWER TIBIA MY (Nm) vs TIME (ms)

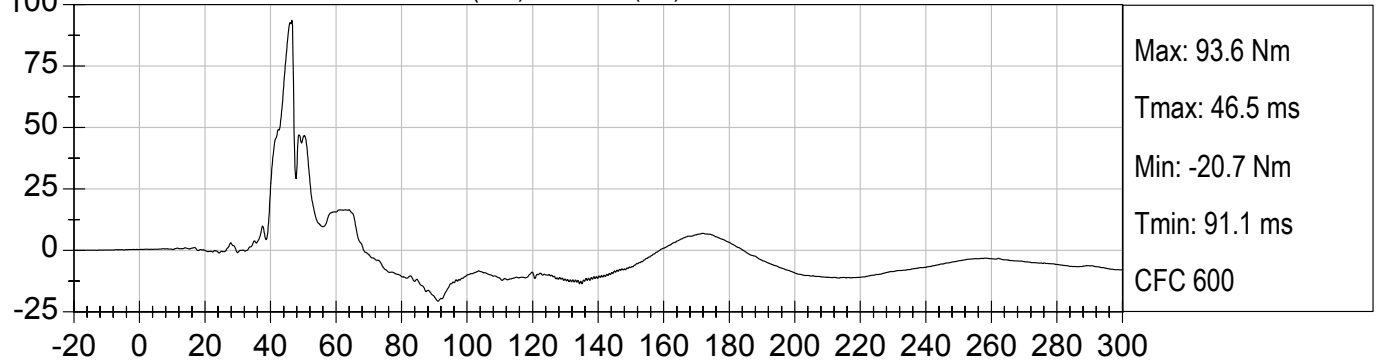


DRIVER LEFT LOWER TIBIA FZ (N) vs TIME (ms)

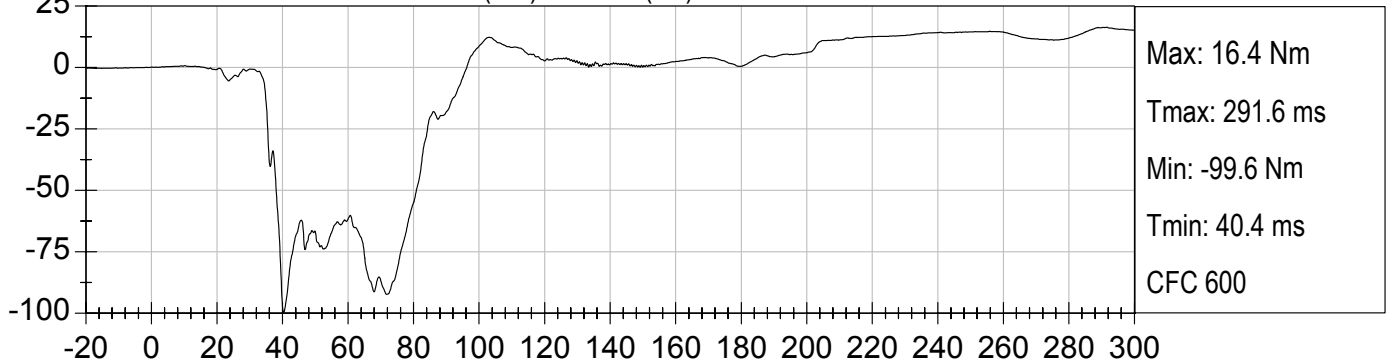




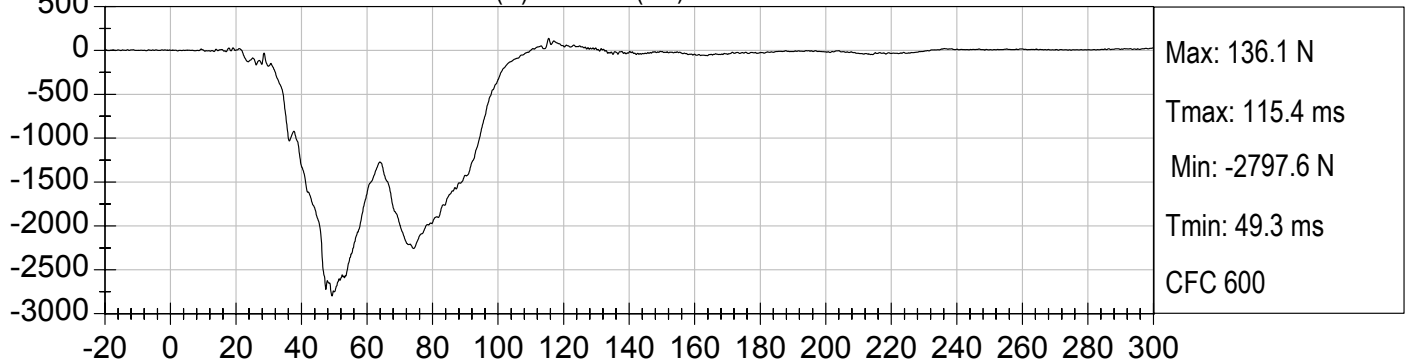
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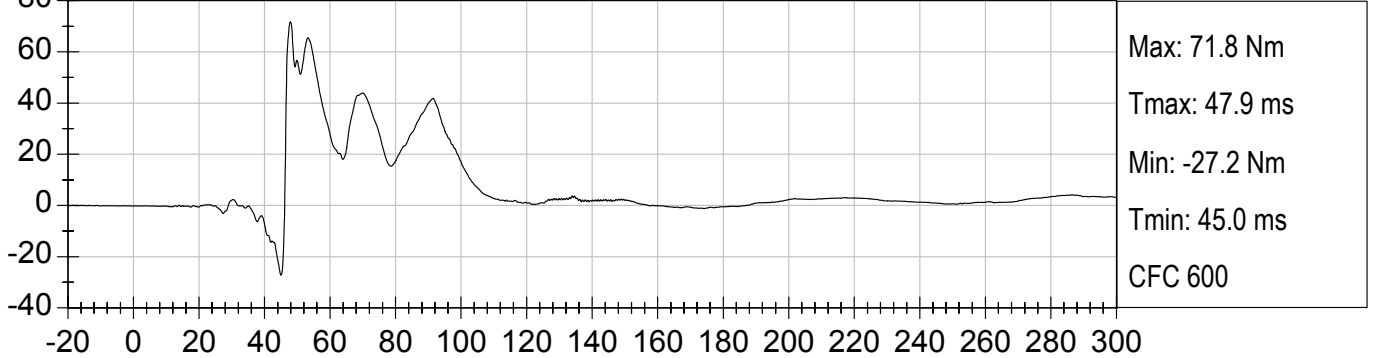


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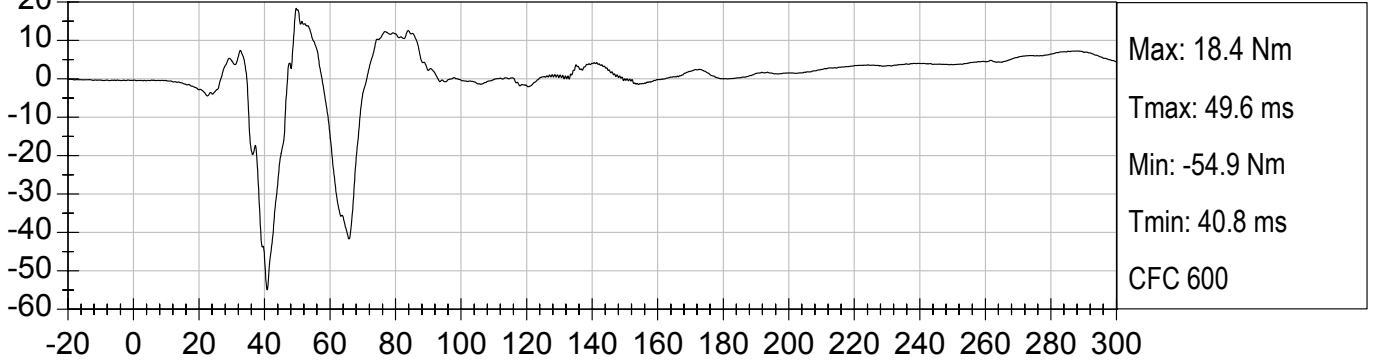




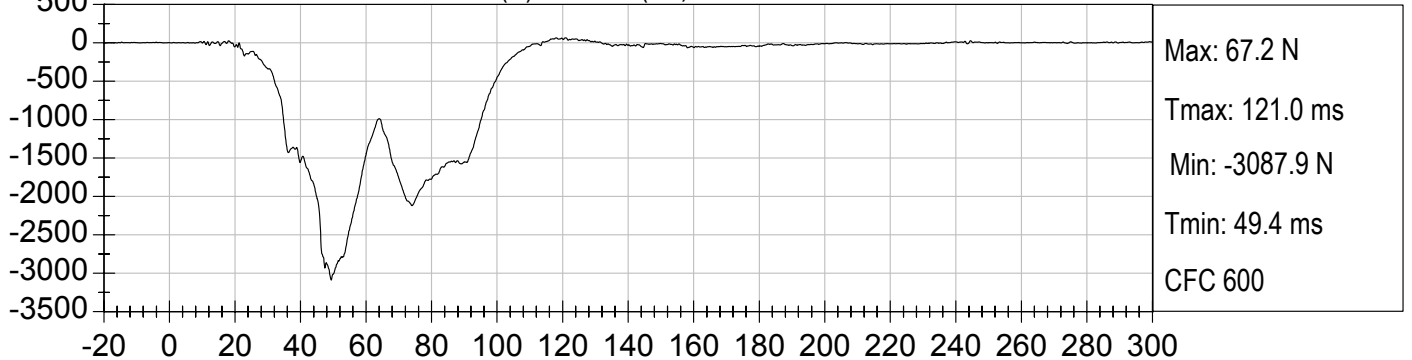
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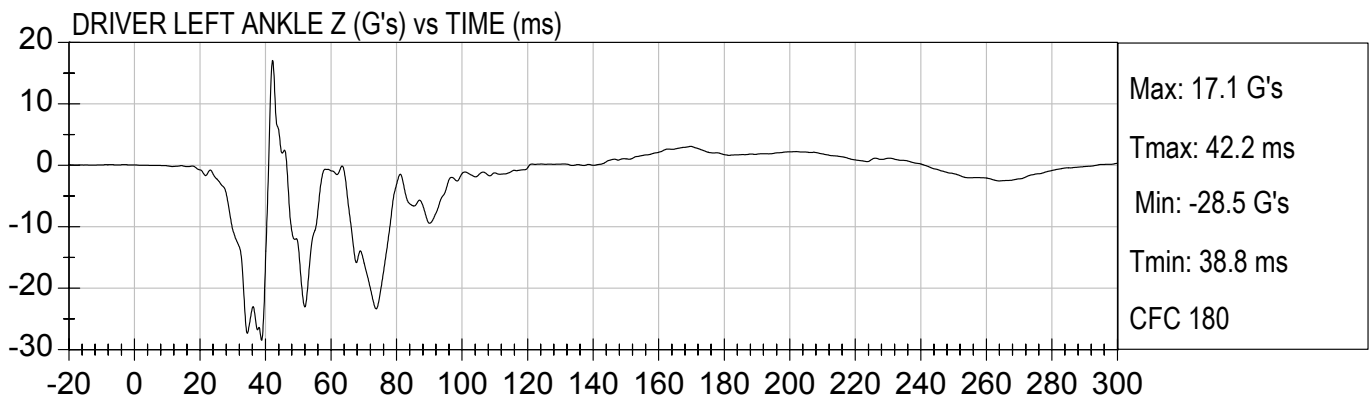
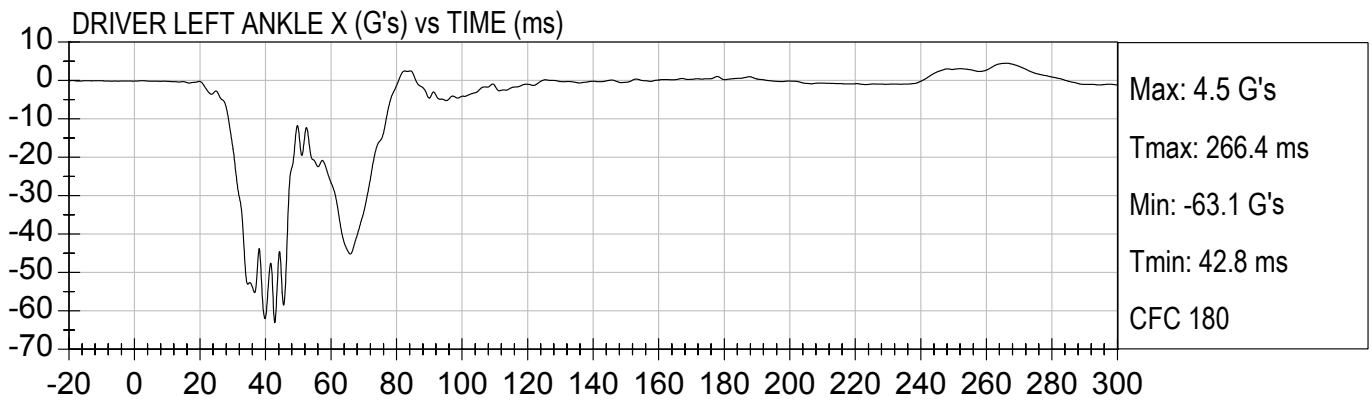
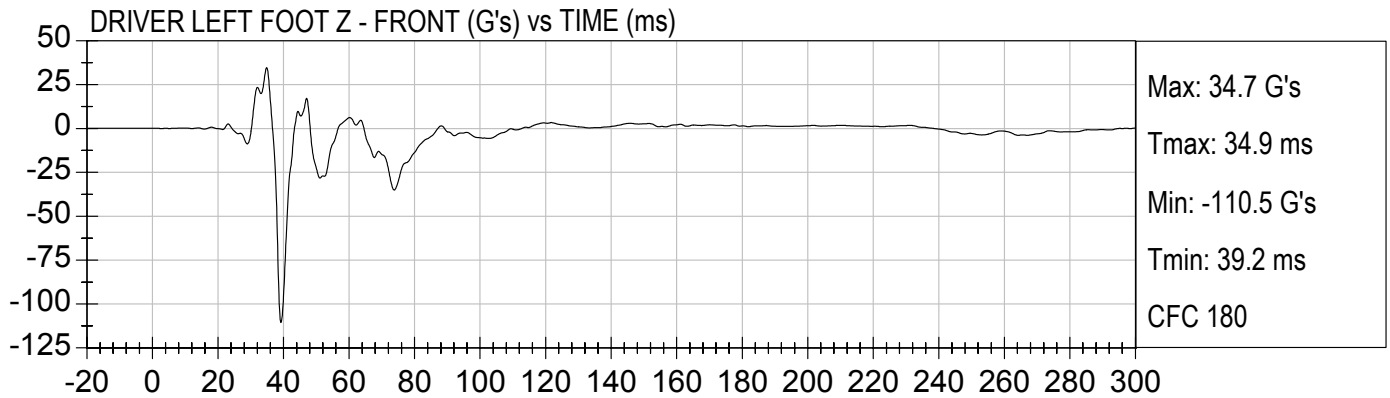


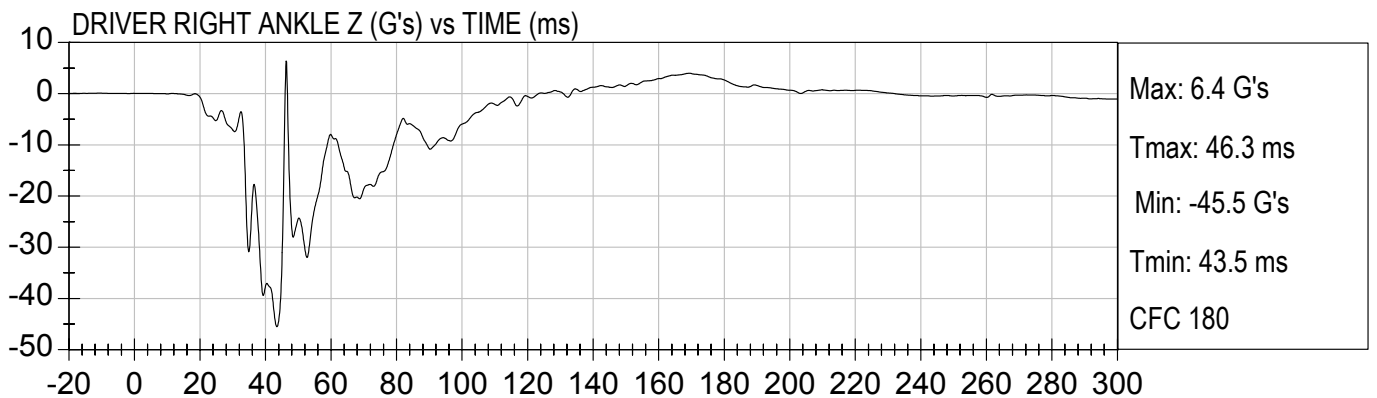
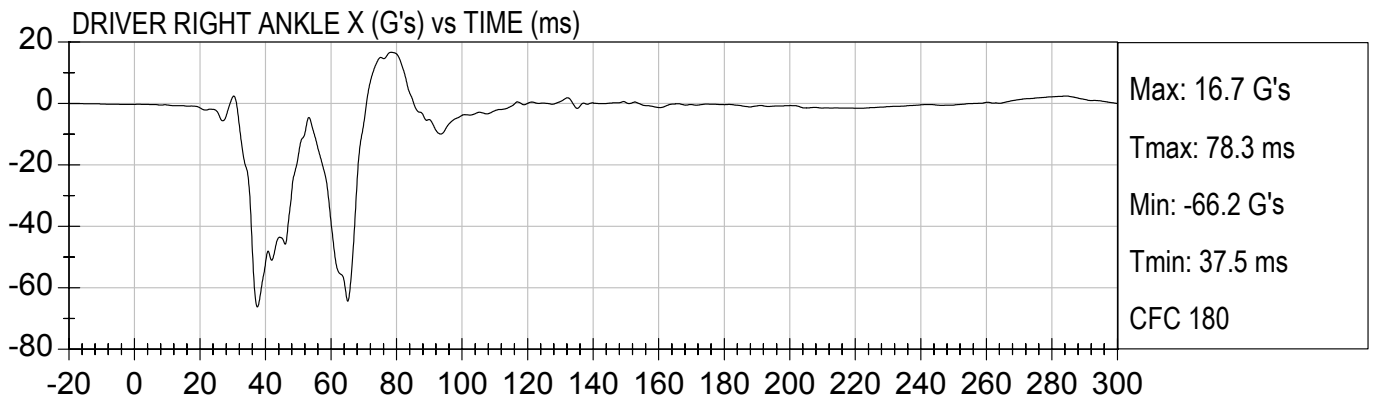
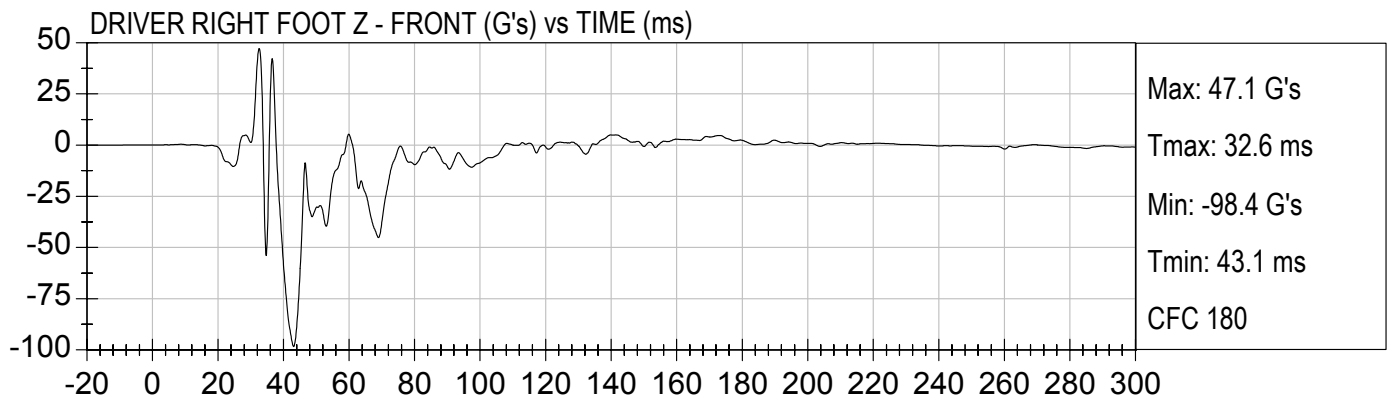
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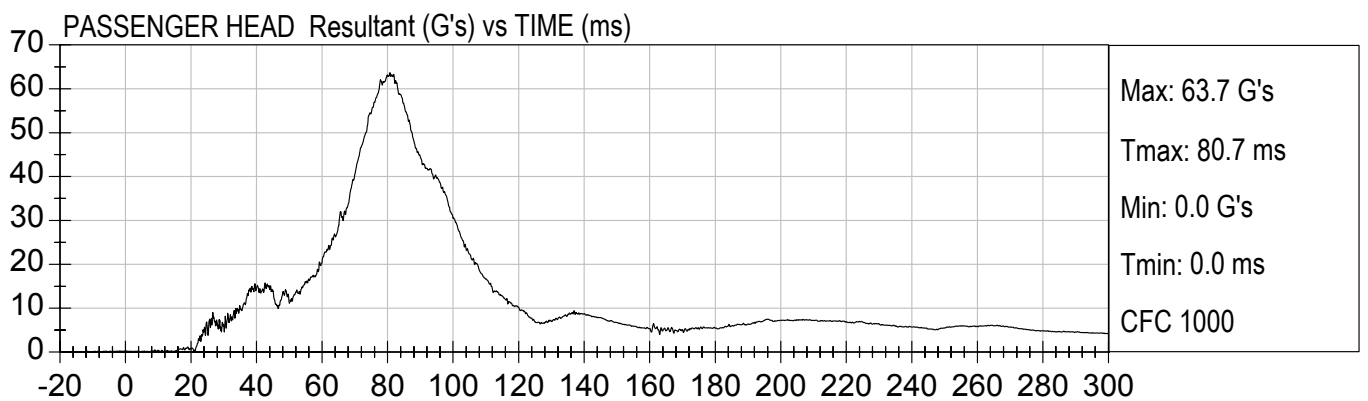
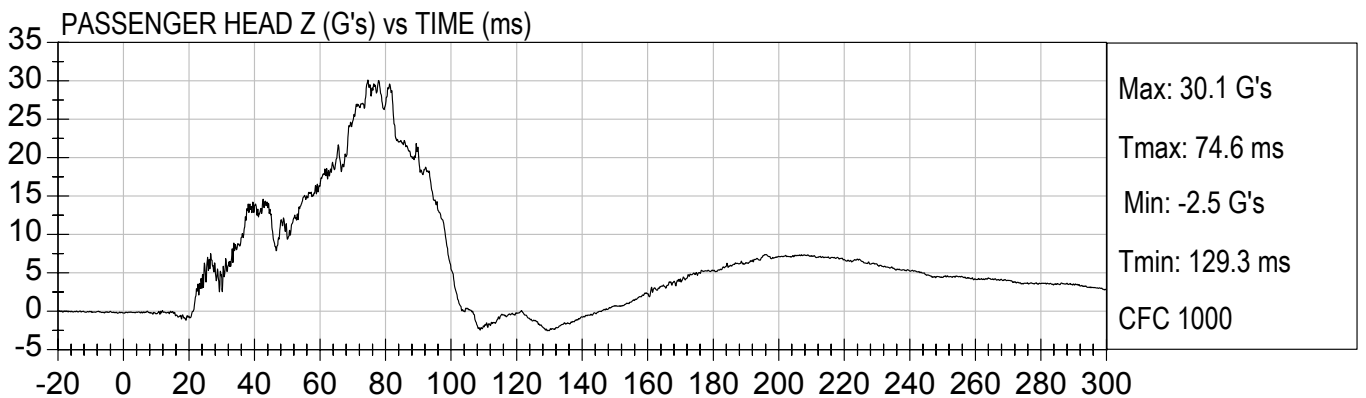
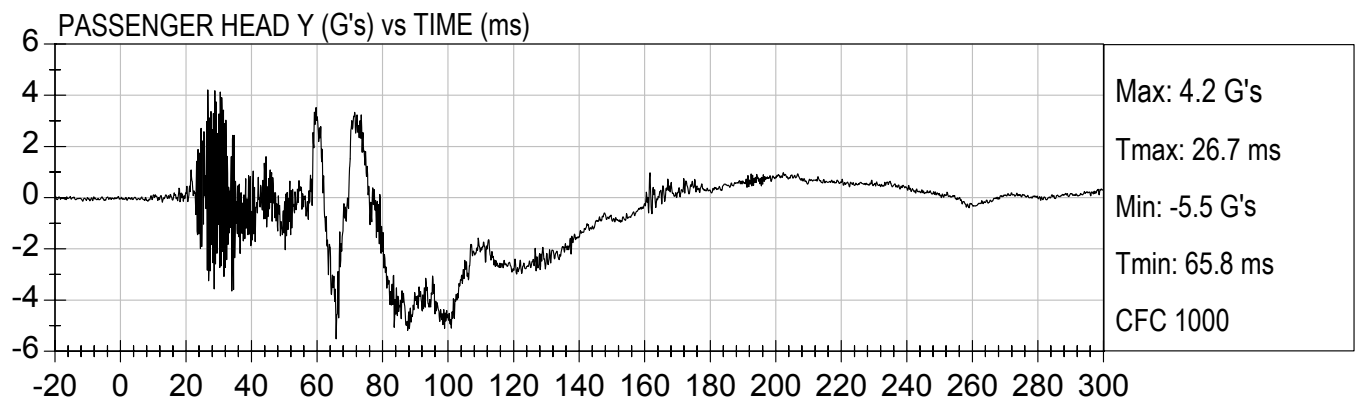
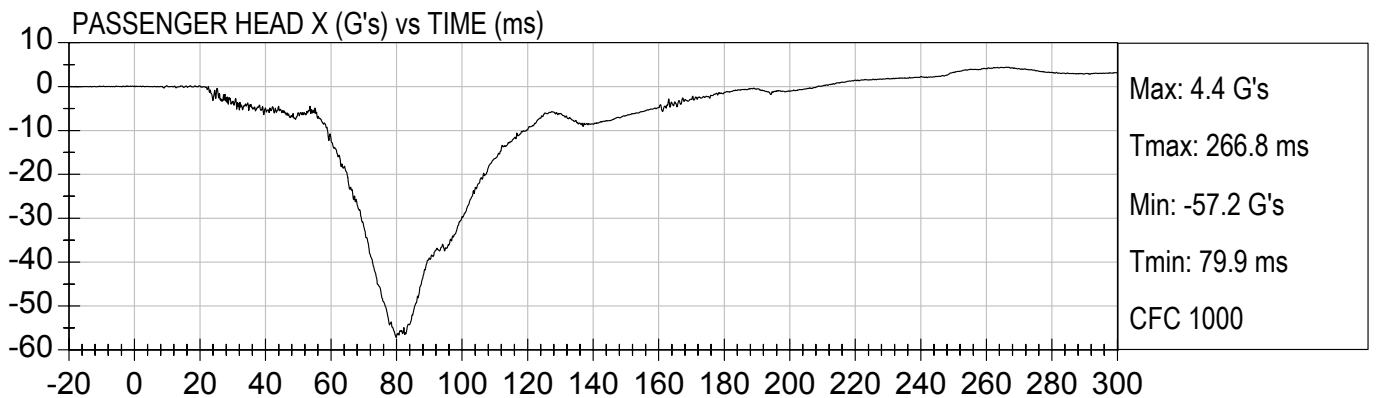


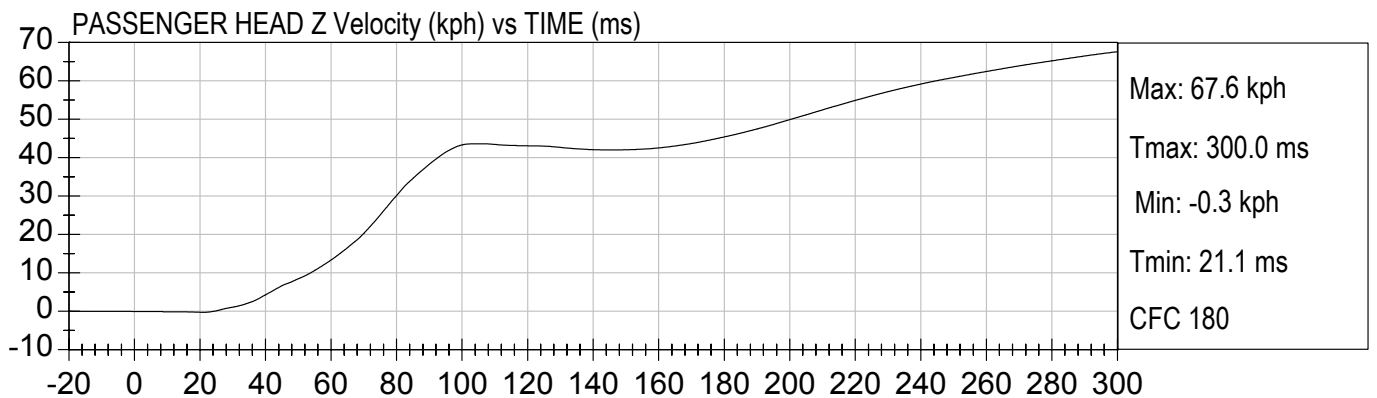
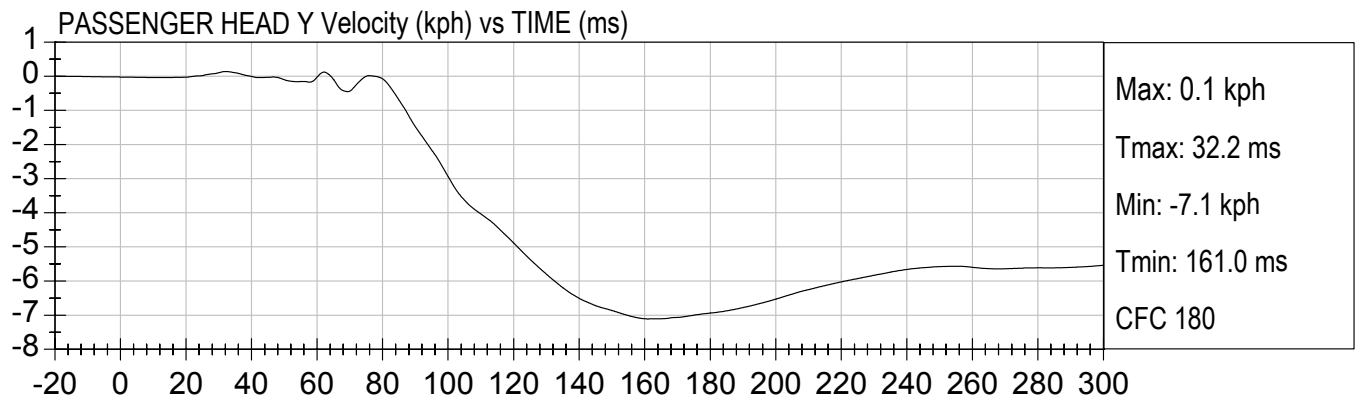
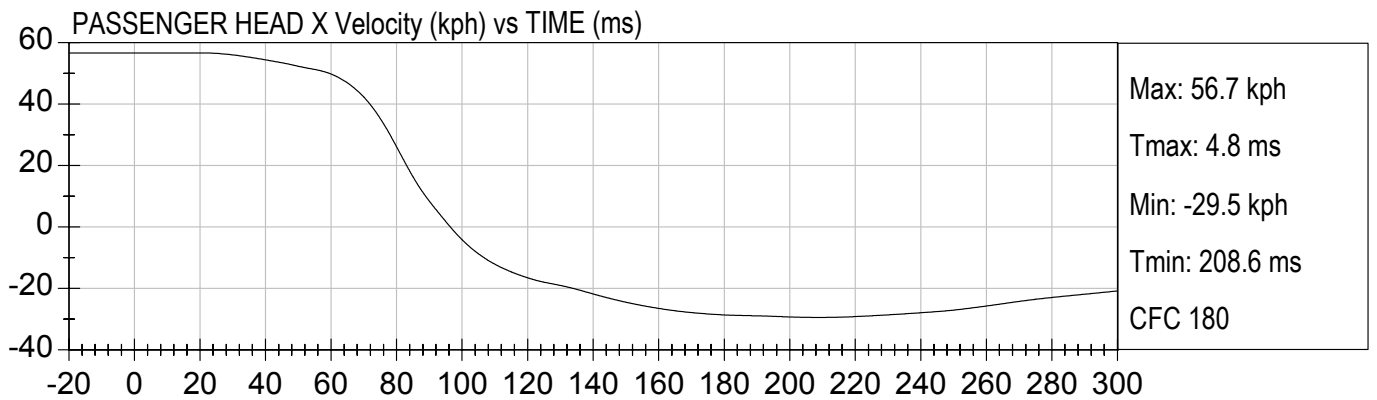
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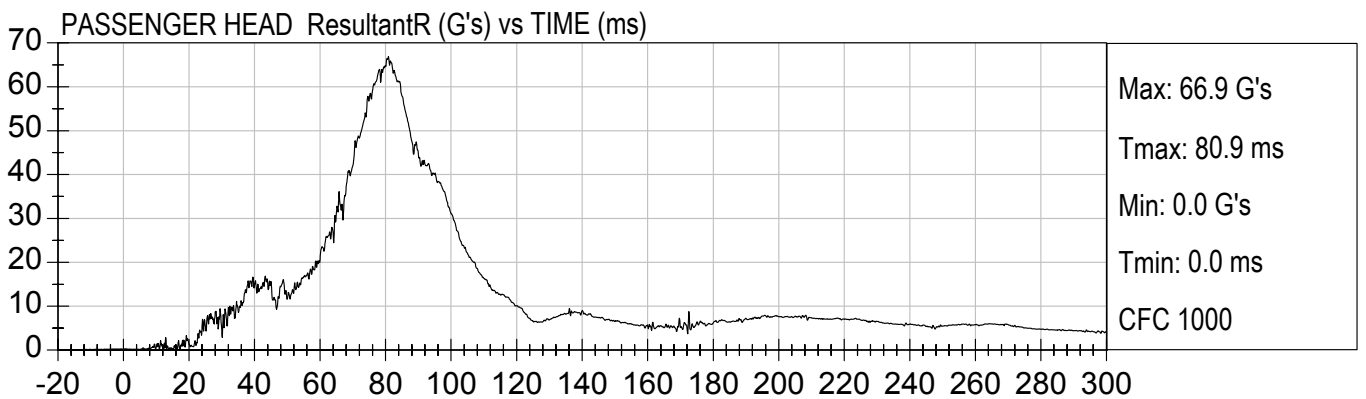
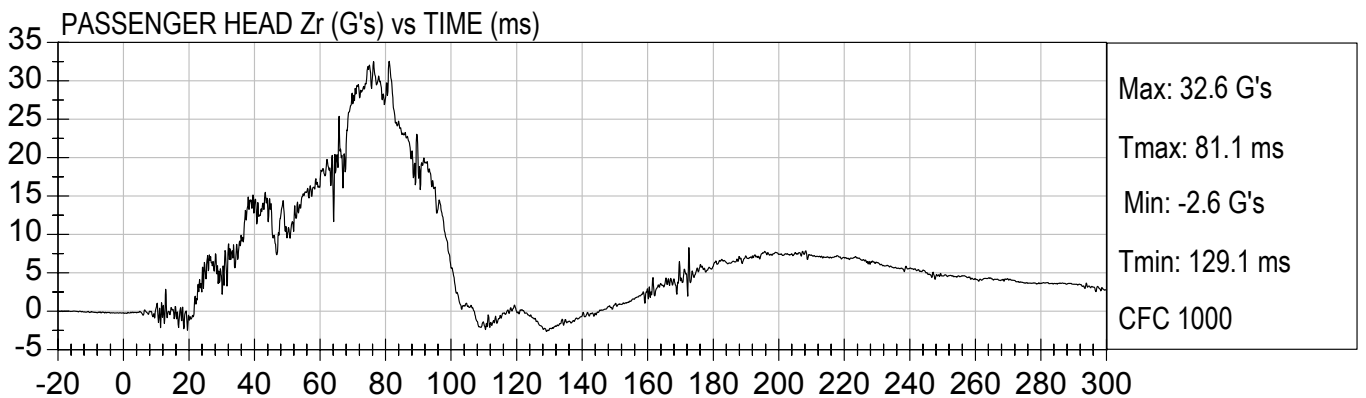
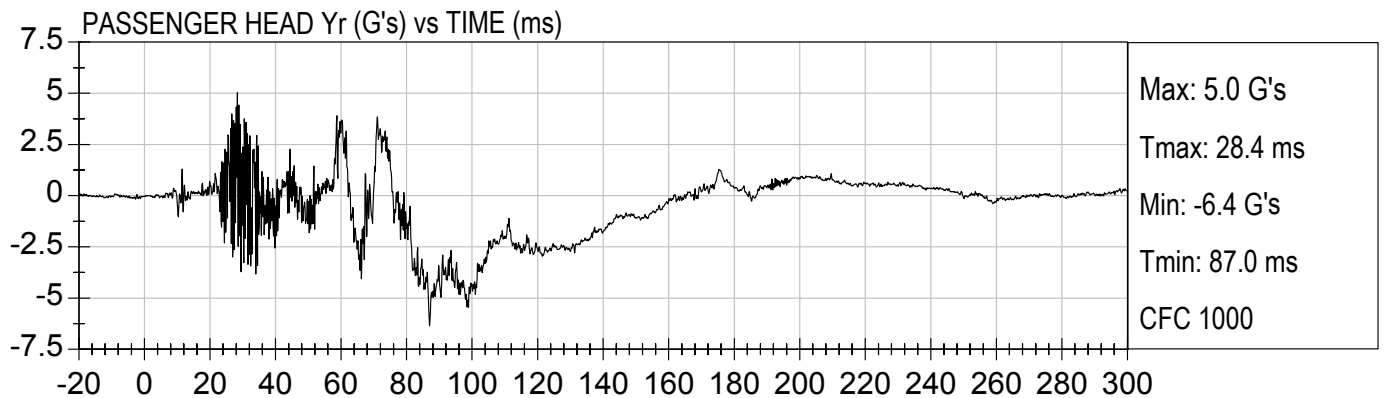
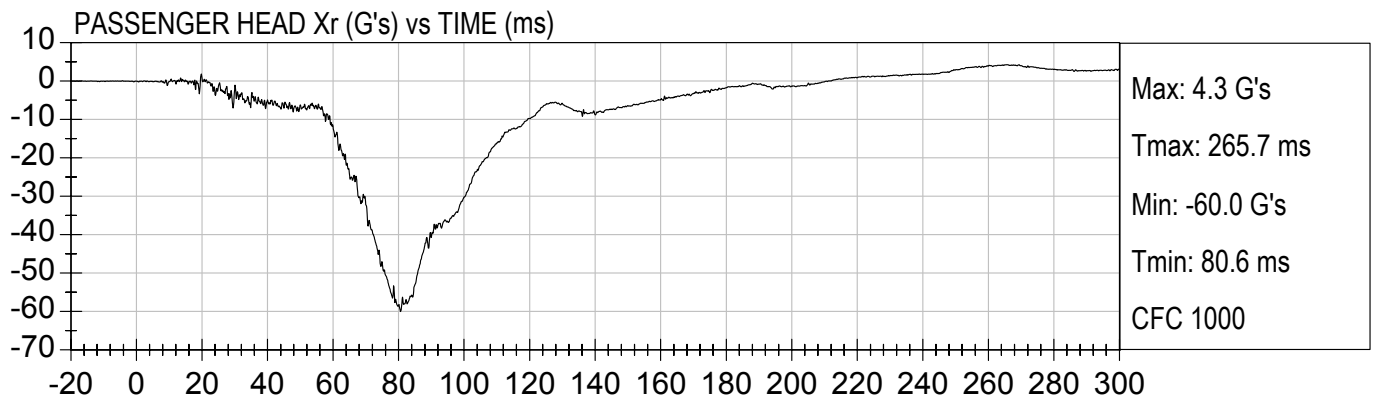


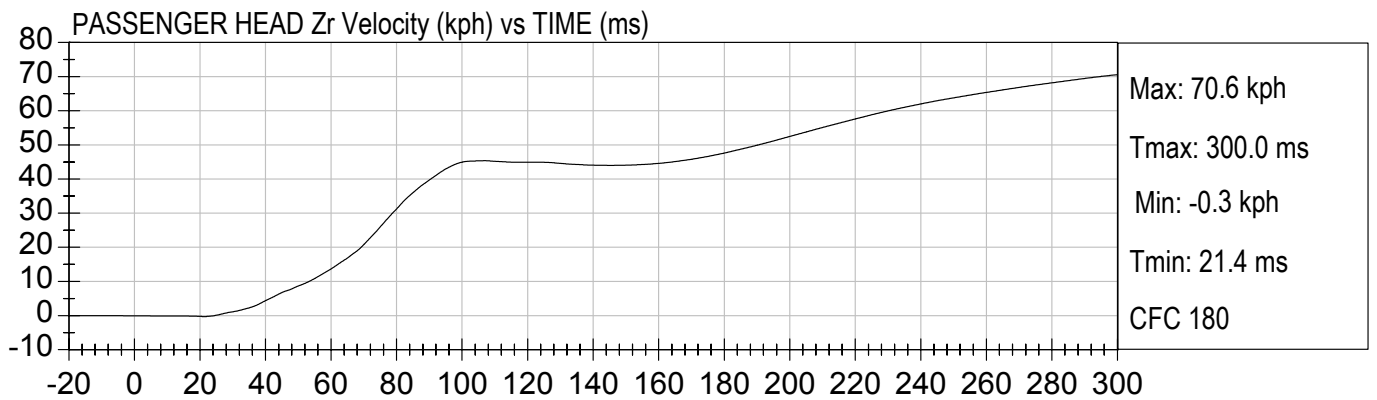
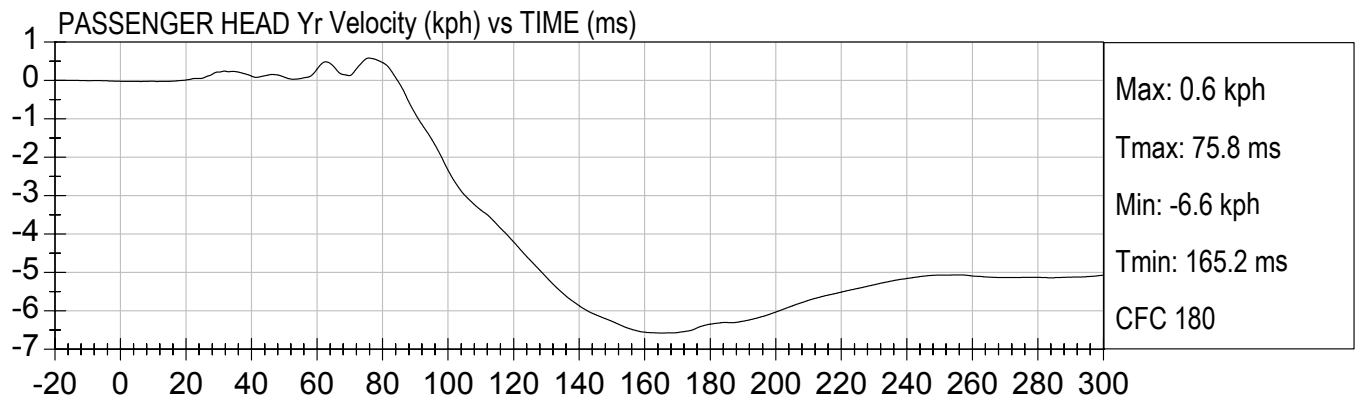
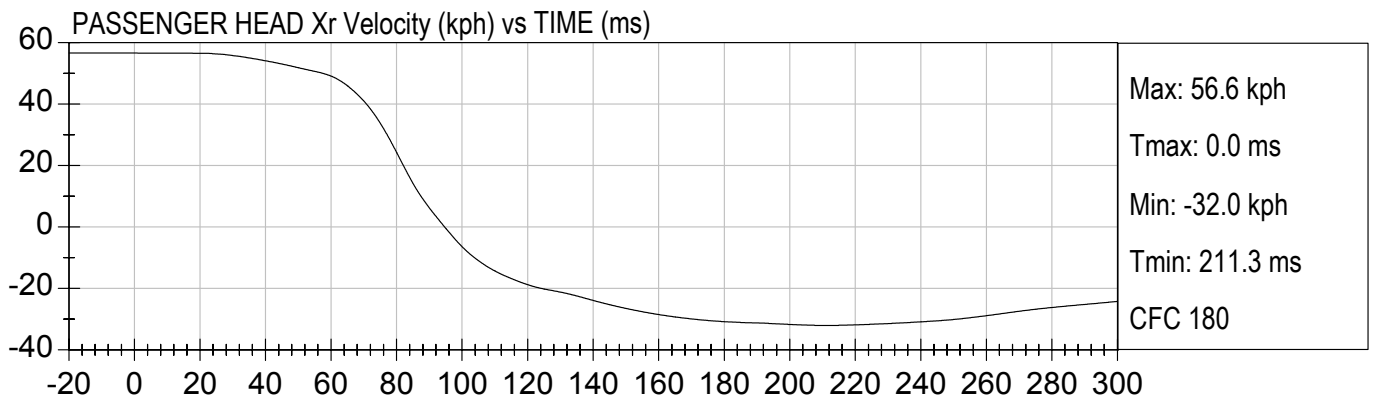






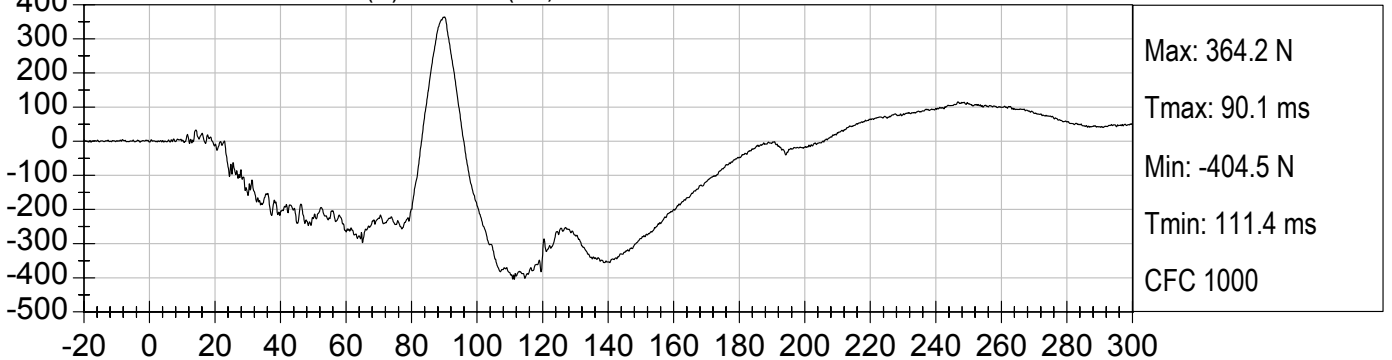




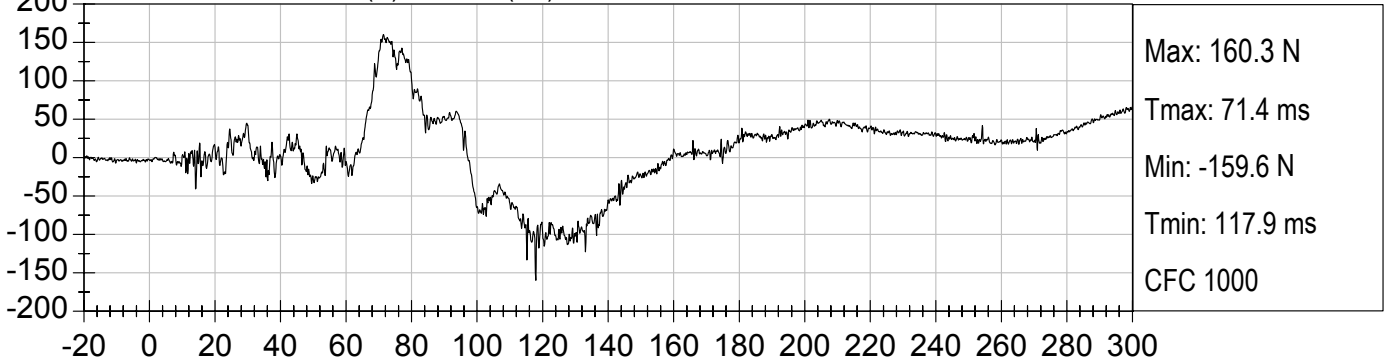




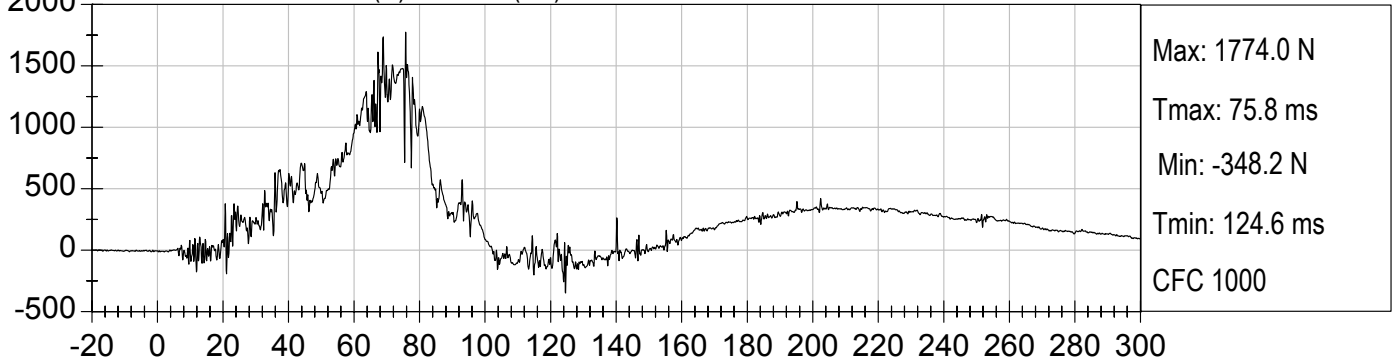
PASSENGER NECK FX (N) vs TIME (ms)



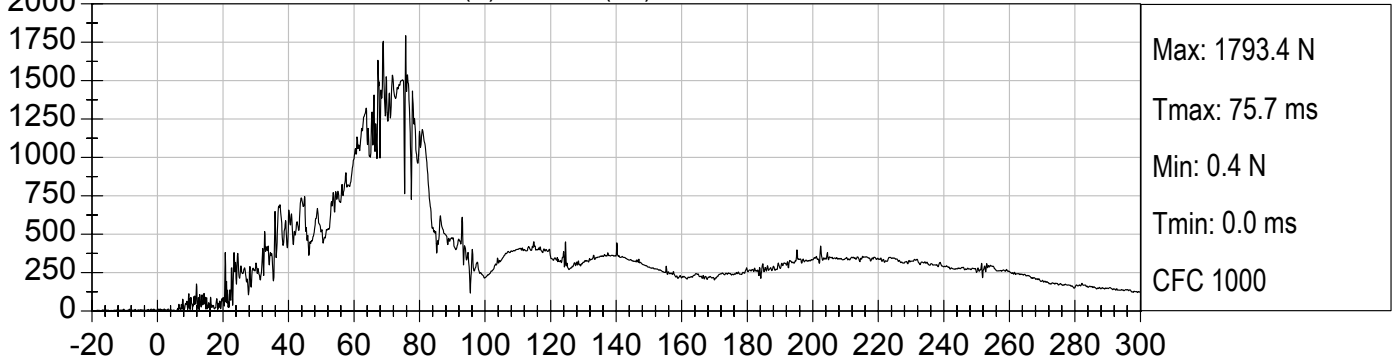
PASSENGER NECK FY (N) vs TIME (ms)

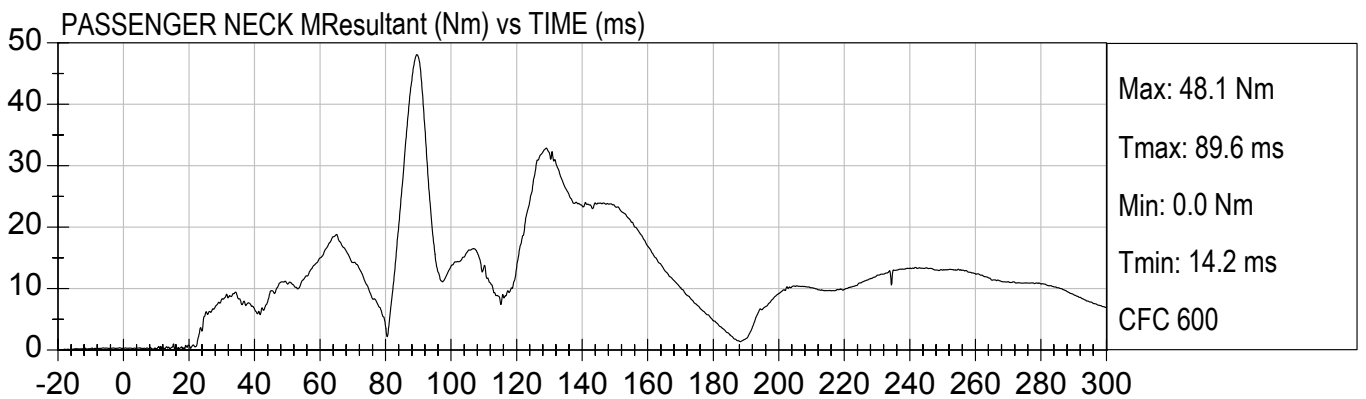
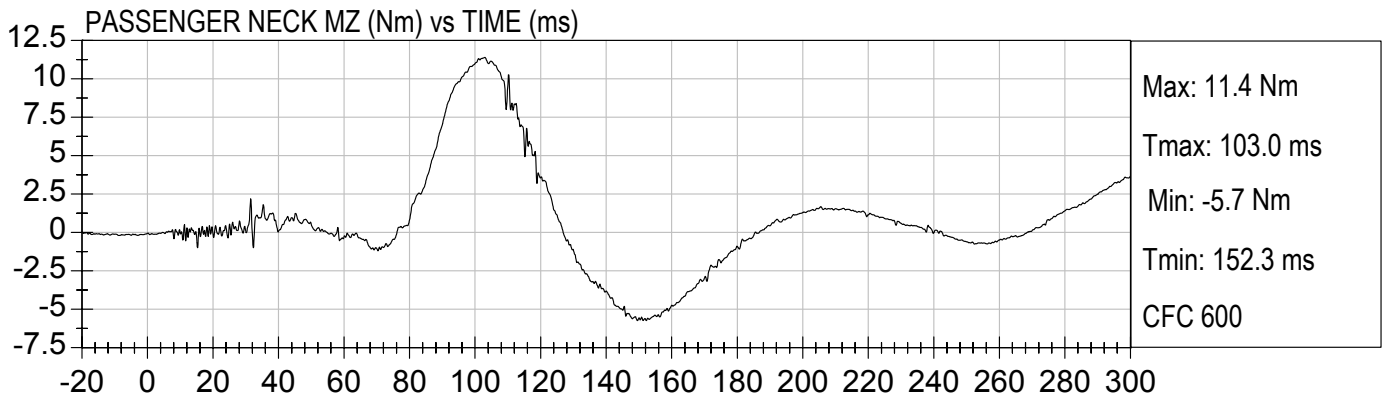
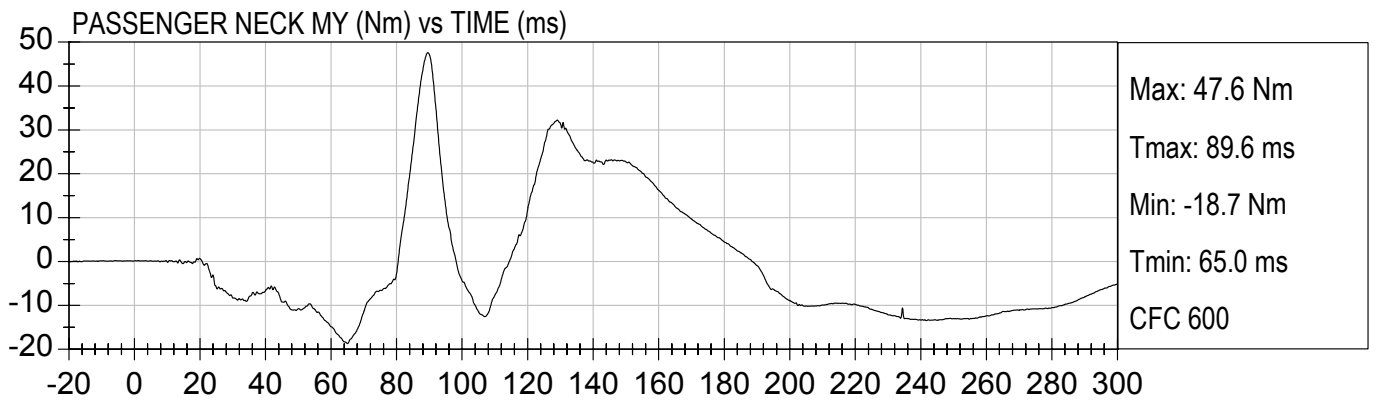
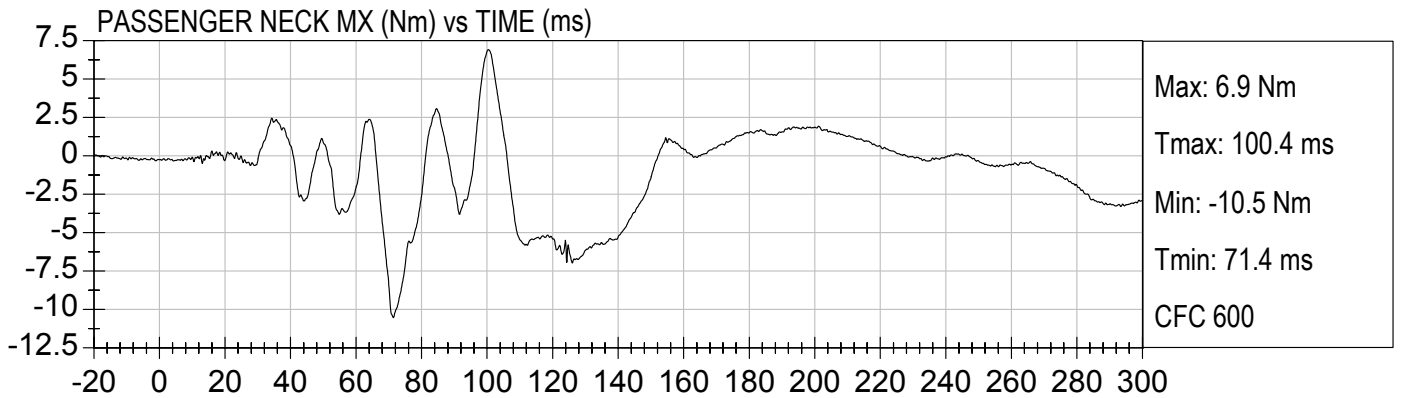


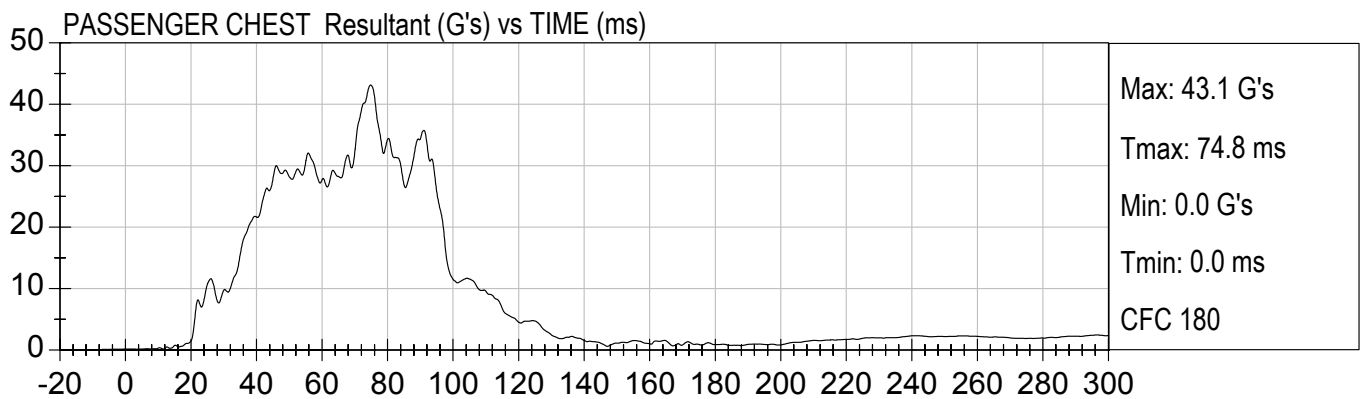
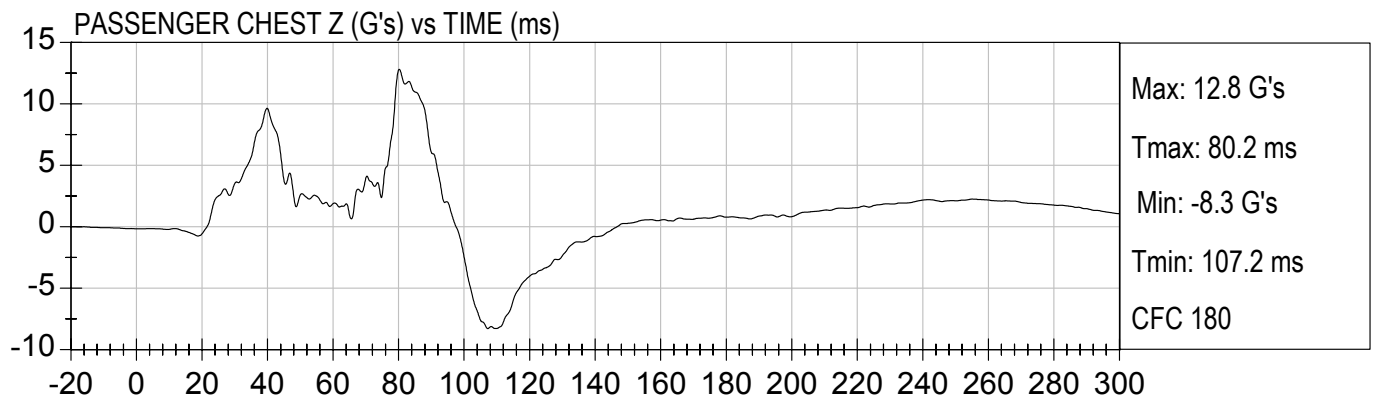
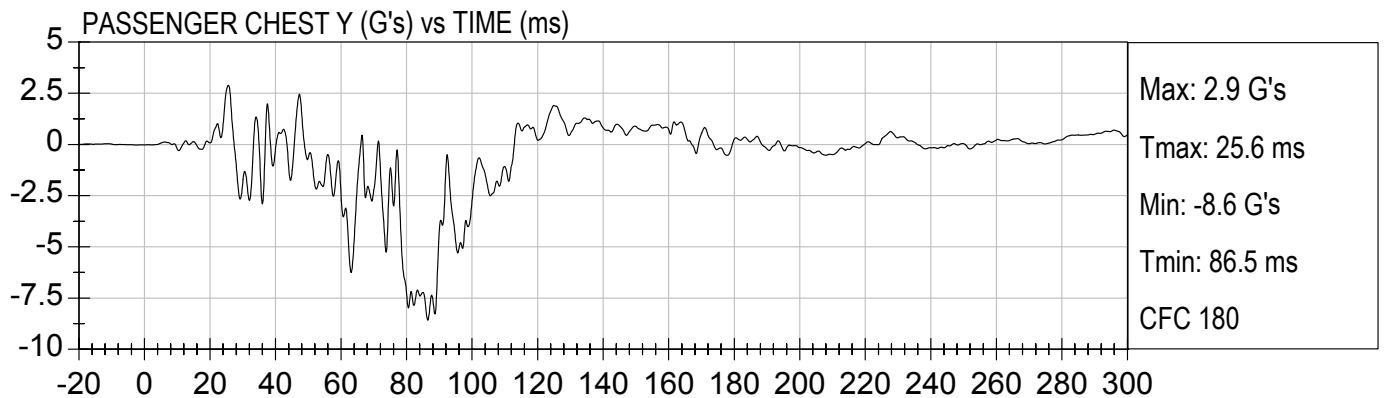
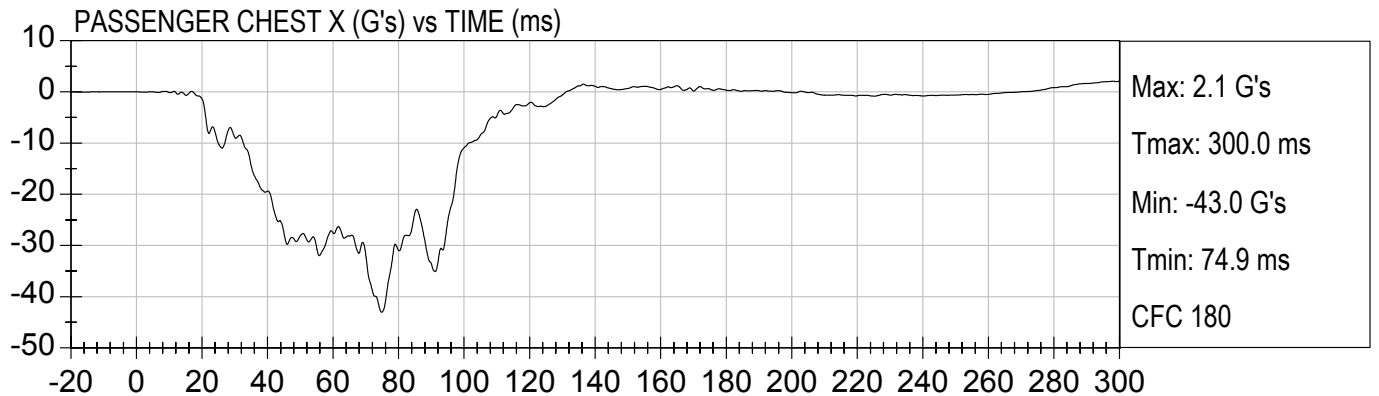
PASSENGER NECK FZ (N) vs TIME (ms)

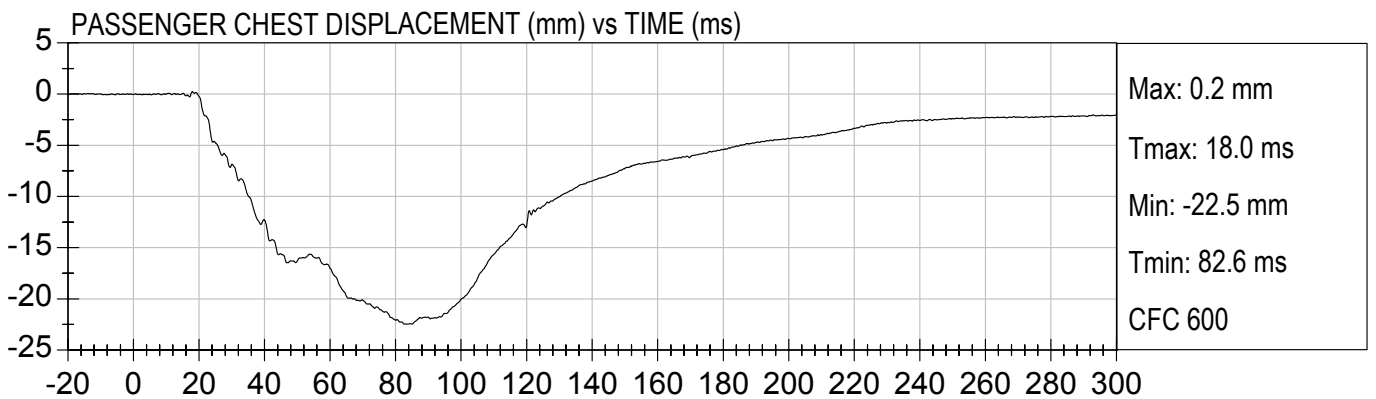
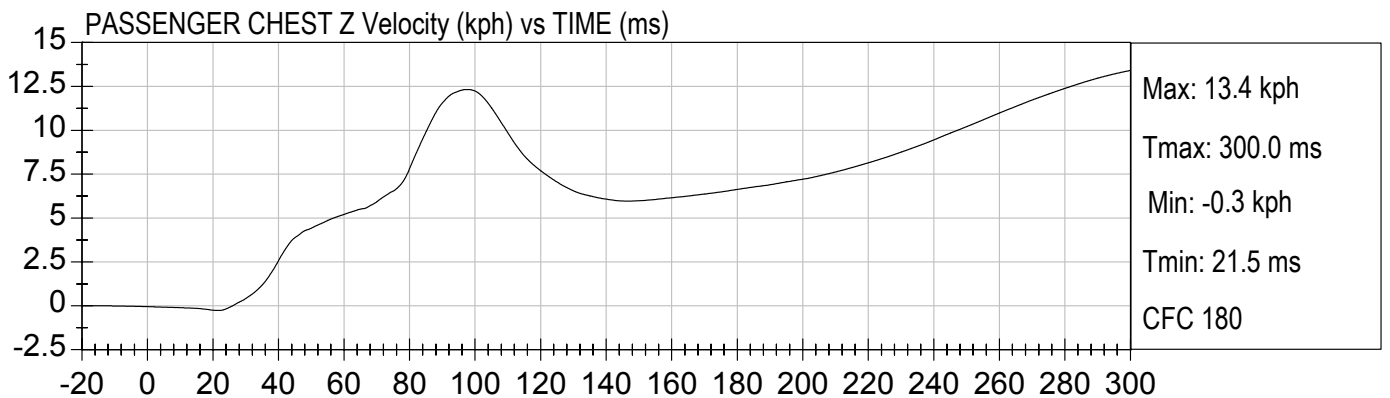
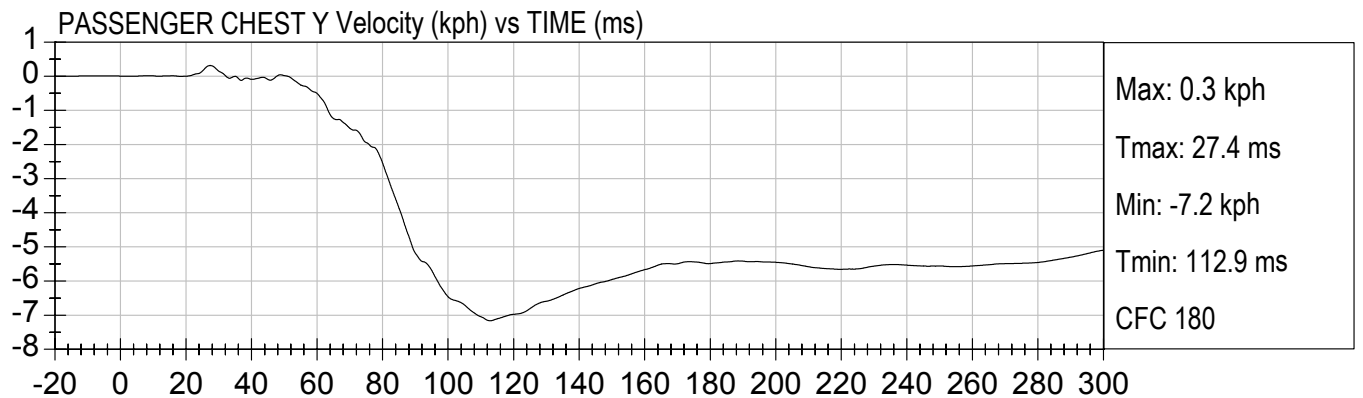
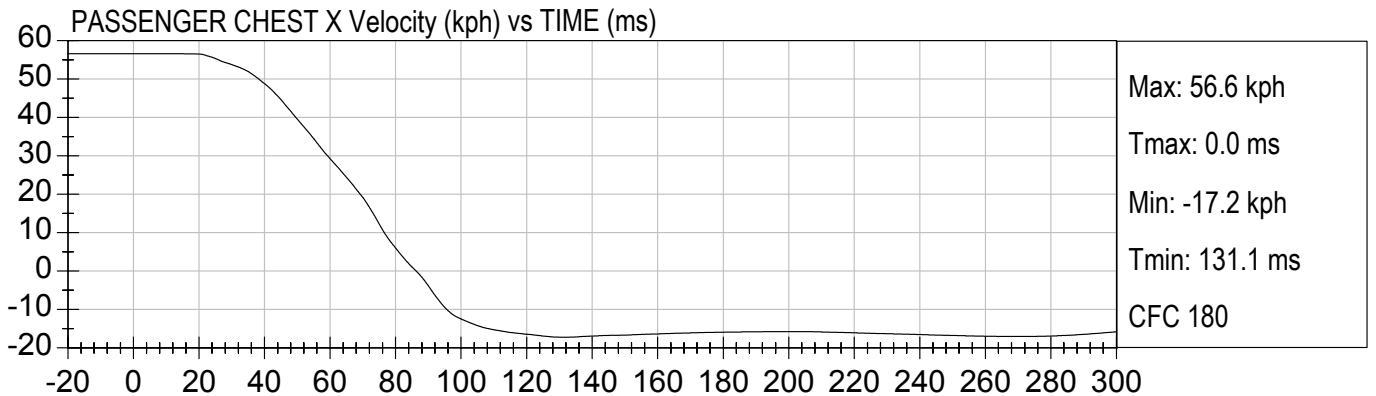


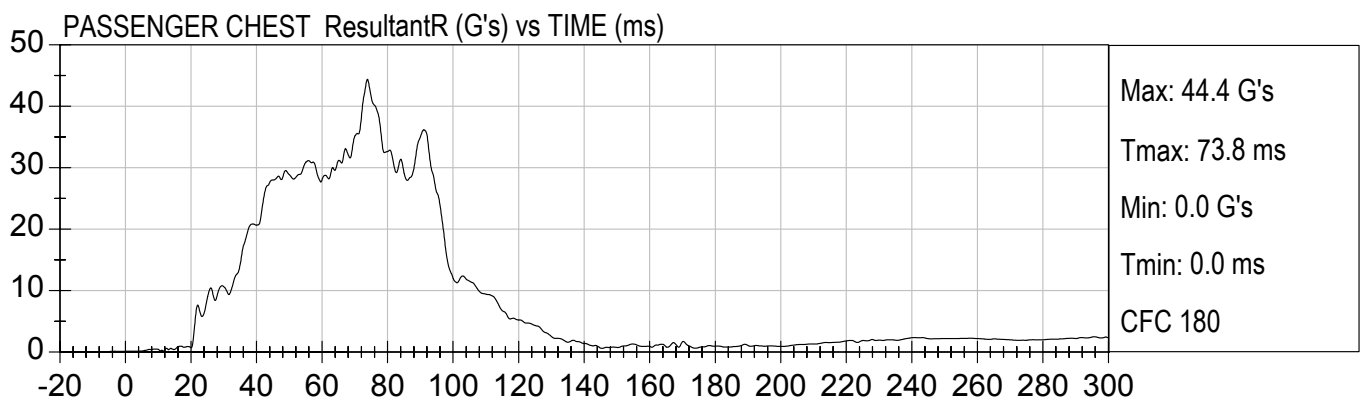
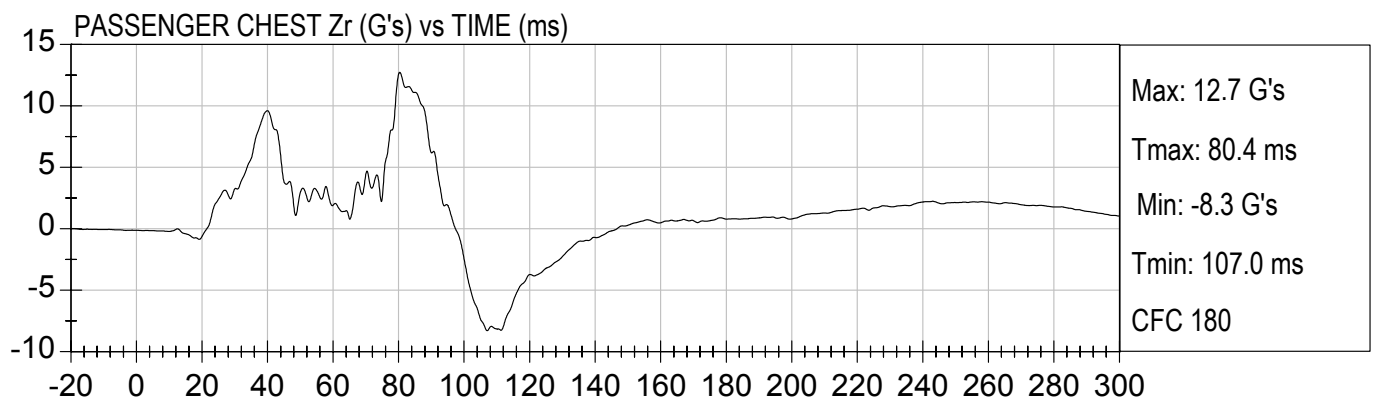
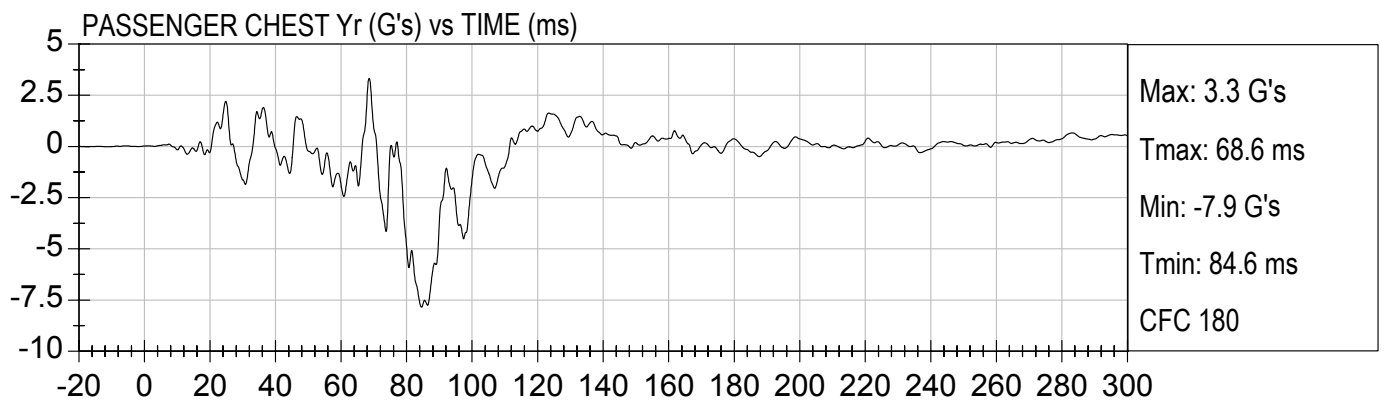
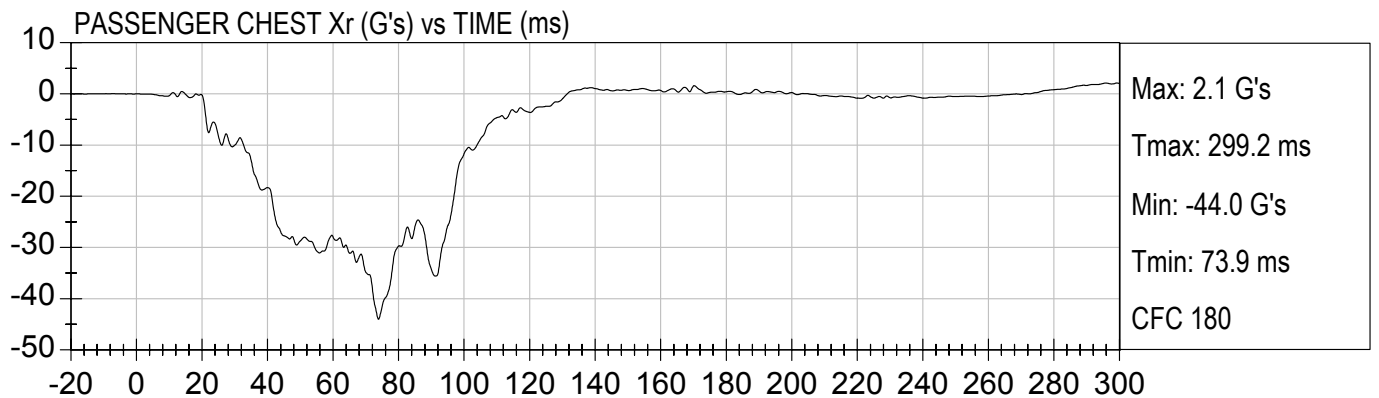
PASSENGER NECK FResultant (N) vs TIME (ms)

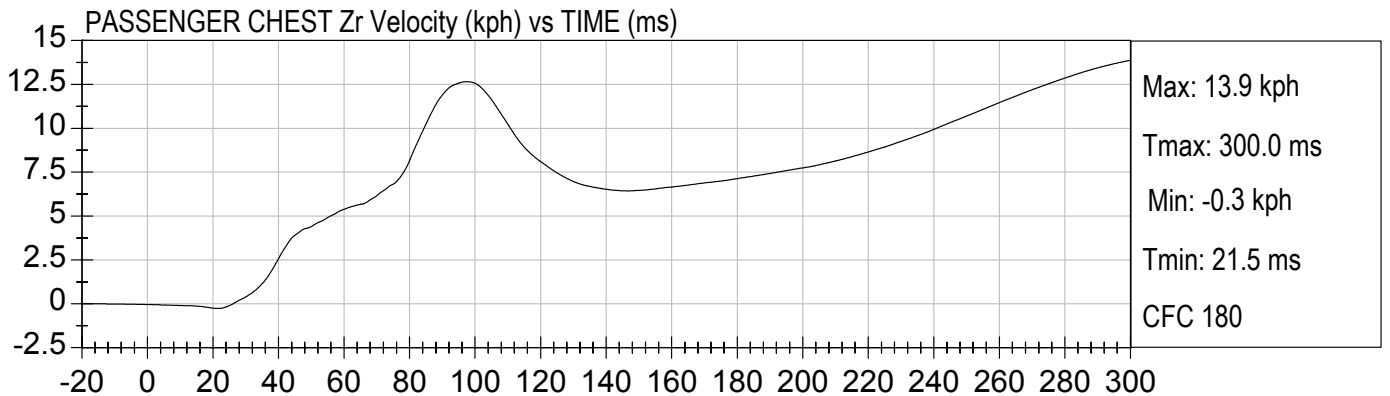
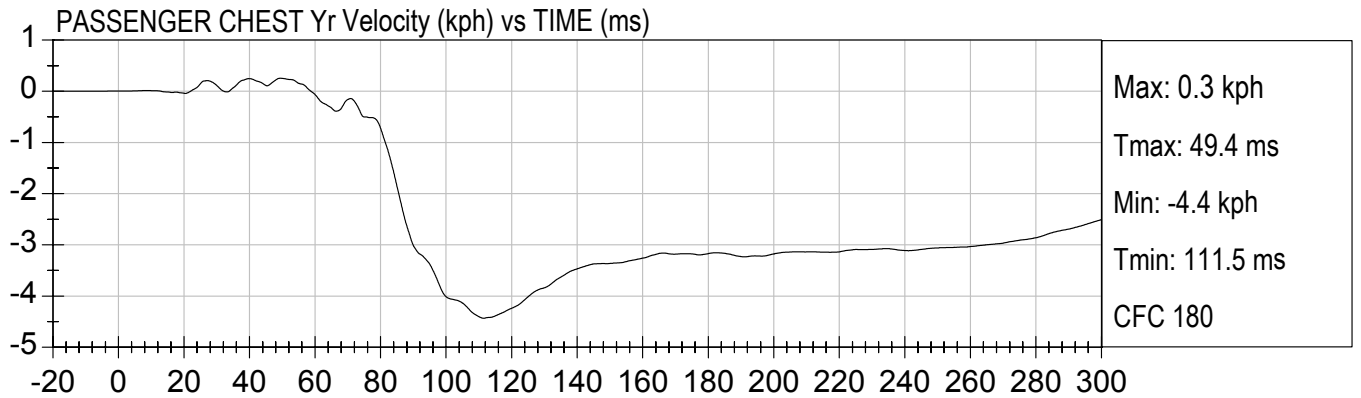
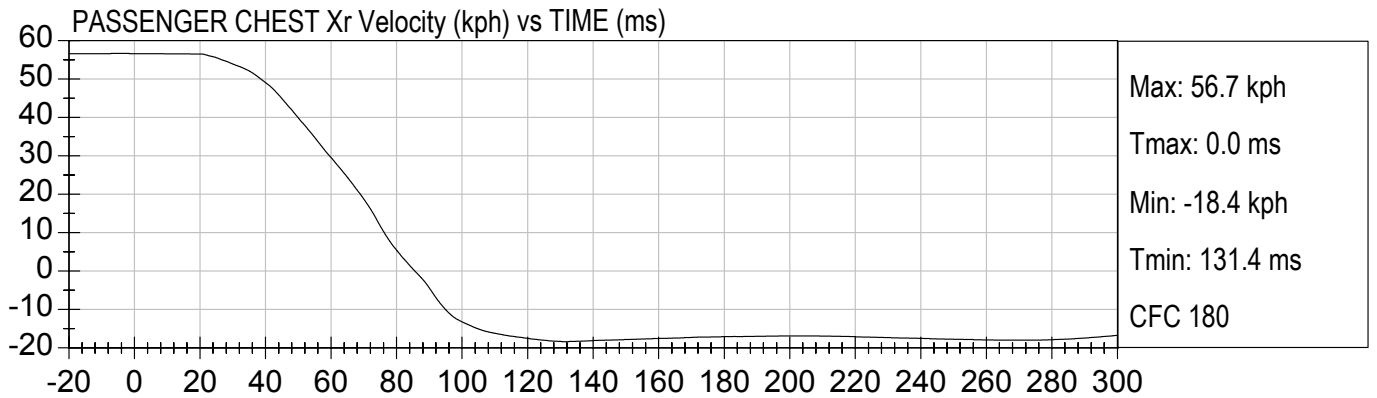


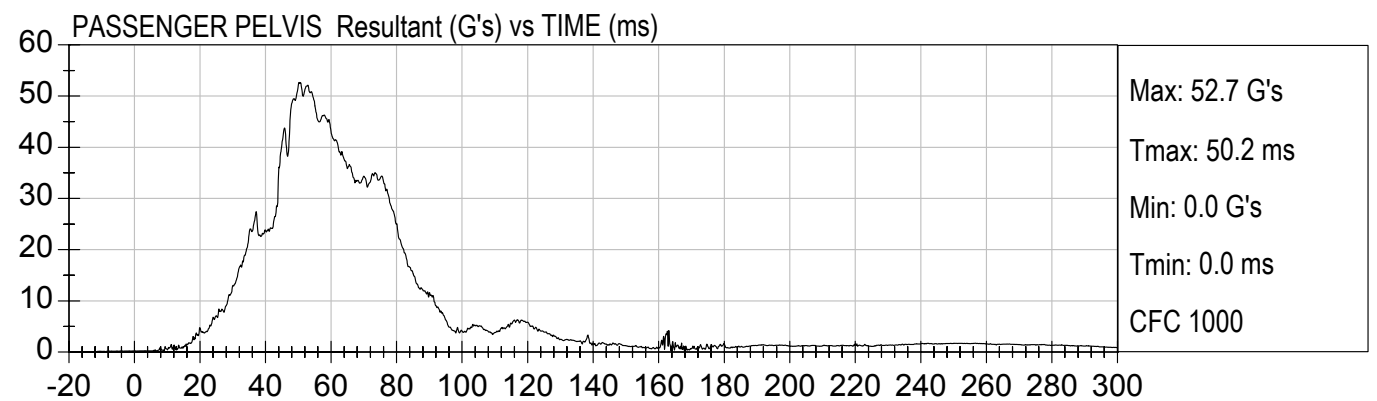
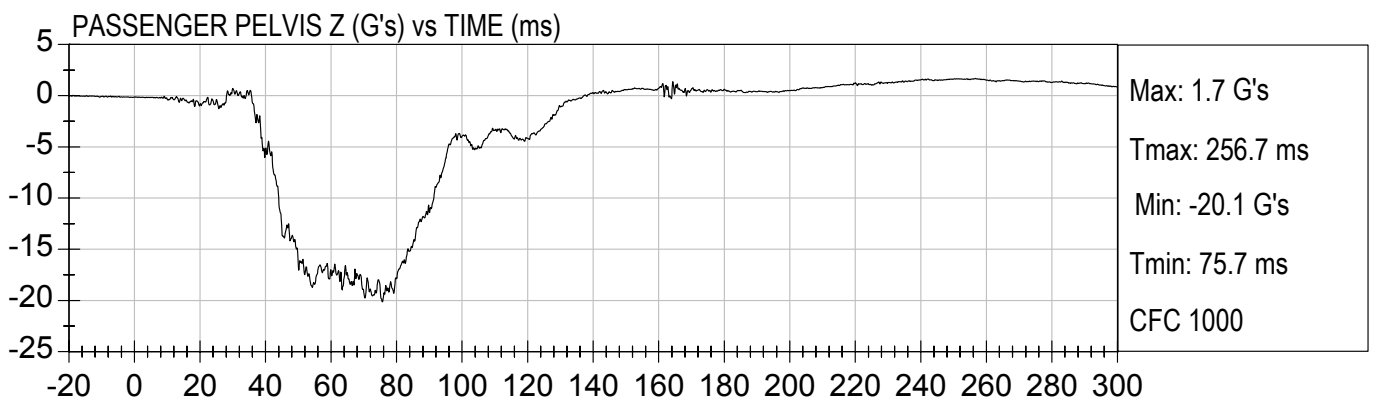
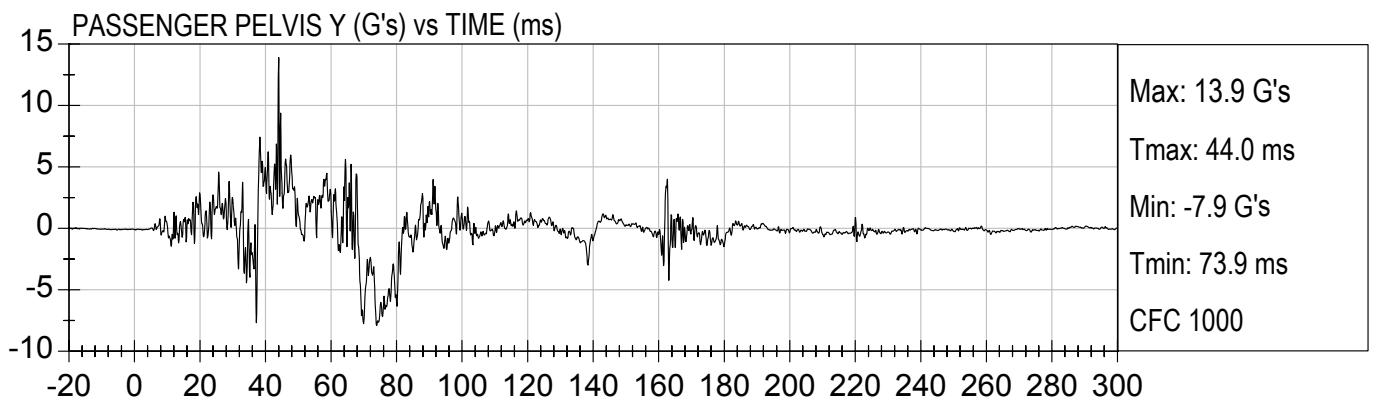
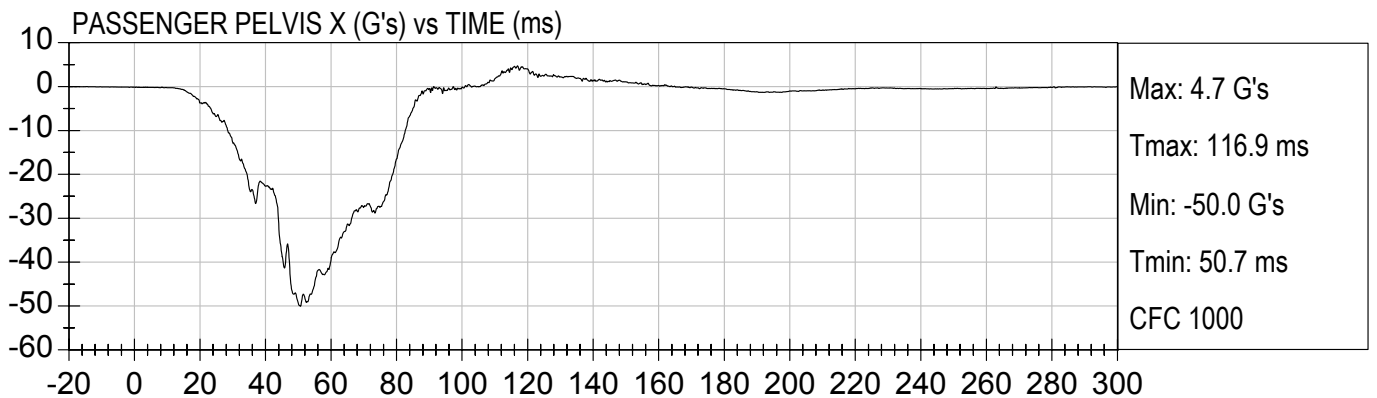


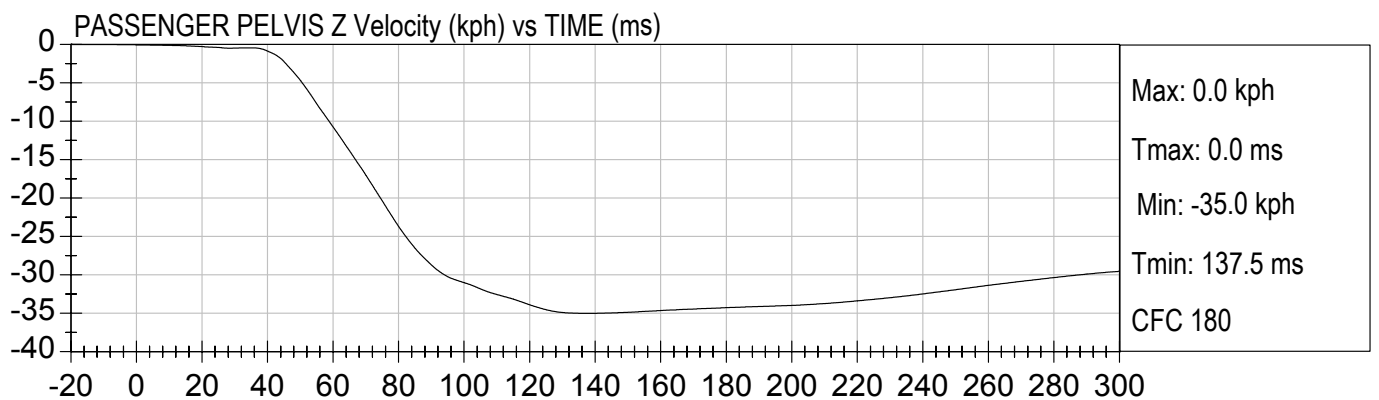
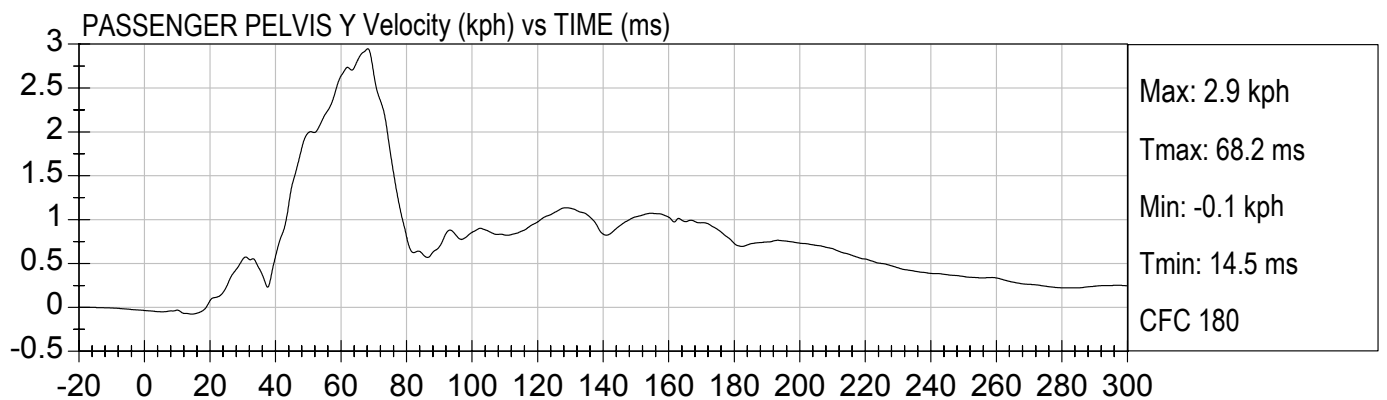
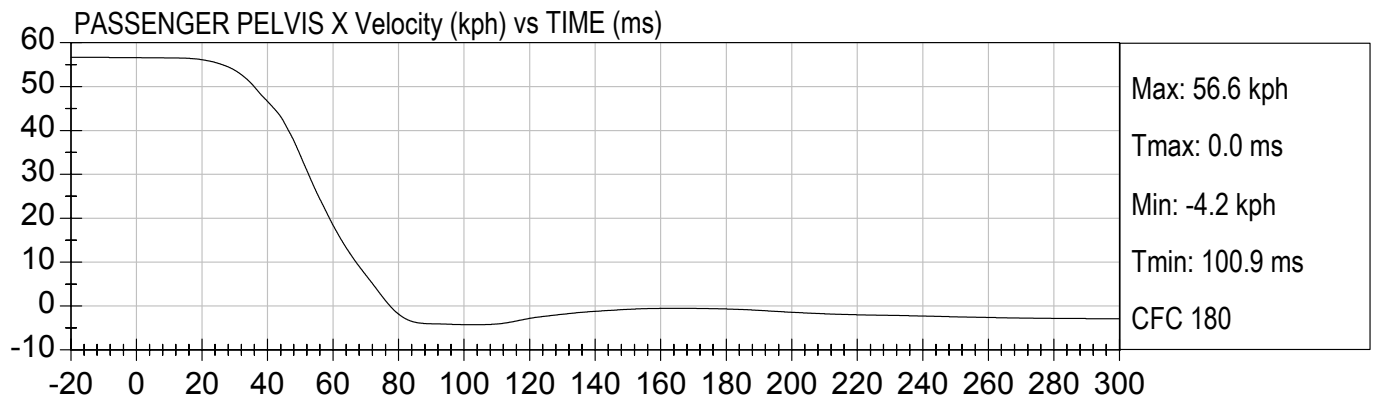


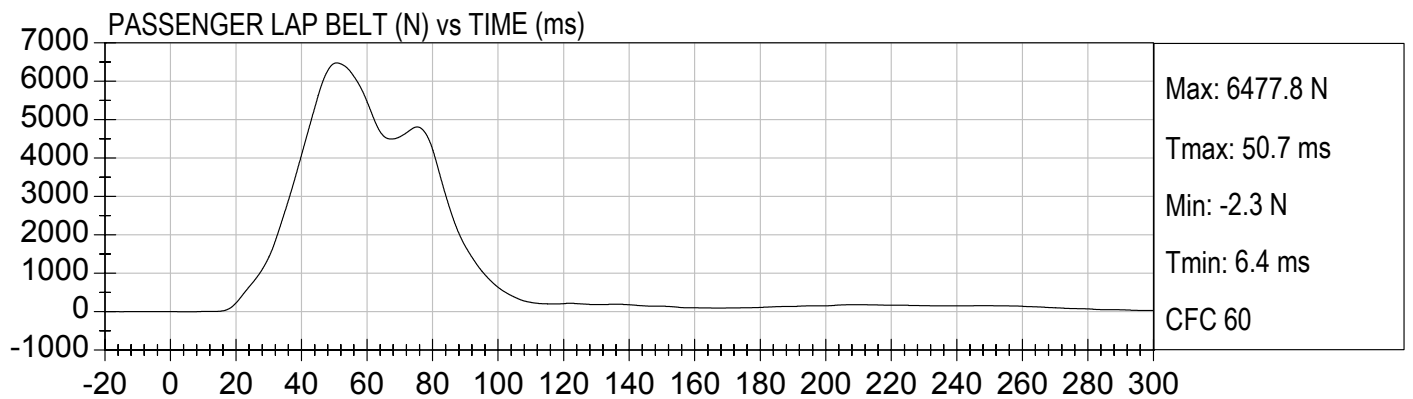
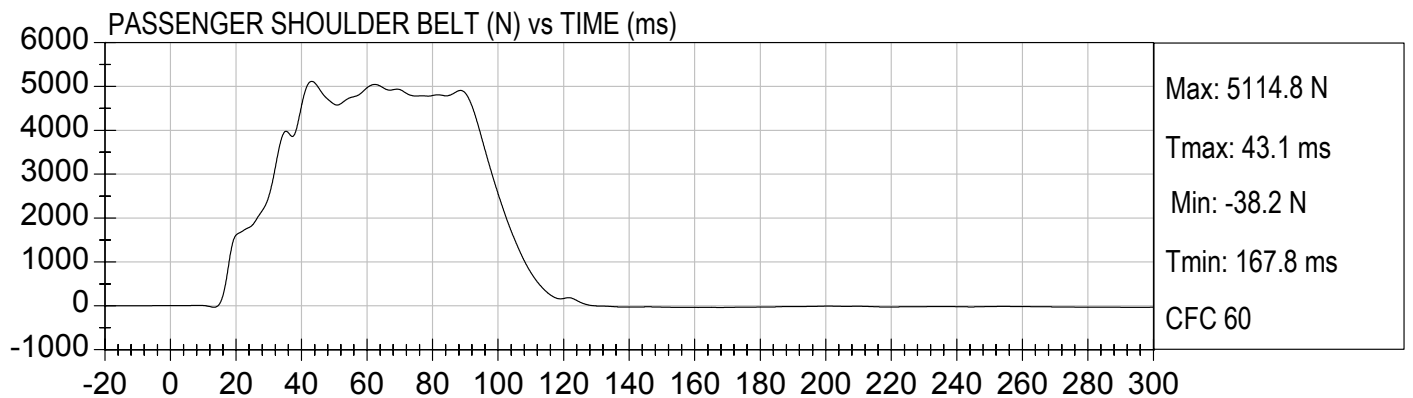
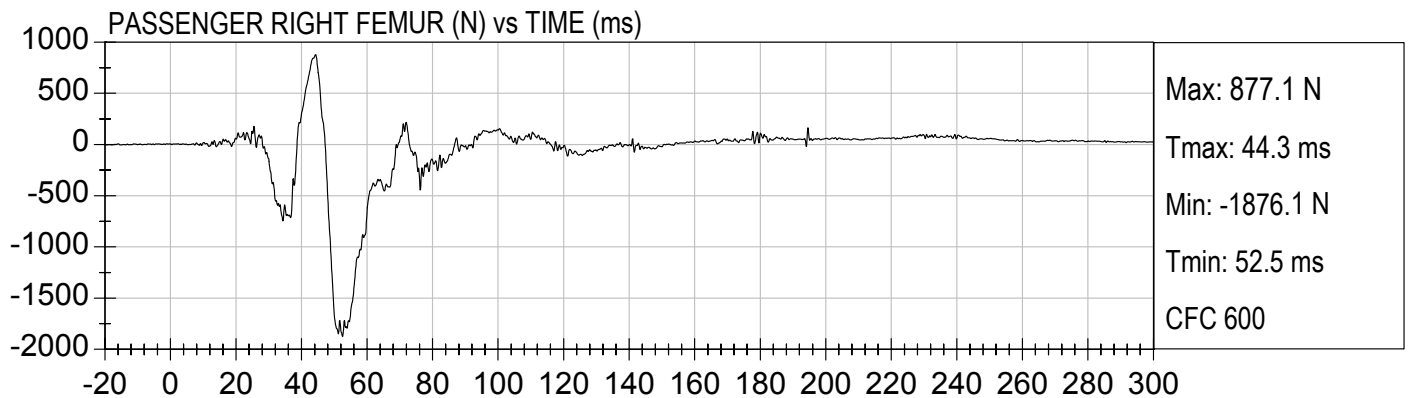
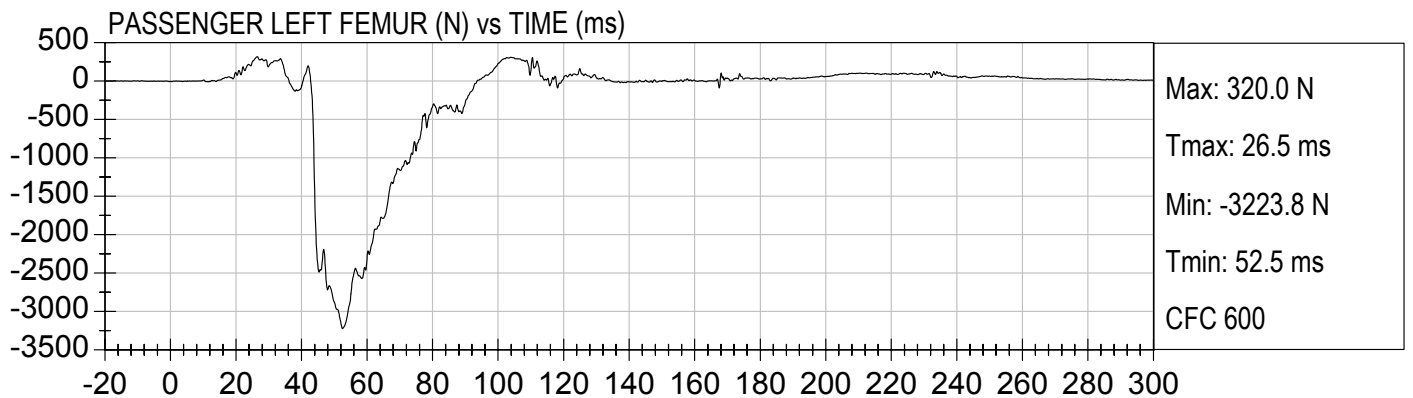






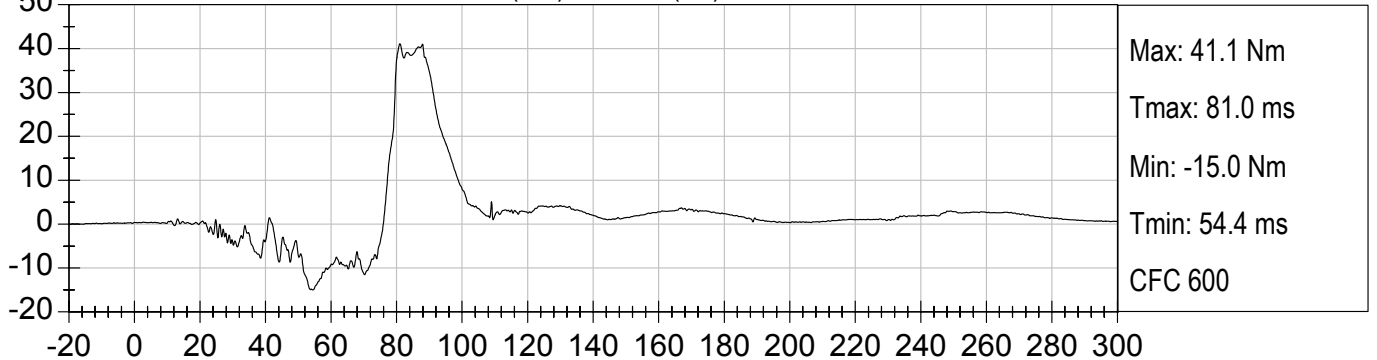




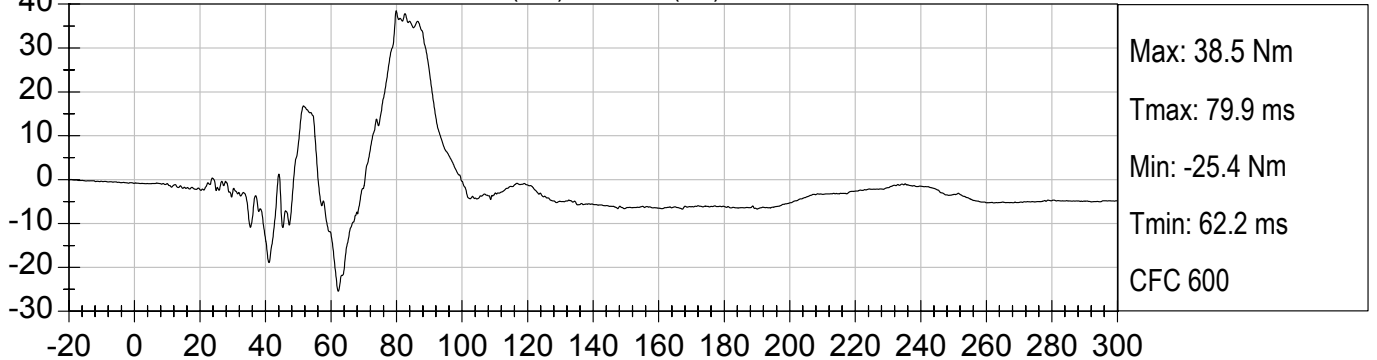




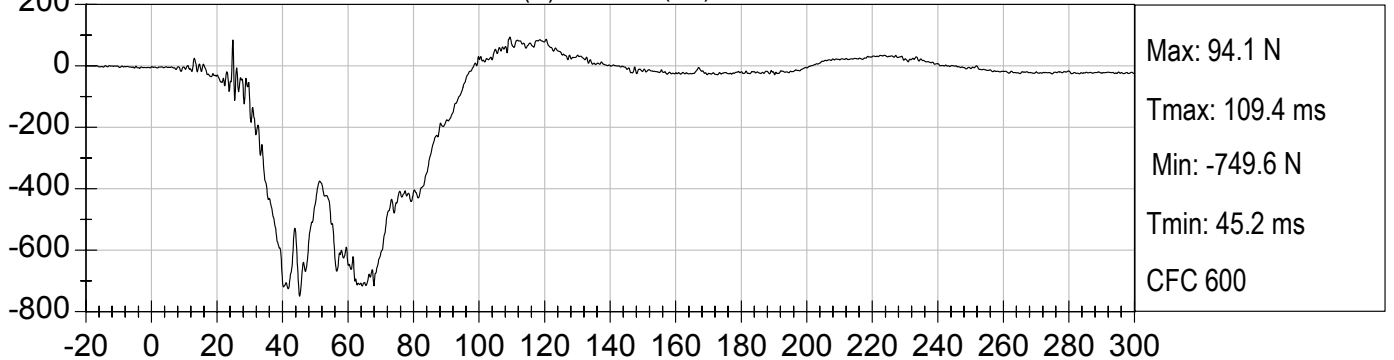
PASSENGER LEFT UPPER TIBIA MX (Nm) vs TIME (ms)



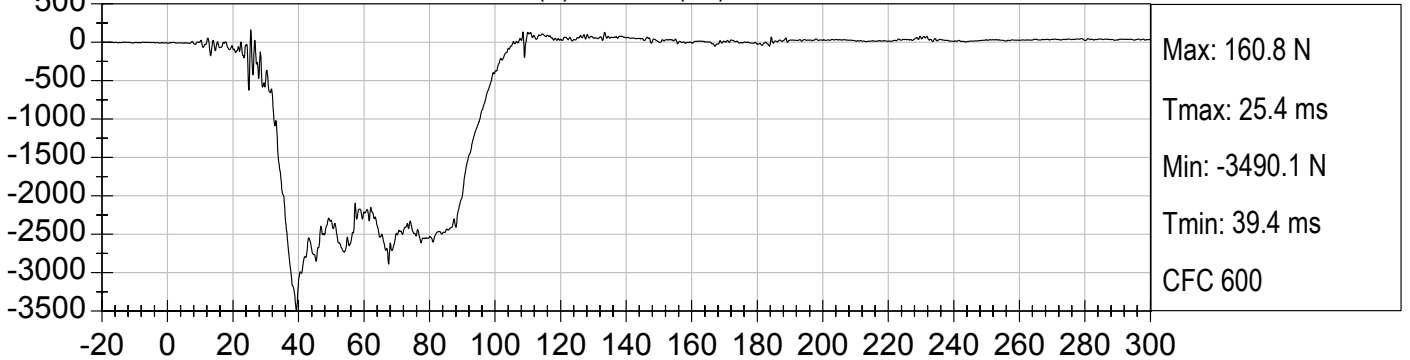
PASSENGER LEFT UPPER TIBIA MY (Nm) vs TIME (ms)



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

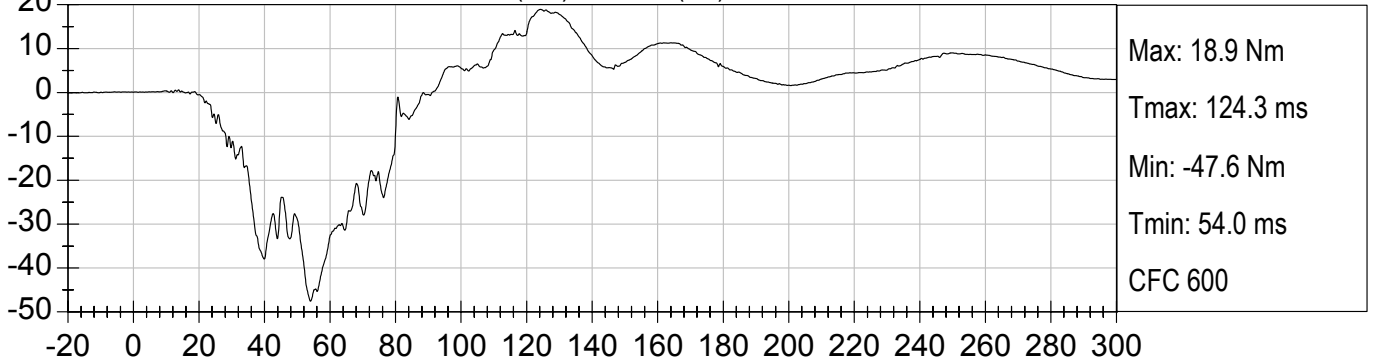


PASSENGER LEFT UPPER TIBIA FZ (N) vs TIME (ms)

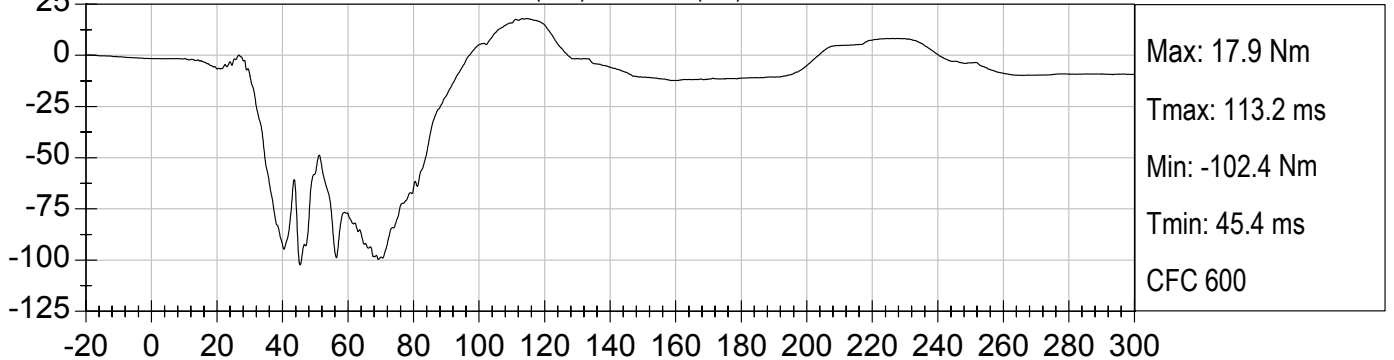




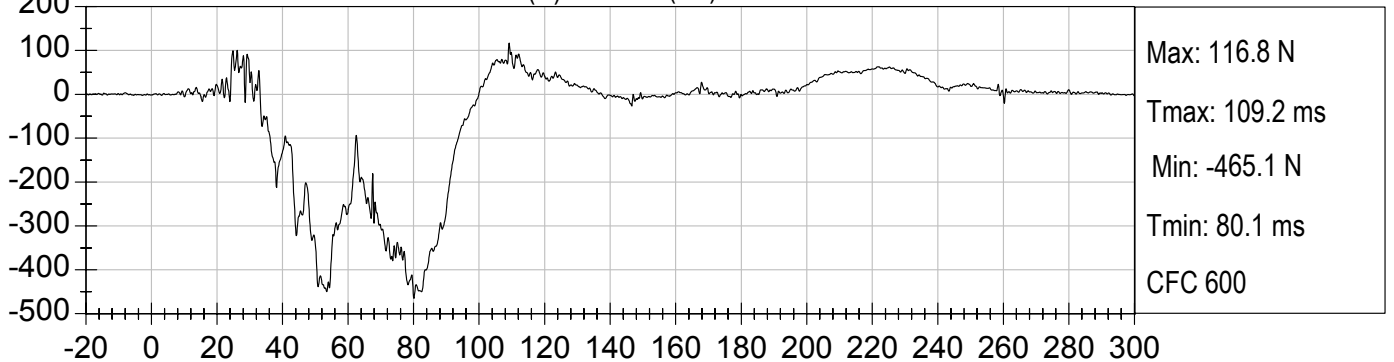
PASSENGER LEFT LOWER TIBIA MX (Nm) vs TIME (ms)



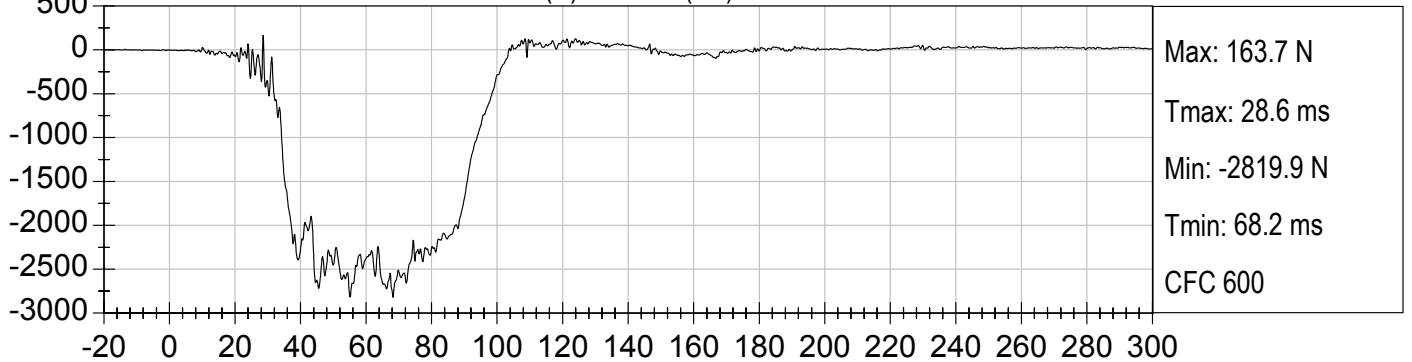
PASSENGER LEFT LOWER TIBIA MY (Nm) vs TIME (ms)

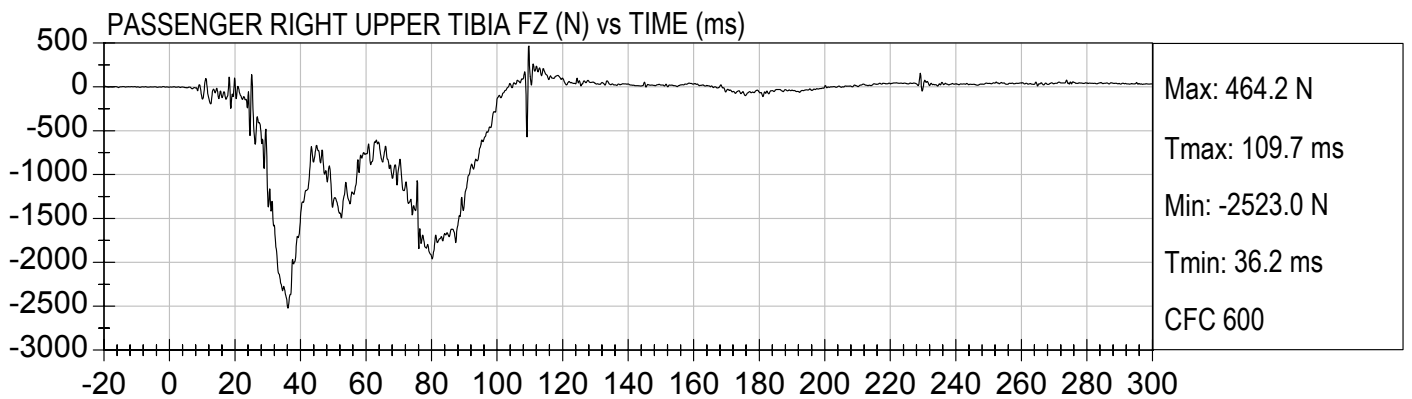
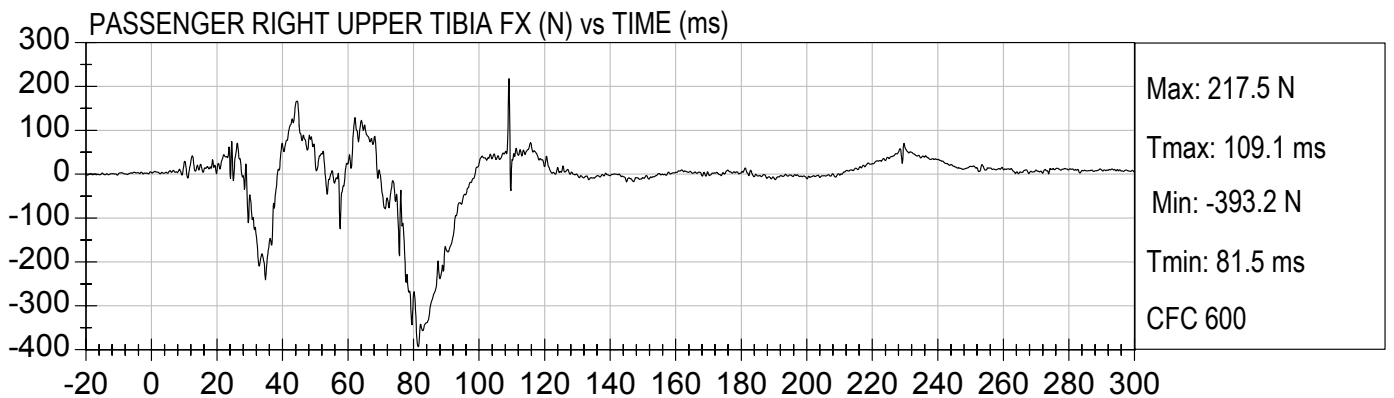
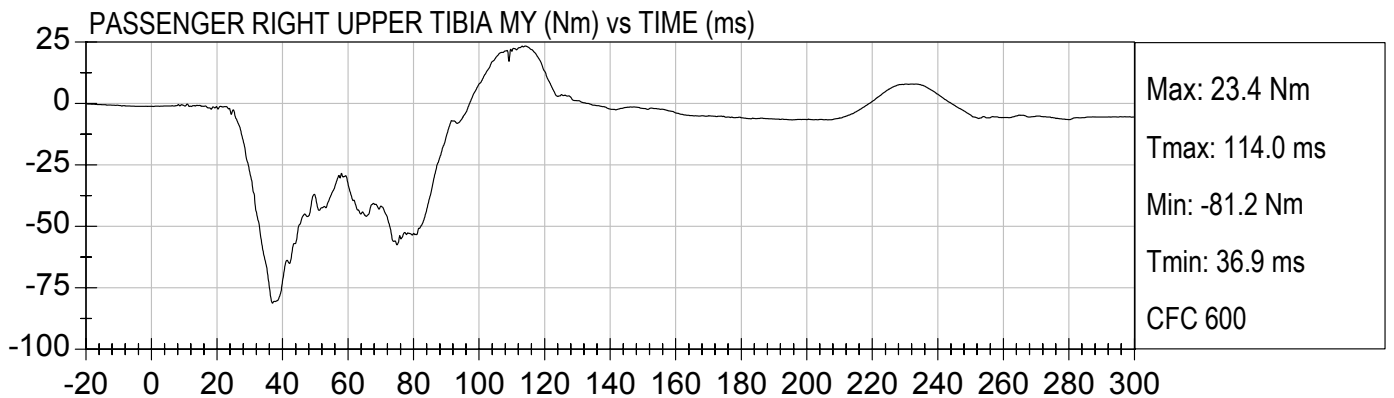
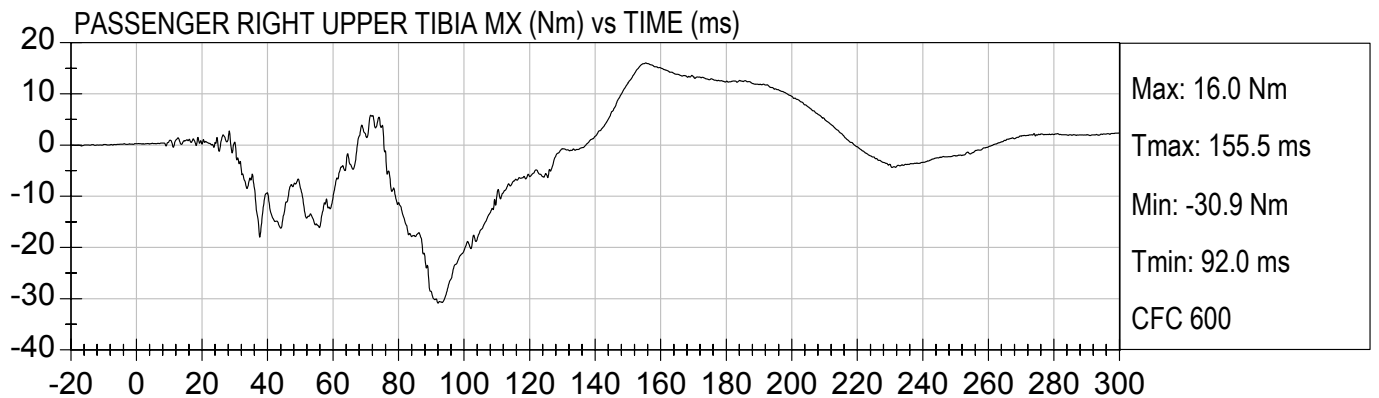


PASSENGER LEFT LOWER TIBIA FX (N) vs TIME (ms)



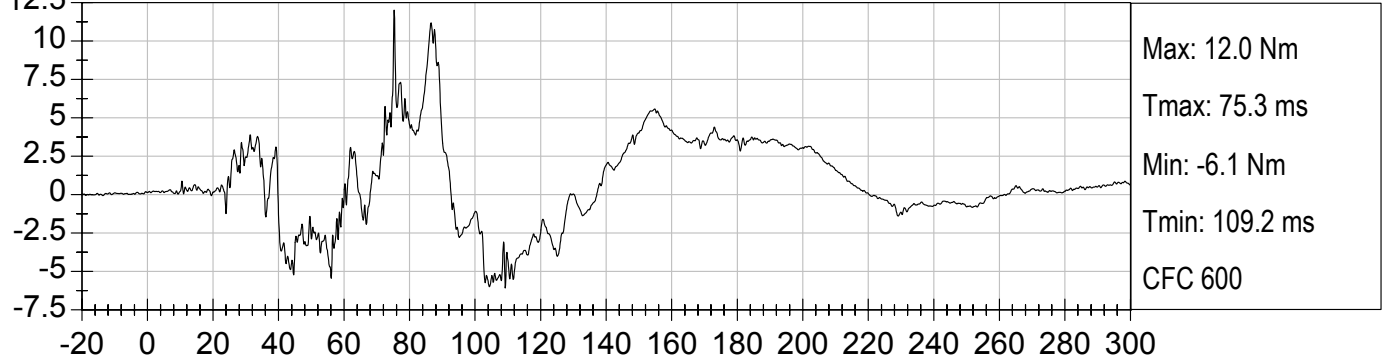
PASSENGER LEFT LOWER TIBIA FZ (N) vs TIME (ms)



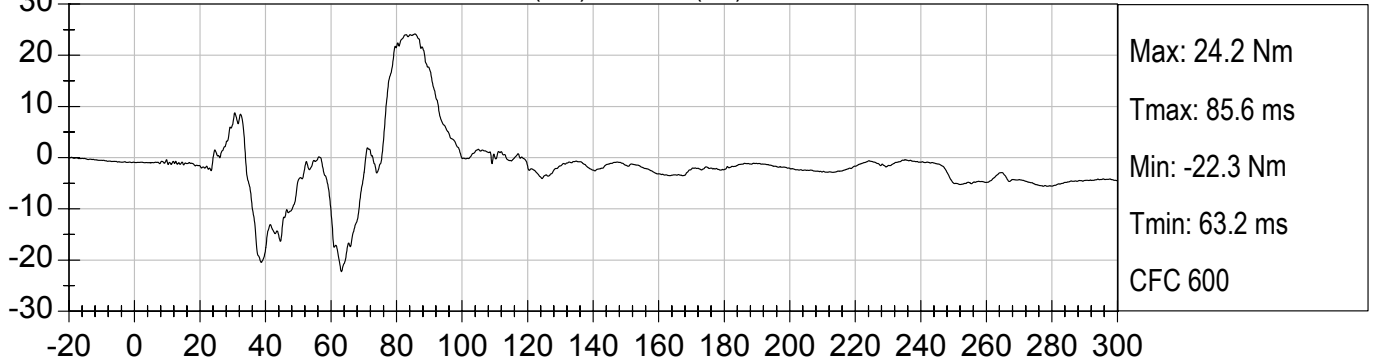




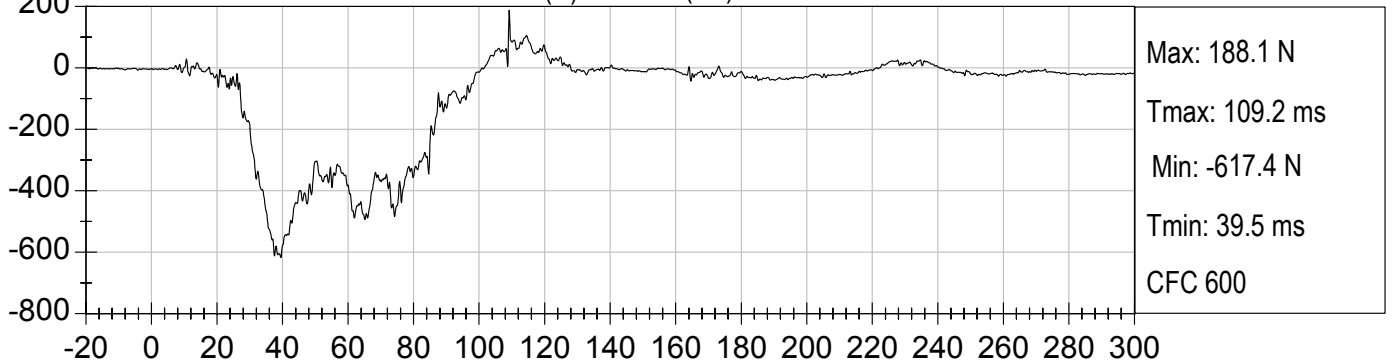
PASSENGER RIGHT LOWER TIBIA MX (Nm) vs TIME (ms)



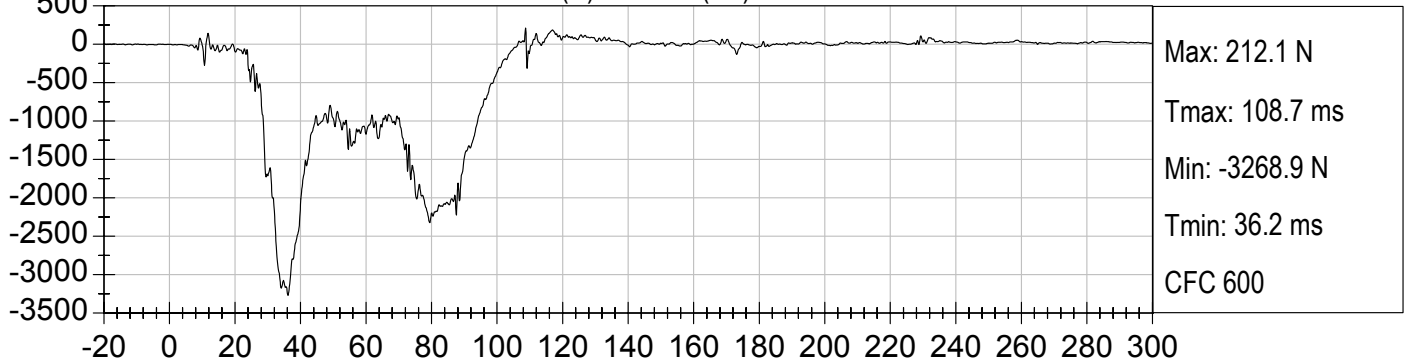
PASSENGER RIGHT LOWER TIBIA MY (Nm) vs TIME (ms)

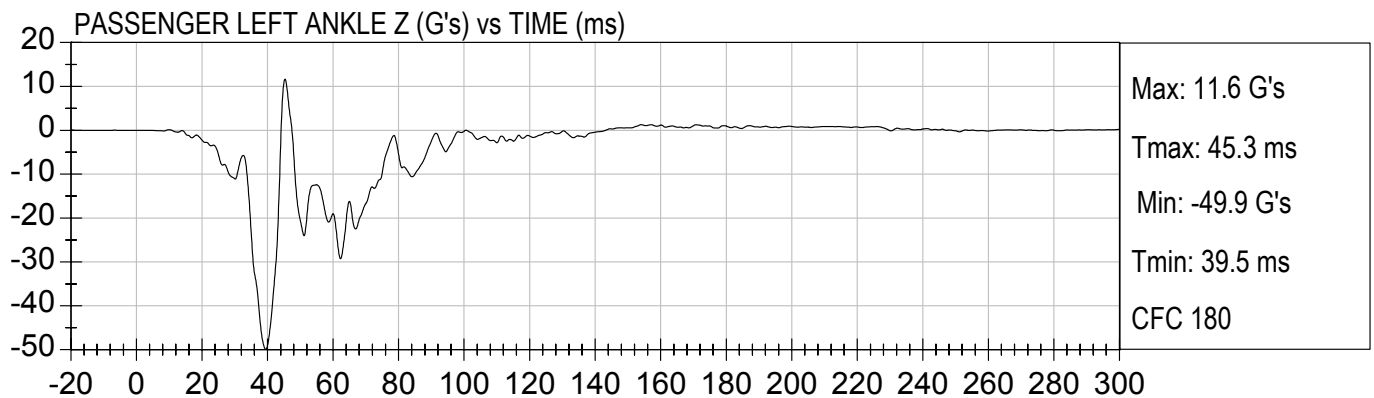
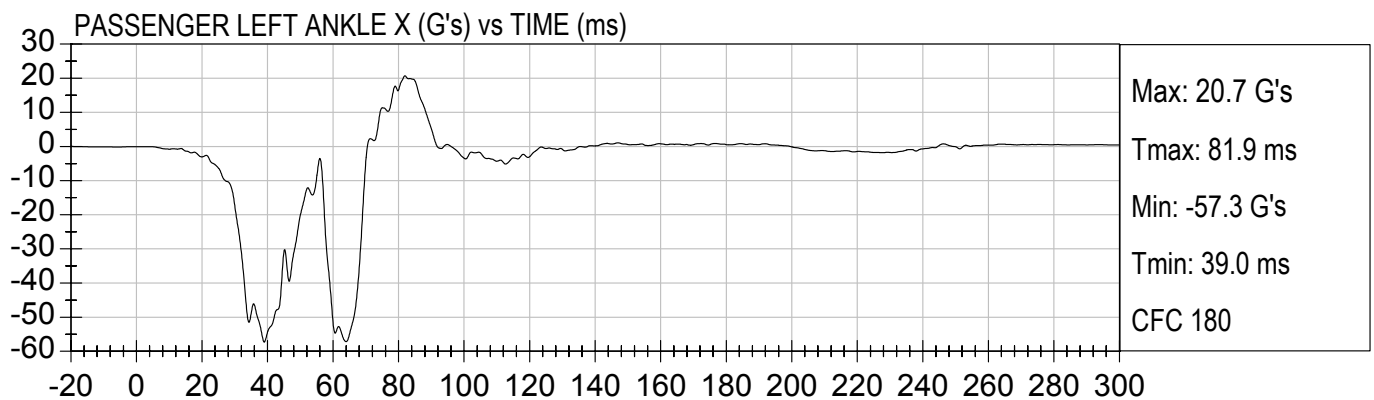
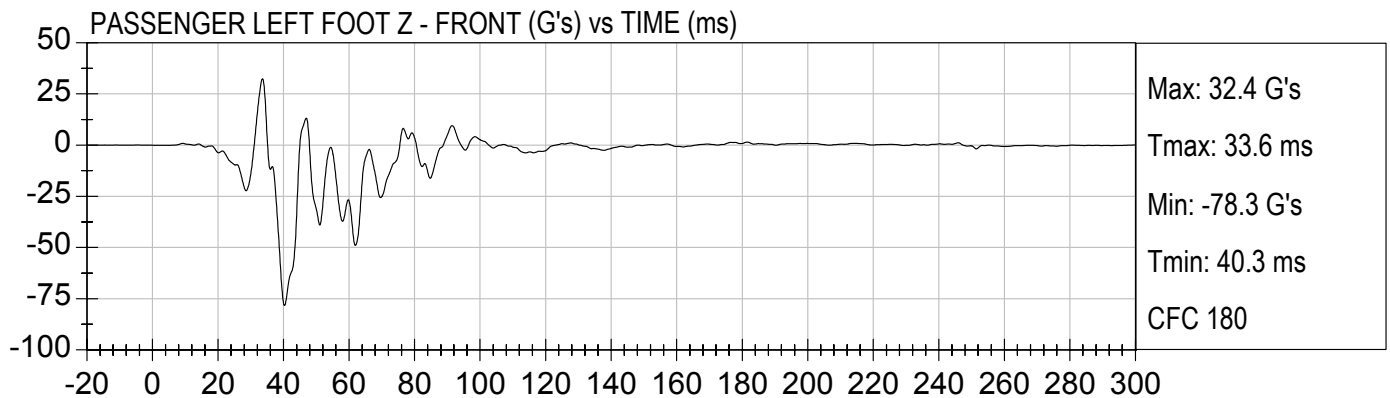


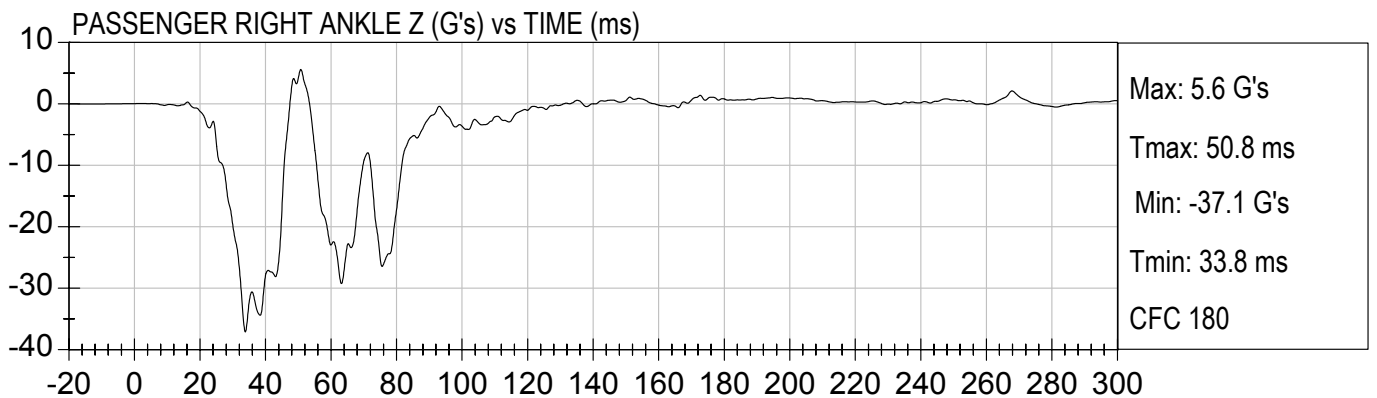
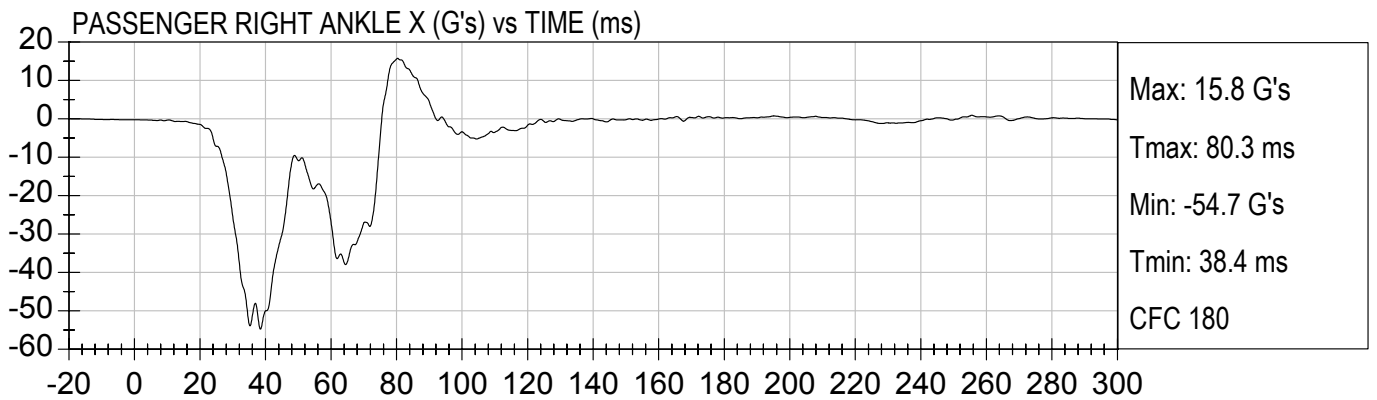
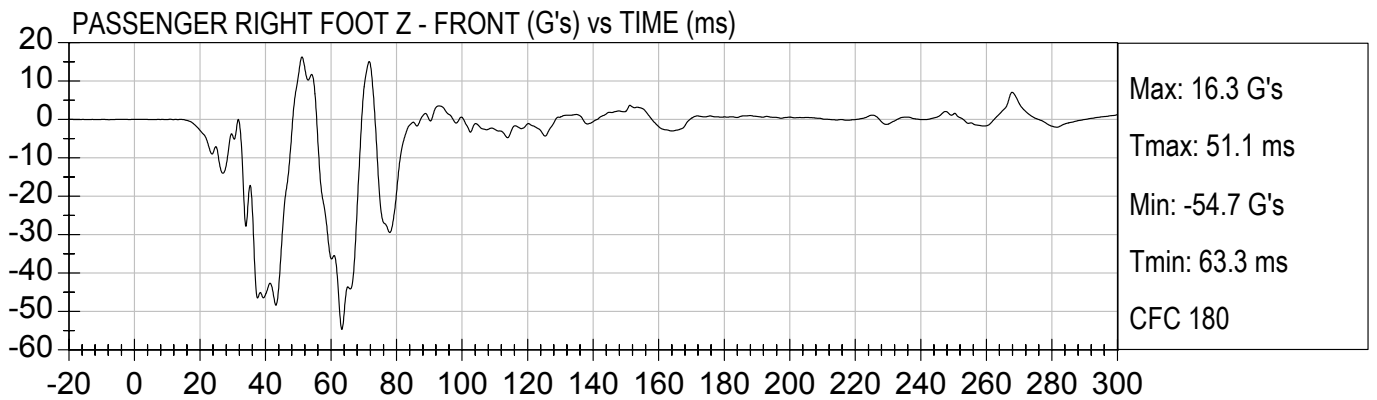
PASSENGER RIGHT LOWER TIBIA FX (N) vs TIME (ms)

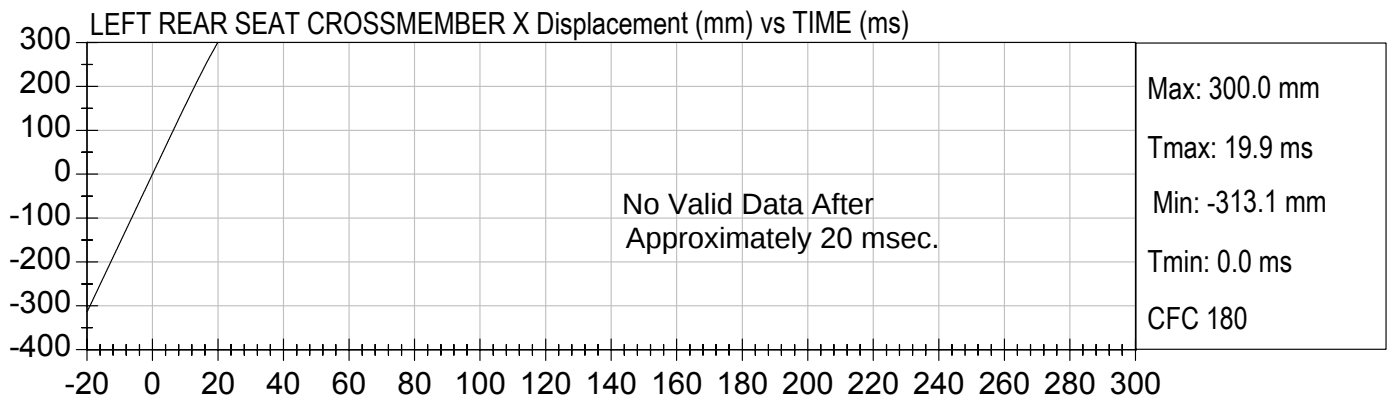
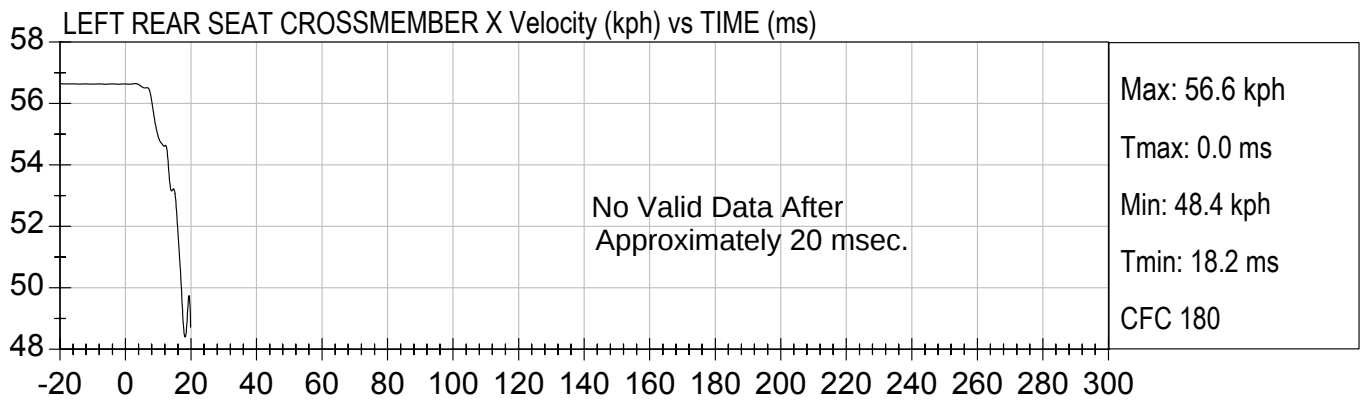
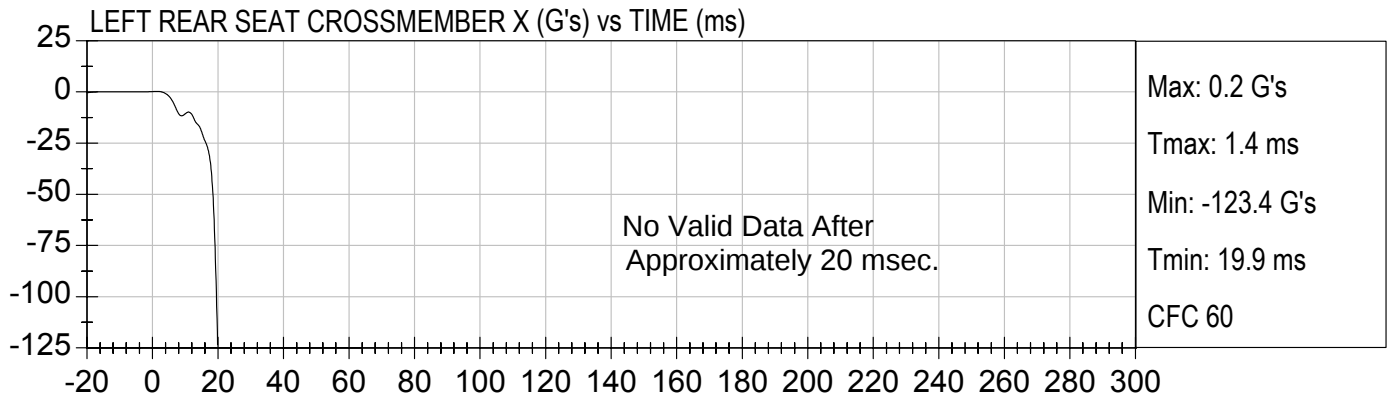


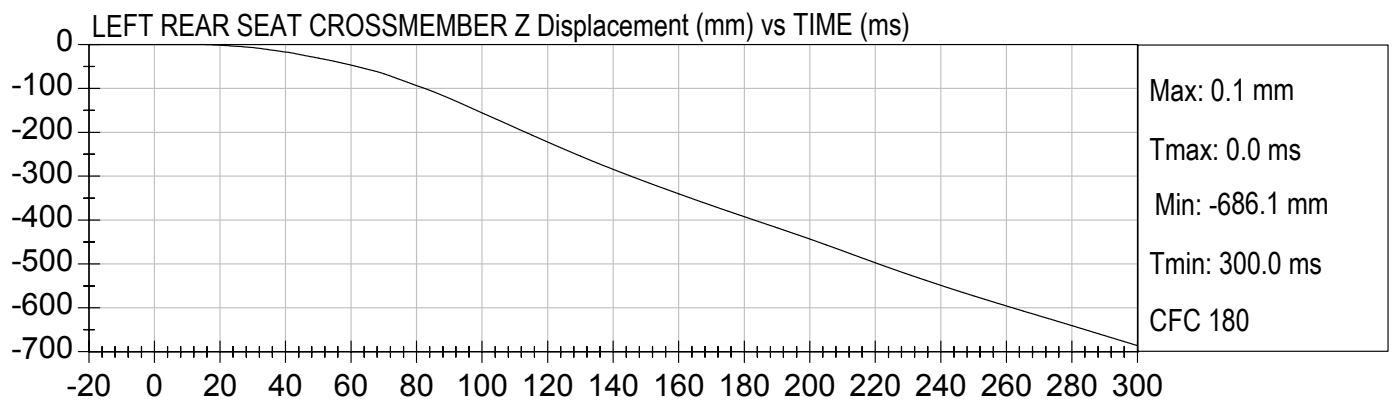
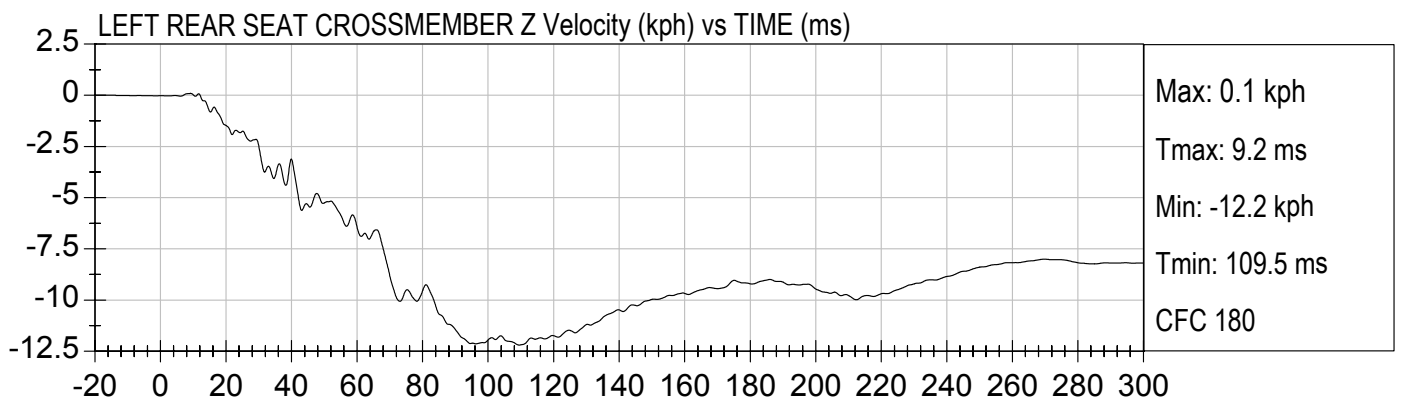
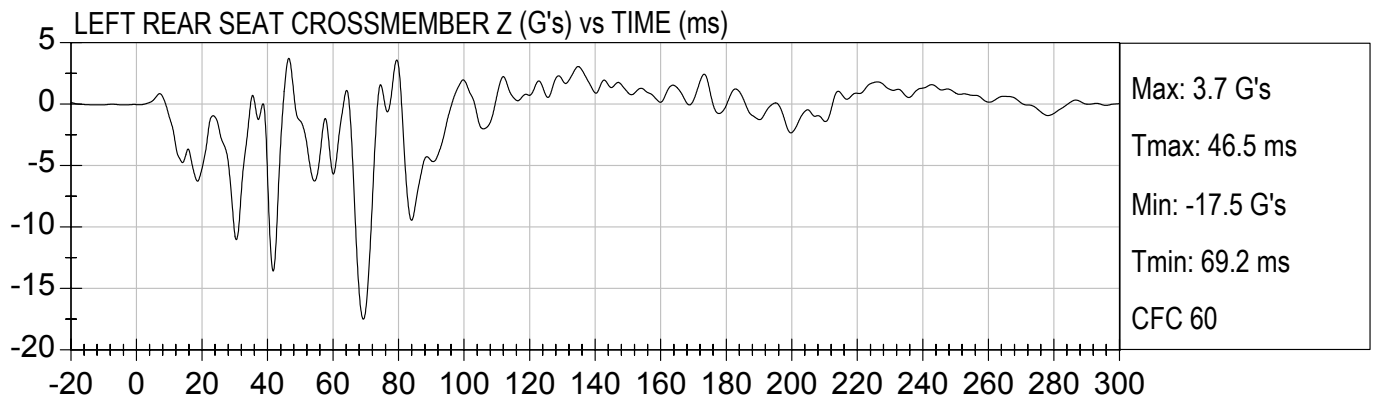
PASSENGER RIGHT LOWER TIBIA FZ (N) vs TIME (ms)

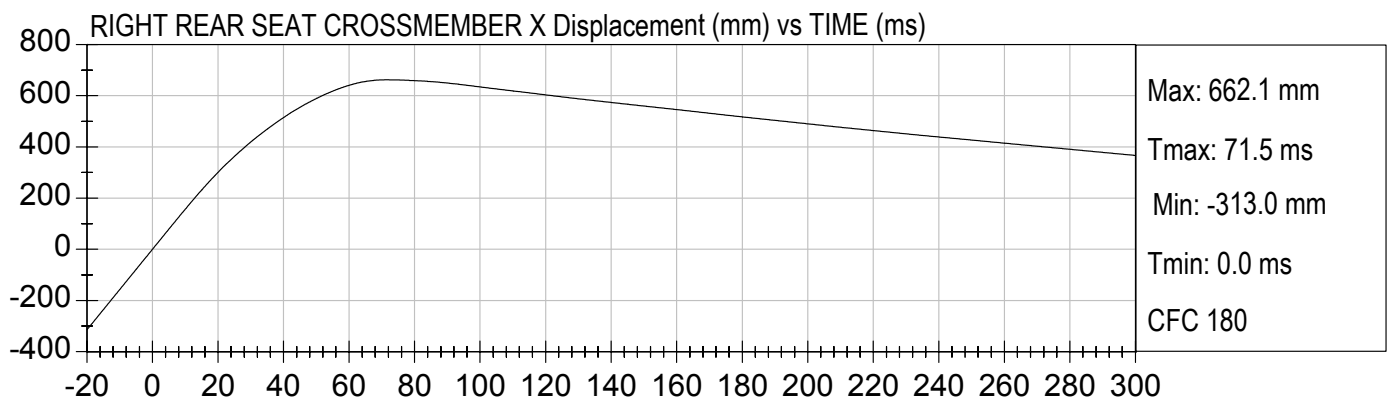
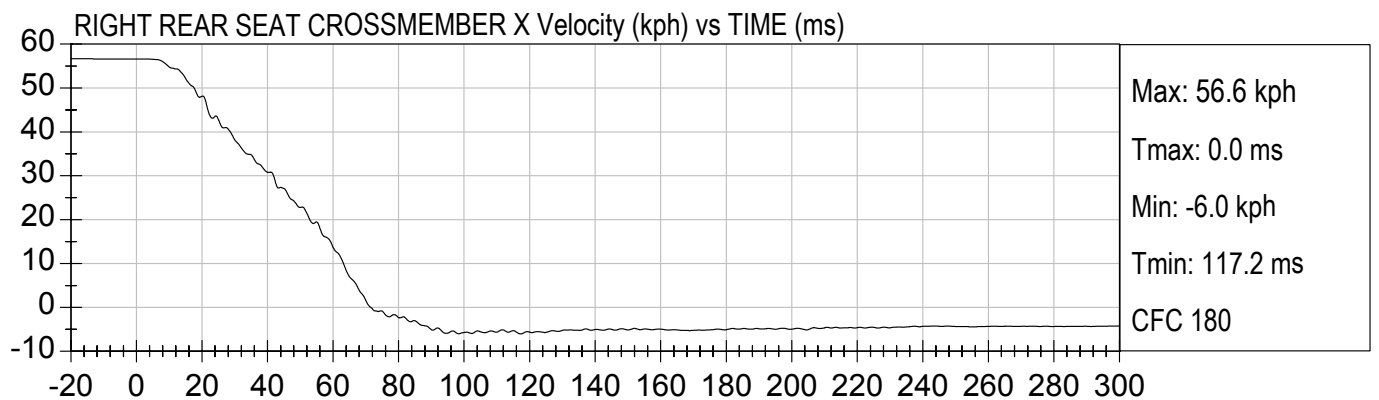
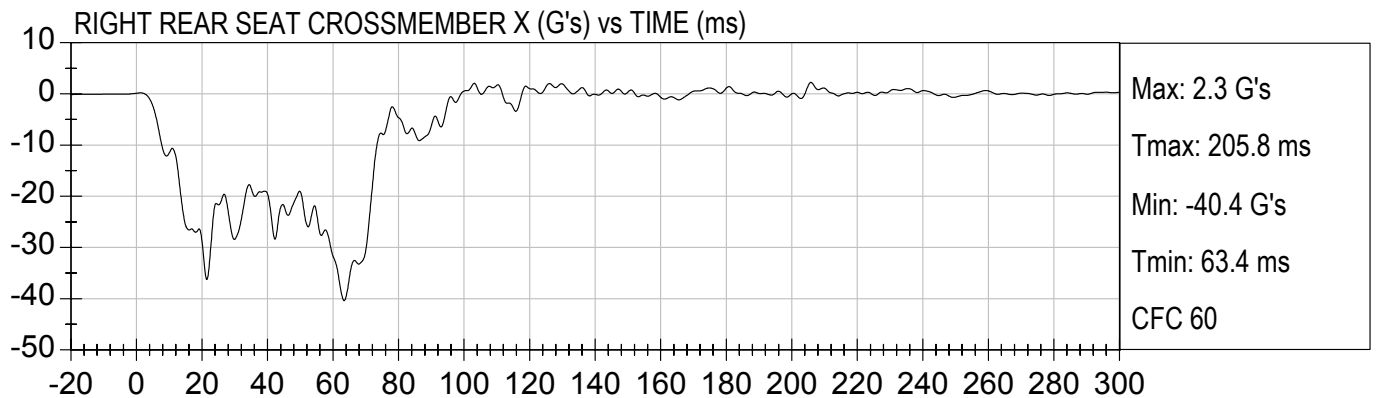


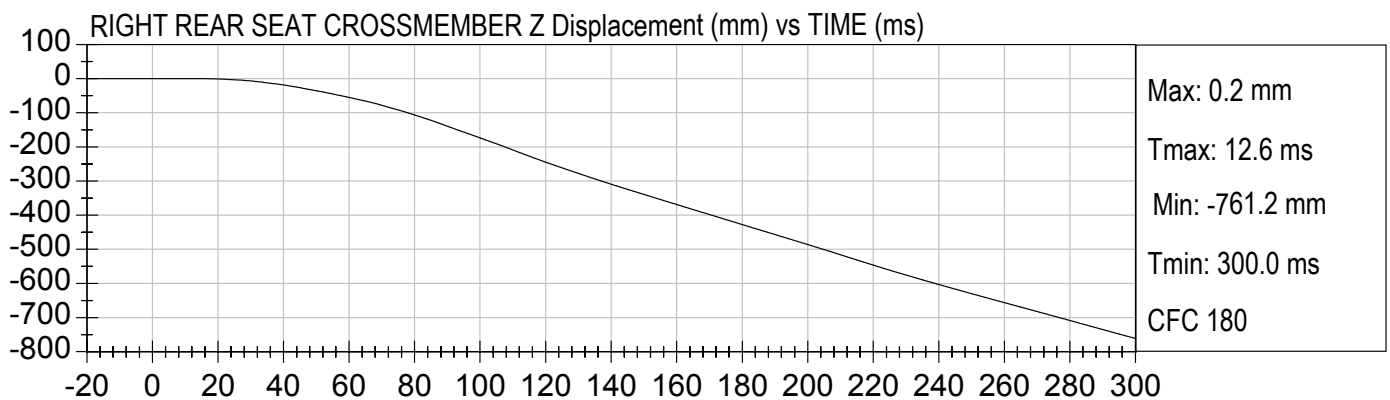
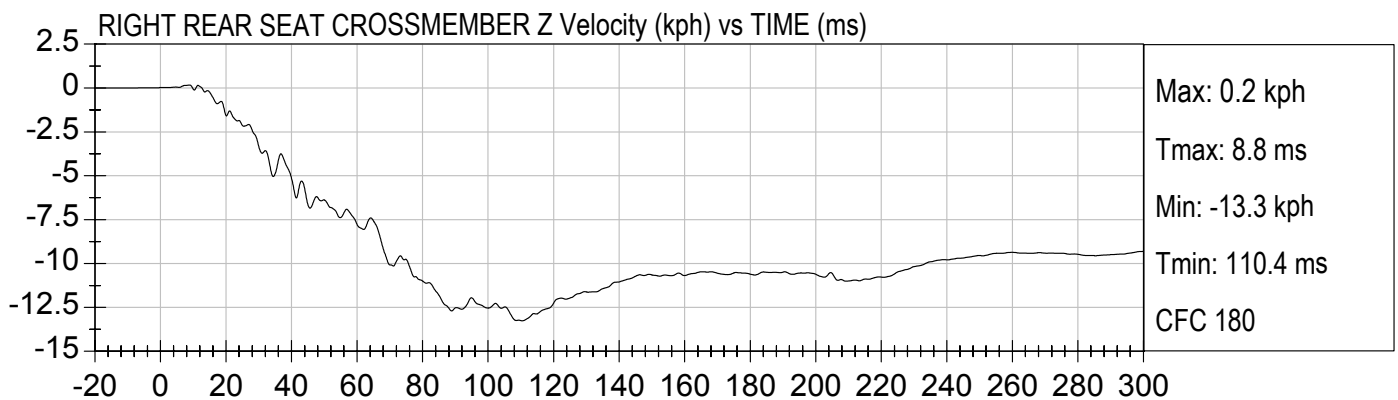
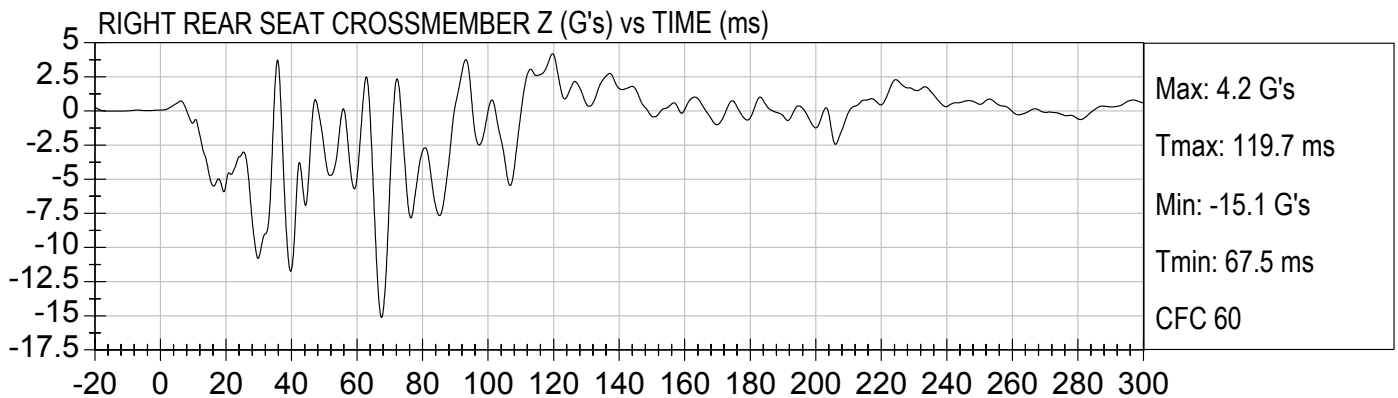


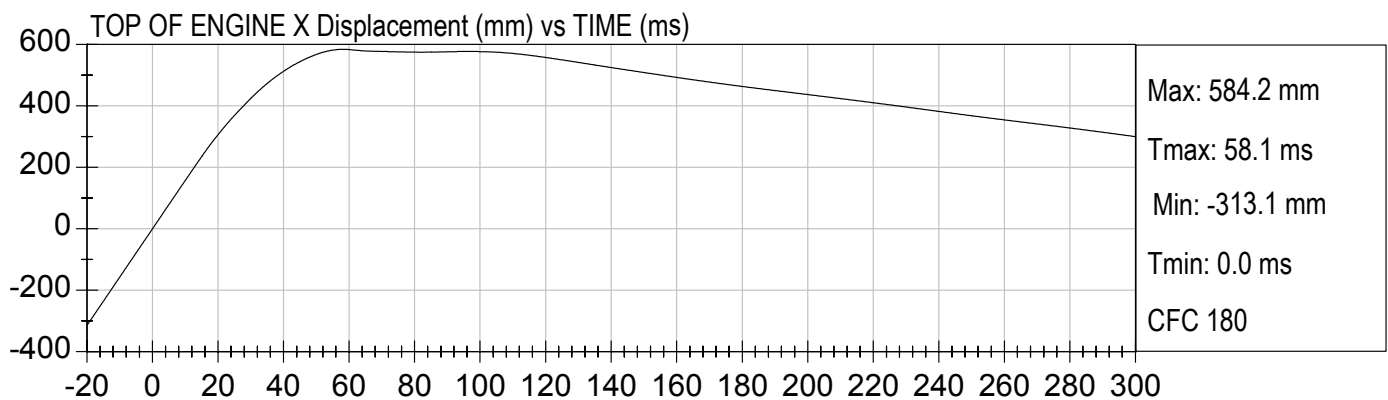
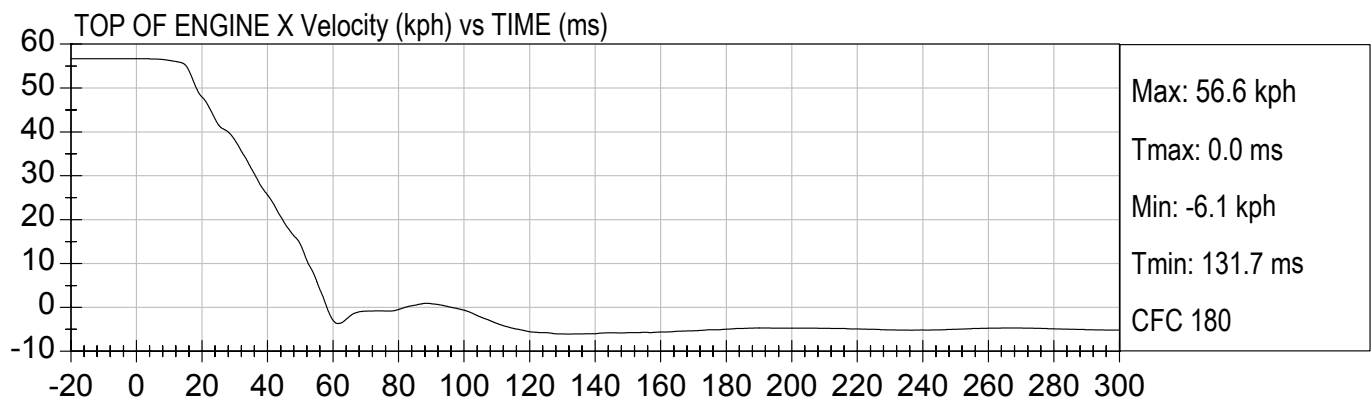
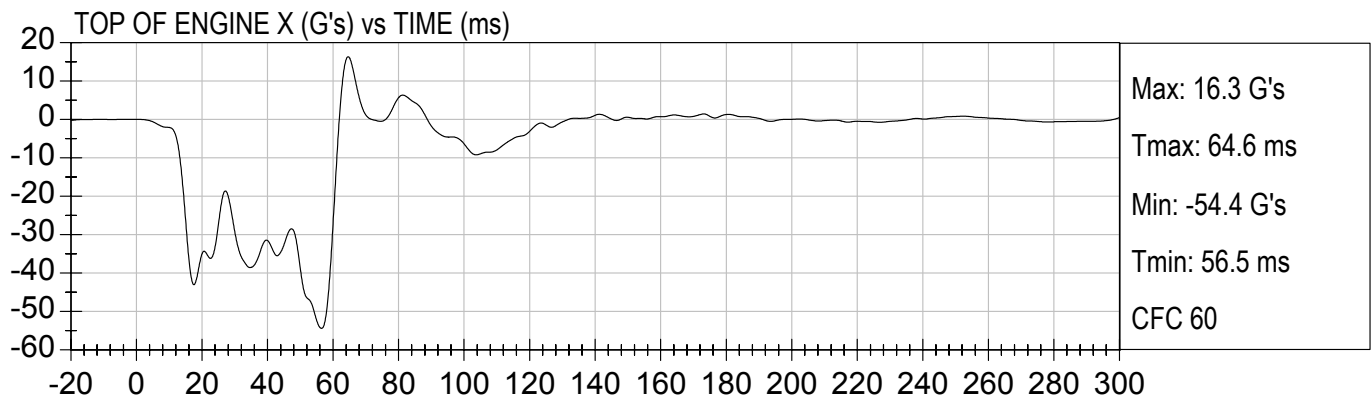


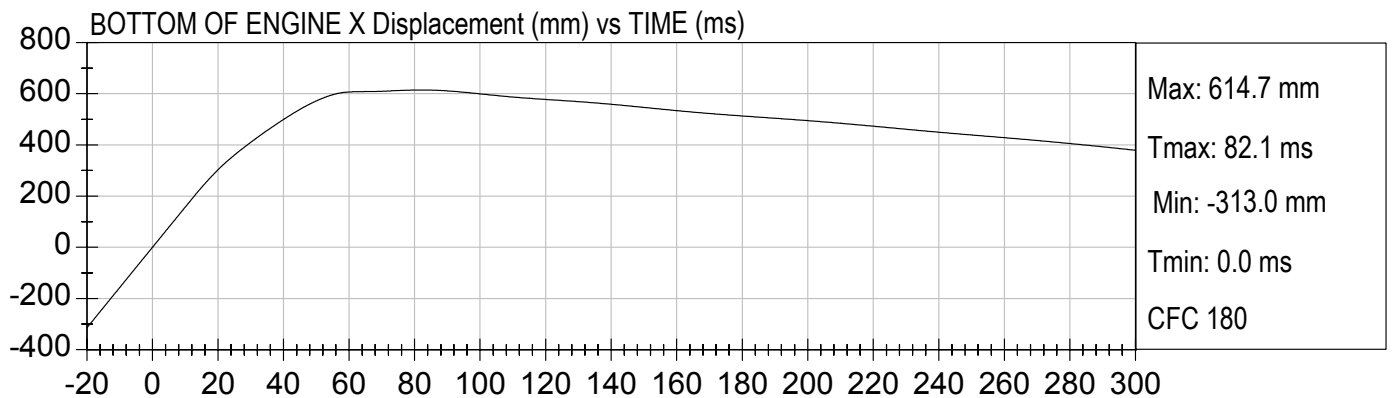
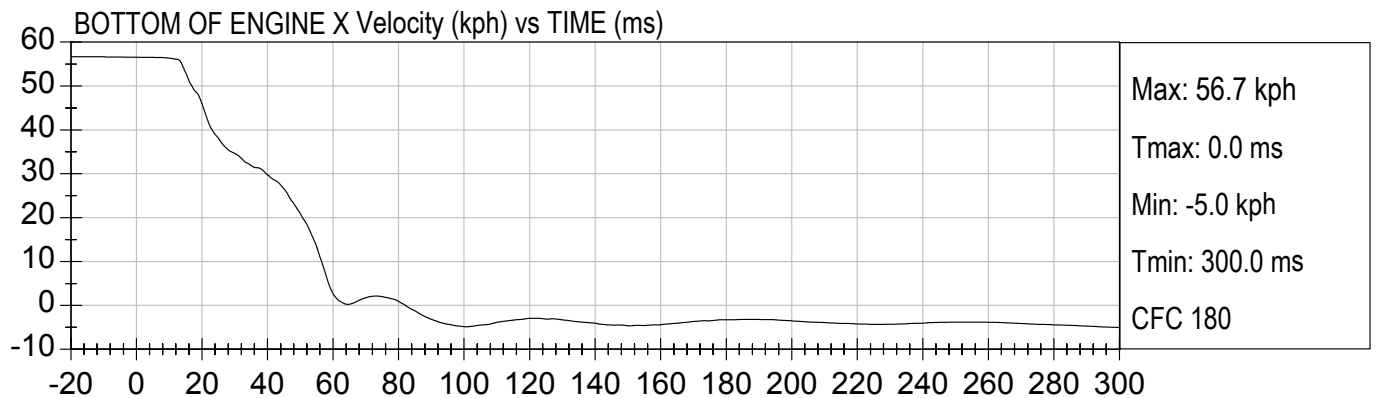
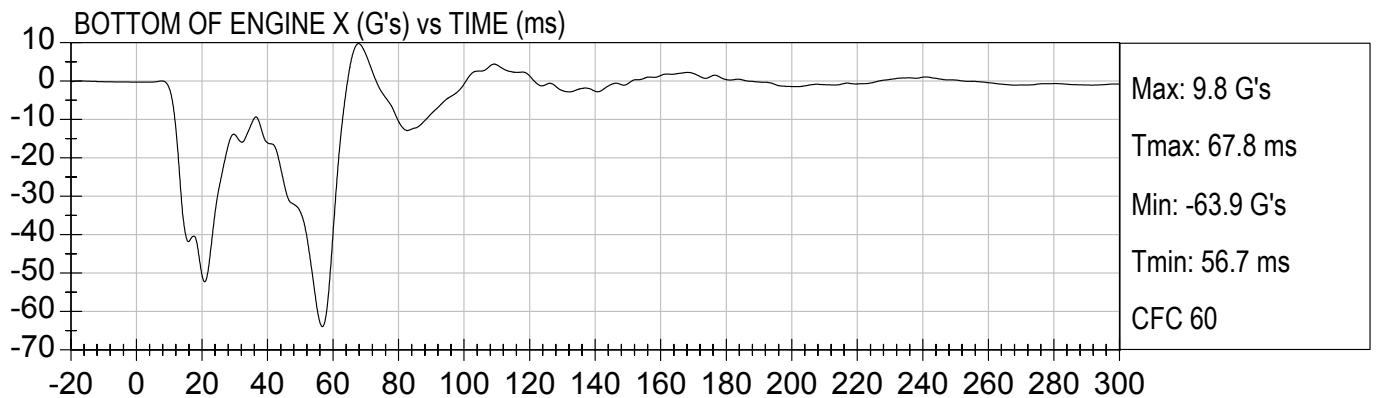


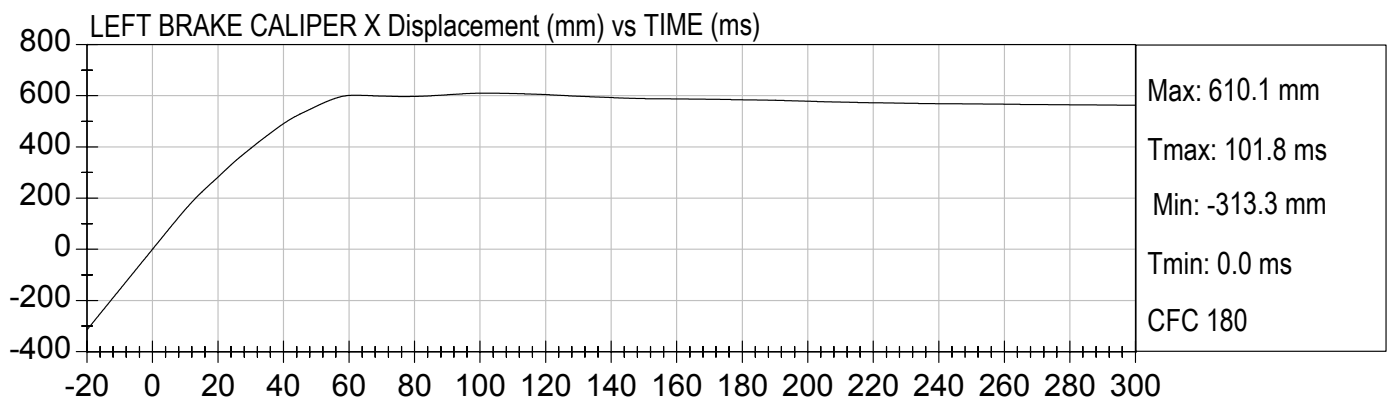
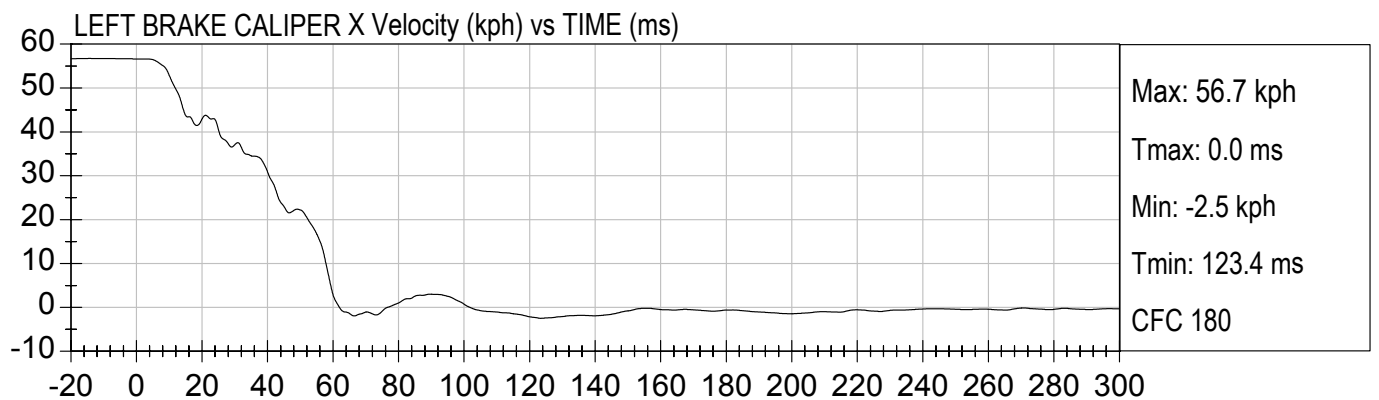
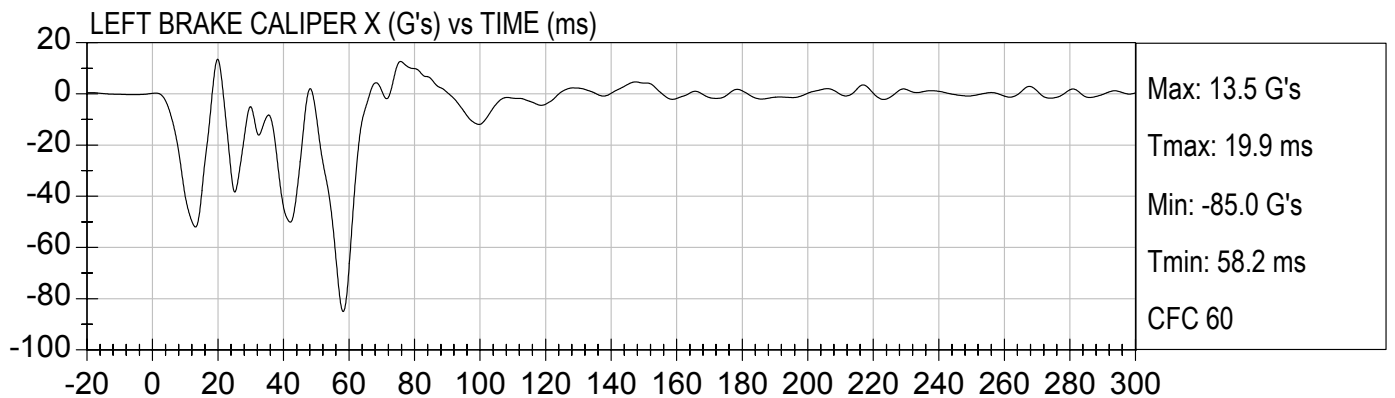


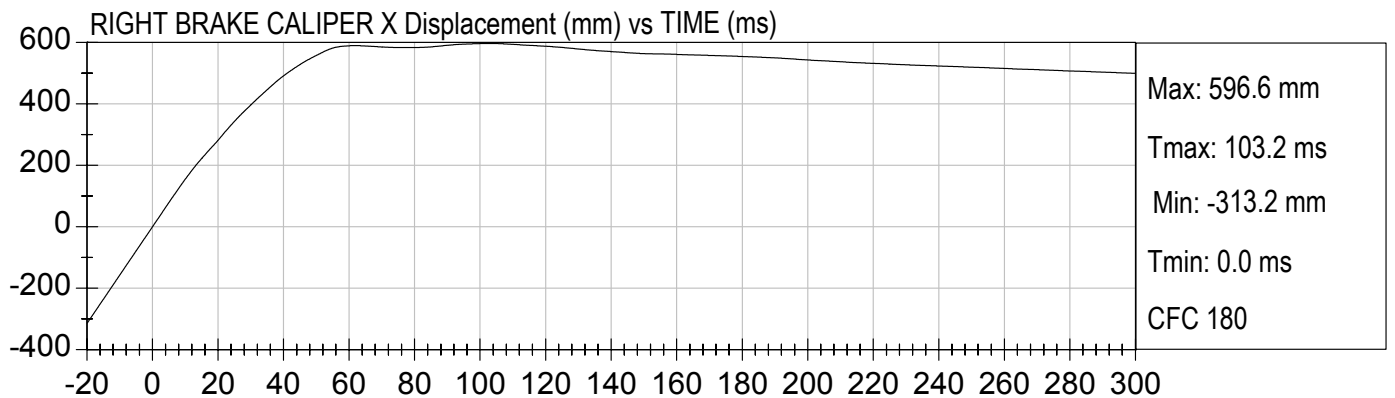
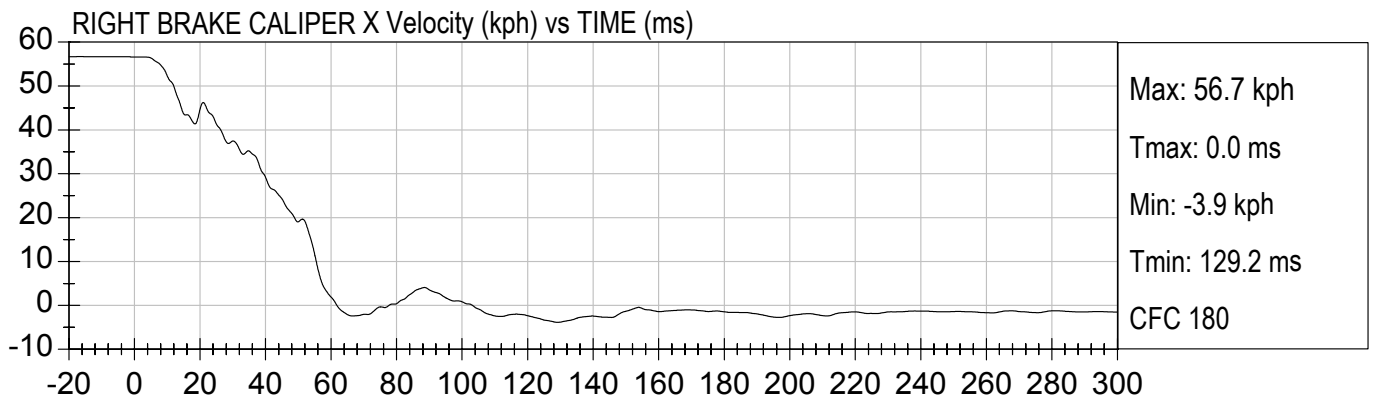
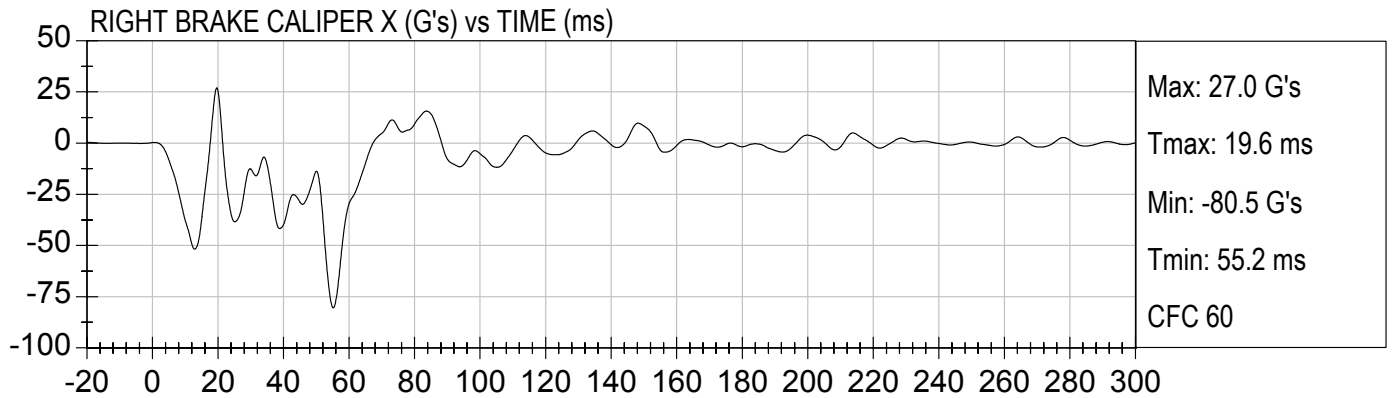


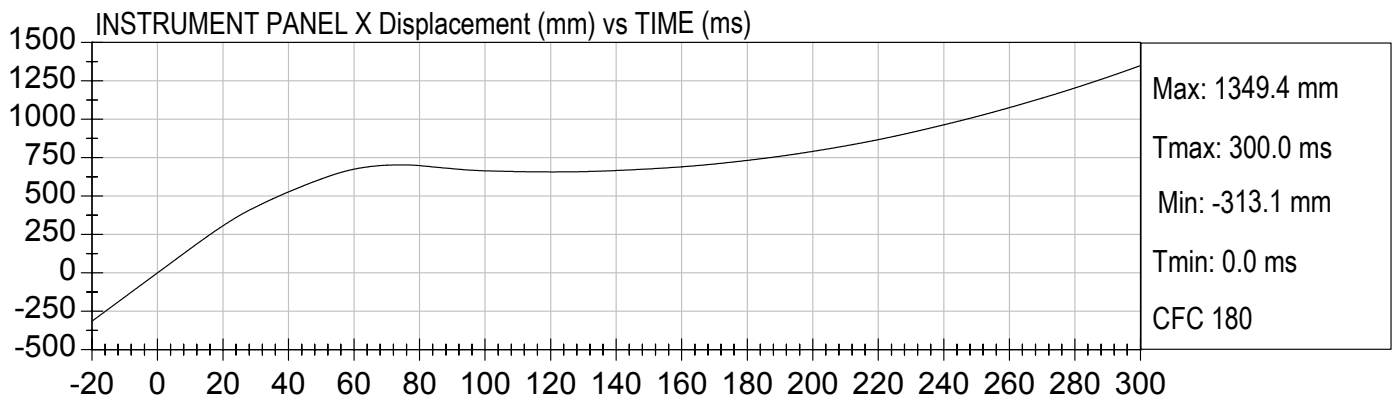
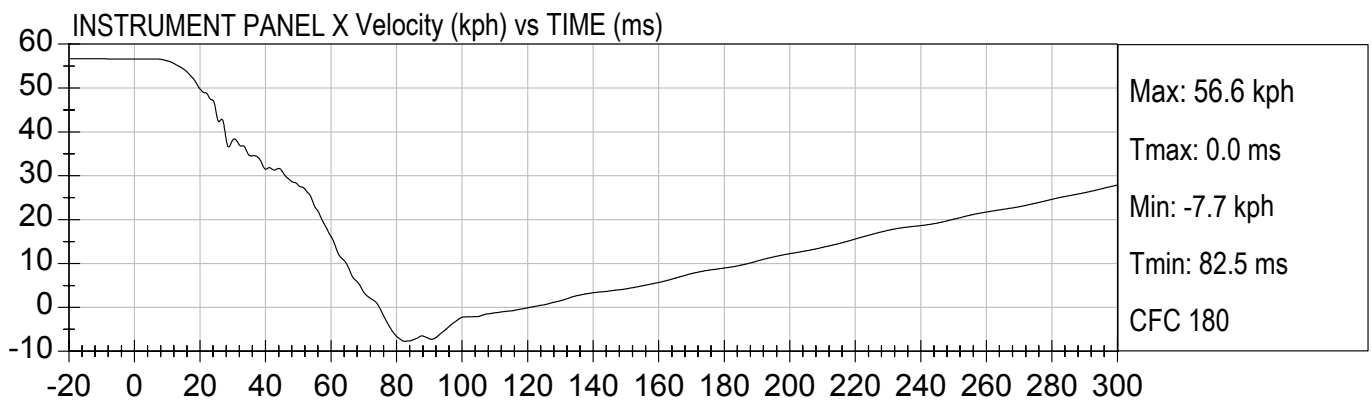
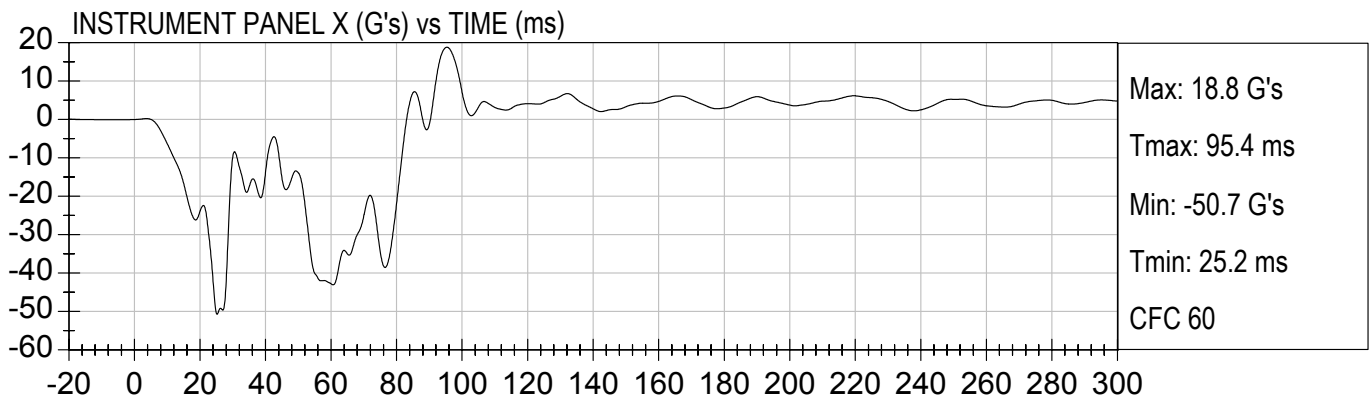


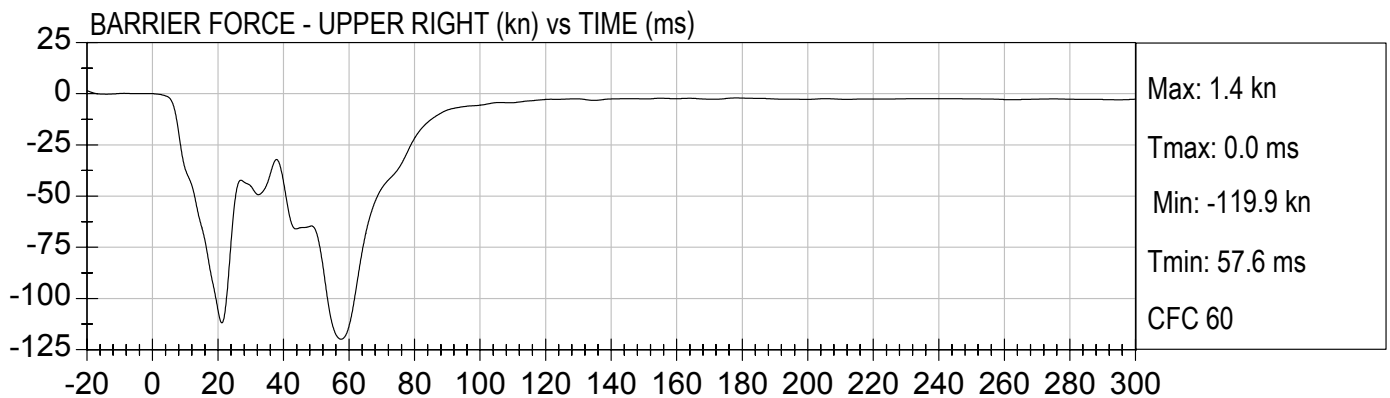
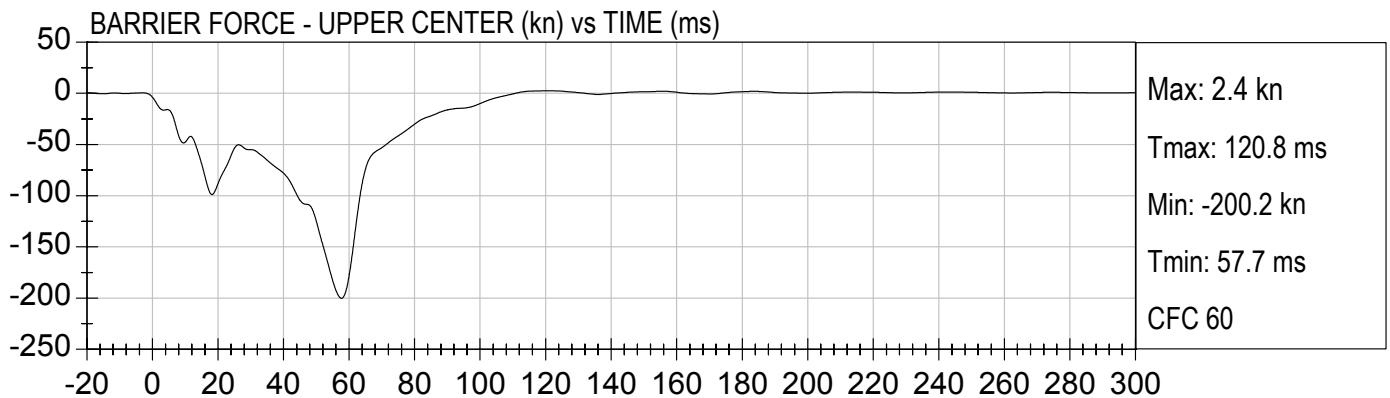
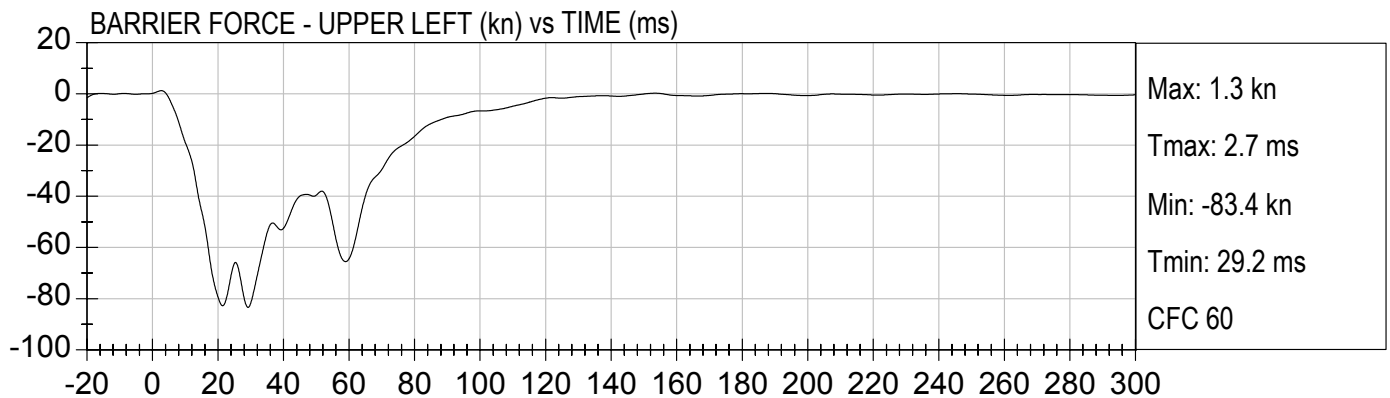


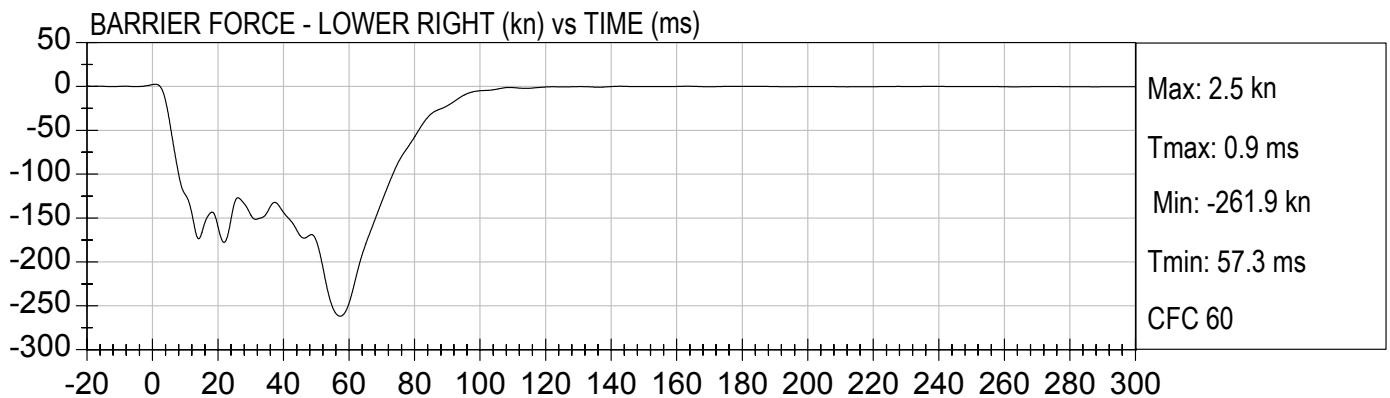
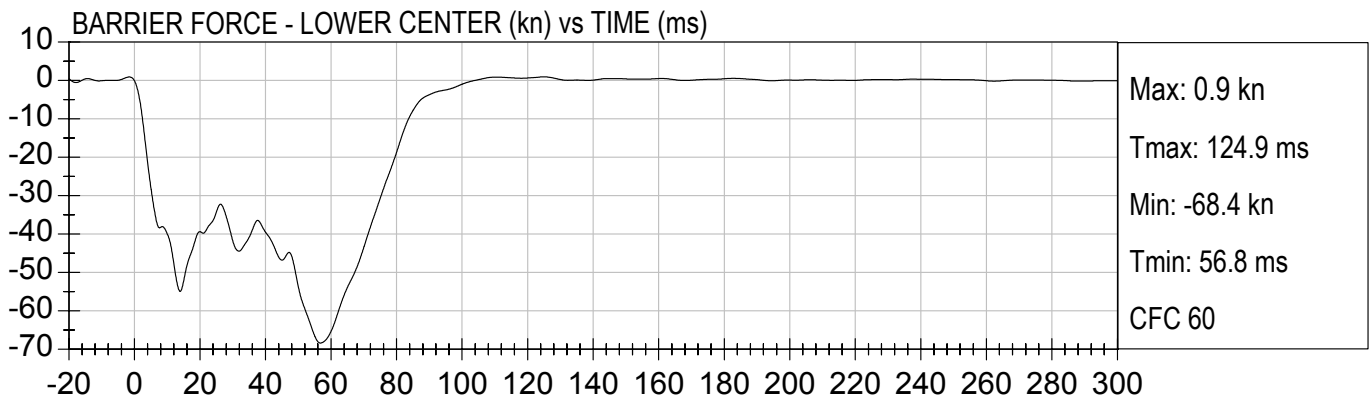
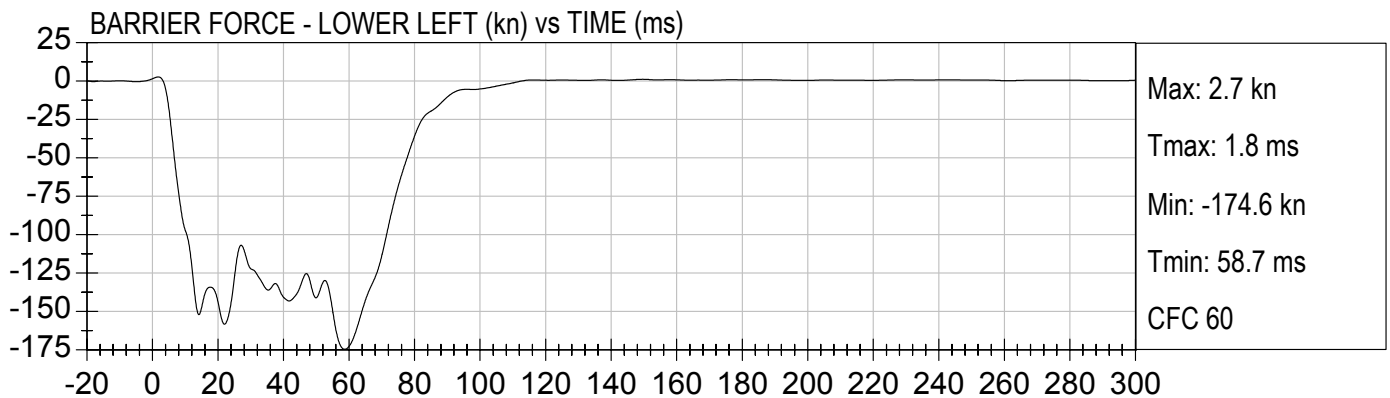


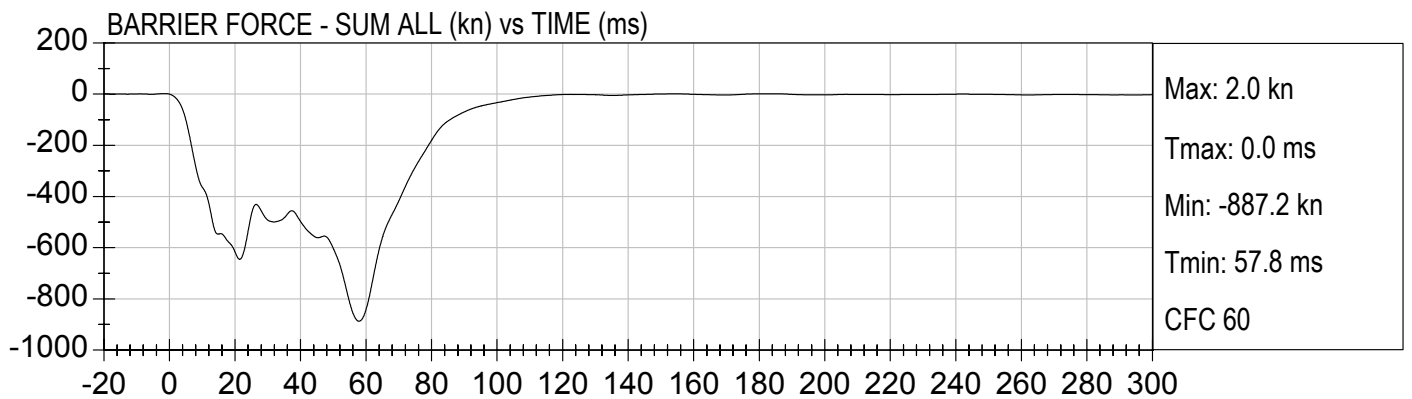
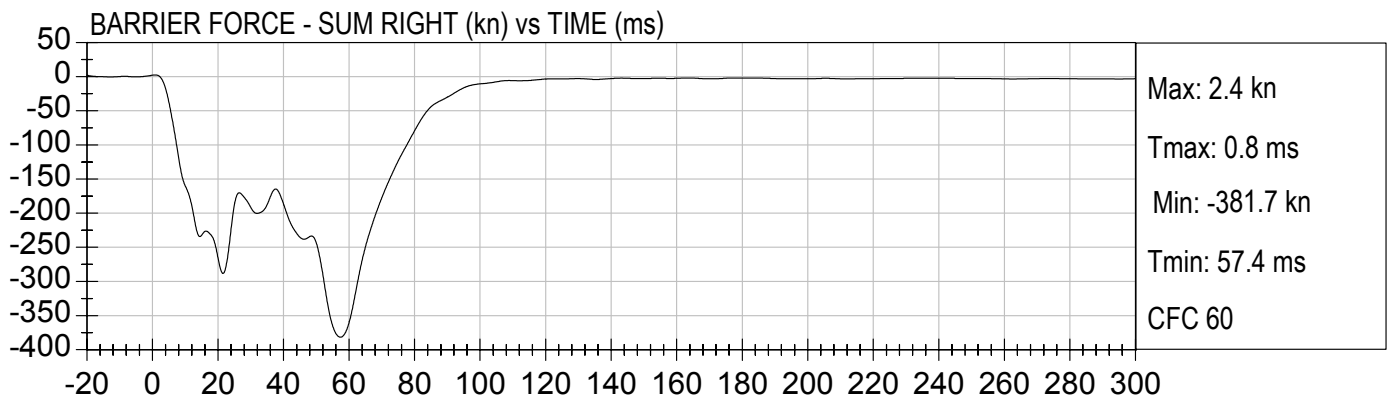
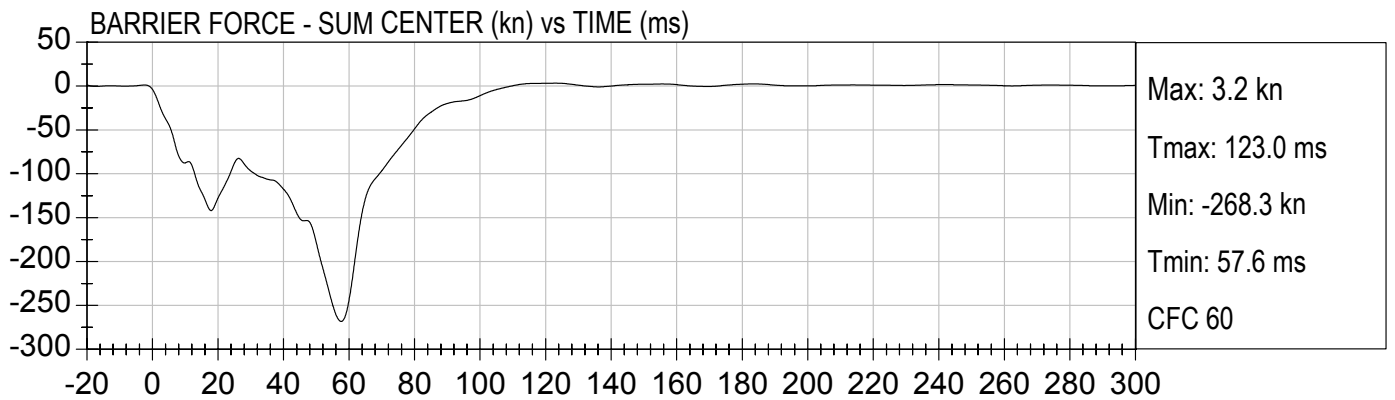
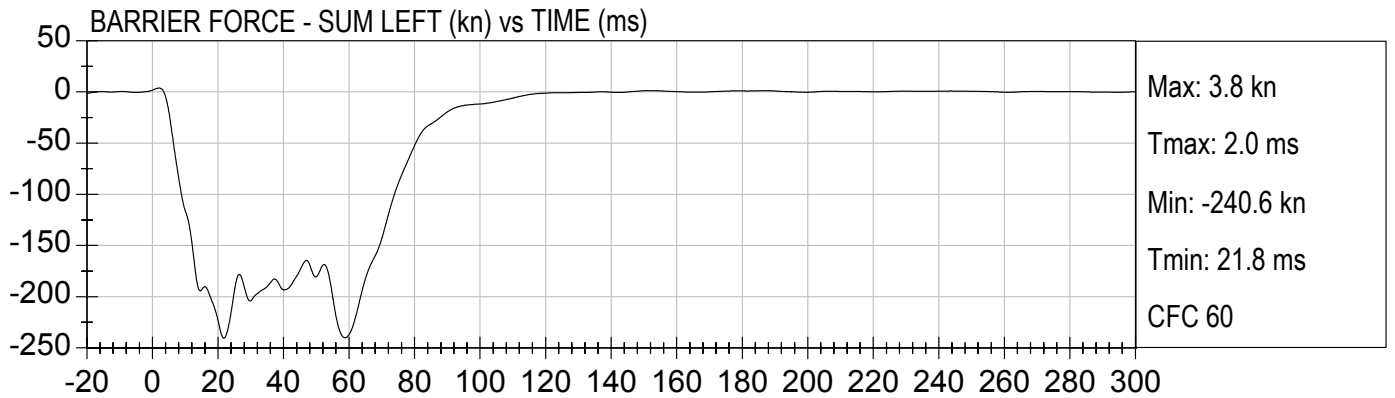












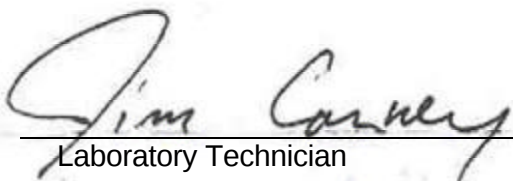
APPENDIX C
DUMMY CALIBRATION DATA TRACES AND TABLES

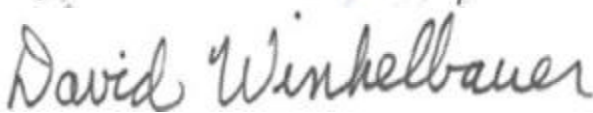
MGA RESEARCH CORPORATION
HEAD DROP TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 066

Test ID: D042911

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	18	Pass
Peak Resultant Acceleration	G's	225 - 275	240	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	7.6	Pass
Unimodal	Yes/No	NA	Yes	Pass
Oscillations	Yes/No	within 10% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

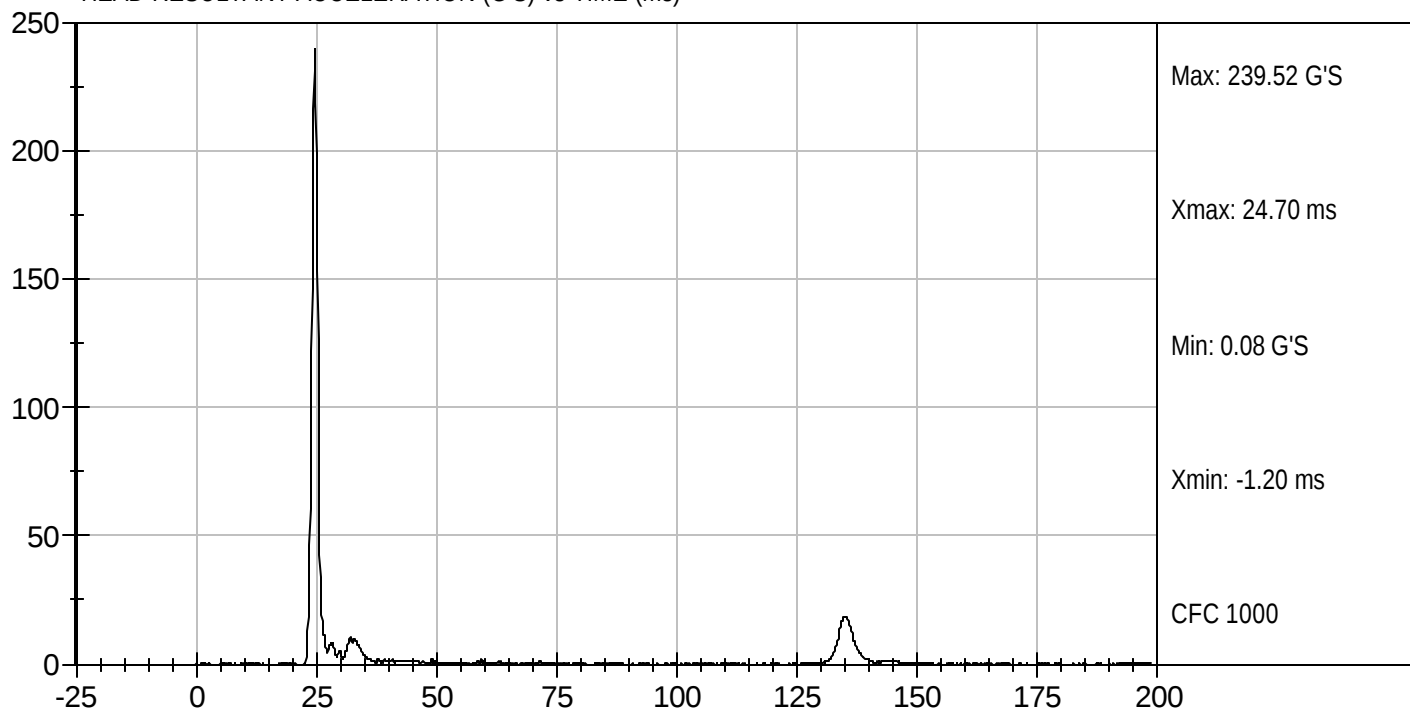
12/21/2004
Test Date



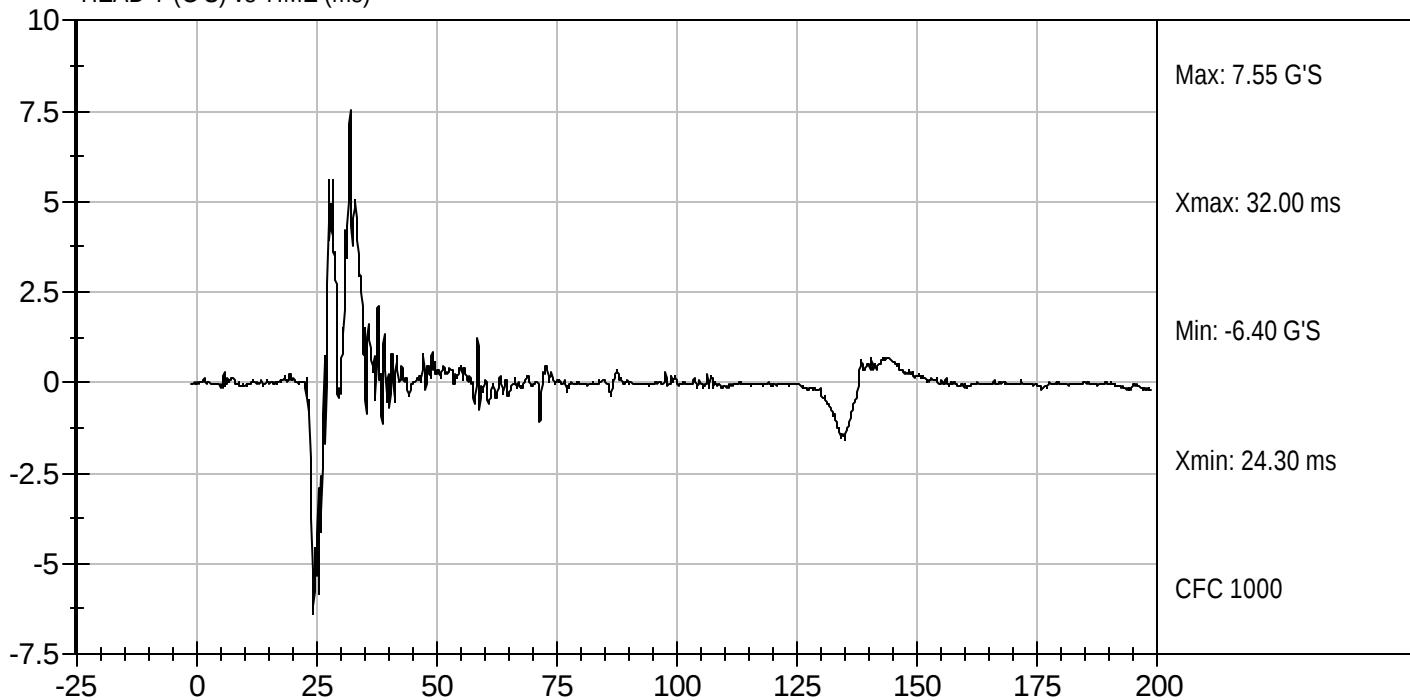
Test Desc: Head Drop
Componet ID: D042911

Test Date: 12/21/2004
Velocity: 0 ft/s, 0.00 m/s

HEAD RESULTANT ACCELERATION (G'S) vs TIME (ms)



HEAD Y (G'S) vs TIME (ms)



MGA RESEARCH CORPORATION
NECK FLEXION TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 066

Test I.D: D042912

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity		%	10 to 70	16	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.98	Pass
Pendulum Deceleration	10 msec	G's	22.50 to 27.50	25.25	Pass
	20 msec	G's	17.60 to 22.60	19.43	Pass
	30 msec	G's	12.50 to 18.50	13.41	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 29.0	13.36	Pass
Deceleration Decay Time to Cross 5 G's		msec	34.0 to 42.0	37.8	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	72.6	Pass
	Time	msec	57.0 to 64.0	57.9	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	113.0 to 128.0	114.0	Pass
Moment About Occipital Condyle	Maximum	N m	88.1 to 108.5	92.9	Pass
	Time	msec	47.0 to 58.0	51.7	Pass
Positive Moment Decay Time To Zero Crossing		msec	97.0 to 107.0	101.8	Pass
Overall Test Results					Pass



Laboratory Technician

12/21/2004

Test Date



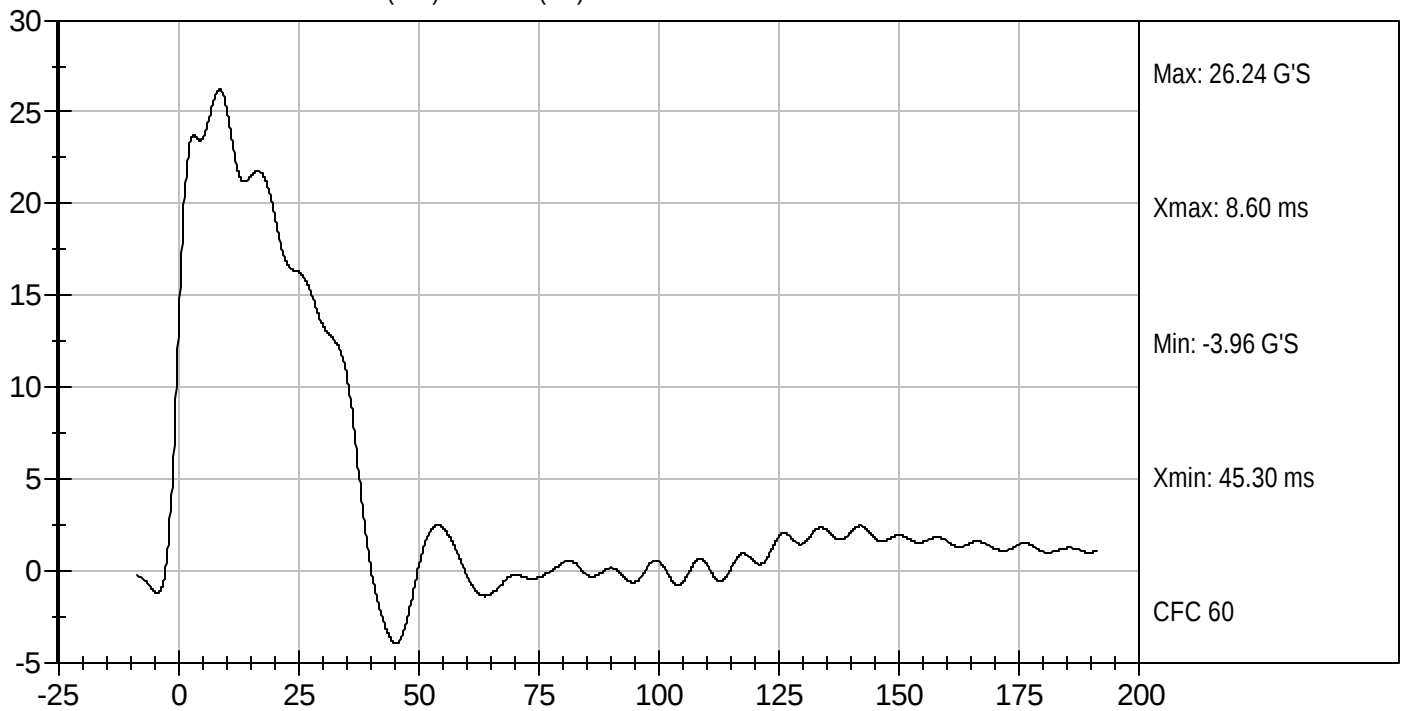
Approved By



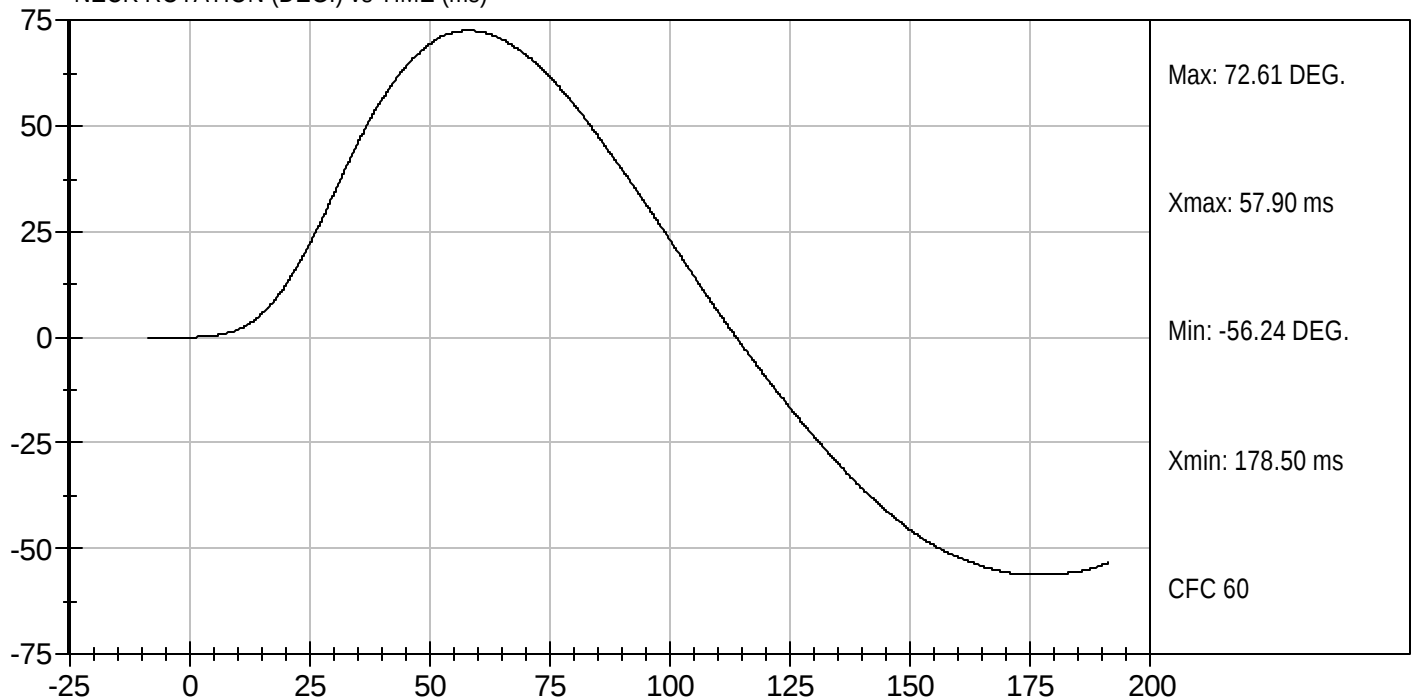
Test Desc: Neck Flexion
Componet ID: D042912

Test Date: 12/21/2004
Velocity: 22.9 ft/s, 6.98 m/s

PENDULUM DECELERATION (G'S) vs TIME (ms)



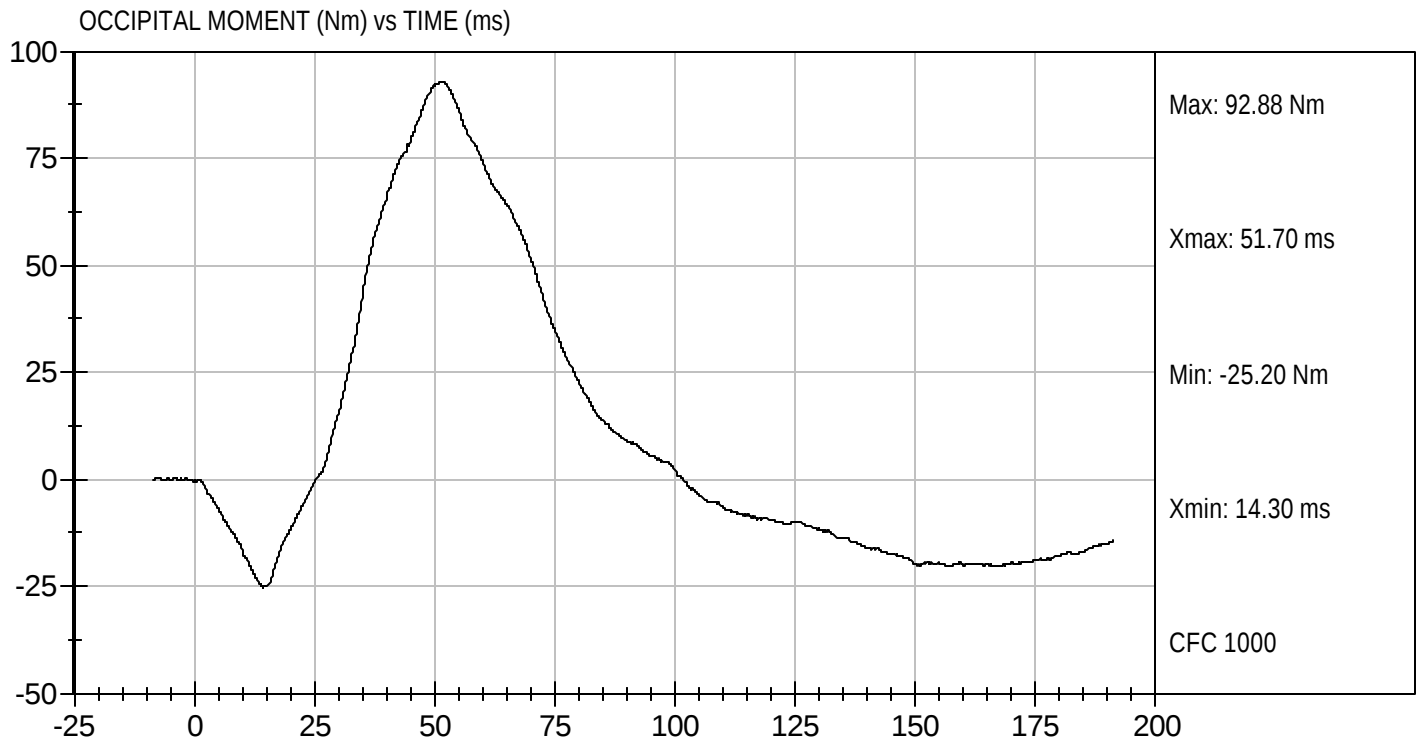
NECK ROTATION (DEG.) vs TIME (ms)





Test Desc: Neck Flexion
Componet ID: D042912

Test Date: 12/21/2004
Velocity: 22.9 ft/s, 6.98 m/s



MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 066

Test I.D: D042913

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity		%	10 to 70	15	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.09	Pass
Pendulum Deceleration	10 msec	G's	17.20 to 21.20	19.07	Pass
	20 msec	G's	14.00 to 19.00	16.46	Pass
	30 msec	G's	11.00 to 16.00	11.43	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 22.0	11.97	Pass
Deceleration Decay Time to Cross 5 G's		msec	38.0 to 46.0	43.0	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	99.2	Pass
	Time	msec	72.0 to 82.0	81.1	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	147.0 to 174.0	159.0	Pass
Moment About Occipital Condyle	Maximum	N m	-52.9 to -79.9	-65.5	Pass
	Time	msec	65.0 to 79.0	75.2	Pass
Negative Moment Decay Time To Zero Crossing		msec	120.0 to 148.0	146.2	Pass
Overall Test Results					Pass



Laboratory Technician



Approved By

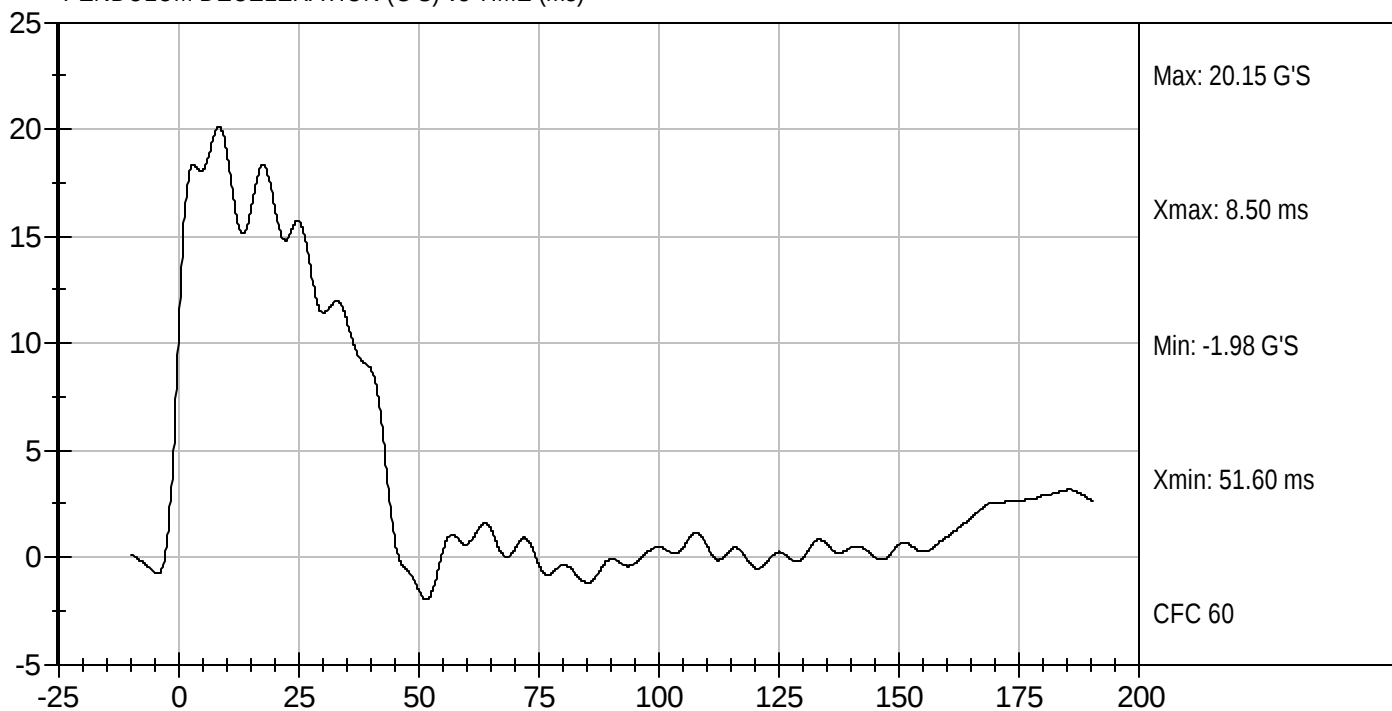
12/21/2004
Test Date



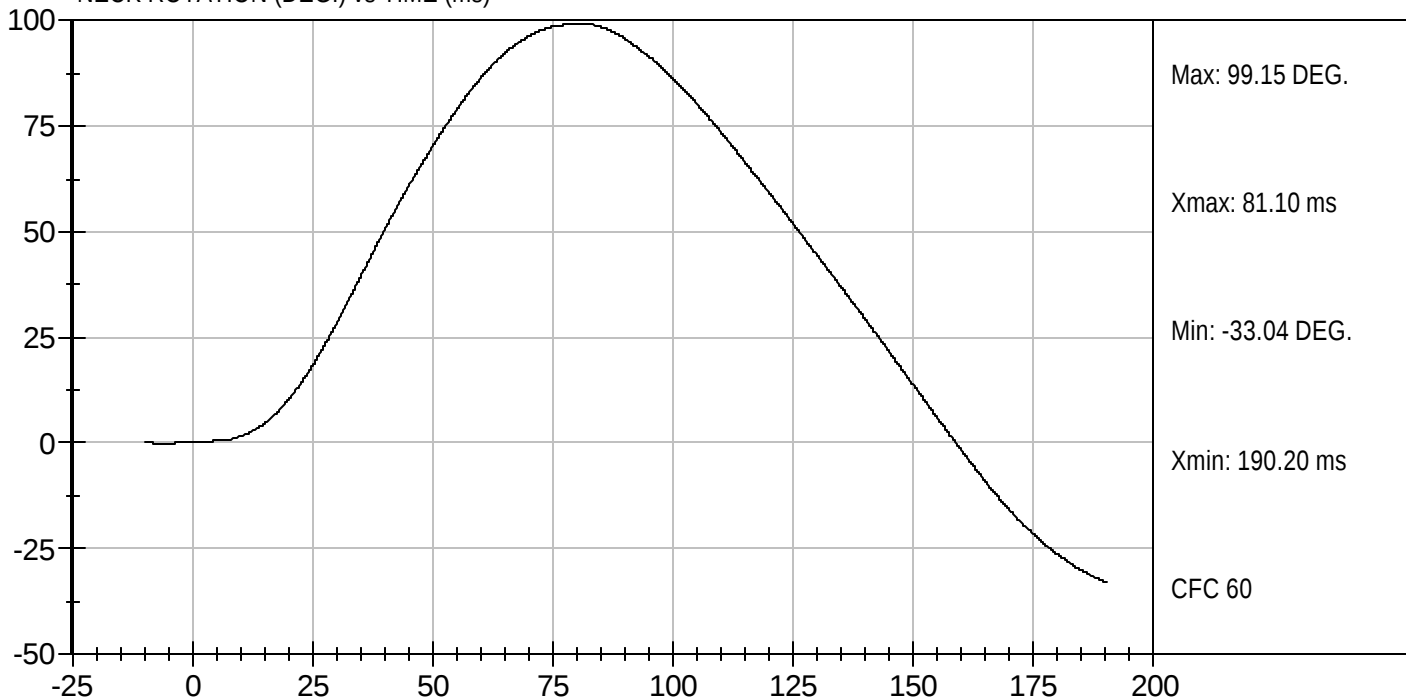
Test Desc: Neck Extension
Componet ID: D042913

Test Date: 12/21/2004
Velocity: 19.97 ft/s, 6.09 m/s

PENDULUM DECELERATION (G'S) vs TIME (ms)



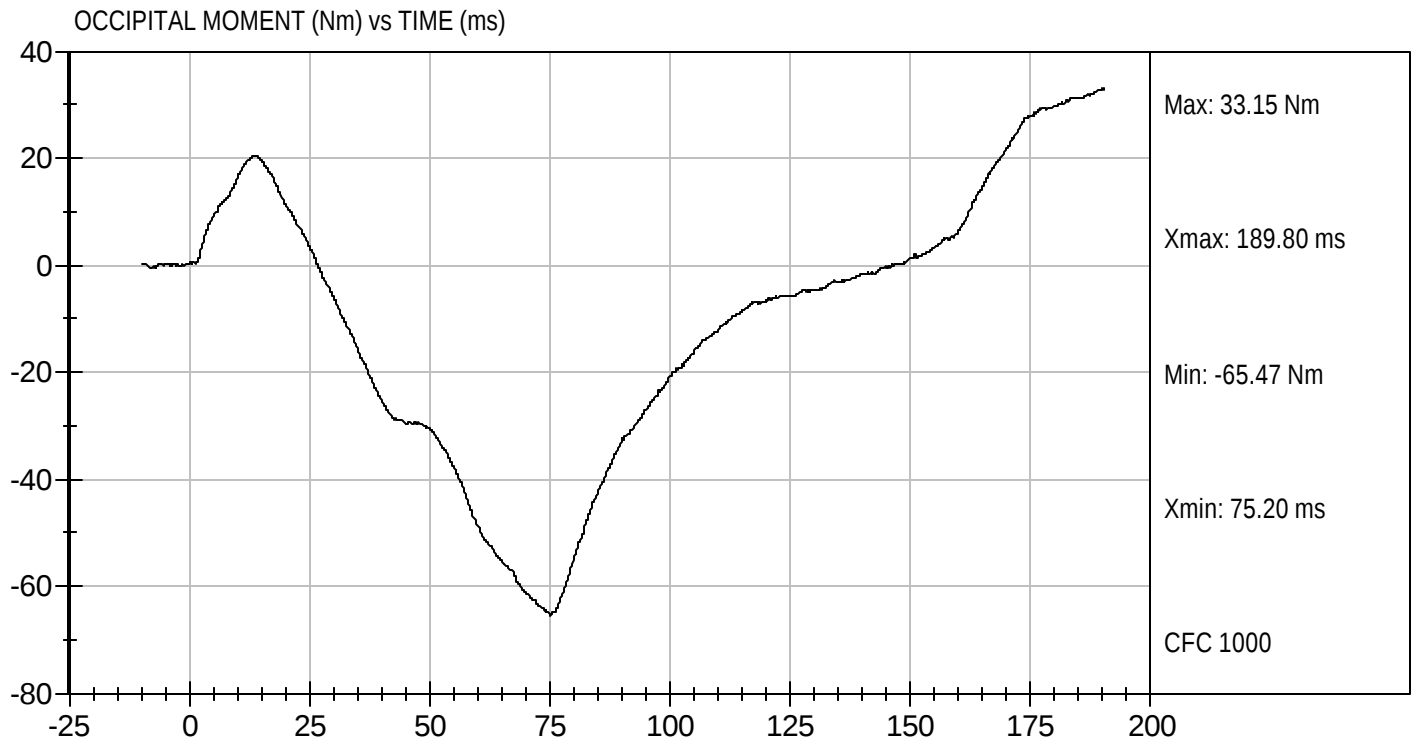
NECK ROTATION (DEG.) vs TIME (ms)





Test Desc: Neck Extension
Componet ID: D042913

Test Date: 12/21/2004
Velocity: 19.97 ft/s, 6.09 m/s



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 066

Test I.D: D042914

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	22.0	Pass
Laboratory Relative Humidity	%	10 to 70	13	Pass
Probe Velocity	m/s	6.58 to 6.82	6.72	Pass
Peak Probe Force	N	5159 to 5893	5,707	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	7.01	Pass
Internal Hysteresis	%	69 to 85	69	Pass
			Overall Test Results	Pass



Laboratory Technician

12/21/2004

Test Date

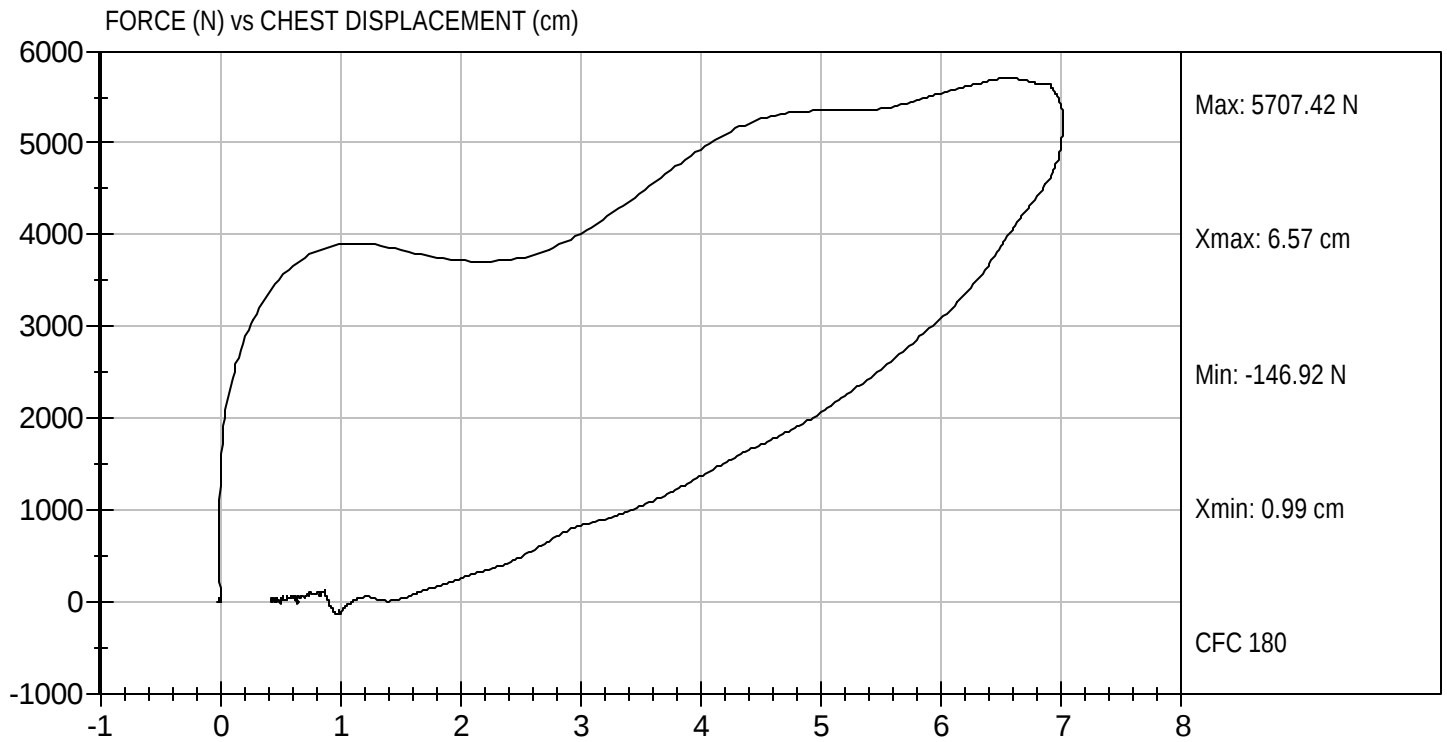


Approved By



Test Desc: Thorax Impact
Componet ID: D042914

Test Date: 12/21/2004
Velocity: 22.04 ft/s, 6.72 m/s



MGA RESEARCH CORPORATION
RIGHT KNEE IMPACT TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 066

Test I.D: D042915

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	15	Pass
Probe Velocity	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	4715 to 5782	4,977	Pass
Overall Test Results				Pass



Laboratory Technician

12/21/2004

Test Date

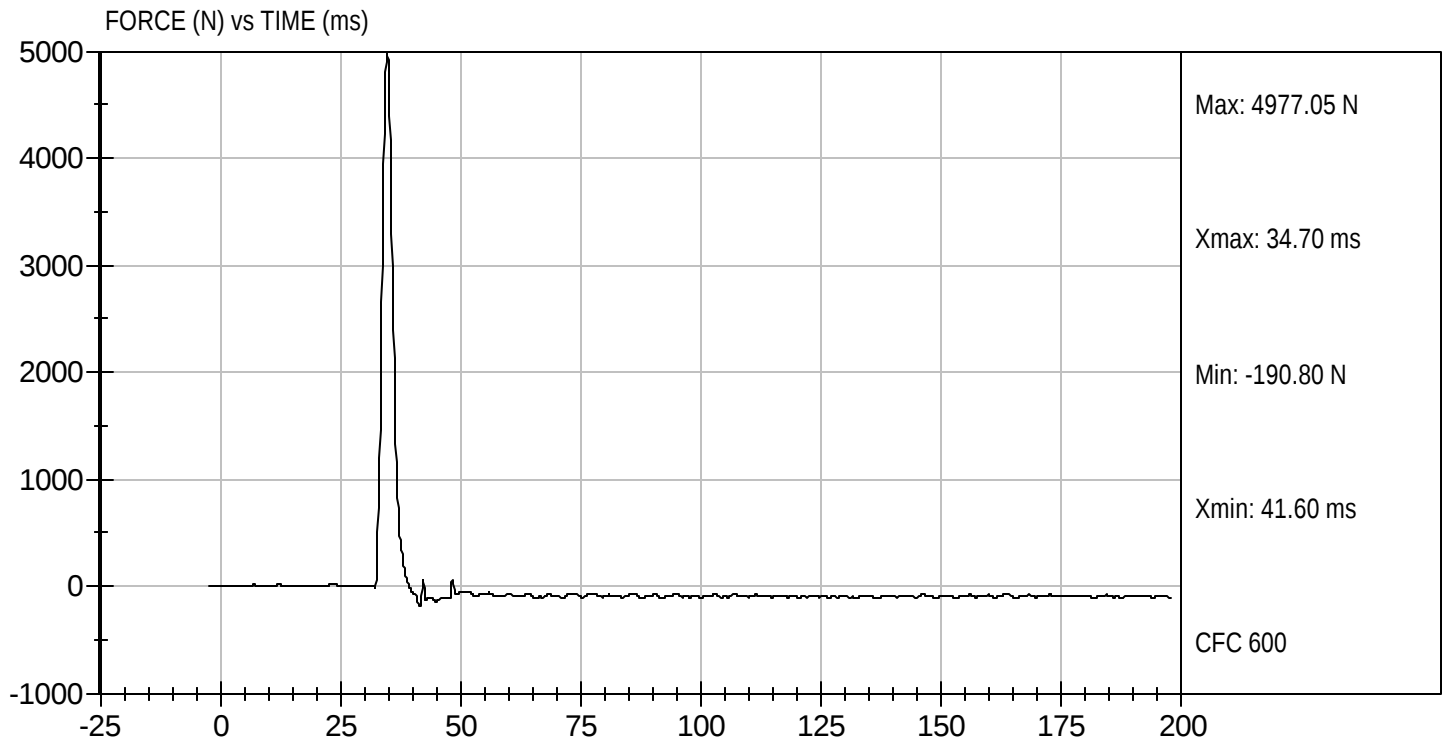


Approved By



Test Desc: Right Knee
Componet ID: D042915

Test Date: 12/21/2004
Velocity: 6.86 ft/s, 2.09 m/s



MGA RESEARCH CORPORATION
LEFT KNEE IMPACT TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 066

Test I.D: D042916

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	15	Pass
Probe Velocity	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	4715 to 5782	4,825	Pass
Overall Test Results				Pass



Laboratory Technician

12/21/2004

Test Date

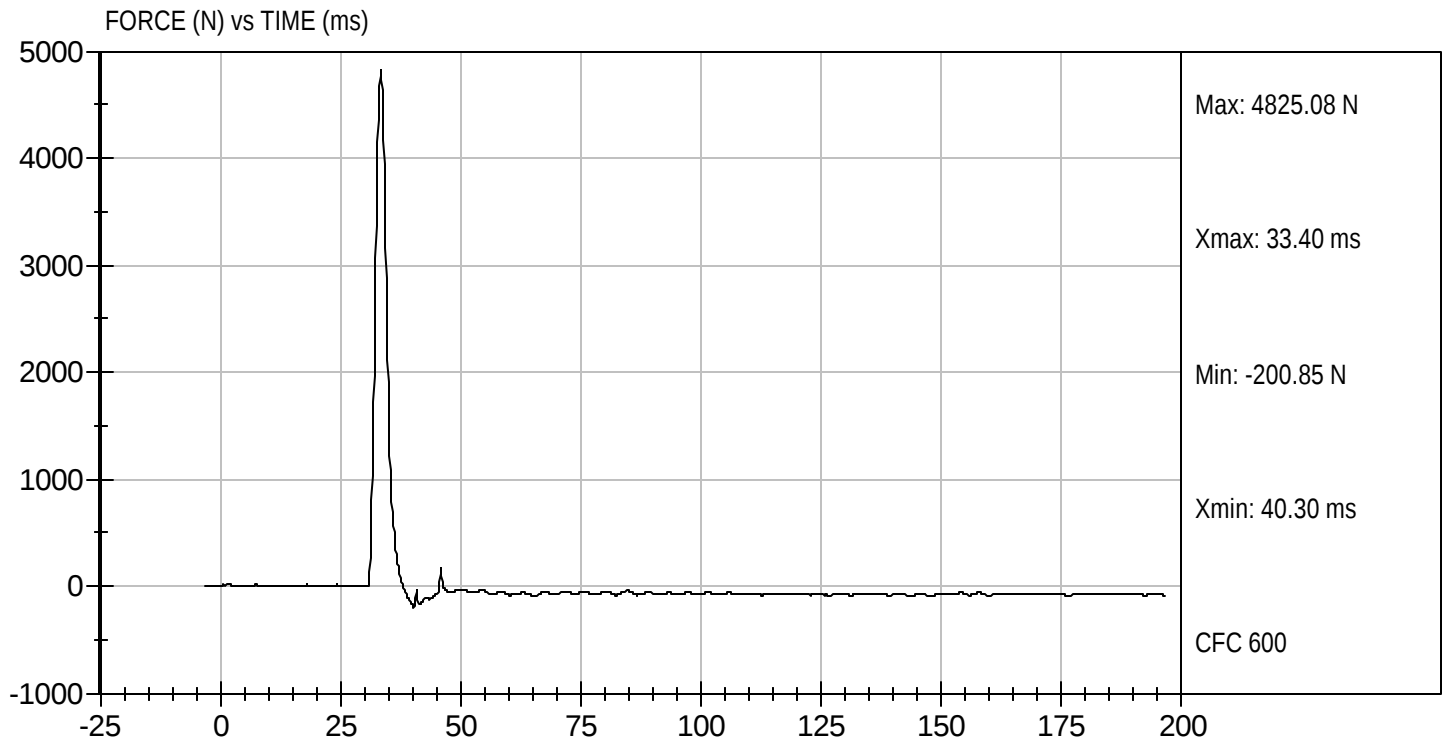


Approved By



Test Desc: Left Knee
Componet ID: D042916

Test Date: 12/21/2004
Velocity: 6.88 ft/s, 2.10 m/s

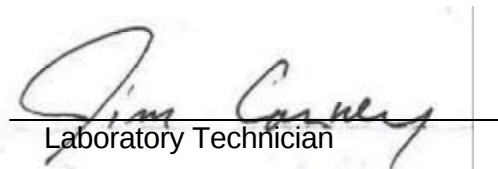


MGA RESEARCH CORPORATION
HIP-FEMUR FLEXION TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 066

Test I.D: D042910

Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.1	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	18	18	Pass
Rotation Rate	deg/sec	5 -10	8	8	Pass
30 Degrees	Nm	94.9 Nm Max	94.6	80.8	Pass
150 ft-lbf / 203.4 Nm	Deg	40- 50 Degree Max Rotation	41	40	Pass
Overall Test Results					Pass


 Laboratory Technician

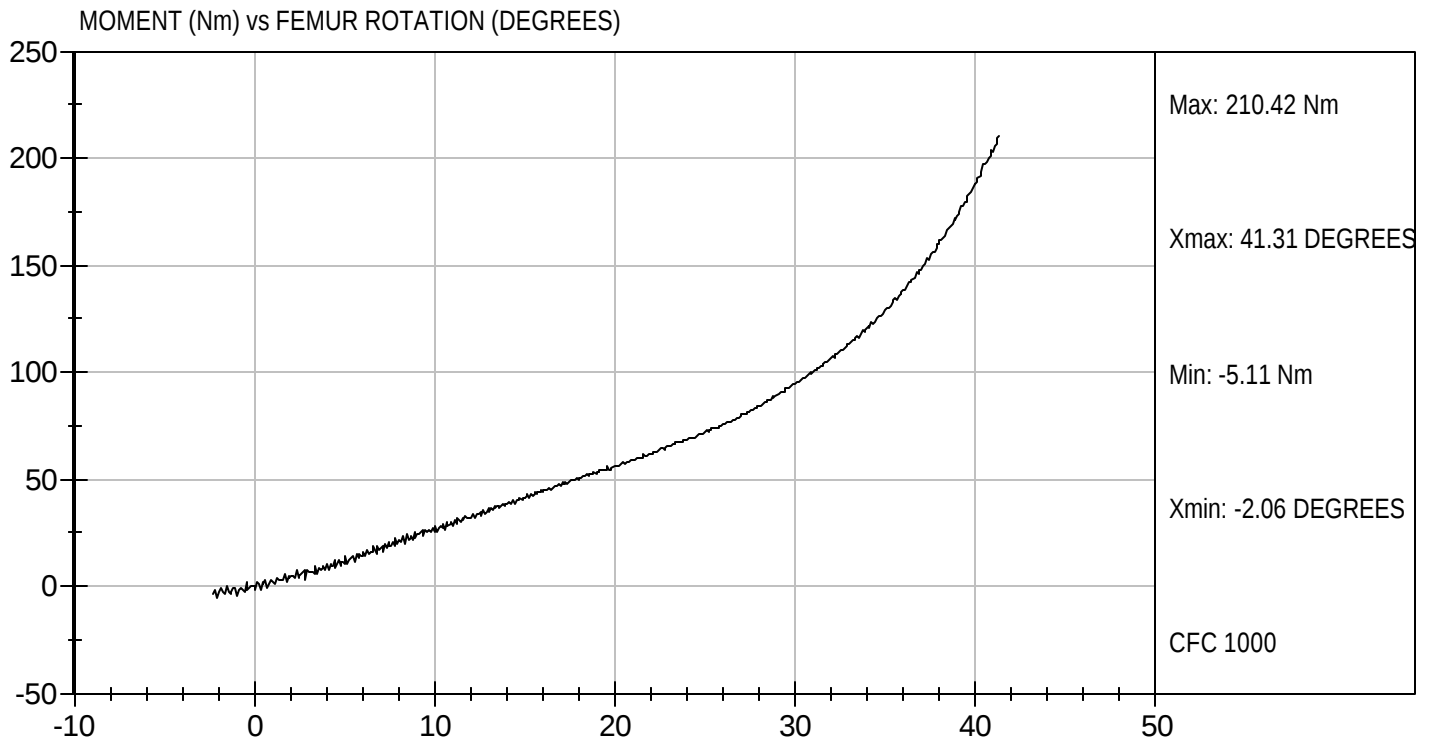
12/21/2004
 Test Date


 Approved By



Test Desc: Hip Femur Flexion
Componet ID: D042919

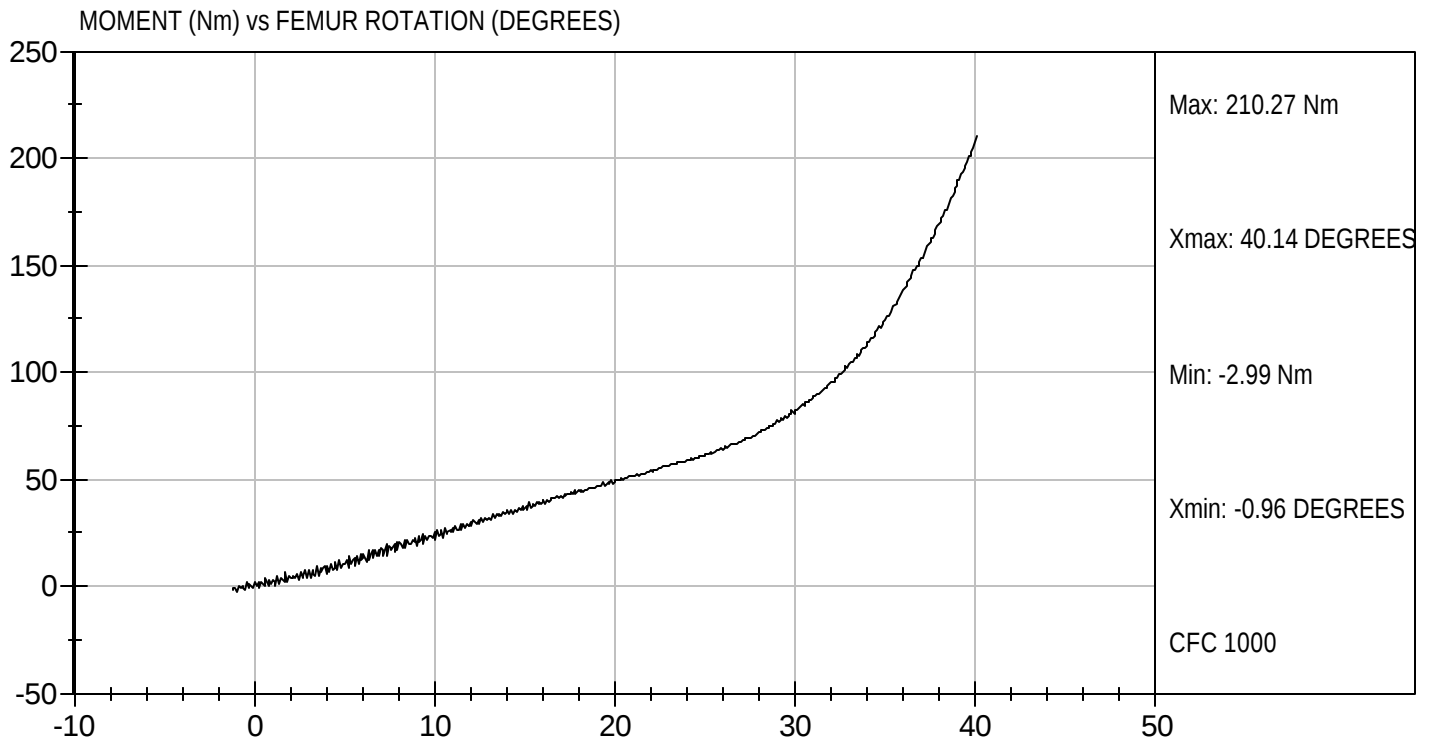
Test Date: 12/21/2004
Velocity: 0 ft/s, 0.00 m/s





Test Desc: Hip Femur Flexion
Componet ID: D042910

Test Date: 12/21/2004
Velocity: 0 ft/s, 0.00 m/s

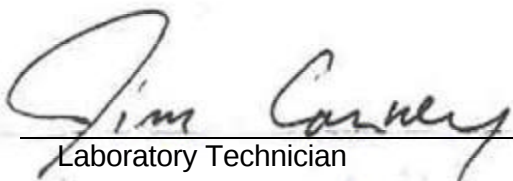


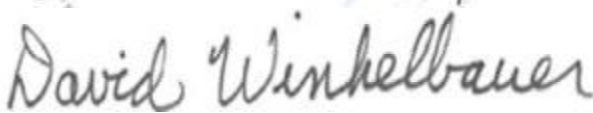
MGA RESEARCH CORPORATION
HEAD DROP TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 065

Test ID: D042901

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	18	Pass
Peak Resultant Acceleration	G's	225 - 275	260	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	8.1	Pass
Unimodal	Yes/No	NA	Yes	Pass
Oscillations	Yes/No	within 10% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

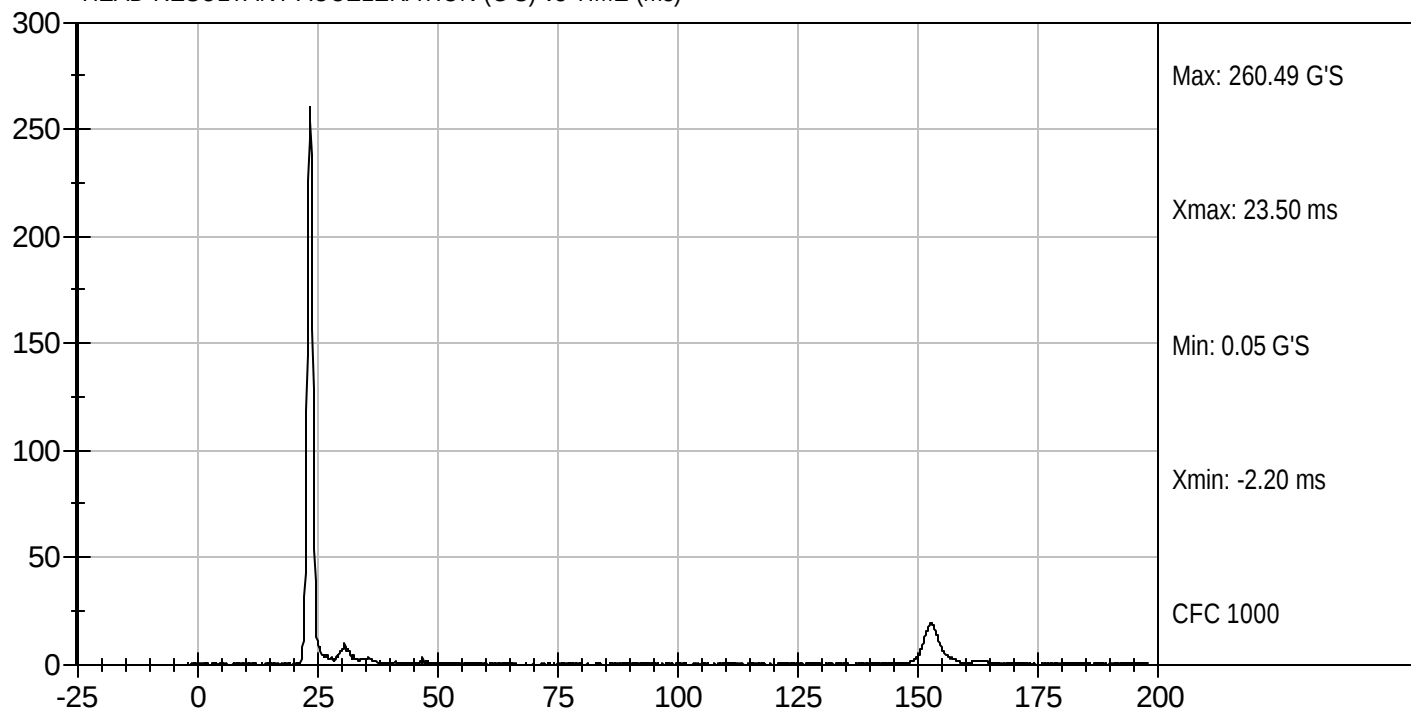
12/21/2004
Test Date



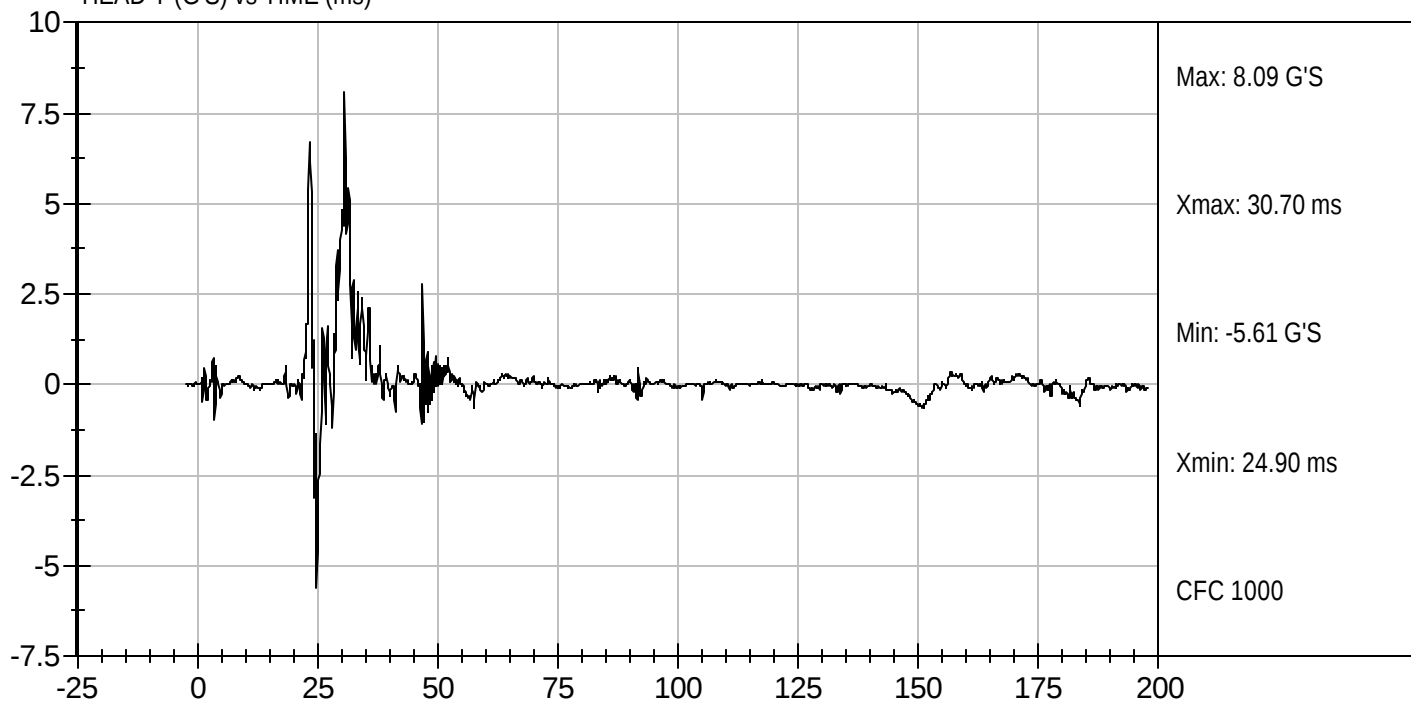
Test Desc: Head Drop
Componet ID: D042901

Test Date: 12/21/2004
Velocity: 0 ft/s, 0.00 m/s

HEAD RESULTANT ACCELERATION (G'S) vs TIME (ms)



HEAD Y (G'S) vs TIME (ms)



MGA RESEARCH CORPORATION
NECK FLEXION TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 065

Test I.D: D042902

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.8	Pass
Laboratory Relative Humidity		%	10 to 70	15	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.97	Pass
Pendulum Deceleration	10 msec	G's	22.50 to 27.50	23.98	Pass
	20 msec	G's	17.60 to 22.60	20.32	Pass
	30 msec	G's	12.50 to 18.50	15.05	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 29.0	14.99	Pass
Deceleration Decay Time to Cross 5 G's		msec	34.0 to 42.0	37.1	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	74.0	Pass
	Time	msec	57.0 to 64.0	58.8	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	113.0 to 128.0	113.7	Pass
Moment About Occipital Condyle	Maximum	N m	88.1 to 108.5	96.4	Pass
	Time	msec	47.0 to 58.0	50.4	Pass
Positive Moment Decay Time To Zero Crossing		msec	97.0 to 107.0	103.8	Pass
Overall Test Results					Pass



Laboratory Technician

12/21/2004

Test Date



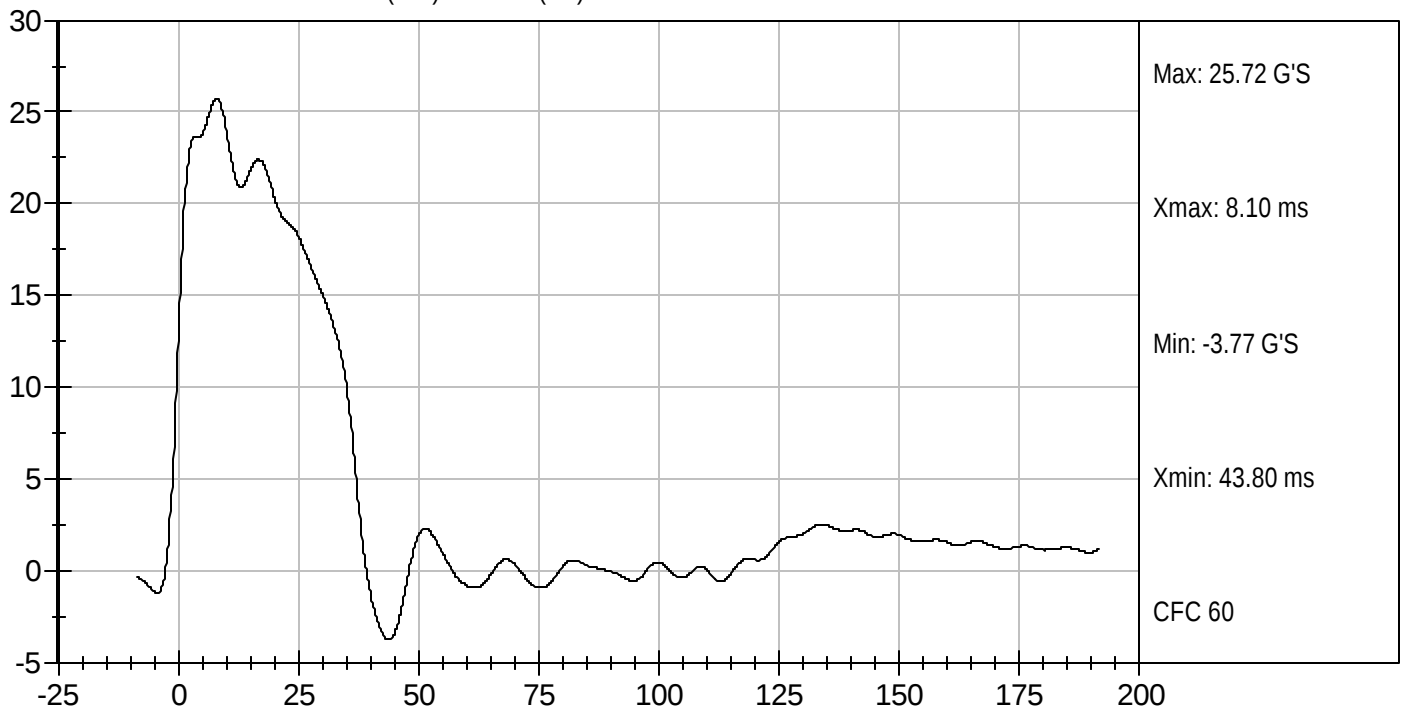
Approved By



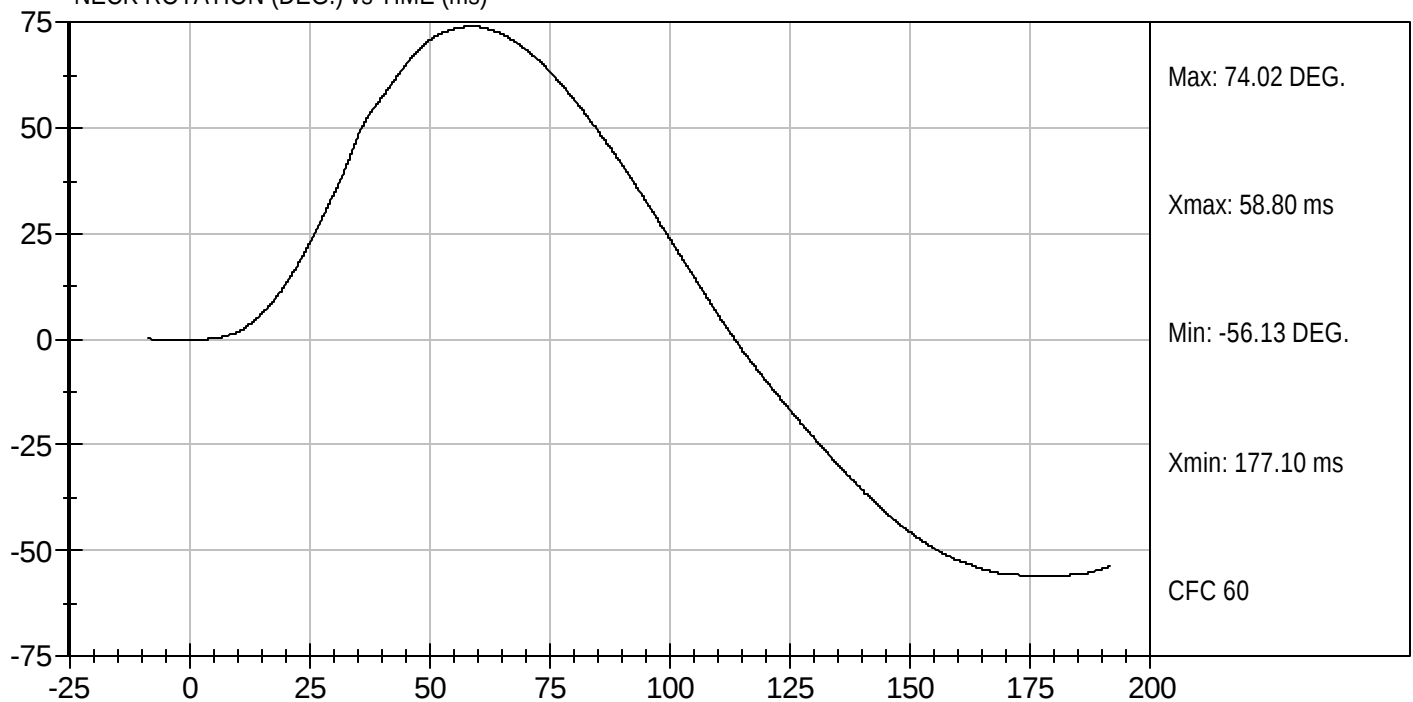
Test Desc: Neck Flexion
Componet ID: D042902

Test Date: 12/21/2004
Velocity: 22.87 ft/s, 6.97 m/s

PENDULUM DECELERATION (G'S) vs TIME (ms)



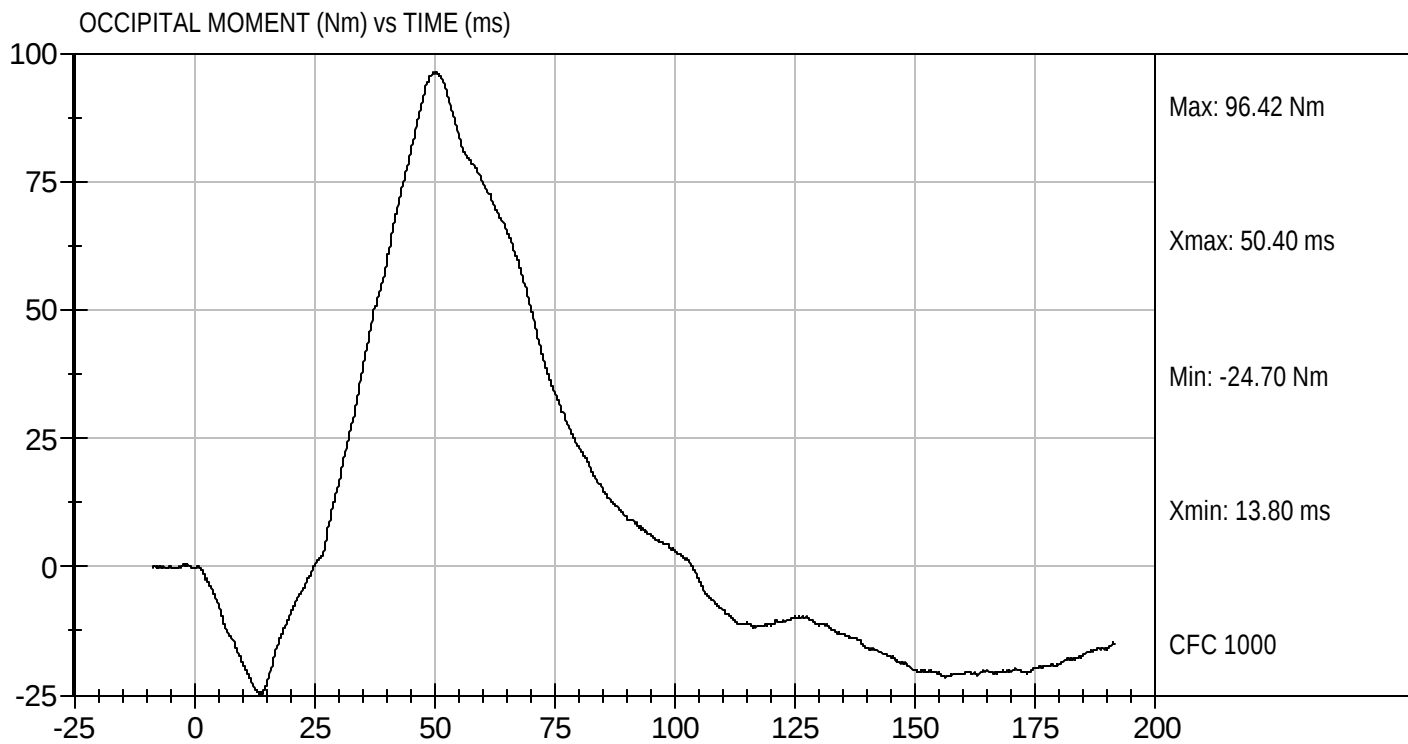
NECK ROTATION (DEG.) vs TIME (ms)





Test Desc: Neck Flexion
Componet ID: D042902

Test Date: 12/21/2004
Velocity: 22.87 ft/s, 6.97 m/s



MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 065

Test I.D: D042903

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.5	Pass
Laboratory Relative Humidity		%	10 to 70	15	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.04	Pass
Pendulum Deceleration	10 msec	G's	17.20 to 21.20	19.49	Pass
	20 msec	G's	14.00 to 19.00	16.65	Pass
	30 msec	G's	11.00 to 16.00	14.19	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 22.0	14.15	Pass
Deceleration Decay Time to Cross 5 G's		msec	38.0 to 46.0	39.8	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	100.3	Pass
	Time	msec	72.0 to 82.0	78.8	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	147.0 to 174.0	157.8	Pass
Moment About Occipital Condyle	Maximum	N m	-52.9 to -79.9	-68.2	Pass
	Time	msec	65.0 to 79.0	72.6	Pass
Negative Moment Decay Time To Zero Crossing		msec	120.0 to 148.0	146.5	Pass
Overall Test Results					Pass



Laboratory Technician

12/21/2004

Test Date



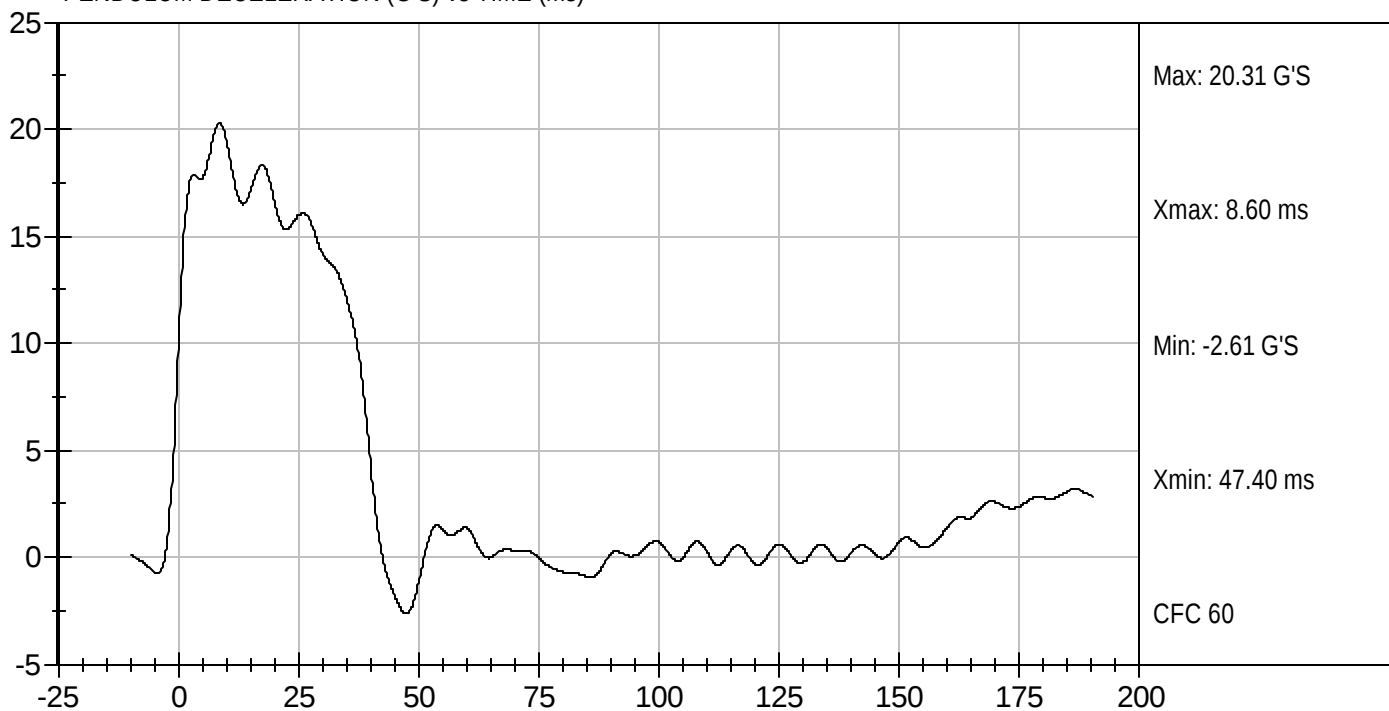
Approved By



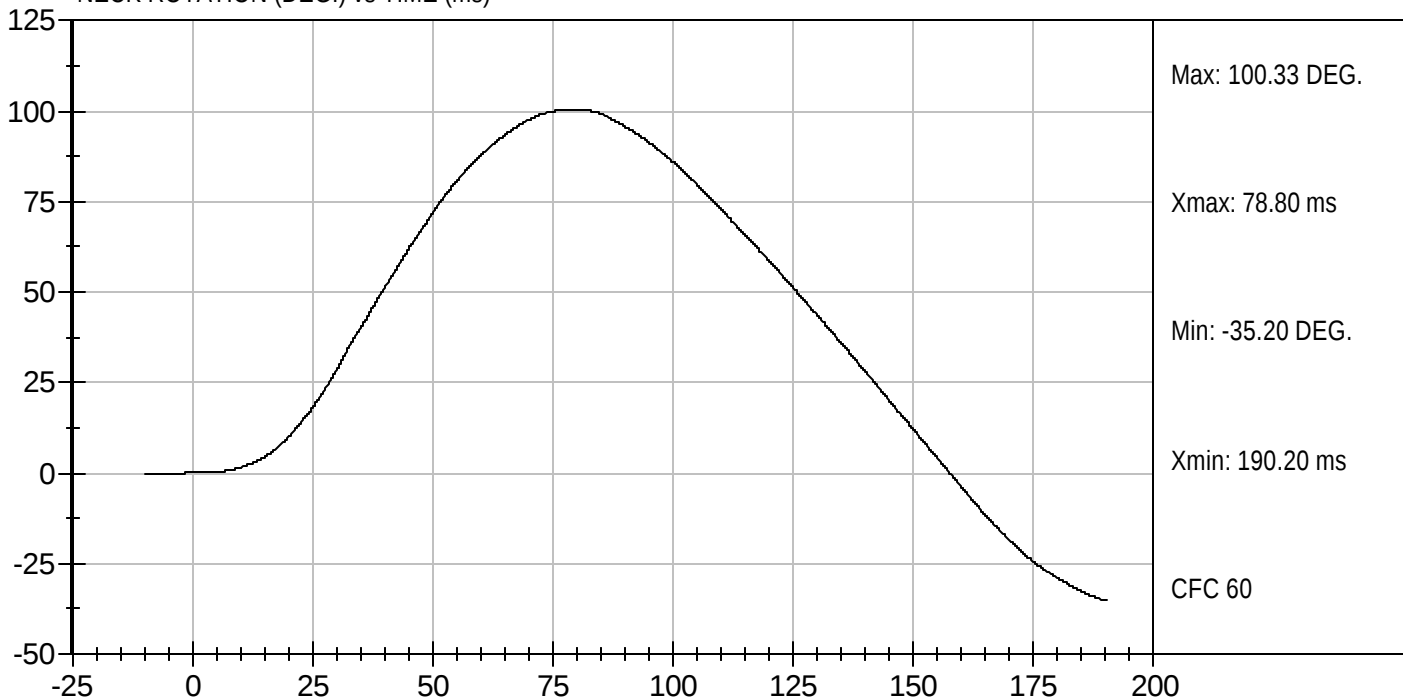
Test Desc: Neck Extension
Componet ID: D042903

Test Date: 12/21/2004
Velocity: 19.8 ft/s, 6.04 m/s

PENDULUM DECELERATION (G'S) vs TIME (ms)



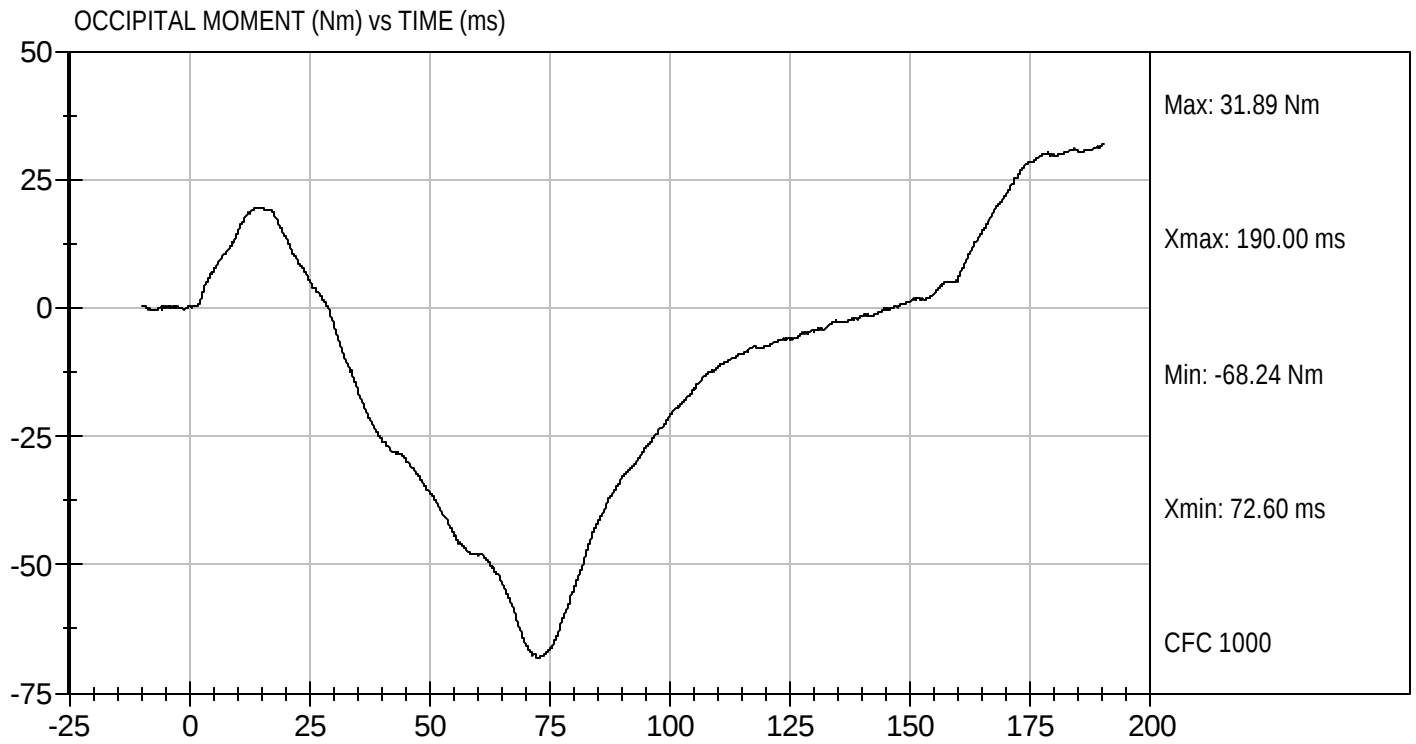
NECK ROTATION (DEG.) vs TIME (ms)





Test Desc: Neck Extension
Componet ID: D042903

Test Date: 12/21/2004
Velocity: 19.8 ft/s, 6.04 m/s



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 065

Test I.D: D042904

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	13	Pass
Probe Velocity	m/s	6.58 to 6.82	6.63	Pass
Peak Probe Force	N	5159 to 5893	5,727	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.81	Pass
Internal Hysteresis	%	69 to 85	69	Pass
Overall Test Results			Pass	



Laboratory Technician

12/21/2004

Test Date

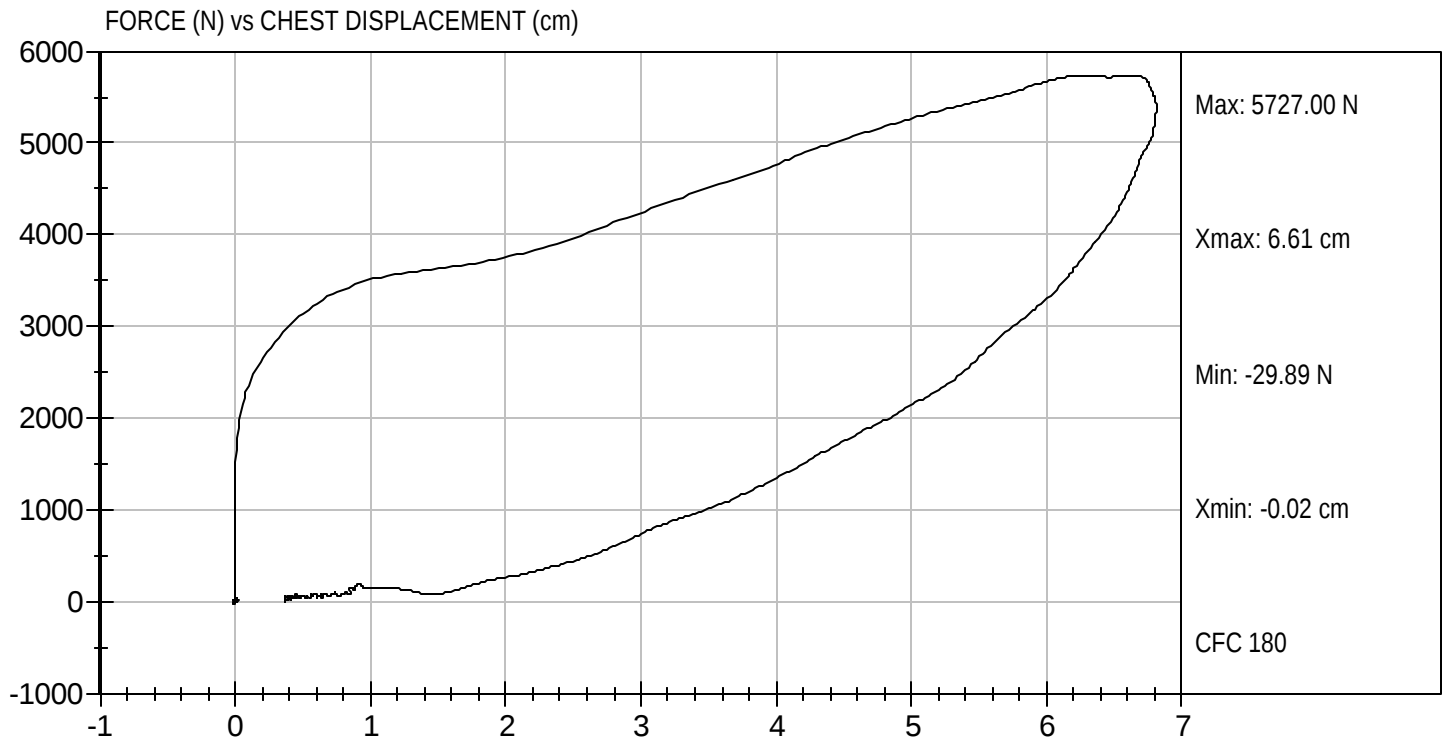


Approved By



Test Desc: Thorax Impact
Componet ID: D042904

Test Date: 12/21/2004
Velocity: 21.75 ft/s, 6.63 m/s



MGA RESEARCH CORPORATION
RIGHT KNEE IMPACT TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 065

Test I.D: D042905

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	15	Pass
Probe Velocity	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	4715 to 5782	5,243	Pass
Overall Test Results				Pass



Laboratory Technician

12/21/2004

Test Date

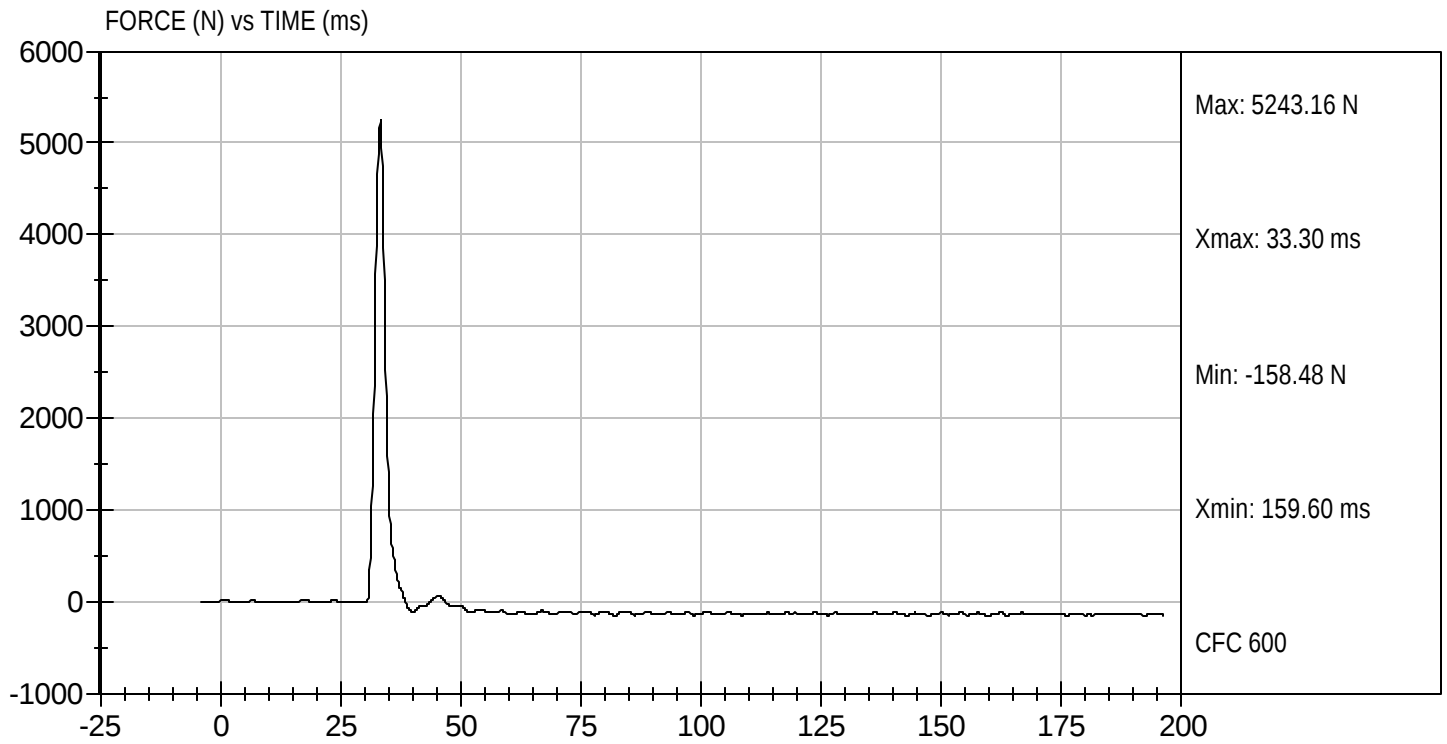


Approved By



Test Desc: Right Knee
Componet ID: D042905

Test Date: 12/21/2004
Velocity: 6.87 ft/s, 2.09 m/s



MGA RESEARCH CORPORATION
LEFT KNEE IMPACT TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 065

Test I.D: D042906

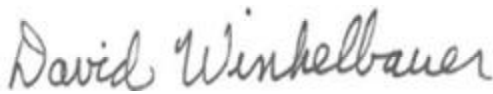
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	15	Pass
Probe Velocity	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	4715 to 5782	5,181	Pass
Overall Test Results				Pass



Laboratory Technician

12/21/2004

Test Date

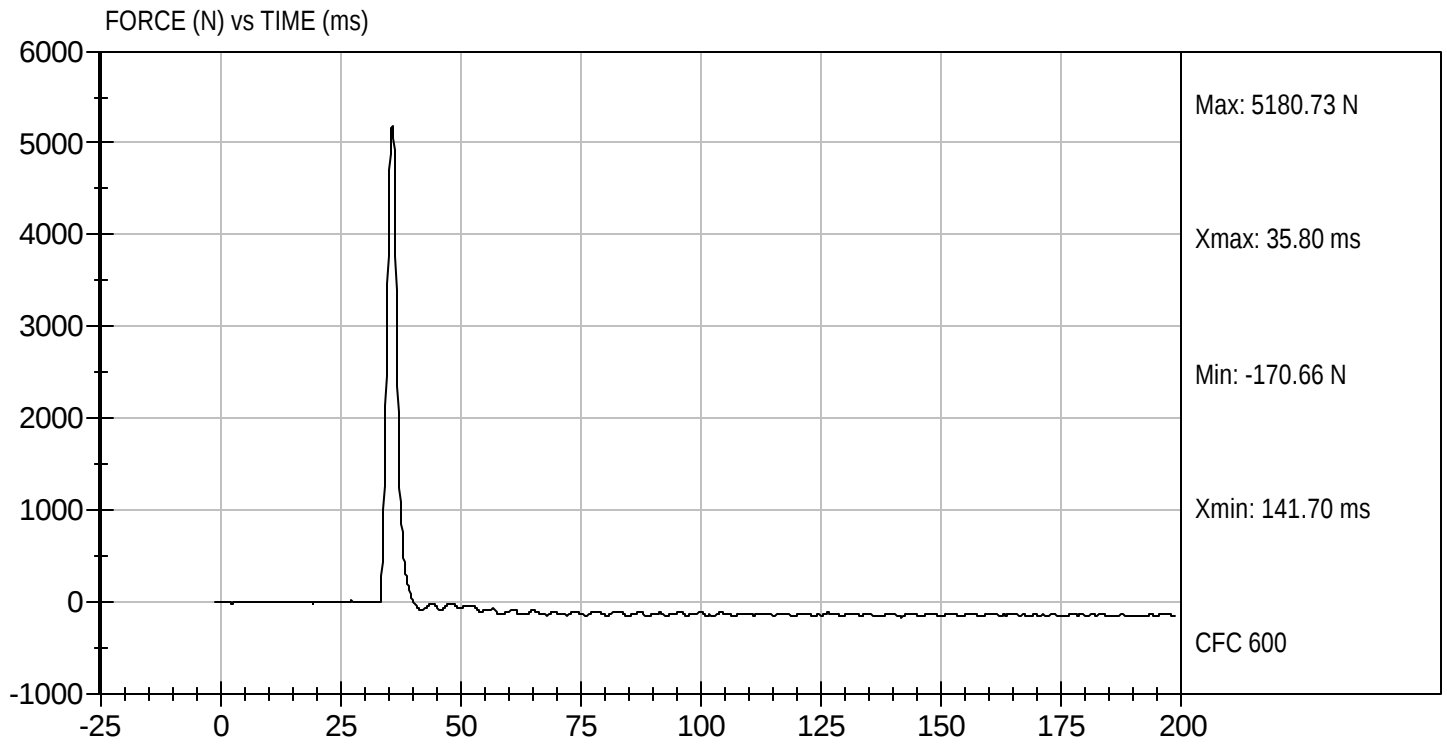


Approved By



Test Desc: Left Knee
Componet ID: D042906

Test Date: 12/21/2004
Velocity: 6.89 ft/s, 2.10 m/s

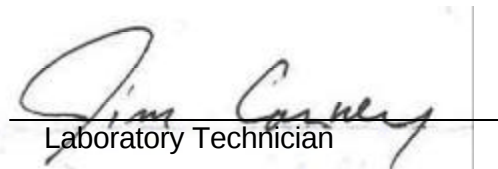


MGA RESEARCH CORPORATION
HIP-FEMUR FLEXION TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 065

Test I.D: D042900

Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.1	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	18	18	Pass
Rotation Rate	deg/sec	5 -10	8	8	Pass
30 Degrees	Nm	94.9 Nm Max	74.7	74.9	Pass
150 ft-lbf / 203.4 Nm	Deg	40- 50 Degree Max Rotation	43	43	Pass
Overall Test Results					Pass


Laboratory Technician

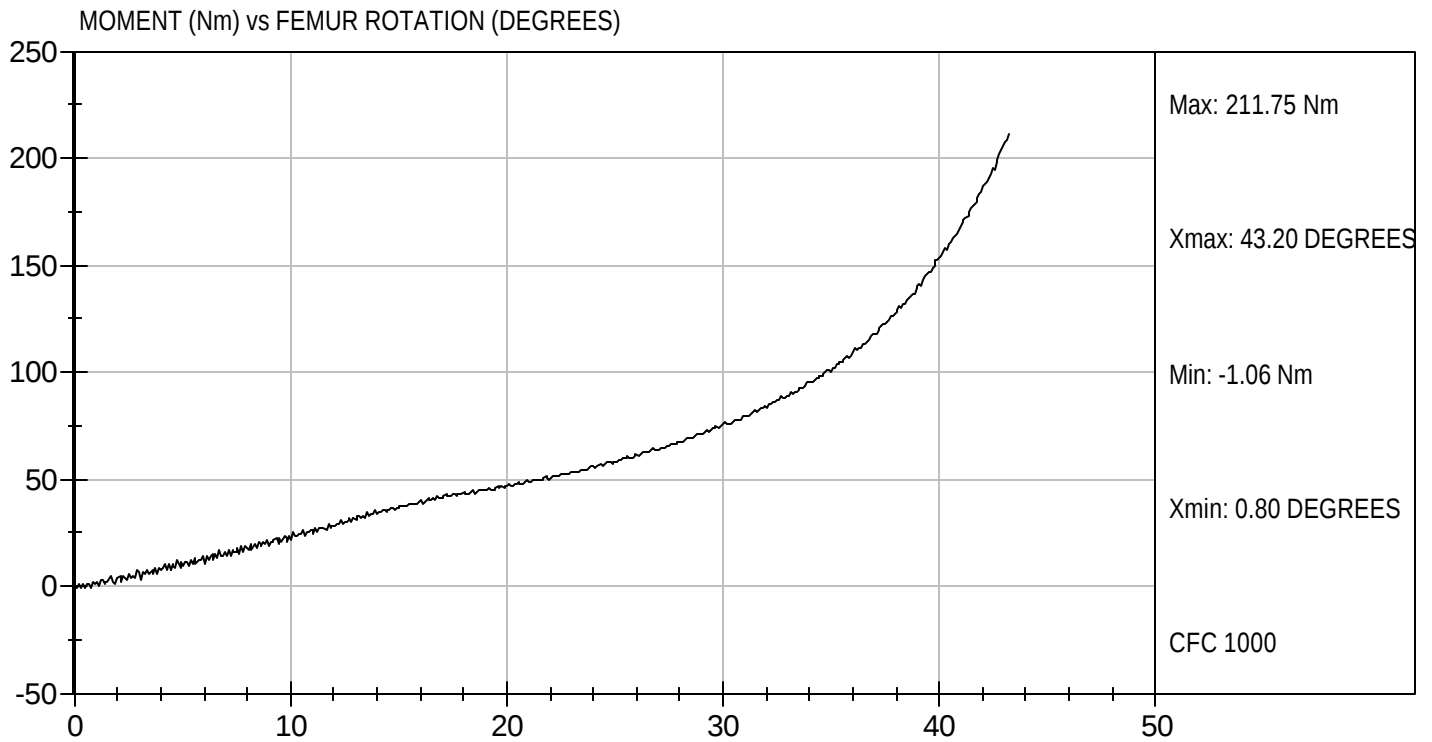
12/21/2004
Test Date


Approved By



Test Desc: Hip Femur Flexion
Componet ID: D042909

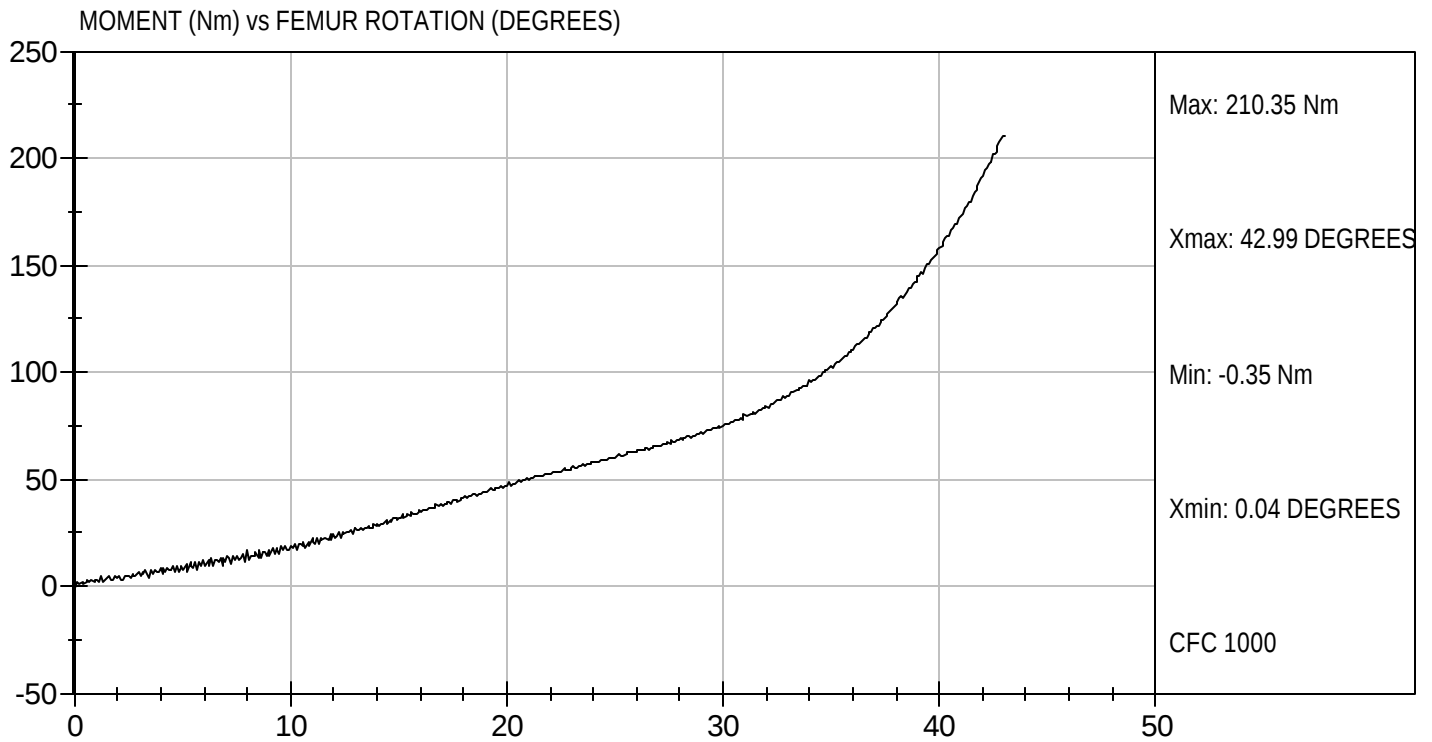
Test Date: 12/21/2004
Velocity: 0 ft/s, 0.00 m/s





Test Desc: Hip Femur Flexion
Componet ID: D042900

Test Date: 12/21/2004
Velocity: 0 ft/s, 0.00 m/s



APPENDIX D

TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION

INSTRUMENTS FOR DRIVER DUMMY NO. 066

	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	A28-H01	Entran	9/17/04
Head Y	J13535	Endevco	10/25/04
Head Z	A28-H02	Entran	9/17/04
Head X Redundant	A27-Z12	Entran	9/17/04
Head Y Redundant	AH097	Endevco	10/25/04
Head Z Redundant	L17-Z14	Entran	9/17/04
Neck Load Cell	442	Denton	7/20/04
Chest X	P22086	Endevco	8/04/04
Chest Y	AJ9D2	Endevco	8/04/04
Chest Z	P24265	Endevco	8/04/04
Chest Deflection Gauge	066	Servo	8/03/04
Chest X Redundant	P22652	Endevco	8/04/04
Chest Y Redundant	AJ417	Endevco	8/04/04
Chest Z Redundant	P22150	Endevco	8/04/04
Pelvis X	J13851	Endevco	8/02/04
Pelvis Y	AJ808	Endevco	8/02/04
Pelvis Z	AH0F0	Endevco	8/02/04
Left Femur Load Cell	259	Denton	7/20/04
Right Femur Load Cell	256	Denton	7/20/04
Left Upper Tibia Load Cell	107	Denton	7/22/04
Left Lower Tibia Load Cell	136	Denton	7/22/04
Right Upper Tibia Load Cell	103	Denton	7/22/04
Right Lower Tibia Load Cell	133	Denton	7/22/04
Left Foot Z – Front	A05-A20	Entran	8/04/04
Left Ankle X	A05-A21	Entran	8/04/04
Left Ankle Z	A07-J01	Entran	8/04/04
Right Foot Z – Front	ANBP7	Endevco	7/23/04
Right Ankle X	L30-Z18	Entran	8/04/04
Right Ankle Z	A12-A11	Entran	8/04/04
Shoulder Belt Load Cell	158	Denton	12/07/04
Lap Belt Load Cell	166	Denton	12/07/04

INSTRUMENTS FOR PASSENGER DUMMY NO. 065

	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	P27020	Endevco	8/04/04
Head Y	P27025	Endevco	8/04/04
Head Z	P22692	Endevco	8/04/04
Head X Redundant	J10431	Endevco	8/04/04
Head Y Redundant	P26986	Endevco	8/04/04
Head Z Redundant	AN9E3	Endevco	8/04/04
Neck Load Cell	443	Denton	7/20/04
Chest X	AMT78	Endevco	8/04/04
Chest Y	AP1Y8	Endevco	8/04/04
Chest Z	J11361	Endevco	8/04/04
Chest Deflection Gauge	065	Servo	8/03/04
Chest X Redundant	ALFP5	Endevco	8/04/04
Chest Y Redundant	AP138	Endevco	8/04/04
Chest Z Redundant	AJ9Y3	Endevco	8/04/04
Pelvis X	AJ9D8	Endevco	11/12/04
Pelvis Y	AJ4J3	Endevco	11/12/04
Pelvis Z	AF0M3	Endevco	11/12/04
Left Femur Load Cell	262	Denton	7/20/04
Right Femur Load Cell	261	Denton	7/20/04
Left Upper Tibia Load Cell	266	Denton	7/22/04
Left Lower Tibia Load Cell	179	Denton	7/22/04
Right Upper Tibia Load Cell	263	Denton	7/22/04
Right Lower Tibia Load Cell	174	Denton	7/22/04
Left Foot Z – Front	AMTL6	Endevco	9/17/04
Left Ankle X	AMTG3	Endevco	9/17/04
Left Ankle Z	ALC37	Endevco	9/17/04
Right Foot Z – Front	J21970	Endevco	9/17/04
Right Ankle X	J22033	Endevco	9/17/04
Right Ankle Z	J21691	Endevco	9/17/04
Shoulder Belt Load Cell	157	Denton	8/18/04
Lap Belt Load Cell	194	Denton	12/07/04

INSTRUMENTS FOR VEHICLE

	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Left Rear Seat Crossmember X	L17-D06	Entran	8/24/04
Left Rear Seat Crossmember Z	L17-D29	Entran	12/02/04
Right Rear Seat Crossmember X	K18-J03	Entran	12/02/04
Right Rear Seat Crossmember Z	K18-D25	Entran	12/02/04
Top of Engine X	K07-R08	Entran	12/02/04
Bottom of Engine X	K18-D11	Entran	12/02/04
Left Brake Caliper X	J21-Z06	Entran	12/01/04
Right Brake Caliper X	A29-F14	Entran	11/02/04
Instrument Panel X	J21-Z01	Entran	12/01/04