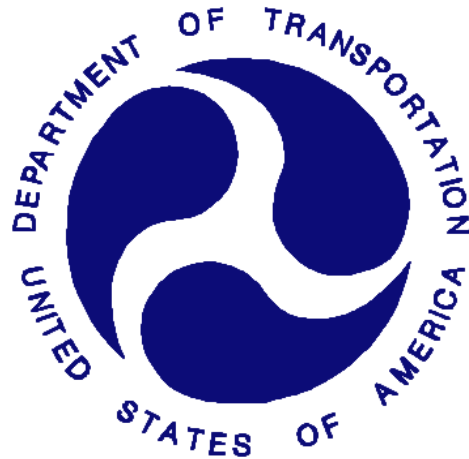


REPORT NUMBER: NCAP-MGA-2012-071

**NEW CAR ASSESSMENT PROGRAM (NCAP)
Frontal Barrier Impact Test**

**GENERAL MOTORS OF CANADA LTD.
2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan
NHTSA No.: MC0118**

**MGA RESEARCH CORPORATION
5000 Warren Road
Burlington, WI 53105**



Test Date: March 2, 2012

Final Report Date: April 27, 2012

FINAL REPORT

**U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Office of Crashworthiness Standards
Mail Code: NVS-111
1200 New Jersey Ave, SE
Room W43-410
Washington, DC 20590**

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Prepared by: 
Donna Janovicz, Project Manager

Approved by: 
Ben Fischer, Project Engineer

Approval Date: April 27, 2012

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

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

Date: _____

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15. Supplementary Notes																																																							
16. Abstract A 56.3 km/h NCAP Frontal Impact Test was conducted on the 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan in accordance with the specifications of the Office of Crashworthiness Standards Frontal NCAP Laboratory Test Procedure. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and foot well intrusion performance. The test was conducted at MGA Research Corporation in Burlington, Wisconsin, on March 2, 2012. The impact velocity was 56.3 km/h and the ambient temperature at the barrier face at the time of impact was 20.7°C. The target vehicle post-test maximum crush was 600 mm located at the vehicle's centerline. The test vehicle's performance was as follows: <table border="1" style="margin: 10px auto; width: 80%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th rowspan="2">Units</th> <th colspan="2">Threshold</th> <th rowspan="2">Driver ATD</th> <th rowspan="2">Passenger ATD</th> </tr> <tr> <th>50th</th> <th>5th</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₁₅)</td> <td>N/A</td> <td>700</td> <td>700</td> <td>179</td> <td>442</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>52</td> <td>25</td> <td>14</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td>1</td> <td>1</td> <td>0.31</td> <td>0.27</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td>2620</td> <td>1130</td> <td>733</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td>2520</td> <td>146</td> <td>166</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10008</td> <td>6805</td> <td>596</td> <td>436</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10008</td> <td>6805</td> <td>142</td> <td>1651</td> </tr> </tbody> </table>						Measurement Description	Units	Threshold		Driver ATD	Passenger ATD	50 th	5 th	Head Injury Criteria (HIC ₁₅)	N/A	700	700	179	442	Maximum Chest Compression	mm	63	52	25	14	Nij	N/A	1	1	0.31	0.27	Neck Tension	N	4170	2620	1130	733	Neck Compression	N	4000	2520	146	166	Left Femur Force	N	10008	6805	596	436	Right Femur Force	N	10008	6805	142	1651
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TABLE OF CONTENTS

<u>Section</u>		<u>Page No.</u>
1	Purpose and Summary of Test	1
2	Occupant and Vehicle Information / Data Sheets	3
<u>Data Sheet No.</u>		<u>Page No.</u>
1	General Test and Vehicle Parameter Data	4
2	Seat Adjustment, Fuel System, and Steering Wheel Data	8
3	Dummy Longitudinal Clearance Dimensions	10
4	Dummy Lateral Clearance Dimensions	11
5	Seat Belt Positioning Data	12
6	High-Speed Camera Locations and Data	13
7	Vehicle Accelerometer Data	15
8	Photographic Reference Target Locations	16
9	Load Cell Locations on Fixed Barrier	17
10	Test Vehicle Summary of Results	18
11	Post-Test Observations	19
12	Vehicle Profile Measurements	20
13	Accident Investigation Division Data	22
14	Vehicle Intrusion Measurements	23
15	Summary of FMVSS 212, 219 (Partial), and 301 Data	26
16	FMVSS 301 Static Rollover Results	28
17	Dummy/Vehicle Temperature Stabilization Data	29
<u>Appendix</u>		
A	Photographs	A
B	Dummy Response Data Traces	B
C	Dummy Calibration and Performance Verification Data	C

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 DTNH22-06-D-00028. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for consumer information purposes.

The 56.3 km/h frontal barrier impact was conducted in accordance with the Office of Crashworthiness Standards Frontal NCAP Laboratory Test Procedure.

SUMMARY

A load cell barrier was impacted by a 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan at a velocity of 56.3 kph. The test was performed at MGA Research Corporation on March 2, 2012. Pre-and post-test photographs of the vehicle and dummies can be found in Appendix A.

Two real-time cameras and fourteen (14) 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.

One Part 572E, 50th percentile male anthropomorphic test device (ATD), was placed in the driver seating position and one Part 572O 5th percentile female test device (ATD) was placed in the right-front passenger seating position according to dummy placement instructions specified in the Frontal NCAP Laboratory Test Procedure.

Both ATDs were fully instrumented with head, chest and pelvis tri-axial accelerometers, chest displacement potentiometers, upper neck transducers, right/left femur load cells, and lower leg instrumentation. Seat belt load cells were also installed on the driver's and passenger's lap belts to measure dummy torso and pelvic section loading.

The driver (position 1) ATD (Serial No. 351) and the right-front passenger (position 2) ATD (Serial No. 634) were calibrated previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C of this report.

The 228 channels of data were recorded on an on-board data acquisition system. Appendix B contains the dummy head, chest displacement, neck, and femur 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 600 mm and both the driver and passenger side doors remained closed during the impact event and were operable after the impact.

The driver's visible contact points were as follows: The driver's head and chest contacted the airbag. The driver's head also contacted the headrest. The driver's knees contacted the knee bolster. The passenger's visible contact points were as follows: The passenger's head and chest contacted the airbag. The passenger's head also contacted the headrest. The passenger's knees contacted the glovebox.

The occupant data is summarized below:

ATD position	HIC ₁₅	Nij	Neck Tension (N)	Neck Comp. (N)	3ms Chest Clip (Gs)	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)
Driver (50 th)	179	0.31	1130	146	41	25	596	142
Passenger (5 th)	442	0.27	733	166	43	14	436	1651

The test data can be found on the NHTSA website at www.nhtsa.dot.gov.

TEST NOTES

There was no valid data collected for:
Load Cell 6-10.

MGA does not endorse or certify products. The manufacturer's name appears solely for identification purposes.

SECTION 2
OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC0118
Test Date: 03/02/2012

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	MC0118	Traction Control System (TCS)	Yes
Model Year	2012	Auto-Leveling System	No
Make	Buick	Automatic Door Locks (ADLs)	Yes
Model	Regal eAssist	Power Window Auto-Reverse	No
Body Style	Sedan	Other Optional Feature	N/A
VIN	2G4GT5GR7C9137725	Driver Front Airbag	Yes
Body Color	Quicksilver Metallic	Driver Curtain Airbag	Yes
Odometer (km/mi)	105 / 65	Driver Torso Airbag	No
Engine Displacement (L)	2.4	Driver Torso/Pelvis Airbag	Yes
Type/No. Cylinders	4	Driver Pelvis Airbag	No
Engine Placement	Lateral	Driver Knee Airbag	No
Transmission Type	Automatic	Pass. Front Airbag	Yes
Transmission Speeds	6	Pass. Curtain Airbag	Yes
Overdrive	Yes	Pass. Torso Airbag	No
Final Drive	Front	Pass. Torso/Pelvis Airbag	Yes
Roof Rack	No	Pass. Pelvis Airbag	No
Sunroof/T-Top	Yes	Pass. Knee Airbag	No
Running Boards	No	Driver Seat Belt Pretensioner	Yes
Tilt Steering Wheel	Yes	Pass. Seat Belt Pretensioner	Yes
Power Seats	No	Driver Load Limiter	Yes
Anti-Lock Brakes (ABS)	Yes	Pass. Load Limiter	Yes
All-Wheel Drive (AWD)	No	Other Safety Restraint	N/A
Does owner's manual provide instructions to turn off automatic door locks?			No

DATA FROM CERTIFICATION LABEL

Manufactured By	GENERAL MOTORS OF CANADA LTD.	GVWR (kg)	2097
Date of Manufacture	10/11	GAWR Front (kg)	1083
Vehicle Type	Passenger Car	GAWR Rear (kg)	1014

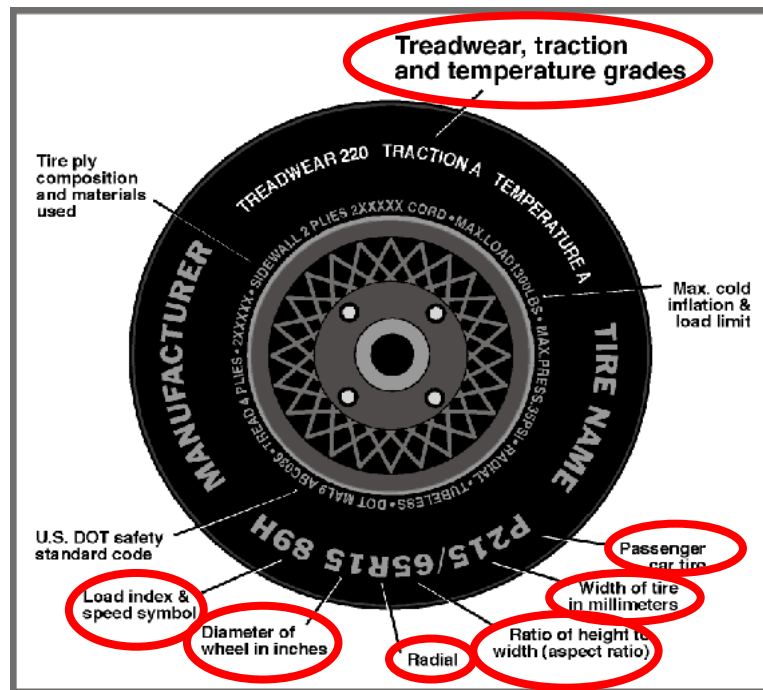
VEHICLE SEATING AND WEIGHT CAPACITY DATA

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench		
Designated Seating Capacity (DSC)	2	3		5
Capacity Weight (VCW) (kg)				410
Cargo Weight (RCLW) (kg)				70

DATA SHEET NO. 1 (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC0118
 Test Date: 03/02/2012



TIRE PLACARD INFORMATION

Measured Parameter	Front	Rear
Recommended Cold Tire Pressure (kPa)	240	240
Recommended Tire Size	P235/50R17	P235/50R17

TIRE SIDEWALL INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	300	300
Tire Size on Vehicle	P235/50R17	P235/50R17
Tire Manufacturer	Michelin	Michelin
Tire Name	Energy Saver A/S	Energy Saver A/S
Tire Type	Passenger	Passenger
Tire Width	235	235
Aspect Ratio	50	50
Radial	Yes	Yes
Wheel Diameter	17	17
Load Index/Speed Symbol	95T	95T
Treadwear	480	480
Traction Grade	A	A
Temperature Grade	B	B
Tire Material	Rubber	Rubber

DATA SHEET NO. 1 (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC0118
 Test Date: 03/02/2012

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	495.8	354.7		532.5	427.3	
Right	kg	490.8	330.2		514.8	401.0	
Ratio	%	59.0	41.0		55.8	44.2	
Totals	kg	986.6	684.9	1671.5	1047.3	828.3	1875.6

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1671.5
Weight of 1 P572E ATD & 1 P572O ATD	kg	140.6
Rated Cargo/Luggage Weight (RCLW)	kg	70
Calculated Vehicle Target Weight (TVTW)	kg	1882.1

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	703	715	725	714	1121
As Tested	mm	704	710	686	695	1208
Post Test	mm	762	768	690	687	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2735
Total Vehicle Length at Left Side	mm	4554
Total Vehicle Length at Centerline	mm	4846
Total Vehicle Length at Right Side	mm	4554
Weight of Ballast in Cargo Area	kg	28.6
Weight of Vehicle Components Removed	kg	53.1
Amount of Stoddard Solvent in Fuel Tank	L	55.6

List of components removed: Right taillight, trunk carpet, jack/tools, spare tire, rear floor mats, rear seat pan, and rear seat backs.

DATA SHEET NO. 1 (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC0118
 Test Date: 03/02/2012

TARGET VEHICLE STRUCTURAL MEASUREMENT

	Elements	Pre-Test (mm)
1	Total Length	4846
2	Total Width	1819
3	Bumper Top Height	530
4	Bumper Bottom Height	440
5	Longitudinal Member Top Height	535
6	Distance between Longitudinal Members	900
7	Longitudinal Member Width	90
8	Engine Top Height	809
9	Engine Bottom Height	178
10	Engine and Gearbox Width	880
11	Front Bumper-Engine Distance	298
12	Front Shock Absorber Fixing Height	900
13	Bonnet Leading Edge Height	820
14	Front Shock Absorber Fixing Width	1189
15	Front Bumper – Front Axle Distance	1025
16	Front Axle – A-Pillar Distance	446
17	A-Pillar – B-Pillar Distance	1162
18	B-Pillar – Rear Axle Distance	1147
19	B-Pillar – C-Pillar Distance	721
20	Roof Sill Bottom Height	1301
21	Roof Sill Top Height	1422
22	Floor Sill Bottom Height	349
23	Floor Sill Top Height	190

DATA SHEET NO. 2

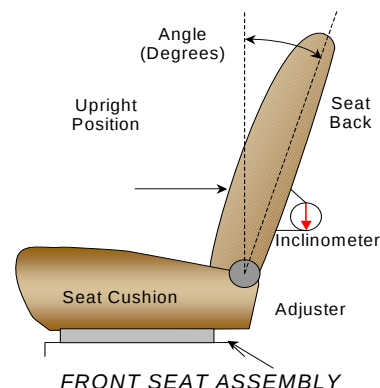
SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle: 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC0118
 Test Date: 03/02/2012

NOMINAL DESIGN RIDING POSITION

The driver seat back is positioned as close as possible to the manufacturer's design angle. For the passenger seat back, seat back is adjusted following Appendix F, "Driver & Passenger Dummy Seating & Positioning Procedures" in the NCAP Test Procedure dated January 2010.



SEAT BACK ANGLE	Degrees
Driver Seat Back Angle	-11.7° on headrest post
Passenger Seat Back Angle	-22.7° on headrest post

SEAT FORE/AFT POSITIONS

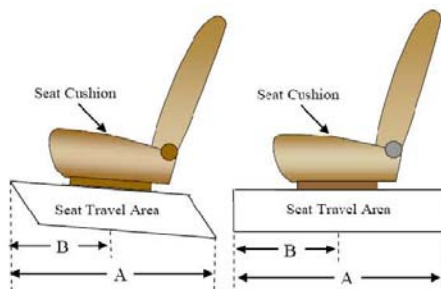
The driver and passenger seat fore/aft positions are adjusted following Appendix F, "Driver & Passenger Dummy Seating & Positioning Procedures" in the NCAP Test Procedure dated January 2010.

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	324 mm	162 mm (forward most as 0)
Passenger Seat	270 mm	0 mm (forward most as 0)

SEAT BELT UPPER ANCHORAGES

The seat belt upper anchorages are positioning following the manufacturer's specified position as listed in Form 1.

	Total # of Positions	Placed in Position #
Driver Seat	4 (1 st as 0)	0 (uppermost as 0)
Passenger Seat	4 (1 st as 0)	0 (uppermost as 0)



DATA SHEET NO. 2 (CONTINUED)
SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle: 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC0118
 Test Date: 03/02/2012

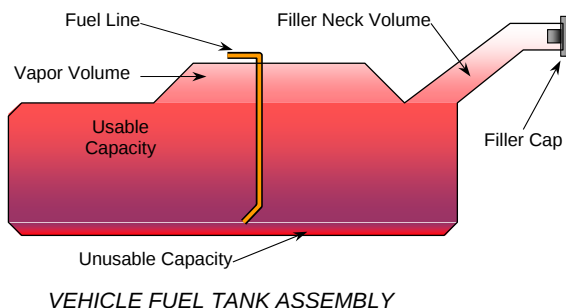
FUEL TANK CAPACITY DATA

	Liters
Usable Capacity of "Standard Tank"	59.8
Usable Capacity of "Optional Tank"	
92-94% of Usable Capacity	55.0 to 56.2
Actual Amount of Solvent used	55.6
1/3 of Usable Capacity	19.9

FUEL PUMP

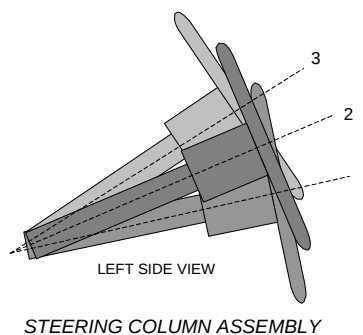
Describe the fuel pump type, its behavior, and the location of the fuel filler pipe.

The vehicle is equipped with an electric fuel pump.
Pump will run when engine is running. Also, it will run
briefly when ignition key is turned to the "on" position
without starting the engine. The fuel pipe is on the right
side.



STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. An aluminum plate is placed across the rim of the steering wheel, an inclinometer is placed on the plate and the angle is measured.



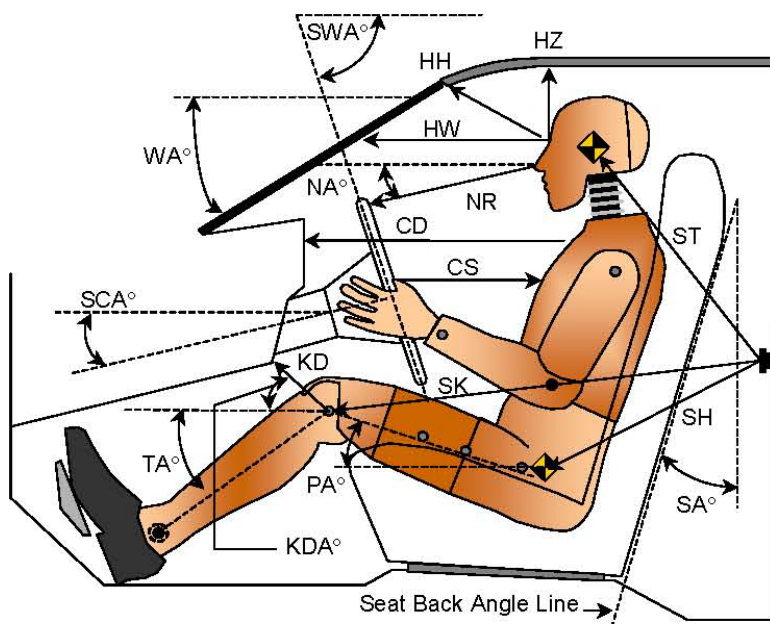
STEERING COLUMN POSITION

	Degrees	Fore/Aft Position (mm)
Lowermost – Position 1	69.8	251
Geometric Center – Position 2	67.7	223
Uppermost – Position 3	65.6	195
Telescoping Steering Wheel Travel		56
Test Position	67.7	223

DATA SHEET NO. 3 DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC0118
 Test Date: 03/02/2012



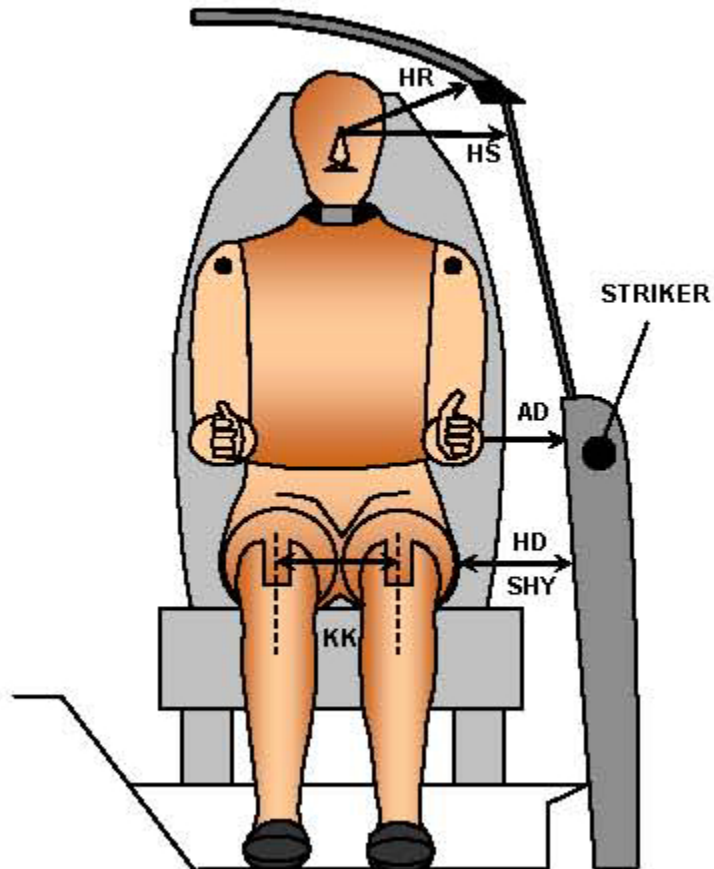
LEFT SIDE VIEW

Code	Measurement Description	Driver S/N 351		Passenger S/N 634	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		27.0		
SWA°	Steering Wheel Angle		67.7		
SCA°	Steering Column Angle		22.3		
SA°	Seat Back Angle (on headrest post)		-11.7		-22.7
HZ	Head to Roof (Z)	178	90	190	90
HH	Head to Header	385	21.4	262	39.4
HW	Head to Windshield	665	0	575	0
NR	Nose to Rim	425	11.7		
CD	Chest to Dash	585		400	
CS	Chest to Steering Hub	361	4.6		
RA	Rim to Abdomen	218	0		
KDL	Left Knee to Dash	183	37.7	100	33.5
KDR	Right Knee to Dash	168	39.5	89	31.6
PA°	Pelvic Angle		24.7		21.6
TA°	Tibia Angle		40.0		50.5
SK	Striker to Knee	571	95.9	676	95.3
ST	Striker to Head	468	5.5	469	27.0
SH	Striker to H-Point	260	142.2	403	112.3

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC0118
 Test Date: 03/02/2012



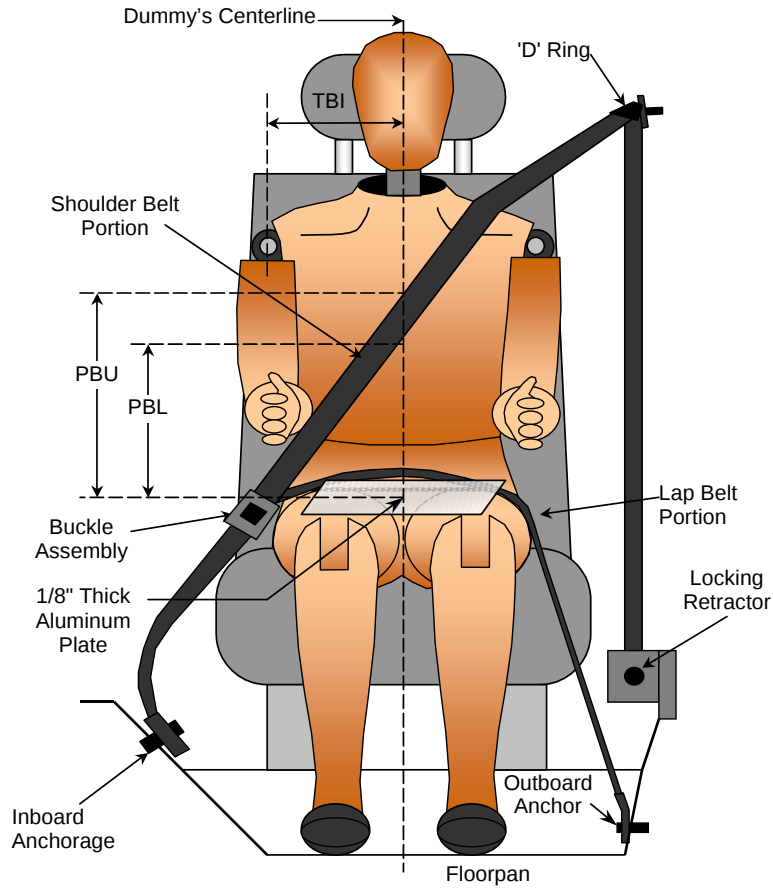
FRONT VIEW OF DUMMY

Code	Measurement Description	Driver S/N 351	Passenger S/N 634
		Length (mm)	
AD	Arm to Door	140	99
HD	H-Point to Door	157	177
HR	Head to Side Header	198	218
HS	Head to Side Window	324	491
KK	Knee to Knee	345	226
SHY	Striker to H-Point (Y Direction)	290	311
AA	Ankle to Ankle	310	184

DATA SHEET NO. 5 SEAT BELT POSITIONING DATA

Test Vehicle: 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC0118
 Test Date: 03/02/2012



FRONT VIEW OF DUMMY

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU - Top surface of reference to belt upper edge	mm	340	310
PBL - Top surface of reference to belt lower edge	mm	260	220

BELT LENGTH DATA

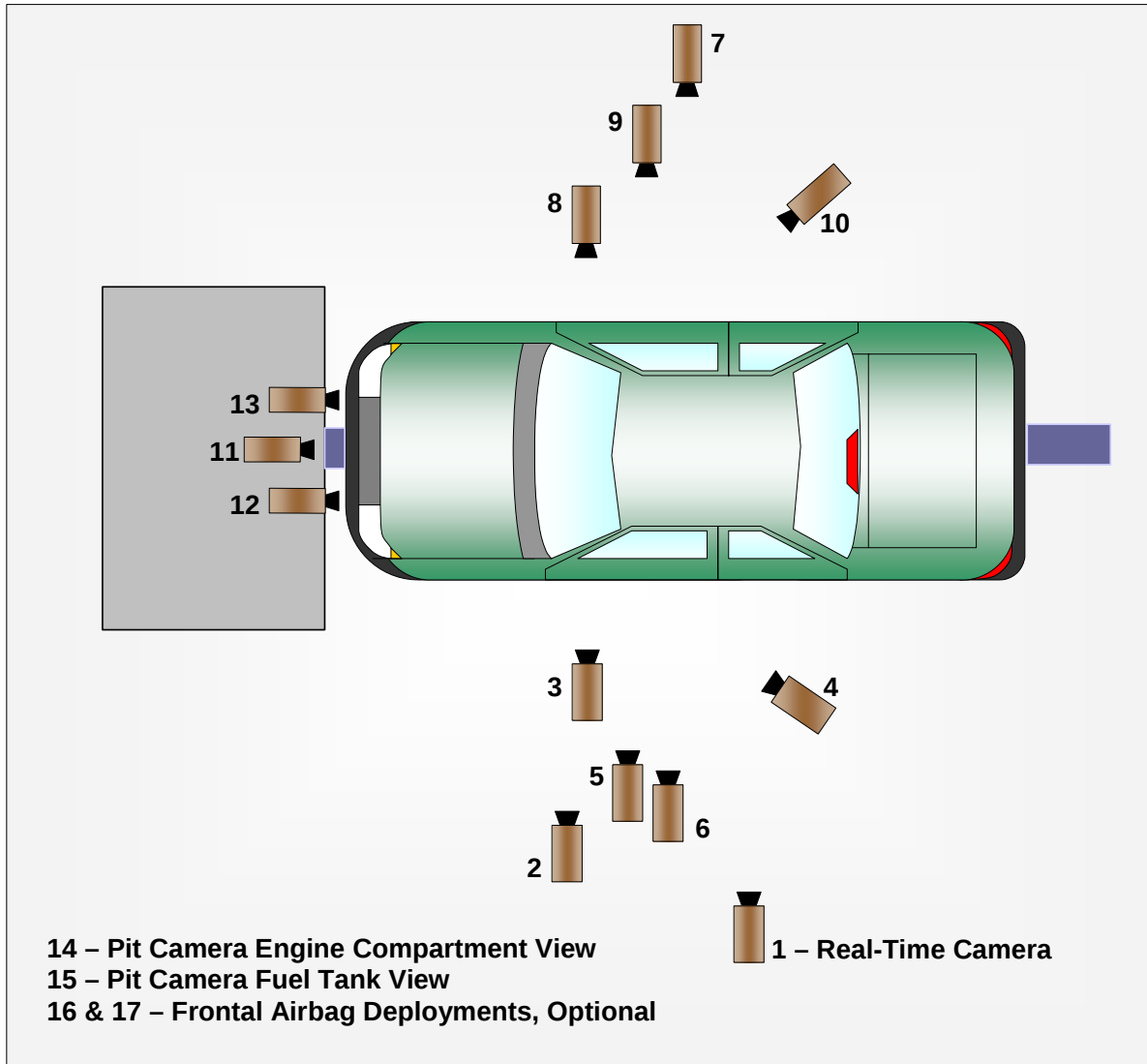
Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as measured on ATD	mm	780	930
Lap Belt Length as measured on ATD	mm	460	530
Remainder of belt on reel	mm	1860	1640
Total Belt Length for Continuous Webbing Systems	mm	3100	3100

DATA SHEET NO. 6
HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC0118
Test Date: 03/02/2012

CAMERA POSITIONS FOR FRONTAL IMPACTS



DATA SHEET NO. 6 (CONTINUED)
CAMERA LOCATIONS AND DATA

Test Vehicle: 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC0118
 Test Date: 03/02/2012

CAMERA LOCATIONS

No.	Camera View	Coordinates (mm)			Lens (mm)	Speed (fps)
		X*	Y*	Z*		
1	Real-Time Left Overall					30
2	Driver Close-Up	1410	-6590	-1920	35	1000
3	Left Front Half	1140	-5040	-1080	24	1000
4	Left Angle	5640	-5160	-1980	50	1000
5	Steering Column - Top	610	-5200	-1250	24	1000
6	Steering Column - Bottom	580	-5150	-830	24	1000
7	Right Overall	2390	6660	-1070	20	1000
8	Passenger Close-Up	1850	6680	-1870	35	1000
9	Right Front Half	1300	5110	-1140	24	1000
10	Right Angle	5690	4810	-1940	50	1000
11	Windshield	-130	0	-2810	24	1000
12	Driver Windshield	250	-450	-2030	12.5	1000
13	Passenger Windshield	250	450	-2030	12.5	1000
14	Pit Front	1020	0	3150	24	1000
15	Pit Rear	3090	0	3150	24	1000
16	Onboard Driver Side (optional)					
17	Onboard Passenger Side (optional)					
18	Real-Time Pan View					30

***COORDINATES:**

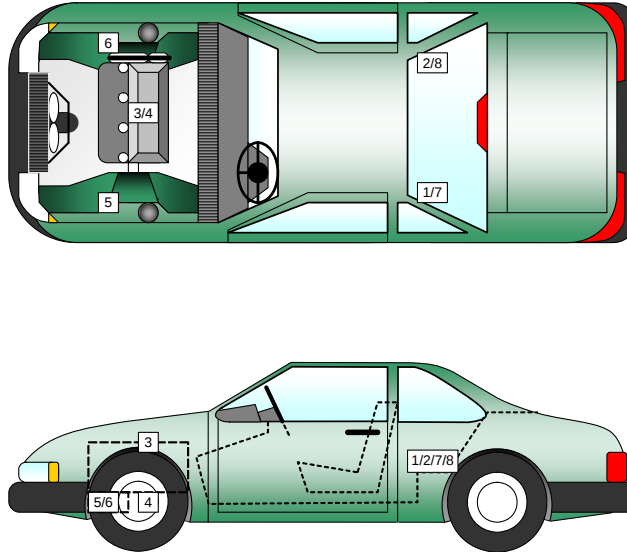
- +X = forward of impact plane
- +Y = right of monorail centerline
- +Z = below ground level

Cameras 16 & 17 were not used for this test.

DATA SHEET NO. 7 **VEHICLE ACCELEROMETER DATA**

Test Vehicle: 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC0118
 Test Date: 03/02/2012



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear Accelerometer – X Direction	1927	-505	-207
2	Right Rear Accelerometer – X Direction	1927	525	-207
3	Engine Top X	3959	0	-800
4	Engine Bottom X	3910	0	-239
5	Left Brake Caliper X	3899	-675	-311
6	Right Brake Caliper X	3899	675	-311
7	Left Rear Accelerometer Redundant – X Direction			
8	Right Rear Accelerometer Redundant – X Direction			

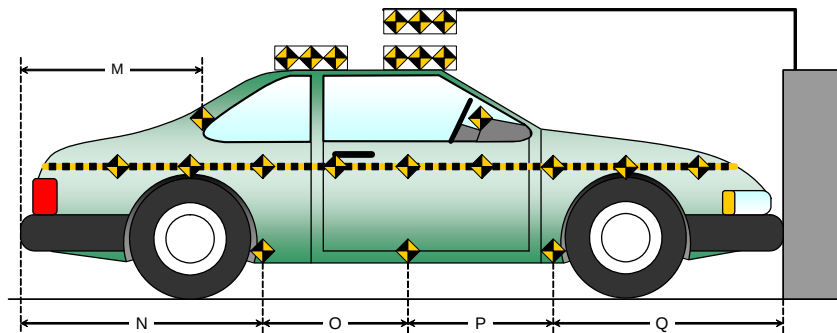
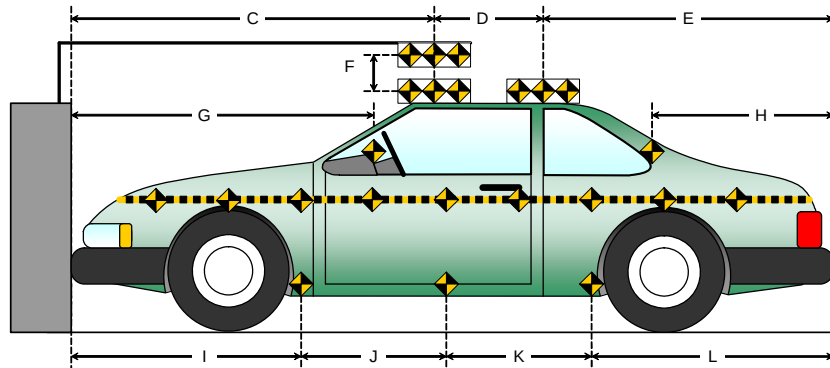
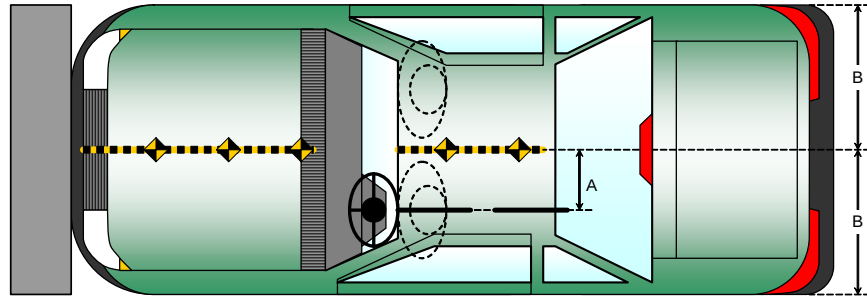
Reference Points: X - Rear Surface of Vehicle (+ forward)
 Y - Vehicle Centerline (+ to right)
 Z - Ground Plane (+ down)

DATA SHEET NO. 8
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC0118
 Test Date: 03/02/2012

Item	Value (mm)
A	386
B	910
C	2345
D	657
E	1844
F	200
G	
H	1016
I	1458
J	940
K	940
L	1508
M	1016
N	1508
O	940
P	940
Q	1458

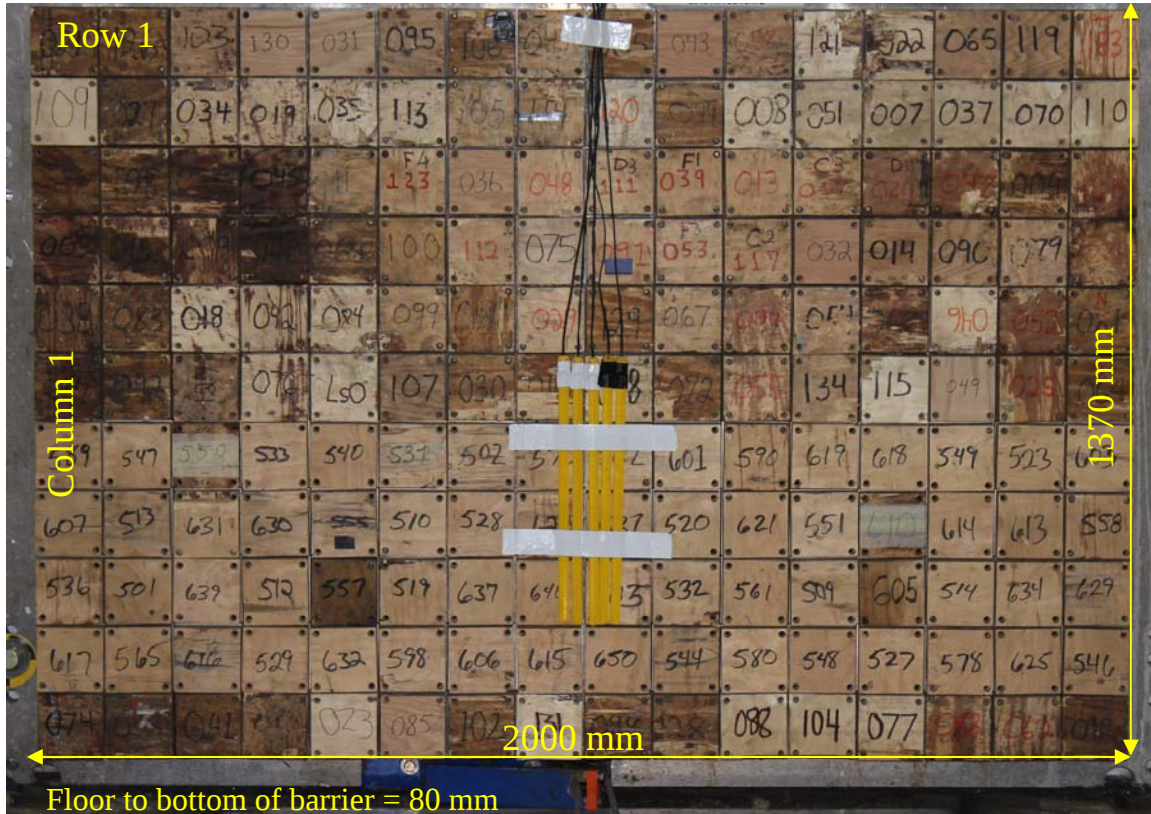


DATA SHEET NO. 9 **LOAD CELL LOCATIONS ON FIXED BARRIER**

Test Vehicle: 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC0118
 Test Date: 03/02/2012

Advanced Research Load Cell Barrier



1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	1-9	1-10	1-11	1-12	1-13	1-14	1-15	1-16
2-1	2-2	2-3	2-4	2-5	2-6	2-7	2-8	2-9	2-10	2-11	2-12	2-13	2-14	2-15	2-16
3-1	3-2	3-3	3-4	3-5	3-6	3-7	3-8	3-9	3-10	3-11	3-12	3-13	3-14	3-15	3-16
4-1	4-2	4-3	4-4	4-5	4-6	4-7	4-8	4-9	4-10	4-11	4-12	4-13	4-14	4-15	4-16
5-1	5-2	5-3	5-4	5-5	5-6	5-7	5-8	5-9	5-10	5-11	5-12	5-13	5-14	5-15	5-16
6-1	6-2	6-3	6-4	6-5	6-6	6-7	6-8	6-9	6-10	6-11	6-12	6-13	6-14	6-15	6-16
7-1	7-2	7-3	7-4	7-5	7-6	7-7	7-8	7-9	7-10	7-11	7-12	7-13	7-14	7-15	7-16
8-1	8-2	8-3	8-4	8-5	8-6	8-7	8-8	8-9	8-10	8-11	8-12	8-13	8-14	8-15	8-16
9-1	9-2	9-3	9-4	9-5	9-6	9-7	9-8	9-9	9-10	9-11	9-12	9-13	9-14	9-15	9-16
10-1	10-2	10-3	10-4	10-5	10-6	10-7	10-8	10-9	10-10	10-11	10-12	10-13	10-14	10-15	10-16
11-1	11-2	11-3	11-4	11-5	11-6	11-7	11-8	11-9	11-10	11-11	11-12	11-13	11-14	11-15	11-16

Load Cells are 121 mm x 121 mm with a 7 mm gap in between each load cell.

DATA SHEET NO. 10
TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC0118
Test Date: 03/02/2012

INSTRUMENTATION

Driver Dummy Data Channels	46
Passenger Dummy Data Channels	46
Vehicle Structure Accelerometers	8
Barrier Channels	128
Total	228

CAMERA COVERAGE

High-Speed Vehicle Onboard	0
High-Speed Offboard	14
Real-Time	2
Total	16

**DATA SHEET NO. 11
POST-TEST OBSERVATIONS**

Test Vehicle: 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC0118
Test Date: 03/02/2012

TEST DUMMY INFORMATION AND CONTACT LOCATIONS

Description	Driver	Passenger
Dummy Type / Serial No.	HIII 50% / 351	HIII 5% / 634
Head Contact	Airbag, Headrest	Airbag, Headrest
Upper Torso Contact	Airbag	Airbag
Lower Torso Contact	None	None
Left Knee Contact	Knee Bolster, Steering Column	Glovebox
Right Knee Contact	Knee Bolster, Steering Column	Glovebox

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Locked/Unlocked Doors	Doors were locked	Doors were locked
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

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Windshield Damage	Cracked
Window Damage	None
Other Notable Effects	None

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	2250
Center	mm	2140
Right Side	mm	2220
Average	mm	2203

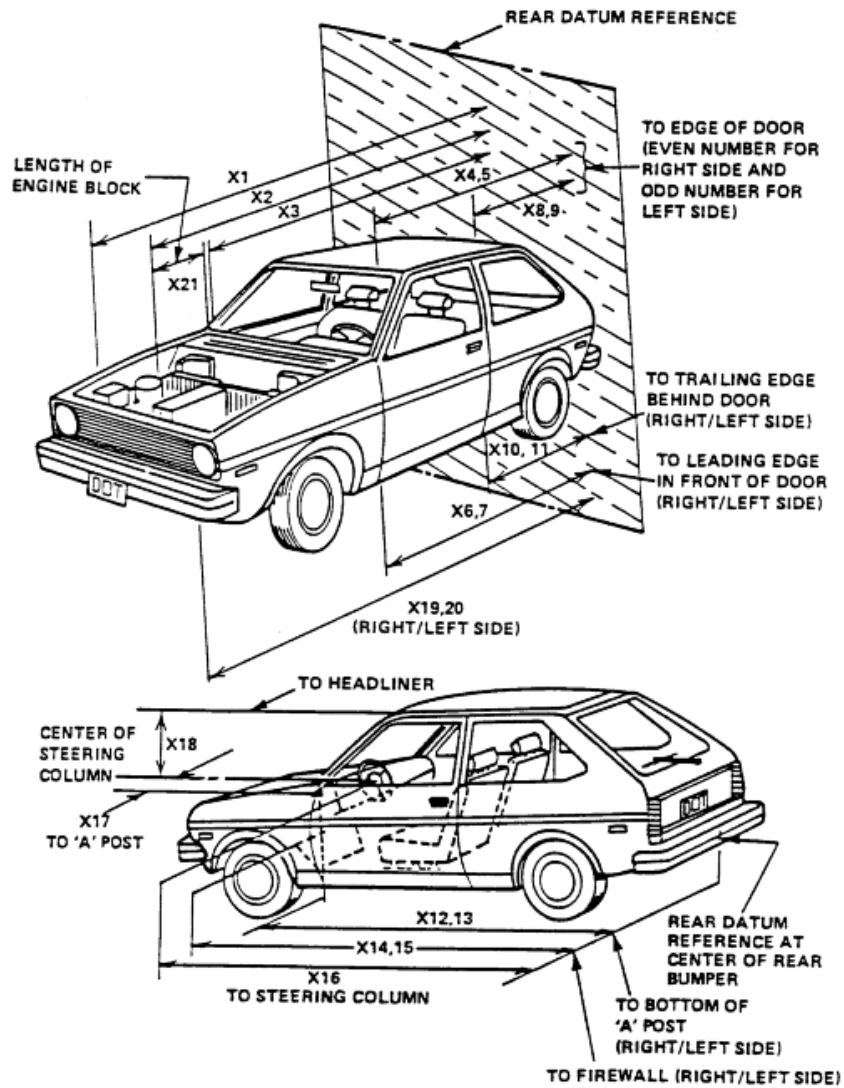
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Left Front (Driver) P1		Right Front (Passenger) P2	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	Yes	Yes	Yes
Knee Airbag	No		No	
Curtain Side Airbag	Yes	No	Yes	No
Torso/Pelvis Side Airbag	Yes	No	Yes	No
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes		Yes	

DATA SHEET NO. 12 VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC0118
 Test Date: 03/02/2012



DATA SHEET NO. 12 (CONTINUED)
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC0118
 Test Date: 03/02/2012

RSOV (Rear Surface of Vehicle)

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	mm	4846	4246	600
2	RSOV to Front of Engine	mm	4337	4010	327
3	RSOV to Firewall	mm	3641	3640	1
4	RSOV to Upper Leading Edge of Right Door	mm	3263	3263	0
5	RSOV to Upper Leading Edge of Left Door	mm	3263	3263	0
6	RSOV to Lower Leading Edge of Right Door	mm	3254	3253	1
7	RSOV to Lower Leading Edge of Left Door	mm	3254	3254	0
8	RSOV to Upper Trailing Edge of Right Door	mm	2145	2145	0
9	RSOV to Upper Trailing Edge of Left Door	mm	2151	2152	-1
10	RSOV to Lower Trailing Edge of Right Door	mm	2163	2164	-1
11	RSOV to Lower Trailing Edge of Left Door	mm	2163	2164	-1
12	RSOV to Bottom of "A" Post of Right Side	mm	3260	3257	3
13	RSOV to Bottom of "A" Post of Left Side	mm	3256	3256	0
14	RSOV to Firewall, Right Side	mm	3603	3599	4
15	RSOV to Firewall, Left Side	mm	3603	3600	3
16	RSOV to Steering Column	mm	2769	2807	-38
17	Center of Steering Column to "A" Post	mm	373	380	-7
18	Center of Steering Column to Headliner	mm	414	420	-6
19	RSOV to Right Side of Front Bumper	mm	4554	4265	289
20	RSOV to Left Side of Front Bumper	mm	4554	4260	294
21	Length of Engine Block	mm	553	553	0
RD	RSOV to Right Side of Dash Panel	mm	2930	2931	-1
CD	RSOV to Center of Dash Panel	mm	3063	3060	3
LD	RSOV to Left Side of Dash Panel	mm	2930	2930	0

DATA SHEET NO. 13
ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC0118
Test Date: 03/02/2012

VEHICLE INFORMATION

VIN: 2G4GT5GR7C9137725 Wheelbase (mm): 2735
Vehicle Size Category: Sedan Test Weight (kg): 1875.6

ACCELEROMETER DATA

Accelerometer Locations: As per measurements on Page 15

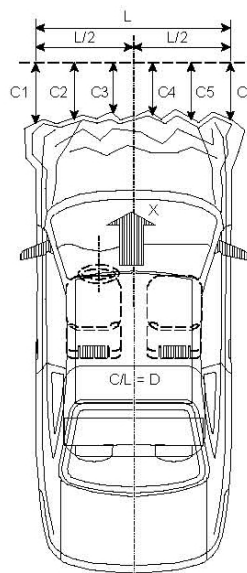
Cal. Procedure/Interval: MGA procedure / 6 month

Integration Algorithm: Trapezoidal Linearity: > 99%

Impact Velocity (km/h): 56.3

Velocity Change (km/h): 65.0

Time of Separation (msec): 128.6



CRUSH PROFILE

Collision Deformation Classification: Frontal

Midpoint of Damage: Centerline

Damage Region Length (mm): 1341

Impact Mode: Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	4554	4260	294
C2	Crush zone 2 at left side	mm	4665	4246	419
C3	Crush zone 3 at left side	mm	4752	4240	512
C4	Crush zone 4 at right side	mm	4752	4244	508
C5	Crush zone 5 at right side	mm	4665	4251	414
C6	Crush zone 6 at right side	mm	4554	4272	282
L	C1 TO C6	mm	1341	1260	81

DATA SHEET NO. 14
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan
Test Program: NCAP Frontal Barrier Impact Test

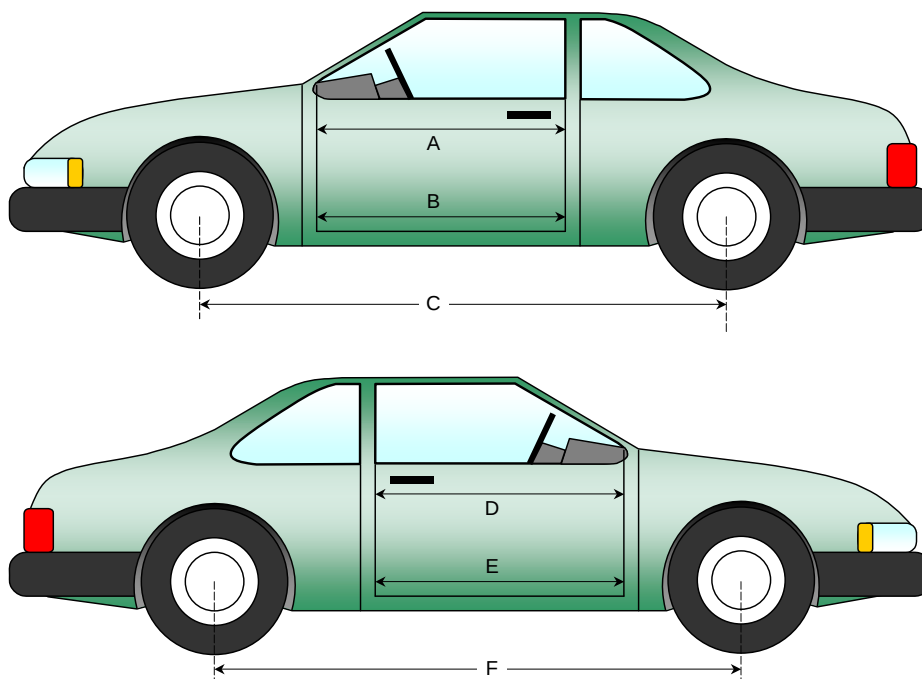
NHTSA No.: MC0118
Test Date: 03/02/2012

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	955	955	0
B	Left Side Lower	mm	884	884	0
D	Right Side Upper	mm	955	995	0
E	Right Side Lower	mm	884	884	0

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2735	2643	92
F	Right Side Wheelbase	mm	2735	2640	95



DATA SHEET NO. 14 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

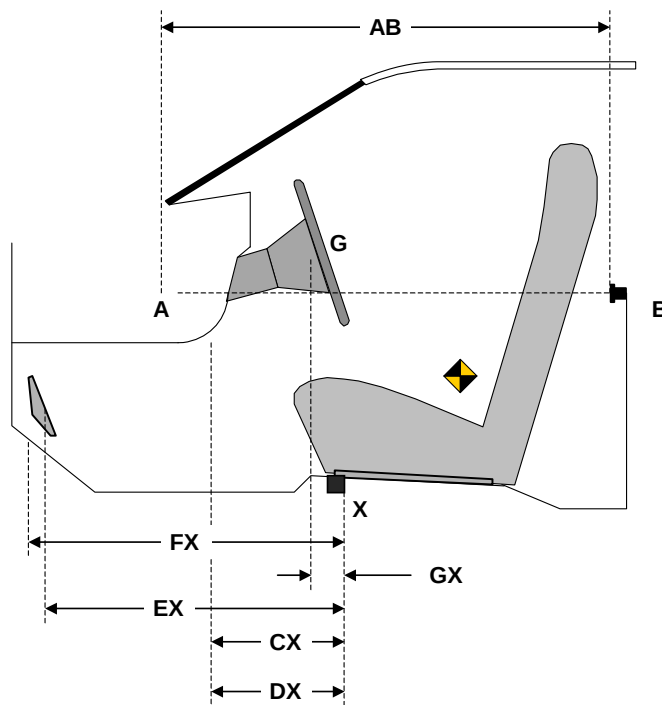
Test Vehicle: 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC0118
 Test Date: 03/02/2012

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside window jam)	mm	795	795	0
CX	Left Knee Bolster to X	mm	243	239	4
DX	Right Knee Bolster to X	mm	259	252	7
EX	Brake Pedal to X	mm	577	558	19
FX	Foot Rest to X	mm	631	628	3
GX	Center of Steering Column Wheel Hub to X	mm	80	104	-24

X = Front of Seat Track (stationary)

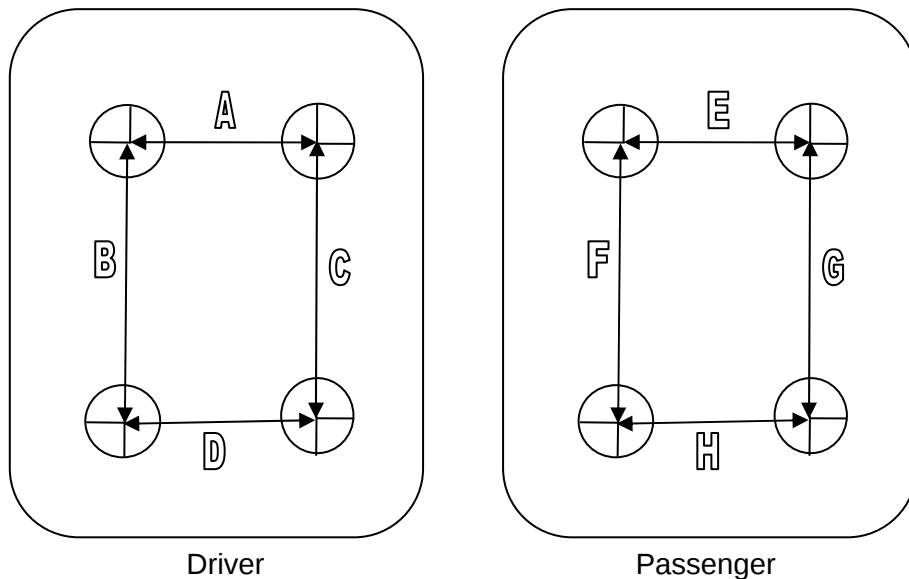


DRIVER COMPARTMENT

DATA SHEET NO. 14 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC0118
 Test Date: 03/02/2012



TOP VIEW THROUGH FLOOR PAN

UNDERBODY FLOORBOARD DEFORMATION

Measurement	Units	Pre-Test	Post-Test	Difference
A	mm	300	300	0
B	mm	300	300	0
C	mm	300	300	0
D	mm	300	300	0
E	mm	300	300	0
F	mm	300	300	0
G	mm	300	300	0
H	mm	300	300	0

DATA SHEET NO. 15
SUMMARY OF FMVSS 212, 219 (PARTIAL), AND 301 DATA

Test Vehicle: 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC0118
 Test Date: 03/02/2012

Windshield Mounting Details:

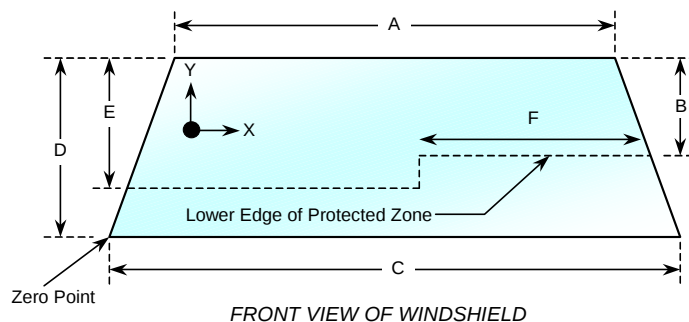
Windshield glass is secured to the vehicle frame with a rubber trim and glue.

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: 20.7°C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% of Retention
Left Side	2142	2142	100
Right Side	2142	2142	100
Total	4284	4284	100



Item	Units	Value
A	mm	1220
B	mm	519
C	mm	1438
D	mm	813
E	mm	515
F	mm	562

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

Test Vehicle: 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan NHTSA No.: MC0118
Test Program: NCAP Frontal Barrier Impact Test Test Date: 03/02/2012

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Test Time: 1:05 pm

Temperature: 20.7° C

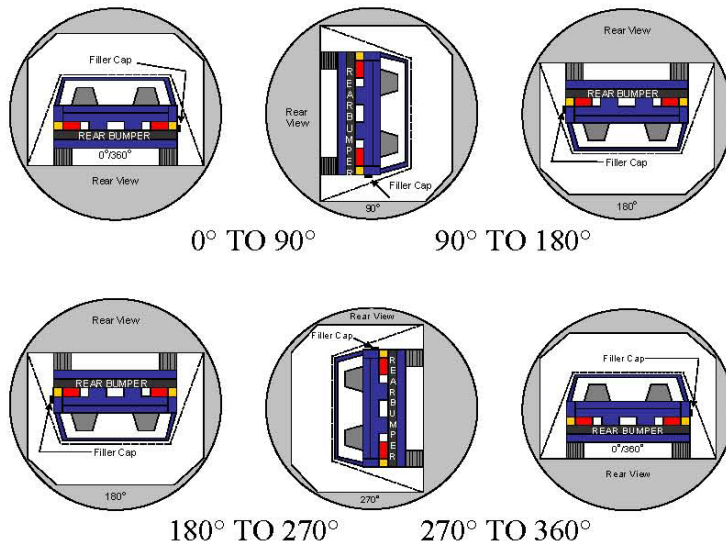
- A. From impact until vehicle motion ceases: 0 oz.
(Maximum Allowable = 1 ounce)
- B. For the 5 minute period after motion ceases: None
(Maximum allowable = 5 ounces)
- C. For the following 25 minutes: None
(Maximum allowable = 1 oz./minute)
- D. Spillage Details: None

DATA SHEET NO. 16 **FMVSS 301 STATIC ROLLOVER RESULTS**

Test Vehicle: 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC0118
 Test Date: 03/02/2012

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: **None**



SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	110	300	410
90° to 180°	109	300	409
180° to 270°	115	300	415
270° to 360°	117	300	417

FMVSS 301 ROLLOVER SPILLAGE TABLE (units in ounces)

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

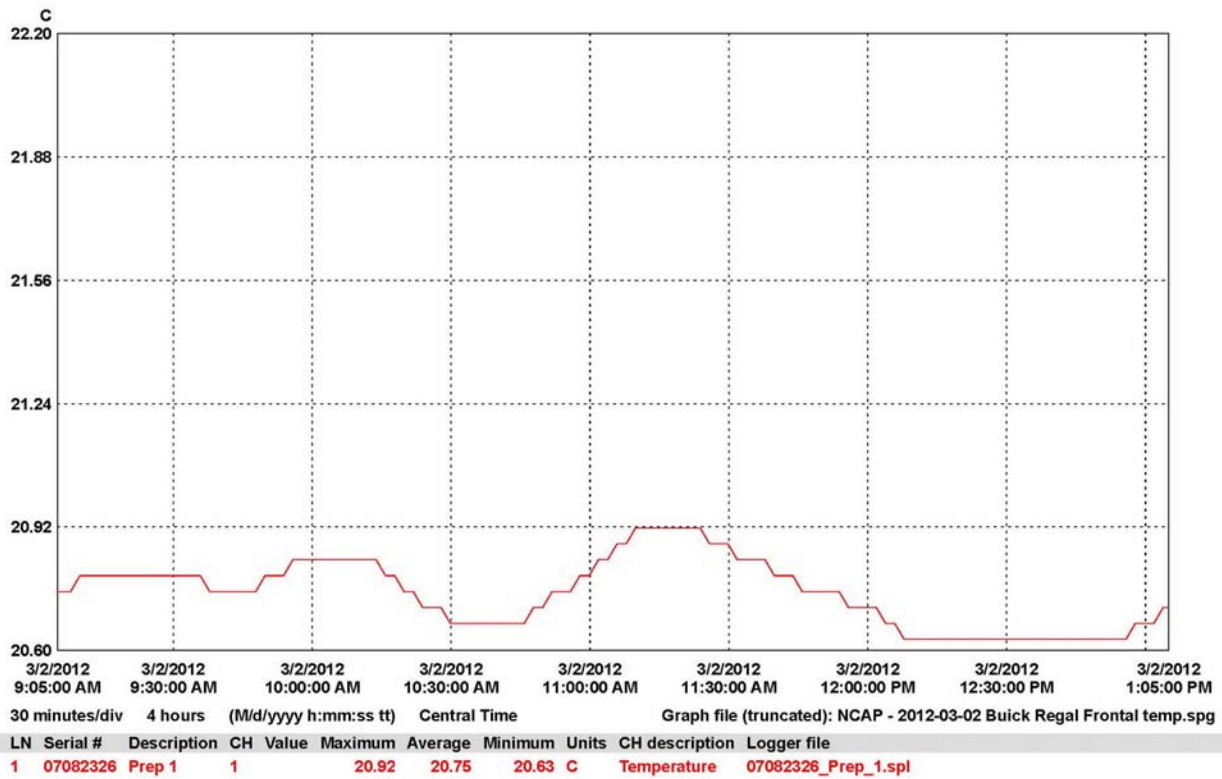
ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 17 **DUMMY/VEHICLE TEMPERATURE STABILIZATION DATA**

Test Vehicle: 2012 Buick Regal Premium II Group with eAssist 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MC0118
 Test Date: 03/02/2012



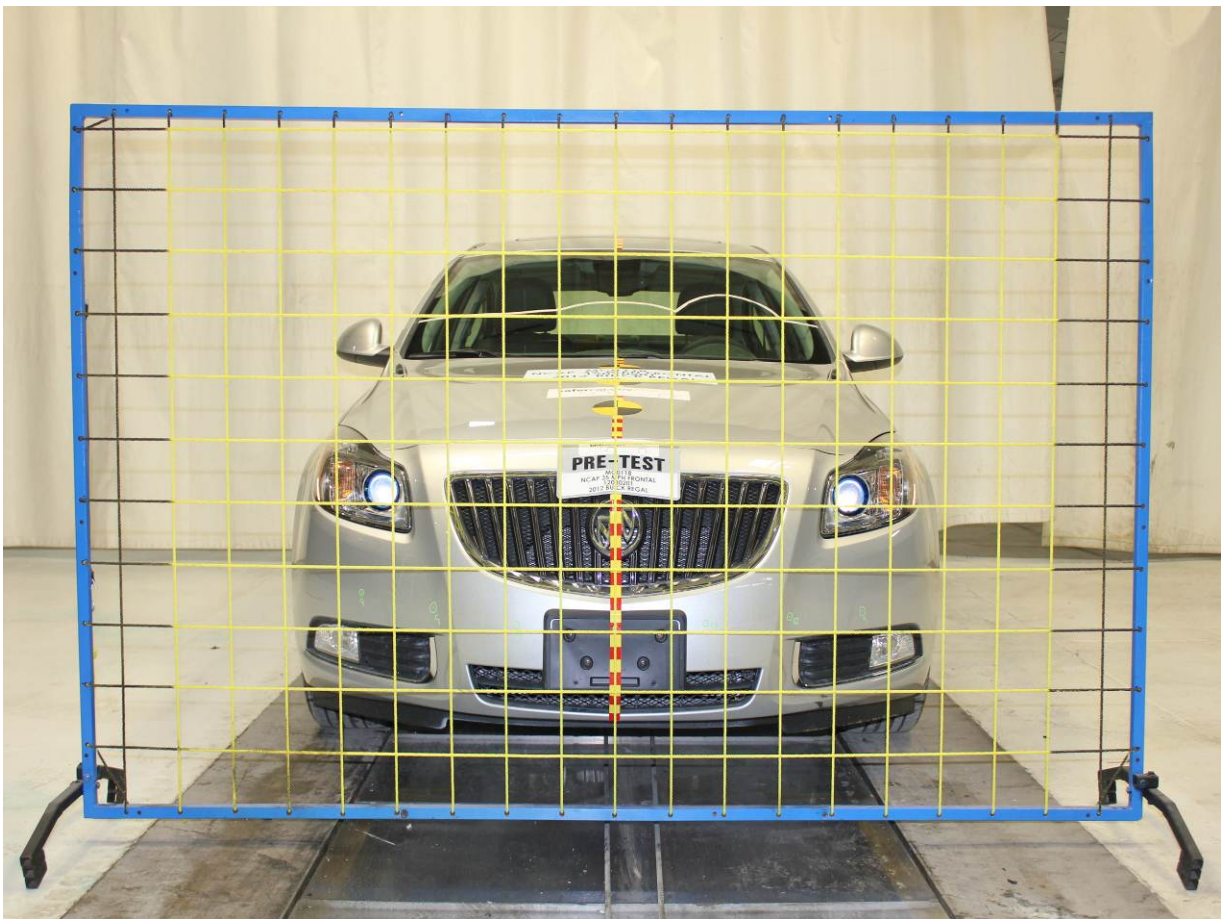
APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

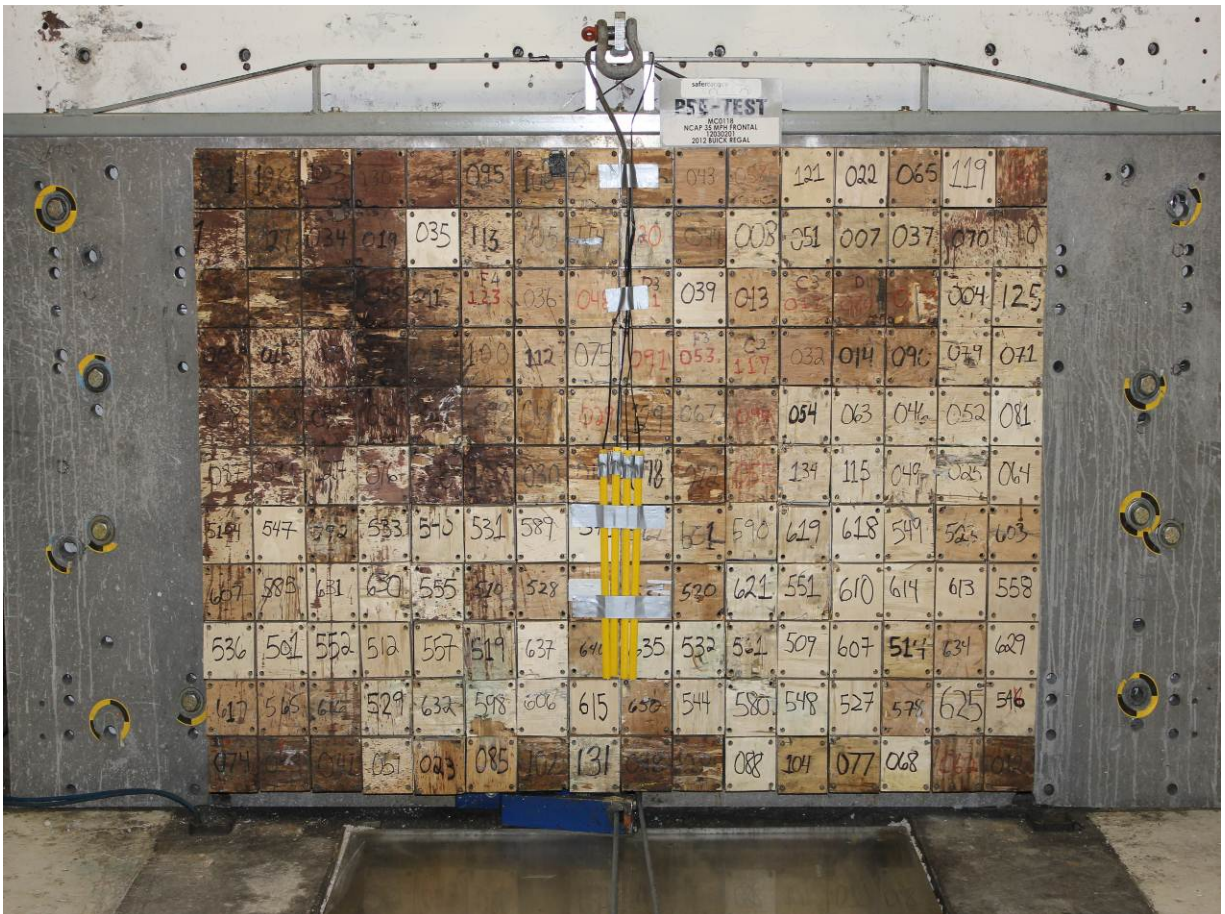
		<u>Page No.</u>
Photo No. 1.	Load Cell Location	A-1
Photo No. 2.	Load Cell Wall	A-1
Photo No. 3.	Manufacturer's Label	A-2
Photo No. 4.	Tire Placard	A-2
Photo No. 5.	2012 Buick Regal Frontal As Delivered	A-3
Photo No. 6.	Left Rear Three-Quarter View, As Received	A-3
Photo No. 7.	Pre-Test Front View of Test Vehicle	A-4
Photo No. 8.	Post-Test Front View of Test Vehicle	A-4
Photo No. 9.	Pre-Test Left View of Test Vehicle	A-5
Photo No. 10.	Post-Test Left View of Test Vehicle	A-5
Photo No. 11.	Pre-Test Right View of Test Vehicle	A-6
Photo No. 12.	Post-Test Right View of Test Vehicle	A-6
Photo No. 13.	Pre-Test Right Front Three-Quarter View	A-7
Photo No. 14.	Post-Test Right Front Three-Quarter View	A-7
Photo No. 15.	Pre-Test Left Rear Three-Quarter View	A-8
Photo No. 16.	Post-Test Left Rear Three-Quarter View	A-8
Photo No. 17.	Pre-Test Windshield View	A-9
Photo No. 18.	Post-Test Windshield View	A-9
Photo No. 19.	Pre-Test Engine Compartment View	A-10
Photo No. 20.	Post-Test Engine Compartment View	A-10
Photo No. 21.	Pre-Test Fuel Filler Cap View	A-11
Photo No. 22.	Post-Test Fuel Filler Cap View	A-11
Photo No. 23.	Pre-Test Front Underbody View	A-12
Photo No. 24.	Post-Test Front Underbody View	A-12
Photo No. 25.	Pre-Test Mid Front Underbody View	A-13
Photo No. 26.	Post-Test Mid Front Underbody View	A-13
Photo No. 27.	Pre-Test Mid Rear Underbody View	A-14
Photo No. 28.	Post-Test Mid Rear Underbody View	A-14

		<u>Page No.</u>
Photo No. 29.	Pre-Test Rear Underbody View	A-15
Photo No. 30.	Post-Test Rear Underbody View	A-15
Photo No. 31.	Pre-Test Dummy Cable Routing	A-16
Photo No. 32.	Post-Test Dummy Cable Routing	A-16
Photo No. 33.	Pre-Test Driver Dummy Front View	A-17
Photo No. 34.	Post-Test Driver Dummy Front View	A-17
Photo No. 35.	Pre-Test Driver Dummy Window View	A-18
Photo No. 36.	Post-Test Driver Dummy Window View	A-18
Photo No. 37.	Pre-Test Driver Dummy and Vehicle Interior (Door Open)	A-19
Photo No. 38.	Post-Test Driver Dummy and Vehicle Interior (Door Open)	A-19
Photo No. 39.	Pre-Test Driver's Seat Fore-Aft Markings	A-20
Photo No. 40.	Post-Test Driver's Seat Fore-Aft Markings	A-20
Photo No. 41.	Pre-Test Driver Dummy Feet	A-21
Photo No. 42.	Post-Test Driver Dummy Feet	A-21
Photo No. 43.	Pre-Test Driver's Side Knee Bolster (without dummy)	A-22
Photo No. 44.	Post-Test Driver's Side Knee Bolster (without dummy)	A-22
Photo No. 45.	Pre-Test Driver's Side Floorpan	A-23
Photo No. 46.	Post-Test Driver's Side Floorpan	A-23
Photo No. 47.	Post-Test Driver Dummy Face	A-24
Photo No. 48.	Post-Test Driver Dummy Contact with Airbag	A-24
Photo No. 49.	Post-Test Driver Dummy Contact with Headrest	A-25
Photo No. 50.	Post-Test Driver Dummy Contact with Knee Bolster	A-25
Photo No. 51.	Pre-Test View of the Steering Wheel	A-26
Photo No. 52.	Post-Test View of the Steering Wheel	A-26
Photo No. 53.	Pre-Test Passenger Dummy Front View	A-27
Photo No. 54.	Post-Test Passenger Dummy Front View	A-27
Photo No. 55.	Pre-Test Passenger Dummy Window View	A-28
Photo No. 56.	Post-Test Passenger Dummy Window View	A-28

		<u>Page No.</u>
Photo No. 57.	Pre-Test Passenger Dummy and Vehicle Interior (Door Open)	A-29
Photo No. 58.	Post-Test Passenger Dummy and Vehicle Interior (Door Open)	A-29
Photo No. 59.	Pre-Test Passenger's Seat Fore-Aft Markings	A-30
Photo No. 60.	Post-Test Passenger's Seat Fore-Aft Markings	A-30
Photo No. 61.	Pre-Test Passenger Dummy Feet	A-31
Photo No. 62.	Post-Test Passenger Dummy Feet	A-31
Photo No. 63.	Pre-Test Passenger's Side Knee Bolster (without dummy)	A-32
Photo No. 64.	Post-Test Passenger's Side Knee Bolster (without dummy)	A-32
Photo No. 65.	Pre-Test Passenger's Side Floorpan	A-33
Photo No. 66.	Post-Test Passenger's Side Floorpan	A-33
Photo No. 67.	Post-Test Passenger Dummy Contact with Airbag	A-34
Photo No. 68.	Post-Test Passenger Dummy Contact with Headrest	A-34
Photo No. 69.	Post-Test Passenger Dummy Contact with Knee Bolster	A-35
Photo No. 70.	Ballast Installed in Vehicle	A-35
Photo No. 71.	Post-Test Stoddard Solvent Spillage Location View	A-36
Photo No. 72.	Post-Test Speed Trap Read-Out	A-36
Photo No. 73.	Vehicle at 0 Degrees on Static Rollover Device	A-37
Photo No. 74.	Vehicle at 90 Degrees on Static Rollover Device	A-37
Photo No. 75.	Vehicle at 180 Degrees on Static Rollover Device	A-38
Photo No. 76.	Vehicle at 270 Degrees on Static Rollover Device	A-38
Photo No. 77.	Vehicle at 360 Degrees on Static Rollover Device	A-39
Photo No. 78.	2012 Buick Regal Frontal Impact Event	A-39
Photo No. 79.	Monroney Label	A-40



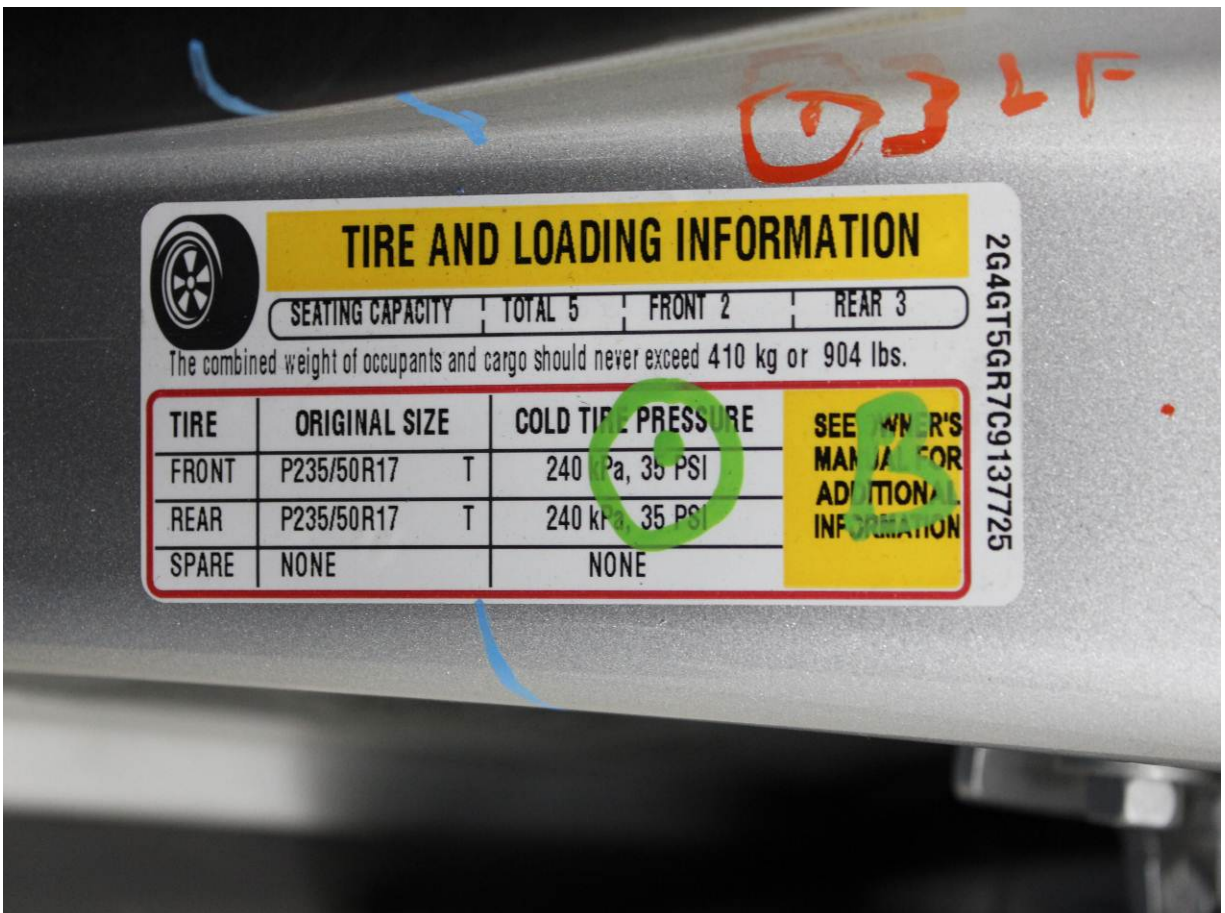
Load Cell Location



Load Cell Wall



Manufacturer's Label



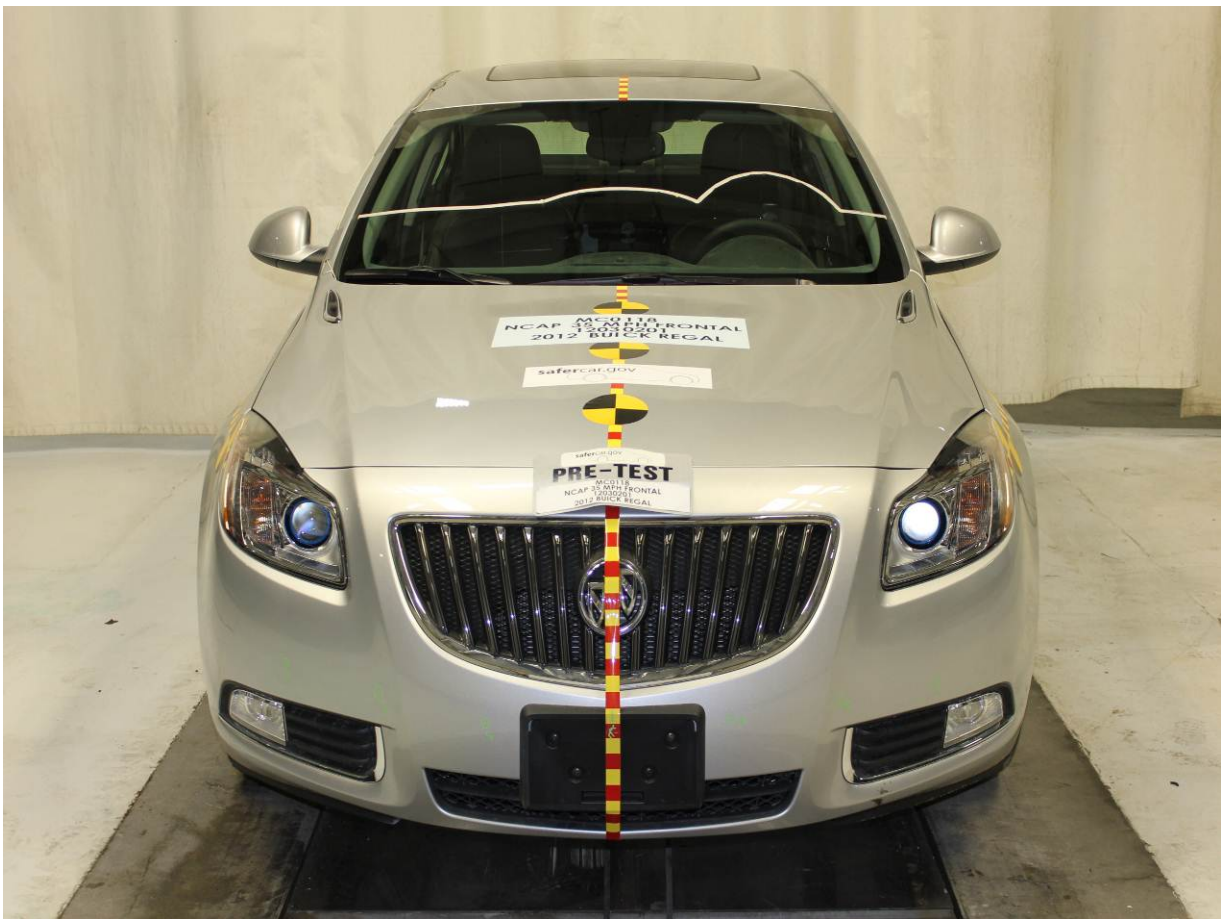
Tire Placard



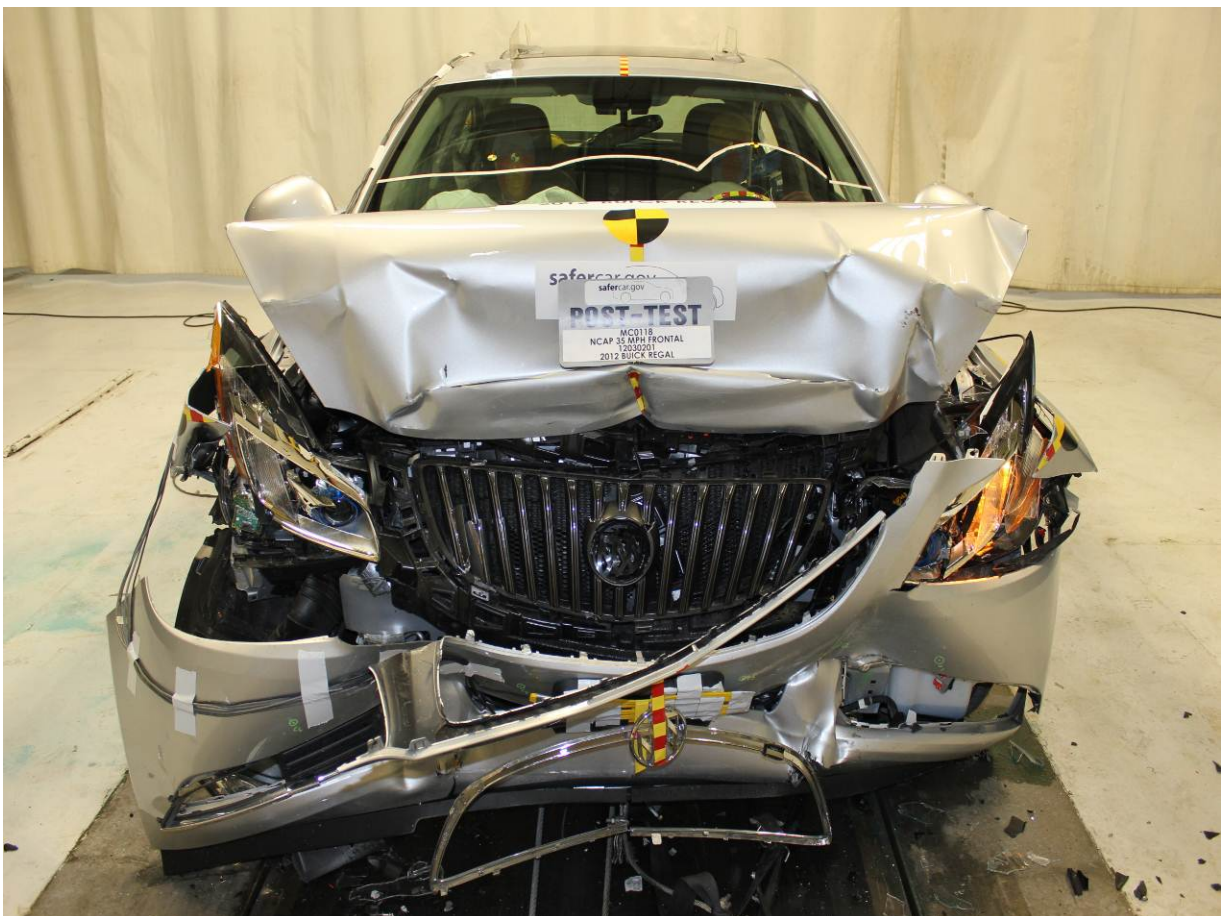
2012 Buick Regal Frontal As Delivered



Left Rear Three-Quarter View, As Received



Pre-Test Front View of Test Vehicle



Post-Test Front View of Test Vehicle



Pre-Test Left View of Test Vehicle



Post-Test Left View of Test Vehicle



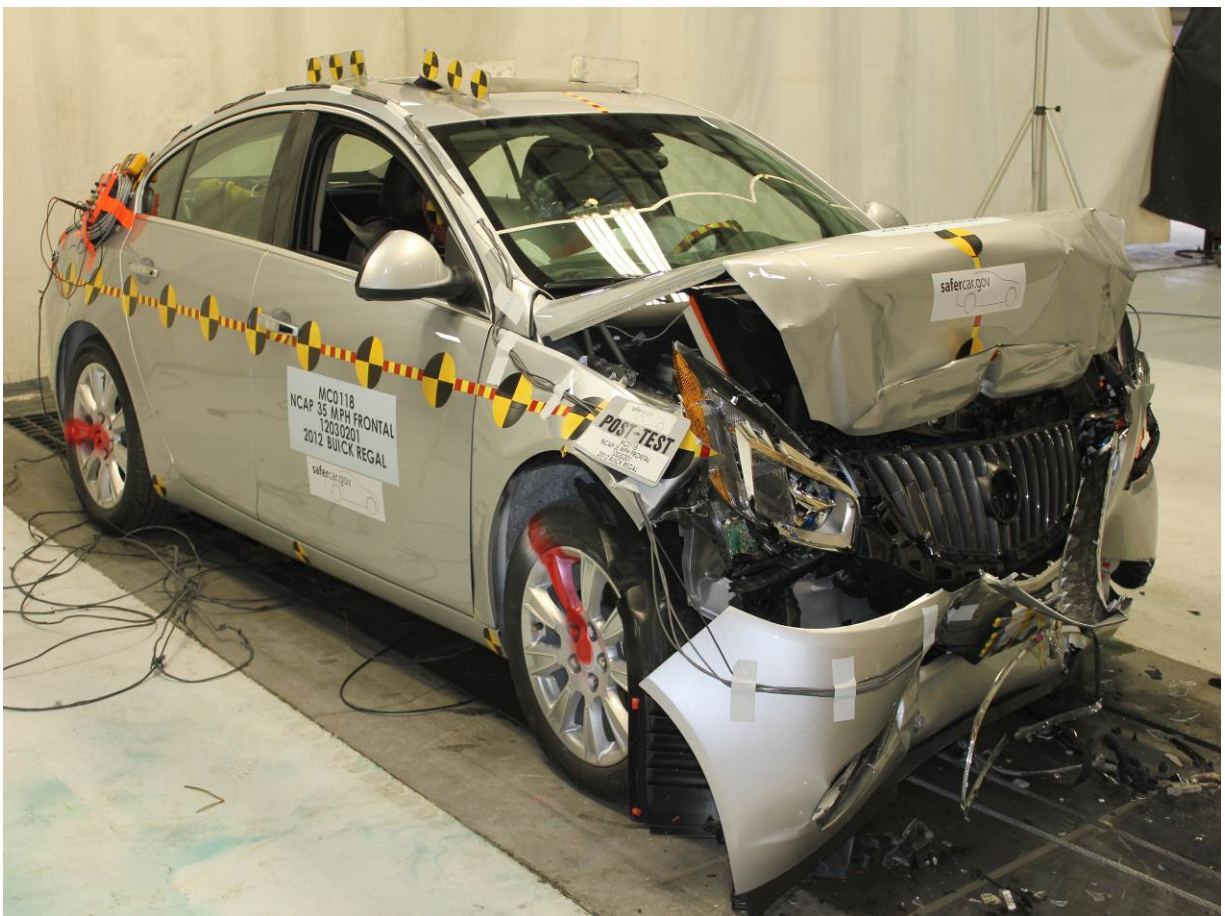
Pre-Test Right View of Test Vehicle



Post-Test Right View of Test Vehicle



Pre-Test Right Front Three-Quarter View



Post-Test Right Front Three-Quarter View



Pre-Test Left Rear Three-Quarter View



Post-Test Left Rear Three-Quarter View



Pre-Test Windshield View



Post-Test Windshield View



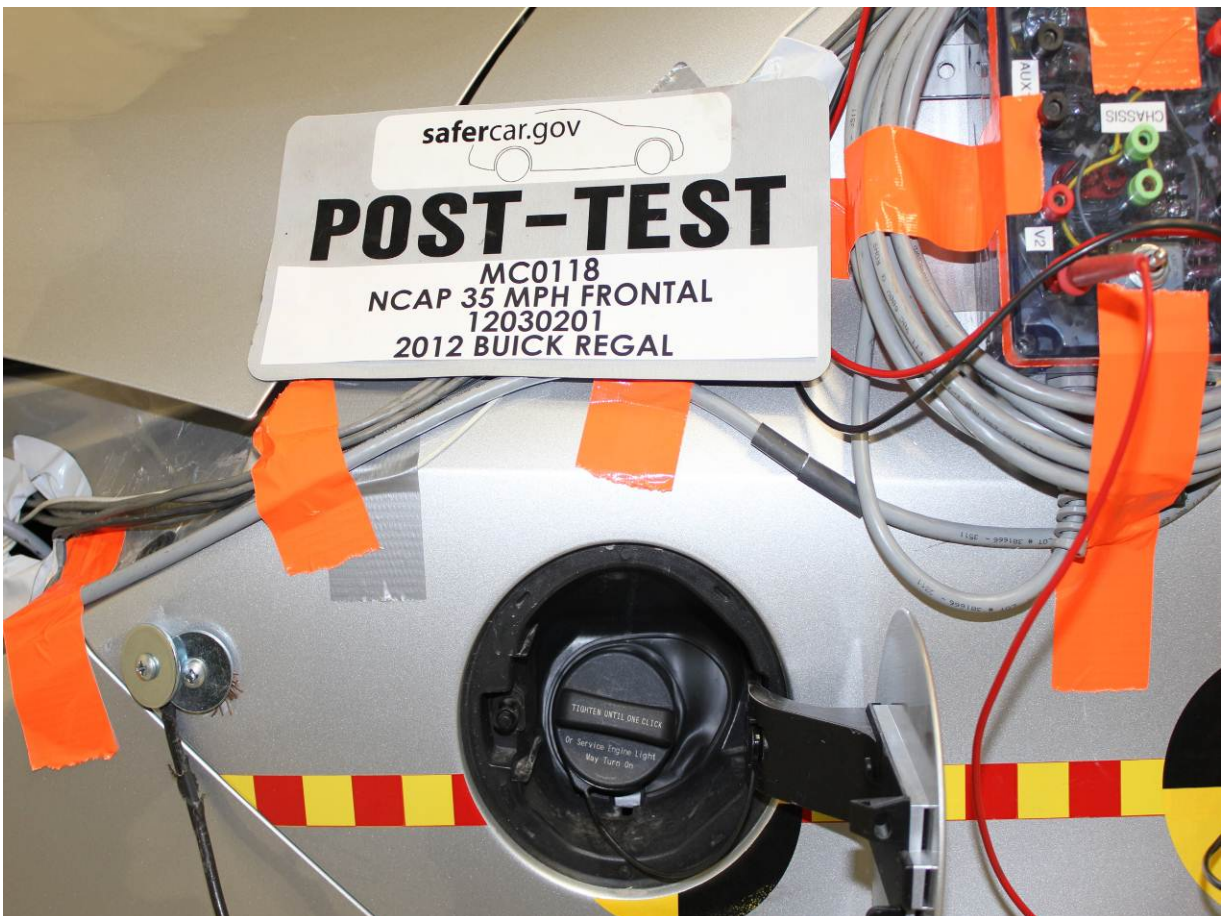
Pre-Test Engine Compartment View



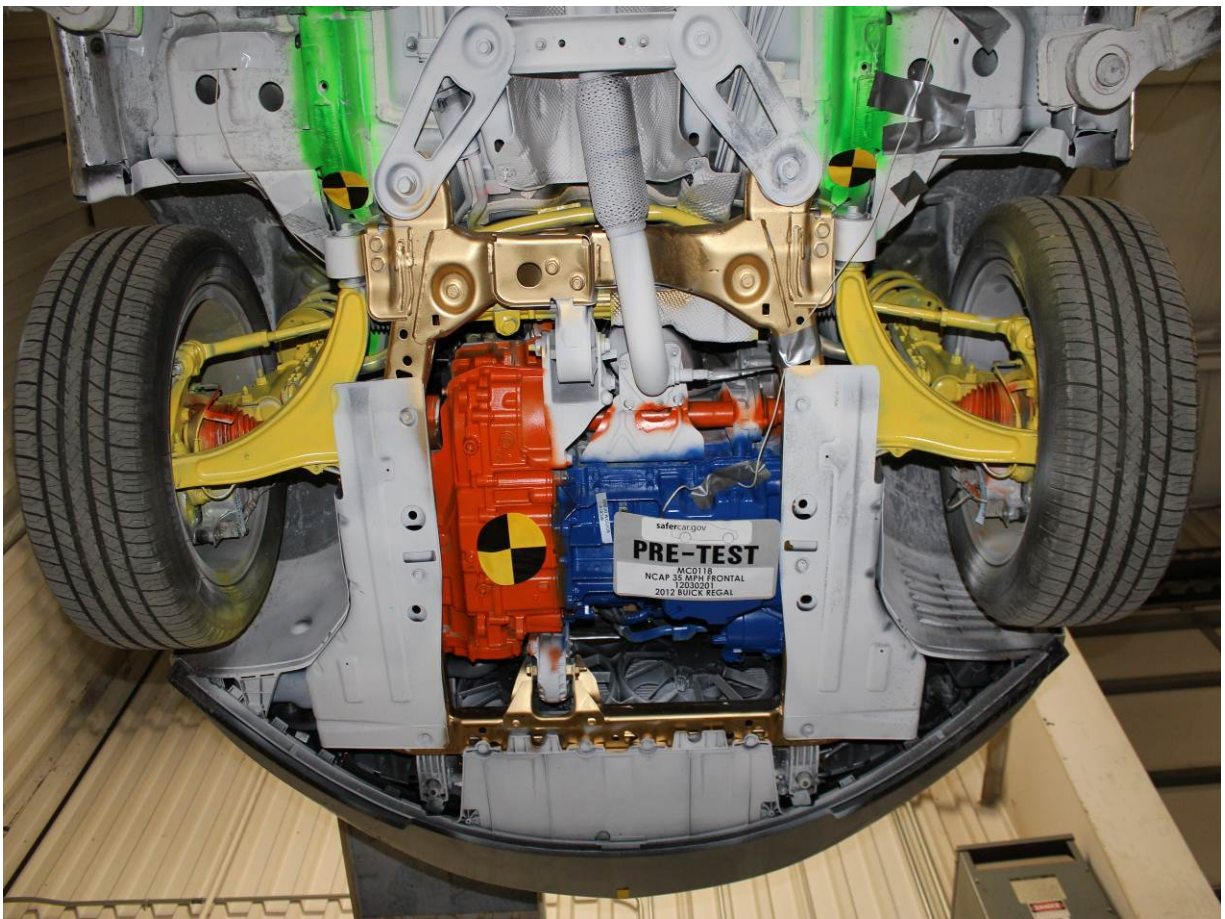
Post-Test Engine Compartment View



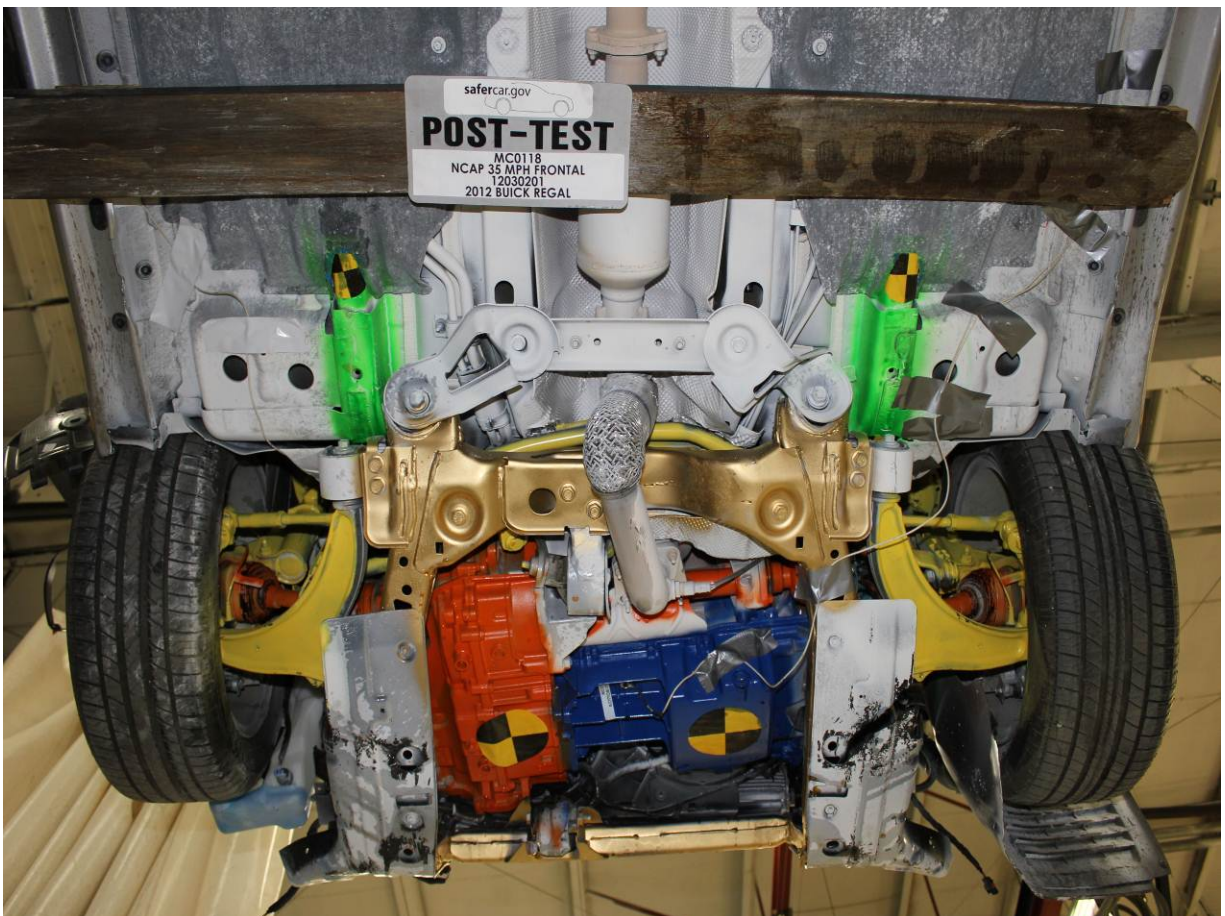
Pre-Test Fuel Filler Cap View



Post-Test Fuel Filler Cap View



Pre-Test Front Underbody View



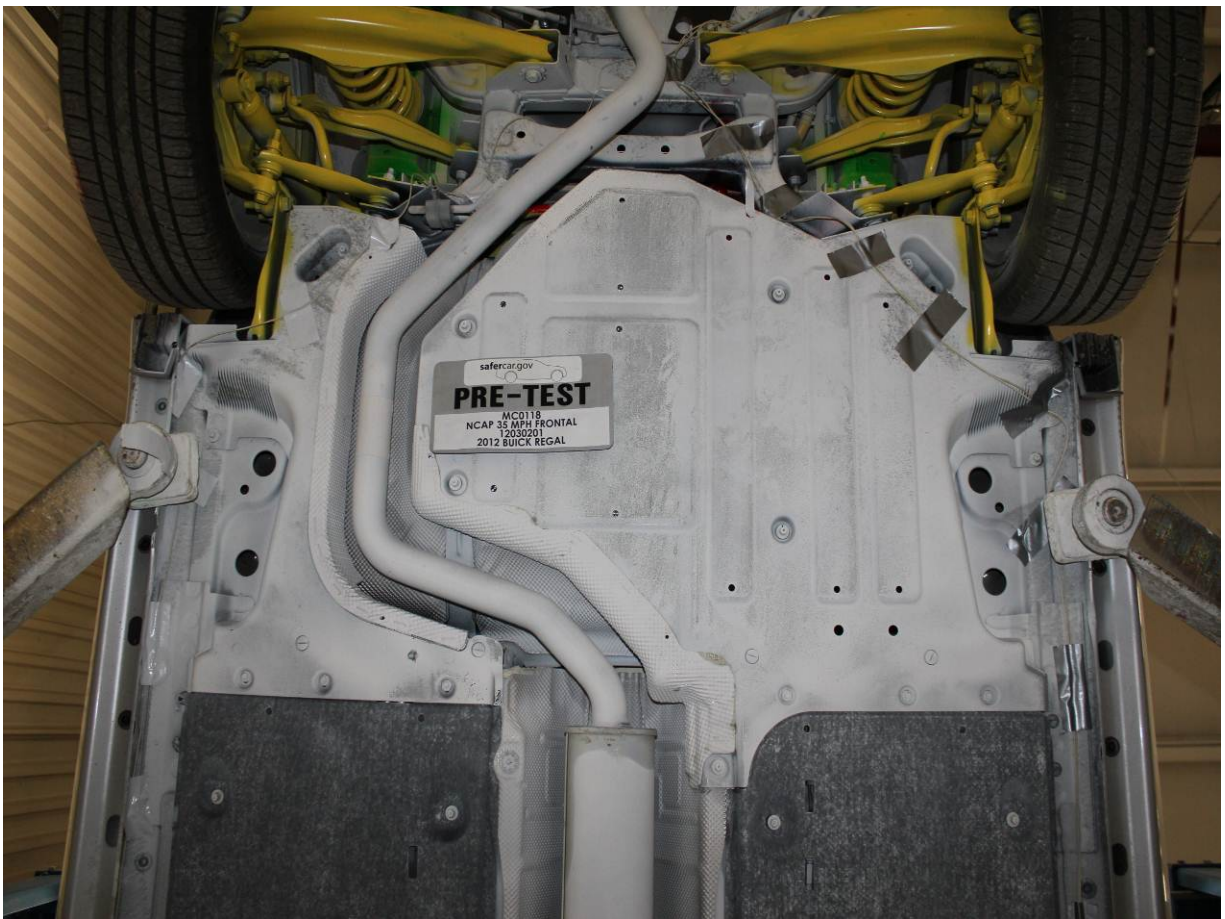
Post-Test Front Underbody View



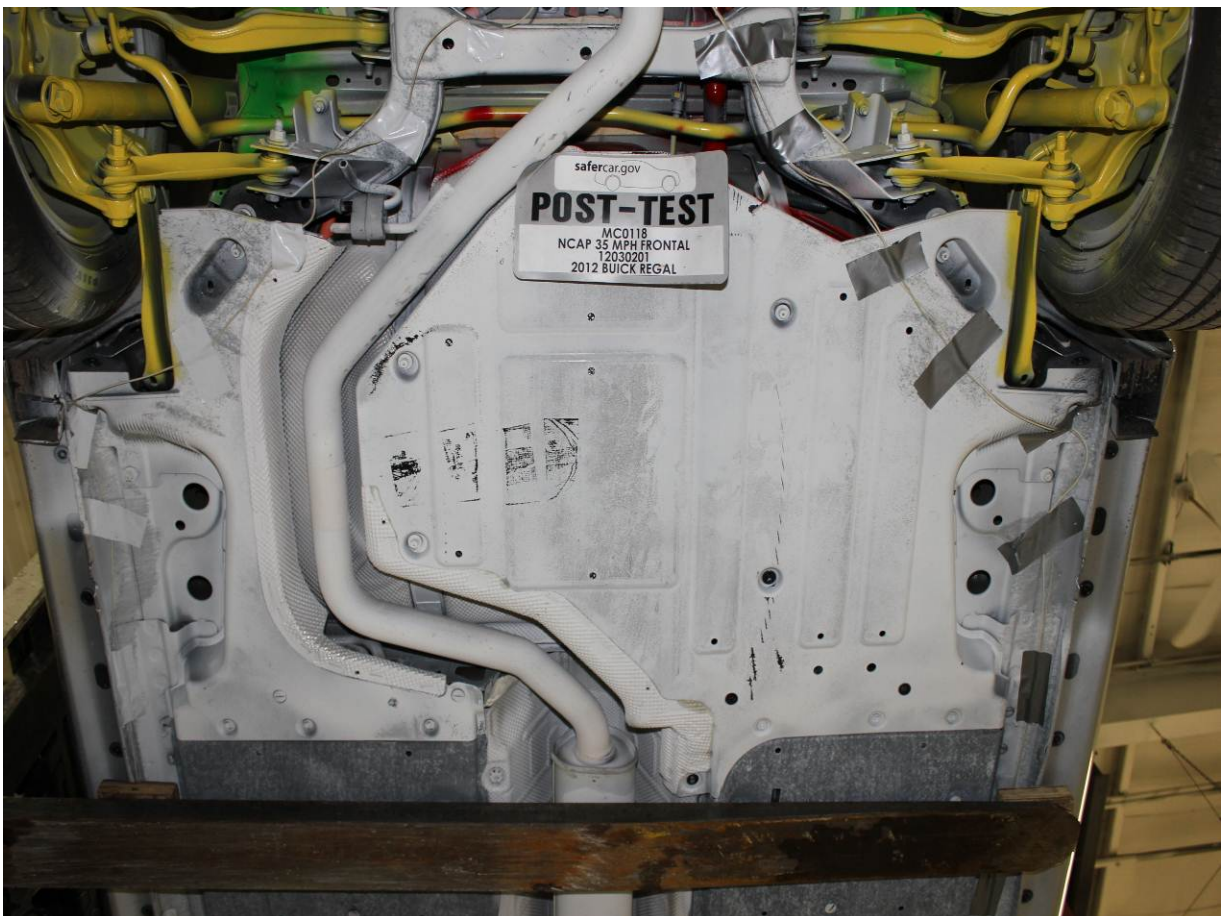
Pre-Test Mid Front Underbody View



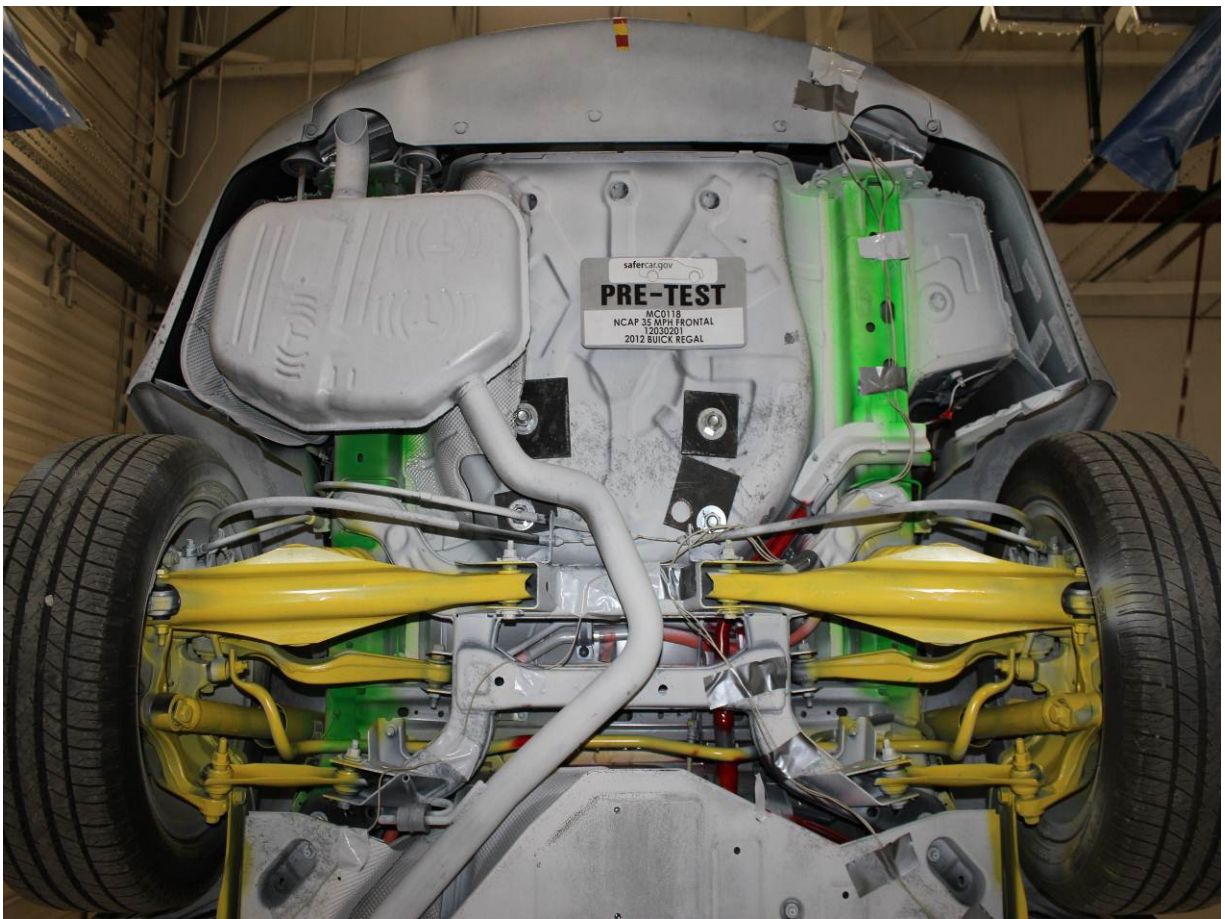
Post-Test Mid Front Underbody View



Pre-Test Mid Rear Underbody View



Post-Test Mid Rear Underbody View



Pre-Test Rear Underbody View



Post-Test Rear Underbody View



Pre-Test Dummy Cable Routing



Post-Test Dummy Cable Routing



Pre-Test Driver Dummy Front View



Post-Test Driver Dummy Front View



Pre-Test Driver Dummy Window View



Post-Test Driver Dummy Window View



Pre-Test Driver Dummy and Vehicle Interior (Door Open)



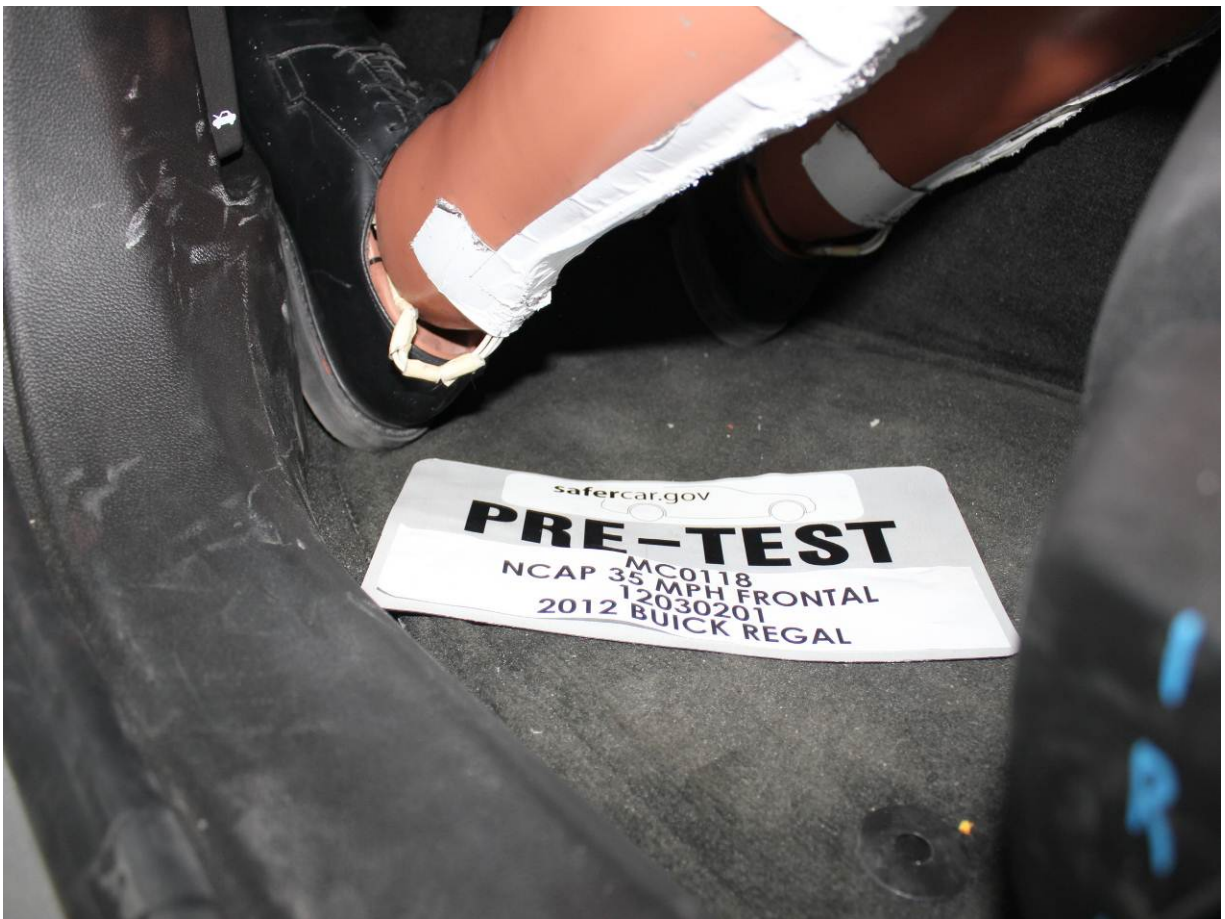
Post-Test Driver Dummy and Vehicle Interior (Door Open)



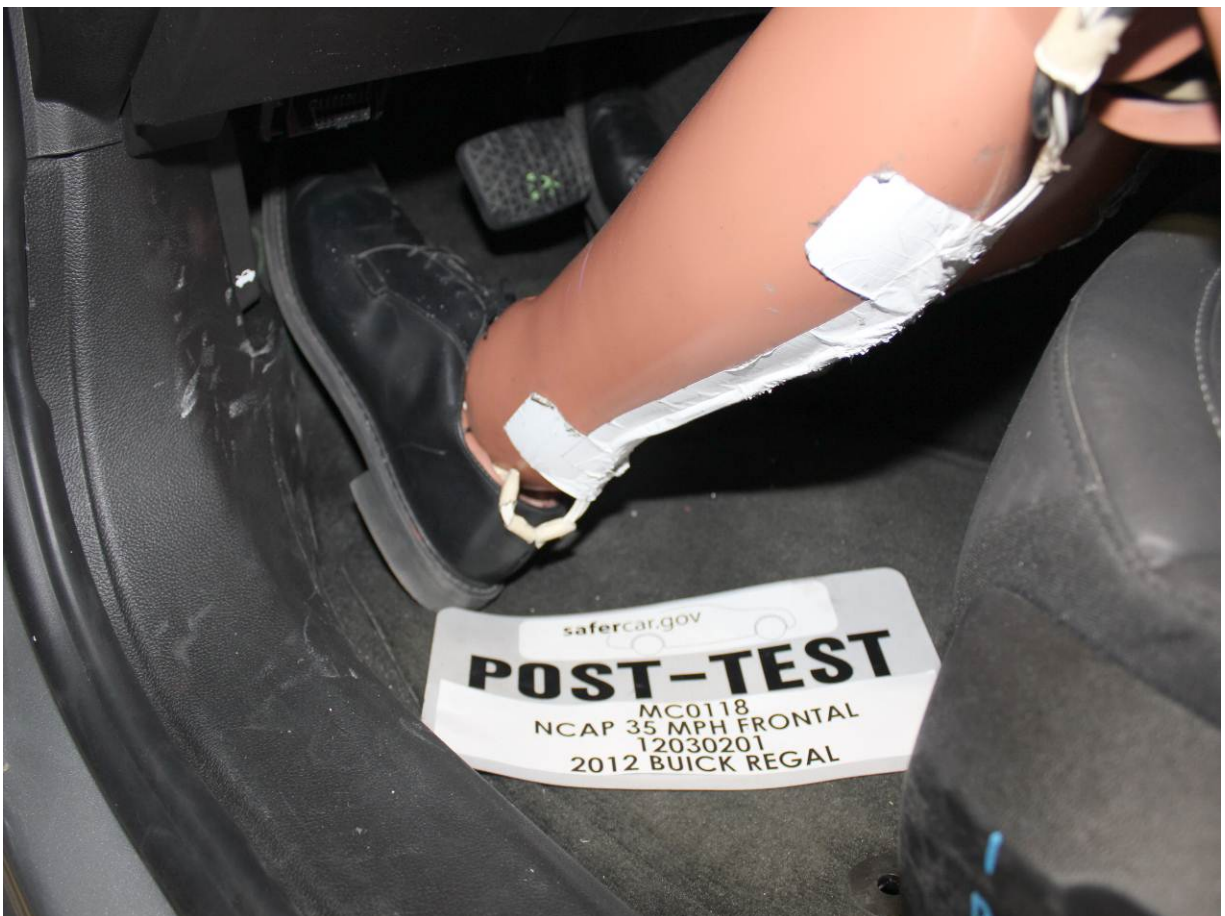
Pre-Test Driver's Seat Fore-Aft Markings



Post-Test Driver's Seat Fore-Aft Markings



Pre-Test Driver Dummy Feet



Post-Test Driver Dummy Feet



Pre-Test Driver's Side Knee Bolster (without dummy)



Post-Test Driver's Side Knee Bolster (without dummy)



Pre-Test Driver's Side Floorpan



Post-Test Driver's Side Floorpan



Post-Test Driver Dummy Face



Post-Test Driver Dummy Contact with Airbag



Post-Test Driver Dummy Contact with Headrest



Post-Test Driver Dummy Contact with Knee Bolster



Pre-Test View of the Steering Wheel



Post-Test View of the Steering Wheel



Pre-Test Passenger Dummy Front View



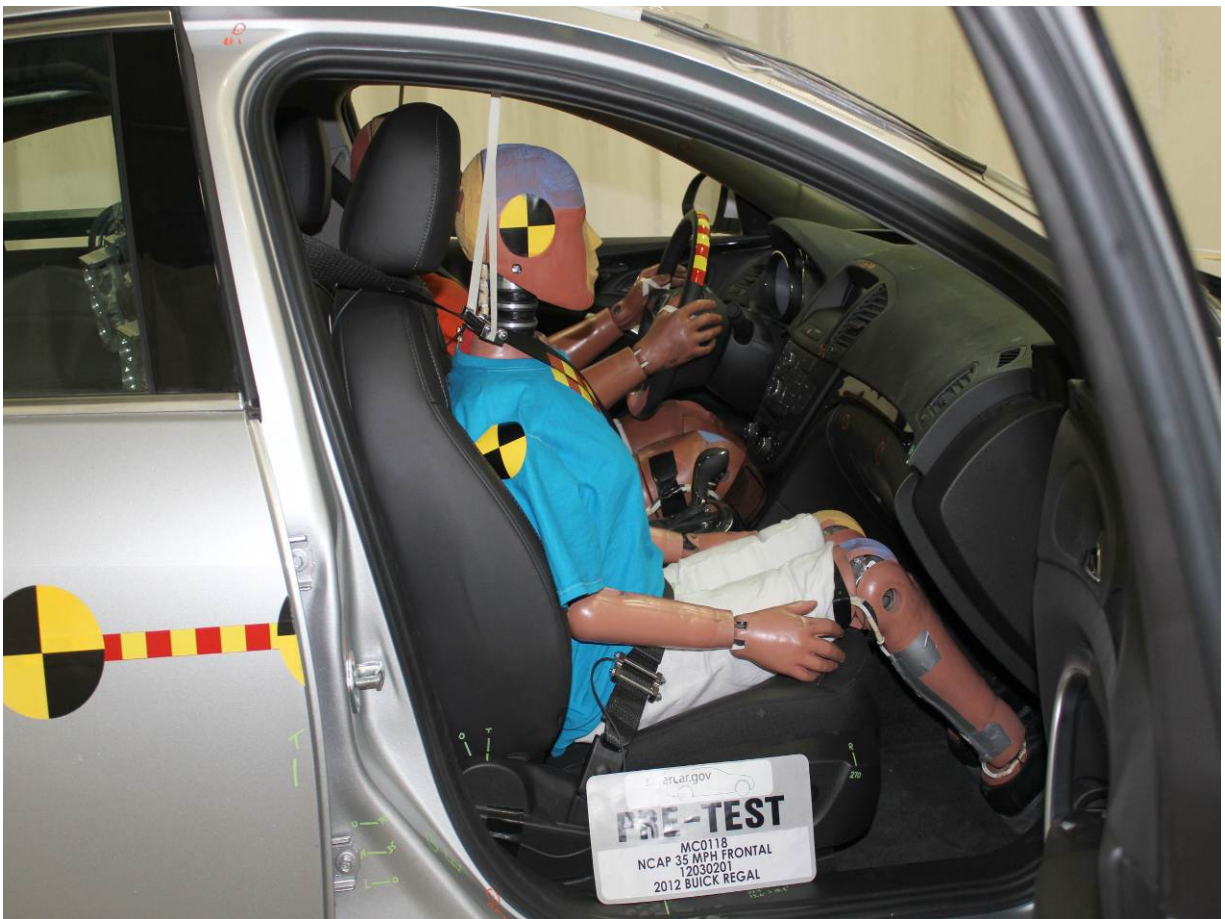
Post-Test Passenger Dummy Front View



Pre-Test Passenger Dummy Window View



Post-Test Passenger Dummy Window View



Pre-Test Passenger Dummy and Vehicle Interior (Door Open)



Post-Test Passenger Dummy and Vehicle Interior (Door Open)



Pre-Test Passenger's Seat Fore-Aft Markings



Post-Test Passenger's Seat Fore-Aft Markings



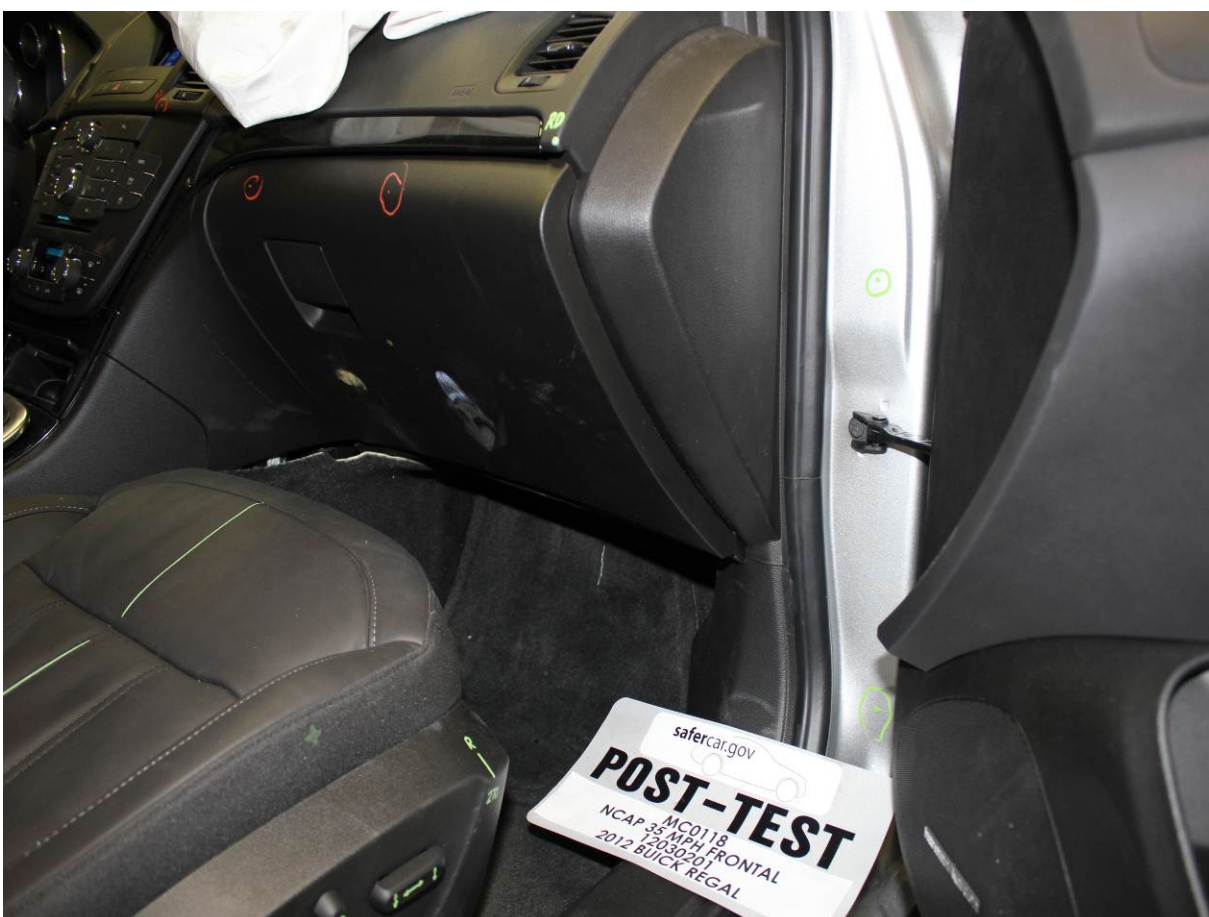
Pre-Test Passenger Dummy Feet



Post-Test Passenger Dummy Feet



Pre-Test Passenger's Side Knee Bolster (without dummy)



Post-Test Passenger's Side Knee Bolster (without dummy)



Pre-Test Passenger's Side Floorpan



Post-Test Passenger's Side Floorpan



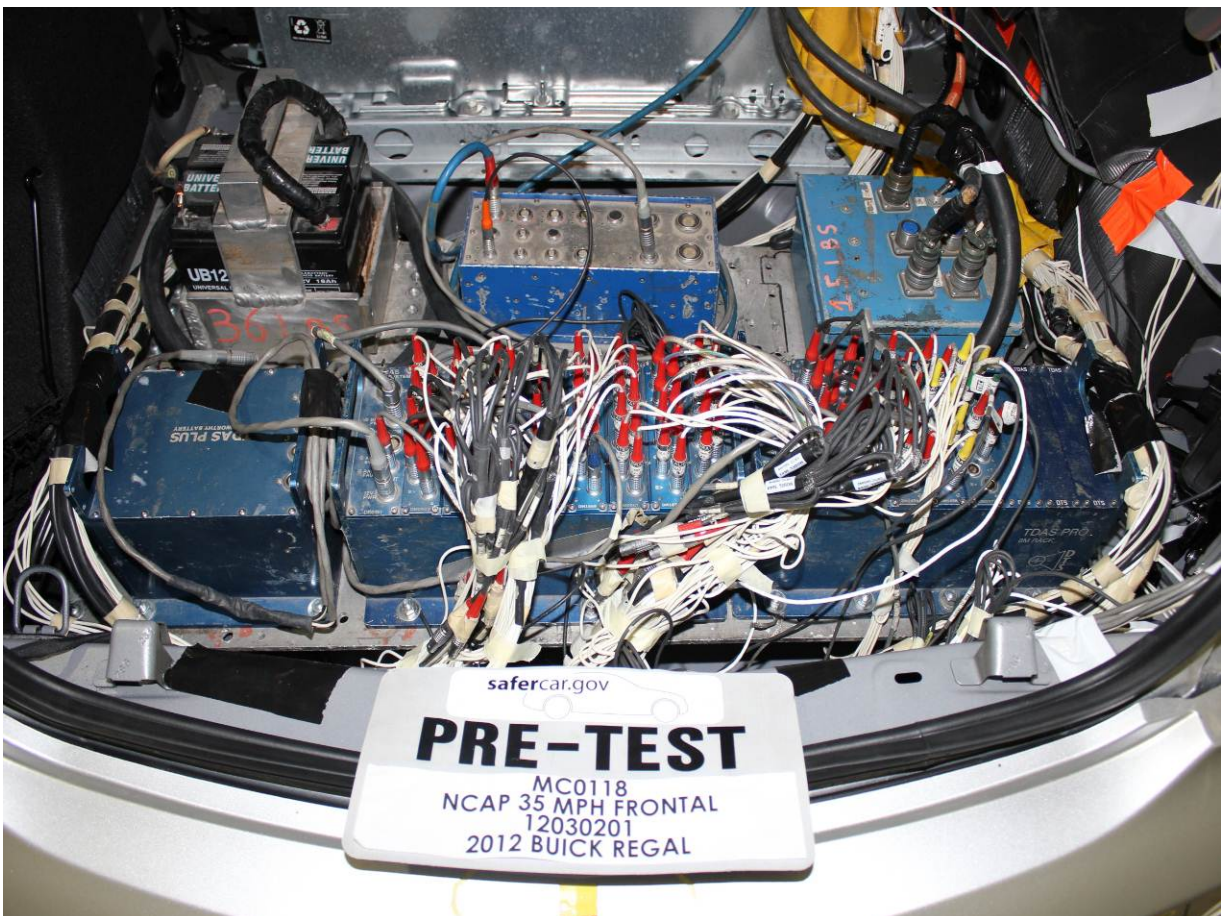
Post-Test Passenger Dummy Contact with Airbag



Post-Test Passenger Dummy Contact with Headrest



Post-Test Passenger Dummy Contact with Knee Bolster



Ballast Installed in Vehicle

PHOTOGRAPH NOT APPLICABLE

Post-Test Stoddard Solvent Spillage Location View



Post-Test Speed Trap Read-Out



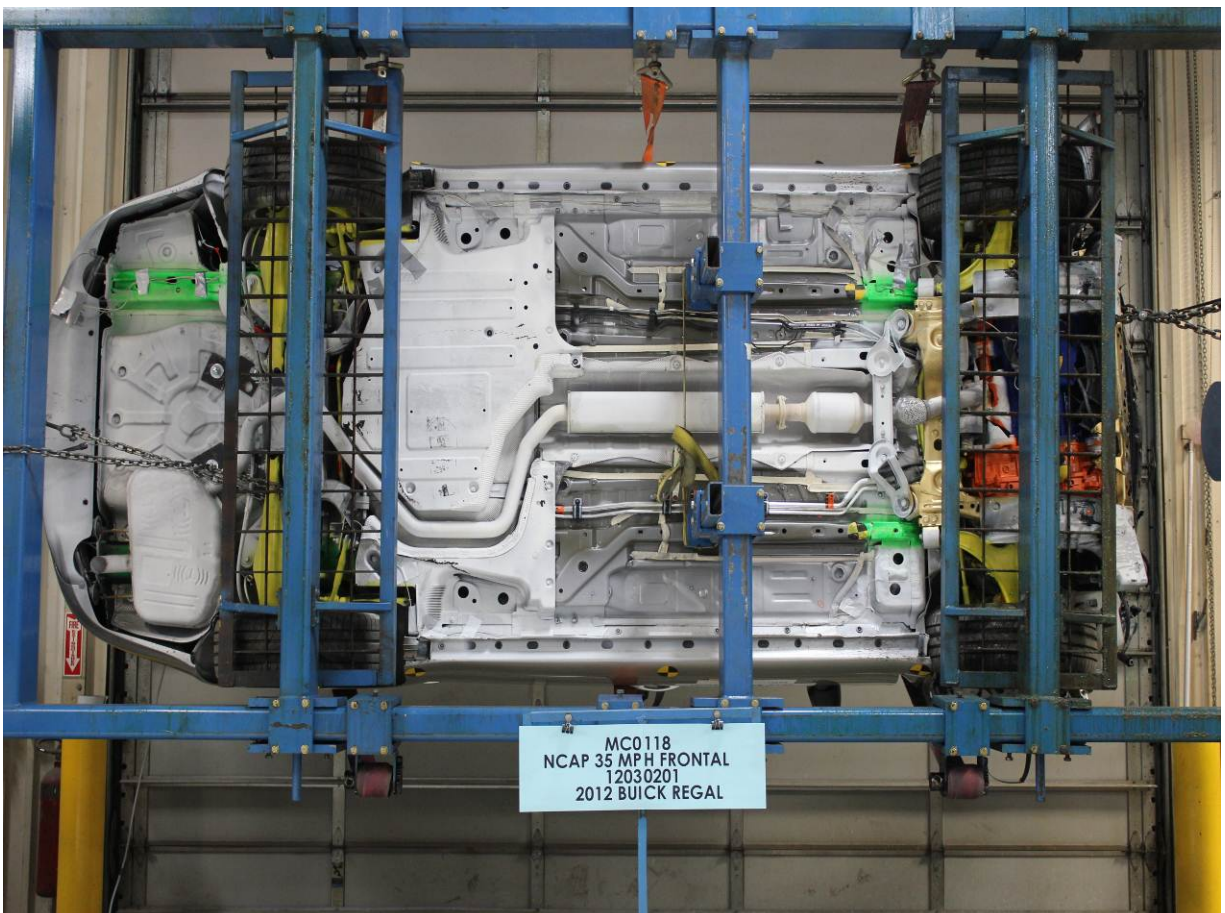
Vehicle at 0 Degrees on Static Rollover Device



Vehicle at 90 Degrees on Static Rollover Device



Vehicle at 180 Degrees on Static Rollover Device



Vehicle at 270 Degrees on Static Rollover Device



Vehicle at 360 Degrees on Static Rollover Device



2012 Buick Regal Frontal Impact Event



2012 REGAL PREMIUM II GROUP

EXTERIOR: QUICKSILVER METALLIC
INTERIOR: EBONY W/ PIANO BLACK
ACCENTS

ENGINE, ECOTEC 2.4L DOHC 4CYL
TRANSMISSION, 6-SPEED AUTOMATIC

Visit us at www.buick.com

STANDARD EQUIPMENT

REGAL FEATURES BELOW ARE INCLUDED AT NO EXTRA CHARGE IN THE STANDARD VEHICLE PRICE (\$29,515.00)

- 5 YEAR / 100,000 MILE POWERTRAIN LIMITED WARRANTY SEE DEALER FOR DETAILS
- 4 YEAR/50,000 MILE BUMPER-TO-BUMPER WARRANTY SEE DEALER FOR DETAILS

MECHANICAL

- ENGINE, 2.4L ECOTEC DOHC 4 CYL SIDI W/ VVT
- TRANSMISSION, 6 SPD AUTOMATIC

SAFETY & SECURITY

- 2011 TOP SAFETY PICK AWARD FROM THE INSURANCE INSTITUTE FOR HIGHWAY SAFETY
- 6 MOS. ONSTAR DIRECTIONS & CONNECTIONS W/ AUTOMATIC CRASH RESPONSE, TURN-BY-TURN NAVIGATION, AND ONSTAR REMOTE LINK (ASK DEALER ABOUT

GEOGRAPHIC COVERAGE

- ANTILOCK BRAKE SYSTEM, 4 WHEEL DISC
- STABILITRAK-STABILITY CONTROL SYSTEM W/ TRACTION CONTROL
- AIRBAG SENSING SYSTEM, PASSENGER
- DAYTIME RUNNING LAMPS
- REAR CHILD SEAT LATCH ANCHORS
- REAR DR LOCKS, CHILD SECURITY
- TIRE PRESSURE MONITORING SYSTEM

EXTERIOR

- WHEELS, 18" PAINTED ALLOY
- FRONT FOG LAMPS
- POWER DUAL OUTSIDE MIRRORS, HEATED

INTERIOR

- POWER OUTLETS (2) 12 VOLT
- PWR SEAT ADJUST, DRIVER, 8 WAY
- PWR SEAT ADJUST, DRIVER

4-WAY LUMBAR

- AIR CONDITIONING, DUAL ZONE CLIMATE CONTROL
- AIR FILTRATION SYSTEM
- BLUETOOTH FOR PHONE
- CONVENIENCE NET, TRUNK
- CRUISE CONTROL
- DRIVER & FRONT PASSENGER HEATED SEATS
- FLOOR MATS, FRONT & REAR
- DRIVER INFORMATION CENTER
- INSIDE REARVIEW MIRROR, AUTO DIMMING
- LEATHER WRAP STEERING WHEEL
- POWER WINDOWS, DRIVER & PASSENGER EXPRESS UP/DOWN
- POWER DOOR LOCKS WITH LOCKOUT PROTECTION
- REAR SEAT, 60/40 SPLIT FOLDING SEATBACK
- SEATS, LEATHER APPOINTED
- STEERING COLUMN, TILT AND TELESCOPIC

- STEERING WHEEL CONTROLS
- AM/FM/XM STEREO, CD PLAYER
- USB PORT
- XM RADIO + SERVICE SUBSCRIPTION SOLD SEPARATELY BY SUBSCRIPTION AFTER 3 MTHS

ADDITIONAL STD EQUIP

- COMFORT & CONVENIENCE PACKAGE
- PWR SEAT ADJUST, FRONT PASSENGER, 8-WAY
- PWR SEAT ADJUST, FRONT PASSENGER, 4-WAY LUMBAR
- POWER OUTLET, 120 VOLT
- REAR PARKING ASSIST
- REMOTE START
- PASSIVE ENTRY, PUSH BUTTON START
- UNIVERSAL GARAGE DOOR OPENER
- DRIVER CONFIDENCE PACKAGE
- PREMIUM 8 SPEAKER SYSTEM
- AIRBAGS, REAR SEAT MOUNTED
- HIGH INTENSITY DISCHARGE

HEADLAMPS

OPTIONS & PRICING

MANUFACTURER'S SUGGESTED RETAIL PRICE
STANDARD EQUIPMENT (EXCL)

STANDARD VEHICLE PRICE \$29,515.00

OPTIONS INSTALLED BY THE MANUFACTURER MAY REPLACE STANDARD EQUIPMENT (EXCL)

ENGINE, ECOTEC 2.4L DOHC 4CYL 2,000.00

WITH EASSET, AND 17" MACHINED ALLOY WHEELS

REPLACING 18" PAINTED ALLOY WHEELS

POWER SUNROOF 1,000.00

UNIT BUILT WITHOUT POWER MIRROR TURN SIGNAL INDICATORS

UNIT BUILT WITHOUT POWER MIRROR TURN SIGNAL INDICATORS

TOTAL OPTIONS \$2,000.00

TOTAL VEHICLE & OPTIONS \$32,465.00

DESTINATION CHARGE 800.00

TOTAL VEHICLE PRICE* \$33,325.00

EPA Fuel Economy Estimates

GASOLINE CITY MPG

25

Expected range for most drivers
20 to 30 MPG

Fuel economy when operating on E85 will yield different values than gasoline. See Fuel Economy Guide for more information.

HYBRID VEHICLE* GASOLINE - ELECTRICITY

Estimated Annual Fuel Cost
\$1,915

based on 15,000 miles at \$3.70 per gallon of GASOLINE

Combined GASOLINE Fuel Economy
29

GASOLINE HIGHWAY MPG

36

Expected range for most drivers
29 to 43 MPG

Your actual mileage will vary depending on how you drive and maintain your vehicle.

AFW

See the FREE Fuel Economy Guide at dealers or www.fueleconomy.gov

GOVERNMENT 5-STAR SAFETY RATINGS

This vehicle has not been rated by the government for overall vehicle score, frontal crash, side crash or rollover risk.

Source: National Highway Traffic Safety Administration (NHTSA)
www.safercar.gov or 1-888-327-4236

PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS CARLINE:
U.S./CANADIAN PARTS CONTENT: 60%
MAJOR SOURCES OF FOREIGN PARTS CONTENT: MEXICO 15%

NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION, OR OTHER NON-PARTS COSTS.

FOR THIS VEHICLE:
FINAL ASSEMBLY POINT:
OSHAWA, ON CANADA
COUNTRY OF ORIGIN:
ENGINE: UNITED STATES
TRANSMISSION: UNITED STATES

This label has been applied pursuant to Importer's obligation to provide parts and assembly to the U.S. and Canada. This label is not a warranty. For more information, see the Importer's obligation to provide parts and assembly to the U.S. and Canada.

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GMILK_PRCO_2009-11750111

ORDER NO. 1000000000 SALES CODE 0
SALES MONTH 2009-04
DEALER NO. 1000000000
FINAL ASSEMBLY
OSHAWA, ON CANADA

VIN 2G4GT6G7C9137725

REISSUE

DEALER TO WHOM ORDERED
JENSEN MOTORS, INC.
P.O. BOX 138
NEW ULAM, MN 56073-0138

Monroney Label

APPENDIX B
DUMMY RESPONSE DATA TRACES

TABLE OF DATA PLOTS

Page No.

List of Data Plots Provided in the Test Report

Figure No. 1.	Driver Head X Acceleration vs. Time	B-1
Figure No. 2.	Driver Head Y Acceleration vs. Time	B-1
Figure No. 3.	Driver Head Z Acceleration vs. Time	B-1
Figure No. 4.	Driver Head Resultant Acceleration vs. Time	B-1
Figure No. 5.	Driver Chest Displacement vs. Time	B-2
Figure No. 6.	Driver Chest X Acceleration vs. Time	B-3
Figure No. 7.	Driver Chest Y Acceleration vs. Time	B-3
Figure No. 8.	Driver Chest Z Acceleration vs. Time	B-3
Figure No. 9.	Driver Chest Resultant Acceleration vs. Time	B-3
Figure No. 10.	Driver Neck Force X vs. Time	B-4
Figure No. 11.	Driver Neck Force Z vs. Time	B-4
Figure No. 12.	Driver Neck Moment Y vs. Time	B-4
Figure No. 13.	Driver Nij (NTF) vs. Time	B-5
Figure No. 14.	Driver Nij (NTE) vs. Time	B-5
Figure No. 15.	Driver Nij (NCF) vs. Time	B-5
Figure No. 16.	Driver Nij (NCE) vs. Time	B-5
Figure No. 17.	Driver Left Femur Force vs. Time	B-6
Figure No. 18.	Driver Right Femur Force vs. Time	B-6
Figure No. 19.	Passenger Head X Acceleration vs. Time	B-7
Figure No. 20.	Passenger Head Y Acceleration vs. Time	B-7
Figure No. 21.	Passenger Head Z Acceleration vs. Time	B-7
Figure No. 22.	Passenger Head Resultant Acceleration vs. Time	B-7
Figure No. 23.	Passenger Chest Displacement vs. Time	B-8
Figure No. 24.	Passenger Chest X Acceleration vs. Time	B-9
Figure No. 25.	Passenger Chest Y Acceleration vs. Time	B-9
Figure No. 26.	Passenger Chest Z Acceleration vs. Time	B-9
Figure No. 27.	Passenger Chest Resultant Z Acceleration vs. Time	B-9

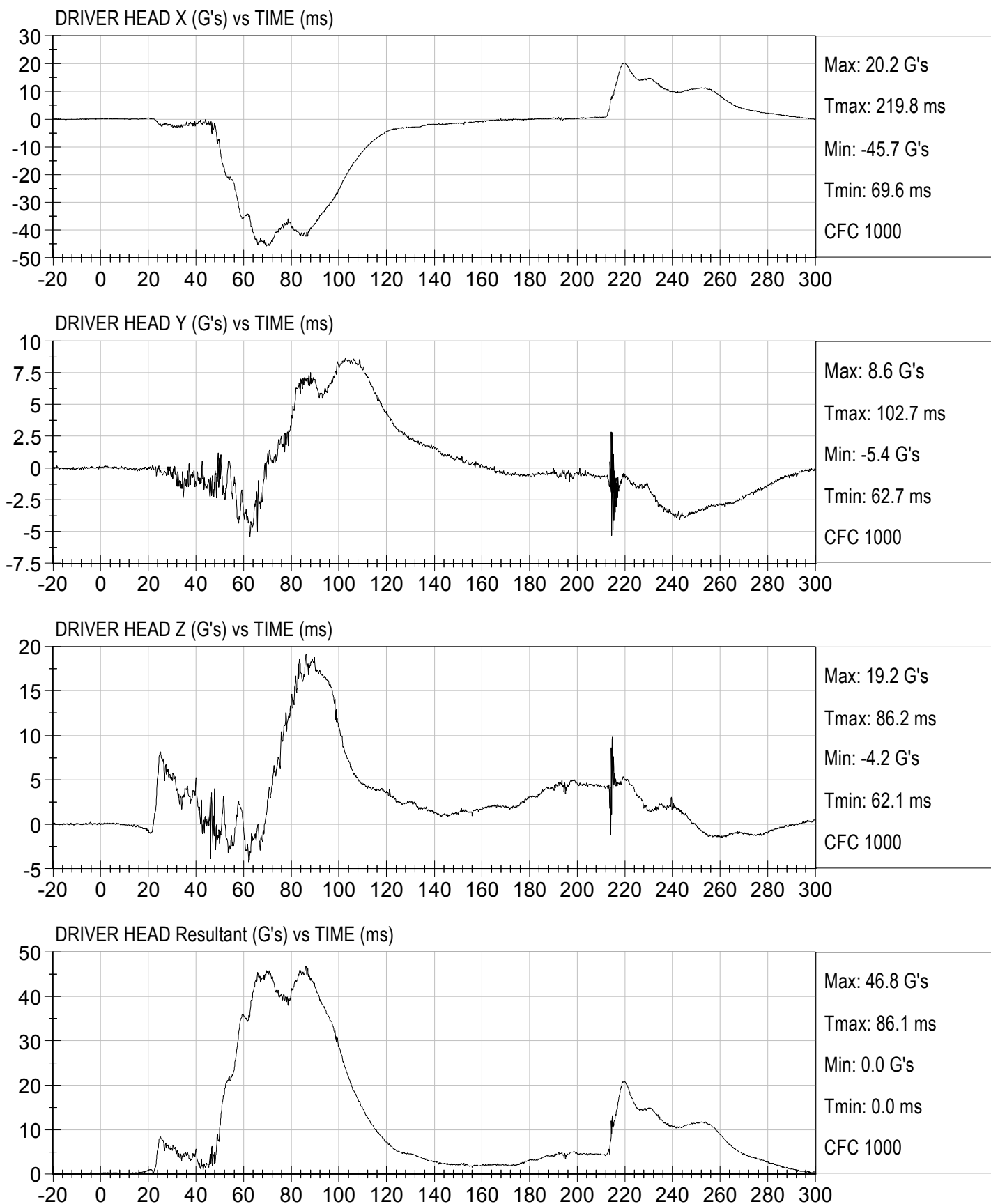
	<u>Page No.</u>
Figure No. 28. Passenger Neck Force X vs. Time	B-10
Figure No. 29. Passenger Neck Force Z vs. Time	B-10
Figure No. 30. Passenger Neck Moment Y vs. Time	B-10
Figure No. 31. Passenger Nij (NTF) vs. Time	B-11
Figure No. 32. Passenger Nij (NTE) vs. Time	B-11
Figure No. 33. Passenger Nij (NCF) vs. Time	B-11
Figure No. 34. Passenger Nij (NCE) vs. Time	B-11
Figure No. 35. Passenger Left Femur Force vs. Time	B-12
Figure No. 36. Passenger Right Femur Force vs. Time	B-12

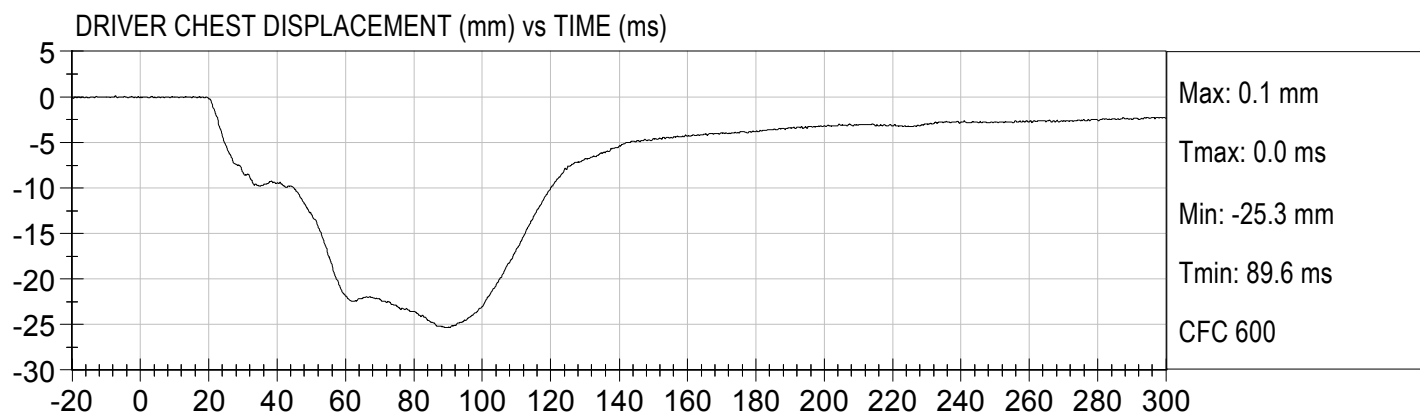
The following additional dummy and vehicle response data can be found in the R&D section of the NHTSA website at www.nhtsa.dot.gov

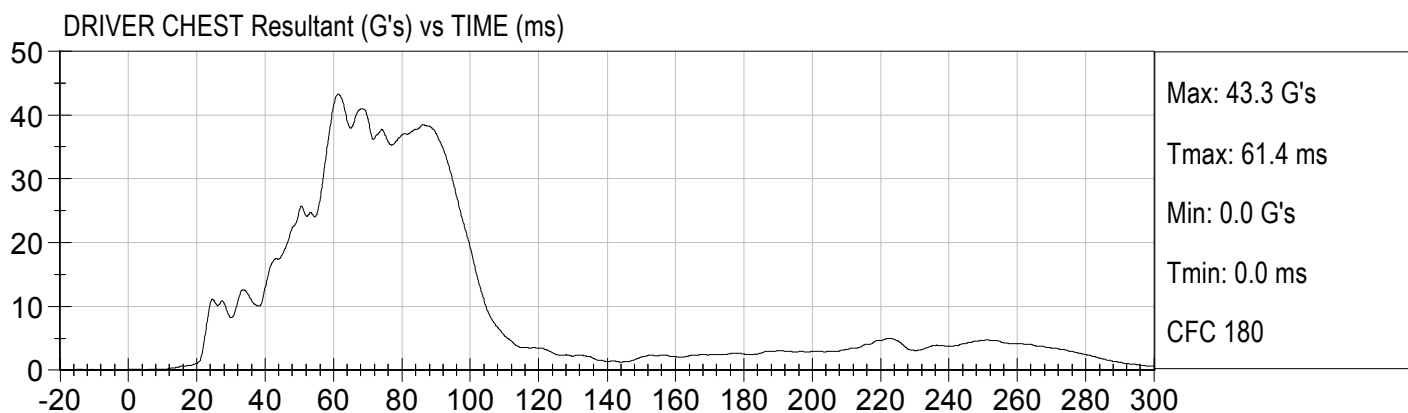
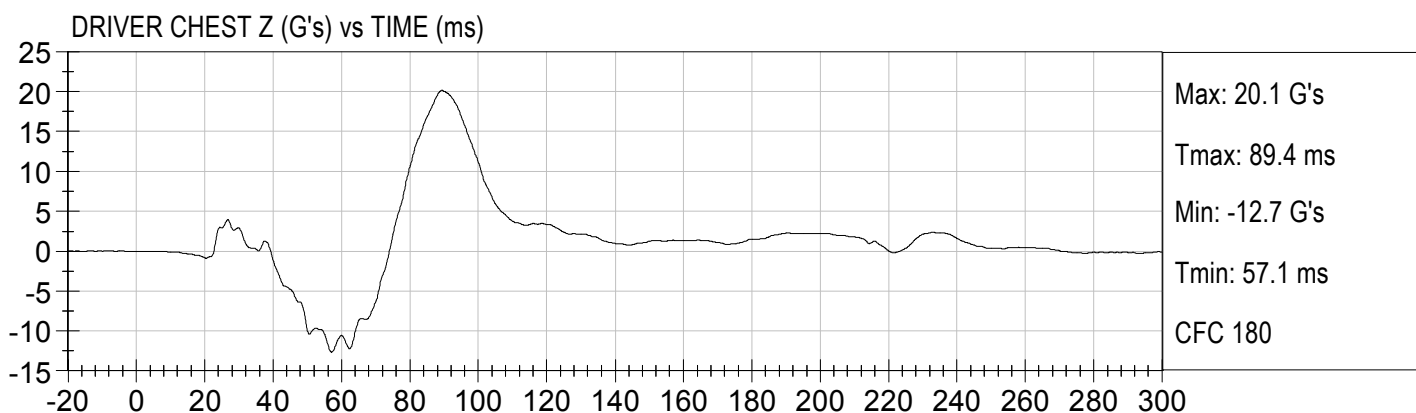
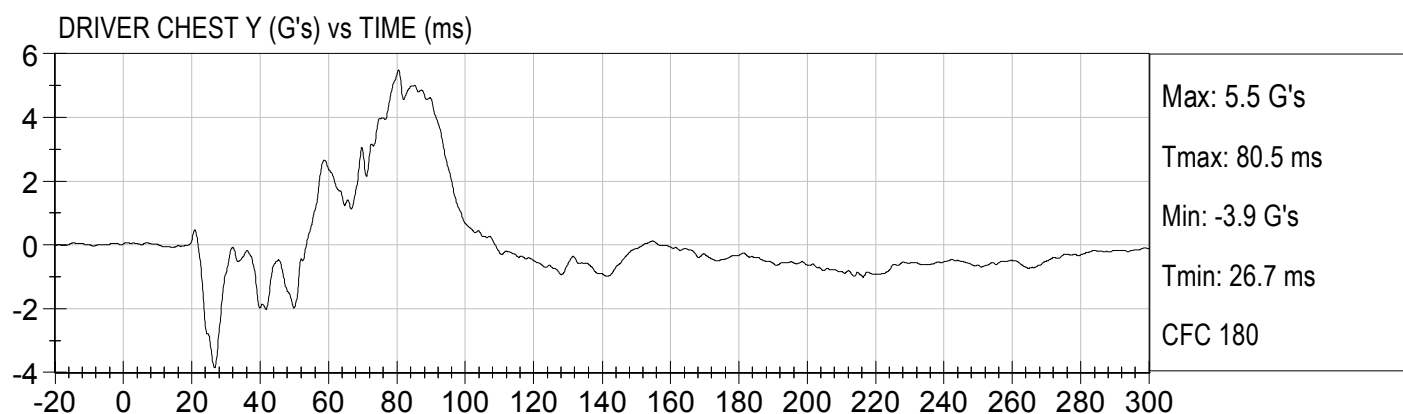
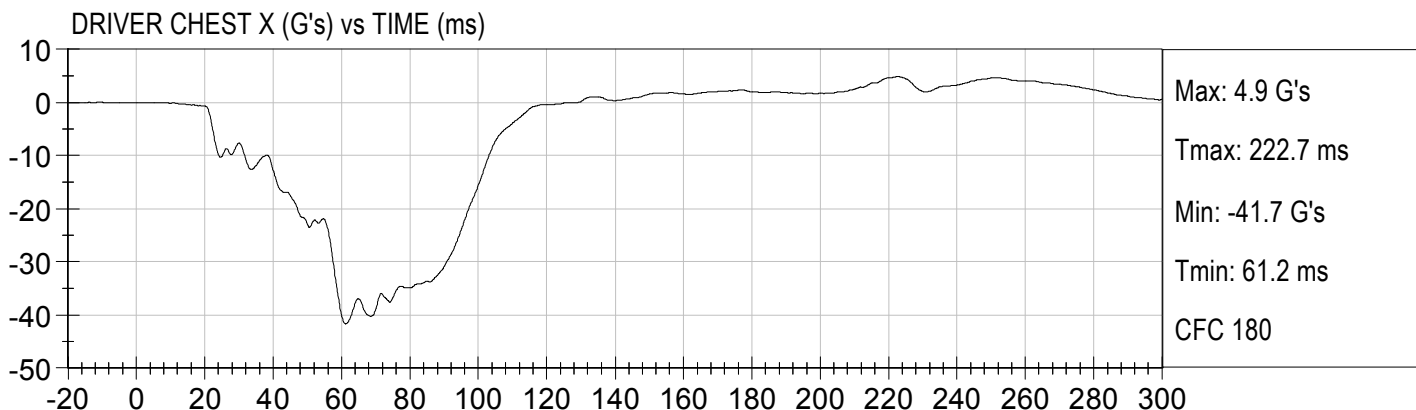
Driver Head X Redundant
 Driver Head Y Redundant
 Driver Head Z Redundant
 Driver Upper Neck Force Y
 Driver Upper Neck Moment X
 Driver Upper Neck Moment Z
 Driver Chest X Redundant
 Driver Chest Y Redundant
 Driver Chest Z Redundant
 Driver Pelvis X
 Driver Pelvis Y
 Driver Pelvis Z
 Driver Left Femur Redundant
 Driver Right Femur Redundant
 Driver Left Upper Tibia Moment X
 Driver Left Upper Tibia Moment Y
 Driver Left Upper Tibia Force Z
 Driver Left Lower Tibia Moment X

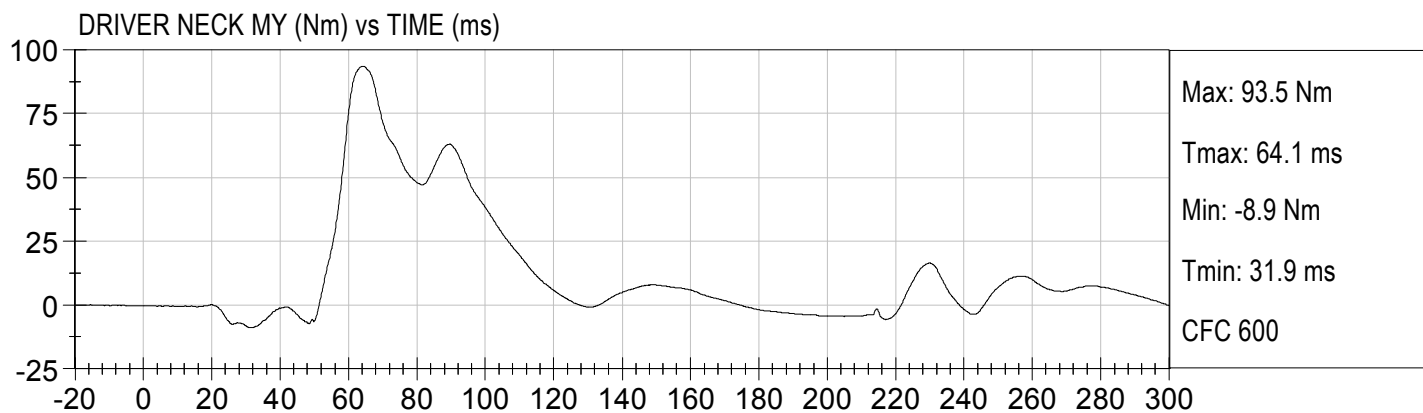
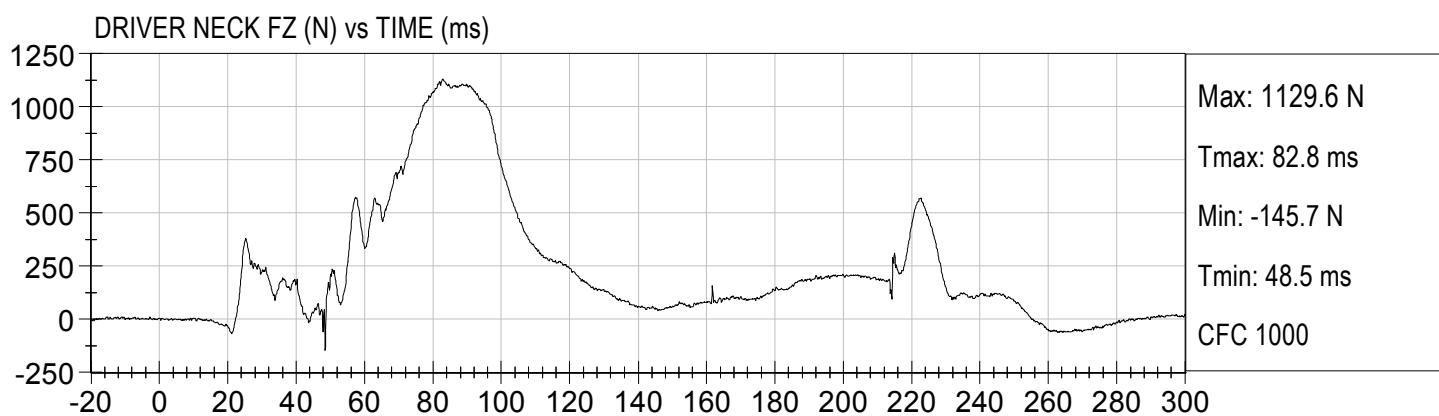
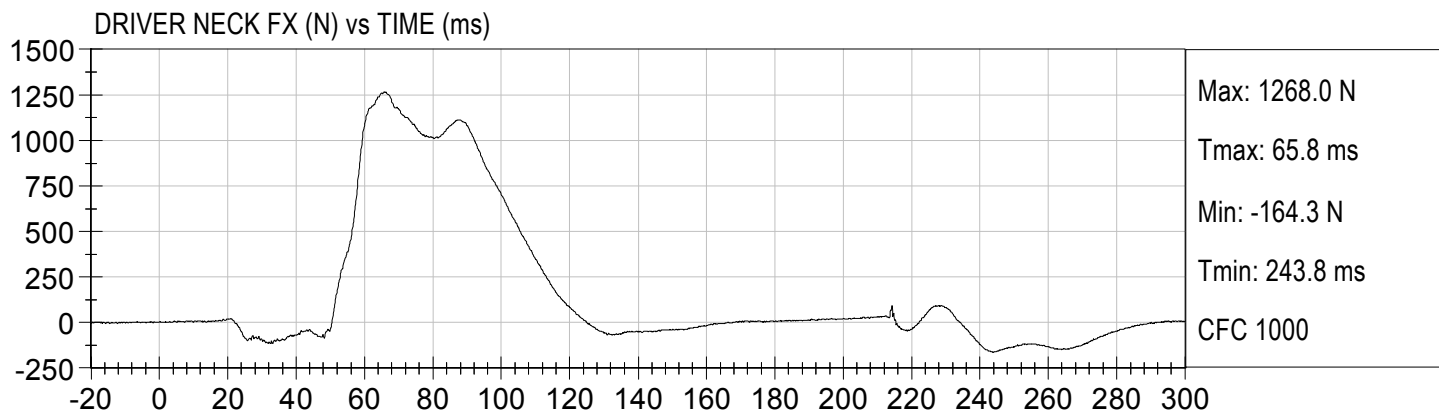
Driver Left Lower Tibia Moment Y
Driver Left Lower Tibia Force Z
Driver Right Upper Tibia Moment X
Driver Right Upper Tibia Moment Y
Driver Right Upper Tibia Force Z
Driver Right Lower Tibia Moment X
Driver Right Lower Tibia Moment Y
Driver Right Lower Tibia Force Z
Driver Left Foot Fore Z
Driver Left Foot Aft X
Driver Left Foot Aft Z
Driver Right Foot Fore Z
Driver Right Foot Aft X
Driver Right Foot Aft Z
Driver Lap Belt Force
Driver Shoulder Belt Force
Passenger Head X Redundant
Passenger Head Y Redundant
Passenger Head Z Redundant
Passenger Upper Neck Force Y
Passenger Upper Neck Moment X
Passenger Upper Neck Moment Z
Passenger Chest X Redundant
Passenger Chest Y Redundant
Passenger Chest Z Redundant
Passenger Pelvis X
Passenger Pelvis Y
Passenger Pelvis Z
Passenger Left Femur Redundant
Passenger Right Femur Redundant
Passenger Left Upper Tibia Moment X

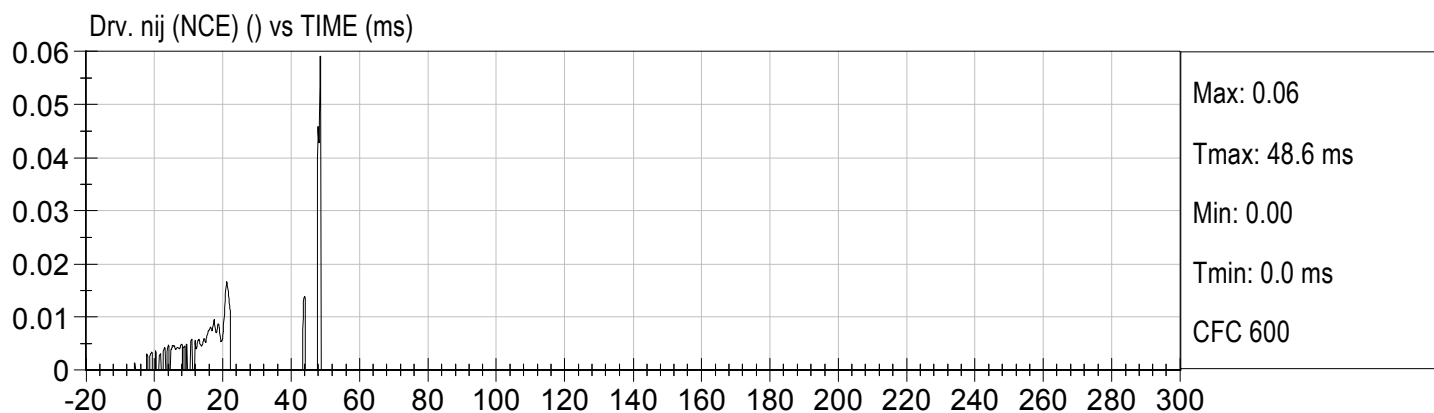
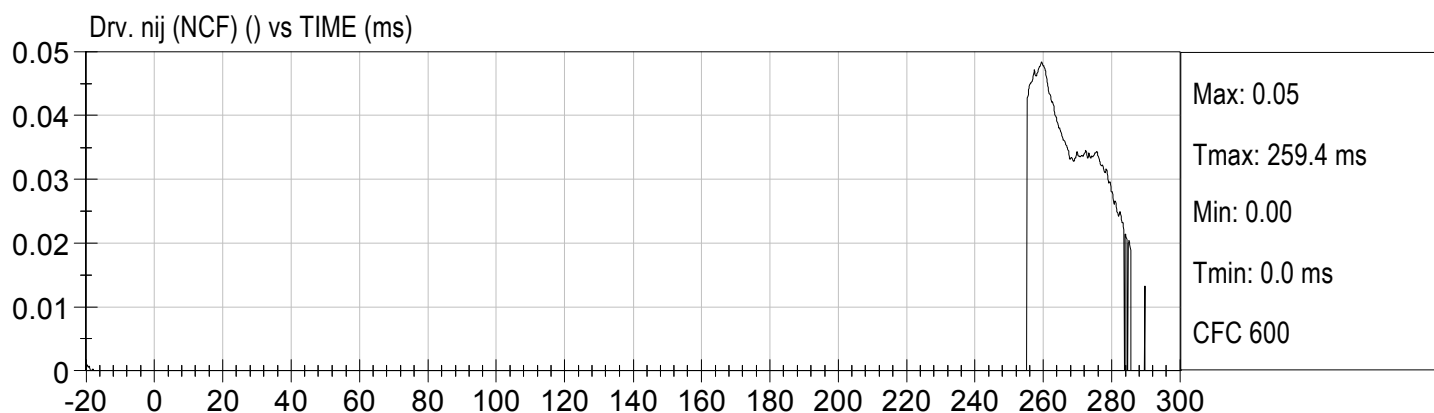
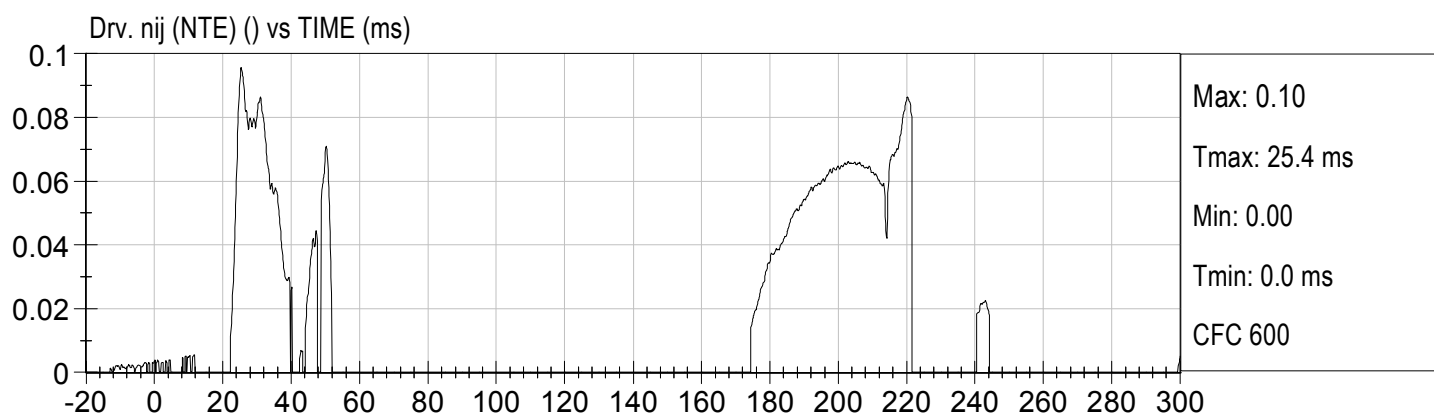
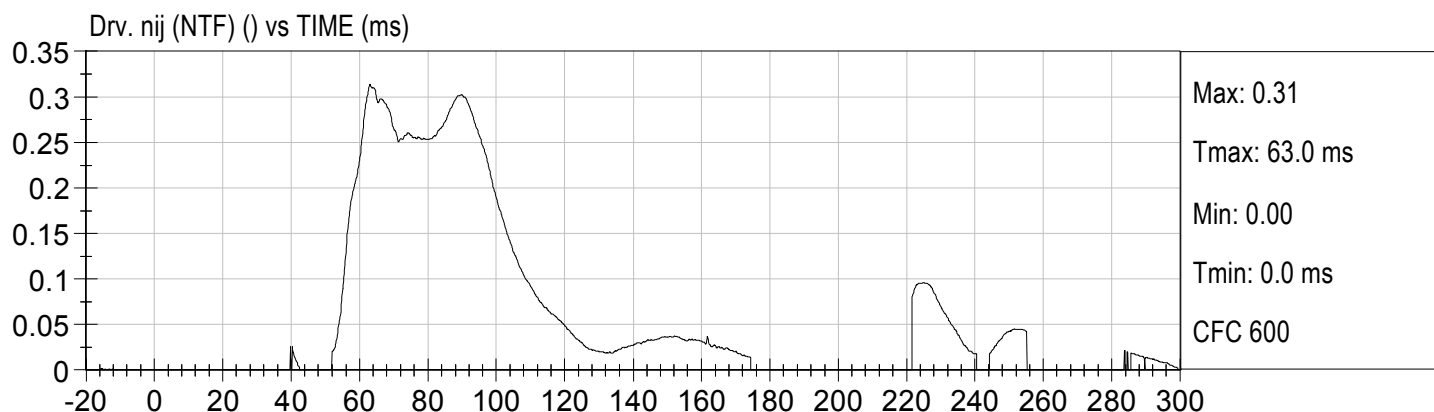
Passenger Left Upper Tibia Moment Y
Passenger Left Upper Tibia Force Z
Passenger Left Lower Tibia Moment X
Passenger Left Lower Tibia Moment Y
Passenger Left Lower Tibia Force Z
Passenger Right Upper Tibia Moment X
Passenger Right Upper Tibia Moment Y
Passenger Right Upper Tibia Force Z
Passenger Right Lower Tibia Moment X
Passenger Right Lower Tibia Moment Y
Passenger Right Lower Tibia Force Z
Passenger Left Foot Fore Z
Passenger Left Foot Aft X
Passenger Left Foot Aft Z
Passenger Right Foot Fore Z
Passenger Right Foot Aft X
Passenger Right Foot Aft Z
Passenger Lap Belt Force
Passenger Shoulder Belt Force
Left Rear Seat Crossmember X
Right Rear Seat Crossmember X
Vehicle Engine Top X
Vehicle Engine Bottom X
Vehicle Left Brake Caliper X
Vehicle Right Brake Caliper X
Left Rear Seat Crossmember Xr
Right Rear Seat Crossmember Xr
Advanced Research Load Cell Barrier – 128 channels

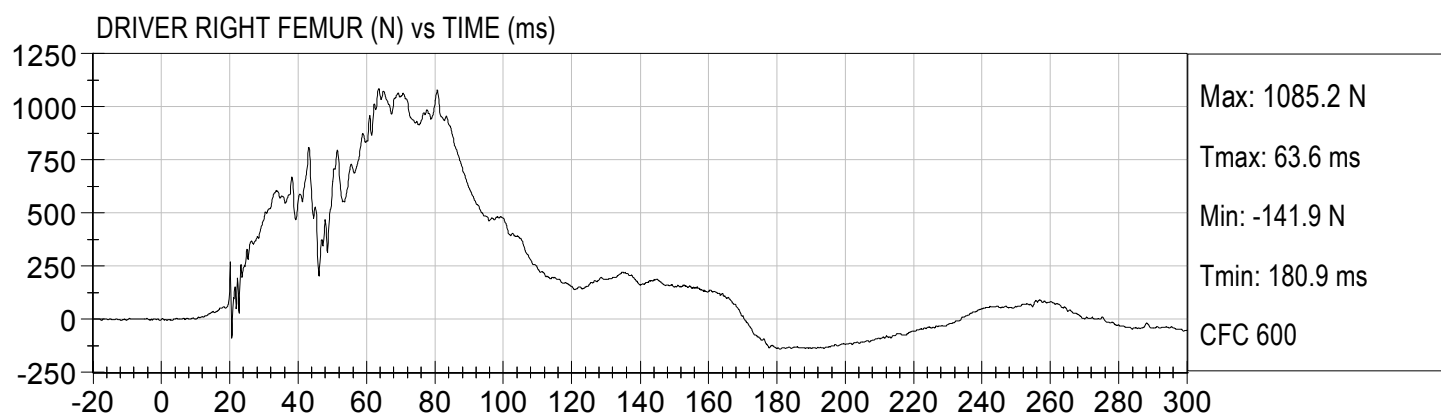
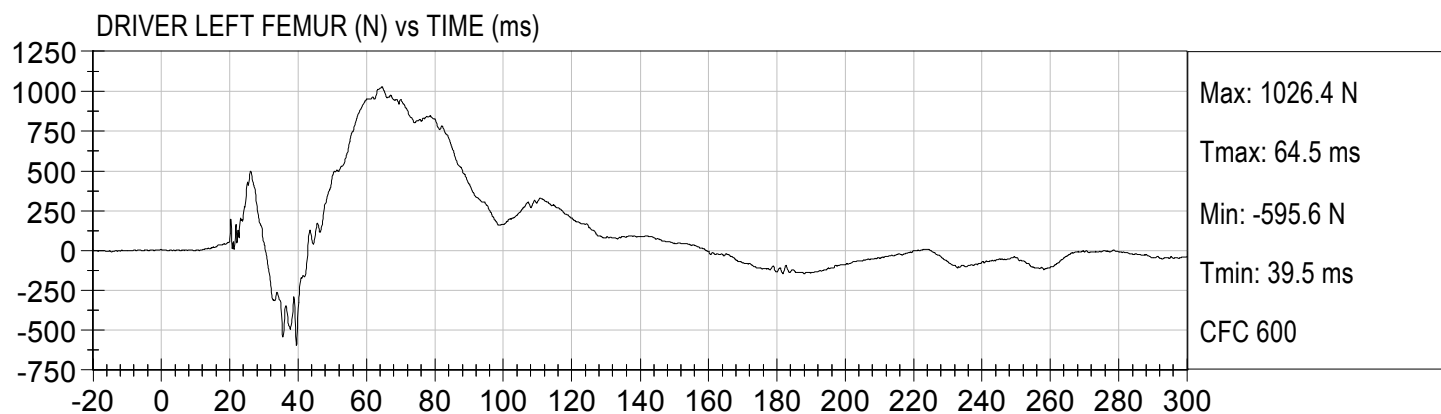


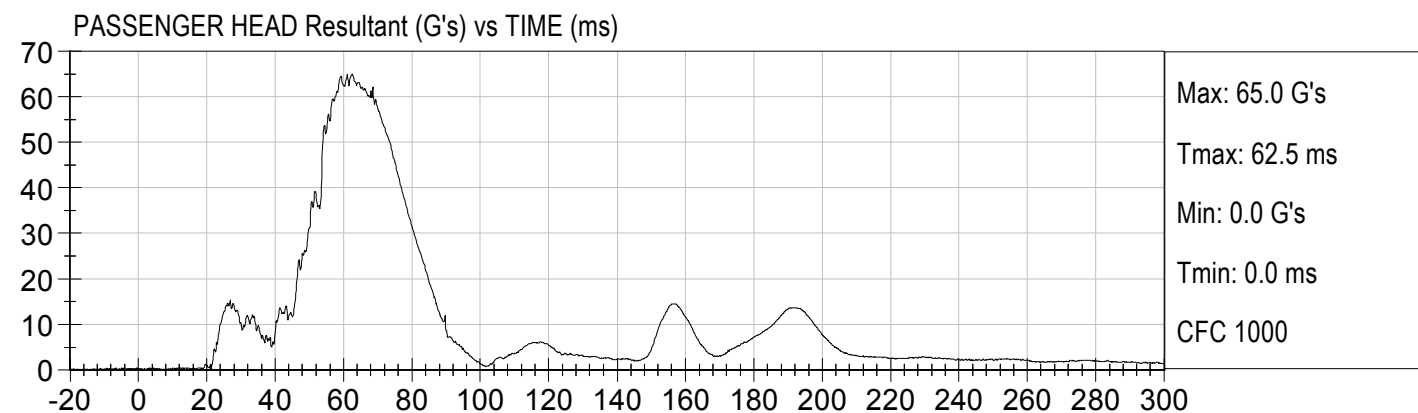
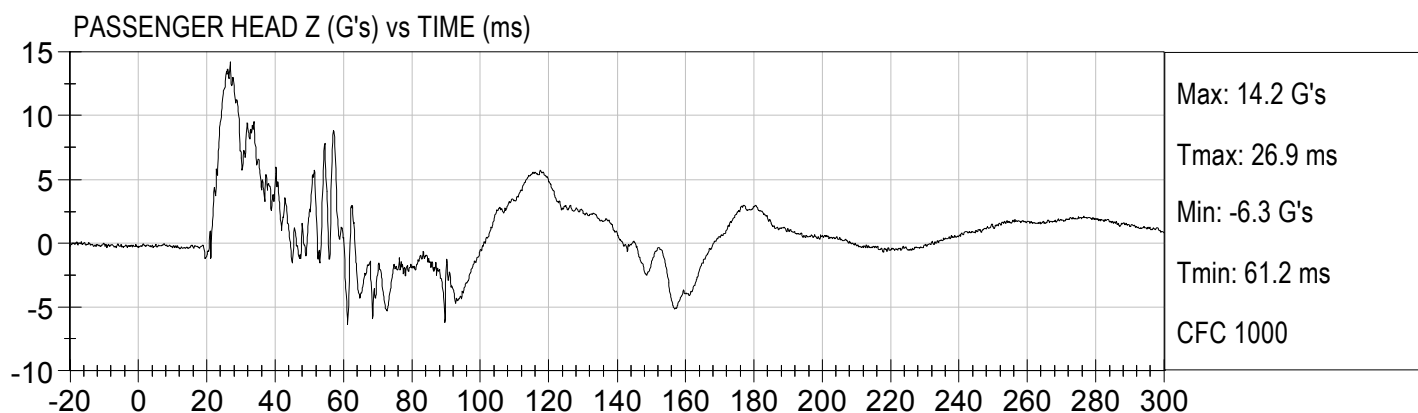
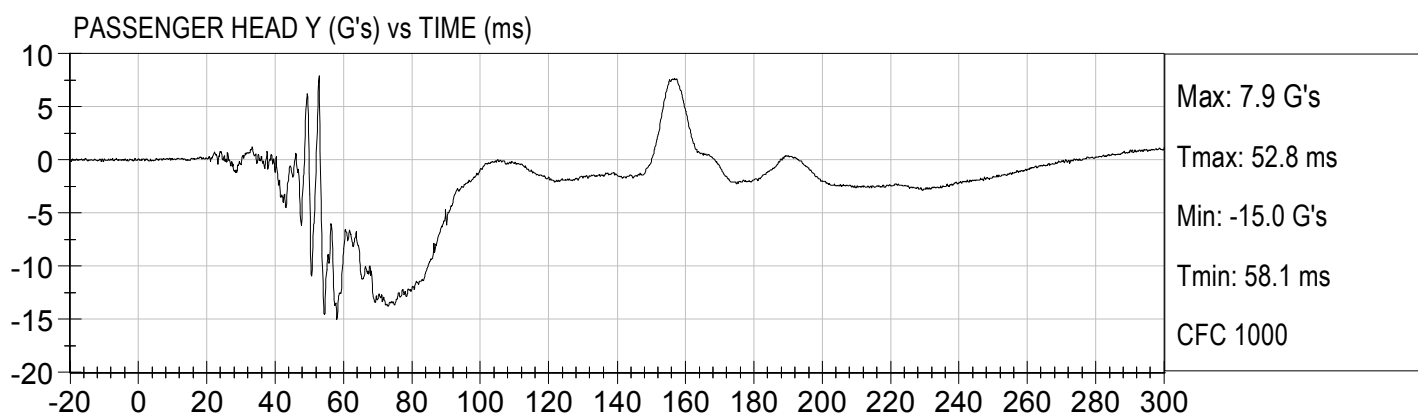
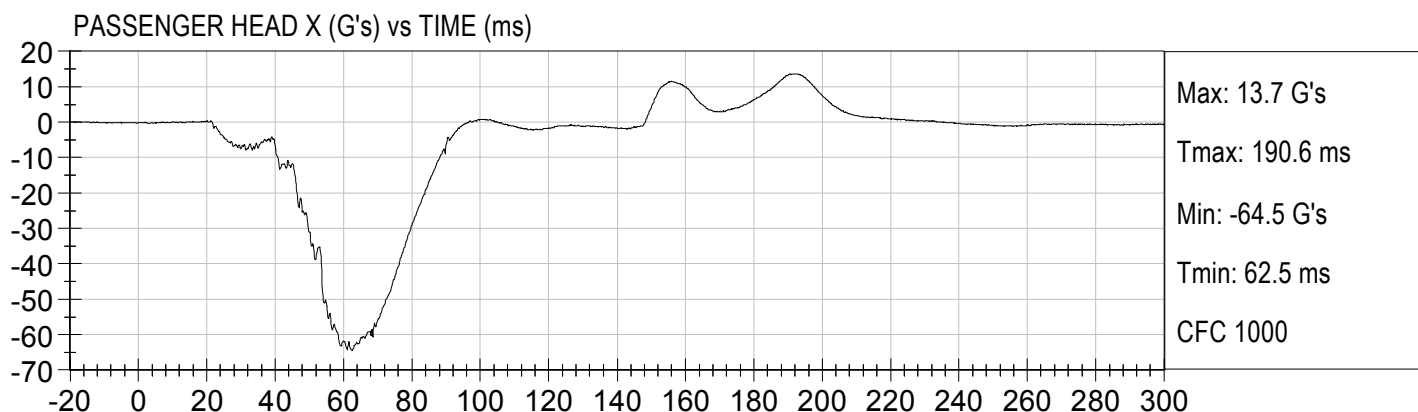


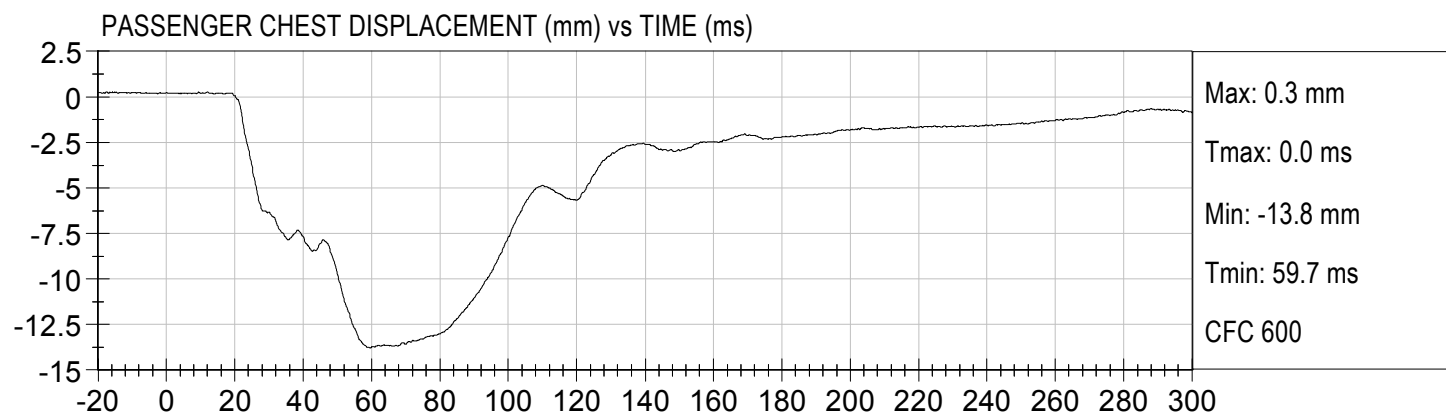


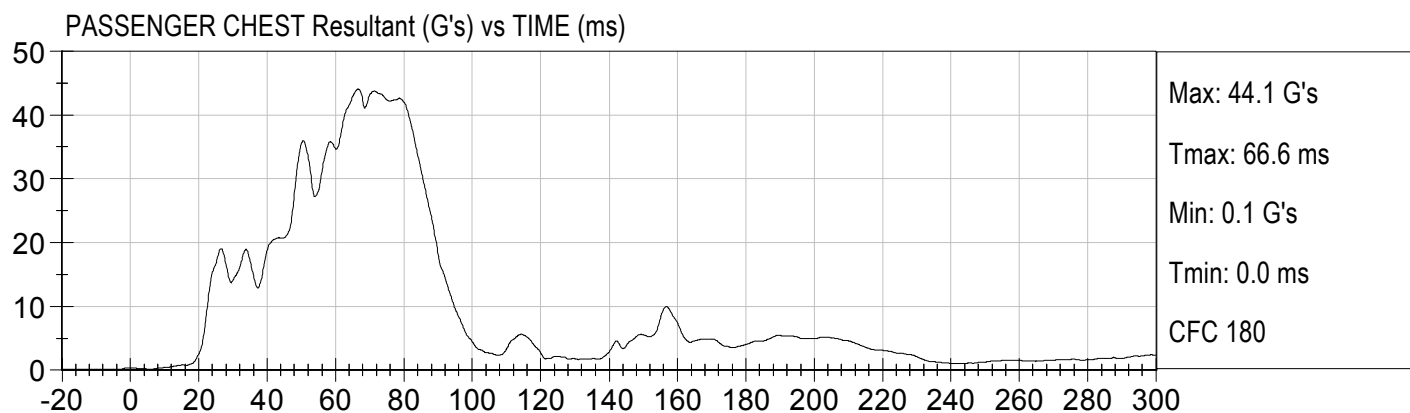
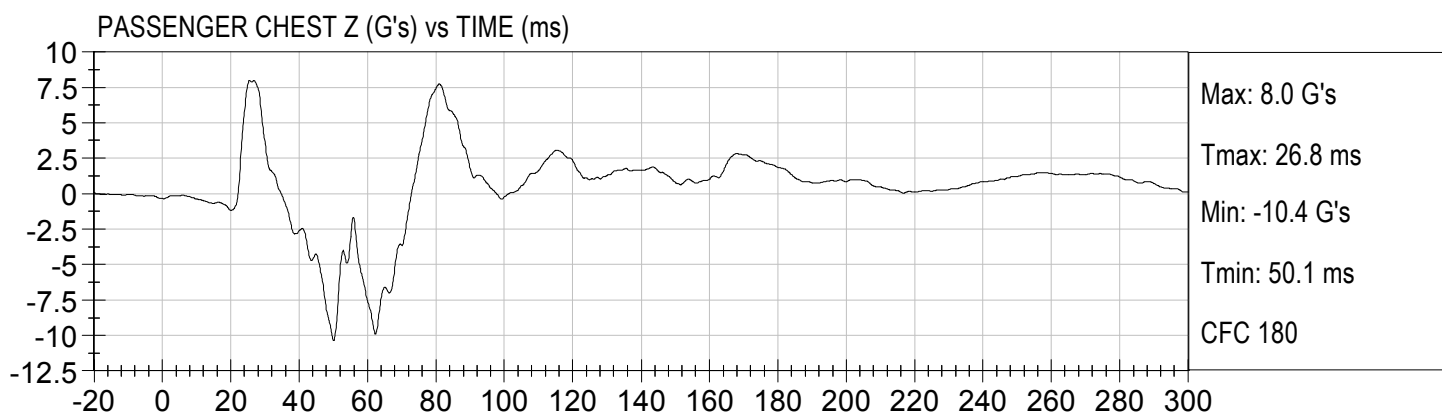
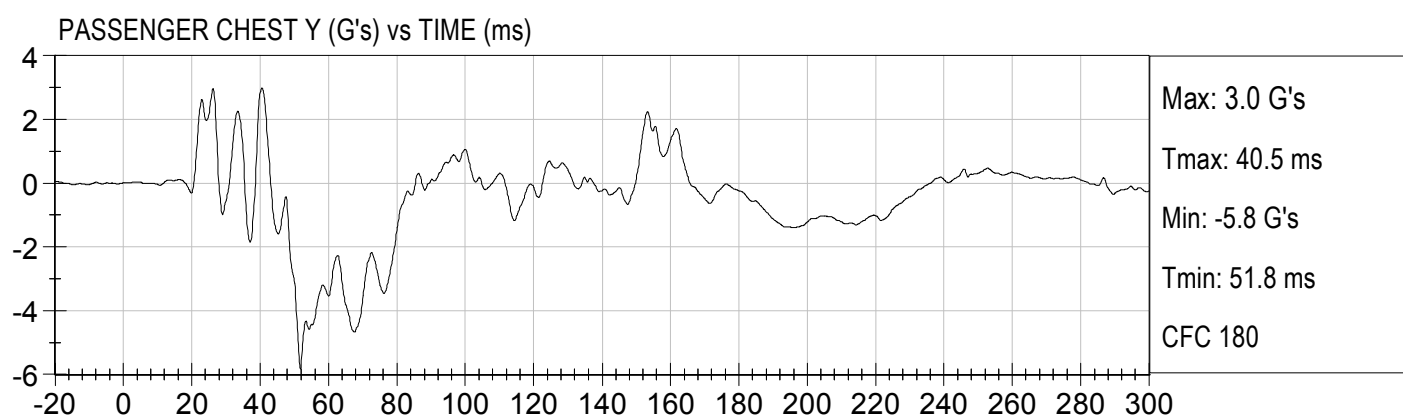
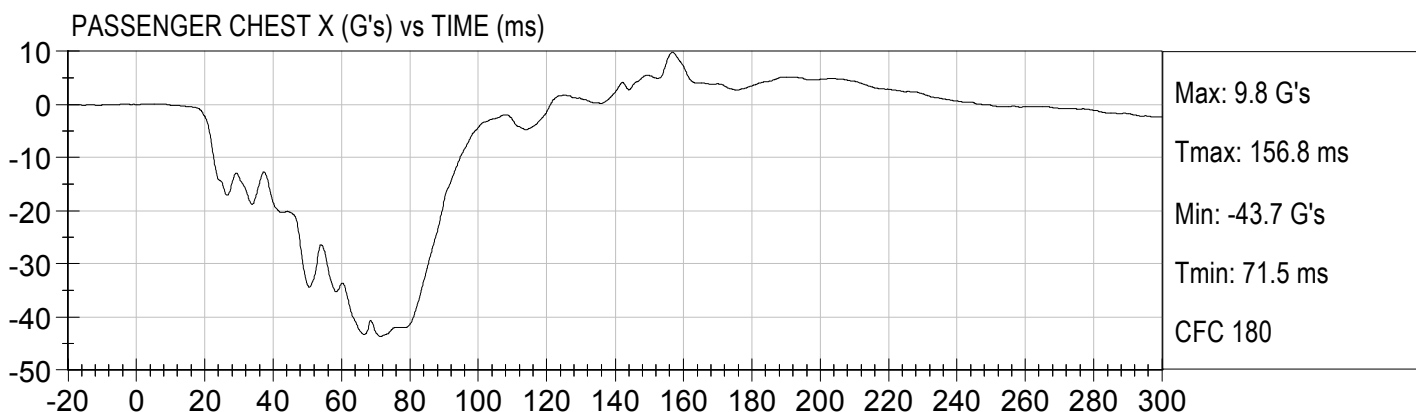


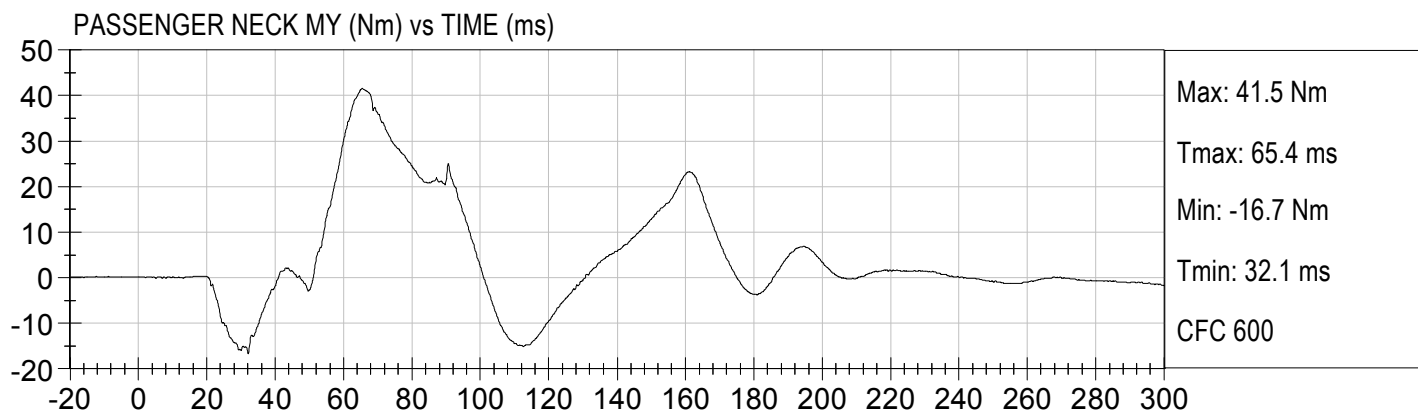
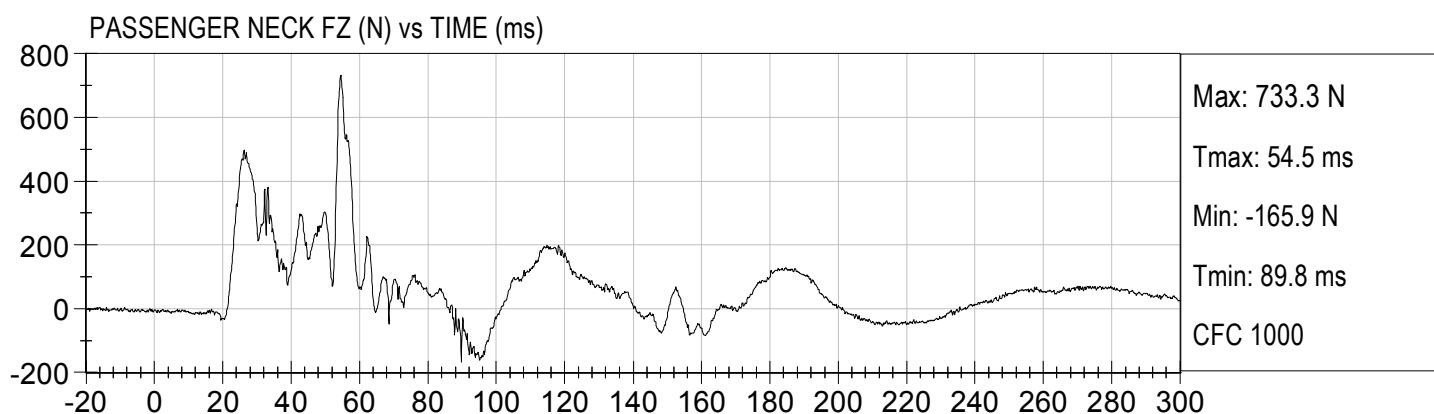
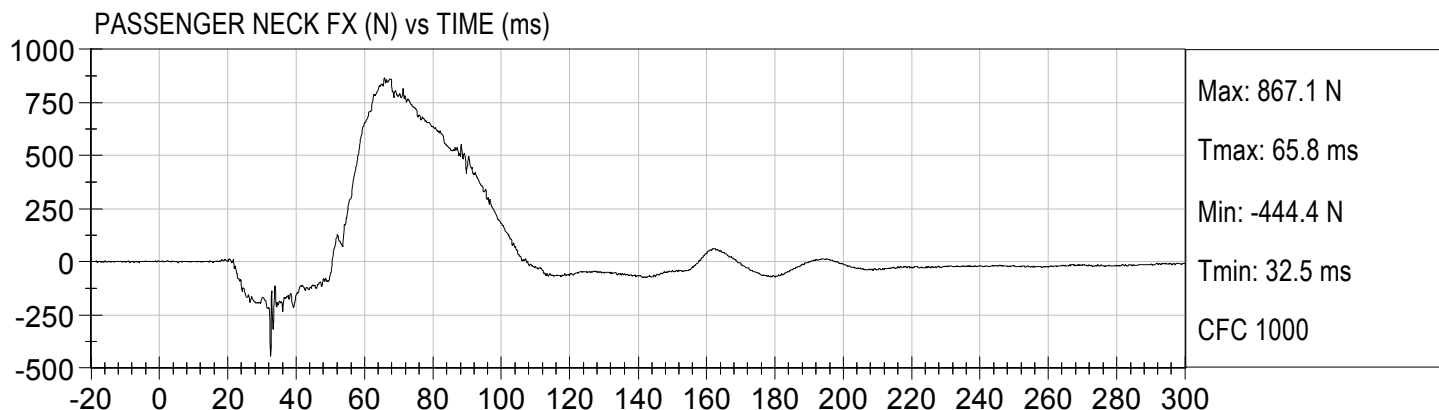


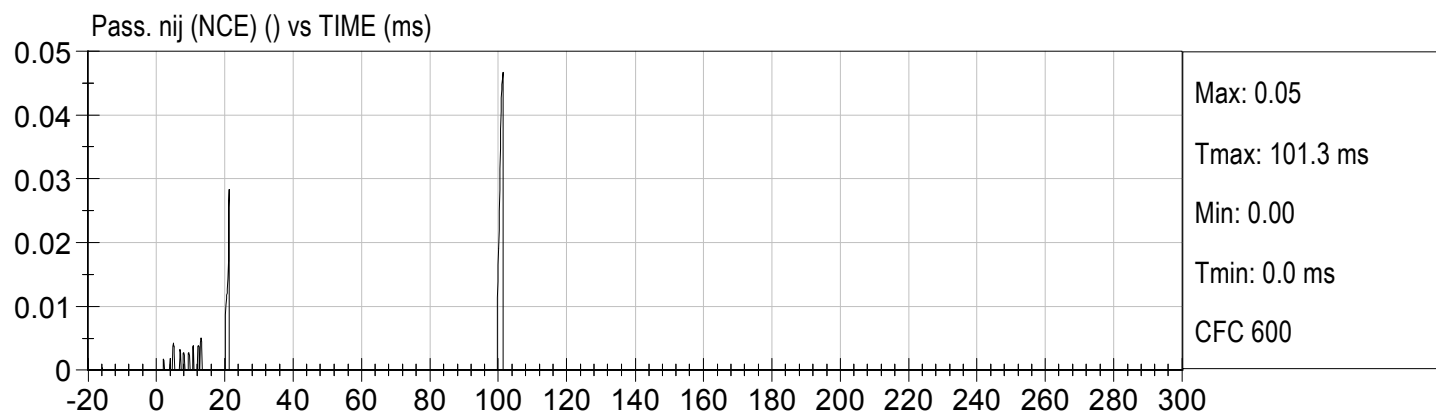
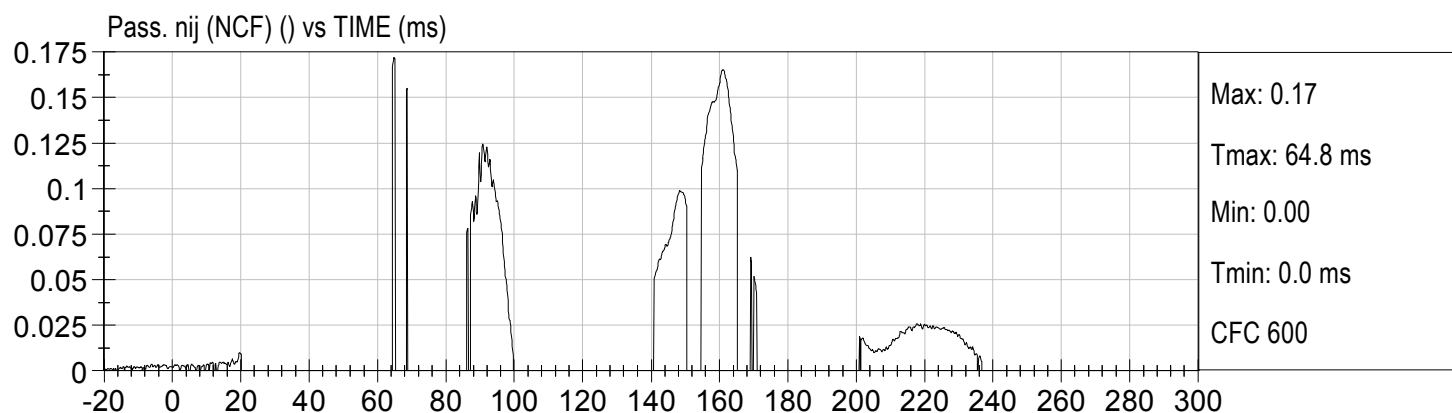
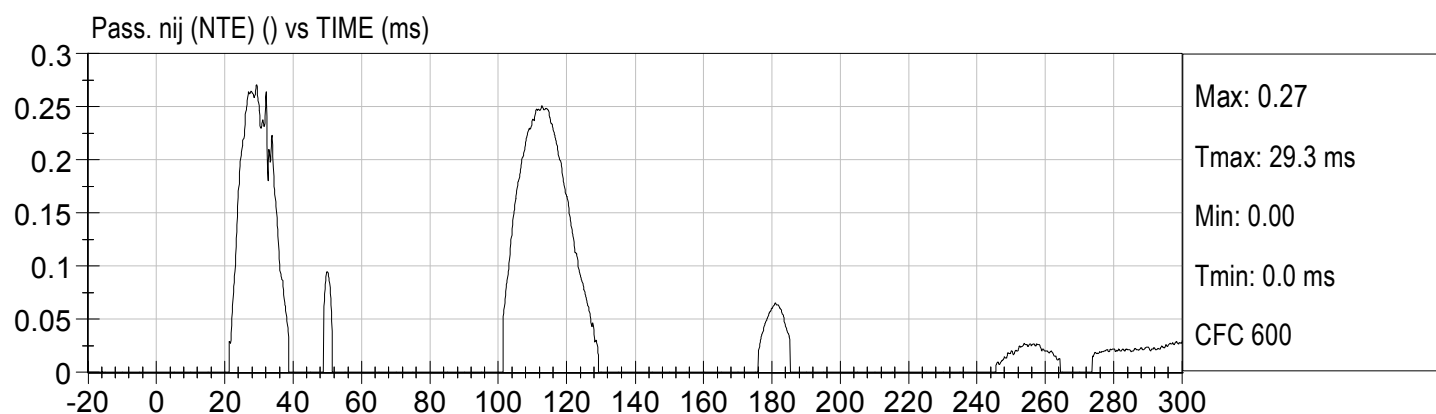
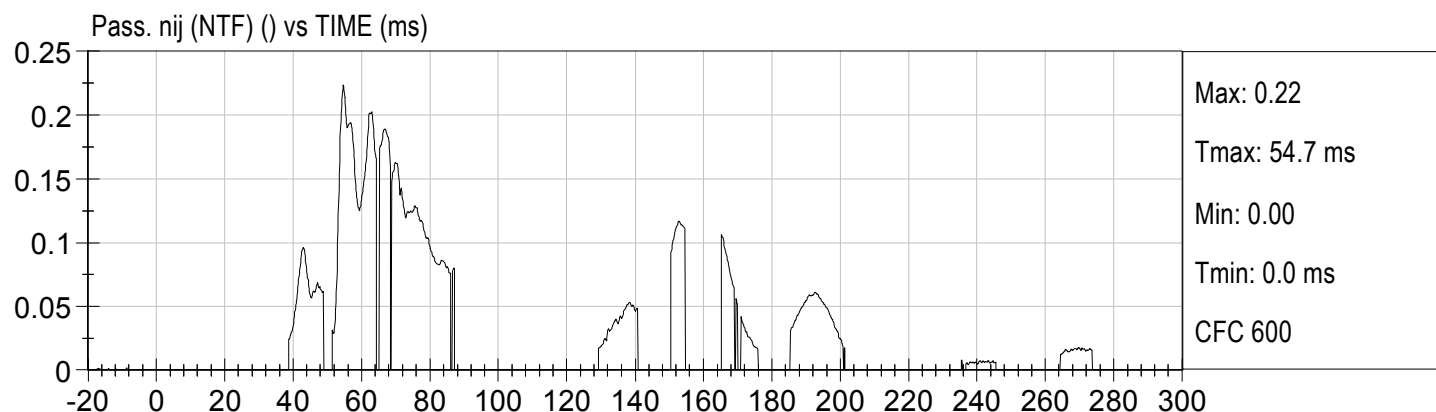


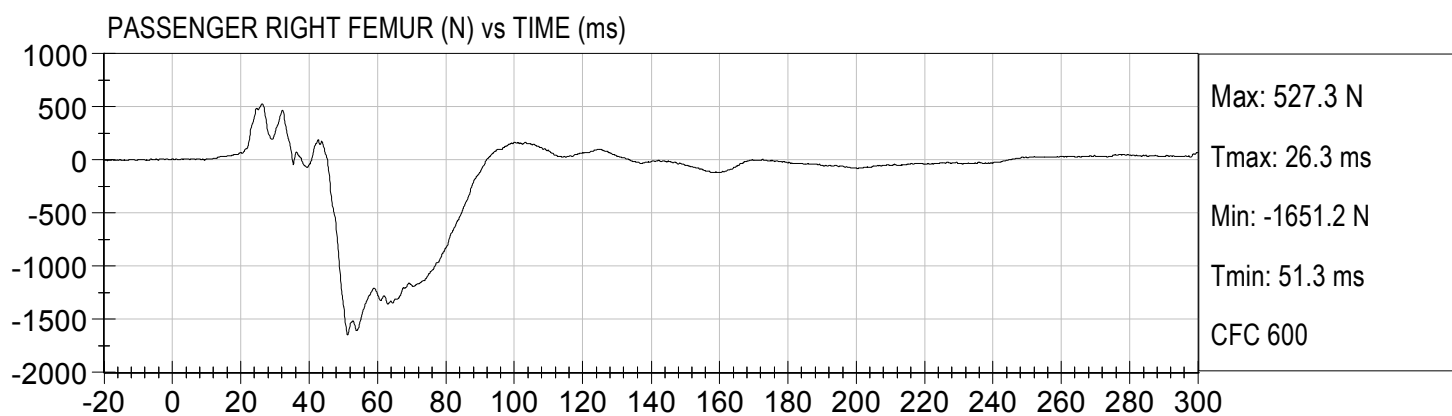
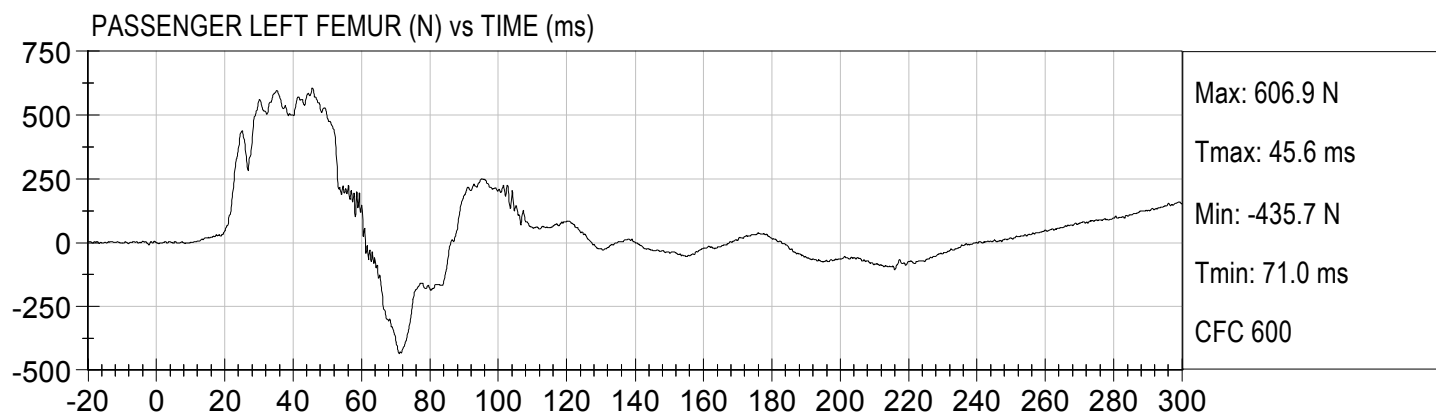












APPENDIX C

DUMMY CALIBRATION AND PERFORMANCE VERIFICATION DATA

Hybrid III, 50th External Measurements
SN: 351

HYBRID III, PART 572, SUBPART E EXTERNAL DIMENSIONS				
DIMENSION	DESCRIPTION	DETAILS	ASSEMBLY DIMENSION (inches)	ACTUAL MEASUREMENT
A	TOTAL SITTING HEIGHT	Seat surface to highest point on top of the head.	34.6–35.0	34.8
B	SHOULDER PIVOT HEIGHT	Centerline of shoulder pivot bolt to the seat surface.	19.9-20.5	20.0
C	H-POINT HEIGHT	Reference	3.3-3.5	3.4
D	H-POINT LOCATION FROM BACKLINE	Reference	5.3-5.5	5.5
E	SHOULDER PIVOT FROM BACKLINE	Center of the shoulder clevis to the rear vertical surface of the fixture.	3.3-3.7	3.5
F	THIGH CLEARANCE	Measured at the highest point on the upper femur segment.	5.5-6.1	6.0
G	BACK OF ELBOW TO WRIST PIVOT	back of the elbow flesh to the wrist pivot in line with the elbow and wrist pivots	11.4-12.0	11.8
H	HEAD BACK TO BACKLINE	Back of Skull cap skin to seat rear vertical surface (Reference)	1.6-1.8	1.7
I	SHOULDER TO- ELBOW LENGTH	Measure from the highest point on top of the shoulder clevis to the lowest part of the flesh on the elbow in line with the elbow pivot bolt.	13.0-13.6	13.3
J	ELBOW REST HEIGHT	Measure from the flesh below the elbow pivot bolt to the seat surface.	7.5-8.3	7.8
K	BUTTOCK TO KNEE LENGTH	The forward most part of the knee flesh to the rear vertical surface of the fixture.	22.8-23.8	23.8
L	POPLITEAL HEIGHT	Seat surface to the plane of the horizontal plane of the bottom of the feet.	16.9-17.9	17.0
M	KNEE PIVOT HEIGHT	Centerline of knee pivot bolt to the horizontal plane of the bottom of the feet.	19.1-19.7	19.5
N	BUTTOCK POPLITEAL LENGTH	The rearmost surface of the lower leg to the same point on the rear surface of the buttocks used for dim. "K".	17.8-18.8	18.8

HYBRID III, SUBPART E EXTERIOR DIMENSIONS, continued				
DIMENSION	DESCRIPTION	DETAILS		ACTUAL MEASUREMENT
O	CHEST DEPTH WITHOUT JACKET	Measured 16.9-17.1 in. above seat surface	8.4-9.0	8.5
P	FOOT LENGTH	Tip of toe to rear of heel	9.9-10.5	10.3
V	SHOULDER BREADTH	Outside edges of right and left shoulder clevises	16.3-17.2	16.5
W	FOOT BREADTH	The widest part of the foot	3.6-4.2	4.0
Y	CHEST CIRCUMFERENCE (WITH CHEST JACKET)	Measured 16.9-17.1 in. above seat surface	38.2-39.4	39.2
Z	WAIST CIRCUMFERENCE	Measured 8.9-9.1 in. above seat surface	32.9-34.1	33.7
AA	REFERENCE LOCATION FOR MEASUREMENT OF CHEST CIRCUMFERENCE	Reference	16.9-17.1	17.0
BB	REFERENCE LOCATION FOR MEASUREMENT OF WAIST CIRCUMFERENCE	Reference	8.9-9.1	9.0

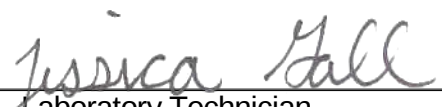
NOTE: THE H-POINT IS LOCATED 1.83 INCHES FORWARD AND 2.57 INCHES DOWN FROM THE CENTER OF THE PELVIS ANGLE REFERENCE HOLE.

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

ATD Serial No: 351

Test ID: D12691

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	20	Pass
Peak Resultant Acceleration	G's	225 - 275	252	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-5.9	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician

2/27/12
Test Date

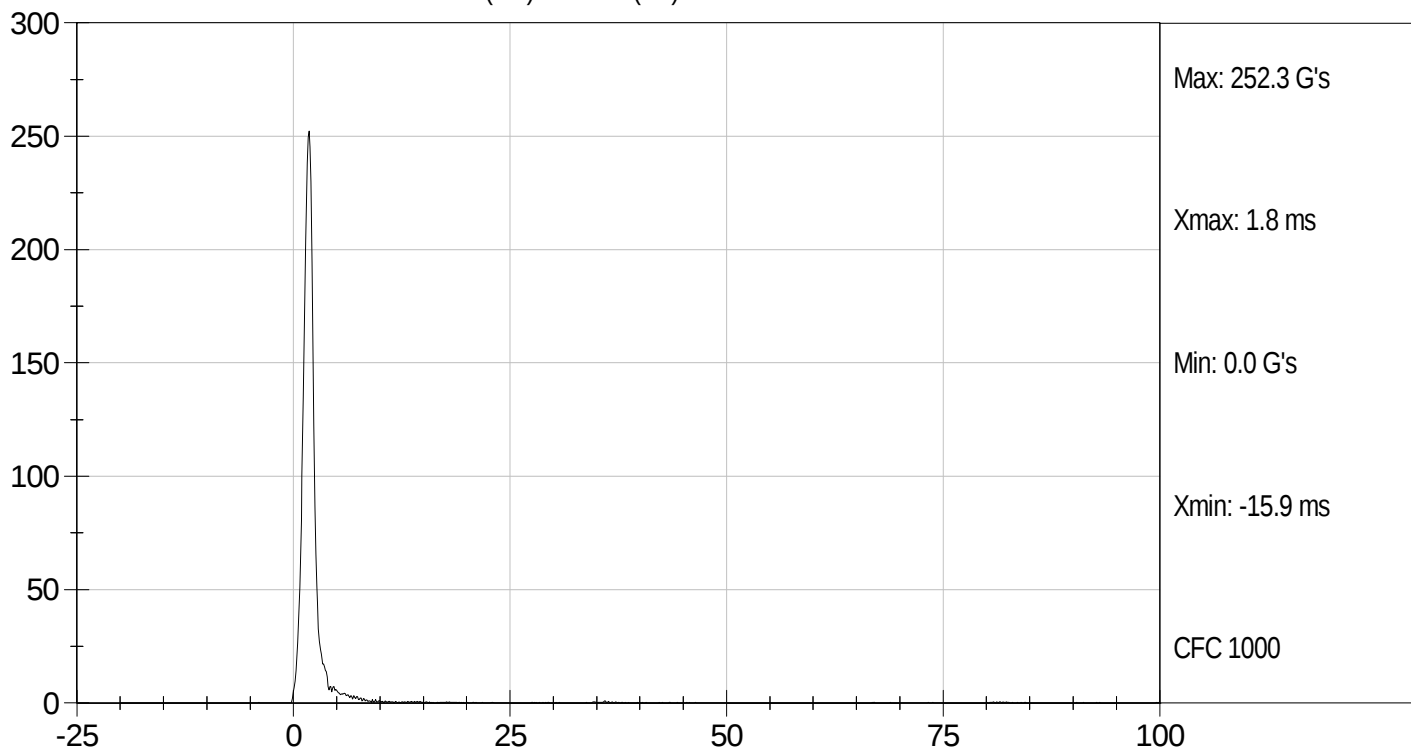

Approved By



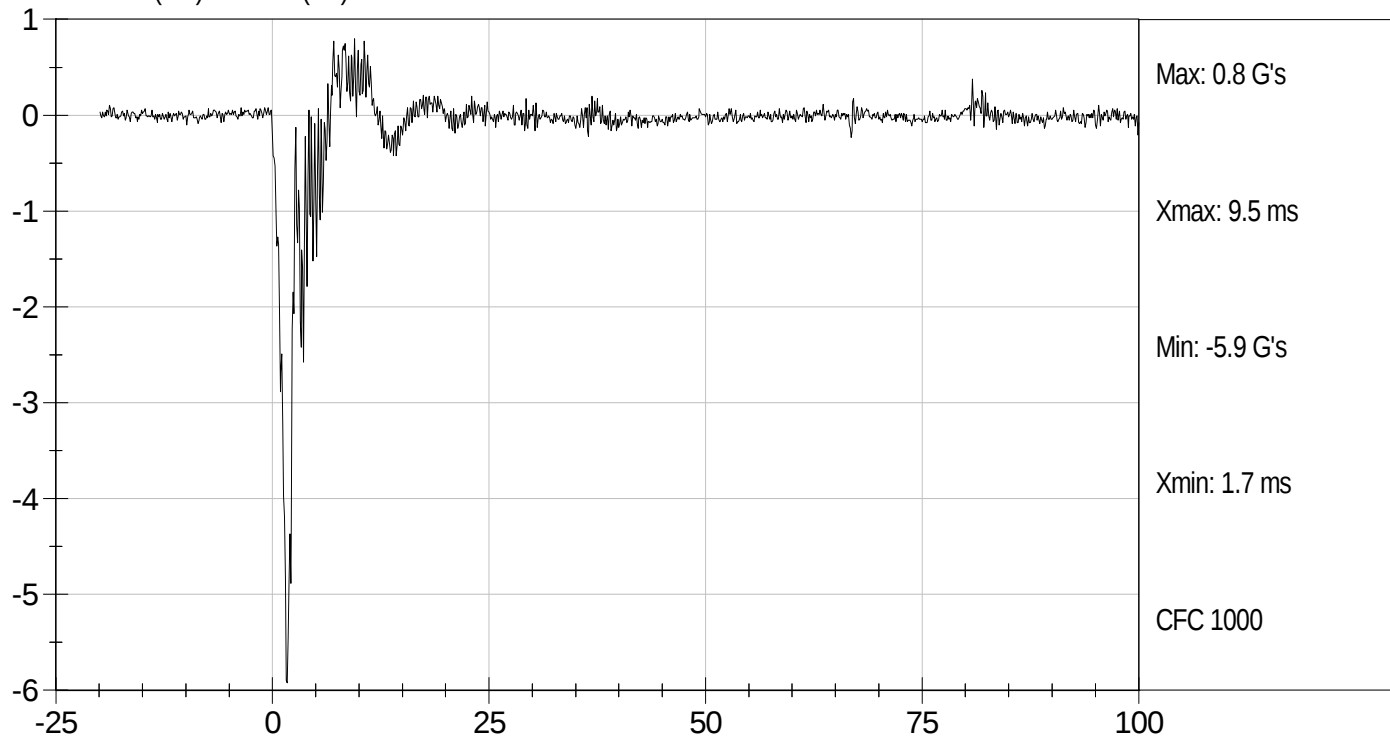
Test Desc: Head Drop
Component ID: D12691

Test Date: 2/27/12
Velocity: 0 ft/s, 0 m/s

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



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



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

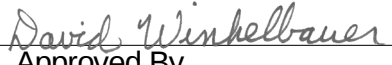
ATD Serial No: 351

Test I.D: D12692

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	19	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.06	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	23.03	Pass
	20 ms	G's	17.60 to 22.60	18.22	Pass
	30 ms	G's	12.50 to 18.50	12.70	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	12.7	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	38.7	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	71.6	Pass
	Time	ms	57.0 to 64.0	59.6	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	114.5	Pass
Moment About Occipital Condyle	Maximum	N m	88.1 to 108.5	95.0	Pass
	Time	ms	47.0 to 58.0	52.3	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	100.9	Pass
Overall Test Results					Pass


 Laboratory Technician

2/27/12
 Test Date

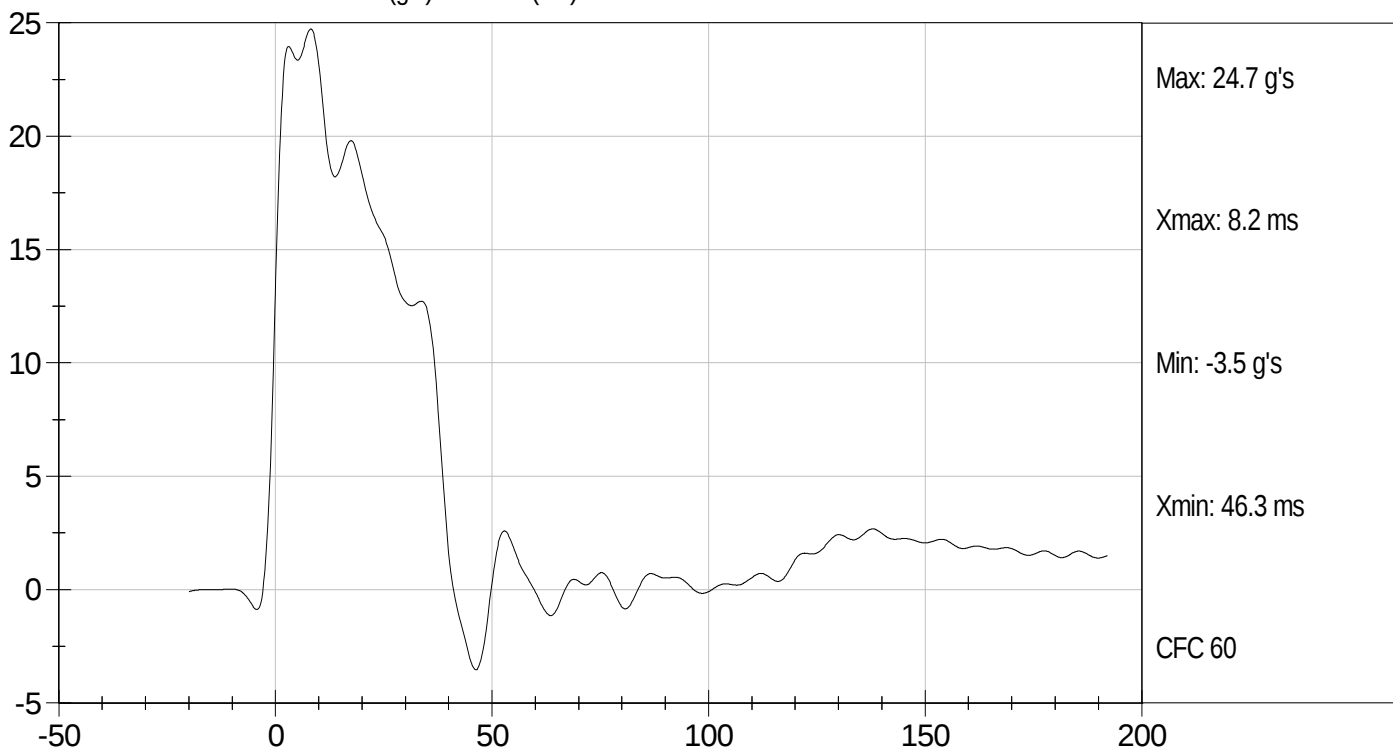

 Approved By



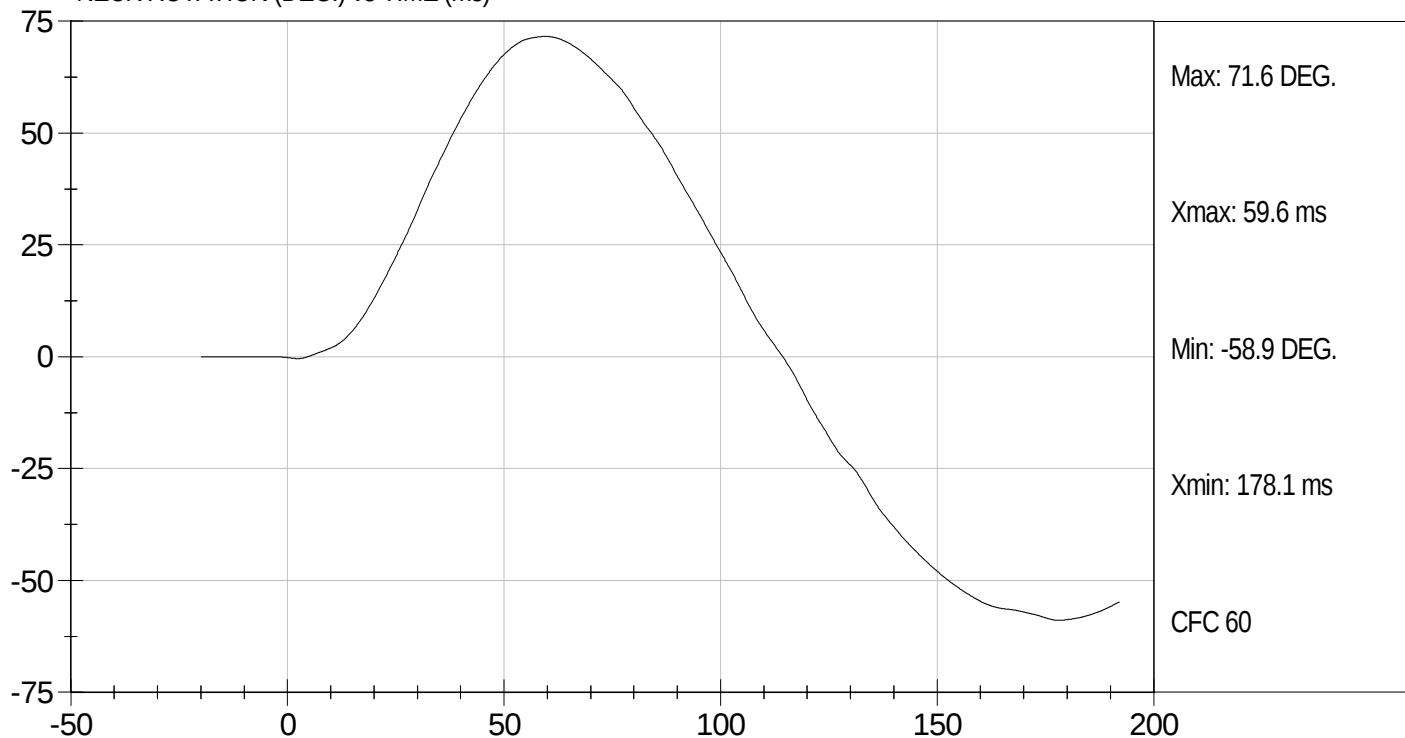
Test Desc: Neck Flexion
Component ID: D12692

Test Date: 2/27/12
Velocity: 23.15 ft/s, 7.06 m/s

PENDULUM DECELERATION (g's) vs TIME (ms)



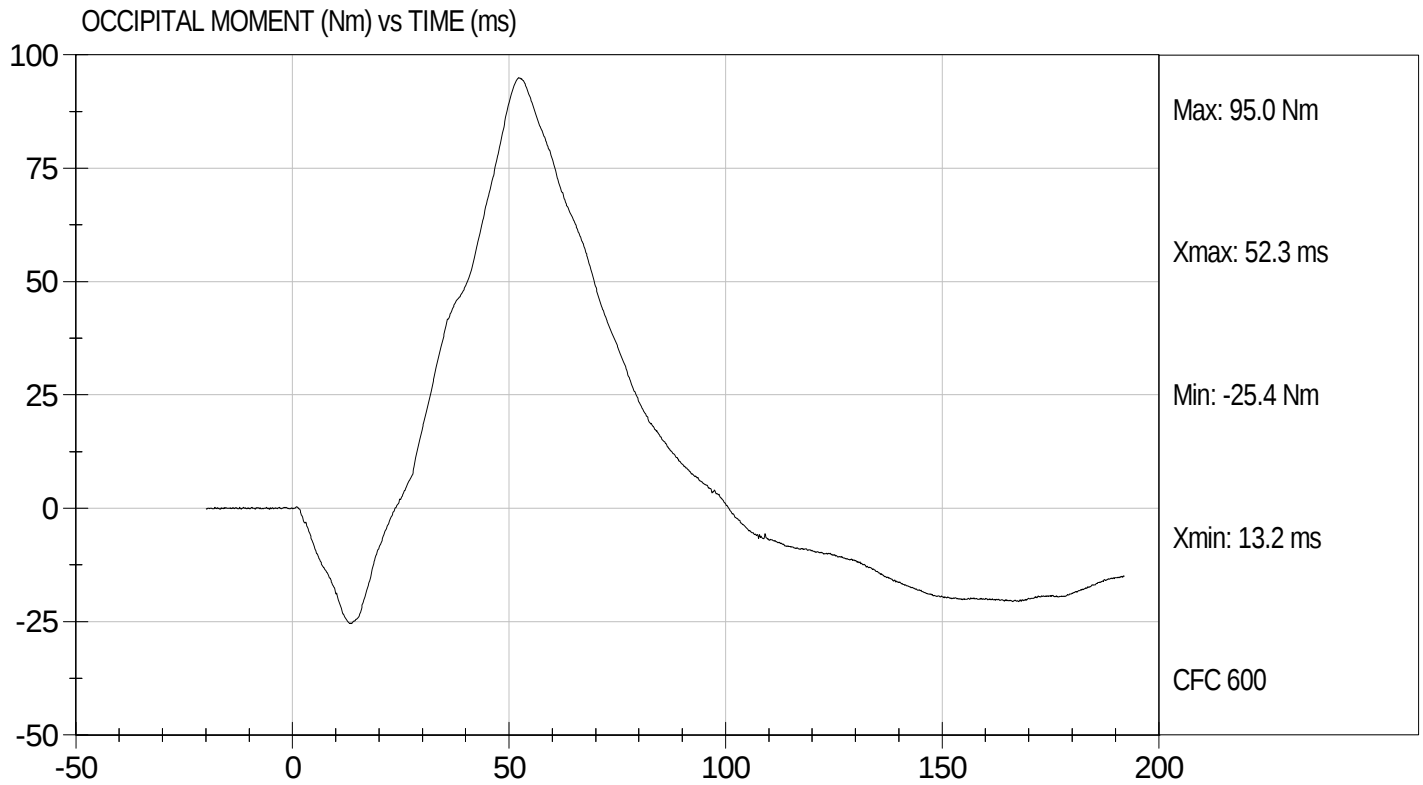
NECK ROTATION (DEG.) vs TIME (ms)





Test Desc: Neck Flexion
Component ID: D12692

Test Date: 2/27/12
Velocity: 23.15 ft/s, 7.06 m/s



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

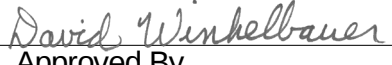
ATD Serial No: 351

Test I.D: D12693

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity		%	10 to 70	19	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.13	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	19.01	Pass
	20 ms	G's	14.00 to 19.00	14.63	Pass
	30 ms	G's	11.00 to 16.00	11.86	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 22.0	12.8	Pass
Deceleration Decay Time to Cross 5 G's		ms	38.0 to 46.0	39.0	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	99.5	Pass
	Time	ms	72.0 to 82.0	78.1	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	156.9	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-63.6	Pass
	Time	ms	65.0 to 79.0	72.4	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	144.7	Pass
Overall Test Results					Pass


 Laboratory Technician

2/27/12
 Test Date

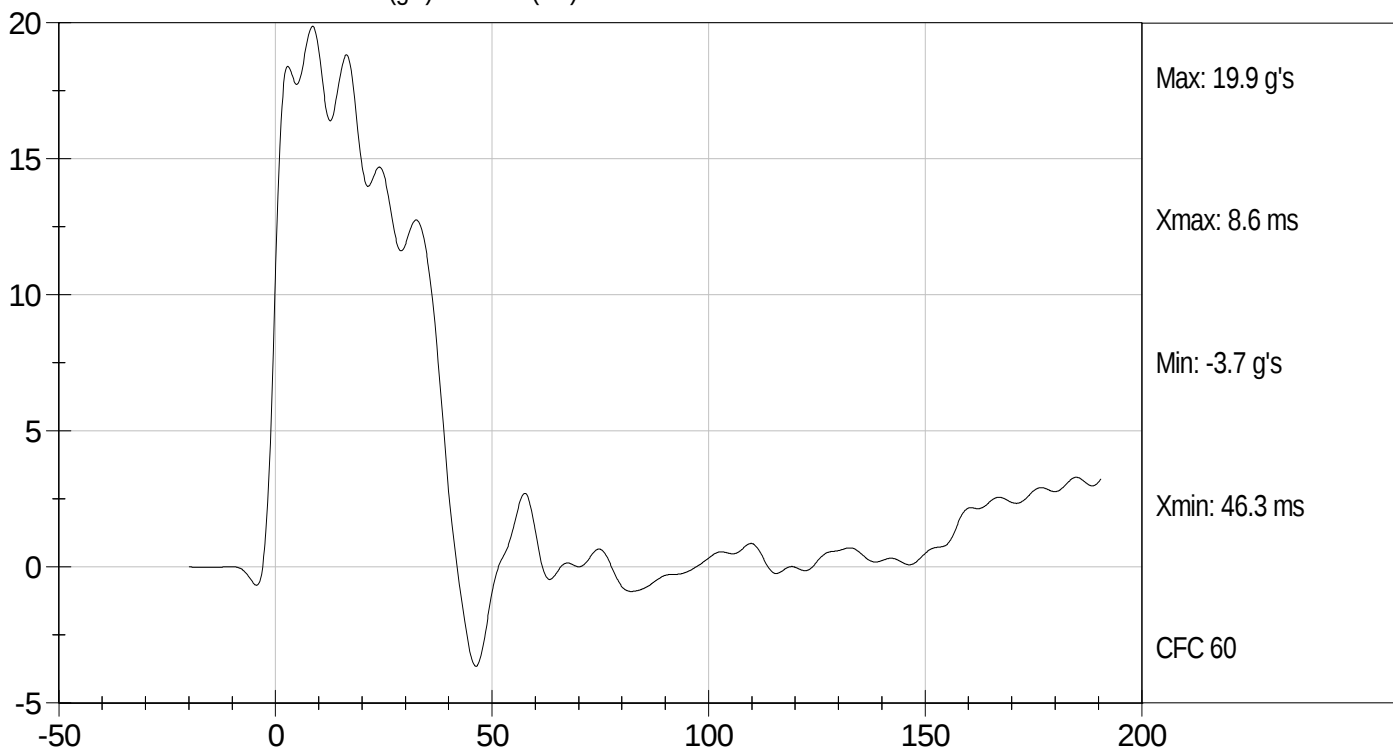

 Approved By



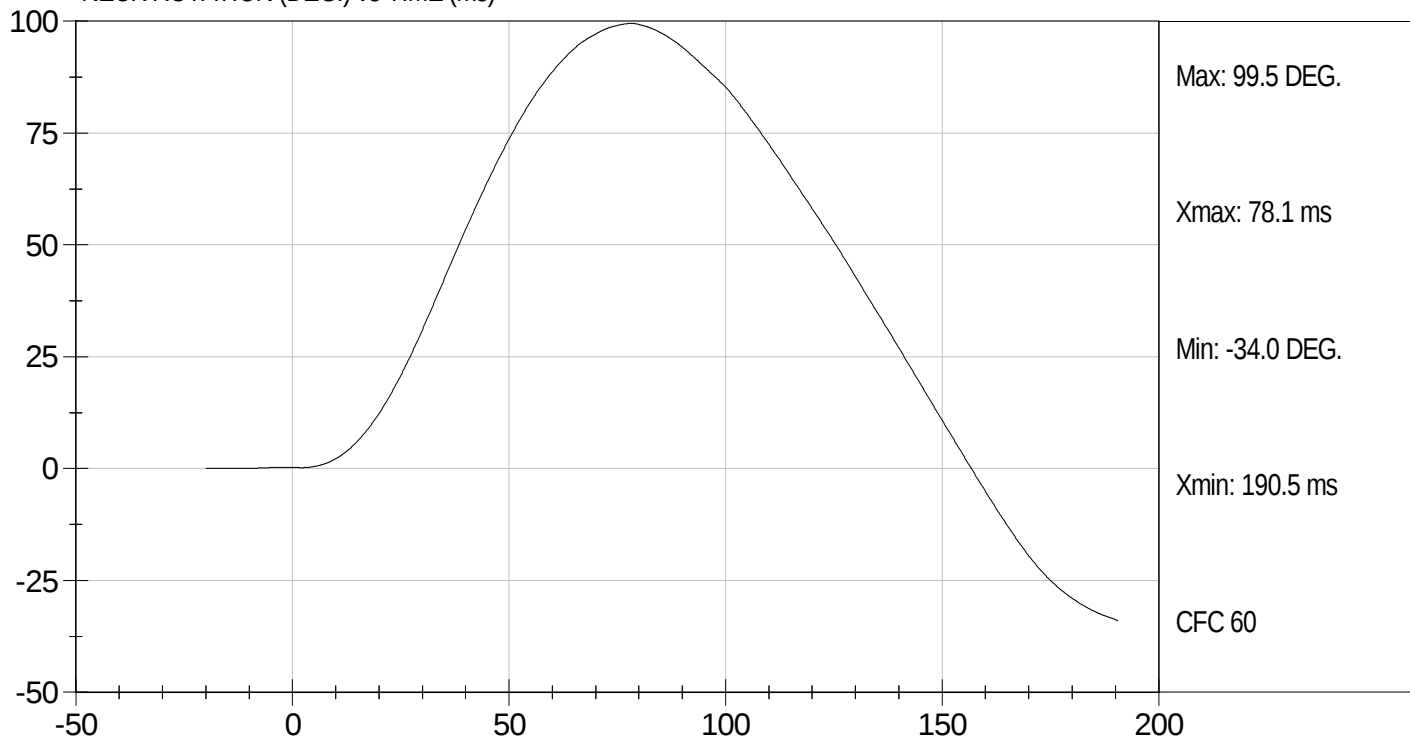
Test Desc: Neck Extension
Component ID: D12693

Test Date: 2/27/12
Velocity: 20.10 ft/s, 6.13 m/s

PENDULUM DECELERATION (g's) vs TIME (ms)



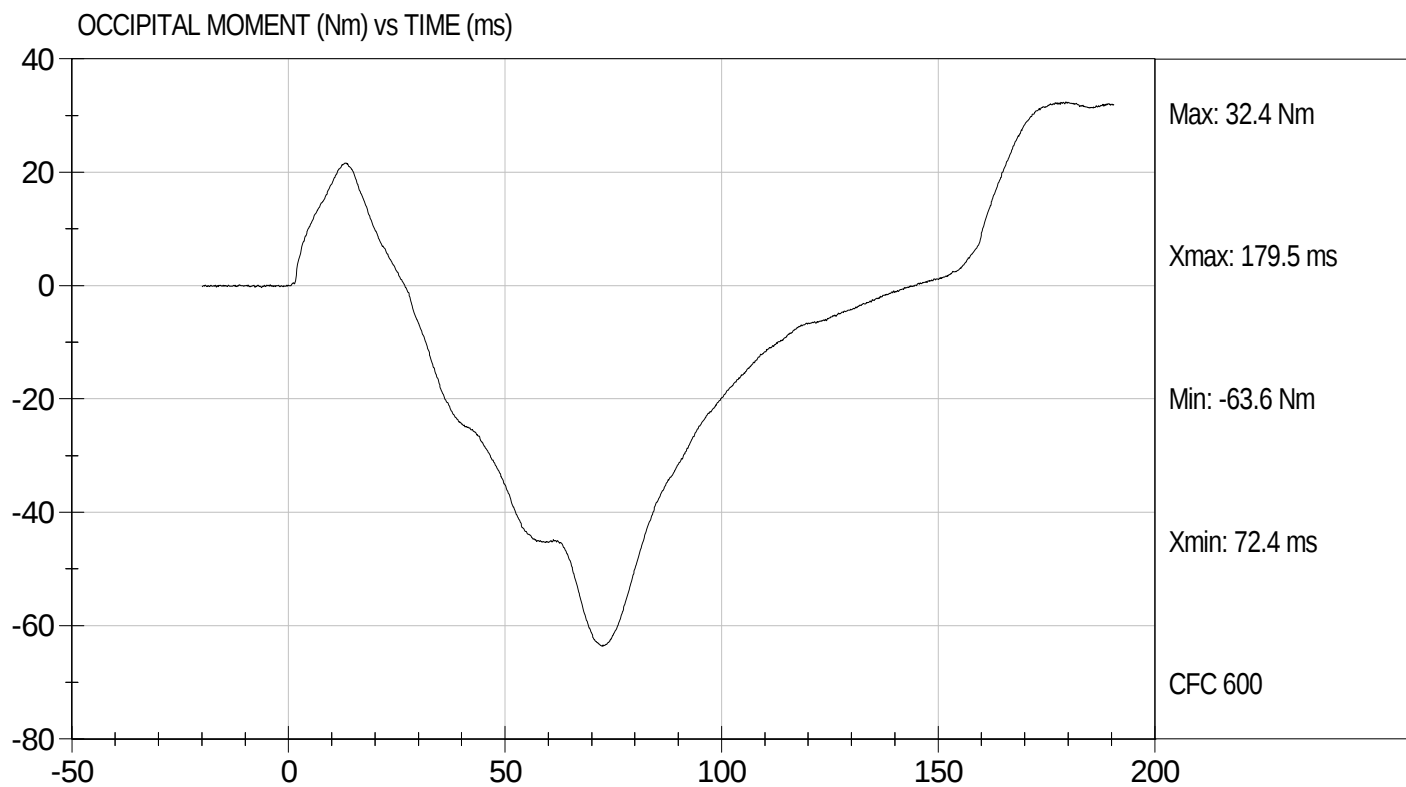
NECK ROTATION (DEG.) vs TIME (ms)





Test Desc: Neck Extension
Component ID: D12693

Test Date: 2/27/12
Velocity: 20.10 ft/s, 6.13 m/s



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

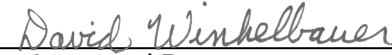
ATD Serial No: 351

Test I.D: D12694

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	22.1	Pass
Laboratory Relative Humidity	%	10 to 70	18	Pass
Probe Velocity	m/s	6.58 to 6.82	6.68	Pass
Peak Probe Force	N	5159 to 5893	5,316	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.49	Pass
Internal Hysteresis	%	69 to 85	71	Pass
			Overall Test Results	Pass


Laboratory Technician

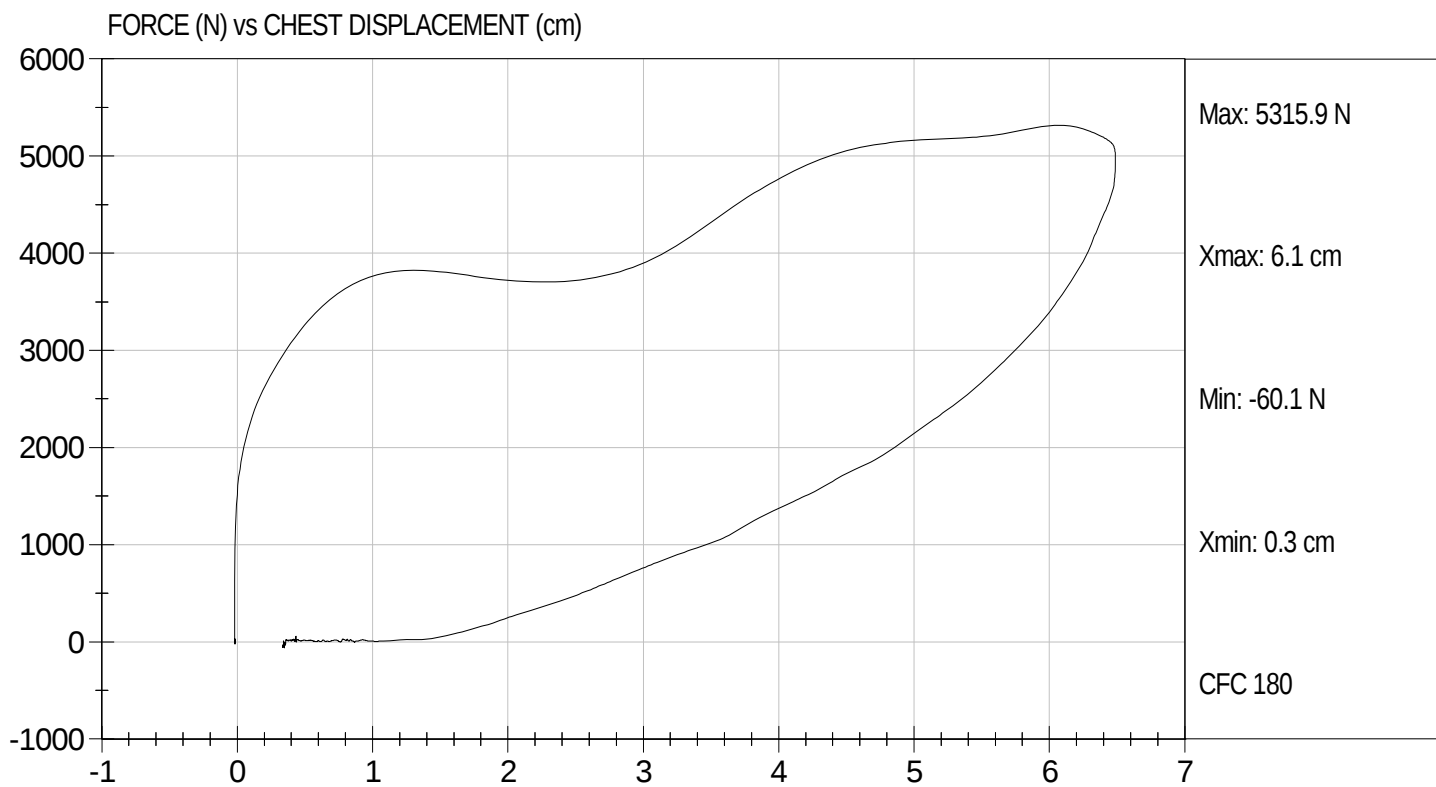
2/27/12
Test Date


Approved By



Test Desc: Thorax Impact
Component ID: D12694

Test Date: 2/27/12
Velocity: 21.9 ft/s, 6.68 m/s



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

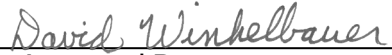
ATD Serial No: 351

Test I.D: D12695

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	20	Pass
Probe Velocity	m/s	2.07 to 2.13	2.12	Pass
Peak Probe Force	Newtons	4715 to 5782	5,317	Pass
			Overall Test Results	Pass


Laboratory Technician

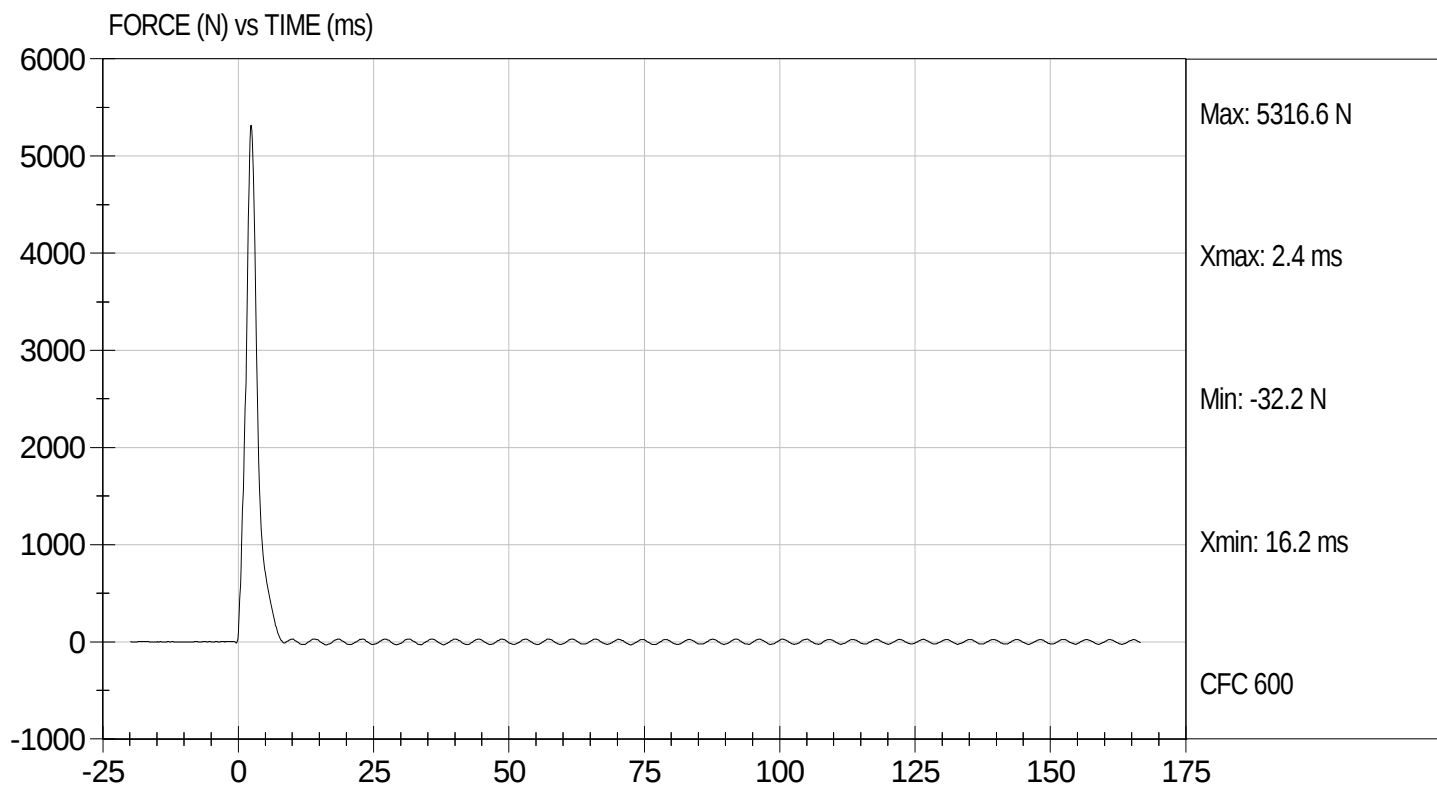
2/27/12
Test Date


Approved By



Test Desc: Right Knee
Component ID: D12695

Test Date: 2/27/12
Velocity: 6.97 ft/s, 2.12 m/s



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

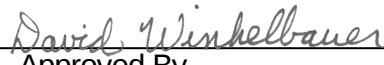
ATD Serial No: 351

Test I.D: D12696

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	20	Pass
Probe Velocity	m/s	2.07 to 2.13	2.12	Pass
Peak Probe Force	Newtons	4715 to 5782	5,000	Pass
			Overall Test Results	Pass


Laboratory Technician

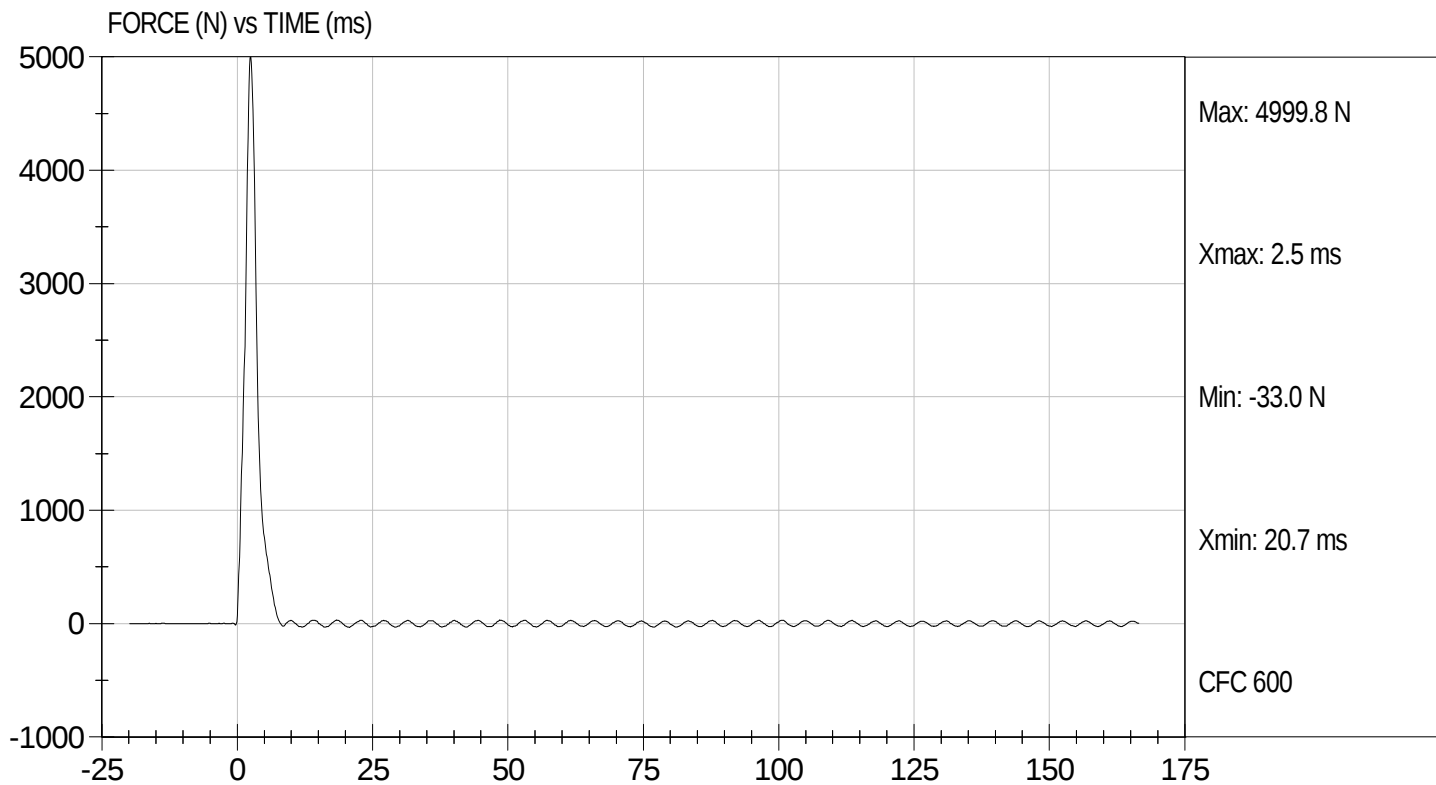
2/27/12
Test Date


Approved By



Test Desc: Left Knee
Component ID: D12696

Test Date: 2/27/12
Velocity: 6.94 ft/s, 2.12 m/s



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

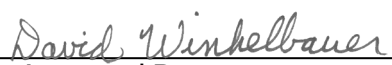
ATD Serial No: 351

Test I.D: D12690

Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	22.1	22.1	Pass
Laboratory Relative Humidity	%	10 to 70	20	20	Pass
Rotation Rate	deg/s	5.0 -10.0	6.4	6.3	Pass
30 Degrees	Nm	94.9 Nm Max	58.0	59.2	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 - 50.0 Degree Max Rotation	49.3	47.4	Pass
Overall Test Results					Pass


 Laboratory Technician

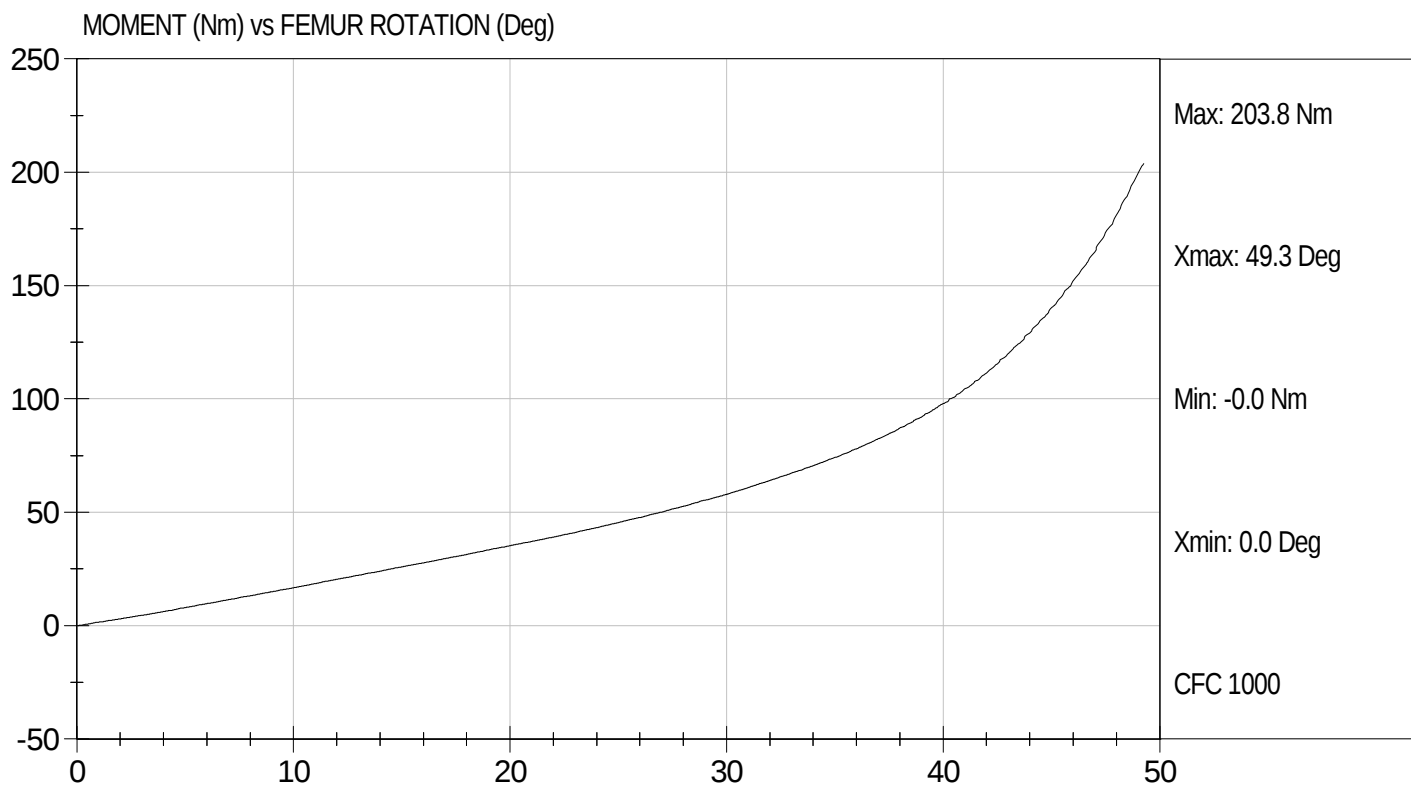
2/27/12
 Test Date


 Approved By



Test Desc: Hip Femur Flexion
Component ID: D12699

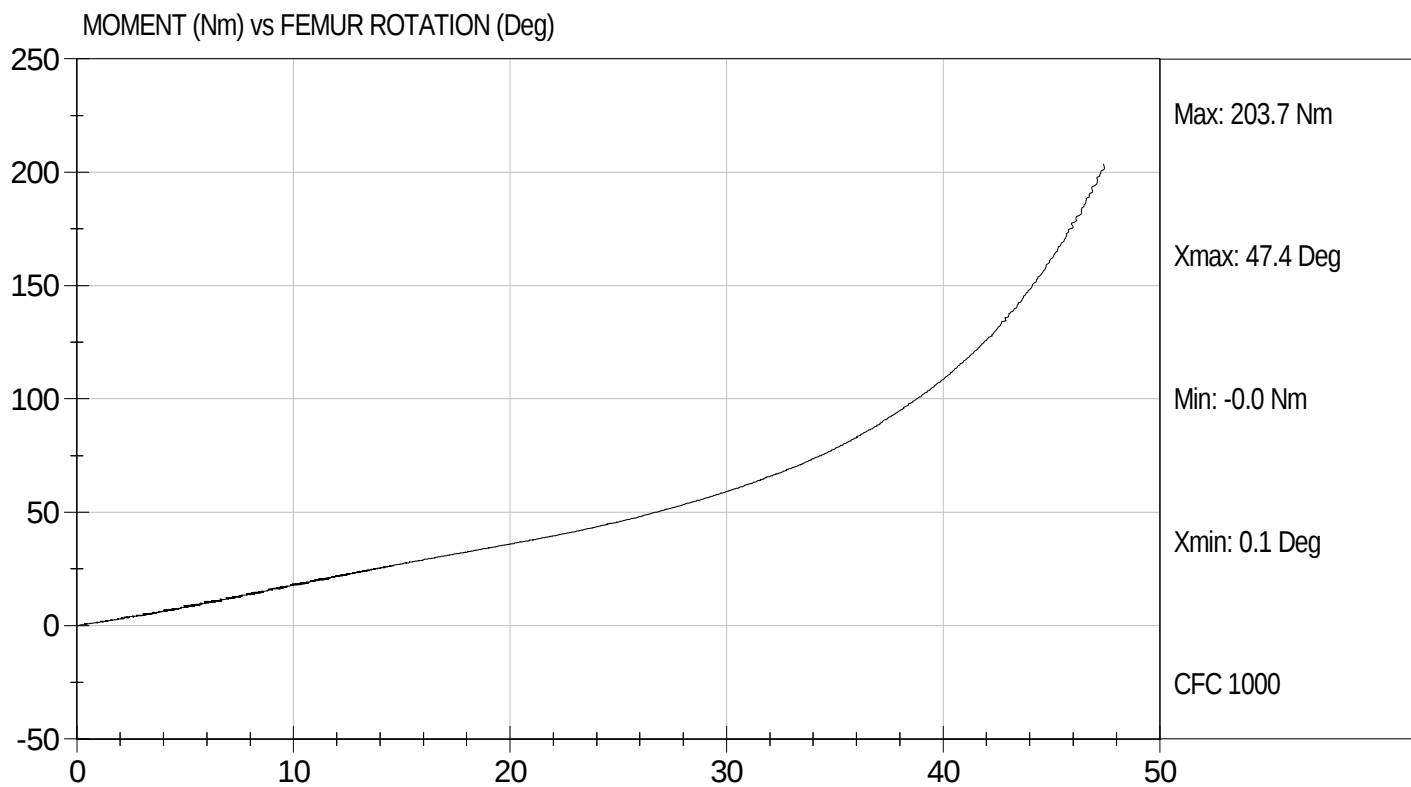
Test Date: 2/27/12
Velocity: 0 ft/s, 0.00 m/s





Test Desc: Hip Femur Flexion
Component ID: D12690

Test Date: 2/27/12
Velocity: 0 ft/s, 0.00 m/s



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

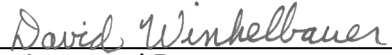
ATD Serial No: 351

Test ID: D12801

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.6	21.0	Pass
Laboratory Relative Humidity	%	10 to 70	34	Pass
Peak Resultant Acceleration	G's	225 - 275	250	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	1.9	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician

3/2/12
Test Date

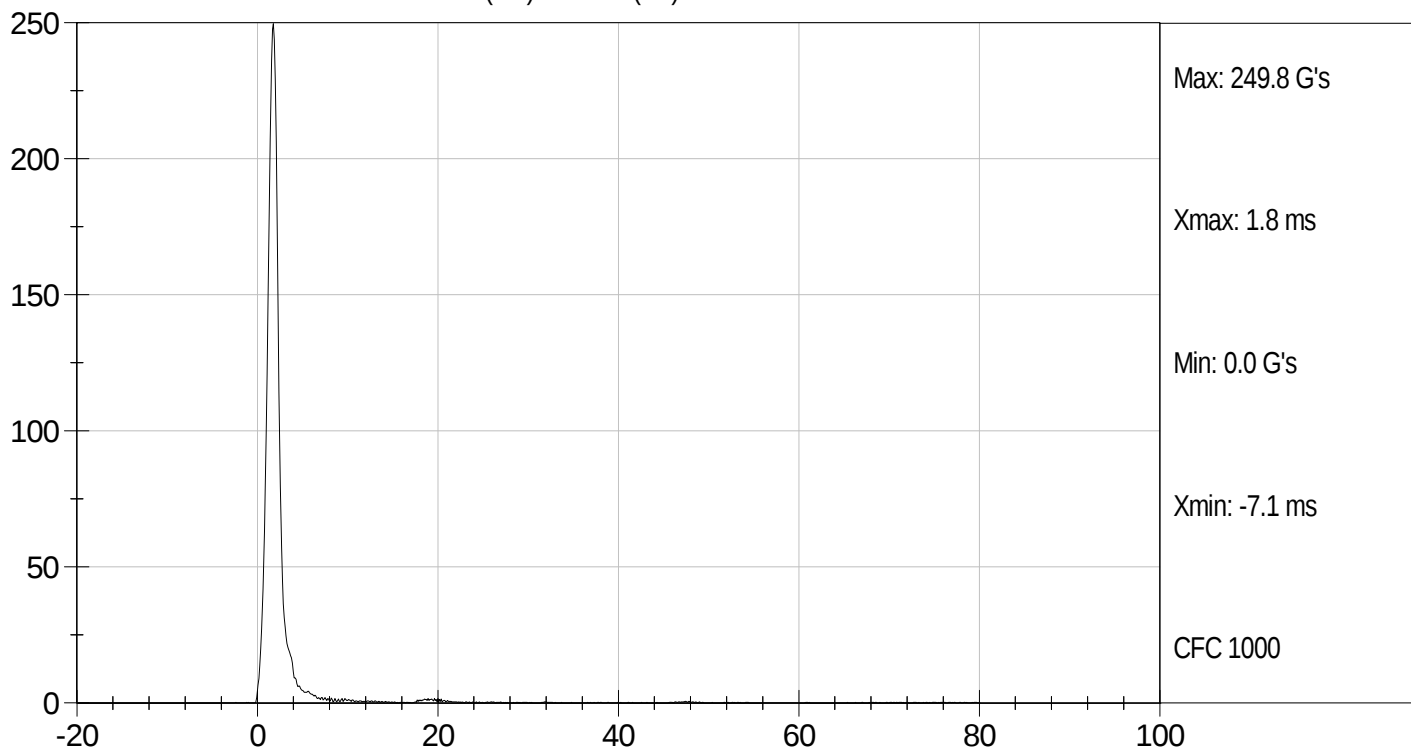

Approved By



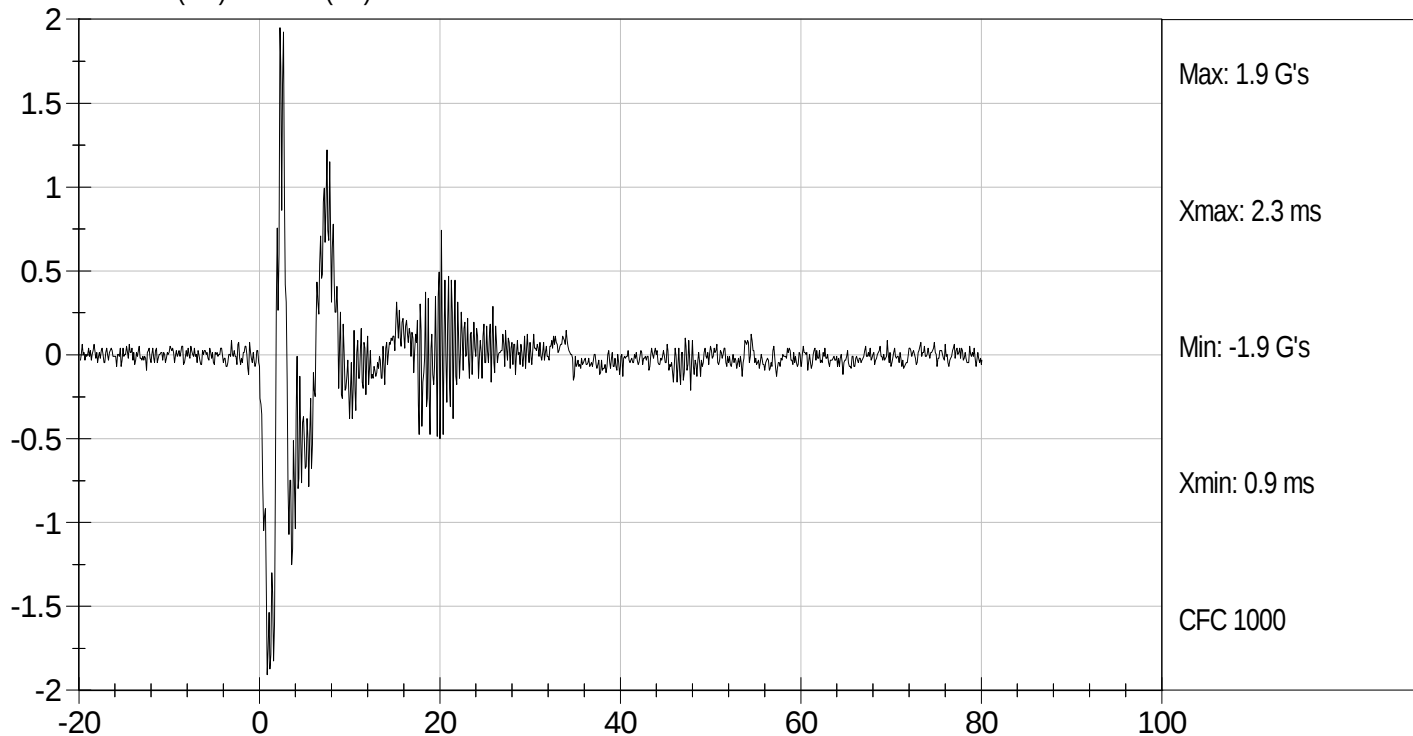
Test Desc: Head Drop
Component ID: D12801

Test Date: 3/2/12
Velocity: 0 ft/s, 0 m/s

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



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



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

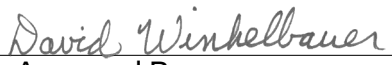
ATD Serial No: 351

Test I.D: D12802

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	34	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.06	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	25.59	Pass
	20 ms	G's	17.60 to 22.60	18.31	Pass
	30 ms	G's	12.50 to 18.50	15.32	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	15.2	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	34.5	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	68.0	Pass
	Time	ms	57.0 to 64.0	57.3	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	113.5	Pass
Moment About Occipital Condyle	Maximum	N m	88.1 to 108.5	93.9	Pass
	Time	ms	47.0 to 58.0	47.6	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	98.3	Pass
Overall Test Results					Pass


 Laboratory Technician

3/2/12
 Test Date

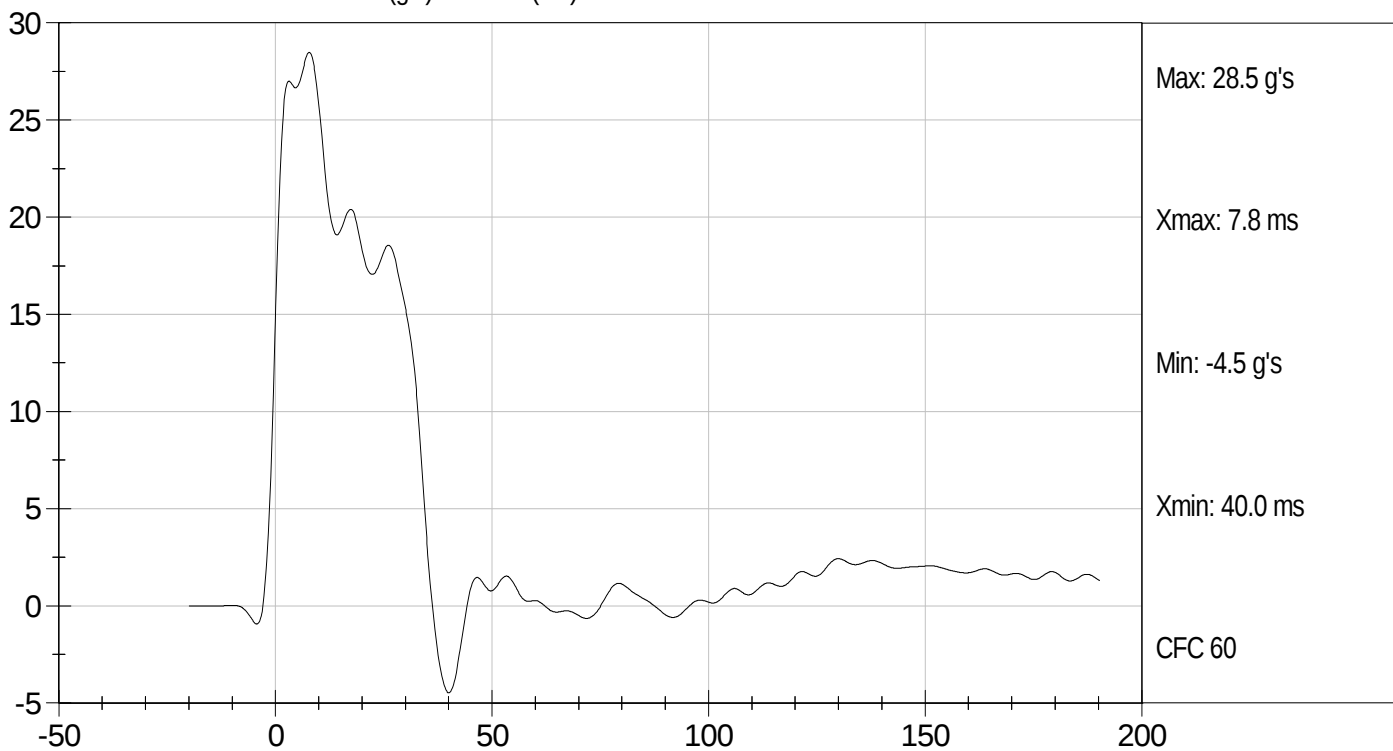

 Approved By



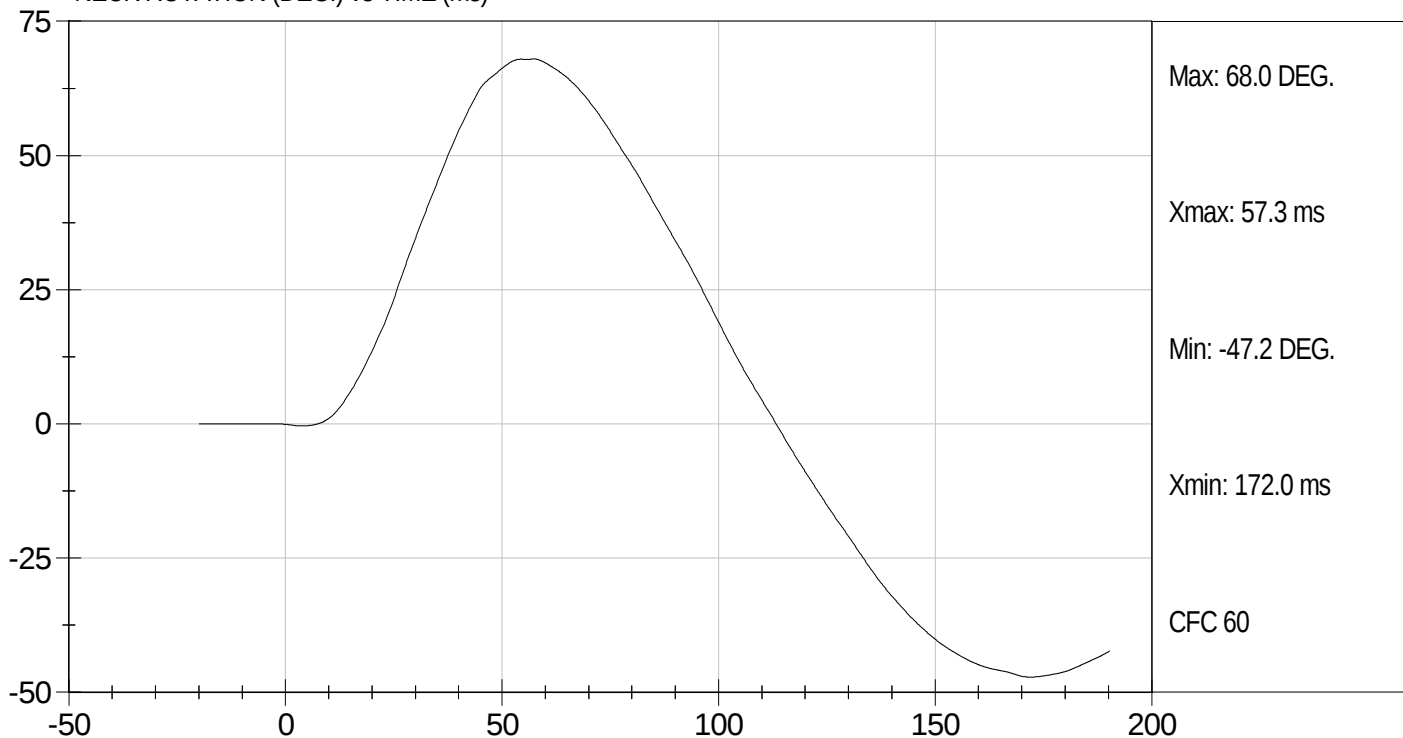
Test Desc: Neck Flexion
Component ID: D12802

Test Date: 3/2/12
Velocity: 23.15 ft/s, 7.06 m/s

PENDULUM DECELERATION (g's) vs TIME (ms)



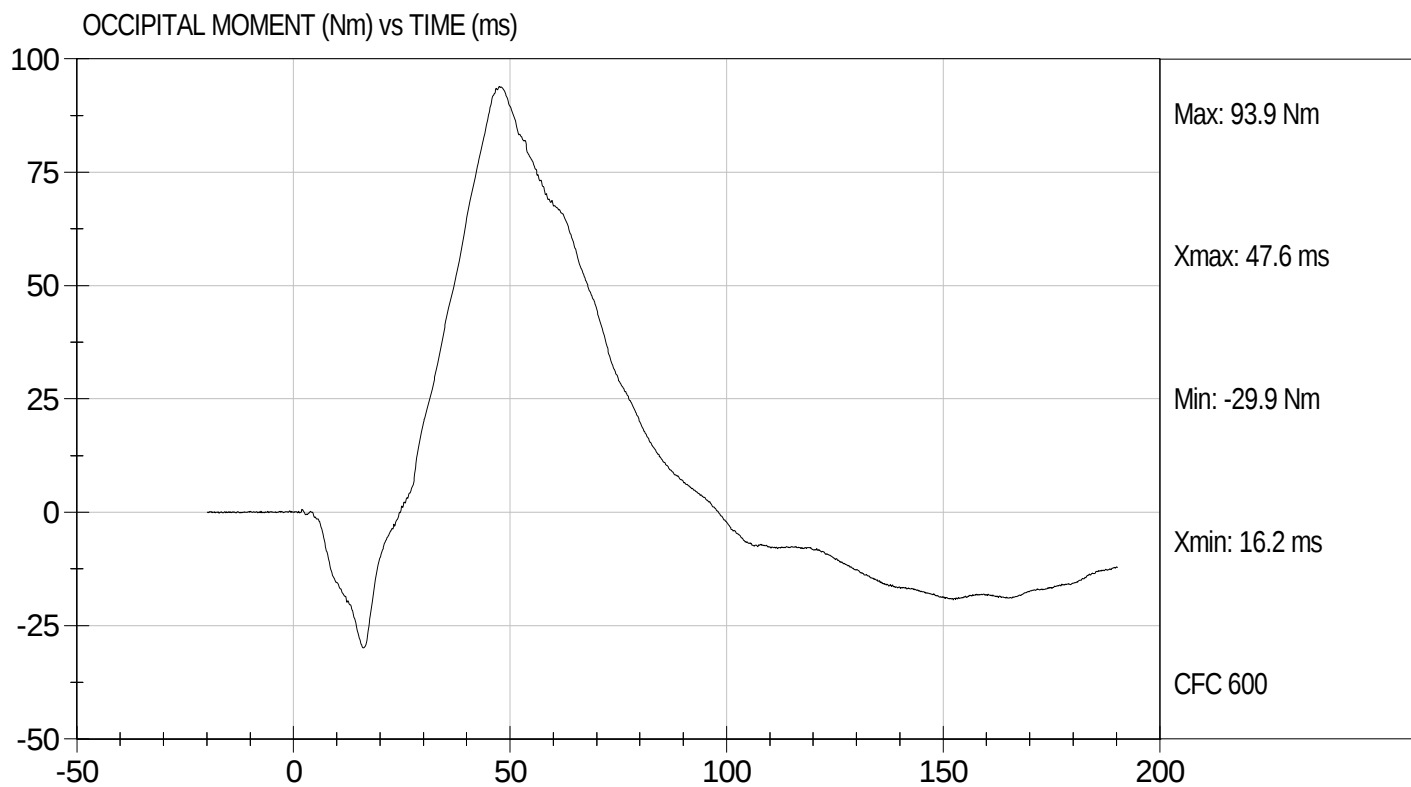
NECK ROTATION (DEG.) vs TIME (ms)





Test Desc: Neck Flexion
Component ID: D12802

Test Date: 3/2/12
Velocity: 23.15 ft/s, 7.06 m/s



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

ATD Serial No: 351

Test I.D: D12803

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	34	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.12	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	19.00	Pass
	20 ms	G's	14.00 to 19.00	15.15	Pass
	30 ms	G's	11.00 to 16.00	12.83	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 22.0	13.2	Pass
Deceleration Decay Time to Cross 5 G's		ms	38.0 to 46.0	38.3	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	95.3	Pass
	Time	ms	72.0 to 82.0	76.0	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	155.6	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-59.0	Pass
	Time	ms	65.0 to 79.0	70.5	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	140.8	Pass
Overall Test Results					Pass


Laboratory Technician

3/2/12
Test Date

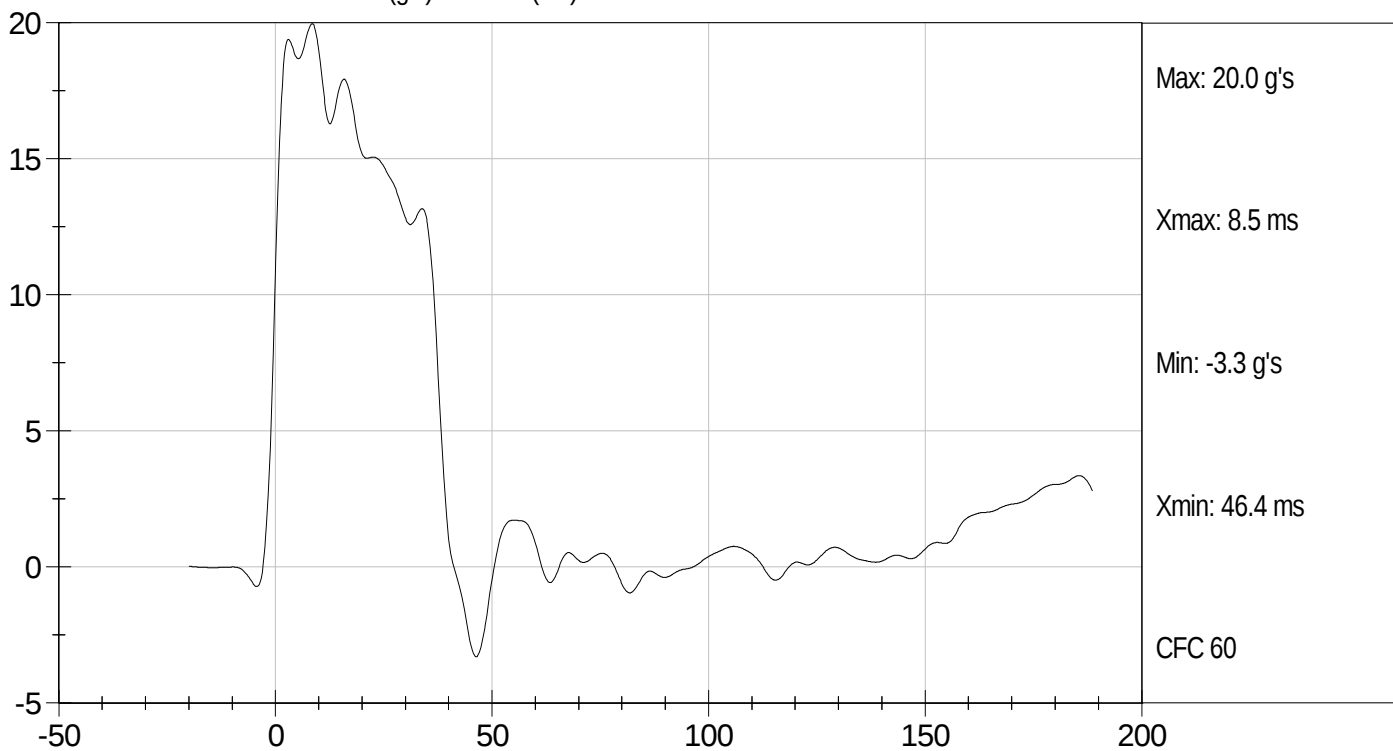

Approved By



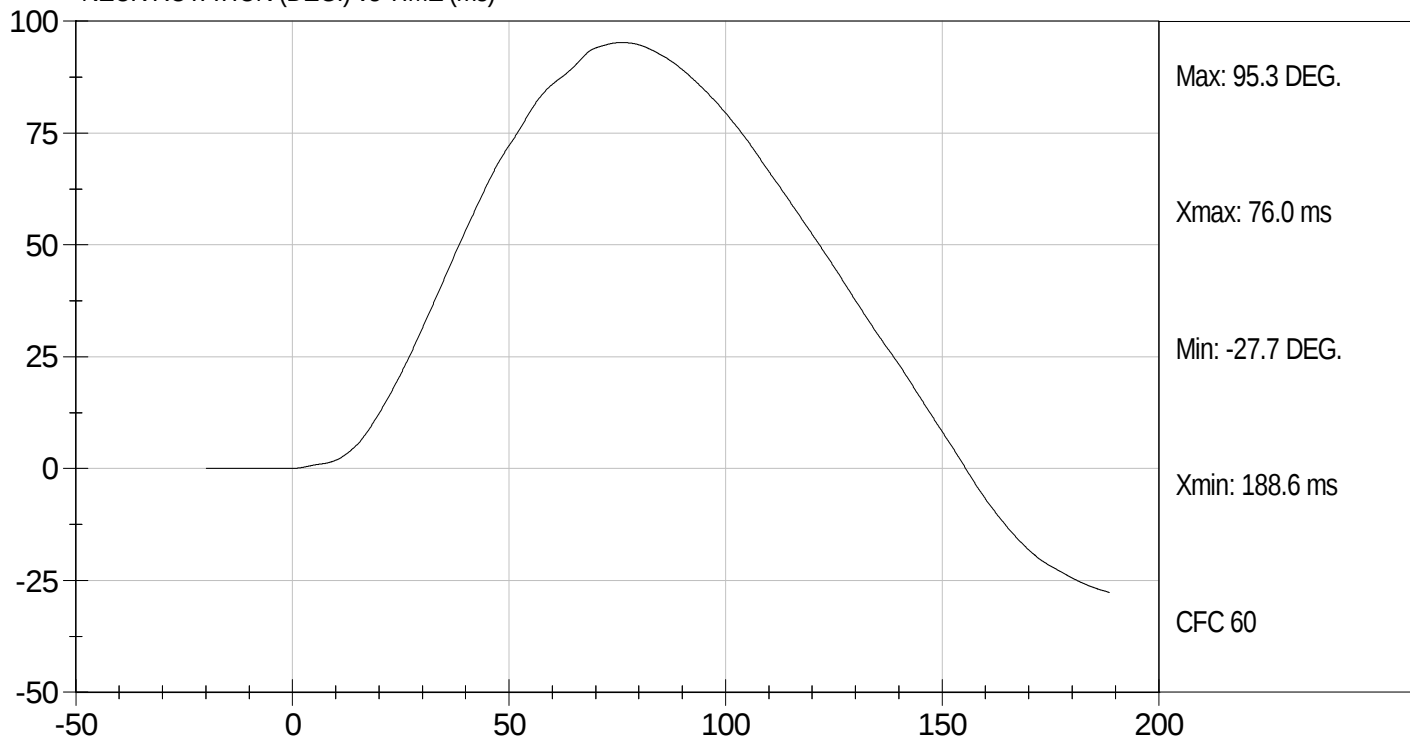
Test Desc: Neck Extension
Component ID: D12803

Test Date: 3/2/12
Velocity: 20.08 ft/s, 6.12 m/s

PENDULUM DECELERATION (g's) vs TIME (ms)



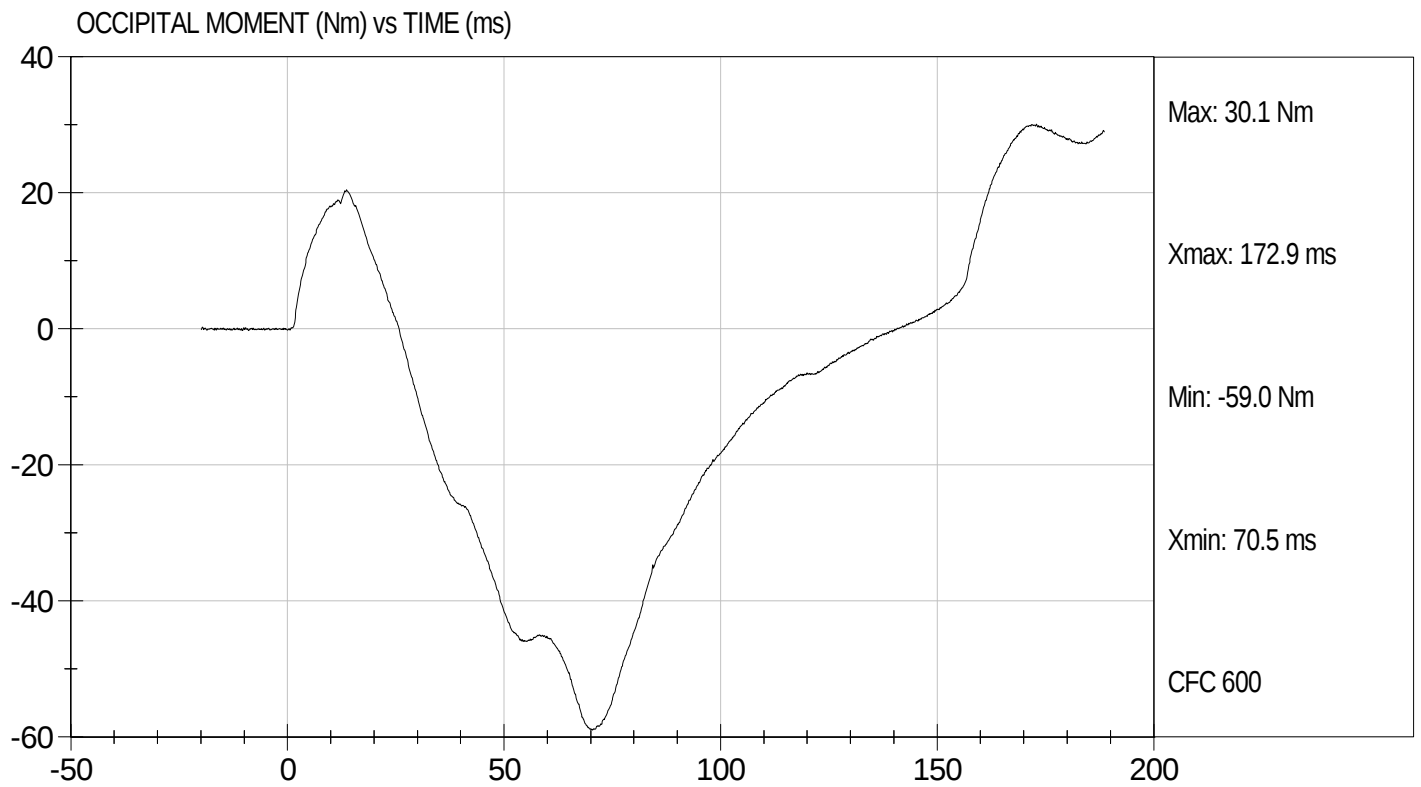
NECK ROTATION (DEG.) vs TIME (ms)





Test Desc: Neck Extension
Component ID: D12803

Test Date: 3/2/12
Velocity: 20.08 ft/s, 6.12 m/s



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 351

Test I.D: D12804

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	18	Pass
Probe Velocity	m/s	6.58 to 6.82	6.77	Pass
Peak Probe Force	N	5159 to 5893	5,208	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.64	Pass
Internal Hysteresis	%	69 to 85	70	Pass
			Overall Test Results	Pass


Laboratory Technician

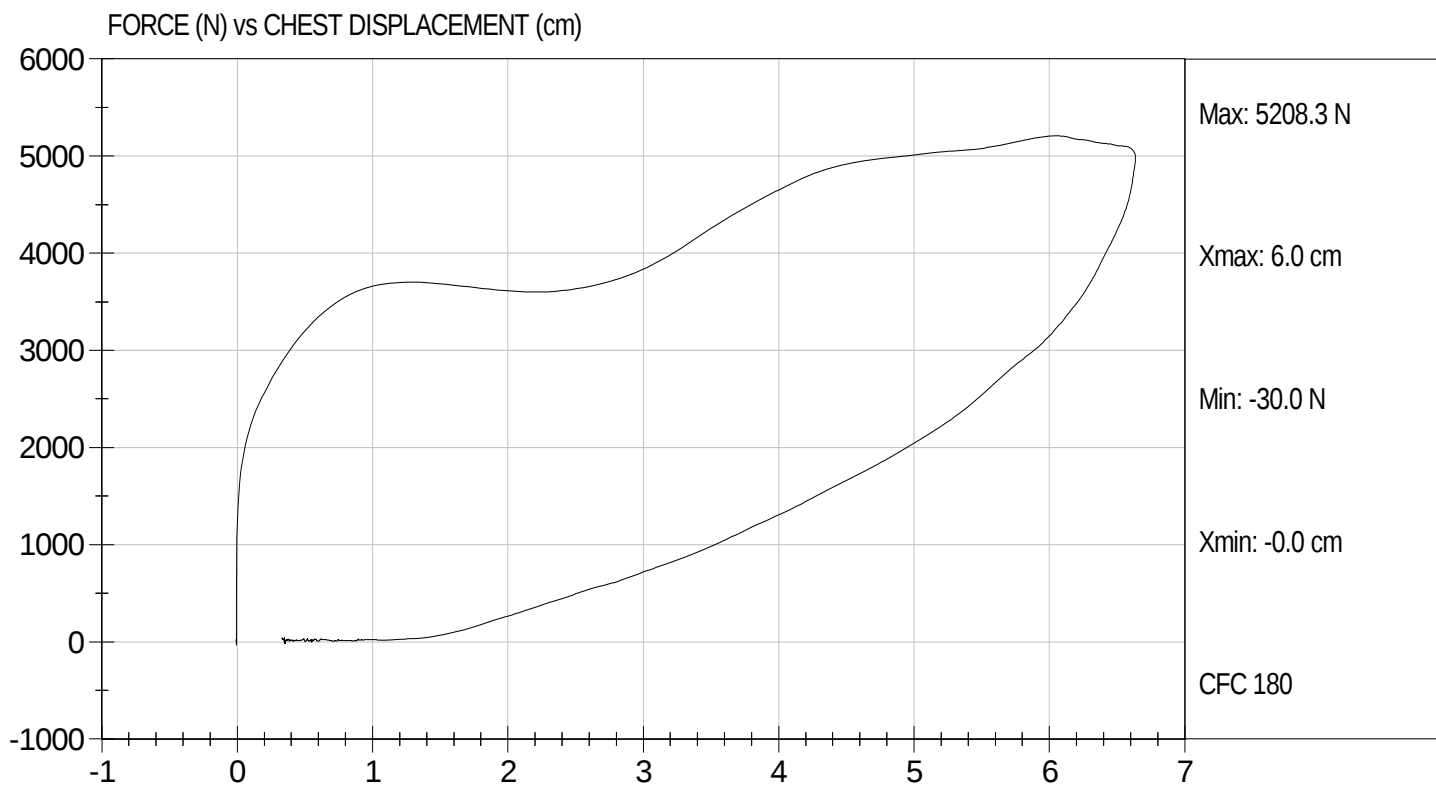
3/5/12
Test Date


Approved By



Test Desc: Thorax Impact
Component ID: D12804

Test Date: 3/5/12
Velocity: 22.22 ft/s, 6.77 m/s



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

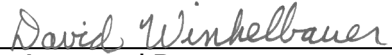
ATD Serial No: 351

Test I.D: D12805

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	19	Pass
Probe Velocity	m/s	2.07 to 2.13	2.12	Pass
Peak Probe Force	Newtons	4715 to 5782	5,624	Pass
Overall Test Results				Pass


Laboratory Technician

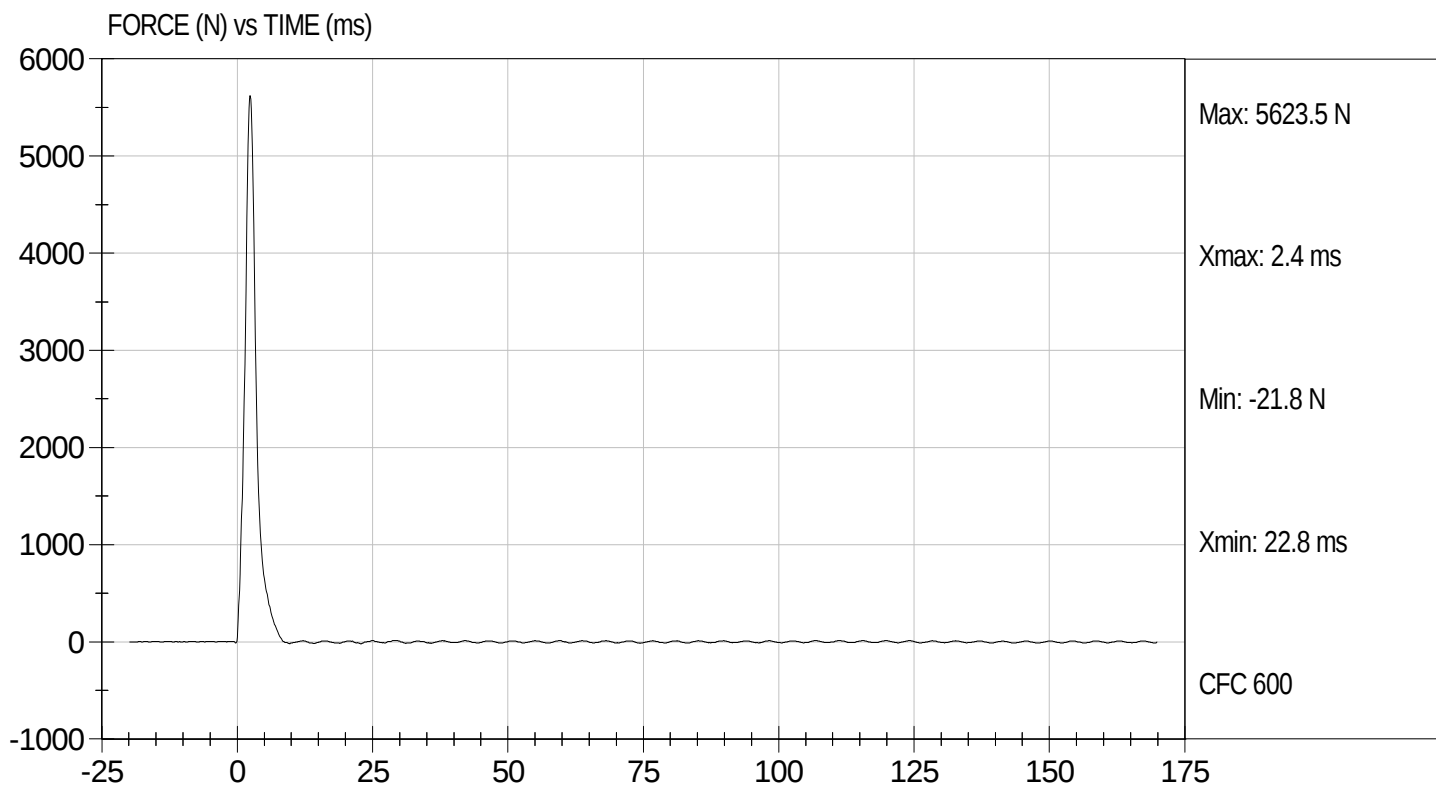
3/5/12
Test Date


Approved By



Test Desc: Right Knee
Component ID: D12805

Test Date: 3/5/12
Velocity: 6.97 ft/s, 2.12 m/s



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

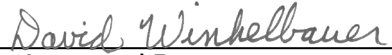
ATD Serial No: 351

Test I.D: D12806

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	19	Pass
Probe Velocity	m/s	2.07 to 2.13	2.12	Pass
Peak Probe Force	Newtons	4715 to 5782	5,500	Pass
Overall Test Results				Pass


Laboratory Technician

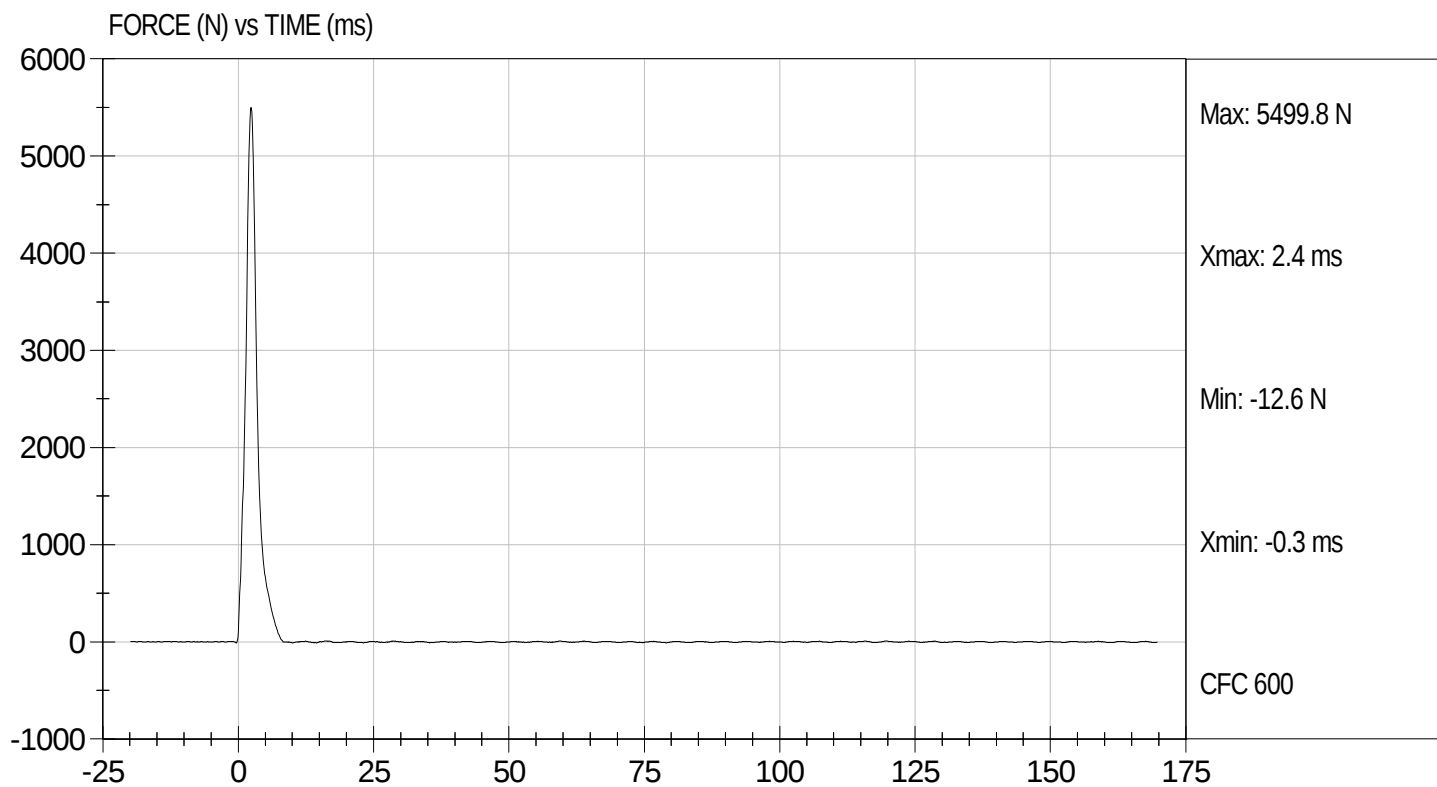
3/5/12
Test Date


Approved By



Test Desc: Left Knee
Component ID: D12806

Test Date: 3/5/12
Velocity: 6.97 ft/s, 2.12 m/s

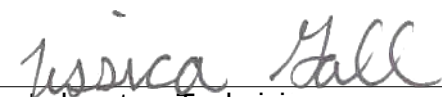


MGA RESEARCH CORPORATION
HIP-FEMUR FLEXION TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 351

Test I.D: D12800

Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.0	21.0	Pass
Laboratory Relative Humidity	%	10 to 70	34	34	Pass
Rotation Rate	deg/s	5.0 -10.0	6.3	6.3	Pass
30 Degrees	Nm	94.9 Nm Max	59.2	58.0	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 - 50.0 Degree Max Rotation	49.0	47.6	Pass
Overall Test Results					Pass


 Laboratory Technician

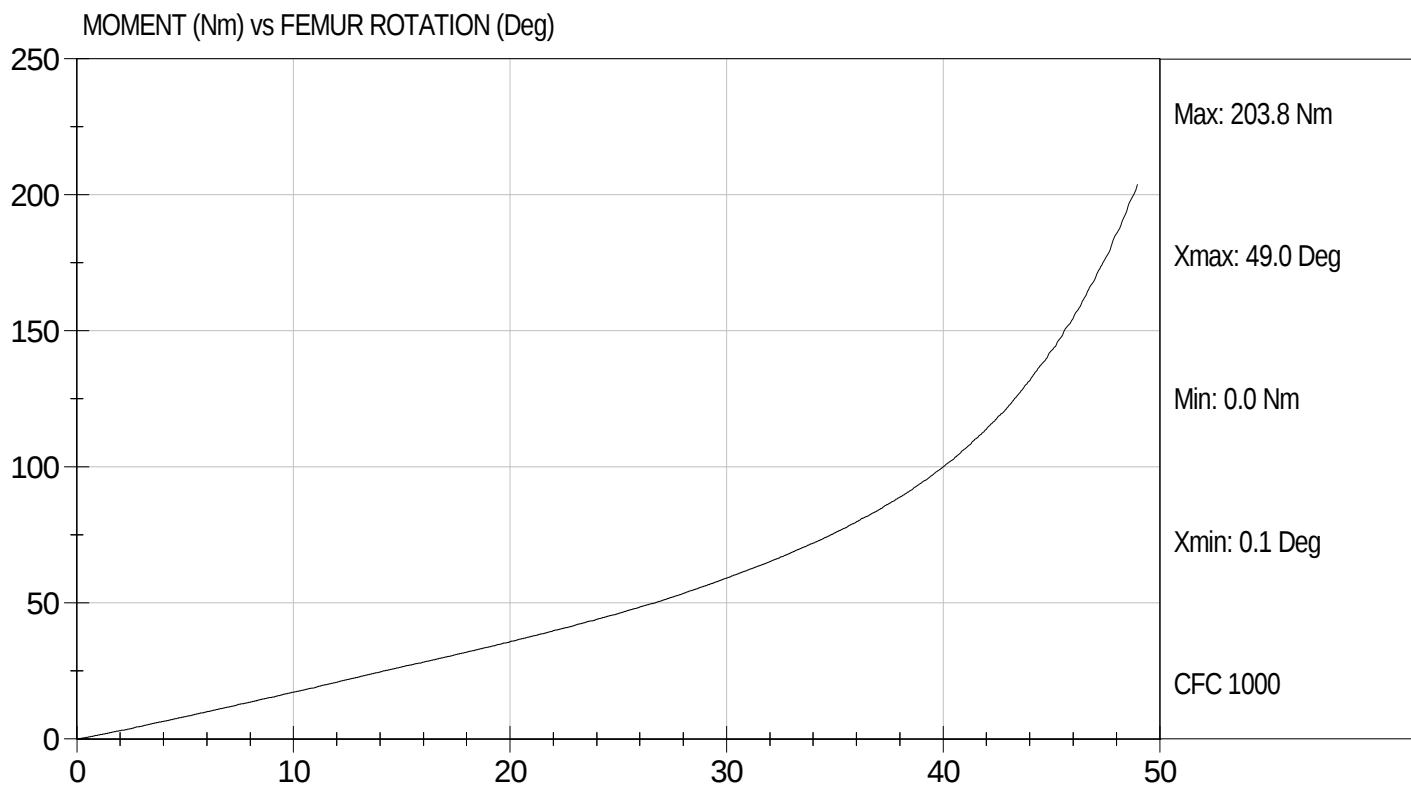
3/2/12
 Test Date


 Approved By



Test Desc: Hip Femur Flexion
Component ID: D12809

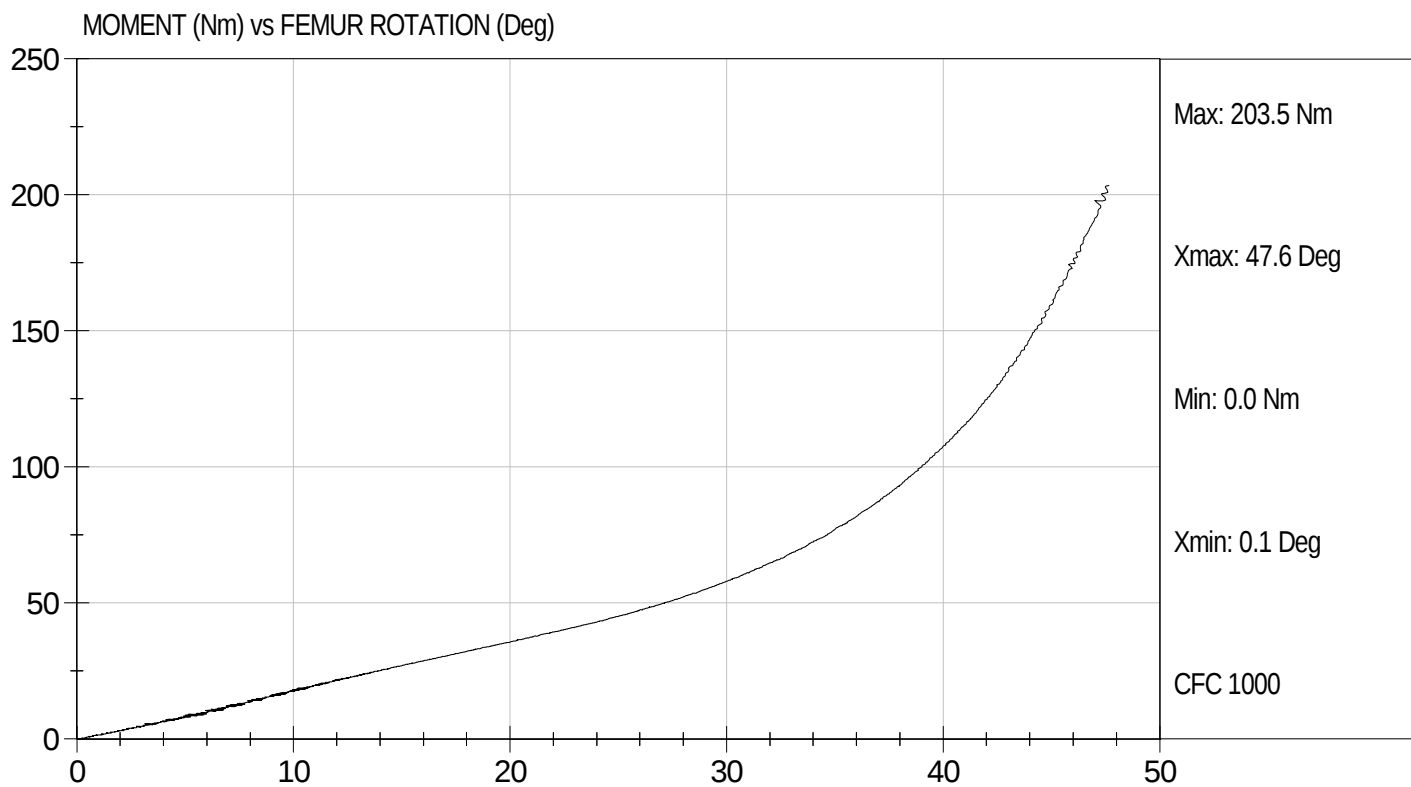
Test Date: 3/2/12
Velocity: 0 ft/s, 0.00 m/s





Test Desc: Hip Femur Flexion
Component ID: D12800

Test Date: 3/2/12
Velocity: 0 ft/s, 0.00 m/s



Hybrid III, 5th External Measurements
SN: 634

HYBRID III, PART 572, SUBPART O EXTERNAL DIMENSIONS				
DIMENSION	DESCRIPTION	DETAILS	ASSEMBLY DIMENSION (mm)	ACTUAL MEASUREMENT
A	TOTAL SITTING HEIGHT	Seat surface to highest point on top of the head.	774.7-800.1	784.6
B	SHOULDER PIVOT HEIGHT	Centerline of shoulder pivot bolt to the seat surface.	431.8-457.2	449.0
C	H-POINT HEIGHT	Reference	81.3-86.3	85.0
D	H-POINT LOCATION FROM BACKLINE	Reference	144.8-149.8	145.0
E	SHOULDER PIVOT FROM BACKLINE	Center of the shoulder clevis to the rear vertical surface of the fixture.	68.6-83.8	79.2
F	THIGH CLEARANCE	Measured at the highest point on the upper femur segment.	119.4-134.6	125.6
G	BACK OF ELBOW TO WRIST PIVOT	back of the elbow flesh to the wrist pivot in line with the elbow and wrist pivots	243.9-259.1	253.4
H	HEAD BACK TO BACKLINE	Back of Skull cap skin to seat rear vertical surface (Reference)	43.2-48.2	45.0
I	SHOULDER TO- ELBOW LENGTH	Measure from the highest point on top of the shoulder clevis to the lowest part of the flesh on the elbow in line with the elbow pivot bolt.	276.8-297.2	277.8
J	ELBOW REST HEIGHT	Measure from the flesh below the elbow pivot bolt to the seat surface.	182.8-203.2	197.5
K	BUTTOCK TO KNEE LENGTH	The forward most part of the knee flesh to the rear vertical surface of the fixture.	520.7-546.1	541.4
L	POPLITEAL HEIGHT	Seat surface to the plane of the horizontal plane of the bottom of the feet.	355.6-376.0	362.1
M	KNEE PIVOT HEIGHT	Centerline of knee pivot bolt to the horizontal plane of the bottom of the feet.	393.7-419.1	400.4
N	BUTTOCK POPLITEAL LENGTH	The rearmost surface of the lower leg to the same point on the rear surface of the buttocks used for dim. "K".	414-439.4	428.6

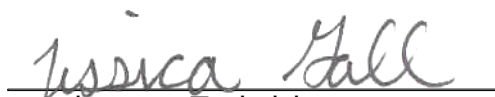
HYBRID III, SUBPART O EXTERNAL DIMENSIONS, continued				
DIMENSION	DESCRIPTION	DETAILS	ASSEMBLY DIMENSION (mm)	ACTUAL MEASUREMENT
O	CHEST DEPTH WITHOUT JACKET	Measured 304.8 ± 5.1 mm above seat surface	175.3-190.5	181.6
P	FOOT LENGTH	Tip of toe to rear of heel	218.5-233.7	224.7
Q	STANDING HEIGHT	(THEORETICAL)	1501.1	N/A
R	BUTTOCK TO KNEE PIVOT LENGTH	The rear surface of the buttocks to the knee pivot bolt	457.2-482.6	482.0
S	HEAD BREADTH	The widest part of the head	137.1-147.3	139.6
T	HEAD DEPTH	Back of the head to the forehead	177.8-188.0	179.2
U	HIP BREADTH	The widest part of the hip	299.7-314.9	306.1
V	SHOULDER BREADTH	Outside edges of right and left shoulder clevises	350.5-365.7	355.5
W	FOOT BREADTH	The widest part of the foot	78.8-94.0	90.0
X	HEAD CIRCUMFERENCE	Measured at the point as in dim. "T"	528.3-548.7	540.6
Y	CHEST CIRCUMFERENCE (WITH CHEST JACKET)	Measured 345.4 ± 12.7 mm above seat surface	850.9-881.3	868.7
Z	WAIST CIRCUMFERENCE	Measured 165.1 ± 5.1 mm above seat surface	759.5-789.9	786.8
AA	REFERENCE LOCATION FOR MEASUREMENT OF CHEST CIRCUMFERENCE	Reference	332.7-358.1	345.4
BB	REFERENCE LOCATION FOR MEASUREMENT OF WAIST CIRCUMFERENCE	Reference	160.1-170.2	165.1

MGA RESEARCH CORPORATION
HEAD DROP TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test ID: D12701

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	20	Pass
Peak Resultant Acceleration	G's	250 to 300	278	Pass
Peak Lateral Acceleration	G's	+/- 15	7.6	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician

2/27/12
Test Date

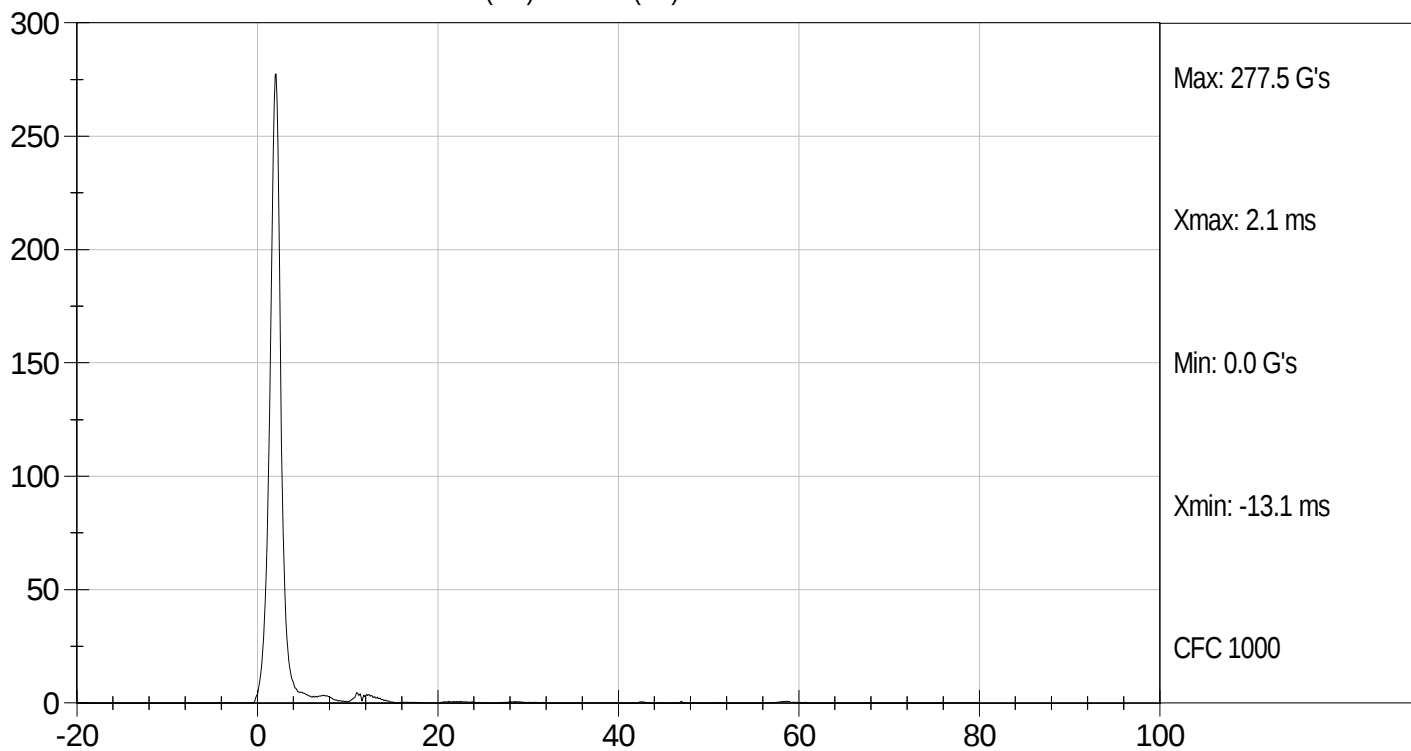

Approved By



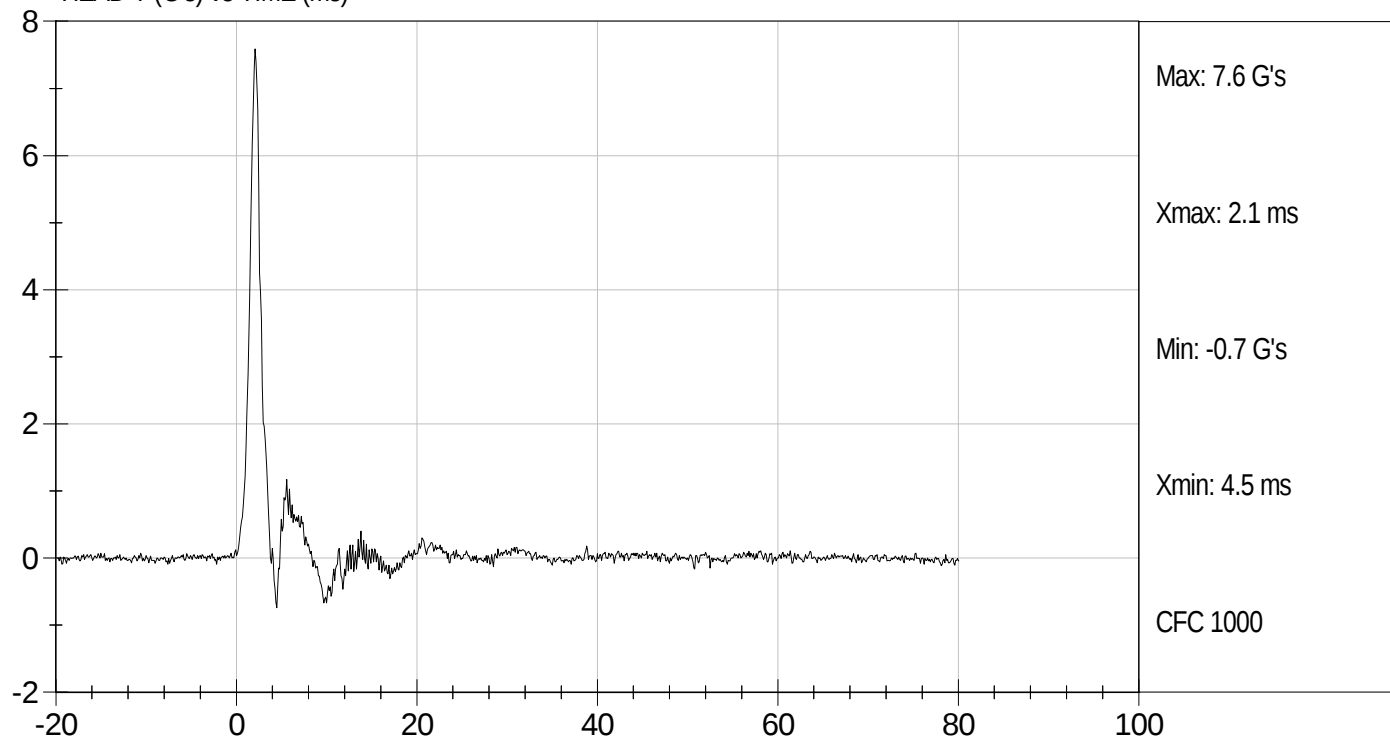
Test Desc: Head Drop
Component ID: D12701

Test Date: 2/27/12
Velocity: 0 ft/s, 0 m/s

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



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



MGA RESEARCH CORPORATION
NECK FLEXION TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D12702

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity		%	10 to 70	19	Pass
Pendulum Speed		m/s	6.89 to 7.13	7.06	Pass
Pendulum Pulse	10 ms	m/s	2.1 to 2.5	2.4	Pass
	20 ms	m/s	4.0 to 5.0	4.8	Pass
	30 ms	m/s	5.8 to 7.0	6.5	Pass
D Plane Rotation	Max	deg	77 to 91	87	Pass
Occipital Condyle Moment within Deflection Corridor		Nm	69 to 83	72	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 to 100	85	Pass
Overall Results				Pass	


Laboratory Technician

2/27/12
Test Date

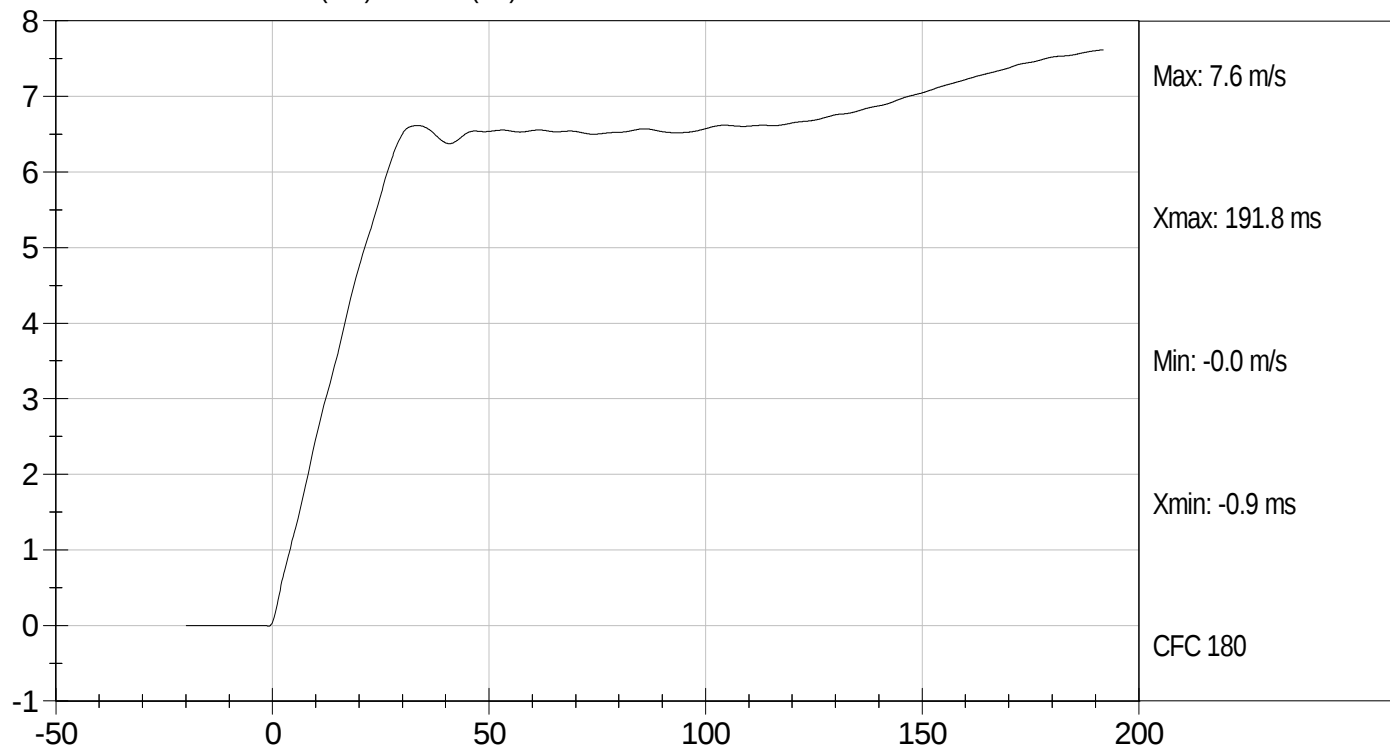

Approved By



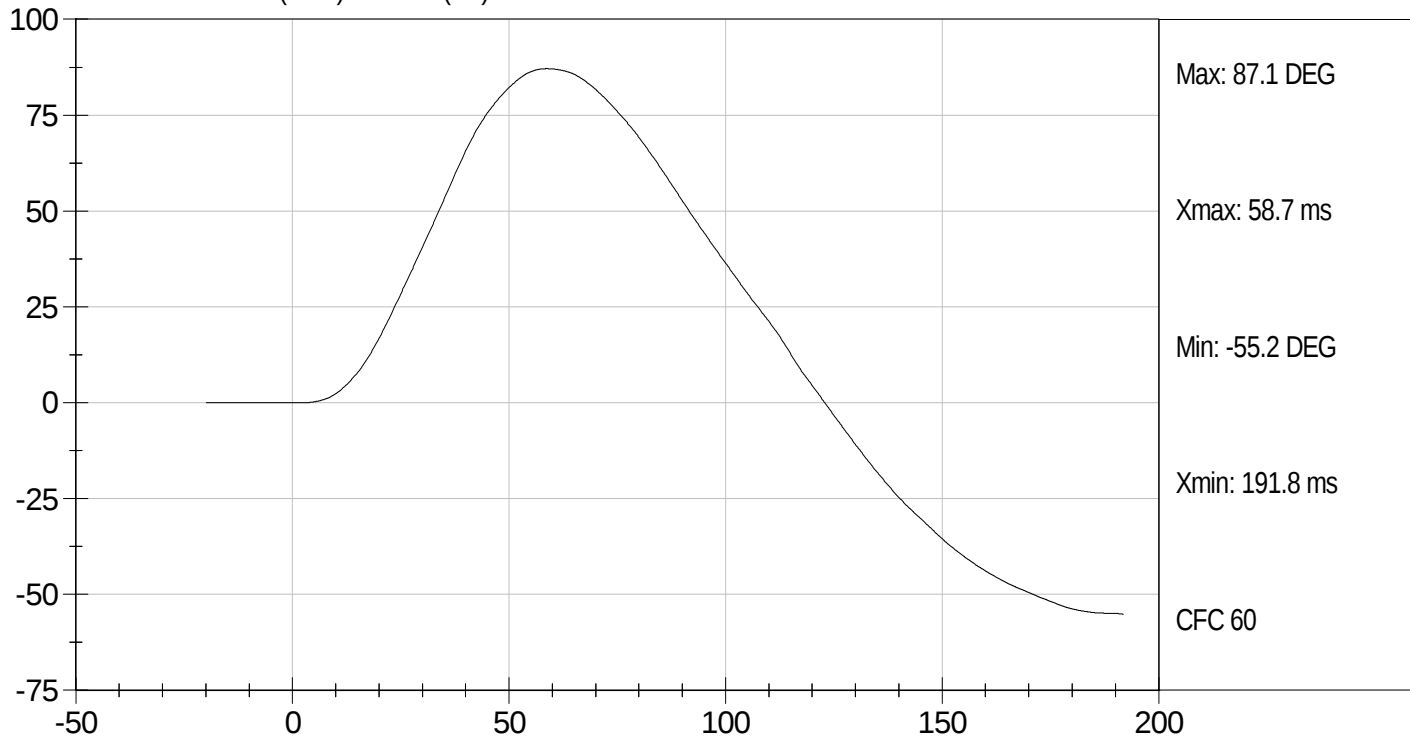
Test Desc: Neck Flexion
Component ID: D12702

Test Date: 2/27/12
Velocity: 23.15 ft/s, 7.06 m/s

PENDULUM VELOCITY (m/s) vs TIME (ms)



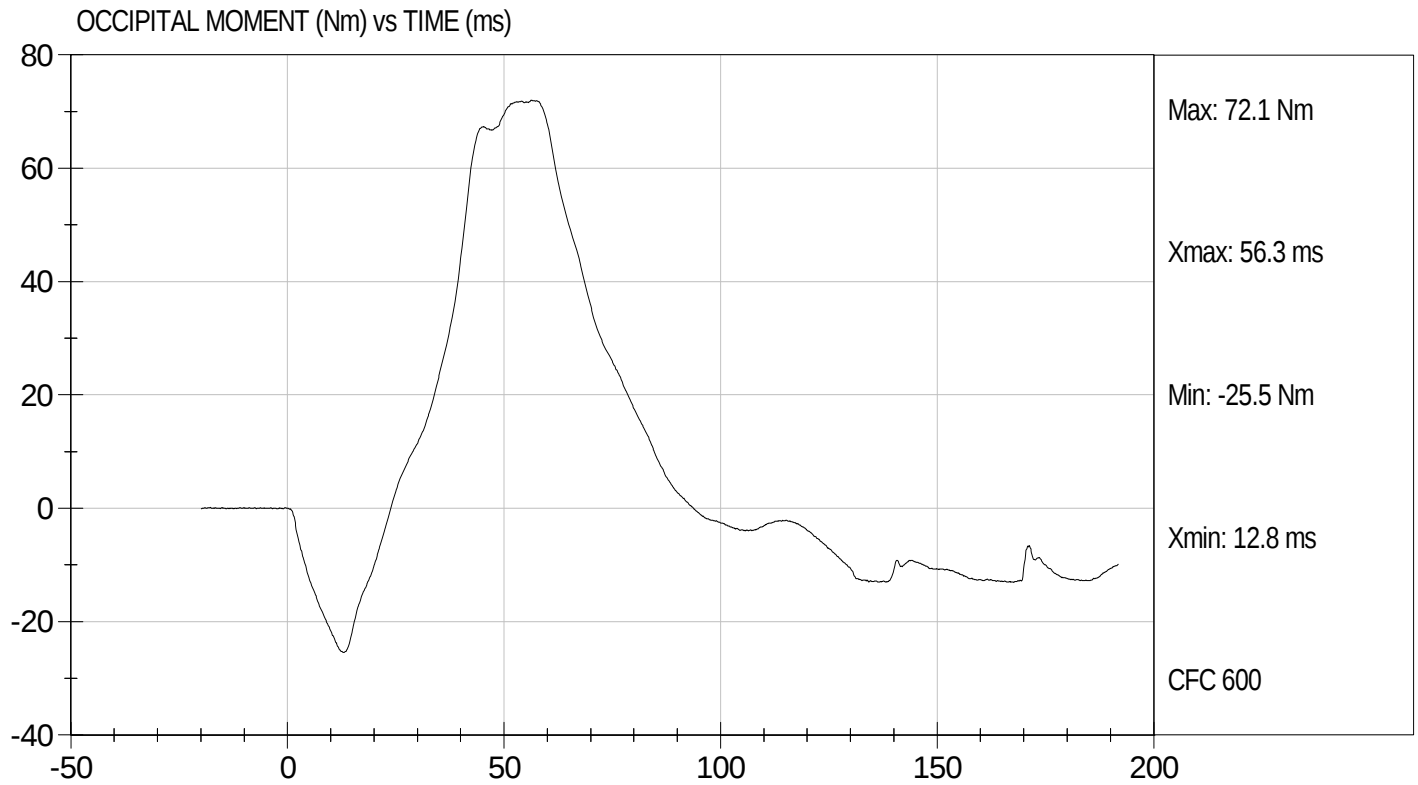
NECK ROTATION (DEG) vs TIME (ms)





Test Desc: Neck Flexion
Component ID: D12702

Test Date: 2/27/12
Velocity: 23.15 ft/s, 7.06 m/s



MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D12703

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	19	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.13	Pass
Pendulum Pulse	10 ms	m/s	1.5 to 1.9	1.9	Pass
	20 ms	m/s	3.1 to 3.9	3.6	Pass
	30 ms	m/s	4.6 to 5.6	5.1	Pass
D Plane Rotation	Max	deg	99 to 114	99	Pass
Occipital Condyle Moment within Deflection Corridor		Nm	-65 to -53	-55	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	99	Pass
Overall Results					Pass


 Laboratory Technician

2/27/12
 Test Date

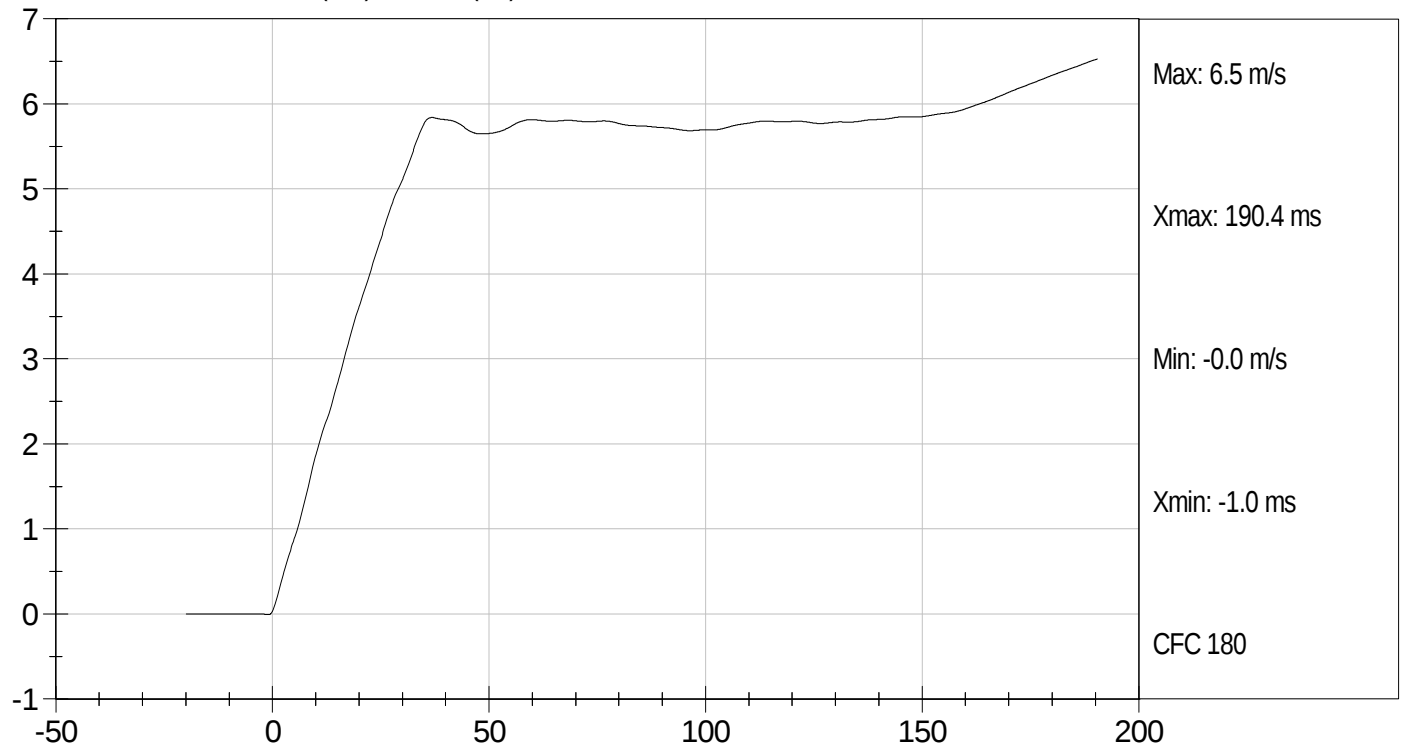

 Approved By



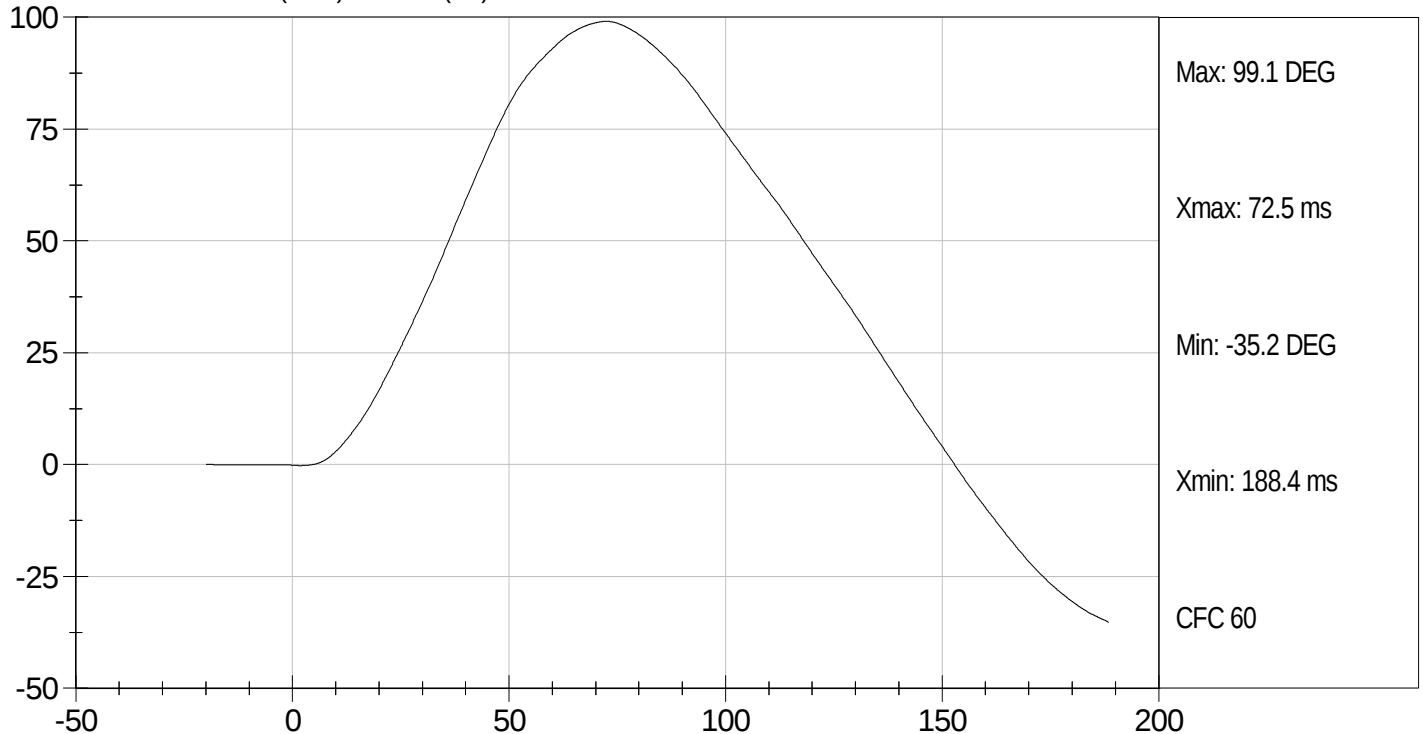
Test Desc: Neck Extension
Component ID: D12703

Test Date: 2/27/12
Velocity: 20.10 ft/s, 6.13 m/s

PENDULUM VELOCITY (m/s) vs TIME (ms)



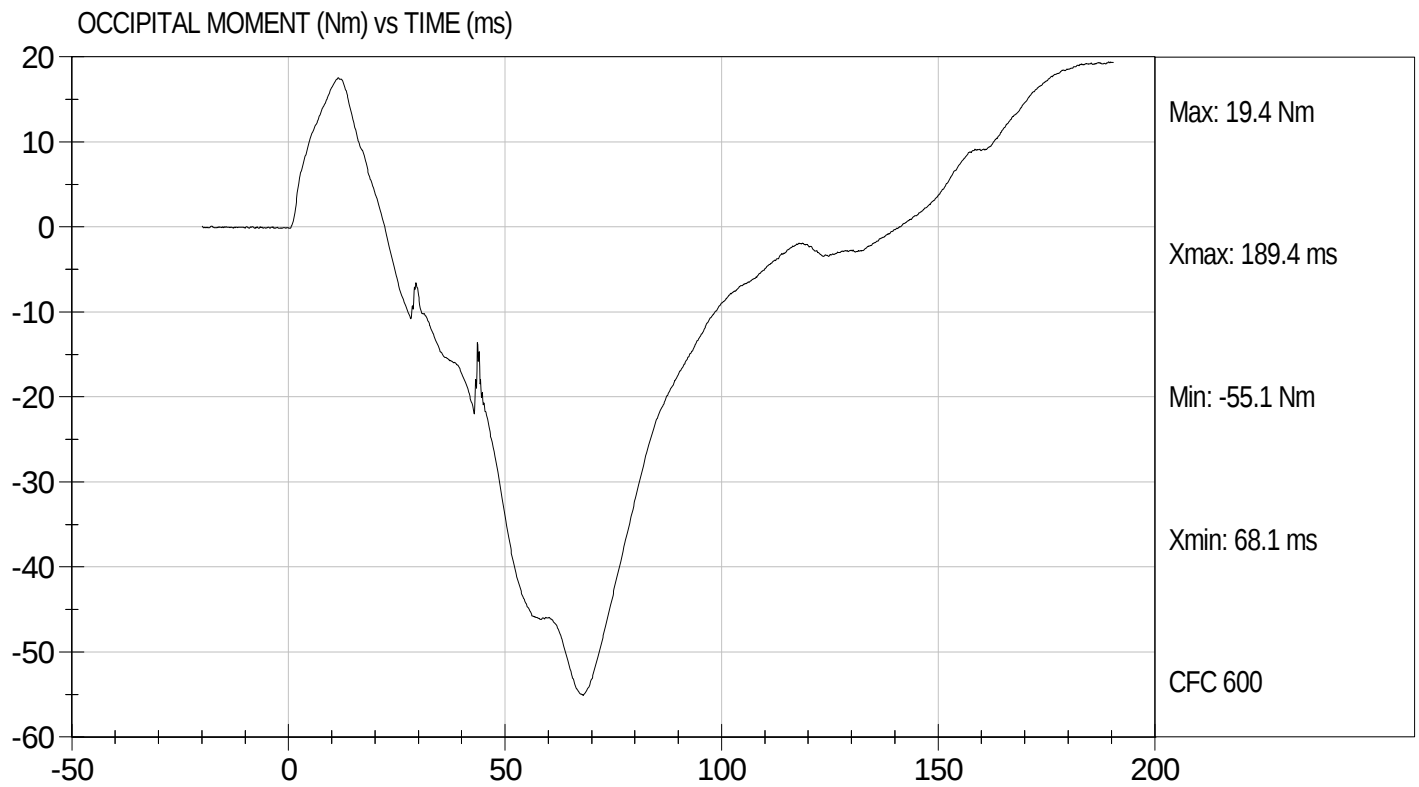
NECK ROTATION (DEG) vs TIME (ms)





Test Desc: Neck Extension
Component ID: D12703

Test Date: 2/27/12
Velocity: 20.10 ft/s, 6.13 m/s



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D12704

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	22.1	Pass
Relative Humidity	%	10 to 70	18	Pass
Probe Speed	m/s	6.59 to 6.83	6.77	Pass
Peak Deflection	mm	50 to 58	55	Pass
Peak Resistive Force w/in Deflection Corridor	kN	3.9 to 4.4	4.11	Pass
Internal Hysteresis	%	69 to 85	70	Pass
Peak Force 18 mm - 50 mm	N	<= 4,600 N	3921	Pass
Overall Test Results				Pass


 Laboratory Technician

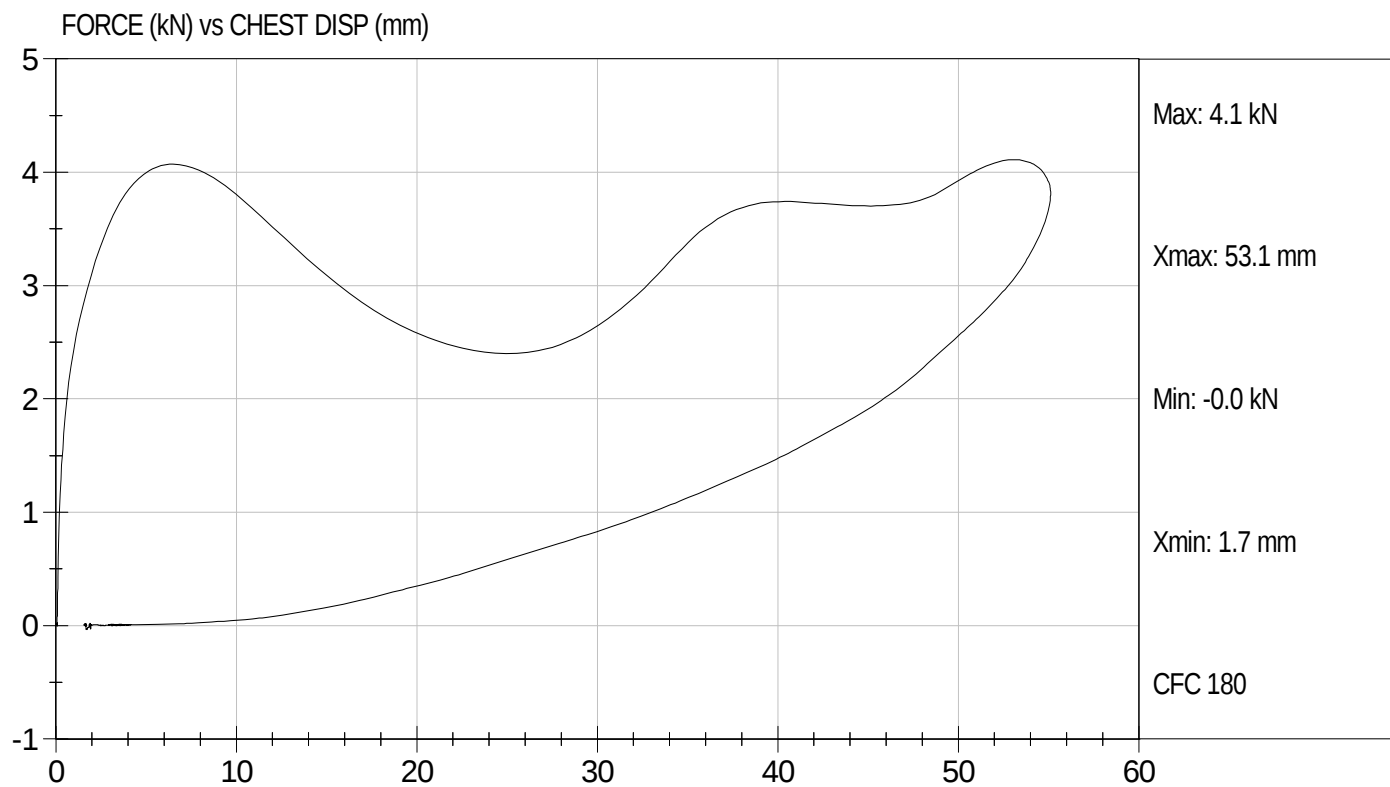
2/27/12
 Test Date


 Approved By



Test Desc: Thorax Impact
Component ID: D12704

Test Date: 2/27/12
Velocity: 22.22 ft/s, 6.77 m/s



MGA RESEARCH CORPORATION

RIGHT KNEE IMPACT TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D12705

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	21	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	kN	3.45 to 4.06	3.74	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

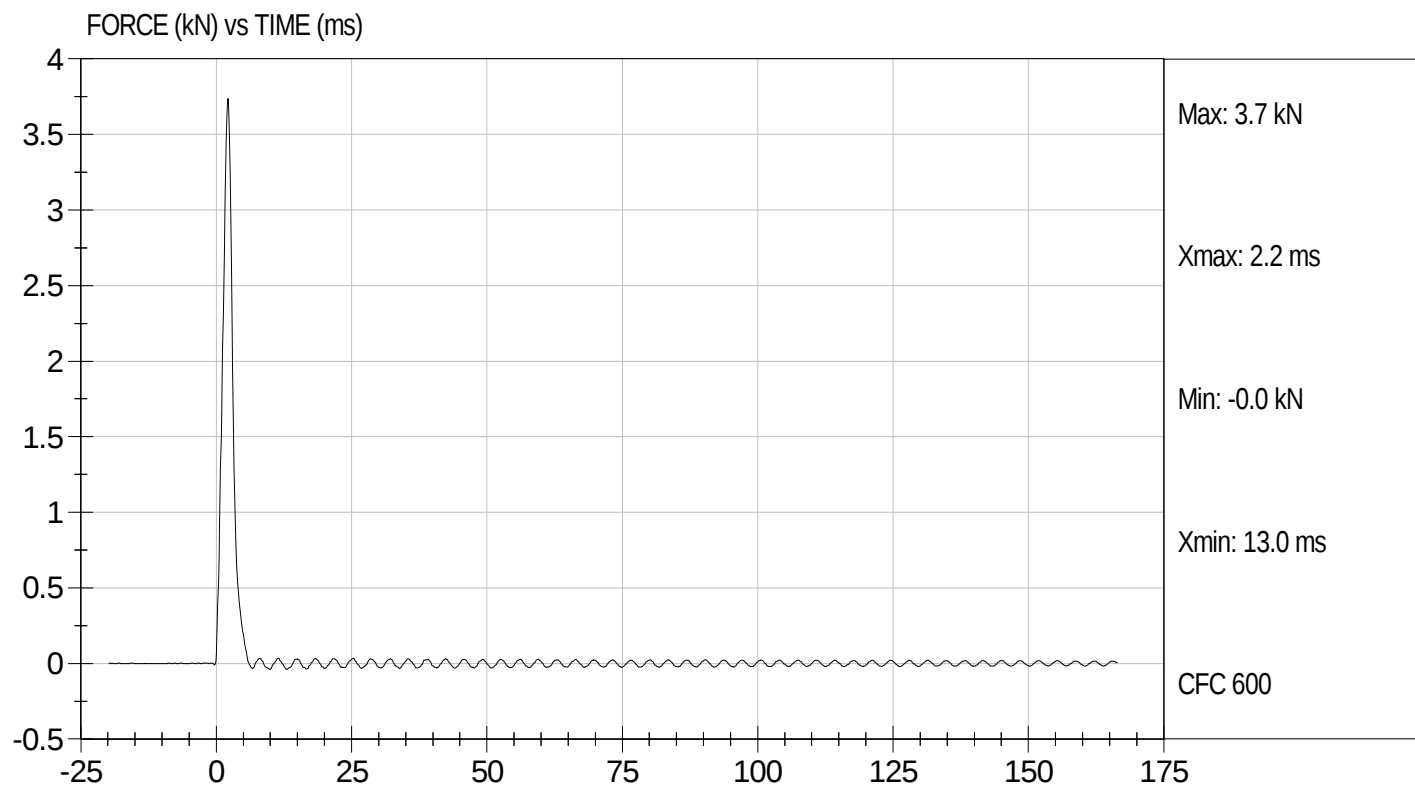
2/27/12
Test Date

David Winkelbauer
Approved By



Test Desc: Right Knee
Component ID: D12705

Test Date: 2/27/12
Velocity: 6.94 ft/s, 2.12 m/s



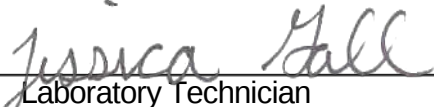
MGA RESEARCH CORPORATION

LEFT KNEE IMPACT TEST
HYBRID III 5TH PERCENTILE

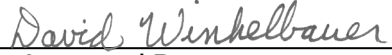
ATD Serial No: 634

Test I.D: D12706

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	21	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	kN	3.45 to 4.06	3.77	Pass
Overall Test Results				Pass


Laboratory Technician

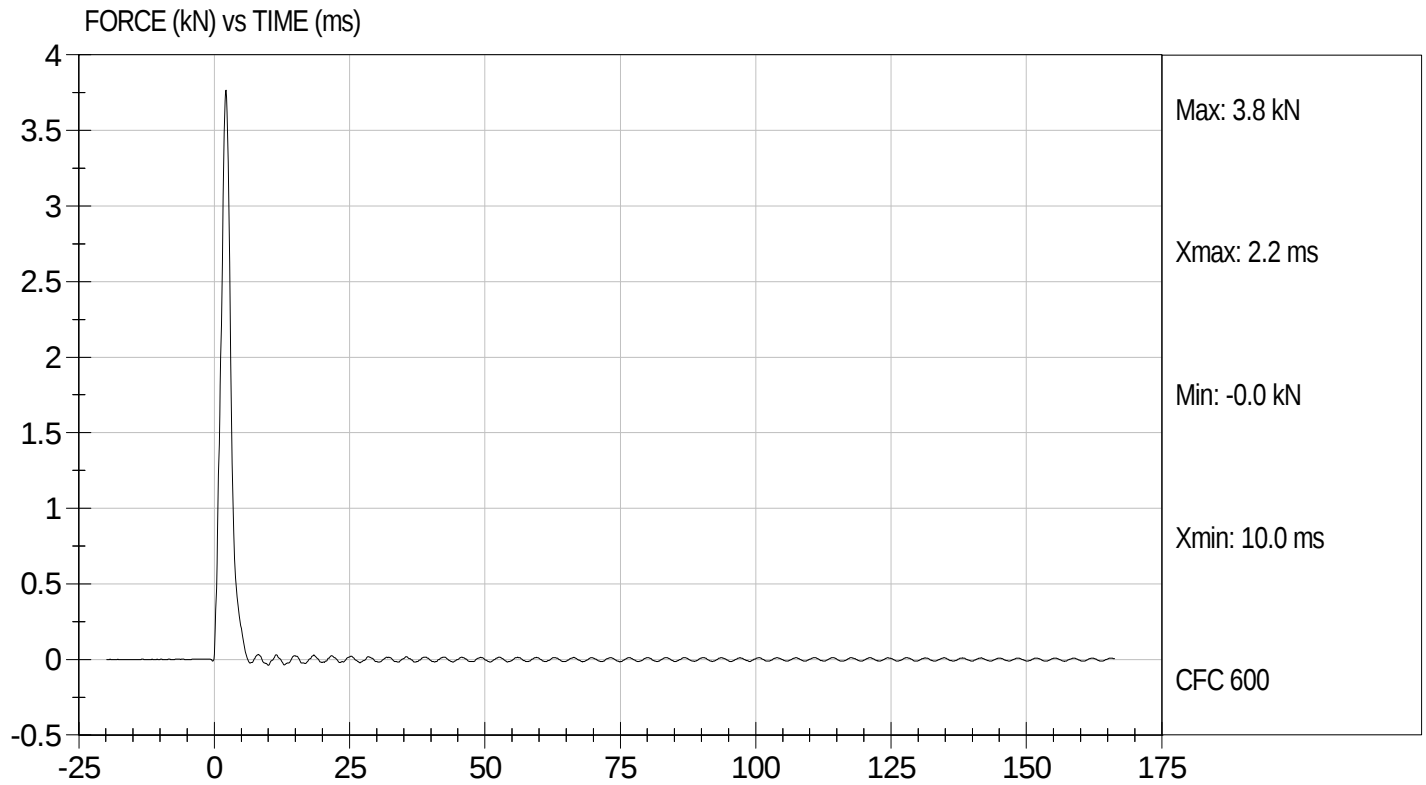
2/27/12
Test Date


Approved By



Test Desc: Left Knee
Component ID: D12706

Test Date: 2/27/12
Velocity: 6.97 ft/s, 2.12 m/s



MGA RESEARCH CORPORATION
TORSO FLEXION TEST
HYBRID III 5TH PERCENTILE

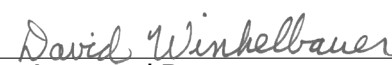
ATD Serial No: 634

Test I.D: D12707

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	22.1	Pass
Laboratory Relative Humidity	%	10 to 70	18	Pass
Initial Angle	deg	0 to 20	15	Pass
Return Angle	deg	+/- 8	7	Pass
Force at 45 deg	N	320 to 390	372	Pass
Upper Torso Deflection Rate	Deg/sec	0.5 to 1.5	1.0	Pass
Overall Result				Pass


Laboratory Technician

2/27/12
Test Date


Approved By

MGA RESEARCH CORPORATION
HEAD DROP TEST
HYBRID III 5TH PERCENTILE

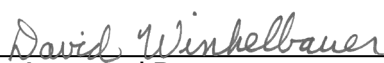
ATD Serial No: 634

Test ID: D12811

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.0	Pass
Laboratory Relative Humidity	%	10 to 70	34	Pass
Peak Resultant Acceleration	G's	250 to 300	277	Pass
Peak Lateral Acceleration	G's	+/- 15	1.1	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician

3/2/12
Test Date

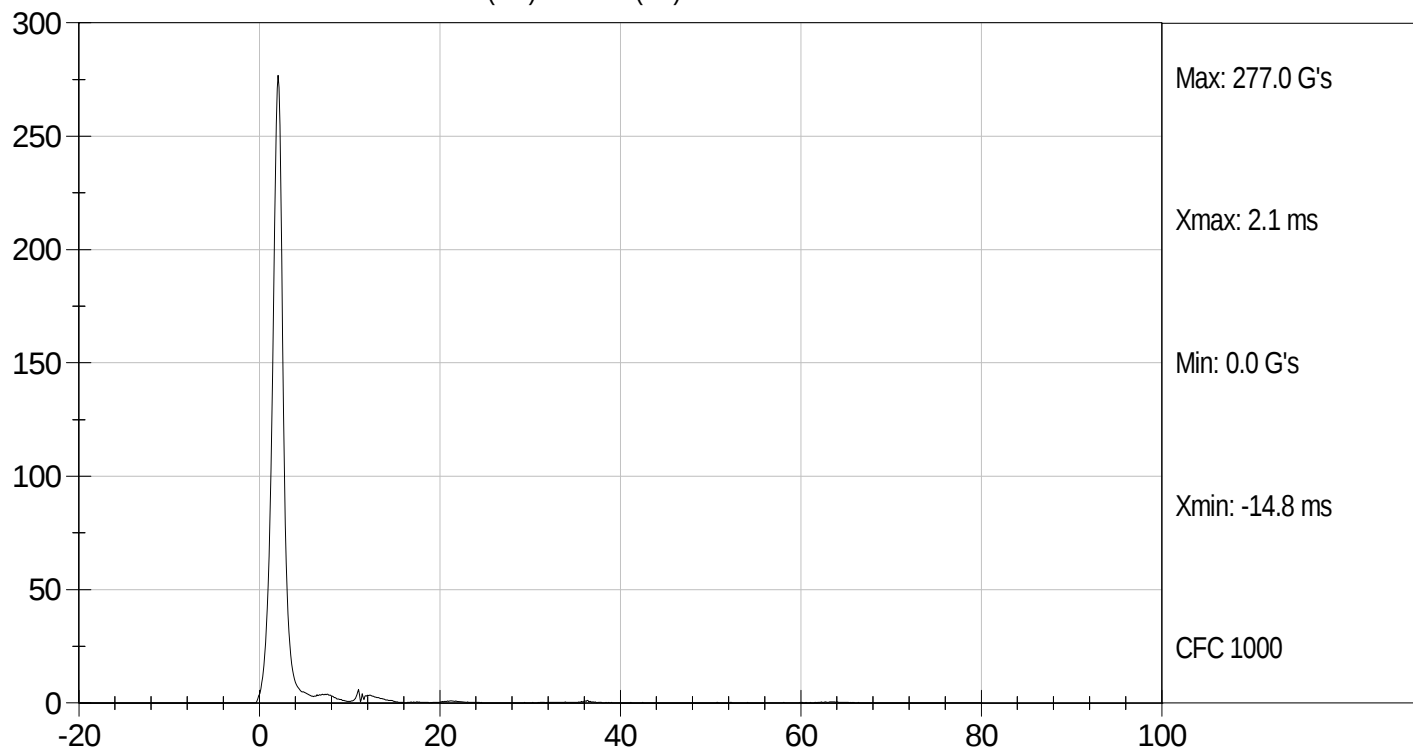

Approved By



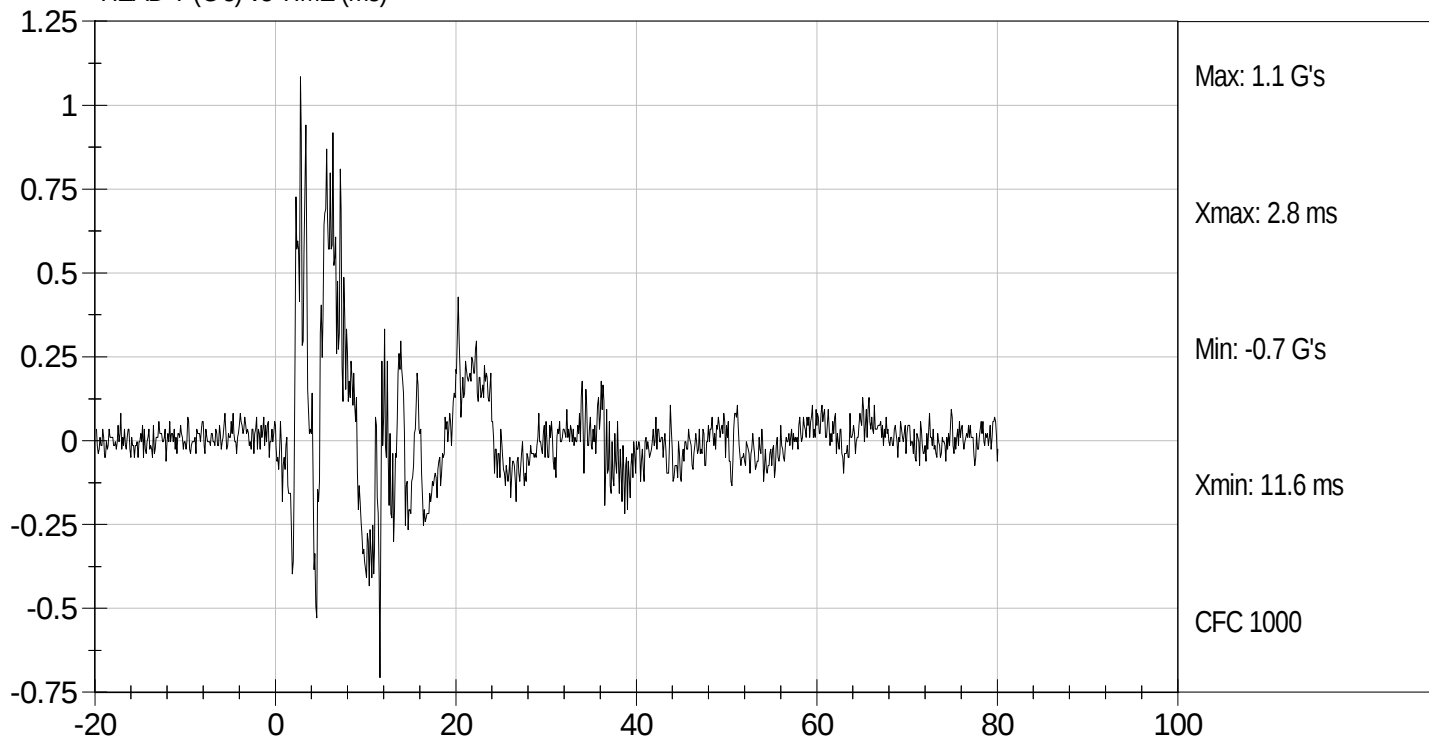
Test Desc: Head Drop
Component ID: D12811

Test Date: 3/2/12
Velocity: 0 ft/s, 0 m/s

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



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



MGA RESEARCH CORPORATION
NECK FLEXION TEST
HYBRID III 5TH PERCENTILE

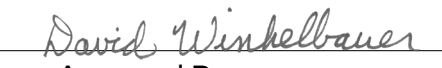
ATD Serial No: 634

Test I.D: D12812

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.0	Pass
Laboratory Relative Humidity		%	10 to 70	33	Pass
Pendulum Speed		m/s	6.89 to 7.13	7.06	Pass
Pendulum Pulse	10 ms	m/s	2.1 to 2.5	2.5	Pass
	20 ms	m/s	4.0 to 5.0	4.8	Pass
	30 ms	m/s	5.8 to 7.0	6.2	Pass
D Plane Rotation	Max	deg	77 to 91	84	Pass
Occipital Condyle Moment within Deflection Corridor		Nm	69 to 83	70	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 to 100	84	Pass
Overall Results					Pass


Laboratory Technician

3/2/12
Test Date

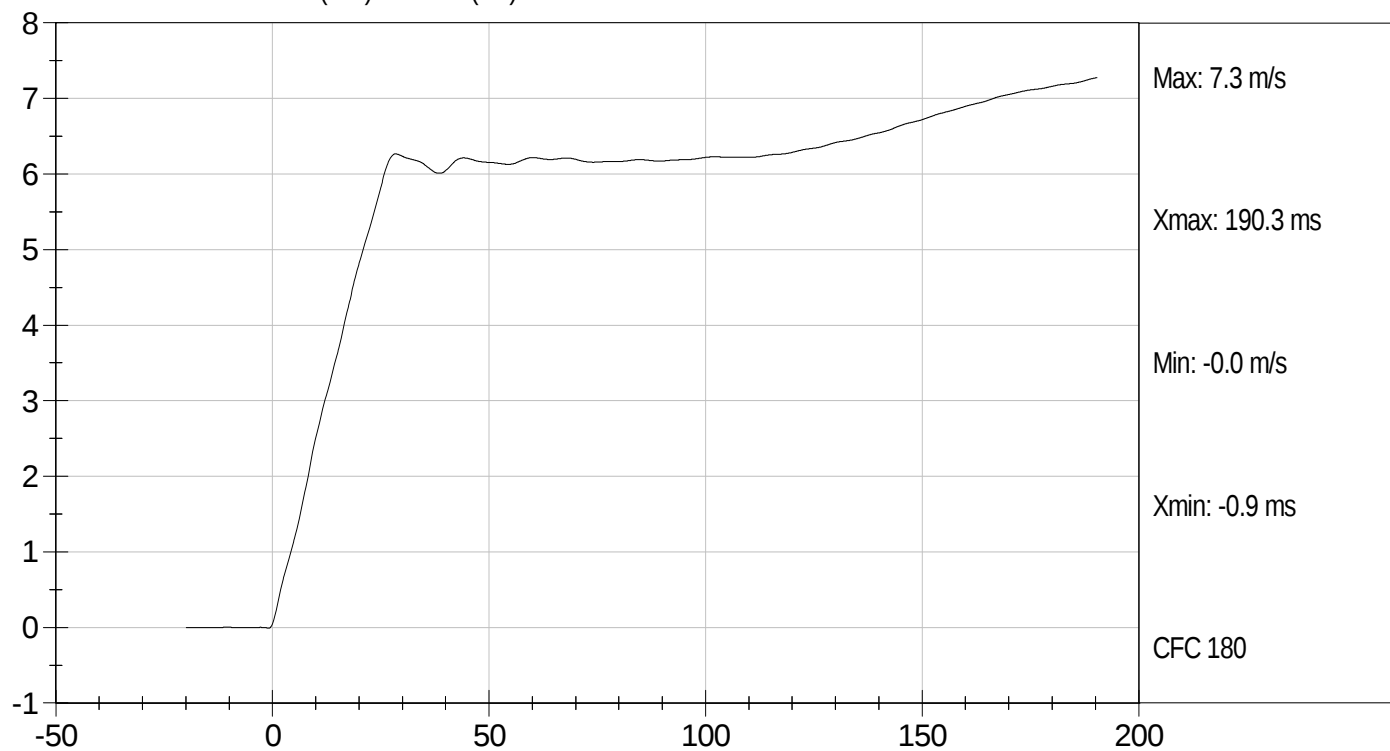

Approved By



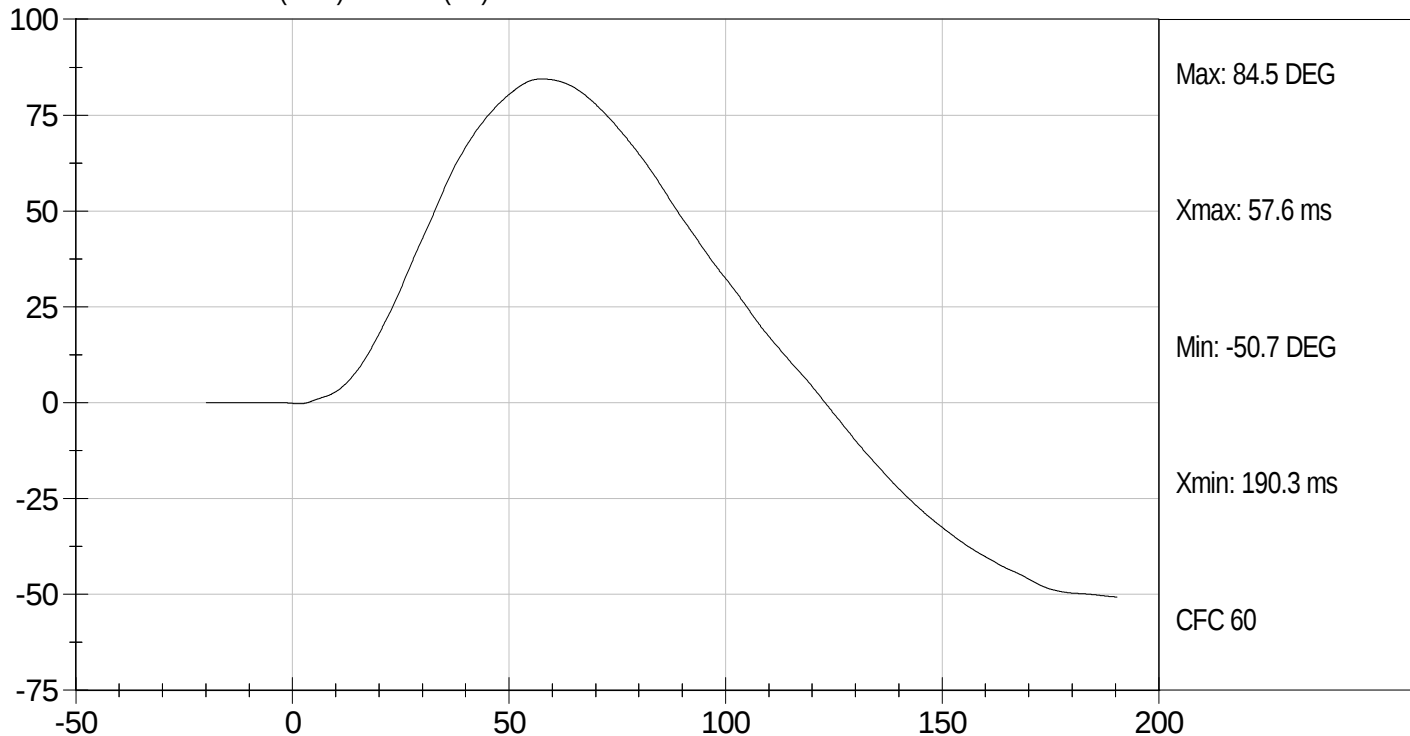
Test Desc: Neck Flexion
Component ID: D12812

Test Date: 3/2/12
Velocity: 23.15 ft/s, 7.06 m/s

PENDULUM VELOCITY (m/s) vs TIME (ms)



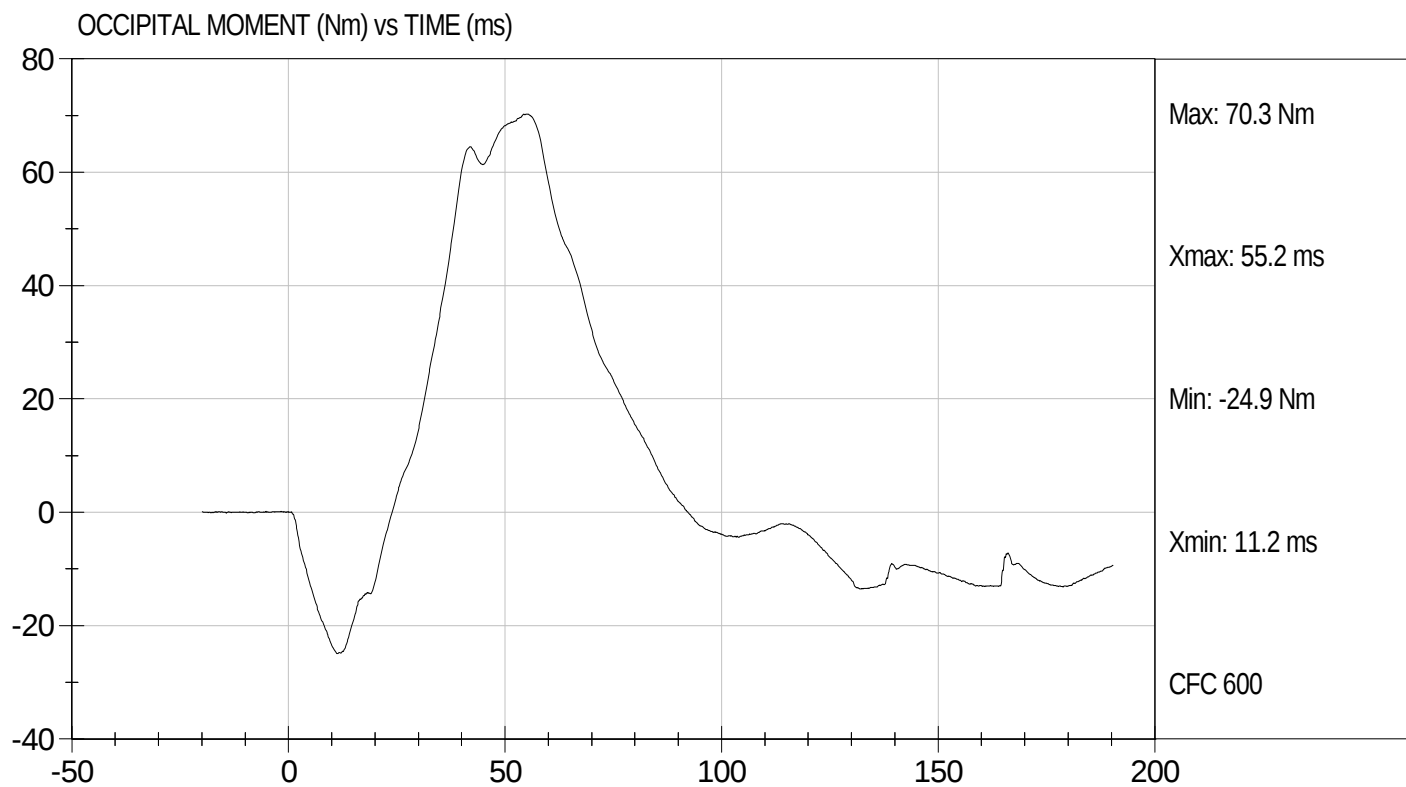
NECK ROTATION (DEG) vs TIME (ms)





Test Desc: Neck Flexion
Component ID: D12812

Test Date: 3/2/12
Velocity: 23.15 ft/s, 7.06 m/s



MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 5TH PERCENTILE

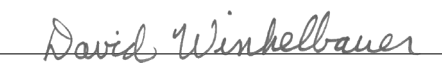
ATD Serial No: 634

Test I.D: D12813

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.0	Pass
Laboratory Relative Humidity		%	10 to 70	33	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.12	Pass
Pendulum Pulse	10 ms	m/s	1.5 to 1.9	1.9	Pass
	20 ms	m/s	3.1 to 3.9	3.6	Pass
	30 ms	m/s	4.6 to 5.6	5.2	Pass
D Plane Rotation	Max	deg	99 to 114	102	Pass
Occipital Condyle Moment within Deflection Corridor		Nm	-65 to -53	-56	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	97	Pass
Overall Results					Pass


Laboratory Technician

3/2/12
Test Date

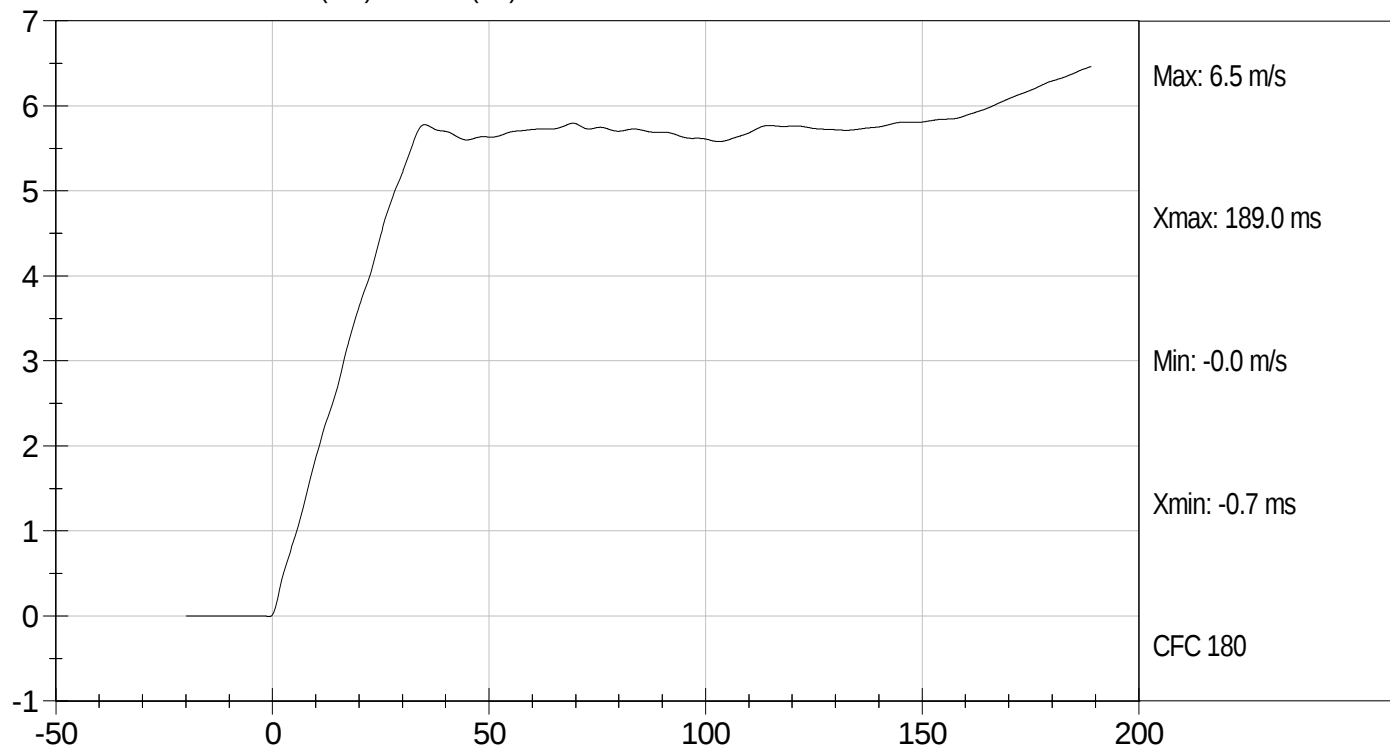

Approved By



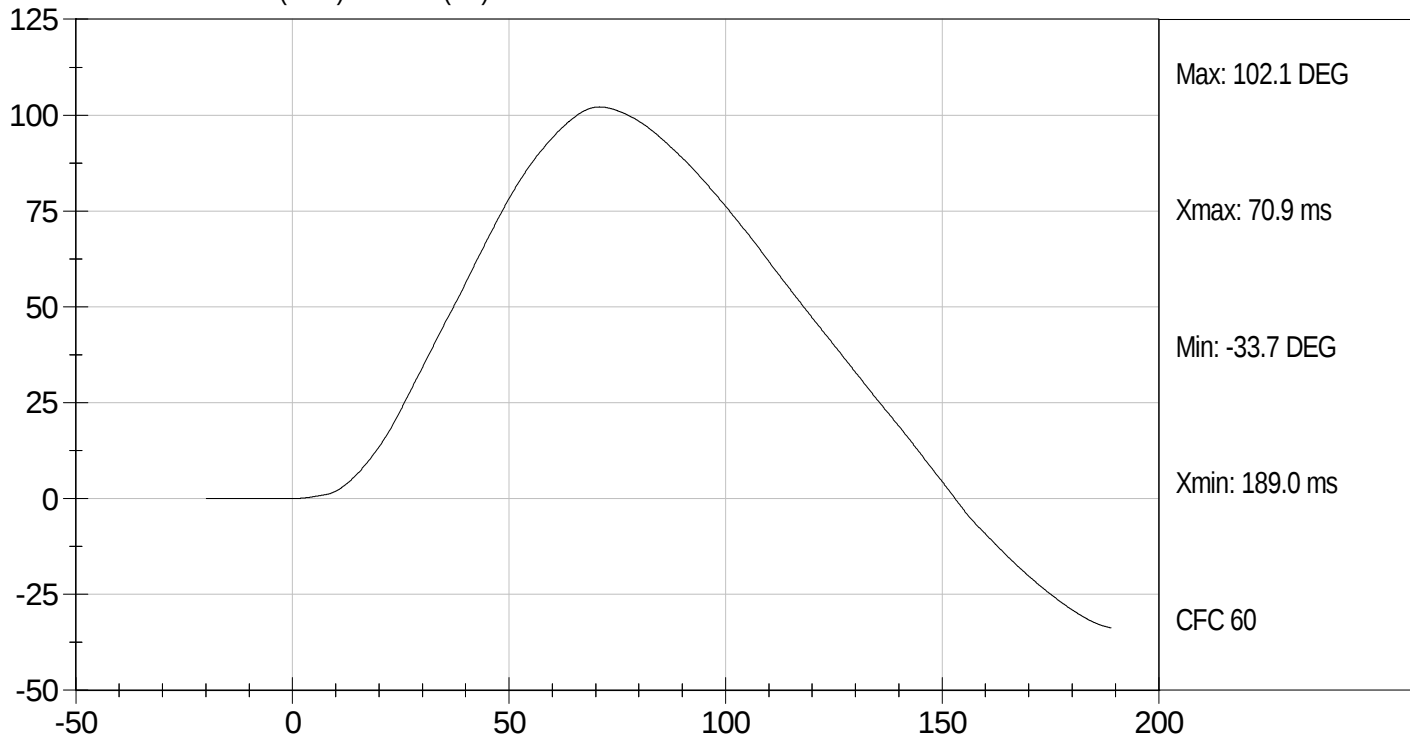
Test Desc: Neck Extension
Component ID: D12813

Test Date: 3/2/12
Velocity: 20.08 ft/s, 6.12 m/s

PENDULUM VELOCITY (m/s) vs TIME (ms)



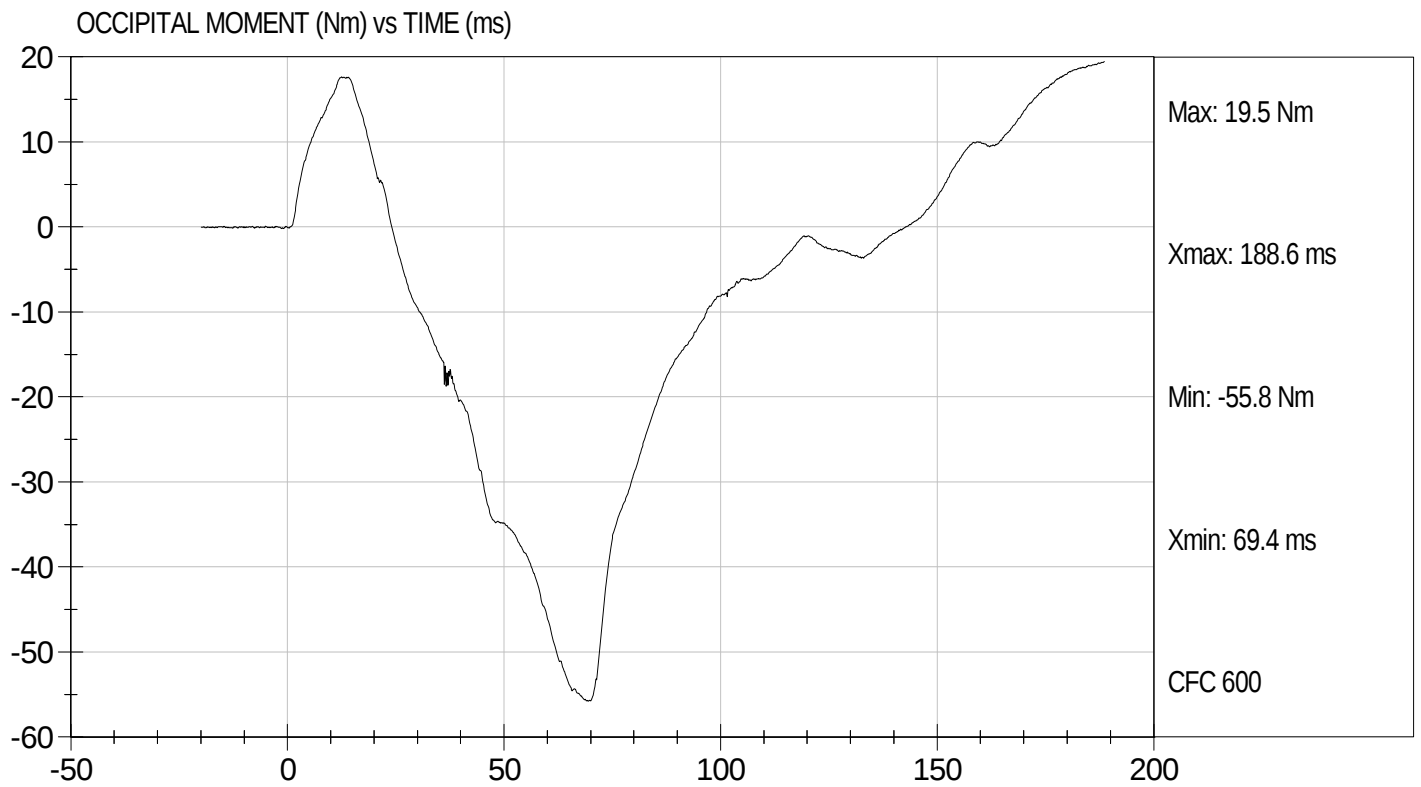
NECK ROTATION (DEG) vs TIME (ms)





Test Desc: Neck Extension
Component ID: D12813

Test Date: 3/2/12
Velocity: 20.08 ft/s, 6.12 m/s



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D12814

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	22.0	Pass
Relative Humidity	%	10 to 70	18	Pass
Probe Speed	m/s	6.59 to 6.83	6.77	Pass
Peak Deflection	mm	50 to 58	51	Pass
Peak Resistive Force w/in Deflection Corridor	kN	3.9 to 4.4	4.06	Pass
Internal Hysteresis	%	69 to 85	75	Pass
Peak Force 18 mm - 50 mm	N	<= 4,600 N	4113	Pass
Overall Test Results				Pass


Laboratory Technician

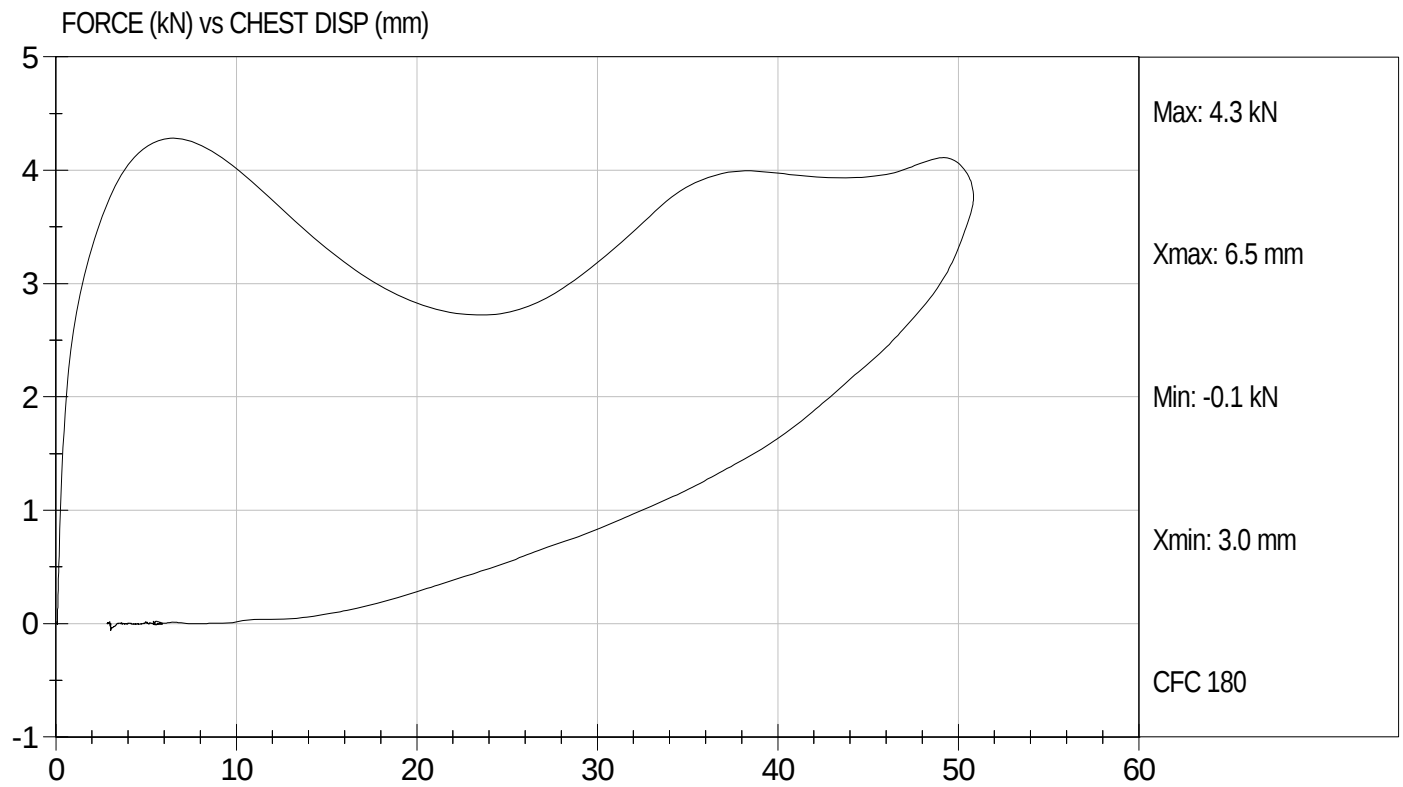
3/5/12
Test Date


Approved By



Test Desc: Thorax Impact
Component ID: D12814

Test Date: 3/5/12
Velocity: 22.22 ft/s, 6.77 m/s

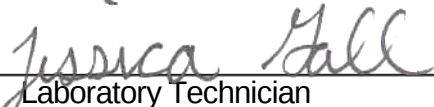


MGA RESEARCH CORPORATION
RIGHT KNEE IMPACT TEST
HYBRID III 5TH PERCENTILE

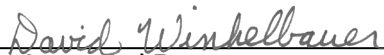
ATD Serial No: 634

Test I.D: D12815

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	19	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	kN	3.45 to 4.06	3.93	Pass
Overall Test Results				Pass


Laboratory Technician

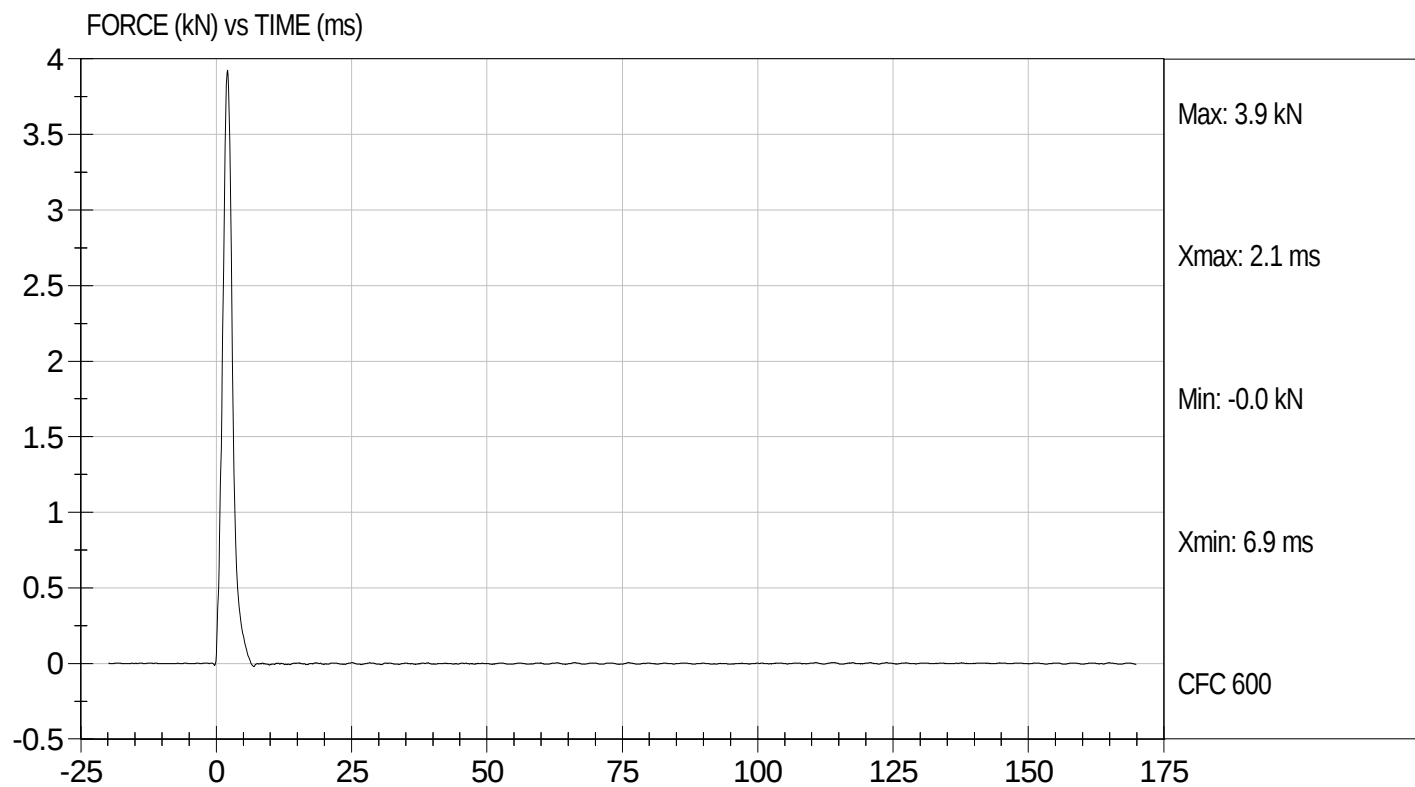
3/5/12
Test Date


Approved By



Test Desc: Right Knee
Component ID: D12815

Test Date: 3/5/12
Velocity: 6.97 ft/s, 2.12 m/s



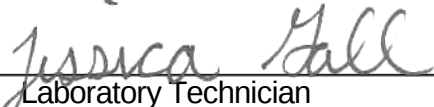
MGA RESEARCH CORPORATION

LEFT KNEE IMPACT TEST
HYBRID III 5TH PERCENTILE

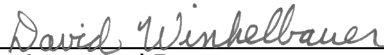
ATD Serial No: 634

Test I.D: D12816

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	19	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	kN	3.45 to 4.06	3.83	Pass
Overall Test Results				Pass


Laboratory Technician

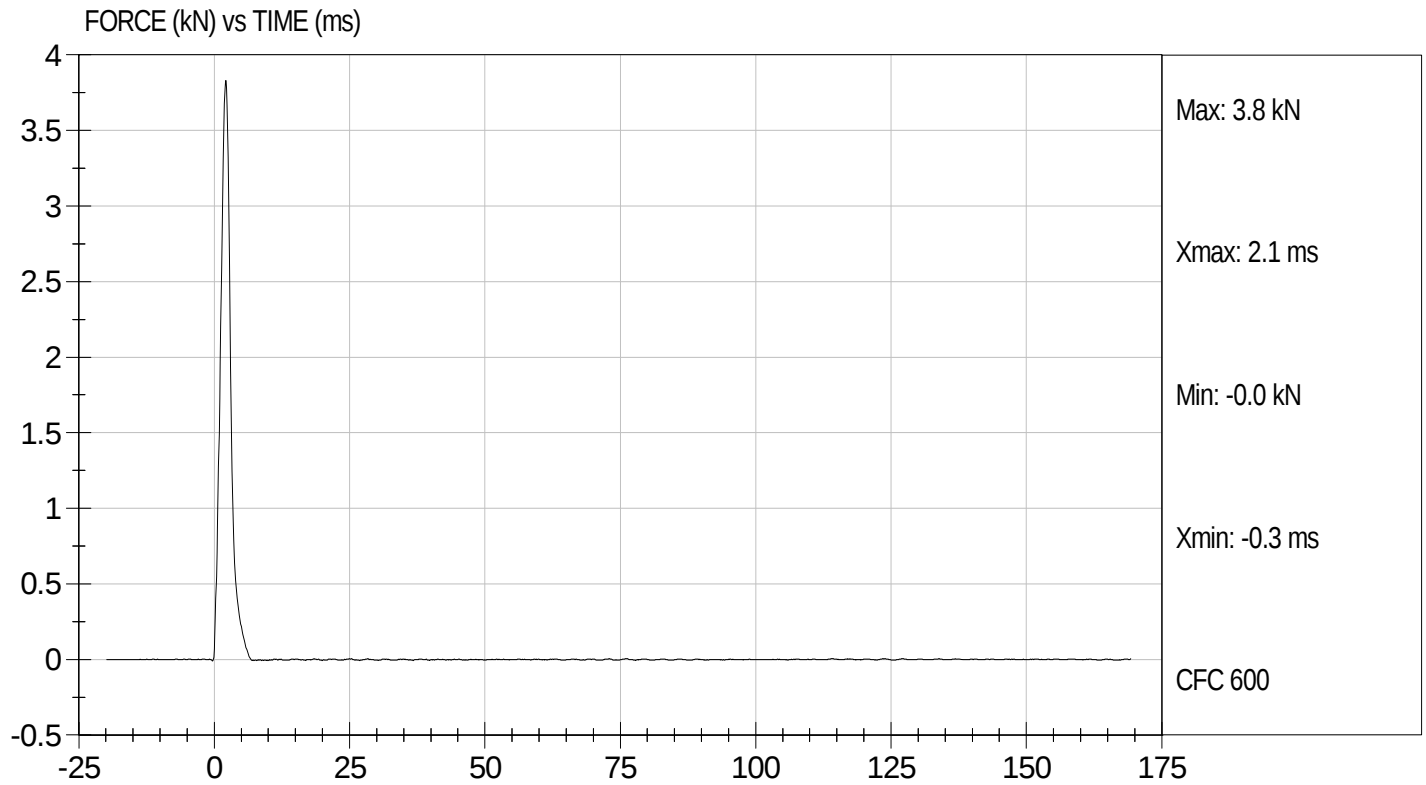
3/5/12
Test Date


Approved By



Test Desc: Left Knee
Component ID: D12816

Test Date: 3/5/12
Velocity: 6.97 ft/s, 2.12 m/s



MGA RESEARCH CORPORATION
TORSO FLEXION TEST
HYBRID III 5TH PERCENTILE

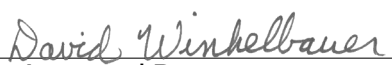
ATD Serial No: 634

Test I.D: D12817

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	34	Pass
Initial Angle	deg	0 to 20	18	Pass
Return Angle	deg	+/- 8	5	Pass
Force at 45 deg	N	320 to 390	382	Pass
Upper Torso Deflection Rate	Deg/sec	0.5 to 1.5	1.0	Pass
Overall Result				Pass


Laboratory Technician

3/2/12
Test Date


Approved By