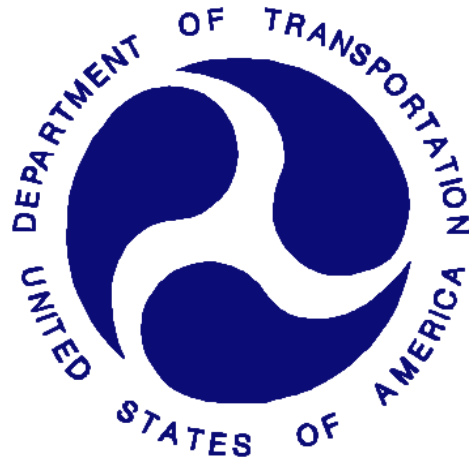


REPORT NUMBER: NCAP-MGA-2015-019

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

**CHRYSLER GROUP LLC
2015 Chrysler 200 Limited 4-Dr Sedan
NHTSA No.: O20150300**

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



Test Date: October 1, 2014

Final Report Date: October 28, 2014

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: October 28, 2014

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: _____

Technical Report Documentation Page

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		15. Supplementary Notes																																																							
16. Abstract A 56.3 km/h NCAP Frontal Impact Test was conducted on a 2015 Chrysler 200 Limited 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), and 301 performance. The test was conducted at MGA Research Corporation in Burlington, Wisconsin, on October 1, 2014. The impact velocity of the vehicle was 56.2 km/h and the ambient temperature at the barrier face at the time of impact was 22.0°C. The target vehicle post-test maximum crush was 426 located at the vehicle's centerline. The test vehicle's performance was as follows: <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th rowspan="2">Units</th> <th colspan="2">Driver ATD</th> <th colspan="2">Passenger ATD</th> </tr> <tr> <th>Threshold</th> <th>Result</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₁₅)</td> <td>N/A</td> <td>700</td> <td>134</td> <td>700</td> <td>123</td> </tr> <tr> <td>Maximum Chest</td> <td>mm</td> <td>63</td> <td>19</td> <td>52</td> <td>7</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td>1</td> <td>0.29</td> <td>1</td> <td>0.47</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td>1220</td> <td>2620</td> <td>724</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td>36</td> <td>2520</td> <td>151</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10008</td> <td>1388</td> <td>6805</td> <td>1011</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10008</td> <td>1741</td> <td>6805</td> <td>1192</td> </tr> </tbody> </table>						Measurement Description	Units	Driver ATD		Passenger ATD		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC ₁₅)	N/A	700	134	700	123	Maximum Chest	mm	63	19	52	7	Nij	N/A	1	0.29	1	0.47	Neck Tension	N	4170	1220	2620	724	Neck Compression	N	4000	36	2520	151	Left Femur Force	N	10008	1388	6805	1011	Right Femur Force	N	10008	1741	6805	1192
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SECTION 1 PURPOSE AND SUMMARY OF TEST

PURPOSE

This 56.3 km/h frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under contract number DTNH22-12-D-00258. 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 consisting of 176 load cells was impacted by a 2015 Chrysler 200 Limited 4-Dr Sedan at a velocity of 56.2 km/h. The test was performed at MGA Research Corporation on October 1, 2014. Pre-test and post-test photographs of the vehicle and dummies can be found in Appendix A.

Two (2) 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 lap and shoulder belts and the passenger's lap and shoulder 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 628 channels of data were recorded on a data acquisition system. Appendix B contains the dummy response data traces.

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

The maximum static crush of the vehicle was 426 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 airbag. 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 knee airbag.

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)	134	0.29	1220	36	40	19	1388	1741
Passenger (5 th)	123	0.47	724	151	39	7	1011	1192

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

TEST NOTES

Barrier K-16 MY has no valid data after 5 ms.

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: 2015 Chrysler 200 Limited 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20150300
 Test Date: 10/1/2014

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	O20150300	Traction Control System (TCS)	Yes
Model Year	2015	Power Steering	Yes
Make	Chrysler	Power Window Auto-Reverse	Yes
Model	200	Driver Frontal Airbag	Yes
Body Style	Sedan	Driver Curtain Airbag	Yes
VIN	1C3CCCAB0FN536811	Driver Head/Torso Airbag	No
Body Color	Billet Silver Metallic	Driver Torso Airbag	No
Odometer (km/mi)	66 / 41	Driver Torso/Pelvis Airbag	Yes
Engine Displacement (L)	2.4	Driver Pelvis Airbag	No
Type/No. Cylinders	4	Driver Knee Airbag	Yes
Engine Placement	Lateral	Front Pass. Frontal Airbag	Yes
Transmission Type	Automatic	Front Pass. Curtain Airbag	Yes
Transmission Speeds	9	Front Pass. Head/Torso Airbag	No
Overdrive	Yes	Front Pass. Torso Airbag	No
Final Drive	Front	Front Pass. Torso/Pelvis Airbag	Yes
Roof Rack	No	Front Pass. Pelvis Airbag	No
Sunroof/T-Top	No	Front Pass. Knee Airbag	Yes
Running Boards	No	Driver Pretensioner	Yes
Tilt Steering Wheel	Yes	Driver Load Limiter	Yes
Power Seats	No	Front Pass. Pretensioner	Yes
Anti-Lock Brakes (ABS)	Yes	Front Pass. Load Limiter	Yes
Automatic Door Locks (ADLs)	Yes	Other	N/A

Does owner's manual provide instructions to turn off automatic door locks?	No
--	----

DATA FROM CERTIFICATION LABEL

Manufactured By	Chrysler Group LLC	GVWR (kg)	2092
Date of Manufacture	8-14	GAWR Front (kg)	1185
		GAWR Rear (kg)	1185

VEHICLE SEATING AND WEIGHT CAPACITY DATA

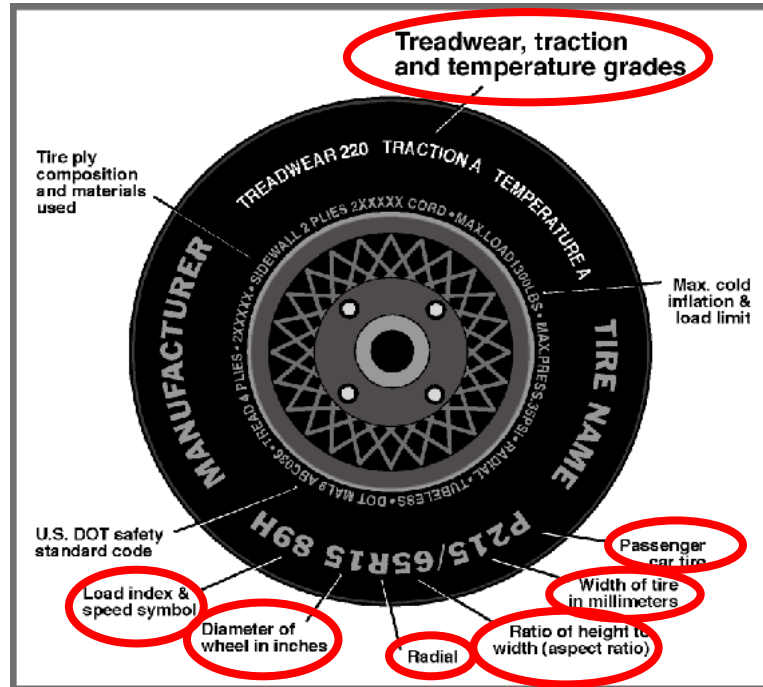
Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Split Bench		
Designated Seating Capacity (DSC)	2	3		5
Capacity Weight (VCW) (kg)				408
Cargo Weight (RCLW) (kg)				68

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

Test Vehicle: 2015 Chrysler 200 Limited 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20150300
 Test Date: 10/1/2014

VEHICLE TIRE INFORMATION



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	255	255
Recommended Tire Size	215/55R17	215/55R17
Tire Size on Vehicle	215/55R17	215/55R17
Tire Manufacturer	Bridgestone	Bridgestone
Tire Model	ECOPIA	ECOPIA
Treadwear	480	480
Traction	A	A
Temperature Grade	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	1 Polyester, 2 Steel, 1 Nylon	1 Polyester, 2 Steel, 1 Nylon
Load Index/Speed Symbol	94H	94H
Tire Material	Rubber	Rubber
DOT Safety Code Left	OB3R E26 2914	OB3R E26 2914
DOT Safety Code Right	OB3R E26 2914	OB3R E26 2914

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

Test Vehicle: 2015 Chrysler 200 Limited 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20150300
 Test Date: 10/1/2014

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	470.5	321.0		507.0	389.0	
Right	kg	474.0	301.5		502.5	370.5	
Ratio	%	60.3	39.7		57.1	42.9	
Totals	kg	944.5	622.5	1567.0	1009.5	759.5	1769.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1567.0
Weight of 1 P572E ATD & 1 P572O ATD	kg	140.6
Rated Cargo/Luggage Weight (RCLW)	kg	68
Calculated Test Vehicle Target Weight (TVTW)	kg	1775.6

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	725	718	723	732	1085
As Tested	mm	717	718	705	709	1172
Post Test	mm	746	755	704	699	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2730
Total Vehicle Length at Left Side	mm	4567
Total Vehicle Length at Centerline	mm	4888
Total Vehicle Length at Right Side	mm	4567
Weight of Ballast in Cargo Area	kg	0.0
Weight of Vehicle Components Removed	kg	36.7
Amount of Stoddard Solvent in Fuel Tank	L	55.6

List of components removed to meet test weight: Rear door trim panels, left taillight, left and right inner taillights, trunk trim.

List of components removed for instrumentation, data box, and equipment installation: Cargo carpet and divider, rear floor mats, jack & tools, spare tire and cover, right taillight, rear underbody plastic.

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

Test Vehicle: 2015 Chrysler 200 Limited 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20150300
 Test Date: 10/1/2014

TARGET VEHICLE STRUCTURAL MEASUREMENT

	Elements	Pre-Test (mm)
1	Total Length	4888
2	Total Width	1872
3	Bumper Top Height	598
4	Bumper Bottom Height	493
5	Longitudinal Member Top Height	600
6	Distance between Longitudinal Members	895
7	Longitudinal Member Width	558
8	Engine Top Height	890
9	Engine Bottom Height	205
10	Engine and Gearbox Width	840
11	Front Bumper-Engine Distance	430
12	Front Shock Absorber Fixing Height	895
13	Bonnet Leading Edge Height	737
14	Front Shock Absorber Fixing Width	1140
15	Front Bumper – Front Axle Distance	1034
16	Front Axle – A-Pillar Distance	446
17	A-Pillar – B-Pillar Distance	1220
18	B-Pillar – Rear Axle Distance	1078
19	B-Pillar – C-Pillar Distance	720
20	Roof Sill Bottom Height	1318
21	Roof Sill Top Height	1433
22	Floor Sill Bottom Height	182
23	Floor Sill Top Height	300

DATA SHEET NO. 2

SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

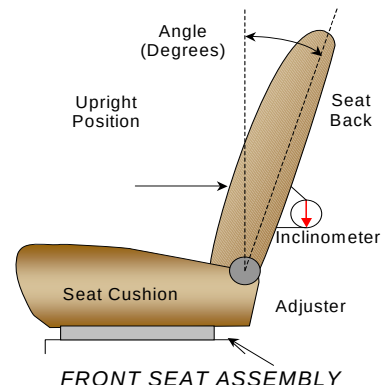
Test Vehicle: 2015 Chrysler 200 Limited 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20150300
 Test Date: 10/1/2014

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 August 2013.

	Degrees
Driver Seat Back Angle	3.4° on headrest post
Passenger Seat Back Angle	1.2° on headrest post



SEAT FORE/AFT POSITIONS

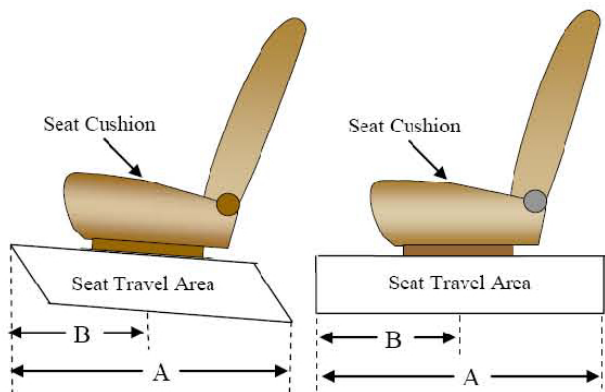
The driver and passenger seat fore/aft positions are adjusted following Appendix F, "Driver & Passenger Dummy Seating & Positioning Procedures" in the NCAP Test Procedure dated August 2013.

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	271 mm / 21 detents	8 th detent (foremost as 0)
Passenger Seat	210 mm / 22 detents	0 th detent (foremost 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 1)	0 (1 st as 0)
Passenger Seat	4 (1 st as 1)	0 (1 st as 0)



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

Test Vehicle: 2015 Chrysler 200 Limited 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20150300
 Test Date: 10/1/2014

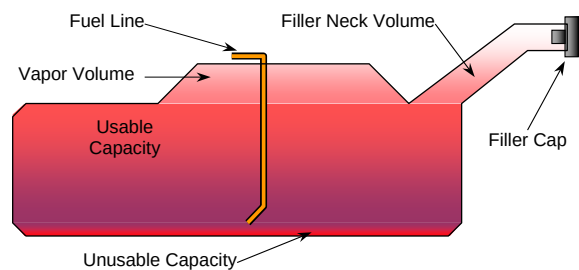
FUEL TANK CAPACITY DATA

	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.

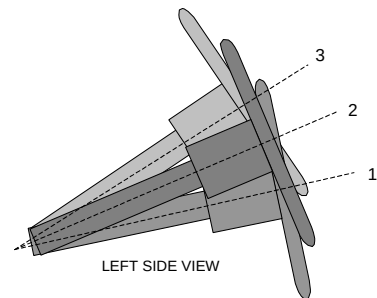
The vehicle is equipped with an electric fuel pump.
The fuel pump starts pumping fuel when the key is in "ON" position. The fuel pipe is on the right side.



VEHICLE FUEL TANK ASSEMBLY

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 ASSEMBLY

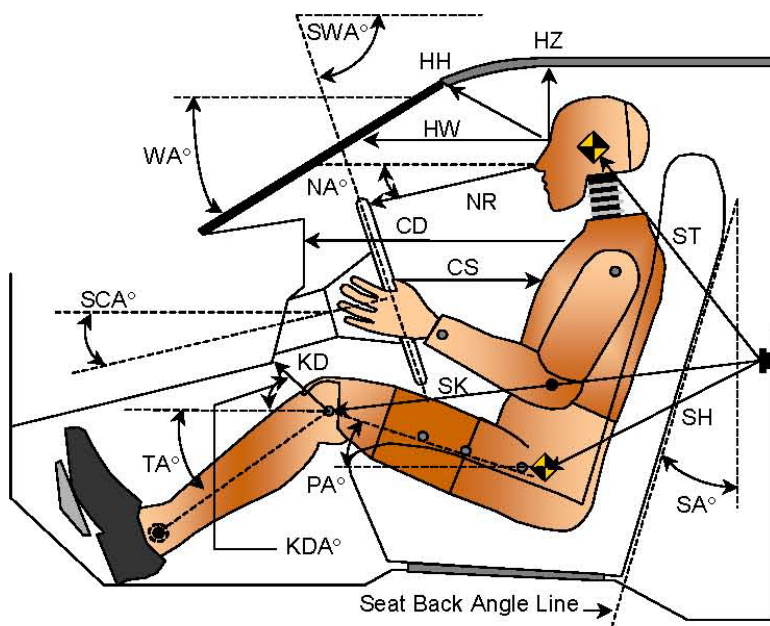
STEERING COLUMN POSITION

	Degrees	Fore/Aft Position (mm)
Lowermost Position 1	69.4	227
Geometric Center Position 2	67.2	207
Uppermost Position 3	65.0	187
Telescoping Steering Wheel Travel		40
Test Position	67.2	207

DATA SHEET NO. 3 DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2015 Chrysler 200 Limited 4-Dr Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20150300
Test Date: 10/1/2014



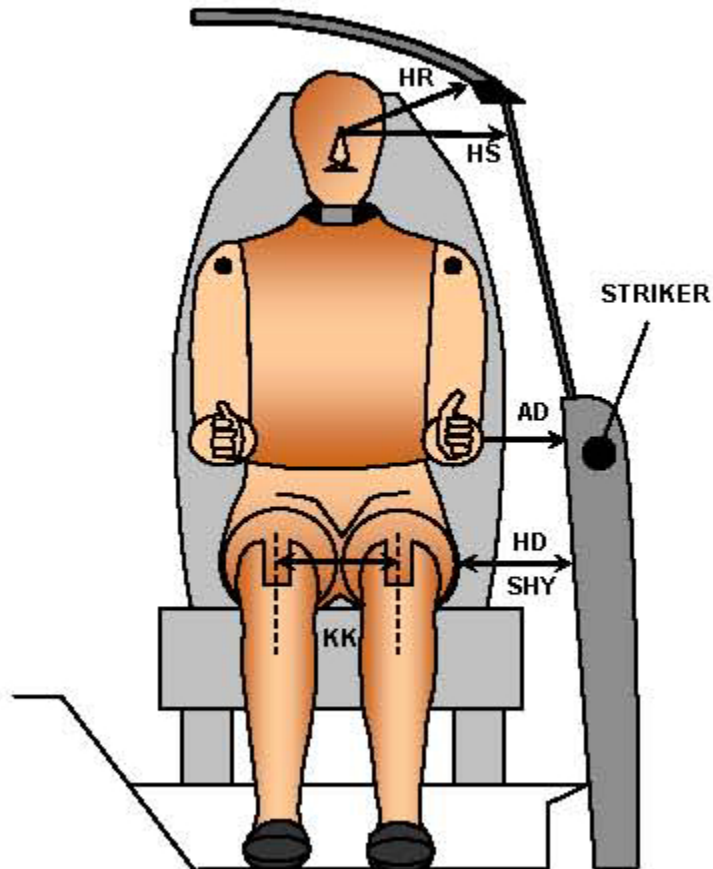
LEFT SIDE VIEW

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		19.8		
SWA°	Steering Wheel Angle		67.2		
SCA°	Steering Column Angle		22.8		
SA°	Seat Back Angle (on headrest post)		3.4		1.2
HZ	Head to Roof (Z)	209	90.0	245	90.0
HH	Head to Header	353	22.6	334	40.0
HW	Head to Windshield	725	0.0	759	0.0
NR	Nose to Rim	415	8.5		
CD	Chest to Dash	593		430	
CS	Chest to Steering Hub	330	3.2		
RA	Rim to Abdomen	202	0.0		
KDL	Left Knee to Dash	161	32.0	139	37.9
KDR	Right Knee to Dash	142	28.5	144	38.6
PA°	Pelvic Angle		24.6		21.8
TA°	Tibia Angle		50.0		41.6
SK	Striker to Knee	529	92.7	648	96.4
ST	Striker to Head	494	6.5	437	22.4
SH	Striker to H-Point	268	126.6	329	113.3

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2015 Chrysler 200 Limited 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20150300
 Test Date: 10/1/2014



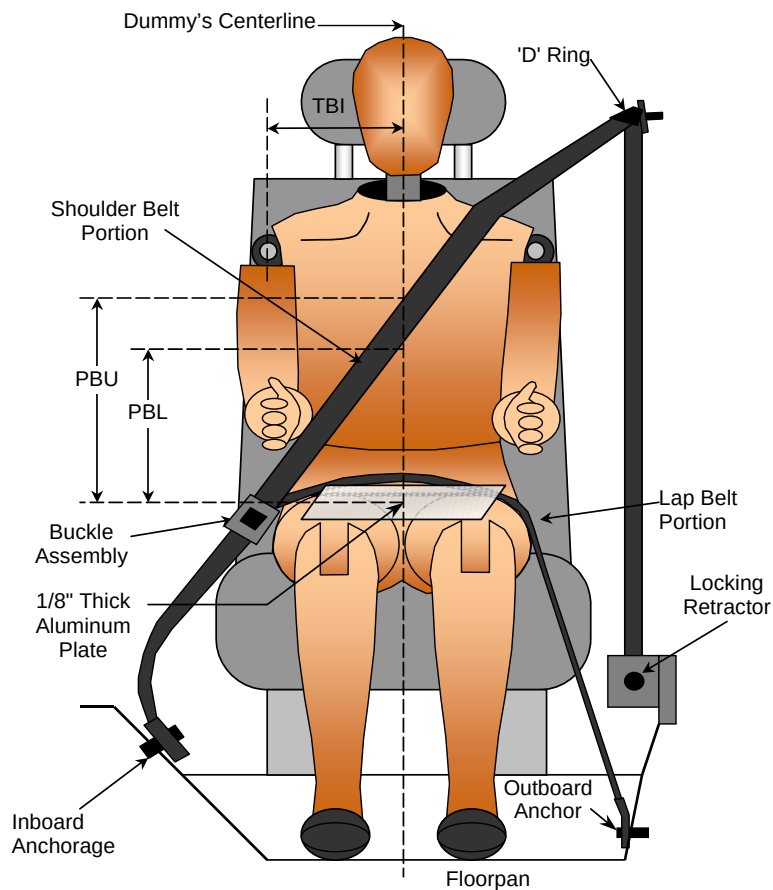
FRONT VIEW OF DUMMY

Code	Measurement Description	Driver	Passenger
		Length (mm)	
AD	Arm to Door	151	125
HD	H-Point to Door	163	183
HR	Head to Side Header	216	252
HS	Head to Side Window	342	370
KK	Knee to Knee	339	227
SHY	Striker to H-Point (Y Direction)	282	320
320	Ankle to Ankle	315	183

DATA SHEET NO. 5 SEAT BELT POSITIONING DATA

Test Vehicle: 2015 Chrysler 200 Limited 4-Dr Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20150300
Test Date: 10/1/2014



FRONT VIEW OF DUMMY

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU - Top surface of reference to belt upper edge	mm	350	320
PBL - Top surface of reference to belt lower edge	mm	260	230

BELT LENGTH DATA

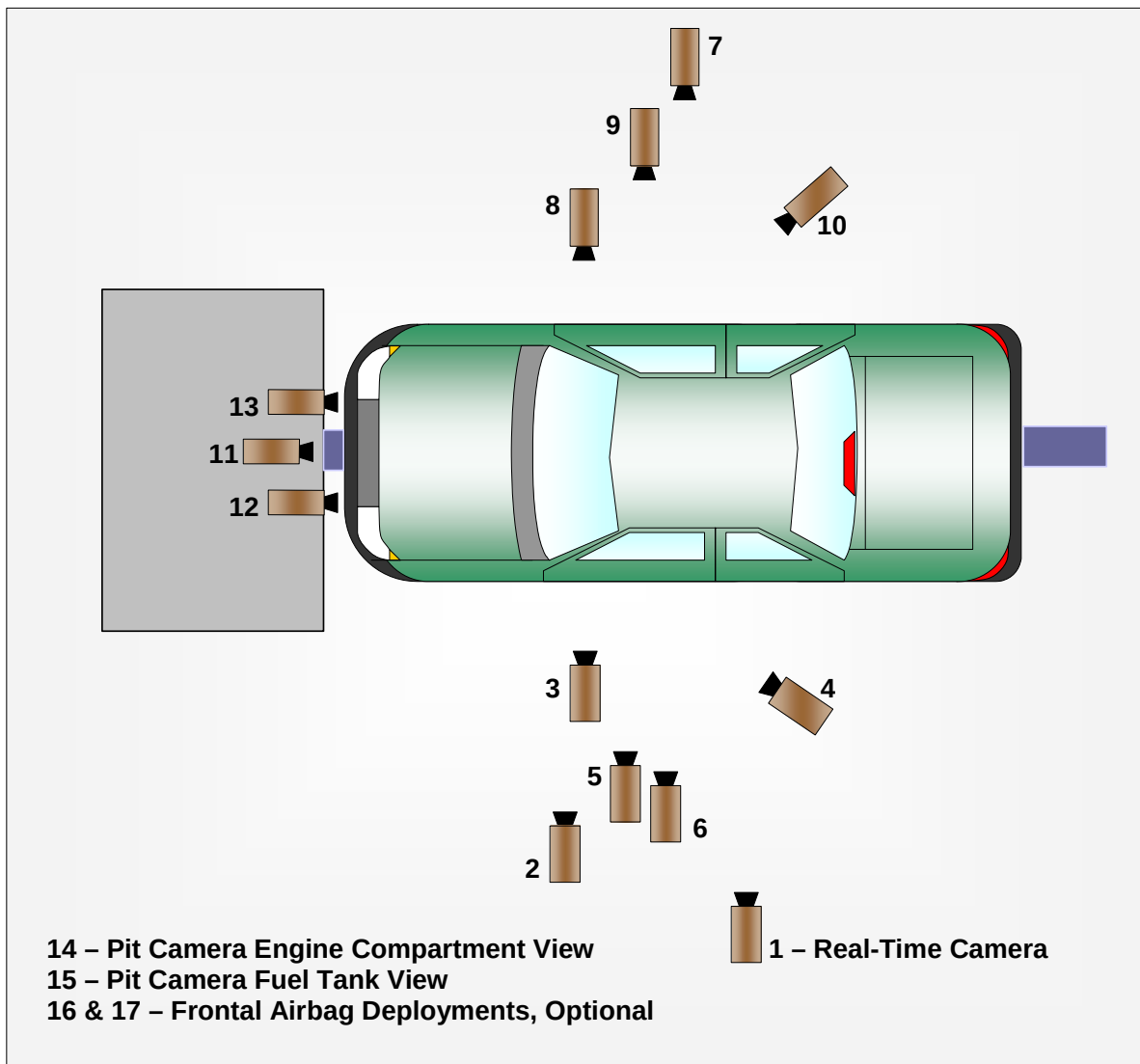
Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as measured on ATD	mm	813	855
Lap Belt Length as measured on ATD	mm	566	610
Remainder of belt on reel	mm	1921	1835
Total Belt Length for Continuous Webbing Systems	mm	3300	3300

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

Test Vehicle: 2015 Chrysler 200 Limited 4-Dr Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20150300
Test Date: 10/1/2014

CAMERA POSITIONS FOR FRONTAL IMPACTS



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

Test Vehicle: 2015 Chrysler 200 Limited 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20150300
 Test Date: 10/1/2014

CAMERA LOCATIONS

No.	Camera View	Coordinates (mm)			Lens (mm)	Speed (fps)
		X*	Y*	Z*		
1	Real-Time Left Overall					30
2	Driver Close-Up	1600	-6570	-1860	35	1000
3	Left Front Half	1240	-5280	-1330	24	1000
4	Left Angle	5670	-5010	-1930	50	1000
5	Steering Column - Top					
6	Steering Column - Bottom					
7	Right Overall	2330	6810	-1330	16	1000
8	Passenger Close-Up	1580	6720	-1840	35	1000
9	Right Front Half	1270	5240	-1360	24	1000
10	Right Angle	5660	5000	-1930	50	1000
11	Windshield	-210	0	-2810	20	1000
12	Driver Windshield	0	-450	-2030	8.5	1000
13	Passenger Windshield	0	450	-2030	8.5	1000
14	Pit Front	1150	0	3150	24	1000
15	Pit Rear	2990	0	3150	24	1000
16	Onboard Driver Side				12	1000
17	Onboard Passenger Side				12	1000
18	Real-Time Pan View					30

***COORDINATES:**

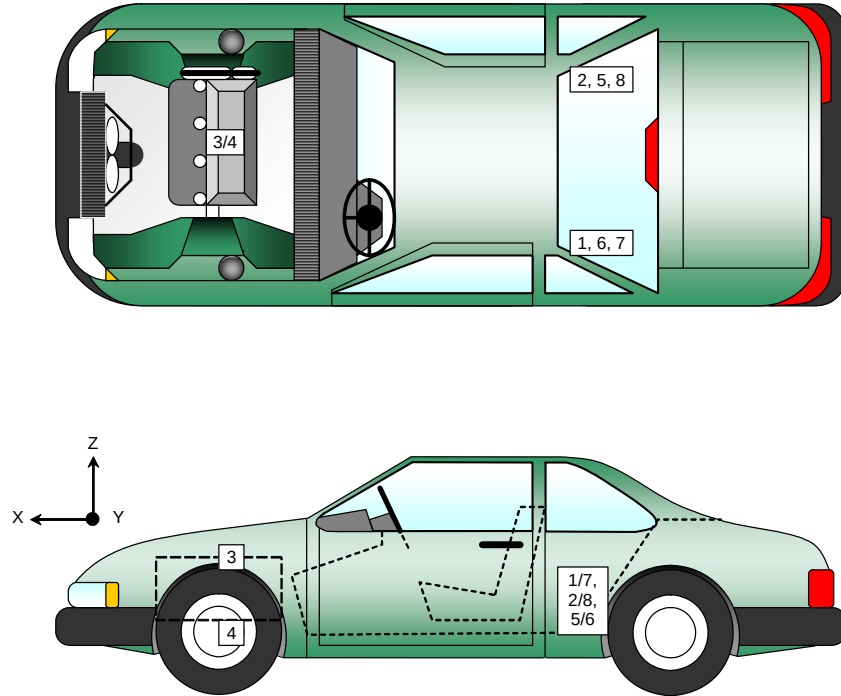
+X = forward of impact plane
 +Y = right of monorail centerline
 +Z = below ground level

Cameras 5 & 6 were not used for this test.

DATA SHEET NO. 7 VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2015 Chrysler 200 Limited 4-Dr Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20150300
Test Date: 10/1/2014



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear Crossmember Accelerometer – X Direction	1972	-406	-276
2	Right Rear Crossmember Accelerometer – X Direction	1972	406	-276
3	Engine Top X	4030	-10	-897
4	Engine Bottom X	4072	134	-200
5	Left Rear Crossmember Accelerometer – Z Direction	1972	-406	-276
6	Right Rear Crossmember Accelerometer – Z Direction	1972	406	-276
7	Left Rear Crossmember Accelerometer Redundant – X Direction	1972	-406	-276
8	Right Rear Crossmember Accelerometer Redundant – X Direction	1972	406	-276

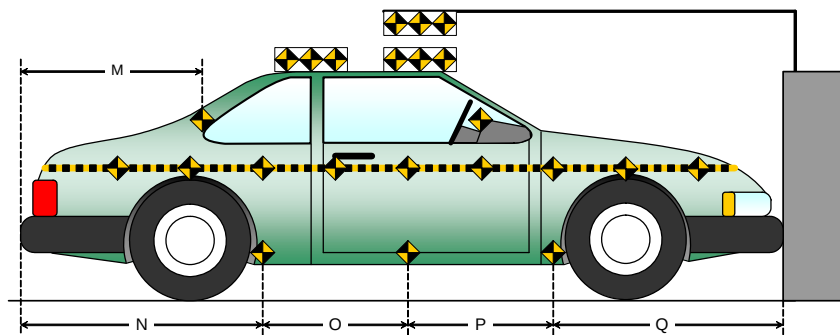
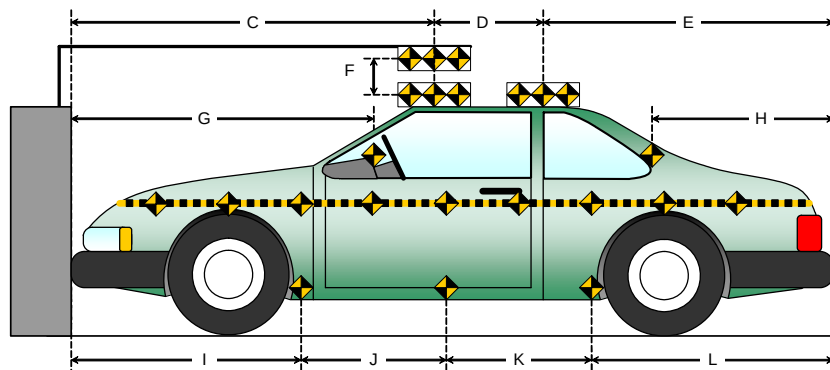
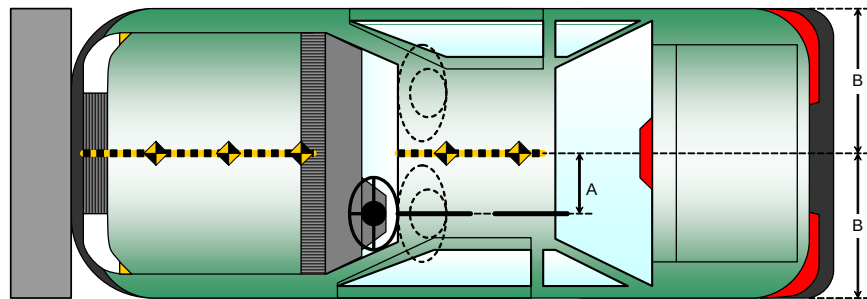
Reference Points: X - Rear Surface of Vehicle (+ forward)
Y - Vehicle Centerline (+ to right)
Z - Ground Plane (+ down)

DATA SHEET NO. 8
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2015 Chrysler 200 Limited 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20150300
 Test Date: 10/1/2014

Item	Value (mm)
A	368
B	936
C	2465
D	685
E	1738
F	90
G	
H	1434
I	1480
J	931
K	931
L	1546
M	1434
N	1546
O	931
P	931
Q	1480



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

Test Vehicle: 2015 Chrysler 200 Limited 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20150300
 Test Date: 10/1/2014

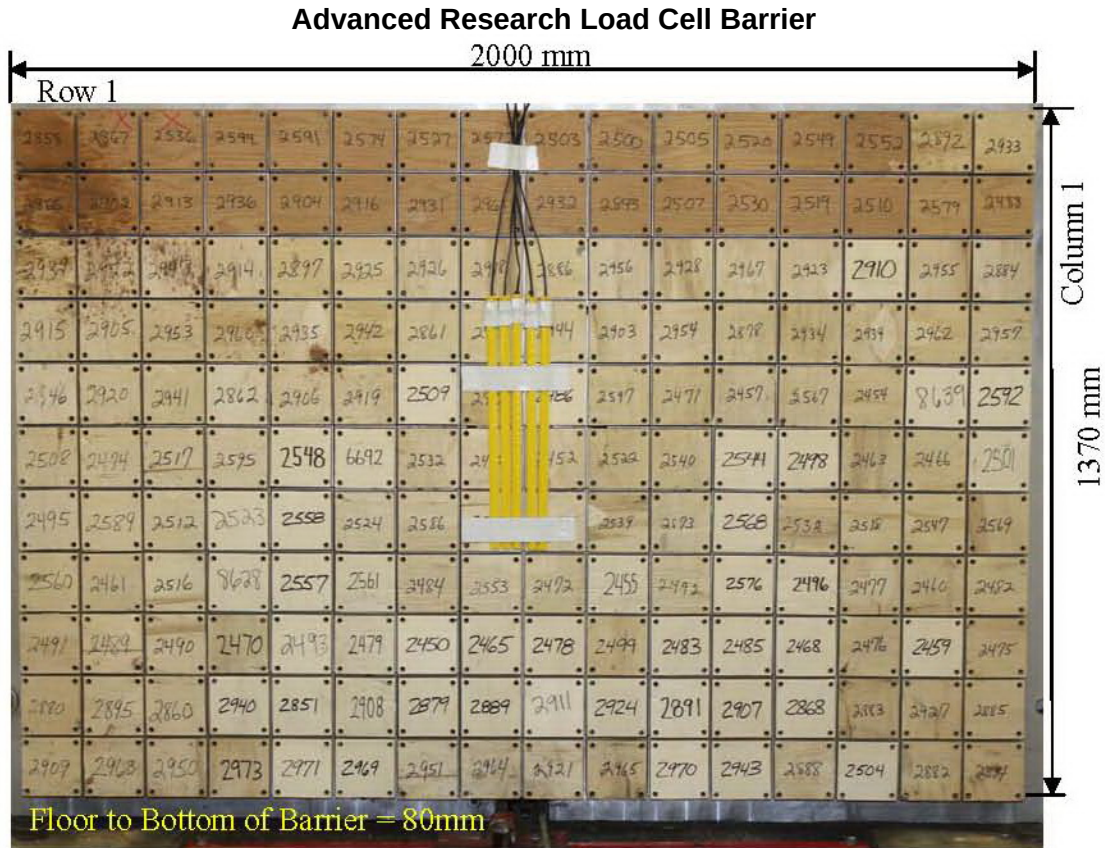


Photo for Reference Only

Centerline															
A-16	A-15	A-14	A-13	A-12	A-11	A-10	A-09	A-08	A-07	A-06	A-05	A-04	A-03	A-02	A-01
B-16	B-15	B-14	B-13	B-12	B-11	B-10	B-09	B-08	B-07	B-06	B-05	B-04	B-03	B-02	B-01
C-16	C-15	C-14	C-13	C-12	C-11	C-10	C-09	C-08	C-07	C-06	C-05	C-04	C-03	C-02	C-01
D-16	D-15	D-14	D-13	D-12	D-11	D-10	D-09	D-08	D-07	D-06	D-05	D-04	D-03	D-02	D-01
E-16	E-15	E-14	E-13	E-12	E-11	E-10	E-09	E-08	E-07	E-06	E-05	E-04	E-03	E-02	E-01
F-16	F-15	F-14	F-13	F-12	F-11	F-10	F-09	F-08	F-07	F-06	F-05	F-04	F-03	F-02	F-01
G-16	G-15	G-14	G-13	G-12	G-11	G-10	G-09	G-08	G-07	G-06	G-05	G-04	G-03	G-02	G-01
H-16	H-15	H-14	H-13	H-12	H-11	H-10	H-09	H-08	H-07	H-06	H-05	H-04	H-03	H-02	H-01
I-16	I-15	I-14	I-13	I-12	I-11	I-10	I-09	I-08	I-07	I-06	I-05	I-04	I-03	I-02	I-01
J-16	J-15	J-14	J-13	J-12	J-11	J-10	J-09	J-08	J-07	J-06	J-05	J-04	J-03	J-02	J-01
K-16	K-15	K-14	K-13	K-12	K-11	K-10	K-09	K-08	K-07	K-06	K-05	K-04	K-03	K-02	K-01

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: 2015 Chrysler 200 Limited 4-Dr Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20150300
Test Date: 10/1/2014

INSTRUMENTATION

Driver Dummy Data Channels	46
Passenger Dummy Data Channels	46
Vehicle Structure Accelerometers	8
Barrier Channels	528
Total	628

CAMERA COVERAGE

High-Speed Vehicle Onboard	2
High-Speed Offboard	12
Real-Time	2
Total	16

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

Test Vehicle: 2015 Chrysler 200 Limited 4-Dr Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20150300
Test Date: 10/1/2014

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 Airbag	Knee Airbag
Right Knee Contact	Knee Airbag	Knee Airbag

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	None
Window Damage	None
Other Notable Effects	None

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	2005
Center	mm	1935
Right Side	mm	1995
Average	mm	1978

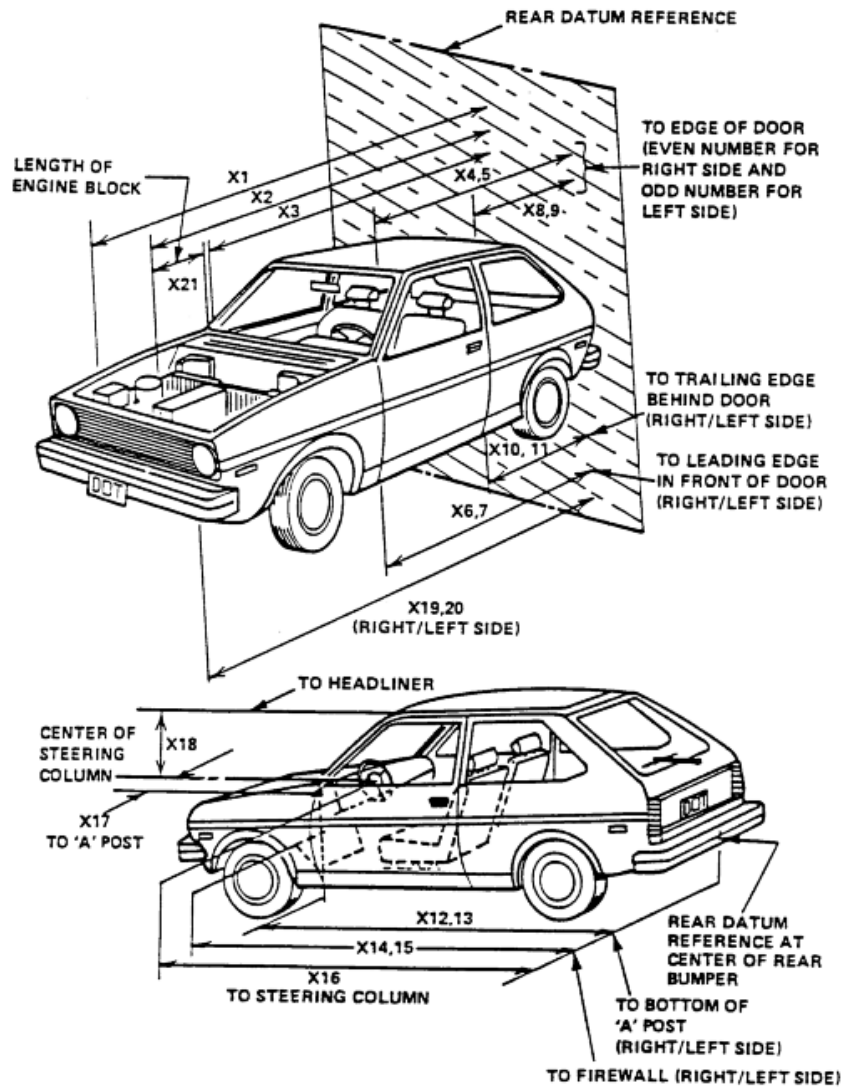
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Driver (Occupant 1)		Passenger (Occupant 2)	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	Yes	Yes	Yes
Curtain Side Airbag	Yes	No	Yes	No
Torso/Pelvis Side Airbag	Yes	No	Yes	No
Knee Airbag	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes		Yes	

DATA SHEET NO. 12 VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2015 Chrysler 200 Limited 4-Dr Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20150300
Test Date: 10/1/2014



DATA SHEET NO. 12 (CONTINUED)
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2015 Chrysler 200 Limited 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20150300
 Test Date: 10/1/2014

RSOV (Rear Surface of Vehicle)

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	mm	4888	4462	426
2	RSOV to Front of Engine	mm	4120	3967	153
3	RSOV to Firewall	mm	3791	3778	13
4	RSOV to Upper Leading Edge of Right Door	mm	3313	3313	0
5	RSOV to Upper Leading Edge of Left Door	mm	3313	3313	0
6	RSOV to Lower Leading Edge of Right Door	mm	3307	3307	0
7	RSOV to Lower Leading Edge of Left Door	mm	3307	3307	0
8	RSOV to Upper Trailing Edge of Right Door	mm	2185	2185	0
9	RSOV to Upper Trailing Edge of Left Door	mm	2185	2185	0
10	RSOV to Lower Trailing Edge of Right Door	mm	2250	2250	0
11	RSOV to Lower Trailing Edge of Left Door	mm	2250	2250	0
12	RSOV to Bottom of "A" Post of Right Side	mm	3320	3320	0
13	RSOV to Bottom of "A" Post of Left Side	mm	3320	3320	0
14	RSOV to Firewall, Right Side	mm	3625	3608	17
15	RSOV to Firewall, Left Side	mm	3625	3621	4
16	RSOV to Steering Column	mm	2805	2878	-73
17	Center of Steering Column to "A" Post	mm	402	428	-26
18	Center of Steering Column to Headliner	mm	405	458	-53
19	RSOV to Right Side of Front Bumper	mm	4567	4392	175
20	RSOV to Left Side of Front Bumper	mm	4567	4356	211
21	Length of Engine Block	mm	445	445	0
RD	RSOV to Right Side of Dash Panel	mm	3050	3050	0
CD	RSOV to Center of Dash Panel	mm	3077	3077	0
LD	RSOV to Left Side of Dash Panel	mm	3040	3040	0

DATA SHEET NO. 13
ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2015 Chrysler 200 Limited 4-Dr Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20150300
Test Date: 10/1/2014

VEHICLE INFORMATION

VIN: 1C3CCCAB0FN536811 Wheelbase (mm): 2730
Vehicle Size Category: Sedan Test Weight (kg): 1769.0

ACCELEROMETER DATA

Accelerometer Locations: As per measurements on Page 15

Cal. Procedure/Interval: MGA procedure / 6 month

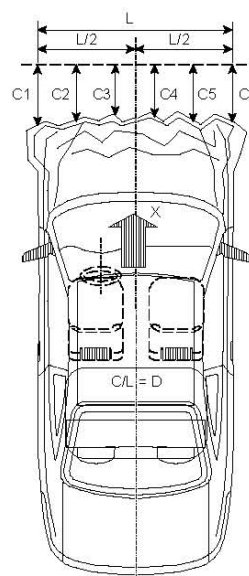
Integration Algorithm: Trapezoidal

Linearity: > 99%

Impact Velocity (km/h): 56.2

Velocity Change (km/h): 64.0

Time of Separation (msec): 105.9



CRUSH PROFILE

Collision Deformation Classification: Frontal

Midpoint of Damage: Centerline

Damage Region Length (mm): 1604

Impact Mode: Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	4567	4356	211
C2	Crush zone 2 at left side	mm	4732	4392	340
C3	Crush zone 3 at left side	mm	4814	4393	421
C4	Crush zone 4 at right side	mm	4814	4391	423
C5	Crush zone 5 at right side	mm	4732	4376	356
C6	Crush zone 6 at right side	mm	4567	4392	175
L	C1 TO C6	mm	1604	1585	19

DATA SHEET NO. 14
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2015 Chrysler 200 Limited 4-Dr Sedan
Test Program: NCAP Frontal Barrier Impact Test

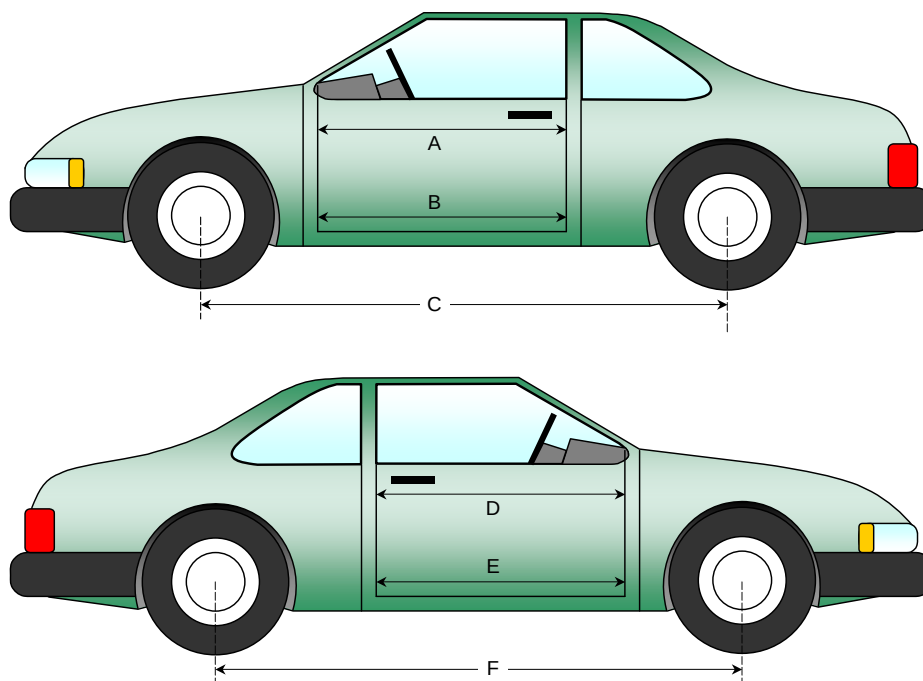
NHTSA No.: O20150300
Test Date: 10/1/2014

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	986	986	0
B	Left Side Lower	mm	894	894	0
D	Right Side Upper	mm	986	986	0
E	Right Side Lower	mm	894	893	1

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2730	2712	18
F	Right Side Wheelbase	mm	2730	2713	17



DATA SHEET NO. 14 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

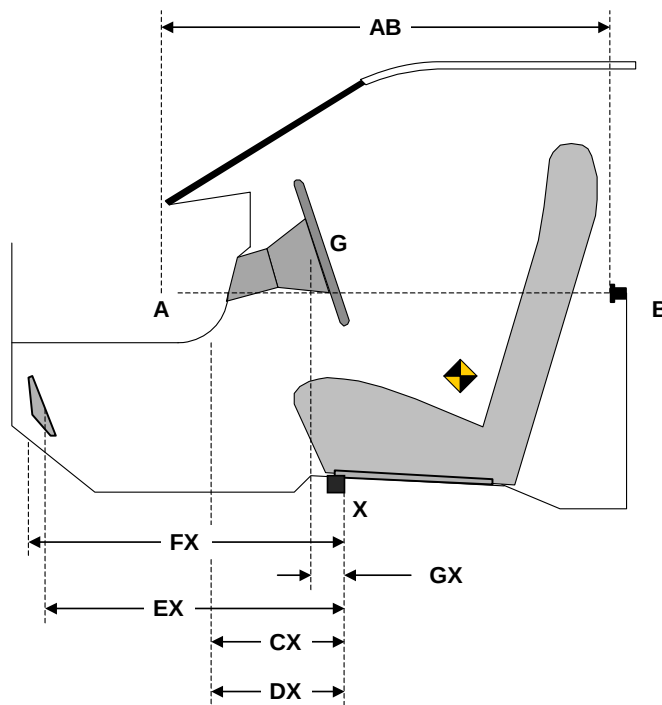
Test Vehicle: 2015 Chrysler 200 Limited 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20150300
 Test Date: 10/1/2014

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	790	790	0
CX	Left Knee Bolster to X	mm	265	265	0
DX	Right Knee Bolster to X	mm	243	242	1
EX	Brake Pedal to X	mm	570	570	0
FX	Foot Rest to X	mm	590	587	3
GX	Center of Steering Column Wheel Hub to X	mm	86	124	-38

X = Front of Seat Track (stationary)



DRIVER COMPARTMENT

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

Test Vehicle: 2015 Chrysler 200 Limited 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20150300
 Test Date: 10/1/2014

Windshield Mounting Details:

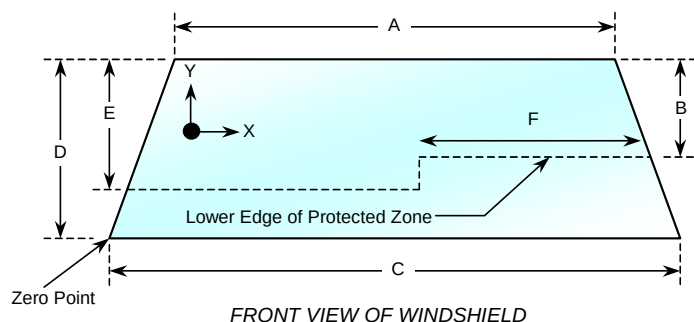
Windshield glass is secured to the vehicle frame with a rubber trim and glue.

The standard requires that the post-test retention measurement be a minimum of 75 percent of the pre-test 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: 22.0° C.

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% of Retention
Left Side	2214	2214	100
Right Side	2214	2214	100
Total	4428	4428	100



Item	Units	Value
A	mm	1224
B	mm	522
C	mm	1344
D	mm	930
E	mm	540
F	mm	508

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, FMVSS 219 (PARTIAL), AND 301 DATA

Test Vehicle: 2015 Chrysler 200 Limited 4-Dr Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20150300
Test Date: 10/1/2014

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 22.0°C Test Time: 10:17 a.m.

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

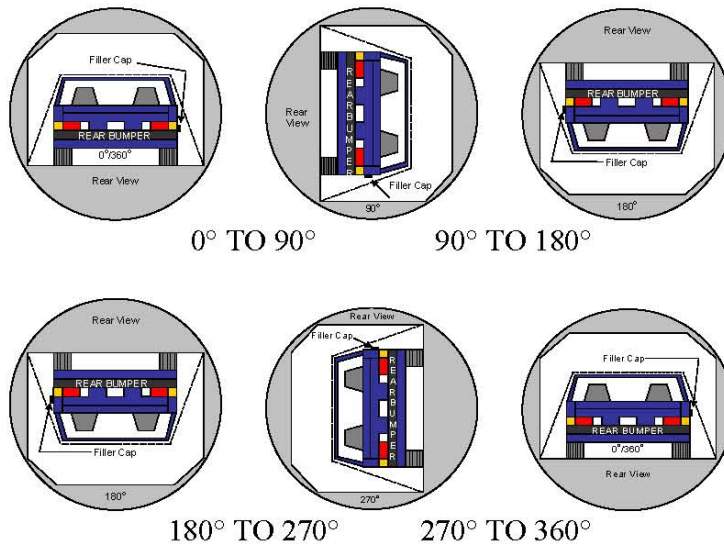
DATA SHEET NO. 16

FMVSS 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2015 Chrysler 200 Limited 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20150300
 Test Date: 10/1/2014

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°	113	300	413
90° to 180°	109	300	409
180° to 270°	107	300	407
270° to 360°	114	300	414

FMVSS 301 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

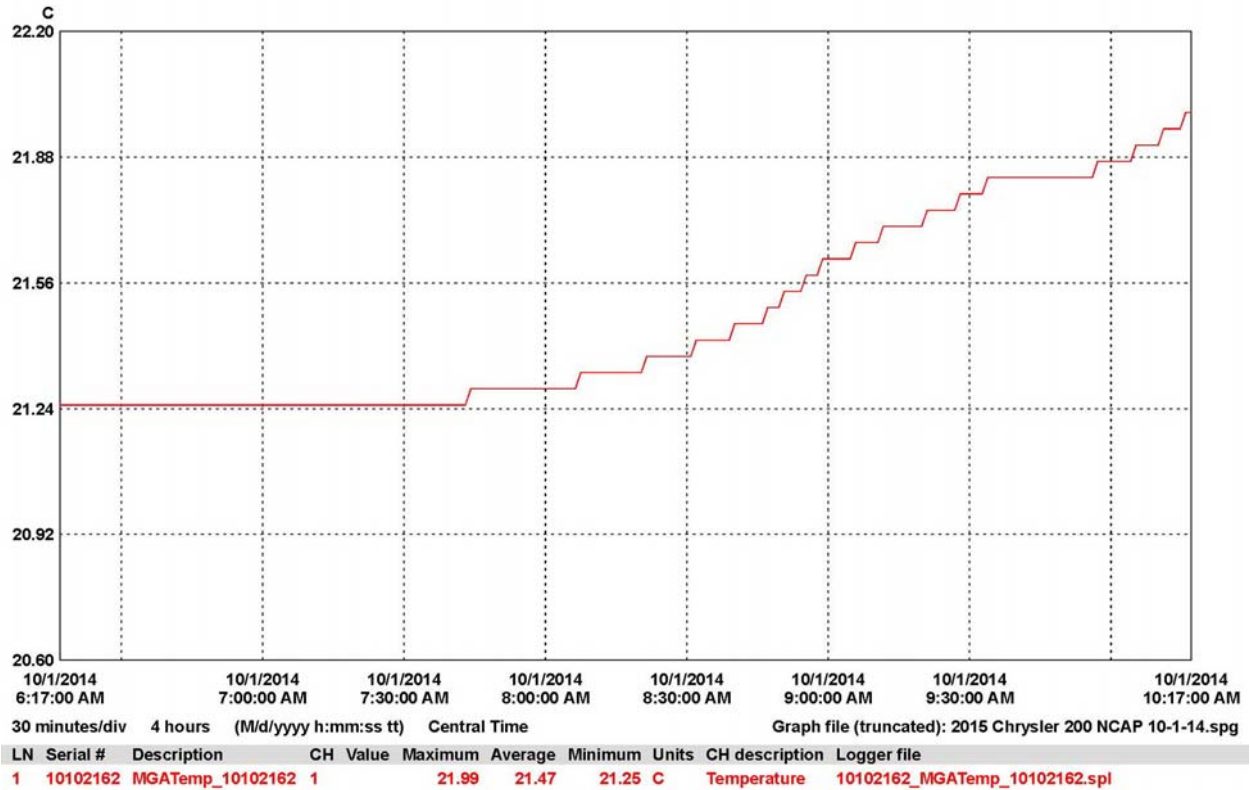
SOLVENT SPILLAGE LOCATION TABLE

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: 2015 Chrysler 200 Limited 4-Dr Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20150300
 Test Date: 10/1/2014



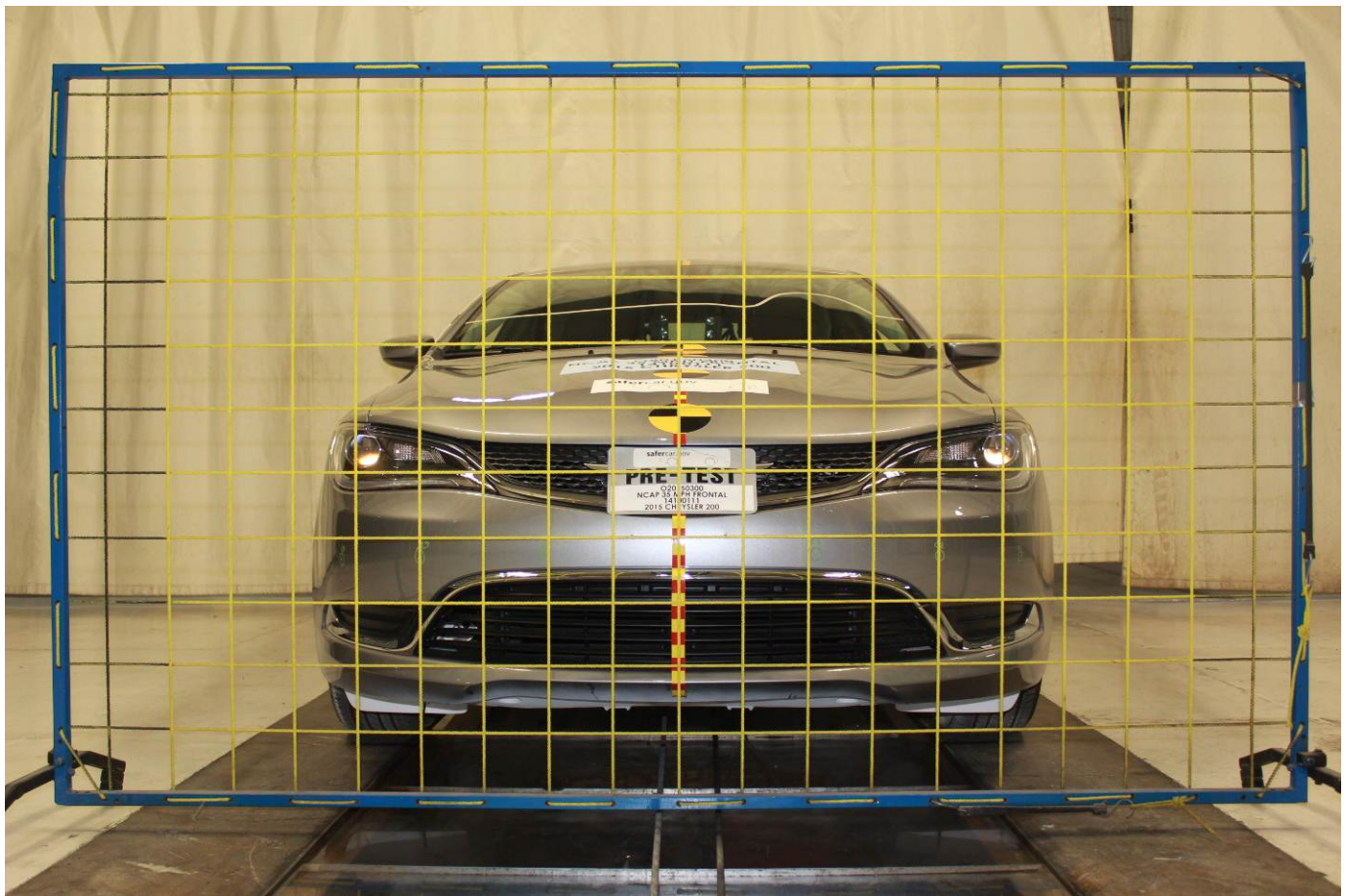
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Load Cell Location



Load Cell Wall



Manufacturer's Label



Tire Placard



2015 Chrysler 200 Frontal As Delivered



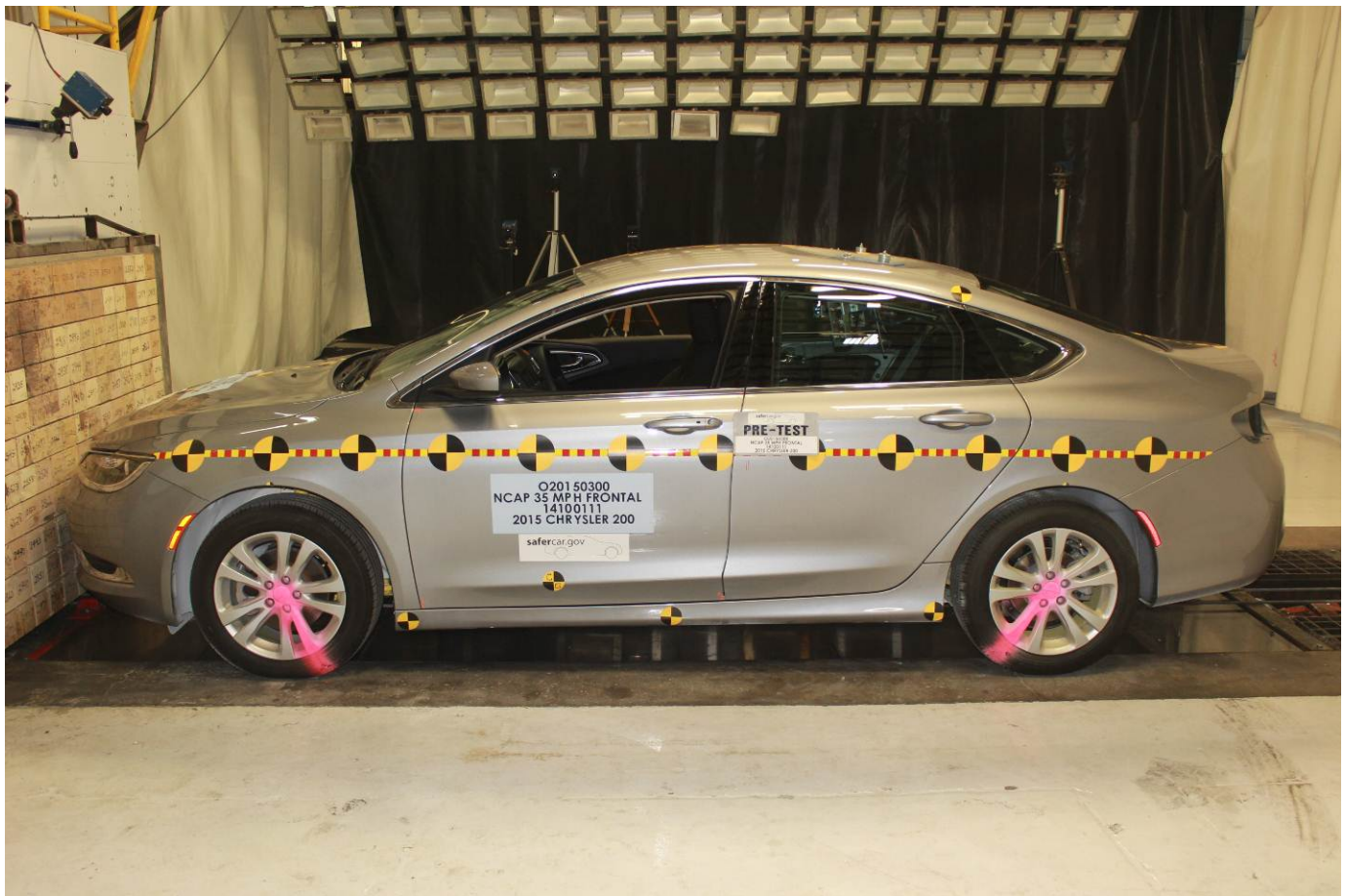
Left Rear 3-4 View, As Received



Pre-Test Front View of Test Vehicle



Post-Test Front View of Test Vehicle



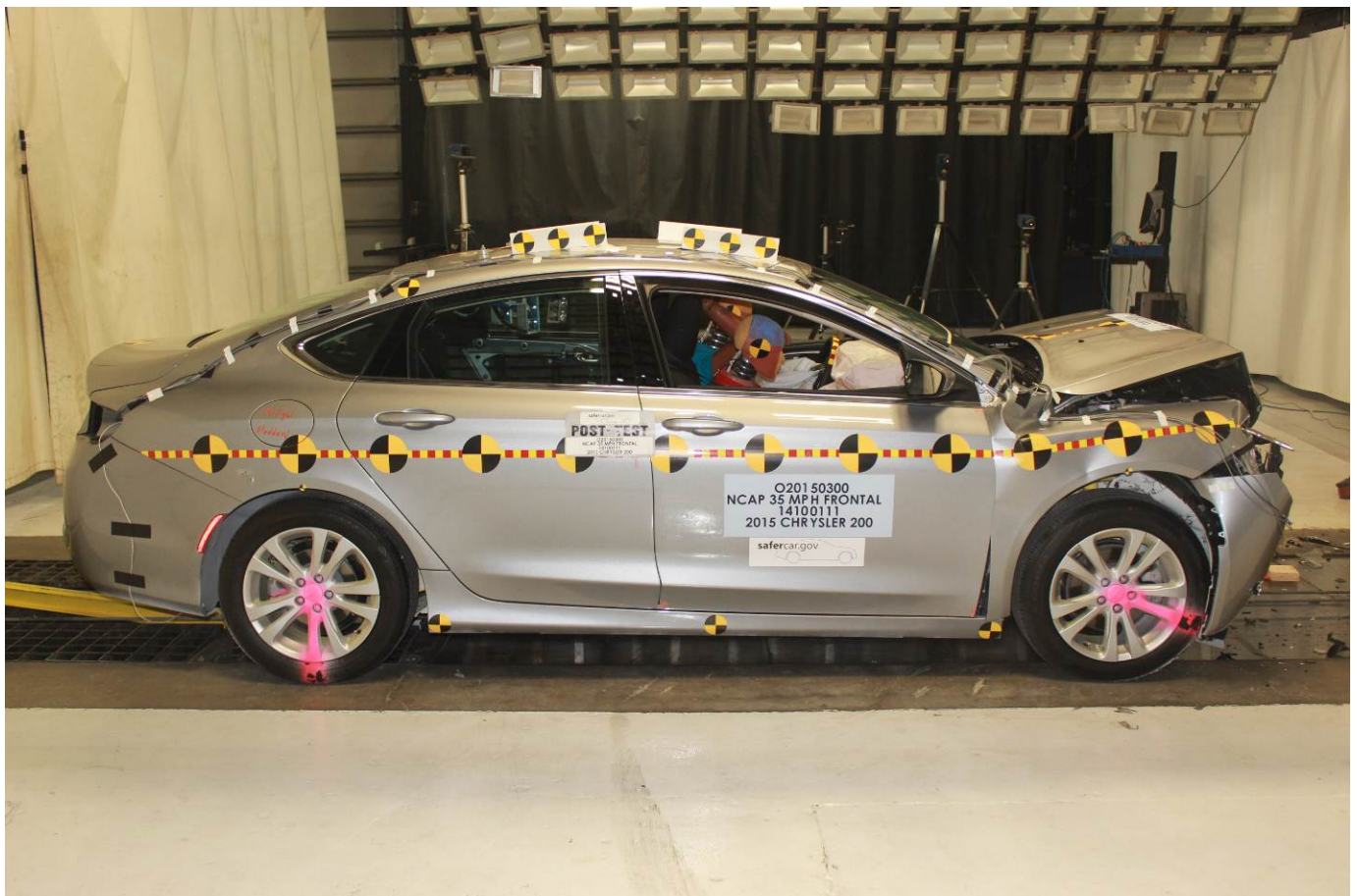
Pre-Test Left View of Test Vehicle



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 3-4 View



Post-Test Right Front 3-4 View



Pre-Test Left Rear 3-4 View



Post-Test Left Rear 3-4 View



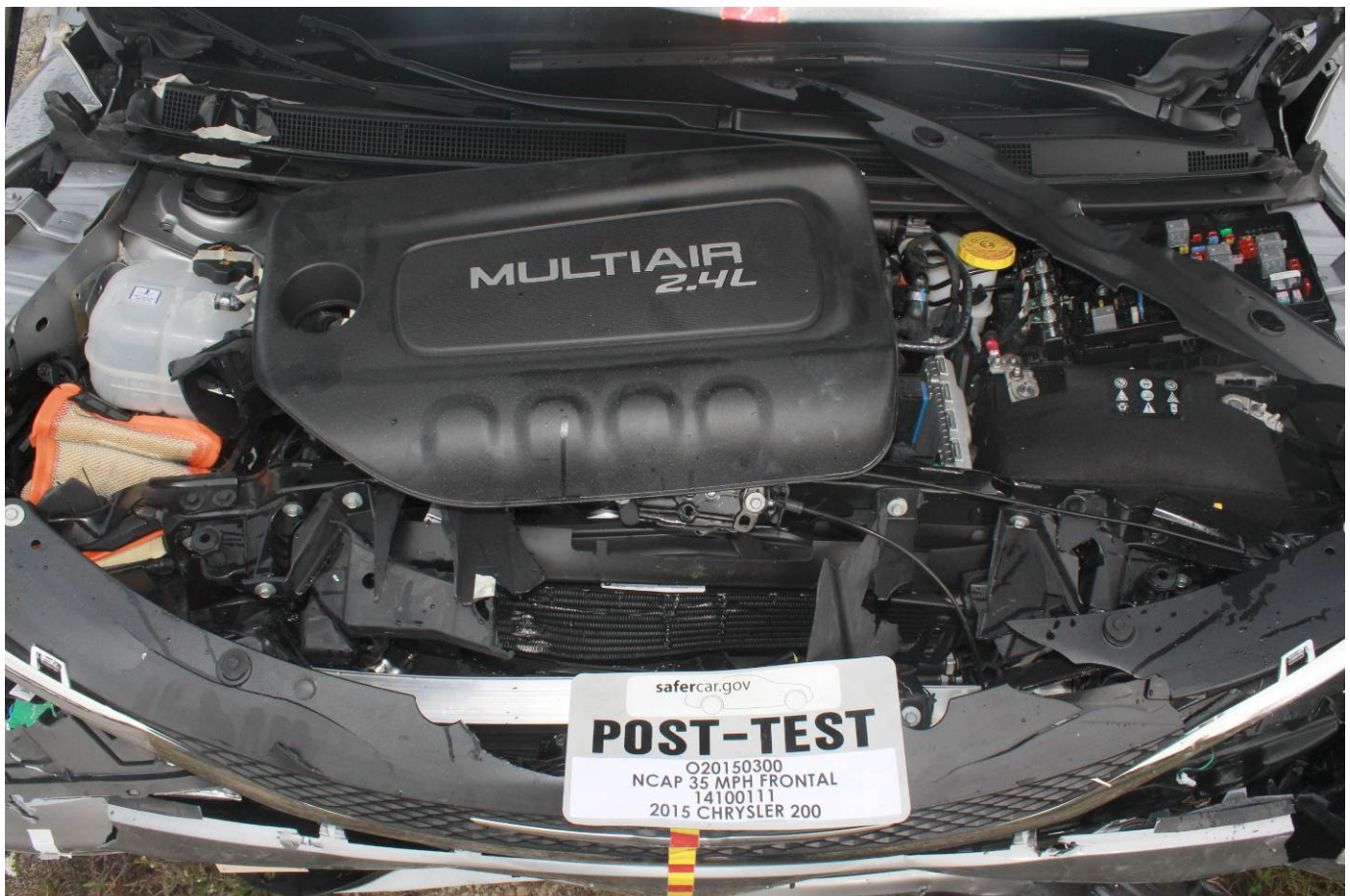
Pre-Test Windshield View



Post-Test Windshield View



Pre-Test Engine Compartment View



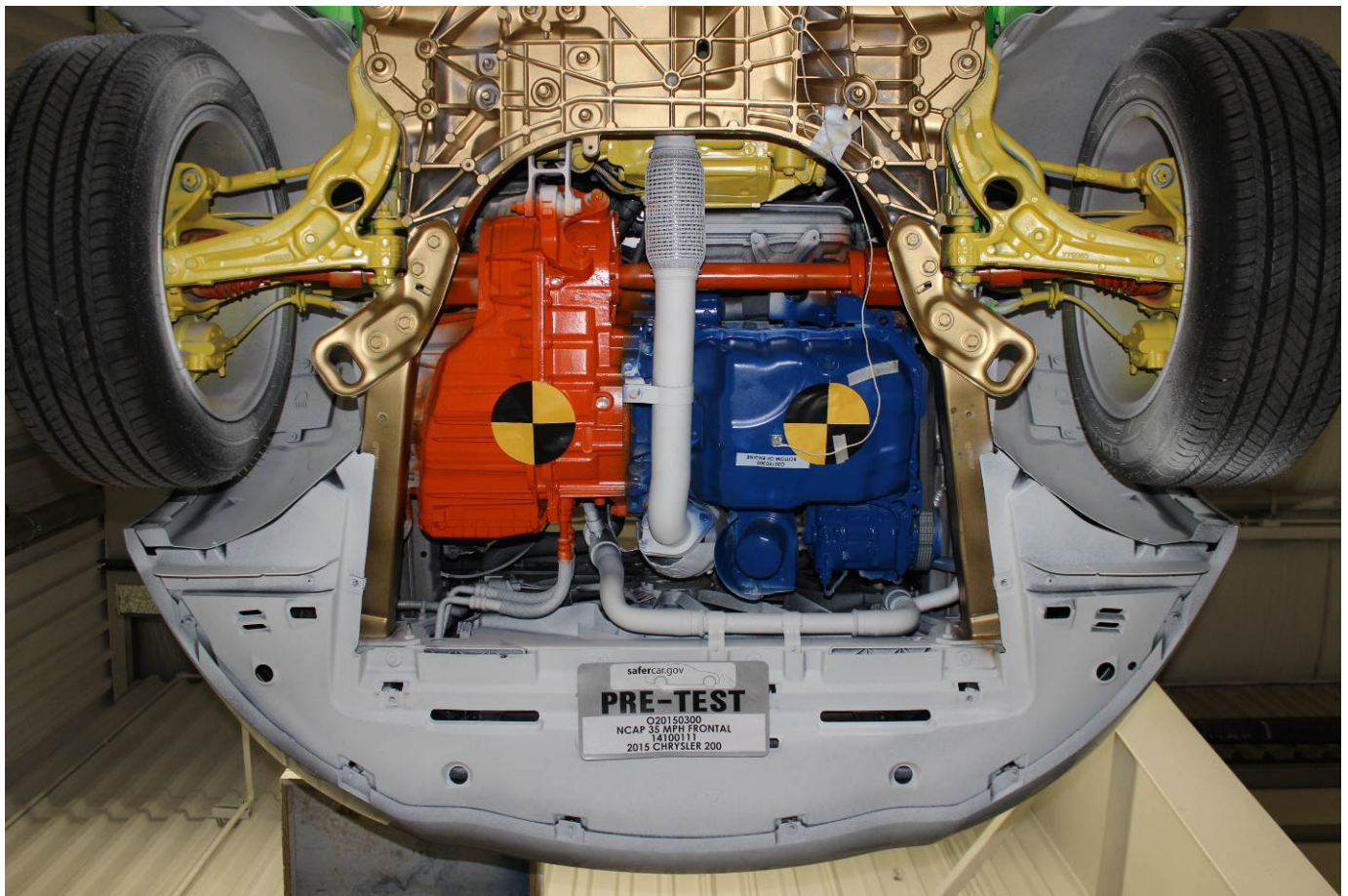
Post-Test Engine Compartment View



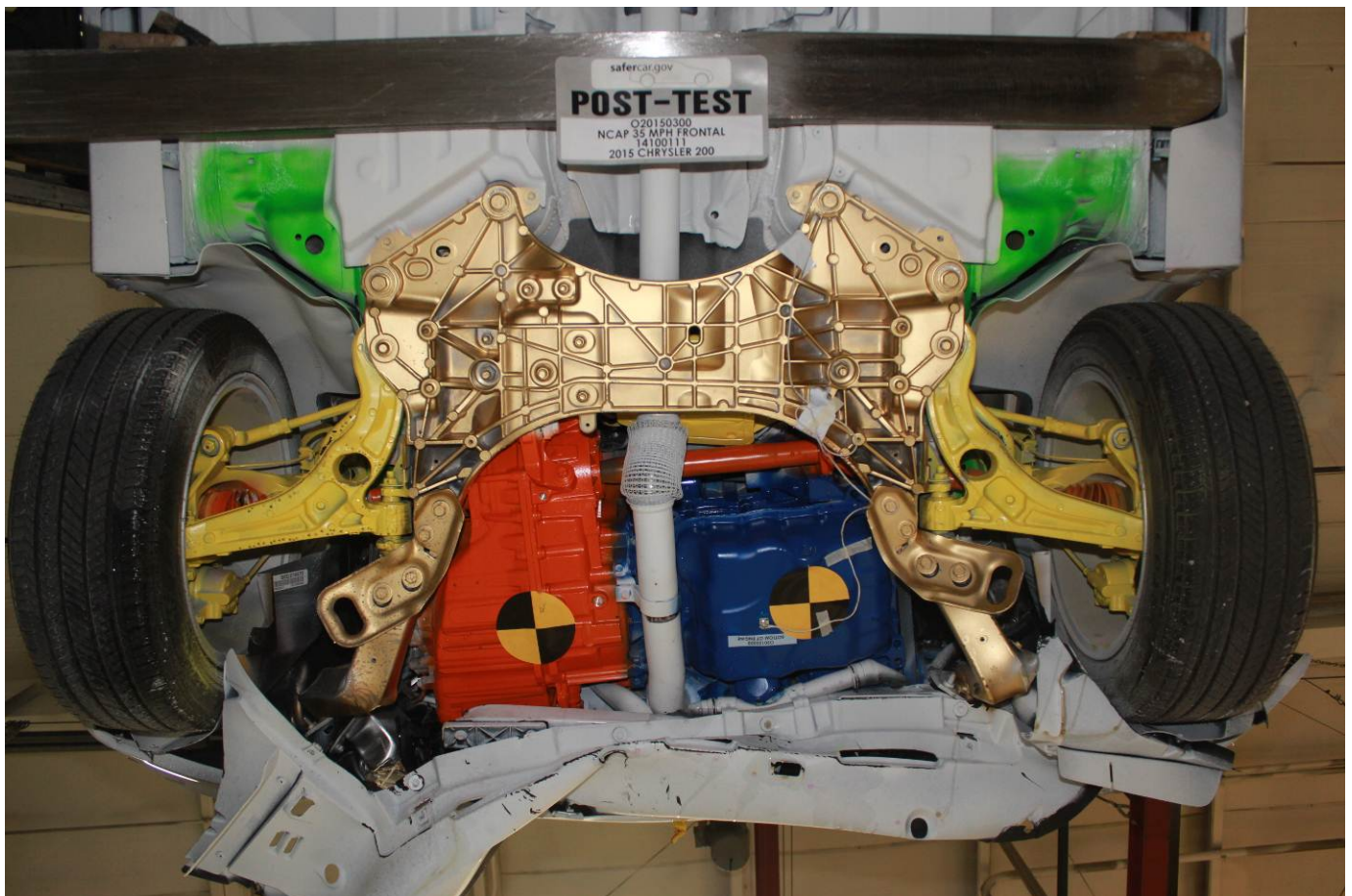
Pre-Test Fuel Filler Cap View



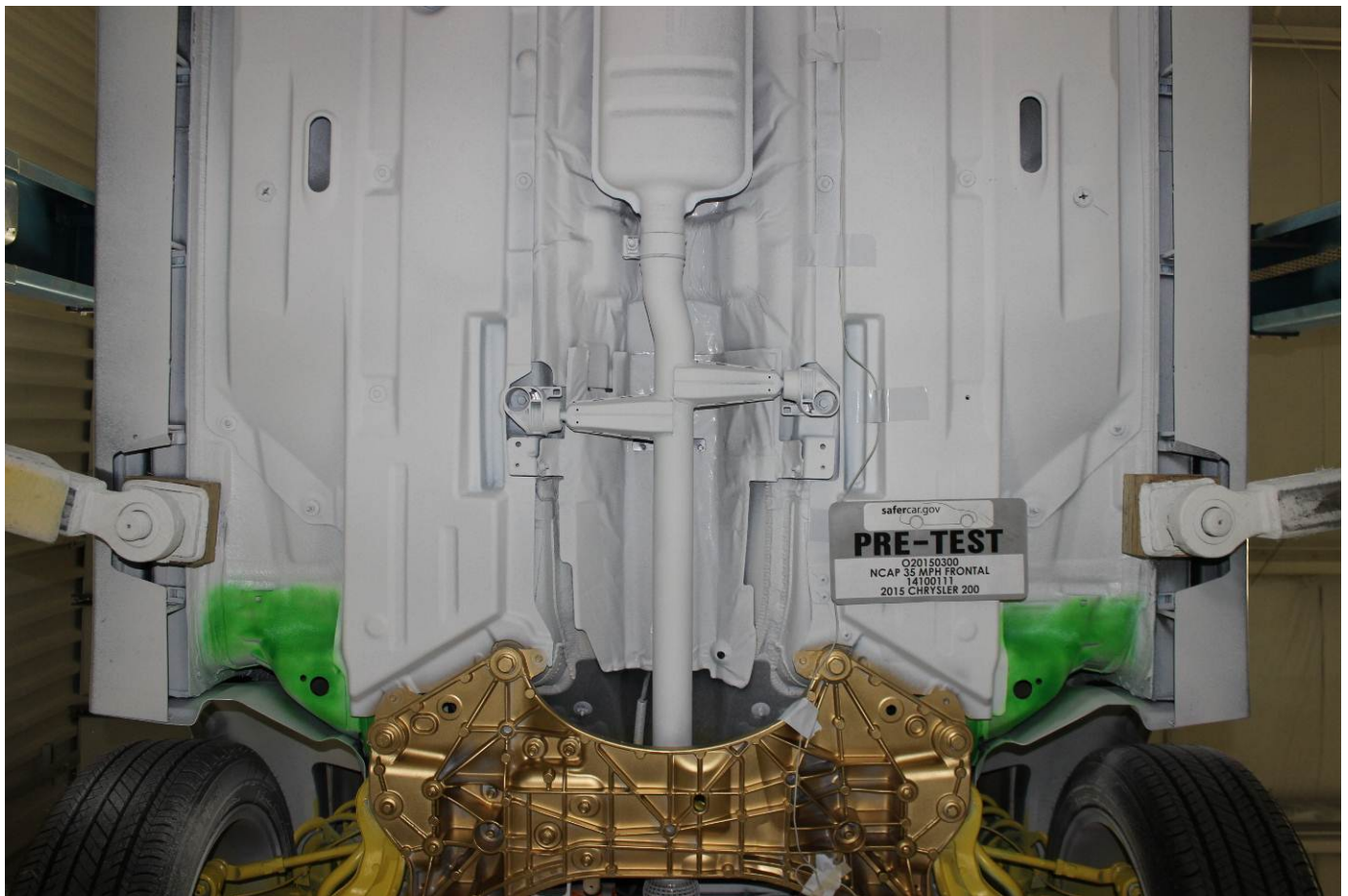
Post-Test Fuel Filler Cap View



Pre-Test Front Underbody View



Post-Test Front Underbody View



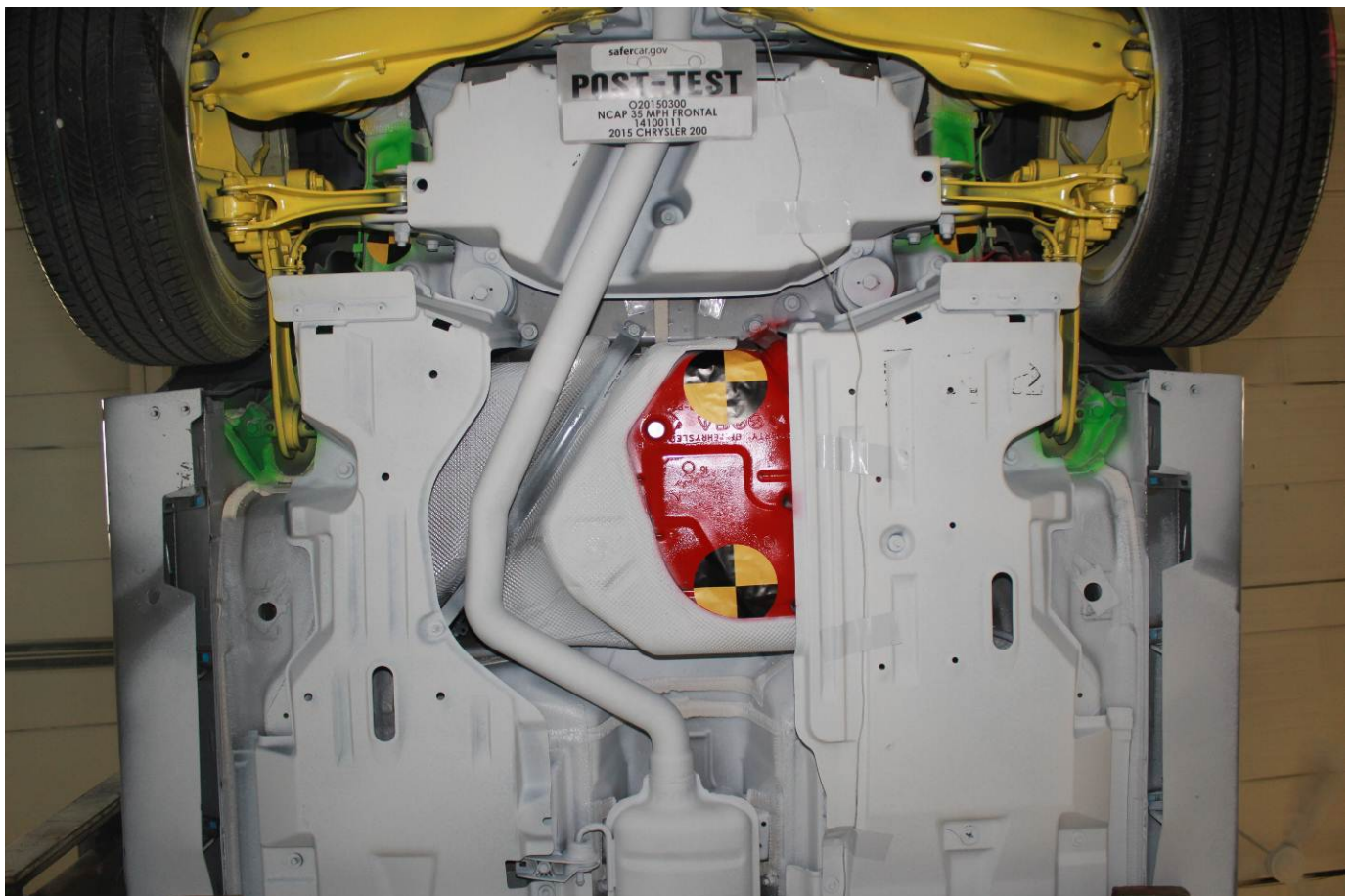
Pre-Test Mid Front Underbody View



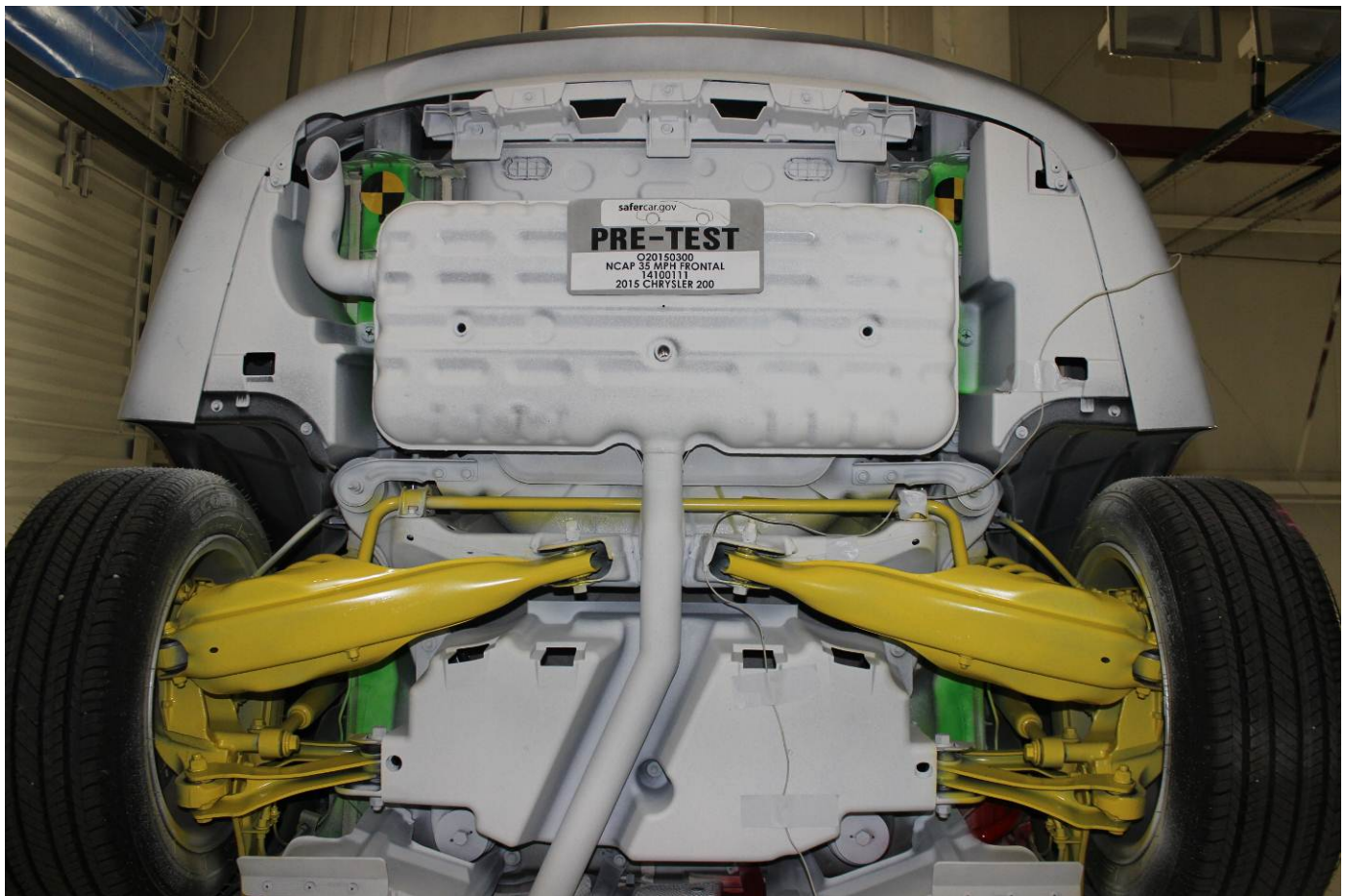
Post-Test Mid Front Underbody View



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 View of Belt Anchorage for Driver Dummy



Post-Test View of Belt Anchorage for Driver Dummy



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 Airbag



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



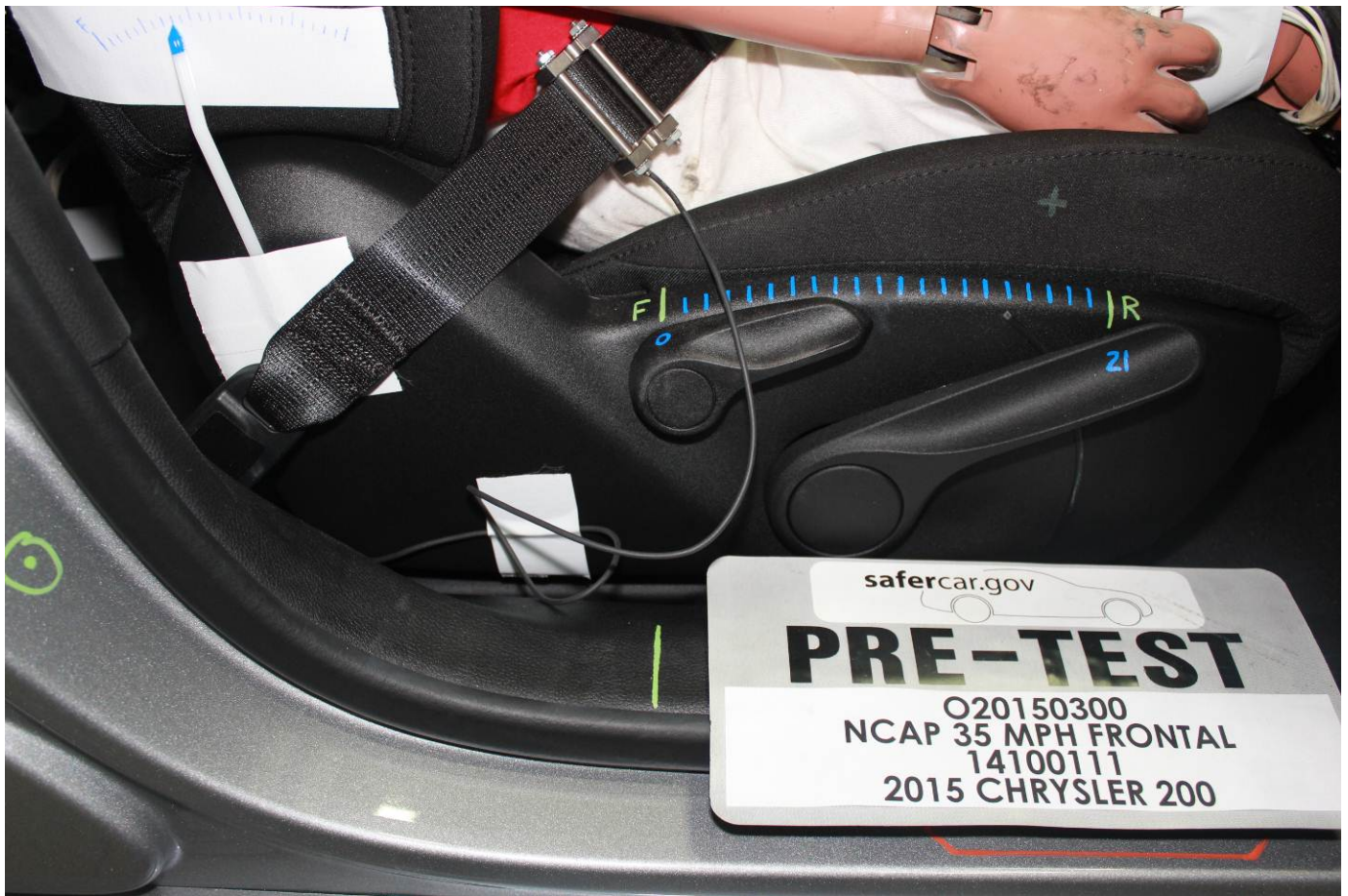
Post-Test Passenger Dummy Window View



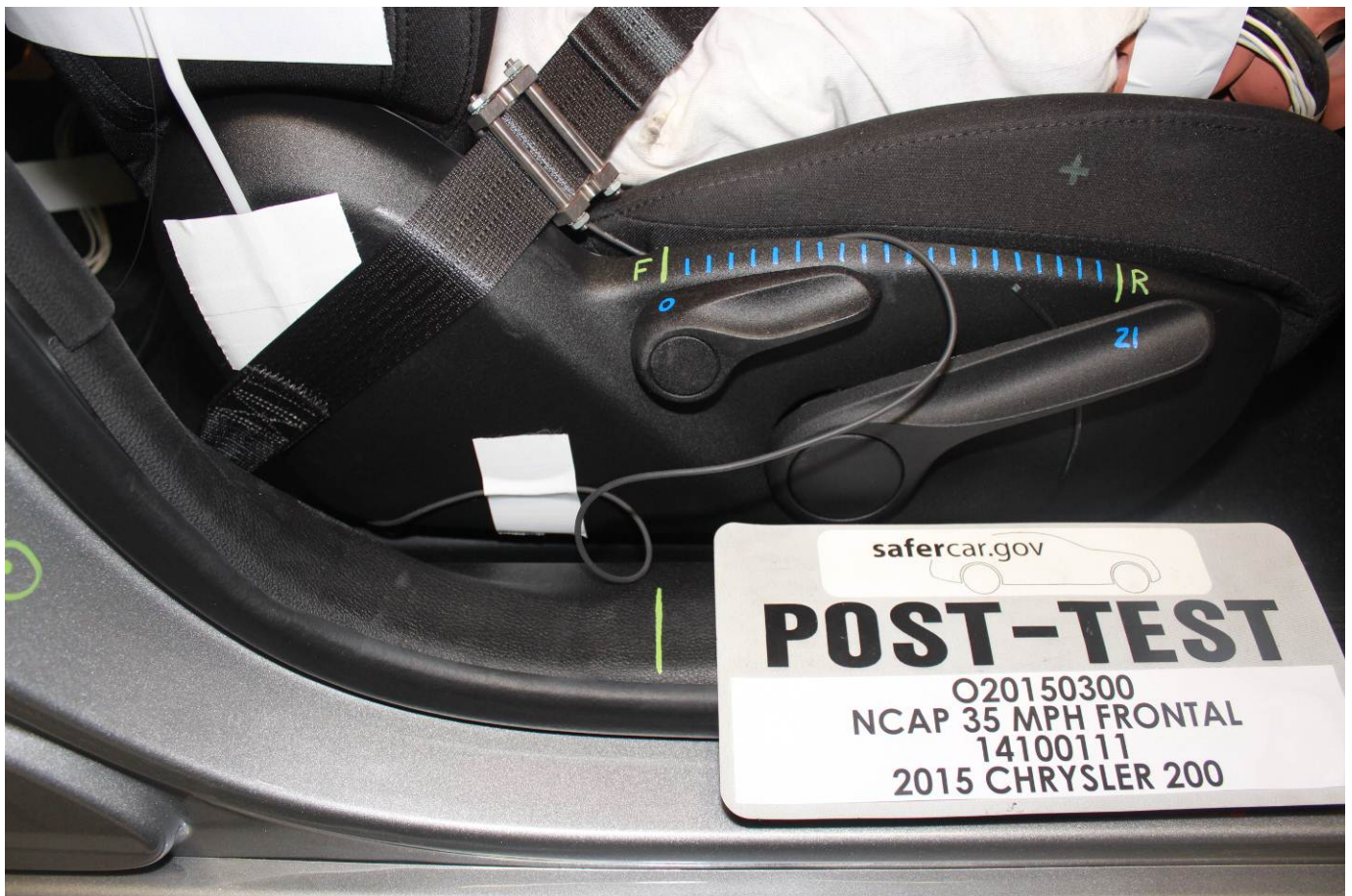
Pre-Test Passenger Dummy and Vehicle Interior (Door Open)



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



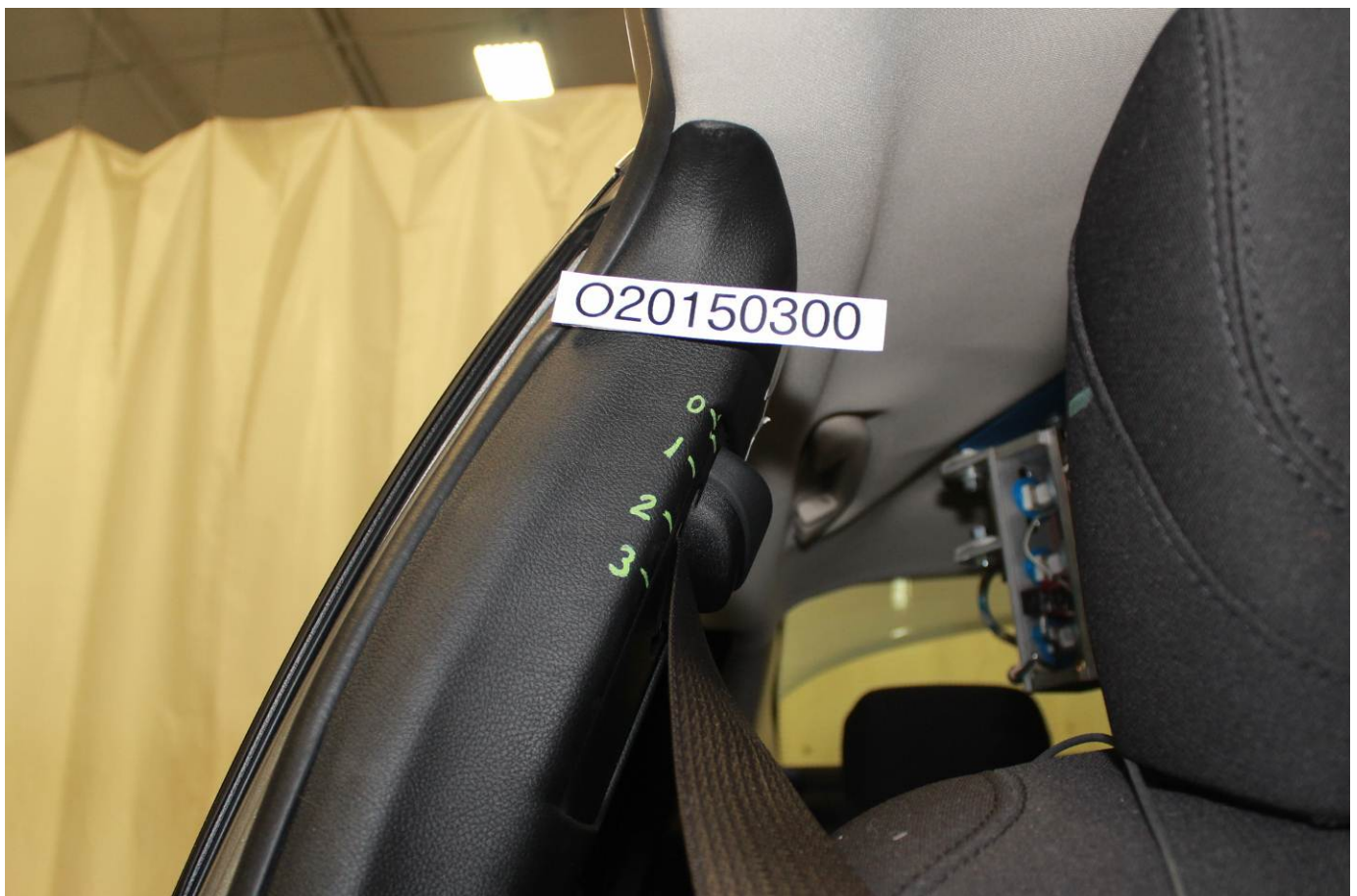
Pre-Test Passenger's Seat Fore-Aft Markings



Post-Test Passenger's Seat Fore-Aft Markings



Pre-Test View of Belt Anchorage for Passenger Dummy



Post-Test View of Belt Anchorage for Passenger Dummy



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 Face



Post-Test Passenger Dummy Contact with Airbag



Post-Test Passenger Dummy Contact with Headrest



Post-Test Passenger Dummy Contact with Knee Airbag

PHOTOGRAPH NOT APPLICABLE

Ballast Installed in Vehicle

PHOTOGRAPH NOT APPLICABLE

Post-Test Stoddard Solvent Spillage Location View



Post-Test Speed Trap Read-Out



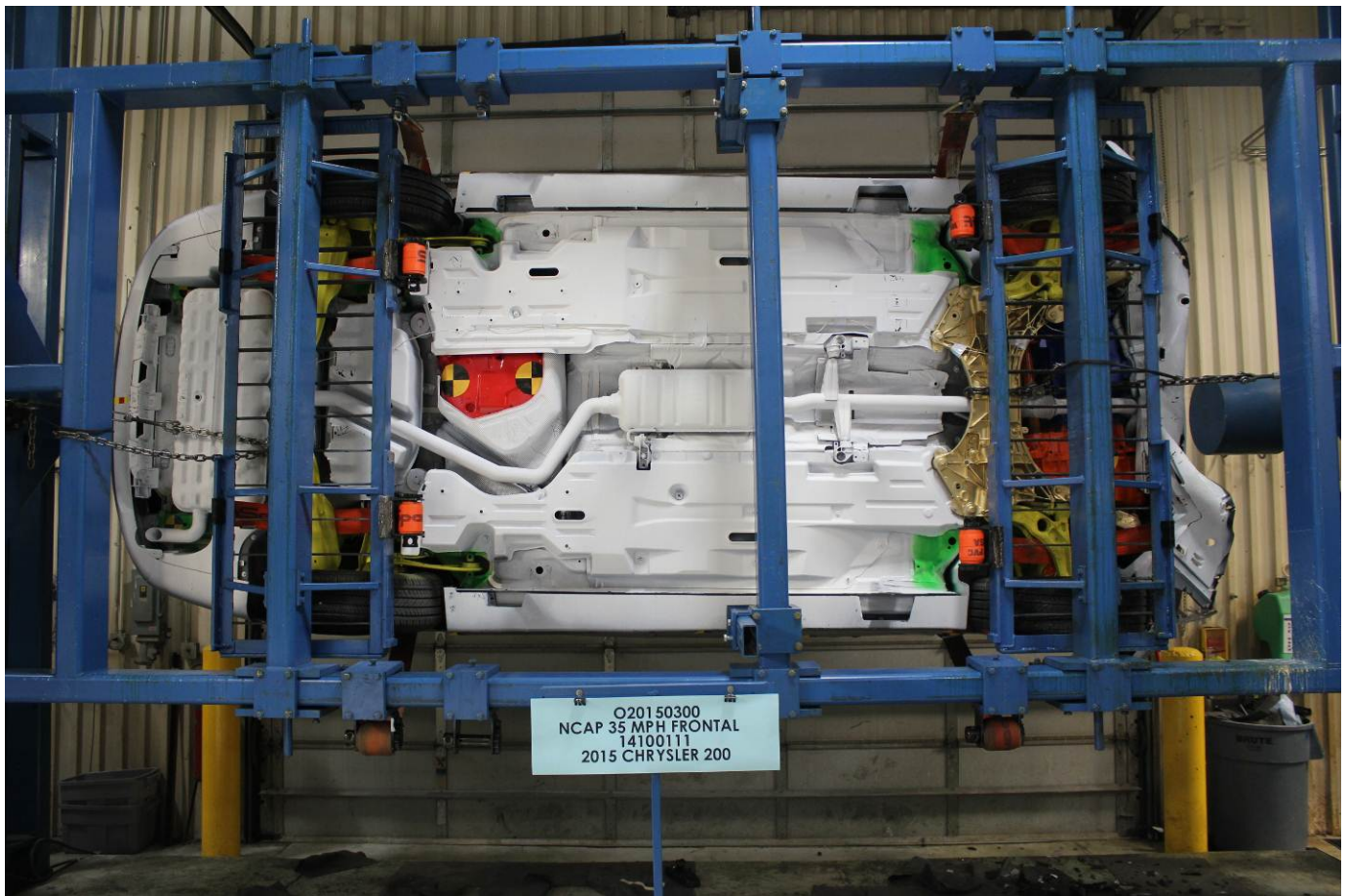
Vehicle at 0 Degree on Static Rollover Device



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



2015 Chrysler 200 Frontal Impact Event

2015 200 LIMITED

For more information visit: www.chrysler.com Chrysler Group LLC
or call 1-800-CHRYSLER

THIS VEHICLE IS MANUFACTURED TO MEET SPECIFIC UNITED STATES REQUIREMENTS. THIS VEHICLE IS NOT MANUFACTURED FOR SALE OR REGISTRATION OUTSIDE OF THE UNITED STATES.

MANUFACTURER'S SUGGESTED RETAIL PRICE OF THIS MODEL INCLUDING DEALER PREPARATION

Base Price: \$23,255

CHRYSLER 200 LIMITED
 Exterior Color: Billet Silver Metallic Clear Coat Exterior Paint
 Interior Color: Black Interior Color
 Interior: Premium Cloth Bucket Seats
 Engine: 2.4-Liter I4 MultiAir® Engine
 Transmission: 9-Speed 6AS75 Automatic Transmission

STANDARD EQUIPMENT (UNLESS REPLACED BY OPTIONAL EQUIPMENT)

FUNCTIONAL/SAFETY FEATURES

- Advanced Multistage Front Airbags
- Supplemental Front Seat-Mounted Side Airbags
- Supplemental Side-Curtain Front and Rear Airbags
- Driver Inflatable Knee-Bolster Airbag
- Passenger Inflatable Knee-Bolster Airbag
- Child Seat Anchor System-LATCH Ready
- Electronic Stability Control
- Traction Control
- Anti-Lock 4-Wheel Disc Brakes
- Brake Assist
- Electric Park Brake
- Electric Power Steering
- Keyless Enter™ in Go™
- Variable Intermittent Windshield Wipers
- Security Alarm
- Speed Control
- Rear Window Defroster

INTERIOR FEATURES

- Air Conditioning
- Uconnect® 5.0 AM/FM/MT
- 6 Speakers
- Audio Jack Input for Mobile Devices
- Remote USB Port
- Steering Wheel Mounted Audio Controls
- Power Front Windows w/ 1-Touch Up and Down Feature
- Manual 6-Way Driver Seat
- 6-Way Manual Passenger Seat Adjust
- Ambient LED Interior Lighting
- Electronic Vehicle Information Center
- Tire Pressure Monitoring Display

EXTERIOR FEATURES

- Compass Gauge
- Outside Temperature Gauge
- Rearview Mirror with Microphone
- Tilt / Telescope Steering Column
- 12-Volt Auxiliary Power Outlet in Console
- Rear Seat Armrest with Storage Cup Holder
- Front Center Sliding Armrest
- Overhead Console with Sunglass Holder
- Sun Visors with Vanity Mirrors

OPTIONAL EQUIPMENT (May Replace Standard Equipment)

Customer Preferred Package 28E

- Front Floor Mats
- Rear Floor Mats
- NAA

DESTINATION CHARGE \$995

TOTAL PRICE: *\$24,250

WARRANTY COVERAGE

5-year or 100,000-mile Powertrain Limited Warranty.
 3-year or 36,000-mile Basic Limited Warranty.
 5-year or 100,000-mile Roadside Assistance; certain restrictions apply.
 Ask Dealer for a copy of the limited warranties or see your owner's manual for details.

5 YEAR/100,000 MILE POWERTRAIN WARRANTY

Assembly Plant/Port of Entry: STERLING HTS, MICH., U.S.A.
 VIN: 1C3CCABDN-536811 LAUCH 5693 0007

SAFETY: 00002 00 PALMER MOTOR INC 5431-15TH STREET KENOSHA WI 53140-3801

SALES: 01 0020 PALMER MOTOR INC 5431-15TH STREET KENOSHA WI 53140-3801

THIS LABEL IS ADDED TO THE VEHICLE TO COMPLY WITH FEDERAL LAW. THE LABEL CANNOT BE MOVED OR ALTERED PRIOR TO DELIVERY TO THE ULTIMATE PURCHASER. *STATE AND/OR LOCAL TAXES, IF ANY, *TITLES AND *TITLES FEES AND *DEALER SUPPLIED AND *RETAILER OPTIONS AND ACCESSORIES ARE NOT INCLUDED IN THIS PRICE. (CHECKING, IF ANY, IS BASED ON PRICE OF OPTION IF PURCHASED SEPARATELY.)

EPA DOT Fuel Economy and Environment

Fuel Economy

28 MPG combined city/highway

23 city 36 highway 3.6 gallons per 100 miles

Driving Range: 642 miles (Estimate) 322 miles (Actual)

You save \$1,500 in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost \$1,900

Fuel Economy & Greenhouse Gas Rating (tailpipe only)

Smog Rating (tailpipe only)

The vehicle emits 322 grams CO2 per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also creates emissions. Learn more at fuelconomy.gov

Actual results may vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 24 MPG and cost \$11,000 to fuel over 5 years. Cost estimates are based on 13,000 miles per year of 92¢ per gallon. This is a direct fuel cost estimate. (MPG is miles per gallon; gallon is based on 120.16 grams per gallon. Vehicle emissions are in grams per mile (tailpipe only) and are not a measure of overall emissions.)

fuelconomy.gov
Calculate personalized estimates and compare vehicles

GOVERNMENT 5-STAR SAFETY RATINGS

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

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

Bumper Performance

This vehicle is equipped with bumper systems that can withstand a frontal barrier impact speed of 2.5 miles per hour and a rear barrier impact speed of 2.5 miles per hour with no more damage than allowed by the Federal bumper standard. The Federal bumper standard allows damage to the bumpers and attaching hardware and specifies barrier tests to be conducted at 2.5 miles per hour.

PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS CARLINE:
U.S./CANADIAN PARTS CONTENT: 73 %
 NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION, OR OTHER NON-PARTS COSTS.

FOR THIS VEHICLE:
FINAL ASSEMBLY POINT:
 STERLING HTS, MICH., U.S.A.
COUNTRY OF ORIGIN:
 ENGINE: UNITED STATES
 TRANSMISSION: UNITED STATES

Monroney Label Photograph

APPENDIX B
DUMMY RESPONSE DATA TRACES

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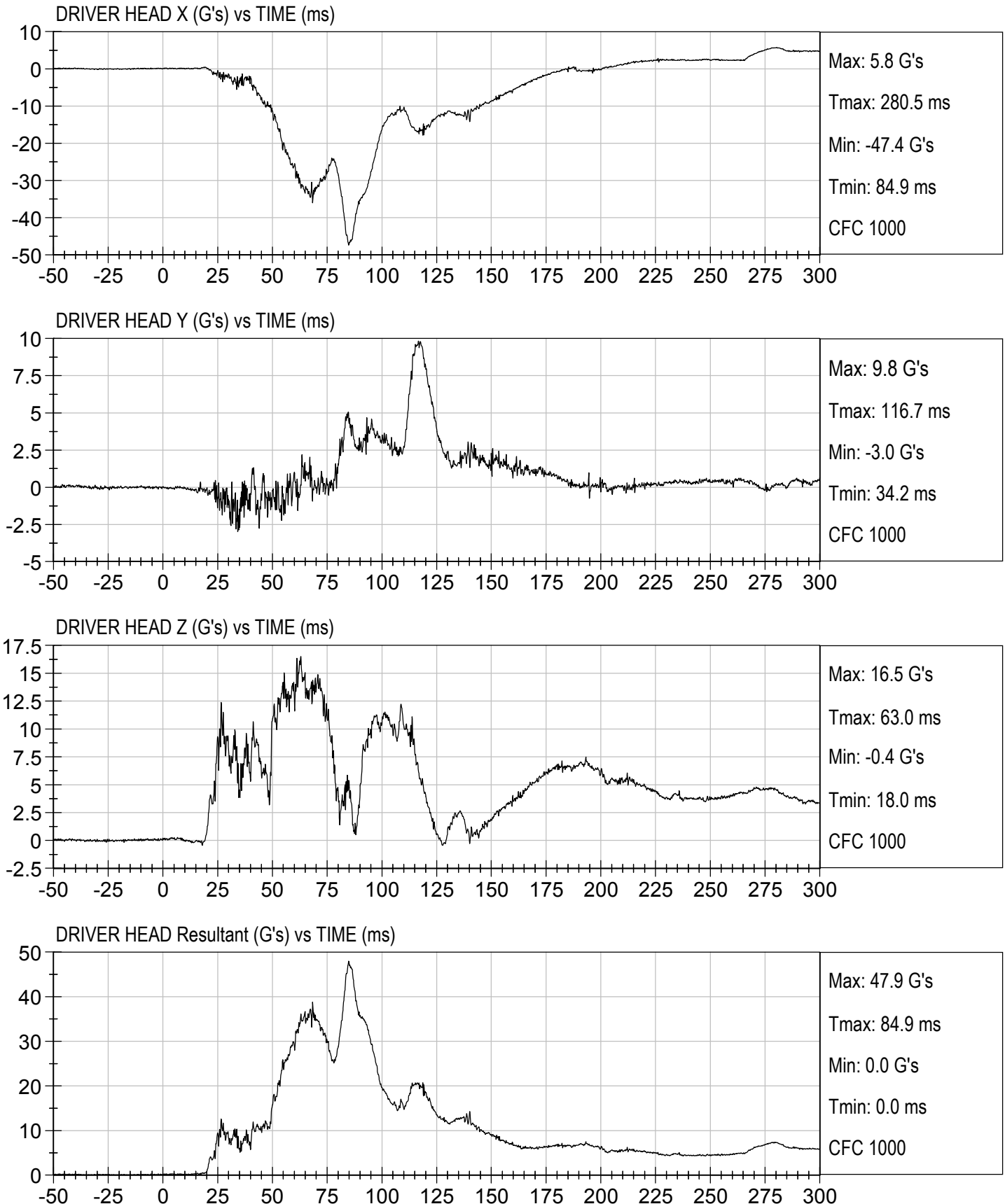
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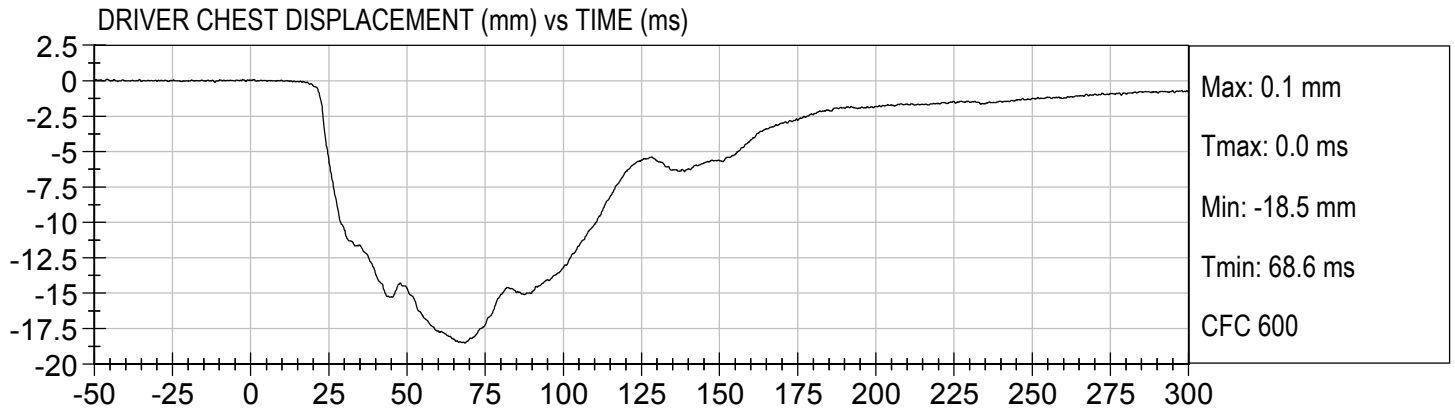
The following additional dummy and vehicle response data can be found in the R&D section of the NHTSA website at www.nhtsa.dot.gov

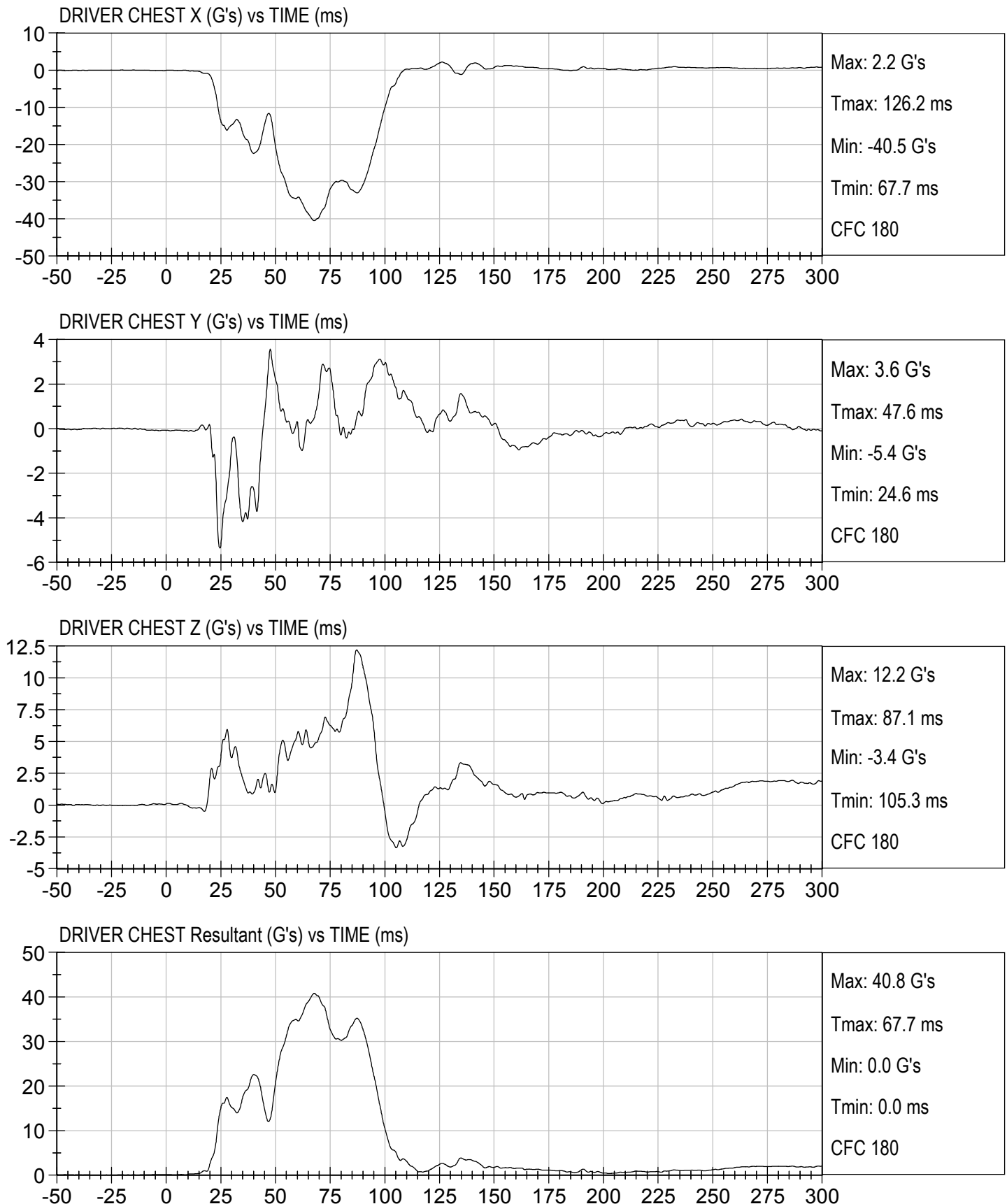
Driver Head X Redundant
 Driver Head Y Redundant
 Driver Head Z Redundant
 Driver Upper Neck Force Y
 Driver Upper Neck Moment X
 Driver Upper Neck Moment Z
 Driver Chest X Redundant
 Driver Chest Y Redundant
 Driver Chest Z Redundant
 Driver Pelvis X
 Driver Pelvis Y
 Driver Pelvis Z
 Driver Left Femur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

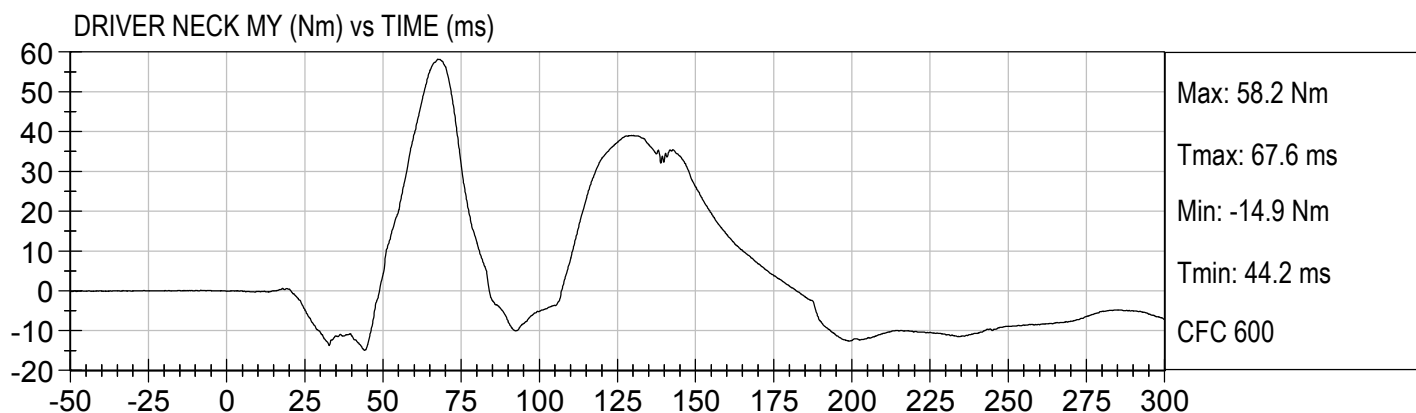
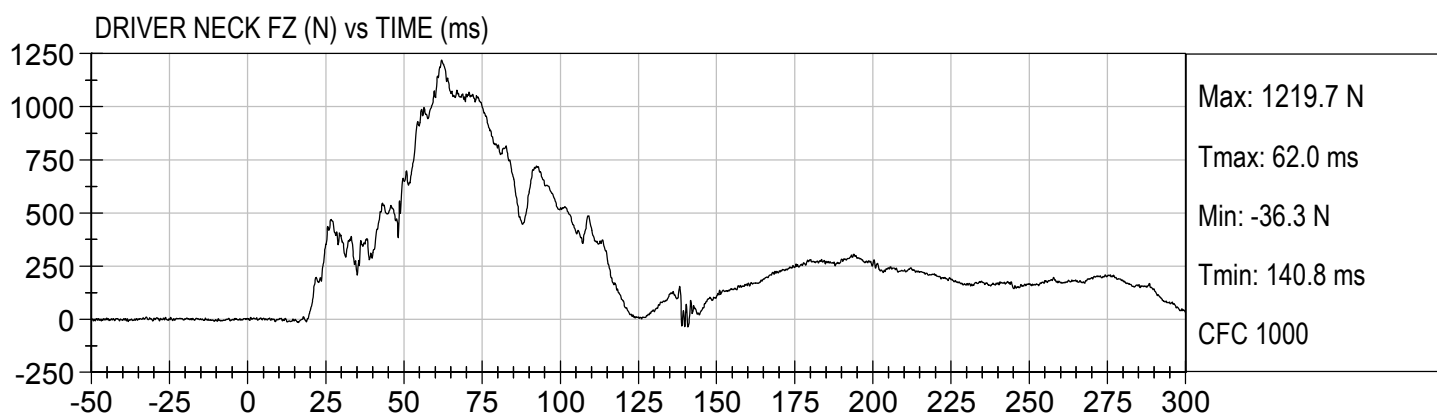
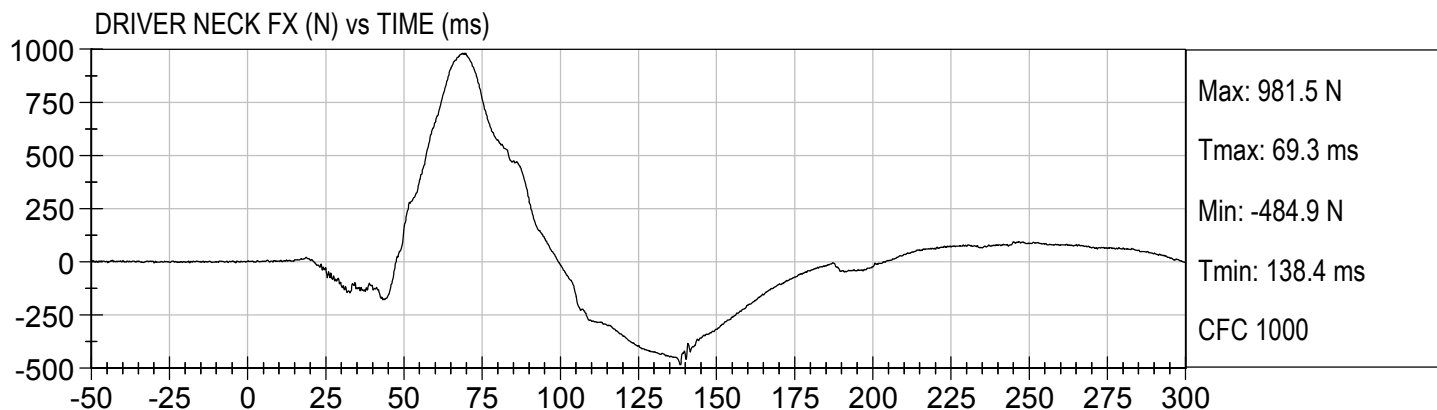
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Driver Left Lower Tibia Force Z
Driver Right Upper Tibia Moment X
Driver Right Upper Tibia Moment Y
Driver Right Upper Tibia Force Z
Driver Right Lower Tibia Moment X
Driver Right Lower Tibia Moment Y
Driver Right Lower Tibia Force Z
Driver Left Foot 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

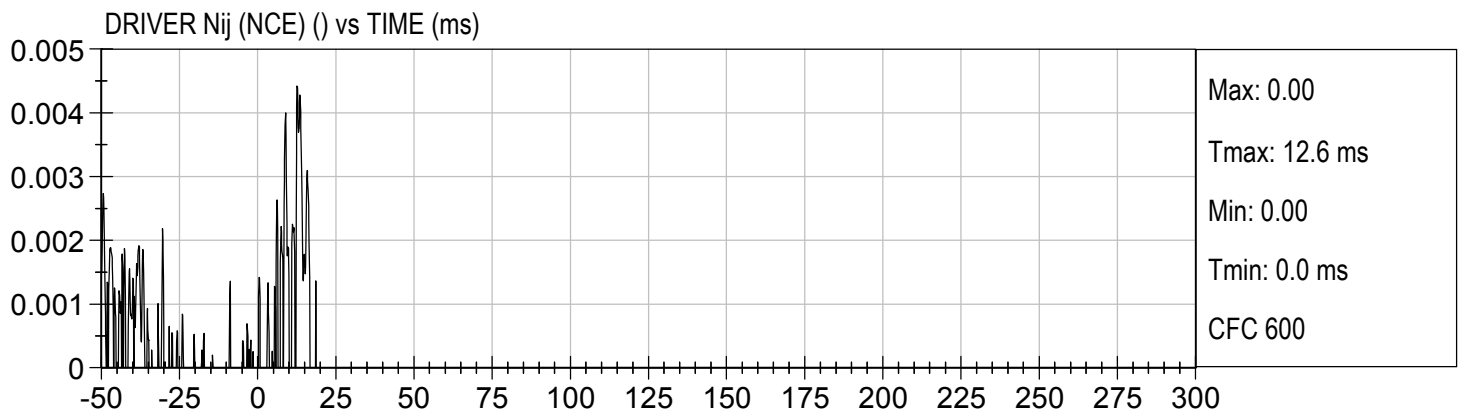
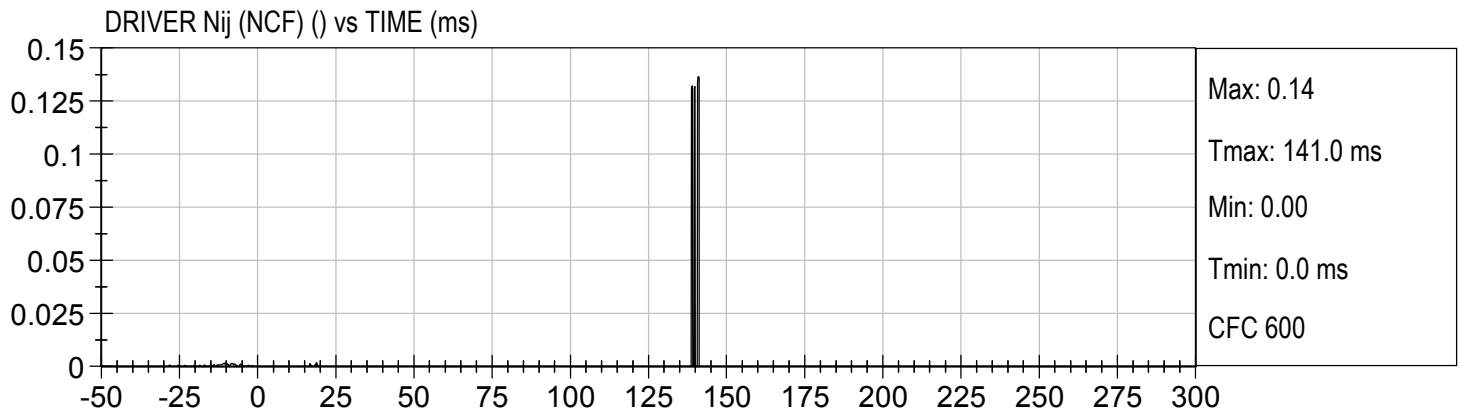
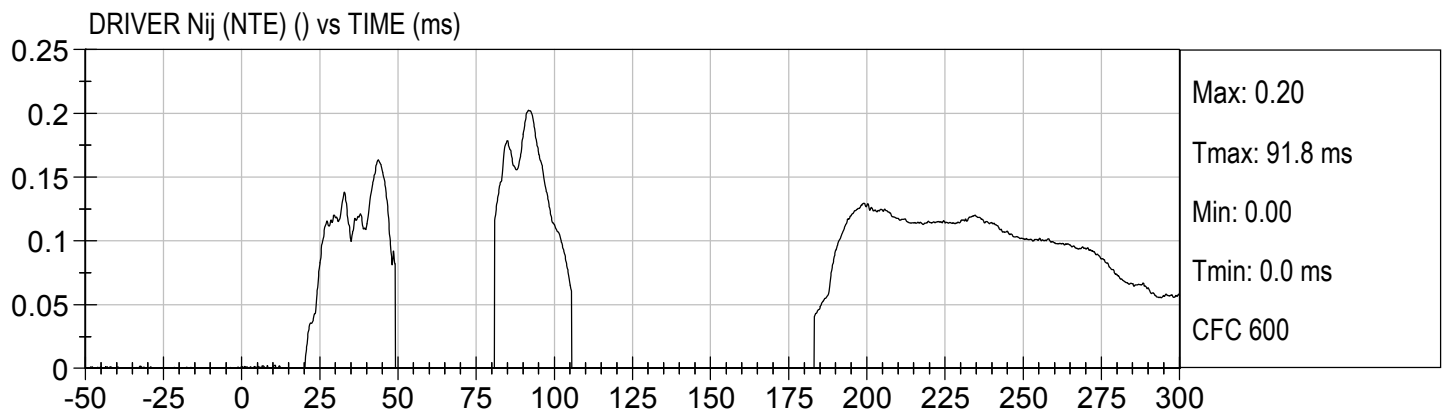
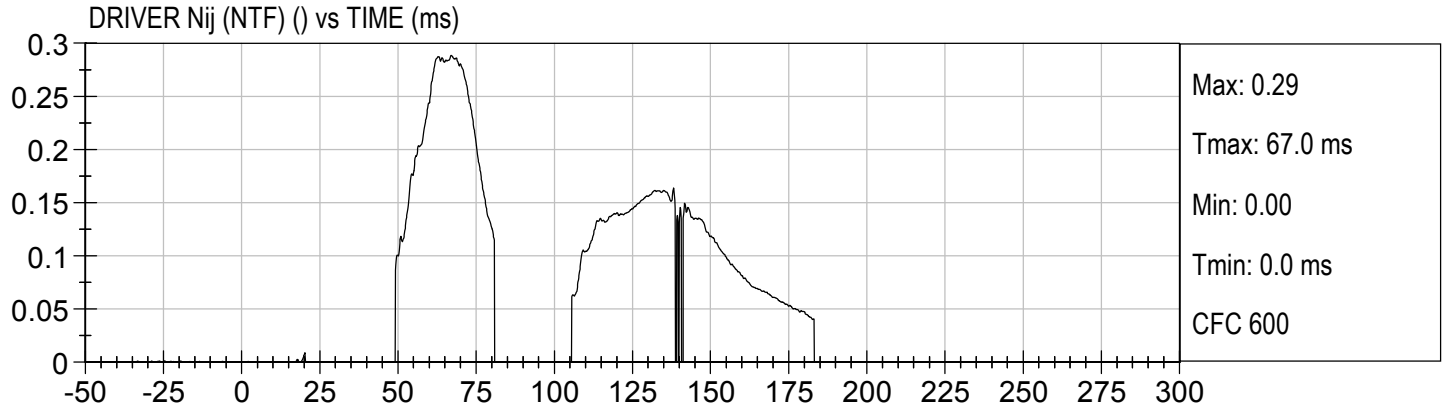
Passenger Left Upper Tibia Moment Y
Passenger Left Upper Tibia Force Z
Passenger Left Lower Tibia Moment X
Passenger Left Lower Tibia Moment Y
Passenger Left Lower Tibia Force Z
Passenger Right Upper Tibia Moment X
Passenger Right Upper Tibia Moment Y
Passenger Right Upper Tibia Force Z
Passenger Right 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
Left Rear Seat Crossmember Z
Right Rear Seat Crossmember Z
Left Rear Seat Crossmember Xr
Right Rear Seat Crossmember Xr
Advanced Research Load Cell Barrier – 528 channels

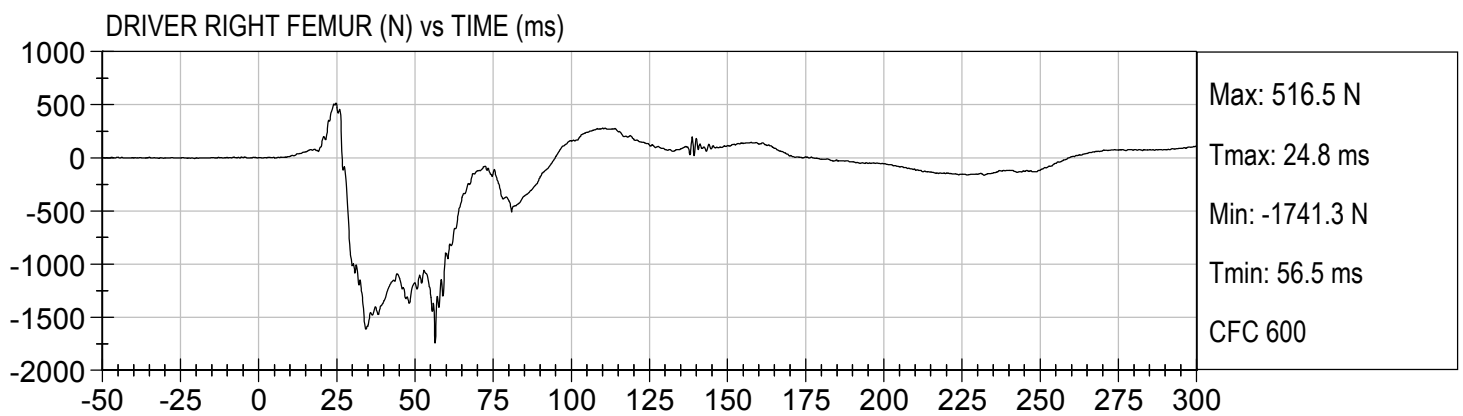
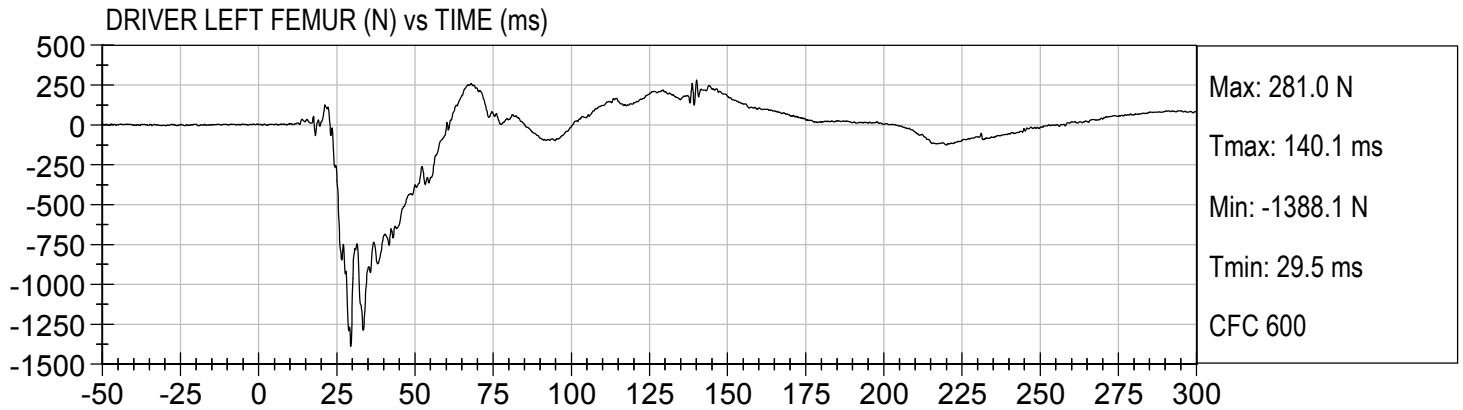


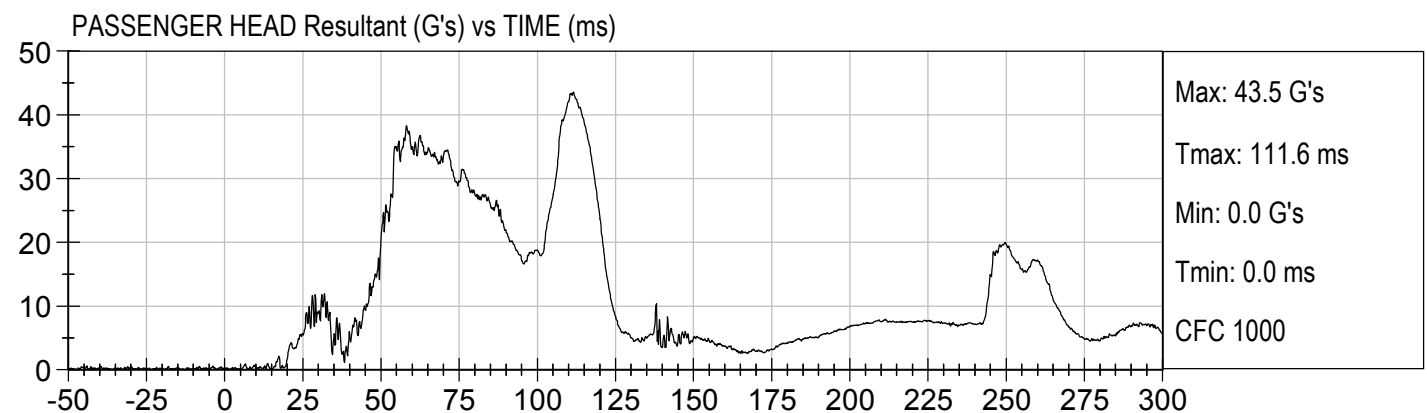
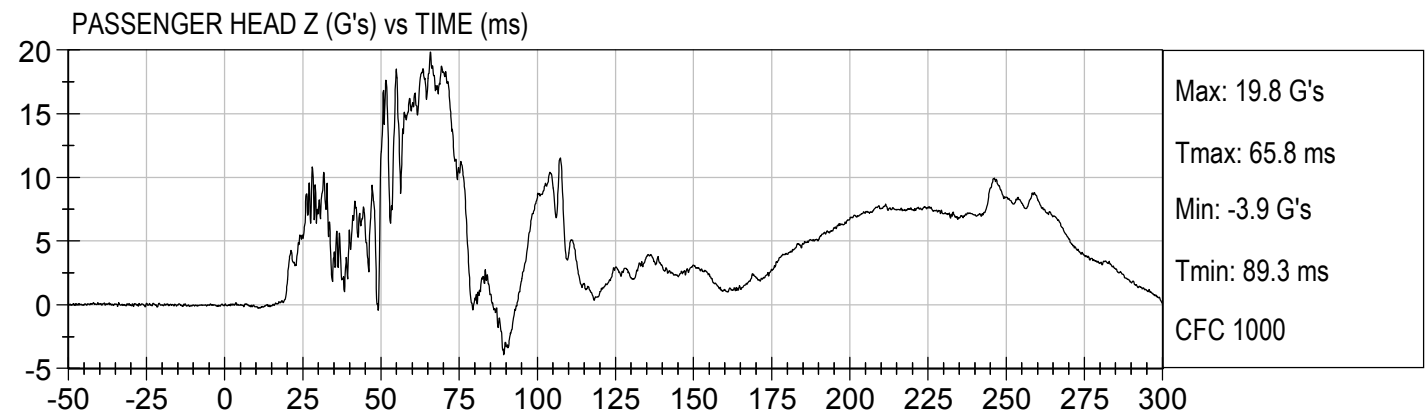
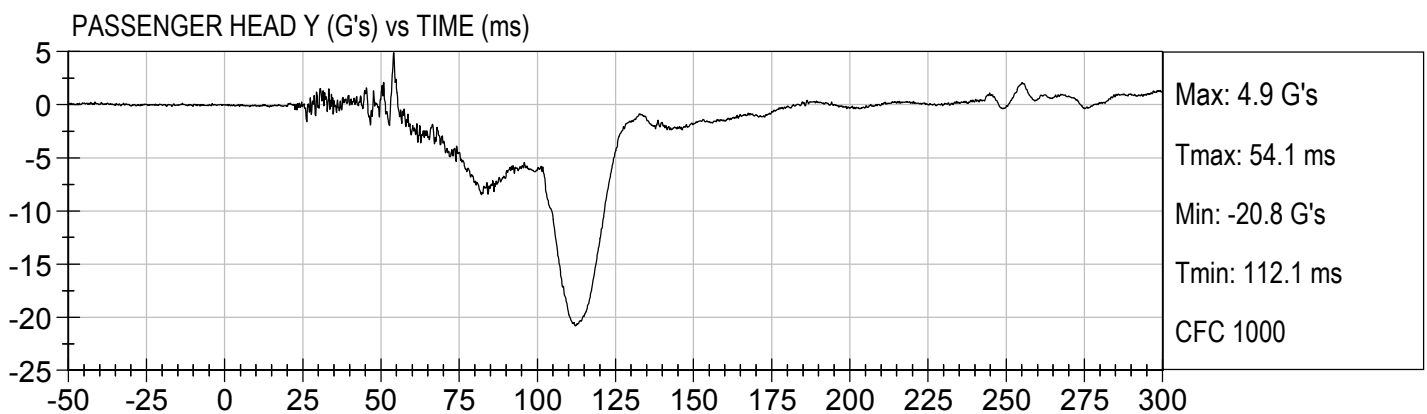
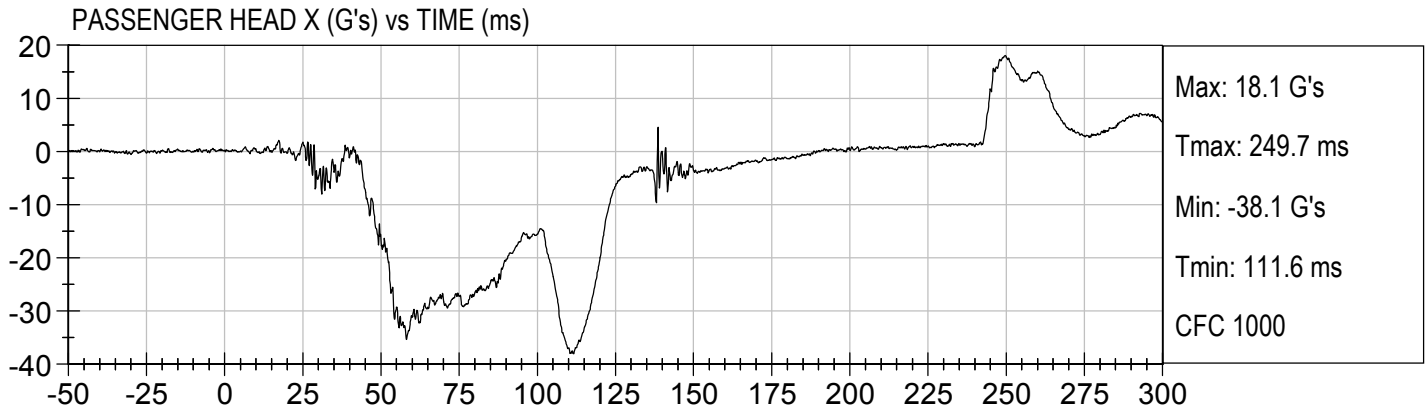


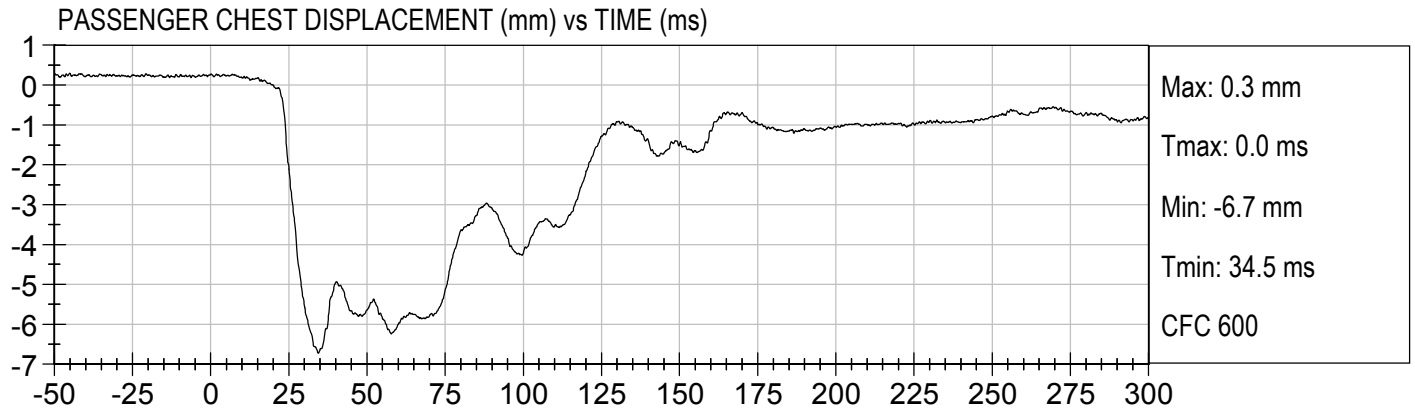


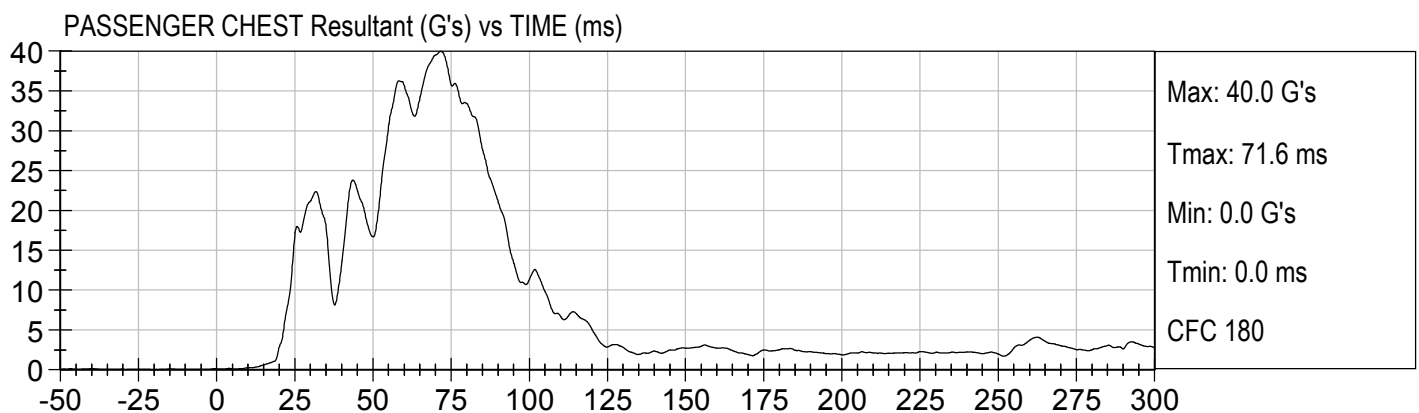
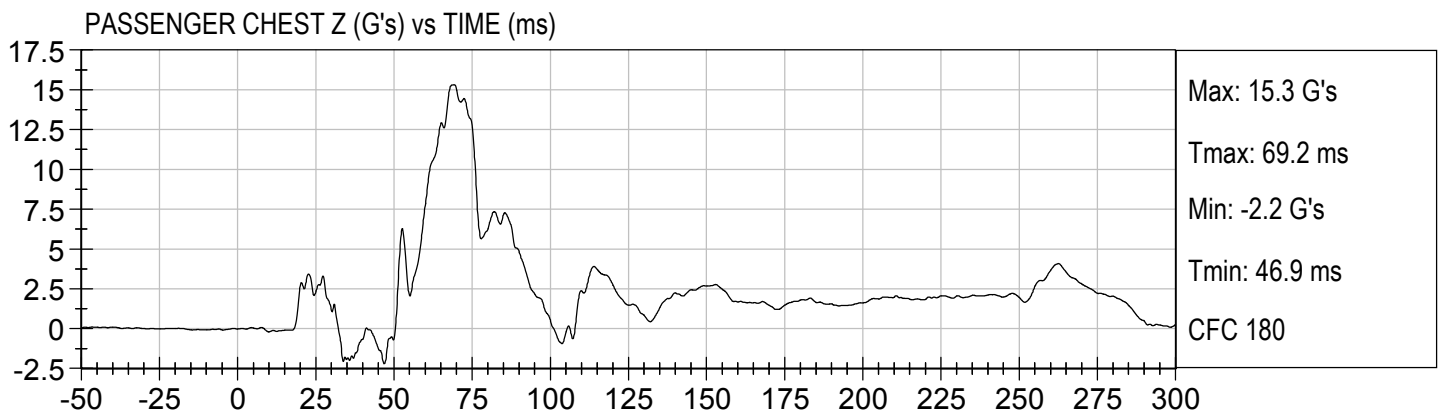
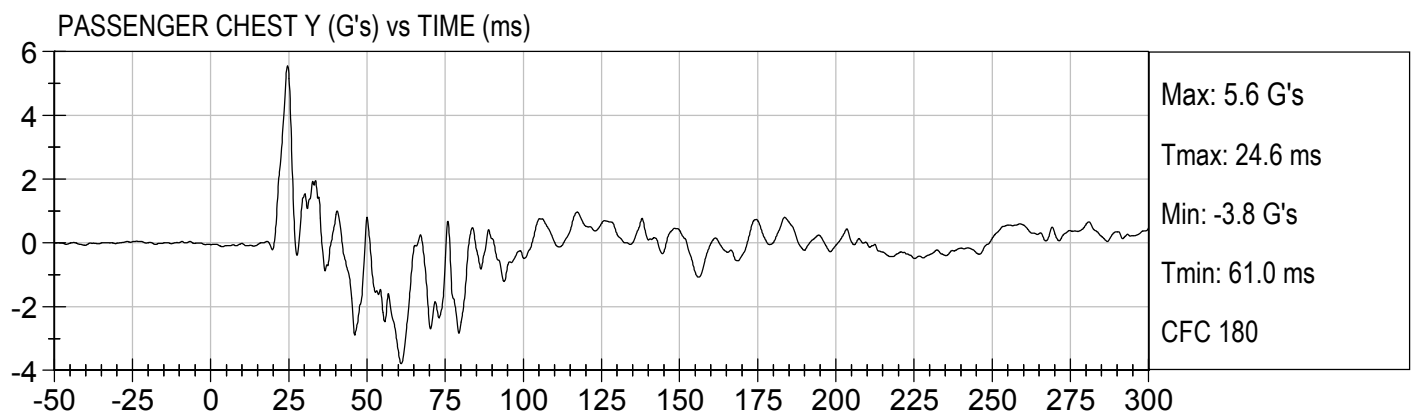
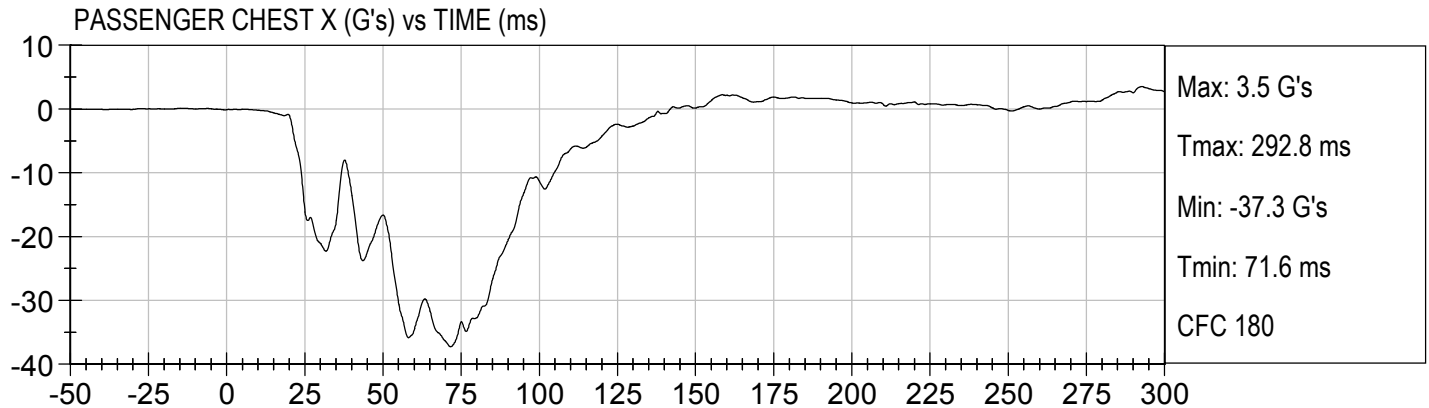


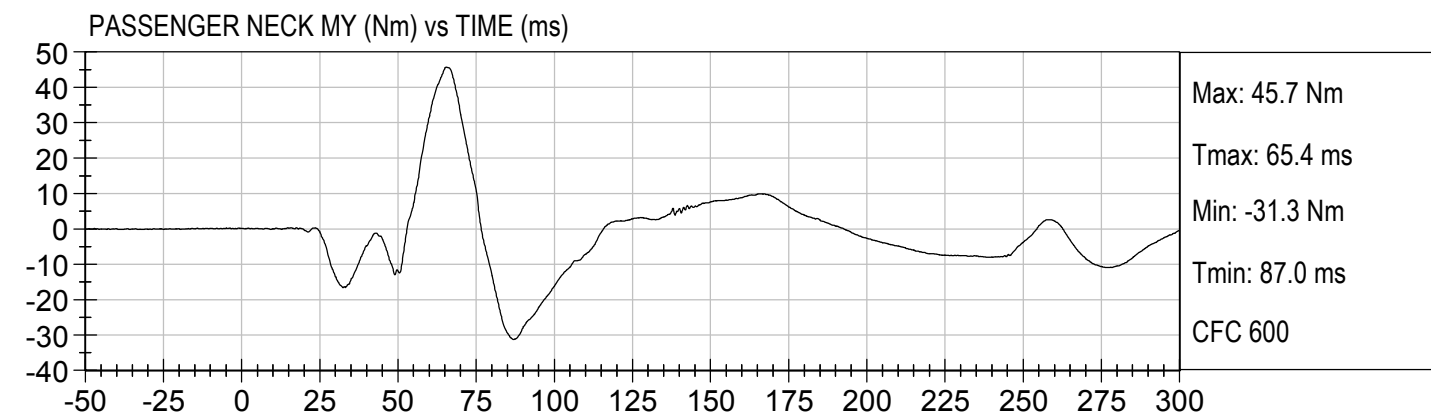
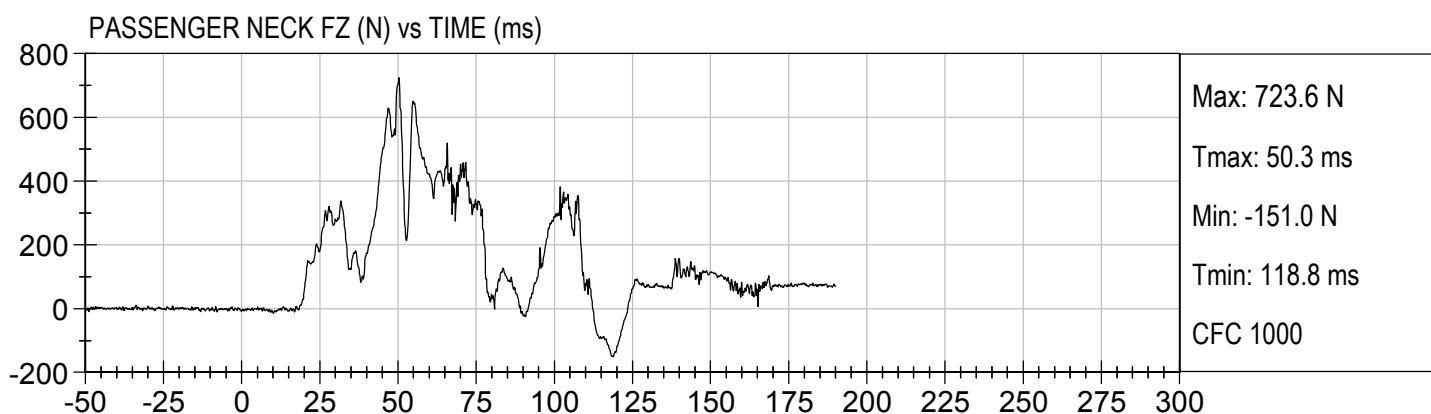
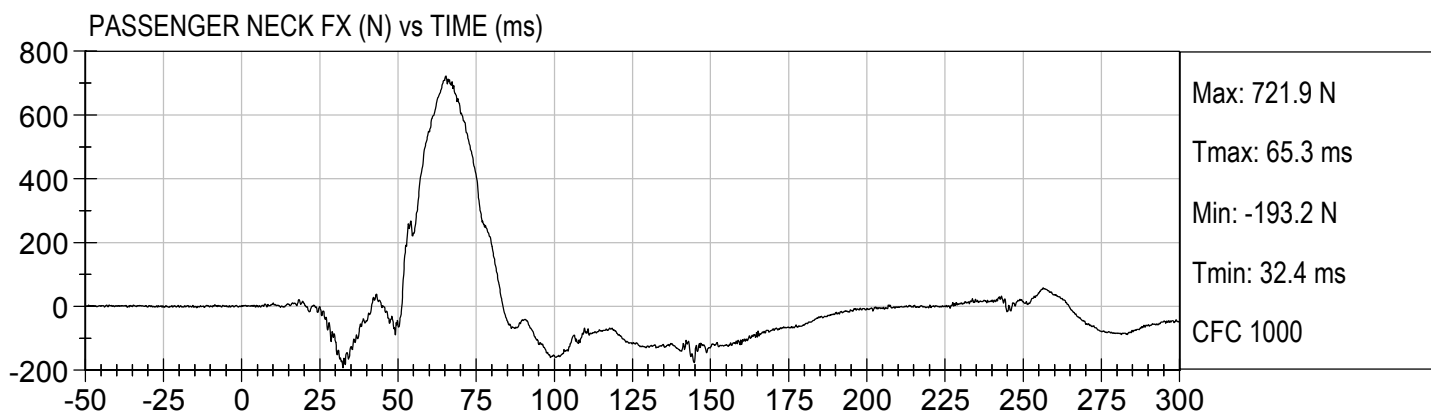


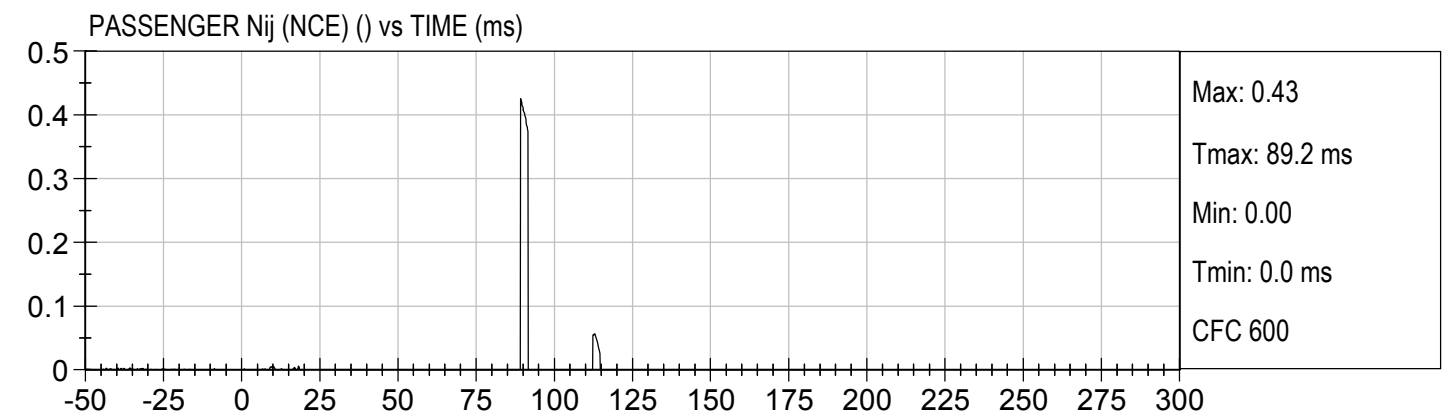
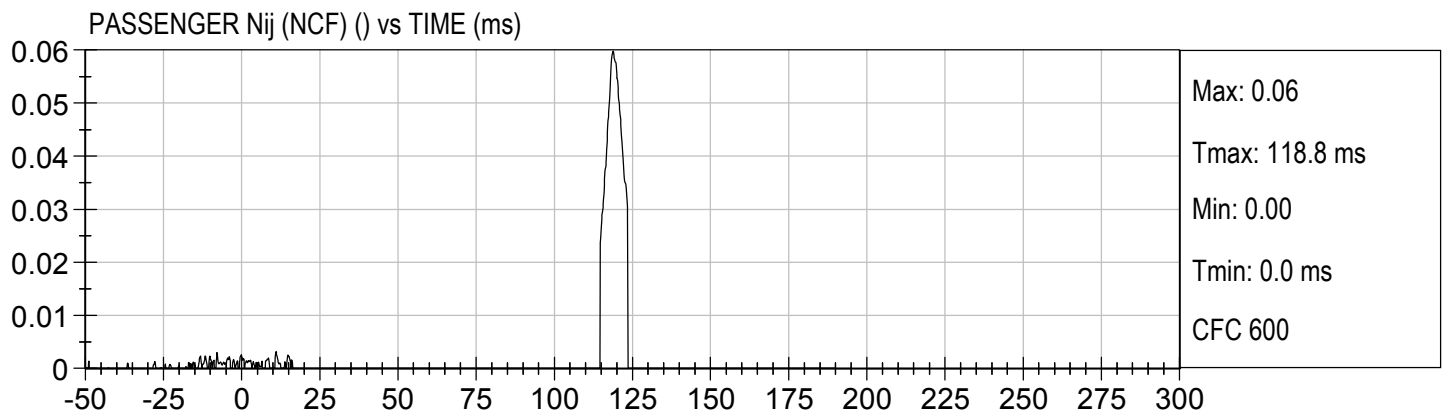
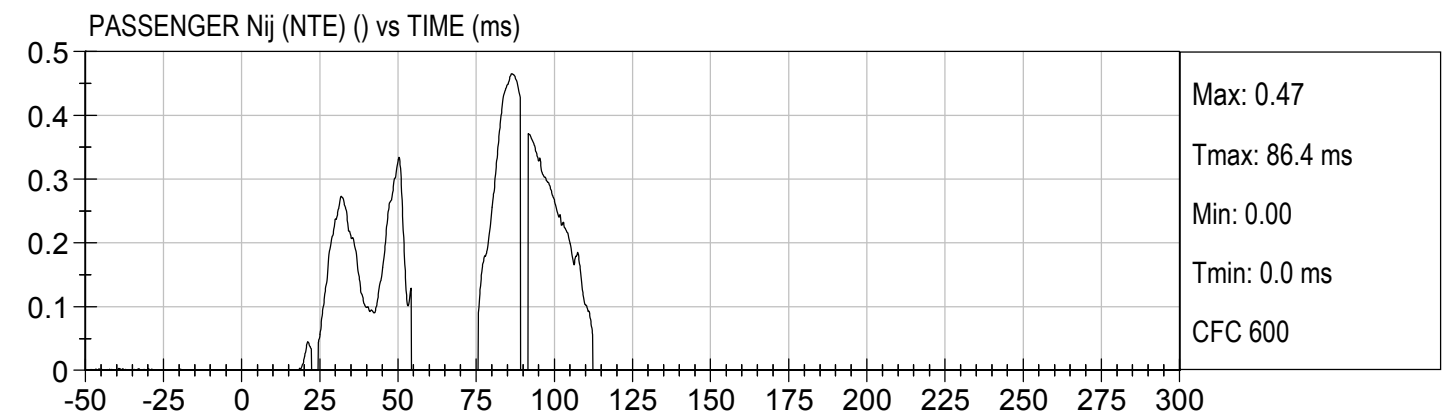
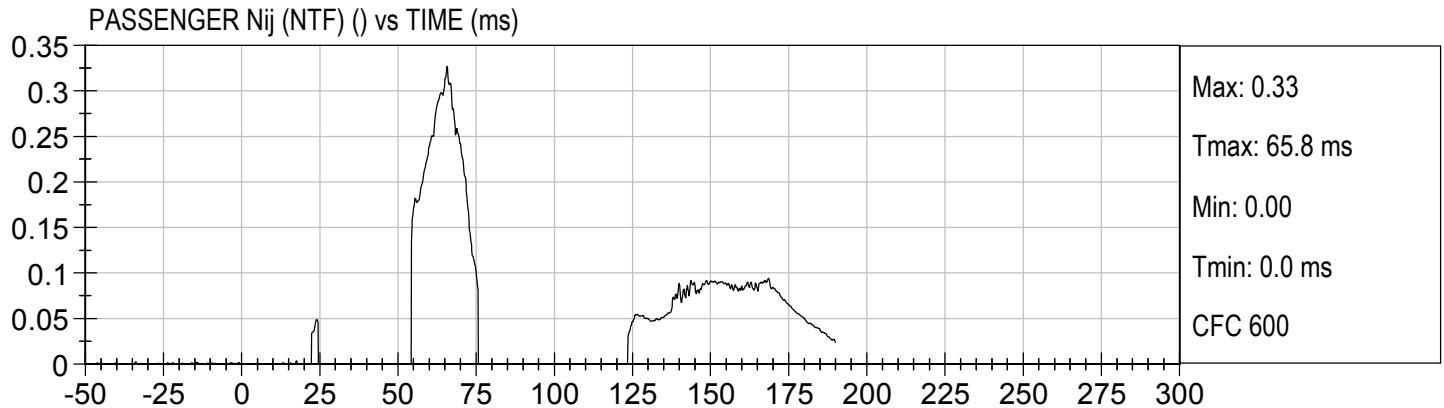


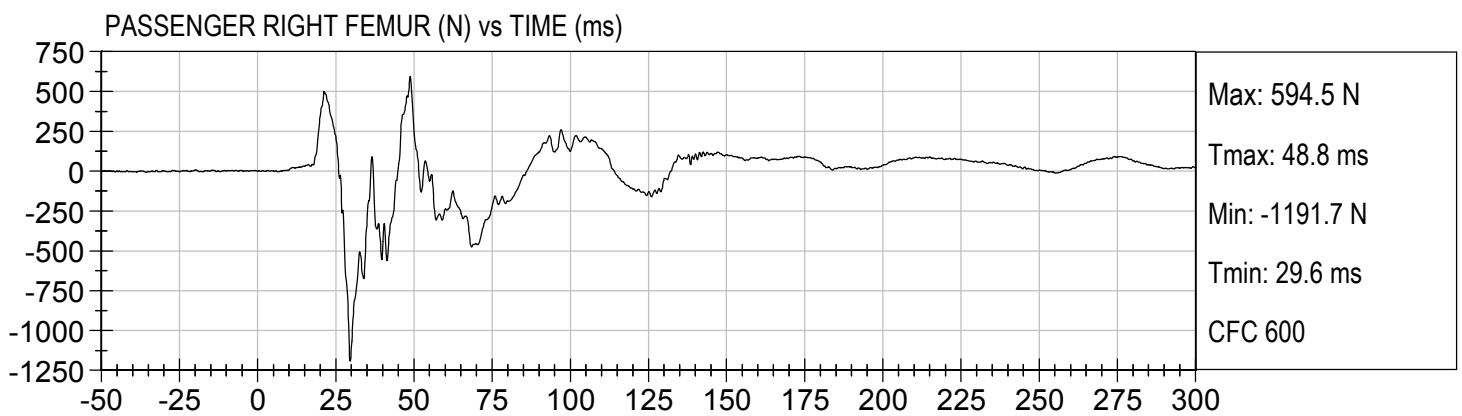
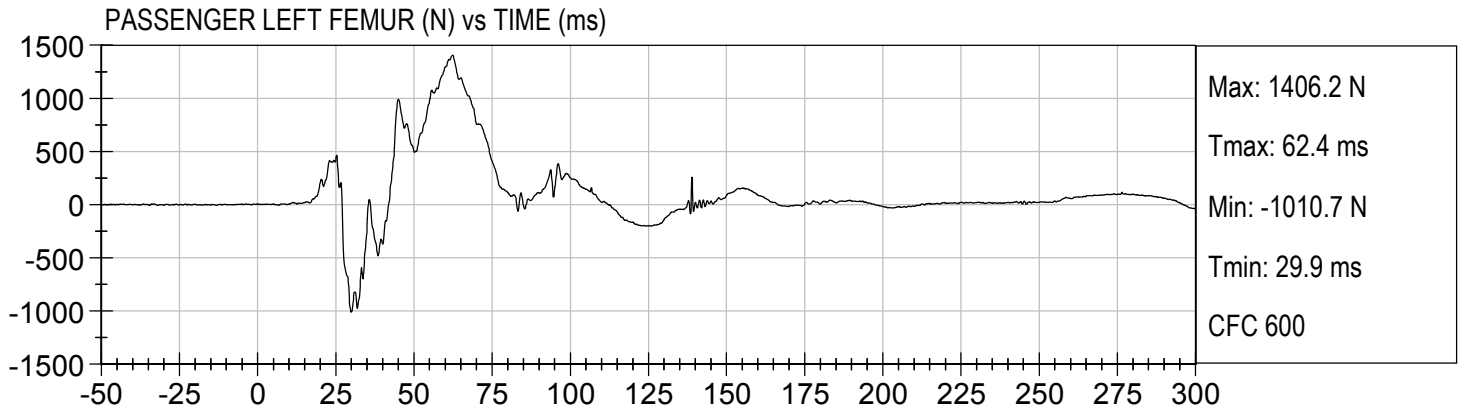












APPENDIX C
DUMMY CALIBRATION AND PERFORMANCE VERIFICATION DATA

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: D143121

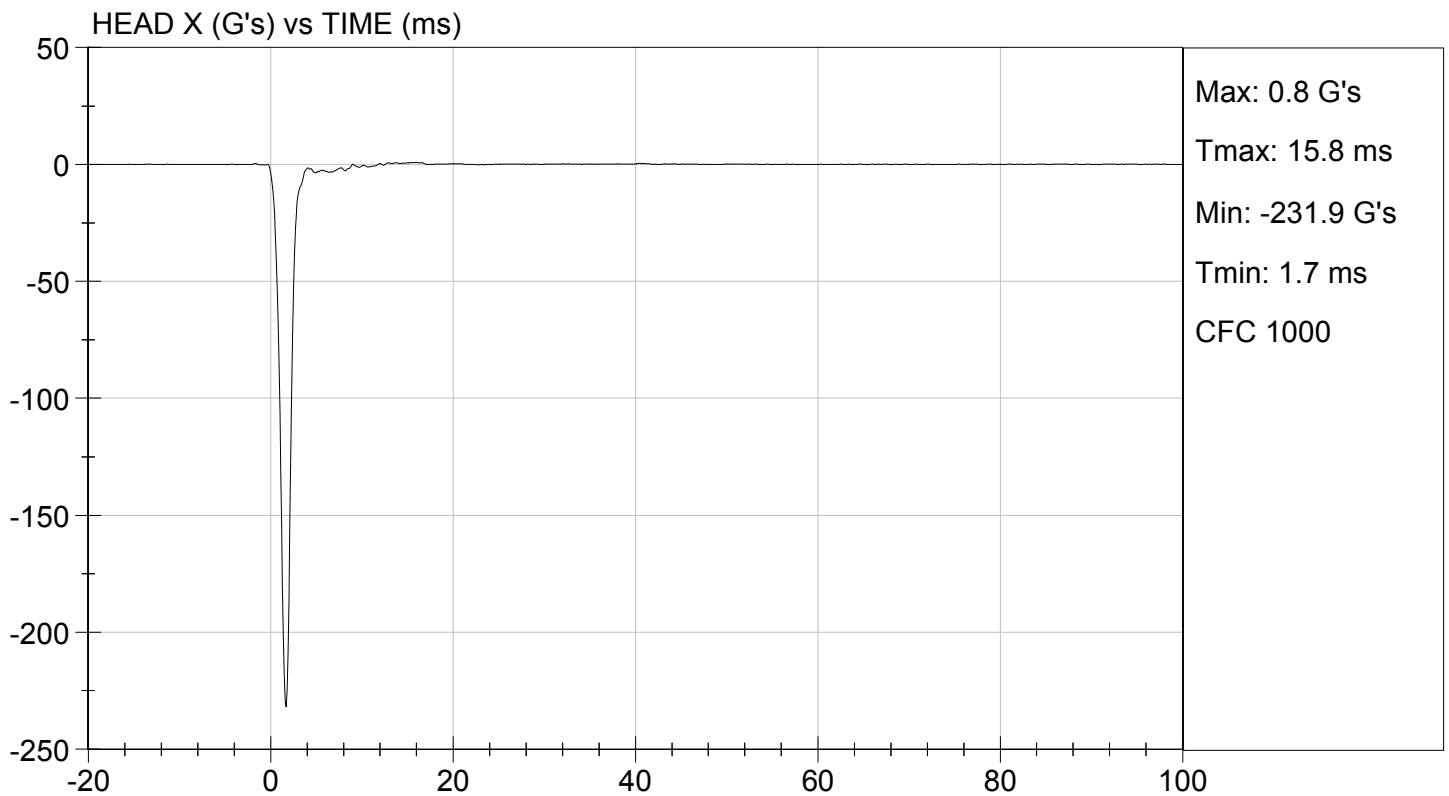
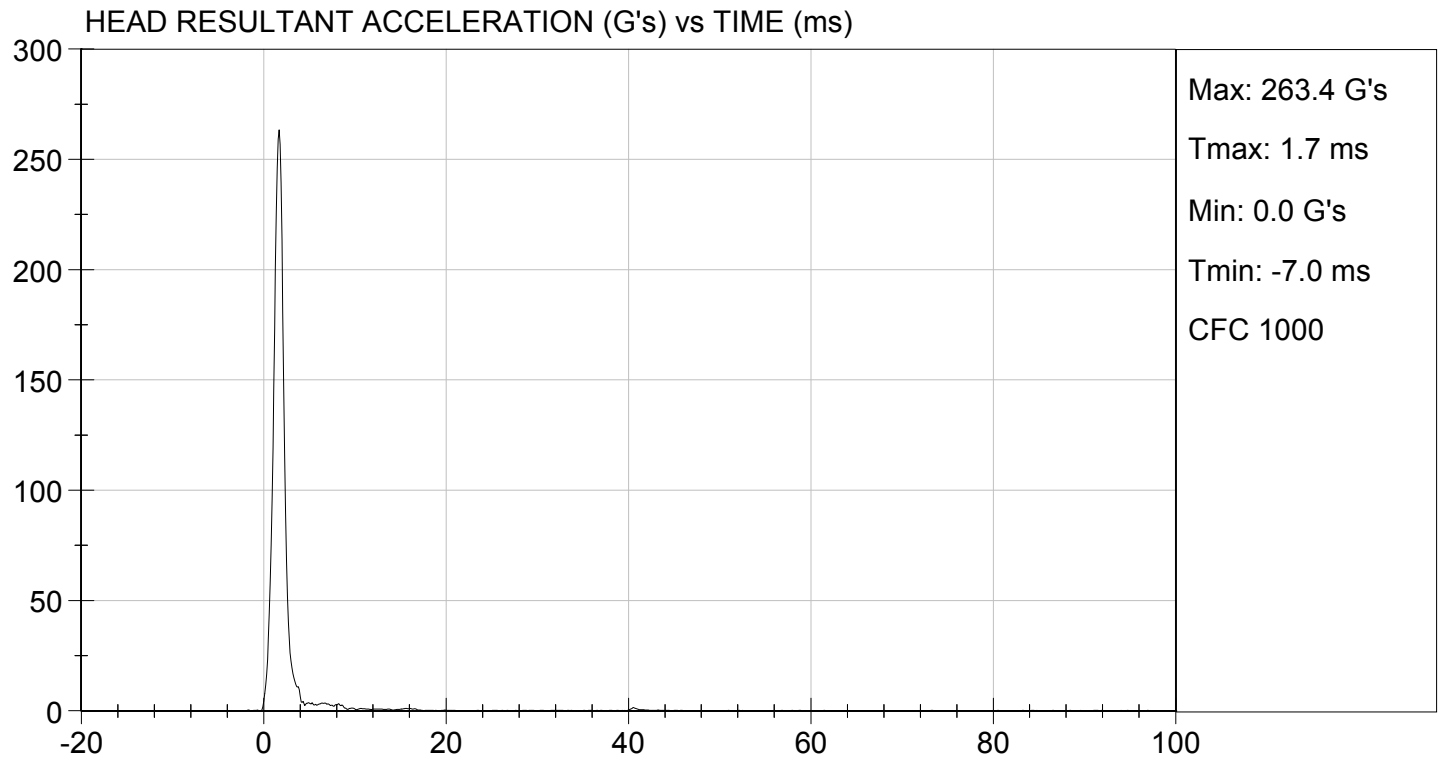
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	52	Pass
Peak Resultant Acceleration	G's	225 to 275	263	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	7.7	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

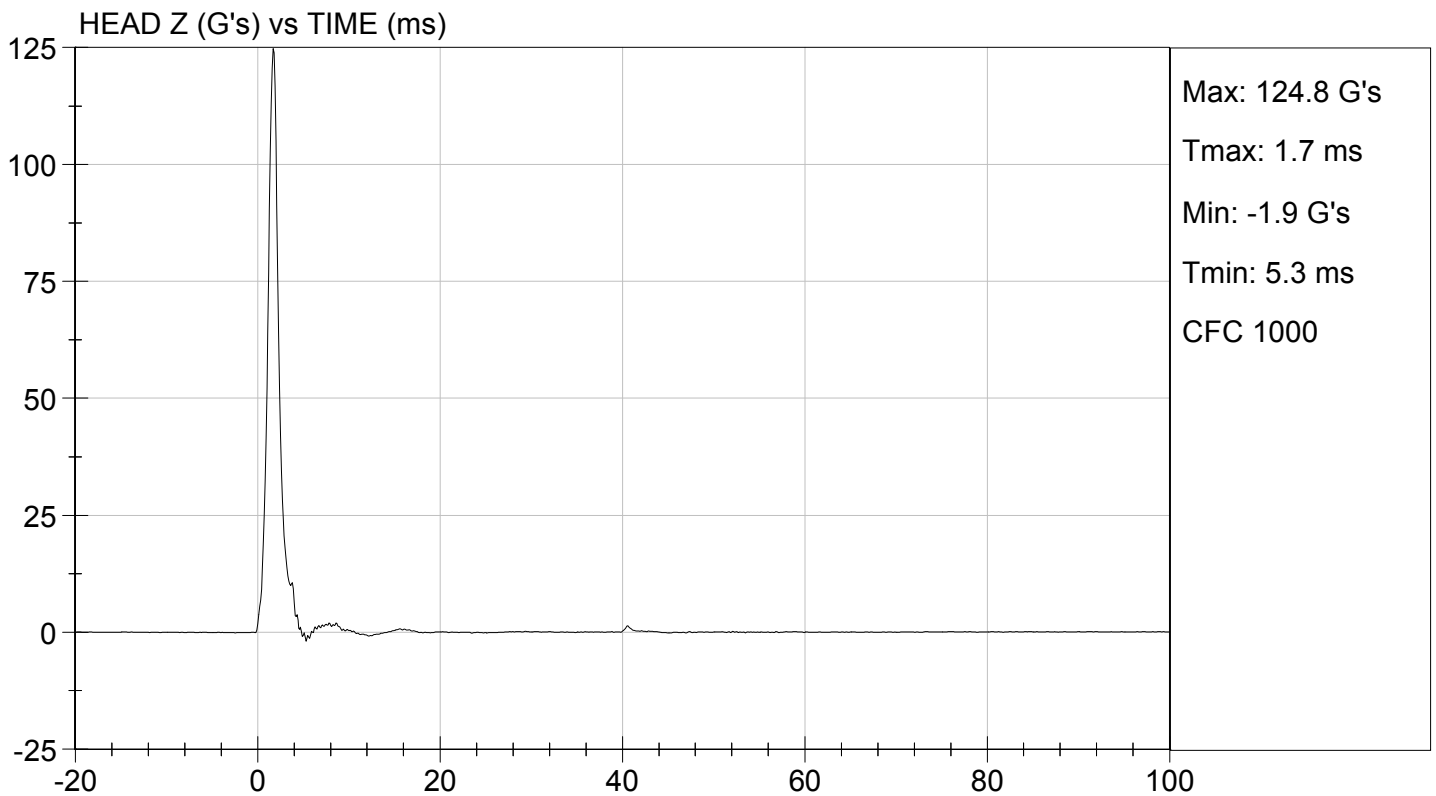
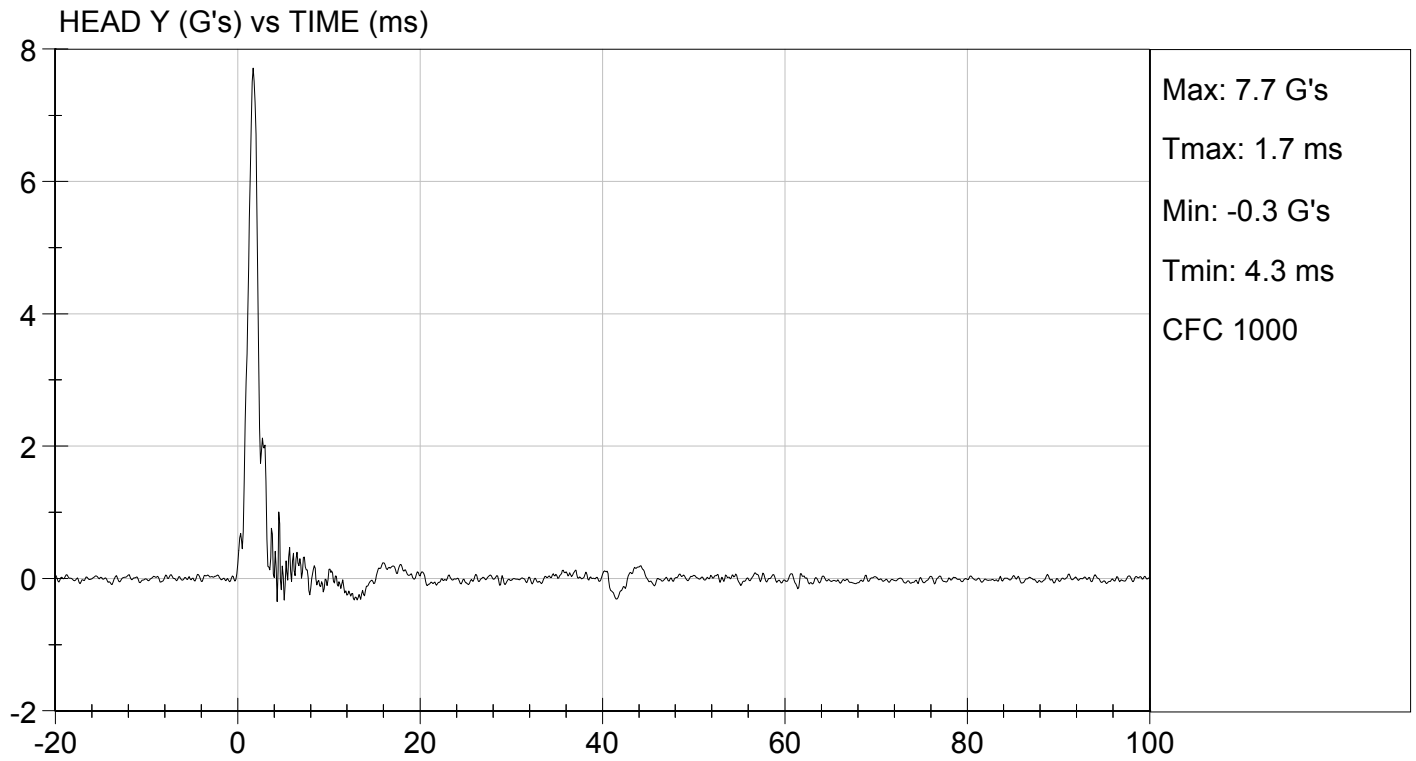
David Schoedel
Laboratory Technician

09/10/2014

Test Date

Jessica Hall
Approved By





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

ATD Serial No: 351

Test I.D: D143122

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	52	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.13	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	25.22	Pass
	20 ms	G's	17.60 to 22.60	19.53	Pass
	30 ms	G's	12.50 to 18.50	13.62	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	13.6	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	35.7	Pass
Maximum "D" Plane Rotation	Maximum	Deg	64.0 to 78.0	69.1	Pass
	Time	ms	57.0 to 64.0	59.0	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	114.9	Pass
Moment About Occipital Condyle	Maximum	Nm	88.1 to 108.5	92.5	Pass
	Time	ms	47.0 to 58.0	47.5	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	97.3	Pass
Overall Test Results					Pass

David Schoedel
Laboratory Technician

09/10/2014

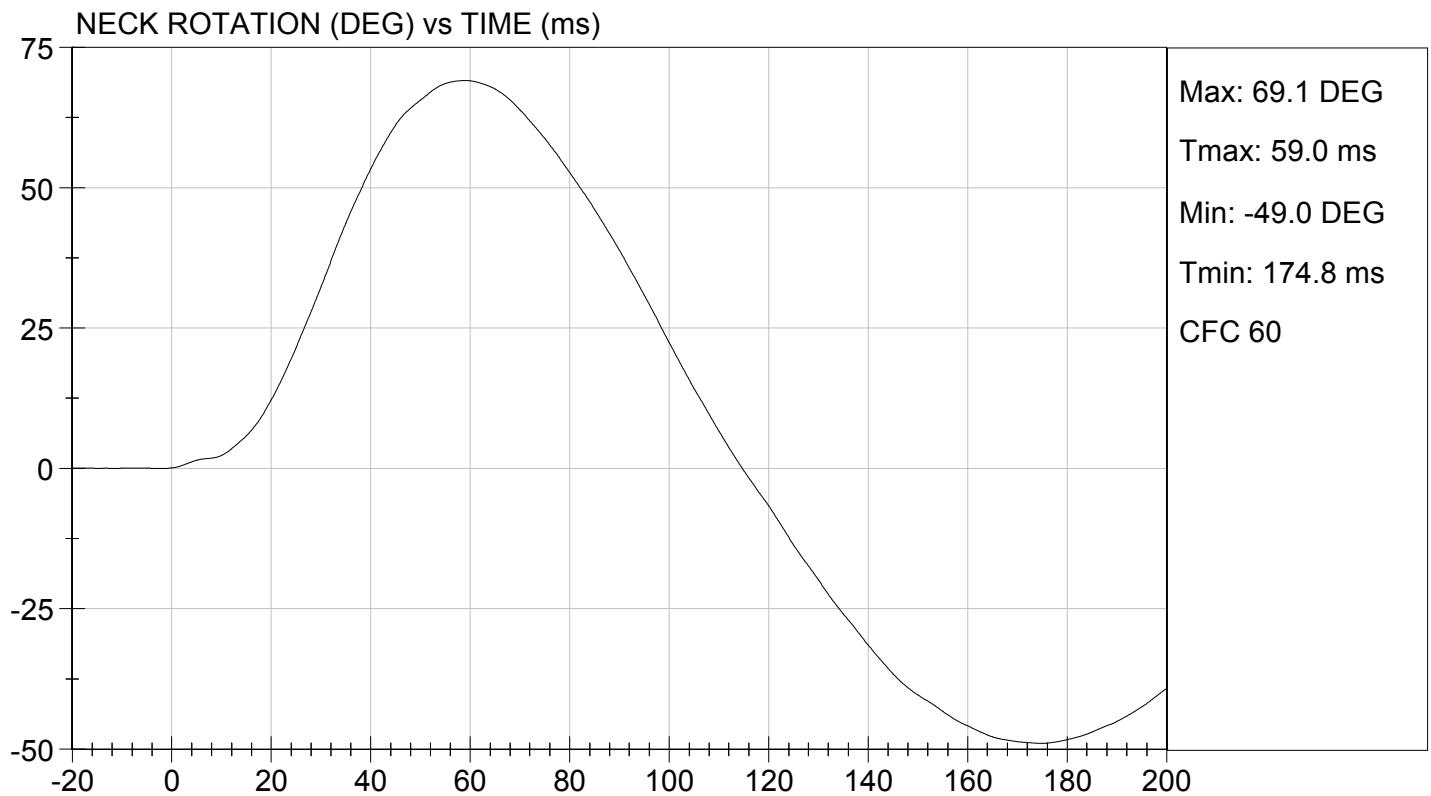
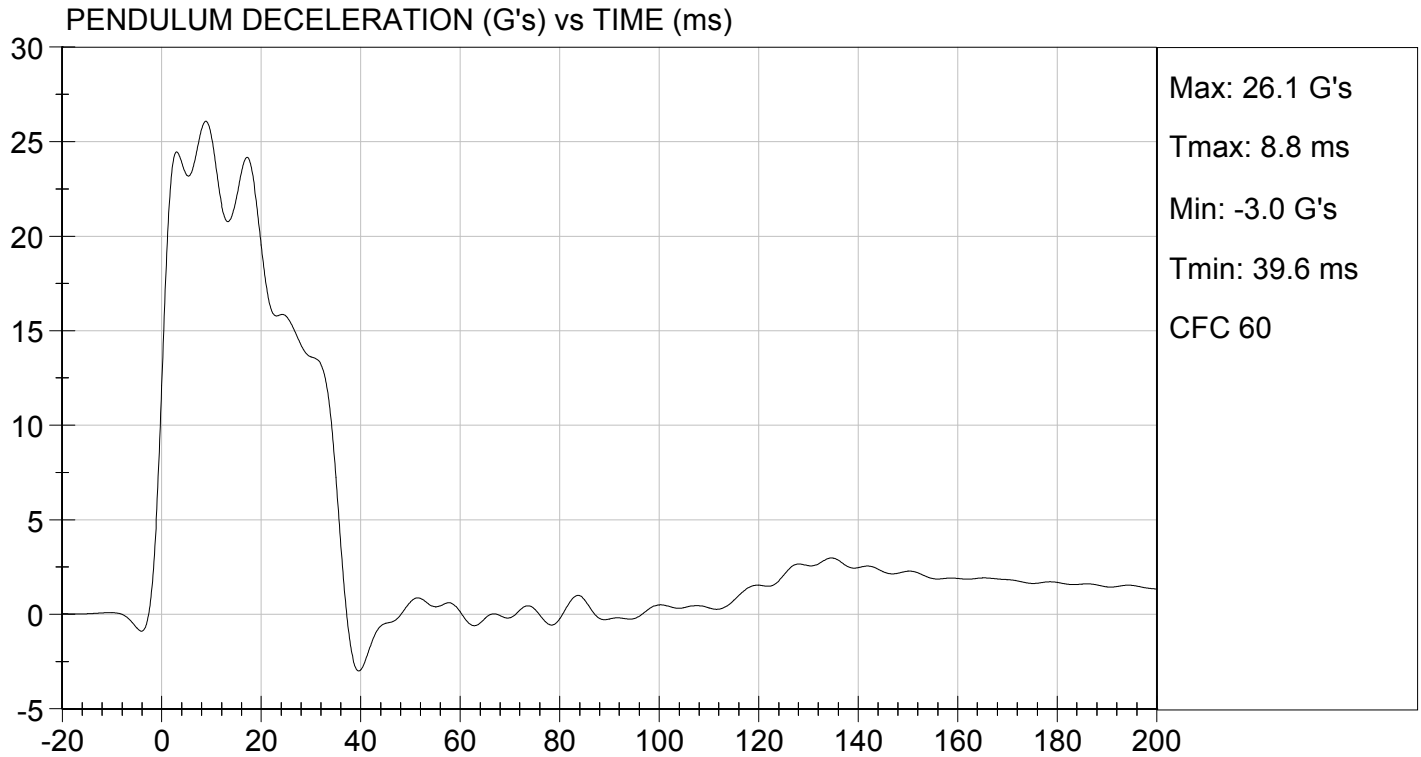
Test Date

Jessica Hall
Approved By



TEST DESC: NECK FLEXION
VELOCITY: 23.40 ft/s, 7.13 m/s

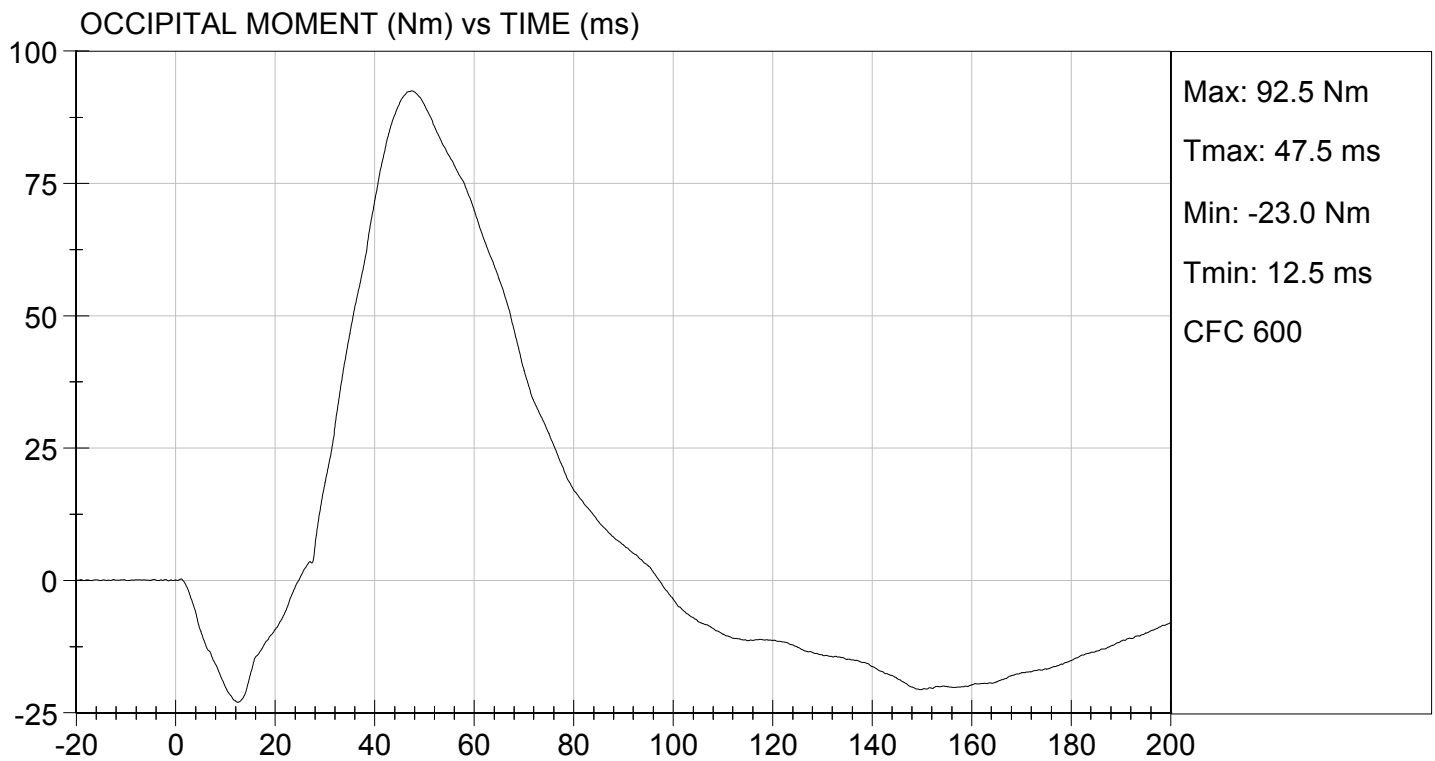
TEST DATE: 09/10/2014
TEST #: D143122





TEST DESC: NECK FLEXION
VELOCITY: 23.40 ft/s, 7.13 m/s

TEST DATE: 09/10/2014
TEST #: D143122



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

ATD Serial No: 351

Test I.D: D143123

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	52	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.19	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	19.06	Pass
	20 ms	G's	14.00 to 19.00	15.44	Pass
	30 ms	G's	11.00 to 16.00	11.38	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 22.0	15.3	Pass
Deceleration Decay Time to Cross 5 G's		ms	38.0 to 46.0	41.9	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	95.5	Pass
	Time	ms	72.0 to 82.0	73.4	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	152.4	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-65.1	Pass
	Time	ms	65.0 to 79.0	69.2	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	140.1	Pass
Overall Test Results					Pass

David Schoedel
Laboratory Technician

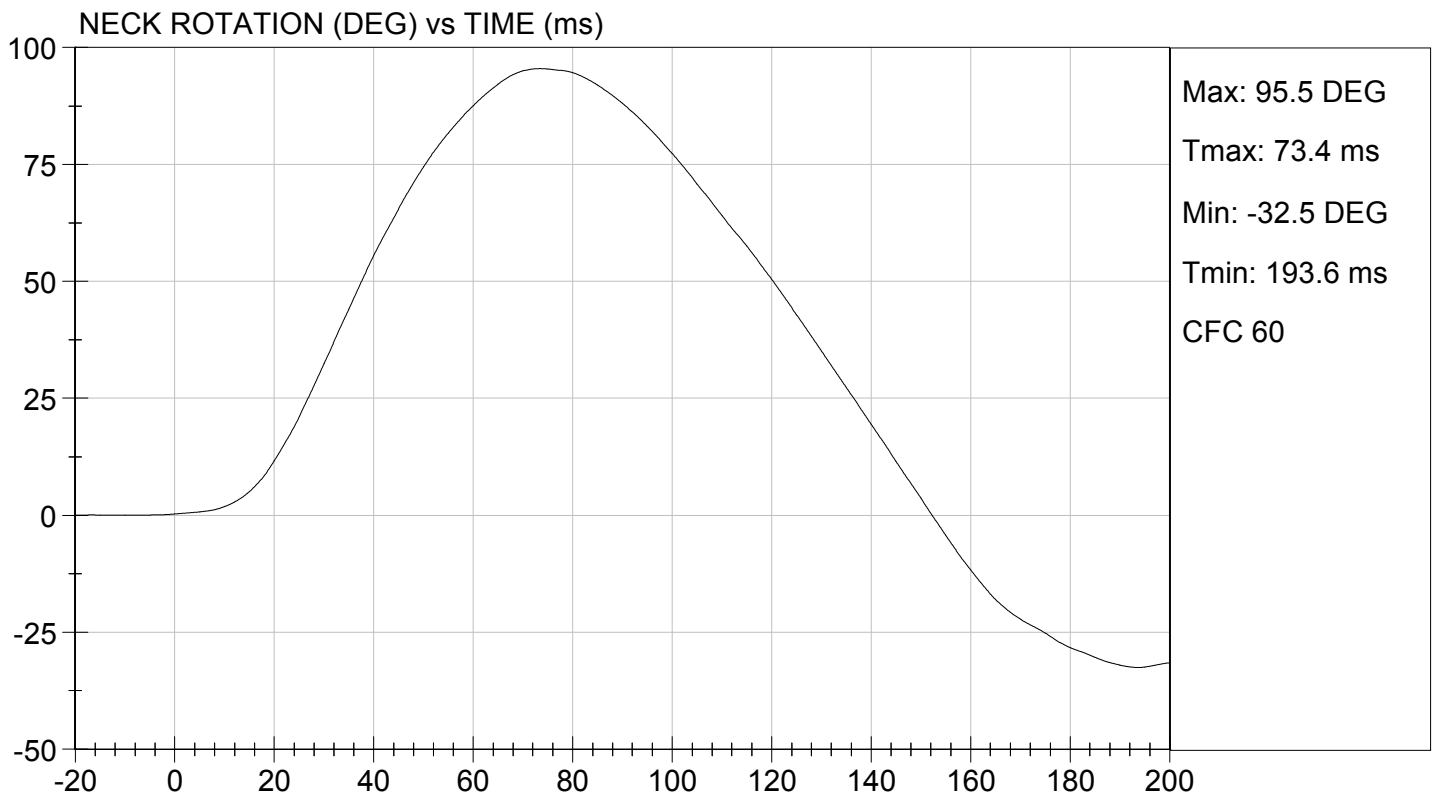
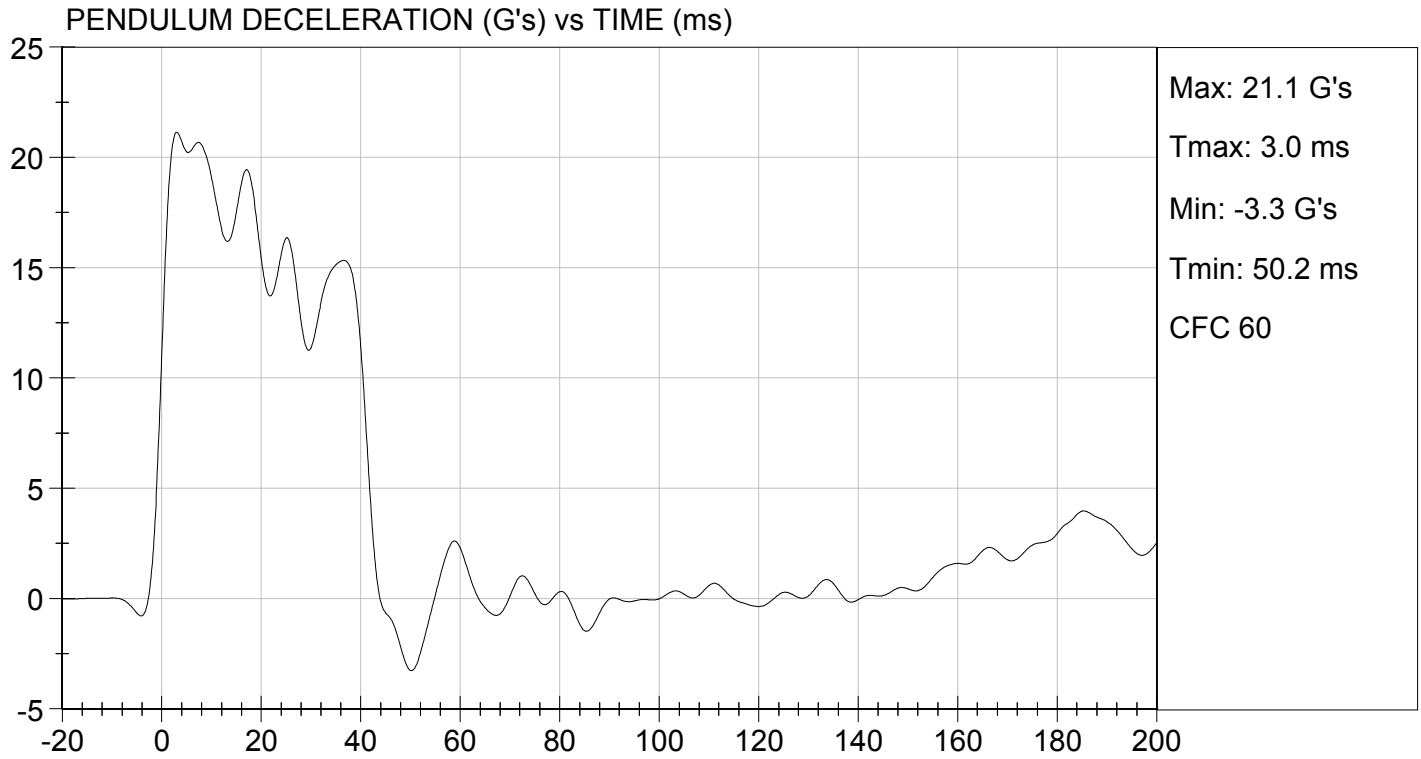
09/10/2014
Test Date

Jessica Hall
Approved By



TEST DESC: NECK EXTENSION
VELOCITY: 20.30 ft/s, 6.19 m/s

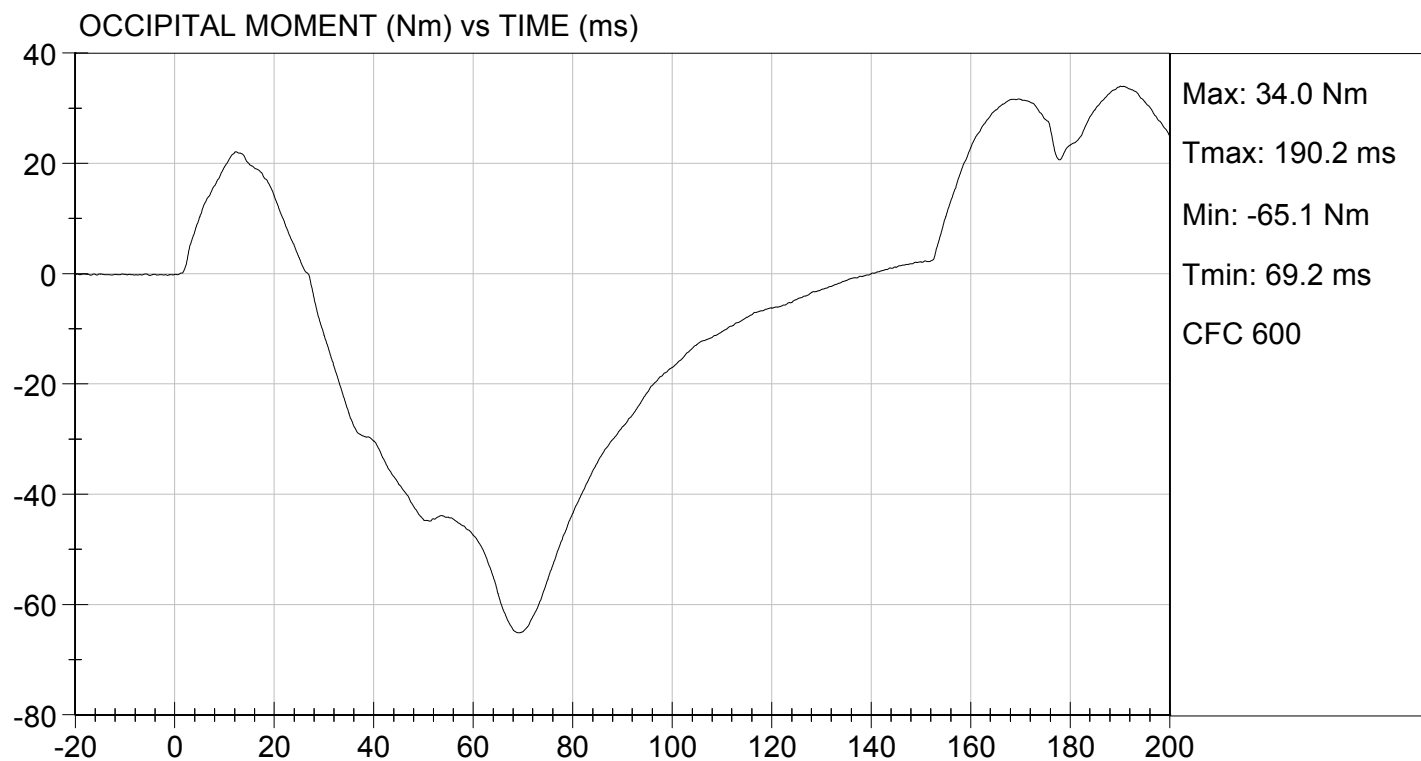
TEST DATE: 09/10/2014
TEST #: D143123





TEST DESC: NECK EXTENSION
VELOCITY: 20.30 ft/s, 6.19 m/s

TEST DATE: 09/10/2014
TEST #: D143123



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 351

Test I.D: D143124

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	54	Pass
Probe Velocity	m/s	6.58 to 6.82	6.77	Pass
Peak Probe Force	N	5159 to 5893	5,400	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.47	Pass
Internal Hysteresis	%	69 to 85	69	Pass
Overall Test Results			Pass	

David Schoedel
Laboratory Technician

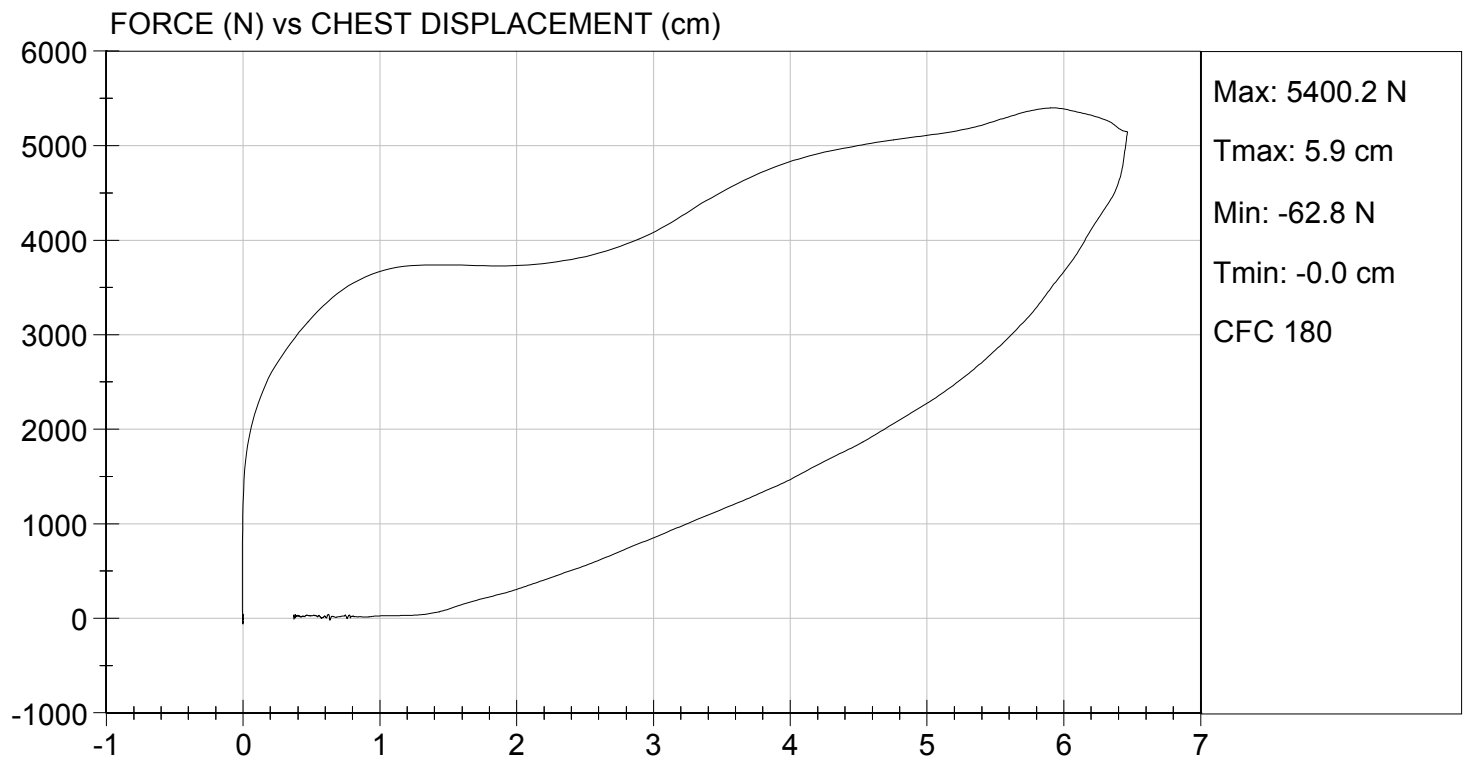
09/10/2014
Test Date

Jessica Hall
Approved By



TEST DESC: THORAX IMPACT
VELOCITY: 22.22 ft/s, 6.77 m/s

TEST DATE: 09/10/2014
TEST #: D143124



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

ATD Serial No: 351

Test I.D: D143125

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	54	Pass
Probe Velocity	m/s	2.07 to 2.13	2.13	Pass
Peak Probe Force	N	4715 to 5782	4,772	Pass
Overall Test Results				Pass


Laboratory Technician

09/10/2014

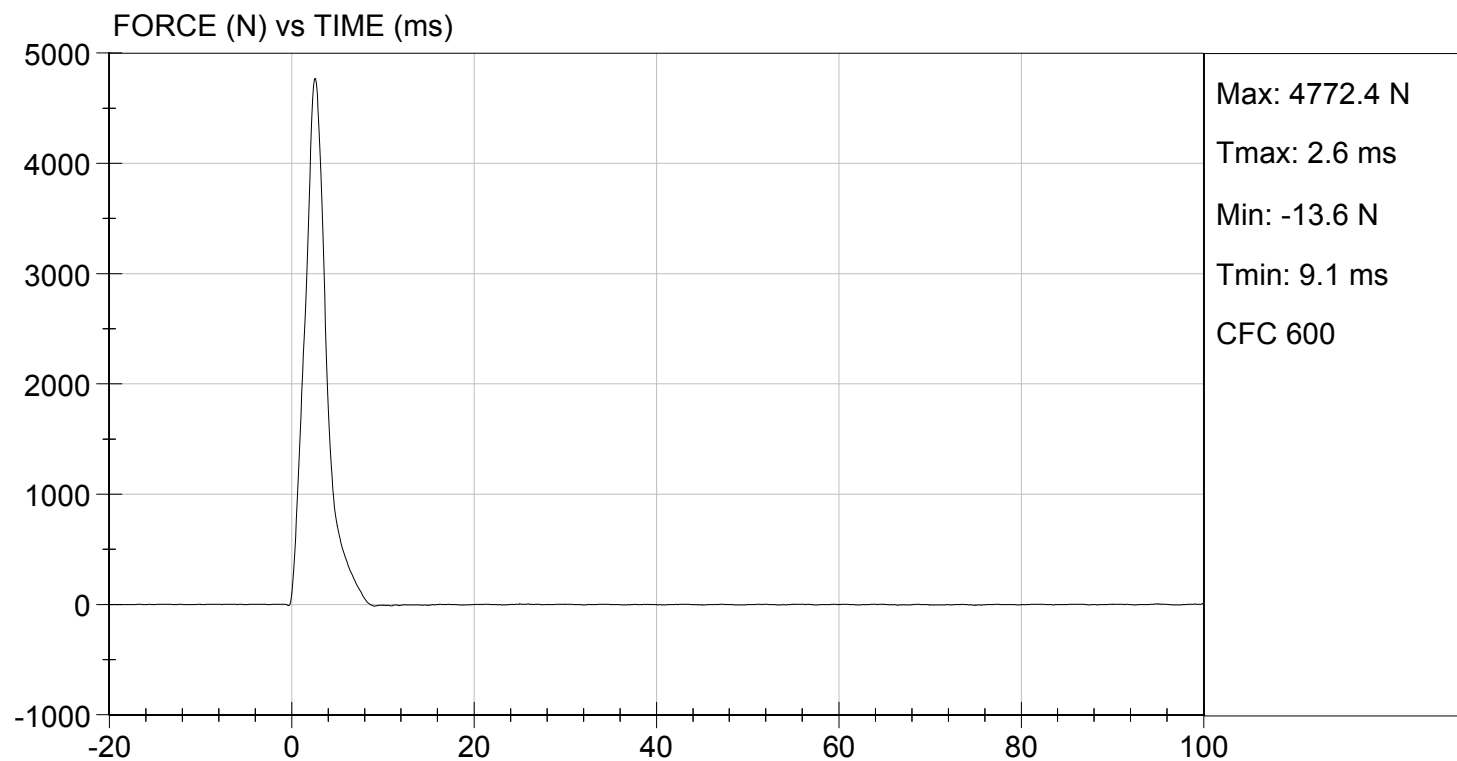
Test Date


Approved By



TEST DESC: RIGHT KNEE
VELOCITY: 7.00 ft/s, 2.13 m/s

TEST DATE: 09/10/2014
TEST #: D143125



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

ATD Serial No: 351

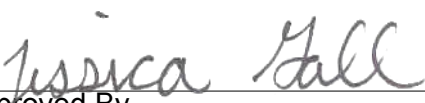
Test I.D: D143126

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	54	Pass
Probe Velocity	m/s	2.07 to 2.13	2.13	Pass
Peak Probe Force	N	4715 to 5782	5,170	Pass
Overall Test Results				Pass


Laboratory Technician

09/10/2014

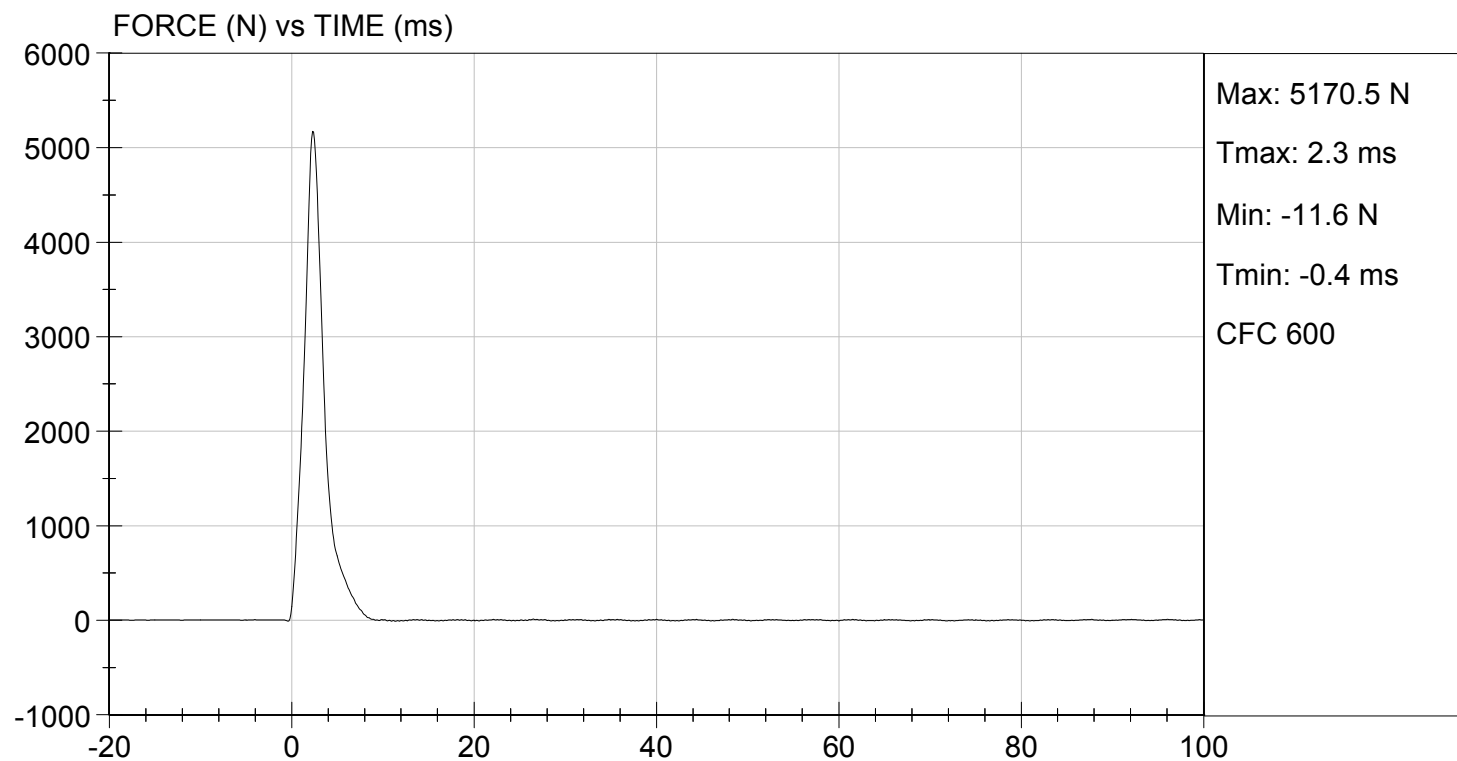
Test Date


Approved By



TEST DESC: LEFT KNEE
VELOCITY: 7.00 ft/s, 2.13 m/s

TEST DATE: 09/10/2014
TEST #: D143126



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

ATD Serial No: 351

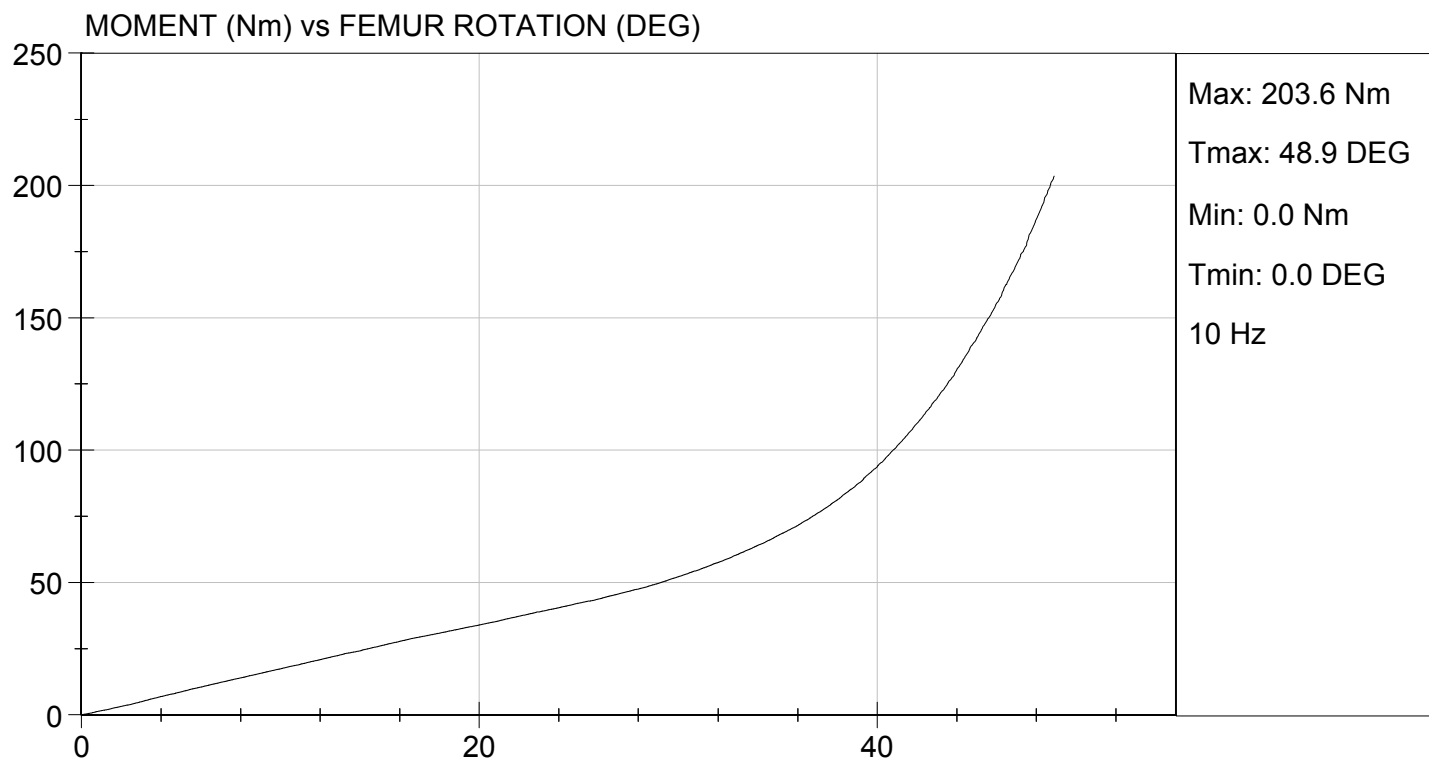
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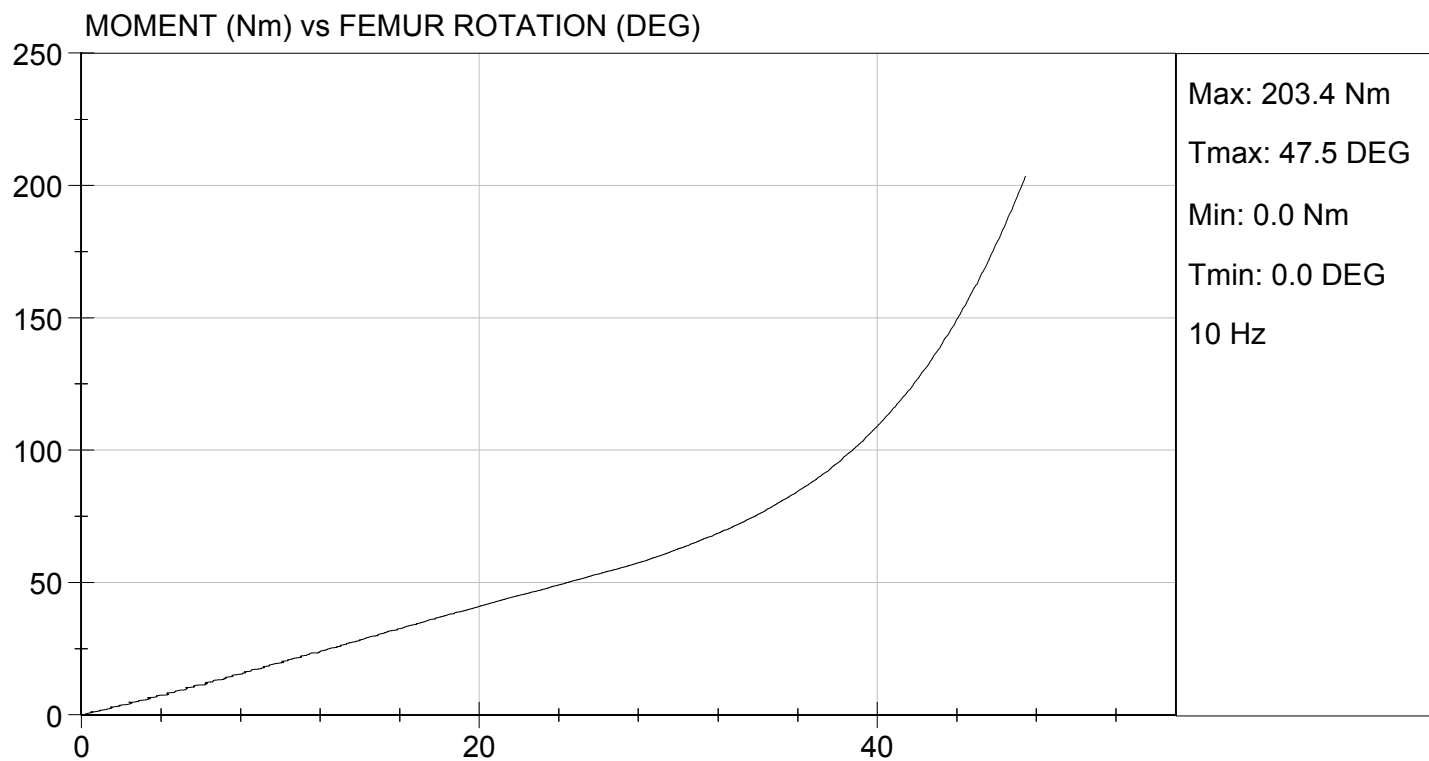
Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.5	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	55	55	Pass
Rotation Rate	deg/s	5.0 to 10.0	6.3	6.3	Pass
30 Degrees	Nm	94.9 Nm Max	52.1	62.7	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 to 50.0 Degree Max Rotation	48.9	47.5	Pass
Overall Test Results					Pass

David Schoedel
Laboratory Technician

09/10/2014
Test Date

Jessica Hall
Approved By





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

ATD Serial No: 351

Test ID: D143441

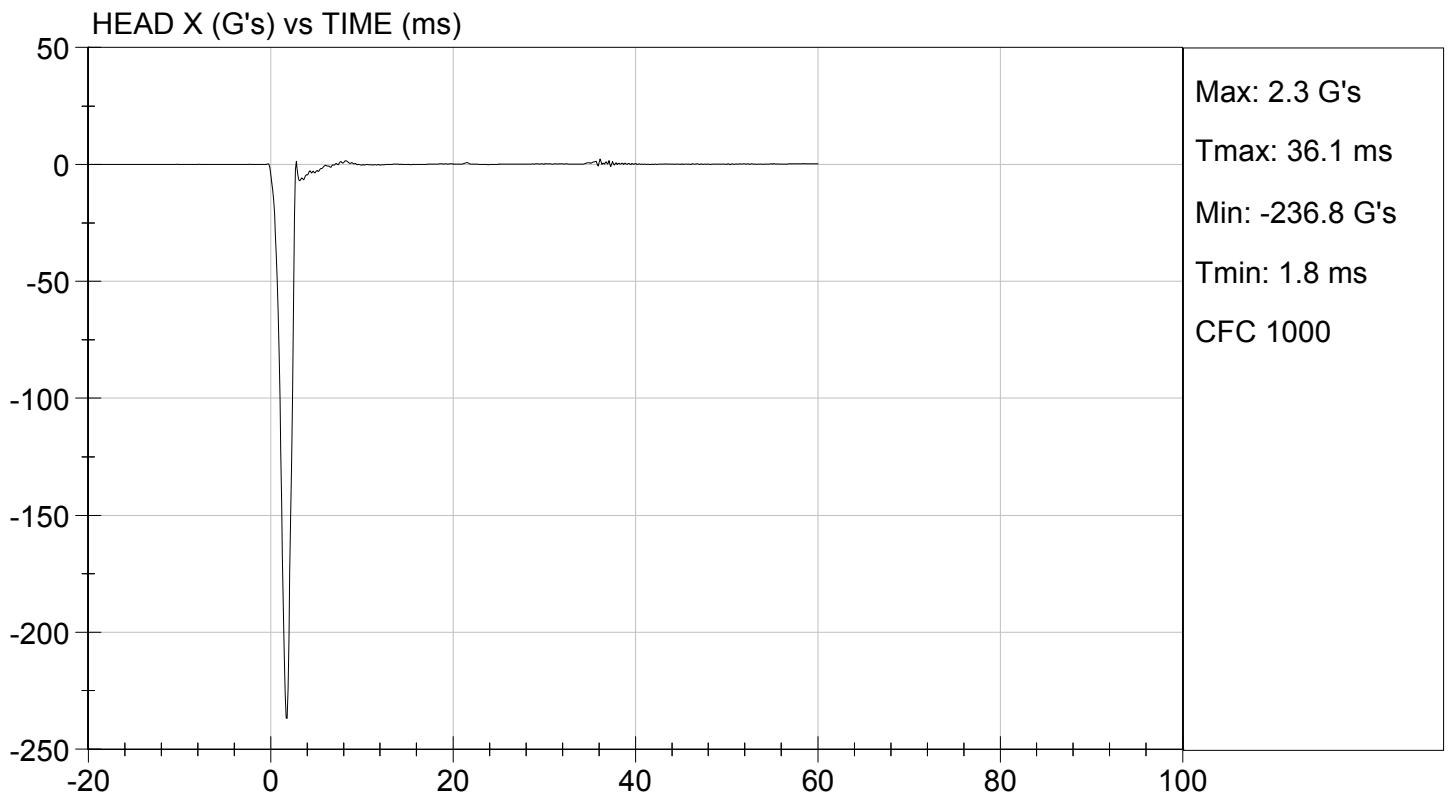
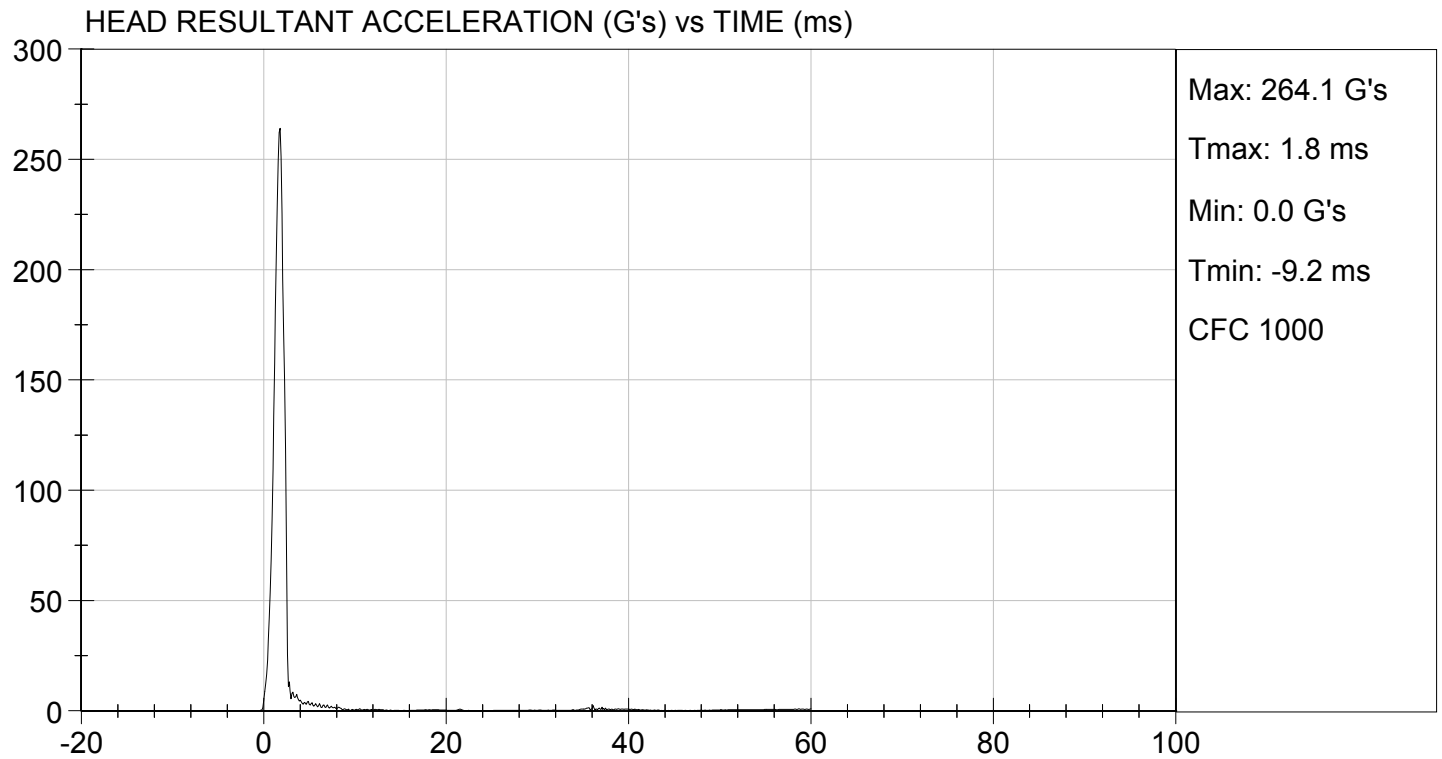
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	22.1	Pass
Laboratory Relative Humidity	%	10 to 70	44	Pass
Peak Resultant Acceleration	G's	225 to 275	264	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-10.6	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

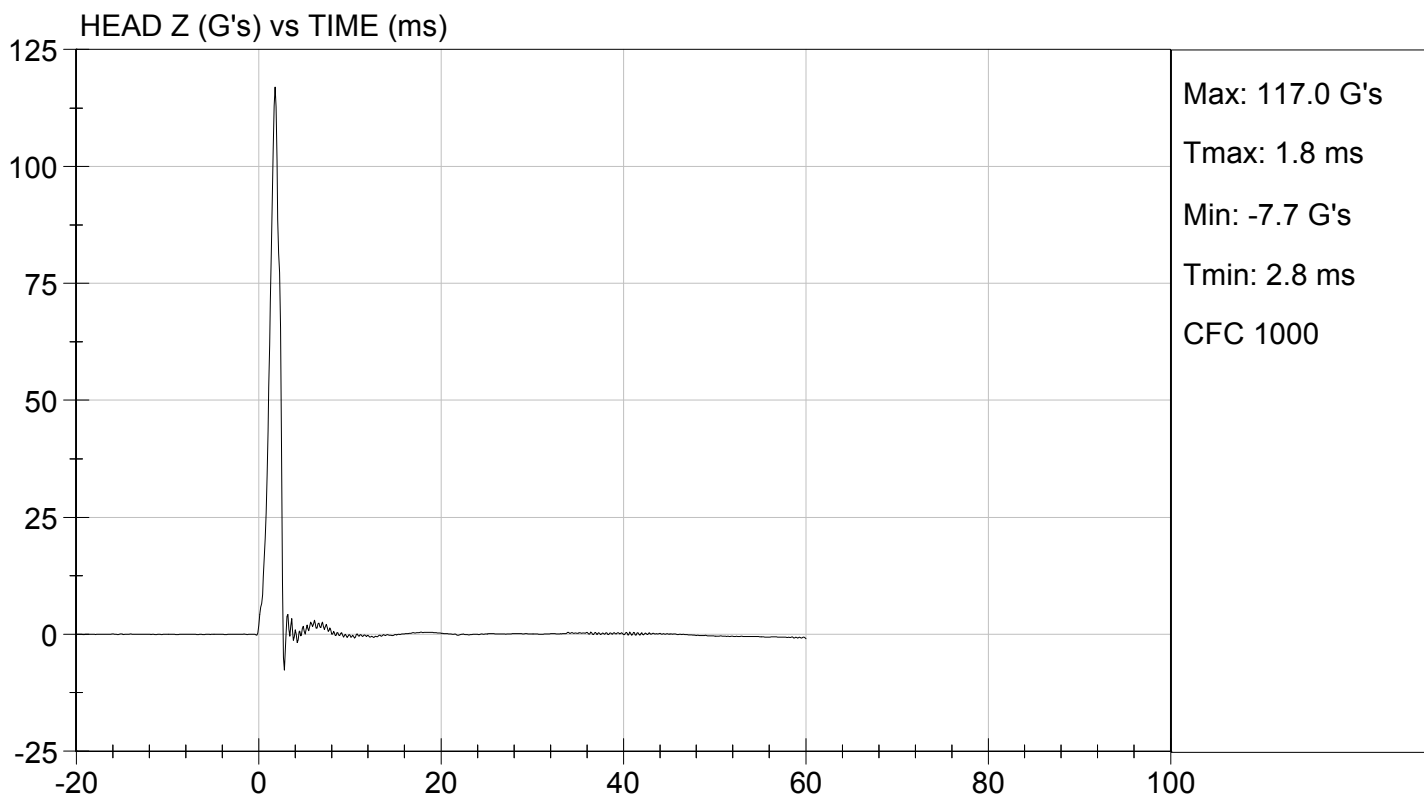
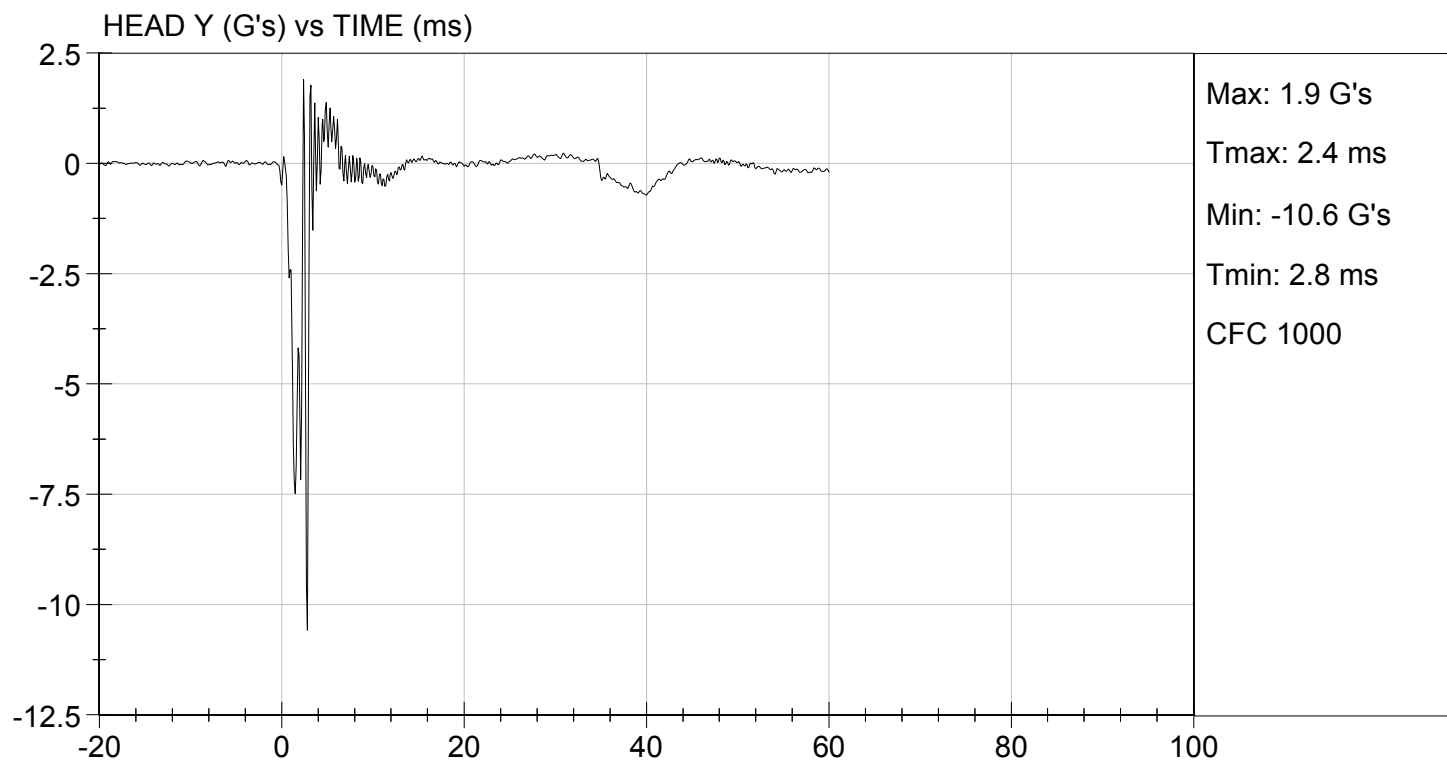
David Schoedel
Laboratory Technician

10/01/2014

Test Date

Jessica Hall
Approved By





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

ATD Serial No: 351

Test I.D: D143442

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	47	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.96	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	23.23	Pass
	20 ms	G's	17.60 to 22.60	19.45	Pass
	30 ms	G's	12.50 to 18.50	14.76	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	14.8	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	38.8	Pass
Maximum "D" Plane Rotation	Maximum	Deg	64.0 to 78.0	65.7	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	113.3	Pass
Moment About Occipital Condyle	Maximum	Nm	88.1 to 108.5	88.4	Pass
	Time	ms	47.0 to 58.0	52.0	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	99.2	Pass
Overall Test Results					Pass

David Schoedel
 Laboratory Technician

10/01/2014

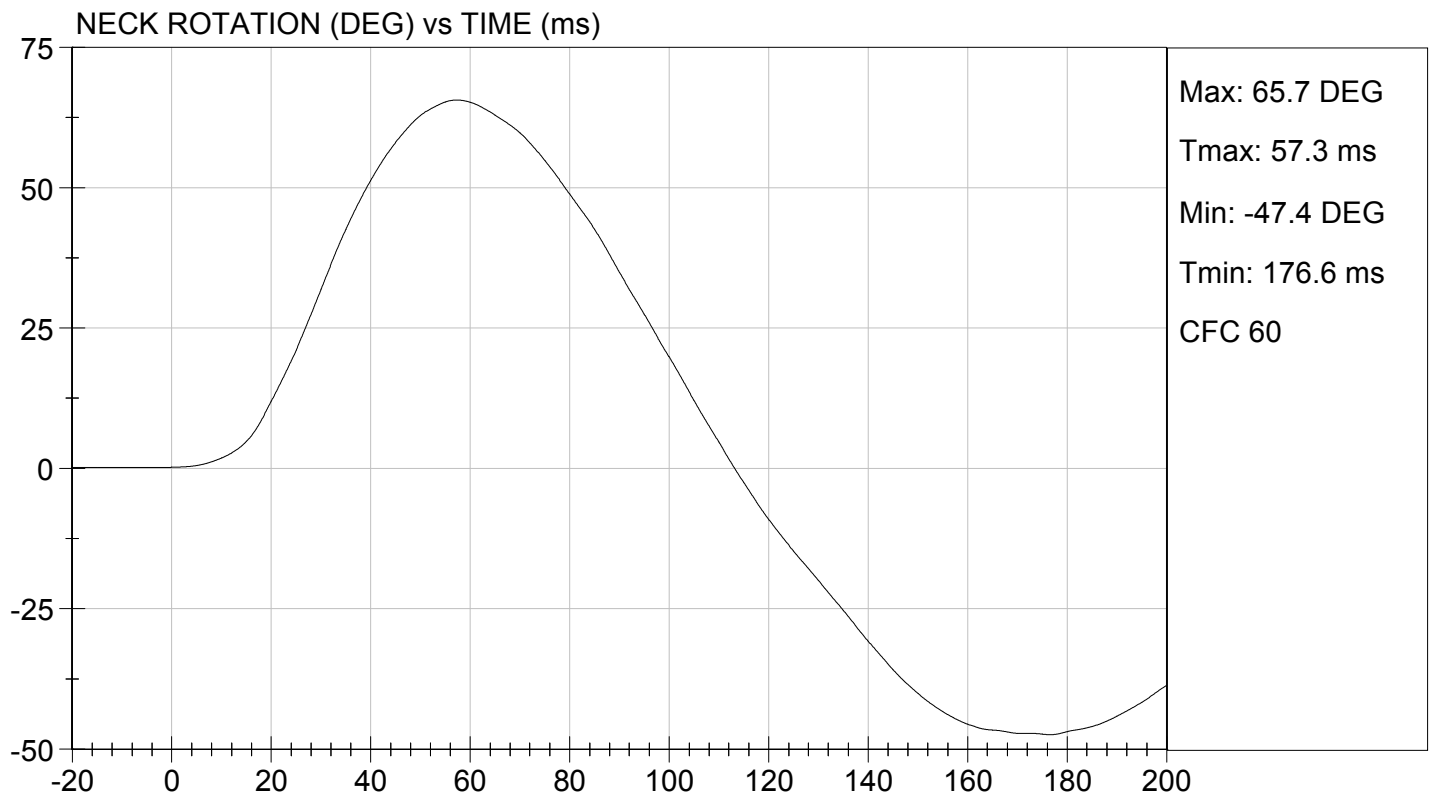
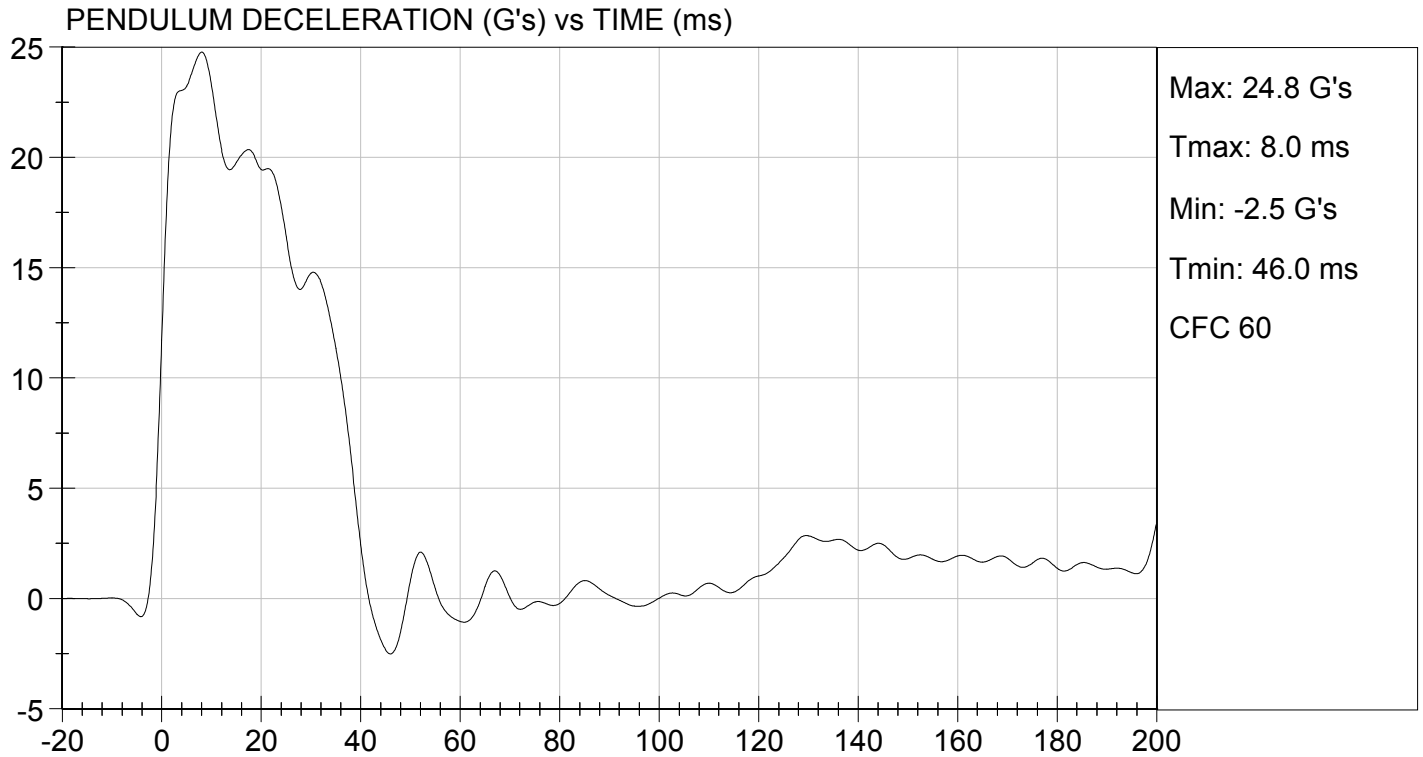
Test Date

Jessica Hall
 Approved By



TEST DESC: NECK FLEXION
VELOCITY: 22.83 ft/s, 6.96 m/s

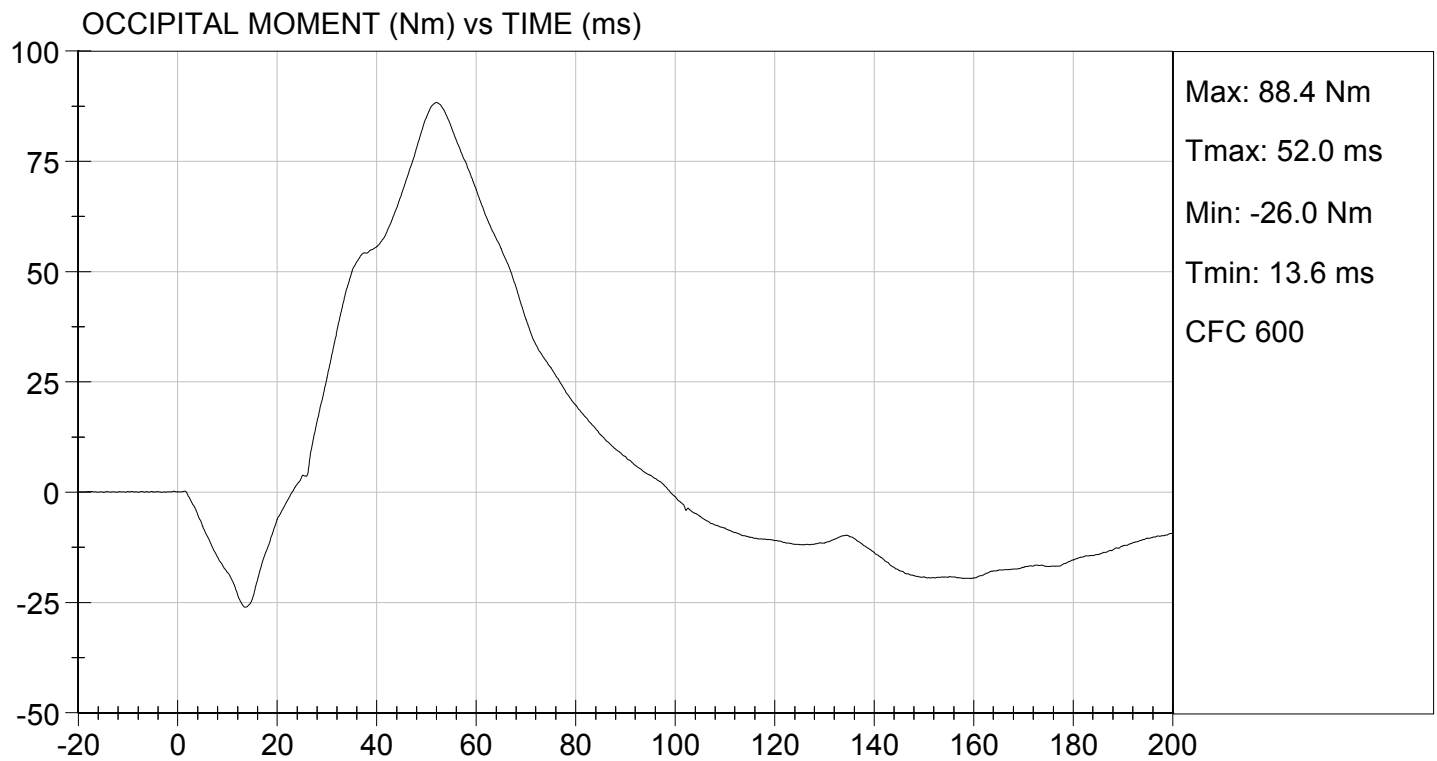
TEST DATE: 10/01/2014
TEST #: D143442





TEST DESC: NECK FLEXION
VELOCITY: 22.83 ft/s, 6.96 m/s

TEST DATE: 10/01/2014
TEST #: D143442



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

ATD Serial No: 351

Test I.D: D143443

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	47	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.12	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	17.38	Pass
	20 ms	G's	14.00 to 19.00	15.24	Pass
	30 ms	G's	11.00 to 16.00	12.78	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	41.3	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	94.1	Pass
	Time	ms	72.0 to 82.0	77.4	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	156.6	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-55.3	Pass
	Time	ms	65.0 to 79.0	71.6	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	145.3	Pass
Overall Test Results					Pass

David Schoedel
Laboratory Technician

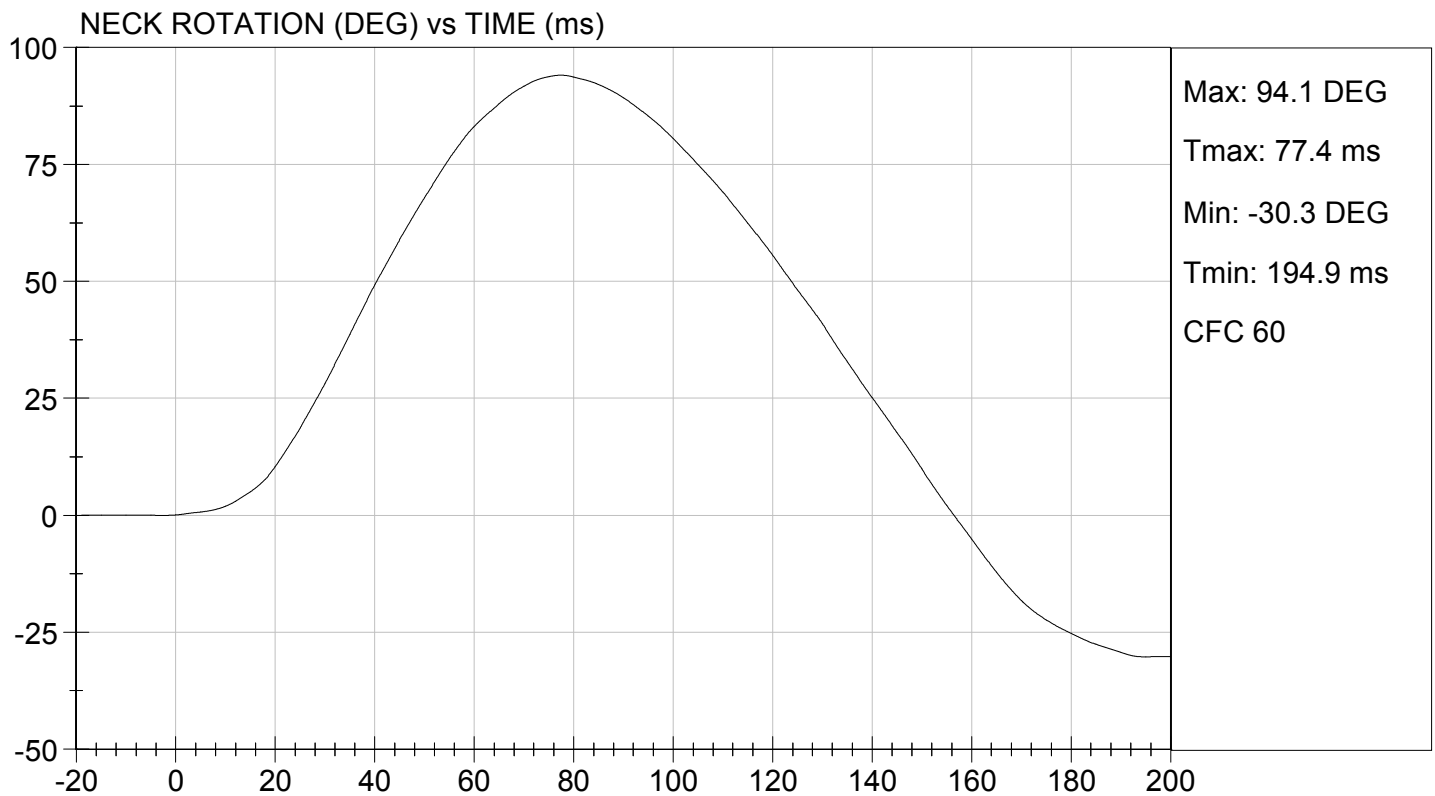
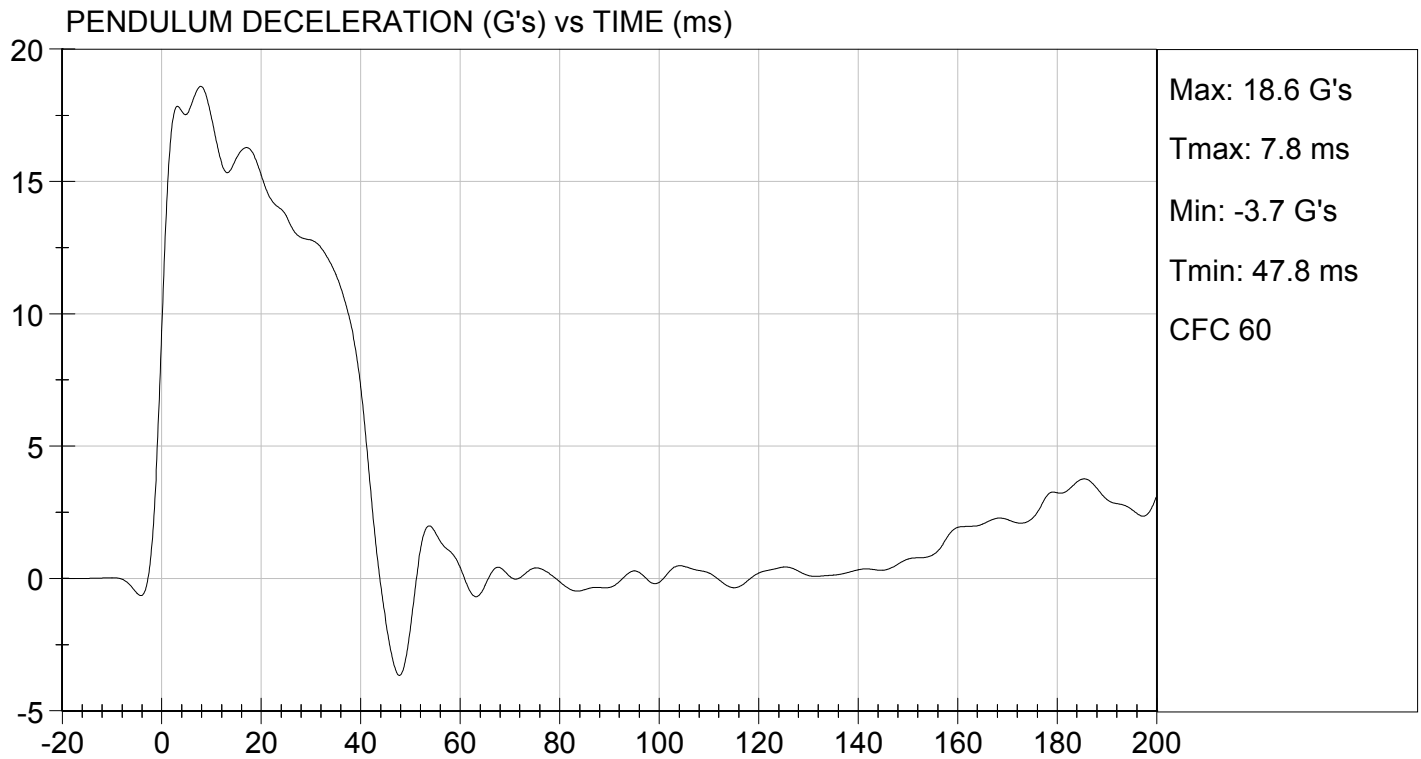
10/01/2014
Test Date

Jessica Hall
Approved By



TEST DESC: NECK EXTENSION
VELOCITY: 20.08 ft/s, 6.12 m/s

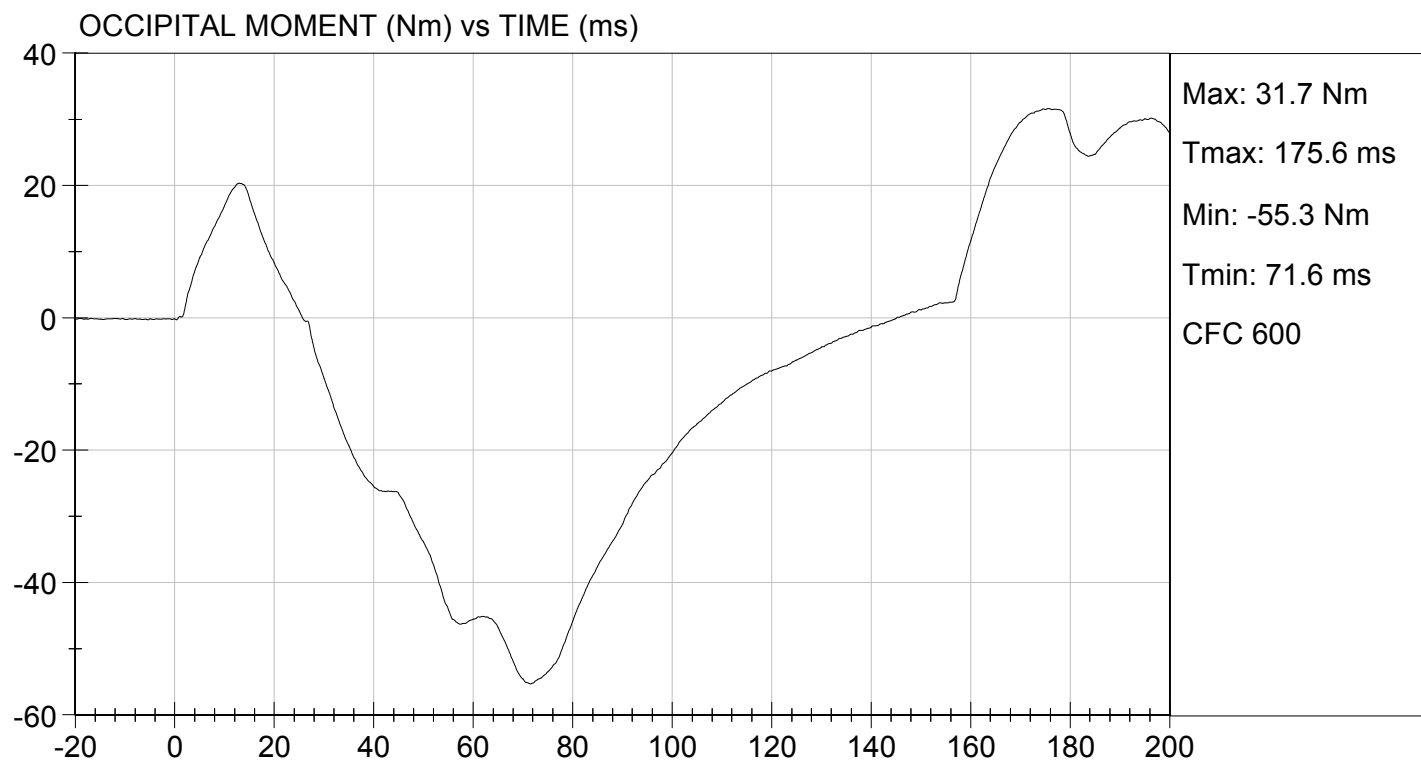
TEST DATE: 10/01/2014
TEST #: D143443





TEST DESC: NECK EXTENSION
VELOCITY: 20.08 ft/s, 6.12 m/s

TEST DATE: 10/01/2014
TEST #: D143443



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 351

Test I.D: D143444

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	48	Pass
Probe Velocity	m/s	6.58 to 6.82	6.77	Pass
Peak Probe Force	N	5159 to 5893	5,213	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.68	Pass
Internal Hysteresis	%	69 to 85	69	Pass
Overall Test Results			Pass	


Laboratory Technician

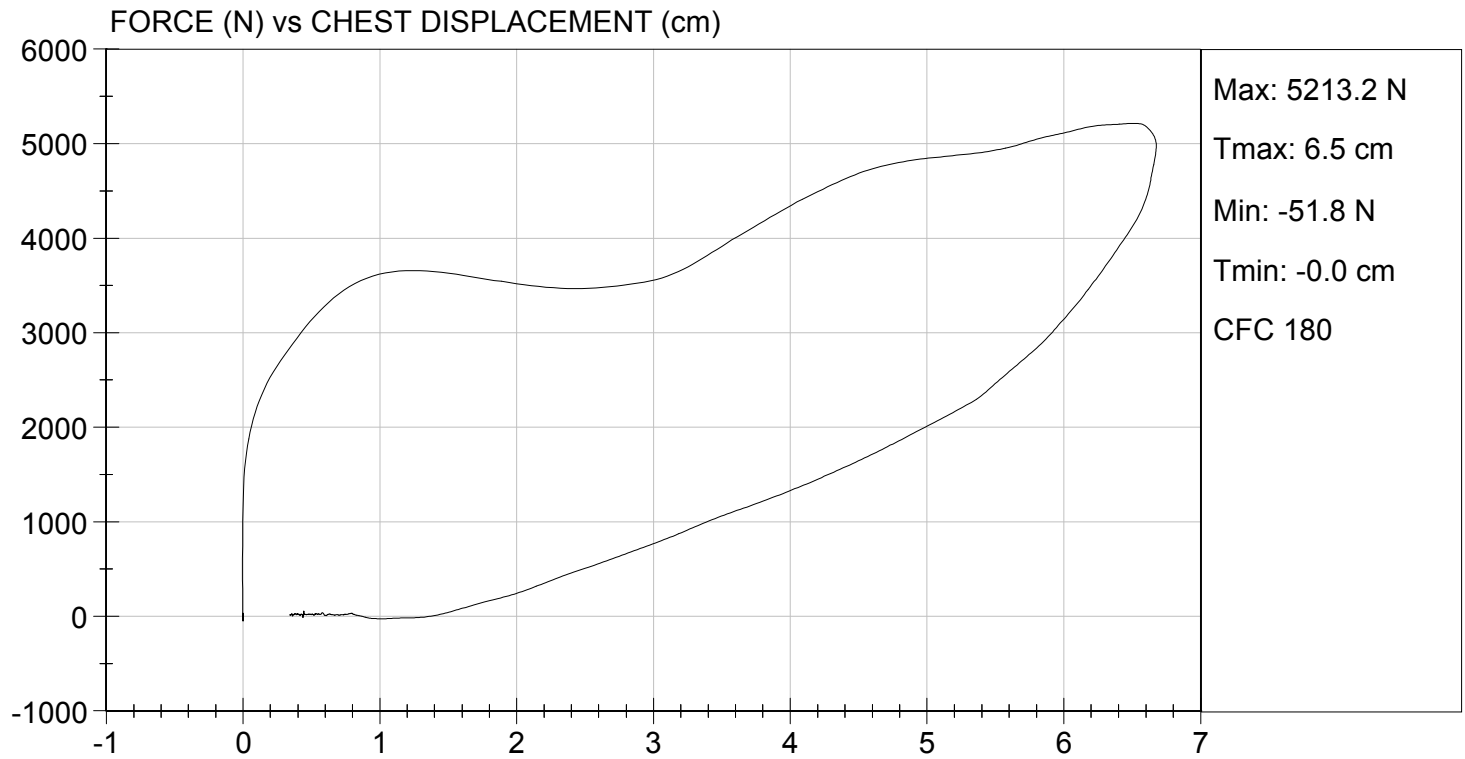
10/02/2014
Test Date


Approved By



TEST DESC: THORAX IMPACT
VELOCITY: 22.22 ft/s, 6.77 m/s

TEST DATE: 10/02/2014
TEST #: D143444



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

ATD Serial No: 351

Test I.D: D143445

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	20.9	Pass
Laboratory Relative Humidity	%	10 to 70	49	Pass
Probe Velocity	m/s	2.07 to 2.13	2.11	Pass
Peak Probe Force	N	4715 to 5782	5,430	Pass
Overall Test Results				Pass

Maxime Chamberland
Laboratory Technician

10/01/2014

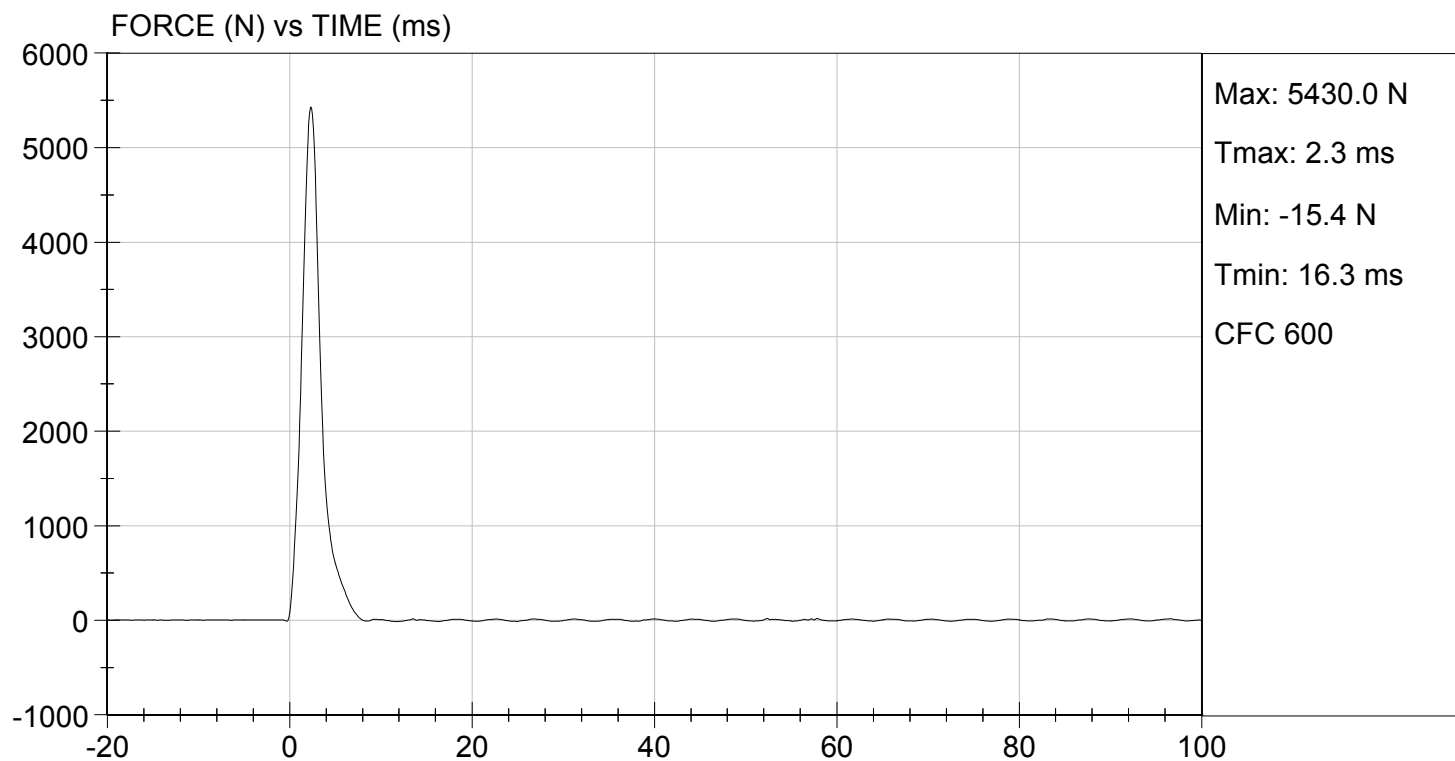
Test Date

Jessica Hall
Approved By



TEST DESC: RIGHT KNEE
VELOCITY: 6.92 ft/s, 2.11 m/s

TEST DATE: 10/01/2014
TEST #: D143445



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

ATD Serial No: 351

Test I.D: D143446

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	20.4	Pass
Laboratory Relative Humidity	%	10 to 70	48	Pass
Probe Velocity	m/s	2.07 to 2.13	2.11	Pass
Peak Probe Force	N	4715 to 5782	4,967	Pass
Overall Test Results				Pass

Maxime Chamberland
Laboratory Technician

10/01/2014

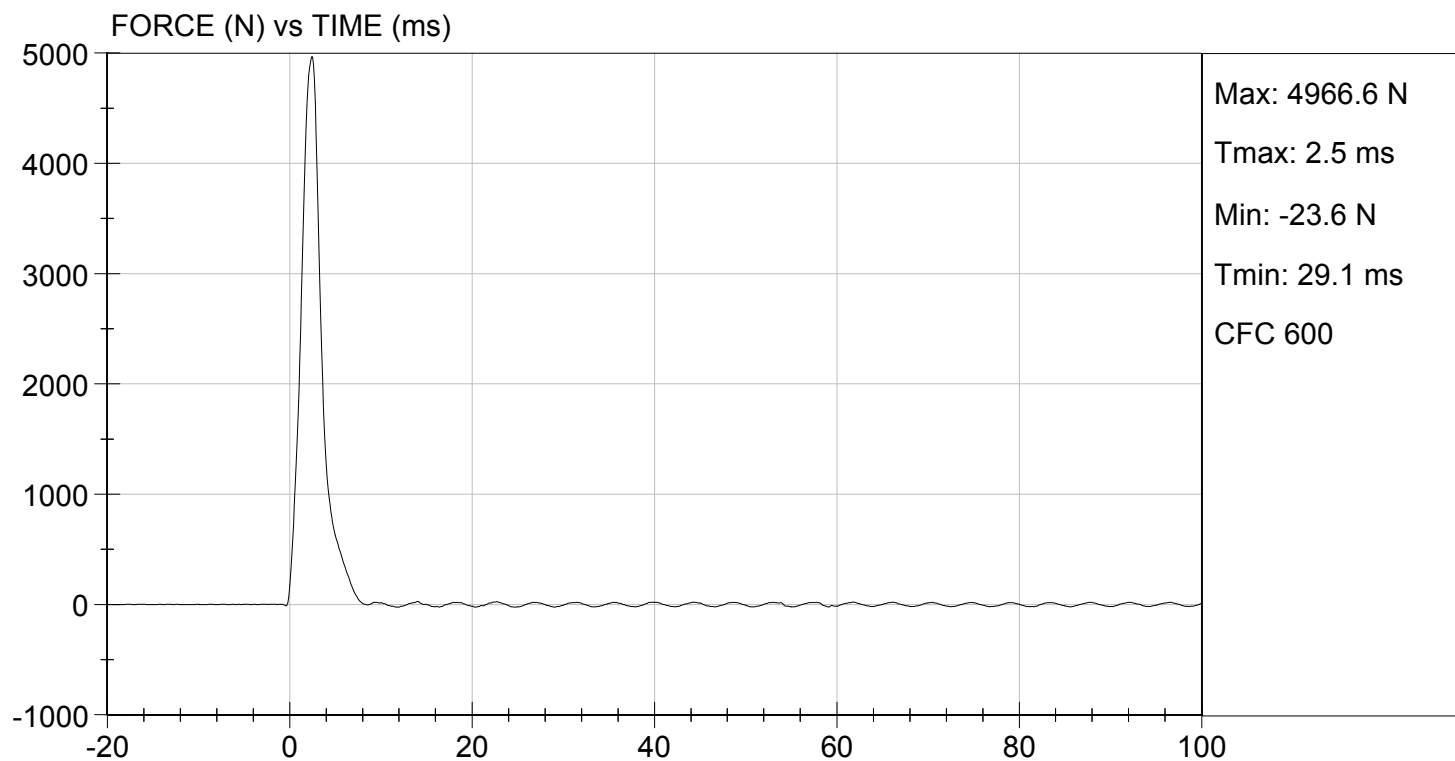
Test Date

Jessica Hall
Approved By



TEST DESC: LEFT KNEE
VELOCITY: 6.92 ft/s, 2.11 m/s

TEST DATE: 10/01/2014
TEST #: D143446



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

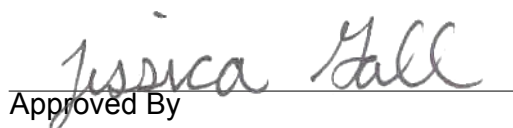
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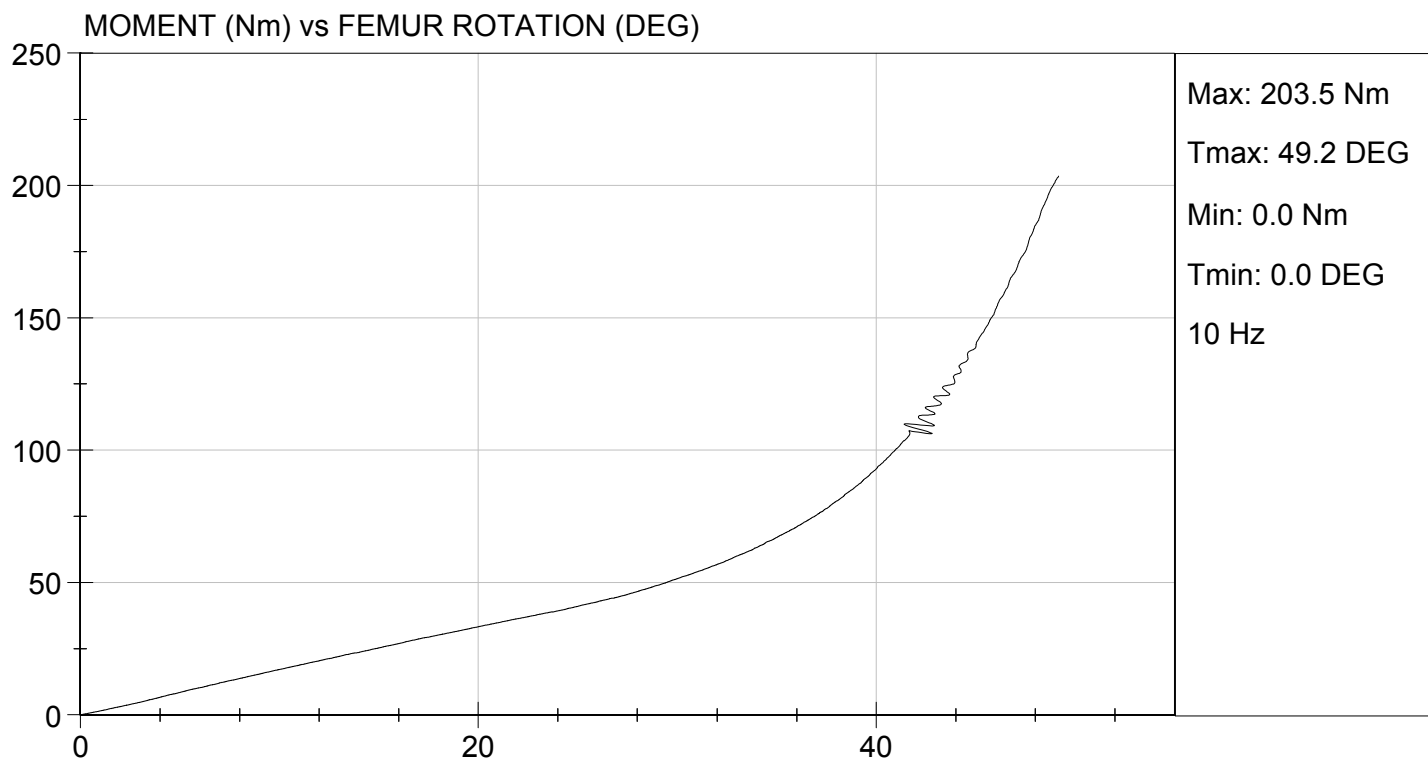
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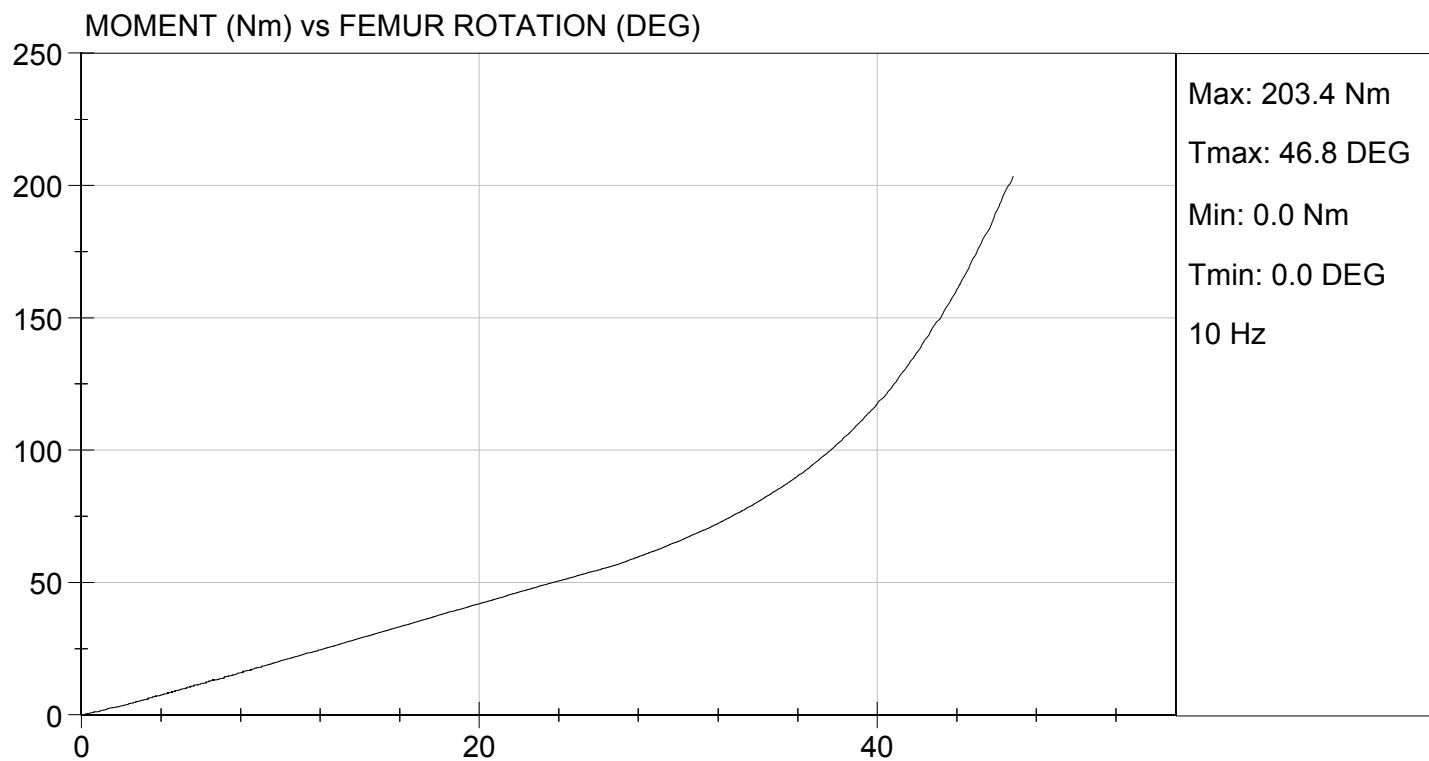
Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.7	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	47	47	Pass
Rotation Rate	deg/s	5.0 to 10.0	6.3	6.3	Pass
30 Degrees	Nm	94.9 Nm Max	51.4	65.5	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 to 50.0 Degree Max Rotation	49.2	46.8	Pass
Overall Test Results					Pass


Laboratory Technician

10/01/2014
Test Date


Approved By





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: D142501

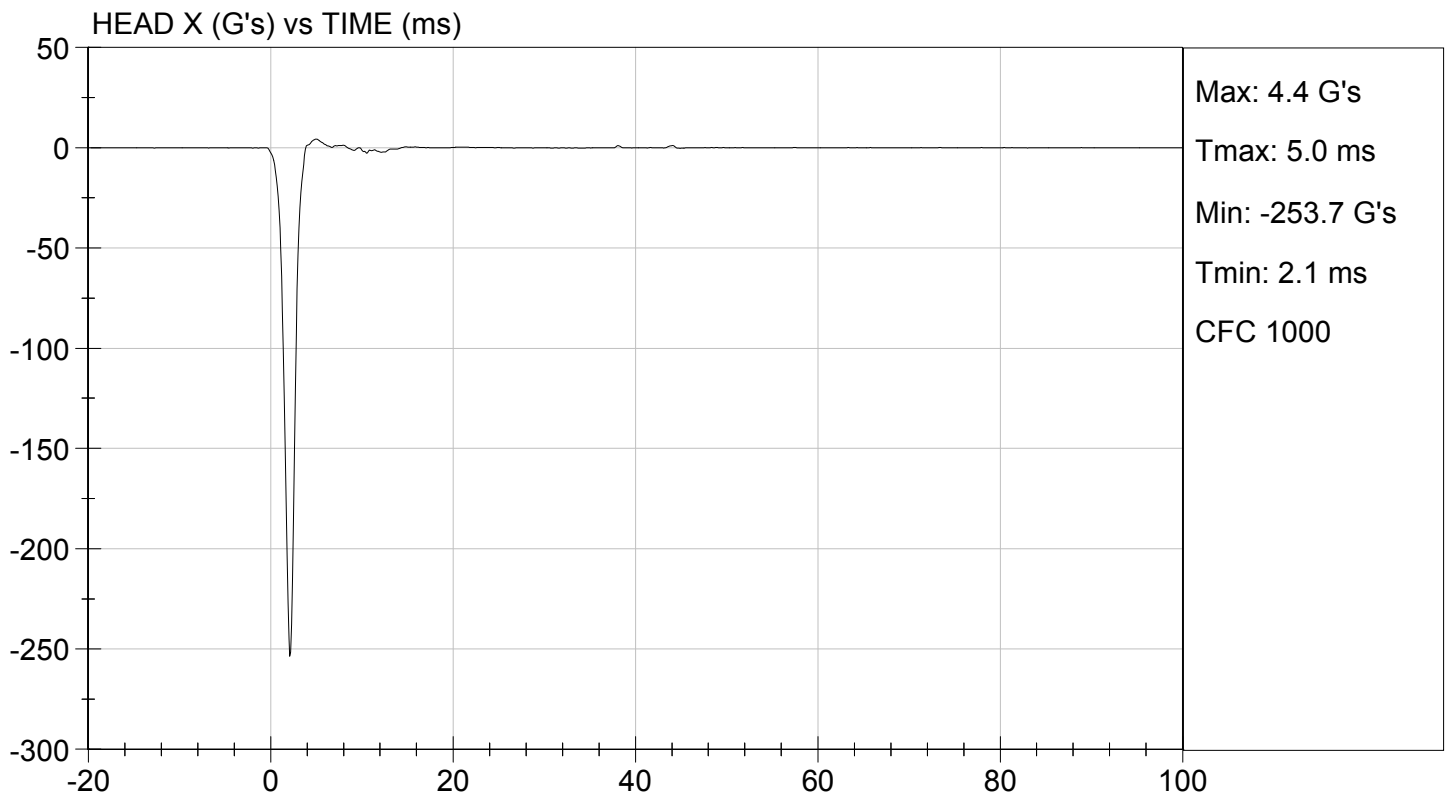
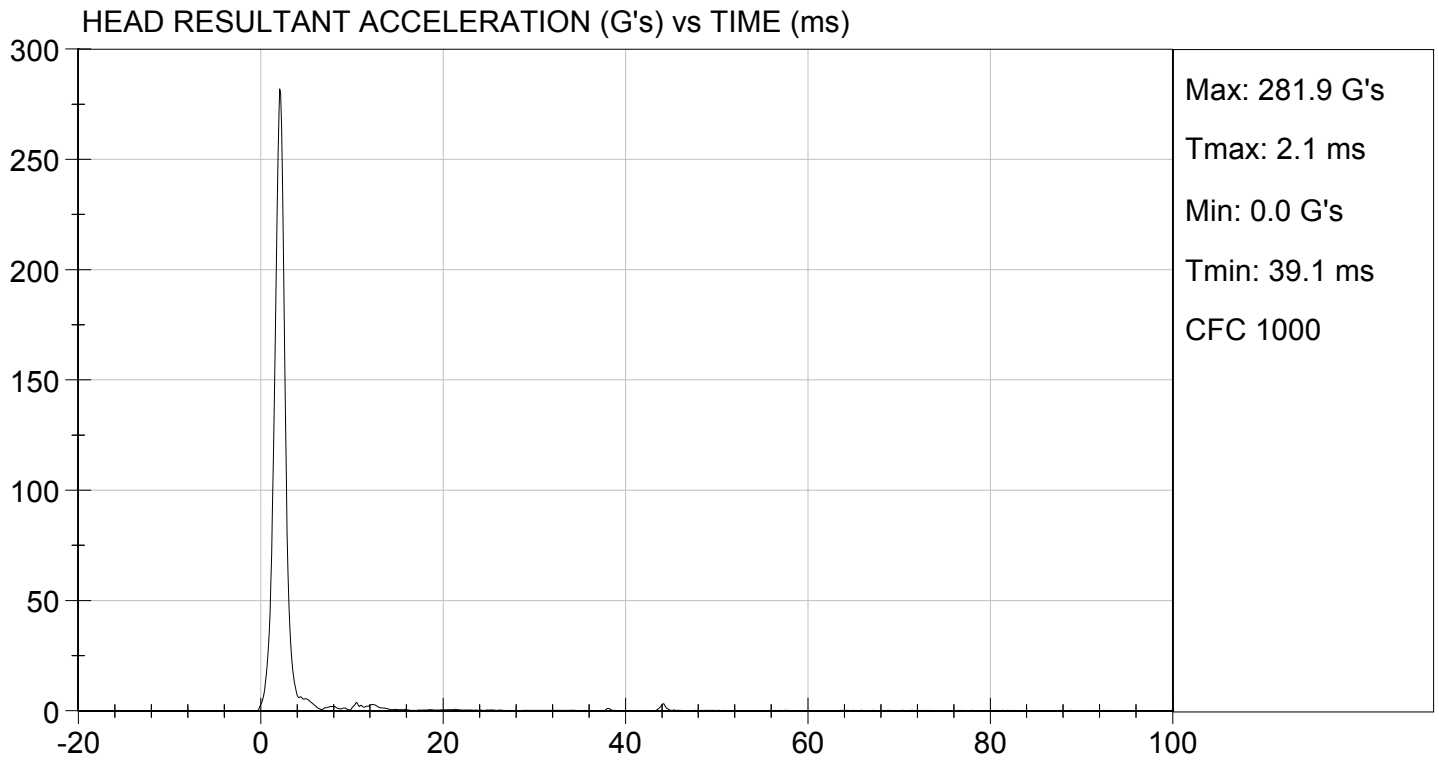
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	43	Pass
Peak Resultant Acceleration	G's	250 to 300	282	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-1.4	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
			Overall Test Results	Pass

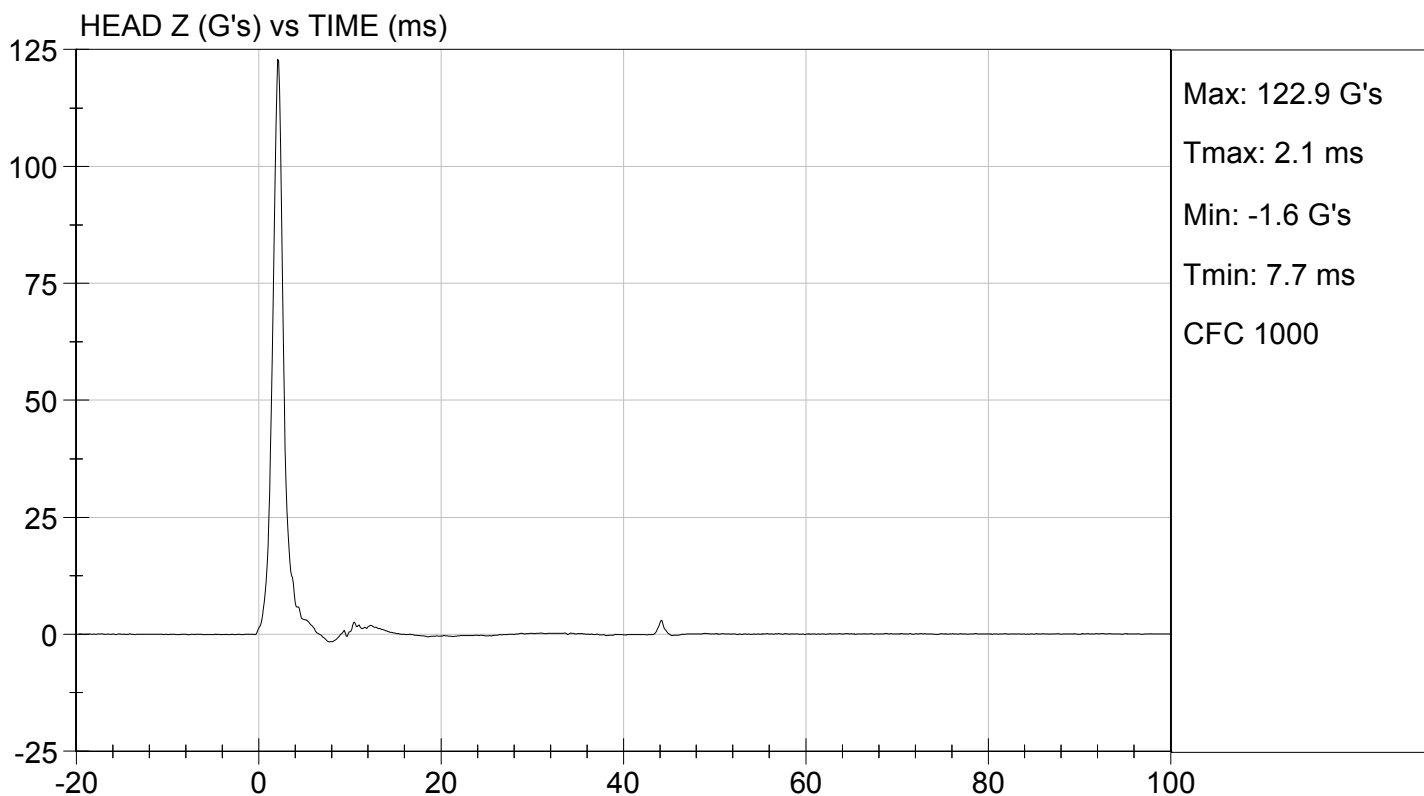
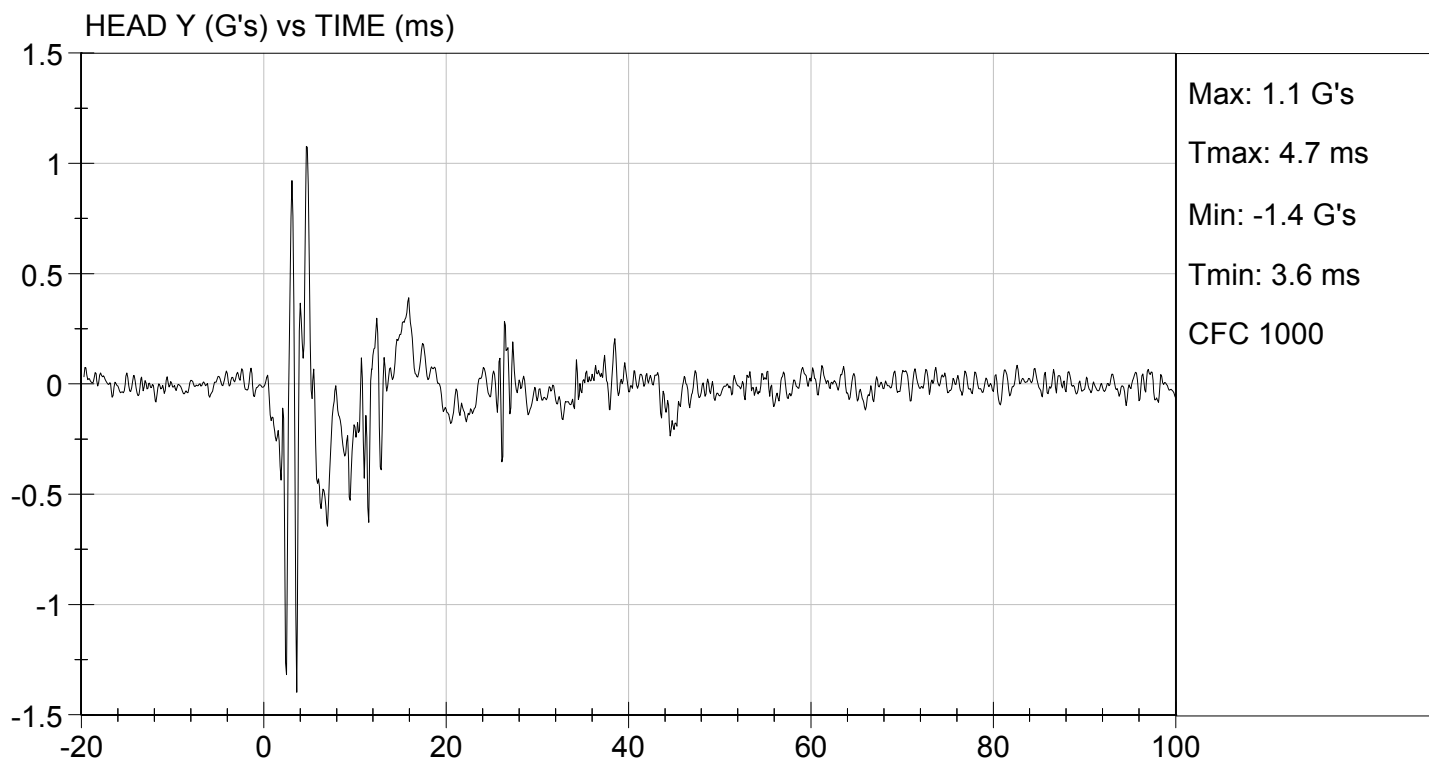

Laboratory Technician

07/17/2014

Test Date


Approved By





MGA RESEARCH CORPORATION

NECK FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D142502

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity		%	10 to 70	49	Pass
Pendulum Speed		m/s	6.89 to 7.13	7.13	Pass
Pendulum Velocity	10 ms	m/s	2.1 to 2.5	2.3	Pass
	20 ms	m/s	4.0 to 5.0	4.5	Pass
	30 ms	m/s	5.8 to 7.0	6.2	Pass
D Plane Rotation	Max	deg	77 to 91	86	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	69 to 83	70	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 to 100	86	Pass
Overall Results					Pass

Jessica Hall
 Laboratory Technician

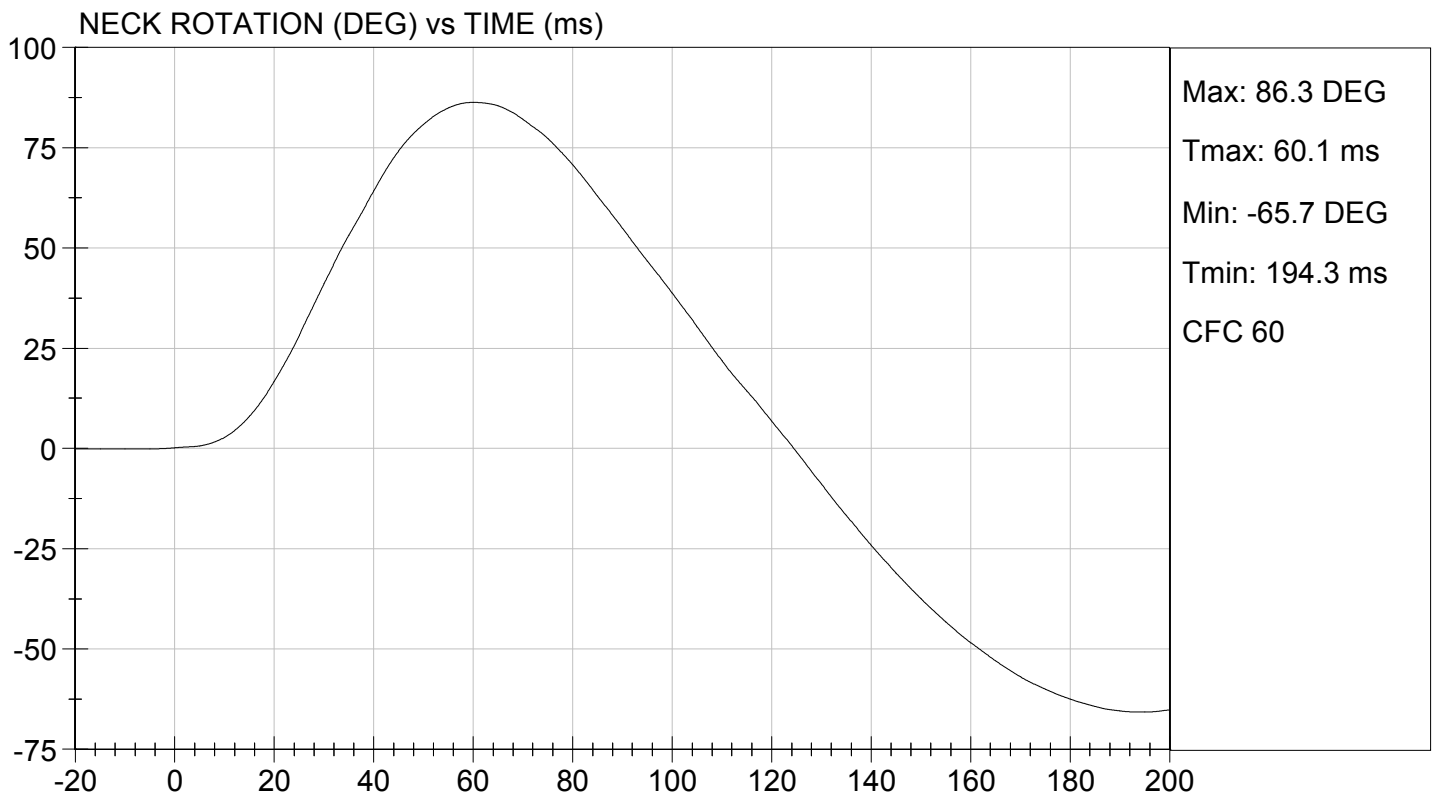
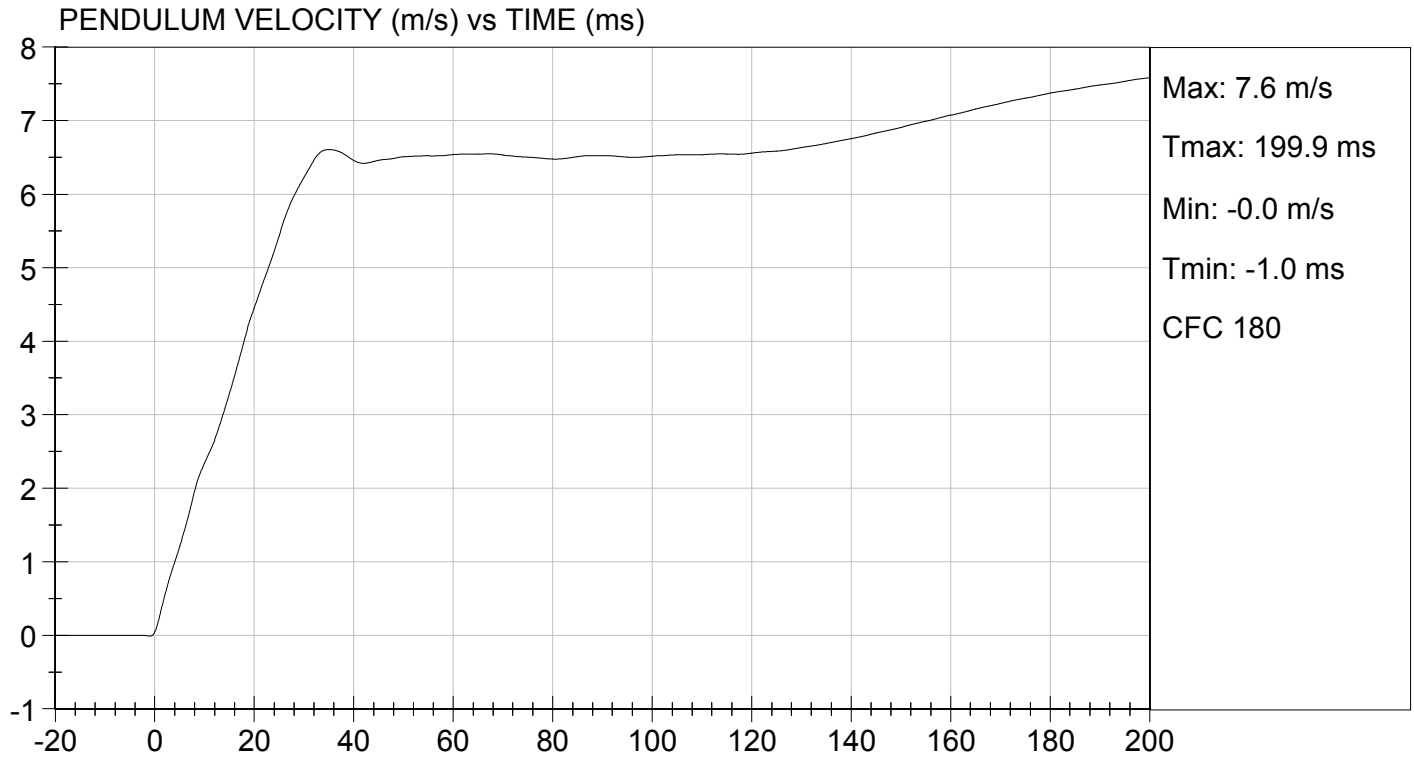
07/18/2014
 Test Date

David Winkelbauer
 Approved By



TEST DESC: NECK FLEXION
VELOCITY: 23.40 ft/s, 7.13 m/s

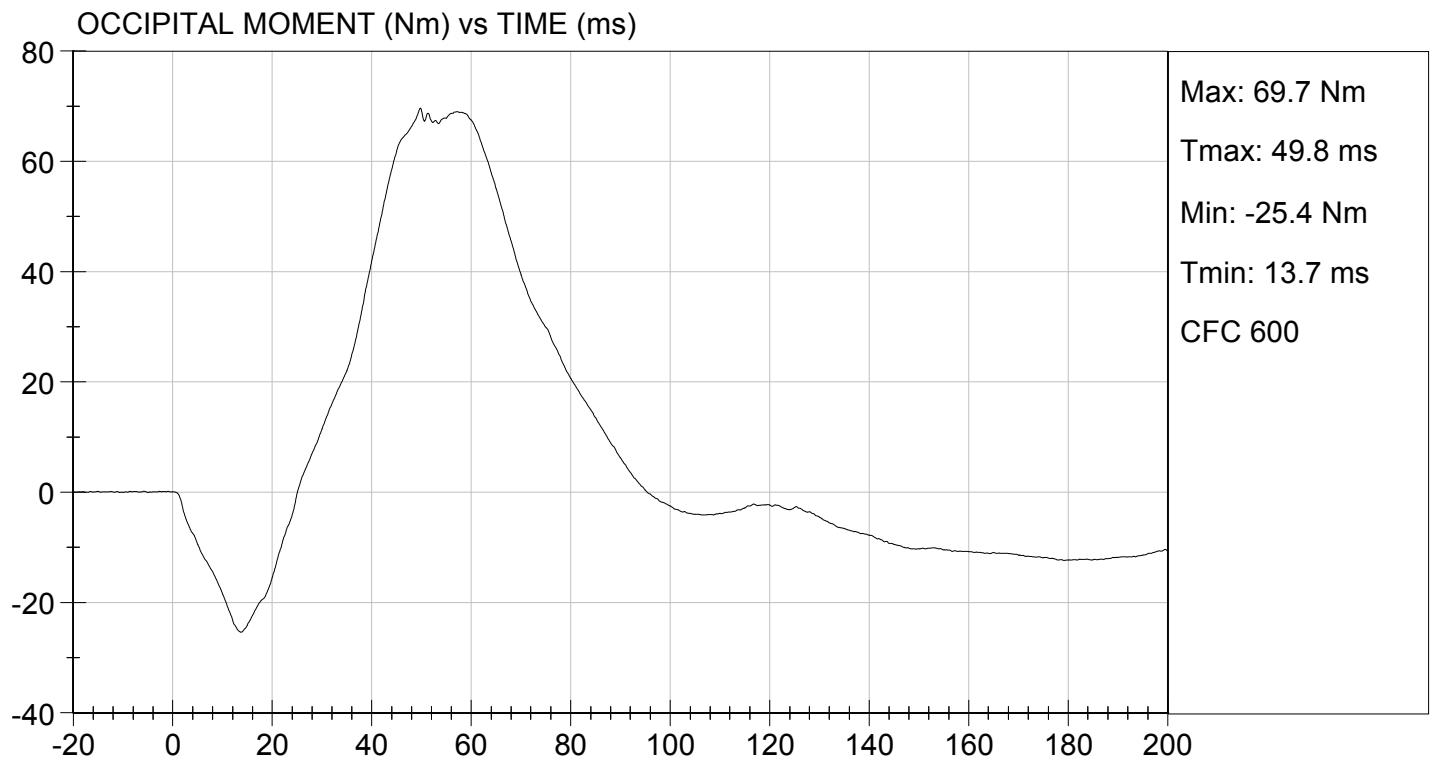
TEST DATE: 07/18/2014
TEST #: D142502





TEST DESC: NECK FLEXION
VELOCITY: 23.40 ft/s, 7.13 m/s

TEST DATE: 07/18/2014
TEST #: D142502

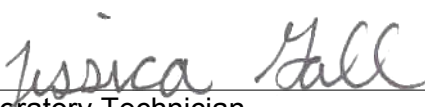


MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D142503

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity		%	10 to 70	49	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.18	Pass
Pendulum Velocity	10 ms	m/s	1.5 to 1.9	1.7	Pass
	20 ms	m/s	3.1 to 3.9	3.6	Pass
	30 ms	m/s	4.6 to 5.6	5.3	Pass
D Plane Rotation	Max	deg	99 to 114	109	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	-65 to -53	-63	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	94	Pass
Overall Results					Pass


 Laboratory Technician

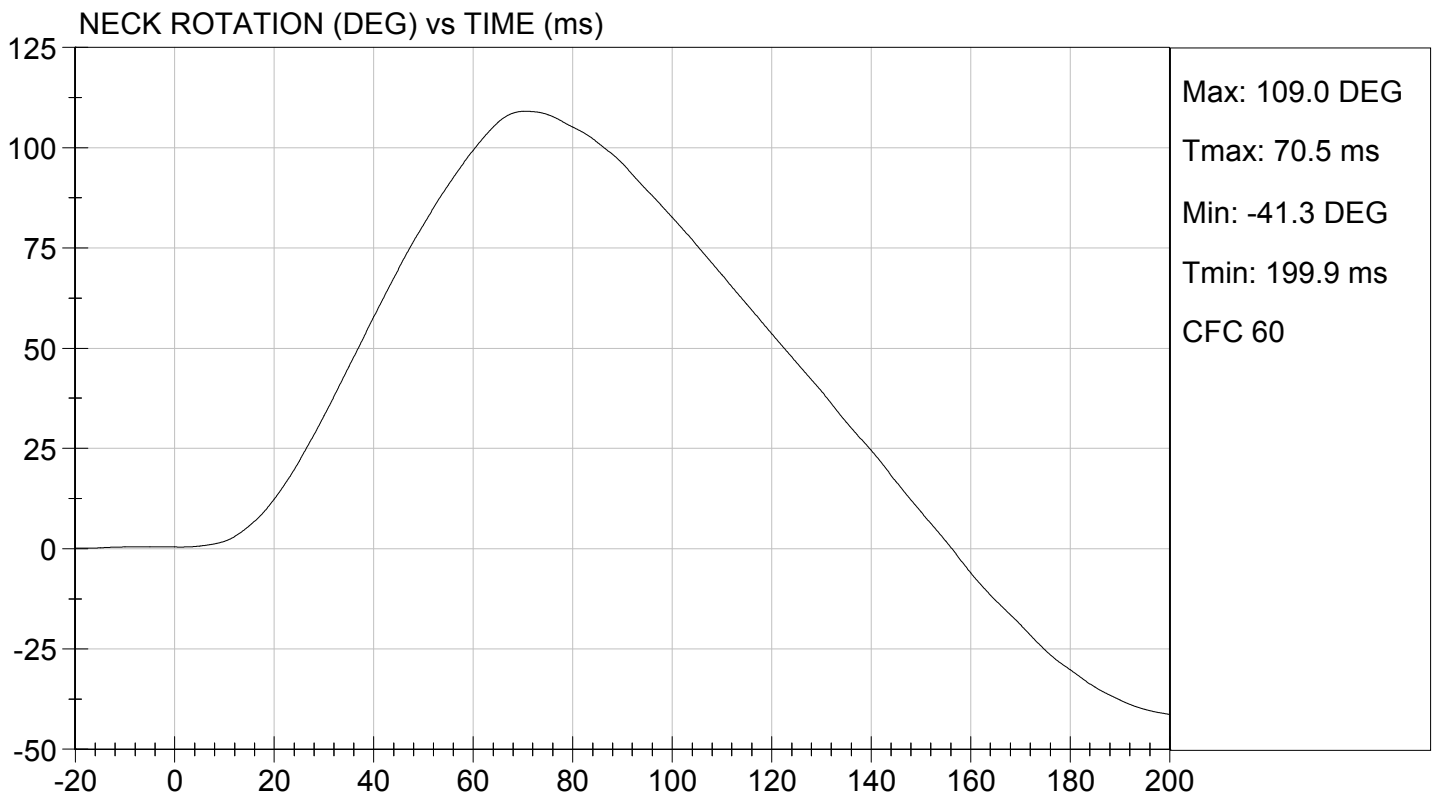
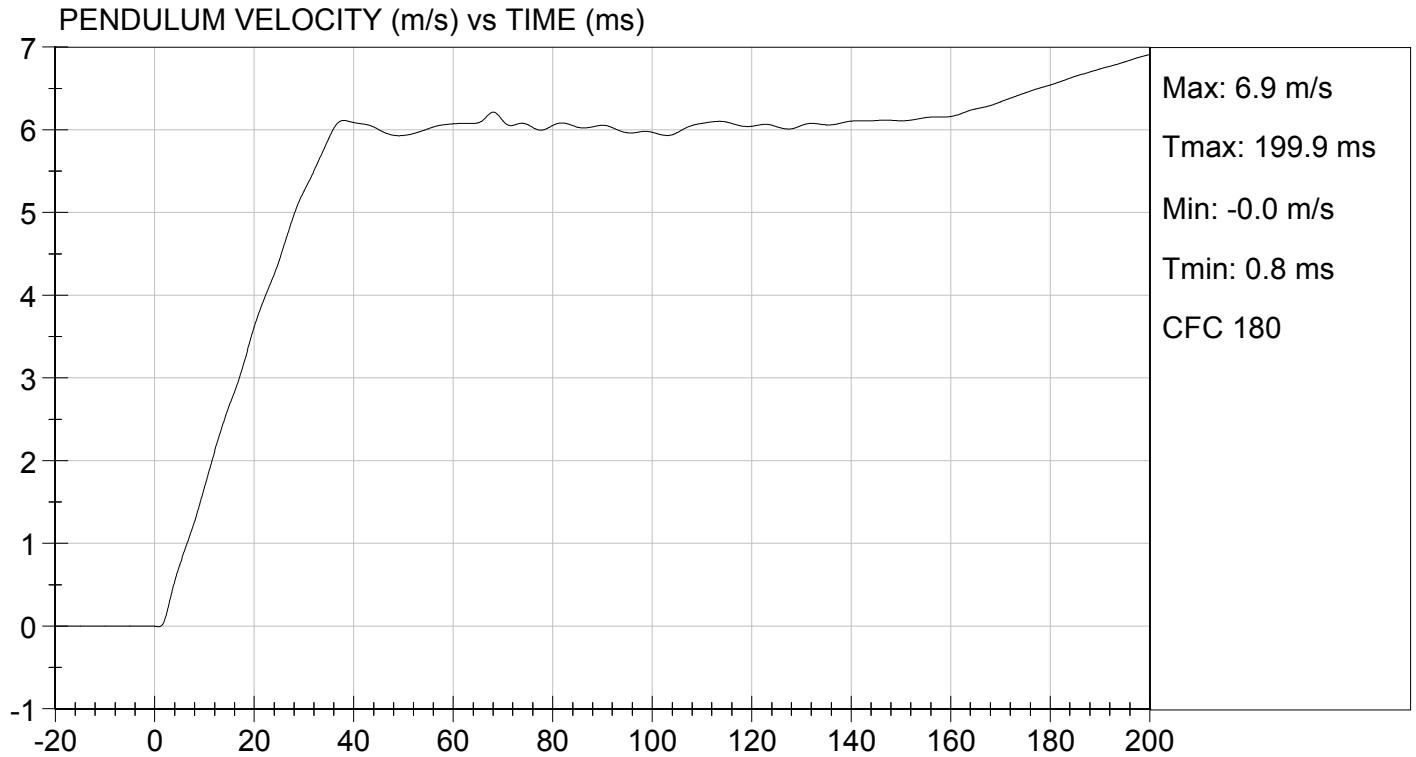
07/18/2014
 Test Date


 Approved By



TEST DESC: NECK EXTENSION
VELOCITY: 20.30 ft/s, 6.18 m/s

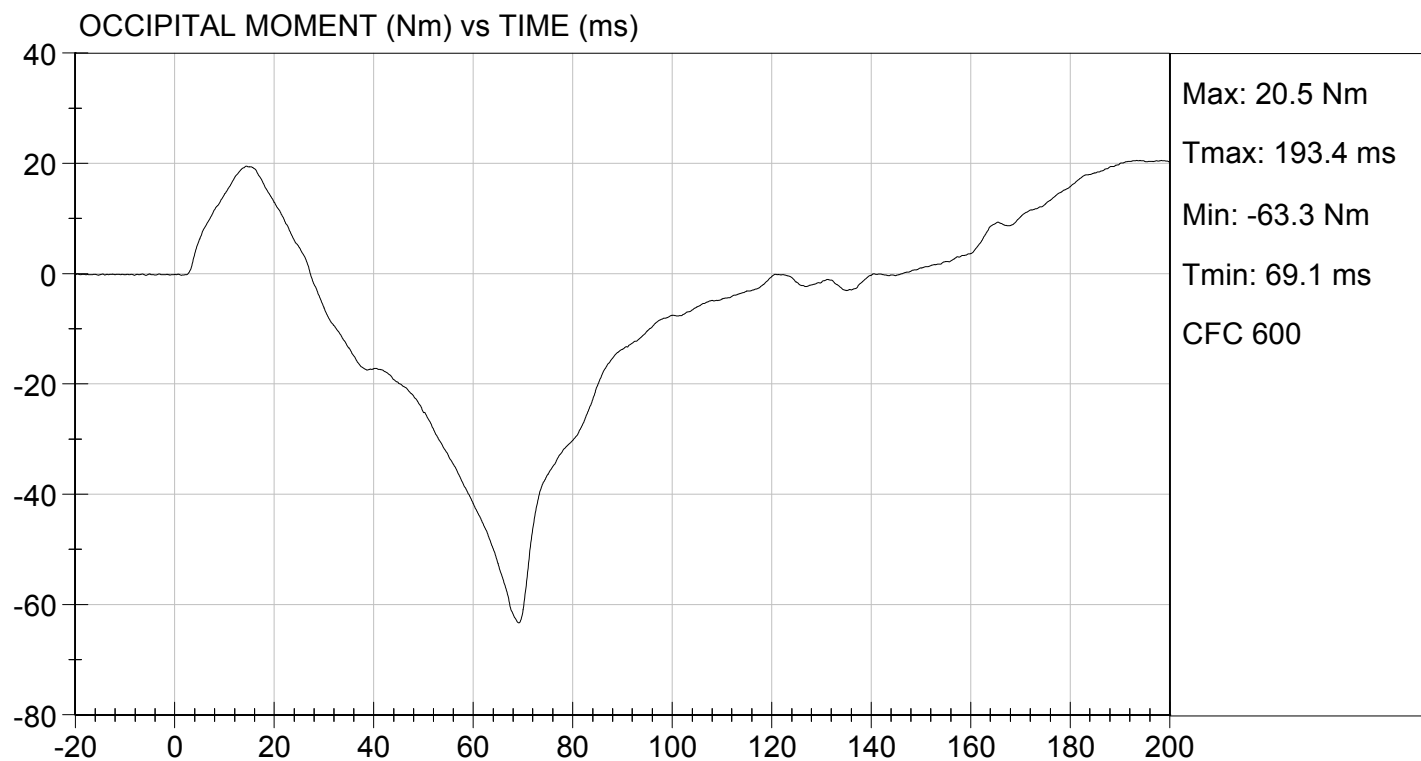
TEST DATE: 07/18/2014
TEST #: D142503





TEST DESC: NECK EXTENSION
VELOCITY: 20.30 ft/s, 6.18 m/s

TEST DATE: 07/18/2014
TEST #: D142503

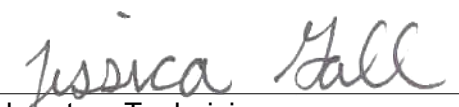


MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D142504

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.4	Pass
Relative Humidity	%	10 to 70	48	Pass
Probe Speed	m/s	6.59 to 6.83	6.68	Pass
Peak Deflection	mm	50 to 58	51	Pass
Peak Resistive Force w/in Deflection Corridor	N	3900 to 4400	4315	Pass
Internal Hysteresis	%	69 to 85	72	Pass
Peak Force 18 mm - 50 mm	N	<= 4600	4312	Pass
Overall Test Results				Pass


Laboratory Technician

07/18/2014

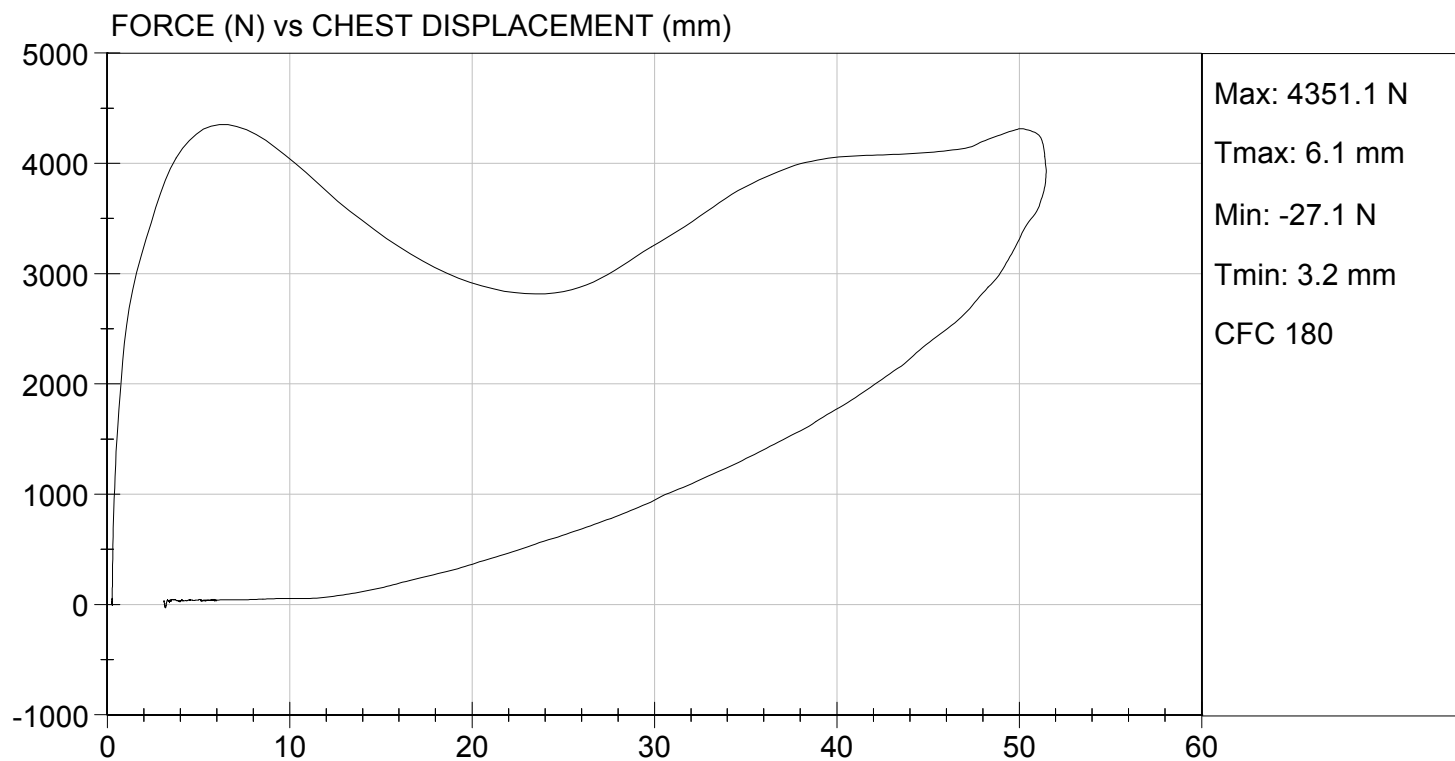
Test Date


Approved By



TEST DESC: THORAX IMPACT
VELOCITY: 21.93 ft/s, 6.68 m/s

TEST DATE: 07/18/2014
TEST #: D142504



MGA RESEARCH CORPORATION

RIGHT KNEE IMPACT TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D142505

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	43	Pass
Probe Speed	m/s	2.07 to 2.13	2.09	Pass
Maximum Force	N	3450 to 4060	3687	Pass
Overall Test Results				Pass

Jessica Gall
Laboratory Technician

07/17/2014

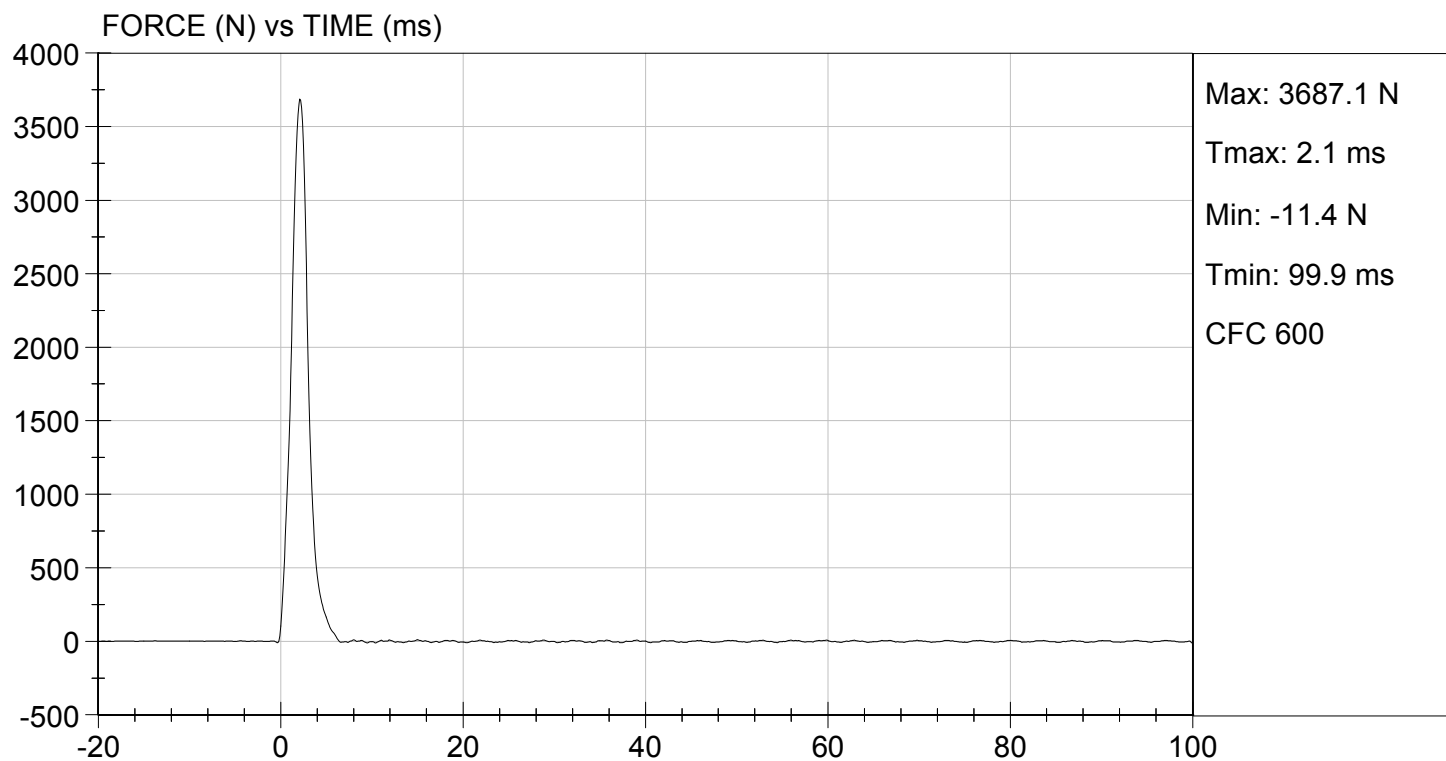
Test Date

David Winkelbauer
Approved By



TEST DESC: RIGHT KNEE
VELOCITY: 6.86 ft/s, 2.09 m/s

TEST DATE: 07/17/2014
TEST #: D142505



MGA RESEARCH CORPORATION

**LEFT KNEE IMPACT TEST
HYBRID III 5TH PERCENTILE**

ATD Serial No: 634

Test I.D: D142506

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	43	Pass
Probe Speed	m/s	2.07 to 2.13	2.08	Pass
Maximum Force	N	3450 to 4060	3734	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

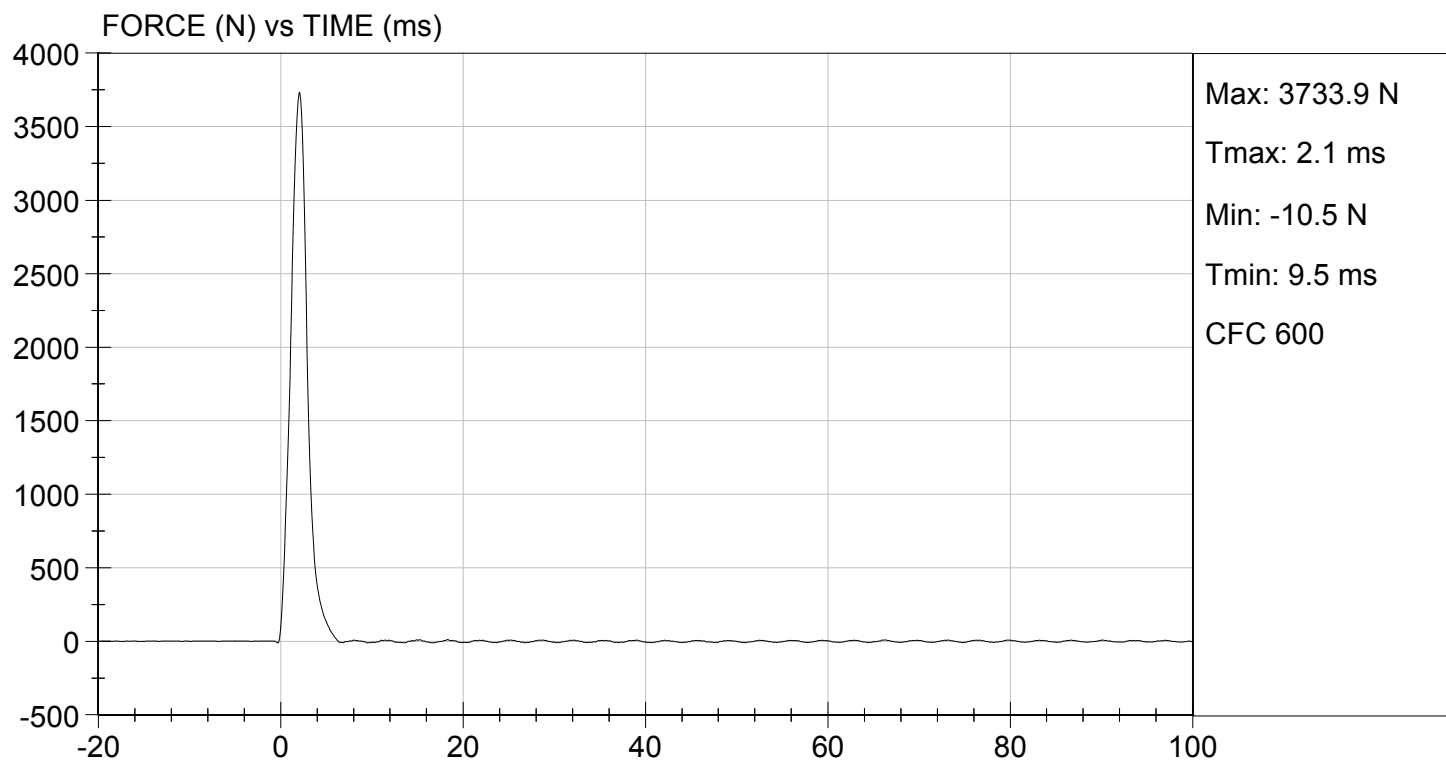
07/17/2014
Test Date

David Winkelbauer
Approved By



TEST DESC: LEFT KNEE
VELOCITY: 6.81 ft/s, 2.08 m/s

TEST DATE: 07/17/2014
TEST #: D142506



MGA RESEARCH CORPORATION

TORSO FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D142507

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	49	Pass
Initial Angle	deg	0 to 20	18	Pass
Return Angle	deg	+/- 8	5	Pass
Force at 45 deg	N	320 to 390	367	Pass
Upper Torso Deflection Rate	deg/s	0.5 to 1.5	0.9	Pass
Overall Result				Pass

Jessica Hall
Laboratory Technician

07/17/2014

Test Date

David Winkelbauer
Approved By

MGA RESEARCH CORPORATION
HEAD DROP TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test ID: D143451

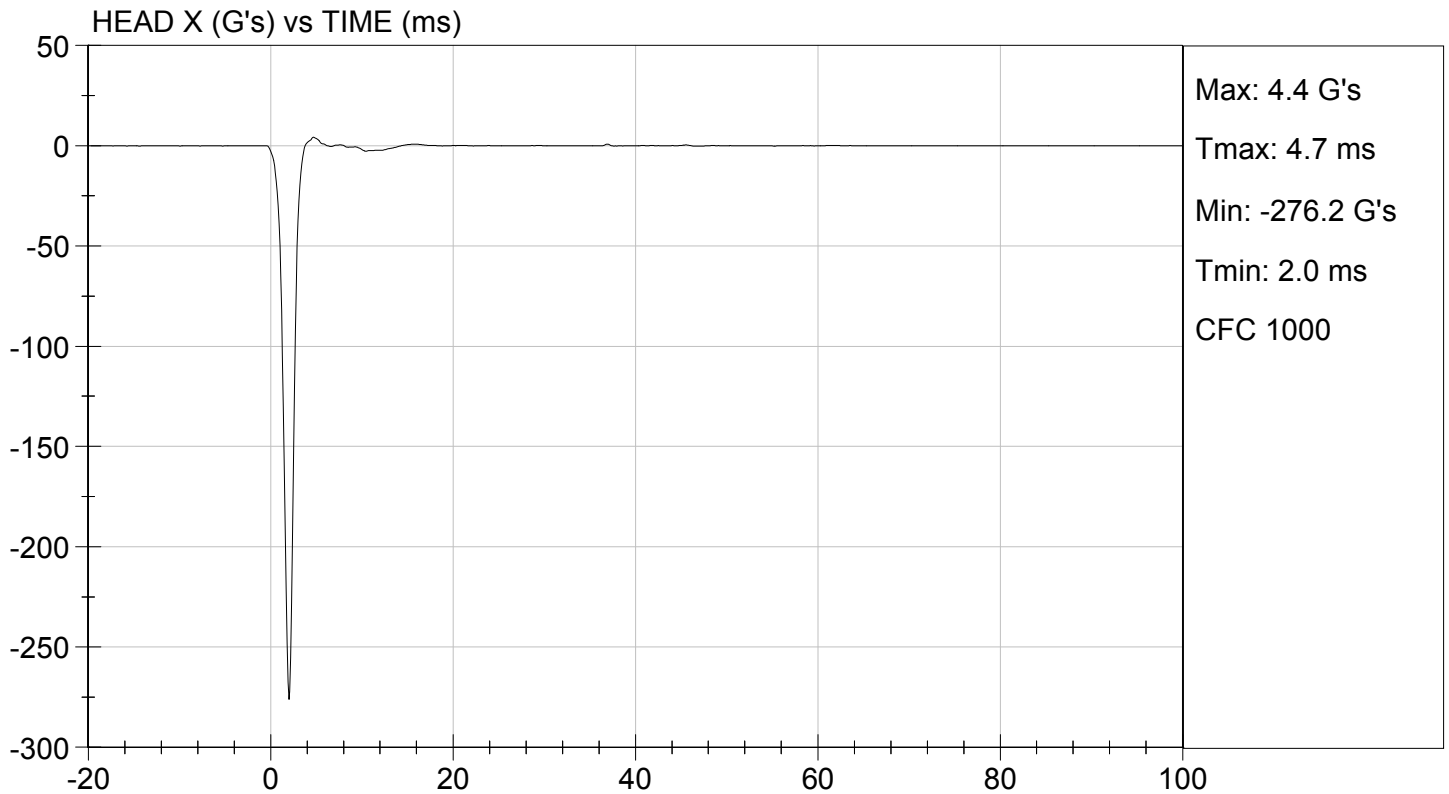
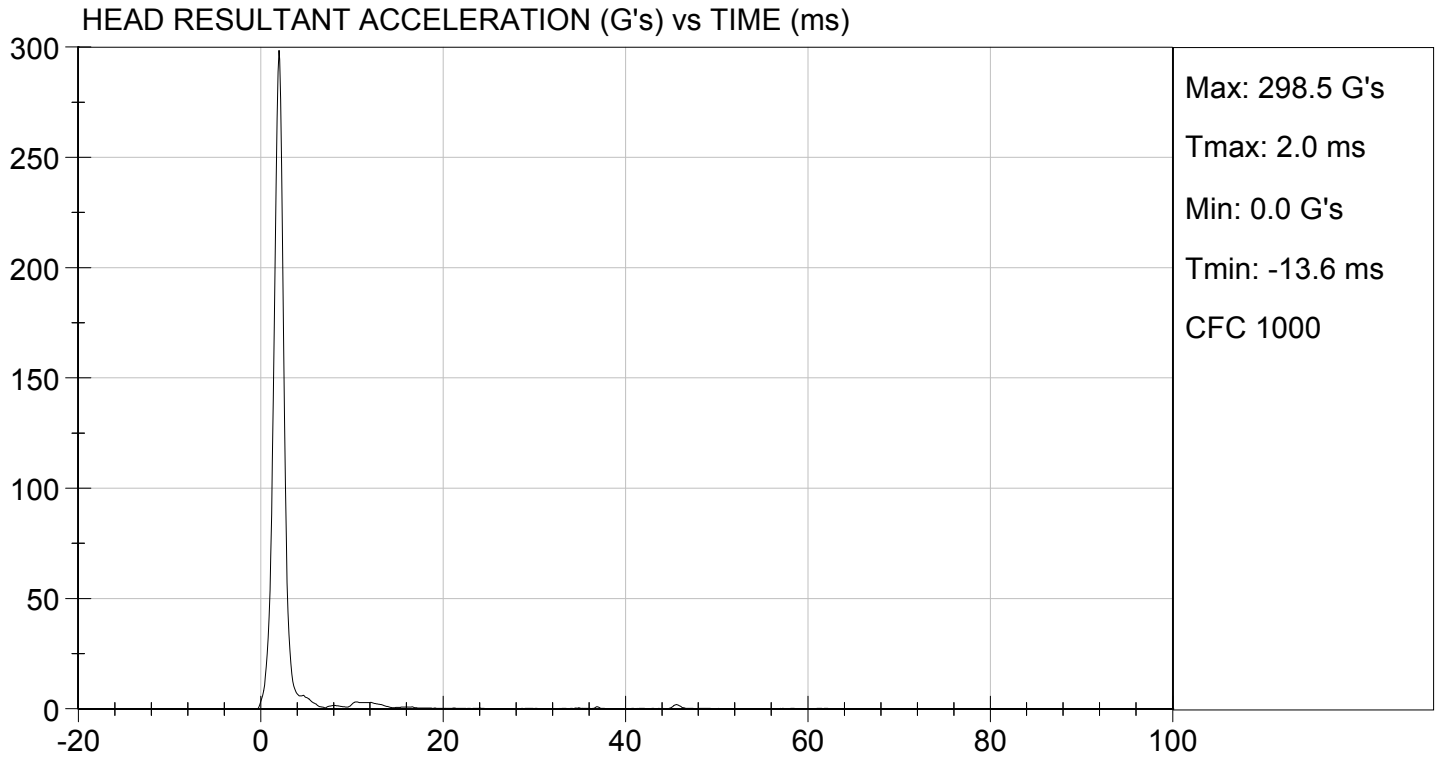
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	22.1	Pass
Laboratory Relative Humidity	%	10 to 70	44	Pass
Peak Resultant Acceleration	G's	250 to 300	299	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-7.7	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

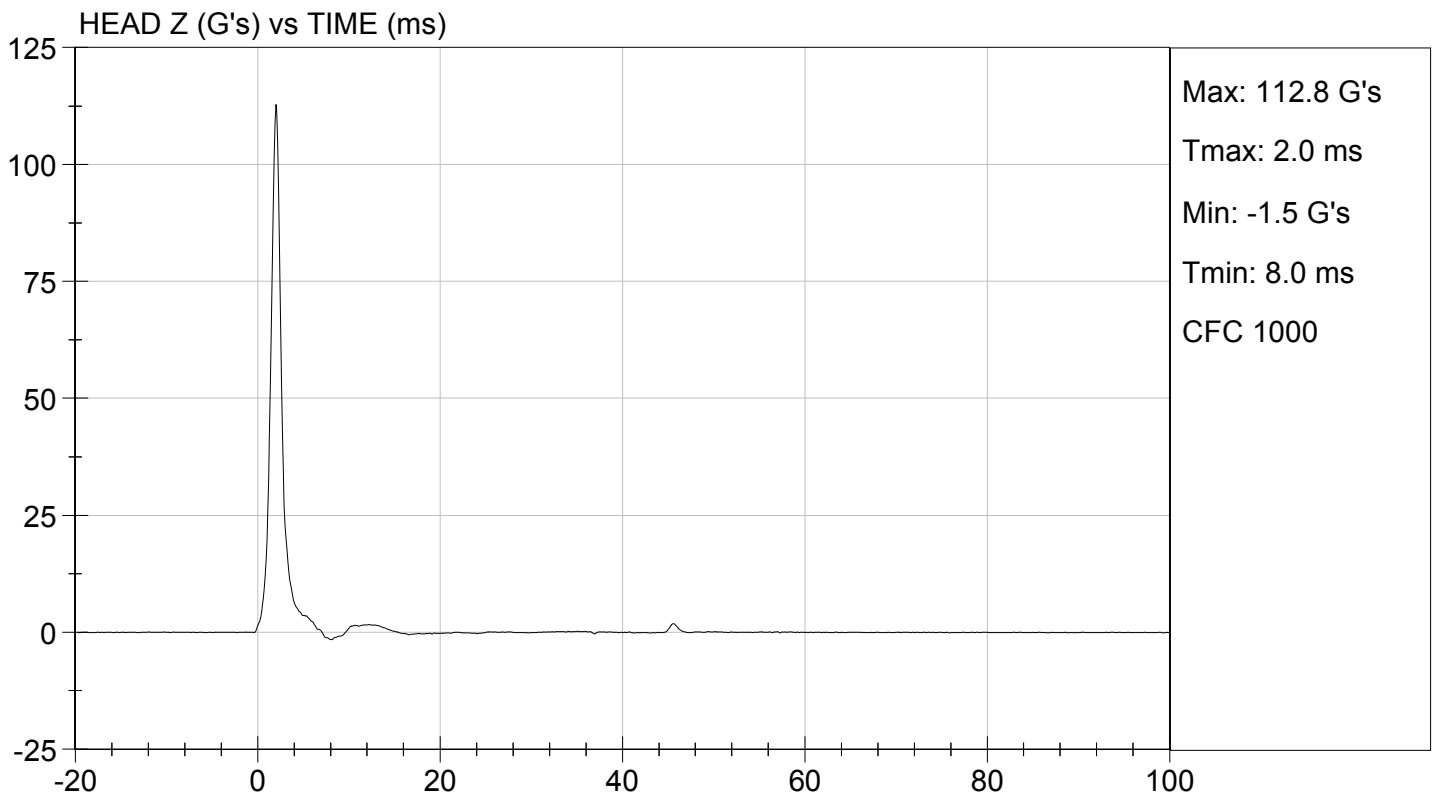
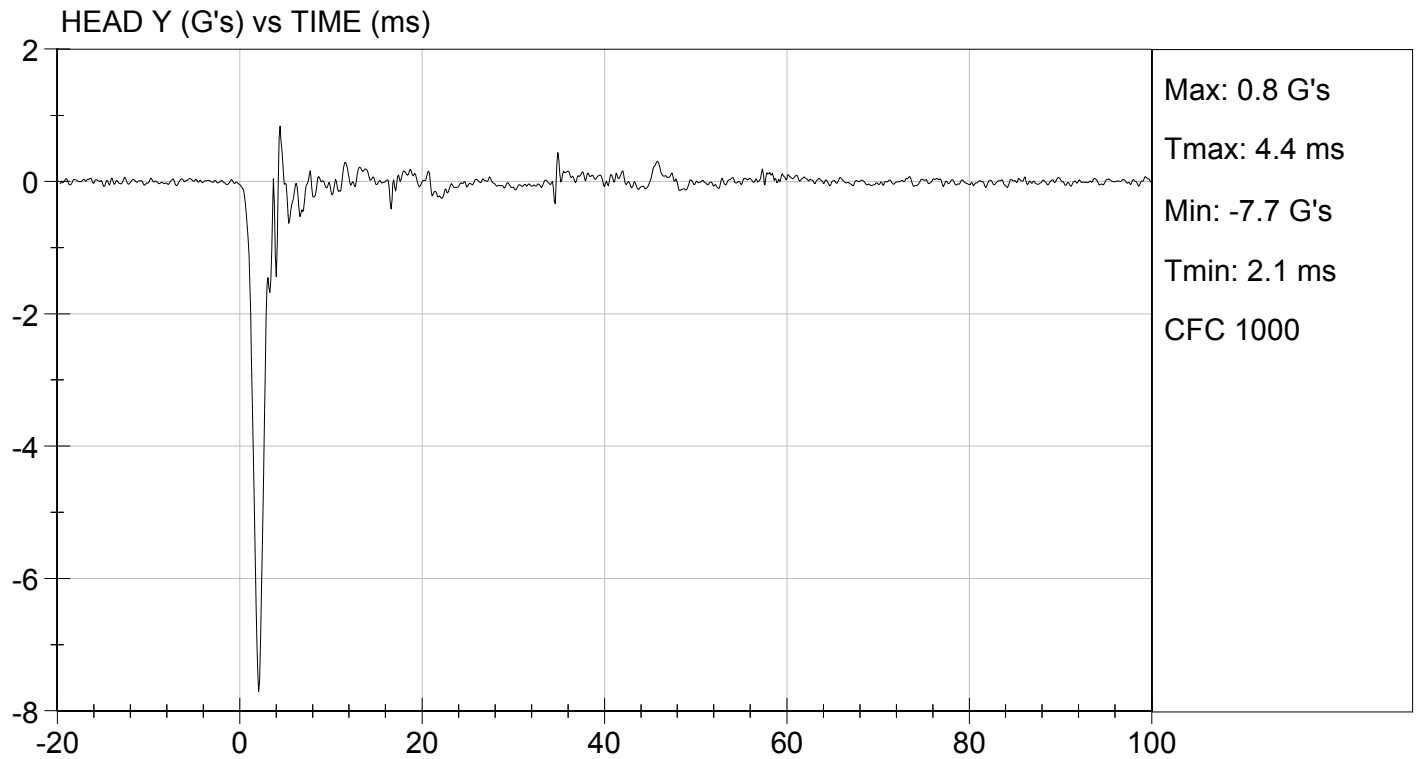
David Schoedel
Laboratory Technician

10/01/2014

Test Date

Jessica Hall
Approved By





MGA RESEARCH CORPORATION

NECK FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D143452

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	44	Pass
Pendulum Speed		m/s	6.89 to 7.13	7.13	Pass
Pendulum Velocity	10 ms	m/s	2.1 to 2.5	2.4	Pass
	20 ms	m/s	4.0 to 5.0	4.4	Pass
	30 ms	m/s	5.8 to 7.0	6.0	Pass
D Plane Rotation	Max	deg	77 to 91	84	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	69 to 83	70	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 to 100	85	Pass
Overall Results					Pass

David Schoedel
Laboratory Technician

10/01/2014

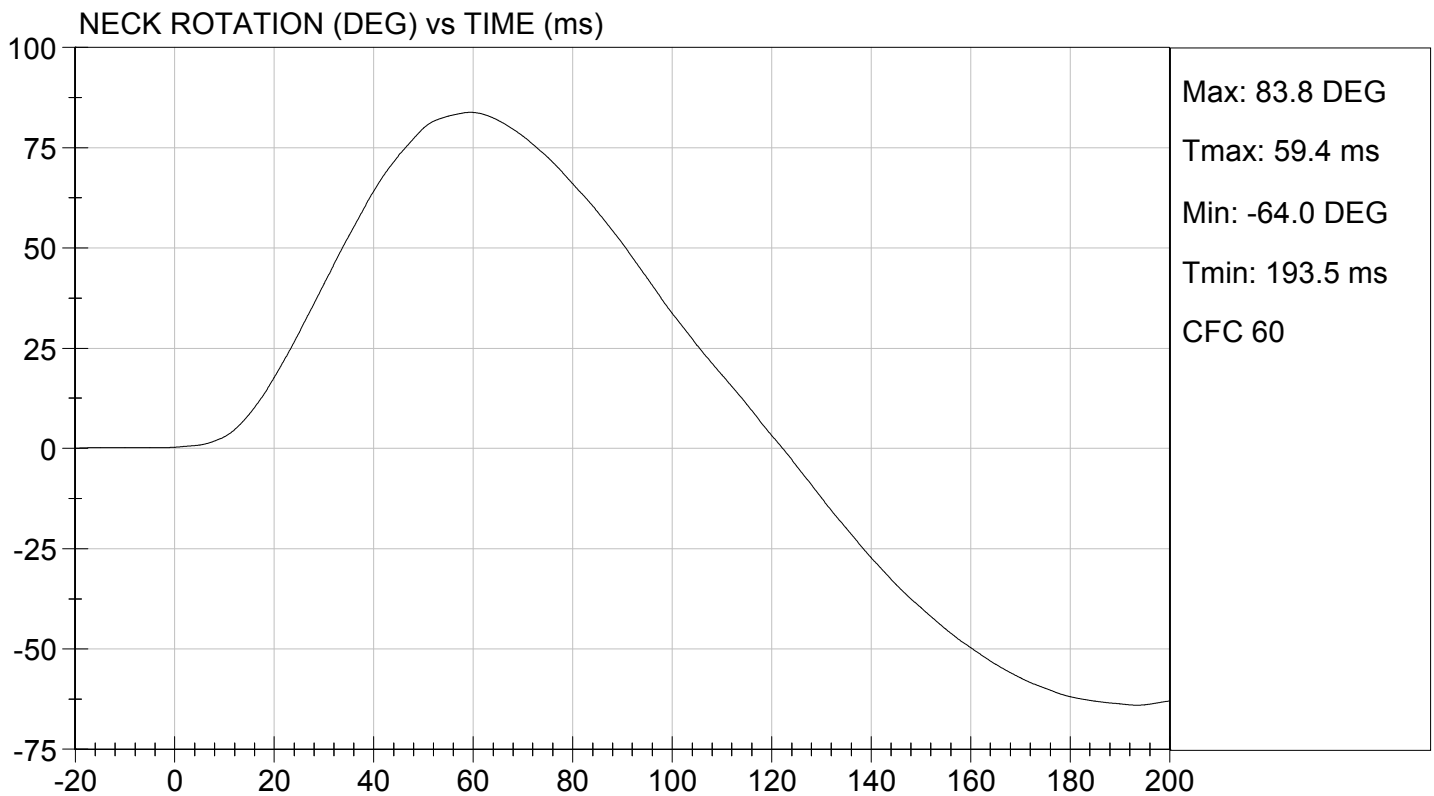
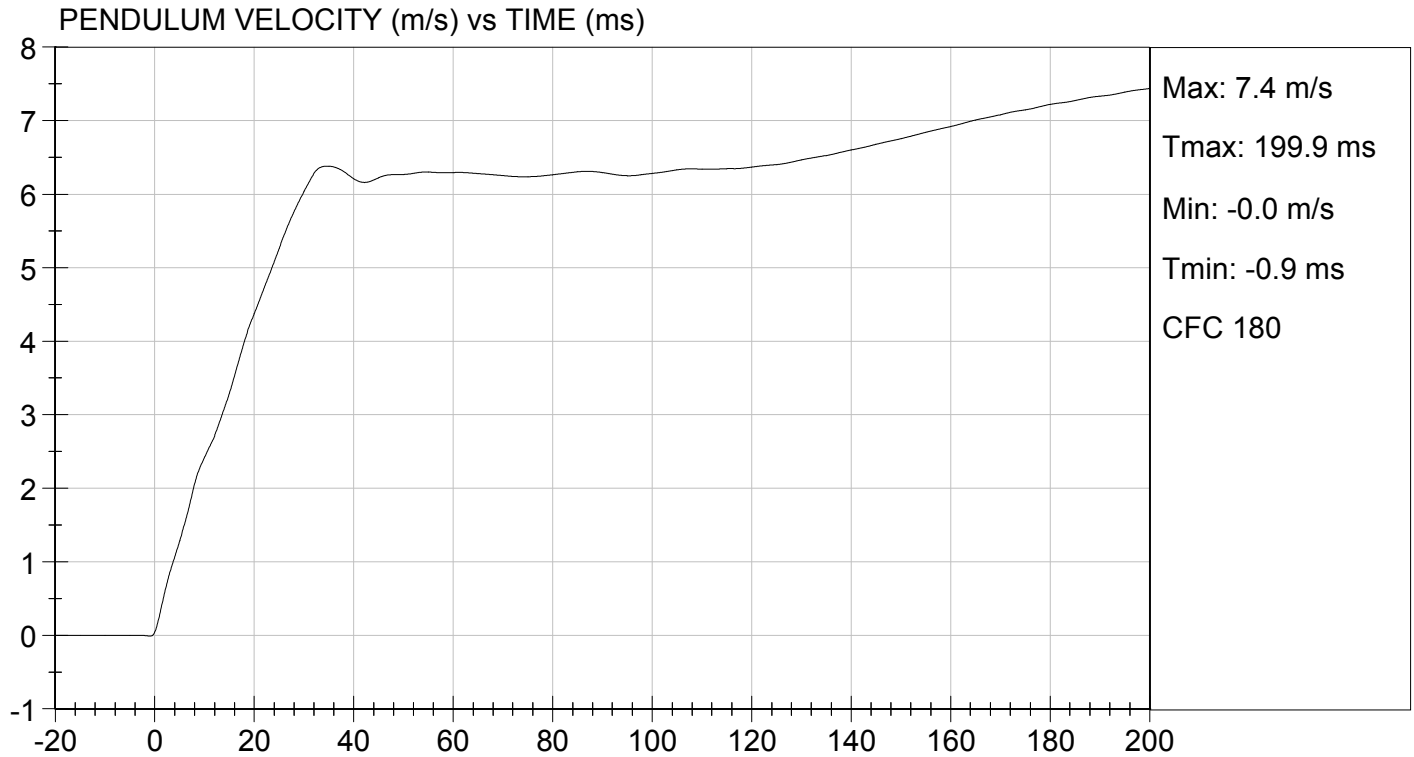
Test Date

Jessica Hall
Approved By



TEST DESC: NECK FLEXION
VELOCITY: 23.40 ft/s, 7.13 m/s

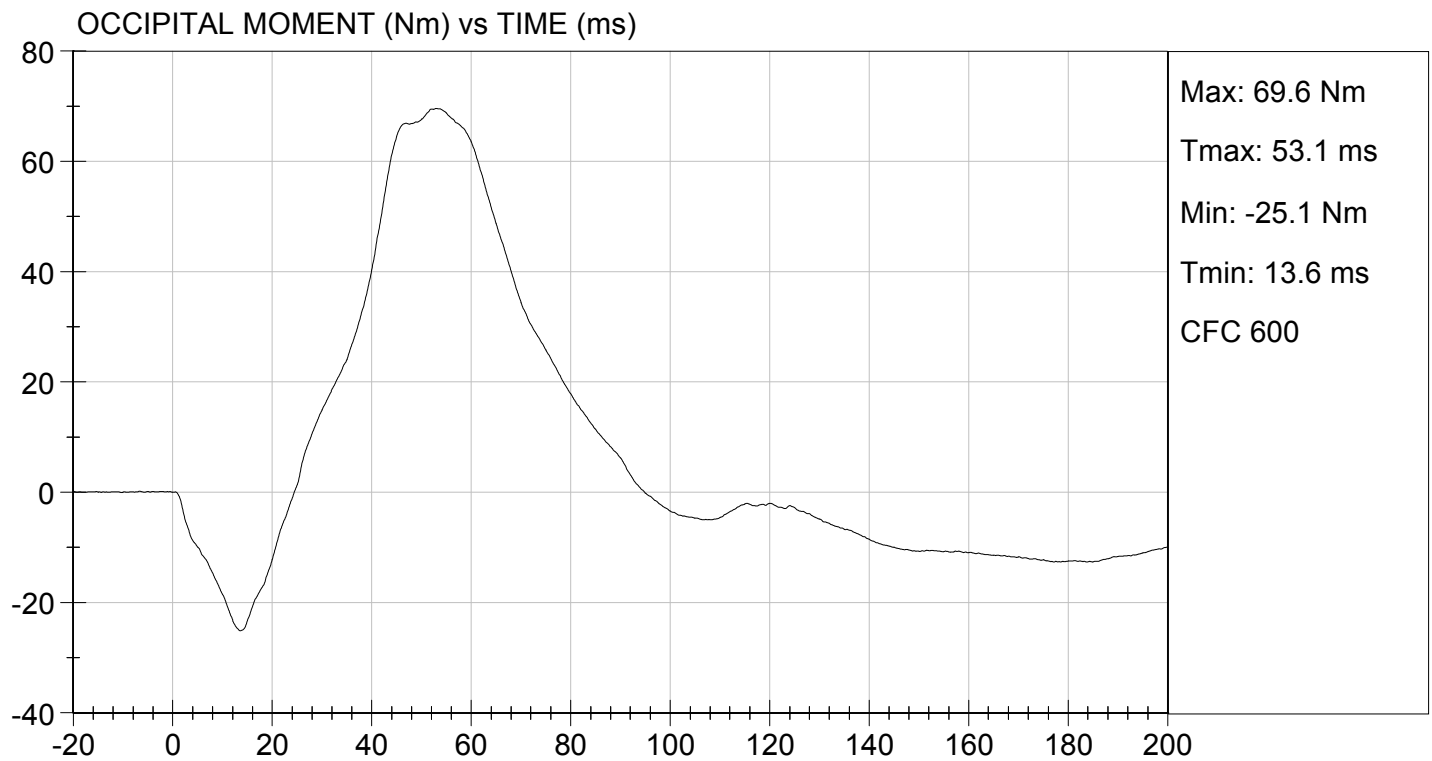
TEST DATE: 10/01/2014
TEST #: D143452





TEST DESC: NECK FLEXION
VELOCITY: 23.40 ft/s, 7.13 m/s

TEST DATE: 10/01/2014
TEST #: D143452



MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D143453

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	44	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.12	Pass
Pendulum Velocity	10 ms	m/s	1.5 to 1.9	1.7	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	106	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	-65 to -53	-54	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	97	Pass
Overall Results					Pass

David Schoedel
Laboratory Technician

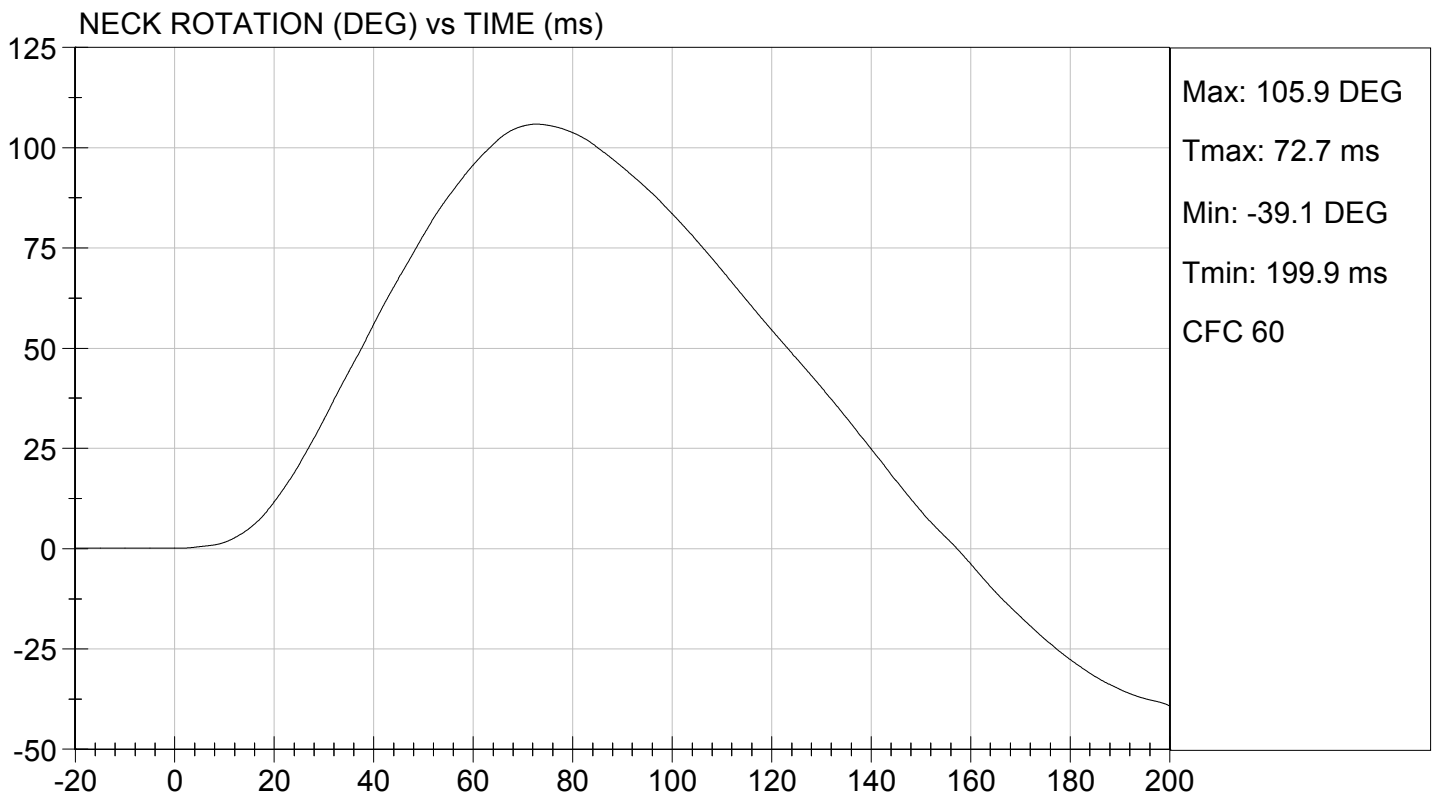
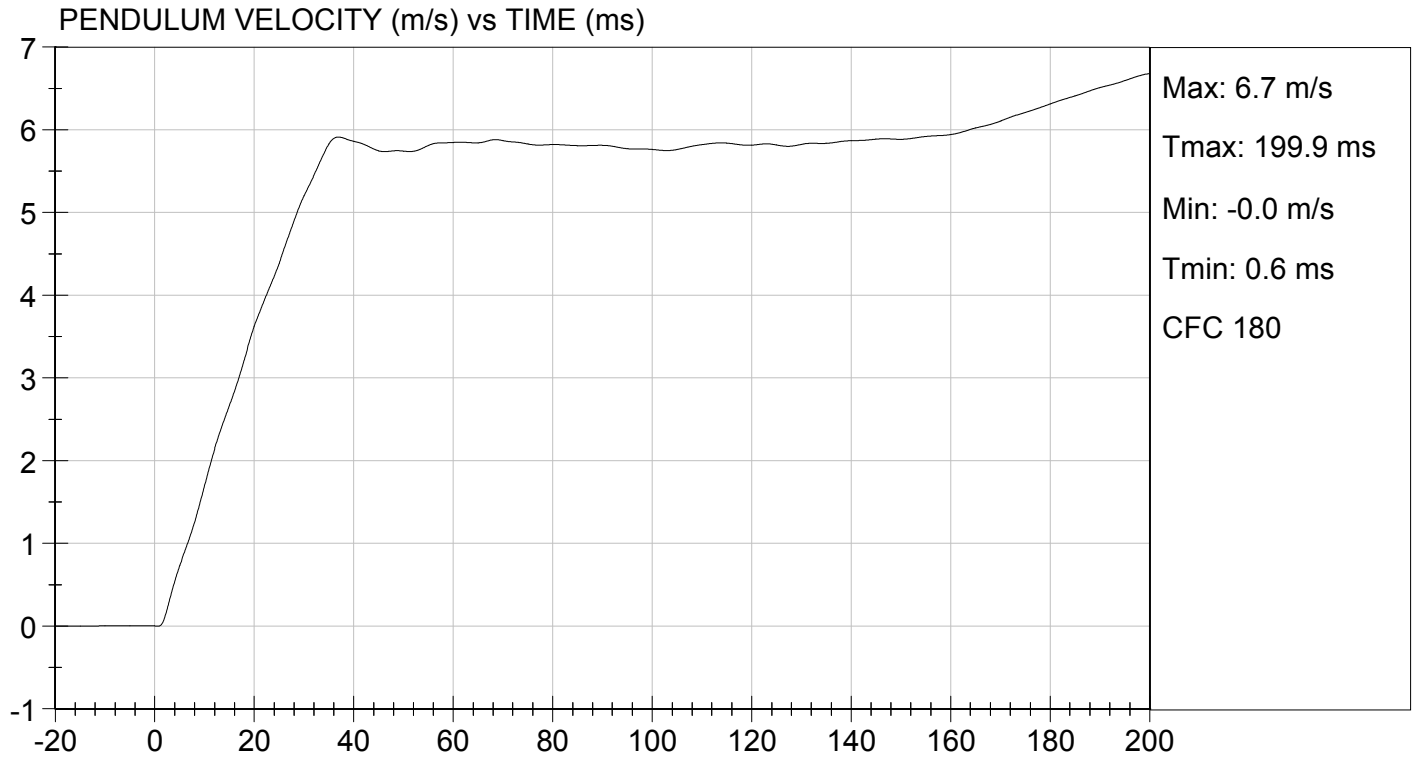
10/01/2014
Test Date

Jessica Hall
Approved By



TEST DESC: NECK EXTENSION
VELOCITY: 20.08 ft/s, 6.12 m/s

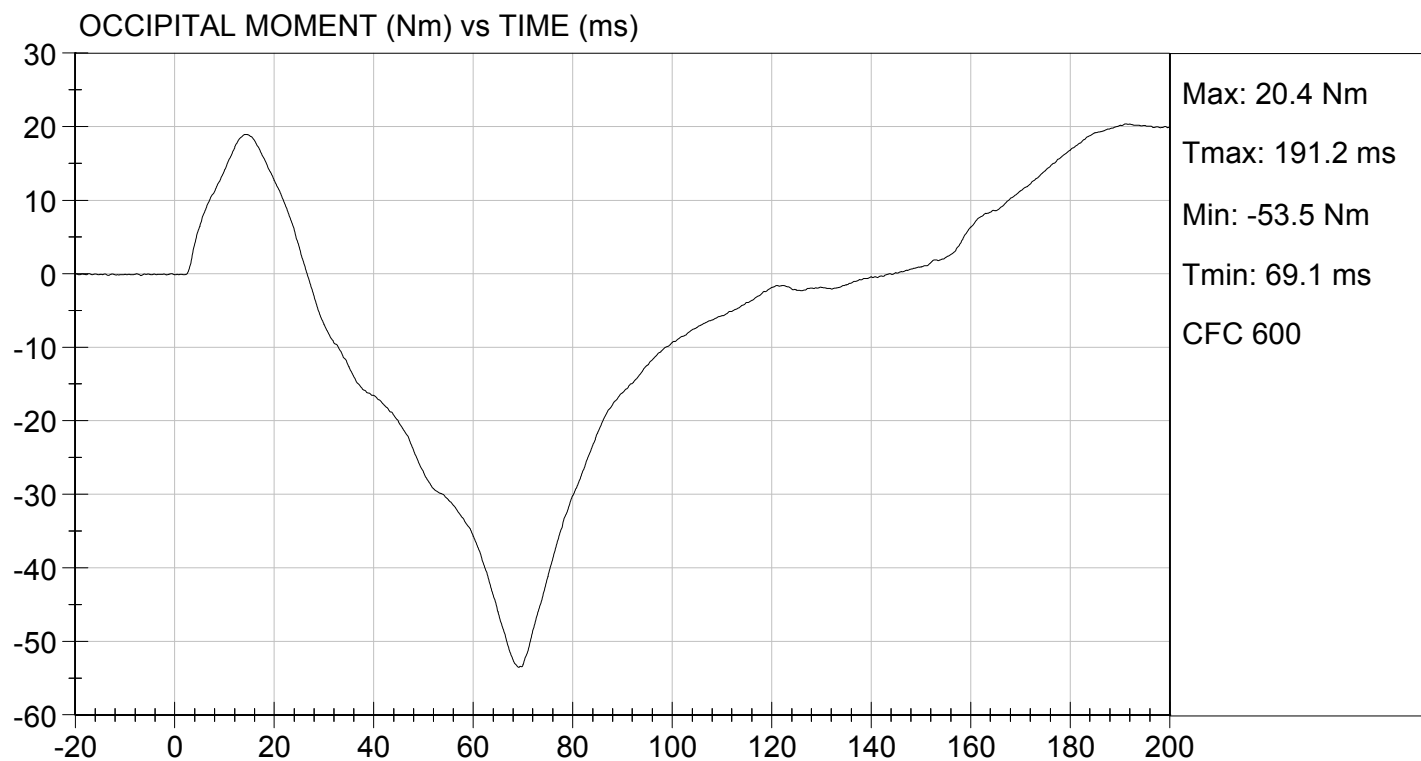
TEST DATE: 10/01/2014
TEST #: D143453





TEST DESC: NECK EXTENSION
VELOCITY: 20.08 ft/s, 6.12 m/s

TEST DATE: 10/01/2014
TEST #: D143453



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D143454

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.7	Pass
Relative Humidity	%	10 to 70	47	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	N	3900 to 4400	4299	Pass
Internal Hysteresis	%	69 to 85	73	Pass
Peak Force 18 mm - 50 mm	N	<= 4600	4304	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

10/01/2014

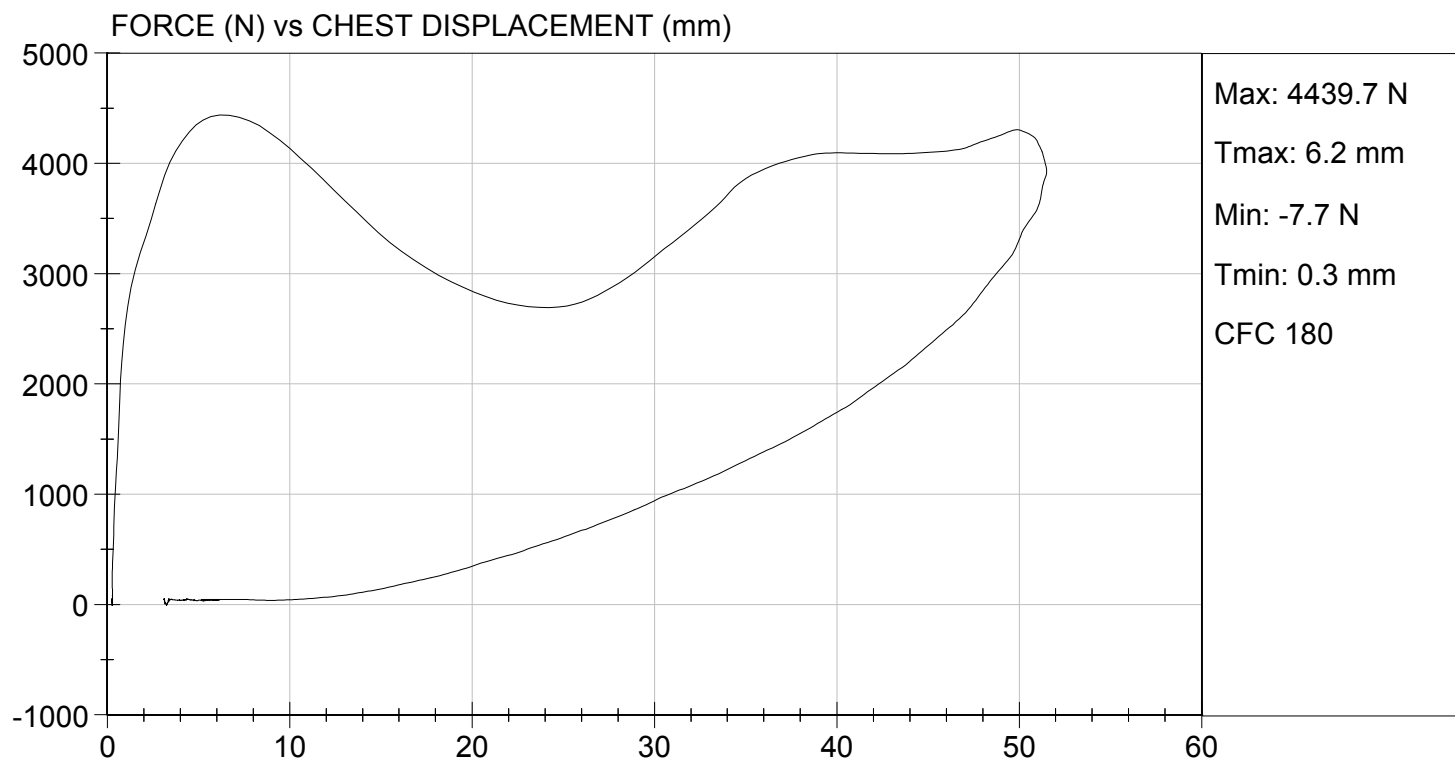
Test Date

Jessica Hall
Approved By



TEST DESC: THORAX IMPACT
VELOCITY: 22.22 ft/s, 6.77 m/s

TEST DATE: 10/01/2014
TEST #: D143454



MGA RESEARCH CORPORATION

RIGHT KNEE IMPACT TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D143455

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	44	Pass
Probe Speed	m/s	2.07 to 2.13	2.13	Pass
Maximum Force	N	3450 to 4060	3942	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

10/01/2014

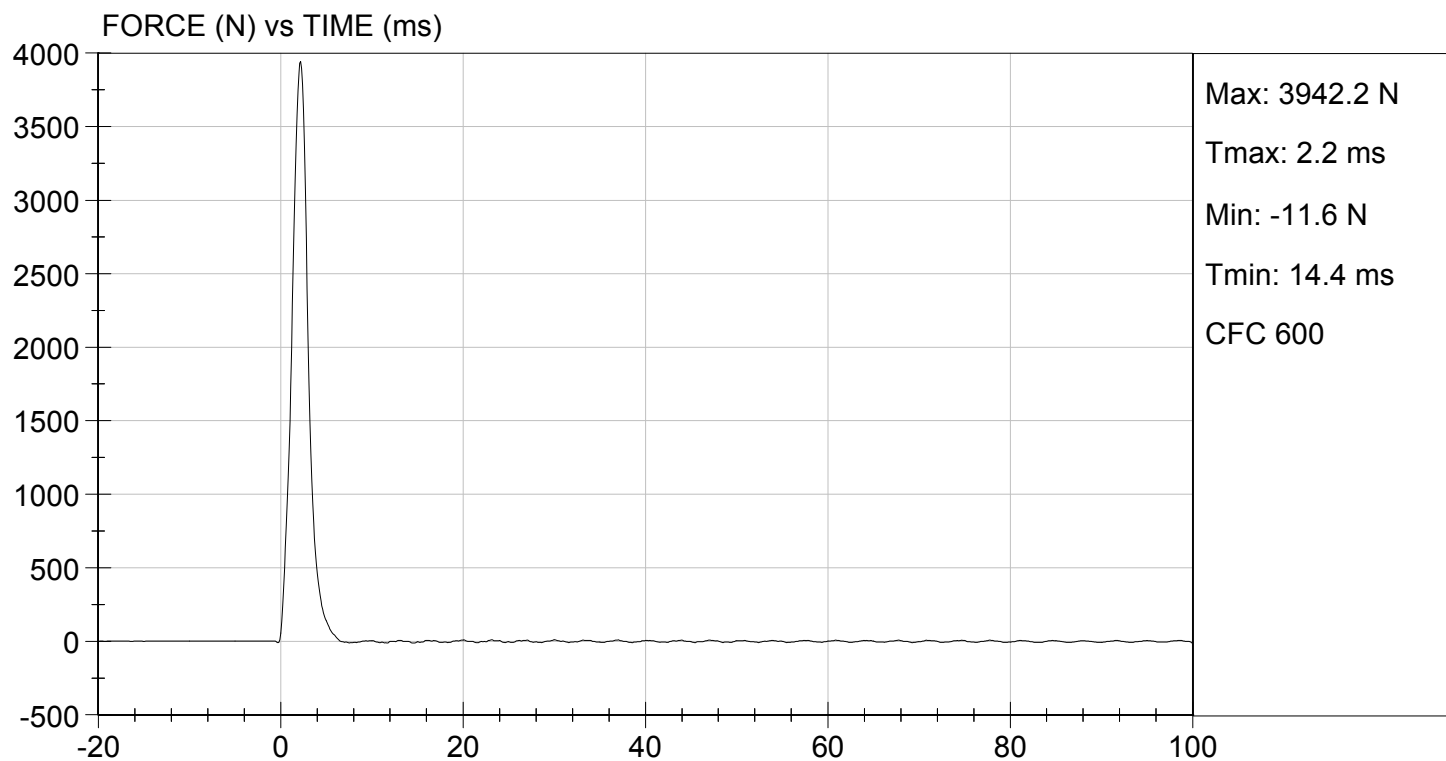
Test Date

Jessica Hall
Approved By



TEST DESC: RIGHT KNEE
VELOCITY: 7.00 ft/s, 2.13 m/s

TEST DATE: 10/01/2014
TEST #: D143455



MGA RESEARCH CORPORATION

**LEFT KNEE IMPACT TEST
HYBRID III 5TH PERCENTILE**

ATD Serial No: 634

Test I.D: D143456

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	44	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	N	3450 to 4060	4042	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

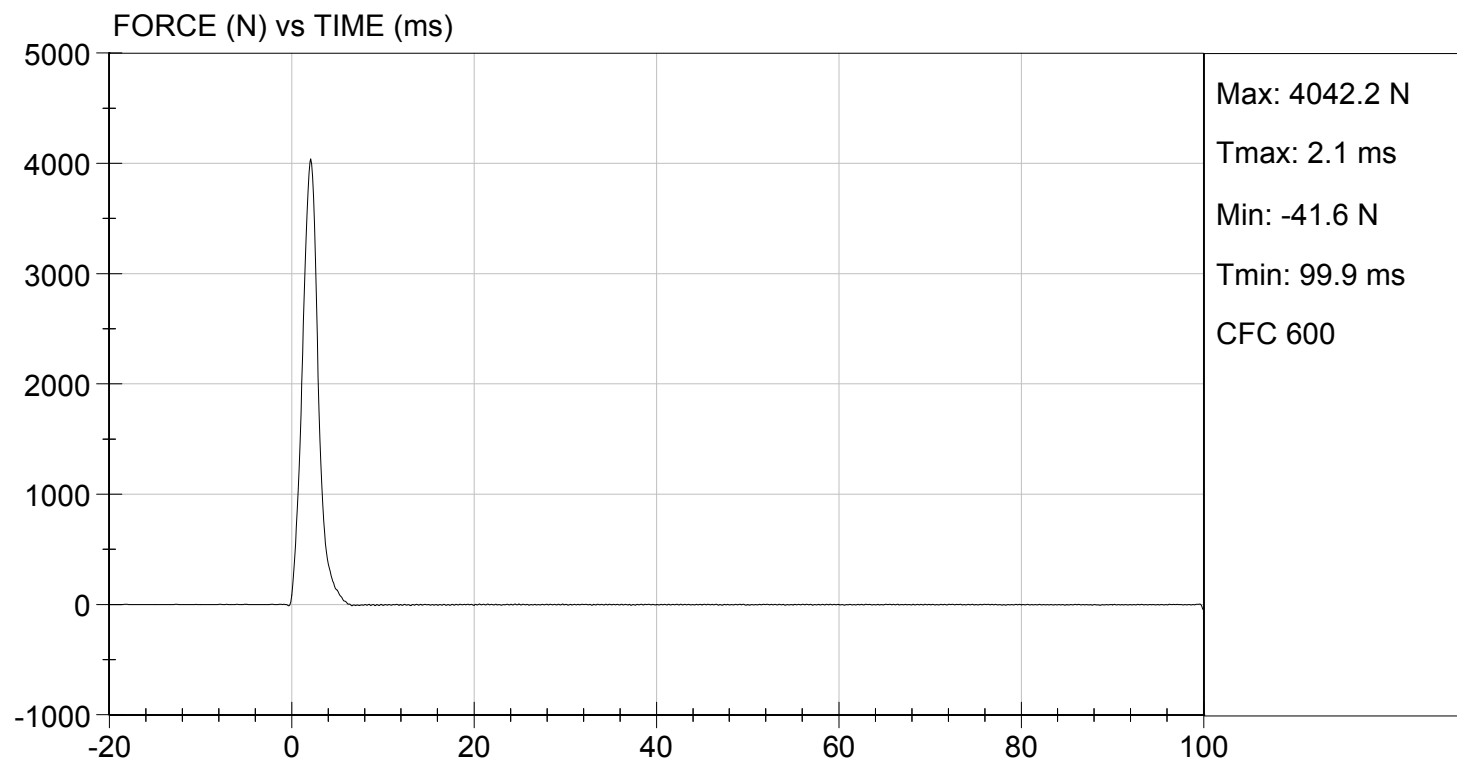
10/01/2014
Test Date

Jessica Hall
Approved By



TEST DESC: LEFT KNEE
VELOCITY: 6.97 ft/s, 2.12 m/s

TEST DATE: 10/01/2014
TEST #: D143456



MGA RESEARCH CORPORATION

TORSO FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D143457

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	48	Pass
Initial Angle	deg	0 to 20	18	Pass
Return Angle	deg	+/- 8	4	Pass
Force at 45 deg	N	320 to 390	372	Pass
Upper Torso Deflection Rate	deg/s	0.5 to 1.5	0.9	Pass
Overall Result				Pass

David Schoedel
Laboratory Technician

10/01/2014

Test Date

Jessica Hall
Approved By