

REPORT NUMBER: NCAP-MGA-2018-023

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

**VOLKSWAGEN DE MEXICO S.A. DE C.V. MEXICO
2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV
NHTSA No.: O20185803**

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



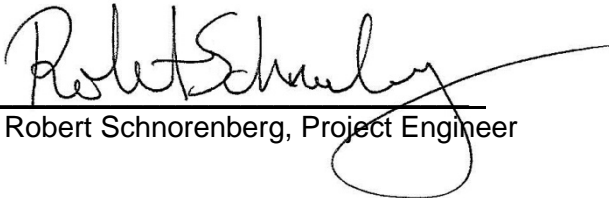
Test Date: December 8, 2017


Final Report Date: March 14, 2023

FINAL REPORT

**U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Office of Crashworthiness Standards
Mail Code: NRM-110
1200 New Jersey Ave, SE
Washington, DC 20590**

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Prepared by: 
Robert Schnorenberg, Project Engineer

Approved by: 
David Winkelbauer, Project Manager

Approval Date: March 14, 2023

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

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NHTSA, Office of Crashworthiness Standards

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Technical Report Documentation Page

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15. Supplementary Notes																																																							
<p>16. Abstract</p> <p>A 56.3 km/h NCAP Frontal Impact Test was conducted on a 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV 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 December 8, 2017.</p> <p>The impact velocity of the vehicle was 56.26 km/h and the ambient temperature at the barrier face at the time of impact was 21.9°C. The target vehicle post-test maximum crush was 276mm located to the left of the vehicle centerline. The test vehicle's performance was as follows:</p>																																																							
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="width: 30%;">Measurement Description</th> <th rowspan="2" style="width: 10%;">Units</th> <th colspan="2" style="width: 20%;">Driver ATD</th> <th colspan="2" style="width: 20%;">Passenger ATD</th> </tr> <tr> <th style="width: 10%;">Threshold</th> <th style="width: 10%;">Result</th> <th style="width: 10%;">Threshold</th> <th style="width: 10%;">Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₁₅)</td> <td>N/A</td> <td style="text-align: center;">700</td> <td style="text-align: center;">108</td> <td style="text-align: center;">700</td> <td style="text-align: center;">210</td> </tr> <tr> <td>Maximum Chest</td> <td>mm</td> <td style="text-align: center;">63</td> <td style="text-align: center;">28</td> <td style="text-align: center;">52</td> <td style="text-align: center;">14</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td style="text-align: center;">1</td> <td style="text-align: center;">0.31</td> <td style="text-align: center;">1</td> <td style="text-align: center;">0.43</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td style="text-align: center;">4170</td> <td style="text-align: center;">1654</td> <td style="text-align: center;">2620</td> <td style="text-align: center;">987</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td style="text-align: center;">4000</td> <td style="text-align: center;">300</td> <td style="text-align: center;">2520</td> <td style="text-align: center;">398</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td style="text-align: center;">10008</td> <td style="text-align: center;">2606</td> <td style="text-align: center;">6805</td> <td style="text-align: center;">2266</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td style="text-align: center;">10008</td> <td style="text-align: center;">2847</td> <td style="text-align: center;">6805</td> <td style="text-align: center;">2174</td> </tr> </tbody> </table>				Measurement Description	Units	Driver ATD		Passenger ATD		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC ₁₅)	N/A	700	108	700	210	Maximum Chest	mm	63	28	52	14	Nij	N/A	1	0.31	1	0.43	Neck Tension	N	4170	1654	2620	987	Neck Compression	N	4000	300	2520	398	Left Femur Force	N	10008	2606	6805	2266	Right Femur Force	N	10008	2847	6805	2174
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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 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV at a velocity of 56.26 km/h. The test was performed at MGA Research Corporation on December 8, 2017. 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.

The driver (position 1) ATD (Serial No. 351) and the right-front passenger (position 2) ATD (Serial No. 138) were calibrated previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C of this report.

The 630 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 276mm to the left of the vehicle centerline 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 contacted the airbag. The driver's head also contacted the headliner and A-Pillar. The driver's knees contacted the knee bolster. The passenger's visible contact points were as follows: The passenger's head contacted the airbag. The passenger's head also contacted the headrest. The passenger's knees contacted the glove box.

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)	108	0.31	1654	300	46	28	2606	2847
Passenger (5 th)	210	0.43	987	398	49	14	2266	2174

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

TEST NOTES

The driver seatbelt completely separated at the buckle latch plate during the event.

- Driver Lap Belt load cell was not installed.
- Passenger Lap Belt load cell was not installed.
- Passenger Neck Mz recorded no valid data after 64ms.
- Top of Engine X recorded no valid data after 50ms.
- Barrier K-16 My recorded no valid data.
- Barrier G-08 My recorded no valid data.
- Barrier G-08 Mz recorded no valid data.
- Barrier F-01 Fx recorded no valid data.
- Barrier F-01 My recorded no valid data.
- Barrier F-01 Mz recorded no valid data.
- Barrier C-04 Fx recorded no valid data.
- Barrier C-04 My recorded no valid data.
- Barrier C-04 Mz recorded no valid data.

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: 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV NHTSA No.: O20185803
 Test Program: NCAP Frontal Barrier Impact Test Test Date: 12/8/2017

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	O20185803	Traction Control System (TCS)	Yes
Model Year	2018	Power Steering	Yes
Make	Volkswagen	Power Window Auto-Reverse	Yes
Model	Tiguan 2.0 TSI S	Driver Frontal Airbag	Yes
Body Style	5-Door SUV	Driver Curtain Airbag	Yes
VIN	3VV0B7AXXJM054095	Driver Head/Torso Airbag	No
Body Color	Silk Blue Metallic	Driver Torso Airbag	No
Odometer (km/mi)	175km / 109mi	Driver Torso/Pelvis Airbag	Yes
Engine Displacement (L)	2.0 L	Driver Pelvis Airbag	No
Type/No. Cylinders	Inline 4	Driver Knee Airbag	No
Engine Placement	Lateral	Front Pass. Frontal Airbag	Yes
Transmission Type	Automatic	Front Pass. Curtain Airbag	Yes
Transmission Speeds	8	Front Pass. Head/Torso Airbag	No
Overdrive	Yes	Front Pass. Torso Airbag	No
Final Drive	AWD	Front Pass. Torso/Pelvis Airbag	Yes
Roof Rack	No	Front Pass. Pelvis Airbag	No
Sunroof/T-Top	No	Front Pass. Knee Airbag	No
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
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DATA FROM CERTIFICATION LABEL

Manufactured By	VOLKSWAGEN DE MEXICO S.A. DE C.V. MEXICO	GVWR (kg)	2310
		GAWR Front (kg)	1190
Date of Manufacture	09/17	GAWR Rear (kg)	1170

VEHICLE SEATING AND WEIGHT CAPACITY DATA

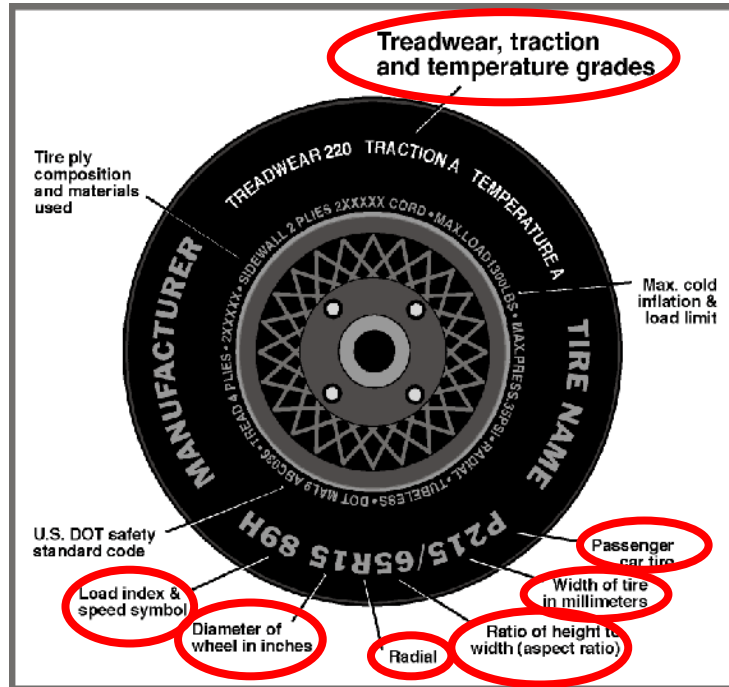
Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Split Bench		
Designated Seating Capacity (DSC)	2	3		5
Capacity Weight (VCW) (kg)				440
Cargo Weight (RCLW) (kg)				100

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

Test Vehicle: 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20185803
 Test Date: 12/8/2017

VEHICLE TIRE INFORMATION



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	280	280
Recommended Tire Size	215/65R17	215/65R17
Tire Size on Vehicle	215/65R17	215/65R17
Tire Manufacturer	Continental	Continental
Tire Model	ProContact	ProContact
Treadwear	500	500
Traction	A	A
Temperature Grade	A	A
Tire Plies Sidewall	1 Polyester	1 Polyester
Tire Plies Body	1 Polyester, 2 Steel, 1 Polyamide	1 Polyester, 2 Steel, 1 Polyamide
Load Index/Speed Symbol	99H	99H
Tire Material	Rubber	Rubber
DOT Safety Code Left	A33R WD2B 3117	A33R WD2B 3117
DOT Safety Code Right	A33R WD2B 3117	A33R WD2B 3117

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

Test Vehicle: 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV NHTSA No.: O20185803
 Test Program: NCAP Frontal Barrier Impact Test Test Date: 12/8/2017

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	499.0	377.0		534.0	468.0	
Right	kg	486.0	373.5		515.5	452.5	
Ratio	%	56.8%	43.2%		53.3%	46.7%	
Totals	kg	985.0	750.5	1735.5	1049.5	920.5	1970.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1735.5
Weight of 1 P572E ATD & 1 P572O ATD	kg	141
Rated Cargo/Luggage Weight (RCLW)	kg	100
Calculated Test Vehicle Target Weight (TVTW)	kg	1976.5

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	788	788	802	802	1205
As Tested	mm	777	780	771	773	1304
Post Test	mm	809	765	788	770	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2790
Total Vehicle Length at Left Side	mm	4562
Total Vehicle Length at Centerline	mm	4710
Total Vehicle Length at Right Side	mm	4562
Weight of Ballast in Cargo Area	kg	24
Weight of Vehicle Components Removed	kg	28
Amount of Stoddard Solvent in Fuel Tank	L	55.6

List of components removed to meet test weight: None.

List of components removed for instrumentation, data box, and equipment installation: Cargo area cover, jack and tool kit, spare tire, RR tail light.

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

Test Vehicle: 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20185803
 Test Date: 12/8/2017

TARGET VEHICLE STRUCTURAL MEASUREMENT

	Elements	Pre-Test (mm)
1	Total Length	4710
2	Total Width	1836
3	Bumper Top Height	645
4	Bumper Bottom Height	525
5	Longitudinal Member Top Height	601
6	Distance between Longitudinal Members	915
7	Longitudinal Member Width	82
8	Engine Top Height	880
9	Engine Bottom Height	215
10	Engine and Gearbox Width	792
11	Front Bumper-Engine Distance	195
12	Front Shock Absorber Fixing Height	916
13	Bonnet Leading Edge Height	878
14	Front Shock Absorber Fixing Width	N/A
15	Front Bumper – Front Axle Distance	925
16	Front Axle – A-Pillar Distance	430
17	A-Pillar – B-Pillar Distance	1117
18	B-Pillar – Rear Axle Distance	1262
19	B-Pillar – C-Pillar Distance	772
20	Roof Sill Bottom Height	1494
21	Roof Sill Top Height	1545
22	Floor Sill Bottom Height	280
23	Floor Sill Top Height	395

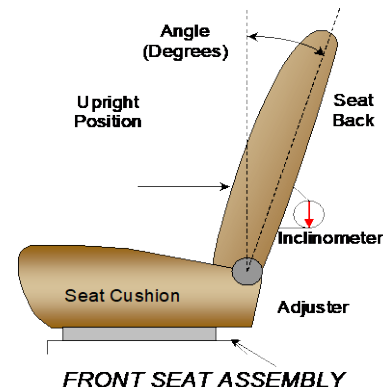
**DATA SHEET NO. 2
SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA**

Test Vehicle: 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20185803
 Test Date: 12/8/2017

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 October 2015.



	Degrees
Driver Seat Back Angle	18.9° on seat back center
Passenger Seat Back Angle	16.1° on seat back center

SEAT FORE/AFT POSITIONS

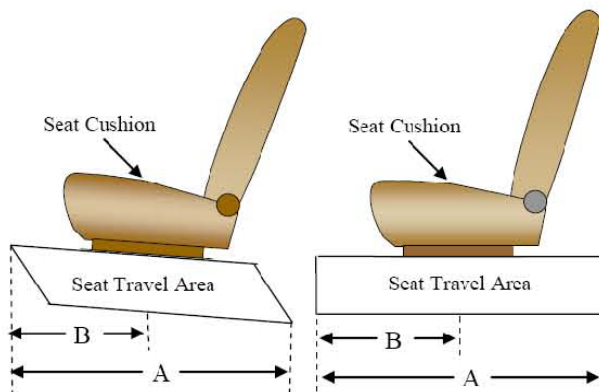
The driver and passenger seat fore/aft positions are adjusted following Appendix F, “Driver & Passenger Dummy Seating & Positioning Procedures” in the NCAP Test Procedure dated October 2015.

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	319 mm / 39 detents (1 st as 1)	156 mm / 15 th detent (1 st as 0)
Passenger Seat	254 mm / 39 detents (1 st as 1)	0 mm / 0 th detent (1 st 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: 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20185803
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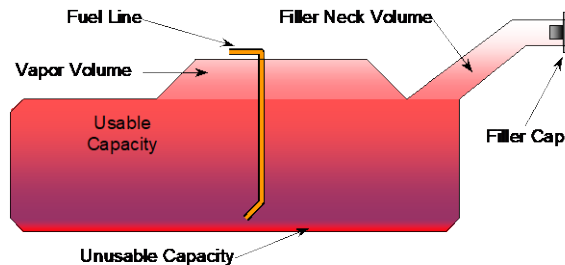
FUEL TANK CAPACITY DATA

	Liters
Usable Capacity of "Standard Tank"	60.2
Usable Capacity of "Optional Tank"	
92-94% of Usable Capacity	55.4 to 56.6
Actual Amount of Solvent used	55.6
1/3 of Usable Capacity	20.1

FUEL PUMP

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

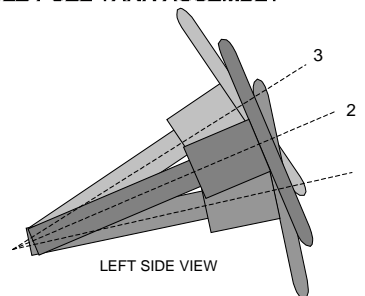
The vehicle is equipped with an electronic fuel pump. The fuel pump runs for 2 seconds after ignition is switched on. If the engine does not run, the fuel pump stops running. If there is a crash signal, it will also stop running. The filler neck is located on the passenger's side.



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

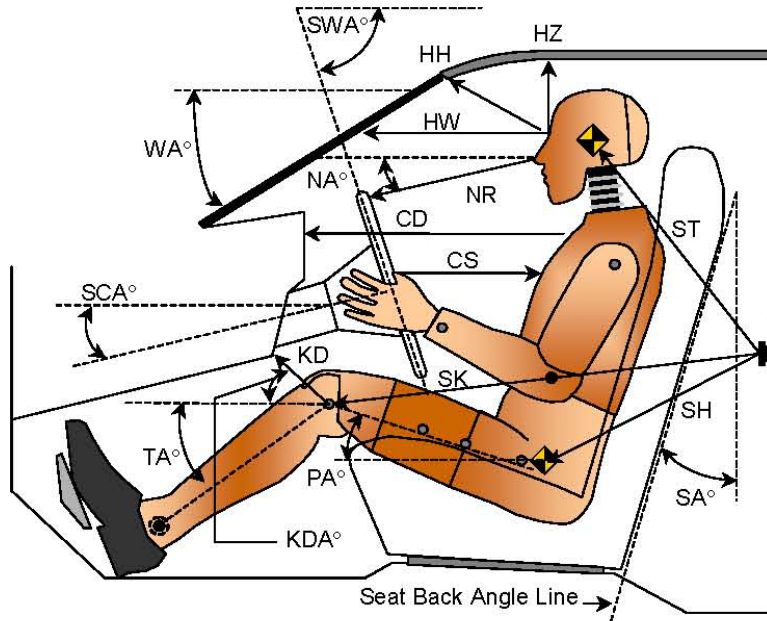
STEERING COLUMN POSITION

	Degrees	Fore/Aft Position (mm)
Lowermost Position 1	66.4	141
Geometric Center Position 2	63.7	169
Uppermost Position 3	61.0	197
Telescoping Steering Wheel Travel		56
Test Position	63.7	169

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20185803
Test Date: 12/8/2017



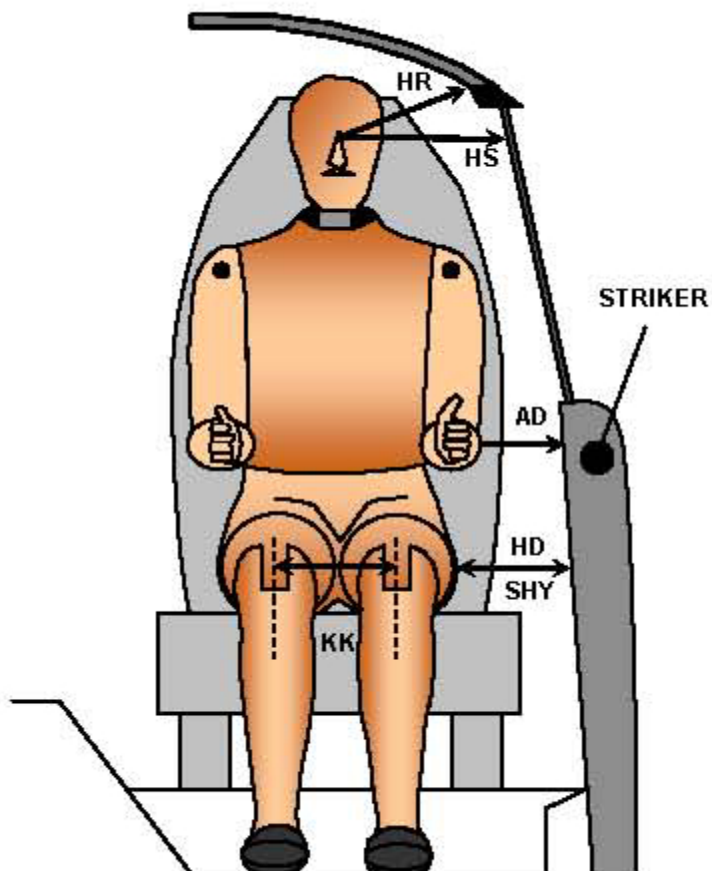
LEFT SIDE VIEW

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		25.3		
SWA°	Steering Wheel Angle		63.7		
SCA°	Steering Column Angle		26.3		
SA°	Seat Back Angle		18.9		16.1
HZ	Head to Roof (Z)	211	90	246	90
HH	Head to Header	351	32.9	315	42.9
HW	Head to Windshield	643	0	670	0
NR	Nose to Rim	381	10.1		
CD	Chest to Dash	535		381	
CS	Chest to Steering Hub	320	3.5		
RA	Rim to Abdomen	209	0		
KDL	Left Knee to Dash	197	28.4	108	35.1
KDR	Right Knee to Dash	155	21.1	109	36.0
PA°	Pelvic Angle		23.9		21.9
TA°	Tibia Angle		49.5		55.2
SK	Striker to Knee	610	102.1	661	101.7
ST	Striker to Head	462	18.5	429	34.5
SH	Striker to H-Point	329	137.9	428	120.6

**DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS**

Test Vehicle: 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20185803
 Test Date: 12/8/2017



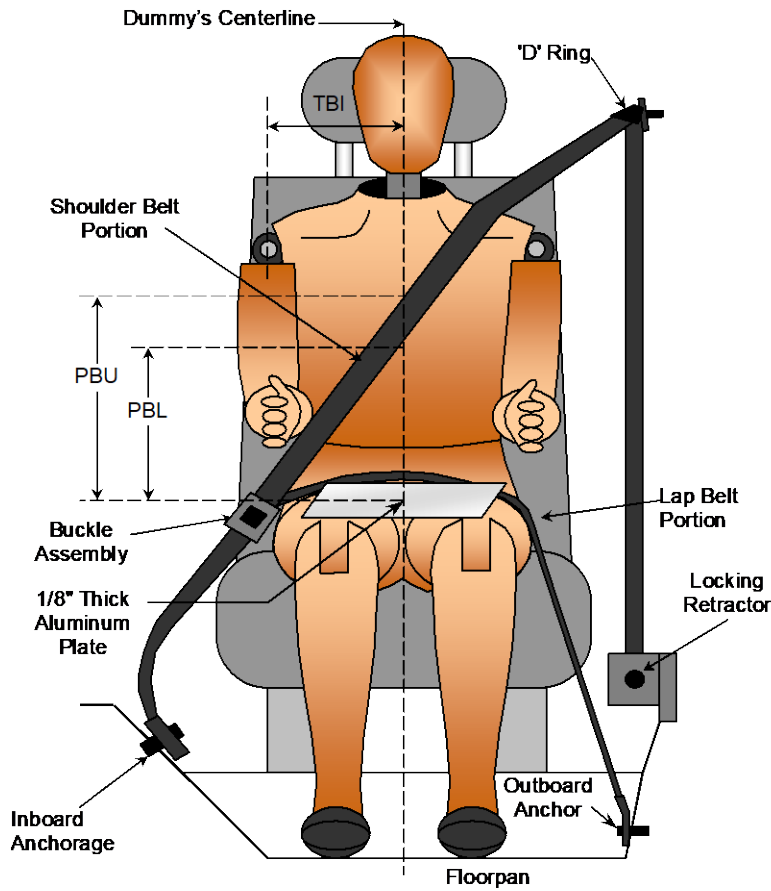
FRONT VIEW OF DUMMY

Code	Measurement Description	Driver	Passenger
		Length (mm)	
AD	Arm to Door	173	112
HD	H-Point to Door	166	183
HR	Head to Side Header	243	283
HS	Head to Side Window	380	382
KK	Knee to Knee	360	227
SHY	Striker to H-Point (Y Direction)	294	307
AA	Ankle to Ankle	352	178

**DATA SHEET NO. 5
SEAT BELT POSITIONING DATA**

Test Vehicle: 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20185803
 Test Date: 12/8/2017



FRONT VIEW OF DUMMY

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU - Top surface of reference to belt upper edge	mm	365	345
PBL - Top surface of reference to belt lower edge	mm	280	255

BELT LENGTH DATA

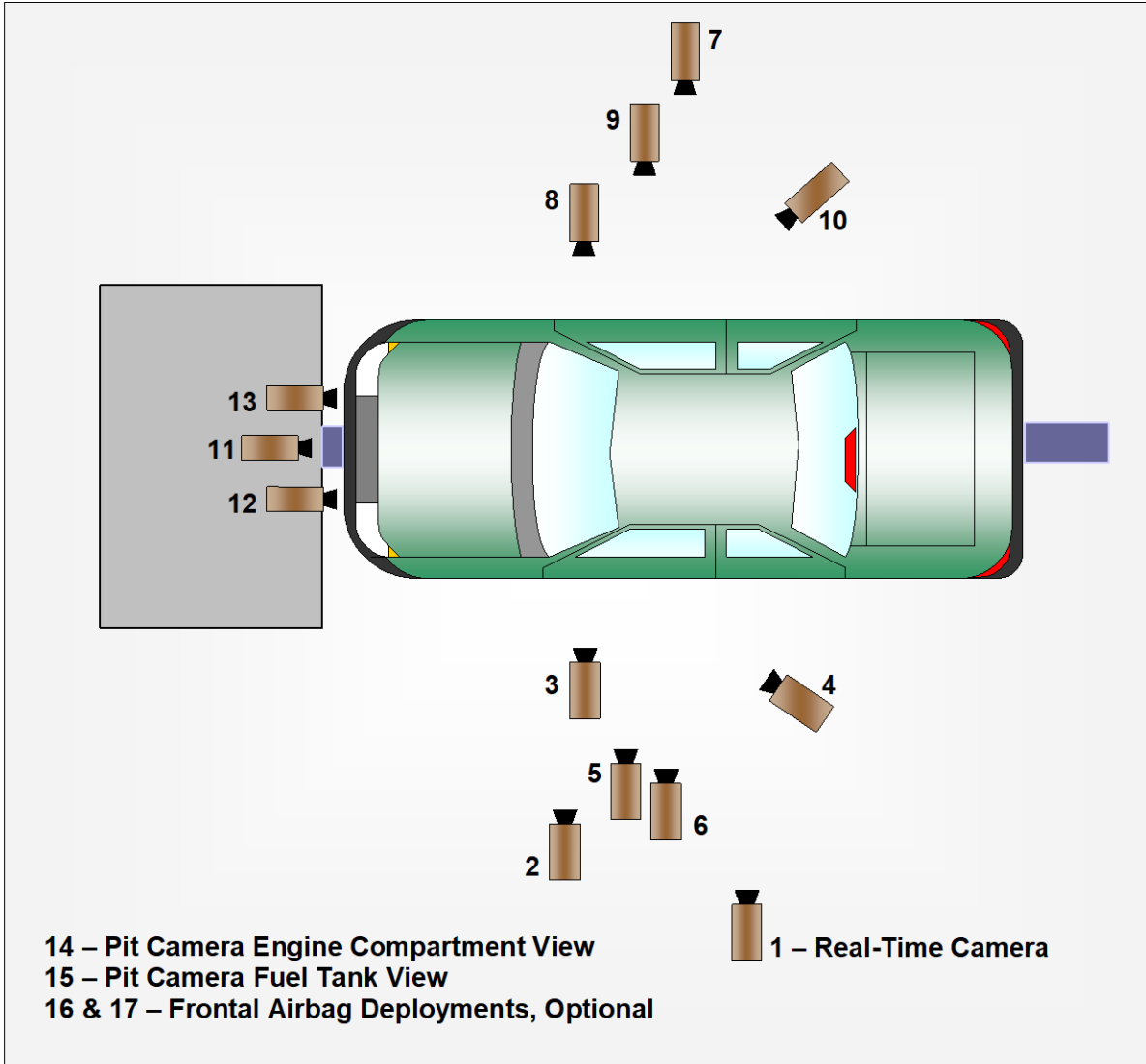
Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as measured on ATD	mm	905	935
Lap Belt Length as measured on ATD	mm	685	750
Remainder of belt on reel	mm	1010	915
Total Belt Length for Continuous Webbing Systems	mm	3400	3400

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

Test Vehicle: 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20185803
Test Date: 12/8/2017

CAMERA POSITIONS FOR FRONTAL IMPACTS



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

Test Vehicle: 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20185803
 Test Date: 12/8/2017

CAMERA LOCATIONS

No.	Camera View	Coordinates (mm)			Lens (mm)	Speed (fps)
		X*	Y*	Z*		
1	Real-Time Left Overall					30
2	Driver Close-Up	-1790	-6550	-2080	50	1000
3	Left Front Half	-1300	-5770	-1500	25	1000
4	Left Angle	-7340	-5940	-1970	75	1000
5	Steering Column - Top					
6	Steering Column - Bottom					
7	Right Overall	-2130	5800	-1380	16	1000
8	Passenger Close-Up	-1600	6730	-1990	50	1000
9	Right Front Half	-1140	5850	-1370	25	1000
10	Right Angle	-6950	5960	-2070	75	1000
11	Windshield	150	0	-2310	16	1000
12	Driver Windshield	220	-370	-2230	25	1000
13	Passenger Windshield	220	370	-2230	25	1000
14	Pit Front	-1060	0	3340	24	1000
15	Pit Rear	-3100	0	3340	24	1000
16	Onboard Driver Side				12	1000
17	Onboard Passenger Side				12	1000
18	Real-Time Pan View					30

***COORDINATES:**

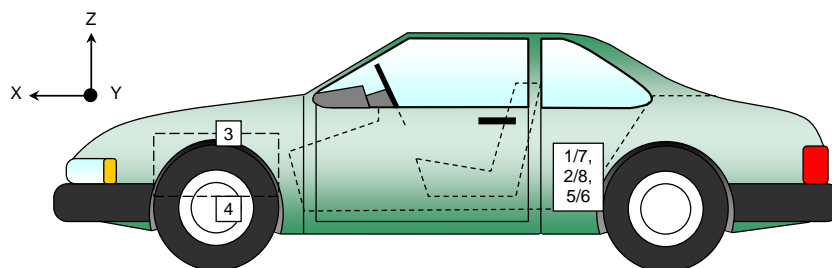
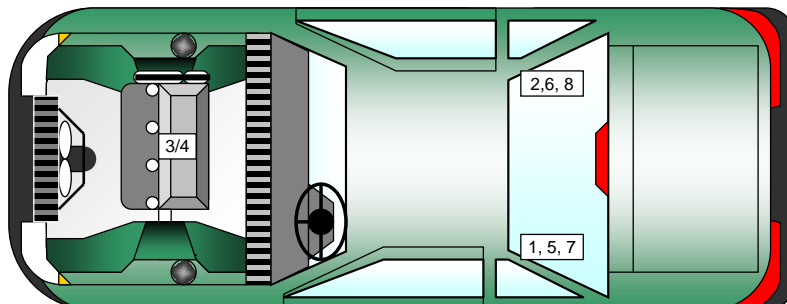
- +X = forward of impact plane
- +Y = right of monorail centerline
- +Z = below ground level

Cameras 5 & 6 were not used for this test.

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

Test Vehicle: 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20185803
 Test Date: 12/8/2017



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear Crossmember Accelerometer – X Direction	1950	-375	-279
2	Right Rear Crossmember Accelerometer – X Direction	1950	375	-282
3	Engine Top X	3971	-35	-885
4	Engine Bottom X	3991	45	-220
5	Left Rear Crossmember Accelerometer – Z Direction	1950	-375	-279
6	Right Rear Crossmember Accelerometer – Z Direction	1950	375	-282
7	Left Rear Crossmember Accelerometer Redundant – X Direction	1975	-375	-279
8	Right Rear Crossmember Accelerometer Redundant – X Direction	1975	375	-282

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

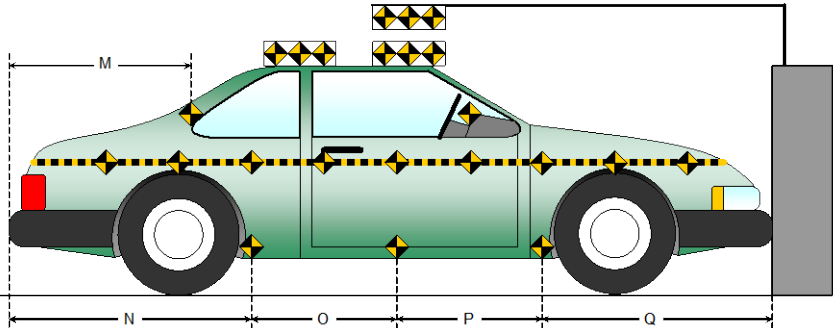
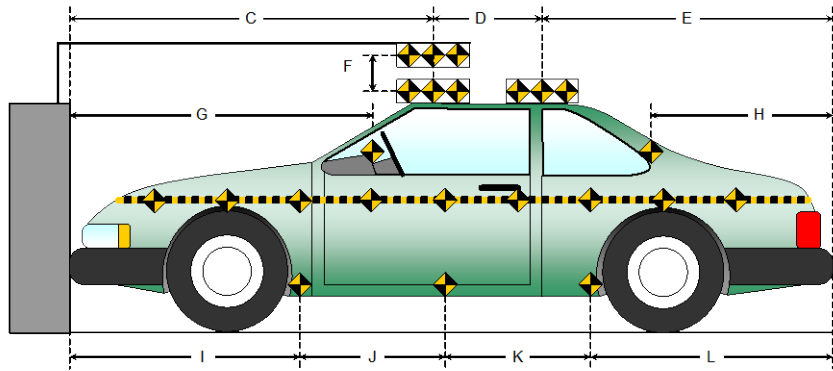
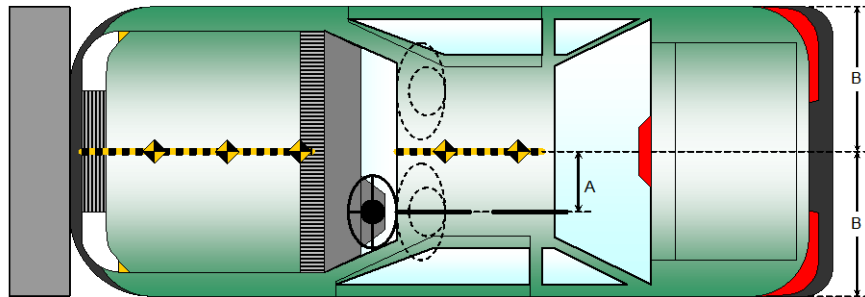
DATA SHEET NO. 8

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20185803
 Test Date: 12/8/2017

Item	Value (mm)
A	360
B	918
C	2405
D	616
E	1689
F	260
G	
H	1227
I	1860
J	915
K	915
L	1020
M	1227
N	1020
O	915
P	915
Q	1860



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

Test Vehicle: 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20185803
 Test Date: 12/8/2017

Advanced Research Load Cell Barrier

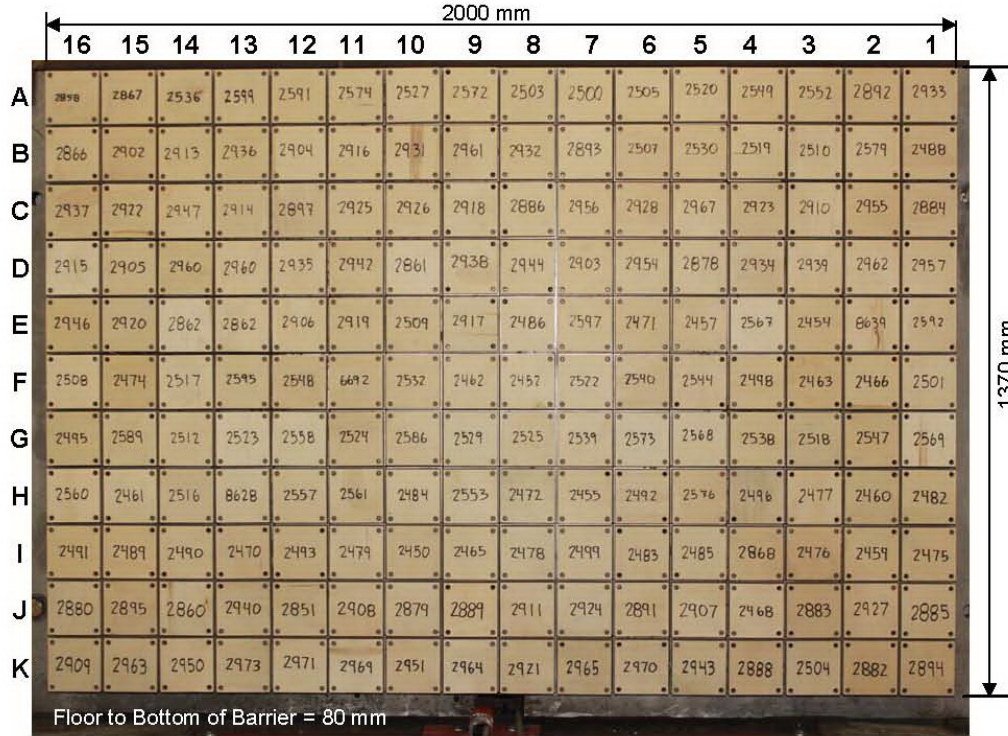


Photo for Reference Only

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: 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20185803
Test Date: 12/8/2017

INSTRUMENTATION

Driver Dummy Data Channels	47
Passenger Dummy Data Channels	47
Vehicle Structure Accelerometers	8
Barrier Channels	528
Total	630

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: 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20185803
 Test Date: 12/8/2017

TEST DUMMY INFORMATION AND CONTACT LOCATIONS

Description	Driver	Passenger
Dummy Type / Serial No.	HIII 50% / 351	HIII 5% / 138
Head Contact	Airbag, Headliner, A-Pillar	Airbag, Headrest
Upper Torso Contact	Airbag	Airbag
Lower Torso Contact	None	None
Left Knee Contact	Knee Bolster	Glove Box
Right Knee Contact	Knee Bolster	Glove Box

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	1650
Center	mm	1600
Right Side	mm	1550
Average	mm	1600

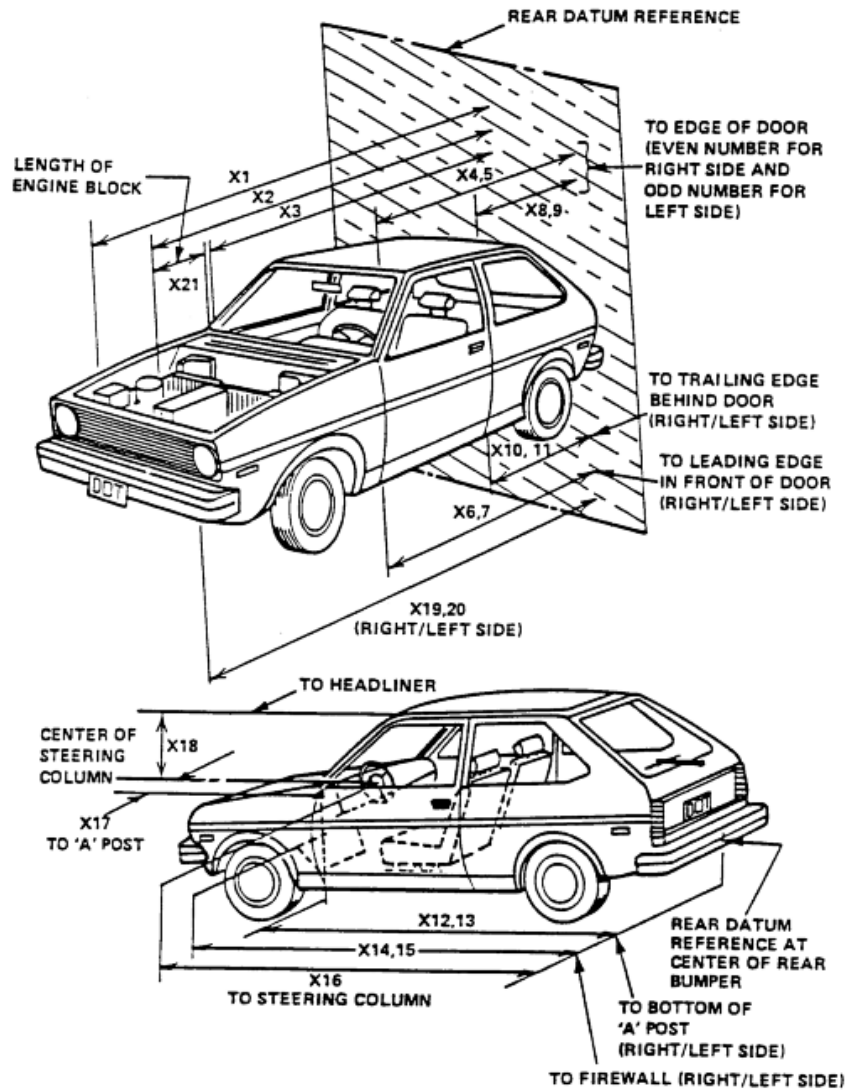
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

DATA SHEET NO. 12 VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20185803
 Test Date: 12/8/2017



**DATA SHEET NO. 12 (CONTINUED)
VEHICLE PROFILE MEASUREMENTS**

Test Vehicle: 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20185803
 Test Date: 12/8/2017

RSOV (Rear Surface of Vehicle)

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	mm	4710	4457	253
2	RSOV to Front of Engine	mm	4252	4138	114
3	RSOV to Firewall	mm	3780	3688	92
4	RSOV to Upper Leading Edge of Right Door	mm	3275	3279	-4
5	RSOV to Upper Leading Edge of Left Door	mm	3275	3277	-2
6	RSOV to Lower Leading Edge of Right Door	mm	3286	3288	-2
7	RSOV to Lower Leading Edge of Left Door	mm	3286	3282	4
8	RSOV to Upper Trailing Edge of Right Door	mm	2194	2197	-3
9	RSOV to Upper Trailing Edge of Left Door	mm	2195	2191	4
10	RSOV to Lower Trailing Edge of Right Door	mm	2244	2246	-2
11	RSOV to Lower Trailing Edge of Left Door	mm	2245	2240	5
12	RSOV to Bottom of "A" Post of Right Side	mm	3273	3265	8
13	RSOV to Bottom of "A" Post of Left Side	mm	3275	3268	7
14	RSOV to Firewall, Right Side	mm	3788	3764	24
15	RSOV to Firewall, Left Side	mm	3791	3743	48
16	RSOV to Steering Column	mm	2875	2920	-45
17	Center of Steering Column to "A" Post	mm	366	352	14
18	Center of Steering Column to Headliner	mm	422	443	-21
19	RSOV to Right Side of Front Bumper	mm	4562	4351	211
20	RSOV to Left Side of Front Bumper	mm	4562	4365	197
21	Length of Engine Block	mm	540	540	0
RD	RSOV to Right Side of Dash Panel	mm	3015	3066	-51
CD	RSOV to Center of Dash Panel	mm	3100	3066	34
LD	RSOV to Left Side of Dash Panel	mm	3078	3073	5

DATA SHEET NO. 13
ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

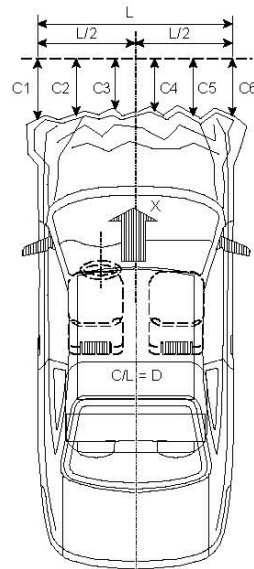
NHTSA No.: O20185803
 Test Date: 12/8/2017

VEHICLE INFORMATION

VIN: 3VV0B7AXXJM054095 Wheelbase (mm): 2790
 Vehicle Size Category: MPV Test Weight (kg): 1970.0

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): 56.26
 Velocity Change (km/h): 63.2
 Time of Separation (msec): 98



CRUSH PROFILE

Collision Deformation Classification: 12FDEW2
 Midpoint of Damage: Centerline
 Damage Region Length (mm): 1290
 Impact Mode: Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	4562	4365	197
C2	Crush zone 2 at left side	mm	4653	4429	224
C3	Crush zone 3 at left side	mm	4679	4403	276
C4	Crush zone 4 at right side	mm	4679	4435	244
C5	Crush zone 5 at right side	mm	4653	4412	241
C6	Crush zone 6 at right side	mm	4562	4351	211
L	C1 TO C6	mm	1290	1287	3

**DATA SHEET NO. 14
VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

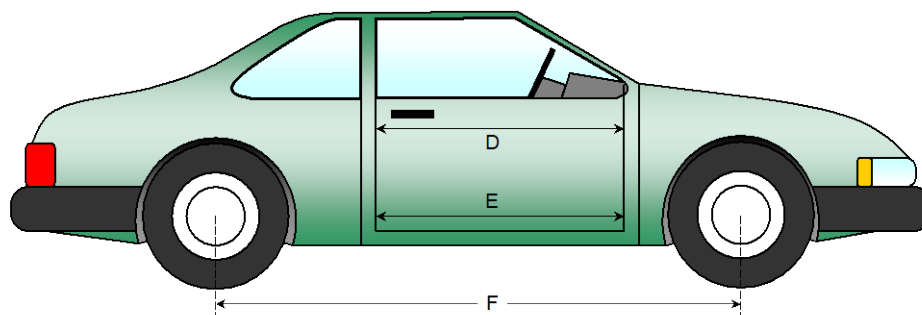
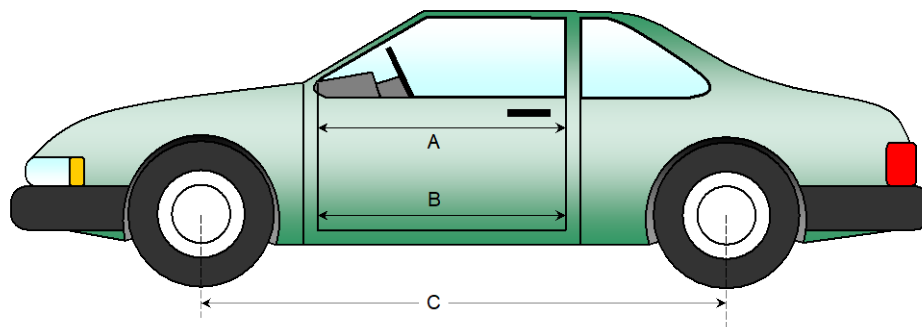
NHTSA No.: O20185803
 Test Date: 12/8/2017

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	969	969	0
B	Left Side Lower	mm	875	875	0
D	Right Side Upper	mm	967	967	0
E	Right Side Lower	mm	886	886	0

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2790	2756	34
F	Right Side Wheelbase	mm	2790	2762	28



**DATA SHEET NO. 14 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS**

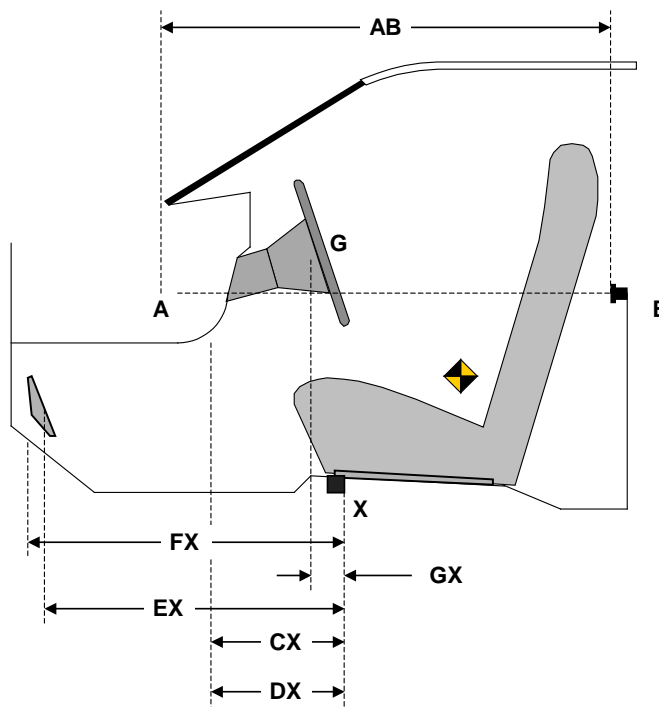
Test Vehicle: 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20185803
 Test Date: 12/8/2017

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	770	770	0
CX	Left Knee Bolster to X	mm	410	411	-1
DX	Right Knee Bolster to X	mm	415	414	1
EX	Brake Pedal to X	mm	542	548	-6
FX	Foot Rest to X	mm	564	556	8
GX	Center of Steering Column Wheel Hub to X	mm	89	177	-88

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: 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV NHTSA No.: O20185803
 Test Program: NCAP Frontal Barrier Impact Test Test Date: 12/8/2017

Windshield Mounting Details:

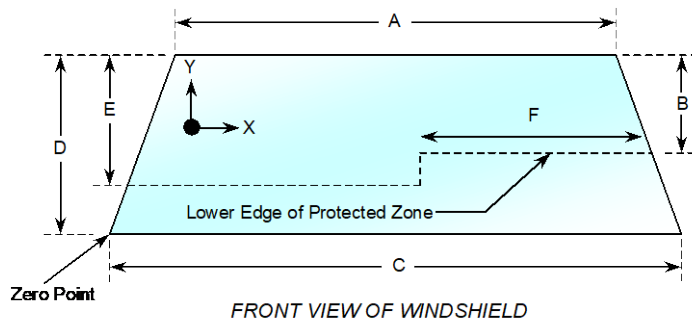
Windshield glass is secured to the vehicle frame with a rubber trim and glue.

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: 21.9° C.

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% of Retention
Left Side	2180	2180	100.0
Right Side	2180	2180	100.0
Total	4360	4360	100.0



Item	Units	Value
A	mm	1270
B	mm	410
C	mm	1590
D	mm	780
E	mm	457
F	mm	634

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: 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV NHTSA No.: O20185803
Test Program: NCAP Frontal Barrier Impact Test Test Date: 12/8/2017

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21.9°C

Test Time: 10:00 a.m.

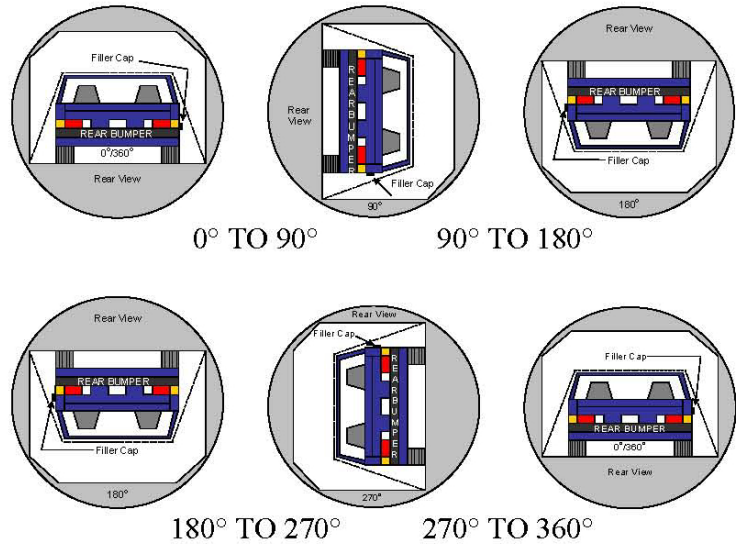
- A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable = 1 oz.)
- B. For the 5 minute period after motion ceases: 0 oz.
(Maximum allowable = 5 oz.)
- C. For the following 25 minutes: 0 oz.
(Maximum allowable = 1 oz./minute)
- D. Spillage: None

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

Test Vehicle: 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20185803
 Test Date: 12/8/2017

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°	112	300	412
90° to 180°	111	300	411
180° to 270°	109	300	409
270° to 360°	108	300	408

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

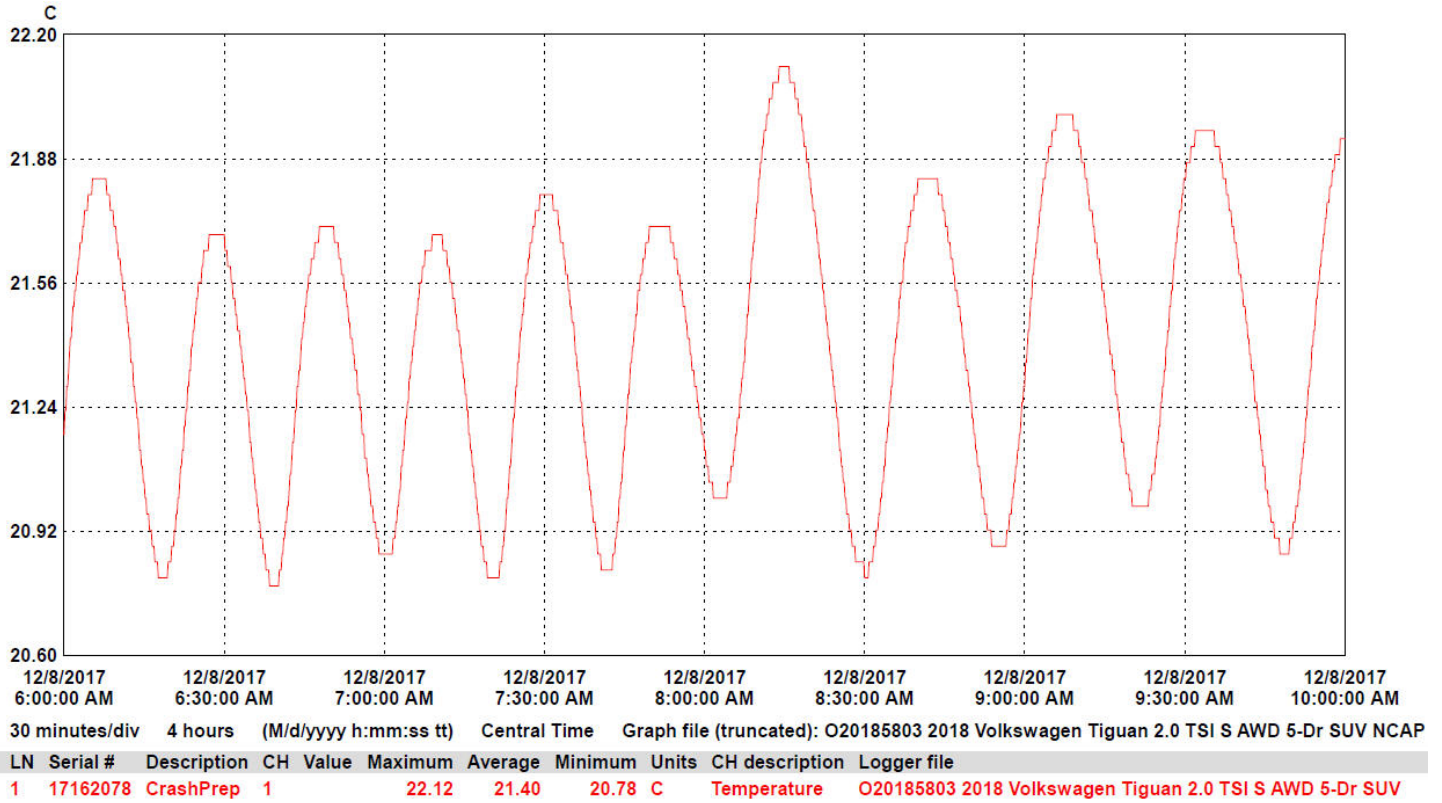
SOLVENT SPILLAGE LOCATION TABLE

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: 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20185803
 Test Date: 12/8/2017



**APPENDIX A
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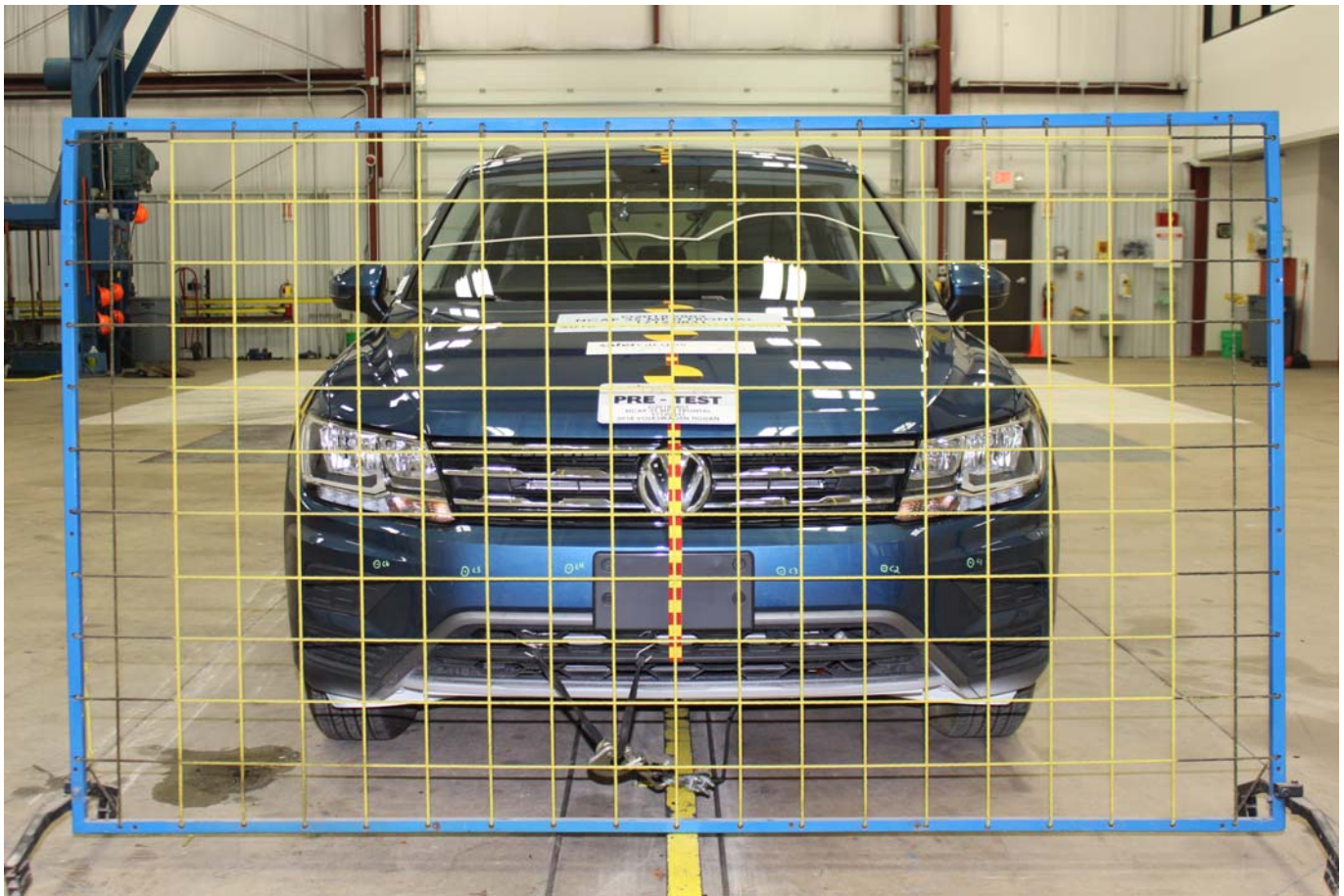


Photo No. 001 - Load Cell Location



Photo No. 002 - Pre-Test Load Cell Wall

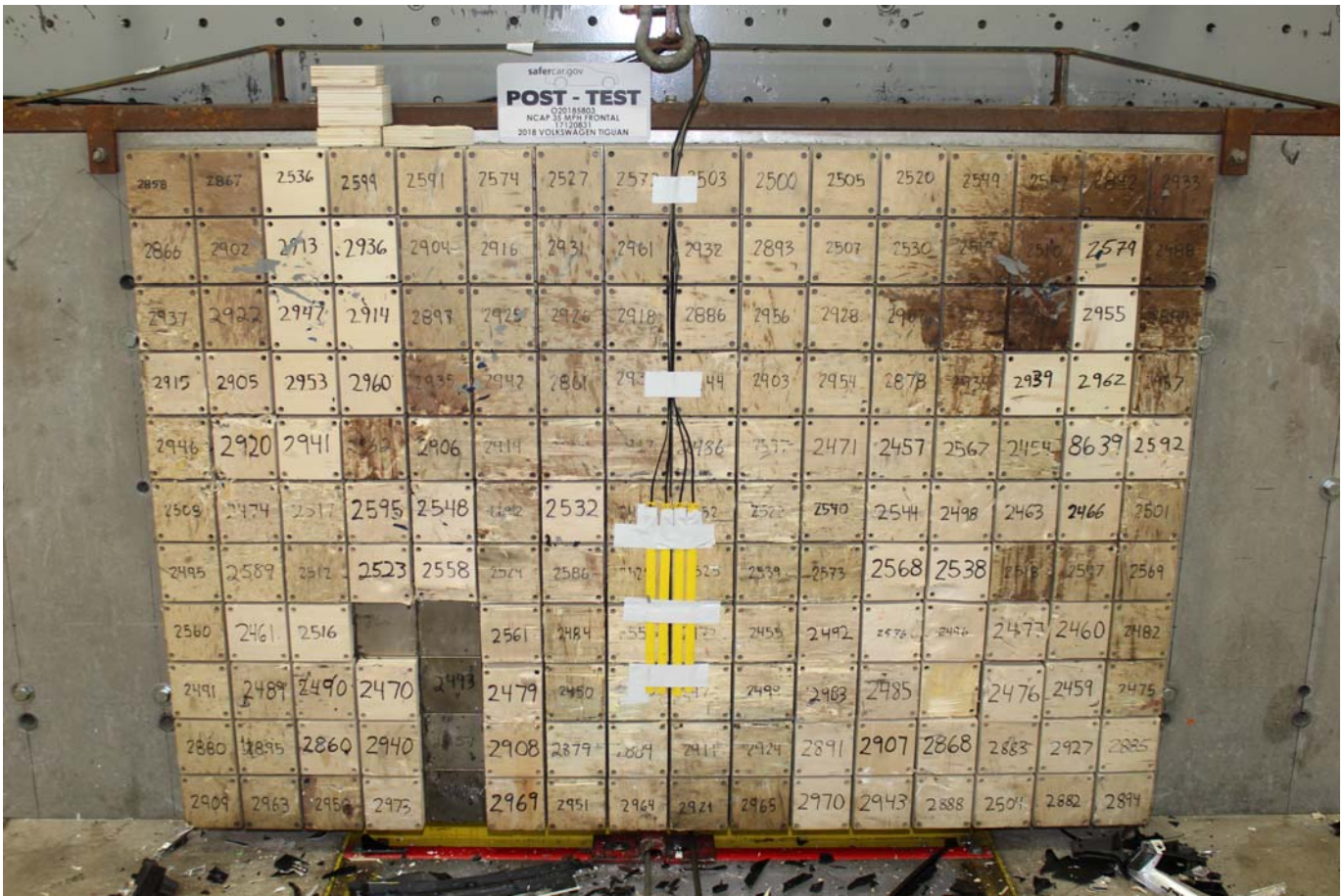


Photo No. 003 - Post-Test Load Cell Wall



Photo No. 004 - Manufacturer Label



Photo No. 005 - Tire Placard



Photo No. 006 - 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Door SUV Frontal As Delivered



Photo No. 007 - Left Rear 3-4 View, As Received



Photo No. 008 - Pre-Test Front View of Test Vehicle

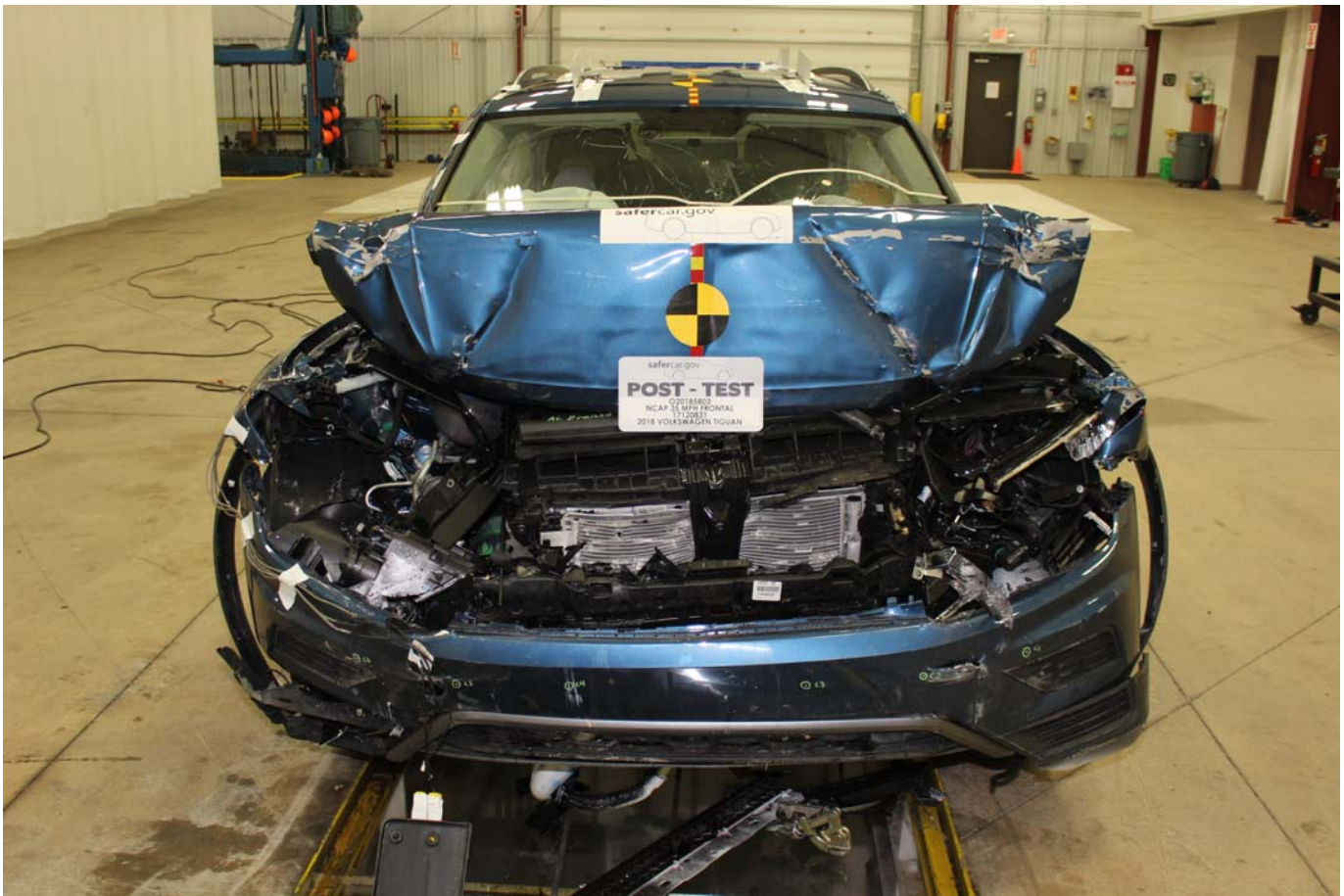


Photo No. 009 - Post-Test Front View of Test Vehicle



Photo No. 010 - Pre-Test Left View of Test Vehicle



Photo No. 011 - Post-Test Left View of Test Vehicle



Photo No. 012 - Pre-Test Right View of Test Vehicle



Photo No. 013 - Post-Test Right View of Test Vehicle



Photo No. 014 - Pre-Test Right Front 3-4 View

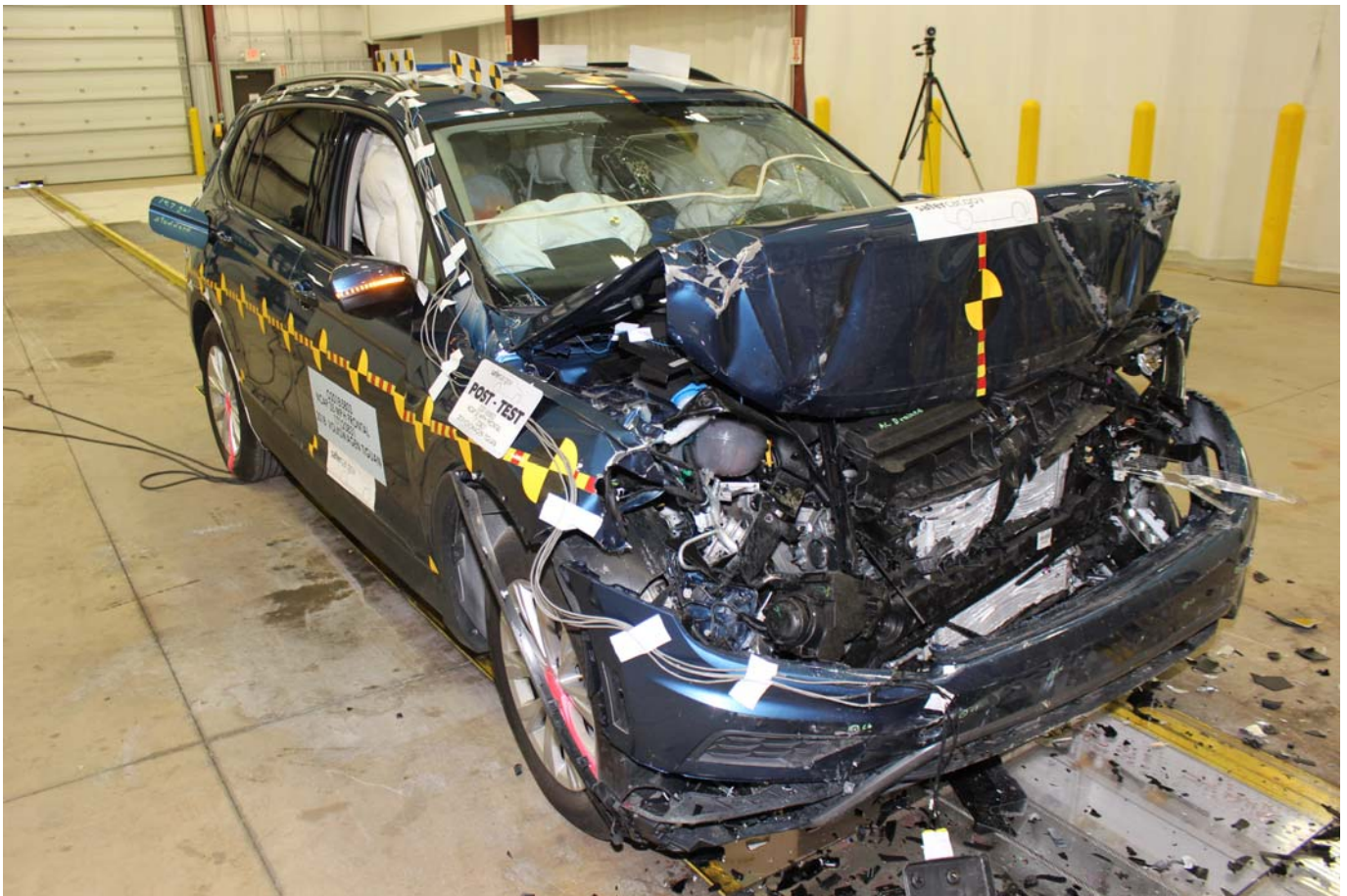


Photo No. 015 - Post-Test Right Front 3-4 View



Photo No. 016 - Pre-Test Left Rear 3-4 View

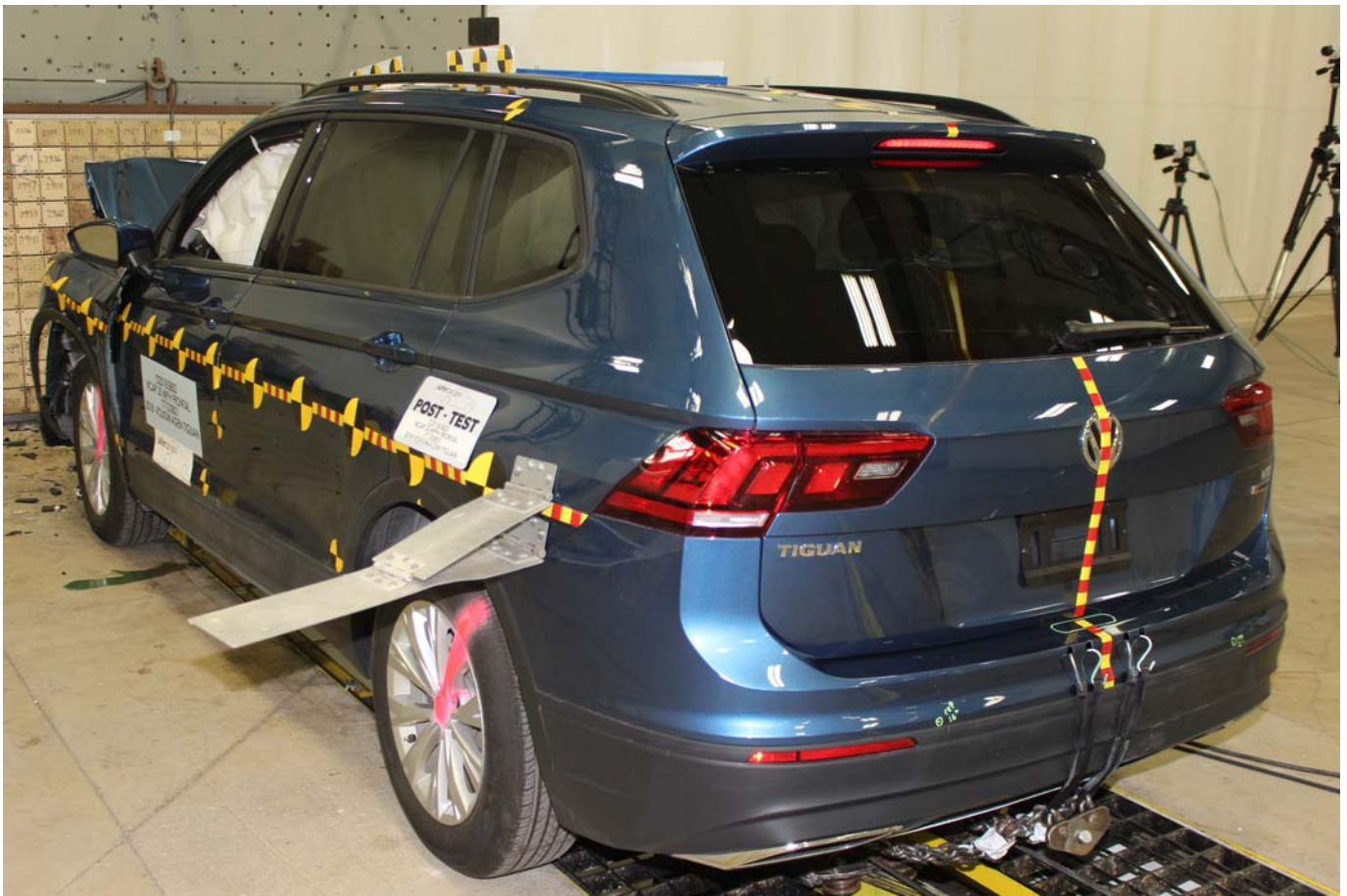


Photo No. 017 - Post-Test Left Rear 3-4 View

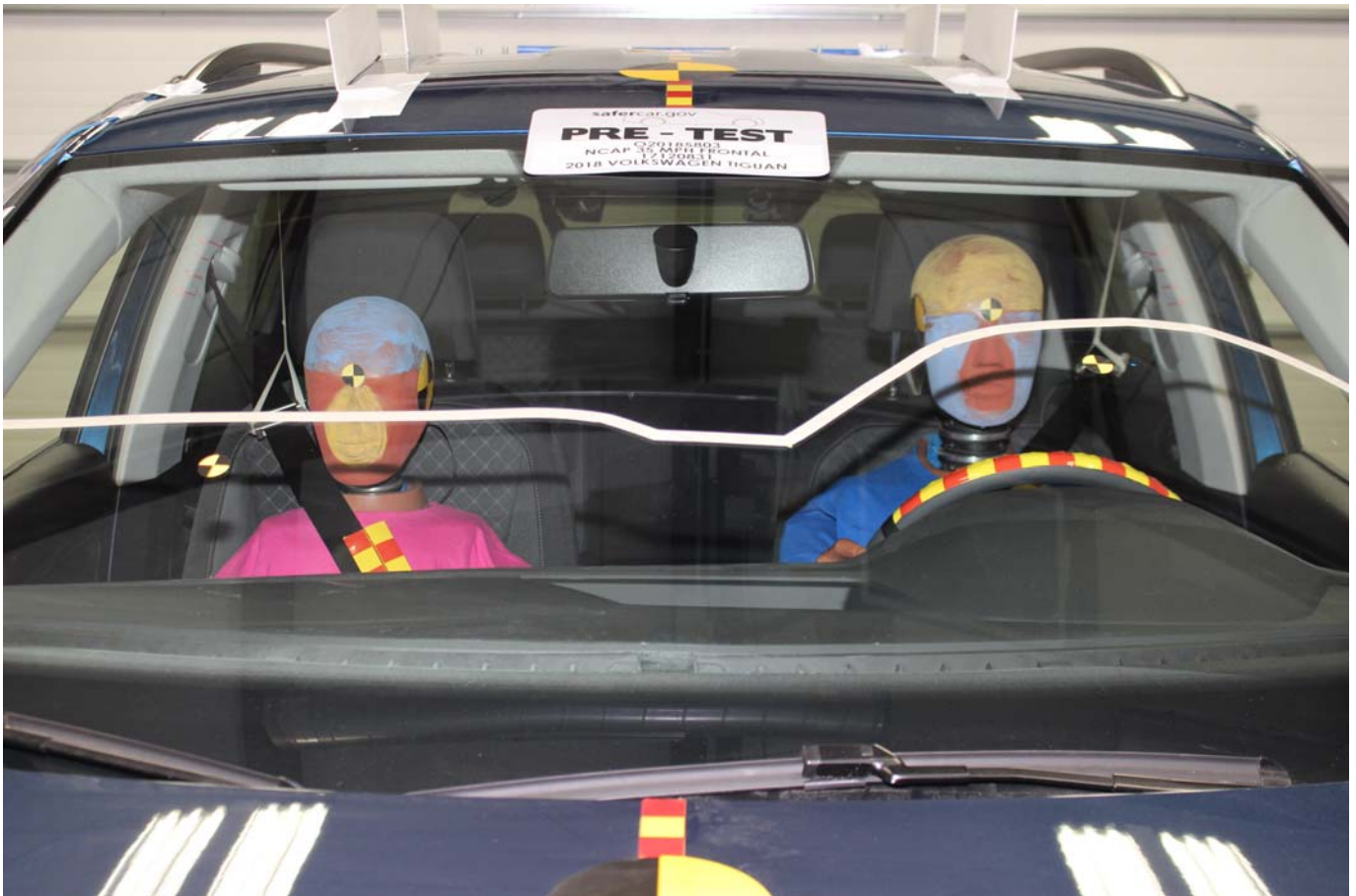


Photo No. 018 - Pre-Test Windshield View



Photo No. 019 - Post-Test Windshield View



Photo No. 020 - Pre-Test Engine Compartment View

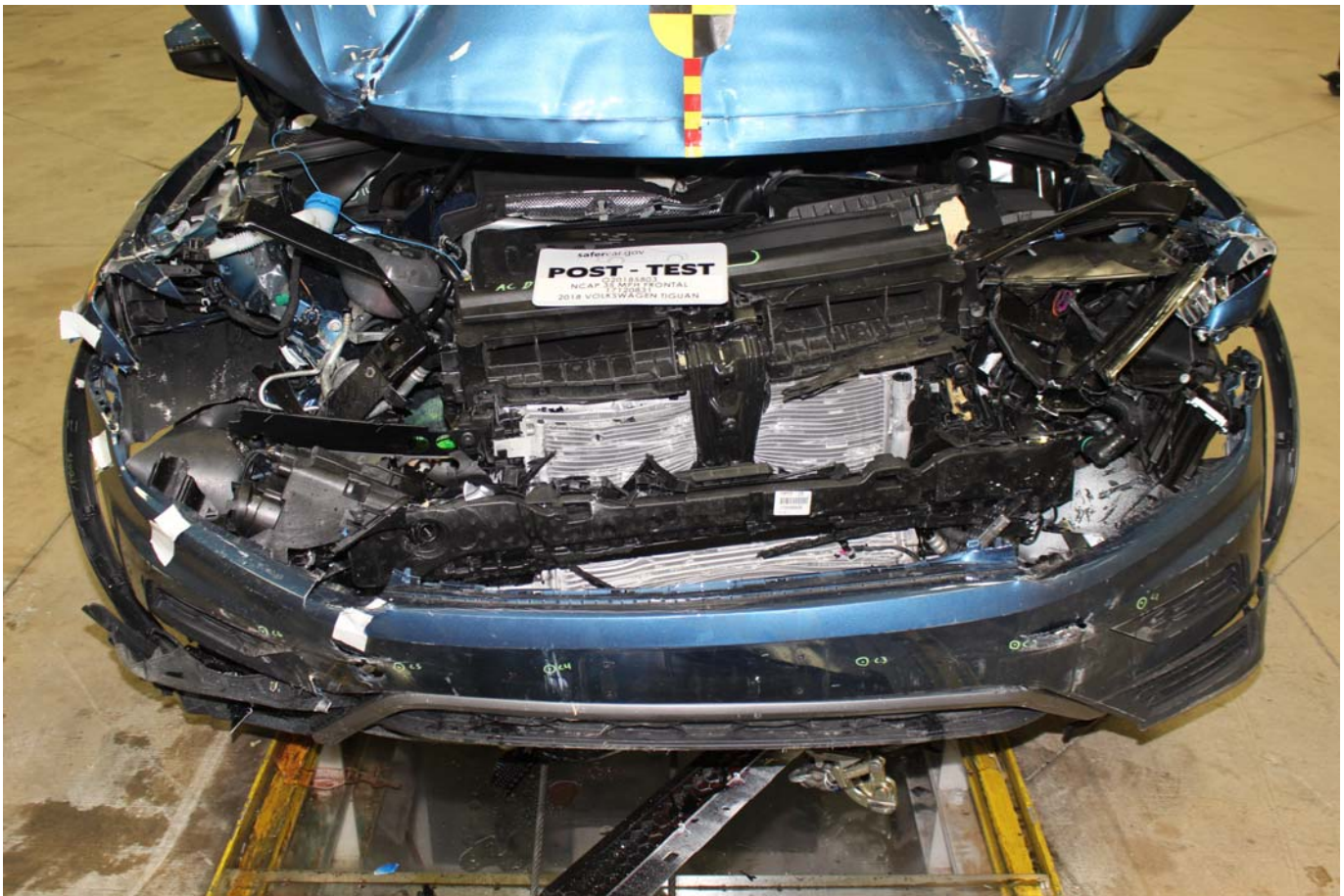


Photo No. 021 - Post-Test Engine Compartment View



Photo No. 022 - Pre-Test Fuel Filler Cap View

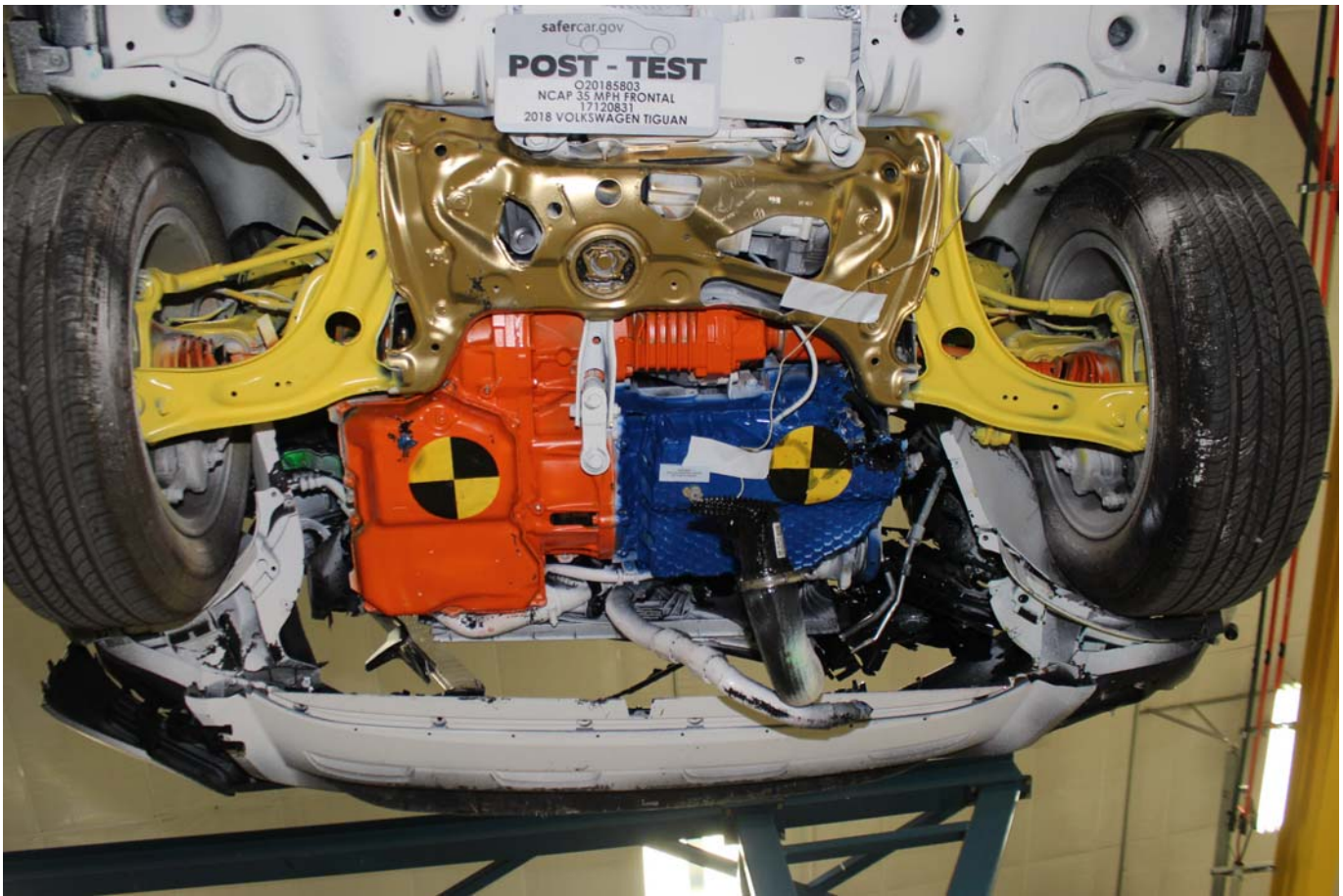


Photo No. 025 - Post-Test Front Underbody View

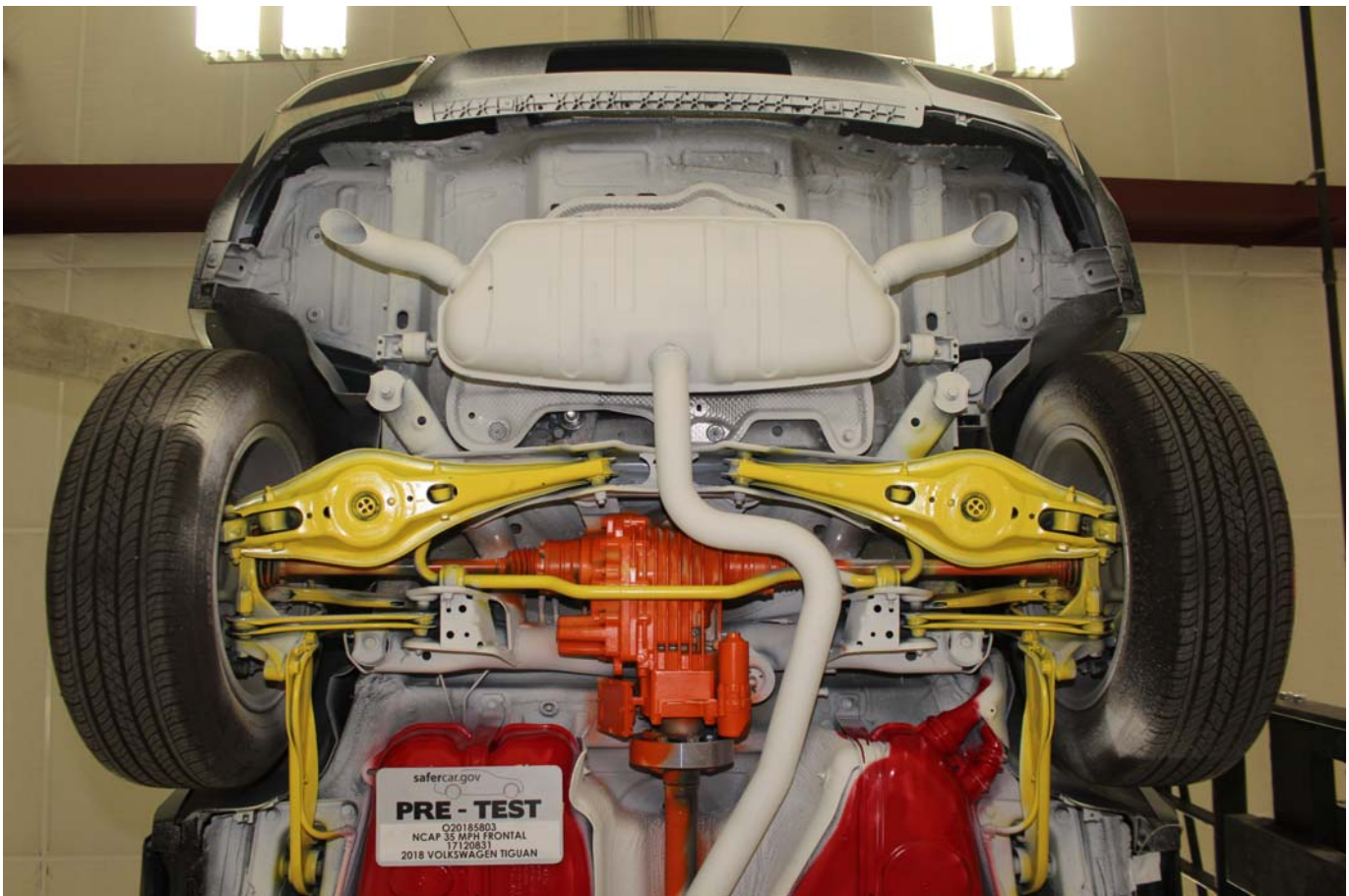


Photo No. 026 - Pre-Test Rear Underbody View

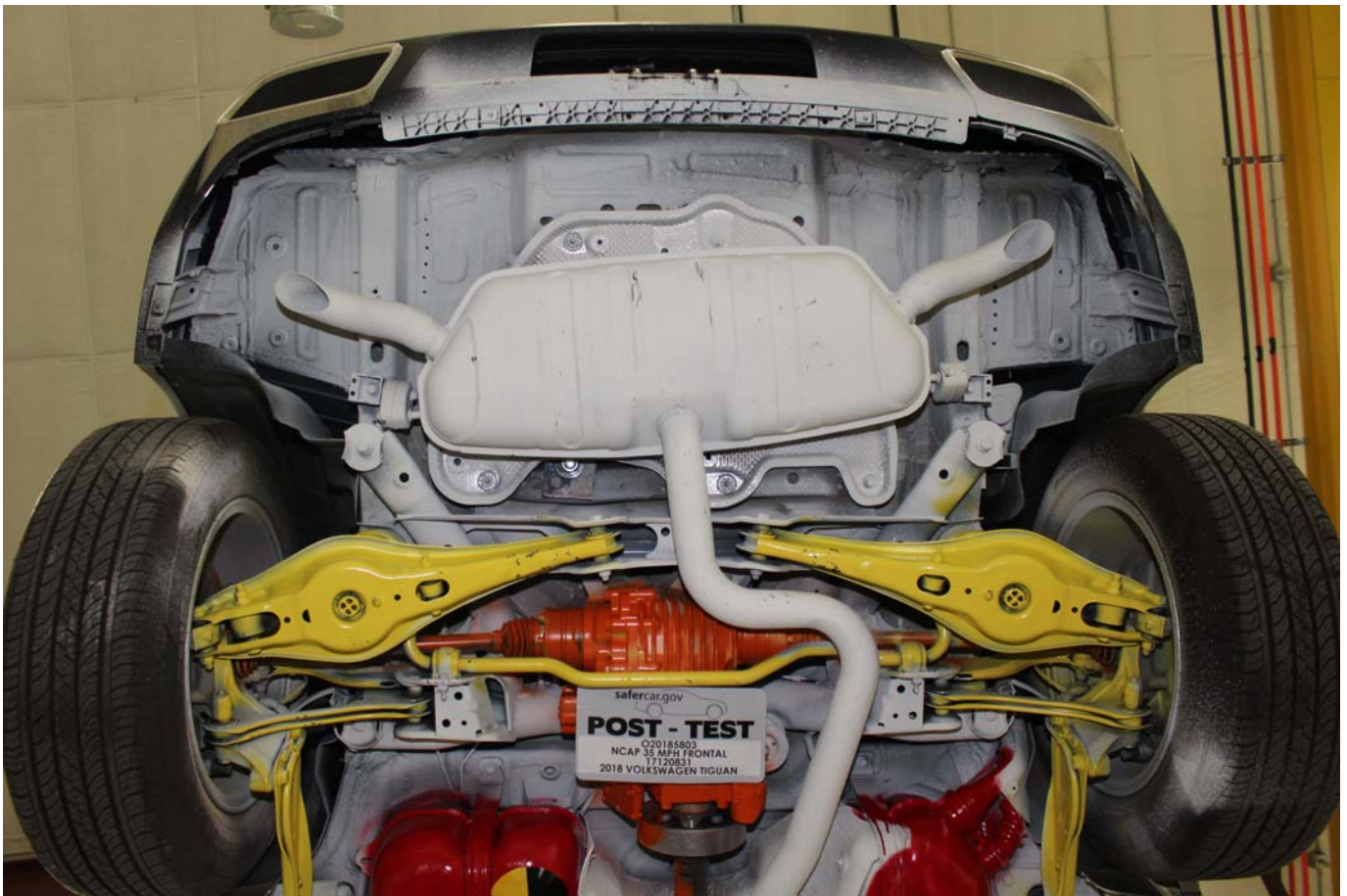


Photo No. 027 - Post-Test Rear Underbody View



Photo No. 028 - Pre-Test Dummy Cable Routing

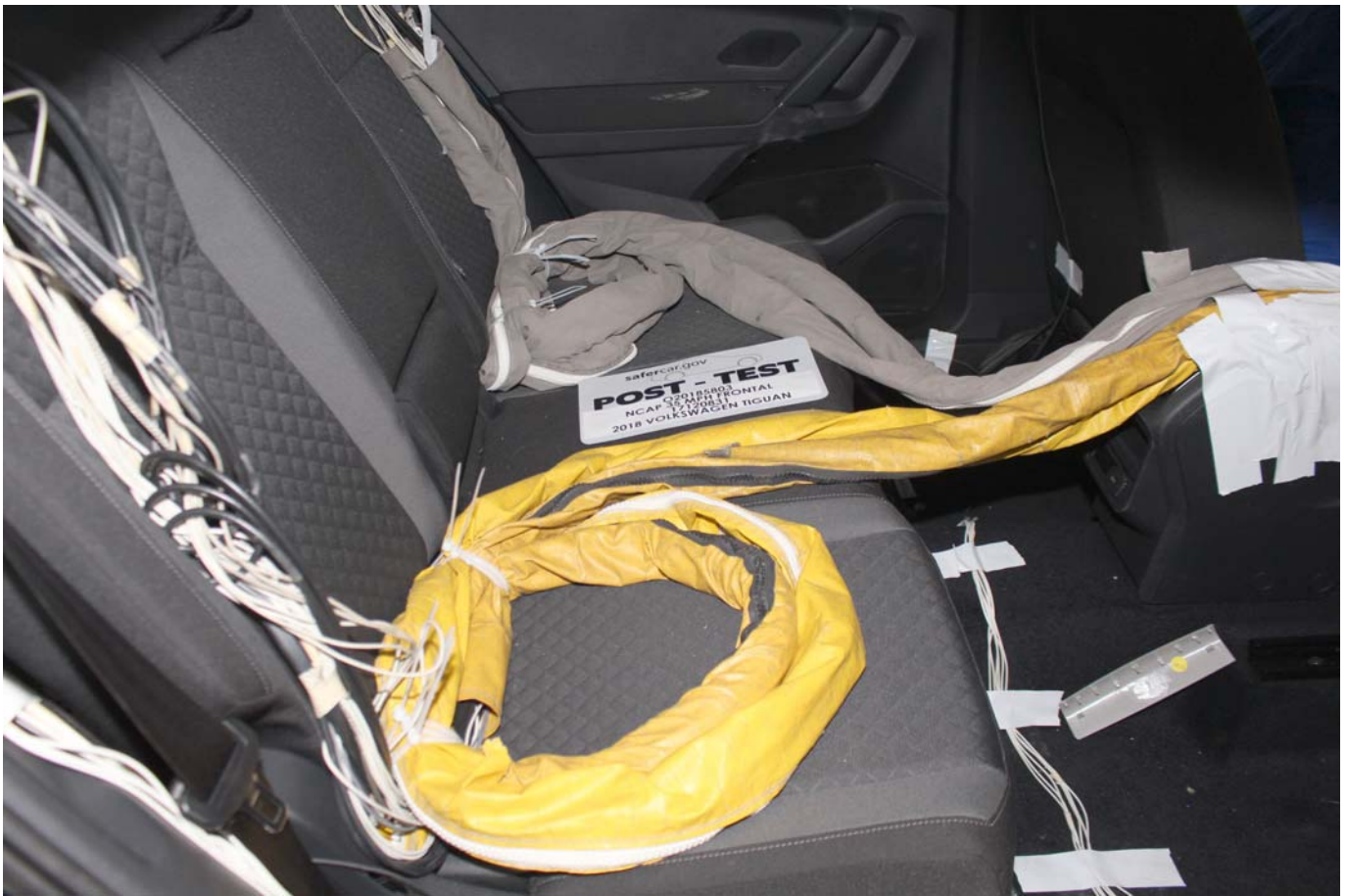


Photo No. 029 - Post-Test Dummy Cable Routing



Photo No. 030 - Pre-Test Driver Dummy Front View



Photo No. 031 - Post-Test Driver Dummy Front View



Photo No. 032 - Pre-Test Driver Dummy Window View



Photo No. 033 - Post-Test Driver Dummy Window View



Photo No. 034 - Pre-Test Driver Dummy and Vehicle Interior (Door Open)



Photo No. 035 - Post-Test Driver Dummy and Vehicle Interior (Door Open)



Photo No. 036 - Pre-Test Driver Seat Fore-Aft Markings



Photo No. 037 - Post-Test Driver Seat Fore-Aft Markings



Photo No. 038 - Pre-Test View of Belt Anchorage for Driver Dummy



Photo No. 039 - Post-Test View of Belt Anchorage for Driver Dummy



Photo No. 040 - Pre-Test Driver Dummy Feet



Photo No. 041 - Post-Test Driver Dummy Feet



Photo No. 042 - Pre-Test Driver Side Knee Bolster (without dummy)



Photo No. 043 - Post-Test Driver Side Knee Bolster (without dummy)



Photo No. 044 - Pre-Test Driver Side Floorpan



Photo No. 045 - Post-Test Driver Side Floorpan



Photo No. 046 - Post-Test Driver Dummy Face



Photo No. 047 - Post-Test Driver Dummy Contact with Airbag

PHOTOGRAPH NOT APPLICABLE

Photo No. 048 - Post-Test Driver Dummy Contact with Headrest



Photo No. 049 - Pre-Test View of the Steering Wheel



Photo No. 050 - Post-Test View of the Steering Wheel



Photo No. 051 - Pre-Test Passenger Dummy Front View



Photo No. 052 - Post-Test Passenger Dummy Front View



Photo No. 053 - Pre-Test Passenger Dummy Window View

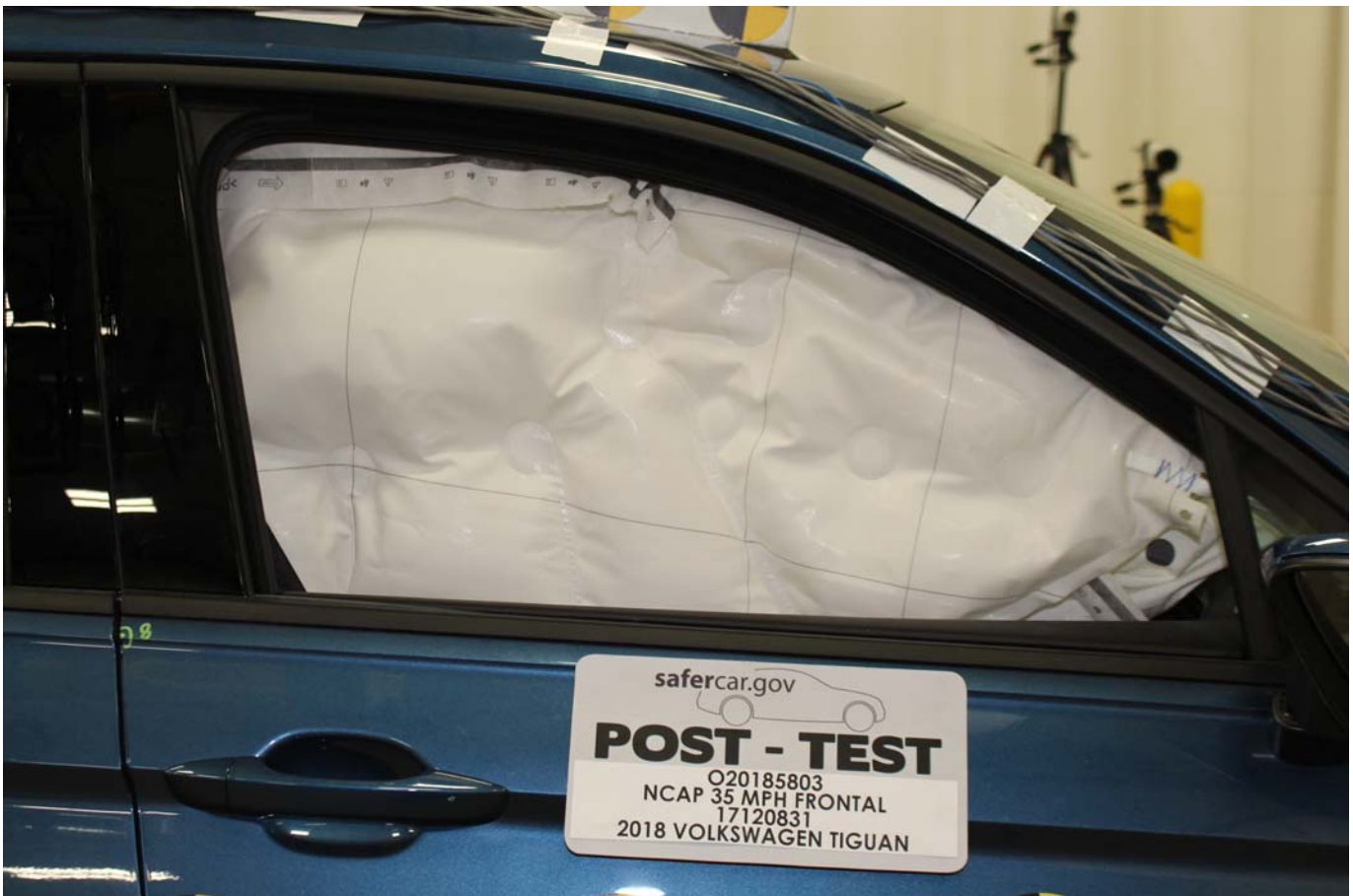


Photo No. 054 - Post-Test Passenger Dummy Window View



Photo No. 055 - Pre-Test Passenger Dummy and Vehicle Interior (Door Open)



Photo No. 056 - Post-Test Passenger Dummy and Vehicle Interior (Door Open)



Photo No. 057 - Pre-Test Passenger Seat Fore-Aft Markings



Photo No. 058 - Post-Test Passenger Seat Fore-Aft Markings



Photo No. 059 - Pre-Test View of Belt Anchorage for Passenger Dummy

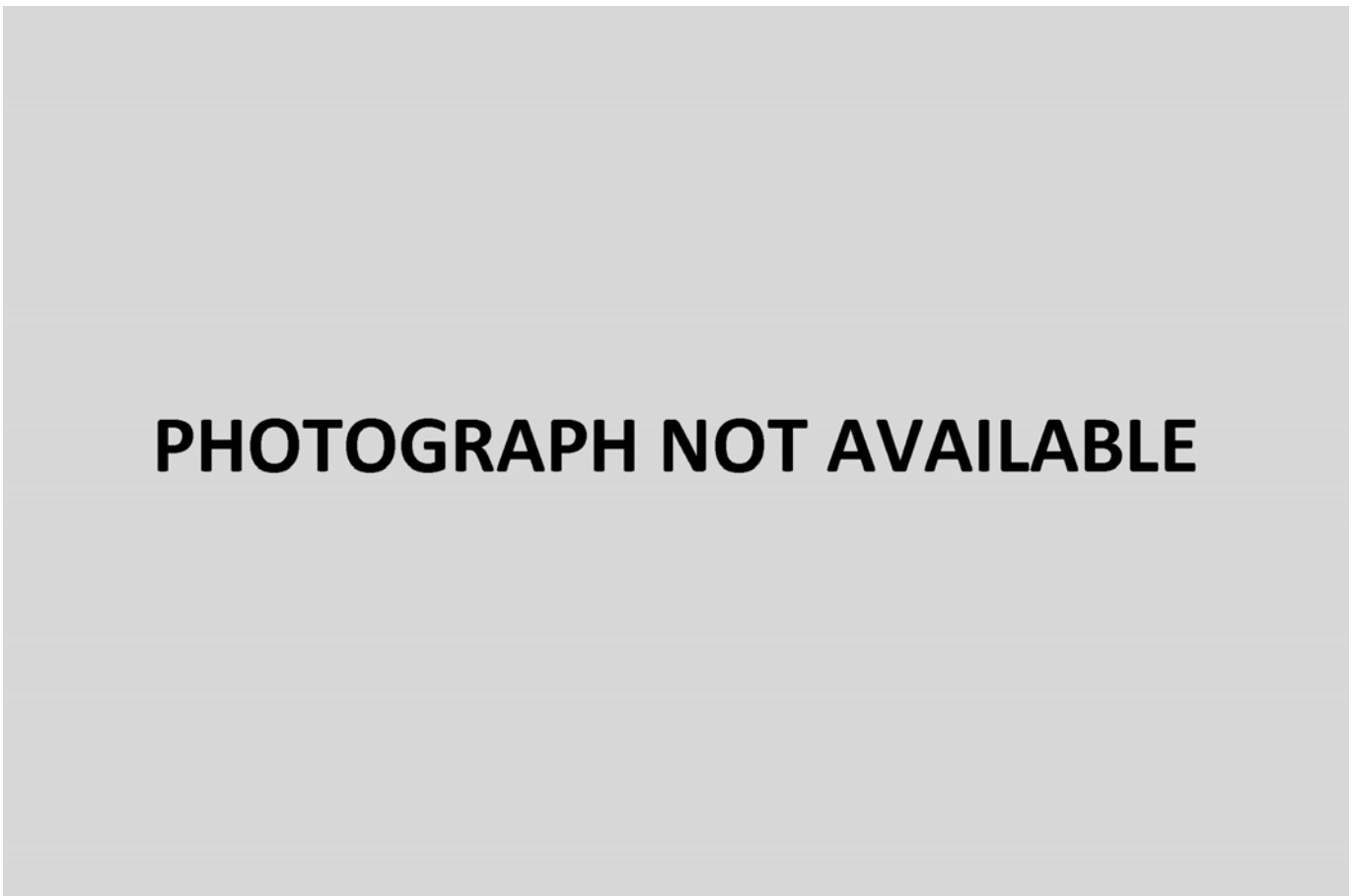


Photo No. 060 - Post-Test View of Belt Anchorage for Passenger Dummy



Photo No. 061 - Pre-Test Passenger Dummy Feet



Photo No. 062 - Post-Test Passenger Dummy Feet



Photo No. 063 - Pre-Test Passenger Side Knee Bolster (without dummy)



Photo No. 064 - Post-Test Passenger Side Knee Bolster (without dummy)



Photo No. 065 - Pre-Test Passenger Side Floorpan



Photo No. 066 - Post-Test Passenger Side Floorpan



Photo No. 067 - Post-Test Passenger Dummy Face



Photo No. 068 - Post-Test Passenger Dummy Contact with Airbag



Photo No. 069 - Post-Test Passenger Dummy Contact with Headrest

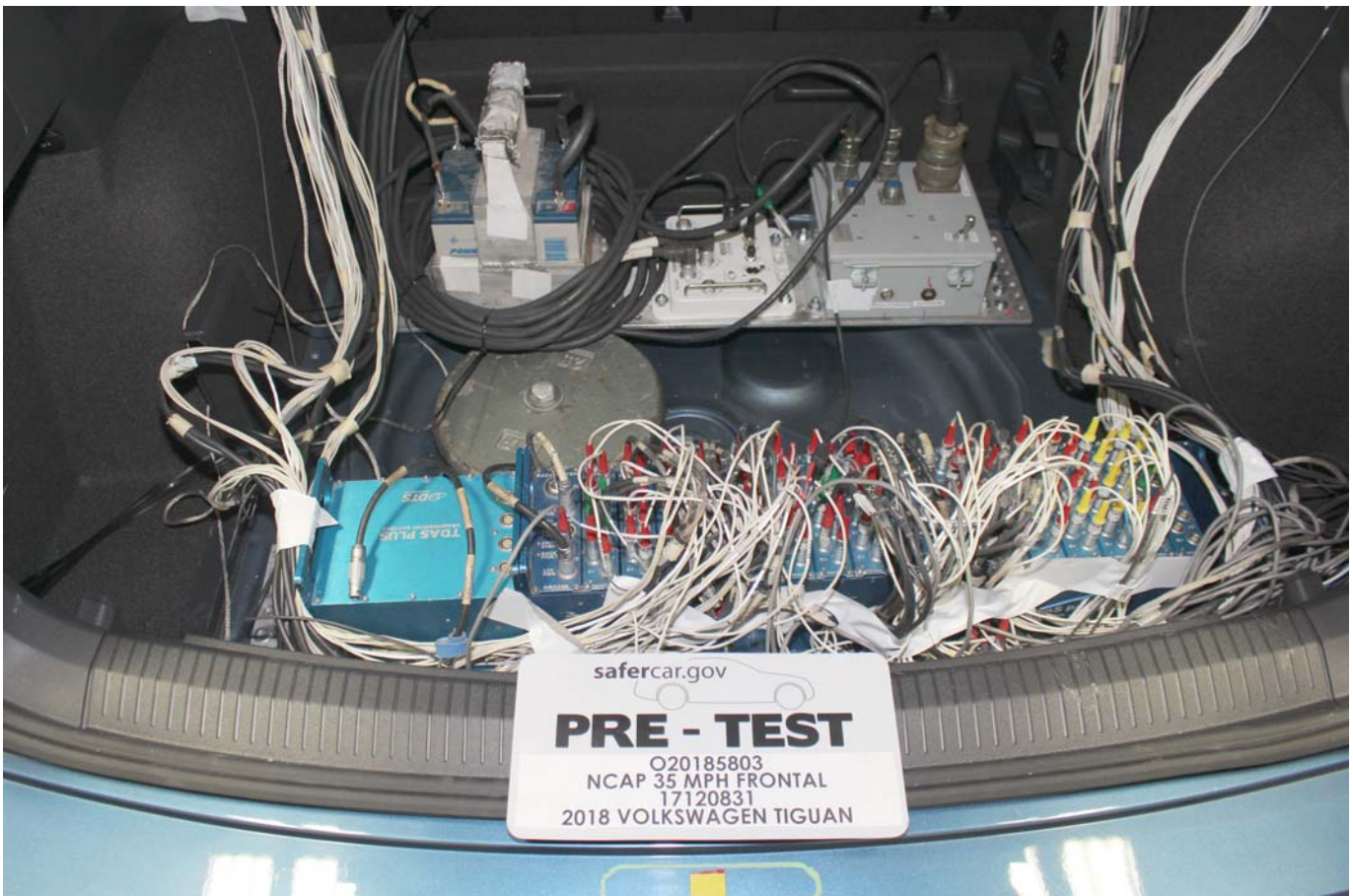


Photo No. 070 - Ballast Installed in Vehicle

PHOTOGRAPH NOT APPLICABLE

Photo No. 071 - Post-Test Stoddard Solvent Spillage Location View



Photo No. 072 - Post-Test Speed Trap Read-Out



Photo No. 073 - Vehicle at 0 Degree on Static Rollover Device



Photo No. 074 - Vehicle at 90 Degrees on Static Rollover Device



Photo No. 075 - Vehicle at 180 Degrees on Static Rollover Device

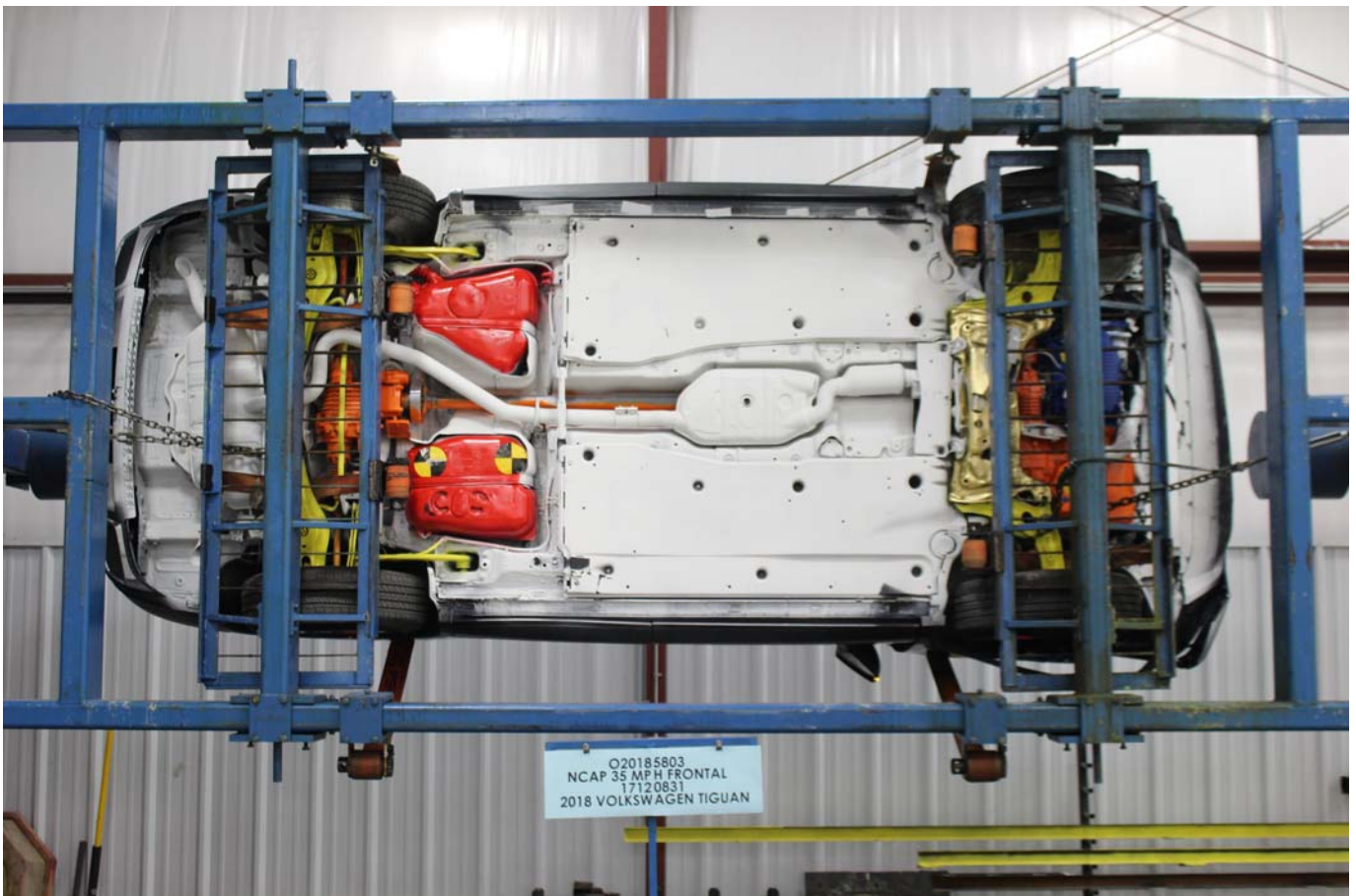


Photo No. 076 - Vehicle at 270 Degrees on Static Rollover Device



Photo No. 077 - Vehicle at 360 Degrees on Static Rollover Device



Photo No. 078 - 2018 Volkswagen Tiguan 2.0 TSI S AWD 5-Door SUV Frontal Impact Event

2018 Tiguan 2.0T S w/ 4MOTION®

Silk Blue Metallic Exterior Titan Black Cloth Interior



STANDARD FEATURES (unless replaced by options)

PERFORMANCE

- 2.0L TSI® 16-valve DOHC turbo 4-cylinder engine w/ direct fuel injection
- 4MOTION® all-wheel-drive w/ Active Control
- Four-wheel independent suspension

SAFETY FEATURES

- Driver & front passenger front & side airbag supplemental restraint systems
- Side Curtain Protection® head impact airbags
- 3-point safety belts, all seating positions
- Anti-lock Braking System (ABS) w/ disc brakes
- Anti-Slip Regulation (ASR) & Engine Brake Assist (EBA)
- Electronic Brake-pressure Distribution (EBD) & Hydraulic Brake Assist (HBA)
- Electronic Stability Control (ESC) & Electronic Differential Lock (EDL)
- Intelligent Crash Response System (ICRS)
- Lower Anchors & Tethers for Children (LATCH)
- Tire Pressure Monitoring System (TPMS)

EXTERIOR

- 17" alloy wheels w/ all-season tires
- Automatic, halogen headlights w/ LED Daytime Running Lights (DRL)
- Heated, foldable, power adjustable side mirrors w/ integrated turn signals
- Variable intermittent front wipers
- Rear window washer & wiper
- Black roof rails

INTERIOR

- Manual climate control
- 3-spoke, multi-function steering wheel
- Tilt & telescoping adjustable steering column
- Driver's seat: 6-way manual w/ height adjustment
- Front passenger seat: 6-way manual w/ height adjustment
- 2nd-row seat: 40/20/40 split-folding, sliding & reclining w/ armrest
- Cloth seating surfaces
- Front center console w/ cup holders, armrest & storage
- Front reading lights & illuminated vanity mirrors
- Carpeted cargo area w/ tie-down hooks

TECHNOLOGY

- Rear View Camera System
- Composition Color: 6.5" touchscreen AM/FM radio w/ USB input
- 6-speaker sound system
- Bluetooth® connectivity (for compatible devices)
- Cruise control
- Color multi-function display (MFD) w/ trip computer
- Power door locks w/ remote featuring panic button
- Electric parking brake

Manufacturer's Suggested Retail Price: \$26,495.00

VW CAR-NET® EQUIPPED. Features include:

- > App-Connect® (Smartphone Integration & Interface)

DRIVER CARE PACKAGE

WARRANTY INFORMATION

- Volkswagen New Vehicle Limited Warranty
- 6 years/72,000 miles (whichever occurs first)
- * Includes coverage for powertrain components
- Limited Warranty against Corrosion Perforation
- * 7 years/100,000 miles (whichever occurs first)

Please ask your dealer for a copy of the Volkswagen warranty booklet for details.

24-HOUR ROADSIDE ASSISTANCE

- * 3 years/36,000 miles (whichever occurs first)
- (Towing, Jump Starts, Tire Changes, Out of Fuel, and Lock-Out)
- Provided by a third party supplier

PACKAGES/OPTIONS

- Silk Blue Metallic Exterior No Charge
- Titan Black Cloth Interior No Charge
- Monster Mats® (set of 4) w/ Trunk Liner & VW CarGo Blocks No Charge
- Roadside Assistance Kit \$235.00
- 8-Speed Automatic w/ Tiptronic® \$35.00
- No Charge

EPA DOT Fuel Economy and Environment Gasoline Vehicle

Fuel Economy

23 MPG combined city/hwy

21 city

27 highway

4.3 gallons per 100 miles

Small Sport Utility Vehicles range from 18 to 34 MPG. The best vehicle rates 136 MPG.

You spend \$1,000 more in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost \$1,550

Fuel Economy & Greenhouse Gas Rating (tailpipe only)

1 5 10 Best

Smog Rating (tailpipe only)

1 7 10 Best

This vehicle emits 382 grams of CO₂ per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also create emissions; learn more at fuelconomy.gov.

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 27 MPG and costs \$5,760 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$2.40 per gallon. MPGe is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fuelconomy.gov

Calculate personalized estimates and compare vehicles

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5885 E CIRCLE DR
CICERO, NY 13039

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5885 E CIRCLE DR
CICERO, NY 13039

Port of Entry: DAVISVILLE
VIN: 3VV067AJXJ0054095

GOVERNMENT 5-STAR SAFETY RATINGS

Overall Vehicle Score Not Rated
Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight.

Frontal Crash	Driver Passenger	Not Rated
Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.		
Side Crash	Front Seat Rear Seat	Not Rated
Based on the risk of injury in a side impact.		
Rollover		Not Rated
Based on the risk of rollover in a single-vehicle crash.		

Star ratings range from 1 to 5 stars (★★★★★) with 5 being the highest.
Source: National Highway Traffic Safety Administration (NHTSA).
www.safercar.gov or 1-888-327-4236

Who better to get you into a Volkswagen than us? Volkswagen Credit

Destination Charge \$900.00

Total Price: \$27,115.00

Fuel, license, title fees, taxes and dealer-installed accessories are not included.

PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS CARLINE:	FOR THIS VEHICLE:
U.S./CANADIAN	FINAL ASSEMBLY POINT: PUEBLA, MEXICO
PARTS CONTENT: 11%	COUNTRY OF ORIGIN: MEXICO
MAJOR SOURCES OF FOREIGN PARTS CONTENT:	ENGINE: MEXICO
MEXICO: 43%	TRANSMISSION: JAPAN
GERMANY: 16%	

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

Photo No. 079 - Monroney Label Photograph



Photo No. 080 - Post-Test Driver Seatbelt Separation (at seatbelt buckle)



Photo No. 080a - Post-Test Driver Seatbelt Buckle



Photo No. 080b - Post-Test Driver Seatbelt Buckle (removed)



Photo No. 080c - Post-Test Driver Dummy Clothing (at seatbelt buckle)

APPENDIX B
DUMMY RESPONSE DATA TRACES

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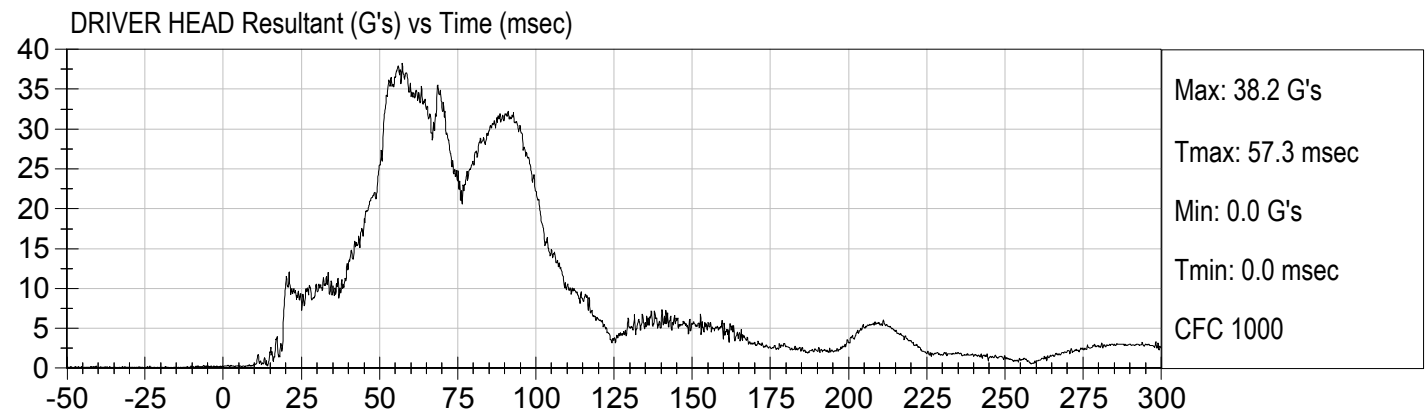
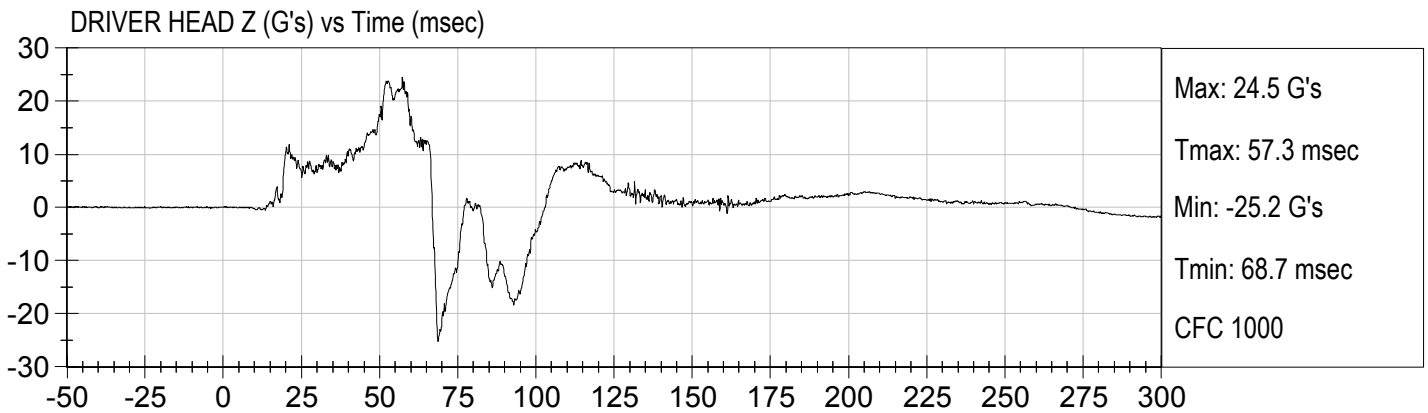
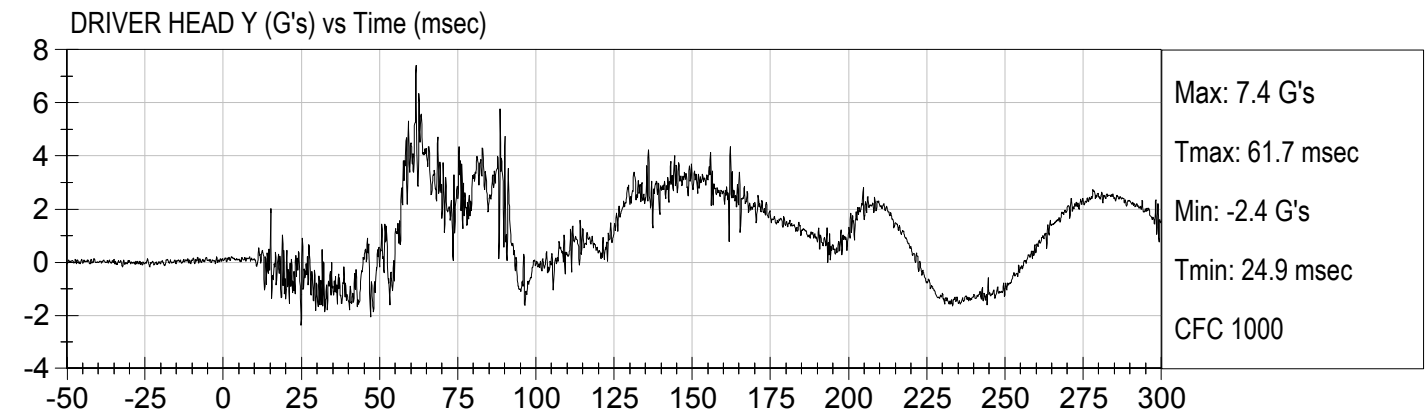
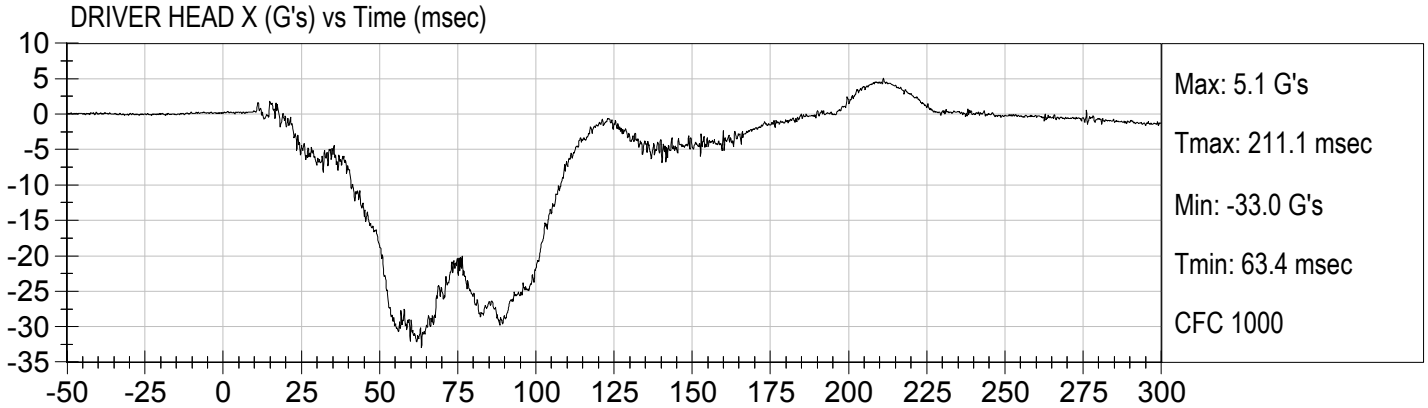
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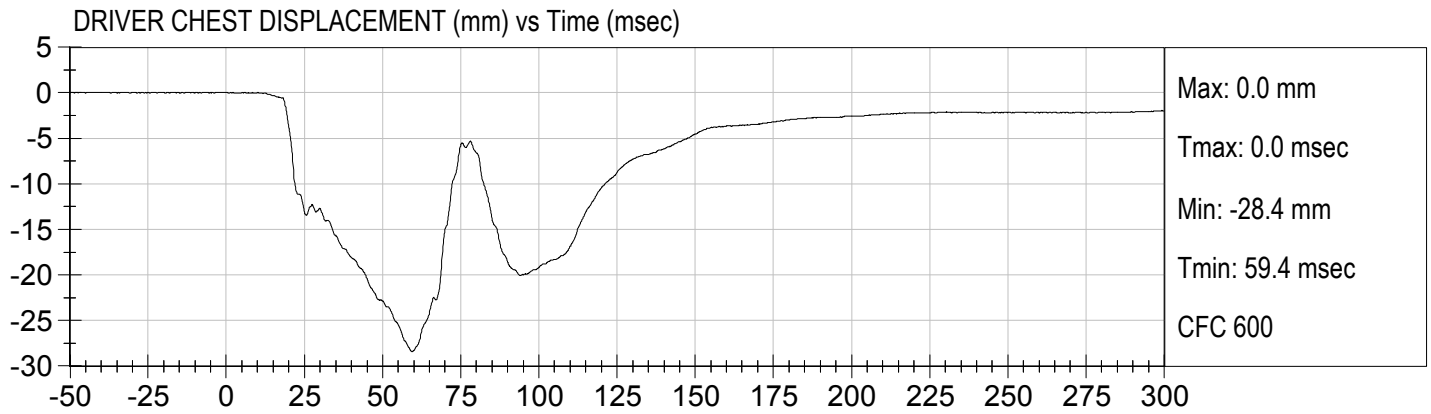
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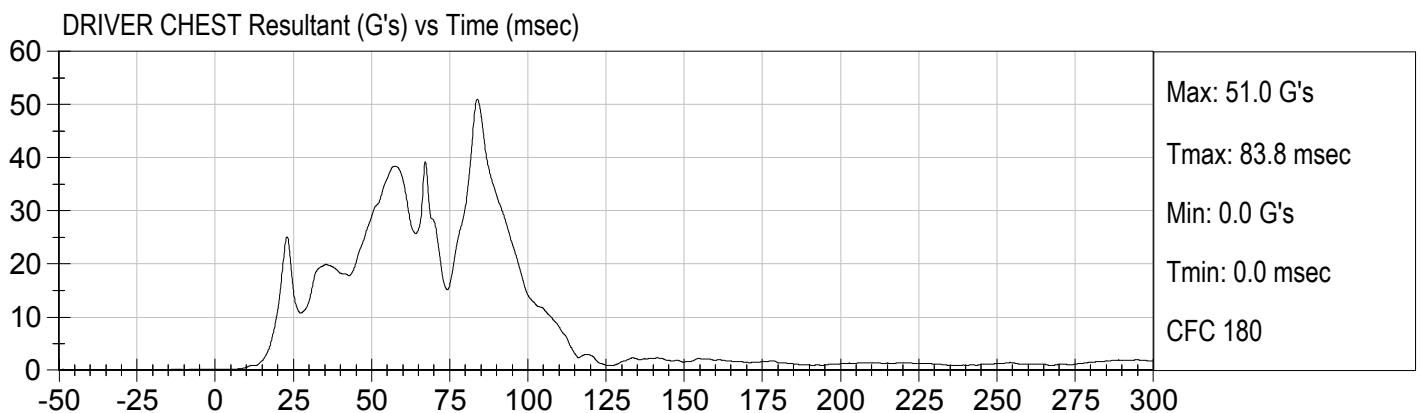
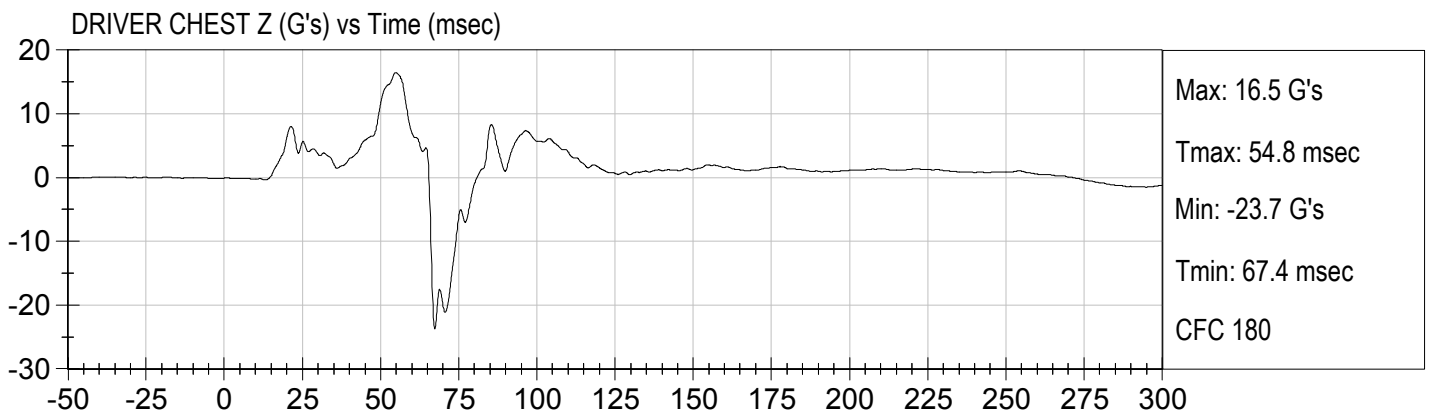
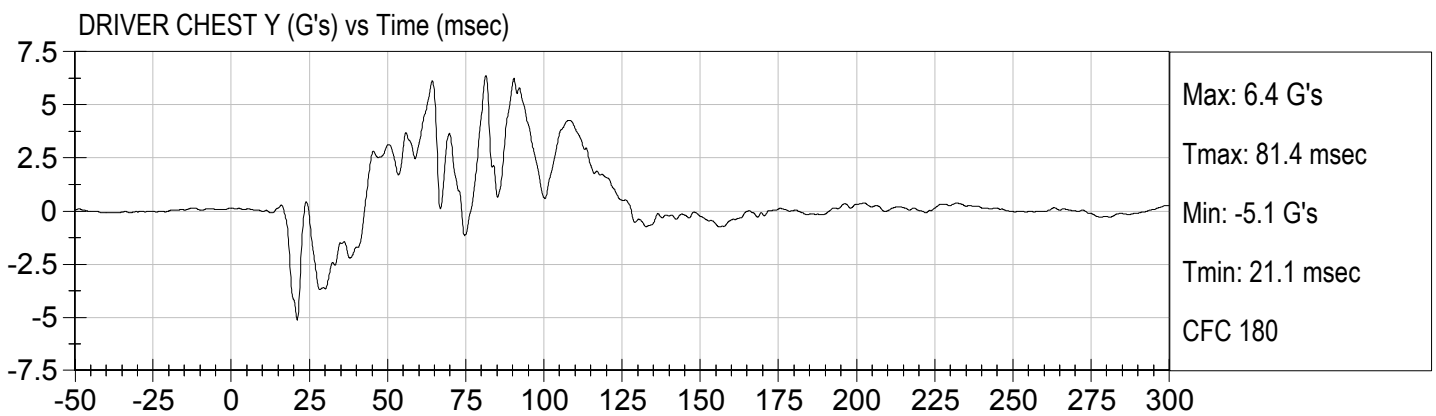
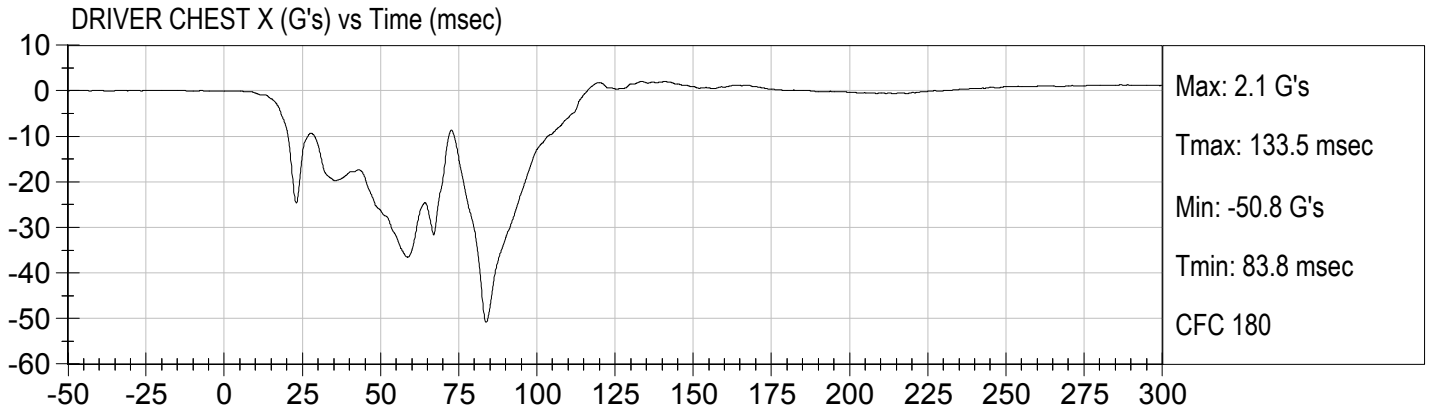
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 Driver Head Z Redundant
 Driver Head Angular Velocity X
 Driver Head Angular Velocity Y
 Driver Head Angular Velocity Z
 Driver Upper Neck Force Y
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 Driver Upper Neck Moment Z
 Driver Chest X Redundant
 Driver Chest Y Redundant
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 Driver Left Femur Redundant
 Driver Right Femur Redundant
 Driver Left Upper Tibia Moment X
 Driver Left Upper Tibia Moment Y

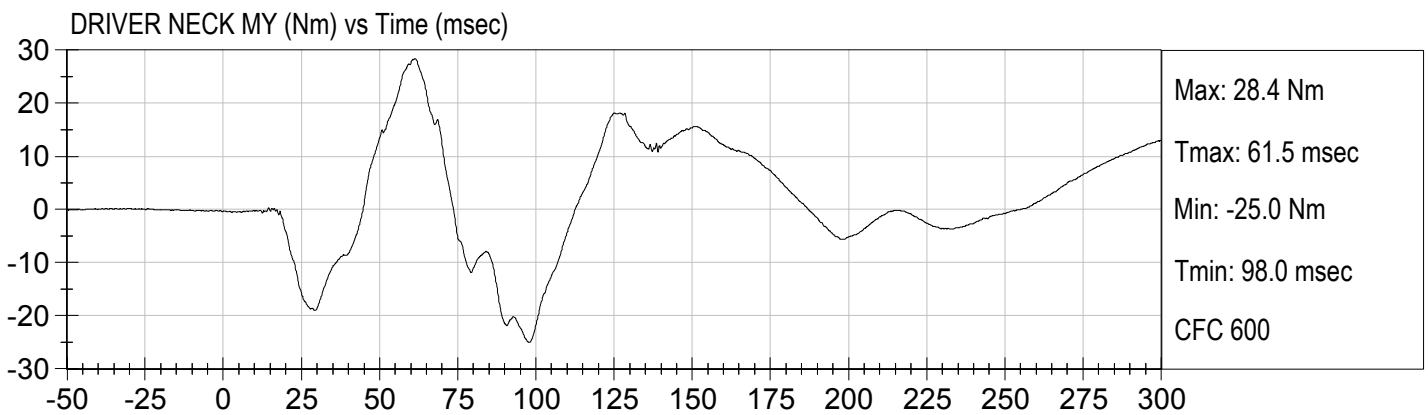
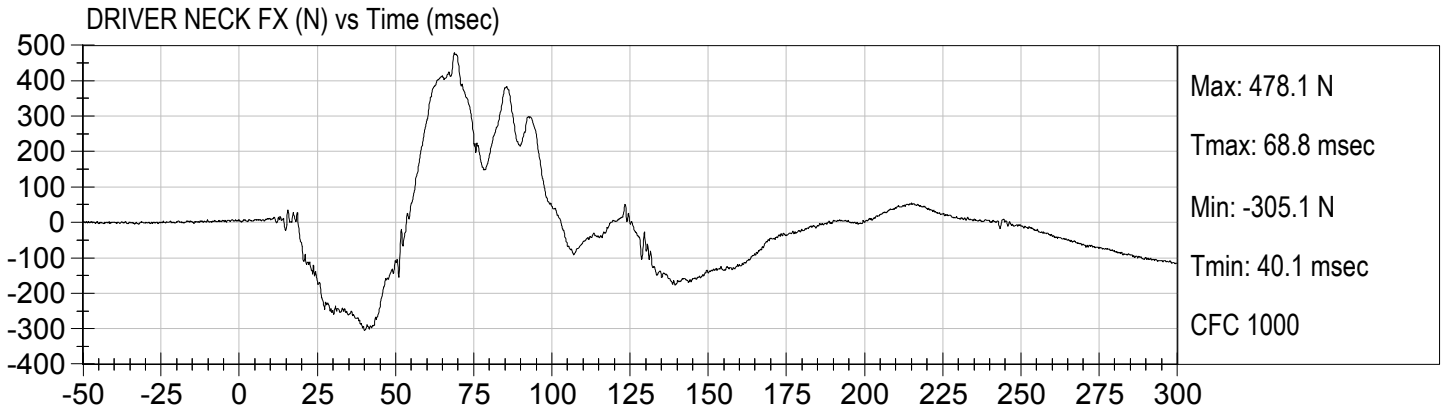
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Driver Left Lower Tibia Moment Y
Driver Left Lower Tibia Force Z
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Driver Right Upper Tibia Moment Y
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Driver Right Lower Tibia Moment X
Driver Right 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 Head Angular Velocity X
Passenger Head Angular Velocity Y
Passenger Head Angular Velocity Z
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

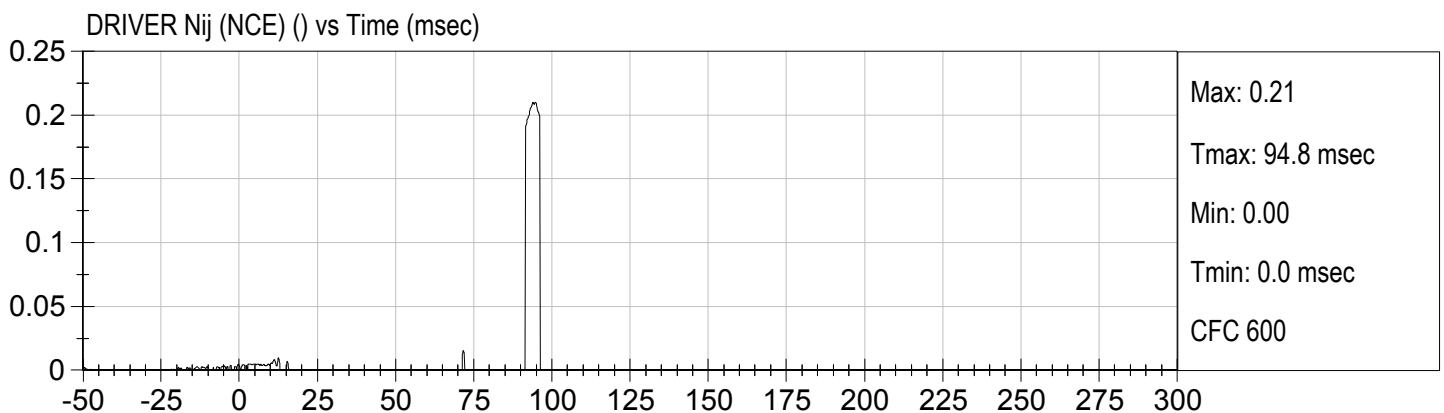
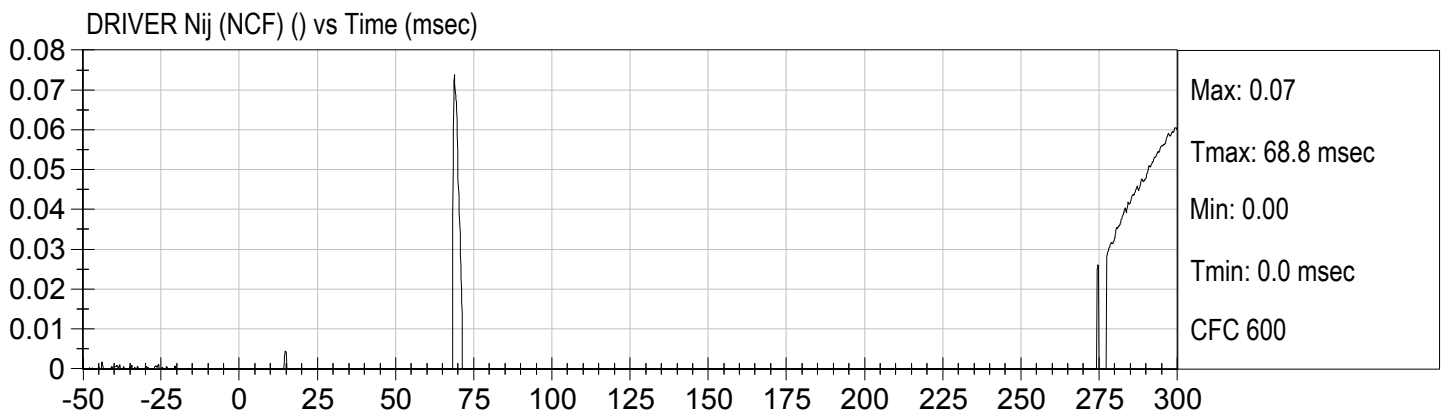
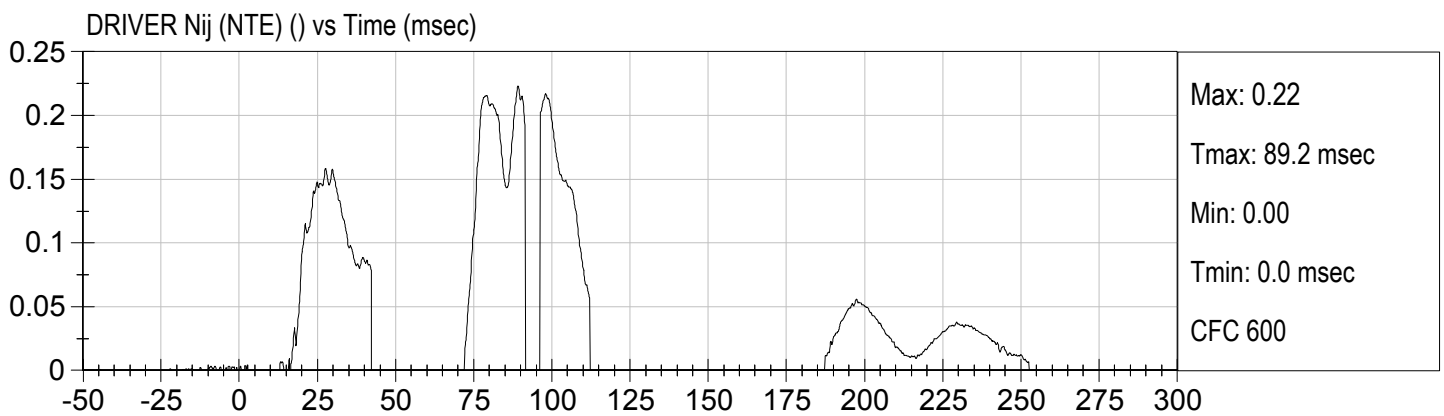
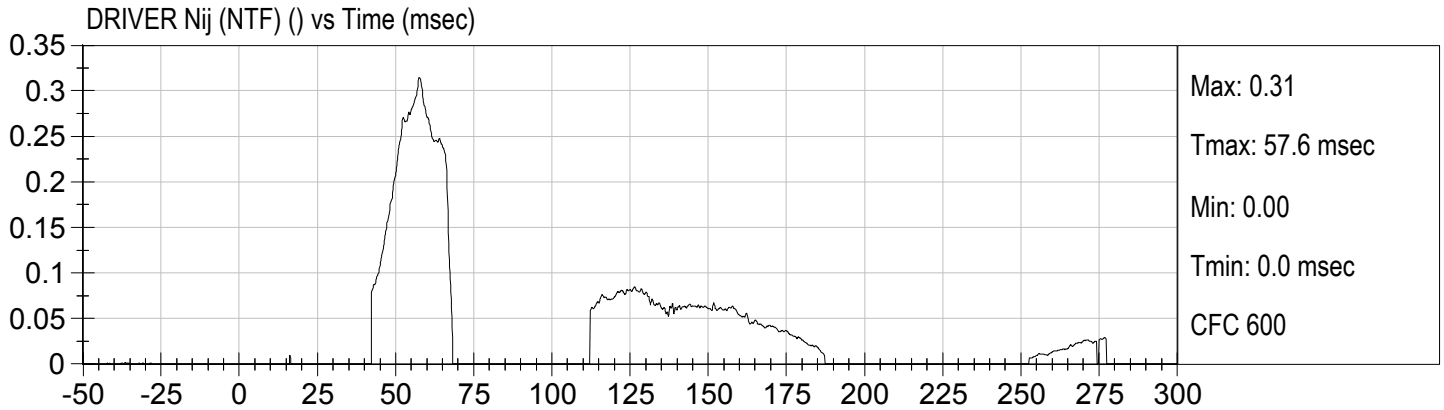
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Passenger Left Lower Tibia Moment Y
Passenger Left Lower Tibia Force Z
Passenger Right Upper Tibia Moment X
Passenger Right Upper Tibia Moment Y
Passenger Right Upper Tibia Force Z
Passenger Right Lower Tibia Moment X
Passenger Right Lower Tibia Moment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

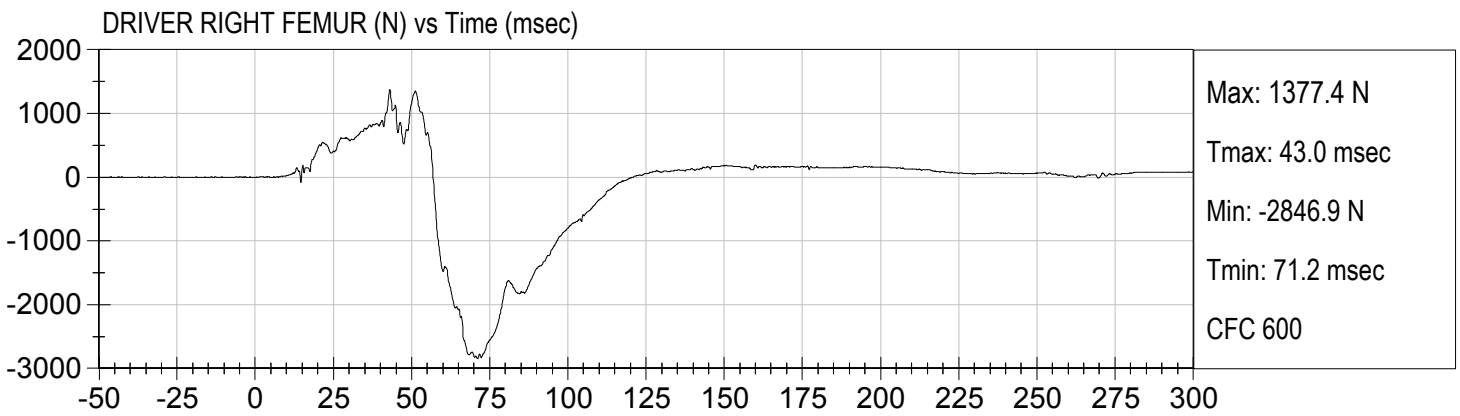
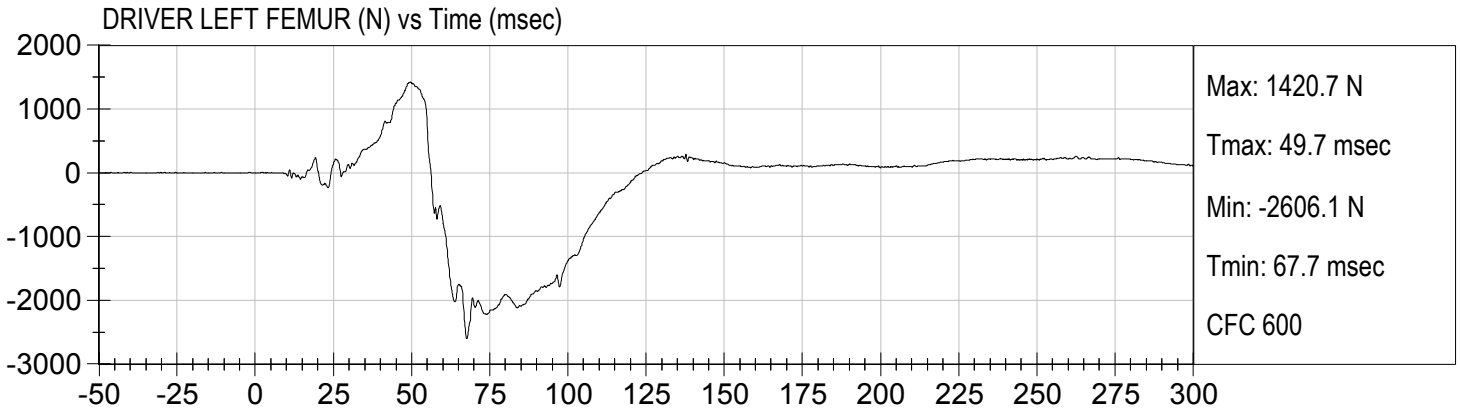


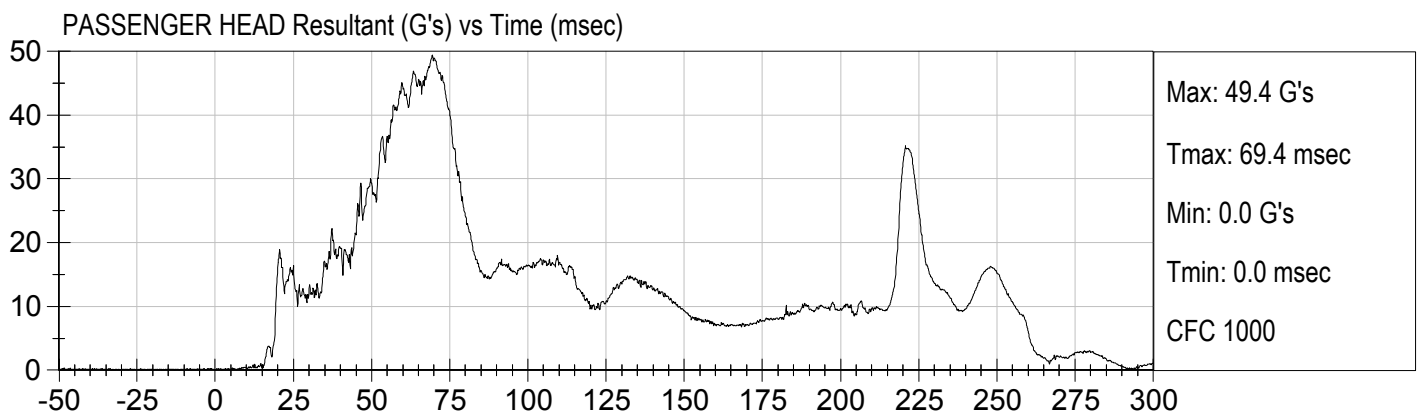
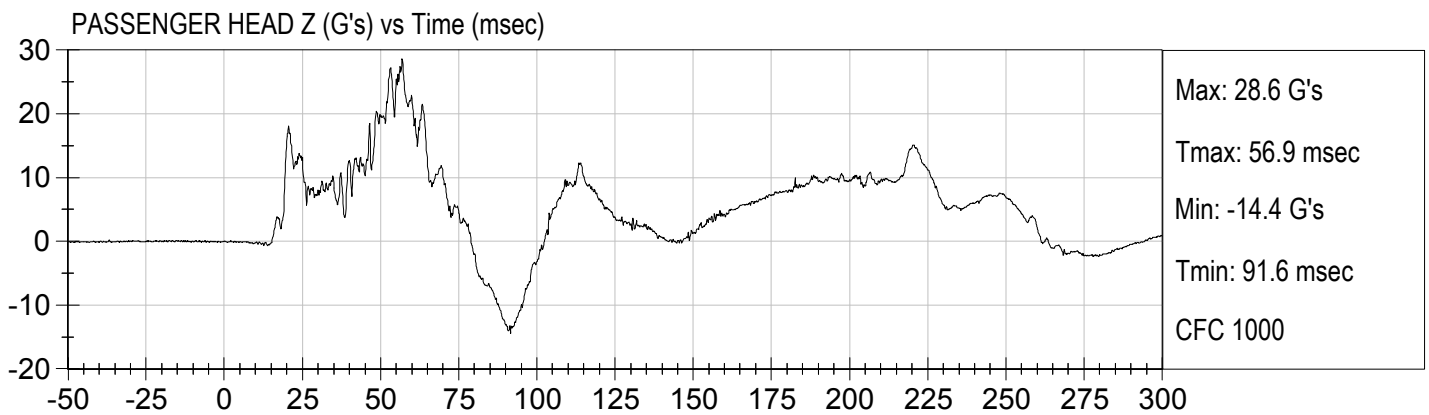
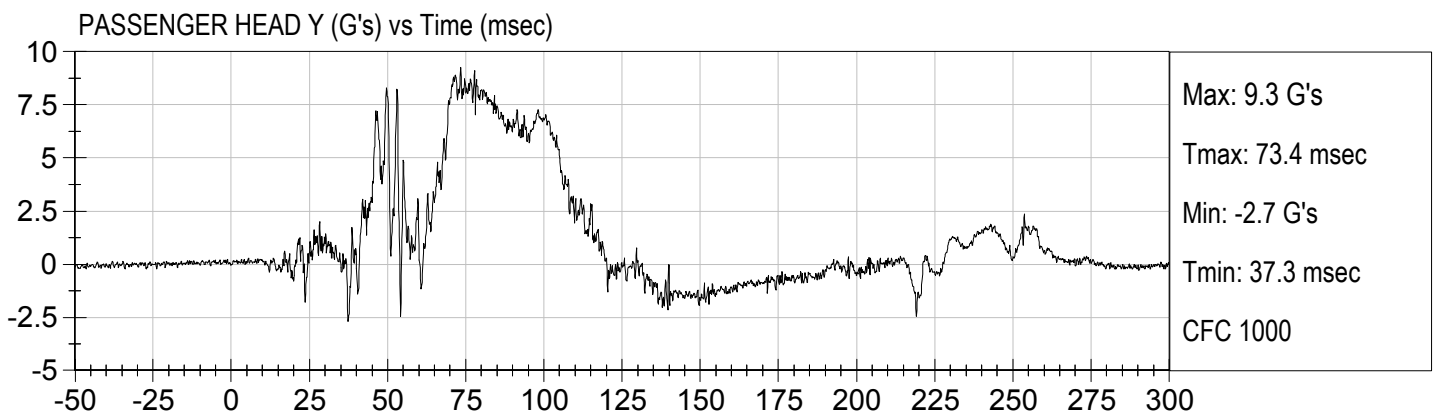
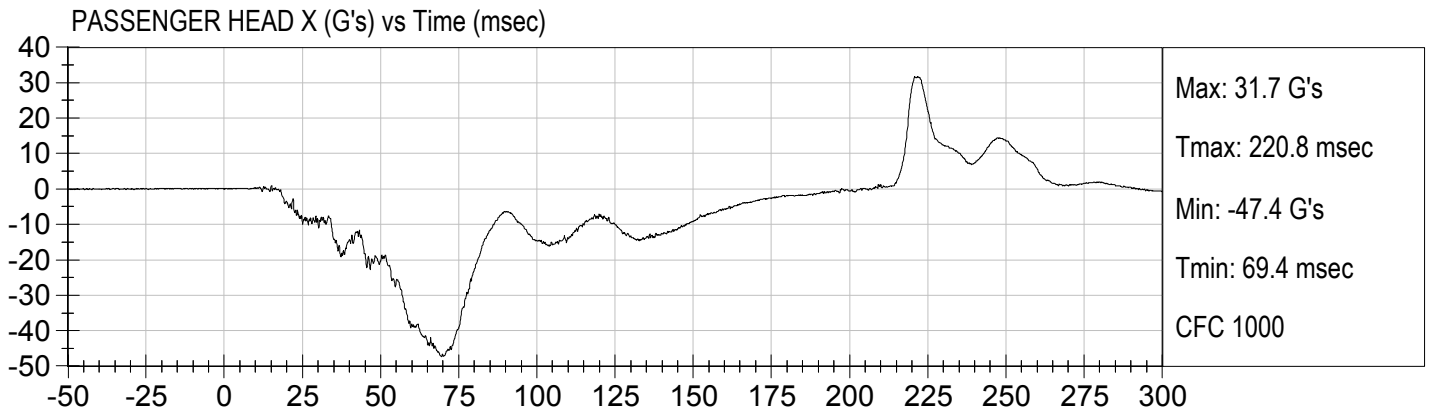


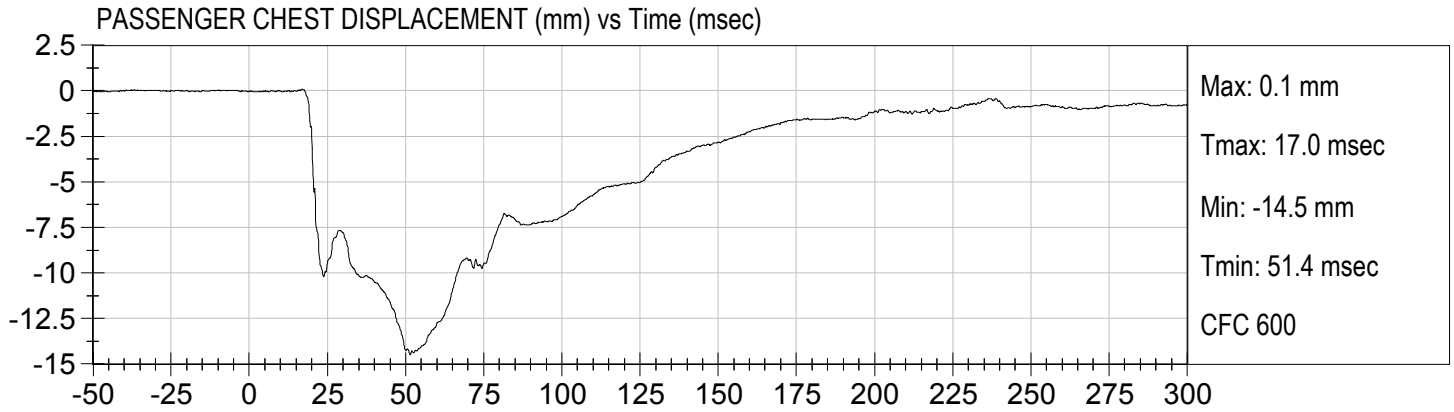


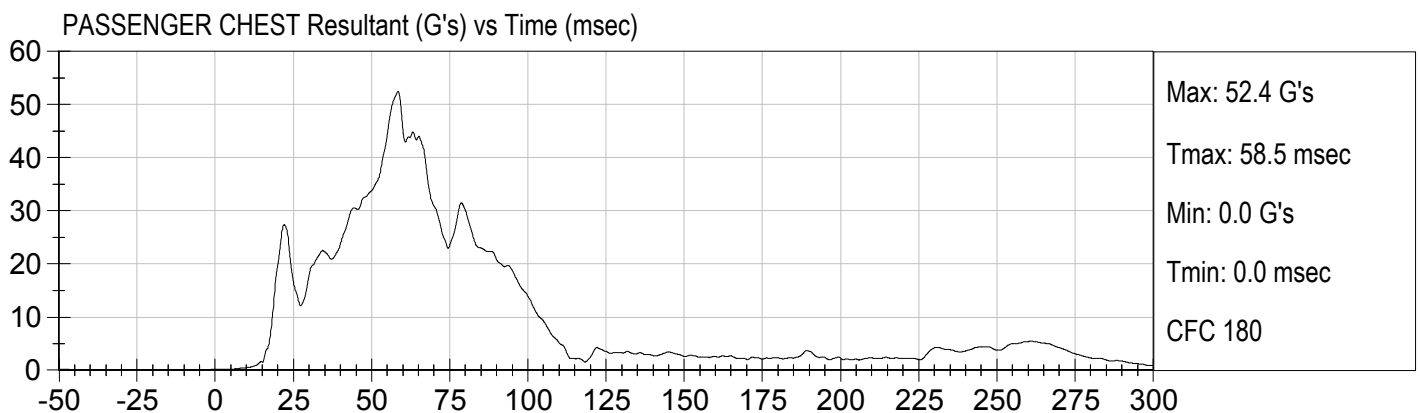
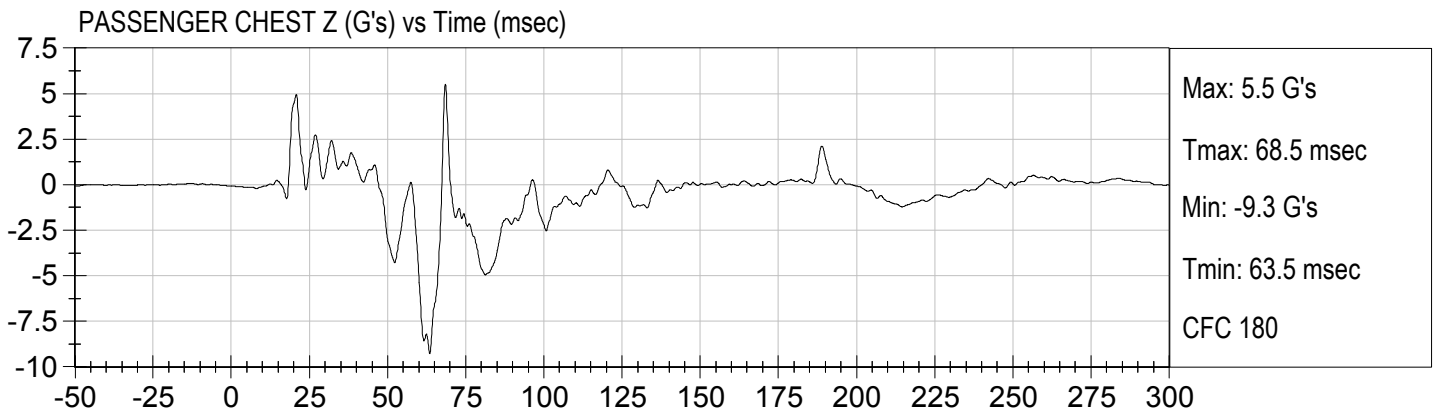
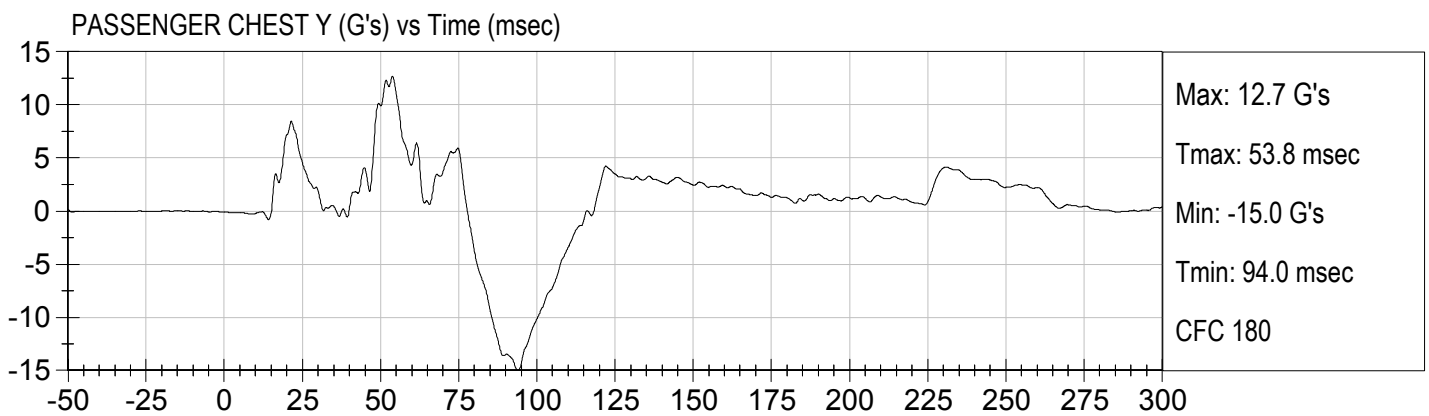
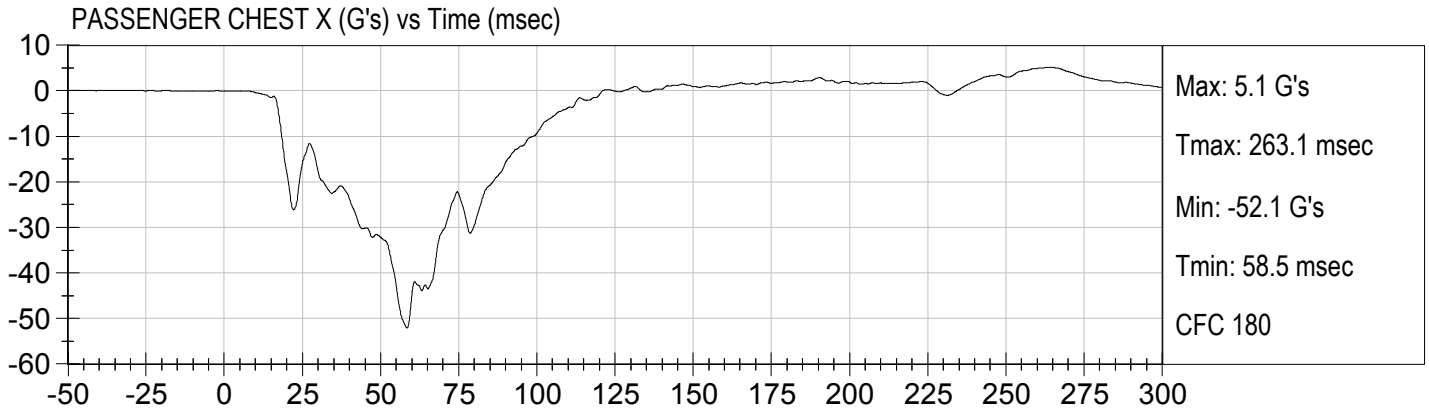


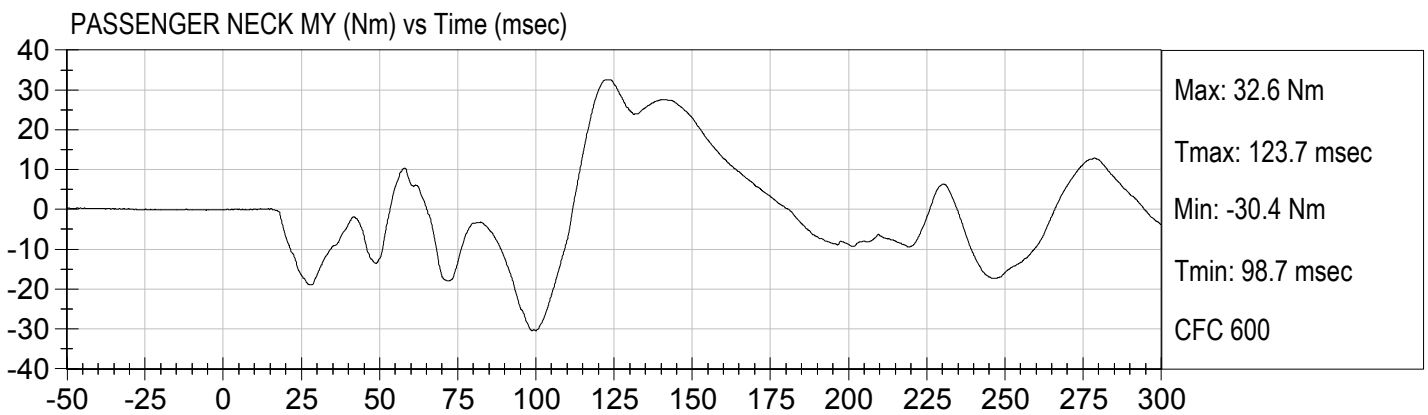
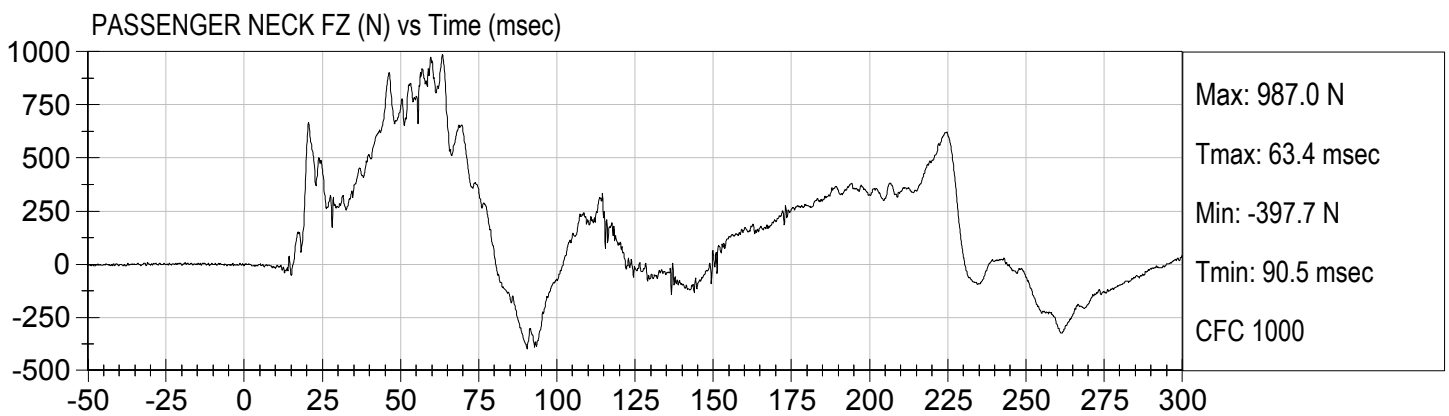
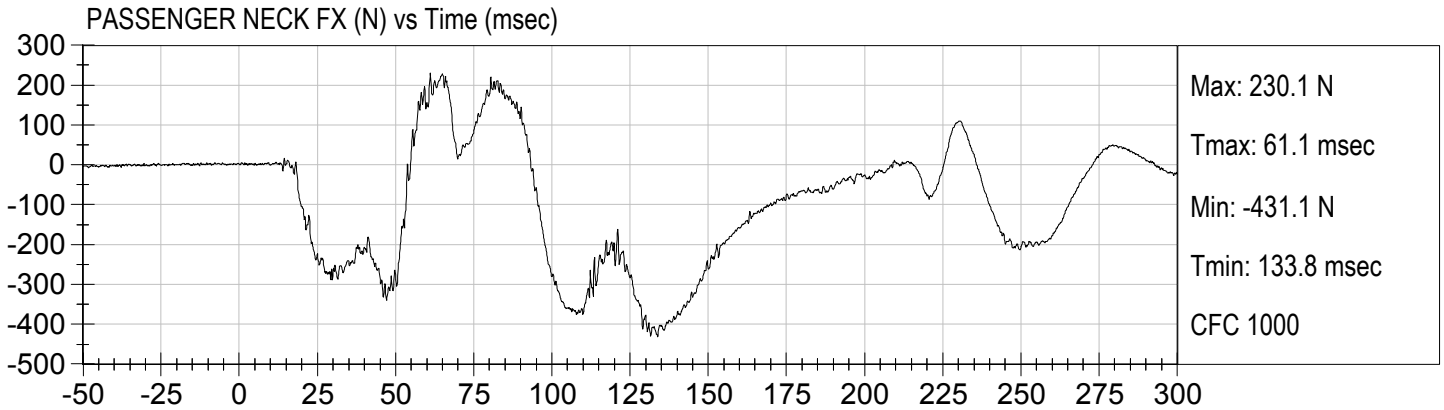


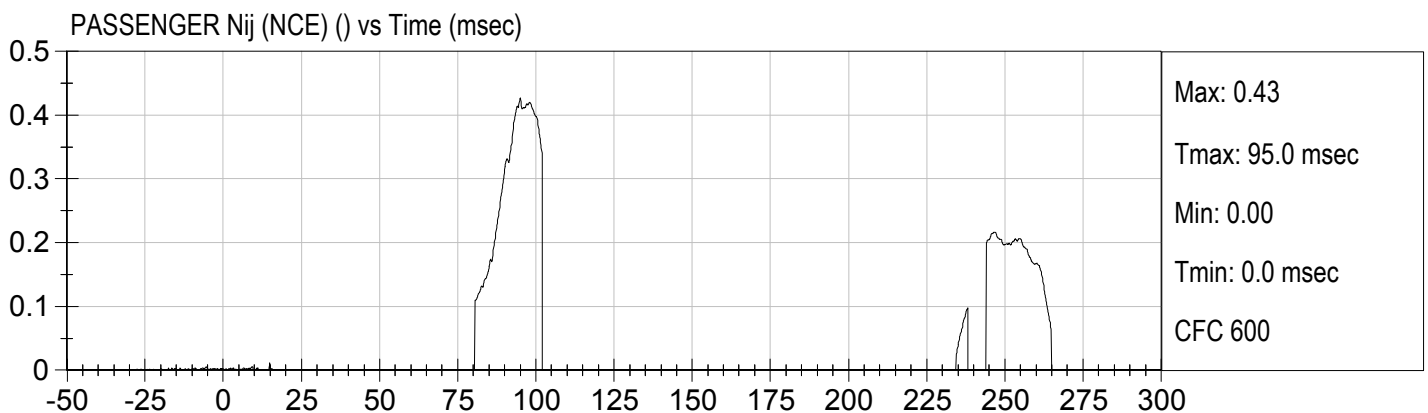
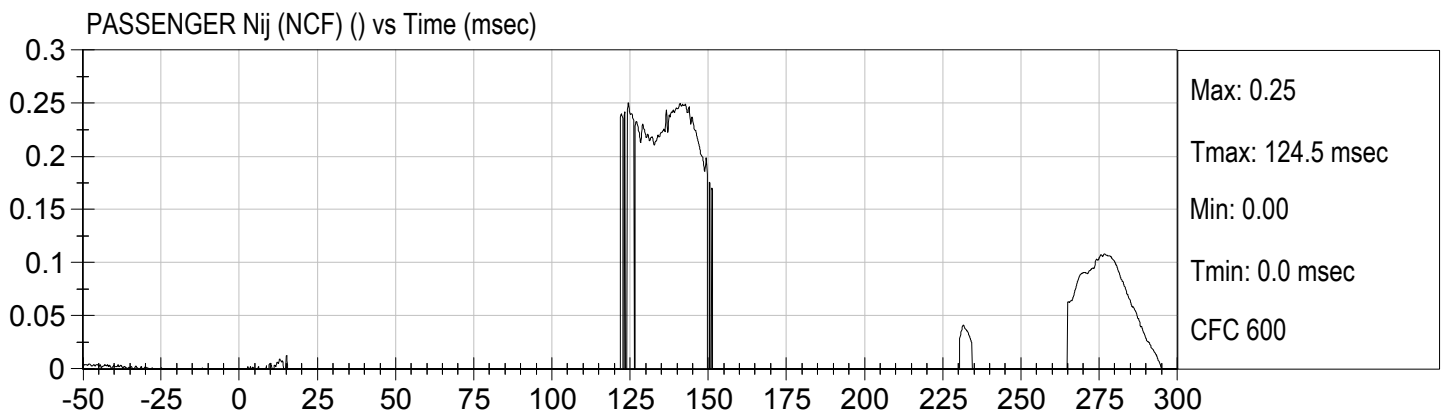
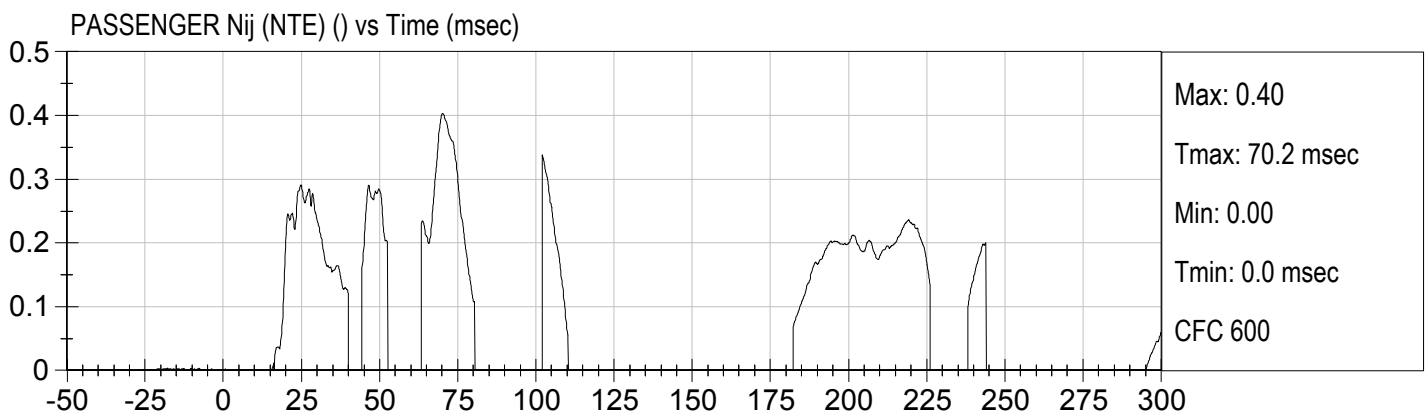
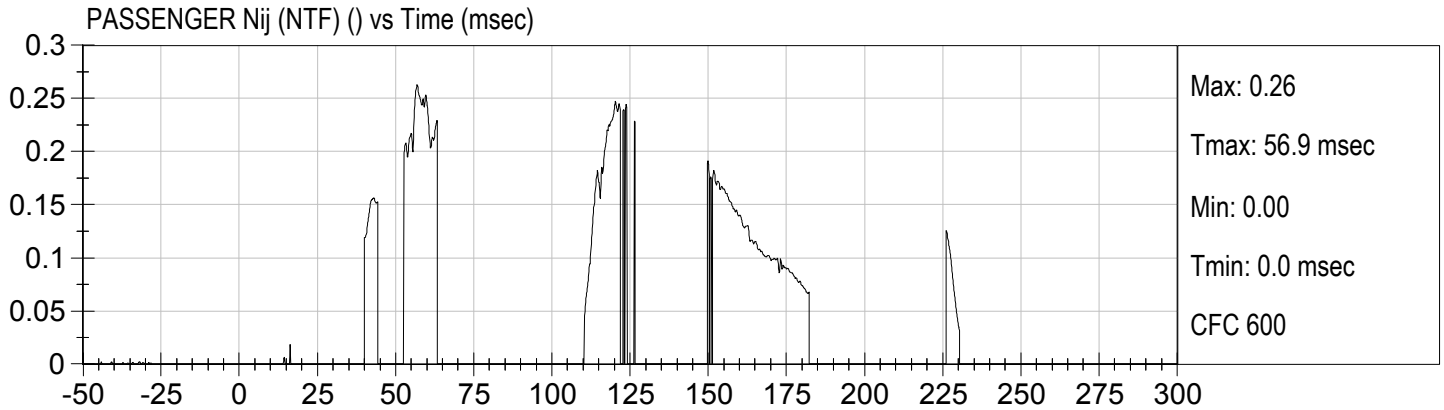


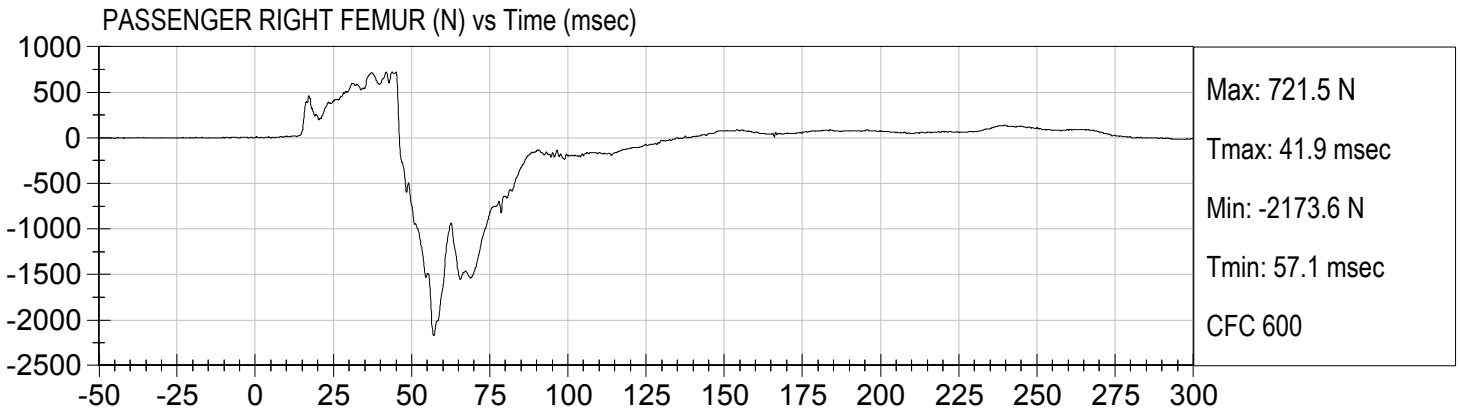
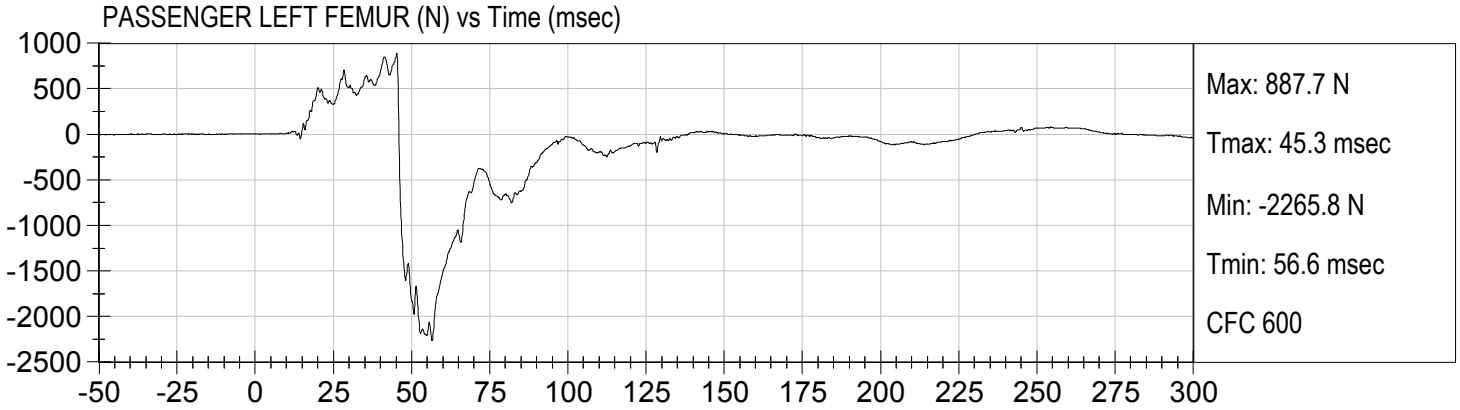












APPENDIX C
DUMMY CALIBRATION AND PERFORMANCE VERIFICATION DATA

**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**

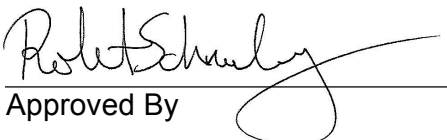
ATD Serial No: 351

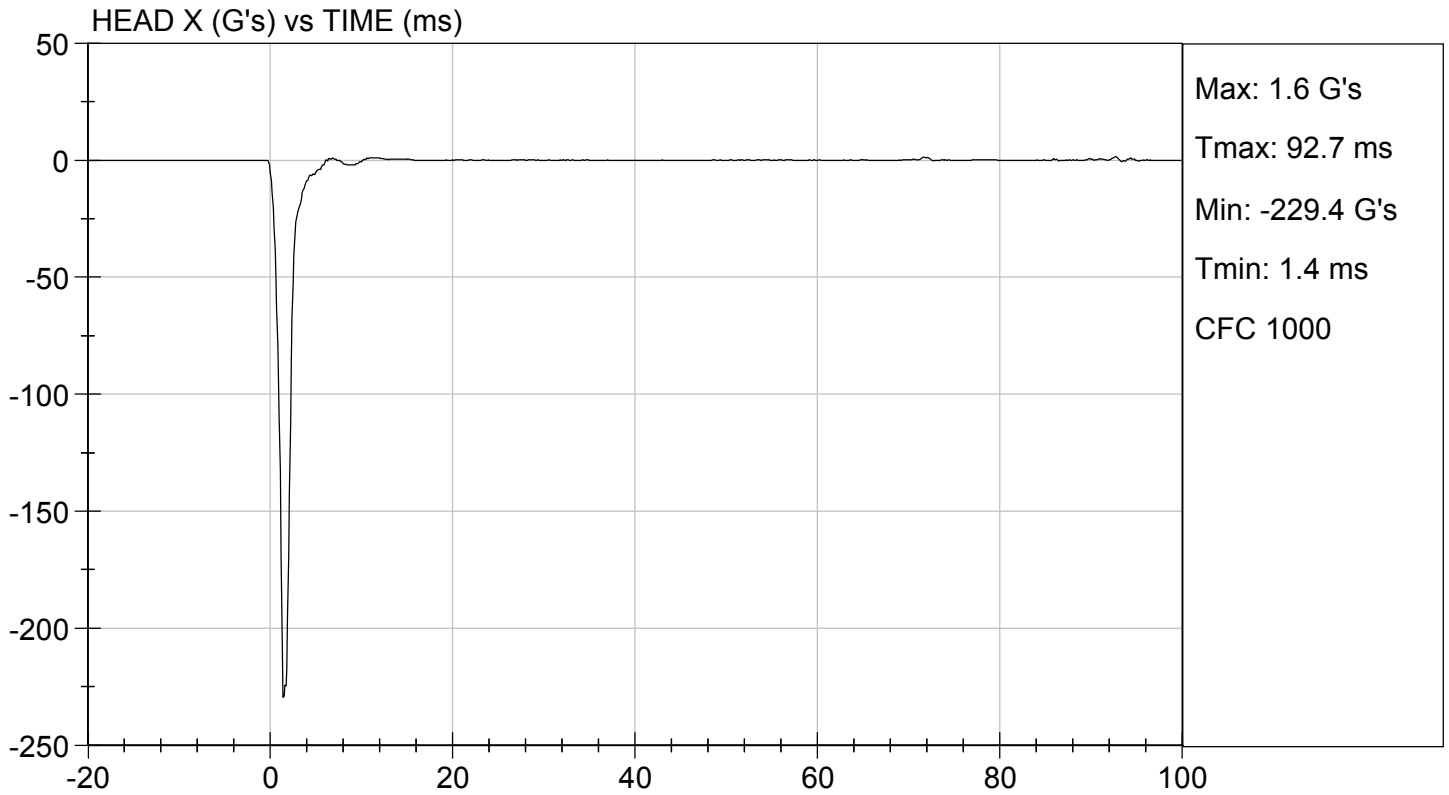
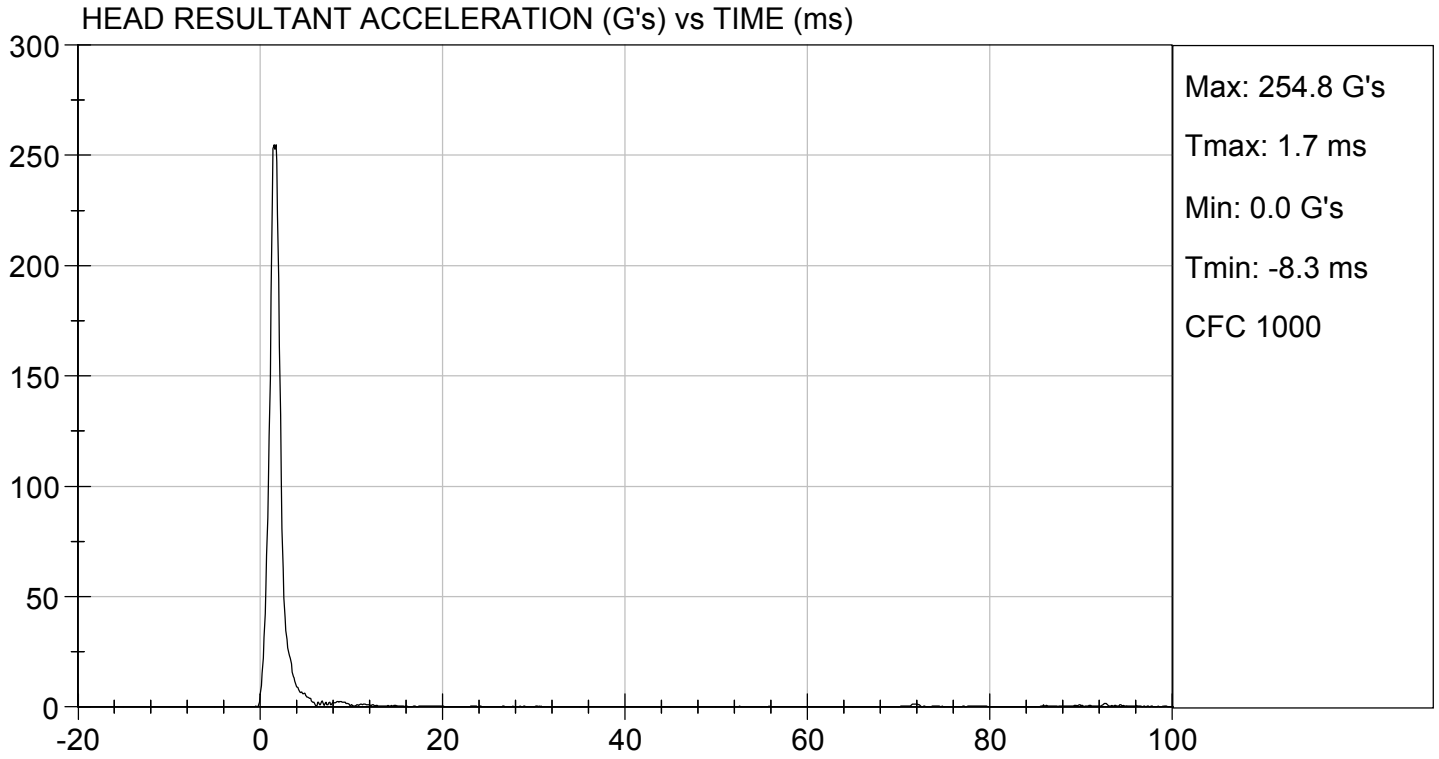
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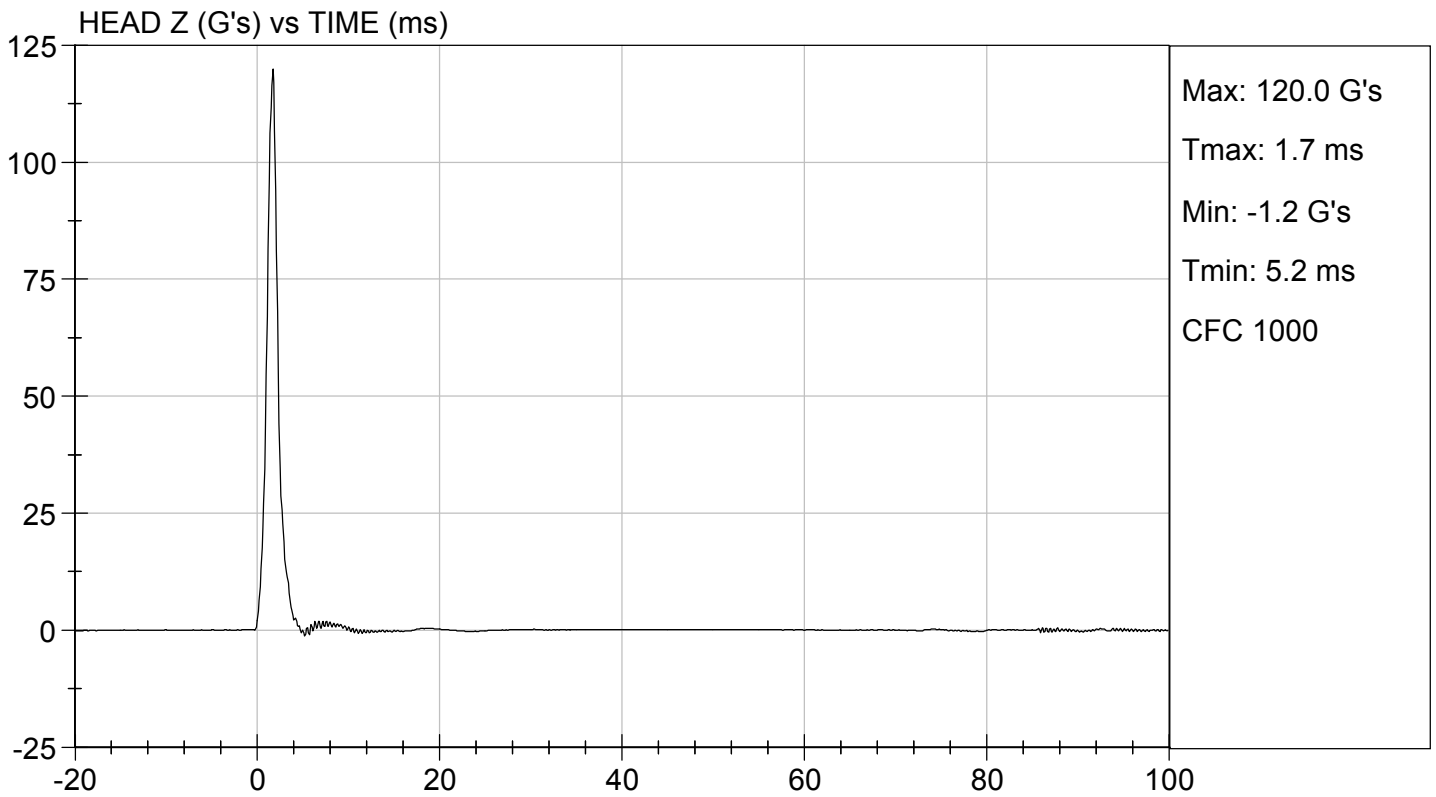
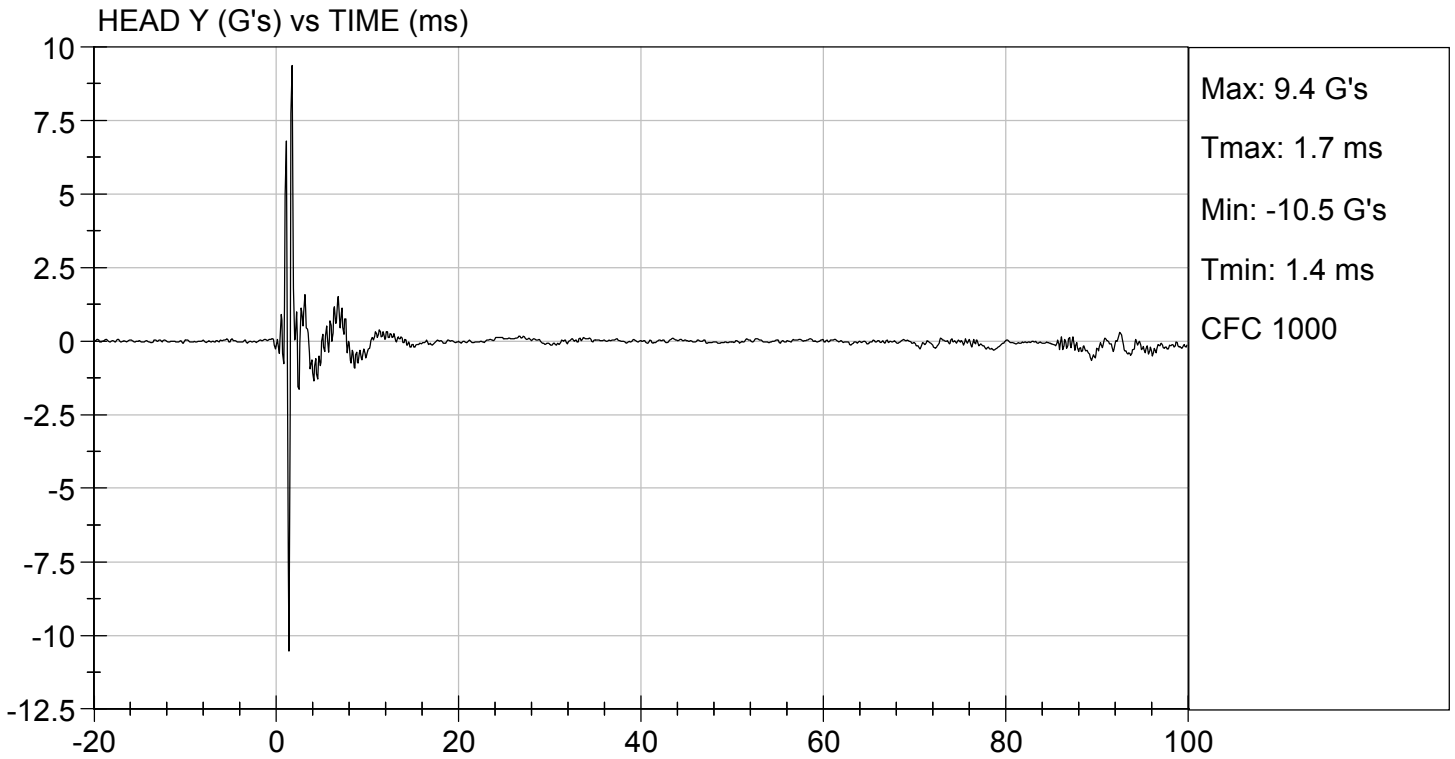
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	22	Pass
Peak Resultant Acceleration	G's	225 to 275	255	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-10.5	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician

12/06/2017
Test Date


Approved By





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

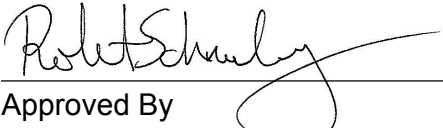
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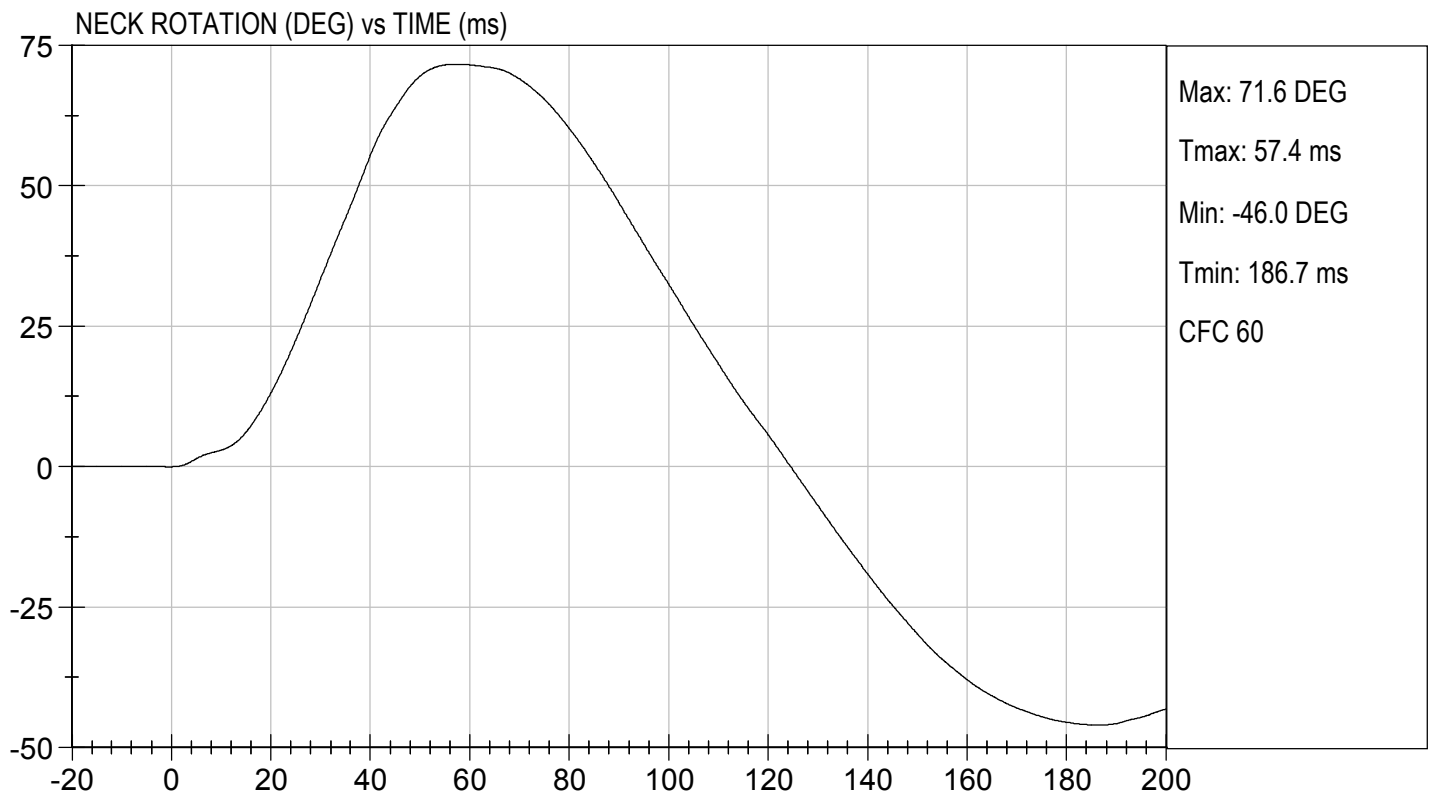
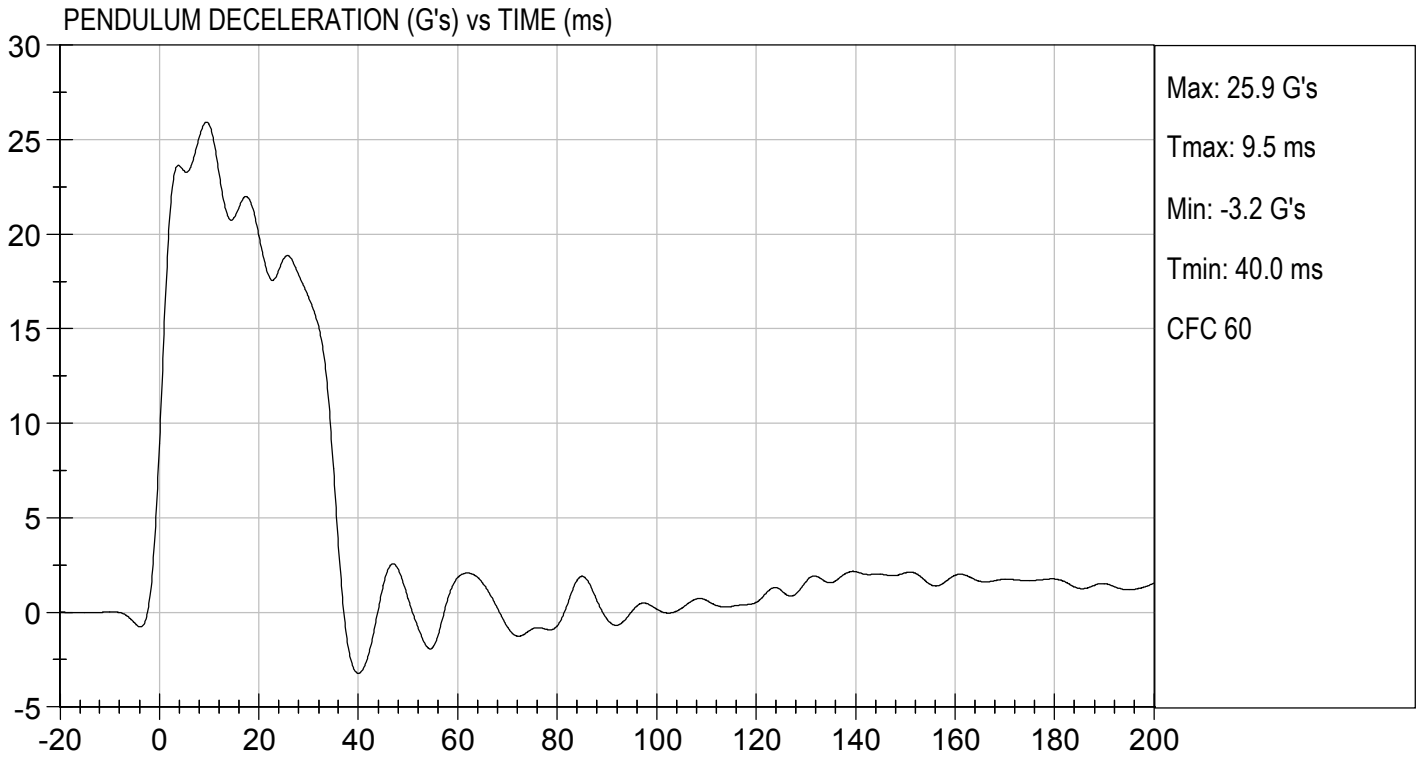
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Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity		%	10 to 70	22	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.96	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	25.80	Pass
	20 ms	G's	17.60 to 22.60	19.93	Pass
	30 ms	G's	12.50 to 18.50	16.66	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	16.6	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	71.6	Pass
	Time	ms	57.0 to 64.0	57.4	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	124.7	Pass
Moment About Occipital Condyle	Maximum	Nm	88.1 to 108.5	90.2	Pass
	Time	ms	47.0 to 58.0	48.7	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	100.1	Pass
Overall Test Results					Pass


 Laboratory Technician

12/06/2017
 Test Date

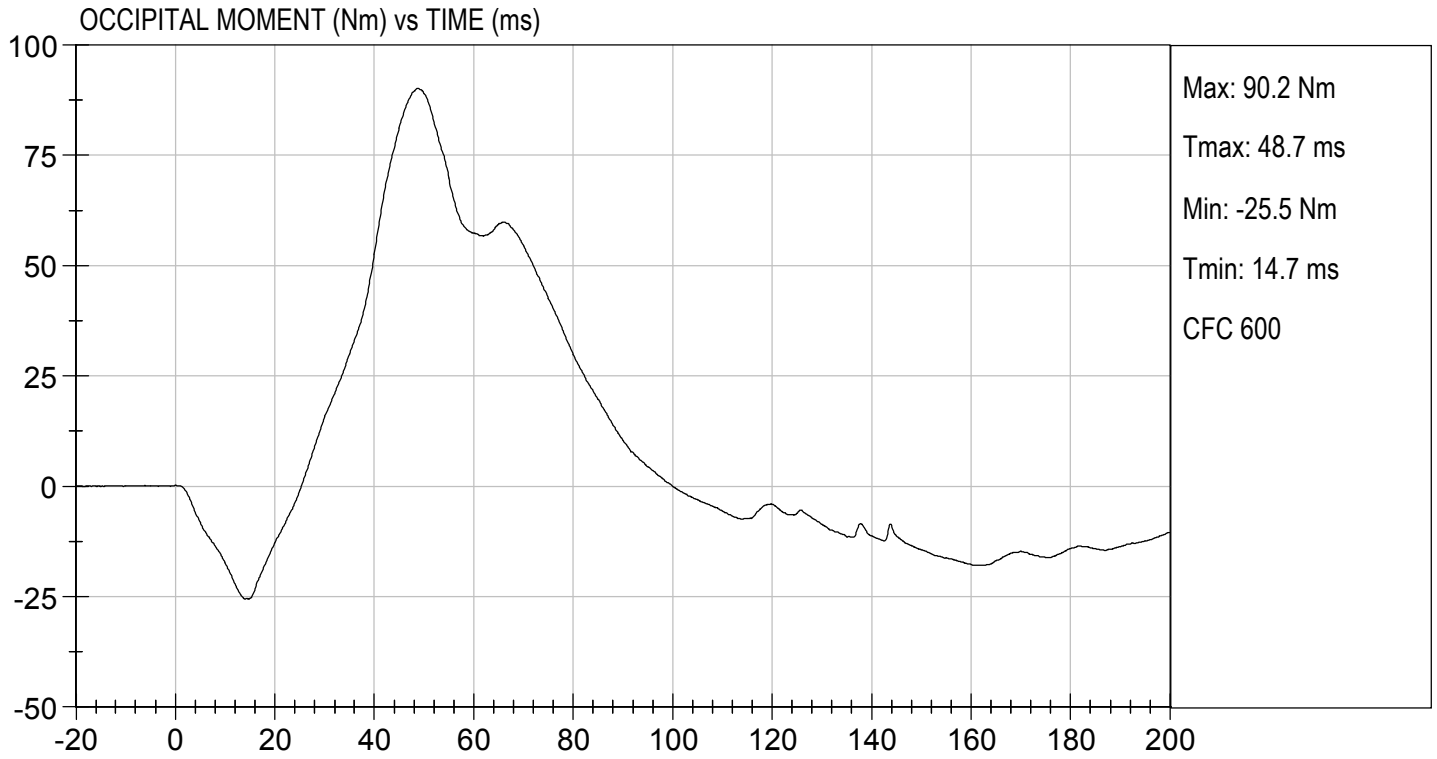

 Approved By





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

TEST DATE: 12/06/2017
TEST #: D173572

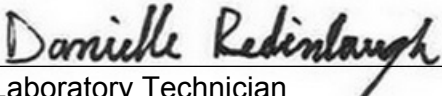


MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 50TH PERCENTILE MALE

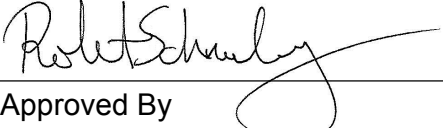
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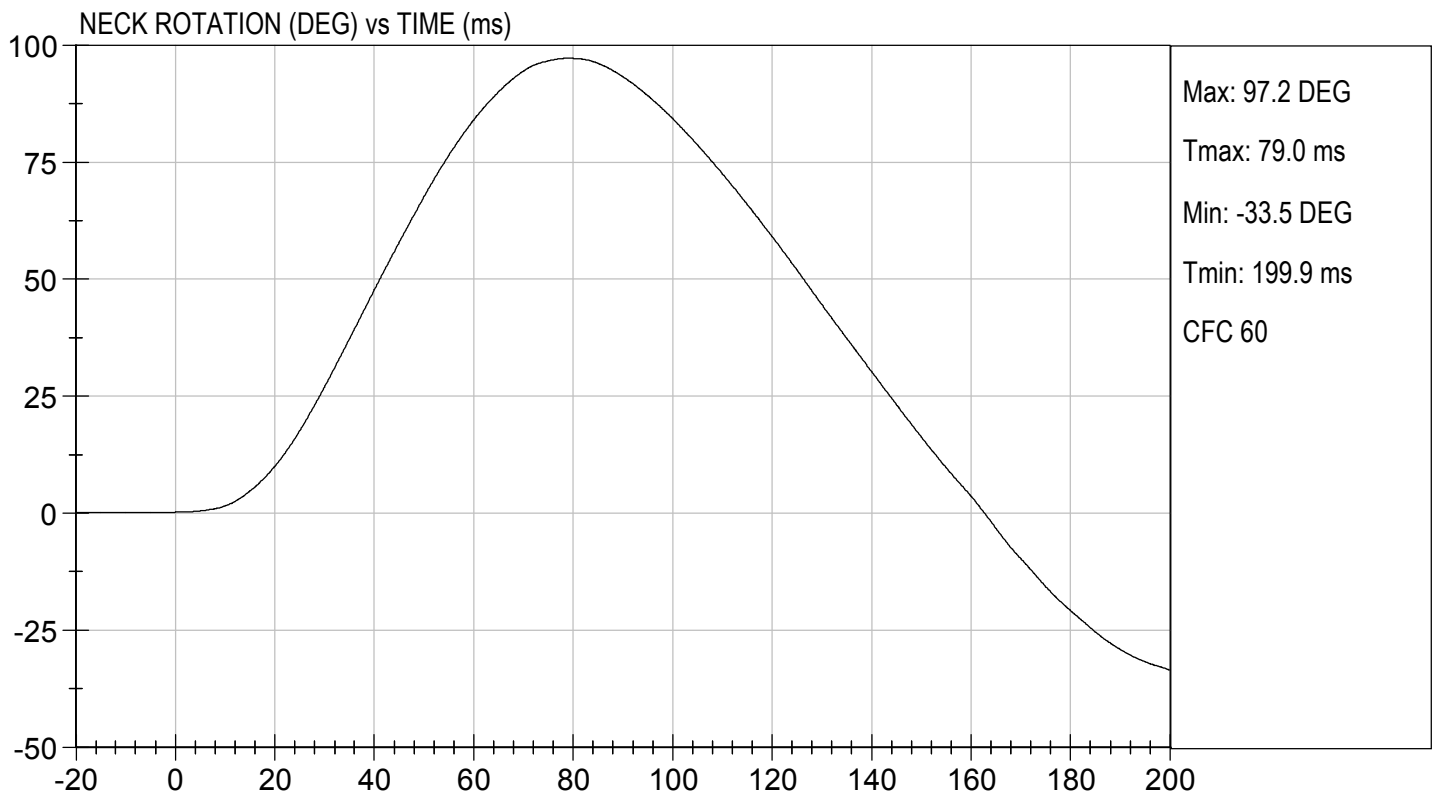
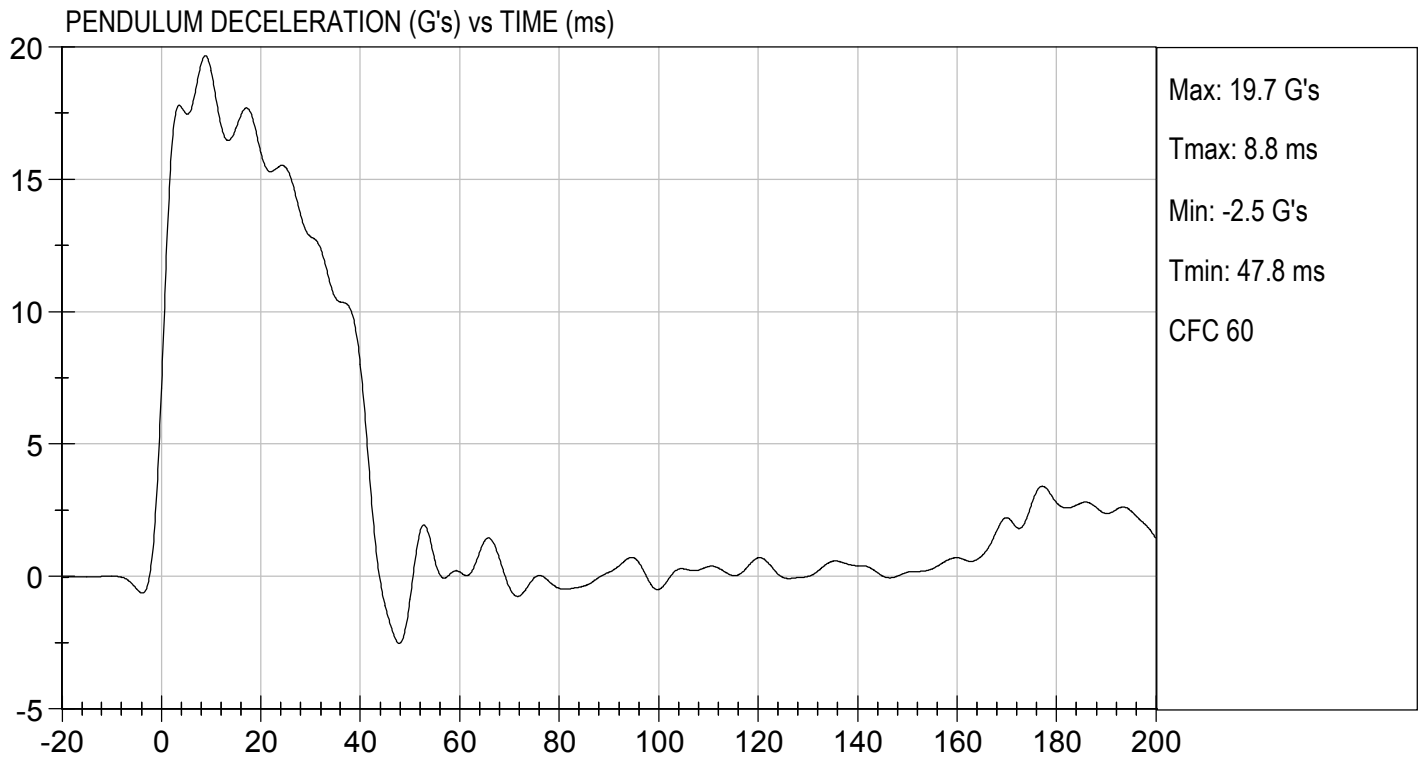
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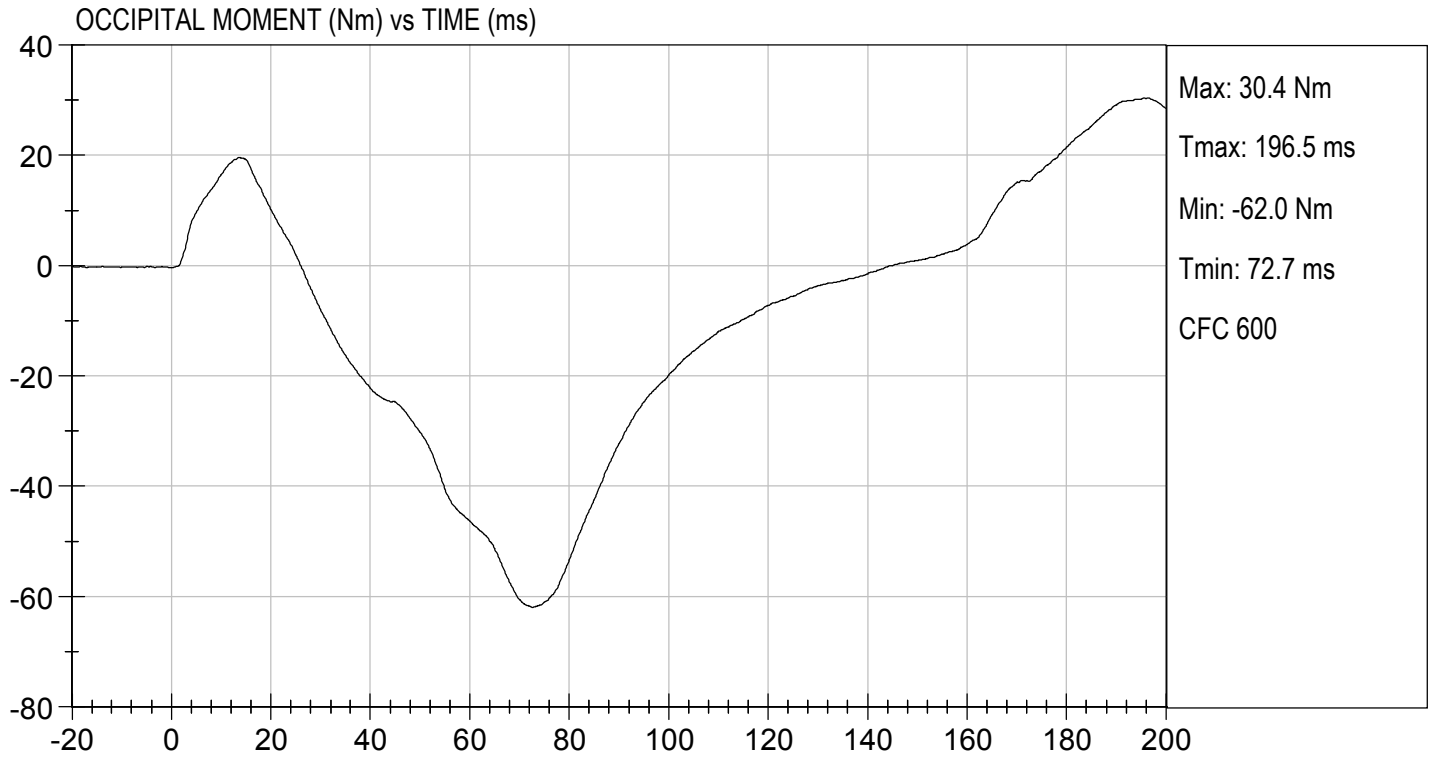
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity		%	10 to 70	22	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.05	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	19.09	Pass
	20 ms	G's	14.00 to 19.00	16.01	Pass
	30 ms	G's	11.00 to 16.00	12.83	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	41.5	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	97.2	Pass
	Time	ms	72.0 to 82.0	79.0	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	162.9	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-62.0	Pass
	Time	ms	65.0 to 79.0	72.7	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	145.2	Pass
Overall Test Results					Pass


 Laboratory Technician

12/06/2017
 Test Date


 Approved By





MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

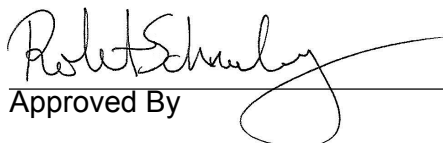
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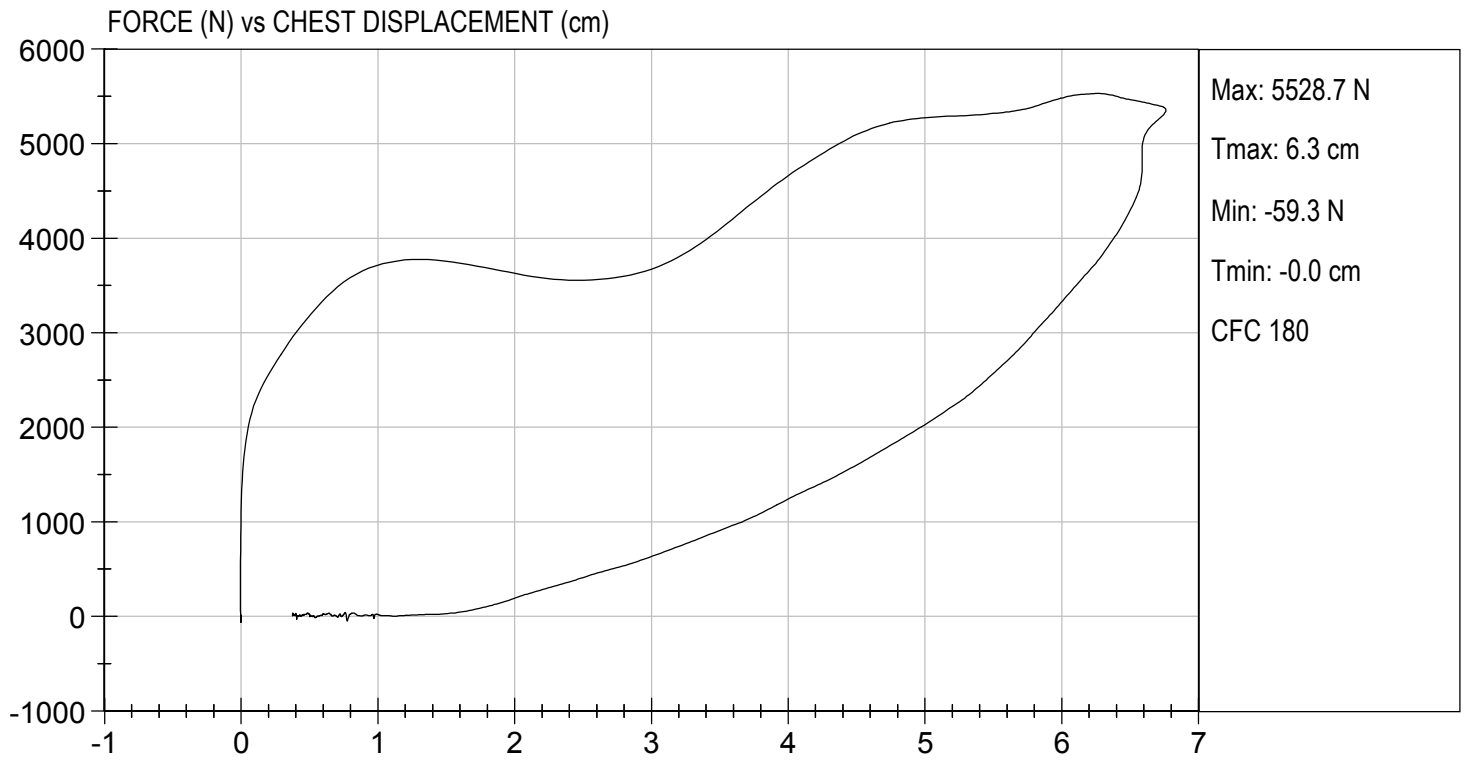
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Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	37	Pass
Probe Velocity	m/s	6.58 to 6.82	6.60	Pass
Peak Probe Force	N	5159 to 5893	5,529	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.76	Pass
Internal Hysteresis	%	69 to 85	70	Pass
Overall Test Results				Pass


 Laboratory Technician

12/07/2017
 Test Date


 Approved By



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

ATD Serial No: 351

Test I.D: D173575

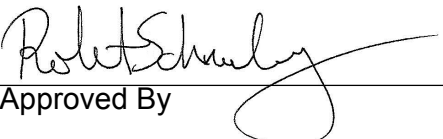
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	22	Pass
Probe Velocity	m/s	2.07 to 2.13	2.12	Pass
Peak Probe Force	N	4715 to 5782	5,730	Pass
Overall Test Results				Pass



 Laboratory Technician

12/08/2017

 Test Date

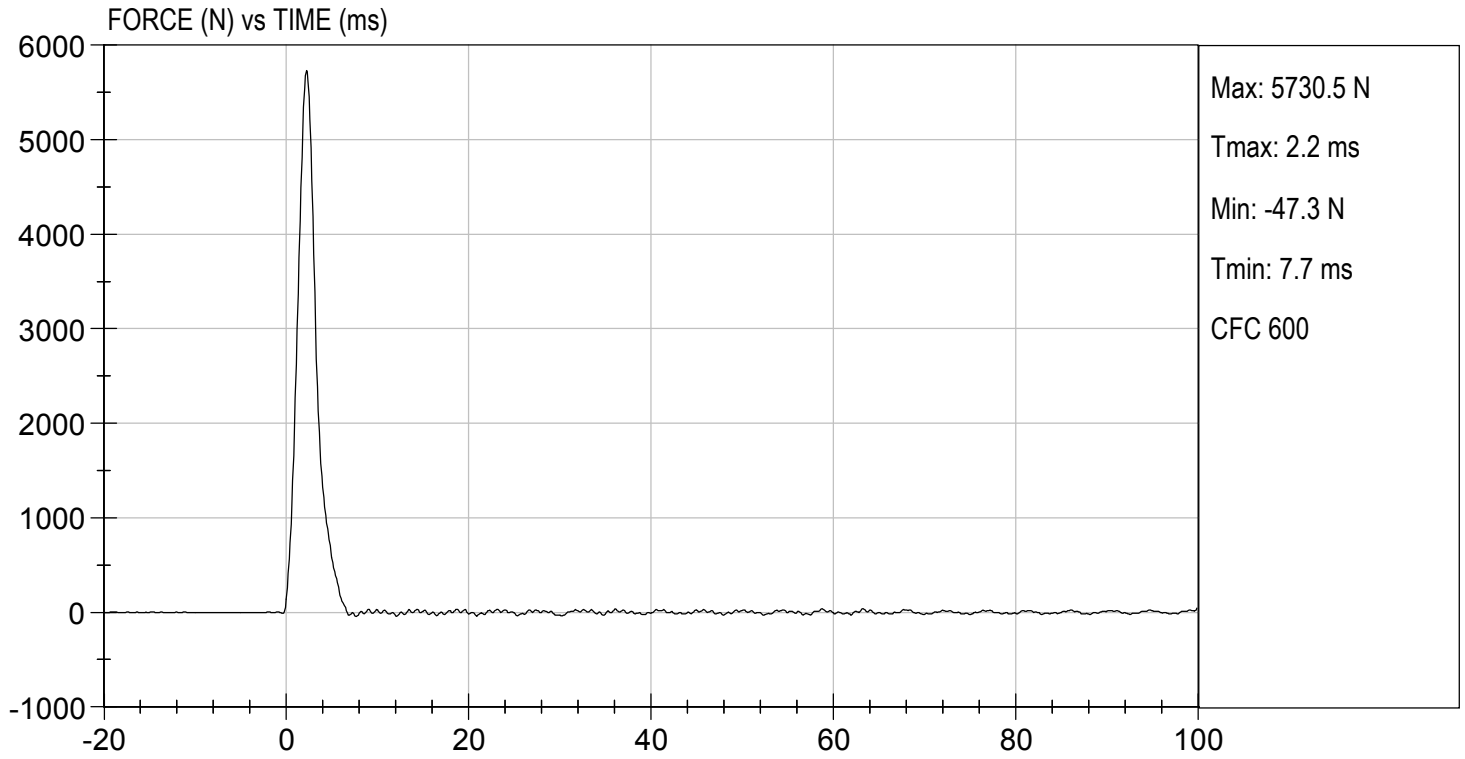


 Approved By



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

TEST DATE: 12/08/2017
TEST #: D173575



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

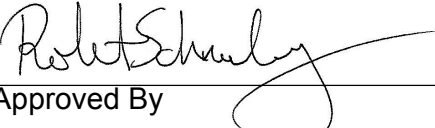
ATD Serial No: 351

Test I.D: D173576

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	22	Pass
Probe Velocity	m/s	2.07 to 2.13	2.13	Pass
Peak Probe Force	N	4715 to 5782	5,137	Pass
Overall Test Results				Pass


 Laboratory Technician

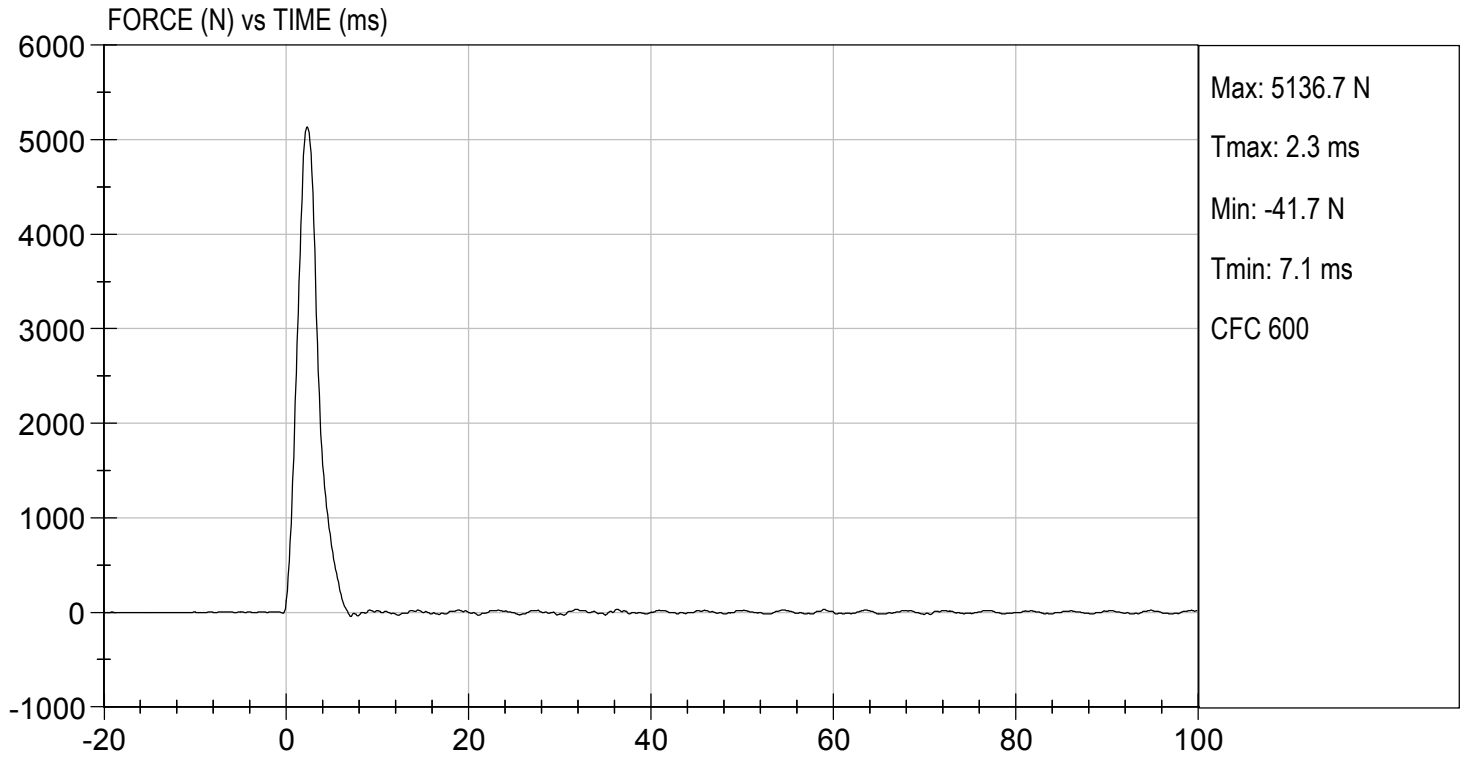
12/07/2017
 Test Date


 Approved By



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

TEST DATE: 12/07/2017
TEST #: D173576

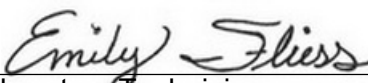


MGA RESEARCH CORPORATION
HIP-FEMUR FLEXION TEST
HYBRID III 50TH PERCENTILE MALE

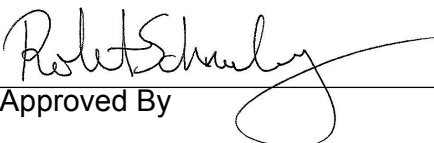
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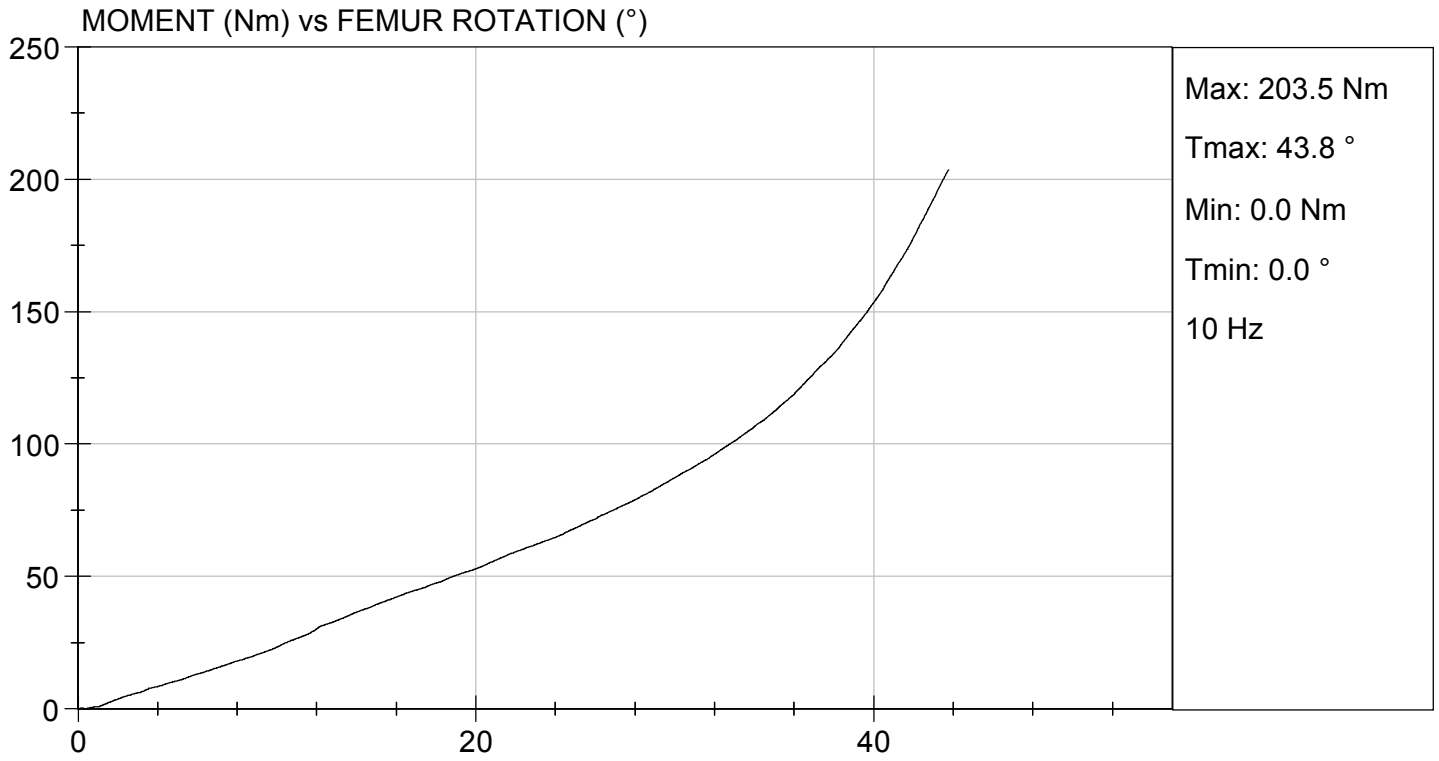
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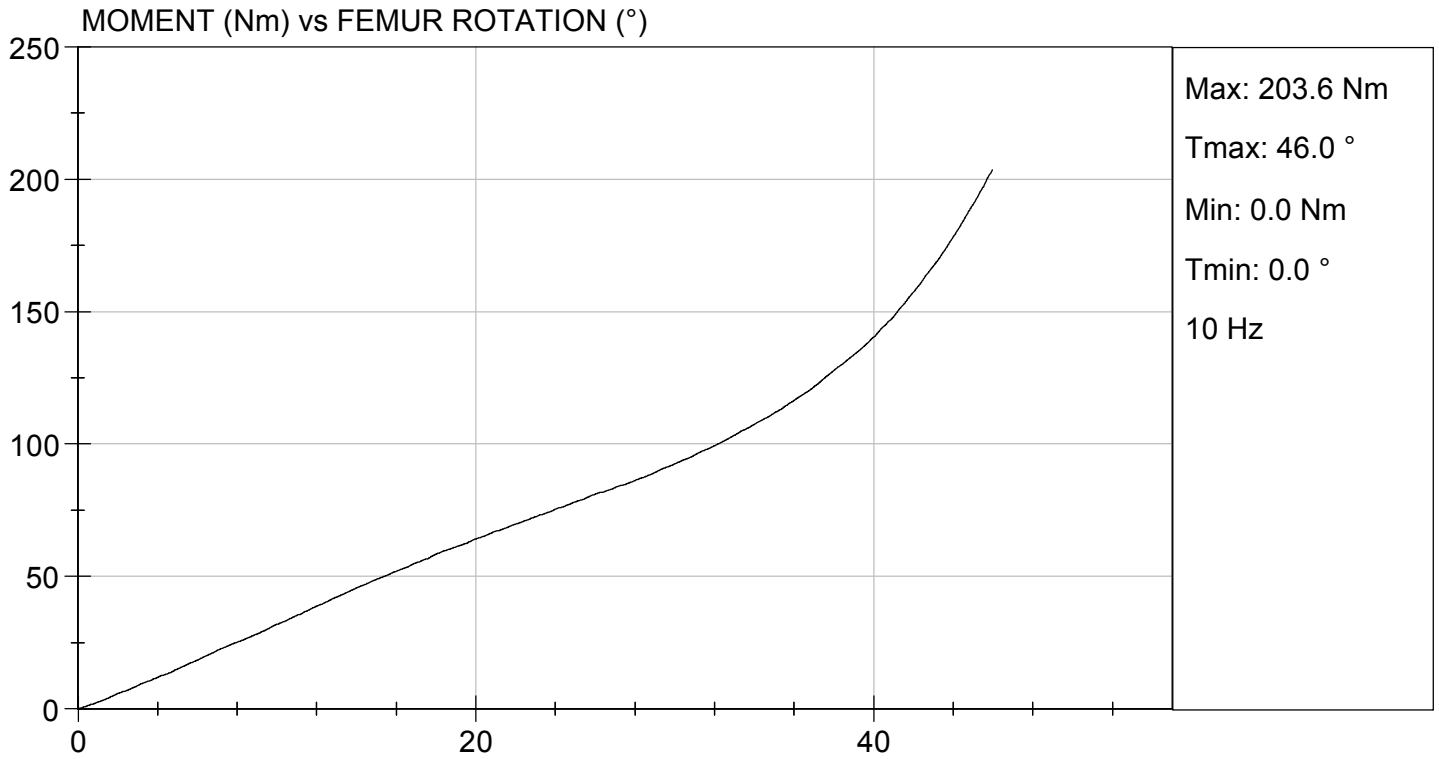
Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.8	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	22	22	Pass
Rotation Rate	deg/s	5.0 to 10.0	6.5	6.5	Pass
30 Degrees	Nm	94.9 Nm Max	92.6	87.4	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 to 50.0 Degree Max Rotation	46.0	43.8	Pass
Overall Test Results					Pass


 Laboratory Technician

12/06/2017
 Test Date


 Approved By



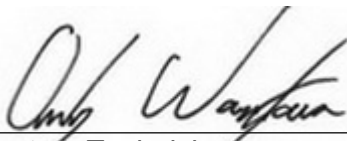


MGA RESEARCH CORPORATION
HEAD DROP TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 351

Test ID: D173601

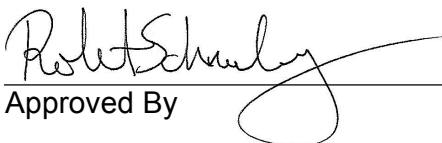
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	22	Pass
Peak Resultant Acceleration	G's	225 to 275	266	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	12.3	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass



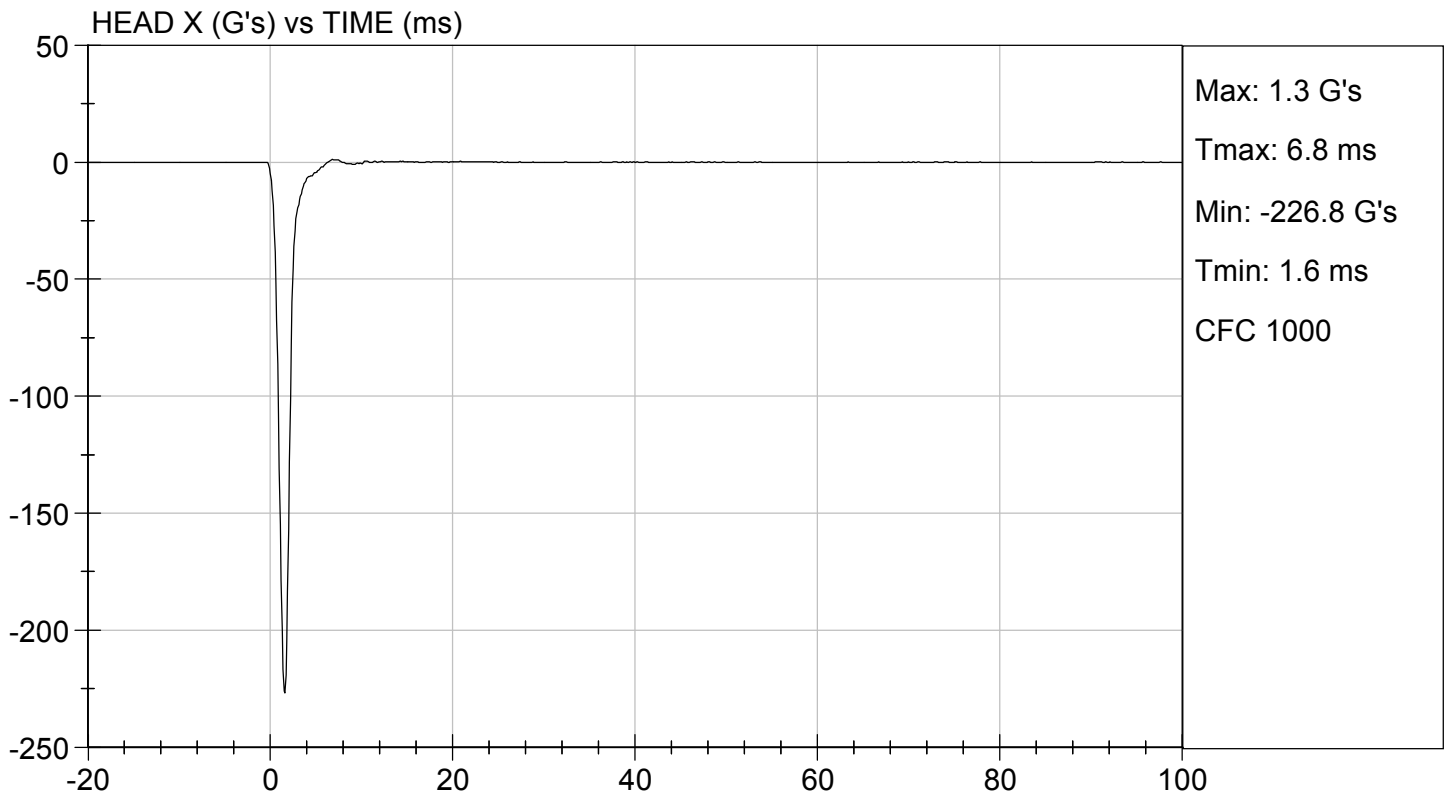
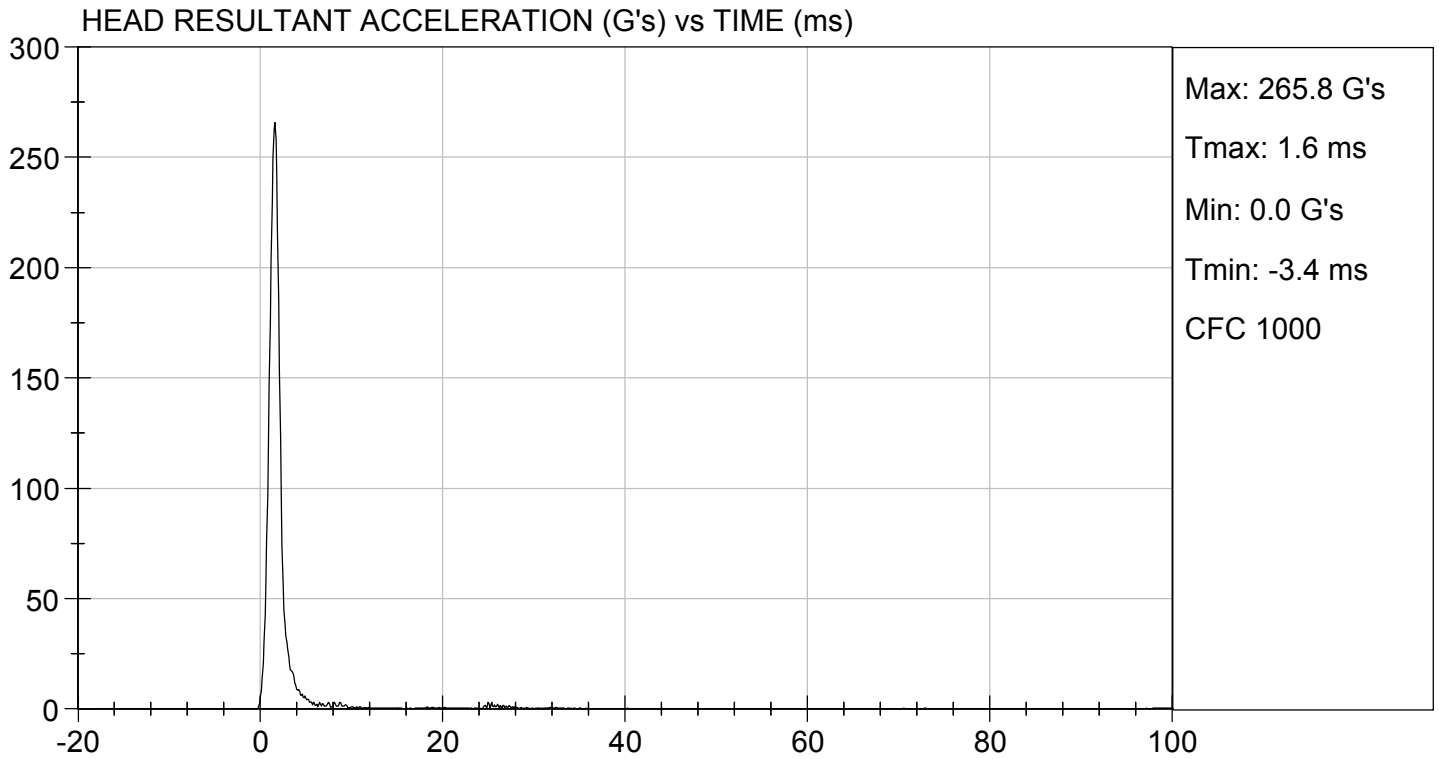
 Laboratory Technician

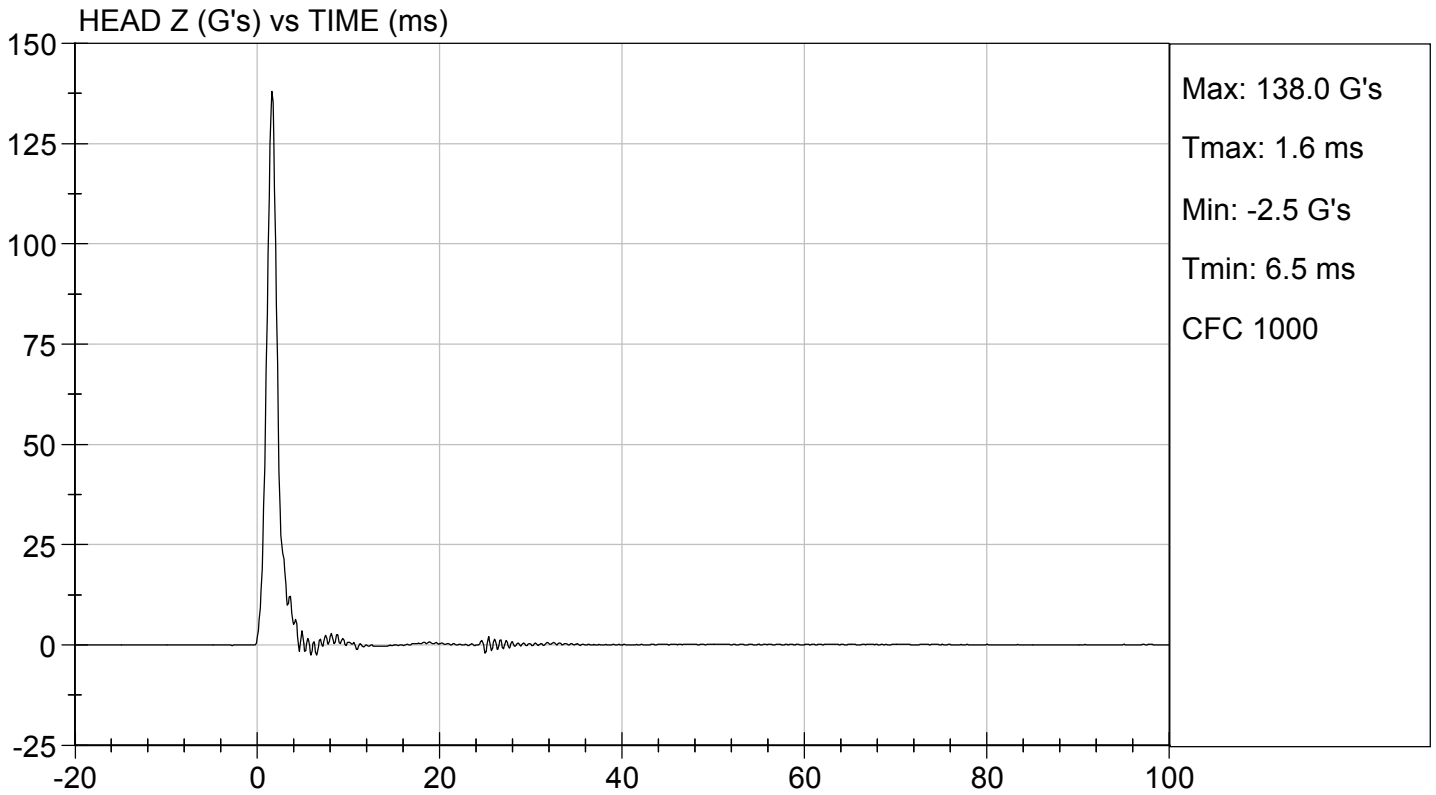
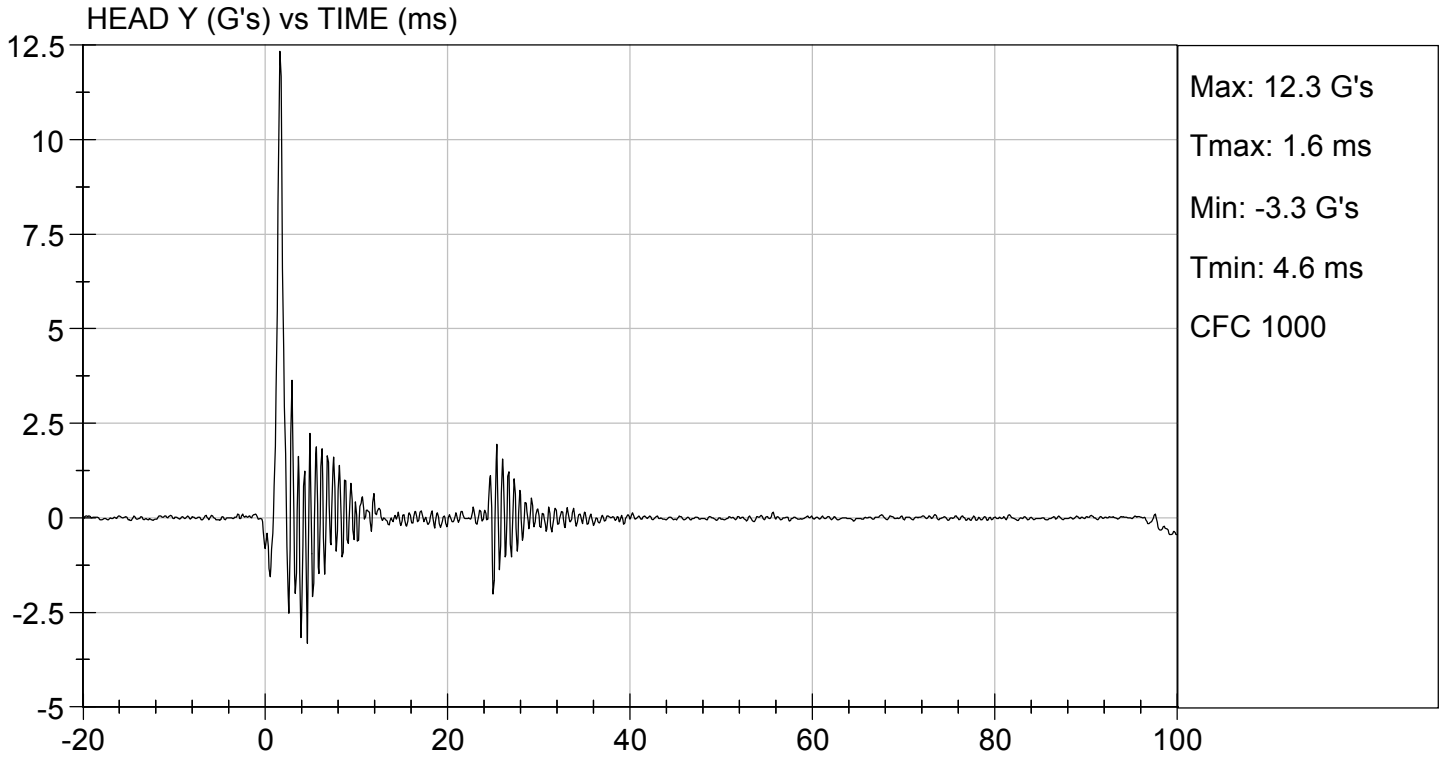
12/11/2017

 Test Date



 Approved By





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

ATD Serial No: 351

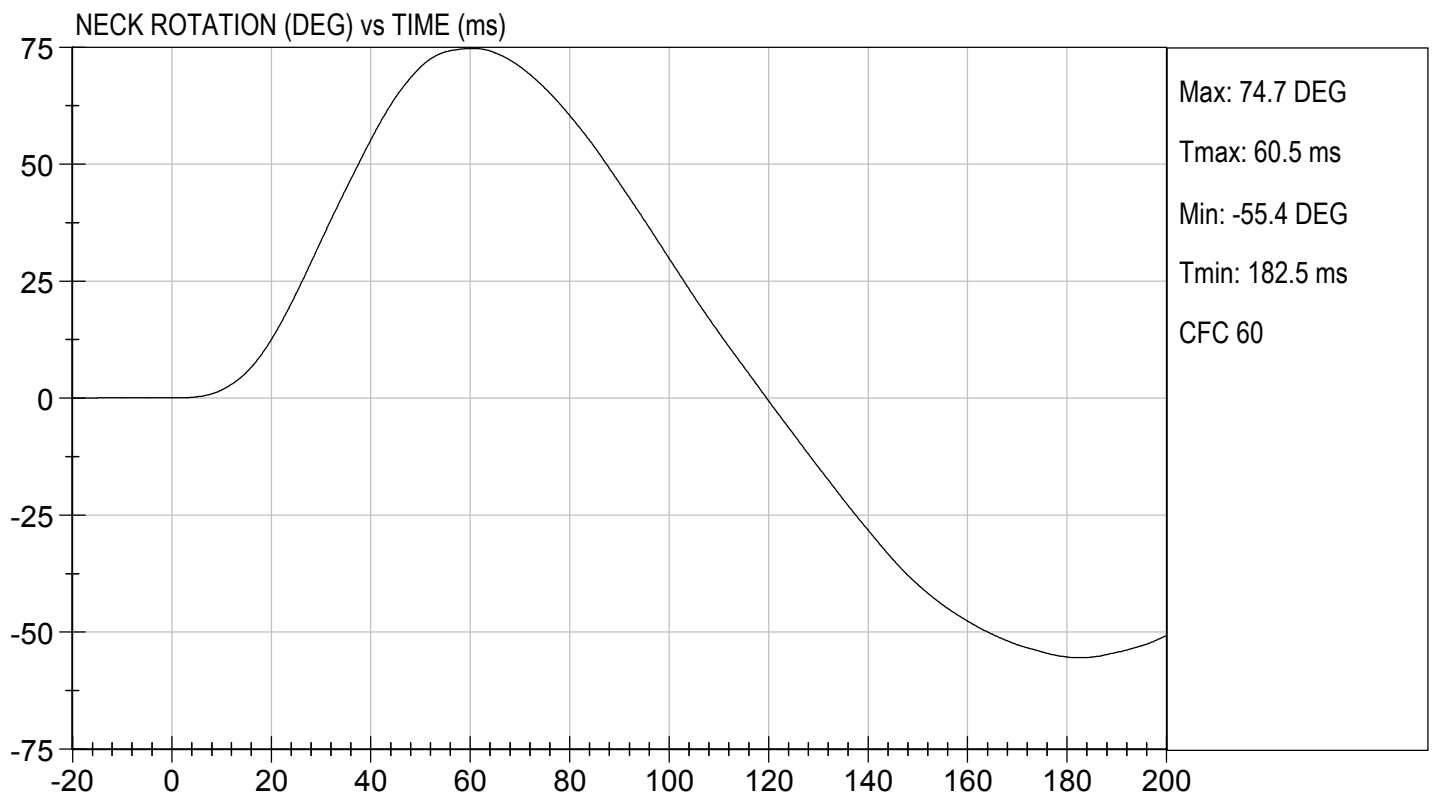
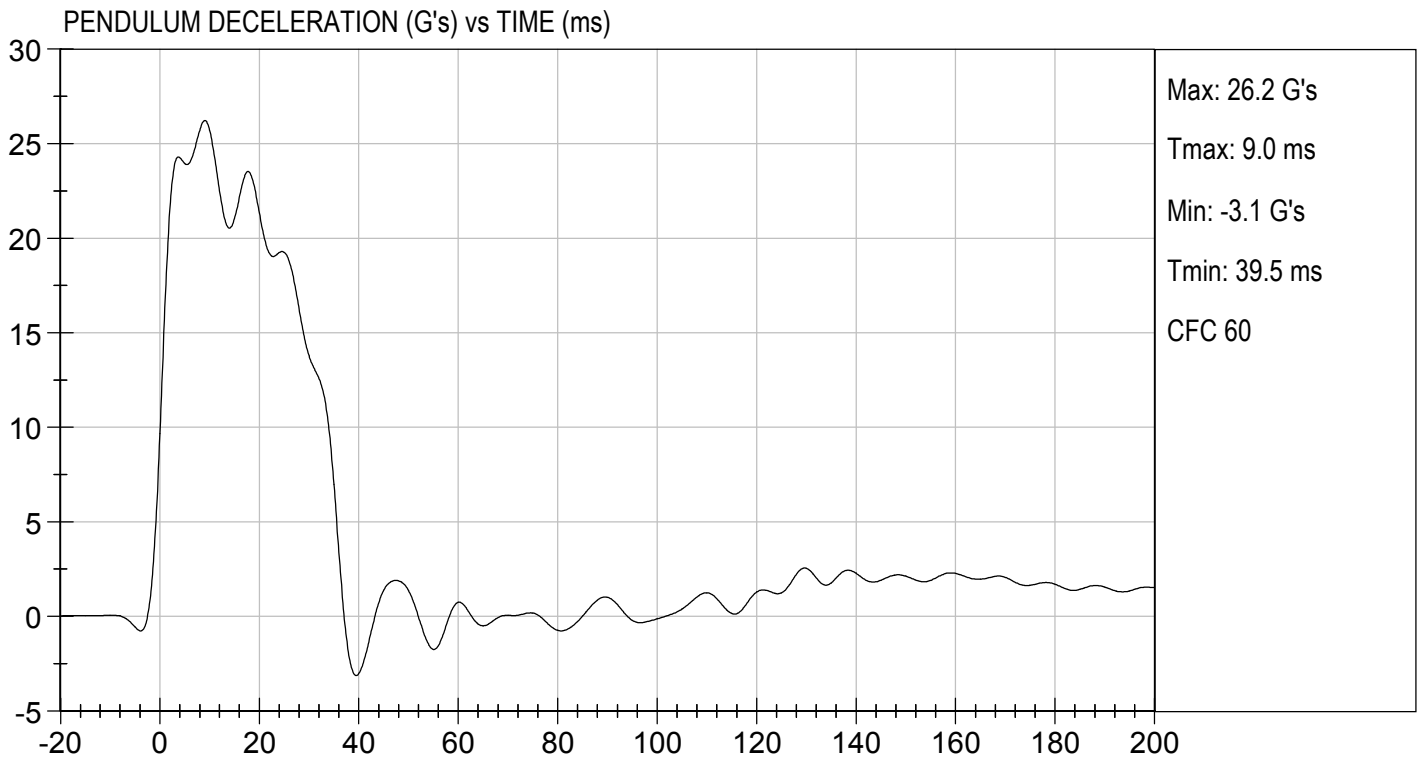
Test I.D: D173602

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity		%	10 to 70	17	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.95	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	25.71	Pass
	20 ms	G's	17.60 to 22.60	21.33	Pass
	30 ms	G's	12.50 to 18.50	13.76	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	13.7	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	35.6	Pass
Maximum "D" Plane Rotation	Maximum	Deg	64.0 to 78.0	74.7	Pass
	Time	ms	57.0 to 64.0	60.5	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	119.8	Pass
Moment About Occipital Condyle	Maximum	Nm	88.1 to 108.5	88.6	Pass
	Time	ms	47.0 to 58.0	49.8	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	99.1	Pass
Overall Test Results					Pass

Danielle Redinlaugh
 Laboratory Technician

12/12/2017
 Test Date

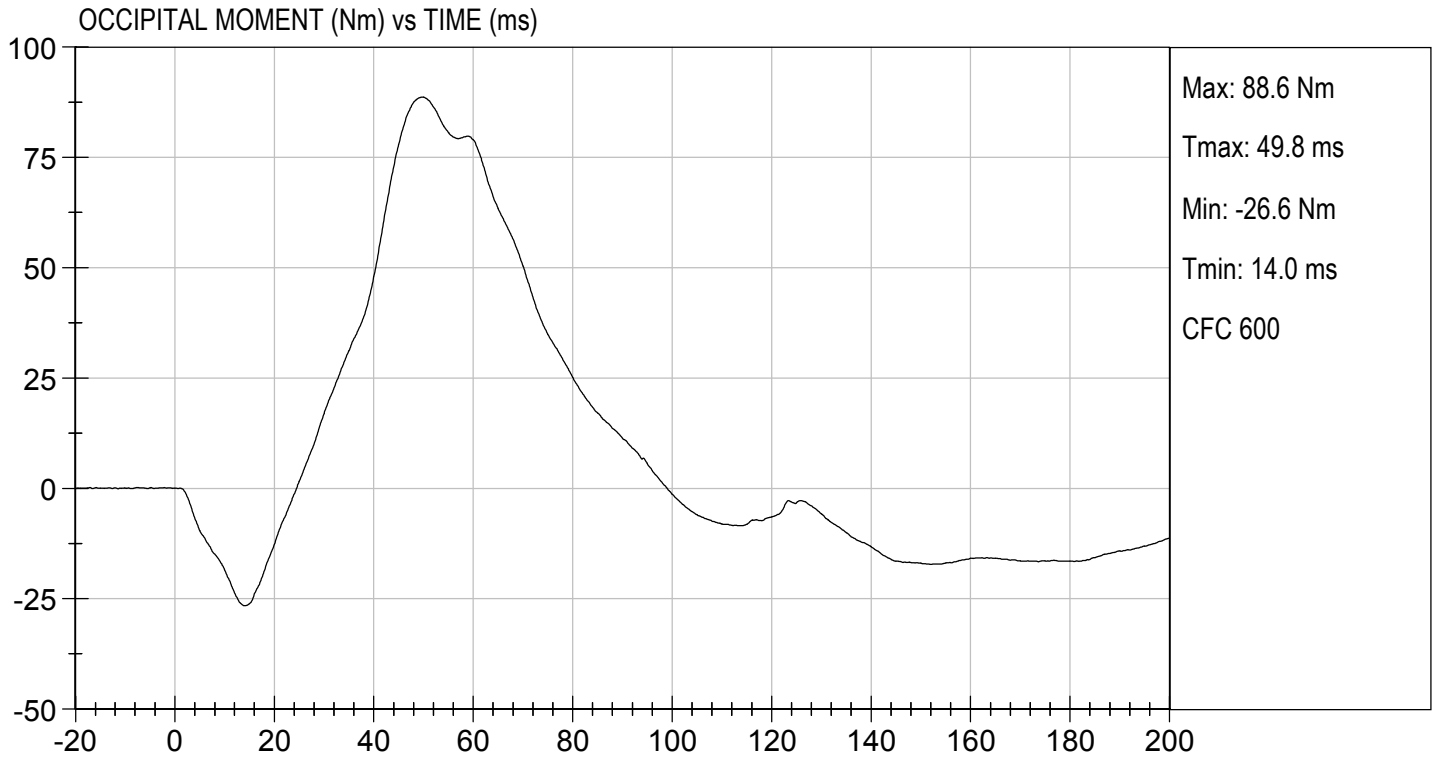
Robert Schaub
 Approved By





TEST DESC: NECK FLEXION
VELOCITY: 22.80 ft/s, 6.95 m/s

TEST DATE: 12/12/2017
TEST #: D173602



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

ATD Serial No: 351

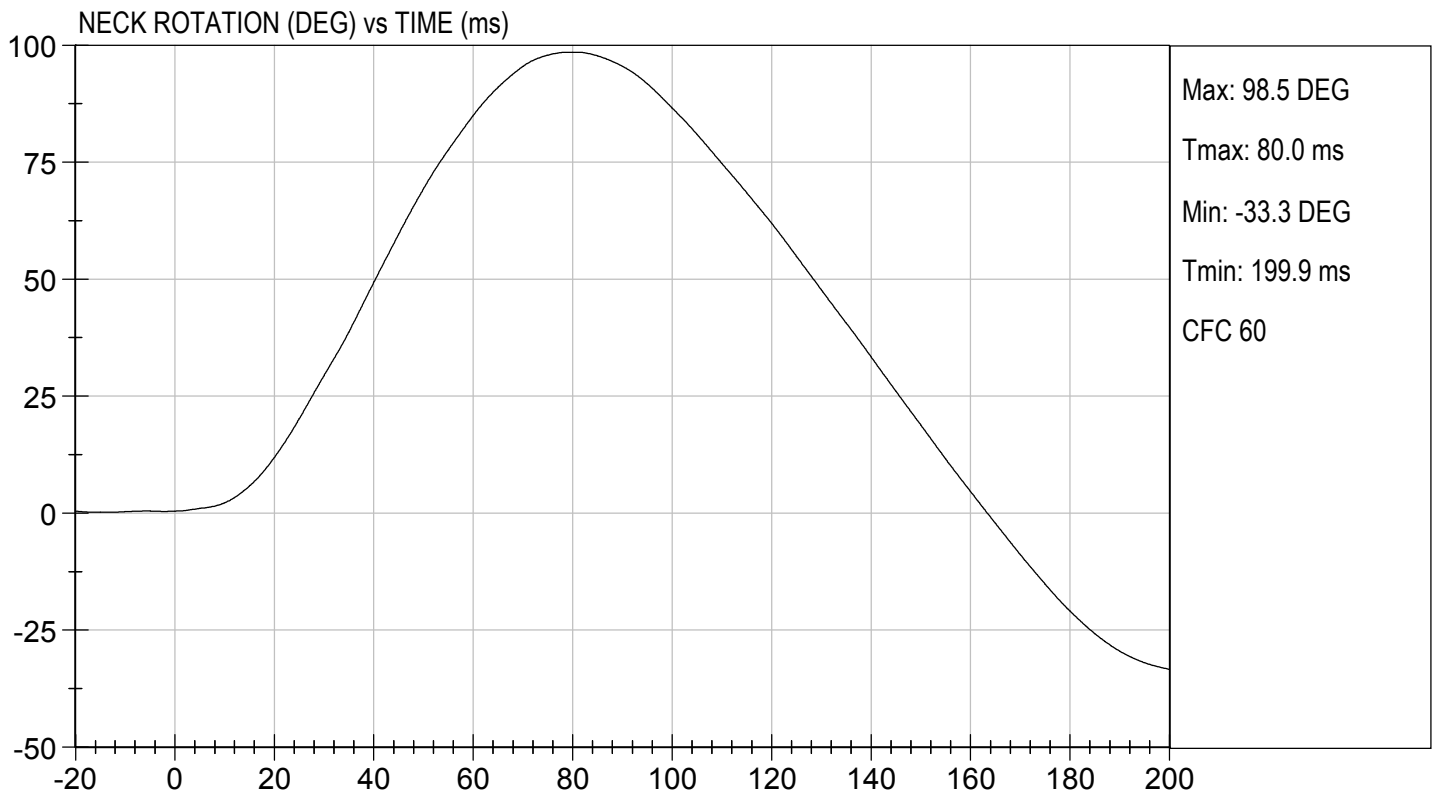
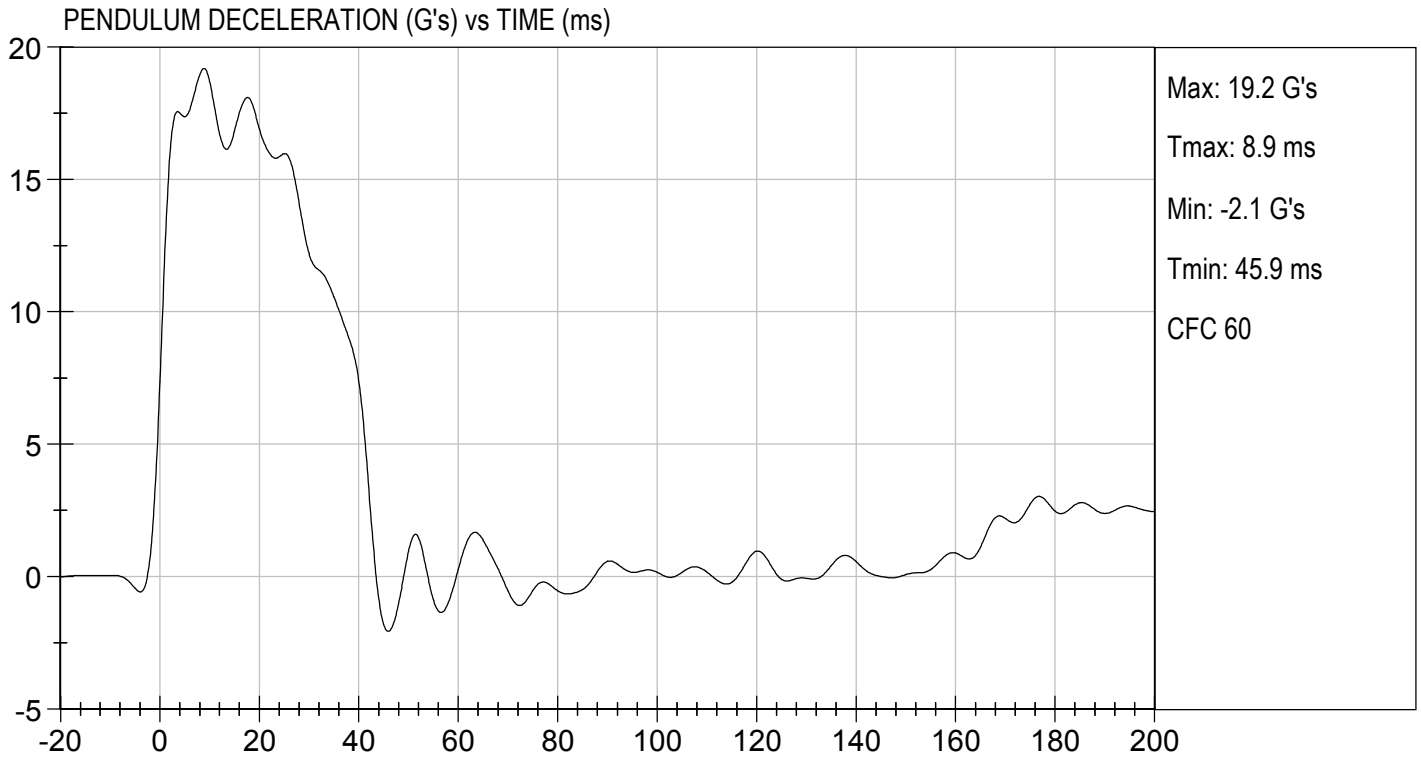
Test I.D.: D173603

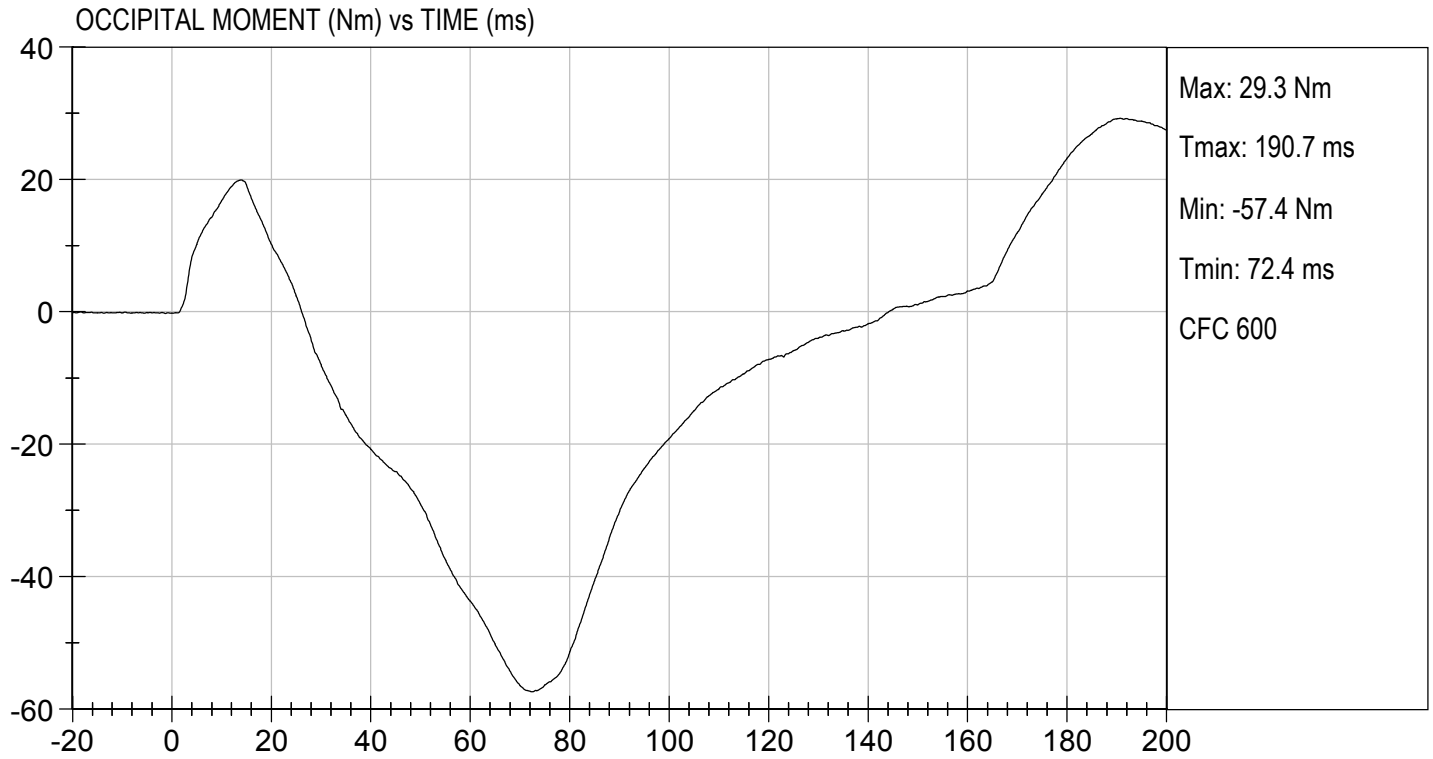
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity		%	10 to 70	17	Pass
Pendulum Velocity		m/s	5.95 to 6.19	5.98	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	18.71	Pass
	20 ms	G's	14.00 to 19.00	16.90	Pass
	30 ms	G's	11.00 to 16.00	12.18	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 22.0	12.1	Pass
Deceleration Decay Time to Cross 5 G's		ms	38.0 to 46.0	41.4	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	98.5	Pass
	Time	ms	72.0 to 82.0	80.0	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	163.5	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-57.4	Pass
	Time	ms	65.0 to 79.0	72.4	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	144.3	Pass
Overall Test Results					Pass

Danielle Redinlaugh
 Laboratory Technician

12/12/2017
 Test Date

Robert Schueler
 Approved By



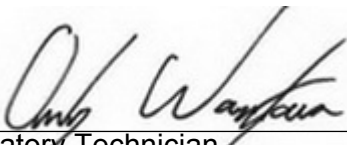


MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

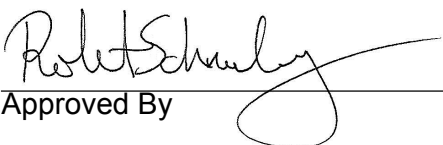
ATD Serial No: 351

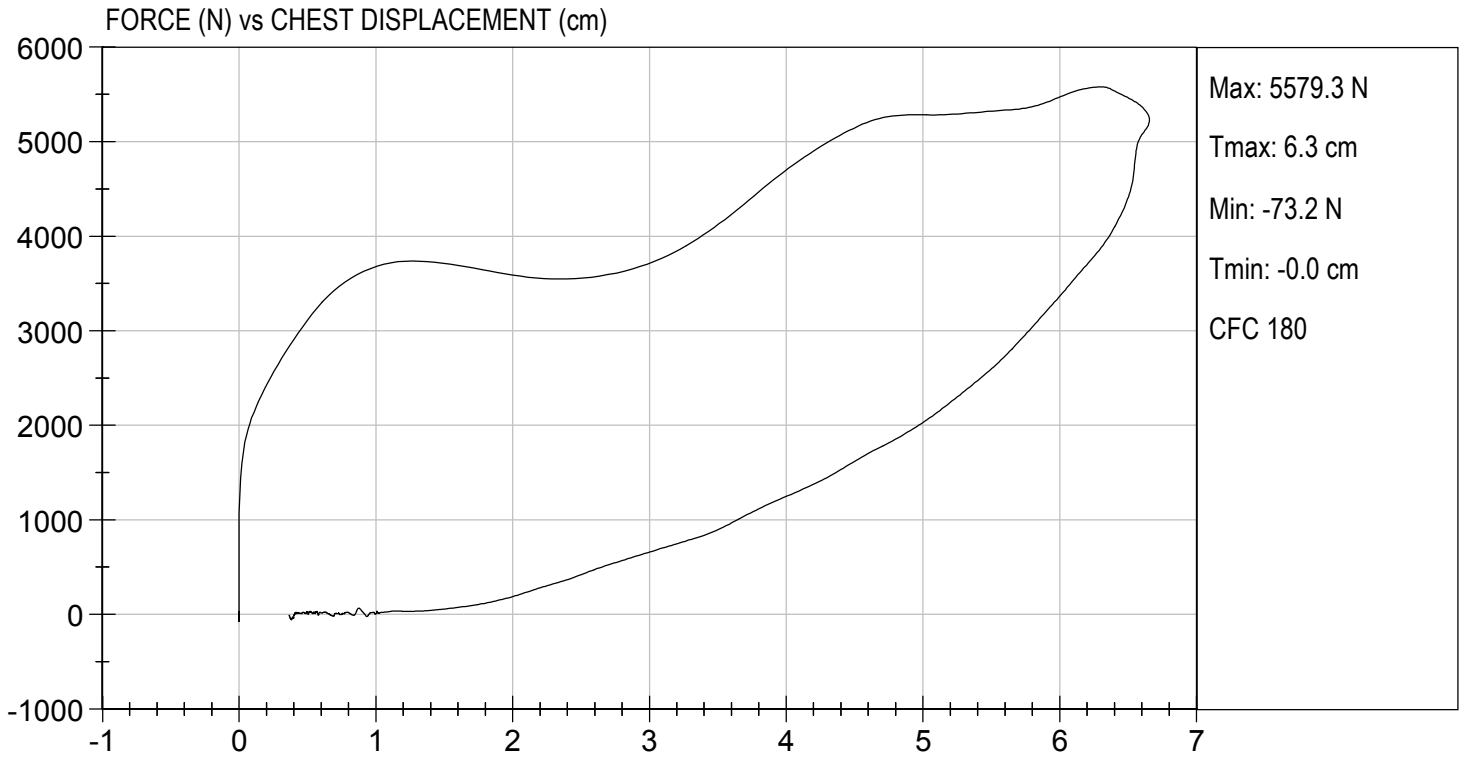
Test I.D: D173604

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	18	Pass
Probe Velocity	m/s	6.58 to 6.82	6.68	Pass
Peak Probe Force	N	5159 to 5893	5,579	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.66	Pass
Internal Hysteresis	%	69 to 85	71	Pass
			Overall Test Results	Pass


 Laboratory Technician

12/11/2017
 Test Date


 Approved By

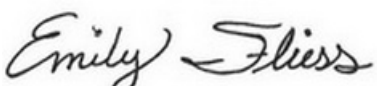


MGA RESEARCH CORPORATION
RIGHT KNEE IMPACT TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 351

Test I.D: D173605

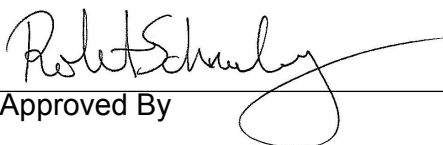
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Probe Velocity	m/s	2.07 to 2.13	2.12	Pass
Peak Probe Force	N	4715 to 5782	4,759	Pass
Overall Test Results				Pass



 Laboratory Technician

12/11/2017

 Test Date

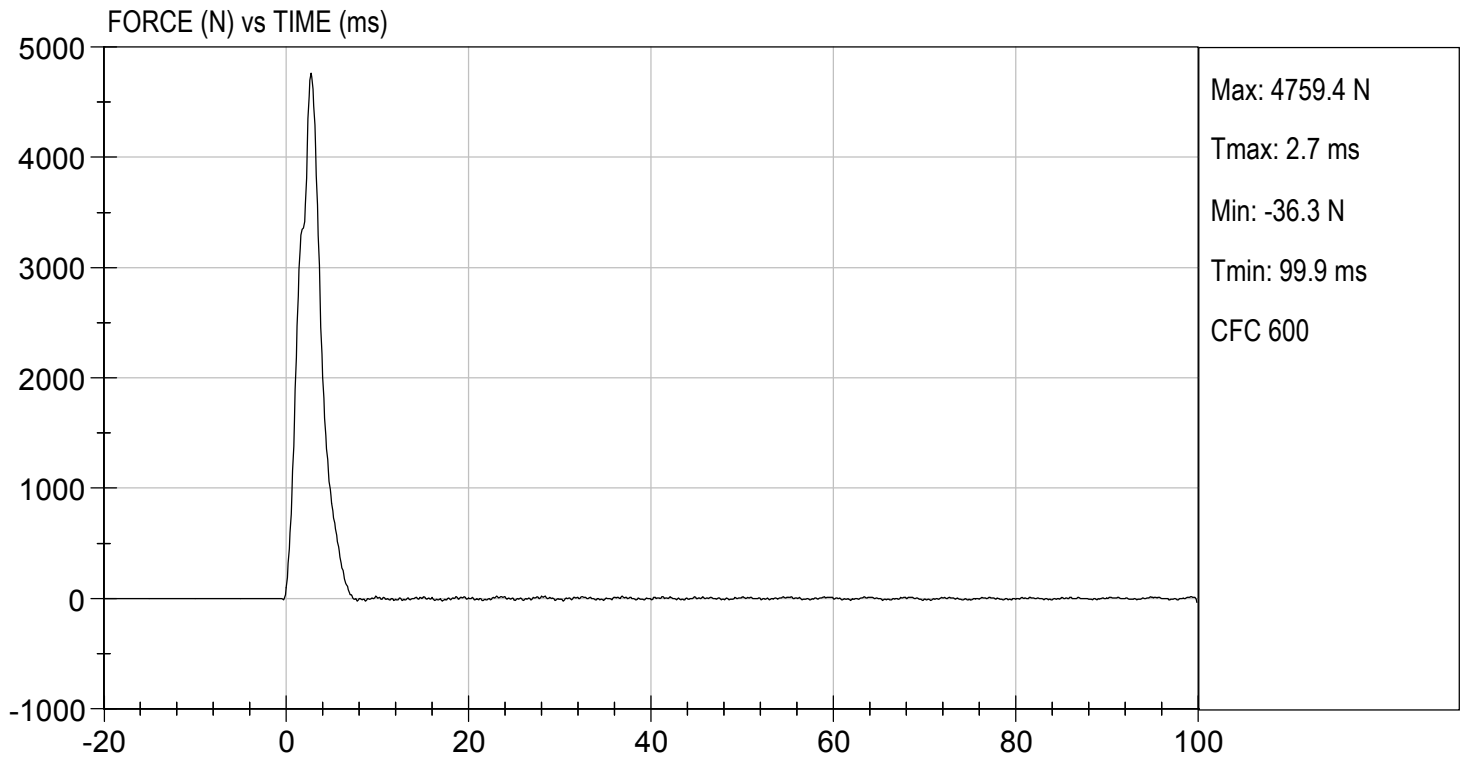


 Approved By



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

TEST DATE: 12/11/2017
TEST #: D173605



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

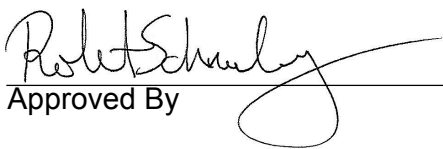
ATD Serial No: 351

Test I.D: D173606

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	25	Pass
Probe Velocity	m/s	2.07 to 2.13	2.08	Pass
Peak Probe Force	N	4715 to 5782	5,555	Pass
Overall Test Results				Pass


 Laboratory Technician

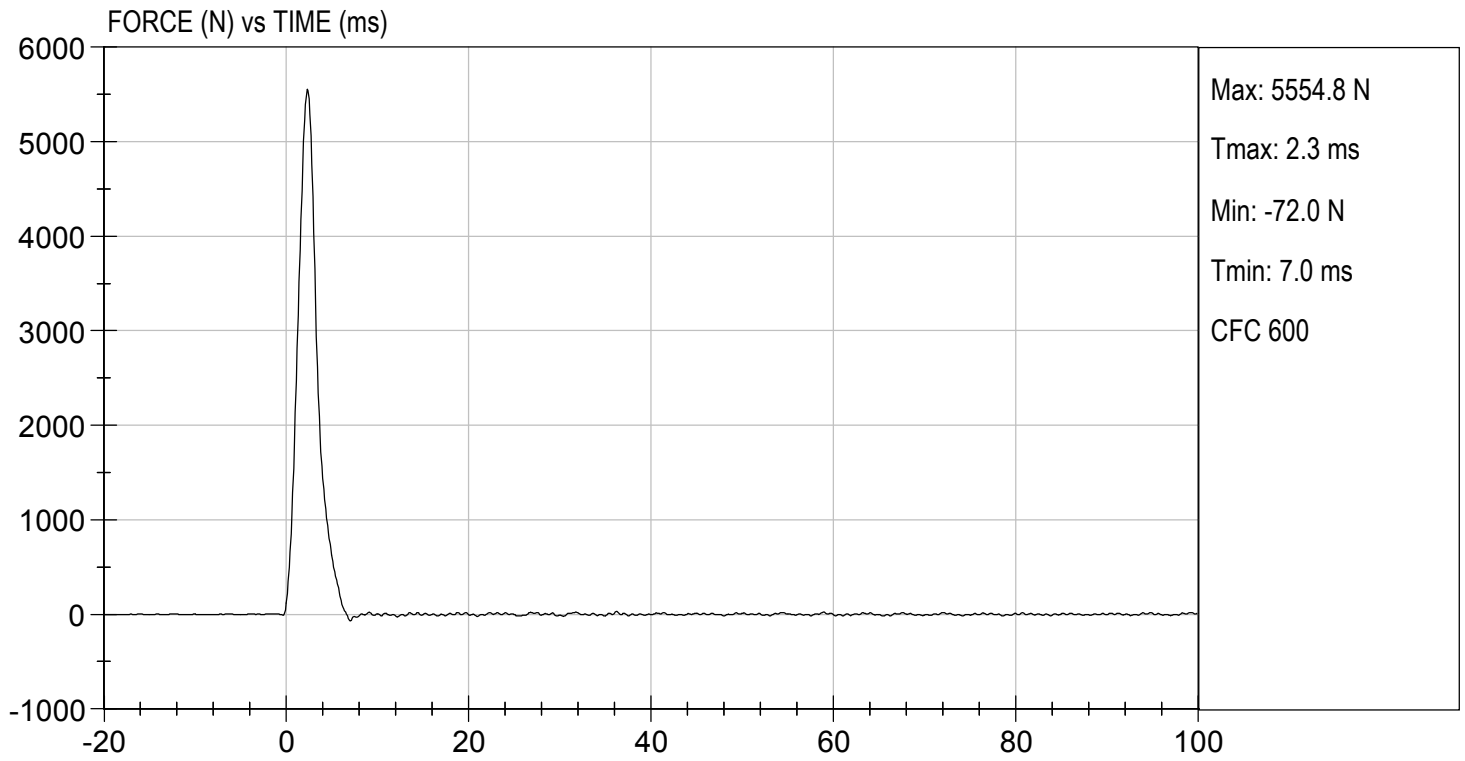
12/11/2017
 Test Date


 Approved By



TEST DESC: LEFT KNEE
VELOCITY: 6.83 ft/s, 2.08 m/s

TEST DATE: 12/11/2017
TEST #: D173606



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

ATD Serial No: 351

Test I.D: D173600

Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.8	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	22	22	Pass
Rotation Rate	deg/s	5.0 to 10.0	6.5	6.5	Pass
30 Degrees	Nm	94.9 Nm Max	94.0	90.4	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 to 50.0 Degree Max Rotation	45.6	43.6	Pass
Overall Test Results					Pass



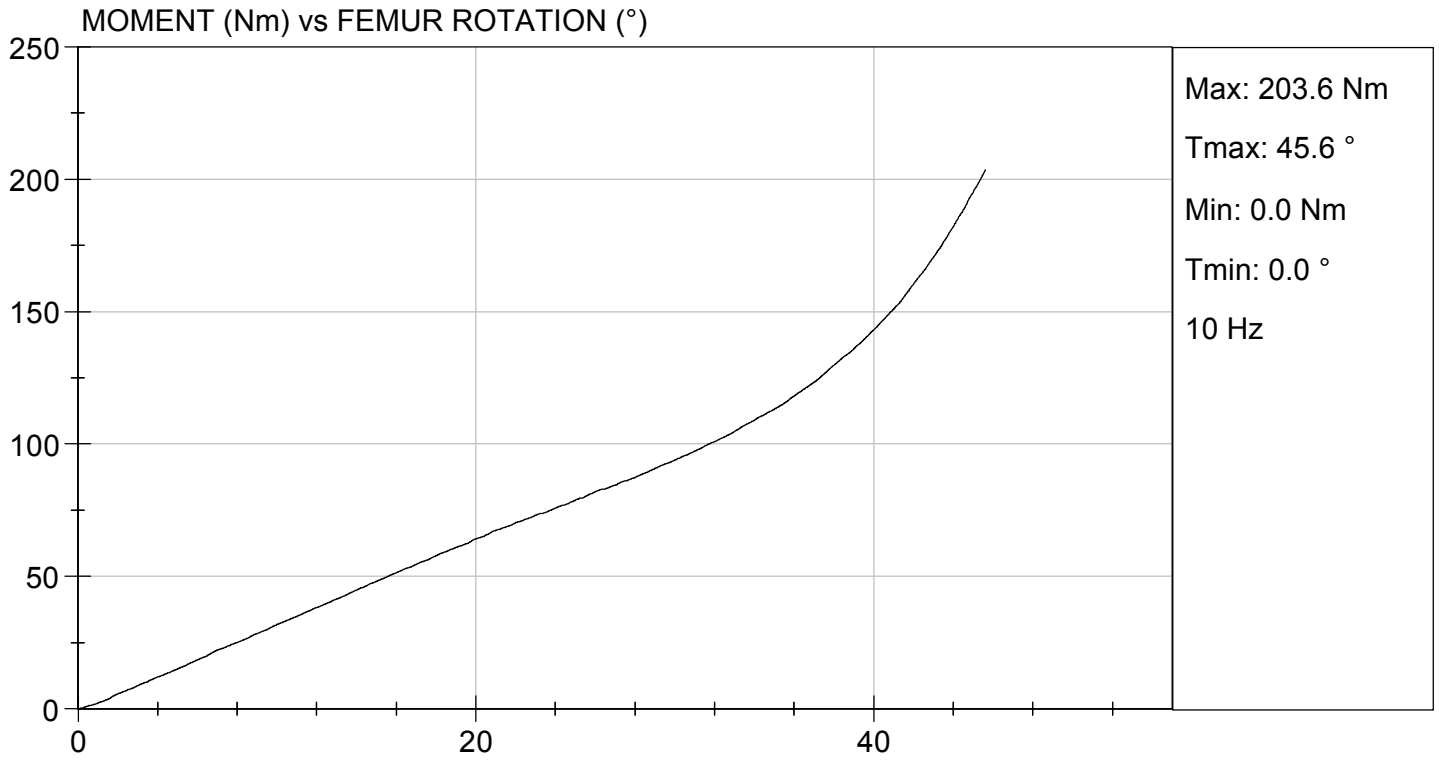
Laboratory Technician

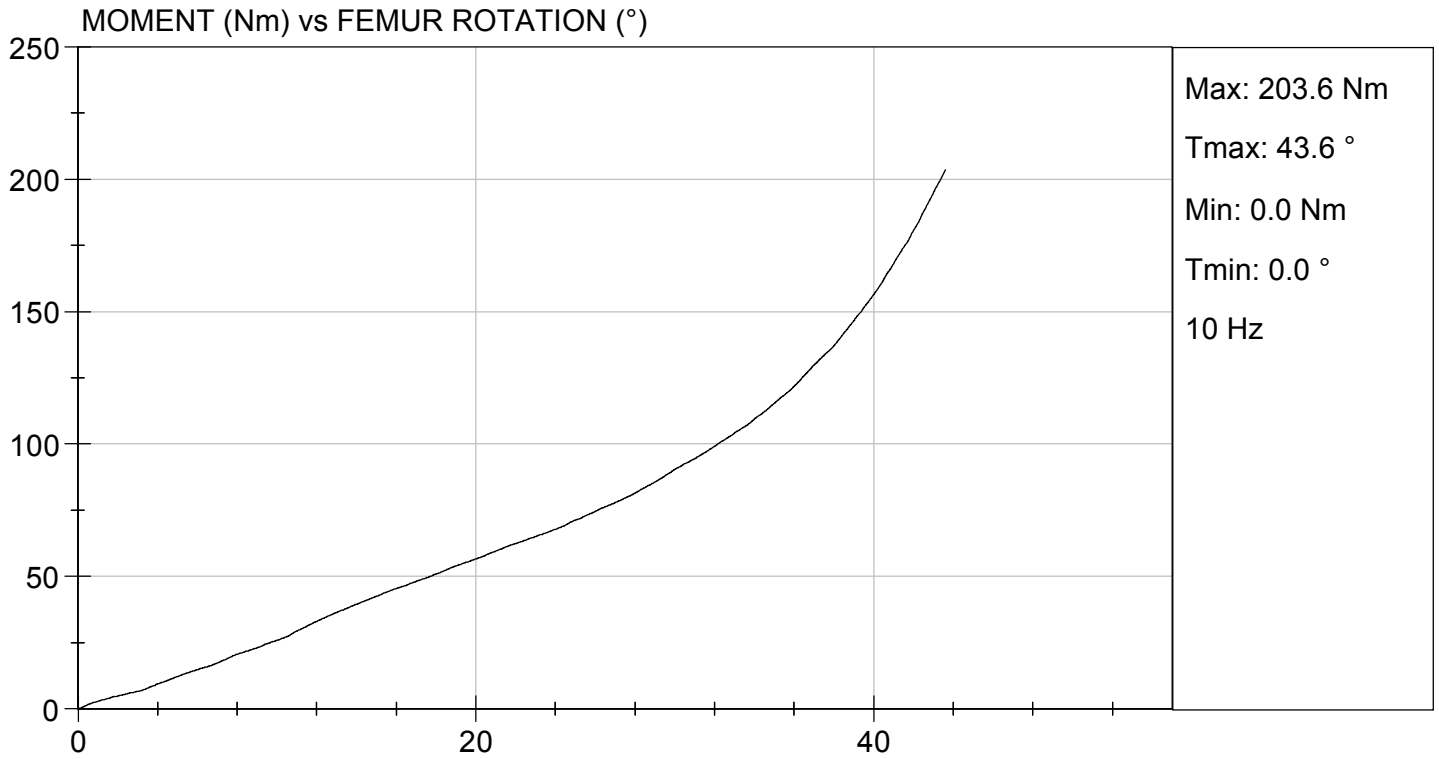
12/11/2017

Test Date



Approved By





Hybrid III, 5th External Measurements
SN: 138

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	785.1
B	SHOULDER PIVOT HEIGHT	Centerline of shoulder pivot bolt to the seat surface.	431.8-457.2	456.8
C	H-POINT HEIGHT	Reference	81.3-86.3	84.0
D	H-POINT LOCATION FROM BACKLINE	Reference	144.8-149.8	146.2
E	SHOULDER PIVOT FROM BACKLINE	Center of the shoulder clevis to the rear vertical surface of the fixture.	68.6-83.8	78.0
F	THIGH CLEARANCE	Measured at the highest point on the upper femur segment.	119.4-134.6	127.5
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	249.6
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	280.2
J	ELBOW REST HEIGHT	Measure from the flesh below the elbow pivot bolt to the seat surface.	182.8-203.2	201.9
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	526.7
L	POPLITEAL HEIGHT	Seat surface to the plane of the horizontal plane of the bottom of the feet.	355.6-376.0	362.3
M	KNEE PIVOT HEIGHT	Centerline of knee pivot bolt to the horizontal plane of the bottom of the feet.	393.7-419.1	398.0

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	430.5
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	184.6
P	FOOT LENGTH	Tip of toe to rear of heel	218.5-233.7	221.0
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	472.6
S	HEAD BREADTH	The widest part of the head	137.1-147.3	141.9
T	HEAD DEPTH	Back of the head to the forehead	177.8-188.0	184.2
U	HIP BREADTH	The widest part of the hip	299.7-314.9	307.4
V	SHOULDER BREADTH	Outside edges of right and left shoulder clevises	350.5-365.7	360.5
W	FOOT BREADTH	The widest part of the foot	78.8-94.0	85.0
X	HEAD CIRCUMFERENCE	Measured at the point as in dim. "T"	528.3-548.7	546.2
Y	CHEST CIRCUMFERENCE (WITH CHEST JACKET)	Measured 345.4 ± 12.7 mm above seat surface	850.9-881.3	875.1
Z	WAIST CIRCUMFERENCE	Measured 165.1 ± 5.1 mm above seat surface	759.5-789.9	785.4
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: 138

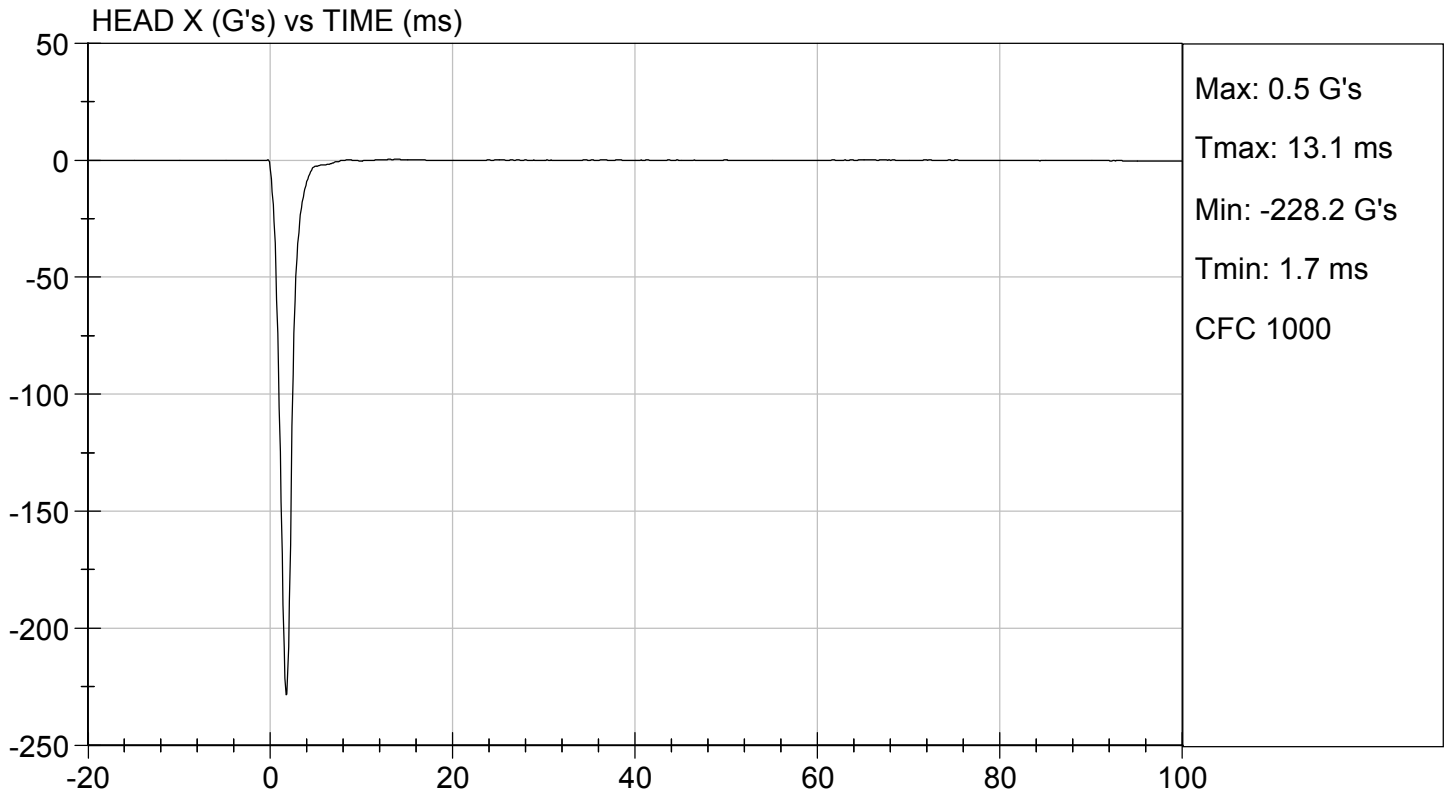
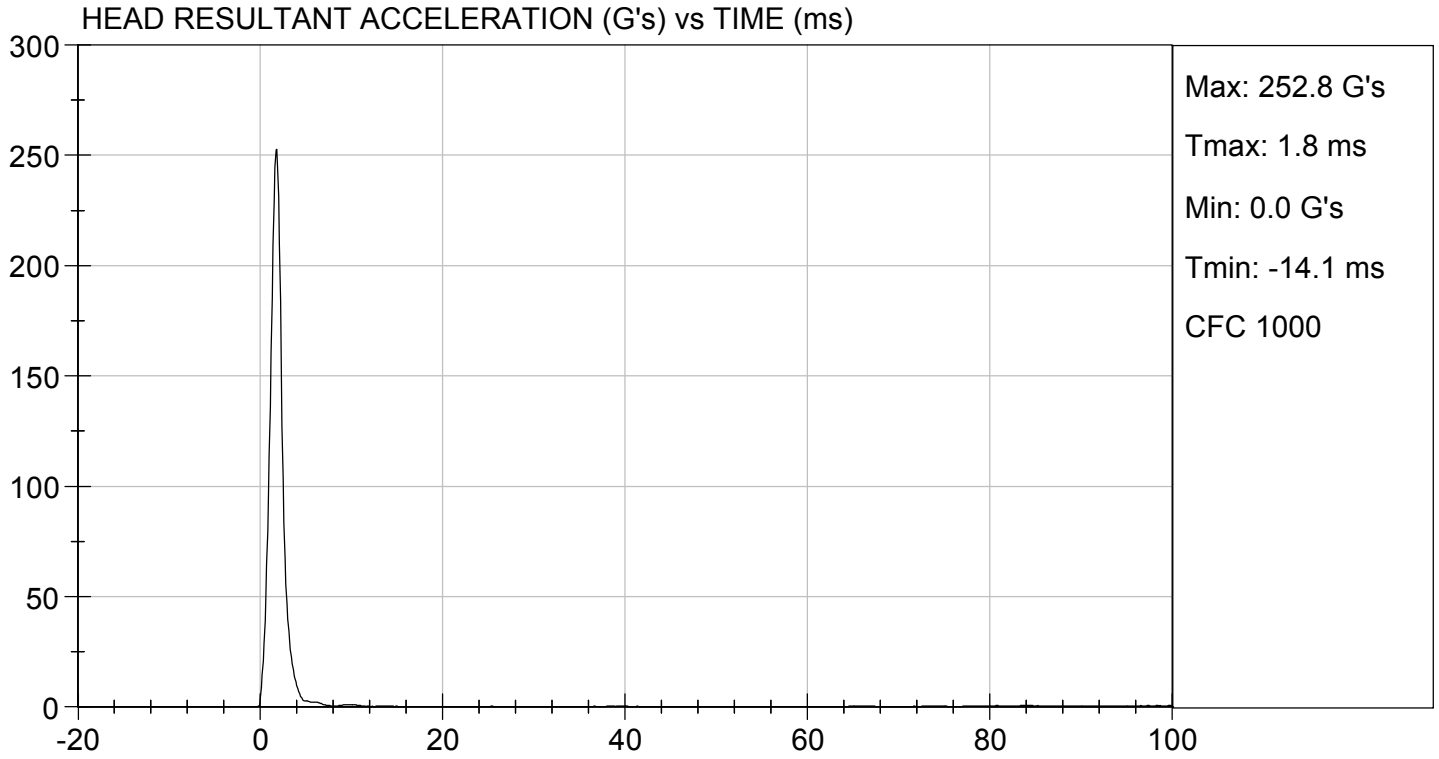
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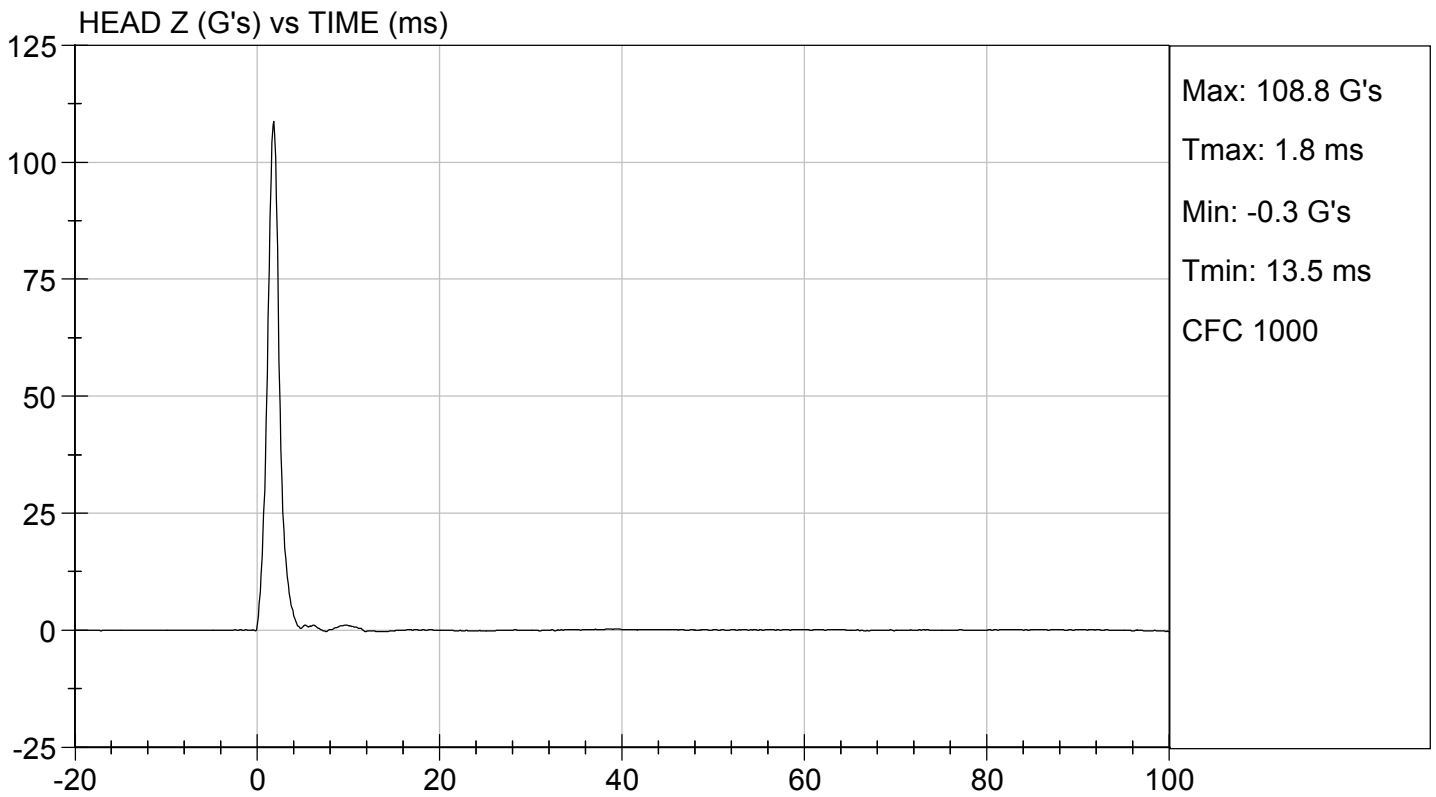
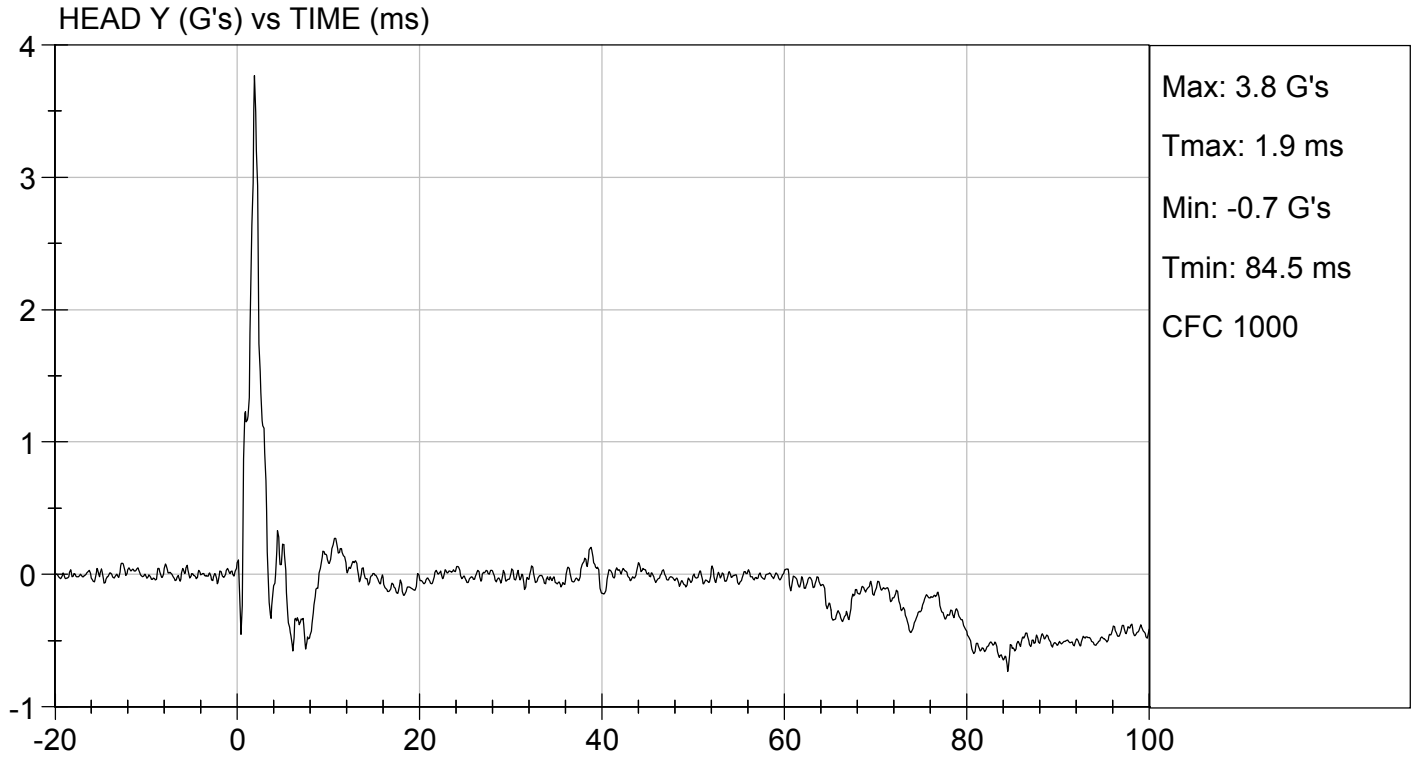
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	22	Pass
Peak Resultant Acceleration	G's	250 to 300	253	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	3.8	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

Danielle Redinlaugh
Laboratory Technician

12/06/2017
Test Date

Robert Schmalz
Approved By





MGA RESEARCH CORPORATION

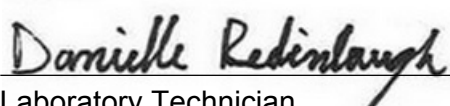
NECK FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 138

Test I.D.: D173582

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	25	Pass
Pendulum Speed		m/s	6.89 to 7.13	6.96	Pass
Pendulum Velocity	10 ms	m/s	2.1 to 2.5	2.4	Pass
	20 ms	m/s	4.0 to 5.0	4.6	Pass
	30 ms	m/s	5.8 to 7.0	6.6	Pass
D Plane Rotation	Max	deg	77 to 91	81	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	69 to 83	74	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 to 100	83	Pass
Overall Results					Pass



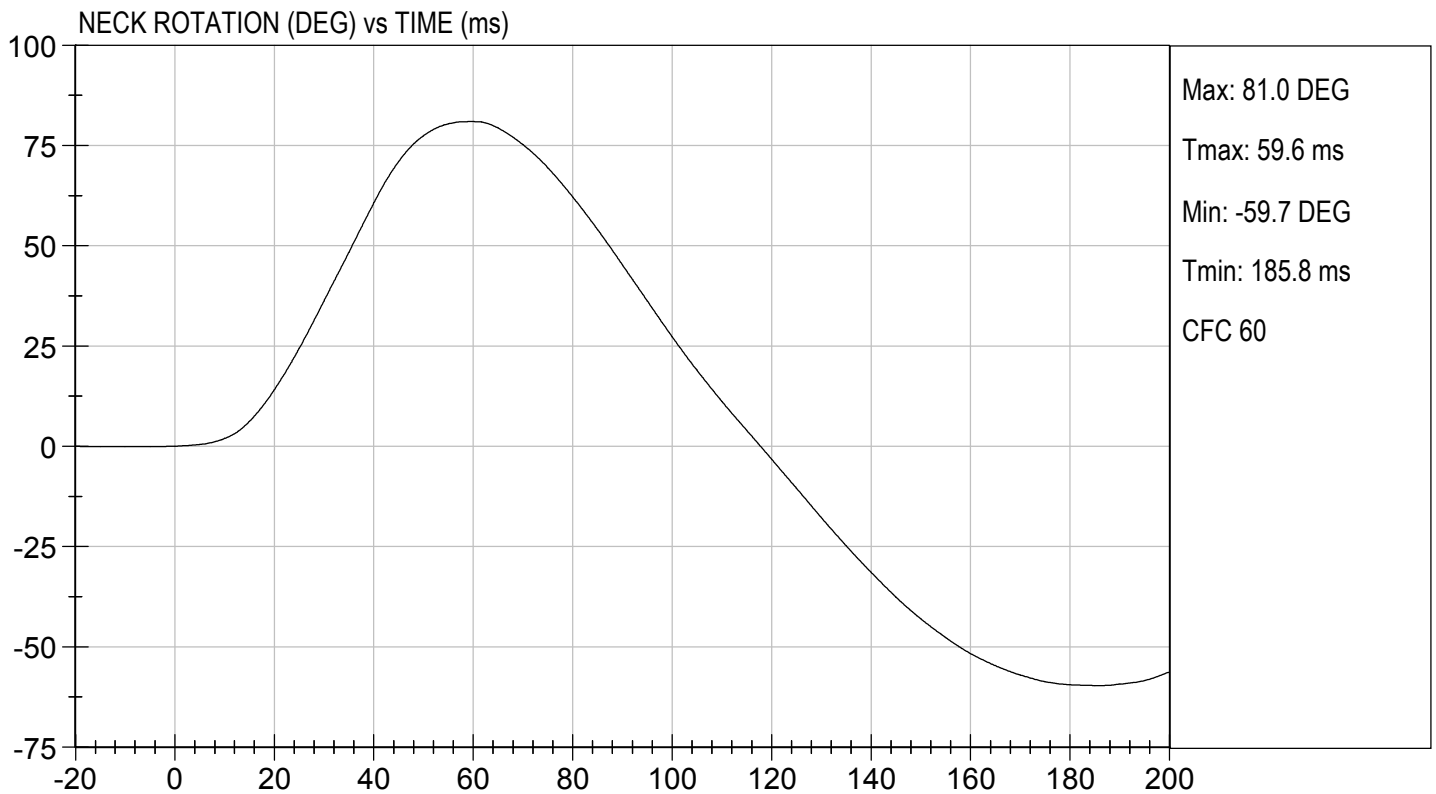
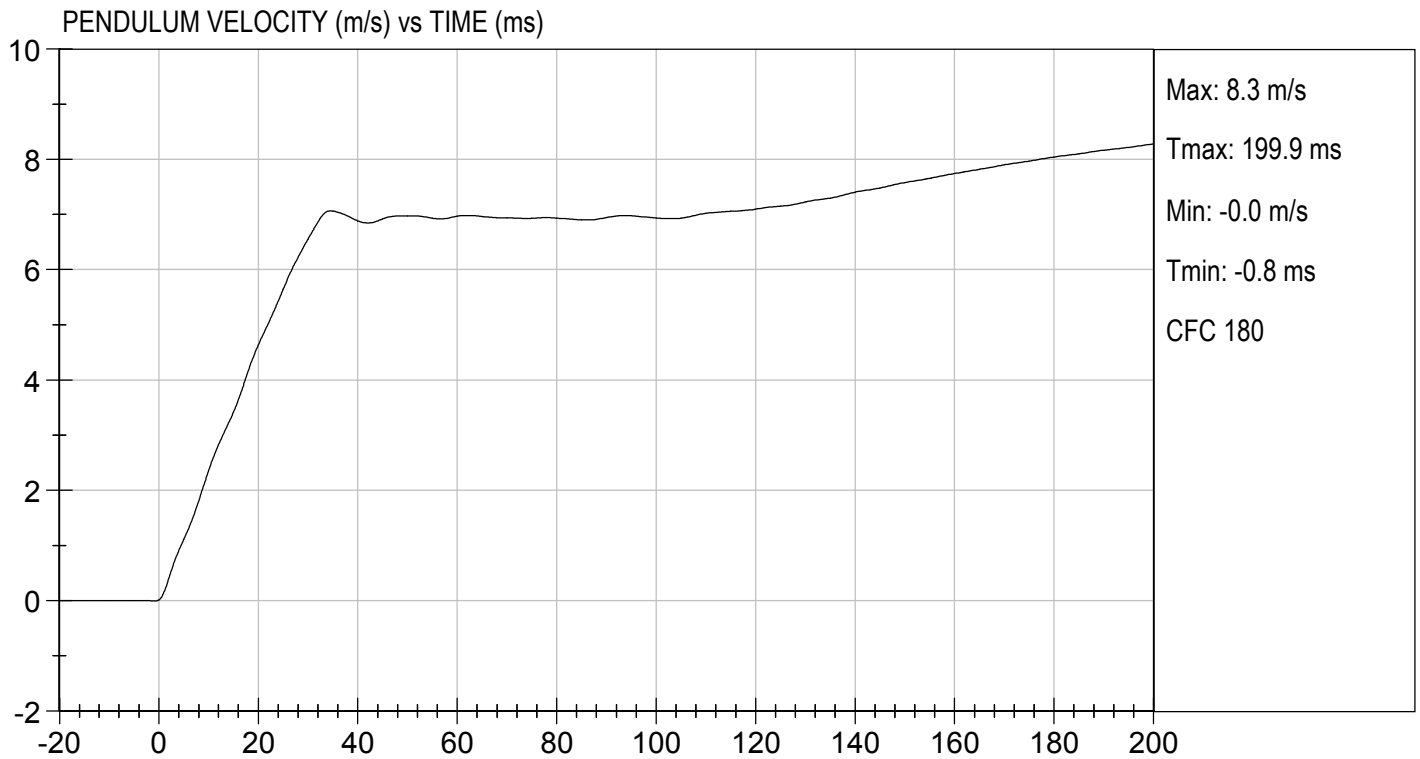
 Laboratory Technician

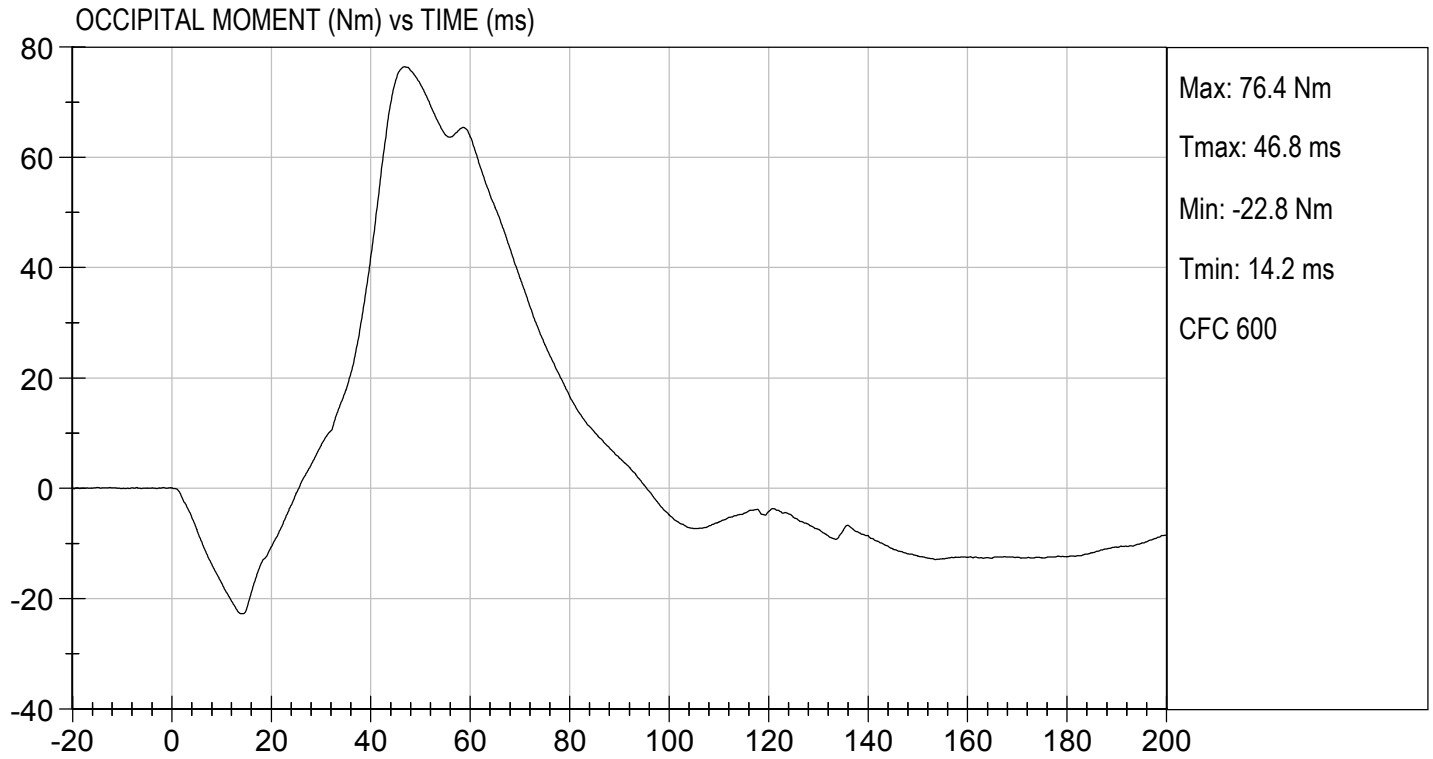
12/06/2017

 Test Date



 Approved By






MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 138

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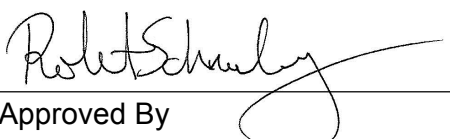
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity		%	10 to 70	25	Pass
Pendulum Speed		m/s	5.95 to 6.19	5.98	Pass
Pendulum Velocity	10 ms	m/s	1.5 to 1.9	1.7	Pass
	20 ms	m/s	3.1 to 3.9	3.5	Pass
	30 ms	m/s	4.6 to 5.6	5.1	Pass
D Plane Rotation	Max	deg	99 to 114	101	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	101	Pass
Overall Results					Pass



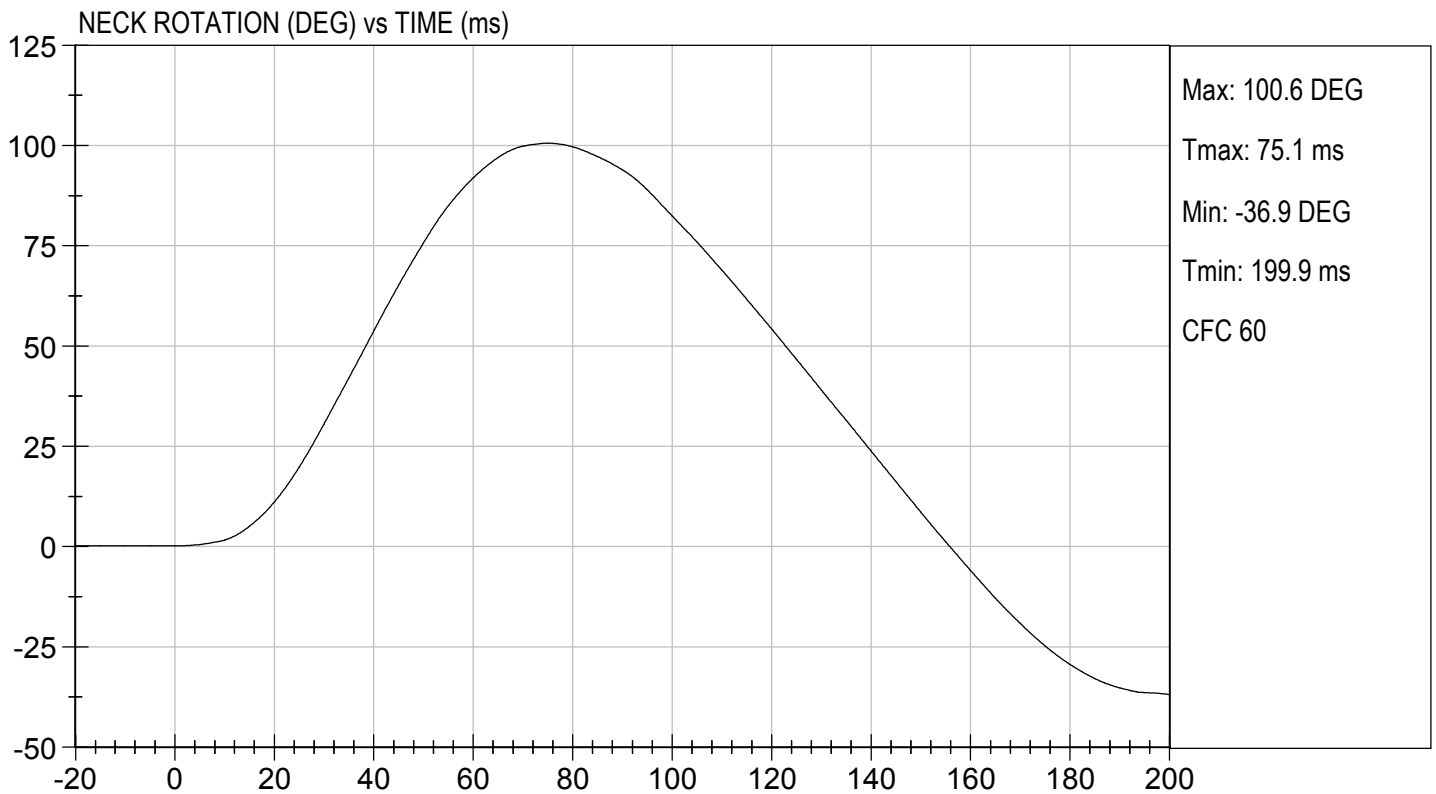
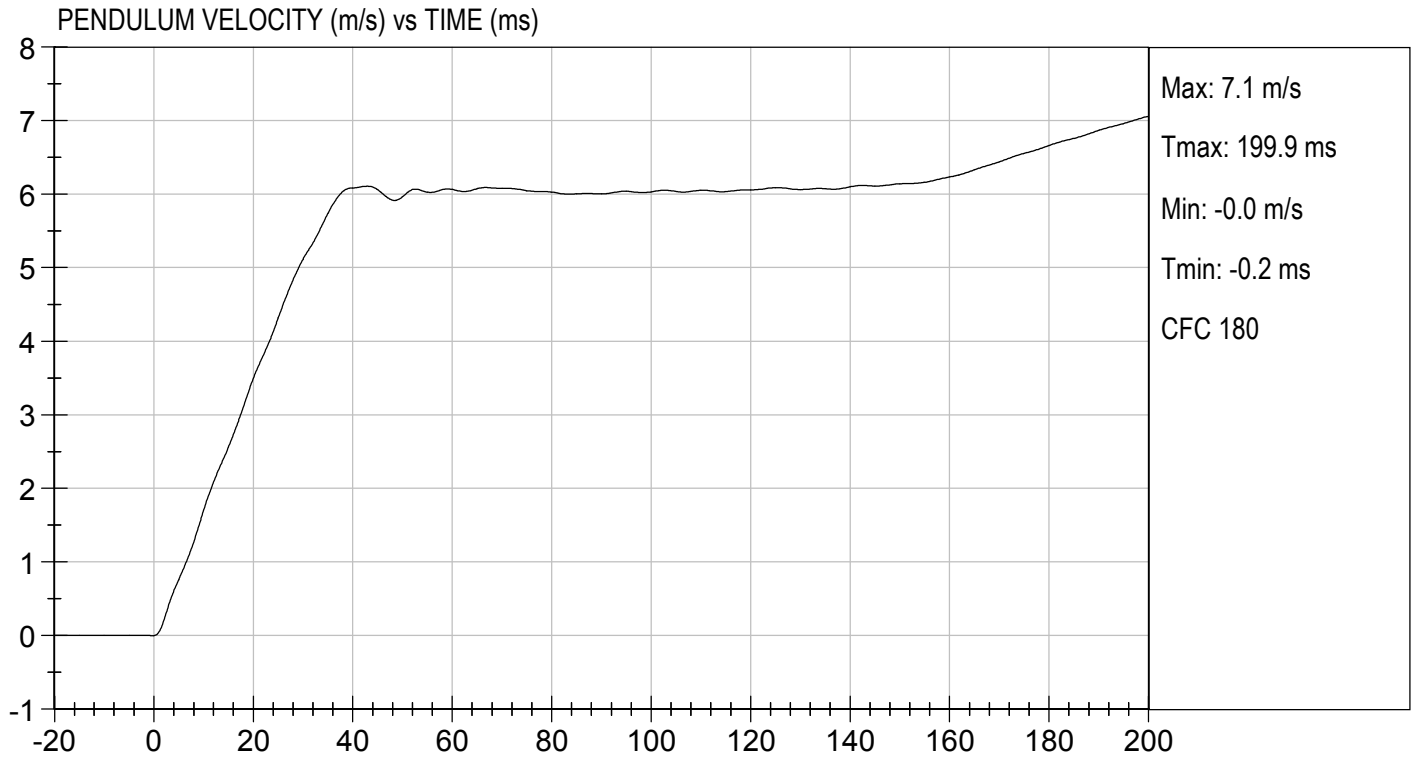
 Laboratory Technician

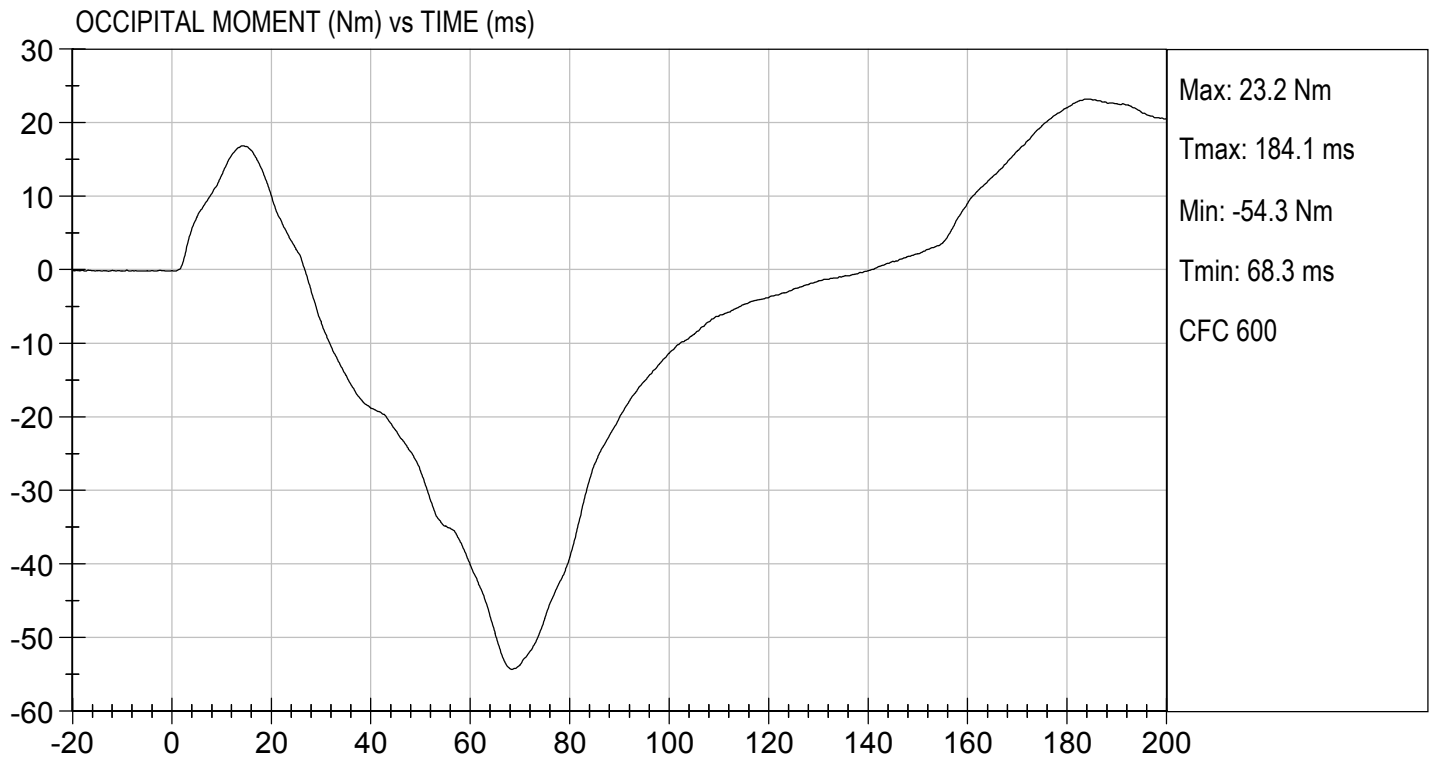
12/06/2017

 Test Date



 Approved By





MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 5TH PERCENTILE

ATD Serial No: 138

Test I.D: D173584

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.6	Pass
Relative Humidity	%	10 to 70	37	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	N	3900 to 4400	4259	Pass
Internal Hysteresis	%	69 to 85	71	Pass
Peak Force 18 mm - 50 mm	N	<= 4600	4195	Pass
Overall Test Results				Pass

Emily Fliess

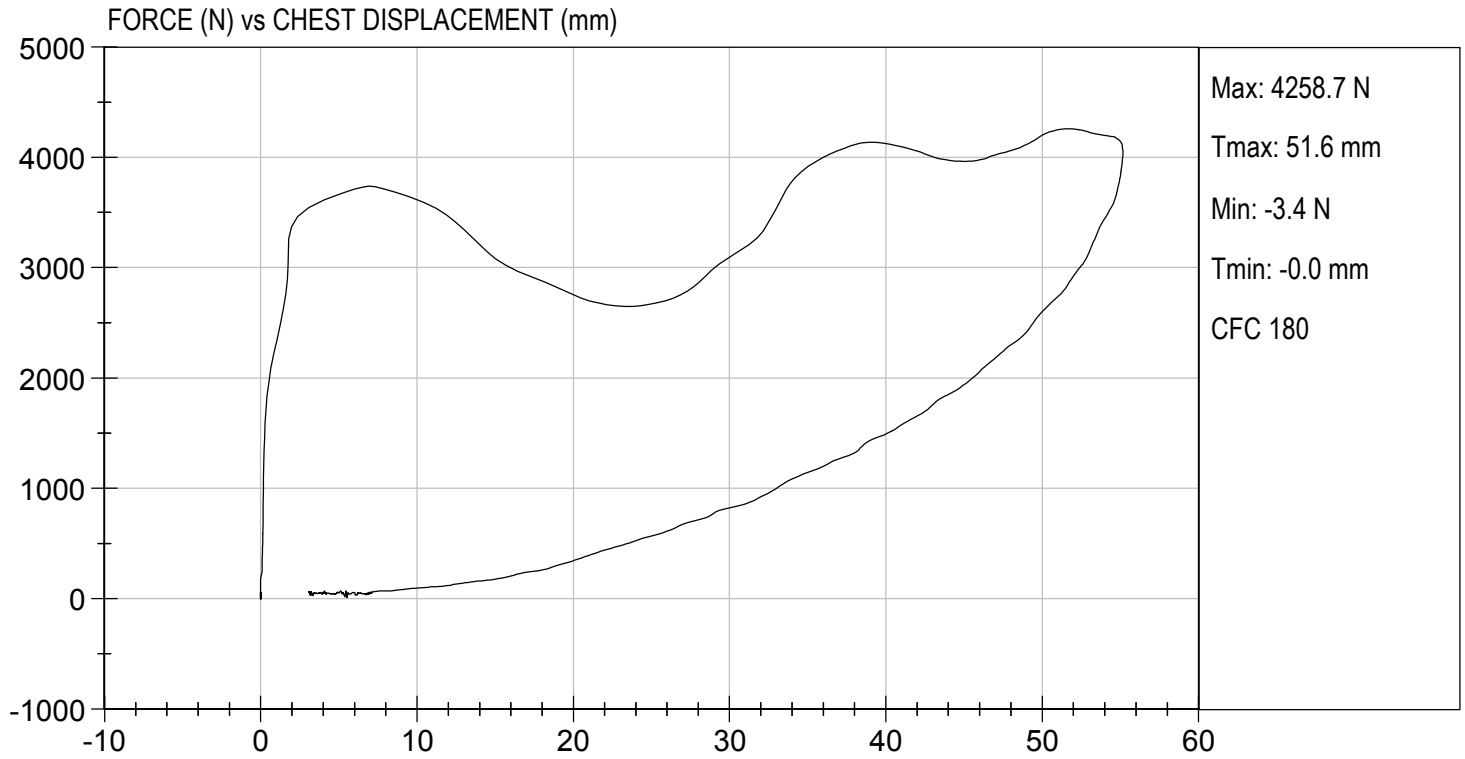
Laboratory Technician

12/07/2017

Test Date

Robert Schaub

Approved By



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

ATD Serial No: 138

Test I.D: D173585

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	22	Pass
Probe Speed	m/s	2.07 to 2.13	2.10	Pass
Maximum Force	N	3450 to 4060	3609	Pass
Overall Test Results				Pass

Danielle Redinlaugh
Laboratory Technician

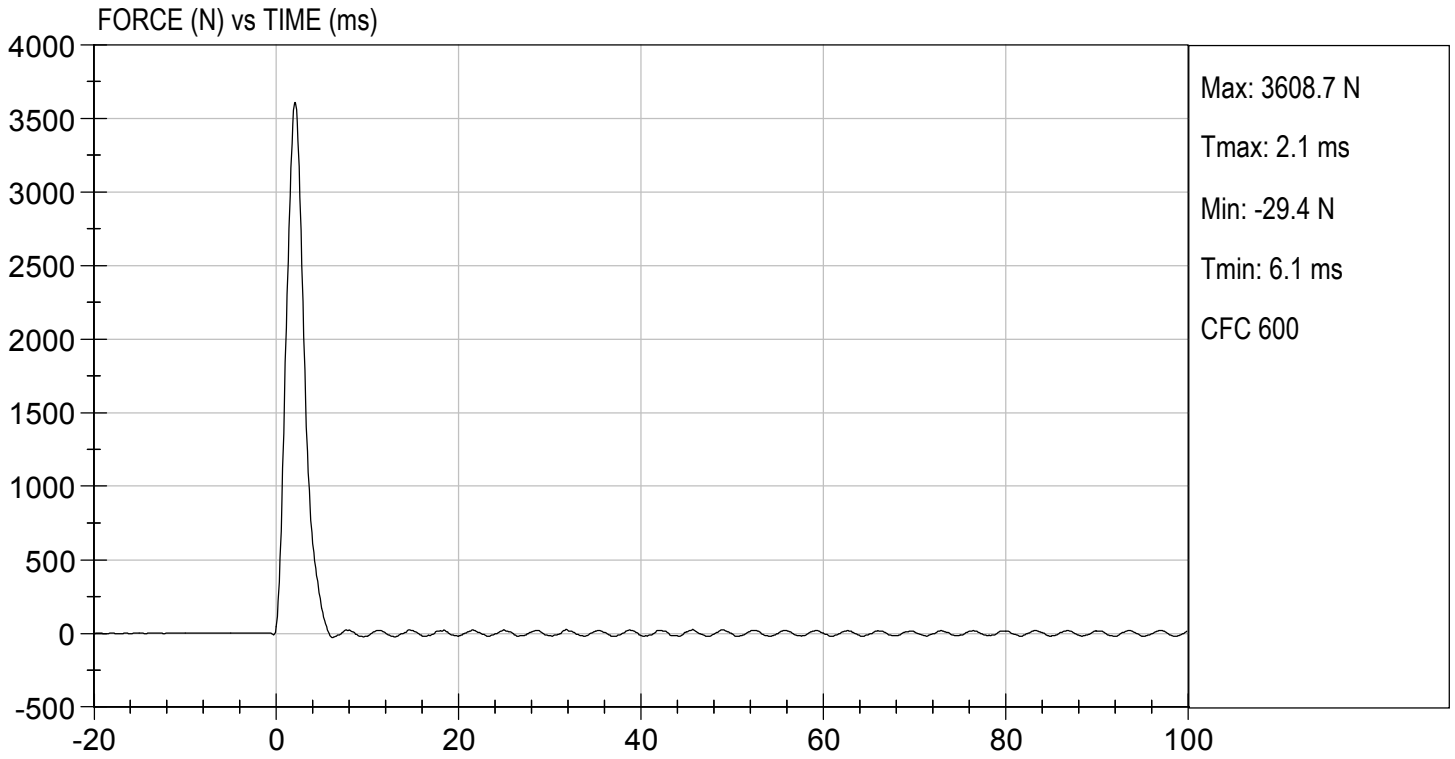
12/07/2017
Test Date

Robert Schumley
Approved By



TEST DESC: RIGHT KNEE
VELOCITY: 6.89 ft/s, 2.10 m/s

TEST DATE: 12/07/2017
TEST #: D173585



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

ATD Serial No: 138

Test I.D: D173586

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	22	Pass
Probe Speed	m/s	2.07 to 2.13	2.10	Pass
Maximum Force	N	3450 to 4060	3783	Pass
Overall Test Results				Pass

Danielle Redinlaugh
 Laboratory Technician

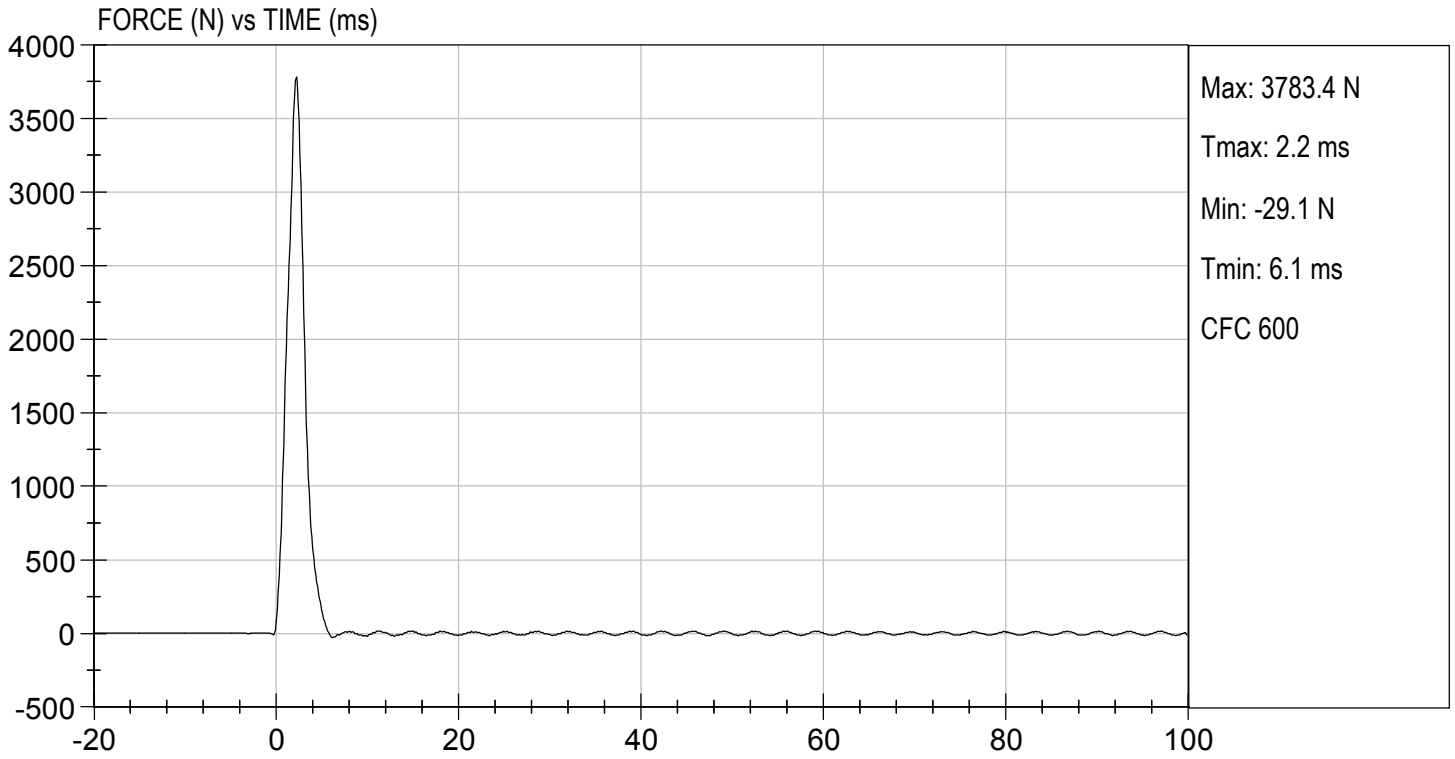
12/07/2017
 Test Date

Robert Schaubert
 Approved By



TEST DESC: LEFT KNEE
VELOCITY: 6.89 ft/s, 2.10 m/s

TEST DATE: 12/07/2017
TEST #: D173586

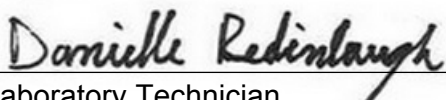


MGA RESEARCH CORPORATION
TORSO FLEXION TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 138

Test I.D: D173587

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	22	Pass
Initial Angle	deg	0 to 20	18	Pass
Return Angle	deg	+/- 8	2	Pass
Force at 45 deg	N	320 to 390	366	Pass
Upper Torso Deflection Rate	deg/s	0.5 to 1.5	0.7	Pass
Overall Result				Pass



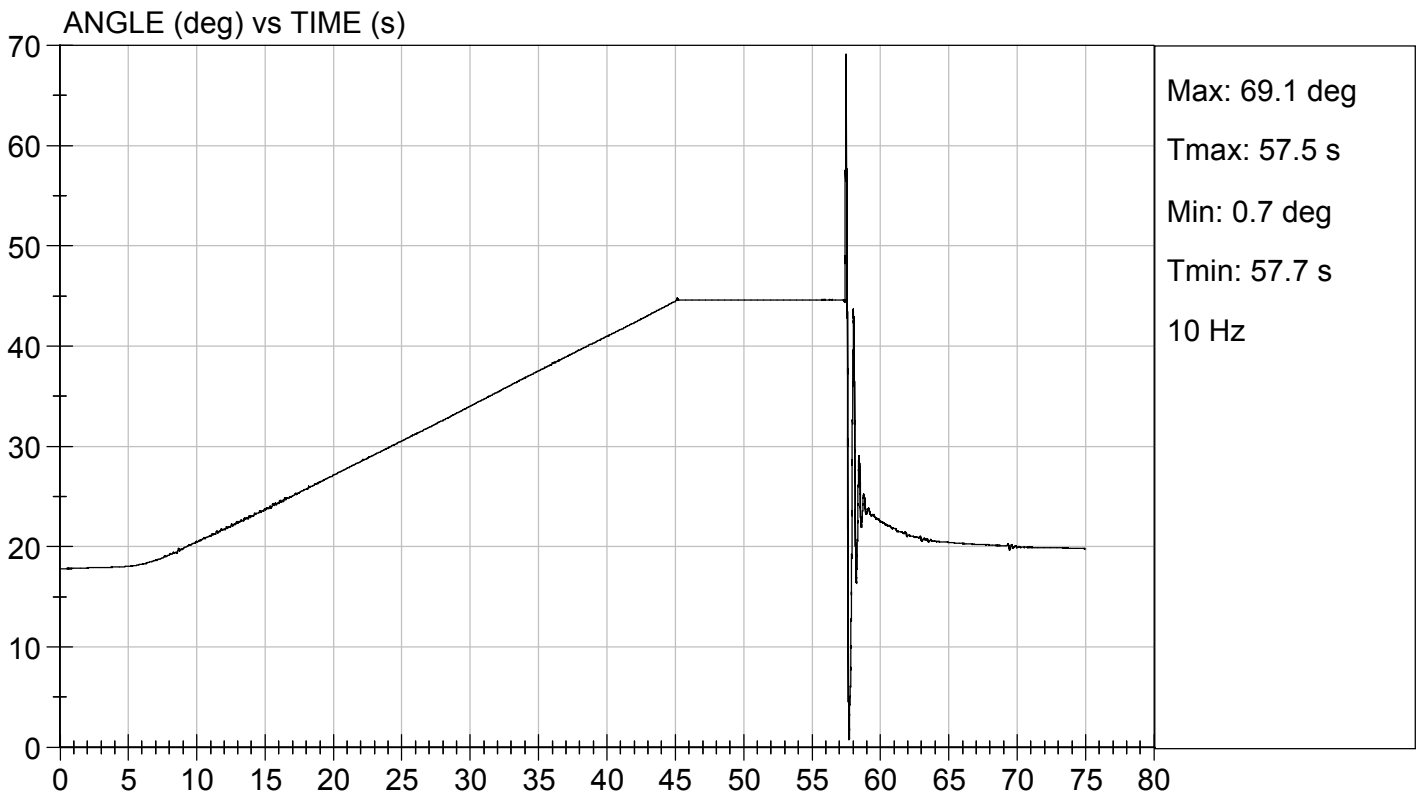
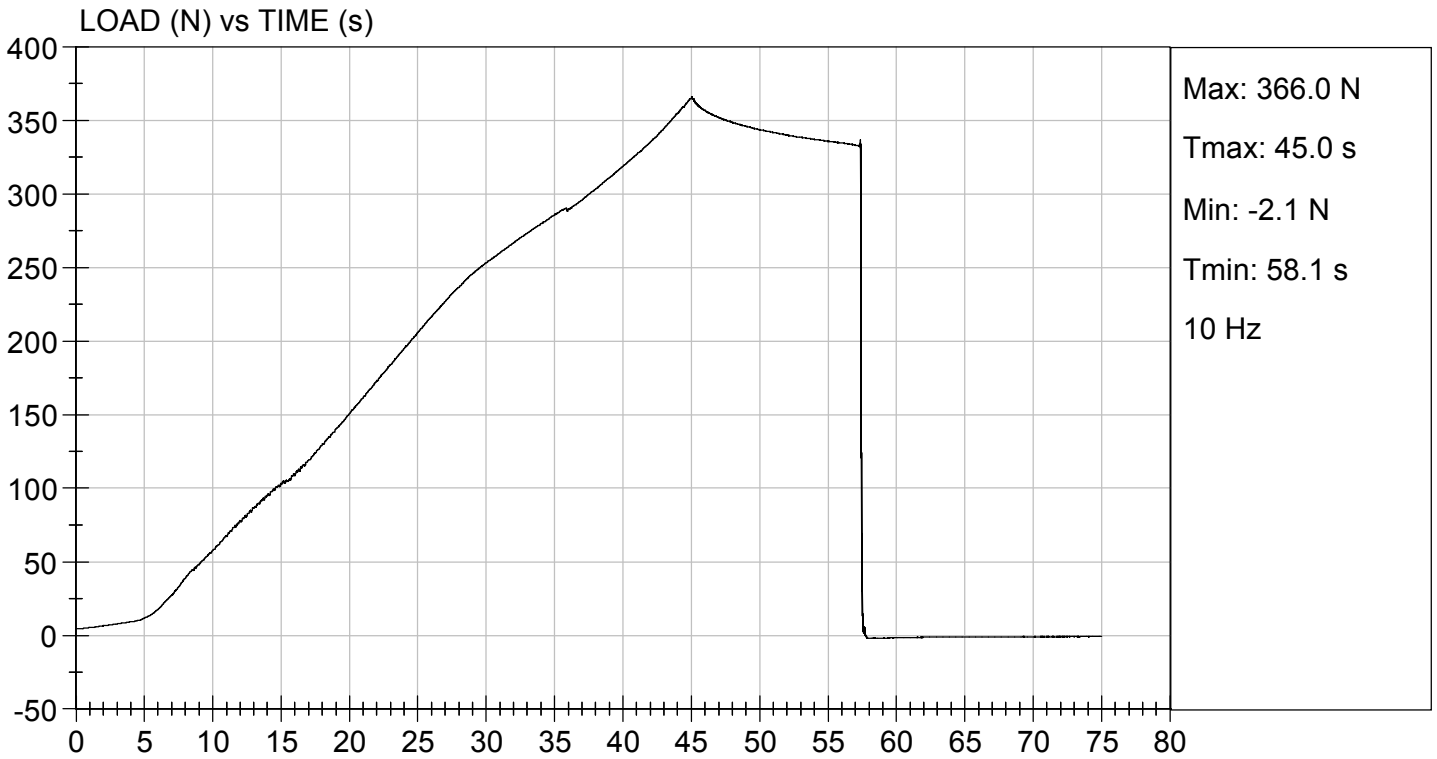
 Laboratory Technician

12/07/2017

 Test Date



 Approved By



MGA RESEARCH CORPORATION
HEAD DROP TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 138

Test ID: D173611

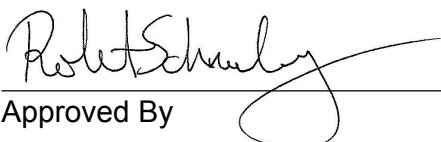
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	22	Pass
Peak Resultant Acceleration	G's	250 to 300	252	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-4.8	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass



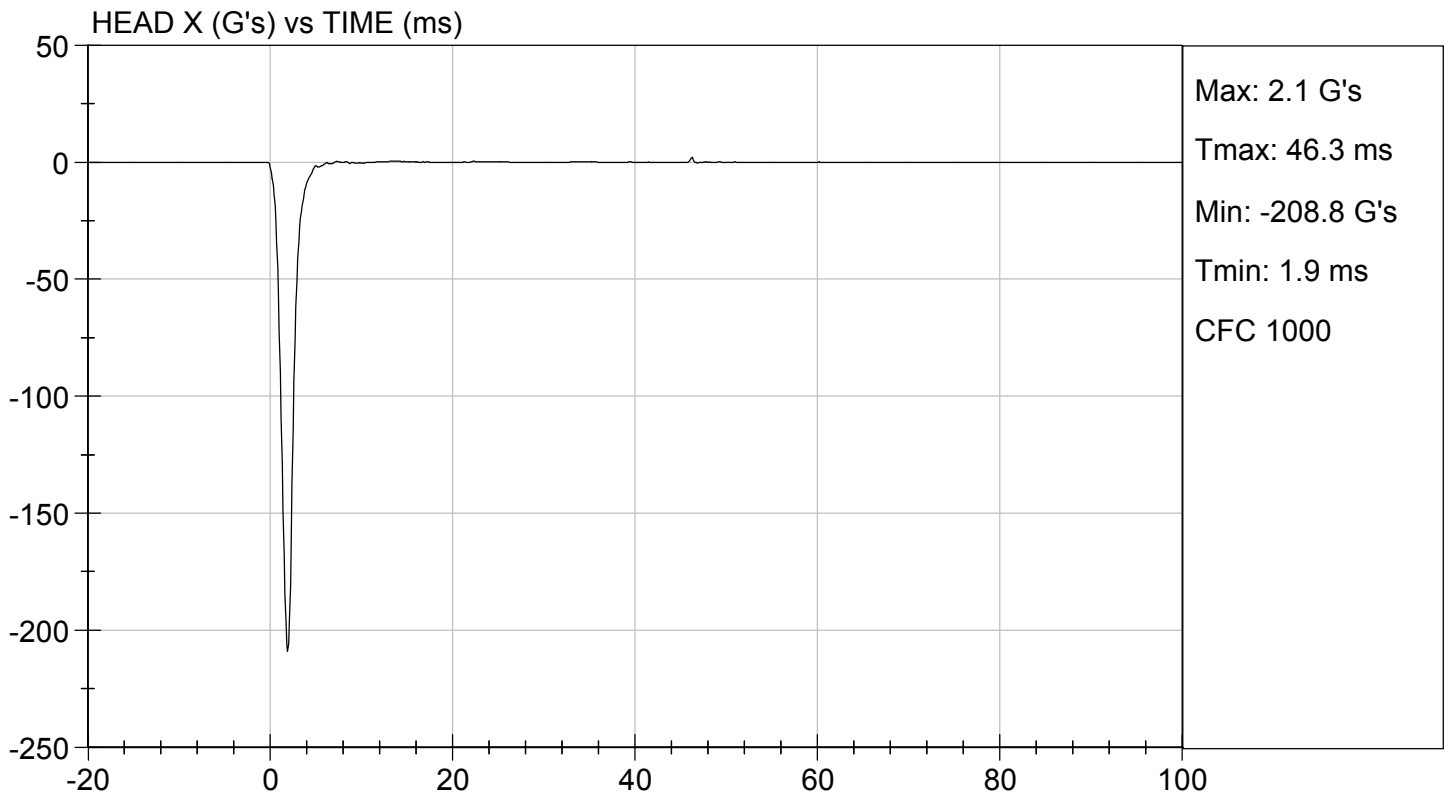
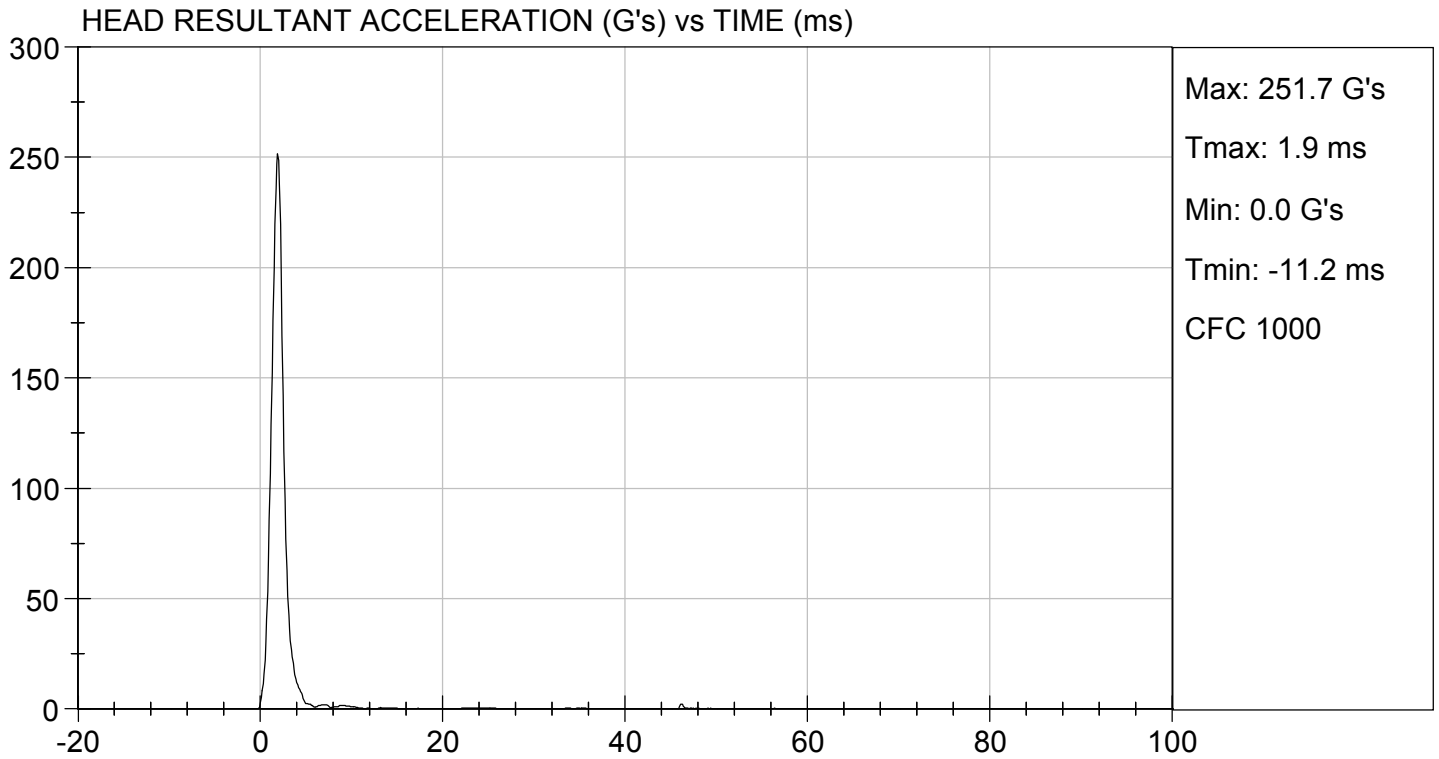
 Laboratory Technician

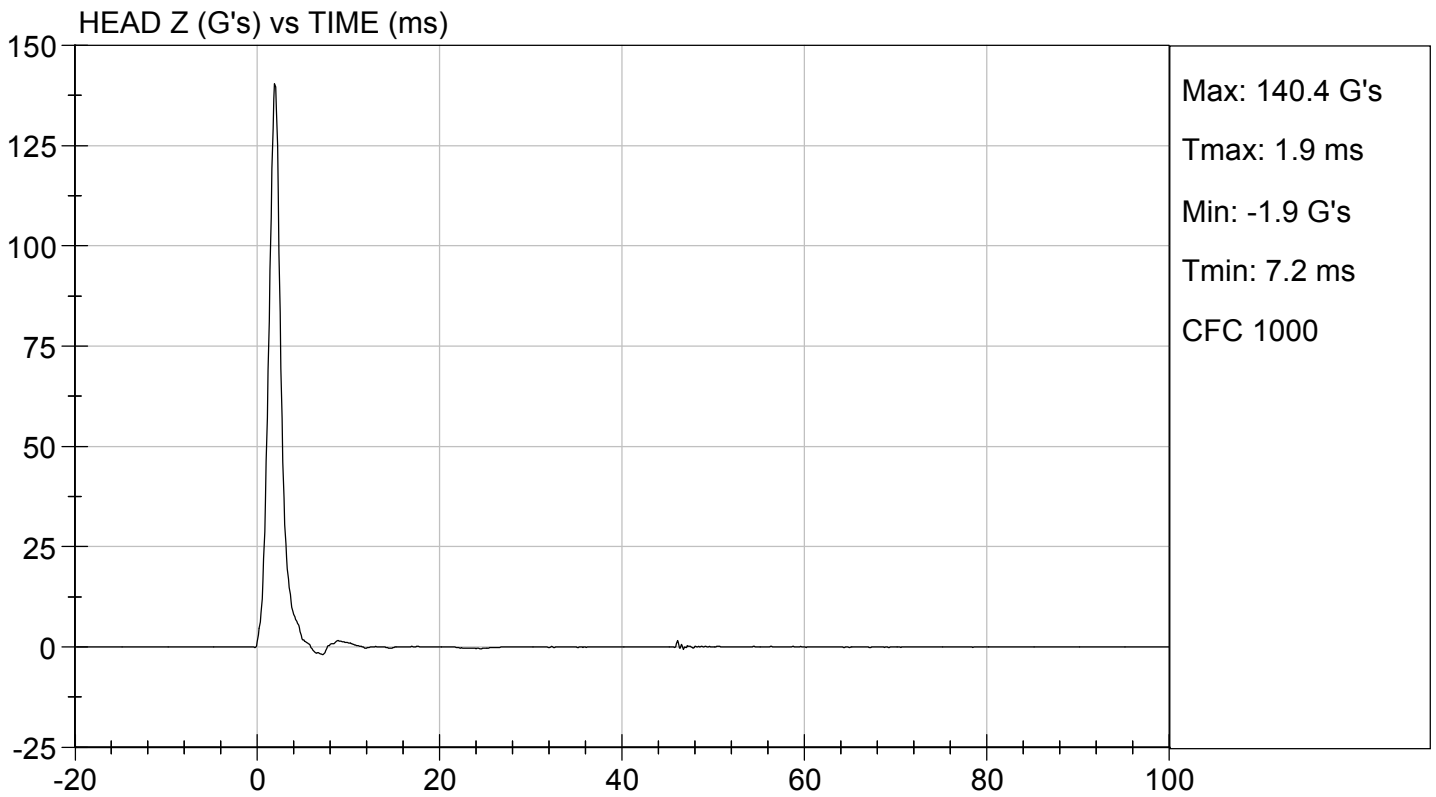
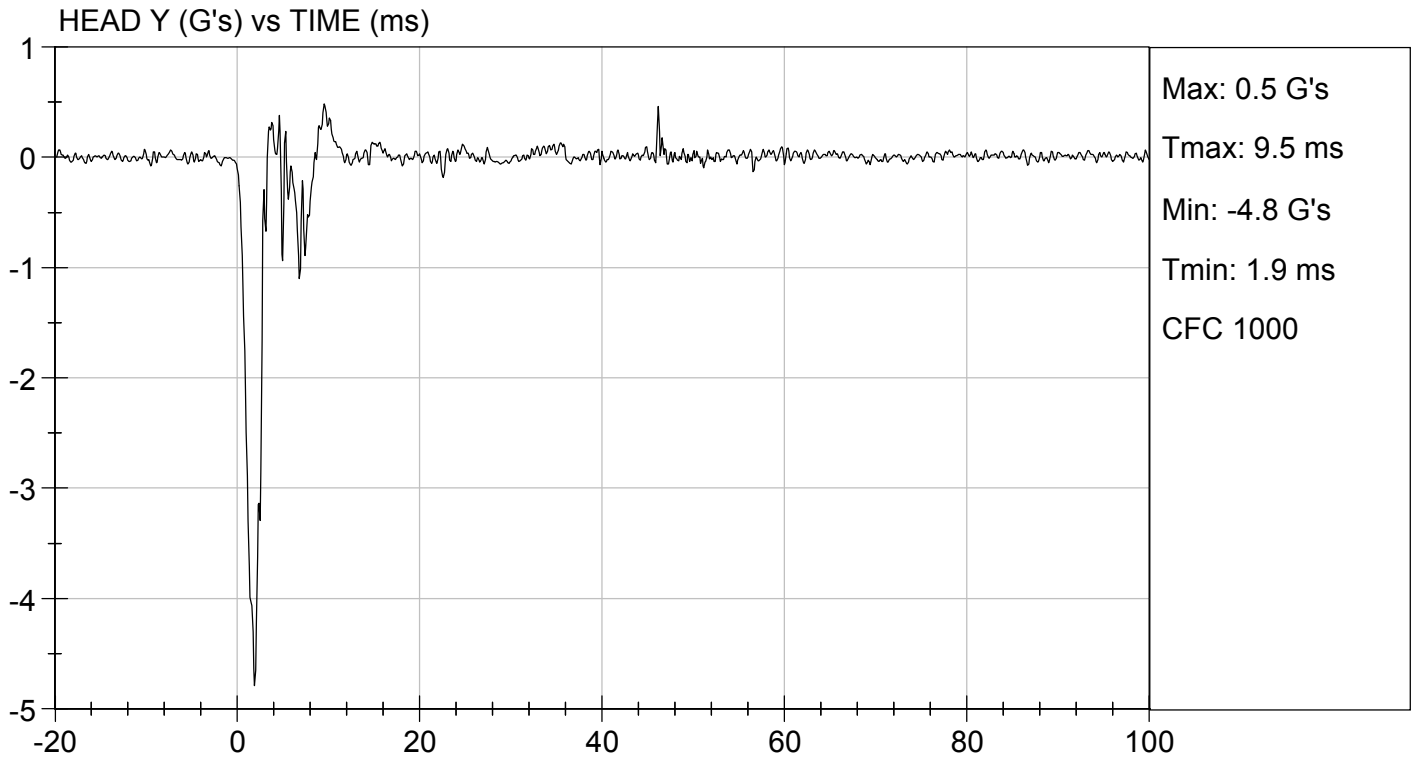
12/11/2017

 Test Date



 Approved By





MGA RESEARCH CORPORATION

NECK FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 138

Test I.D.: D173612

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity		%	10 to 70	17	Pass
Pendulum Speed		m/s	6.89 to 7.13	7.06	Pass
Pendulum Velocity	10 ms	m/s	2.1 to 2.5	2.4	Pass
	20 ms	m/s	4.0 to 5.0	4.7	Pass
	30 ms	m/s	5.8 to 7.0	6.8	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	86	Pass
Overall Results					Pass

Emily Fliess

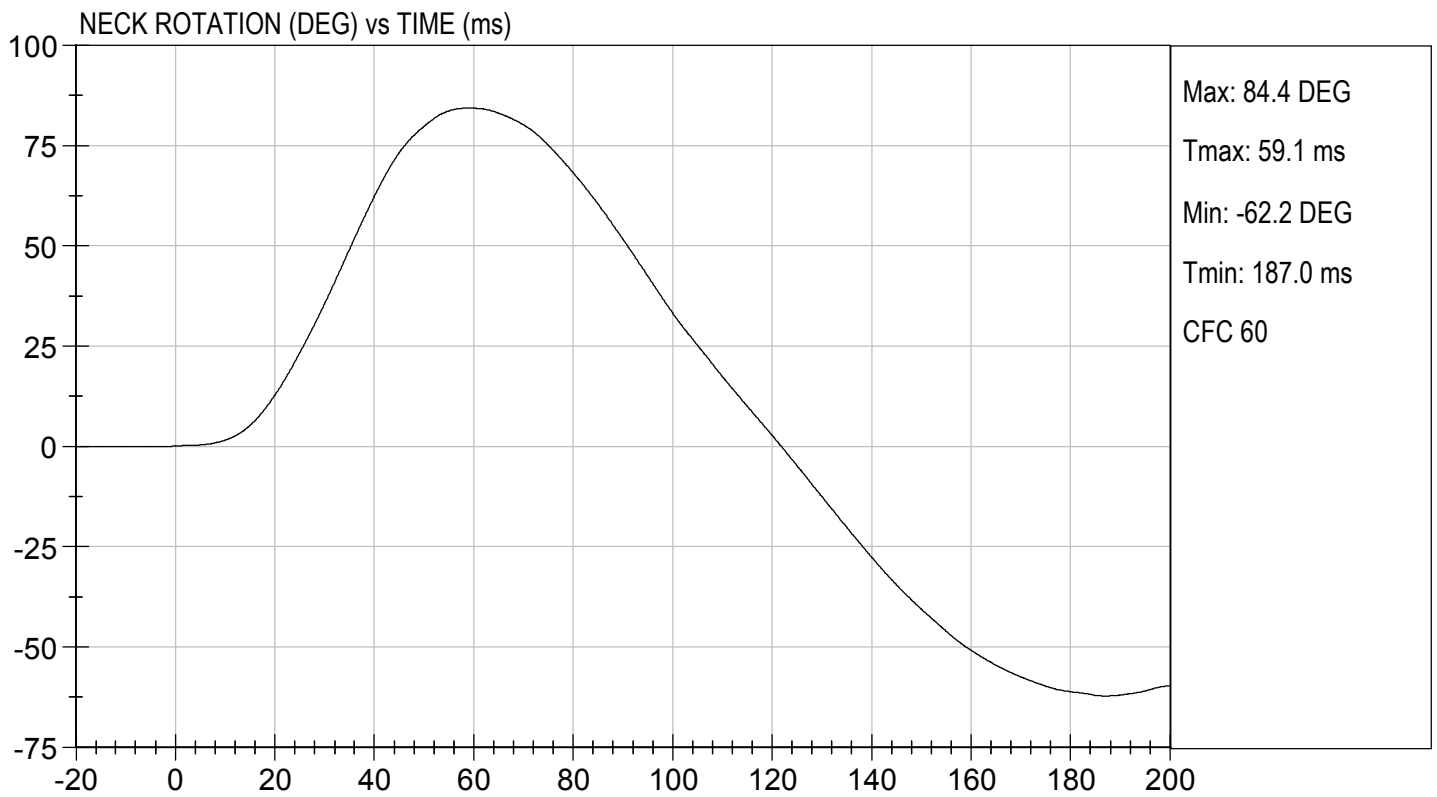
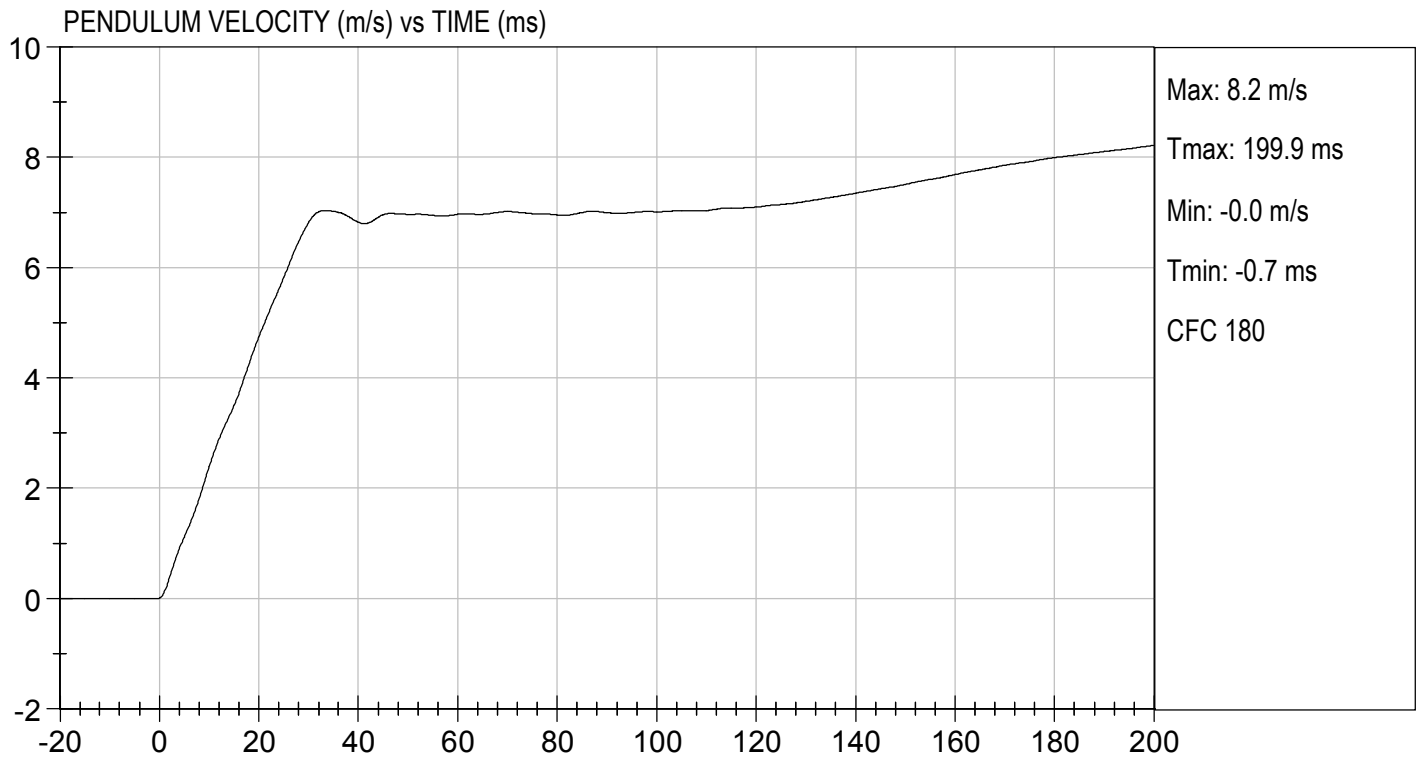
Laboratory Technician

12/11/2017

Test Date

Robert Schaub

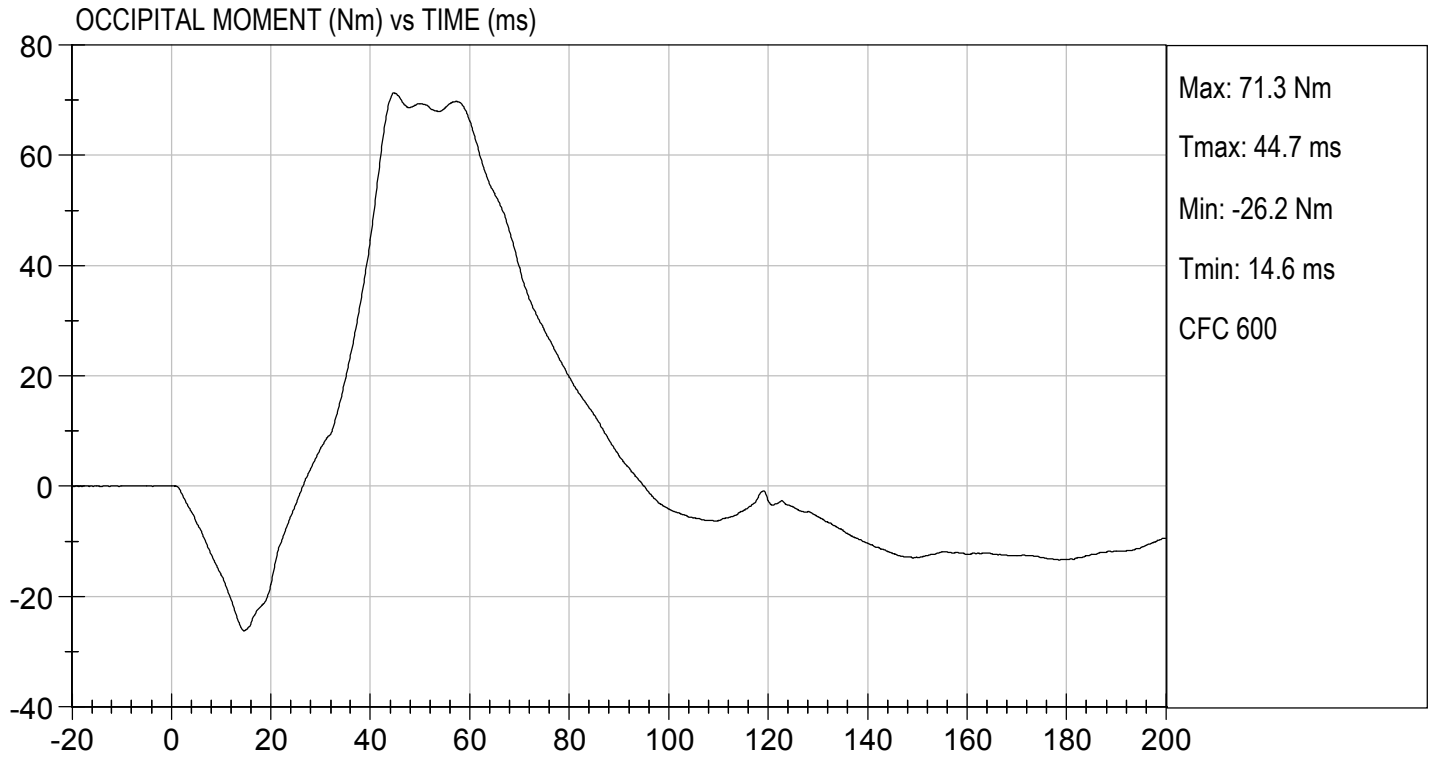
Approved By





TEST DESC: NECK FLEXION
VELOCITY: 23.15 ft/s, 7.06 m/s

TEST DATE: 12/11/2017
TEST #: D173612



MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 5TH PERCENTILE

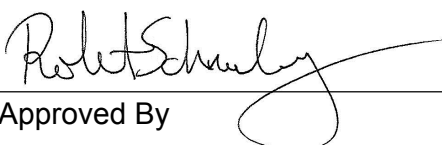
ATD Serial No: 138

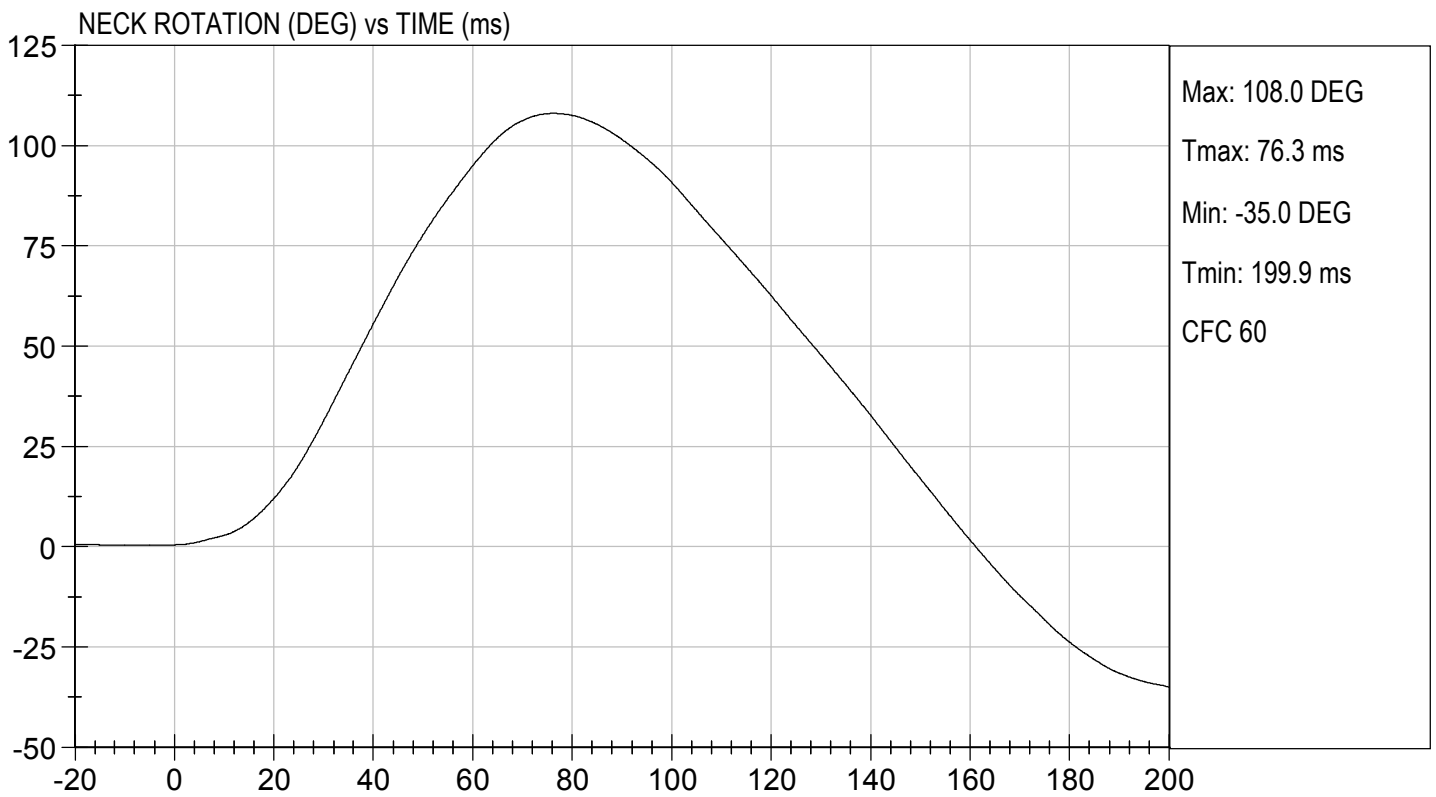
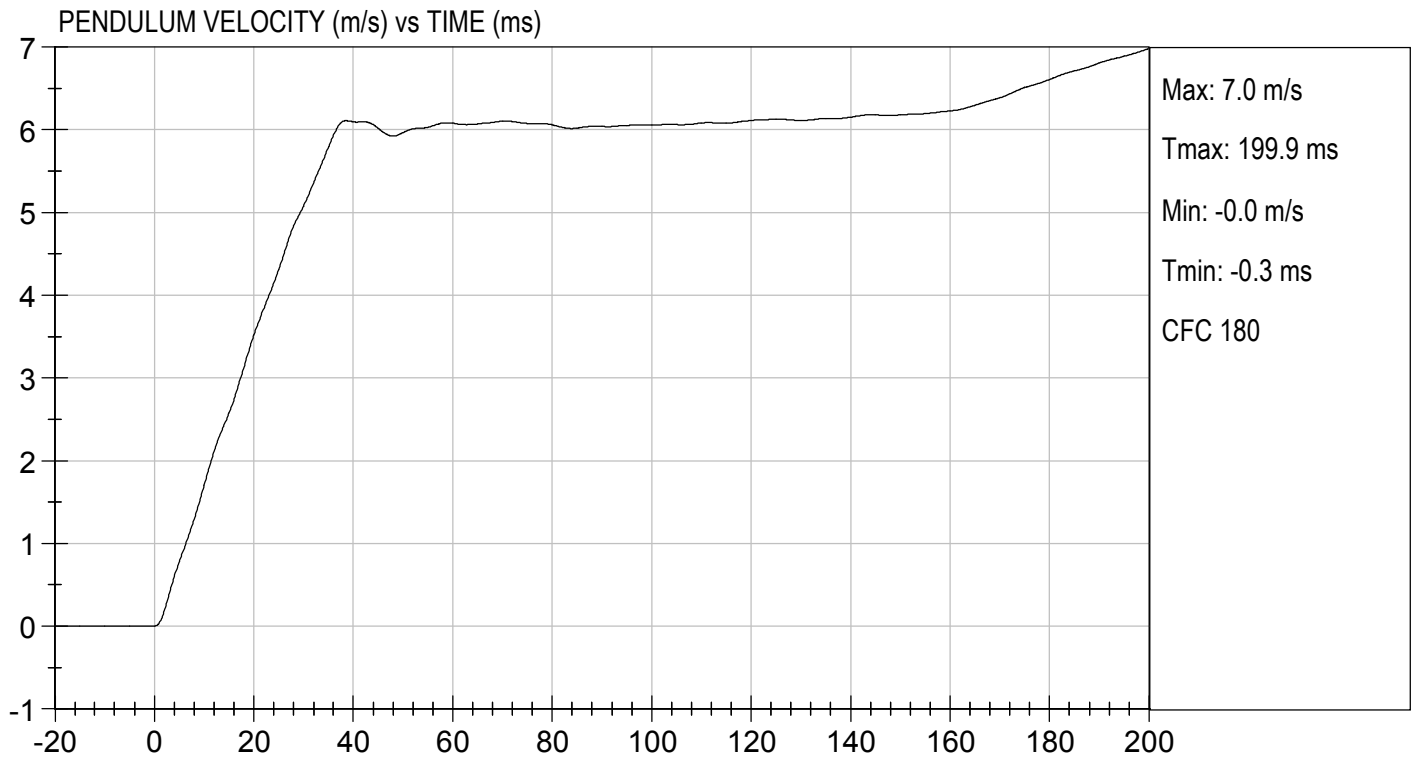
Test I.D: D173613

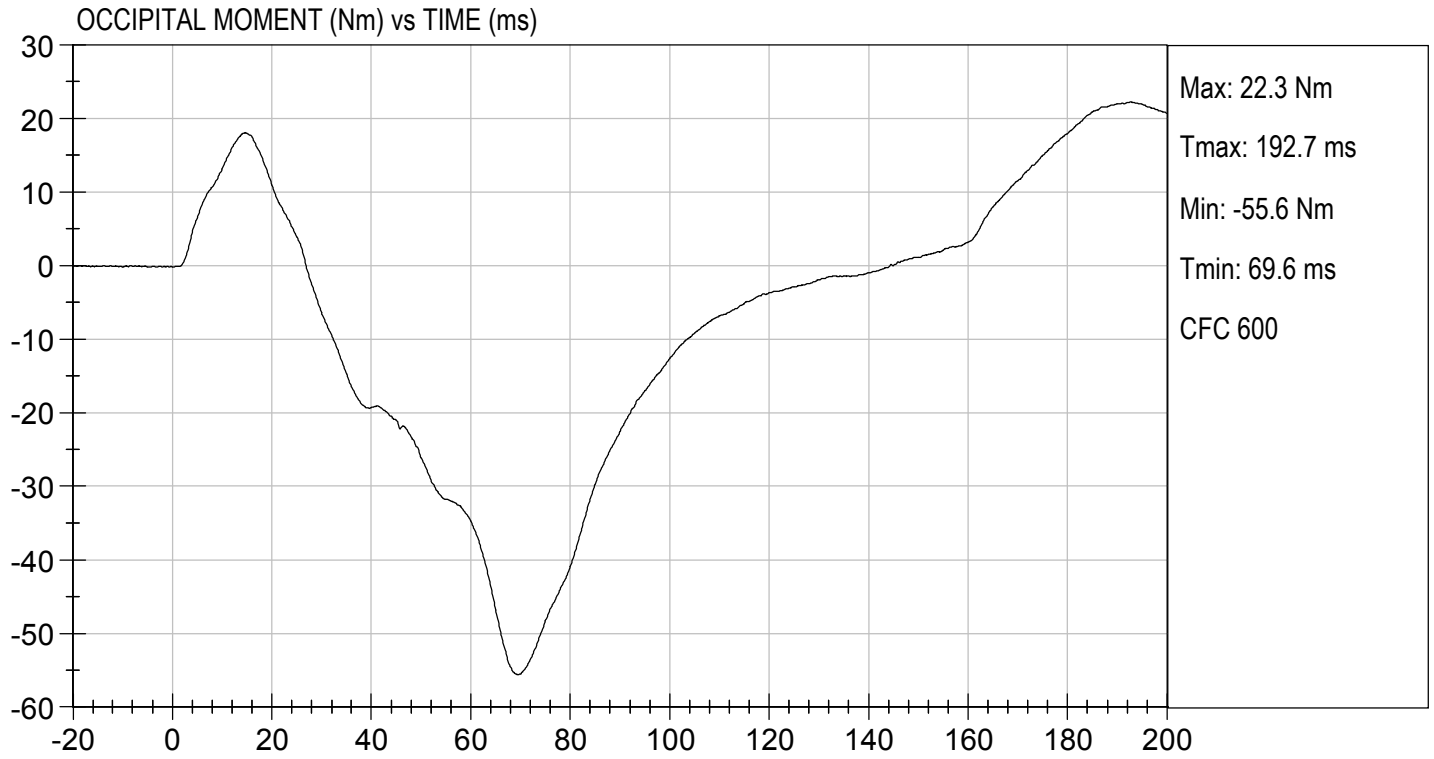
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity		%	10 to 70	17	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.12	Pass
Pendulum Velocity	10 ms	m/s	1.5 to 1.9	1.7	Pass
	20 ms	m/s	3.1 to 3.9	3.5	Pass
	30 ms	m/s	4.6 to 5.6	5.1	Pass
D Plane Rotation	Max	deg	99 to 114	108	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	-65 to -53	-56	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	102	Pass
Overall Results					Pass


 Laboratory Technician

12/11/2017
 Test Date


 Approved By






MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 5TH PERCENTILE

ATD Serial No: 138

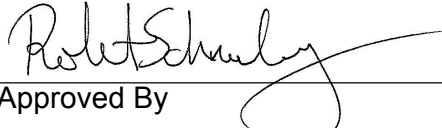
Test I.D: D173614

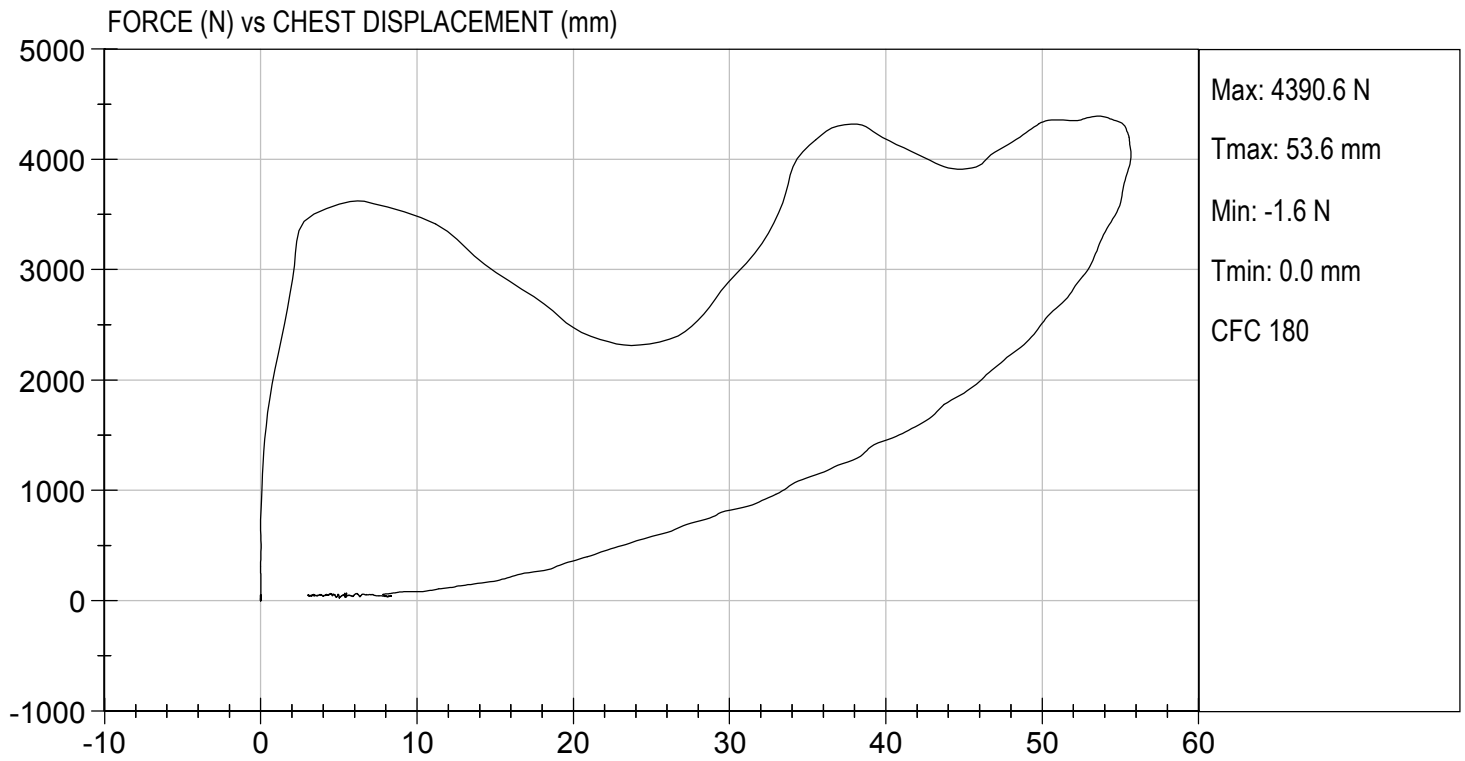
Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.6	Pass
Relative Humidity	%	10 to 70	37	Pass
Probe Speed	m/s	6.59 to 6.83	6.83	Pass
Peak Deflection	mm	50 to 58	56	Pass
Peak Resistive Force w/in Deflection Corridor	N	3900 to 4400	4391	Pass
Internal Hysteresis	%	69 to 85	71	Pass
Peak Force 18 mm - 50 mm	N	<= 4600	4333	Pass
Overall Test Results				Pass


 Laboratory Technician

12/08/2017

Test Date


 Approved By



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

ATD Serial No: 138

Test I.D: D173615

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	25	Pass
Probe Speed	m/s	2.07 to 2.13	2.13	Pass
Maximum Force	N	3450 to 4060	3939	Pass
Overall Test Results				Pass

Emily Fliess

Laboratory Technician

12/11/2017

Test Date

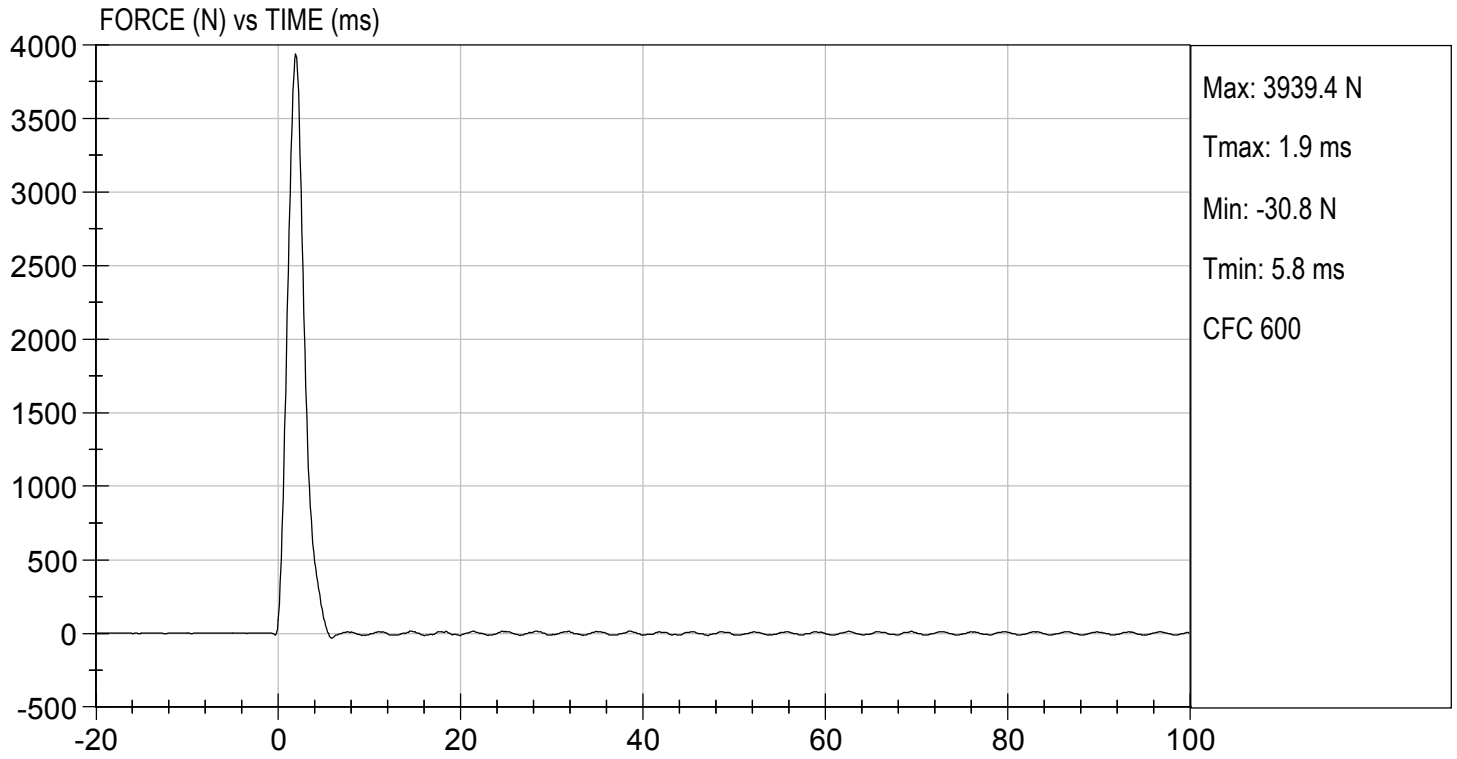
Robert Schuler

Approved By



TEST DESC: RIGHT KNEE
VELOCITY: 6.98 ft/s, 2.13 m/s

TEST DATE: 12/11/2017
TEST #: D173615

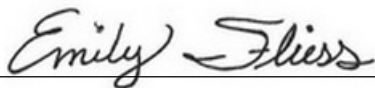


MGA RESEARCH CORPORATION
LEFT KNEE IMPACT TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 138

Test I.D: D173616

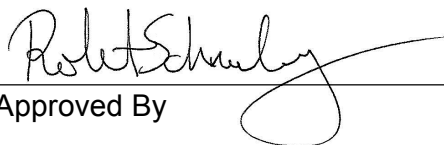
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Probe Speed	m/s	2.07 to 2.13	2.09	Pass
Maximum Force	N	3450 to 4060	3587	Pass
Overall Test Results				Pass



Laboratory Technician

12/11/2017

Test Date

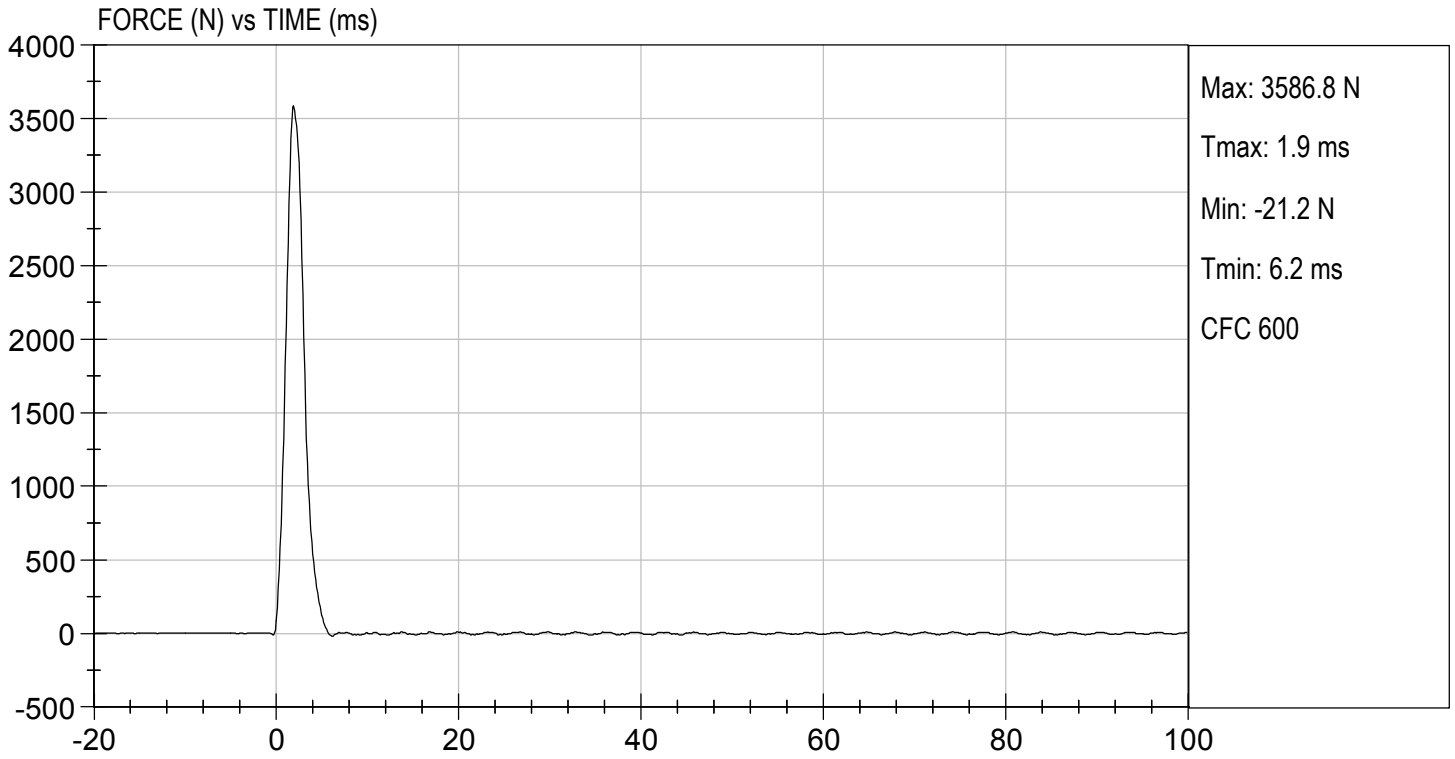


Approved By



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

TEST DATE: 12/11/2017
TEST #: D173616

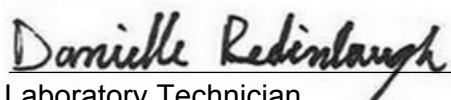


MGA RESEARCH CORPORATION
TORSO FLEXION TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 138

Test I.D: D173617

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	22	Pass
Initial Angle	deg	0 to 20	17	Pass
Return Angle	deg	+/- 8	3	Pass
Force at 45 deg	N	320 to 390	373	Pass
Upper Torso Deflection Rate	deg/s	0.5 to 1.5	0.7	Pass
Overall Result				Pass



 Laboratory Technician

12/08/2017

 Test Date



 Approved By

