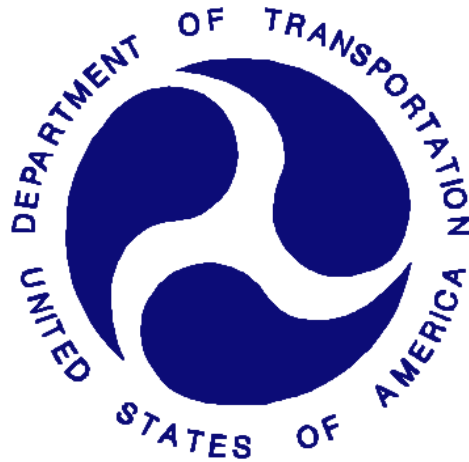


REPORT NUMBER: NCAP-MGA-2017-010

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

**FCA US LLC
2017 Chrysler Pacifica LX Minivan
NHTSA No.: O20170300**

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



Test Date: October 6, 2016

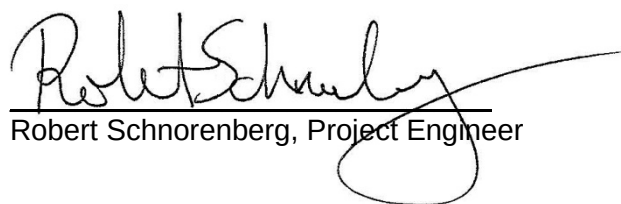
Final Report Date: November 3, 2016

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
Room W43-410
Washington, DC 20590**

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Prepared by: 
Ben Fischer, Project Engineer

Approved by: 
Robert Schnorenberg, Project Engineer

Approval Date: November 3, 2016

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

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

Date: _____

Technical Report Documentation Page

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15. Supplementary Notes																																																							
16. Abstract A 56.3 km/h NCAP Frontal Impact Test was conducted on a 2017 Chrysler Pacifica LX Minivan in accordance with the specifications of the Office of Crashworthiness Standards Frontal NCAP Laboratory Test Procedure. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), and 301 performance. The test was conducted at MGA Research Corporation in Burlington, Wisconsin on October 6, 2016. The impact velocity of the vehicle was 56.16 km/h and the ambient temperature at the barrier face at the time of impact was 21.7°C. The target vehicle post-test maximum crush was 445mm located at the vehicle's centerline. The test vehicle's performance was as follows: <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th rowspan="2">Units</th> <th colspan="2">Driver ATD</th> <th colspan="2">Passenger ATD</th> </tr> <tr> <th>Threshold</th> <th>Result</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₁₅)</td> <td>N/A</td> <td>700</td> <td>168</td> <td>700</td> <td>196</td> </tr> <tr> <td>Maximum Chest</td> <td>mm</td> <td>63</td> <td>22</td> <td>52</td> <td>10</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td>1</td> <td>0.29</td> <td>1</td> <td>0.25</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td>1022</td> <td>2620</td> <td>519</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td>249</td> <td>2520</td> <td>226</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10008</td> <td>334</td> <td>6805</td> <td>1955</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10008</td> <td>863</td> <td>6805</td> <td>1116</td> </tr> </tbody> </table>				Measurement Description	Units	Driver ATD		Passenger ATD		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC ₁₅)	N/A	700	168	700	196	Maximum Chest	mm	63	22	52	10	Nij	N/A	1	0.29	1	0.25	Neck Tension	N	4170	1022	2620	519	Neck Compression	N	4000	249	2520	226	Left Femur Force	N	10008	334	6805	1955	Right Femur Force	N	10008	863	6805	1116
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TABLE OF CONTENTS

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

<u>Data Sheet No.</u>		<u>Page No.</u>
1	General Test and Vehicle Parameter Data	4
2	Seat Adjustment, Fuel System, and Steering Wheel Data	8
3	Dummy Longitudinal Clearance Dimensions	10
4	Dummy Lateral Clearance Dimensions	11
5	Seat Belt Positioning Data	12
6	High-Speed Camera Locations and Data	13
7	Vehicle Accelerometer Locations	15
8	Photographic Reference Target Locations	16
9	Load Cell Locations on Fixed Barrier	17
10	Test Vehicle Summary of Results	18
11	Post-Test Observations	19
12	Vehicle Profile Measurements	20
13	Accident Investigation Division Data	22
14	Vehicle Intrusion Measurements	23
15	Summary of FMVSS 212, FMVSS 219 (Partial) Data, and 301 Data	25
16	FMVSS 301 Static Rollover Results	27
17	Dummy/Vehicle Temperature Stabilization Data	28

<u>Appendix</u>		
A	Photographs	A
B	Dummy Response Data Traces	B
C	Dummy Calibration and Performance Verification Data	C

SECTION 1 PURPOSE AND SUMMARY OF TEST

PURPOSE

This 56.3 km/h frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under contract number DTNH22-12-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 2017 Chrysler Pacifica LX Minivan at a velocity of 56.16 km/h. The test was performed at MGA Research Corporation on October 6, 2016. Pre-test and post-test photographs of the vehicle and dummies can be found in Appendix A.

Two (2) real-time cameras and fourteen (14) high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in this report.

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

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

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

The 634 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 445mm at 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 headrest. The driver's knees contacted the knee airbag. 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 knee airbag.

The occupant data is summarized below:

ATD position	HIC ₁₅	Nij	Neck Tension (N)	Neck Comp. (N)	3ms Chest Clip (Gs)	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)
Driver (50 th)	168	0.29	1022	249	42	22	334	863
Passenger (5 th)	196	0.25	519	226	33	10	1955	1116

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

TEST NOTES

Top of Engine X recorded no valid data after 38ms.
 Bottom of Engine X recorded no valid data after 37ms.
 Barrier K-16 My recorded no valid data.
 Barrier F-01 Fx 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: 2017 Chrysler Pacifica LX Minivan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20170300
 Test Date: 10/6/2016

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	O20170300	Traction Control System (TCS)	Yes
Model Year	2017	Power Steering	Yes
Make	Chrysler	Power Window Auto-Reverse	Yes
Model	Pacifica LX	Driver Frontal Airbag	Yes
Body Style	Minivan	Driver Curtain Airbag	Yes
VIN	2C4RC1CG3HR529408	Driver Head/Torso Airbag	No
Body Color	Dark Cordovan Pearl	Driver Torso Airbag	No
Odometer (km/mi)	51km / 82mi	Driver Torso/Pelvis Airbag	Yes
Engine Displacement (L)	3.6 L	Driver Pelvis Airbag	No
Type/No. Cylinders	V6	Driver Knee Airbag	Yes
Engine Placement	Lateral	Front Pass. Frontal Airbag	Yes
Transmission Type	Automatic	Front Pass. Curtain Airbag	Yes
Transmission Speeds	9	Front Pass. Head/Torso Airbag	No
Overdrive	Yes	Front Pass. Torso Airbag	No
Final Drive	FWD	Front Pass. Torso/Pelvis Airbag	Yes
Roof Rack	No	Front Pass. Pelvis Airbag	No
Sunroof/T-Top	No	Front Pass. Knee Airbag	Yes
Running Boards	No	Driver Pretensioner	Yes
Tilt Steering Wheel	Yes	Driver Load Limiter	Yes
Power Seats	Yes	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?

Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	FCA US LLC	GVWR (kg)	2724
Date of Manufacture	07/16	GAWR Front (kg)	1339
		GAWR Rear (kg)	1452

VEHICLE SEATING AND WEIGHT CAPACITY DATA

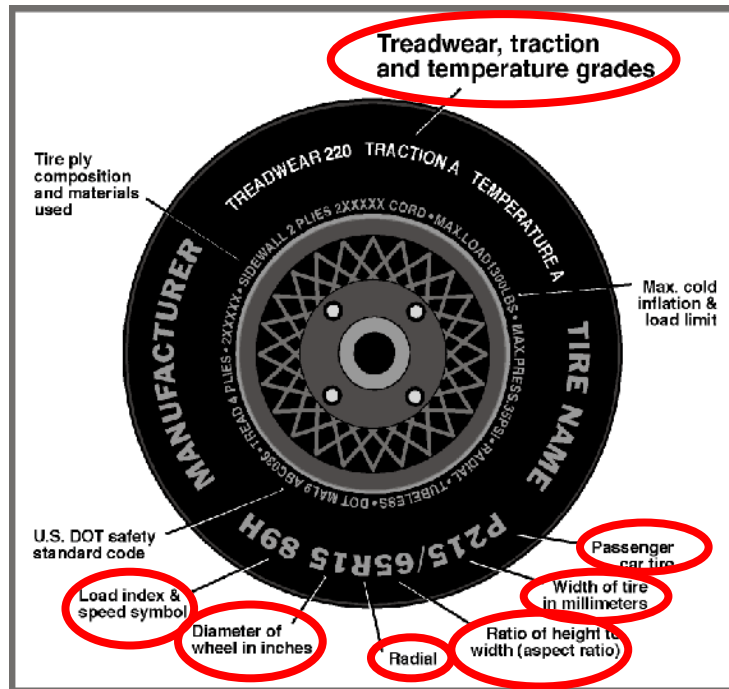
Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bucket	Split Bench	
Designated Seating Capacity (DSC)	2	2	3	7
Capacity Weight (VCW) (kg)				521
Cargo Weight (RCLW) (kg)				45

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

Test Vehicle: 2017 Chrysler Pacifica LX Minivan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20170300
 Test Date: 10/6/2016

VEHICLE TIRE INFORMATION



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	250	250
Recommended Tire Size	235/65R17	235/65R17
Tire Size on Vehicle	235/65R17	235/65R17
Tire Manufacturer	Yokohama	Yokohama
Tire Model	Avid S34	Avid S34
Treadwear	460	460
Traction	B	B
Temperature Grade	B	B
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 2 Steel, 1 Nylon	2 Polyester, 2 Steel, 1 Nylon
Load Index/Speed Symbol	104T	104T
Tire Material	Rubber	Rubber
DOT Safety Code Left	4UL8 PKX 0616	4UL8 PKX 0616
DOT Safety Code Right	4UL8 PKX 0716	4UL8 PKX 0716

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

Test Vehicle: 2017 Chrysler Pacifica LX Minivan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20170300
 Test Date: 10/6/2016

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	551.0	431.5		585.5	509.0	
Right	kg	562.5	408.5		571.5	468.0	
Ratio	%	57.0%	43.0%		54.2%	45.8%	
Totals	kg	1113.5	840.0	1953.5	1157.0	977.0	2134.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1953.5
Weight of 1 P572E ATD & 1 P572O ATD	kg	141
Rated Cargo/Luggage Weight (RCLW)	kg	45
Calculated Test Vehicle Target Weight (TVTW)	kg	2139.5

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	798	795	803	812	1331
As Tested	mm	790	789	792	797	1417
Post Test	mm	838	847	799	786	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	3096
Total Vehicle Length at Left Side	mm	4947
Total Vehicle Length at Centerline	mm	5096
Total Vehicle Length at Right Side	mm	4947
Weight of Ballast in Cargo Area	kg	0
Weight of Vehicle Components Removed	kg	33
Amount of Stoddard Solvent in Fuel Tank	L	66.6

List of components removed to meet test weight: LR, RR door trim panel, LR, RR speakers, 3rd row headrests, LR, RR tail light, rear bumper, rear fascia, rear wiper motor / arm, rear spoiler.

List of components removed for instrumentation, data box, and equipment installation: Cargo area carpet and trim, LR/RR floor mat.

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

Test Vehicle: 2017 Chrysler Pacifica LX Minivan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20170300
 Test Date: 10/6/2016

TARGET VEHICLE STRUCTURAL MEASUREMENT

	Elements	Pre-Test (mm)
1	Total Length	5096
2	Total Width	2030
3	Bumper Top Height	520
4	Bumper Bottom Height	405
5	Longitudinal Member Top Height	563
6	Distance between Longitudinal Members	1003
7	Longitudinal Member Width	132
8	Engine Top Height	938
9	Engine Bottom Height	180
10	Engine and Gearbox Width	850
11	Front Bumper-Engine Distance	376
12	Front Shock Absorber Fixing Height	963
13	Bonnet Leading Edge Height	891
14	Front Shock Absorber Fixing Width	1210
15	Front Bumper – Front Axle Distance	950
16	Front Axle – A-Pillar Distance	520
17	A-Pillar – B-Pillar Distance	1046
18	B-Pillar – Rear Axle Distance	1523
19	B-Pillar – C-Pillar Distance	1056
20	Roof Sill Bottom Height	1487
21	Roof Sill Top Height	1695
22	Floor Sill Bottom Height	195
23	Floor Sill Top Height	382

DATA SHEET NO. 2

SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

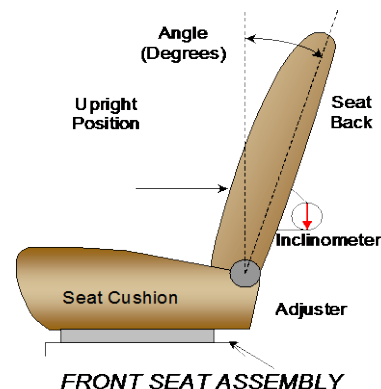
Test Vehicle: 2017 Chrysler Pacifica LX Minivan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20170300
 Test Date: 10/6/2016

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	0.1° on headrest post
Passenger Seat Back Angle	0.8° on headrest post



SEAT FORE/AFT POSITIONS

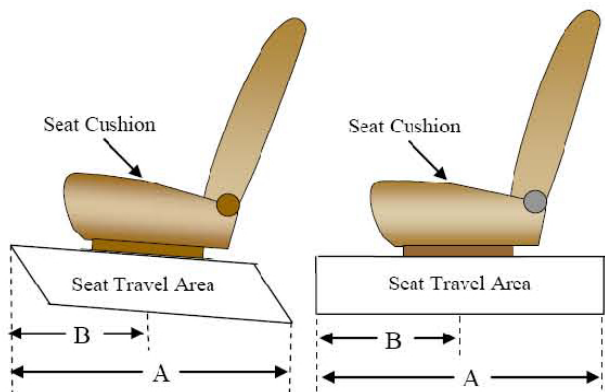
The driver and passenger seat fore/aft positions are adjusted following Appendix F, "Driver & Passenger Dummy Seating & Positioning Procedures" in the NCAP Test Procedure dated October 2015.

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	278 mm	139 mm
Passenger Seat	220 mm / 33 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	5 (1 st as 1)	0 (1 st as 0)
Passenger Seat	5 (1 st as 1)	0 (1 st as 0)



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

Test Vehicle: 2017 Chrysler Pacifica LX Minivan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20170300
 Test Date: 10/6/2016

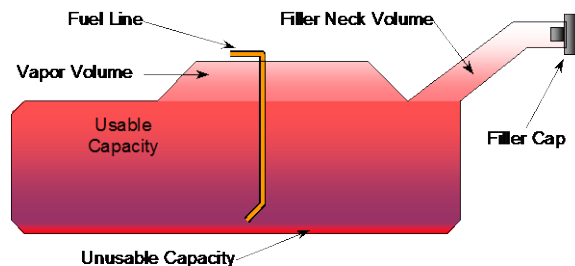
FUEL TANK CAPACITY DATA

	Liters
Usable Capacity of "Standard Tank"	71.9
Usable Capacity of "Optional Tank"	
92-94% of Usable Capacity	66.1 to 67.6
Actual Amount of Solvent used	66.6
1/3 of Usable Capacity	24.0

FUEL PUMP

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

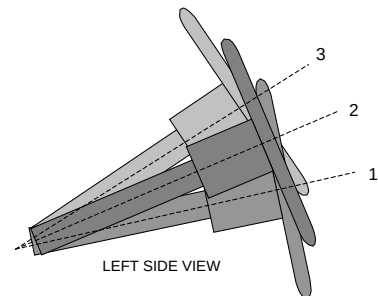
The test vehicle is equipped with an electronic fuel pump. The fuel pump starts pumping fuel when the key is in "ON" position. The filler neck is located on the driver's side.



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

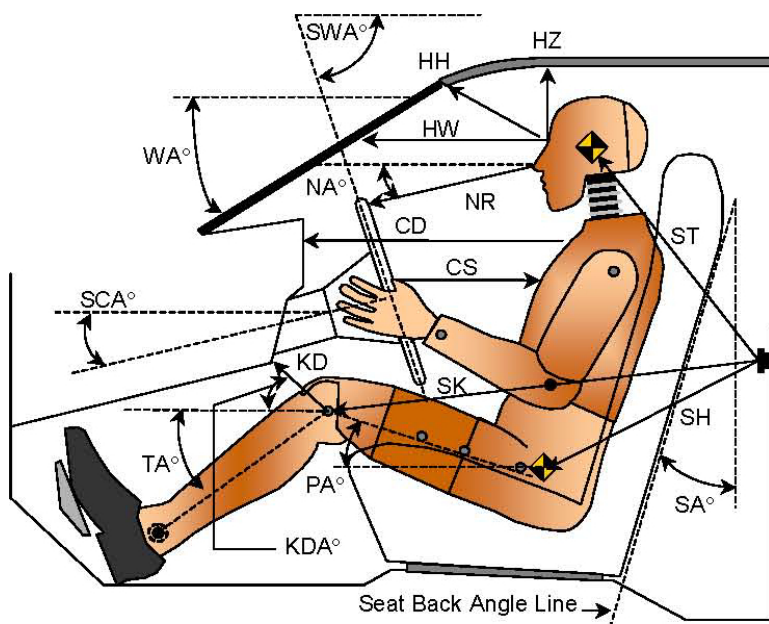
STEERING COLUMN POSITION

	Degrees	Fore/Aft Position (mm)
Lowermost Position 1	70.0	197
Geometric Center Position 2	67.6	227
Uppermost Position 3	65.1	257
Telescoping Steering Wheel Travel		60
Test Position	67.6	227

DATA SHEET NO. 3 DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2017 Chrysler Pacifica LX Minivan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20170300
Test Date: 10/6/2016



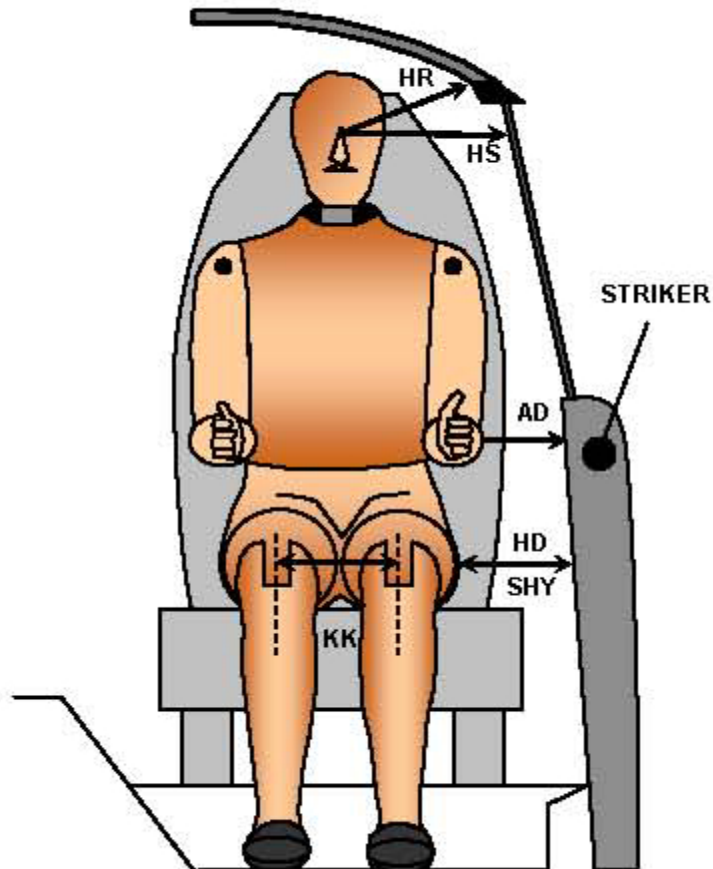
LEFT SIDE VIEW

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		24.8		
SWA°	Steering Wheel Angle		67.6		
SCA°	Steering Column Angle		22.4		
SA°	Seat Back Angle		0.1		0.8
HZ	Head to Roof (Z)	230	90	227	90
HH	Head to Header	357	32.7	337	29.3
HW	Head to Windshield	667	0	674	0
NR	Nose to Rim	382	6.8		
CD	Chest to Dash	541		380	
CS	Chest to Steering Hub	310	3.6		
RA	Rim to Abdomen	190	0		
KDL	Left Knee to Dash	170	32.2	149	38.1
KDR	Right Knee to Dash	167	30.8	148	36.1
PA°	Pelvic Angle		24.6		20.2
TA°	Tibia Angle		54.7		58.4
SK	Striker to Knee	617	92.5	669	93.0
ST	Striker to Head	577	18.4	523	117.1
SH	Striker to H-Point	269	113.5	373	103.4

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2017 Chrysler Pacifica LX Minivan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20170300
 Test Date: 10/6/2016



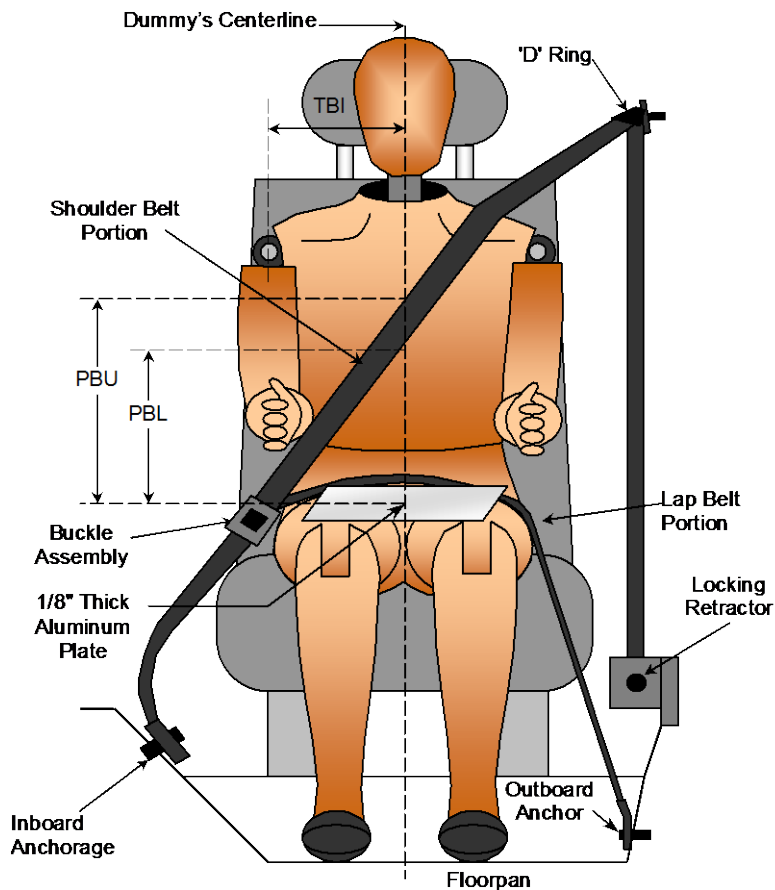
FRONT VIEW OF DUMMY

Code	Measurement Description	Driver	Passenger
		Length (mm)	
AD	Arm to Door	153	111
HD	H-Point to Door	161	193
HR	Head to Side Header	263	286
HS	Head to Side Window	368	375
KK	Knee to Knee	369	228
SHY	Striker to H-Point (Y Direction)	329	350
AA	Ankle to Ankle	381	175

DATA SHEET NO. 5 SEAT BELT POSITIONING DATA

Test Vehicle: 2017 Chrysler Pacifica LX Minivan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20170300
Test Date: 10/6/2016



FRONT VIEW OF DUMMY

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU - Top surface of reference to belt upper edge	mm	360	325
PBL - Top surface of reference to belt lower edge	mm	275	250

BELT LENGTH DATA

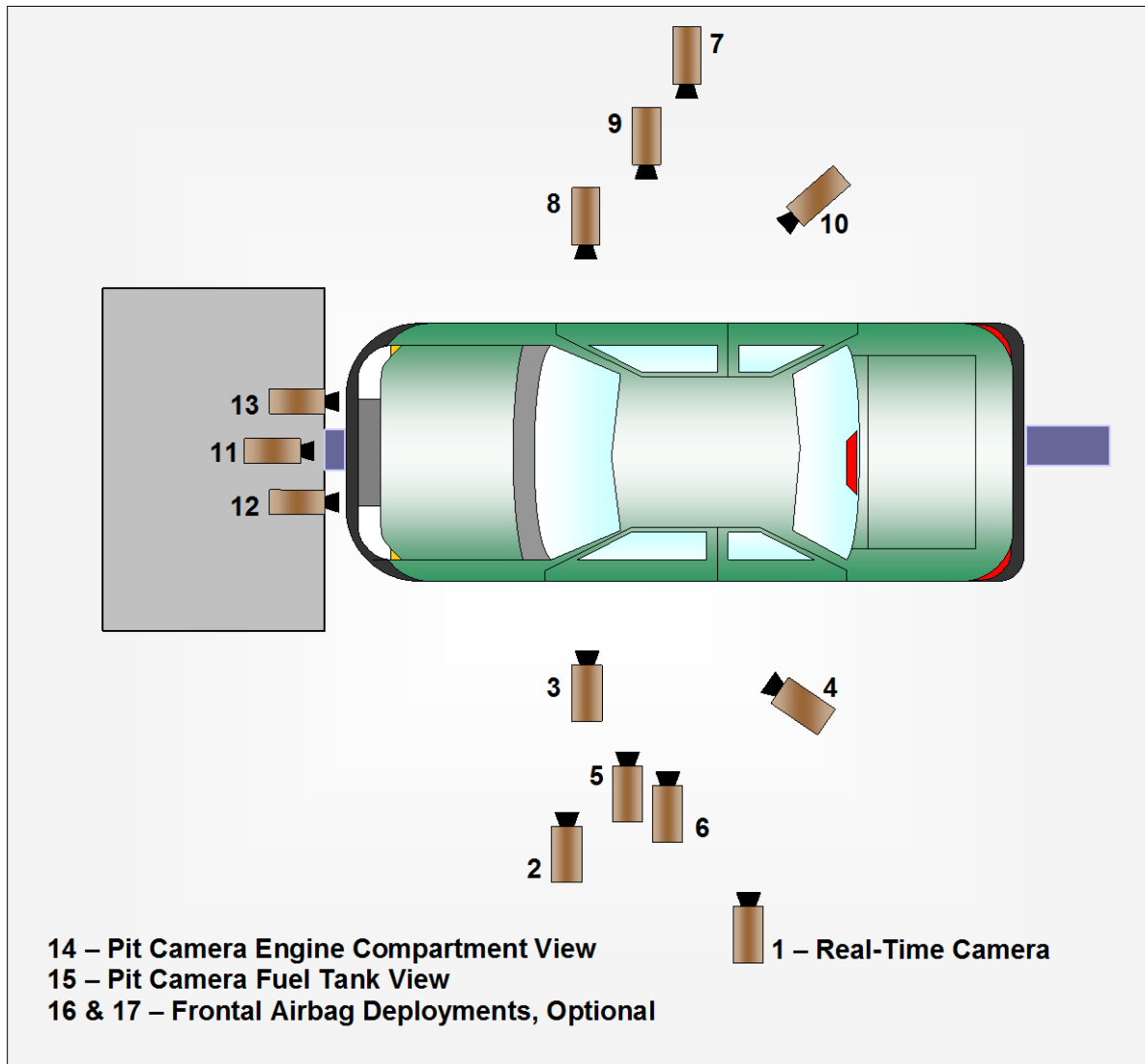
Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as measured on ATD	mm	815	860
Lap Belt Length as measured on ATD	mm	640	710
Remainder of belt on reel	mm	995	880
Total Belt Length for Continuous Webbing Systems	mm	3165	3165

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

Test Vehicle: 2017 Chrysler Pacifica LX Minivan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20170300
Test Date: 10/6/2016

CAMERA POSITIONS FOR FRONTAL IMPACTS



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

Test Vehicle: 2017 Chrysler Pacifica LX Minivan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20170300
 Test Date: 10/6/2016

CAMERA LOCATIONS

No.	Camera View	Coordinates (mm)			Lens (mm)	Speed (fps)
		X*	Y*	Z*		
1	Real-Time Left Overall					30
2	Driver Close-Up	-1620	-6300	-2020	35	1000
3	Left Front Half	-1040	-5040	-1140	24	1000
4	Left Angle	-5860	-4800	-2100	50	1000
5	Steering Column - Top					
6	Steering Column - Bottom					
7	Right Overall	-2350	7300	-1250	20	1000
8	Passenger Close-Up	-1590	6780	-1980	35	1000
9	Right Front Half	-1160	5190	-1240	24	1000
10	Right Angle	-5740	4750	-2050	50	1000
11	Windshield	420	0	-2810	20	1000
12	Driver Windshield	-30	-450	-2030	8.5	1000
13	Passenger Windshield	-30	450	-2030	8.5	1000
14	Pit Front	-1110	0	3150	24	1000
15	Pit Rear	-3190	0	3150	24	1000
16	Onboard Driver Side				12	1000
17	Onboard Passenger Side				12	1000
18	Real-Time Pan View					30

***COORDINATES:**

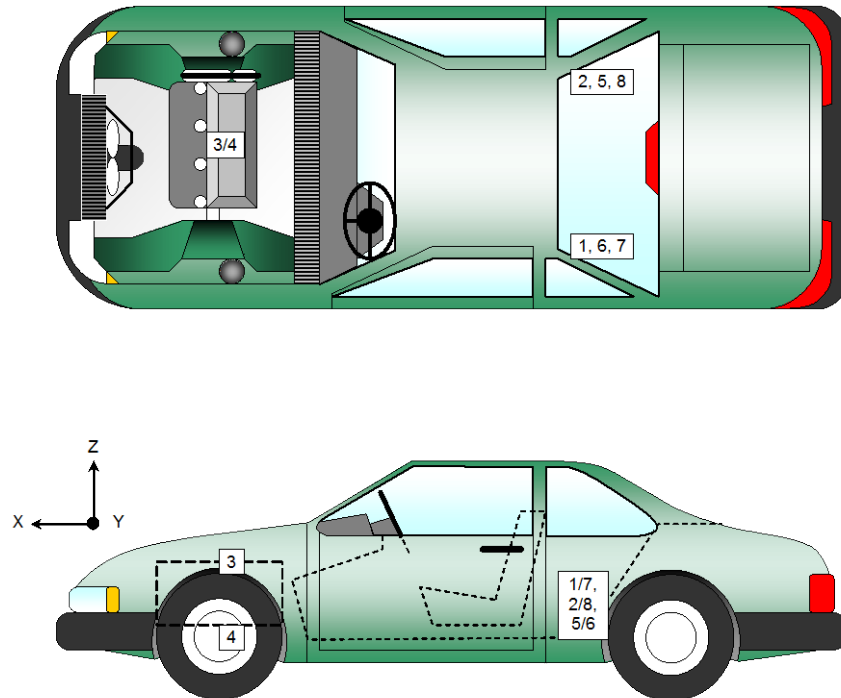
+X = forward of impact plane
 +Y = right of monorail centerline
 +Z = below ground level

Cameras 5 & 6 were not used for this test.

DATA SHEET NO. 7 VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2017 Chrysler Pacifica LX Minivan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20170300
Test Date: 10/6/2016



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear Crossmember Accelerometer – X Direction	2229	-434	-224
2	Right Rear Crossmember Accelerometer – X Direction	2229	434	-224
3	Engine Top X	4435	0	-934
4	Engine Bottom X	4324	50	-278
5	Left Rear Crossmember Accelerometer – Z Direction	2229	-434	-224
6	Right Rear Crossmember Accelerometer – Z Direction	2229	434	-224
7	Left Rear Crossmember Accelerometer Redundant – X Direction	2269	-434	-224
8	Right Rear Crossmember Accelerometer Redundant – X Direction	2267	434	-224

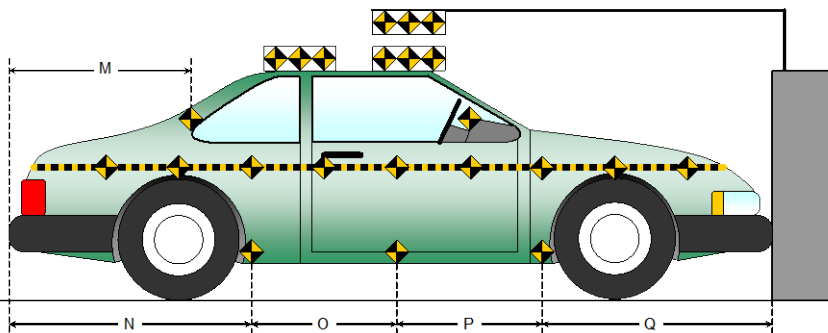
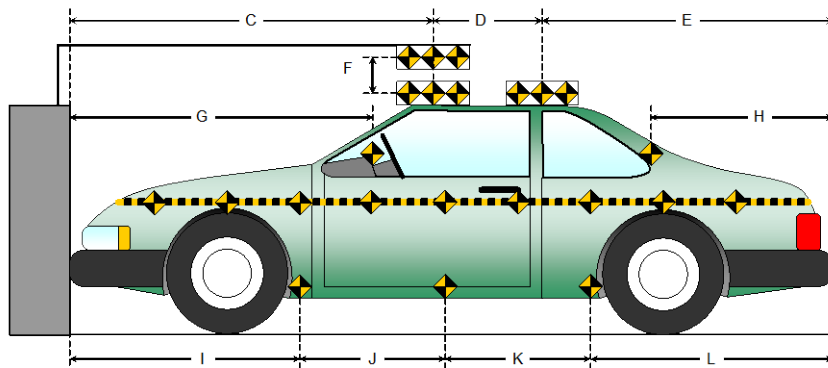
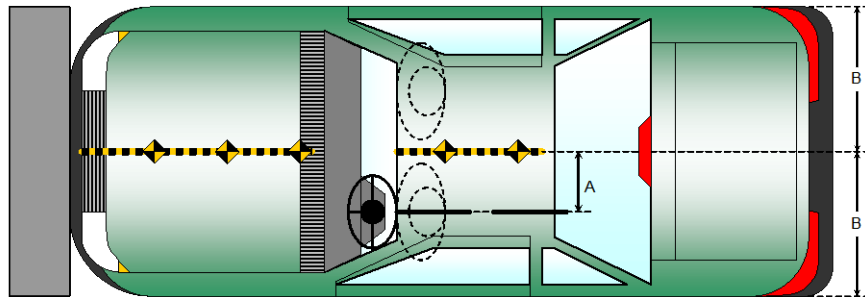
Reference Points: X - Rear Surface of Vehicle (+ forward)
Y - Vehicle Centerline (+ to right)
Z - Ground Plane (+ down)

DATA SHEET NO. 8
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2017 Chrysler Pacifica LX Minivan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20170300
 Test Date: 10/6/2016

Item	Value (mm)
A	425
B	1015
C	2265
D	611
E	2220
F	130
G	
H	1341
I	1422
J	1079
K	1079
L	1516
M	1361
N	1516
O	1079
P	1079
Q	1422



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

Test Vehicle: 2017 Chrysler Pacifica LX Minivan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20170300
 Test Date: 10/6/2016

Advanced Research Load Cell Barrier

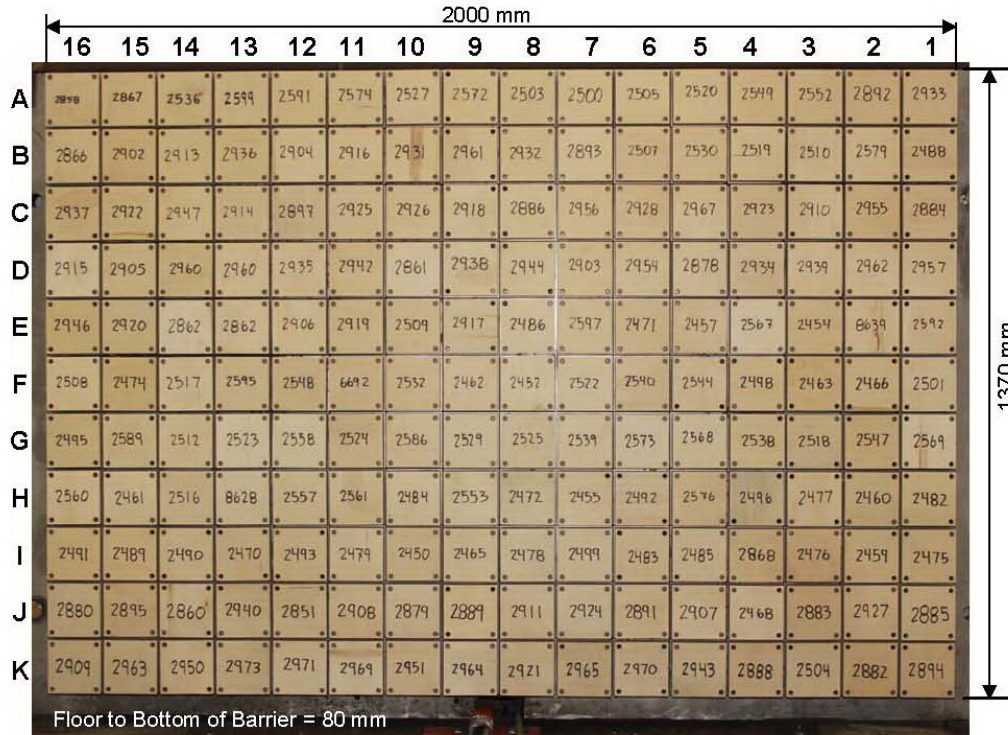


Photo for Reference Only

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: 2017 Chrysler Pacifica LX Minivan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20170300
Test Date: 10/6/2016

INSTRUMENTATION

Driver Dummy Data Channels	49
Passenger Dummy Data Channels	49
Vehicle Structure Accelerometers	8
Barrier Channels	528
Total	634

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: 2017 Chrysler Pacifica LX Minivan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20170300
Test Date: 10/6/2016

TEST DUMMY INFORMATION AND CONTACT LOCATIONS

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

DOOR OPENING AND SEAT TRACK INFORMATION

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

POST TEST STRUCTURAL OBSERVATIONS

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

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	685
Center	mm	665
Right Side	mm	540
Average	mm	630

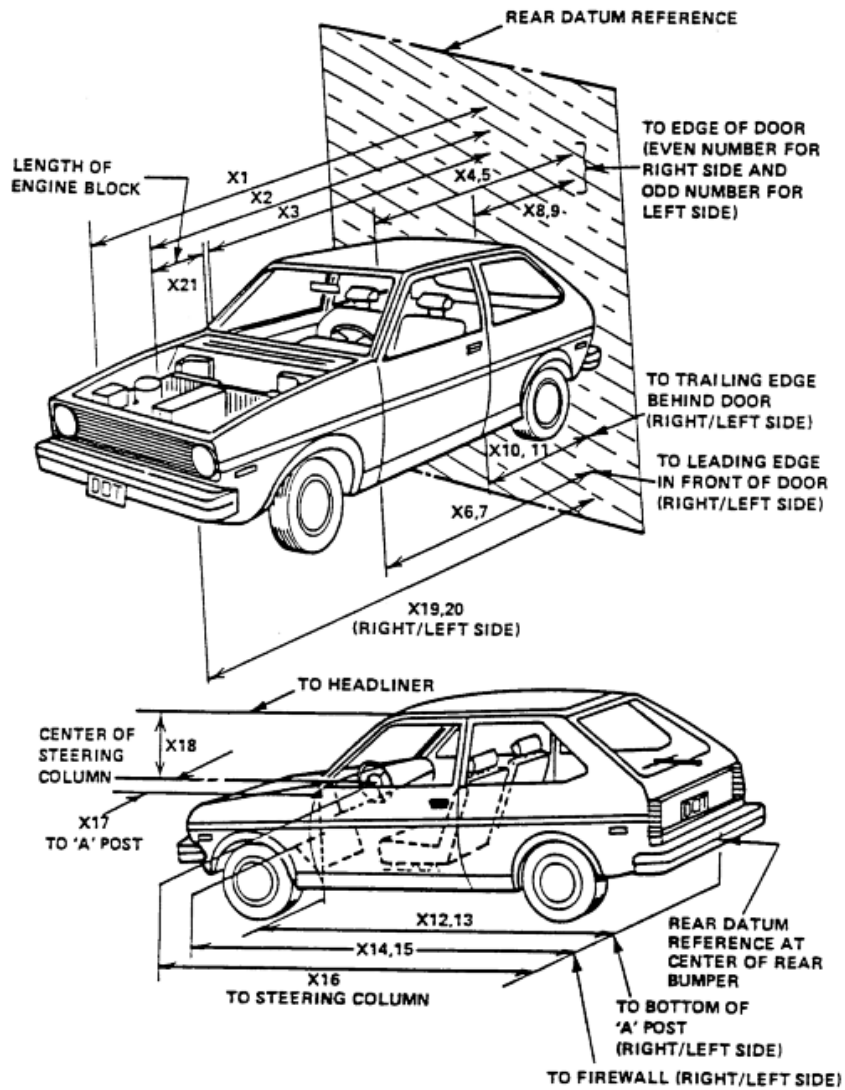
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

DATA SHEET NO. 12 VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2017 Chrysler Pacifica LX Minivan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20170300
Test Date: 10/6/2016



DATA SHEET NO. 12 (CONTINUED)
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2017 Chrysler Pacifica LX Minivan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20170300
 Test Date: 10/6/2016

RSOV (Rear Surface of Vehicle)

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	mm	5096	4651	445
2	RSOV to Front of Engine	mm	4634	4397	237
3	RSOV to Firewall	mm	4154	4142	12
4	RSOV to Upper Leading Edge of Right Door	mm	3619	3612	7
5	RSOV to Upper Leading Edge of Left Door	mm	3619	3615	4
6	RSOV to Lower Leading Edge of Right Door	mm	3604	3604	0
7	RSOV to Lower Leading Edge of Left Door	mm	3604	3604	0
8	RSOV to Upper Trailing Edge of Right Door	mm	2557	2553	4
9	RSOV to Upper Trailing Edge of Left Door	mm	2557	2551	6
10	RSOV to Lower Trailing Edge of Right Door	mm	2573	2564	9
11	RSOV to Lower Trailing Edge of Left Door	mm	2573	2569	4
12	RSOV to Bottom of "A" Post of Right Side	mm	3612	3611	1
13	RSOV to Bottom of "A" Post of Left Side	mm	3612	3599	13
14	RSOV to Firewall, Right Side	mm	4155	4152	3
15	RSOV to Firewall, Left Side	mm	4160	4160	0
16	RSOV to Steering Column	mm	3175	3278	-103
17	Center of Steering Column to "A" Post	mm	424	420	4
18	Center of Steering Column to Headliner	mm	423	464	-41
19	RSOV to Right Side of Front Bumper	mm	4947	4728	219
20	RSOV to Left Side of Front Bumper	mm	4947	4796	151
21	Length of Engine Block	mm	617	617	0
RD	RSOV to Right Side of Dash Panel	mm	3419	3428	-9
CD	RSOV to Center of Dash Panel	mm	3407	3432	-25
LD	RSOV to Left Side of Dash Panel	mm	3419	3430	-11

DATA SHEET NO. 13
ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2017 Chrysler Pacifica LX Minivan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20170300
Test Date: 10/6/2016

VEHICLE INFORMATION

VIN: 2C4RC1CG3HR529408 Wheelbase (mm): 3096
Vehicle Size Category: MPV Test Weight (kg): 2134.0

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): 56.16

Velocity Change (km/h): 65.6

Time of Separation (msec): 99

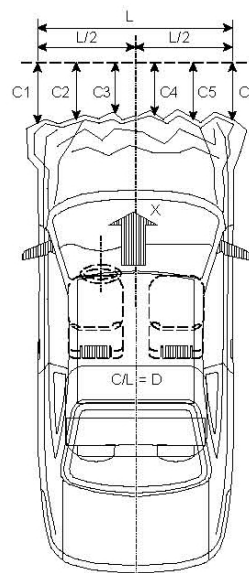
CRUSH PROFILE

Collision Deformation Classification: Frontal

Midpoint of Damage: Centerline

Damage Region Length (mm): 1430

Impact Mode: Frontal



No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	4947	4796	151
C2	Crush zone 2 at left side	mm	5042	4709	333
C3	Crush zone 3 at left side	mm	5067	4641	426
C4	Crush zone 4 at right side	mm	5067	4627	440
C5	Crush zone 5 at right side	mm	5042	4710	332
C6	Crush zone 6 at right side	mm	4947	4728	219
L	C1 TO C6	mm	1430	1341	89

DATA SHEET NO. 14
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2017 Chrysler Pacifica LX Minivan
 Test Program: NCAP Frontal Barrier Impact Test

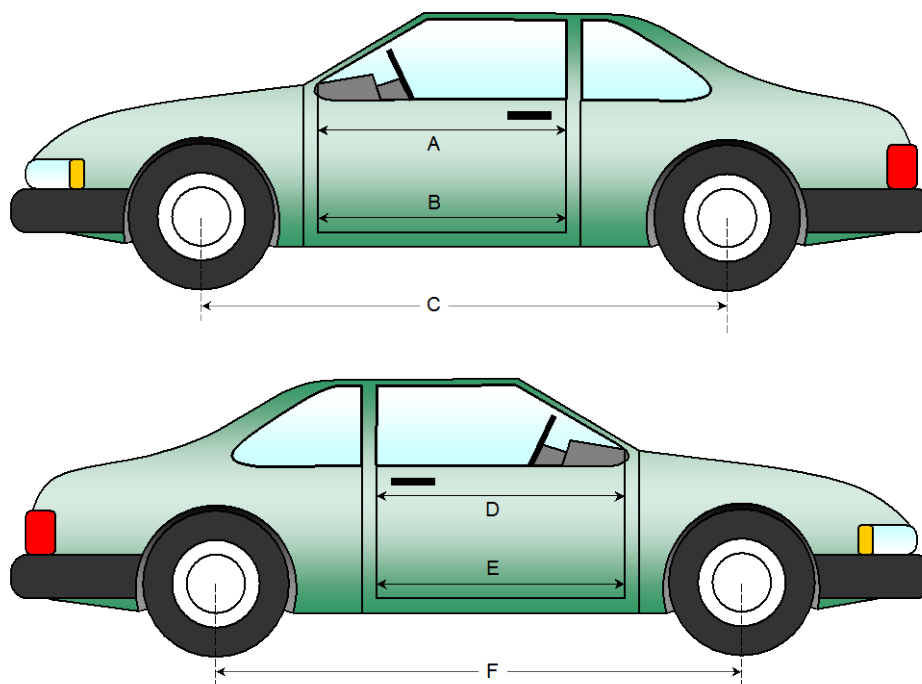
NHTSA No.: O20170300
 Test Date: 10/6/2016

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	943	943	0
B	Left Side Lower	mm	888	888	0
D	Right Side Upper	mm	943	943	0
E	Right Side Lower	mm	888	888	0

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	3096	3015	81
F	Right Side Wheelbase	mm	3096	3013	83



DATA SHEET NO. 14 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

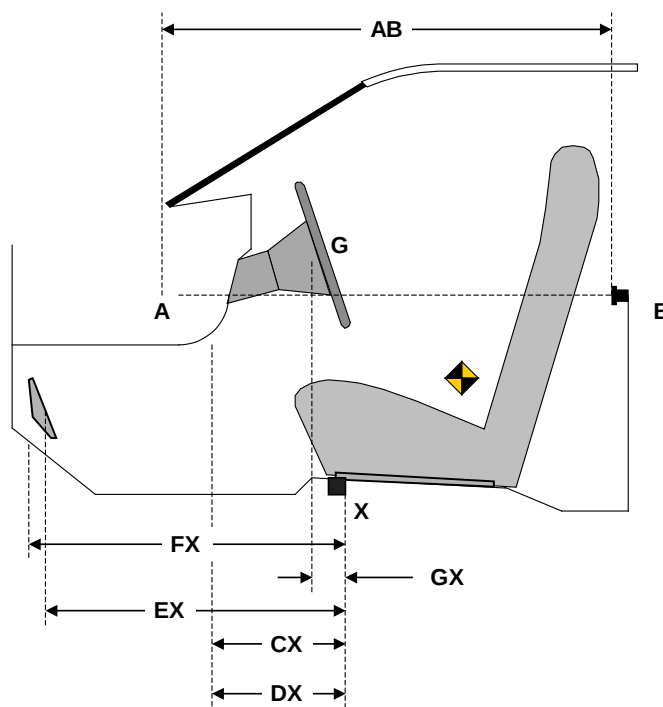
Test Vehicle: 2017 Chrysler Pacifica LX Minivan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20170300
 Test Date: 10/6/2016

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	769	769	0
CX	Left Knee Bolster to X	mm	377	380	-3
DX	Right Knee Bolster to X	mm	358	361	-3
EX	Brake Pedal to X	mm	586	536	50
FX	Foot Rest to X	mm	573	563	10
GX	Center of Steering Column Wheel Hub to X	mm	108	211	-103

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: 2017 Chrysler Pacifica LX Minivan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20170300
 Test Date: 10/6/2016

Windshield Mounting Details:

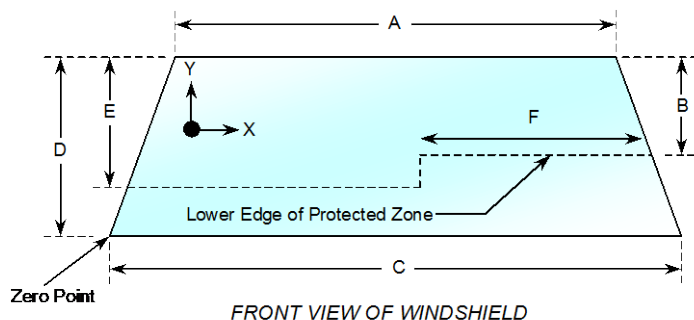
Windshield glass is secured to the vehicle frame with a rubber trim and glue.

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: 21.7° C.

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% of Retention
Left Side	2429	2429	100.0
Right Side	2429	2429	100.0
Total	4858	4858	100.0



Item	Units	Value
A	mm	1383
B	mm	499
C	mm	1424
D	mm	1025
E	mm	609
F	mm	660

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: 2017 Chrysler Pacifica LX Minivan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20170300
Test Date: 10/6/2016

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21.7°C

Test Time: 10:41 a.m.

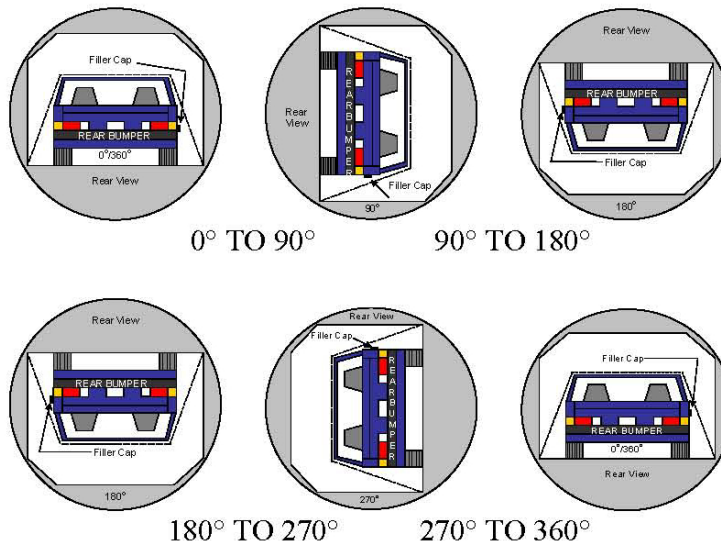
- A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable = 1 oz.)
- B. For the 5 minute period after motion ceases: 0 oz.
(Maximum allowable = 5 oz.)
- C. For the following 25 minutes: 0 oz.
(Maximum allowable = 1 oz./minute)
- D. Spillage: None

DATA SHEET NO. 16 FMVSS 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2017 Chrysler Pacifica LX Minivan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20170300
Test Date: 10/6/2016

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°	111	300	411
90° to 180°	110	300	410
180° to 270°	108	300	408
270° to 360°	111	300	411

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

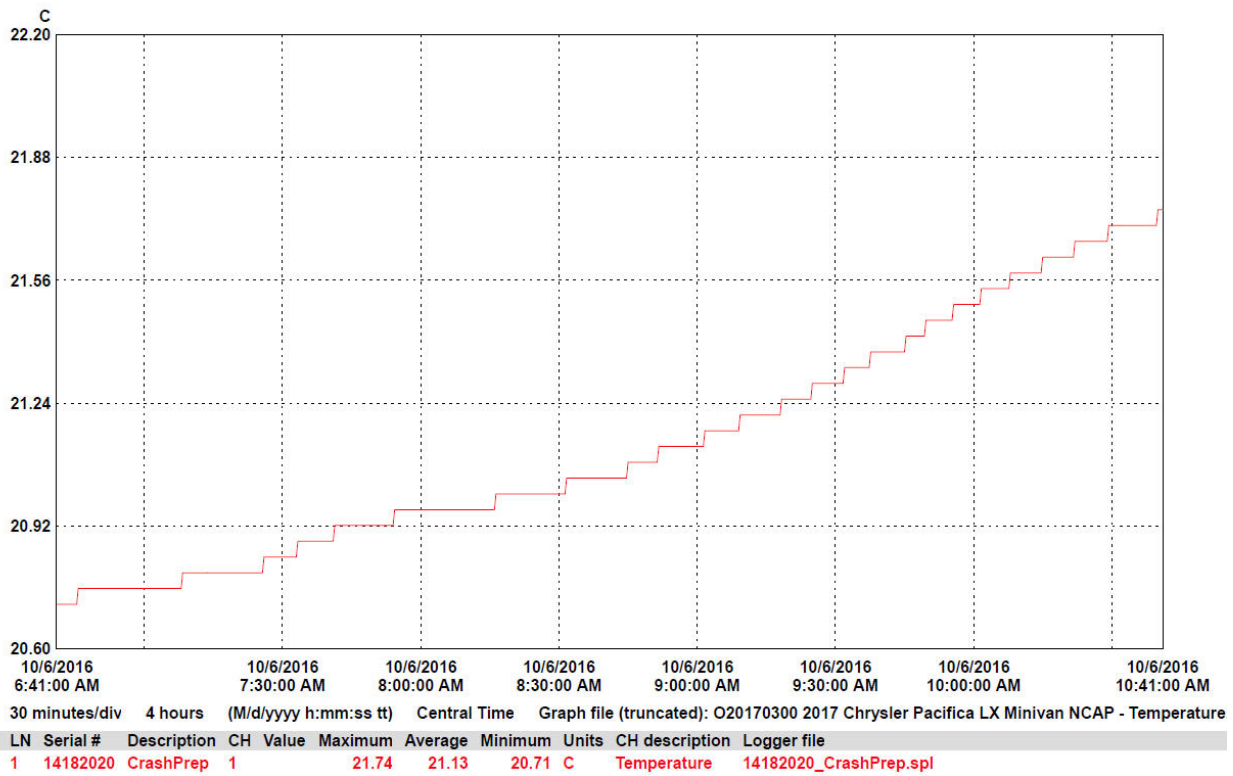
SOLVENT SPILLAGE LOCATION TABLE

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: 2017 Chrysler Pacifica LX Minivan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20170300
 Test Date: 10/6/2016



**APPENDIX A
PHOTOGRAPHS**

TABLE OF PHOTOGRAPHS

		<u>Page No.</u>
Photo No. 001	Load Cell Location	A-1
Photo No. 002	Pre-Test Load Cell Wall	A-1
Photo No. 003	Post-Test Load Cell Wall	A-2
Photo No. 004	Manufacturer's Label	A-2
Photo No. 005	Tire Placard	A-3
Photo No. 006	2017 Chrysler Pacifica LX Frontal As Delivered	A-3
Photo No. 007	Left Rear 3-4 View, As Received	A-4
Photo No. 008	Pre-Test Front View of Test Vehicle	A-4
Photo No. 009	Post-Test Front View of Test Vehicle	A-5
Photo No. 010	Pre-Test Left View of Test Vehicle	A-5
Photo No. 011	Post-Test Left View of Test Vehicle	A-6
Photo No. 012	Pre-Test Right View of Test Vehicle	A-6
Photo No. 013	Post-Test Right View of Test Vehicle	A-7
Photo No. 014	Pre-Test Right Front 3-4 View	A-7
Photo No. 015	Post-Test Right Front 3-4 View	A-8
Photo No. 016	Pre-Test Left Rear 3-4 View	A-8
Photo No. 017	Post-Test Left Rear 3-4 View	A-9
Photo No. 018	Pre-Test Windshield View	A-9
Photo No. 019	Post-Test Windshield View	A-10
Photo No. 020	Pre-Test Engine Compartment View	A-10
Photo No. 021	Post-Test Engine Compartment View	A-11
Photo No. 022	Pre-Test Fuel Filler Cap View	A-11
Photo No. 023	Post-Test Fuel Filler Cap View	A-12
Photo No. 024	Pre-Test Front Underbody View	A-12
Photo No. 025	Post-Test Front Underbody View	A-13
Photo No. 026	Pre-Test Rear Underbody View	A-13
Photo No. 027	Post-Test Rear Underbody View	A-14
Photo No. 028	Pre-Test Dummy Cable Routing	A-14
Photo No. 029	Post-Test Dummy Cable Routing	A-15
Photo No. 030	Pre-Test Driver Dummy Front View	A-15

		<u>Page No.</u>
Photo No. 031	Post-Test Driver Dummy Front View	A-16
Photo No. 032	Pre-Test Driver Dummy Window View	A-16
Photo No. 033	Post-Test Driver Dummy Window View	A-17
Photo No. 034	Pre-Test Driver Dummy and Vehicle Interior (Door Open)	A-17
Photo No. 035	Post-Test Driver Dummy and Vehicle Interior (Door Open)	A-18
Photo No. 036	Pre-Test Driver's Seat Fore-Aft Markings	A-18
Photo No. 037	Post-Test Driver's Seat Fore-Aft Markings	A-19
Photo No. 038	Pre-Test View of Belt Anchorage for Driver Dummy	A-19
Photo No. 039	Post-Test View of Belt Anchorage for Driver Dummy	A-20
Photo No. 040	Pre-Test Driver Dummy Feet	A-20
Photo No. 041	Post-Test Driver Dummy Feet	A-21
Photo No. 042	Pre-Test Driver's Side Knee Bolster (without dummy)	A-21
Photo No. 043	Post-Test Driver's Side Knee Bolster (without dummy)	A-22
Photo No. 044	Pre-Test Driver's Side Floorpan	A-22
Photo No. 045	Post-Test Driver's Side Floorpan	A-23
Photo No. 046	Post-Test Driver Dummy Face	A-23
Photo No. 047	Post-Test Driver Dummy Contact with Airbag	A-24
Photo No. 048	Post-Test Driver Dummy Contact with Headrest	A-24
Photo No. 049	Pre-Test View of the Steering Wheel	A-25
Photo No. 050	Post-Test View of the Steering Wheel	A-25
Photo No. 051	Pre-Test Passenger Dummy Front View	A-26
Photo No. 052	Post-Test Passenger Dummy Front View	A-26
Photo No. 053	Pre-Test Passenger Dummy Window View	A-27
Photo No. 054	Post-Test Passenger Dummy Window View	A-27
Photo No. 055	Pre-Test Passenger Dummy and Vehicle Interior (Door Open)	A-28
Photo No. 056	Post-Test Passenger Dummy and Vehicle Interior (Door Open)	A-28
Photo No. 057	Pre-Test Passenger's Seat Fore-Aft Markings	A-29
Photo No. 058	Post-Test Passenger's Seat Fore-Aft Markings	A-29
Photo No. 059	Pre-Test View of Belt Anchorage for Passenger Dummy	A-30
Photo No. 060	Post-Test View of Belt Anchorage for Passenger Dummy	A-30

		<u>Page No.</u>
Photo No. 061	Pre-Test Passenger Dummy Feet	A-31
Photo No. 062	Post-Test Passenger Dummy Feet	A-31
Photo No. 063	Pre-Test Passenger's Side Knee Bolster (without dummy)	A-32
Photo No. 064	Post-Test Passenger's Side Knee Bolster (without dummy)	A-32
Photo No. 065	Pre-Test Passenger's Side Floorpan	A-33
Photo No. 066	Post-Test Passenger's Side Floorpan	A-33
Photo No. 067	Post-Test Passenger Dummy Face	A-34
Photo No. 068	Post-Test Passenger Dummy Contact with Airbag	A-34
Photo No. 069	Post-Test Passenger Dummy Contact with Headrest	A-35
Photo No. 070	Ballast Installed in Vehicle	A-35
Photo No. 071	Post-Test Stoddard Solvent Spillage Location View	A-36
Photo No. 072	Post-Test Speed Trap Read-Out	A-36
Photo No. 073	Vehicle at 0 Degree on Static Rollover Device	A-37
Photo No. 074	Vehicle at 90 Degrees on Static Rollover Device	A-37
Photo No. 075	Vehicle at 180 Degrees on Static Rollover Device	A-38
Photo No. 076	Vehicle at 270 Degrees on Static Rollover Device	A-38
Photo No. 077	Vehicle at 360 Degrees on Static Rollover Device	A-39
Photo No. 078	2017 Chrysler Pacifica LX Frontal Impact Event	A-39
Photo No. 079	Monroney Label Photograph	A-40

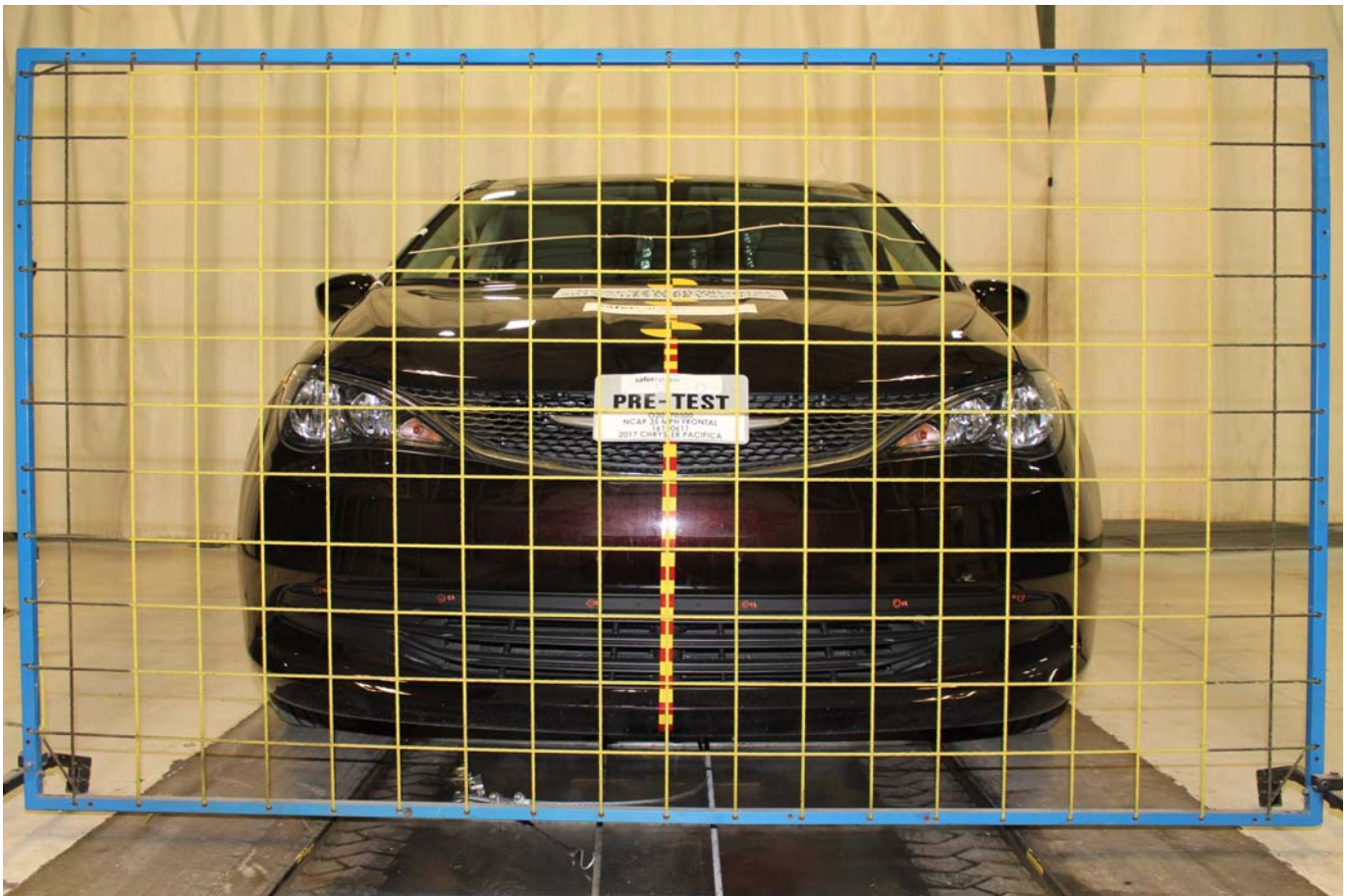


Photo No. 001 - Load Cell Location



Photo No. 002 - Pre-Test Load Cell Wall



Photo No. 003 - Post-Test Load Cell Wall

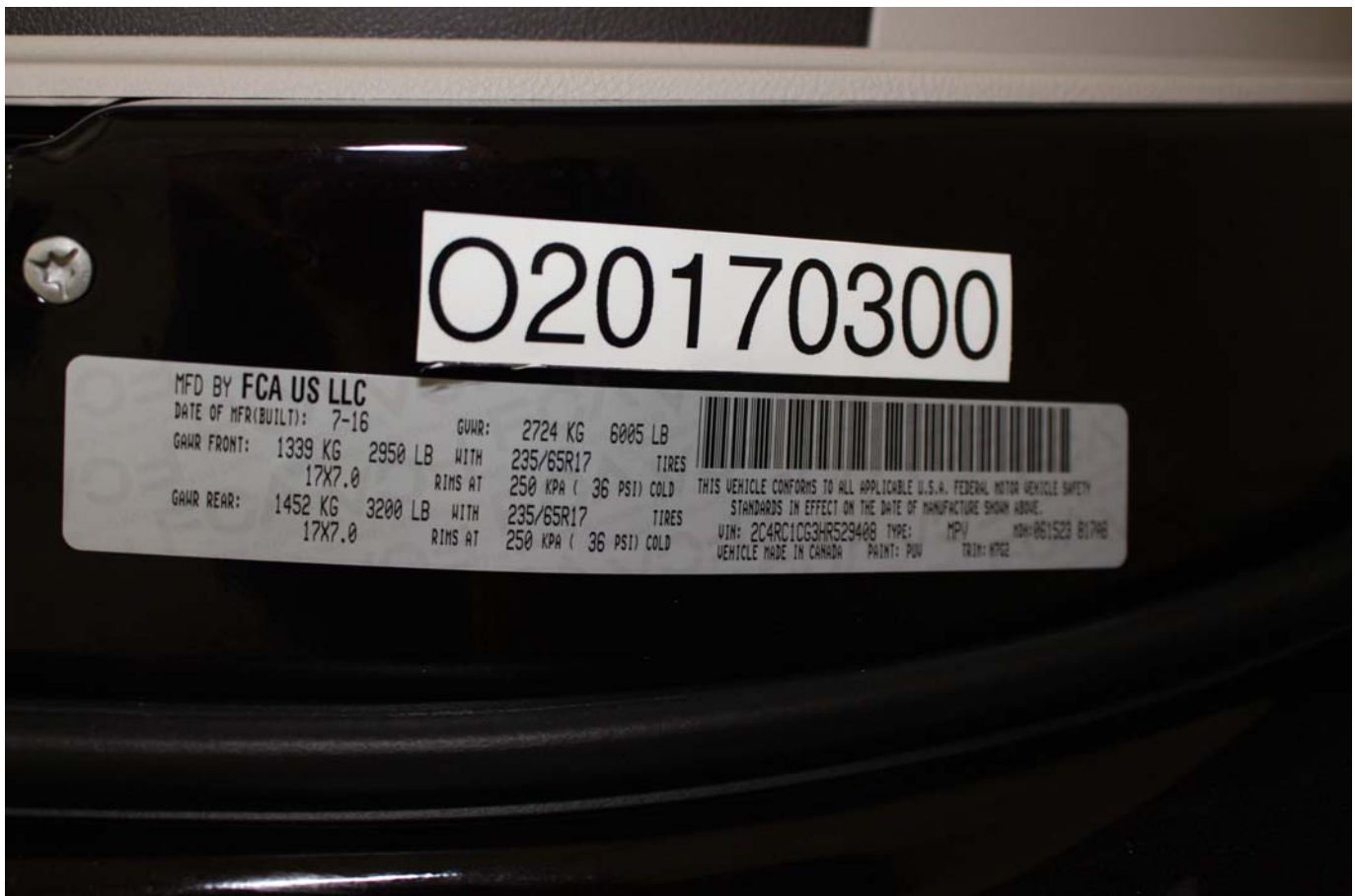


Photo No. 004 - Manufacturer's Label



Photo No. 005 - Tire Placard



Photo No. 006 - 2016 Chrysler Pacifica LX Frontal As Delivered



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

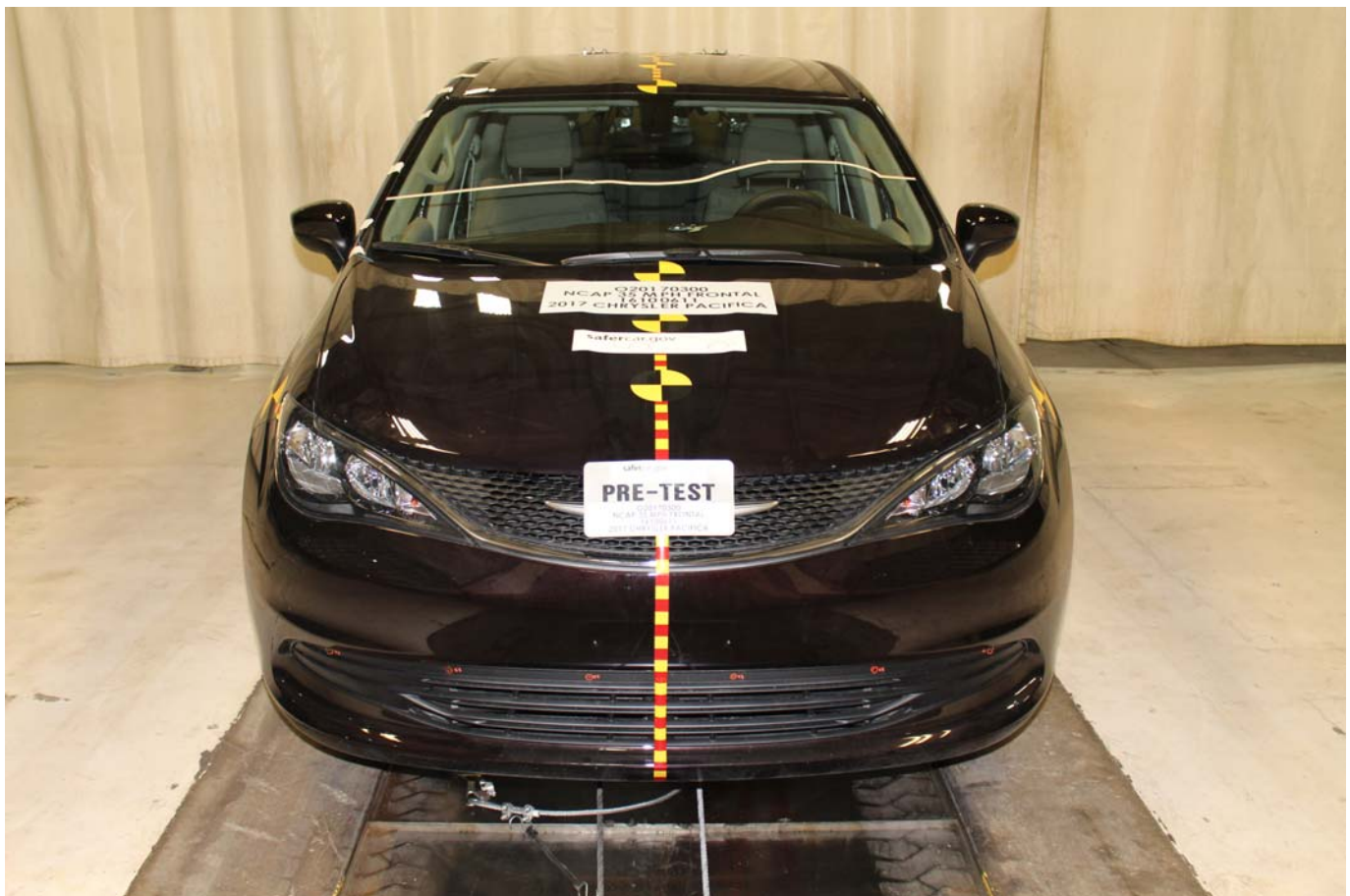


Photo No. 008 - Pre-Test Front View of Test Vehicle

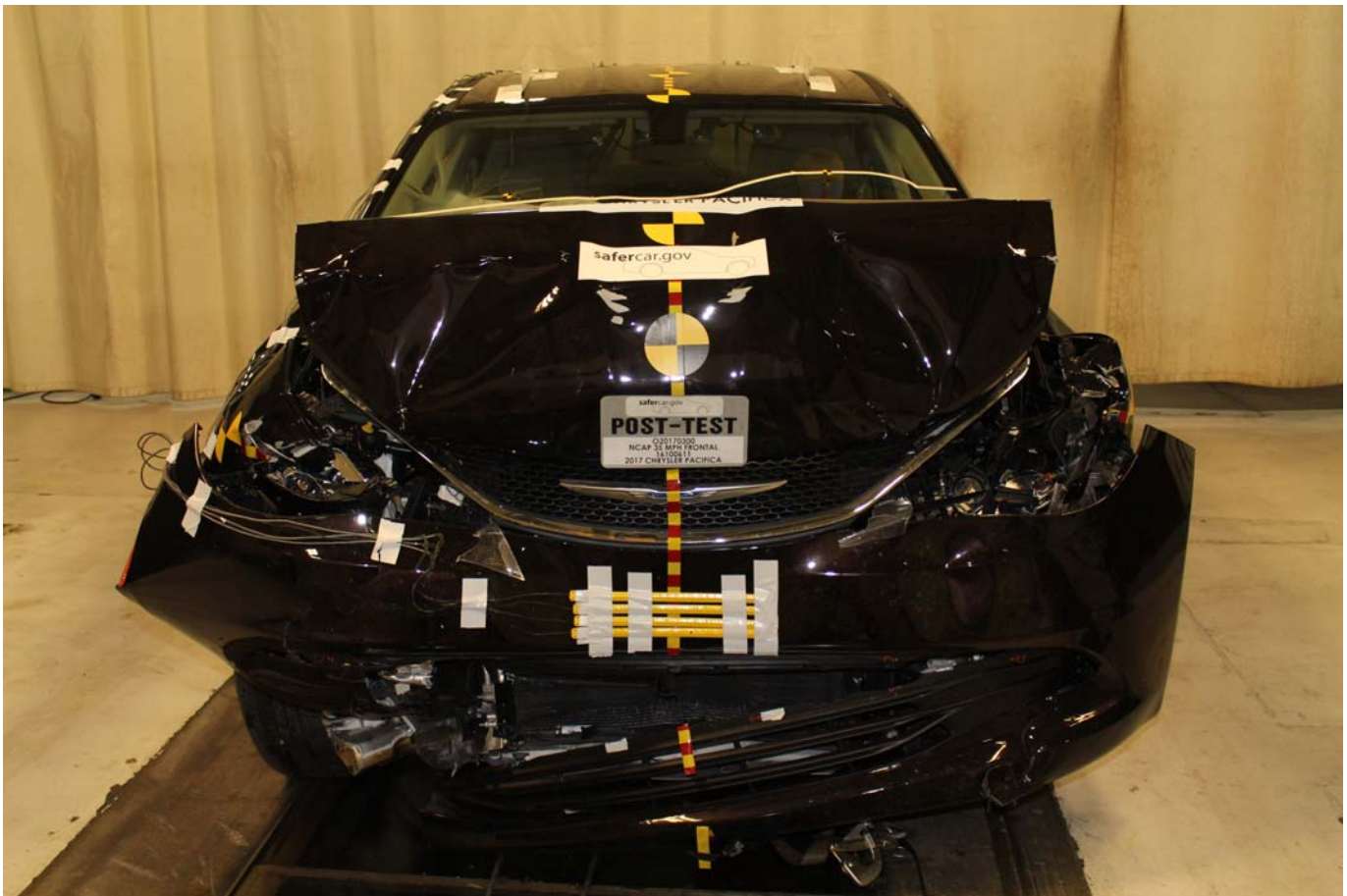


Photo No. 009 - Post-Test Front View of Test Vehicle



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

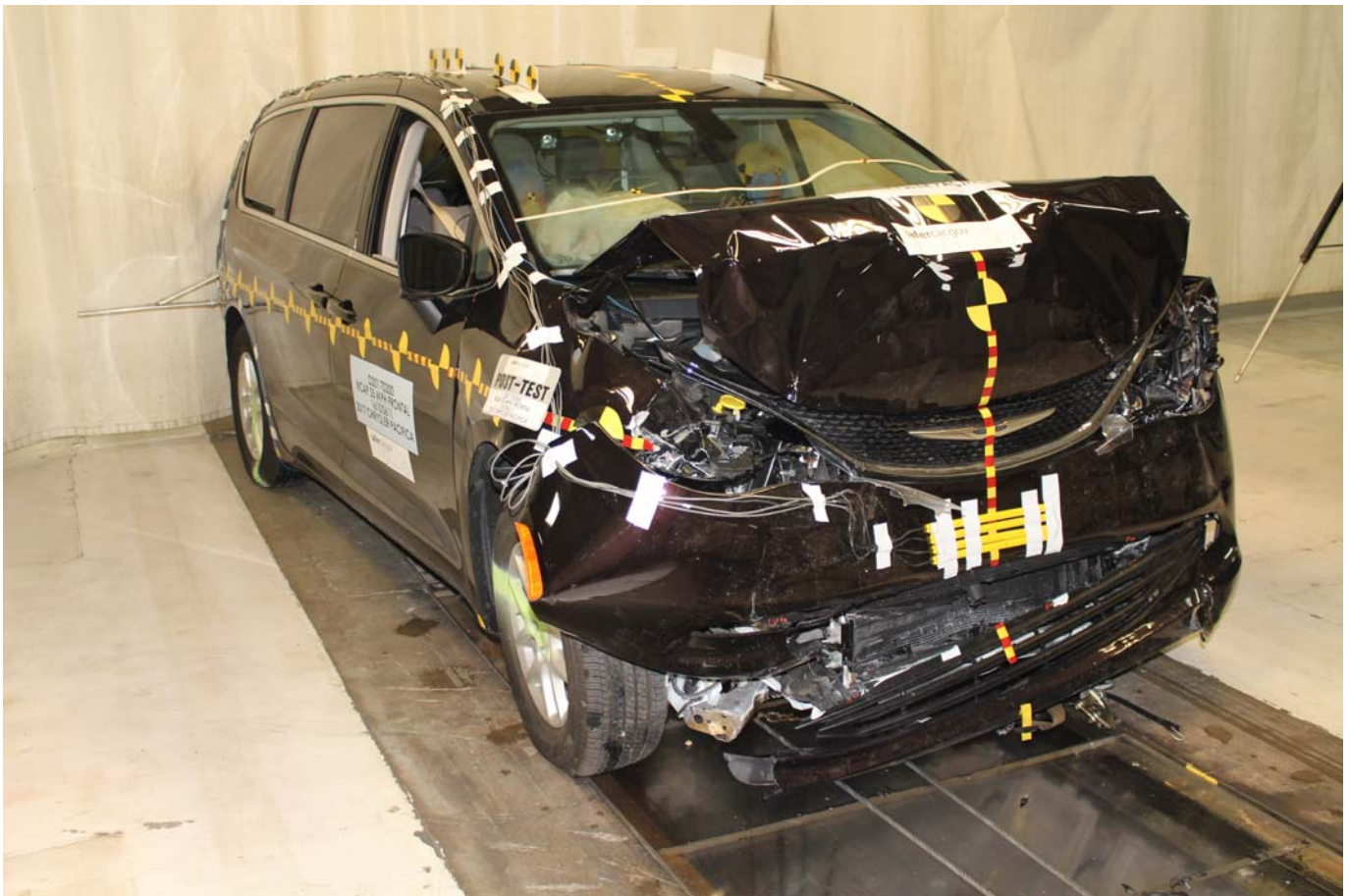


Photo No. 015 - Post-Test Right Front 3-4 View



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



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

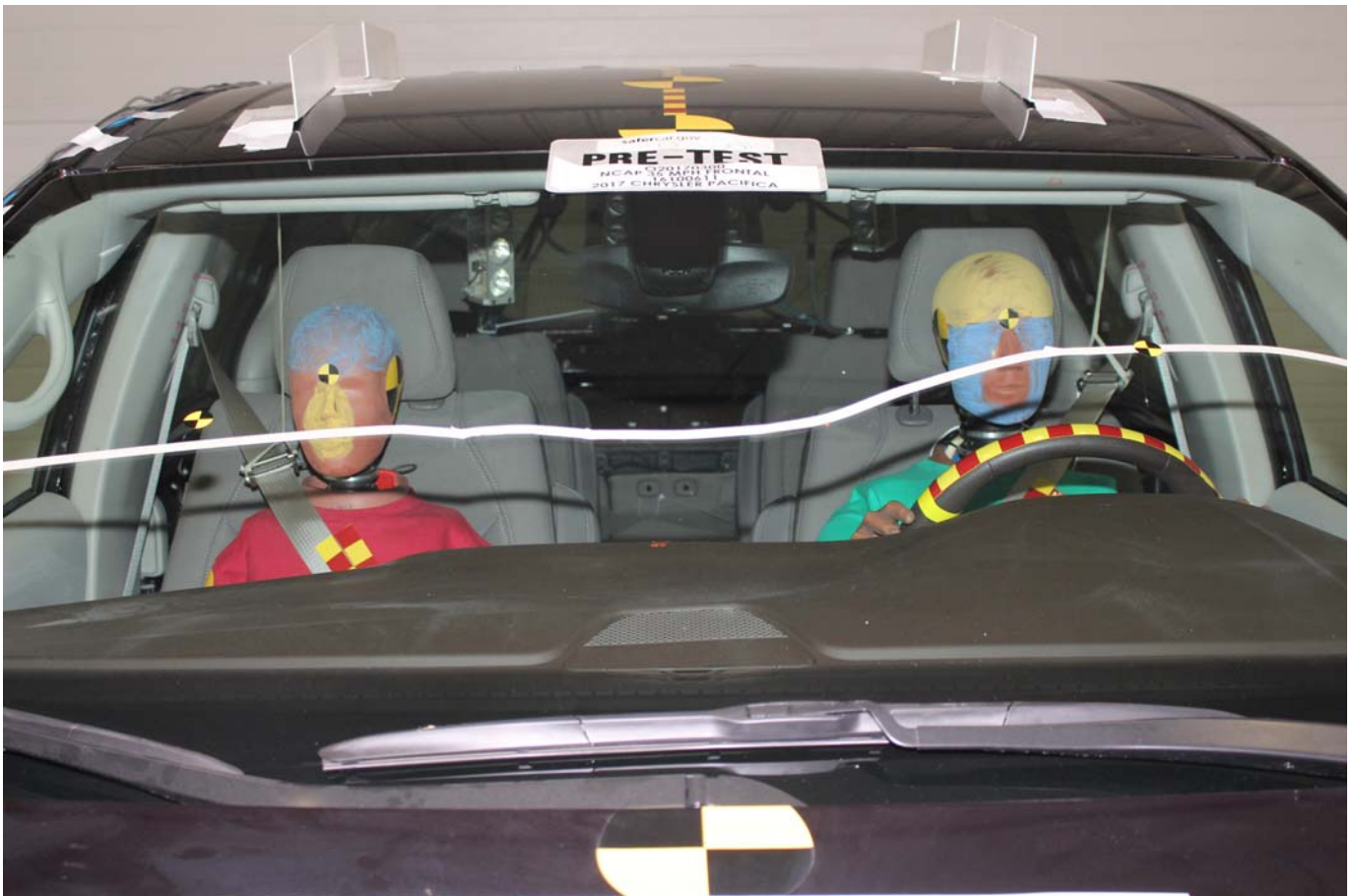


Photo No. 018 - Pre-Test Windshield View



Photo No. 019 - Post-Test Windshield View

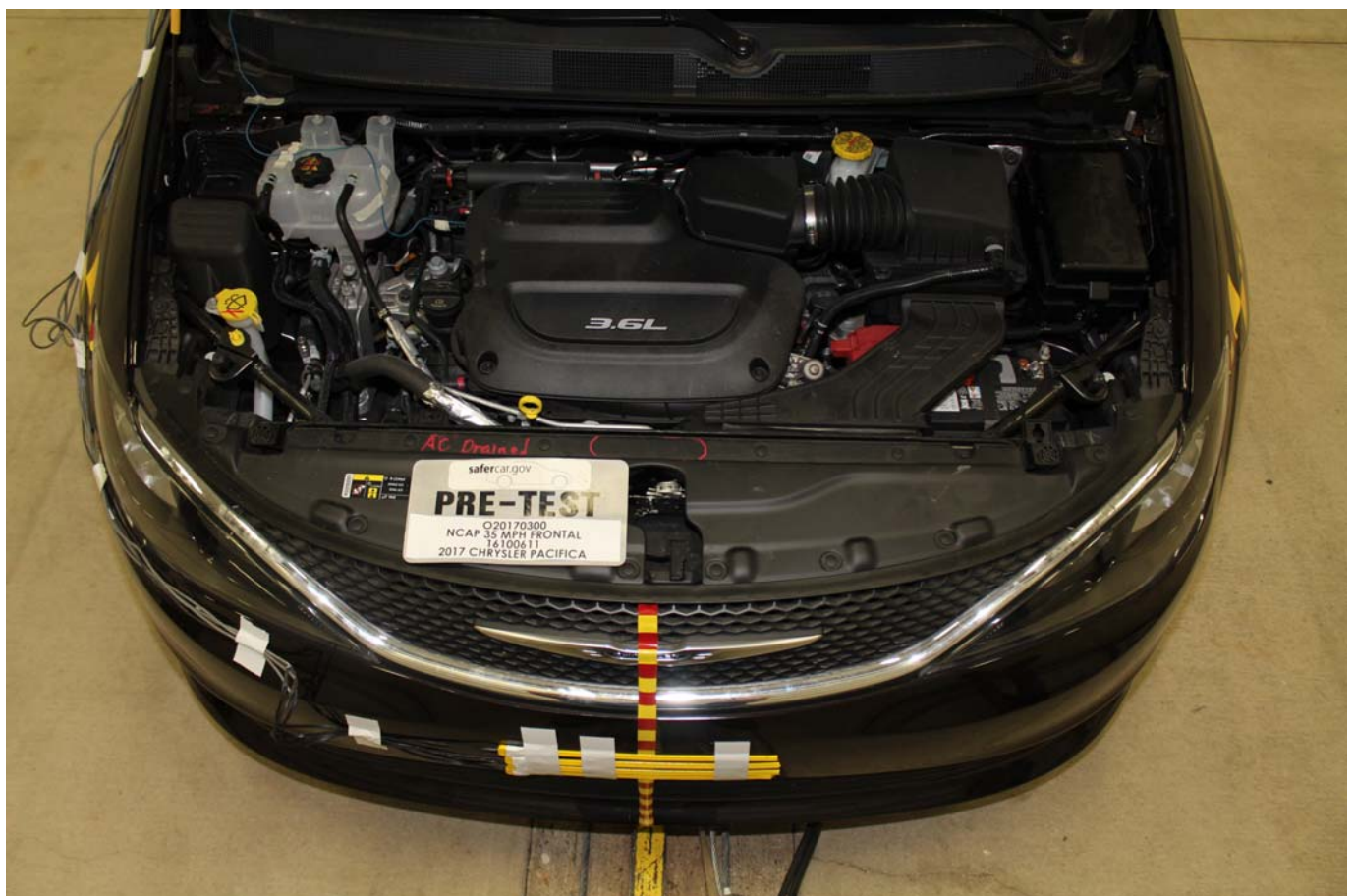


Photo No. 020 - Pre-Test Engine Compartment View



Photo No. 021 - Post-Test Engine Compartment View



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



Photo No. 023 - Post-Test Fuel Filler Cap View

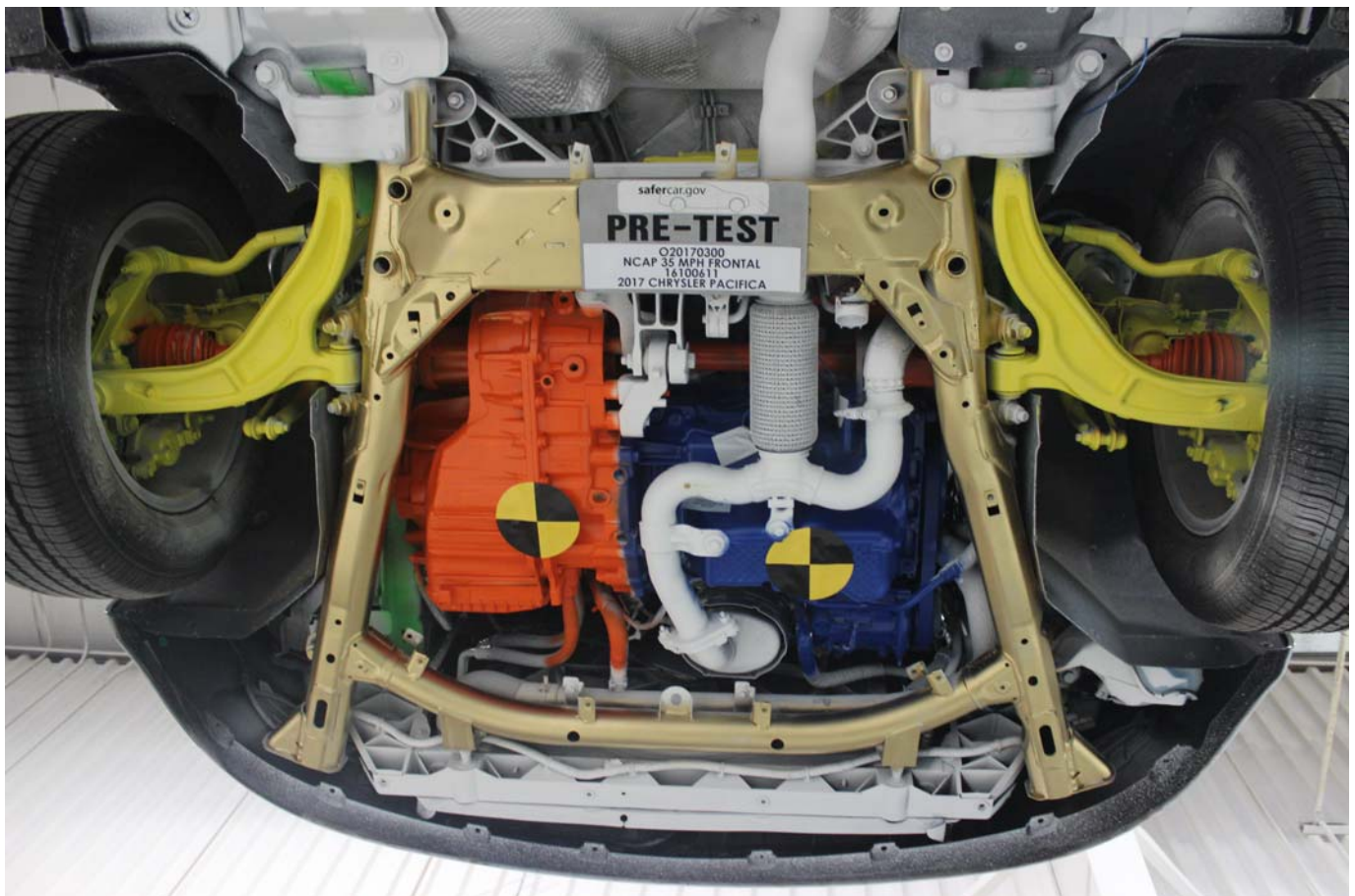


Photo No. 024 - Pre-Test Front Underbody View

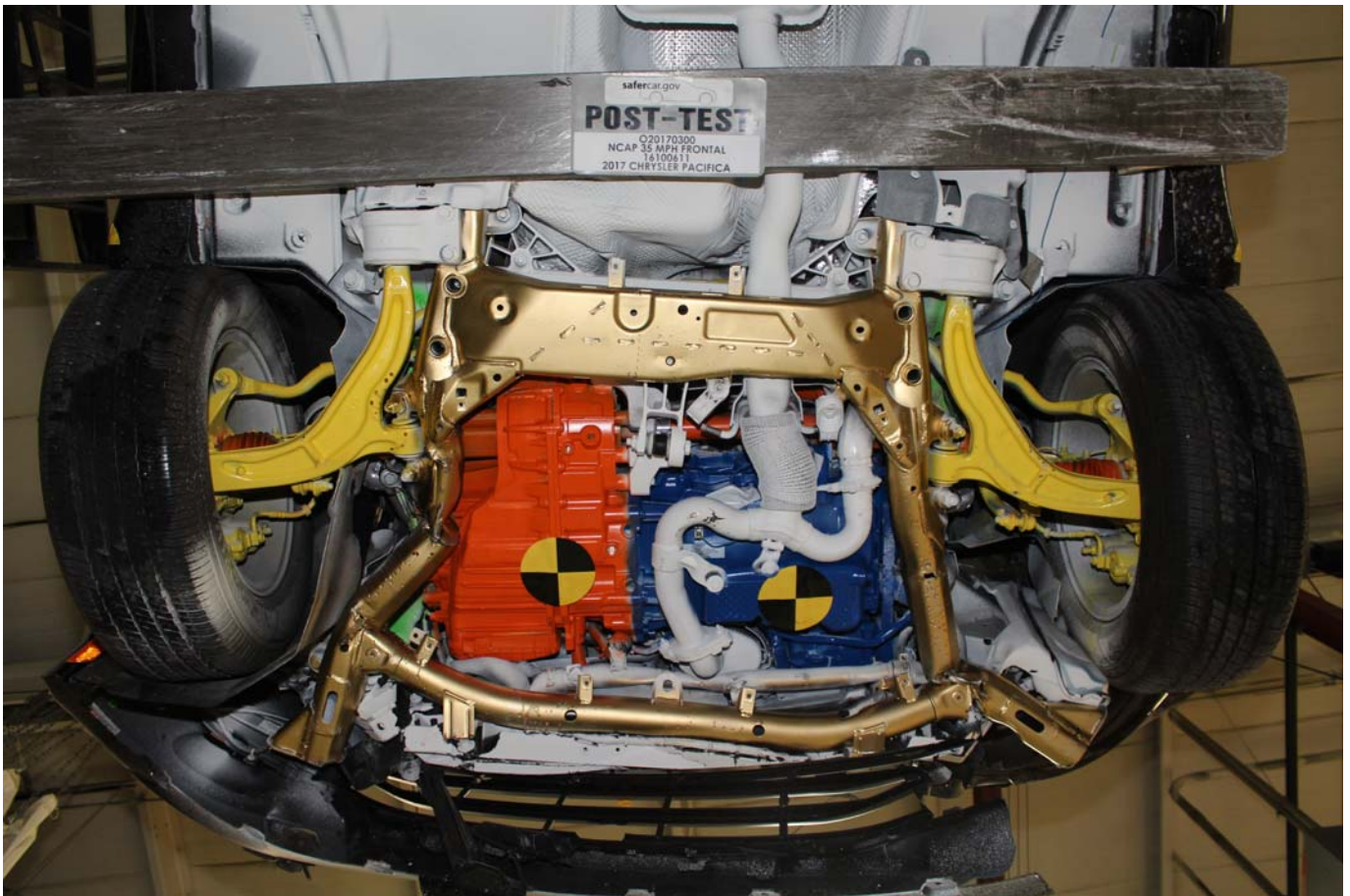


Photo No. 025 - Post-Test Front Underbody View



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

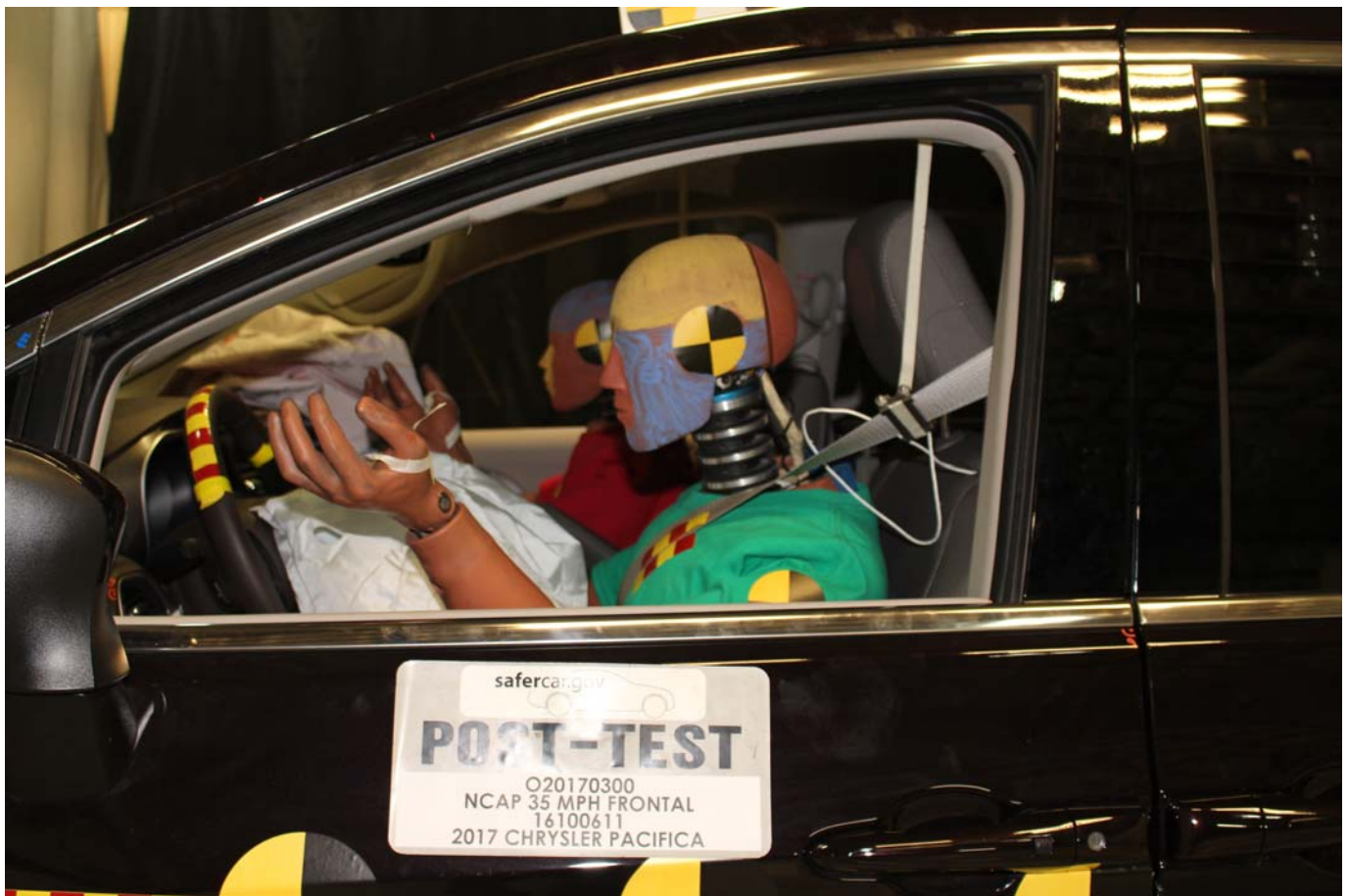


Photo No. 033 - Post-Test Driver Dummy Window View



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's Seat Fore-Aft Markings

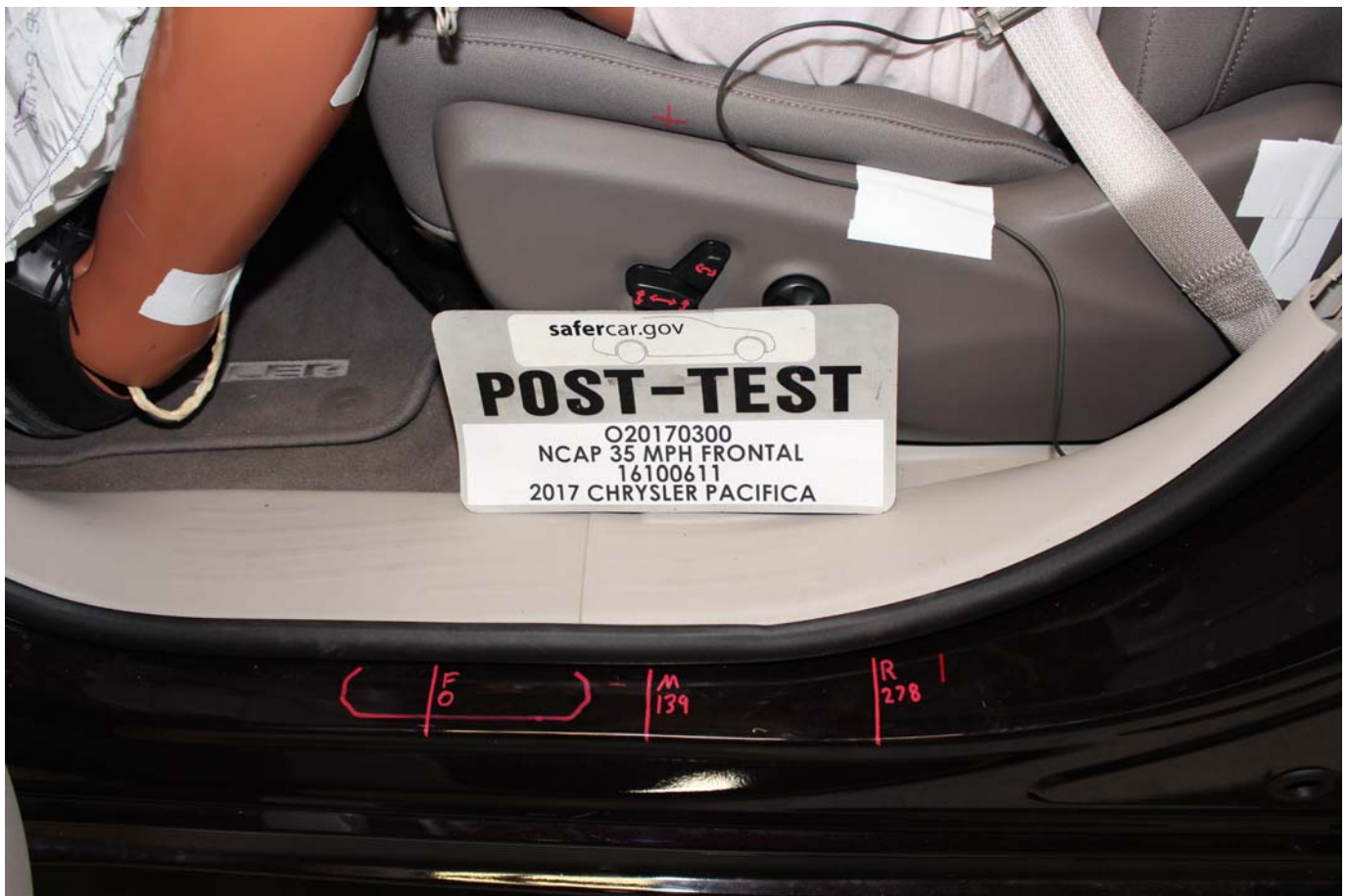


Photo No. 037 - Post-Test Driver's Seat Fore-Aft Markings



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

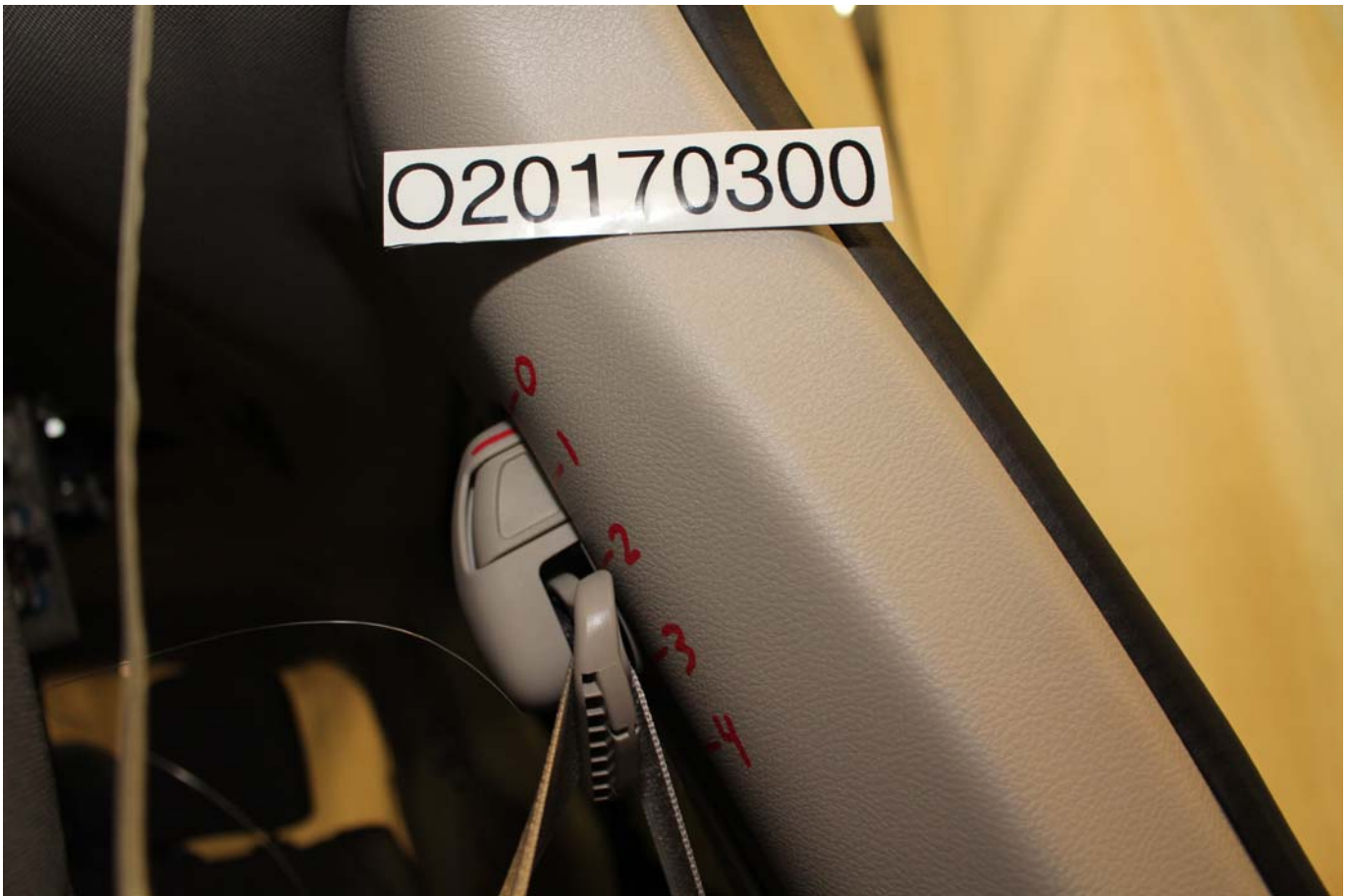


Photo No. 039 - Post-Test View of Belt Anchorage for Driver Dummy



Photo No. 040 - Pre-Test Driver Dummy Feet



Photo No. 041 - Post-Test Driver Dummy Feet



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



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



Photo No. 044 - Pre-Test Driver's Side Floorpan



Photo No. 045 - Post-Test Driver's Side Floorpan



Photo No. 046 - Post-Test Driver Dummy Face



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



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)

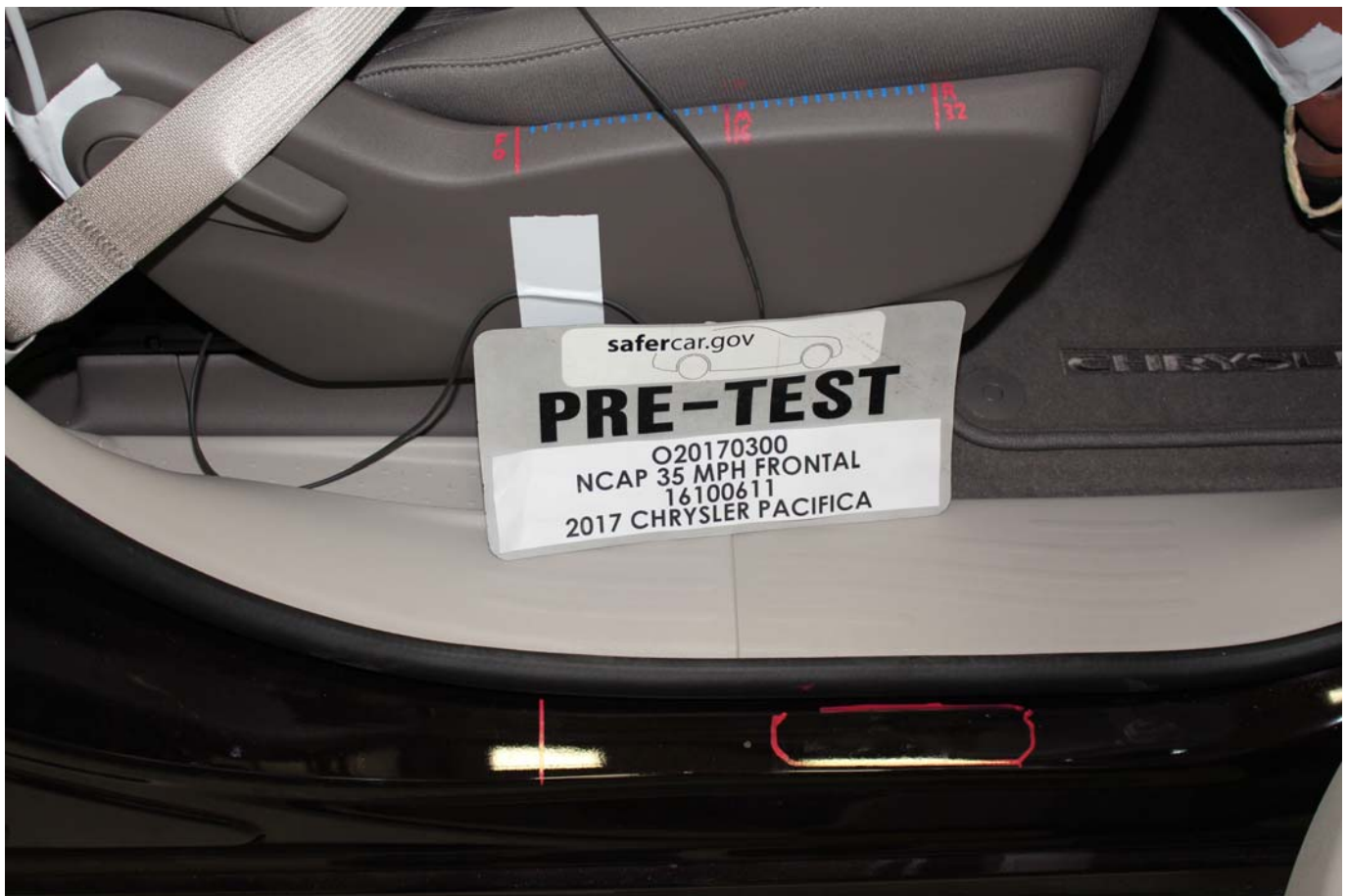


Photo No. 057 - Pre-Test Passenger's Seat Fore-Aft Markings

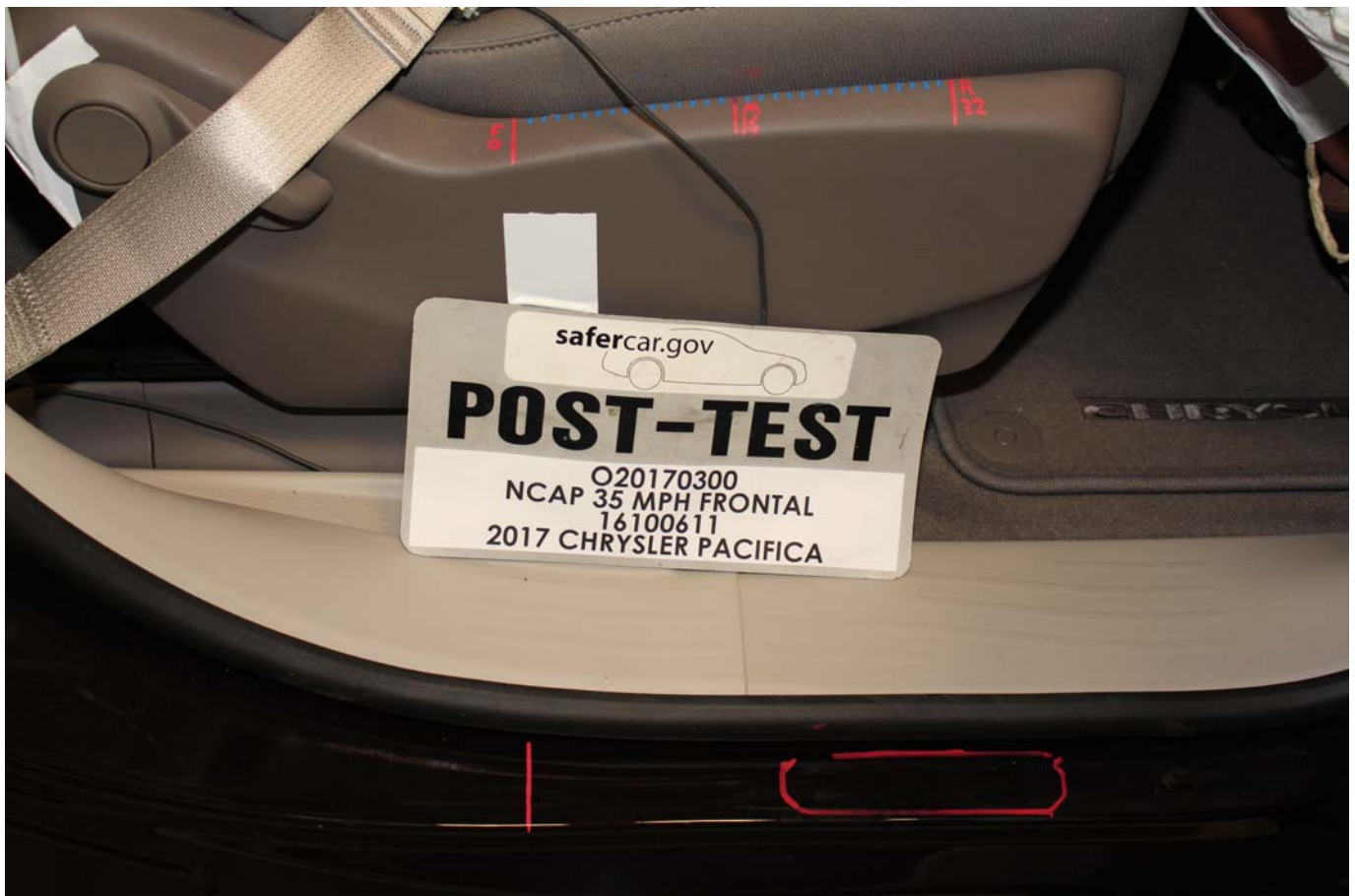


Photo No. 058 - Post-Test Passenger's Seat Fore-Aft Markings



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's Side Knee Bolster (without dummy)



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



Photo No. 065 - Pre-Test Passenger's Side Floorpan



Photo No. 066 - Post-Test Passenger's 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

PHOTOGRAPH NOT APPLICABLE

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

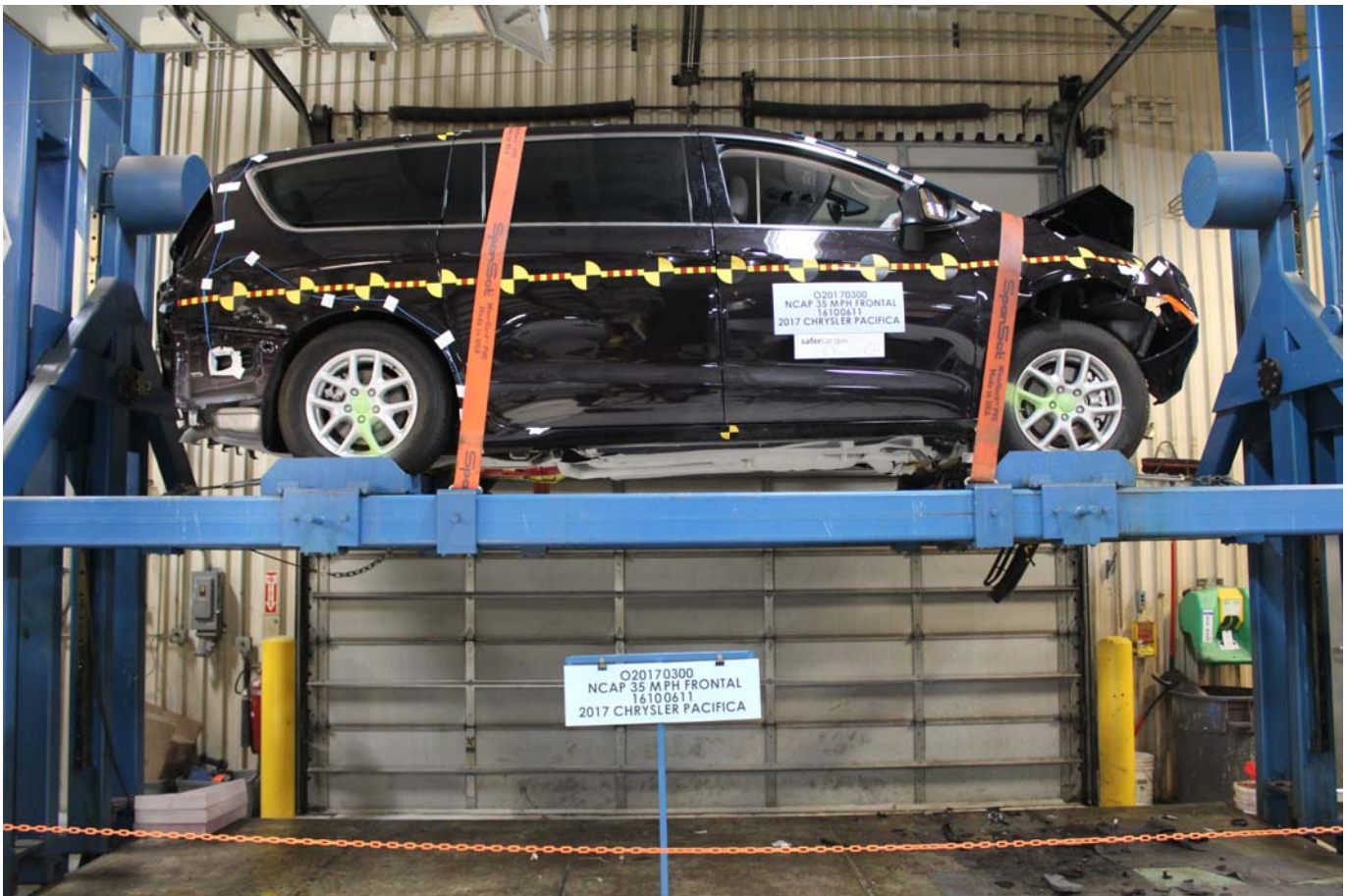


Photo No. 073 - Vehicle at 0 Degree on Static Rollover Device

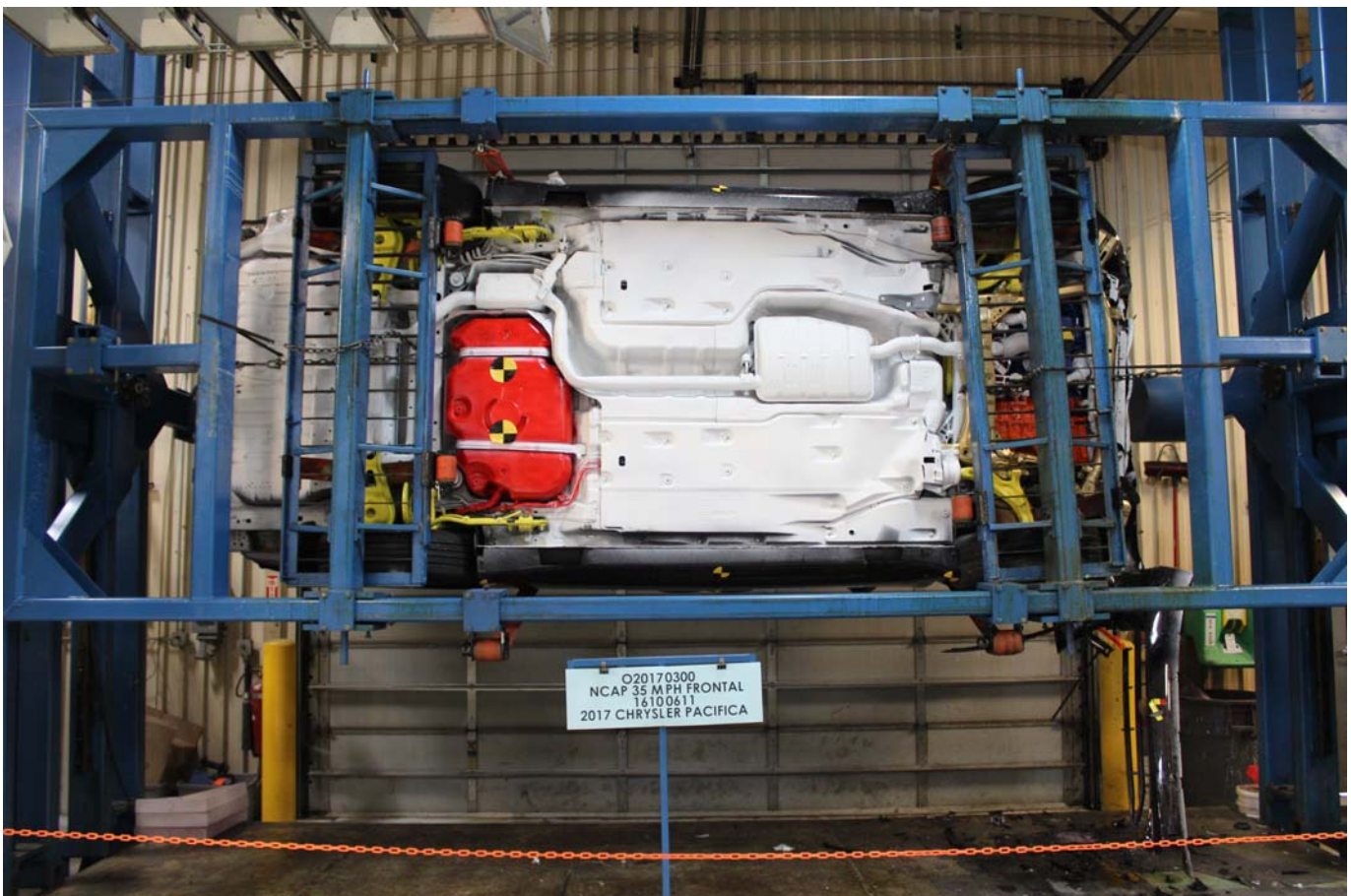


Photo No. 074 - Vehicle at 90 Degrees on Static Rollover Device



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

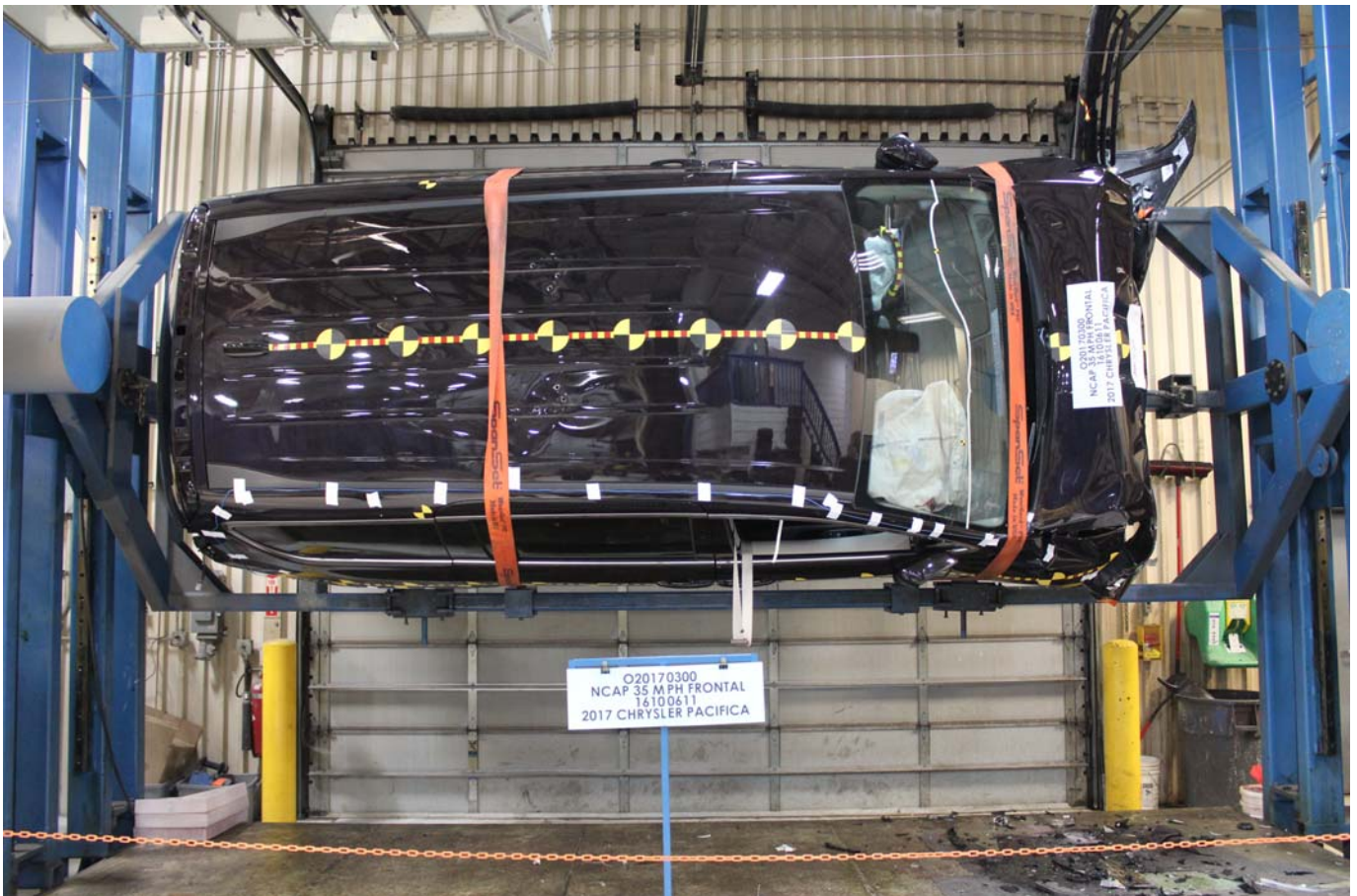


Photo No. 076 - Vehicle at 270 Degrees on Static Rollover Device

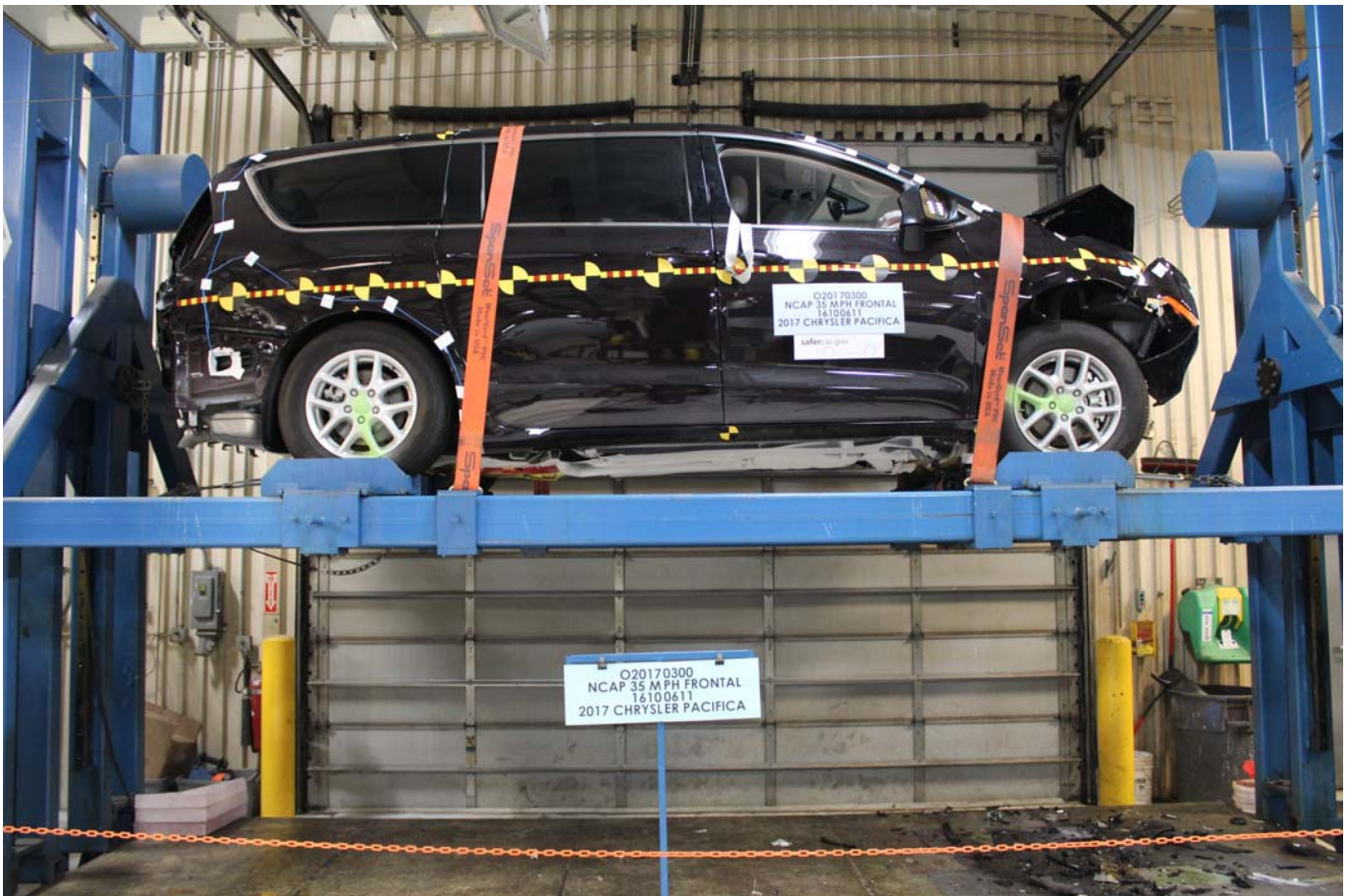


Photo No. 077 - Vehicle at 360 Degrees on Static Rollover Device



Photo No. 078 - 2016 Chrysler Pacifica LX Frontal Impact Event



2017

PACIFICA LX

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

FCA US LLC

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

MANUFACTURER'S SUGGESTED RETAIL PRICE OF THIS MODEL INCLUDING DEALER PREPARATION**Base Price: \$28,595****CHRYSLER PACIFICA LX**
Exterior Color: Dark Cordovan Pearl Coat Exterior Paint
Interior Color: Cognac / Alloy / Toffee Interior Colors
Interior: Cloth Low-Back Bucket Seats
Engine: 3.6L V6 24V VVT Engine
Transmission: 9-Speed FWD Automatic Transmission**STANDARD EQUIPMENT (UNLESS REPLACED BY OPTIONAL EQUIPMENT)****FUNCTIONAL/SAFETY FEATURES**Advanced Multistage Front Airbags
Driver Inflatable Knee-Booster Airbag
Passenger Inflatable Knee-Booster Air Bag
Supplemental Side-Curtain Airbags in All Rows
Supplemental Front Seat-Mounted Side Airbags
LATCH Ready Child Seat Anchor System
ParkView™ Rear Back-Up Camera
Electric Power Steering
Capless Fuel Filler
Active Grille Shutters
Electronic Stability Control
Speed Control
Electric Park Brake
Smart Brake
Rainy Day Braking
Ready Alert Braking
Anti-Lock 4-Wheel Disc Brakes
Keyless Enter-N-Go™
Tire Inflator Kit (No Compact Spare)**INTERIOR FEATURES**Active Noise Cancellation
2nd-Row and 3rd-Row Stow 'n Go Seats
Second-Row In Floor Storage Bins
Driver Seat Stow 'n Assist
Power 8-Way Driver Seat
Power 4-Way Driver Lumbar Adjust
Power Door Locks
Power Front Windows w/ 1-Touch Up and Down Feature
Second-Row Power Windows
5.0-Inch Touchscreen Display
Uconnect® 5.06 Speakers
Integrated Voice Command with Bluetooth®
12-Volt Auxiliary Power Outlet
Steering Wheel Mounted Audio Controls
Rear View Mirror with Microphone
Tilt / Telescope Steering Column
3-Zone Manual Control Front / Rear Air Conditioning
Front Easy Clean Floor Mats**EXTERIOR FEATURES**17-Inch x 7-Inch Aluminum Wheels
235/65R17 BSW All Season Tires
Power Heated Exterior Mirrors w/ Manual Fold-Away
High Beam Daytime Running Headlamps
Incandescent Stop Tail Lamps
Sliding Passenger-Side Door with Glass
Sliding Driver-Side Door with Glass
Sunscreen Glass
Halogen Headlamps**OPTIONAL EQUIPMENT (May Replace Standard Equipment)**

Customer Preferred Package 25E

DESTINATION CHARGE**\$995****TOTAL PRICE: *\$29,590****WARRANTY COVERAGE**5-year or 60,000-mile Powertrain Limited Warranty.
3-year or 36,000-mile Basic Limited Warranty.
Ask Dealer for a copy of the limited warranties or see your owner's manual for details.**5YEAR/60000MILE
POWERTRAIN WARRANTY**

Assembly Point/Port of Entry: WINDSOR, ONTARIO, CANADA

VIN: 2C4-RC1CG3HR-529408

L4 VIN: 4077

SHIP TO: 38770 33
CANADA/DAIGUA CHRYSLER DODGE JEEP
2581 ROCHESTER RD
CANANDAIGUA NY 14424-8725SHIP TO: 38770 38770
CANADA/DAIGUA CHRYSLER DODGE JEEP
2581 ROCHESTER RD
CANANDAIGUA NY 14424-8725THIS LABEL IS ADDED TO THIS VEHICLE TO COMPLY WITH FEDERAL LAW. THE LABEL CANNOT BE REMOVED OR ALTERED PRIOR TO DELIVERY TO THE END-USER PURCHASER.
* STATE AND/OR LOCAL TAXES IF ANY, LICENSE AND TITLE FEES AND DEALER SUPPLIED AND INSTALLED OPTIONS AND ACCESSORIES ARE NOT INCLUDED IN THIS PRICE. DISCOUNT, IF ANY, IS BASED ON PRICE OF OPTIONS IF PURCHASED SEPARATELY.**EPA DOT Fuel Economy and Environment****Gasoline Vehicle**

You spend \$1,250 more in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost \$1,650

Fuel Economy & Greenhouse Gas Rating (tailpipe only)**Smog Rating (tailpipe only)**

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 26 MPG and cost \$7,000 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$2.45 per gallon. MPG 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

**GOVERNMENT 5-STAR SAFETY RATINGS**

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

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

PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS CARLINE:
U.S./CANADIAN PARTS CONTENT: 72%
NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION, OR OTHER NON-PARTS COSTS.

FOR THIS VEHICLE:
FINAL ASSEMBLY POINT:
WINDSOR, ONTARIO, CANADA
COUNTRY OF ORIGIN:
ENGINE: MEXICO
TRANSMISSION: UNITED STATES

Photo No. 079 - Monroney Label Photograph

APPENDIX B
DUMMY RESPONSE DATA TRACES

TABLE OF DATA PLOTS

Page No.

List of Data Plots Provided in the Test Report

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

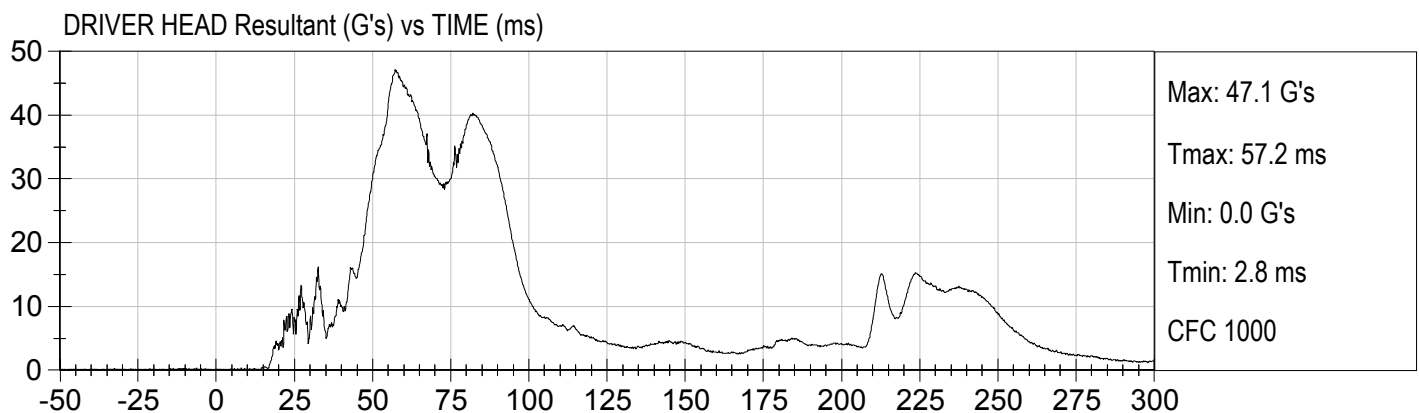
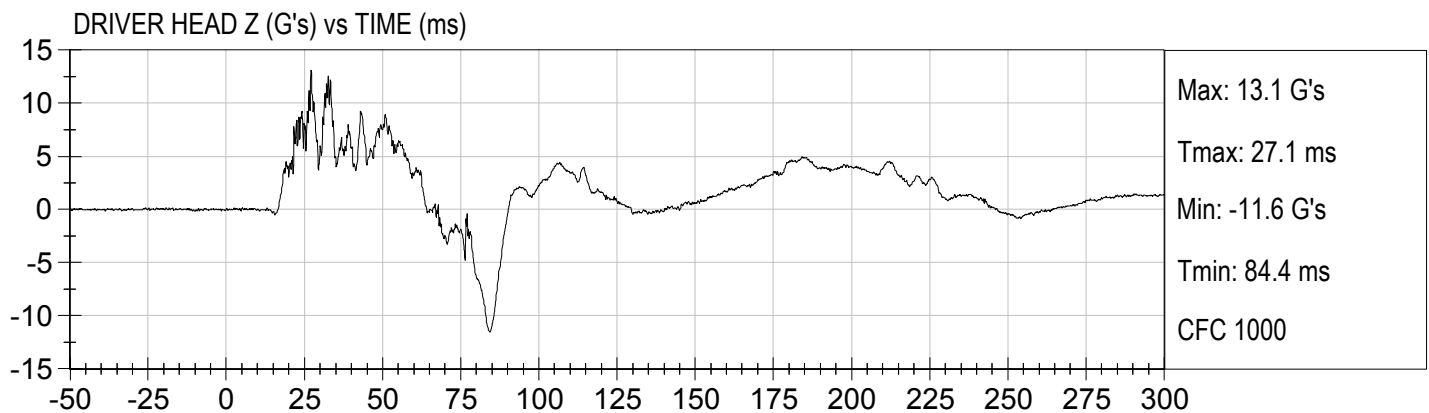
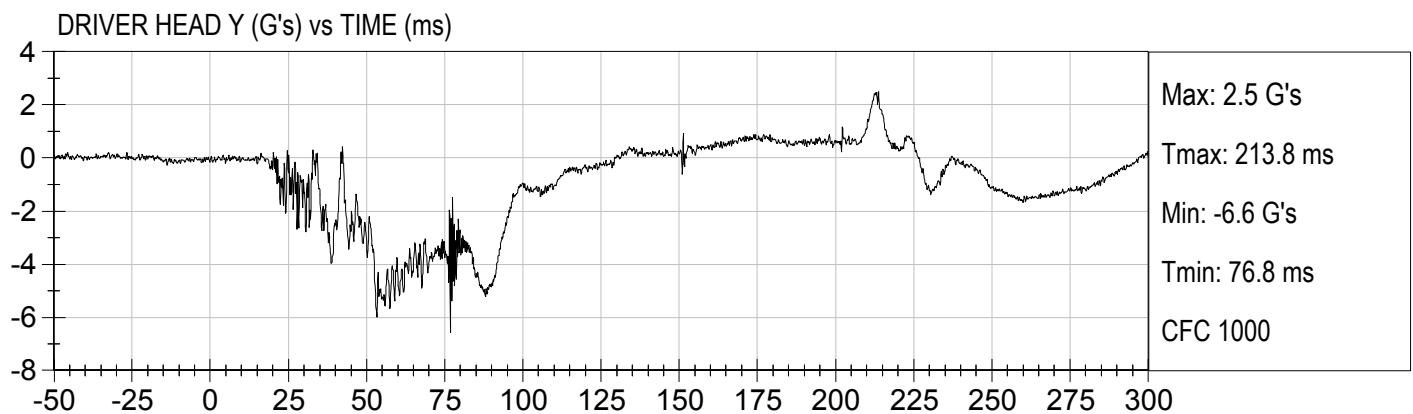
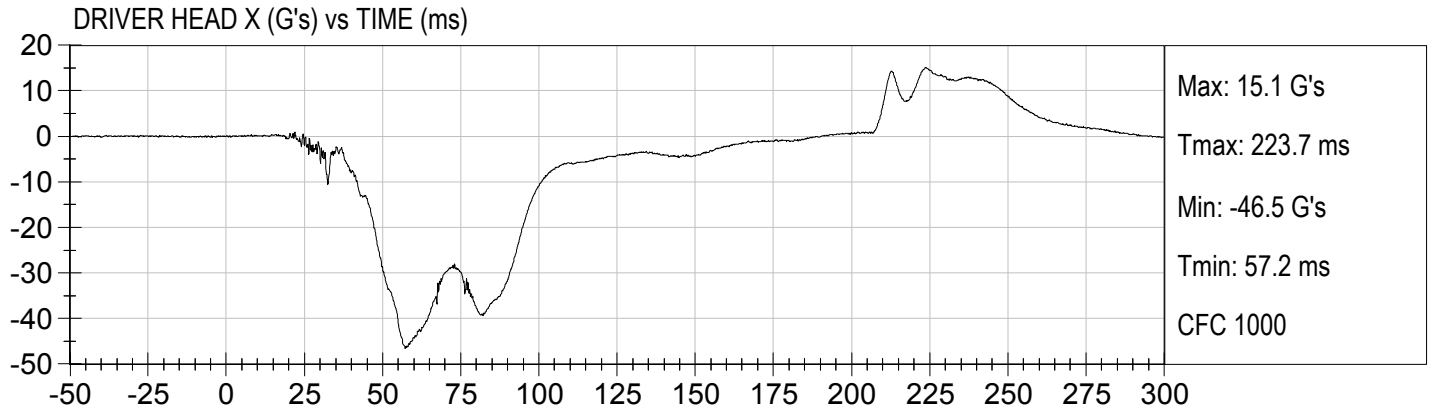
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Figure No. 28.	Passenger Neck Force X vs. Time	B-10
Figure No. 29.	Passenger Neck Force Z vs. Time	B-10
Figure No. 30.	Passenger Neck Moment Y vs. Time	B-10
Figure No. 31.	Passenger Nij (NTF) vs. Time	B-11
Figure No. 32.	Passenger Nij (NTE) vs. Time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

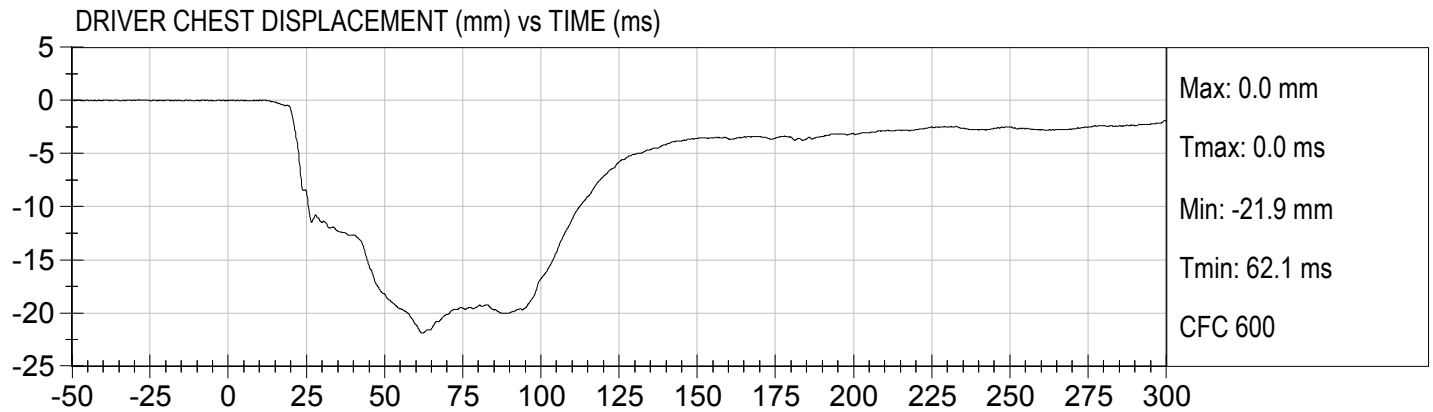
The following additional dummy and vehicle response data can be found in the R&D section of the NHTSA website at www.nhtsa.dot.gov

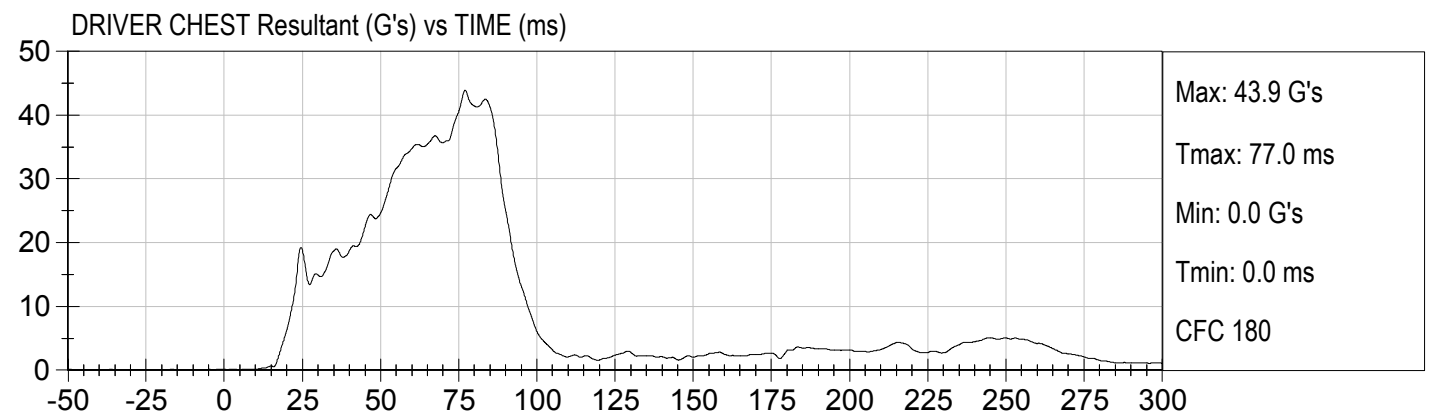
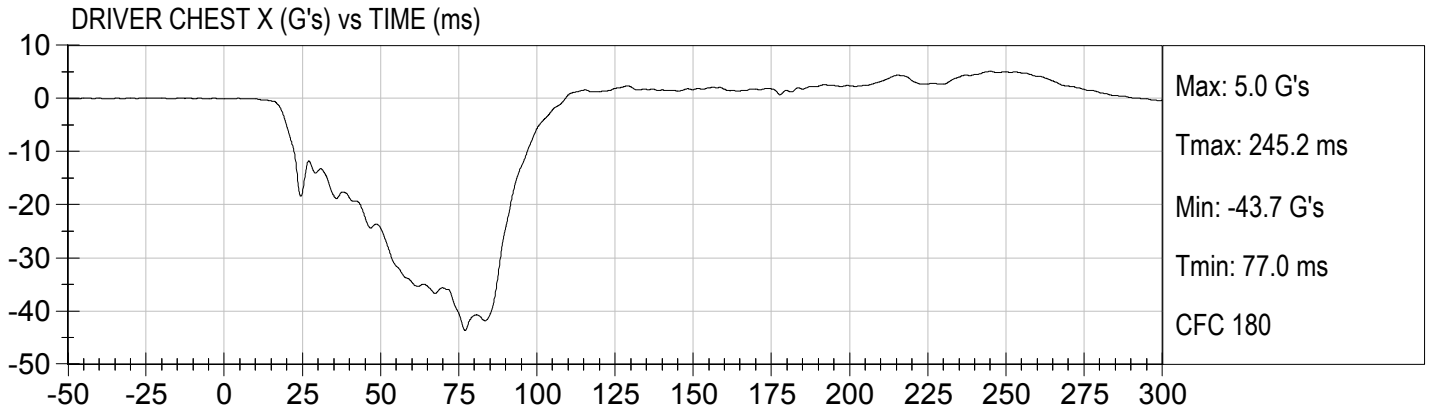
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 Driver Head Y Redundant
 Driver Head Z Redundant
 Driver Head Angular Velocity X
 Driver Head Angular Velocity Y
 Driver Head Angular Velocity Z
 Driver Upper Neck Force Y
 Driver Upper Neck Moment X
 Driver Upper Neck Moment Z
 Driver Chest X Redundant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

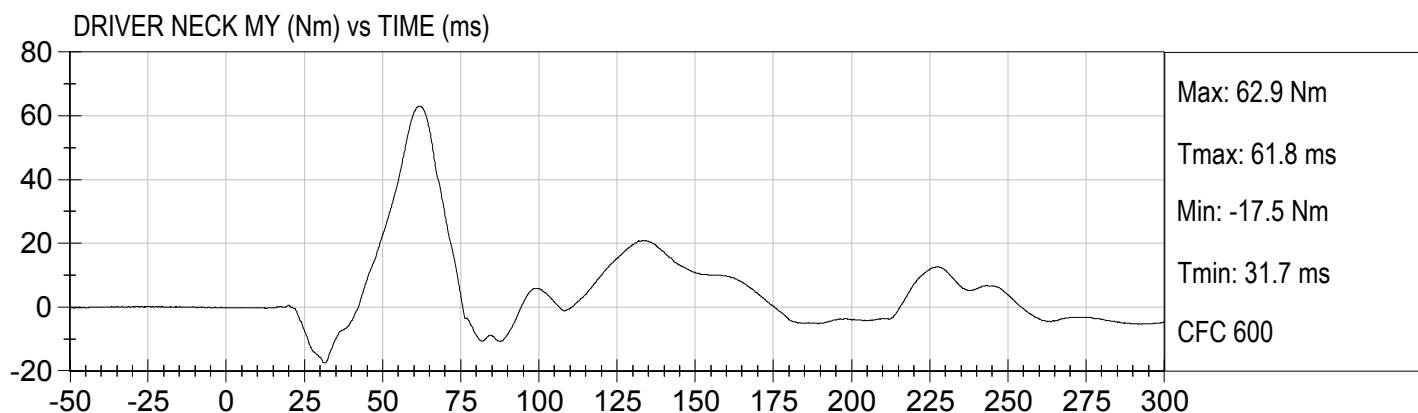
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Driver Left Lower Tibia Moment X
Driver Left Lower Tibia Moment Y
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Driver Right Upper Tibia Moment X
Driver Right Upper Tibia Moment Y
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Driver Right 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

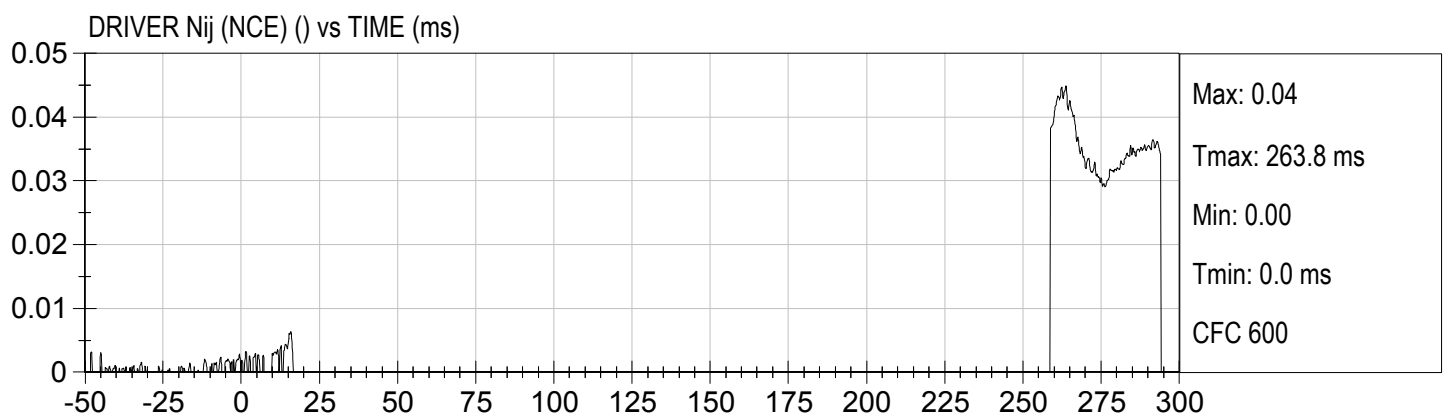
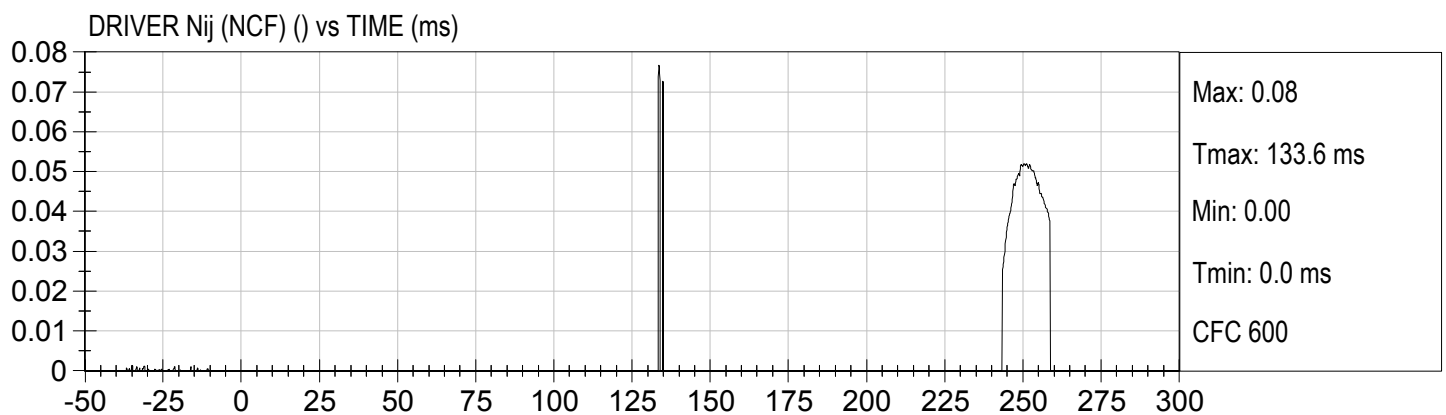
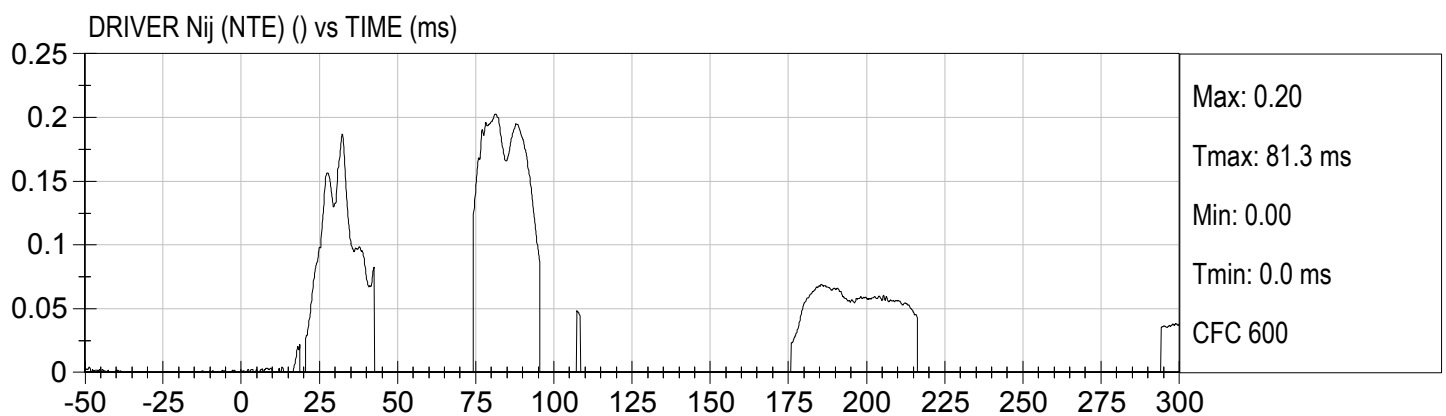
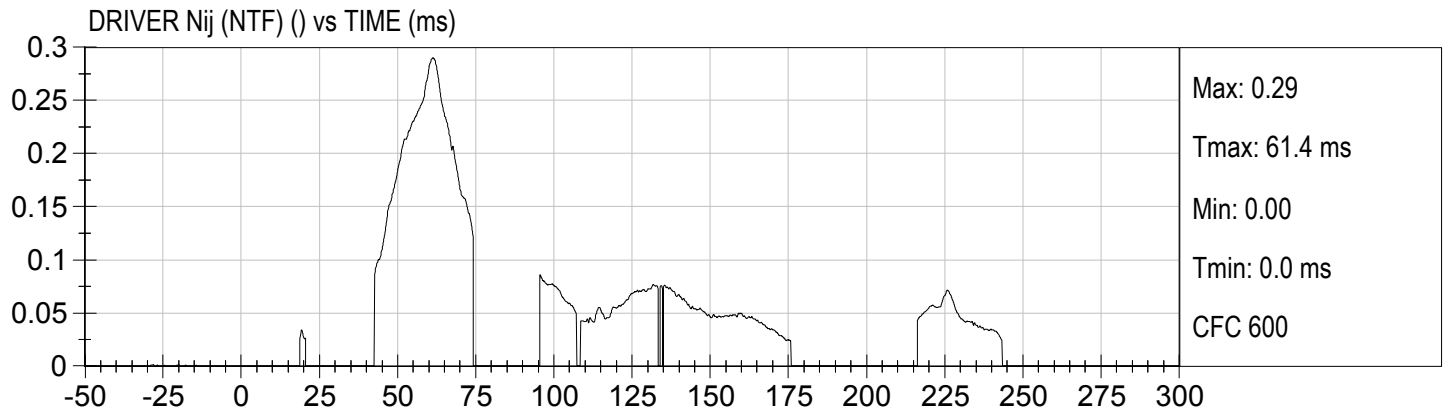
Passenger Pelvis Z
Passenger Left Femur Redundant
Passenger Right Femur Redundant
Passenger Left Upper Tibia Moment X
Passenger Left Upper Tibia Moment Y
Passenger Left Upper Tibia Force Z
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Passenger Left Lower Tibia Moment Y
Passenger Left Lower Tibia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

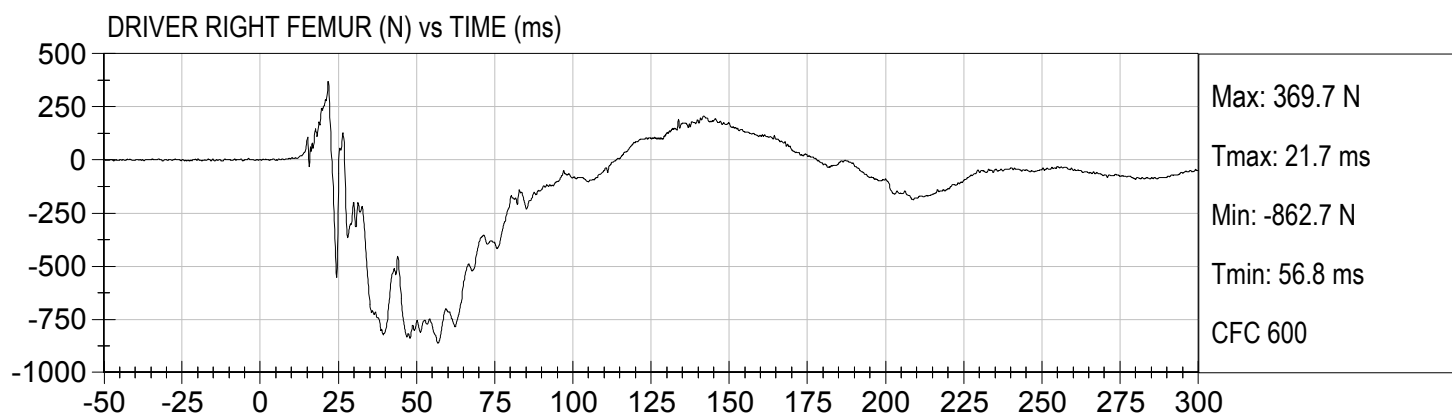
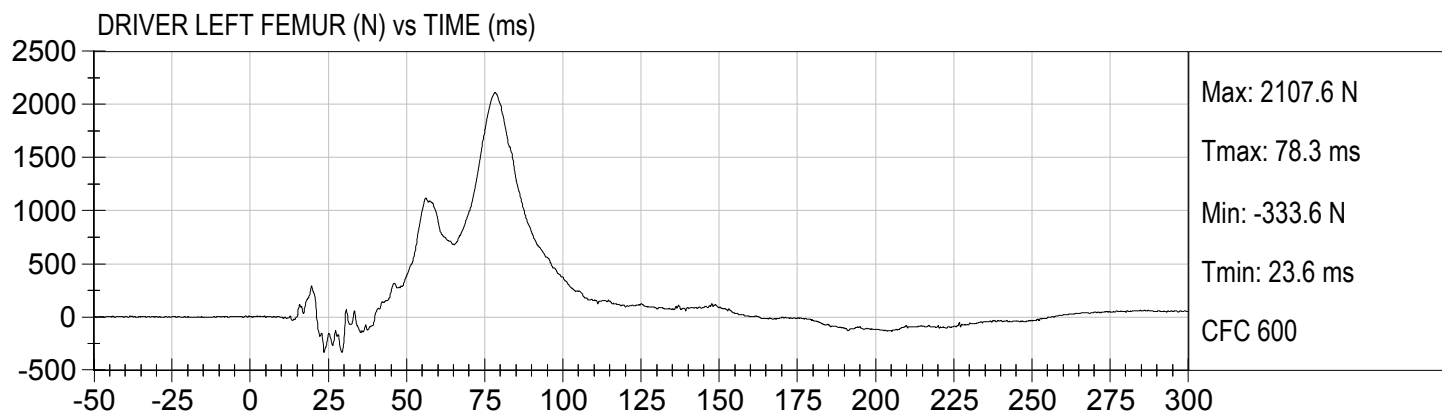


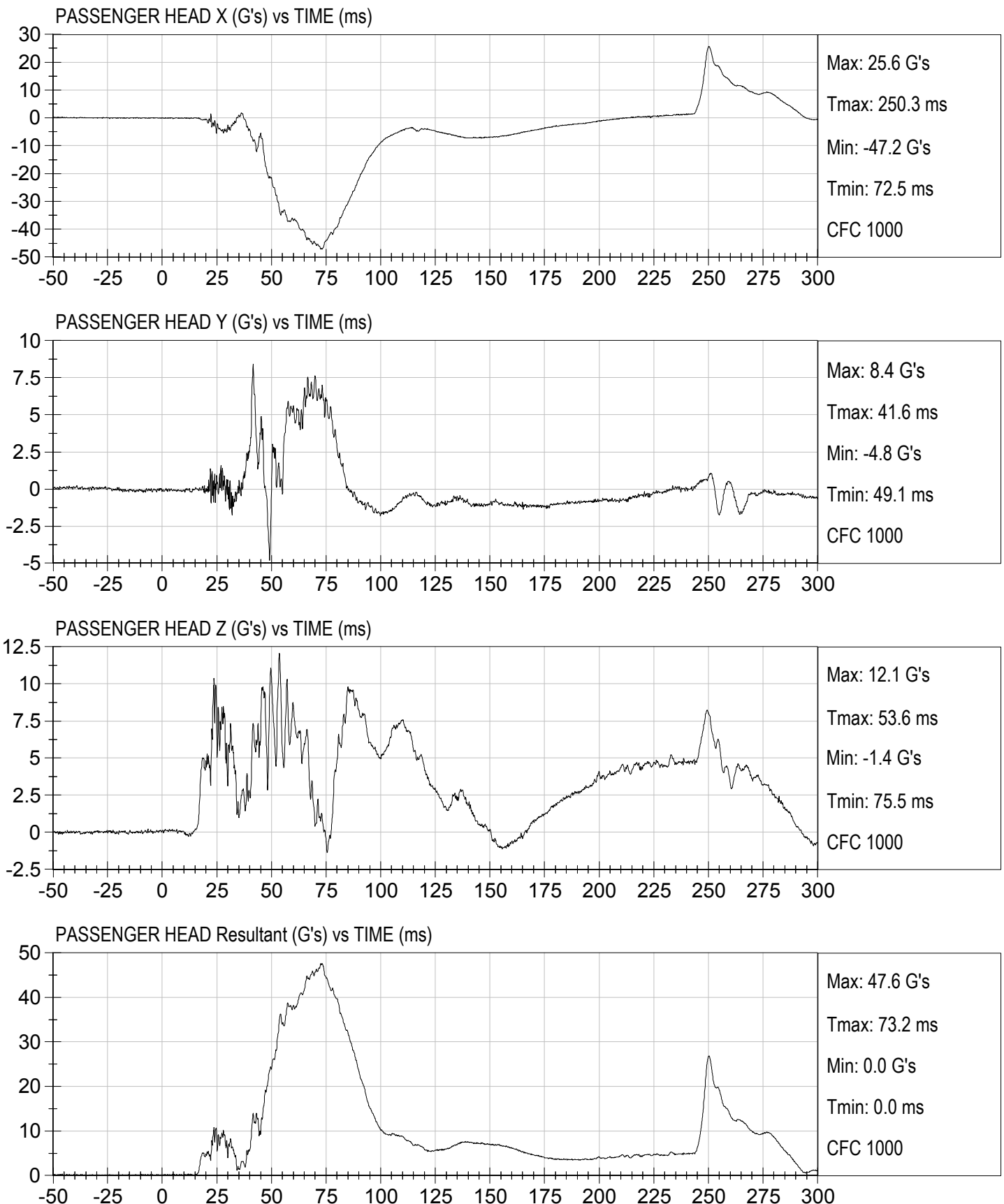


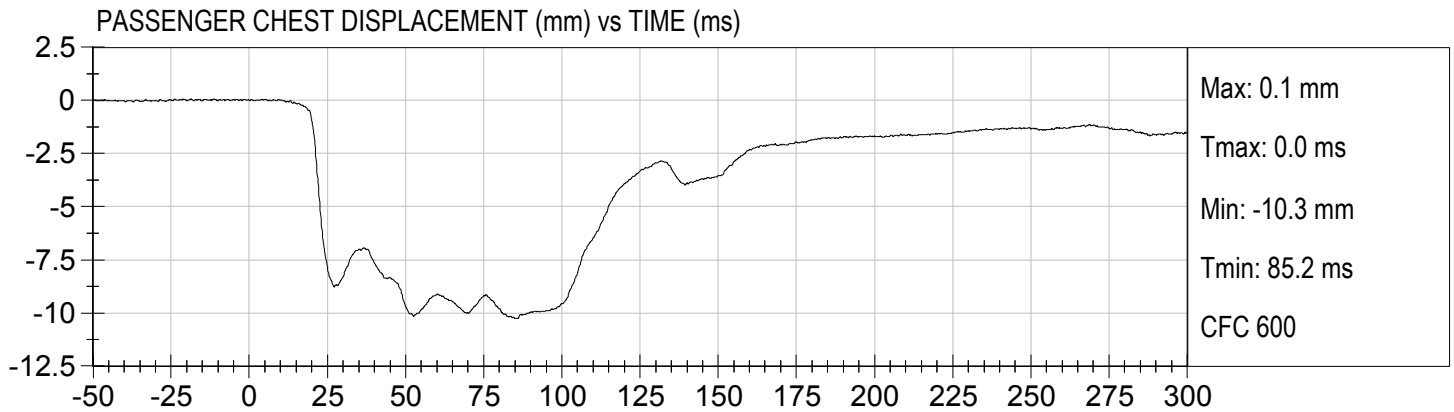


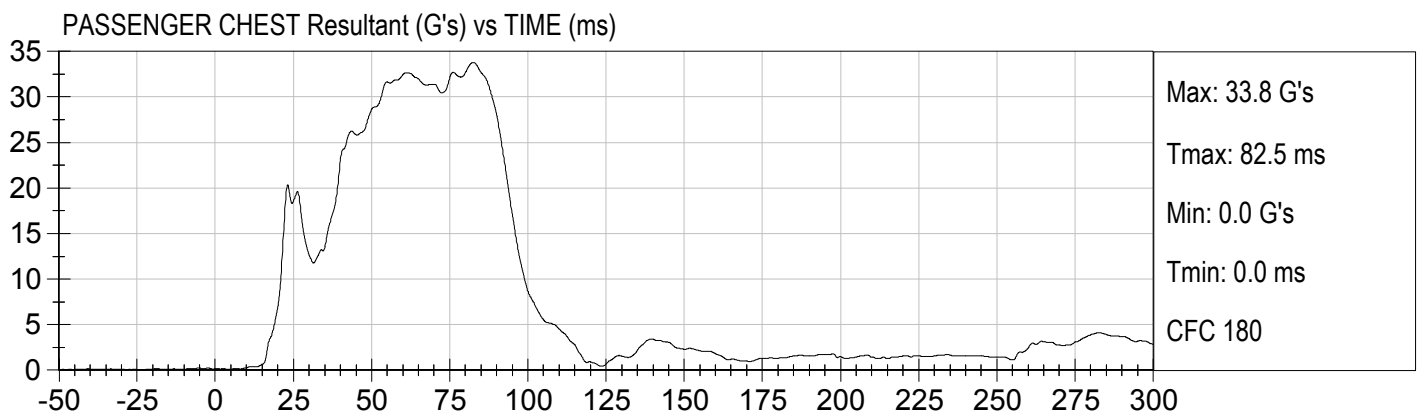
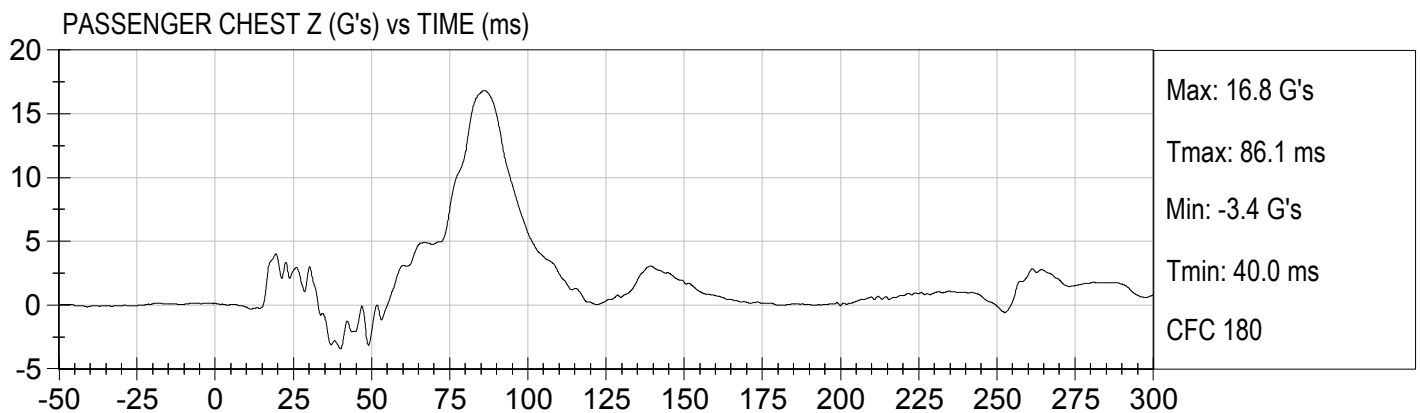
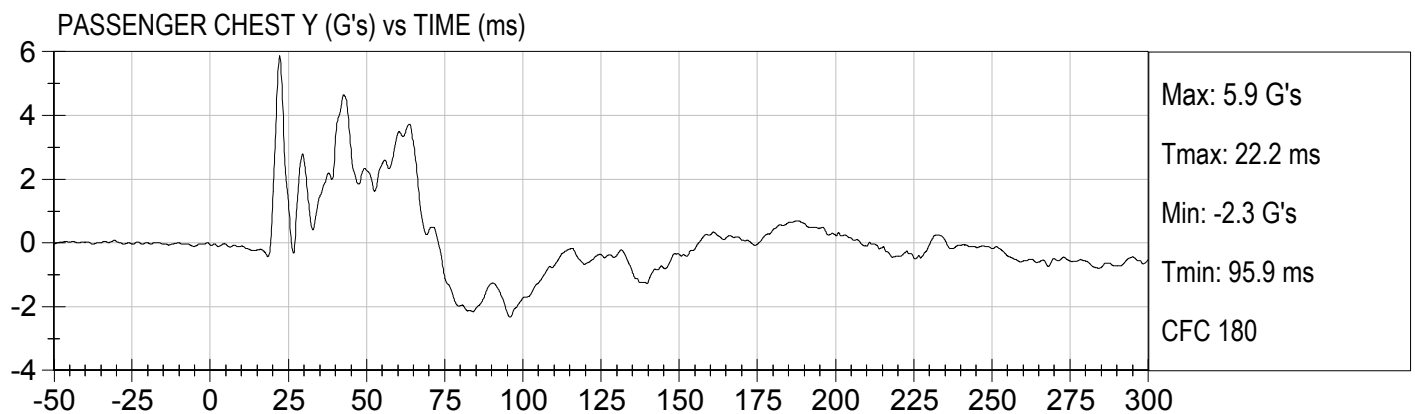
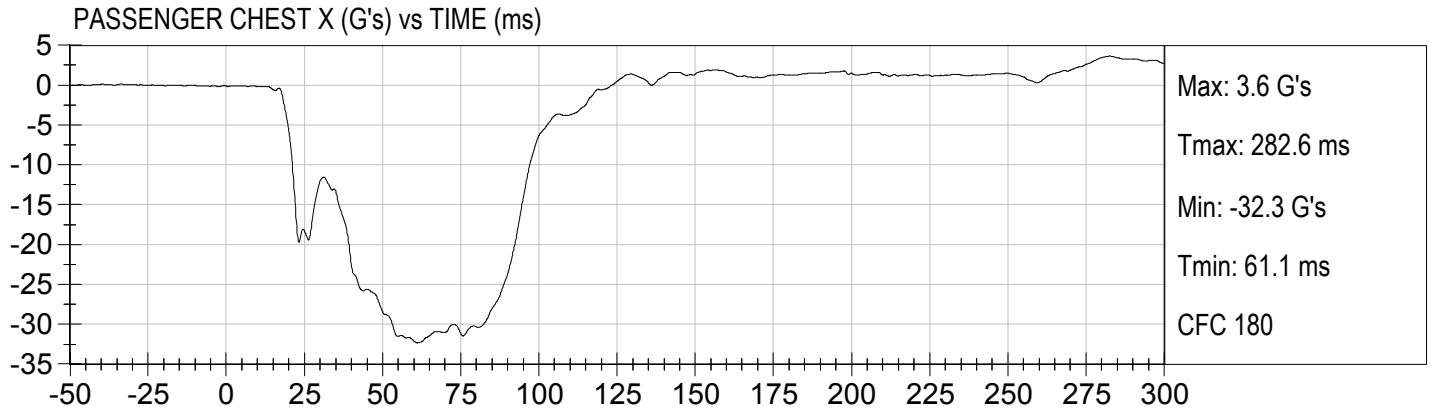


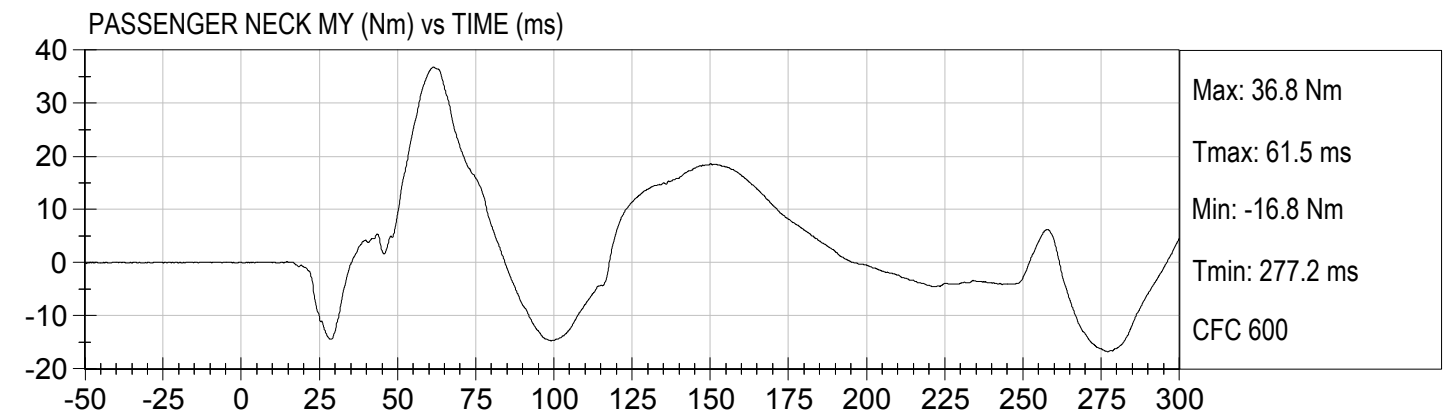
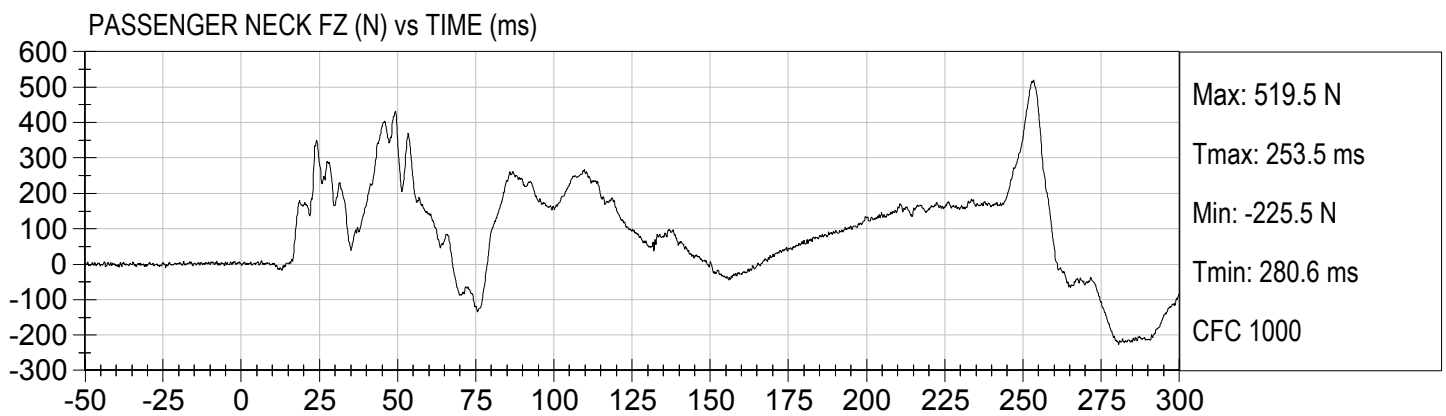
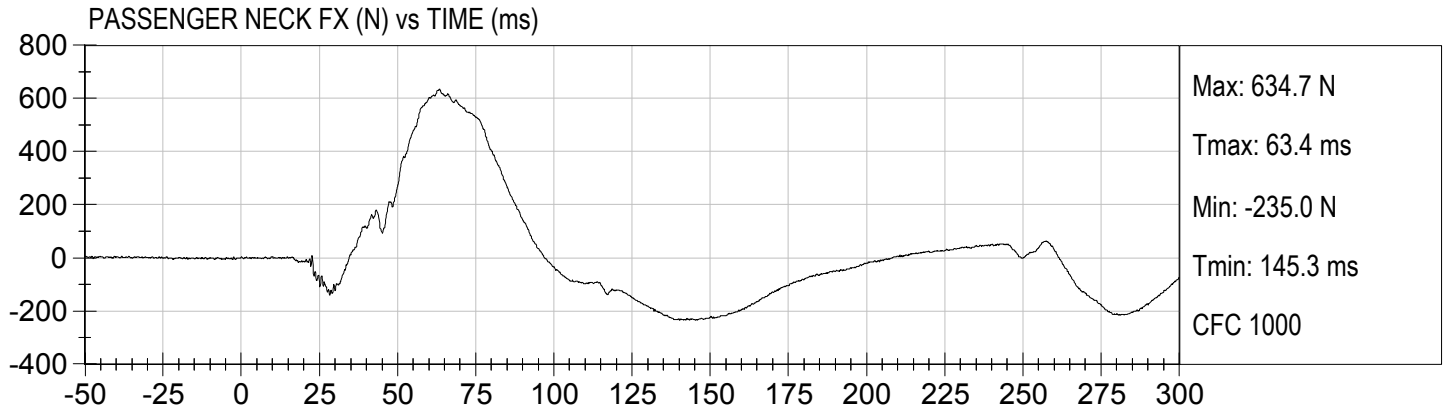


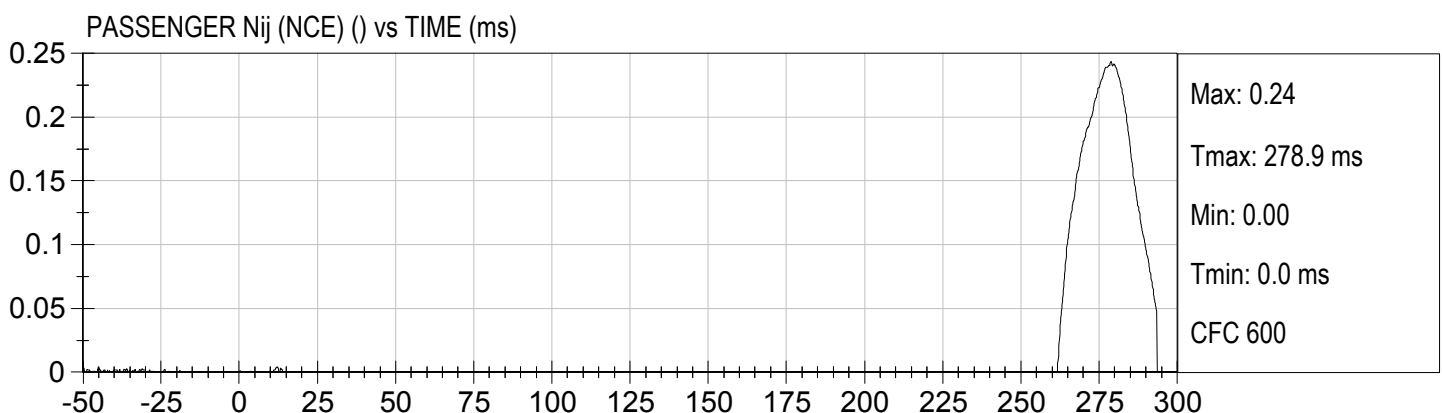
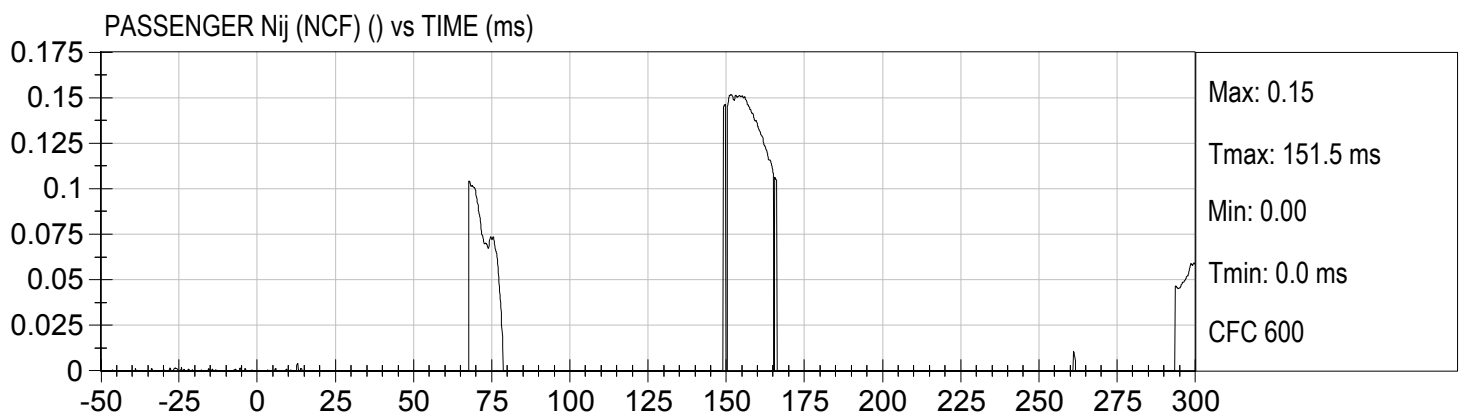
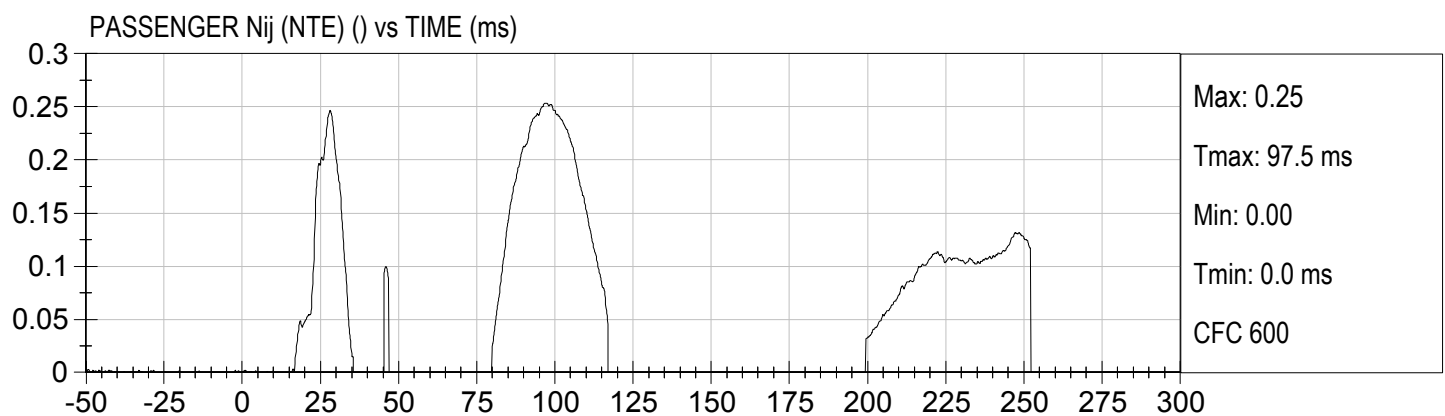
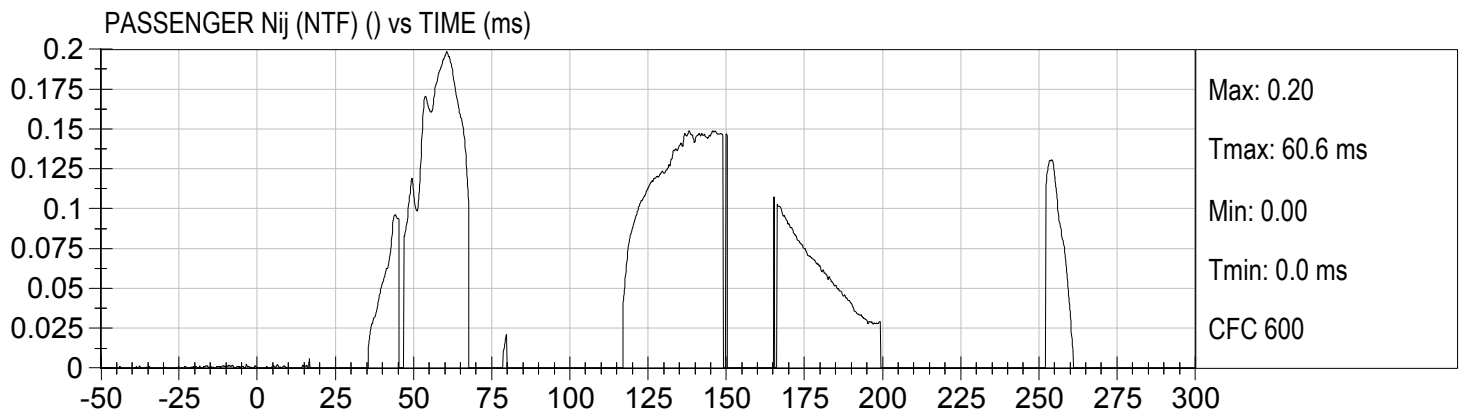


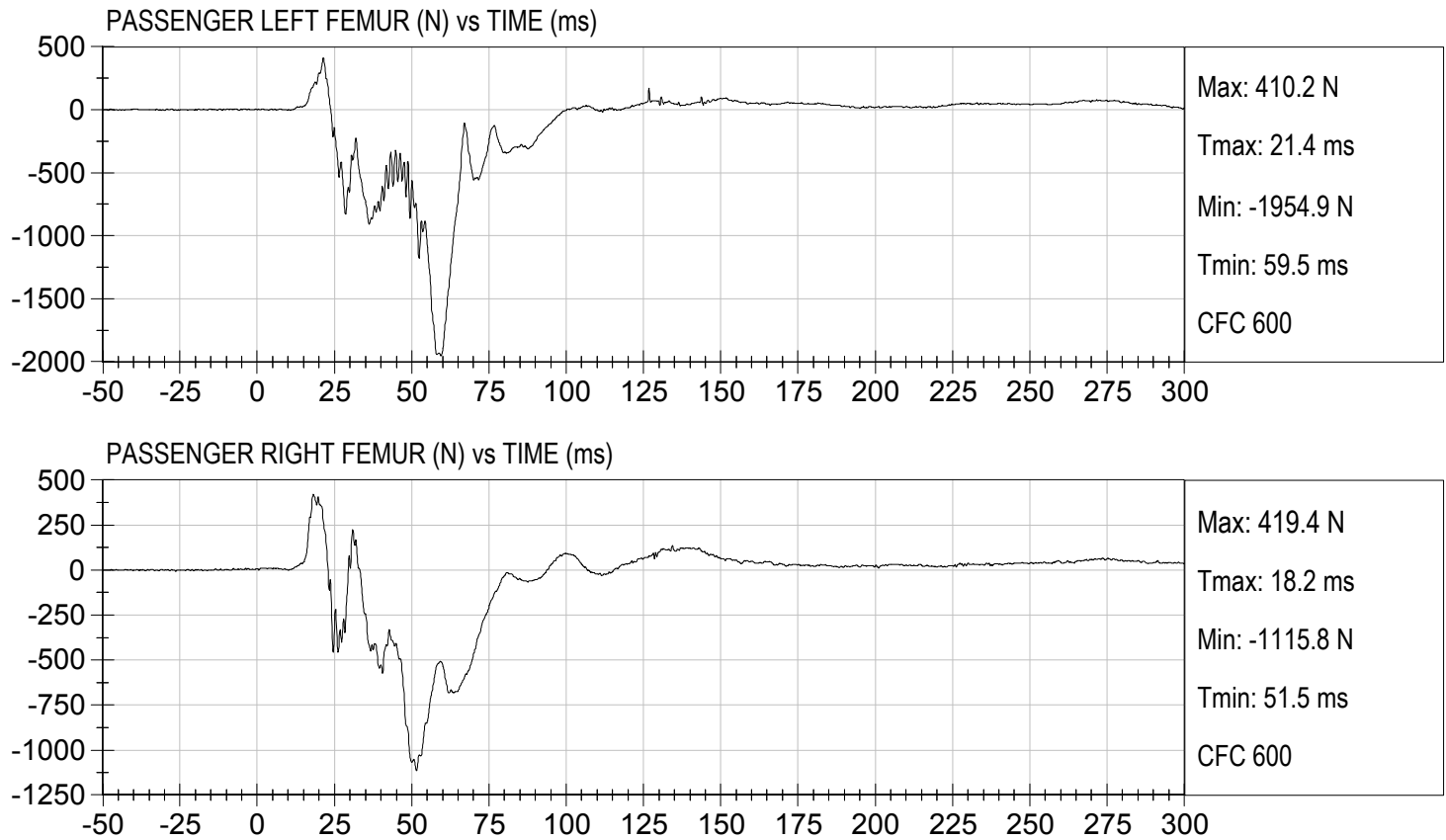












APPENDIX C
DUMMY CALIBRATION AND PERFORMANCE VERIFICATION DATA

Hybrid III, 50th External Measurements
SN: 351

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

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

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

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

ATD Serial No: 351

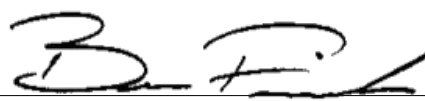
Test ID: D163281

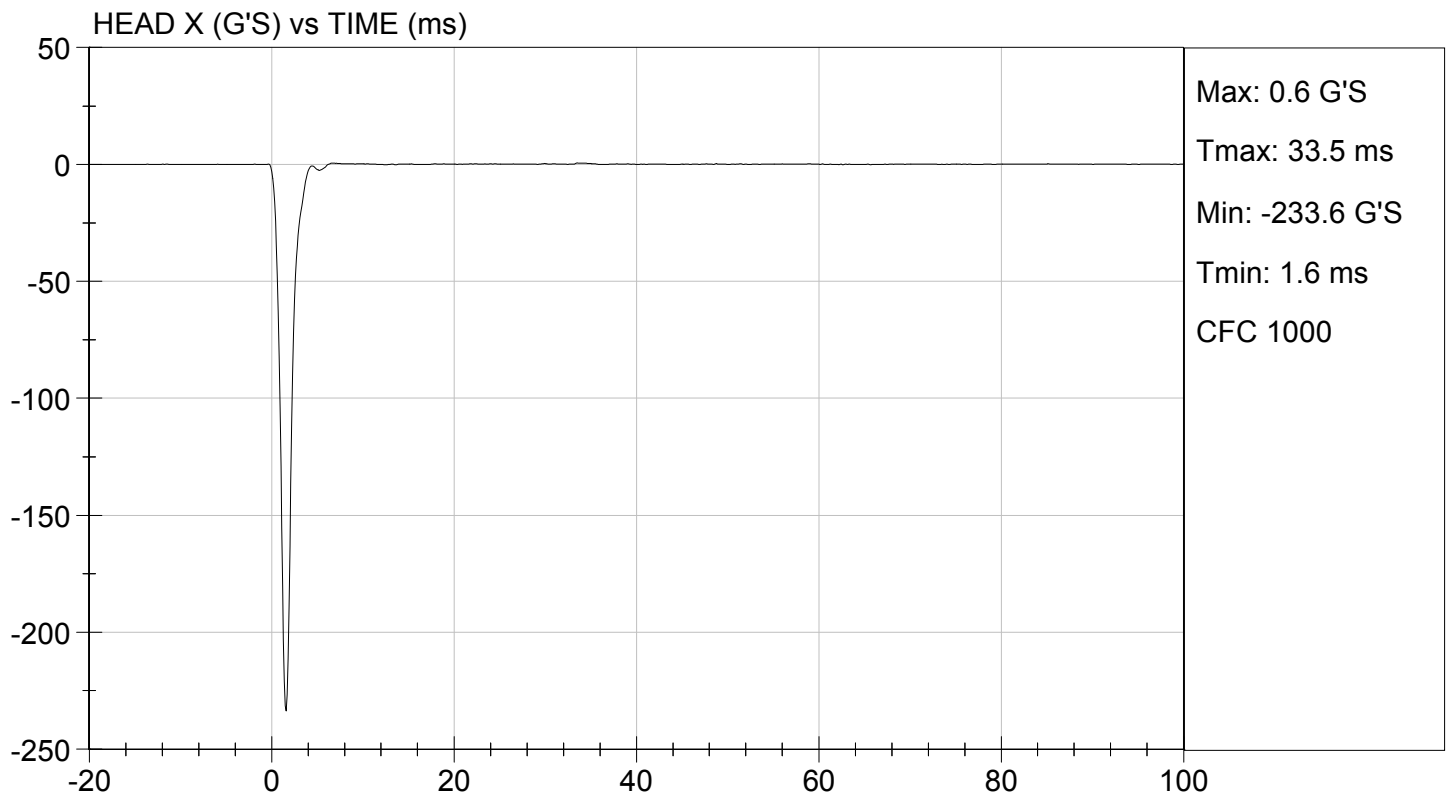
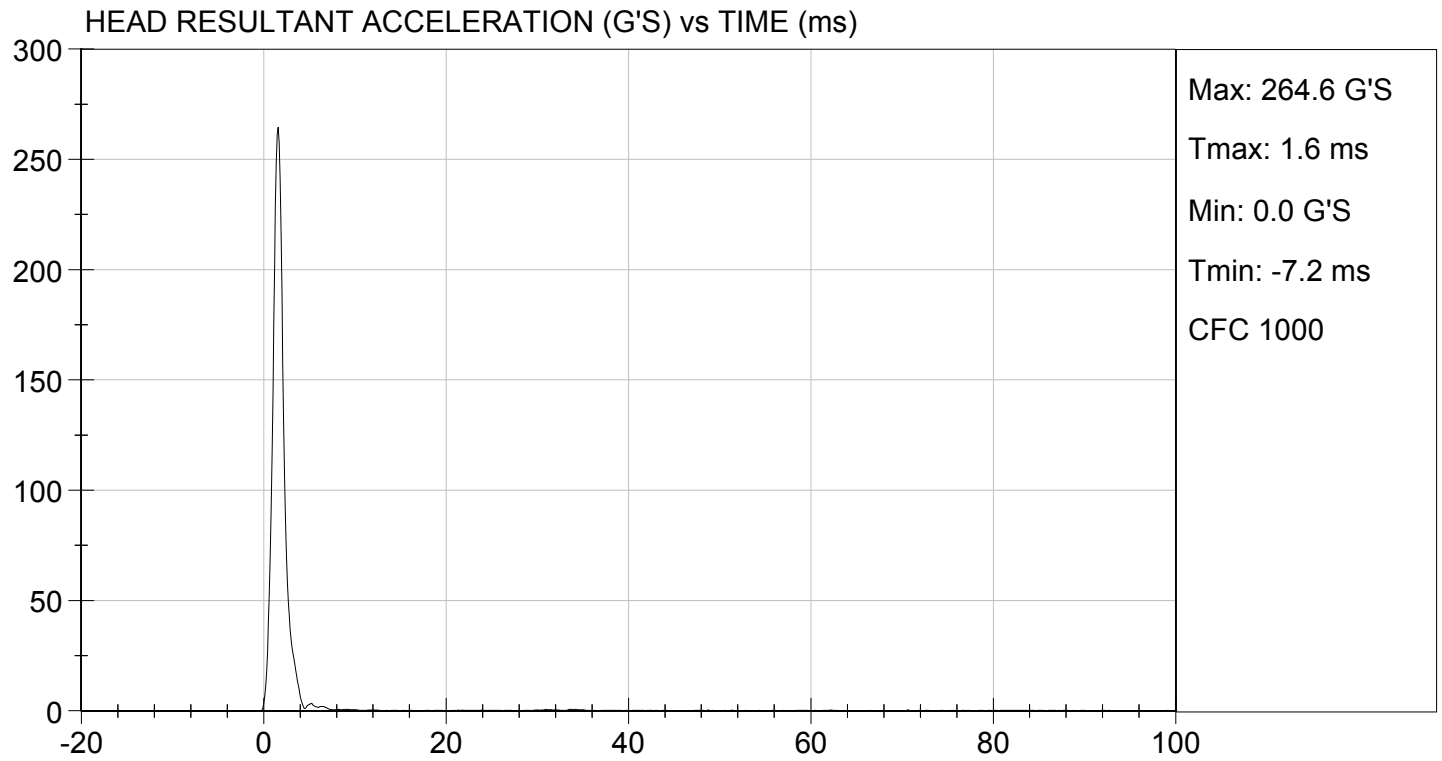
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	38	Pass
Peak Resultant Acceleration	G's	225 to 275	265	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	5.4	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

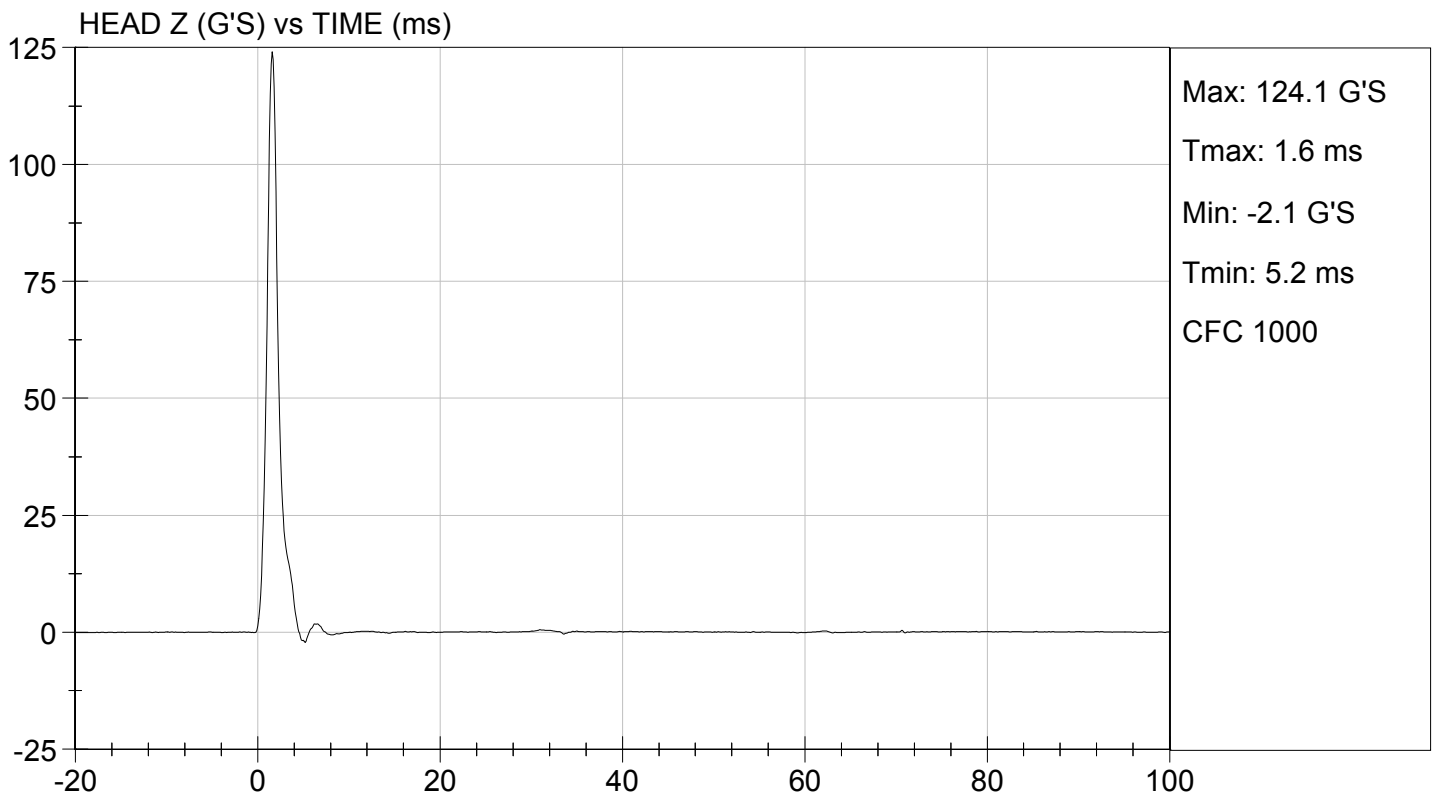
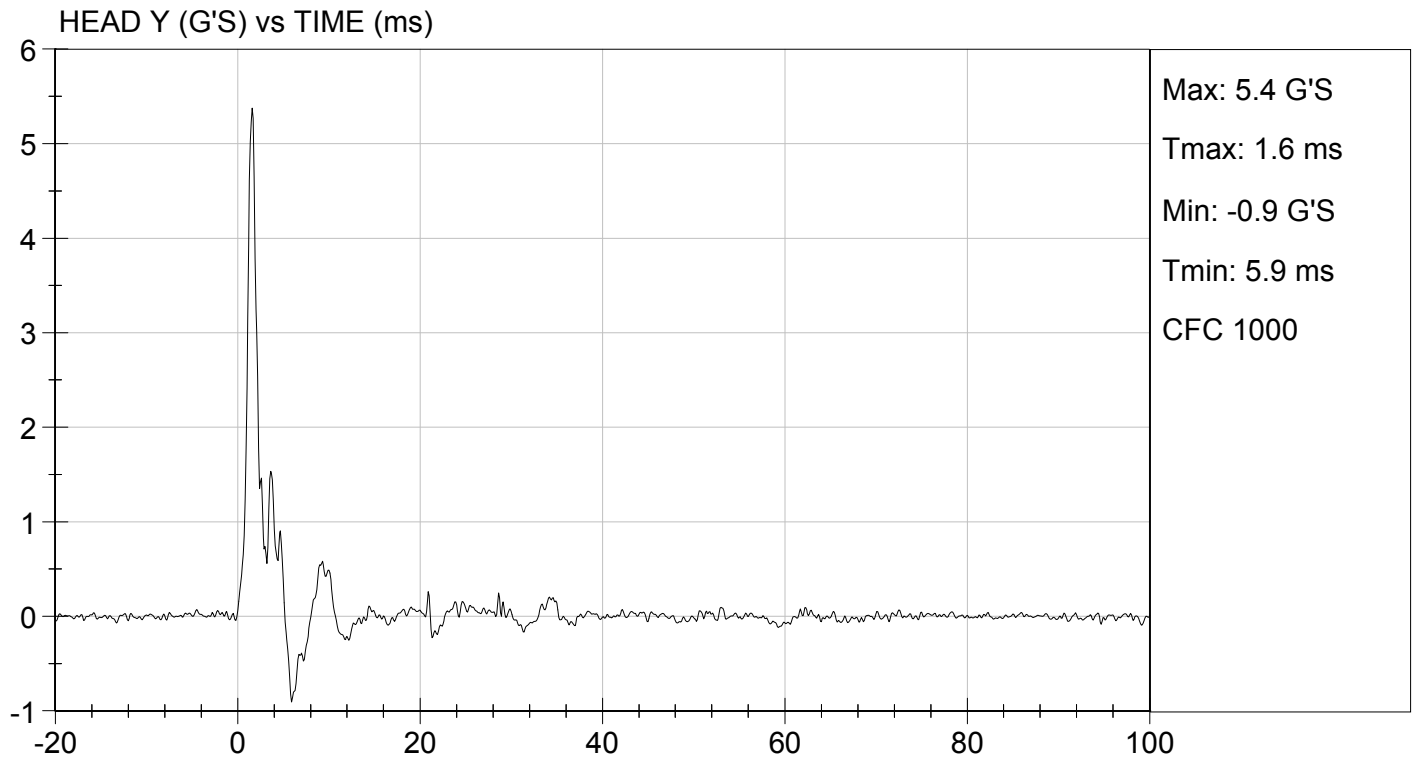

Laboratory Technician

09/27/2016

Test Date


Approved By



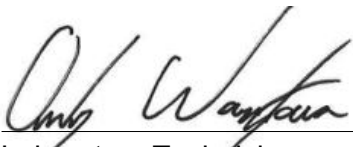


MGA RESEARCH CORPORATION
NECK FLEXION TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 351

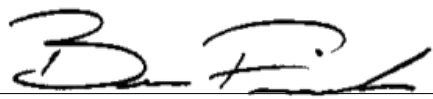
Test I.D: D163282

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	38	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.96	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	23.20	Pass
	20 ms	G's	17.60 to 22.60	19.57	Pass
	30 ms	G's	12.50 to 18.50	15.65	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	15.6	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	36.4	Pass
Maximum "D" Plane Rotation	Maximum	Deg	64.0 to 78.0	69.8	Pass
	Time	ms	57.0 to 64.0	59.3	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	119.5	Pass
Moment About Occipital Condyle	Maximum	Nm	88.1 to 108.5	90.0	Pass
	Time	ms	47.0 to 58.0	49.6	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	98.3	Pass
Overall Test Results					Pass


 Laboratory Technician

09/27/2016

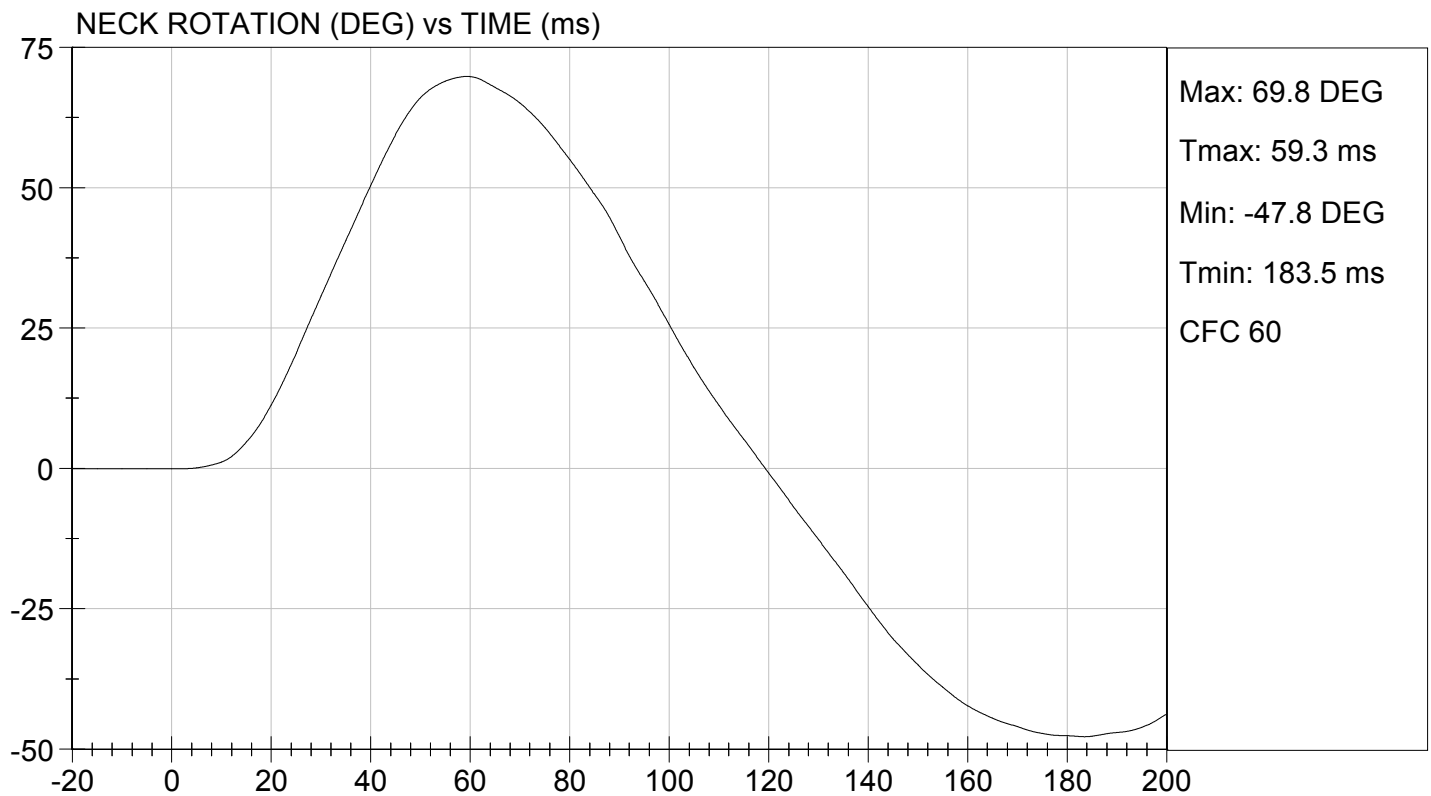
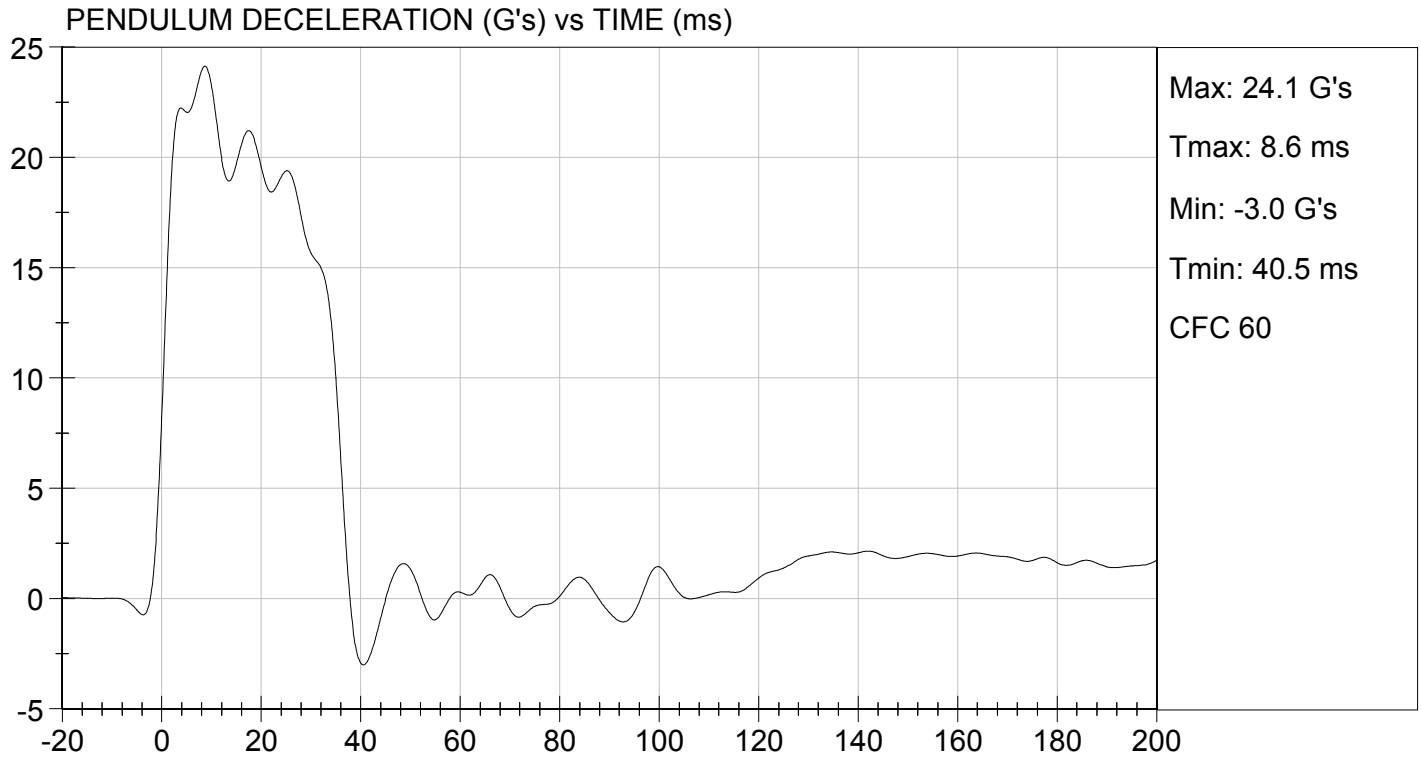
Test Date


 Approved By



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

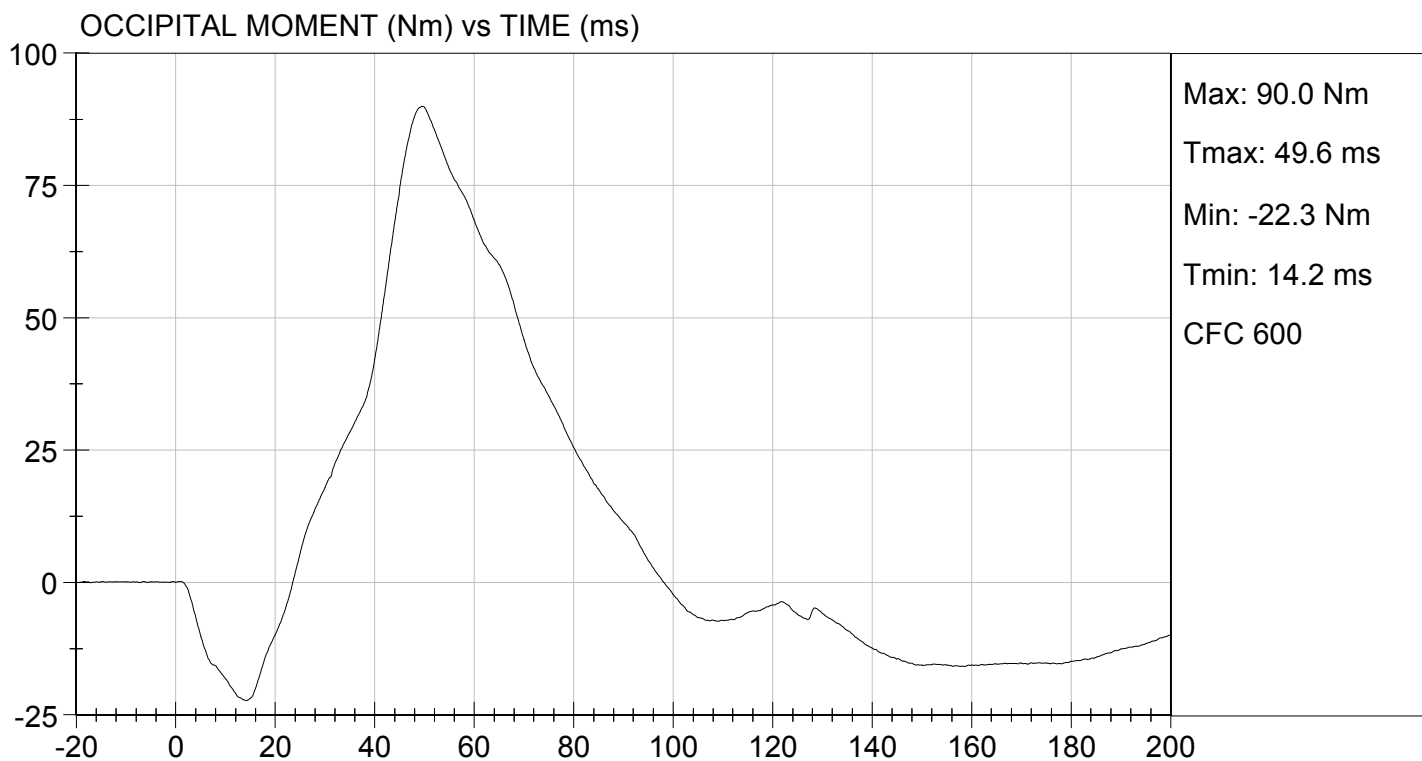
TEST DATE: 09/27/2016
TEST #: D163282





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

TEST DATE: 09/27/2016
TEST #: D163282

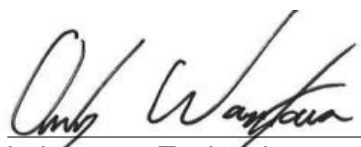


MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 50TH PERCENTILE MALE

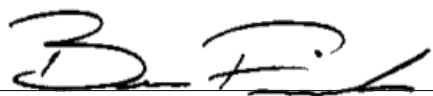
ATD Serial No: 351

Test I.D: D163283

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	38	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.05	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	19.77	Pass
	20 ms	G's	14.00 to 19.00	16.94	Pass
	30 ms	G's	11.00 to 16.00	11.95	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 22.0	13.2	Pass
Deceleration Decay Time to Cross 5 G's		ms	38.0 to 46.0	39.1	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	98.6	Pass
	Time	ms	72.0 to 82.0	80.3	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	165.5	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-59.3	Pass
	Time	ms	65.0 to 79.0	74.4	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	146.7	Pass
Overall Test Results					Pass


 Laboratory Technician

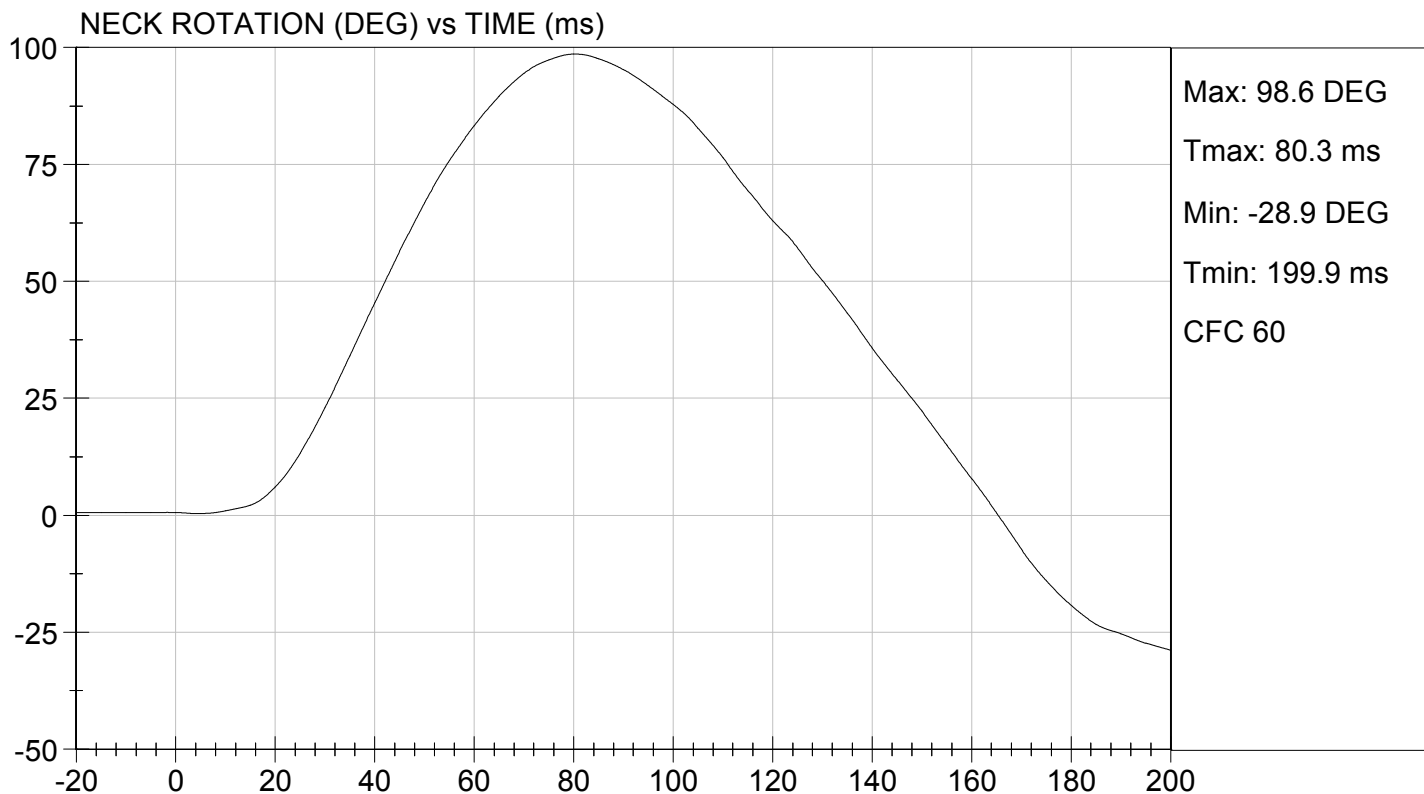
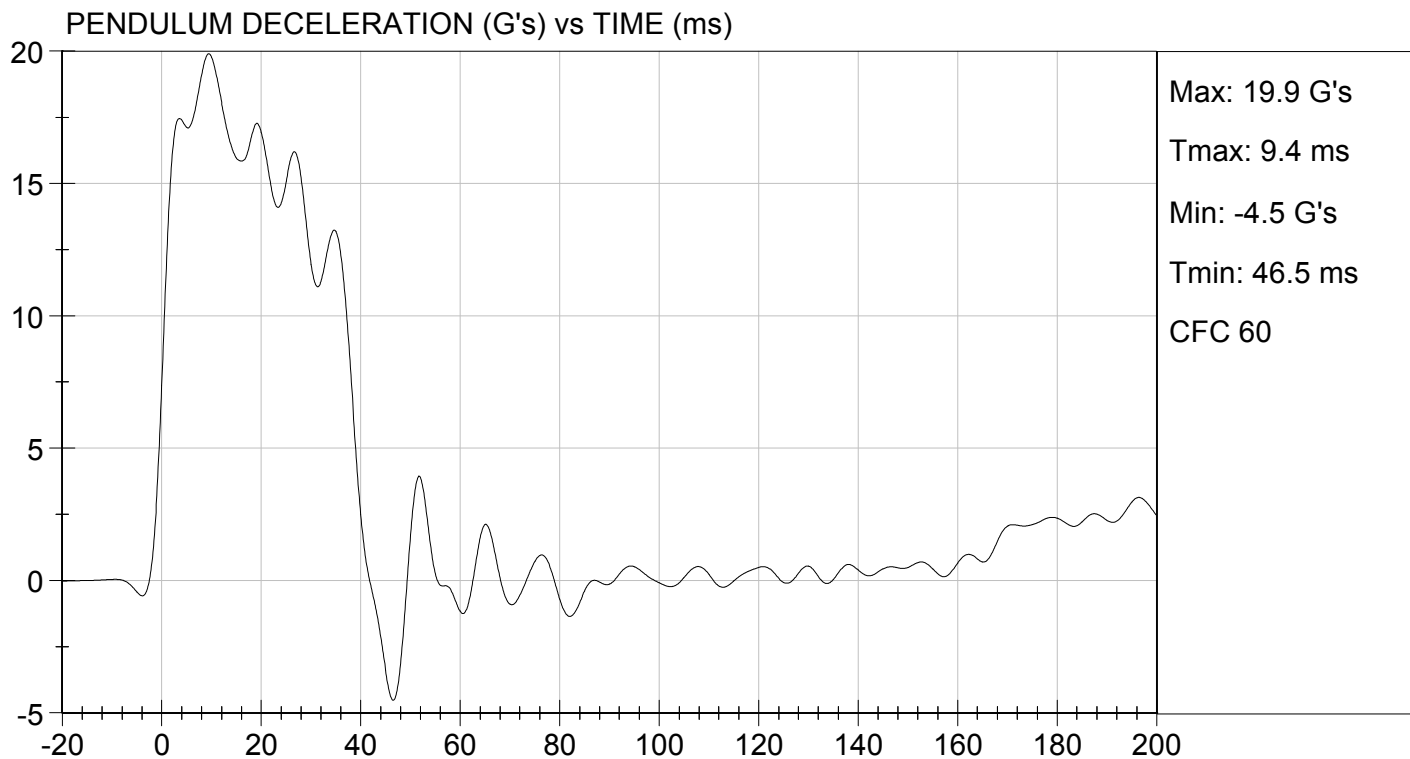
09/27/2016
 Test Date


 Approved By



TEST DESC: NECK EXTENSION
VELOCITY: 19.84 ft/s, 6.05 m/s

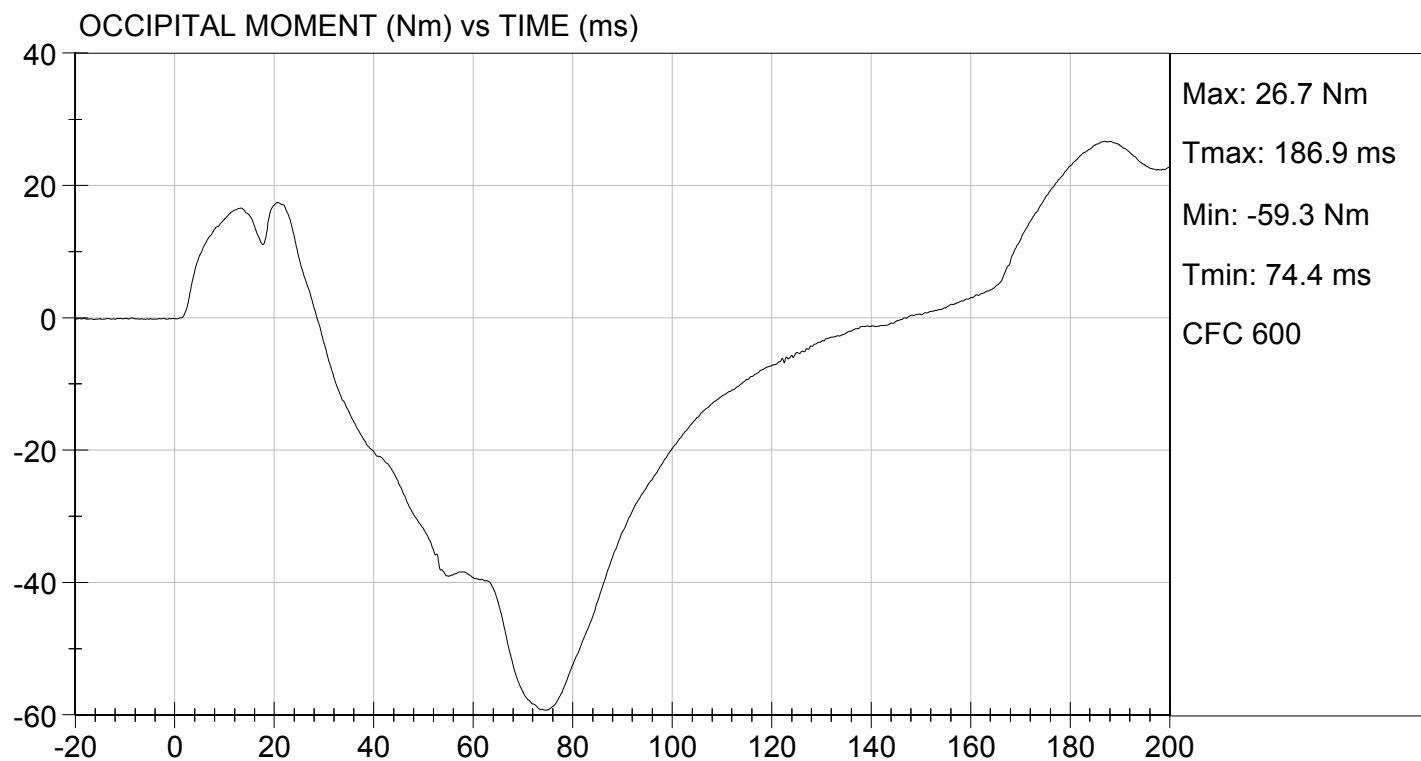
TEST DATE: 09/27/2016
TEST #: D163283





TEST DESC: NECK EXTENSION
VELOCITY: 19.84 ft/s, 6.05 m/s

TEST DATE: 09/27/2016
TEST #: D163283

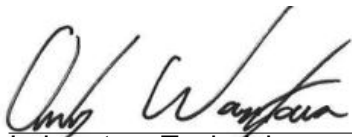


MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 351

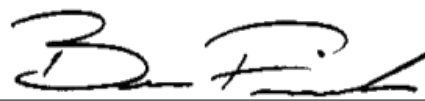
Test I.D: D163284

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	42	Pass
Probe Velocity	m/s	6.58 to 6.82	6.77	Pass
Peak Probe Force	N	5159 to 5893	5,492	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.51	Pass
Internal Hysteresis	%	69 to 85	73	Pass
Overall Test Results			Pass	



Laboratory Technician

09/28/2016
Test Date

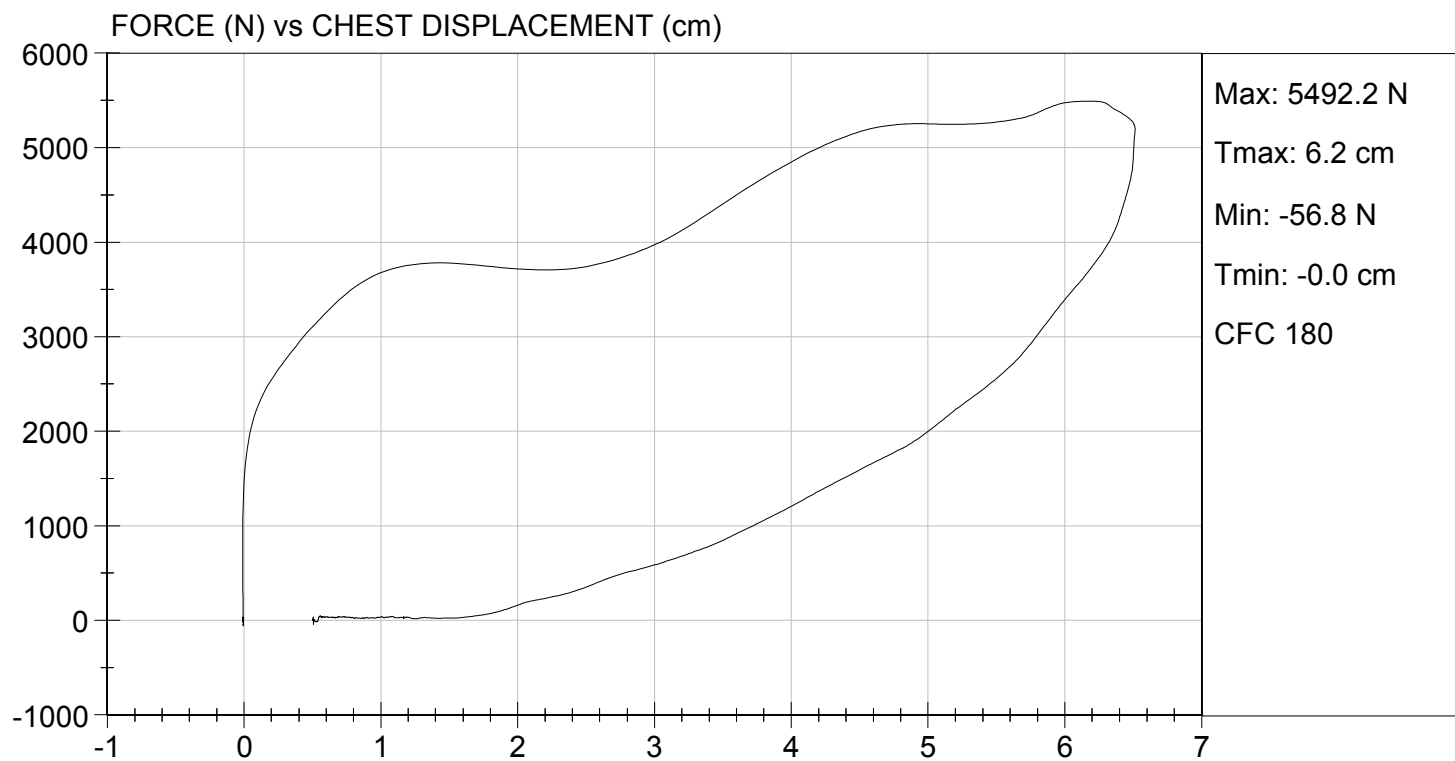


Approved By



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

TEST DATE: 09/28/2016
TEST #: D163284



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

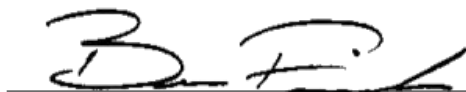
ATD Serial No: 351

Test I.D: D163285

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	38	Pass
Probe Velocity	m/s	2.07 to 2.13	2.12	Pass
Peak Probe Force	N	4715 to 5782	5,168	Pass
Overall Test Results				Pass


Laboratory Technician

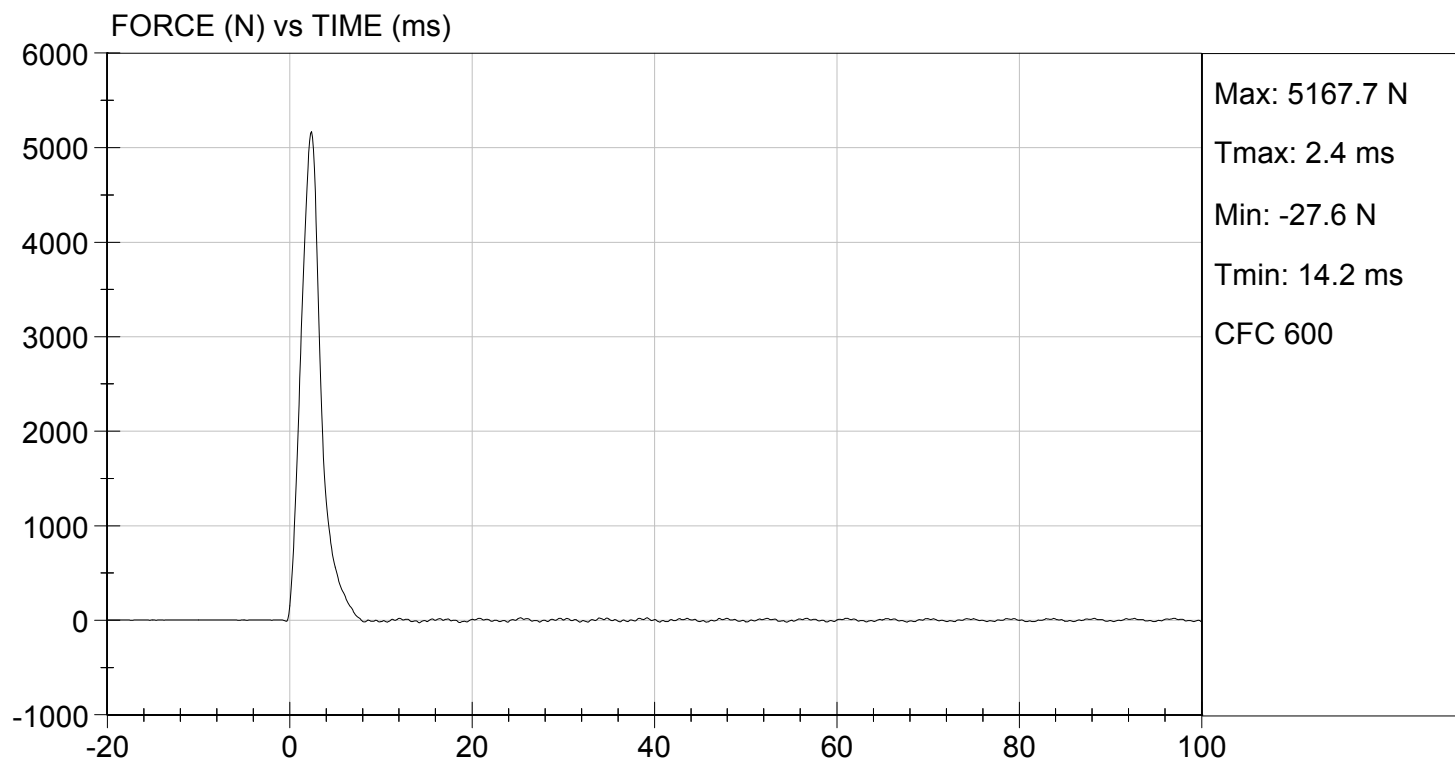
09/27/2016
Test Date


Approved By



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

TEST DATE: 09/27/2016
TEST #: D163285



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

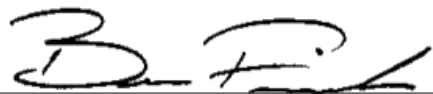
ATD Serial No: 351

Test I.D: D163286

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	38	Pass
Probe Velocity	m/s	2.07 to 2.13	2.13	Pass
Peak Probe Force	N	4715 to 5782	5,251	Pass
Overall Test Results				Pass


Laboratory Technician

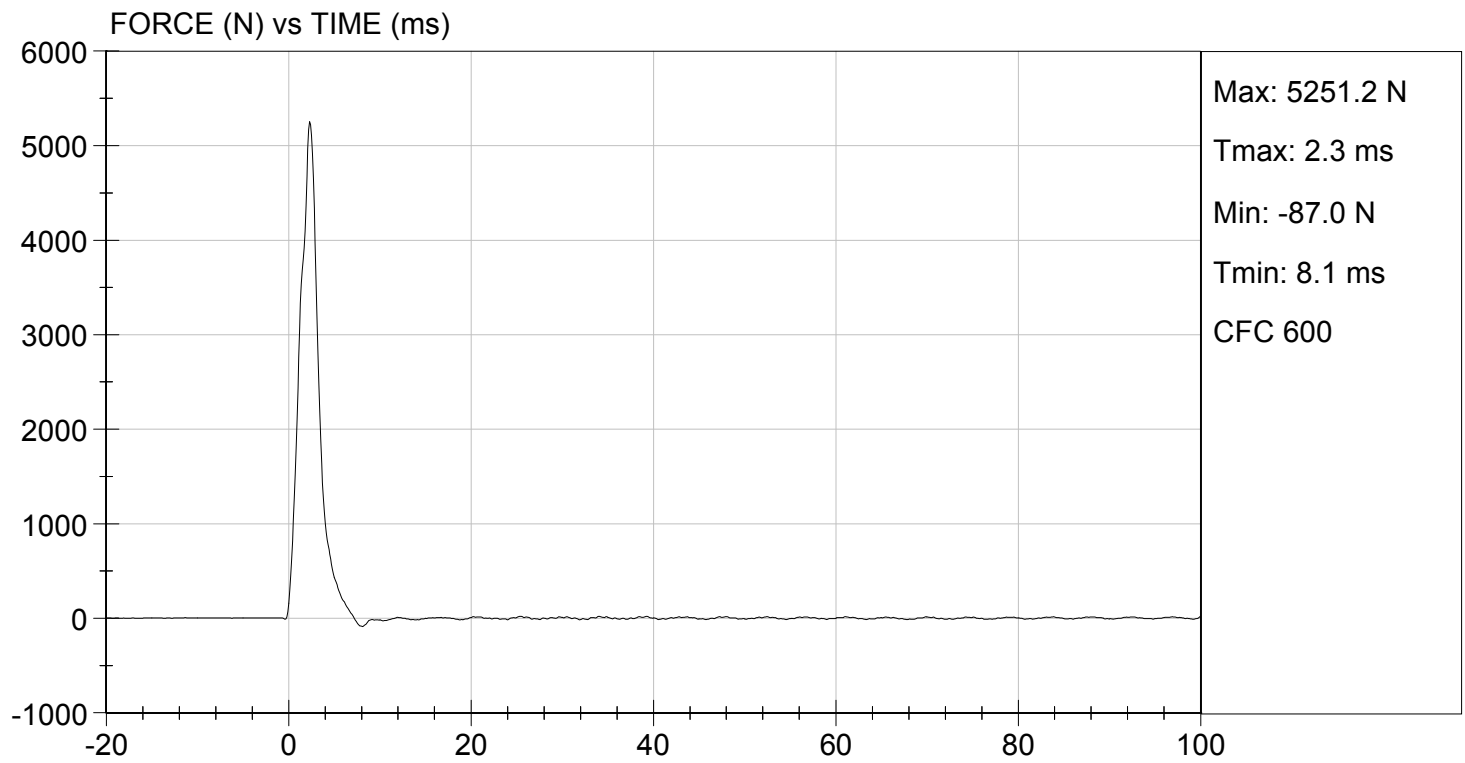
09/27/2016
Test Date


Approved By



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

TEST DATE: 09/27/2016
TEST #: D163286



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

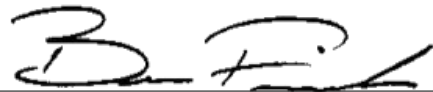
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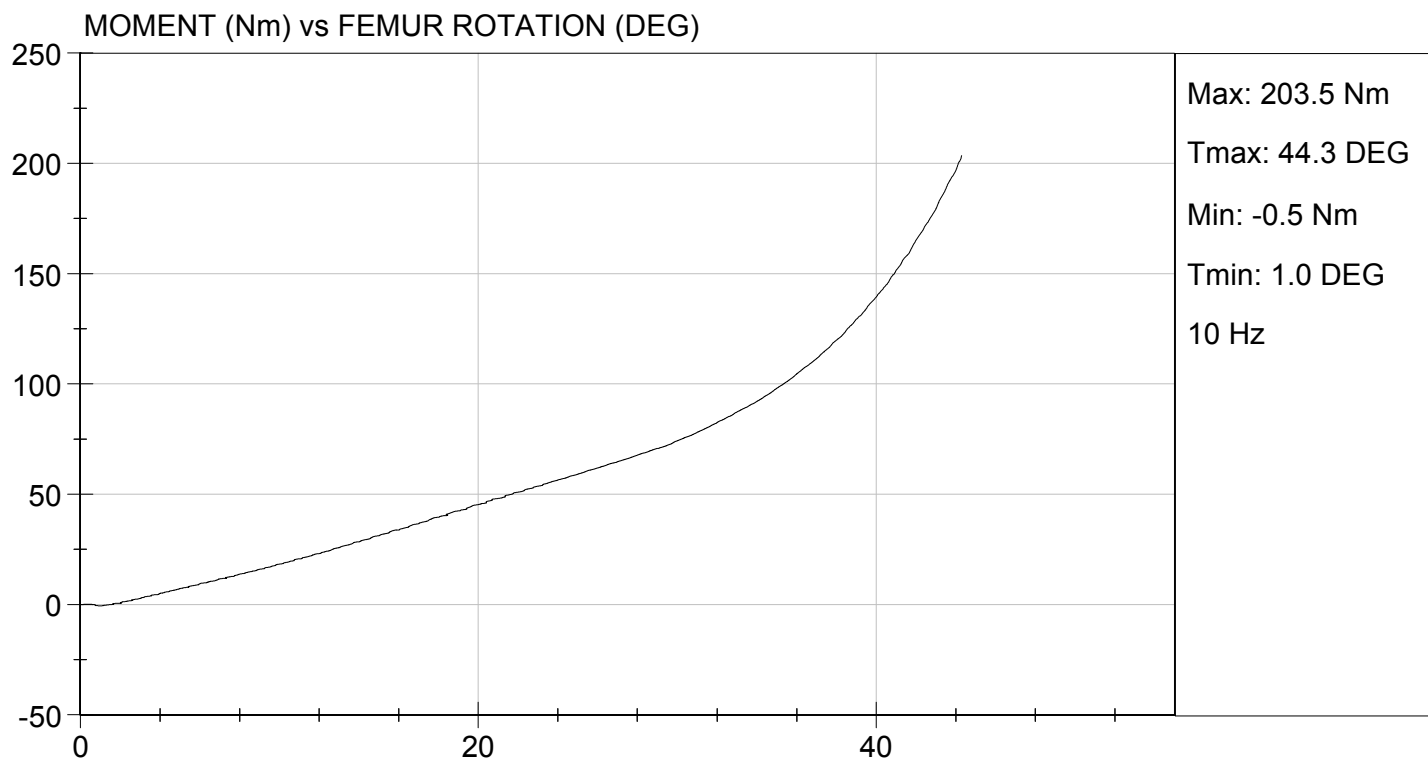
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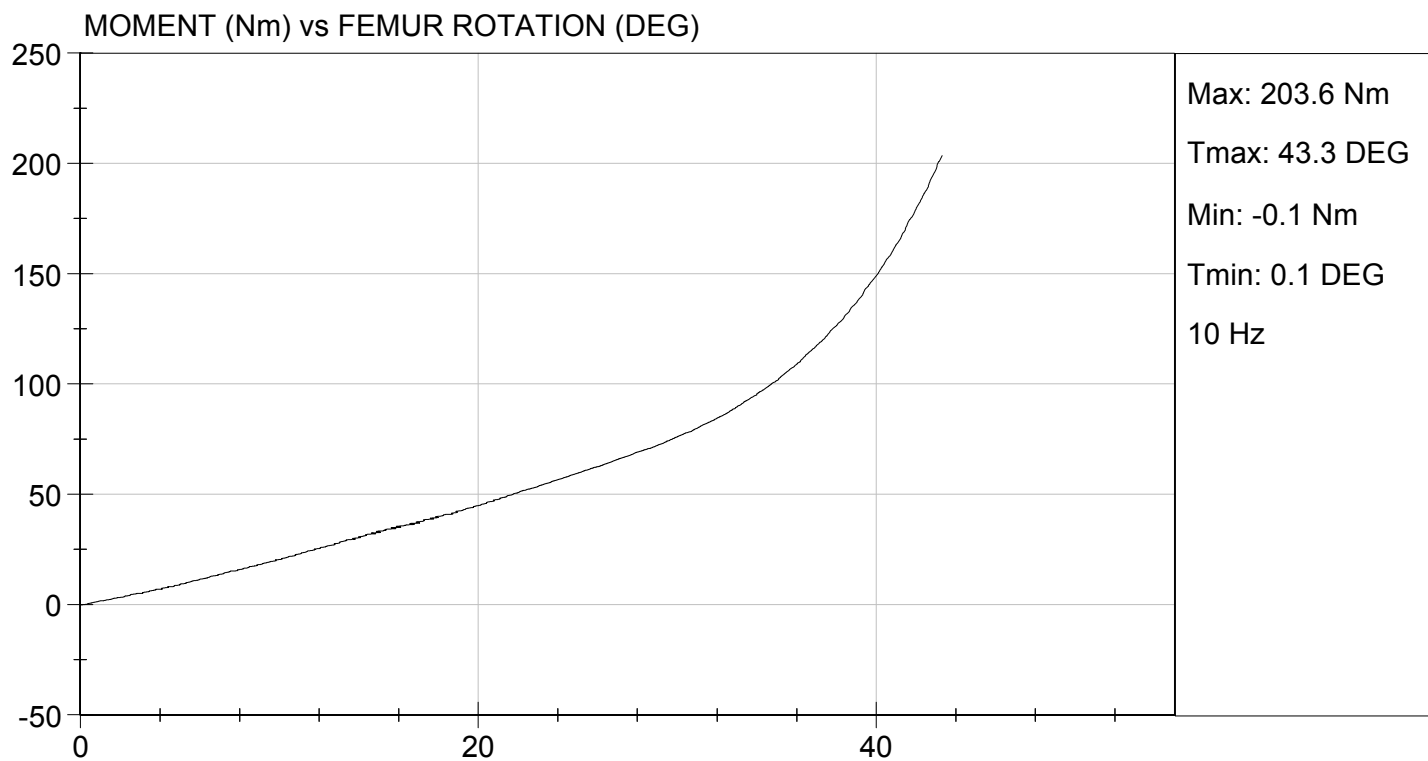
Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.3	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	38	38	Pass
Rotation Rate	deg/s	5.0 to 10.0	6.3	6.3	Pass
30 Degrees	Nm	94.9 Nm Max	74.2	76.1	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 to 50.0 Degree Max Rotation	44.3	43.3	Pass
Overall Test Results					Pass


Laboratory Technician

09/27/2016
Test Date


Approved By



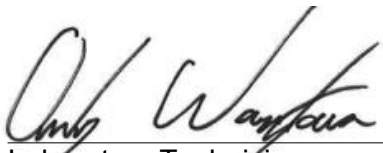


MGA RESEARCH CORPORATION
HEAD DROP TEST
HYBRID III 50TH PERCENTILE MALE

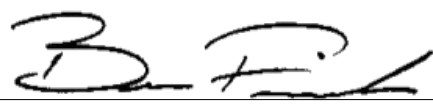
ATD Serial No: 351

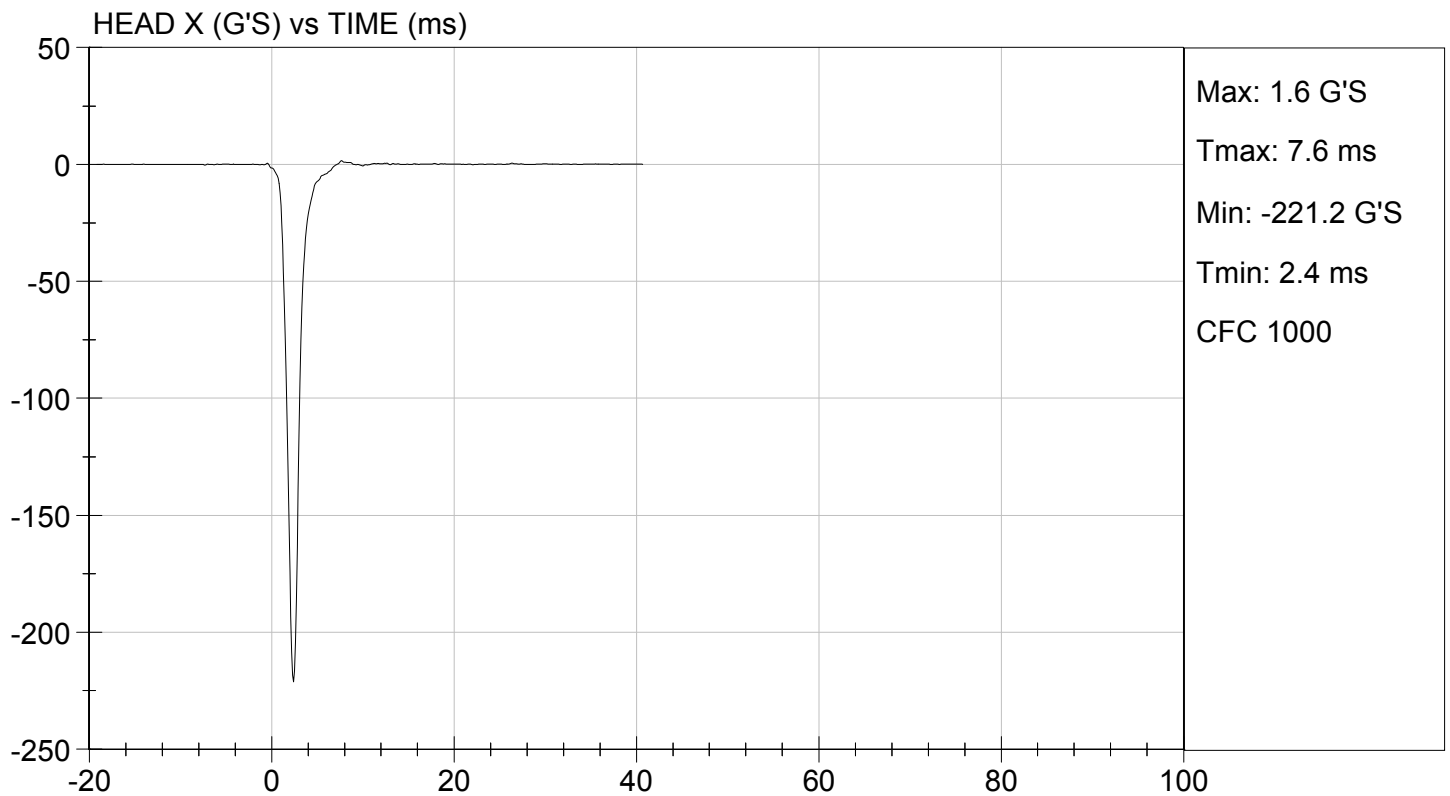
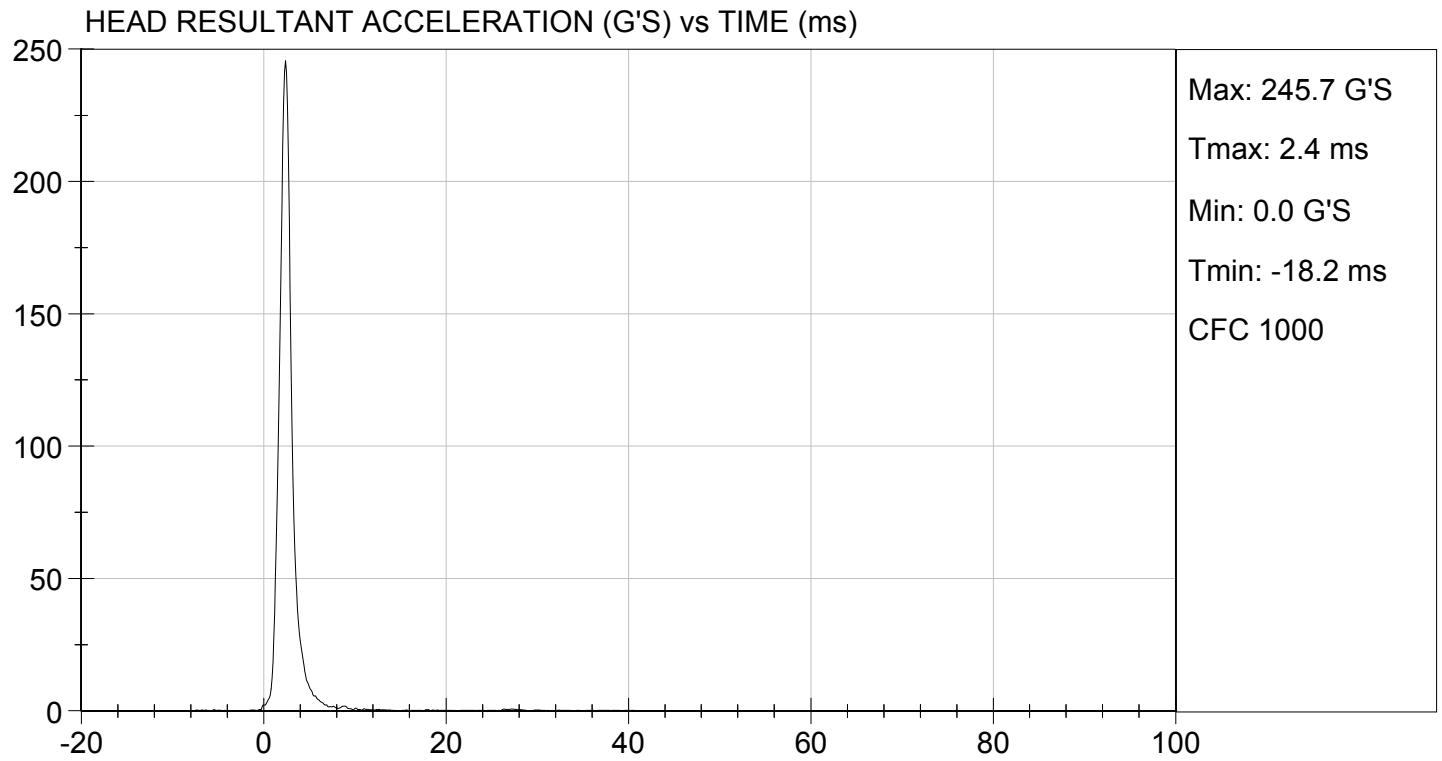
Test ID: D163391

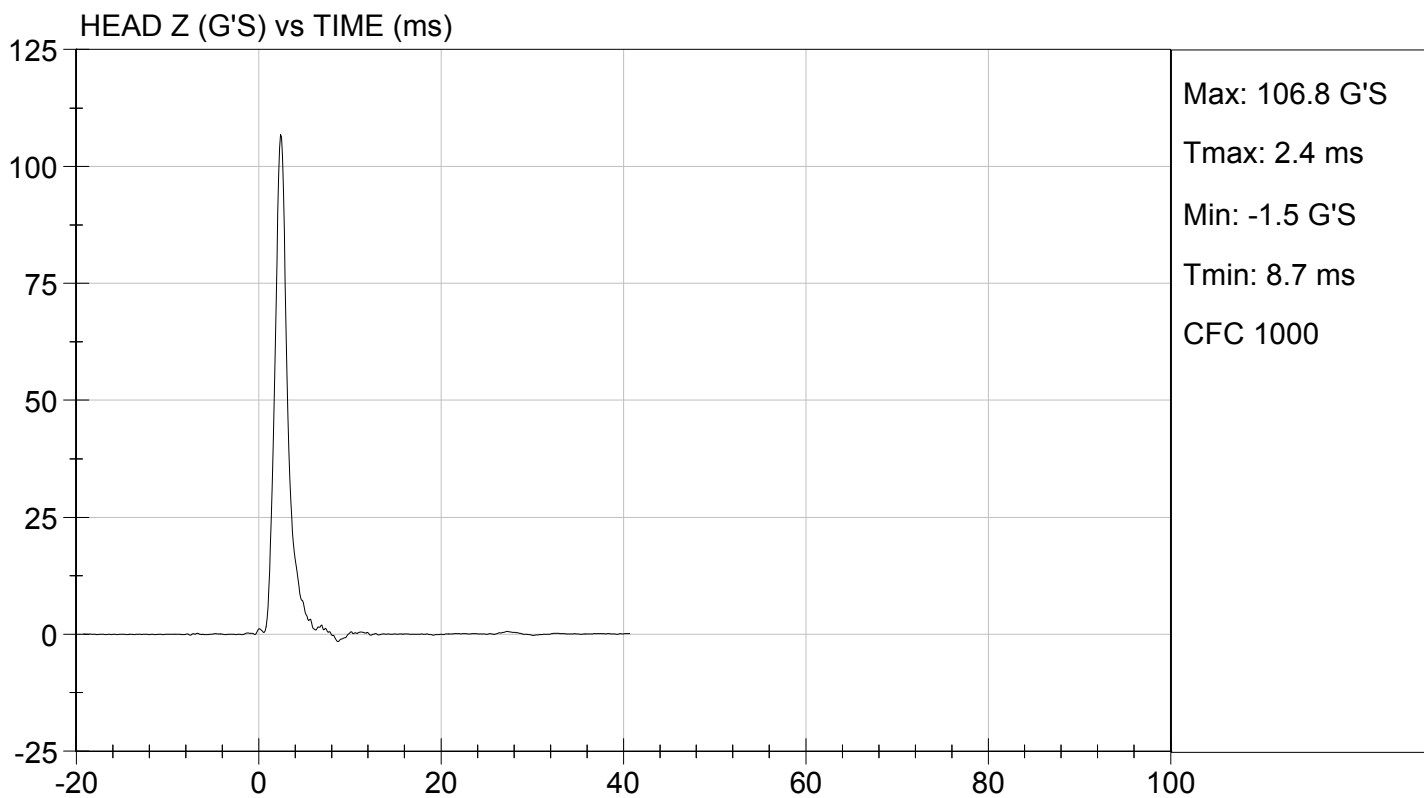
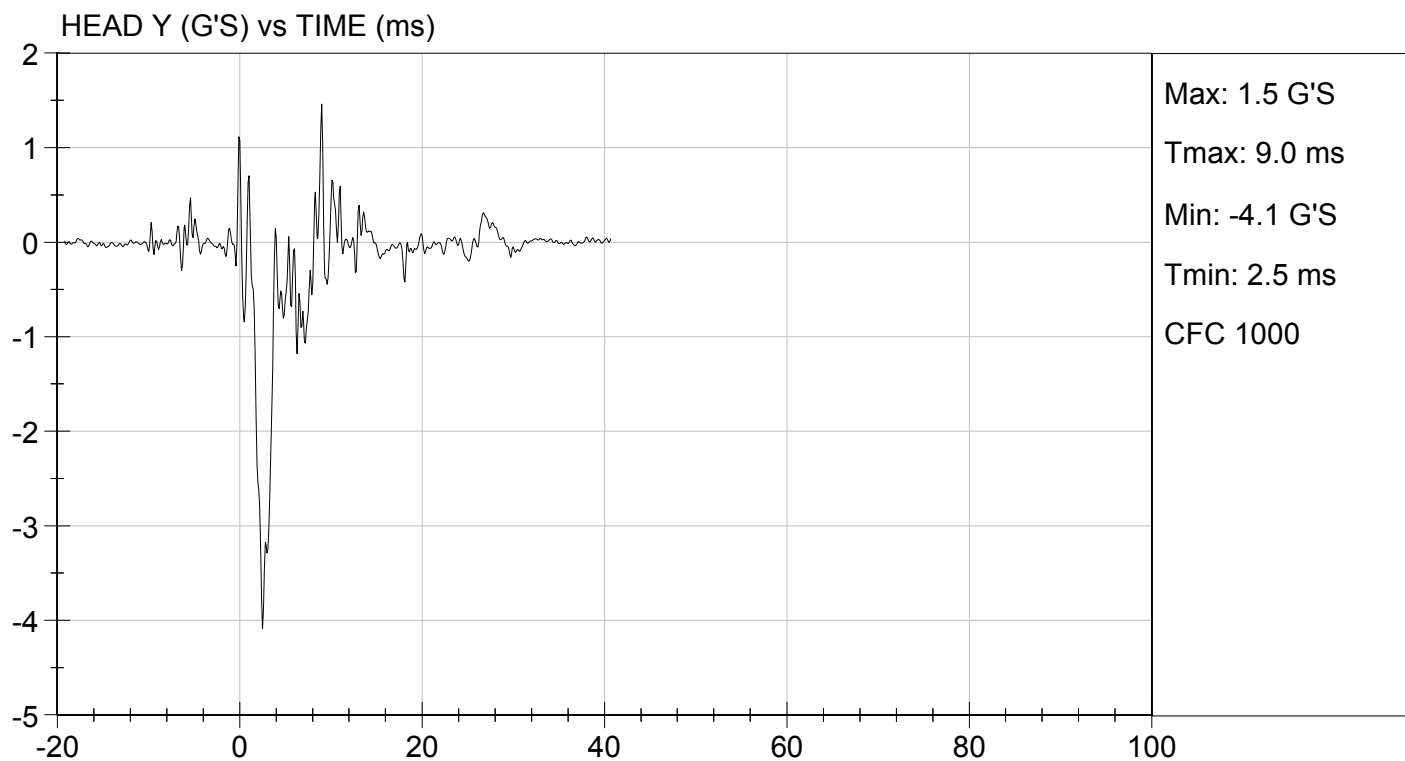
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	53	Pass
Peak Resultant Acceleration	G's	225 to 275	246	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-4.1	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician

10/06/2016
Test Date


Approved By



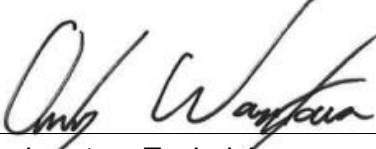


MGA RESEARCH CORPORATION
NECK FLEXION TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 351

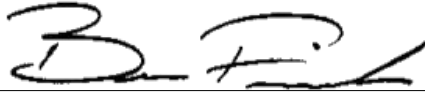
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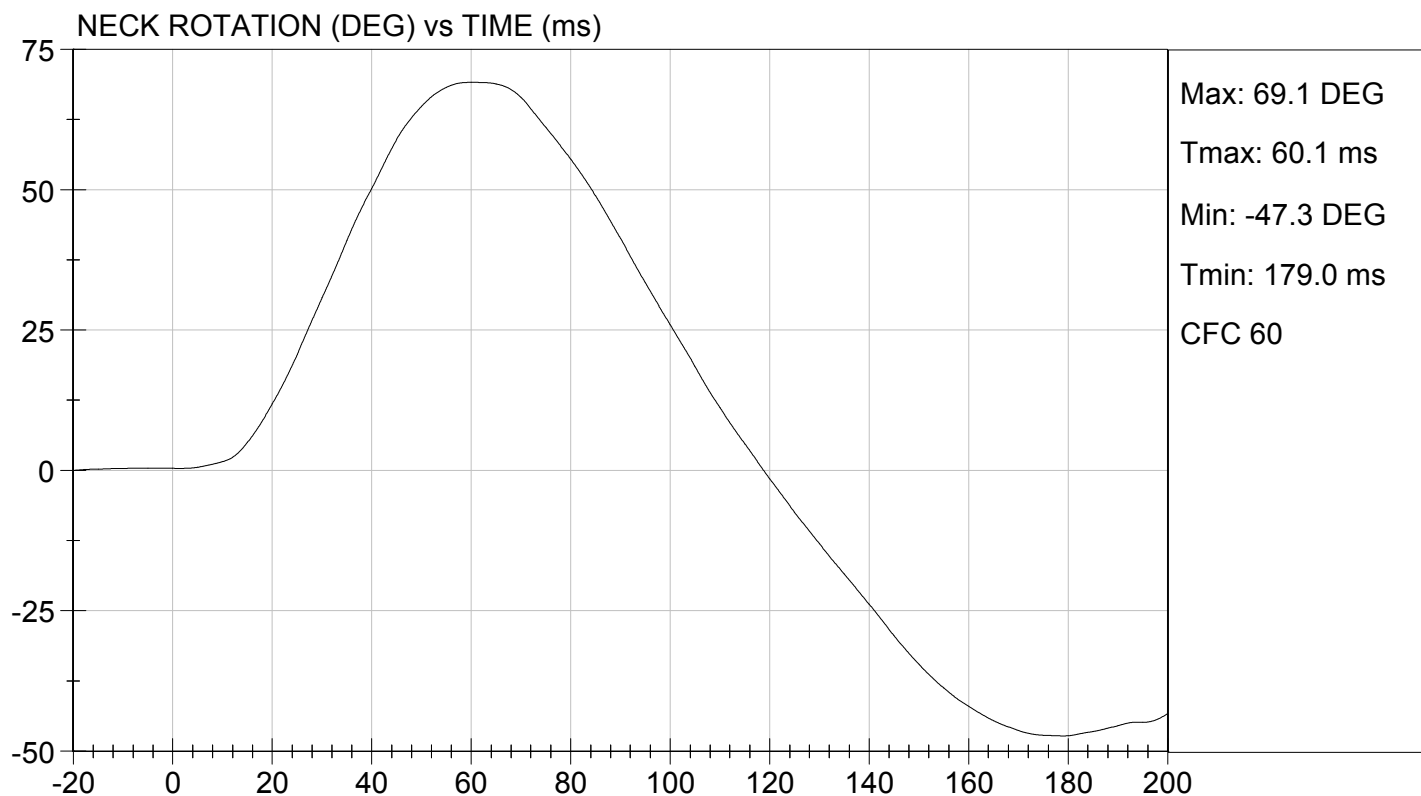
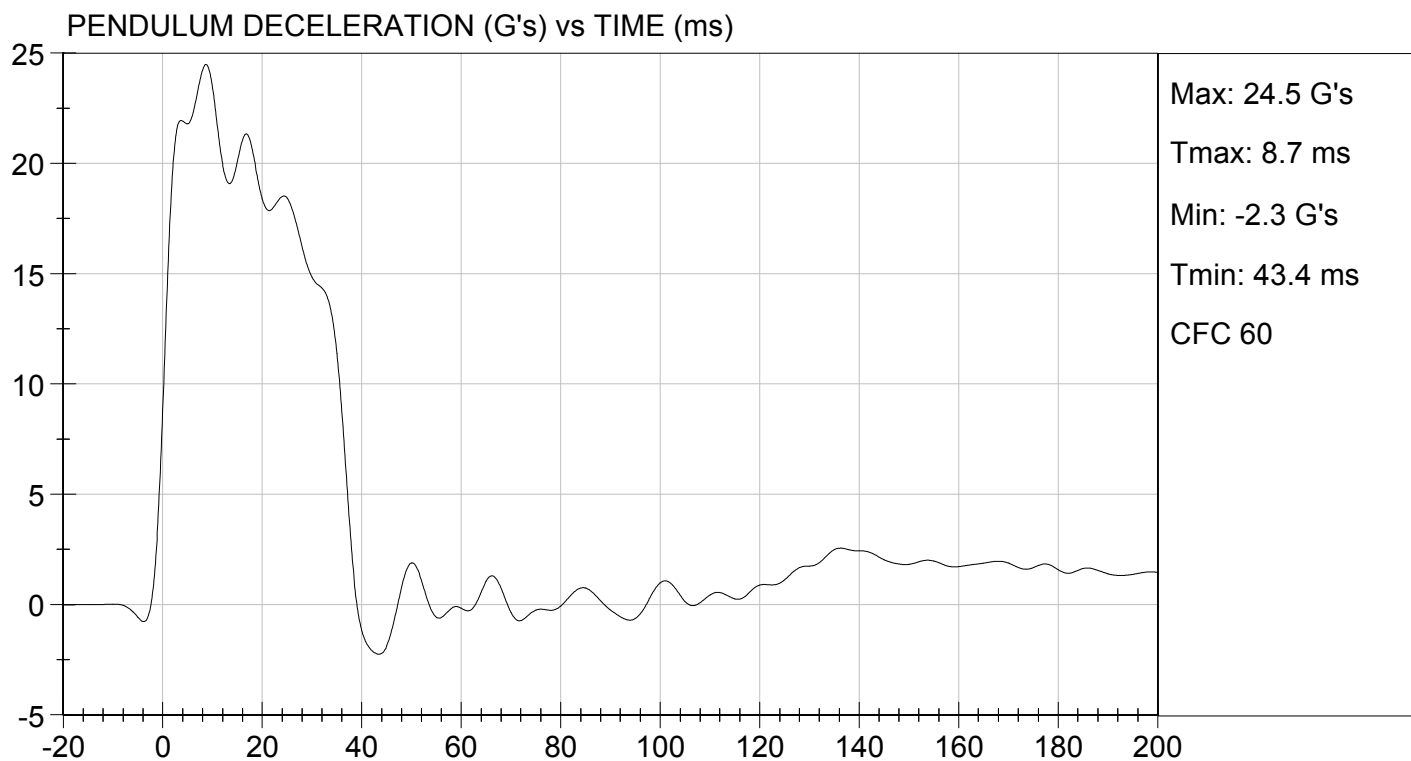
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity		%	10 to 70	54	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.96	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	23.41	Pass
	20 ms	G's	17.60 to 22.60	18.40	Pass
	30 ms	G's	12.50 to 18.50	14.84	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	14.8	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	37.2	Pass
Maximum "D" Plane Rotation	Maximum	Deg	64.0 to 78.0	69.1	Pass
	Time	ms	57.0 to 64.0	60.1	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	119.0	Pass
Moment About Occipital Condyle	Maximum	Nm	88.1 to 108.5	90.6	Pass
	Time	ms	47.0 to 58.0	50.4	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	98.3	Pass
Overall Test Results					Pass


 Laboratory Technician

10/06/2016

Test Date

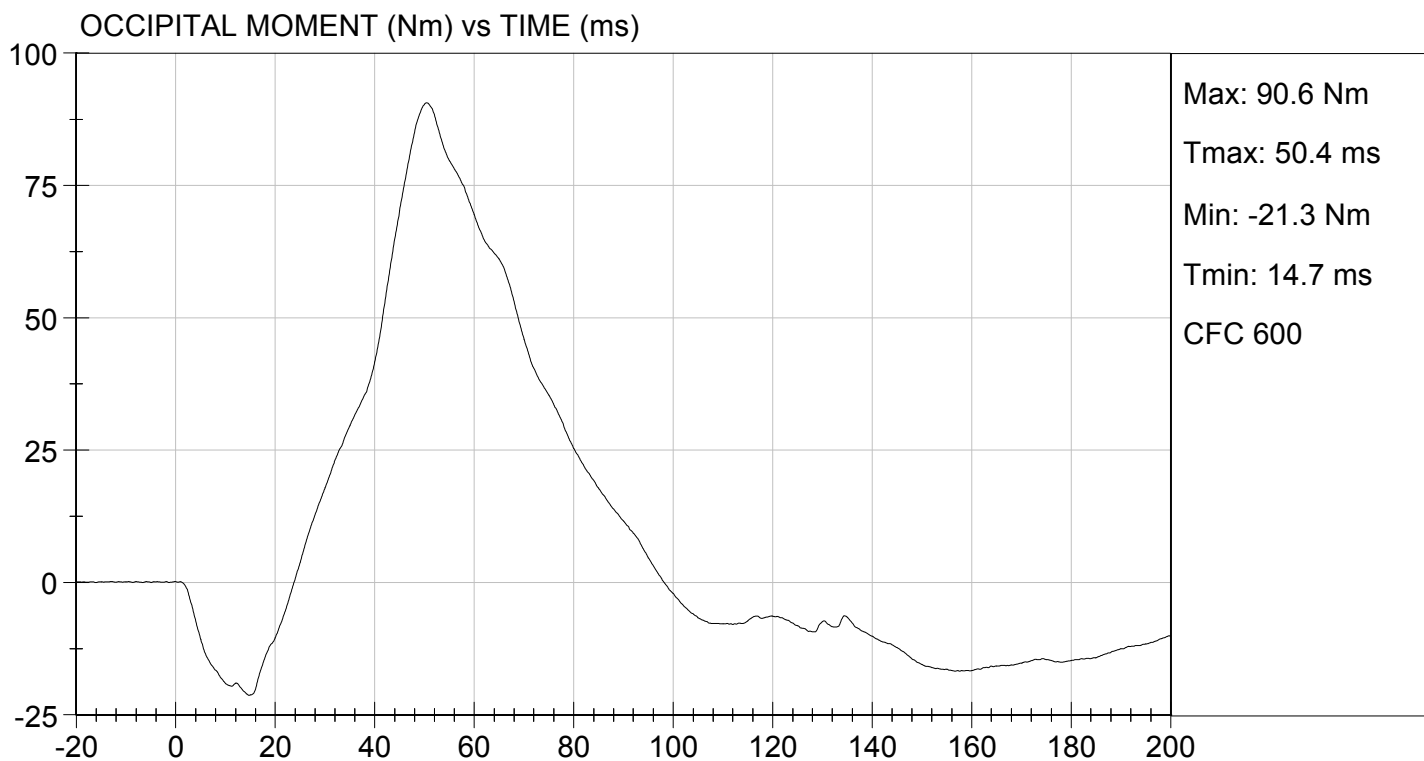

 Approved By





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

TEST DATE: 10/06/2016
TEST #: D163392

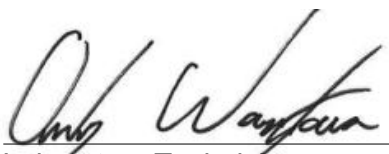


MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 50TH PERCENTILE MALE

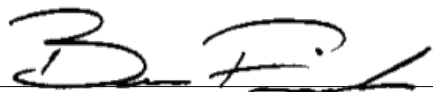
ATD Serial No: 351

Test I.D: D163393

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	54	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.05	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	19.26	Pass
	20 ms	G's	14.00 to 19.00	17.54	Pass
	30 ms	G's	11.00 to 16.00	12.41	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	40.0	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	99.6	Pass
	Time	ms	72.0 to 82.0	79.8	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	163.6	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-62.2	Pass
	Time	ms	65.0 to 79.0	74.4	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	147.8	Pass
Overall Test Results					Pass


 Laboratory Technician

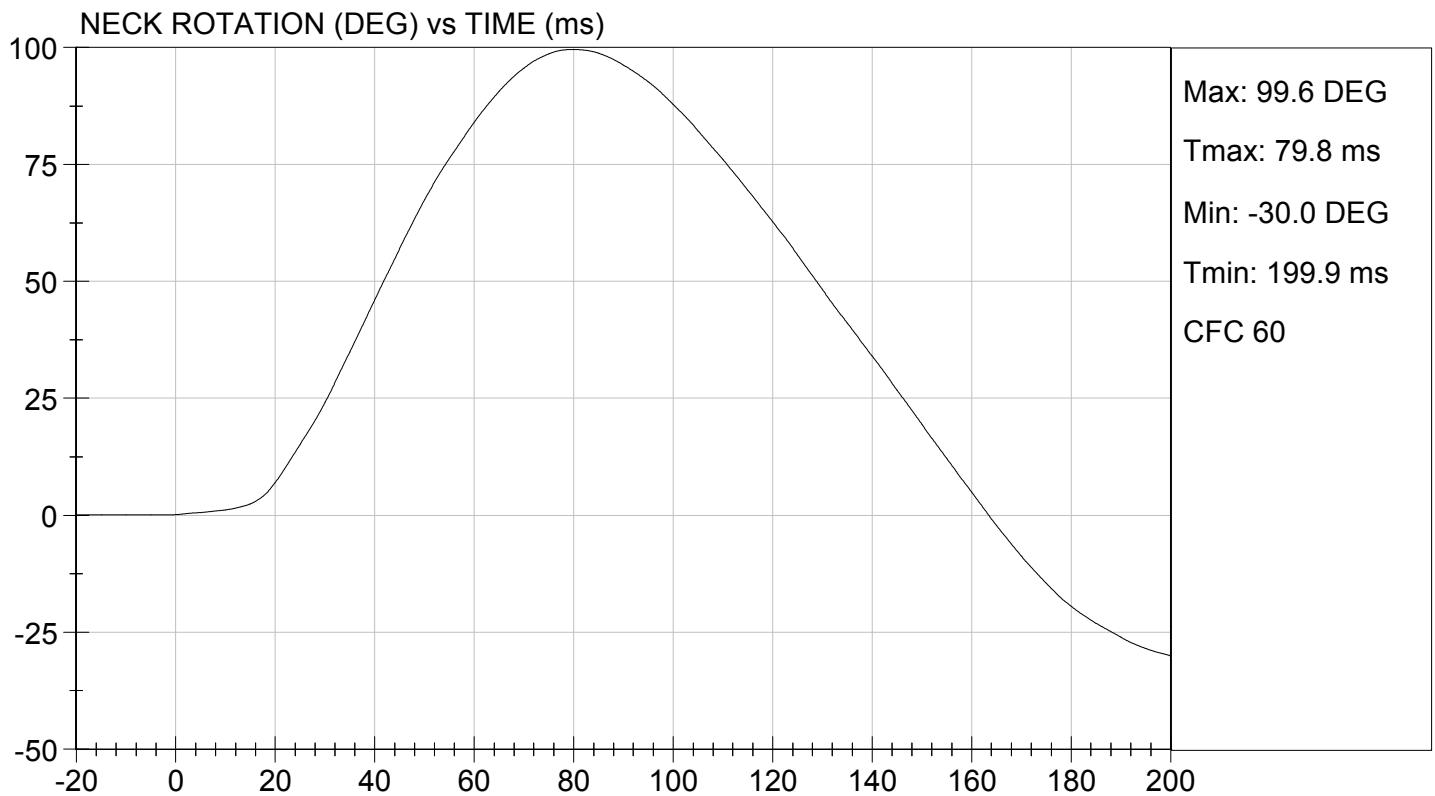
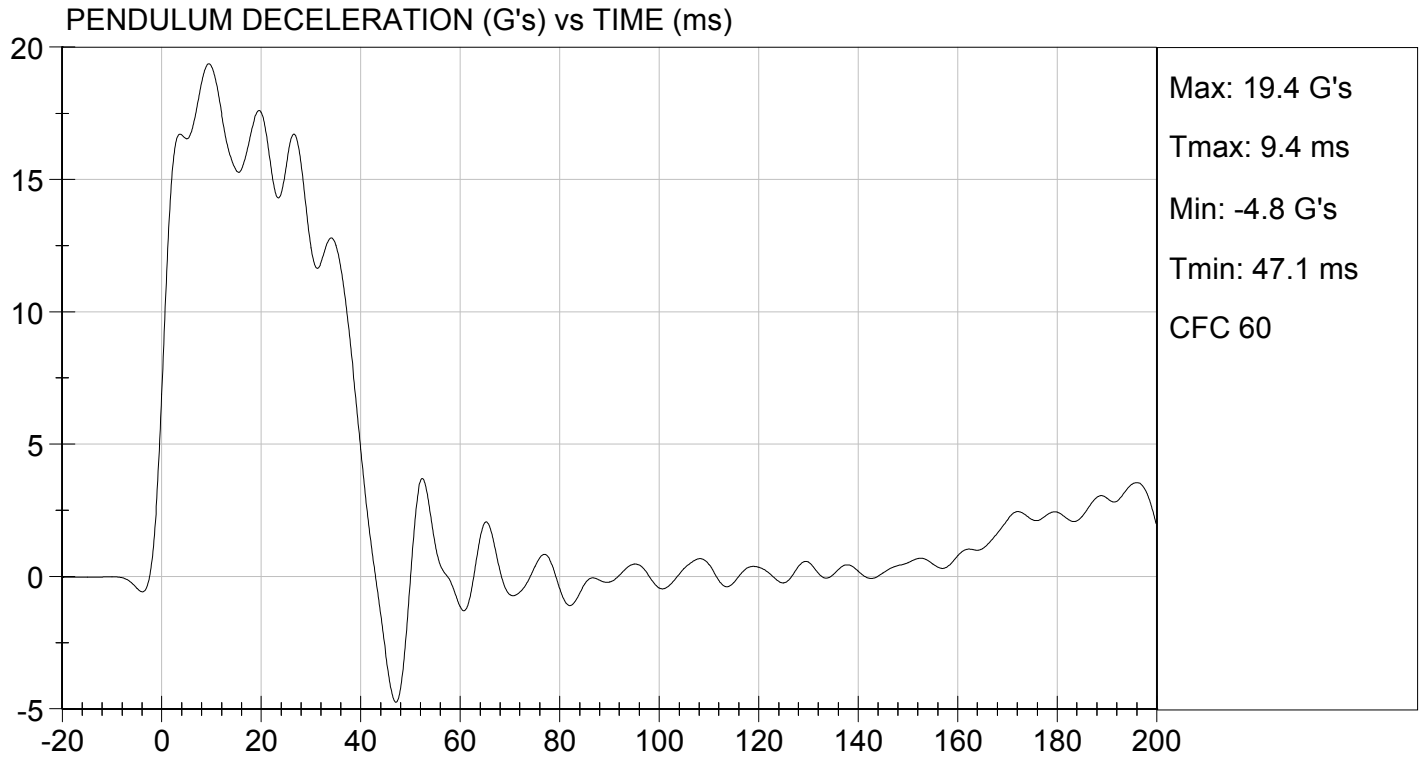
10/06/2016
 Test Date


 Approved By



TEST DESC: NECK EXTENSION
VELOCITY: 19.84 ft/s, 6.05 m/s

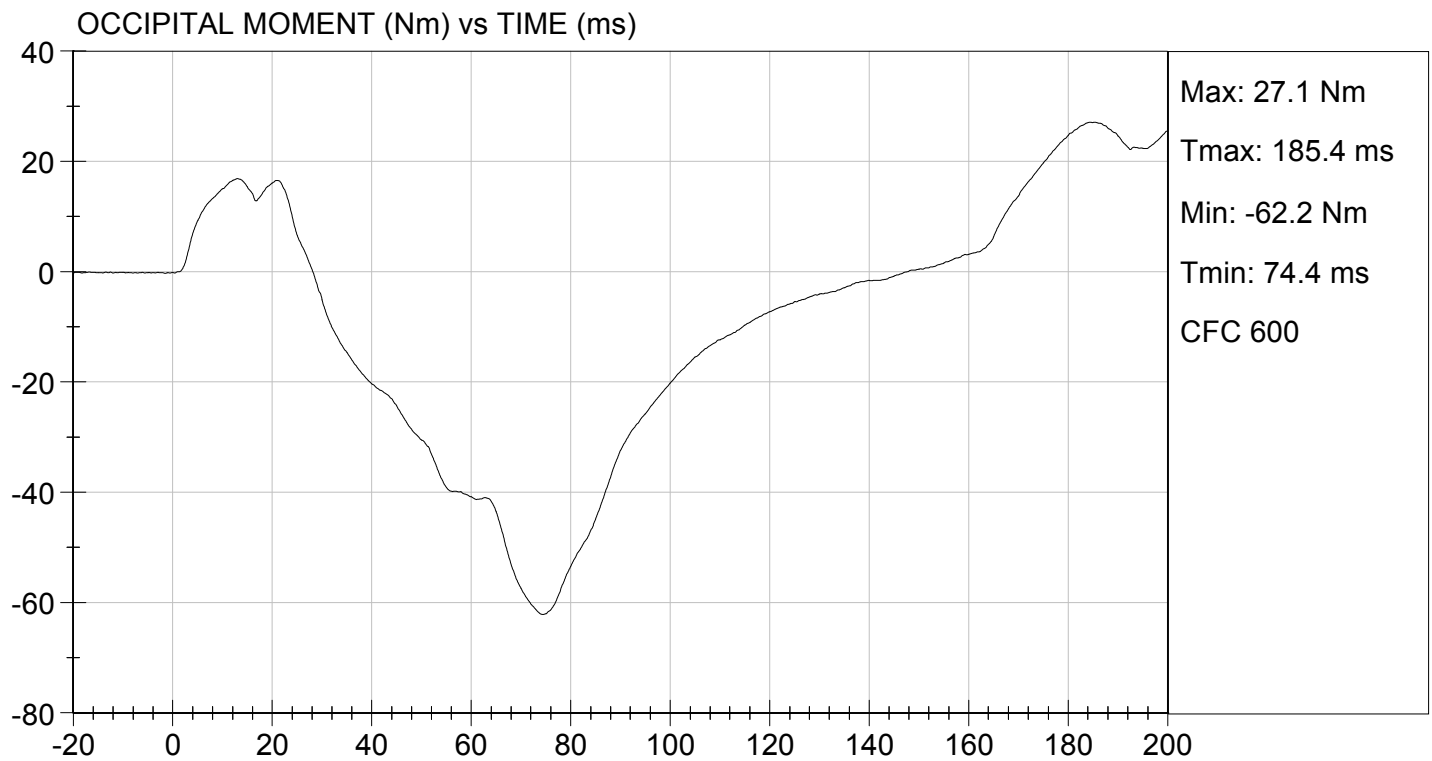
TEST DATE: 10/06/2016
TEST #: D163393





TEST DESC: NECK EXTENSION
VELOCITY: 19.84 ft/s, 6.05 m/s

TEST DATE: 10/06/2016
TEST #: D163393

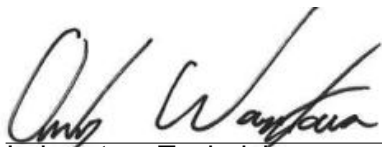


MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 351

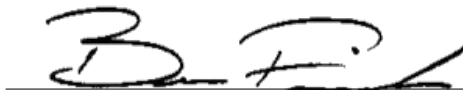
Test I.D: D163394

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	53	Pass
Probe Velocity	m/s	6.58 to 6.82	6.60	Pass
Peak Probe Force	N	5159 to 5893	5,522	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.43	Pass
Internal Hysteresis	%	69 to 85	74	Pass
Overall Test Results			Pass	



Laboratory Technician

10/07/2016
Test Date

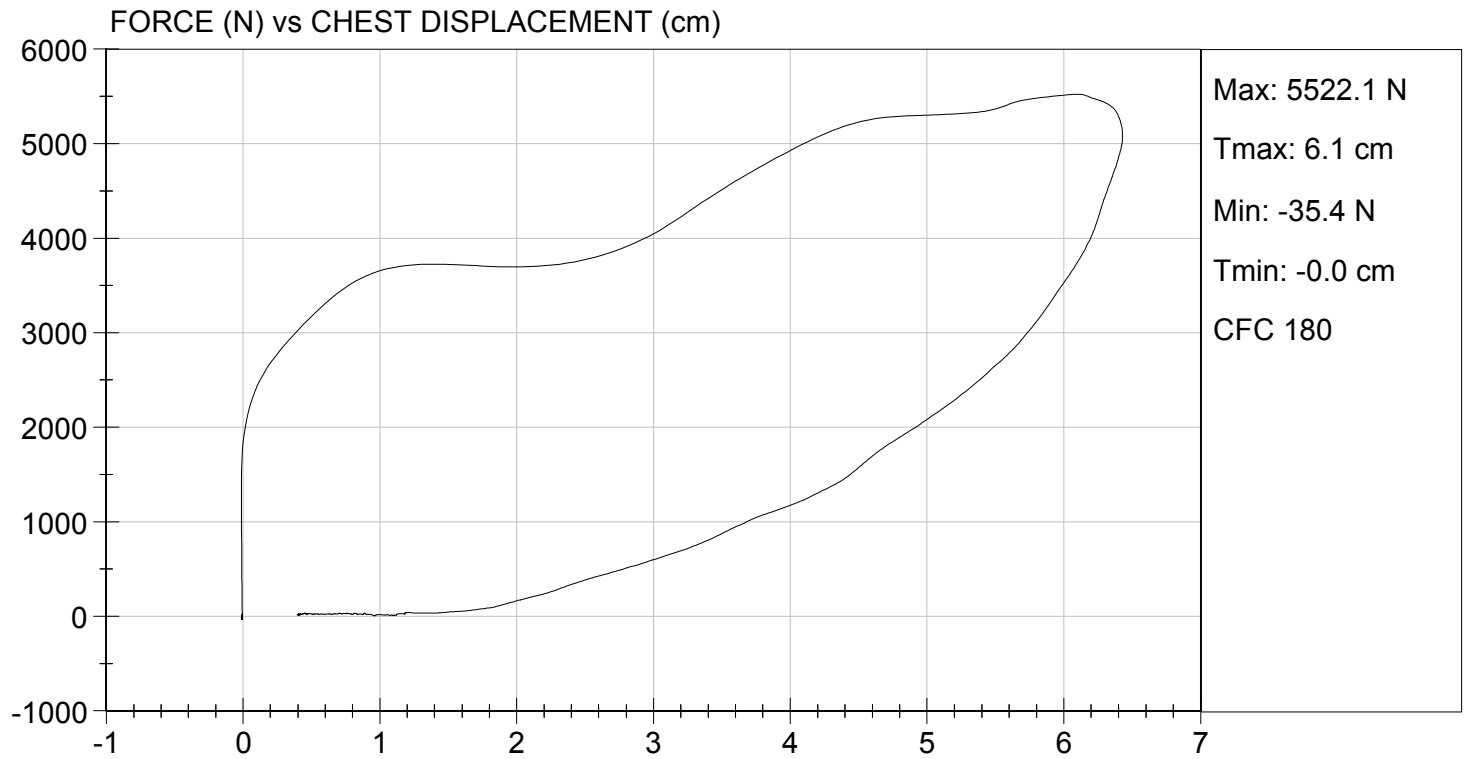


Approved By



TEST DESC: THORAX IMPACT
VELOCITY: 21.65 ft/s, 6.60 m/s

TEST DATE: 10/07/2016
TEST #: D163394



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

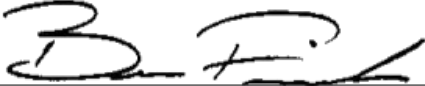
ATD Serial No: 351

Test I.D: D163395

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	54	Pass
Probe Velocity	m/s	2.07 to 2.13	2.13	Pass
Peak Probe Force	N	4715 to 5782	5,053	Pass
Overall Test Results				Pass


Laboratory Technician

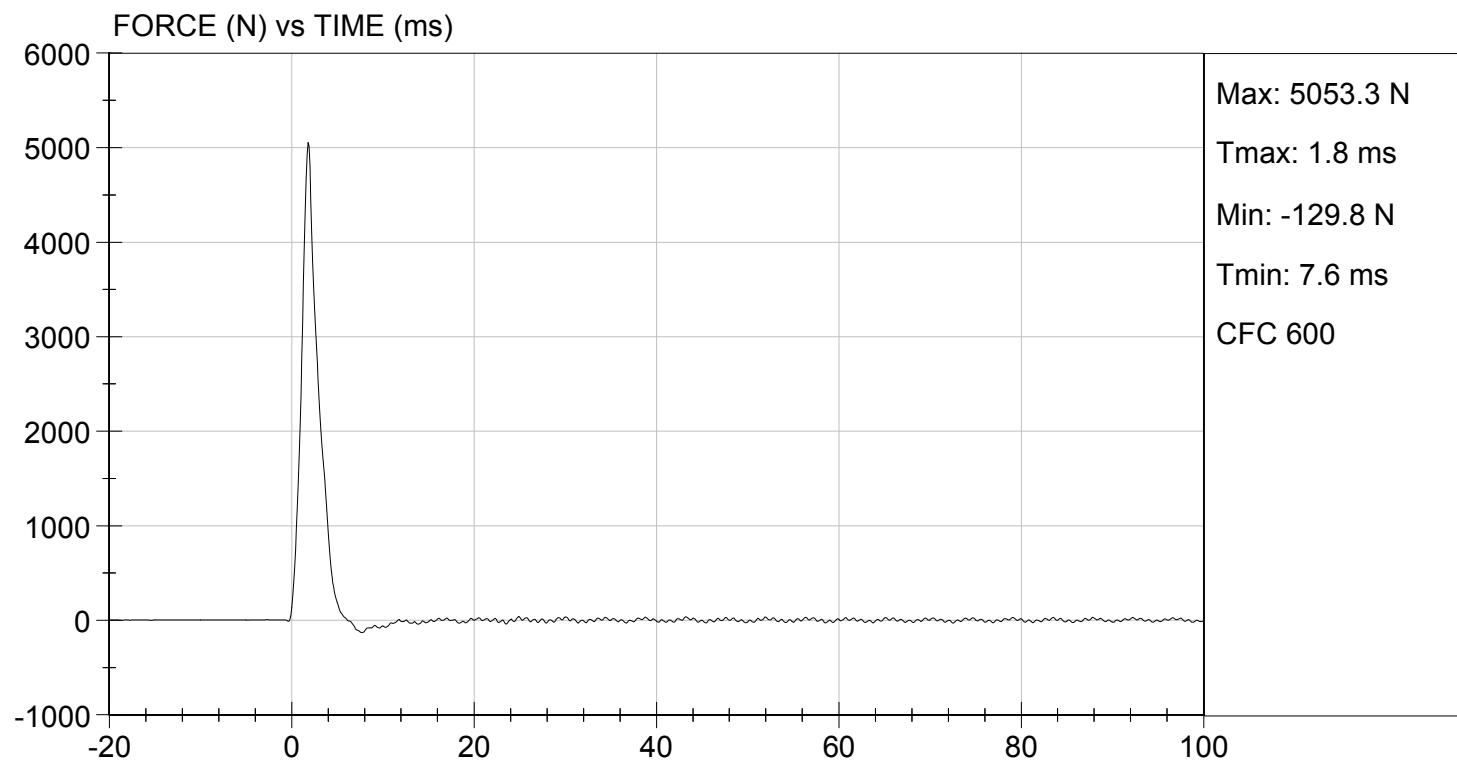
10/06/2016
Test Date


Approved By



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

TEST DATE: 10/06/2016
TEST #: D163395



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

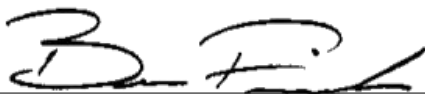
ATD Serial No: 351

Test I.D: D163396

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	54	Pass
Probe Velocity	m/s	2.07 to 2.13	2.11	Pass
Peak Probe Force	N	4715 to 5782	5,593	Pass
Overall Test Results				Pass


Laboratory Technician

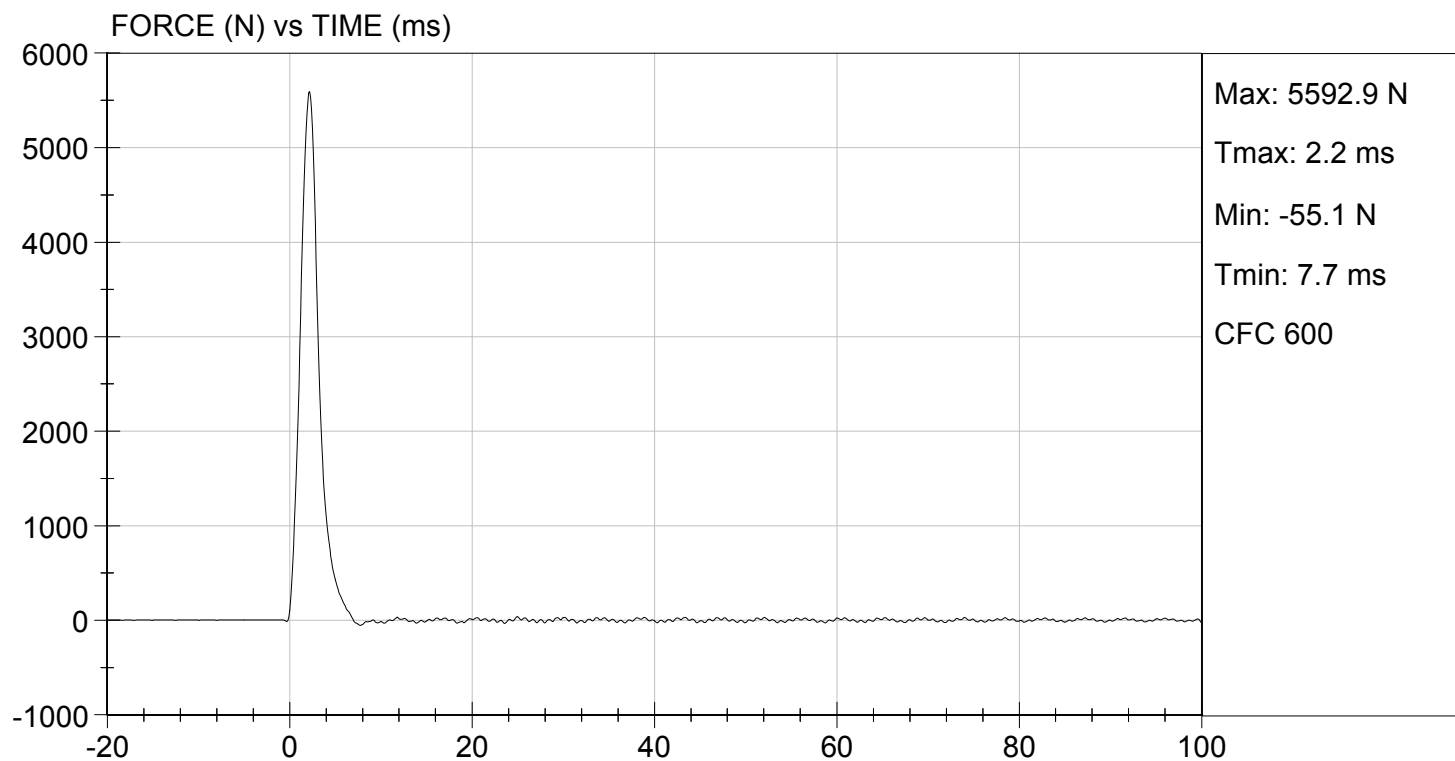
10/06/2016
Test Date


Approved By



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

TEST DATE: 10/06/2016
TEST #: D163396



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

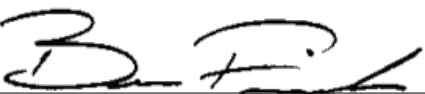
ATD Serial No: 351

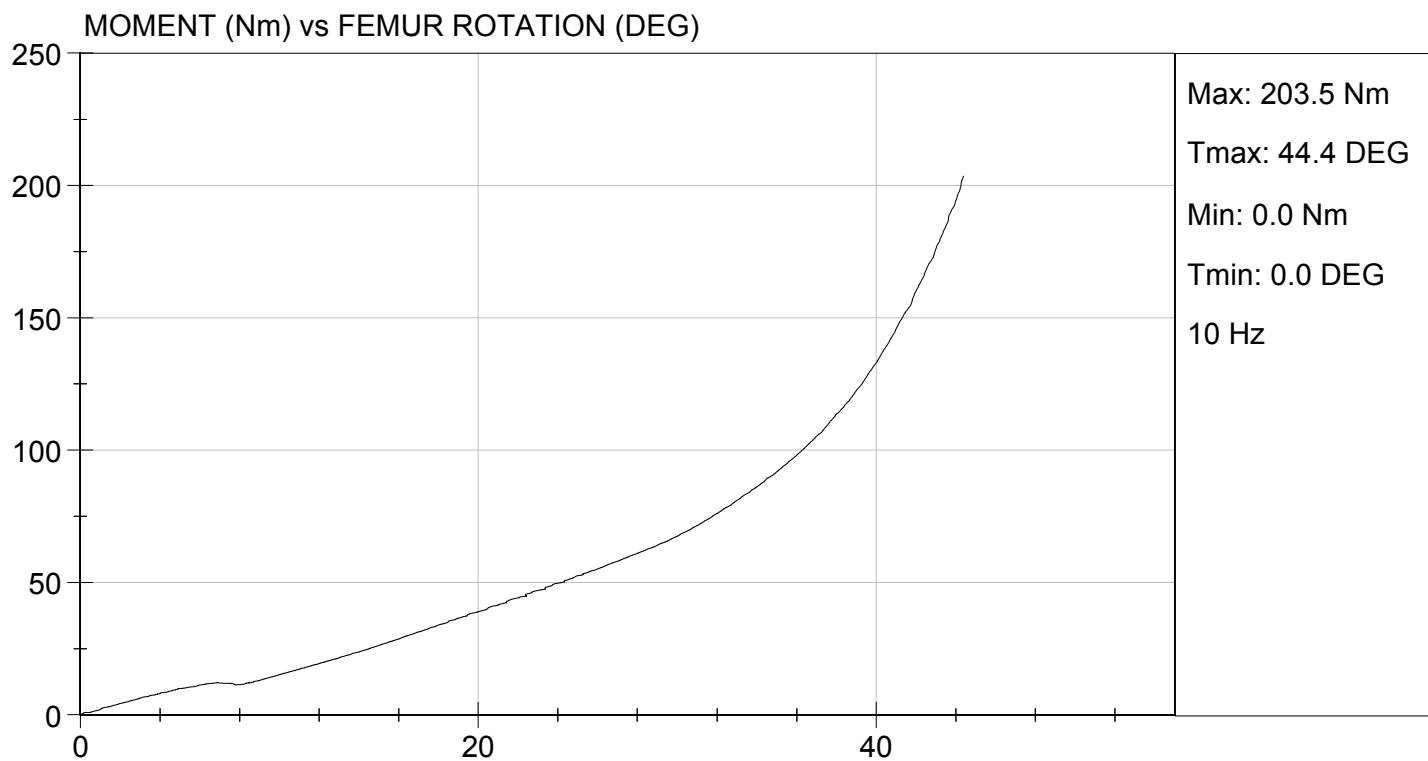
Test I.D: D163390

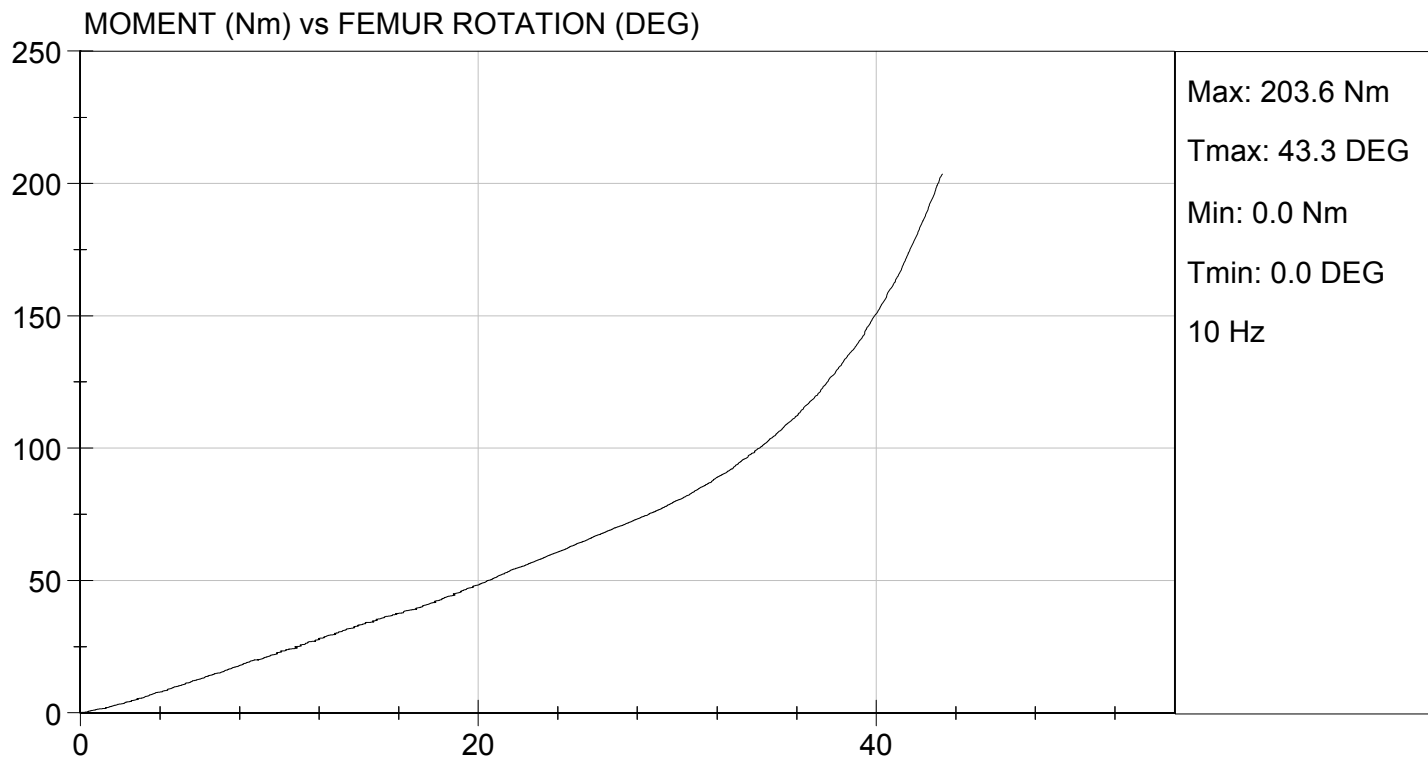
Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.6	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	53	53	Pass
Rotation Rate	deg/s	5.0 to 10.0	6.2	6.2	Pass
30 Degrees	Nm	94.9 Nm Max	67.4	80.3	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 to 50.0 Degree Max Rotation	44.4	43.3	Pass
Overall Test Results					Pass


 Laboratory Technician

10/06/2016
 Test Date


 Approved By





Hybrid III, 5th External Measurements
SN: 634

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

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

MGA RESEARCH CORPORATION
HEAD DROP TEST
HYBRID III 5TH PERCENTILE

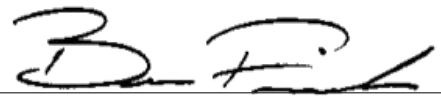
ATD Serial No: 634

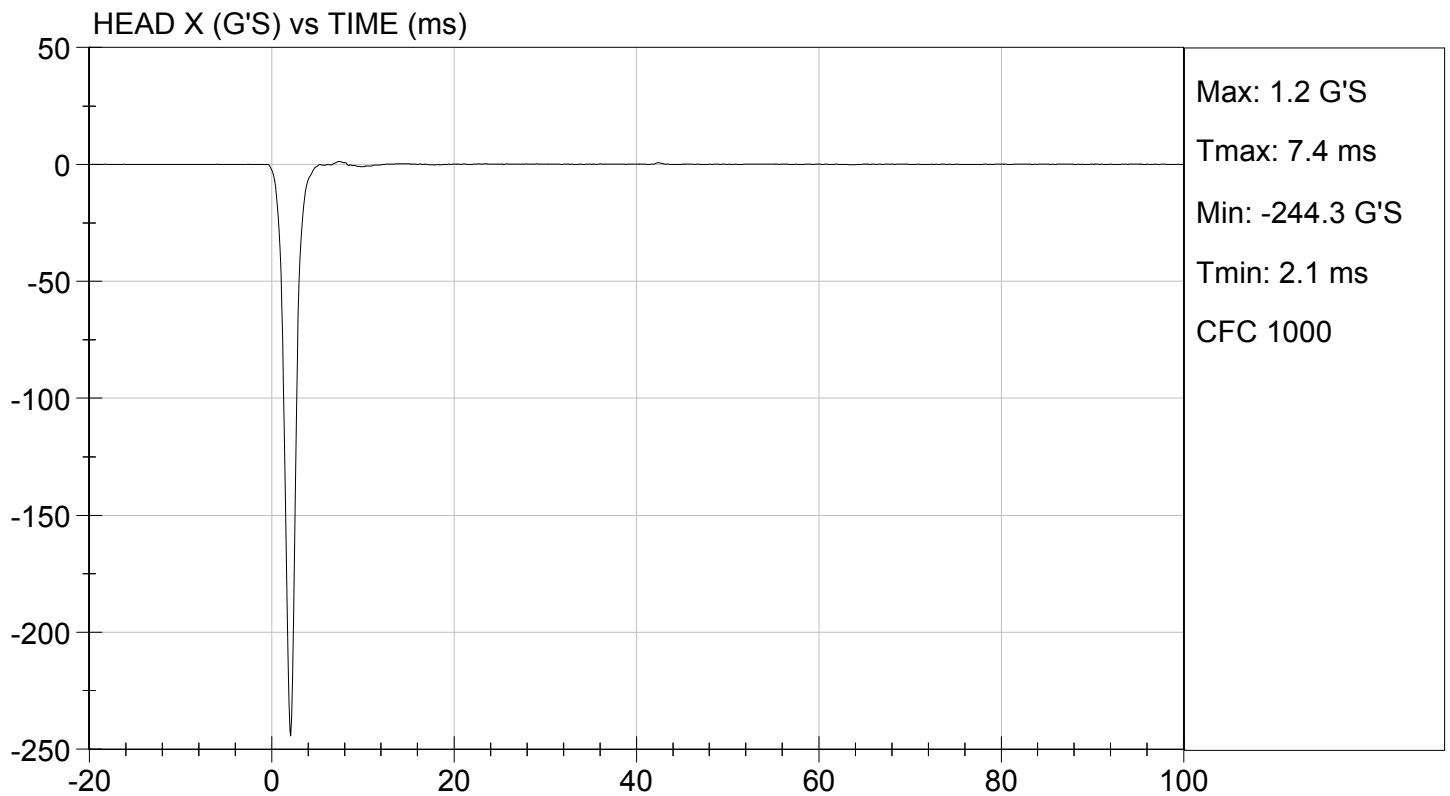
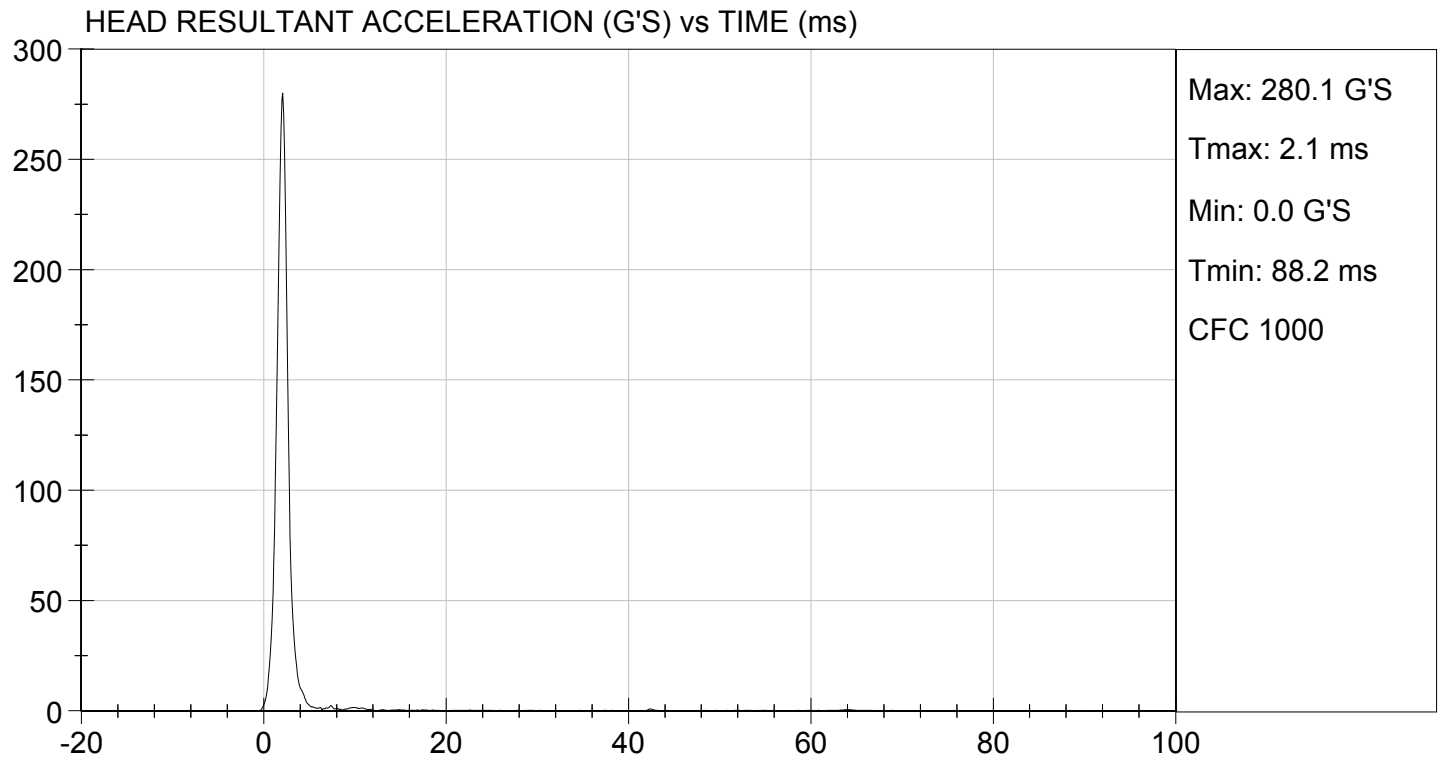
Test ID: D163271

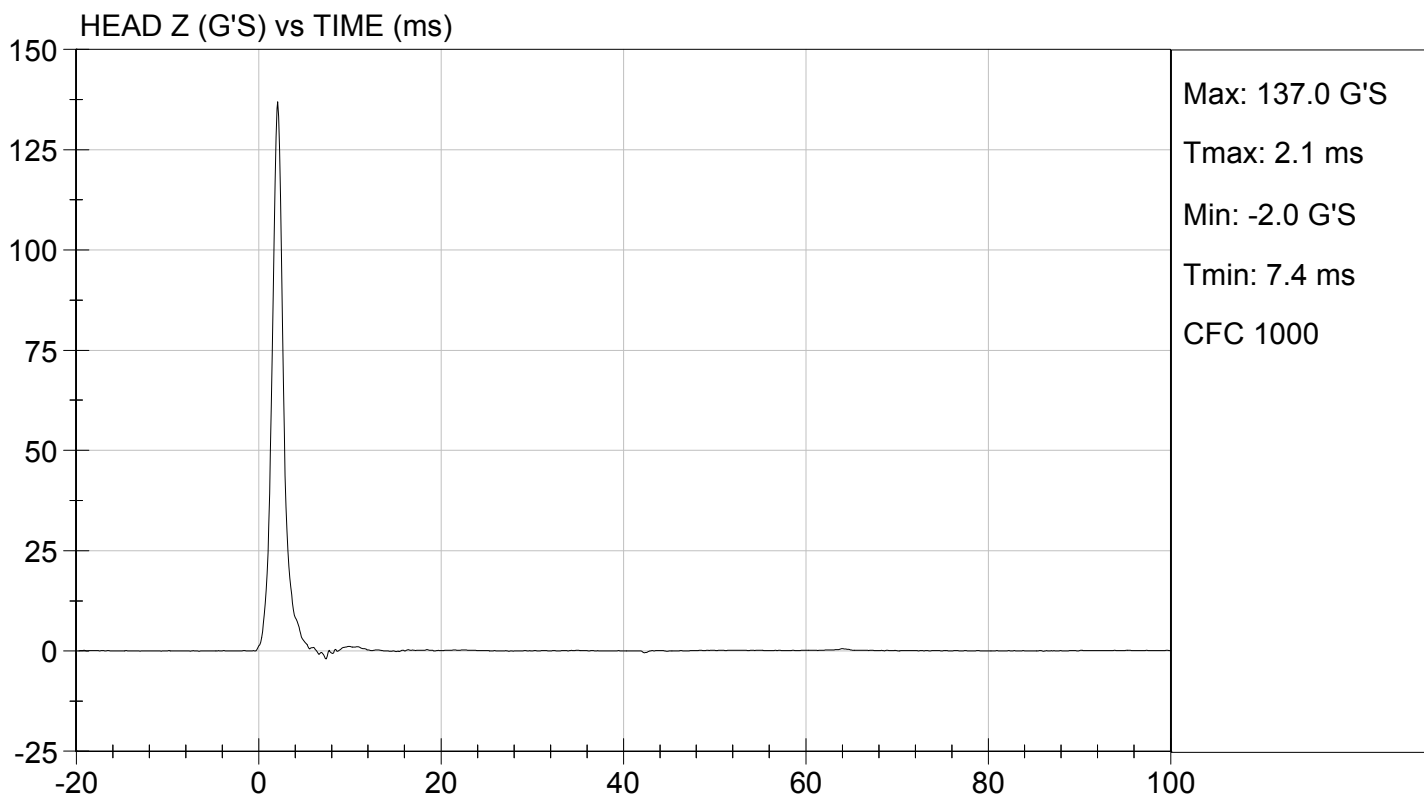
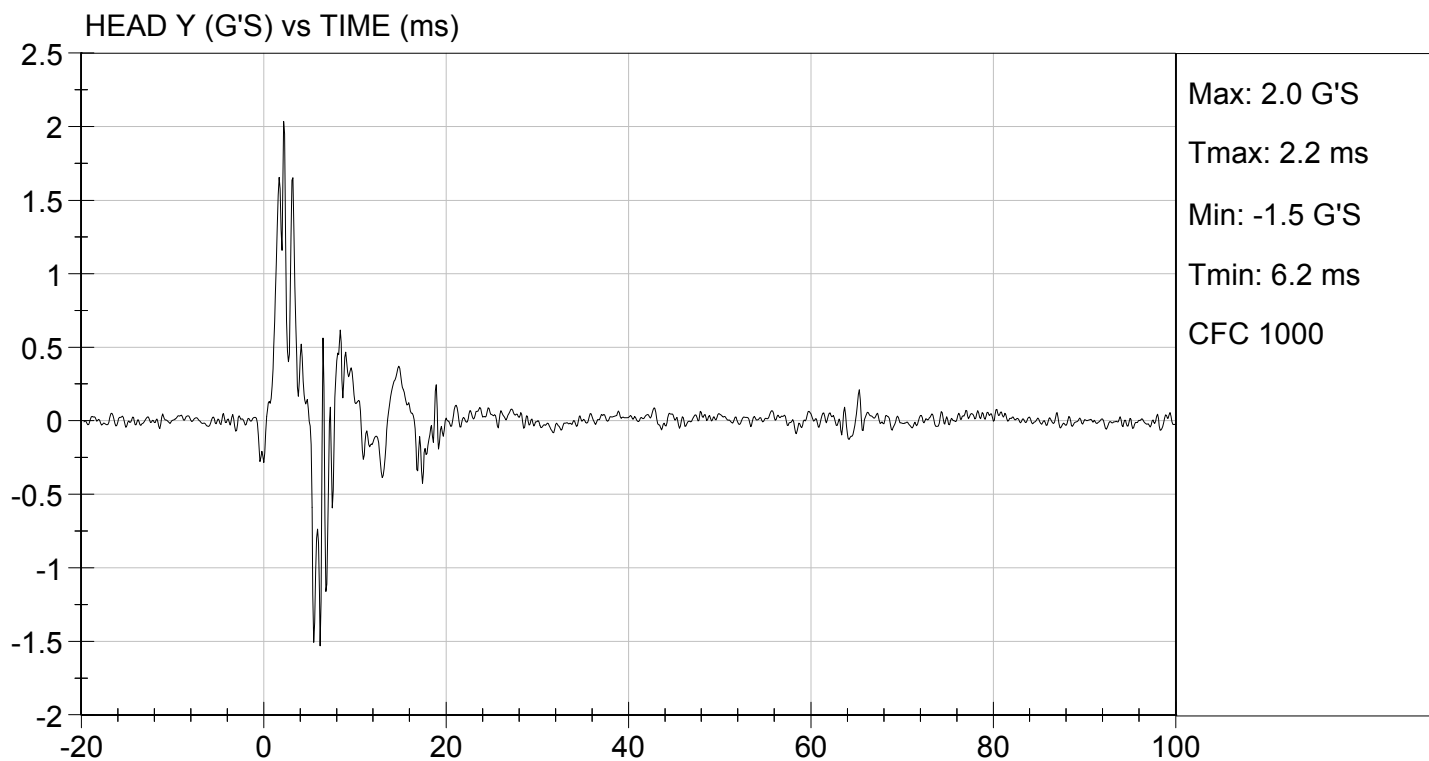
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	37	Pass
Peak Resultant Acceleration	G's	250 to 300	280	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	2.0	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician

09/27/2016
Test Date


Approved By





MGA RESEARCH CORPORATION

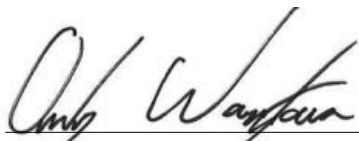
NECK FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D163272

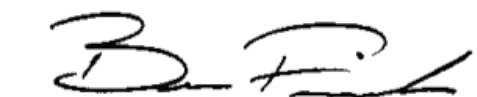
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity		%	10 to 70	38	Pass
Pendulum Speed		m/s	6.89 to 7.13	7.06	Pass
Pendulum Velocity	10 ms	m/s	2.1 to 2.5	2.3	Pass
	20 ms	m/s	4.0 to 5.0	4.8	Pass
	30 ms	m/s	5.8 to 7.0	6.8	Pass
D Plane Rotation	Max	deg	77 to 91	82	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	69 to 83	71	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 to 100	84	Pass
Overall Results					Pass



Laboratory Technician

09/27/2016

Test Date

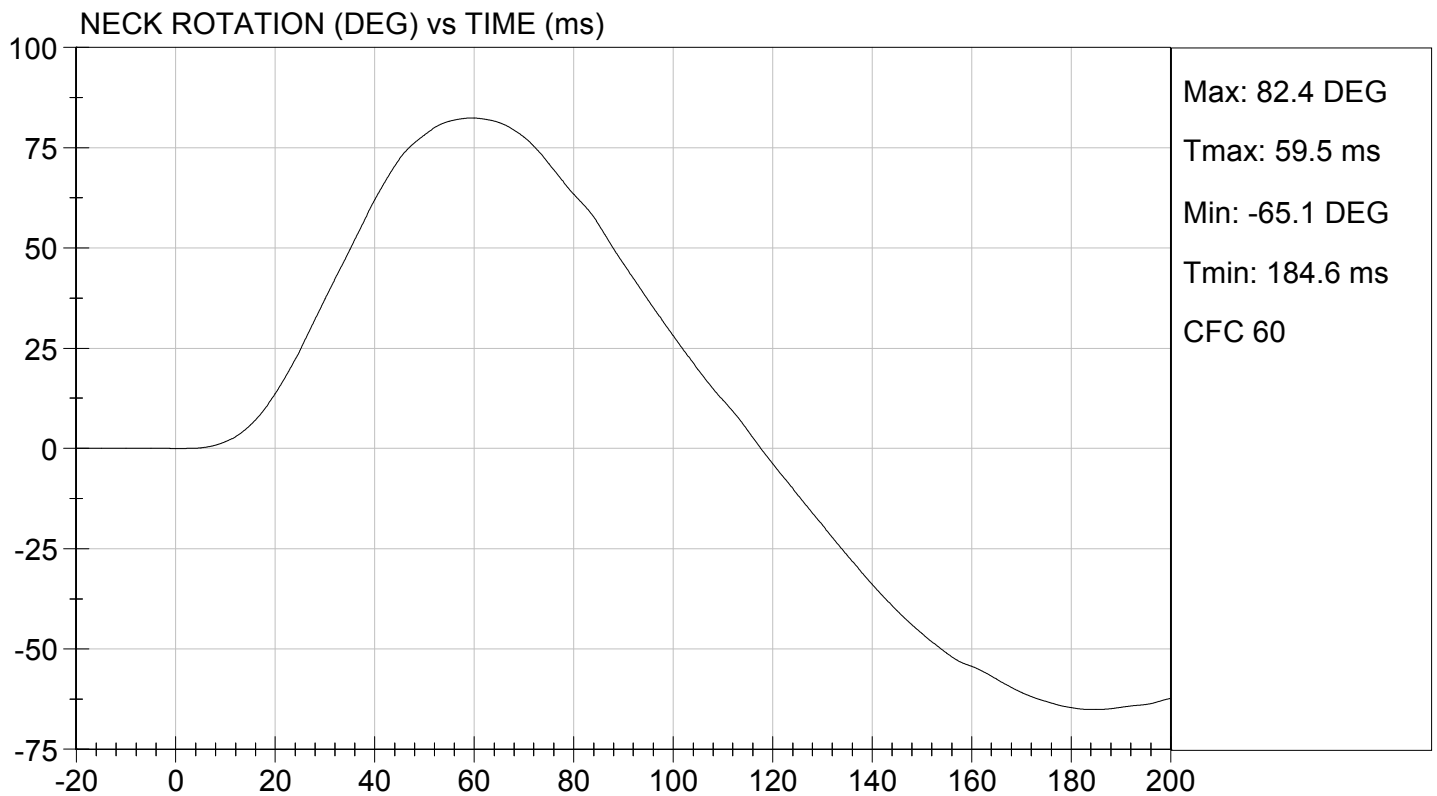
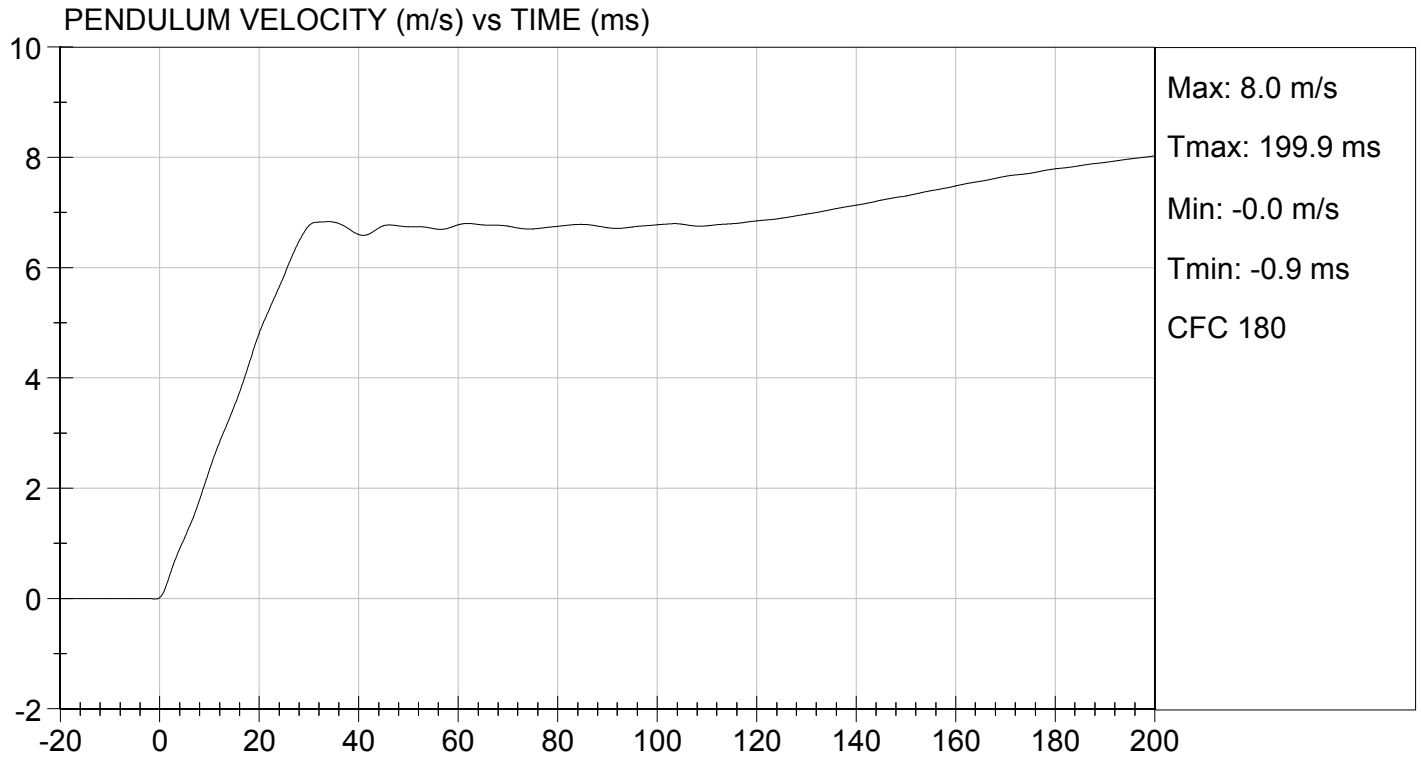


Approved By



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

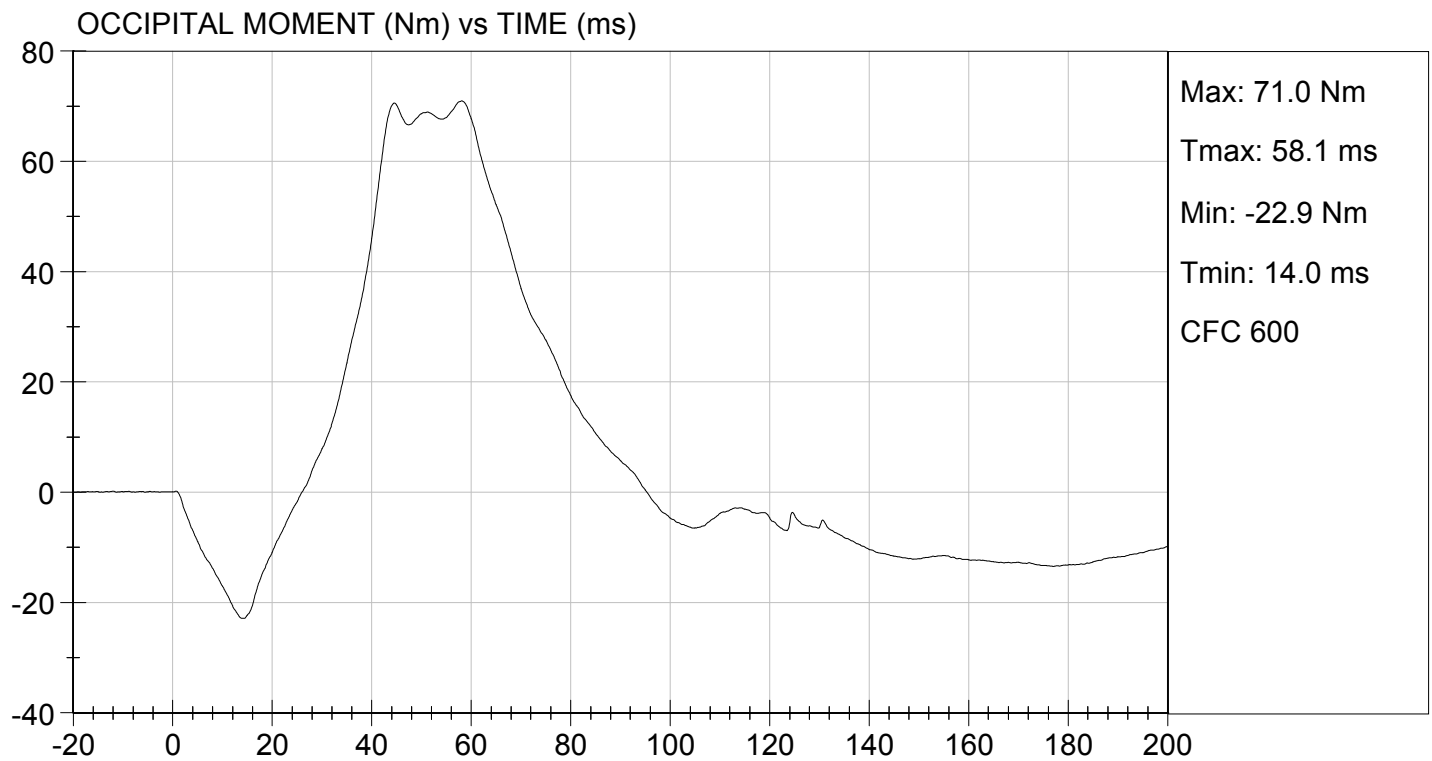
TEST DATE: 09/27/2016
TEST #: D163272





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

TEST DATE: 09/27/2016
TEST #: D163272



MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 5TH PERCENTILE

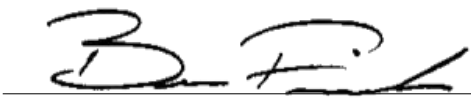
ATD Serial No: 634

Test I.D: D163273

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	38	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.05	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	109	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	-65 to -53	-55	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	103	Pass
Overall Results					Pass


 Laboratory Technician

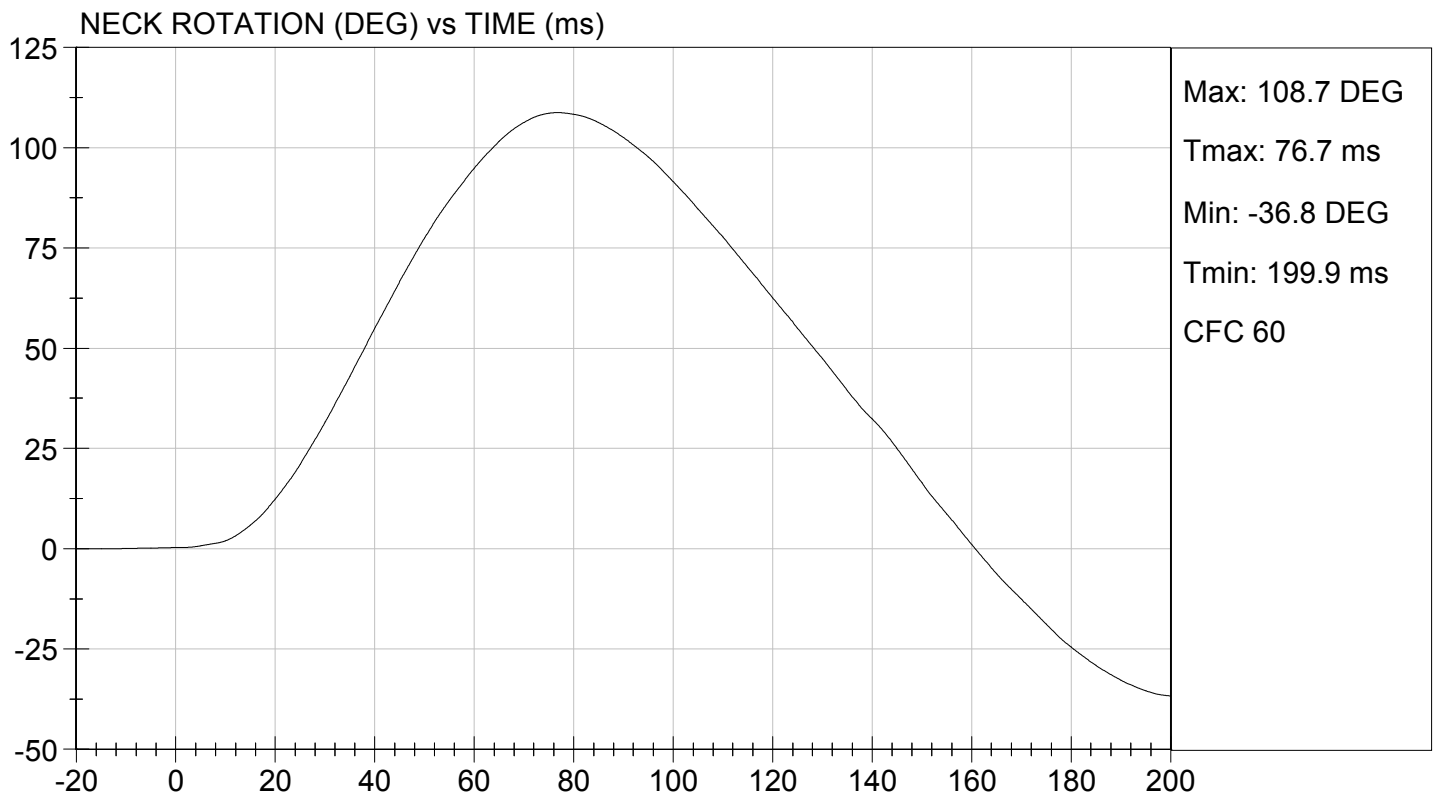
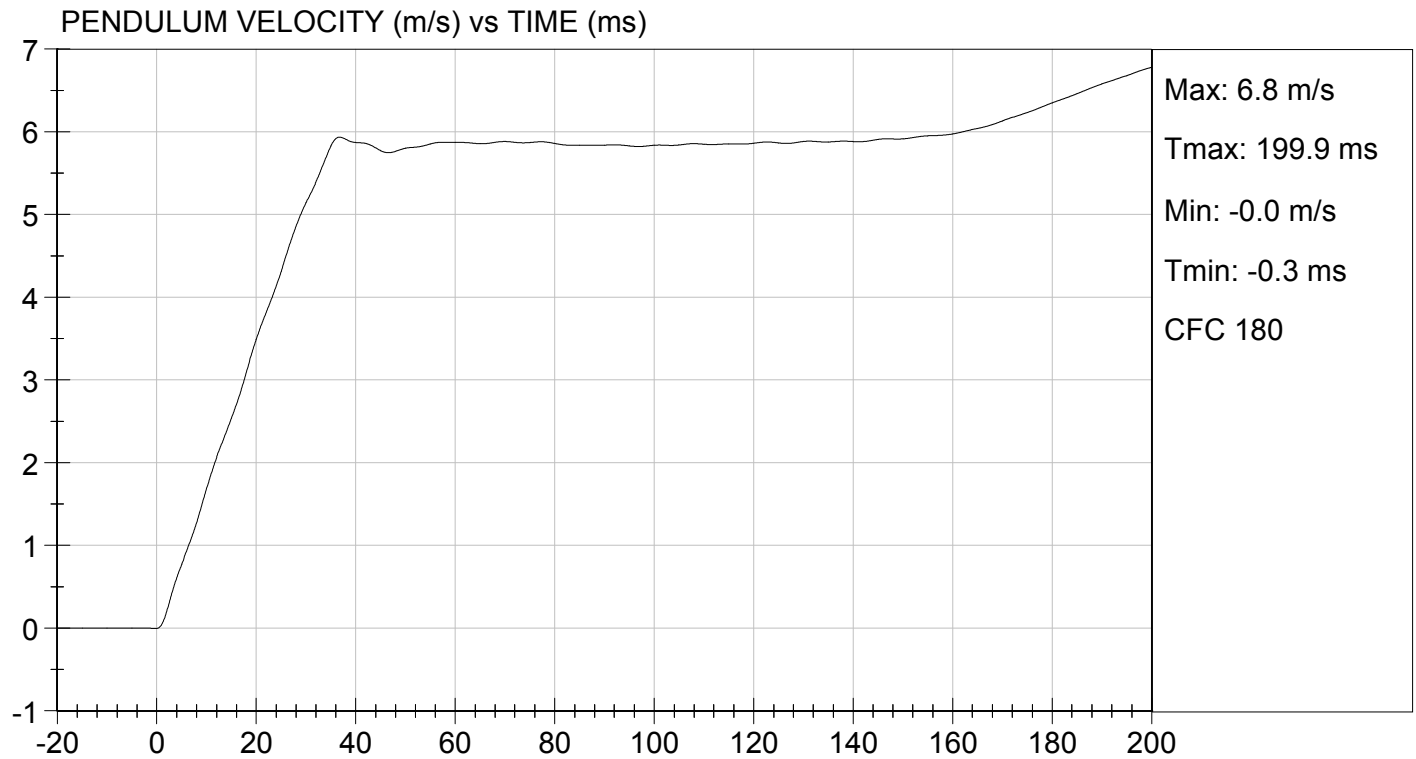
09/27/2016
 Test Date


 Approved By



TEST DESC: NECK EXTENSION
VELOCITY: 19.84 ft/s, 6.05 m/s

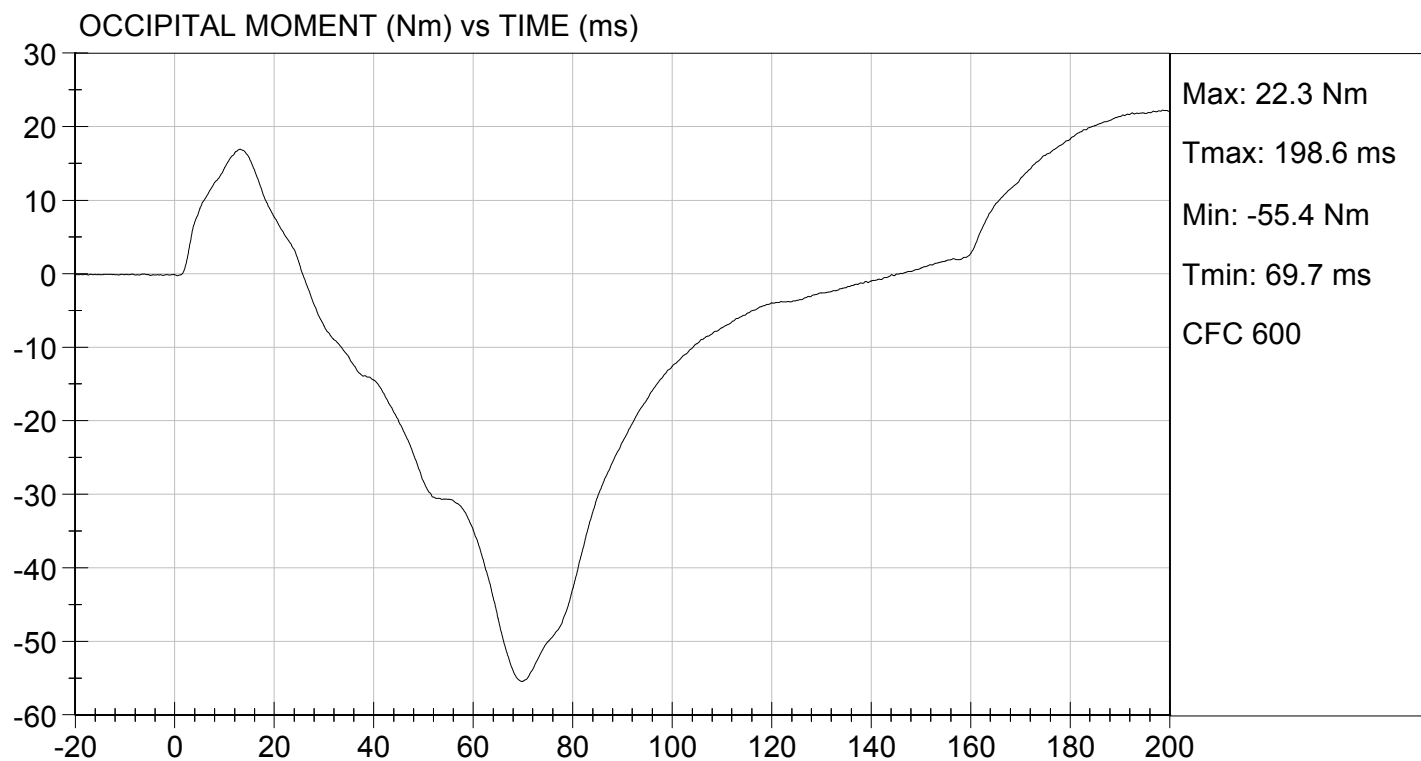
TEST DATE: 09/27/2016
TEST #: D163273





TEST DESC: NECK EXTENSION
VELOCITY: 19.84 ft/s, 6.05 m/s

TEST DATE: 09/27/2016
TEST #: D163273



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

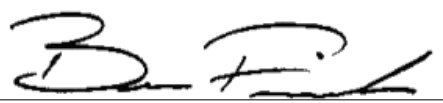
Test I.D: D163274

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.4	Pass
Relative Humidity	%	10 to 70	38	Pass
Probe Speed	m/s	6.59 to 6.83	6.77	Pass
Peak Deflection	mm	50 to 58	51	Pass
Peak Resistive Force w/in Deflection Corridor	N	3900 to 4400	4247	Pass
Internal Hysteresis	%	69 to 85	72	Pass
Peak Force 18 mm - 50 mm	N	<= 4600	4262	Pass
Overall Test Results				Pass


Laboratory Technician

09/27/2016

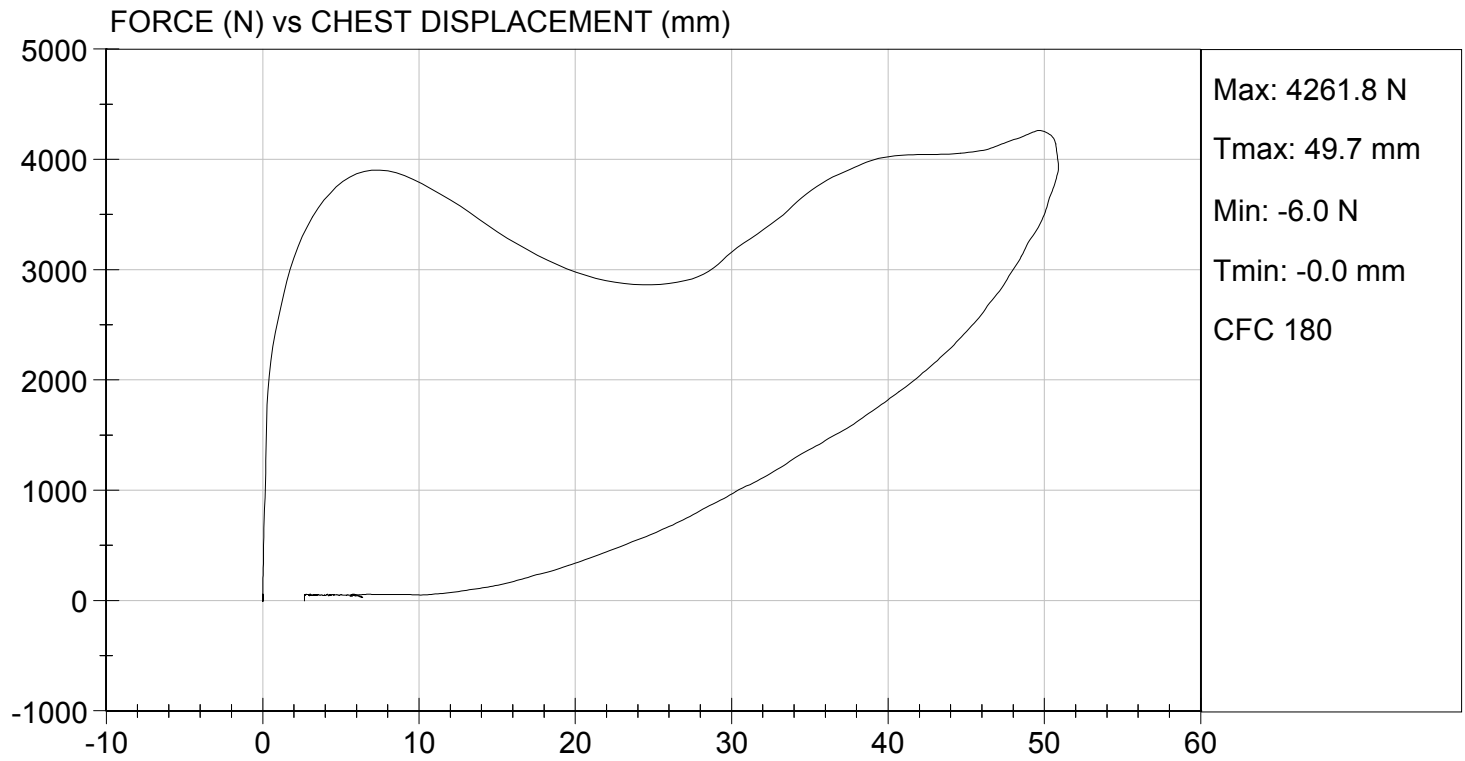
Test Date


Approved By



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

TEST DATE: 09/27/2016
TEST #: D163274



MGA RESEARCH CORPORATION

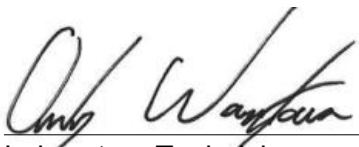
RIGHT KNEE IMPACT TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 634

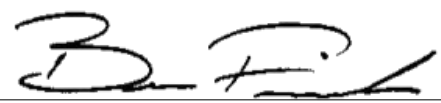
Test I.D: D163275

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	38	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	N	3450 to 4060	3937	Pass
Overall Test Results				Pass


Laboratory Technician

09/27/2016

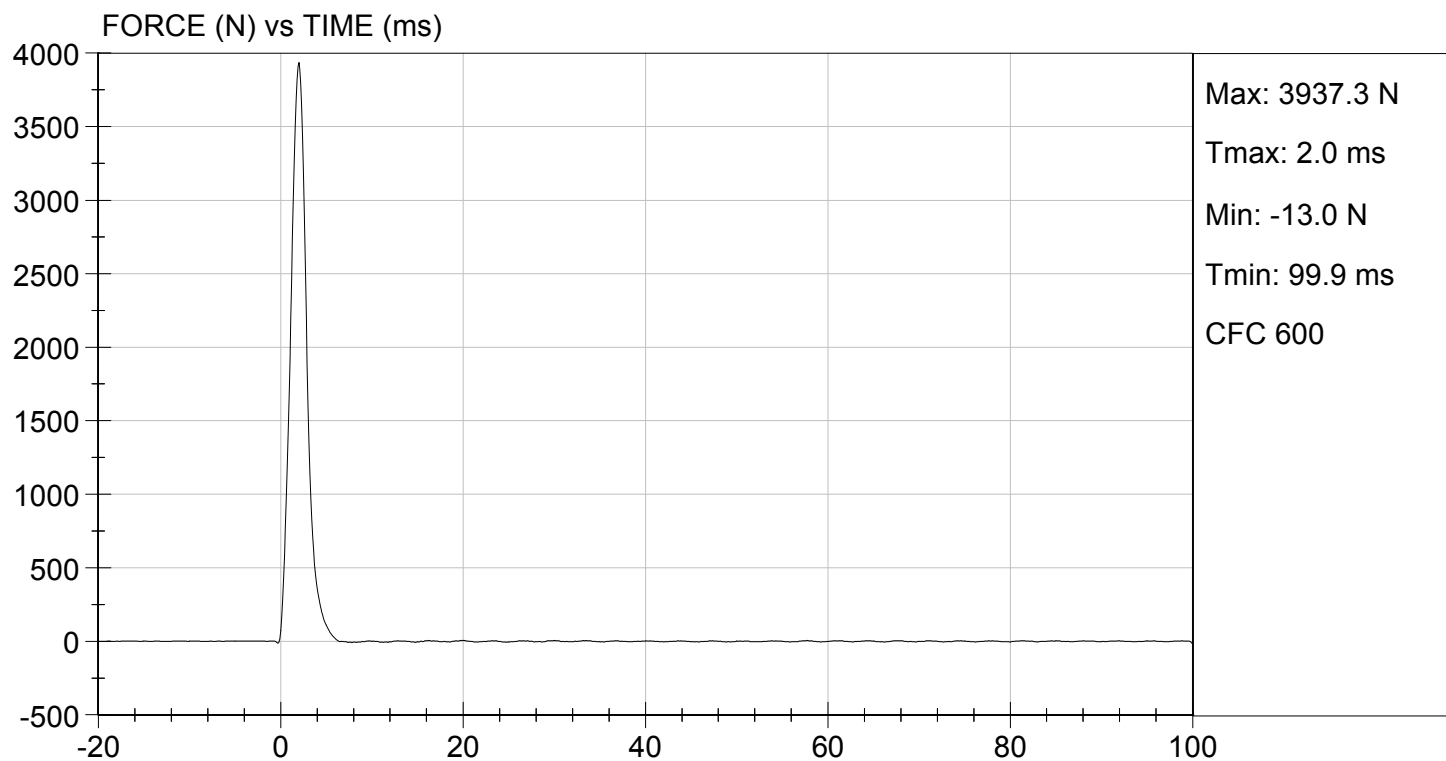
Test Date


Approved By



TEST DESC: RIGHT KNEE
VELOCITY: 6.94 ft/s, 2.12 m/s

TEST DATE: 09/27/2016
TEST #: D163275



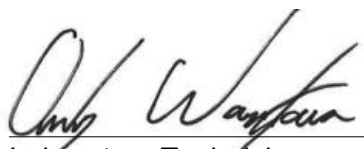
MGA RESEARCH CORPORATION

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

ATD Serial No: 634

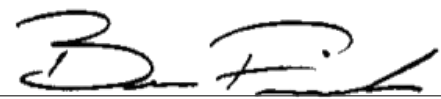
Test I.D: D163276

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	38	Pass
Probe Speed	m/s	2.07 to 2.13	2.13	Pass
Maximum Force	N	3450 to 4060	3777	Pass
Overall Test Results				Pass


Laboratory Technician

09/27/2016

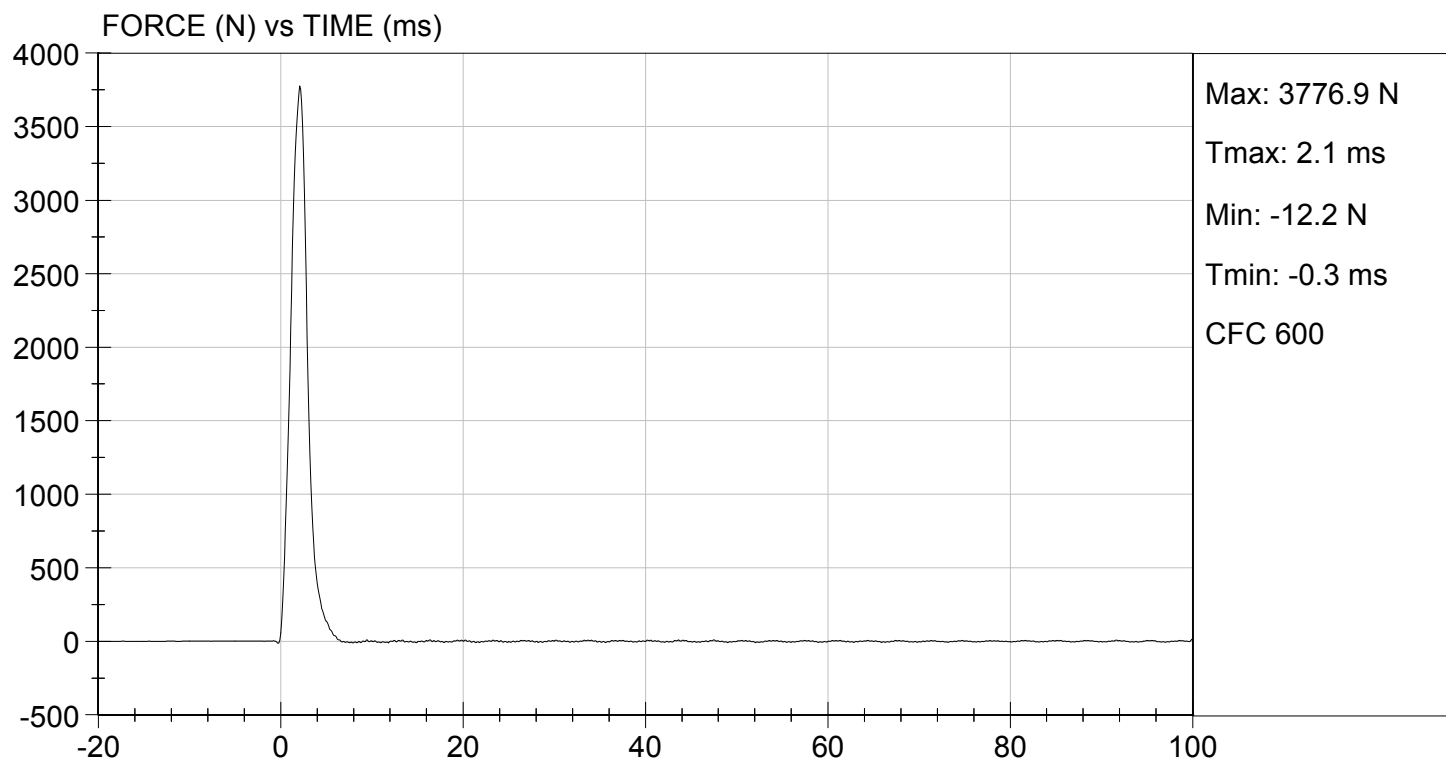
Test Date


Approved By



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

TEST DATE: 09/27/2016
TEST #: D163276



MGA RESEARCH CORPORATION

TORSO FLEXION TEST

HYBRID III 5TH PERCENTILE

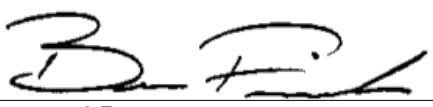
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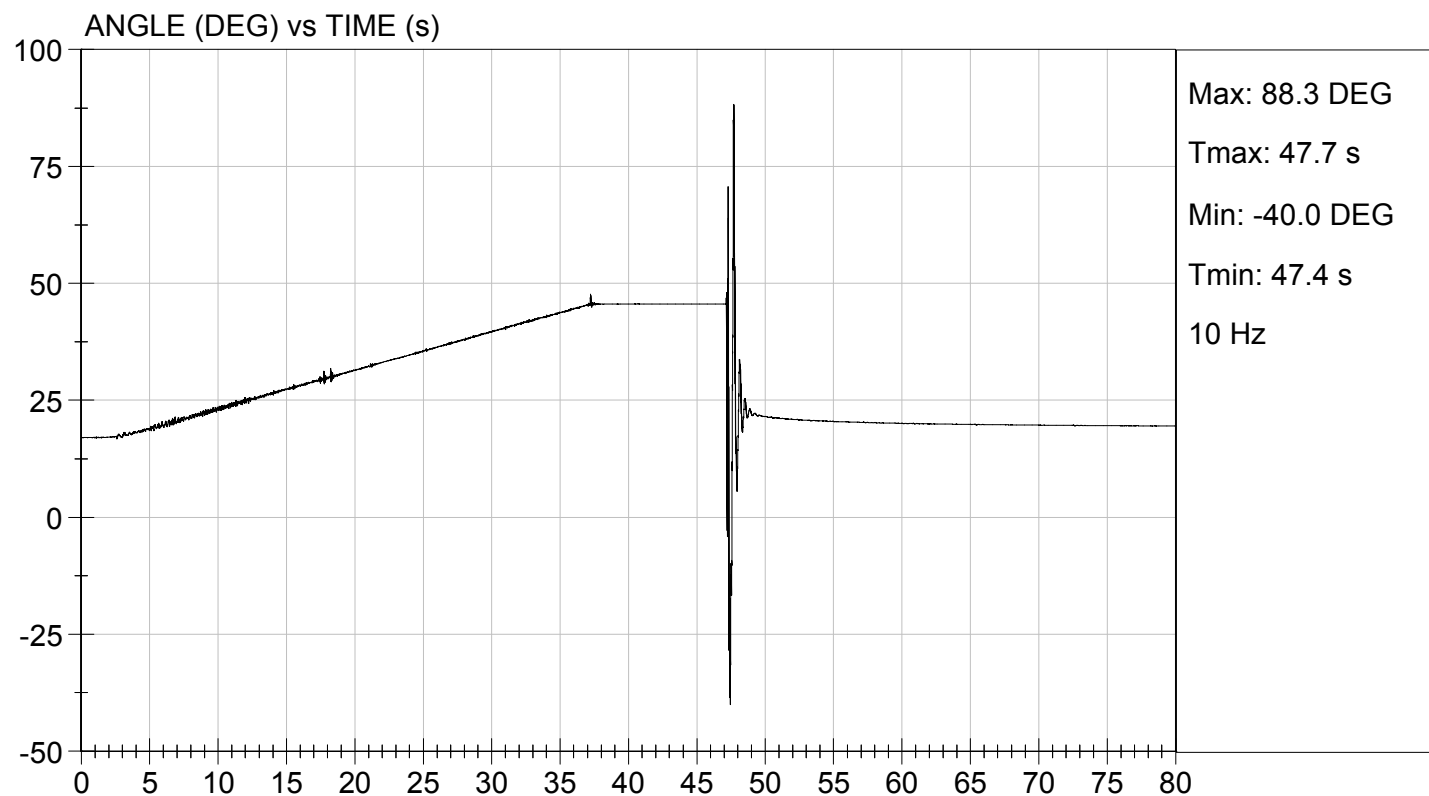
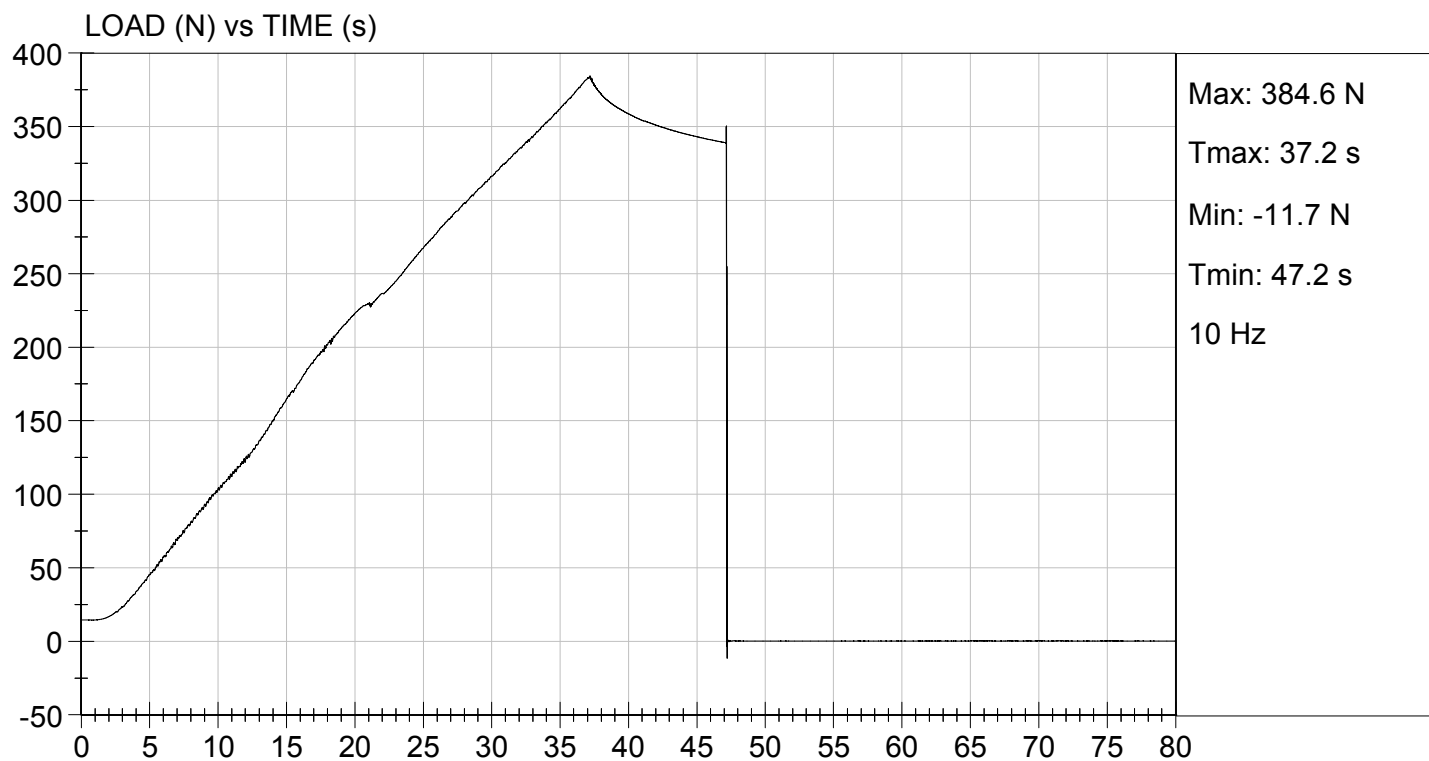
Test I.D: D163277

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	38	Pass
Initial Angle	deg	0 to 20	17	Pass
Return Angle	deg	+/- 8	2	Pass
Force at 45 deg	N	320 to 390	385	Pass
Upper Torso Deflection Rate	deg/s	0.5 to 1.5	0.8	Pass
Overall Result			Pass	


Laboratory Technician

09/27/2016
Test Date


Approved By



MGA RESEARCH CORPORATION
HEAD DROP TEST
HYBRID III 5TH PERCENTILE

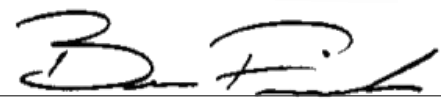
ATD Serial No: 634

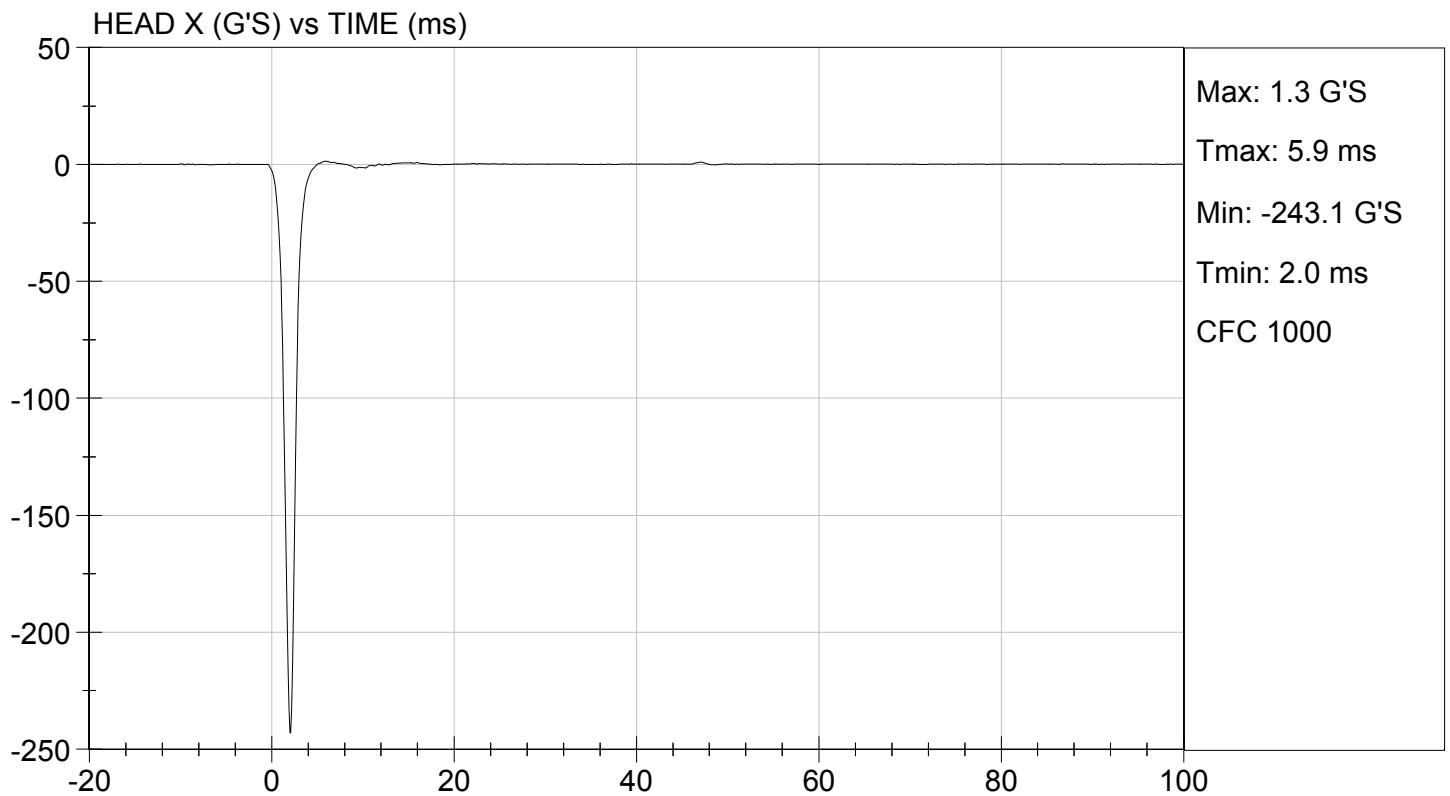
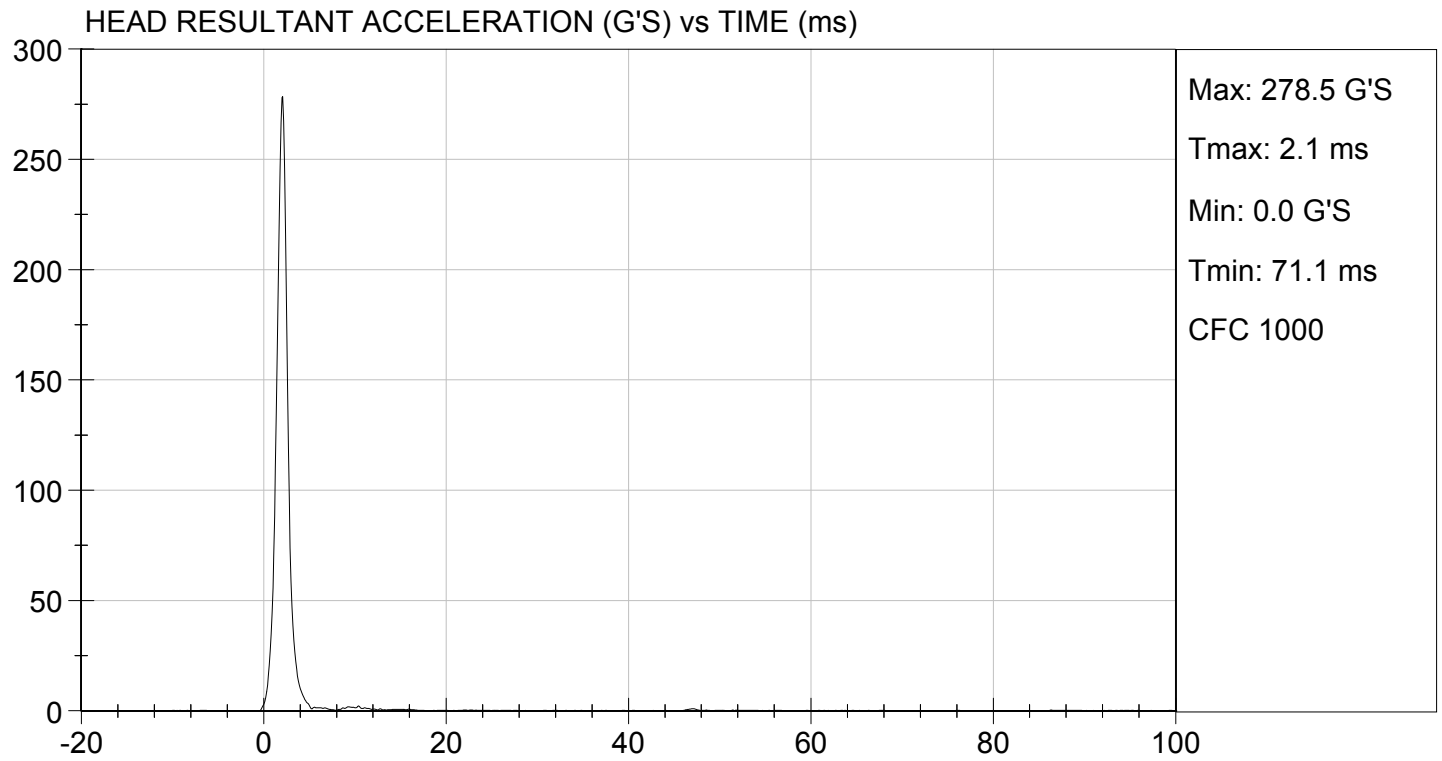
Test ID: D163381

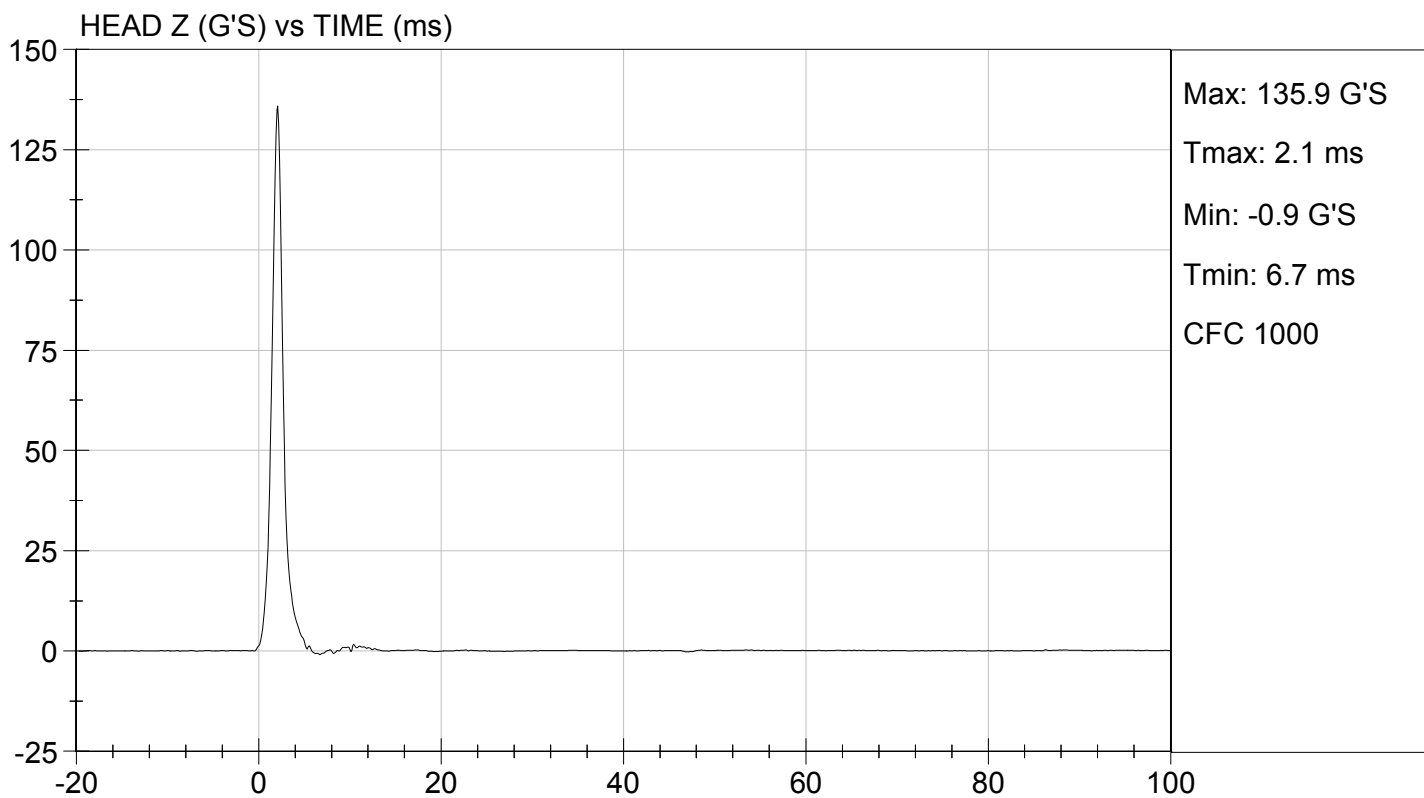
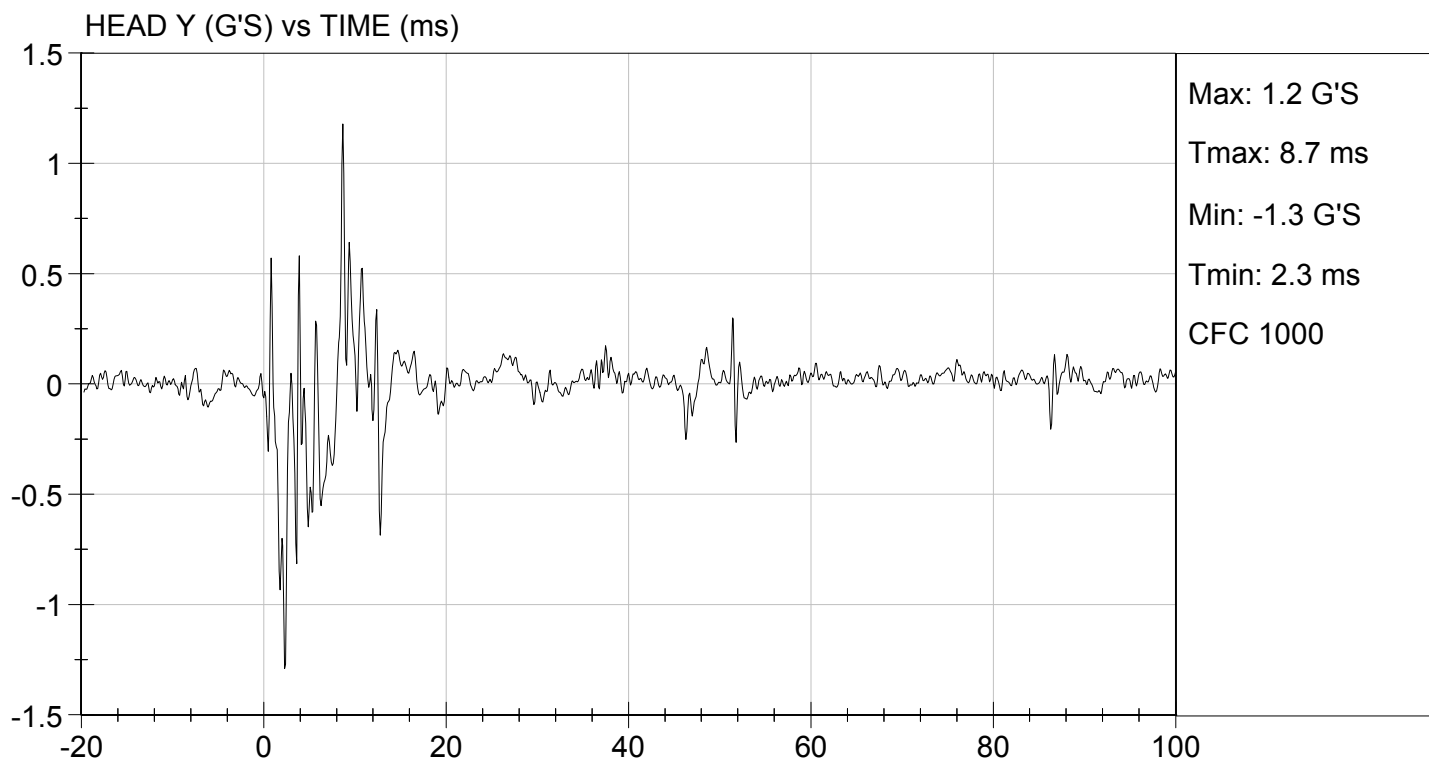
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	53	Pass
Peak Resultant Acceleration	G's	250 to 300	278	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-1.3	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician

10/06/2016
Test Date


Approved By





MGA RESEARCH CORPORATION

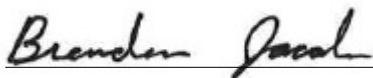
NECK FLEXION TEST

HYBRID III 5TH PERCENTILE

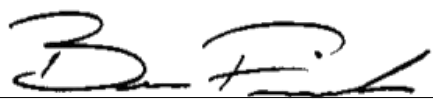
ATD Serial No: 634

Test I.D: D163382

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	54	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	4.9	Pass
	30 ms	m/s	5.8 to 7.0	6.9	Pass
D Plane Rotation	Max	deg	77 to 91	81	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	69 to 83	69	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 to 100	82	Pass
Overall Results					Pass


 Laboratory Technician

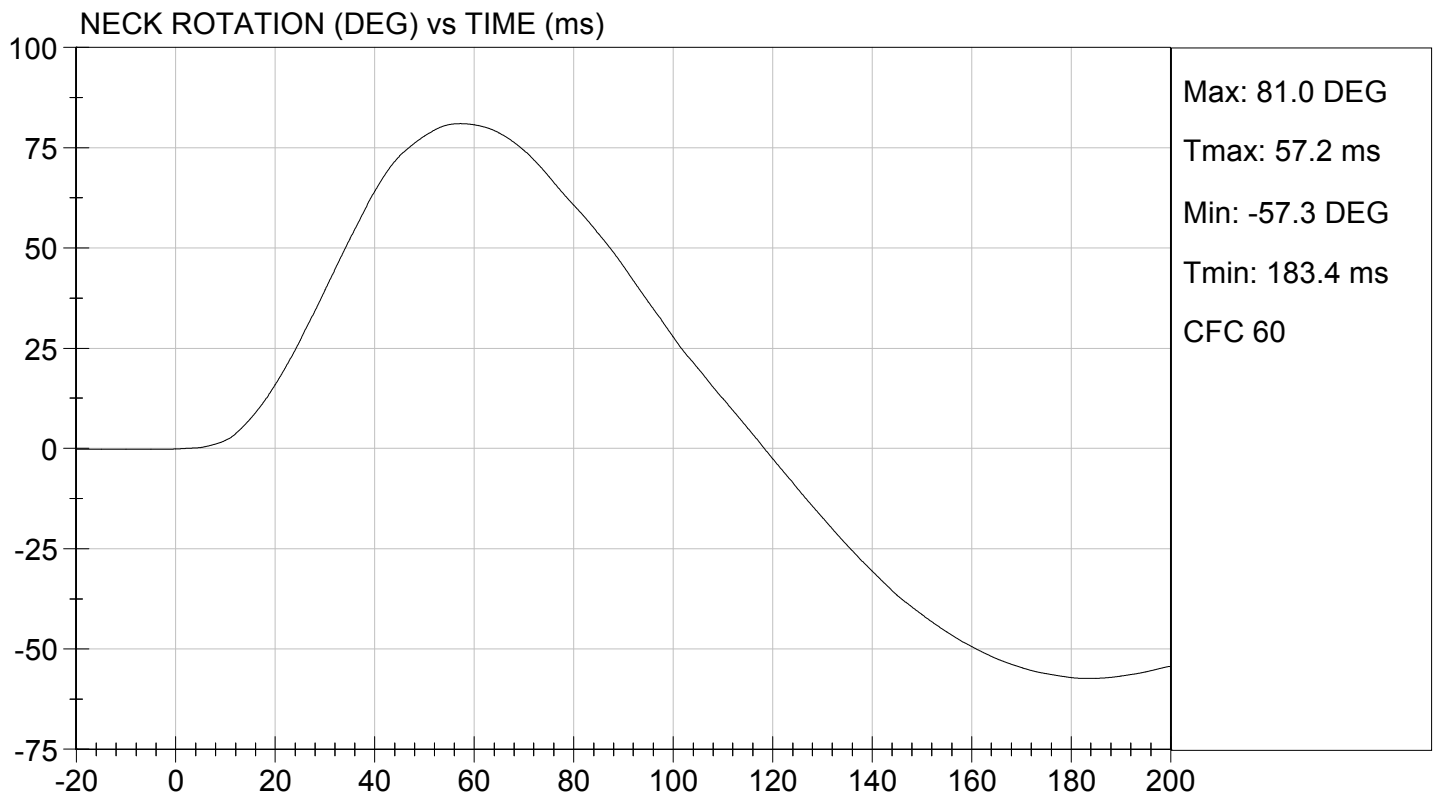
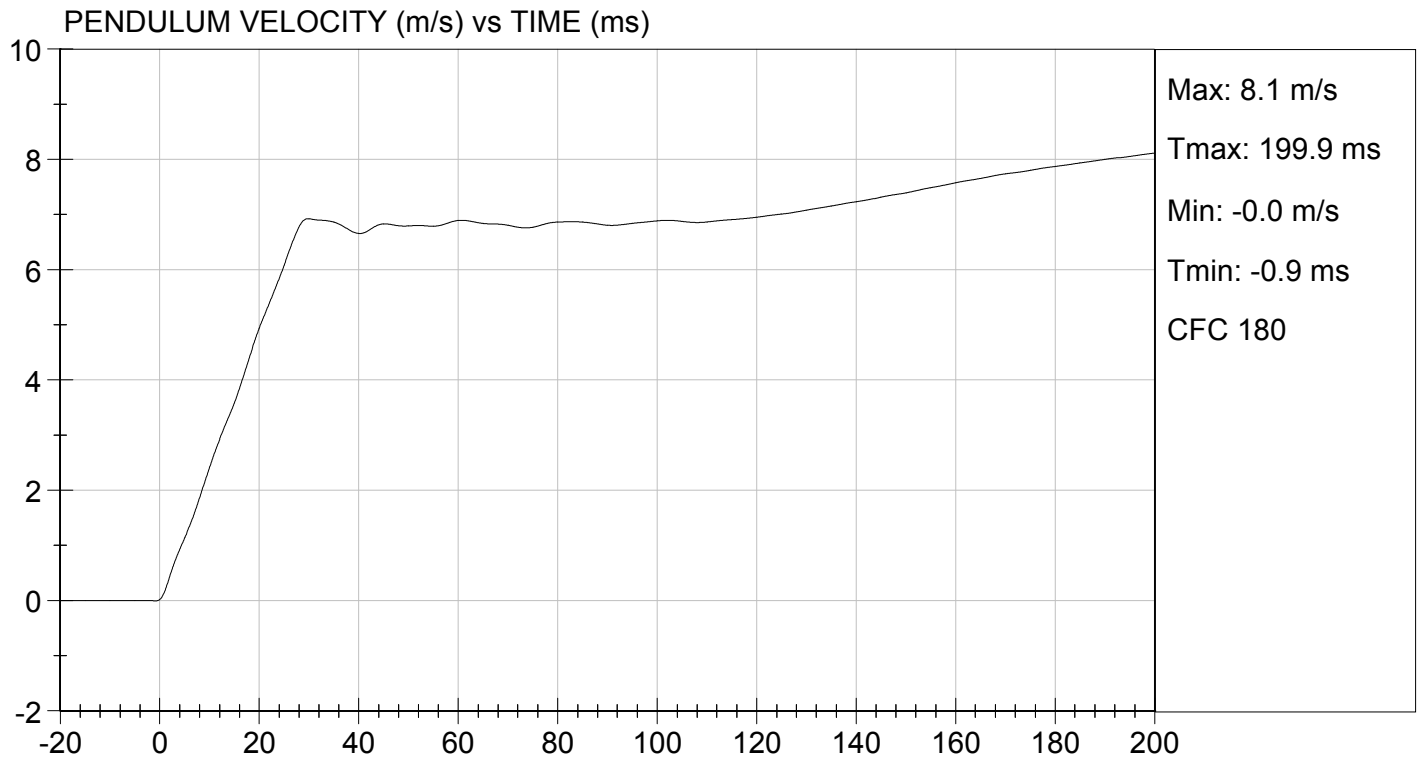
10/06/2016
 Test Date


 Approved By



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

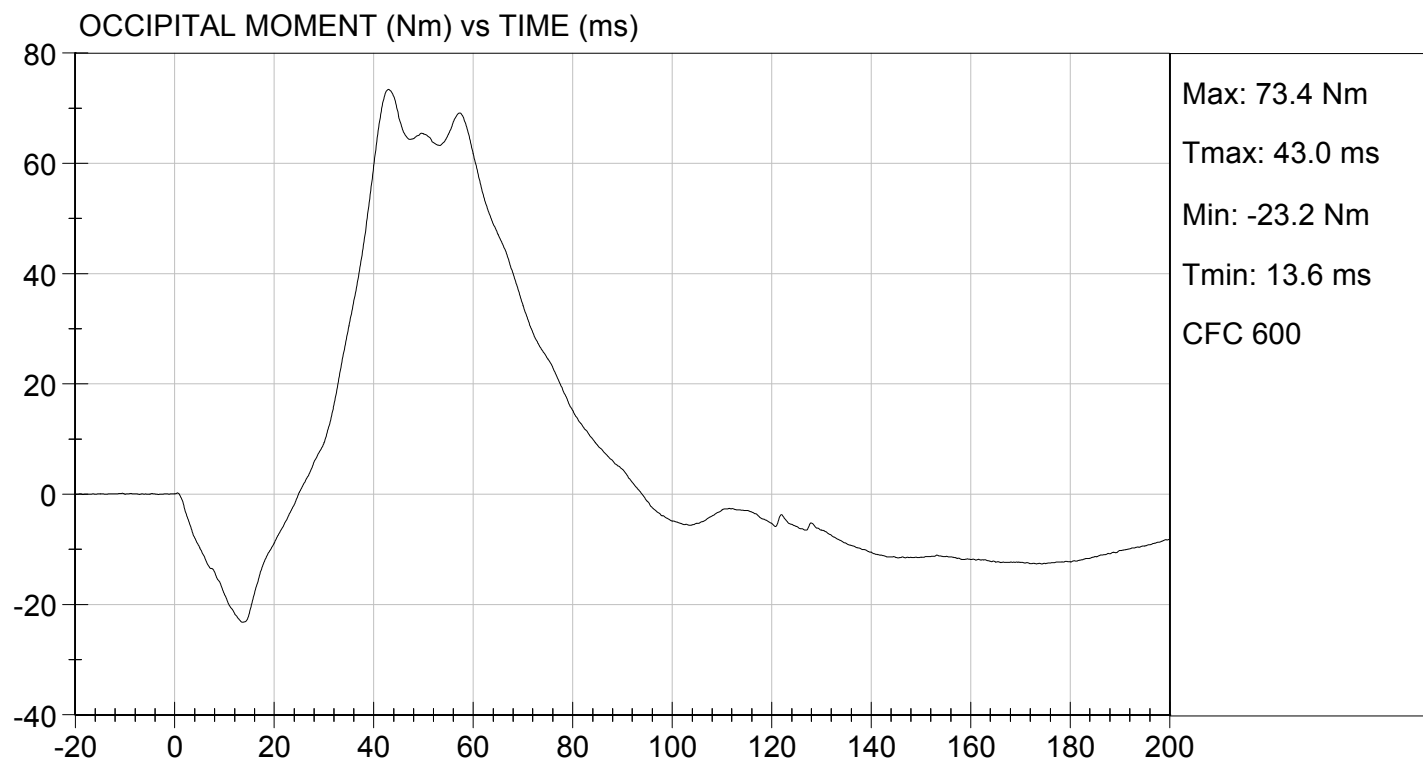
TEST DATE: 10/06/2016
TEST #: D163382





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

TEST DATE: 10/06/2016
TEST #: D163382

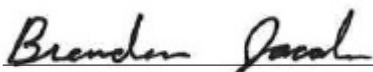


MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 5TH PERCENTILE

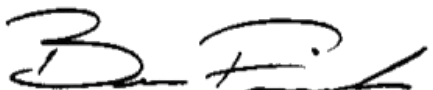
ATD Serial No: 634

Test I.D: D163383

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	54	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.12	Pass
Pendulum Velocity	10 ms	m/s	1.5 to 1.9	1.8	Pass
	20 ms	m/s	3.1 to 3.9	3.8	Pass
	30 ms	m/s	4.6 to 5.6	5.6	Pass
D Plane Rotation	Max	deg	99 to 114	107	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	99	Pass
Overall Results					Pass


 Laboratory Technician

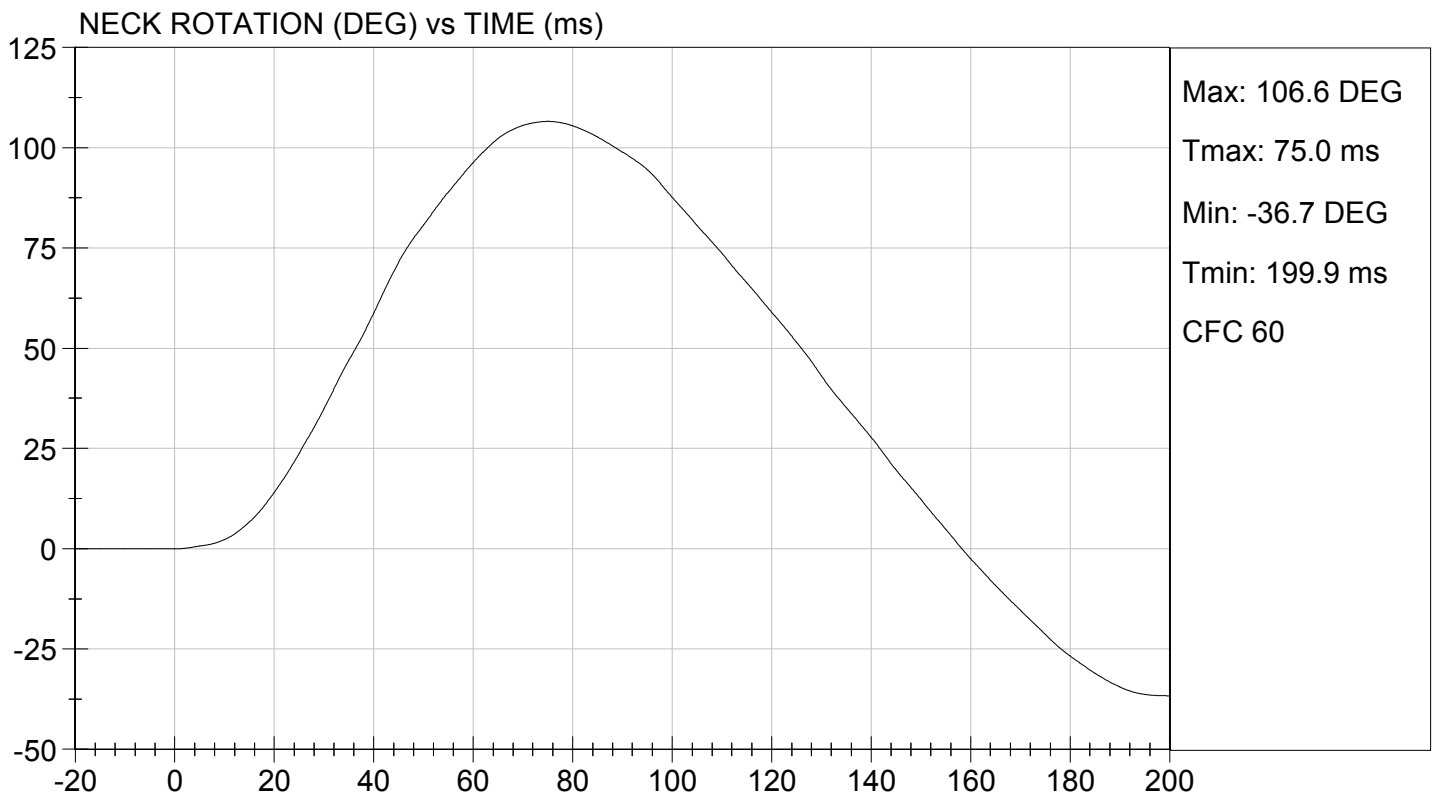
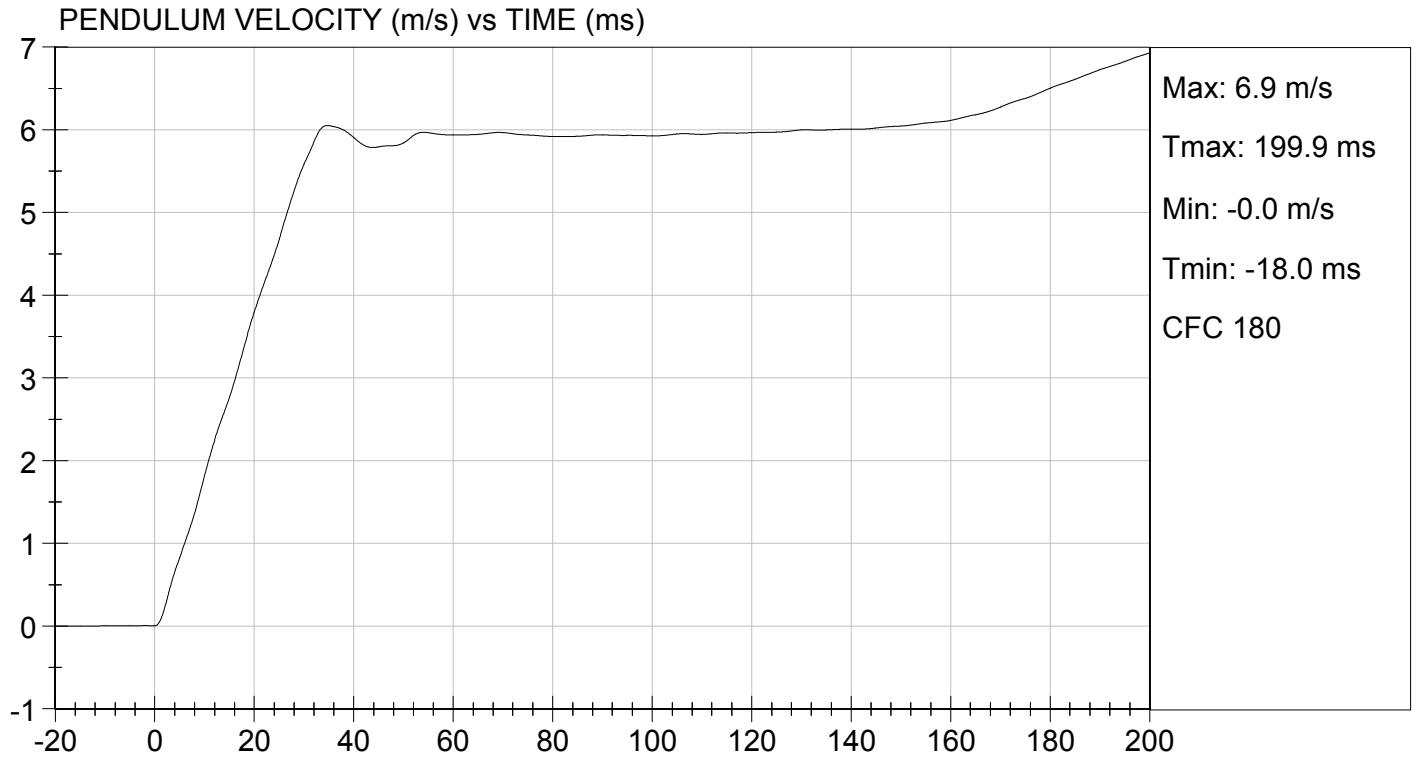
10/06/2016
 Test Date


 Approved By



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

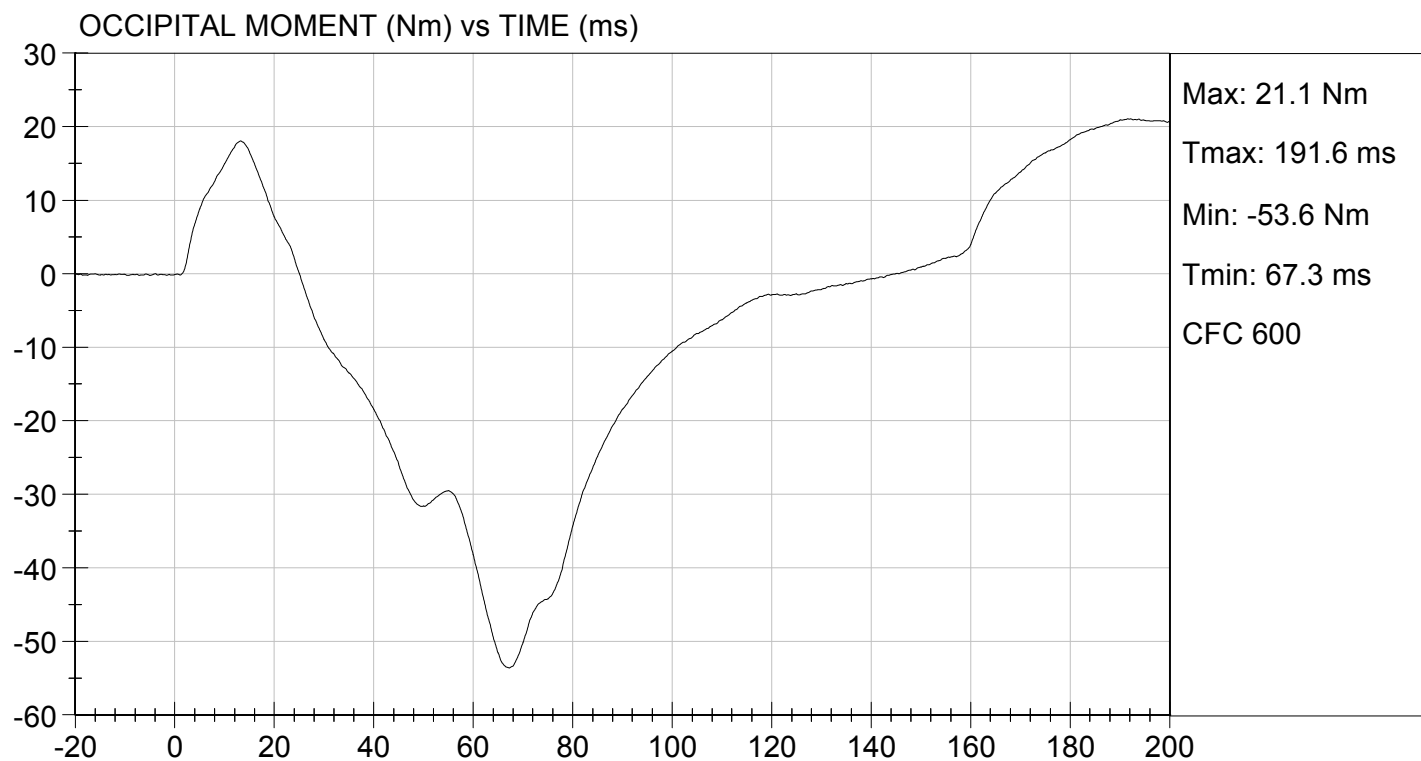
TEST DATE: 10/06/2016
TEST #: D163383





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

TEST DATE: 10/06/2016
TEST #: D163383

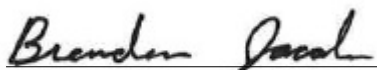


MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

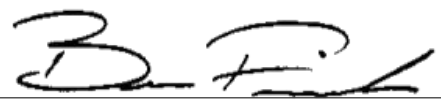
Test I.D: D163384

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.6	Pass
Relative Humidity	%	10 to 70	53	Pass
Probe Speed	m/s	6.59 to 6.83	6.77	Pass
Peak Deflection	mm	50 to 58	52	Pass
Peak Resistive Force w/in Deflection Corridor	N	3900 to 4400	4288	Pass
Internal Hysteresis	%	69 to 85	72	Pass
Peak Force 18 mm - 50 mm	N	<= 4600	4232	Pass
Overall Test Results				Pass


Laboratory Technician

10/06/2016

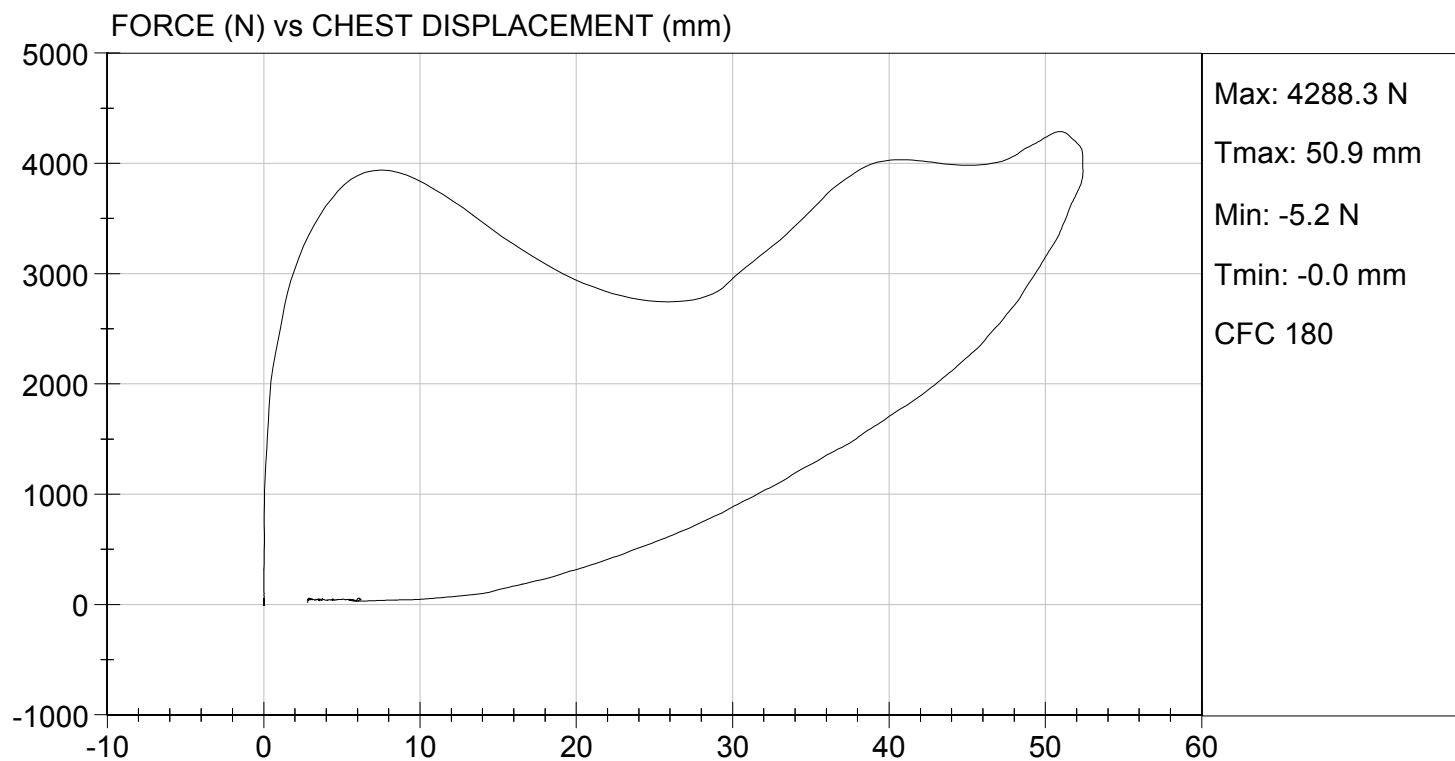
Test Date


Approved By



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

TEST DATE: 10/06/2016
TEST #: D163384



MGA RESEARCH CORPORATION

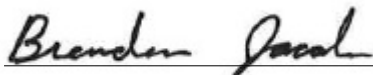
RIGHT KNEE IMPACT TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D163385

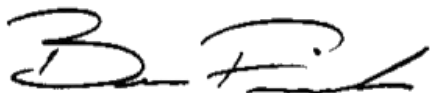
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	54	Pass
Probe Speed	m/s	2.07 to 2.13	2.13	Pass
Maximum Force	N	3450 to 4060	3956	Pass
Overall Test Results				Pass



Laboratory Technician

10/06/2016

Test Date

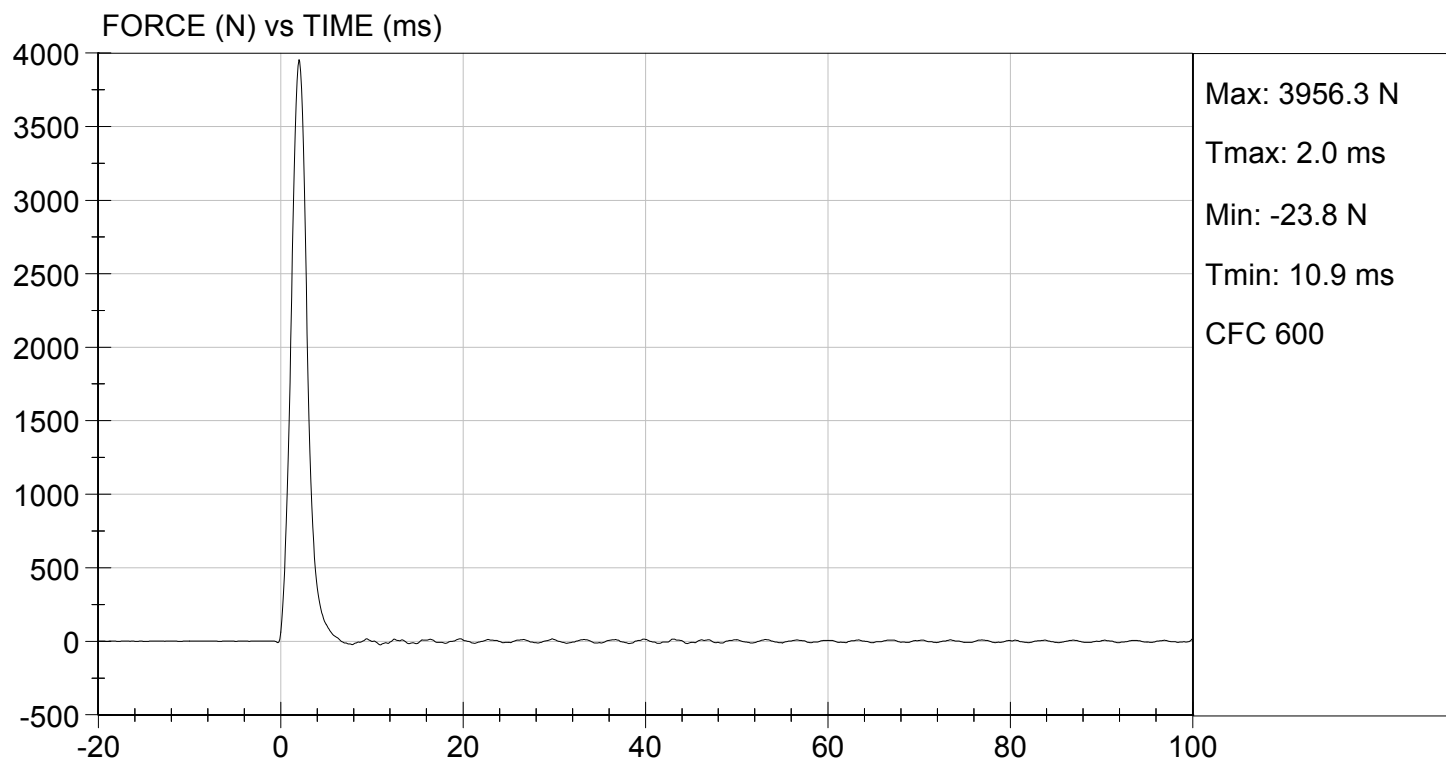


Approved By



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

TEST DATE: 10/06/2016
TEST #: D163385



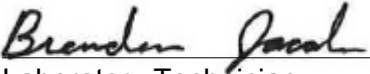
MGA RESEARCH CORPORATION

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

ATD Serial No: 634

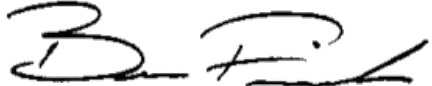
Test I.D: D163386

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	54	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	N	3450 to 4060	3519	Pass
Overall Test Results				Pass


Laboratory Technician

10/06/2016

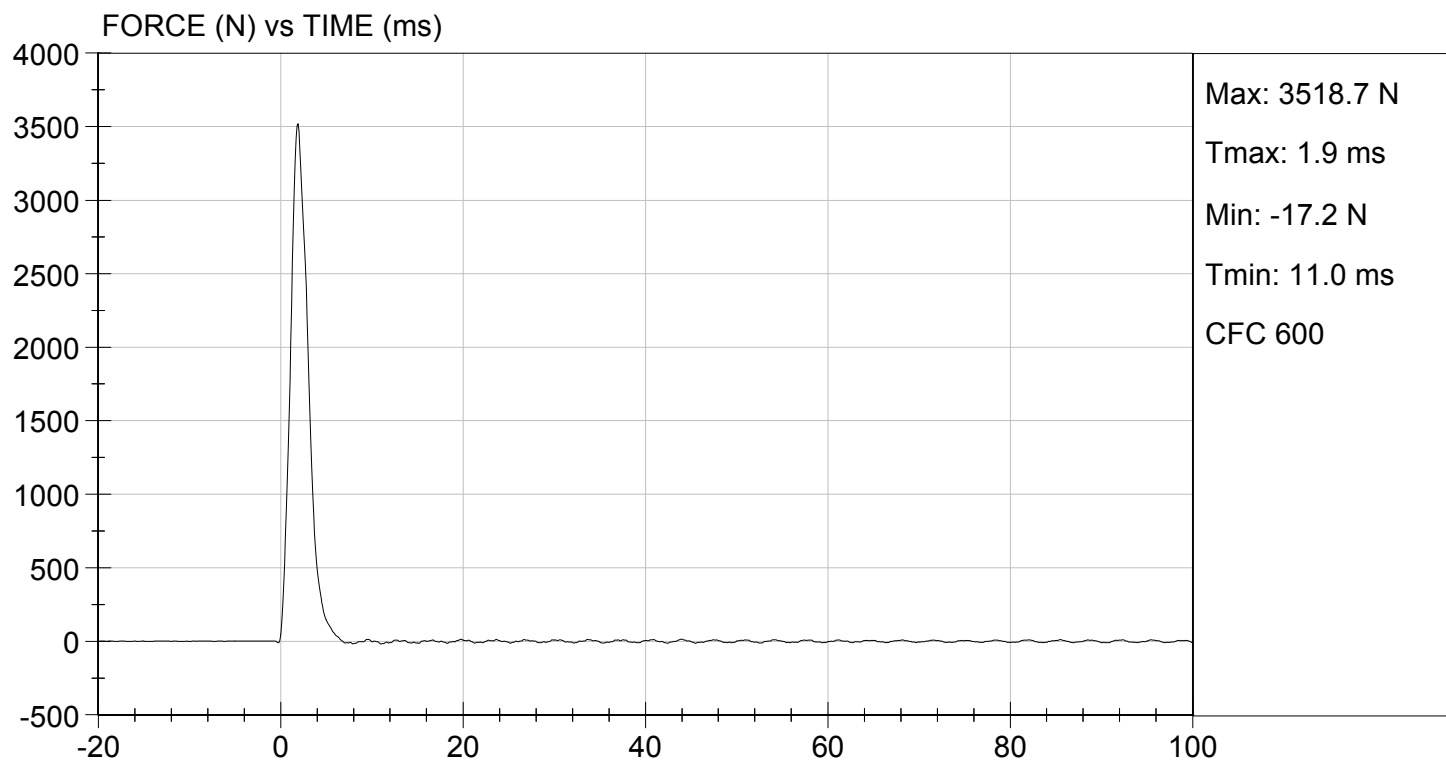
Test Date


Approved By



TEST DESC: LEFT KNEE
VELOCITY: 6.94 ft/s, 2.12 m/s

TEST DATE: 10/06/2016
TEST #: D163386



MGA RESEARCH CORPORATION

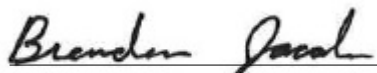
TORSO FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 634

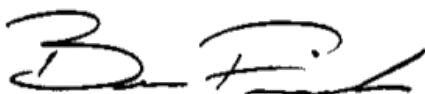
Test I.D: D163387

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	53	Pass
Initial Angle	deg	0 to 20	19	Pass
Return Angle	deg	+/- 8	3	Pass
Force at 45 deg	N	320 to 390	361	Pass
Upper Torso Deflection Rate	deg/s	0.5 to 1.5	0.8	Pass
Overall Result				Pass


Laboratory Technician

10/06/2016

Test Date


Approved By

