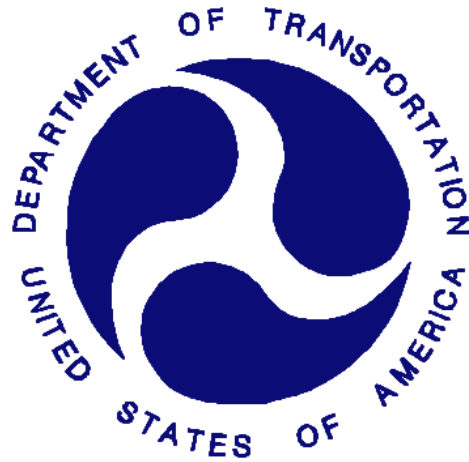


REPORT NUMBER: NCAP-MGA-2016-017

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

**HONDA MFG. OF ALABAMA, LLC
2016 Honda Pilot AWD EX 5-Dr. SUV
NHTSA No.: O20165308**

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



Test Date: August 10, 2015

Final Report Date: September 9, 2015

FINAL REPORT

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

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Prepared by: 
Nicholas Abels, Project Engineer

Approved by: 
Ben Fischer, Project Engineer

Approval Date: September 9, 2015

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 2016 Honda Pilot AWD EX 5-Dr. SUV in accordance with the specifications of the Office of Crashworthiness Standards Frontal NCAP Laboratory Test Procedure. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), and 301 performance. The test was conducted at MGA Research Corporation in Burlington, Wisconsin on August 10, 2015. The impact velocity of the vehicle was 56.5 km/h and the ambient temperature at the barrier face at the time of impact was 21.8°C. The target vehicle post-test maximum crush was 541 located at the vehicle's centerline. The test vehicle's performance was as follows:																																																									
<table border="1"> <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>149</td> <td>700</td> <td>216</td> </tr> <tr> <td>Maximum Chest</td> <td>mm</td> <td>63</td> <td>26</td> <td>52</td> <td>15</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td>1</td> <td>0.28</td> <td>1</td> <td>0.35</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td>839</td> <td>2620</td> <td>515</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td>162</td> <td>2520</td> <td>309</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10008</td> <td>204</td> <td>6805</td> <td>2127</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10008</td> <td>1080</td> <td>6805</td> <td>1940</td> </tr> </tbody> </table>						Measurement Description	Units	Driver ATD		Passenger ATD		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC ₁₅)	N/A	700	149	700	216	Maximum Chest	mm	63	26	52	15	Nij	N/A	1	0.28	1	0.35	Neck Tension	N	4170	839	2620	515	Neck Compression	N	4000	162	2520	309	Left Femur Force	N	10008	204	6805	2127	Right Femur Force	N	10008	1080	6805	1940
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SECTION 1 PURPOSE AND SUMMARY OF TEST

PURPOSE

This 56.3 km/h frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under contract number DTNH22-12-D-00258. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for consumer information purposes.

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

SUMMARY

A load cell barrier consisting of 176 load cells was impacted by a 2016 Honda Pilot AWD EX 5-Dr. SUV at a velocity of 56.5 km/h. The test was performed at MGA Research Corporation on August 10, 2015. 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 541 mm and both the driver and passenger side doors remained closed during the impact event and were operable after the impact.

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

The occupant data is summarized below:

ATD position	HIC ₁₅	Nij	Neck Tension (N)	Neck Comp. (N)	3ms Chest Clip (Gs)	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)
Driver (50 th)	149	0.28	839	162	40	26	204	1080
Passenger (5 th)	216	0.35	515	309	41	15	2127	1940

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

TEST NOTES

BARRIER K-16 MY has no valid data after 80ms.
 BARRIER C-04 FX has no valid data.
 BARRIER C-04 MY has no valid data.
 BARRIER C-04 MZ has 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: 2016 Honda Pilot AWD EX 5-Dr. SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165308
 Test Date: 8/10/2015

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	O20165308	Traction Control System (TCS)	Yes
Model Year	2016	Power Steering	Yes
Make	Honda	Power Window Auto-Reverse	Yes
Model	Pilot	Driver Frontal Airbag	Yes
Body Style	5-Door SUV	Driver Curtain Airbag	Yes
VIN	5FN1YF6H39GB004613	Driver Head/Torso Airbag	No
Body Color	Dark Cherry Pearl	Driver Torso Airbag	No
Odometer (km/mi)	68km / 42mi	Driver Torso/Pelvis Airbag	Yes
Engine Displacement (L)	3.5	Driver Pelvis Airbag	No
Type/No. Cylinders	6	Driver Knee Airbag	No
Engine Placement	Lateral	Front Pass. Frontal Airbag	Yes
Transmission Type	Automatic	Front Pass. Curtain Airbag	Yes
Transmission Speeds	6	Front Pass. Head/Torso Airbag	No
Overdrive	Yes	Front Pass. Torso Airbag	No
Final Drive	AWD	Front Pass. Torso/Pelvis Airbag	Yes
Roof Rack	No	Front Pass. Pelvis Airbag	No
Sunroof/T-Top	No	Front Pass. Knee Airbag	No
Running Boards	No	Driver Pretensioner	Yes
Tilt Steering Wheel	Yes	Driver Load Limiter	Yes
Power Seats	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	HONDA MFG. OF ALABAMA, LLC	GVWR (kg)	2650
Date of Manufacture	06/15	GAWR Front (kg)	1295
		GAWR Rear (kg)	1405

VEHICLE SEATING AND WEIGHT CAPACITY DATA

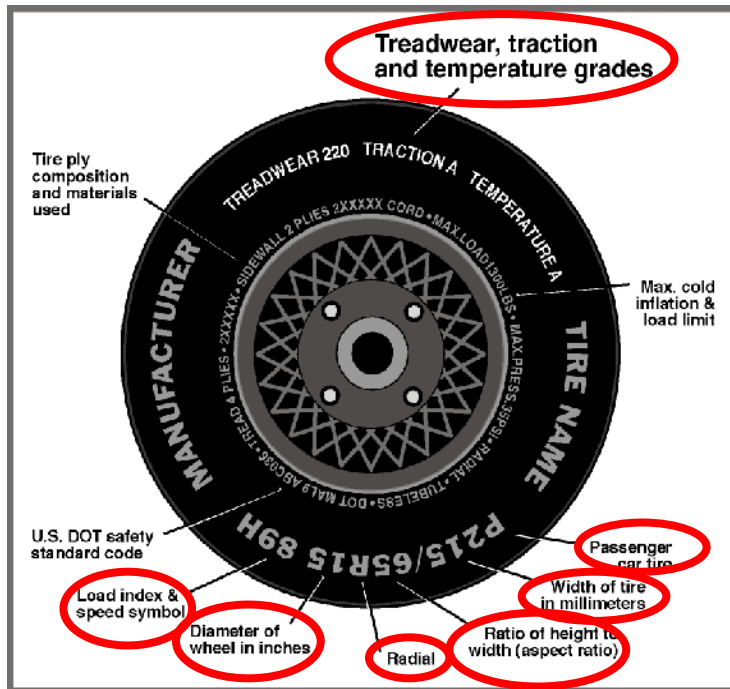
Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Split Bench	Contoured	
Designated Seating Capacity (DSC)	2	3	3	8
Capacity Weight (VCW) (kg)				608
Cargo Weight (RCLW) (kg)				64

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

Test Vehicle: 2016 Honda Pilot AWD EX 5-Dr. SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165308
 Test Date: 8/10/2015

VEHICLE TIRE INFORMATION



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	220	220
Recommended Tire Size	245/60R18	245/60R18
Tire Size on Vehicle	245/60R18	245/60R18
Tire Manufacturer	Bridgestone	Bridgestone
Tire Model	Dueler	Dueler
Treadwear	500	500
Traction	A	A
Temperature Grade	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	1 Polyester, 2 Steel, 1 Nylon	1 Polyester, 2 Steel, 1 Nylon
Load Index/Speed Symbol	105H	105H
Tire Material	Rubber	Rubber
DOT Safety Code Left	7X83 HPA 1715	7X83 HPA 2015
DOT Safety Code Right	7X83 HPA 1715	7X83 HPA 2015

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

Test Vehicle: 2016 Honda Pilot AWD EX 5-Dr. SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165308
 Test Date: 8/10/2015

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	573.0	398.5		610.0	469.5	
Right	kg	533.0	416.0		557.5	480.0	
Ratio	%	57.6	42.4		55.1	44.9	
Totals	kg	1106.0	814.5	1920.5	1167.5	949.5	2117.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1920.5
Weight of 1 P572E ATD & 1 P572O ATD	kg	141
Rated Cargo/Luggage Weight (RCLW)	kg	64
Calculated Test Vehicle Target Weight (TVTW)	kg	2125.5

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	810	814	846	842	1196
As Tested	mm	802	805	822	825	1265
Post Test	mm					

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2820
Total Vehicle Length at Left Side	mm	4725
Total Vehicle Length at Centerline	mm	4937
Total Vehicle Length at Right Side	mm	4725
Weight of Ballast in Cargo Area	kg	0
Weight of Vehicle Components Removed	kg	18
Amount of Stoddard Solvent in Fuel Tank	L	68.5

List of components removed to meet test weight: Spare tire.

List of components removed for instrumentation, data box, and equipment installation: Cargo area carpet, LR tail light.

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

Test Vehicle: 2016 Honda Pilot AWD EX 5-Dr. SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165308
 Test Date: 8/10/2015

TARGET VEHICLE STRUCTURAL MEASUREMENT

	Elements	Pre-Test (mm)
1	Total Length	4937
2	Total Width	2003
3	Bumper Top Height	626
4	Bumper Bottom Height	492
5	Longitudinal Member Top Height	648
6	Distance between Longitudinal Members	1002
7	Longitudinal Member Width	80
8	Engine Top Height	905
9	Engine Bottom Height	205
10	Engine and Gearbox Width	802
11	Front Bumper-Engine Distance	248
12	Front Shock Absorber Fixing Height	1108
13	Bonnet Leading Edge Height	951
14	Front Shock Absorber Fixing Width	1101
15	Front Bumper – Front Axle Distance	977
16	Front Axle – A-Pillar Distance	491
17	A-Pillar – B-Pillar Distance	1057
18	B-Pillar – Rear Axle Distance	2455
19	B-Pillar – C-Pillar Distance	827
20	Roof Sill Bottom Height	1676
21	Roof Sill Top Height	1712
22	Floor Sill Bottom Height	280
23	Floor Sill Top Height	412

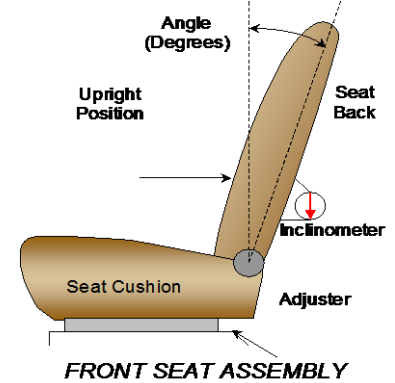
DATA SHEET NO. 2
SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle: 2016 Honda Pilot AWD EX 5-Dr. SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165308
 Test Date: 8/10/2015

NOMINAL DESIGN RIDING POSITION

The driver seat back is positioned as close as possible to the manufacturer’s design angle. For the passenger seat back, seat back is adjusted following Appendix F, “Driver & Passenger Dummy Seating & Positioning Procedures” in the NCAP Test Procedure dated August 2013.



	Degrees
Driver Seat Back Angle	1.4° on headrest post
Passenger Seat Back Angle	2.7° on headrest post

SEAT FORE/AFT POSITIONS

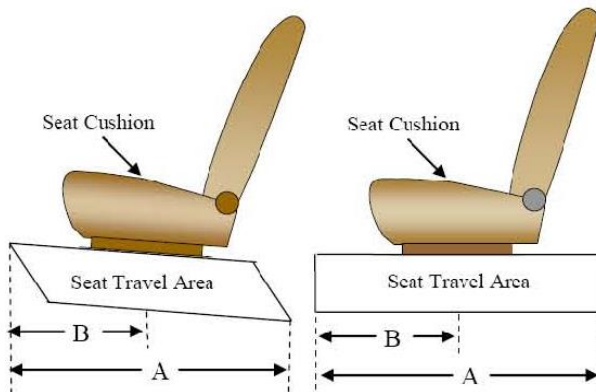
The driver and passenger seat fore/aft positions are adjusted following Appendix F, “Driver & Passenger Dummy Seating & Positioning Procedures” in the NCAP Test Procedure dated August 2013.

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	272 mm	136 mm
Passenger Seat	230mm / 24 detents (1 st as 1)	0 mm / 0 th detent (1 st as 0)

SEAT BELT UPPER ANCHORAGES

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

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



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

Test Vehicle: 2016 Honda Pilot AWD EX 5-Dr. SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165308
 Test Date: 8/10/2015

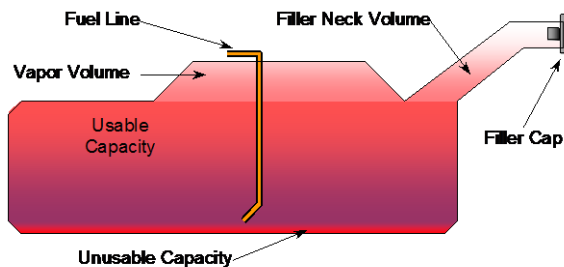
FUEL TANK CAPACITY DATA

	Liters
Usable Capacity of "Standard Tank"	73.8
Usable Capacity of "Optional Tank"	
92-94% of Usable Capacity	67.9 to 69.4
Actual Amount of Solvent used	68.5
1/3 of Usable Capacity	24.6

FUEL PUMP

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

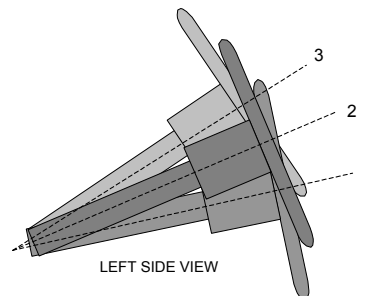
The electric fuel pump turns on once the start button is pressed.



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

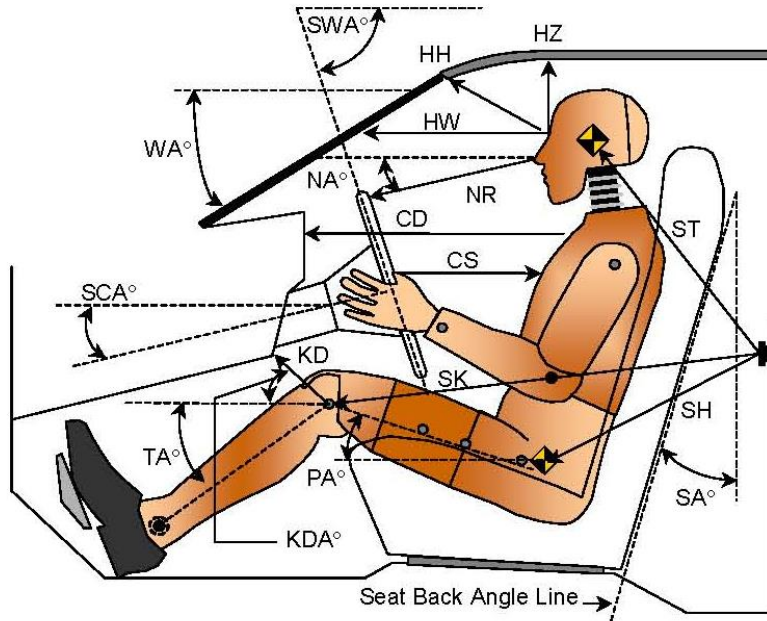
STEERING COLUMN POSITION

	Degrees	Fore/Aft Position (mm)
Lowermost Position 1	67.6	184
Geometric Center Position 2	65.3	208
Uppermost Position 3	63.0	232
Telescoping Steering Wheel Travel		48
Test Position	65.3	208

**DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS**

Test Vehicle: 2016 Honda Pilot AWD EX 5-Dr. SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165308
 Test Date: 8/10/2015



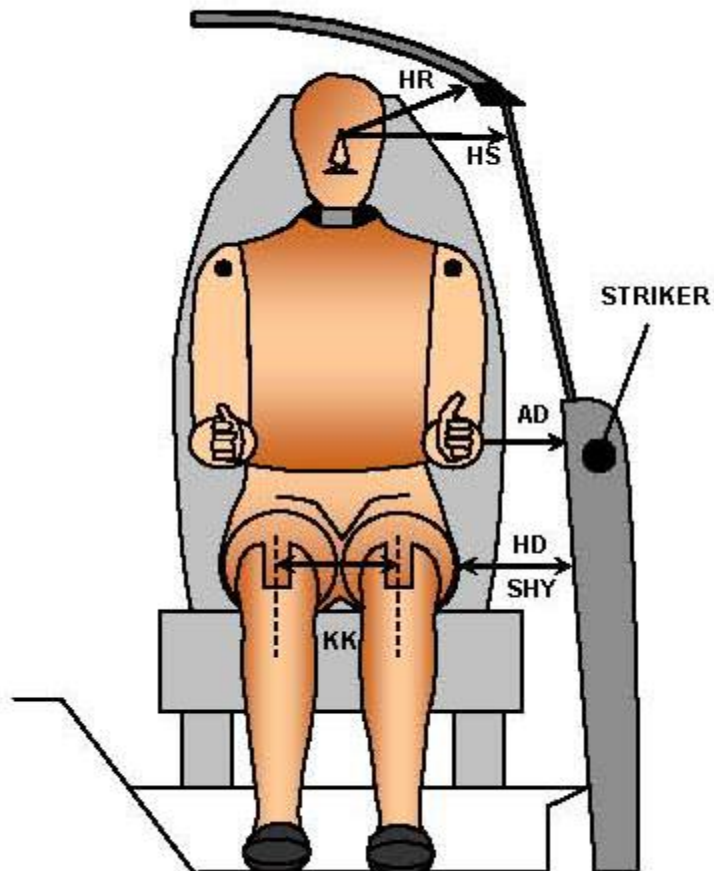
LEFT SIDE VIEW

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		29.5		
SWA°	Steering Wheel Angle		65.3		
SCA°	Steering Column Angle		24.7		
SA°	Seat Back Angle (on headrest post)		1.4		2.7
HZ	Head to Roof (Z)	247	90	282	90
HH	Head to Header	423	26.2	364	37.6
HW	Head to Windshield	735	0	745	0
NR	Nose to Rim	411	8.7		
CD	Chest to Dash	578		404	
CS	Chest to Steering Hub	327	3.1		
RA	Rim to Abdomen	201	0		
KDL	Left Knee to Dash	156	21.9	82	31.5
KDR	Right Knee to Dash	157	23.2	85	30.6
PA°	Pelvic Angle		24.2		22.1
TA°	Tibia Angle		54.4		52.4
SK	Striker to Knee	592	98.2	723	104.0
ST	Striker to Head	453	10.7	418	35.2
SH	Striker to H-Point	408	135.8	405	118.4

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

Test Vehicle: 2016 Honda Pilot AWD EX 5-Dr. SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165308
 Test Date: 8/10/2015



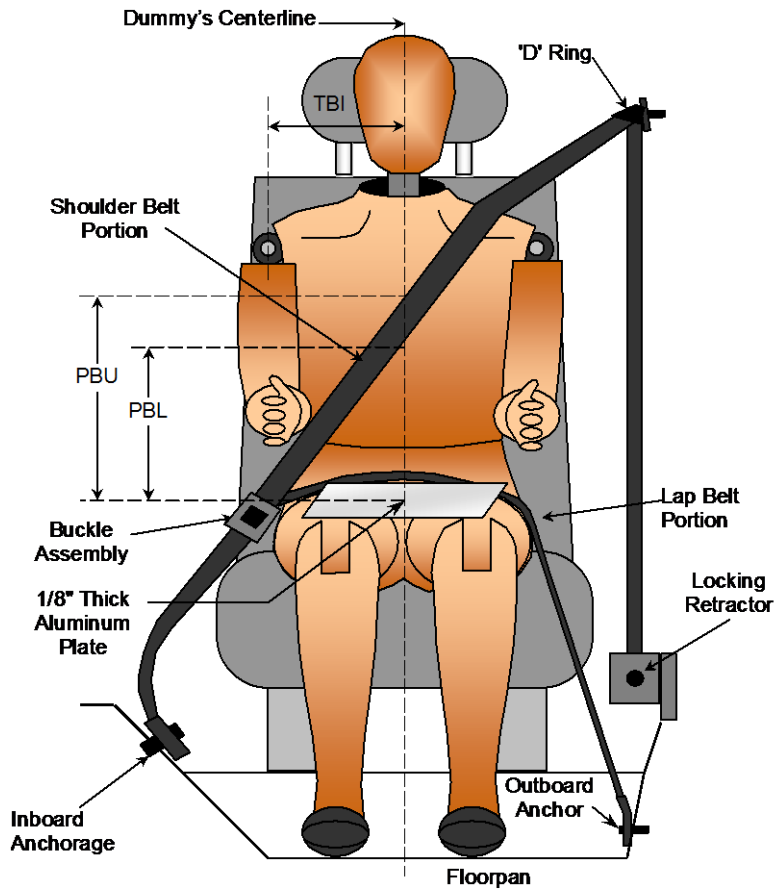
FRONT VIEW OF DUMMY

Code	Measurement Description	Driver	Passenger
		Length (mm)	
AD	Arm to Door	146	94
HD	H-Point to Door	151	186
HR	Head to Side Header	268	306
HS	Head to Side Window	368	398
KK	Knee to Knee	363	227
SHY	Striker to H-Point (Y Direction)	302	327
AA	Ankle to Ankle	333	172

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

Test Vehicle: 2016 Honda Pilot AWD EX 5-Dr. SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165308
 Test Date: 8/10/2015



FRONT VIEW OF DUMMY

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU - Top surface of reference to belt upper edge	mm	350	305
PBL - Top surface of reference to belt lower edge	mm	270	220

BELT LENGTH DATA

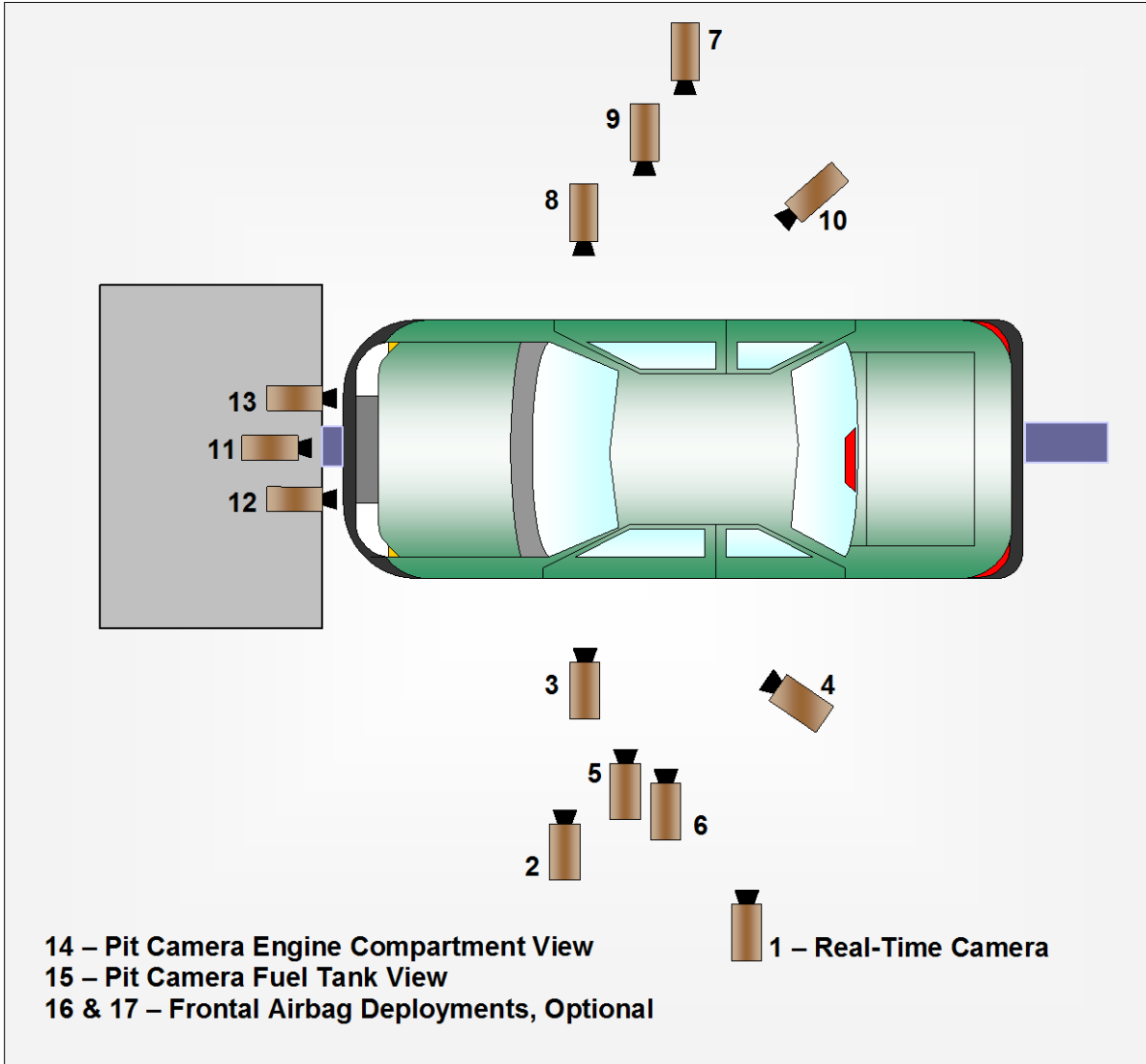
Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as measured on ATD	mm	900	900
Lap Belt Length as measured on ATD	mm	690	445
Remainder of belt on reel	mm	1510	1755
Total Belt Length for Continuous Webbing Systems	mm	3100	3100

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

Test Vehicle: 2016 Honda Pilot AWD EX 5-Dr. SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165308
Test Date: 8/10/2015

CAMERA POSITIONS FOR FRONTAL IMPACTS



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

Test Vehicle: 2016 Honda Pilot AWD EX 5-Dr. SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165308
 Test Date: 8/10/2015

CAMERA LOCATIONS

No.	Camera View	Coordinates (mm)			Lens (mm)	Speed (fps)
		X*	Y*	Z*		
1	Real-Time Left Overall					30
2	Driver Close-Up	-1370	-6080	-1850	35	1000
3	Left Front Half	-1070	-5570	-1170	24	1000
4	Left Angle	-5940	-5210	-2000	50	1000
5	Steering Column - Top					
6	Steering Column - Bottom					
7	Right Overall	-2060	6810	-1180	20	1000
8	Passenger Close-Up	-1500	6350	-1810	35	1000
9	Right Front Half	-1130	5630	-1130	24	1000
10	Right Angle	-5930	4860	-2020	50	1000
11	Windshield	430	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	-1090	0	3150	24	1000
15	Pit Rear	-3130	0	3150	24	1000
16	Onboard Driver Side				12	1000
17	Onboard Passenger Side				12	1000
18	Real-Time Pan View					30

*COORDINATES:

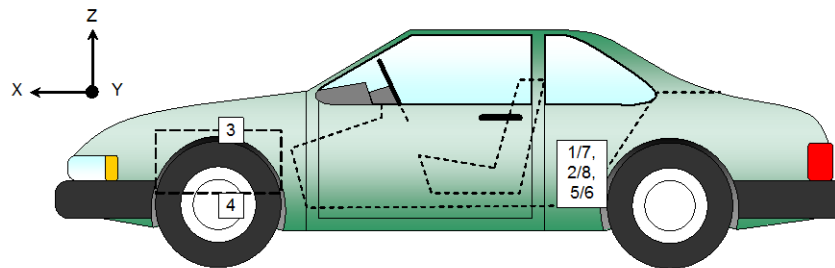
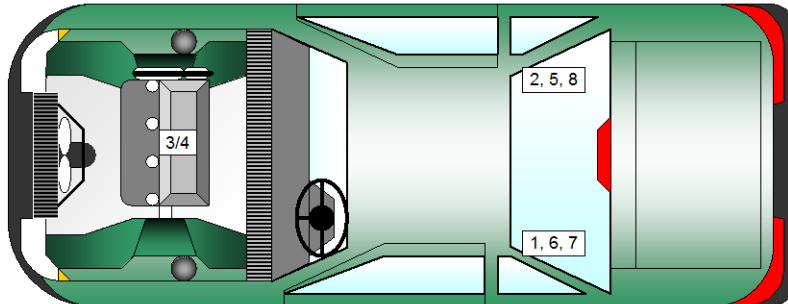
- +X = forward of impact plane
- +Y = right of monorail centerline
- +Z = below ground level

Cameras 5 & 6 were not used for this test.

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

Test Vehicle: 2016 Honda Pilot AWD EX 5-Dr. SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165308
 Test Date: 8/10/2015



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear Crossmember Accelerometer – X Direction	2145	-350	-418
2	Right Rear Crossmember Accelerometer – X Direction	2145	350	-418
3	Engine Top X	4139	-71	-910
4	Engine Bottom X	4195	0	-254
5	Left Rear Crossmember Accelerometer – Z Direction	2145	-350	-418
6	Right Rear Crossmember Accelerometer – Z Direction	2145	350	-418
7	Left Rear Crossmember Accelerometer Redundant – X Direction	2145	-350	-421
8	Right Rear Crossmember Accelerometer Redundant – X Direction	2145	350	-421

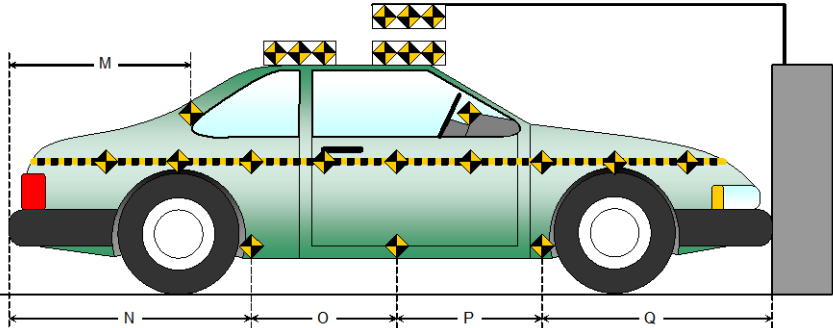
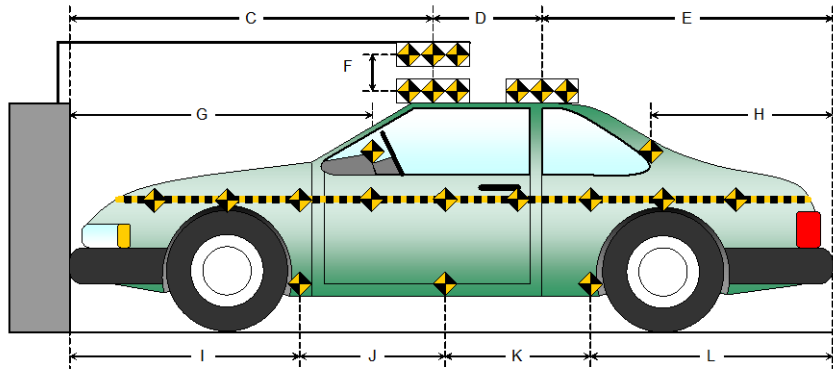
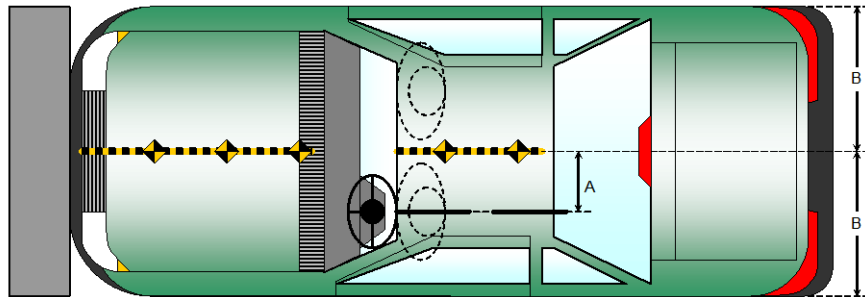
Reference Points: X - Rear Surface of Vehicle (+ forward)
 Y - Vehicle Centerline (+ to right)
 Z - Ground Plane (+ down)

DATA SHEET NO. 8
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2016 Honda Pilot AWD EX 5-Dr. SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165308
 Test Date: 8/10/2015

Item	Value (mm)
A	437
B	1001
C	2321
D	613
E	2003
F	36
G	
H	508
I	1456
J	938
K	938
L	1605
M	508
N	1605
O	938
P	938
Q	1456



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

Test Vehicle: 2016 Honda Pilot AWD EX 5-Dr. SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165308
 Test Date: 8/10/2015

Advanced Research Load Cell Barrier

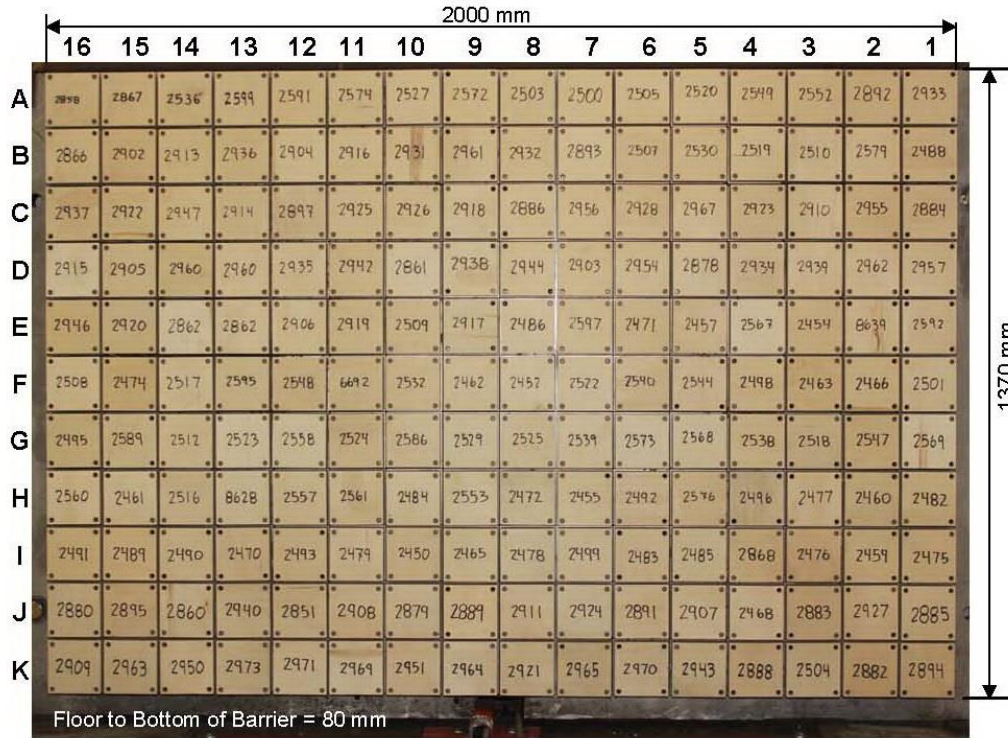


Photo for Reference Only

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: 2016 Honda Pilot AWD EX 5-Dr. SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165308
Test Date: 8/10/2015

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: 2016 Honda Pilot AWD EX 5-Dr. SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165308
 Test Date: 8/10/2015

TEST DUMMY INFORMATION AND CONTACT LOCATIONS

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

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	
Center	mm	
Right Side	mm	
Average	mm	

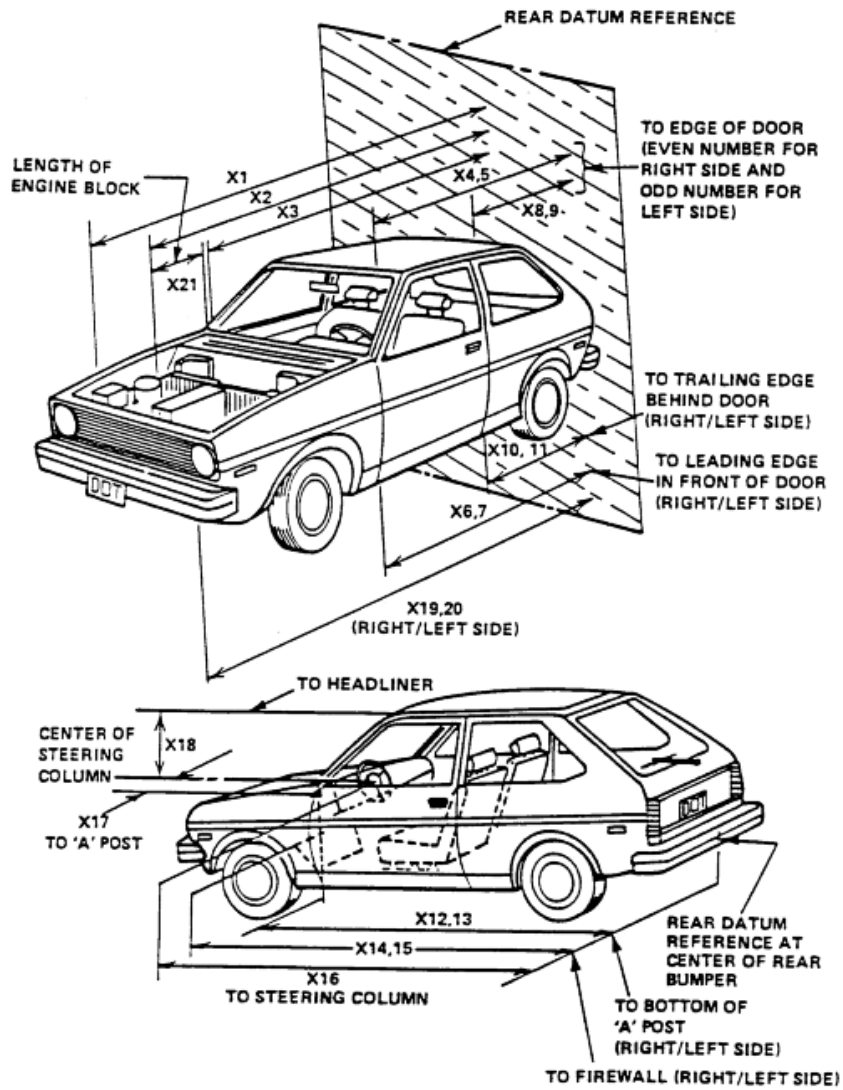
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

DATA SHEET NO. 12 VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2016 Honda Pilot AWD EX 5-Dr. SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165308
 Test Date: 8/10/2015



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

Test Vehicle: 2016 Honda Pilot AWD EX 5-Dr. SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165308
Test Date: 8/10/2015

RSOV (Rear Surface of Vehicle)

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	mm	4937	4396	541
2	RSOV to Front of Engine	mm	4428	4100	328
3	RSOV to Firewall	mm	3989	3925	64
4	RSOV to Upper Leading Edge of Right Door	mm	3462	3457	5
5	RSOV to Upper Leading Edge of Left Door	mm	3462	3455	7
6	RSOV to Lower Leading Edge of Right Door	mm	3403	3395	8
7	RSOV to Lower Leading Edge of Left Door	mm	3403	3393	10
8	RSOV to Upper Trailing Edge of Right Door	mm	2401	2398	3
9	RSOV to Upper Trailing Edge of Left Door	mm	2401	2399	2
10	RSOV to Lower Trailing Edge of Right Door	mm	2415	2413	2
11	RSOV to Lower Trailing Edge of Left Door	mm	2415	2412	3
12	RSOV to Bottom of "A" Post of Right Side	mm	3422	3420	2
13	RSOV to Bottom of "A" Post of Left Side	mm	3422	3412	10
14	RSOV to Firewall, Right Side	mm	4005	3948	57
15	RSOV to Firewall, Left Side	mm	4005	3940	65
16	RSOV to Steering Column	mm	3034	3045	-11
17	Center of Steering Column to "A" Post	mm	401	371	30
18	Center of Steering Column to Headliner	mm	440	422	18
19	RSOV to Right Side of Front Bumper	mm	4725	4337	388
20	RSOV to Left Side of Front Bumper	mm	4725	4320	405
21	Length of Engine Block	mm	465	465	0
RD	RSOV to Right Side of Dash Panel	mm	3309	3306	3
CD	RSOV to Center of Dash Panel	mm	3238	3237	1
LD	RSOV to Left Side of Dash Panel	mm	3318	3316	2

DATA SHEET NO. 13
ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2016 Honda Pilot AWD EX 5-Dr. SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165308
Test Date: 8/10/2015

VEHICLE INFORMATION

VIN: 5FNYP6H39GB004613 Wheelbase (mm): 2820
Vehicle Size Category: MPV Test Weight (kg): 2117.0

ACCELEROMETER DATA

Accelerometer Locations: As per measurements on Page 15

Cal. Procedure/Interval: MGA procedure / 6 month

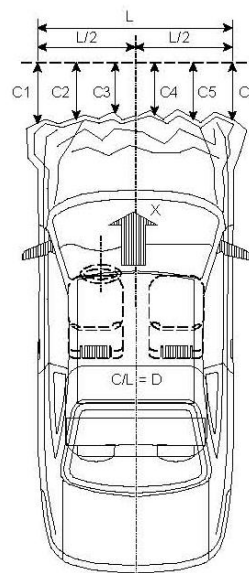
Integration Algorithm: Trapezoidal

Linearity: > 99%

Impact Velocity (km/h): 56.5

Velocity Change (km/h): 62.6

Time of Separation (msec): 101



CRUSH PROFILE

Collision Deformation Classification: Frontal

Midpoint of Damage: Centerline

Damage Region Length (mm): 1500

Impact Mode: Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	4725	4370	355
C2	Crush zone 2 at left side	mm	4860	4332	528
C3	Crush zone 3 at left side	mm	4902	4370	532
C4	Crush zone 4 at right side	mm	4902	4374	528
C5	Crush zone 5 at right side	mm	4860	4328	532
C6	Crush zone 6 at right side	mm	4725	4337	388
L	C1 TO C6	mm	1500	1477	23

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

Test Vehicle: 2016 Honda Pilot AWD EX 5-Dr. SUV
 Test Program: NCAP Frontal Barrier Impact Test

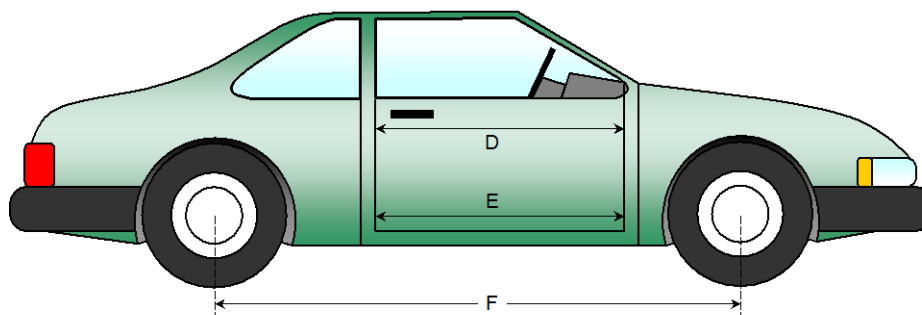
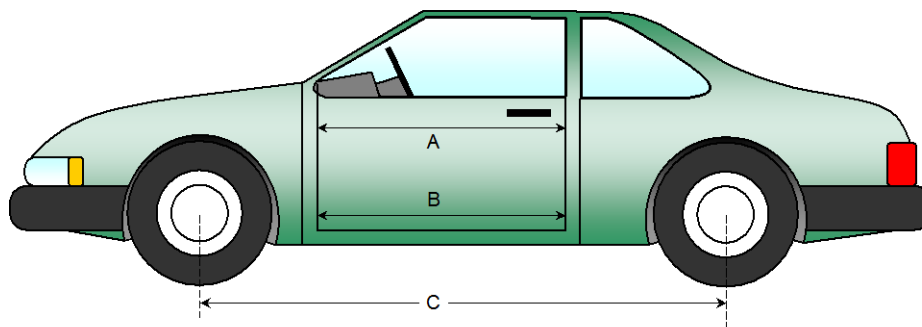
NHTSA No.: O20165308
 Test Date: 8/10/2015

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	920	920	0
B	Left Side Lower	mm	849	849	0
D	Right Side Upper	mm	920	920	0
E	Right Side Lower	mm	865	865	0

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2820	2745	75
F	Right Side Wheelbase	mm	2820	2697	123



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

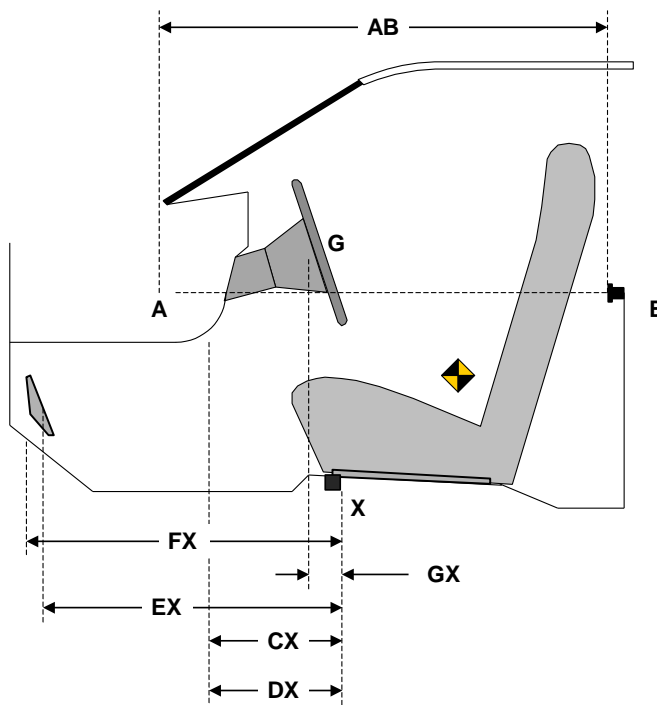
Test Vehicle: 2016 Honda Pilot AWD EX 5-Dr. SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165308
 Test Date: 8/10/2015

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	745	745	0
CX	Left Knee Bolster to X	mm	366	358	6
DX	Right Knee Bolster to X	mm	381	362	19
EX	Brake Pedal to X	mm	570	530	40
FX	Foot Rest to X	mm	581	560	21
GX	Center of Steering Column Wheel Hub to X	mm	109	150	-41

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: 2016 Honda Pilot AWD EX 5-Dr. SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165308
 Test Date: 8/10/2015

Windshield Mounting Details:

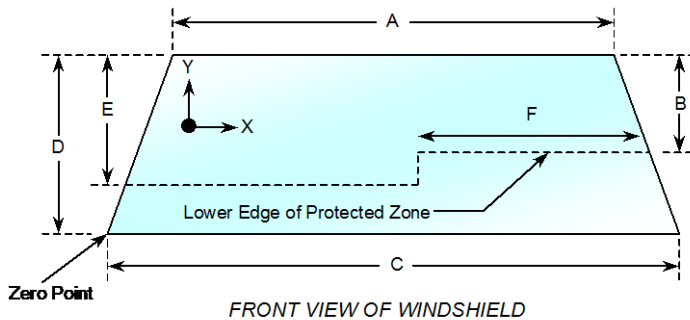
Windshield glass is secured to the vehicle frame with a rubber trim and glue.

The standard requires that the post-test retention measurement be a minimum of 75 percent of the pre-test total periphery measurement for vehicles not equipped with occupant passive restraints and 50 percent for each side of the windshield for vehicles which are equipped with occupant passive restraints.

Temperature of windshield molding during test: 21.9° C.

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% of Retention
Left Side	2339	2339	100
Right Side	2339	2339	100
Total	4678	4678	100



Item	Units	Value
A	mm	1360
B	mm	530
C	mm	1654
D	mm	832
E	mm	560
F	mm	617

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: 2016 Honda Pilot AWD EX 5-Dr. SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165308
Test Date: 8/10/2015

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21.8°C

Test Time: 11:01 a.m.

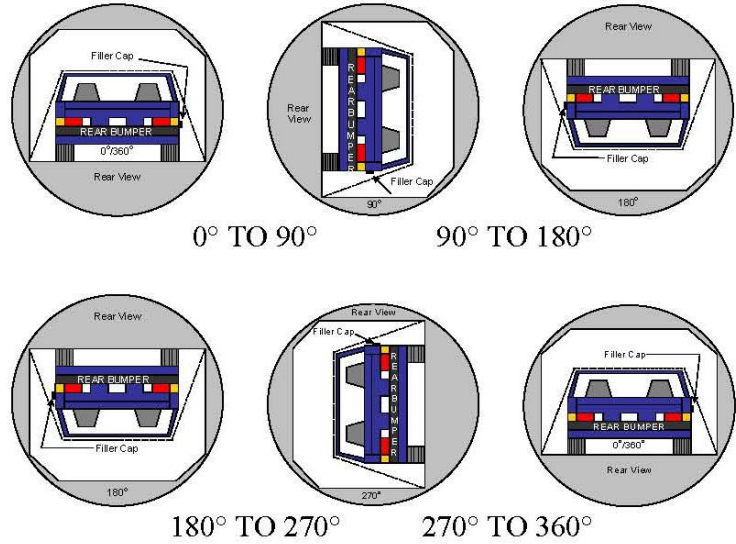
- A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable = 1 oz.)
- B. For the 5 minute period after motion ceases: 0 oz.
(Maximum allowable = 5 oz.)
- C. For the following 25 minutes: 0 oz.
(Maximum allowable = 1 oz./minute)
- D. Spillage: None

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

Test Vehicle: 2016 Honda Pilot AWD EX 5-Dr. SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165308
 Test Date: 8/10/2015

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°	115	300	415
90° to 180°	110	300	410
180° to 270°	107	300	407
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

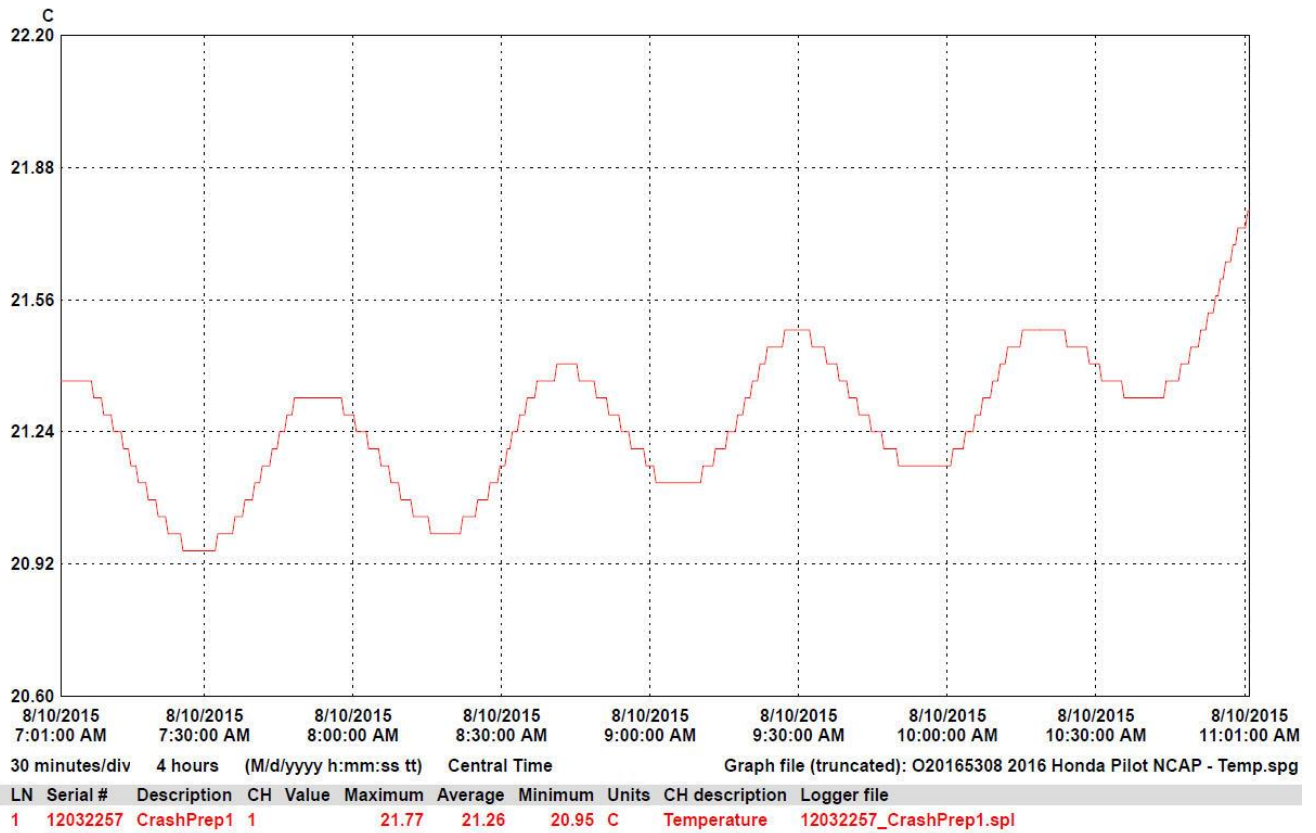
SOLVENT SPILLAGE LOCATION TABLE

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: 2016 Honda Pilot AWD EX 5-Dr. SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20165308
 Test Date: 8/10/2015



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020165308

MFD. BY HONDA MFG. OF ALABAMA, LLC 06/' 15
GVWR 2650KG(5842LBS) TIRE SIZE RIM SIZE
GAWR F 1295KG(2855LBS) 245/60R18 105H 18X8.0J
GAWR R 1405KG(3098LBS) 245/60R18 105H 18X8.0J
THIS VEHICLE CONFORMS TO ALL APPLICABLE
FEDERAL MOTOR VEHICLE SAFETY
AND THEFT PREVENTION STANDARDS IN EFFECT
ON THE DATE OF MANUFACTURE SHOWN ABOVE.
V.I.N.: 5FN1YF6H39GB004613 TYPE: MPV



TG7 G AF6 -R529P -F -B

Photo No. 003 - Manufacturer's Label

4T8

TIRE AND LOADING INFORMATION

SEATING CAPACITY : TOTAL 8 : FRONT 2 : REAR 6

The combined weight of occupants and cargo should never exceed 608kg or 1340lbs.

TIRE	SIZE	COLD TIRE PRESSURE	SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION
FRONT	245/60R18 105H	220KPA, 32PSI	
REAR		220KPA, 32PSI	
SPARE	T165/80D17 104M	420KPA, 60PSI	

● This car is equipped with side airbags (A9)

SIDE AIRBAG (A9)

020165308

Photo No. 004 - Tire Placard



Photo No. 005 - 2016 Honda Pilot AWD EX Frontal As Delivered



Photo No. 006 - Left Rear 3-4 View, As Received



Photo No. 007 - Pre-Test Front View of Test Vehicle



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



Photo No. 009 - Pre-Test Left View of Test Vehicle



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



Photo No. 011 - Pre-Test Right View of Test Vehicle



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



Photo No. 013 - Pre-Test Right Front 3-4 View



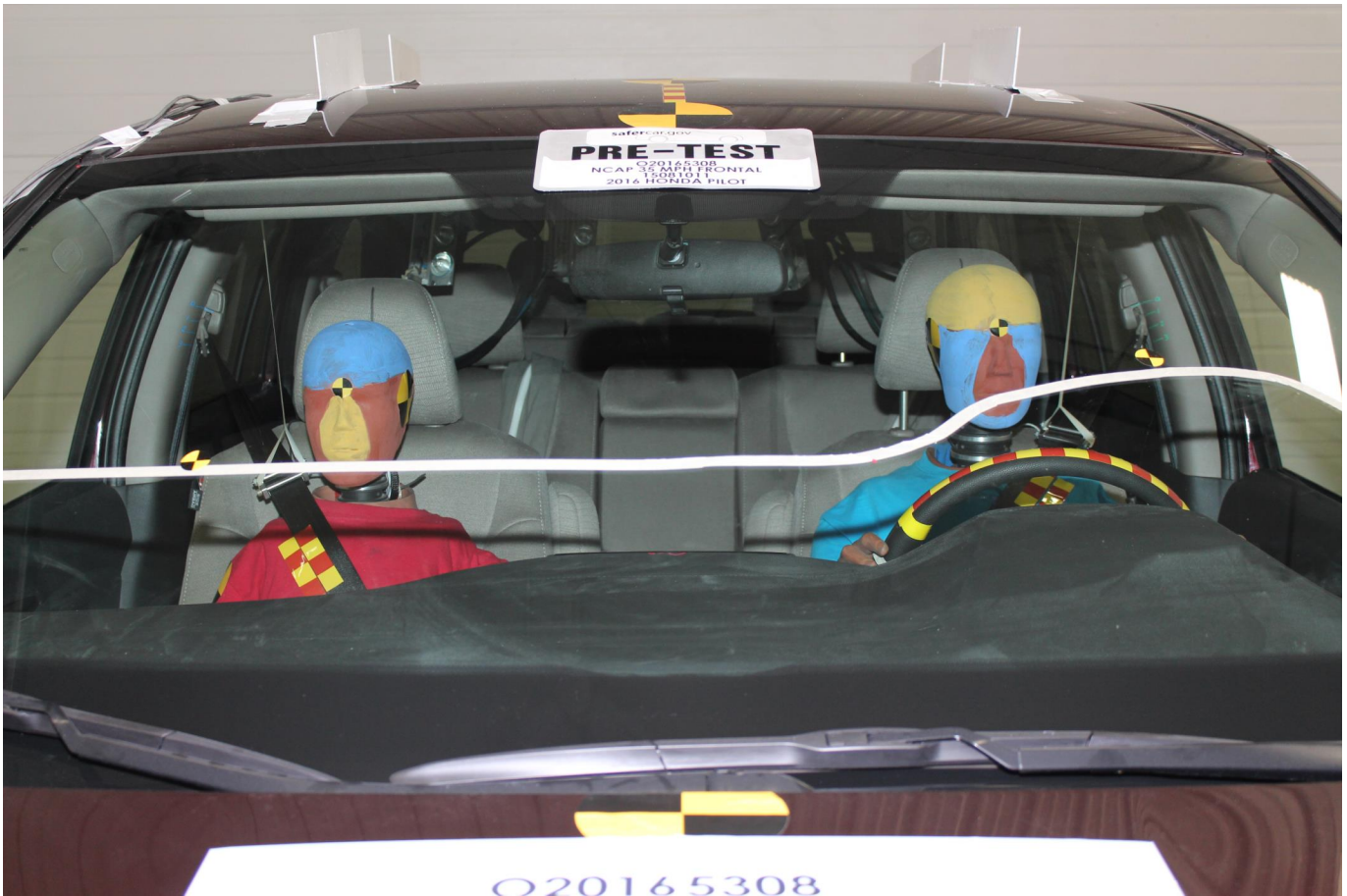
Photo No. 014 - Post-Test Right Front 3-4 View



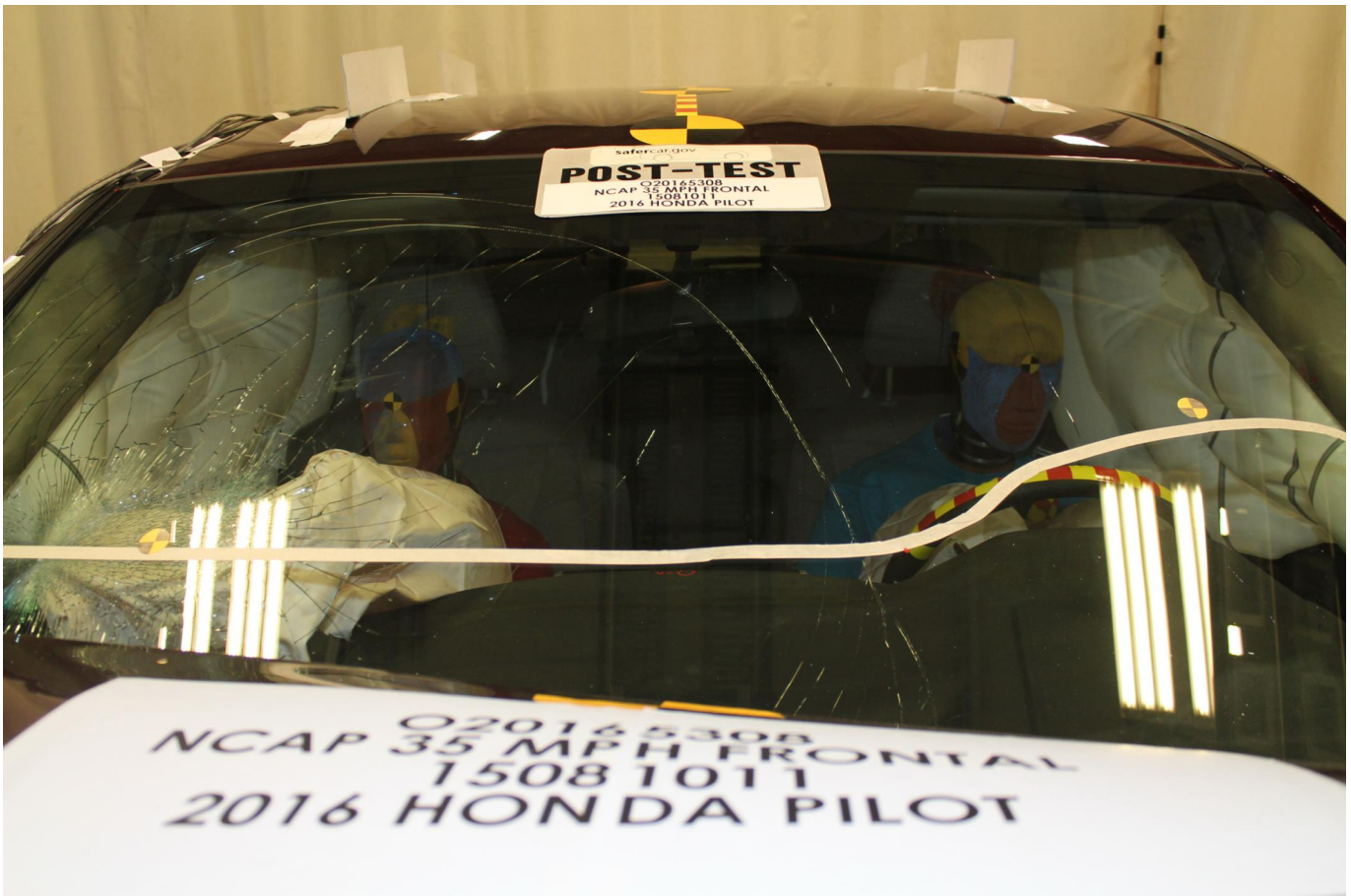
Photo No. 015 - Pre-Test Left Rear 3-4 View



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



O20165308
Photo No. 017 - Pre-Test Windshield View



O20165308
NCAP 35 MPH FRONTAL
15081011
2016 HONDA PILOT
Photo No. 018 - Post-Test Windshield View



Photo No. 019 - Pre-Test Engine Compartment View

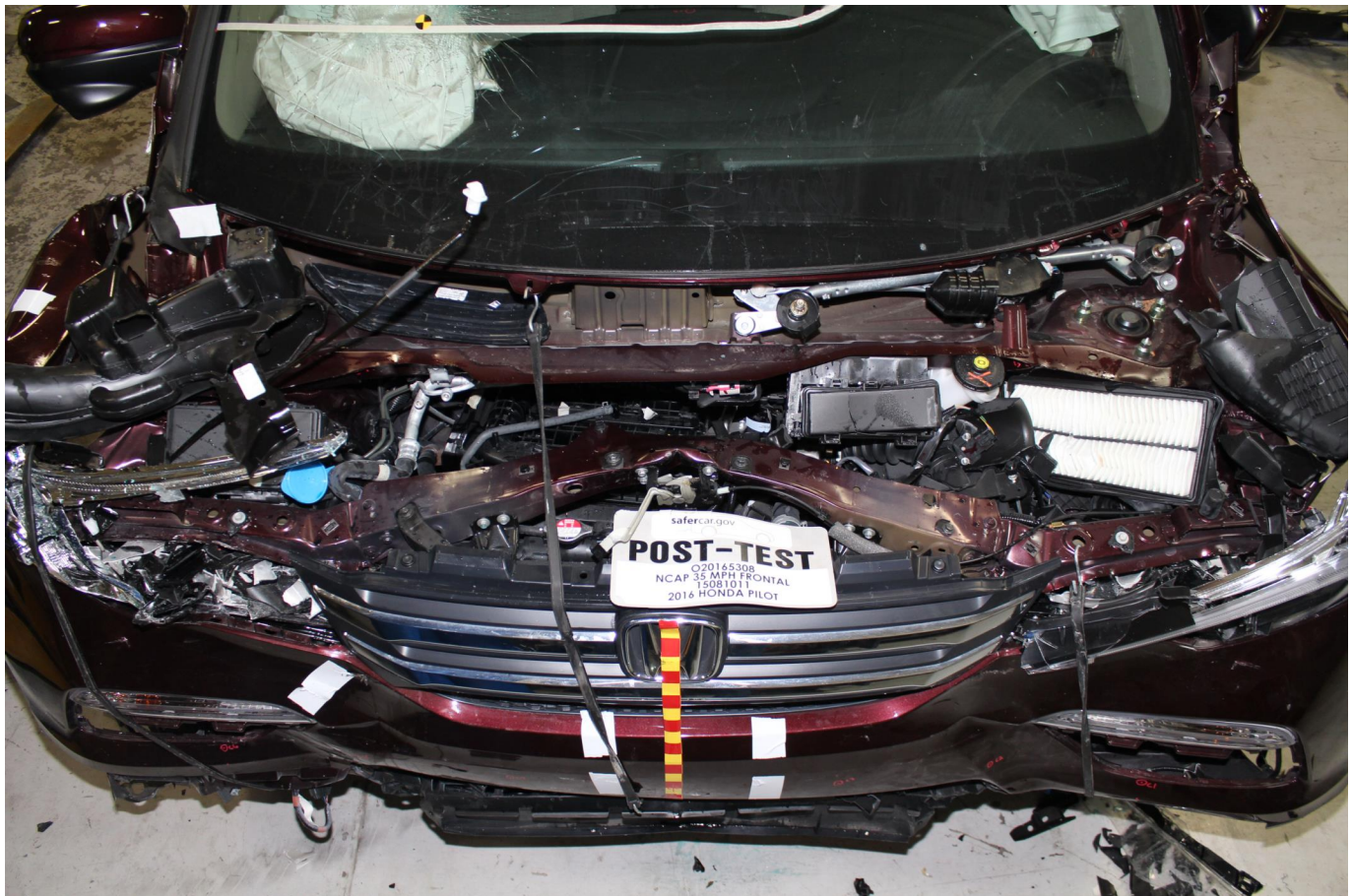


Photo No. 020 - Post-Test Engine Compartment View



Photo No. 021 - Pre-Test Fuel Filler Cap View



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

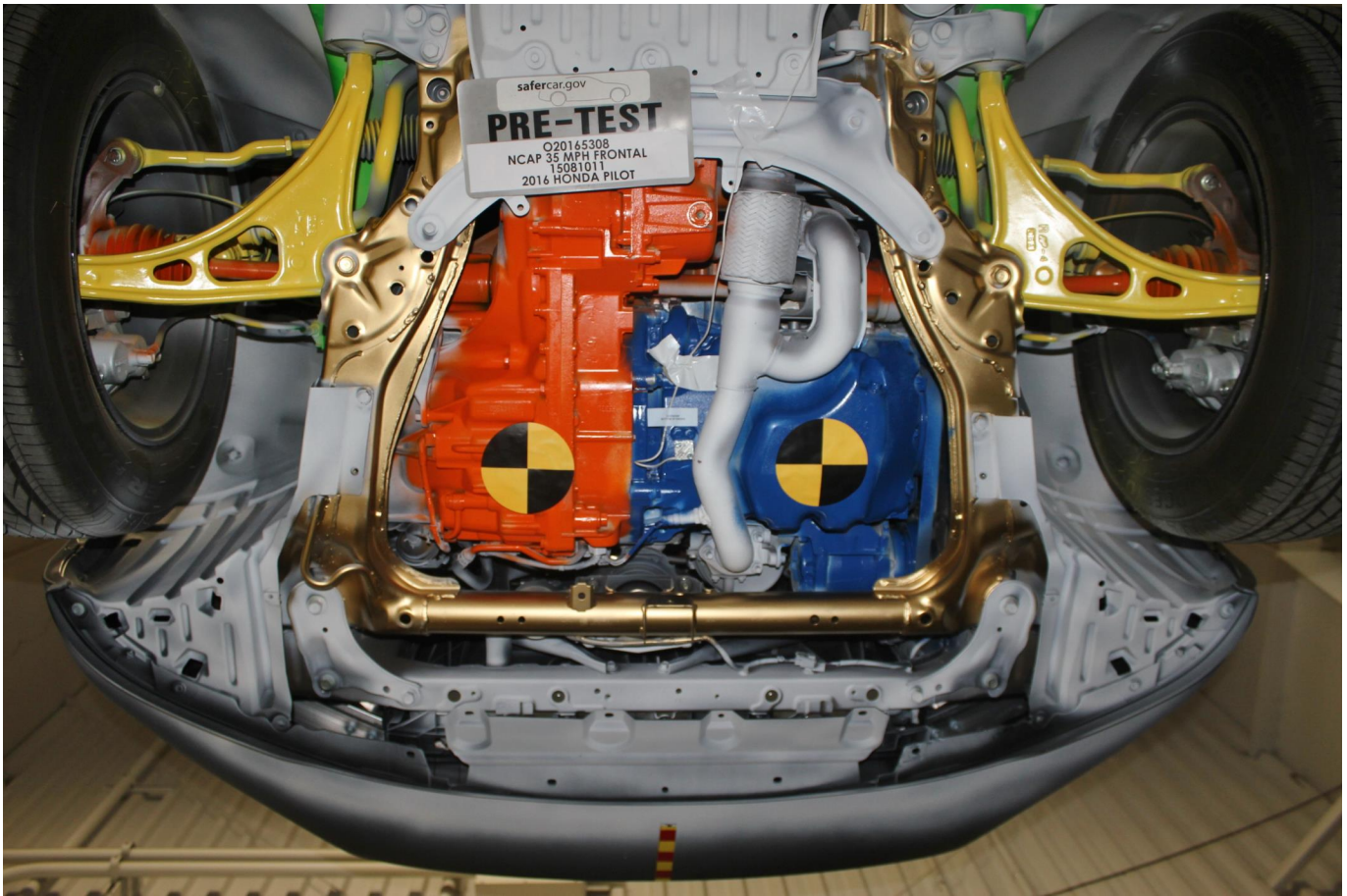


Photo No. 023 - Pre-Test Front Underbody View

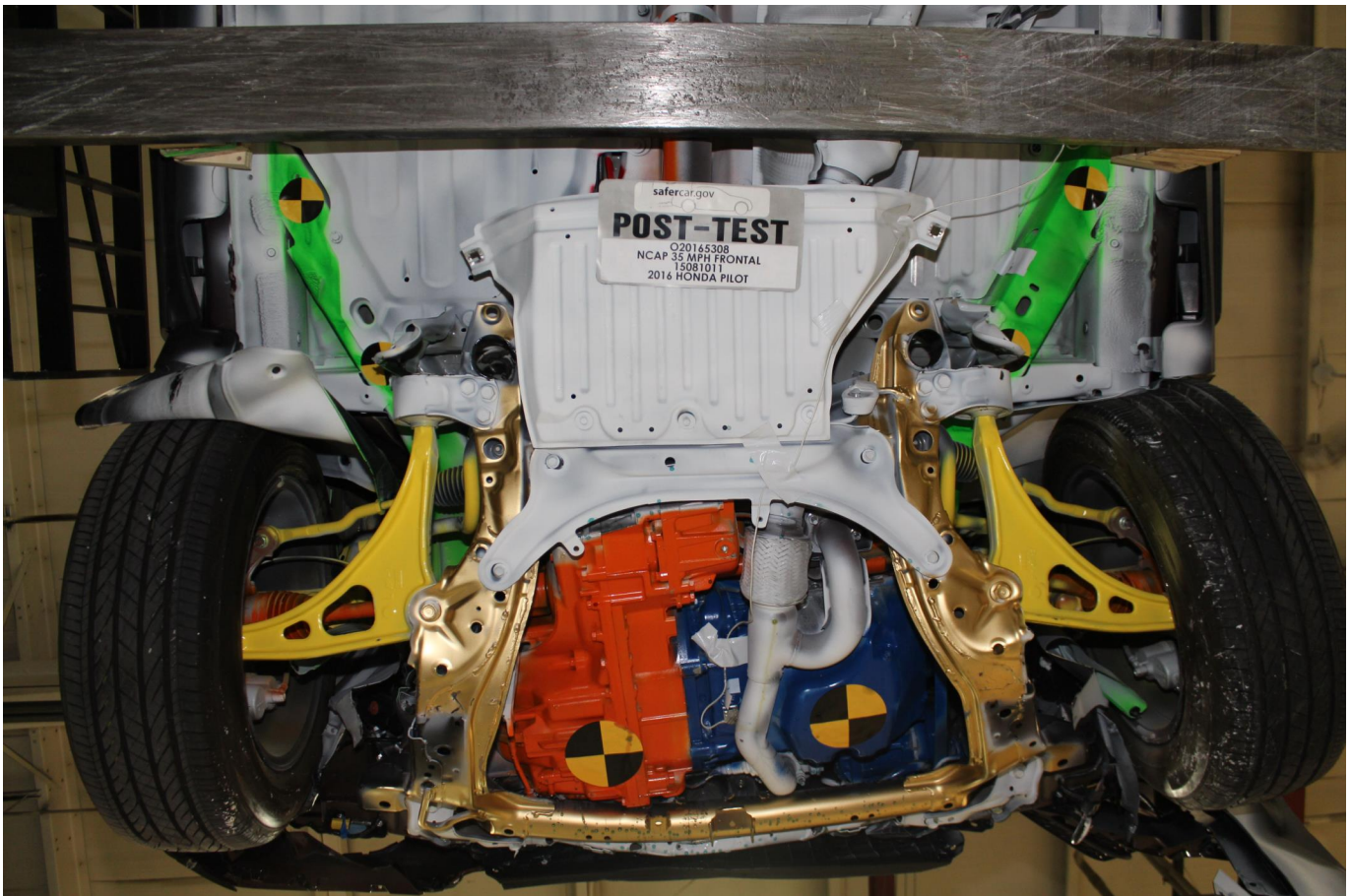


Photo No. 024 - Post-Test Front Underbody View

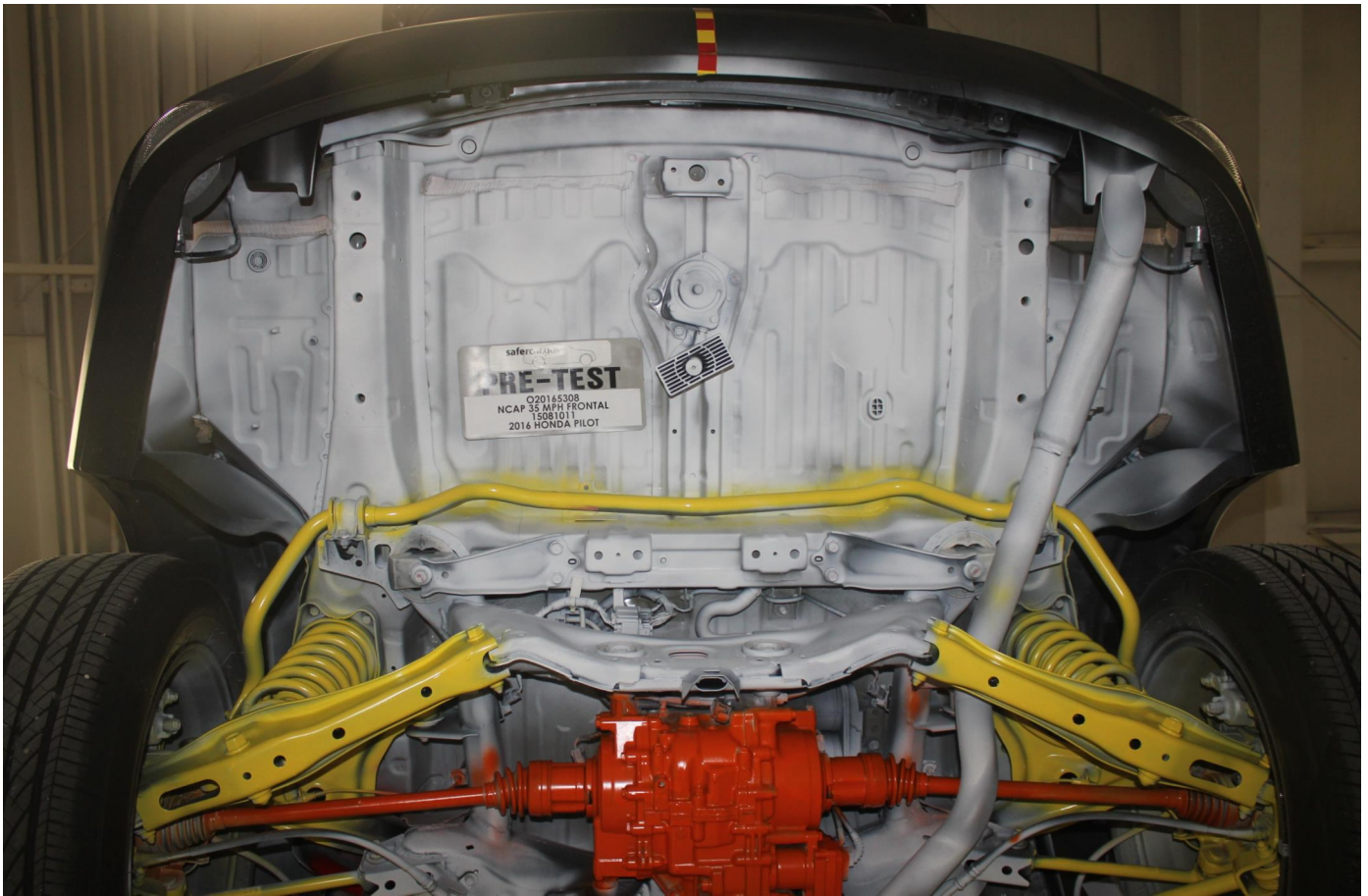


Photo No. 025 - Pre-Test Rear Underbody View

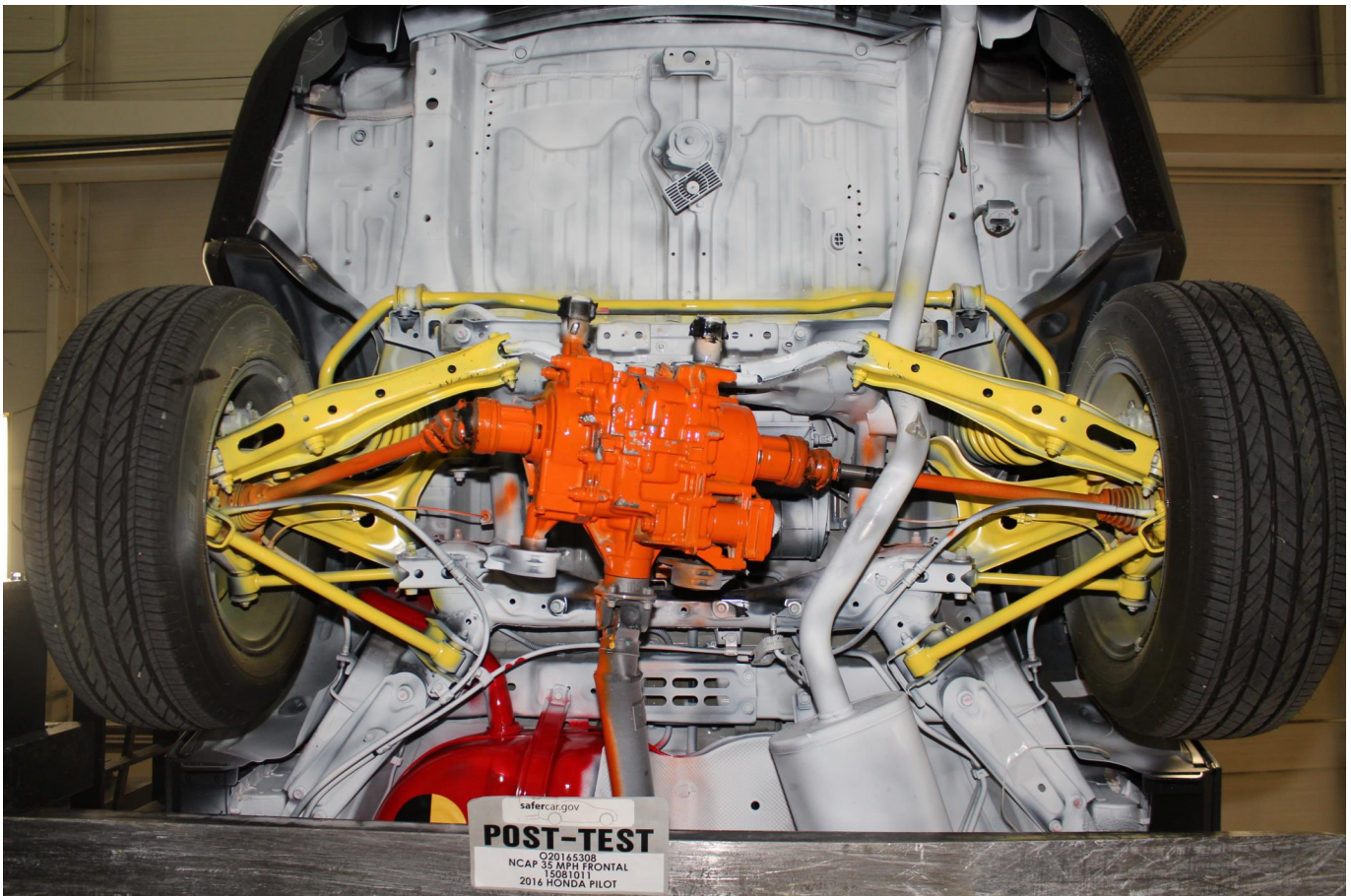


Photo No. 026 - Post-Test Rear Underbody View



Photo No. 027 - Pre-Test Dummy Cable Routing



Photo No. 028 - Post-Test Dummy Cable Routing

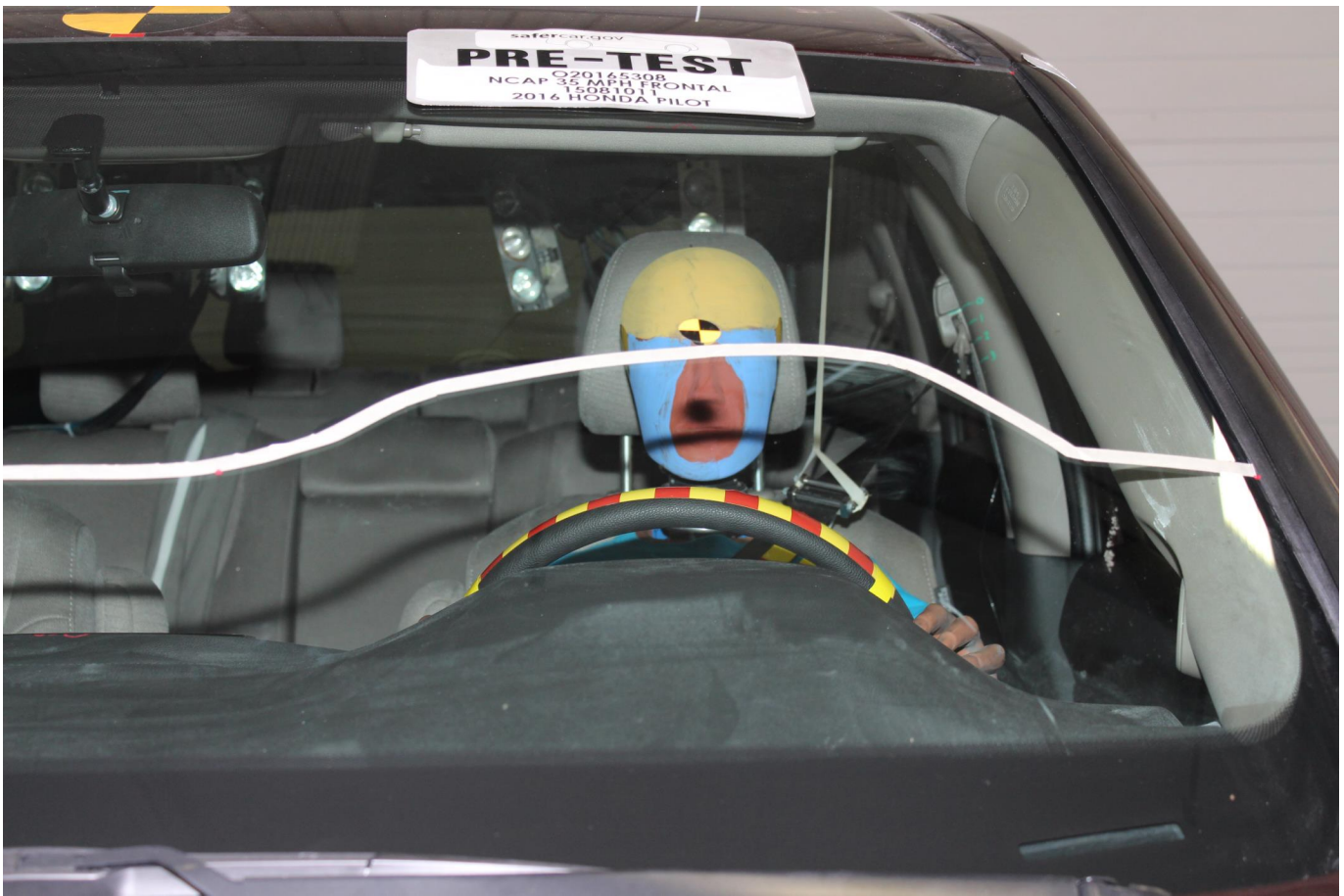


Photo No. 029 - Pre-Test Driver Dummy Front View



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



Photo No. 031 - Pre-Test Driver Dummy Window View



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



Photo No. 033 - Pre-Test Driver Dummy and Vehicle Interior (Door Open)



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



Photo No. 035 - Pre-Test Driver's Seat Fore-Aft Markings



Photo No. 036 - Post-Test Driver's Seat Fore-Aft Markings



Photo No. 037 - Pre-Test View of Belt Anchorage for Driver Dummy



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



Photo No. 039 - Pre-Test Driver Dummy Feet



Photo No. 040 - Post-Test Driver Dummy Feet



Photo No. 041 - Pre-Test Driver's Side Knee Bolster (without dummy)



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



Photo No. 043 - Pre-Test Driver's Side Floorpan



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



Photo No. 045 - Post-Test Driver Dummy Face



Photo No. 046 - Post-Test Driver Dummy Contact with Airbag



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



Photo No. 048 - Pre-Test View of the Steering Wheel



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



Photo No. 050 - Pre-Test Passenger Dummy Front View



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



Photo No. 052 - Pre-Test Passenger Dummy Window View



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



Photo No. 054 - Pre-Test Passenger Dummy and Vehicle Interior (Door Open)



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



Photo No. 056 - Pre-Test Passenger Seat Fore-Aft Markings



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



Photo No. 058 - Pre-Test View of Belt Anchorage for Passenger Dummy

PHOTOGRAPH NOT AVAILABLE

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



Photo No. 060 - Pre-Test Passenger Dummy Feet



Photo No. 061 - Post-Test Passenger Dummy Feet



Photo No. 062 - Pre-Test Passenger Side Knee Bolster (without dummy)



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



Photo No. 064 - Pre-Test Passenger Side Floorpan



Photo No. 065 - Post-Test Passenger Side Floorpan



Photo No. 066 - Post-Test Passenger Dummy Face



Photo No. 067 - Post-Test Passenger Dummy Contact with Airbag



Photo No. 068 - Post-Test Passenger Dummy Contact with Headrest, etc.

PHOTOGRAPH NOT APPLICABLE

Photo No. 069 - Ballast Installed in Vehicle

PHOTOGRAPH NOT APPLICABLE

Photo No. 070 - Post-Test Stoddard Solvent Spillage Location View



Photo No. 071 - Post-Test Speed Trap Read-Out



Photo No. 072 - Vehicle at 0 Degree on Static Rollover Device

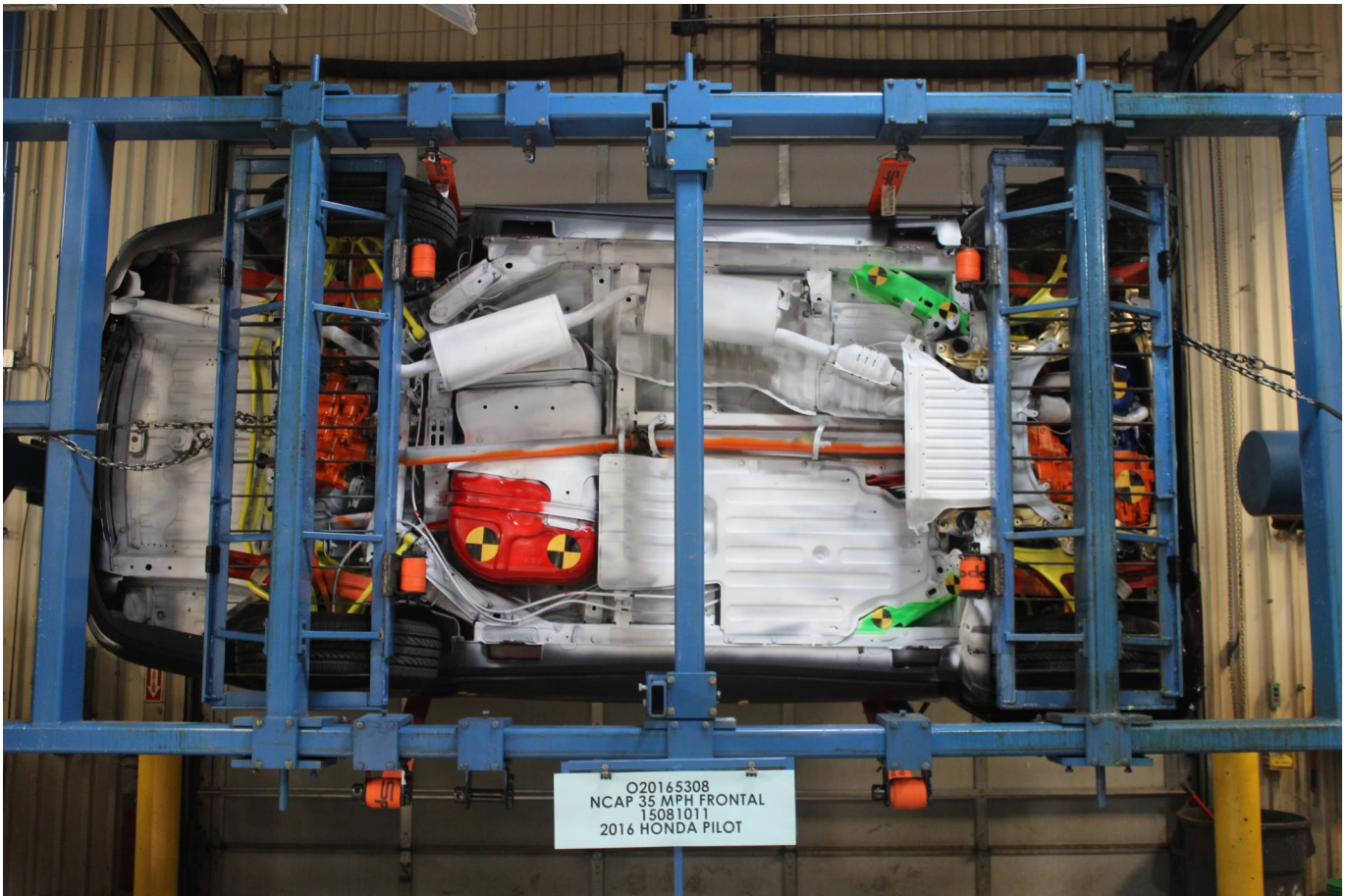


Photo No. 073 - Vehicle at 90 Degrees on Static Rollover Device

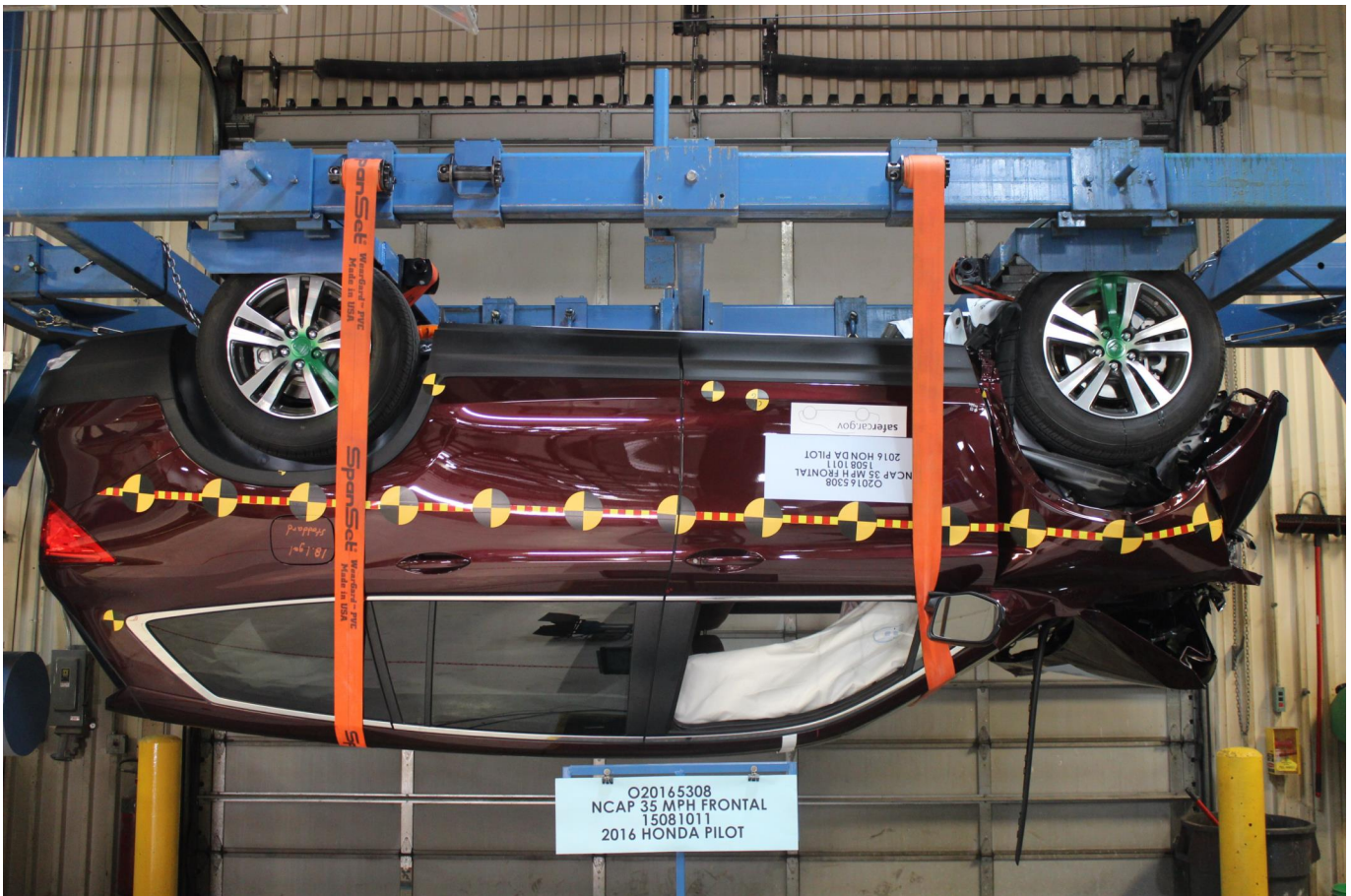


Photo No. 074 - Vehicle at 180 Degrees on Static Rollover Device



Photo No. 075 - Vehicle at 270 Degrees on Static Rollover Device



Photo No. 076 - Vehicle at 360 Degrees on Static Rollover Device

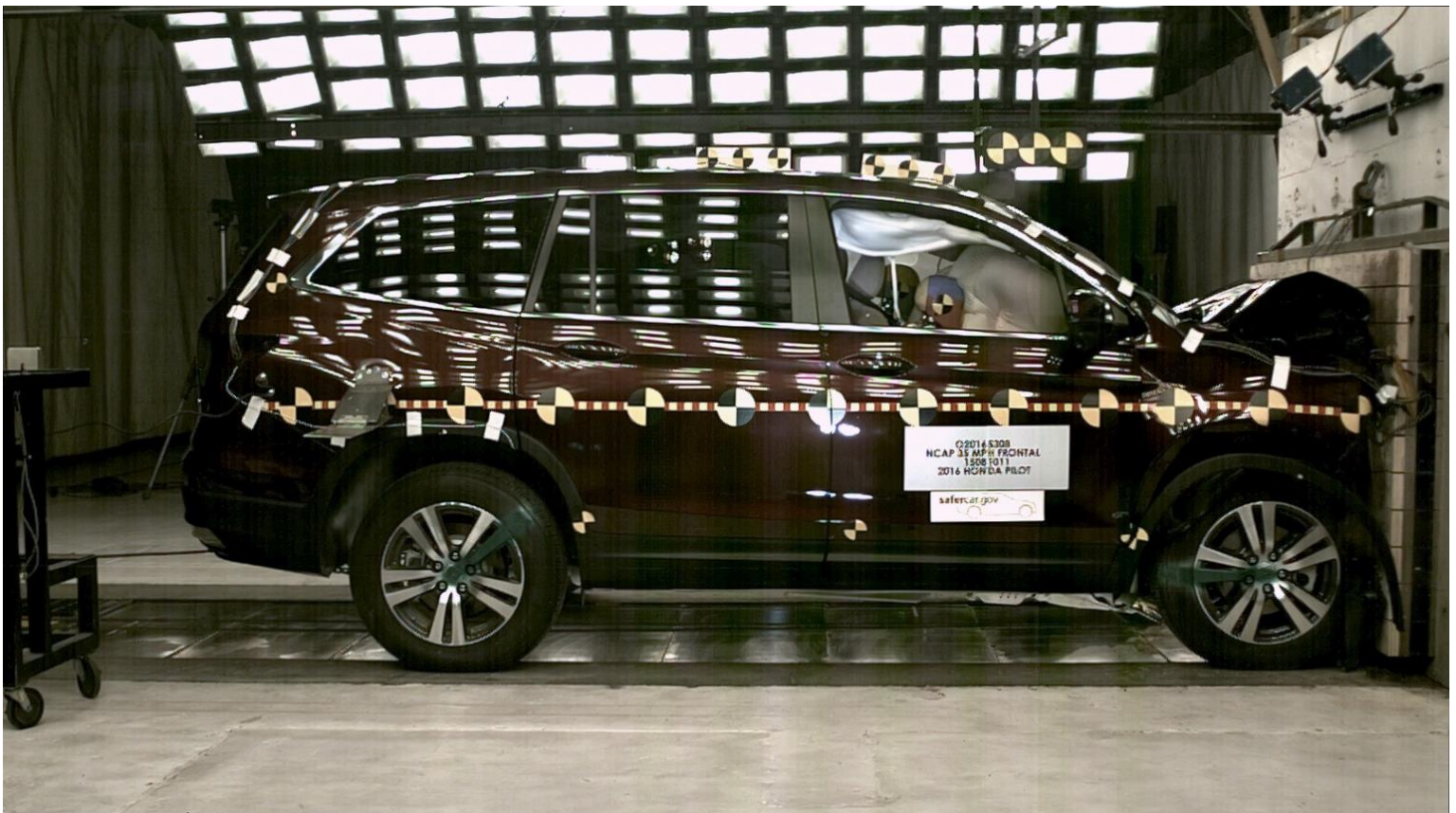


Photo No. 077 - 2016 Honda Pilot AWD EX Frontal Impact Event

HONDA		2016 PILOT AWD EX EXT: DARK CHERRY P. ENGINE NUMBER: J35V6-10G5819 INT: BEIGE		EPA DOT Fuel Economy and Environment Gasoline Vehicle										
STANDARD EQUIPMENT AT NO EXTRA COST * TECHNICAL FEATURES * <ul style="list-style-type: none"> 286hp, 3.5-Liter SOHC 24-Valve i-VTEC Direct Injection V6 Engine w/ Earth Dreams Technology & Variable Cylinder Management (VCM) 6-Speed Automatic Transmission i-VTM4 All Wheel Drive System Intelligent Traction Management Hill Start Assist Electric Power-Assisted Rack-and-Pinion Steering * SAFETY FEATURES * <ul style="list-style-type: none"> Drivers and Front Passenger's Dual-Stage Airbags (SRS) Drivers and Front Passenger's Side Airbags Three Row Side Curtain Airbags Vehicle Stability Assist (VSA) Anti-Lock Braking System (ABS) Electronic Brake Distribution (EBD) Brake Assist ACE Body Structure Tire Pressure Monitoring System (TPMS) with Tire Fill Assist LED Daytime Running Lights LATCH System for Child Seats * INTERIOR FEATURES * <ul style="list-style-type: none"> AM/FM Audio System with 7 Speakers including Subwoofer 8-inch Display Audio w/ Electrochromic Touchscreen and Multi-View Rear Camera 4.2-inch Multi-Information Display XM Satellite Radio Next Generation HondaLink with Smartphones Applications Pandora Internet Radio Interface Bluetooth HandsFreeLink & Audio 		Manufacturer's Suggested Retail Price \$34,230.00 Full Tank of Fuel No Charge XM Satellite Radio Includes Free Activation and 3 Months Free Service (excl. AK & HI) Honda Roadside Assistance 3YR/50K Mile Warranty Term For more information please visit: http://owners.honda.com/vehicles/roadside-assistance		Fuel Economy 21 MPG 18 26 combined city/hwy city highway 4.8 gallons per 100 miles Smart SUVs range from 17 to 33 MPG. The best vehicle rates 119 MPG.										
* EXTERIOR FEATURES * <ul style="list-style-type: none"> 18" x 8" Alloy Wheels 245/60 R18 All-Season Tires Remote Engine Start Auto-Off/On headlights Fog Lights Heated Power Door Mirrors Coolest Fuel Filter LED Taillights Rear Privacy Glass Smart Entry System with Security System Walk Away Auto Lock 		Honda Roadside Assistance 3YR/50K Mile Warranty Term For more information please visit: http://owners.honda.com/vehicles/roadside-assistance		You spend \$1,750 in fuel costs over 5 years compared to the average new vehicle.										
Destination and Handling 680.00 TOTAL VEHICLE PRICE (Includes PV-Delivery Service) \$35,110.00 <small>Licenses and title fees, dealer options and accessories are not included in the manufacturer's suggested retail price.</small>		Annual fuel cost \$2,150 Fuel Economy & Greenhouse Gas Rating (excl. 0 only) Smog Rating (excl. 0 only) 1 5 10 Best This vehicle emits 422 grams CO ₂ per mile. The best emits 0 grams per mile (0/100 only). Purchasing and distributing fuel also create emissions. Learn more at fuelconomy.gov .		fuelconomy.gov <small>Government Department of Energy</small>										
MULLER HONDA OF GURNEE 7000 GRAND AVENUE GURNEE, IL 60031 PORT OF ENTRY: ALABAMA DELIVERY POINT: SCHAUMBURG POW(SPACE): 760-029 TRANS METHOD: N50 ELWOOD VIN: 5FNYP6H39GB004613		ORIG. DLR: 208663 REF NO: 40032 HN CODE: HN-4597 EMISSION: 50 STATE CONTROL NO: 540141 DEALER: 208663		PARTS CONTENT INFORMATION FOR VEHICLES IN THIS CARLINE U.S./Canadian Parts Content: 75 % NOTE: Parts content does not include final assembly, distribution or other non-parts costs.										
MULLER HONDA OF GURNEE 7000 GRAND AVENUE GURNEE, IL 60031 PORT OF ENTRY: ALABAMA DELIVERY POINT: SCHAUMBURG POW(SPACE): 760-029 TRANS METHOD: N50 ELWOOD VIN: 5FNYP6H39GB004613		ORIG. DLR: 208663 REF NO: 40032 HN CODE: HN-4597 EMISSION: 50 STATE CONTROL NO: 540141 DEALER: 208663		GOVERNMENT 5-STAR SAFETY RATING Overall Vehicle Score Not Rated <small>Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight.</small> <table border="1"> <tr> <td>Frontal Crash</td> <td>Driver Passenger</td> <td>Not Rated</td> </tr> <tr> <td>Side Crash</td> <td>Front seat Rear seat</td> <td>Not Rated</td> </tr> <tr> <td>Rollover</td> <td></td> <td>Not Rated</td> </tr> </table>		Frontal Crash	Driver Passenger	Not Rated	Side Crash	Front seat Rear seat	Not Rated	Rollover		Not Rated
Frontal Crash	Driver Passenger	Not Rated												
Side Crash	Front seat Rear seat	Not Rated												
Rollover		Not Rated												
PORT OF ENTRY: ALABAMA DELIVERY POINT: SCHAUMBURG POW(SPACE): 760-029 TRANS METHOD: N50 ELWOOD VIN: 5FNYP6H39GB004613		FOR THIS VEHICLE Final Assembly Point: LINCOLN, ALABAMA USA Country of Origin: Engine: U.S.A. Transmission: U.S.A.		Star Ratings range from 1 to 5 stars (*****), with 5 being the highest. Source: National Highway Traffic Safety Administration (NHTSA) www.safercar.gov or 1-888-327-4236										

Photo No. 078 - Monroney Label Photograph

APPENDIX B
DUMMY RESPONSE DATA TRACES

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Figure No. 26.	Passenger Chest Z Acceleration vs. Time	B-9
Figure No. 27.	Passenger Chest Resultant Z Acceleration vs. Time	B-9

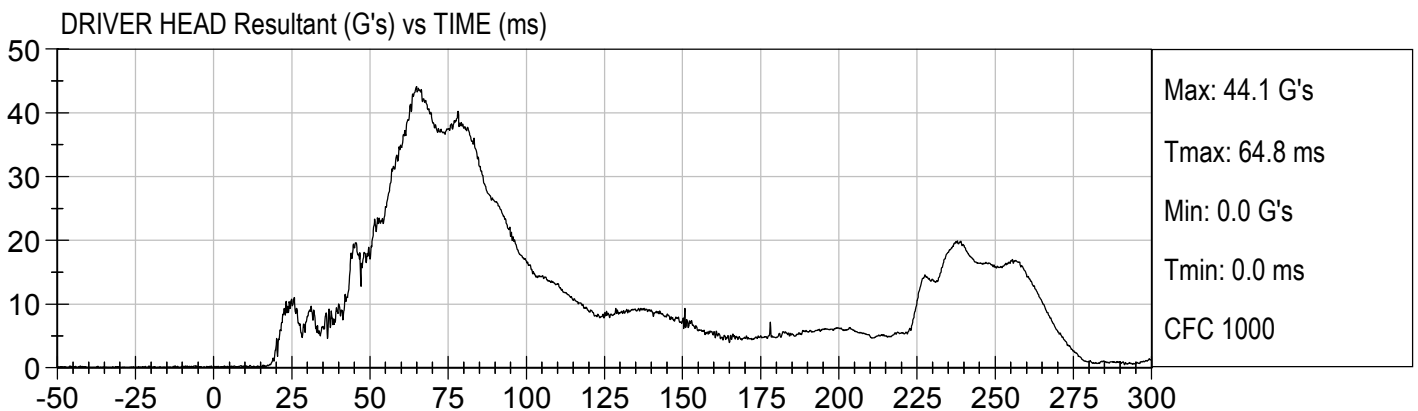
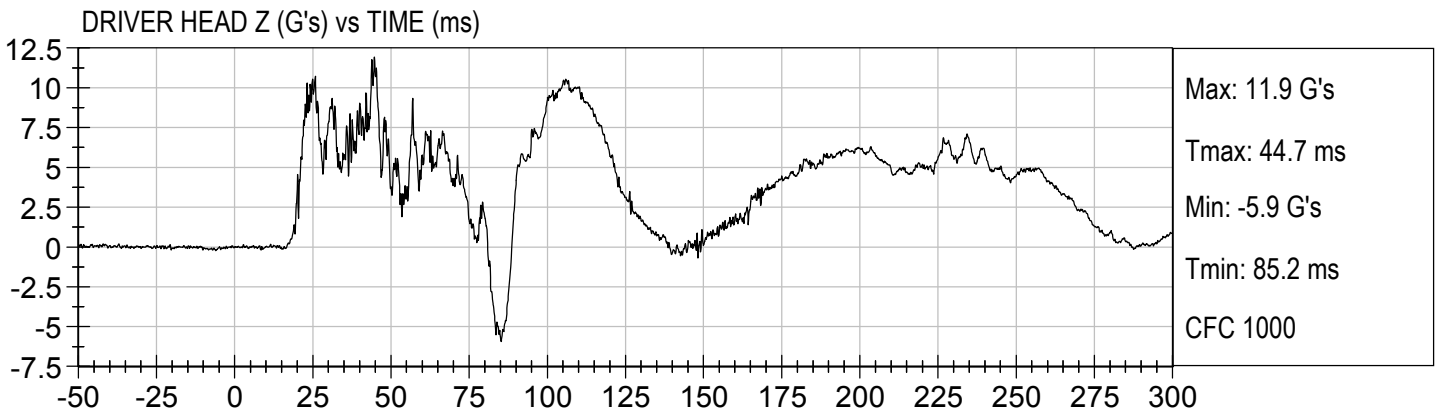
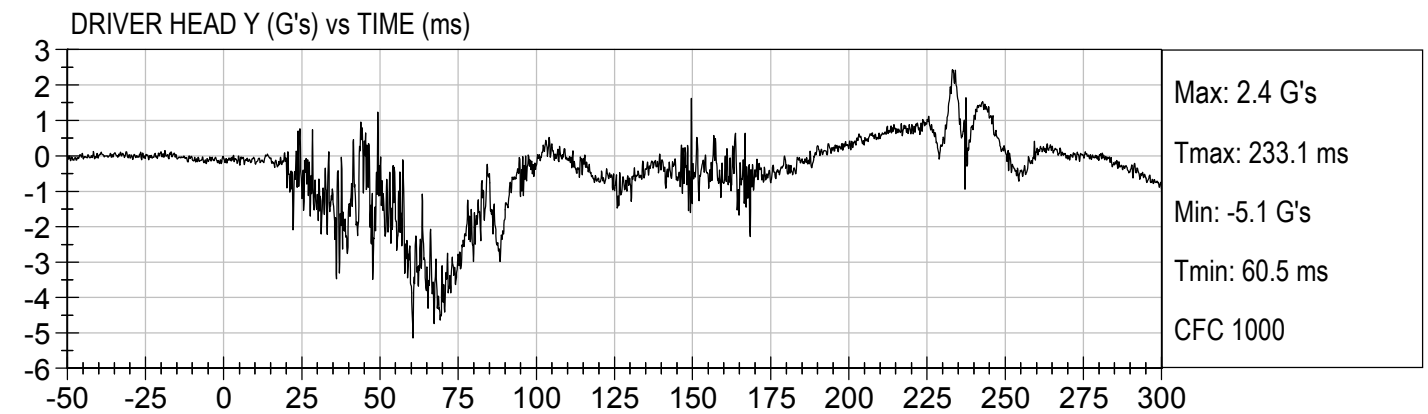
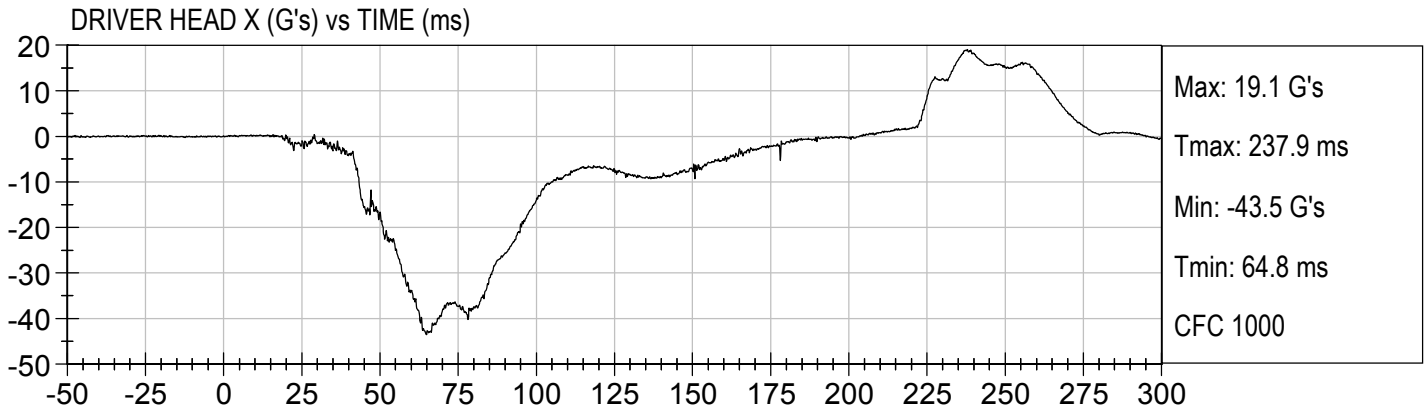
	<u>Page No.</u>
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Figure No. 30. Passenger Neck Moment Y vs. Time	B-10
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Figure No. 36. Passenger Right Femur Force vs. Time	B-12

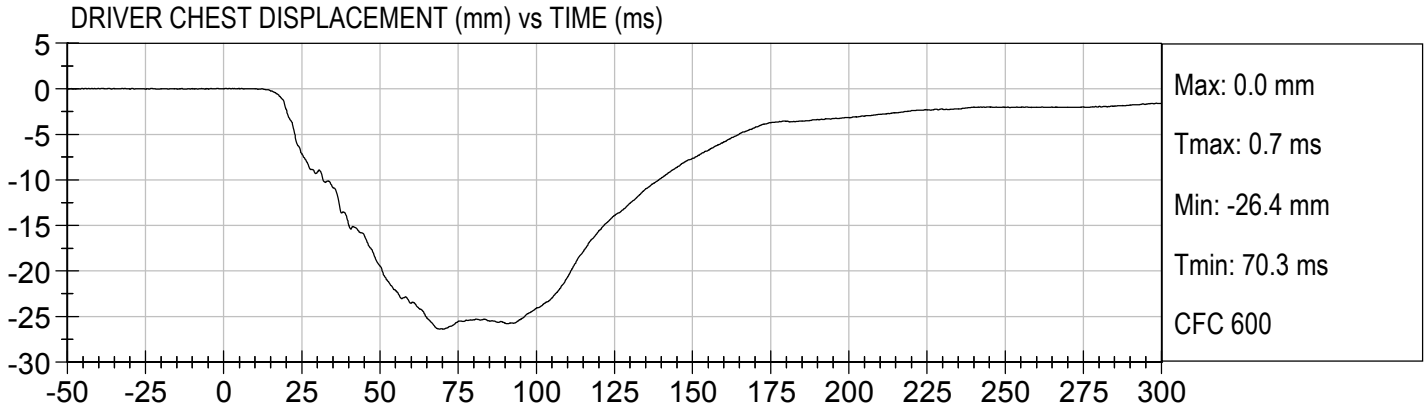
The following additional dummy and vehicle response data can be found in the R&D section of the NHTSA website at www.nhtsa.dot.gov

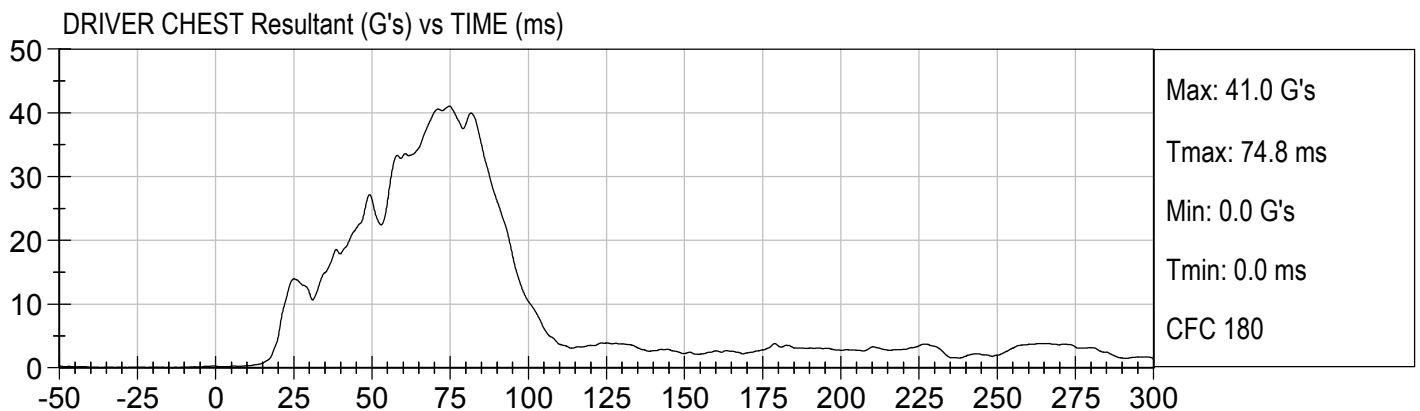
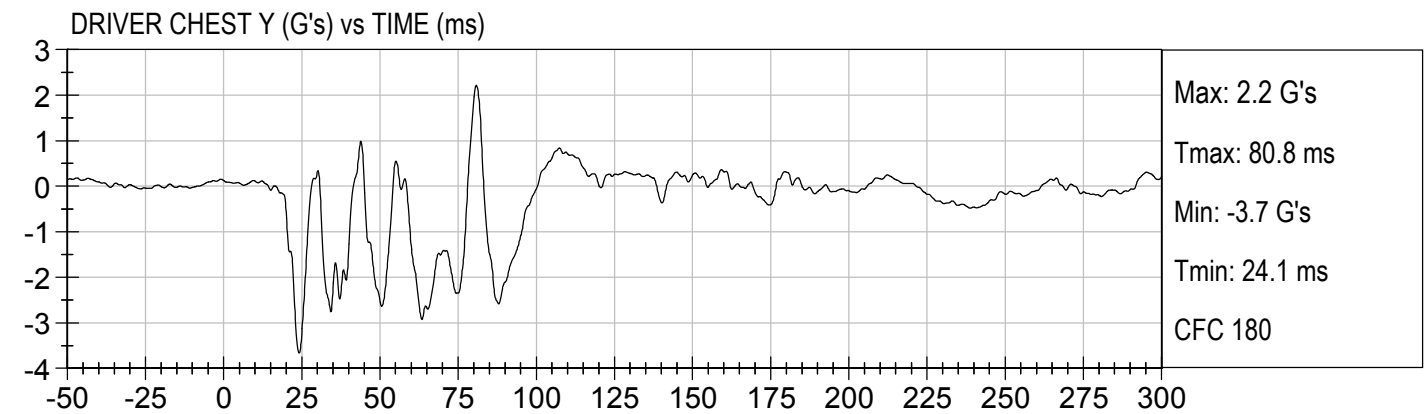
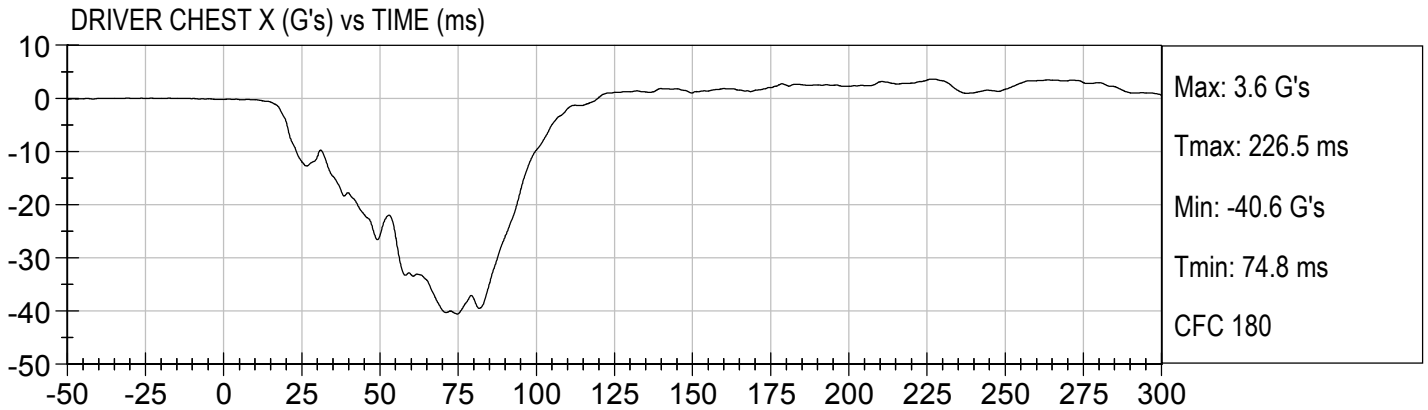
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 Driver Head Y Redundant
 Driver Head Z Redundant
 Driver Head Angular Velocity X
 Driver Head Angular Velocity Y
 Driver Head Angular Velocity Z
 Driver Upper Neck Force Y
 Driver Upper Neck Moment X
 Driver Upper Neck Moment Z
 Driver Chest X Redundant
 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

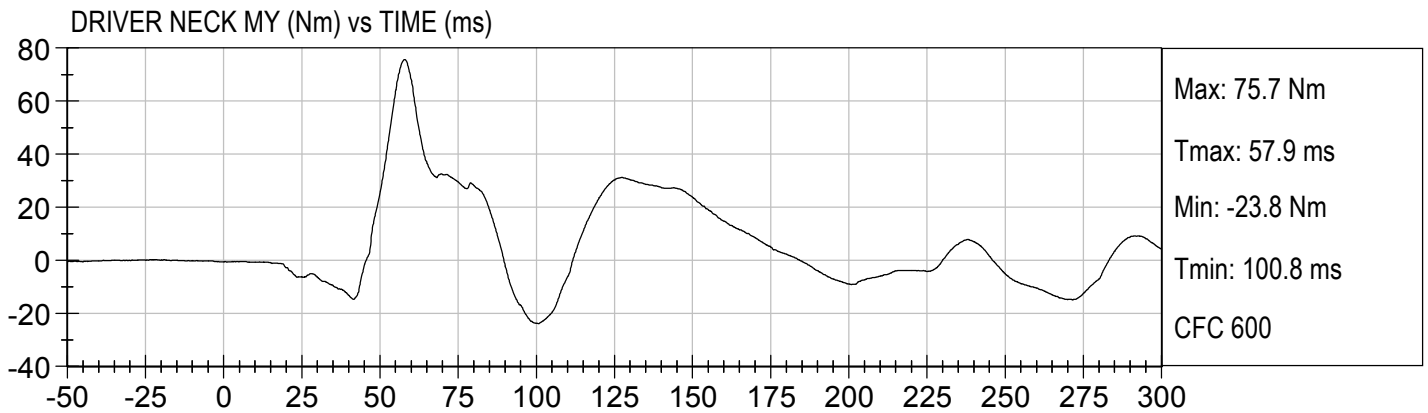
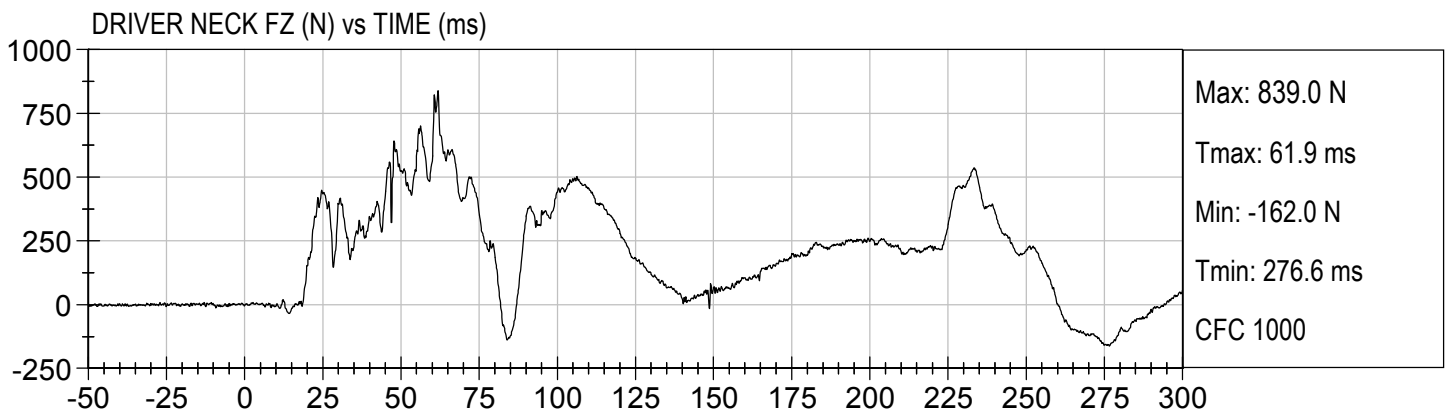
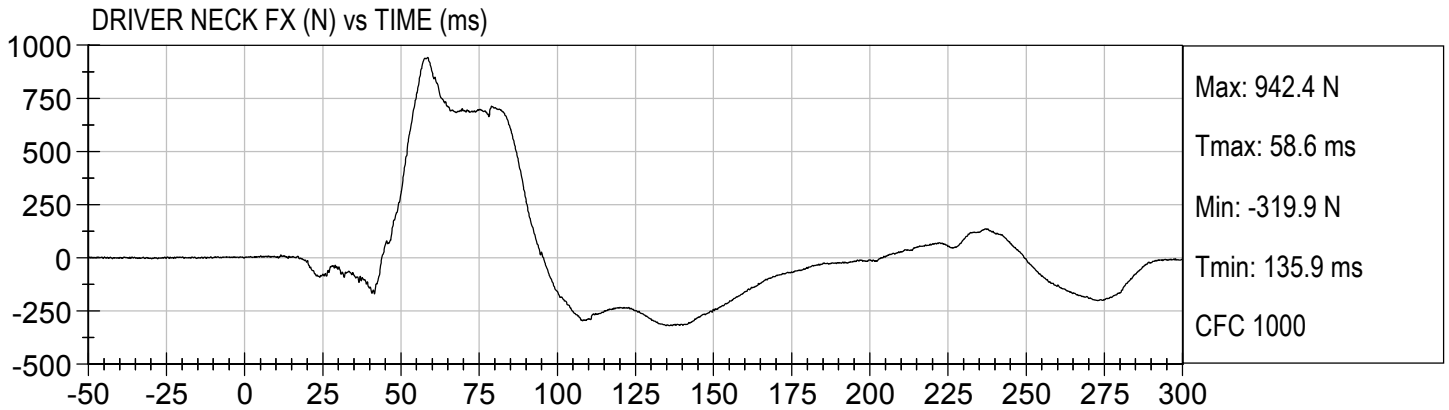
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Driver Left Lower Tibia Moment X
Driver Left Lower Tibia Moment Y
Driver Left Lower Tibia Force Z
Driver Right Upper Tibia Moment X
Driver Right Upper Tibia Moment Y
Driver Right Upper Tibia Force Z
Driver Right Lower Tibia Moment X
Driver Right Lower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

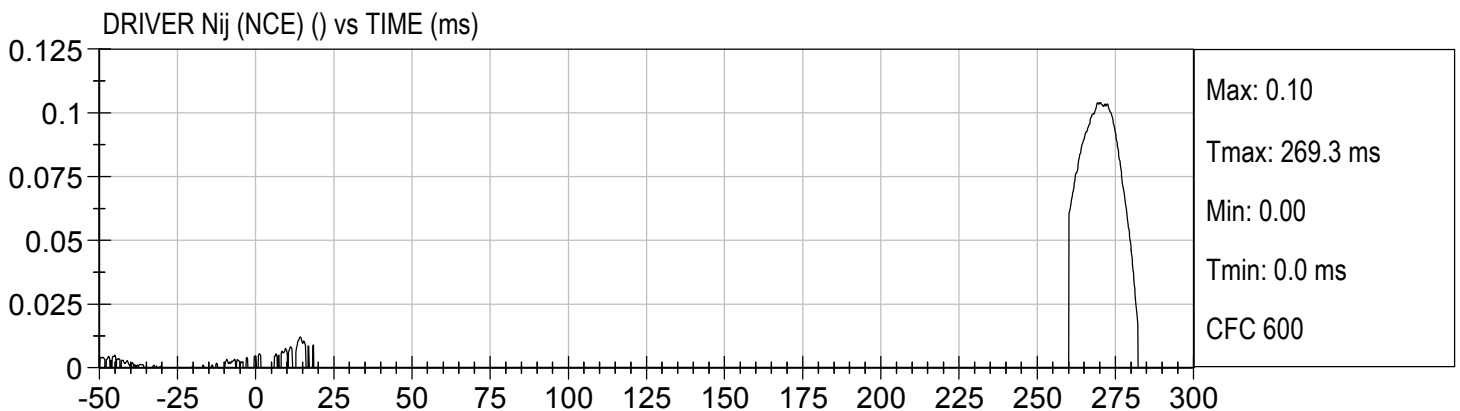
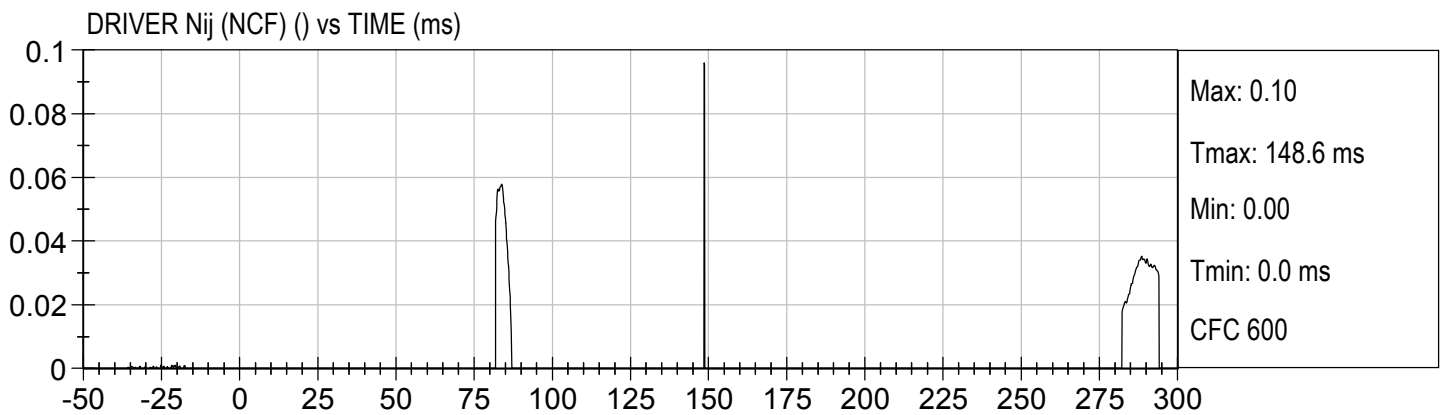
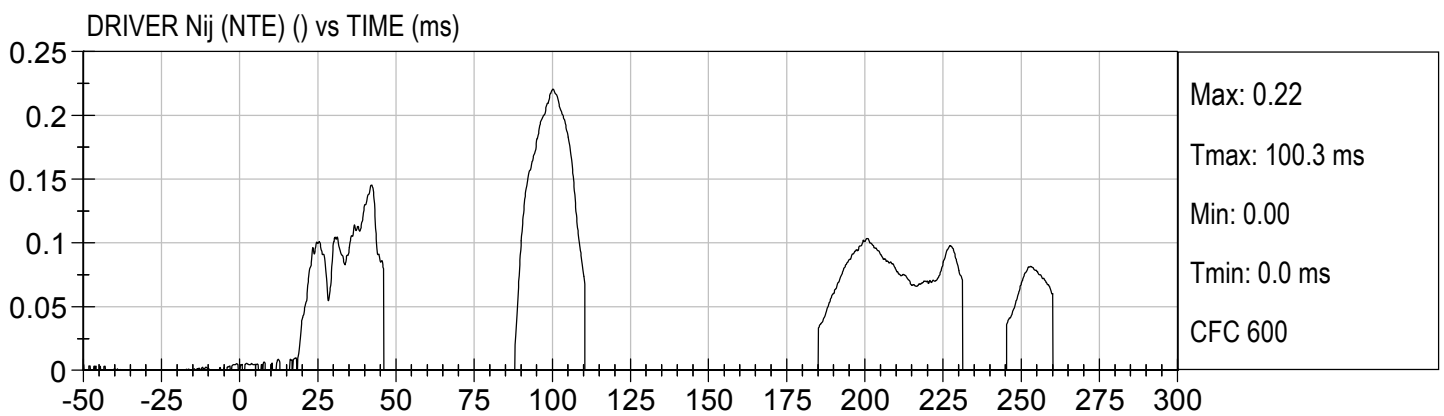
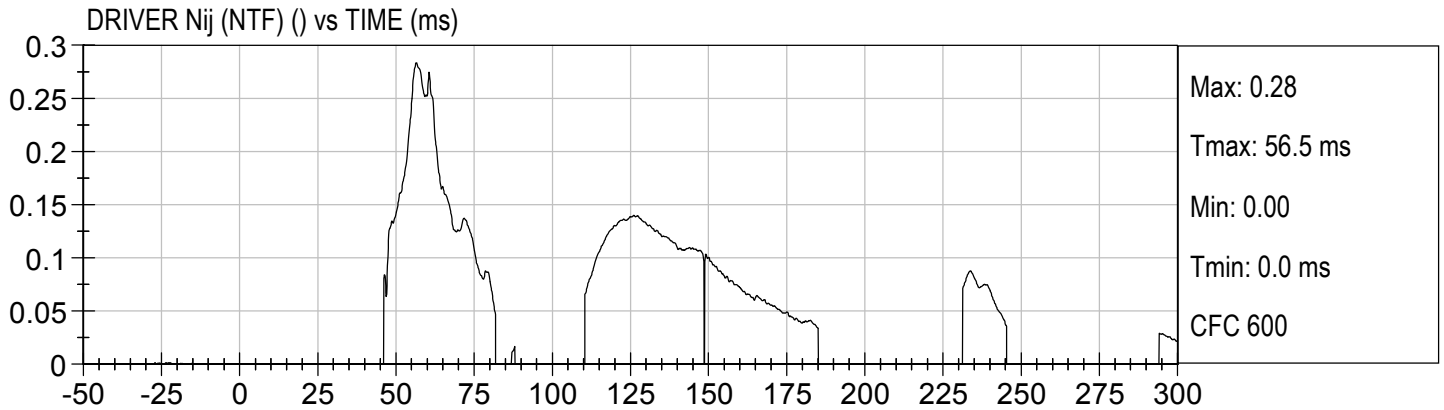
Passenger Pelvis Z
Passenger Left Femur Redundant
Passenger Right Femur Redundant
Passenger Left Upper Tibia Moment X
Passenger Left Upper Tibia Moment Y
Passenger Left Upper Tibia Force Z
Passenger Left Lower Tibia Moment X
Passenger Left Lower Tibia Moment Y
Passenger Left Lower Tibia Force Z
Passenger Right Upper Tibia Moment X
Passenger Right Upper Tibia Moment Y
Passenger Right Upper Tibia Force Z
Passenger Right Lower Tibia Moment X
Passenger Right Lower Tibia Moment Y
Passenger Right Lower Tibia Force Z
Passenger Left Foot Fore Z
Passenger Left Foot Aft X
Passenger Left Foot Aft Z
Passenger Right Foot Fore Z
Passenger Right Foot Aft X
Passenger Right Foot Aft Z
Passenger Lap Belt Force
Passenger Shoulder Belt Force
Left Rear Seat Crossmember X
Right Rear Seat Crossmember X
Vehicle Engine Top X
Vehicle Engine Bottom X
Left Rear Seat Crossmember Z
Right Rear Seat Crossmember Z
Left Rear Seat Crossmember Xr
Right Rear Seat Crossmember Xr
Advanced Research Load Cell Barrier – 528 channels

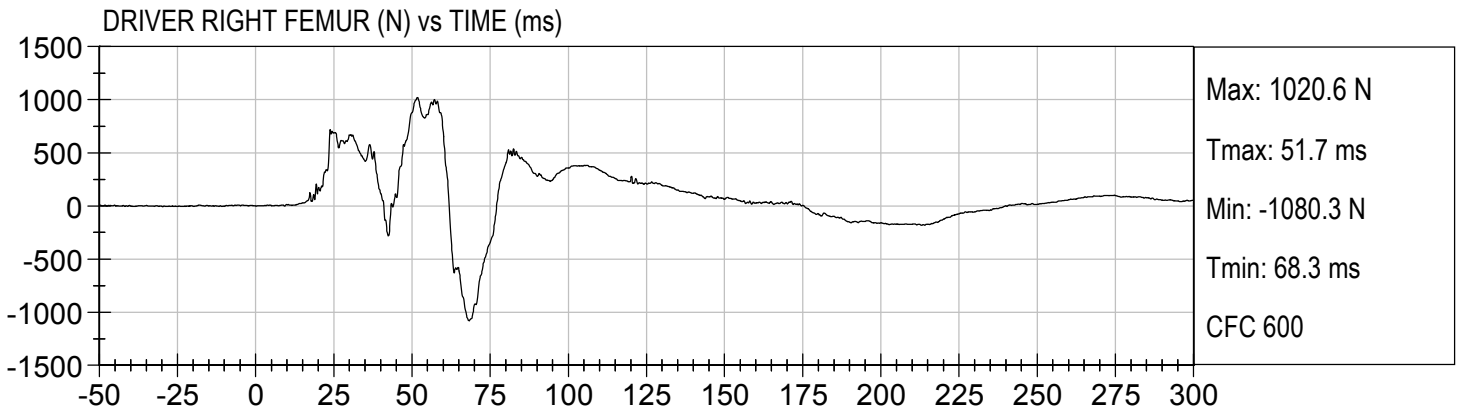


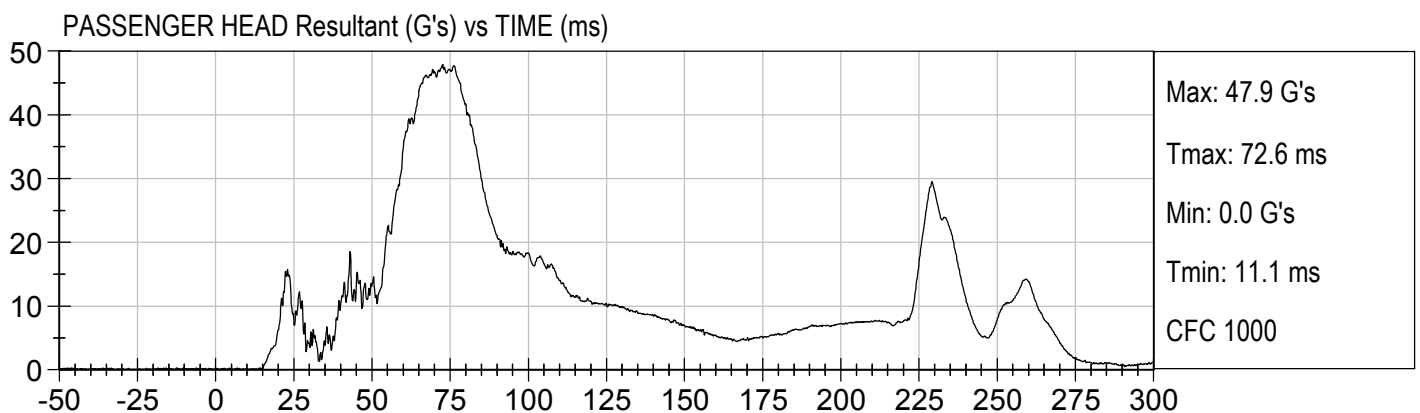
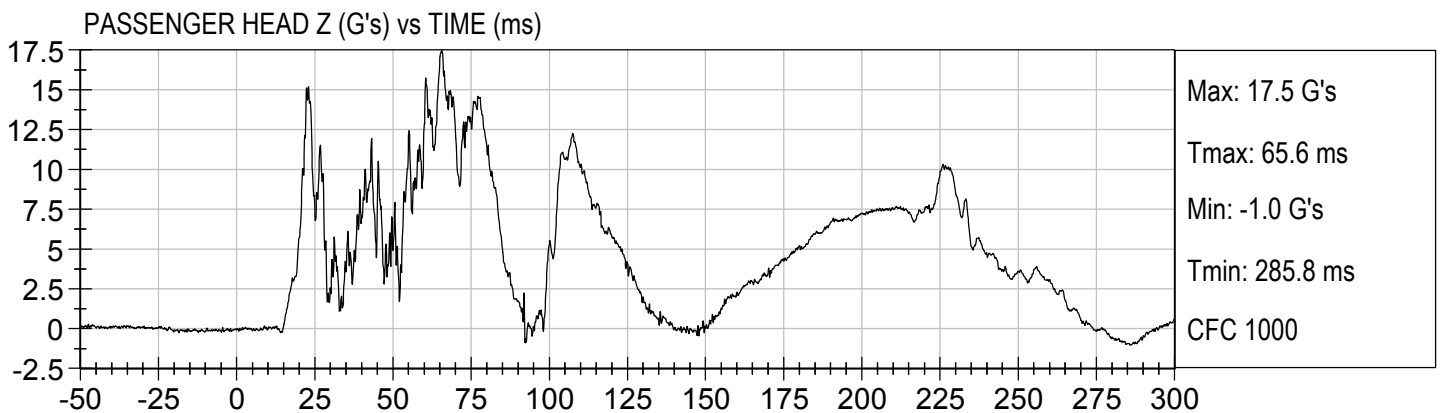
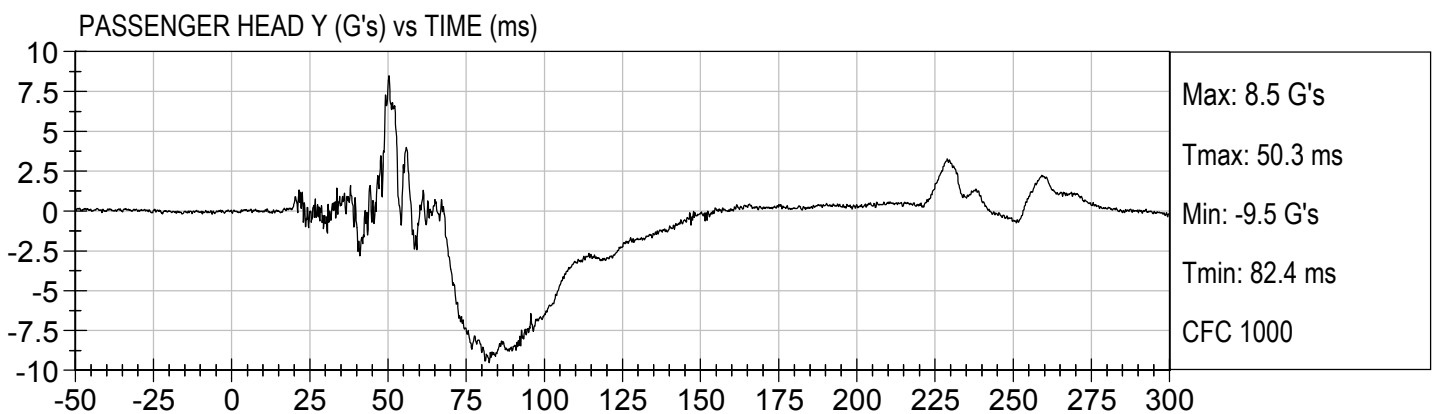
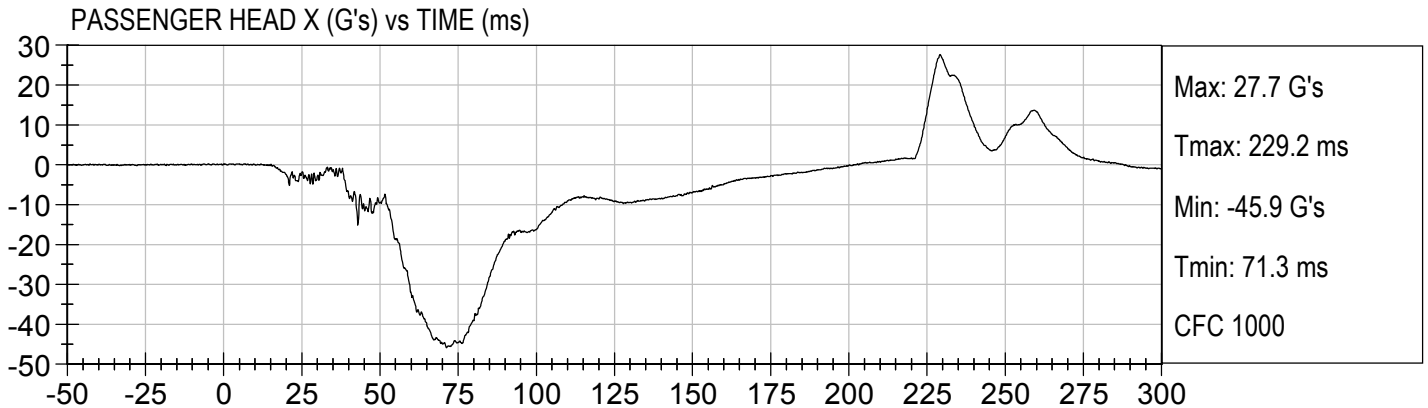


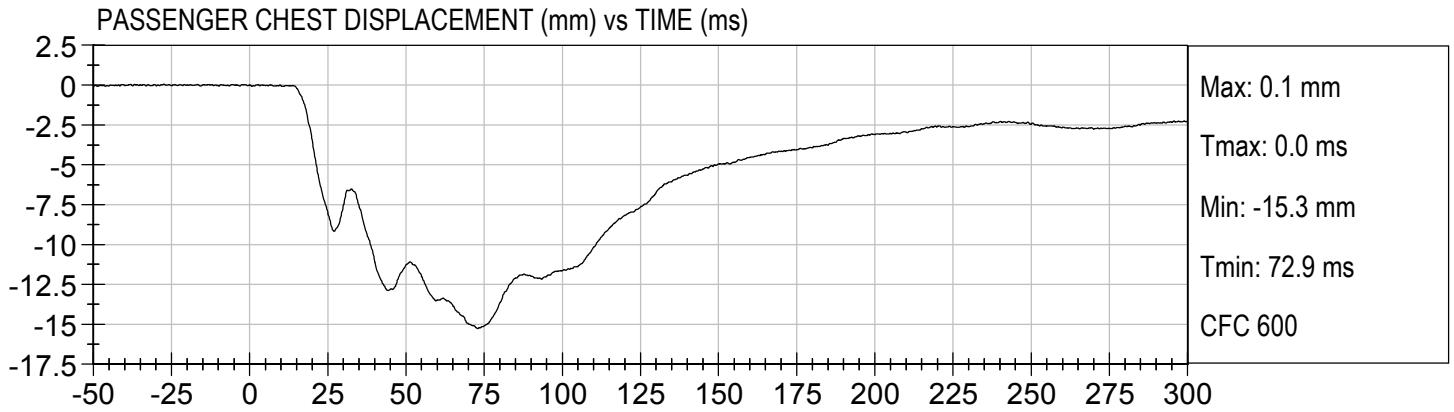


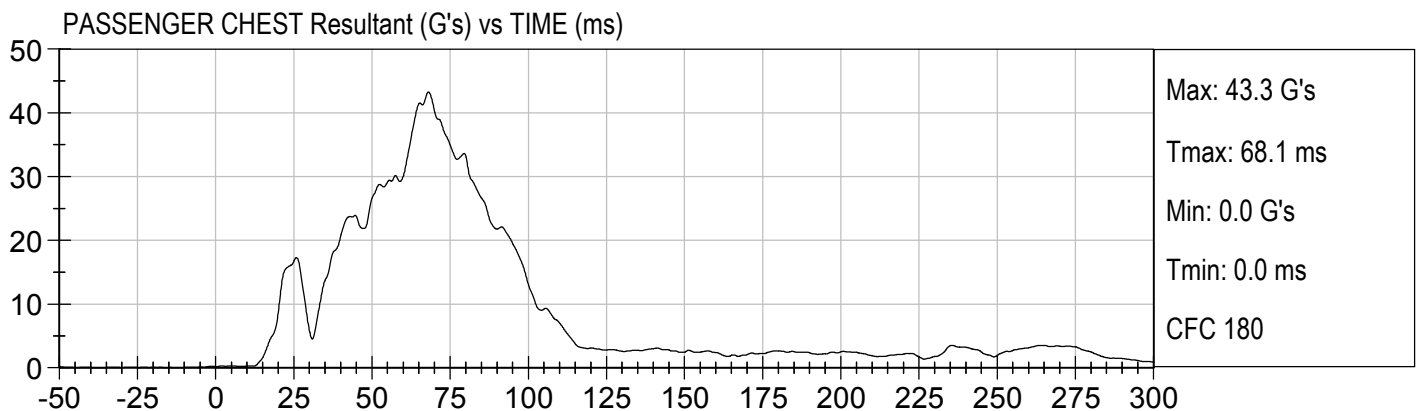
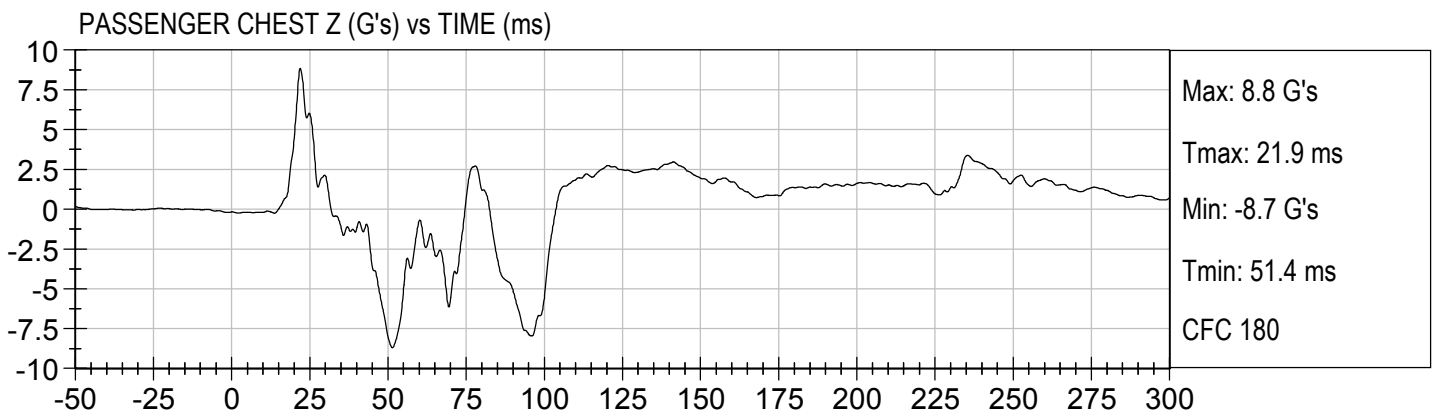
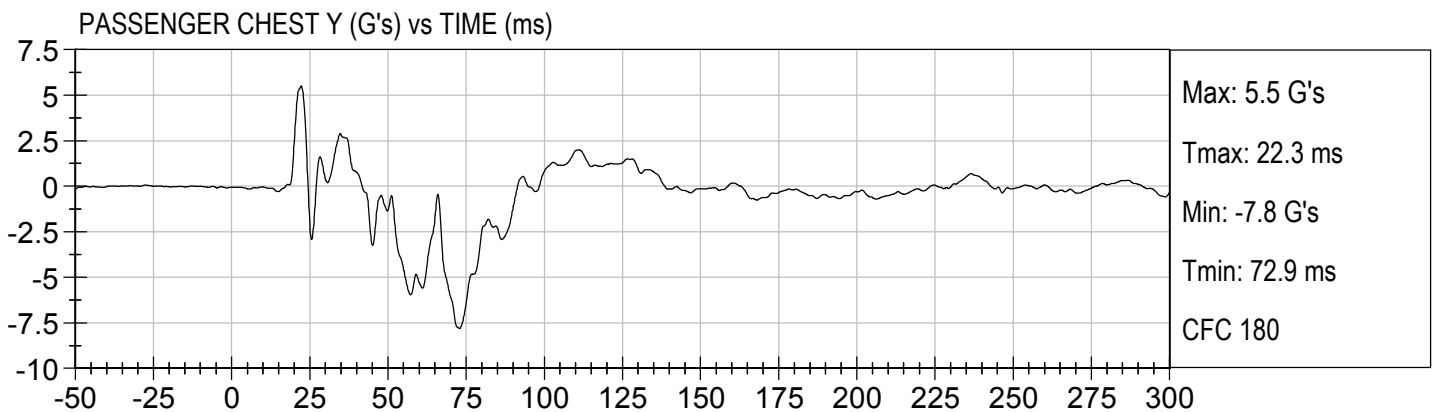
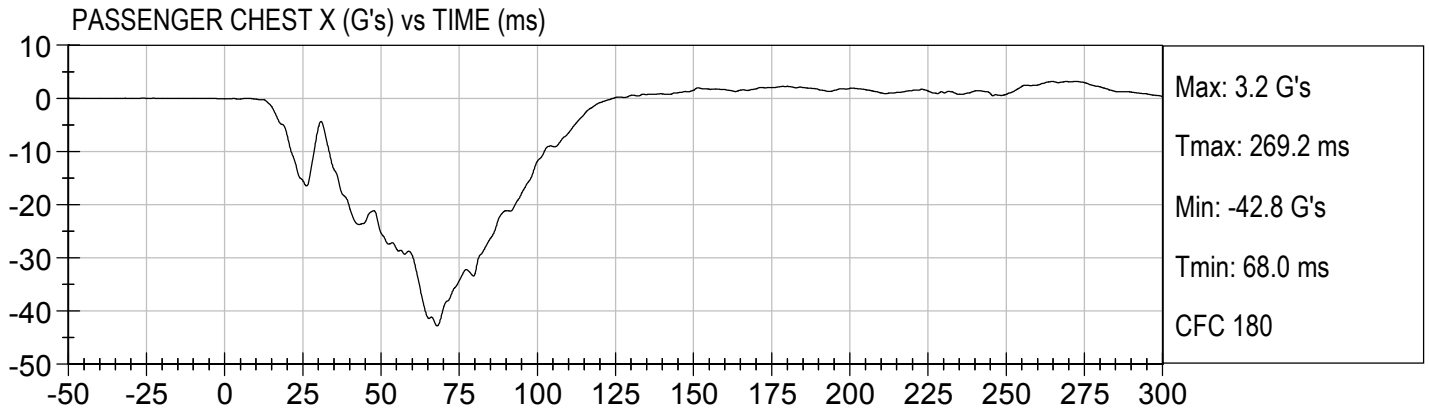


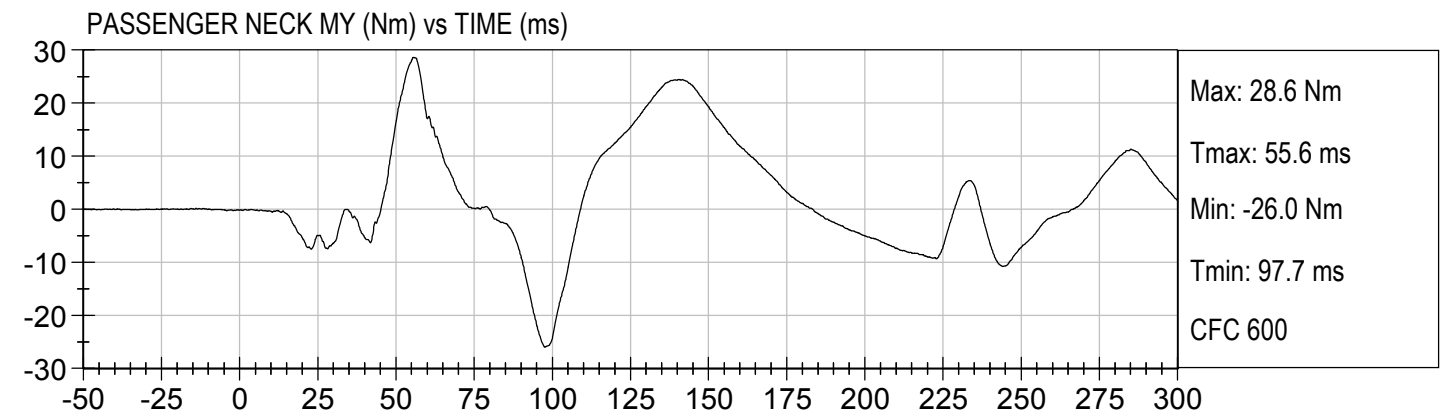
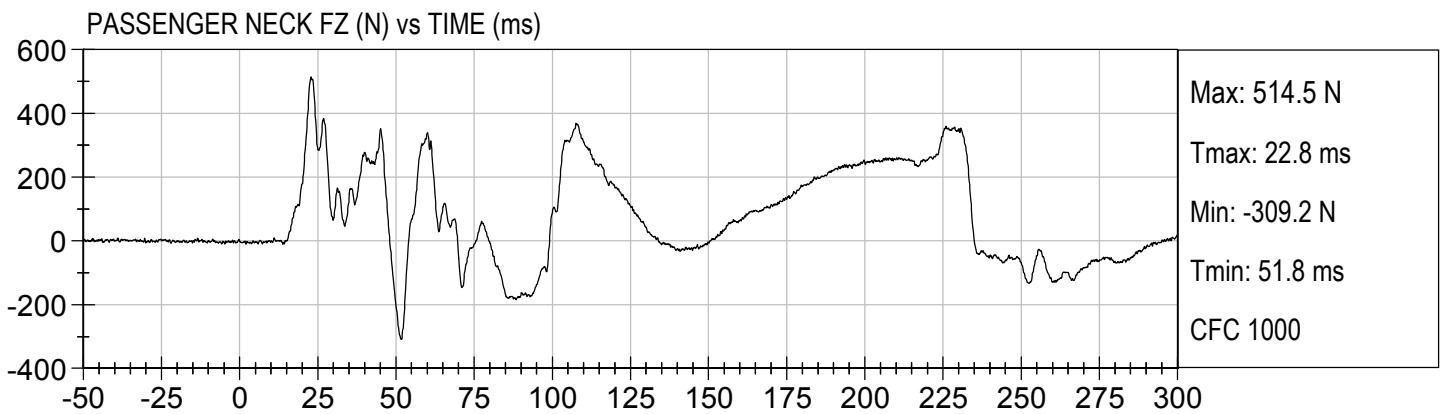
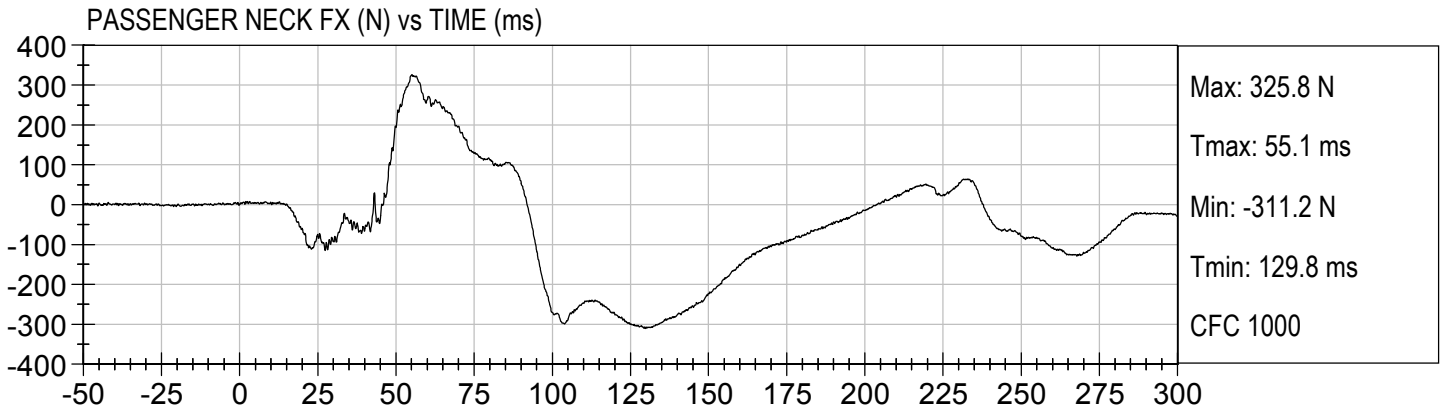


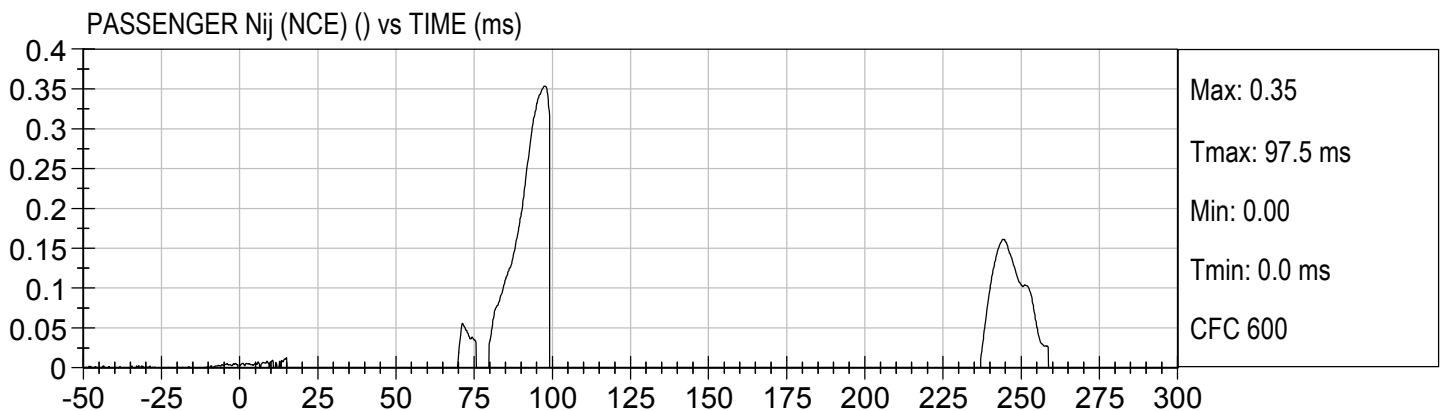
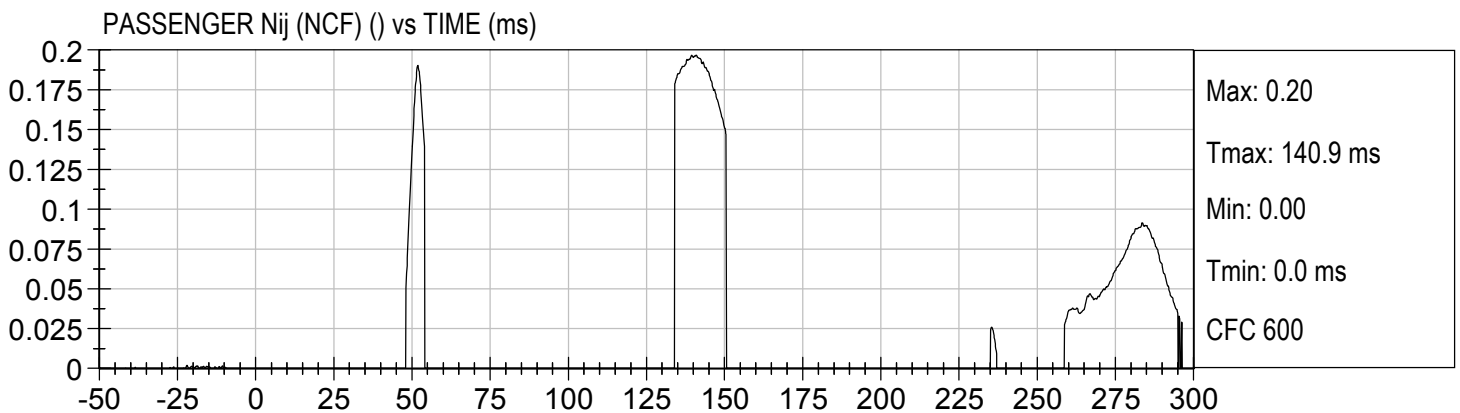
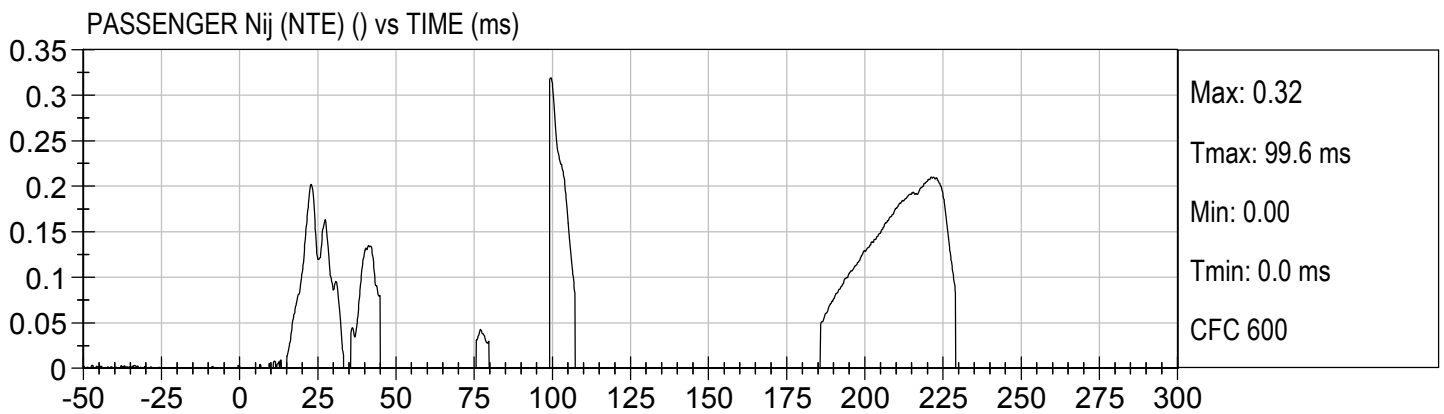
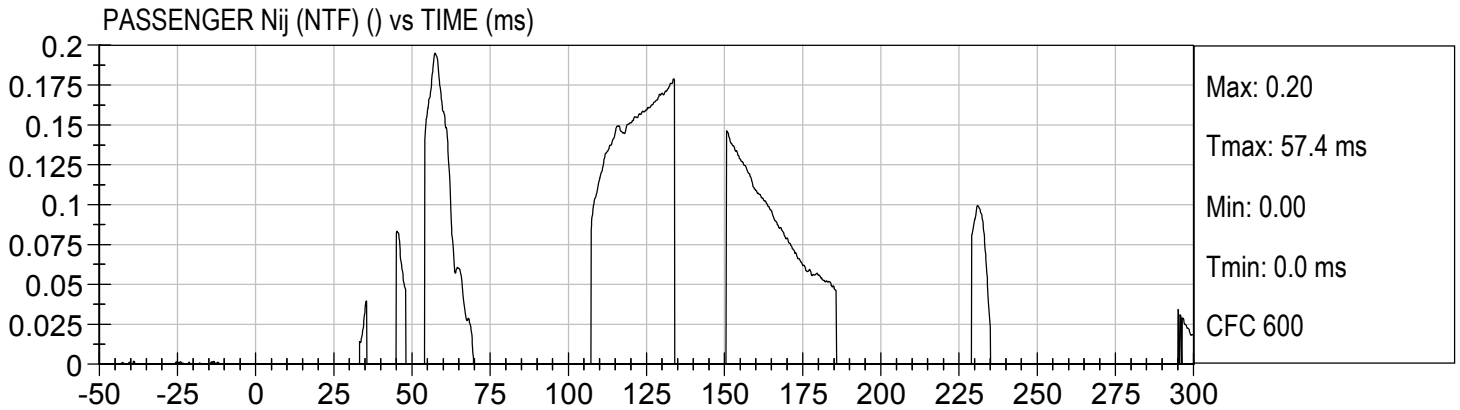


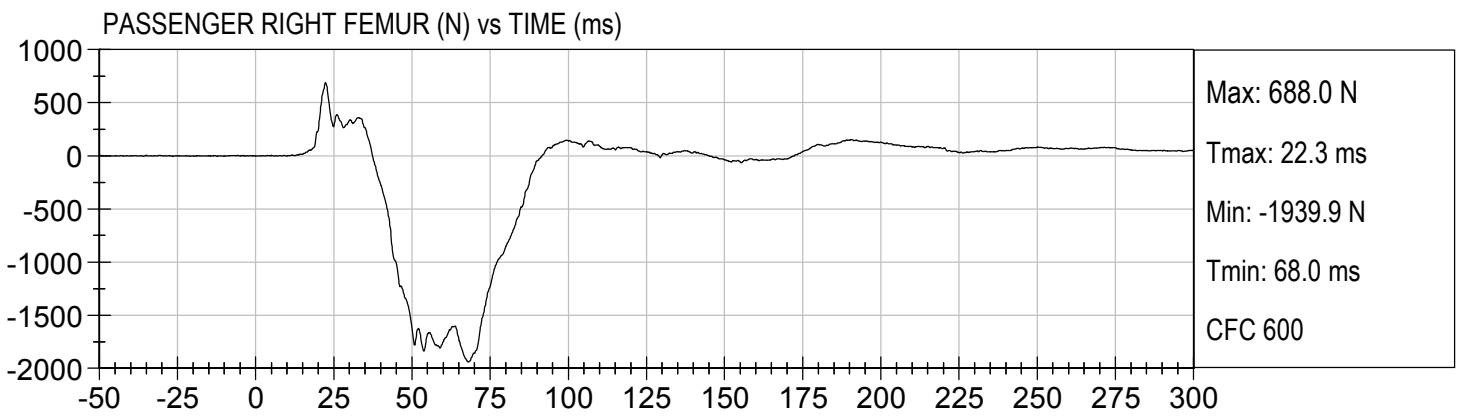
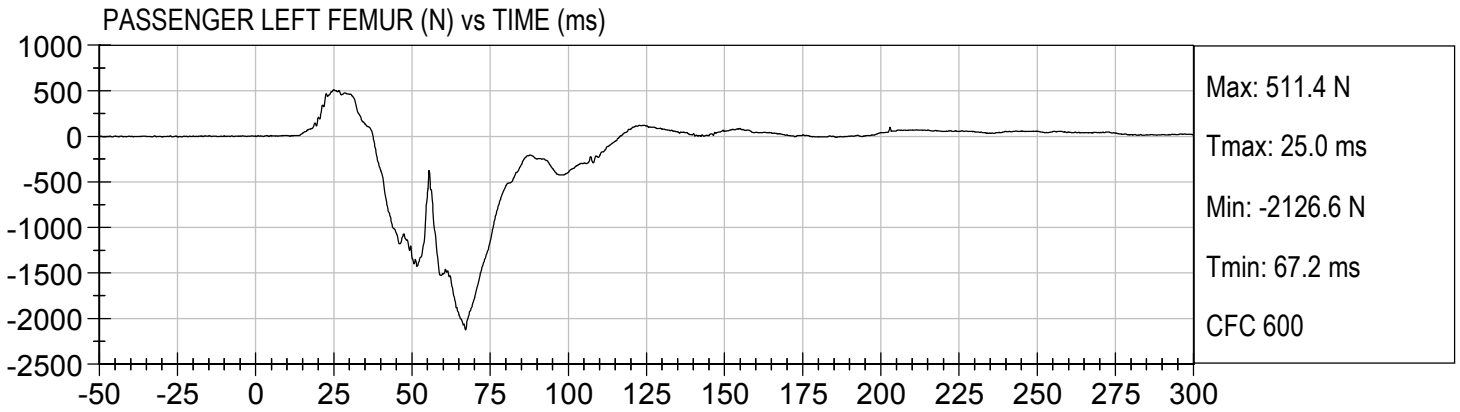












APPENDIX C
DUMMY CALIBRATION AND PERFORMANCE VERIFICATION DATA

**Hybrid III, 50th External Measurements
SN: 351**

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

HYBRID III, SUBPART E EXTERIOR DIMENSIONS, continued

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

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

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

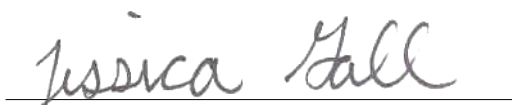
ATD Serial No: 351

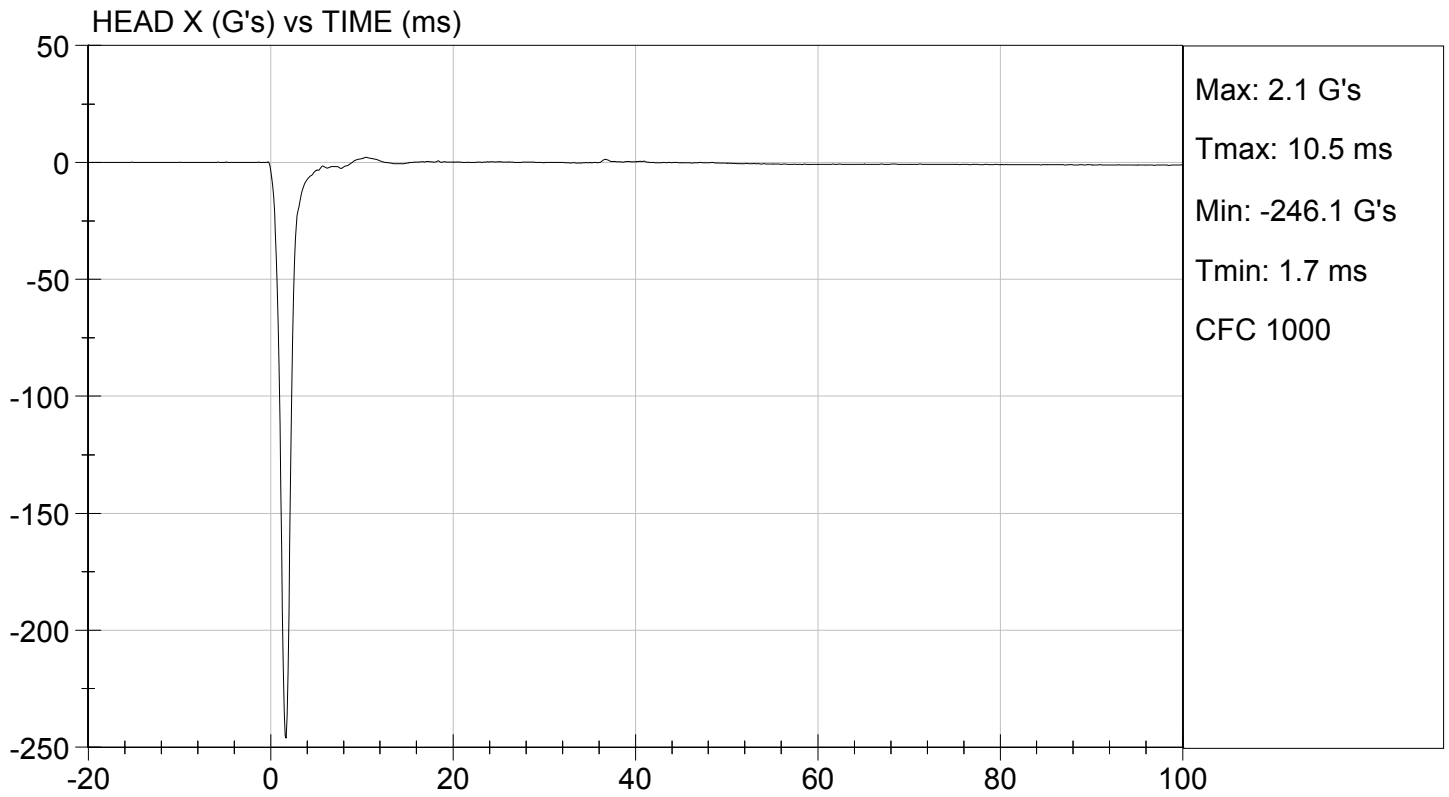
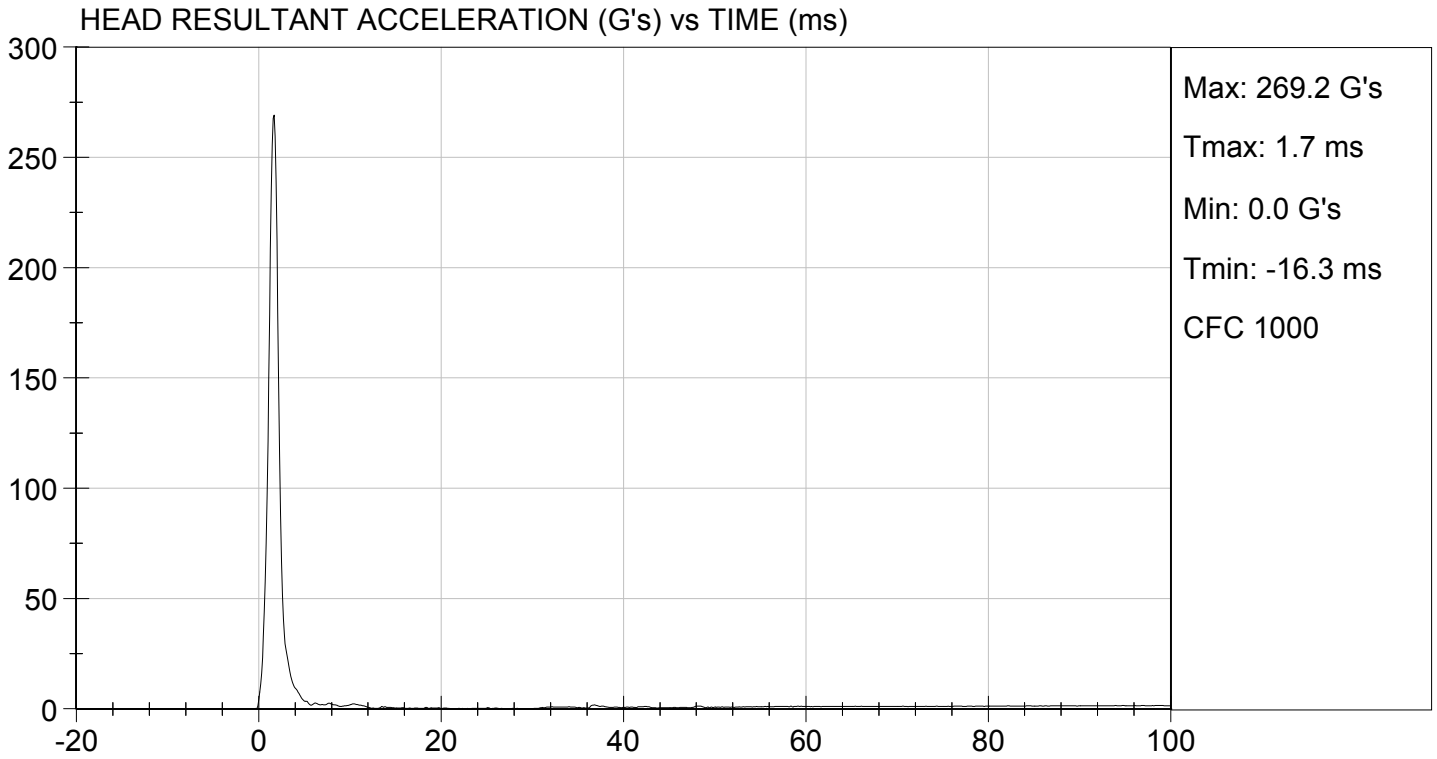
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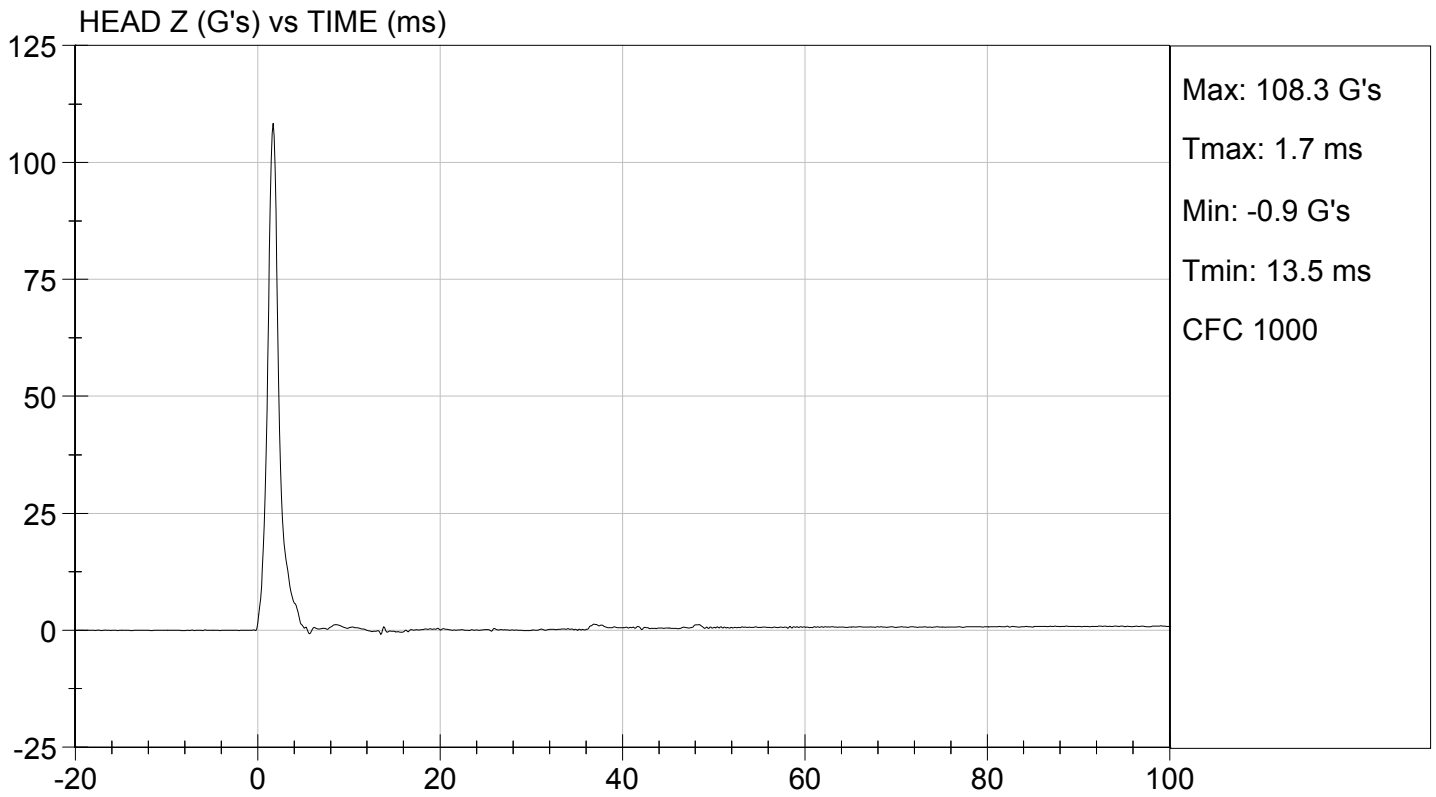
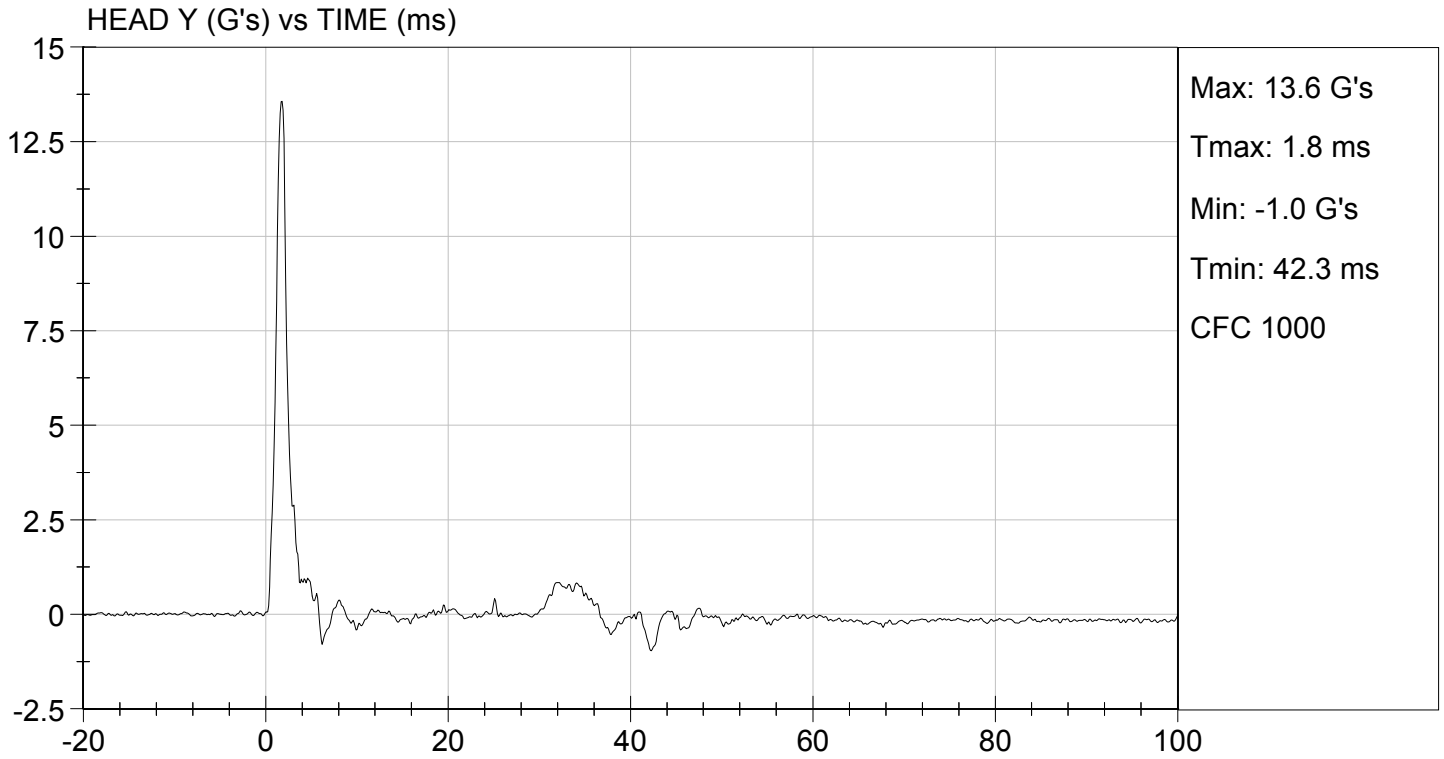
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	54	Pass
Peak Resultant Acceleration	G's	225 to 275	269	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	13.6	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass


 Laboratory Technician

07/13/2015
 Test Date


 Approved By





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

ATD Serial No: 351

Test I.D.: D152042

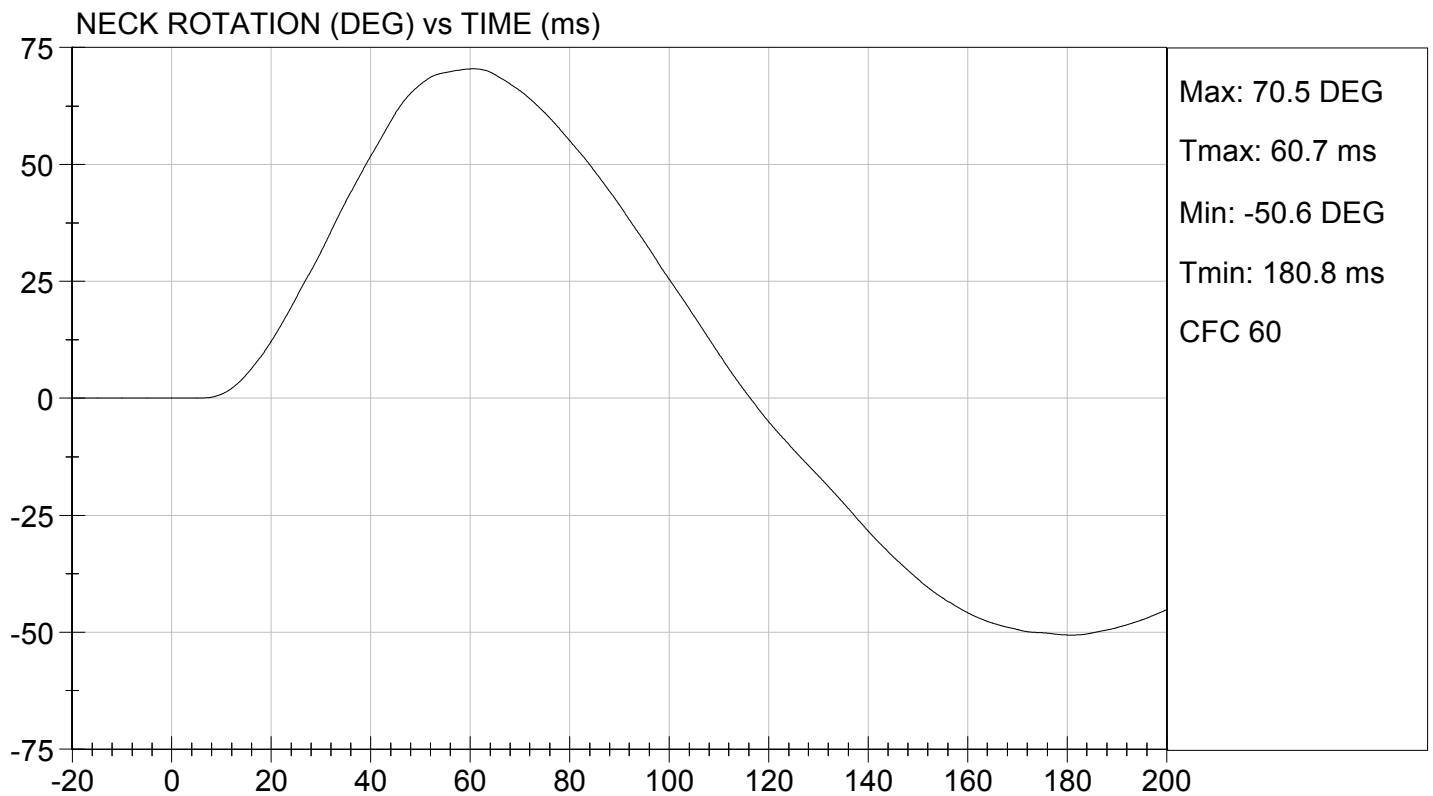
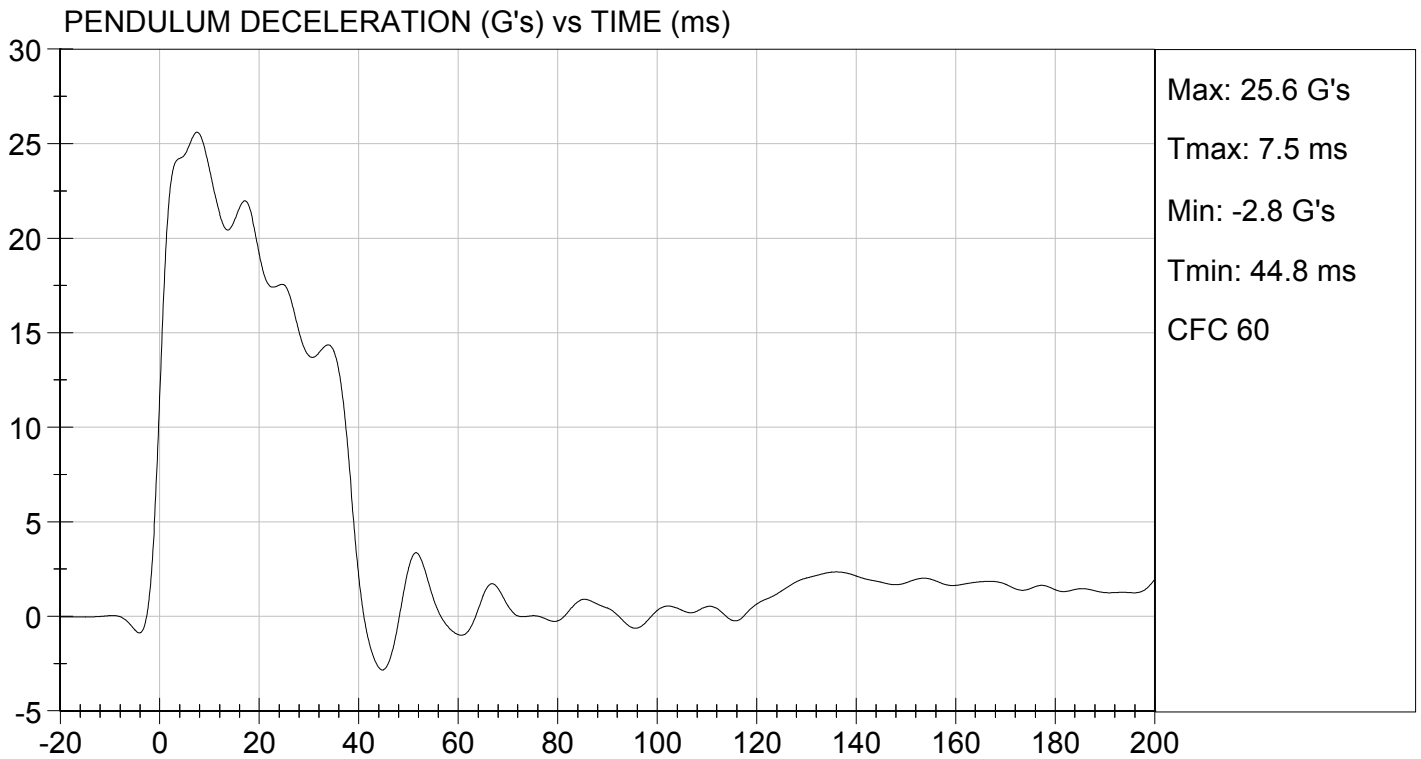
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	22.1	Pass
Laboratory Relative Humidity		%	10 to 70	55	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.96	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	23.60	Pass
	20 ms	G's	17.60 to 22.60	19.17	Pass
	30 ms	G's	12.50 to 18.50	13.78	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	14.4	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	39.1	Pass
Maximum "D" Plane Rotation	Maximum	Deg	64.0 to 78.0	70.5	Pass
	Time	ms	57.0 to 64.0	60.7	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	116.5	Pass
Moment About Occipital Condyle	Maximum	Nm	88.1 to 108.5	92.7	Pass
	Time	ms	47.0 to 58.0	51.9	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	104.4	Pass
Overall Test Results					Pass

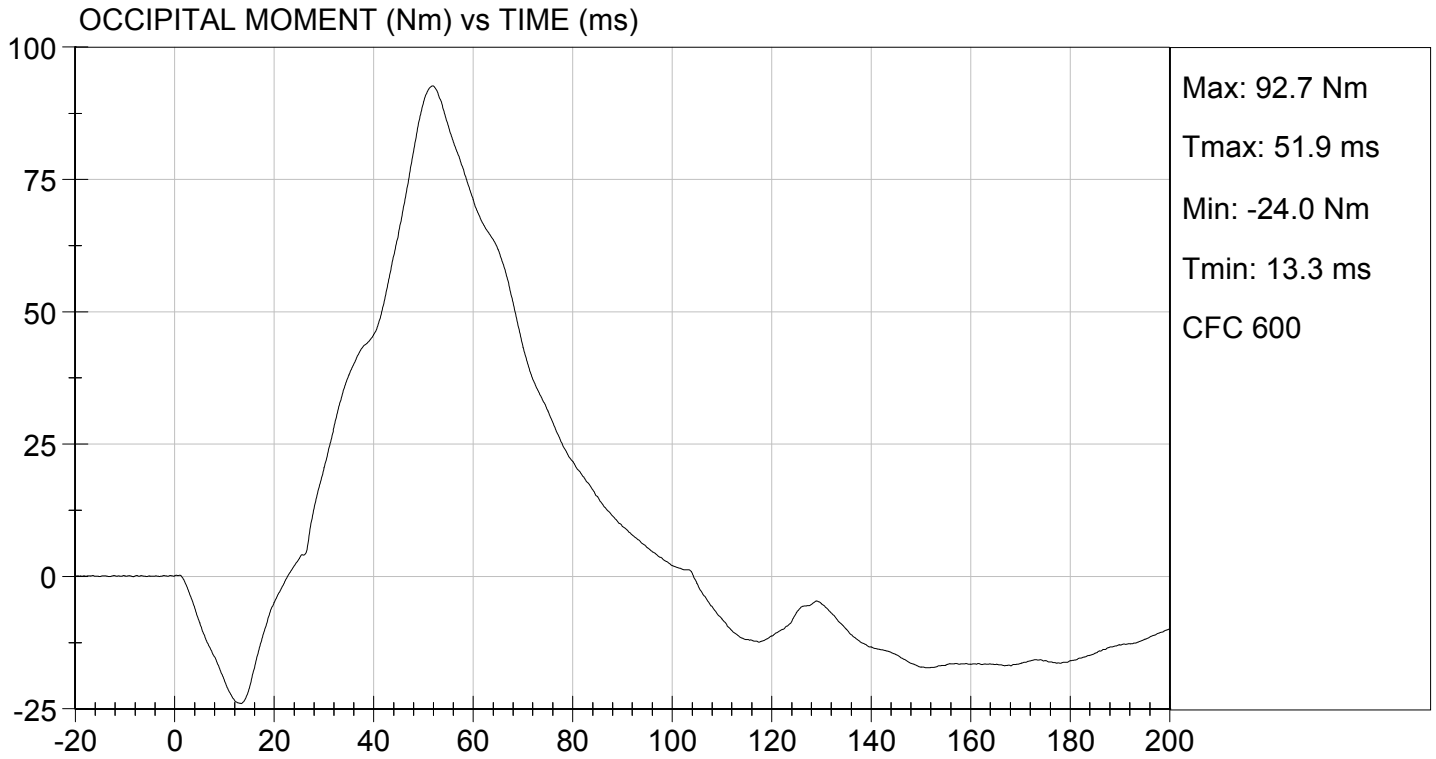
Jack Coleman
 Laboratory Technician

07/13/2015

Test Date

Jessica Hall
 Approved By





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

ATD Serial No: 351

Test I.D.: D152043

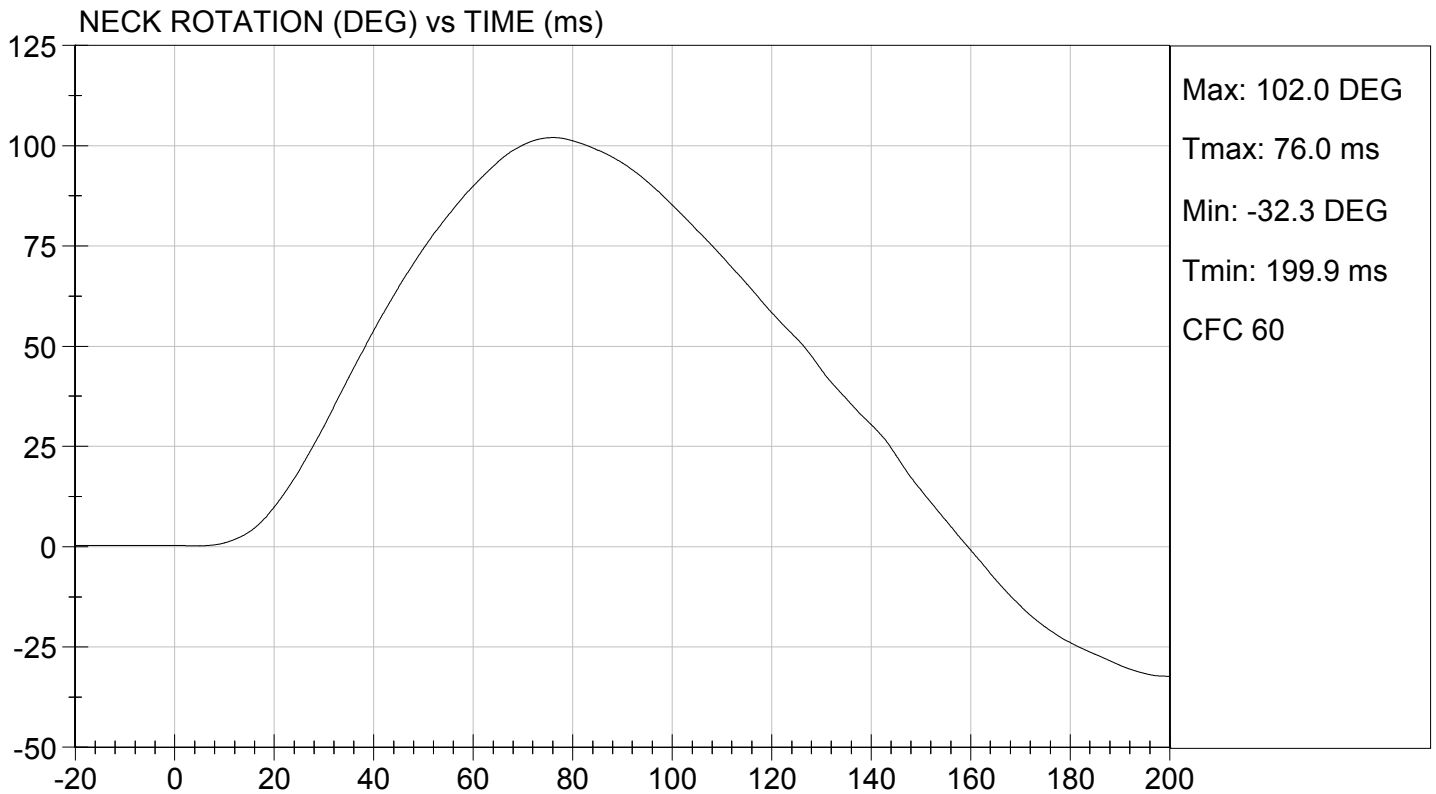
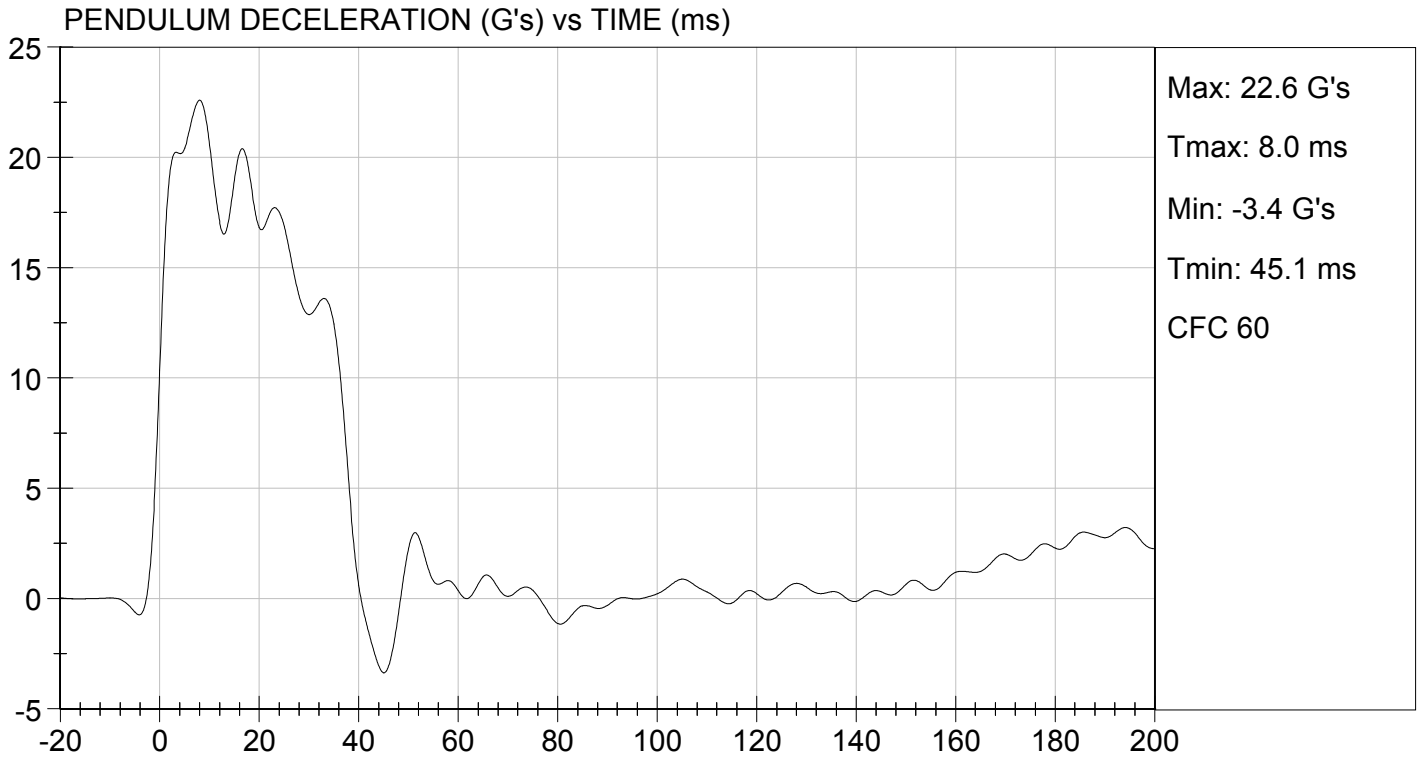
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Laboratory Temperature		deg C	20.6 to 22.2	22.1	Pass
Laboratory Relative Humidity		%	10 to 70	55	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.05	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	20.56	Pass
	20 ms	G's	14.00 to 19.00	16.83	Pass
	30 ms	G's	11.00 to 16.00	12.88	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 22.0	13.6	Pass
Deceleration Decay Time to Cross 5 G's		ms	38.0 to 46.0	38.1	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	102.0	Pass
	Time	ms	72.0 to 82.0	76.0	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	159.6	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-70.1	Pass
	Time	ms	65.0 to 79.0	70.2	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	145.7	Pass
Overall Test Results					Pass

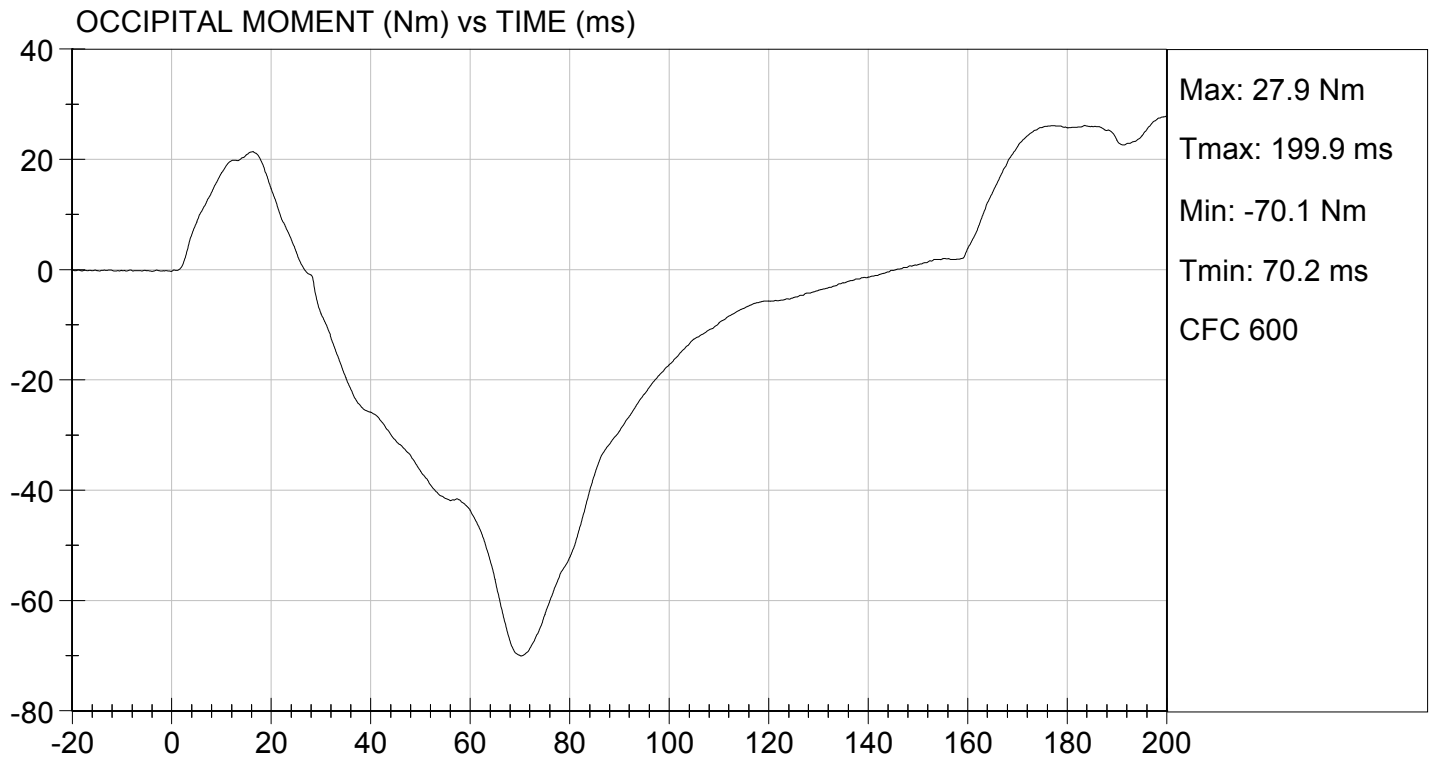
Jack Coleman
 Laboratory Technician

07/13/2015

Test Date

Jessica Hall
 Approved By





MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 351

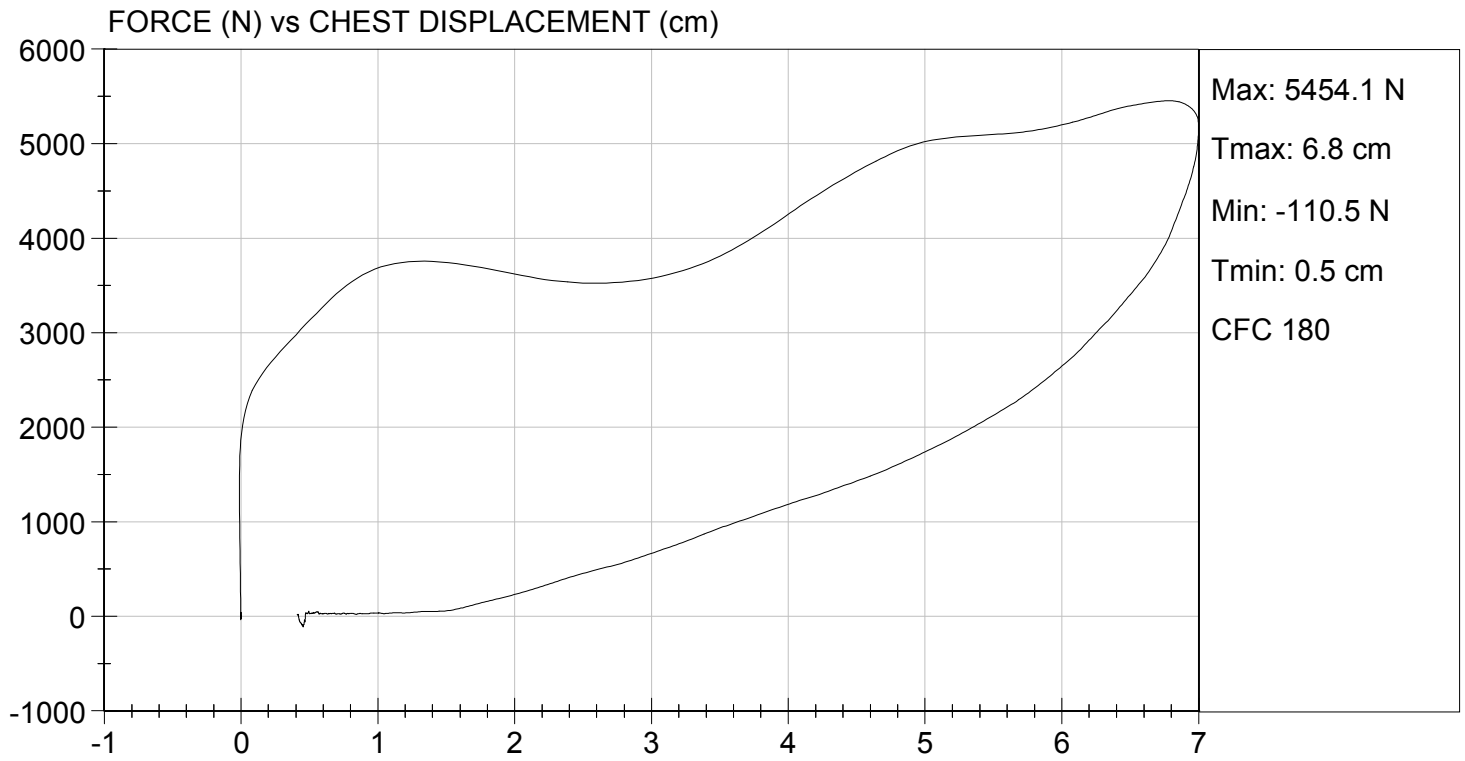
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Laboratory Temperature	deg C	20.6 to 22.2	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Probe Velocity	m/s	6.58 to 6.82	6.68	Pass
Peak Probe Force	N	5159 to 5893	5,454	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	7.00	Pass
Internal Hysteresis	%	69 to 85	71	Pass
Overall Test Results				Pass


 Laboratory Technician

07/14/2015
 Test Date


 Approved By



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

ATD Serial No: 351

Test I.D: D152045

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	43	Pass
Probe Velocity	m/s	2.07 to 2.13	2.11	Pass
Peak Probe Force	N	4715 to 5782	4,813	Pass
Overall Test Results				Pass


Laboratory Technician

07/14/2015

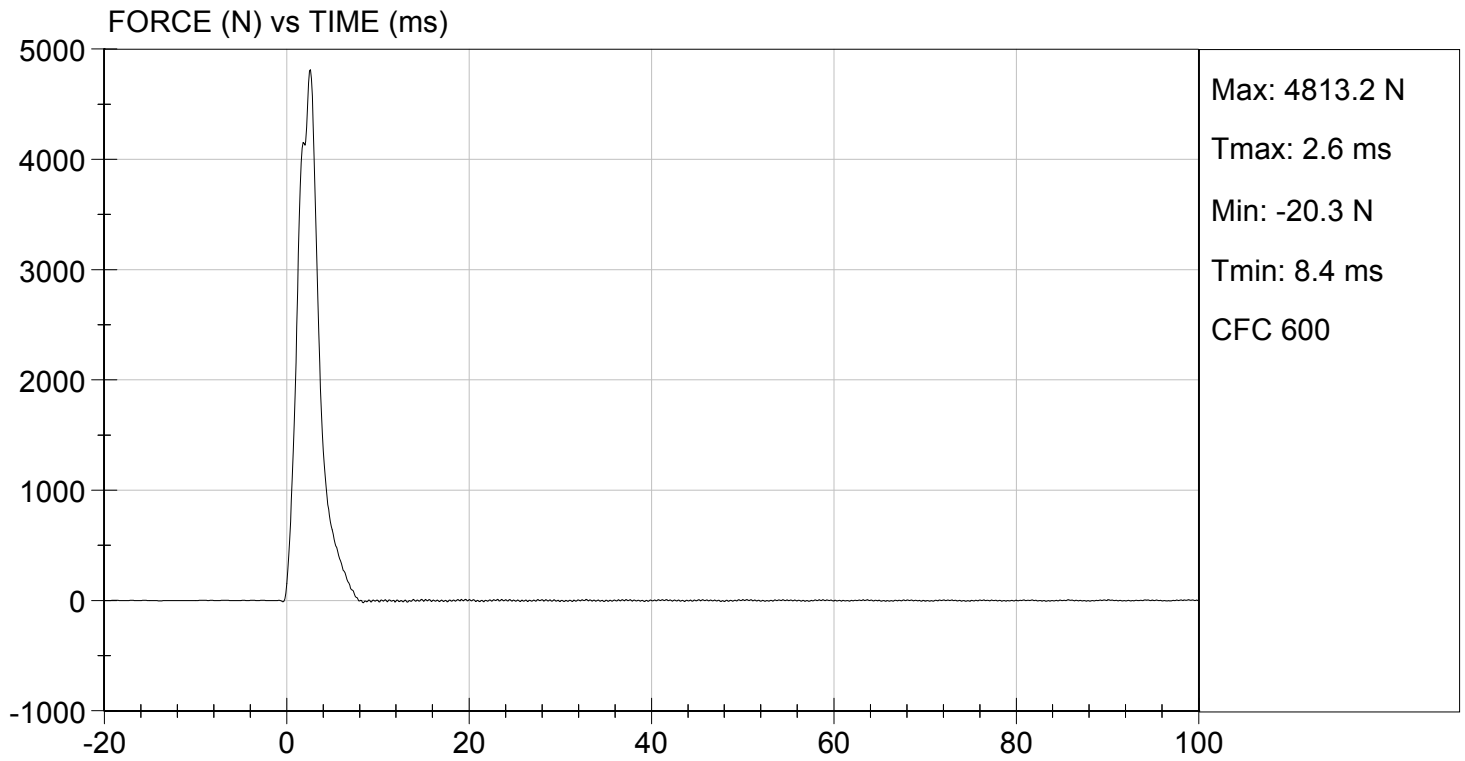
Test Date


Approved By



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

TEST DATE: 07/14/2015
TEST #: D152045



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

ATD Serial No: 351

Test I.D: D152046

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	22.1	Pass
Laboratory Relative Humidity	%	10 to 70	55	Pass
Probe Velocity	m/s	2.07 to 2.13	2.11	Pass
Peak Probe Force	N	4715 to 5782	5,207	Pass
Overall Test Results				Pass


Laboratory Technician

07/13/2015

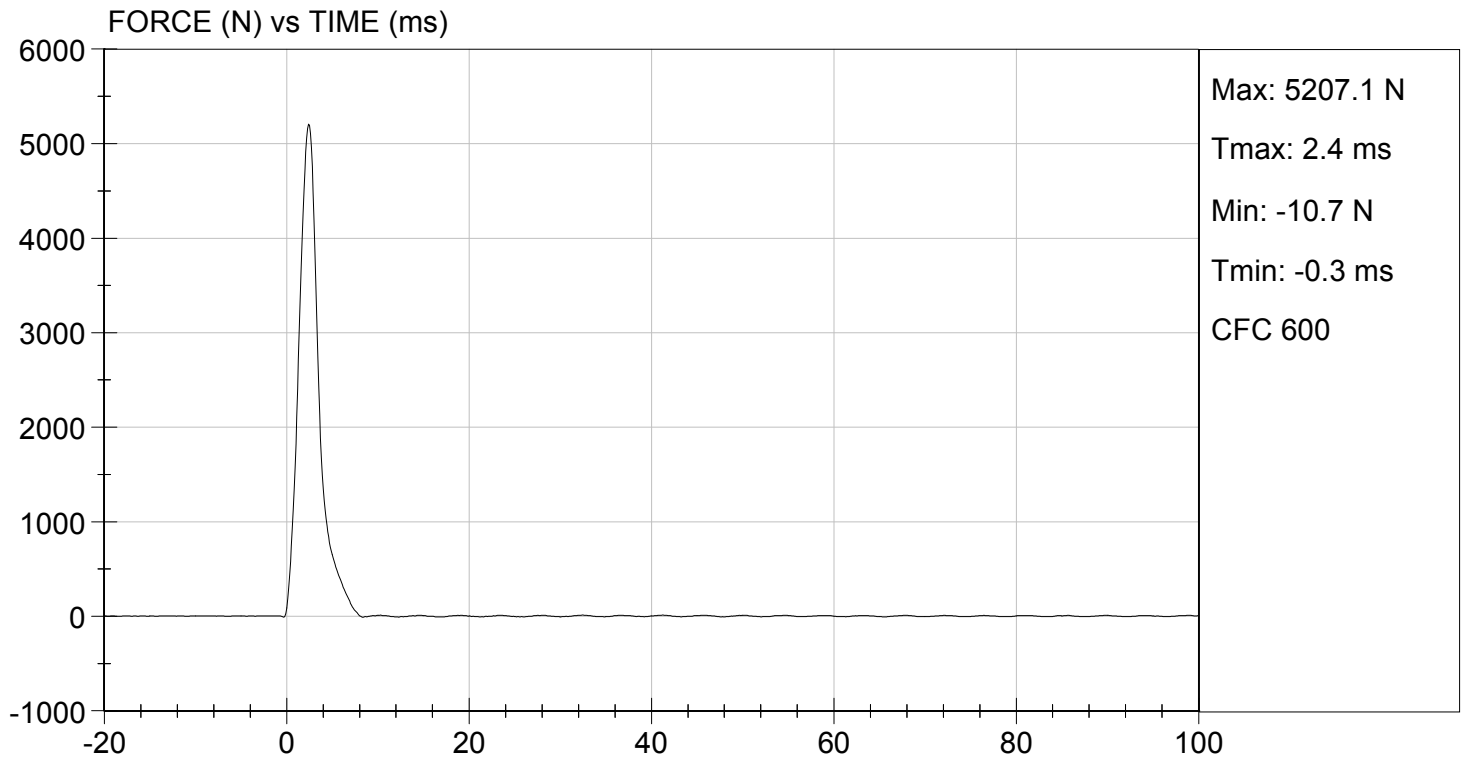
Test Date


Approved By



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

TEST DATE: 07/13/2015
TEST #: D152046



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

ATD Serial No: 351

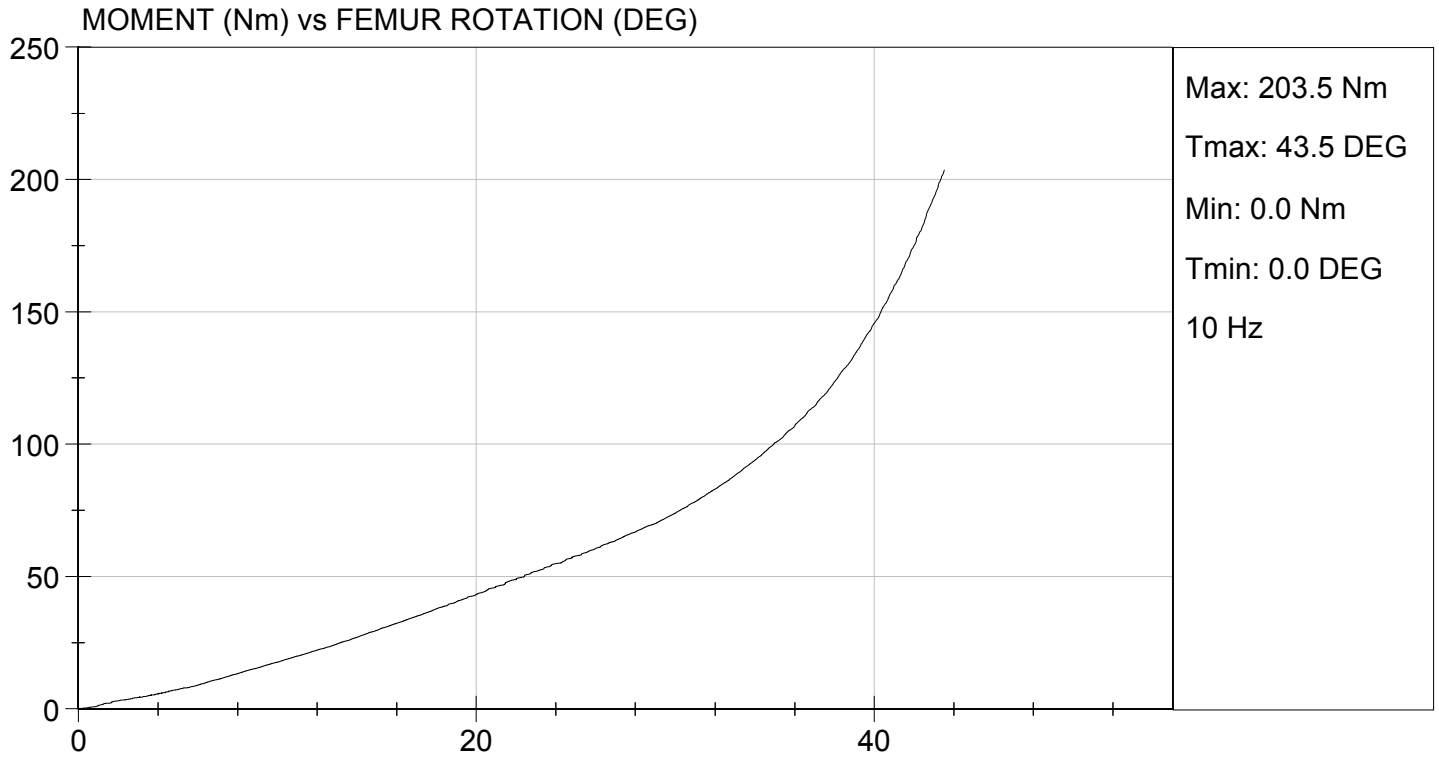
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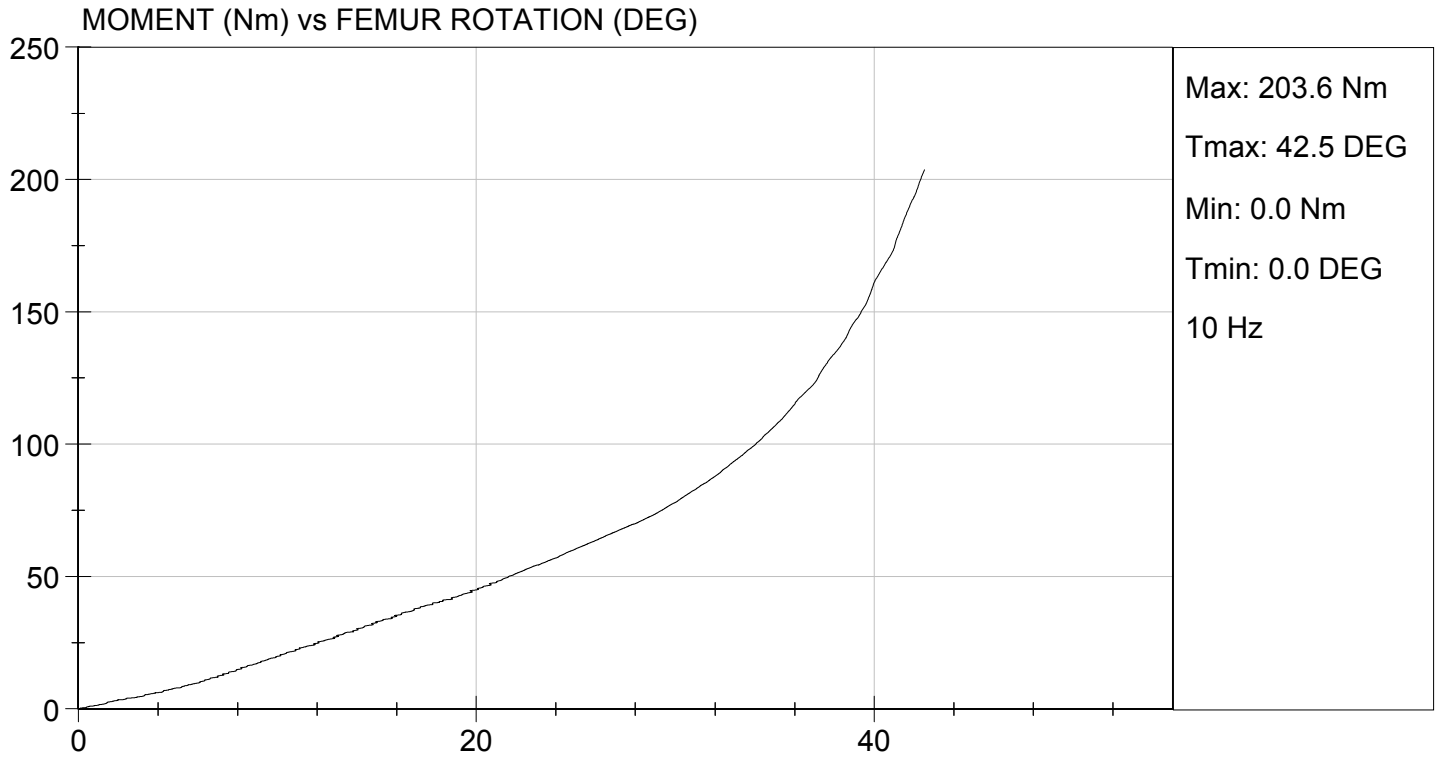
Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.8	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	54	54	Pass
Rotation Rate	deg/s	5.0 to 10.0	6.2	6.2	Pass
30 Degrees	Nm	94.9 Nm Max	74.0	77.9	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 to 50.0 Degree Max Rotation	43.5	42.5	Pass
Overall Test Results					Pass

Jack Coleman
 Laboratory Technician

07/13/2015
 Test Date

Jessica Hall
 Approved By





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

ATD Serial No: 351

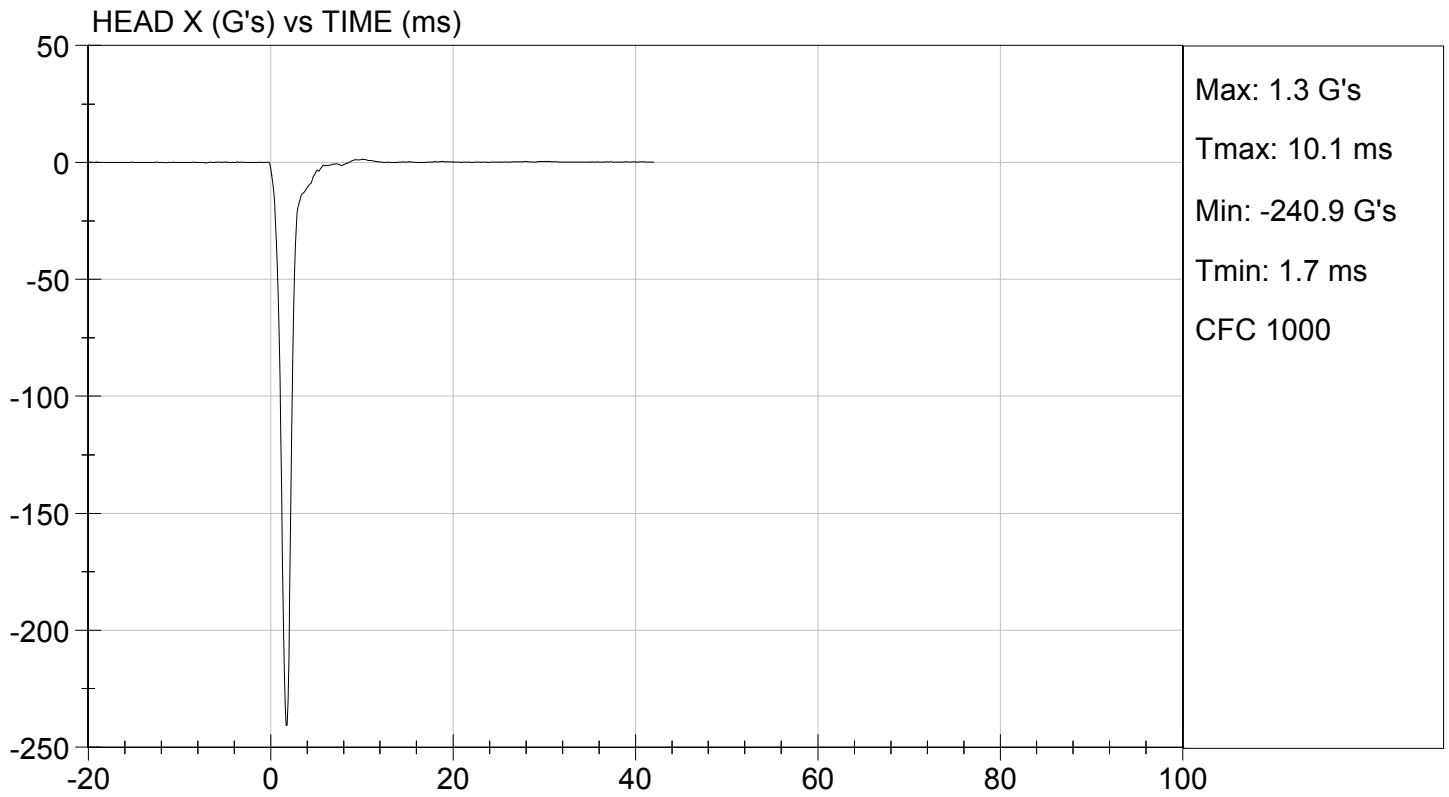
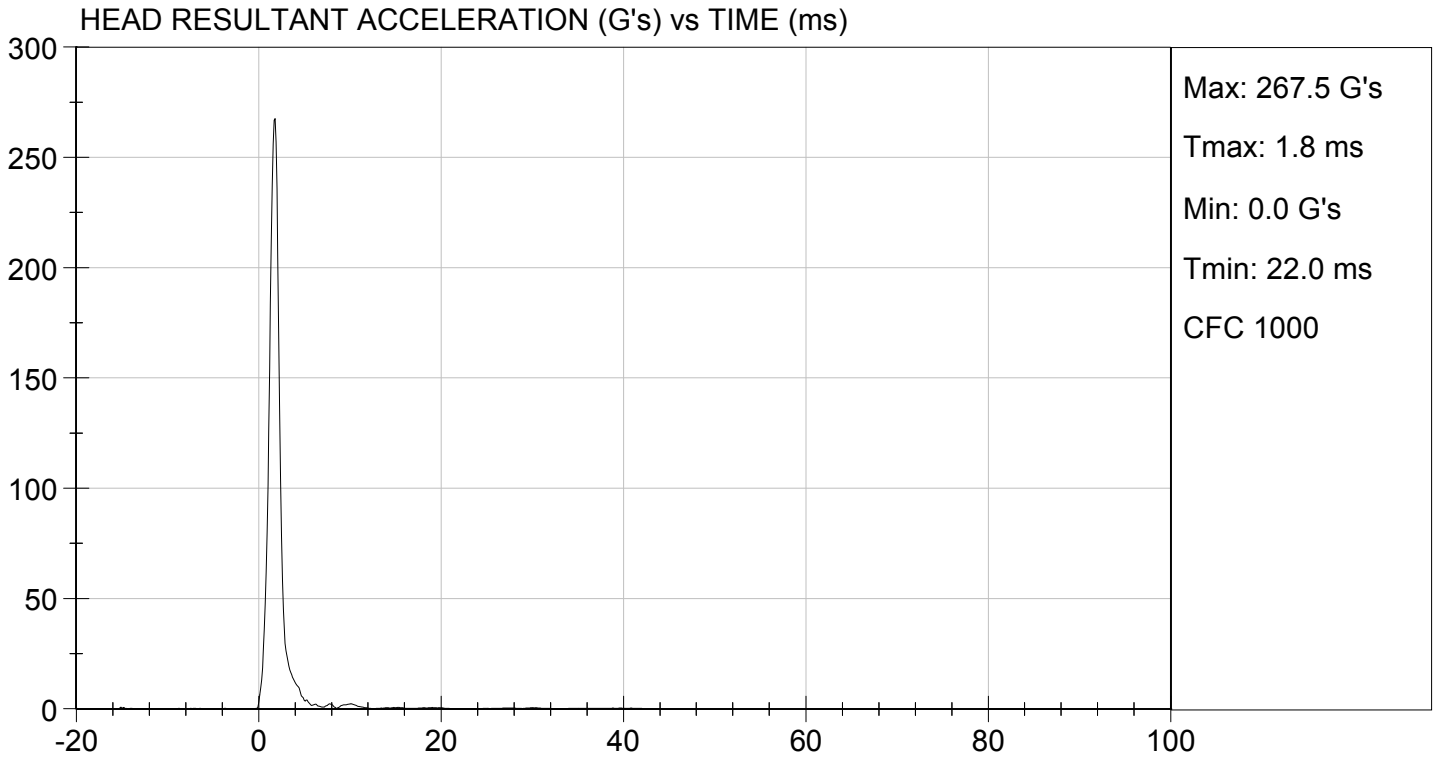
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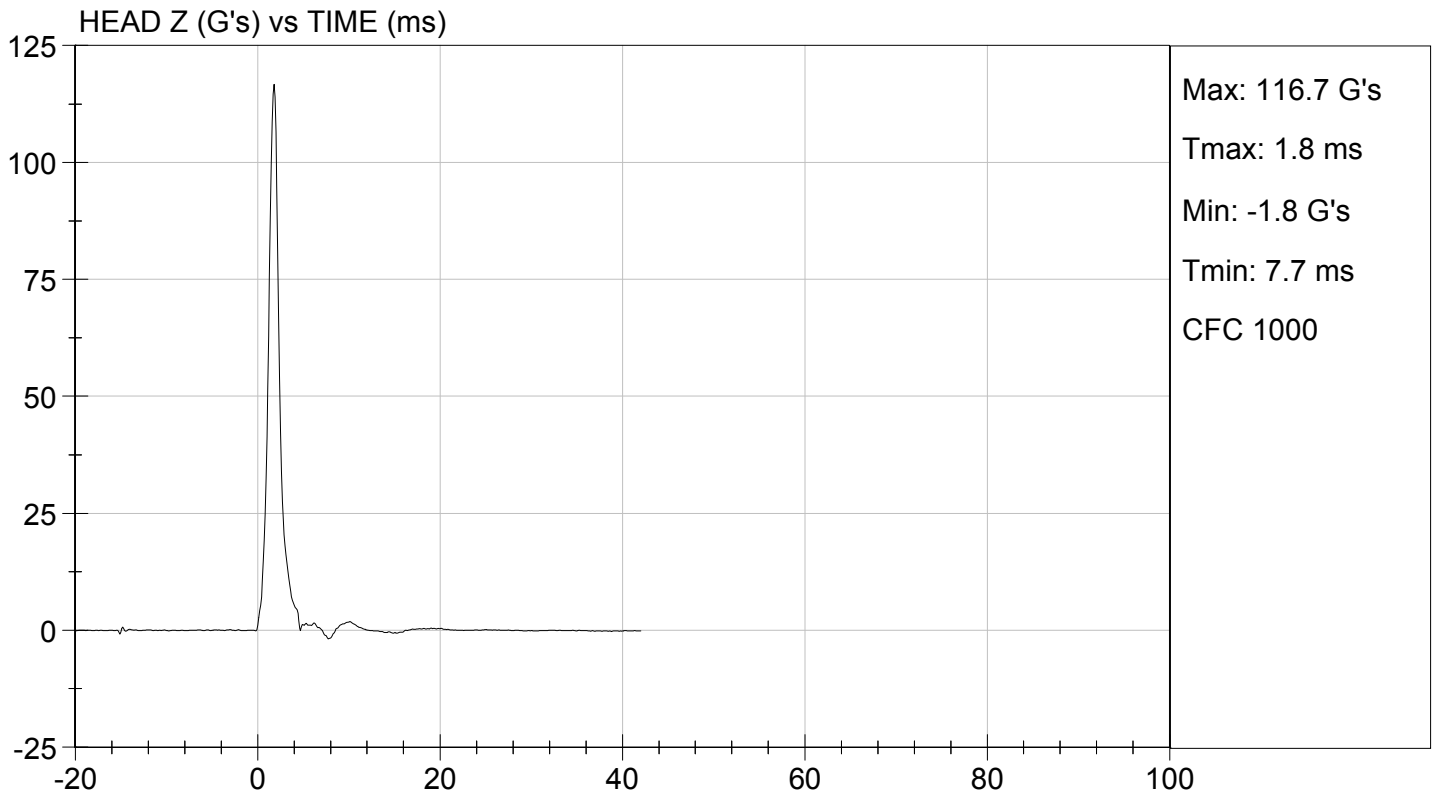
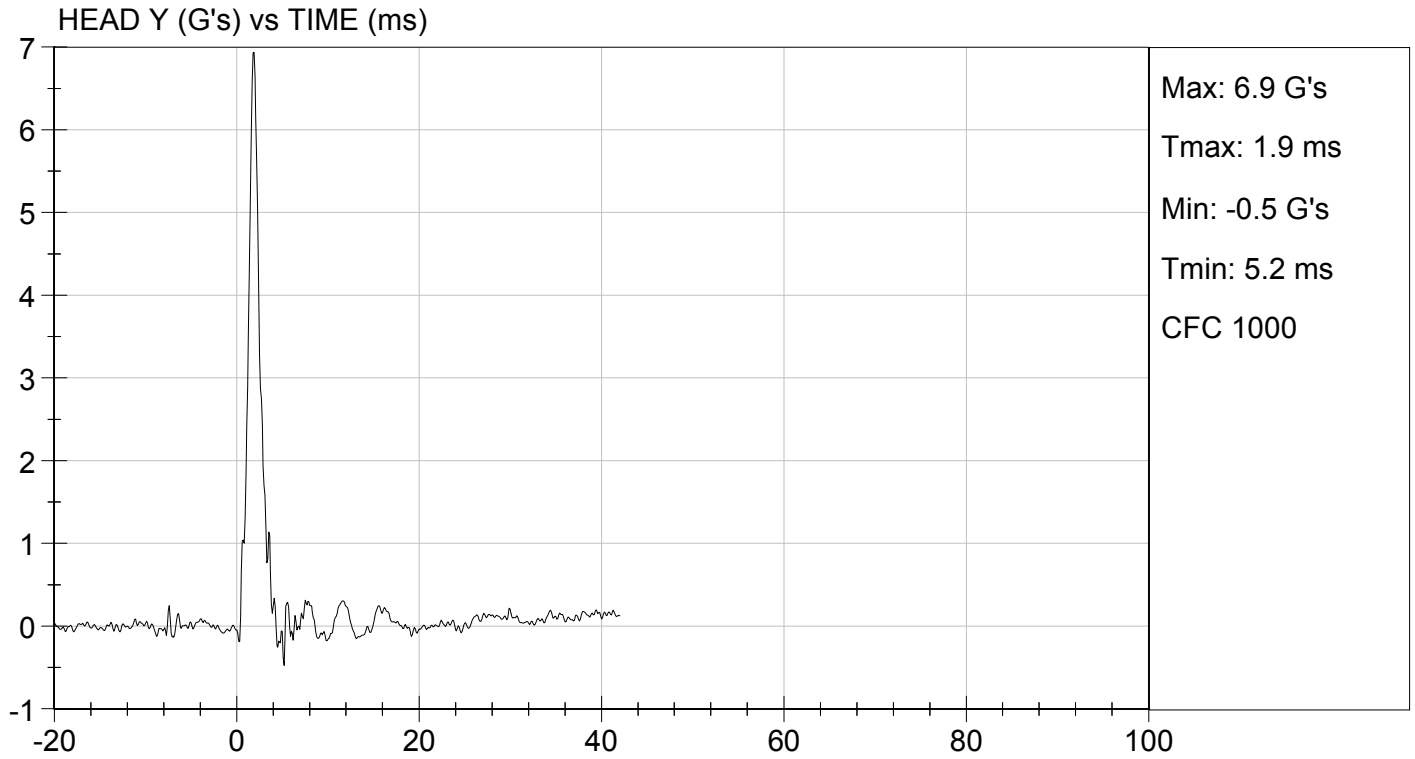
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.0	Pass
Laboratory Relative Humidity	%	10 to 70	48	Pass
Peak Resultant Acceleration	G's	225 to 275	268	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	6.9	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass


 Laboratory Technician

08/10/2015
 Test Date


 Approved By





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

ATD Serial No: 351

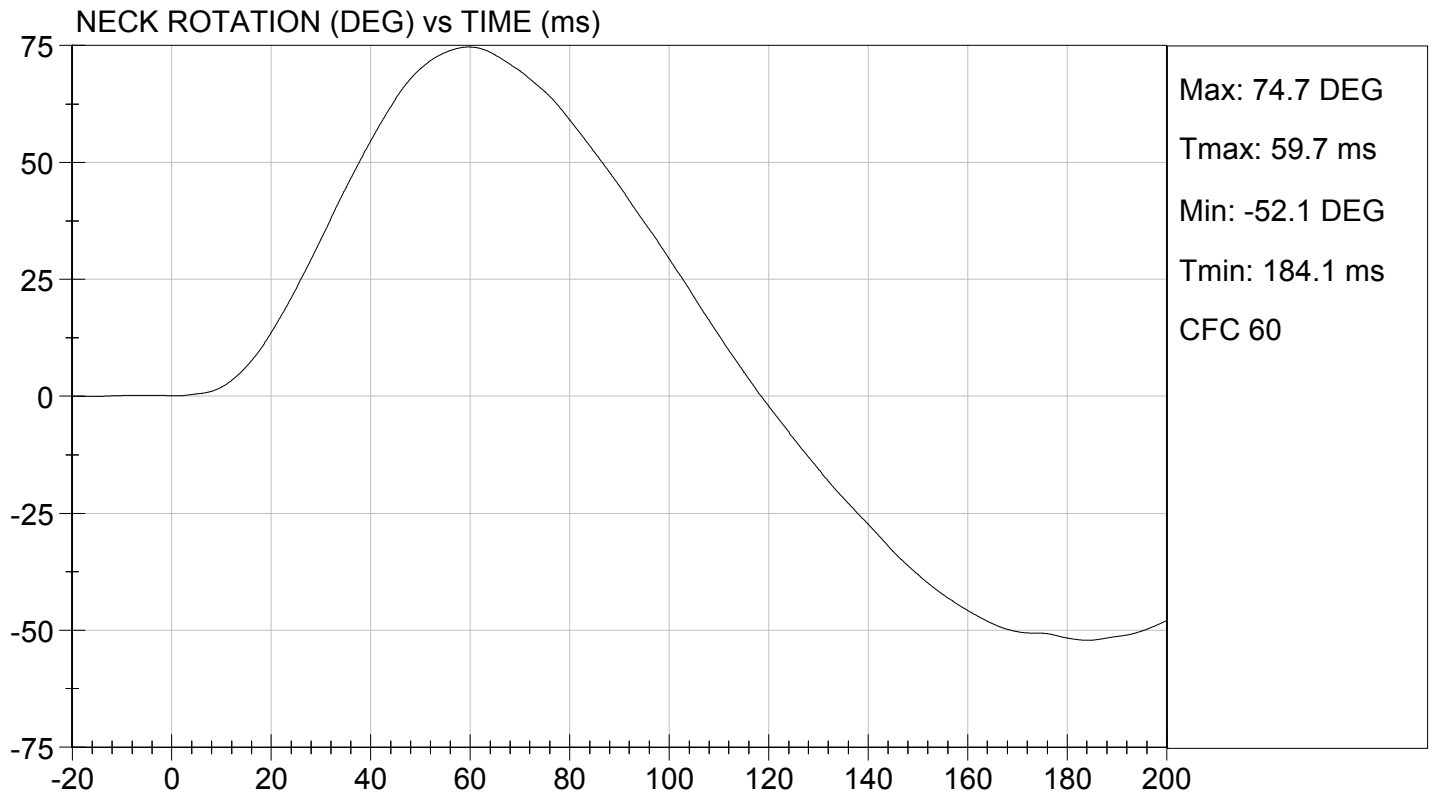
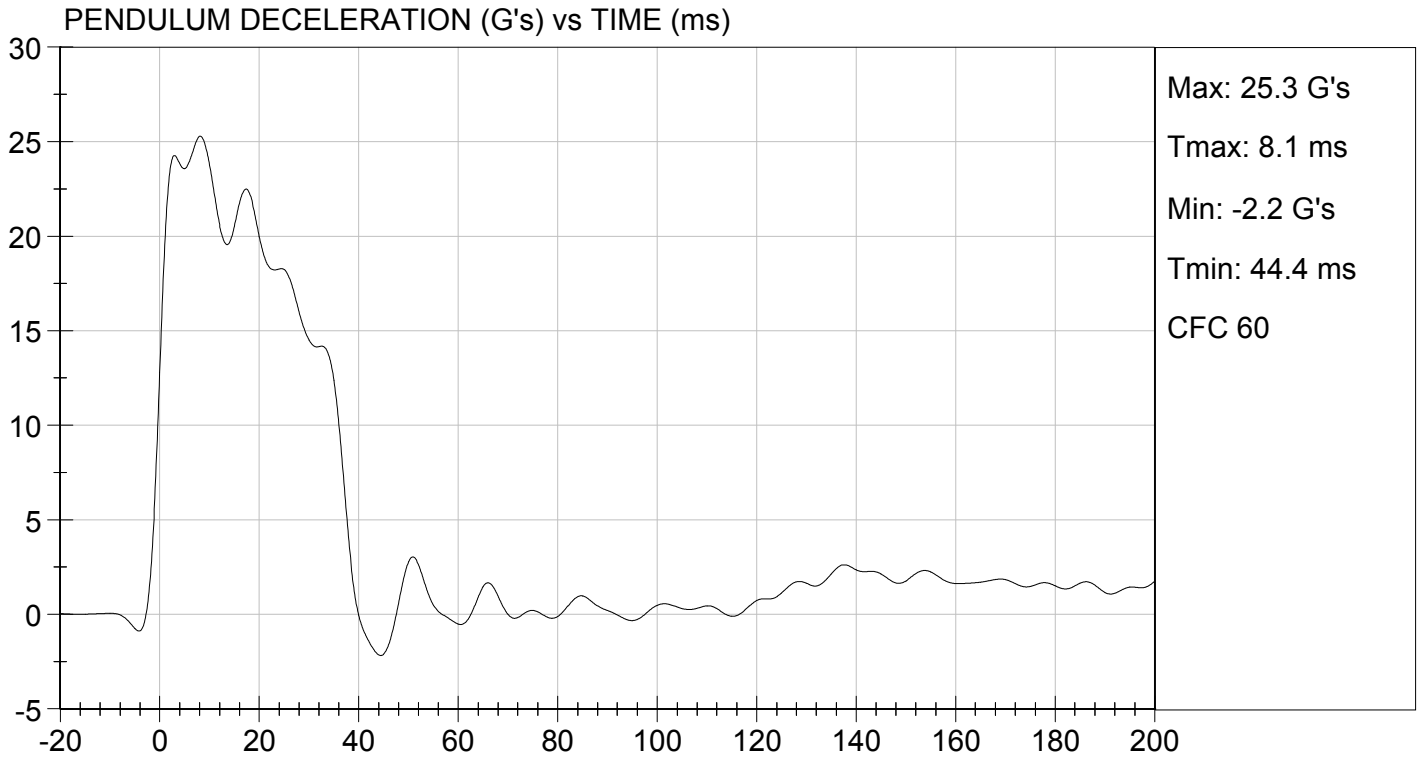
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Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity		%	10 to 70	49	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.06	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	23.74	Pass
	20 ms	G's	17.60 to 22.60	19.99	Pass
	30 ms	G's	12.50 to 18.50	14.50	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	14.5	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	37.7	Pass
Maximum "D" Plane Rotation	Maximum	Deg	64.0 to 78.0	74.7	Pass
	Time	ms	57.0 to 64.0	59.7	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	118.7	Pass
Moment About Occipital Condyle	Maximum	Nm	88.1 to 108.5	89.6	Pass
	Time	ms	47.0 to 58.0	50.9	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	105.1	Pass
Overall Test Results					Pass

David Schoedel
 Laboratory Technician

08/10/2015
 Test Date

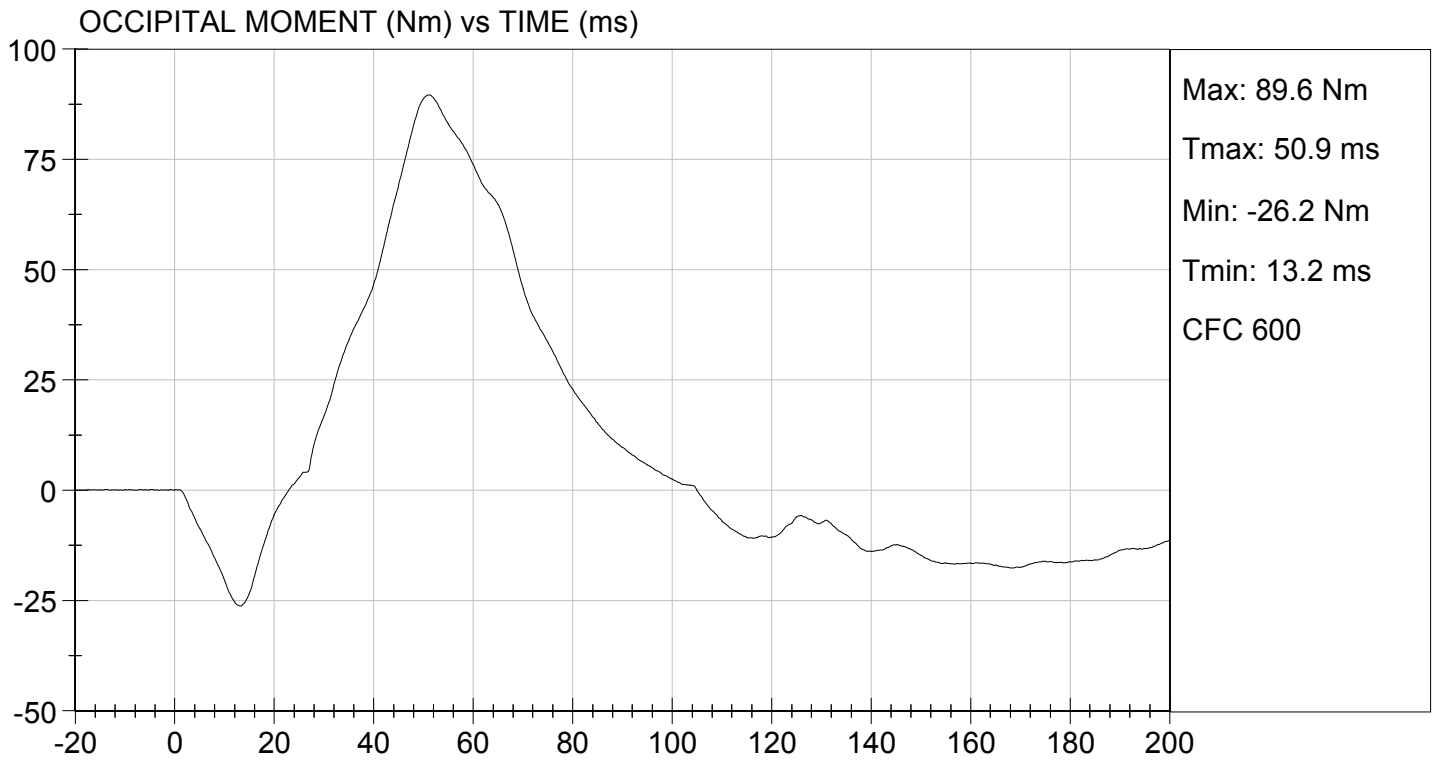
Jessica Hall
 Approved By





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

TEST DATE: 08/10/2015
TEST #: D152412



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

ATD Serial No: 351

Test I.D.: D152413

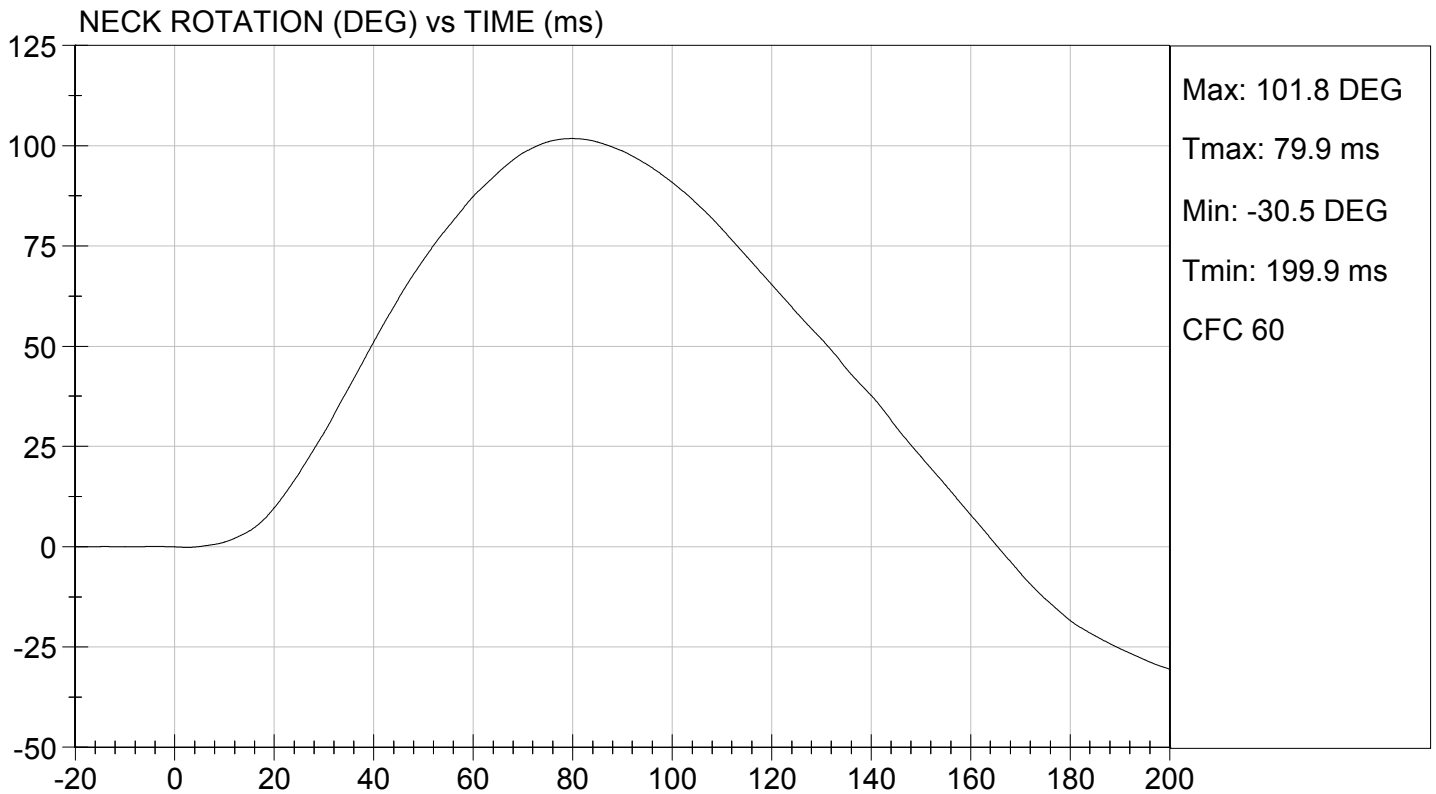
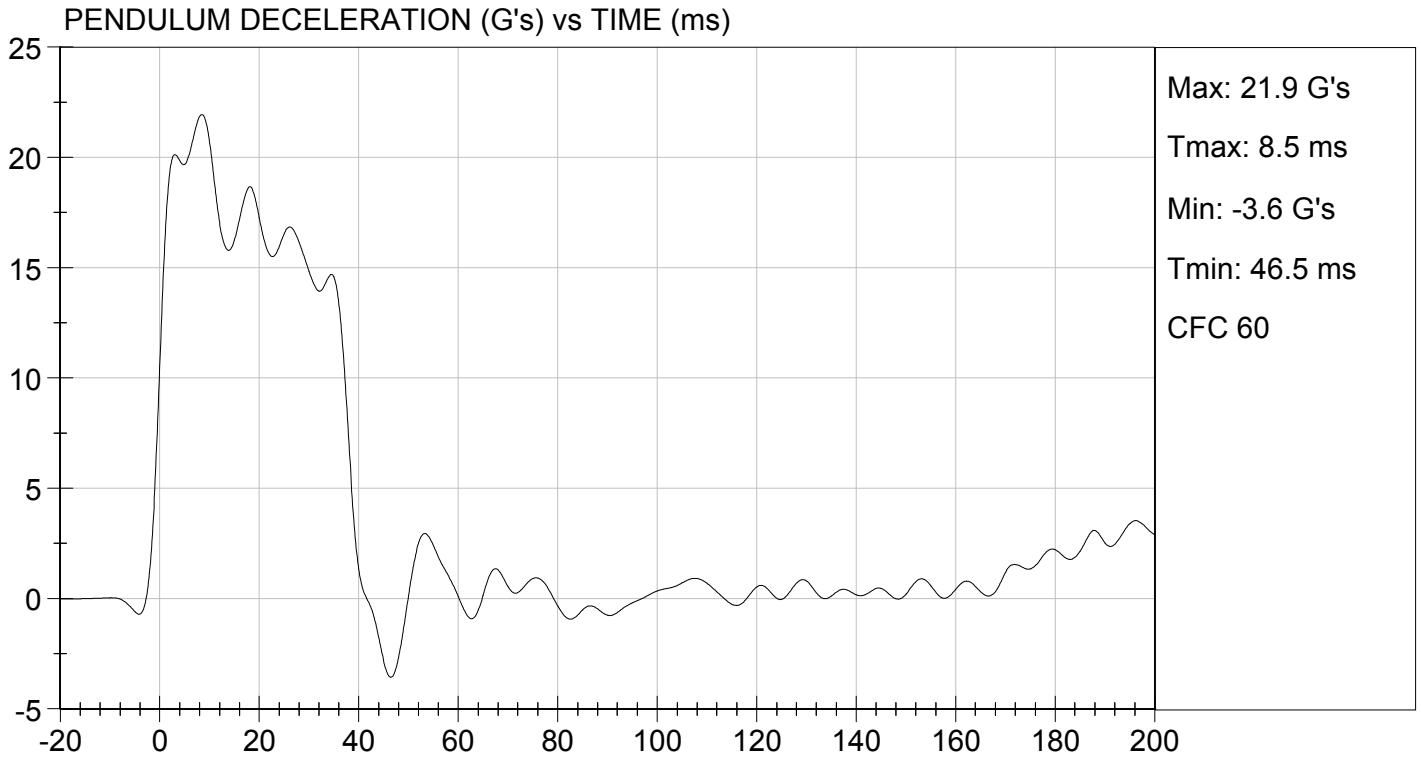
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity		%	10 to 70	49	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.05	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	20.68	Pass
	20 ms	G's	14.00 to 19.00	17.28	Pass
	30 ms	G's	11.00 to 16.00	14.83	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 22.0	14.8	Pass
Deceleration Decay Time to Cross 5 G's		ms	38.0 to 46.0	38.6	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	101.8	Pass
	Time	ms	72.0 to 82.0	79.9	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	165.6	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-60.2	Pass
	Time	ms	65.0 to 79.0	73.3	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	146.7	Pass
Overall Test Results					Pass

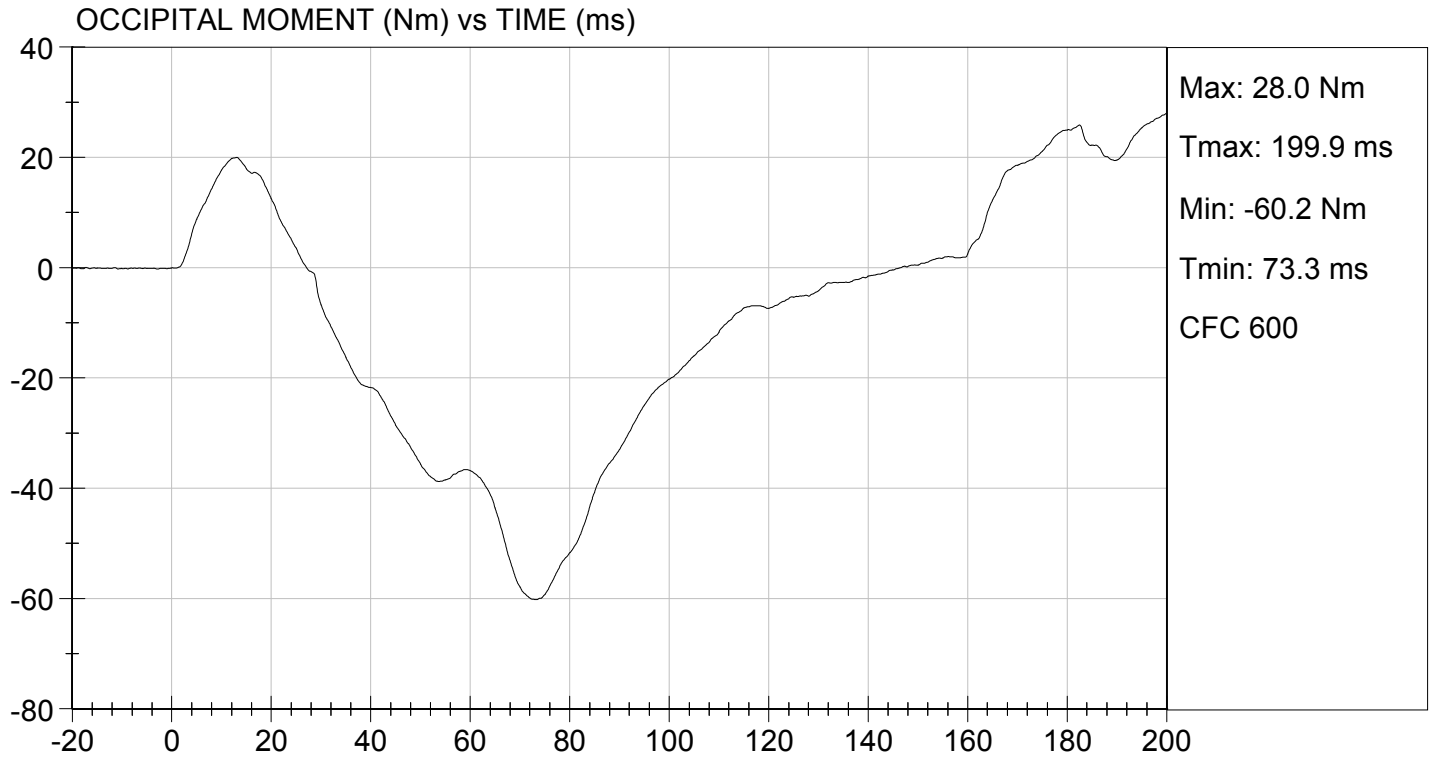
David Schoedel
Laboratory Technician

08/10/2015

Test Date

Jessica Hall
Approved By





**MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE**

ATD Serial No: 351

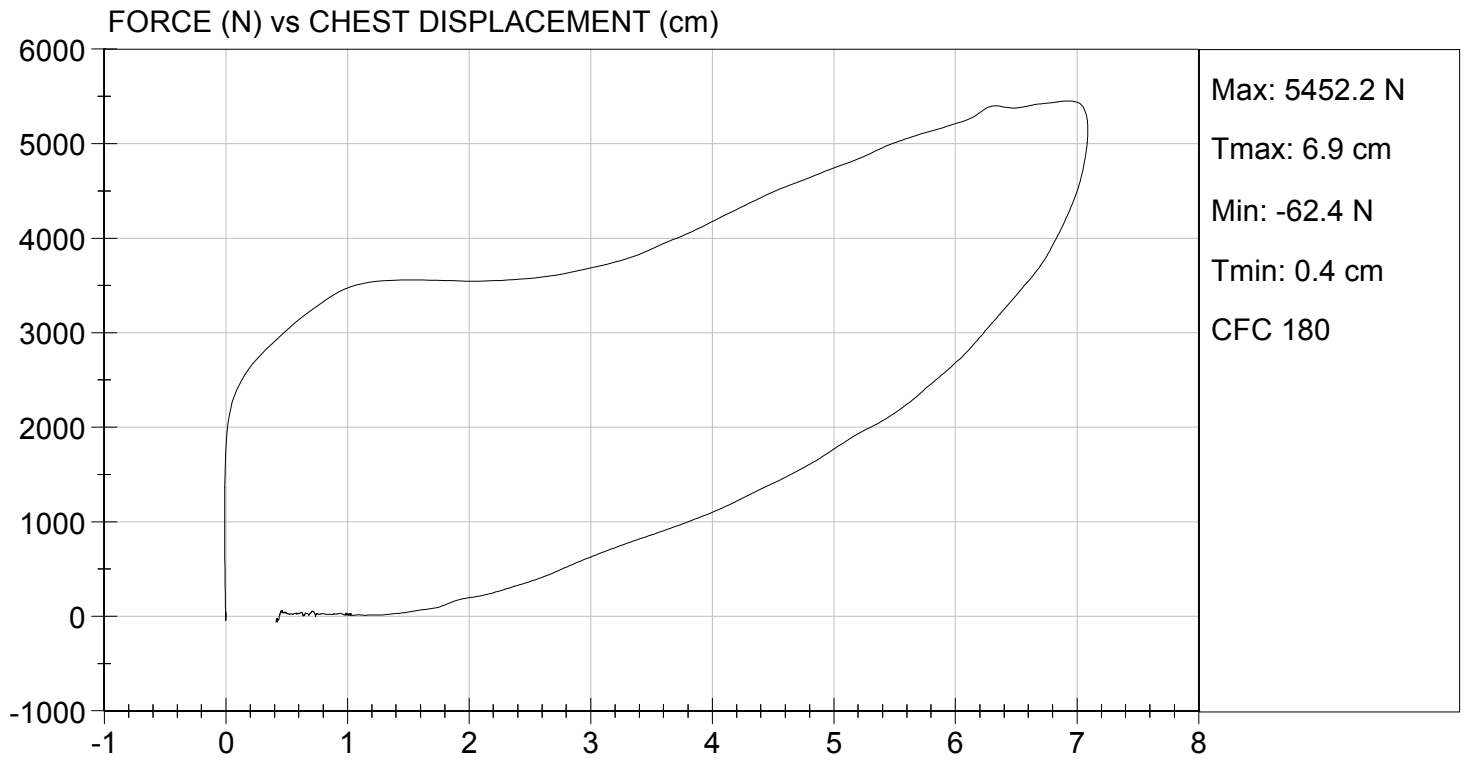
Test I.D.: D152414

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	48	Pass
Probe Velocity	m/s	6.58 to 6.82	6.68	Pass
Peak Probe Force	N	5159 to 5893	5,452	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	7.09	Pass
Internal Hysteresis	%	69 to 85	70	Pass
			Overall Test Results	Pass

David Schoedel
 Laboratory Technician

08/11/2015
 Test Date

Jessica Hall
 Approved By



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

ATD Serial No: 351

Test I.D: D152415

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	49	Pass
Probe Velocity	m/s	2.07 to 2.13	2.12	Pass
Peak Probe Force	N	4715 to 5782	5,574	Pass
Overall Test Results				Pass

David Schoedel
 Laboratory Technician

08/10/2015

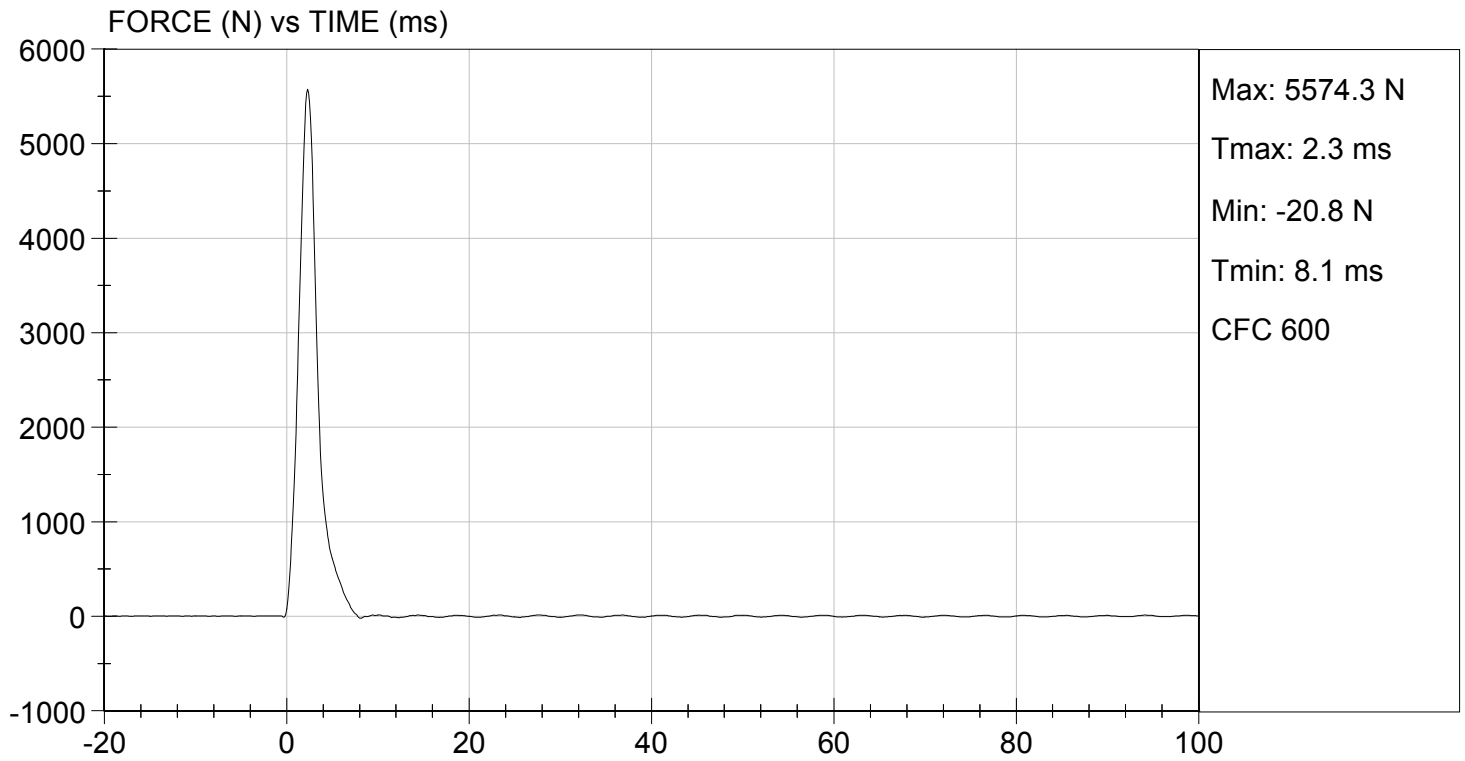
Test Date

Jessica Hall
 Approved By



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

TEST DATE: 08/10/2015
TEST #: D152415



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

ATD Serial No: 351

Test I.D: D152416

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	49	Pass
Probe Velocity	m/s	2.07 to 2.13	2.12	Pass
Peak Probe Force	N	4715 to 5782	5,453	Pass
Overall Test Results				Pass

David Schoedel
 Laboratory Technician

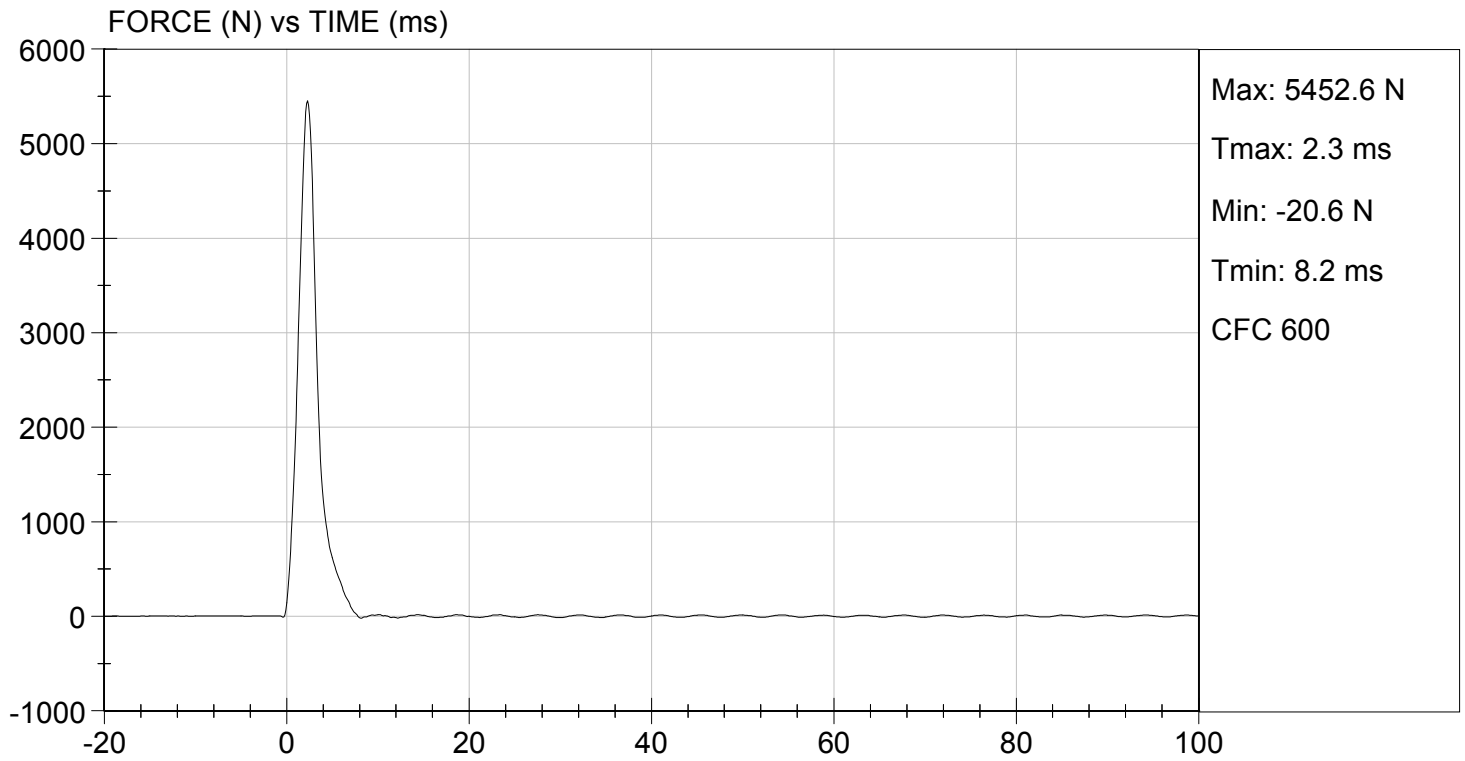
08/10/2015
 Test Date

Jessica Hall
 Approved By



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

TEST DATE: 08/10/2015
TEST #: D152416



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

ATD Serial No: 351

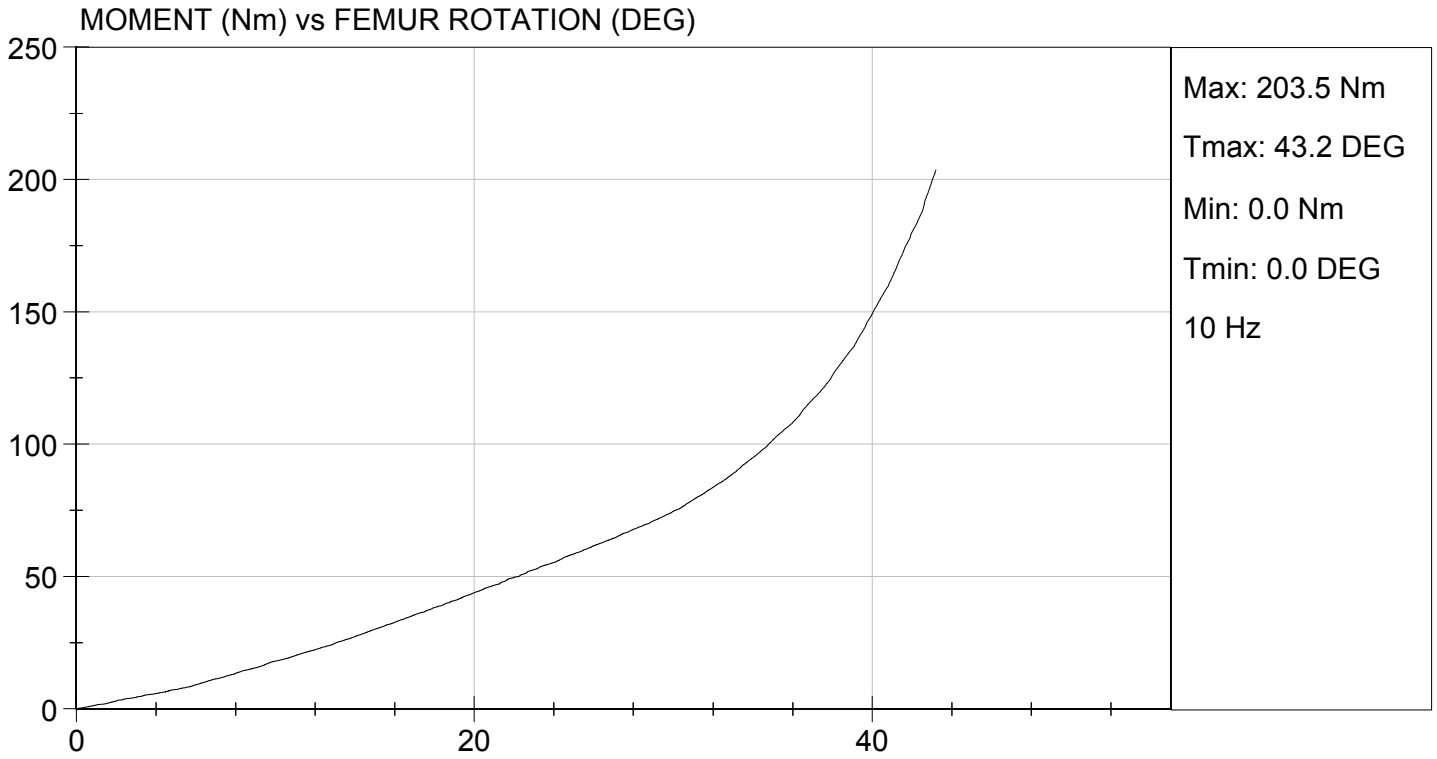
Test I.D: D152410

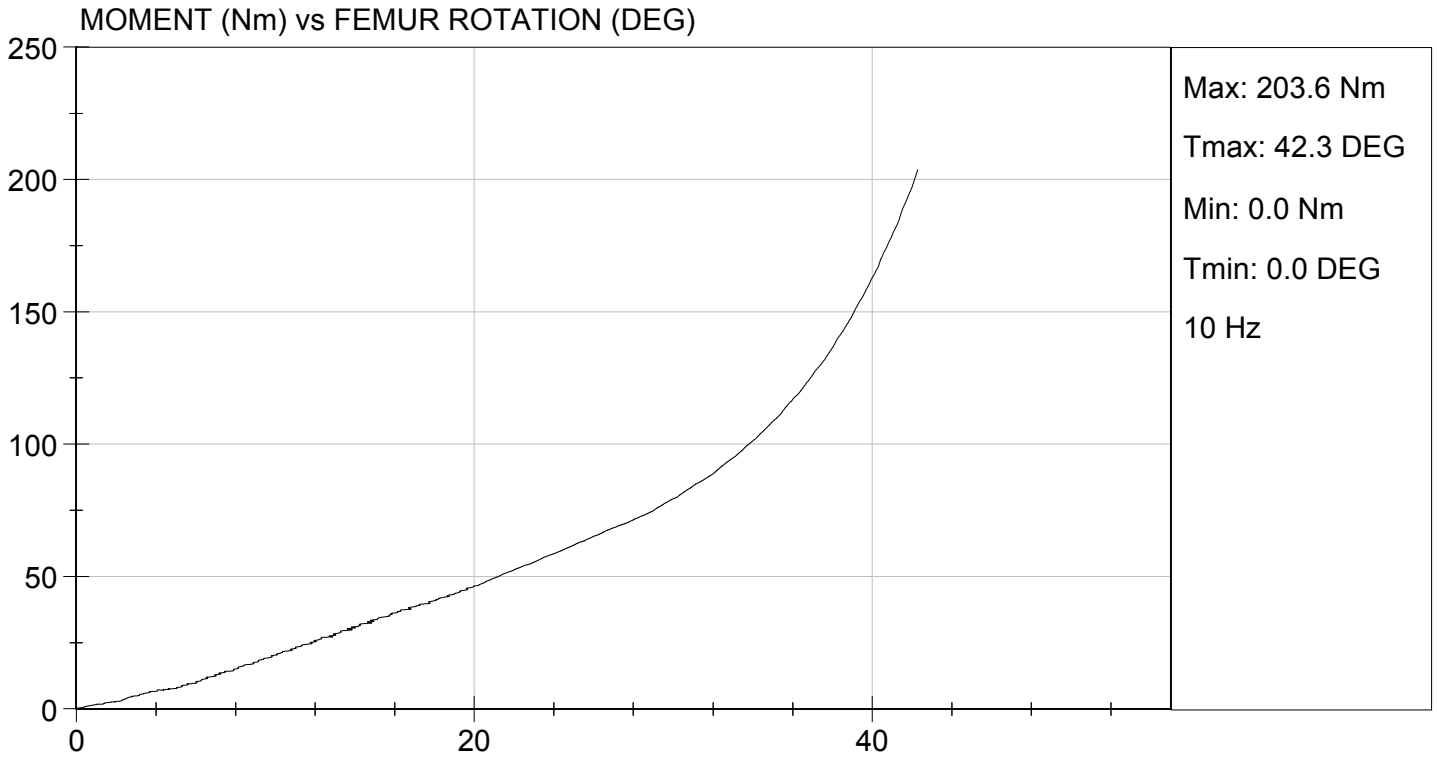
Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.0	21.0	Pass
Laboratory Relative Humidity	%	10 to 70	48	48	Pass
Rotation Rate	deg/s	5.0 to 10.0	6.2	6.2	Pass
30 Degrees	Nm	94.9 Nm Max	74.6	79.4	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 to 50.0 Degree Max Rotation	43.2	42.3	Pass
Overall Test Results					Pass

Jack Coleman
 Laboratory Technician

08/10/2015
 Test Date

Jessica Hall
 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

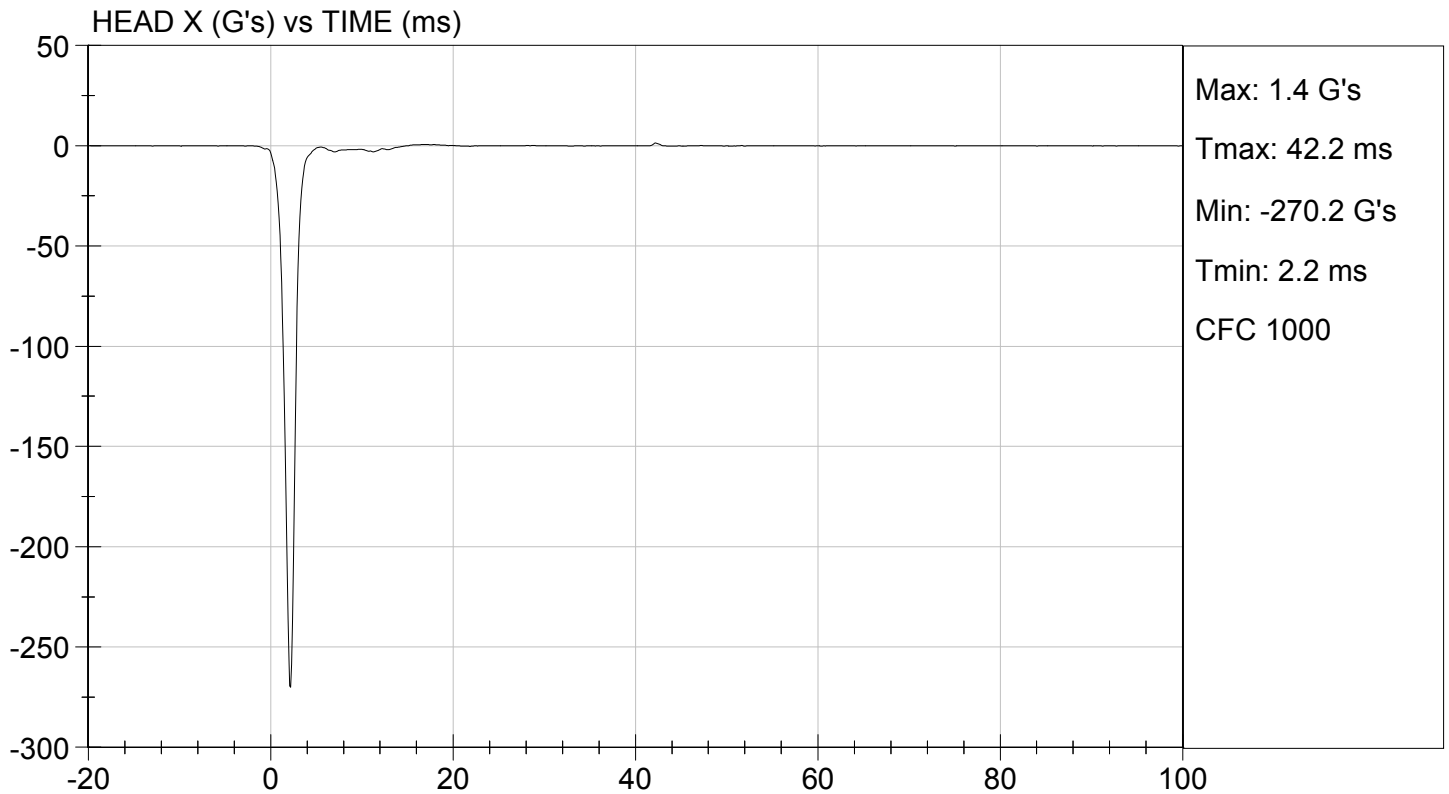
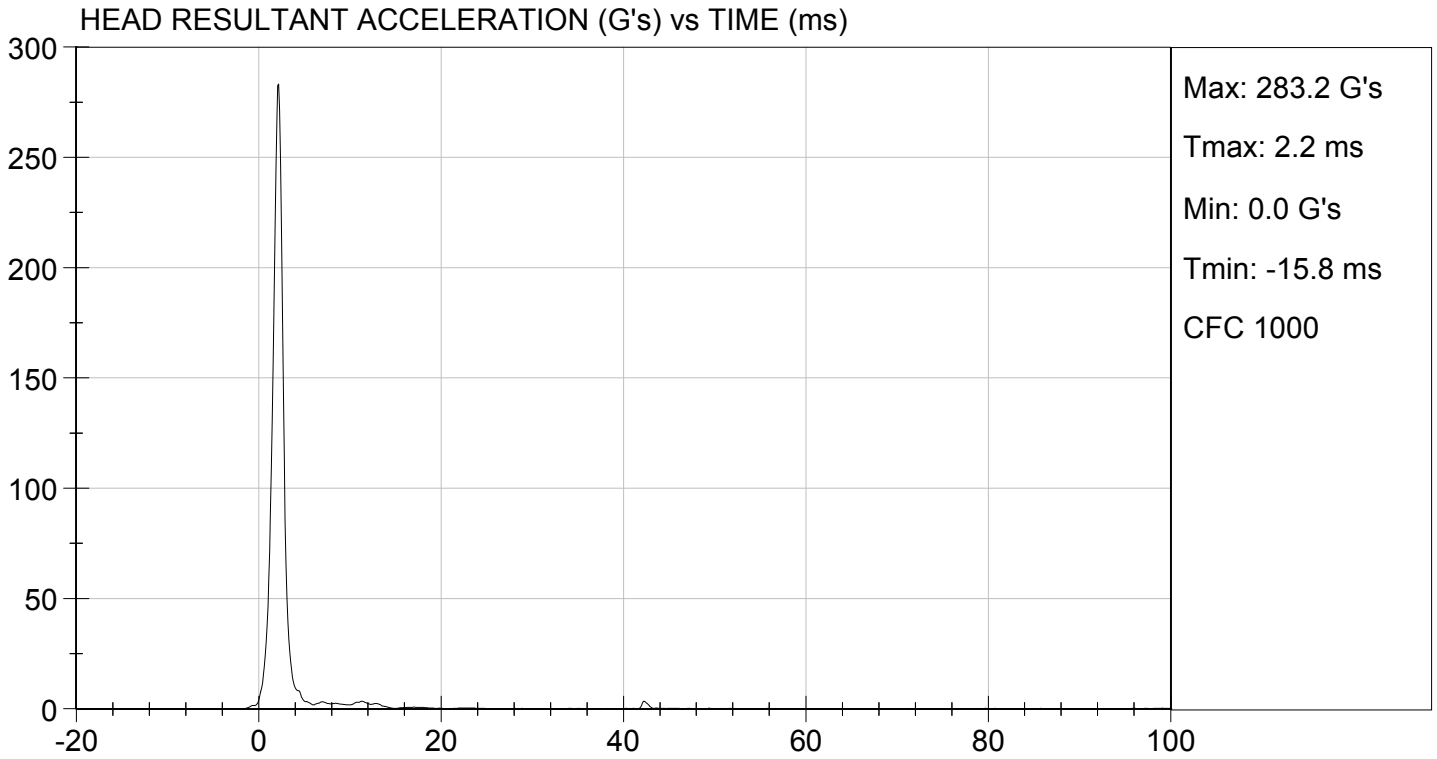
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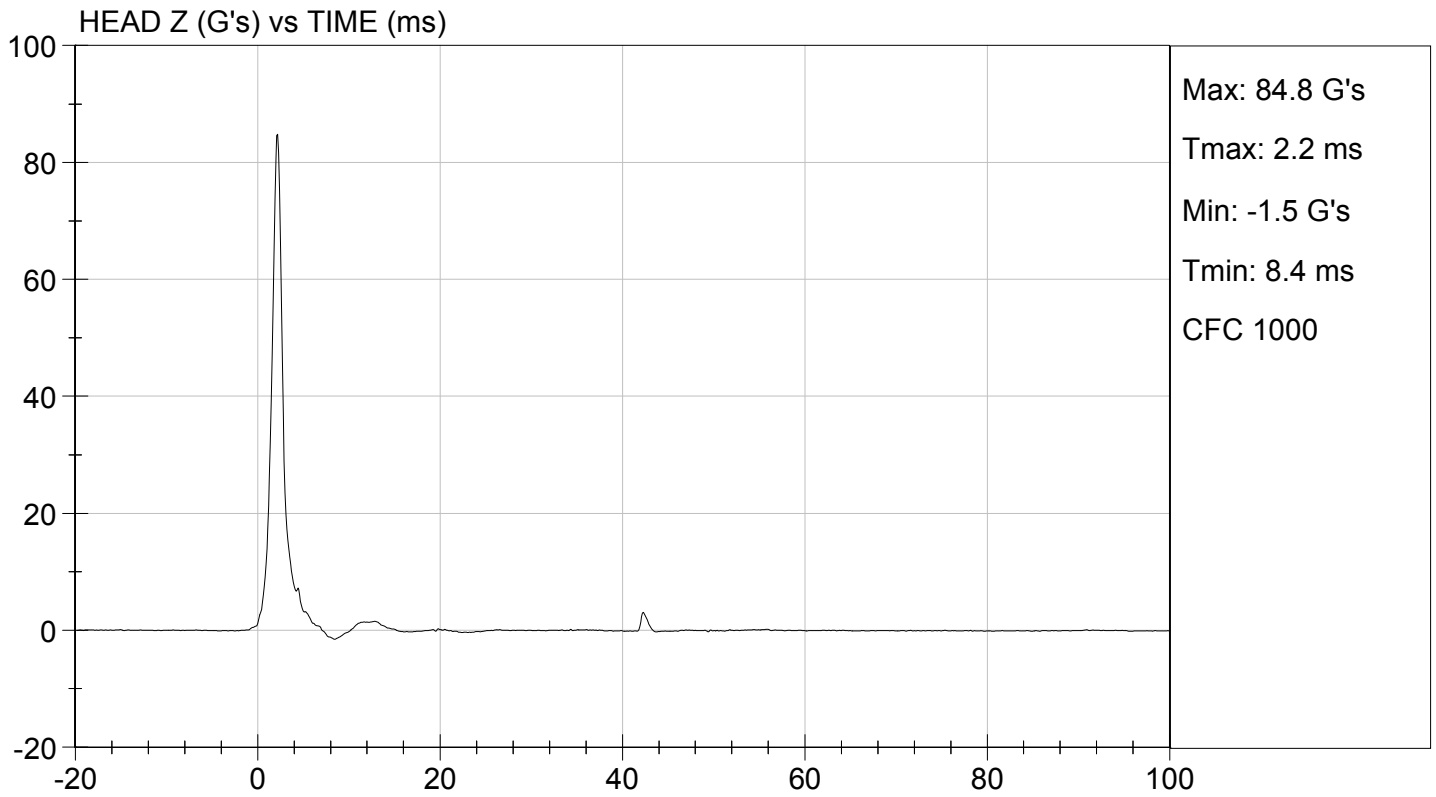
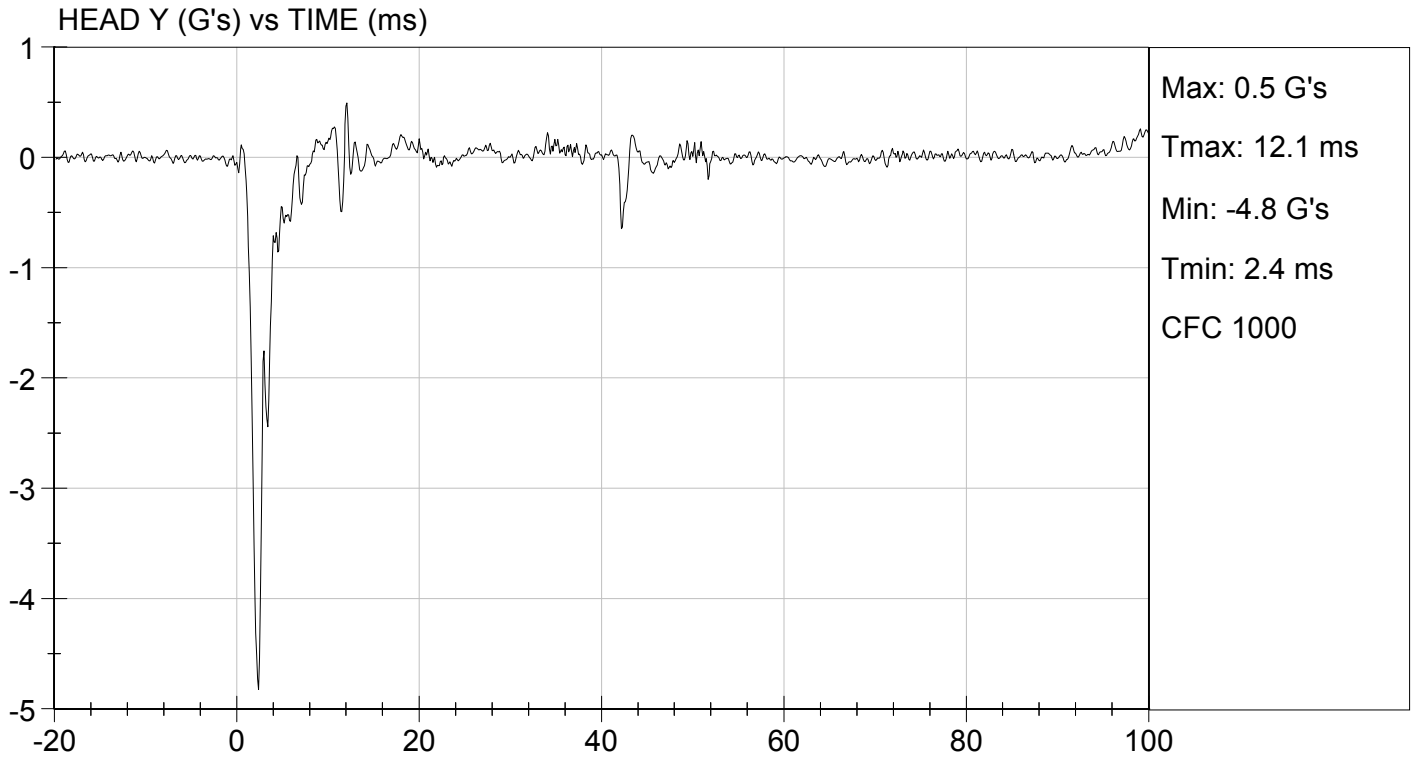
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	54	Pass
Peak Resultant Acceleration	G's	250 to 300	283	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-4.8	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

07/13/2015
Test Date

Jessica Hall
Approved By





MGA RESEARCH CORPORATION

NECK FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 634

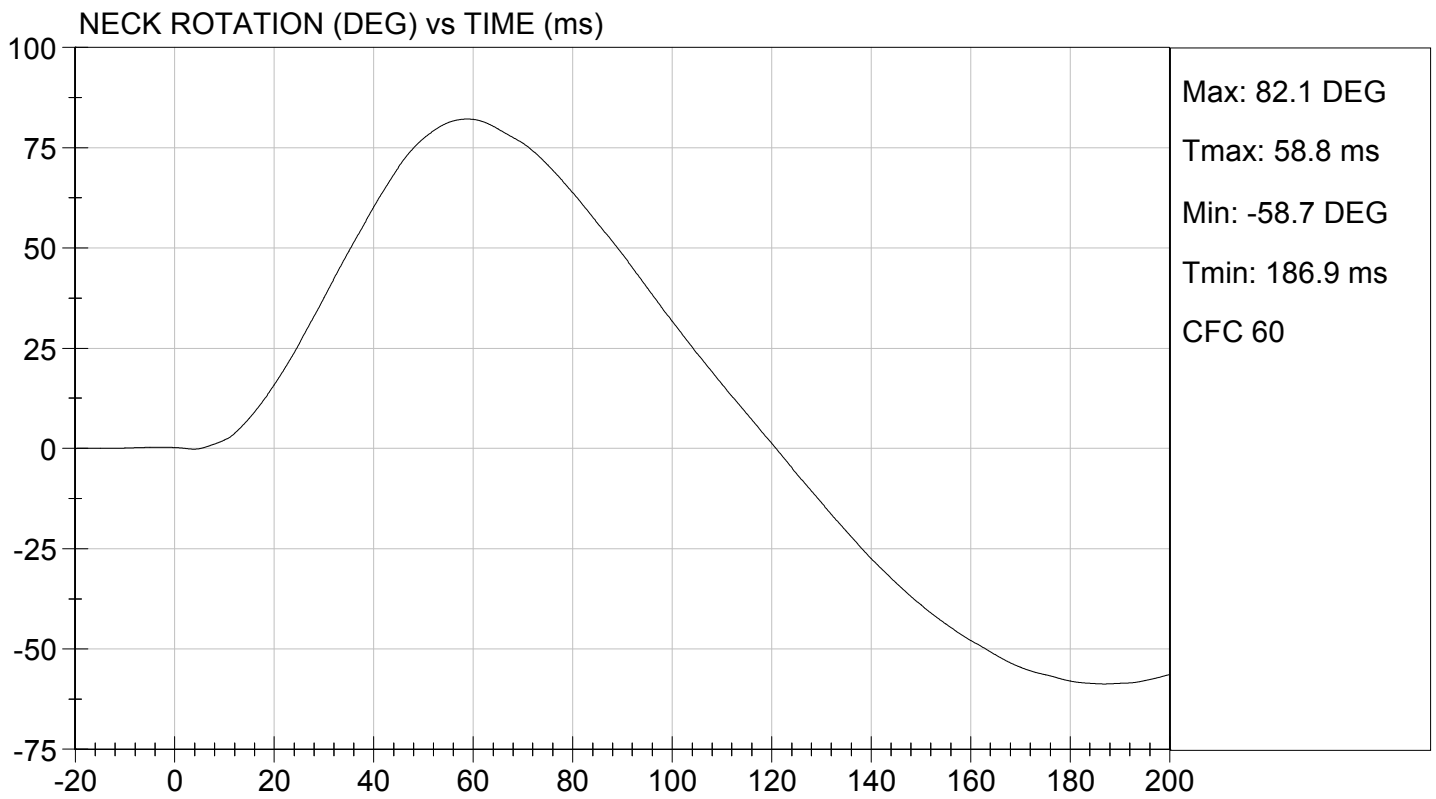
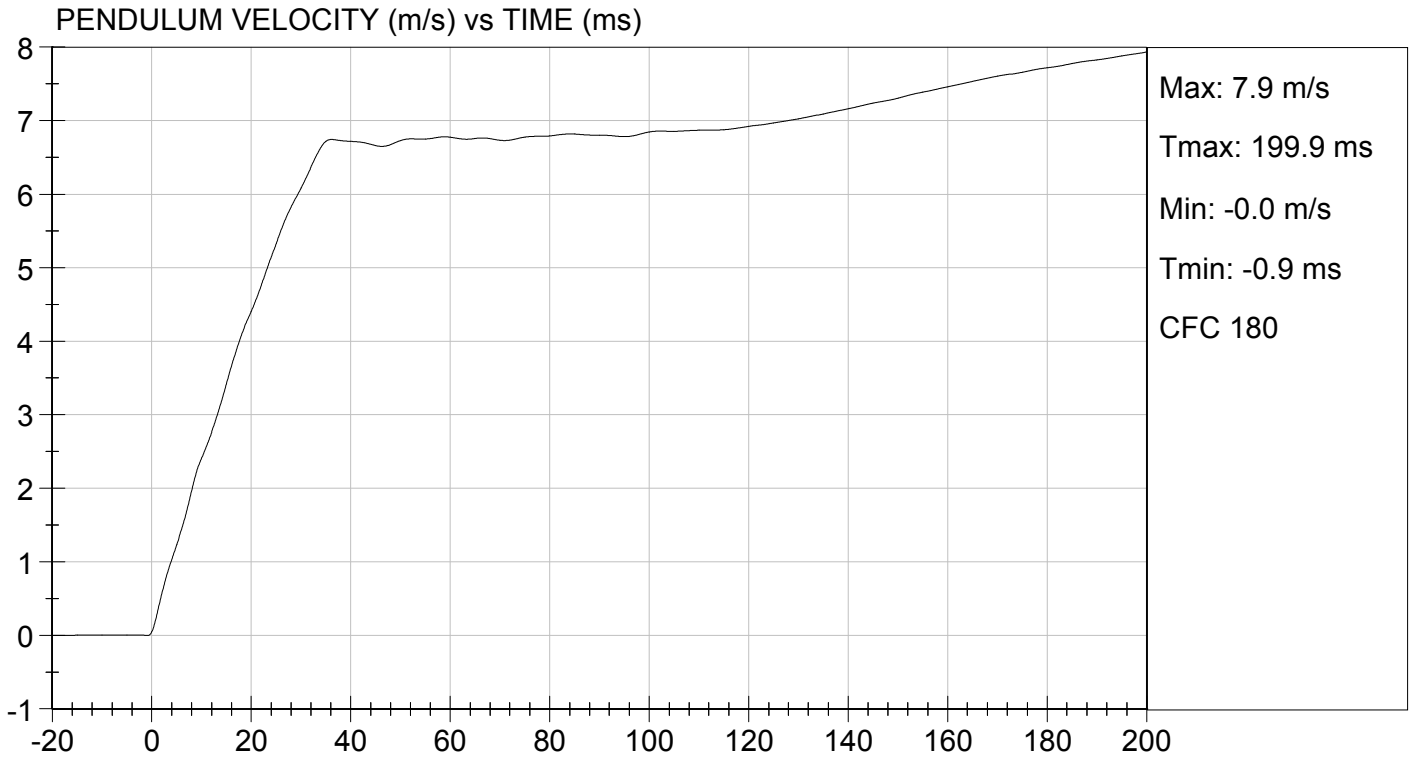
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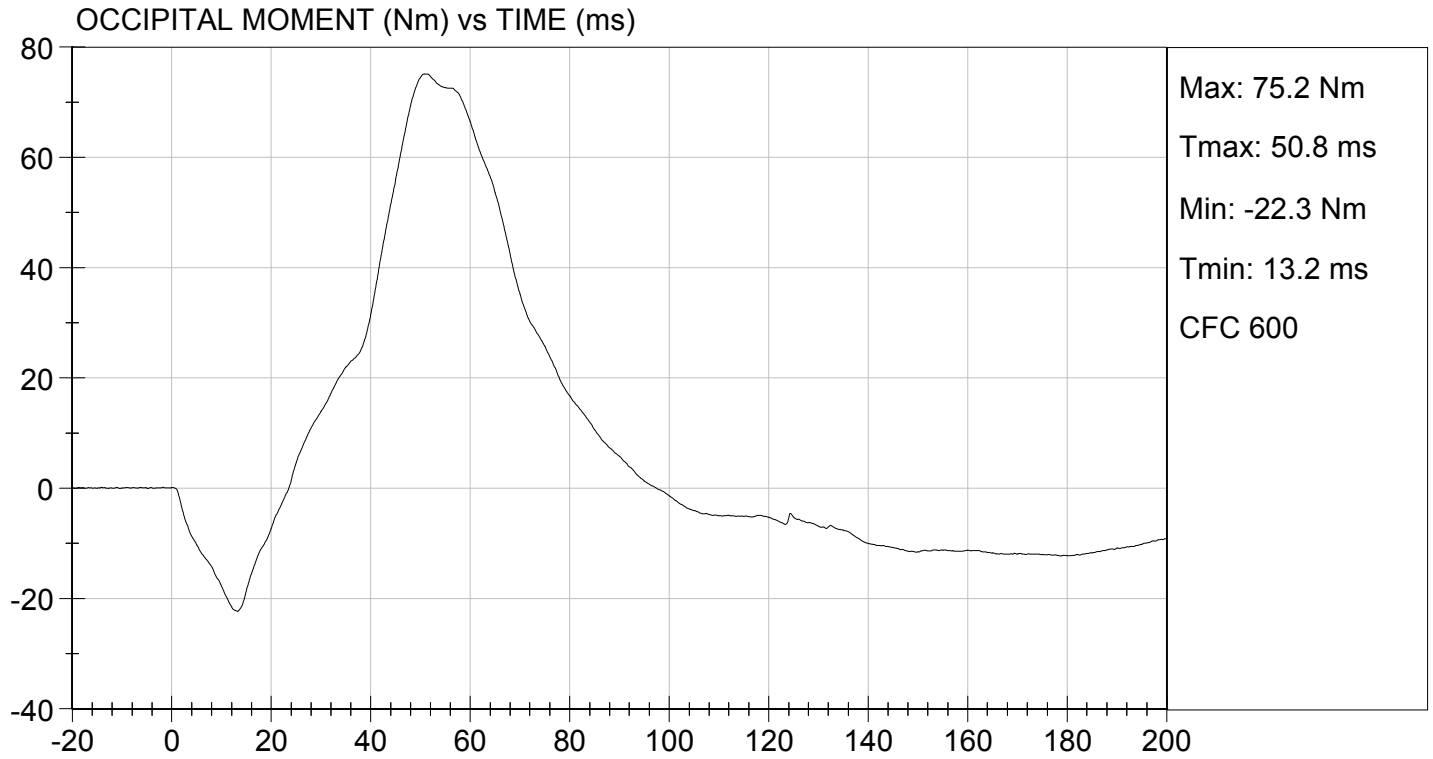
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity		%	10 to 70	47	Pass
Pendulum Speed		m/s	6.89 to 7.13	6.96	Pass
Pendulum Velocity	10 ms	m/s	2.1 to 2.5	2.4	Pass
	20 ms	m/s	4.0 to 5.0	4.4	Pass
	30 ms	m/s	5.8 to 7.0	6.1	Pass
D Plane Rotation	Max	deg	77 to 91	82	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	69 to 83	75	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 to 100	84	Pass
Overall Results					Pass

David Schoedel
 Laboratory Technician

07/13/2015
 Test Date

Jessica Hall
 Approved By





MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

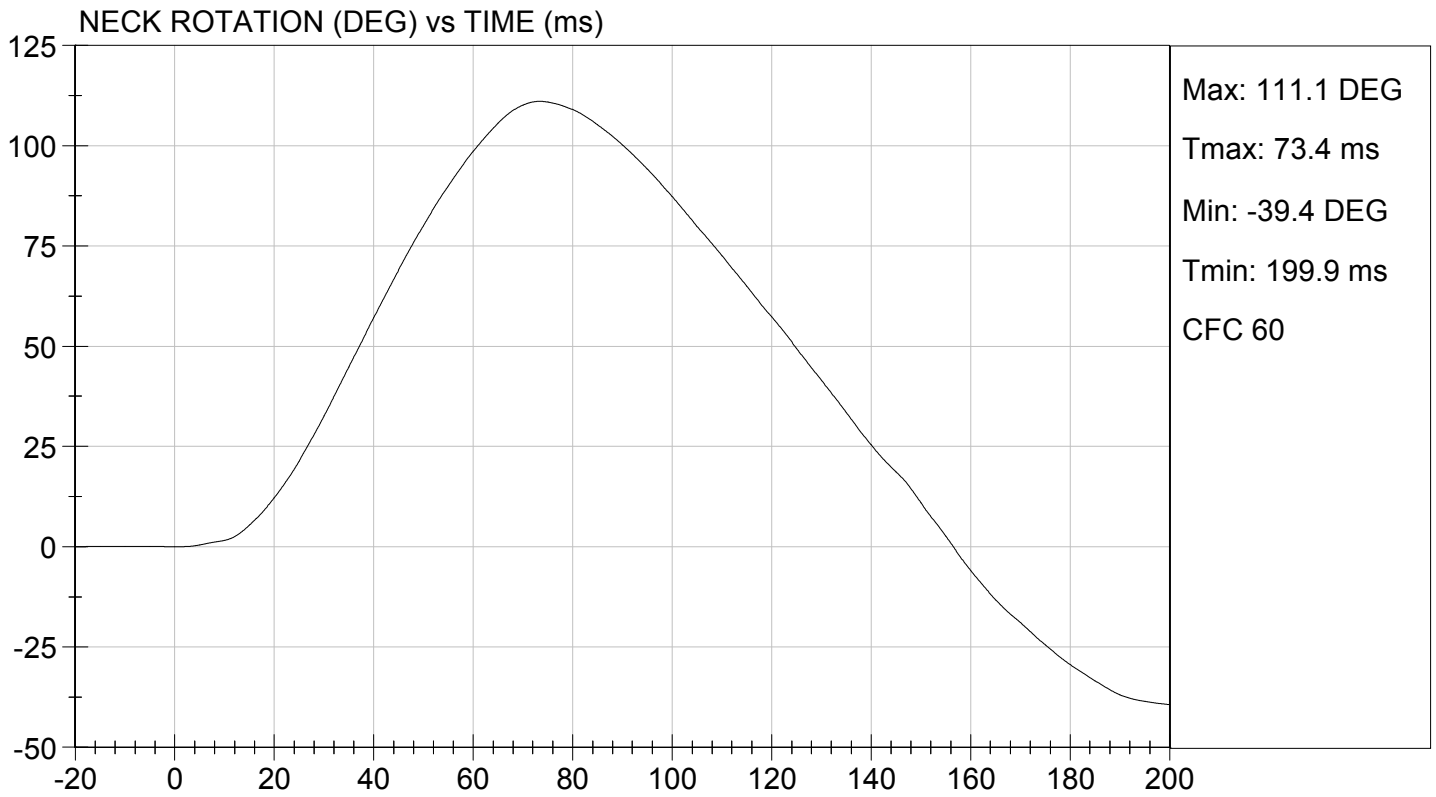
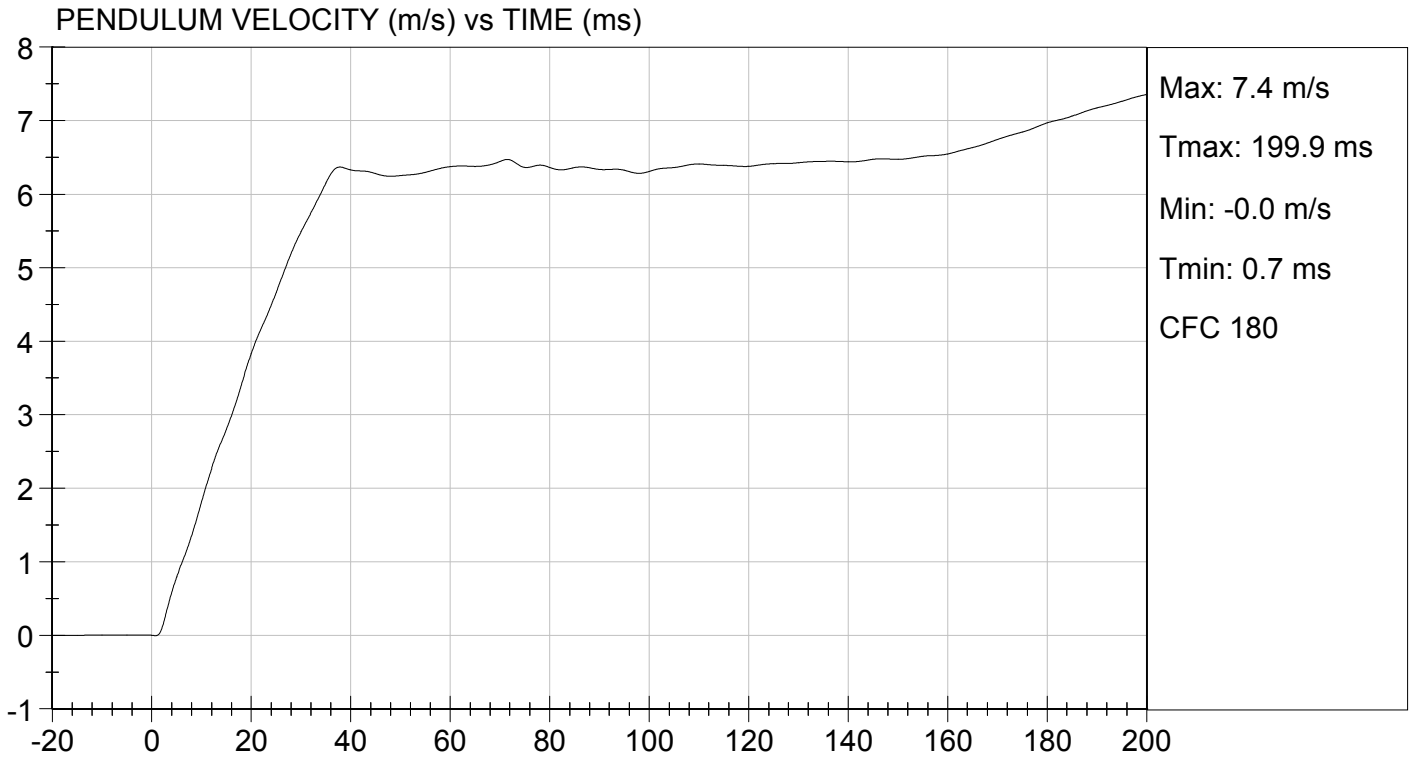
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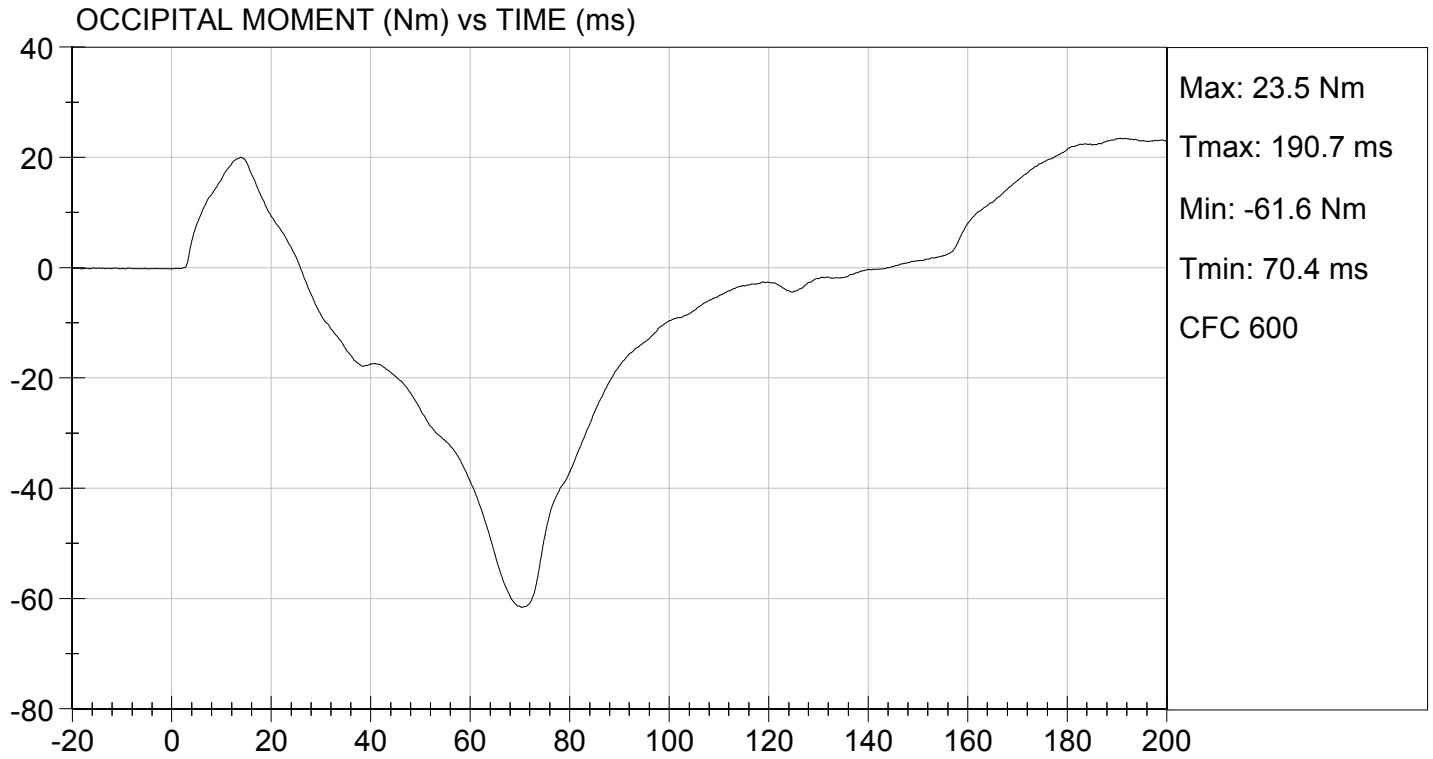
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity		%	10 to 70	47	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.05	Pass
Pendulum Velocity	10 ms	m/s	1.5 to 1.9	1.8	Pass
	20 ms	m/s	3.1 to 3.9	3.8	Pass
	30 ms	m/s	4.6 to 5.6	5.5	Pass
D Plane Rotation	Max	deg	99 to 114	111	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	-65 to -53	-62	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	98	Pass
Overall Results					Pass

David Schoedel
 Laboratory Technician

07/13/2015
 Test Date

Jessica Hall
 Approved By





MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

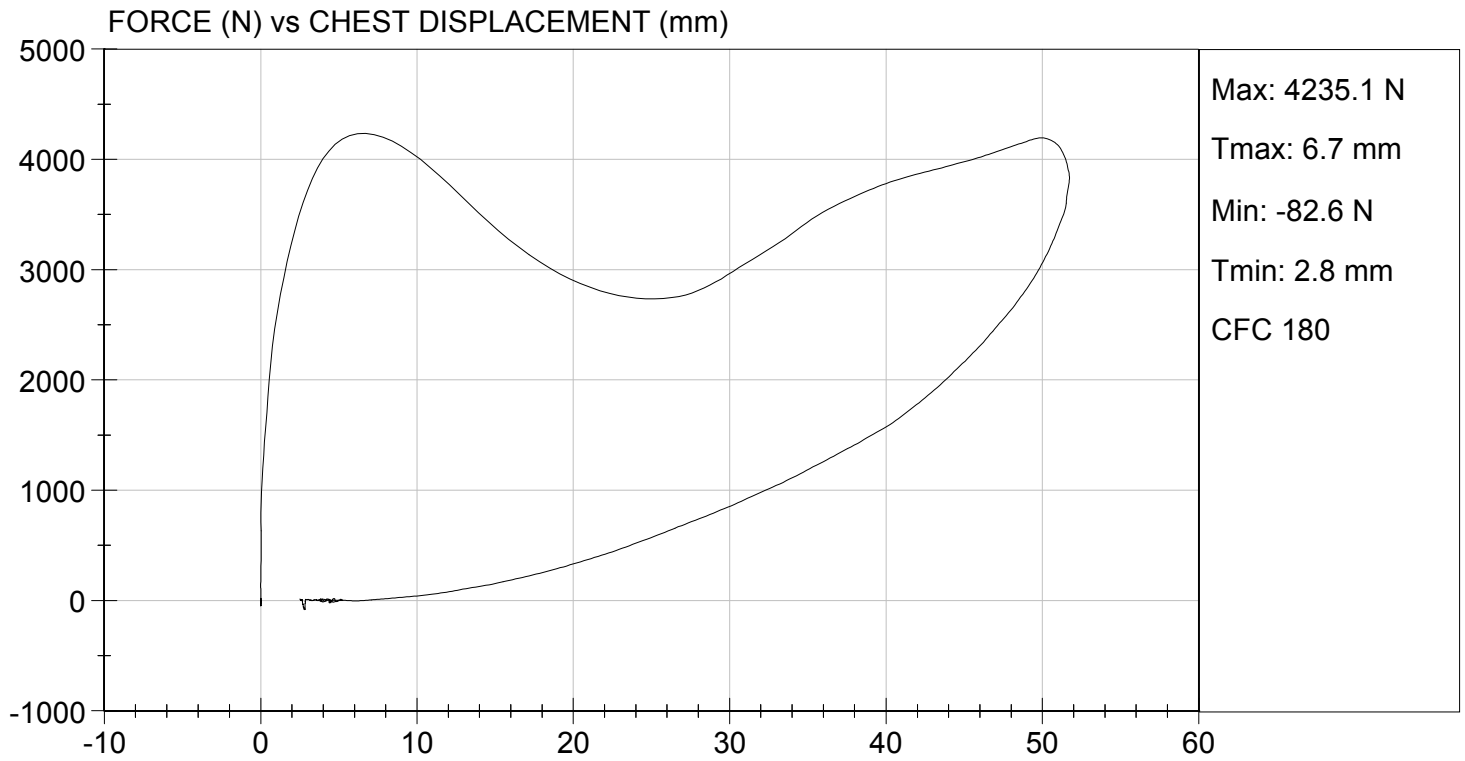
Test I.D: D152054

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Relative Humidity	%	10 to 70	54	Pass
Probe Speed	m/s	6.59 to 6.83	6.68	Pass
Peak Deflection	mm	50 to 58	52	Pass
Peak Resistive Force w/in Deflection Corridor	N	3900 to 4400	4195	Pass
Internal Hysteresis	%	69 to 85	74	Pass
Peak Force 18 mm - 50 mm	N	<= 4600	4195	Pass
Overall Test Results				Pass

David Schoedel
 Laboratory Technician

07/13/2015
 Test Date

Jessica Hall
 Approved By



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

ATD Serial No: 634

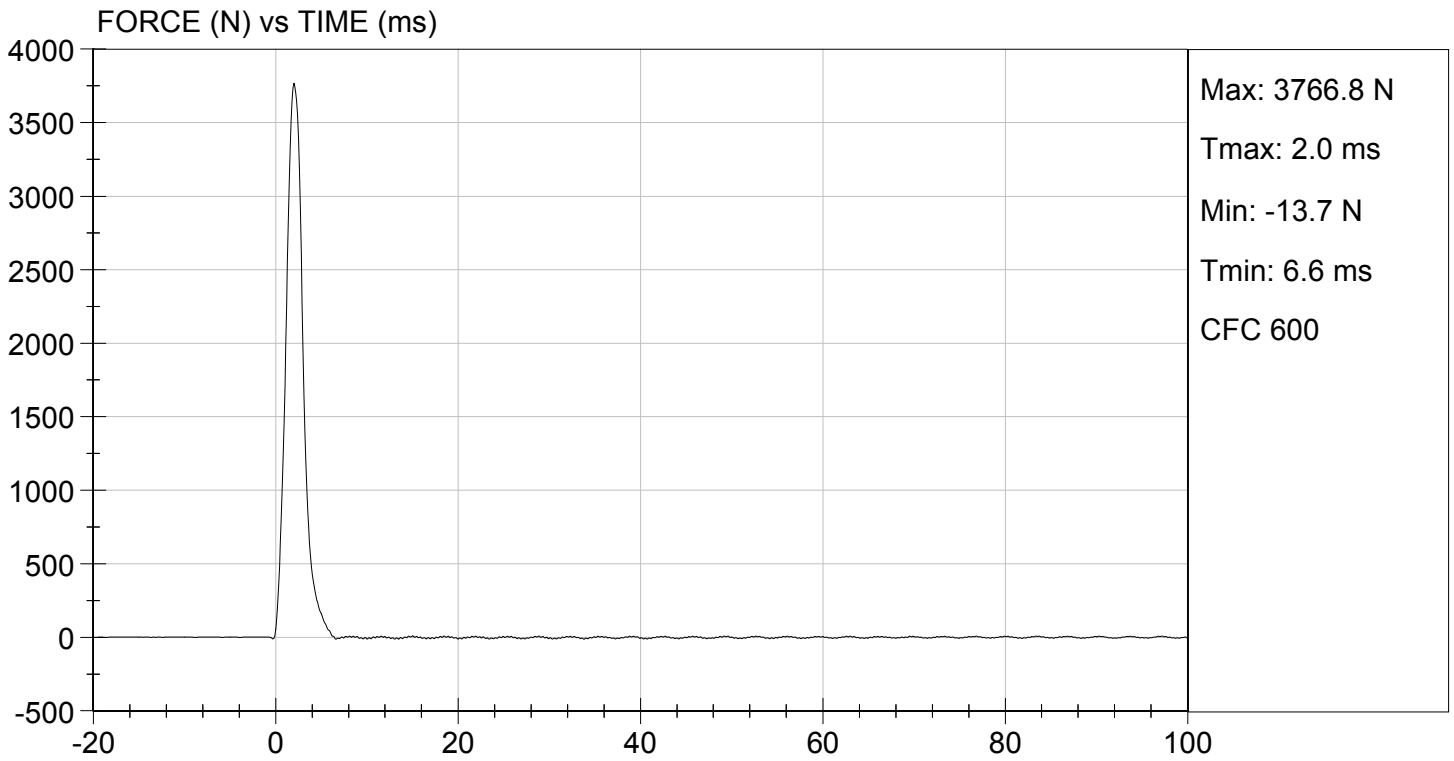
Test I.D: D152055

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	47	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	N	3450 to 4060	3767	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

07/13/2015
Test Date

Jessica Hall
Approved By



MGA RESEARCH CORPORATION

LEFT KNEE IMPACT TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D152056

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	47	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	N	3450 to 4060	3770	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

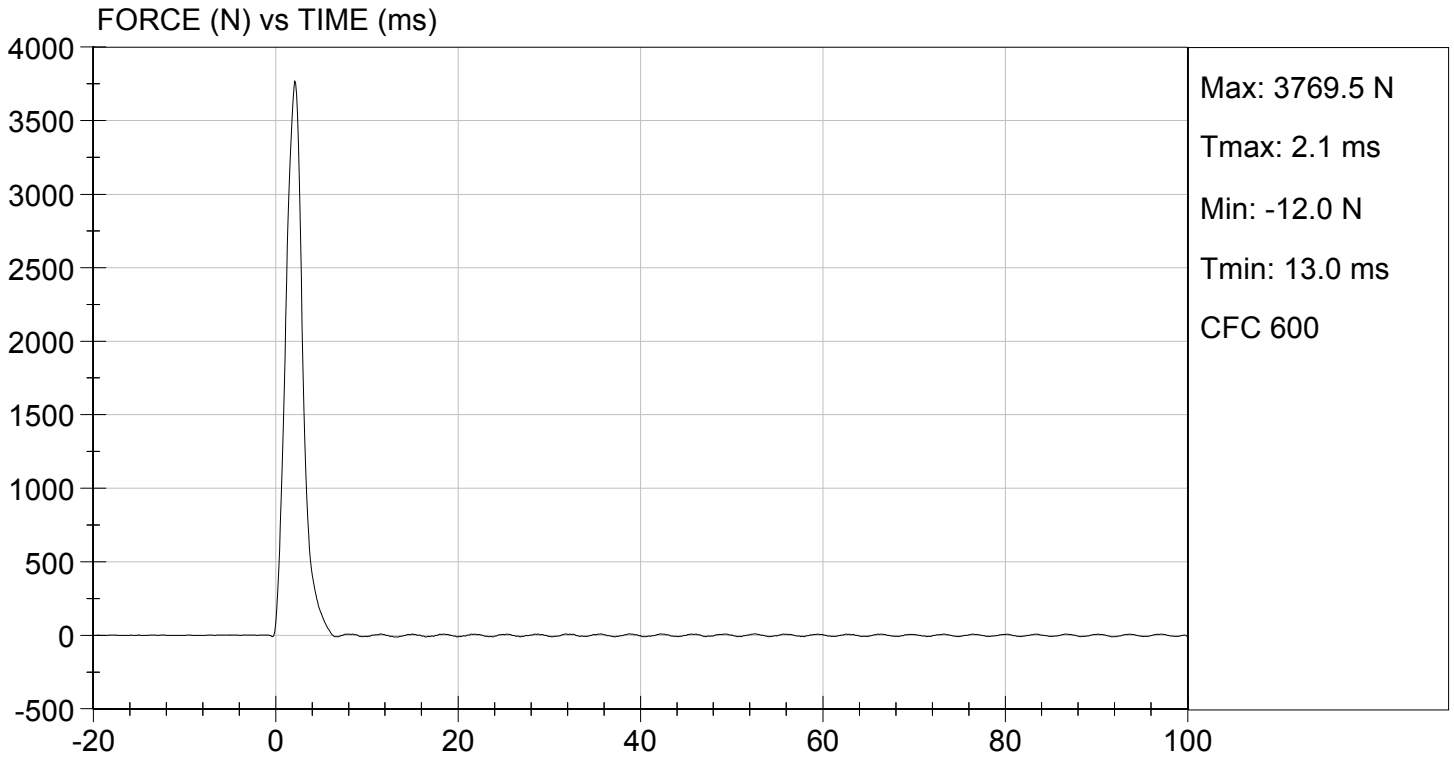
07/13/2015
Test Date

Jessica Hall
Approved By



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

TEST DATE: 07/13/2015
TEST #: D152056



MGA RESEARCH CORPORATION

TORSO FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D.: D152057

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Initial Angle	deg	0 to 20	16	Pass
Return Angle	deg	+/- 8	3	Pass
Force at 45 deg	N	320 to 390	382	Pass
Upper Torso Deflection Rate	deg/s	0.5 to 1.5	1.0	Pass
Overall Result				Pass

David Schoedel
Laboratory Technician

07/13/2015

Test Date

Jessica Hall
Approved By

**MGA RESEARCH CORPORATION
HEAD DROP TEST
HYBRID III 5TH PERCENTILE**

ATD Serial No: 634

Test ID: D152421

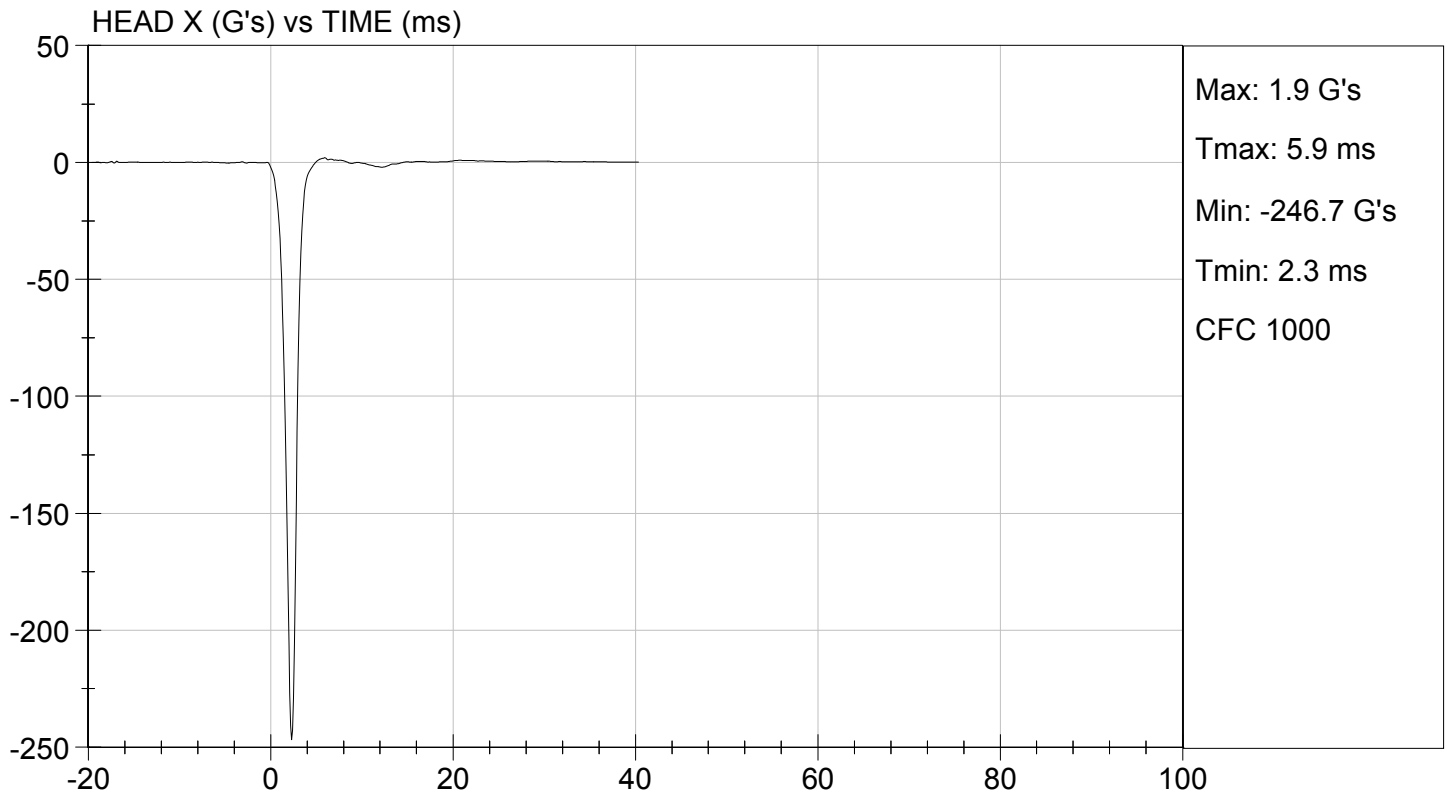
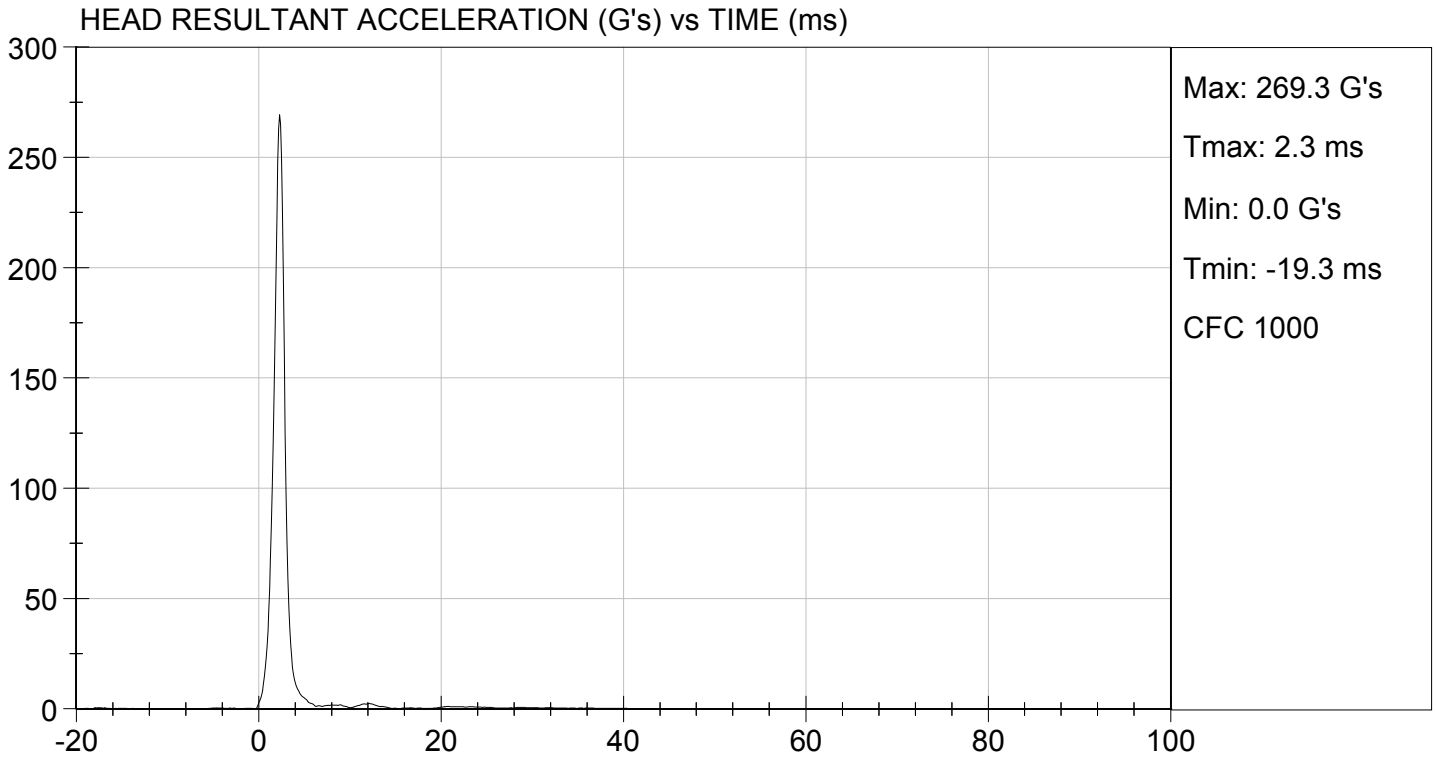
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.0	Pass
Laboratory Relative Humidity	%	10 to 70	48	Pass
Peak Resultant Acceleration	G's	250 to 300	269	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-1.2	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

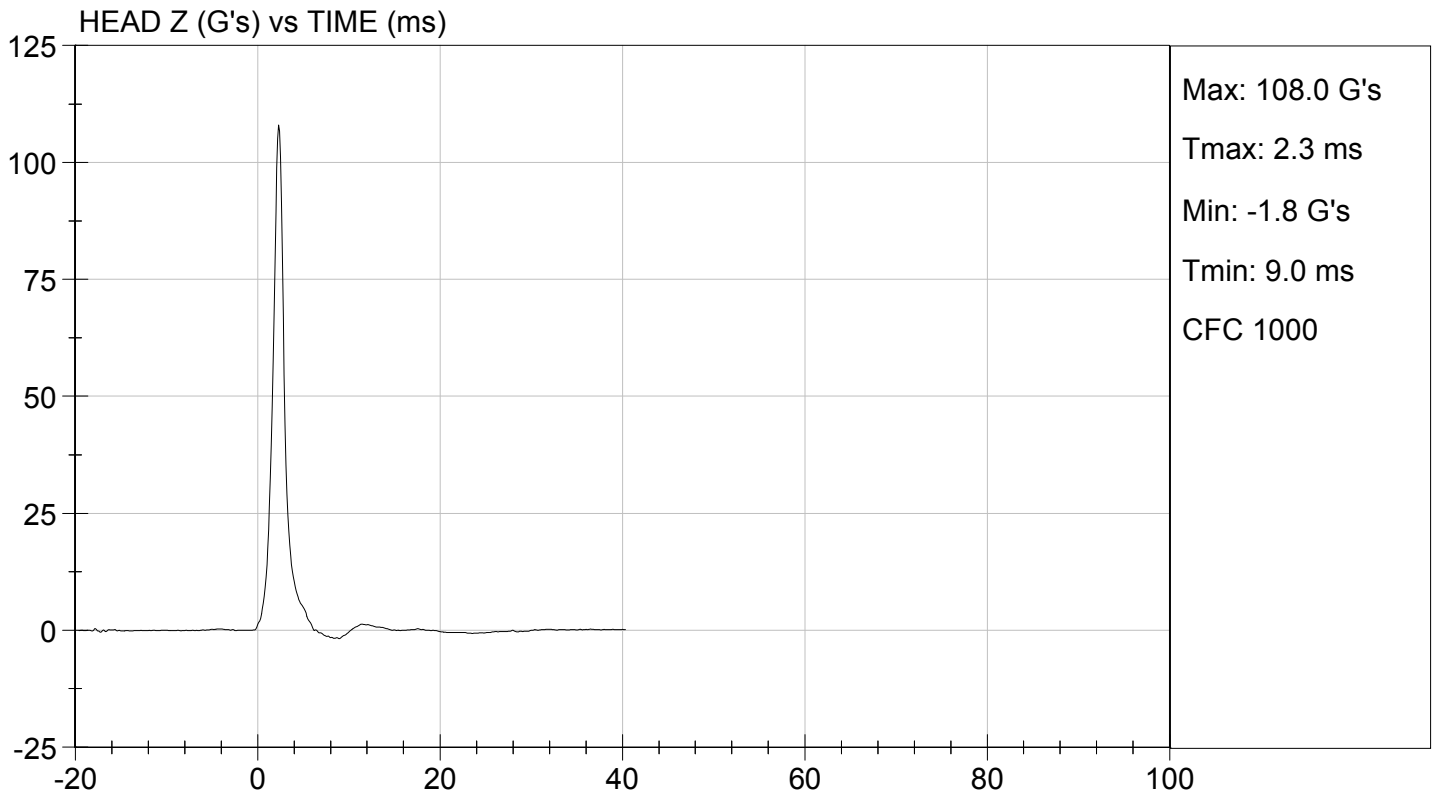
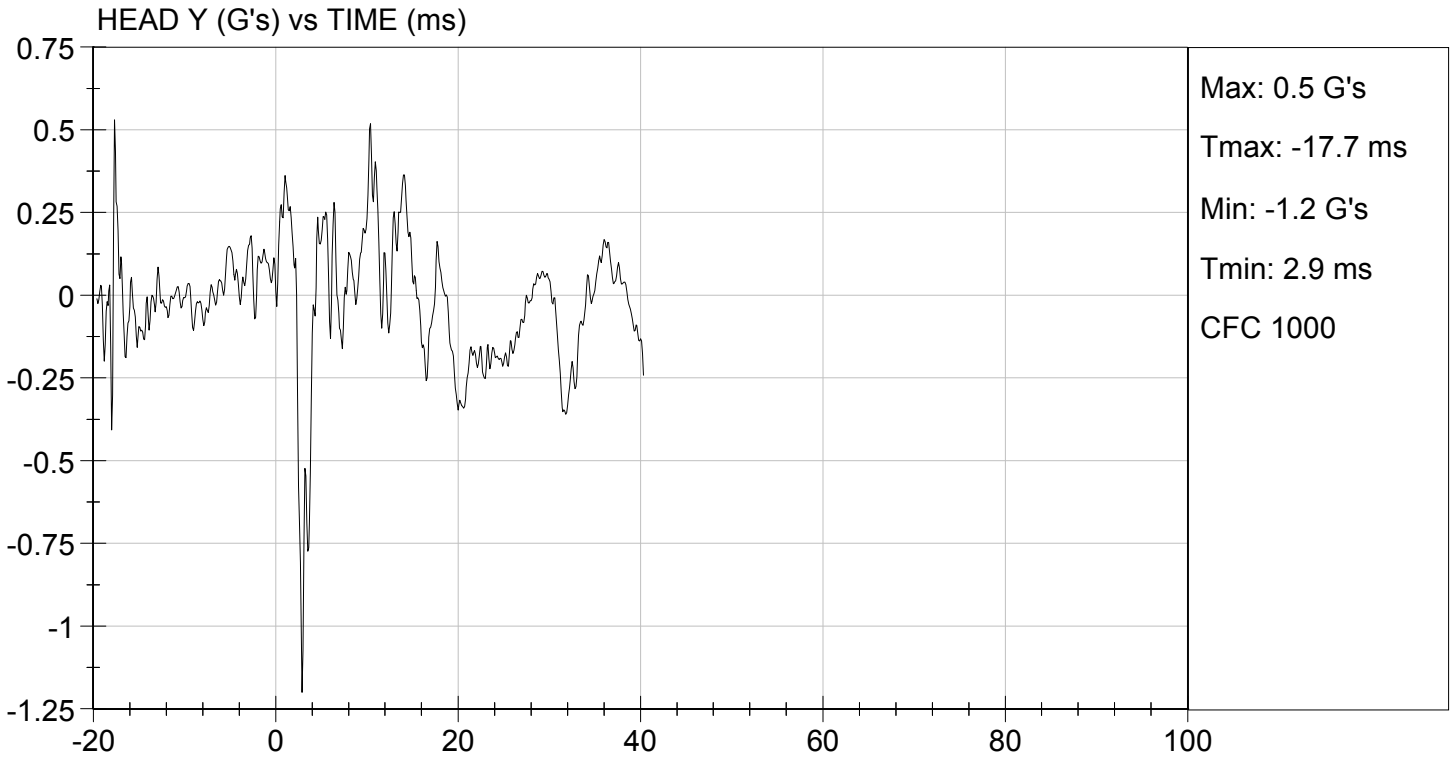
Jack Coleman
Laboratory Technician

08/10/2015

Test Date

Jessica Hall
Approved By





MGA RESEARCH CORPORATION

NECK FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 634

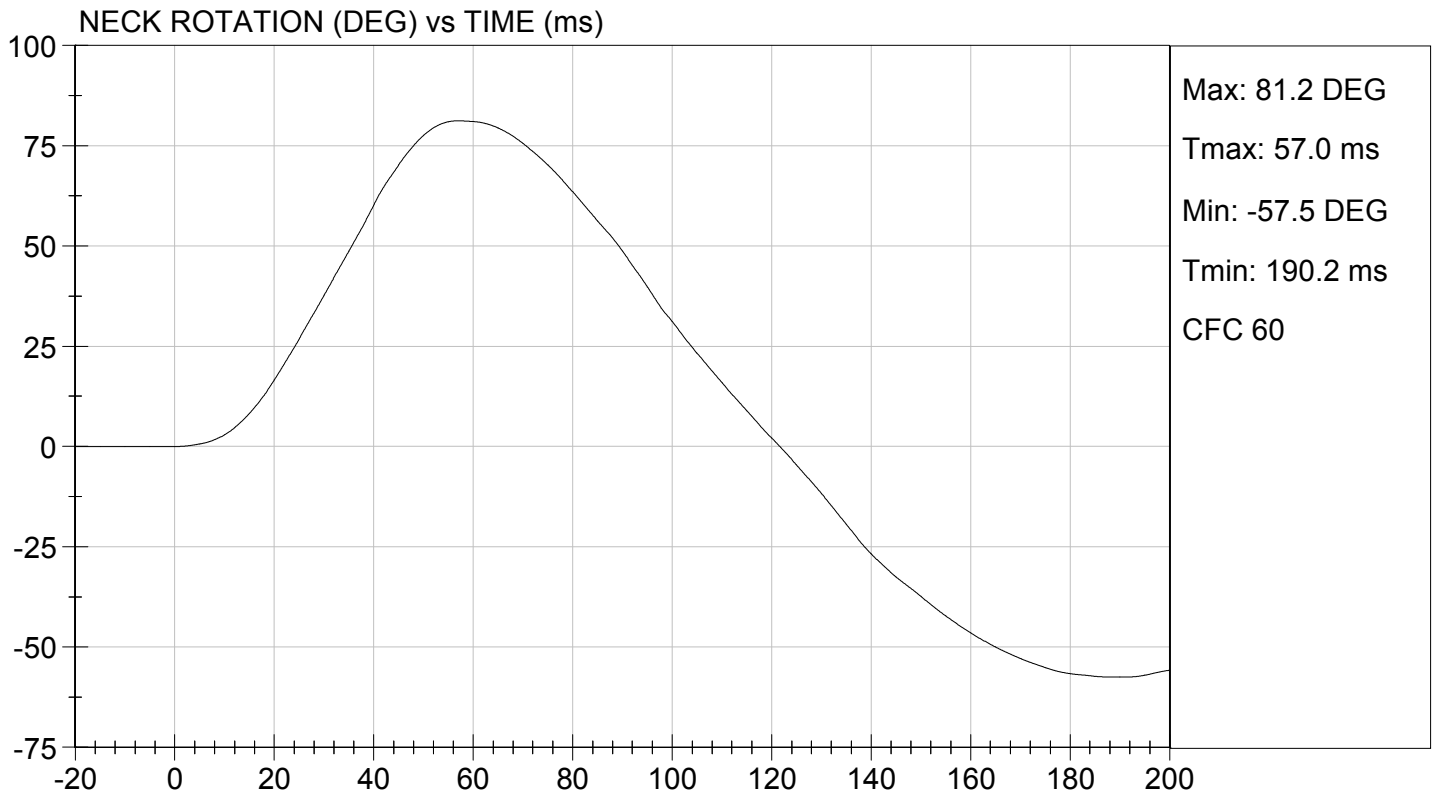
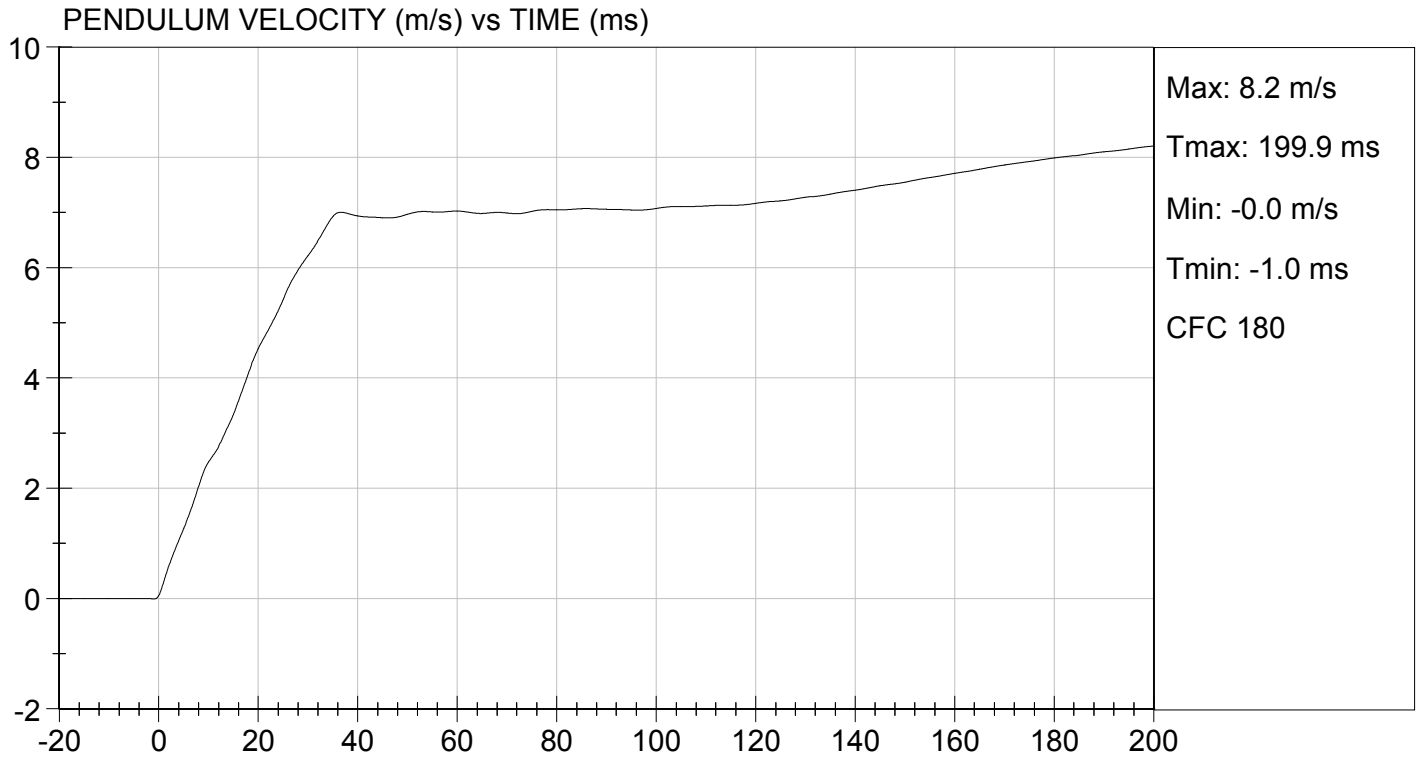
Test I.D.: D152422

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.5	Pass
Laboratory Relative Humidity		%	10 to 70	48	Pass
Pendulum Speed		m/s	6.89 to 7.13	7.06	Pass
Pendulum Velocity	10 ms	m/s	2.1 to 2.5	2.5	Pass
	20 ms	m/s	4.0 to 5.0	4.5	Pass
	30 ms	m/s	5.8 to 7.0	6.2	Pass
D Plane Rotation	Max	deg	77 to 91	81	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	69 to 83	75	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 to 100	85	Pass
Overall Results					Pass

David Schoedel
Laboratory Technician

08/10/2015
Test Date

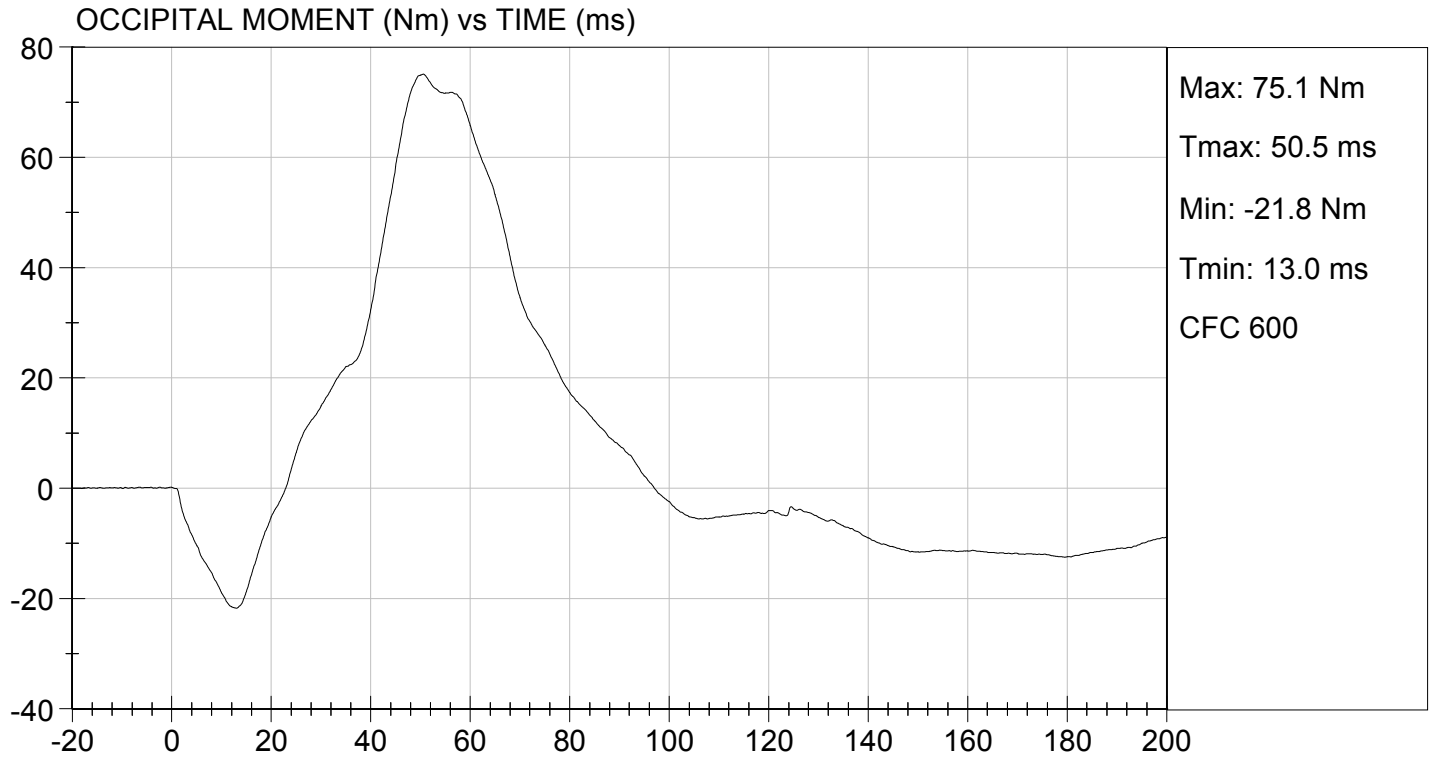
Jessica Hall
Approved By





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

TEST DATE: 08/10/2015
TEST #: D152422



MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

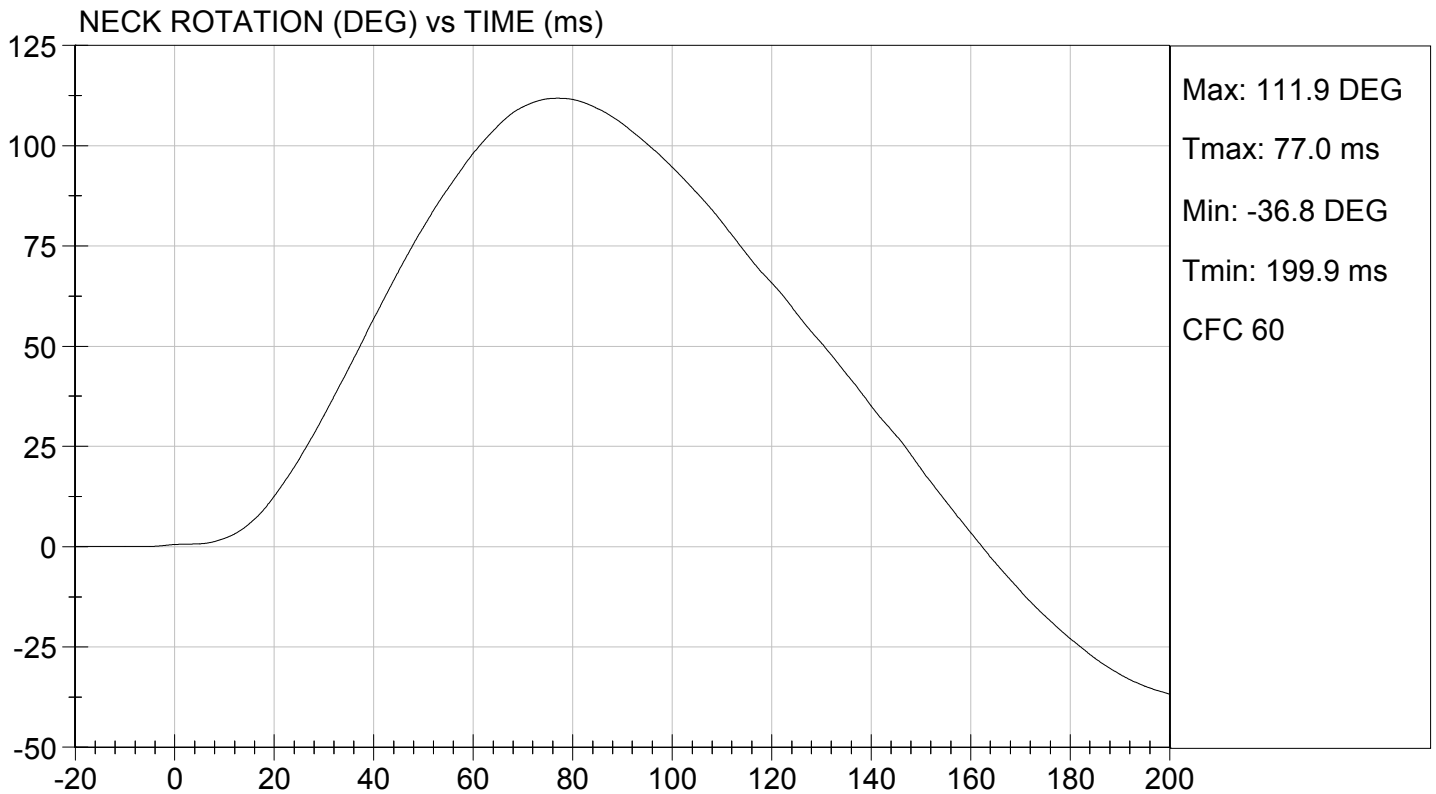
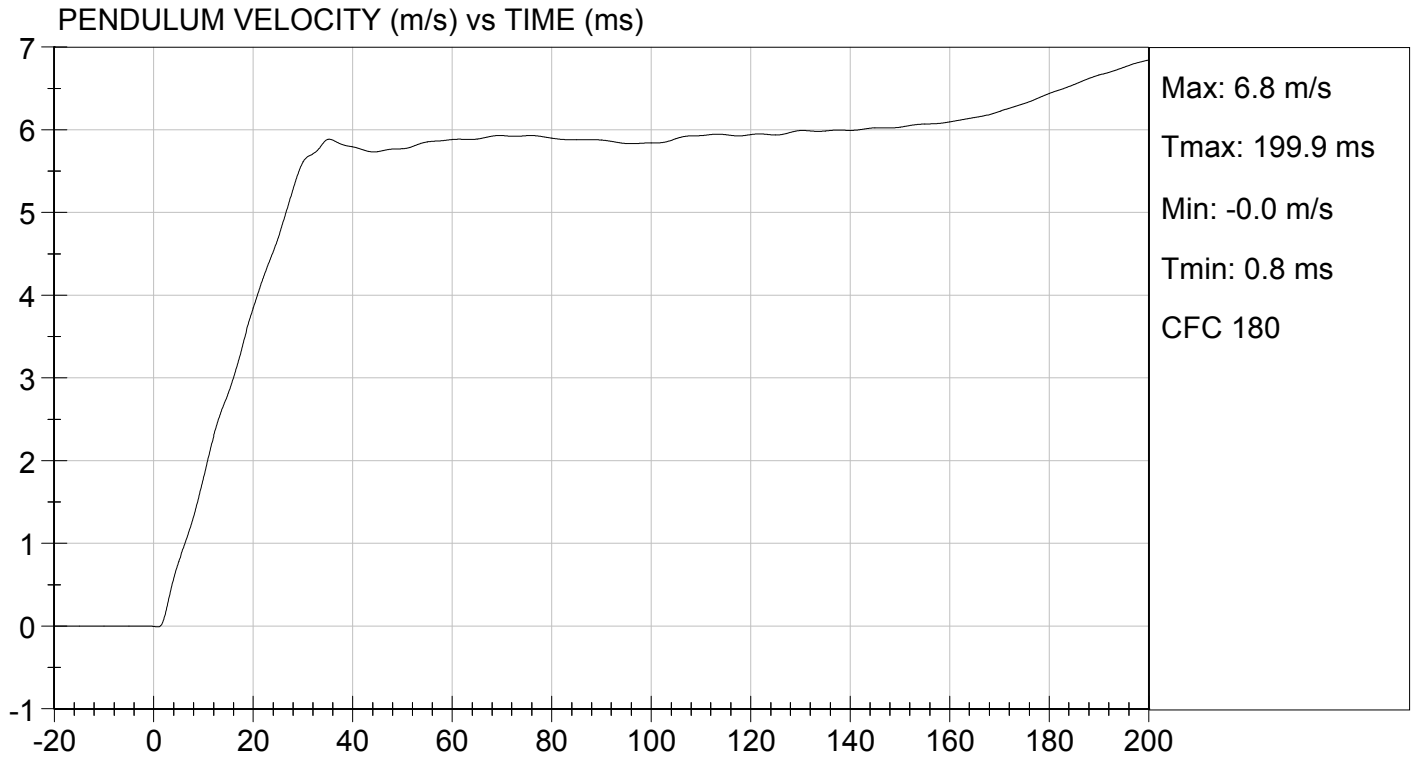
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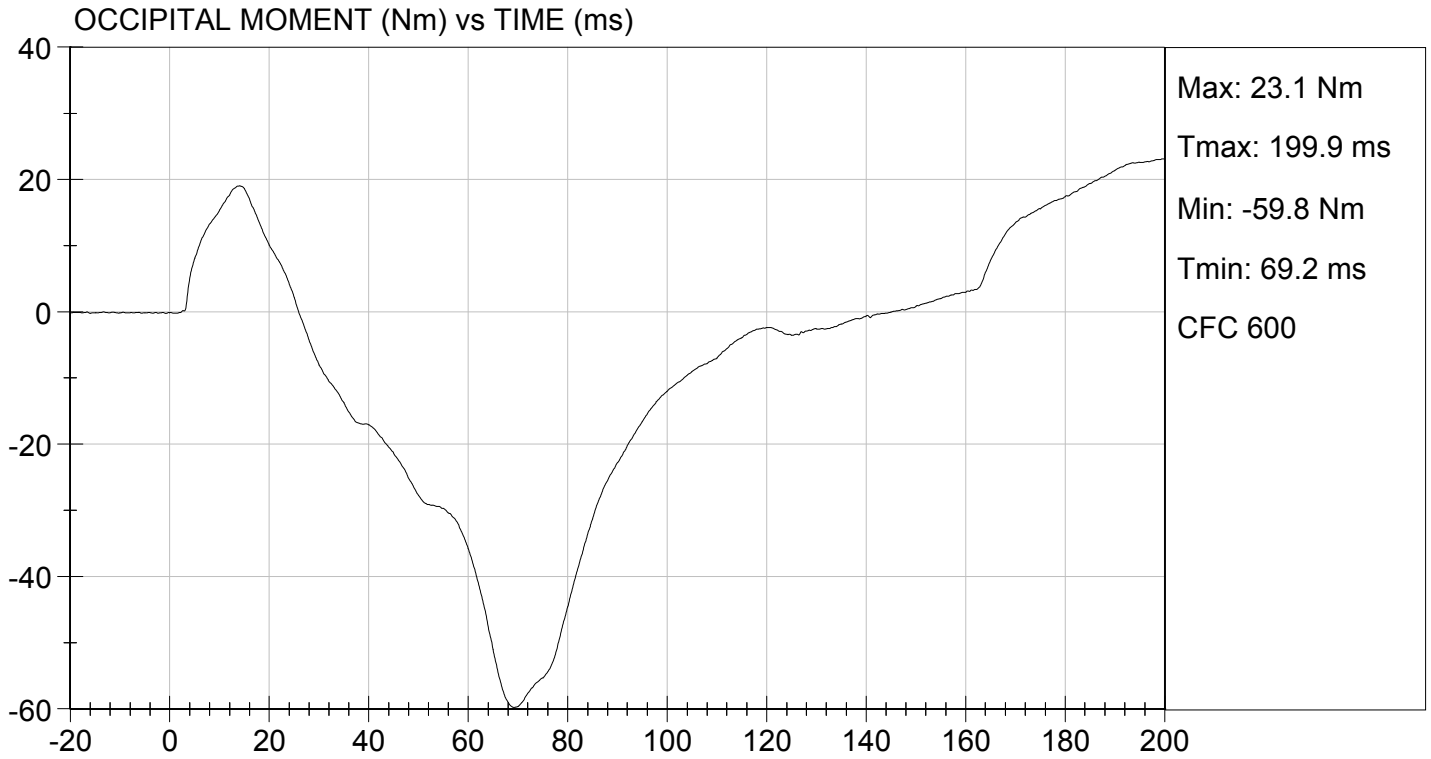
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.5	Pass
Laboratory Relative Humidity		%	10 to 70	48	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.12	Pass
Pendulum Velocity	10 ms	m/s	1.5 to 1.9	1.8	Pass
	20 ms	m/s	3.1 to 3.9	3.8	Pass
	30 ms	m/s	4.6 to 5.6	5.6	Pass
D Plane Rotation	Max	deg	99 to 114	112	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	-65 to -53	-60	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	102	Pass
Overall Results					Pass

David Schoedel
 Laboratory Technician

08/10/2015
 Test Date

Jessica Hall
 Approved By





MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 5TH PERCENTILE

ATD Serial No: 634


Test I.D: D152424

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Relative Humidity	%	10 to 70	48	Pass
Probe Speed	m/s	6.59 to 6.83	6.68	Pass
Peak Deflection	mm	50 to 58	51	Pass
Peak Resistive Force w/in Deflection Corridor	N	3900 to 4400	4282	Pass
Internal Hysteresis	%	69 to 85	72	Pass
Peak Force 18 mm - 50 mm	N	<= 4600	4372	Pass
Overall Test Results				Pass


 Laboratory Technician

08/11/2015

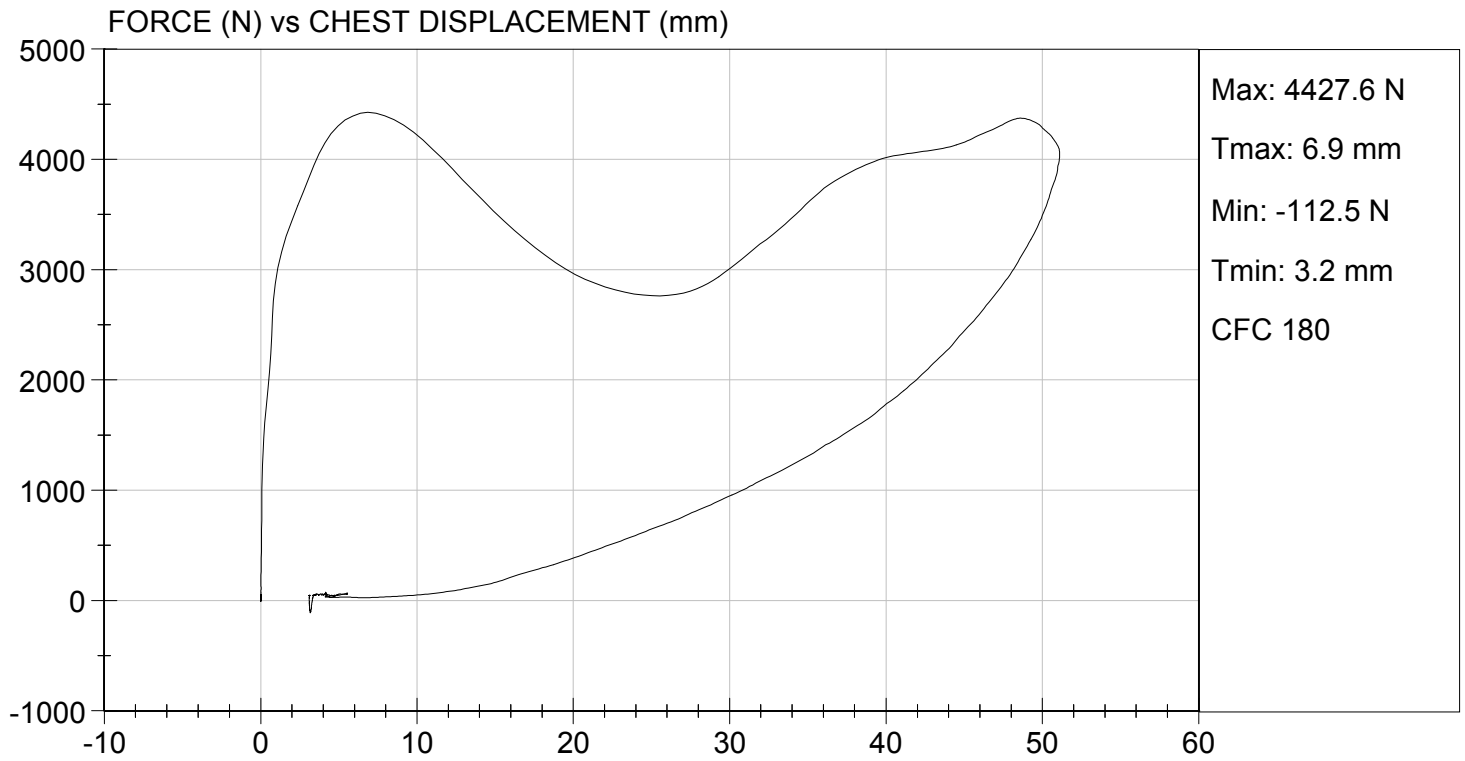
Test Date


 Approved By



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

TEST DATE: 08/11/2015
TEST #: D152424



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

ATD Serial No: 634

Test I.D: D152425

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	48	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	N	3450 to 4060	3644	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

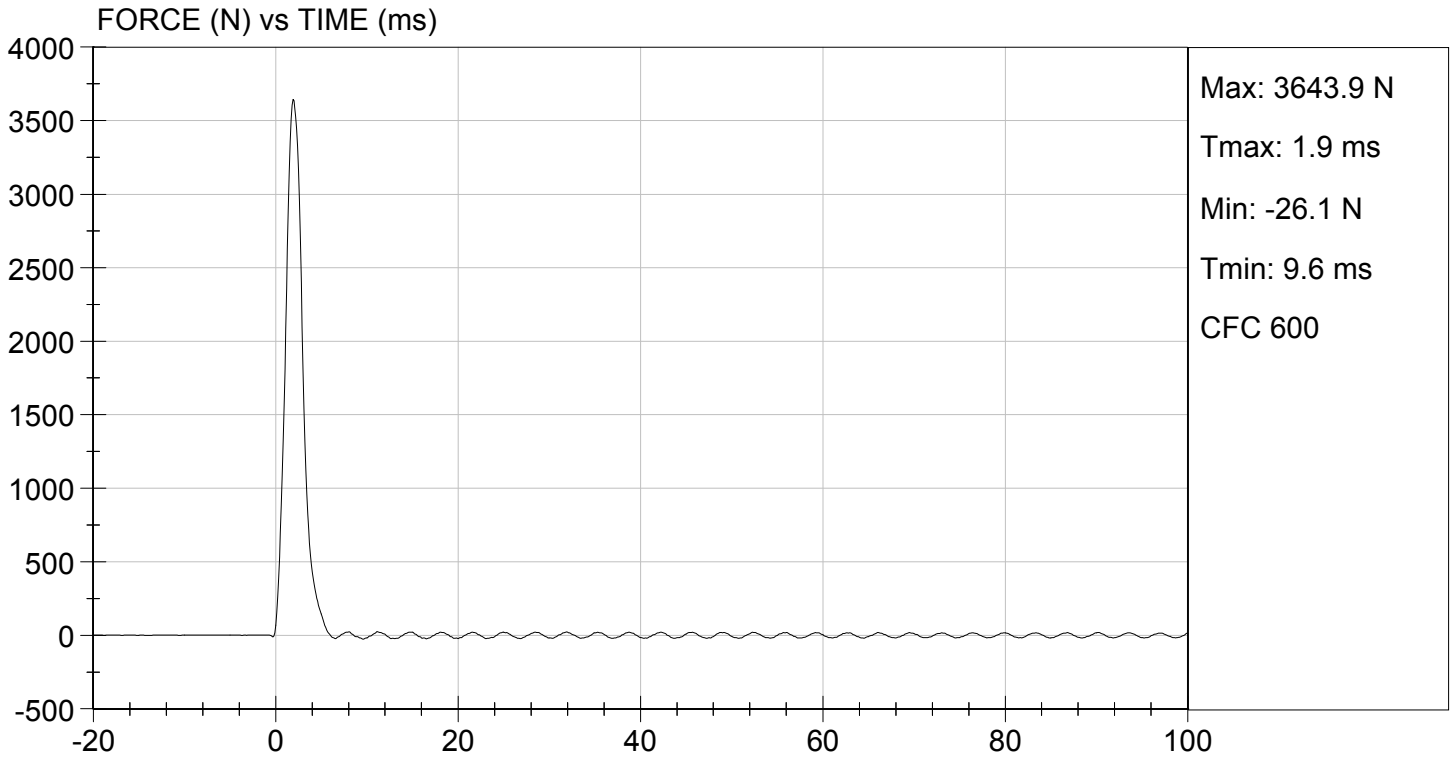
08/10/2015
Test Date

Jessica Hall
Approved By



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

TEST DATE: 08/10/2015
TEST #: D152425



MGA RESEARCH CORPORATION

LEFT KNEE IMPACT TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D152426

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	48	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	N	3450 to 4060	3870	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

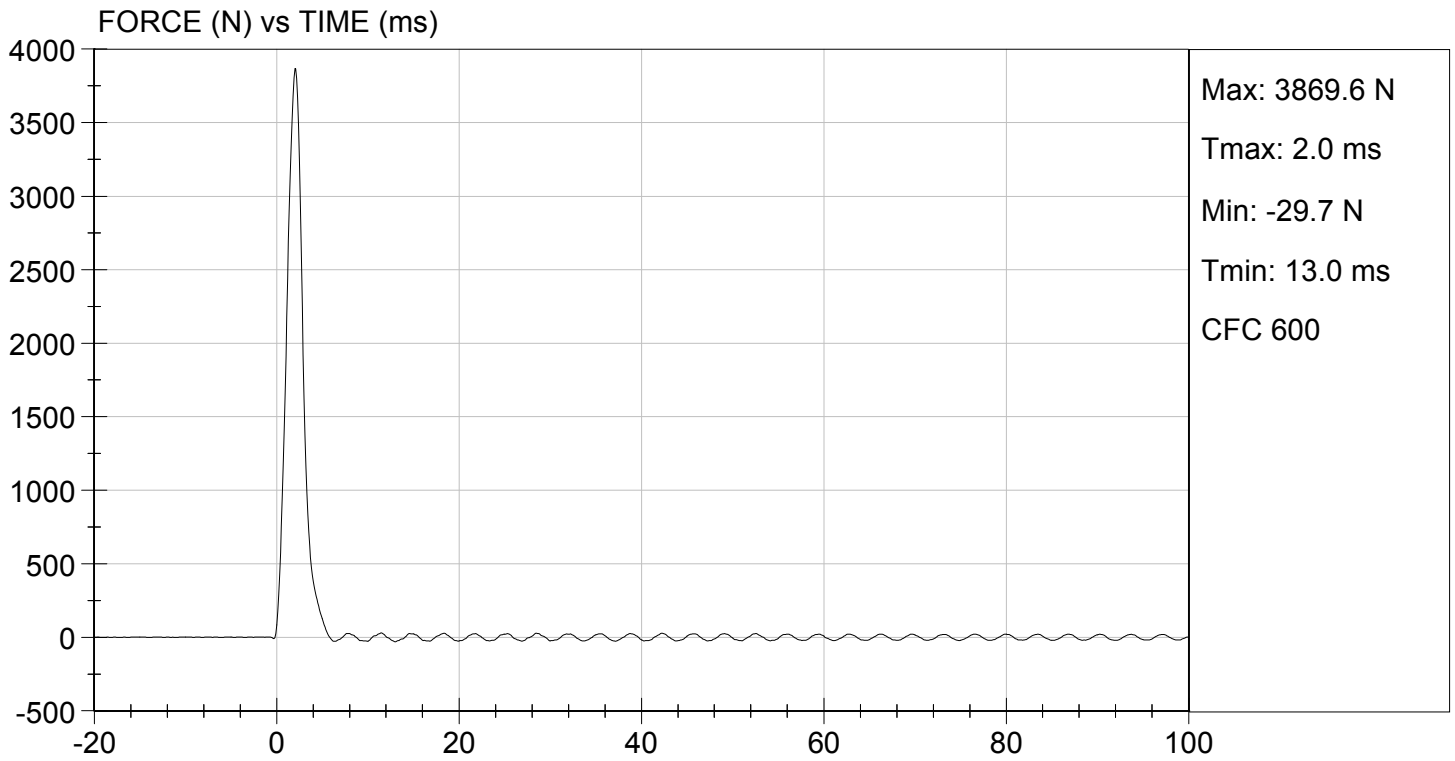
08/10/2015
Test Date

Jessica Hall
Approved By



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

TEST DATE: 08/10/2015
TEST #: D152426



MGA RESEARCH CORPORATION

TORSO FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 634

Test I.D: D152427

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	48	Pass
Initial Angle	deg	0 to 20	18	Pass
Return Angle	deg	+/- 8	4	Pass
Force at 45 deg	N	320 to 390	370	Pass
Upper Torso Deflection Rate	deg/s	0.5 to 1.5	1.0	Pass
Overall Result				Pass

Jack Coleman
Laboratory Technician

08/11/2015

Test Date

Jessica Hall
Approved By