

REPORT NUMBER: NCAP-MGA-2015-064

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

**NISSAN MOTOR CO., LTD.
2015 Nissan Murano S AWD 5-Dr SUV
NHTSA No.: O20155201**

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



Test Date: March 31, 2015

Final Report Date: May 14, 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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Approval Date: May 14, 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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16. Abstract A 56.3 km/h NCAP Frontal Impact Test was conducted on a 2015 Nissan Murano S AWD 5-Dr SUV in accordance with the specifications of the Office of Crashworthiness Standards Frontal NCAP Laboratory Test Procedure. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), and 301 performance. The test was conducted at MGA Research Corporation in Burlington, Wisconsin on March 31, 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 21.3°C. The target vehicle post-test maximum crush was 543 located at the right of vehicle's centerline. The test vehicle's performance was as follows:																																																							
<table border="1" style="width: 100%; border-collapse: collapse;"> <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>282</td> <td>700</td> <td>144</td> </tr> <tr> <td>Maximum Chest</td> <td>mm</td> <td>63</td> <td>19</td> <td>52</td> <td>14</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td>1</td> <td>0.37</td> <td>1</td> <td>0.82</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td>1301</td> <td>2620</td> <td>886</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td>271</td> <td>2520</td> <td>197</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10008</td> <td>1005</td> <td>6805</td> <td>1261</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10008</td> <td>1519</td> <td>6805</td> <td>142</td> </tr> </tbody> </table>				Measurement Description	Units	Driver ATD		Passenger ATD		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC ₁₅)	N/A	700	282	700	144	Maximum Chest	mm	63	19	52	14	Nij	N/A	1	0.37	1	0.82	Neck Tension	N	4170	1301	2620	886	Neck Compression	N	4000	271	2520	197	Left Femur Force	N	10008	1005	6805	1261	Right Femur Force	N	10008	1519	6805	142
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SECTION 1 PURPOSE AND SUMMARY OF TEST

PURPOSE

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

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

SUMMARY

A load cell barrier consisting of 176 load cells was impacted by a 2015 Nissan Murano S AWD 5-Dr SUV at a velocity of 56.5 km/h. The test was performed at MGA Research Corporation on March 31, 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.

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

The 631 channels of data were recorded on a data acquisition system. Appendix B contains the dummy response data traces.

There was 99 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 543 mm and both the driver and passenger side doors remained closed during the impact event and were operable after the impact.

The driver's visible contact points were as follows: The driver's head and chest contacted the airbag. The driver's head also contacted the headrest. The driver's knees contacted the knee airbag. The passenger's visible contact points were as follows: The passenger's head and chest contacted the airbag. The passenger's head also contacted the headrest. The passenger's knees contacted the 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)	282	0.37	1301	271	41	19	1005	1519
Passenger (5 th)	144	0.82	886	197	44	14	1261	142

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

TEST NOTES

Barrier K-16 MY has no valid data after 5 ms.
Barrier D-06 MY has no valid data.
Barrier C-04 FX has no valid data after 5 ms.
Barrier C-04 MY has no valid data after 5 ms.
Barrier C-04 MZ has no valid data after 5 ms.

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

SECTION 2
OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2015 Nissan Murano S AWD 5-Dr SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20155201
Test Date: 3/31/2015

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	O20155201	Traction Control System (TCS)	Yes
Model Year	2015	Power Steering	Yes
Make	Nissan	Power Window Auto-Reverse	Yes
Model	Murano S	Driver Frontal Airbag	Yes
Body Style	SUV	Driver Curtain Airbag	Yes
VIN	5N1AZ2MH5FN207142	Driver Head/Torso Airbag	No
Body Color	Gun Metallic	Driver Torso Airbag	No
Odometer (km/mi)	35 / 22	Driver Torso/Pelvis Airbag	Yes
Engine Displacement (L)	3.5	Driver Pelvis Airbag	No
Type/No. Cylinders	6	Driver Knee Airbag	Yes
Engine Placement	Lateral	Front Pass. Frontal Airbag	Yes
Transmission Type	Automatic	Front Pass. Curtain Airbag	Yes
Transmission Speeds	CVT	Front Pass. Head/Torso Airbag	No
Overdrive	Yes	Front Pass. Torso Airbag	No
Final Drive	AWD	Front Pass. Torso/Pelvis Airbag	Yes
Roof Rack	No	Front Pass. Pelvis Airbag	No
Sunroof/T-Top	No	Front Pass. Knee Airbag	No
Running Boards	No	Driver Pretensioner	Yes
Tilt Steering Wheel	Yes	Driver Load Limiter	Yes
Power Seats	No	Front Pass. Pretensioner	Yes
Anti-Lock Brakes (ABS)	Yes	Front Pass. Load Limiter	Yes
Automatic Door Locks (ADLs)	Yes	Other	N/A

Does owner's manual provide instructions to turn off automatic door locks?	No
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DATA FROM CERTIFICATION LABEL

Manufactured By	Nissan Motor Co., LTD.	GVWR (kg)	2395
Date of Manufacture	12/14	GAWR Front (kg)	1271
		GAWR Rear (kg)	1210

VEHICLE SEATING AND WEIGHT CAPACITY DATA

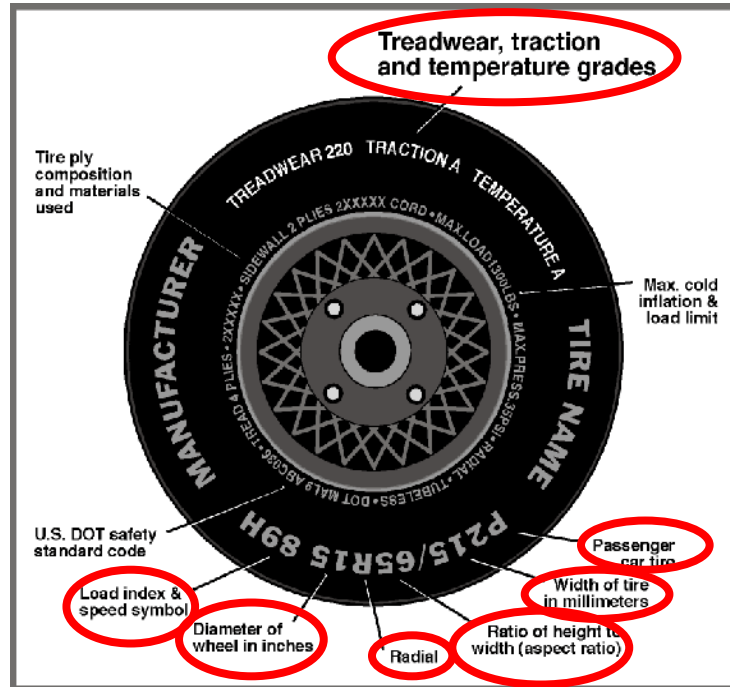
Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Split Bench		
Designated Seating Capacity (DSC)	2	3		5
Capacity Weight (VCW) (kg)				408
Cargo Weight (RCLW) (kg)				68

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

Test Vehicle: 2015 Nissan Murano S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: 020155201
 Test Date: 3/31/2015

VEHICLE TIRE INFORMATION



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	230	230
Recommended Tire Size	235/65R18	235/65R18
Tire Size on Vehicle	235/65R18	235/65R18
Tire Manufacturer	Michelin	Michelin
Tire Model	Latitude	Latitude
Treadwear	620	620
Traction	A	A
Temperature Grade	B	B
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 1 Polyamide, 2 Steel	2 Polyester, 1 Polyamide, 2 Steel
Load Index/Speed Symbol	106T	106T
Tire Material	Rubber	Rubber
DOT Safety Code Left	B9MB 02BX 4714	B9MB 02BX 4714
DOT Safety Code Right	B9MB 02BX 4714	B9MB 02BX 4714

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

Test Vehicle: 2015 Nissan Murano S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20155201
 Test Date: 3/31/2015

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	535.5	356.0		573.0	432.5	
Right	kg	524.0	362.0		547.0	427.5	
Ratio	%	59.6	40.4		56.6	43.4	
Totals	kg	1059.5	718.0	1777.5	1120.0	860.0	1980.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1777.5
Weight of 1 P572E ATD & 1 P572O ATD	kg	141
Rated Cargo/Luggage Weight (RCLW)	kg	68
Calculated Test Vehicle Target Weight (TVTW)	kg	1986.5

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	828	830	824	815	1140
As Tested	mm	822	823	790	794	1226
Post Test	mm	885	863	795	775	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2822
Total Vehicle Length at Left Side	mm	4718
Total Vehicle Length at Centerline	mm	4884
Total Vehicle Length at Right Side	mm	4718
Weight of Ballast in Cargo Area	kg	13
Weight of Vehicle Components Removed	kg	0.0
Amount of Stoddard Solvent in Fuel Tank	L	67.0

List of components removed to meet test weight: None.

List of components removed for instrumentation, data box, and equipment installation: Cargo area cover, cargo carpet, cargo divider/organizer, jack/tool kit, rear floor mats, spare tire, and spare tire cover.

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

Test Vehicle: 2015 Nissan Murano S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20155201
 Test Date: 3/31/2015

TARGET VEHICLE STRUCTURAL MEASUREMENT

	Elements	Pre-Test (mm)
1	Total Length	4884
2	Total Width	1916
3	Bumper Top Height	630
4	Bumper Bottom Height	500
5	Longitudinal Member Top Height	584
6	Distance between Longitudinal Members	950
7	Longitudinal Member Width	80
8	Engine Top Height	965
9	Engine Bottom Height	238
10	Engine and Gearbox Width	910
11	Front Bumper-Engine Distance	536
12	Front Shock Absorber Fixing Height	985
13	Bonnet Leading Edge Height	935
14	Front Shock Absorber Fixing Width	1264
15	Front Bumper – Front Axle Distance	1044
16	Front Axle – A-Pillar Distance	562
17	A-Pillar – B-Pillar Distance	1115
18	B-Pillar – Rear Axle Distance	1145
19	B-Pillar – C-Pillar Distance	839
20	Roof Sill Bottom Height	1584
21	Roof Sill Top Height	1646
22	Floor Sill Bottom Height	260
23	Floor Sill Top Height	435

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

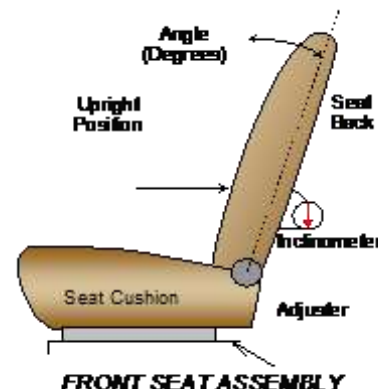
Test Vehicle: 2015 Nissan Murano S AWD 5-Dr SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20155201
Test Date: 3/31/2015

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	0.5° on headrest post
Passenger Seat Back Angle	-1.6° on headrest post



SEAT FORE/AFT POSITIONS

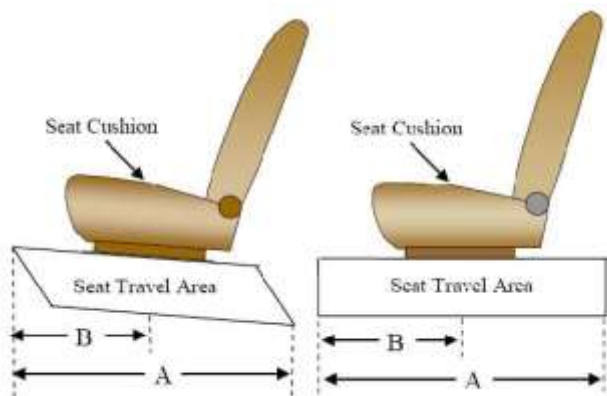
The driver and passenger seat fore/aft positions are adjusted following Appendix F, "Driver & Passenger Dummy Seating & Positioning Procedures" in the NCAP Test Procedure dated August 2013.

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	283 mm / 25 detents (1 st as 1)	143 mm / 10 th detent (1 st as 0)
Passenger Seat	240 mm / 25 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: 2015 Nissan Murano S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20155201
 Test Date: 3/31/2015

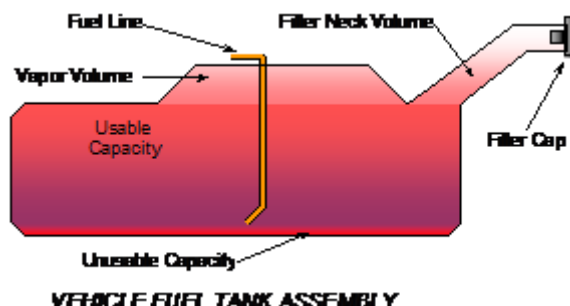
FUEL TANK CAPACITY DATA

	Liters
Usable Capacity of "Standard Tank"	71.9
Usable Capacity of "Optional Tank"	
92-94% of Usable Capacity	66.2 to 67.6
Actual Amount of Solvent used	67.0
1/3 of Usable Capacity	24.0

FUEL PUMP

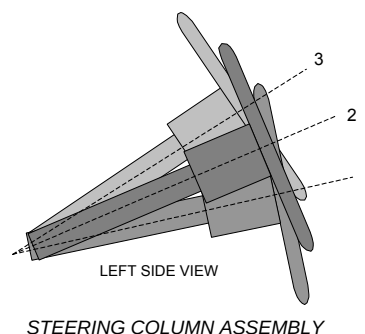
Describe the fuel pump type, its behavior, and the location of the fuel filler pipe.

The vehicle is equipped with an electric fuel pump. Will operate for 1.0s after the ignition is switched to "ON", while the engine is running, or for 1.5s after the engine stops running. The fuel pipe is on the left side.



STEERING COLUMN ADJUSTMENT

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



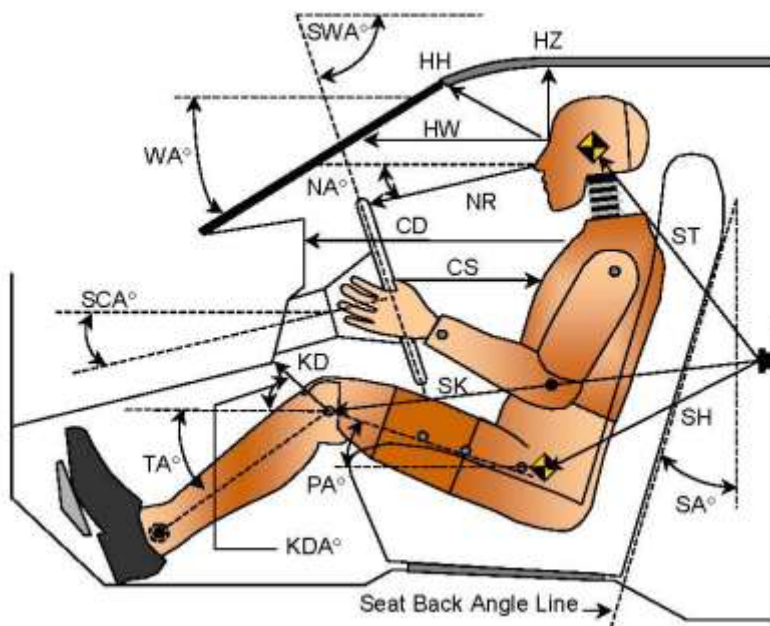
STEERING COLUMN POSITION

	Degrees	Fore/Aft Position (mm)
Lowermost Position 1	67.3	177
Geometric Center Position 2	64.5	197
Uppermost Position 3	61.7	217
Telescoping Steering Wheel Travel		40
Test Position	64.5	197

DATA SHEET NO. 3 DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2015 Nissan Murano S AWD 5-Dr SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20155201
Test Date: 3/31/2015



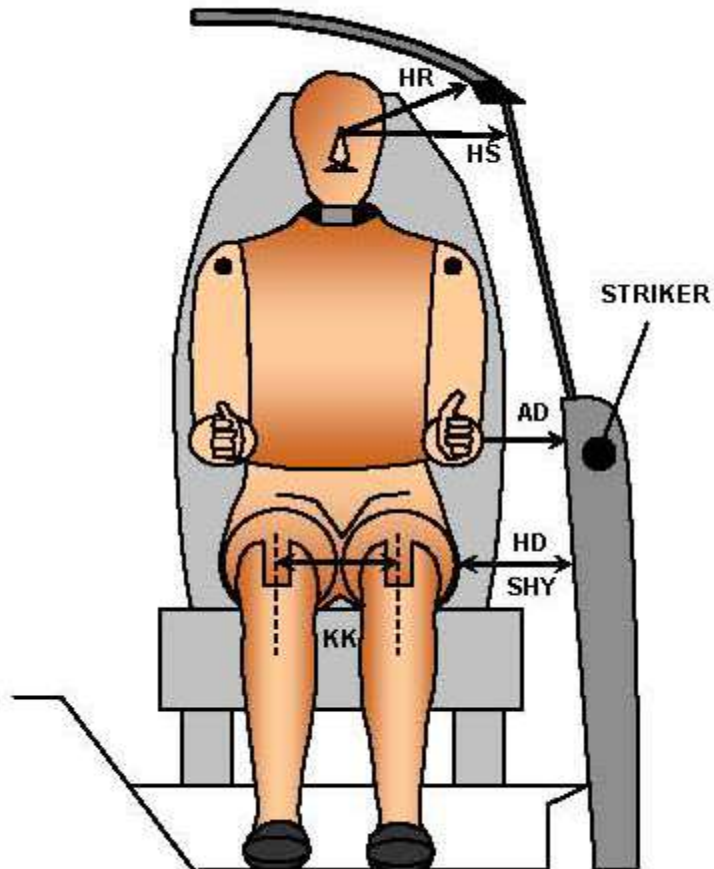
LEFT SIDE VIEW

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		21.6		
SWA°	Steering Wheel Angle		64.5		
SCA°	Steering Column Angle		25.5		
SA°	Seat Back Angle (on headrest post)		0.5		-1.6
HZ	Head to Roof (Z)	217	90.0	225	90.0
HH	Head to Header	347	23.3	284	41.1
HW	Head to Windshield	750	0.0	724	0.0
NR	Nose to Rim	389	12.4		
CD	Chest to Dash	529		388	
CS	Chest to Steering Hub	307	1.5		
RA	Rim to Abdomen	183	0.0		
KDL	Left Knee to Dash	141	27.6	89	42.7
KDR	Right Knee to Dash	118	28.1	109	40.4
PA°	Pelvic Angle		24.4		19.8
TA°	Tibia Angle		47.2		52.8
SK	Striker to Knee	620	89.1	688	91.4
ST	Striker to Head	544	13.6	555	29.9
SH	Striker to H-Point	275	112.3	384	100.2

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2015 Nissan Murano S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20155201
 Test Date: 3/31/2015



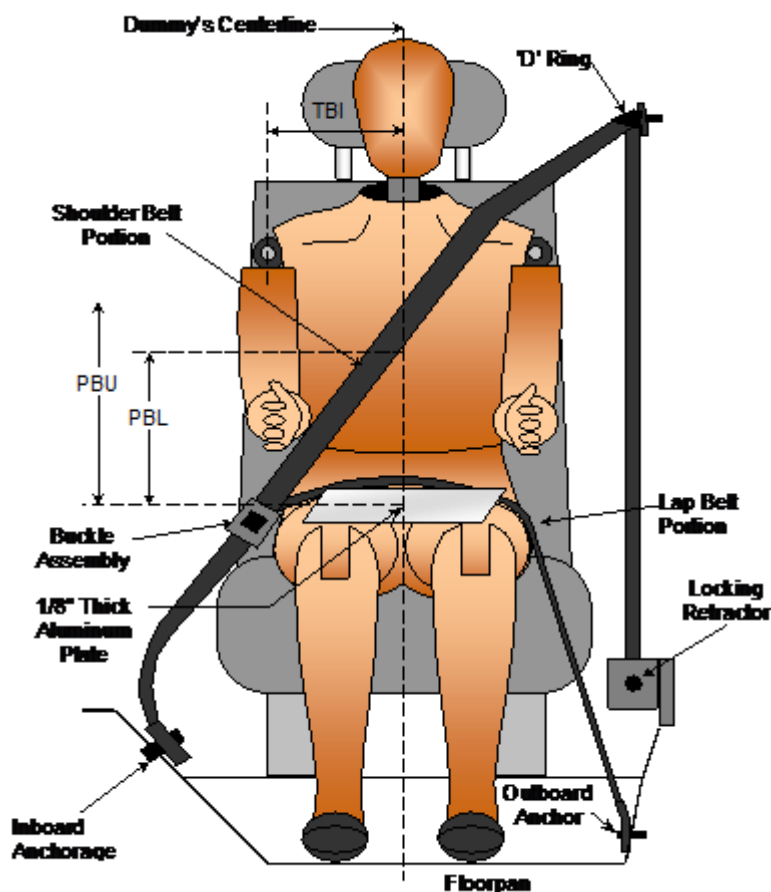
FRONT VIEW OF DUMMY

Code	Measurement Description	Driver	Passenger
		Length (mm)	
AD	Arm to Door	148	99
HD	H-Point to Door	146	181
HR	Head to Side Header	235	261
HS	Head to Side Window	347	369
KK	Knee to Knee	351	228
SHY	Striker to H-Point (Y Direction)	310	354
AA	Ankle to Ankle	354	180

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

Test Vehicle: 2015 Nissan Murano S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20155201
 Test Date: 3/31/2015



FRONT VIEW OF DUMMY

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU - Top surface of reference to belt upper edge	mm	340	320
PBL - Top surface of reference to belt lower edge	mm	265	230

BELT LENGTH DATA

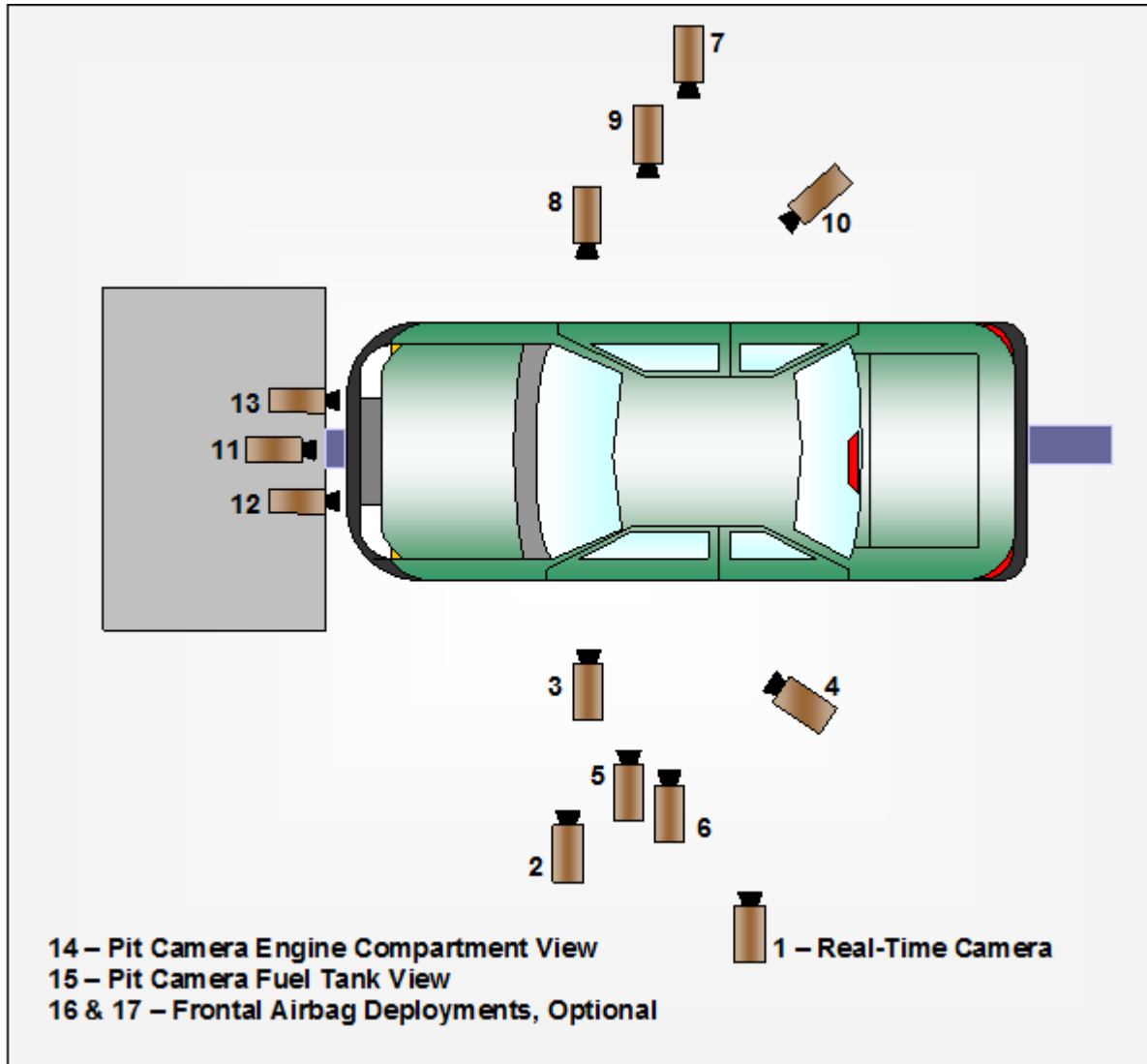
Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as measured on ATD	mm	865	925
Lap Belt Length as measured on ATD	mm	905	750
Remainder of belt on reel	mm	650	745
Total Belt Length for Continuous Webbing Systems	mm	3170	3170

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

Test Vehicle: 2015 Nissan Murano S AWD 5-Dr SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20155201
Test Date: 3/31/2015

CAMERA POSITIONS FOR FRONTAL IMPACTS



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

Test Vehicle: 2015 Nissan Murano S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20155201
 Test Date: 3/31/2015

CAMERA LOCATIONS

No.	Camera View	Coordinates (mm)			Lens (mm)	Speed (fps)
		X*	Y*	Z*		
1	Real-Time Left Overall					30
2	Driver Close-Up	-1530	-6810	-1840	35	1000
3	Left Front Half	-1190	-5480	-1210	24	1000
4	Left Angle	-5570	-5430	-1950	50	1000
5	Steering Column - Top					
6	Steering Column - Bottom					
7	Right Overall	-2160	6660	-1150	20	1000
8	Passenger Close-Up	-1580	6280	-1910	35	1000
9	Right Front Half	-1230	5460	-1130	24	1000
10	Right Angle	-5620	5100	-1930	50	1000
11	Windshield	430	0	-2810	20	1000
12	Driver Windshield	-30	-450	-2030	8.5	1000
13	Passenger Windshield	-40	450	-2030	8.5	1000
14	Pit Front	-1190	0	3150	24	1000
15	Pit Rear	-3050	0	3150	24	1000
16	Onboard Driver Side				12	1000
17	Onboard Passenger Side				12	1000
18	Real-Time Pan View					30

***COORDINATES:**

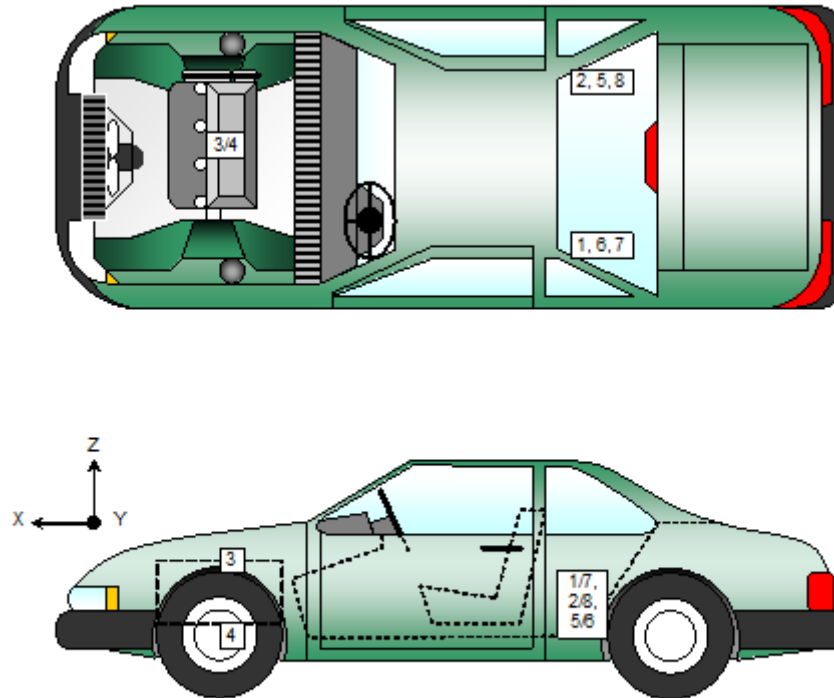
+X = forward of impact plane
 +Y = right of monorail centerline
 +Z = below ground level

Cameras 5 & 6 were not used for this test.

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

Test Vehicle: 2015 Nissan Murano S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20155201
 Test Date: 3/31/2015



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear Crossmember Accelerometer – X Direction	1875	-410	-366
2	Right Rear Crossmember Accelerometer – X Direction	1890	390	-366
3	Engine Top X	4205	30	-849
4	Engine Bottom X	4015	280	-235
5	Left Rear Crossmember Accelerometer – Z Direction	1915	-410	-366
6	Right Rear Crossmember Accelerometer – Z Direction	1930	390	-366
7	Left Rear Crossmember Accelerometer Redundant – X Direction	1915	-410	-366
8	Right Rear Crossmember Accelerometer Redundant – X Direction	1930	390	-366

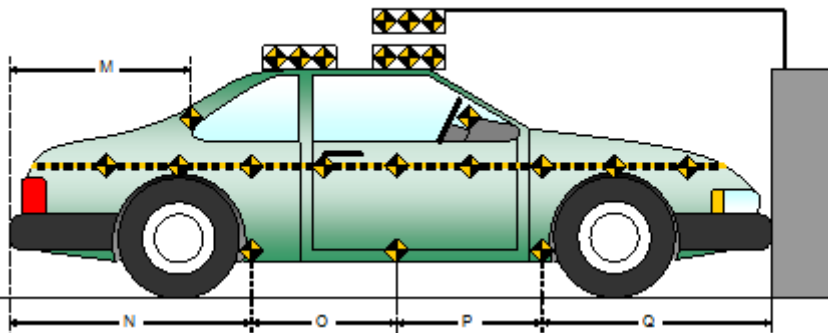
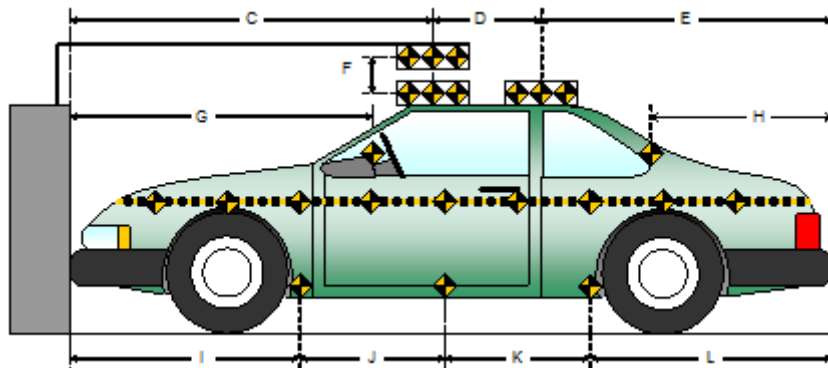
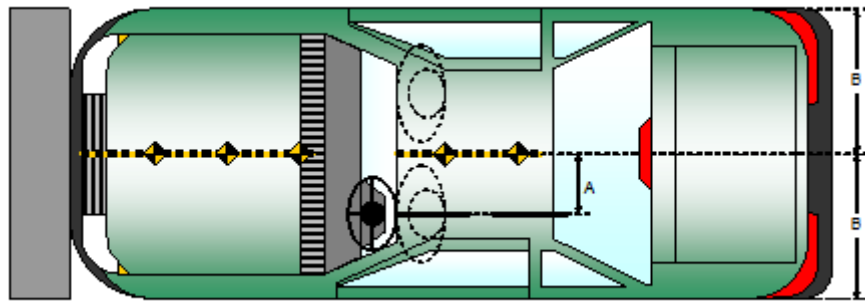
Reference Points: X - Rear Surface of Vehicle (+ forward)
 Y - Vehicle Centerline (+ to right)
 Z - Ground Plane (+ down)

DATA SHEET NO. 8
PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2015 Nissan Murano S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20155201
 Test Date: 3/31/2015

Item	Value (mm)
A	390
B	958
C	2545
D	610
E	1563
F	125
G	
H	1324
I	1568
J	897
K	897
L	1522
M	1324
N	1522
O	897
P	897
Q	1568



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

Test Vehicle: 2015 Nissan Murano S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20155201
 Test Date: 3/31/2015

Advanced Research Load Cell Barrier

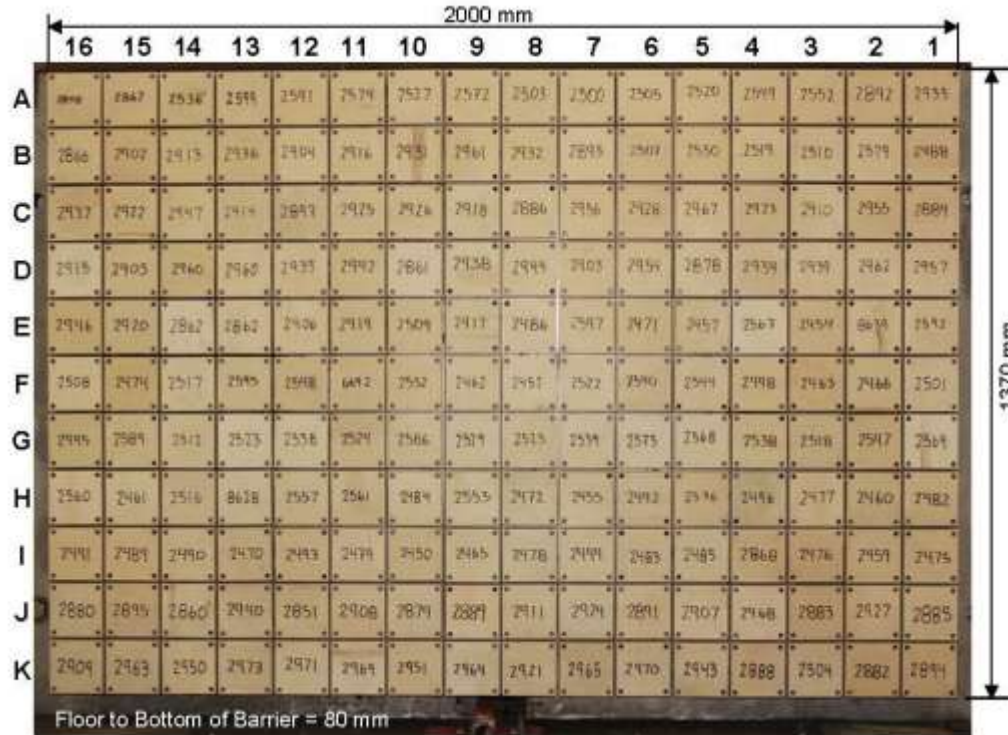


Photo for Reference Only

								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: 2015 Nissan Murano S AWD 5-Dr SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20155201
Test Date: 3/31/2015

INSTRUMENTATION

Driver Dummy Data Channels	46
Passenger Dummy Data Channels	49
Vehicle Structure Accelerometers	8
Barrier Channels	528
Total	631

CAMERA COVERAGE

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

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

Test Vehicle: 2015 Nissan Murano S AWD 5-Dr SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20155201
Test Date: 3/31/2015

TEST DUMMY INFORMATION AND CONTACT LOCATIONS

Description	Driver	Passenger
Dummy Type / Serial No.	HIII 50% / 351	HIII 5% / 138
Head Contact	Airbag, Headrest	Airbag, Headrest
Upper Torso Contact	Airbag	Airbag
Lower Torso Contact	None	None
Left Knee Contact	Knee Airbag	Glovebox
Right Knee Contact	Knee Airbag	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	Cracked
Window Damage	None
Other Notable Effects	None

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	2290
Center	mm	2400
Right Side	mm	2570
Average	mm	2420

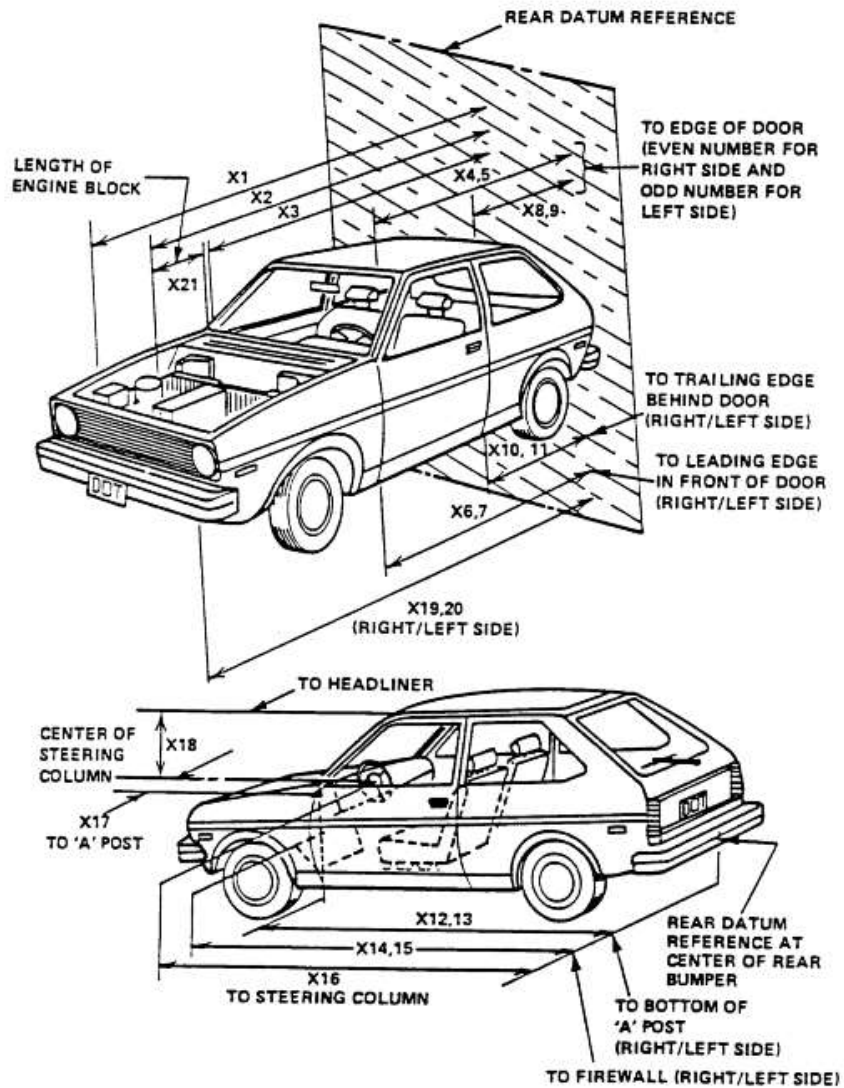
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

DATA SHEET NO. 12 VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2015 Nissan Murano S AWD 5-Dr SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20155201
Test Date: 3/31/2015



DATA SHEET NO. 12 (CONTINUED)
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2015 Nissan Murano S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20155201
 Test Date: 3/31/2015

RSOV (Rear Surface of Vehicle)

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	mm	4884	4417	467
2	RSOV to Front of Engine	mm	4316	4109	207
3	RSOV to Firewall	mm	3862	3796	66
4	RSOV to Upper Leading Edge of Right Door	mm	3276	3267	9
5	RSOV to Upper Leading Edge of Left Door	mm	3276	3264	12
6	RSOV to Lower Leading Edge of Right Door	mm	3241	3241	0
7	RSOV to Lower Leading Edge of Left Door	mm	3241	3240	1
8	RSOV to Upper Trailing Edge of Right Door	mm	2131	2120	11
9	RSOV to Upper Trailing Edge of Left Door	mm	2131	2123	8
10	RSOV to Lower Trailing Edge of Right Door	mm	2146	2146	0
11	RSOV to Lower Trailing Edge of Left Door	mm	2146	2141	5
12	RSOV to Bottom of "A" Post of Right Side	mm	3246	3246	0
13	RSOV to Bottom of "A" Post of Left Side	mm	3246	3246	0
14	RSOV to Firewall, Right Side	mm	3761	3647	114
15	RSOV to Firewall, Left Side	mm	3761	3741	20
16	RSOV to Steering Column	mm	2763	2871	-108
17	Center of Steering Column to "A" Post	mm	435	455	-20
18	Center of Steering Column to Headliner	mm	412	460	-48
19	RSOV to Right Side of Front Bumper	mm	4718	4341	377
20	RSOV to Left Side of Front Bumper	mm	4718	4372	346
21	Length of Engine Block	mm	545	545	0
RD	RSOV to Right Side of Dash Panel	mm	3039	3034	5
CD	RSOV to Center of Dash Panel	mm	3096	3095	1
LD	RSOV to Left Side of Dash Panel	mm	3036	3032	4

DATA SHEET NO. 13
ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2015 Nissan Murano S AWD 5-Dr SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20155201
Test Date: 3/31/2015

VEHICLE INFORMATION

VIN: 5N1AZ2MH5FN207142 Wheelbase (mm): 2822
Vehicle Size Category: MPV Test Weight (kg): 1980.0

ACCELEROMETER DATA

Accelerometer Locations: As per measurements on Page 15

Cal. Procedure/Interval: MGA procedure / 6 month

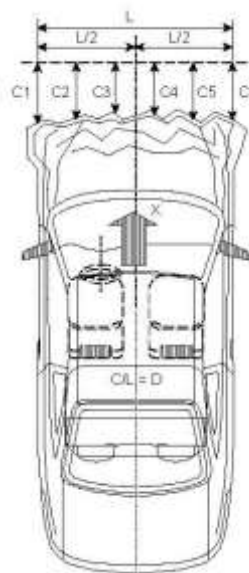
Integration Algorithm: Trapezoidal

Linearity: > 99%

Impact Velocity (km/h): 56.5

Velocity Change (km/h): 66.3

Time of Separation (msec): 103.1



CRUSH PROFILE

Collision Deformation Classification: Frontal

Midpoint of Damage: Centerline

Damage Region Length (mm): 1240

Impact Mode: Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	4718	4372	346
C2	Crush zone 2 at left side	mm	4824	4411	413
C3	Crush zone 3 at left side	mm	4846	4374	472
C4	Crush zone 4 at right side	mm	4846	4368	478
C5	Crush zone 5 at right side	mm	4824	4281	543
C6	Crush zone 6 at right side	mm	4718	4341	377
L	C1 TO C6	mm	1240	1215	25

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

Test Vehicle: 2015 Nissan Murano S AWD 5-Dr SUV
Test Program: NCAP Frontal Barrier Impact Test

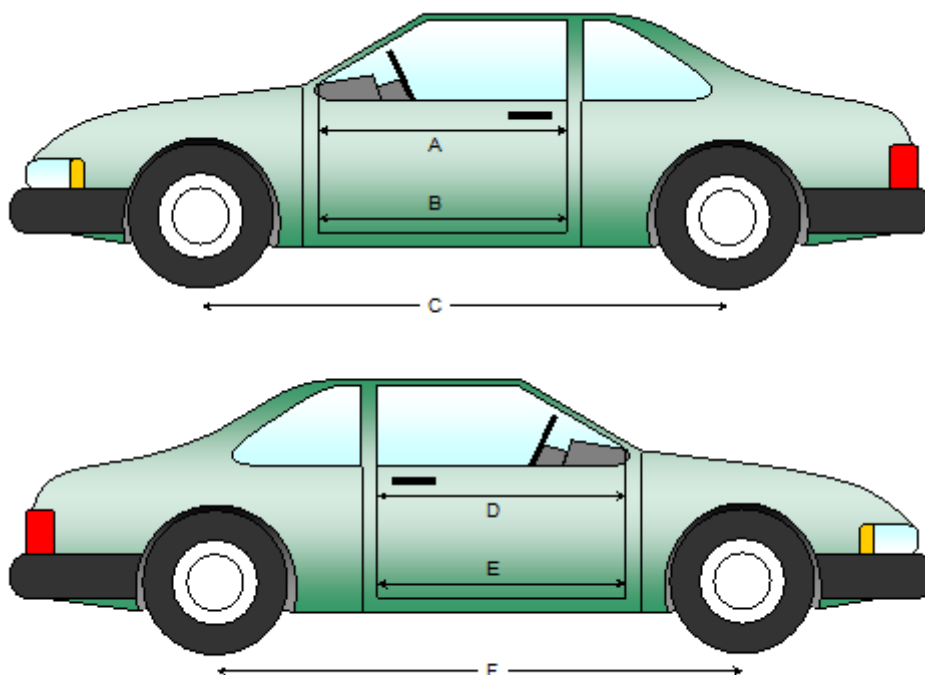
NHTSA No.: O20155201
Test Date: 3/31/2015

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	1040	1040	0
B	Left Side Lower	mm	975	975	0
D	Right Side Upper	mm	1040	1040	0
E	Right Side Lower	mm	975	975	0

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2822	2788	34
F	Right Side Wheelbase	mm	2822	2820	2



DATA SHEET NO. 14 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

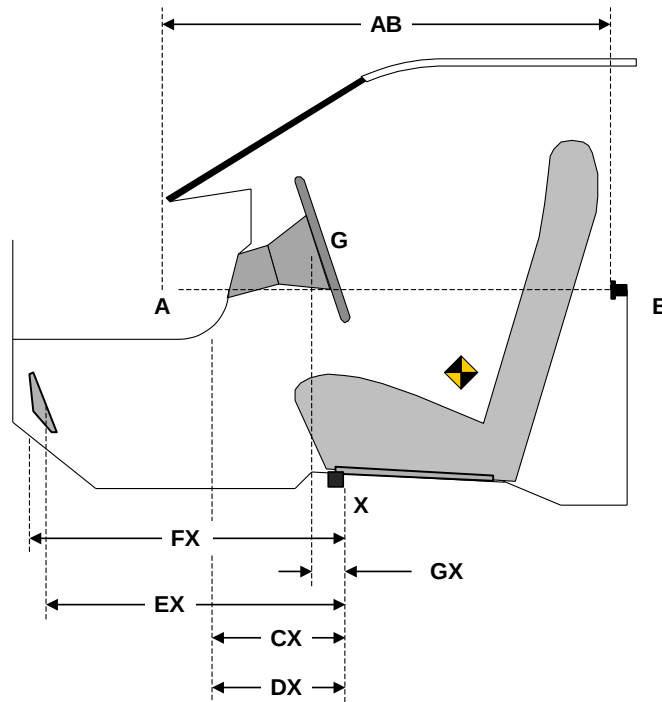
Test Vehicle: 2015 Nissan Murano S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20155201
 Test Date: 3/31/2015

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	886	886	0
CX	Left Knee Bolster to X	mm	260	253	7
DX	Right Knee Bolster to X	mm	218	226	-8
EX	Brake Pedal to X	mm	564	508	56
FX	Foot Rest to X	mm	550	545	5
GX	Center of Steering Column Wheel Hub to X	mm	74	115	-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: 2015 Nissan Murano S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20155201
 Test Date: 3/31/2015

Windshield Mounting Details:

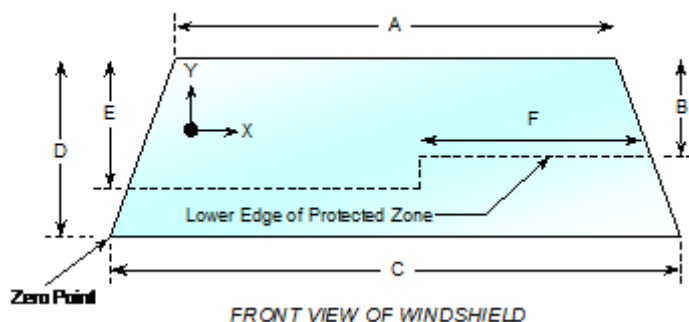
Windshield glass is secured to the vehicle frame with a rubber trim and glue.

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: 21.3° C.

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% of Retention
Left Side	2307	2254	97.7
Right Side	2307	2307	100
Total	4614	4561	98.9



Item	Units	Value
A	mm	1280
B	mm	550
C	mm	1402
D	mm	966
E	mm	542
F	mm	452

AREA OF PROTECTED ZONE FAILURES - NONE

A. Provide coordinates of the area that the protected zone was penetrated more than 0.25 inches by a vehicle component other than one that is normally in contact with the windshield. **None**

X	Y

B. Provide coordinates of the area beneath the protected zone that the inner surface of the windshield was penetrated by a vehicle component. **None**

X	Y

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

Test Vehicle: 2015 Nissan Murano S AWD 5-Dr SUV
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20155201
Test Date: 3/31/2015

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21.3°C Test Time: 10:52 a.m.

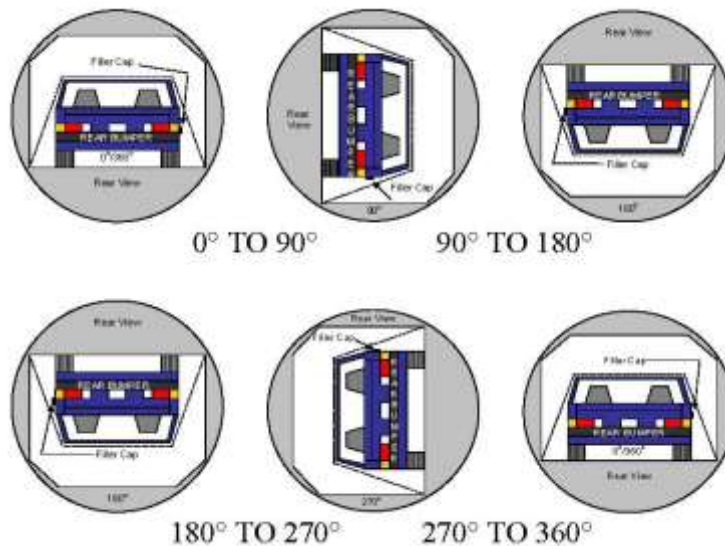
- A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable = 1 oz.)
- B. For the 5 minute period after motion ceases: 0 oz.
(Maximum allowable = 5 oz.)
- C. For the following 25 minutes: 0 oz.
(Maximum allowable = 1 oz./minute)
- D. Spillage: None

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

Test Vehicle: 2015 Nissan Murano S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20155201
 Test Date: 3/31/2015

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°	109	300	409
90° to 180°	109	300	409
180° to 270°	108	300	408
270° to 360°	110	300	410

FMVSS 301 SPILLAGE TABLE (units in ounces)

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

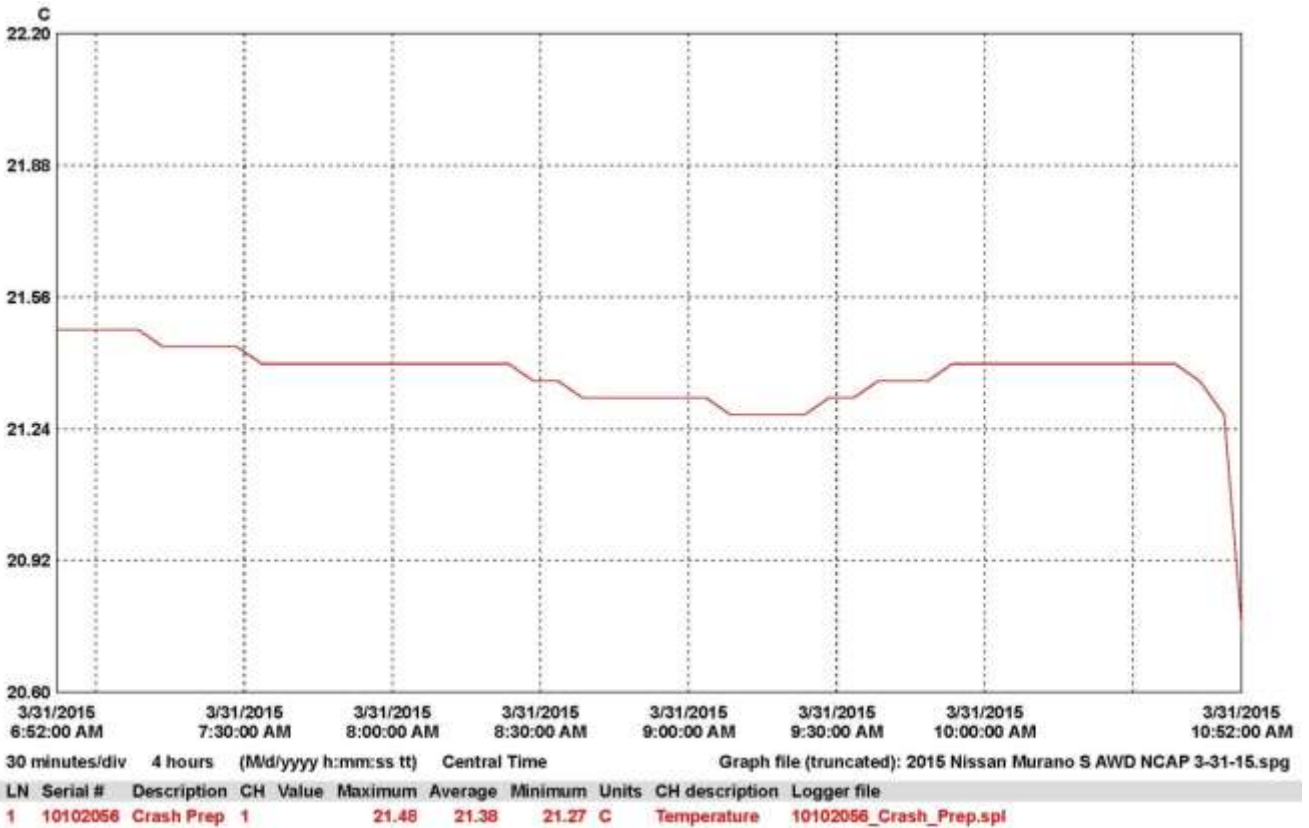
SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 17
DUMMY/VEHICLE TEMPERATURE STABILIZATION DATA

Test Vehicle: 2015 Nissan Murano S AWD 5-Dr SUV
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20155201
 Test Date: 3/31/2015



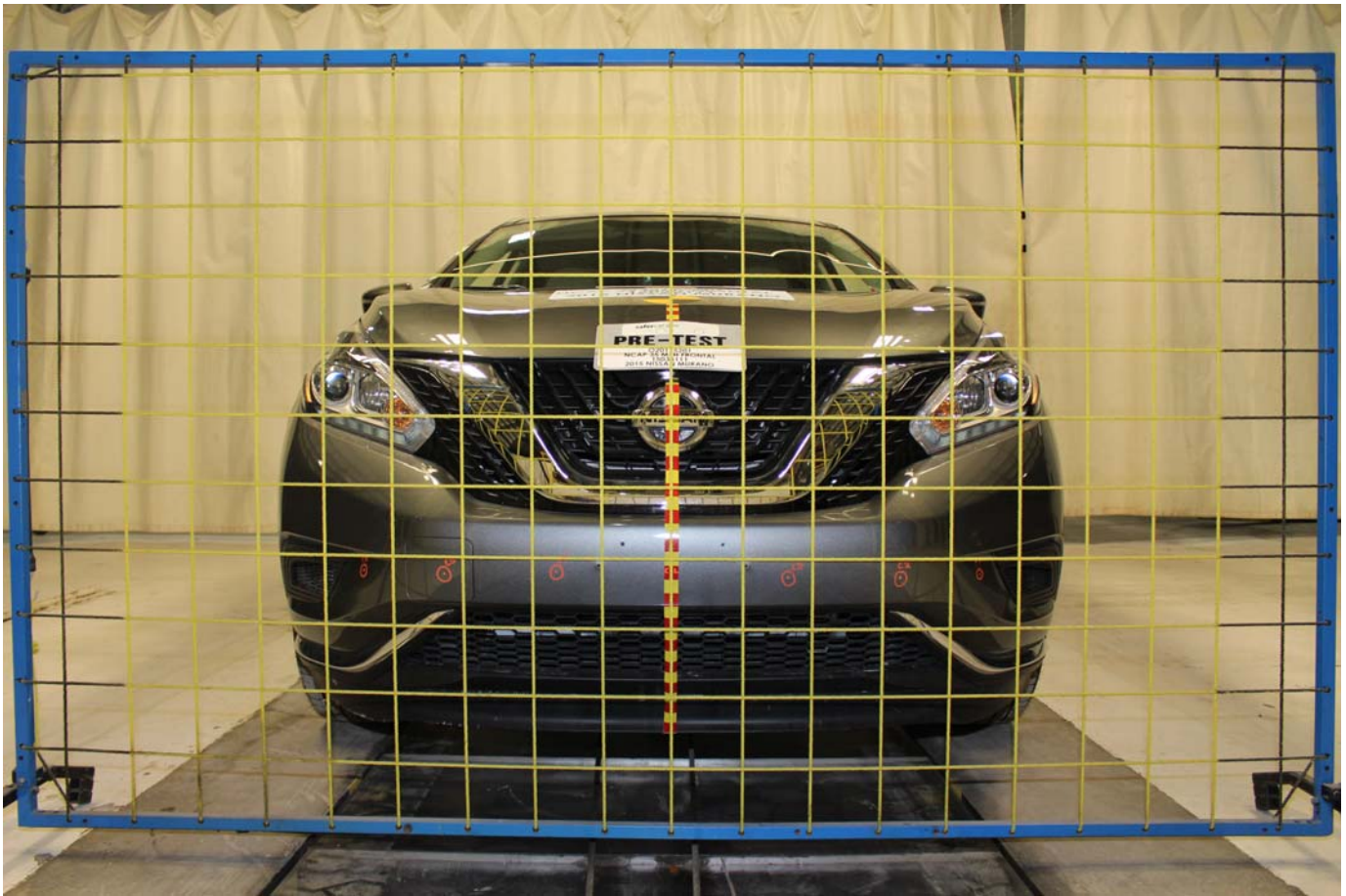
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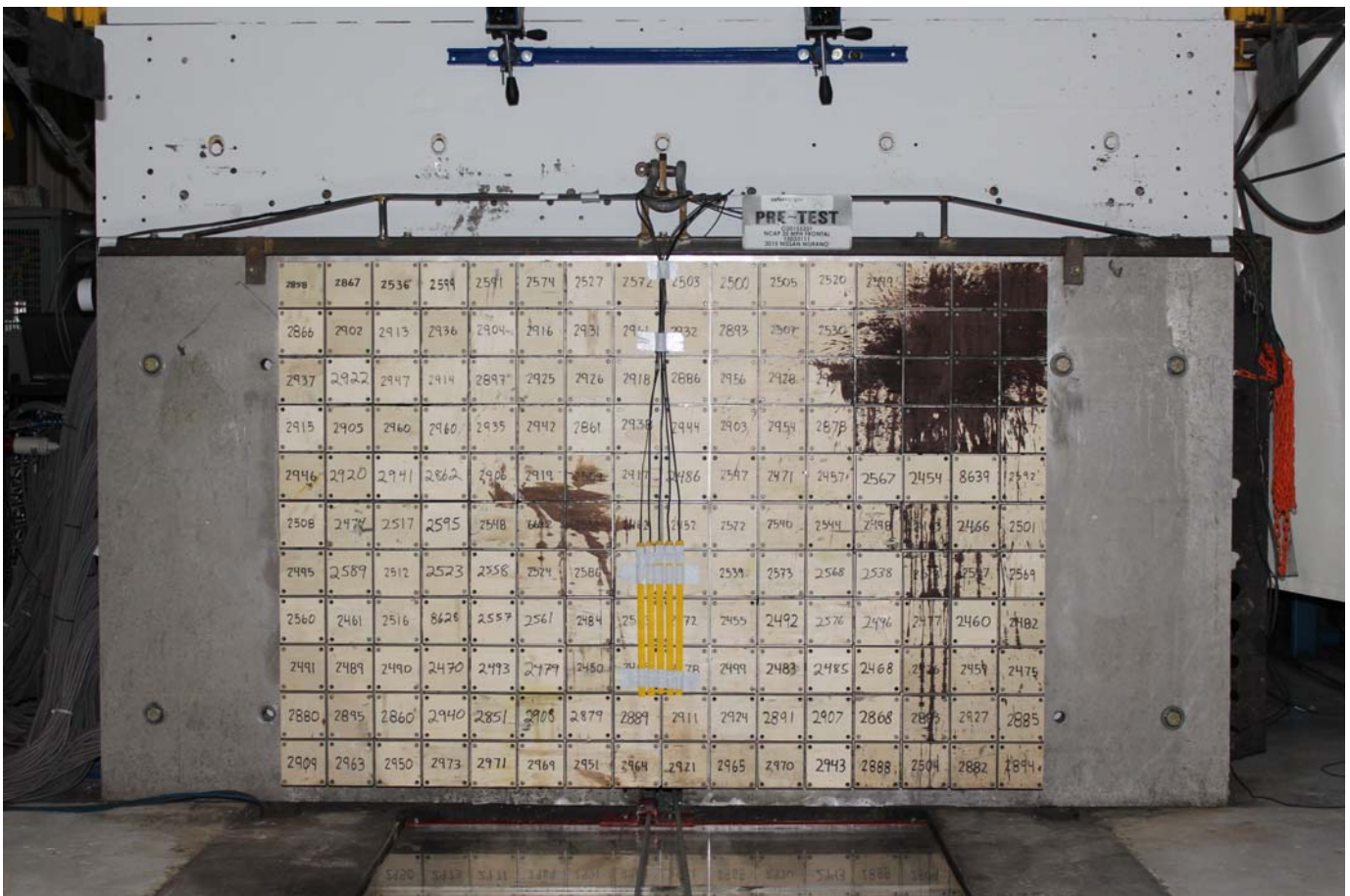
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No. 001 - Load Cell Location



No. 002 - Load Cell Wall

O20155201

MFD BY NISSAN MOTOR CO., LTD.
DATE: 12/14
GVWR: 2395 KG
5280 LB
GAWR FR.: 1271 KG
2802 LB
WITH 235/65R18 TIRES
18 X 7.5 RIMS AT 33 PSI
COLD SINGLE
GAWR RR.: 1210 KG
2667 LB
WITH 235/65R18 TIRES
18 X 7.5 RIMS AT 33 PSI
COLD SINGLE
THIS VEHICLE CONFORMS TO
ALL APPLICABLE FEDERAL
MOTOR VEHICLE SAFETY AND
THEFT PREVENTION
STANDARDS IN EFFECT ON
THE DATE OF MANUFACTURE
SHOWN ABOVE.
5N1AZ2MH5FN 207142
MPV 207345
MODEL: TLJNLPWZ52EUA
COLOR: KAD TRIM: P 2530A

No. 003 - Manufacturer's Label

TIRE AND LOADING INFORMATION
RENSEIGNEMENTS SUR LES PNEUS ET LE CHARGEMENT

SEATING CAPACITY		TOTAL		FRONT		REAR	
NOMBRE DE PLACES		TOTAL		AVANT		ARRIÈRE	
		5		2		3	

The combined weight of occupants and cargo should never exceed **408 kg** or **900 lbs.**
Le poids total des occupants et du chargement ne doit jamais dépasser **408 kg** ou **900 lb.**

TIRE PNEU	SIZE DIMENSIONS	COLD TIRE PRESSURE PRESSION DES PNEUS À FROID
FRONT AVANT	235/65R18	230kPa, 33PSI
REAR ARRIÈRE	235/65R18	230kPa, 33PSI
SPARE DE SECOURS	T165/90D18	420kPa, 60PSI

SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION
VOIR LE MANUEL DE L'USAGE POUR PLUS D'INFORMATION

O20155201

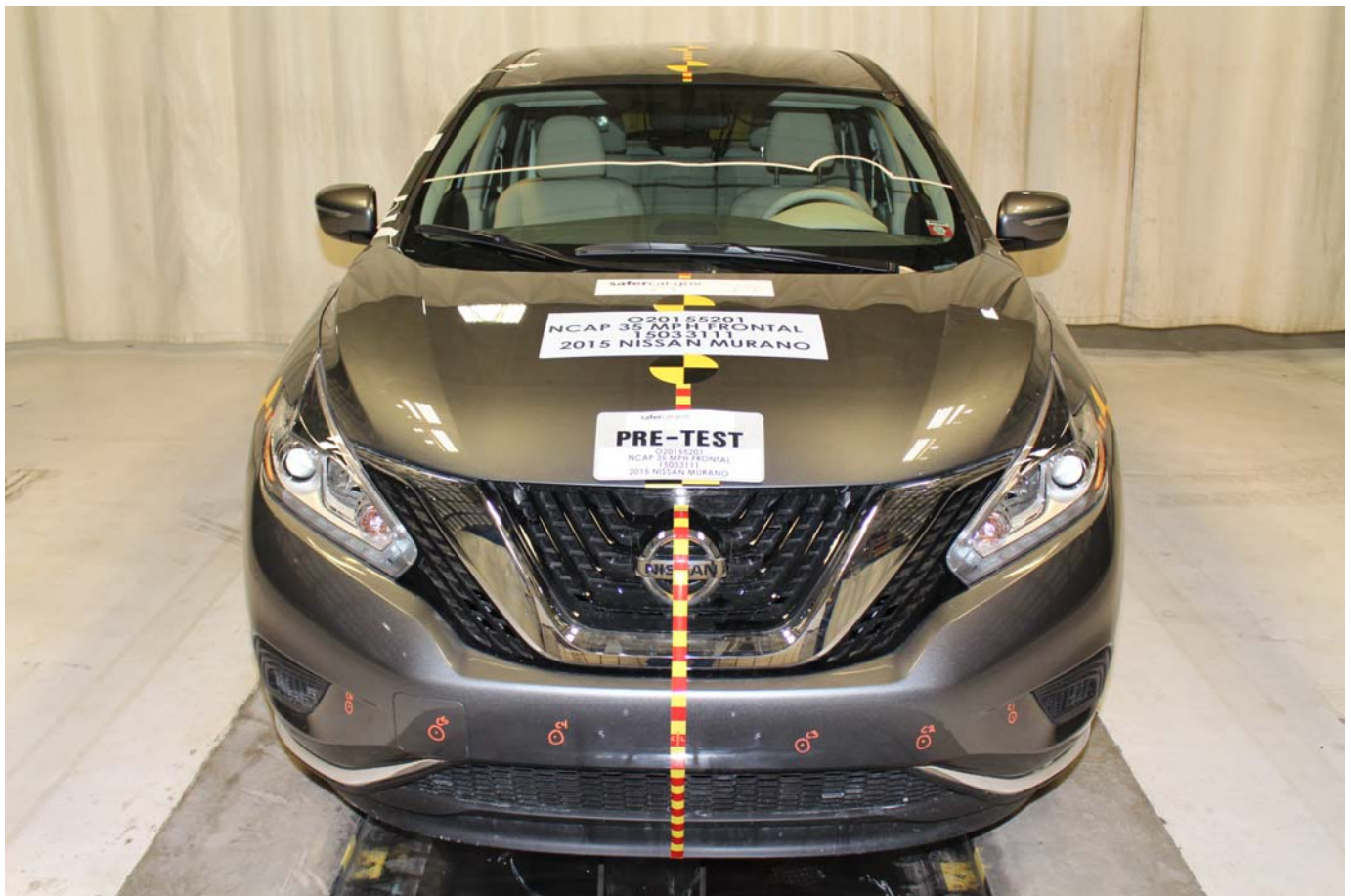
No. 004 - Tire Placard



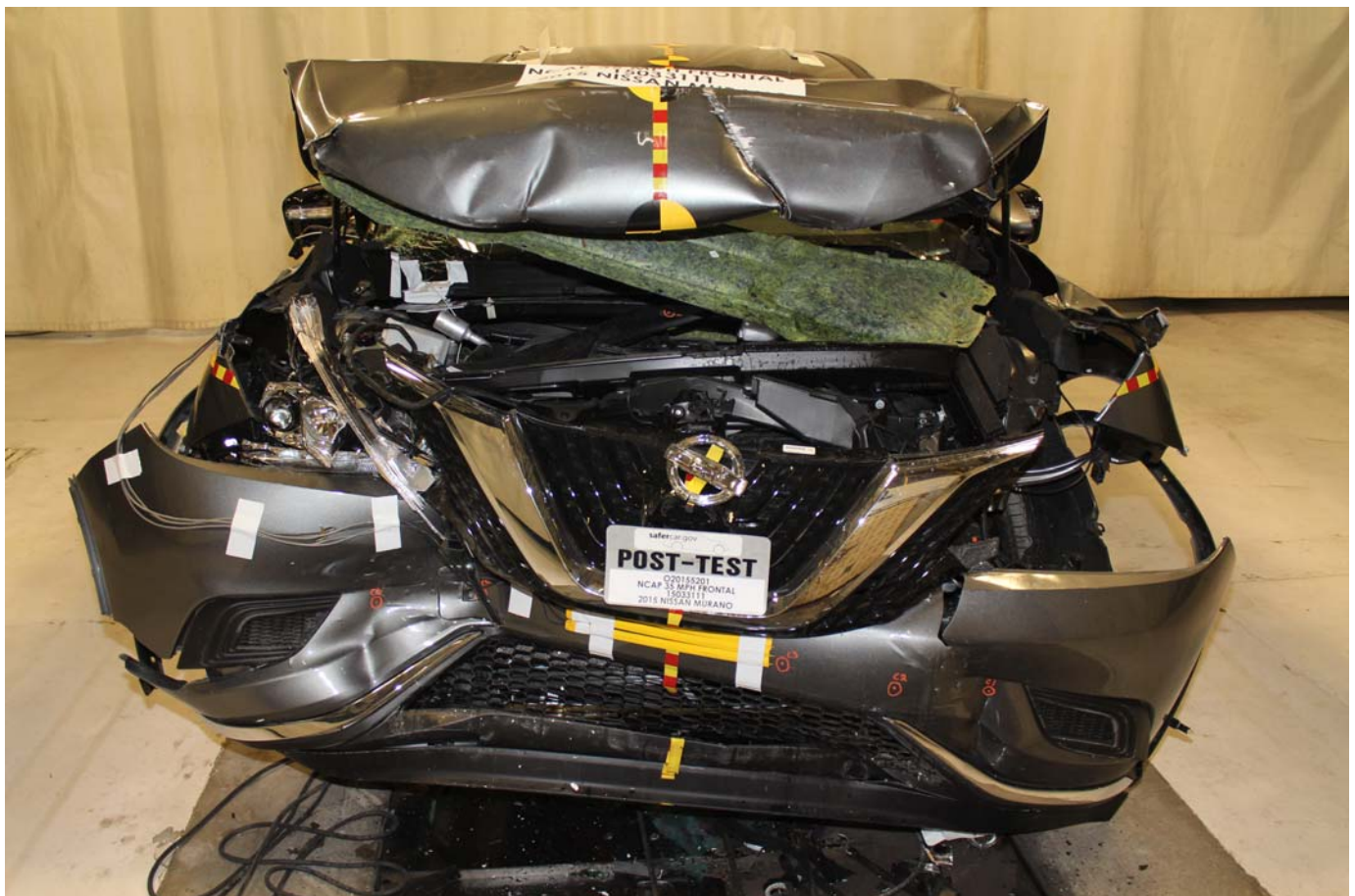
No. 005 - 2015 Nissan Murano S AWD Frontal As Delivered



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



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



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



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



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



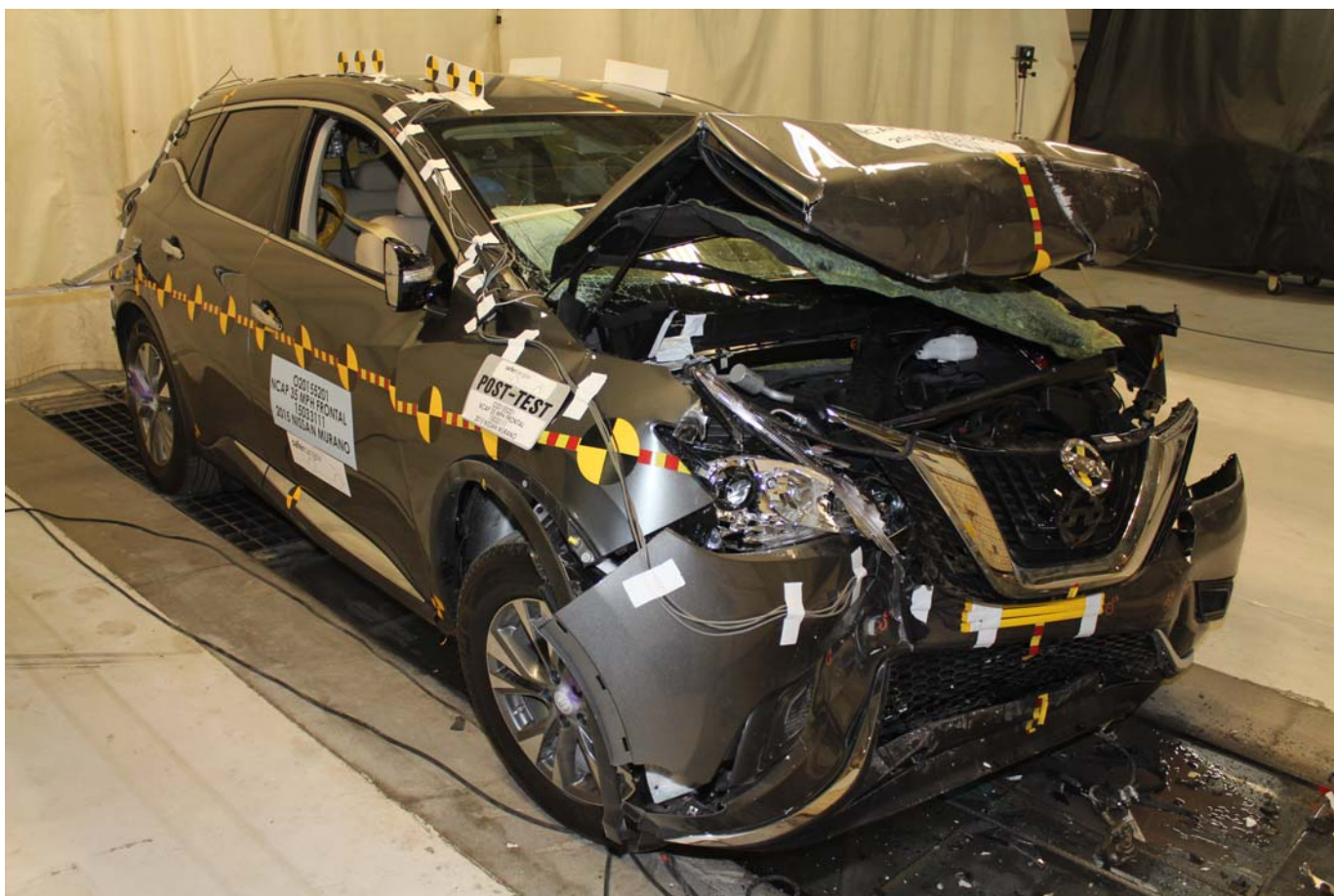
No. 011 - Pre-Test Right View of Test Vehicle



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



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



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



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



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



No. 017 - Pre-Test Windshield View



No. 018 - Post-Test Windshield View



No. 019 - Pre-Test Engine Compartment View



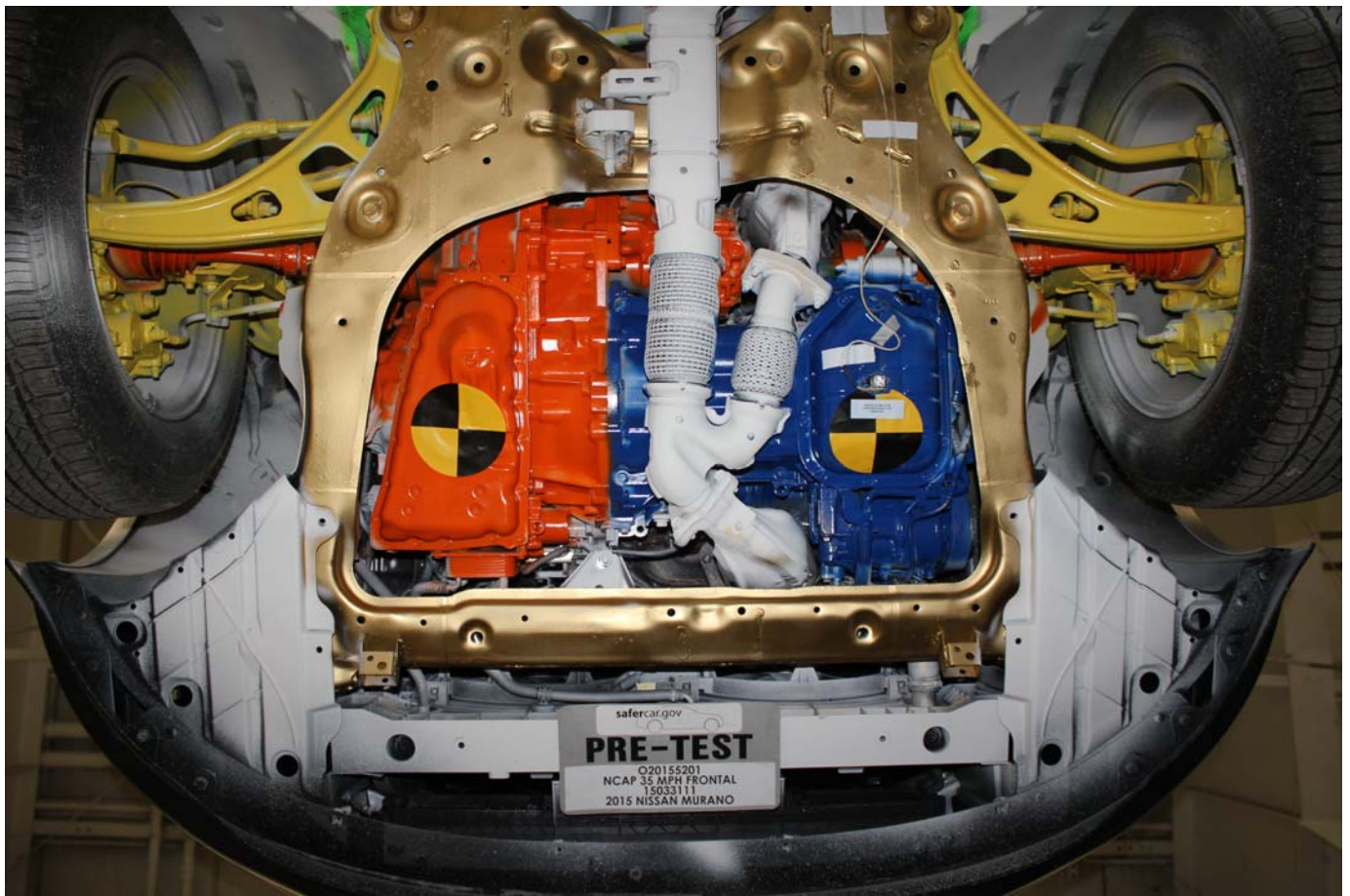
No. 020 - Post-Test Engine Compartment View



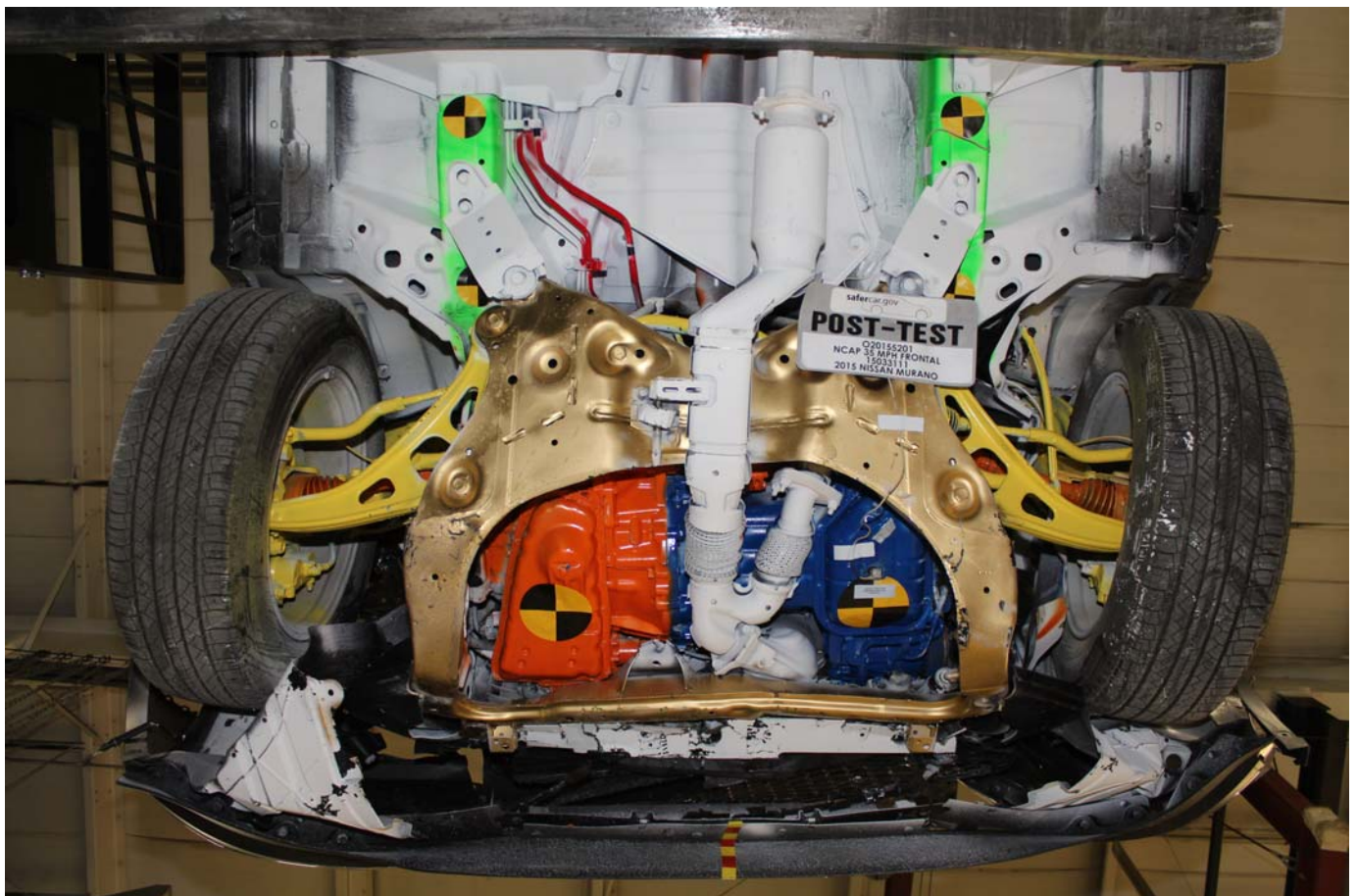
No. 021 - Pre-Test Fuel Filler Cap View



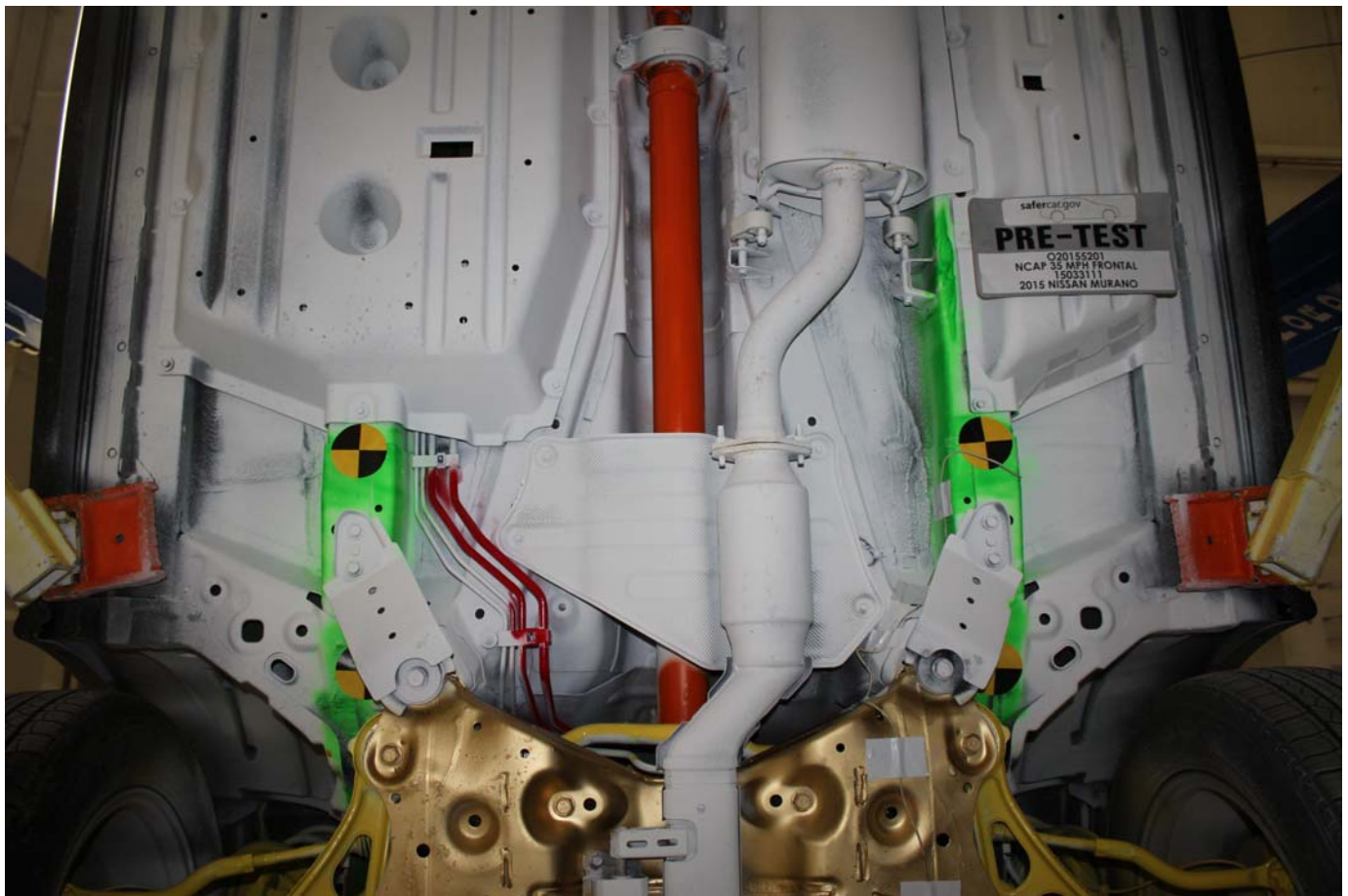
No. 022 - Post-Test Fuel Filler Cap View



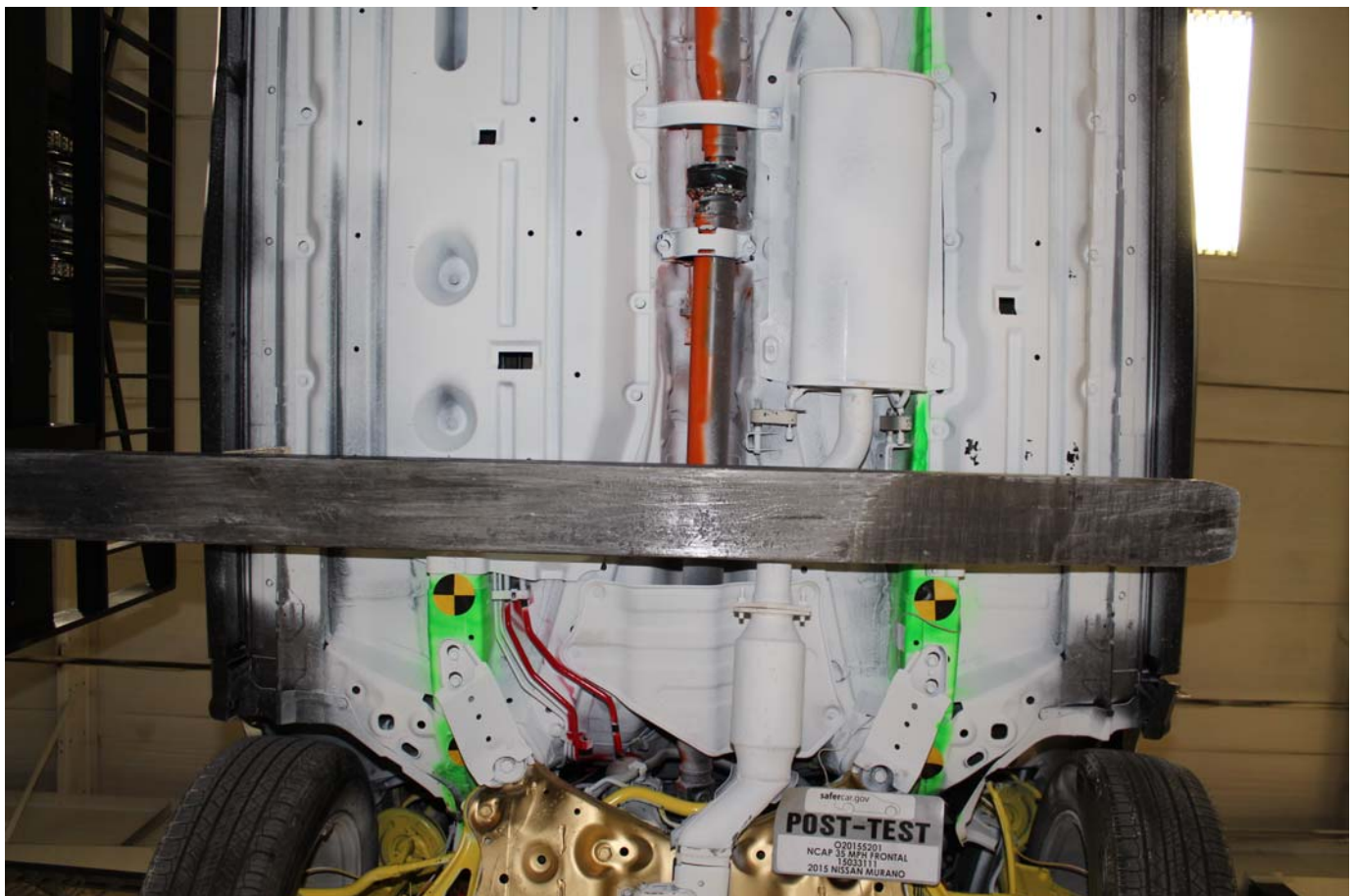
No. 023 - Pre-Test Front Underbody View



No. 024 - Post-Test Front Underbody View



No. 025 - Pre-Test Mid Front Underbody View



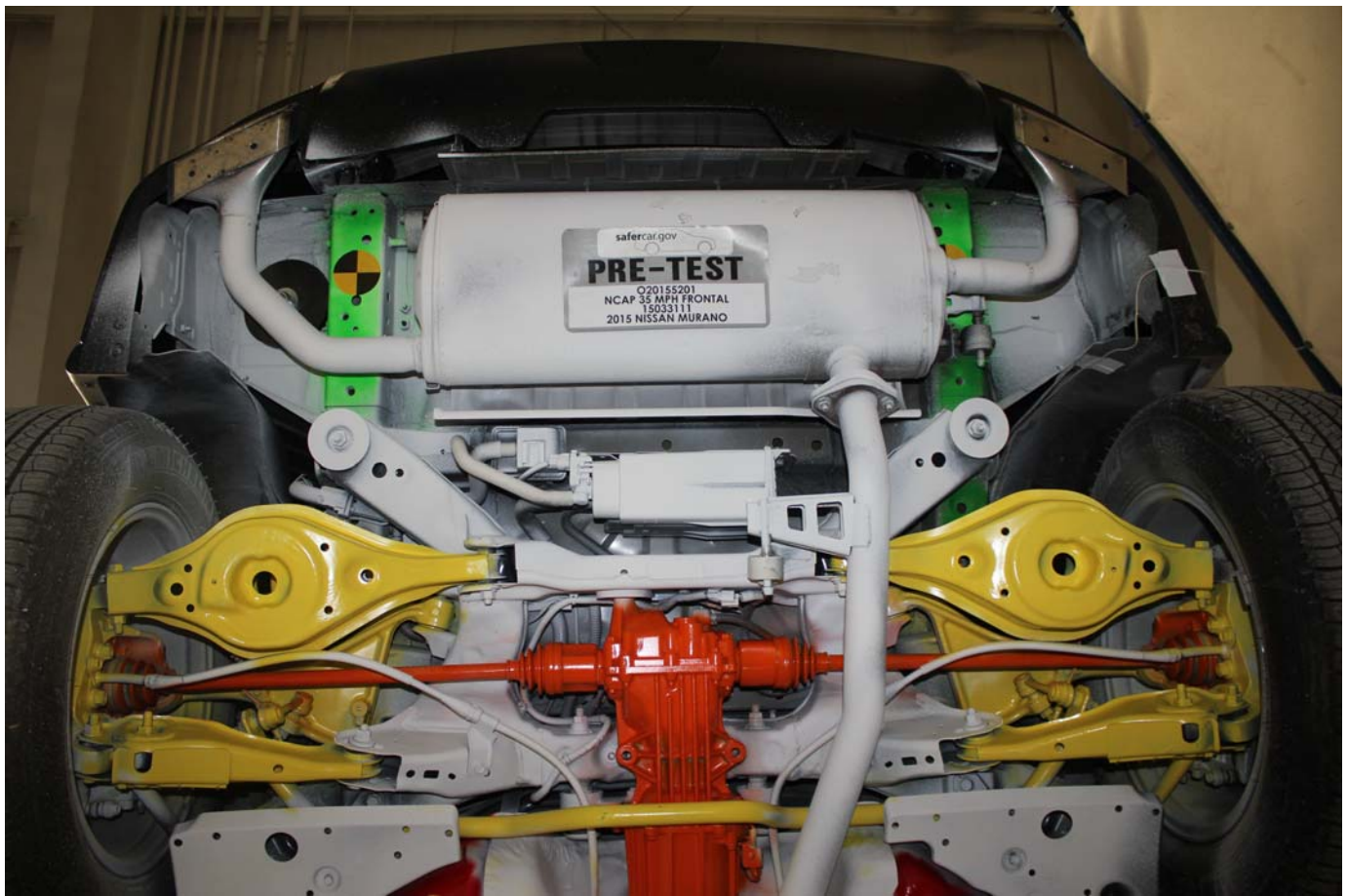
No. 026 - Post-Test Mid Front Underbody View



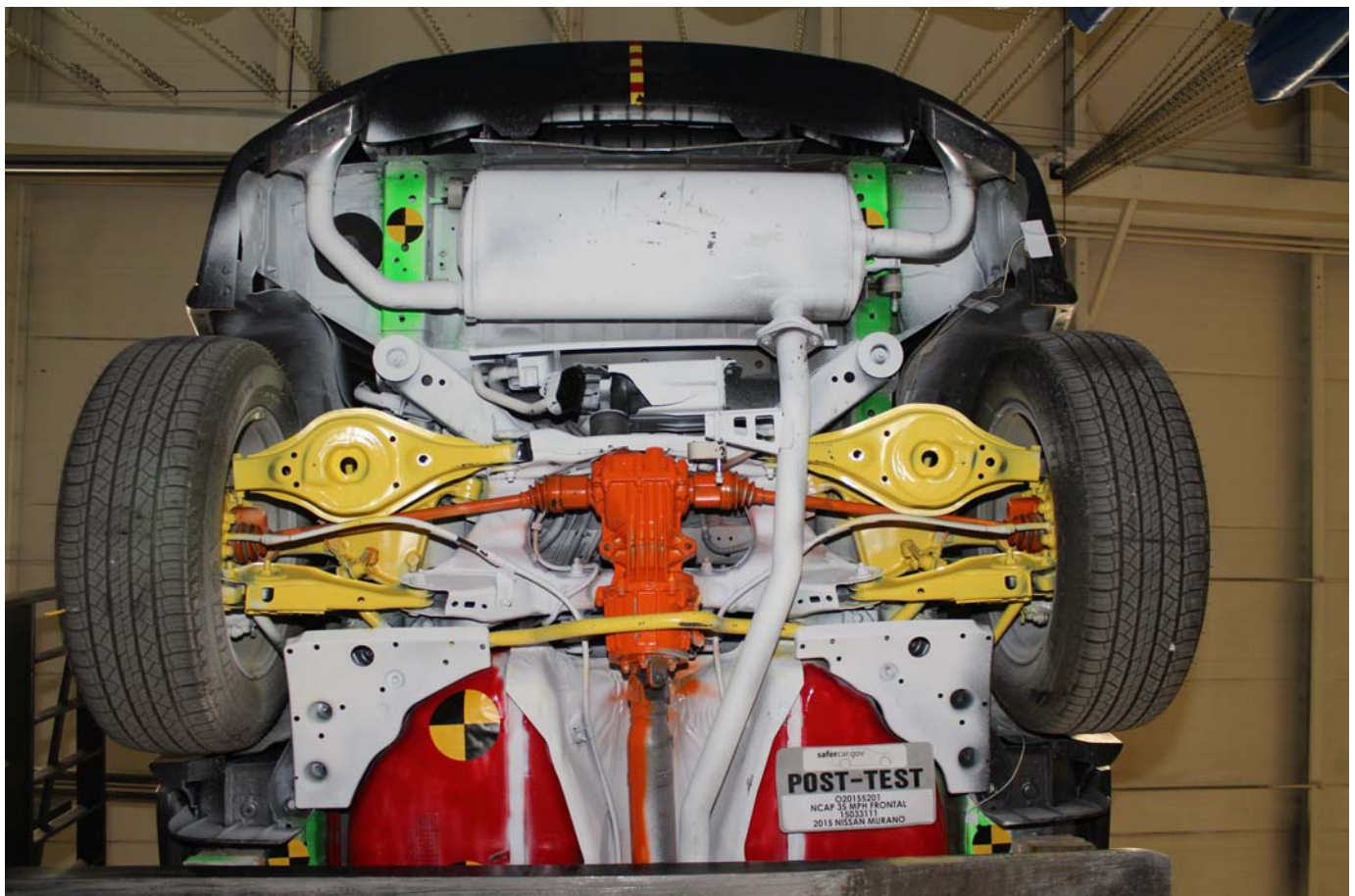
No. 027 - Pre-Test Mid Rear Underbody View



No. 028 - Post-Test Mid Rear Underbody View



No. 029 - Pre-Test Rear Underbody View



No. 030 - Post-Test Rear Underbody View



No. 031 - Pre-Test Dummy Cable Routing



No. 032 - Post-Test Dummy Cable Routing



No. 033 - Pre-Test Driver Dummy Front View



No. 034 - Post-Test Driver Dummy Front View



No. 035 - Pre-Test Driver Dummy Window View



No. 036 - Post-Test Driver Dummy Window View



No. 037 - Pre-Test Driver Dummy and Vehicle Interior (Door Open)



No. 038 - Post-Test Driver Dummy and Vehicle Interior (Door Open)



No. 039 - Pre-Test Driver's Seat Fore-Aft Markings



No. 040 - Post-Test Driver's Seat Fore-Aft Markings



No. 041 - Pre-Test View of Belt Anchorage for Driver Dummy



No. 042 - Post-Test View of Belt Anchorage for Driver Dummy



No. 043 - Pre-Test Driver Dummy Feet



No. 044 - Post-Test Driver Dummy Feet



No. 045 - Pre-Test Driver's Side Knee Bolster (without dummy)



No. 046 - Post-Test Driver's Side Knee Bolster (without dummy)



No. 047 - Pre-Test Driver's Side Floorpan



No. 048 - Post-Test Driver's Side Floorpan



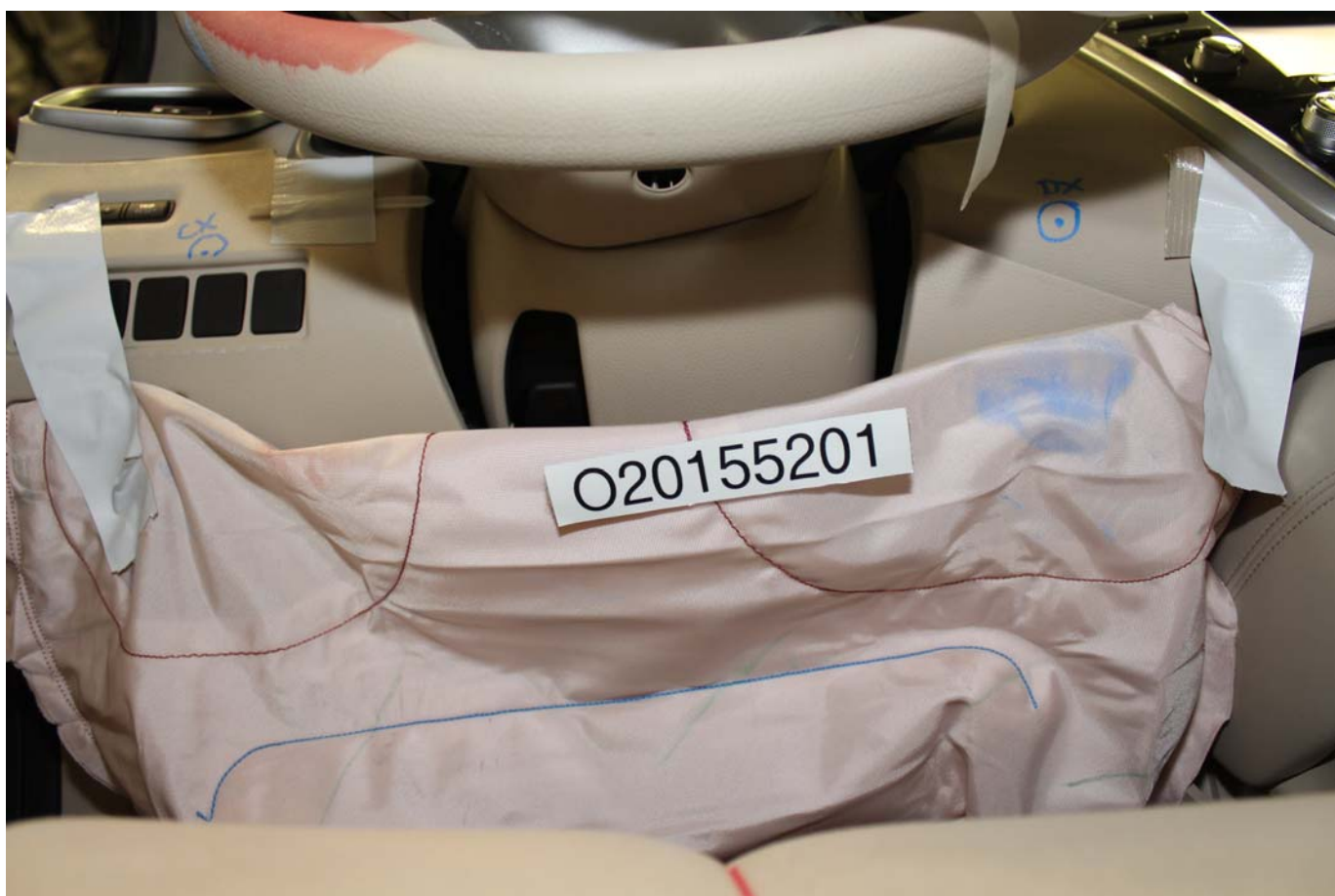
No. 049 - Post-Test Driver Dummy Face



No. 050 - Post-Test Driver Dummy Contact with Airbag



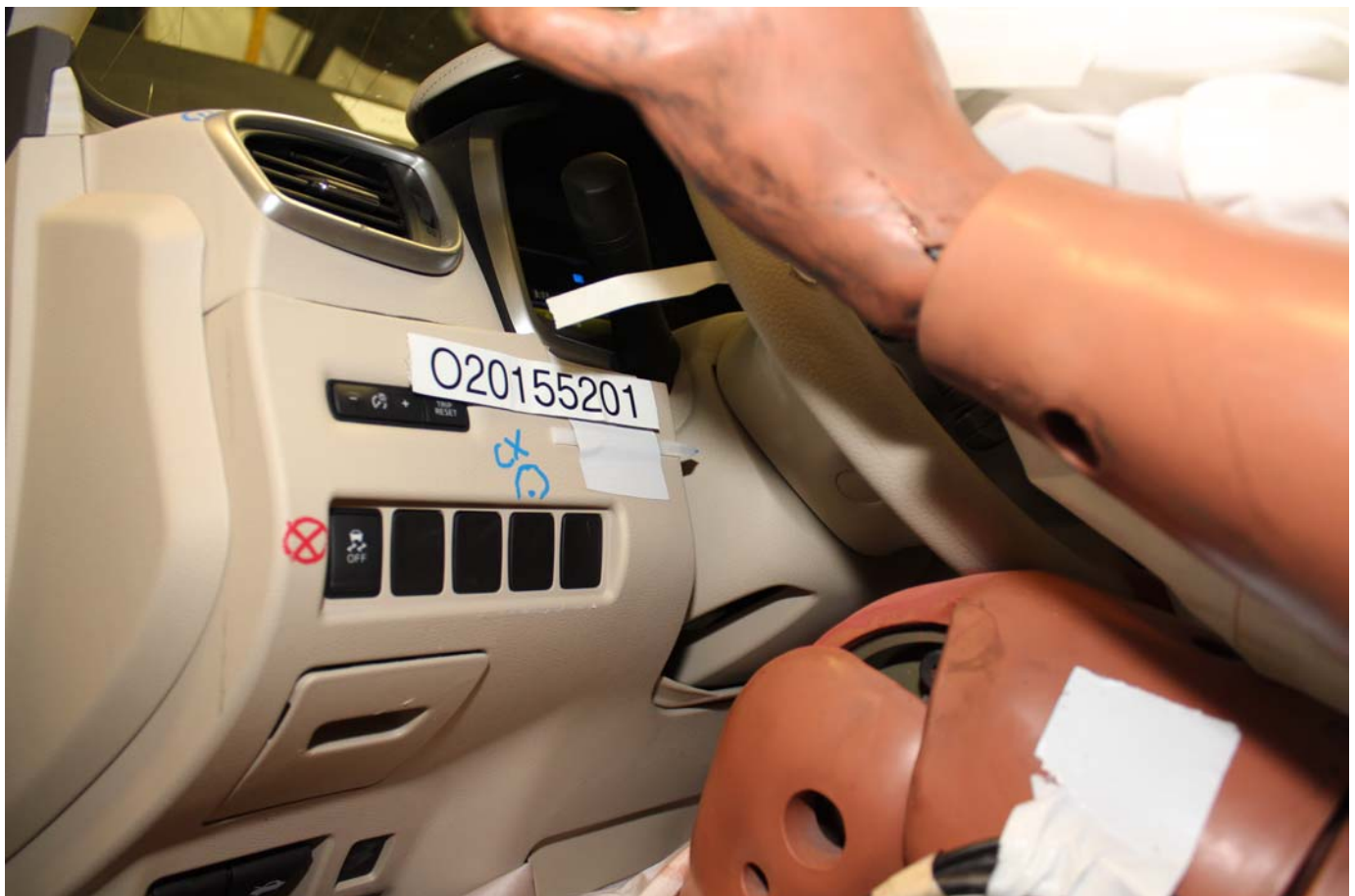
No. 051 - Post-Test Driver Dummy Contact with Headrest



No. 052 - Post-Test Driver Dummy Contact with Knee Airbag



No. 053 - Pre-Test View of the Steering Wheel



No. 054 - Post-Test View of the Steering Wheel



No. 055 - Pre-Test Passenger Dummy Front View



No. 056 - Post-Test Passenger Dummy Front View



No. 057 - Pre-Test Passenger Dummy Window View



No. 058 - Post-Test Passenger Dummy Window View



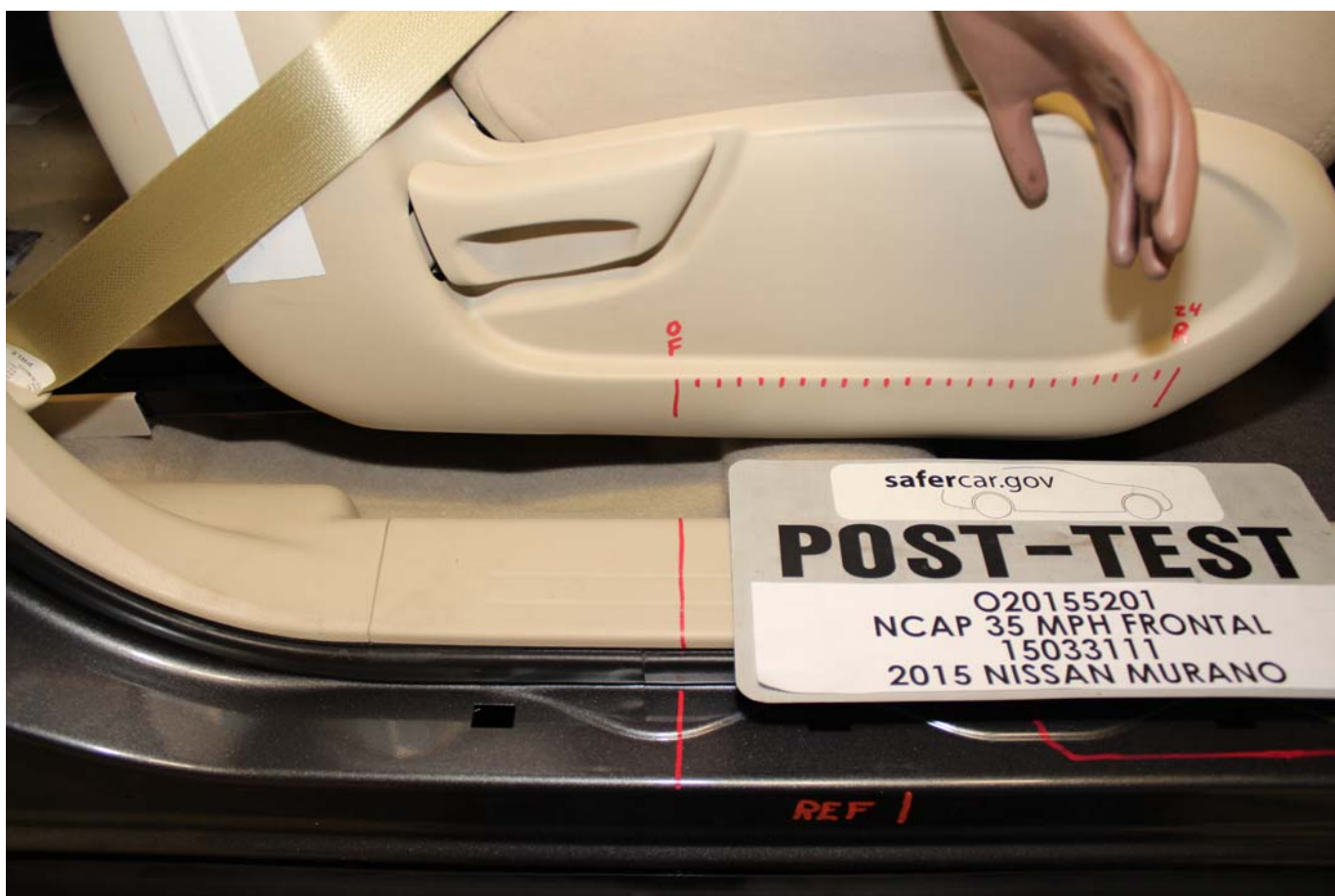
No. 059 - Pre-Test Passenger Dummy and Vehicle Interior (Door Open)



No. 060 - Post-Test Passenger Dummy and Vehicle Interior (Door Open)



No. 061 - Pre-Test Passenger's Seat Fore-Aft Markings



No. 062 - Post-Test Passenger's Seat Fore-Aft Markings



No. 063 - Pre-Test View of Belt Anchorage for Passenger Dummy



No. 064 - Post-Test View of Belt Anchorage for Passenger Dummy



No. 065 - Pre-Test Passenger Dummy Feet



No. 066 - Post-Test Passenger Dummy Feet



No. 067 - Pre-Test Passenger's Side Knee Bolster (without dummy)



No. 068 - Post-Test Passenger's Side Knee Bolster (without dummy)



No. 069 - Pre-Test Passenger's Side Floorpan



No. 070 - Post-Test Passenger's Side Floorpan



No. 071 - Post-Test Passenger Dummy Face



No. 072 - Post-Test Passenger Dummy Contact with Airbag



No. 073 - Post-Test Passenger Dummy Contact with Headrest



No. 074 - Post-Test Passenger Dummy Contact with Glovebox



No. 075 - Ballast Installed in Vehicle

PHOTOGRAPH NOT APPLICABLE

No. 076 - Post-Test Stoddard Solvent Spillage Location View



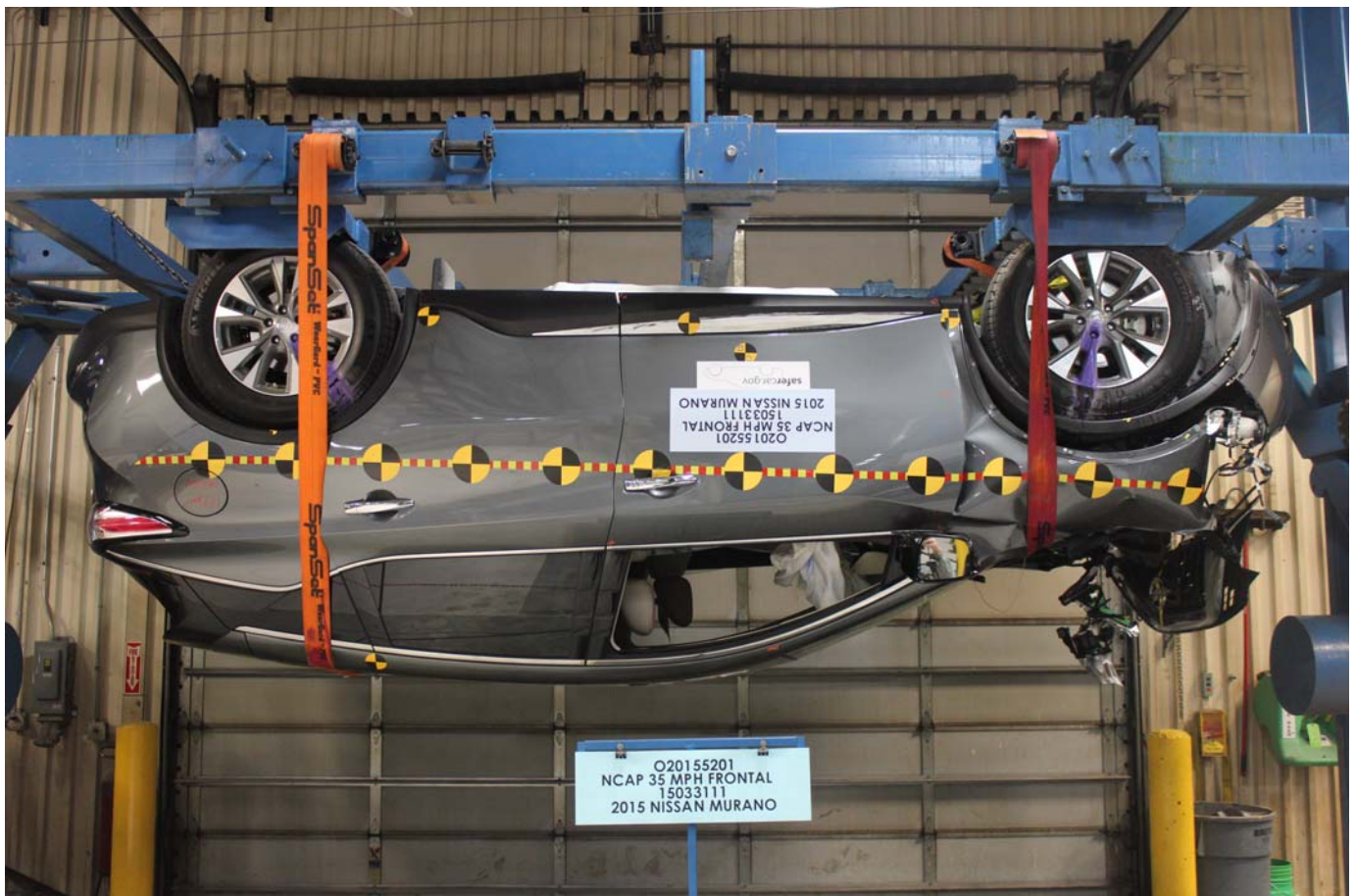
No. 077 - Post-Test Speed Trap Read-Out



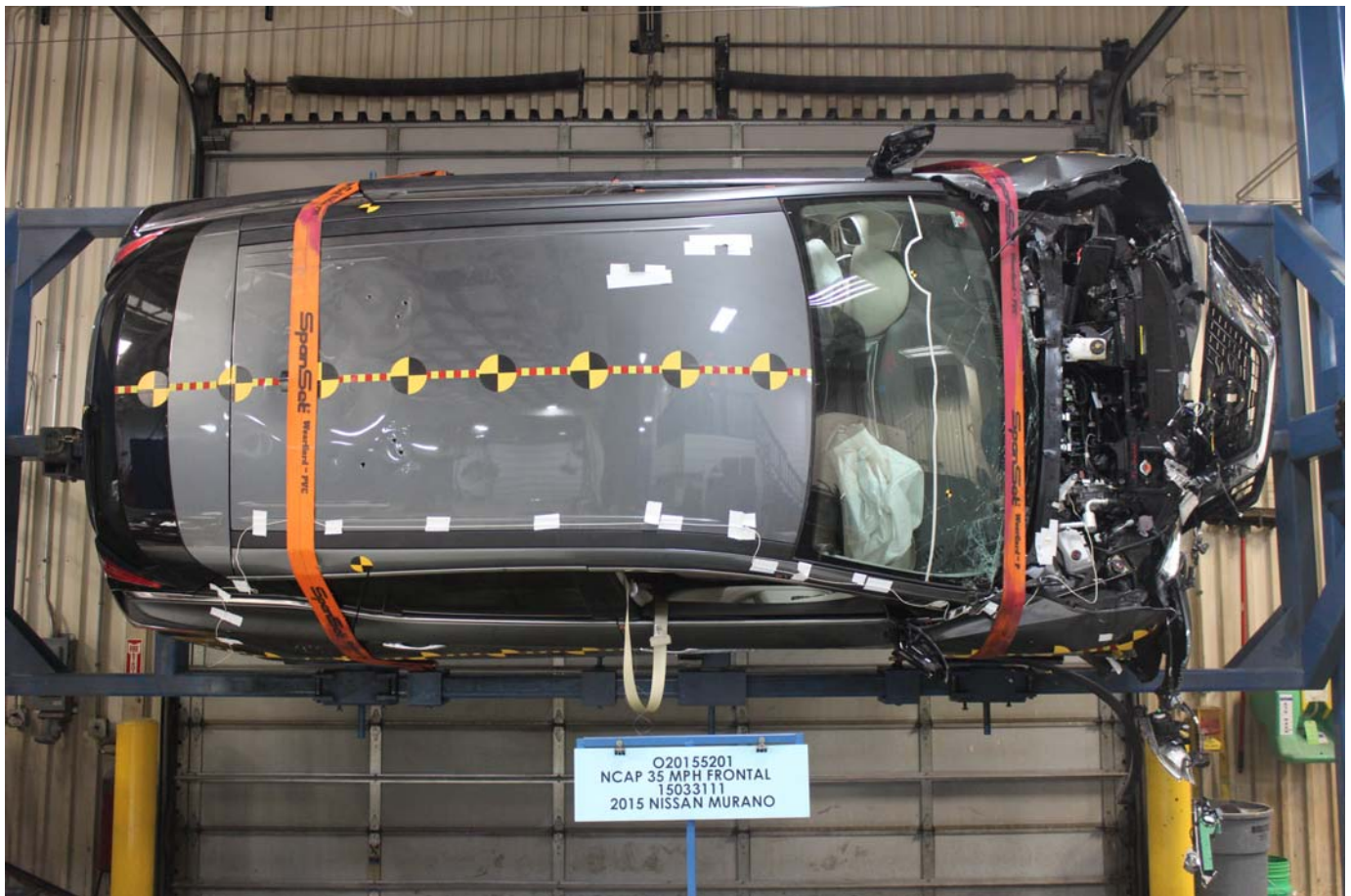
No. 078 - Vehicle at 0 Degree on Static Rollover Device



No. 079 - Vehicle at 90 Degrees on Static Rollover Device



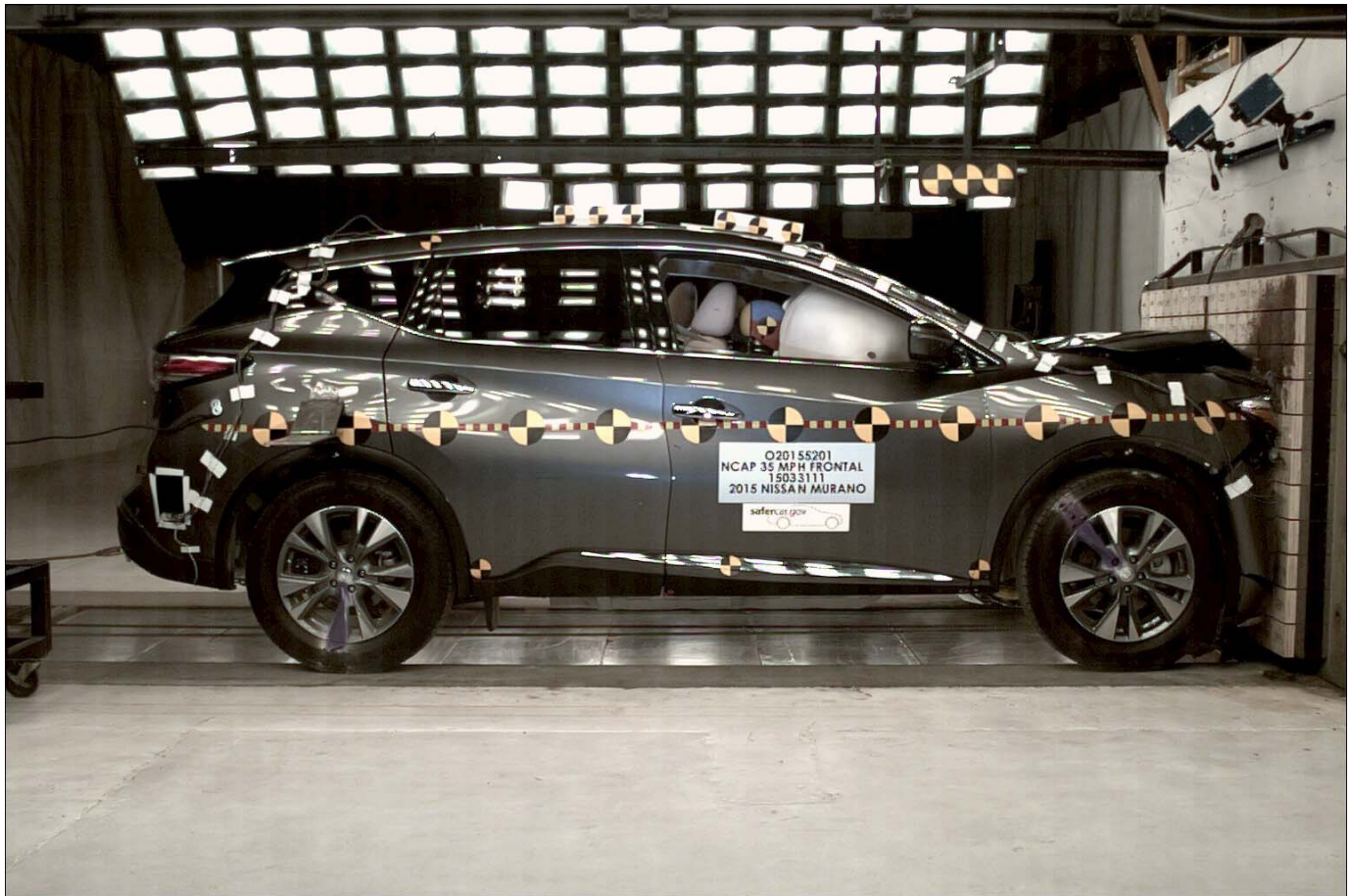
No. 080 - Vehicle at 180 Degrees on Static Rollover Device



No. 081 - Vehicle at 270 Degrees on Static Rollover Device



No. 082 - Vehicle at 360 Degrees on Static Rollover Device



No. 083 - 2015 Nissan Murano S AWD Frontal Impact Event



2015 MURANO S AWD



Scan QR code for general model information & options

Standard Equipment Included at No Extra Charge

MECHANICAL & PERFORMANCE
 3.5 Liter V6 Engine
 XTRONIC CVT®
 (Continuously Variable Transmission)
 All-Wheel Drive
 18" Machined Aluminum-Alloy Wheels

SAFETY & SECURITY
 Driver & Front Passenger, Side-Impact, & Curtain Air Bags
 Driver Knee Air Bag
 Lower Anchors & Tethers for Children (LATCH)
 4-Wheel Anti-lock Braking System (ABS)
 Vehicle Dynamic Control (VDC)
 Traction Control System (TCS)
 Tire Pressure Monitoring System (TPMS) with Easy-Fill Tire Alert
 Vehicle Security System (VSS)
 Hill Start Assist

COMFORT & CONVENIENCE
 NASA-inspired Zero Gravity Front and Rear Outboard Seats
 6-Way Manual Driver's Seat
 4-Way Manual Front Passenger's Seat
 60/40 Split Fold-Down Rear Seats
 Cloth Seats
 Cruise Control
 AM/FM/CD/MP3/WMA In-Dash Changer Audio System with 6 Speakers
 NissanConnect™ with Mobile Apps****
 7" Color Center Display
 SiriusXM Satellite Radio**
 Front USB Connection Port
 Bluetooth® Hands-free Phone System
 Streaming Audio via Bluetooth®
 Auxiliary Audio Input Jack
 Hands-Free Text Messaging Assistant
 RearView Monitor
 7" Advanced Drive-Assist® Display
 Dual Zone Automatic Temperature Control (ATC) with Front & Rear Vents
 Nissan Intelligent Key® with Push Button Ignition
 Power Windows with Front Window One-Touch Auto-Up/Down and Auto-Reverse Feature
 Three 12-Volt DC Power Outlets

EXTERIOR
 LED Signature and Daytime Running Lights
 Automatic On/Off Headlights
 Outside Mirrors with LED Turn Indicators
 LED Taillights
 Rear Tinted Privacy Glass

****SiriusXM Includes activation & 3 months of service only; subscription sold separately. SiriusXM services are not available in AK, HI and some markets.**

*****Optional Equipment Replaces Standard Where Applicable**

******Only use NissanConnect™ services when safe to do so. Subscription Agreement required. Not all features available for all models. Some apps have late availability. Compatible smartphone required. Cellular network not available in all areas. Apps/services subject to change. May require dealer service visit or software upgrade to activate. Service provider may terminate/suspend service without notice. Nissan not responsible for equipment upgrades/replacements required due to service changes. Text and/or data rates may apply.**

Manufacturer's Suggested Retail Base Price:	\$31,160.00
Options Included by Manufacturer FLOOR MATS & CARGO AREA PROTECTOR	210.00
DESTINATION CHARGES	885.00
Total*	\$32,255.00

EPA DOT Fuel Economy and Environment Gasoline Vehicle

Fuel Economy

24 MPG

combined city/hwy

21 city 28 highway

4.2 gallons per 100 miles

You spend \$0 more in fuel costs over 5 years compared to the average new vehicle.

MID-SIZE STATION WAGON range from 18 to 42 MPG. The best vehicle rates 119 MPGe.

Annual fuel cost \$2,200

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

1 6 10 1 5 10 Best

This vehicle emits 376 grams CO₂ per mile. The best emits 6 grams per mile (tailpipe only). Producing and distributing fuel also create emissions; learn more at fueleconomy.gov.

fueleconomy.gov

Calculate personalized estimates and compare vehicles

GOVERNMENT 5-STAR SAFETY RATINGS

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

Frontal Crash Based on the risk of injury in a frontal impact.	Driver Passenger Not Rated Based on the risk of injury in a side impact.	Not Rated Based on the risk of rollover in a single-vehicle crash.
---	---	---

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

DELIVERY

VEHICLE COLORS:
EXT: GUN METALLIC
INT: BEIGE

FINAL ASSEMBLY POINT:
CANTON

TRANSPORT METHOD:
TRUCK

DEALER:
HOSELTON NISSAN
66 MARSH RD
EAST ROCHESTER NY 14445

This Vehicle qualifies for Nissan's

Security+Plus Vehicle Protection Plan

The only service agreement backed by Nissan!
 Ask your dealer for details, or call 1-800-NISSAN-1 for more information

VIN: 5N1AZ2MH5FN207142
EMS: 50 STATE EMISSIONS
MDL: 23015-207142 KAD-P
OPT: G-C03L92266

2014121623534SA07156

No. 084 - Monroney Label Photograph

APPENDIX B
DUMMY RESPONSE DATA TRACES

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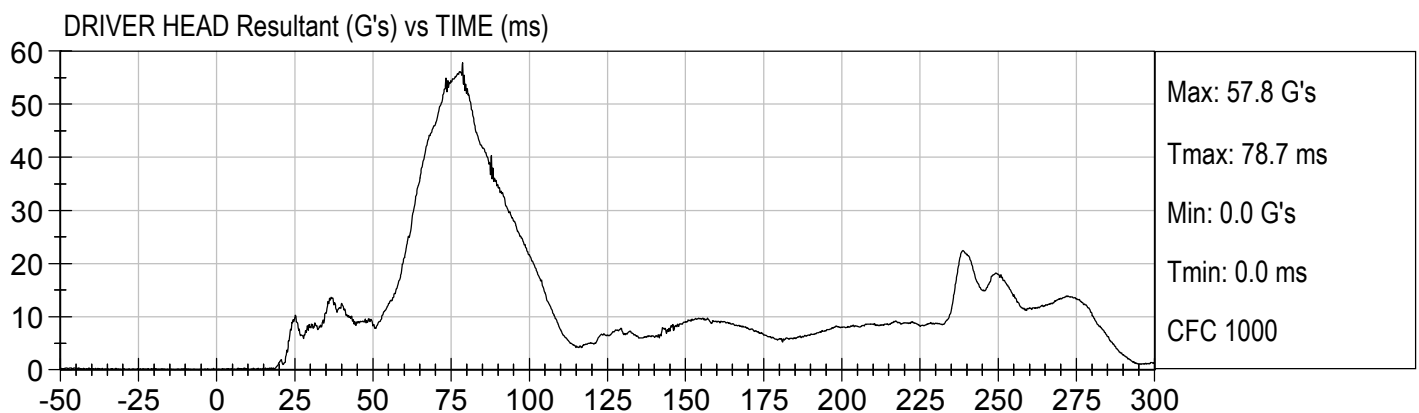
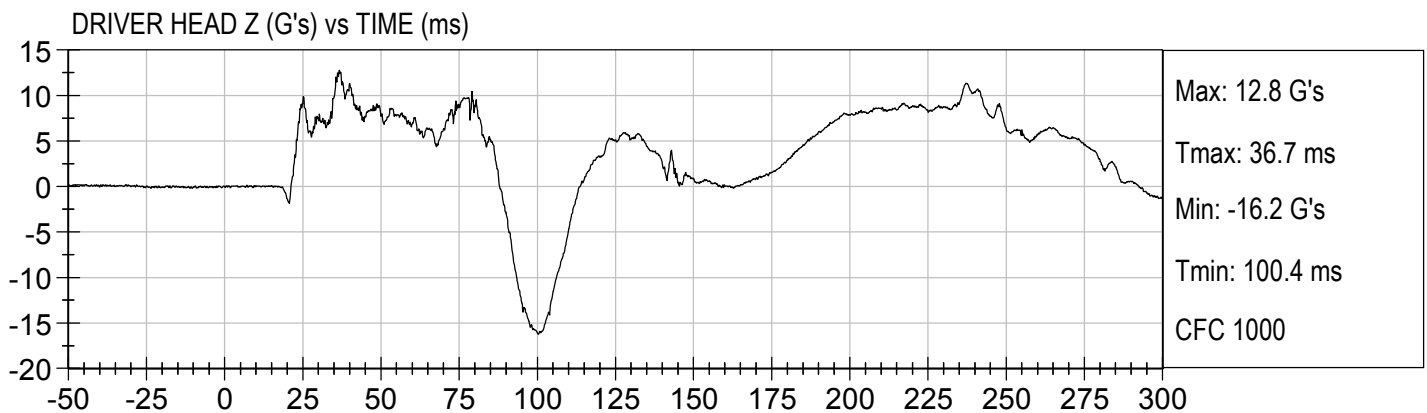
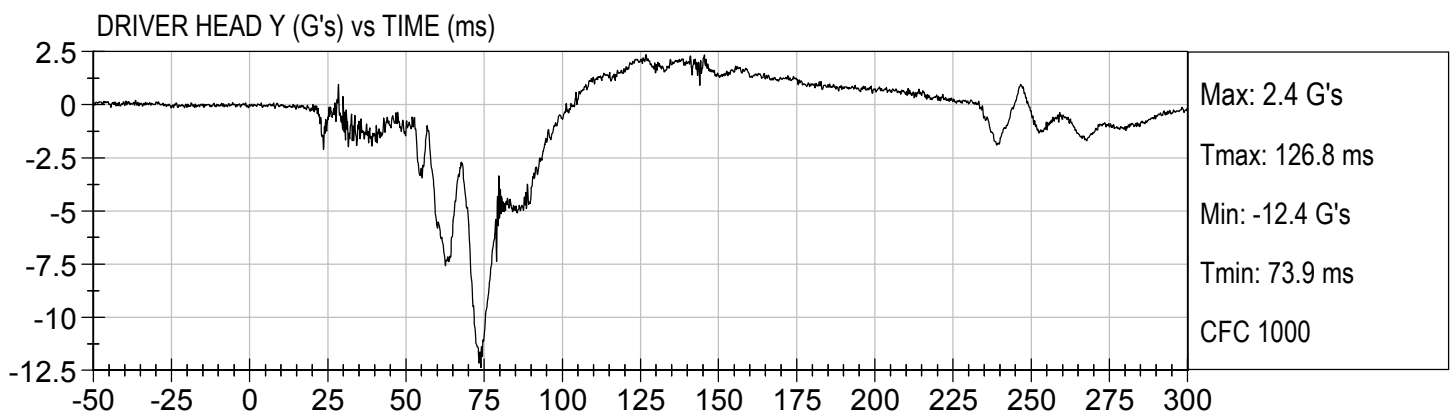
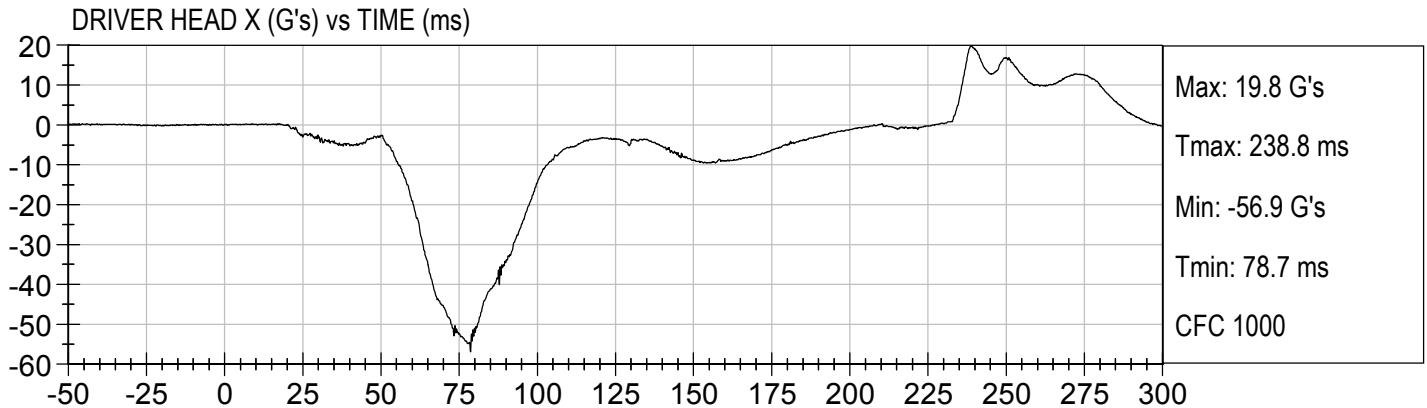
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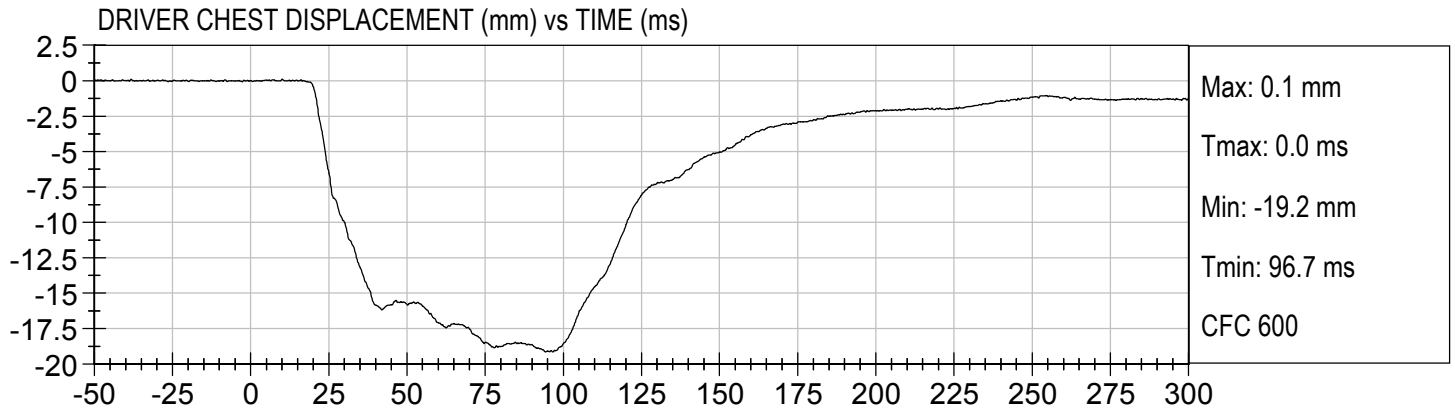
The following additional dummy and vehicle response data can be found in the R&D section of the NHTSA website at www.nhtsa.dot.gov

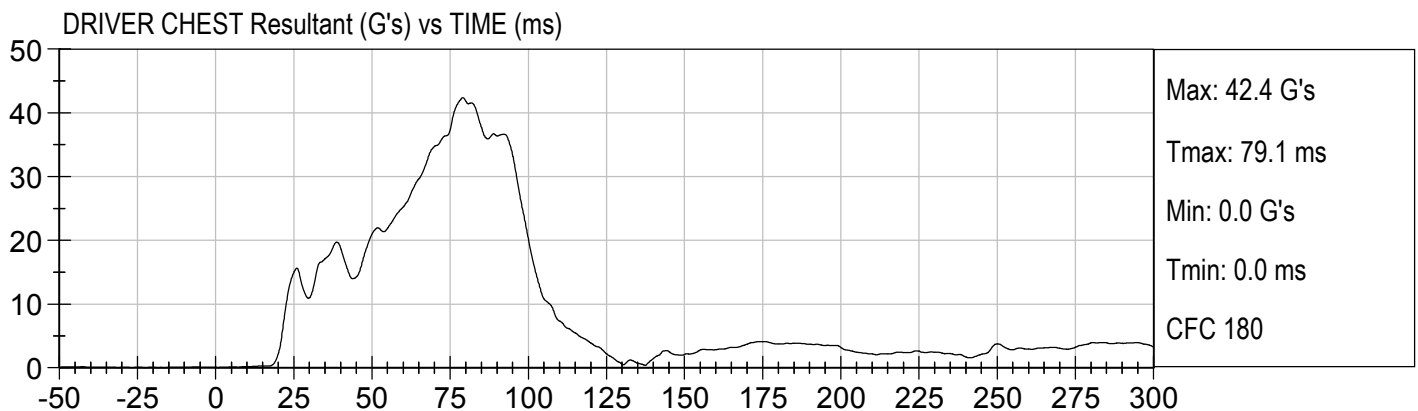
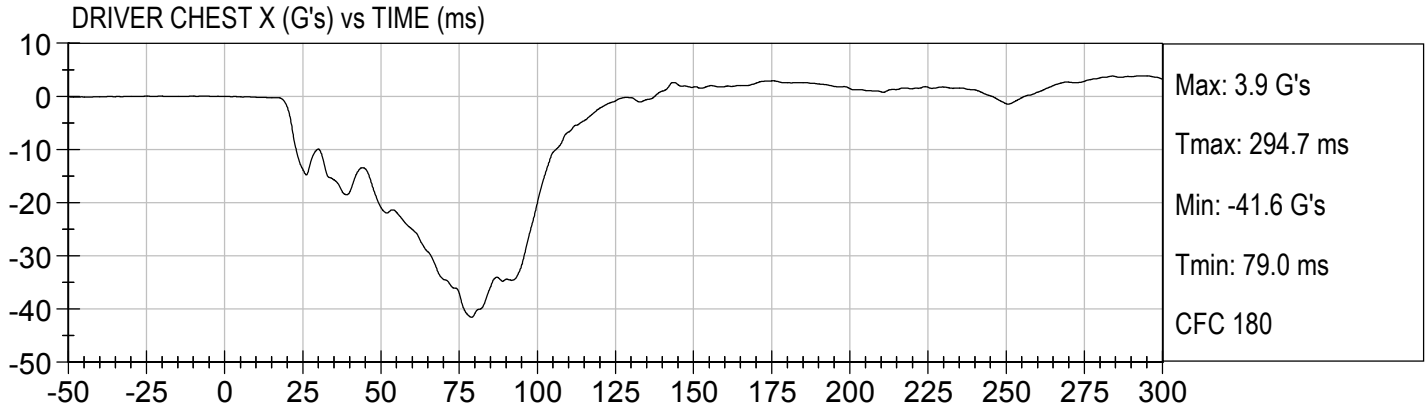
Driver Head X Redundant
 Driver Head Y Redundant
 Driver Head Z Redundant
 Driver Upper Neck Force Y
 Driver Upper Neck Moment X
 Driver Upper Neck Moment Z
 Driver Chest X Redundant
 Driver Chest Y Redundant
 Driver Chest Z Redundant
 Driver Pelvis X
 Driver Pelvis Y
 Driver Pelvis Z
 Driver Left Femur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

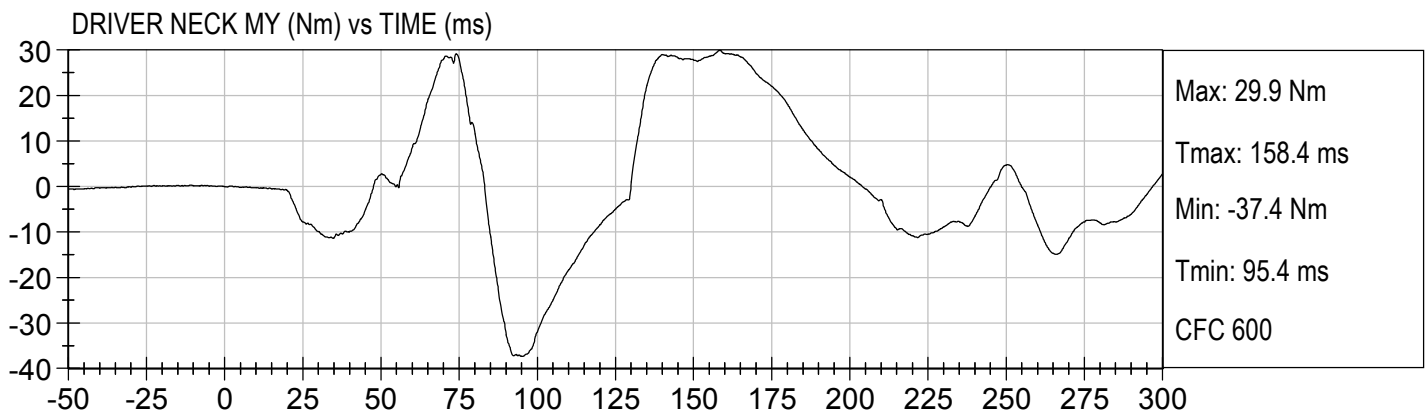
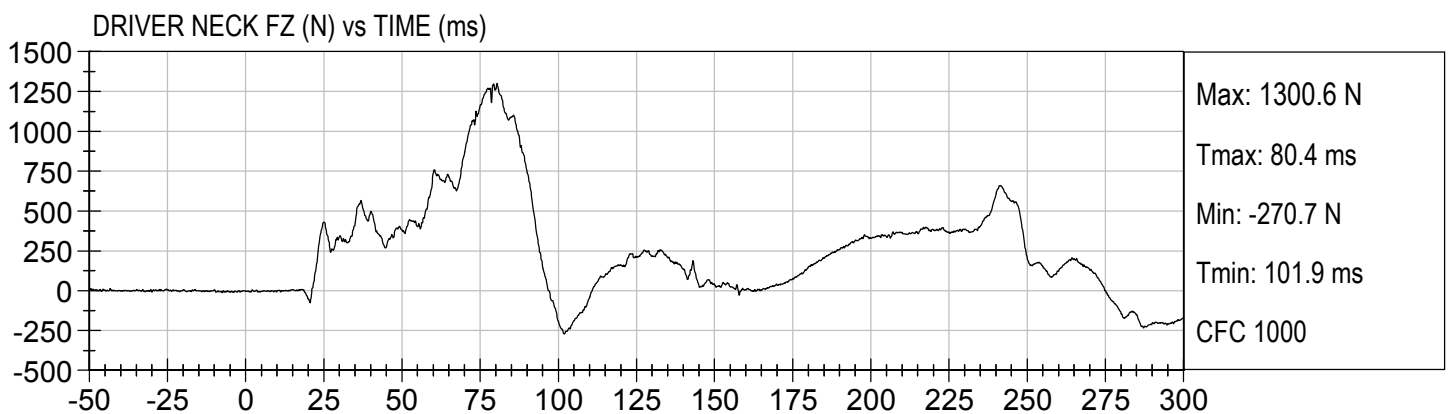
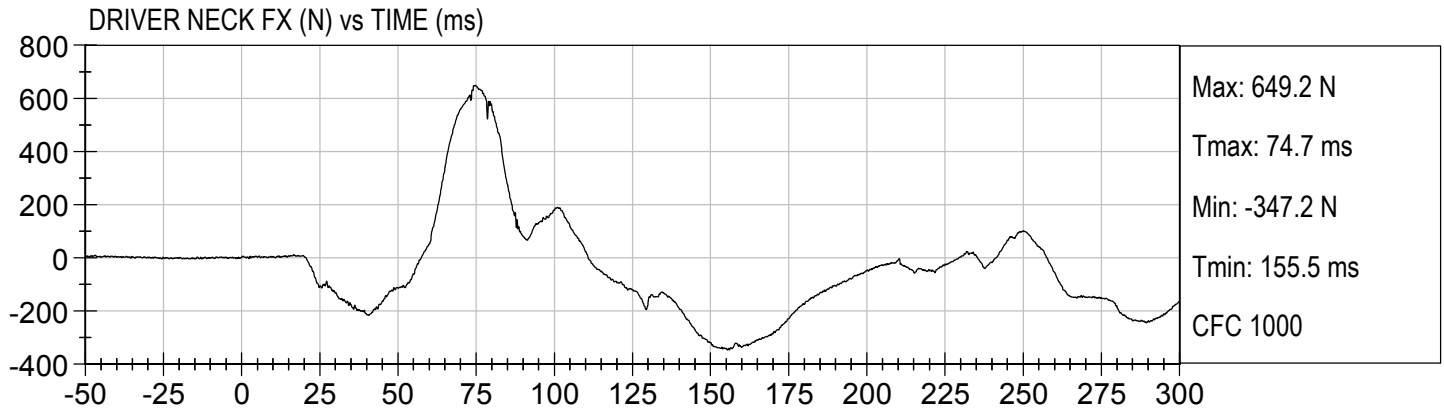
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Driver Left Lower Tibia Moment Y
Driver Left Lower Tibia Force Z
Driver Right Upper Tibia Moment X
Driver Right Upper Tibia Moment Y
Driver Right Upper Tibia Force Z
Driver Right Lower Tibia Moment X
Driver Right Lower Tibia Moment Y
Driver Right Lower 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
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Passenger Chest Z Redundant
Passenger Pelvis X
Passenger Pelvis Y
Passenger Pelvis Z

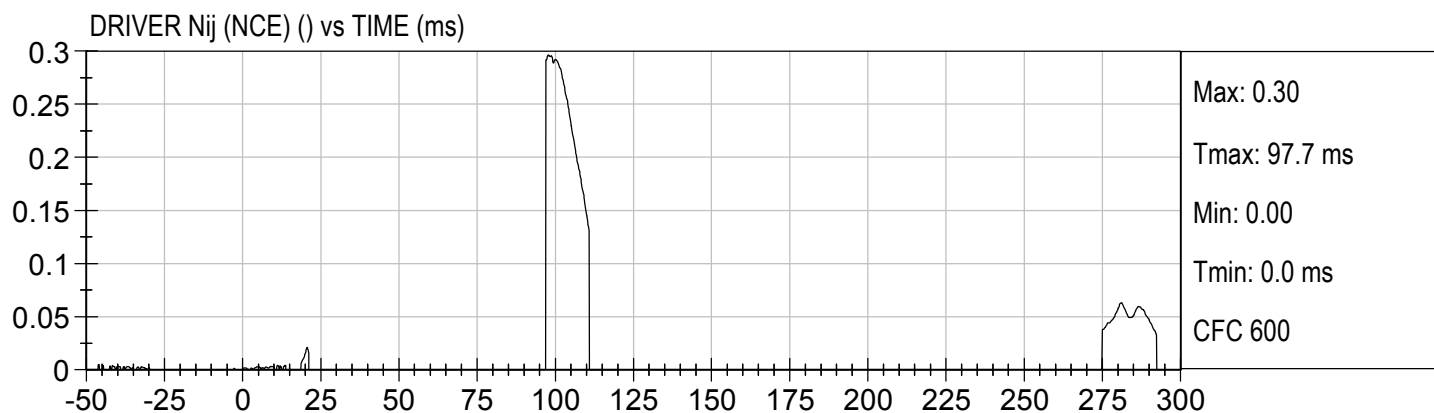
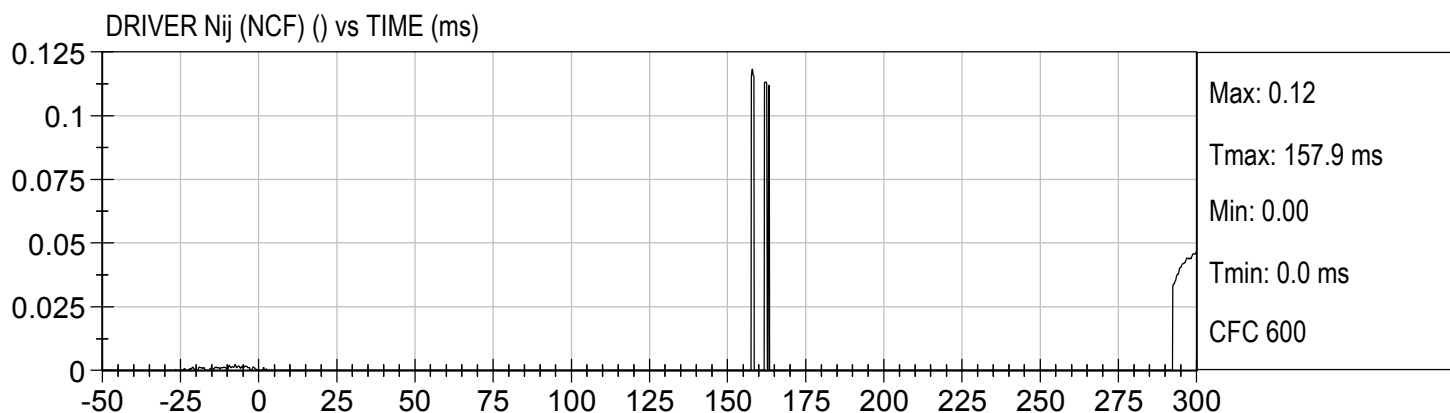
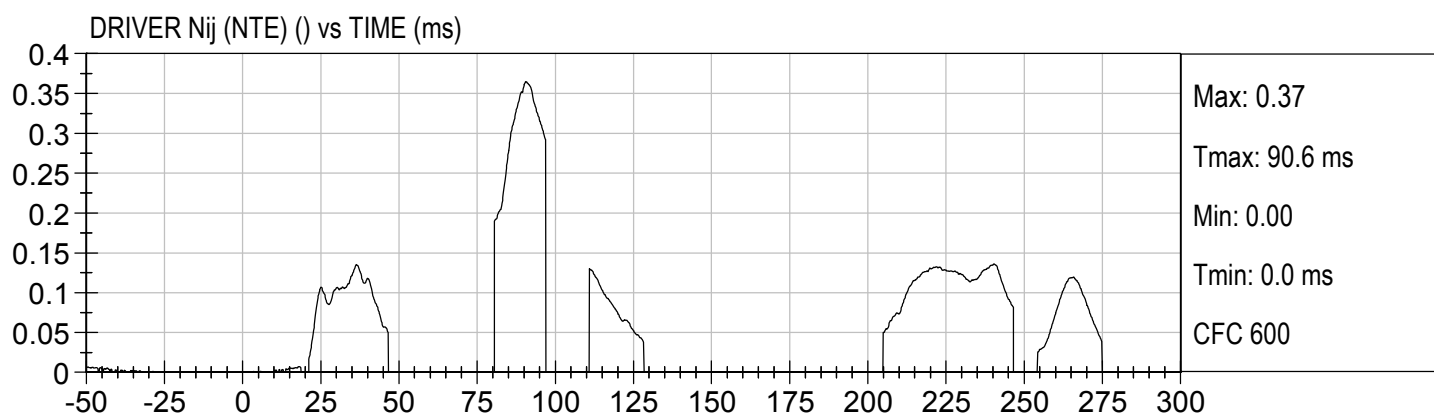
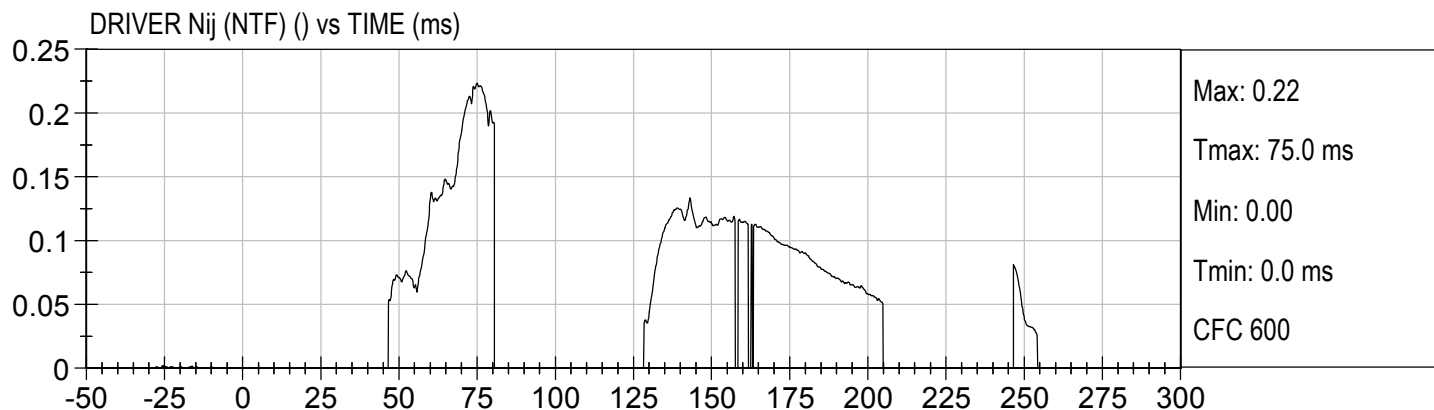
Passenger Left Femur Redundant
Passenger Right Femur Redundant
Passenger Left Upper Tibia Moment X
Passenger Left Upper Tibia Moment Y
Passenger Left Upper Tibia Force Z
Passenger Left Lower Tibia Moment X
Passenger Left Lower Tibia Moment Y
Passenger Left Lower Tibia Force Z
Passenger Right Upper Tibia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

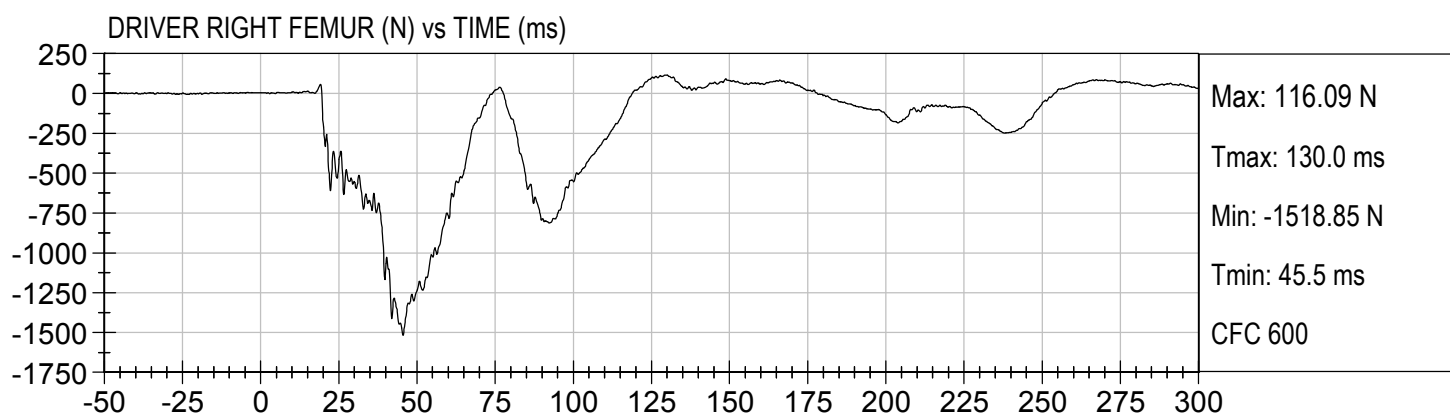
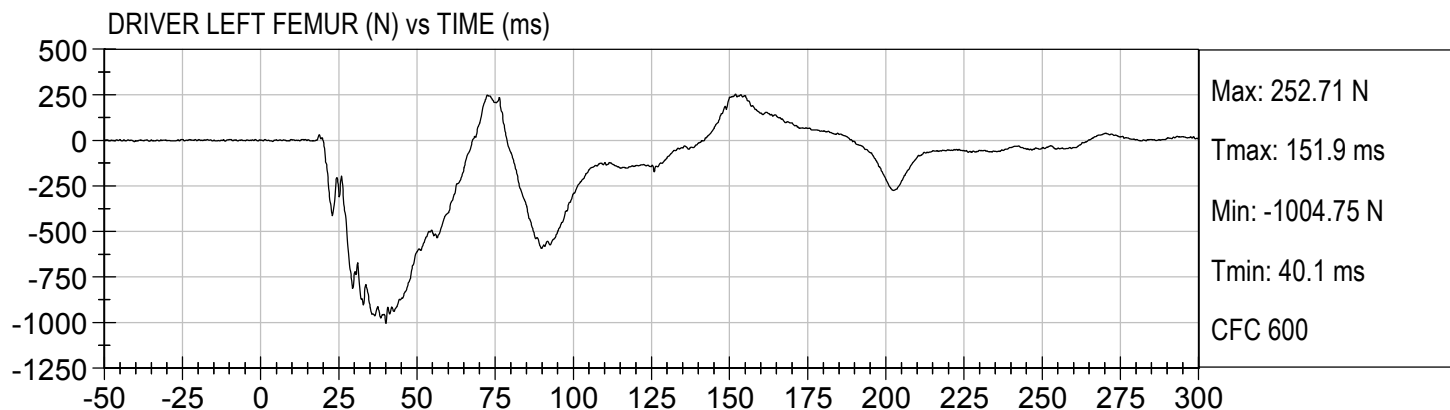


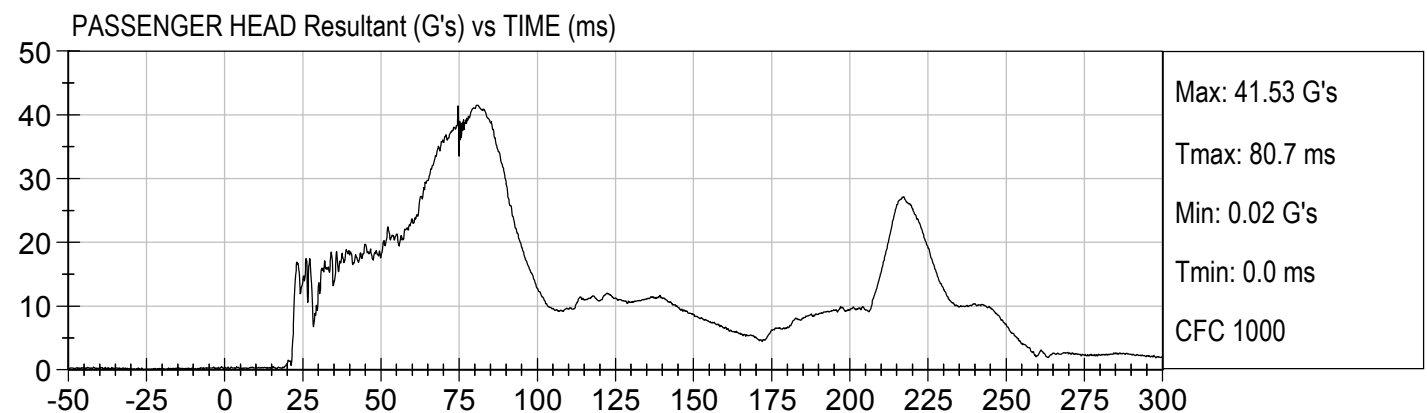
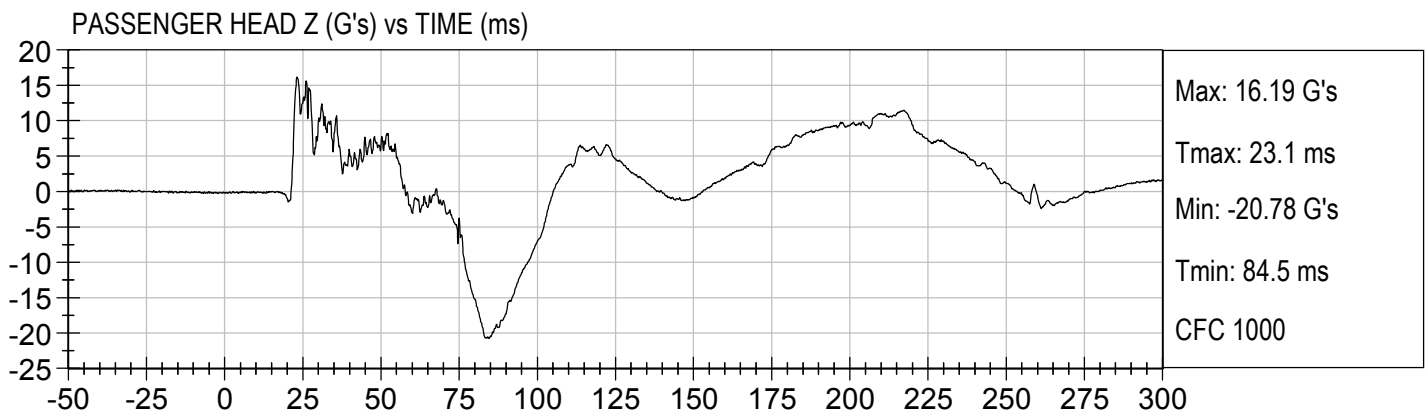
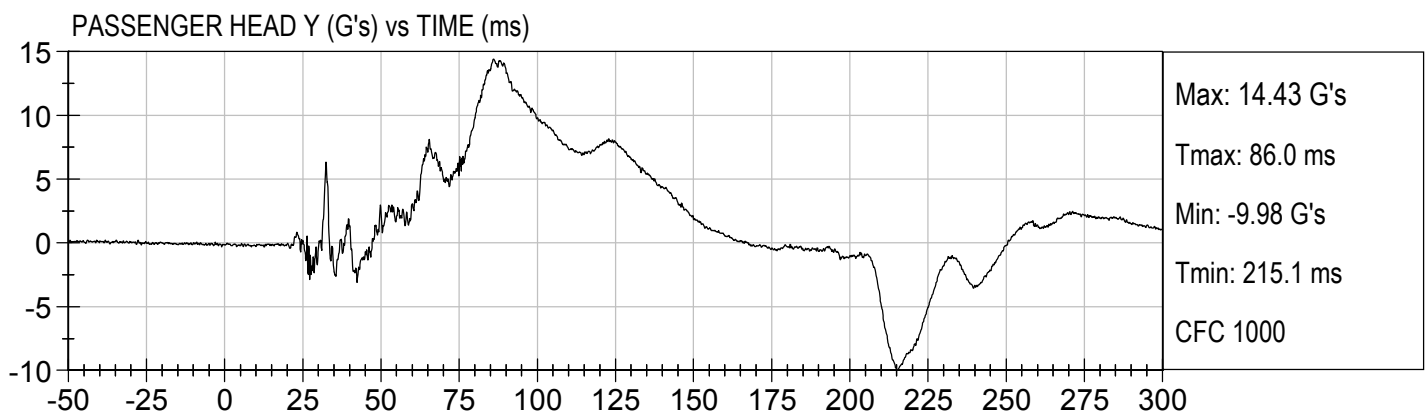
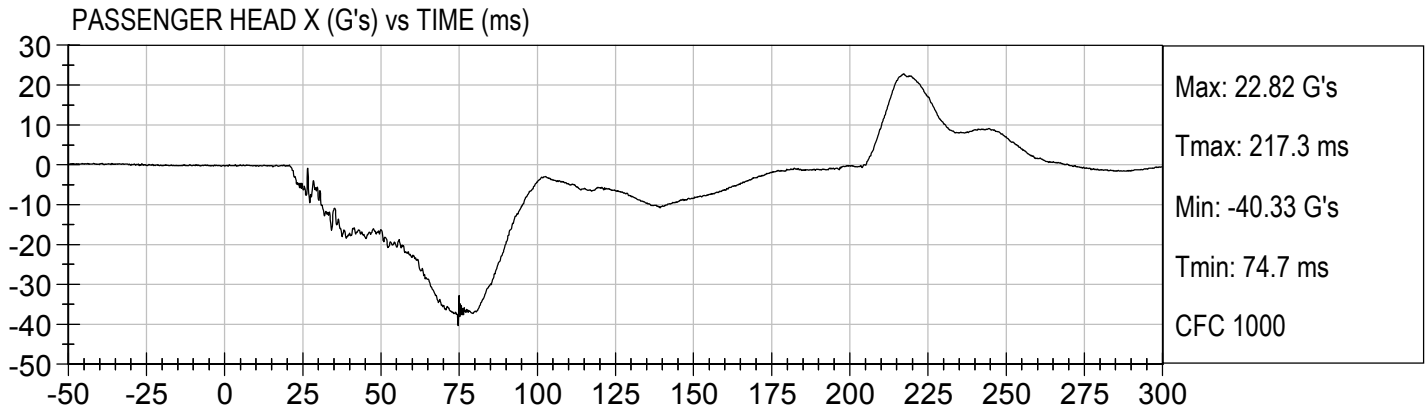


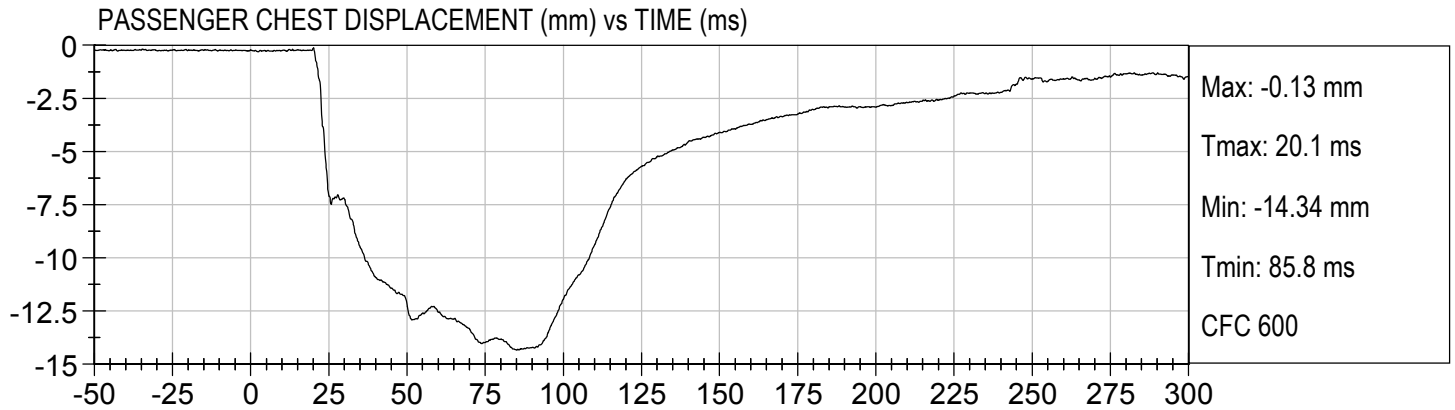


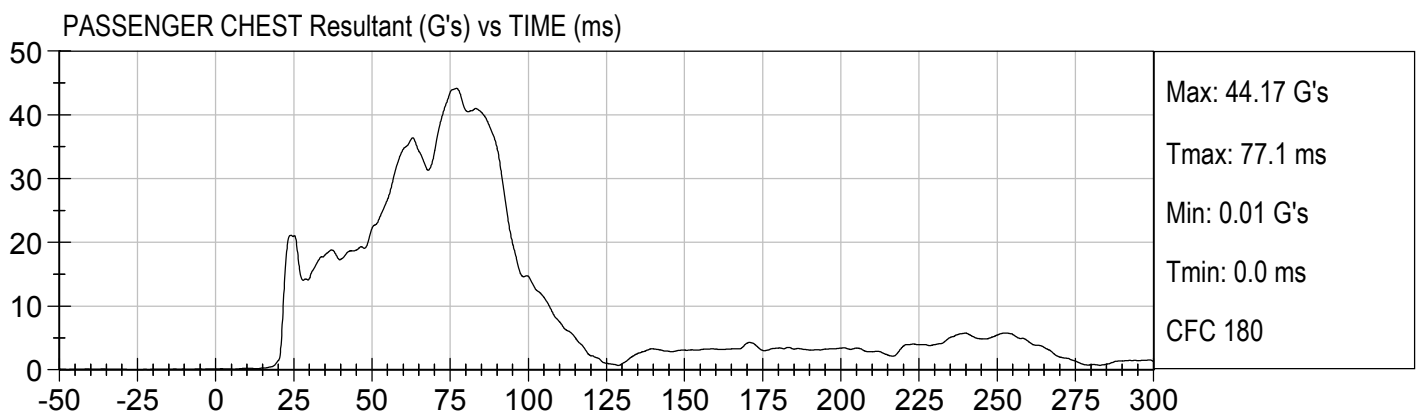
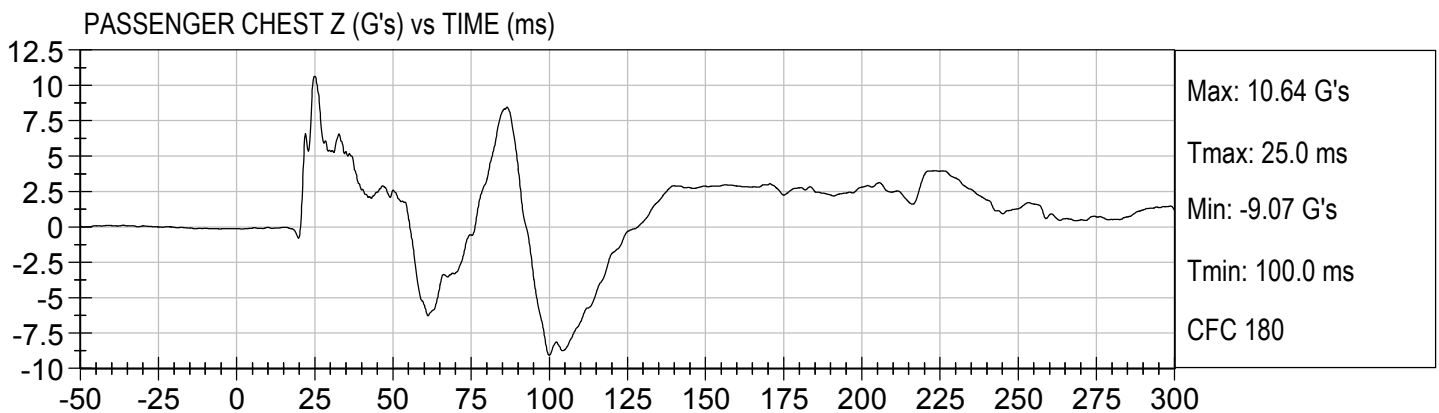
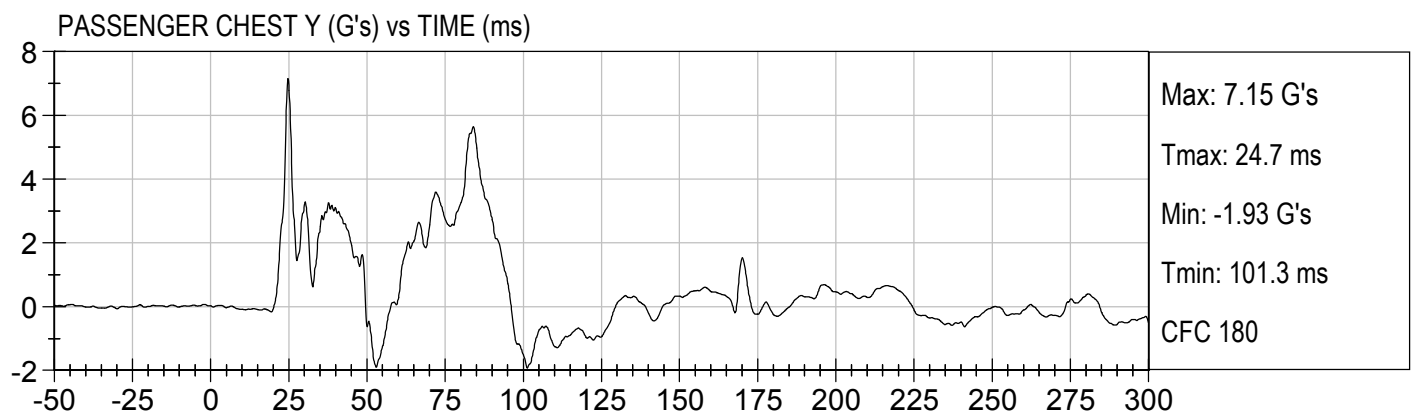
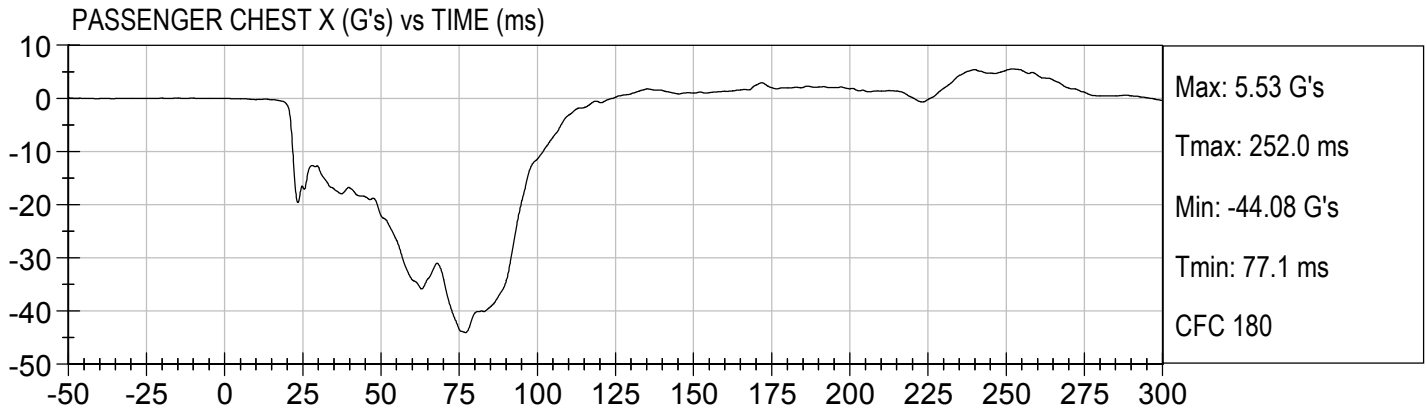


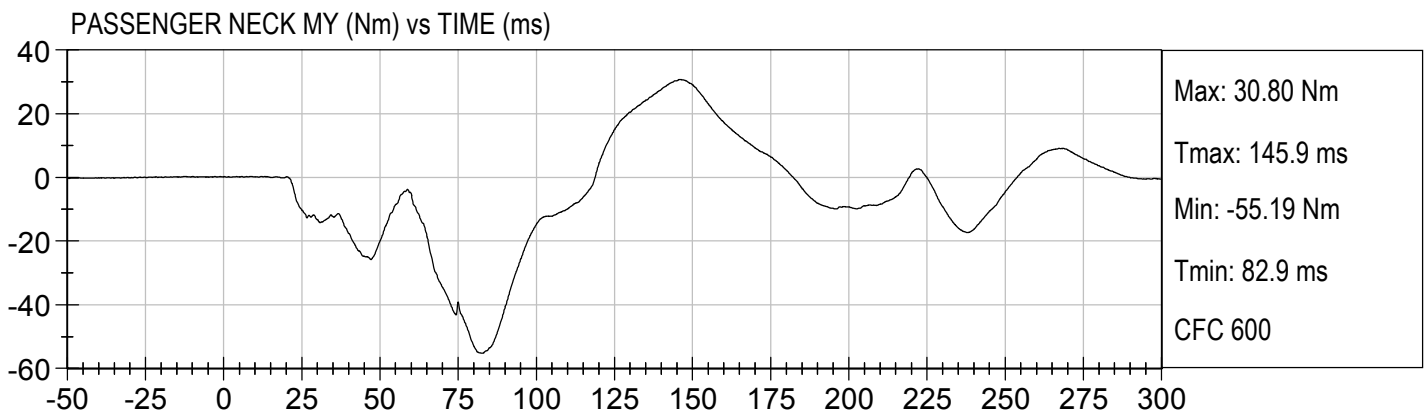
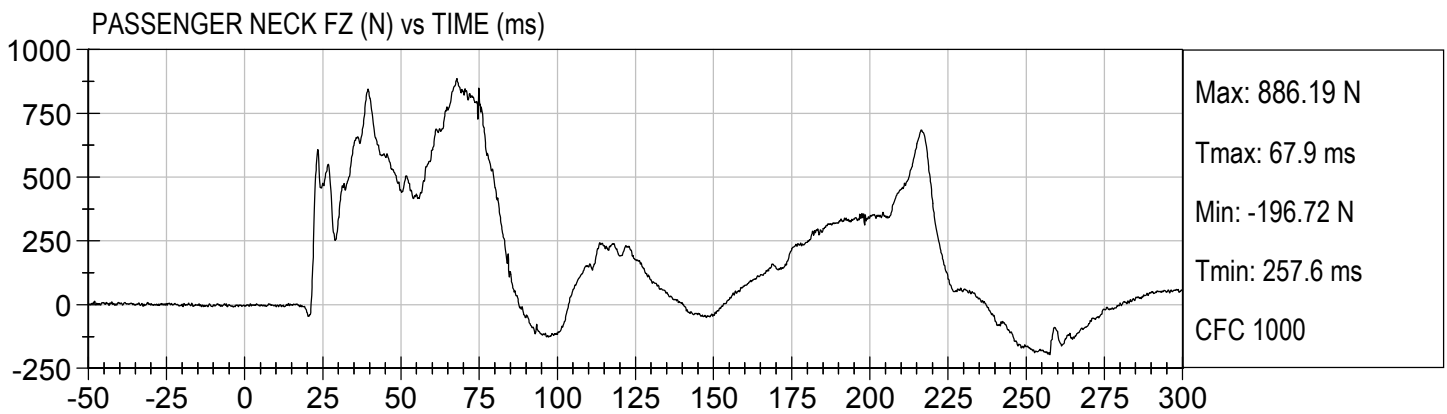
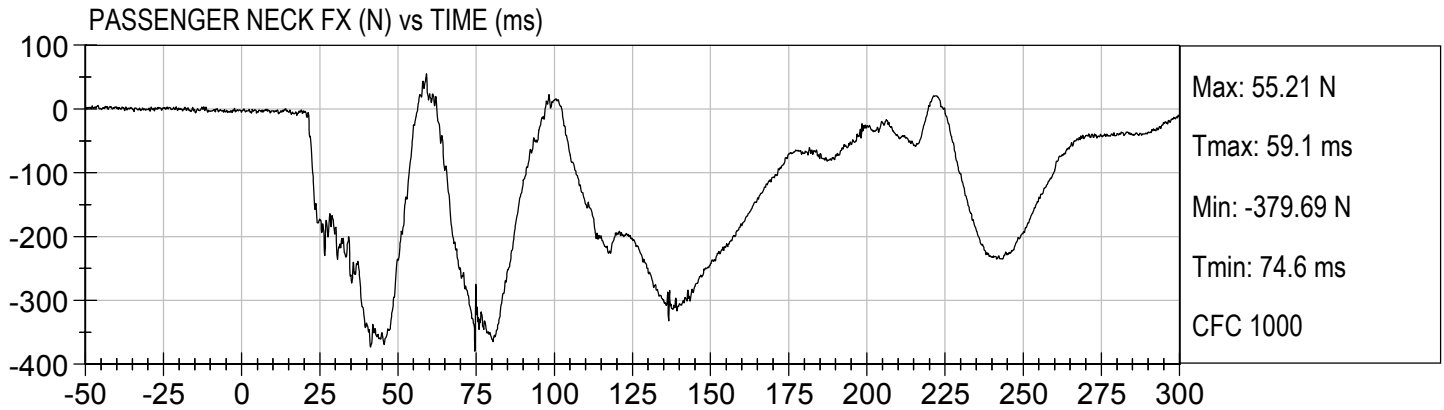


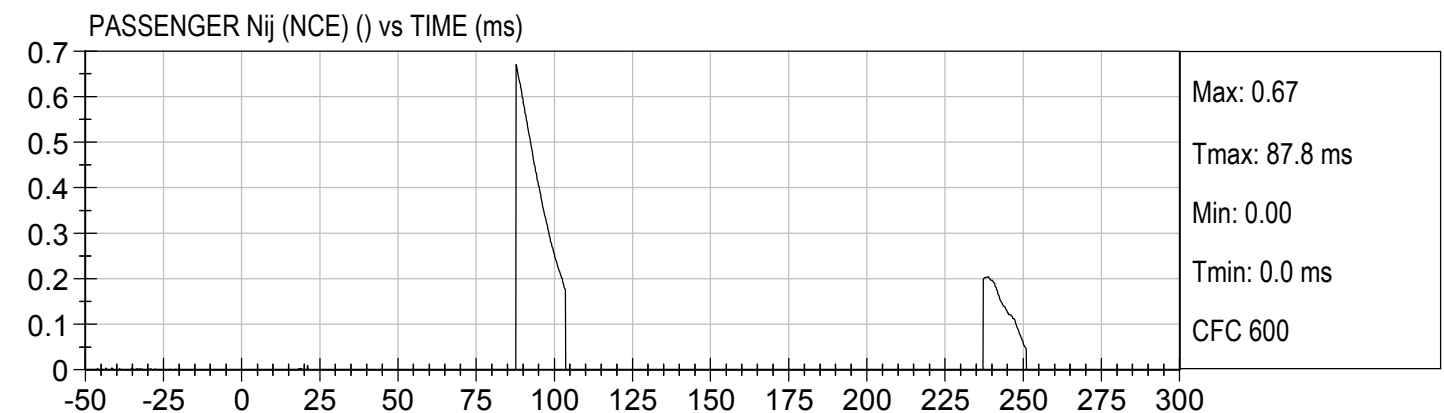
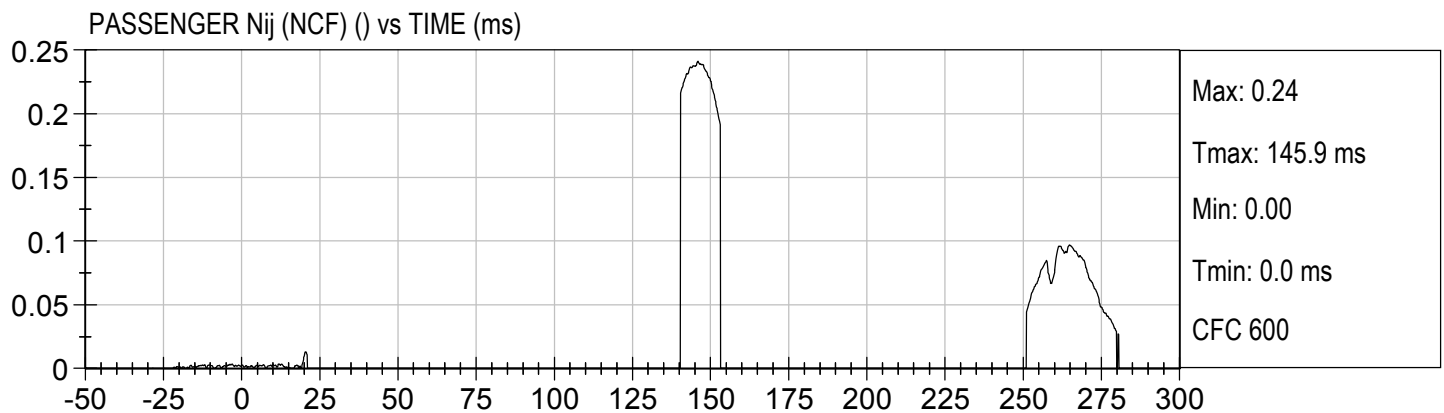
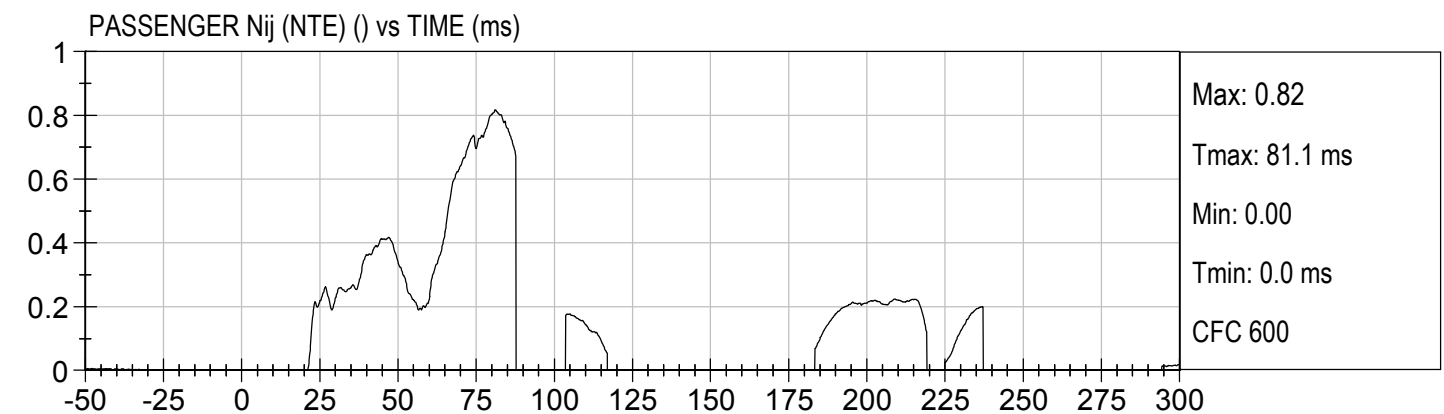
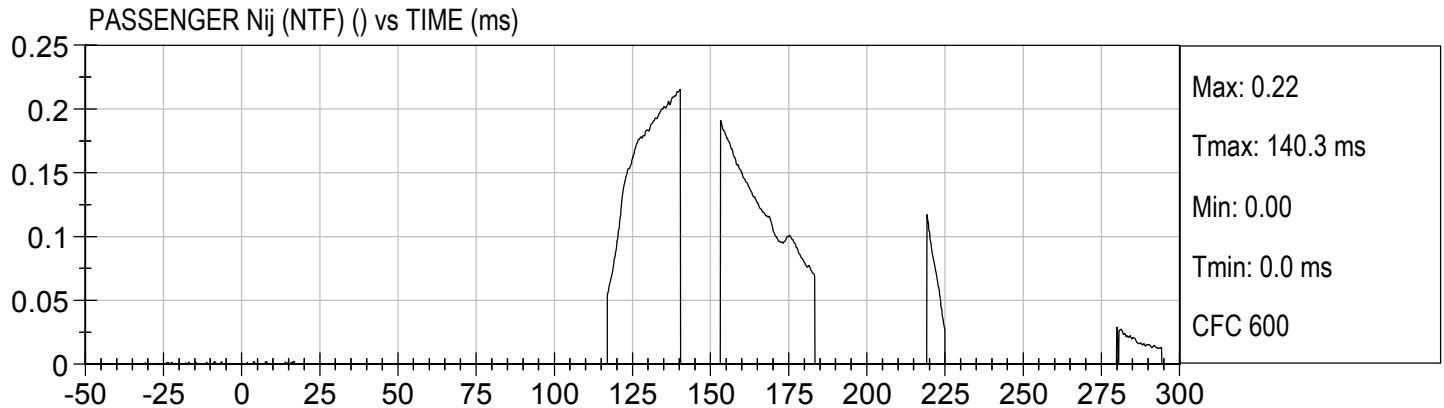


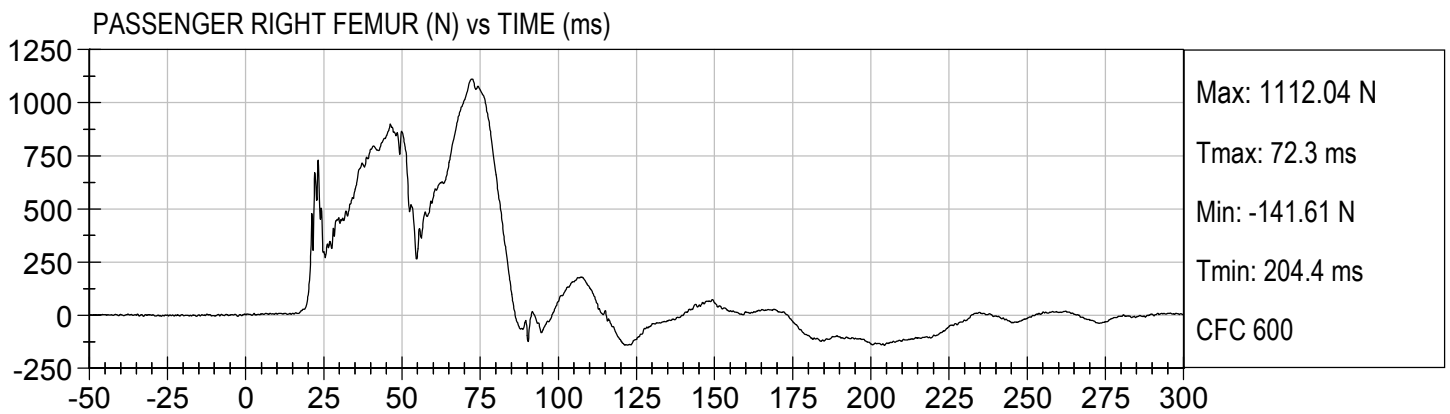
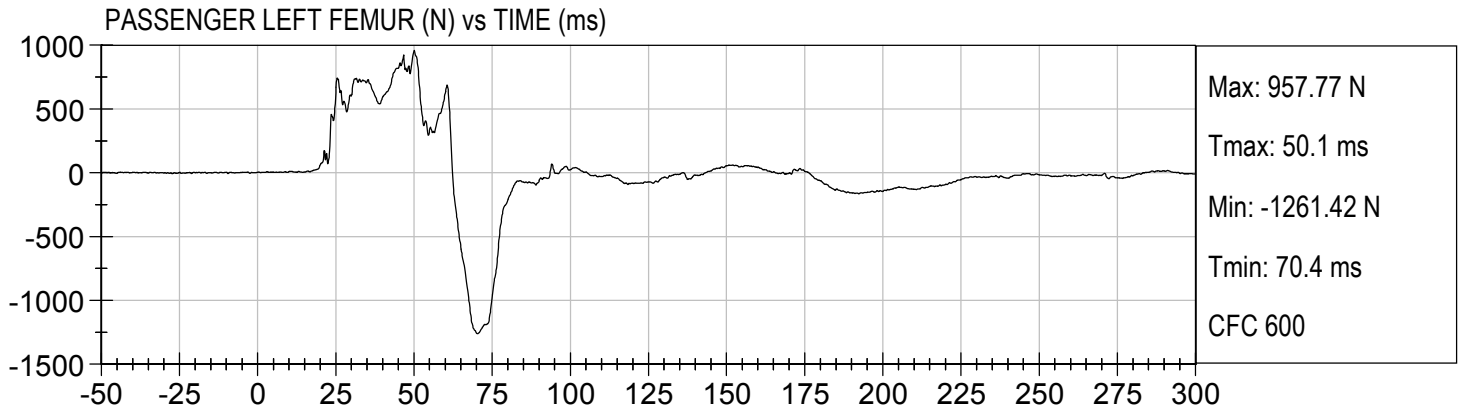












APPENDIX C
DUMMY CALIBRATION AND PERFORMANCE VERIFICATION DATA

Hybrid III, 50th External Measurements
SN: 351

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

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

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

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

ATD Serial No: 351

Test ID: D15761

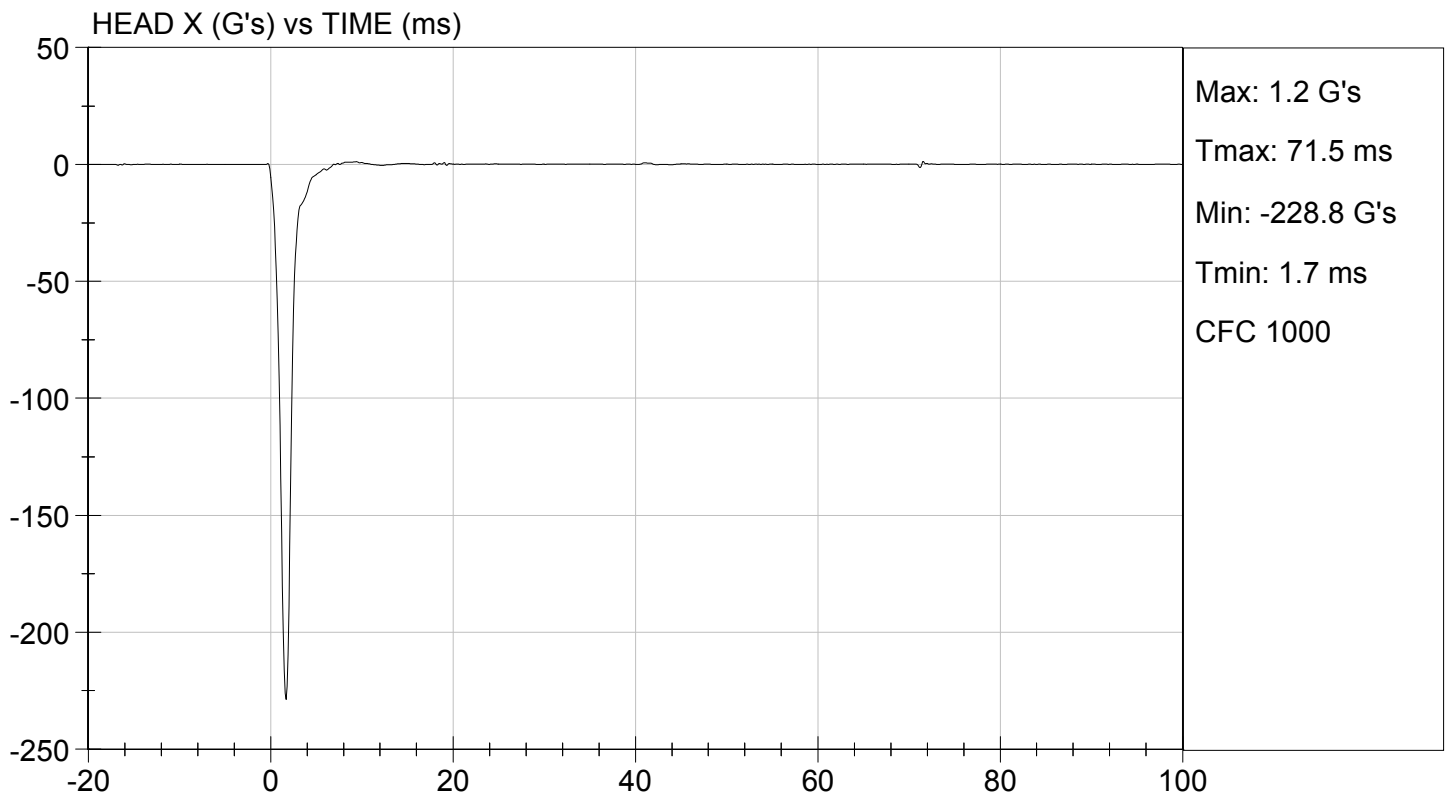
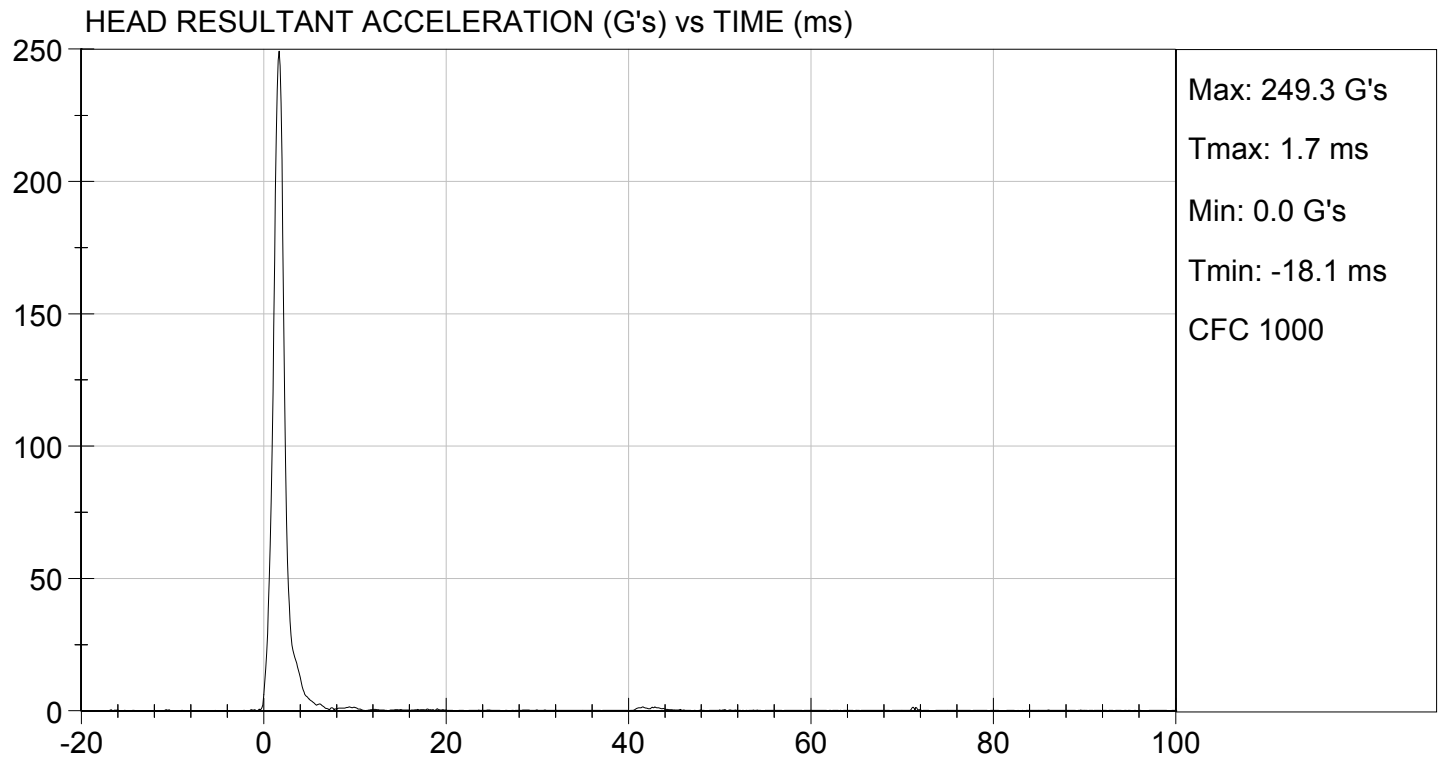
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	20.9	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Peak Resultant Acceleration	G's	225 to 275	249	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-1.1	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

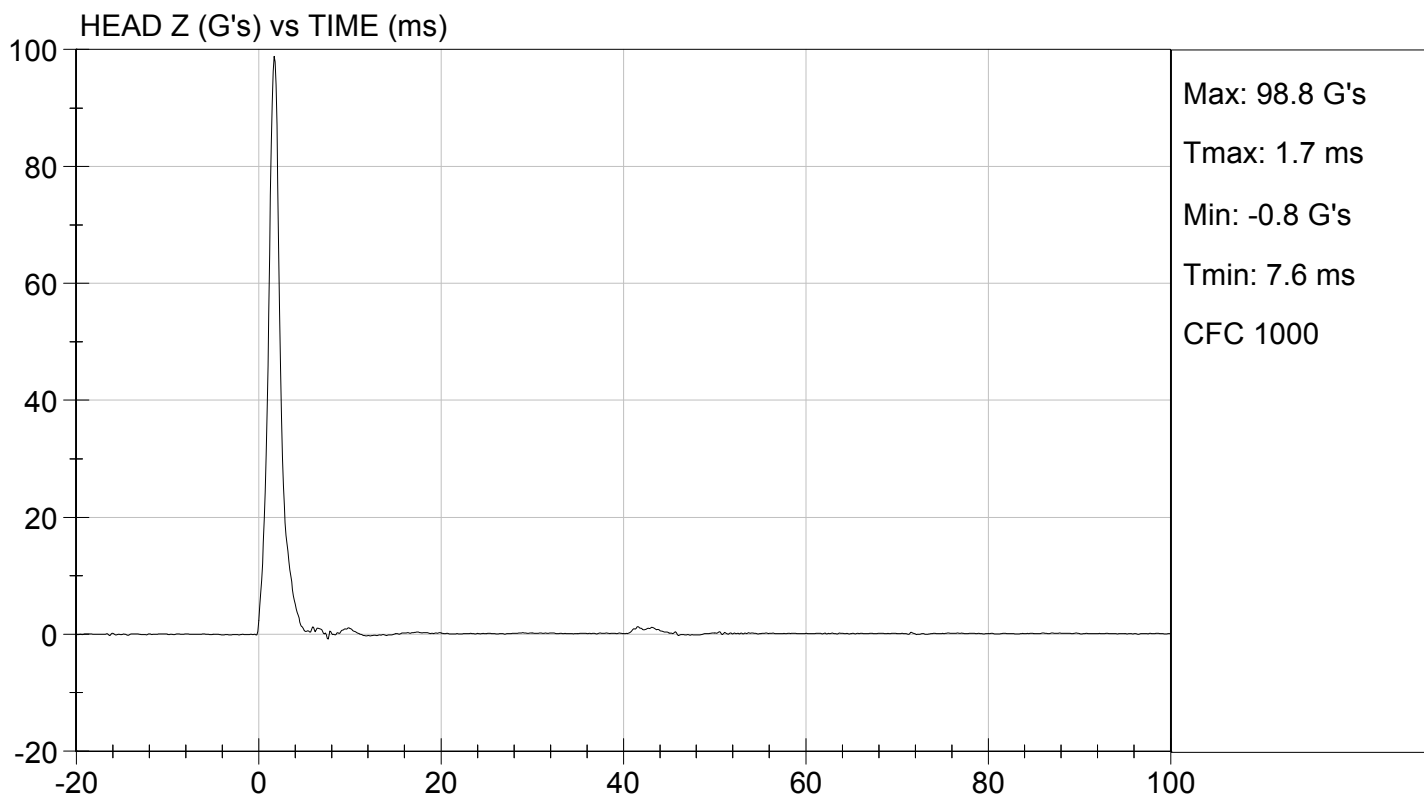
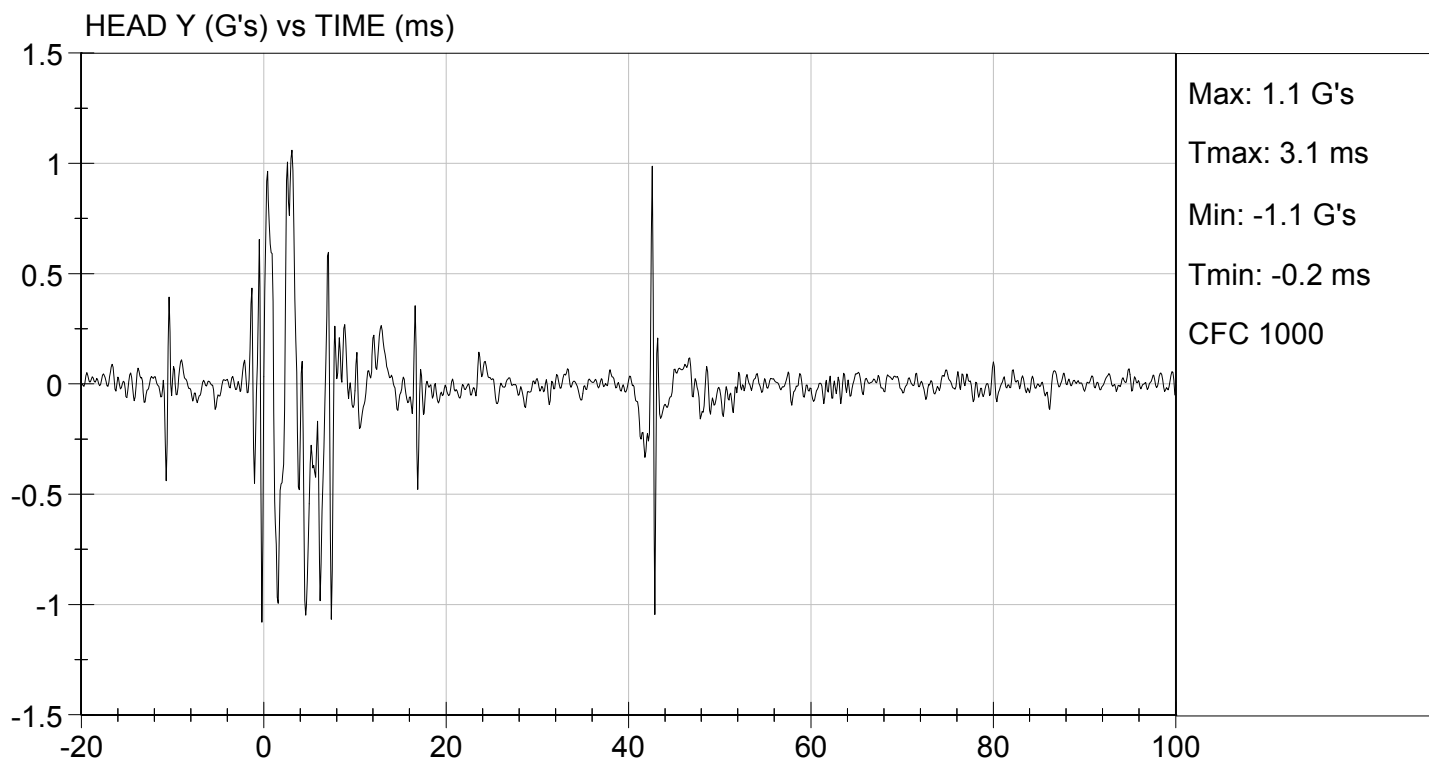
Jack Coleman
Laboratory Technician

03/23/2015

Test Date

Jessica Hall
Approved By



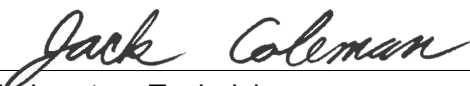


MGA RESEARCH CORPORATION
NECK FLEXION TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 351

Test I.D: D15762

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	19	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.96	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	22.94	Pass
	20 ms	G's	17.60 to 22.60	19.71	Pass
	30 ms	G's	12.50 to 18.50	12.60	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	12.6	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	40.6	Pass
Maximum "D" Plane Rotation	Maximum	Deg	64.0 to 78.0	72.9	Pass
	Time	ms	57.0 to 64.0	60.1	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	118.2	Pass
Moment About Occipital Condyle	Maximum	Nm	88.1 to 108.5	88.7	Pass
	Time	ms	47.0 to 58.0	53.1	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	105.4	Pass
Overall Test Results					Pass


Laboratory Technician

03/24/2015

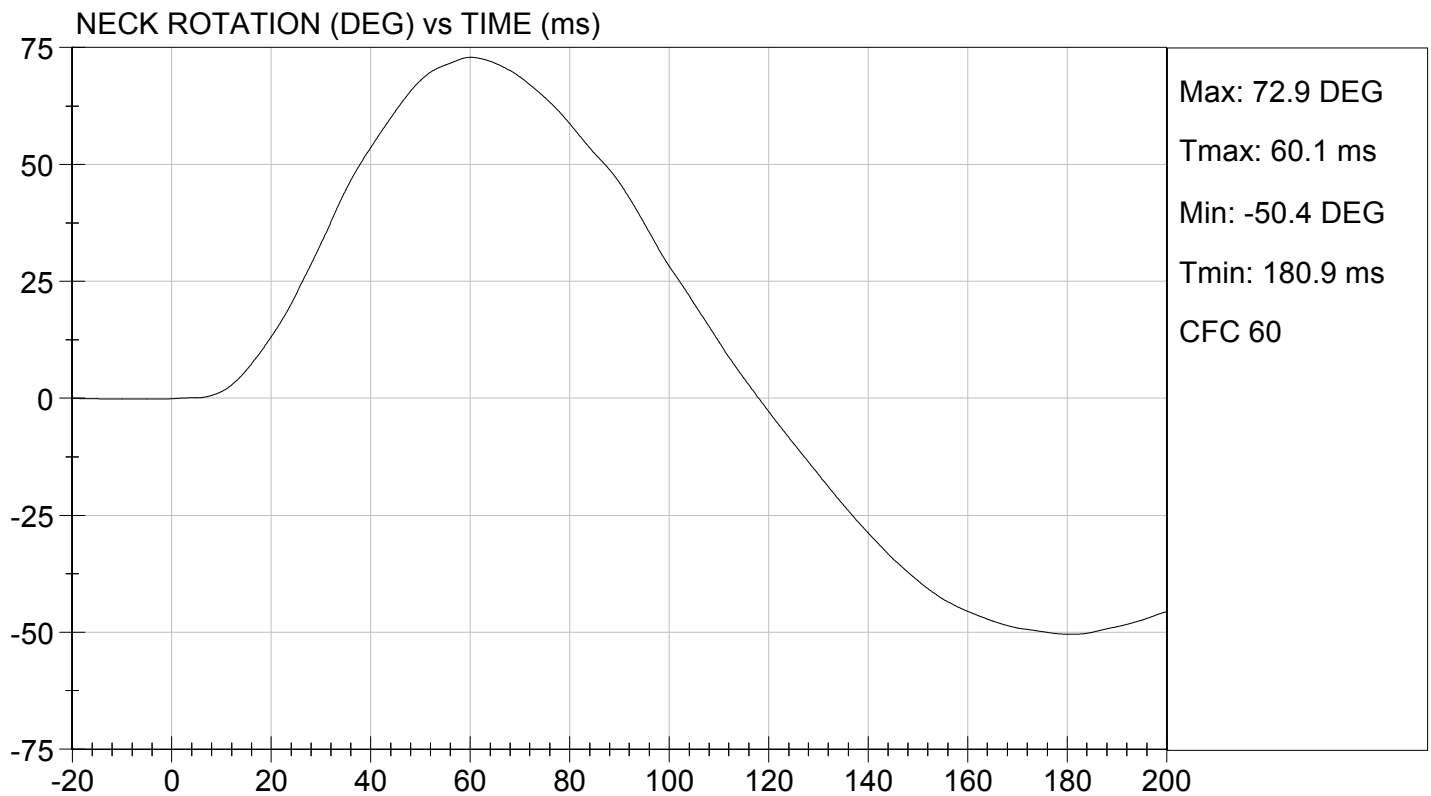
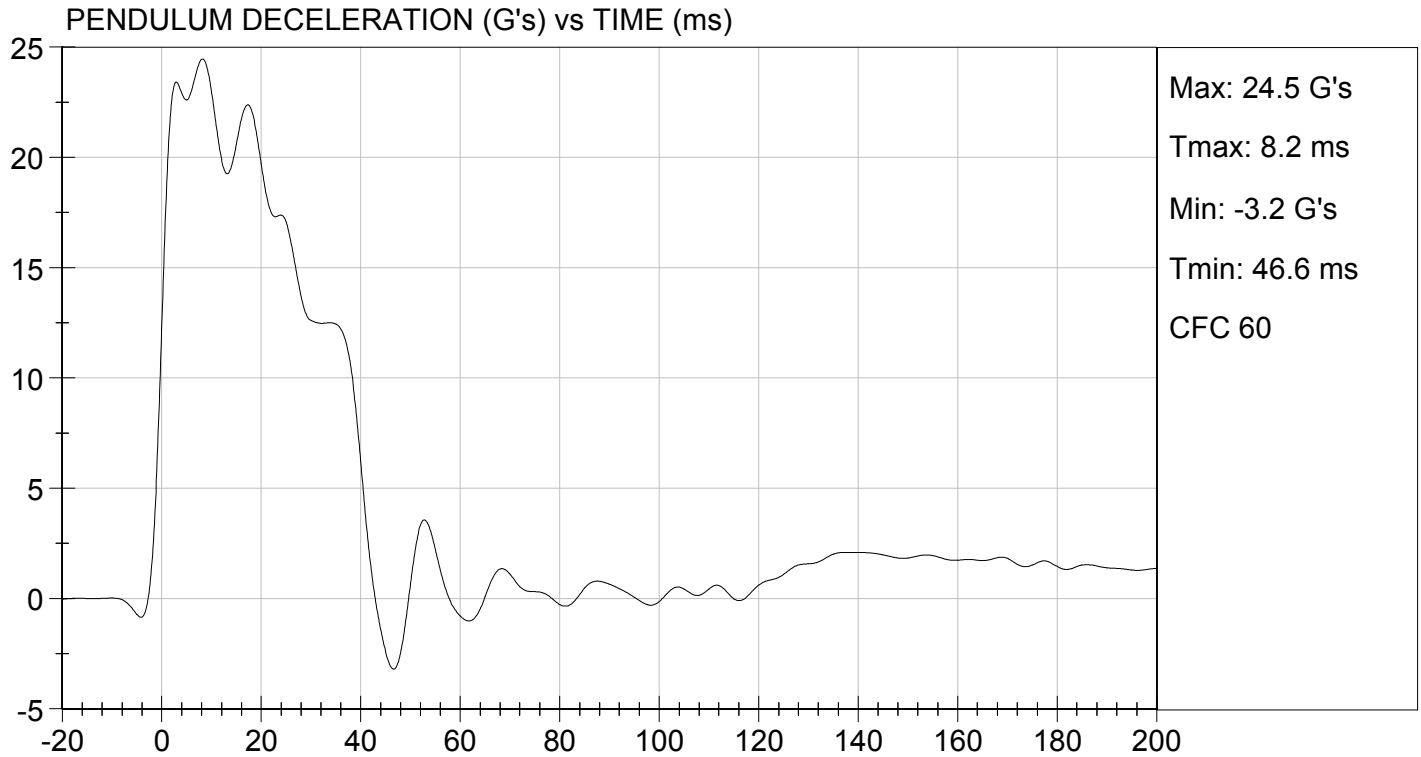
Test Date


Approved By



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

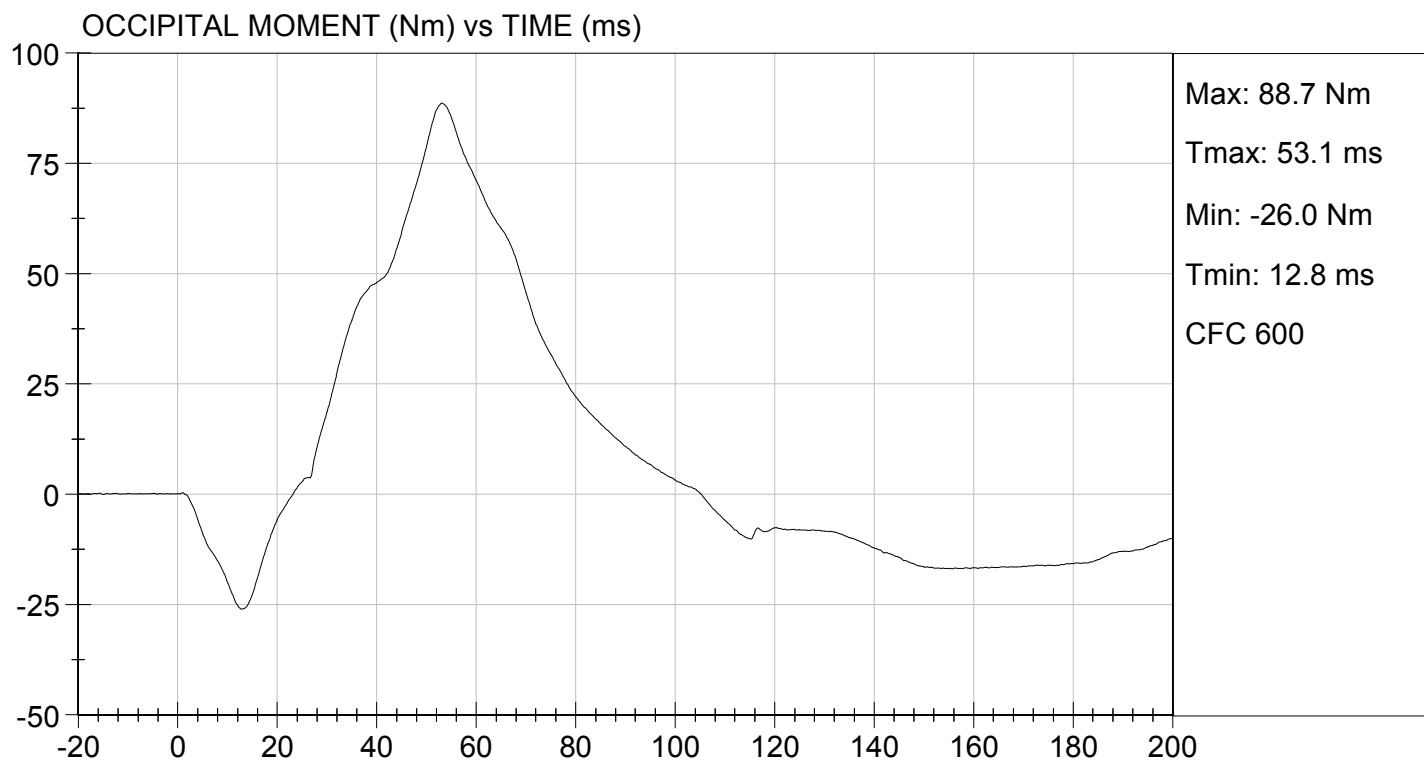
TEST DATE: 03/24/2015
TEST #: D15762





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

TEST DATE: 03/24/2015
TEST #: D15762



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

ATD Serial No: 351

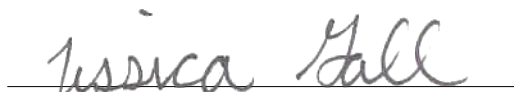
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Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.5	Pass
Laboratory Relative Humidity		%	10 to 70	19	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.05	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	19.51	Pass
	20 ms	G's	14.00 to 19.00	16.65	Pass
	30 ms	G's	11.00 to 16.00	11.81	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 22.0	11.8	Pass
Deceleration Decay Time to Cross 5 G's		ms	38.0 to 46.0	41.1	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	98.2	Pass
	Time	ms	72.0 to 82.0	77.7	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	162.1	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-62.6	Pass
	Time	ms	65.0 to 79.0	72.0	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	147.2	Pass
Overall Test Results					Pass


Laboratory Technician

03/24/2015

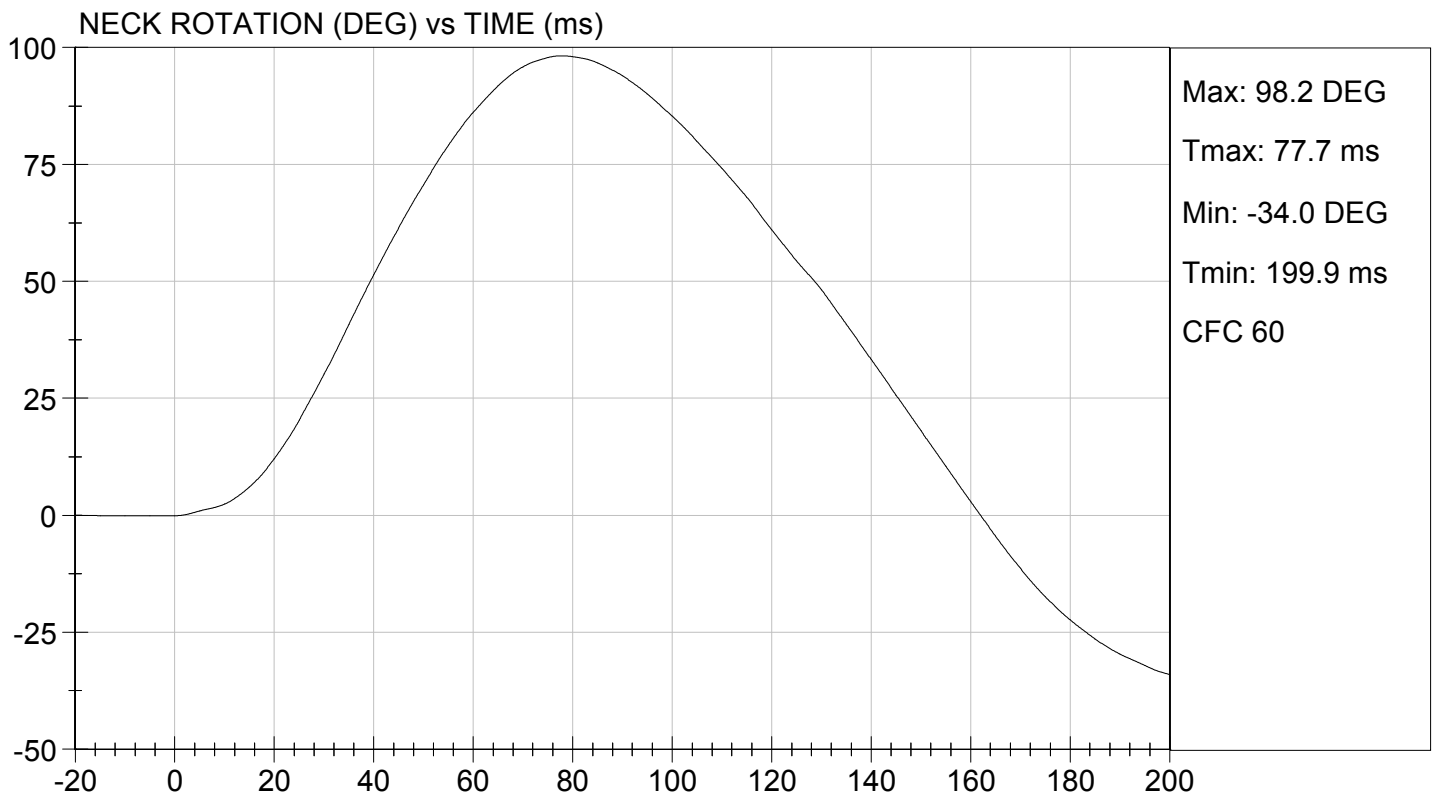
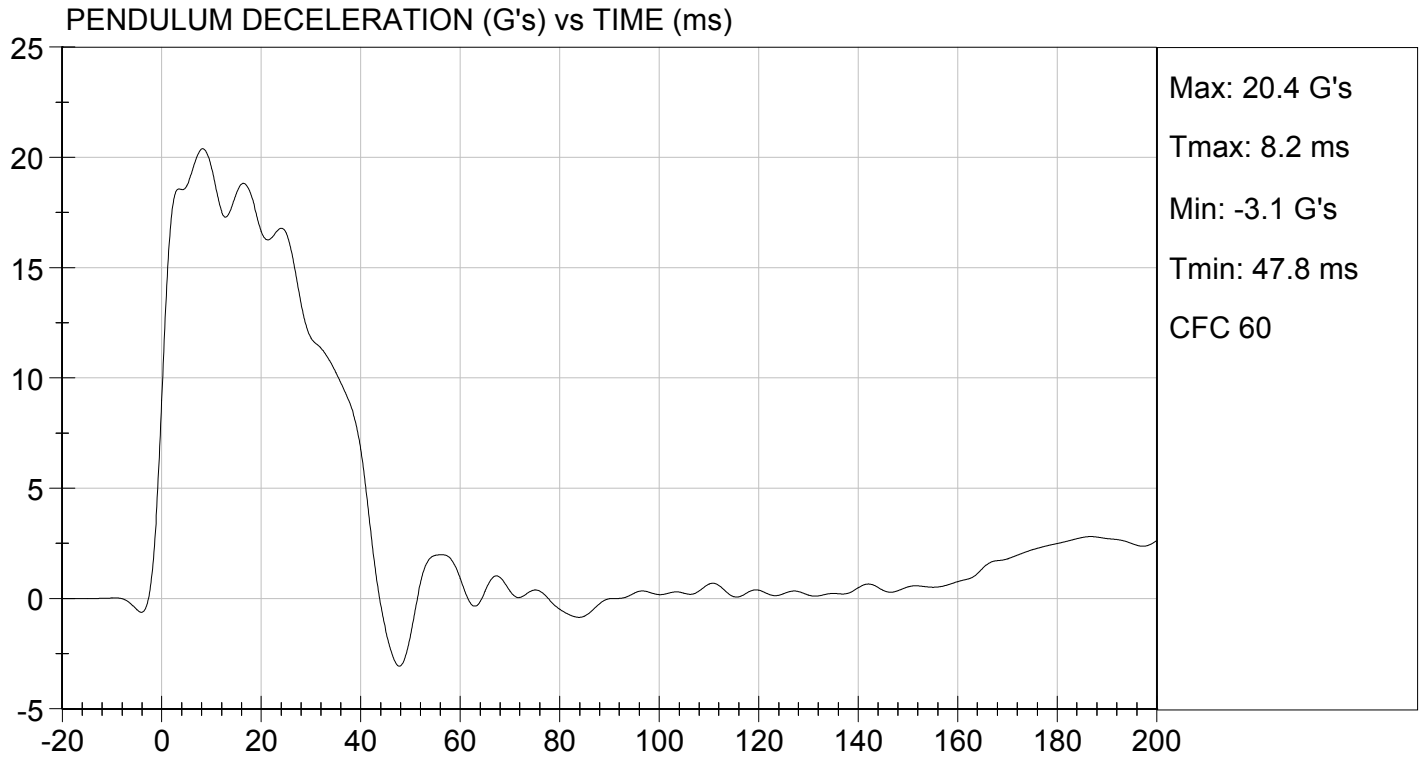
Test Date


Approved By



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

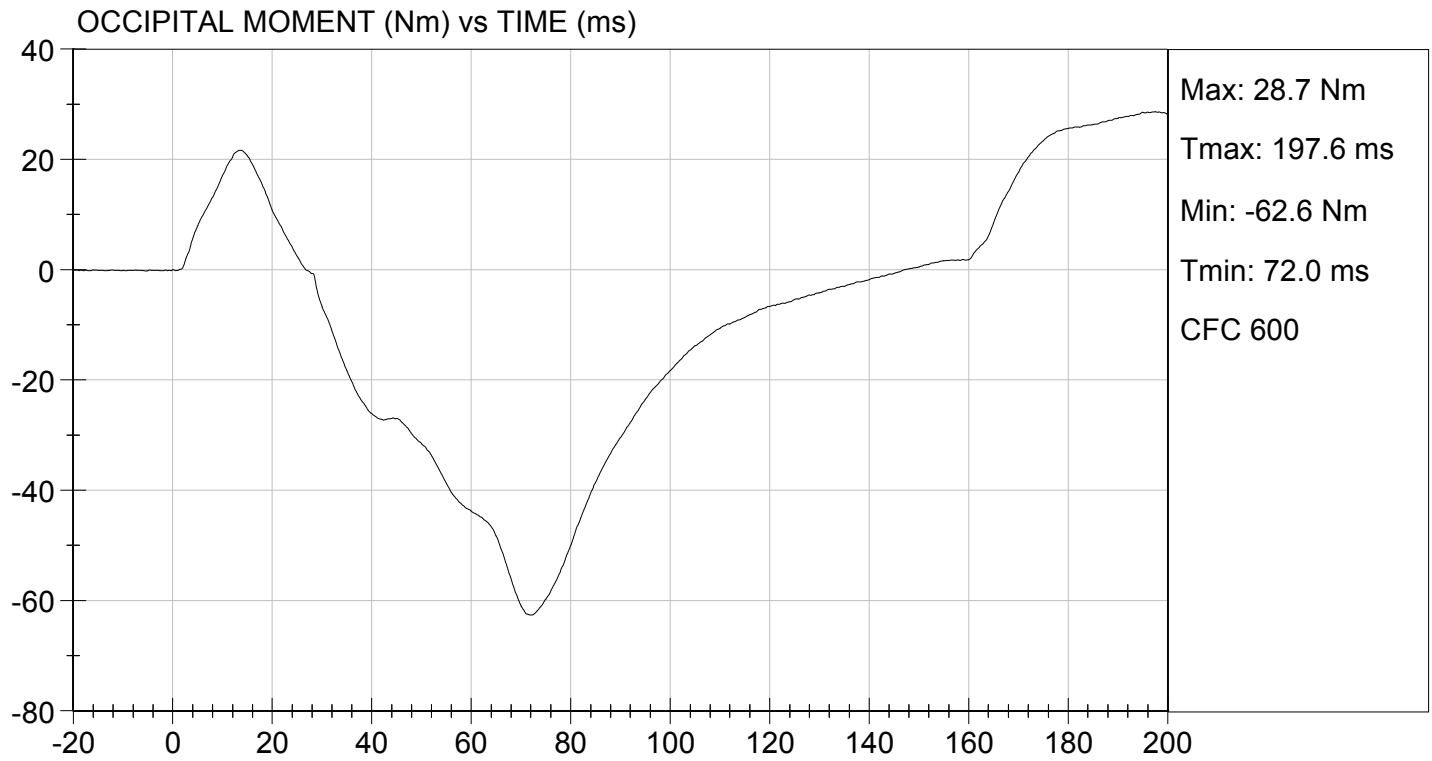
TEST DATE: 03/24/2015
TEST #: D15763





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

TEST DATE: 03/24/2015
TEST #: D15763



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 351

Test I.D: D15764

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	22	Pass
Probe Velocity	m/s	6.58 to 6.82	6.77	Pass
Peak Probe Force	N	5159 to 5893	5,505	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.70	Pass
Internal Hysteresis	%	69 to 85	70	Pass
			Overall Test Results	Pass

David Schoedel
Laboratory Technician

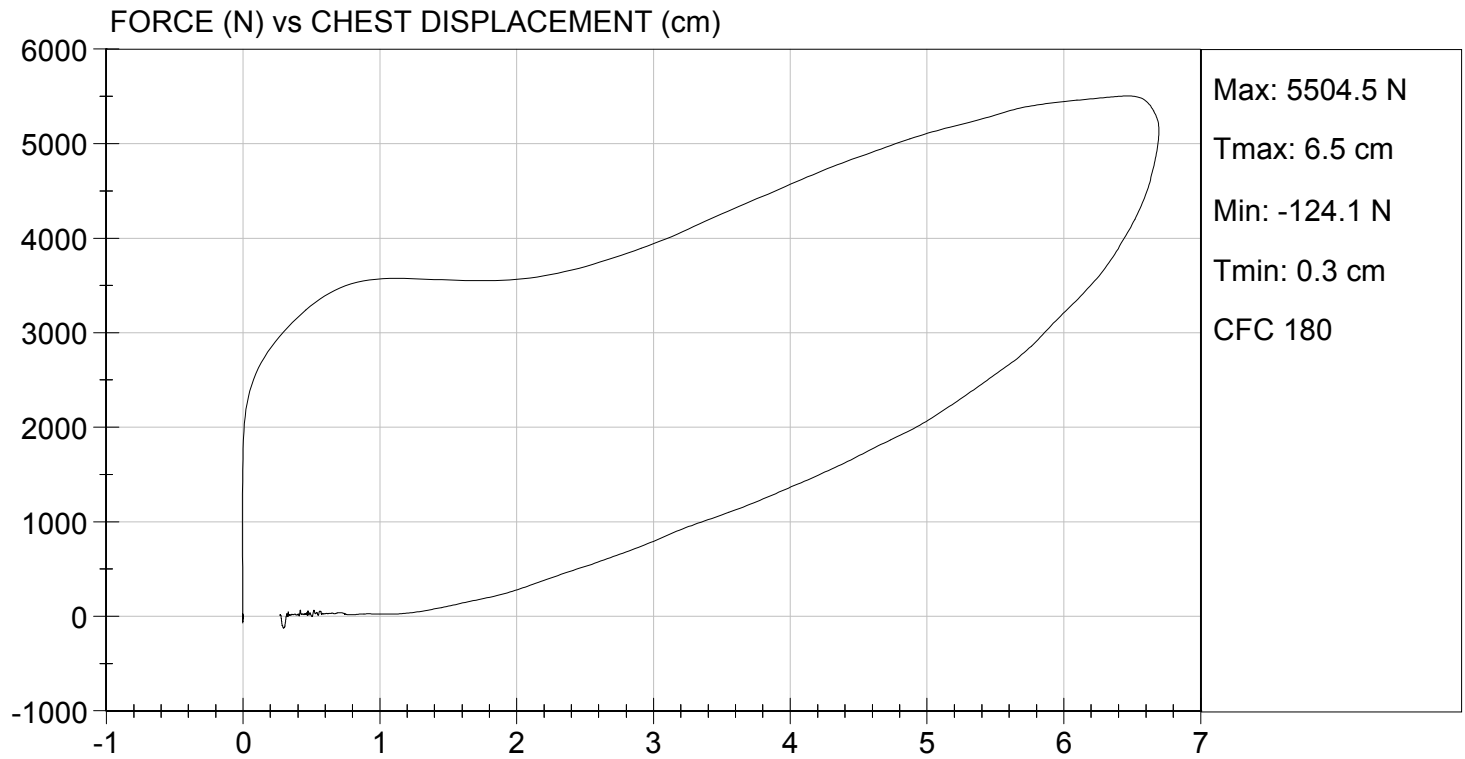
03/24/2015
Test Date

Jessica Hall
Approved By



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

TEST DATE: 03/24/2015
TEST #: D15764



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

ATD Serial No: 351

Test I.D: D15765

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	20.9	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Probe Velocity	m/s	2.07 to 2.13	2.11	Pass
Peak Probe Force	N	4715 to 5782	5,364	Pass
Overall Test Results				Pass


Laboratory Technician

03/23/2015

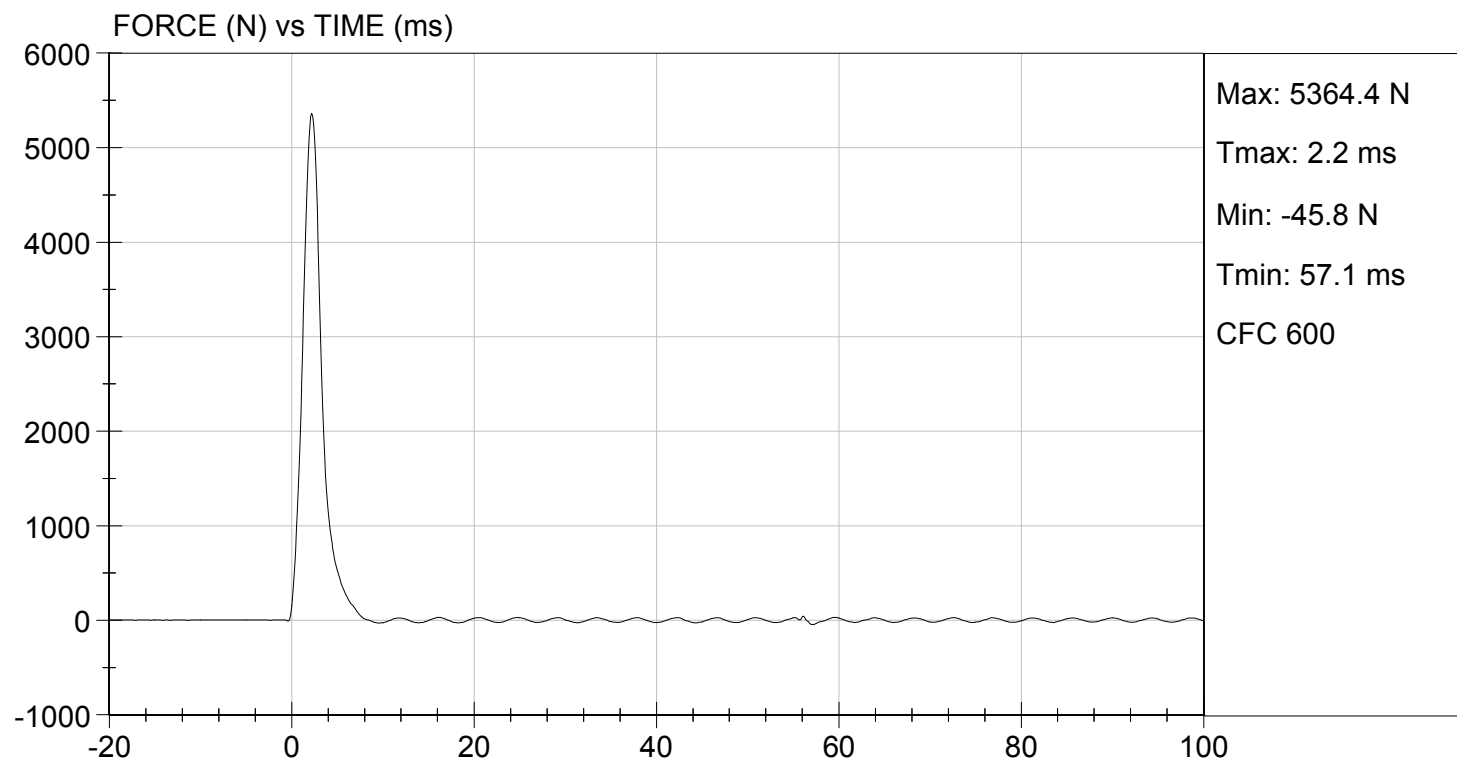
Test Date


Approved By



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

TEST DATE: 03/23/2015
TEST #: D15765



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

ATD Serial No: 351

Test I.D: D15766

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	20.9	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Probe Velocity	m/s	2.07 to 2.13	2.11	Pass
Peak Probe Force	N	4715 to 5782	4,862	Pass
Overall Test Results				Pass


Laboratory Technician

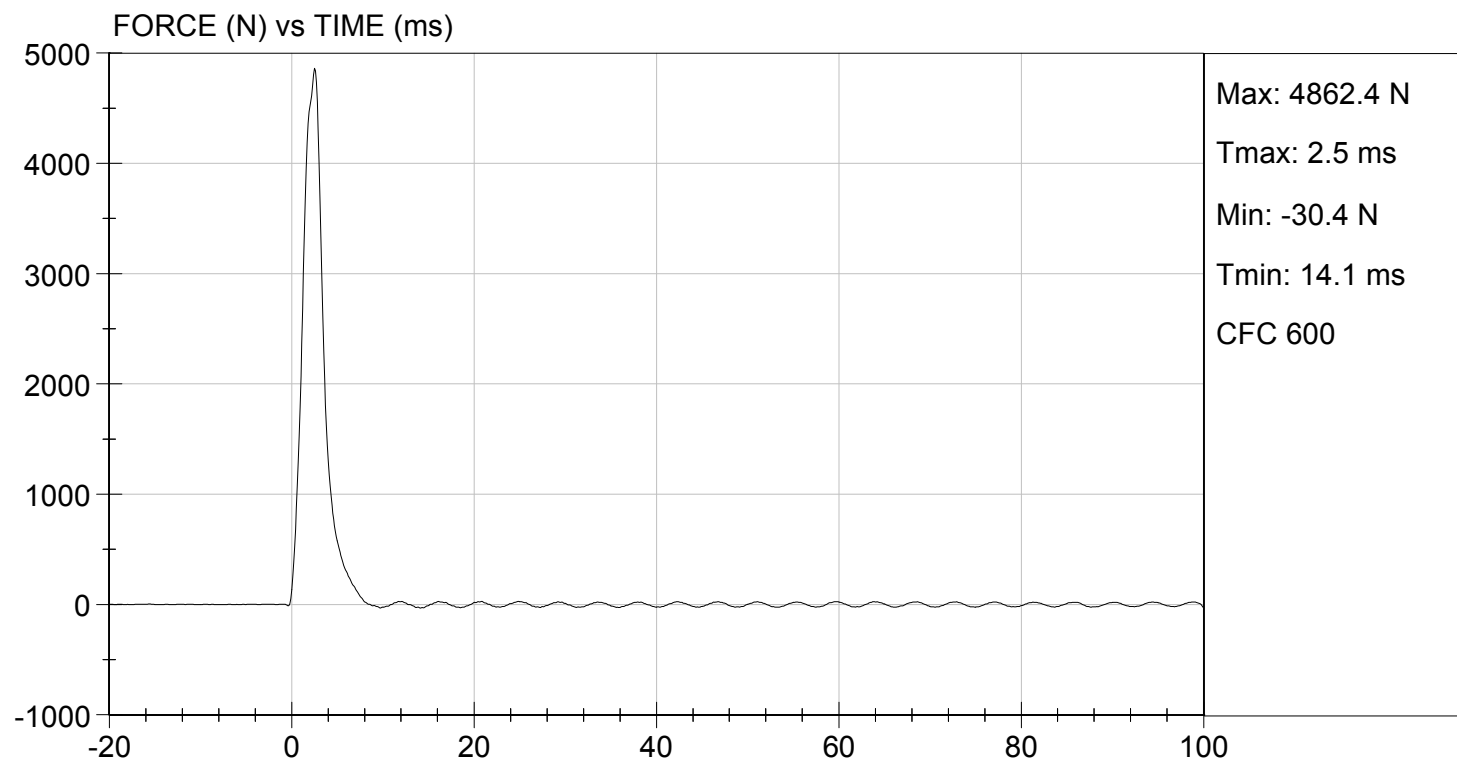
03/23/2015
Test Date


Approved By



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

TEST DATE: 03/23/2015
TEST #: D15766



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

ATD Serial No: 351

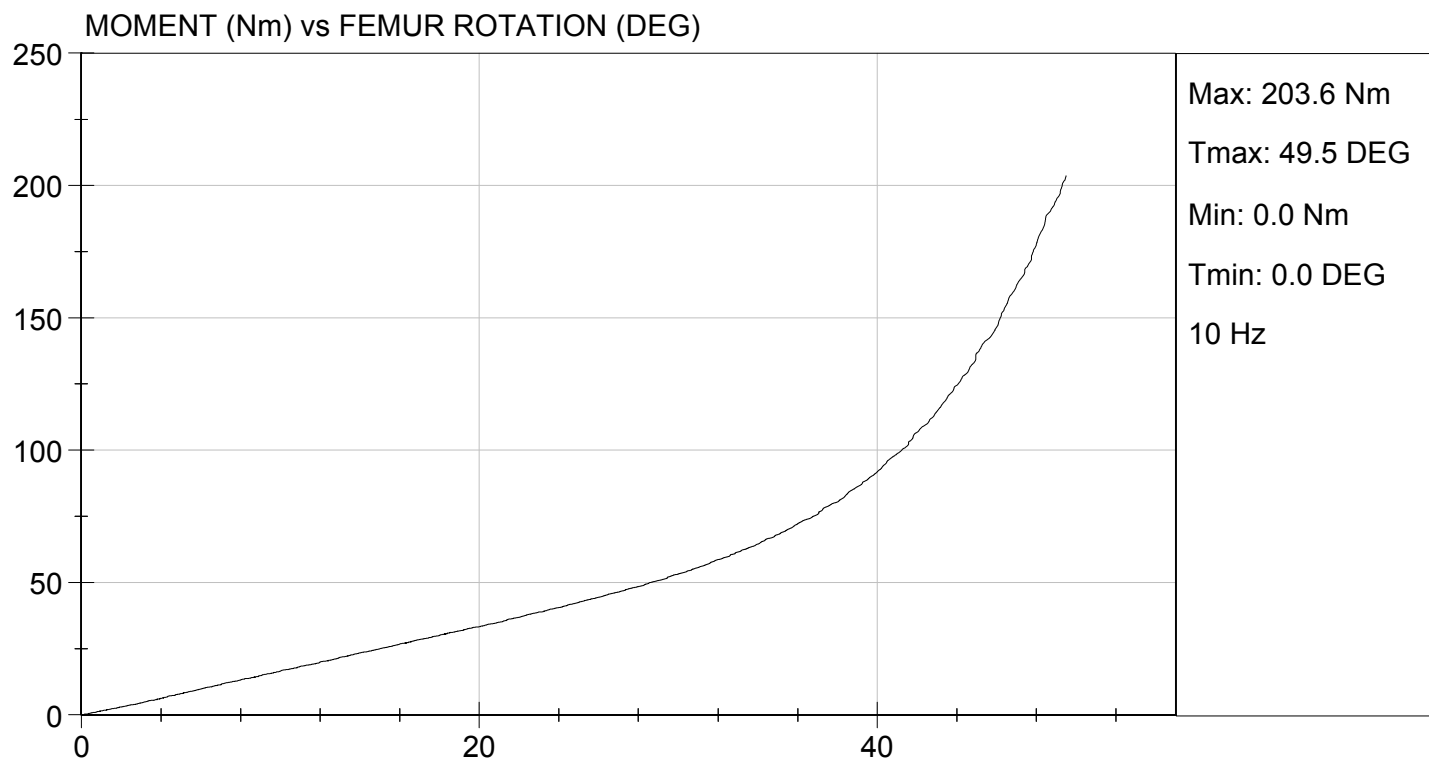
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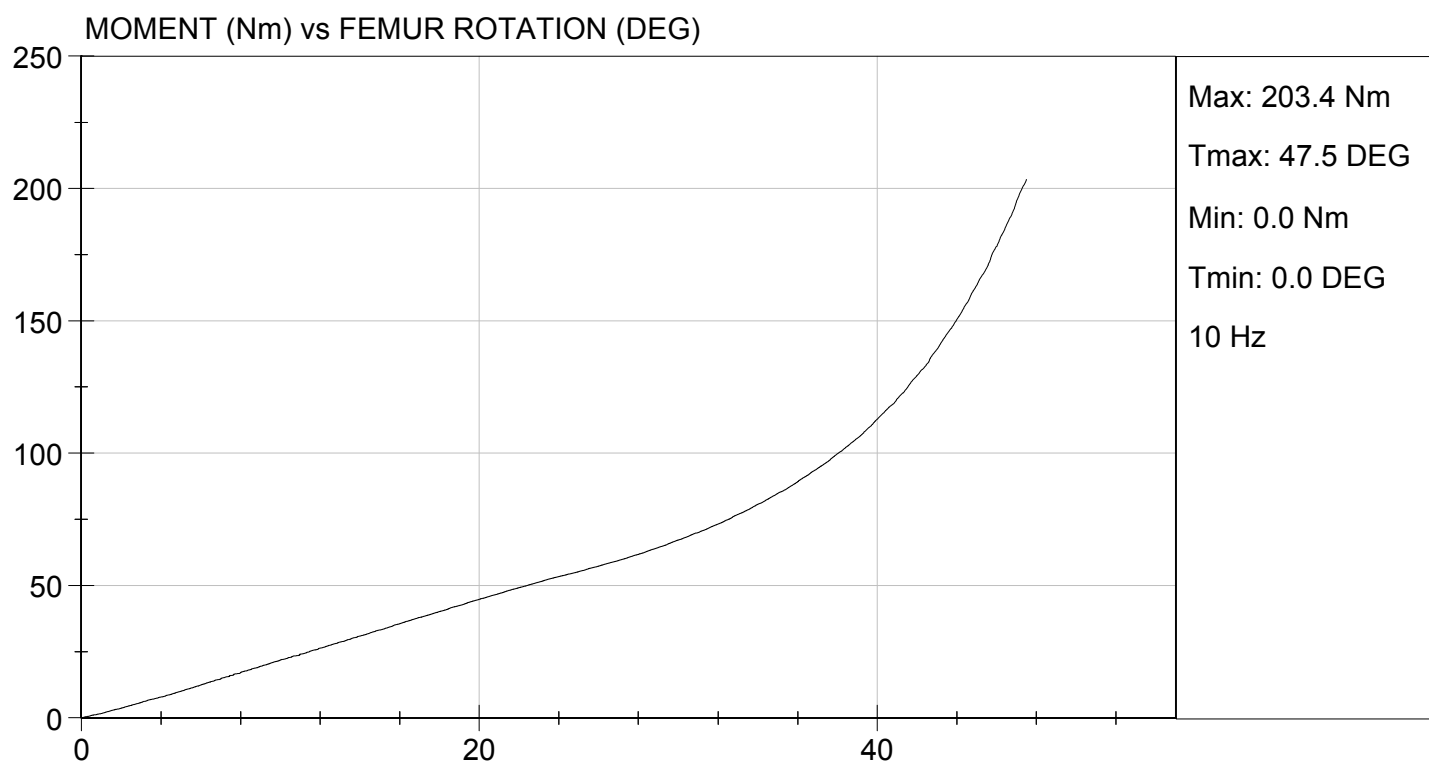
Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	20.8	20.8	Pass
Laboratory Relative Humidity	%	10 to 70	26	26	Pass
Rotation Rate	deg/s	5.0 to 10.0	6.3	6.3	Pass
30 Degrees	Nm	94.9 Nm Max	53.2	67.1	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 to 50.0 Degree Max Rotation	49.5	47.5	Pass
Overall Test Results					Pass

David Schoedel
Laboratory Technician

03/23/2015
Test Date

Jessica Hall
Approved By





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

ATD Serial No: 351

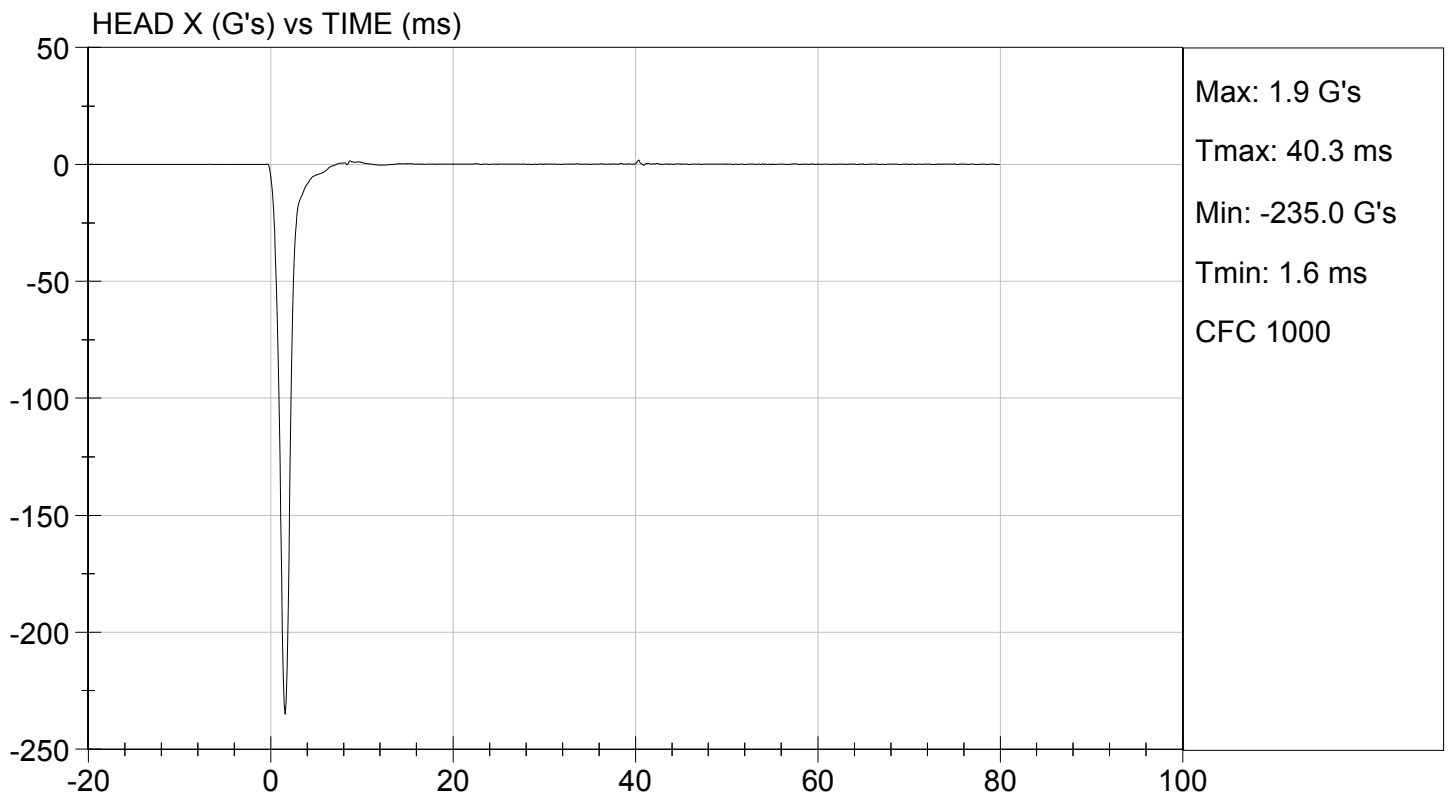
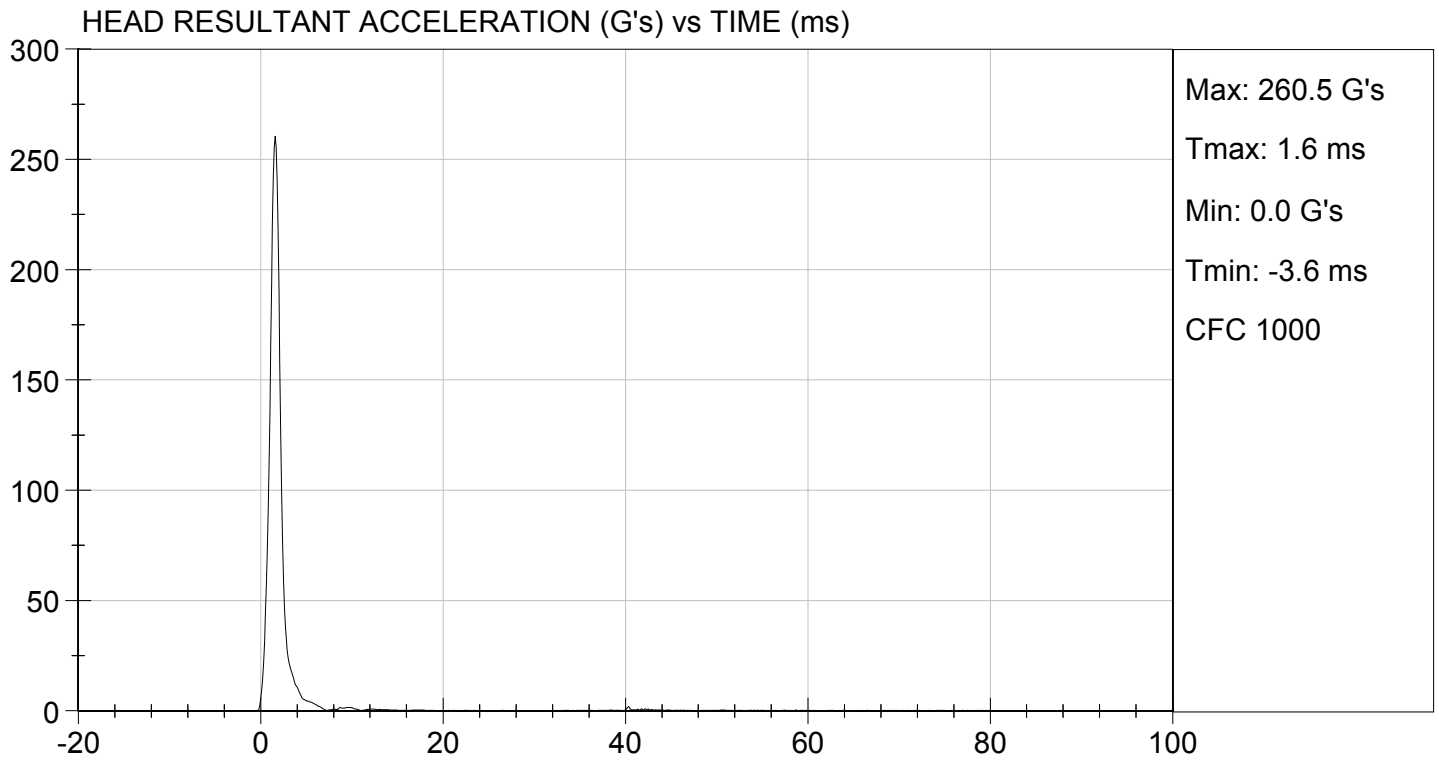
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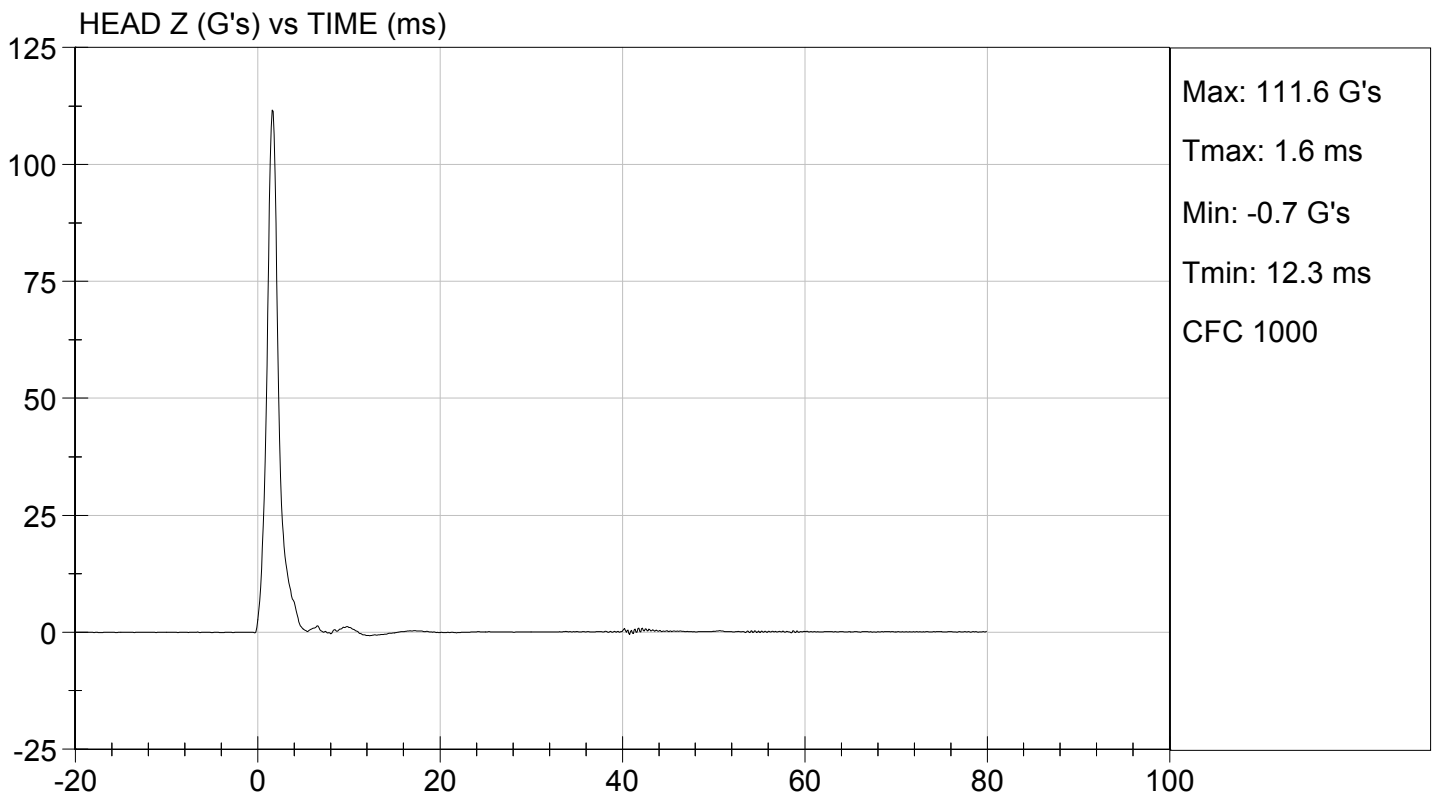
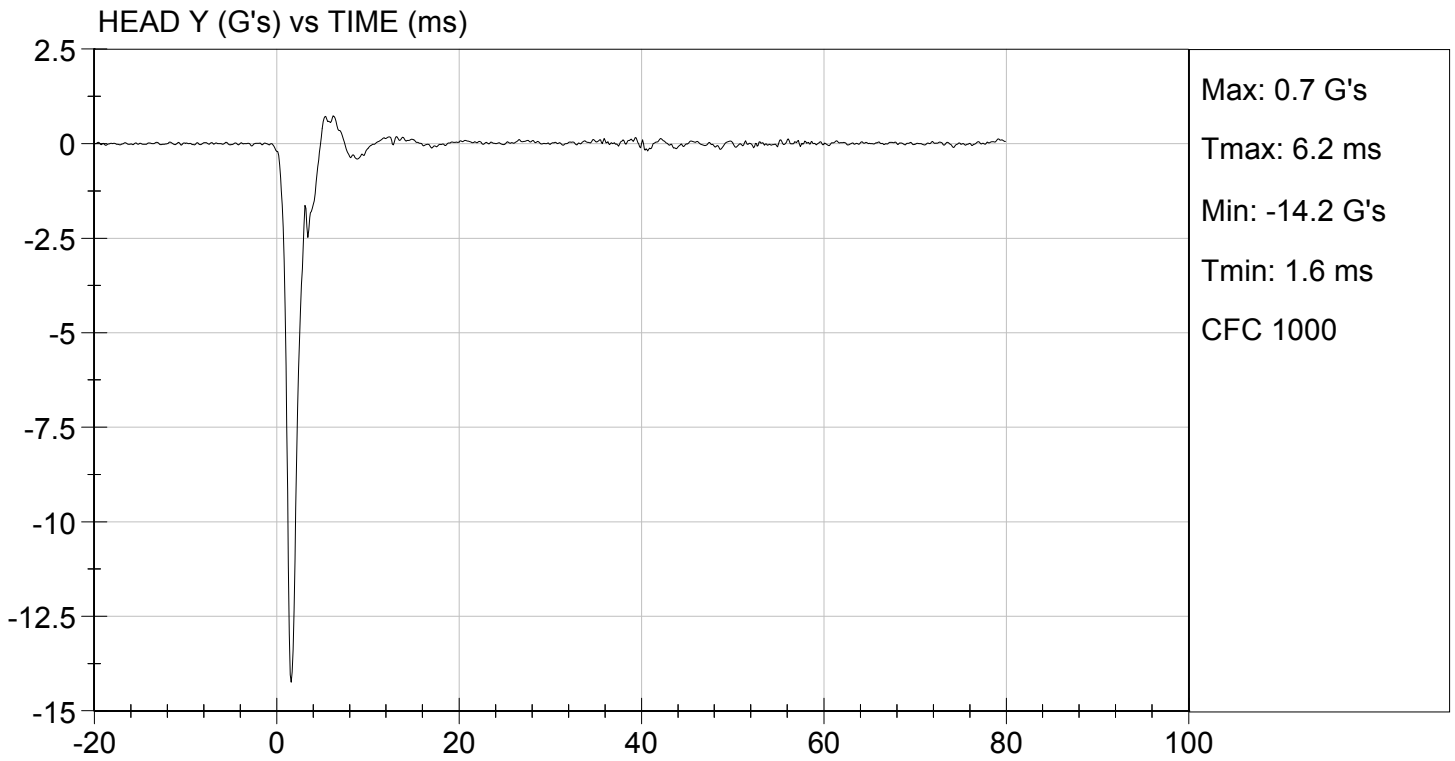
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	22.2	Pass
Laboratory Relative Humidity	%	10 to 70	27	Pass
Peak Resultant Acceleration	G's	225 to 275	261	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-14.2	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

03/31/2015
Test Date

Jessica Hall
Approved By





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

ATD Serial No: 351

Test I.D: D15902

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	31	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.13	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	22.93	Pass
	20 ms	G's	17.60 to 22.60	19.12	Pass
	30 ms	G's	12.50 to 18.50	15.08	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	15.5	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	39.6	Pass
Maximum "D" Plane Rotation	Maximum	Deg	64.0 to 78.0	74.3	Pass
	Time	ms	57.0 to 64.0	60.8	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	121.1	Pass
Moment About Occipital Condyle	Maximum	Nm	88.1 to 108.5	90.0	Pass
	Time	ms	47.0 to 58.0	52.4	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	106.7	Pass
Overall Test Results					Pass

David Schoedel

Laboratory Technician

03/31/2015

Test Date

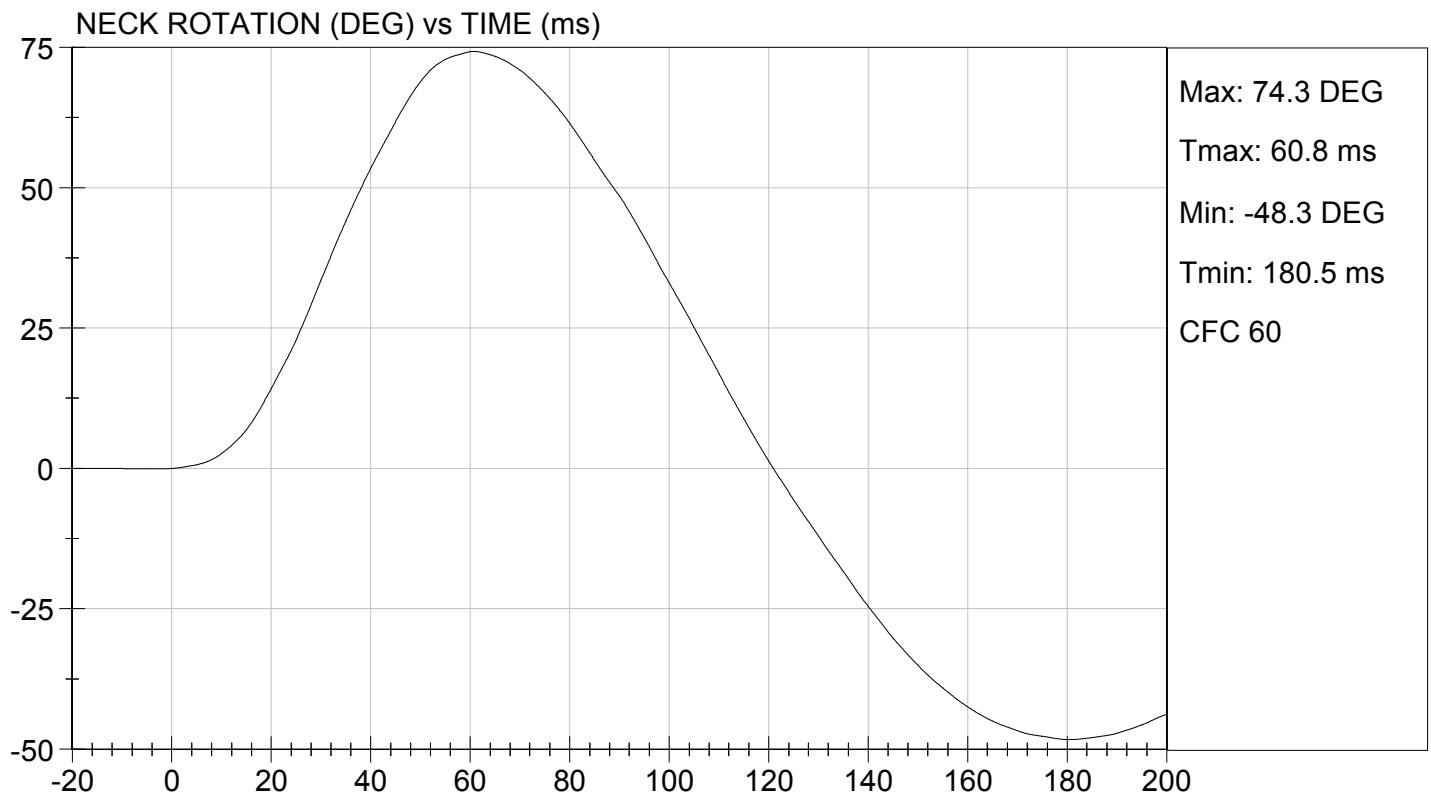
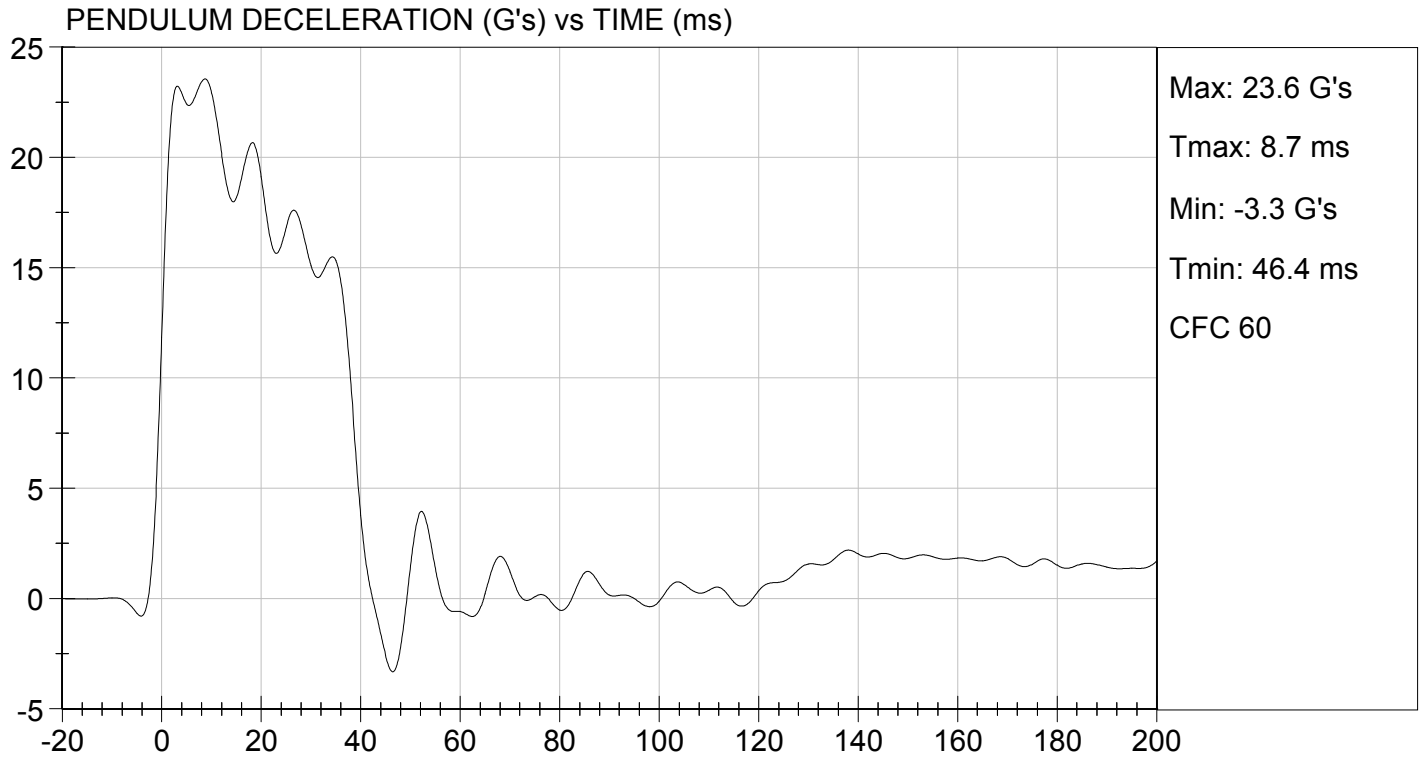
Jessica Hall

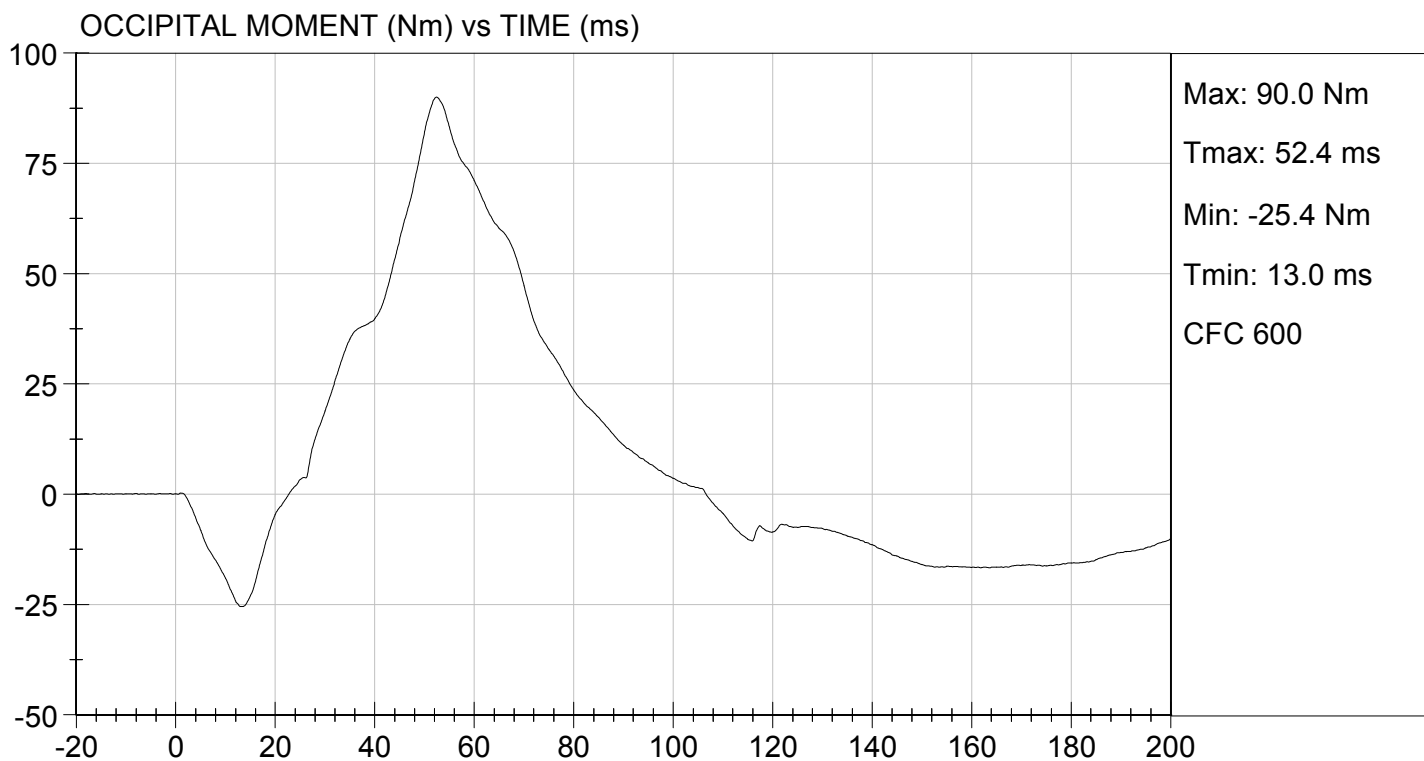
Approved By



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

TEST DATE: 03/31/2015
TEST #: D15902





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

ATD Serial No: 351

Test I.D: D15903

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	31	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.19	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	18.60	Pass
	20 ms	G's	14.00 to 19.00	15.61	Pass
	30 ms	G's	11.00 to 16.00	11.10	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 22.0	11.4	Pass
Deceleration Decay Time to Cross 5 G's		ms	38.0 to 46.0	45.5	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	99.1	Pass
	Time	ms	72.0 to 82.0	80.9	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	166.9	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-55.9	Pass
	Time	ms	65.0 to 79.0	76.0	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	146.2	Pass
Overall Test Results					Pass

David Schoedel

Laboratory Technician

03/31/2015

Test Date

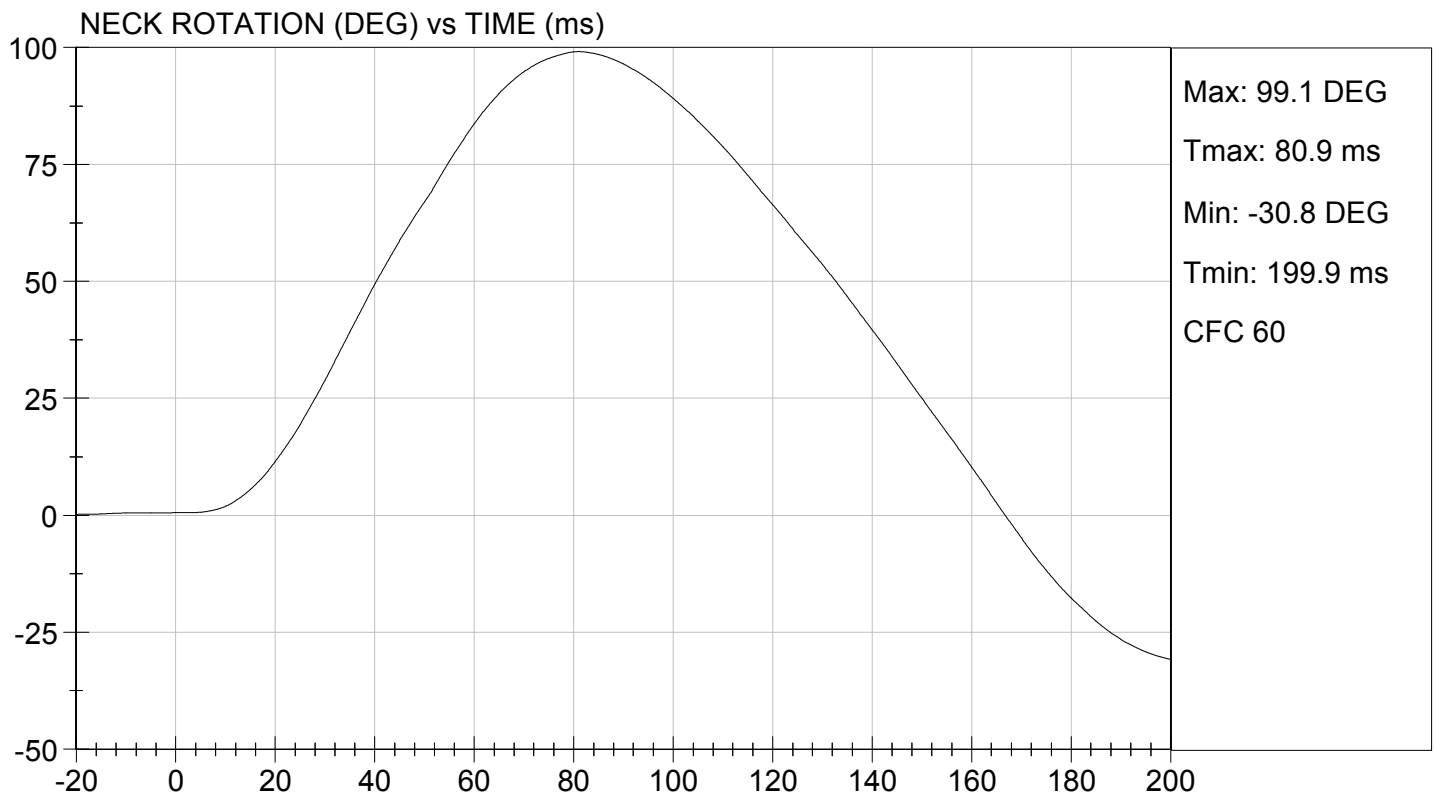
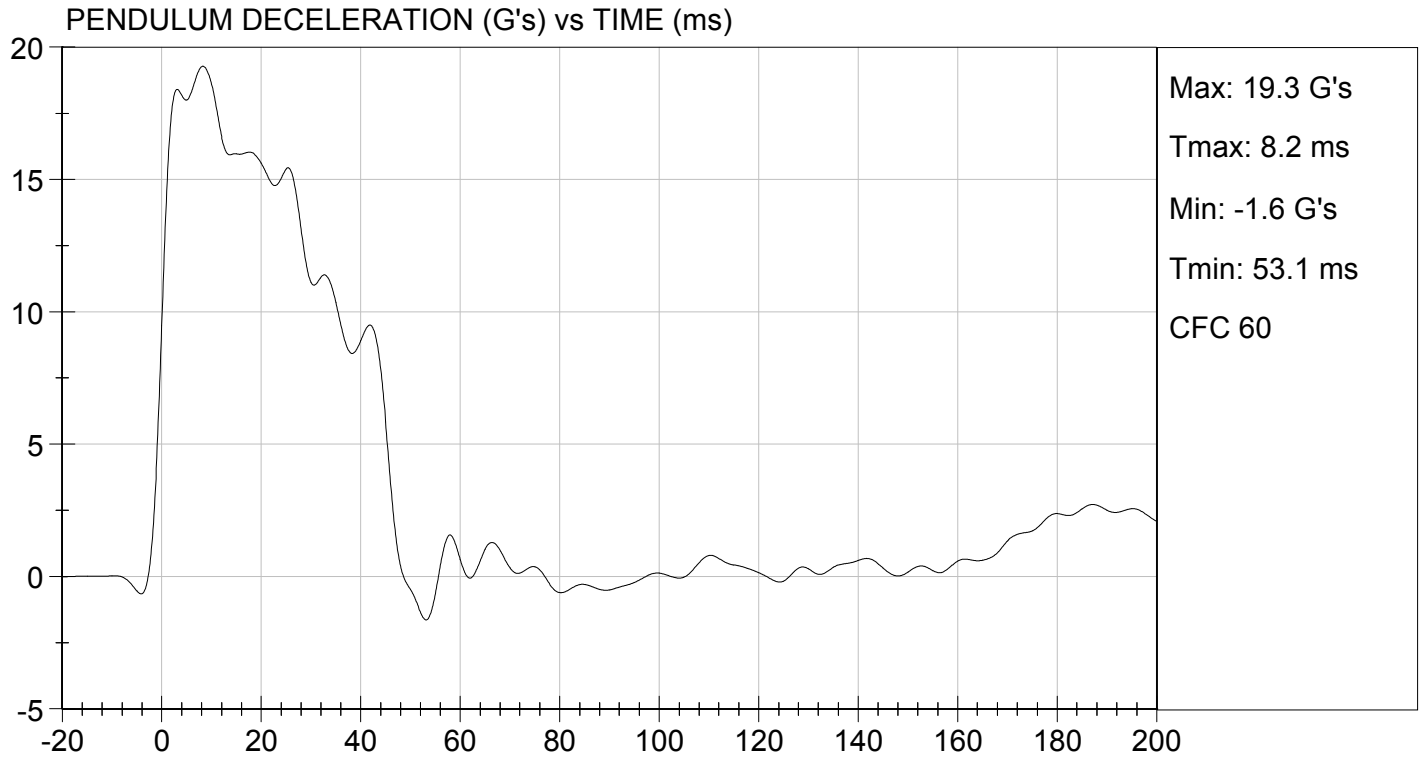
Jessica Hall

Approved By



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

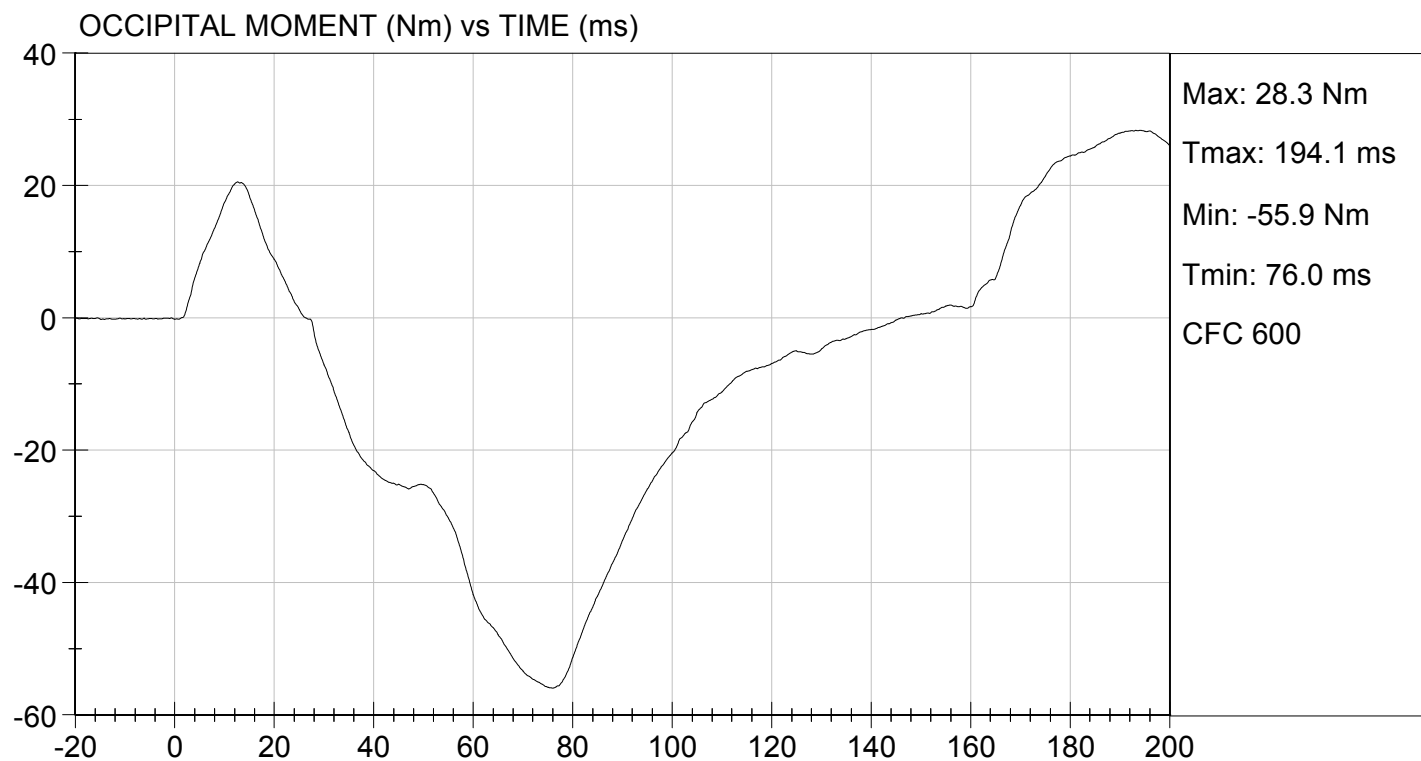
TEST DATE: 03/31/2015
TEST #: D15903





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

TEST DATE: 03/31/2015
TEST #: D15903

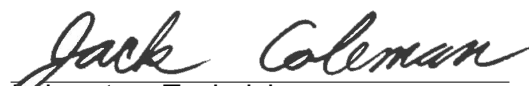


MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 351

Test I.D: D15904

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	22.2	Pass
Laboratory Relative Humidity	%	10 to 70	31	Pass
Probe Velocity	m/s	6.58 to 6.82	6.77	Pass
Peak Probe Force	N	5159 to 5893	5,246	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.68	Pass
Internal Hysteresis	%	69 to 85	69	Pass
Overall Test Results			Pass	


Laboratory Technician

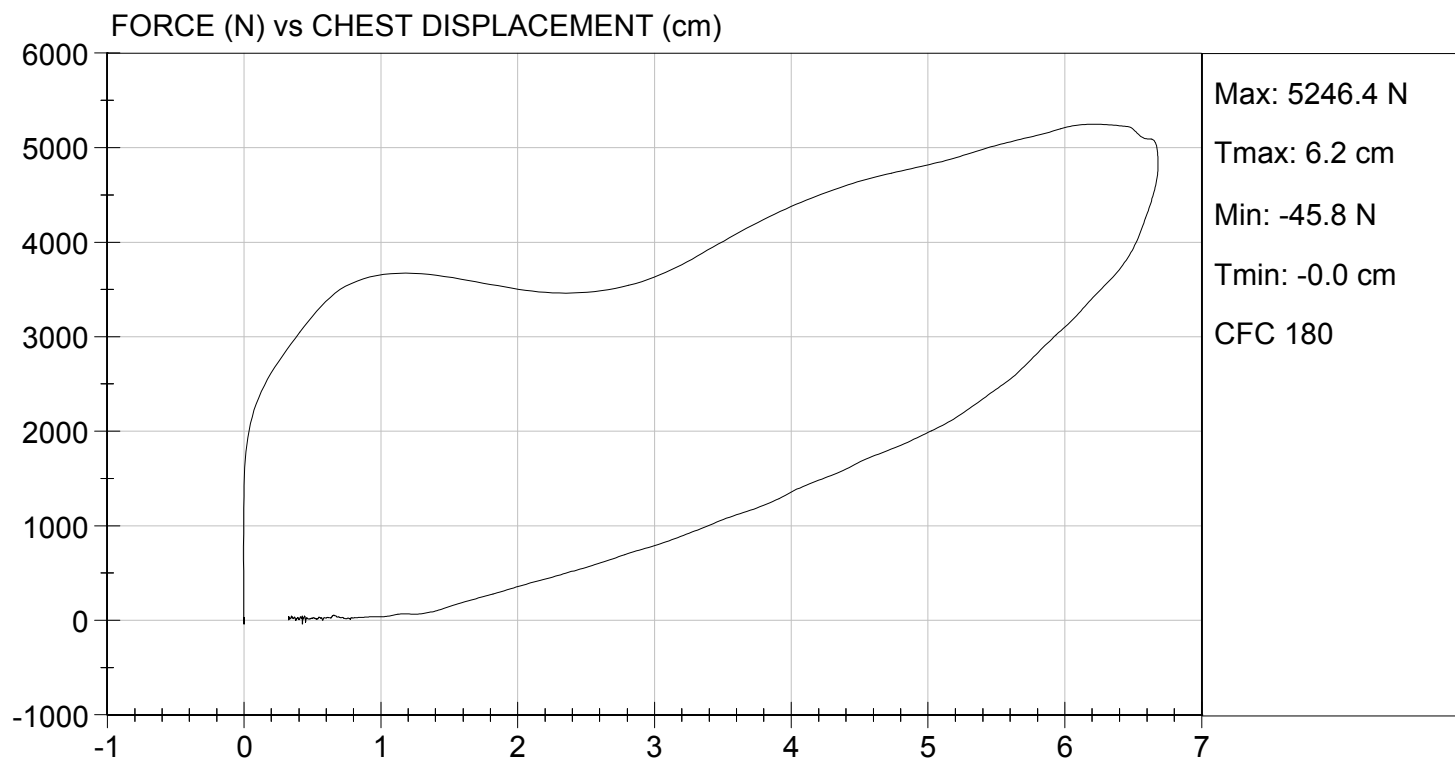
03/31/2015
Test Date


Approved By



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

TEST DATE: 03/31/2015
TEST #: D15904

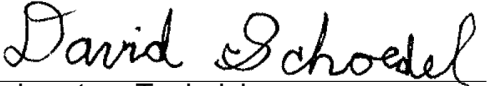


MGA RESEARCH CORPORATION
RIGHT KNEE IMPACT TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 351

Test I.D: D15905

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	31	Pass
Probe Velocity	m/s	2.07 to 2.13	2.13	Pass
Peak Probe Force	N	4715 to 5782	5,155	Pass
Overall Test Results				Pass


Laboratory Technician

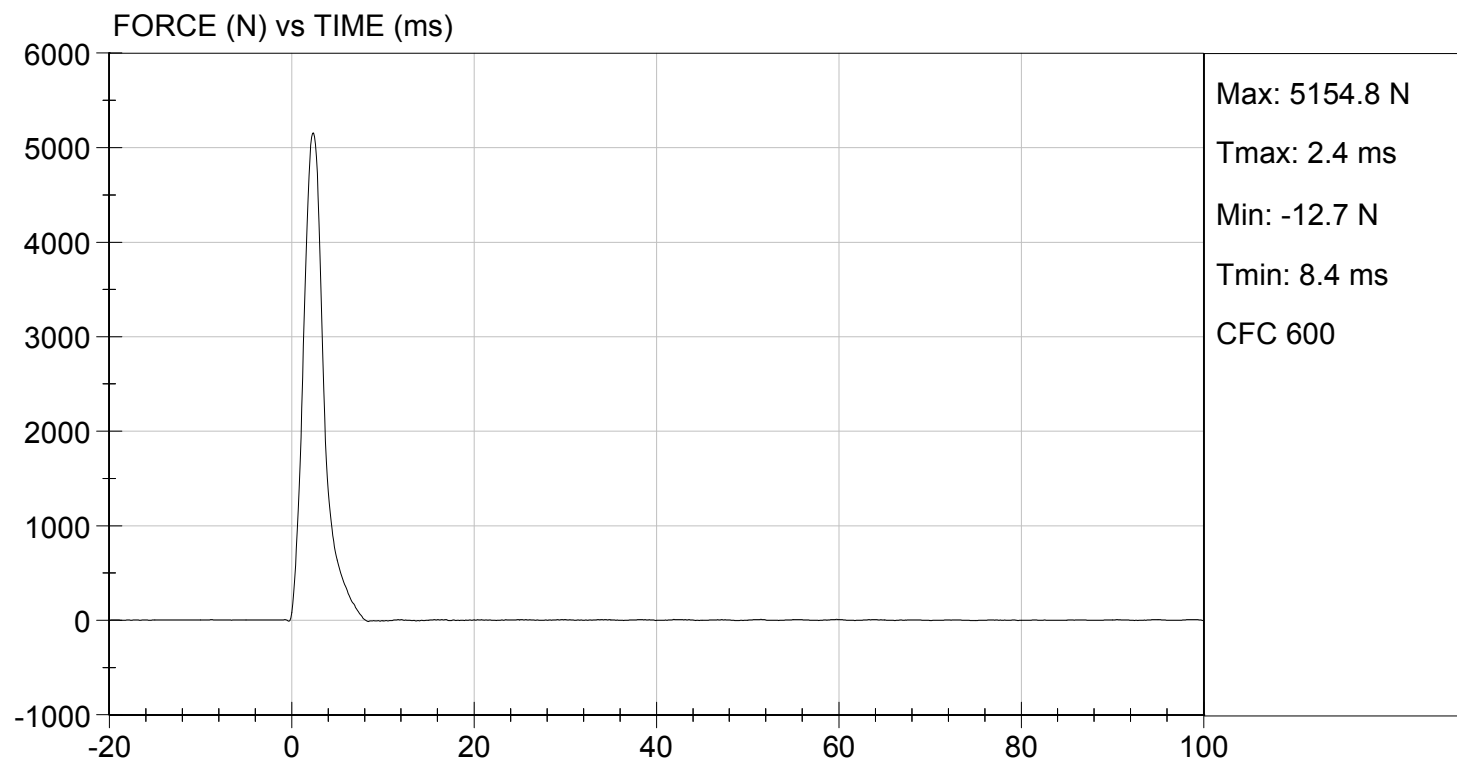
03/31/2015
Test Date


Approved By



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

TEST DATE: 03/31/2015
TEST #: D15905



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

ATD Serial No: 351

Test I.D: D15906

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	31	Pass
Probe Velocity	m/s	2.07 to 2.13	2.13	Pass
Peak Probe Force	N	4715 to 5782	5,296	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

03/31/2015

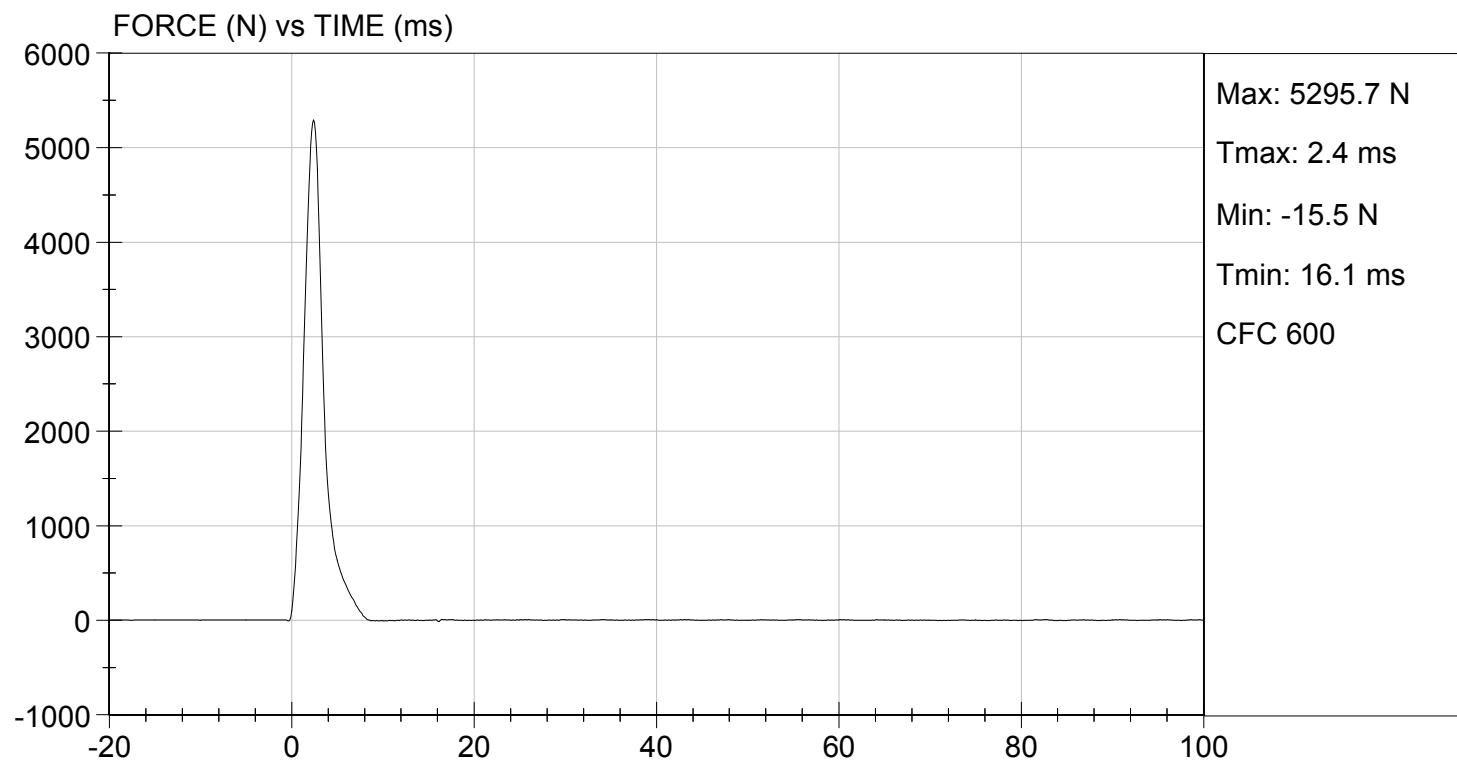
Test Date

Jessica Hall
Approved By



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

TEST DATE: 03/31/2015
TEST #: D15906



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

ATD Serial No: 351

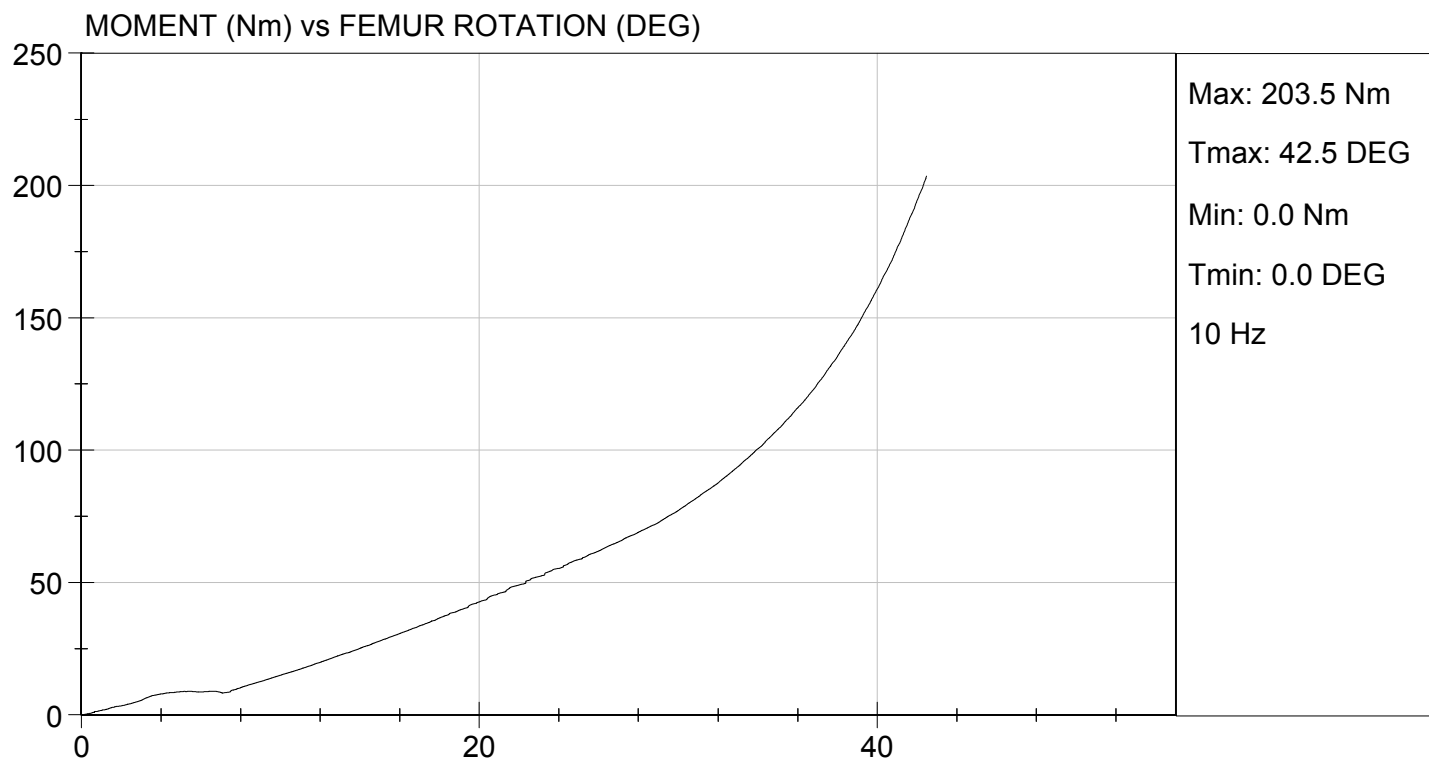
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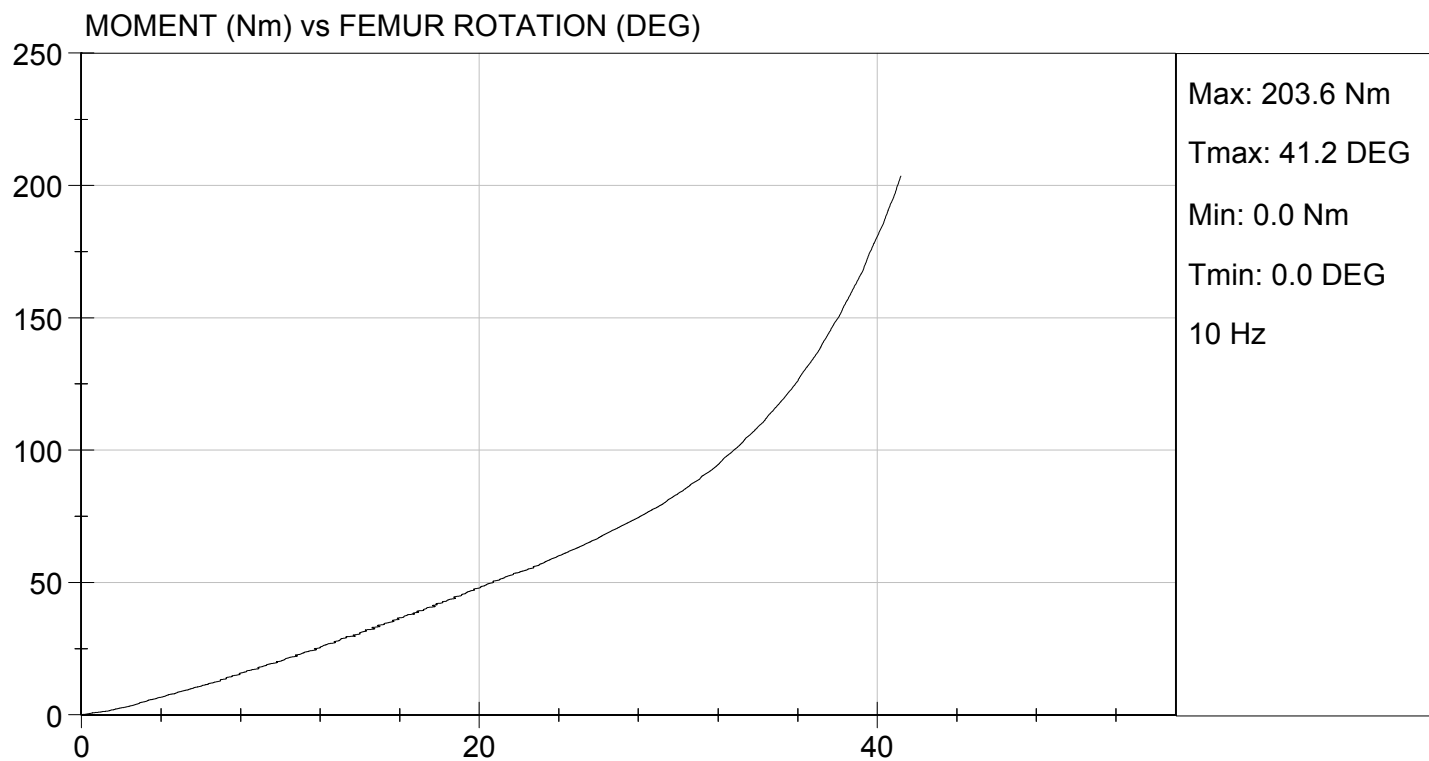
Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.1	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	32	32	Pass
Rotation Rate	deg/s	5.0 to 10.0	6.1	6.2	Pass
30 Degrees	Nm	94.9 Nm Max	77.2	83.6	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 to 50.0 Degree Max Rotation	42.5	41.2	Pass
Overall Test Results					Pass


Laboratory Technician

03/31/2015
Test Date


Approved By





Hybrid III, 5th External Measurements
SN: 138

HYBRID III, PART 572, SUBPART O EXTERNAL DIMENSIONS				
DIMENSION	DESCRIPTION	DETAILS	ASSEMBLY DIMENSION (mm)	ACTUAL MEASUREMENT
A	TOTAL SITTING HEIGHT	Seat surface to highest point on top of the head.	774.7-800.1	785.1
B	SHOULDER PIVOT HEIGHT	Centerline of shoulder pivot bolt to the seat surface.	431.8-457.2	456.8
C	H-POINT HEIGHT	Reference	81.3-86.3	84.0
D	H-POINT LOCATION FROM BACKLINE	Reference	144.8-149.8	146.2
E	SHOULDER PIVOT FROM BACKLINE	Center of the shoulder clevis to the rear vertical surface of the fixture.	68.6-83.8	78.0
F	THIGH CLEARANCE	Measured at the highest point on the upper femur segment.	119.4-134.6	127.5
G	BACK OF ELBOW TO WRIST PIVOT	back of the elbow flesh to the wrist pivot in line with the elbow and wrist pivots	243.9-259.1	249.6
H	HEAD BACK TO BACKLINE	Back of Skull cap skin to seat rear vertical surface (Reference)	43.2-48.2	45.0
I	SHOULDER TO- ELBOW LENGTH	Measure from the highest point on top of the shoulder clevis to the lowest part of the flesh on the elbow in line with the elbow pivot bolt.	276.8-297.2	280.2
J	ELBOW REST HEIGHT	Measure from the flesh below the elbow pivot bolt to the seat surface.	182.8-203.2	201.9
K	BUTTOCK TO KNEE LENGTH	The forward most part of the knee flesh to the rear vertical surface of the fixture.	520.7-546.1	526.7
L	POPLITEAL HEIGHT	Seat surface to the plane of the horizontal plane of the bottom of the feet.	355.6-376.0	362.3
M	KNEE PIVOT HEIGHT	Centerline of knee pivot bolt to the horizontal plane of the bottom of the feet.	393.7-419.1	398.0

N	BUTTOCK POPLITEAL LENGTH	The rearmost surface of the lower leg to the same point on the rear surface of the buttocks used for dim. "K".	414-439.4	430.5
HYBRID III, SUBPART O EXTERNAL DIMENSIONS, continued				
DIMENSION	DESCRIPTION	DETAILS	ASSEMBLY DIMENSION (mm)	ACTUAL MEASUREMENT
O	CHEST DEPTH WITHOUT JACKET	Measured 304.8 ± 5.1 mm above seat surface	175.3-190.5	184.6
P	FOOT LENGTH	Tip of toe to rear of heel	218.5-233.7	221.0
Q	STANDING HEIGHT	(THEORETICAL)	1501.1	N/A
R	BUTTOCK TO KNEE PIVOT LENGTH	The rear surface of the buttocks to the knee pivot bolt	457.2-482.6	472.6
S	HEAD BREADTH	The widest part of the head	137.1-147.3	141.9
T	HEAD DEPTH	Back of the head to the forehead	177.8-188.0	184.2
U	HIP BREADTH	The widest part of the hip	299.7-314.9	307.4
V	SHOULDER BREADTH	Outside edges of right and left shoulder clevises	350.5-365.7	360.5
W	FOOT BREADTH	The widest part of the foot	78.8-94.0	85.0
X	HEAD CIRCUMFERENCE	Measured at the point as in dim. "T"	528.3-548.7	546.2
Y	CHEST CIRCUMFERENCE (WITH CHEST JACKET)	Measured 345.4 ± 12.7 mm above seat surface	850.9-881.3	875.1
Z	WAIST CIRCUMFERENCE	Measured 165.1 ± 5.1 mm above seat surface	759.5-789.9	785.4
AA	REFERENCE LOCATION FOR MEASUREMENT OF CHEST CIRCUMFERENCE	Reference	332.7-358.1	345.4
BB	REFERENCE LOCATION FOR MEASUREMENT OF WAIST CIRCUMFERENCE	Reference	160.1-170.2	165.1

MGA RESEARCH CORPORATION
HEAD DROP TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 138

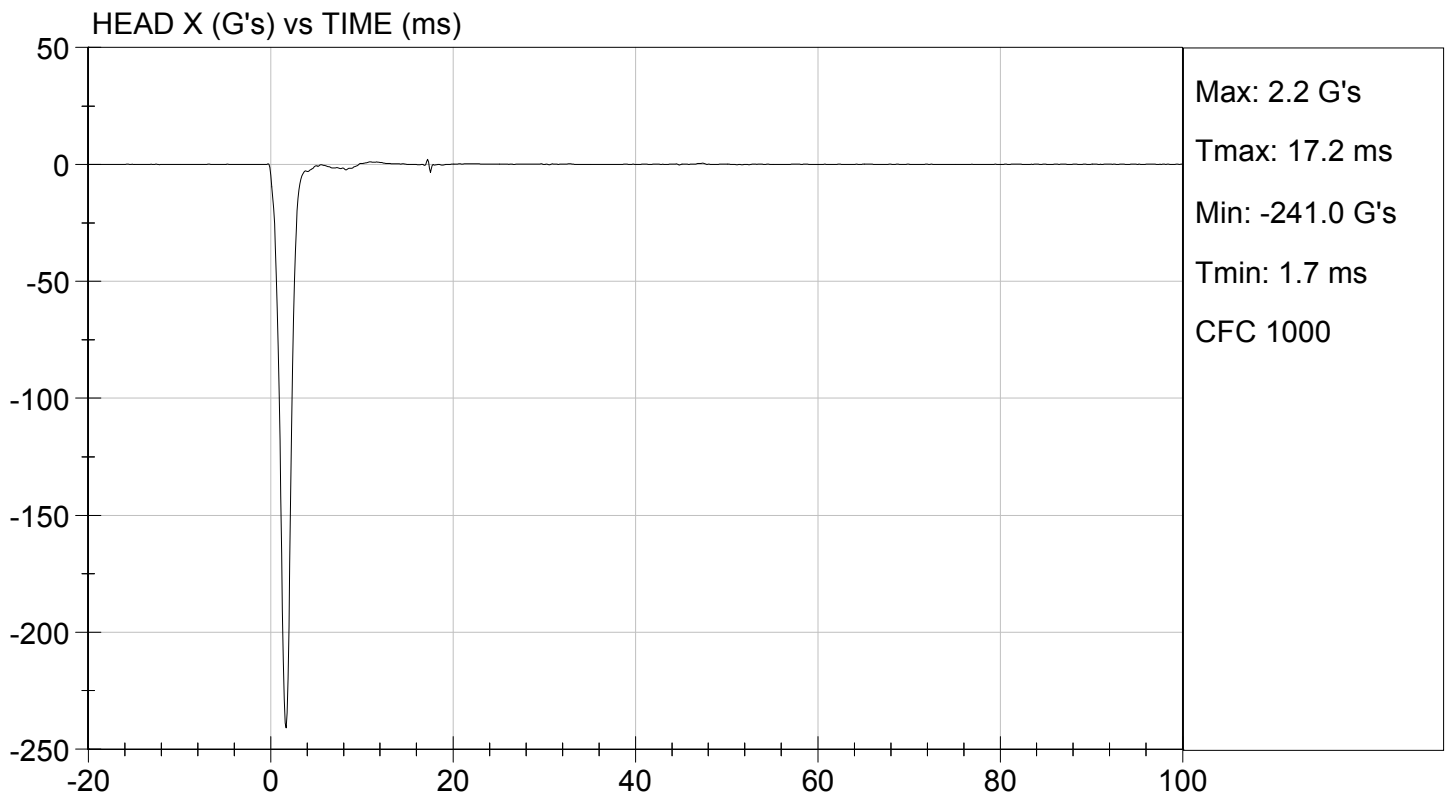
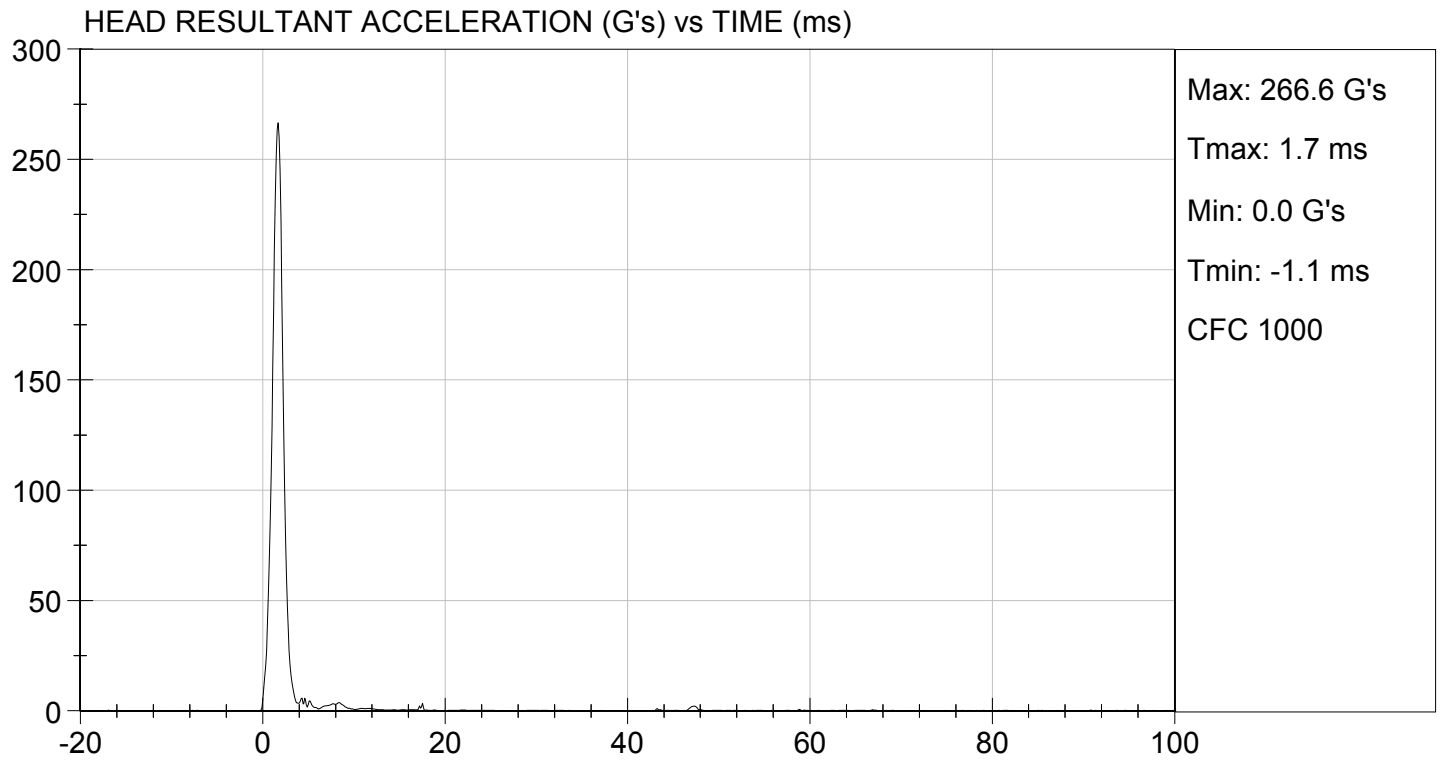
Test ID: D15771

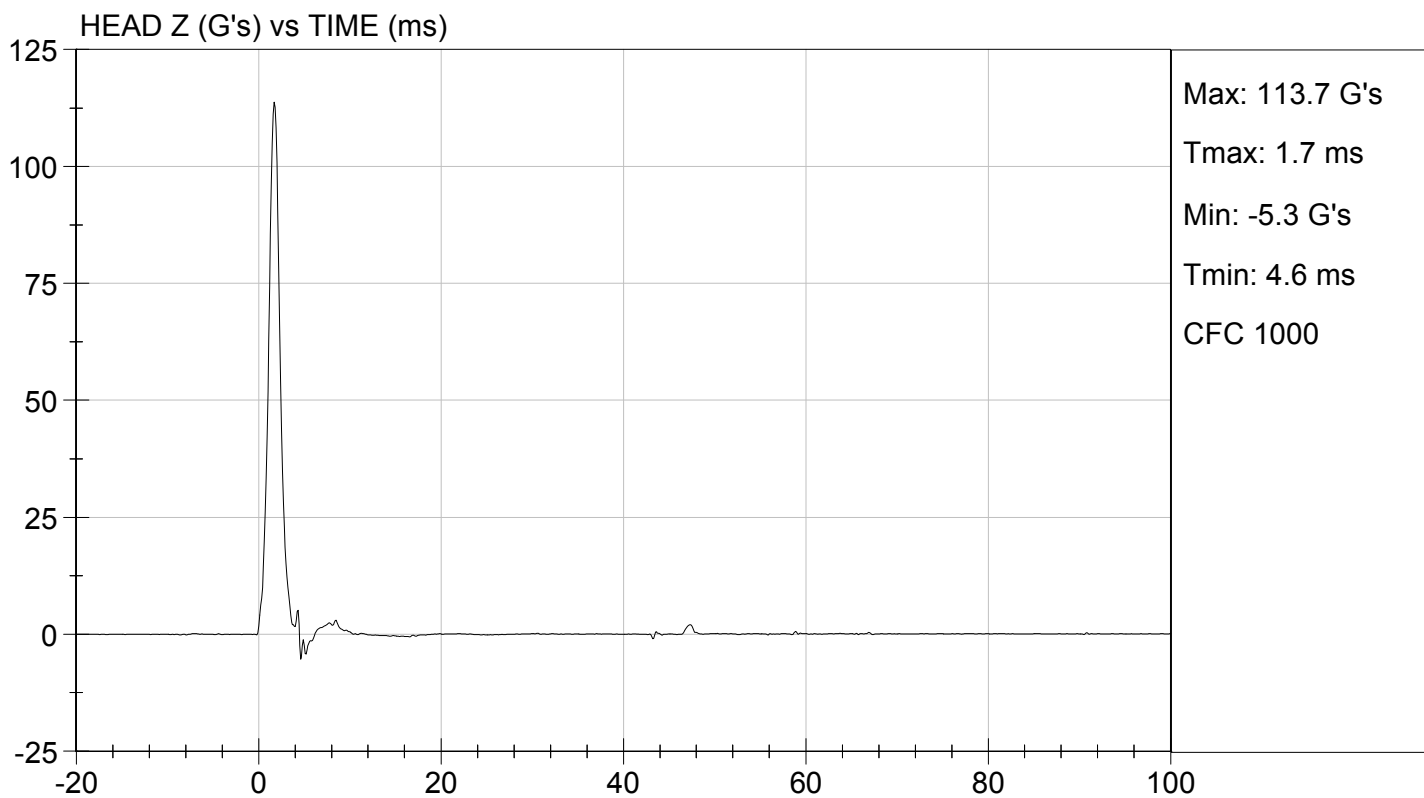
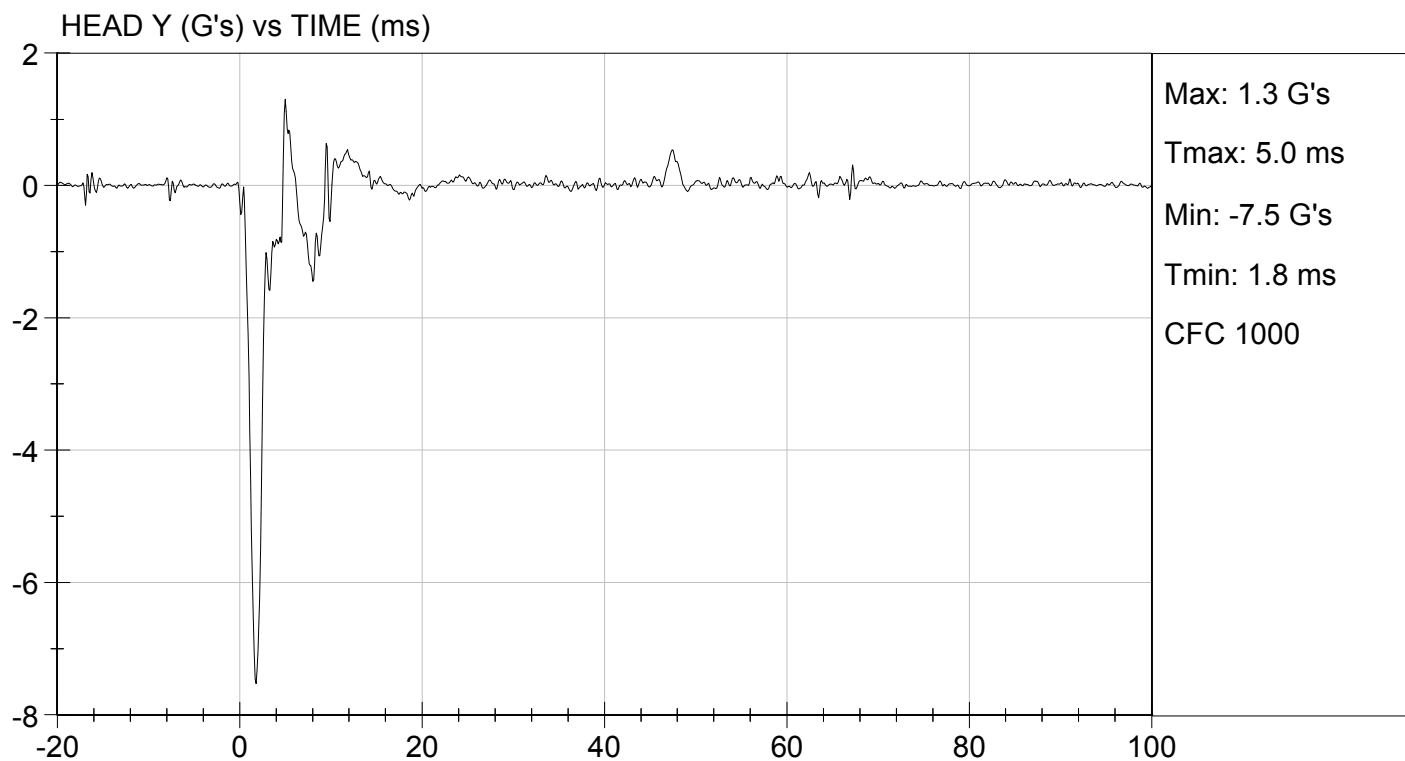
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	19	Pass
Peak Resultant Acceleration	G's	250 to 300	267	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-7.5	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

03/24/2015
Test Date

Jessica Hall
Approved By





MGA RESEARCH CORPORATION

NECK FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 138

Test I.D: D15772

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.0	Pass
Laboratory Relative Humidity		%	10 to 70	25	Pass
Pendulum Speed		m/s	6.89 to 7.13	7.06	Pass
Pendulum Velocity	10 ms	m/s	2.1 to 2.5	2.4	Pass
	20 ms	m/s	4.0 to 5.0	4.4	Pass
	30 ms	m/s	5.8 to 7.0	6.0	Pass
D Plane Rotation	Max	deg	77 to 91	79	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	69 to 83	73	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 to 100	85	Pass
Overall Results					Pass

Maxime Chamberland

Laboratory Technician

03/23/2015

Test Date

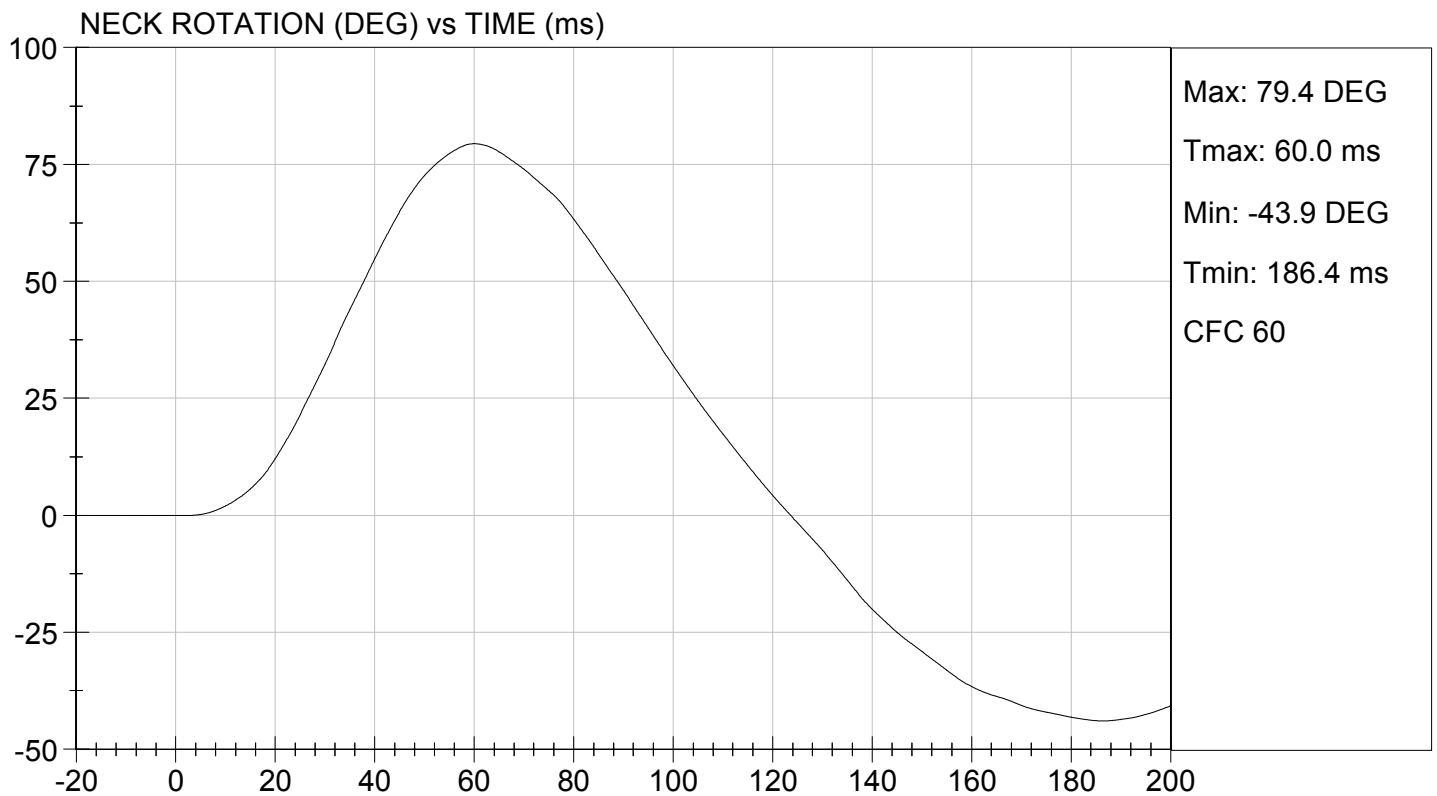
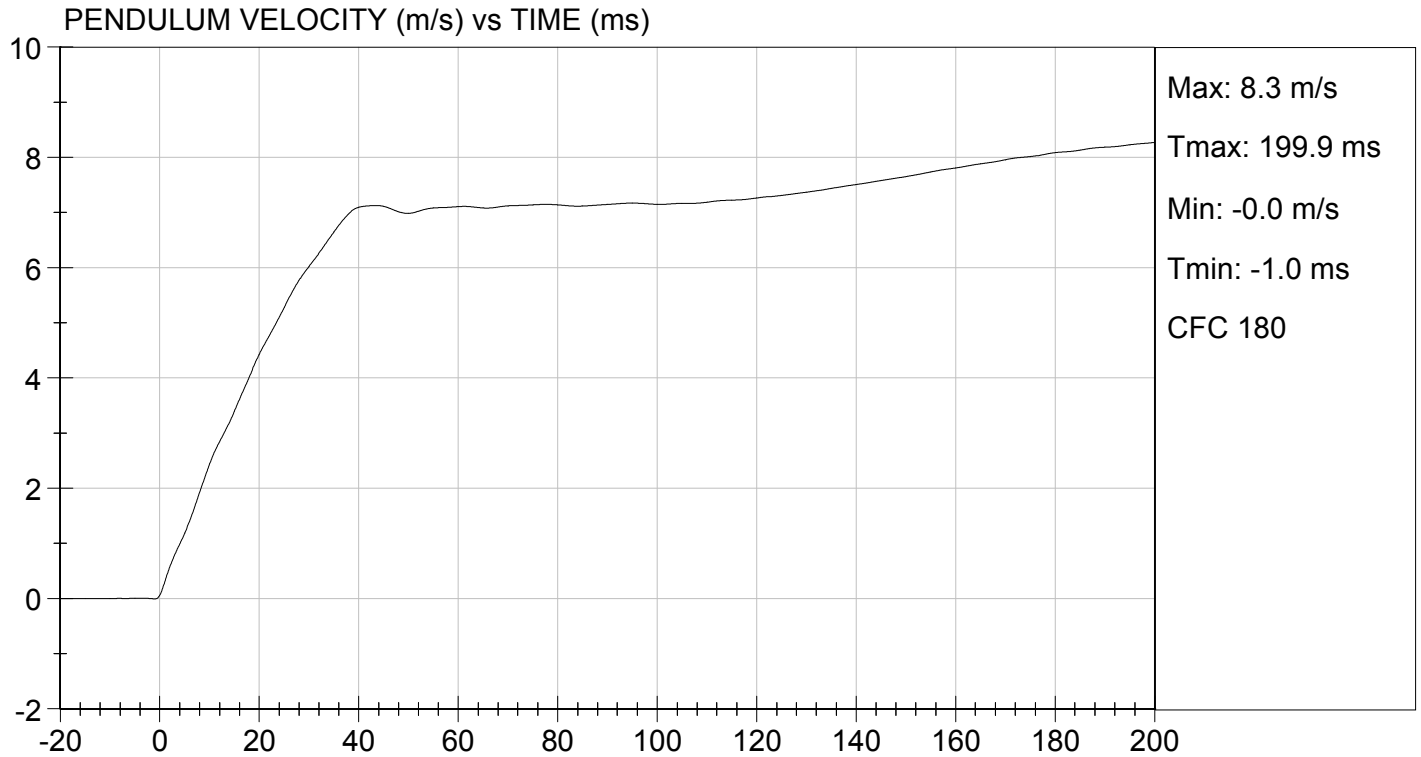
Jessica Hall

Approved By



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

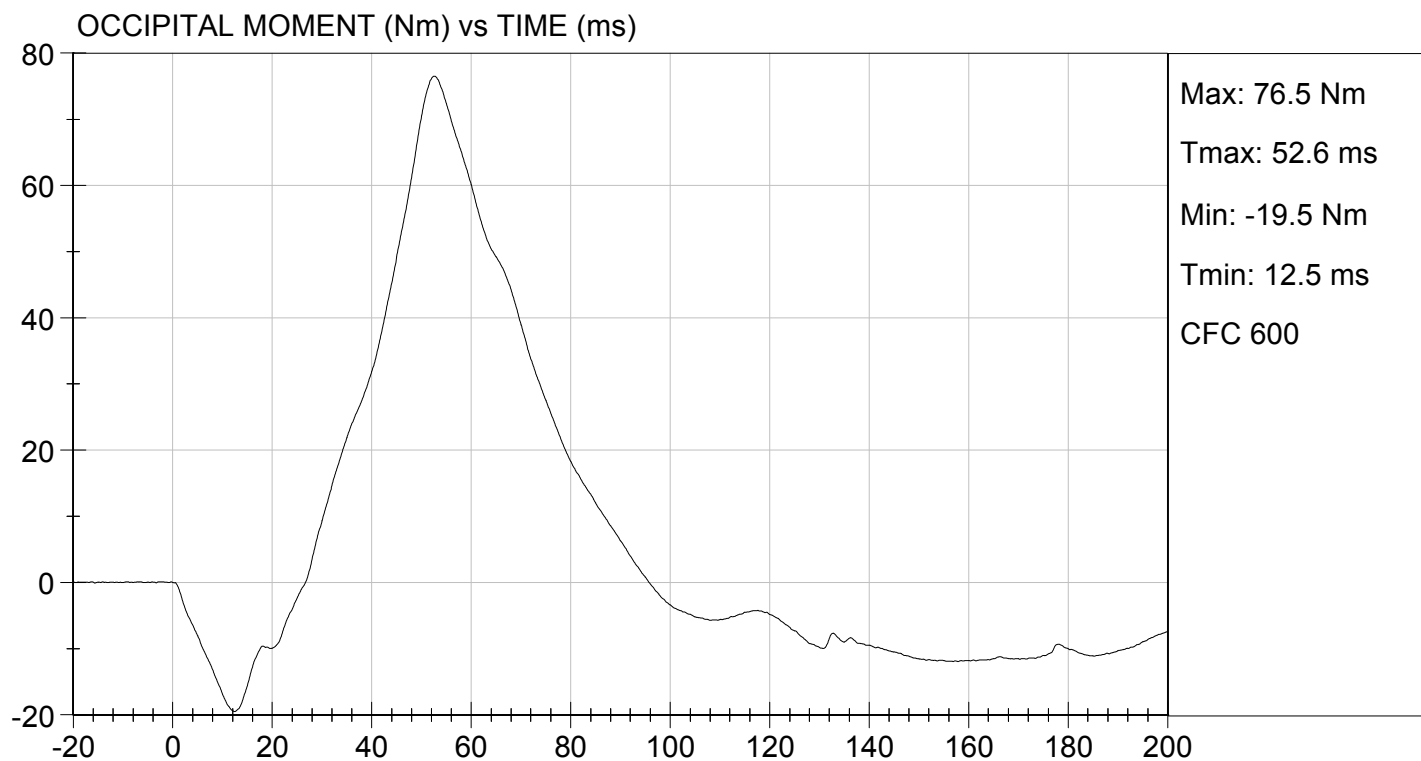
TEST DATE: 03/23/2015
TEST #: D15772





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

TEST DATE: 03/23/2015
TEST #: D15772



MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 138

Test I.D: D15773

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	26	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.12	Pass
Pendulum Velocity	10 ms	m/s	1.5 to 1.9	1.7	Pass
	20 ms	m/s	3.1 to 3.9	3.5	Pass
	30 ms	m/s	4.6 to 5.6	5.1	Pass
D Plane Rotation	Max	deg	99 to 114	101	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	101	Pass
Overall Results					Pass

Maxime Chamberland
Laboratory Technician

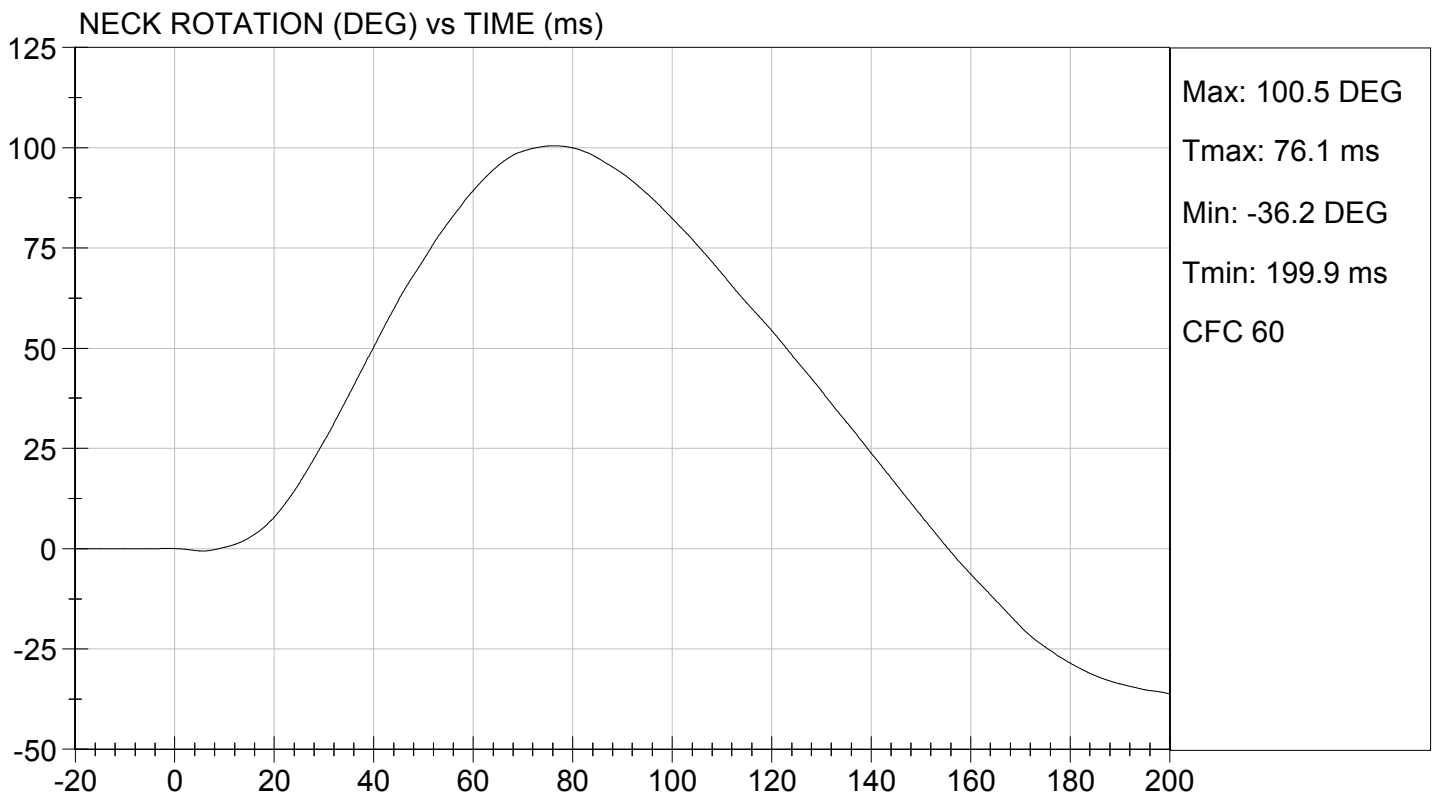
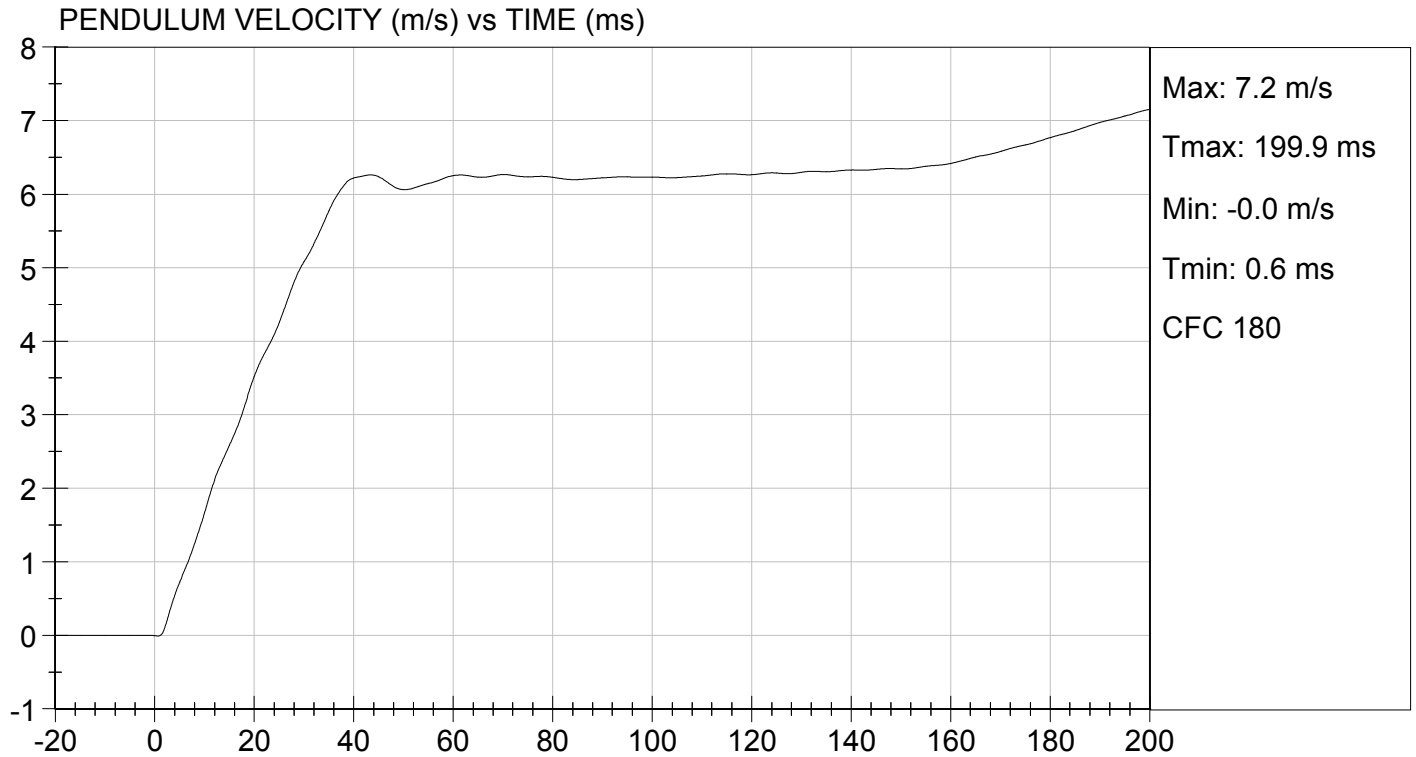
03/23/2015
Test Date

Jessica Hall
Approved By



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

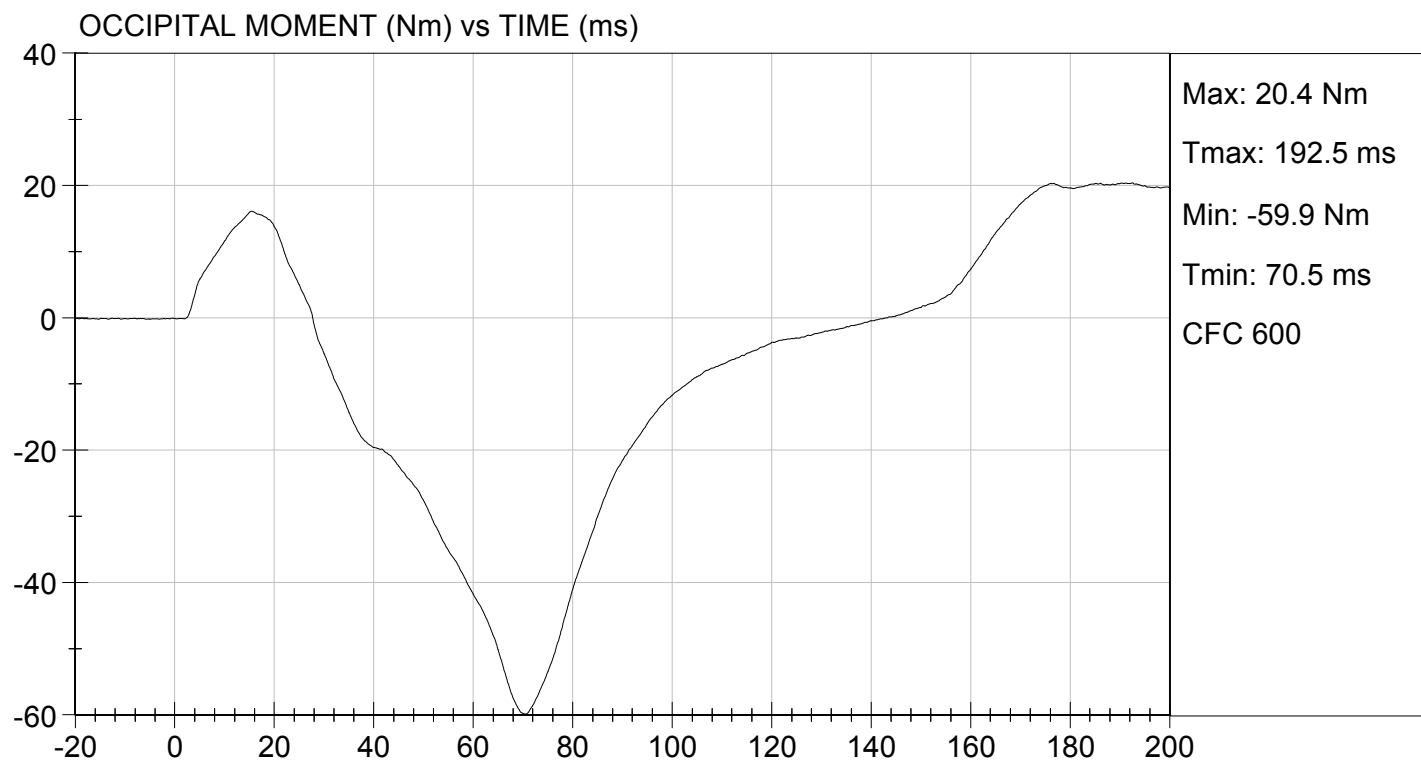
TEST DATE: 03/23/2015
TEST #: D15773





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

TEST DATE: 03/23/2015
TEST #: D15773



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 5TH PERCENTILE

ATD Serial No: 138

Test I.D: D15774

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.6	Pass
Relative Humidity	%	10 to 70	22	Pass
Probe Speed	m/s	6.59 to 6.83	6.77	Pass
Peak Deflection	mm	50 to 58	51	Pass
Peak Resistive Force w/in Deflection Corridor	N	3900 to 4400	4064	Pass
Internal Hysteresis	%	69 to 85	73	Pass
Peak Force 18 mm - 50 mm	N	<= 4600	4088	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

03/24/2015

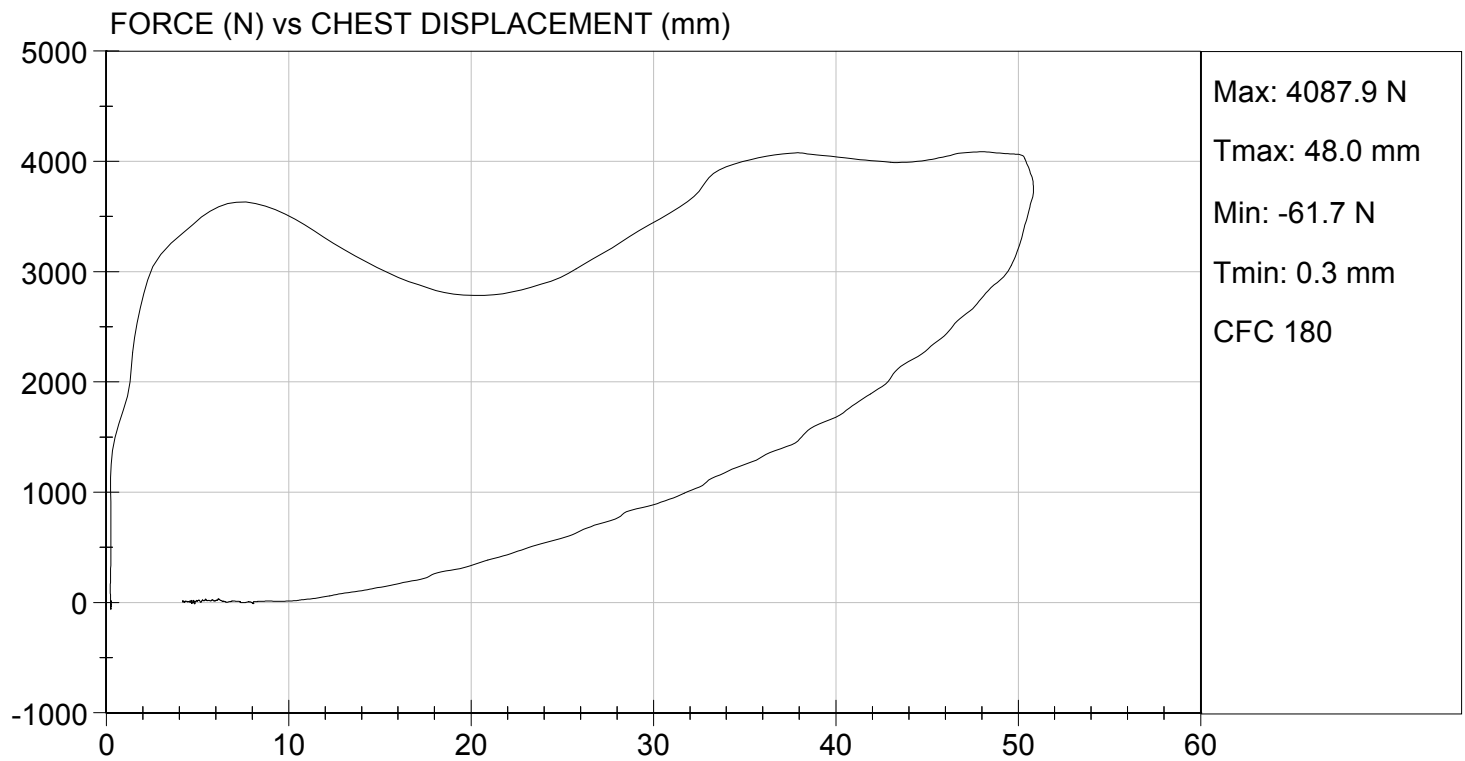
Test Date

Jessica Hall
Approved By



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

TEST DATE: 03/24/2015
TEST #: D15774



MGA RESEARCH CORPORATION

RIGHT KNEE IMPACT TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 138

Test I.D: D15775

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	20.9	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Probe Speed	m/s	2.07 to 2.13	2.11	Pass
Maximum Force	N	3450 to 4060	3504	Pass
Overall Test Results				Pass

Maxime Chamberland

Laboratory Technician

03/23/2015

Test Date

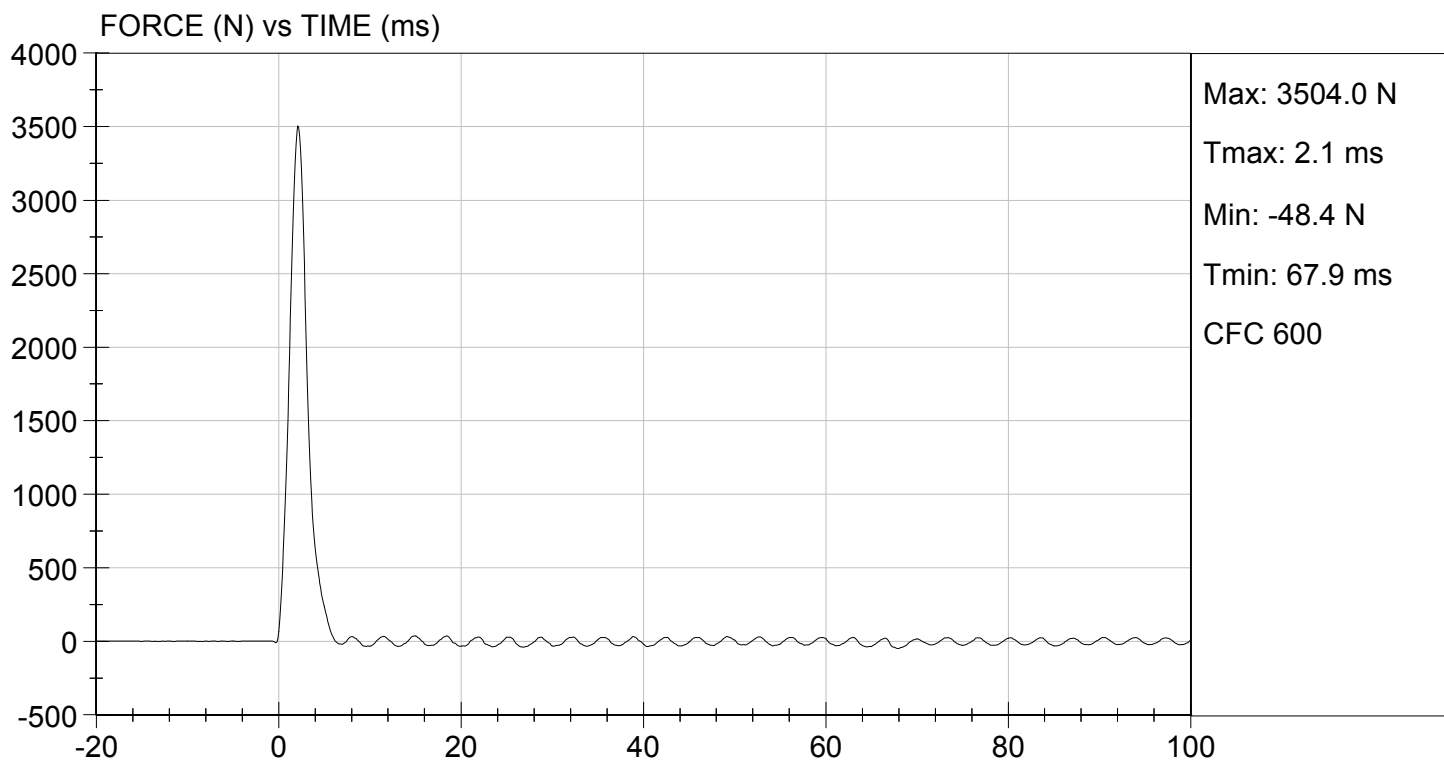
Jessica Hall

Approved By



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

TEST DATE: 03/23/2015
TEST #: D15775



MGA RESEARCH CORPORATION

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

ATD Serial No: 138

Test I.D: D15776

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	20.9	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	N	3450 to 4060	3494	Pass
Overall Test Results				Pass

Maxime Chamberland
Laboratory Technician

03/23/2015

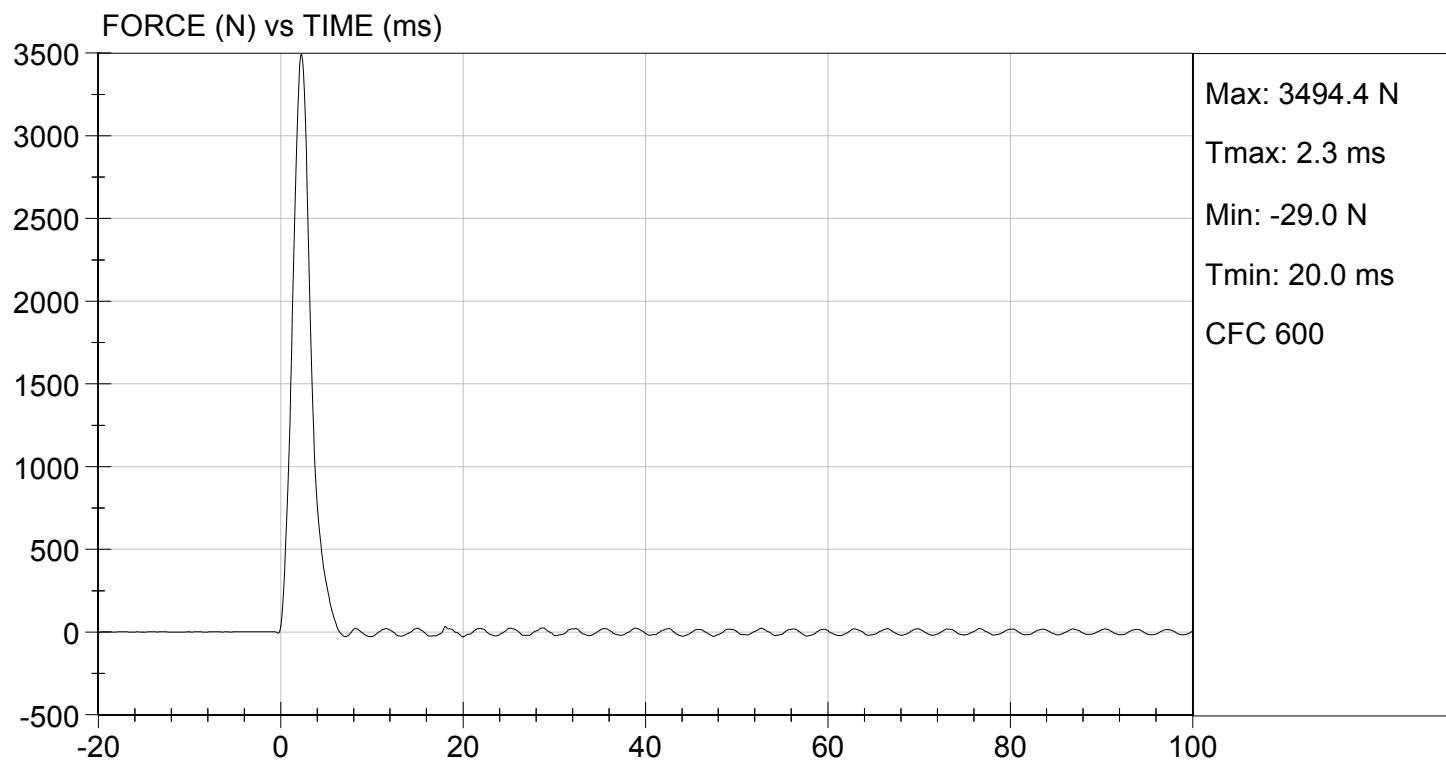
Test Date

Jessica Hall
Approved By



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

TEST DATE: 03/23/2015
TEST #: D15776



MGA RESEARCH CORPORATION

TORSO FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 138

Test I.D: D15777

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	20.9	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Initial Angle	deg	0 to 20	20	Pass
Return Angle	deg	+/- 8	4	Pass
Force at 45 deg	N	320 to 390	343	Pass
Upper Torso Deflection Rate	deg/s	0.5 to 1.5	0.6	Pass
Overall Result				Pass

Maxime Chamberland
Laboratory Technician

03/23/2015

Test Date

Jessica Hall
Approved By

MGA RESEARCH CORPORATION
HEAD DROP TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 138

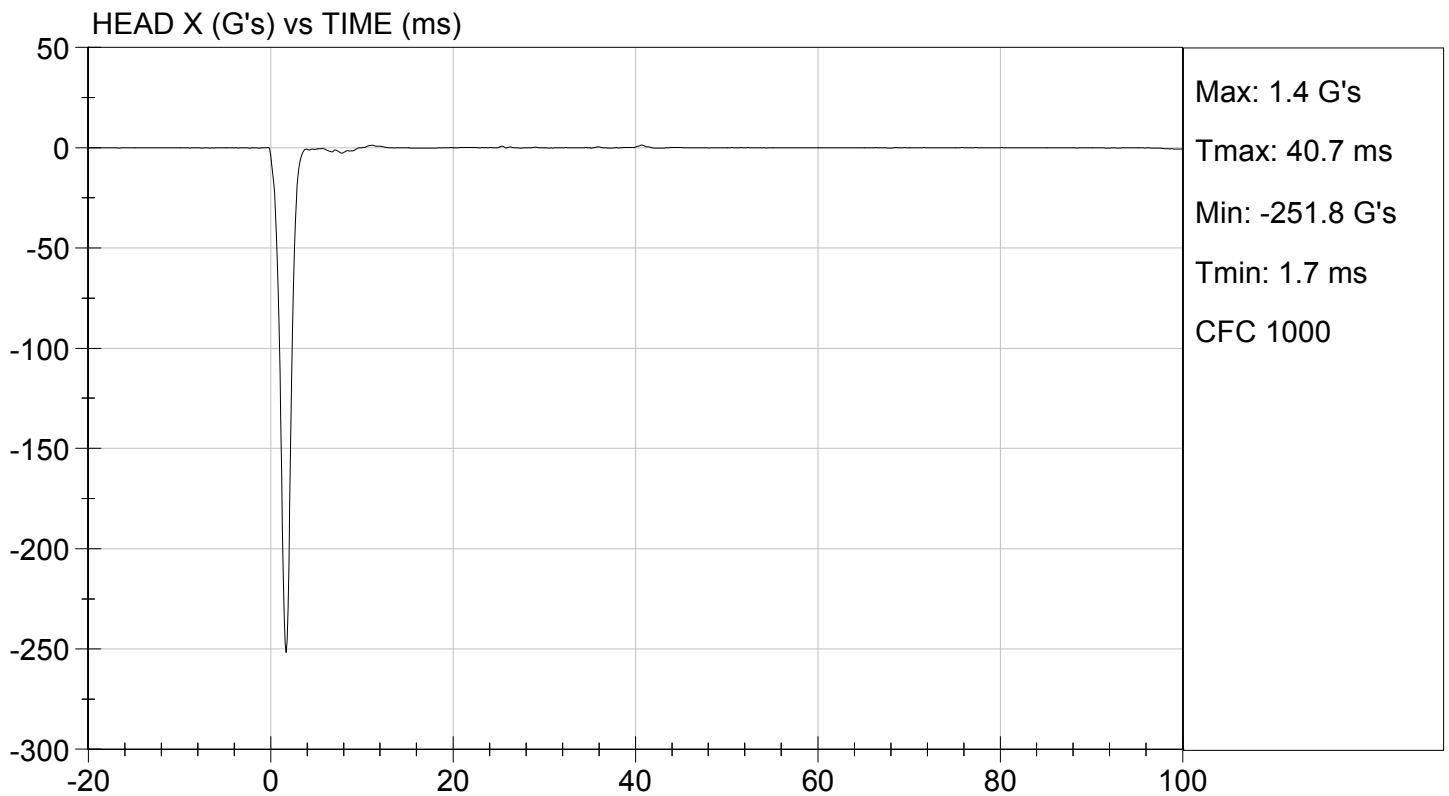
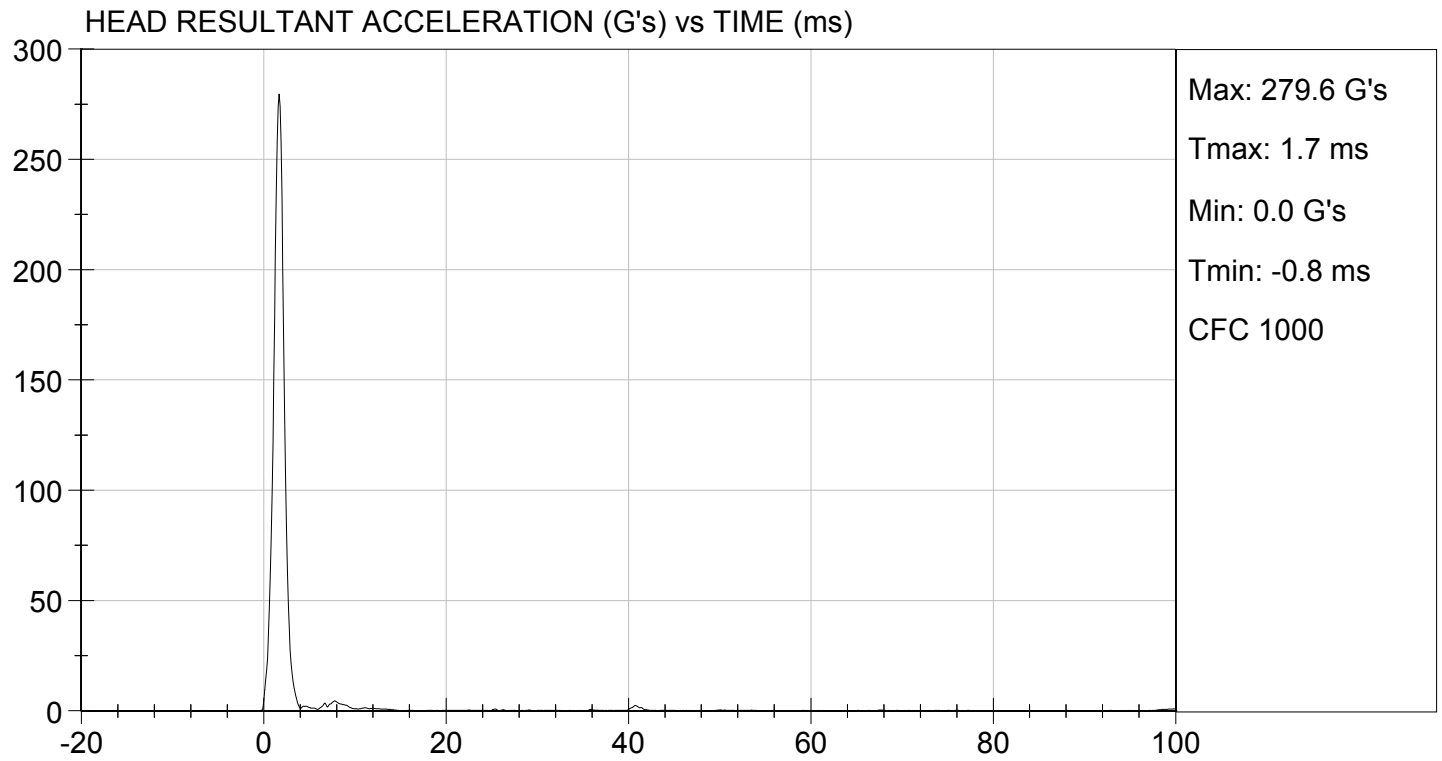
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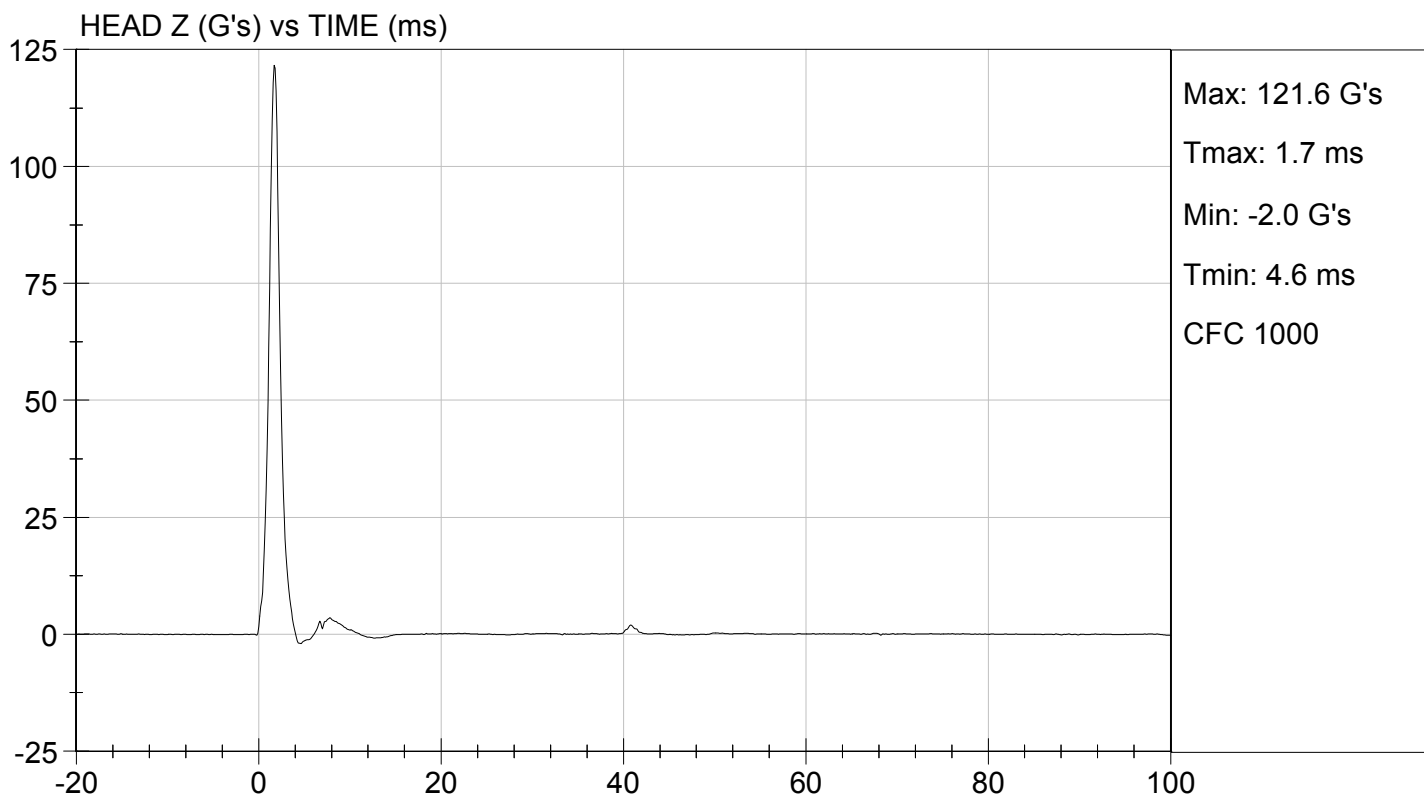
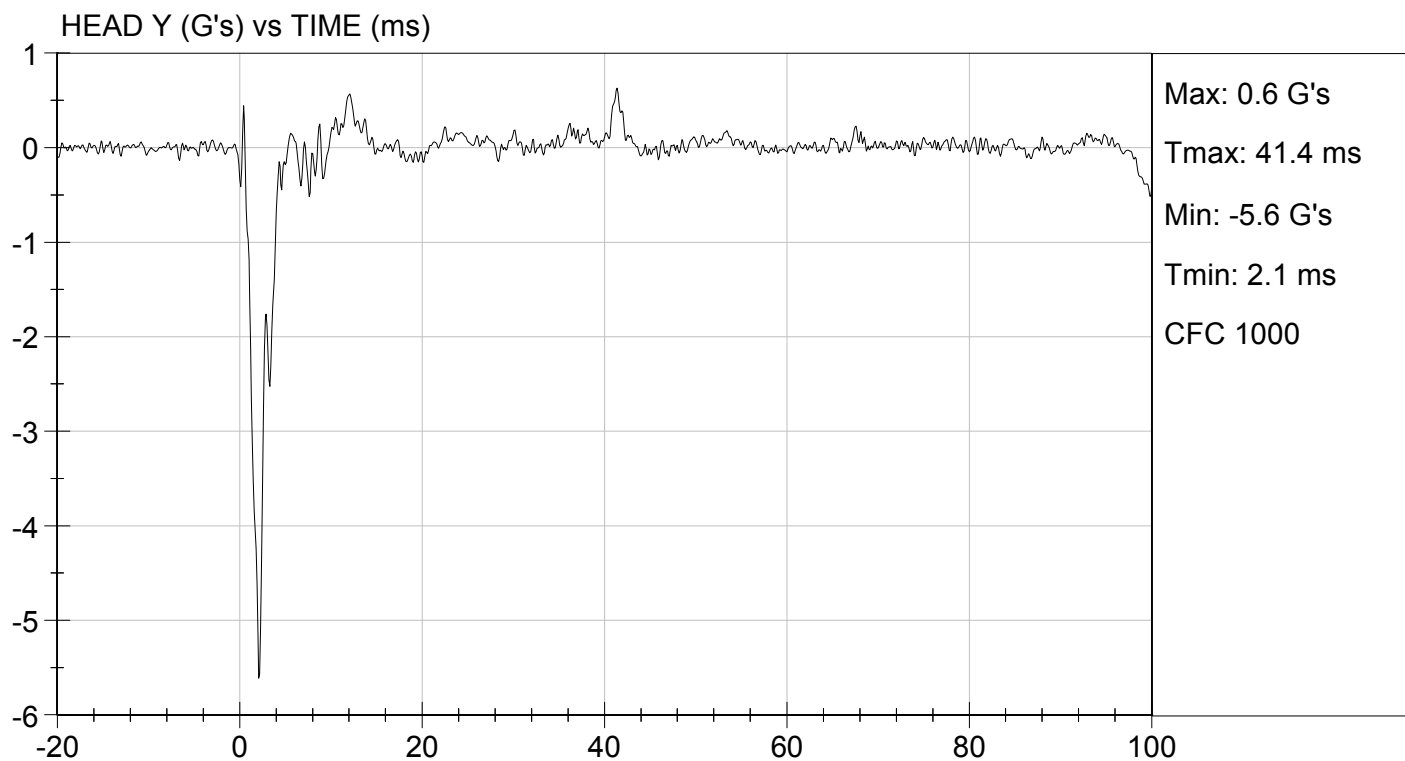
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	22.2	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Peak Resultant Acceleration	G's	250 to 300	280	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-5.6	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

David Schoedel
Laboratory Technician

03/31/2015
Test Date

Jessica Hall
Approved By





MGA RESEARCH CORPORATION

NECK FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 138

Test I.D: D15912

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	22.2	Pass
Laboratory Relative Humidity		%	10 to 70	25	Pass
Pendulum Speed		m/s	6.89 to 7.13	7.13	Pass
Pendulum Velocity	10 ms	m/s	2.1 to 2.5	2.4	Pass
	20 ms	m/s	4.0 to 5.0	4.5	Pass
	30 ms	m/s	5.8 to 7.0	6.3	Pass
D Plane Rotation	Max	deg	77 to 91	81	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	69 to 83	74	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 to 100	86	Pass
Overall Results				Pass	

David Schoedel
Laboratory Technician

03/31/2015

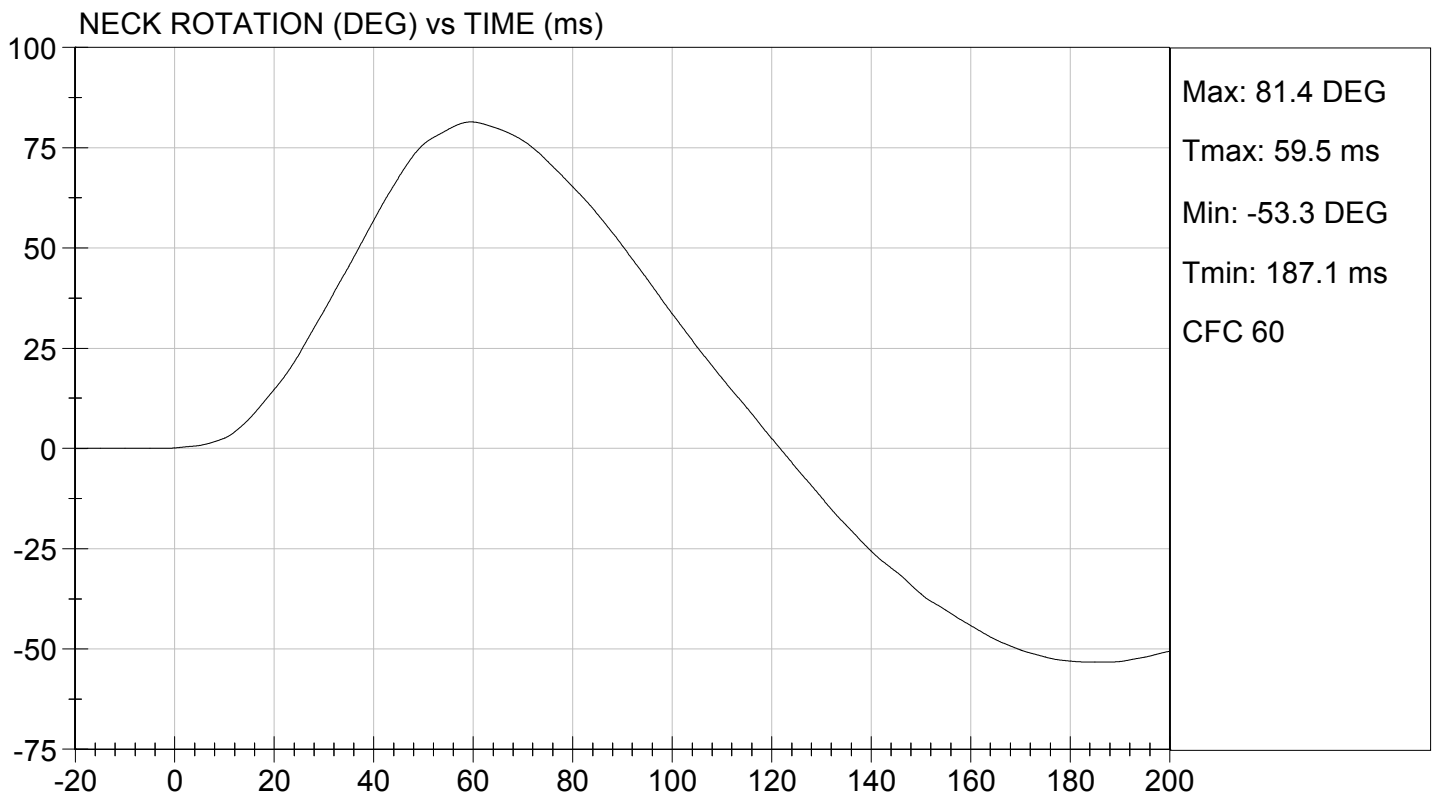
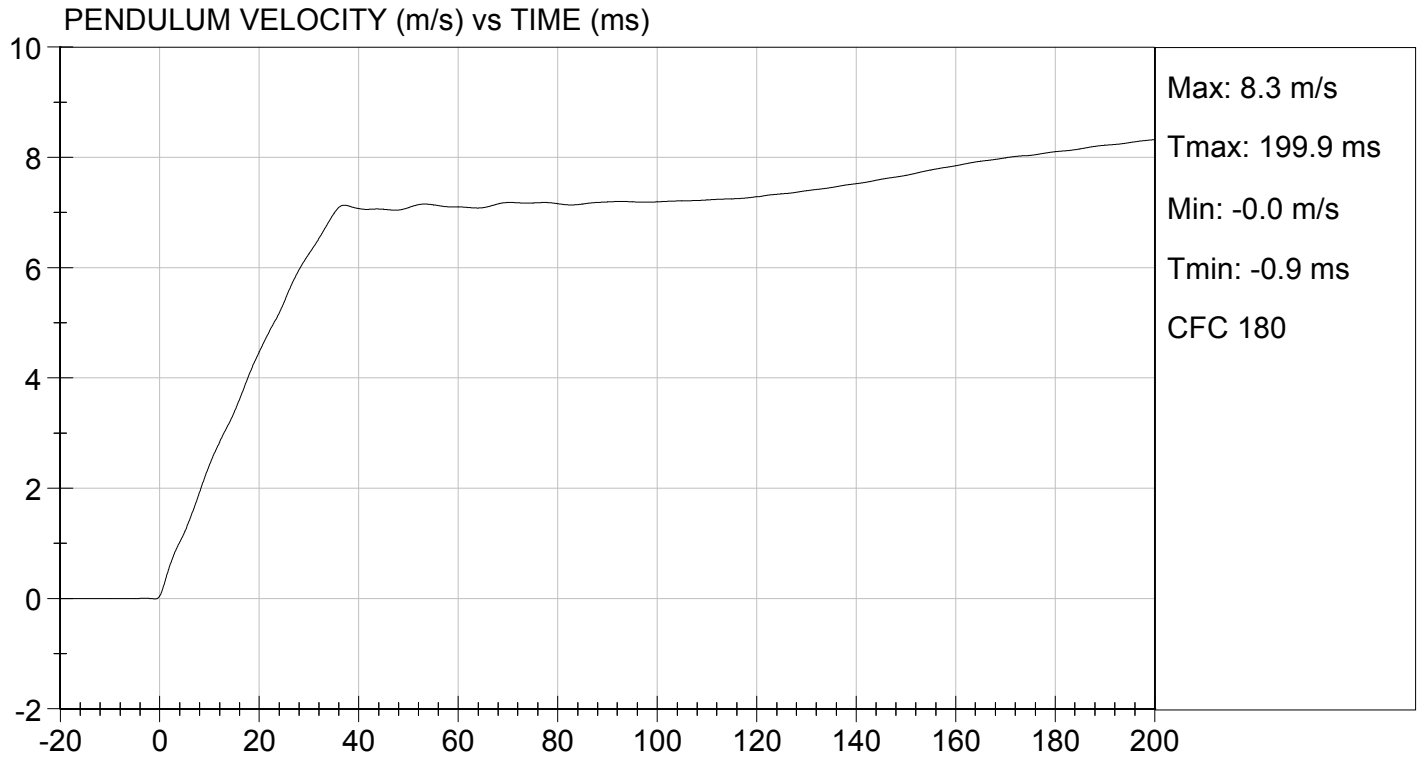
Test Date

Jessica Hall
Approved By



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

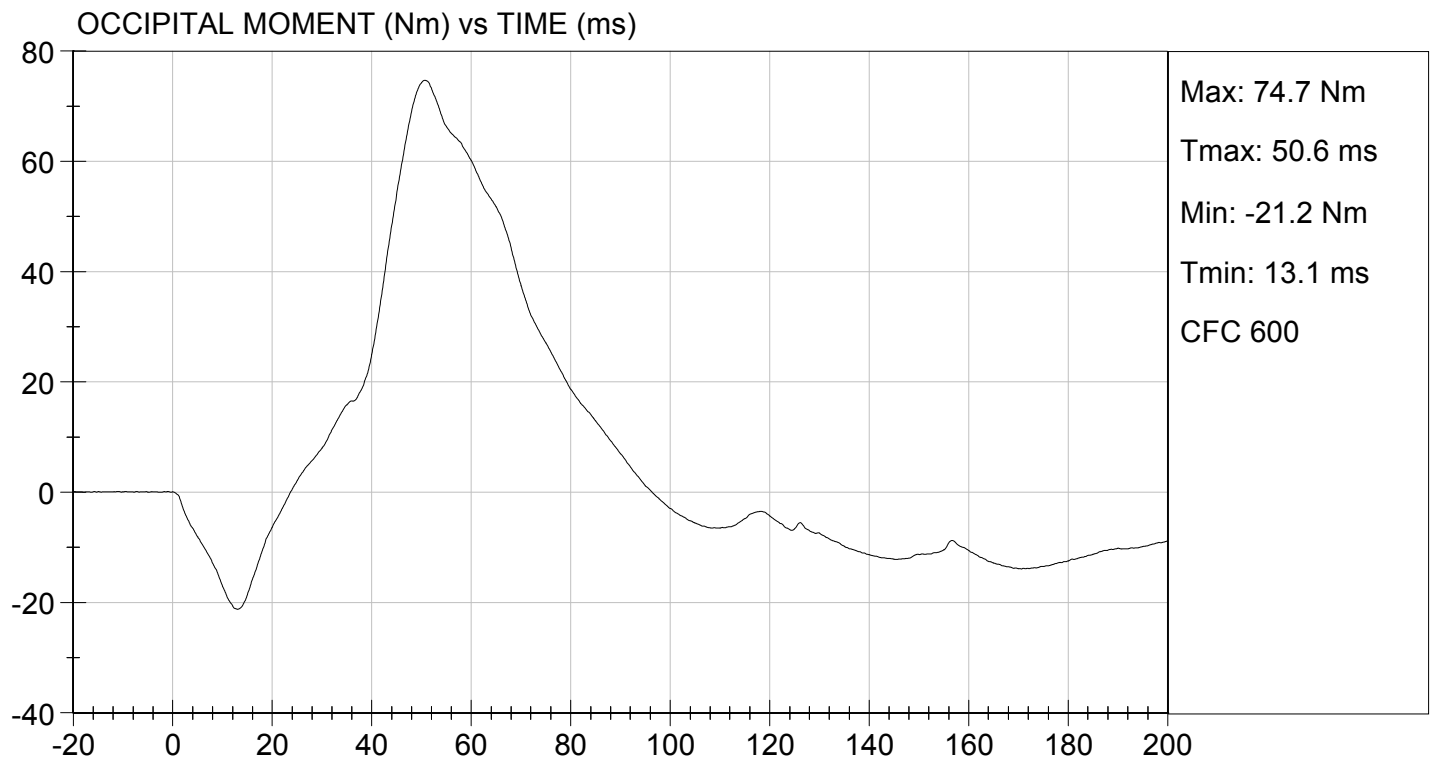
TEST DATE: 03/31/2015
TEST #: D15912





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

TEST DATE: 03/31/2015
TEST #: D15912



MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 5TH PERCENTILE

ATD Serial No: 138

Test I.D: D15913

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	22.2	Pass
Laboratory Relative Humidity		%	10 to 70	25	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.19	Pass
Pendulum Velocity	10 ms	m/s	1.5 to 1.9	1.7	Pass
	20 ms	m/s	3.1 to 3.9	3.6	Pass
	30 ms	m/s	4.6 to 5.6	5.2	Pass
D Plane Rotation	Max	deg	99 to 114	107	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	-65 to -53	-59	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	102	Pass
Overall Results					Pass

David Schoedel
Laboratory Technician

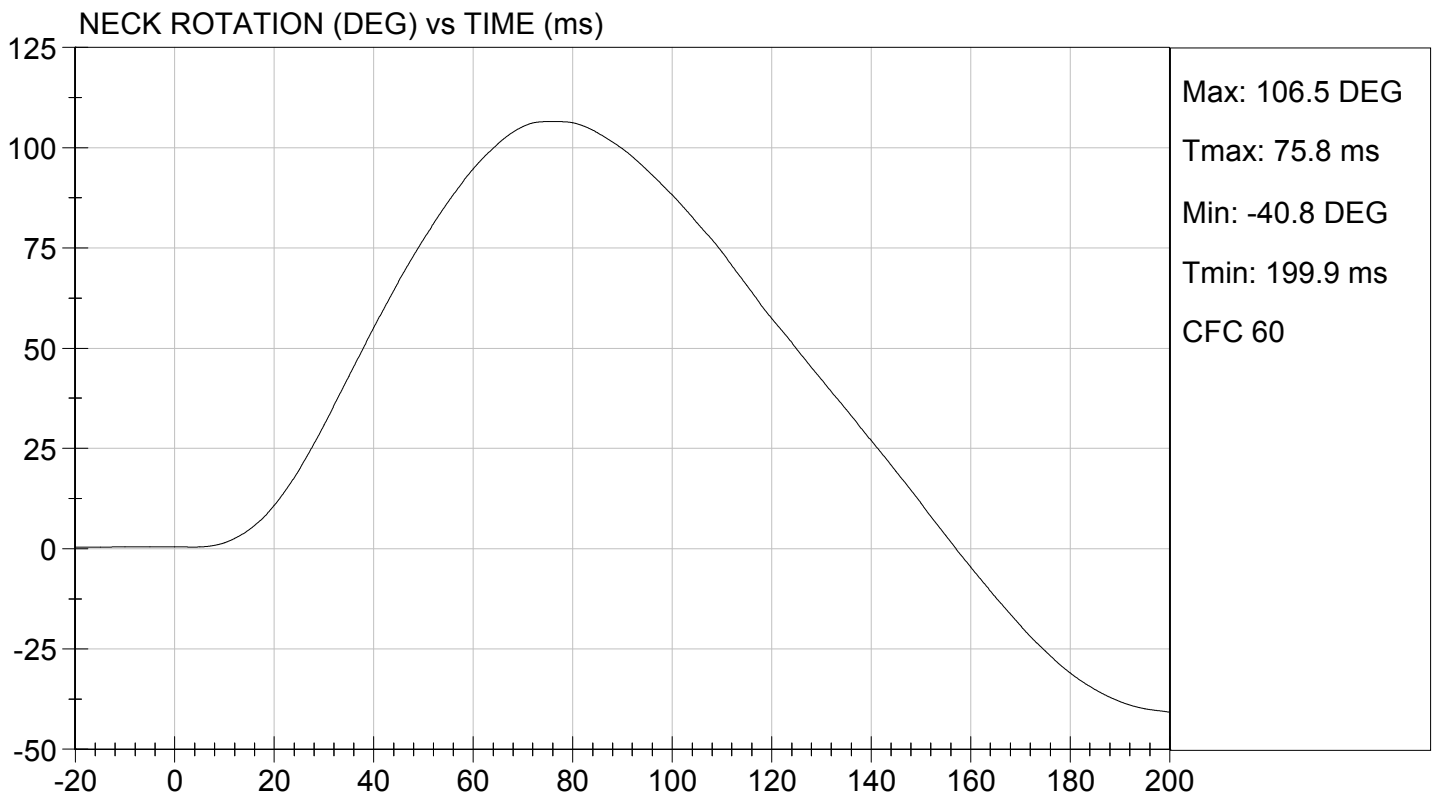
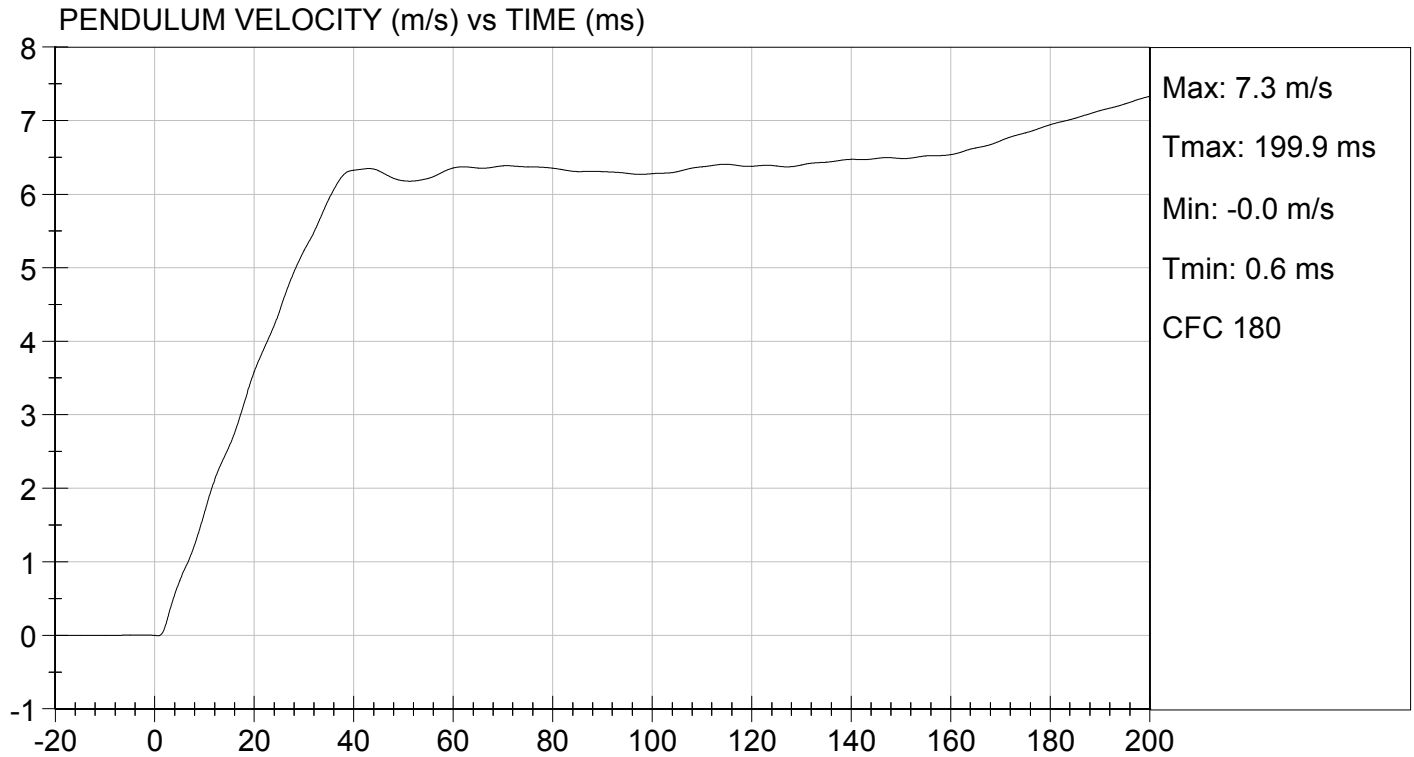
03/31/2015
Test Date

Jessica Hall
Approved By



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

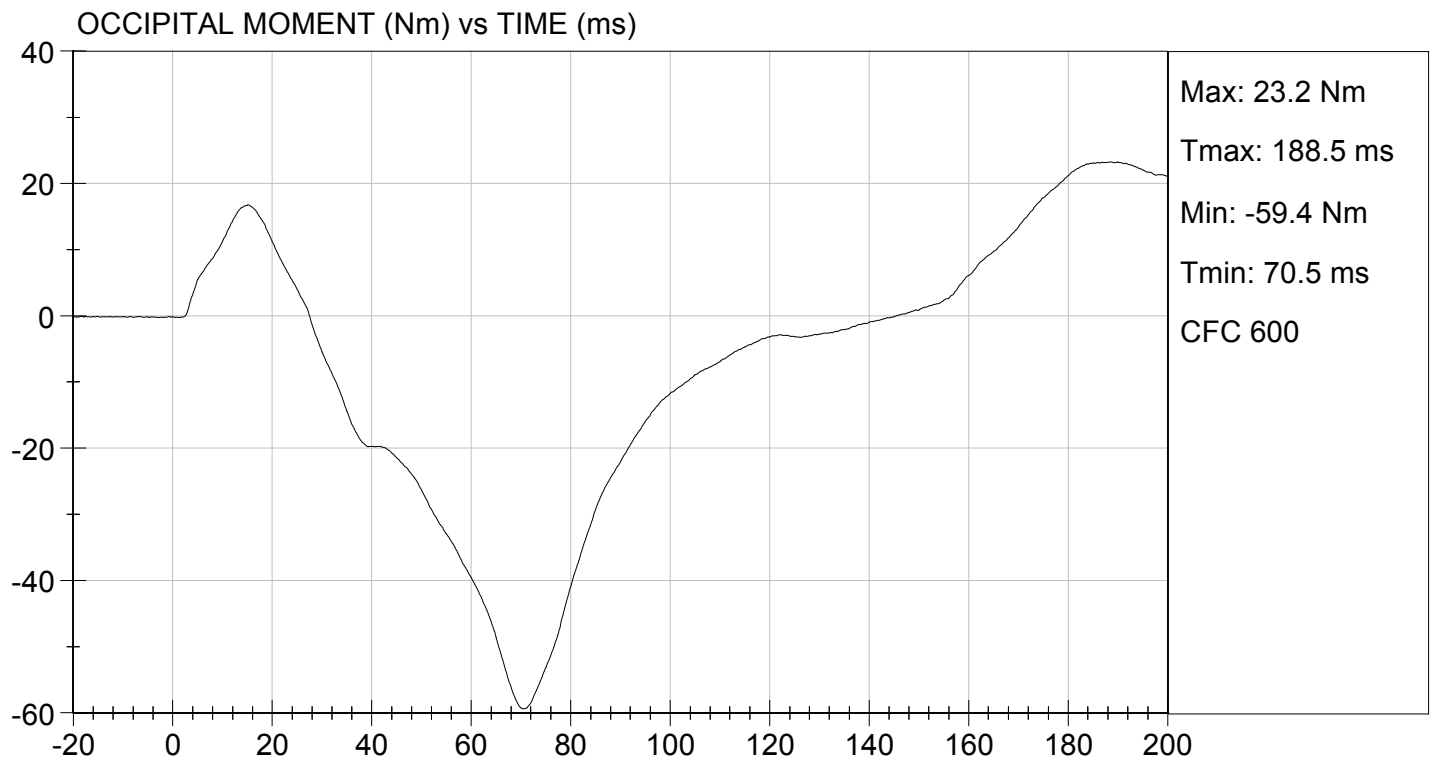
TEST DATE: 03/31/2015
TEST #: D15913





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

TEST DATE: 03/31/2015
TEST #: D15913

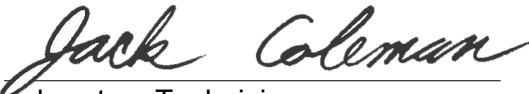


MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 5TH PERCENTILE

ATD Serial No: 138

Test I.D: D15914

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.4	Pass
Relative Humidity	%	10 to 70	27	Pass
Probe Speed	m/s	6.59 to 6.83	6.77	Pass
Peak Deflection	mm	50 to 58	54	Pass
Peak Resistive Force w/in Deflection Corridor	N	3900 to 4400	4121	Pass
Internal Hysteresis	%	69 to 85	70	Pass
Peak Force 18 mm - 50 mm	N	<= 4600	4110	Pass
Overall Test Results				Pass


Laboratory Technician

04/01/2015

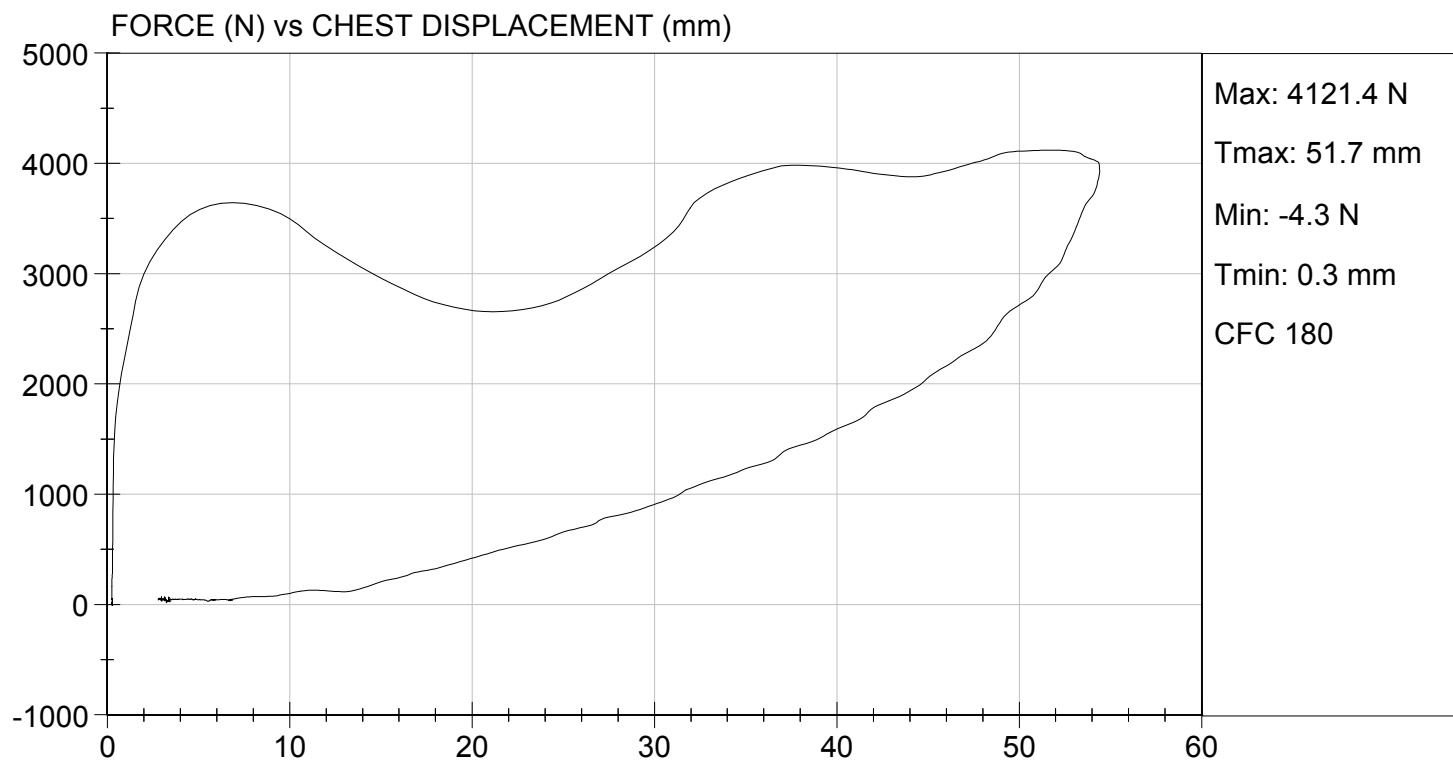
Test Date


Approved By



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

TEST DATE: 04/01/2015
TEST #: D15914



MGA RESEARCH CORPORATION

RIGHT KNEE IMPACT TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 138

Test I.D: D15915

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	22.2	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Probe Speed	m/s	2.07 to 2.13	2.13	Pass
Maximum Force	N	3450 to 4060	3715	Pass
Overall Test Results				Pass

David Schoedel

Laboratory Technician

03/31/2015

Test Date

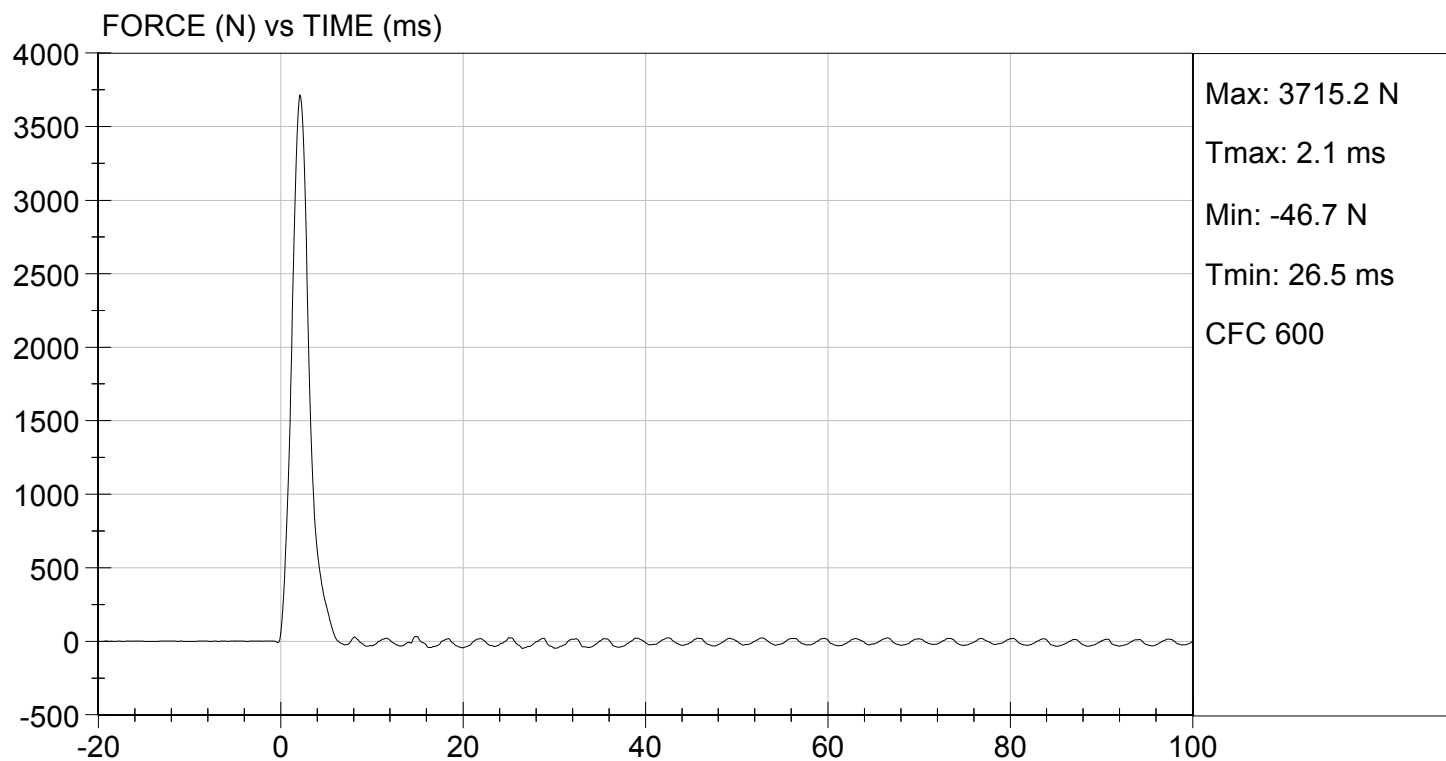
Jessica Hall

Approved By



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

TEST DATE: 03/31/2015
TEST #: D15915



MGA RESEARCH CORPORATION

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

ATD Serial No: 138

Test I.D: D15916

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	22.2	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	N	3450 to 4060	3561	Pass
Overall Test Results				Pass

David Schoedel

Laboratory Technician

03/31/2015

Test Date

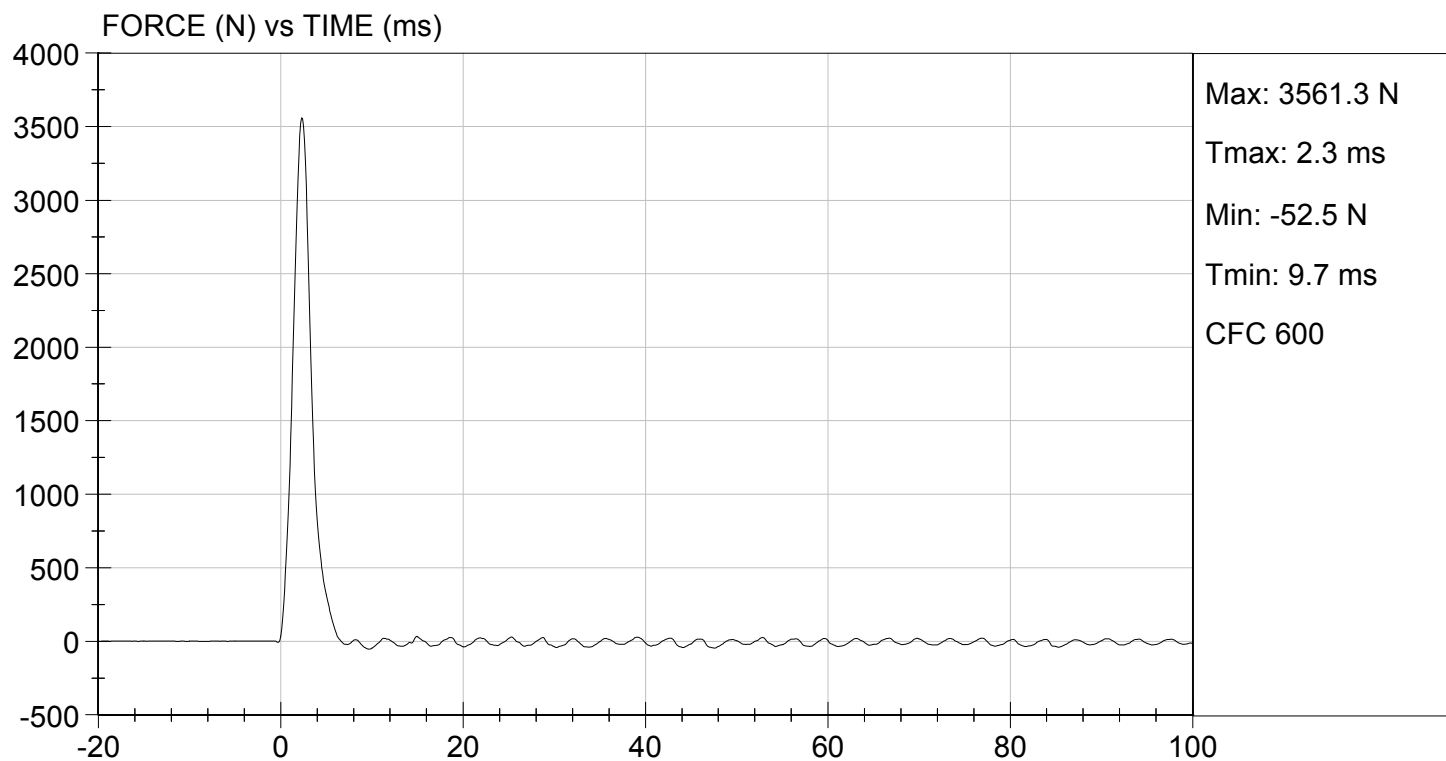
Jessica Hall

Approved By



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

TEST DATE: 03/31/2015
TEST #: D15916



MGA RESEARCH CORPORATION

TORSO FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 138

Test I.D: D15917

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	27	Pass
Initial Angle	deg	0 to 20	20	Pass
Return Angle	deg	+/- 8	5	Pass
Force at 45 deg	N	320 to 390	336	Pass
Upper Torso Deflection Rate	deg/s	0.5 to 1.5	0.8	Pass
Overall Result				Pass

David Schoedel

Laboratory Technician

04/01/2015

Test Date

Jessica Hall

Approved By