REPORT NUMBER: NCAP-MGA-2011-069

NEW CAR ASSESSMENT PROGRAM (NCAP)
Frontal Barrier Impact Test

TOYOTA MOTOR CORPORATION
2011 Toyota Prius 5-Dr Liftback
NHTSA No.: MB5114

MGA RESEARCH CORPORATION
5000 Warren Road
Burlington, WI 53105

Test Date: February 16, 2011

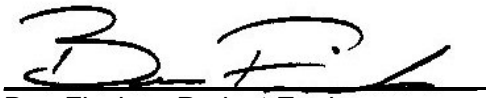
Final Report Date: March 18, 2011

FINAL REPORT

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

This final test report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, in response to Contract Number DTNH22-06-D-00028.

Prepared by: 
Donna Janovicz, Project Manager

Approved by: 
Ben Fischer, Project Engineer

Approval Date: March 18, 2011

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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9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105		*10. Work Unit No.* *11. Contract or Grant No.* DTNH22-06-D-00028
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15. Supplementary Notes		

16. Abstract

A 56.3 km/h NCAP Frontal Impact Test was conducted on the 2011 Toyota Prius 5-Dr Liftback in accordance with the specifications of the Office of Crashworthiness Standards Frontal NCAP Laboratory Test Procedure for the generation of consumer information on vehicle frontal crash protection. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, 305, and foot well intrusion performance. The test was conducted at MGA Research Corporation in Burlington, Wisconsin, on February 16, 2011.

The impact velocity was 56.6 km/h and the ambient temperature at the barrier face at the time of impact was 21°C. The target vehicle post-test maximum crush was 401 mm located at the vehicle's centerline. The test vehicle's performance was as follows:

Measurement Description	Units	Threshold		Driver ATD	Passenger ATD
		50th	5th		
Head Injury Criteria (HIC_{15})	N/A	700	700	203	336
Maximum Chest Compression	mm	63	52	17	11
Nij	N/A	1	1	0.32	0.35
Neck Tension	N	4170	2620	1393	1002
Neck Compression	N	4000	2520	148	292
Left Femur Force	N	10008	6805	2546	2567
Right Femur Force	N	10008	6805	2955	1584

17. Key Words 35 mph Frontal Barrier Impact Test New Car Assessment Program (NCAP)		*18. Distribution Statement* Copies of this report are available from: National Highway Traffic Safety Adm. Technical Reference Division 1200 New Jersey Ave, SE Washington, D.C. 20590	
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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 DTNH22-06-D-00028. 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 Standard's NCAP Frontal Laboratory Test Procedure dated January 2010.

SUMMARY

A load cell barrier was impacted by a 2011 Toyota Prius 5-Dr Liftback at a velocity of 56.6 kph. The test was performed at MGA Research Corporation on February 16, 2011. Pre-and post-test photographs of the vehicle and dummies can be found in Appendix A.

Two 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 on the driver's lap belt and the passenger's lap belt to measure dummy torso and pelvic section loading. The driver (position 1) ATD (Serial No. 036) and the right-front passenger (position 2) ATD (Serial No. 138) were calibrated previous to this test. Certification details, along with verification data, are found in Appendix C of this report.

The 227 channels of data were recorded on an on-board data acquisition system. Appendix B contains the dummy head, chest displacement, neck, and femur 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 401 mm and both the driver and passenger side doors remained closed during the impact event and were operable after the impact.

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 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}	T^1	T^2	Chest Disp. (mm)	Nij	Neck Tension (N)	Neck Comp. (N)	Left Femur (N)	Right Femur (N)
Driver (50^{th})	203	57.0	72.0	17	0.32	1393	148	2546	2955
Passenger (5^{th})	336	58.8	73.8	11	0.35	1002	292	2567	1584

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

TEST NOTES

There was no valid data collected for:
Bottom of Engine X – noise spike between 71-80 msec.

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: 2011 Toyota Prius 5-Dr Liftback
Test Program: NCAP Frontal Barrier Impact Test
NHTSA No.: MB5114
Test Date: 2/16/2011

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	MB5114
Model Year	2011
Make	Toyota
Model	Prius
Body Style	Liftback
VIN	JTDKN3DU9B0252857
Body Color	Classic Silver Met.
Delivery Date	1/27/2011
Odometer (mi)	54
Odometer (km)	87
Dealer	Wilde Toyota
Transmission	Automatic
Final Drive	Front
Type/No. Cylinders	4
Engine Displacement (L)	1.8
Engine Placement	Lateral
Roof Rack	No
Sunroof/T-Top	No
Tinted Glass	No
Traction Control	Yes
Power Brakes	Yes
Front Disc	Yes
Rear Disc	Yes
Does owner's manual provide instructions to turn off automatic door locks?	Yes

Anti-Lock Brakes	Yes
All Wheel Drive	No
Power Steering	Yes
Driver Front Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	Yes
Driver Torso/Pelvis Airbag	No
Driver Pelvis Airbag	No
Driver Knee Airbag	Yes
Pass. Front Airbag	Yes
Pass. Curtain Airbag	Yes
Pass. Head/Torso Airbag	No
Pass. Torso Airbag	Yes
Pass. Torso/Pelvis Airbag	No
Pass. Pelvis Airbag	No
Pass. Knee Airbag	No
Pretensioners	Yes
Load Limiters	Yes
Automatic Door Locks	Yes
Bucket Seats	Yes
Tilt Steering	Yes
Other	

DATA FROM CERTIFICATION LABEL

Manufactured By	Toyota Motor Corporation
Date of Manufacture	11/10

GVWR (kg)	1805
GAWR Front (kg)	1030
GAWR Rear (kg)	987

VEHICLE SEATING AND WEIGHT CAPACITY DATA

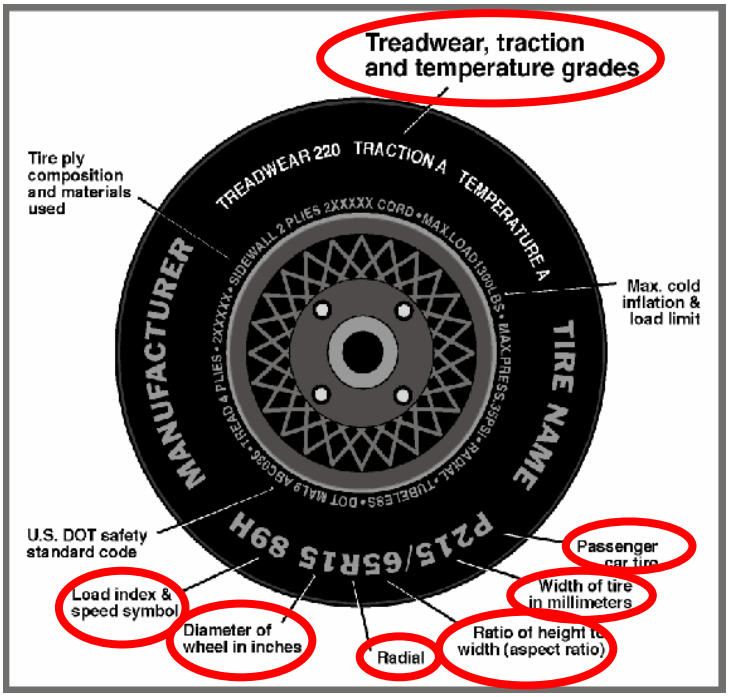
Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Split Bench		
Designated Seating Capacity (DSC)	2	3		5
Capacity Weight (VCW) (kg)				365
Cargo Weight (RCLW) (kg)				25

DATA SHEET NO. 1 (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MB5114
Test Date: 2/16/2011



Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	240	230
Recommended Tire Size	P195/65R15	P195/65R15
Tire Size on Vehicle	P195/65R15	P195/65R15
Tire Manufacturer	Goodyear	Goodyear
Tire Model	Assurance	Assurance
Treadwear	540	540
Traction	A	A
Temperature Grades	B	B
Tire Plies Sidewall	1	1
Tire Plies Body	3	3
Load Index & Speed Symbol	89S	89S
Tire Material	Rubber	Rubber
DOT Safety Code Right	VW9N	VW9N
DOT Safety Code Left	VW9N	VW9N

DATA SHEET NO. 1 (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback NHTSA No.: MB5114
Test Program: NCAP Frontal Barrier Impact Test Test Date: 2/16/2011

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	424.1	290.7		459.5	345.7	
Right	kg	416.9	269.0		432.7	323.4	
Ratio	%	60.0	40.0		57.1	42.9	
Totals	kg	841.0	559.7	1400.7	892.2	669.1	1561.3

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1400.7
Weight of 1 P572E ATD & 1 P572O ATD	kg	140.6
Rated Cargo/Luggage Weight (RCLW)	kg	25
Calculated Target Vehicle Target Weight (TVTW)	kg	1566.3

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	669	680	692	690	1079
As Tested	mm	667	670	654	660	1157
Post Test	mm	672	697	645	673	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2700
Total Vehicle Length at Left Side	mm	4350
Total Vehicle Length at Centerline	mm	4460
Total Vehicle Length at Right Side	mm	4350
Weight of Ballast in Cargo Area	kg	32.7
Weight of Vehicle Components Removed	kg	27.7
Amount of Stoddard Solvent in Fuel Tank	L	41.8

List of components removed to meet test weight: Spare tire, right tail light, jack & tools, trunk carpet and box, rear floor mats, front splash guard.

DATA SHEET NO. 1 (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback NHTSA No.: MB5114
Test Program: NCAP Frontal Barrier Impact Test Test Date: 2/16/2011

TARGET VEHICLE STRUCTURAL MEASUREMENT

	Elements	Pre-Test (mm)
1	Total Length	4460
2	Total Width	1748
3	Bumper Top Height	550
4	Bumper Bottom Height	432
5	Longitudinal Member Top Height	550
6	Distance between Longitudinal Members	912
7	Longitudinal Member Width	70
8	Engine Top Height	845
9	Engine Bottom Height	190
10	Engine and Gearbox Width	860
11	Front Bumper-Engine Distance	485
12	Front Shock Absorber Fixing Height	874
13	Bonnet Leading Edge Height	794
14	Front Shock Absorber Fixing Width	1202
15	Front Bumper – Front Axle Distance	1327
16	Front Axle – A-Pillar Distance	426
17	A-Pillar – B-Pillar Distance	1140
18	B-Pillar – Rear Axle Distance	1136
19	B-Pillar – C-Pillar Distance	725
20	Roof Sill Bottom Height	1354
21	Roof Sill Top Height	1481
22	Floor Sill bottom Height	195
23	Floor Sill Top Height	345

DATA SHEET 1A

ELECTRIC VEHICLE PARAMETER DATA

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback NHTSA No.: MB5114
Test Program: NCAP Frontal Barrier Impact Test Test Date: 2/16/2011

Type of Electric Vehicle (Electric/Hybrid):	Gas-Electric Hybrid
Propulsion Battery Type:	NiMH
Nominal Voltage (V):	201.6
Physical Location of Automatic Propulsion Battery Disconnect:	Not physically contained within the propulsion battery system
Auxiliary Battery Type:	N/A

PROPULSION BATTERY SYSTEM DATA (COTR SUPPLIED DATA)

Electrolyte Fluid Type:	KOH	
Electrolyte Fluid Specific Gravity:	1.269 g/cm2	
Electrolyte Kinematic Viscosity (centistokes):	1.906 mPa·s	
Electrolyte Fluid Color:	Clear	
Propulsion Battery Coolant Type, Color, Specific Gravity (if applicable):	Air	
Location of Battery Modules:		Inside Passenger Compartment
	X	Outside Passenger Compartment

MEASURE AND RECORD BATTERY STATE OF CHARGE

	Maximum State of Charge recommended by manufacturer:	
	Test Voltage (>95% of Maximum State of Charge):	
X	Test Voltage (Within Normal Operating Voltage Range):	**168-280 V**

VEHICLE CHASSIS GROUND POINT(S) LOCATION(S)

Details of Vehicle Chassis Ground Point(s) & Locations(s)	Any position on the body plat where not painted.

PROPULSION BATTERY SYSTEM

Details of Propulsion Battery Components	1. Service Disconnect 2. Forced Air Cooling System

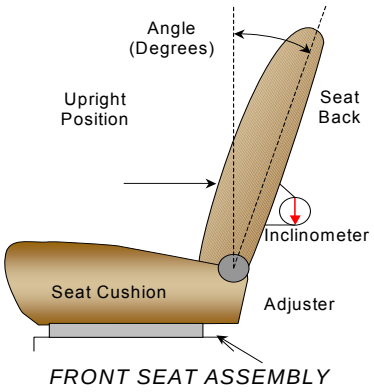
DATA SHEET NO. 2

SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback NHTSA No.: MB5114
Test Program: NCAP Frontal Barrier Impact Test Test Date: 2/16/2011

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 Seating & Positioning Procedures" in the NCAP Test Procedure dated January 2010.



SEAT BACK ANGLE	Degrees
Driver Seat Back Angle	1.1° on headrest post
Passenger Seat Back Angle	1.0° on headrest post

SEAT FORE/AFT POSITIONS

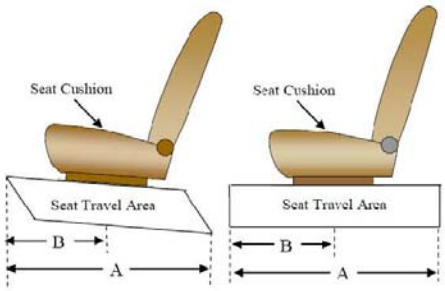
The driver and passenger seat fore/aft positions are adjusted following Appendix F, "Driver & Passenger Seating & Positioning Procedures" in the NCAP Test Procedure dated January 2010.

SEAT FORE/AFT POSITIONS	Total Fore/Aft Travel	Placed in Position #
Driver Seat	26 detents (first as 0)	11th detent (forward-most as 0)
Passenger Seat	26 detents (first as 0)	0 mm (forward-most as 0)

SEAT BELT UPPER ANCHORAGES

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

SEAT BELT UPPER ANCHORAGES	Total # of Positions	Placed in Position #
Driver Seat	4	0 (uppermost as 0)
Passenger Seat	4	0 (uppermost as 0)



DATA SHEET NO. 2 (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL DATA

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback NHTSA No.: MB5114
Test Program: NCAP Frontal Barrier Impact Test Test Date: 2/16/2011

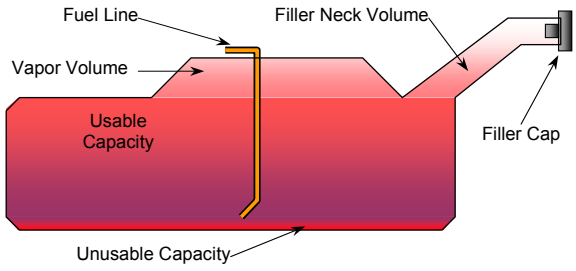
FUEL TANK CAPACITY DATA

	Liters
Usable Capacity of "Standard Tank"	45.0
Usable Capacity of "Optional" Tank	
92-94% of Usable Capacity	41.4 to 42.3
Actual Amount of Solvent used	41.8
1/3 of Usable Capacity	15.0

FUEL PUMP

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

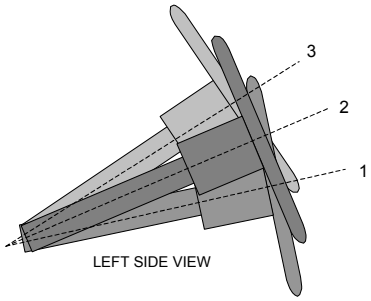
The vehicle is equipped with an electric fuel pump. The fuel pump is activated when the ignition is turned on. The fuel pipe is on the left side.



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

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



STEERING COLUMN ASSEMBLY

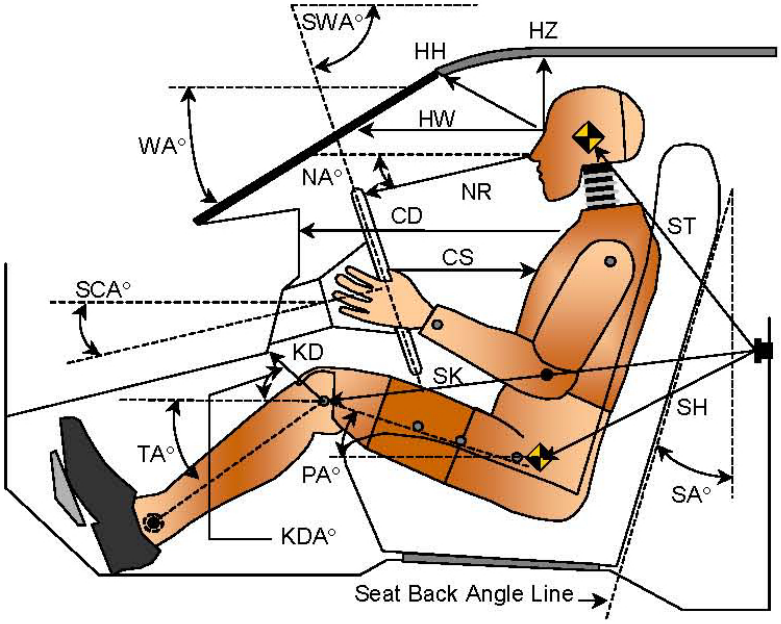
STEERING COLUMN POSITION

	Degrees	Fore/Aft Position (mm)
Lowermost – Position 1	68.0	140
Geometric Center – Position 2	66.5	120
Uppermost – Position 3	65.0	100
Telescoping Steering Wheel Travel		40
Test Position	66.5	120

DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback NHTSA No.: MB5114
Test Program: NCAP Frontal Barrier Impact Test Test Date: 2/16/2011

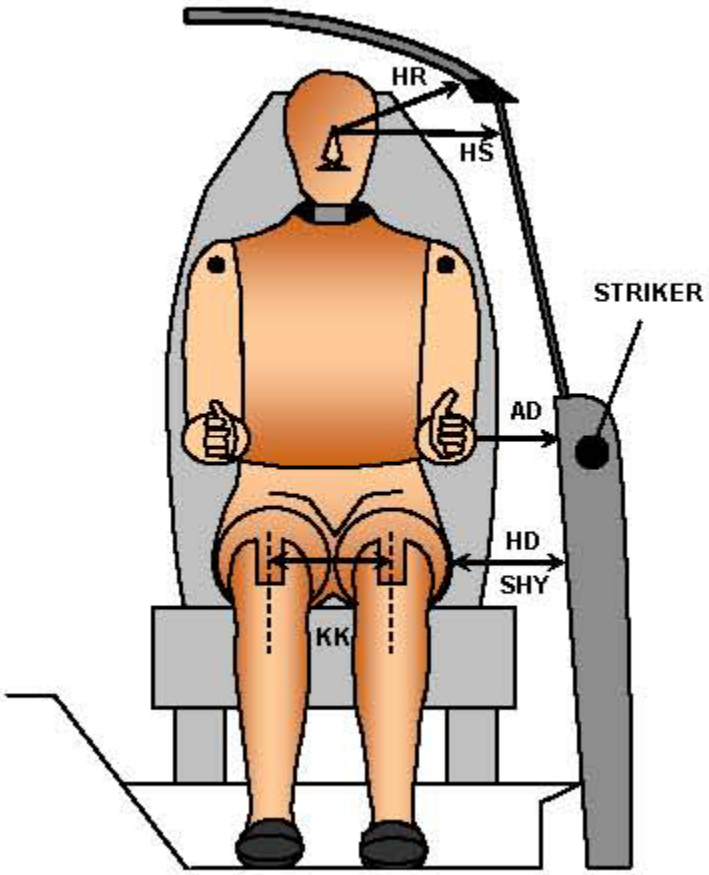


Code	Measurement Description	Driver S/N 036		Passenger S/N 138	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA	Windshield Angle		20.8		
SWA	Steering Wheel Angle		66.5		
SCA	Steering Column Angle		23.5		
SA	Seat Back Angle		1.1		1.0
HZ	Head to Roof (Z)	181	90	171	90
HH	Head to Header	334	23.3	275	40.6
HW	Head to Windshield	706	0	643	0
NR	Nose to Rim	400	14.9		
CD	Chest to Dash	810		361	
CS	Chest to Steering Hub	323	3.6		
RA	Rim to Abdomen	209	0		
KDL	Left Knee to Dash	144	35.5	68	45.4
KDR	Right Knee to Dash	126	30.8	79	47.7
PA	Pelvic Angle		23.6		20.8
TA	Tibia Angle		49.4		52.1
SK	Striker to Knee	601	97.1	680	94.4
ST	Striker to Head	466	14.7	486	32.8
SH	Striker to H-Point	290	135.9	411	111.1

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback
Test Program: NCAP Frontal Barrier Impact Test
NHTSA No.: MB5114
Test Date: 2/16/2011



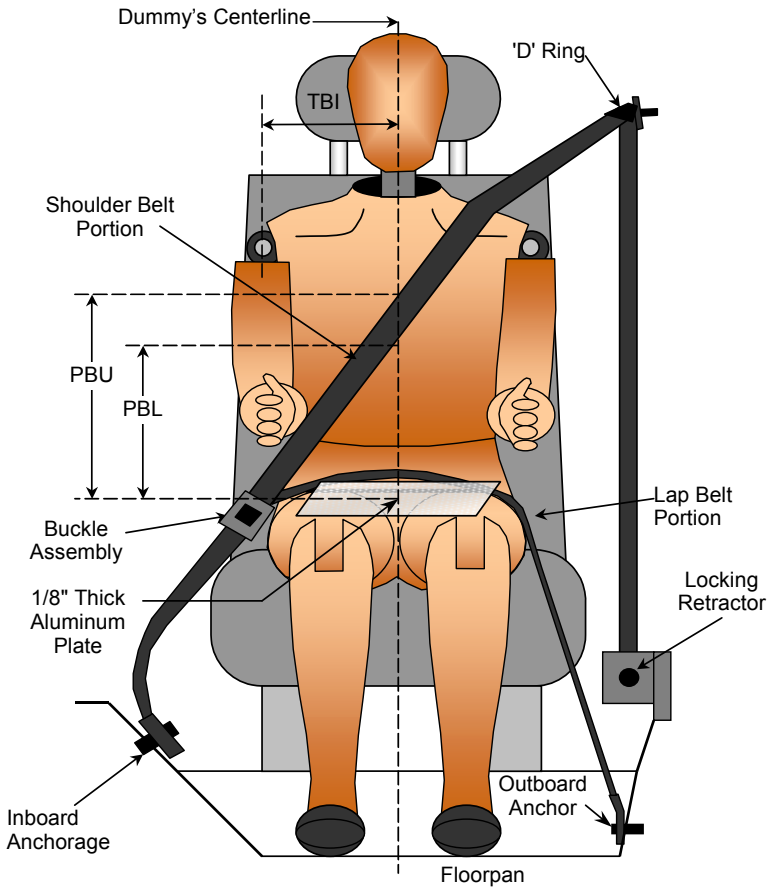
FRONT VIEW OF DUMMY

Code	Measurement Description	Driver S/N 036	Passenger S/N 138
		Length (mm)	
AD	Arm to Door	125	93
HD	H-Point to Door	166	178
HR	Head to Side Header	229	237
HS	Head to Side Window	326	349
KK	Knee to Knee	330	217
SHY	Striker to H-Point (Y Direction)	380	314
AA	Ankle to Ankle	330	184

DATA SHEET NO. 5

SEAT BELT POSITIONING DATA

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback
Test Program: NCAP Frontal Barrier Impact Test
NHTSA No.: MB5114
Test Date: 2/16/2011



FRONT VIEW OF DUMMY

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU - Top surface of reference to belt upper edge	mm	330	335
PBL - Top surface of reference to belt lower edge	mm	250	245

BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as measured on ATD	mm	880	960
Lap Belt Length as measured on ATD	mm	880	970
Remainder of belt on reel	mm	1690	1470
Total Belt Length for Continuous Webbing Systems	mm	3450	3400

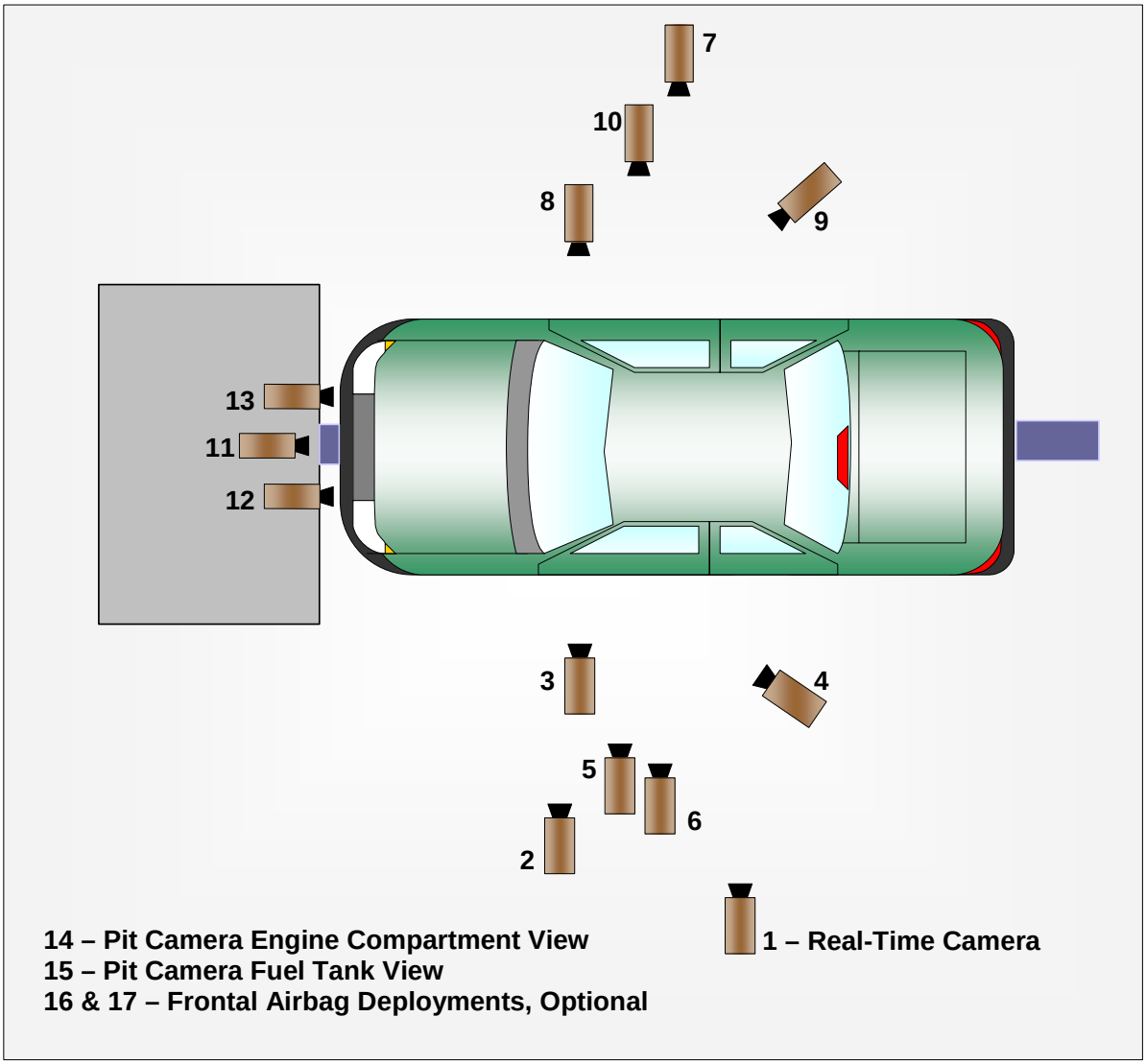
DATA SHEET NO. 6

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MB5114
Test Date: 2/16/2011

CAMERA POSITIONS FOR FRONTAL IMPACTS



14 – Pit Camera Engine Compartment View
15 – Pit Camera Fuel Tank View
16 & 17 – Frontal Airbag Deployments, Optional

1 – Real-Time Camera

DATA SHEET NO. 6 (CONTINUED)

CAMERA LOCATIONS AND DATA

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback NHTSA No.: MB5114
Test Program: NCAP Frontal Barrier Impact Test Test Date: 2/16/2011

CAMERA LOCATIONS

No.	Camera View	Coordinates (mm)			Lens (mm)	Speed (fps)
		X*	Y*	Z*		
1	Real-Time Left Side View					30
2	Left Front Half	1110	-4620	-1070	24	1000
3	Driver Close-Up	1480	-6380	-1840	35	1000
4	Driver Angle	5450	-4850	-1880	50	1000
5	Steering Column Top	650	-4760	-1220	24	1000
6	Steering Column Bottom	630	-4740	-850	24	1000
7	Right Overall	2070	6310	-1100	20	1000
8	Passenger Close-Up	1510	6450	-1770	35	1000
9	Passenger Angle	5560	4790	-1870	50	1000
10	Right Front Half	1200	4700	-1060	24	1000
11	Windshield	-260	0	-2860	24	1000
12	Top Driver	-20	-470	-2030	12.5	1000
13	Top Passenger	-20	470	-2030	12.5	1000
14	Pit Front	1100	0	3150	24	1000
15	Pit Rear	3140	0	3150	24	1000
16	Onboard Driver Side (optional)					
17	Onboard Passenger Side (optional)					
18	Real-Time Pan View					30

*COORDINATES:

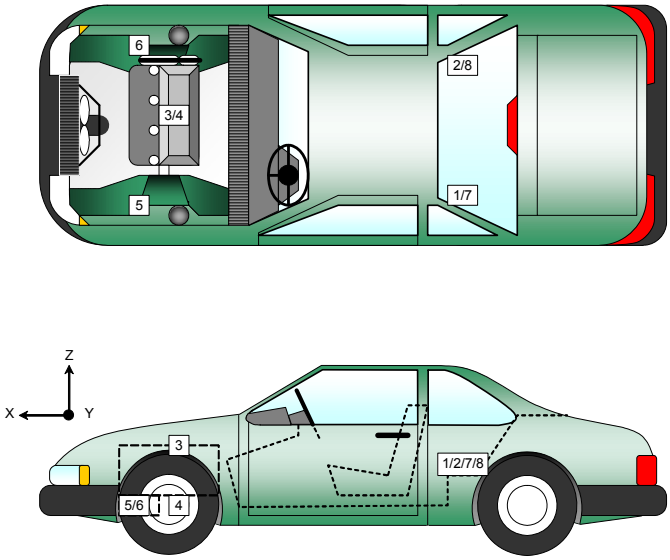
+X = forward of impact plane
+Y = right of monorail centerline
+Z = below ground level

Cameras 16 & 17 were not used for this test.

DATA SHEET NO. 7

VEHICLE ACCELEROMETER DATA

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback
Test Program: NCAP Frontal Barrier Impact Test
NHTSA No.: MB5114
Test Date: 2/16/2011



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear X-Member X	1710	-305	-250
2	Right Rear X-Member X	1710	310	-250
3	Engine Top X	3748	70	-846
4	Engine Bottom X	3765	0	-305
5	Left Brake Caliper X	3665	-676	-215
6	Right Brake Caliper X	3665	676	-215
7	Left Rear X-Member Z	1710	-305	-250
8	Right Rear X-Member Z	1710	310	-250

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

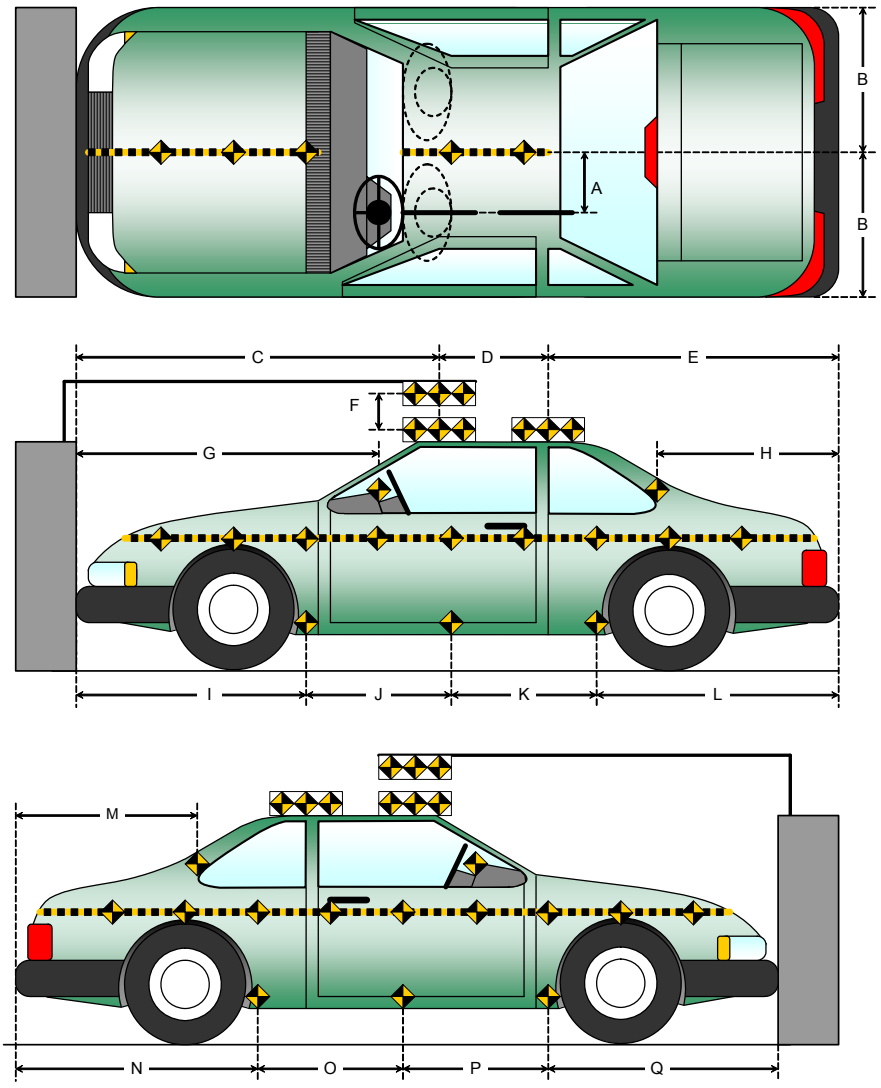
DATA SHEET NO. 8

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MB5114
Test Date: 2/16/2011

Item	Value (mm)
A	351
B	874
C	2303
D	670
E	1487
F	185
G	
H	1243
I	1327
J	935
K	935
L	1263
M	1243
N	1263
O	935
P	935
Q	1327



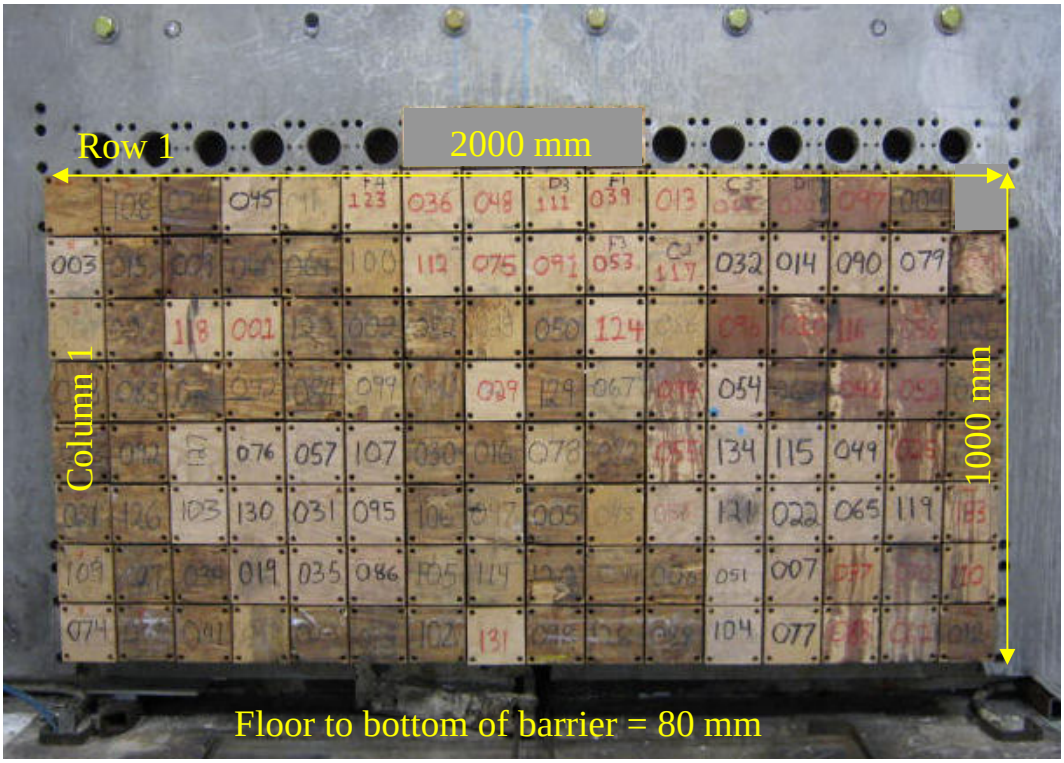
DATA SHEET NO. 9

LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MB5114
Test Date: 2/16/2011

Advanced Research Load Cell Barrier



1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	1-9	1-10	1-11	1-12	1-13	1-14	1-15	1-16
2-1	2-2	2-3	2-4	2-5	2-6	2-7	2-8	2-9	2-10	2-11	2-12	2-13	2-14	2-15	2-16
3-1	3-2	3-3	3-4	3-5	3-6	3-7	3-8	3-9	3-10	3-11	3-12	3-13	3-14	3-15	3-16
4-1	4-2	4-3	4-4	4-5	4-6	4-7	4-8	4-9	4-10	4-11	4-12	4-13	4-14	4-15	4-16
5-1	5-2	5-3	5-4	5-5	5-6	5-7	5-8	5-9	5-10	5-11	5-12	5-13	5-14	5-15	5-16
6-1	6-2	6-3	6-4	6-5	6-6	6-7	6-8	6-9	6-10	6-11	6-12	6-13	6-14	6-15	6-16
7-1	7-2	7-3	7-4	7-5	7-6	7-7	7-8	7-9	7-10	7-11	7-12	7-13	7-14	7-15	7-16
8-1	8-2	8-3	8-4	8-5	8-6	8-7	8-8	8-9	8-10	8-11	8-12	8-13	8-14	8-15	8-16
9-1	9-2	9-3	9-4	9-5	9-6	9-7	9-8	9-9	9-10	9-11	9-12	9-13	9-14	9-15	9-16

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: 2011 Toyota Prius 5-Dr Liftback NHTSA No.: MB5114
Test Program: NCAP Frontal Barrier Impact Test Test Date: 2/16/2011

INSTRUMENTATION

Driver Dummy Data Channels	46
Passenger Dummy Data Channels	46
Vehicle Structure Accelerometers	8
Barrier Channels	127
Total	227

CAMERA COVERAGE

High-Speed Vehicle Onboard	0
High-Speed Offboard	14
Real-Time	2
Total	16

DATA SHEET NO. 11

POST-TEST OBSERVATIONS

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback NHTSA No.: MB5114
Test Program: NCAP Frontal Barrier Impact Test Test Date: 2/16/2011

TEST DUMMY INFORMATION AND CONTACT

Description	Driver	Passenger
Dummy Type / Serial No.	HIII 50% / 036	HIII 5% / 138
Head Contact	Airbag, Headrest	Airbag, Headrest
Upper Torso Contact	Airbag	Airbag
Lower Torso Contact	Airbag	Airbag
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	2050
Center	mm	2056
Right Side	mm	2125
Average	mm	2077

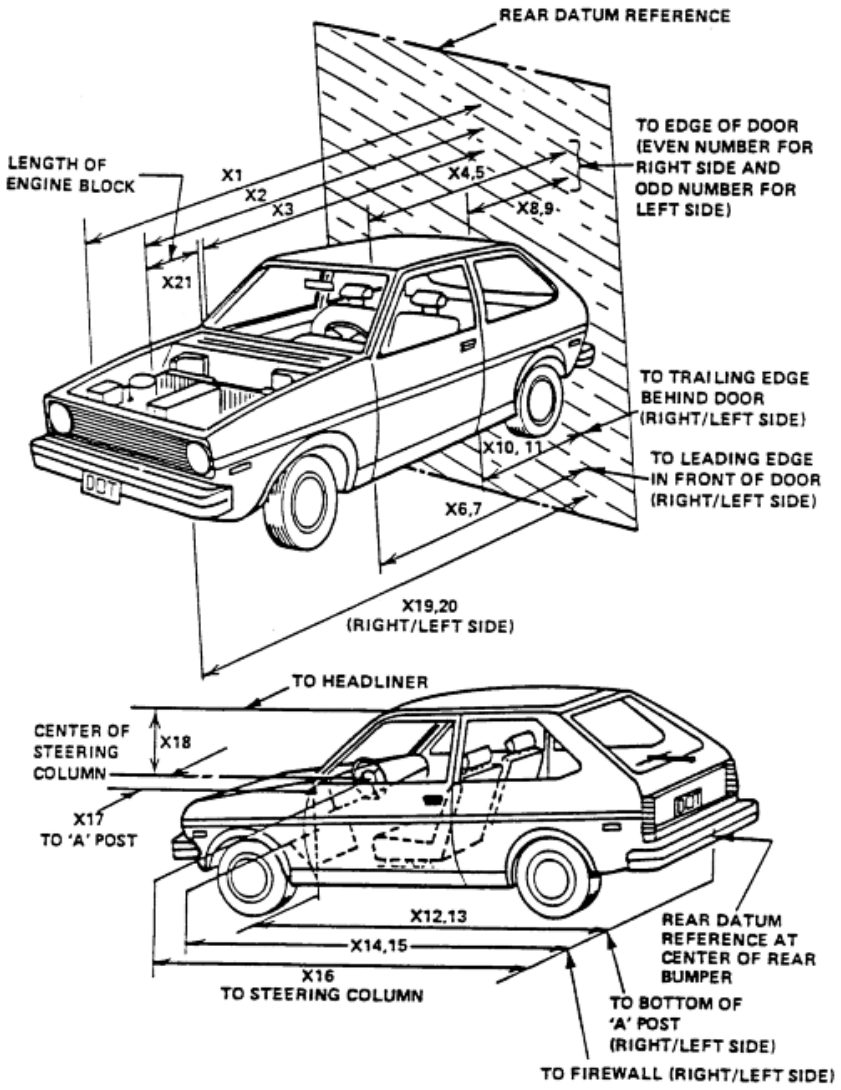
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Left Front (Driver) P1		Right Front (Passenger) P2	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	Yes	Yes	Yes
Knee Airbag	Yes	Yes	No	
Curtain Side Airbag	Yes	No	Yes	No
Torso Side Airbag	Yes	No	Yes	No
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes		Yes	

DATA SHEET NO. 12

VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback NHTSA No.: MB5114
Test Program: NCAP Frontal Barrier Impact Test Test Date: 2/16/2011



DATA SHEET NO. 12 (CONTINUED)

VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback NHTSA No.: MB5114
Test Program: NCAP Frontal Barrier Impact Test Test Date: 2/16/2011

RSOV (Rear Surface of Vehicle)

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	mm	4460	4059	401
2	RSOV to Front of Engine	mm	3752	3580	172
3	RSOV to Firewall	mm	3640	3581	59
4	RSOV to Upper Leading Edge of Right Door	mm	3077	3072	5
5	RSOV to Upper Leading Edge of Left Door	mm	3076	3089	-13
6	RSOV to Lower Leading Edge of Right Door	mm	3040	3020	20
7	RSOV to Lower Leading Edge of Left Door	mm	3037	3027	10
8	RSOV to Upper Trailing Edge of Right Door	mm	1990	2000	-10
9	RSOV to Upper Trailing Edge of Left Door	mm	1990	2008	-18
10	RSOV to Lower Trailing Edge of Right Door	mm	1972	1964	8
11	RSOV to Lower Trailing Edge of Left Door	mm	1972	1962	10
12	RSOV to Bottom of “A” Post of Right Side	mm	3070	3056	14
13	RSOV to Bottom of “A” Post of Left Side	mm	3060	3051	9
14	RSOV to Firewall, Right Side	mm	3568	3560	8
15	RSOV to Firewall, Left Side	mm	3565	3540	25
16	RSOV to Steering Column	mm	2623	2660	-37
17	Center of Steering Column to “A” Post	mm	375	395	-20
18	Center of Steering Column to Headliner	mm	422	460	-38
19	RSOV to Right Side of Front Bumper	mm	4350	4016	334
20	RSOV to Left Side of Front Bumper	mm	4350	4012	338
21	Length of Engine Block	mm	500	500	0
RD	RSOV to Right Side of Dash Panel	mm	2803	2792	11
CD	RSOV to Center of Dash Panel	mm	2826	2805	21
LD	RSOV to Left Side of Dash Panel	mm	2802	2800	2

DATA SHEET NO. 13

ACCIDENT INVESTIGATION DIVISION DATA

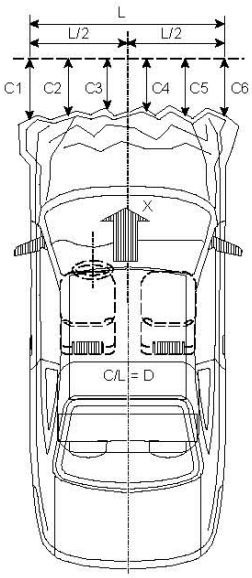
Test Vehicle: 2011 Toyota Prius 5-Dr Liftback NHTSA No.: MB5114
Test Program: NCAP Frontal Barrier Impact Test Test Date: 2/16/2011

VEHICLE INFORMATION

VIN: JTDKN3DU9B0252857 Wheelbase (mm): 2700
Vehicle Size Category: Sedan Test Weight (kg): 1561.3

ACCELEROMETER DATA

Accelerometer Locations: As per measurements on Page 16
Cal. Procedure/Interval: MGA procedure / 6 month
Integration Algorithm: Trapezoidal Linearity: > 99%
Impact Velocity (km/h): 56.6
Velocity Change (km/h): 63.3
Time of Separation (msec): 76.9



CRUSH PROFILE

Collision Deformation Classification: Frontal
Midpoint of Damage: Centerline
Damage Region Length (mm): 1188
Impact Mode: Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	4350	4012	338
C2	Crush zone 2 at left side	mm	4401	4032	369
C3	Crush zone 3 at left side	mm	4429	4051	378
C4	Crush zone 4 at right side	mm	4429	4049	380
C5	Crush zone 5 at right side	mm	4401	4026	375
C6	Crush zone 6 at right side	mm	4350	4016	334
L	C1 TO C6	mm	1188	1154	34

DATA SHEET NO. 14

VEHICLE INTRUSION MEASUREMENTS

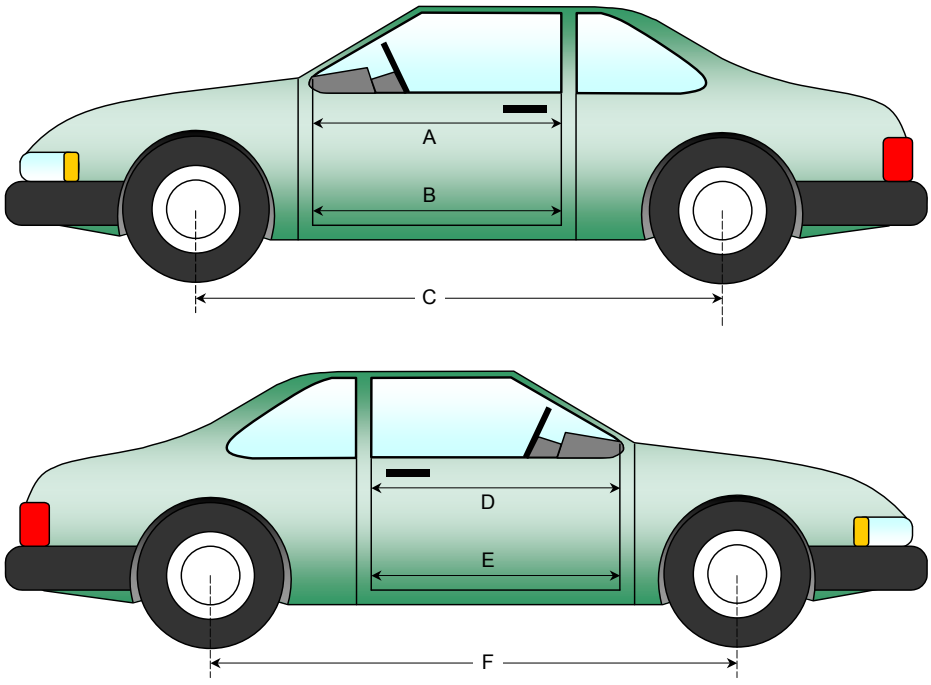
Test Vehicle: 2011 Toyota Prius 5-Dr Liftback
Test Program: NCAP Frontal Barrier Impact Test
NHTSA No.: MB5114
Test Date: 2/16/2011

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	960	960	0
B	Left Side Lower	mm	845	845	0
D	Right Side Upper	mm	960	960	0
E	Right Side Lower	mm	850	850	0

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2700	2680	20
F	Right Side Wheelbase	mm	2700	2700	0



DATA SHEET NO. 14 (CONTINUED)

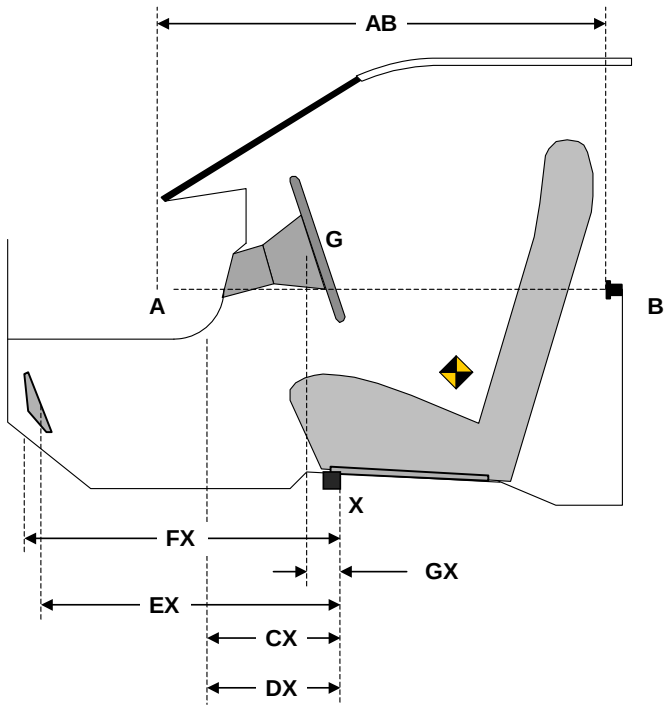
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback
Test Program: NCAP Frontal Barrier Impact Test
NHTSA No.: MB5114
Test Date: 2/16/2011

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside window jam)	mm	855	855	0
CX	Left Knee Bolster to X	mm	235	260	-25
DX	Right Knee Bolster to X	mm	225	255	-30
EX	Brake Pedal to X	mm	548	548	0
FX	Foot Rest to X	mm	528	538	-10
GX	Center of Steering Column Wheel Hub to X	mm	77	158	-81

X = Front of Seat Track (stationary)

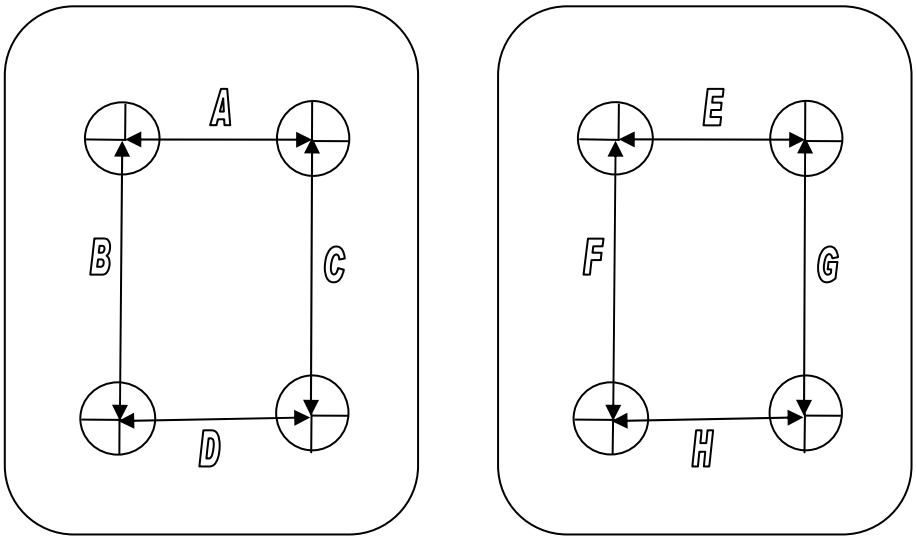


DRIVER COMPARTMENT

DATA SHEET NO. 14 (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback NHTSA No.: MB5114
Test Program: NCAP Frontal Barrier Impact Test Test Date: 2/16/2011



Driver Passenger

TOP VIEW THROUGH FLOOR PAN

UNDERBODY FLOORBOARD DEFORMATION

Measurement	Units	Pre-Test	Post-Test	Difference
A	mm	288	288	0
B	mm	275	275	0
C	mm	262	260	2
D	mm	288	284	4
E	mm	262	262	0
F	mm	260	258	2
G	mm	262	264	-2
H	mm	260	258	2

DATA SHEET NO. 15

SUMMARY OF FMVSS 212, 219 (PARTIAL), AND 301 DATA

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback NHTSA No.: MB5114
Test Program: NCAP Frontal Barrier Impact Test Test Date: 2/16/2011

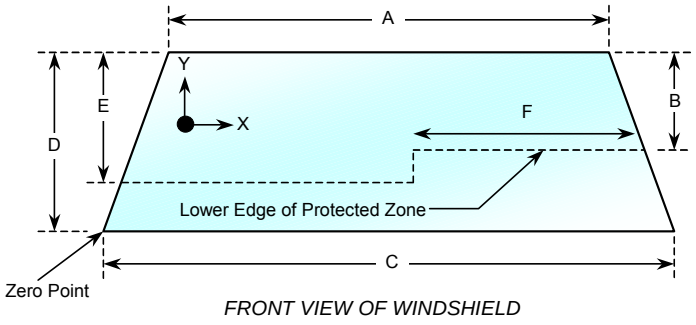
Windshield Mounting Details:
Windshield glass is secured to the vehicle frame with a rubber trim and glue.

The standard requires that the post-test retention measurement be a minimum of 75 percent of the pretest 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°C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% of Retention
Left Side	2177	2177	100
Right Side	2177	2177	100
Total	4354	4354	100



FRONT VIEW OF WINDSHIELD

Item	Units	Value
A	mm	1186
B	mm	596
C	mm	1434
D	mm	867
E	mm	605
F	mm	565

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, 219 (PARTIAL), AND 301 DATA

Test Vehicle:	2011 Toyota Prius 5-Dr Liftback	NHTSA No.:	MB5114
Test Program:	NCAP Frontal Barrier Impact Test	Test Date:	2/16/2011

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Test Time: 10:35 am Temperature: 21° C

A. From impact until vehicle motion ceases: 0 oz.
(Maximum Allowable = 1 ounce)

B. For the 5 minute period after motion ceases: None
(Maximum allowable = 5 ounces)

C. For the following 25 minutes: None
(Maximum allowable = 1 oz/minute)

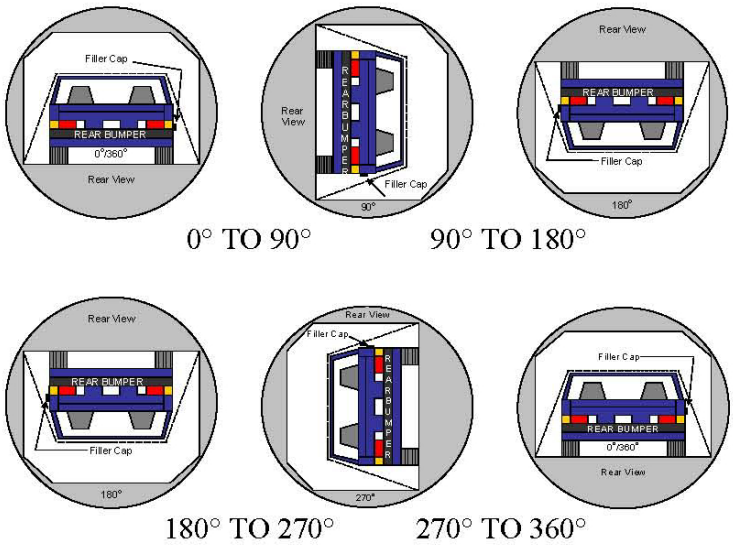
D. Spillage Details: None

DATA SHEET NO. 16

FMVSS 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback NHTSA No.: MB5114
Test Program: NCAP Frontal Barrier Impact Test Test Date: 2/16/2011

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°	122	300	422
90° to 180°	116	300	416
180° to 270°	109	300	409
270° to 360°	116	300	416

FMVSS 301 ROLLOVER 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

ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

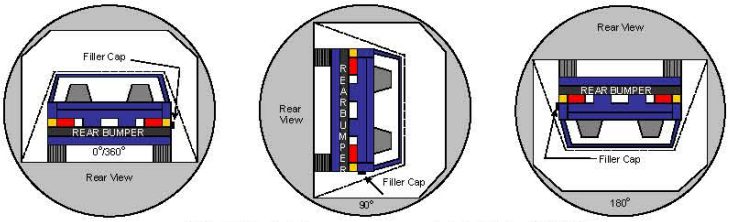
Test Phase	Spillage Location
0° to 90°	
90° to 180°	
180° to 270°	
270° to 360°	

DATA SHEET 16A

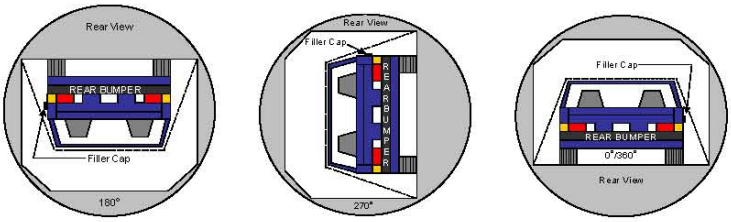
FMVSS 305 STATIC ROLLOVER RESULTS FOR ELECTRIC-POWERED VEHICLES

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: MB5114
Test Date: 2/16/2011



0° TO 90° 90° TO 180°



180° TO 270° 270° TO 360°

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 electrolyte spillage: **None**

ELECTROLYTE COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	122	300	422
90° to 180°	116	300	416
180° to 270°	109	300	409
270° to 360°	116	300	416

FMVSS 305 ELECTROLYTE SPILLAGE LOCATION TABLE (units in liters)

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

Total Spillage: __0__ L

	Yes	No
Is the total spillage of propulsion battery electrolyte greater than 5.0 Liters?		X
Is propulsion battery electrolyte spillage visible in the passenger compartment?		X

DATA SHEET 16A (CONTINUED)

FMVSS 305 STATIC ROLLOVER RESULTS FOR ELECTRIC-POWERED VEHICLES

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback NHTSA No.: MB5114
Test Program: NCAP Frontal Barrier Impact Test Test Date: 2/16/2011

VOLTMETER INFORMATION

Make:	Fluke
Model:	11
Serial Number:	68541895
Internal Impedance Value (MΩ):	>10 MΩ < 100 pF
Nominal Propulsion Battery Voltage (Vb) (V):	201.6 V

ELECTRICAL ISOLATION MEASUREMENT

V1 =	131.1	V	90°	Time:	2	Minutes	17	s
V1 =	124.1	V	180°	Time:	2	Minutes	16	s
V1 =	106.3	V	270°	Time:	2	Minutes	12	s
V1 =	120.3	V	360°	Time:	2	Minutes	09	s
V2 =	108.3	V	90°	Time:	2	Minutes	27	s
V2 =	119.3	V	180°	Time:	2	Minutes	29	s
V2 =	130.1	V	270°	Time:	2	Minutes	21	s
V2 =	82.3	V	360°	Time:	2	Minutes	21	s
V1' =	2.6	V	90°	Time:	2	Minutes	21	s
V1' =	1.9	V	180°	Time:	2	Minutes	22	s
V1' =	3.6	V	270°	Time:	2	Minutes	23	s
V1' =	2.8	V	360°	Time:	2	Minutes	13	s
V2' =	3.1	V	90°	Time:	2	Minutes	33	s
V2' =	5.4	V	180°	Time:	2	Minutes	36	s
V2' =	5.2	V	270°	Time:	2	Minutes	25	s
V2' =	4.3	V	360°	Time:	2	Minutes	25	s

DATA SHEET 16A (CONTINUED)

FMVSS 305 STATIC ROLLOVER RESULTS FOR ELECTRIC-POWERED VEHICLES

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback NHTSA No.: MB5114
Test Program: NCAP Frontal Barrier Impact Test Test Date: 2/16/2011

ELECTRICAL ISOLATION CALCULATION

Note: If measured voltage is zero and results in a division by zero, record "Zero Volts". This "zero voltage" condition is considered as being compliant.

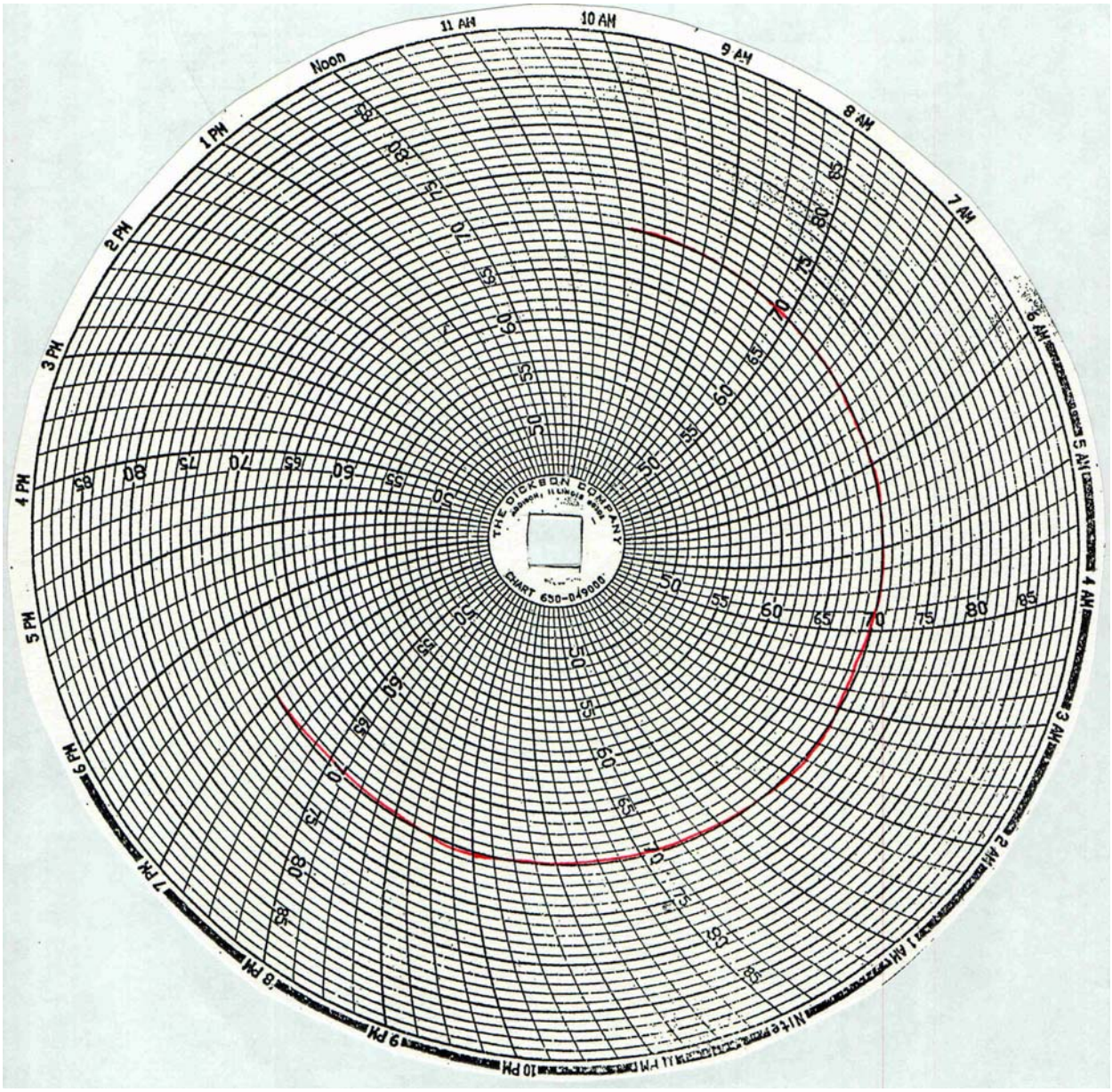
Ri1 = Ro (1 + V2/V1) [(V1-V1')/V1']								
Ri1 =	17518468.0	Ω	0°	Time:	0	Minutes	00	s
Ri1 =	14223532.0	Ω	90°	Time:	2	Minutes	33	s
Ri1 =	19880285.0	Ω	180°	Time:	2	Minutes	36	s
Ri1 =	9998580.9	Ω	270°	Time:	2	Minutes	25	s
Ri1 =	11138068.0	Ω	360°	Time:	2	Minutes	25	s
Ri2 = Ro (1 + V1/V2) [(V2-V2')/V2']								
Ri2 =	10776703.0	Ω	0°	Time:	0	Minutes	000	s
Ri2 =	11844913.0	Ω	90°	Time:	2	Minutes	33	s
Ri2 =	6795043.2	Ω	180°	Time:	2	Minutes	36	s
Ri2 =	6878369.2	Ω	270°	Time:	2	Minutes	25	s
Ri2 =	7050954.0	Ω	360°	Time:	2	Minutes	25	s
Ri = The lesser of Ri1 and Ri2								
Ri =	10776703.0	Ω	0°	Time:	0	Minutes	00	s
Ri =	11844913.0	Ω	90°	Time:	2	Minutes	33	s
Ri =	6795043.2	Ω	180°	Time:	2	Minutes	36	s
Ri =	6878369.2	Ω	270°	Time:	2	Minutes	25	s
Ri =	7050954.0	Ω	360°	Time:	2	Minutes	25	s
Ri/Vb = Electrical Isolation Value/Nominal Battery Voltage Minumum Electrical Isolation Value is 500 Ω /V								
Ri/Vb =	48807.5	Ω/V	0°	Time:	0	Minutes	00	s
Ri/Vb =	53645.4	Ω/V	90°	Time:	2	Minutes	33	s
Ri/Vb =	30774.7	Ω/V	180°	Time:	2	Minutes	36	s
Ri/Vb =	31152.0	Ω/V	270°	Time:	2	Minutes	25	s
Ri/Vb =	31933.7	Ω/V	360°	Time:	2	Minutes	25	s

	Yes	No, Fail
Is the measured Electrical Isolation Value ≥ 500 Ω/V?	X	

DATA SHEET NO. 17

DUMMY/VEHICLE TEMPERATURE STABILIZATION DATA

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback NHTSA No.: MB5114
Test Program: NCAP Frontal Barrier Impact Test Test Date: 2/16/2011



DATA SHEET 18

PRE-IMPACT ELECTRIC ISOLATION MEASUREMENTS AND CALCULATIONS

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback NHTSA No.: MB5114
Test Program: NCAP Frontal Barrier Impact Test Test Date: 2/16/2011

VOLTMETER INFORMATION

Make:	Fluke
Model:	11
Serial Number:	68541895
Internal Impedance Value (MΩ):	>10 MΩ < 100 pF
Resolution (V):	0.001
Last Calibration Date:	1/24/2011

PROPULSION BATTERY VOLTAGE

Measurement shall be made with propulsion battery connected to the vehicle propulsion system, and the vehicle in the “ready-to-drive” (Propulsion motor(s) activated) position.

If voltage measurement is not at the voltage or within the normal operating voltage range specified by the manufacturer, the battery must be charged.

Vb (V):	220.8

PROPULSION BATTERY TO VEHICLE CHASSIS

Vehicle chassis point(s) determined and supplied to contractor by COTR.

V1 (V):	104.9
V2 (V):	51.3

PROPULSION BATTERY TO VEHICLE CHASSIS ACROSS RESISTOR

The known resistance Ro (in ohms) should be approximately 500 times the normal operating voltage of the vehicle (in volts) per SAE J1766.

Ro (Ω):	157900 K Ω

DATA SHEET 18 (CONTINUED)

PRE-IMPACT ELECTRIC ISOLATION MEASUREMENTS AND CALCULATIONS

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback
Test Program: NCAP Frontal Barrier Impact Test
NHTSA No.: MB5114
Test Date: 2/16/2011

ELECTRICAL ISOLATION MEASUREMENT

Note: If measured voltage is zero and results in a division by zero, record “Zero Volts”. This “zero voltage” condition is considered as being compliant.

V1’ (V):	3.3 V
Ri1 = Ro (1 + V2/V1) [(V1-V1’)/V1’]	
Ri1 (Ω):	7225061.1
V2’ (V):	3.3 V
Ri2 = R0 (1 + V1/V2) [(V2-V2’)/V2’]	
Ri2 (Ω):	6993154.0
Ri = The lesser of Ri1 and Ri2	
Ri Pre-Test ((Ω):	6993154.0
Ri/Vb (Ω/V):	31671.9 (Electrical Isolation Value)
Minimum Electrical Isolation Value is 500 Ω/V	

	Yes	No, Fail
Is the measured Electrical Isolation Value ≥ 500 Ω/V?	X	

DATA SHEET 19

POST-IMPACT ELECTRIC ISOLATION MEASUREMENTS AND CALCULATIONS

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback NHTSA No.: MB5114
Test Program: NCAP Frontal Barrier Impact Test Test Date: 2/16/2011

VOLTMETER INFORMATION

Make:	Fluke
Model:	11
Serial Number:	68541895
Internal Impedance Value (MΩ):	>10 MΩ < 100 pF
Nominal Propulsion Battery Voltage (Vb) (V):	201.6 V

PROPULSION BATTERY VOLTAGE

NOTE: Record V1, V2, V1', V2' voltage measurements immediately after the impacted vehicle **comes to rest.**

V1 =	88.1	V	Impact Time:	2	Minutes	35	s
V2 =	110.8	V	Impact Time:	2	Minutes	55	s
V1' =	2.6	V	Impact Time:	2	Minutes	43	s
V2' =	2.8	V	Impact Time:	2	Minutes	59	s

ELECTRICAL ISOLATION MEASUREMENT

Note: If measured voltage is zero and results in a division by zero, record "Zero Volts". This "zero voltage" condition is considered as being compliant.

Ri1 = Ro (1 + V2/V1) [(V1-V1')/V1']							
Ri1 =	11700593.0	Ω	Impact Time:	2	Minutes	43	s
Ri2 = Ro (1 + V1/V2) [(V2-V2')/V2']							
Ri2 =	10933089.0	Ω	Impact Time:	2	Minutes	59	s
Ri = The lesser of Ri1 and Ri2							
Ri =	10933089.0	Ω	Impact Time:	2	Minutes	59	s
Ri/Vb = electrical Isolation Value/Nominal Battery Voltage							
Minimum Electrical Value is 500 Ω/V							
Ri/Vb =	49515.8	Ω/V	Impact Time:	2	Minutes	59	s

	Yes	No, Fail
Is the measured Electrical Isolation Value ≥ 500 Ω/V?	X	

DATA SHEET 19 (CONTINUED)

POST-IMPACT ELECTRIC ISOLATION MEASUREMENTS AND CALCULATIONS

Test Vehicle: 2011 Toyota Prius 5-Dr Liftback NHTSA No.: MB5114
Test Program: NCAP Frontal Barrier Impact Test Test Date: 2/16/2011

PROPULSION BATTERY SYSTEM COMPONENTS

Describe Propulsion Battery Module movement within the passenger compartment [Supply photographs as appropriate]:
No Movement

	Yes	No
Has the Propulsion Battery Module moved within the passenger compartment?		X

Describe intrusion of an outside Propulsion Battery Component into the passenger compartment [Supply photographs as appropriate]:
Not Applicable

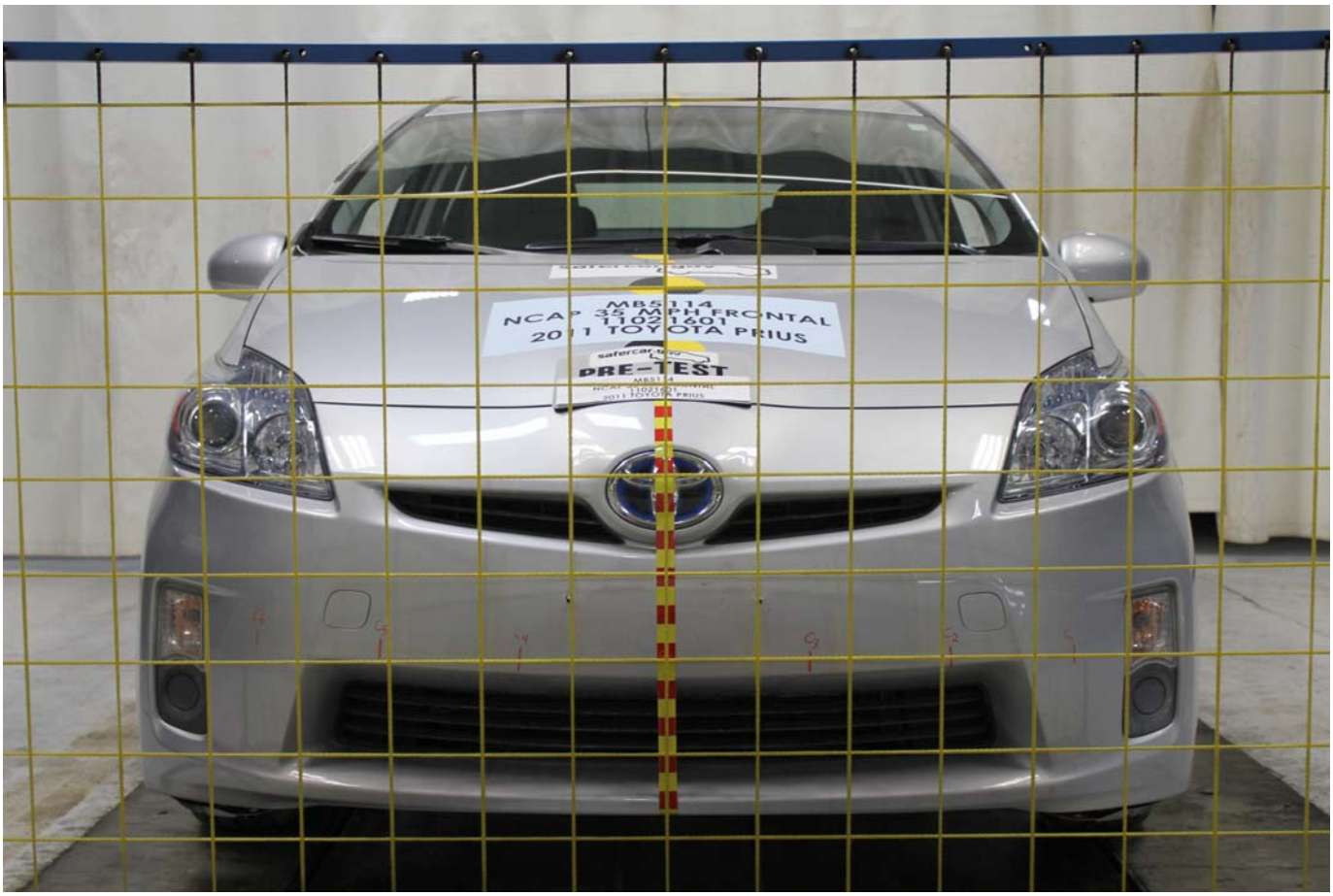
	Yes	No
Has an outside Propulsion Battery Component intruded into the passenger compartment?		X

	Yes	No
Is propulsion battery electrolyte spillage visible in the passenger compartment?		X

APPENDIX A

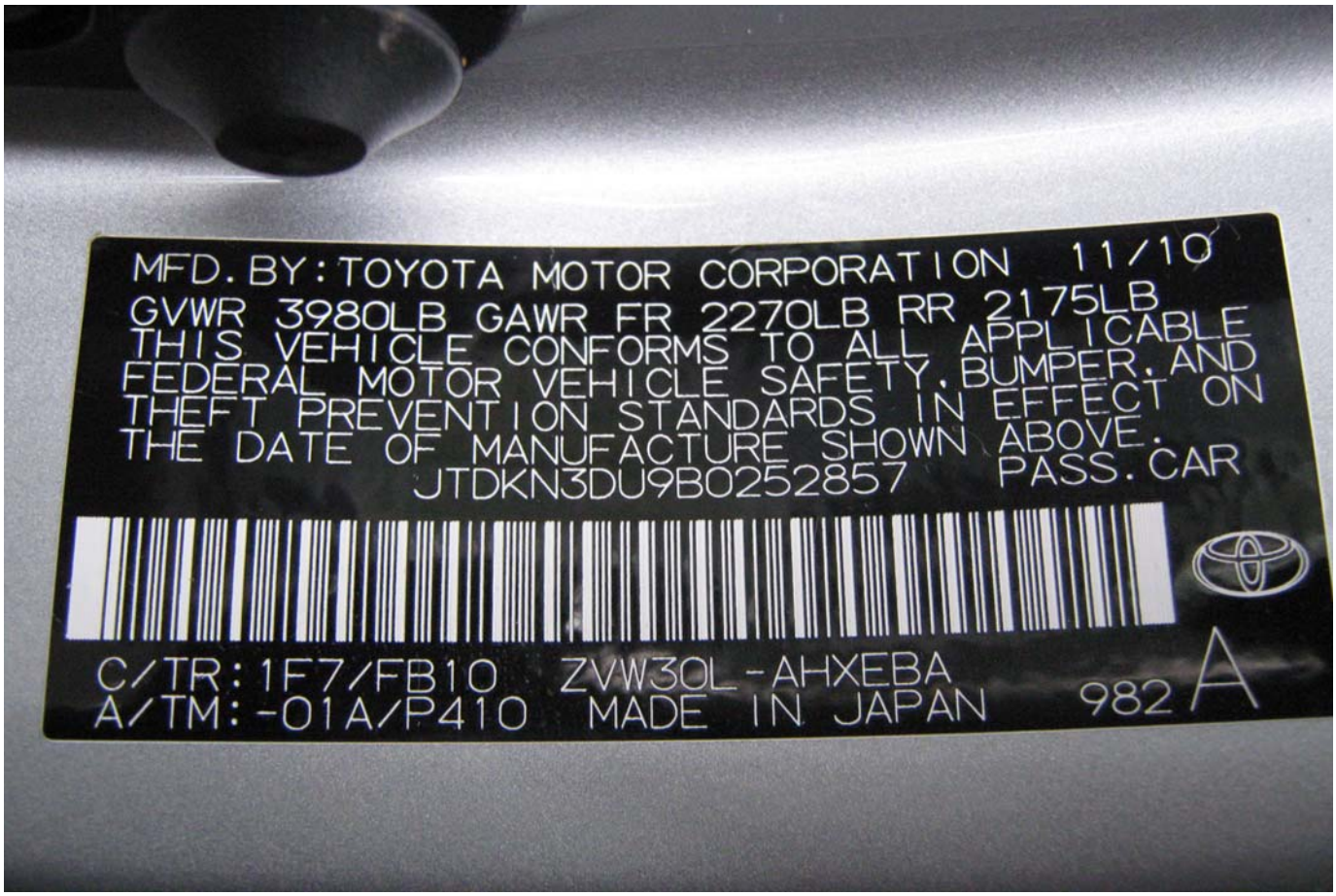
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS



Load Cell Location

Load Cell Wall



Manufacturer's Label

Tire Placard

Vehicle's Load Carrying Capacity Reduced

Right Front Three-Quarter View, As Received

Left Rear Three-Quarter View, As Received

Pre-Test Front View

Post-Test Front View

Pre-Test Left Side View (with vehicle at barrier)

Post-Test Left Side View

Pre-Test Right Side View (with vehicle at barrier)

Post-Test Right Side View

Pre-Test Right Front Three-Quarter View

Post-Test Right Front Three-Quarter View

Pre-Test Left Rear Three-Quarter View (with vehicle at barrier)

Post-Test Left Rear Three-Quarter View

Pre-Test Windshield View

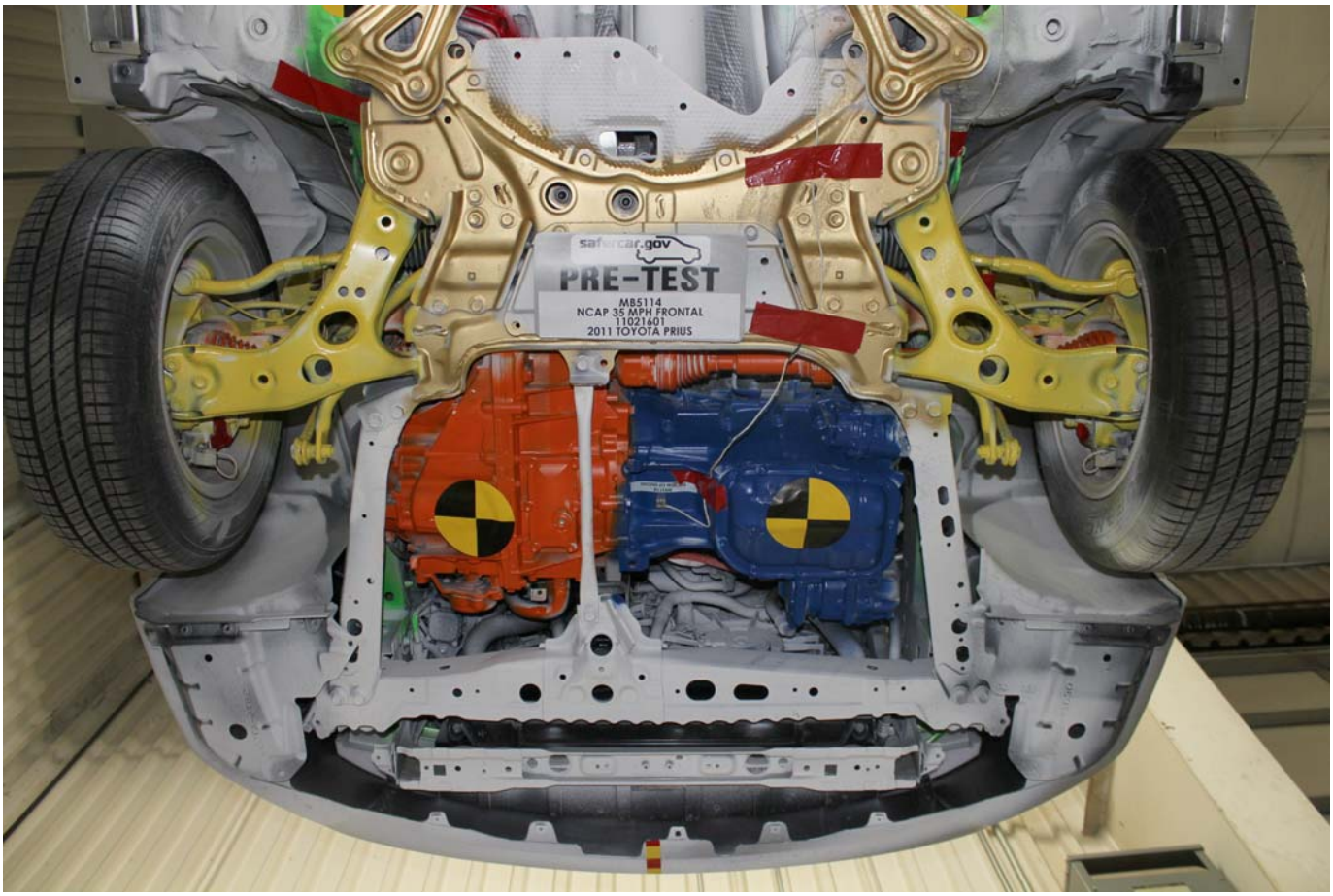
Post-Test Windshield View

Pre-Test Engine Compartment View

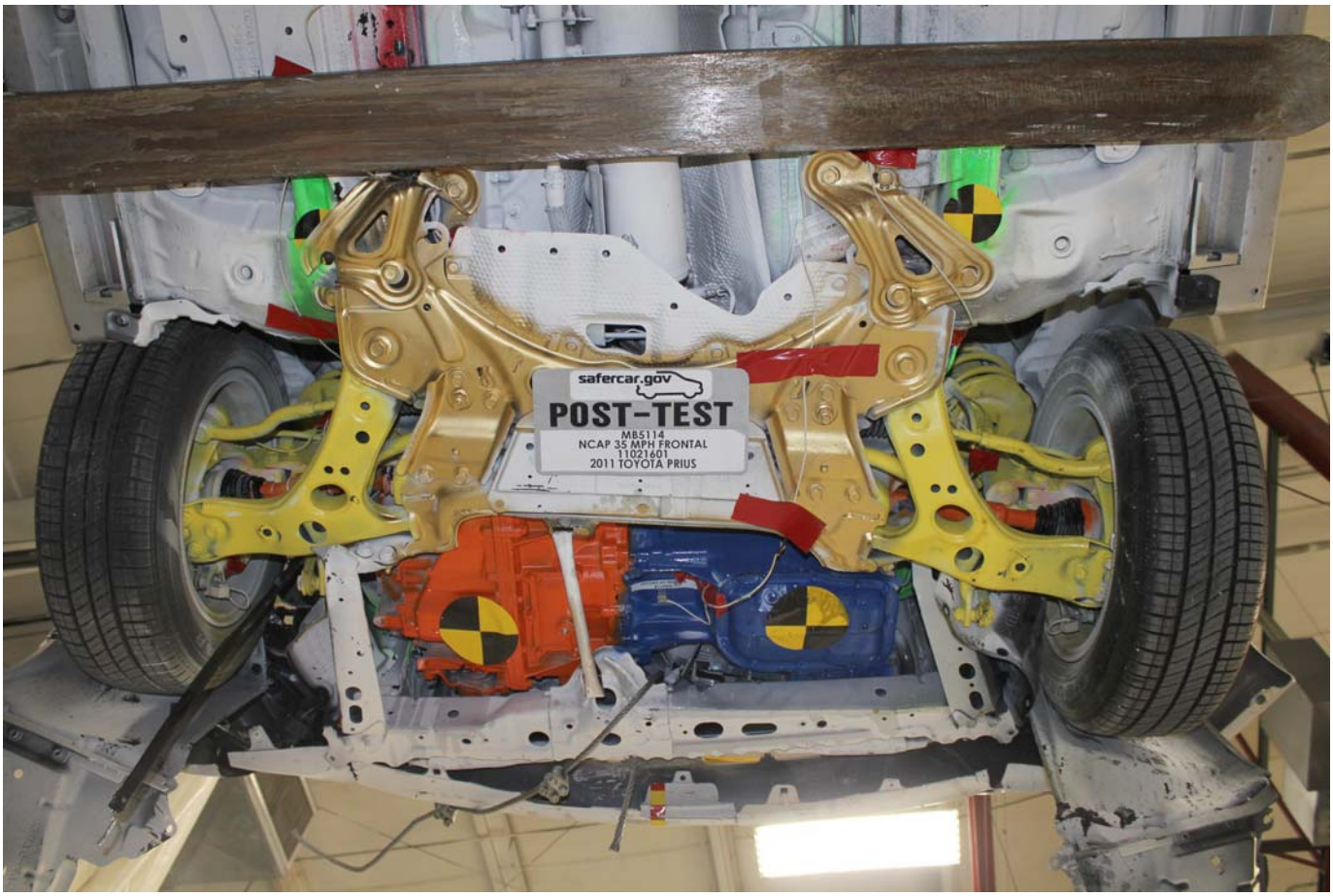
Post-Test Engine Compartment View

Pre-Test Fuel Cap View

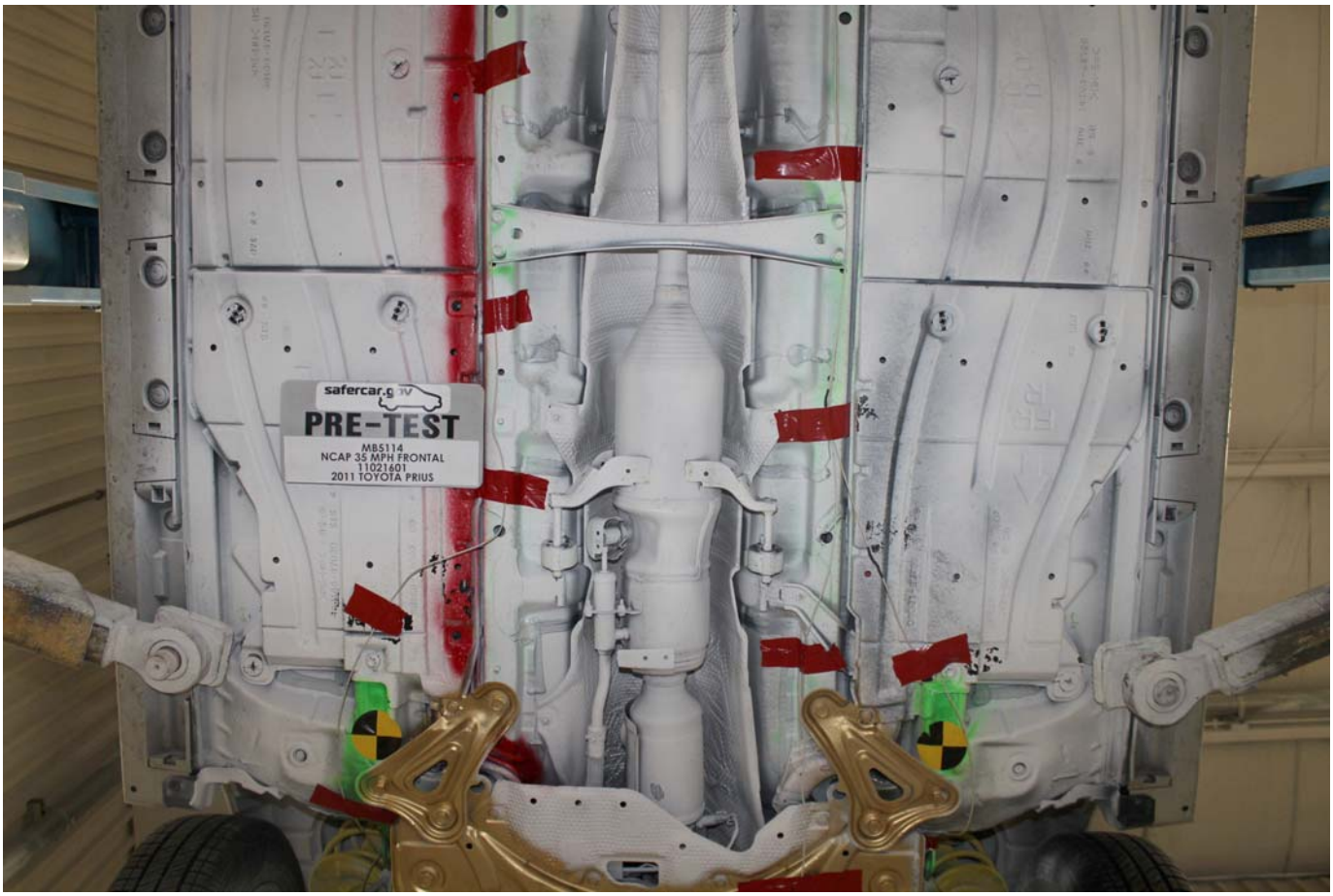
Post-Test Fuel Cap View



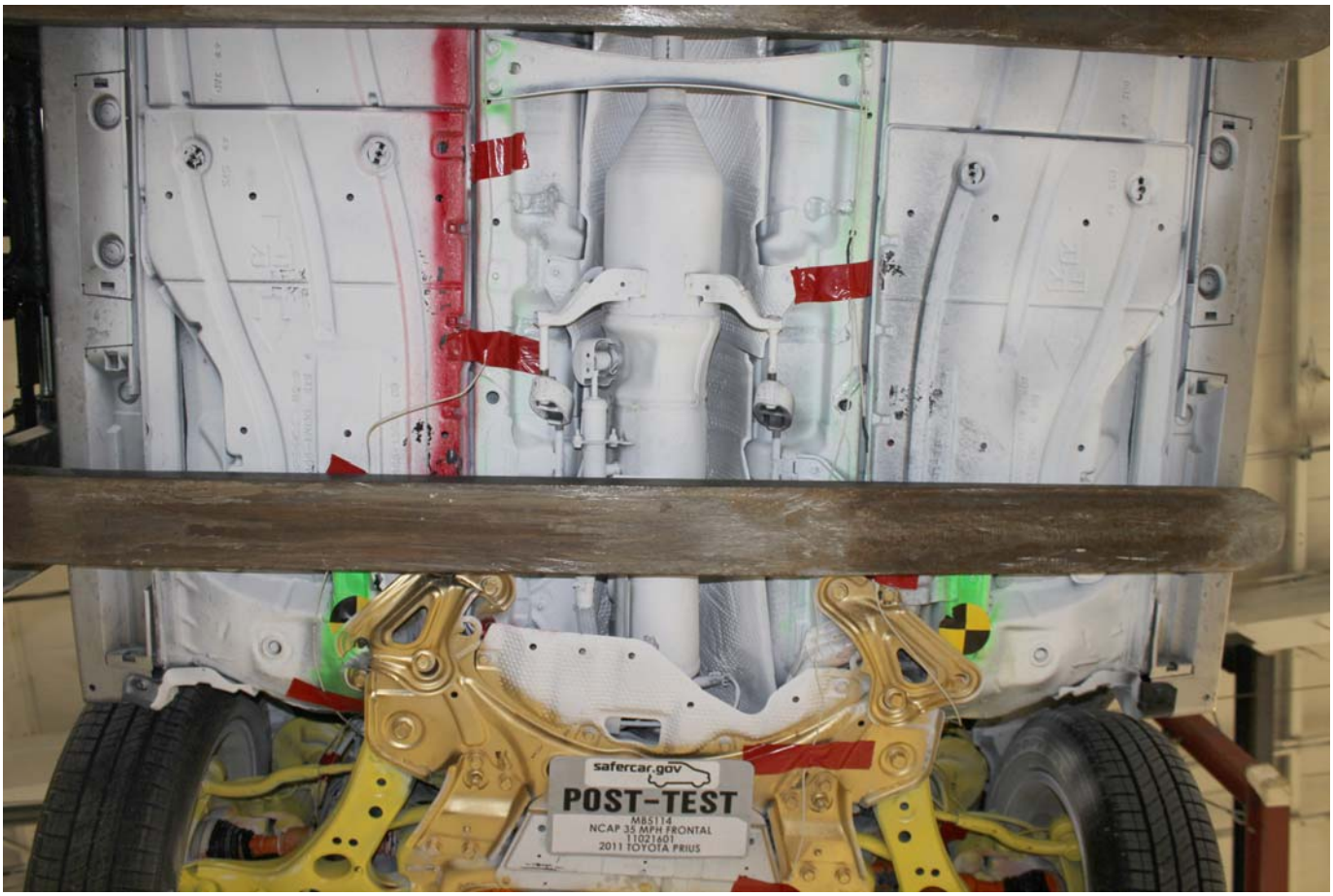
Pre-Test Front Underbody View



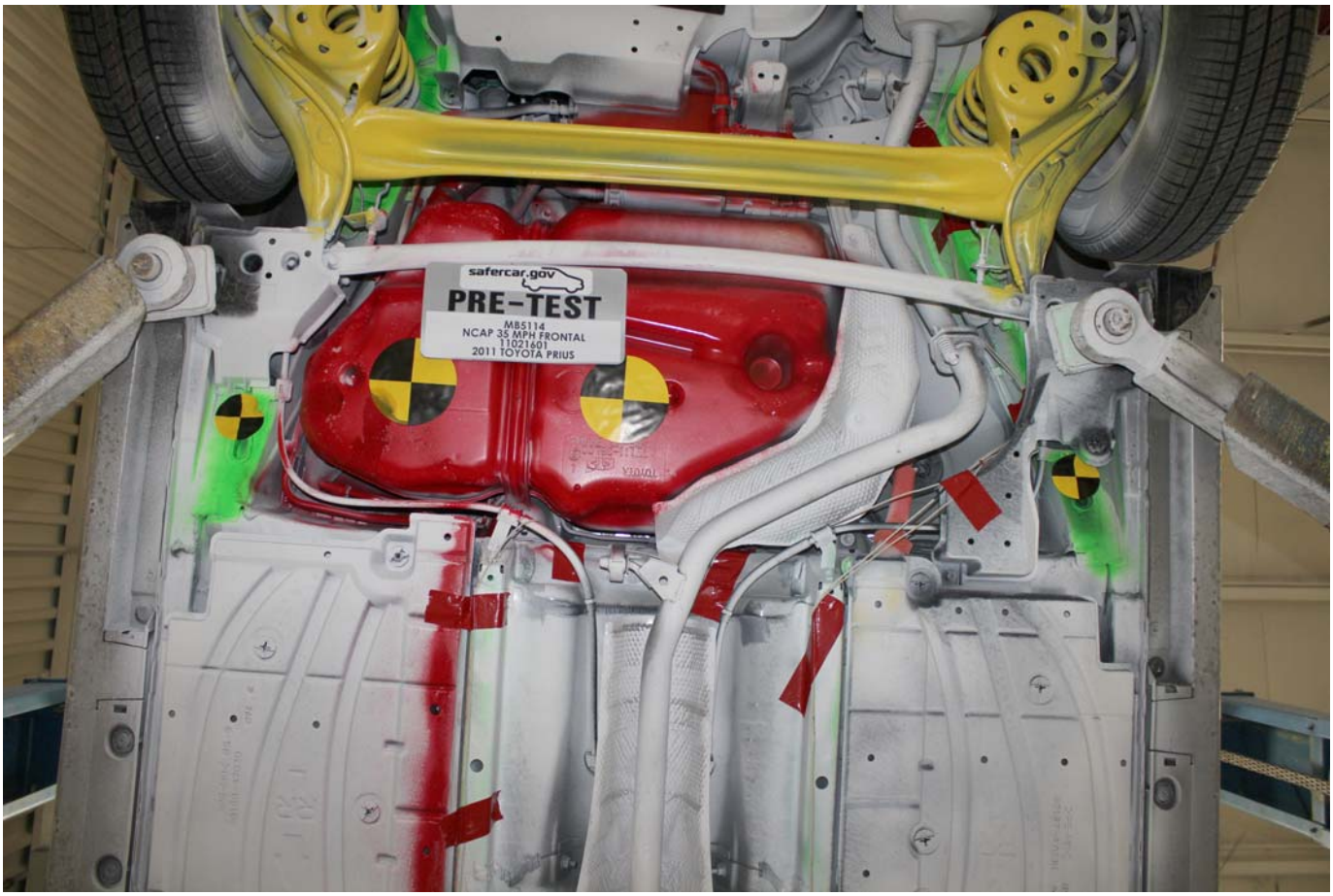
Post-Test Front Underbody View



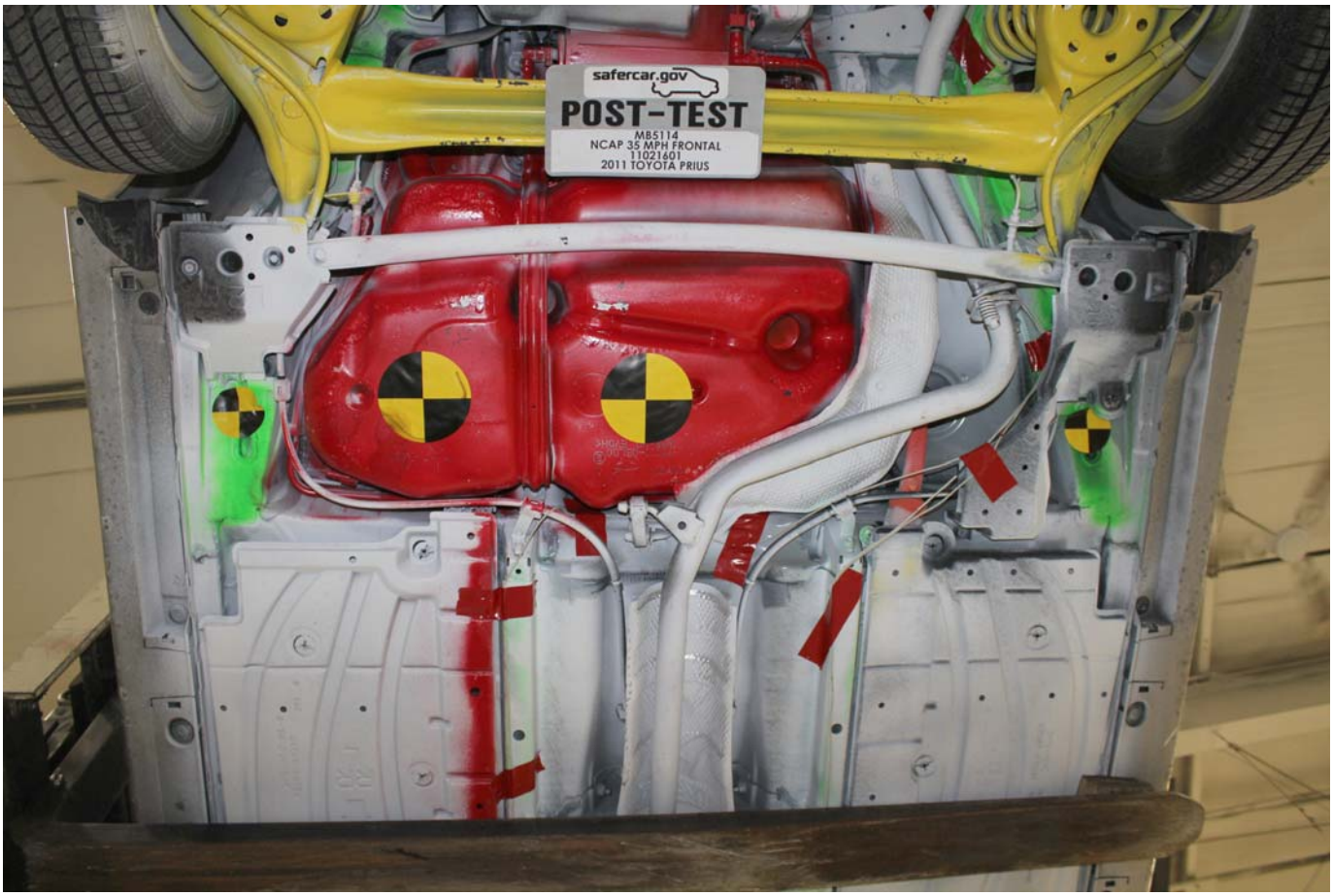
Pre-Test Mid Underbody View



Post-Test Mid Underbody View



Pre-Test Rear Underbody View



Post-Test Rear Underbody View

Pre-Test Dummy Cable Routing

Post-Test Dummy Cable Routing

Pre-Test Driver Dummy Front View

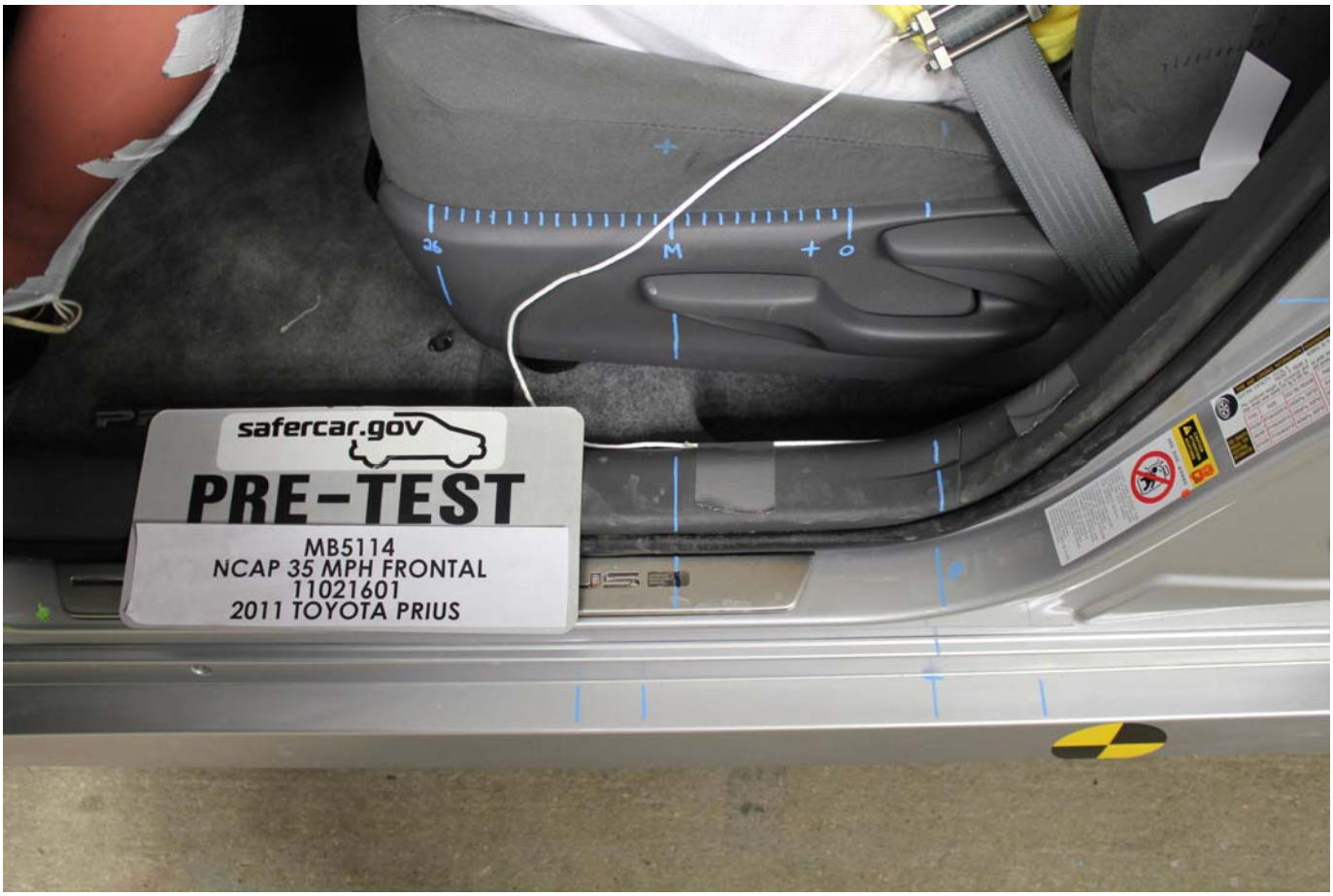
Post-Test Driver Dummy Front View

Pre-Test Driver Dummy Window View

Post-Test Driver Dummy Window View

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

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



Pre-Test Driver's Seat Fore-Aft Markings

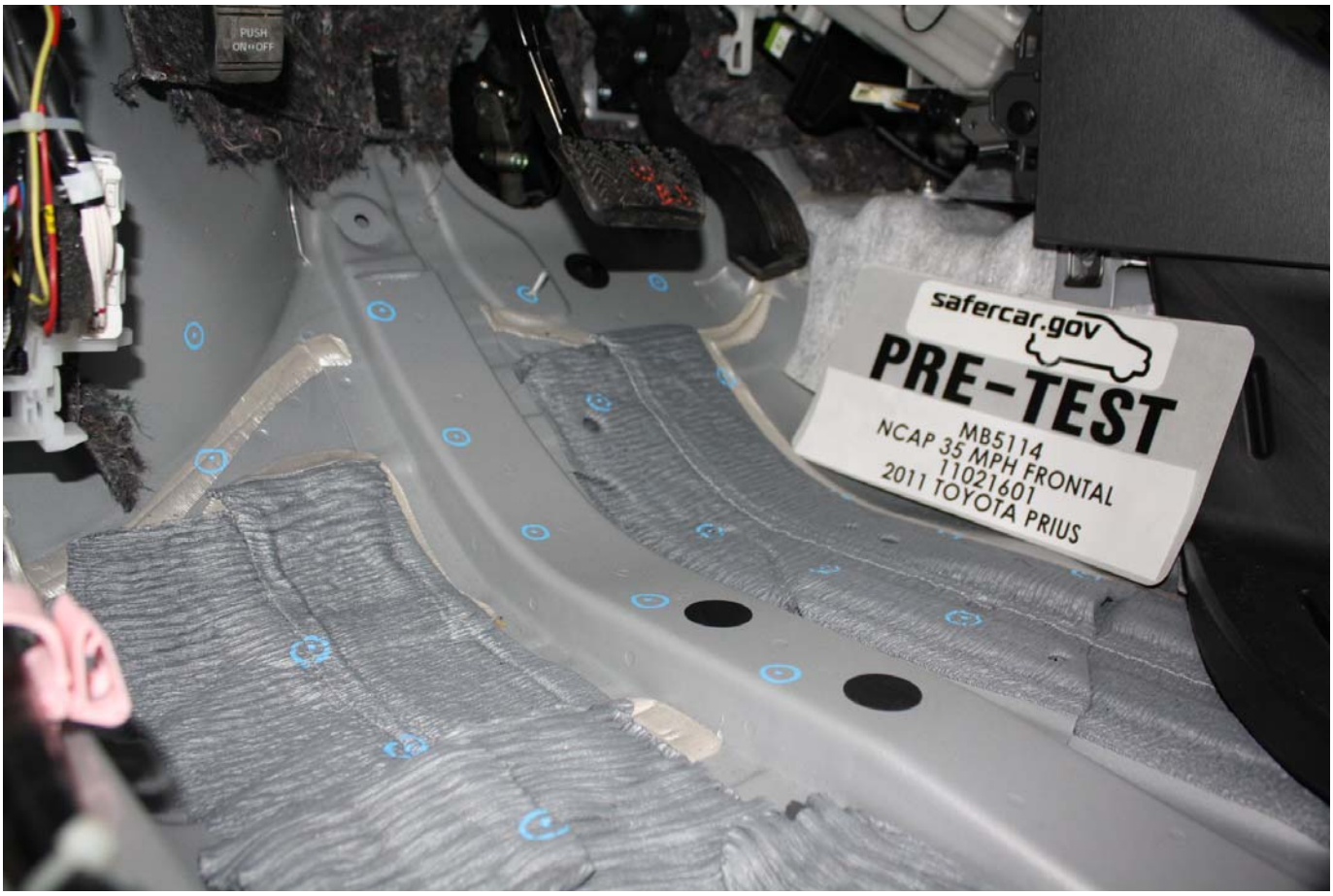
Post-Test Driver's Seat Fore-Aft Markings

Pre-Test Driver Dummy Feet

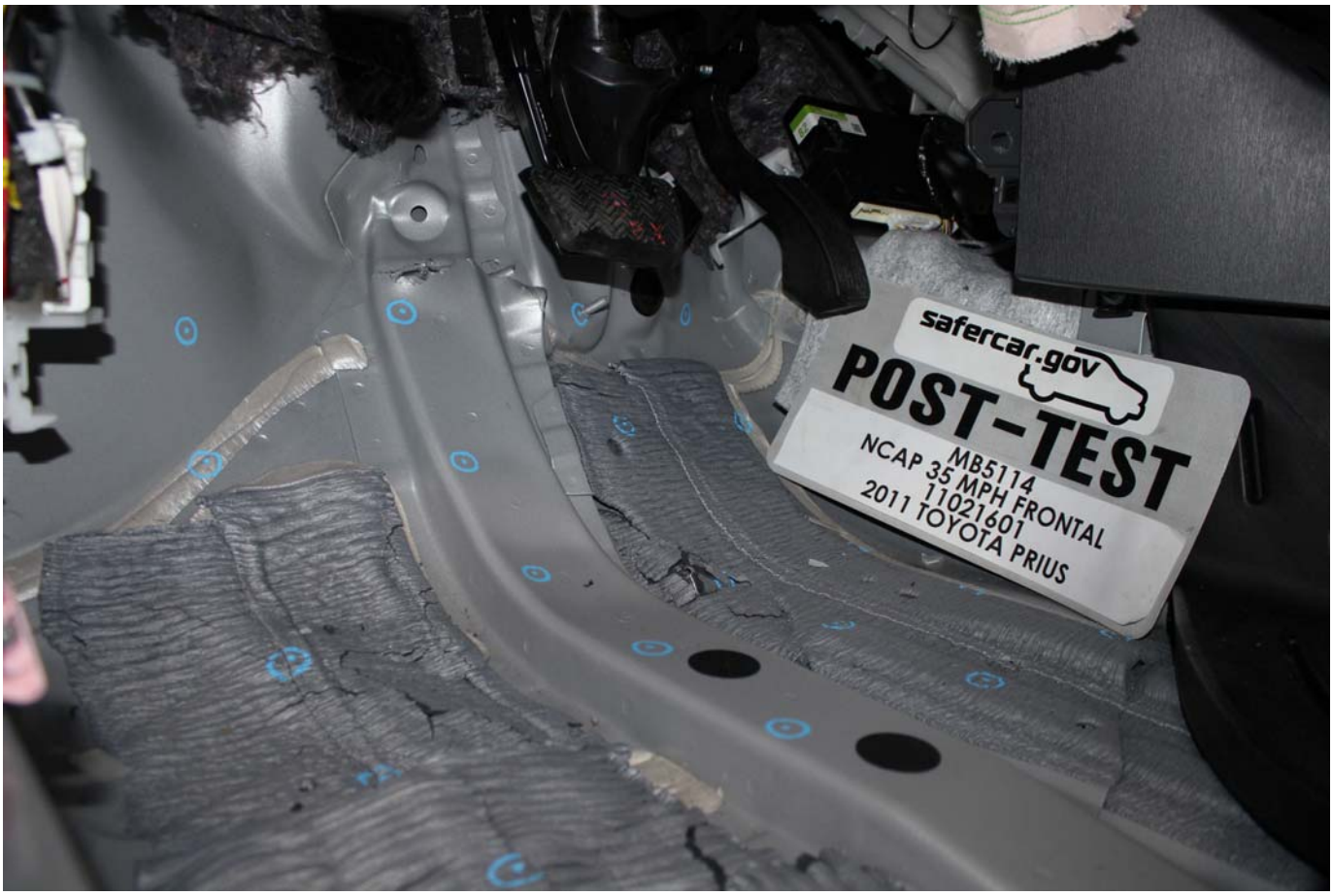
Post-Test Driver Dummy Feet

Pre-Test Driver's Side Knee Bolster (without dummy)

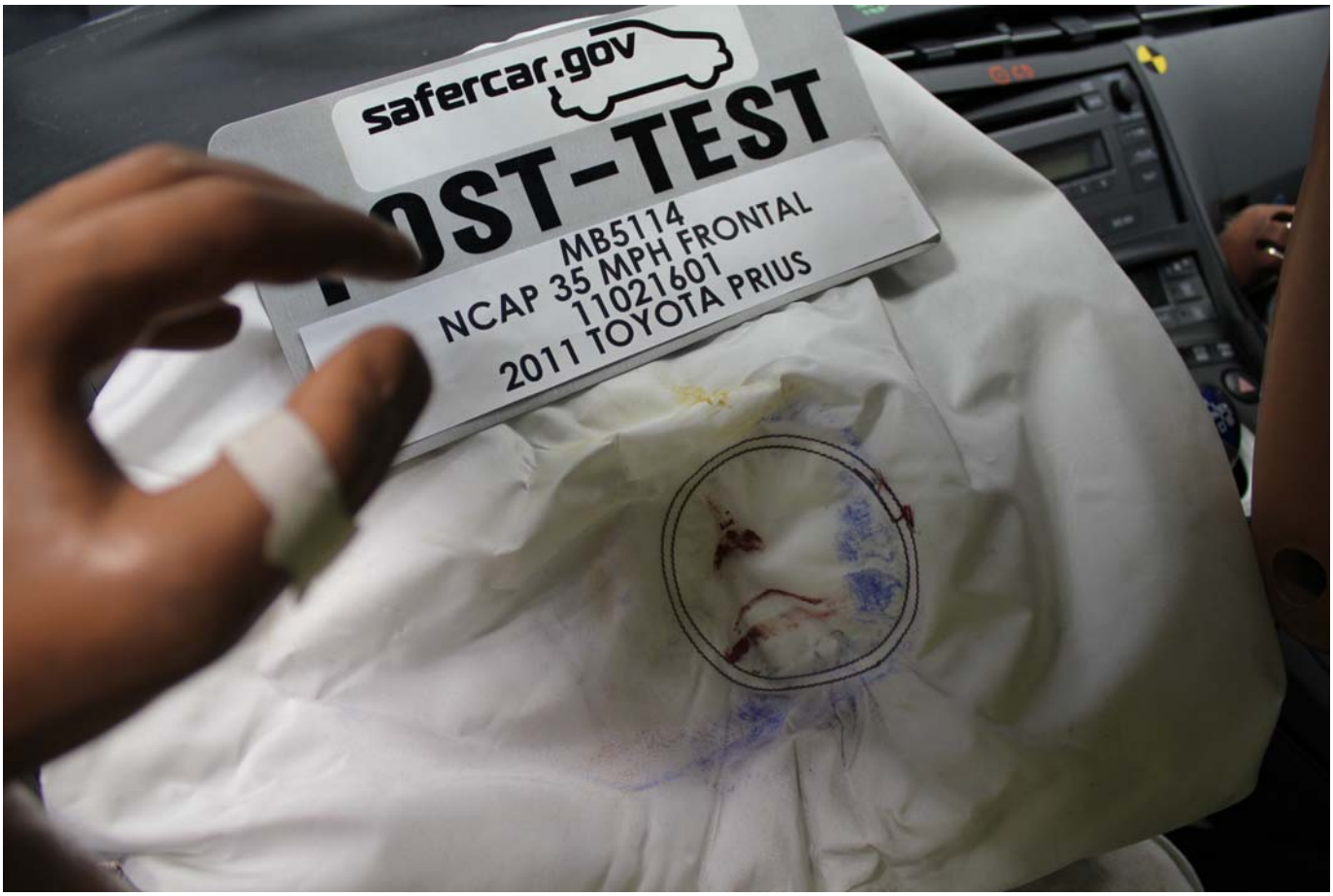
Post-Test Driver's Side Knee Bolster (without dummy)



Pre-Test Driver's Side Floorpan



Post-Test Driver's Side Floorpan



Post-Test Driver Dummy Contact with Airbag

Post-Test Driver Dummy Contact with Headrest

Post-Test Driver Dummy Contact with Knee Airbag

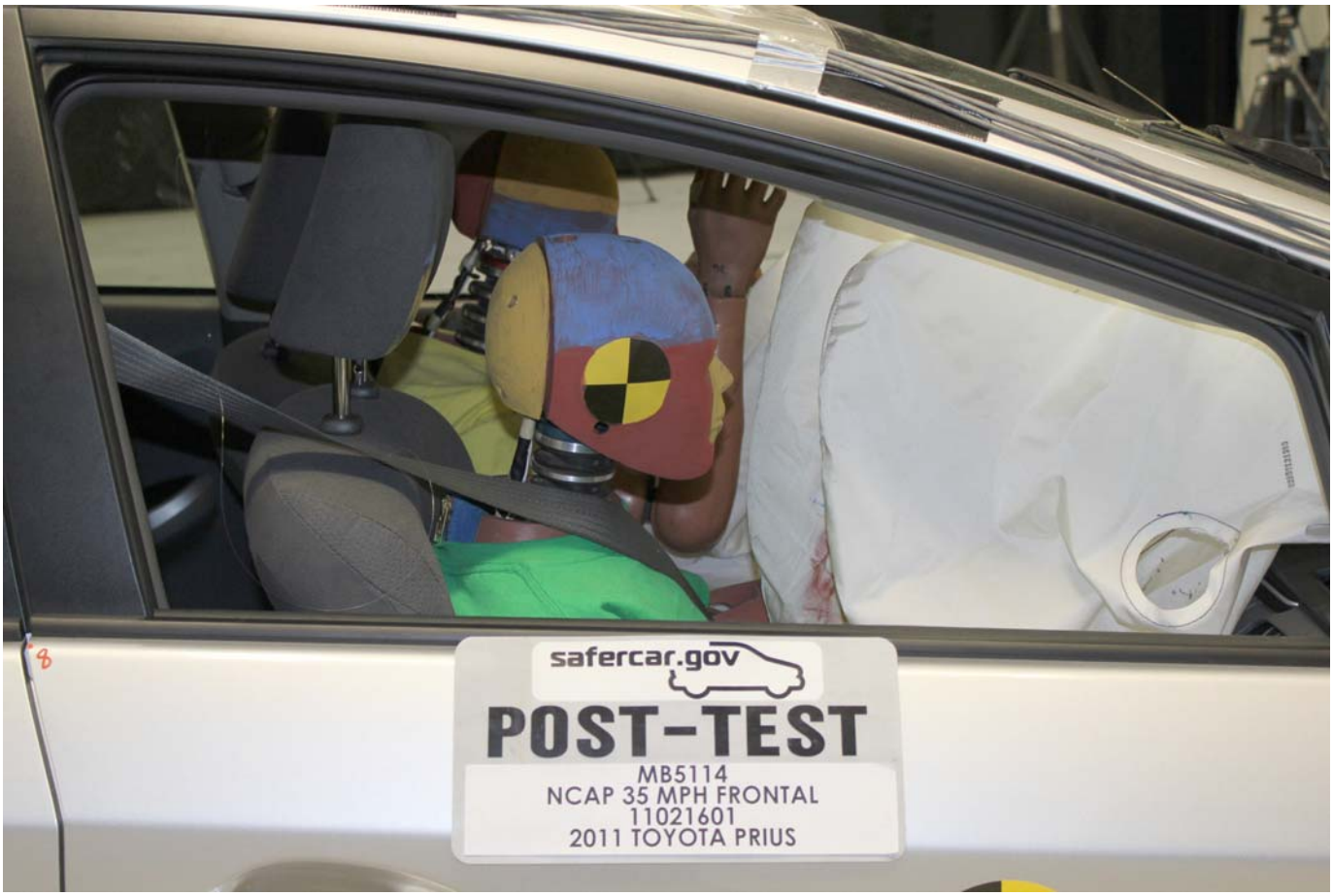
Pre-Test View of Steering Column Shear Capsule

Post-Test View of Steering Column Shear Capsule

Pre-Test Passenger Dummy Front View

Post-Test Passenger Dummy Front View

Pre-Test Passenger Dummy Window View



Post-Test Passenger Dummy Window View

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

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

Pre-Test Passenger's Seat Fore-Aft Markings

Post-Test Passenger's Seat Fore-Aft Markings

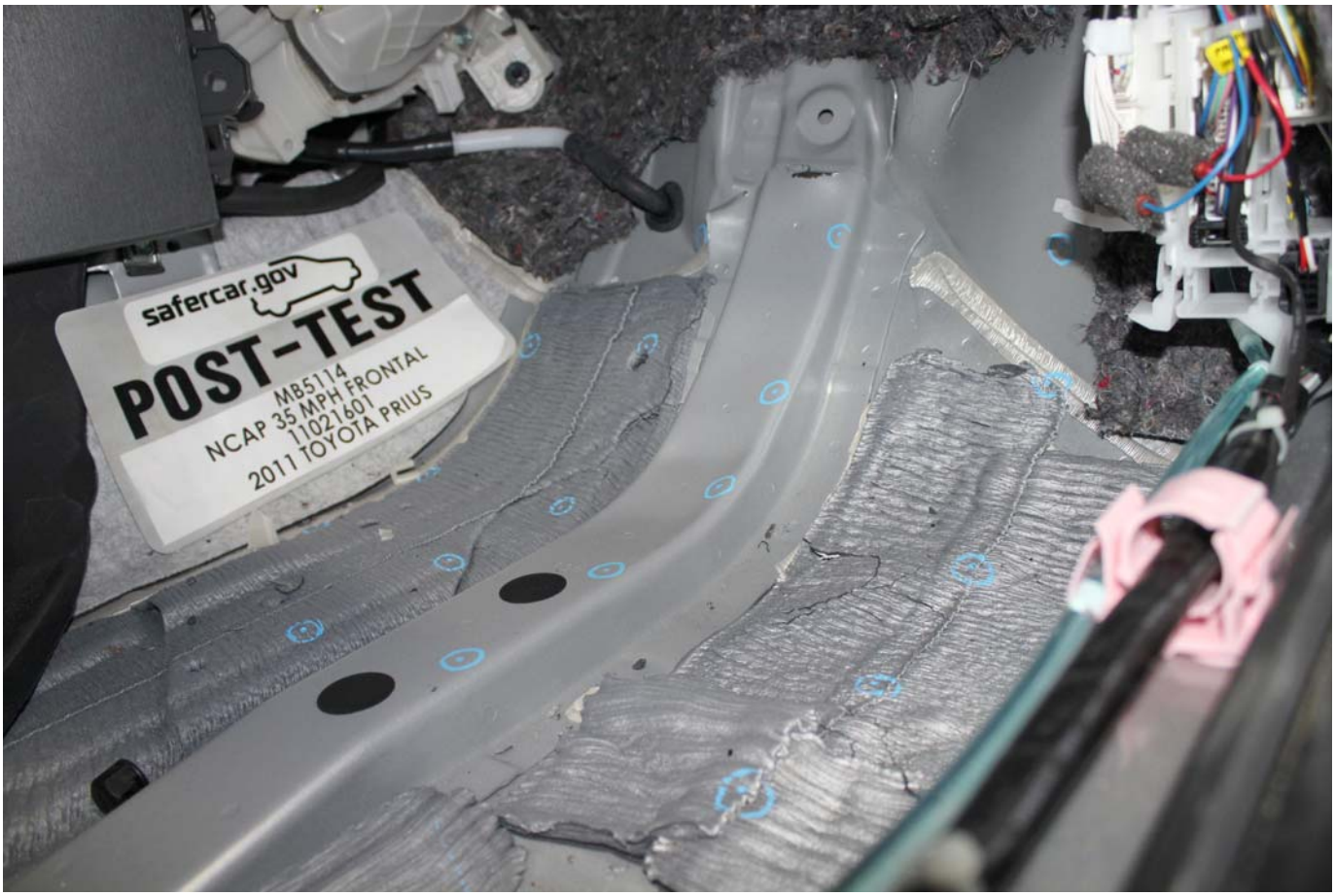
Pre-Test Passenger Dummy Feet

Post-Test Passenger Dummy Feet

Pre-Test Passenger's Side Knee Bolster (without dummy)

Post-Test Passenger's Side Knee Bolster (without dummy)

Pre-Test Passenger's Side Floorpan



Post-Test Passenger's Side Floorpan

Post-Test Passenger Dummy Contact with Airbag

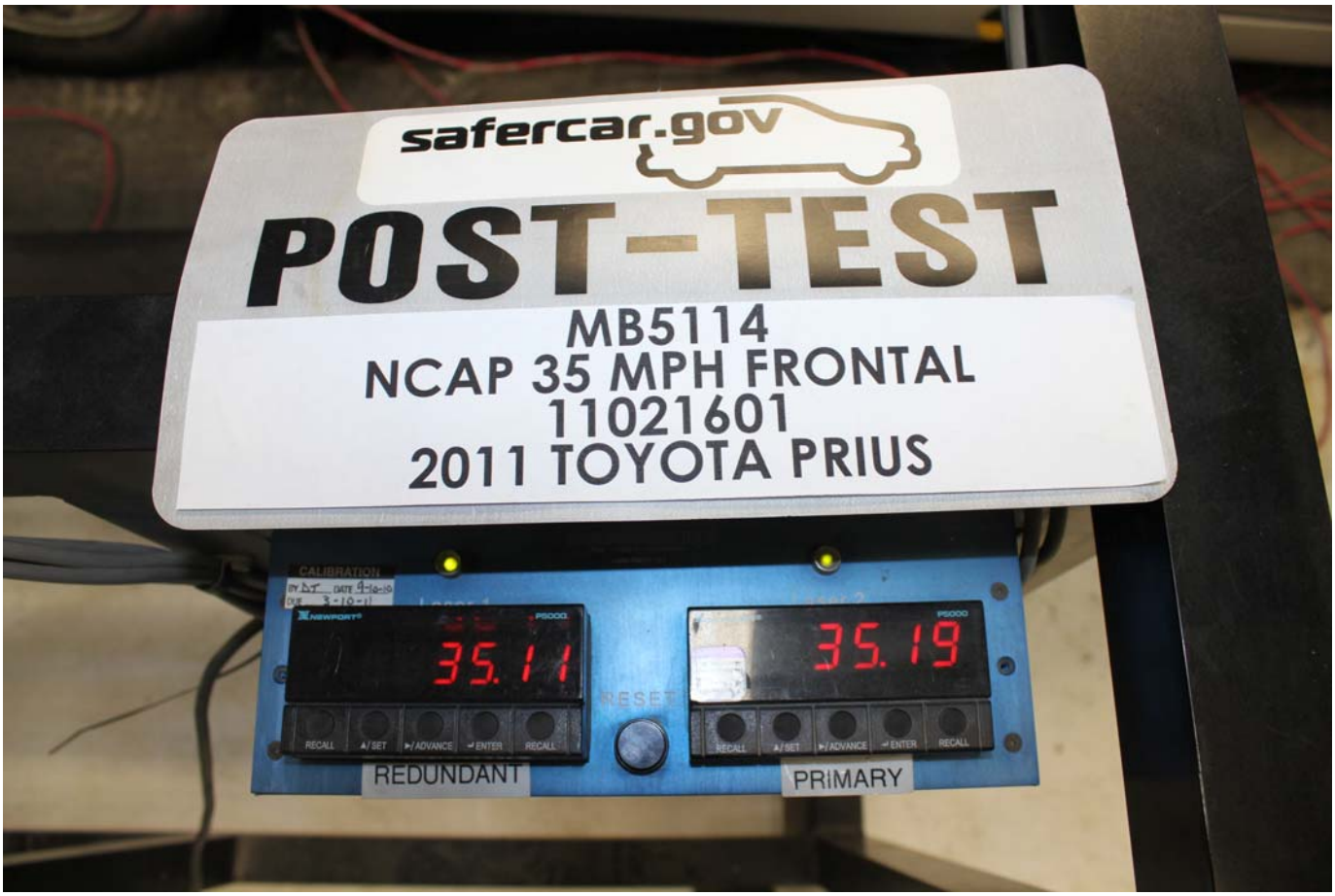
Post-Test Passenger Dummy Contact with Headrest

Post-Test Passenger Dummy Contact with Glovebox

Ballast Installed in Vehicle

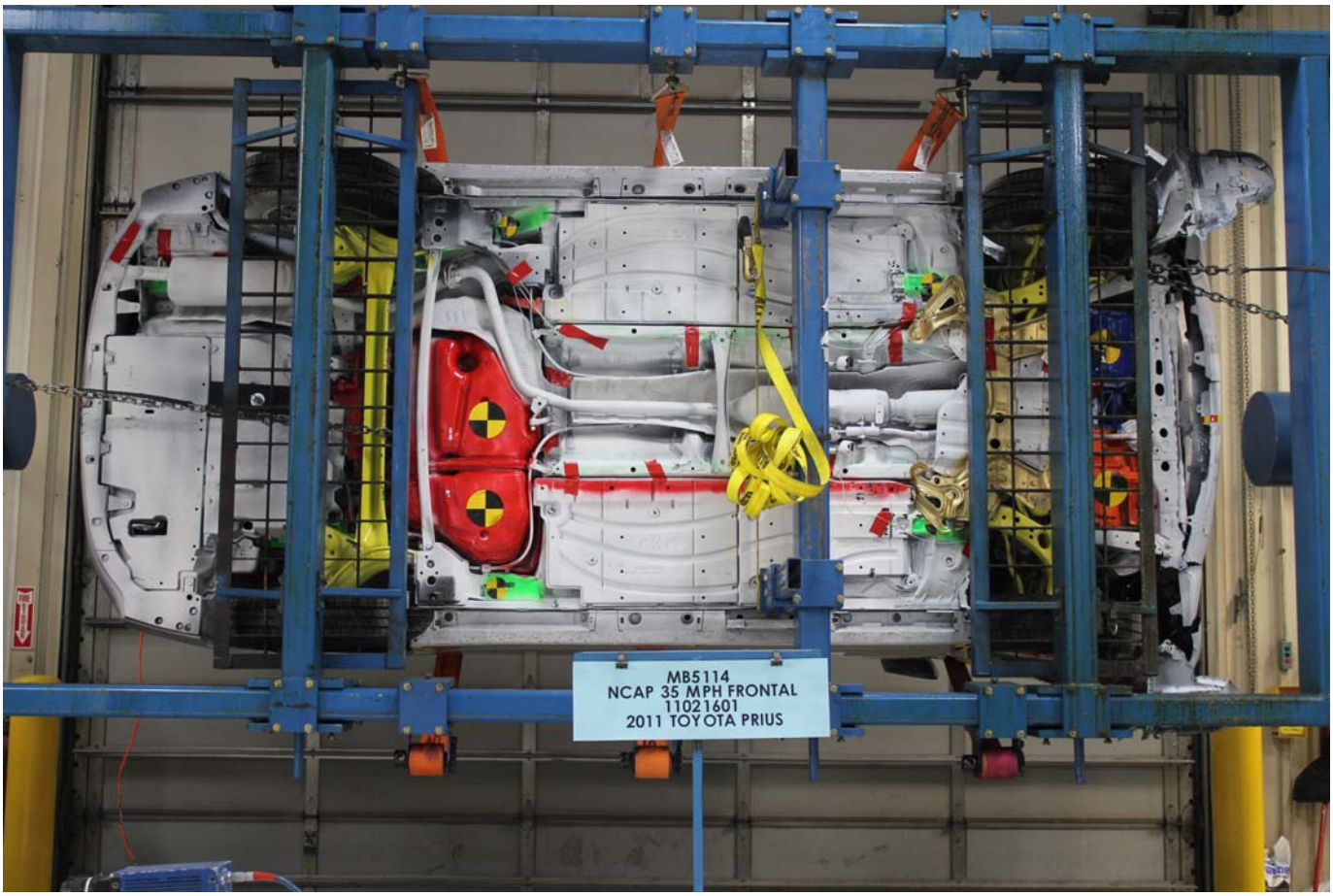
PHOTOGRAPH NOT APPLICABLE

Post-Test Stoddard Solvent Spillage Location View

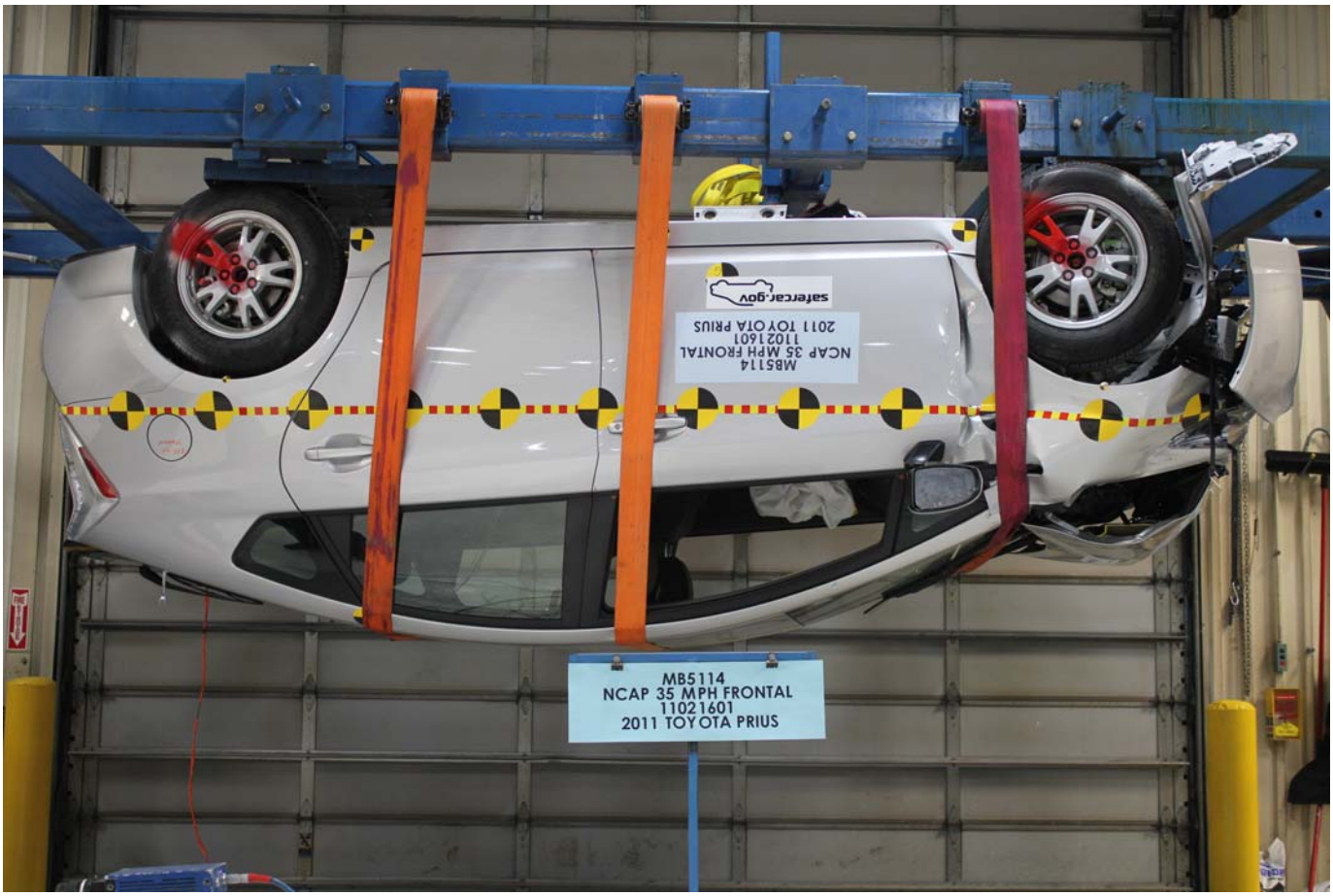


Post-Test Speed Trap Read-Out

Vehicle at 0 Degrees on Static Rollover Device



Vehicle at 90 Degrees on Static Rollover Device

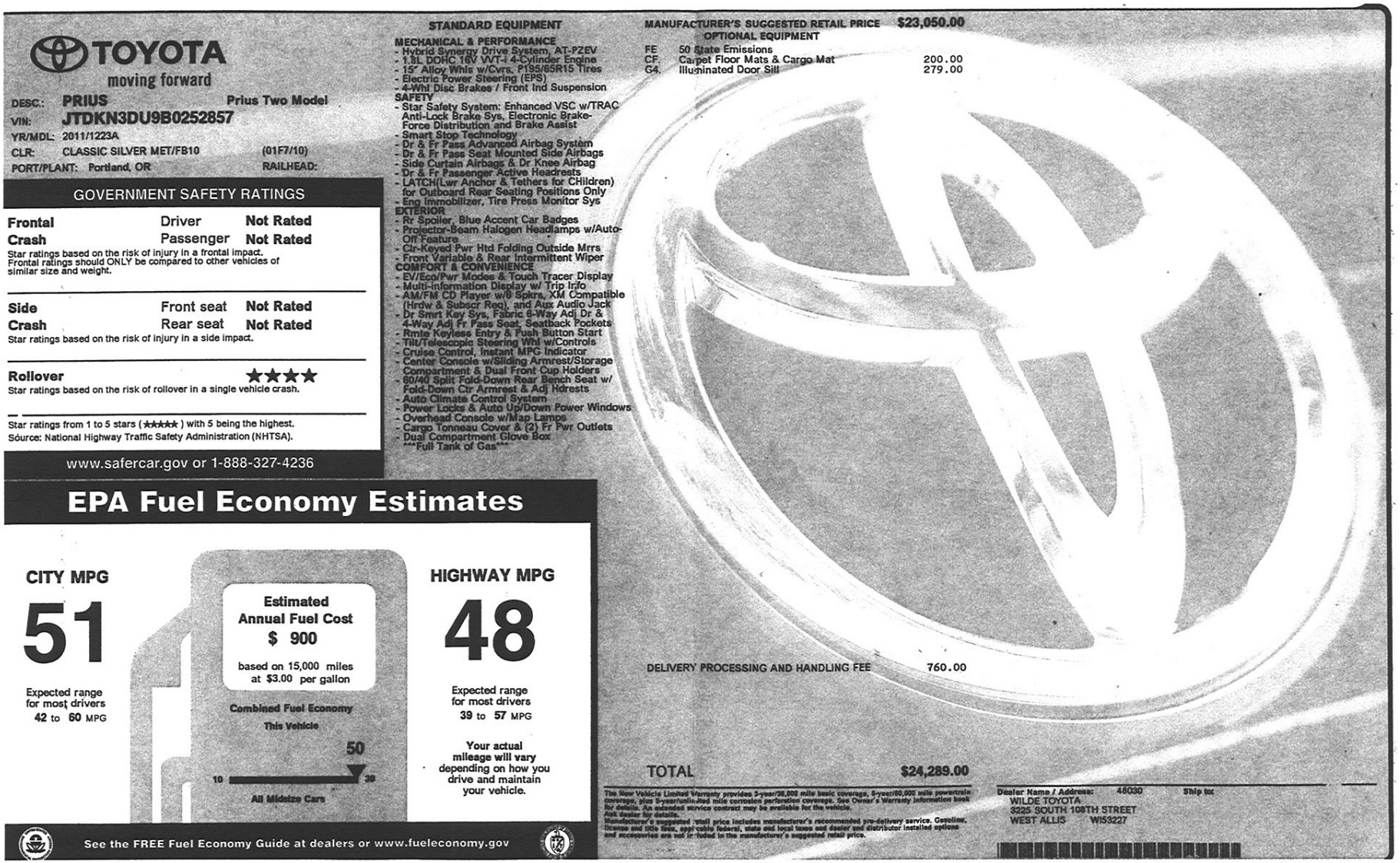


Vehicle at 180 Degrees on Static Rollover Device

Vehicle at 270 Degrees on Static Rollover Device

Vehicle at 360 Degrees on Static Rollover Device

Vehicle Impact



TOYOTA
moving forward

DESC.: PRIUS Prius Two Model
VIN: JTDKN3DU9B0252857
YR/MDL: 2011/1223A
CLR: CLASSIC SILVER MET/FB10 (01F7/10)
PORT/PLANT: Portland, OR RAILHEAD:

GOVERNMENT SAFETY RATINGS

Frontal Crash — Driver: Not Rated; Passenger: Not Rated
Star ratings based on the risk of injury in a frontal impact. Frontal ratings should ONLY be compared to other vehicles of similar size and weight.

Side Crash — Front seat: Not Rated; Rear seat: Not Rated
Star ratings based on the risk of injury in a side impact.

Rollover ★★★★
Star ratings based on the risk of rollover in a single vehicle crash.

Star ratings 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

EPA Fuel Economy Estimates

CITY MPG
51
Expected range for most drivers
42 to 60 MPG

Estimated Annual Fuel Cost
$ 900
based on 15,000 miles at $3.00 per gallon

Combined Fuel Economy
This Vehicle
50
10 30
All Midsize Cars

HIGHWAY MPG
48
Expected range for most drivers
39 to 57 MPG

Your actual mileage will vary depending on how you drive and maintain your vehicle.

See the FREE Fuel Economy Guide at dealers or www.fueleconomy.gov

STANDARD EQUIPMENT

MECHANICAL & PERFORMANCE
- Hybrid Synergy Drive System, AT-PZEV
- 1.8L DOHC 16V VVT-i 4-Cylinder Engine
- 15" Alloy Whls w/Cvrs, P195/65R15 Tires
- Electric Power Steering (EPS)
- 4-Whl Disc Brakes / Front Ind Suspension

SAFETY
- Star Safety System: Enhanced VSC w/TRAC Anti-Lock Brake Sys, Electronic Brake-Force Distribution and Brake Assist
- Smart Stop Technology
- Dr & Fr Pass Advanced Airbag System
- Dr & Fr Pass Seat Mounted Side Airbags
- Side Curtain Airbags & Dr Knee Airbag
- Dr & Fr Passenger Active Headrests
- LATCH(Lwr Anchor & Tethers for CHildren) for Outboard Rear Seating Positions Only
- Eng Immobilizer, Tire Press Monitor Sys

EXTERIOR
- Rr Spoiler, Blue Accent Car Badges
- Projector-Beam Halogen Headlamps w/Auto-Off Feature
- Clr-Keyed Pwr Htd Folding Outside Mrrs
- Front Variable & Rear Intermittent Wiper

COMFORT & CONVENIENCE
- EV/Eco/Pwr Modes & Touch Tracer Display
- Multi-Information Display w/ Trip Info
- AM/FM CD Player w/8 Spkrs, XM Compatible (Hrdw & Subscr Req), and Aux Audio Jack
- Dr Smrt Key Sys, Fabric 6-Way Adj Dr & 4-Way Adj Fr Pass Seat, Seatback Pockets
- Rmte Keyless Entry & Push Button Start
- Tilt/Telescopic Steering Whl w/Controls
- Cruise Control, Instant MPG Indicator
- Center Console w/Sliding Armrest/Storage Compartment & Dual Front Cup Holders
- 60/40 Split Fold-Down Rear Bench Seat w/ Fold-Down Ctr Armrest & Adj Hdrests
- Auto Climate Control System
- Power Locks & Auto Up/Down Power Windows
- Overhead Console w/Map Lamps
- Cargo Tonneau Cover & (2) Fr Pwr Outlets
- Dual Compartment Glove Box
- ***Full Tank of Gas***

MANUFACTURER'S SUGGESTED RETAIL PRICE $23,050.00

OPTIONAL EQUIPMENT

FE	50 State Emissions	
CF	Carpet Floor Mats & Cargo Mat	200.00
G4	Illuminated Door Sill	279.00

DELIVERY PROCESSING AND HANDLING FEE 760.00

TOTAL $24,289.00

The New Vehicle Limited Warranty provides 3-year/36,000 mile basic coverage, 5-year/60,000 mile powertrain coverage, plus 5-year/unlimited mile corrosion perforation coverage. See Owner's Warranty information book for details. An extended service contract may be available for the vehicle. Ask dealer for details.
Manufacturer's suggested retail price includes manufacturer's recommended pre-delivery service. Gasoline, license and title fees, applicable federal, state and local taxes and dealer and distributor installed options and accessories are not included in the manufacturer's suggested retail price.

Dealer Name / Address: 48030 Ship to:
WILDE TOYOTA
3225 SOUTH 108TH STREET
WEST ALLIS WI53227

Monroney Label

APPENDIX B

DUMMY RESPONSE DATA

TABLE OF DATA PLOTS

The following 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 Shoulder Belt Force – not installed

Driver Lap Belt Force

Driver Left Upper Tibia Moment X

Driver Left Upper Tibia Moment Y

Driver Left Upper Tibia Force Z

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

Passenger Head X Redundant

Passenger Head Y Redundant

Passenger Head Z Redundant

Passenger Upper Neck Force Y

Passenger Upper Neck Moment X

Passenger Upper Neck Moment Z

Passenger Chest X Redundant

Passenger Chest Y Redundant

Passenger Chest Z Redundant

Passenger Pelvis X

Passenger Pelvis Y

Passenger Pelvis Z

Passenger Left Femur Redundant

Passenger Right Femur Redundant

Passenger Lap Belt Force

Passenger Shoulder Belt Force – not installed

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

Left Rear Seat Crossmember X

Left Rear Seat Crossmember Z

Right Rear Seat Crossmember X

Right Rear Seat Crossmember Z

Vehicle Engine Top X

Vehicle Engine Bottom X

Vehicle Left Brake Caliper X

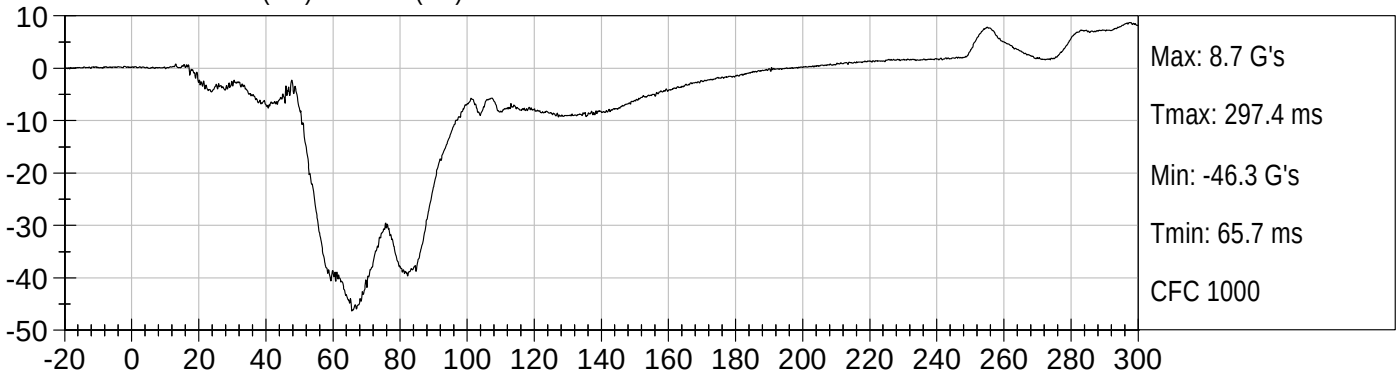
Vehicle Right Brake Caliper X

Advanced Research Load Cell Barrier – 127 channels

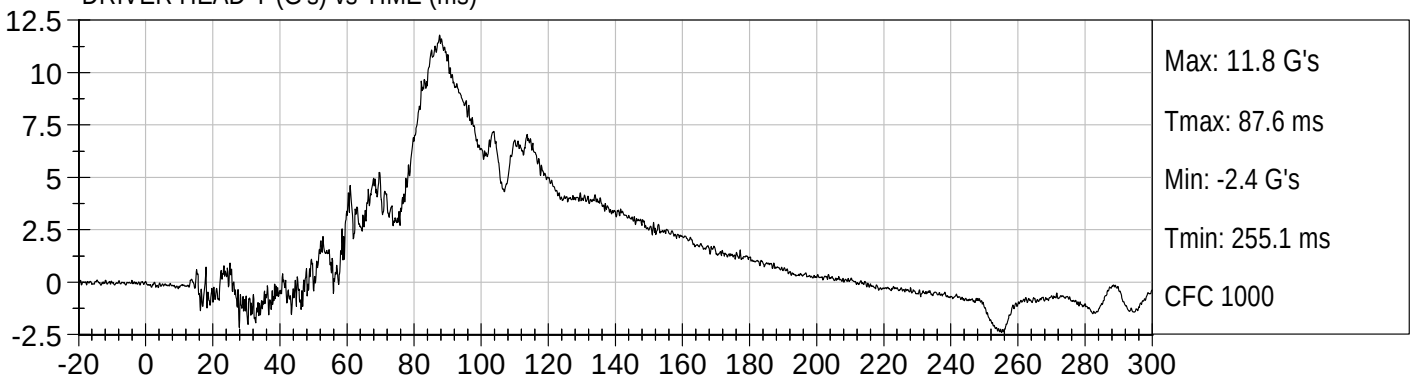
NCAP 35mph Frontal
2011 Toyota Prius - MB5114

Test Date: 02/16/2011
Speed: 35.2 mph (56.6 km/h)

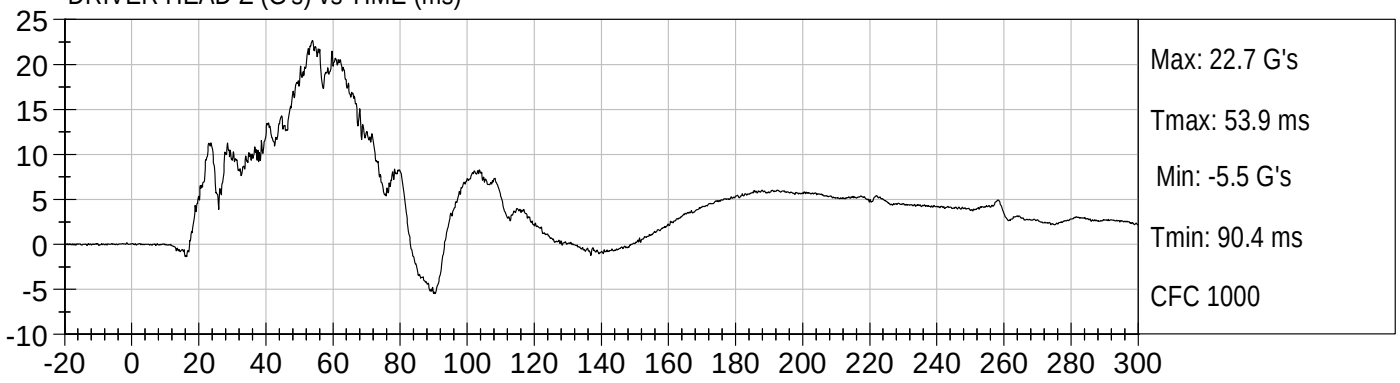
DRIVER HEAD X (G's) vs TIME (ms)



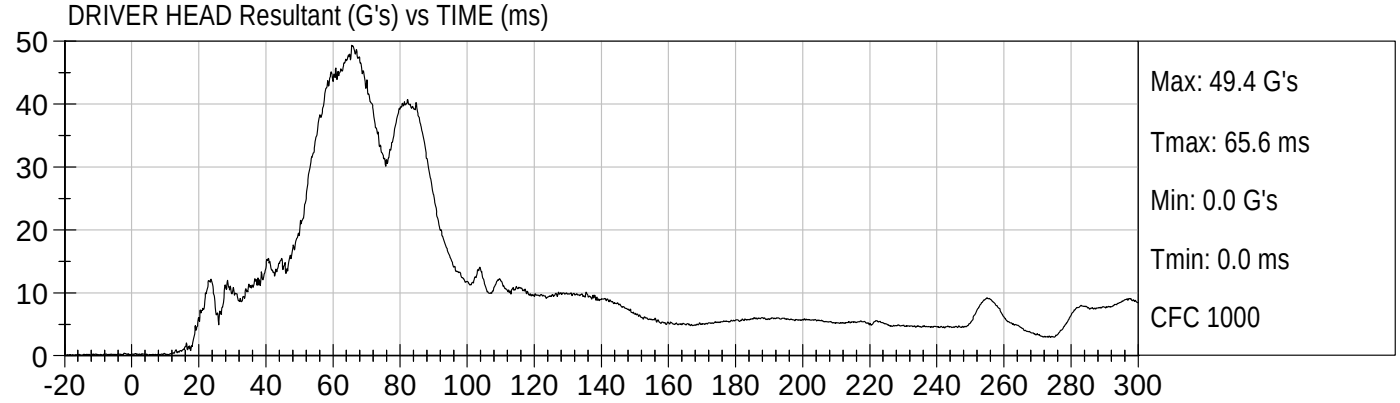
DRIVER HEAD Y (G's) vs TIME (ms)



DRIVER HEAD Z (G's) vs TIME (ms)

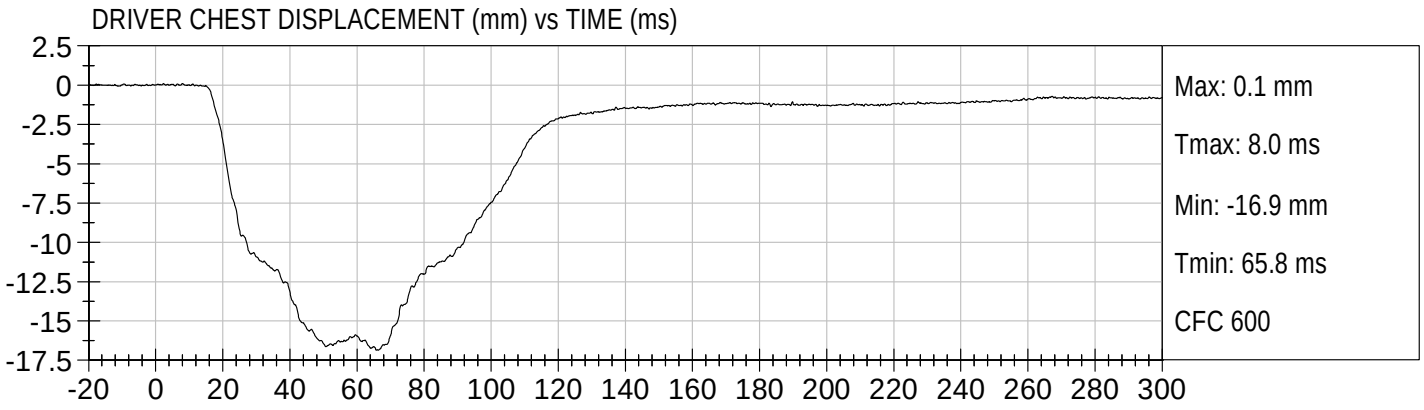


DRIVER HEAD Resultant (G's) vs TIME (ms)



NCAP 35mph Frontal
2011 Toyota Prius - MB5114

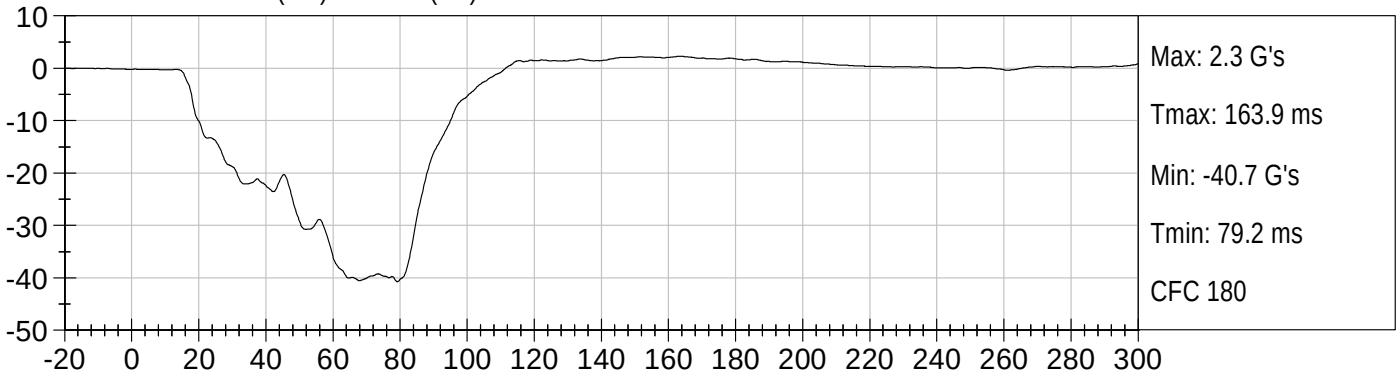
Test Date: 02/16/2011
Speed: 35.2 mph (56.6 km/h)



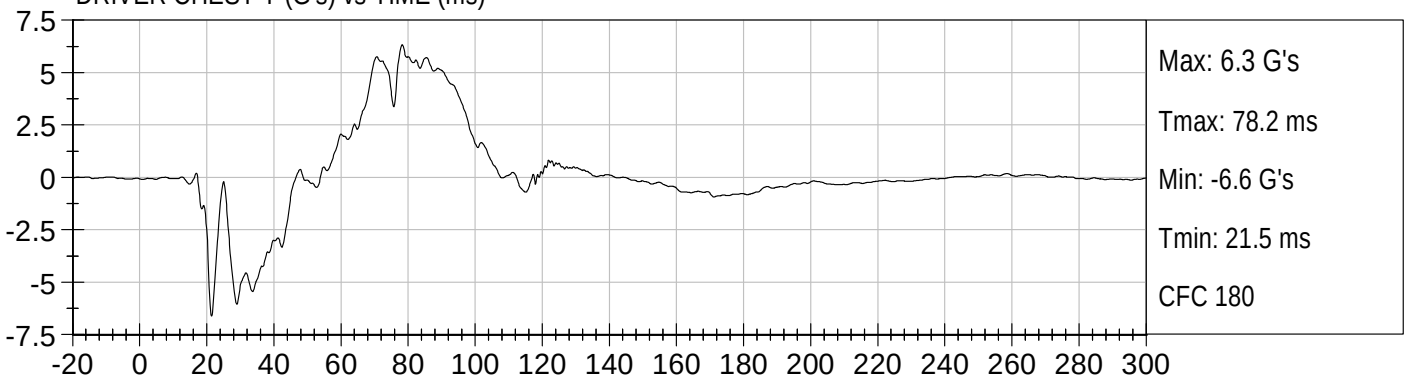
NCAP 35mph Frontal
2011 Toyota Prius - MB5114

Test Date: 02/16/2011
Speed: 35.2 mph (56.6 km/h)

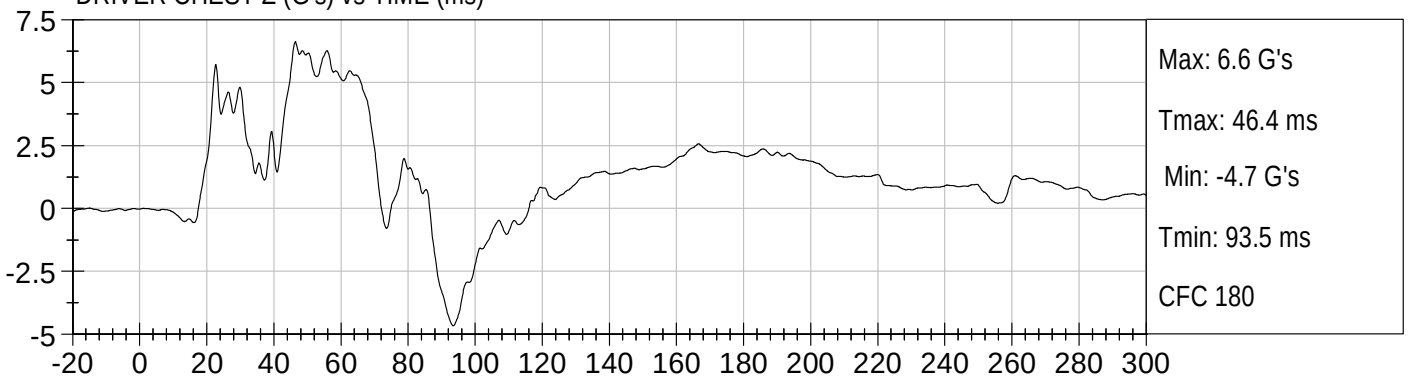
DRIVER CHEST X (G's) vs TIME (ms)



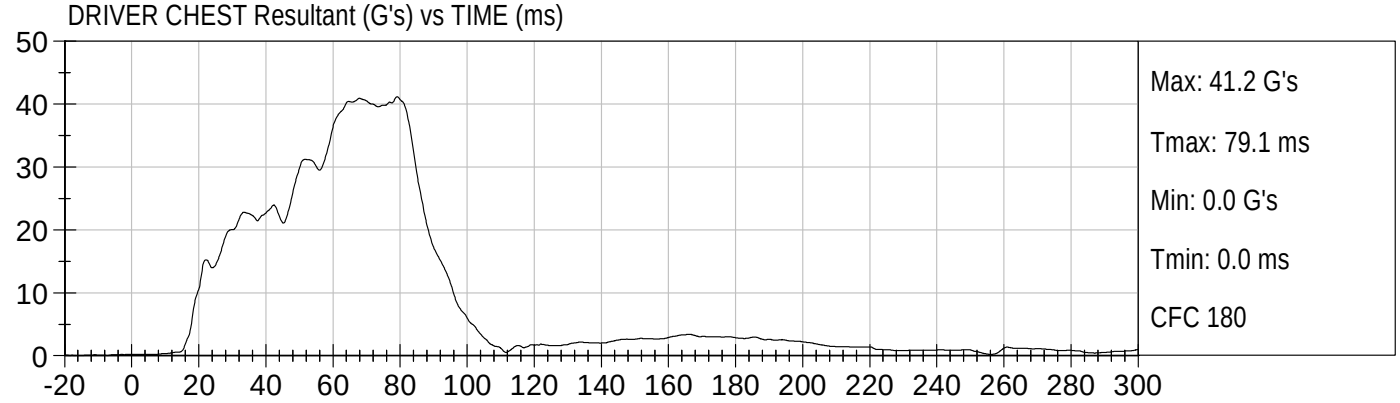
DRIVER CHEST Y (G's) vs TIME (ms)



DRIVER CHEST Z (G's) vs TIME (ms)



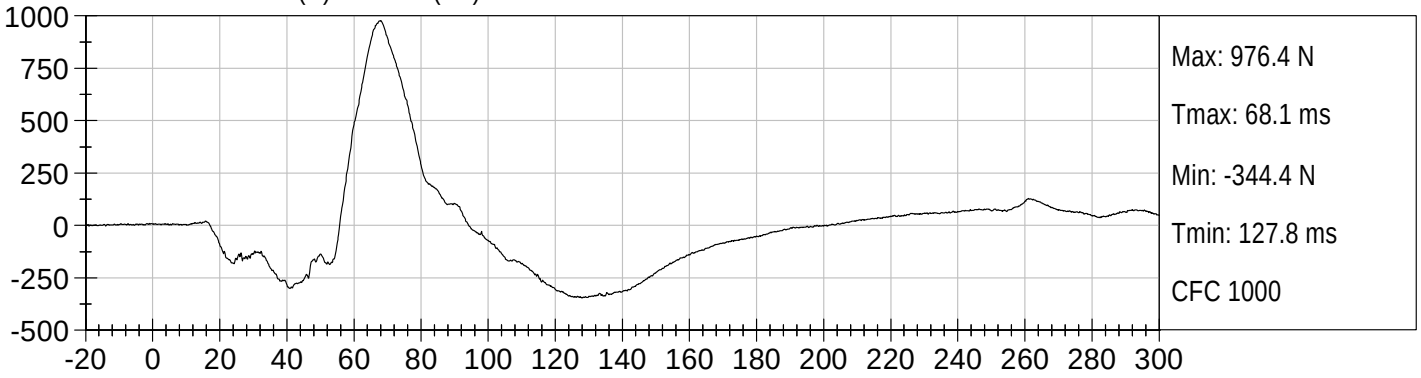
DRIVER CHEST Resultant (G's) vs TIME (ms)



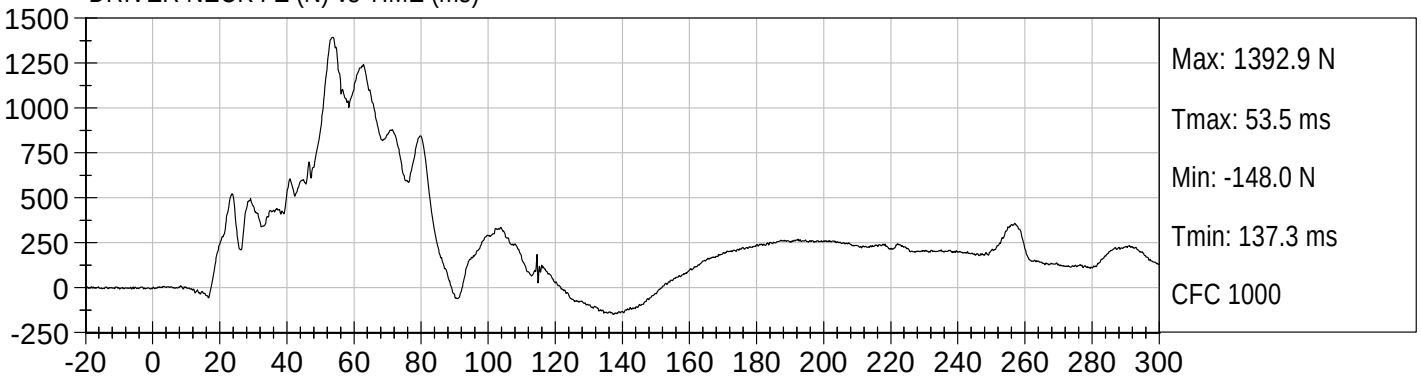
NCAP 35mph Frontal
2011 Toyota Prius - MB5114

Test Date: 02/16/2011
Speed: 35.2 mph (56.6 km/h)

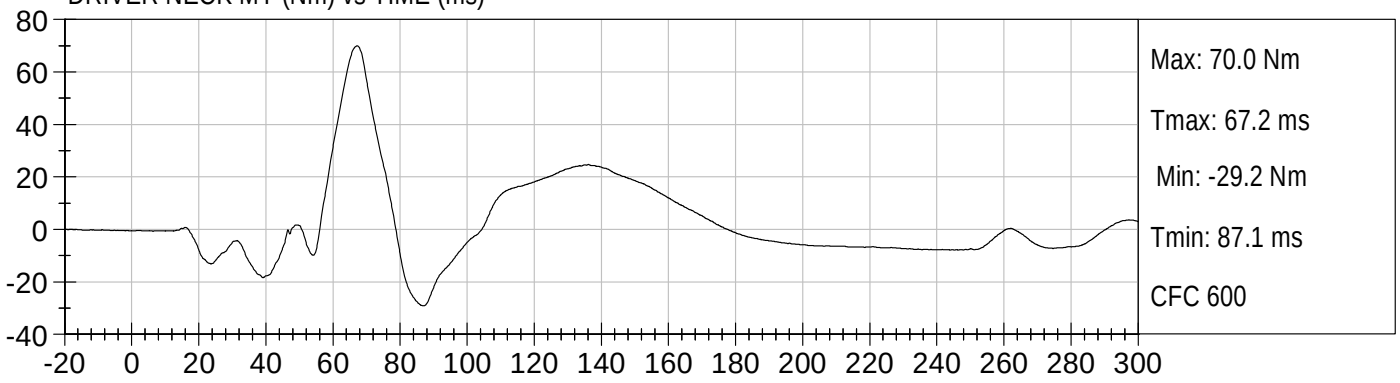
DRIVER NECK FX (N) vs TIME (ms)



DRIVER NECK FZ (N) vs TIME (ms)

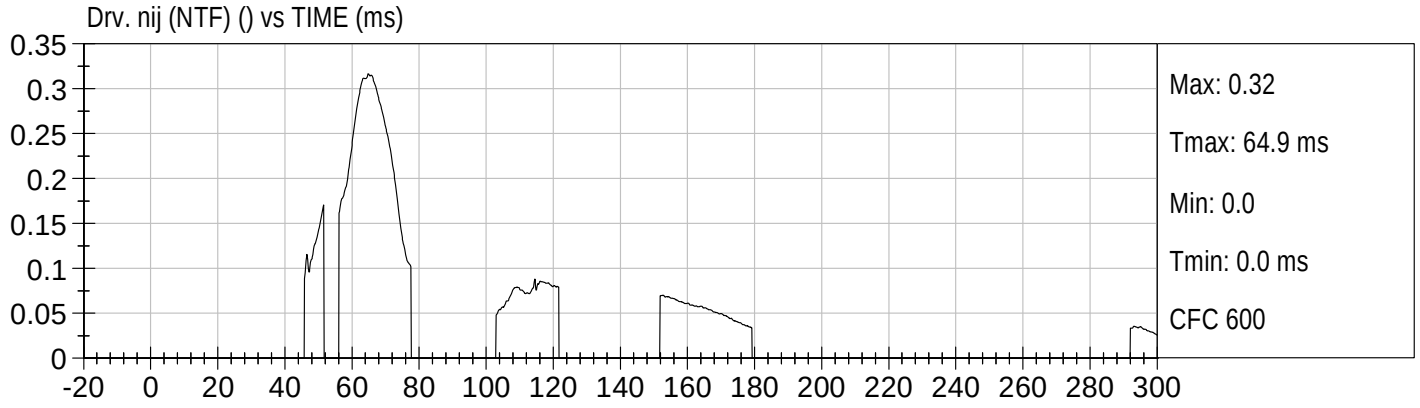


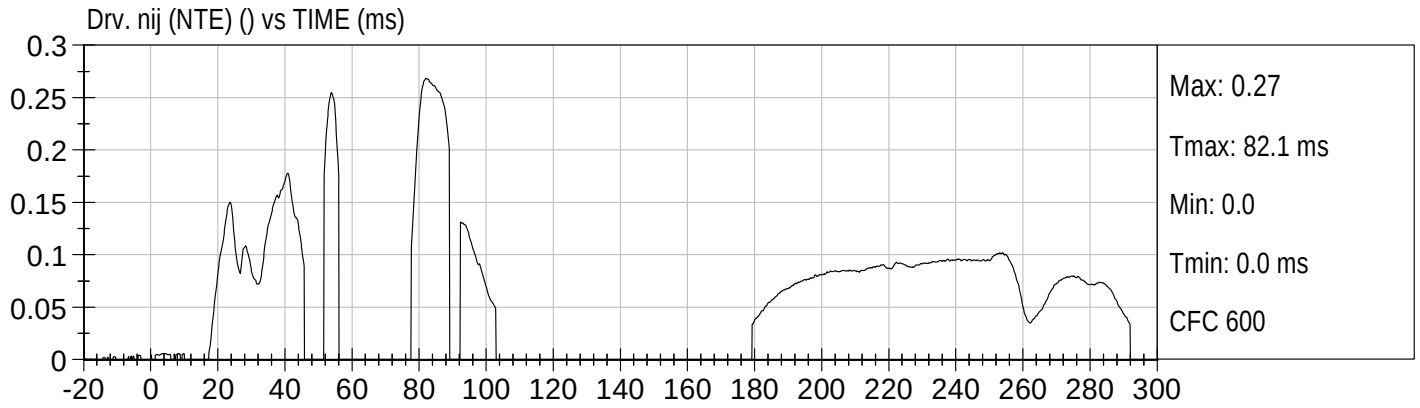
DRIVER NECK MY (Nm) vs TIME (ms)

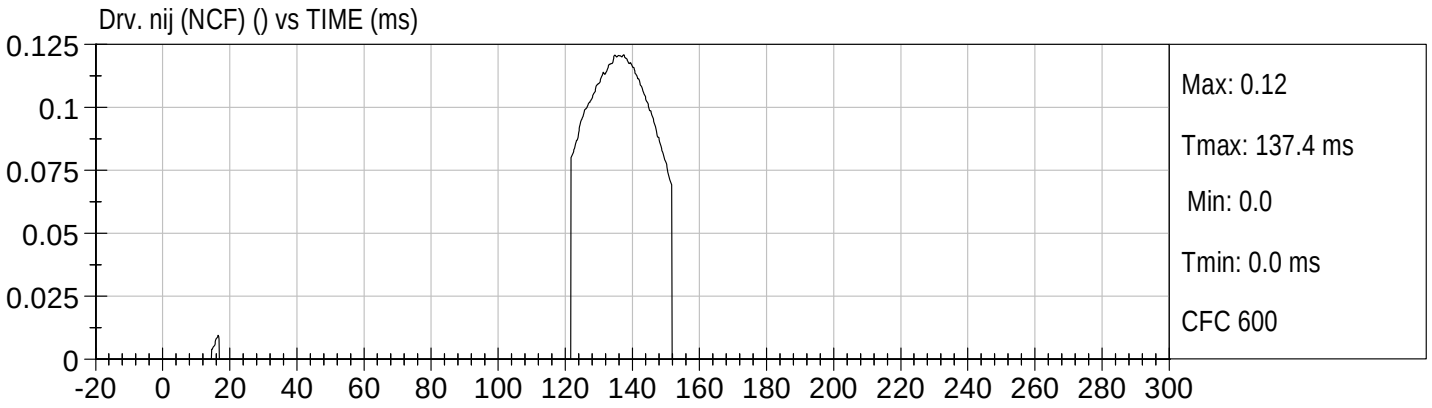


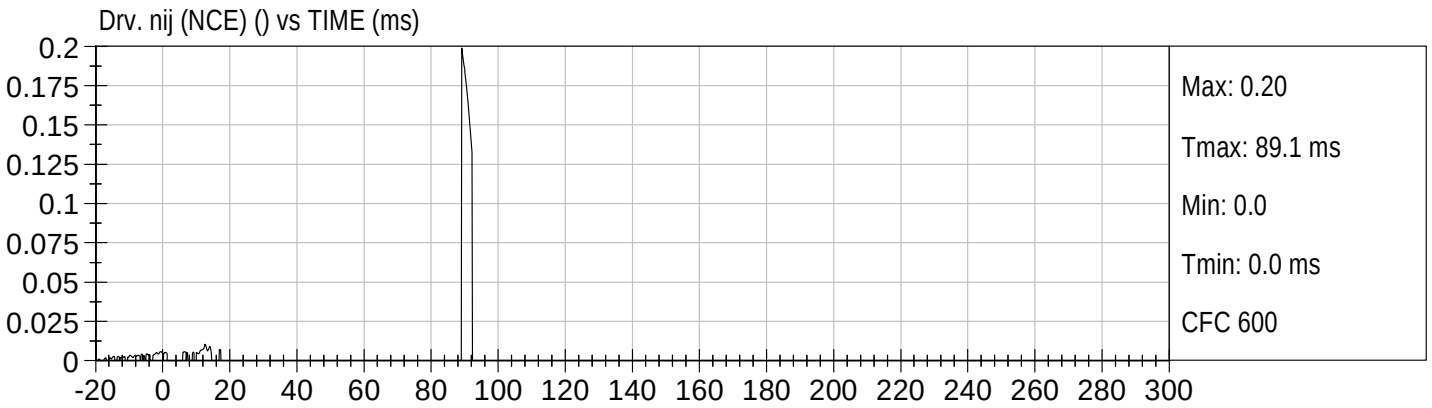
NCAP 35mph Frontal
2011 Toyota Prius - MB5114

Test Date: 02/16/2011
Speed: 35.2 mph (56.6 km/h)





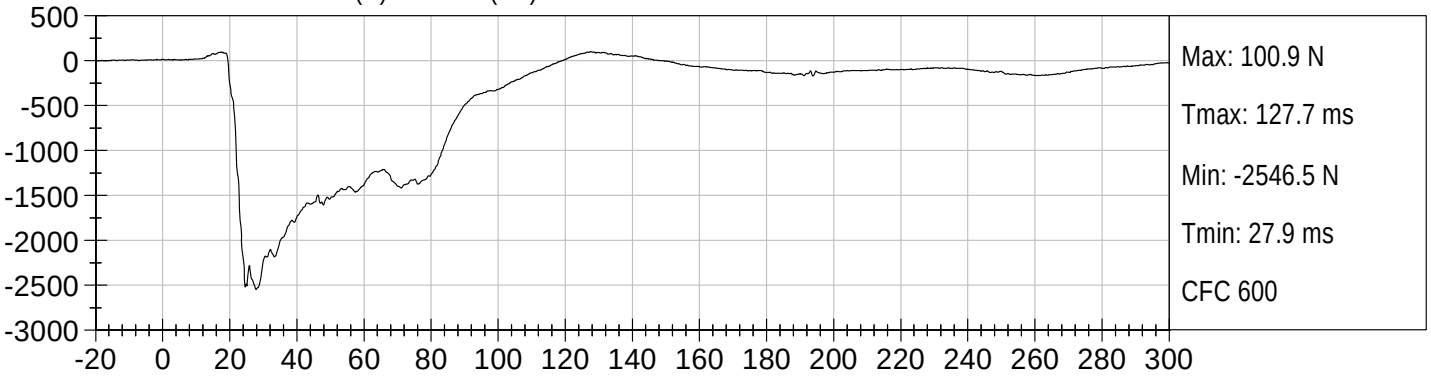




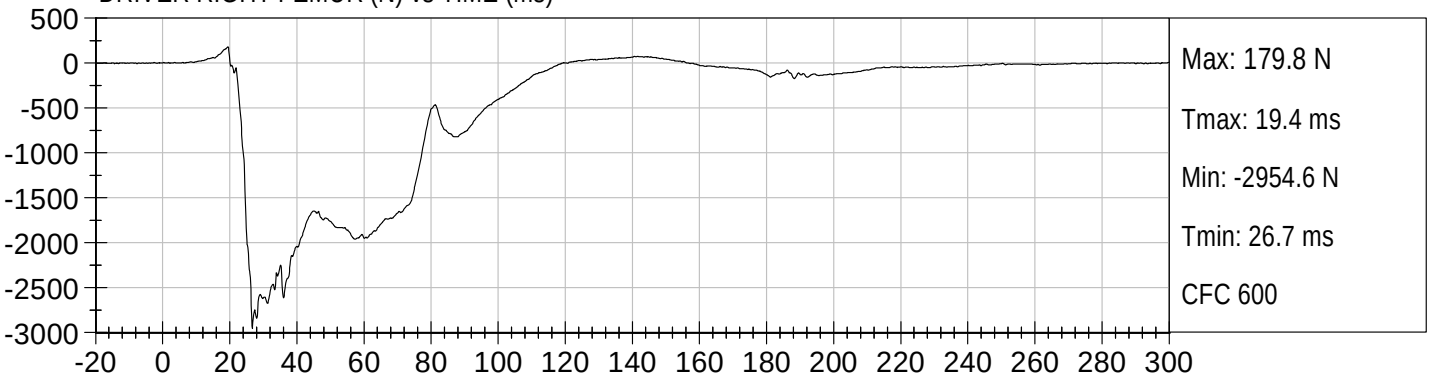
NCAP 35mph Frontal
2011 Toyota Prius - MB5114

Test Date: 02/16/2011
Speed: 35.2 mph (56.6 km/h)

DRIVER LEFT FEMUR (N) vs TIME (ms)



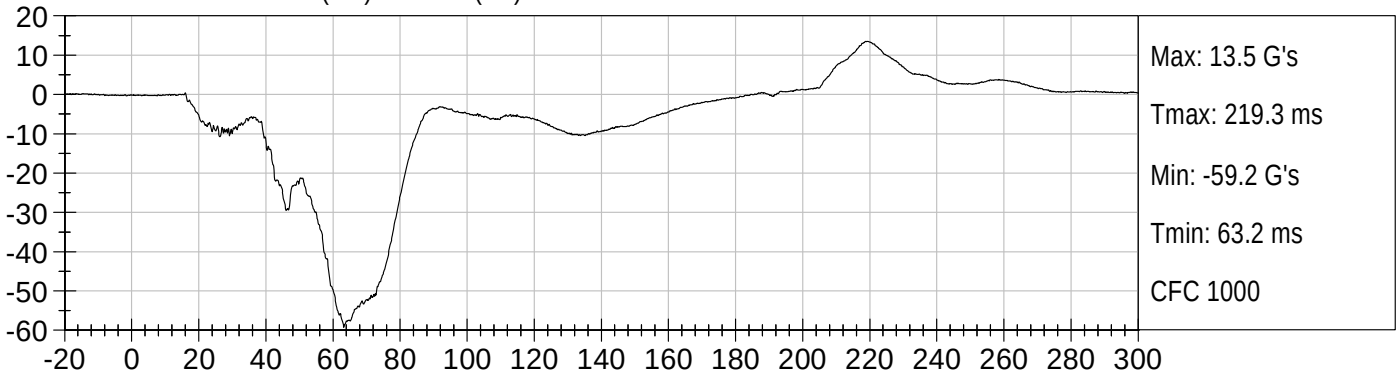
DRIVER RIGHT FEMUR (N) vs TIME (ms)



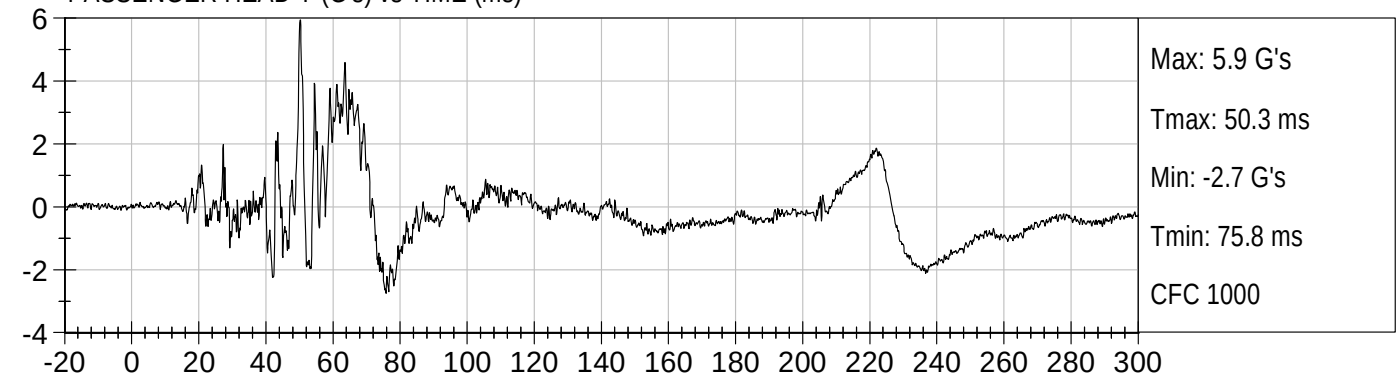
NCAP 35mph Frontal
2011 Toyota Prius - MB5114

Test Date: 02/16/2011
Speed: 35.2 mph (56.6 km/h)

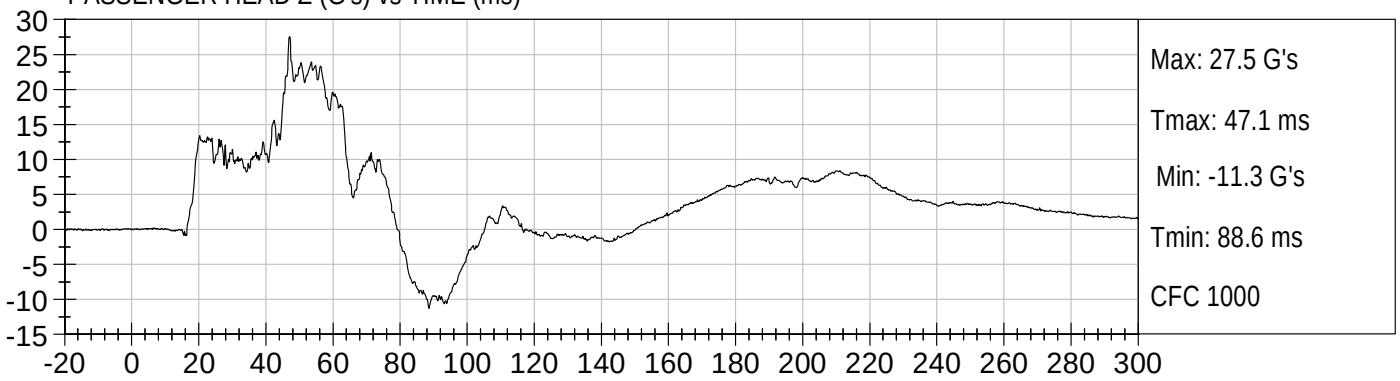
PASSENGER HEAD X (G's) vs TIME (ms)



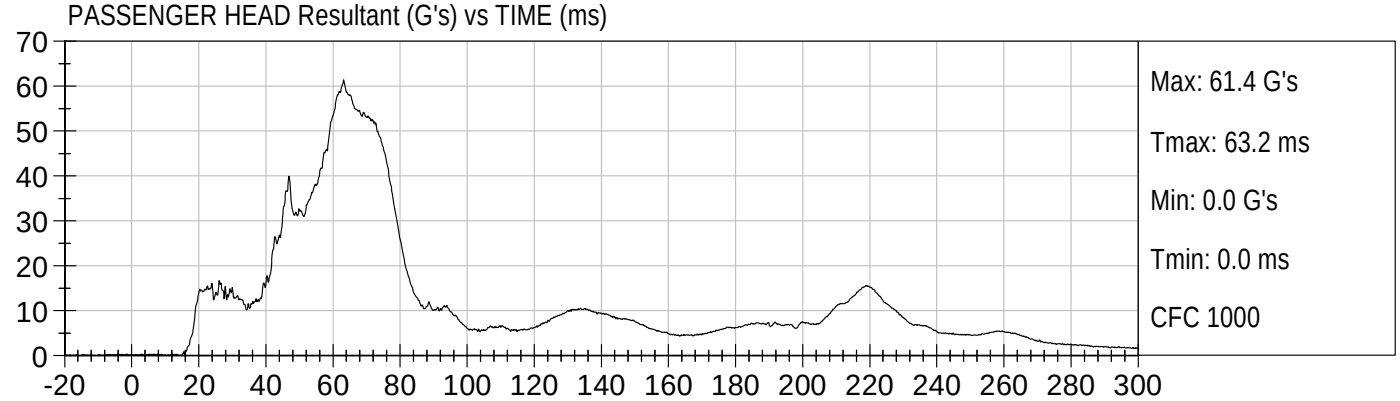
PASSENGER HEAD Y (G's) vs TIME (ms)



PASSENGER HEAD Z (G's) vs TIME (ms)

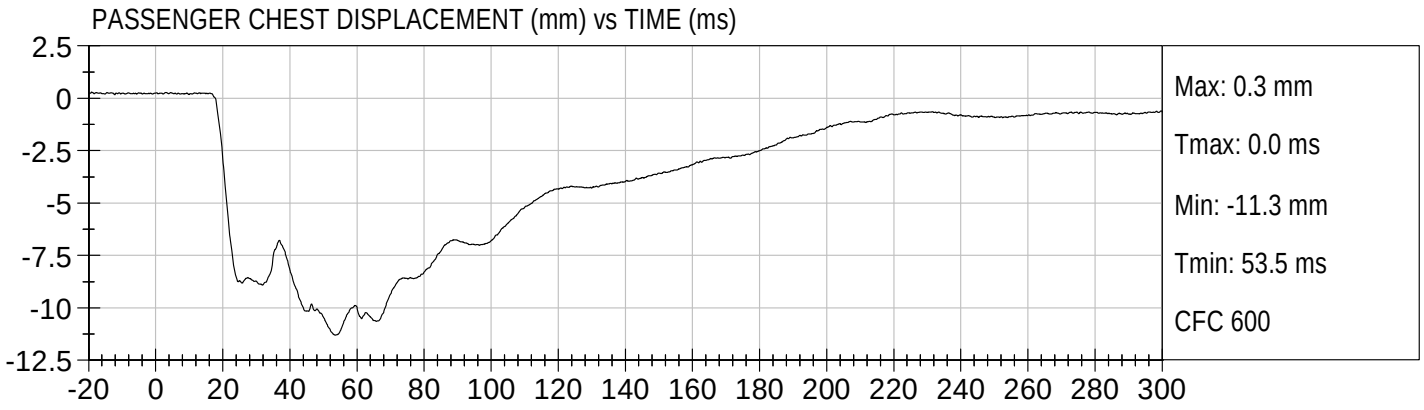


PASSENGER HEAD Resultant (G's) vs TIME (ms)



NCAP 35mph Frontal
2011 Toyota Prius - MB5114

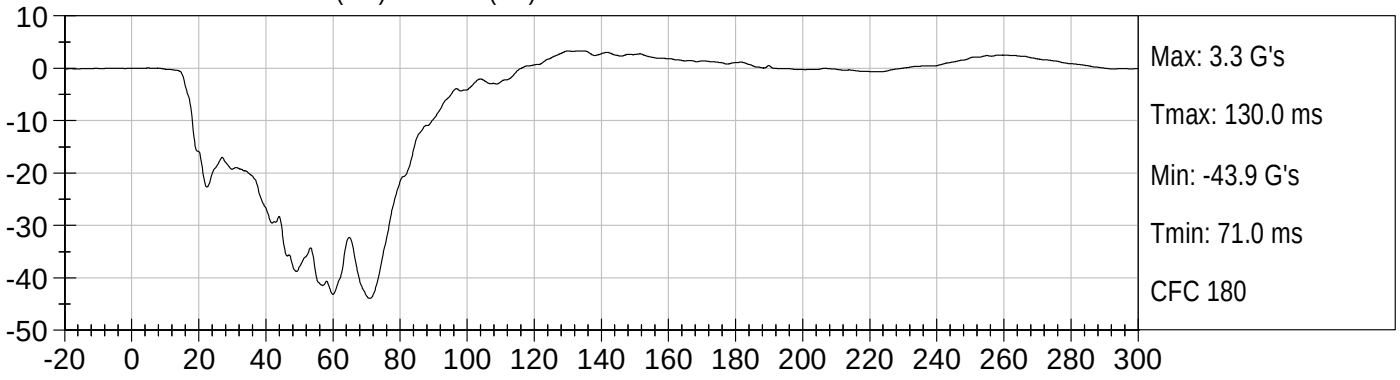
Test Date: 02/16/2011
Speed: 35.2 mph (56.6 km/h)



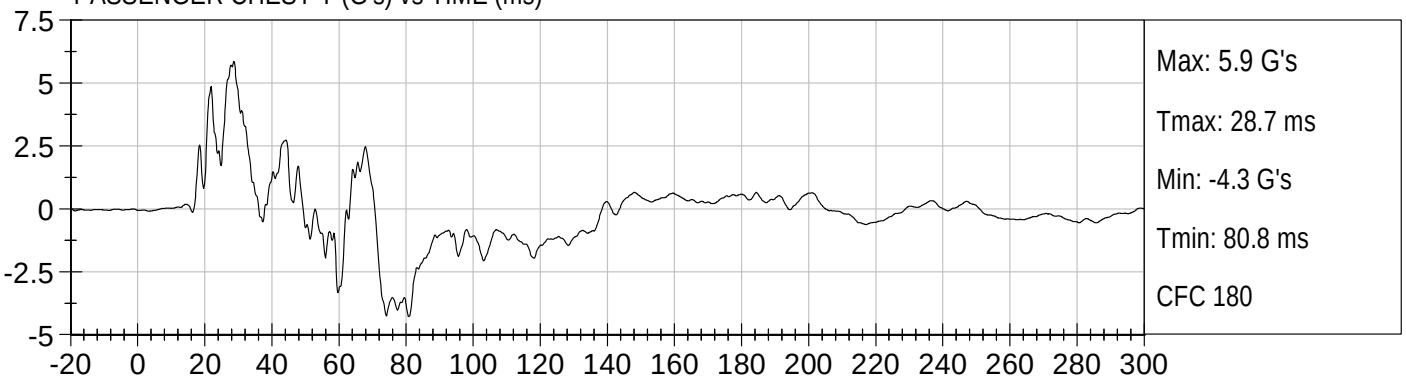
NCAP 35mph Frontal
2011 Toyota Prius - MB5114

Test Date: 02/16/2011
Speed: 35.2 mph (56.6 km/h)

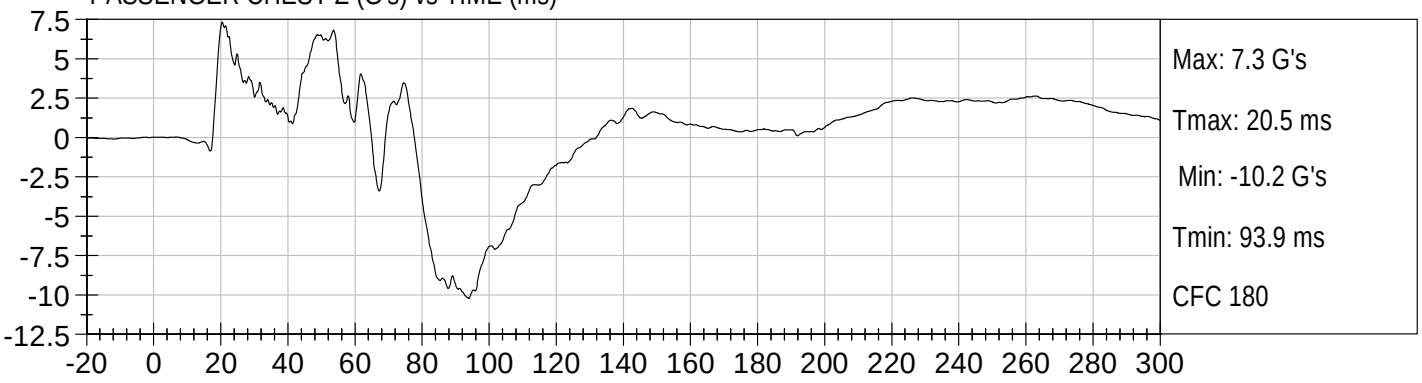
PASSENGER CHEST X (G's) vs TIME (ms)



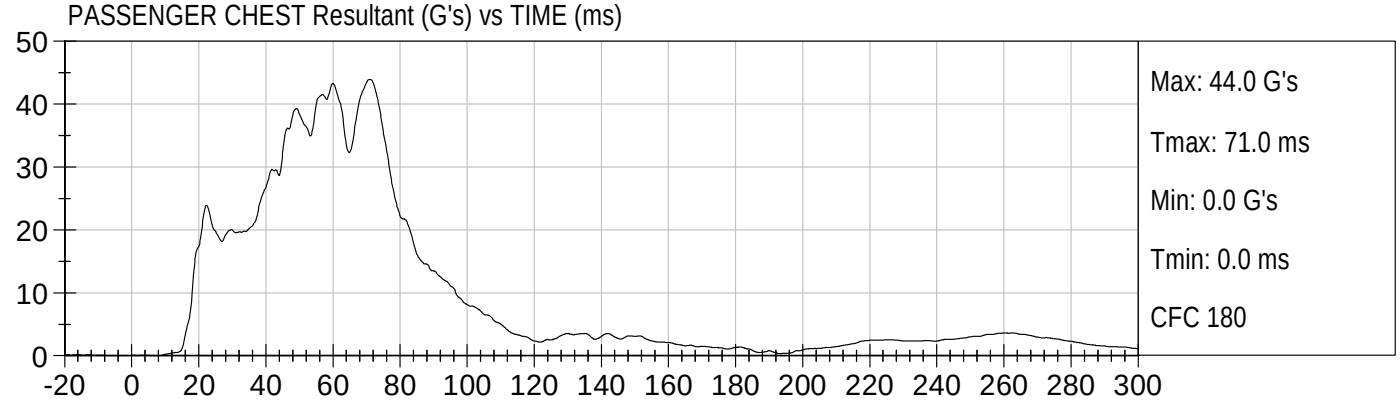
PASSENGER CHEST Y (G's) vs TIME (ms)



PASSENGER CHEST Z (G's) vs TIME (ms)



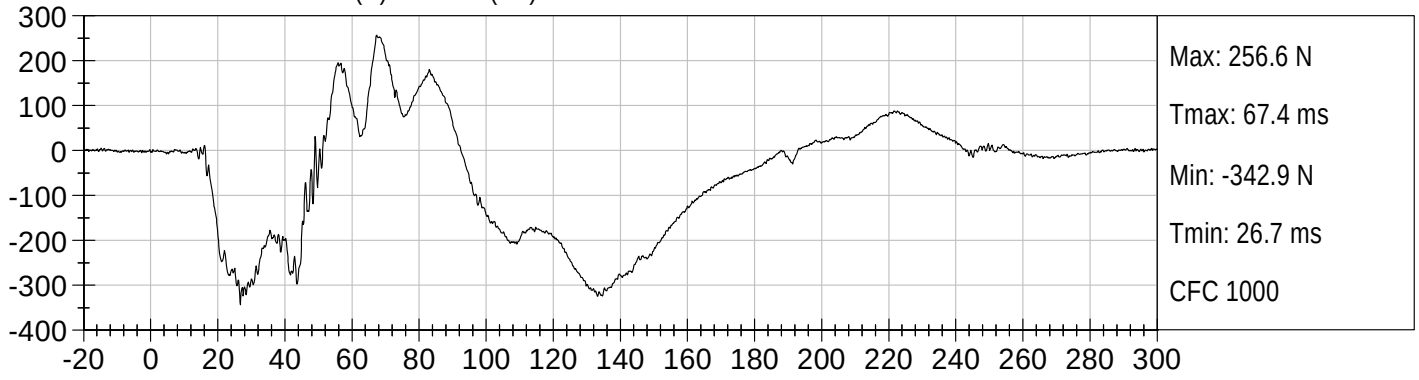
PASSENGER CHEST Resultant (G's) vs TIME (ms)



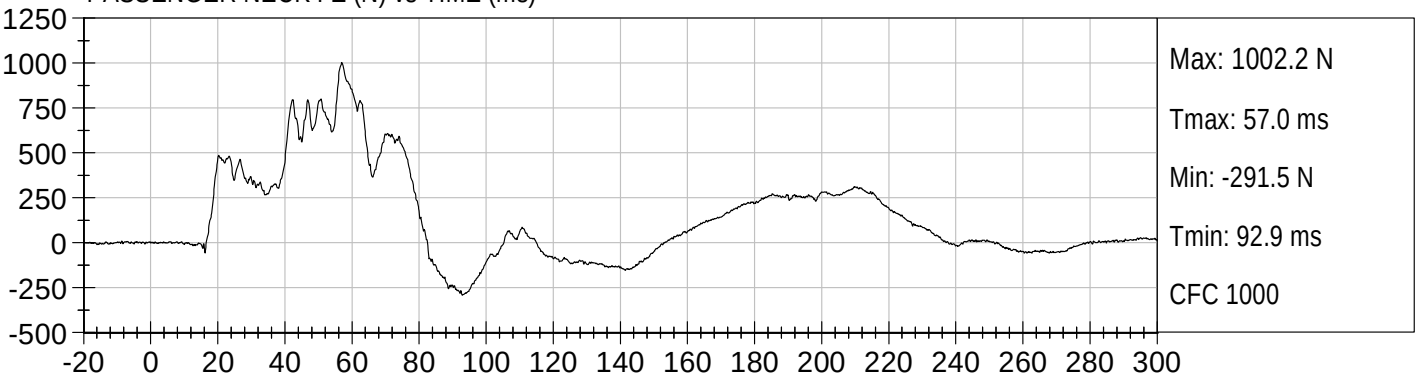
NCAP 35mph Frontal
2011 Toyota Prius - MB5114

Test Date: 02/16/2011
Speed: 35.2 mph (56.6 km/h)

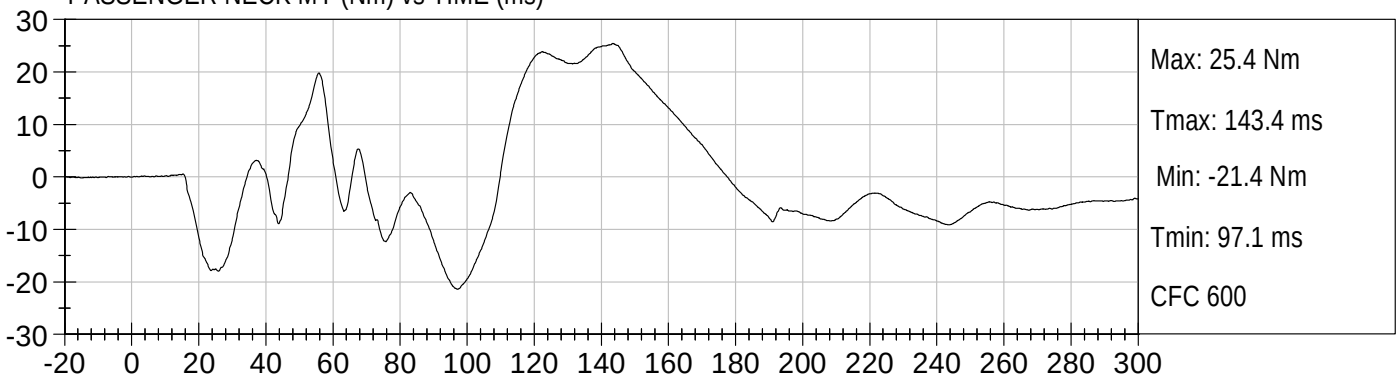
PASSENGER NECK FX (N) vs TIME (ms)



PASSENGER NECK FZ (N) vs TIME (ms)

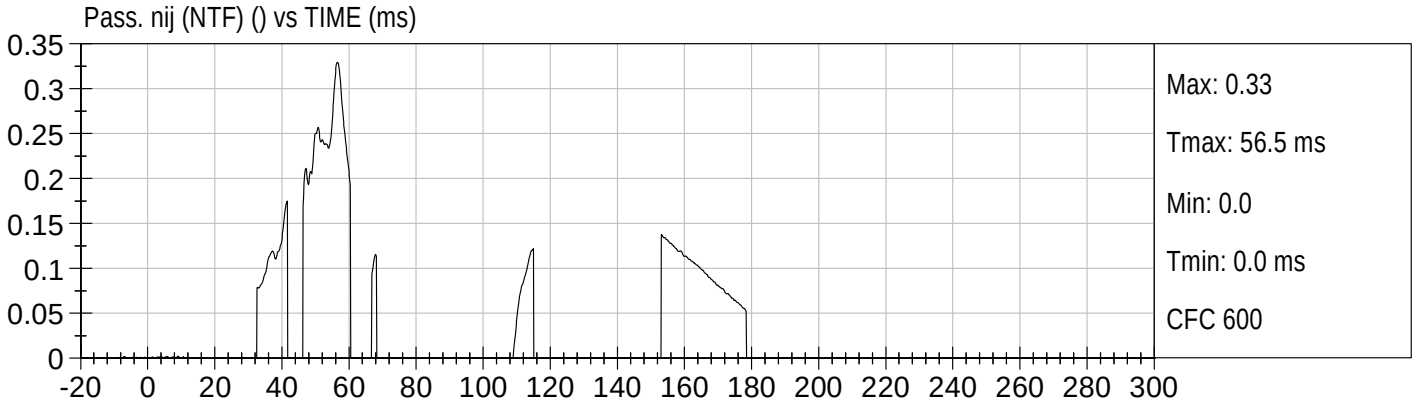


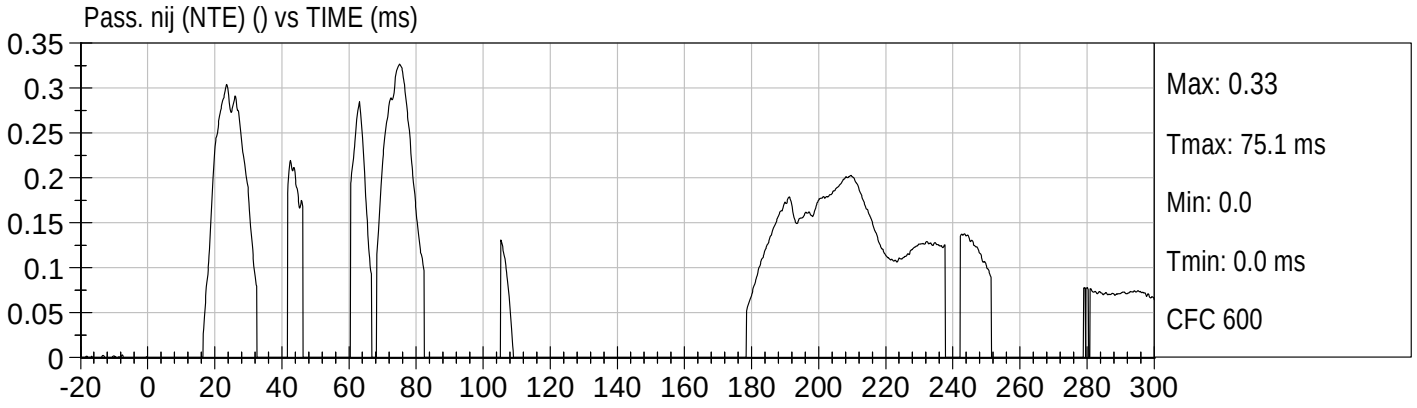
PASSENGER NECK MY (Nm) vs TIME (ms)

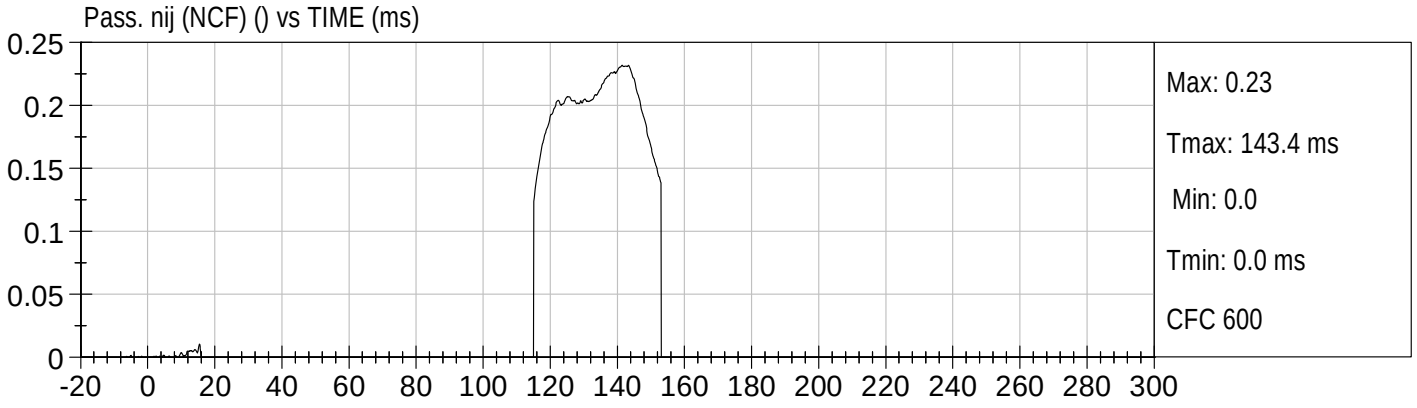


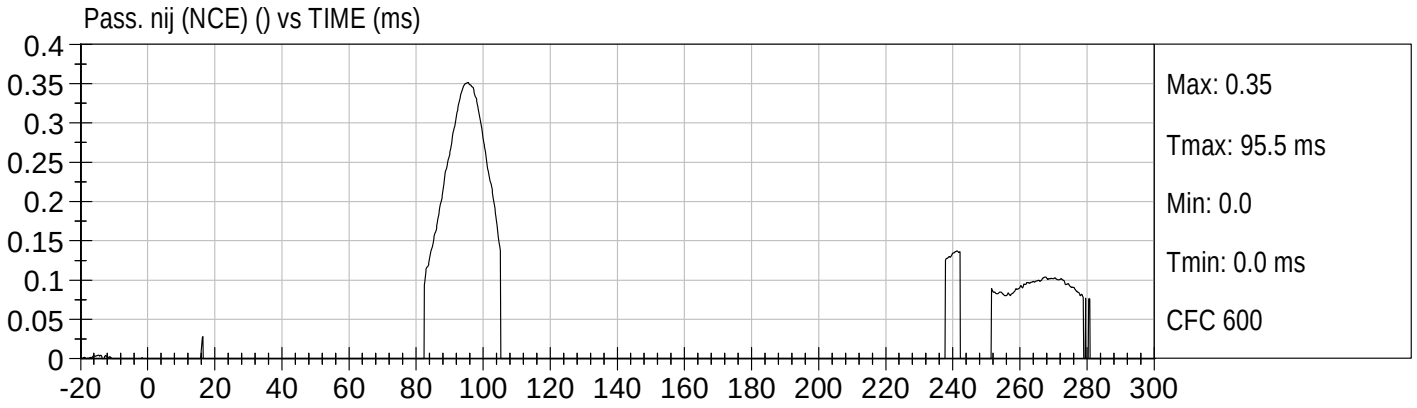
NCAP 35mph Frontal
2011 Toyota Prius - MB5114

Test Date: 02/16/2011
Speed: 35.2 mph (56.6 km/h)





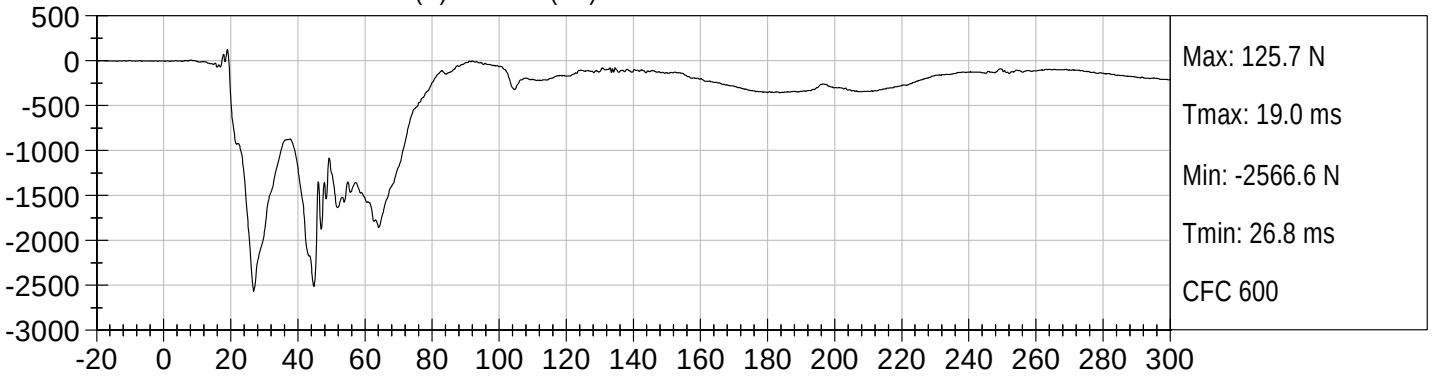




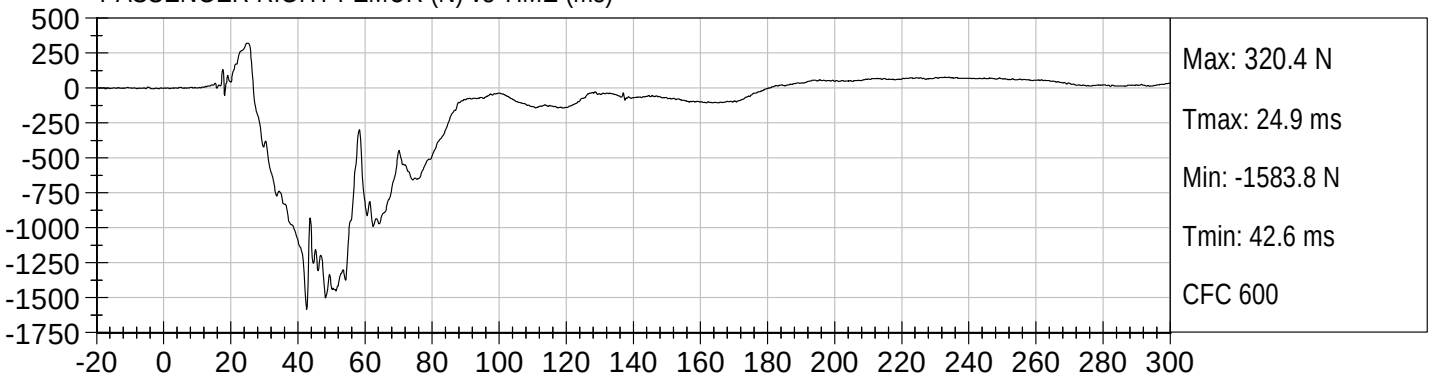
NCAP 35mph Frontal
2011 Toyota Prius - MB5114

Test Date: 02/16/2011
Speed: 35.2 mph (56.6 km/h)

PASSENGER LEFT FEMUR (N) vs TIME (ms)



PASSENGER RIGHT FEMUR (N) vs TIME (ms)



APPENDIX C

DUMMY CALIBRATION DATA

MGA RESEARCH CORPORATION

HEAD DROP TEST

HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 036 **Test ID:** D11441

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.6	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	14	Pass
Peak Resultant Acceleration	G's	225 - 275	245	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-2.8	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

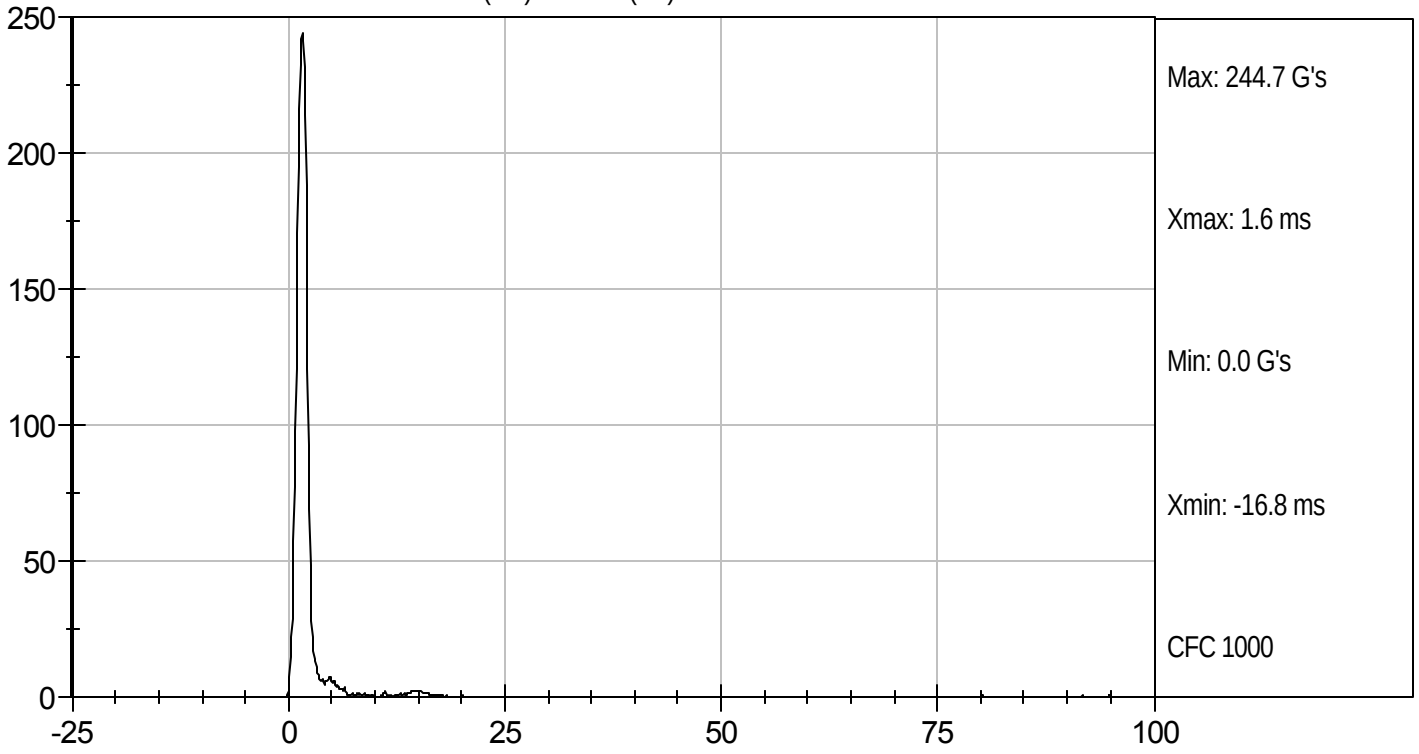
2/8/11
Test Date

David Winkelbauer
Approved By

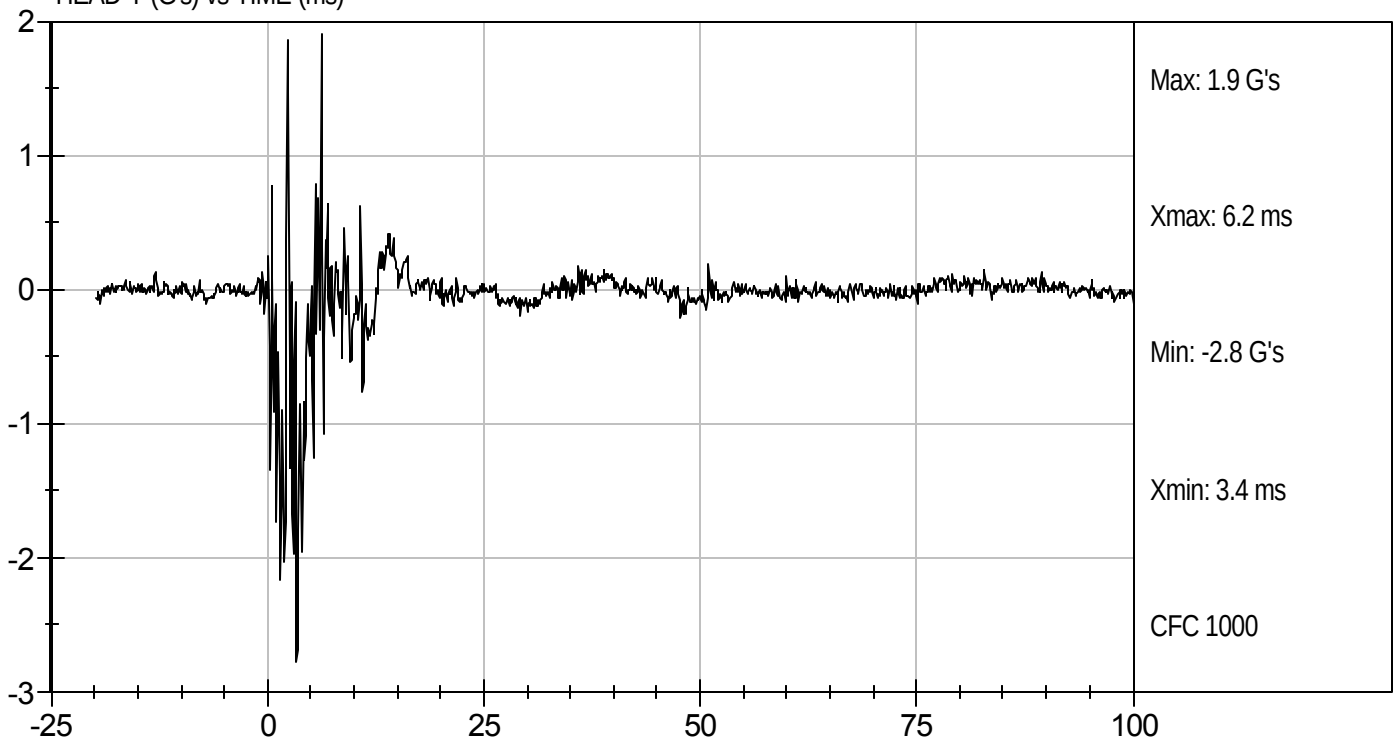
Test Desc: Head Drop
Component ID: D11441

Test Date: 2/8/11
Velocity: 0 ft/s, 0.00 m/s

RESULTANT HEAD ACCELERATION (G's) vs TIME (ms)



HEAD Y (G's) vs TIME (ms)



MGA RESEARCH CORPORATION

NECK FLEXION TEST

HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 036 **Test I.D:** D11442

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	14	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.04	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	22.59	Pass
	20 ms	G's	17.60 to 22.60	18.16	Pass
	30 ms	G's	12.50 to 18.50	16.54	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	16.5	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	39.3	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	72.8	Pass
	Time	ms	57.0 to 64.0	59.0	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	119.3	Pass
Moment About Occipital Condyle	Maximum	N m	88.1 to 108.5	98.7	Pass
	Time	ms	47.0 to 58.0	52.4	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	98.6	Pass
			Overall Test Results		Pass

Jessica Hall
Laboratory Technician

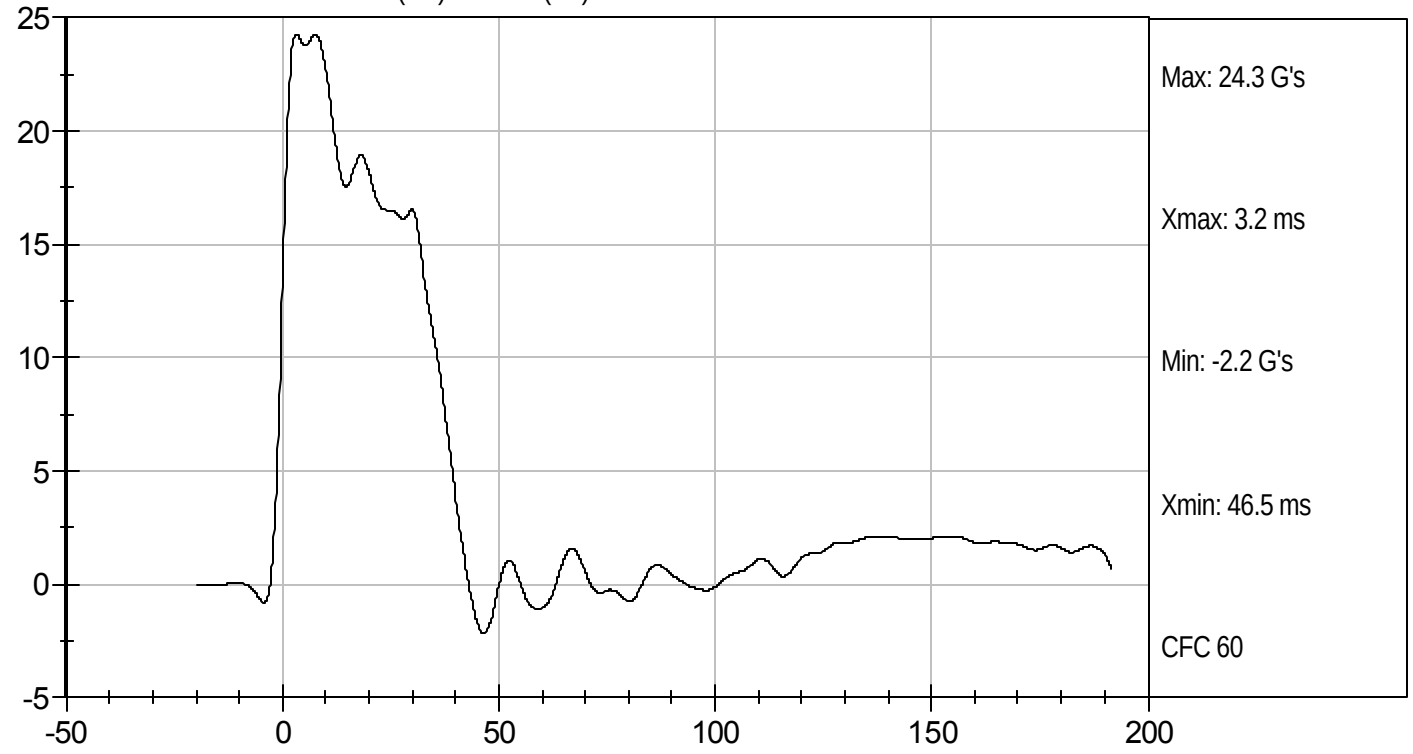
2/8/11
Test Date

David Winkelbauer
Approved By

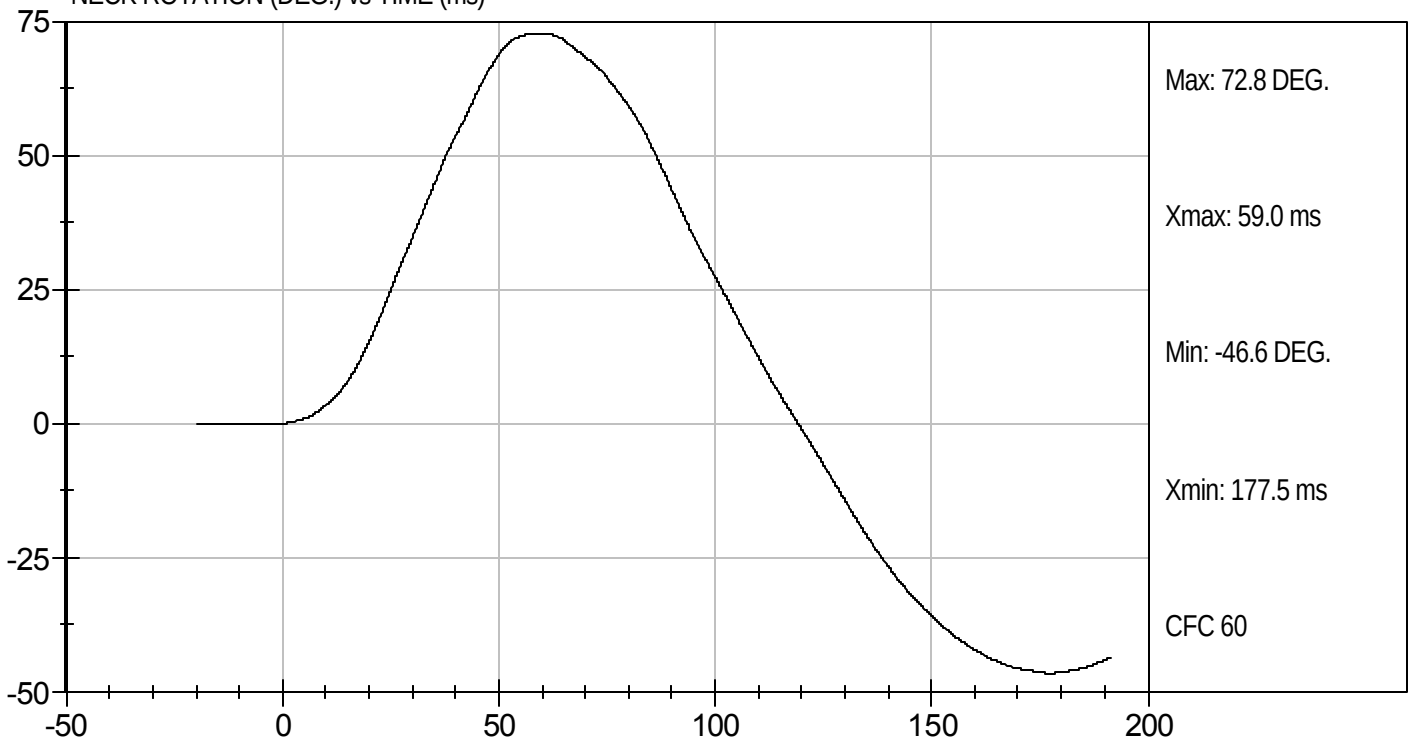
Test Desc: Neck Flexion
Component ID: D11442

Test Date: 2/8/11
Velocity: 23.15 ft/s, 7.06 m/s

PENDULUM DECELERATION (G's) vs TIME (ms)

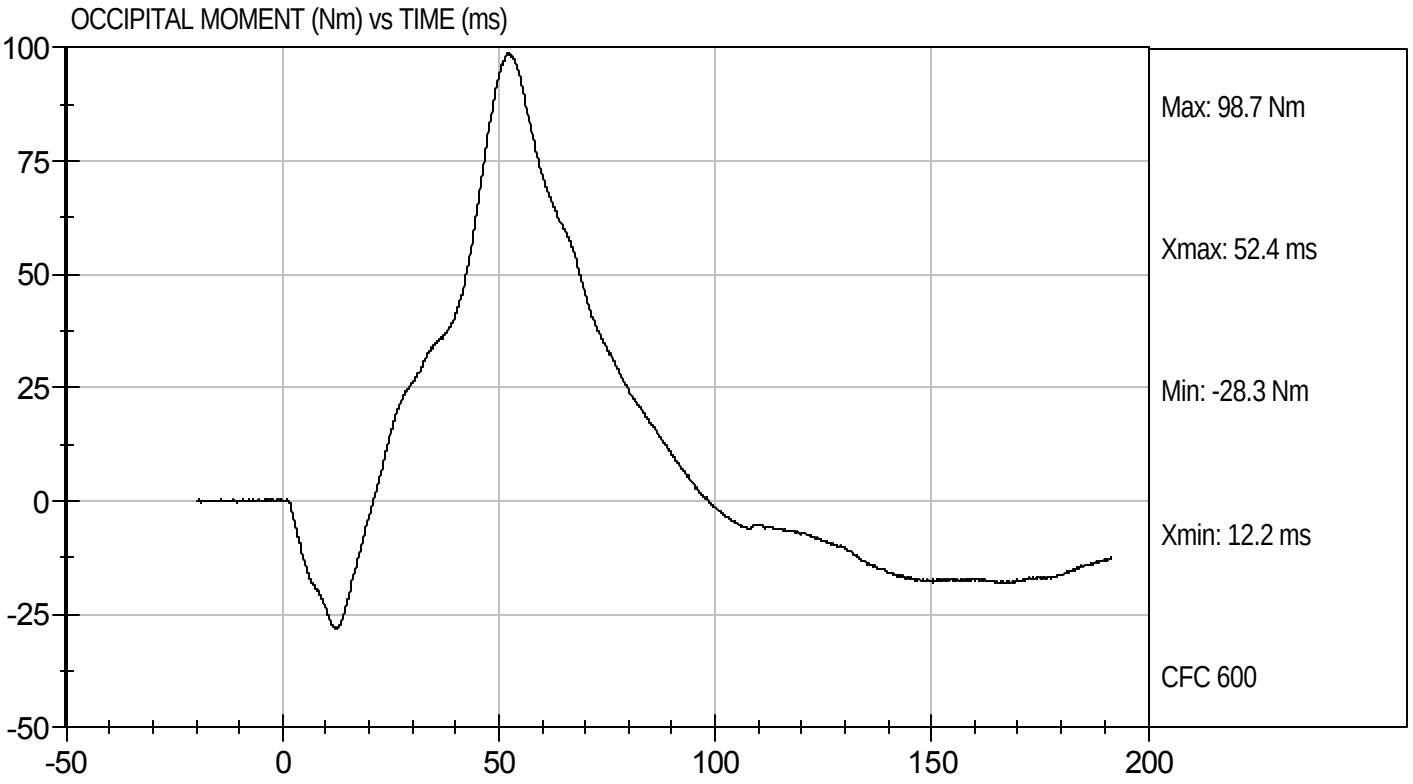


NECK ROTATION (DEG.) vs TIME (ms)



Test Desc: Neck Flexion
Component ID: D11442

Test Date: 2/8/11
Velocity: 23.15 ft/s, 7.06 m/s



MGA RESEARCH CORPORATION

NECK EXTENSION TEST

HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 036 **Test I.D:** D11443

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	14	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.10	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	17.96	Pass
	20 ms	G's	14.00 to 19.00	14.86	Pass
	30 ms	G's	11.00 to 16.00	13.68	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	38.9	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	96.3	Pass
	Time	ms	72.0 to 82.0	74.5	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	157.0	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-68.8	Pass
	Time	ms	65.0 to 79.0	70.3	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	141.0	Pass
			Overall Test Results		Pass

Jessica Hall
Laboratory Technician

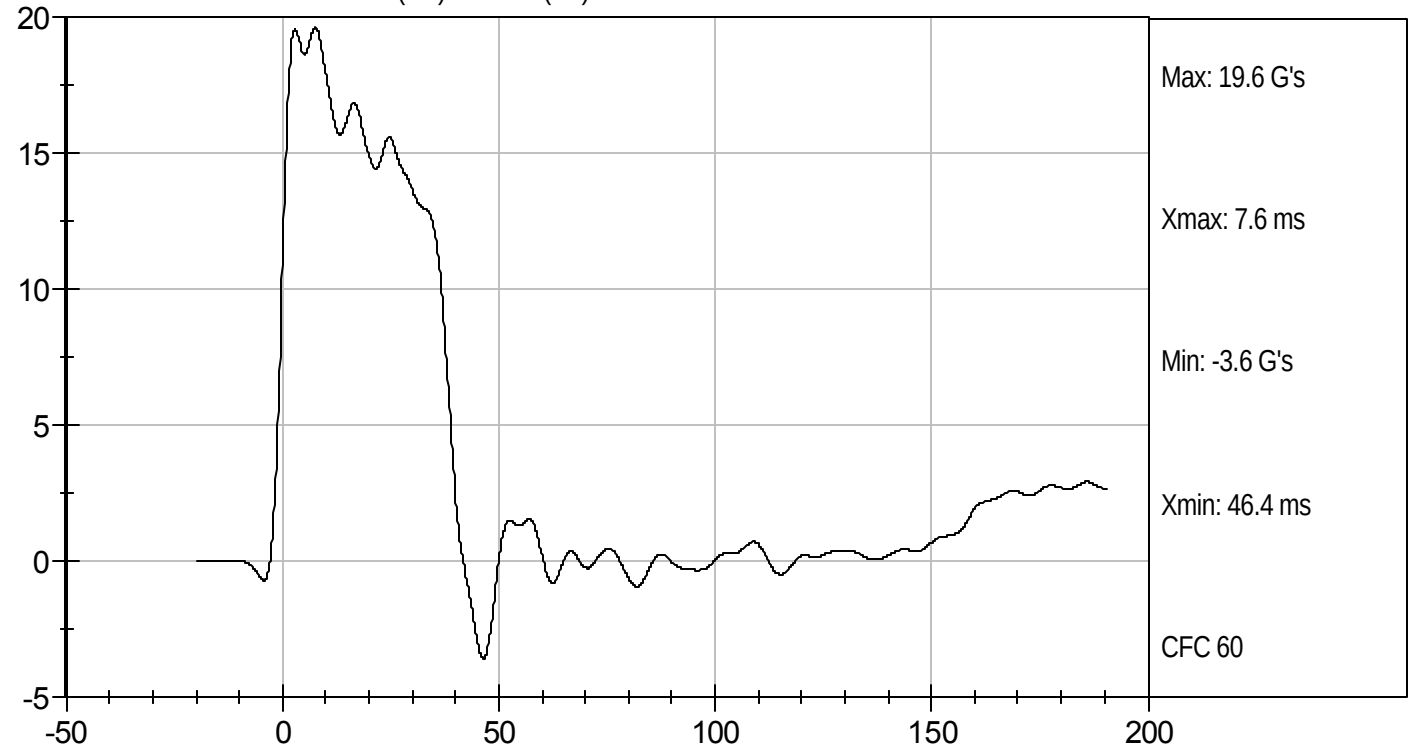
2/8/11
Test Date

David Winkelbauer
Approved By

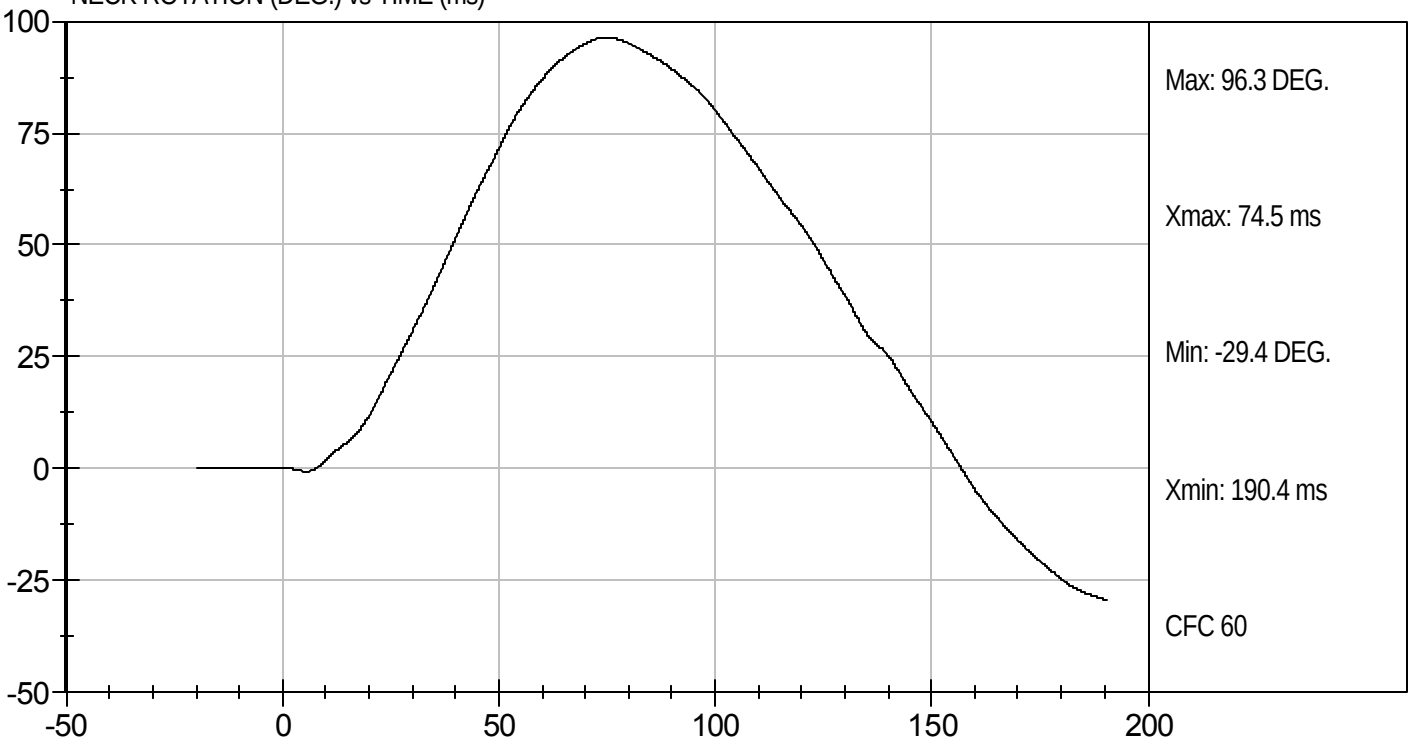
Test Desc: Neck Extension
Component ID: D11443

Test Date: 2/8/11
Velocity: 20.0 ft/s, 6.10 m/s

PENDULUM DECELERATION (G's) vs TIME (ms)

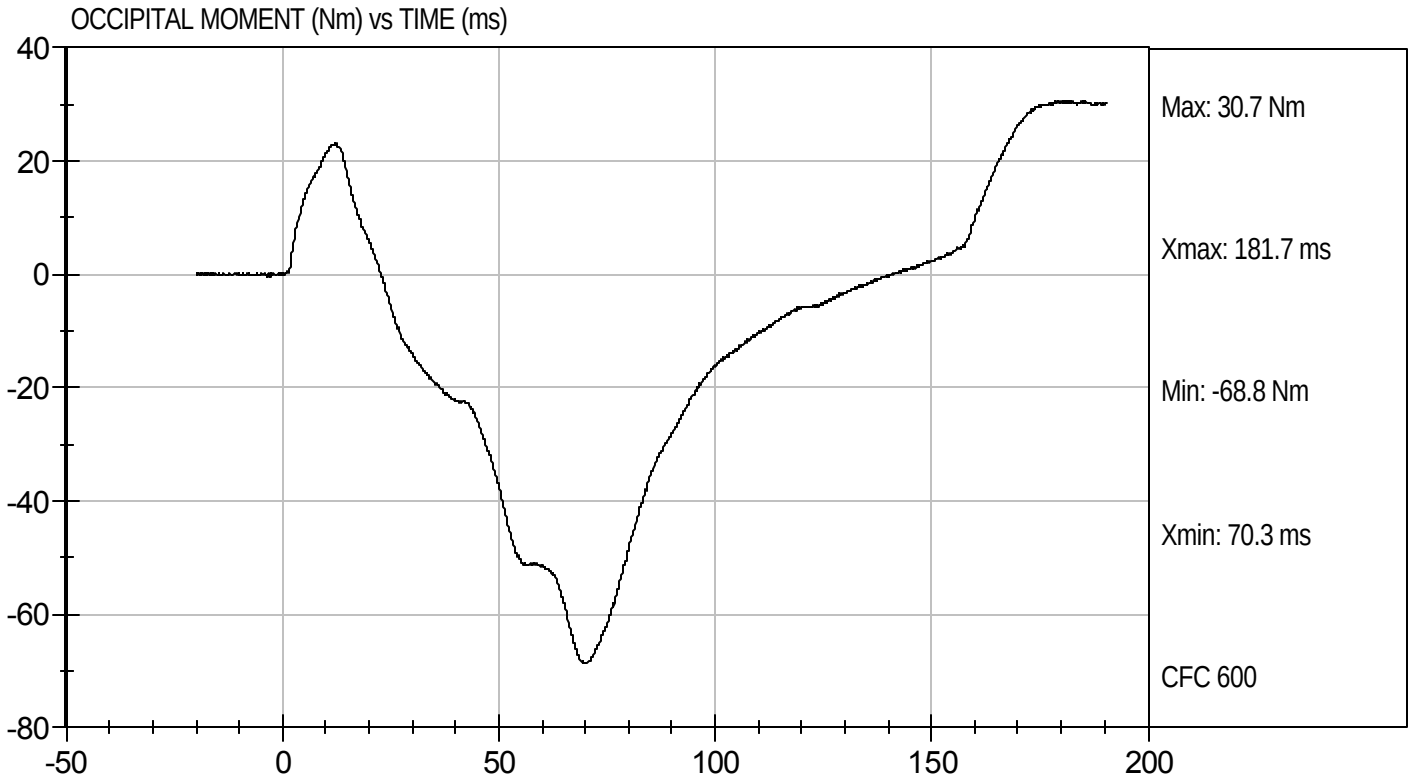


NECK ROTATION (DEG.) vs TIME (ms)



Test Desc: Neck Extension
Component ID: D11443

Test Date: 2/8/11
Velocity: 20.0 ft/s, 6.10 m/s



MGA RESEARCH CORPORATION

THORAX IMPACT

HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 036 **Test I.D:** D11444

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	11	Pass
Probe Velocity	m/s	6.58 to 6.82	6.77	Pass
Peak Probe Force	N	5159 to 5893	5,530	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.73	Pass
Internal Hysteresis	%	69 to 85	70	Pass
		Overall Test Results		Pass

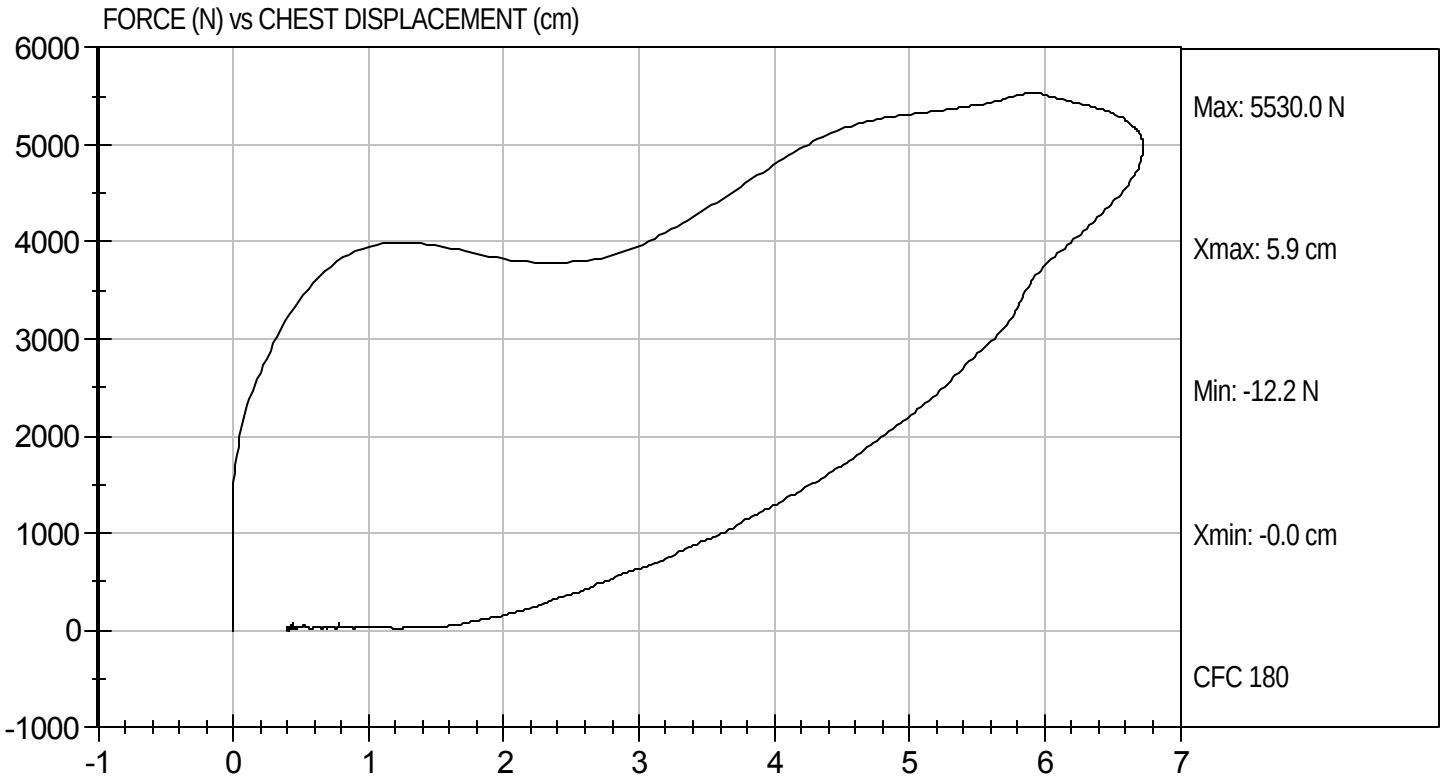
Jessica Gall
Laboratory Technician

2/9/11
Test Date

David Winkelbauer
Approved By

Test Desc: Thorax Impact
Component ID: D11444

Test Date: 2/9/11
Velocity: 22.22 ft/s, 6.77 m/s



MGA RESEARCH CORPORATION

RIGHT KNEE IMPACT TEST

HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 036 **Test I.D:** D11445

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	14	Pass
Probe Velocity	m/s	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	4715 to 5782	4,866	Pass
		Overall Test Results		Pass

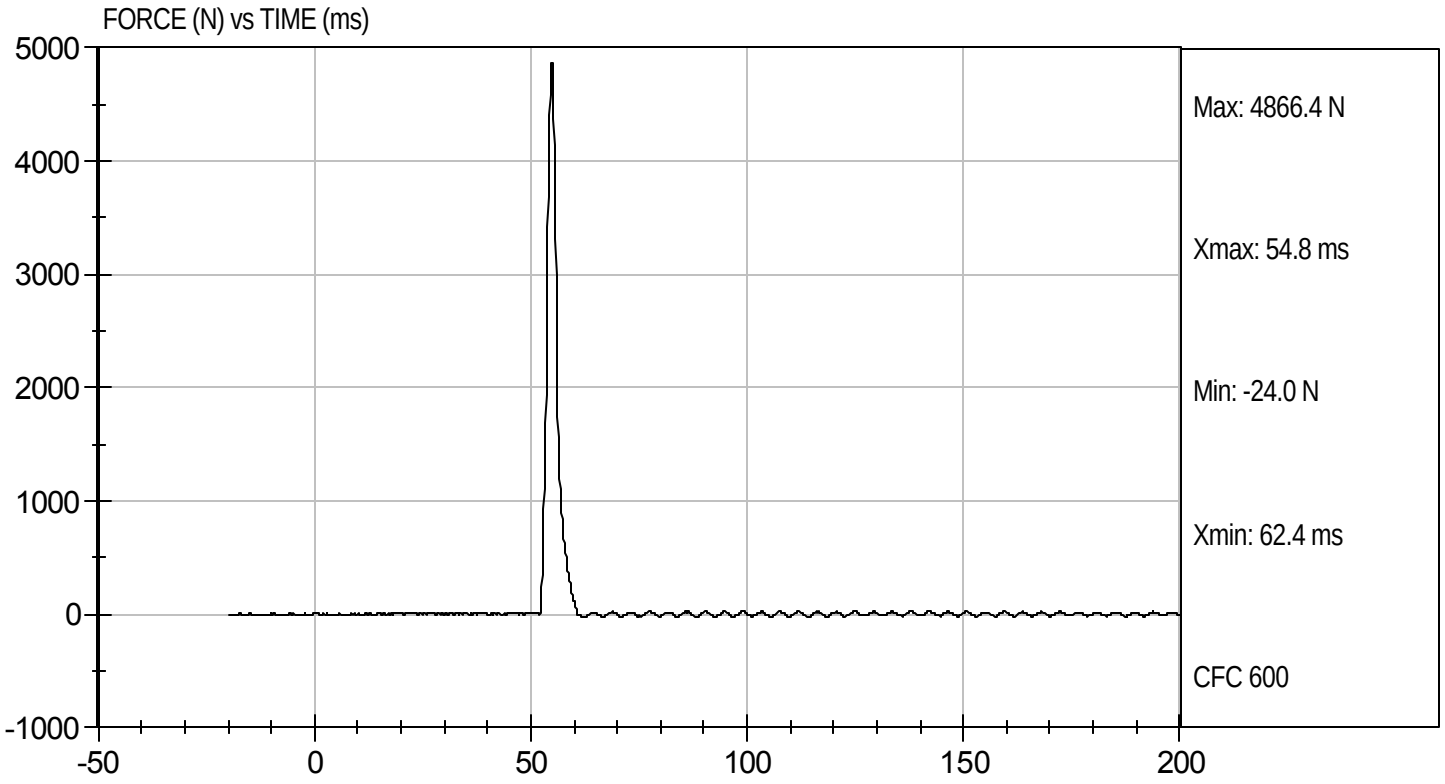
Jessica Gall
Laboratory Technician

2/8/11
Test Date

David Winkelbauer
Approved By

Test Desc: Right Knee
Component ID: D11445

Test Date: 2/8/11
Velocity: 6.9 ft/s, 2.10 m/s



MGA RESEARCH CORPORATION

LEFT KNEE IMPACT TEST

HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 036 **Test I.D:** D11446

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	14	Pass
Probe Velocity	m/s	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	4715 to 5782	5,383	Pass
		Overall Test Results		Pass

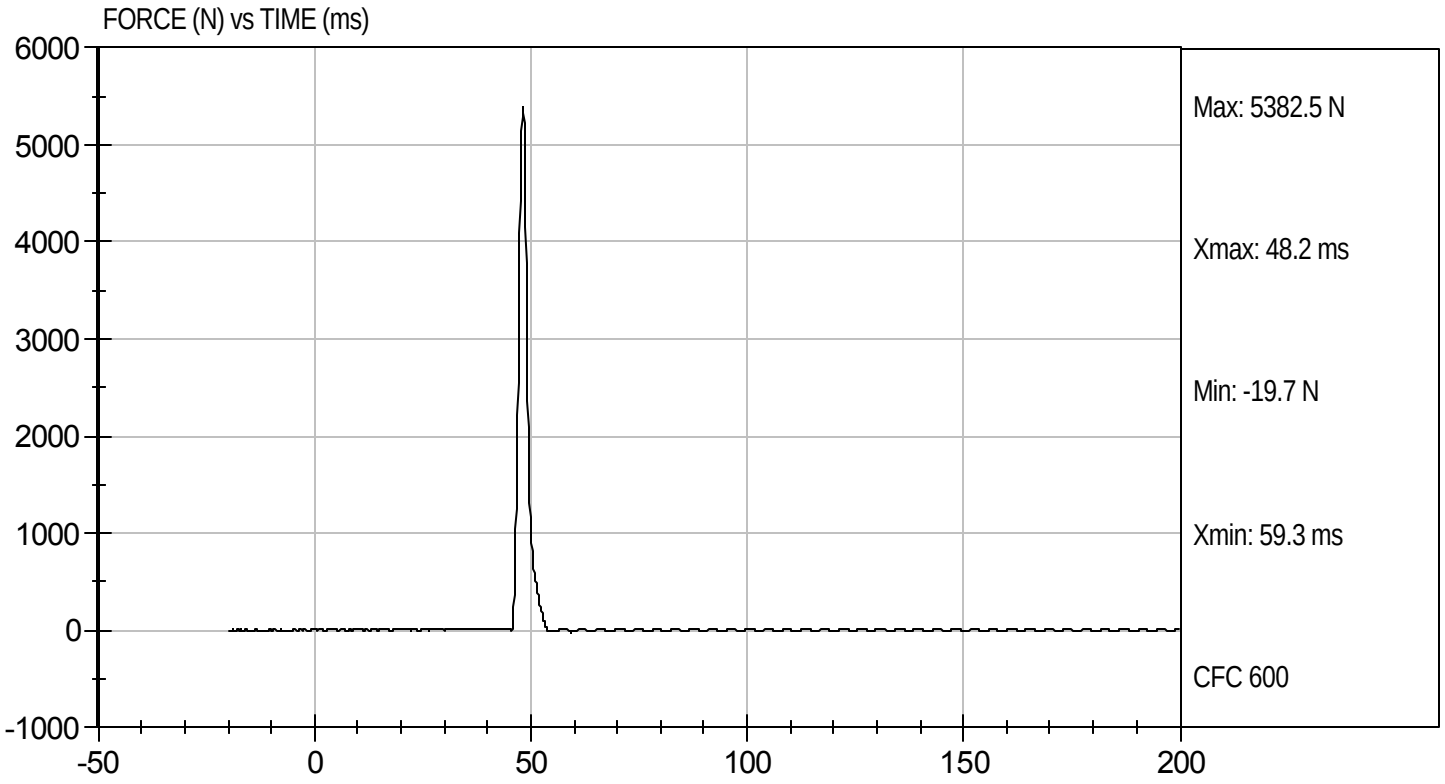
Jessica Gall
Laboratory Technician

2/8/11
Test Date

David Winkelbauer
Approved By

Test Desc: Left Knee
Component ID: D11446

Test Date: 2/8/11
Velocity: 6.9 ft/s, 2.10 m/s



MGA RESEARCH CORPORATION

HIP-FEMUR FLEXION TEST

HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 036 **Test I.D:** D11440

Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.5	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	16	16	Pass
Rotation Rate	deg/s	5 -10	8	8	Pass
30 Degrees	Nm	94.9 Nm Max	65.7	56.1	Pass
150 ft-lbf / 203.4 Nm	Deg	40- 50 Degree Max Rotation	47	48	Pass
		Overall Test Results			Pass

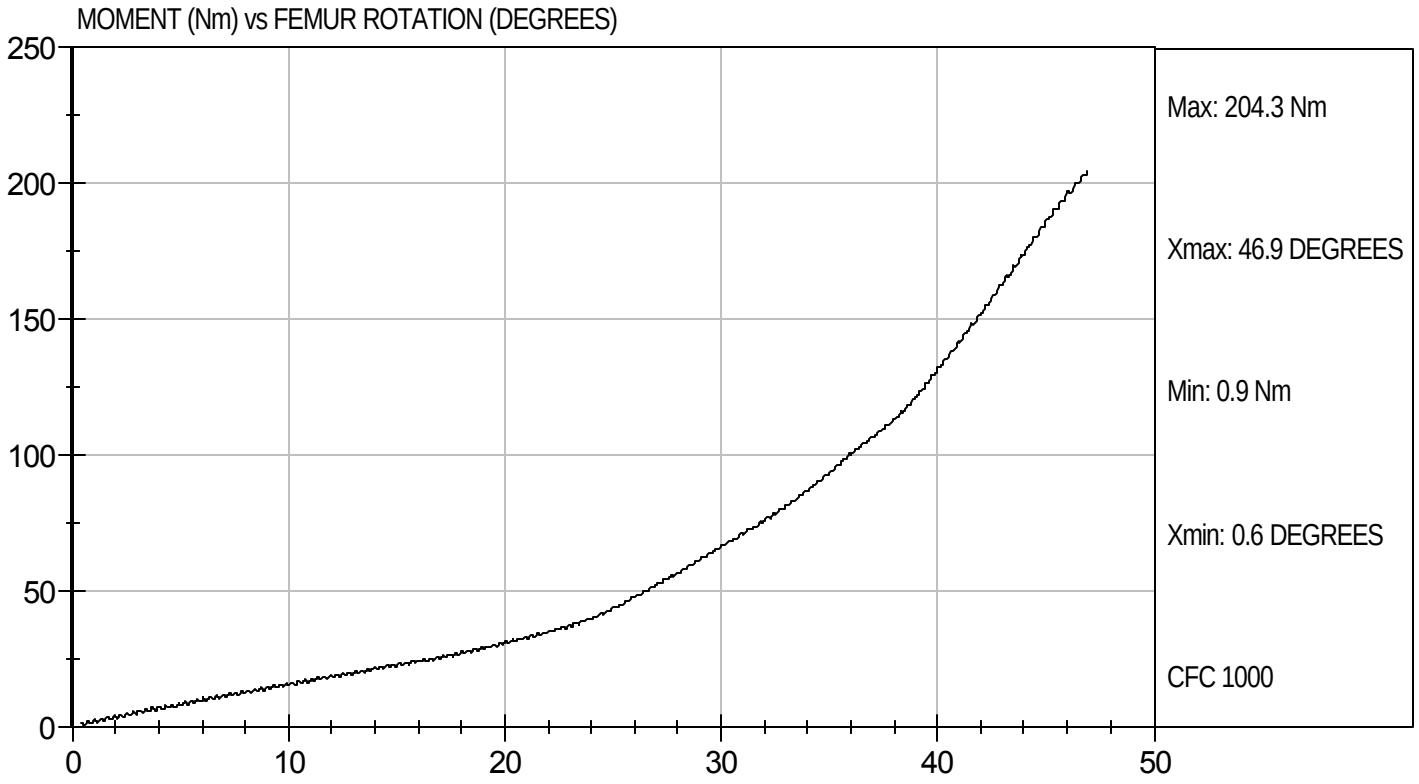
Jessica Hall
Laboratory Technician

2/8/11
Test Date

David Winkelbauer
Approved By

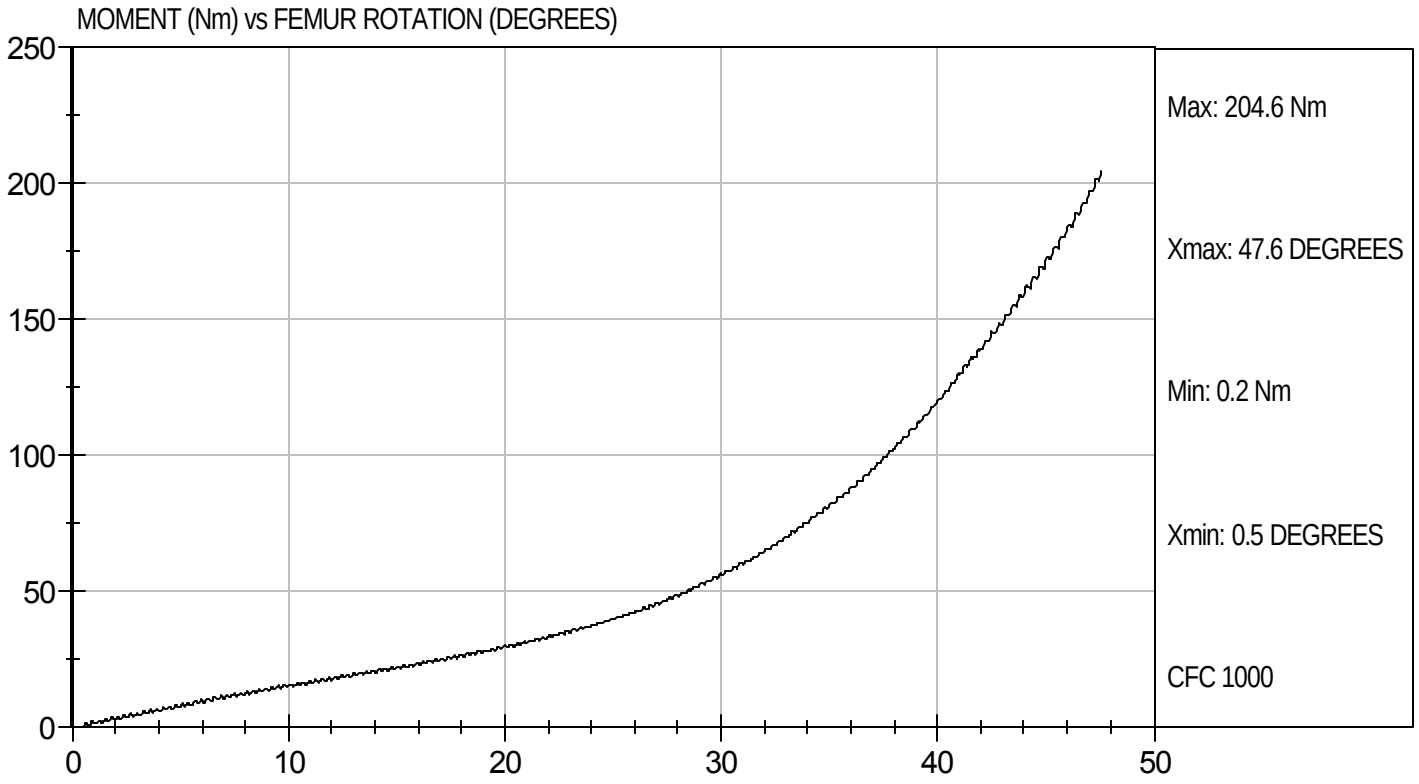
Test Desc: Hip Femur Flexion
Component ID: D11449

Test Date: 2/8/11
Velocity: 0 ft/s, 0.00 m/s



Test Desc: Hip Femur Flexion
Component ID: D11440

Test Date: 2/8/11
Velocity: 0 ft/s, 0.00 m/s



MGA RESEARCH CORPORATION

HEAD DROP TEST

HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 036 **Test ID:** D11571

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.6	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	32	Pass
Peak Resultant Acceleration	G's	225 - 275	230	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	2.1	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

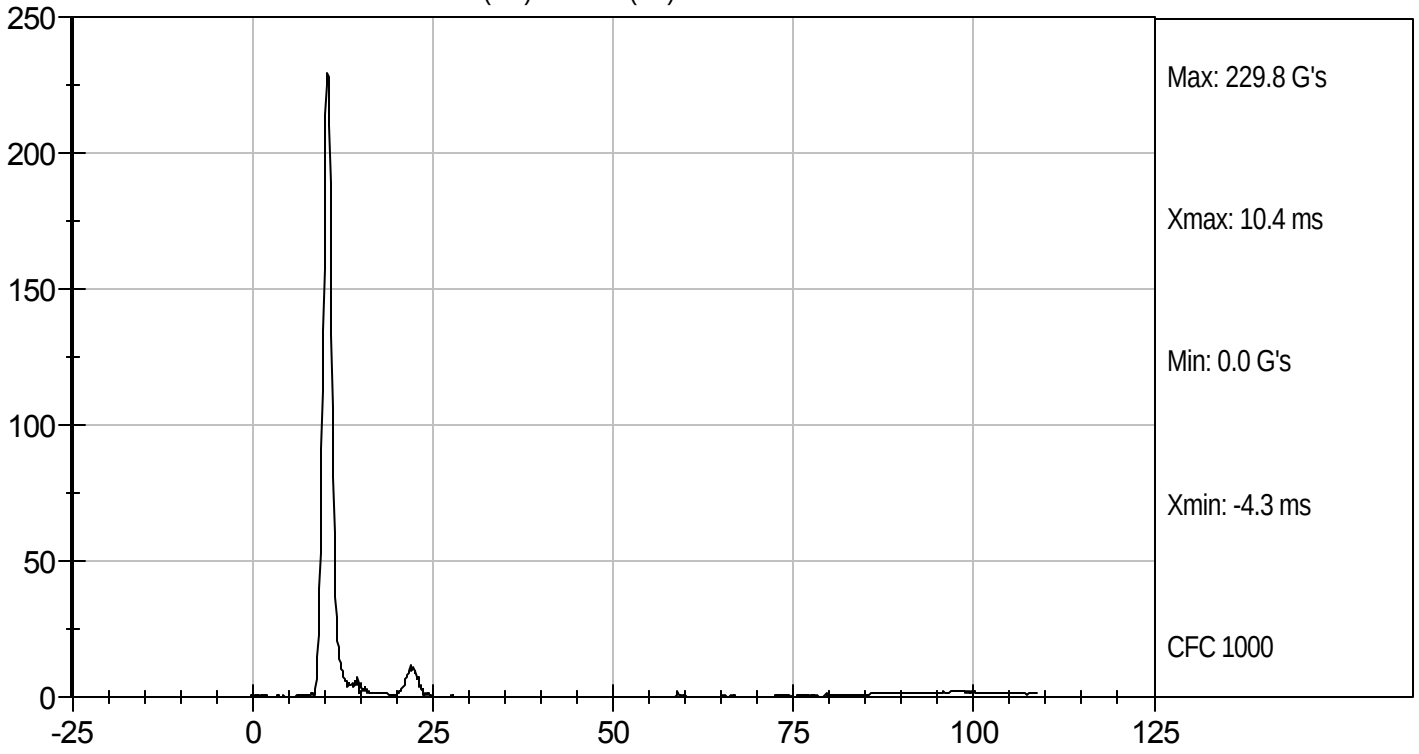
2/16/11
Test Date

David Winkelbauer
Approved By

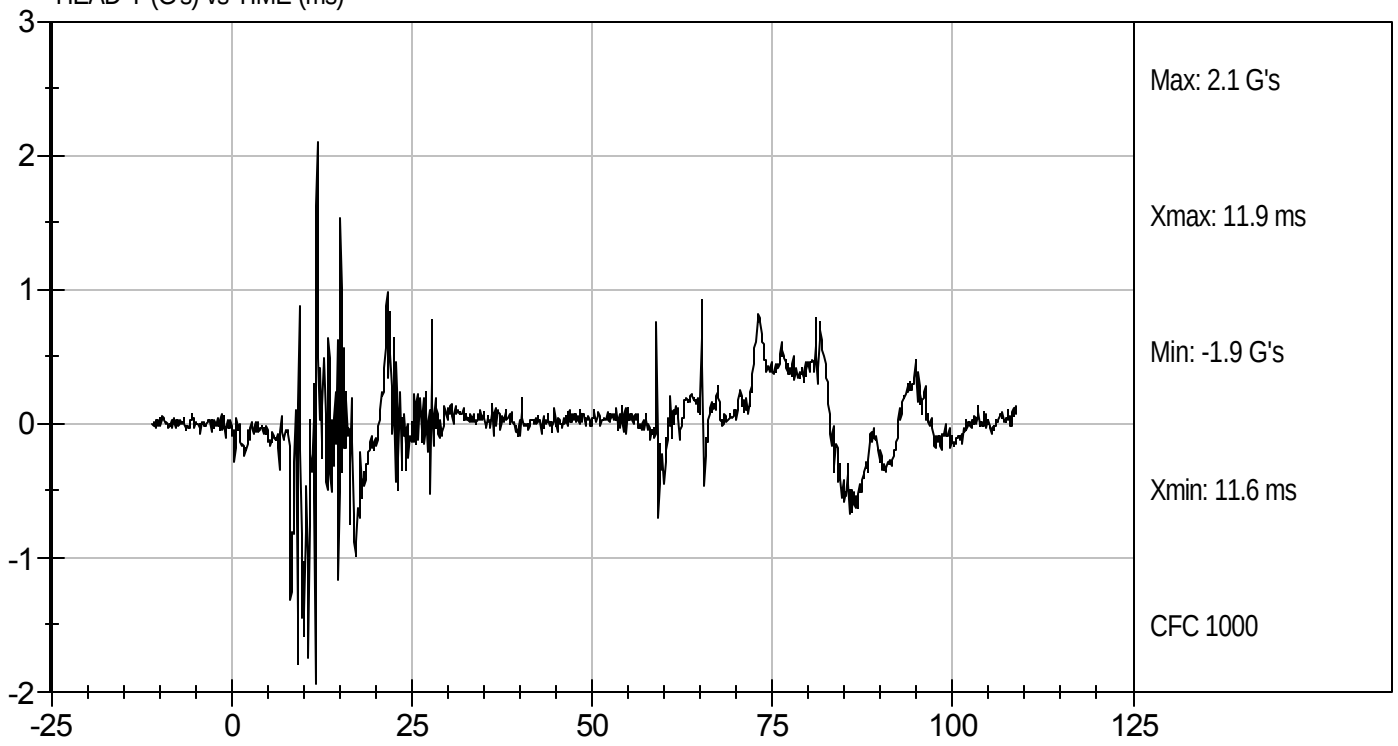
Test Desc: Head Drop
Component ID: D11571

Test Date: 2/16/11
Velocity: 0 ft/s, 0.00 m/s

RESULTANT HEAD ACCELERATION (G's) vs TIME (ms)



HEAD Y (G's) vs TIME (ms)



MGA RESEARCH CORPORATION

NECK FLEXION TEST

HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 036 **Test I.D:** D11572

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	20.7	Pass
Laboratory Relative Humidity		%	10 to 70	34	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.96	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	23.14	Pass
	20 ms	G's	17.60 to 22.60	18.43	Pass
	30 ms	G's	12.50 to 18.50	12.57	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	14.0	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	37.6	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	71.3	Pass
	Time	ms	57.0 to 64.0	58.4	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	118.9	Pass
Moment About Occipital Condyle	Maximum	N m	88.1 to 108.5	98.1	Pass
	Time	ms	47.0 to 58.0	51.3	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	98.3	Pass
			Overall Test Results		Pass

Jessica Hall
Laboratory Technician

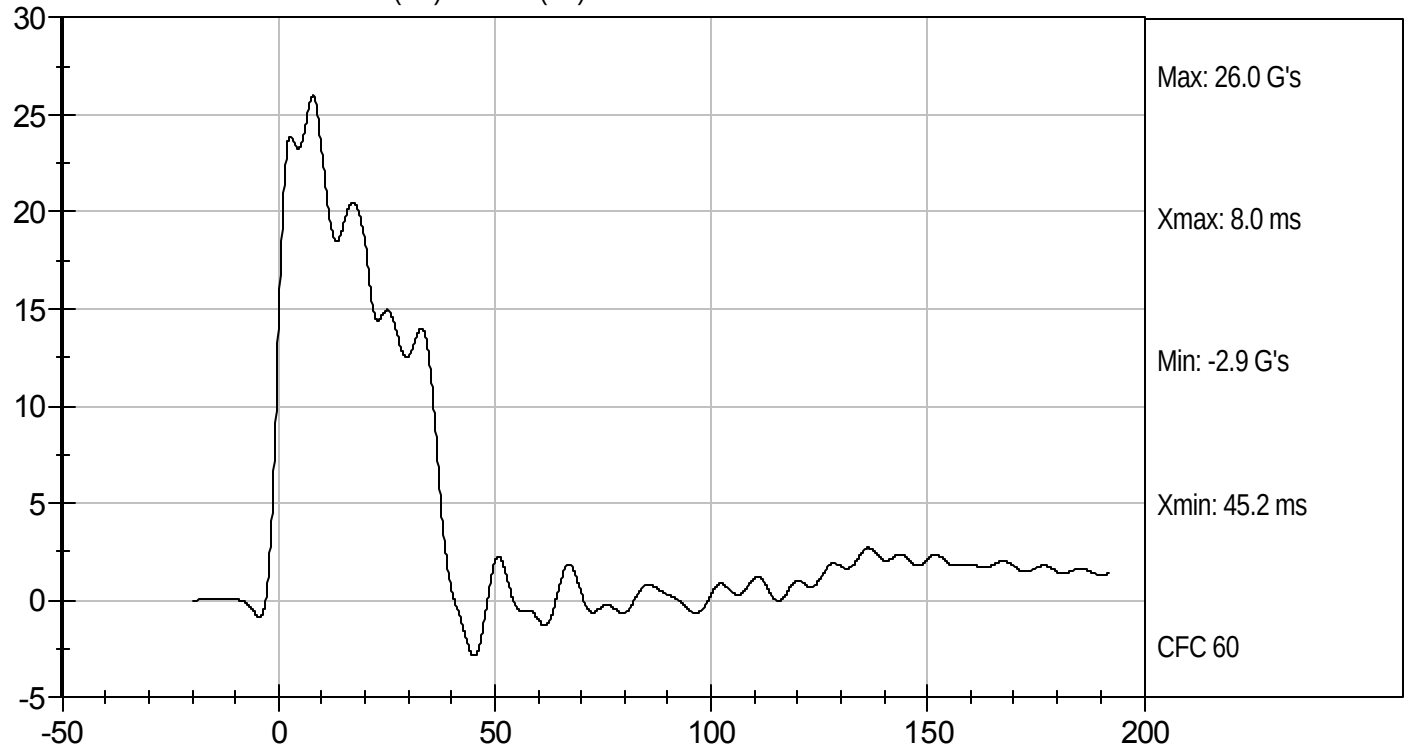
2/16/11
Test Date

David Winkelbauer
Approved By

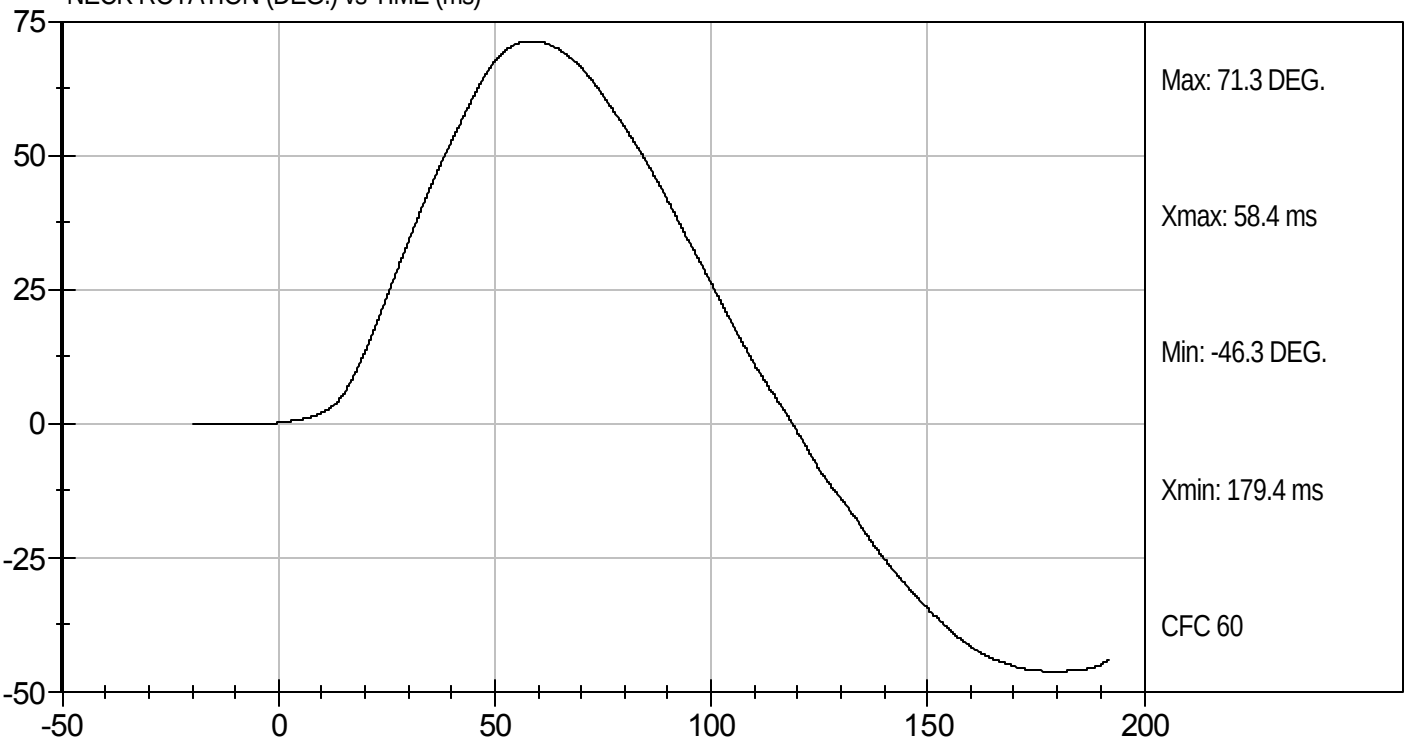
Test Desc: Neck Flexion
Component ID: D11572

Test Date: 2/16/11
Velocity: 22.83 ft/s, 6.96 m/s

PENDULUM DECELERATION (G's) vs TIME (ms)

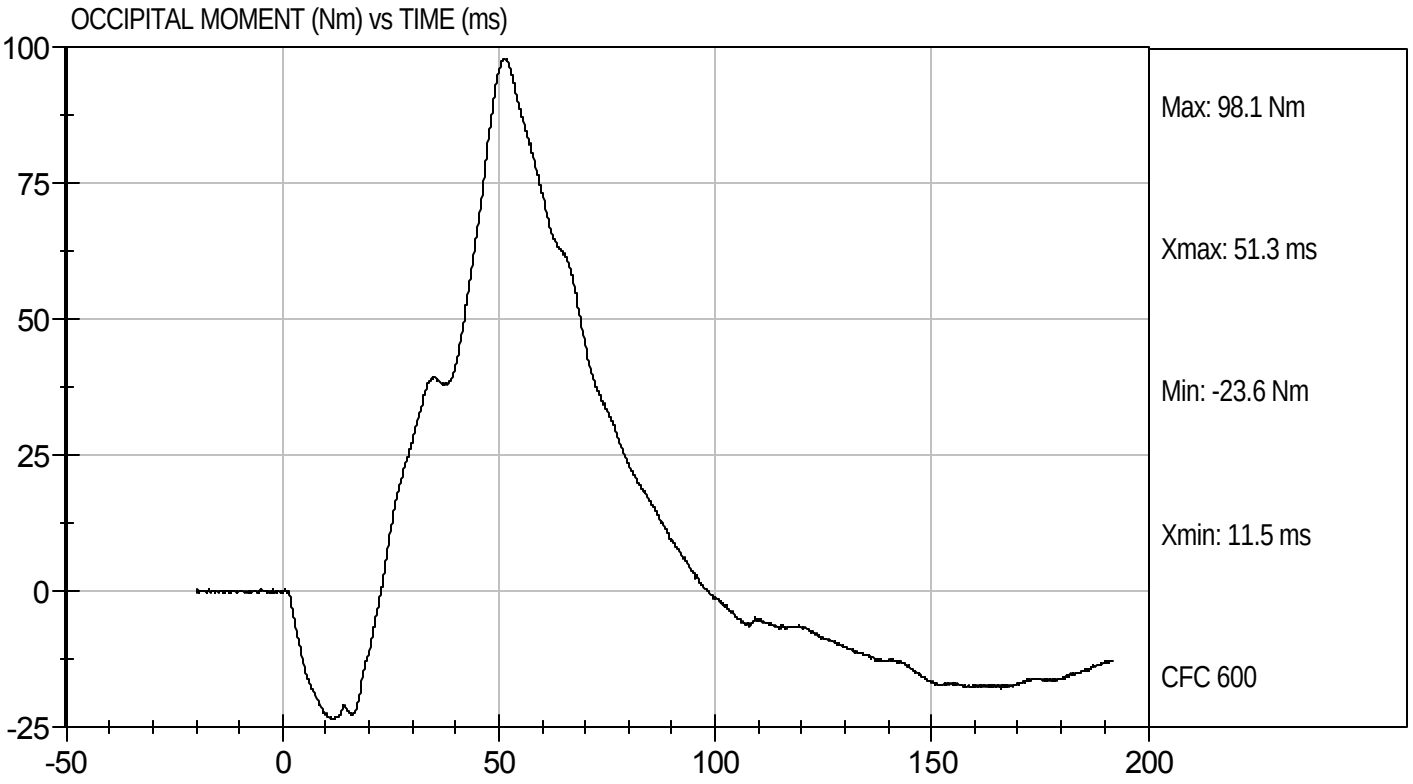


NECK ROTATION (DEG.) vs TIME (ms)



Test Desc: Neck Flexion
Component ID: D11572

Test Date: 2/16/11
Velocity: 22.83 ft/s, 6.96 m/s



MGA RESEARCH CORPORATION

NECK EXTENSION TEST

HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 036 **Test I.D:** D11573

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	35	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.13	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	18.16	Pass
	20 ms	G's	14.00 to 19.00	17.44	Pass
	30 ms	G's	11.00 to 16.00	14.45	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 22.0	14.3	Pass
Deceleration Decay Time to Cross 5 G's		ms	38.0 to 46.0	38.3	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	97.8	Pass
	Time	ms	72.0 to 82.0	75.1	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	155.9	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-71.4	Pass
	Time	ms	65.0 to 79.0	68.8	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	142.2	Pass
			Overall Test Results		Pass

Jessica Hall
Laboratory Technician

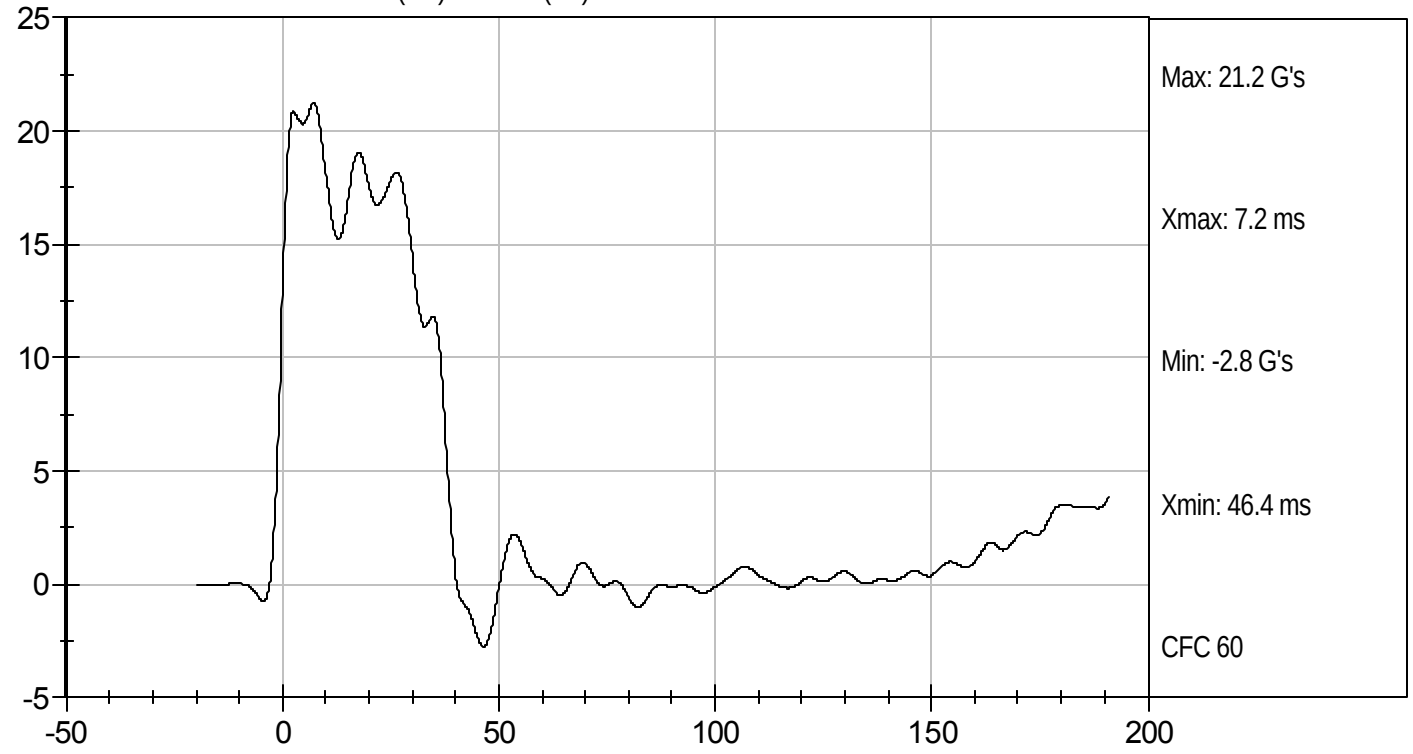
2/16/11
Test Date

David Winkelbauer
Approved By

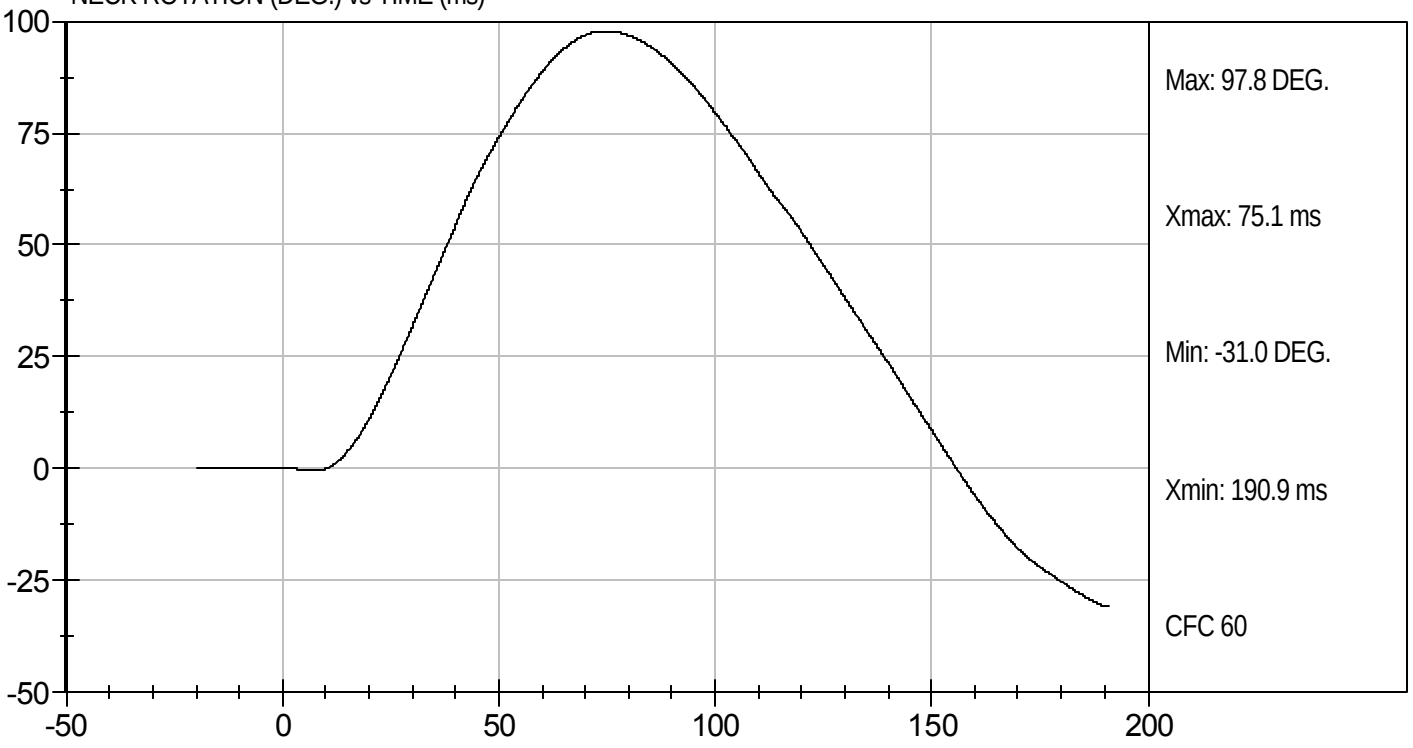
Test Desc: Neck Extension
Component ID: D11573

Test Date: 2/16/11
Velocity: 20.10 ft/s, 6.13 m/s

PENDULUM DECELERATION (G's) vs TIME (ms)

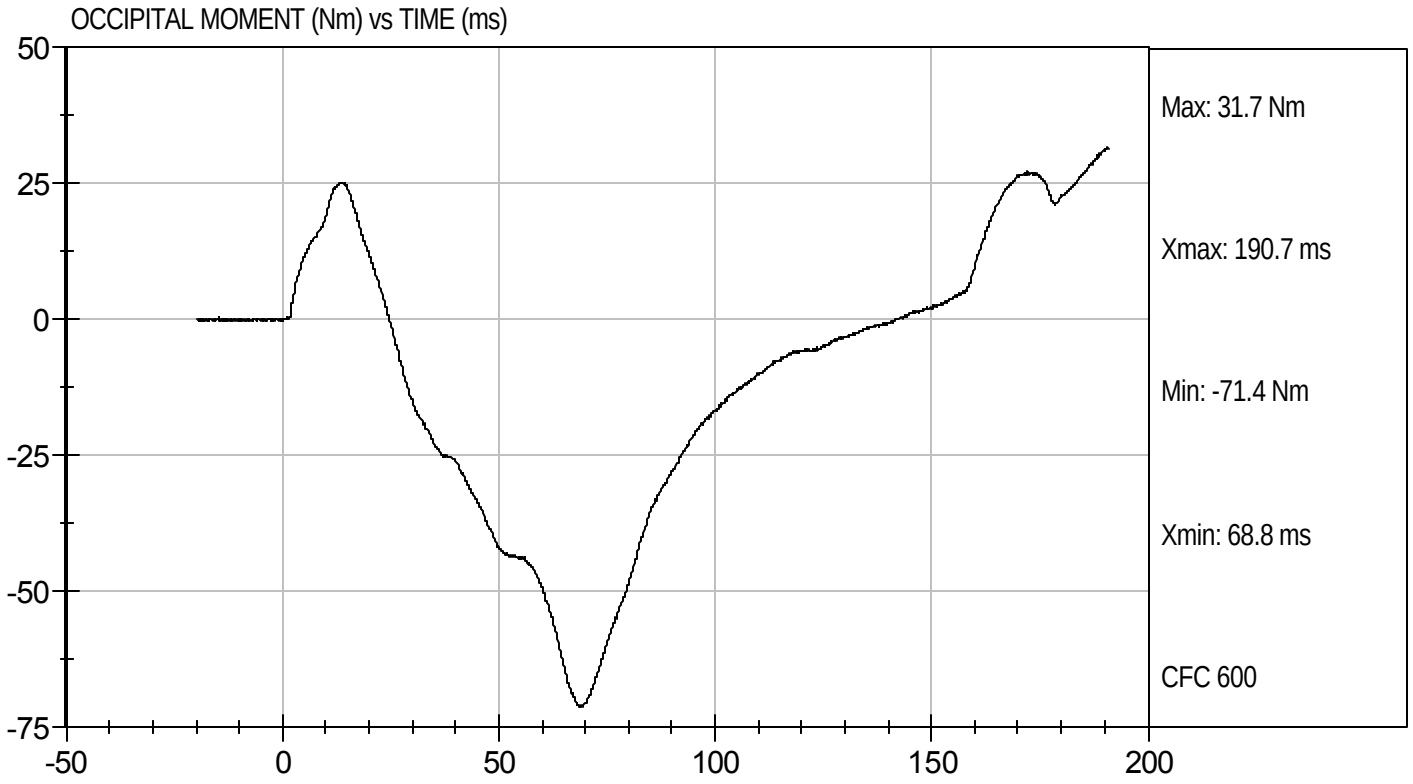


NECK ROTATION (DEG.) vs TIME (ms)



Test Desc: Neck Extension
Component ID: D11573

Test Date: 2/16/11
Velocity: 20.10 ft/s, 6.13 m/s



MGA RESEARCH CORPORATION

THORAX IMPACT

HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 036 **Test I.D:** D11574

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	32	Pass
Probe Velocity	m/s	6.58 to 6.82	6.77	Pass
Peak Probe Force	N	5159 to 5893	5,509	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.46	Pass
Internal Hysteresis	%	69 to 85	73	Pass
		Overall Test Results		Pass

Jessica Gall
Laboratory Technician

2/16/11
Test Date

David Winkelbauer
Approved By

Test Desc: Thorax Impact
Component ID: D11574

Test Date: 2/16/11
Velocity: 22.22 ft/s, 6.77 m/s

MGA RESEARCH CORPORATION

RIGHT KNEE IMPACT TEST

HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 036 **Test I.D:** D11575

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	20.6	Pass
Laboratory Relative Humidity	%	10 to 70	36	Pass
Probe Velocity	m/s	2.07 to 2.13	2.12	Pass
Peak Probe Force	Newtons	4715 to 5782	5,180	Pass
		Overall Test Results		Pass

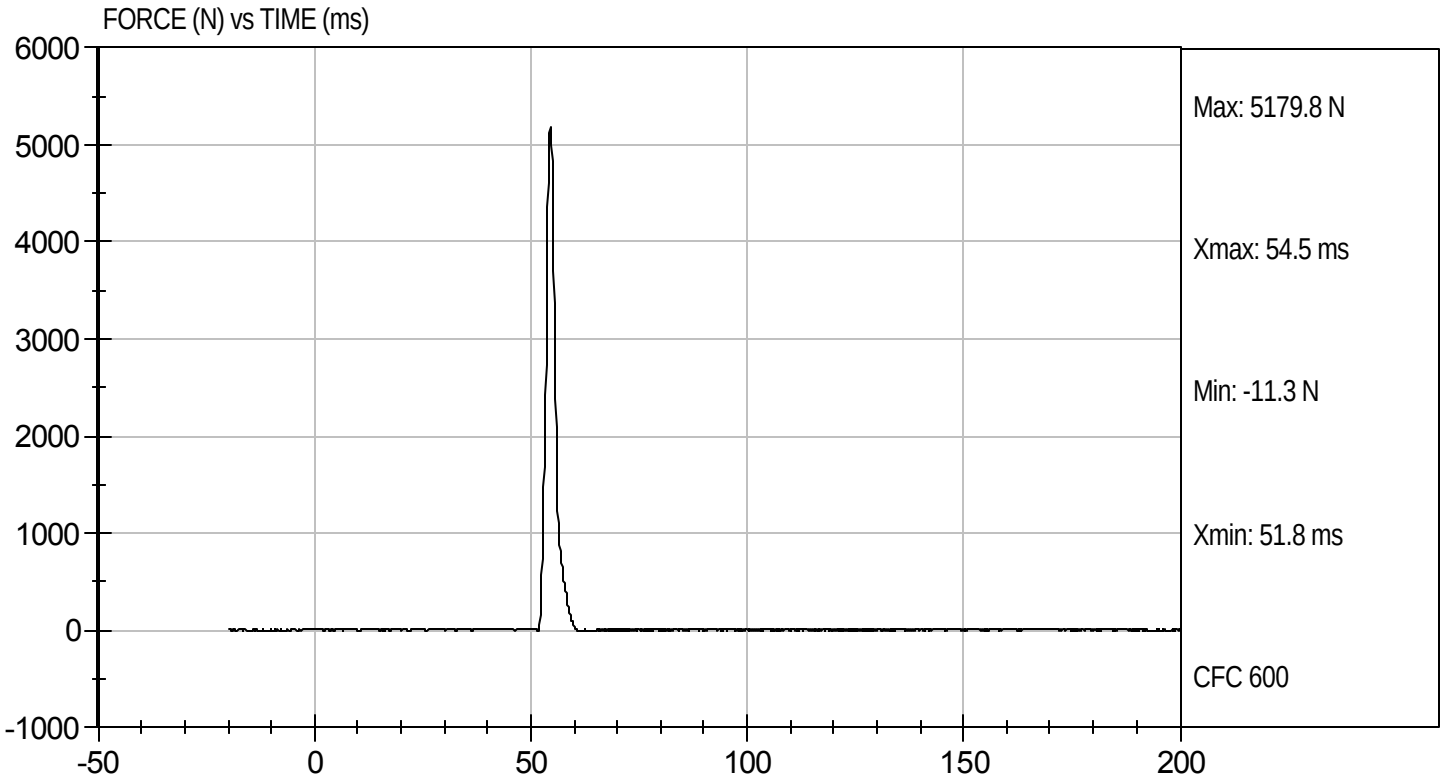
Jessica Gall
Laboratory Technician

2/16/11
Test Date

David Winkelbauer
Approved By

Test Desc: Right Knee
Component ID: D11575

Test Date: 2/16/11
Velocity: 6.94 ft/s, 2.12 m/s



MGA RESEARCH CORPORATION

LEFT KNEE IMPACT TEST

HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 036 **Test I.D:** D11576

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	20.6	Pass
Laboratory Relative Humidity	%	10 to 70	36	Pass
Probe Velocity	m/s	2.07 to 2.13	2.12	Pass
Peak Probe Force	Newtons	4715 to 5782	5,610	Pass
		Overall Test Results		Pass

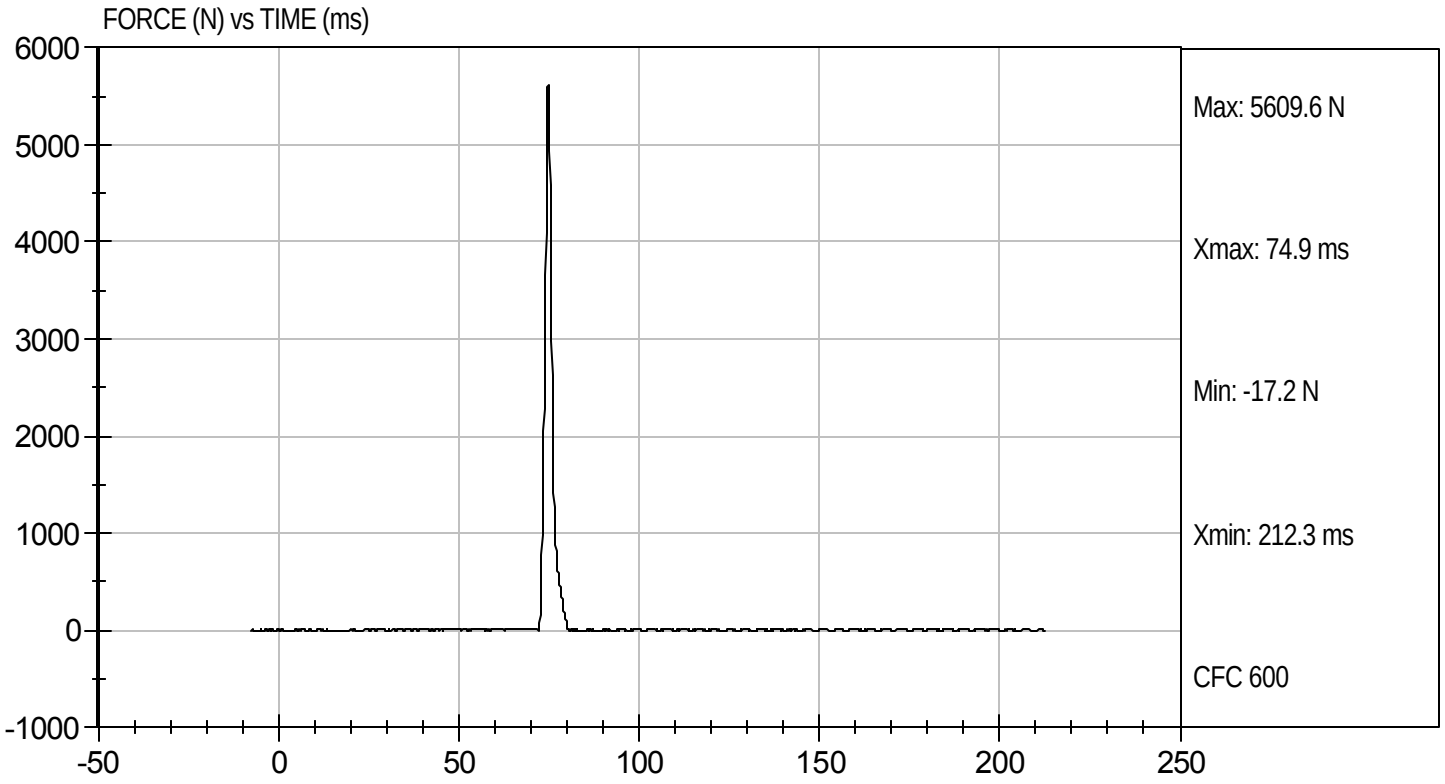
Jessica Gall
Laboratory Technician

2/16/11
Test Date

David Winkelbauer
Approved By

Test Desc: Left Knee
Component ID: D11576

Test Date: 2/16/11
Velocity: 6.97 ft/s, 2.12 m/s



MGA RESEARCH CORPORATION

HIP-FEMUR FLEXION TEST

HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 036 **Test I.D:** D11570

Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.6	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	32	32	Pass
Rotation Rate	deg/s	5 -10	8	8	Pass
30 Degrees	Nm	94.9 Nm Max	62.2	50.5	Pass
150 ft-lbf / 203.4 Nm	Deg	40- 50 Degree Max Rotation	48	49	Pass
		Overall Test Results			Pass

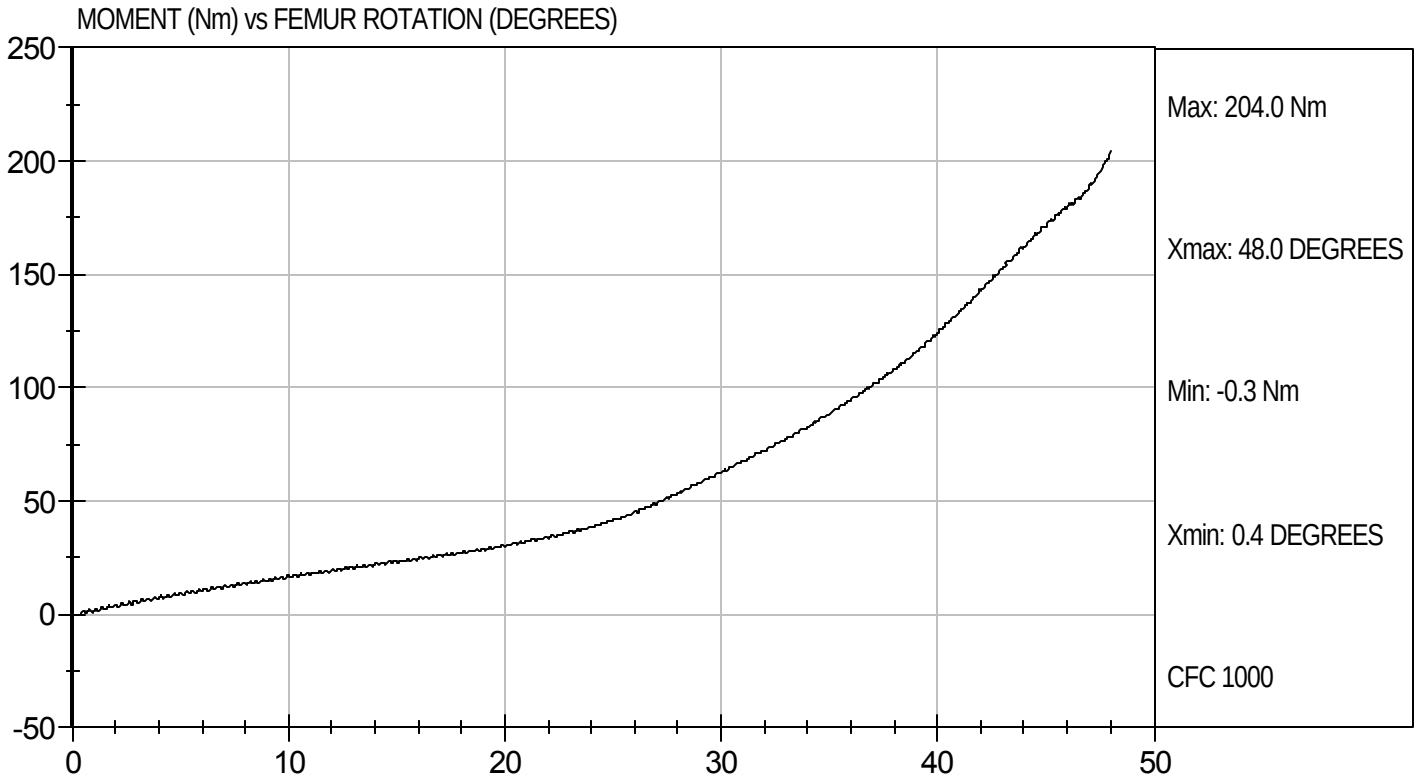
Jessica Hall
Laboratory Technician

2/16/11
Test Date

David Winkelbauer
Approved By

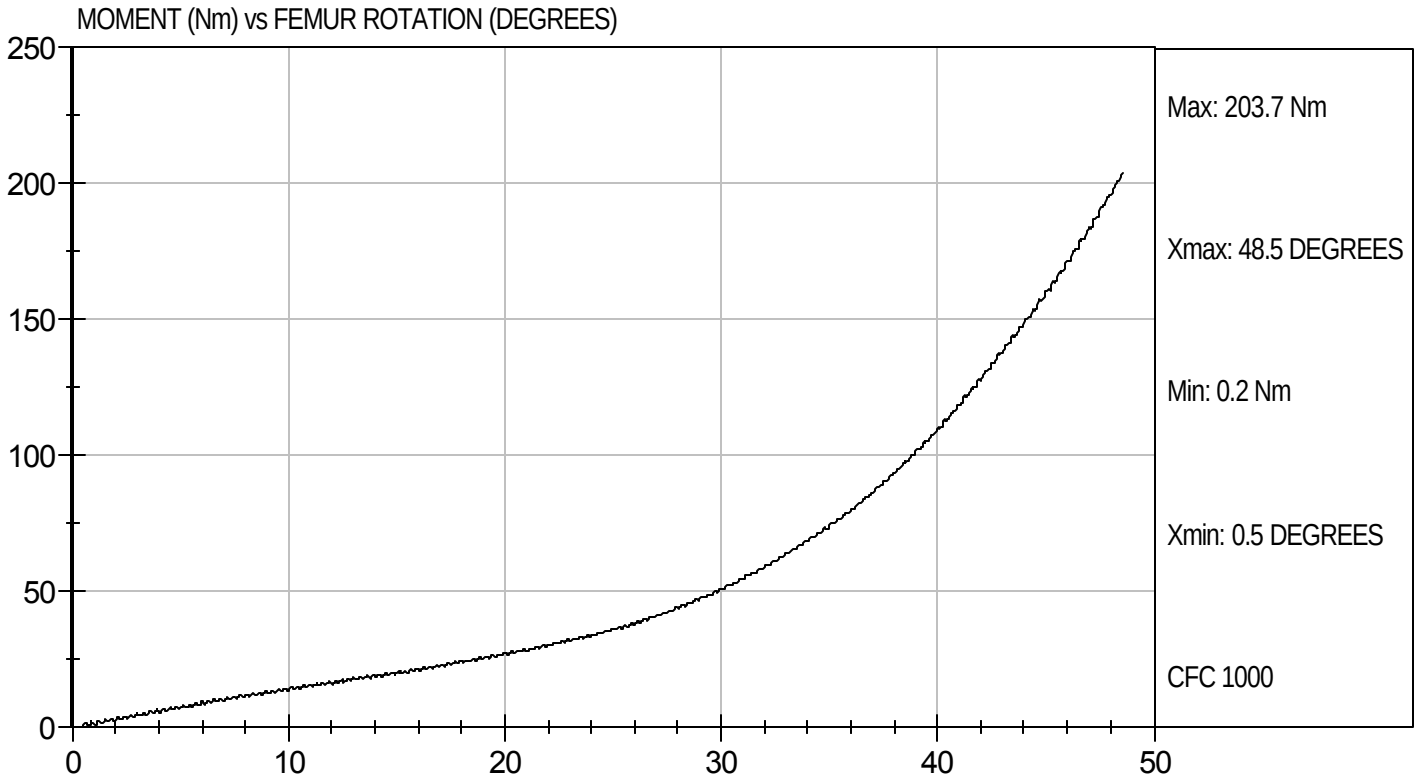
Test Desc: Hip Femur Flexion
Component ID: D11579

Test Date: 2/16/11
Velocity: 0 ft/s, 0.00 m/s



Test Desc: Hip Femur Flexion
Component ID: D11570

Test Date: 2/16/11
Velocity: 0 ft/s, 0.00 m/s



MGA RESEARCH CORPORATION

HEAD DROP TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 138 **Test ID:** D11451

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	15	Pass
Peak Resultant Acceleration	G's	250 to 300	278	Pass
Peak Lateral Acceleration	G's	+/- 15	8.1	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

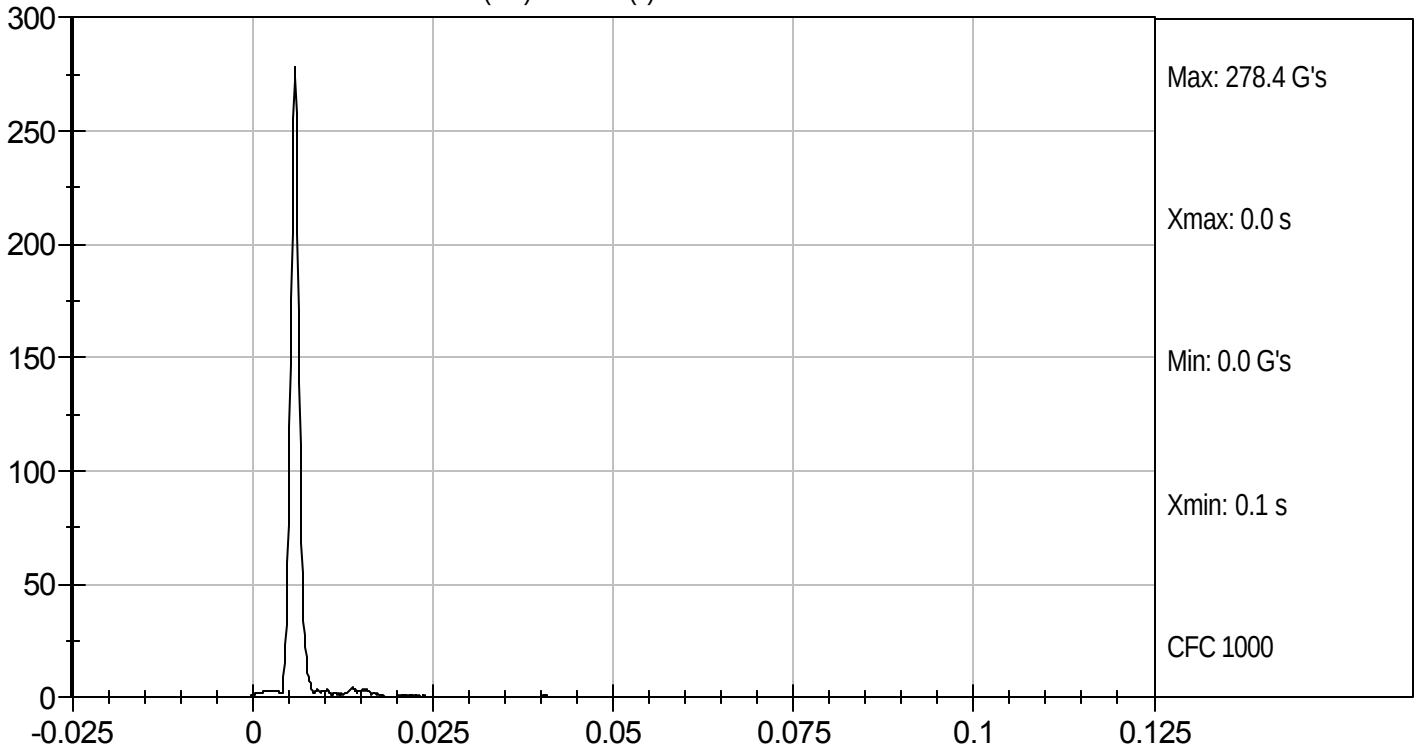
2/8/11
Test Date

David Winkelbauer
Approved By

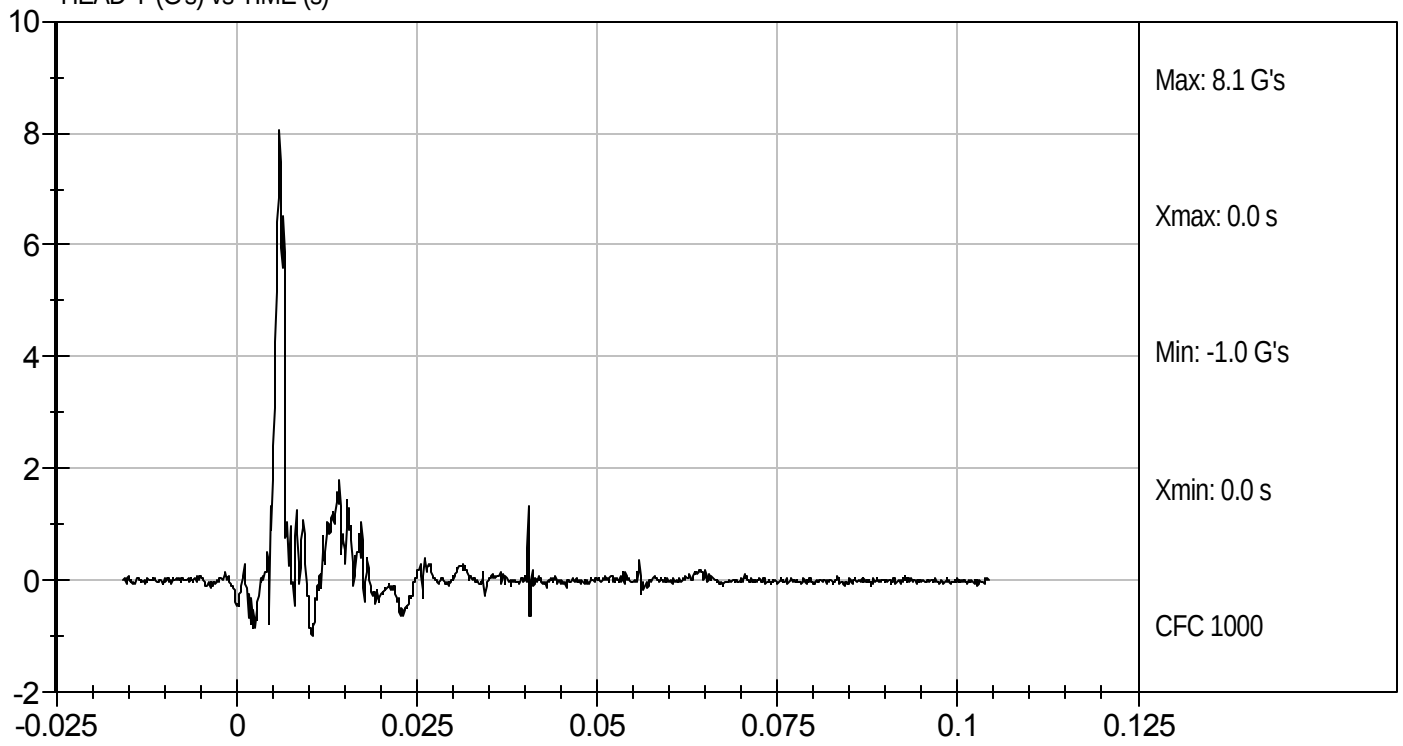
Test Desc: Head Drop
Component ID: D11451

Test Date: 2/8/11
Velocity: 0 ft/s, 0.00 m/s

RESULTANT HEAD ACCELERATION (G's) vs TIME (s)



HEAD Y (G's) vs TIME (s)



MGA RESEARCH CORPORATION

NECK FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 138 **Test I.D:** D11452

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity		%	10 to 70	14	Pass
Pendulum Speed		m/s	6.89 to 7.13	7.06	Pass
Pendulum Deceleration	10 ms	m/s	2.1 to 2.5	2.4	Pass
	20 ms	m/s	4.0 to 5.0	4.3	Pass
	30 ms	m/s	5.8 to 7.0	5.9	Pass
D Plane Rotation	Max	deg	77 to 91	80	Pass
Occipital Condyle Moment within Deflection Corridor		Nm	69 to 83	79	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 to 100	87	Pass
			Overall Results		Pass

Jessica Hall
Laboratory Technician

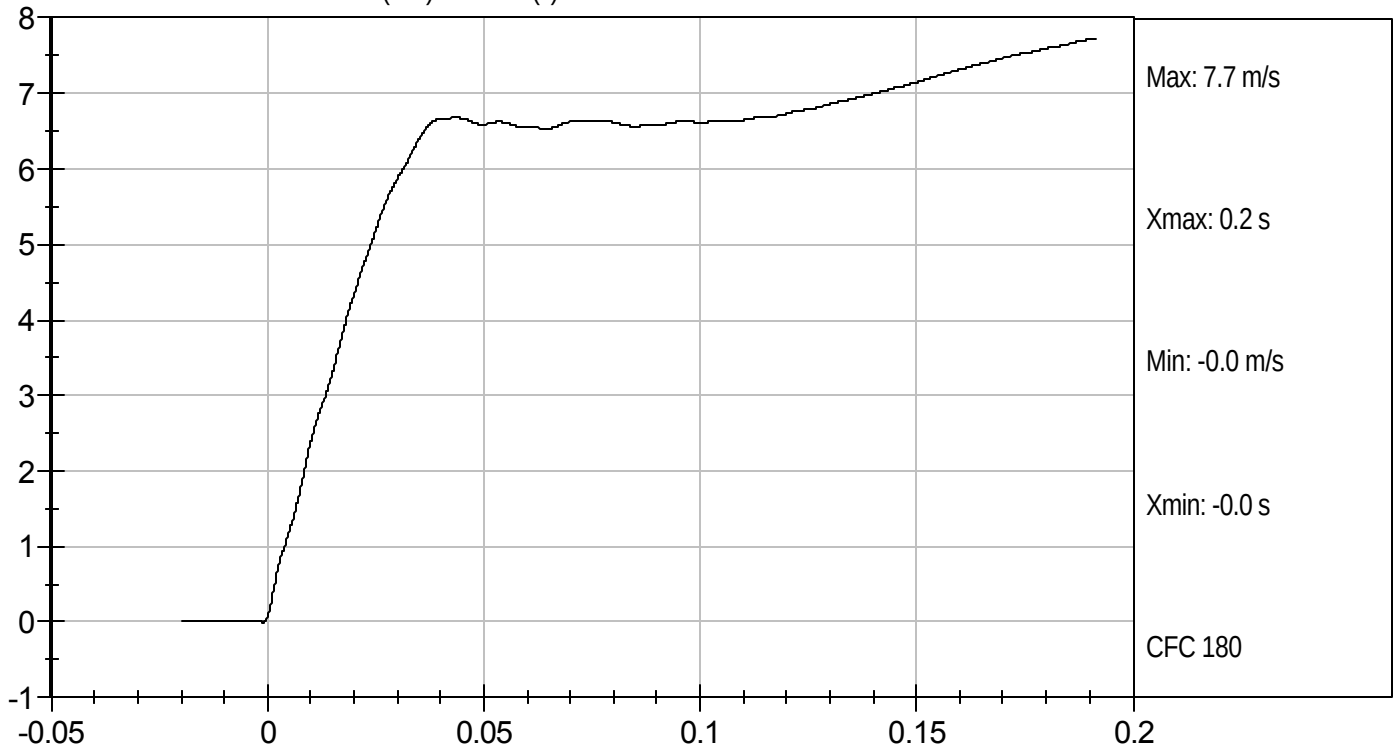
2/8/11
Test Date

David Winkelbauer
Approved By

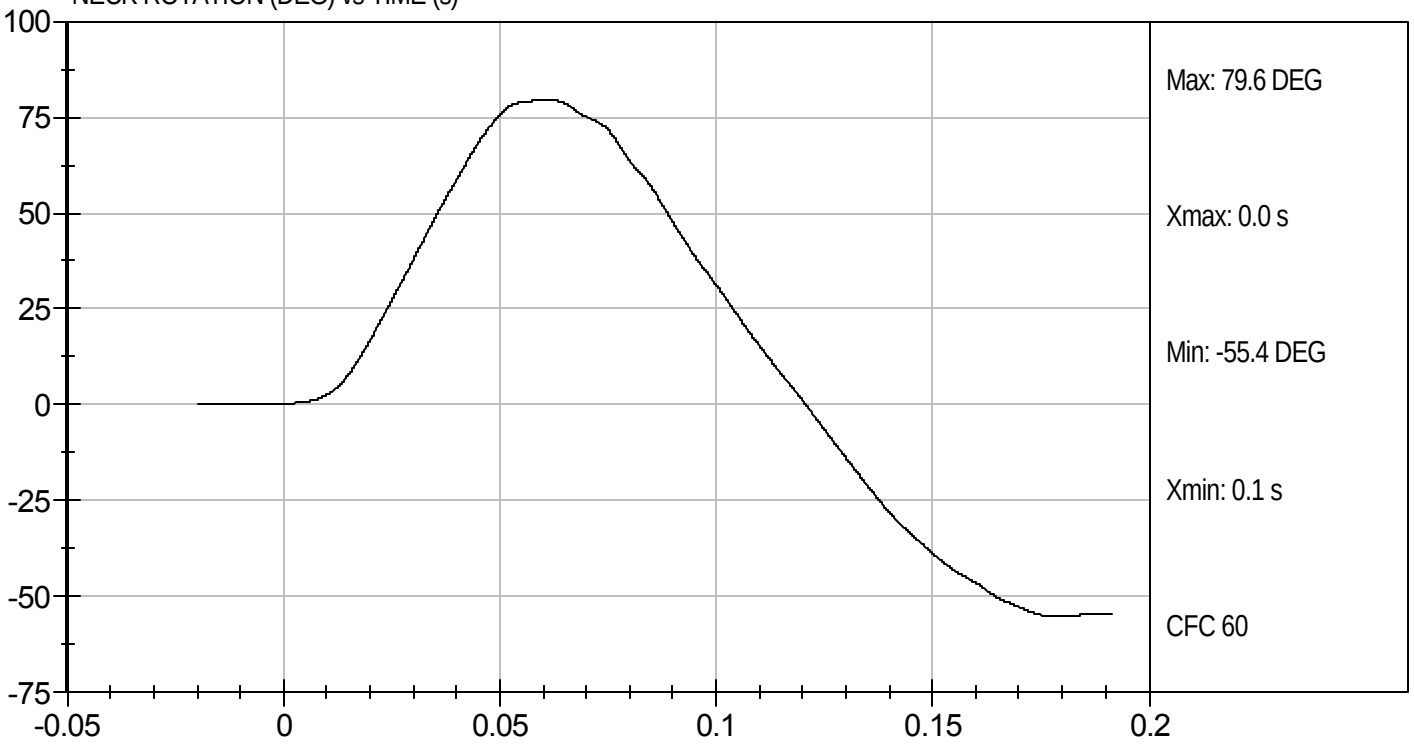
Test Desc: Neck Flexion
Component ID: D11452

Test Date: 2/8/11
Velocity: 23.15 ft/s, 7.06 m/s

PENDULUM DECELERATION (m/s) vs TIME (s)

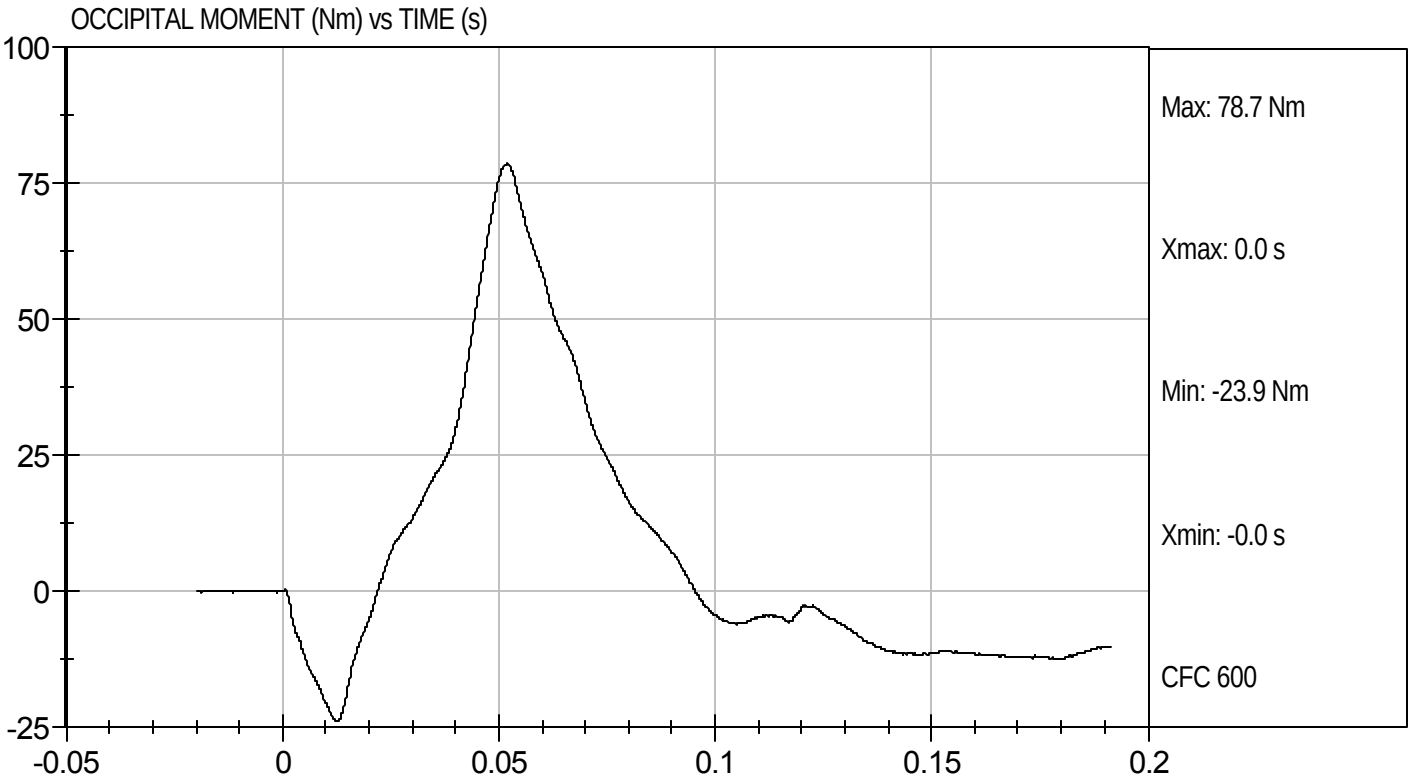


NECK ROTATION (DEG) vs TIME (s)



Test Desc: Neck Flexion
Component ID: D11452

Test Date: 2/8/11
Velocity: 23.15 ft/s, 7.06 m/s



MGA RESEARCH CORPORATION

NECK EXTENSION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 138 **Test I.D:** D11453

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity		%	10 to 70	14	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.12	Pass
Pendulum Deceleration	10 ms	m/s	1.5 to 1.9	1.9	Pass
	20 ms	m/s	3.1 to 3.9	3.6	Pass
	30 ms	m/s	4.6 to 5.6	5.1	Pass
D Plane Rotation	Max	deg	99 to 114	104	Pass
Occipital Condyle Moment within Deflection Corridor		Nm	-65 to -53	-54	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	103	Pass
			Overall Results		Pass

Jessica Gall
Laboratory Technician

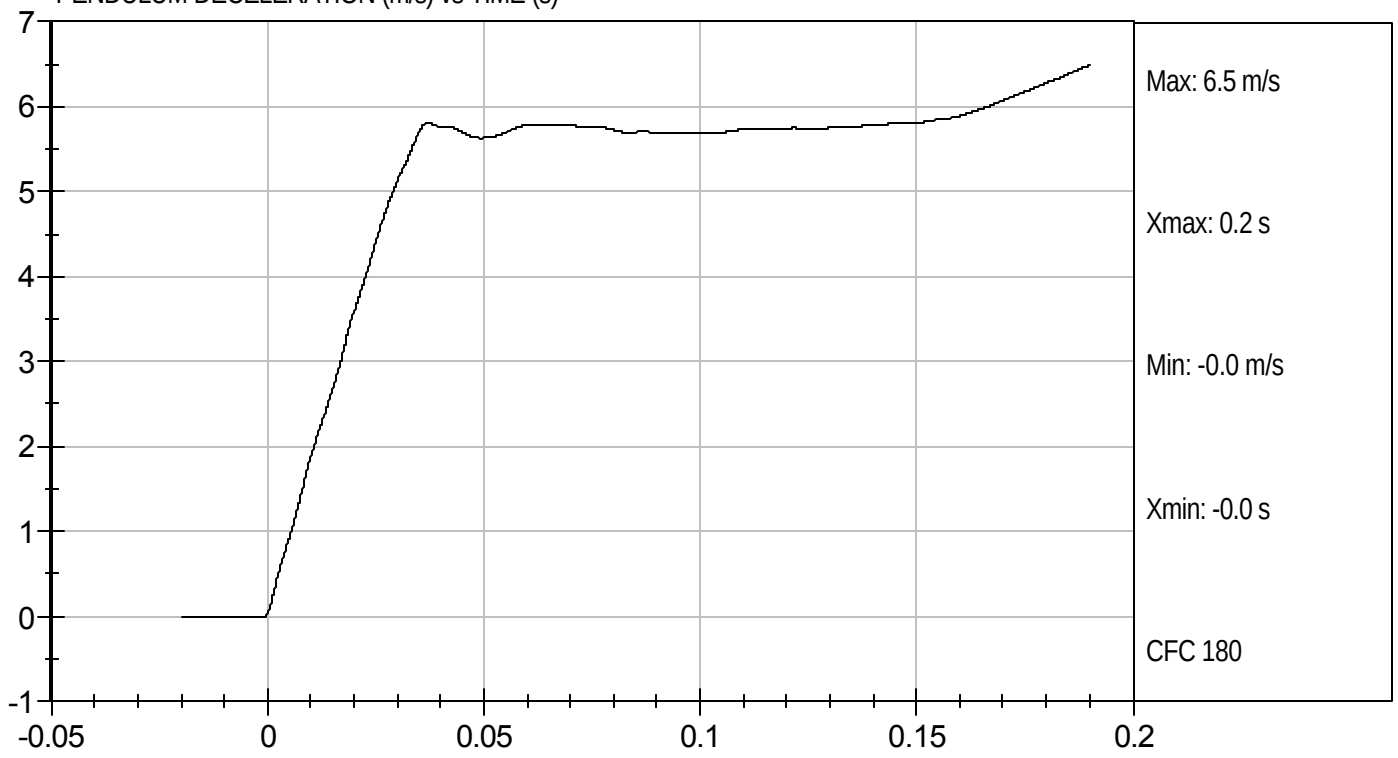
2/8/11
Test Date

David Winkelbauer
Approved By

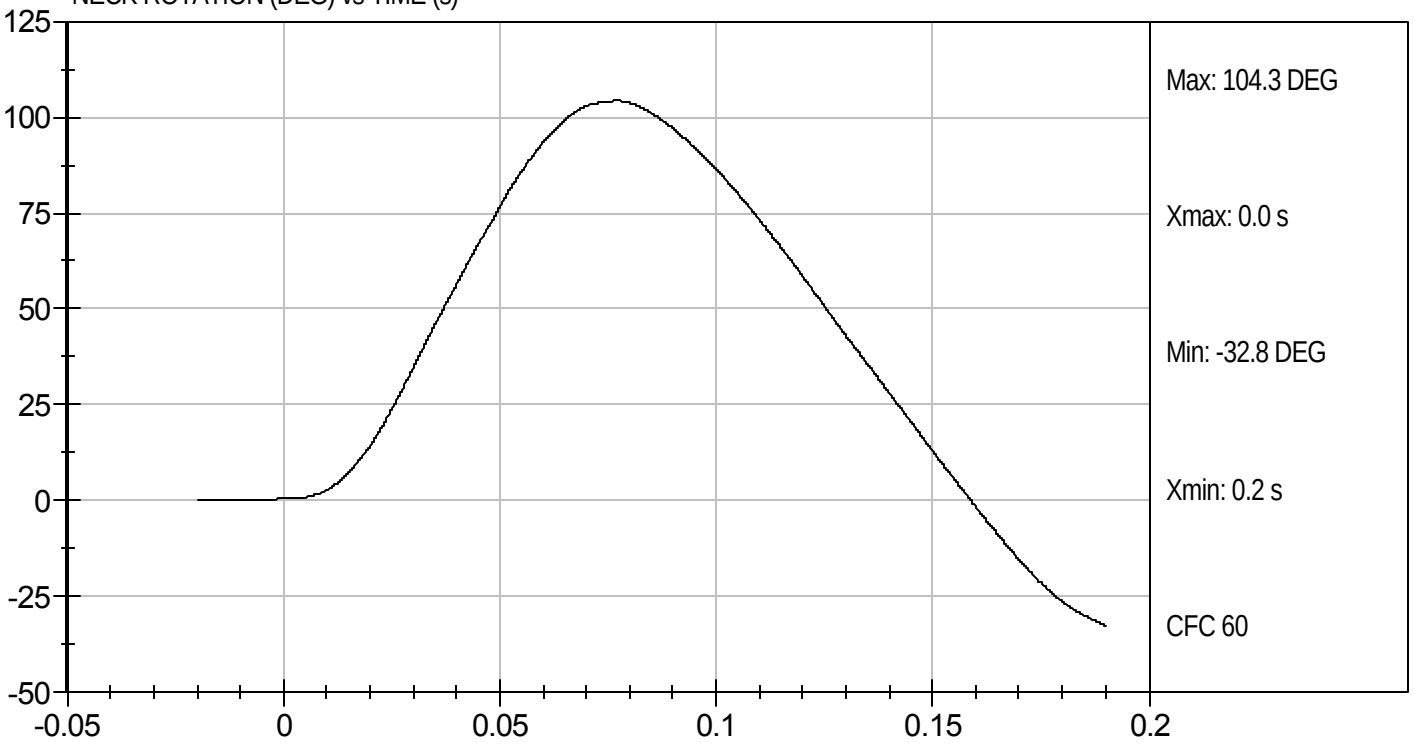
Test Desc: Neck Extension
Component ID: D11453

Test Date: 2/8/11
Velocity: 20.08 ft/s, 6.12 m/s

PENDULUM DECELERATION (m/s) vs TIME (s)

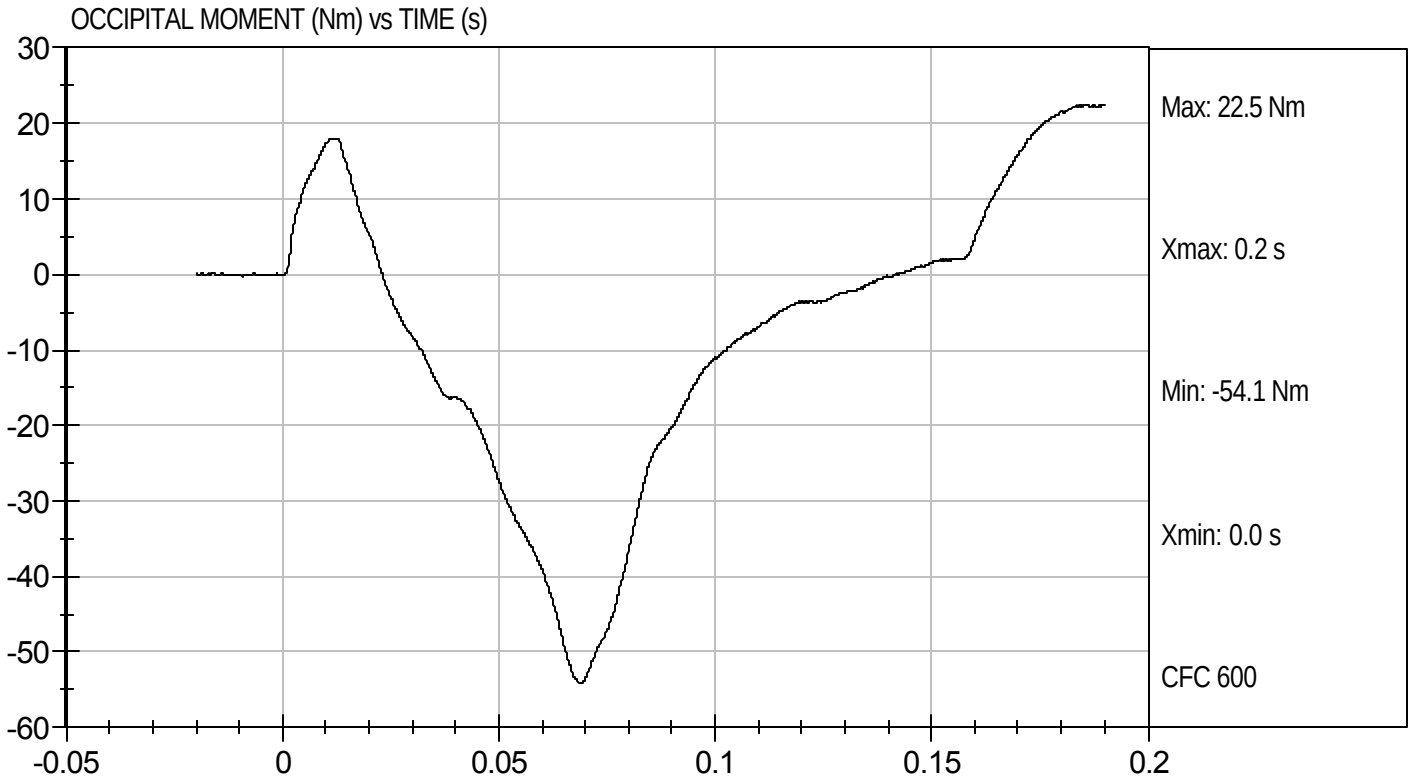


NECK ROTATION (DEG) vs TIME (s)



Test Desc: Neck Extension
Component ID: D11453

Test Date: 2/8/11
Velocity: 20.08 ft/s, 6.12 m/s



MGA RESEARCH CORPORATION

THORAX IMPACT

HYBRID III 5TH PERCENTILE

ATD Serial No: 138 **Test I.D:** D11454

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.4	Pass
Relative Humidity	%	10 to 70	11	Pass
Probe Speed	m/s	6.59 to 6.83	6.60	Pass
Peak Deflection	mm	50 to 58	52	Pass
Peak Resistive Force w/in Deflection Corridor	kN	3.9 to 4.4	4.17	Pass
Internal Hysteresis	%	69 to 85	71	Pass
Peak Force 18 mm - 50 mm	N	<= 4,600 N	4174	Pass
		Overall Test Results		Pass

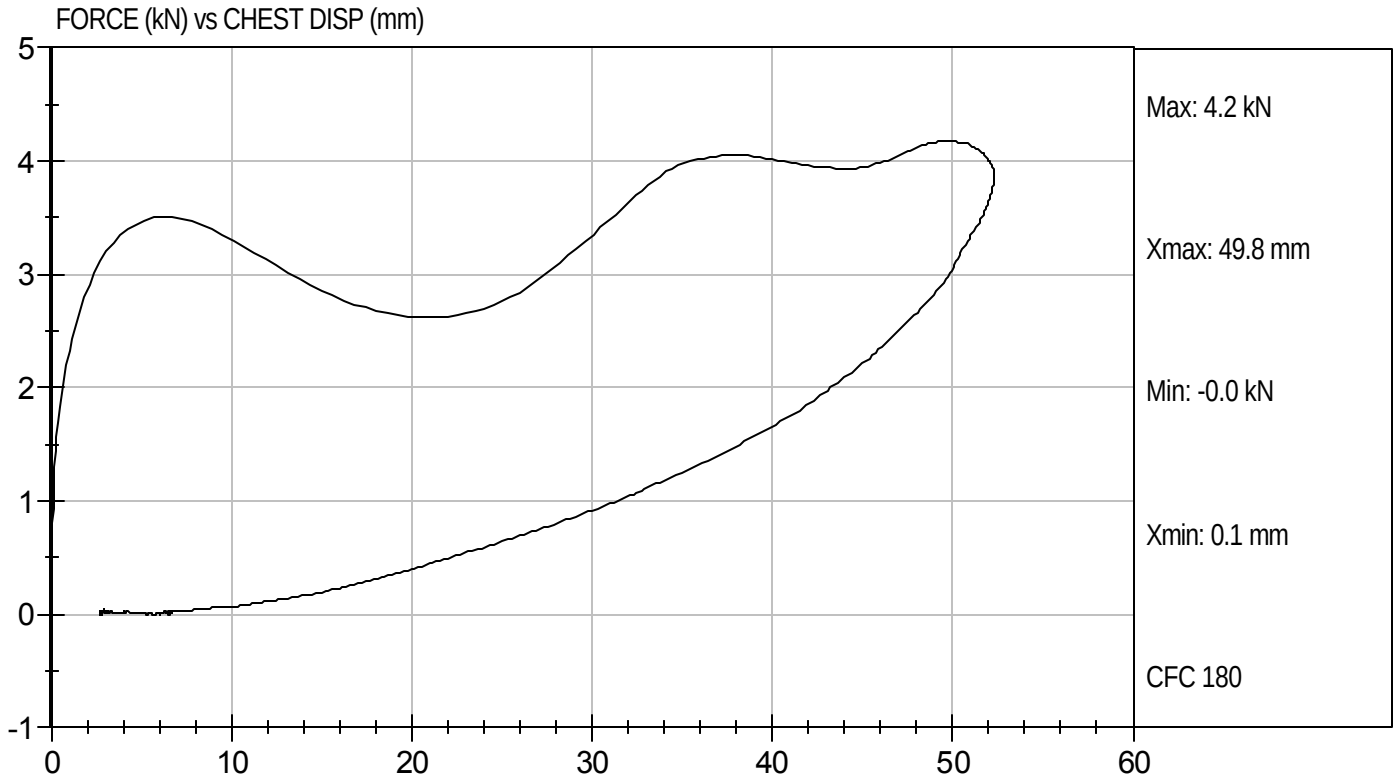
Jessica Hall
Laboratory Technician

2/9/11
Test Date

David Winkelbauer
Approved By

Test Desc: Thorax Impact
Component ID: D11454

Test Date: 2/9/11
Velocity: 21.65 ft/s, 6.60 m/s



MGA RESEARCH CORPORATION

RIGHT KNEE IMPACT TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 138 **Test I.D:** D11455

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	20.6	Pass
Laboratory Relative Humidity	%	10 to 70	12	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	kN	3.45 to 4.06	3.69	Pass
		Overall Test Results		Pass

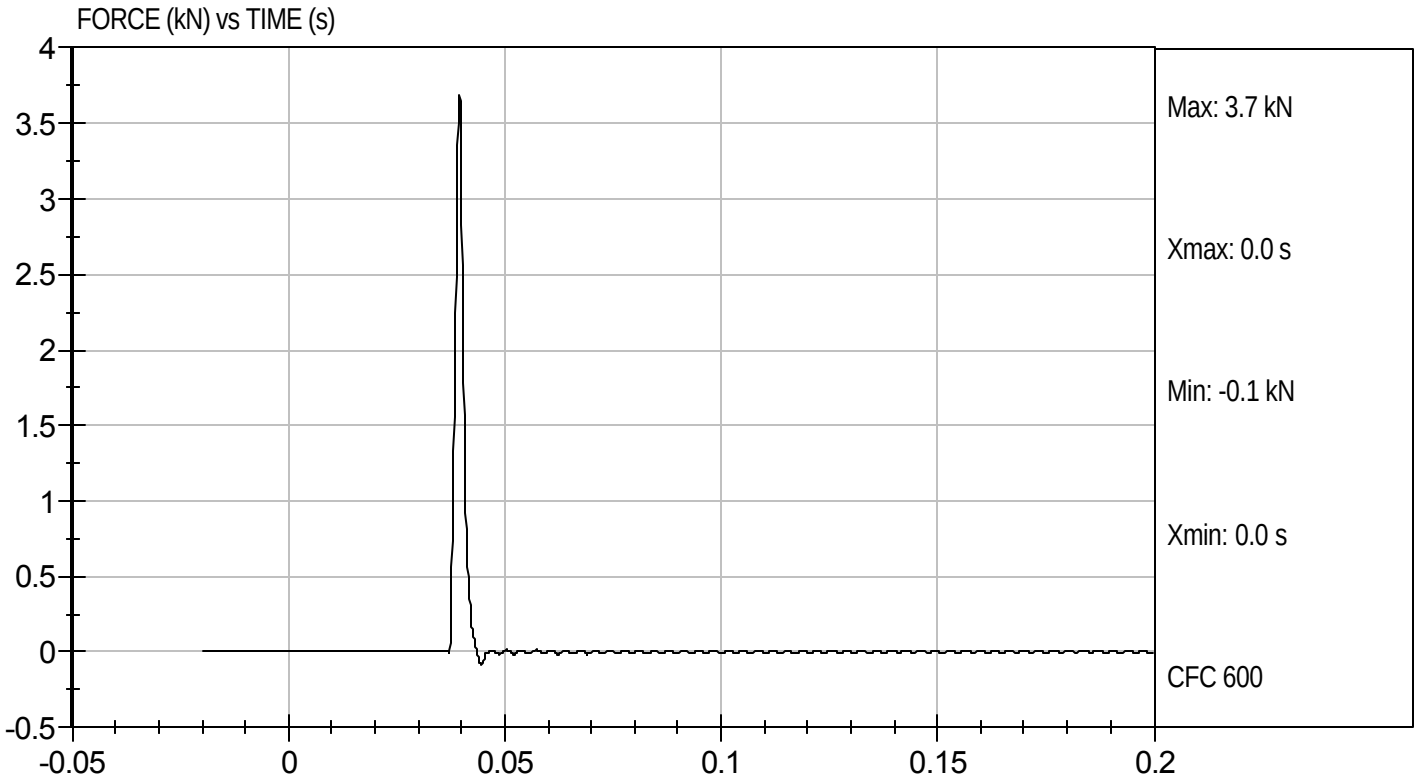
Jessica Gall
Laboratory Technician

2/9/11
Test Date

David Winkelbauer
Approved By

Test Desc: Right Knee
Component ID: D11455

Test Date: 2/9/11
Velocity: 6.94 ft/s, 2.12 m/s



MGA RESEARCH CORPORATION

LEFT KNEE IMPACT TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 138 **Test I.D:** D11456

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	20.6	Pass
Laboratory Relative Humidity	%	10 to 70	12	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	kN	3.45 to 4.06	3.68	Pass
		Overall Test Results		Pass

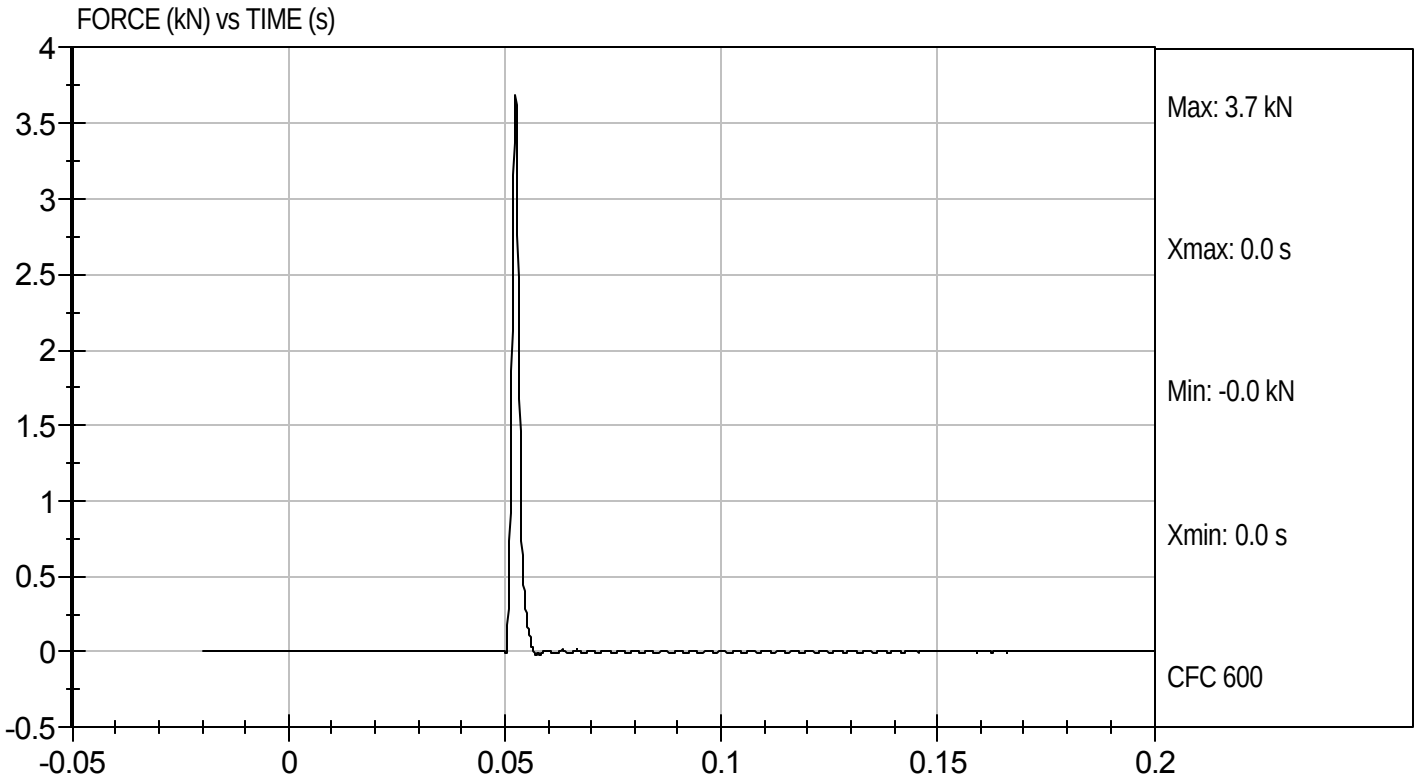
Jessica Hall
Laboratory Technician

2/9/11
Test Date

David Winkelbauer
Approved By

Test Desc: Left Knee
Component ID: D11456

Test Date: 2/9/11
Velocity: 6.97 ft/s, 2.12 m/s



MGA RESEARCH CORPORATION

TORSO FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 138 **Test I.D:** D11457

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	15	Pass
Initial Angle	deg	0 to 20	17	Pass
Return Angle	deg	+/- 8	5	Pass
Force at 45 deg	N	320 to 390	326	Pass
Upper Torso Deflection Rate	Deg/sec	0.5 to 1.5	1.0	Pass
		Overall Result		Pass

Jessica Hall
Laboratory Technician

2/8/11
Test Date

David Winkelbauer
Approved By

MGA RESEARCH CORPORATION

HEAD DROP TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 138 **Test ID:** D11581

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	32	Pass
Peak Resultant Acceleration	G's	250 to 300	274	Pass
Peak Lateral Acceleration	G's	+/- 15	-10.1	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
		Overall Test Results		Pass

Jessica Hall
Laboratory Technician

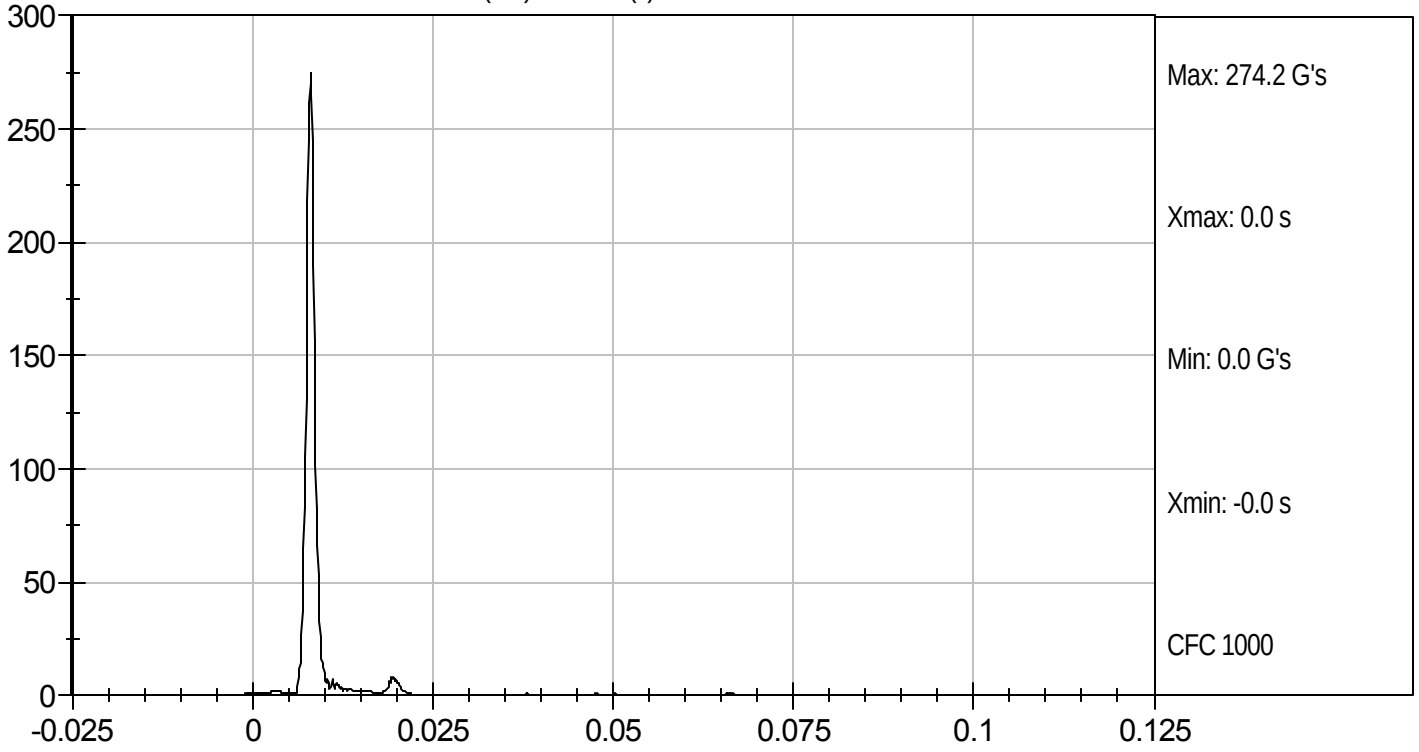
2/16/11
Test Date

David Winkelbauer
Approved By

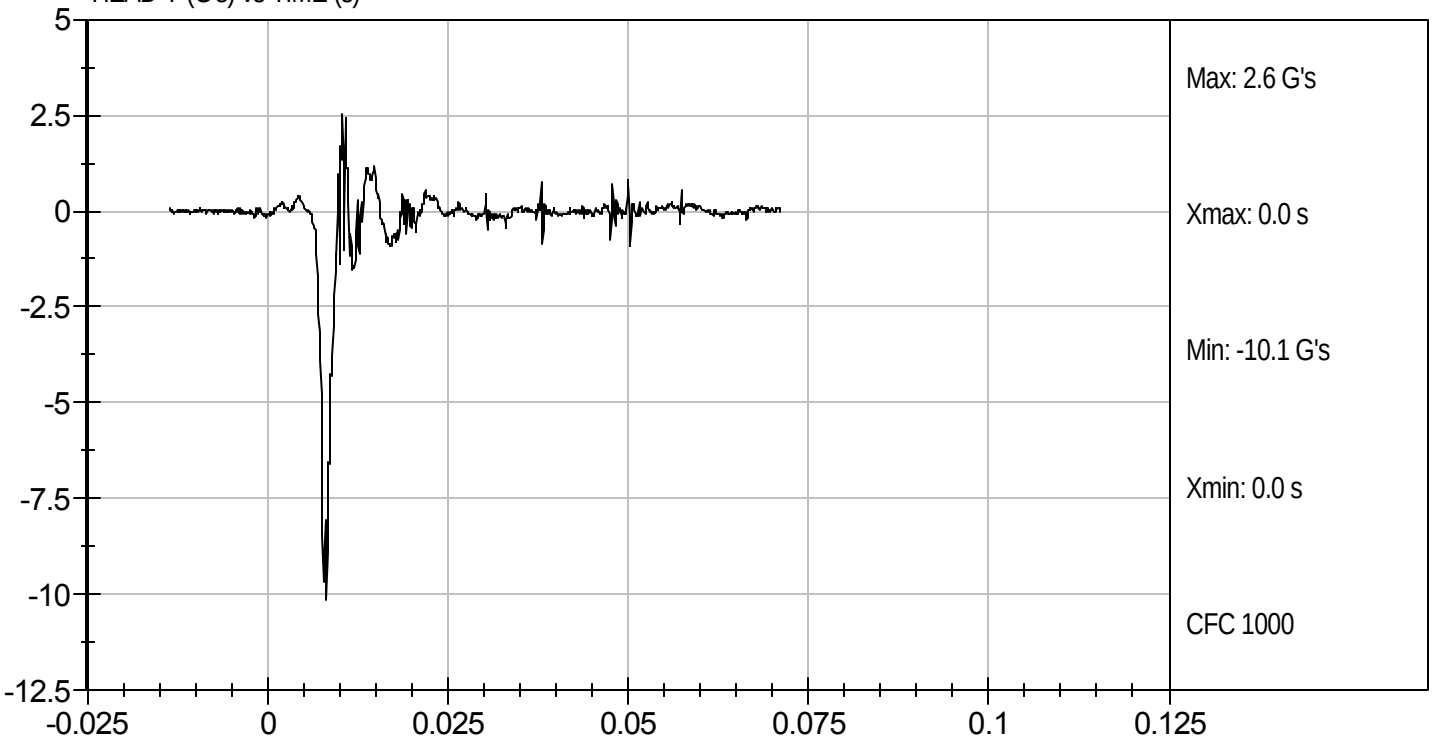
Test Desc: Head Drop
Component ID: D11581

Test Date: 2/16/11
Velocity: 0 ft/s, 0 m/s

RESULTANT HEAD ACCELERATION (G's) vs TIME (s)



HEAD Y (G's) vs TIME (s)



MGA RESEARCH CORPORATION

NECK FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 138 **Test I.D:** D11582

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.9	Pass
Laboratory Relative Humidity		%	10 to 70	35	Pass
Pendulum Speed		m/s	6.89 to 7.13	7.06	Pass
Pendulum Deceleration	10 ms	m/s	2.1 to 2.5	2.3	Pass
	20 ms	m/s	4.0 to 5.0	4.3	Pass
	30 ms	m/s	5.8 to 7.0	5.8	Pass
D Plane Rotation	Max	deg	77 to 91	77	Pass
Occipital Condyle Moment within Deflection Corridor		Nm	69 to 83	77	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 to 100	87	Pass
			Overall Results		Pass

Jessica Hall
Laboratory Technician

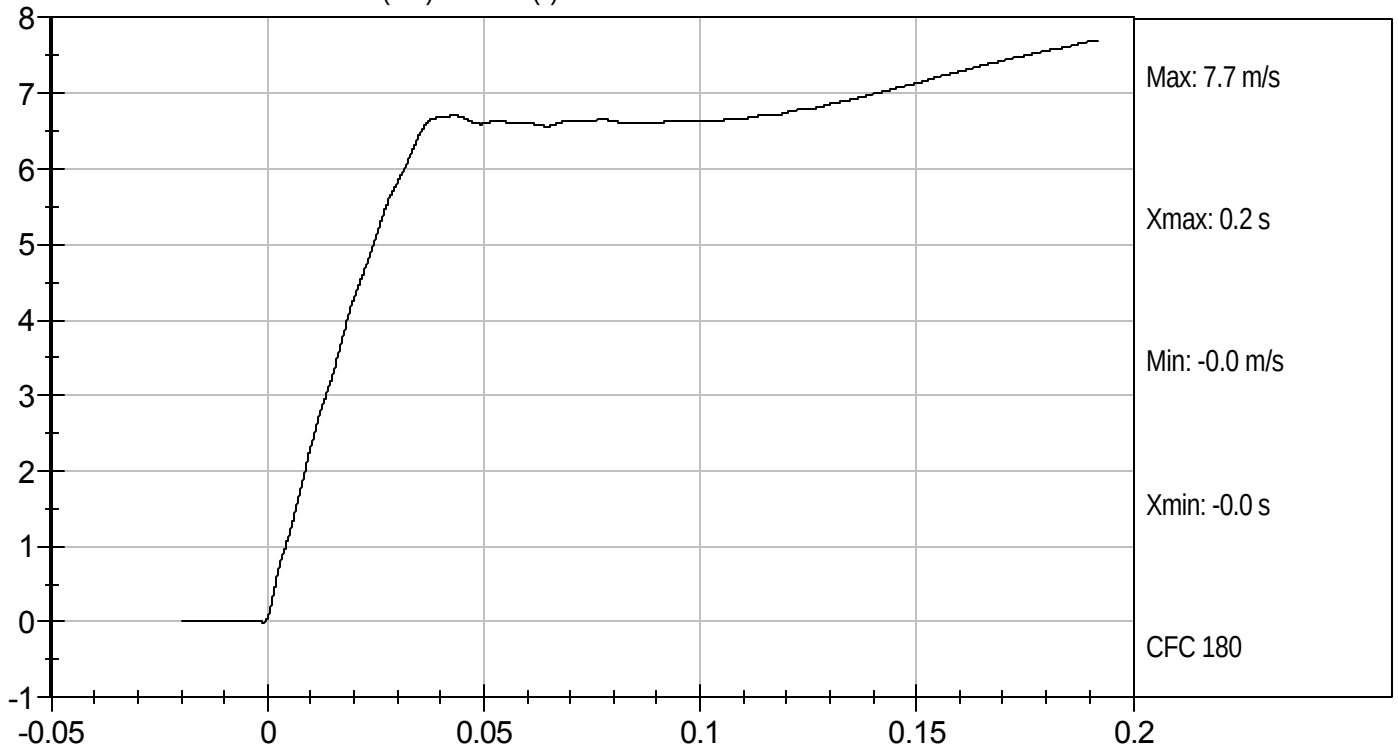
2/16/11
Test Date

David Winkelbauer
Approved By

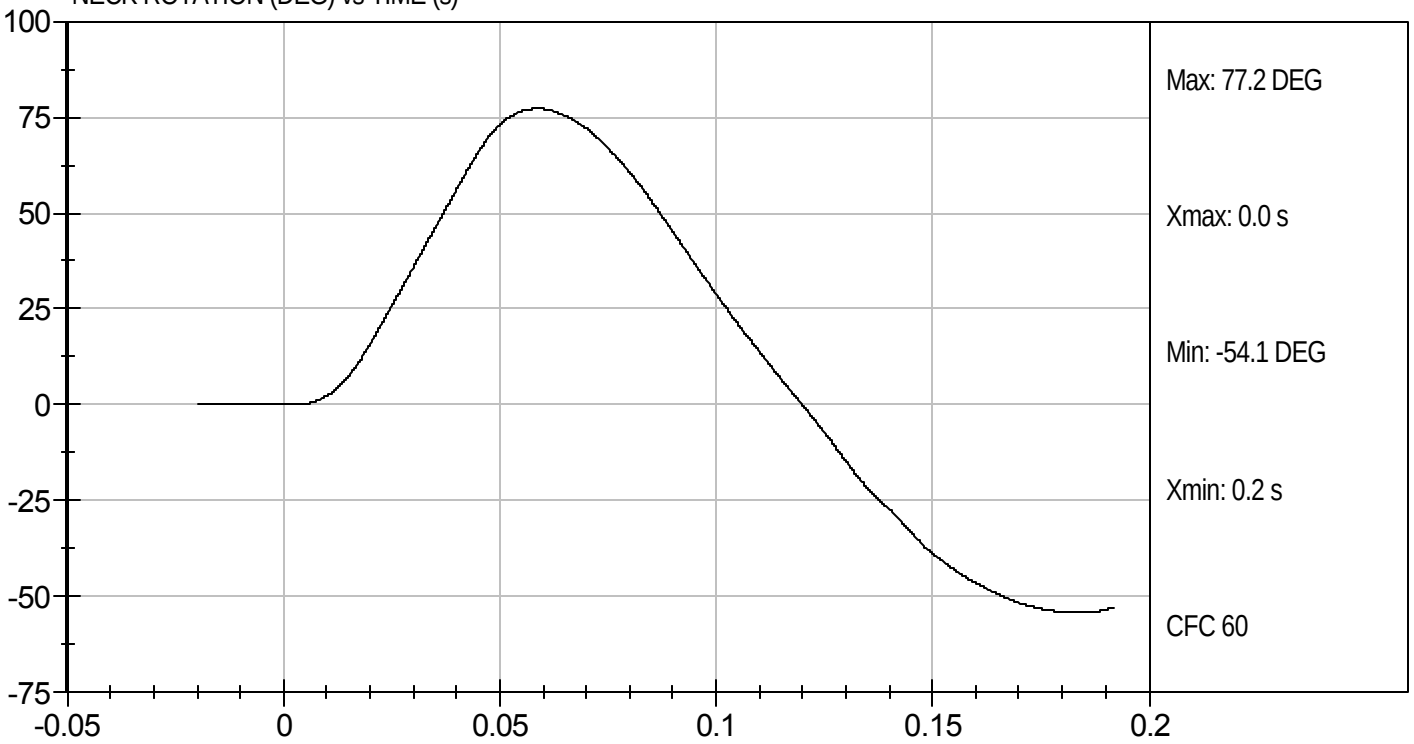
Test Desc: Neck Flexion
Component ID: D11582

Test Date: 2/16/11
Velocity: 23.15 ft/s, 7.06 m/s

PENDULUM DECELERATION (m/s) vs TIME (s)

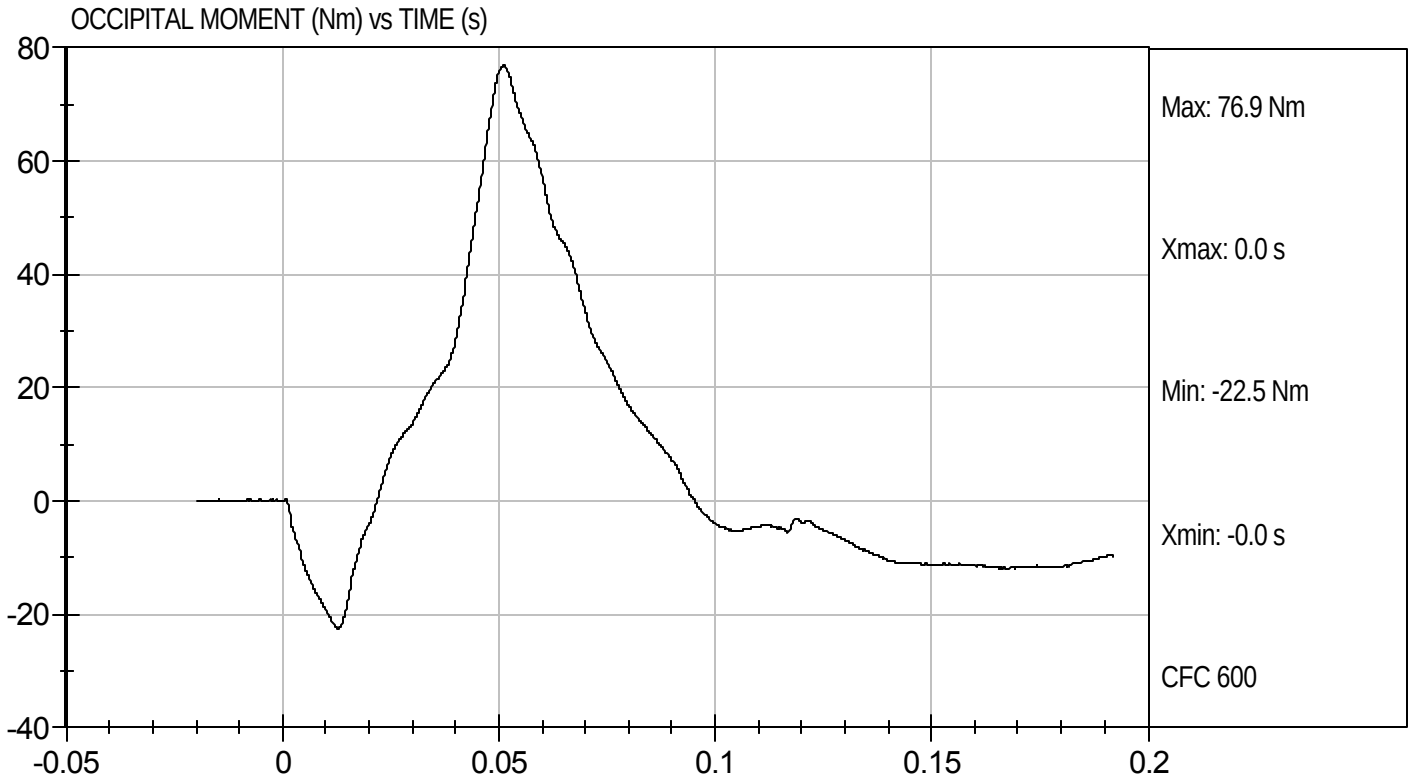


NECK ROTATION (DEG) vs TIME (s)



Test Desc: Neck Flexion
Component ID: D11582

Test Date: 2/16/11
Velocity: 23.15 ft/s, 7.06 m/s



MGA RESEARCH CORPORATION

NECK EXTENSION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 138 **Test I.D:** D11583

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	36	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.16	Pass
Pendulum Deceleration	10 ms	m/s	1.5 to 1.9	1.8	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 Deflection Corridor		Nm	-65 to -53	-56	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	102	Pass
			Overall Results		Pass

Jessica Hall
Laboratory Technician

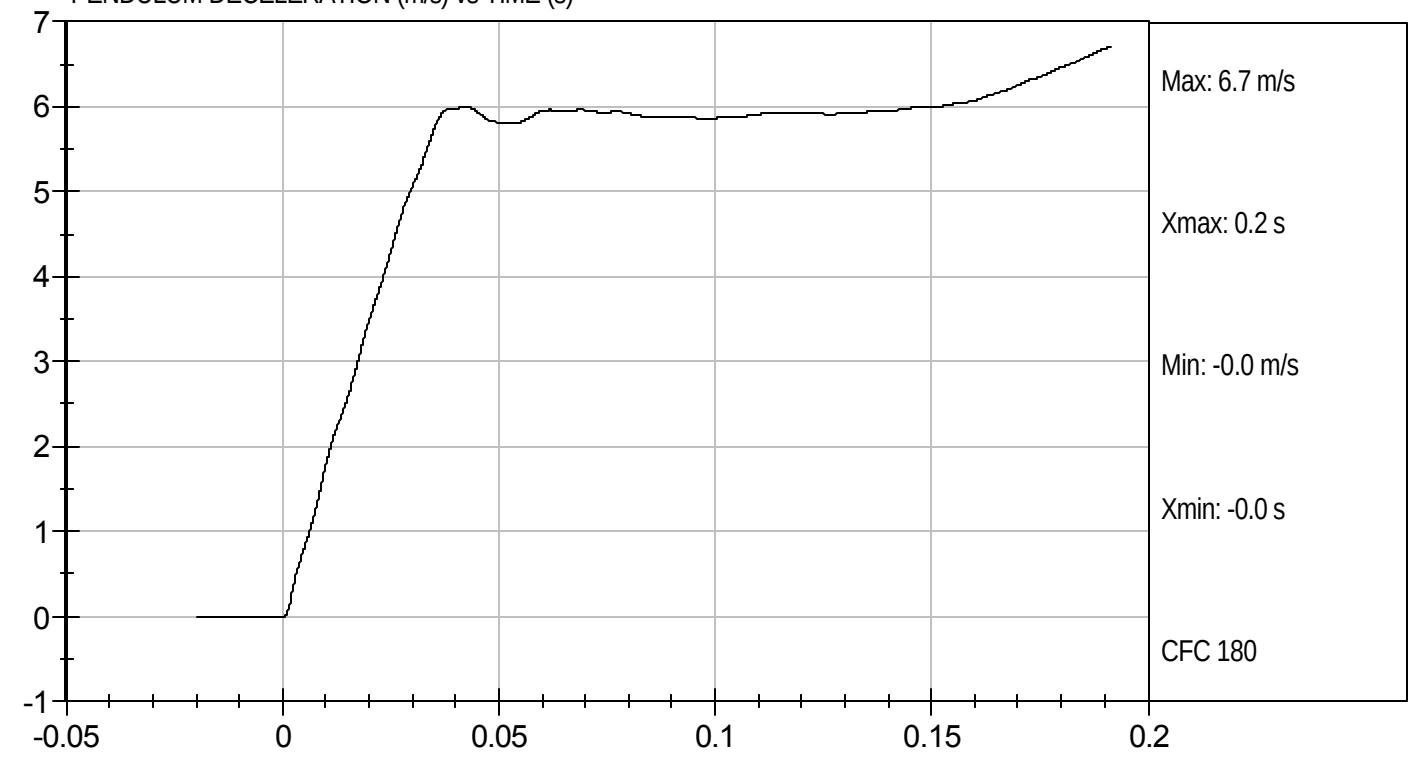
2/17/11
Test Date

David Winkelbauer
Approved By

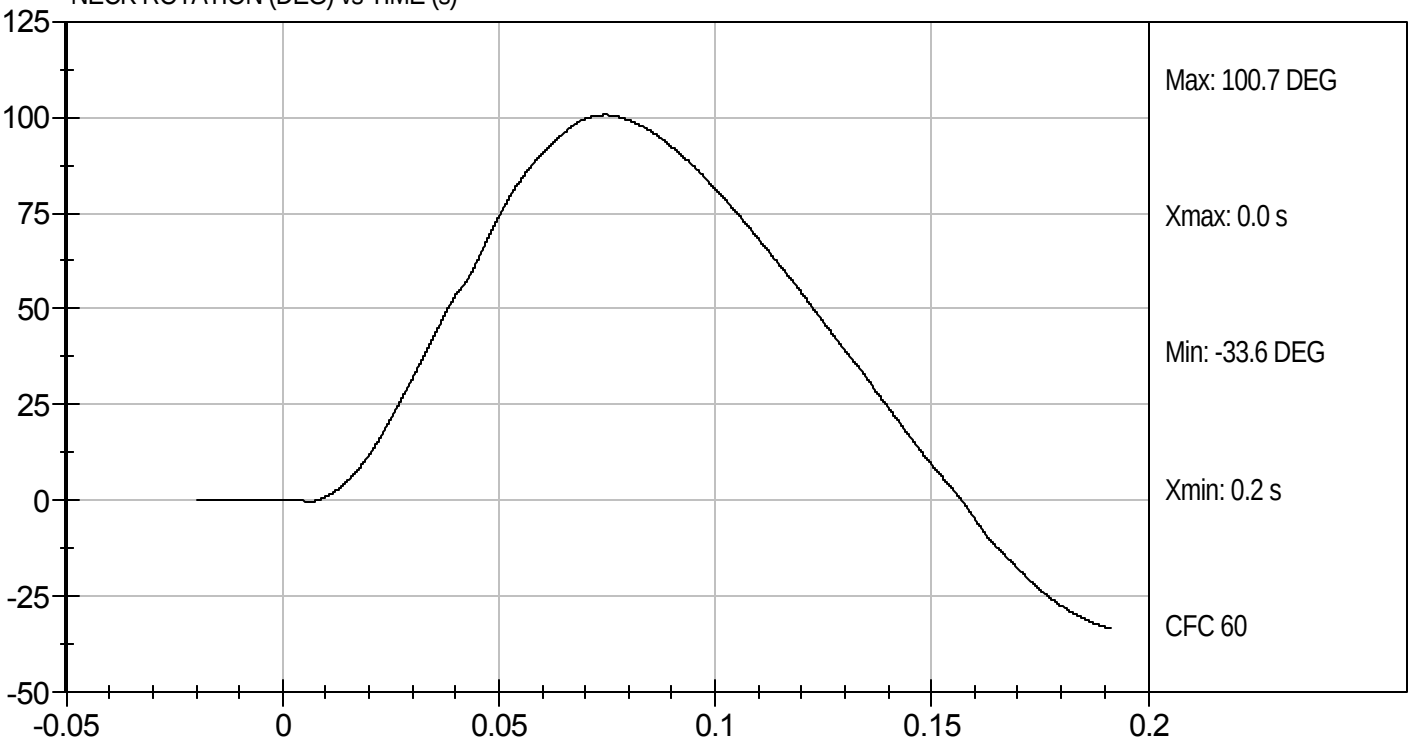
Test Desc: Neck Extension
Component ID: D11583

Test Date: 2/17/11
Velocity: 20.2 ft/s, 6.16 m/s

PENDULUM DECELERATION (m/s) vs TIME (s)

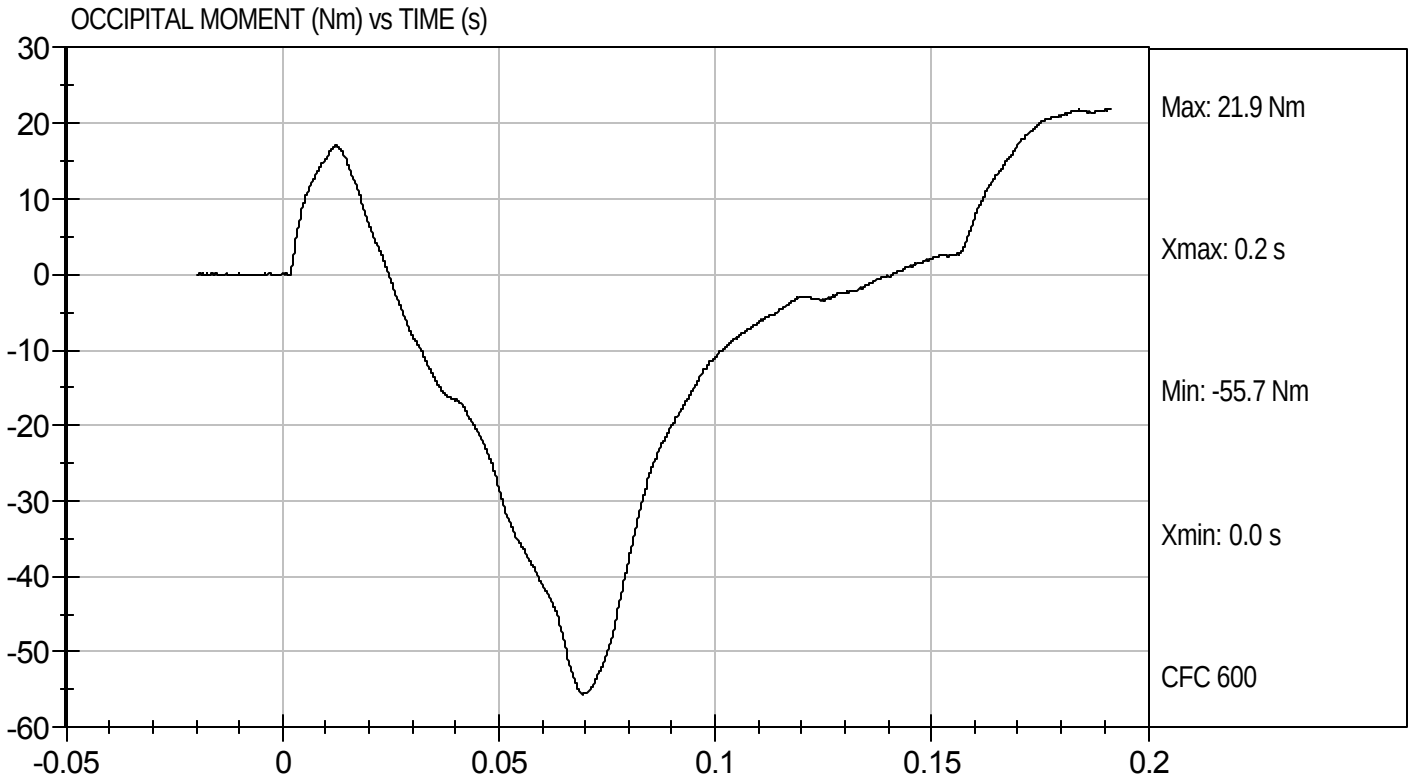


NECK ROTATION (DEG) vs TIME (s)



Test Desc: Neck Extension
Component ID: D11583

Test Date: 2/17/11
Velocity: 20.2 ft/s, 6.16 m/s



MGA RESEARCH CORPORATION

THORAX IMPACT

HYBRID III 5TH PERCENTILE

ATD Serial No: 138 **Test I.D:** D11584

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.4	Pass
Relative Humidity	%	10 to 70	37	Pass
Probe Speed	m/s	6.59 to 6.83	6.77	Pass
Peak Deflection	mm	50 to 58	53	Pass
Peak Resistive Force w/in Deflection Corridor	kN	3.9 to 4.4	4.1	Pass
Internal Hysteresis	%	69 to 85	71	Pass
Peak Force 18 mm - 50 mm	N	<= 4,600 N	4117	Pass
		Overall Test Results		Pass

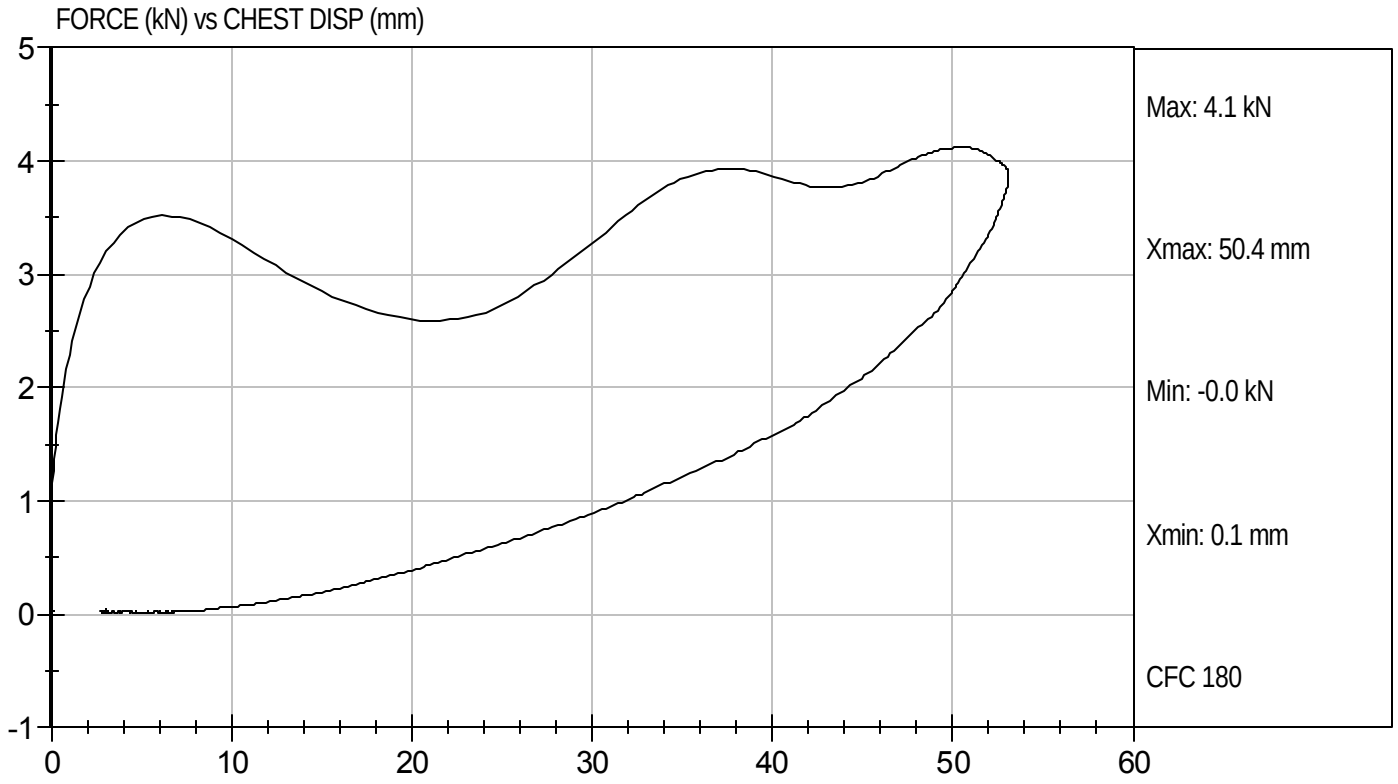
Jessica Hall
Laboratory Technician

2/17/11
Test Date

David Winkelbauer
Approved By

Test Desc: Thorax Impact
Component ID: D11584

Test Date: 2/17/11
Velocity: 22.22 ft/s, 6.77 m/s



MGA RESEARCH CORPORATION

RIGHT KNEE IMPACT TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 138 **Test I.D:** D11585

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	36	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	kN	3.45 to 4.06	3.51	Pass
		Overall Test Results		Pass

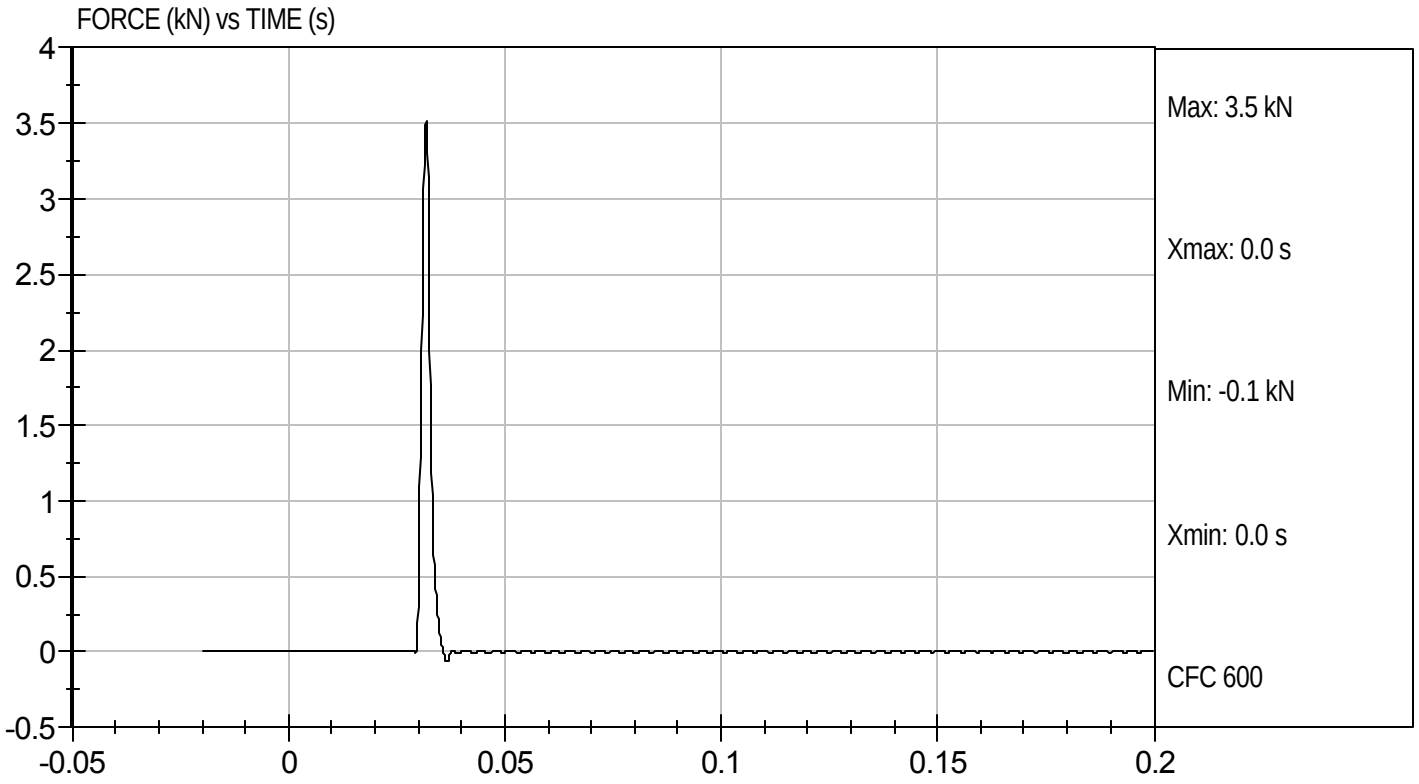
Jessica Gall
Laboratory Technician

2/17/11
Test Date

David Winkelbauer
Approved By

Test Desc: Right Knee
Component ID: D11585

Test Date: 2/17/11
Velocity: 6.97 ft/s, 2.12 m/s



MGA RESEARCH CORPORATION

LEFT KNEE IMPACT TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 138 **Test I.D:** D11586

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	36	Pass
Probe Speed	m/s	2.07 to 2.13	2.12	Pass
Maximum Force	kN	3.45 to 4.06	3.51	Pass
		Overall Test Results		Pass

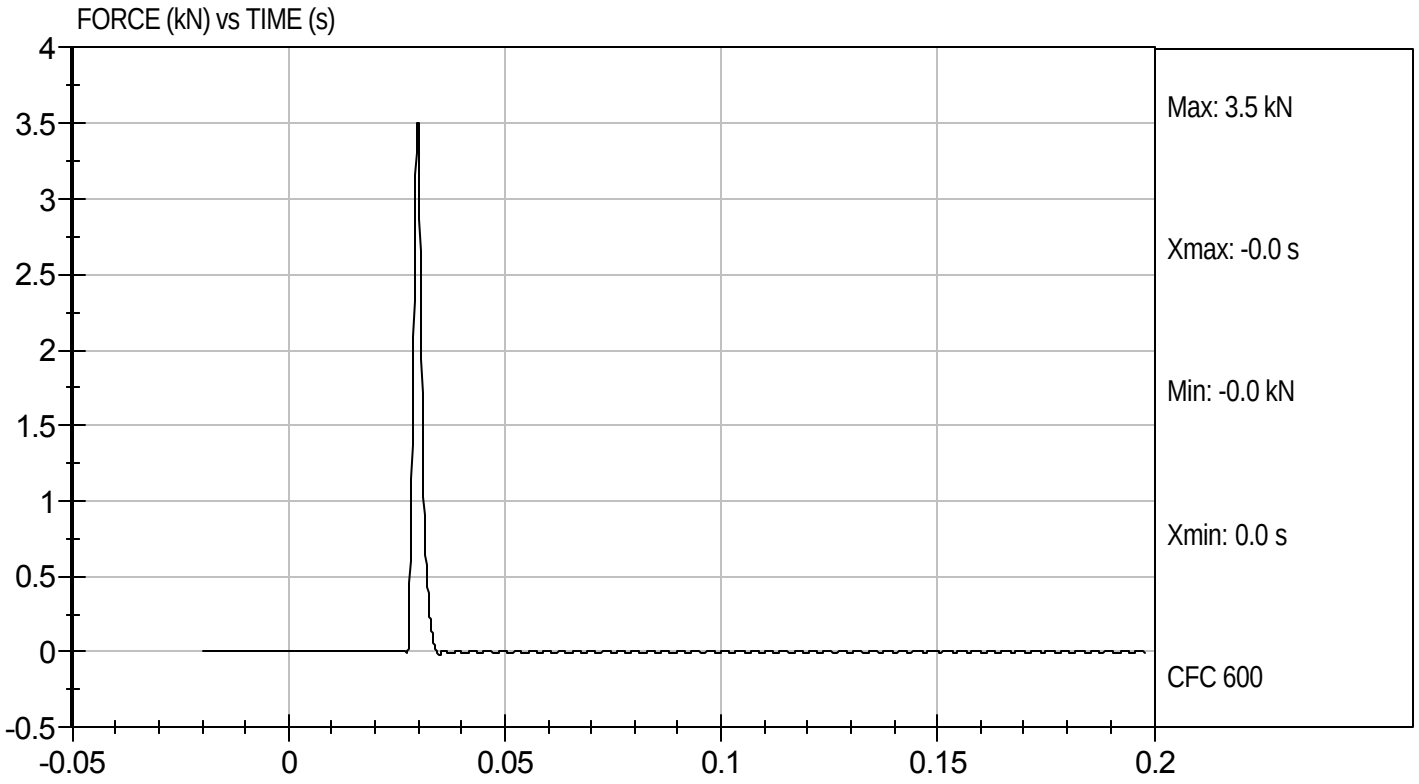
Jessica Gall
Laboratory Technician

2/17/11
Test Date

David Winkelbauer
Approved By

Test Desc: Left Knee
Component ID: D11586

Test Date: 2/17/11
Velocity: 6.97 ft/s, 2.12 m/s



MGA RESEARCH CORPORATION

TORSO FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 138 **Test I.D:** D11587

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	32	Pass
Initial Angle	deg	0 to 20	19	Pass
Return Angle	deg	+/- 8	5	Pass
Force at 45 deg	N	320 to 390	330	Pass
Upper Torso Deflection Rate	Deg/sec	0.5 to 1.5	1.0	Pass
		Overall Result		Pass

Jessica Hall
Laboratory Technician

2/16/11
Test Date

David Winkelbauer
Approved By