

REPORT NUMBER: NCAP-MGA-2007-001

**NEW CAR ASSESSMENT PROGRAM
FRONTAL BARRIER IMPACT TEST**

**DAIMLERCHRYSLER CORPORATION
2007 JEEP COMPASS SPORT 4X4
NHTSA NUMBER: M70302**

**PREPARED BY:
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BURLINGTON, WI 53105**



Test Date: August 16, 2006

Final Report Date: September 15, 2006

FINAL REPORT

**PREPARED FOR:
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NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
RULEMAKING
OFFICE OF CRASHWORTHINESS STANDARDS
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16. <i>Abstract</i> A frontal barrier impact was conducted on a 2007 Jeep Compass Sport 4x4 at MGA Research Corporation on August 16, 2006. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and foot well intrusion performance. The impact velocity was 56.5 km/h. The ambient temperature at the barrier face at the time of impact was 21 degrees Celsius. The vehicle's maximum post test static crush is 477 mm located to the left of the vehicle centerline. The test vehicle is equipped with a 3-point continuous belt system and an airbag in both front outboard seating positions. With respect to FMVSS 208 "Occupant Crash Protection", the occupant injury criteria summary is as follows: <table border="1" style="width: 100%; margin-top: 10px; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Measurement Description</u></th> <th style="text-align: left;"><u>Units</u></th> <th style="text-align: left;"><u>Threshold</u></th> <th style="text-align: left;"><u>Driver ATD</u></th> <th style="text-align: left;"><u>Pass. ATD</u></th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC)</td> <td>N/A</td> <td>1000</td> <td>617</td> <td>641</td> </tr> <tr> <td>Max. Thorax Accel. (3ms Clip)</td> <td>G's</td> <td>60</td> <td>45</td> <td>54</td> </tr> <tr> <td>Left Femur Force</td> <td>Newton</td> <td>10009</td> <td>-4596</td> <td>-5562</td> </tr> <tr> <td>Right Femur Force</td> <td>Newton</td> <td>10009</td> <td>-4583</td> <td>-4732</td> </tr> </tbody> </table>				<u>Measurement Description</u>	<u>Units</u>	<u>Threshold</u>	<u>Driver ATD</u>	<u>Pass. ATD</u>	Head Injury Criteria (HIC)	N/A	1000	617	641	Max. Thorax Accel. (3ms Clip)	G's	60	45	54	Left Femur Force	Newton	10009	-4596	-5562	Right Femur Force	Newton	10009	-4583	-4732
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SECTION 1

PURPOSE AND SUMMARY OF TEST

PURPOSE

This 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 an impact in excess of the current 48.3 kph requirements.

SUMMARY

A load cell barrier was impacted by a 2007 Jeep Compass Sport 4x4 at a velocity of 56.5 kph. The test was performed at MGA Research Corporation on August 16, 2006. Pre-and post-test photographs of the vehicle and dummies can be found in Appendix A.

One real-time camera and fourteen 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.

Two Part 572E, 50th percentile male anthropomorphic test devices (ATDs), were placed in the driver and right-front passenger seating positions according to dummy placement instructions specified in the Laboratory Indicant Test Procedure.

Both ATDs were fully instrumented with head, chest and pelvis tri-axial accelerometers, chest displacement potentiometer, upper neck transducers, right/left femur load cells, and lower leg instrumentation. The driver (position 1) ATD (Serial No. 065) and right-front passenger (position 2) ATD (Serial No. 066) were calibrated previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C.

The 102 channels of data were recorded on an on-board data acquisition system. Appendix B contains the dummy head, chest, 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 477 mm and both the driver and passenger side doors remained closed and latched 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 bolster and steering column. The passenger's head and chest contacted the airbag. The passenger's head also contacted the headrest. The passenger's knees contacted the glove box.

The occupant data is summarized below:

ATD position	HIC	T ¹	T ²	Clip (g)	T ¹	T ²	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)
Driver	617	53.9	86.5	45	74.6	77.6	-28	-4596	-4583
Passenger	641	66.9	102.9	54	79.0	82.0	-19	-5562	-4732

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

TEST NOTES

There was no valid data collected for:

Top of Engine X after 20 msec.

Bottom of Engine X between 91-102 msec.

SECTION 2
OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

DATA SHEET NO. 1
CRASH TEST SUMMARY

Test Vehicle: 2007 Jeep Compass Sport 4x4
 Test Program: 35mph Frontal Impact

NHTSA No.: M70302
 Test Date: 8/16/2006

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
Glazing Damage	The windshield was cracked.	

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	1739
Center	mm	1625
Right Side	mm	1585
Average	mm	1650

BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Shoulder belt length as measured on ATD	mm	784	769
Lap belt length as measured on ATD	mm	768	745
Remainder of belt on reel	mm	1257	1318
Total belt length for continuous webbing systems	mm	2809	2832

DATA SHEET NO. 2
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2007 Jeep Compass Sport 4x4
 Test Program: 35mph Frontal Impact

NHTSA No.: M70302
 Test Date: 8/16/2006

TEST VEHICLE INFORMATION

Manufacturer	Jeep
Model	Compass Sport
Body Style	MPV
NHTSA No.	M70302
VIN	1J8FF47W770586170
Color	Black
Delivery Date	8/02/06
Odometer Reading (mile)	62
Dealer	Braeger Chrysler Jeep
Transmission	Automatic
Final Drive	4 Wheel
Number of Cylinders	4
Engine Displacement (L)	2.4
Engine Placement	Lateral
Automatic Door Lock (ADL)	No
Owners Manual Details Instructions on Disabling ADLs	N/A
Bucket Seats	Yes

TEST VEHICLE OPTIONS

Front Airbag	Yes
Driver Side Curtain Airbag	Yes
Driver Side Torso Airbag	No
Rear Passenger Side Curtain Airbag	Yes
Rear Passenger Side Torso Airbag	No
Force Limiter	Yes
Pretensioner	Yes
Power Steering	Yes
Power Door Locks	Yes
Tilt Wheel	Yes
Air Conditioning	Yes
Anti-lock Brakes	Yes
Traction Control	Yes
All Wheel Drive	Yes
Power Seats	No

DATA FROM CERTIFICATION LABEL

Manufactured By	DaimlerChrysler Corporation
Date of Manufacture	7/06

GVWR (kg)	2012
GAWR Front (kg)	1080
GAWR Rear (kg)	1044

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench		
Number of Occupants	2	3		5
Capacity Wt. (VCW) (kg)				419
Cargo Wt. (RCLW) (kg)				79

DATA SHEET NO. 2... (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2007 Jeep Compass Sport 4x4
 Test Program: 35mph Frontal Impact

NHTSA No.: M70302
 Test Date: 8/16/2006

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	460.4	324.3		489.4	410.5	
Right	kg	422.8	323.4		448.2	410.1	
Ratio	%	57.7	42.3		53.3	46.7	
Totals	kg	883.2	647.7	1530.9	937.6	820.6	1758.2

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1530.9
Weight of 2 P572E ATDs	kg	156.0
Rated Cargo/Luggage Weight (RCLW)	kg	79
Calculated Vehicle Target Weight (TVTW)	kg	1765.9

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	759	768	774	776	1115
As Tested	mm	753	758	736	740	1230
Post Test	mm	792	780	737	732	

Vehicle Wheelbase (mm): 2635

Weight of Ballast secured in cargo area (kg): 61.7

Vehicle Components Removed: Spare tire, trunk carpet/floor, right side
rear compartment, left rear tail light, rear seat

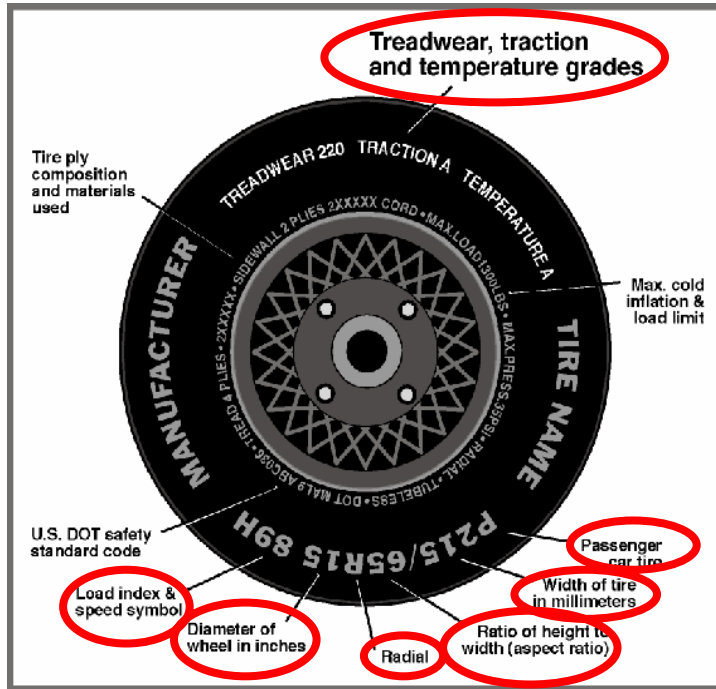
Ballast weight does not include instrumentation and data acquisition system.

DATA SHEET NO. 3

TEST VEHICLE TIRE INFORMATION

Test Vehicle: 2007 Jeep Compass Sport 4x4
 Test Program: 35mph Frontal Impact

NHTSA No.: M70302
 Test Date: 8/16/2006



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	220	220
Recommended Tire Size	P215/60R17	P215/60R17
Tire Size on Vehicle	P215/60R17	P215/60R17
Tire Manufacturer	Firestone	Firestone
Tire Name	Affinity	Affinity
Tire Type	M + S	M + S
Tire Width (mm)	215	215
Ratio of Height to Width (aspect ratio)	60	60
Radial	R	R
Wheel Diameter	17	17
Load Index & Speed Symbol	95T	95T
Treadwear	500	500
Traction Grade	A	A
Temperature Grade	B	B

DATA SHEET NO. 4
TEST VEHICLE INFORMATION

Test Vehicle: 2007 Jeep Compass Sport 4x4
 Test Program: 35mph Frontal Impact

NHTSA No.: M70302
 Test Date: 8/16/2006

NORMAL DESIGN RIDING POSITION

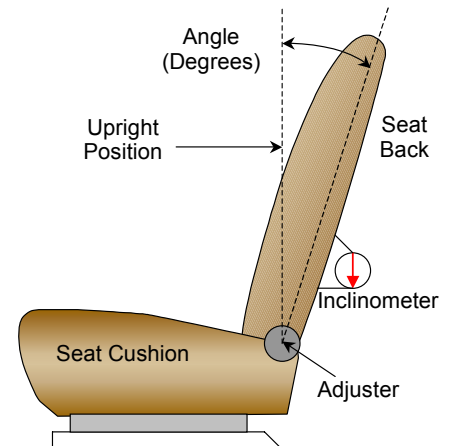
The driver and passenger seat back is positioned to the manufacturer's designated angle. The procedure is as follows: Measure 14 degrees from vertical with inclinometer on headrest posts. Seat back angle = 20 degrees.

Driver seat back angle: 14.1 degrees on headrest post

Passenger seat back angle: 13.9 degrees on headrest post

SEAT FORE/AFT POSITIONING

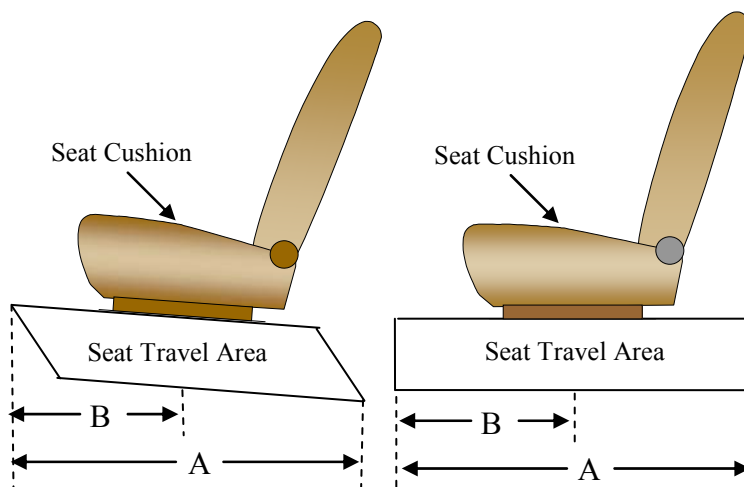
	Total Fore/Aft Travel	Placed in Position #
Driver Seat	300 mm	150 mm
Passenger Seat	260 mm 39 detents	130 mm 20 th detent, 1 st as 1



FRONT SEAT ASSEMBLY

ADJUSTABLE D-RING POSITION

The driver and passenger D-rings were placed 1 position below full-up.



DATA SHEET NO. 4...(CONTINUED)

TEST VEHICLE INFORMATION

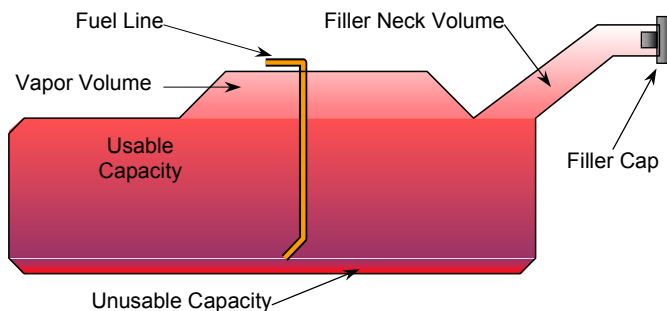
Test Vehicle: 2007 Jeep Compass Sport 4x4
Test Program: 35mph Frontal Impact

NHTSA No.: M70302
Test Date: 8/16/2006

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	51.5
Usable Capacity of "Optional" Tank	
92-94% of Usable Capacity	47.4 – 48.4
Actual Amount of Solvent used	47.7
1/3 of Usable Capacity	17.2

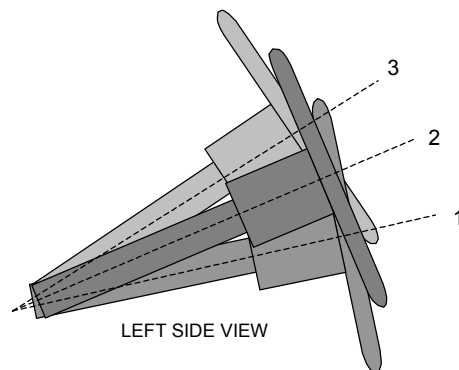
The test vehicle is equipped with an electric fuel pump. Pump will run when the vehicle's electrical system is activated.



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 POSITIONS

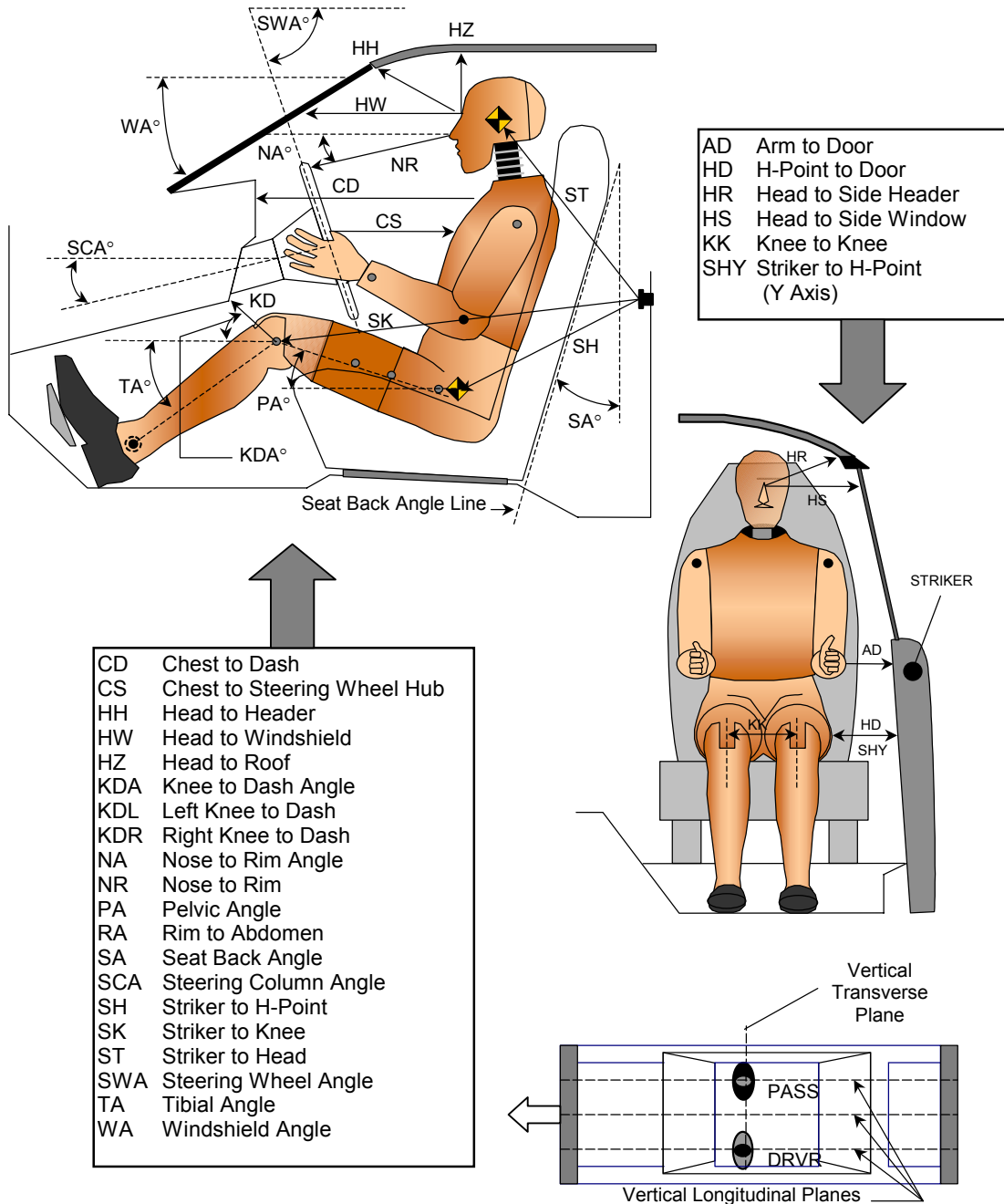
	Fore/Aft Position (mm)	Degrees
Lowermost position No. 1		20.7
Geometric center position No. 2		23.8
Uppermost position No. 3		26.9

DATA SHEET NO. 5 **DUMMY POSITIONING IN VEHICLE**

Test Vehicle: 2007 Jeep Compass Sport 4x4
 Test Program: 35mph Frontal Impact

NHTSA No.: M70302
 Test Date: 8/16/2006

DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS



DATA SHEET NO. 5... (CONTINUED)

DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2007 Jeep Compass Sport 4x4
 Test Program: 35mph Frontal Impact

NHTSA No.: M70302
 Test Date: 8/16/2006

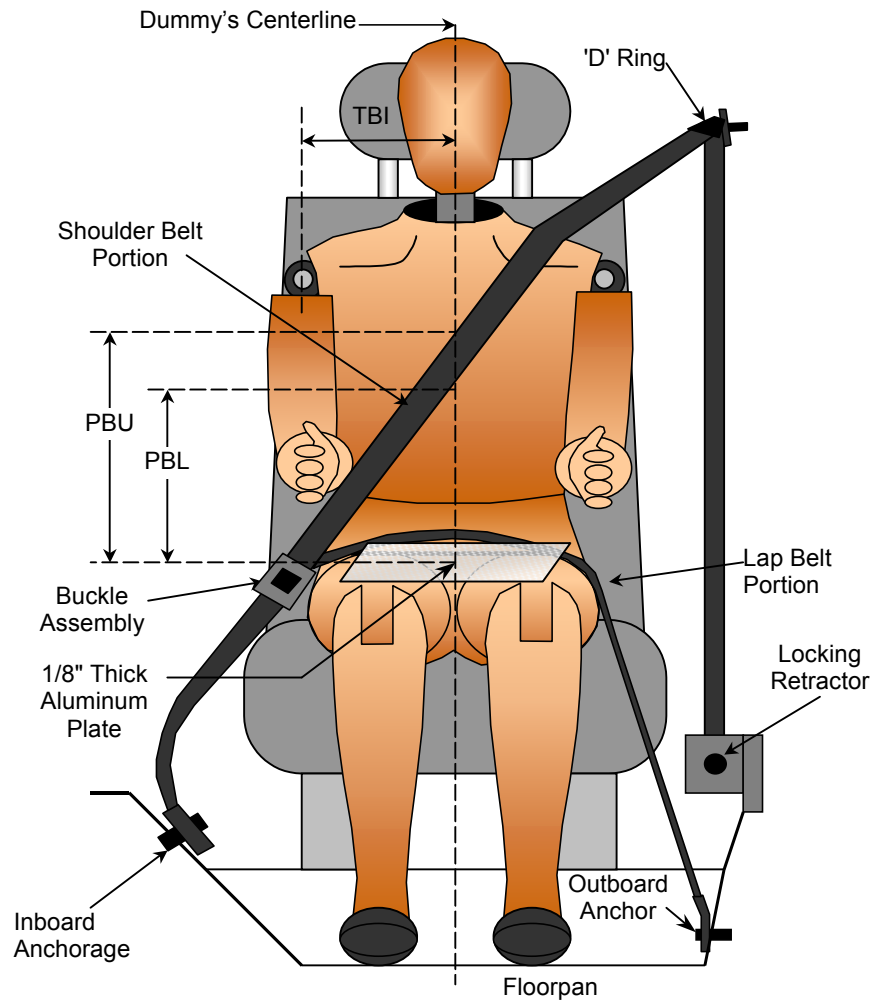
TEST DUMMY POSITION MEASUREMENTS

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA	Windshield Angle		26.5		
SWA	Steering Wheel Angle		66.2		
SCA	Steering Column Angle		23.1		
SA	Seat Back Angle (headrest post)		14.1		13.9
HZ	Head to Roof (Z)	232	90	204	90
HH	Head to Header	480	18.1	497	15.7
HW	Head to Windshield	786	0	722	0
HR	Head to Side Header (Y)	248		241	
NR	Nose to Rim	390	10.6		
CD	Chest to Dash	554		536	
CS	Chest to Steering Hub	324	10.7		
RA	Rim to Abdomen	181	0		
KDL	Left Knee to Dash	153	32.6	149	
KDR	Right Knee to Dash	137		154	29.2
PA	Pelvic Angle		23.2		23.5
TA	Tibia Angle		54.7		47.7
KK	Knee to Knee (Y)	295		270	
SK	Striker to Knee	569	93.4	569	98.4
ST	Striker to Head	513	5.3	539	8.4
SH	Striker to H-Point	235	122.1	223	124.0
SHY	Striker to H-Point (Y)	258		261	
HS	Head to Side Window	372		364	
HD	H-Point to Door (Y)	132		130	
AD	Arm to Door (Y)	122		122	
AA	Ankle to Ankle	321		225	

DATA SHEET NO. 6 **SEAT BELT POSITIONING DATA**

Test Vehicle: 2007 Jeep Compass Sport 4x4
 Test Program: 35mph Frontal Impact

NHTSA No.: M70302
 Test Date: 8/16/2006



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU - Top surface of reference to belt upper edge	mm	325	325
PBL - To surface of reference to belt lower edge	mm	240	240

DATA SHEET NO. 7
VEHICLE ACCELEROMETER LOCATIONS

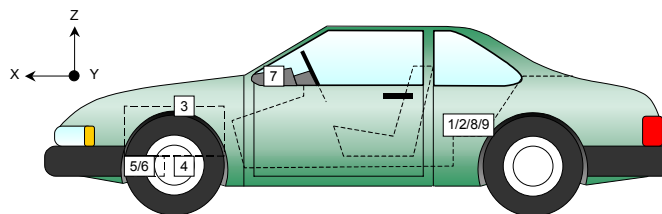
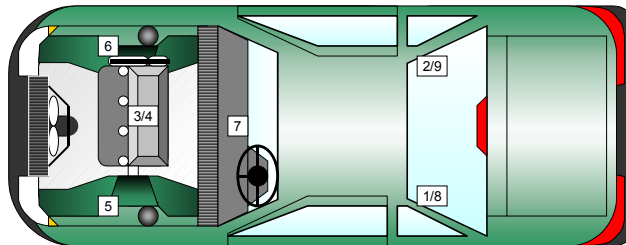
Test Vehicle: 2007 Jeep Compass Sport 4x4
 Test Program: 35mph Frontal Impact

NHTSA No.: M70302
 Test Date: 8/16/2006

VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear X-Member X	1559	-375	848
2	Right Rear X-Member X	1559	375	848
3	Engine Top X	3699	-40	850
4	Engine Bottom X	3572	-41	315
5	Left Brake Caliper X	3581	-673	234
6	Right Brake Caliper X	3582	673	233
7	Instrument Panel X			
8	Left Rear X-Member Z	1559	-375	848
9	Right Rear X-Member Z	1559	375	848

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



DATA SHEET NO. 8

SUMMARY OF FMVSS 212 AND FMVSS 219 (Partial) DATA

Test Vehicle: 2007 Jeep Compass Sport 4x4
 Test Program: 35mph Frontal Impact

NHTSA No.: M70302
 Test Date: 8/16/2006

Windshield Mounting Details:

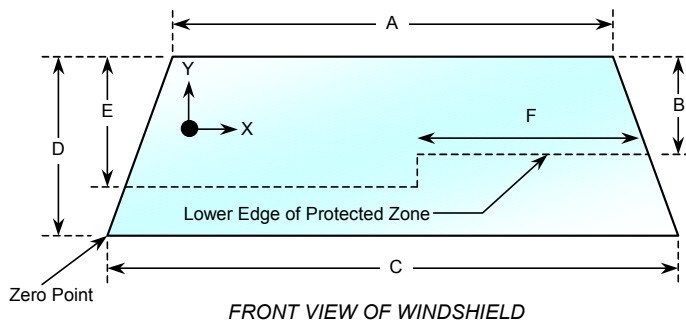
Windshield glass is secured to the vehicle frame with a rubber trim and glue.

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	2021	2021	100
Right Side	2021	2021	100
Total	4042	4042	100



Item	Units	Value
A	mm	1140
B	mm	469
C	mm	1452
D	mm	725
E	mm	490
F	mm	501

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. 9
SUMMARY OF FMVSS 301 DATA

Test Vehicle: 2007 Jeep Compass Sport 4x4
 Test Program: 35mph Frontal Impact

NHTSA No.: M70302
 Test Date: 8/16/2006

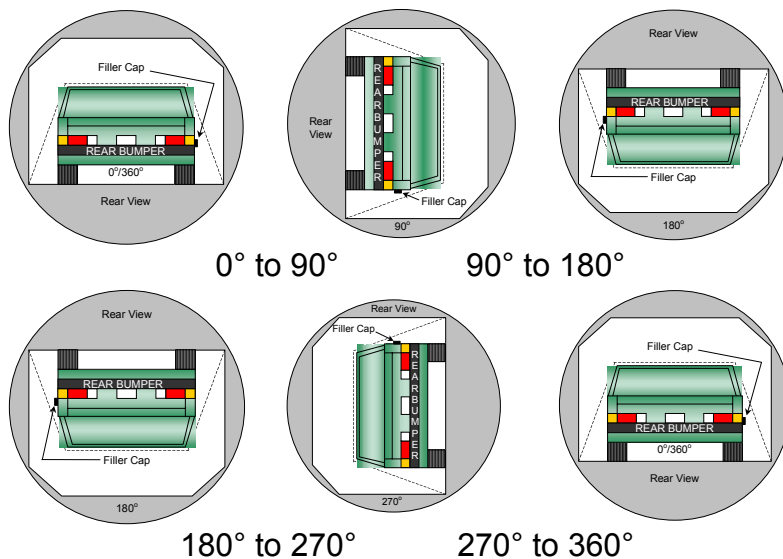
FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21° C Test Time: 10:36 am

Stoddard Solvent Spillage Measurements

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

FMVSS 301 STATIC ROLLOVER DATA



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 locations:
None

Test Phase	Rotation Time (sec.)	Hold Time (sec.)	Spillage (oz.)
0° to 90°	123	300	0
90° to 180°	118	300	0
180° to 270°	111	300	0
270° to 360°	111	300	0

DATA SHEET NO. 10
VEHICLE MEASUREMENTS

Test Vehicle: 2007 Jeep Compass Sport 4x4
Test Program: 35mph Frontal Impact

NHTSA No.: M70302
Test Date: 8/16/2006

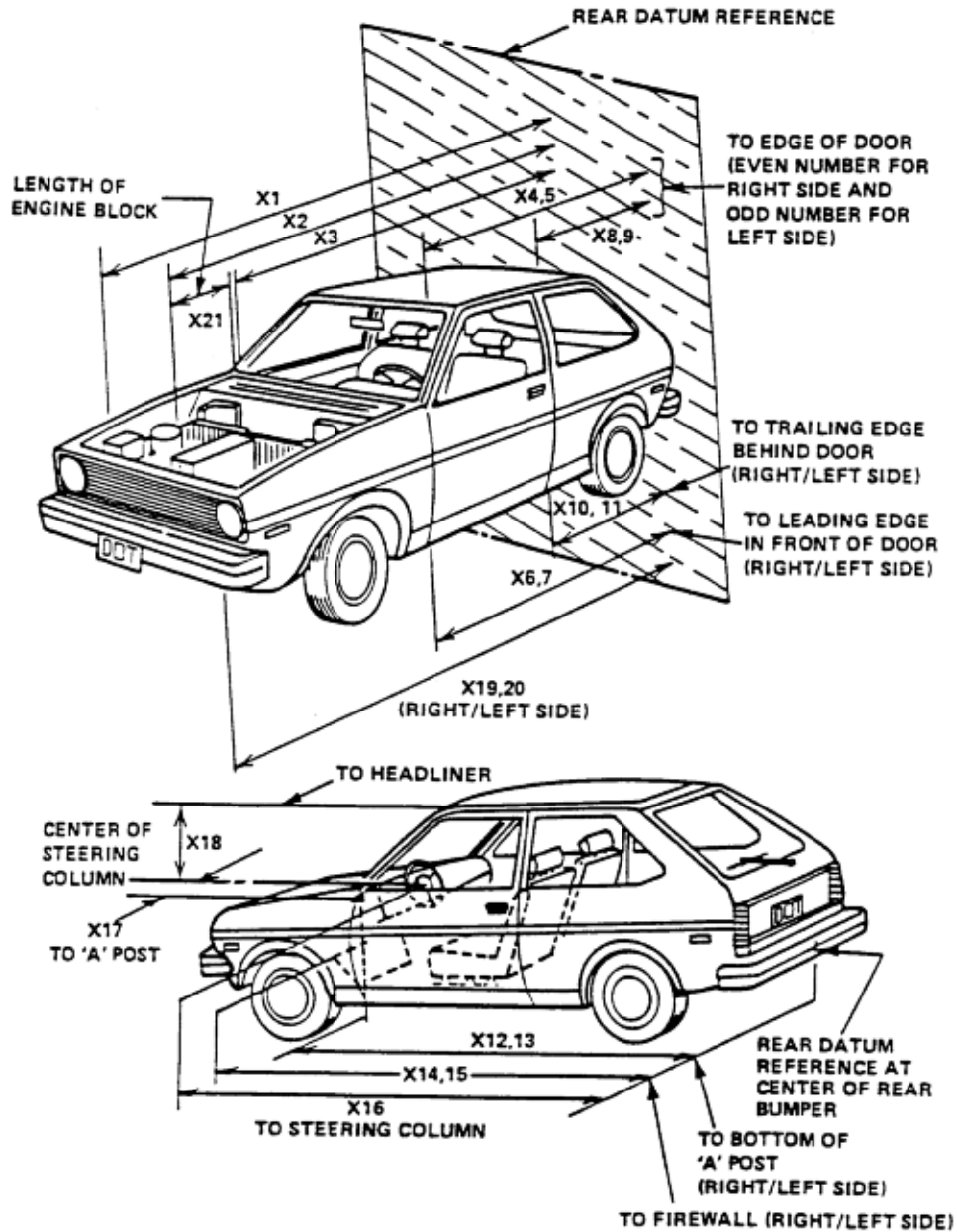
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total length of vehicle at centerline	mm	4353	3931	422
2	RSOV to front of engine	mm	3766	3588	178
3	RSOV to firewall centerline	mm	3481	3495	-14
4	RSOV to leading edge of right door	mm	2968	2994	-26
5	RSOV to leading edge of left door	mm	2981	2989	-8
6	RSOV to lower leading edge of right door	mm	2920	2921	-1
7	RSOV to lower leading edge of left door	mm	2924	2916	8
8	RSOV to upper leading edge of right door	mm	1931	1932	-1
9	RSOV to upper leading edge of left door	mm	1929	1931	-2
10	RSOV to lower trailing edge of right door	mm	1924	1911	13
11	RSOV to lower trailing edge of left door	mm	1931	1919	12
12	RSOV to bottom of right 'A' pillar	mm	2924	2935	-11
13	RSOV to bottom of left 'A' pillar	mm	2935	2924	11
14	RSOV to firewall on right side	mm	3378	3379	-1
15	RSOV to firewall on left side	mm	3378	3374	4
16	RSOV to steering column	mm	2517	2561	-44
17	Center of steering column to left 'A' pillar	mm	419	393	26
18	Center of steering column to headlining	mm	440	397	43
19	RSOV to right side of front bumper	mm	4261	3941	320
20	RSOV to left side of front bumper	mm	4261	3881	380
21	Length of engine block	mm	463	463	0
RD	RSOV to right side of dash panel	mm	2735	2760	-25
CD	RSOV to center of dash panel	mm	2784	2812	-28
LD	RSOV to left side of dash panel	mm	2733	2743	-10

DATA SHEET NO. 10... (continued)

VEHICLE MEASUREMENTS

Test Vehicle: 2007 Jeep Compass Sport 4x4
 Test Program: 35mph Frontal Impact

NHTSA No.: M70302
 Test Date: 8/16/2006



DATA SHEET NO. 10... (continued)**VEHICLE MEASUREMENTS**

Test Vehicle: 2007 Jeep Compass Sport 4x4
Test Program: 35mph Frontal Impact

NHTSA No.: M70302
Test Date: 8/16/2006

Target Vehicle Structural Measurement

	Elements	Pre-Test (mm)
1	Total Length	4353
2	Total Width	1767
3	Bumper Top Height	555
4	Bumper Bottom Height	425
5	Longitudinal Member Top Height	480
6	Distance between Longitudinal Members	900
7	Longitudinal Member Width	60
8	Engine Top Height	862
9	Engine Bottom Height	228
10	Engine and gearbox width	700
11	Front bumper-engine distance	510
12	Front shock absorber fixing height	950
13	Bonnet leading edge height	915
14	Front shock absorber fixing width	1105
15	Front bumper – front axle distance	866
16	Front axle – a pillar distance	1376
17	A-pillar – B-pillar distance	1025
18	B-Pillar – rear axle distance	1086
19	B-pillar – C-pillar distance	900
20	Roof sill bottom height	1594
21	Roof sill top height	1645
22	Floor sill bottom height	250
23	Floor sill top height	385

DATA SHEET NO. 11
CAMERA LOCATIONS

Test Vehicle: 2007 Jeep Compass Sport 4x4
Test Program: 35mph Frontal Impact

NHTSA No.: M70302
Test Date: 8/16/2006

No.	Camera View	Location (mm) *			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Side View				13	24
2	Left Front View	915	-4770	1275	24	1000
3	Steering Column Top	1030	-5390	1475	25	1000
4	Steering Column Bottom	1035	-5365	1025	25	1000
5	Driver Close-up	1455	-6385	1490	35	1000
6	Driver Angle	6485	-5385	2020	50	1000
7	On board Driver Side					
8	On board Passenger Side					
9	Right Overall	1980	6990	1215	24	1000
10	Right Passenger Half	1105	5000	1160	25	1000
11	Right Close-up	1200	6260	1530	35	1000
12	Right Angle	6275	4865	2015	50	1000
13	Windshield	-285	0	2370	12.5	1000
14	Top Driver	-60	-390	2195	24	1000
15	Top Passenger	-60	440	2205	24	1000
16	Pit Front	1090	0	-3150	24	1000
17	Pit Rear	2915	0	-3160	24	1000

***COORDINATES:**

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

Note: Cameras 7 and 8 were not used for this test.

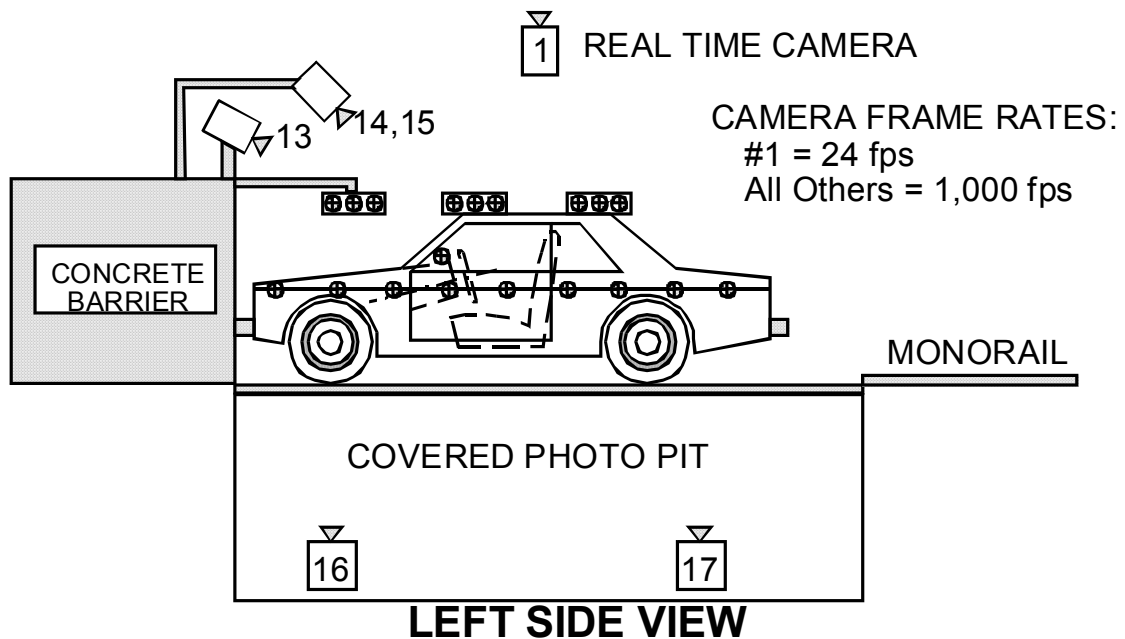
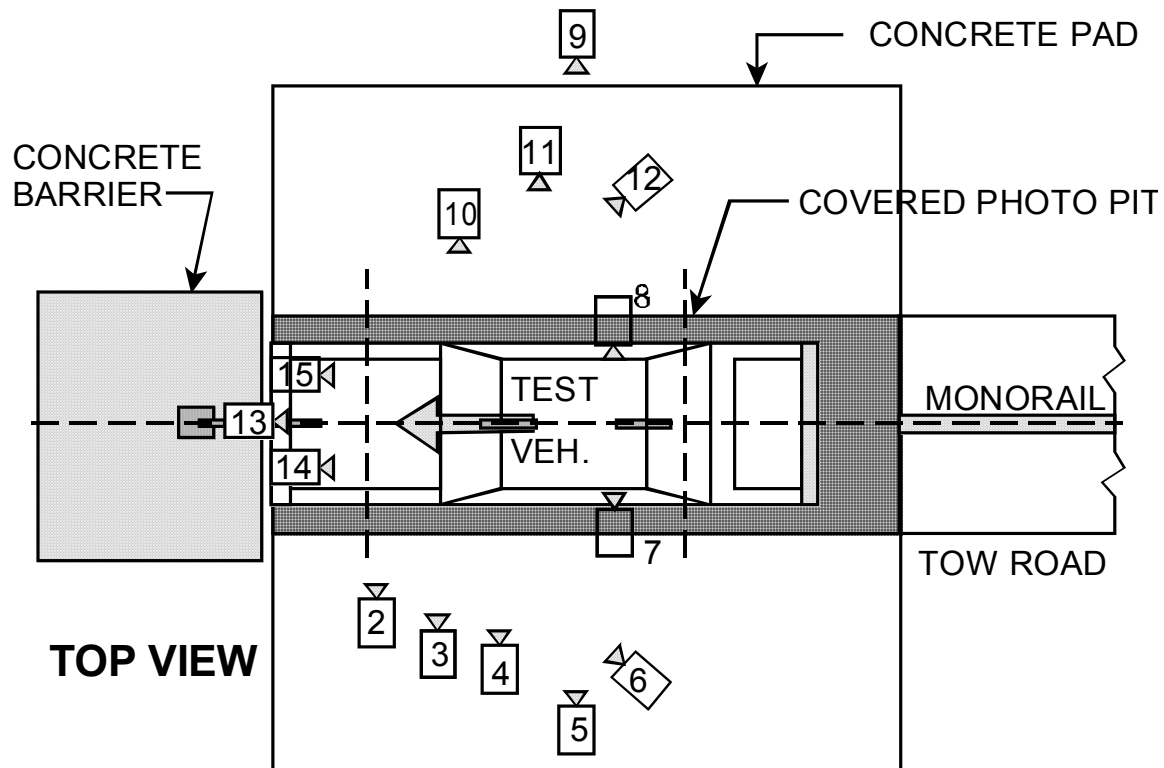
DATA SHEET NO. 11... (continued)

CAMERA LOCATIONS

Test Vehicle: 2007 Jeep Compass Sport 4x4
Test Program: 35mph Frontal Impact

NHTSA No.: M70302
Test Date: 8/16/2006

CAMERA POSITIONS FOR FRONTAL IMPACTS

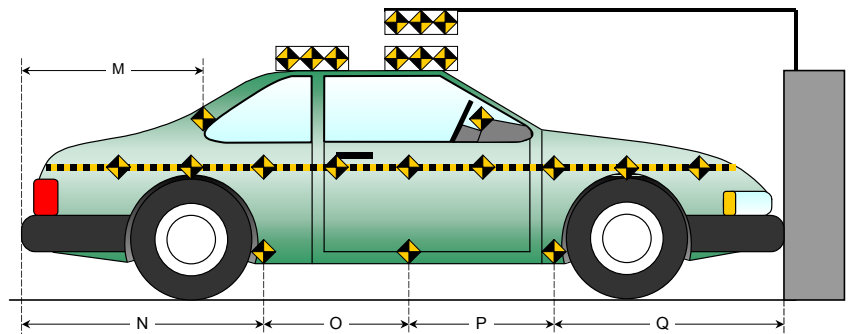
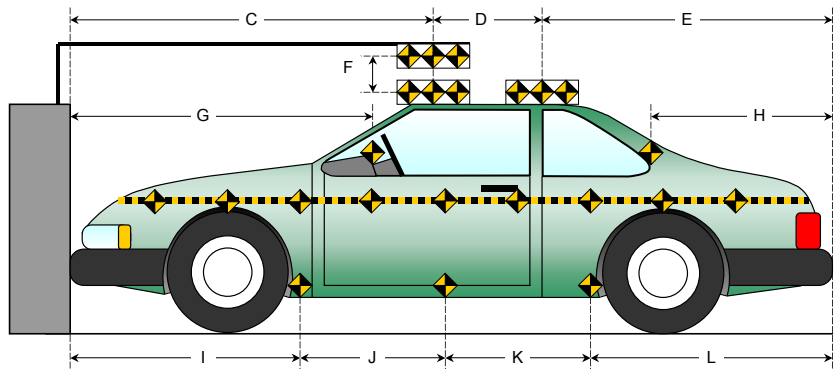
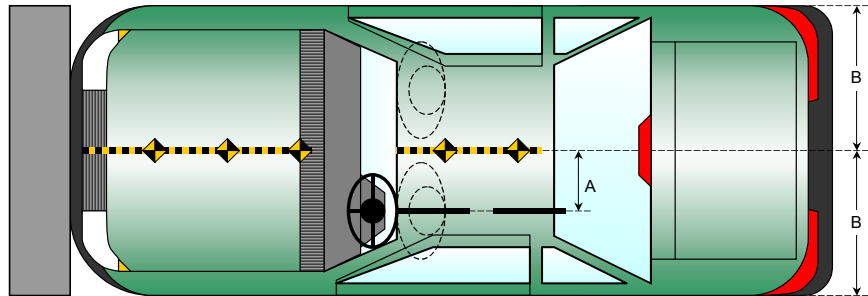


DATA SHEET NO. 12 **PHOTOGRAPHIC REFERENCE TARGET LOCATIONS**

Test Vehicle: 2007 Jeep Compass Sport 4x4
 Test Program: 35mph Frontal Impact

NHTSA No.: M70302
 Test Date: 8/16/2006

Item	Value
A	359
B	884
C	2281
D	610
E	1462
F	1584
G	
H	1143
I	1376
J	837
K	838
L	1302
M	1140
N	1302
O	837
P	838
Q	1376



DATA SHEET NO. 13
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2007 Jeep Compass Sport 4x4
Test Program: 35mph Frontal Impact

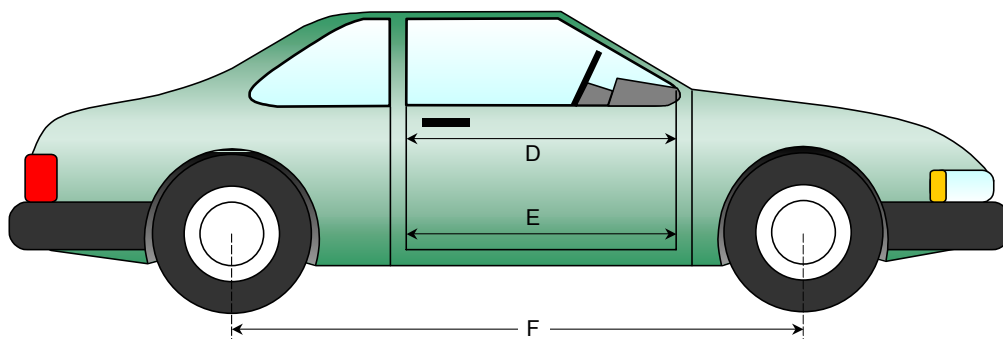
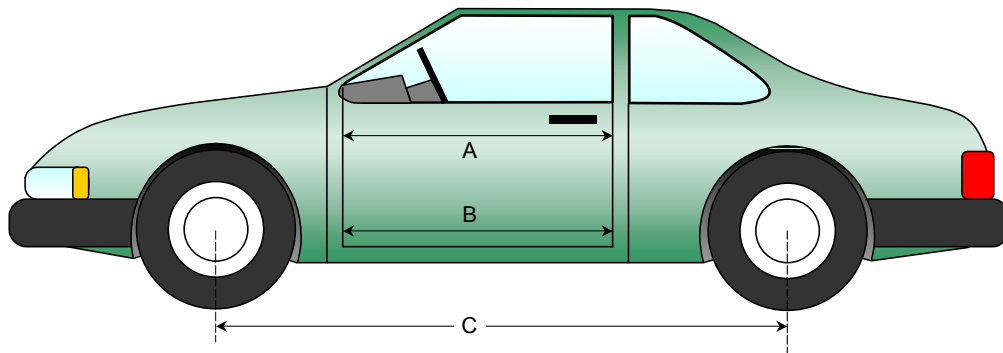
NHTSA No.: M70302
Test Date: 8/16/2006

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	924	923	1
B	Left Side Lower	mm	896	894	2
D	Right Side Upper	mm	926	926	0
E	Right Side Lower	mm	909	908	1

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2635	2584	51
F	Right Side Wheelbase	mm	2634	2580	54



DATA SHEET NO. 13... (continued)
VEHICLE INTRUSION MEASUREMENTS

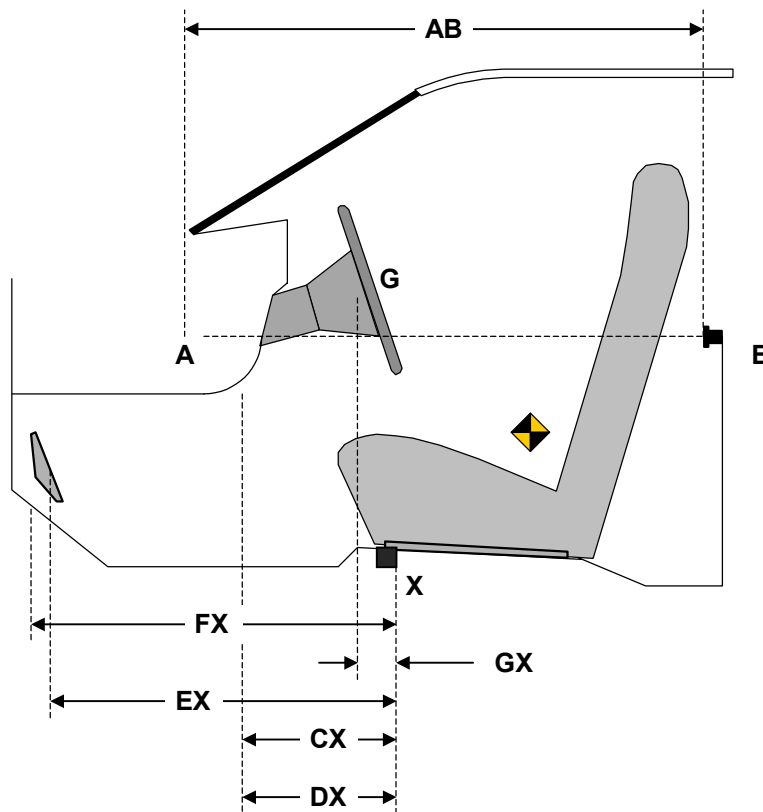
Test Vehicle: 2007 Jeep Compass Sport 4x4
 Test Program: 35mph Frontal Impact

NHTSA No.: M70302
 Test Date: 8/16/2006

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside window jam)	mm	761	761	0
CX	Left Knee Bolster to X	mm	242	275	-33
DX	Right Knee Bolster to X	mm	242	248	-6
EX	Brake Pedal to X	mm	527	441	86
FX	Foot Rest to X	mm	574	562	12
GX	Center of Steering Column Wheel Hub to X	mm	53	129	-76

X = Front of Seat Track (stationary)

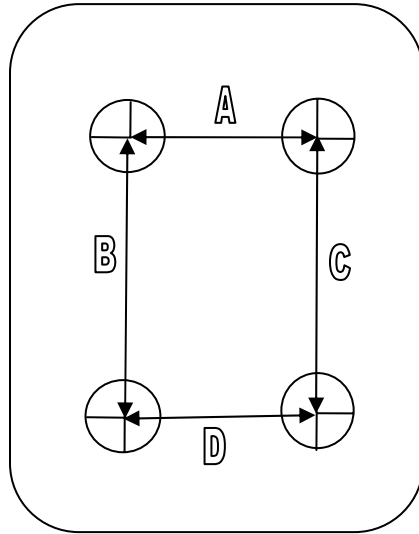


DRIVER COMPARTMENT

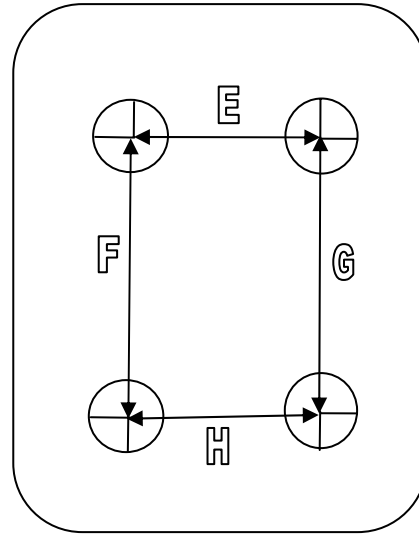
DATA SHEET NO. 13... (continued)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2007 Jeep Compass Sport 4x4
 Test Program: 35mph Frontal Impact

NHTSA No.: M70302
 Test Date: 8/16/2006



Driver



Passenger

UNDERBODY FLOORBOARD DEFORMATION

Measurement	Pre-Test	Post-Test	Difference
A	325	308	17
B	257	254	3
C	253	251	2
D	328	310	18
E	255	242	13
F	301	300	1
G	287	287	0
H	250	237	13

DATA SHEET NO. 14

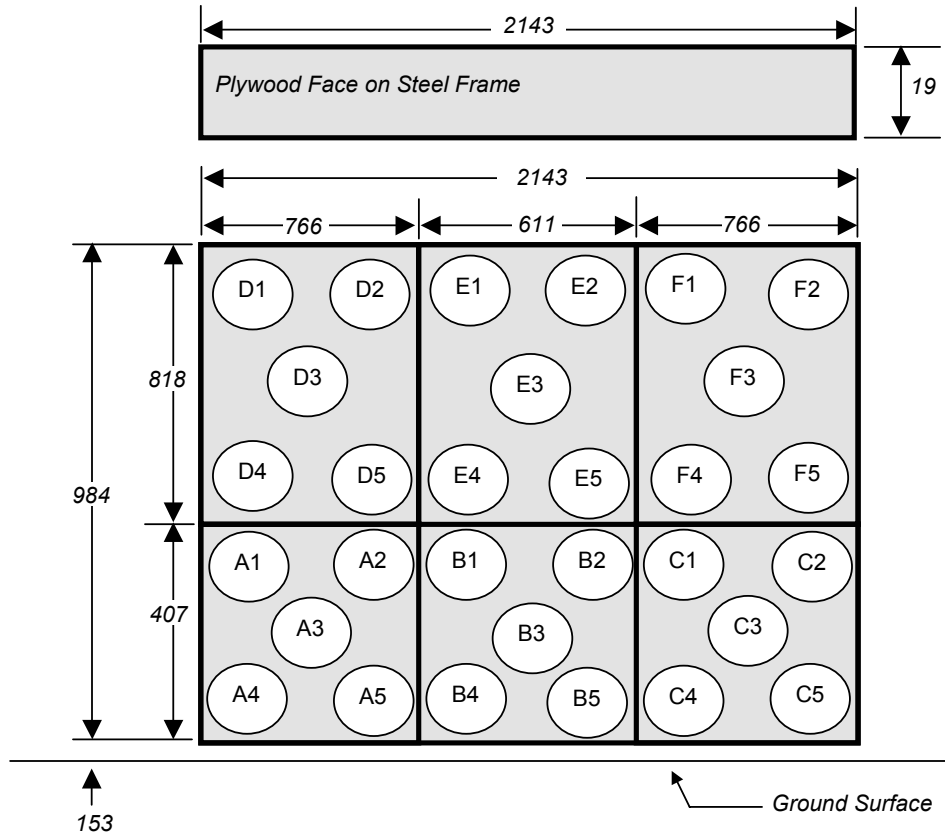
LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2007 Jeep Compass Sport 4x4
 Test Program: 35mph Frontal Impact

NHTSA No.: M70302
 Test Date: 8/16/2006

30 Load Cell Rigid Barrier

Load Cell Locations on Fixed Barrier



Group 4 D1-D5	Group 5 E1-E5	Group 6 F1-F5
Group 1 A1-A5	Group 2 B1-B5	Group 3 C1-C5

6 Groups of 5 Load Cells Each

DATA SHEET NO. 15
ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2007 Jeep Compass Sport 4x4 NHTSA No.: M70302
 Test Program: 35mph Frontal Impact Test Date: 8/16/2006

VEHICLE INFORMATION

VIN: 1J8FF47W77D586170 Wheelbase (mm) : 2635
 Vehicle Size Category: MPV Test Weight (kg) : 1758.2

ACCELEROMETER DATA

Accelerometer Locations: As per measurements on Page 12
 Cal. Procedure/Interval: MGA procedure / 6 month
 Integration Algorithm: Trapezoidal Linearity: > 99%
 Impact Velocity (km/h): 56.5
 Velocity Change (km/h): 64.9 Time of Separation (msec): 81

CRUSH PROFILE

Collision Deformation Classification: Frontal Midpoint of Damage: Centerline
 Damage Region Length (mm): 1213 Impact Mode: Frontal

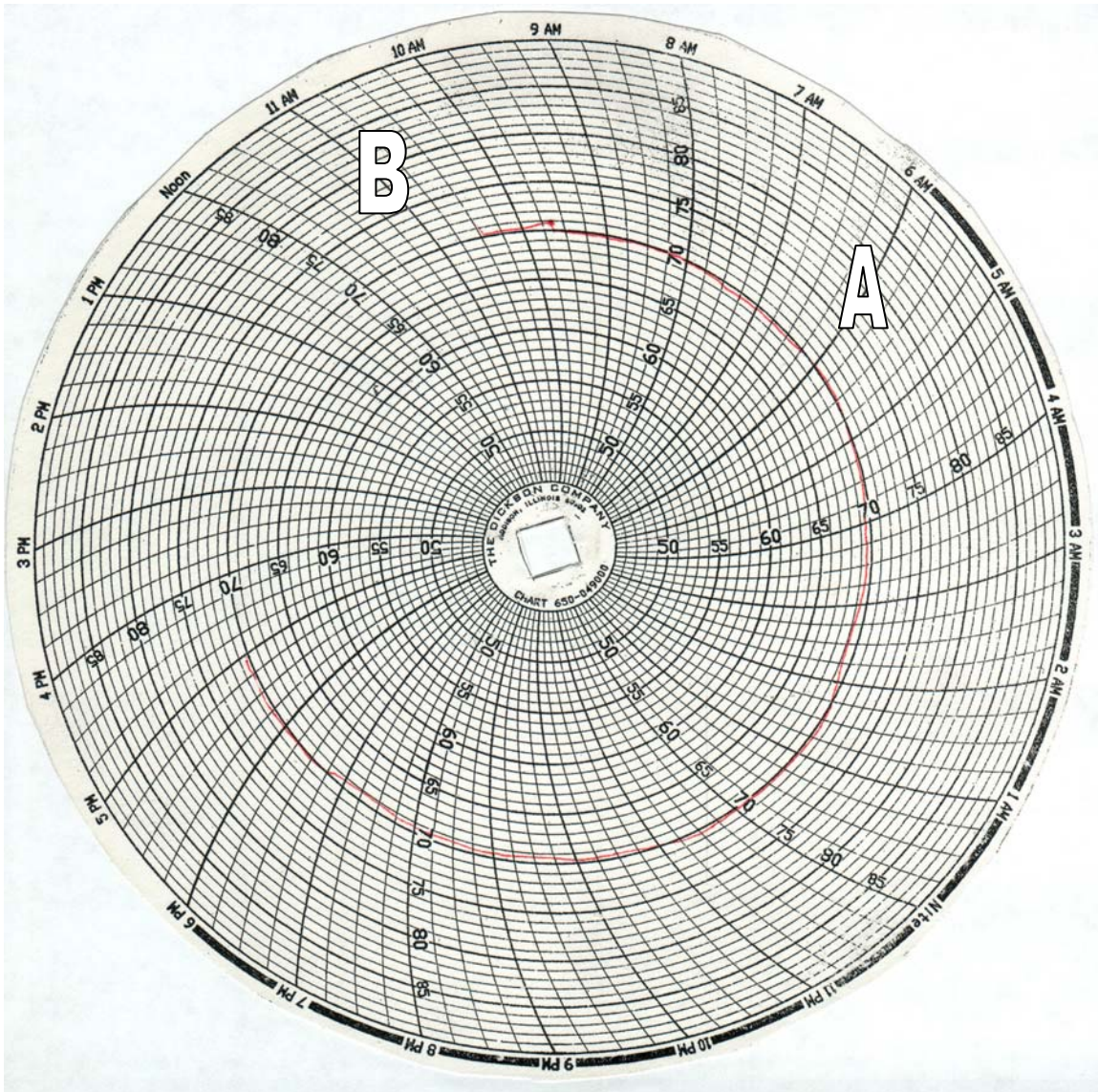
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	4261	3881	380
C2	Crush zone 2 at left side	mm	4328	3851	477
C3	Crush zone 3 at left side	mm	4347	3895	452
C4	Crush zone 4 at right side	mm	4346	3964	382
C5	Crush zone 5 at right side	mm	4322	3964	358
C6	Crush zone 6 at right side	mm	4261	3941	320
L	C1 TO C6	mm	1213	1206	7

DATA SHEET NO. 16

DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2007 Jeep Compass Sport 4x4
Test Program: 35mph Frontal Impact

NHTSA No.: M70302
Test Date: 8/16/2006



A = Dummies installed in vehicle at 6:00 am

B = Test conducted at 10:36 am

APPENDIX A
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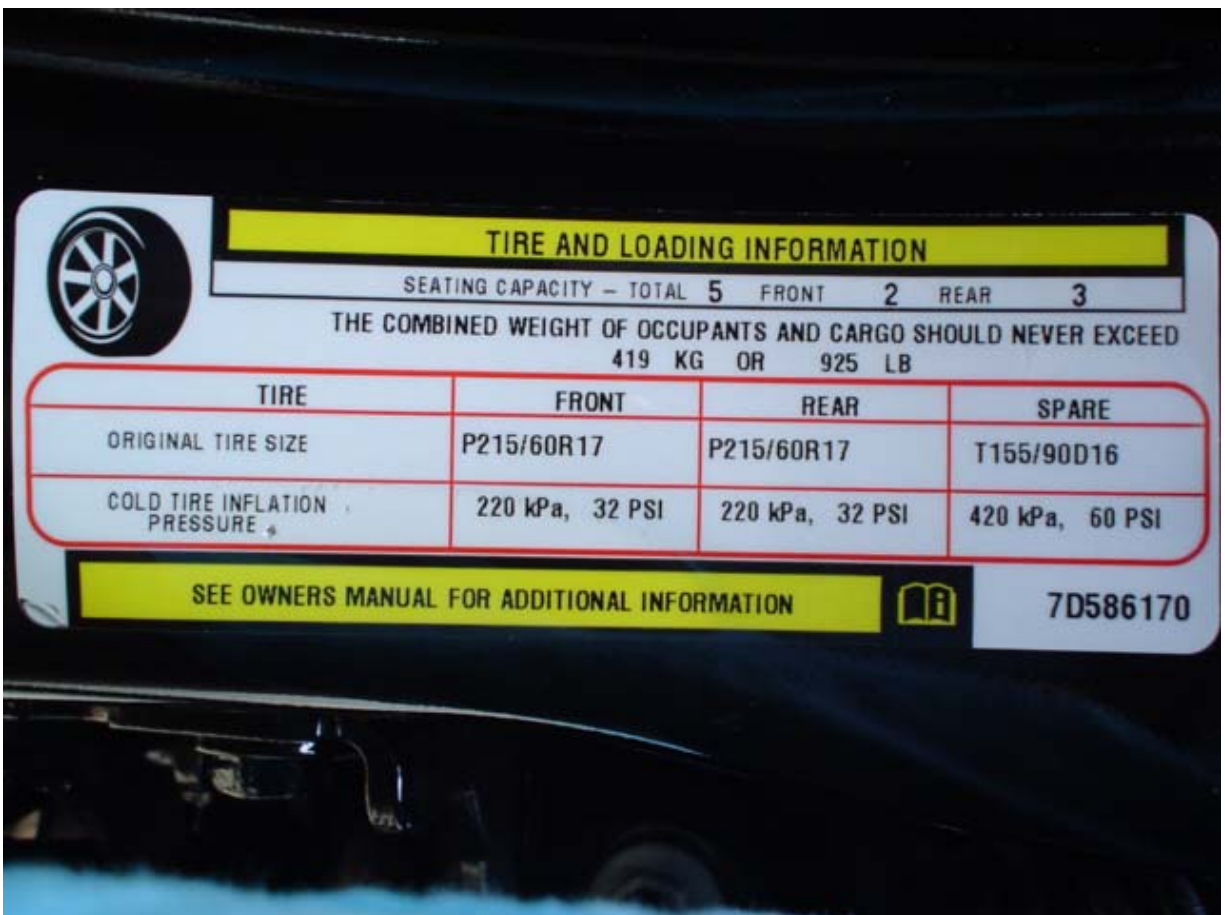
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Load Cell Location



Manufacturer's Label



Tire Placard



Left Front $\frac{3}{4}$ View, As Received



Right Rear $\frac{3}{4}$ View, As Received



Pre-Test Front View



Post-Test Front View



Pre-Test Left Side View



Post-Test Left Side View



Pre-Test Right Side View



Post-Test Right Side View



Pre-Test Right Front $\frac{3}{4}$ View



Post-Test Right Front $\frac{3}{4}$ View



Pre-Test Left Rear $\frac{3}{4}$ View



Post-Test Left Rear $\frac{3}{4}$ View



Pre-Test Left Side $\frac{3}{4}$ View of Doors



Post-Test Left Side $\frac{3}{4}$ View of Doors After Impact



Pre-Test Right Side ¾ View of Doors



Post-Test Right Side ¾ View of Doors After Impact



Pre-Test Windshield View



Post-Test Windshield View



Pre-Test Engine Compartment View



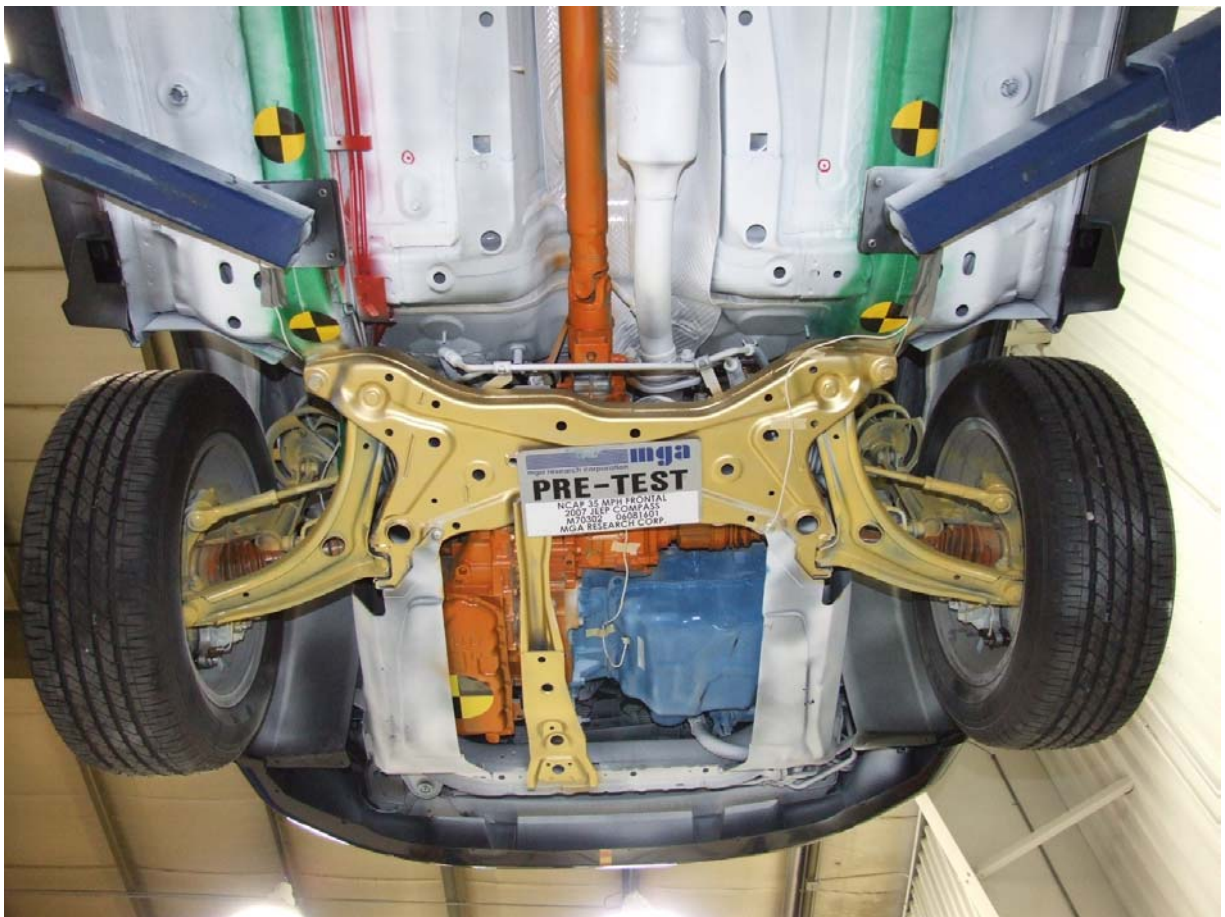
Post-Test Engine Compartment View



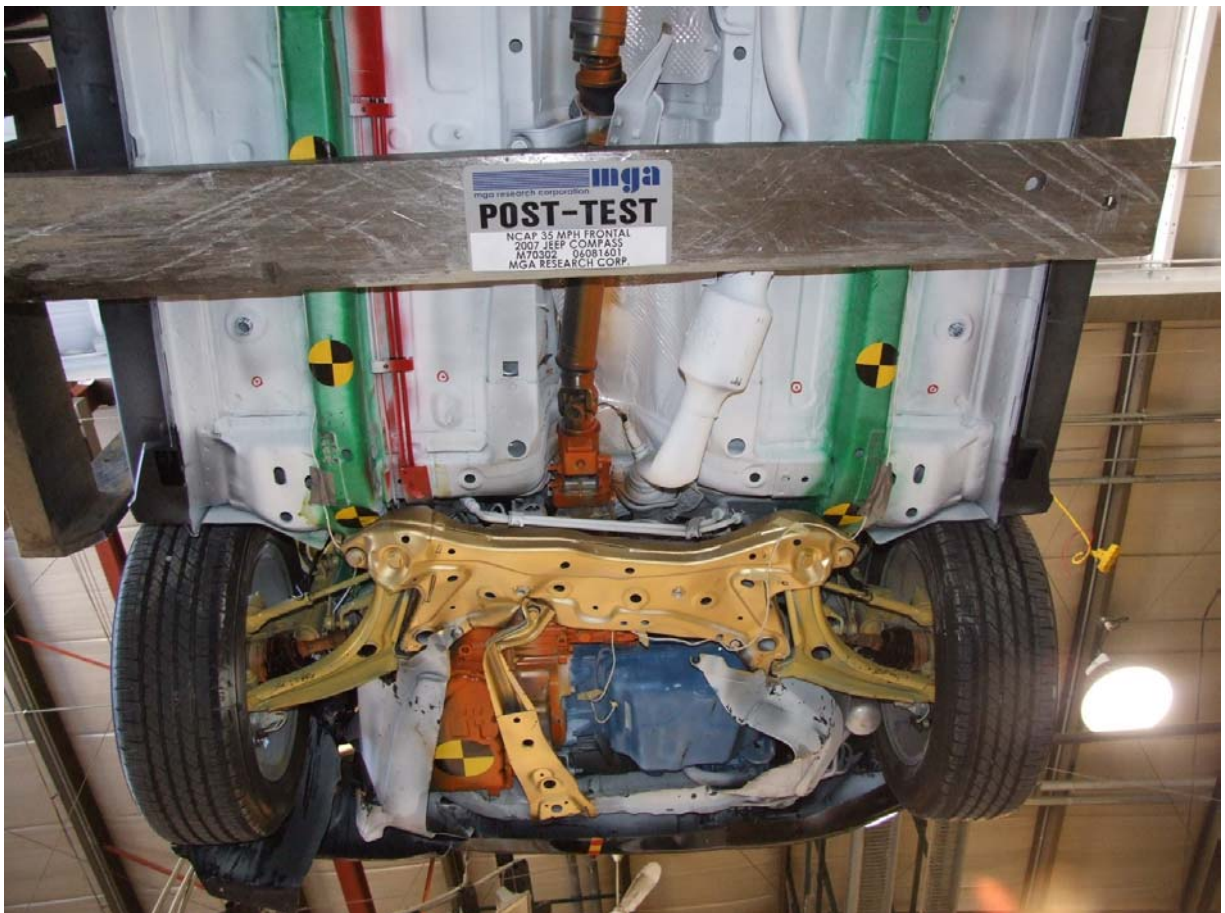
Pre-Test Fuel Cap View



Post-Test Fuel Cap View



Pre-Test Front Underbody View



Post-Test Front Underbody View



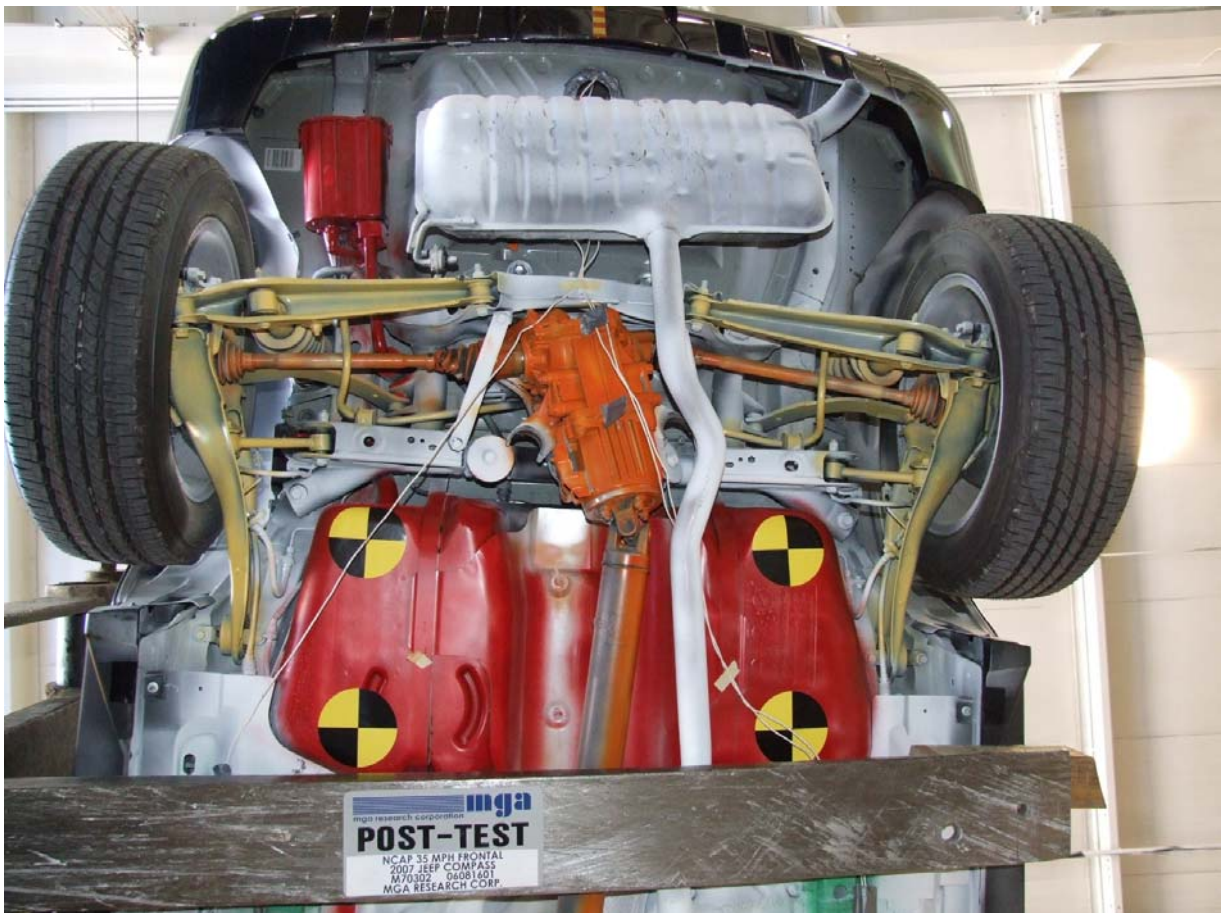
Pre-Test Mid Underbody View



Post-Test Mid Underbody View



Pre-Test Rear Underbody View



Post-Test Rear Underbody View



Pre-Test Driver Dummy Front View (Head Position)



Post-Test Driver Dummy Front View (Head Position)



Pre-Test Driver Dummy (Through Window)



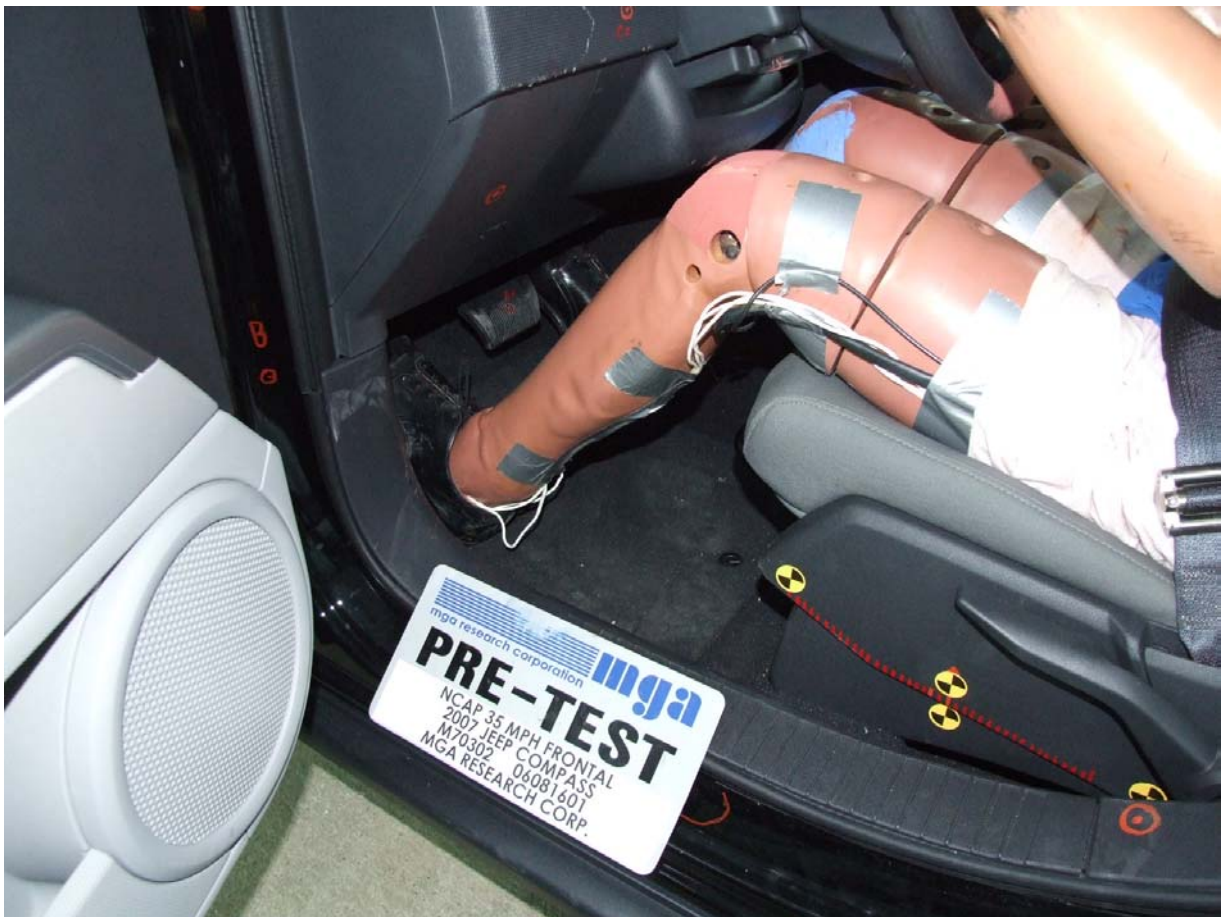
Post-Test Driver Dummy (Through Window)



Pre-Test Driver Dummy (Door Open)



Post-Test Driver Dummy (Door Open)



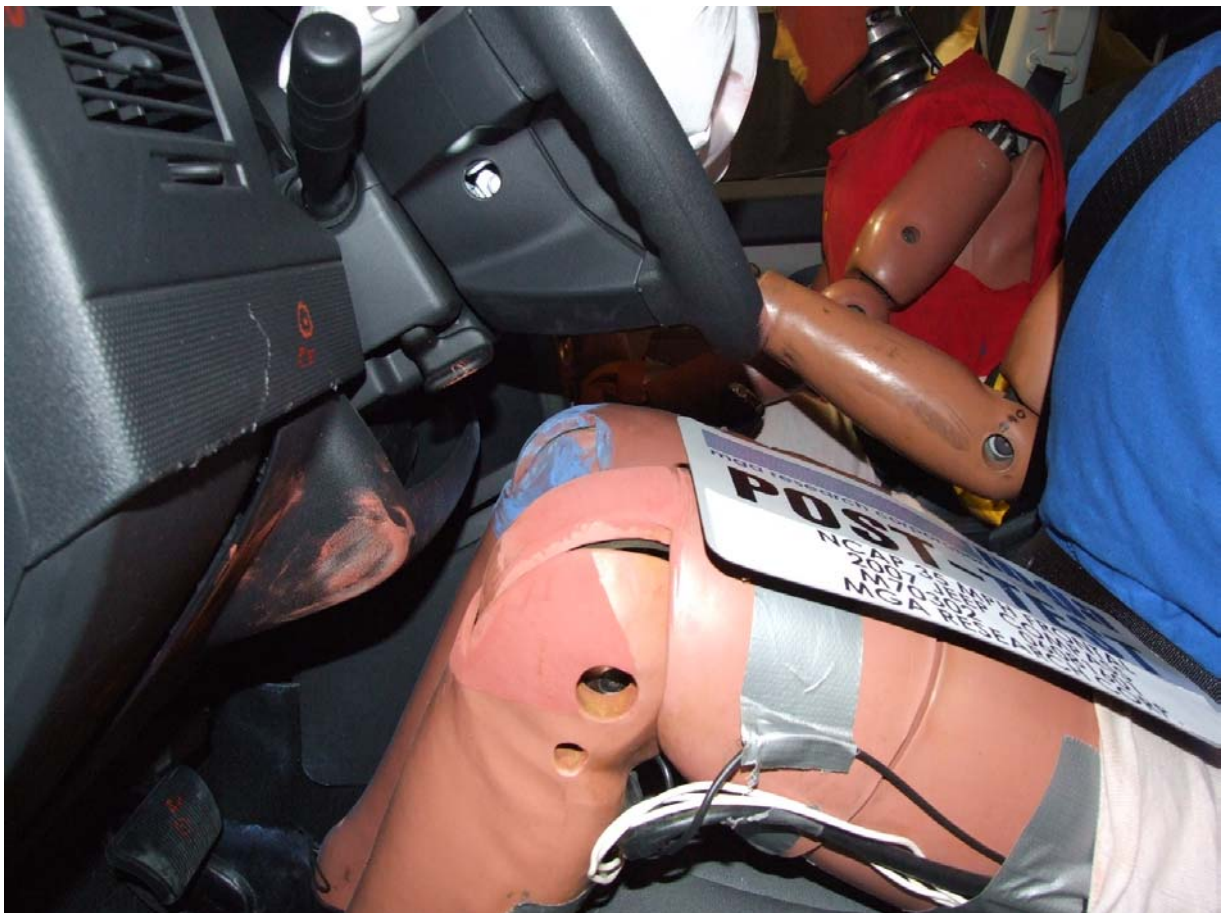
Pre-Test Driver Dummy Feet



Post-Test Driver Dummy Feet



Pre-Test Driver Side Knee Bolster



Post-Test Driver Side Knee Bolster



Pre-Test Driver Side Floor Pan



Post-Test Driver Side Floor Pan



Post-Test Driver Dummy Head Contact



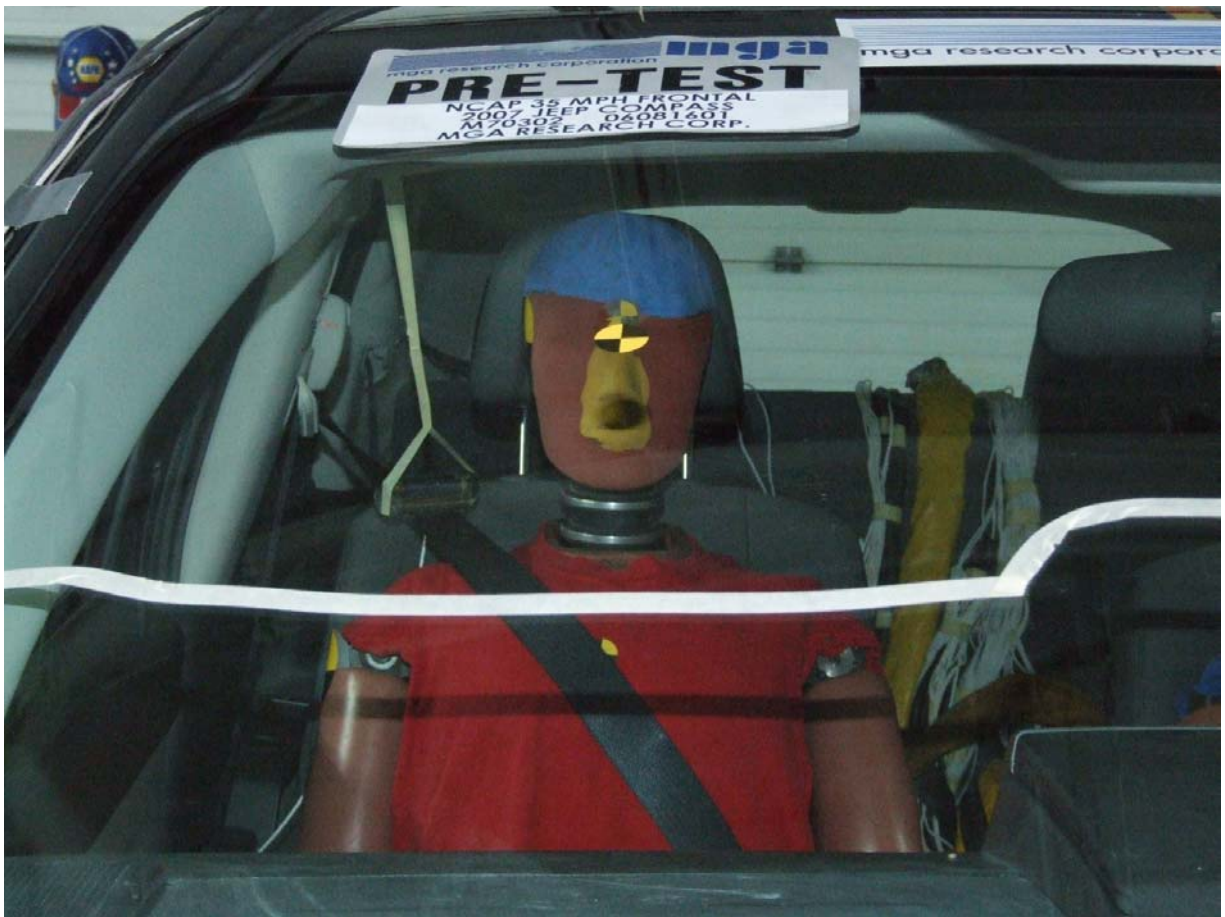
Post-Test Driver Dummy Left Knee Contact



Post-Test Driver Dummy Right Knee Contact



Post-Test Driver Dummy Airbag Contact



Pre-Test Passenger Dummy Front View (Head Position)



Post-Test Passenger Dummy Front View (Head Position)



Pre-Test Passenger Dummy (Through Window)



Post-Test Passenger Dummy (Through Window)



Pre-Test Passenger Dummy (Door Open)



Post-Test Passenger Dummy (Door Open)



Pre-Test Passenger Dummy Feet



Post-Test Passenger Dummy Feet



Pre-Test Passenger Side Glove Box



Post-Test Passenger Side Glove Box



Pre-Test Passenger Side Floor Pan



Post-Test Passenger Side Floor Pan



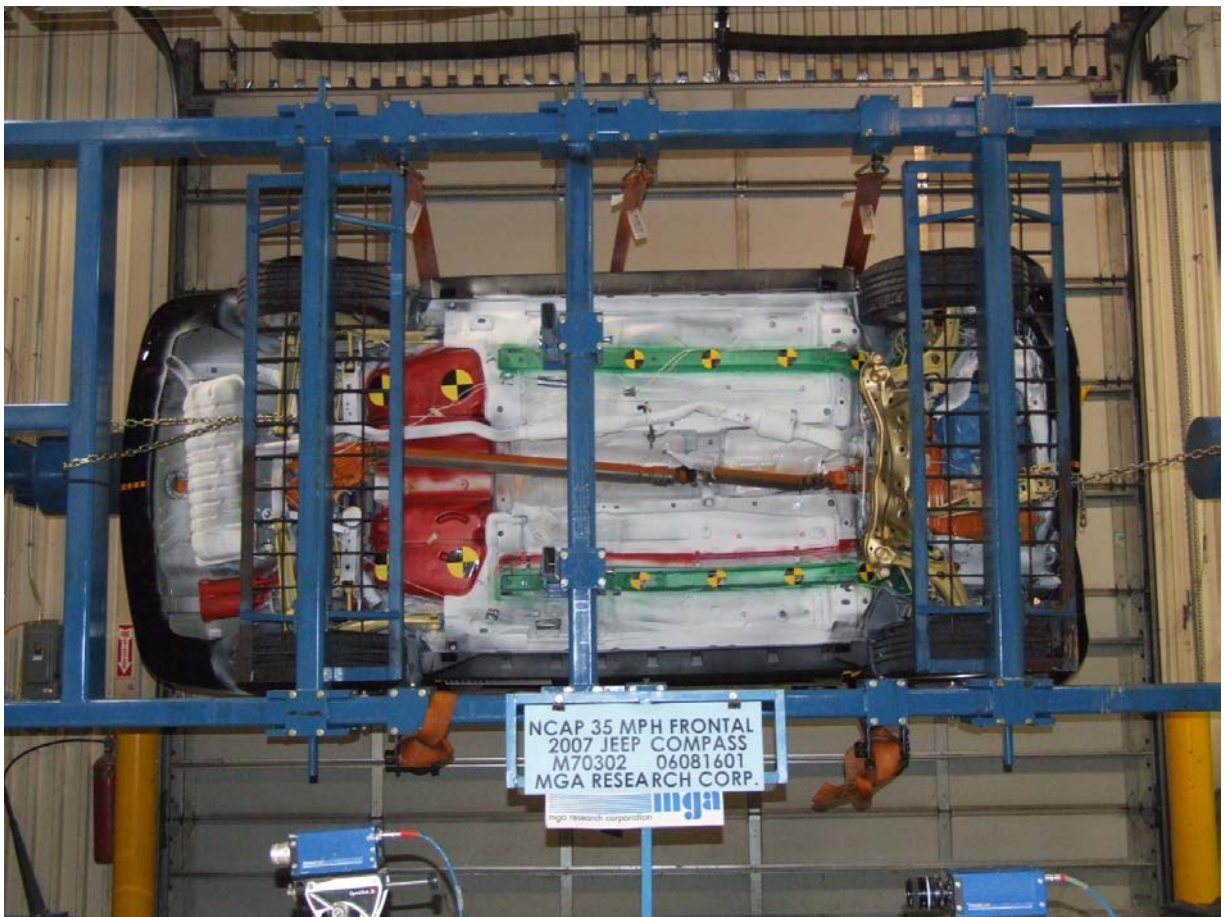
Post-Test Passenger Dummy Head Contact



Post-Test Passenger Dummy Knee Contact



Post-Test Passenger Dummy Airbag Contact



Vehicle on Rollover Device at 90 Degrees



Vehicle on Rollover Device at 180 Degrees



Vehicle on Rollover Device at 270 Degrees



Vehicle on Rollover Device at 360 Degrees



Vehicle Impact

APPENDIX B
DUMMY RESPONSE DATA TRACES

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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 X

Driver Upper Neck Force Y

Driver Upper Neck Force Z

Driver Upper Neck Moment X

Driver Upper Neck Moment Y

Driver Upper Neck Moment Z

Driver Chest X Redundant

Driver Chest Y Redundant

Driver Chest Z Redundant

Driver Chest Displacement

Driver Pelvis X

Driver Pelvis Y

Driver Pelvis Z

Driver Shoulder Belt Force

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

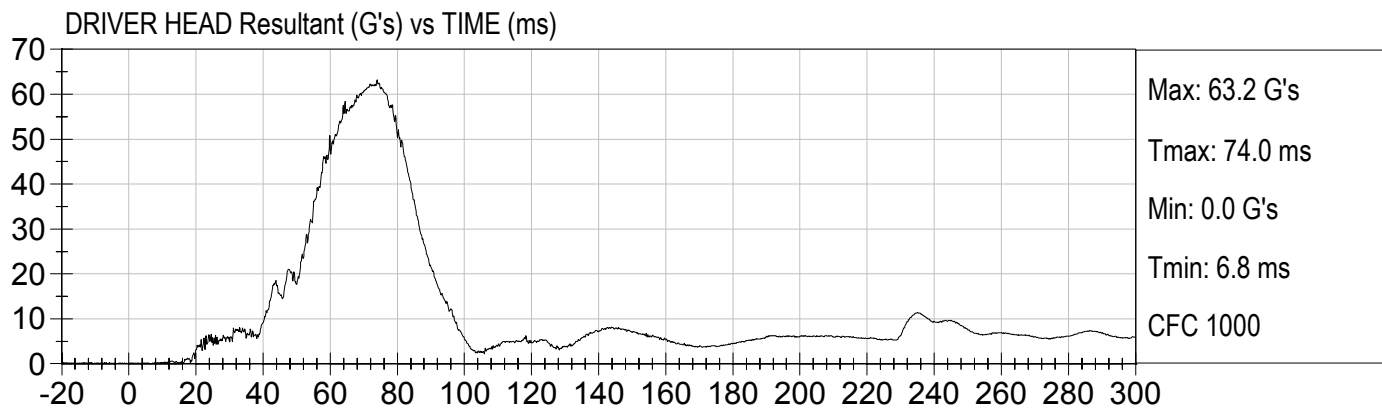
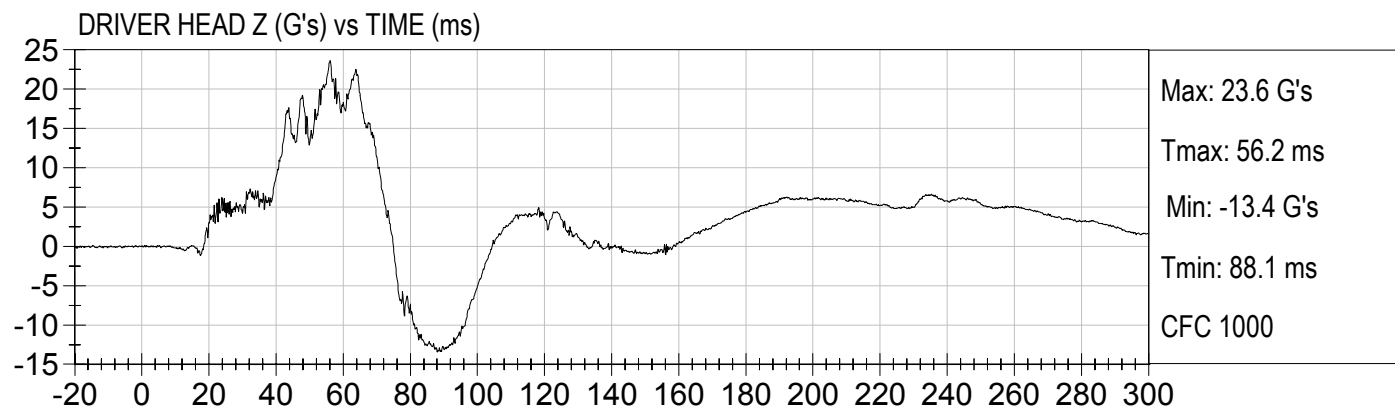
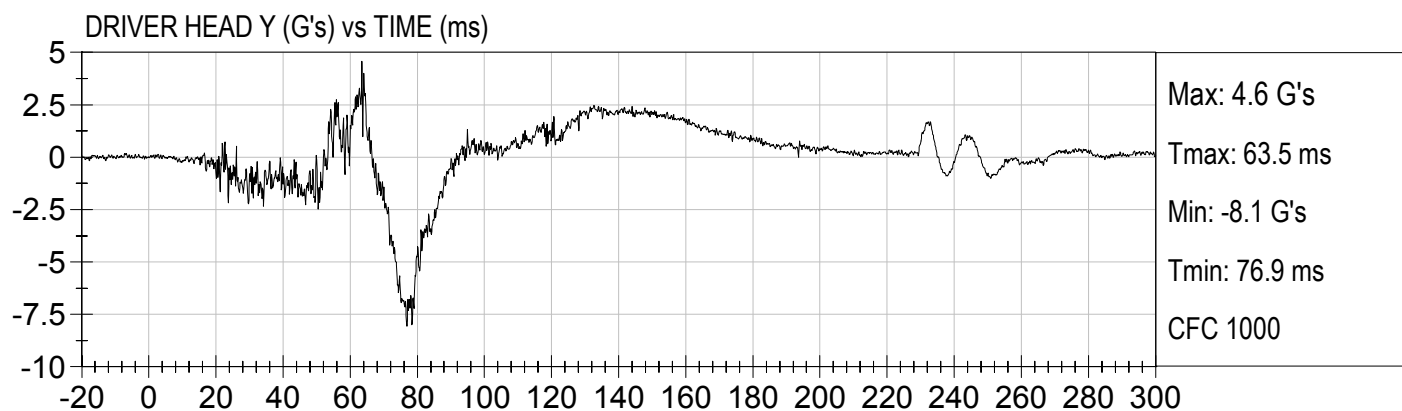
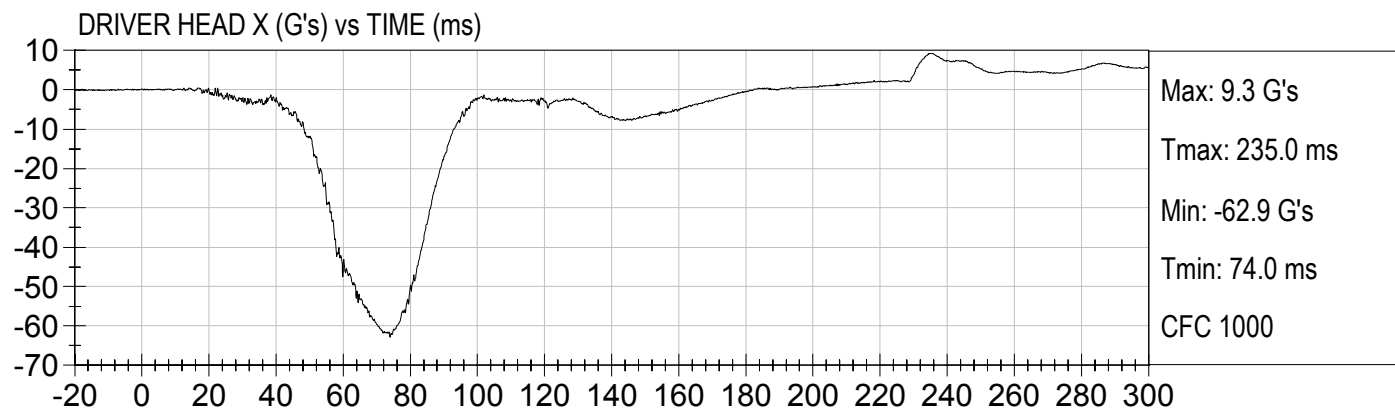
Driver Left Lower Tibia Force Z

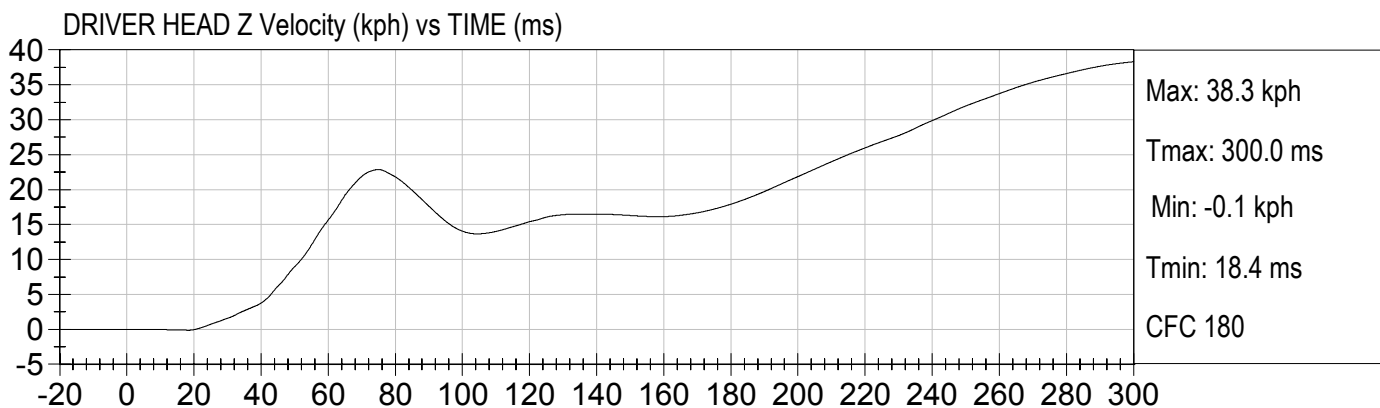
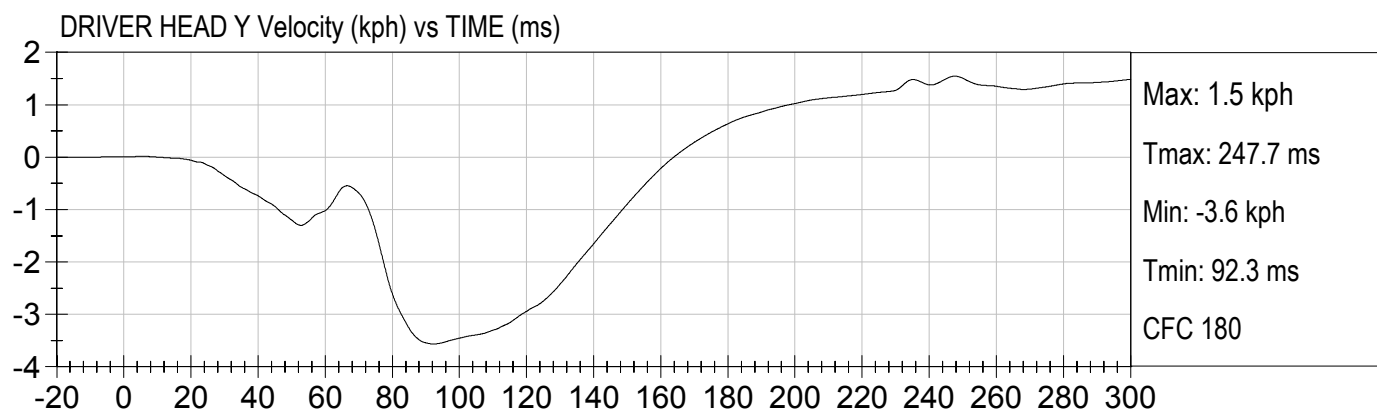
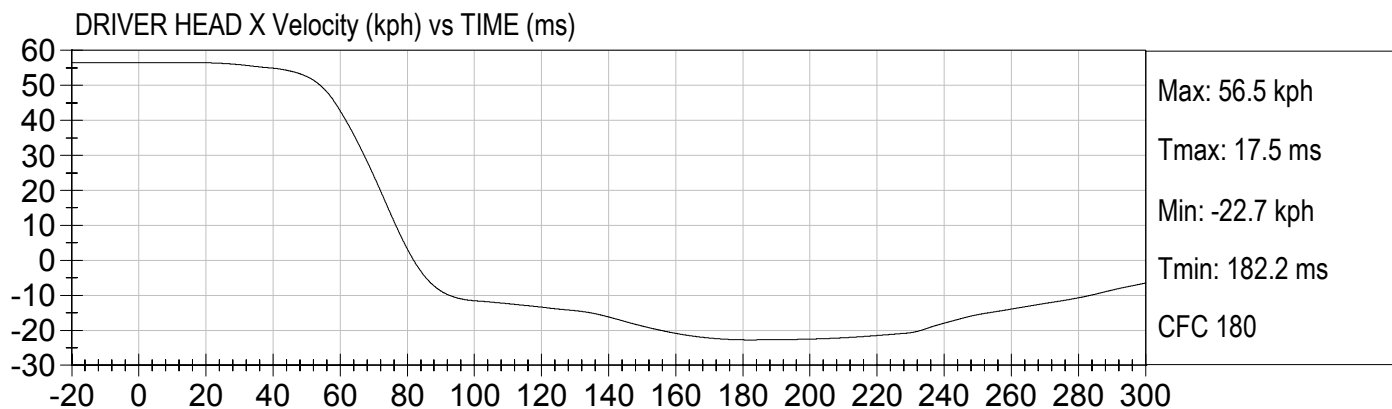
Driver Right Upper Tibia Moment X

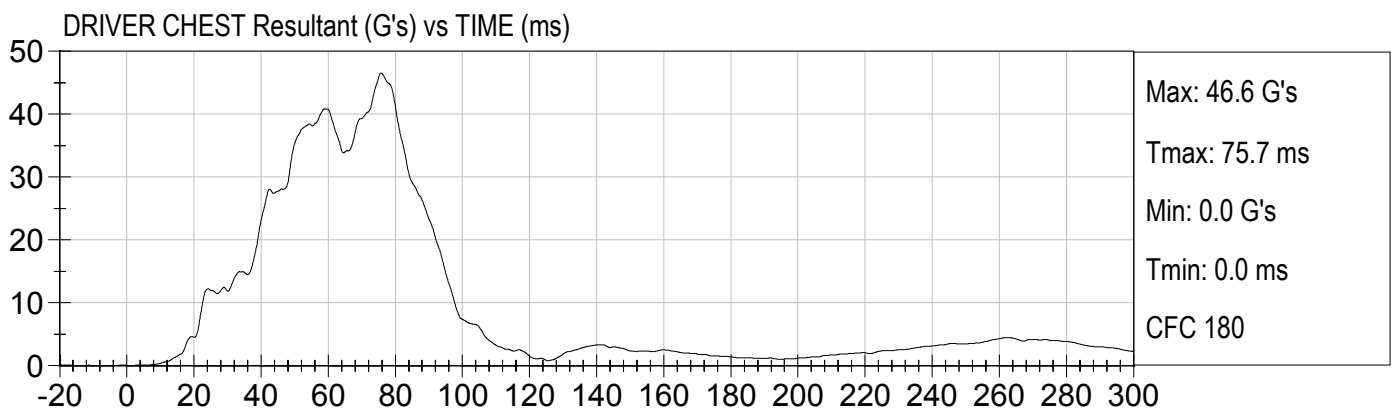
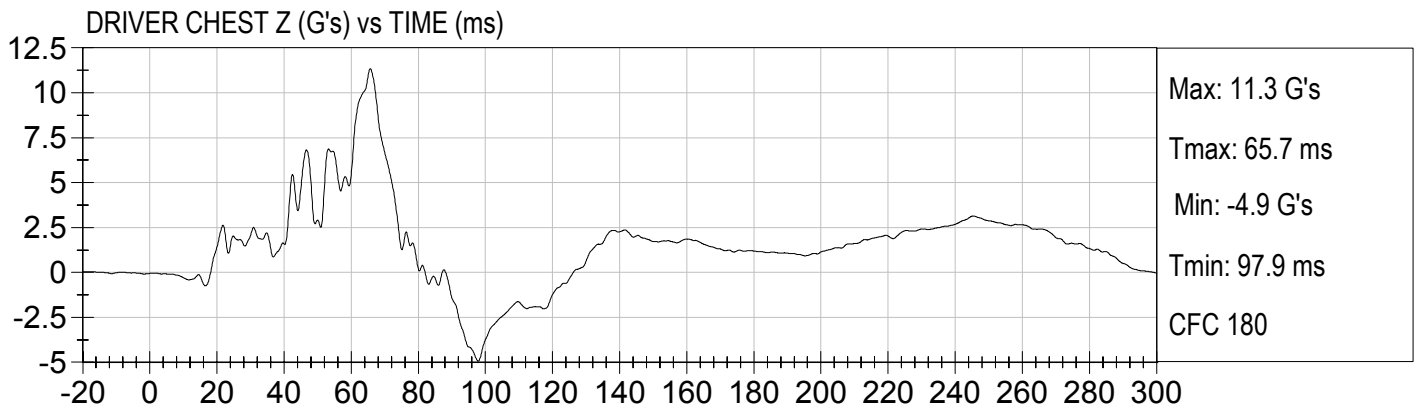
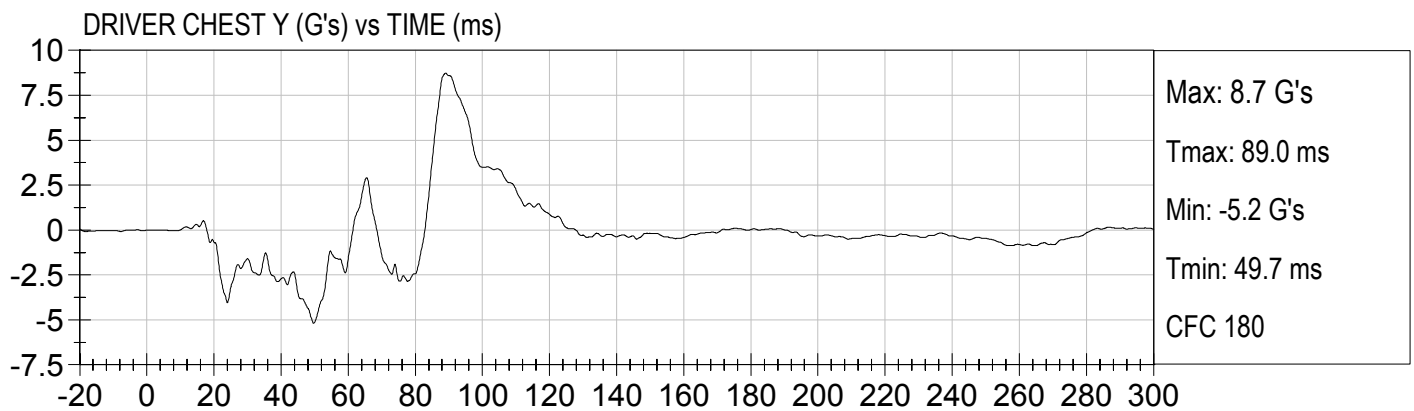
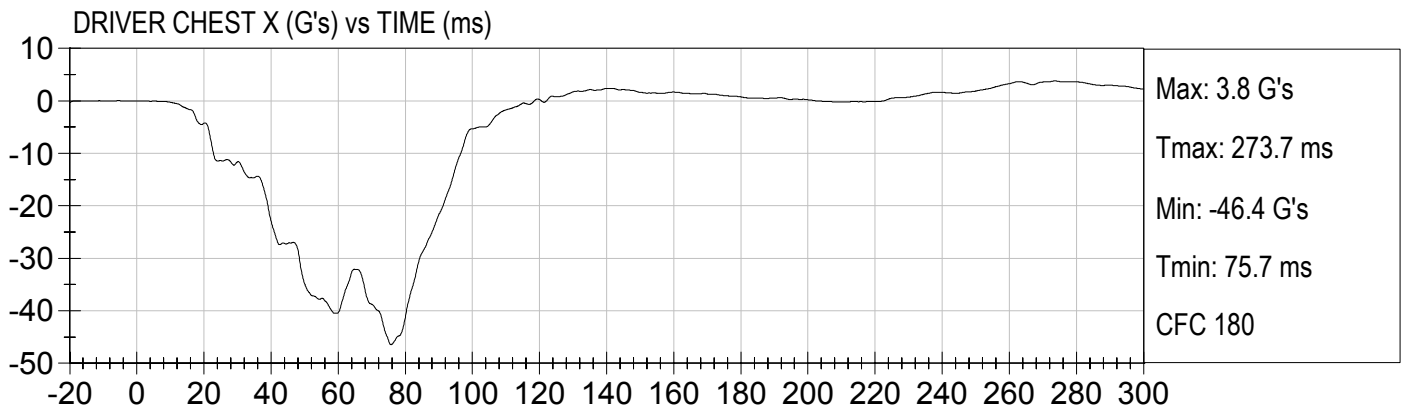
Driver Right Upper Tibia Moment Y

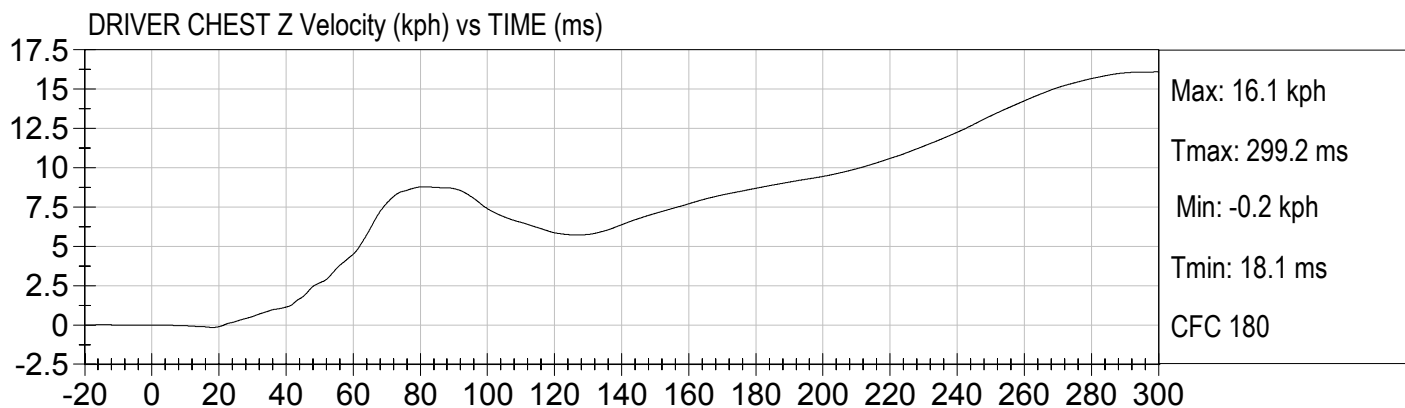
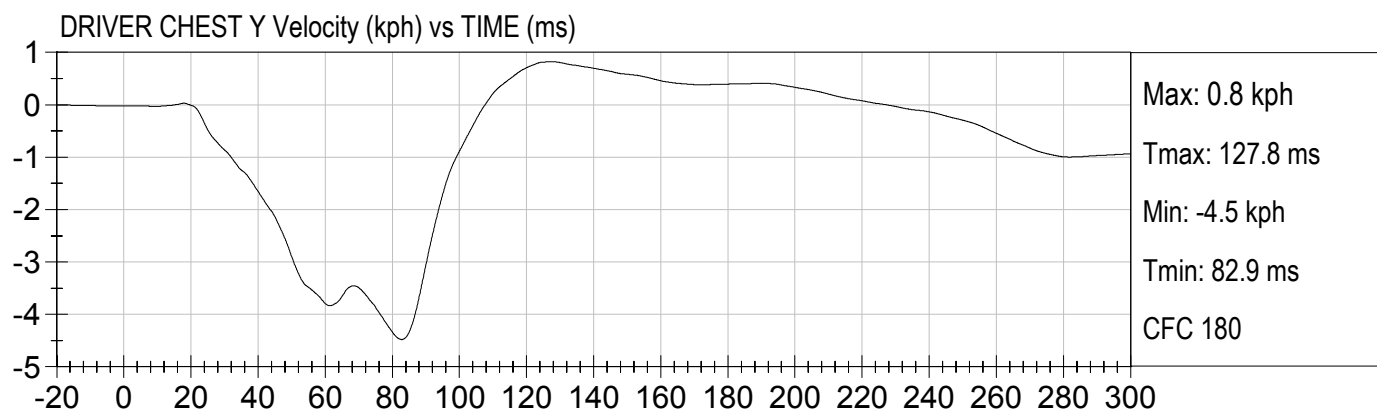
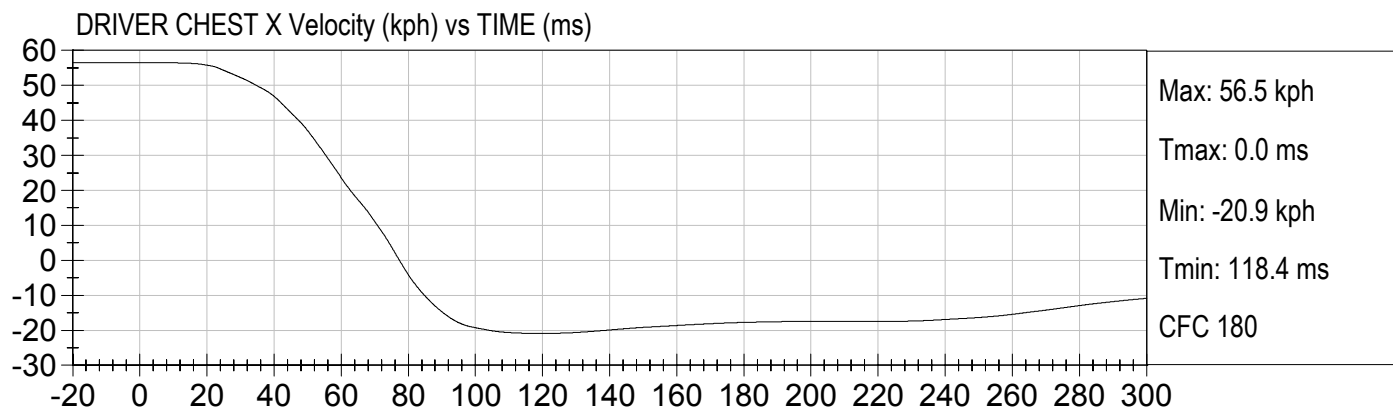
Driver Right Upper Tibia Force Z
Driver Right Lower Tibia Moment X
Driver Right Lower Tibia Moment Y
Driver Right Lower Tibia Force Z
Driver Left Foot Fore Z
Driver Left Foot Aft X
Driver Left Foot Aft Z
Driver Right Foot Fore Z
Driver Right Foot Aft X
Driver Right Foot Aft Z
Passenger Head X Redundant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

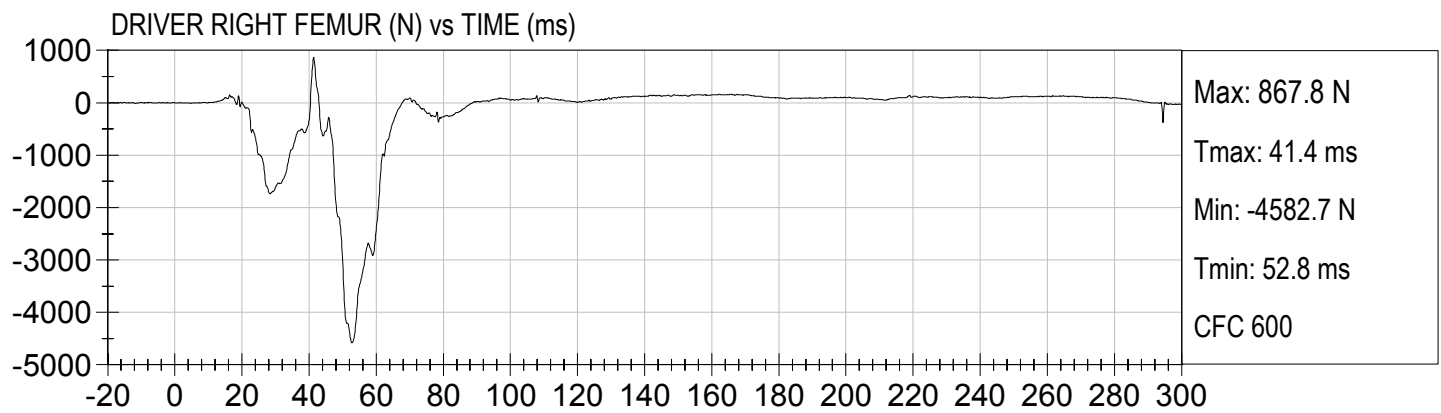
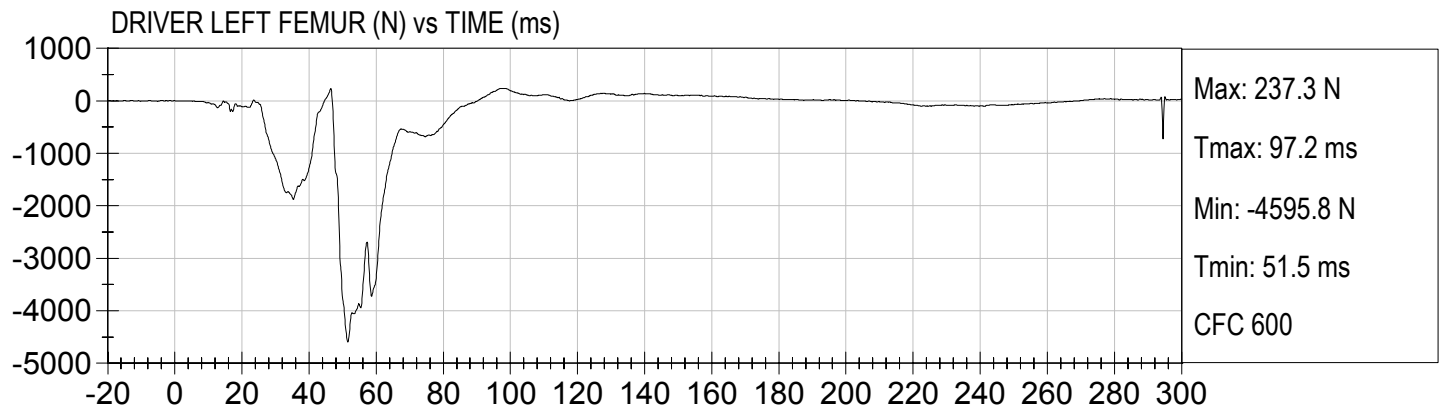
Passenger Left Lower Tibia Moment Y
Passenger Left Lower Tibia Force Z
Passenger Right Upper Tibia Moment X
Passenger Right Upper Tibia Moment Y
Passenger Right Upper Tibia Force Z
Passenger Right Lower Tibia Moment X
Passenger Right Lower Tibia Moment Y
Passenger Right Lower Tibia Force Z
Passenger 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

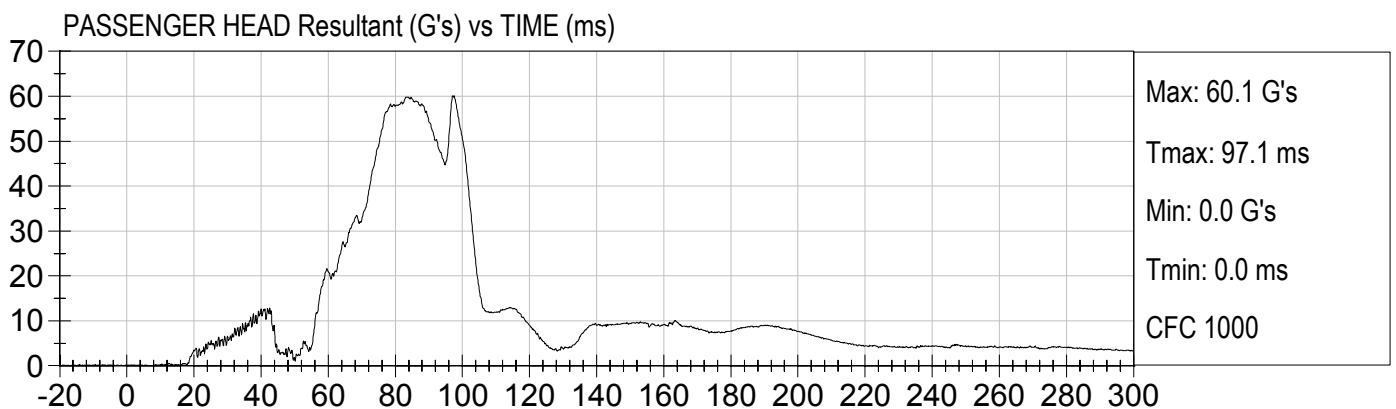
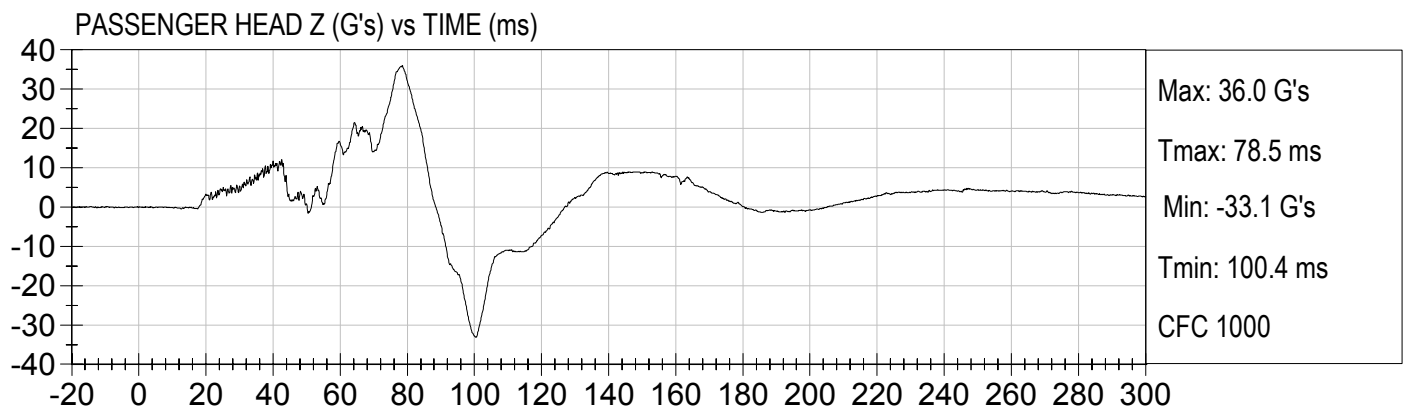
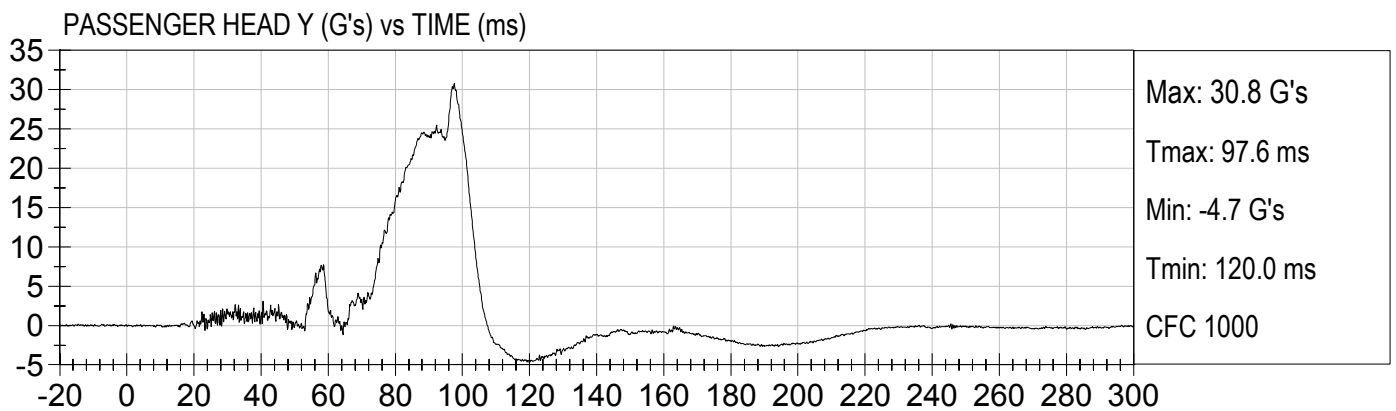
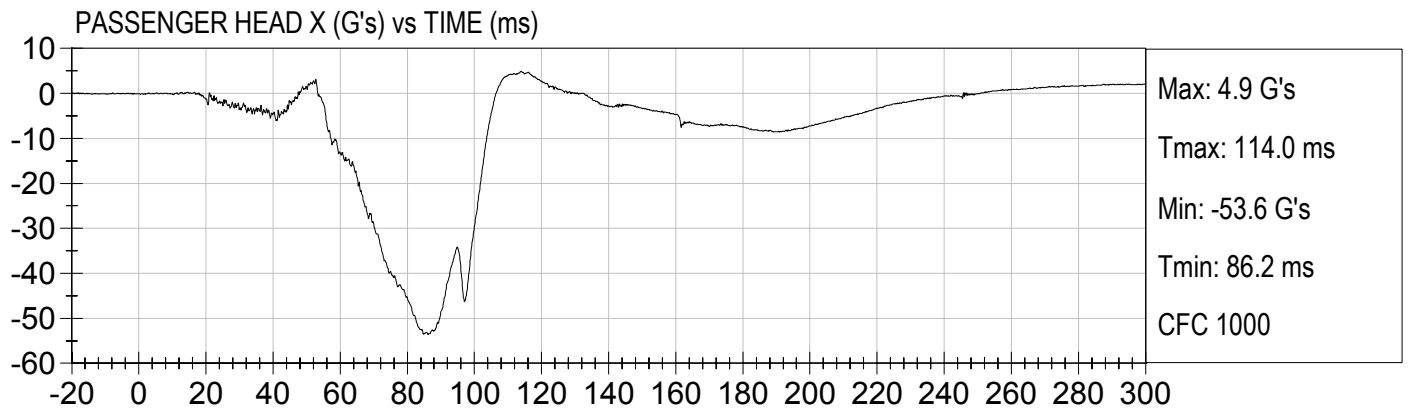


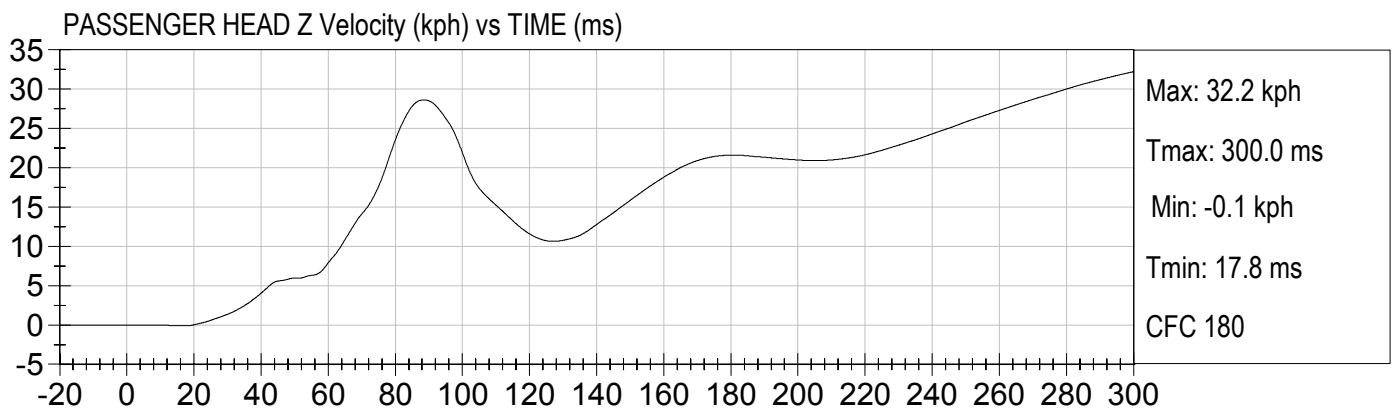
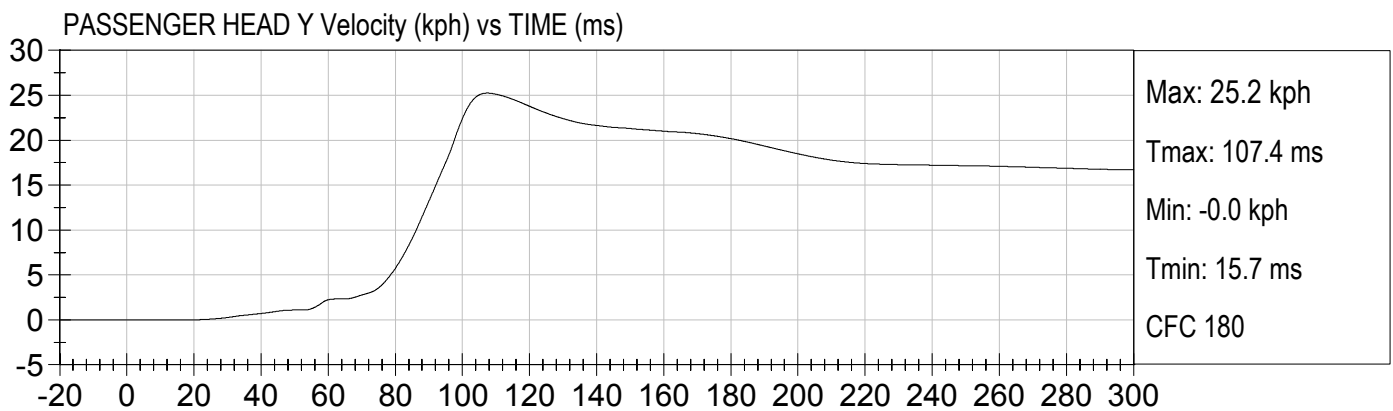
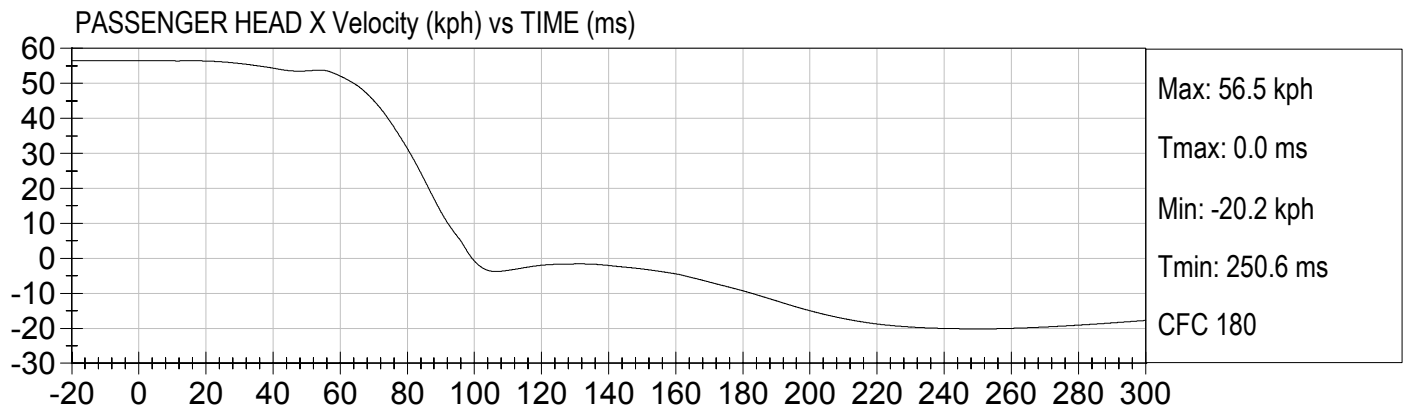


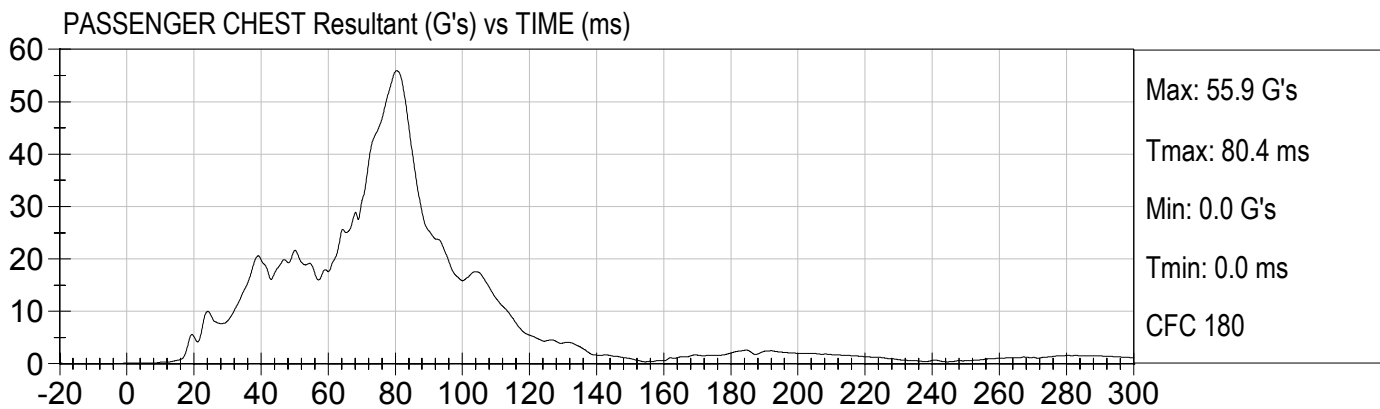
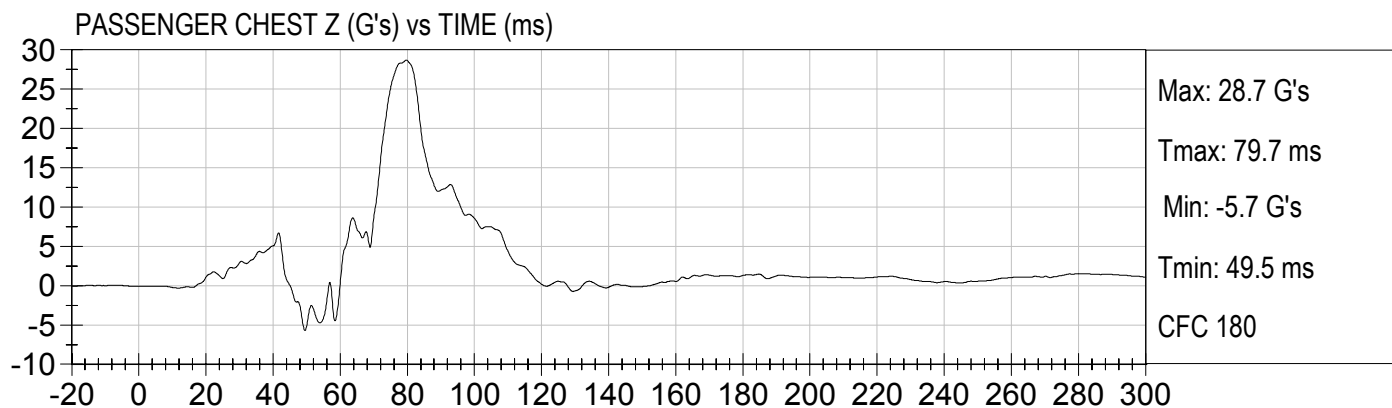
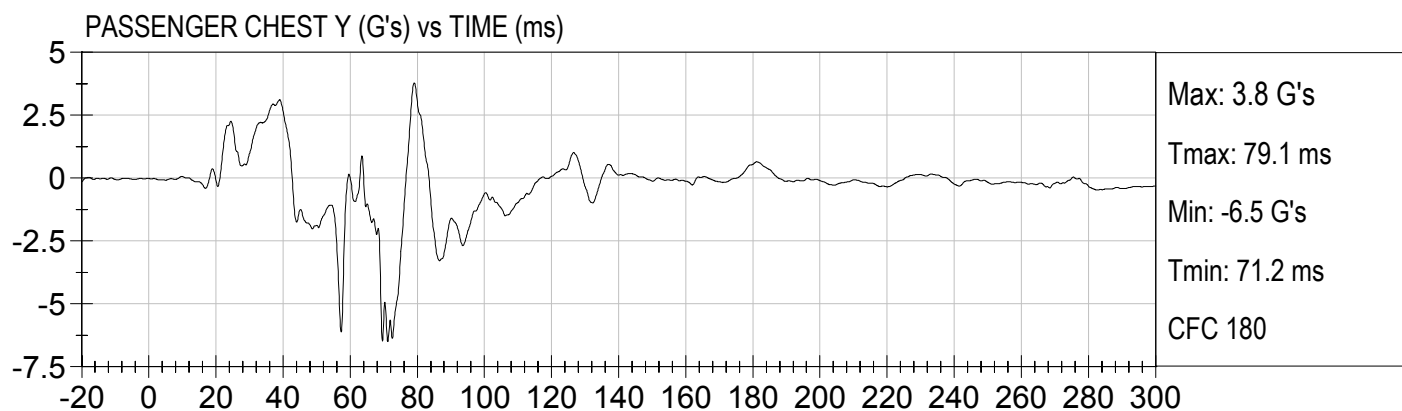
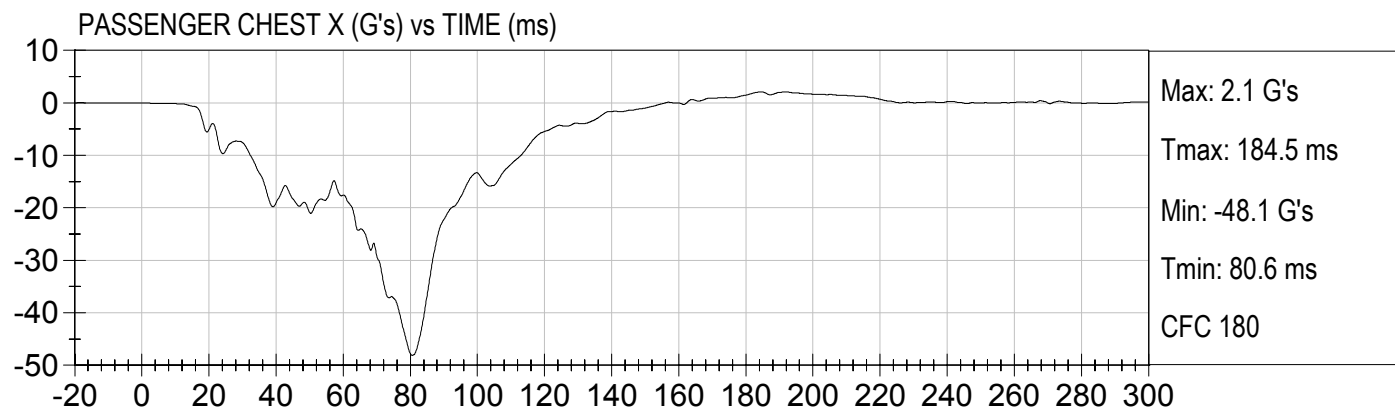


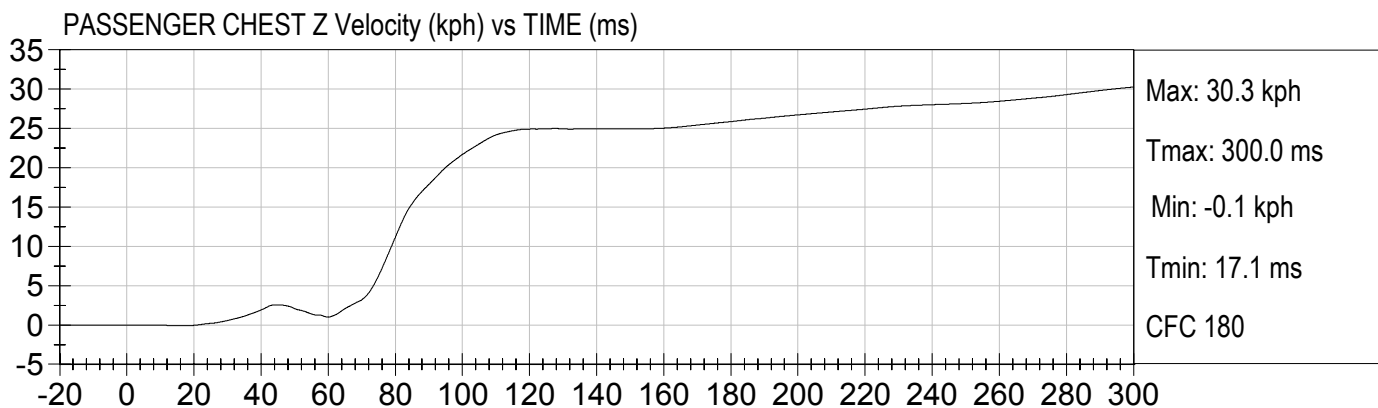
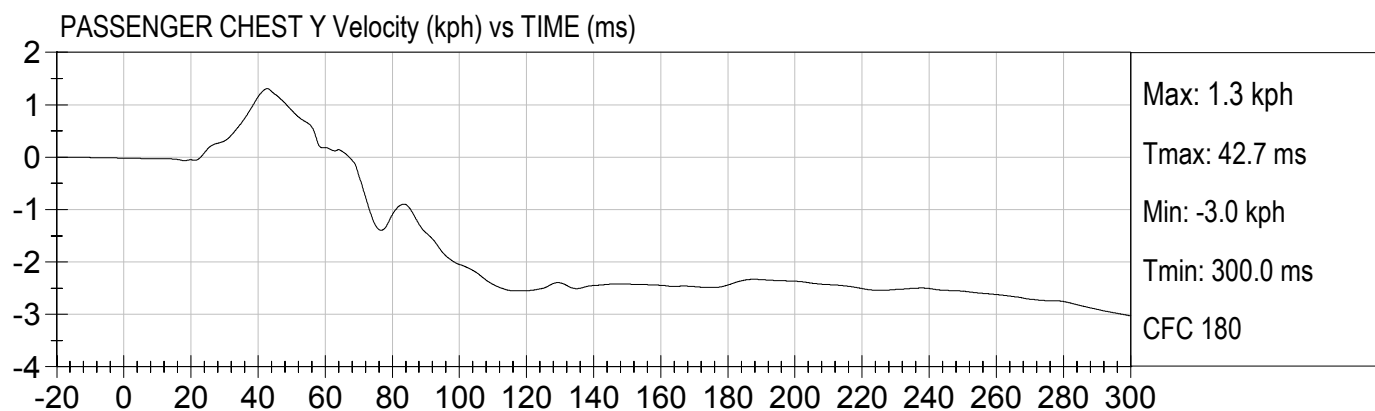
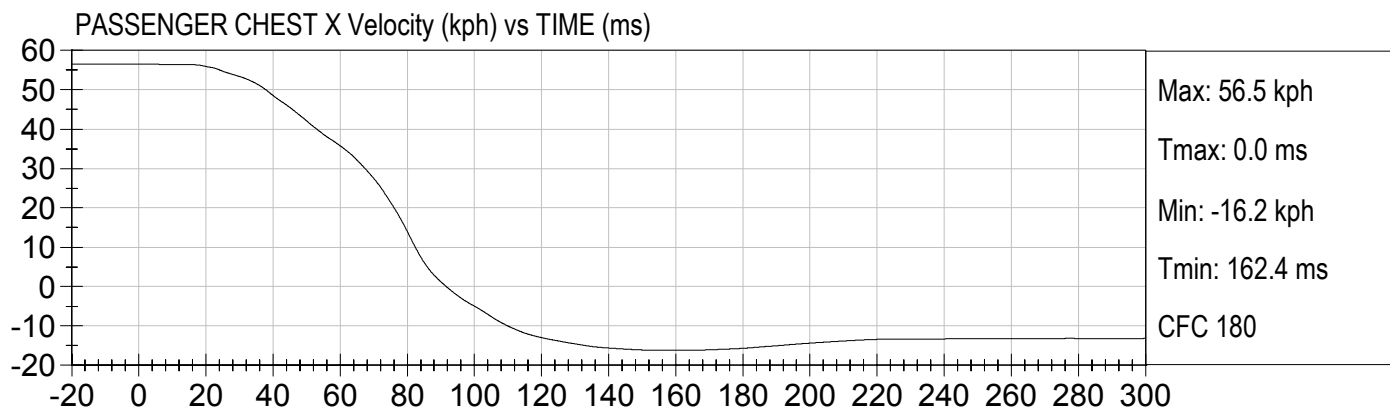


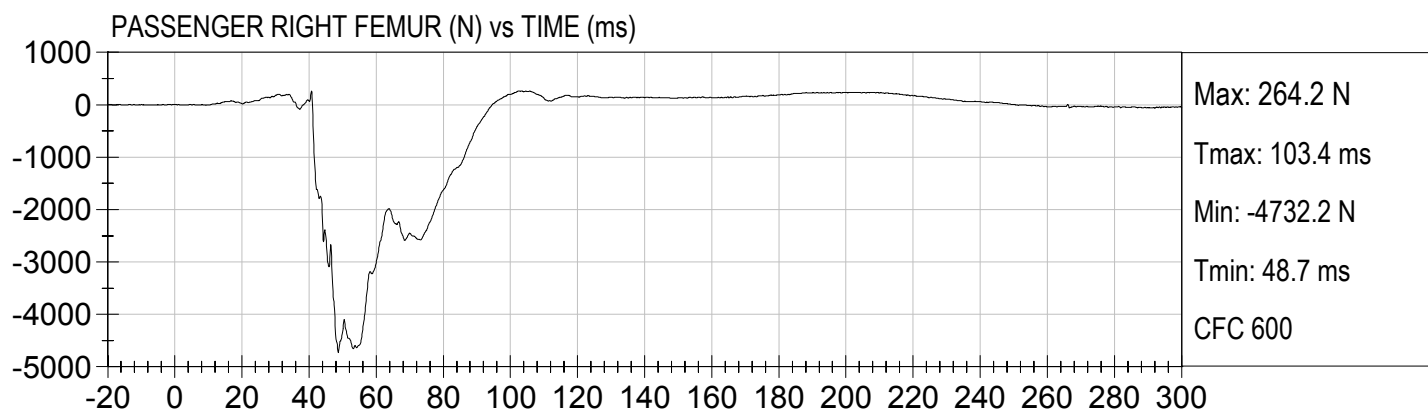
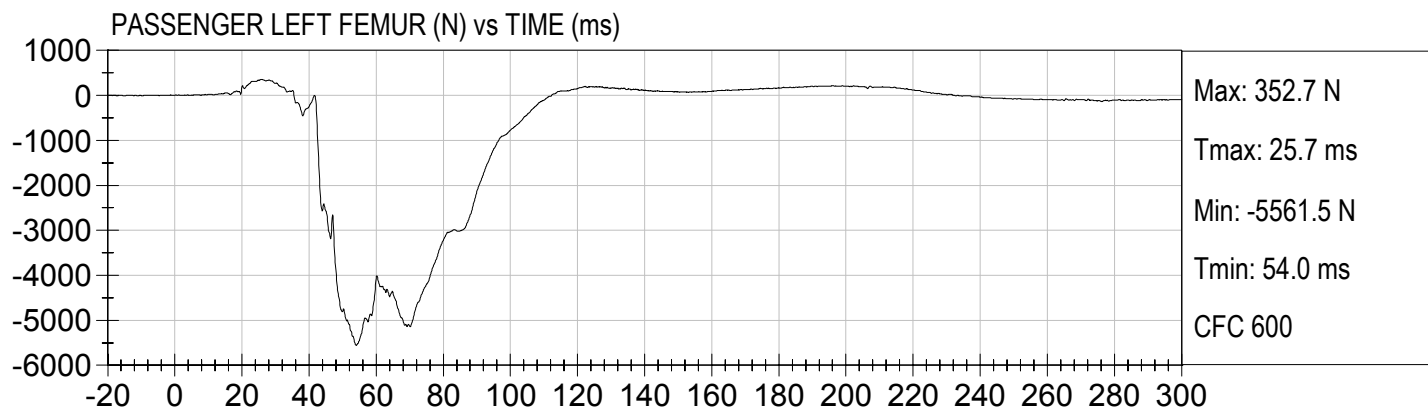












APPENDIX C
DUMMY CALIBRATION DATA

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

ATD Serial No: 065

Test ID: D061411

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.6	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	42	Pass
Peak Resultant Acceleration	G's	225 - 275	227	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-5.7	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician

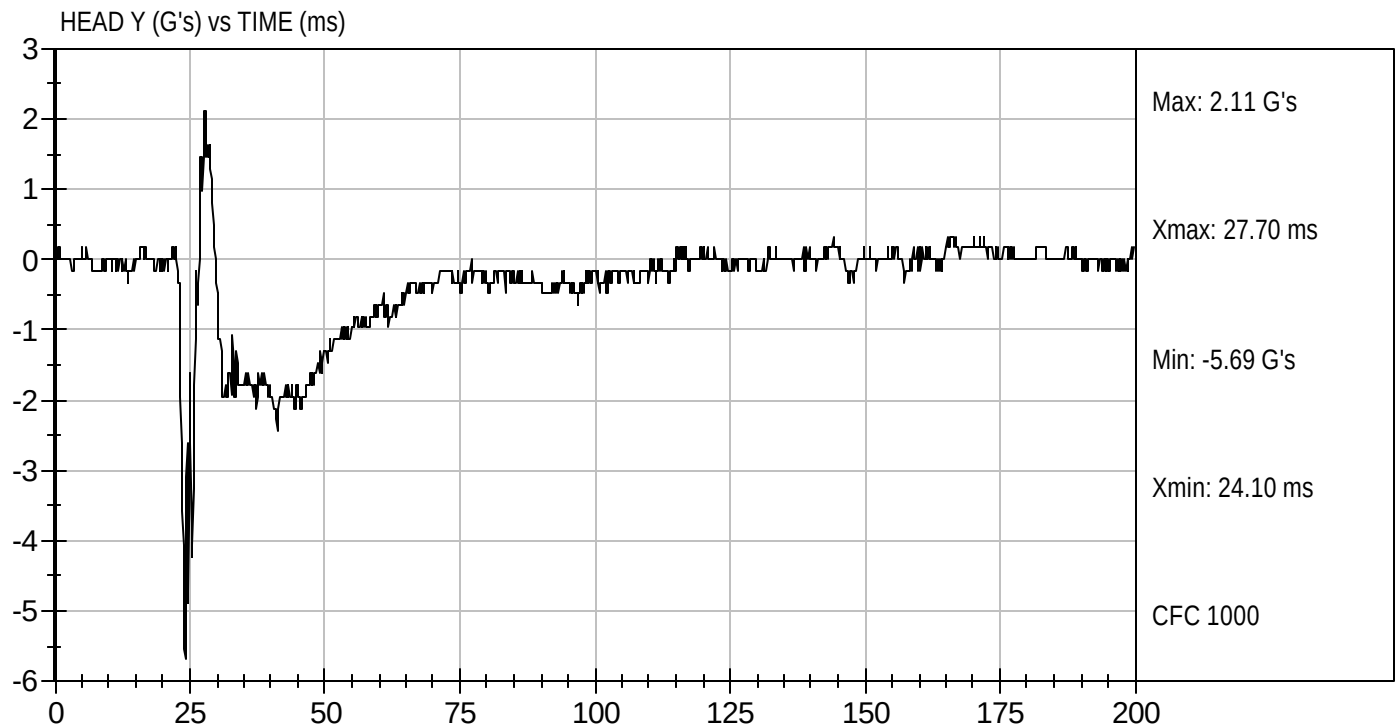
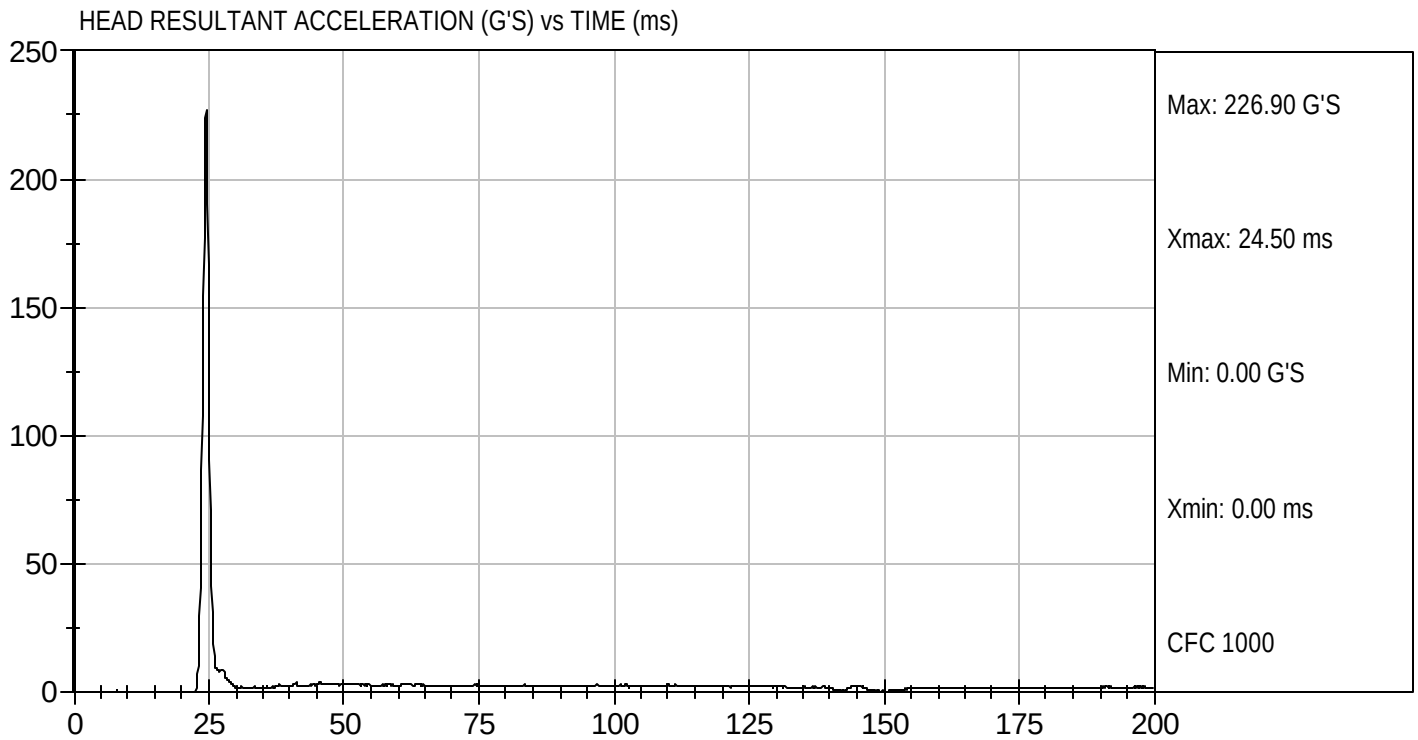

Approved By

05/18/2006
Test Date



Test Desc: Head Drop
Componet ID: D061411

Test Date: 05/18/2006
Velocity: 0 ft/s, 0.00 m/s



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

ATD Serial No: 065

Test I.D: D061412

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.5	Pass
Laboratory Relative Humidity		%	10 to 70	42	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.98	Pass
Pendulum Deceleration	10 msec	G's	22.50 to 27.50	23.02	Pass
	20 msec	G's	17.60 to 22.60	19.94	Pass
	30 msec	G's	12.50 to 18.50	13.56	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 29.0	13.81	Pass
Deceleration Decay Time to Cross 5 G's		msec	34.0 to 42.0	39.7	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	72.3	Pass
	Time	msec	57.0 to 64.0	59.4	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	113.0 to 128.0	115.8	Pass
Moment About Occipital Condyle	Maximum	N m	88.1 to 108.5	90.3	Pass
	Time	msec	47.0 to 58.0	52.3	Pass
Positive Moment Decay Time To Zero Crossing		msec	97.0 to 107.0	103.4	Pass
Overall Test Results					Pass


 Laboratory Technician

05/18/2006
 Test Date

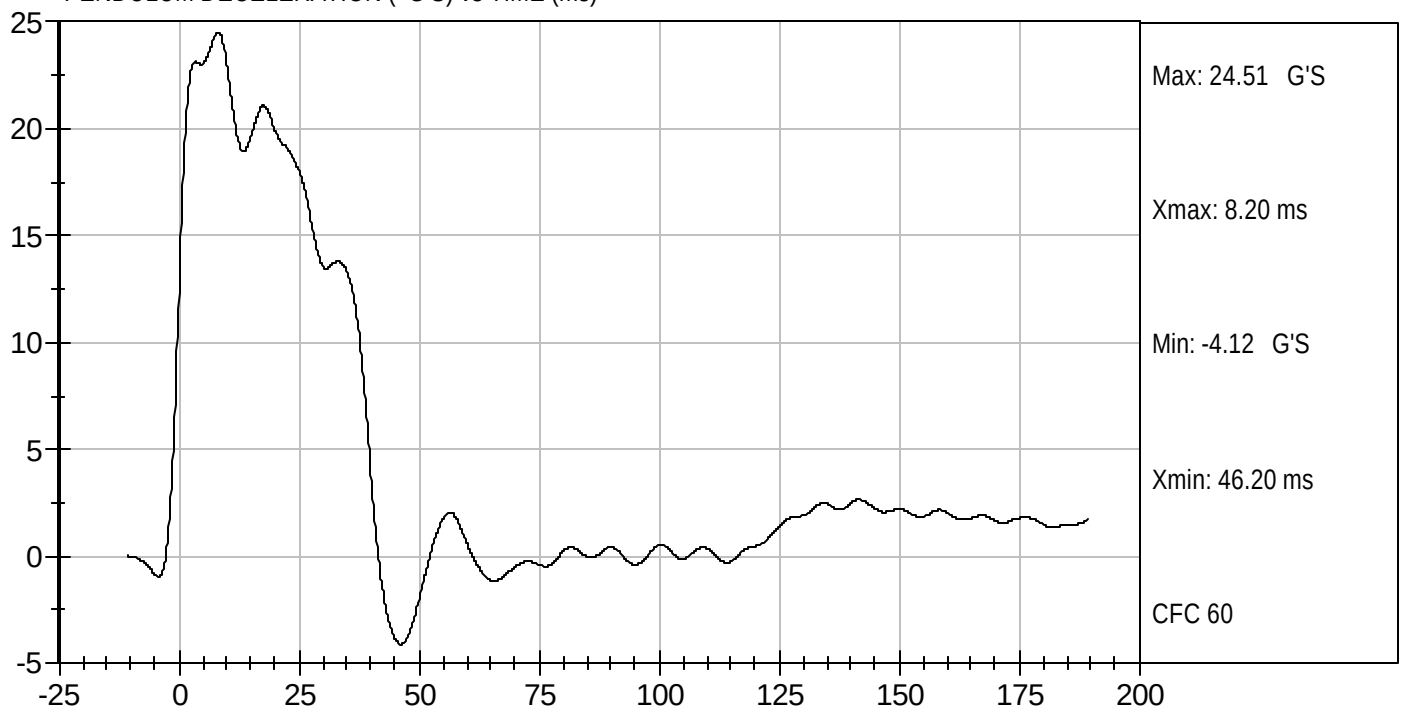

 Approved By



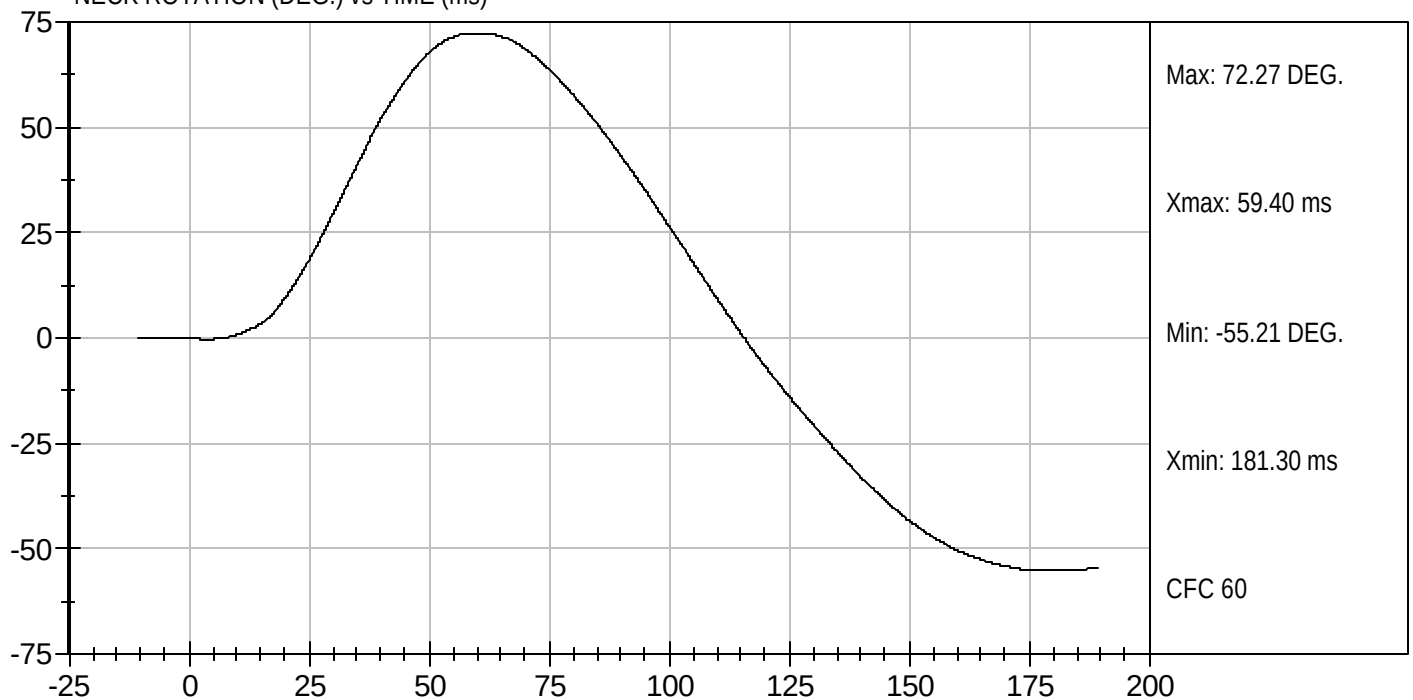
Test Desc: Neck Flexion
Componet ID: D061412

Test Date: 05/18/2006
Velocity: 22.9 ft/s, 6.98 m/s

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



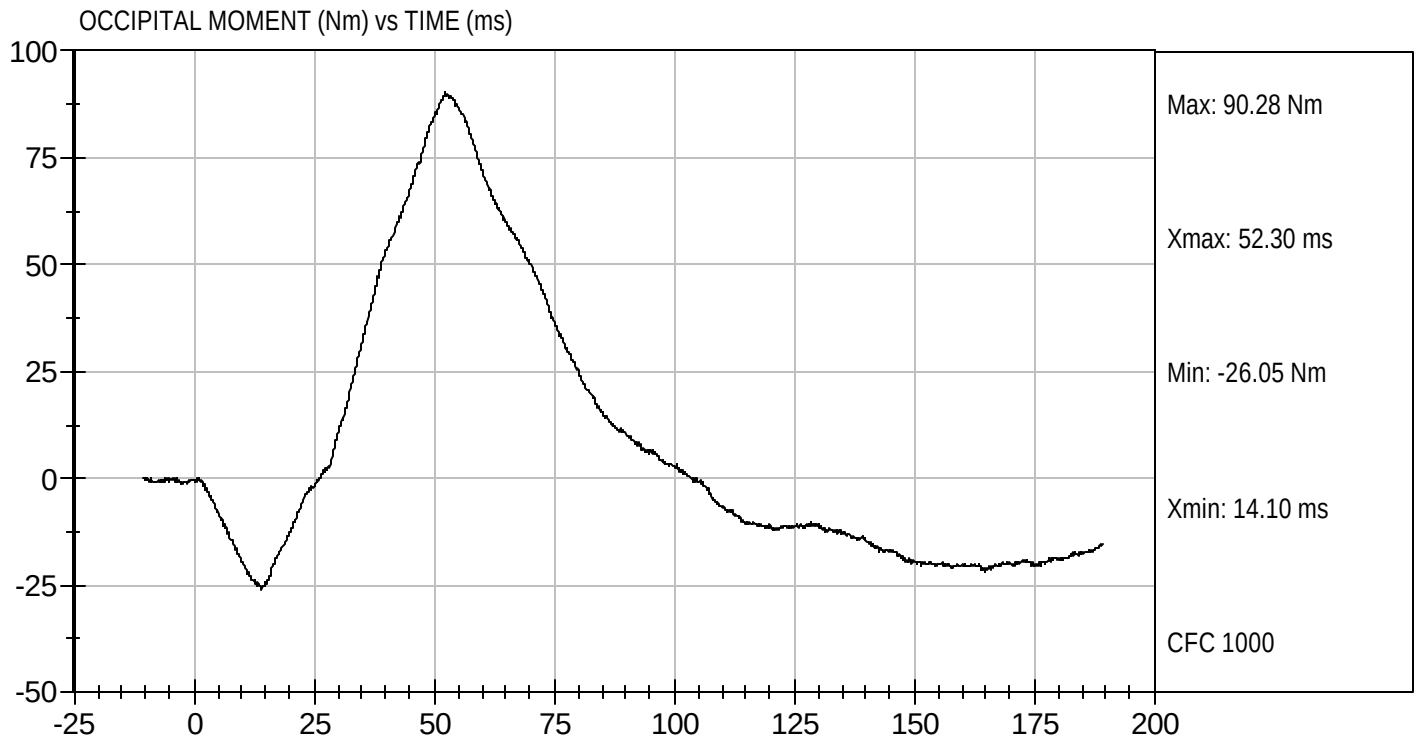
NECK ROTATION (DEG.) vs TIME (ms)





Test Desc: Neck Flexion
Componet ID: D061412

Test Date: 05/18/2006
Velocity: 22.9 ft/s, 6.98 m/s



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

ATD Serial No: 065

Test I.D: D061413

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity		%	10 to 70	40	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.14	Pass
Pendulum Deceleration	10 msec	G's	17.20 to 21.20	19.20	Pass
	20 msec	G's	14.00 to 19.00	17.35	Pass
	30 msec	G's	11.00 to 16.00	14.06	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 22.0	14.21	Pass
Deceleration Decay Time to Cross 5 G's		msec	38.0 to 46.0	40.5	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	102.2	Pass
	Time	msec	72.0 to 82.0	78.7	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	147.0 to 174.0	158.5	Pass
Moment About Occipital Condyle	Maximum	N m	-52.9 to -79.9	-71.8	Pass
	Time	msec	65.0 to 79.0	72.7	Pass
Negative Moment Decay Time To Zero Crossing		msec	120.0 to 148.0	142.2	Pass
Overall Test Results				Pass	


Laboratory Technician

05/18/2006
Test Date

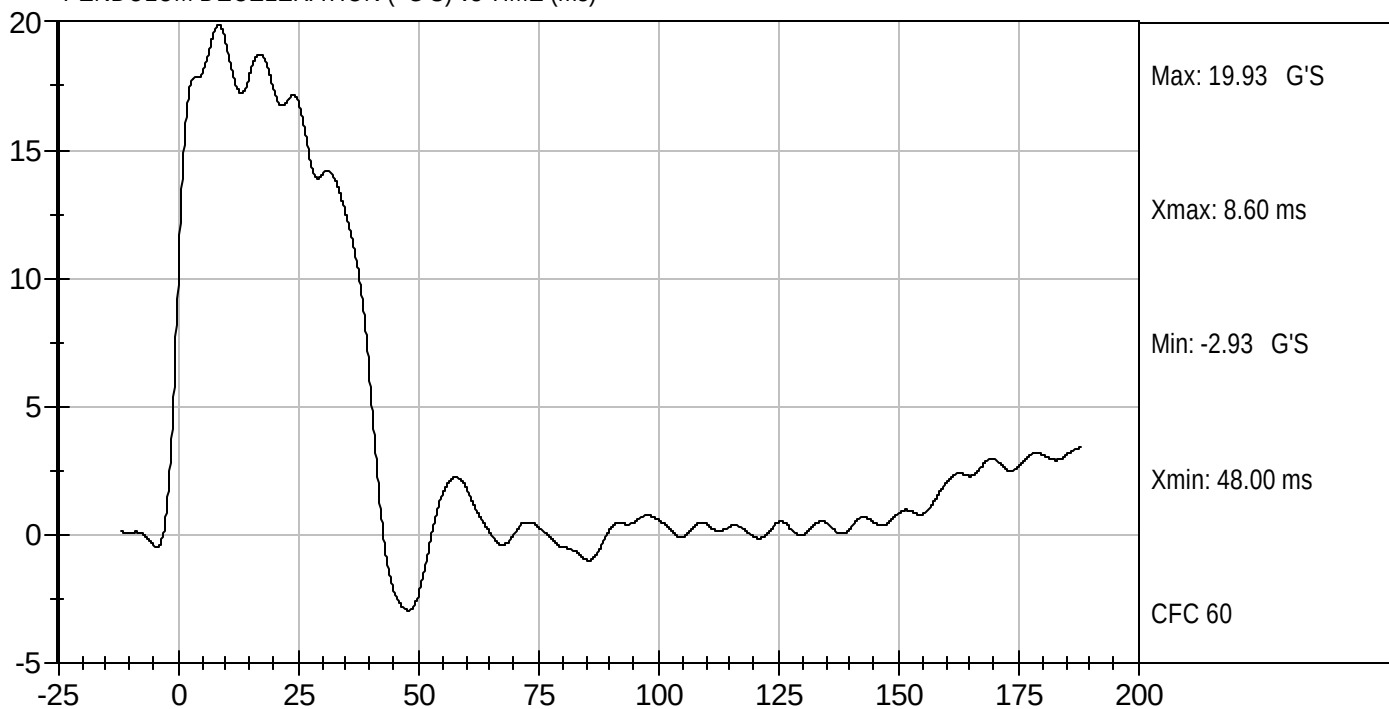

Approved By



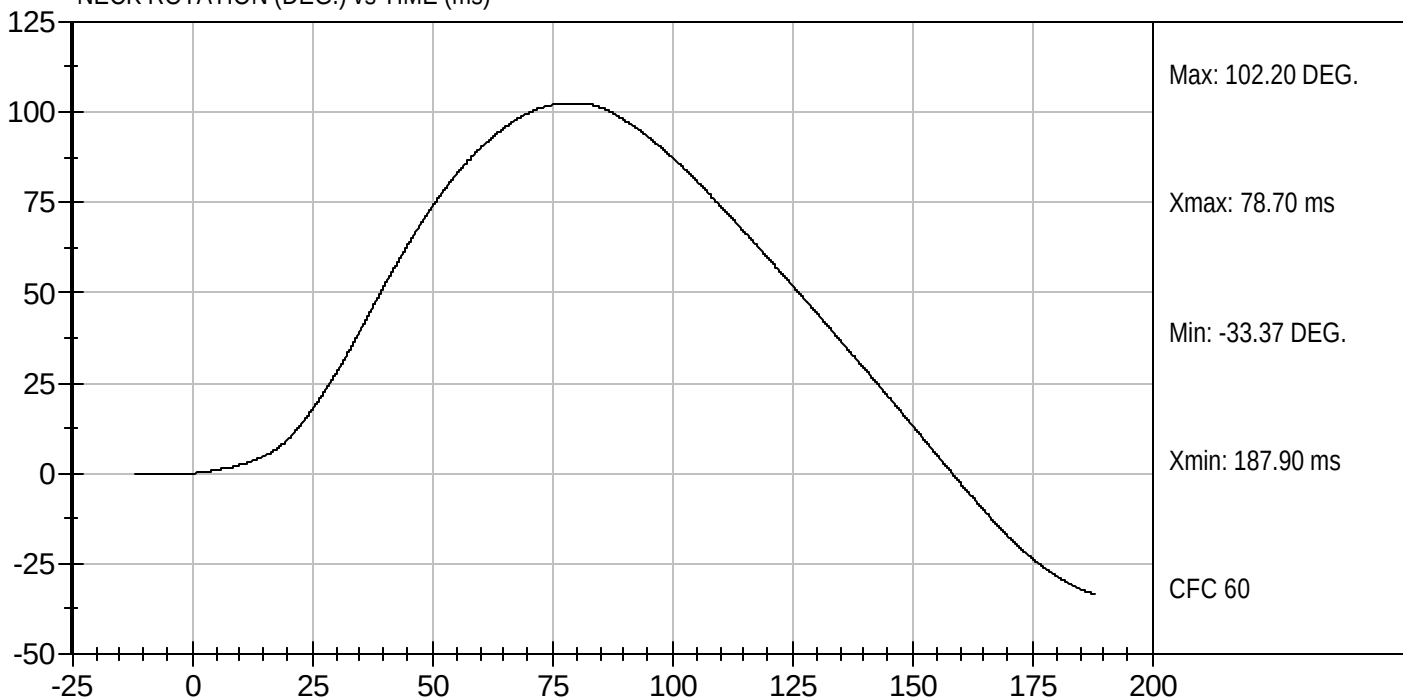
Test Desc: Neck Extension
Componet ID: D061413

Test Date: 05/18/2006
Velocity: 20.13 ft/s, 6.14 m/s

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



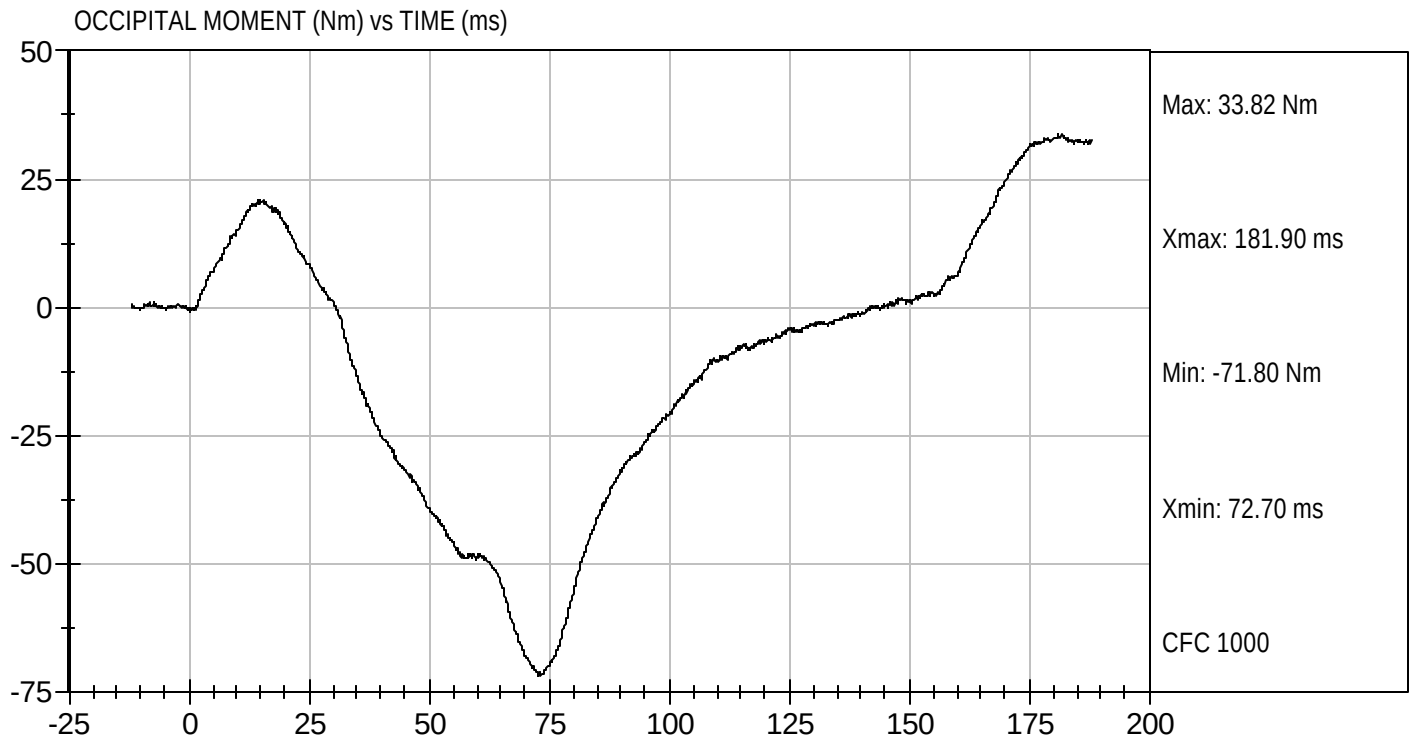
NECK ROTATION (DEG.) vs TIME (ms)





Test Desc: Neck Extension
Componet ID: D061413

Test Date: 05/18/2006
Velocity: 20.13 ft/s, 6.14 m/s



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 065

Test I.D: D061414

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	34	Pass
Probe Velocity	m/s	6.58 to 6.82	6.60	Pass
Peak Probe Force	N	5159 to 5893	5,567	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.95	Pass
Internal Hysteresis	%	69 to 85	72	Pass
			Overall Test Results	Pass


Laboratory Technician

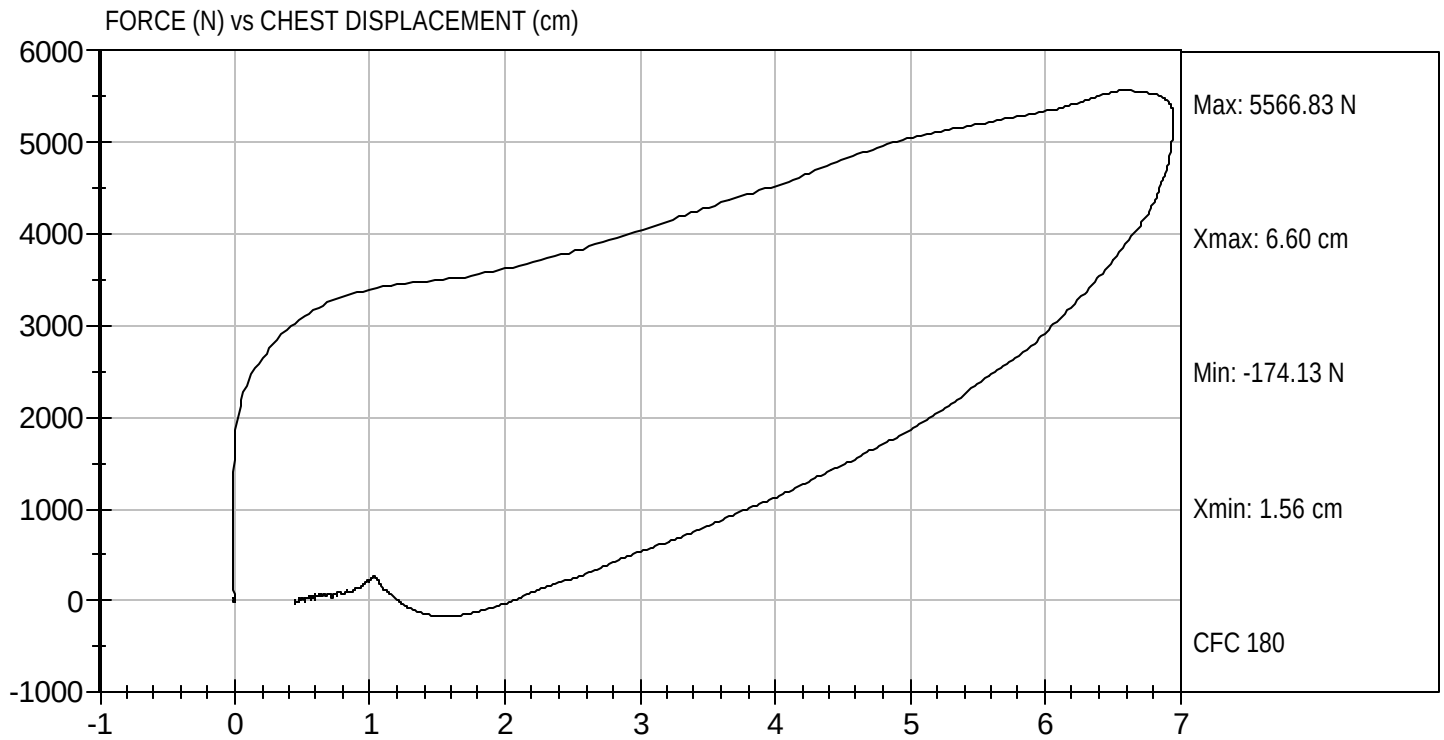

Approved By

05/19/2006
Test Date



Test Desc: Thorax Impact
Componet ID: D061414

Test Date: 05/19/2006
Velocity: 21.66 ft/s, 6.60 m/s



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

ATD Serial No: 065

Test I.D: D061415

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	36	Pass
Probe Velocity	m/sec	2.07 to 2.13	2.11	Pass
Peak Probe Force	Newtons	4715 to 5782	5,293	Pass
Overall Test Results				Pass


Laboratory Technician

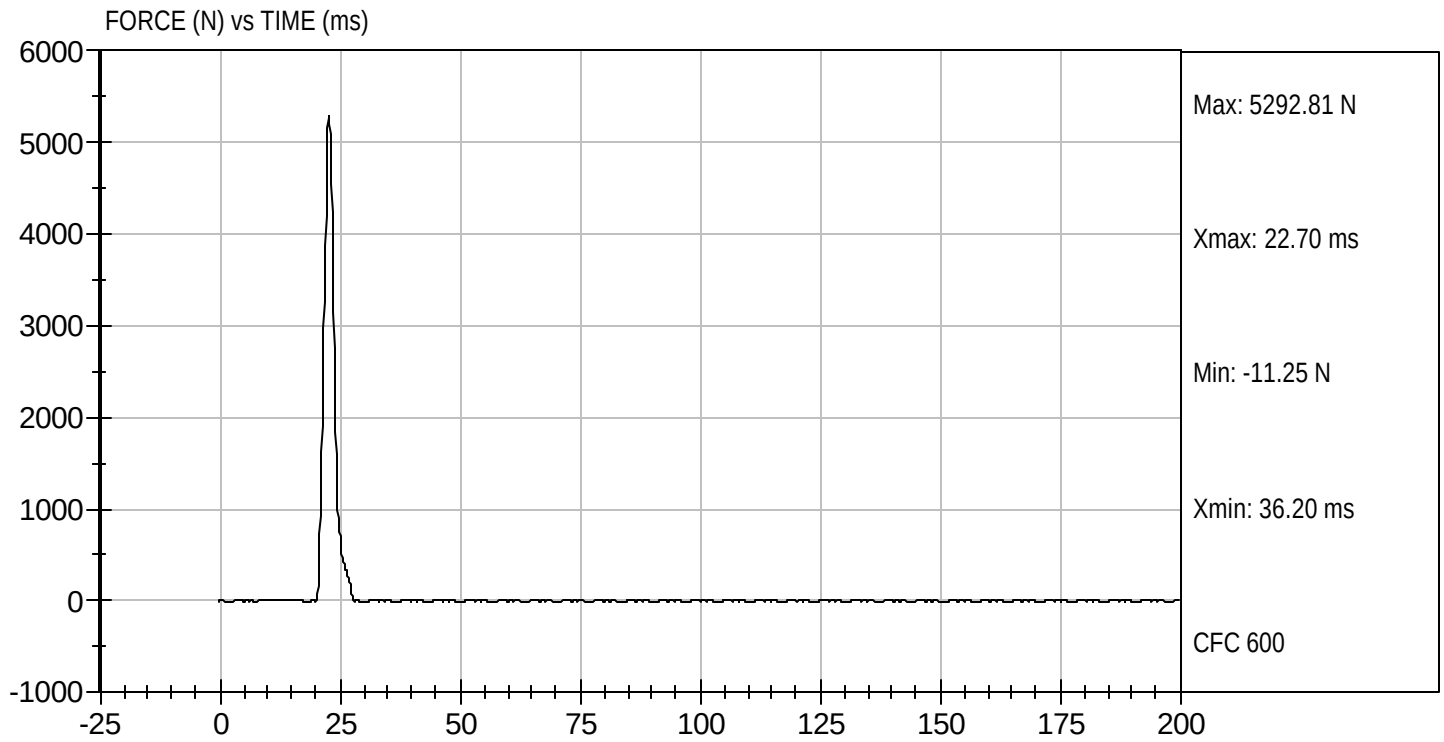

Approved By

05/18/2006
Test Date



Test Desc: Left Knee
Componet ID: D061415

Test Date: 05/18/2006
Velocity: 6.91 ft/s, 2.11 m/s



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

ATD Serial No: 065

Test I.D: D061416

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	37	Pass
Probe Velocity	m/sec	2.07 to 2.13	2.11	Pass
Peak Probe Force	Newtons	4715 to 5782	5,183	Pass
Overall Test Results				Pass


Laboratory Technician

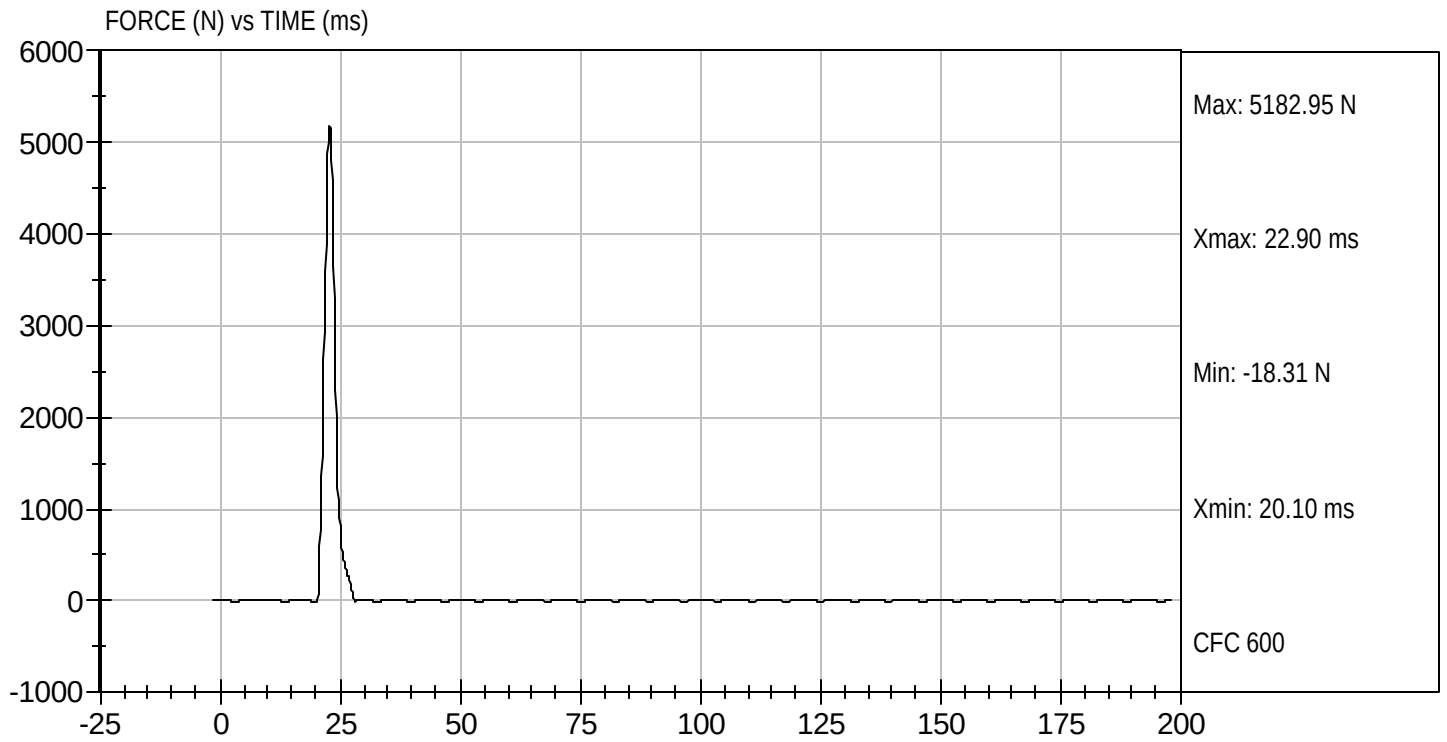

Approved By

05/18/2006
Test Date



Test Desc: Right Knee
Componet ID: D061416

Test Date: 05/18/2006
Velocity: 6.91 ft/s, 2.11 m/s



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

ATD Serial No: 065

Test I.D: D061410

Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.8	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	37	37	Pass
Rotation Rate	deg/sec	5 -10	8	8	Pass
30 Degrees	Nm	94.9 Nm Max	87.8	82.5	Pass
150 ft-lbf / 203.4 Nm	Deg	40- 50 Degree Max Rotation	43	43	Pass
Overall Test Results				Pass	


 Laboratory Technician

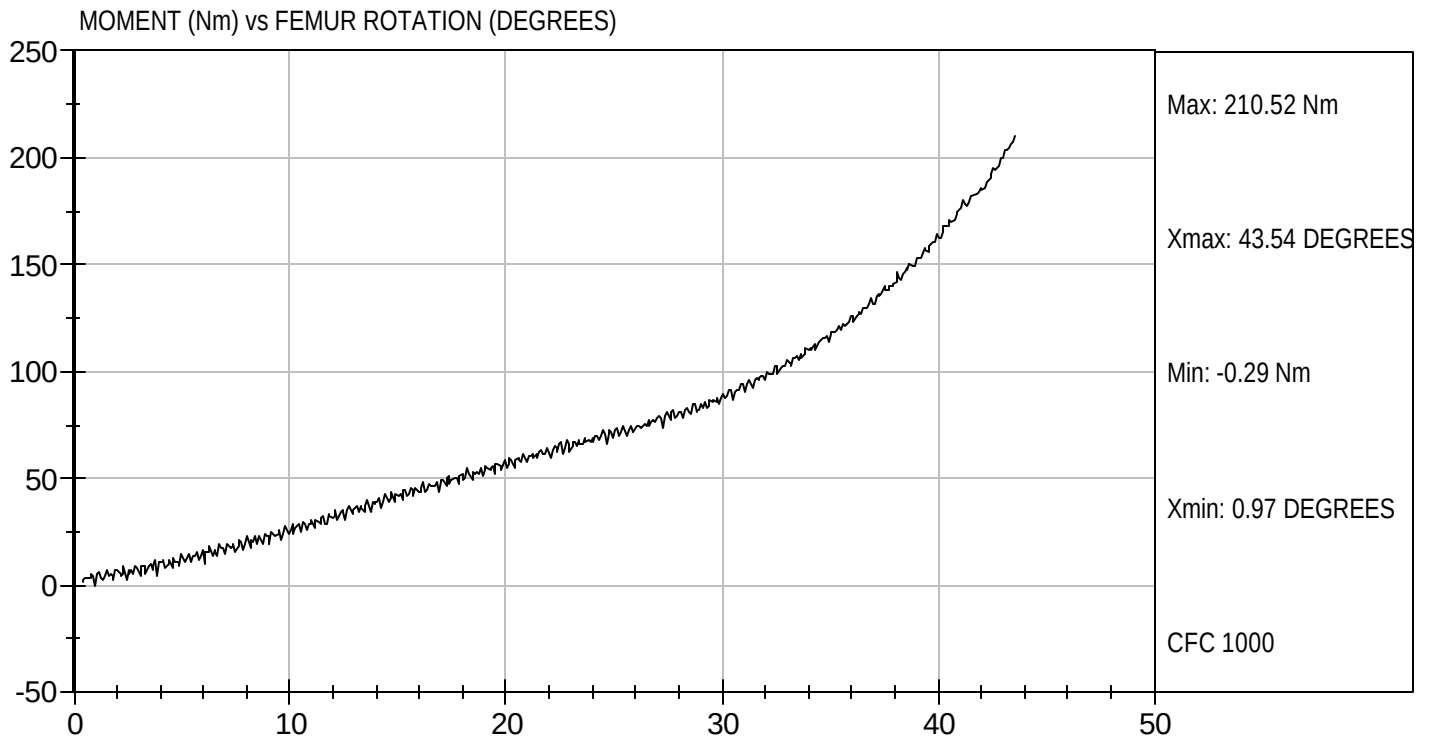

 Approved By

05/18/2006
 Test Date



Test Desc: Hip Femur Flexion
Componet ID: D061419

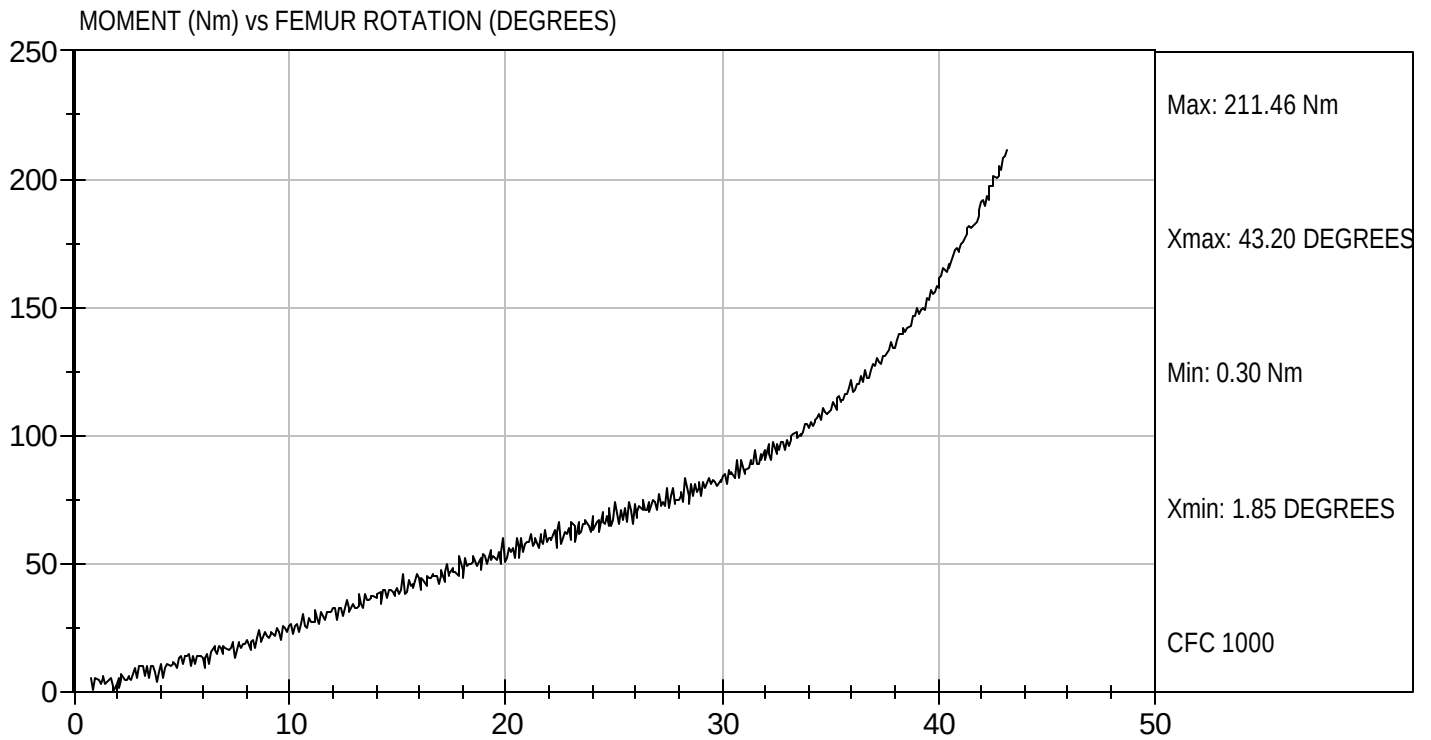
Test Date: 05/18/2006
Velocity: 0 ft/s, 0.00 m/s





Test Desc: Hip Femur Flexion
Componet ID: D061410

Test Date: 05/18/2006
Velocity: 0 ft/s, 0.00 m/s



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

ATD Serial No: 066

Test ID: D061421

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.6	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	42	Pass
Peak Resultant Acceleration	G's	225 - 275	234	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-12.3	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
			Overall Test Results	Pass


 Laboratory Technician


 Approved By

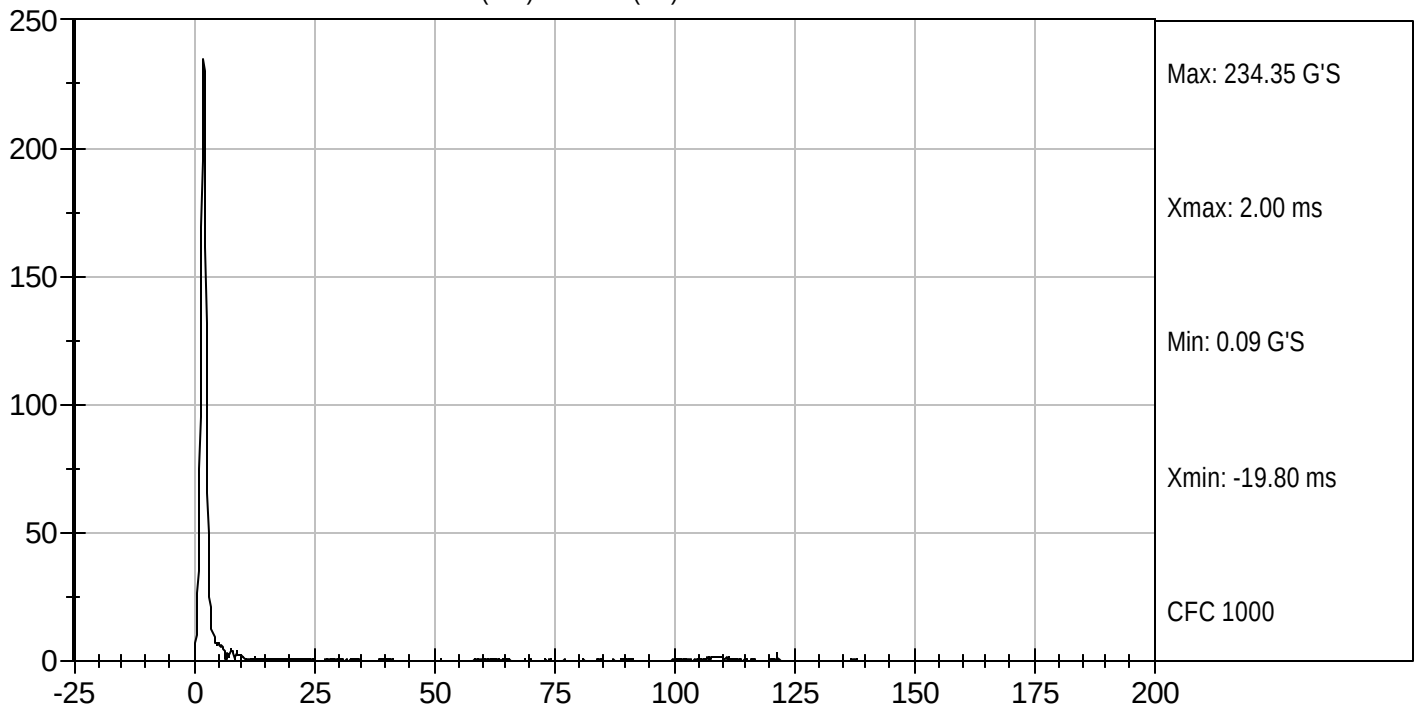
05/18/2006
 Test Date



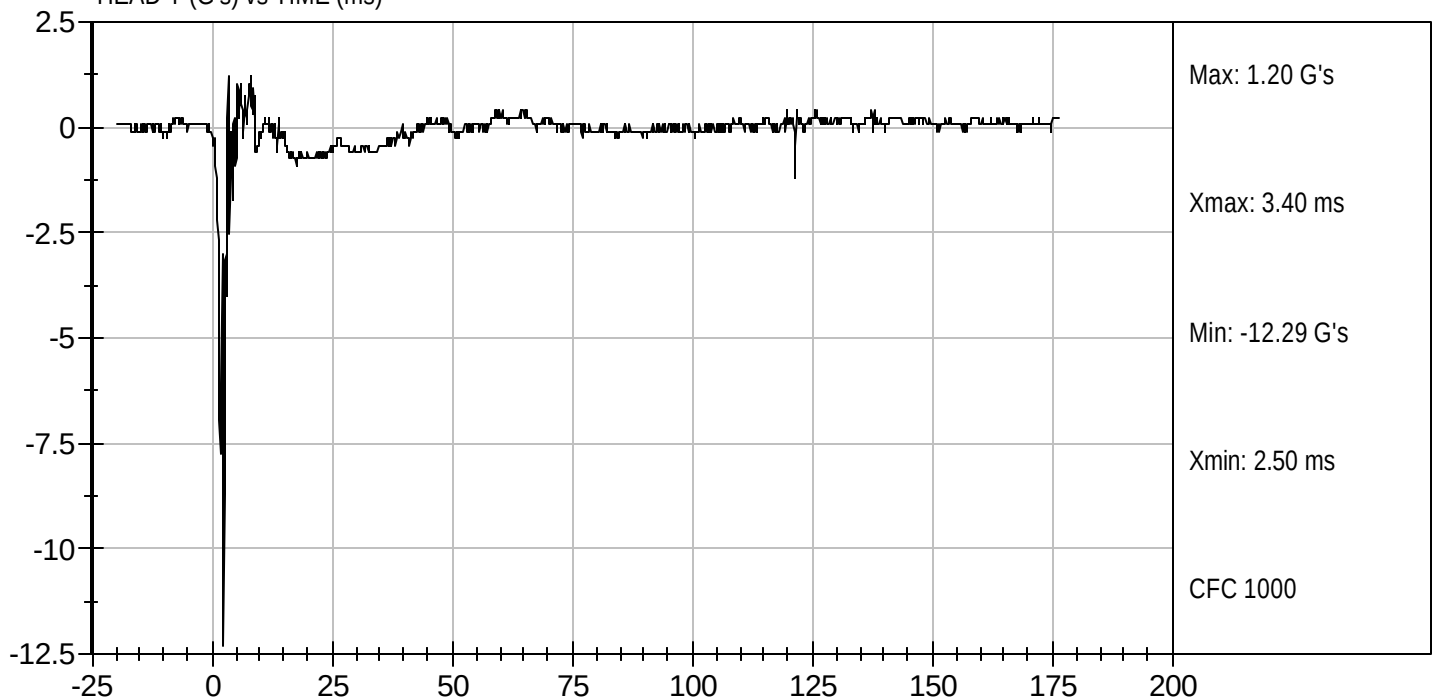
Test Desc: Head Drop
Componet ID: D061421

Test Date: 05/18/2006
Velocity: 0 ft/s, 0.00 m/s

HEAD RESULTANT 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: 066

Test I.D: D061422

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.7	Pass
Laboratory Relative Humidity		%	10 to 70	37	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.01	Pass
Pendulum Deceleration	10 msec	G's	22.50 to 27.50	24.13	Pass
	20 msec	G's	17.60 to 22.60	19.45	Pass
	30 msec	G's	12.50 to 18.50	15.08	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 29.0	15.03	Pass
Deceleration Decay Time to Cross 5 G's		msec	34.0 to 42.0	39.4	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	69.5	Pass
	Time	msec	57.0 to 64.0	61.9	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	113.0 to 128.0	113.9	Pass
Moment About Occipital Condyle	Maximum	N m	88.1 to 108.5	88.2	Pass
	Time	msec	47.0 to 58.0	51.1	Pass
Positive Moment Decay Time To Zero Crossing		msec	97.0 to 107.0	101.5	Pass
Overall Test Results					Pass


 Laboratory Technician

05/18/2006
 Test Date

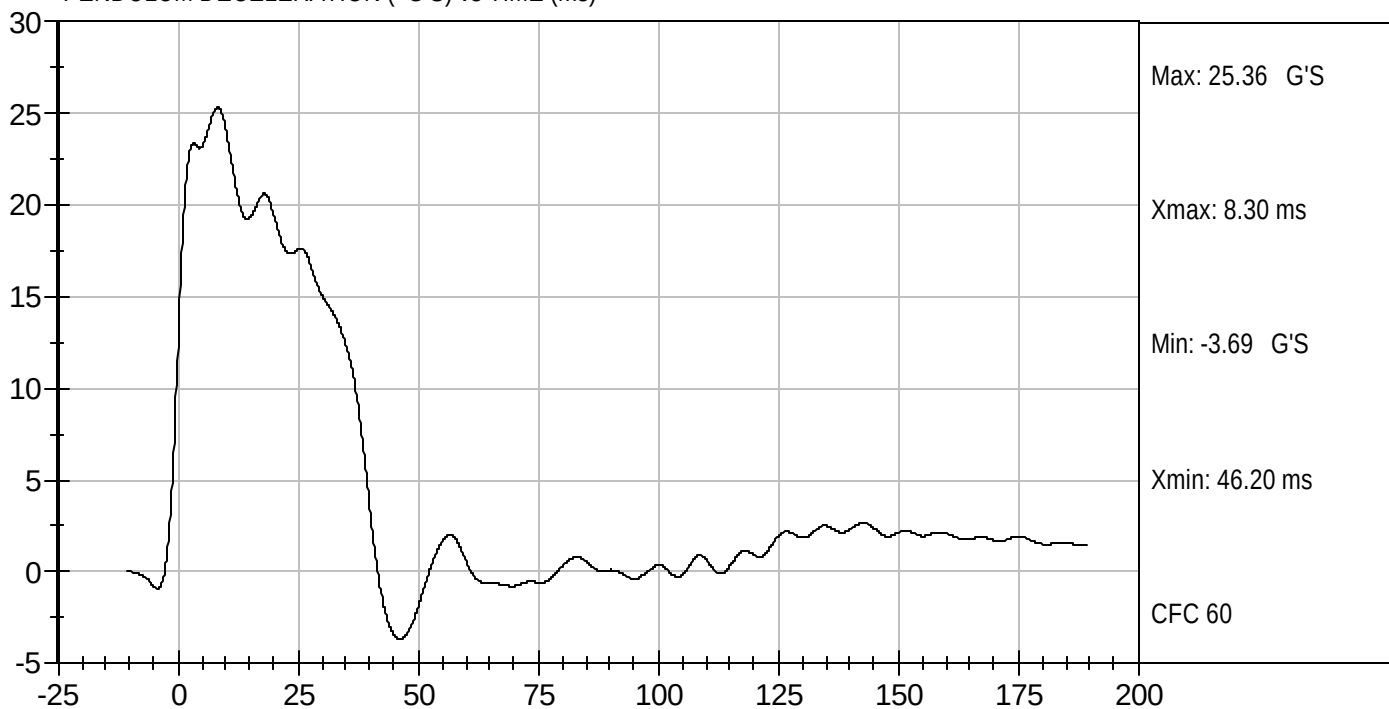

 Approved By



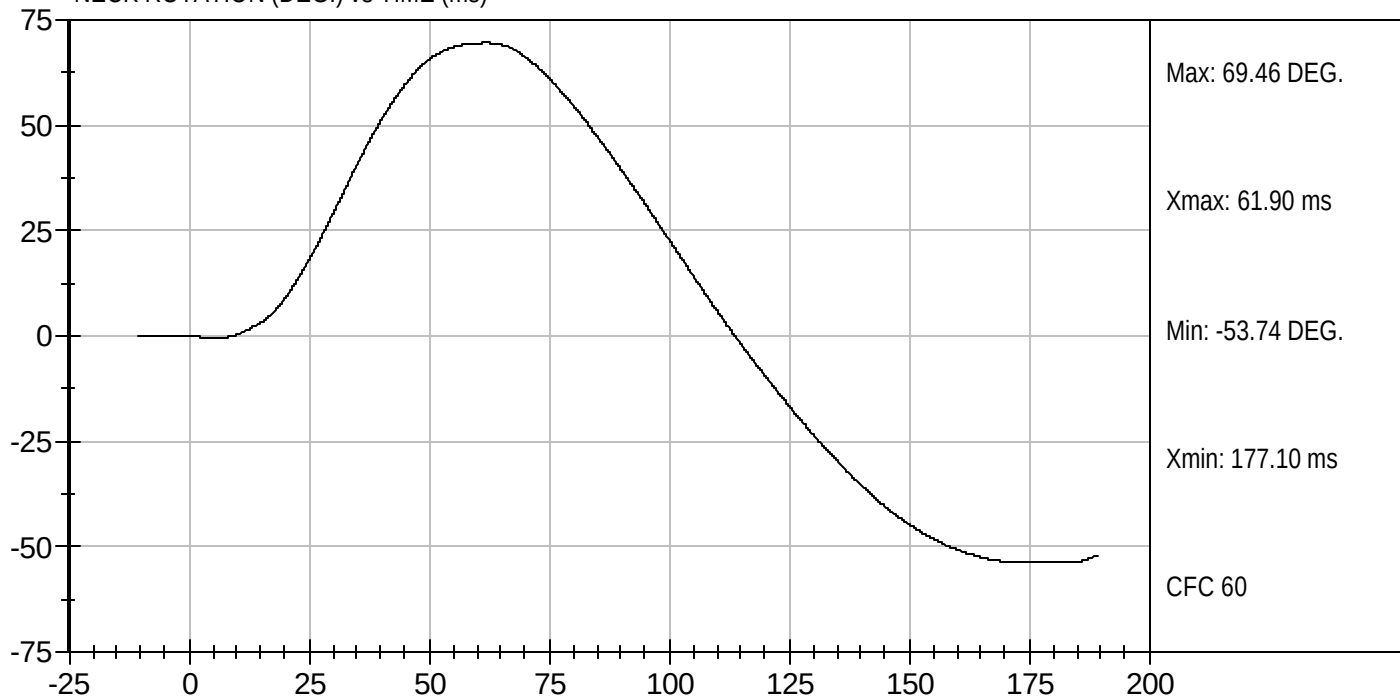
Test Desc: Neck Flexion
Componet ID: D061422

Test Date: 05/18/2006
Velocity: 23.01 ft/s, 7.01 m/s

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



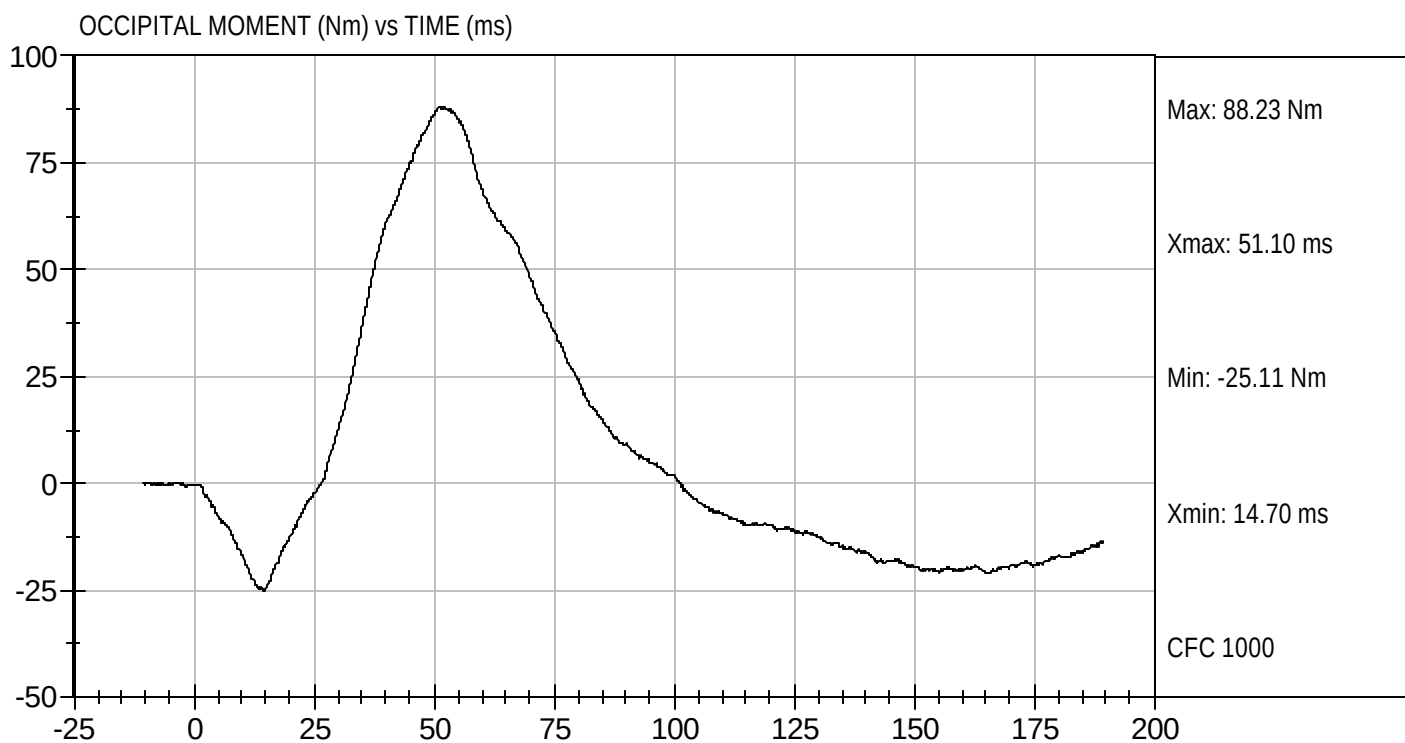
NECK ROTATION (DEG.) vs TIME (ms)





Test Desc: Neck Flexion
Componet ID: D061422

Test Date: 05/18/2006
Velocity: 23.01 ft/s, 7.01 m/s

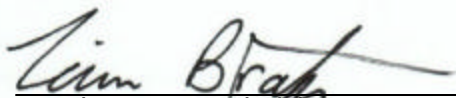


MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 066

Test I.D: D061423

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.8	Pass
Laboratory Relative Humidity		%	10 to 70	37	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.10	Pass
Pendulum Deceleration	10 msec	G's	17.20 to 21.20	18.30	Pass
	20 msec	G's	14.00 to 19.00	16.62	Pass
	30 msec	G's	11.00 to 16.00	14.16	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 22.0	14.12	Pass
Deceleration Decay Time to Cross 5 G's		msec	38.0 to 46.0	42.8	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	99.0	Pass
	Time	msec	72.0 to 82.0	82.0	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	147.0 to 174.0	158.1	Pass
Moment About Occipital Condyle	Maximum	N m	-52.9 to -79.9	-65.5	Pass
	Time	msec	65.0 to 79.0	73.9	Pass
Negative Moment Decay Time To Zero Crossing		msec	120.0 to 148.0	144.6	Pass
Overall Test Results				Pass	


 Laboratory Technician

05/18/2006
 Test Date

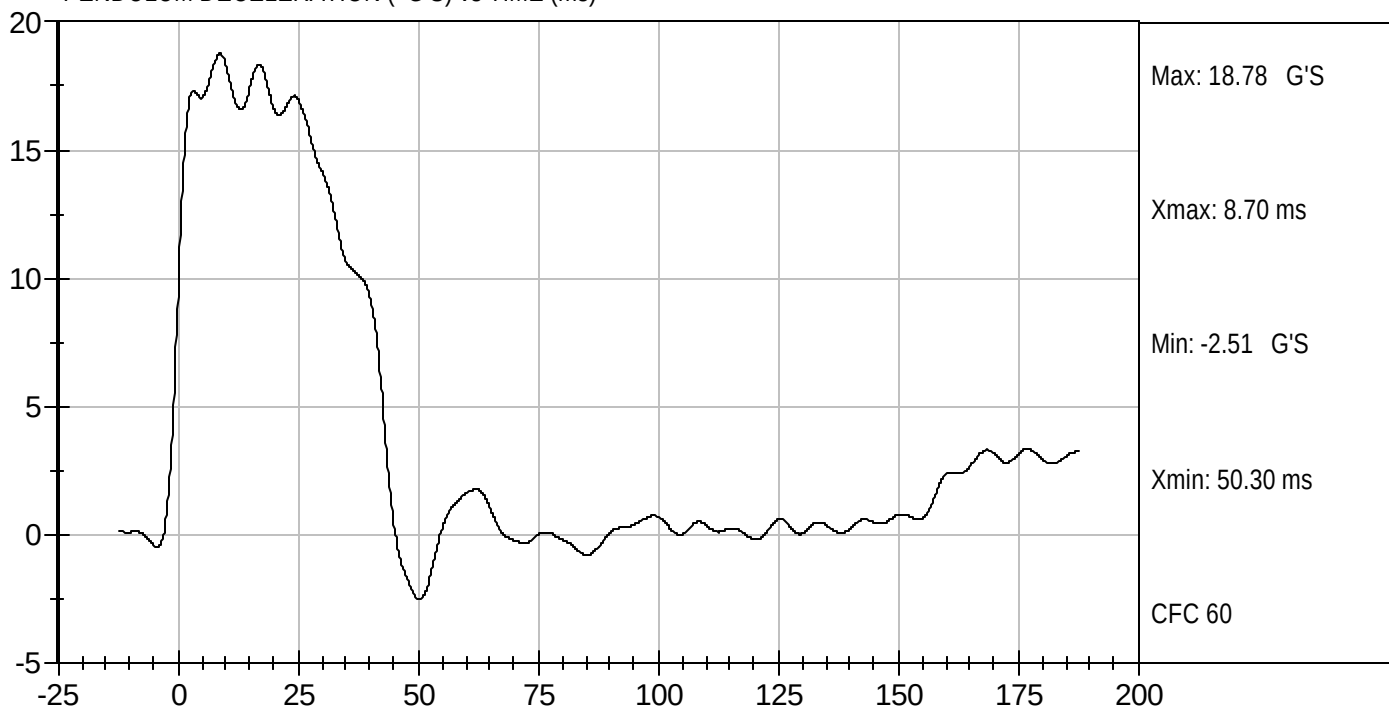

 Approved By



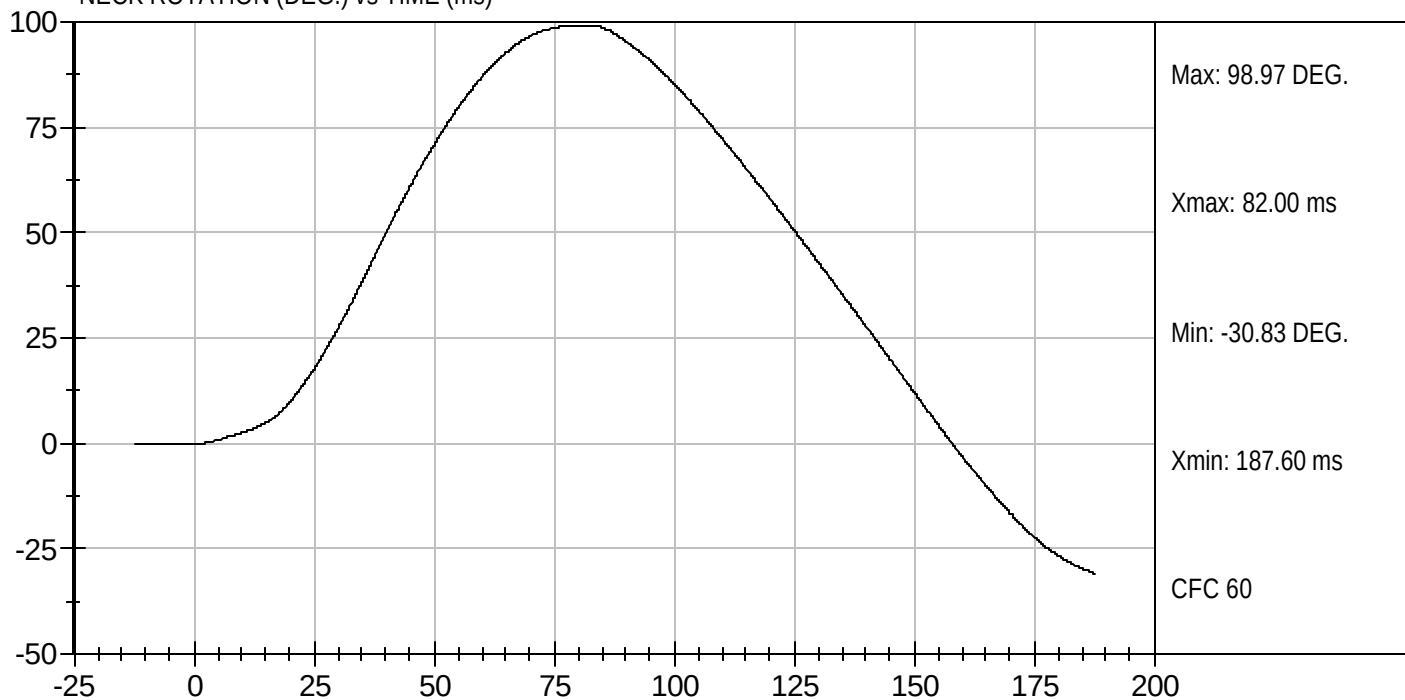
Test Desc: Neck Extension
Componet ID: D061423

Test Date: 05/18/2006
Velocity: 20.02 ft/s, 6.10 m/s

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



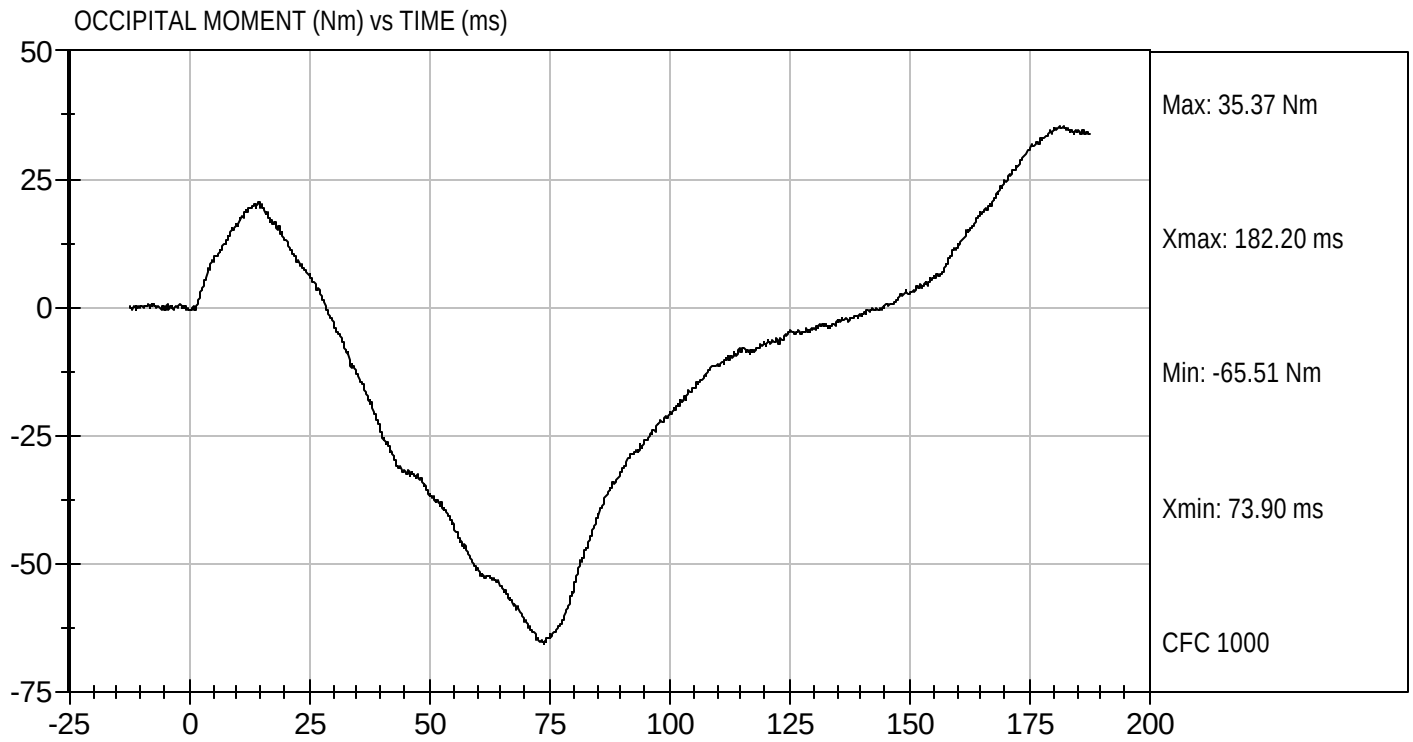
NECK ROTATION (DEG.) vs TIME (ms)





Test Desc: Neck Extension
Componet ID: D061423

Test Date: 05/18/2006
Velocity: 20.02 ft/s, 6.10 m/s



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 066

Test I.D: D061424

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	34	Pass
Probe Velocity	m/s	6.58 to 6.82	6.61	Pass
Peak Probe Force	N	5159 to 5893	5,565	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.88	Pass
Internal Hysteresis	%	69 to 85	70	Pass
Overall Test Results			Pass	


Laboratory Technician

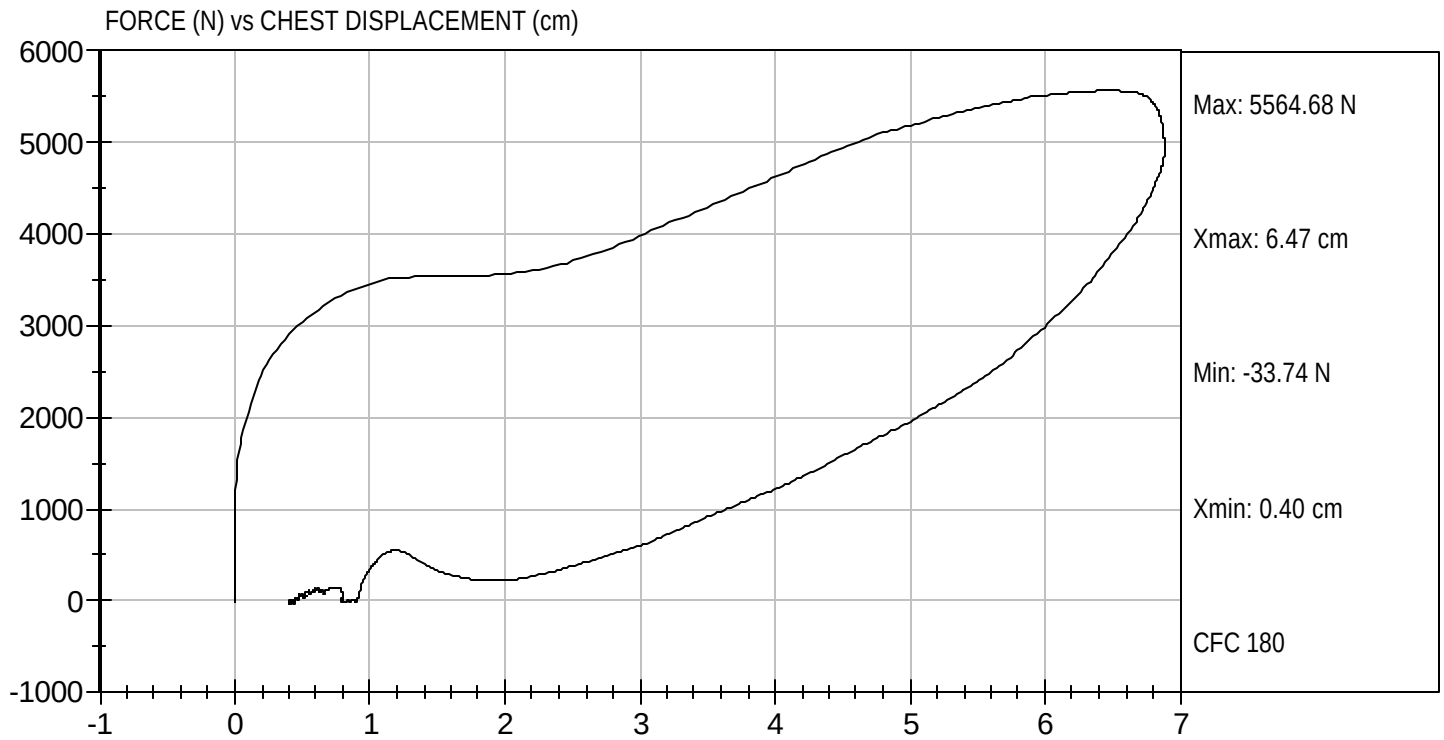

Approved By

05/19/2006
Test Date



Test Desc: Thorax Impact
Componet ID: D061424

Test Date: 05/19/2006
Velocity: 21.68 ft/s, 6.61 m/s



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

ATD Serial No: 066

Test I.D: D061425

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	36	Pass
Probe Velocity	m/sec	2.07 to 2.13	2.11	Pass
Peak Probe Force	Newtons	4715 to 5782	5,447	Pass
Overall Test Results				Pass


Laboratory Technician

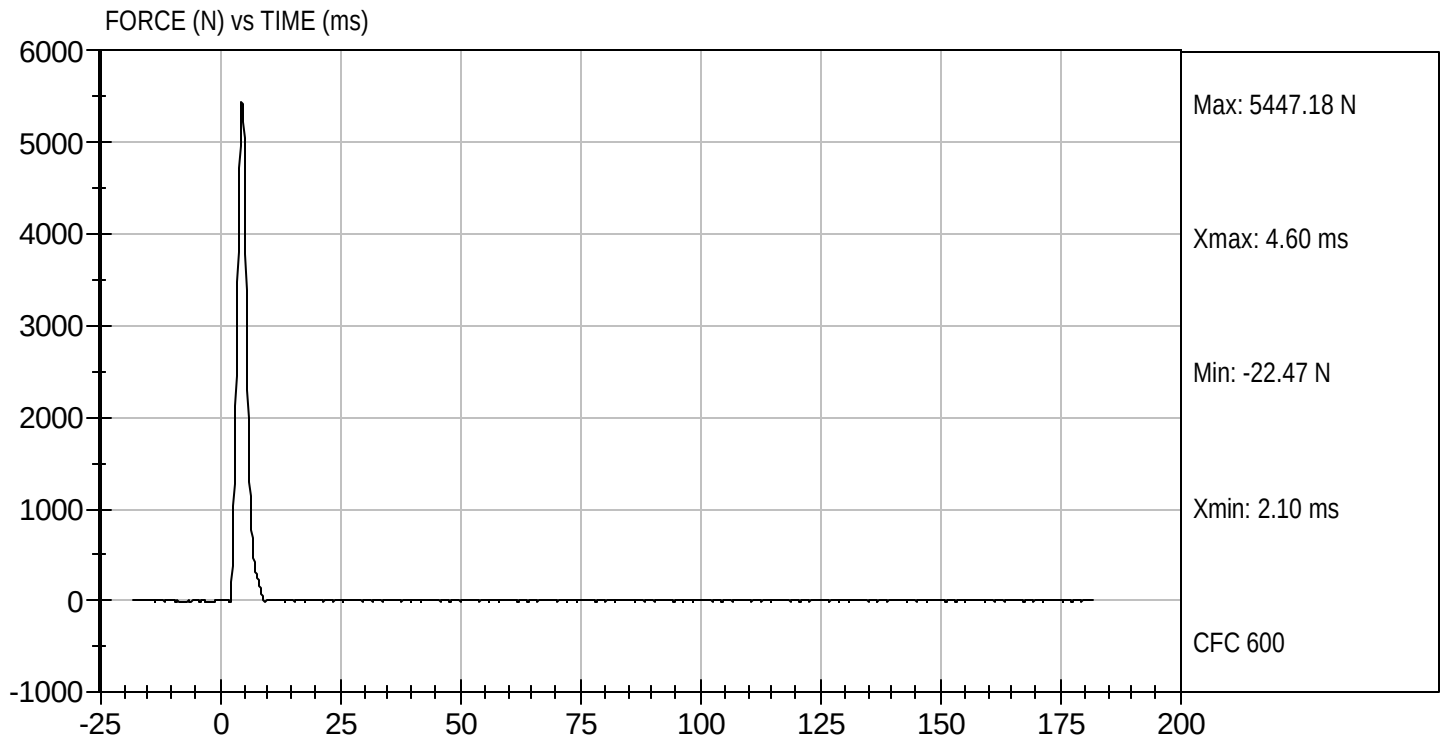

Approved By

05/18/2006
Test Date



Test Desc: Right Knee
Componet ID: D061425

Test Date: 05/18/2006
Velocity: 6.91 ft/s, 2.11 m/s



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

ATD Serial No: 066

Test I.D: D061426

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	36	Pass
Probe Velocity	m/sec	2.07 to 2.13	2.11	Pass
Peak Probe Force	Newtons	4715 to 5782	5,213	Pass
Overall Test Results				Pass


Laboratory Technician

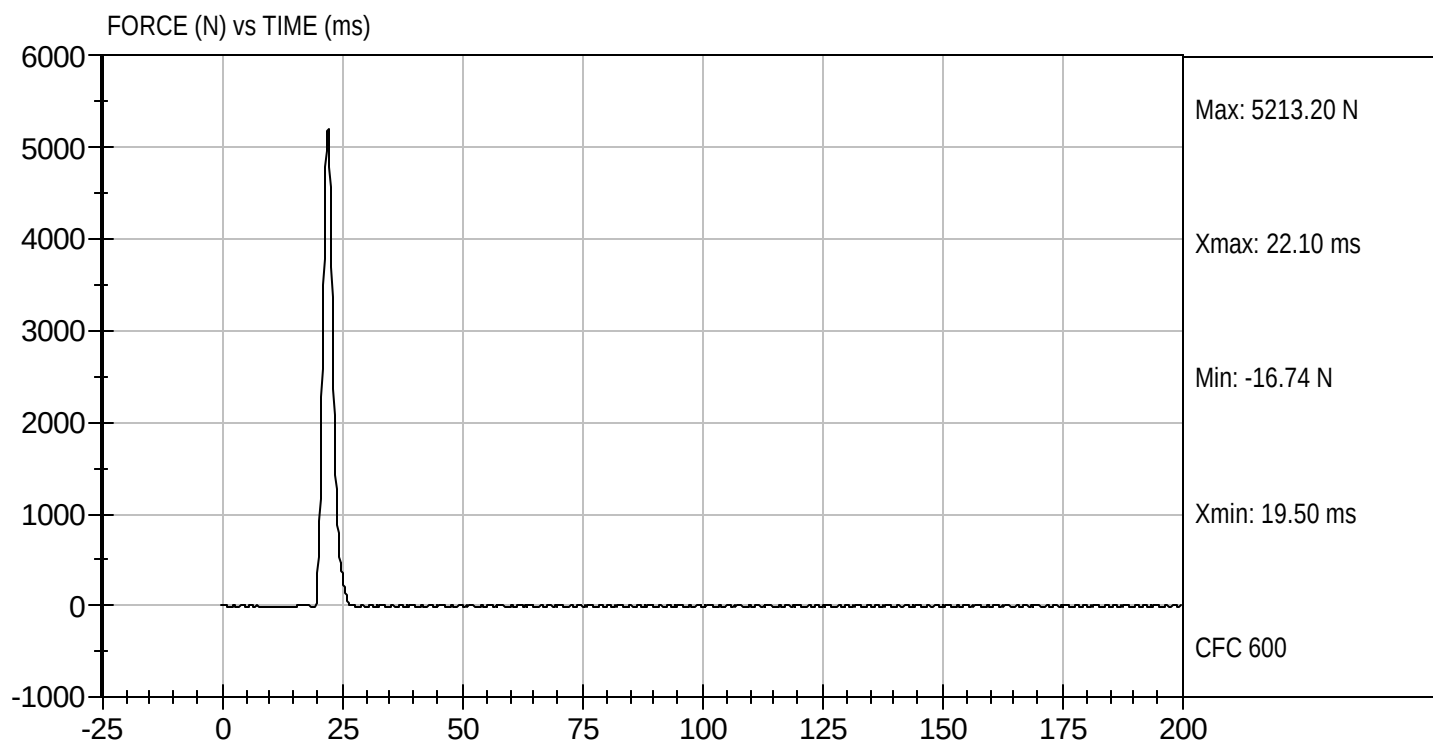

Approved By

05/18/2006
Test Date



Test Desc: Left Knee
Componet ID: D061426

Test Date: 05/18/2006
Velocity: 6.92 ft/s, 2.11 m/s



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

ATD Serial No: 066

Test I.D: D061420

Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.8	21.8	Pass
Laboratory Relative Humidity	%	10 to 70	37	37	Pass
Rotation Rate	deg/sec	5 -10	8	8	Pass
30 Degrees	Nm	94.9 Nm Max	92.8	82.7	Pass
150 ft-lbf / 203.4 Nm	Deg	40- 50 Degree Max Rotation	42	41	Pass
Overall Test Results				Pass	


 Laboratory Technician

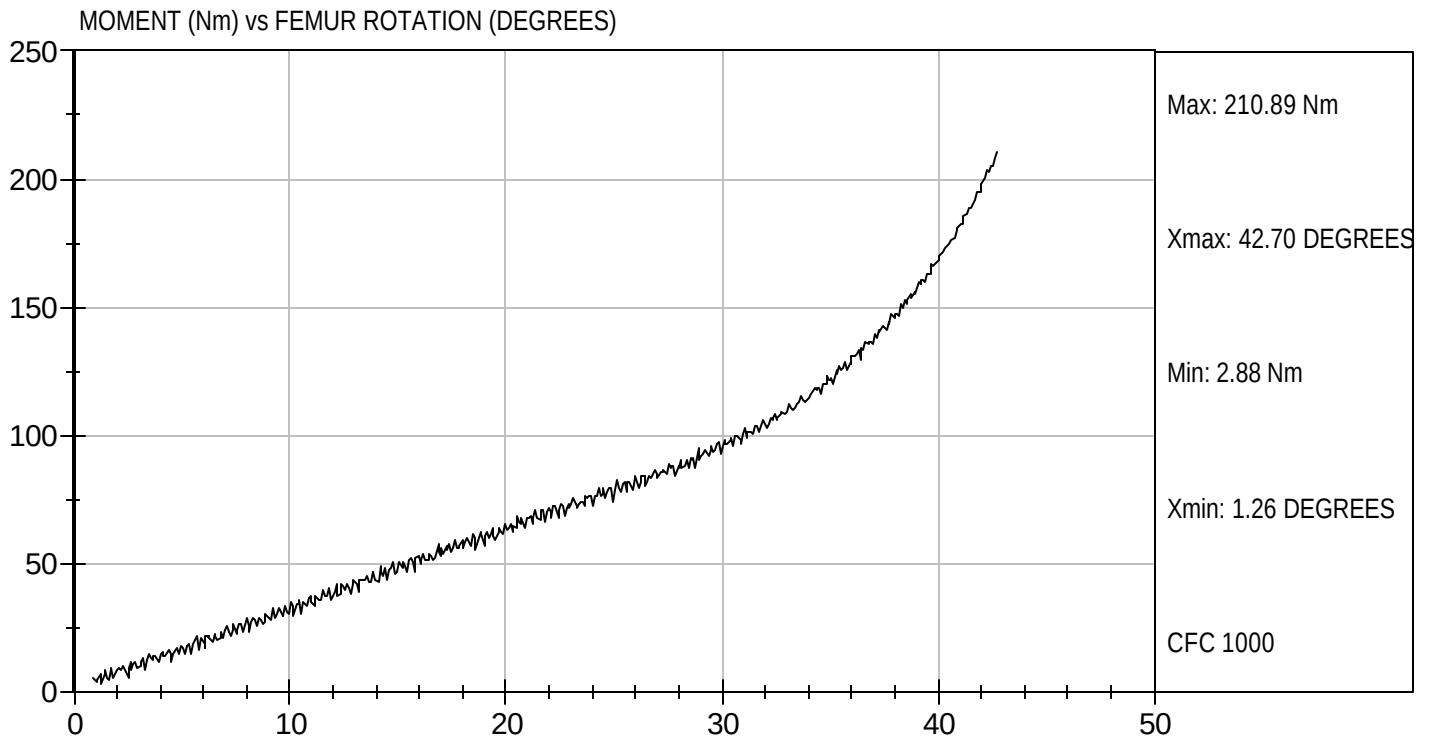

 Approved By

05/18/2006
 Test Date



Test Desc: Hip Femur Flexion
Componet ID: D061429

Test Date: 05/18/2006
Velocity: 0 ft/s, 0.00 m/s





Test Desc: Hip Femur Flexion
Componet ID: D061420

Test Date: 05/18/2006
Velocity: 0 ft/s, 0.00 m/s

