

REPORT NUMBER: NCAP-MGA-2006-008

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

**NISSAN MOTOR CO., LTD
2006 INFINITI FX35 CROSSOVER
NHTSA NUMBER: M65205**

**PREPARED BY:
MGA RESEARCH CORPORATION
5000 WARREN ROAD
BURLINGTON, WI 53105**



Test Date: May 8, 2006

Final Report Date: May 15, 2006

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
RULEMAKING
OFFICE OF CRASHWORTHINESS STANDARDS
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WASHINGTON, D.C. 20590**

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Technical Report Documentation Page

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16. Abstract A frontal barrier impact was conducted on a 2006 Infiniti FX35 Crossover at MGA Research Corporation on May 8, 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 56.3 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 697 mm located at the centerline of the vehicle. 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 style="width: 100%; margin-top: 10px;"> <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>415.3</td> <td>287.3</td> </tr> <tr> <td>Max. Thorax Accel. (3ms Clip)</td> <td>G's</td> <td>60</td> <td>35.5</td> <td>42.3</td> </tr> <tr> <td>Left Femur Force</td> <td>Newton</td> <td>10009</td> <td>-3826</td> <td>-3939</td> </tr> <tr> <td>Right Femur Force</td> <td>Newton</td> <td>10009</td> <td>-5182</td> <td>-3475</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	415.3	287.3	Max. Thorax Accel. (3ms Clip)	G's	60	35.5	42.3	Left Femur Force	Newton	10009	-3826	-3939	Right Femur Force	Newton	10009	-5182	-3475
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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 DTNH22-01-D-12005. 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 2006 Infiniti FX35 Crossover at a velocity of 56.3 kph. The test was performed at MGA Research Corporation on May 8, 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 697 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 and visor. 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	415.3	70.8	106.8	35.5	84.7	87.7	-22.9	-3826	-5182
Passenger	287.3	60.0	96.0	42.3	77.2	80.2	-24.1	-3939	-3475

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

TEST NOTES

No valid data was collected for the following:

Driver Lap Belt Load

SECTION 2
OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

DATA SHEET NO. 1
CRASH TEST SUMMARY

Test Vehicle: 2006 Infiniti FX35 Crossover
Test Program: 35mph Frontal Impact

NHTSA No.: M65205
Test Date: 5/08/2006

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	688
Center	mm	668
Right Side	mm	750
Average	mm	702

BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Shoulder belt length as measured on ATD	mm	910	930
Lap belt length as measured on ATD	mm	645	643
Remainder of belt on reel	mm	1515	1577
Total belt length for continuous webbing systems	mm	3070	3150

DATA SHEET NO. 2
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2006 Infiniti FX35 Crossover
 Test Program: 35mph Frontal Impact

NHTSA No.: M65205
 Test Date: 5/08/2006

TEST VEHICLE INFORMATION

Manufacturer	Infiniti
Model	FX35 Crossover
Body Style	4-Door MPV
NHTSA No.	M65205
VIN	JNRAS08W46X205232
Color	Black Obsidian
Delivery Date	4/26/06
Odometer Reading (mile)	127
Dealer	Fields Infiniti
Transmission	Automatic
Final Drive	4WD
Number of Cylinders	6
Engine Displacement (L)	3.5
Engine Placement	Longitudinal
Automatic Door Lock (ADL)	No
Owners Manual Details Instructions on Disabling ADLs	No
Bucket Seats	Yes

TEST VEHICLE OPTIONS

Front Airbag	Yes
Driver Side Curtain Airbag	Yes
Driver Side Torso Airbag	Yes
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	Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Nissan Motor Co., Ltd.
Date of Manufacture	2/06

GVWR (kg)	2486
GAWR Front (kg)	1187
GAWR Rear (kg)	1311

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench		
Number of Occupants	2	3		5
Capacity Wt. (VCW) (kg)				431
Cargo Wt. (RCLW) (kg)				90.8

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

Test Vehicle: 2006 Infiniti FX35 Crossover
 Test Program: 35mph Frontal Impact

NHTSA No.: M65205
 Test Date: 5/08/2006

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	519.8	464.9		550.2	562.0	
Right	kg	515.8	469.0		548.0	549.8	
Ratio	%	52.6	47.4		49.7	50.3	
Totals	kg	1035.6	933.9	1969.5	1098.2	1111.8	2209.9

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1969.5
Weight of 2 P572E ATDs	kg	156.0
Rated Cargo/Luggage Weight (RCLW)	kg	90.8
Calculated Vehicle Target Weight (TVTW)	kg	2216.3

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	840	841	827	831	1357
As Tested	mm	840	838	813	819	1439
Post Test	mm	794	840	800	801	

Vehicle Wheelbase (mm): 2861

Weight of Ballast secured in cargo area (kg): 88.5

Vehicle Components Removed: Spare tire, jack and tools, trunk carpet

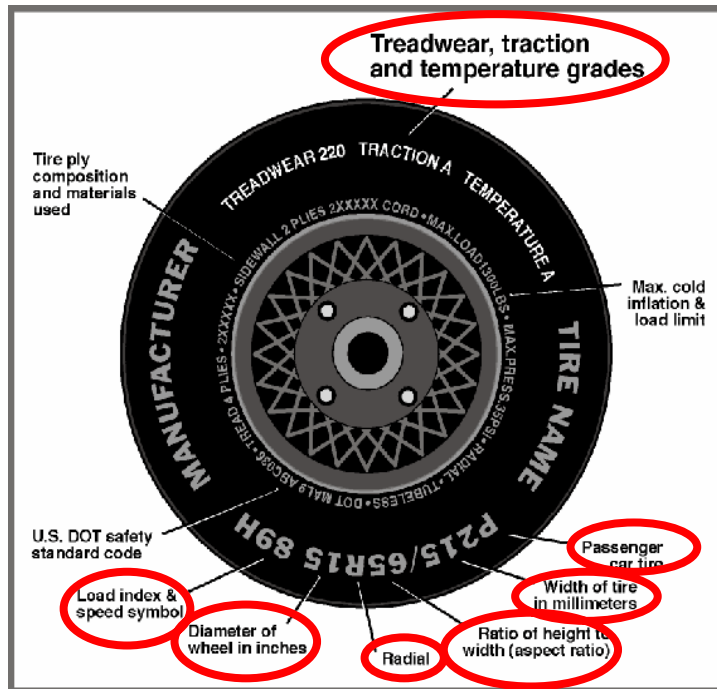
Ballast weight does not include instrumentation and data acquisition system.

DATA SHEET NO. 3

TEST VEHICLE TIRE INFORMATION

Test Vehicle: 2006 Infiniti FX35 Crossover
 Test Program: 35mph Frontal Impact

NHTSA No.: M65205
 Test Date: 5/08/2006



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	350	350
Cold Pressure (max)	220	220
Recommended Tire Size	P265/60R18	P265/60R18
Tire size on Vehicle	P265/60R18	P265/60R18
Tire Manufacturer	Bridgestone	Bridgestone
Tire Name	Potenza	Potenza
Tire Type	M+S	M+S
Tire Width (mm)	P265	P265
Ratio of Height to Width (aspect ratio)	60	60
Radial	R	R
Wheel Diameter	18	18
Load Index & Speed Symbol	109V	109V
Treadwear	260	260
Traction Grade	A	A
Temperature Grade	A	A

DATA SHEET NO. 4
TEST VEHICLE INFORMATION

Test Vehicle: 2006 Infiniti FX35 Crossover
 Test Program: 35mph Frontal Impact

NHTSA No.: M65205
 Test Date: 5/08/2006

NORMAL DESIGN RIDING POSITION

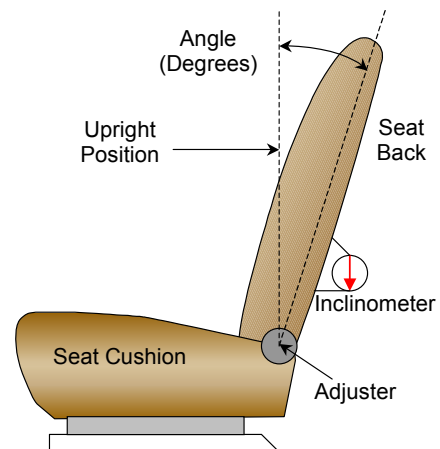
The driver and passenger seat back is positioned to the manufacturer's designated angle. The procedure is as follows: Seatback angle in forward-most locking position is -4.4 degrees and the seatback angle at the test position is 18.6 degrees on headrest post.

Driver seat back angle: 18.6 on headrest post

Passenger seat back angle: 18.2 on headrest post

SEAT FORE/AFT POSITIONING

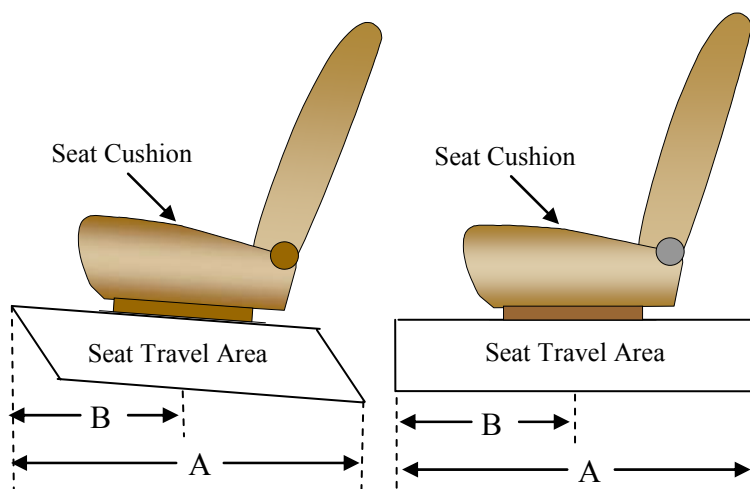
	Total Fore/Aft Travel	Placed in Position #
Driver Seat	280 mm	140 mm
Passenger Seat	260 mm	130 mm



FRONT SEAT ASSEMBLY

ADJUSTABLE D-RING POSITION

The D-Ring was placed in the uppermost position.



DATA SHEET NO. 4...(CONTINUED)

TEST VEHICLE INFORMATION

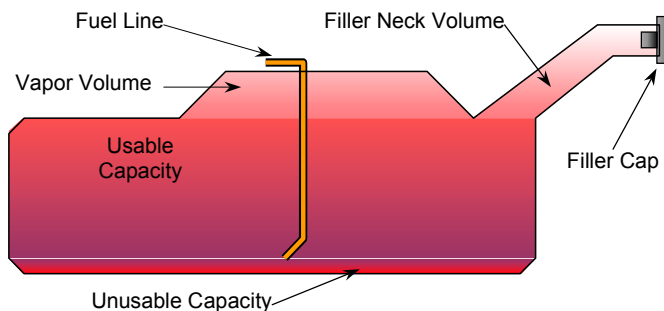
Test Vehicle: 2006 Infiniti FX35 Crossover
Test Program: 35mph Frontal Impact

NHTSA No.: M65205
Test Date: 5/08/2006

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	90.1
Usable Capacity of "Optional" Tank	
92-94% of Usable Capacity	82.9 to 84.7
Actual Amount of Solvent used	83.7
1/3 of Usable Capacity	30.0

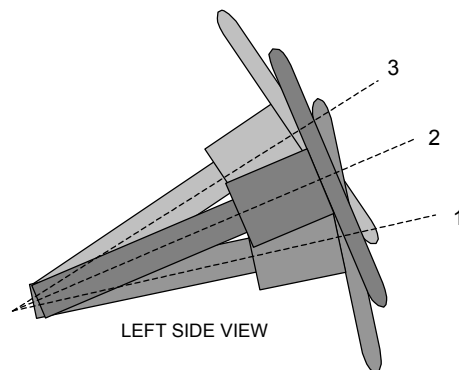
The test vehicle is equipped with an electric fuel pump. The fuel pump will pump fuel with the ignition key in the "on" position.



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.



LEFT SIDE VIEW

STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONS

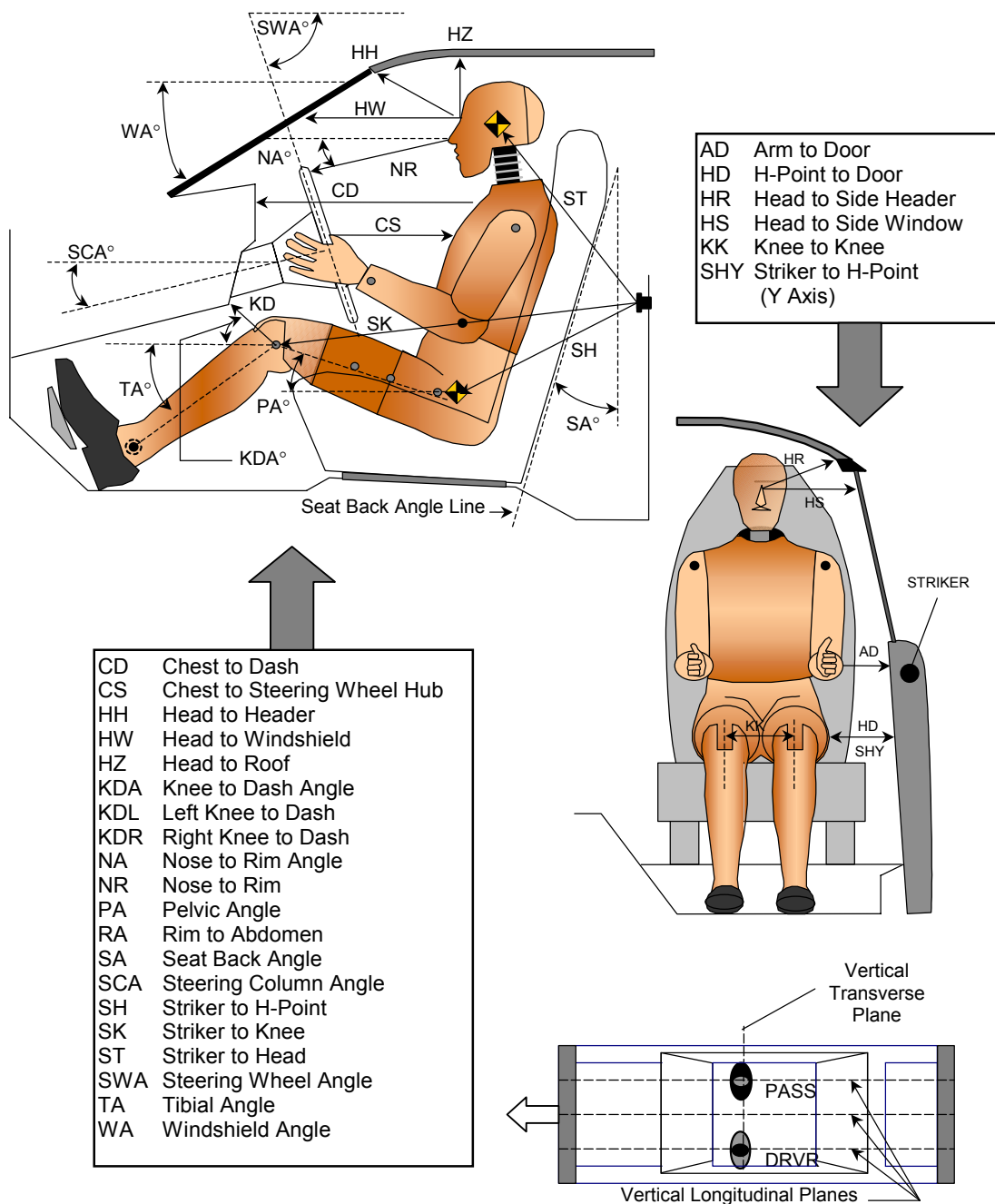
	Fore/Aft Position (mm)	Degrees
Lowermost position No. 1	0	24.7
Geometric center position No. 2	10	27.6
Uppermost position No. 3	20	30.5

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

Test Vehicle: 2006 Infiniti FX35 Crossover
 Test Program: 35mph Frontal Impact

NHTSA No.: M65205
 Test Date: 5/08/2006

DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS



DATA SHEET NO. 5... (CONTINUED)

DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2006 Infiniti FX35 Crossover
 Test Program: 35mph Frontal Impact

NHTSA No.: M65205
 Test Date: 5/08/2006

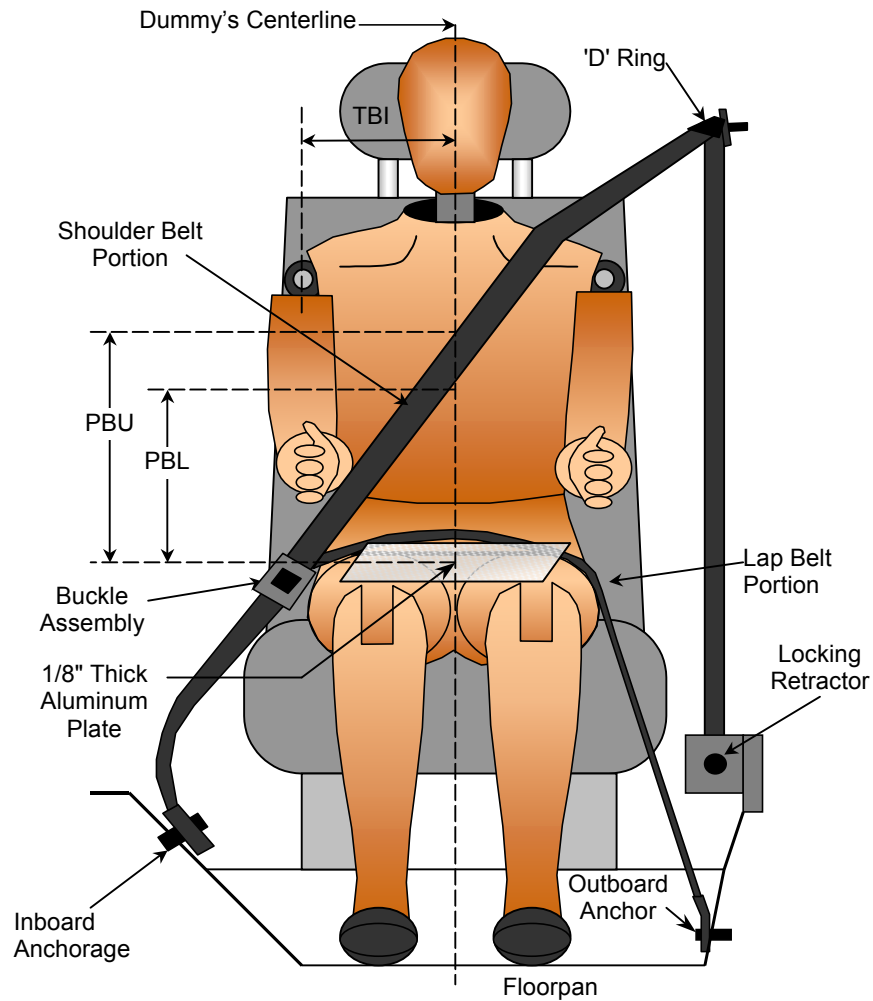
TEST DUMMY POSITION MEASUREMENTS

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA	Windshield Angle		28.0		
SWA	Steering Wheel Angle		62.4		
SCA	Steering Column Angle		27.6		
SA	Seat Back Angle		18.6		18.2
HZ	Head to Roof (Z)	201	90.0	175	90.0
HH	Head to Header	345	29.9	312	27.7
HW	Head to Windshield	633	0.0	555	0.0
HR	Head to Side Header (Y)	216		230	
NR	Nose to Rim	407	13.9		
CD	Chest to Dash	513		519	
CS	Chest to Steering Hub	306	4.1		
RA	Rim to Abdomen	172	0.0		
KDL	Left Knee to Dash	142	26.6	103	
KDR	Right Knee to Dash	97		130	24.4
PA	Pelvic Angle		24.4		24.1
TA	Tibia Angle		41.6		46.0
KK	Knee to Knee (Y)	325		250	
SK	Striker to Knee	682	89.5	696	92.6
ST	Striker to Head	512	21.1	542	22.2
SH	Striker to H-Point	339	119.7	306	118.5
SHY	Striker to H-Point (Y)	272		296	
HS	Head to Side Window	340		349	
HD	H-Point to Door (Y)	208		202	
AD	Arm to Door (Y)	120		118	
AA	Ankle to Ankle	320		240	

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

Test Vehicle: 2006 Infiniti FX35 Crossover
 Test Program: 35mph Frontal Impact

NHTSA No.: M65205
 Test Date: 5/08/2006



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU - Top surface of reference to belt upper edge	mm	355	355
PBL - To surface of reference to belt lower edge	mm	285	285

DATA SHEET NO. 7
VEHICLE ACCELEROMETER LOCATIONS

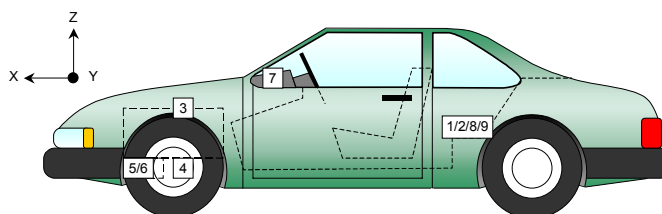
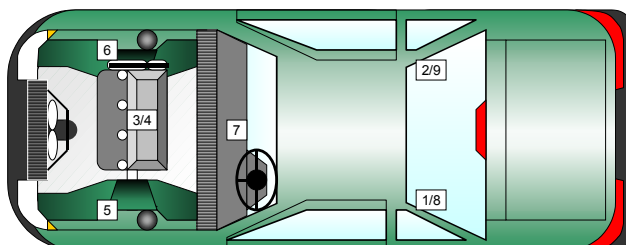
Test Vehicle: 2006 Infiniti FX35 Crossover
 Test Program: 35mph Frontal Impact

NHTSA No.: M65205
 Test Date: 5/08/2006

VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear X-Member X	1756	-290	618
2	Right Rear X-Member X	1756	287	618
3	Engine Top X	4068	-23	916
4	Engine Bottom X	3968	63	278
5	Left Brake Caliper X	3977	-696	270
6	Right Brake Caliper X	3977	696	270
7	Instrument Panel X			
8	Left Rear X-Member Z	1756	-290	618
9	Right Rear X-Member Z	1756	287	618

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: 2006 Infiniti FX35 Crossover
 Test Program: 35mph Frontal Impact

NHTSA No.: M65205
 Test Date: 5/08/2006

Windshield Mounting Details:

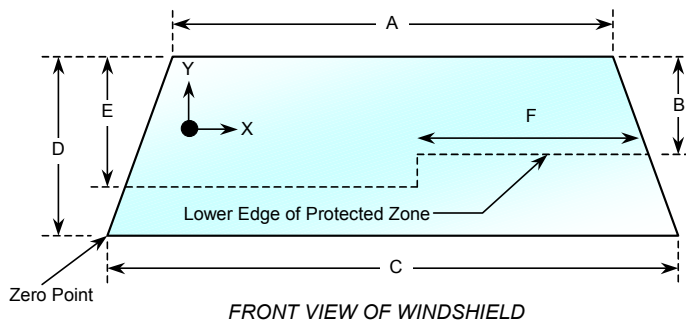
Windshield glass is secured to the vehicle frame with a rubber trim and glue.

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	2167	2167	100
Right Side	2167	2167	100
Total	4334	4334	100



Item	Units	Value
A	mm	1246
B	mm	464
C	mm	1688
D	mm	700
E	mm	457
F	mm	483

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: 2006 Infiniti FX35 Crossover
 Test Program: 35mph Frontal Impact

NHTSA No.: M65205
 Test Date: 5/08/2006

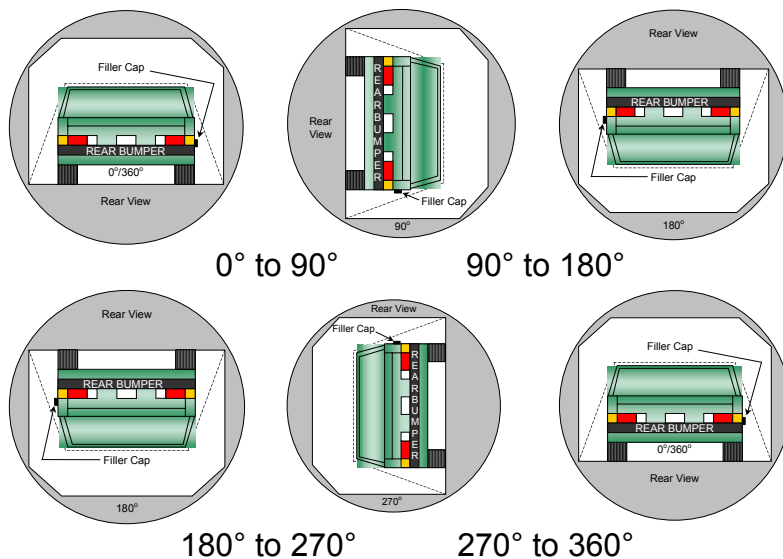
FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21° C Test Time: 12:41 pm

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°	170	300	0
90° to 180°	140	300	0
180° to 270°	144	300	0
270° to 360°	150	300	0

DATA SHEET NO. 10
VEHICLE MEASUREMENTS

Test Vehicle: 2006 Infiniti FX35 Crossover
Test Program: 35mph Frontal Impact

NHTSA No.: M65205
Test Date: 5/08/2006

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total length of vehicle at centerline	mm	4770	4073	697
2	RSOV to front of engine	mm	4050	3863	187
3	RSOV to firewall centerline	mm	3500	3383	117
4	RSOV to leading edge of right door	mm	3100	3107	-7
5	RSOV to leading edge of left door	mm	3115	3121	-6
6	RSOV to lower leading edge of right door	mm	3216	3200	16
7	RSOV to lower leading edge of left door	mm	3225	3204	21
8	RSOV to upper leading edge of right door	mm	2032	2035	-3
9	RSOV to upper leading edge of left door	mm	2035	2047	-12
10	RSOV to lower trailing edge of right door	mm	2050	2032	18
11	RSOV to lower trailing edge of left door	mm	2048	2039	9
12	RSOV to bottom of right 'A' pillar	mm	3223	3208	15
13	RSOV to bottom of left 'A' pillar	mm	3225	3218	7
14	RSOV to firewall on right side	mm	3284	3261	23
15	RSOV to firewall on left side	mm	3288	3277	11
16	RSOV to steering column	mm	2721	2740	-19
17	Center of steering column to left 'A' pillar	mm	363	321	42
18	Center of steering column to headlining	mm	418	385	33
19	RSOV to right side of front bumper	mm	4527	3990	537
20	RSOV to left side of front bumper	mm	4530	4016	514
21	Length of engine block	mm	458	458	0
RD	RSOV to right side of dash panel	mm	2972	2987	-15
CD	RSOV to center of dash panel	mm	2951	2992	-41
LD	RSOV to left side of dash panel	mm	2975	2999	-24

VEHICLE MEASUREMENTS

NHTSA No.: M65205
Test Date: 5/08/2006



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

Test Vehicle: 2006 Infiniti FX35 Crossover
Test Program: 35mph Frontal Impact

NHTSA No.: M65205
Test Date: 5/08/2006

Target Vehicle Structural Measurement

	Elements	Pre-Test (mm)
1	Total Length	4770
2	Total Width	1886
3	Bumper Top Height	635
4	Bumper Bottom Height	538
5	Longitudinal Member Top Height	625
6	Distance between Longitudinal Members	892
7	Longitudinal Member Width	58
8	Engine Top Height	993
9	Engine Bottom Height	280
10	Engine and gearbox width	618
11	Front bumper-engine distance	665
12	Front shock absorber fixing height	1031
13	Bonnet leading edge height	975
14	Front shock absorber fixing width	1126
15	Front bumper – front axle distance	854
16	Front axle – a pillar distance	626
17	A-pillar – B-pillar distance	1085
18	B-Pillar – rear axle distance	1021
19	B-pillar – C-pillar distance	1038
20	Roof sill bottom height	1553
21	Roof sill top height	1618
22	Floor sill bottom height	307
23	Floor sill top height	444

DATA SHEET NO. 11
CAMERA LOCATIONS

Test Vehicle: 2006 Infiniti FX35 Crossover
Test Program: 35mph Frontal Impact

NHTSA No.: M65205
Test Date: 5/08/2006

No.	Camera View	Location (mm) *			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Side View				13	24
2	Left Front View	1130	-5390	1455	24	1000
3	Steering Column Top	1550	-5160	1260	25	1000
4	Steering Column Bottom	1555	-5110	810	25	1000
5	Driver Close-up	1930	-6420	1480	35	1000
6	Driver Angle	5545	-4900	2030	50	1000
7	On board Driver Side					
8	On board Passenger Side					
9	Right Overall	2305	6330	1530	19	1000
10	Right Passenger Half	1300	5250	1560	24	1000
11	Right Close-up	1890	6010	1490	35	1000
12	Right Angle	5550	5220	2040	50	1000
13	Windshield	-285	0	2370	25	1000
14	Top Driver	-95	-385	2210	24	1000
15	Top Passenger	-95	460	2210	24	1000
16	Pit Front	1300	0	-3150	24	1000
17	Pit Rear	3400	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.

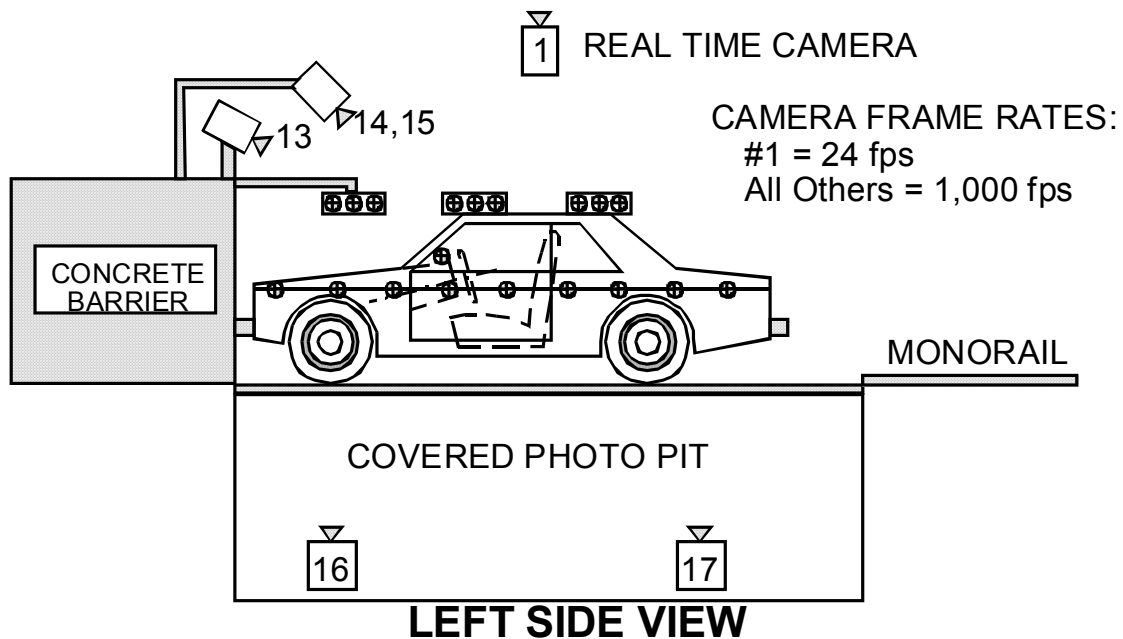
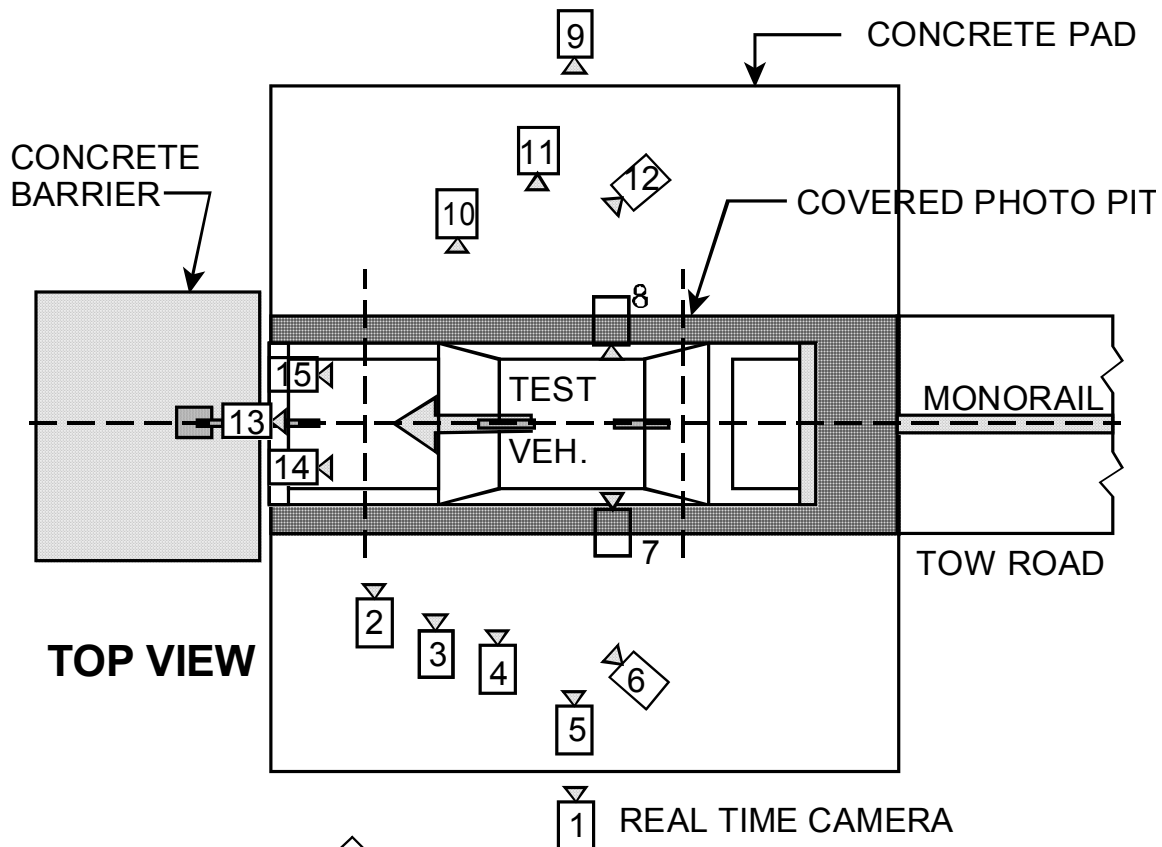
DATA SHEET NO. 11... (continued)

CAMERA LOCATIONS

Test Vehicle: 2006 Infiniti FX35 Crossover
Test Program: 35mph Frontal Impact

NHTSA No.: M65205
Test Date: 5/08/2006

CAMERA POSITIONS FOR FRONTAL IMPACTS

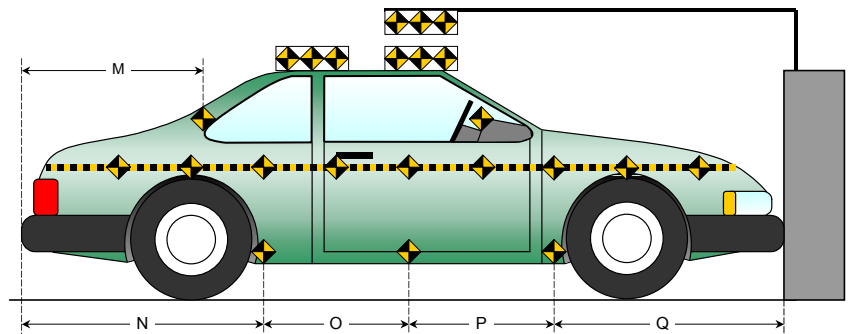
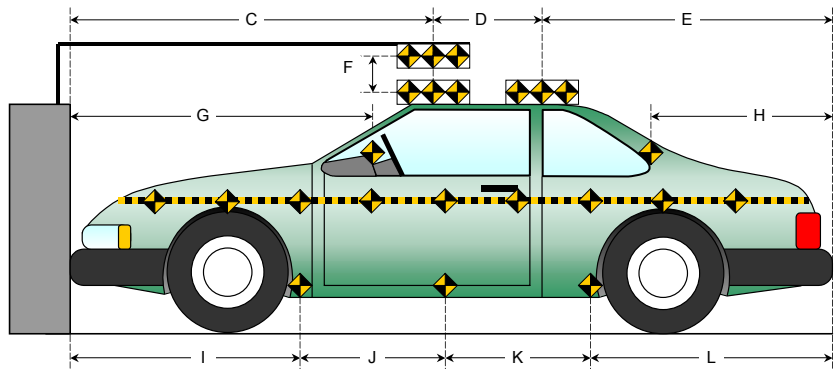
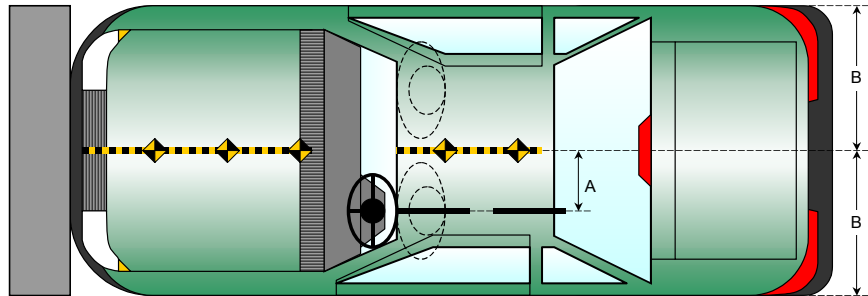


DATA SHEET NO. 12 **PHOTOGRAPHIC REFERENCE TARGET LOCATIONS**

Test Vehicle: 2006 Infiniti FX35 Crossover
 Test Program: 35mph Frontal Impact

NHTSA No.: M65205
 Test Date: 5/08/2006

Item	Value
A	390
B	943
C	2492
D	610
E	1668
F	
G	
H	820
I	1448
J	908
K	902
L	1512
M	857
N	1498
O	905
P	913
Q	1454



DATA SHEET NO. 13
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2006 Infiniti FX35 Crossover
 Test Program: 35mph Frontal Impact

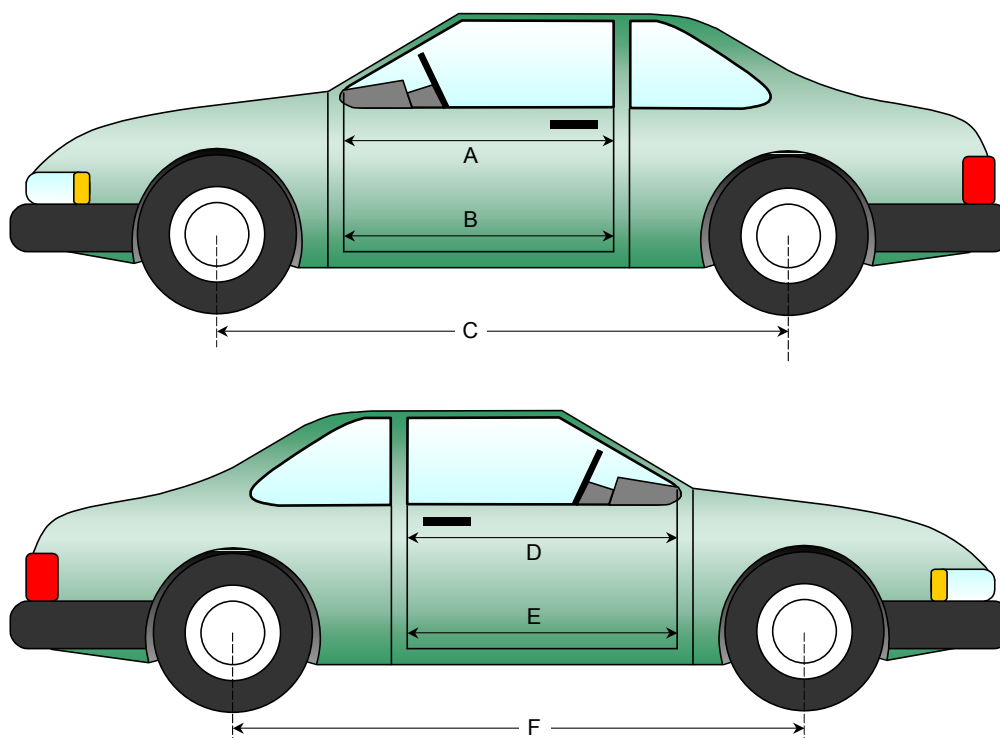
NHTSA No.: M65205
 Test Date: 5/08/2006

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	1077	1071	6
B	Left Side Lower	mm	979	971	8
D	Right Side Upper	mm	1074	1072	2
E	Right Side Lower	mm	975	975	0

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2861	2760	101
F	Right Side Wheelbase	mm	2861	2763	98



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

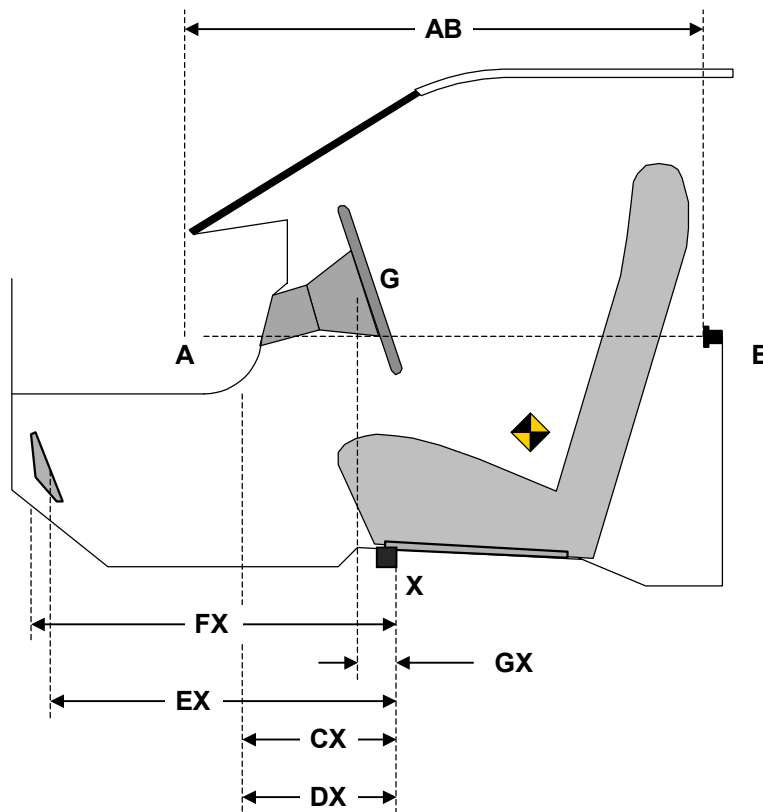
Test Vehicle: 2006 Infiniti FX35 Crossover
 Test Program: 35mph Frontal Impact

NHTSA No.: M65205
 Test Date: 5/08/2006

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside window jam)	mm	1077	1071	6
CX	Left Knee Bolster to X	mm	261	279	-18
DX	Right Knee Bolster to X	mm	241	270	-29
EX	Brake Pedal to X	mm	513	550	-37
FX	Foot Rest to X	mm	646	597	49
GX	Center of Steering Column Wheel Hub to X	mm	41	86	-45

X = Front of Seat Track (stationary)

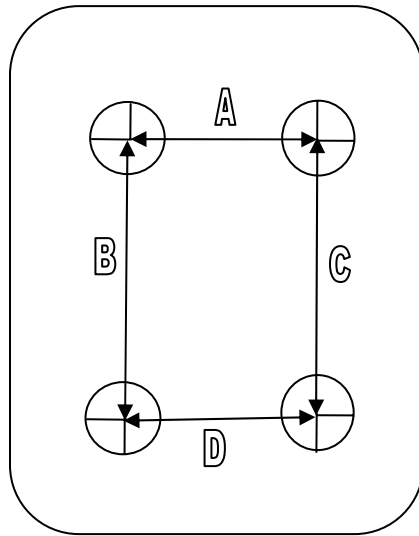


DRIVER COMPARTMENT

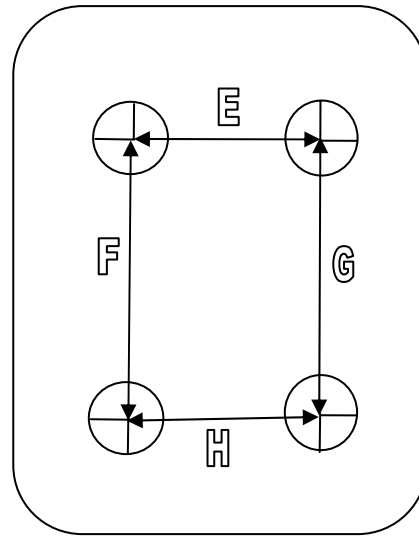
DATA SHEET NO. 13... (continued)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2006 Infiniti FX35 Crossover
 Test Program: 35mph Frontal Impact

NHTSA No.: M65205
 Test Date: 5/08/2006



Driver



Passenger

UNDERBODY FLOORBOARD DEFORMATION

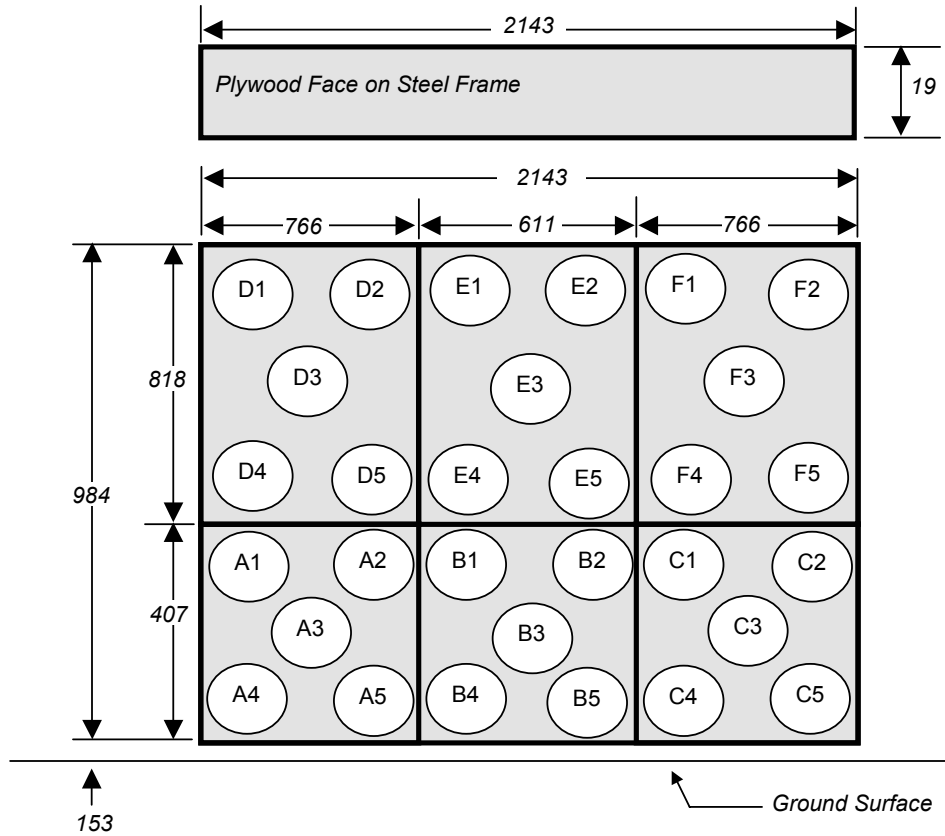
Measurement	Pre-Test	Post-Test	Difference
A	261	268	-7
B	295	294	1
C	311	313	-2
D	252	253	-1
E	246	248	-2
F	297	295	2
G	271	273	-2
H	255	260	-5

DATA SHEET NO. 14
LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2006 Infiniti FX35 Crossover
 Test Program: 35mph Frontal Impact

NHTSA No.: M65205
 Test Date: 5/08/2006

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: 2006 Infiniti FX35 Crossover
 Test Program: 35mph Frontal Impact

NHTSA No.: M65205
 Test Date: 5/08/2006

VEHICLE INFORMATION

VIN: JNRAS08W46X205232 Wheelbase (mm) : 2861
 Vehicle Size Category: MPV Test Weight (kg) : 2209.9

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): 56.3
 Velocity Change (km/h): 63.1 Time of Separation (msec): 130

CRUSH PROFILE

Collision Deformation Classification: Frontal Midpoint of Damage: Centerline
 Damage Region Length (mm): 1690 Impact Mode: Frontal

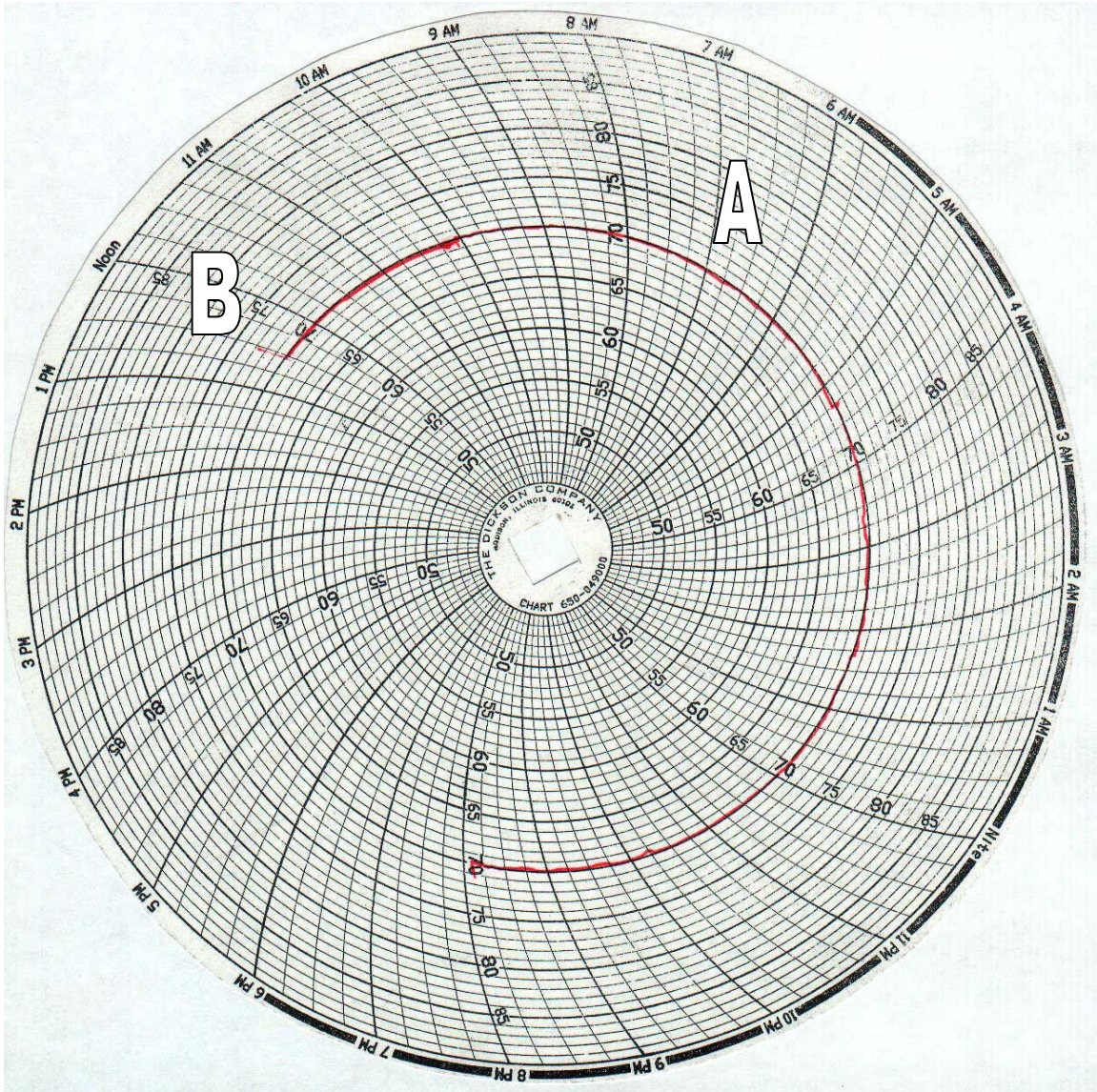
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	4530	4016	514
C2	Crush zone 2 at left side	mm	4670	4077	593
C3	Crush zone 3 at left side	mm	4742	4078	664
C4	Crush zone 4 at right side	mm	4740	4077	663
C5	Crush zone 5 at right side	mm	4674	4061	613
C6	Crush zone 6 at right side	mm	4527	3990	537
L	C1 TO C6	mm	1690	1525	165

DATA SHEET NO. 16

DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2006 Infiniti FX35 Crossover
Test Program: 35mph Frontal Impact

NHTSA No.: M65205
Test Date: 5/08/2006



A = Dummies installed in vehicle at 7:00 am

B = Test conducted at 12:41 pm

APPENDIX A
PHOTOGRAPHS

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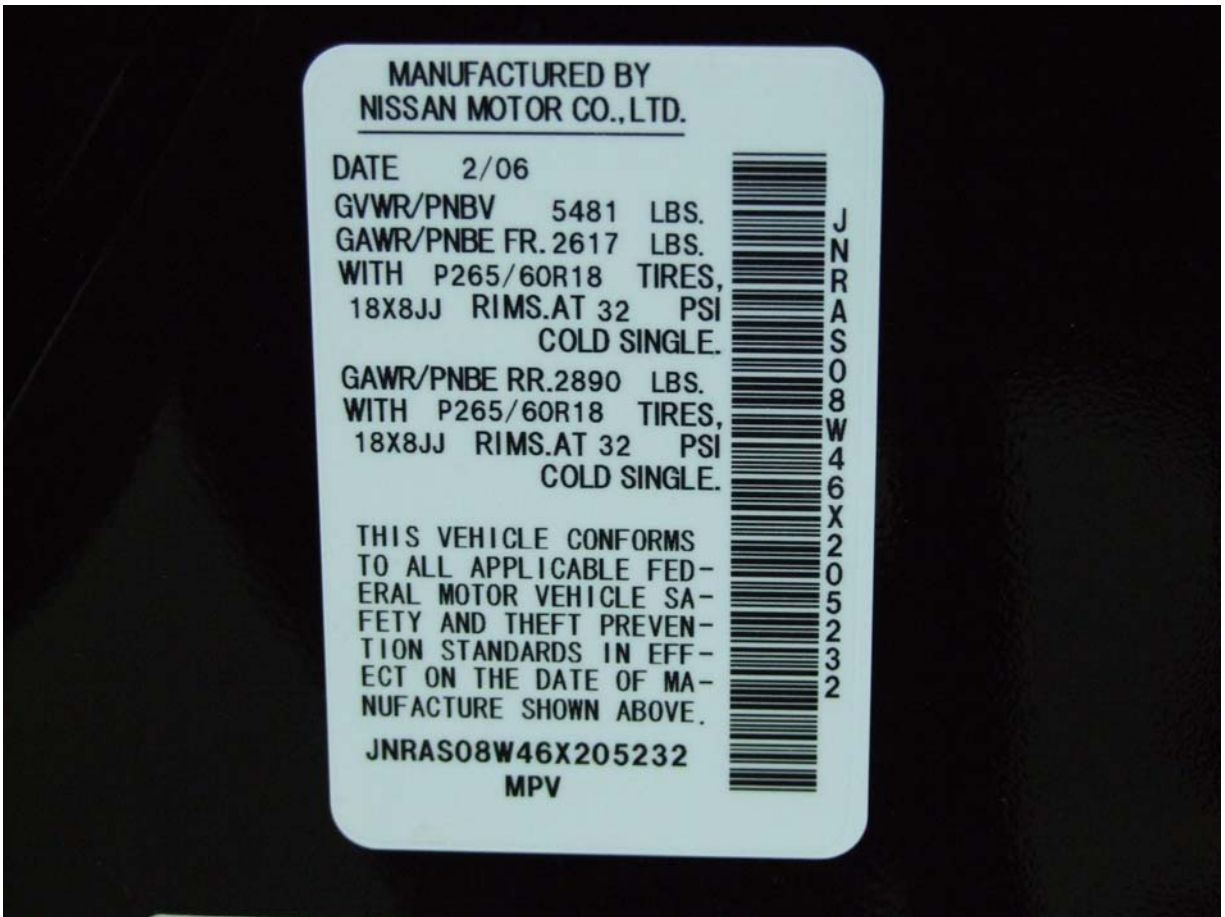
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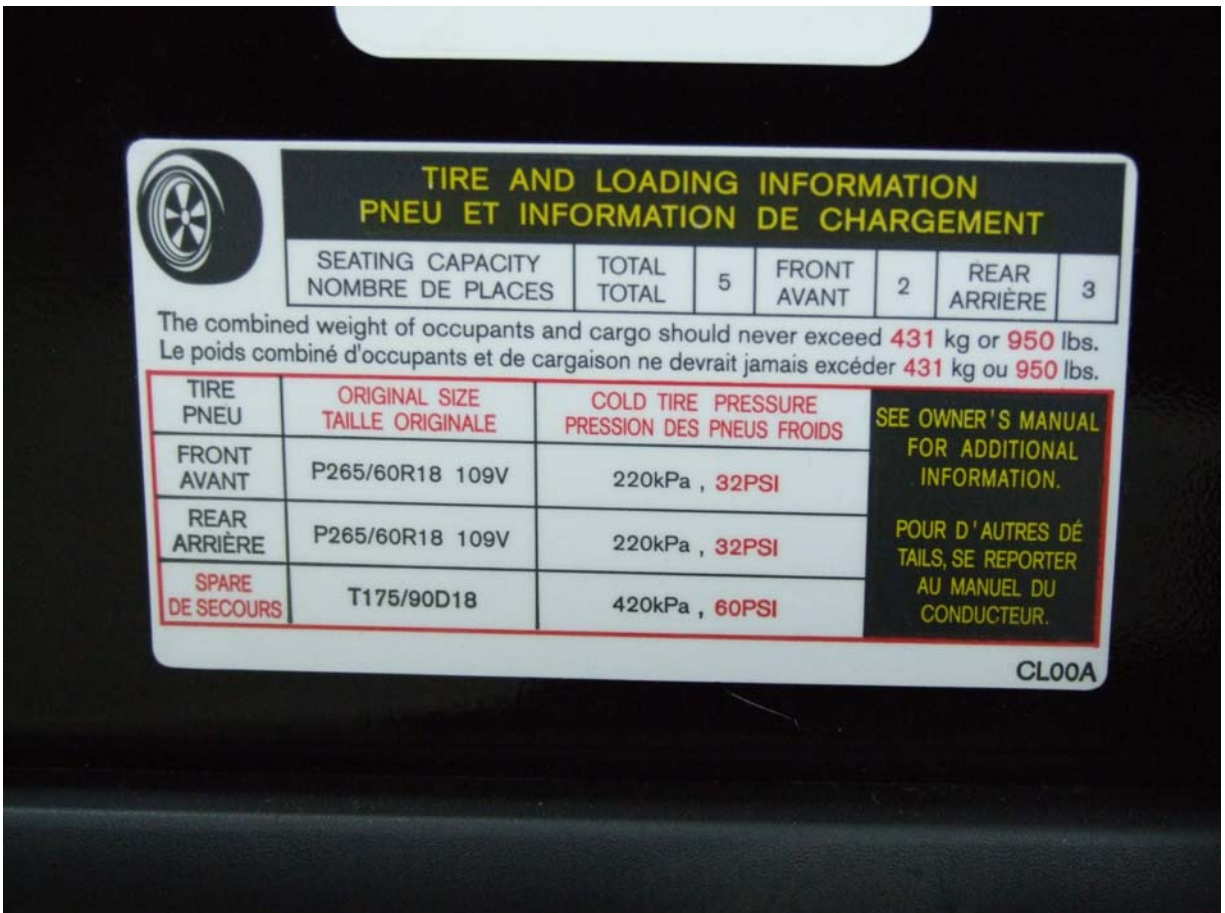
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Load Cell Location



Manufacturer's Label



Tire Placard



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



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



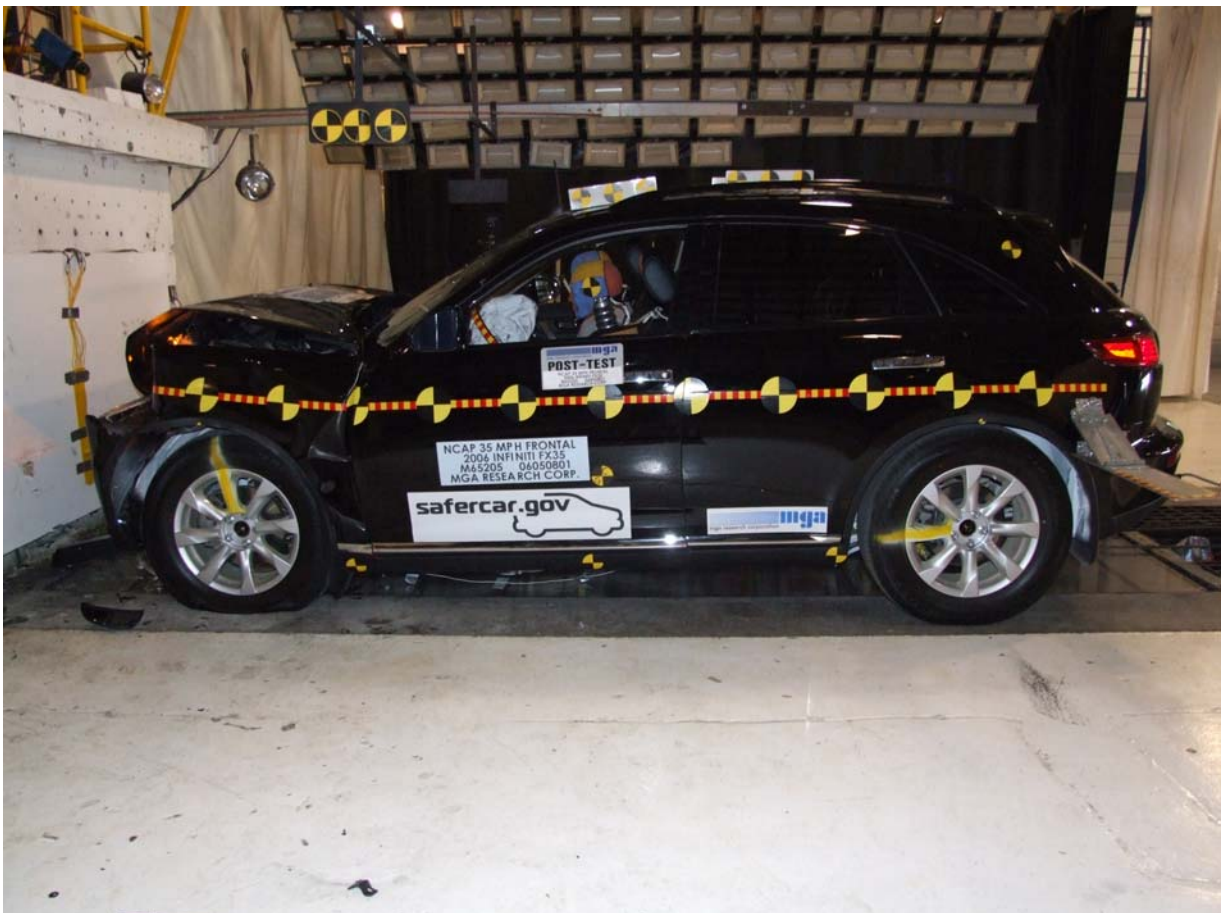
Pre-Test Front View



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



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



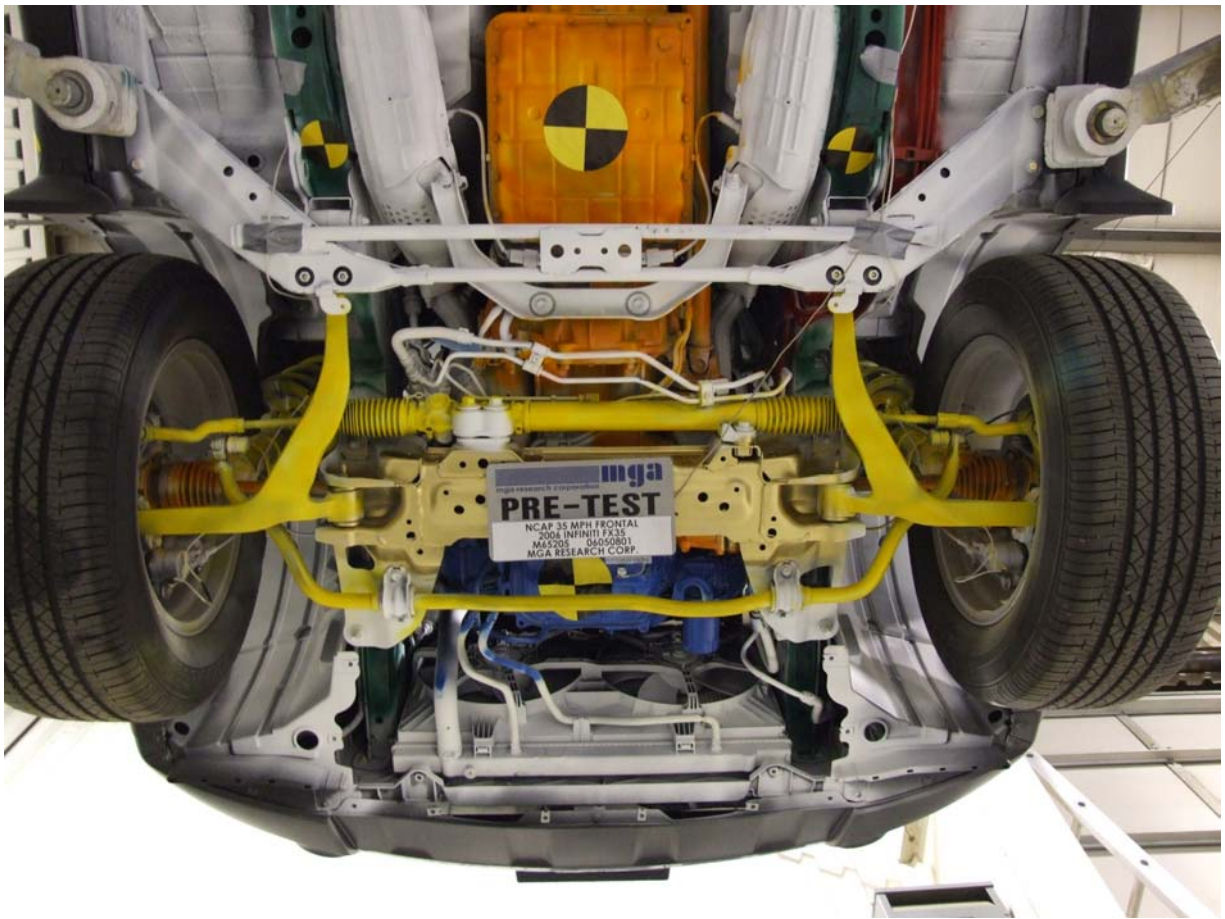
Post-Test Engine Compartment View



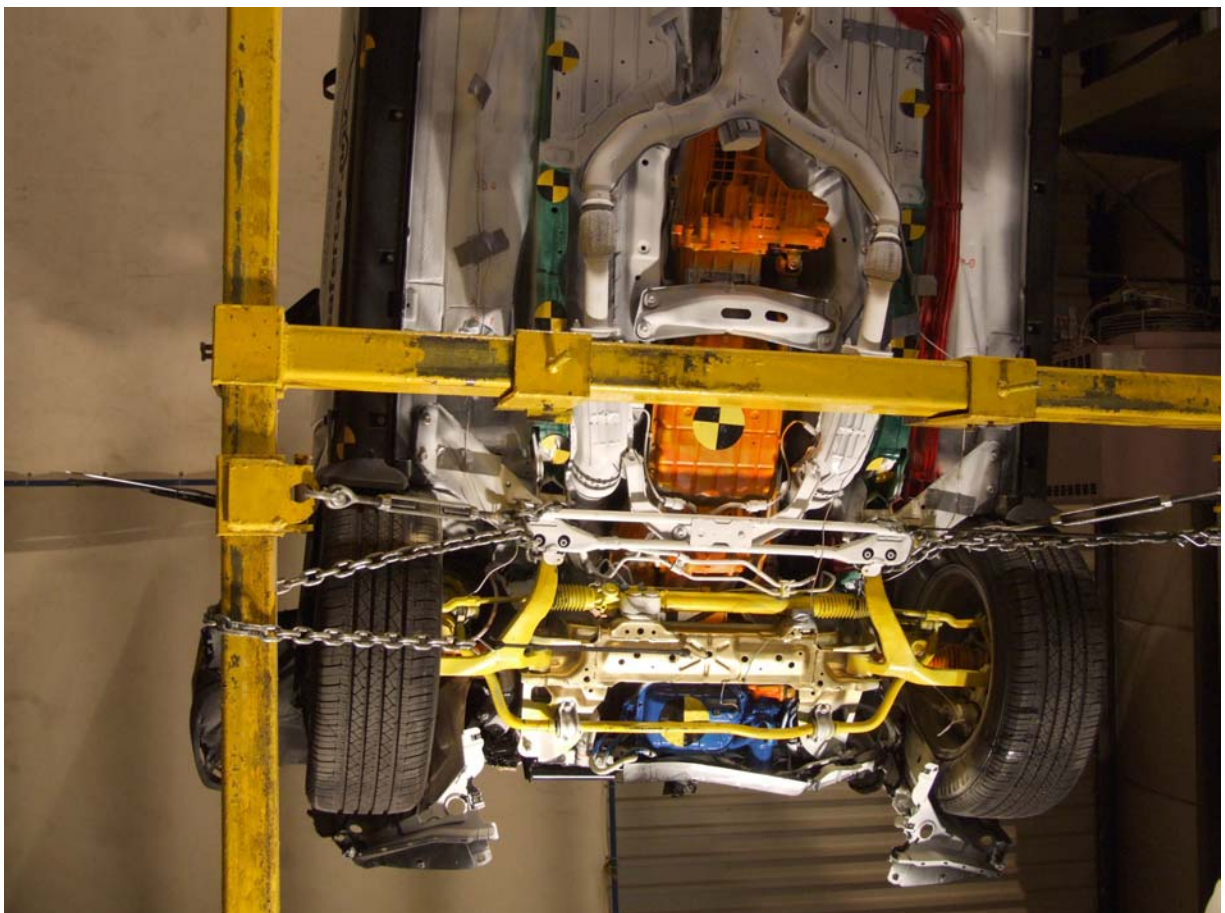
Pre-Test Fuel Cap View



Post-Test Fuel Cap View



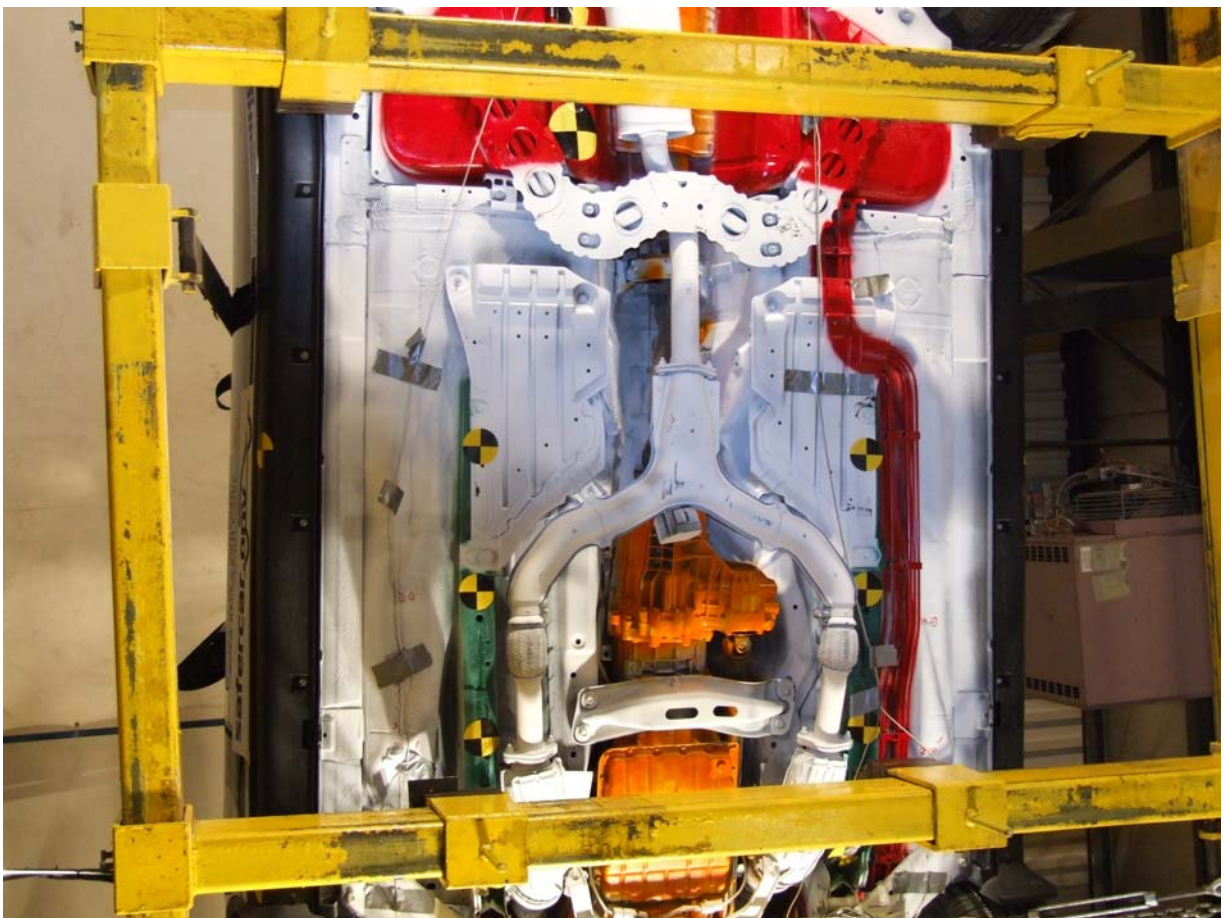
Pre-Test Front Underbody View



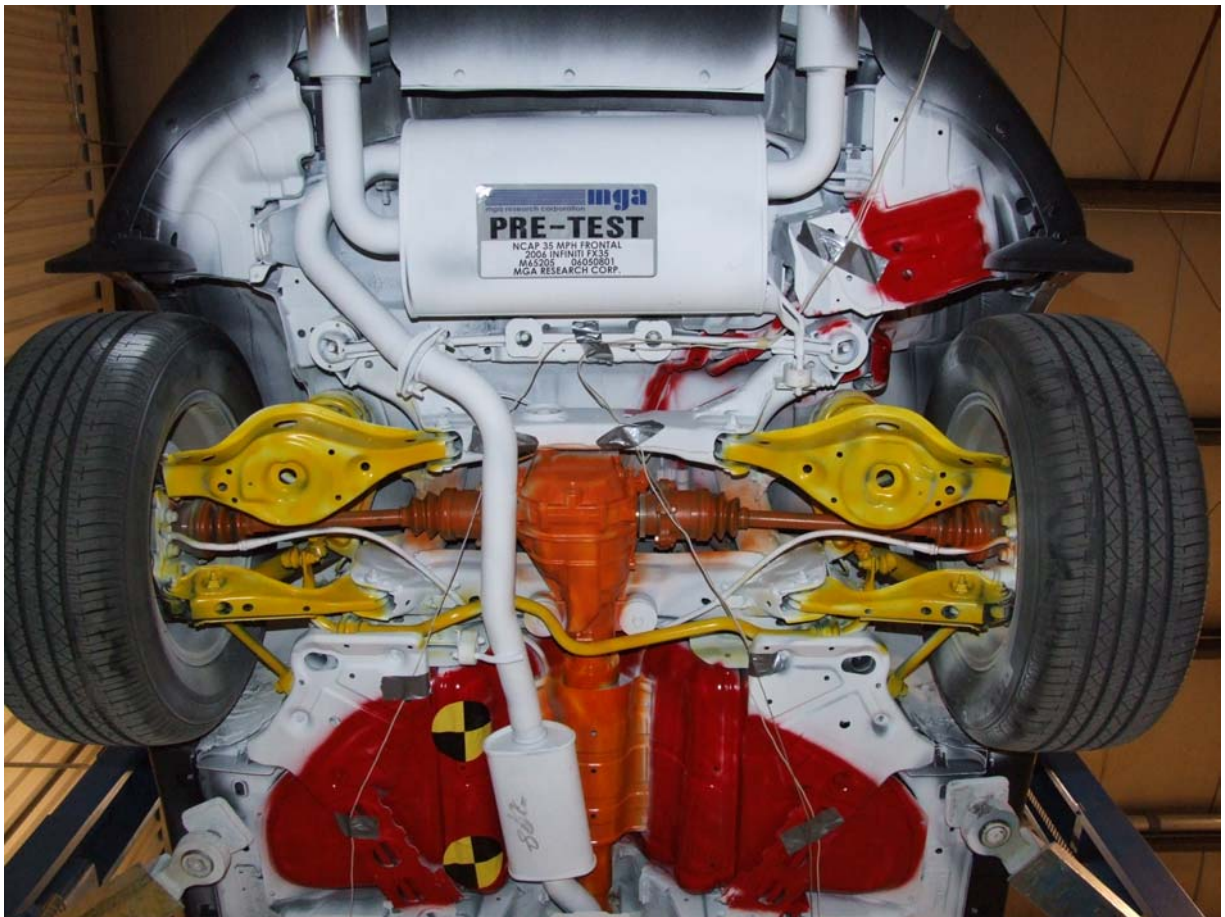
Post-Test Front Underbody View



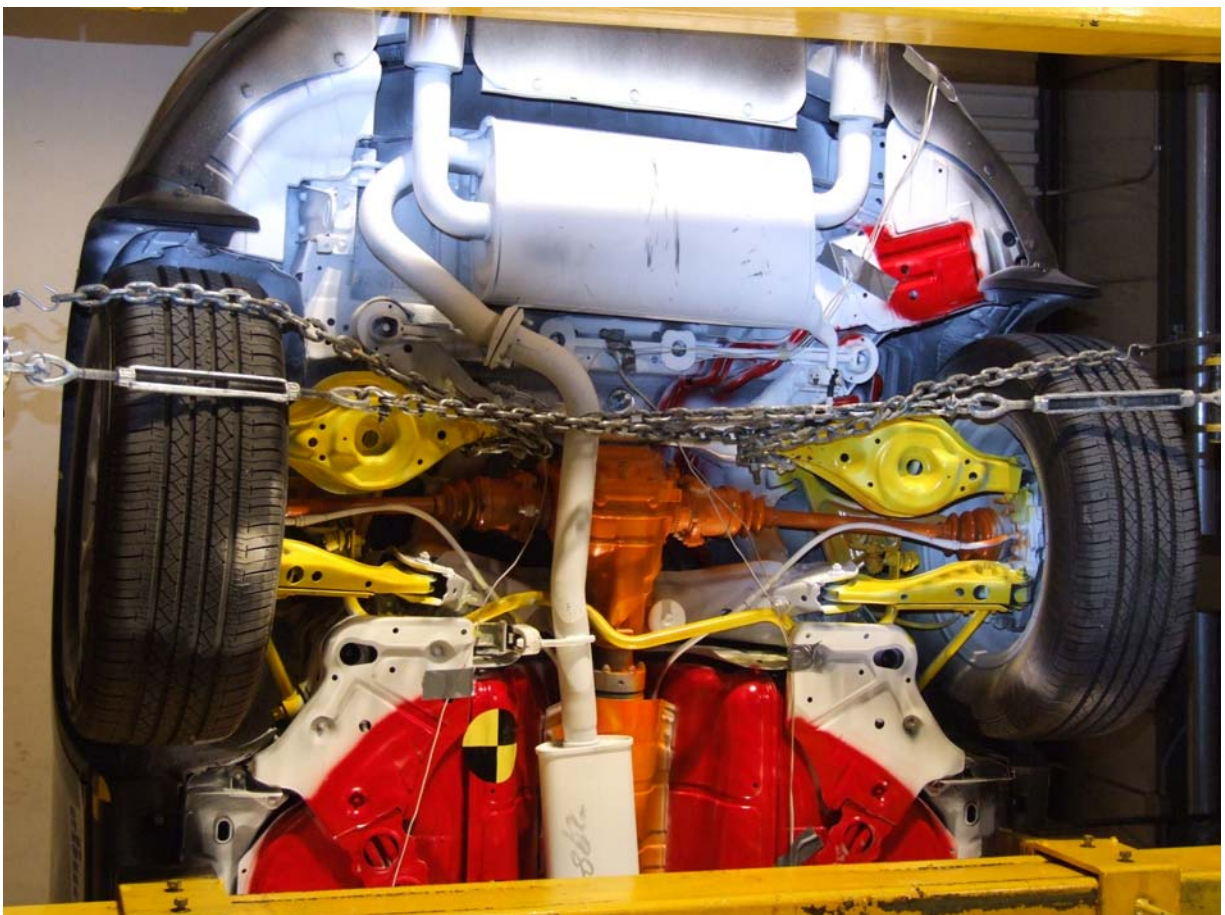
Pre-Test Mid Underbody View



Post-Test Mid Underbody View



Pre-Test Rear Underbody View



Post-Test Rear Underbody View



Pre-Test Driver Dummy Front View (Head Position)



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 Knee Contact



Post-Test Driver Dummy Left Knee Contact



Post-Test Driver Dummy Right Knee Contact



Post-Test Driver Dummy Airbag Contact



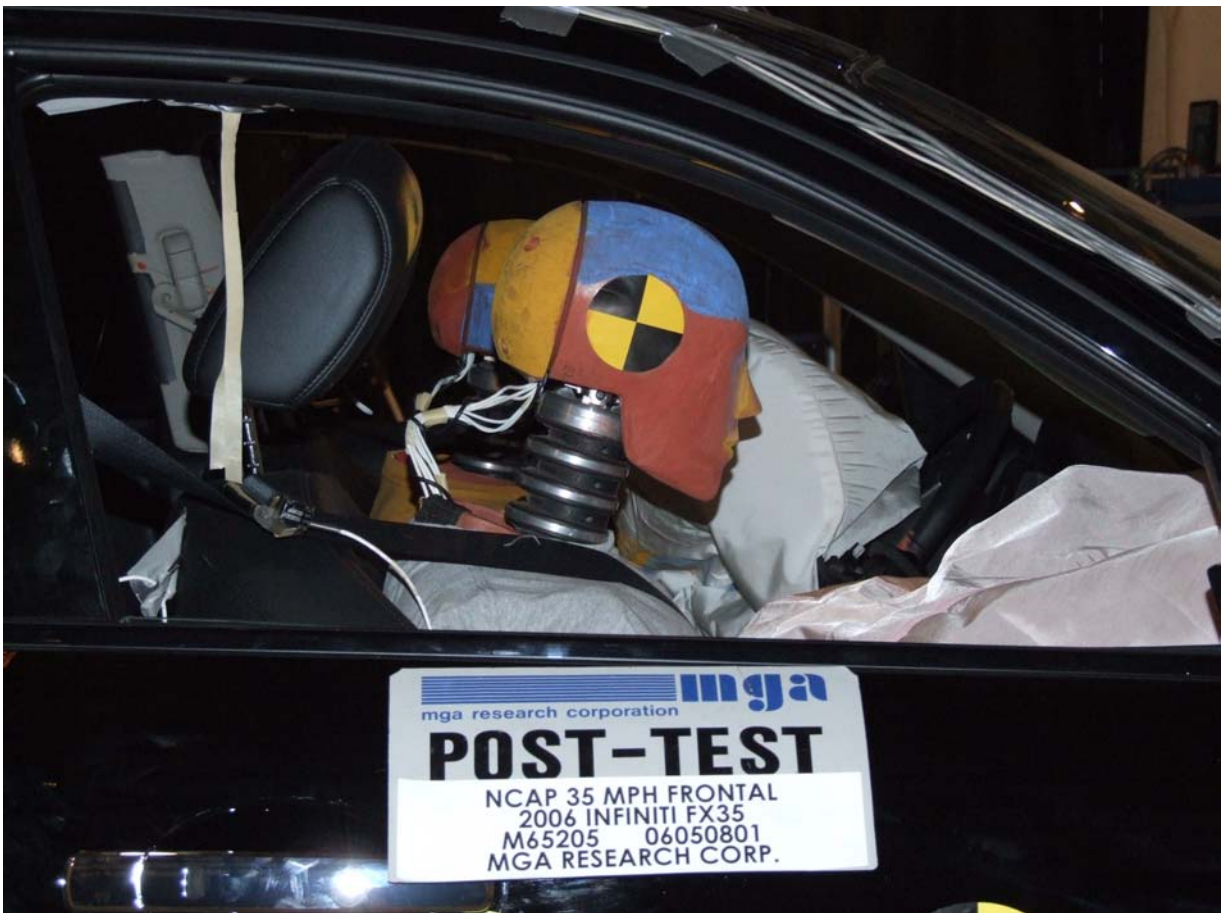
Pre-Test Passenger Dummy Front View (Head Position)



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



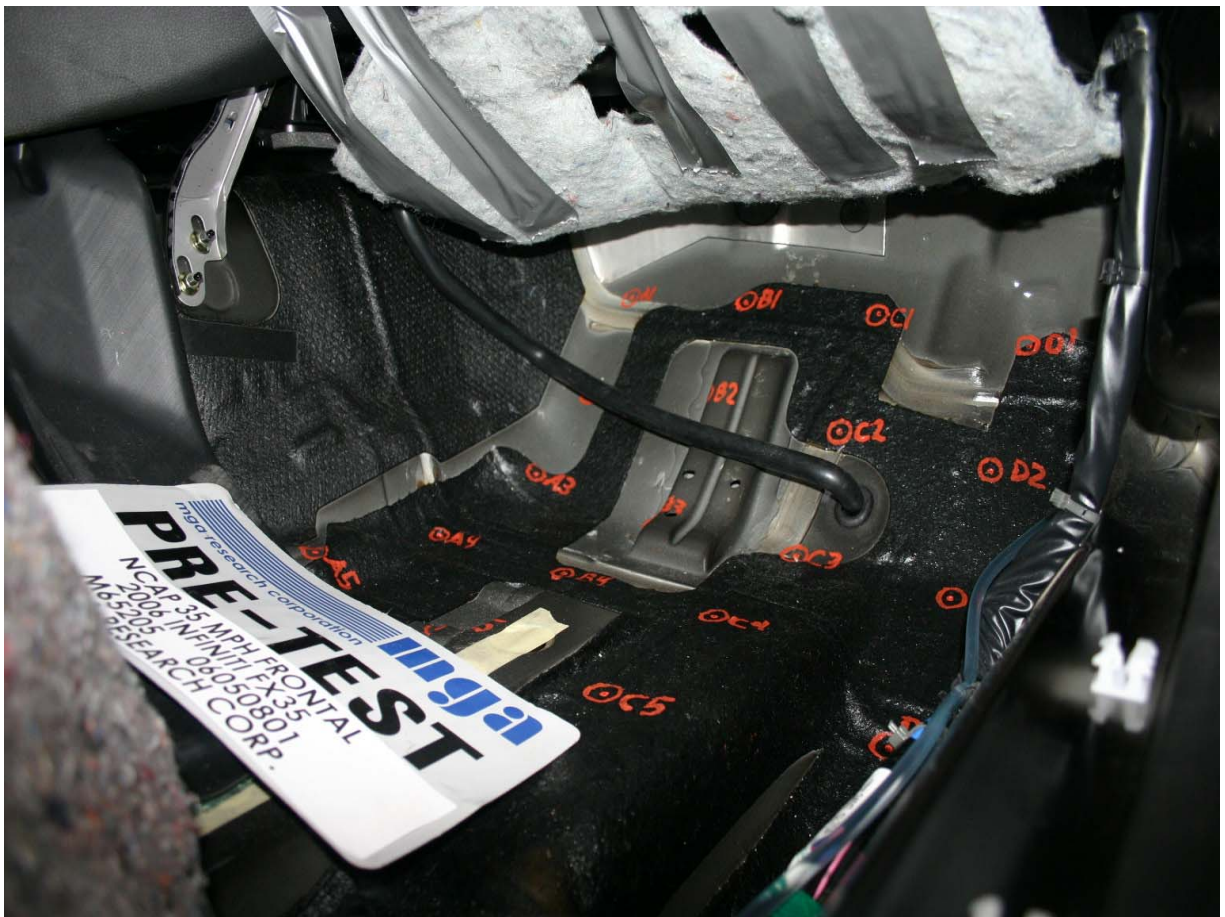
Post-Test Passenger Dummy Feet



Pre-Test Passenger Side Glove Box



Post-Test Passenger Side Glove Box



Pre-Test Passenger Side Floor Pan



Post-Test Passenger Side Floor Pan



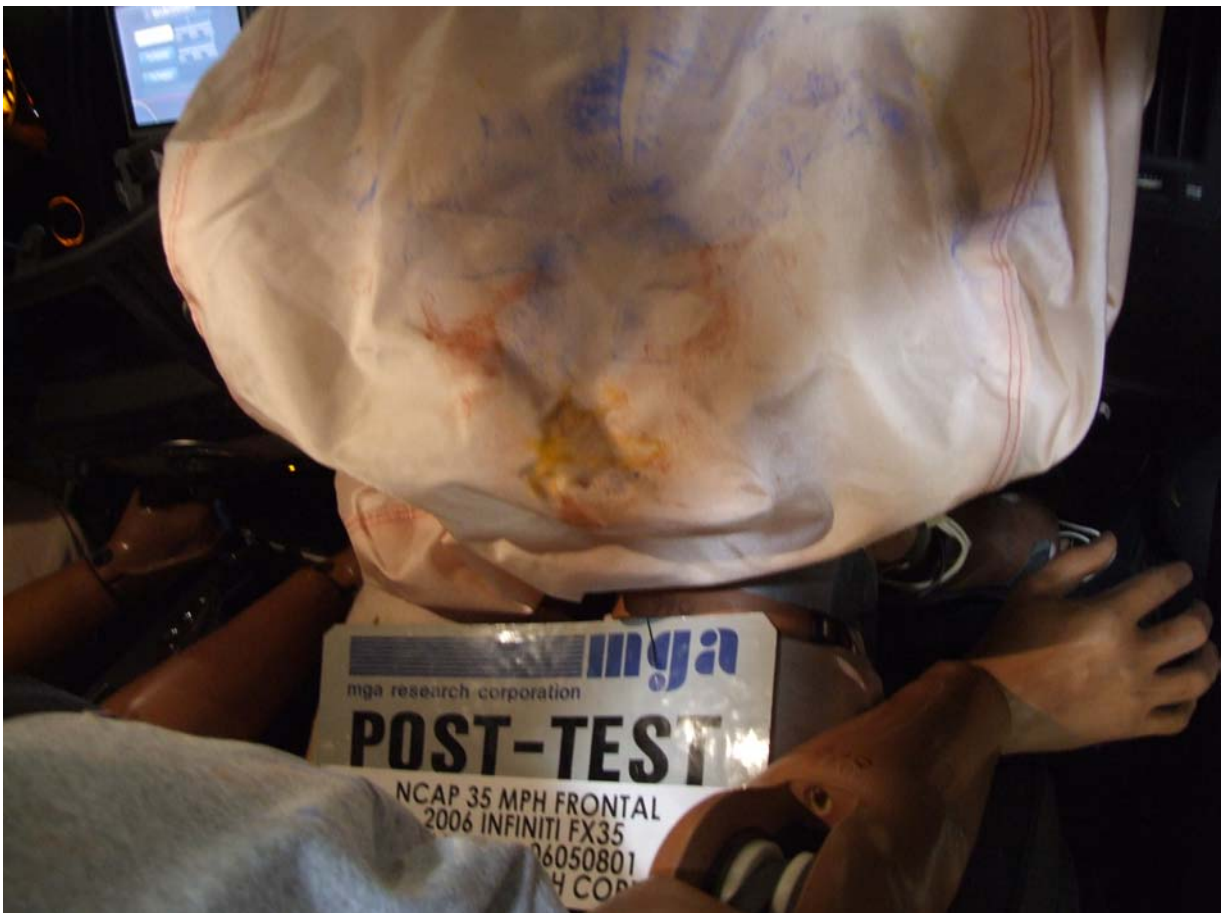
Post-Test Passenger Dummy Head Contact (headrest)



Post-Test Passenger Dummy Head Contact (visor)



Post-Test Passenger Dummy Knee Contact



Post-Test Passenger Dummy Airbag Contact



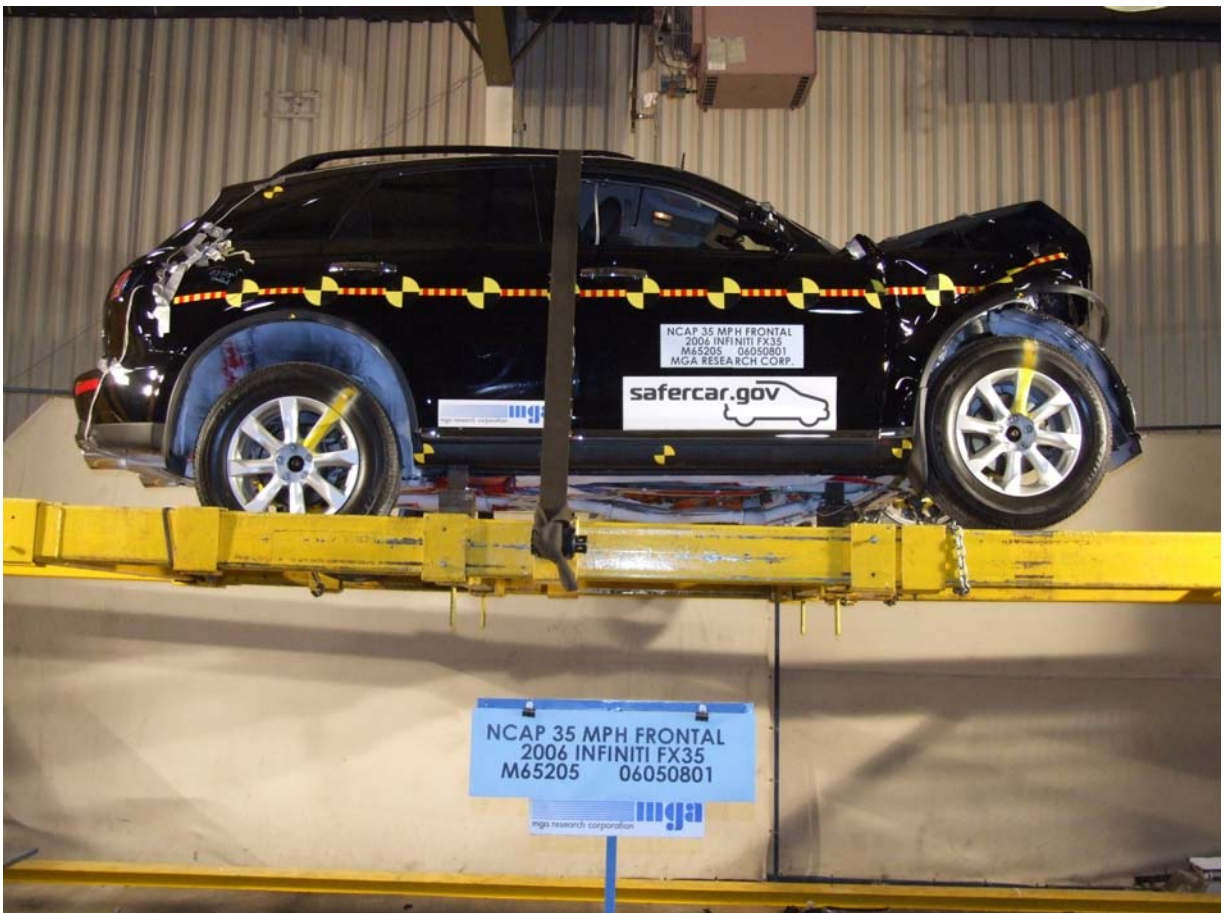
Vehicle on Rollover Device at 90 Degrees



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

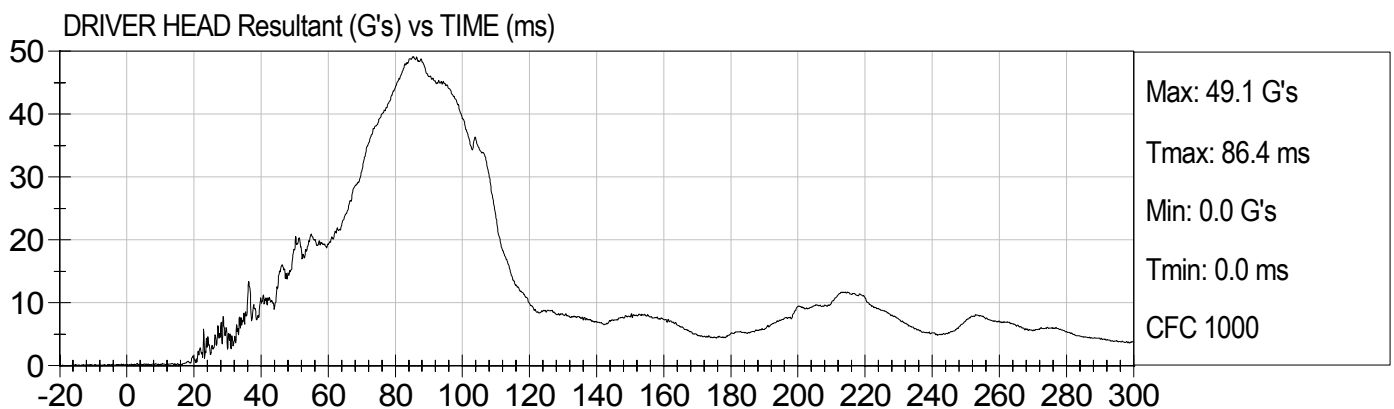
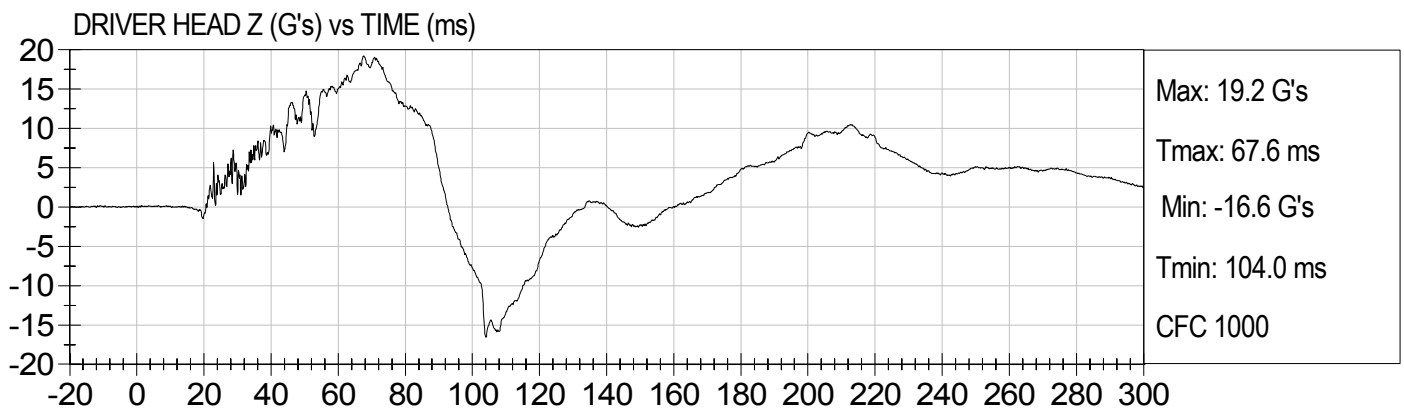
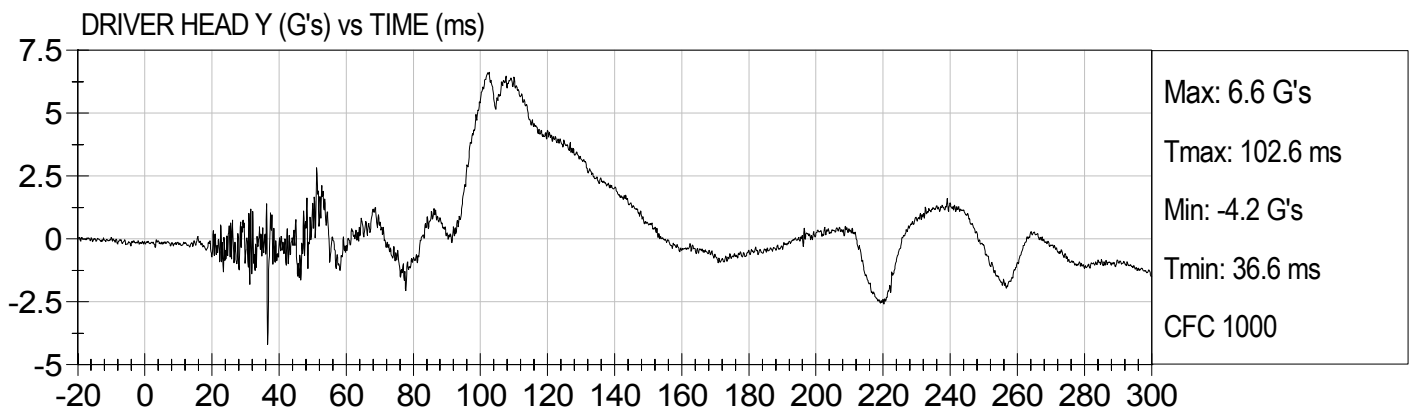
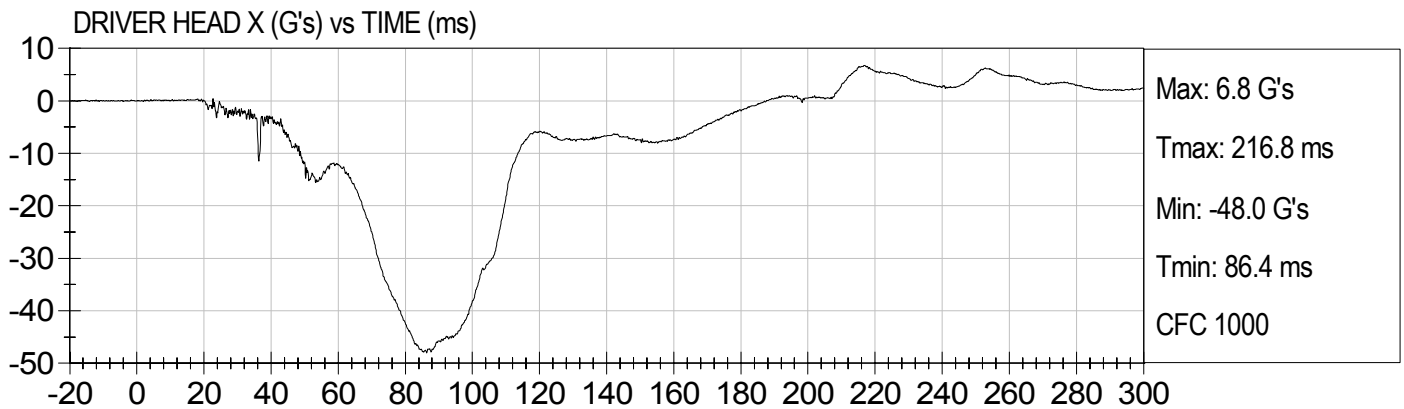
Driver Left Lower Tibia Force Z

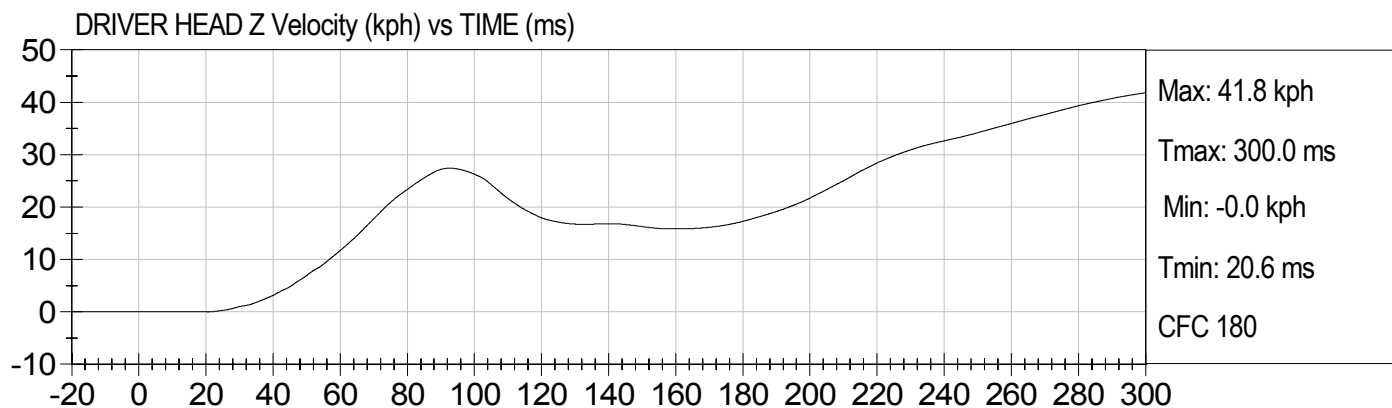
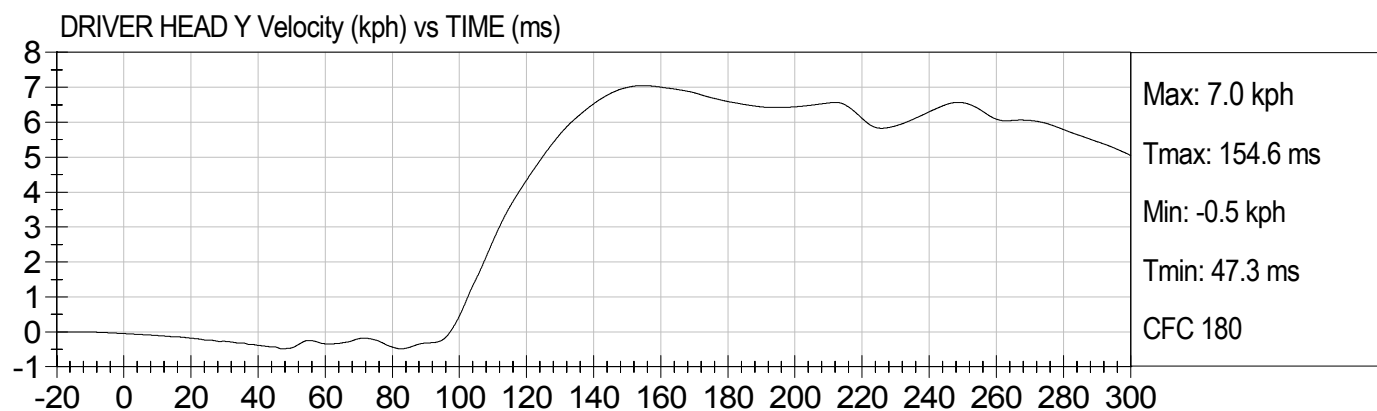
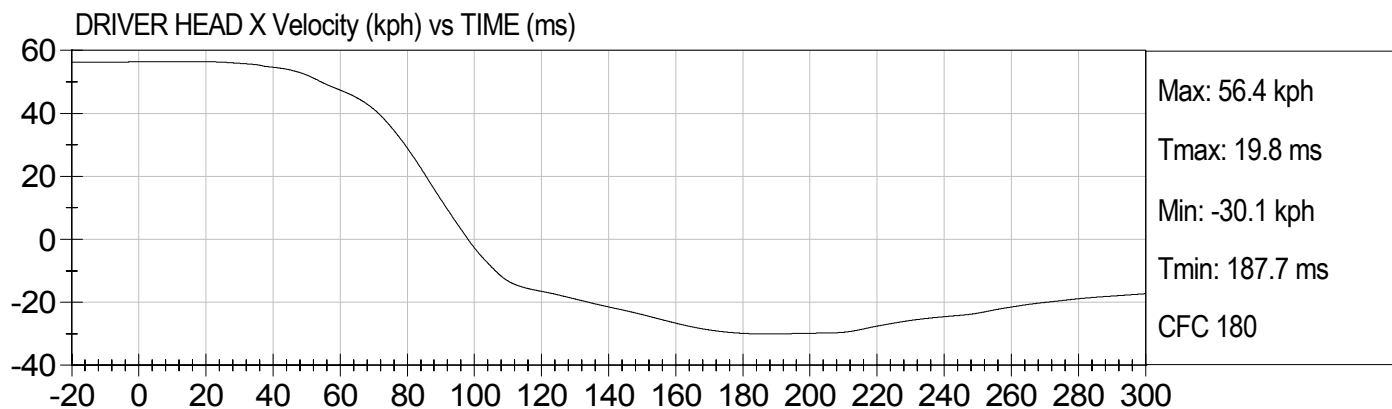
Driver Right Upper Tibia Moment X

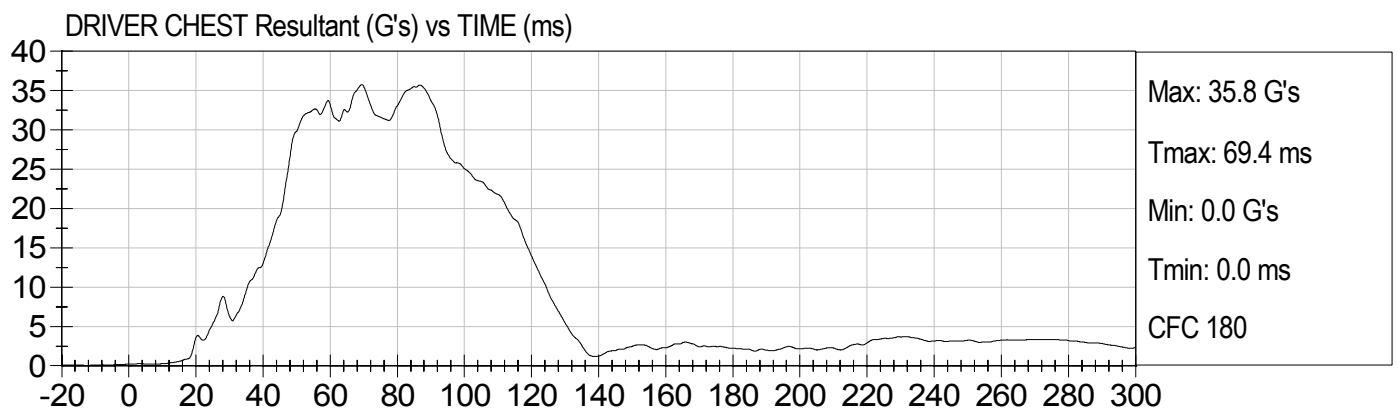
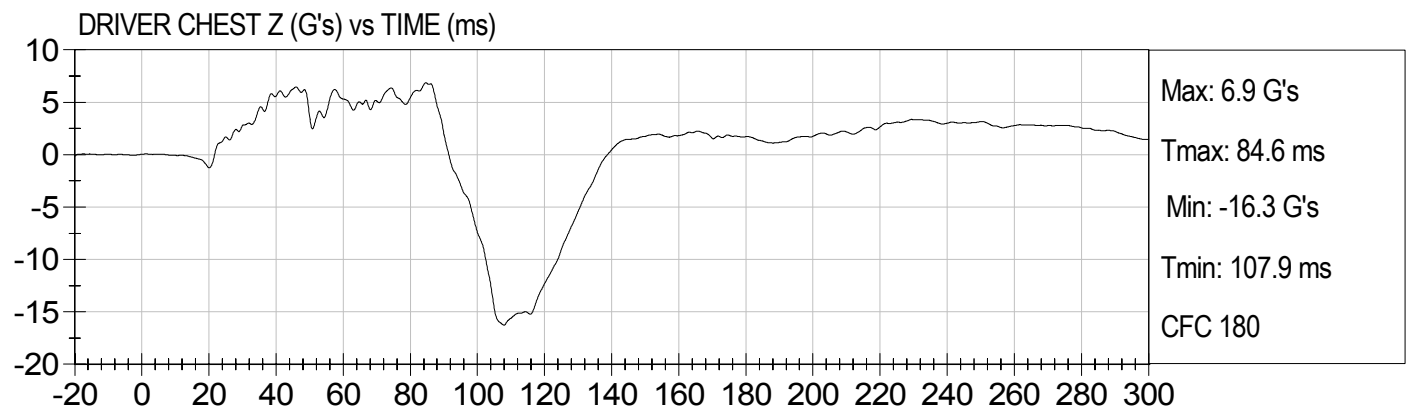
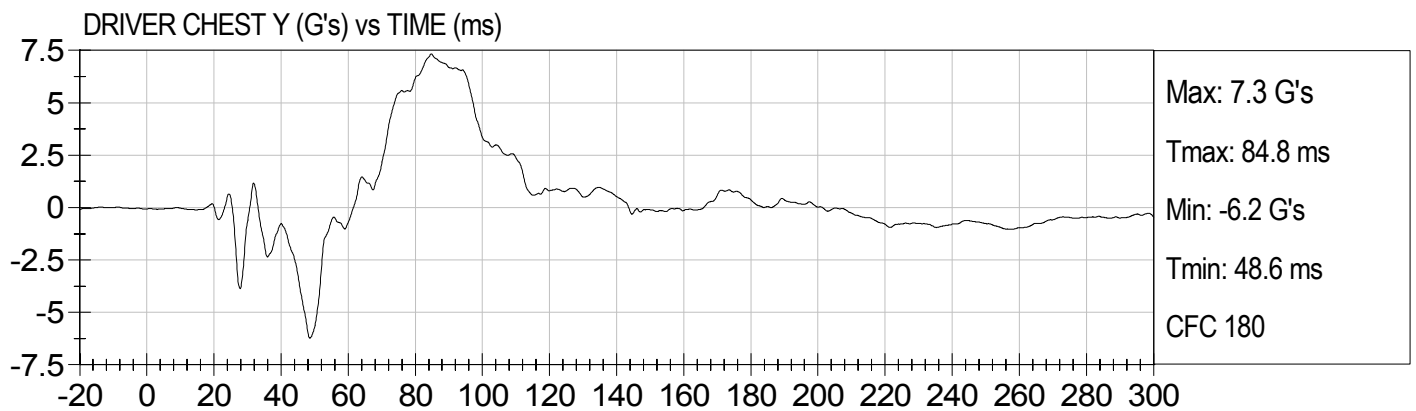
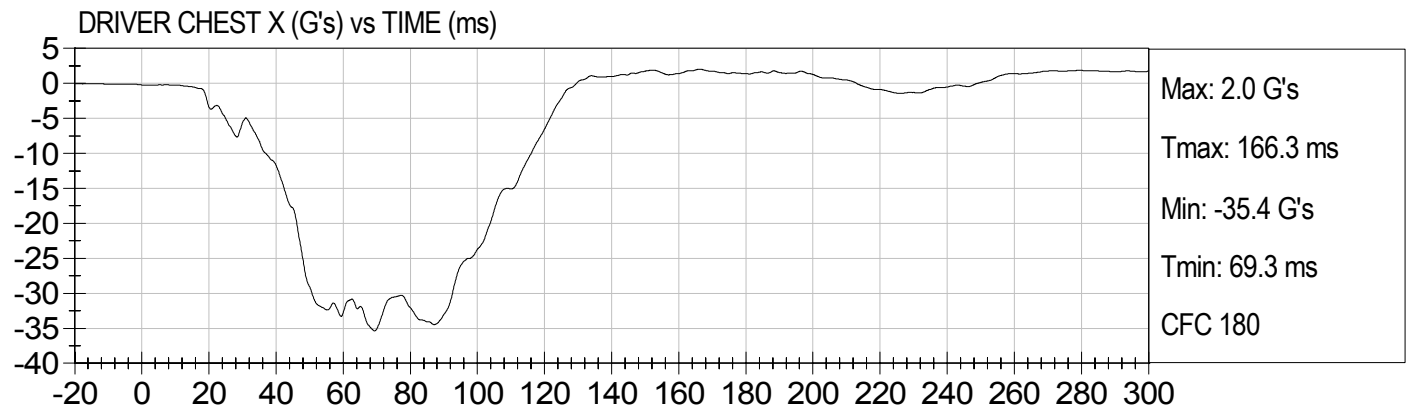
Driver Right Upper Tibia Moment Y

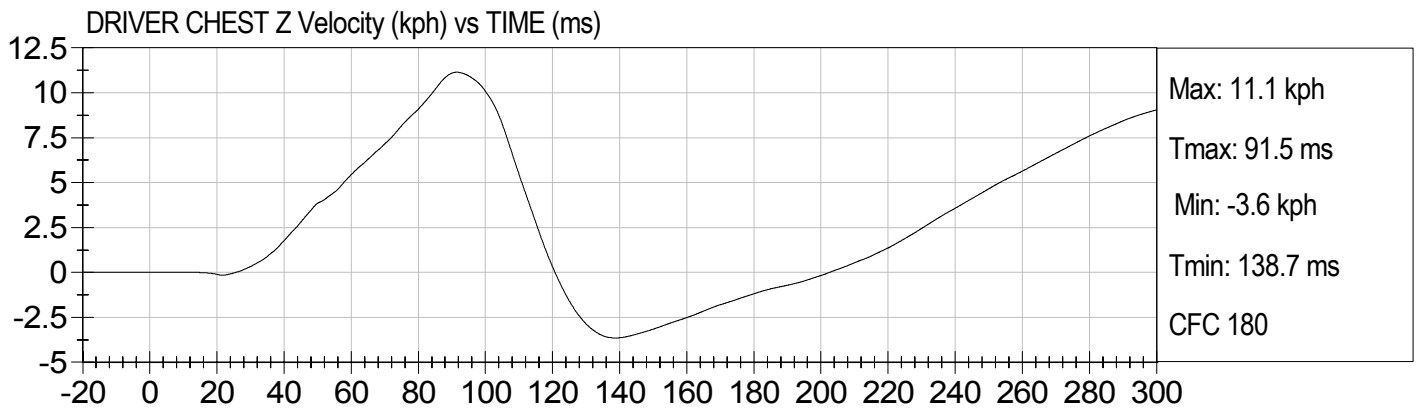
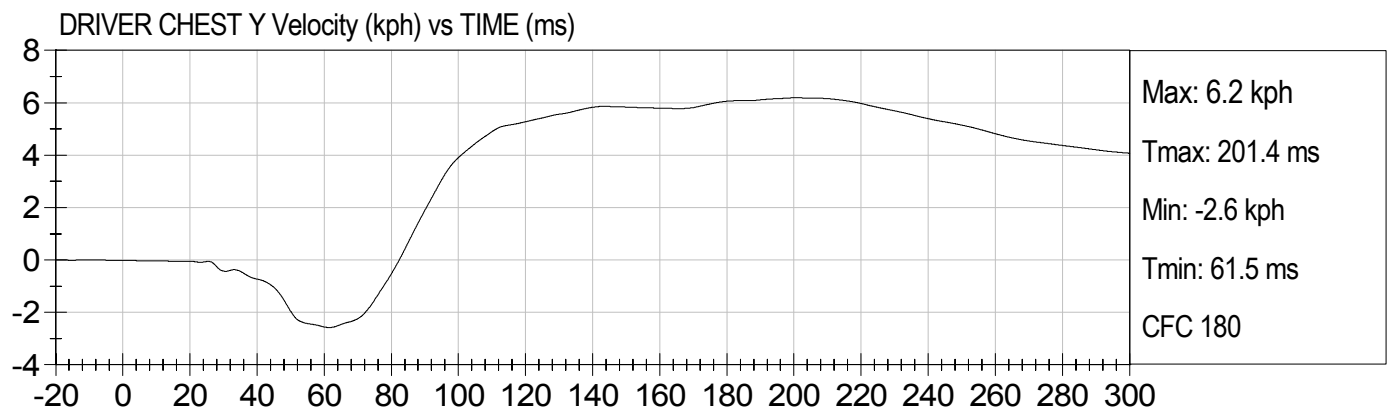
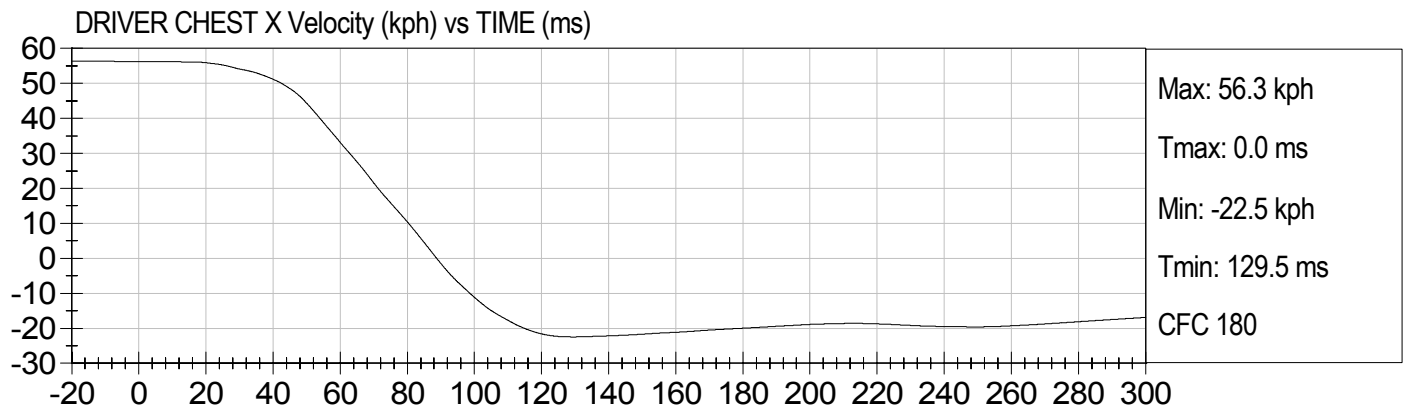
Driver Right Upper Tibia Force Z
Driver Right Lower Tibia Moment X
Driver Right Lower Tibia Moment Y
Driver Right Lower Tibia Force Z
Driver Left Foot Fore Z
Driver Left Foot Aft X
Driver Left Foot Aft Z
Driver Right Foot Fore Z
Driver Right Foot Aft X
Driver Right Foot Aft Z
Passenger Head X Redundant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

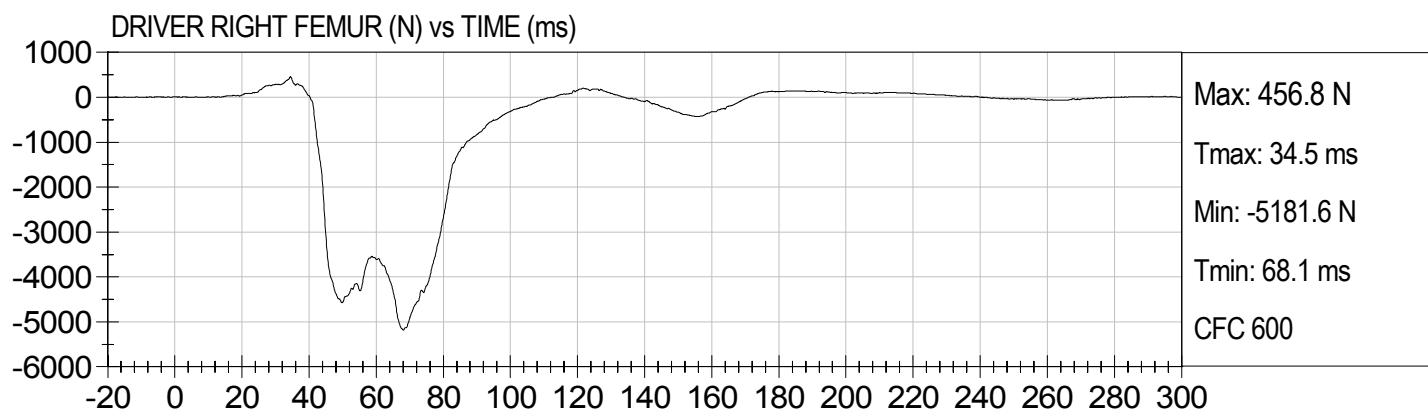
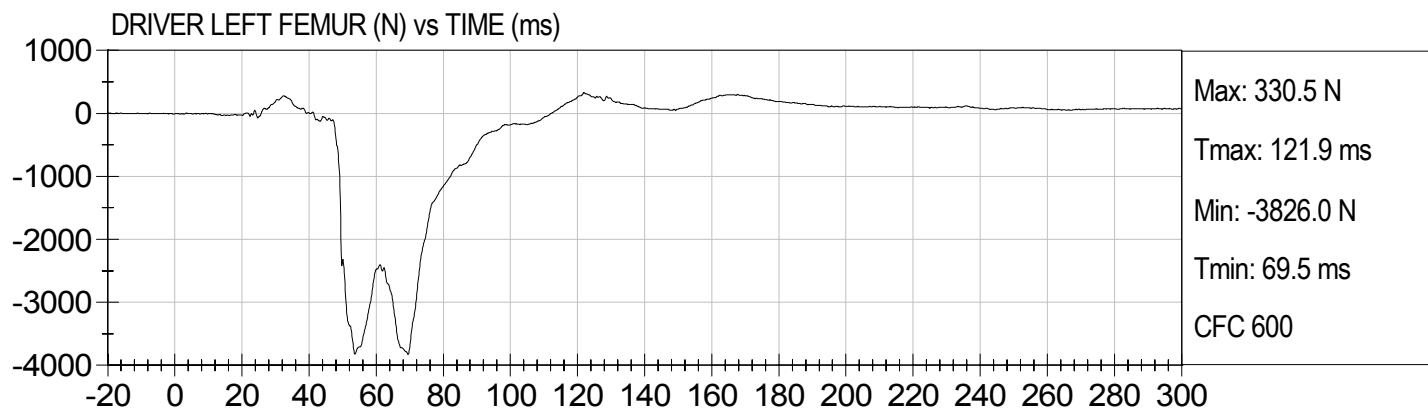
Passenger Left Lower Tibia Moment Y
Passenger Left Lower Tibia Force Z
Passenger Right Upper Tibia Moment X
Passenger Right Upper Tibia Moment Y
Passenger Right Upper Tibia Force Z
Passenger Right Lower Tibia Moment X
Passenger Right Lower Tibia Moment Y
Passenger Right Lower Tibia Force Z
Passenger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

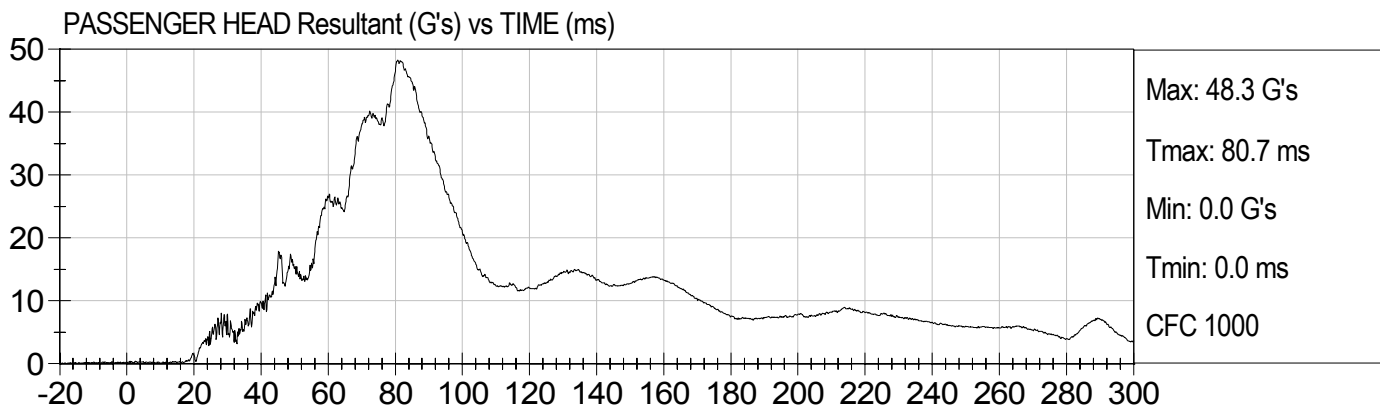
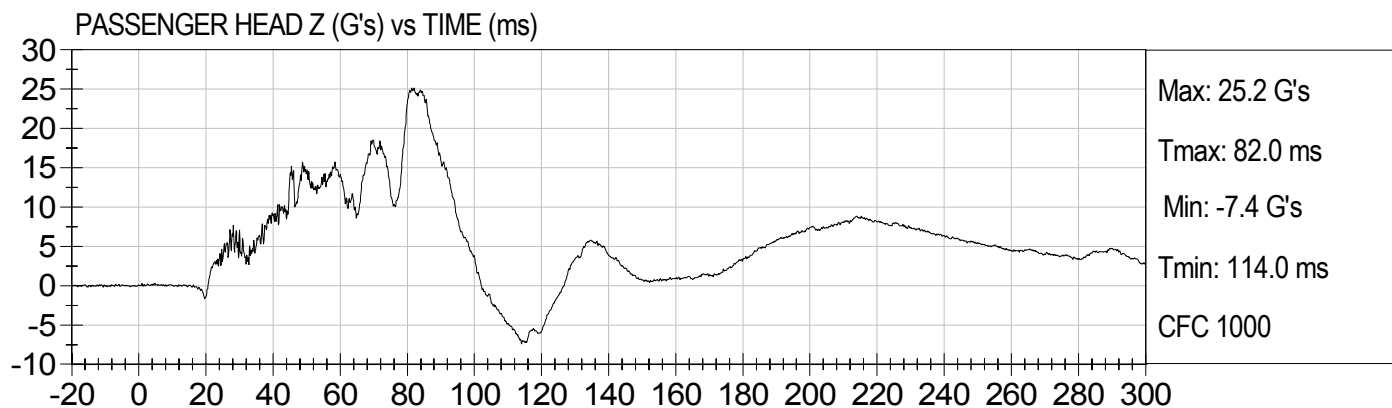
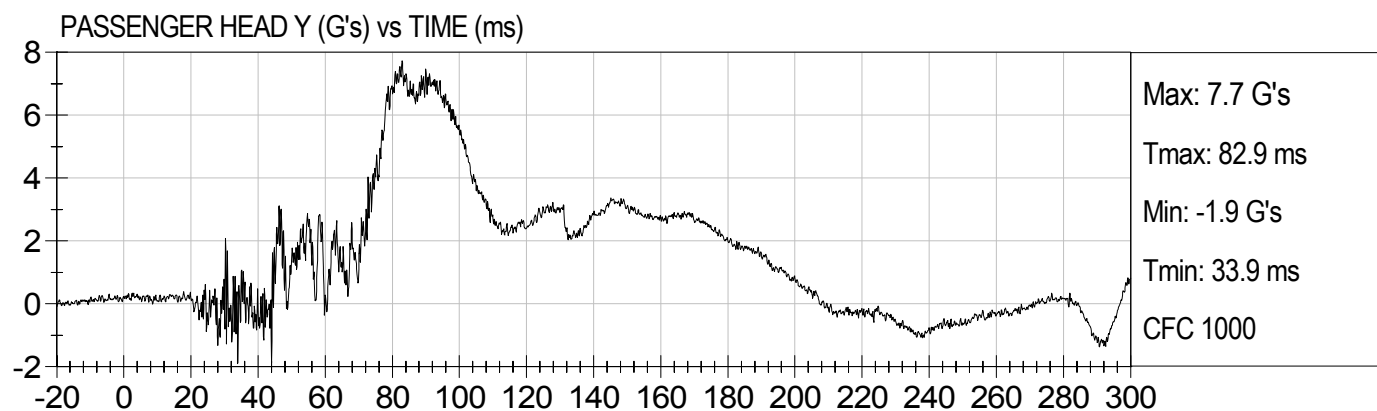
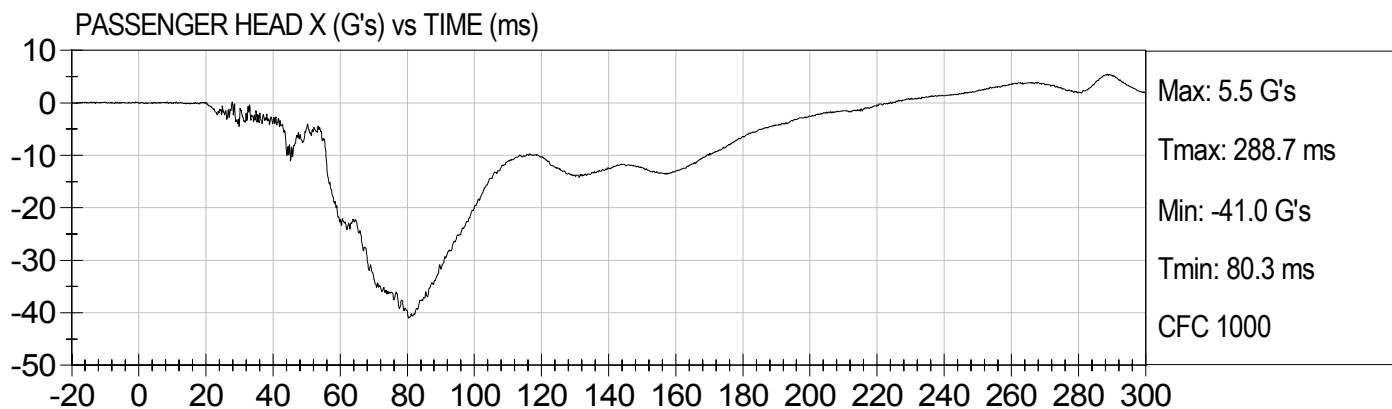


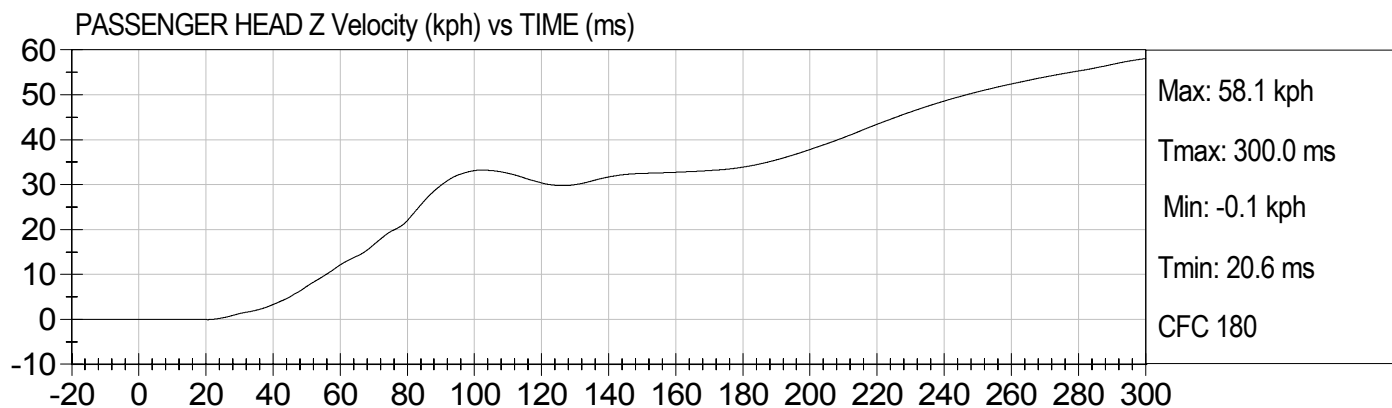
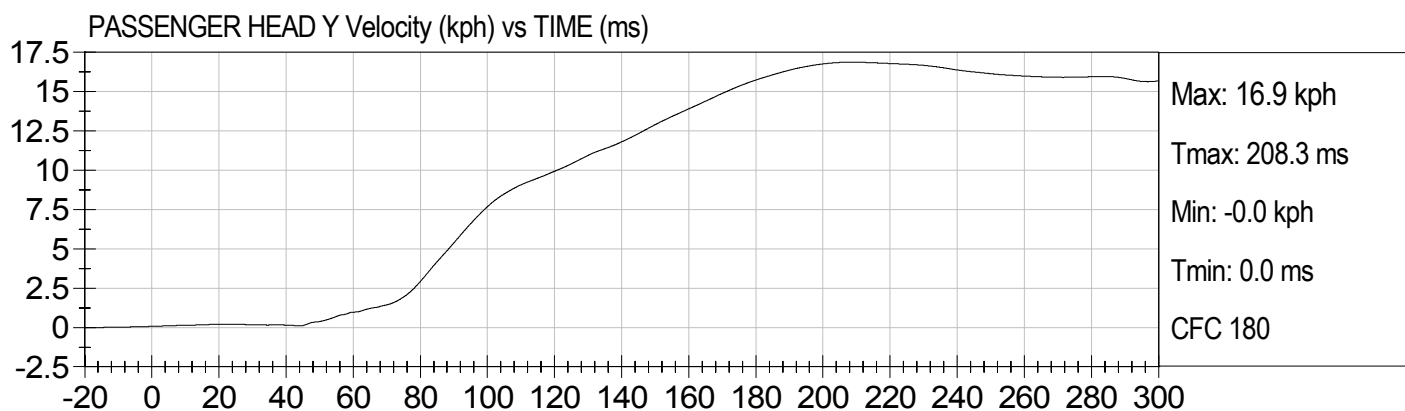
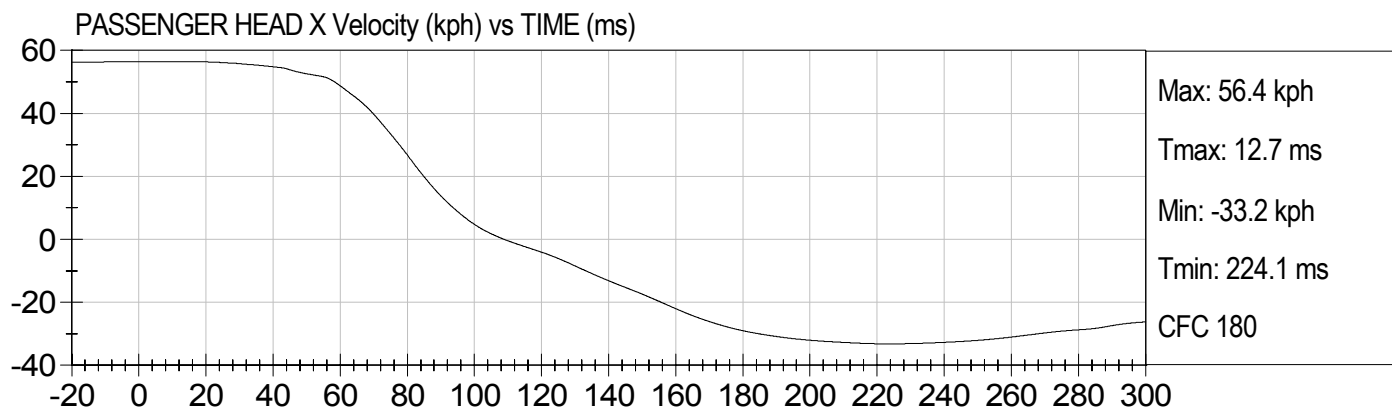


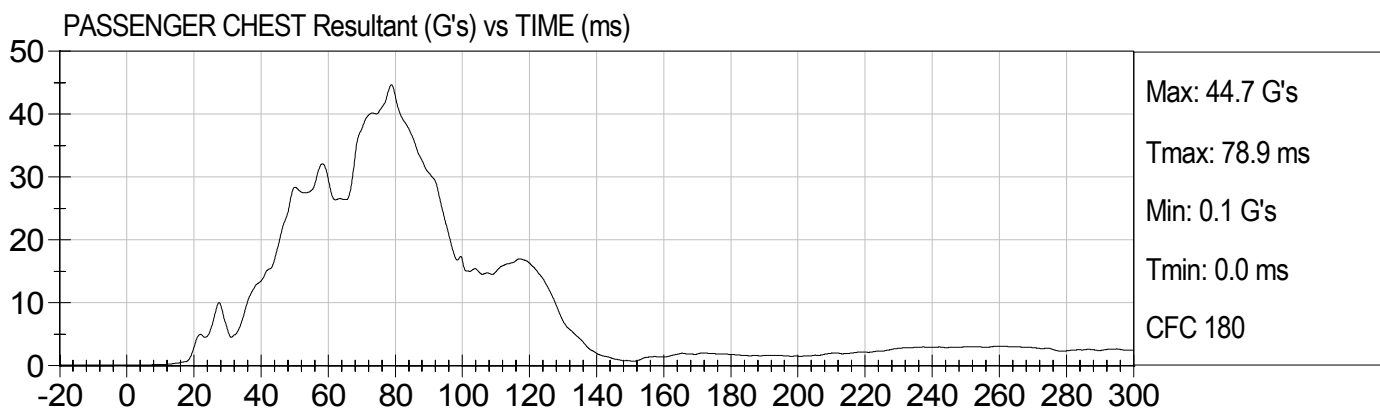
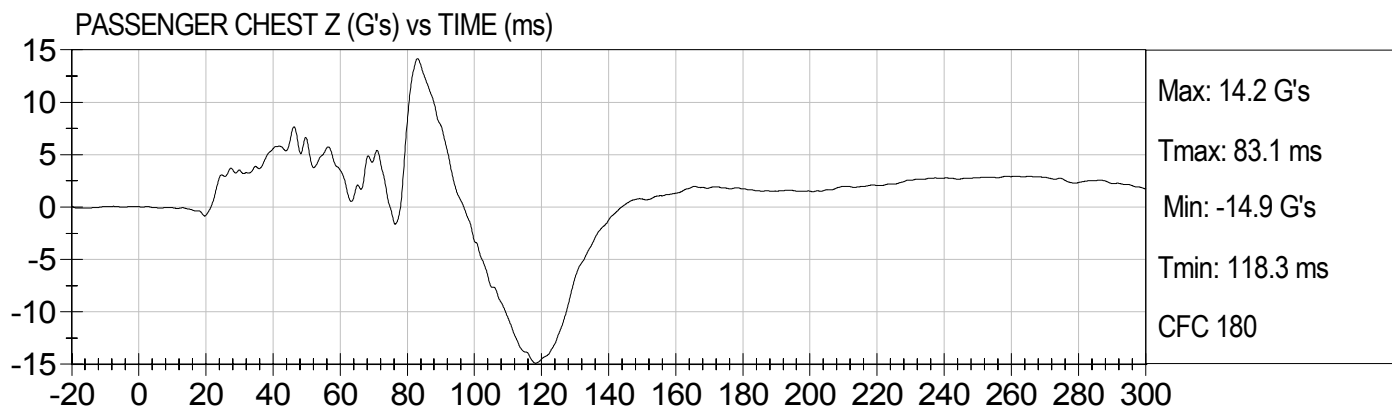
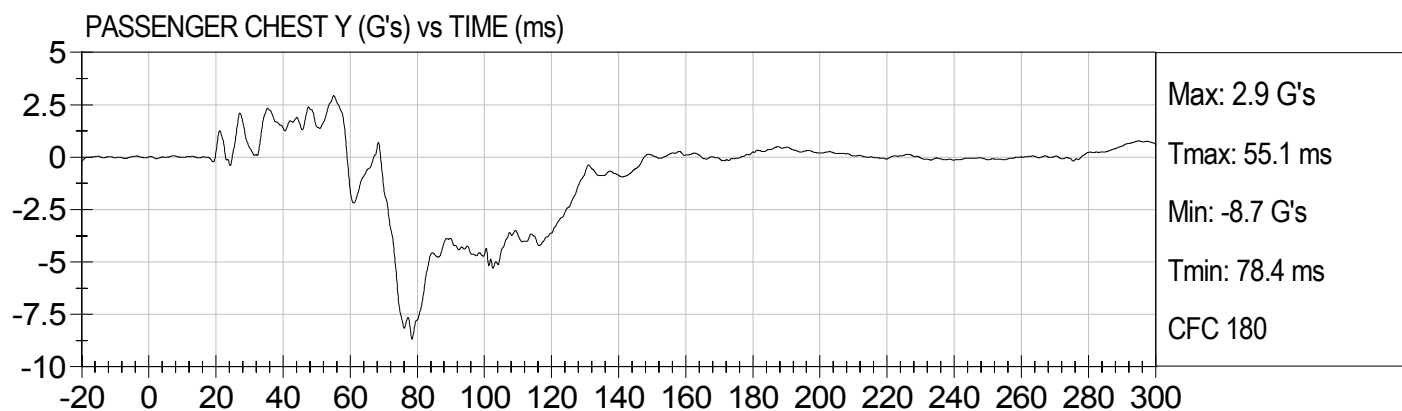
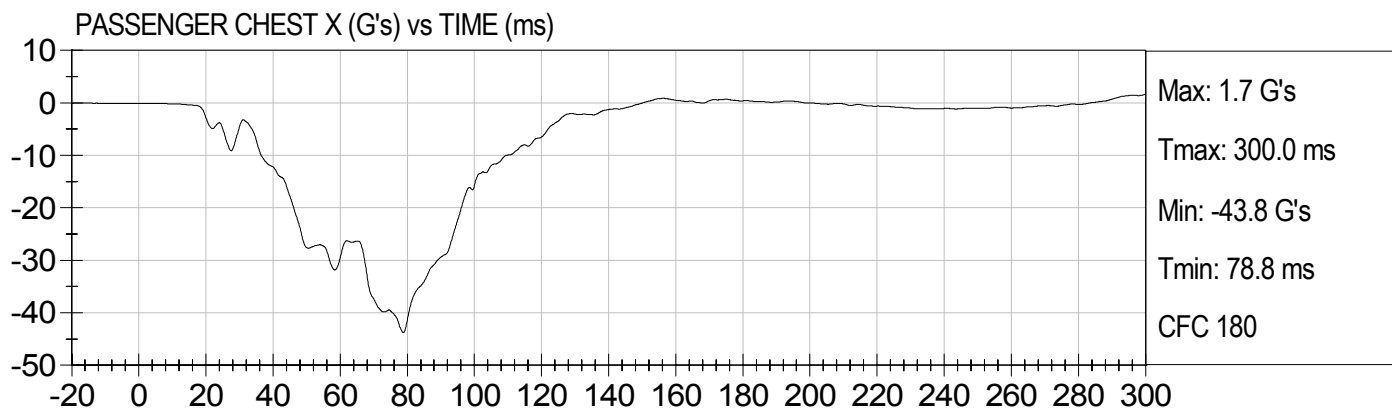


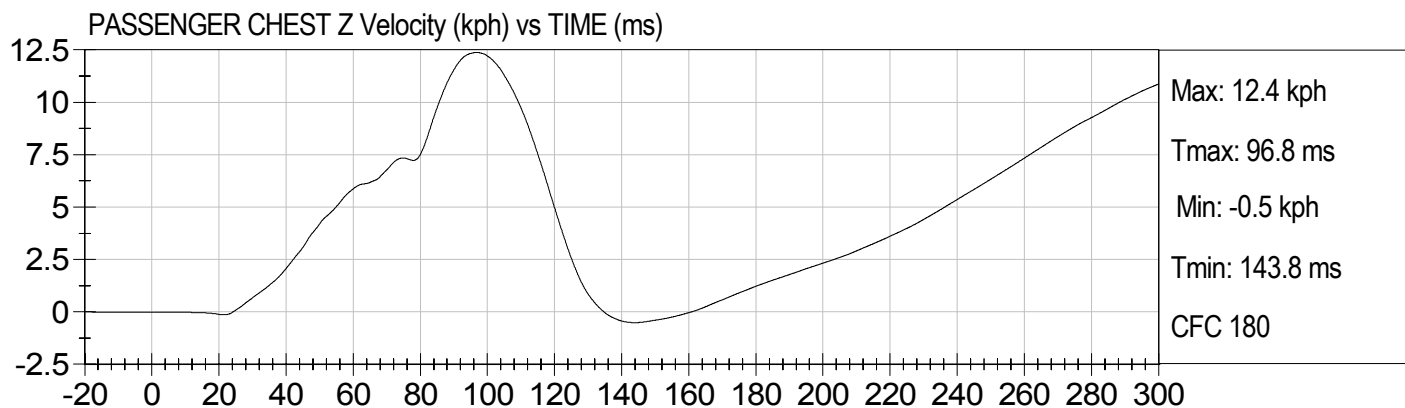
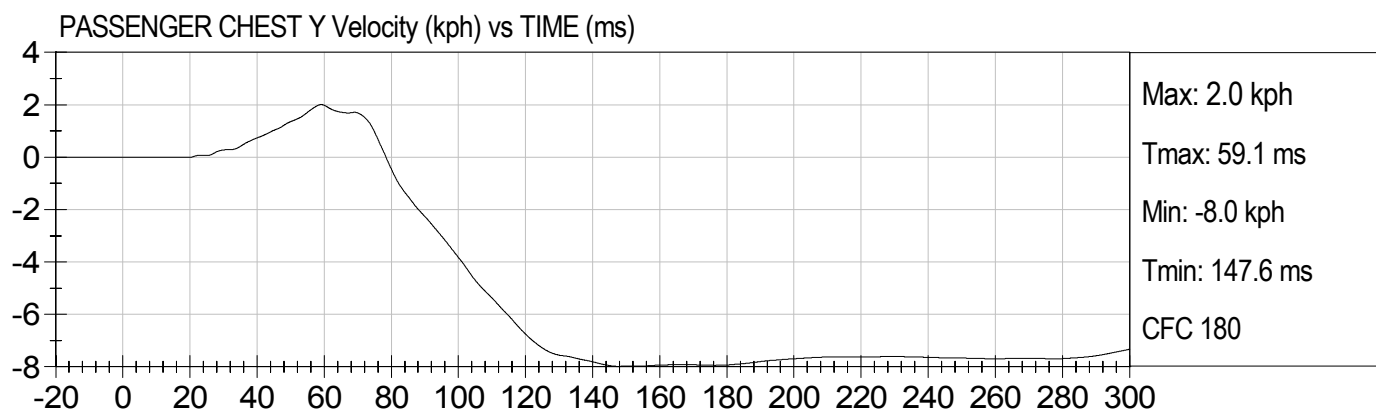
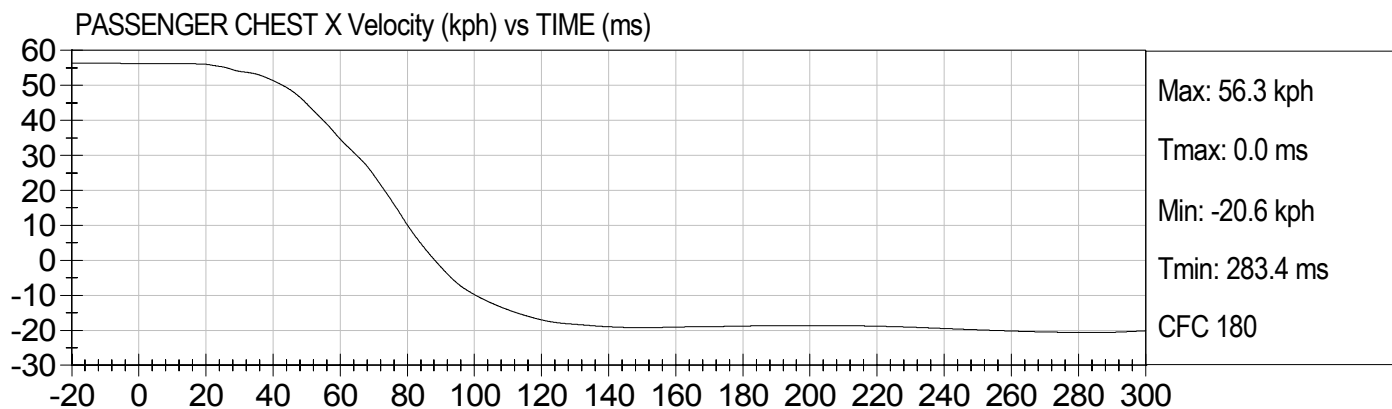


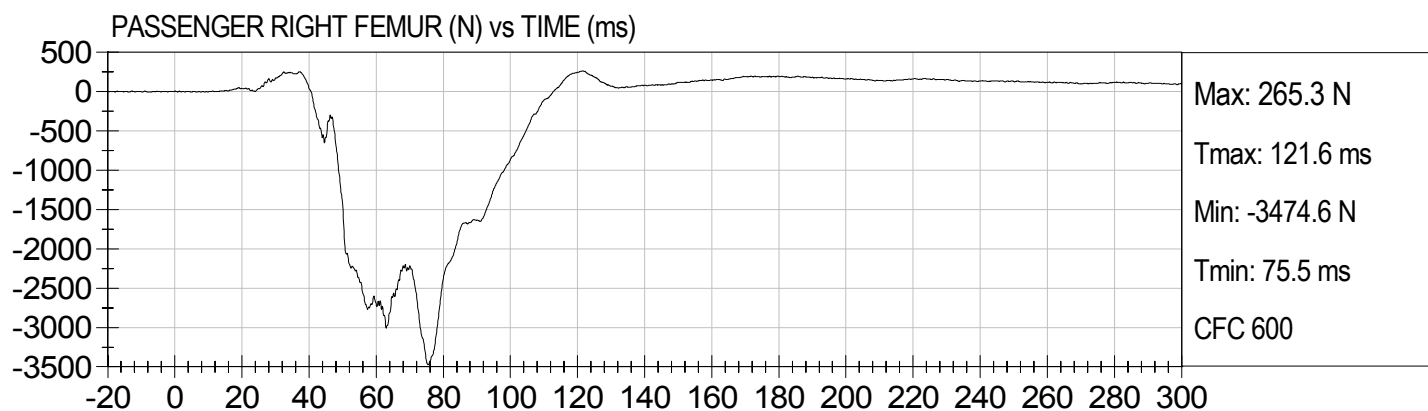
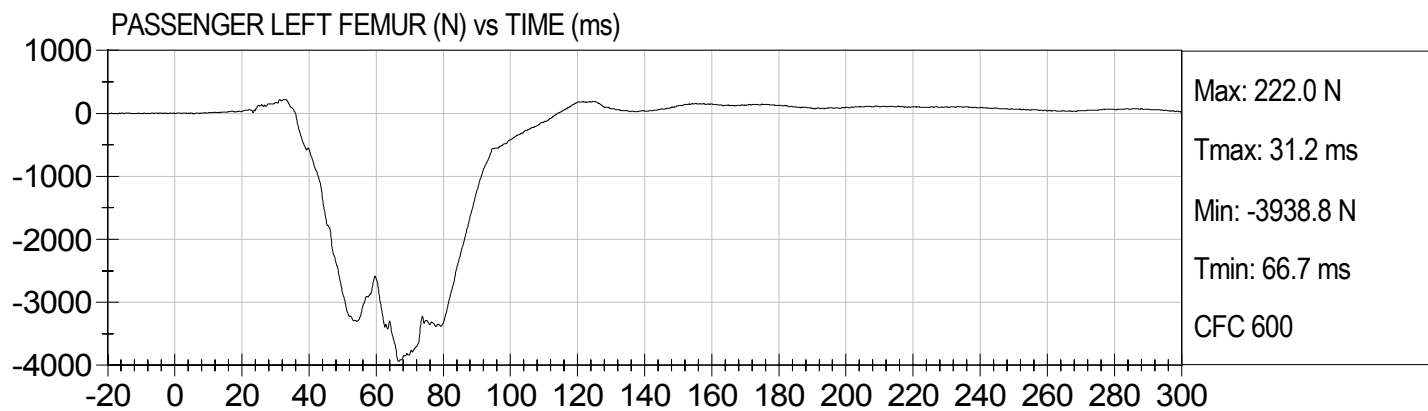












APPENDIX C
DUMMY CALIBRATION DATA

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

ATD Serial No: 065

Test ID: D061181

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.6	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Peak Resultant Acceleration	G's	225 - 275	241	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	1.4	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

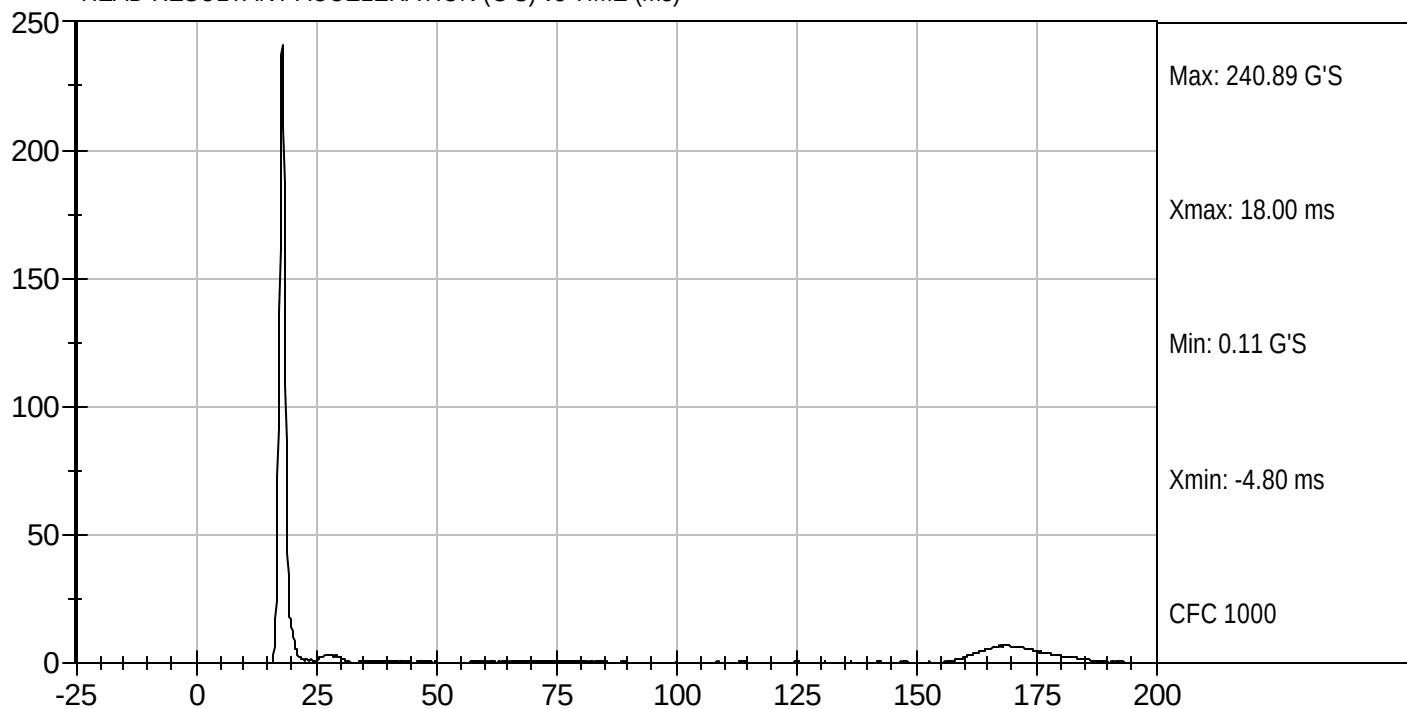
04/28/2006
Test Date



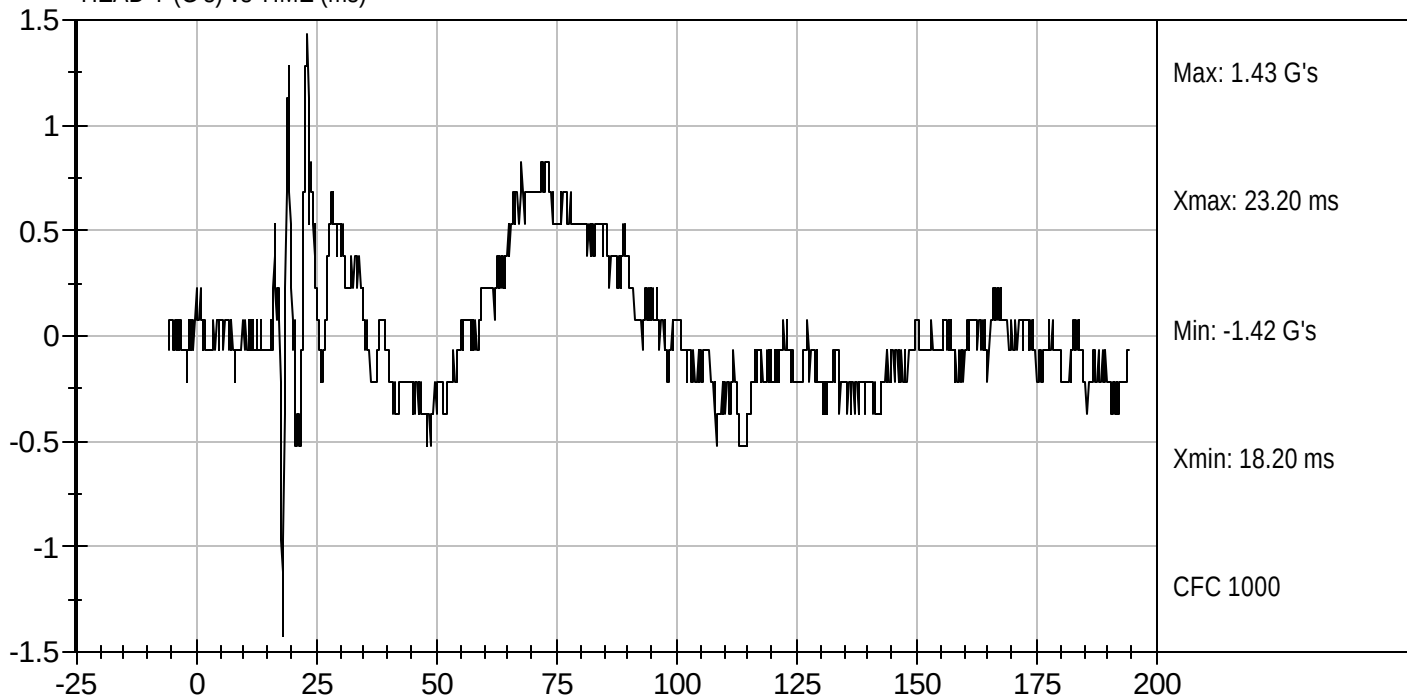
Test Desc: Head Drop
Componet ID: D061181

Test Date: 04/28/2006
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: 065

Test I.D: D061182

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.8	Pass
Laboratory Relative Humidity		%	10 to 70	48	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.11	Pass
Pendulum Deceleration	10 msec	G's	22.50 to 27.50	25.56	Pass
	20 msec	G's	17.60 to 22.60	22.04	Pass
	30 msec	G's	12.50 to 18.50	16.27	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 29.0	16.19	Pass
Deceleration Decay Time to Cross 5 G's		msec	34.0 to 42.0	35.2	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	73.9	Pass
	Time	msec	57.0 to 64.0	59.2	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	113.0 to 128.0	113.1	Pass
Moment About Occipital Condyle	Maximum	N m	88.1 to 108.5	93.0	Pass
	Time	msec	47.0 to 58.0	47.8	Pass
Positive Moment Decay Time To Zero Crossing		msec	97.0 to 107.0	101.5	Pass
Overall Test Results					Pass


 Laboratory Technician

05/01/2006
 Test Date

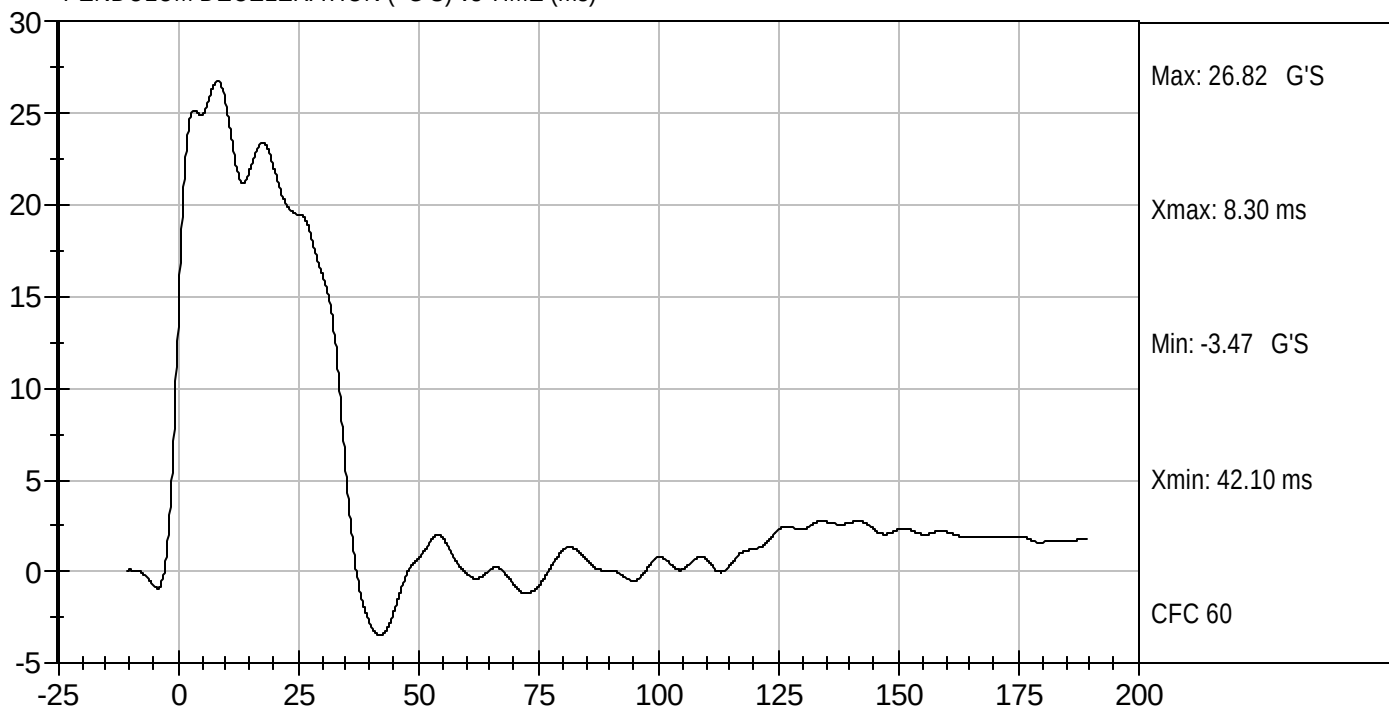

 Approved By



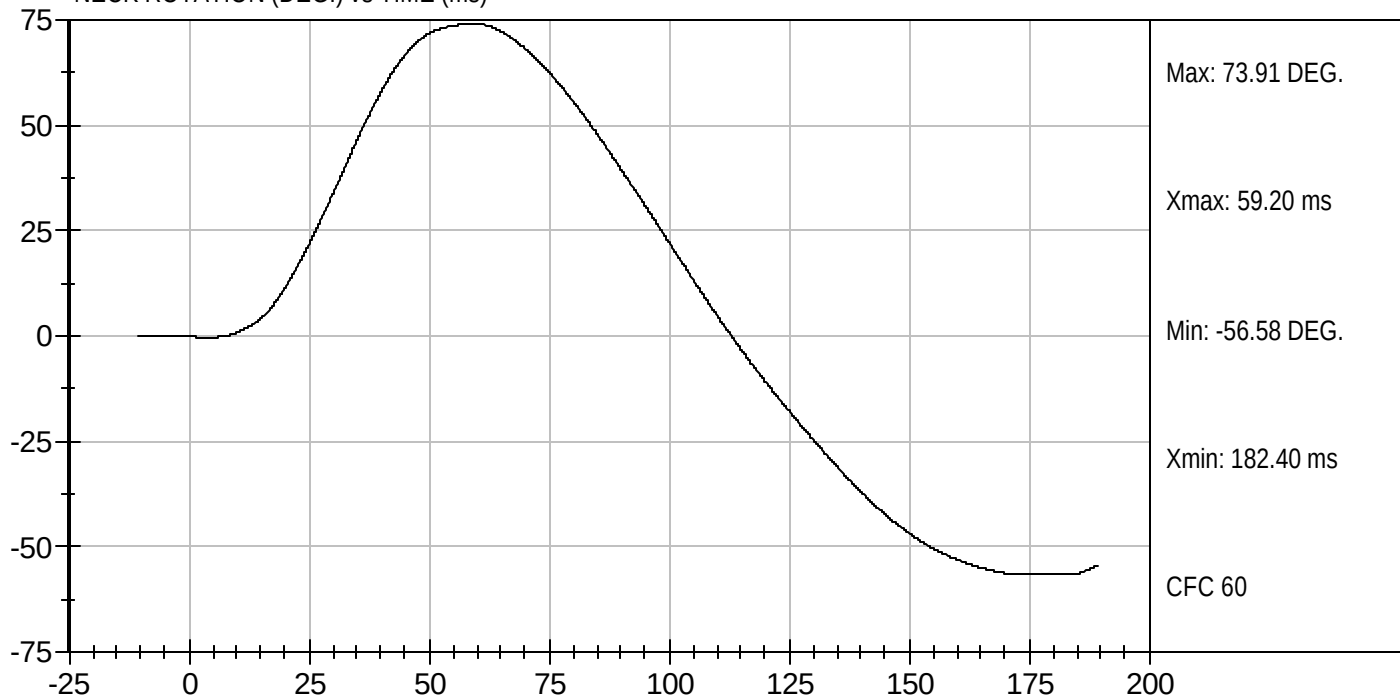
Test Desc: Neck Flexion
Componet ID: D061182

Test Date: 05/01/2006
Velocity: 23.33 ft/s, 7.11 m/s

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



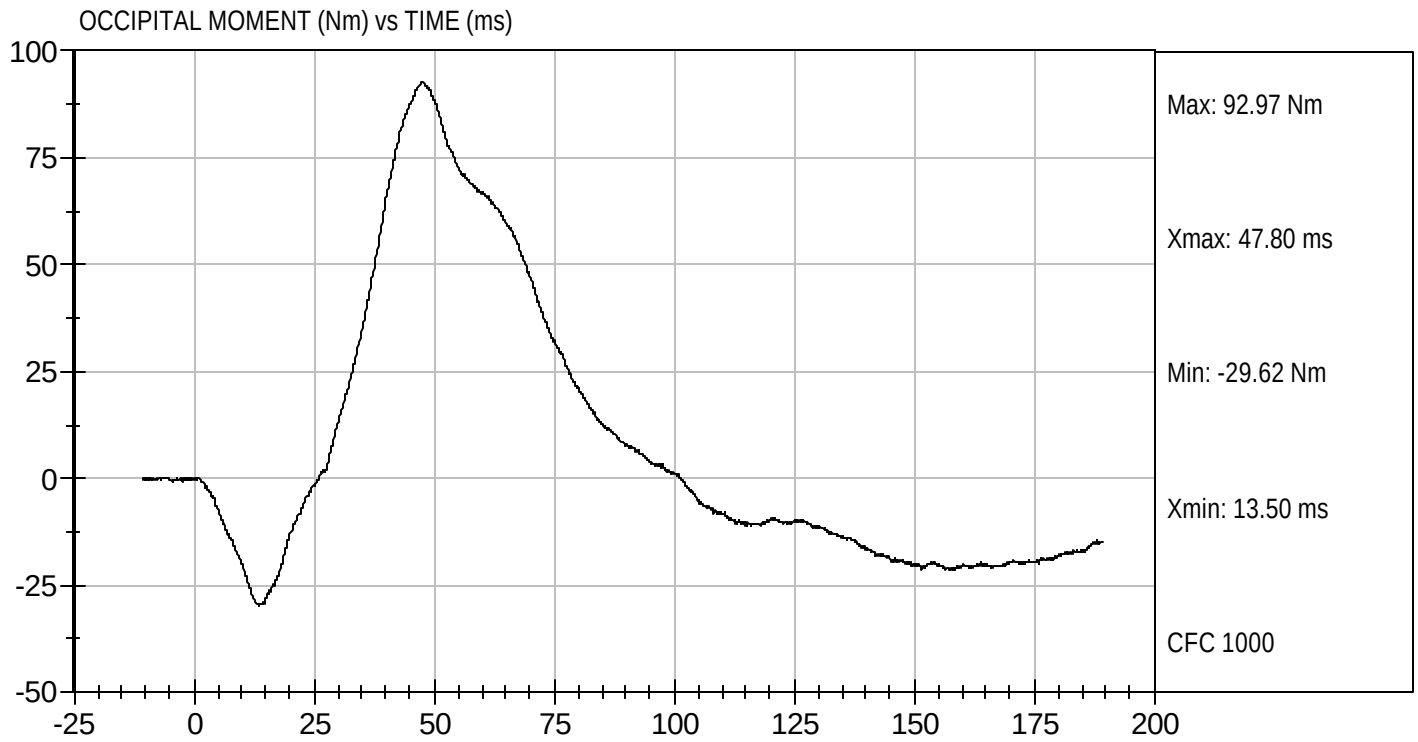
NECK ROTATION (DEG.) vs TIME (ms)





Test Desc: Neck Flexion
Componet ID: D061182

Test Date: 05/01/2006
Velocity: 23.33 ft/s, 7.11 m/s



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

ATD Serial No: 065

Test I.D: D061183

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	48	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.15	Pass
Pendulum Deceleration	10 msec	G's	17.20 to 21.20	19.86	Pass
	20 msec	G's	14.00 to 19.00	17.43	Pass
	30 msec	G's	11.00 to 16.00	14.43	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 22.0	14.77	Pass
Deceleration Decay Time to Cross 5 G's		msec	38.0 to 46.0	38.9	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	102.3	Pass
	Time	msec	72.0 to 82.0	81.1	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	147.0 to 174.0	158.8	Pass
Moment About Occipital Condyle	Maximum	N m	-52.9 to -79.9	-69.7	Pass
	Time	msec	65.0 to 79.0	73.3	Pass
Negative Moment Decay Time To Zero Crossing		msec	120.0 to 148.0	143.3	Pass
Overall Test Results				Pass	


 Laboratory Technician

05/01/2006
 Test Date

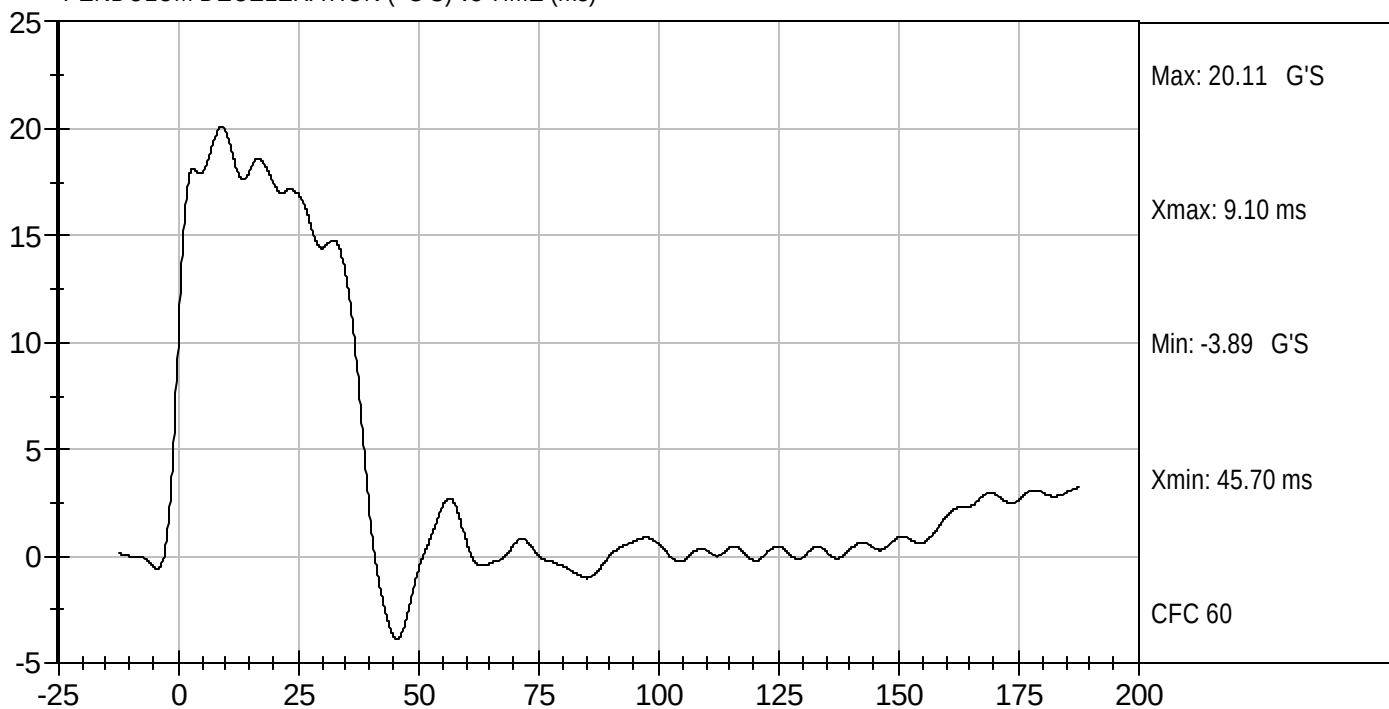

 Approved By



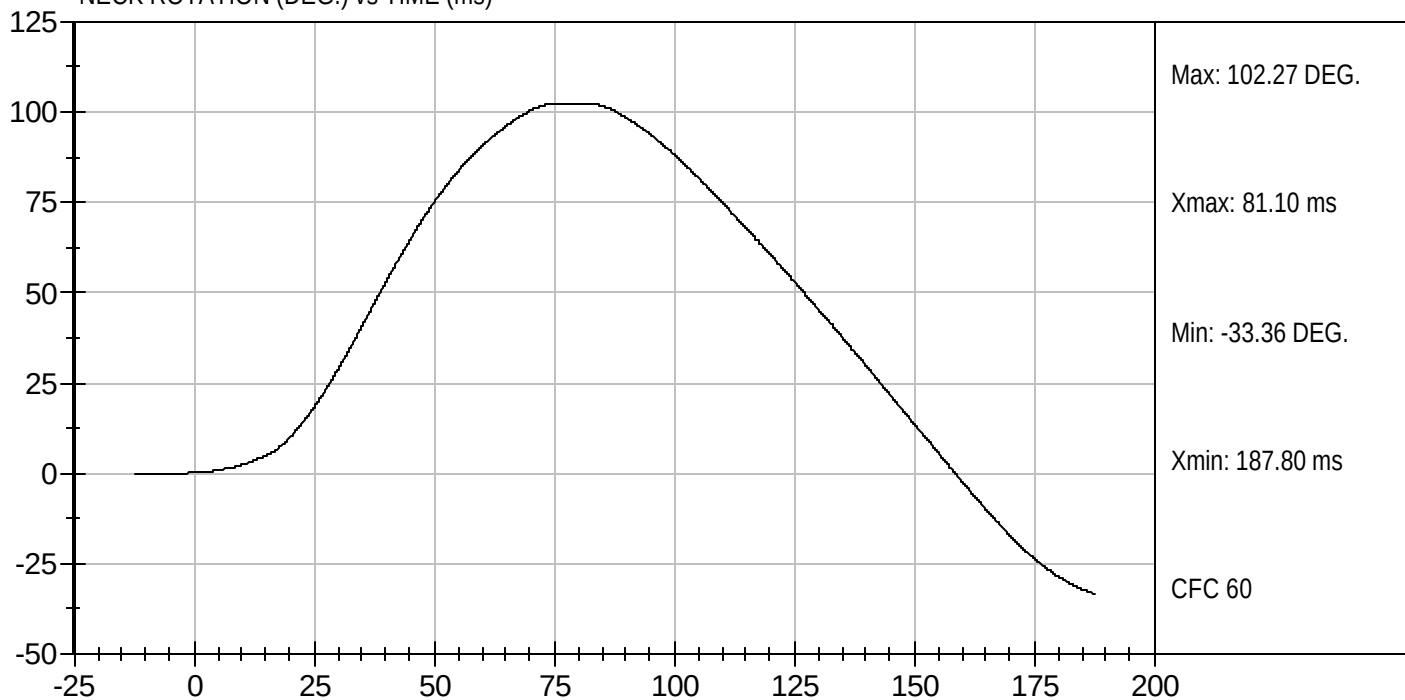
Test Desc: Neck Extension
Componet ID: D061183

Test Date: 05/01/2006
Velocity: 20.19 ft/s, 6.15 m/s

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



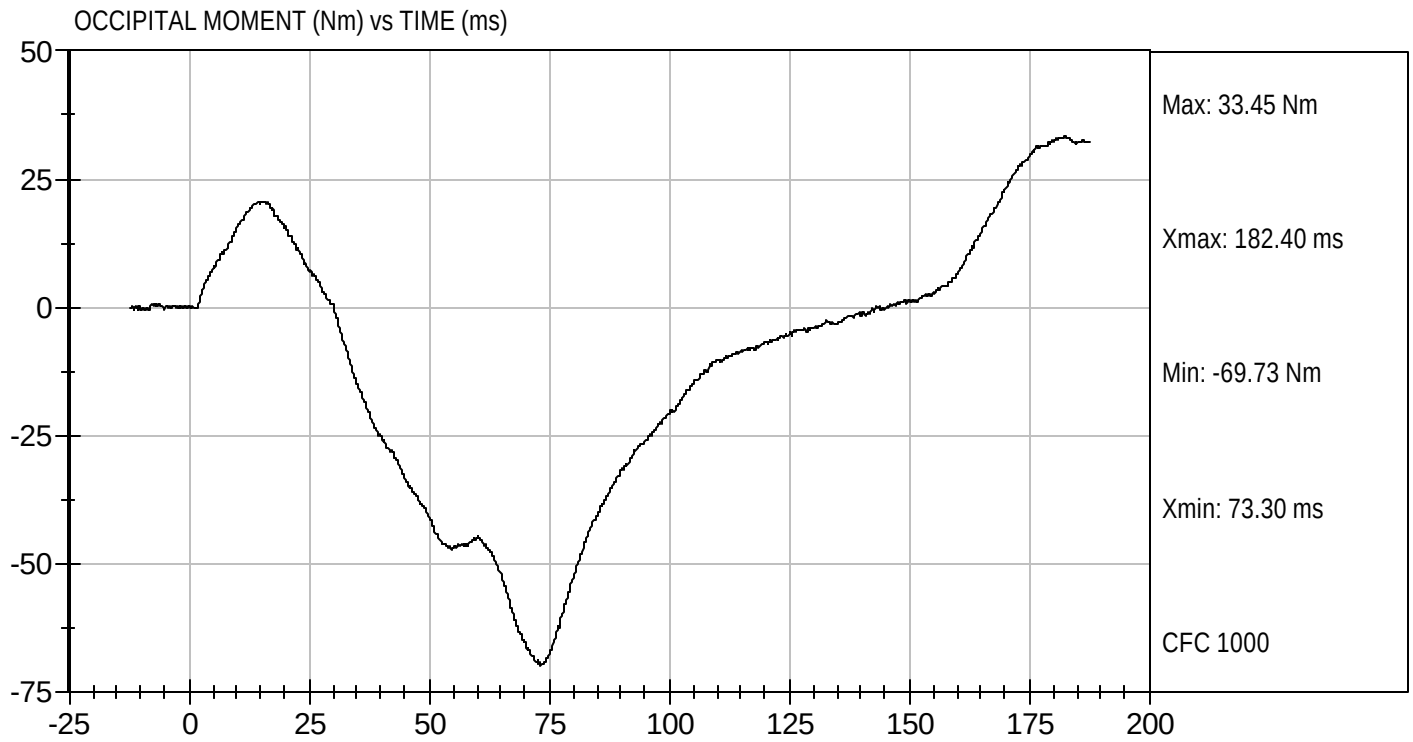
NECK ROTATION (DEG.) vs TIME (ms)





Test Desc: Neck Extension
Componet ID: D061183

Test Date: 05/01/2006
Velocity: 20.19 ft/s, 6.15 m/s



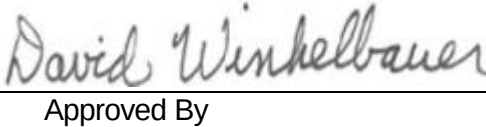
**MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE**

ATD Serial No: 065

Test I.D: D061184

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	45	Pass
Probe Velocity	m/s	6.58 to 6.82	6.71	Pass
Peak Probe Force	N	5159 to 5893	5,471	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	7.10	Pass
Internal Hysteresis	%	69 to 85	71	Pass
Overall Test Results			Pass	


Laboratory Technician

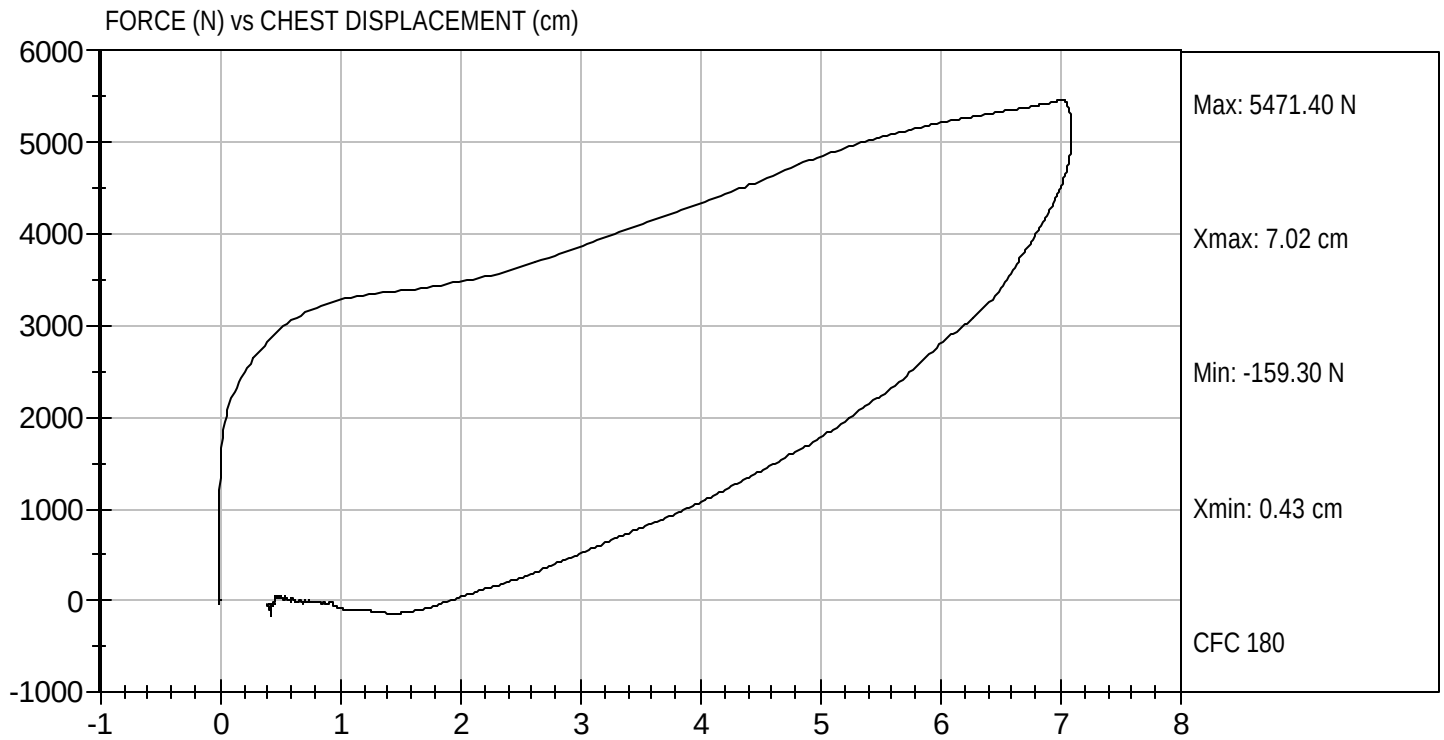

Approved By

05/01/2006
Test Date



Test Desc: Thorax Impact
Componet ID: D061184

Test Date: 05/01/2006
Velocity: 22.03 ft/s, 6.71 m/s



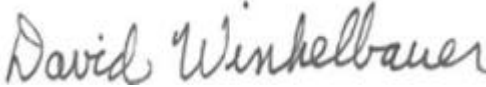
MGA RESEARCH CORPORATION
RIGHT KNEE IMPACT TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 065

Test I.D: D061185

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	22.0	Pass
Laboratory Relative Humidity	%	10 to 70	46	Pass
Probe Velocity	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	4715 to 5782	5,048	Pass
Overall Test Results				Pass


Laboratory Technician

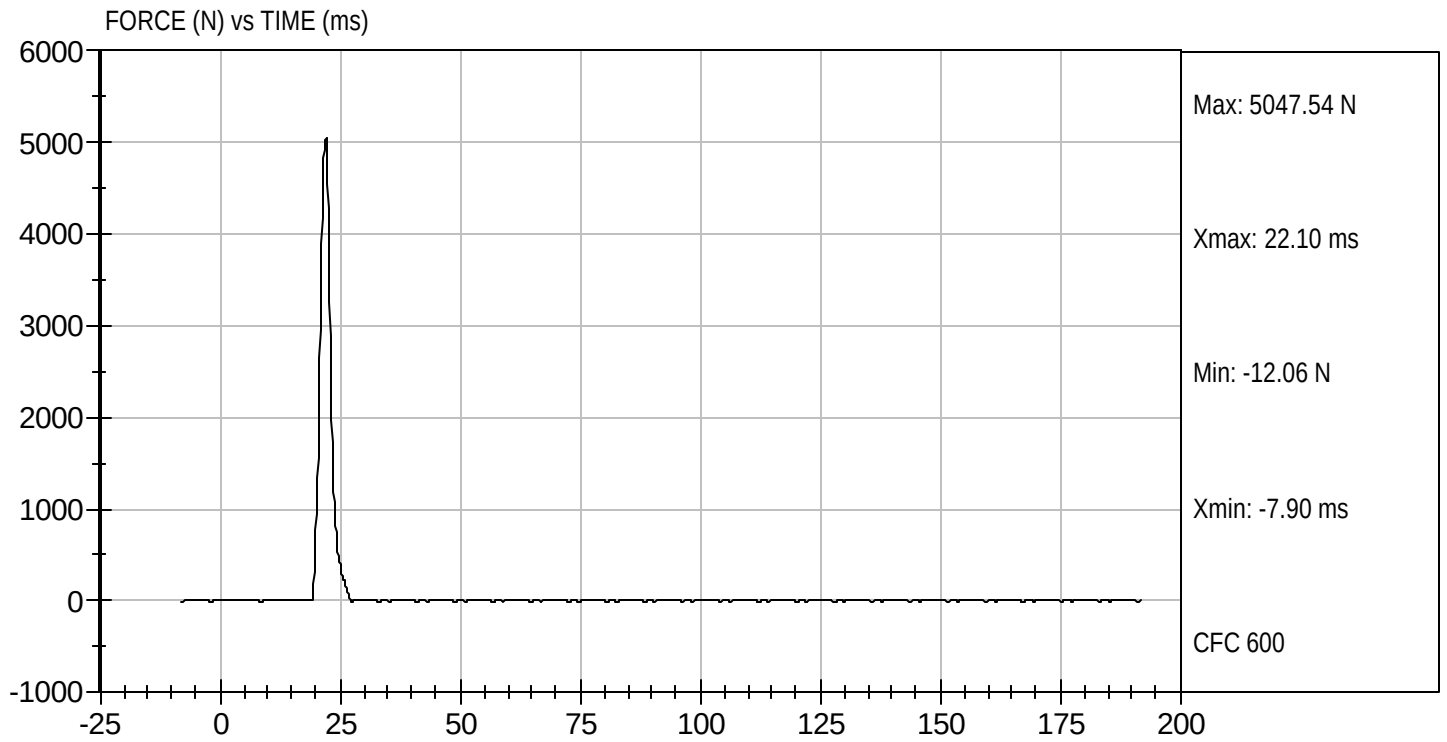

Approved By

05/01/2006
Test Date



Test Desc: Right Knee
Componet ID: D061185

Test Date: 05/01/2006
Velocity: 6.88 ft/s, 2.10 m/s



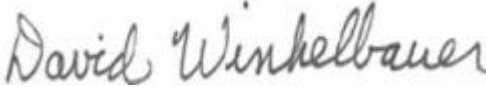
MGA RESEARCH CORPORATION
LEFT KNEE IMPACT TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 065

Test I.D: D061186

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	44	Pass
Probe Velocity	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	4715 to 5782	5,624	Pass
Overall Test Results				Pass


Laboratory Technician

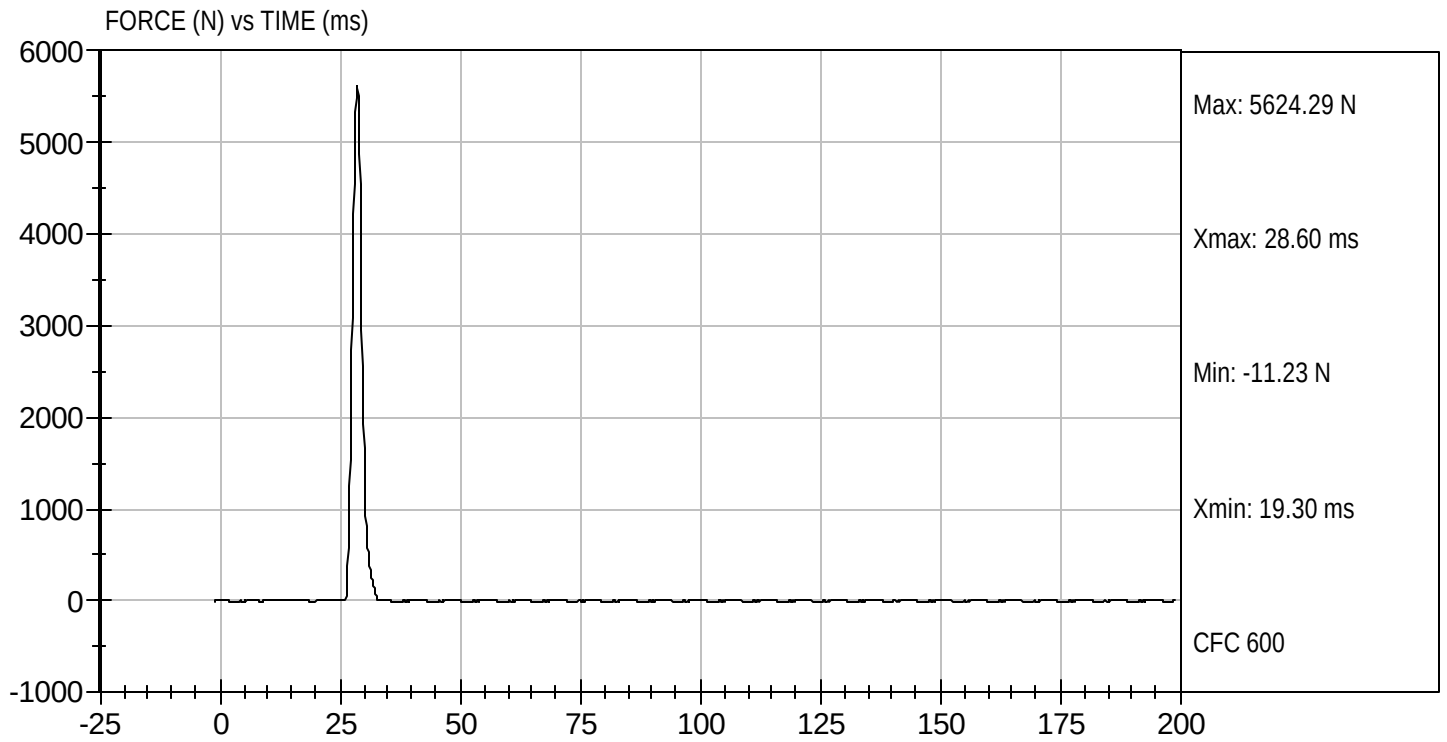

Approved By

05/01/2006
Test Date



Test Desc: Left Knee
Componet ID: D061186

Test Date: 05/01/2006
Velocity: 6.87 ft/s, 2.09 m/s



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

ATD Serial No: 065

Test I.D: D061180

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	48	48	Pass
Rotation Rate	deg/sec	5 -10	8	8	Pass
30 Degrees	Nm	94.9 Nm Max	90.1	87.8	Pass
150 ft-lbf / 203.4 Nm	Deg	40- 50 Degree Max Rotation	43	43	Pass
Overall Test Results				Pass	


 Laboratory Technician

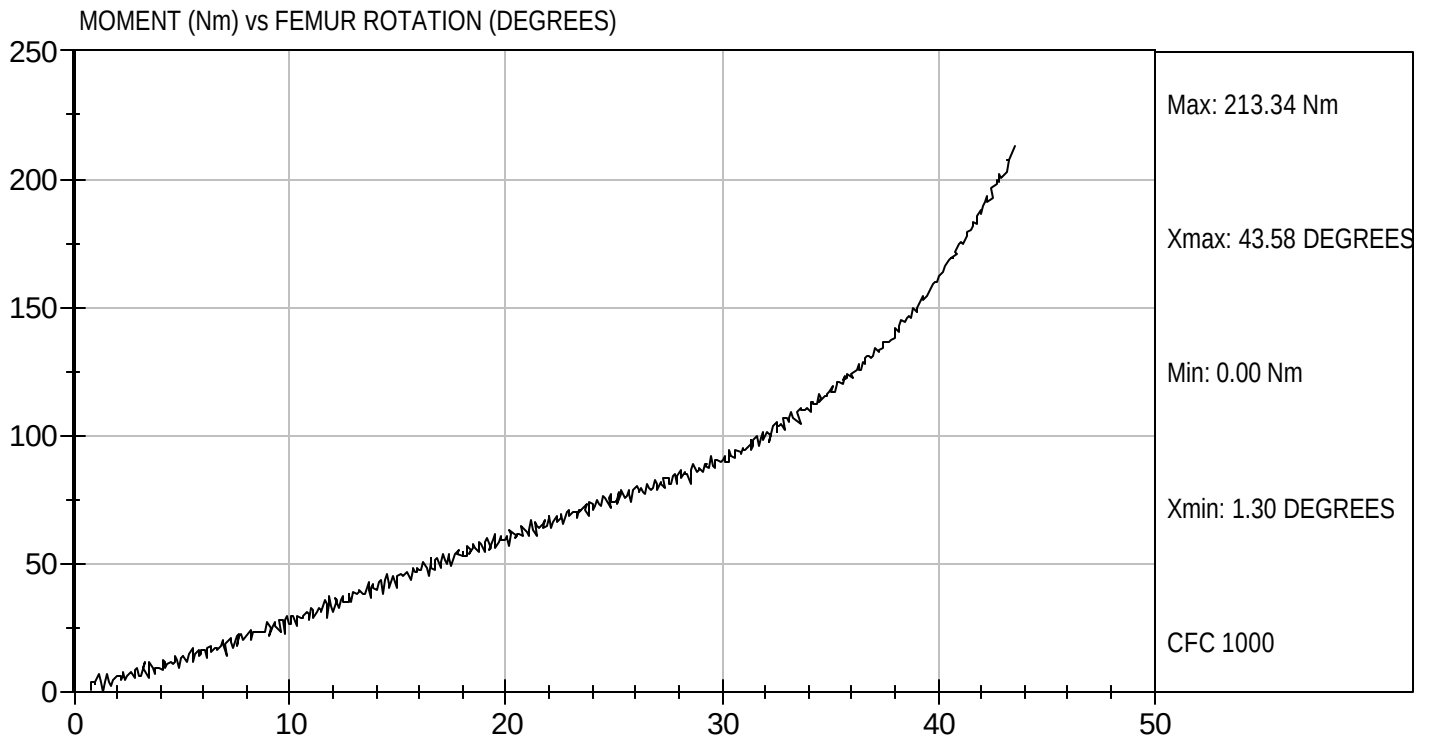
05/01/2006
 Test Date


 Approved By



Test Desc: Hip Femur Flexion
Componet ID: D061189

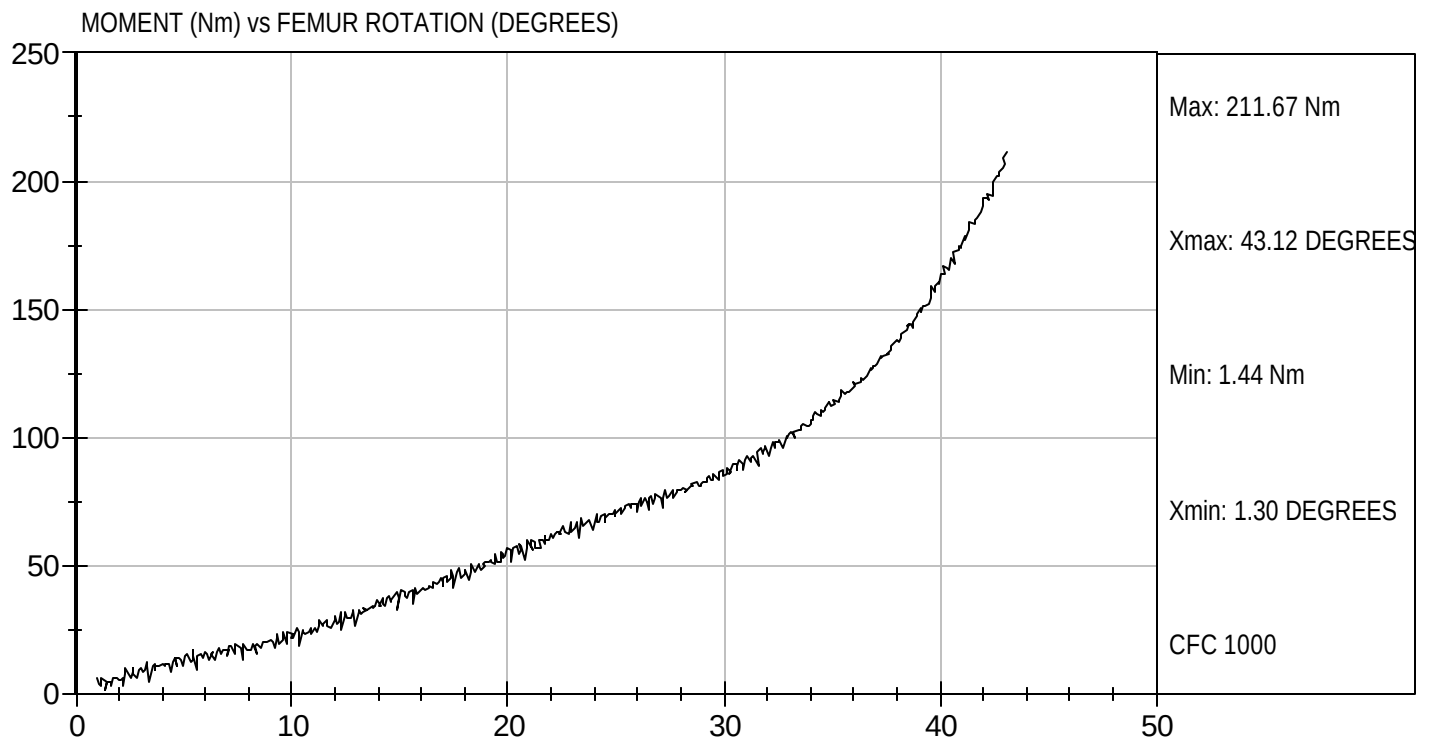
Test Date: 05/01/2006
Velocity: 0 ft/s, 0.00 m/s





Test Desc: Hip Femur Flexion
Componet ID: D061180

Test Date: 05/01/2006
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: D061191

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.6	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Peak Resultant Acceleration	G's	225 - 275	257	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-14.0	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

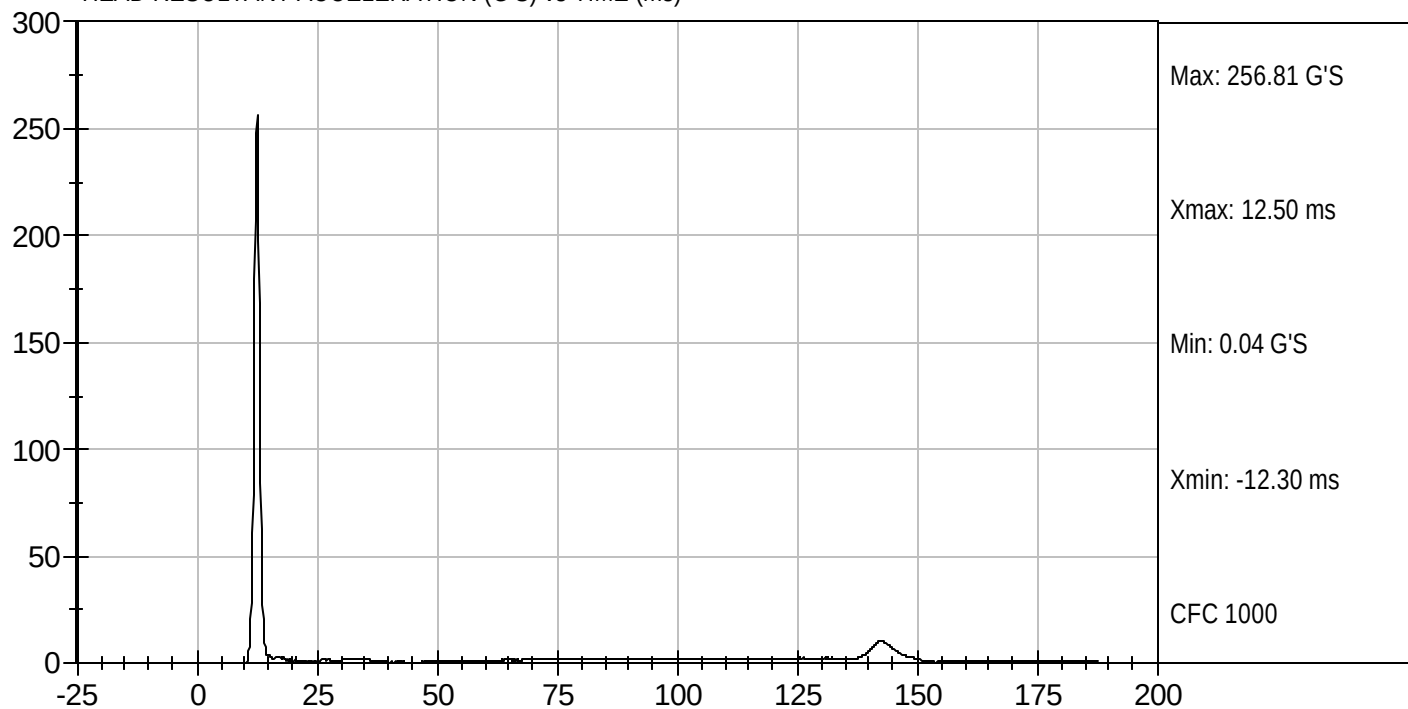
04/28/2006
Test Date



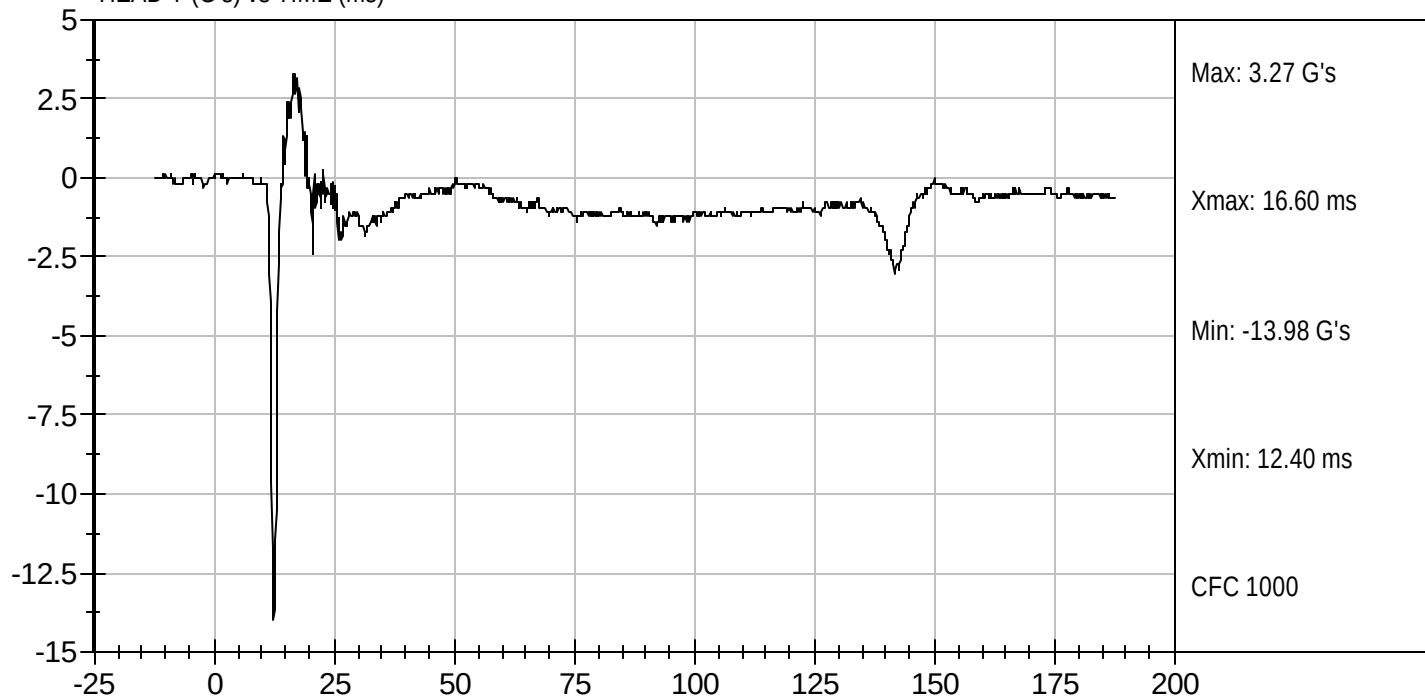
Test Desc: Head Drop
Componet ID: D061191

Test Date: 04/28/2006
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: D061192

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	46	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.12	Pass
Pendulum Deceleration	10 msec	G's	22.50 to 27.50	24.03	Pass
	20 msec	G's	17.60 to 22.60	20.45	Pass
	30 msec	G's	12.50 to 18.50	16.23	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 29.0	16.17	Pass
Deceleration Decay Time to Cross 5 G's		msec	34.0 to 42.0	38.3	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	69.0	Pass
	Time	msec	57.0 to 64.0	62.5	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	113.0 to 128.0	113.3	Pass
Moment About Occipital Condyle	Maximum	N m	88.1 to 108.5	88.4	Pass
	Time	msec	47.0 to 58.0	50.5	Pass
Positive Moment Decay Time To Zero Crossing		msec	97.0 to 107.0	100.2	Pass
Overall Test Results					Pass


 Laboratory Technician

05/01/2006
 Test Date

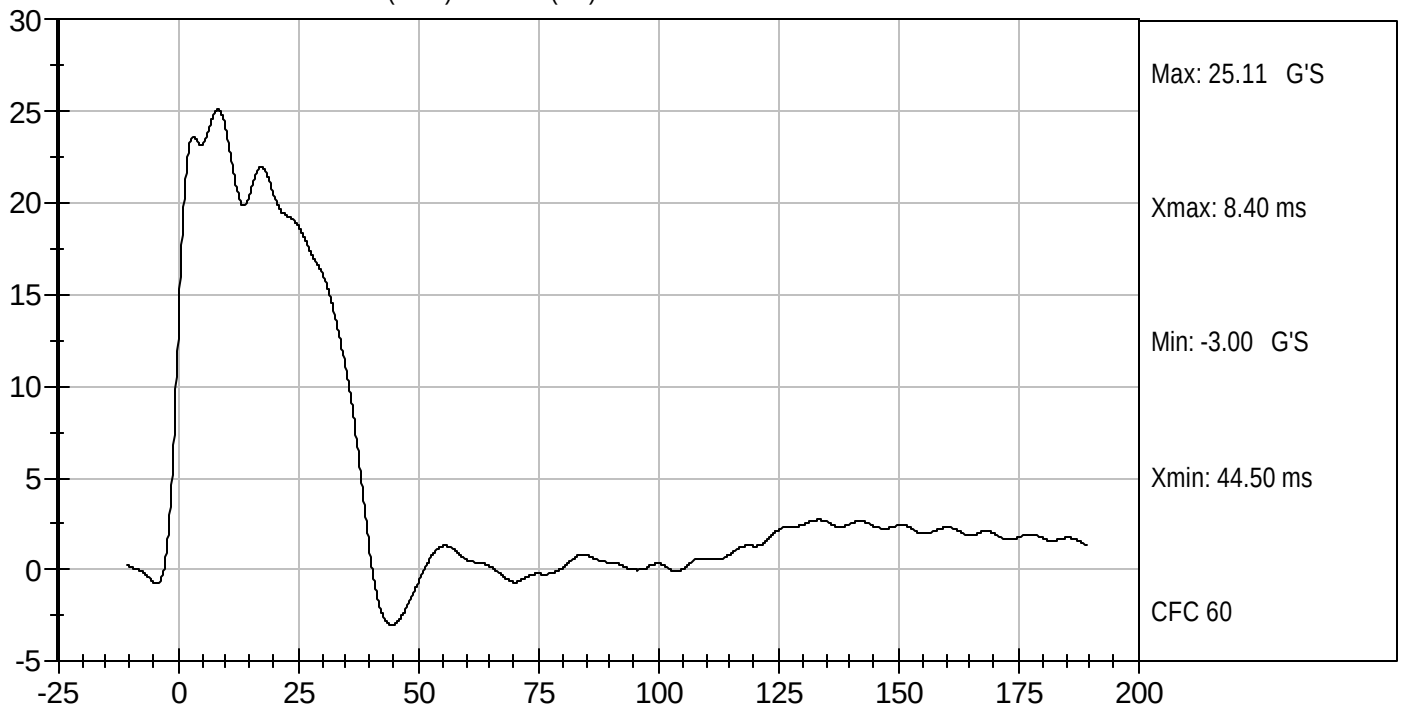

 Approved By



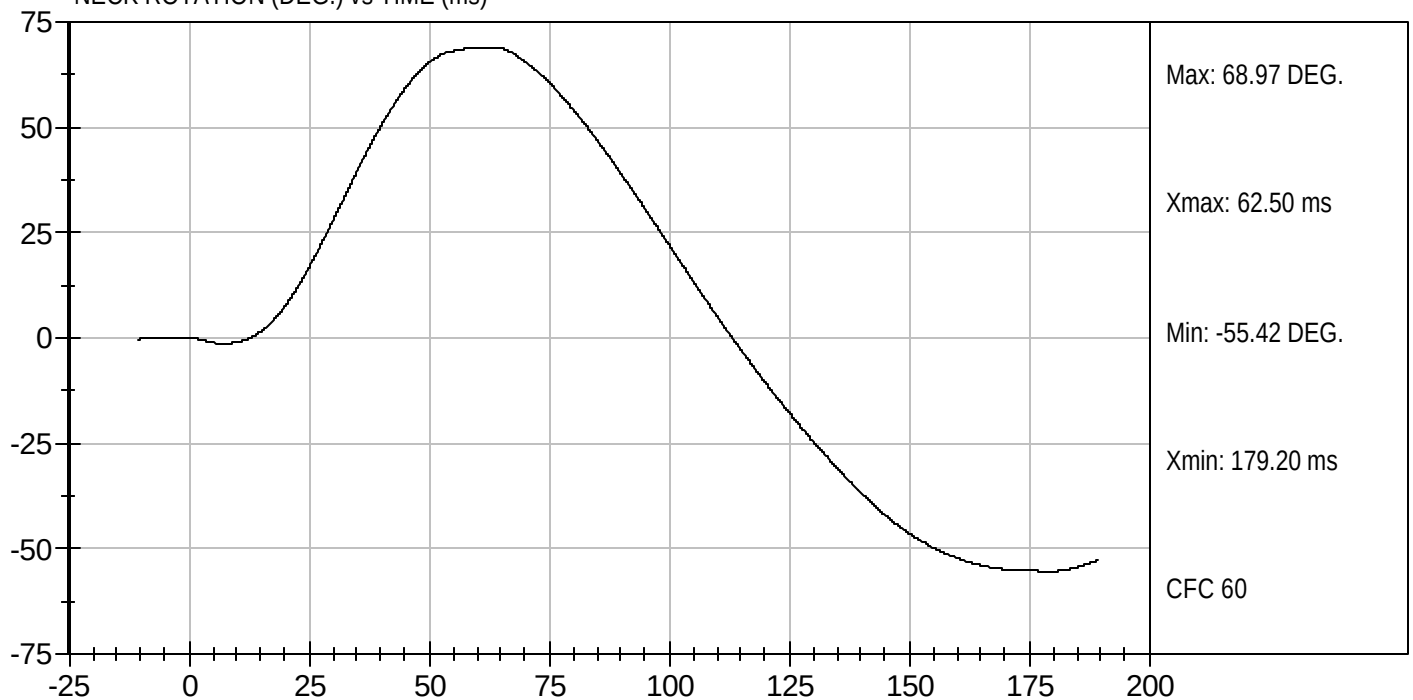
Test Desc: Neck Flexion
Componet ID: D061192

Test Date: 05/01/2006
Velocity: 23.35 ft/s, 7.12 m/s

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



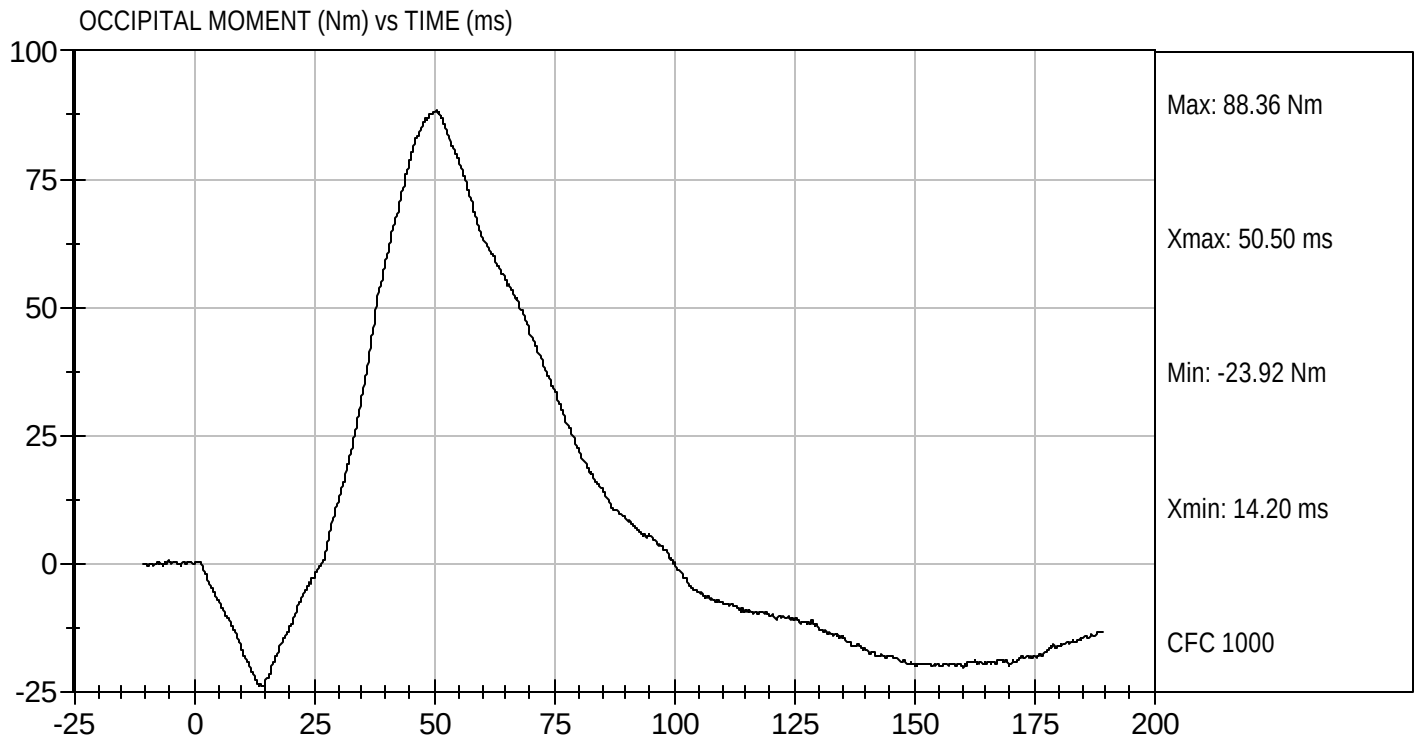
NECK ROTATION (DEG.) vs TIME (ms)





Test Desc: Neck Flexion
Componet ID: D061192

Test Date: 05/01/2006
Velocity: 23.35 ft/s, 7.12 m/s



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

ATD Serial No: 066

Test I.D: D061193

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	47	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.16	Pass
Pendulum Deceleration	10 msec	G's	17.20 to 21.20	18.83	Pass
	20 msec	G's	14.00 to 19.00	16.16	Pass
	30 msec	G's	11.00 to 16.00	13.18	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 22.0	13.13	Pass
Deceleration Decay Time to Cross 5 G's		msec	38.0 to 46.0	43.1	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	100.0	Pass
	Time	msec	72.0 to 82.0	78.6	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	147.0 to 174.0	157.1	Pass
Moment About Occipital Condyle	Maximum	N m	-52.9 to -79.9	-61.6	Pass
	Time	msec	65.0 to 79.0	74.3	Pass
Negative Moment Decay Time To Zero Crossing		msec	120.0 to 148.0	143.2	Pass
Overall Test Results				Pass	


Laboratory Technician

05/01/2006
Test Date

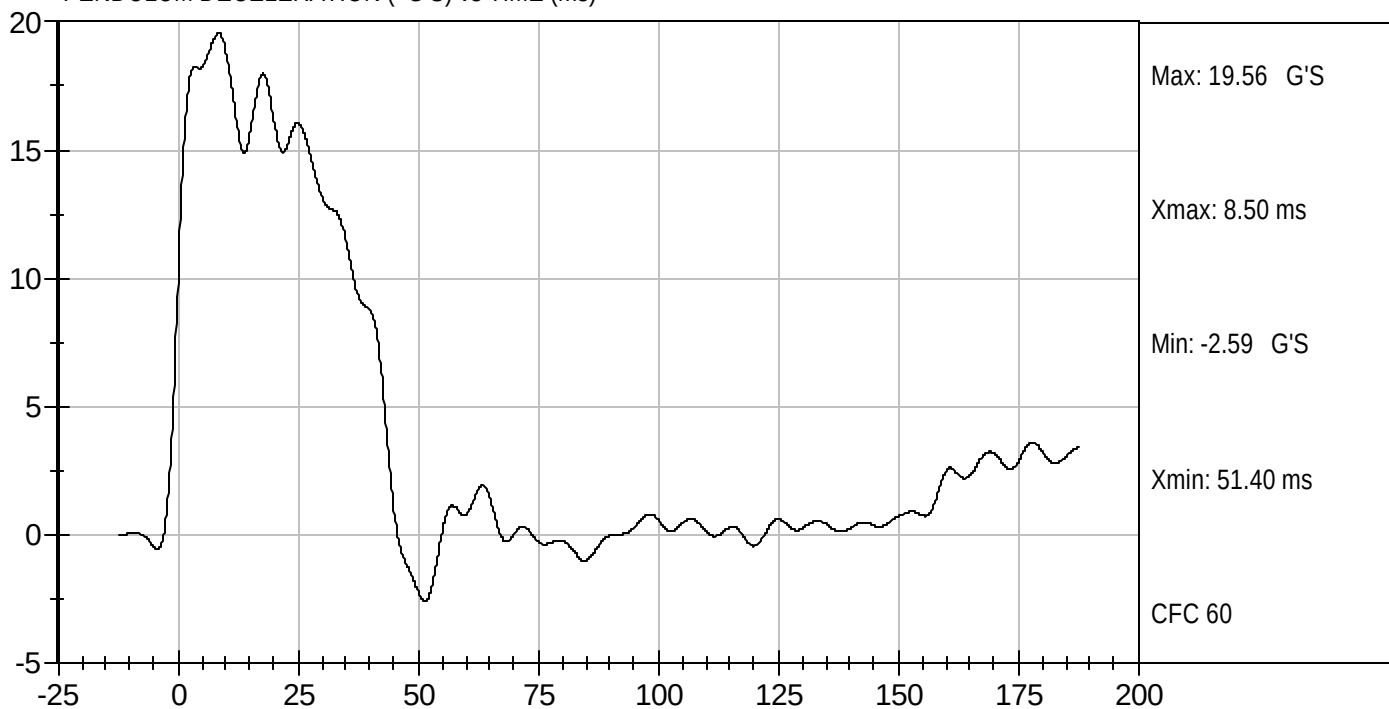

Approved By



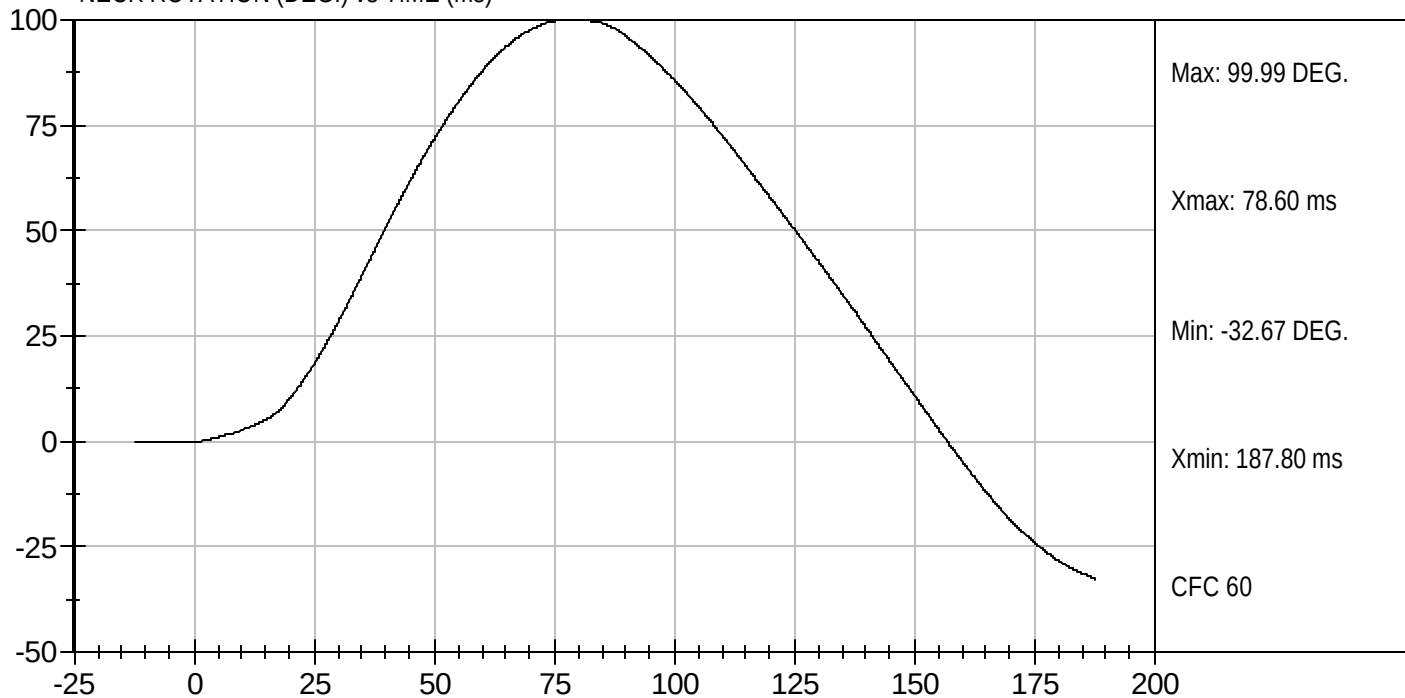
Test Desc: Neck Extension
Componet ID: D061193

Test Date: 05/01/2006
Velocity: 20.22 ft/s, 6.16 m/s

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



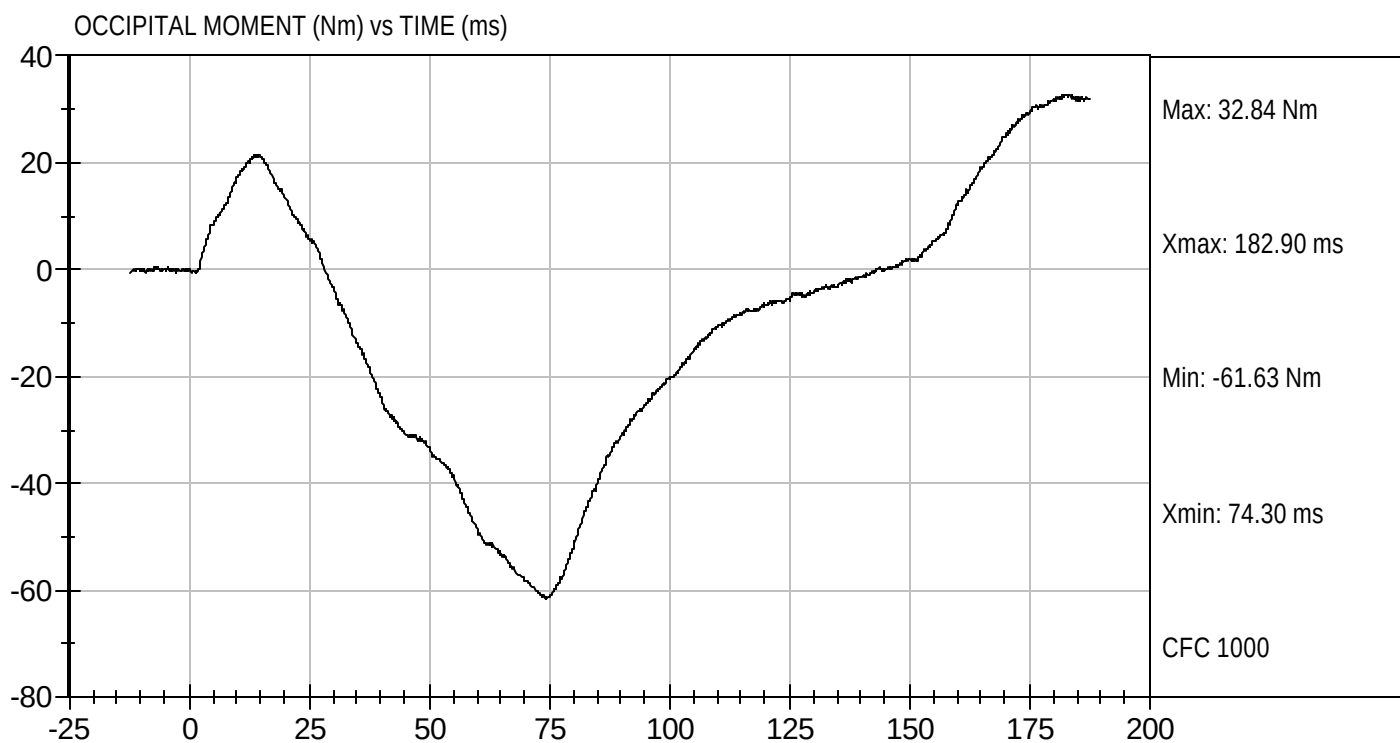
NECK ROTATION (DEG.) vs TIME (ms)





Test Desc: Neck Extension
Componet ID: D061193

Test Date: 05/01/2006
Velocity: 20.22 ft/s, 6.16 m/s



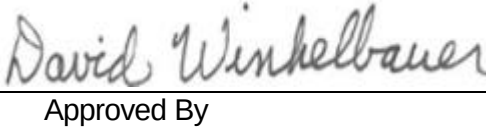
MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 066

Test I.D: D061194

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	44	Pass
Probe Velocity	m/s	6.58 to 6.82	6.62	Pass
Peak Probe Force	N	5159 to 5893	5,332	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	7.03	Pass
Internal Hysteresis	%	69 to 85	69	Pass
Overall Test Results			Pass	


Laboratory Technician

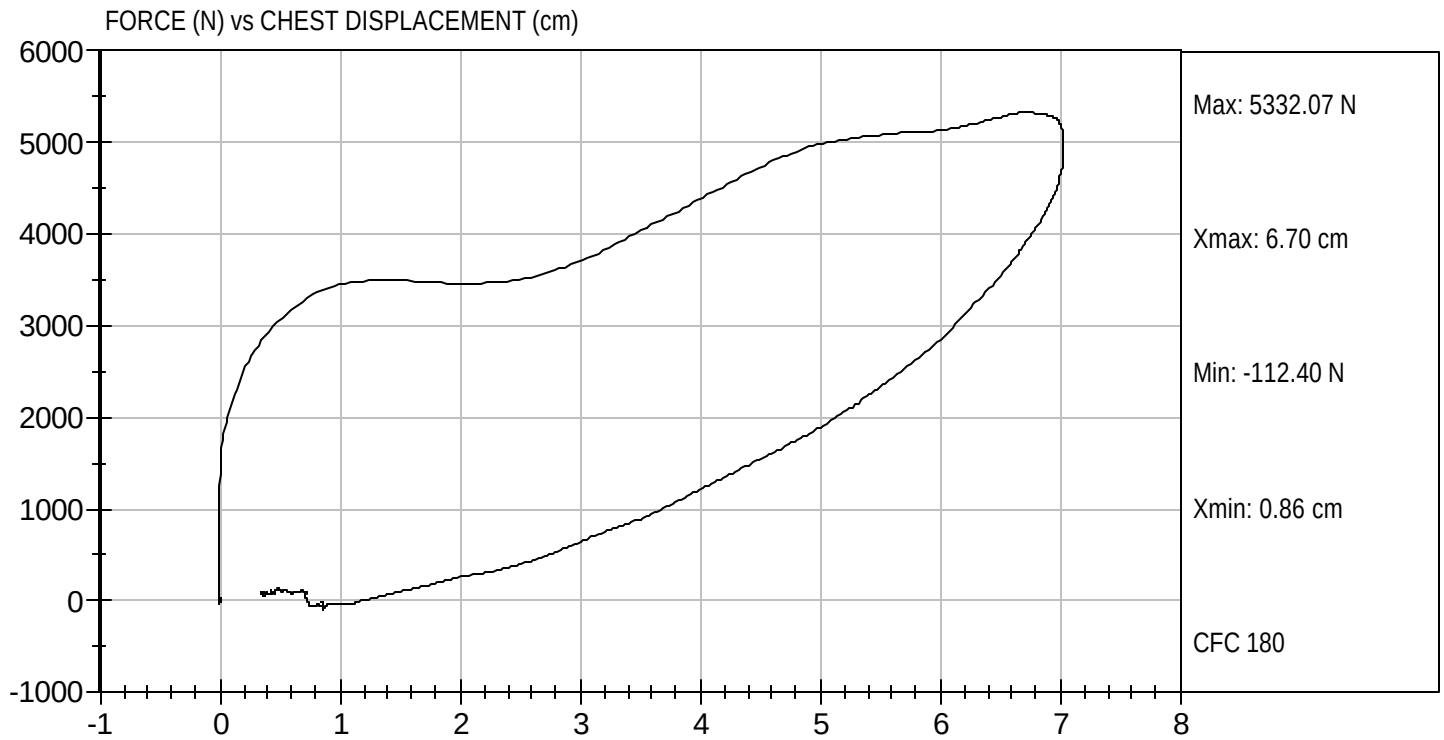

Approved By

05/01/2006
Test Date



Test Desc: Thorax Impact
Componet ID: D061194

Test Date: 05/01/2006
Velocity: 21.72 ft/s, 6.62 m/s



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

ATD Serial No: 066

Test I.D: D061195

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	46	Pass
Probe Velocity	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	4715 to 5782	4,929	Pass
Overall Test Results				Pass


Laboratory Technician

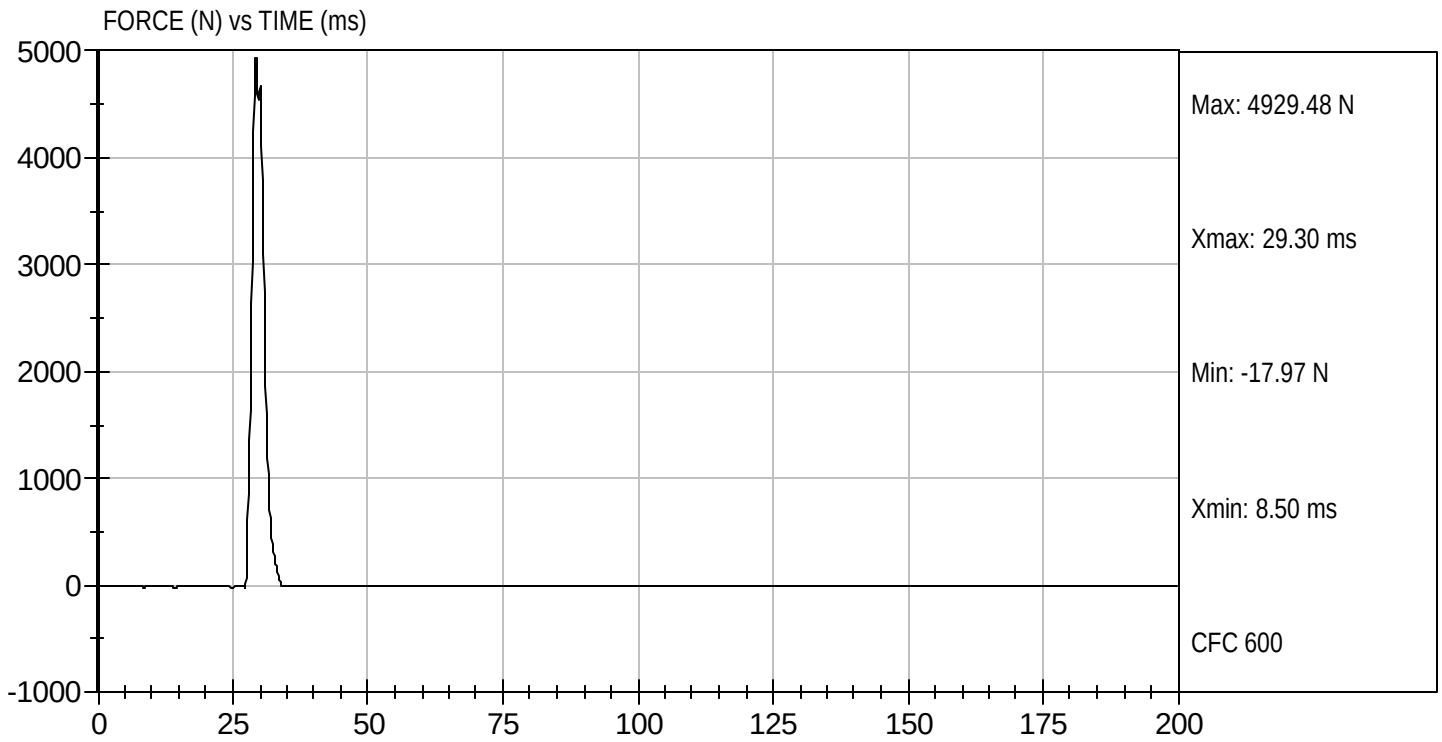

Approved By

05/01/2006
Test Date



Test Desc: Right Knee
Componet ID: D061195

Test Date: 05/01/2006
Velocity: 6.88 ft/s, 2.10 m/s



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

ATD Serial No: 066

Test I.D: D061196

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	22.0	Pass
Laboratory Relative Humidity	%	10 to 70	46	Pass
Probe Velocity	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	4715 to 5782	4,859	Pass
Overall Test Results				Pass


Laboratory Technician

05/01/2006

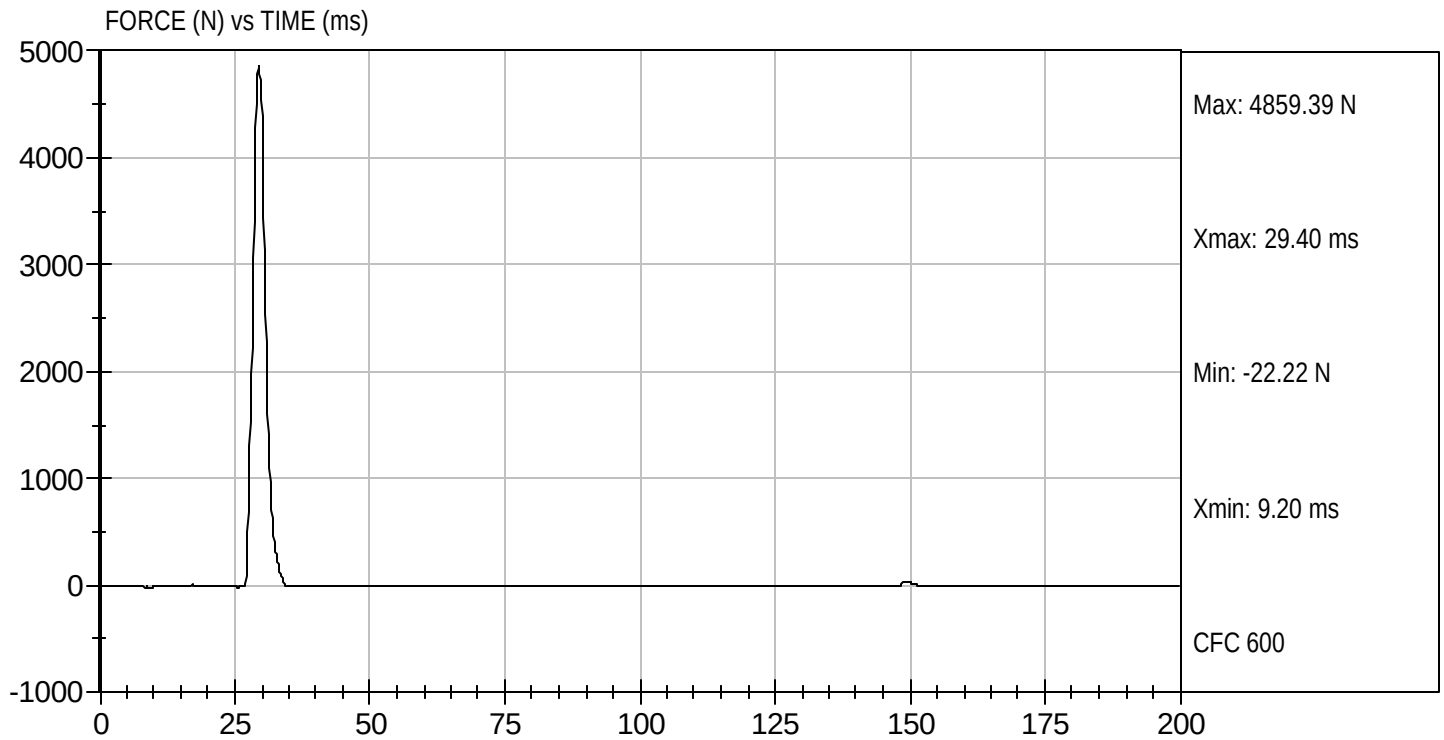
Test Date


Approved By



Test Desc: Left Knee
Componet ID: D061196

Test Date: 05/01/2006
Velocity: 6.86 ft/s, 2.09 m/s



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

ATD Serial No: 066

Test I.D: D061190

Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.9	21.9	Pass
Laboratory Relative Humidity	%	10 to 70	48	48	Pass
Rotation Rate	deg/sec	5 -10	8	8	Pass
30 Degrees	Nm	94.9 Nm Max	88.7	88.7	Pass
150 ft-lbf / 203.4 Nm	Deg	40- 50 Degree Max Rotation	42	40	Pass
Overall Test Results				Pass	


 Laboratory Technician

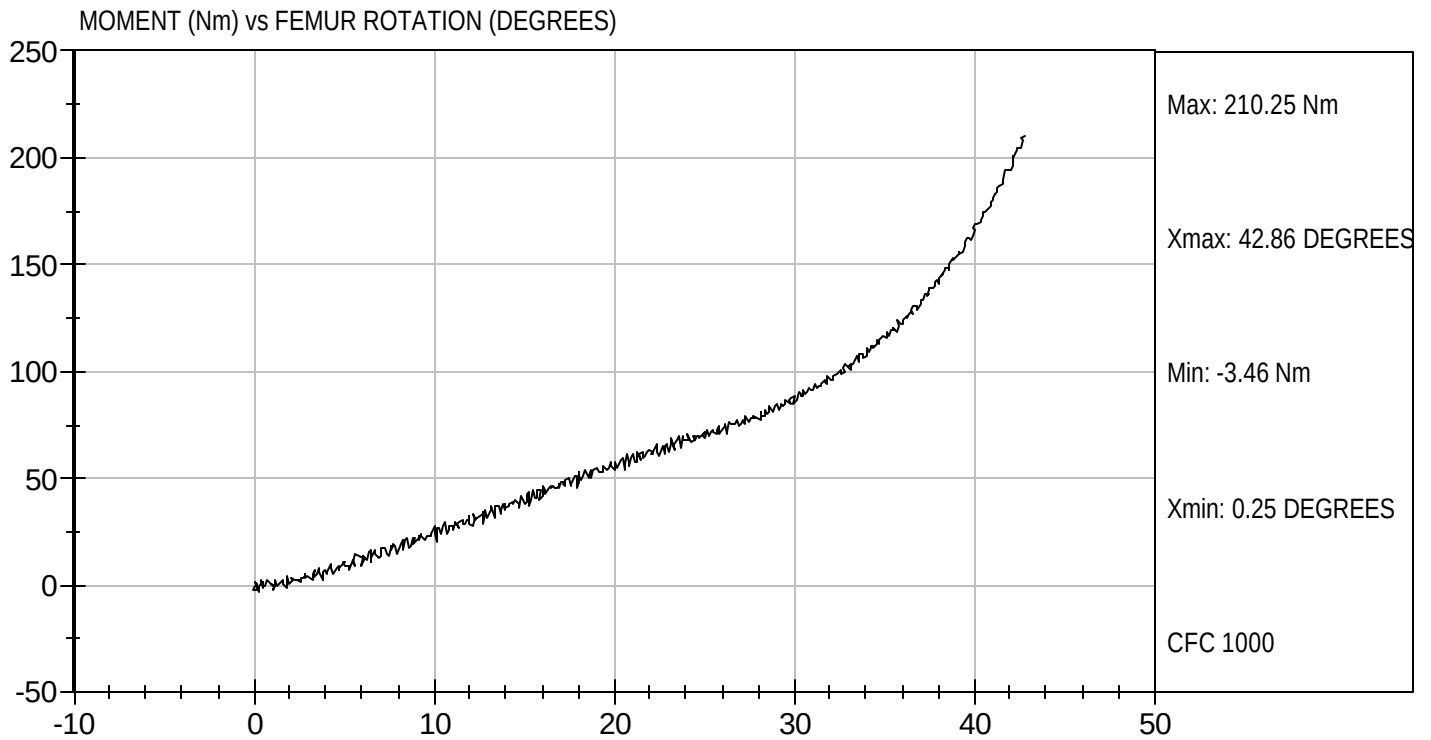
05/01/2006
 Test Date


 Approved By



Test Desc: Hip Femur Flexion
Componet ID: D061199

Test Date: 05/01/2006
Velocity: 0 ft/s, 0.00 m/s





Test Desc: Hip Femur Flexion
Componet ID: D061190

Test Date: 05/01/2006
Velocity: 0 ft/s, 0.00 m/s

