

REPORT NUMBER: NCAP-MGA-2008-008

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

**HONDA OF AMERICA MFG., INC.
2008 HONDA ACCORD 4-DOOR LX
NHTSA NUMBER: M85302**

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



Test Date: October 18, 2007

Final Report Date: December 3, 2007

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
RULEMAKING
OFFICE OF CRASHWORTHINESS STANDARDS
1200 NEW JERSEY AVENUE, SE, ROOM W43-410
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 2008 Honda Accord 4-Door LX at MGA Research Corporation on October 18, 2007. 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 621 mm located at the vehicle's 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 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>221</td> <td>258</td> </tr> <tr> <td>Max. Thorax Accel. (3ms Clip)</td> <td>G's</td> <td>60</td> <td>34</td> <td>35</td> </tr> <tr> <td>Left Femur Force</td> <td>Newton</td> <td>10009</td> <td>-1705</td> <td>-1270</td> </tr> <tr> <td>Right Femur Force</td> <td>Newton</td> <td>10009</td> <td>-1417</td> <td>-1901</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	221	258	Max. Thorax Accel. (3ms Clip)	G's	60	34	35	Left Femur Force	Newton	10009	-1705	-1270	Right Femur Force	Newton	10009	-1417	-1901
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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 2008 Honda Accord 4-Door LX at a velocity of 56.3 kph. The test was performed at MGA Research Corporation on October 18, 2007. Pre-and post-test photographs of the vehicle and dummies can be found in Appendix A.

One real-time camera and sixteen 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. 066) and right-front passenger (position 2) ATD (Serial No. 065) 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 621 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 knee bolster. 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	221	56.3	92.3	34	63.7	66.7	-26	-1705	-1417
Passenger	258	64.3	100.3	35	86.5	89.5	-23	-1270	-1901

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

TEST NOTES

None

SECTION 2
OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

DATA SHEET NO. 1
CRASH TEST SUMMARY

Test Vehicle: 2008 Honda Accord 4-Door LX
 Test Program: 35mph Frontal Impact

NHTSA No.: M85302
 Test Date: 10/18/2007

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)	None	None
Seat Back Failure	None	None
Glazing Damage	None	

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	775
Center	mm	780
Right Side	mm	815
Average	mm	790

BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Shoulder belt length as measured on ATD	mm	892	900
Lap belt length as measured on ATD	mm	632	645
Remainder of belt on reel	mm	1672	1800
Total belt length for continuous webbing systems	mm	3196	3345

DATA SHEET NO. 2
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2008 Honda Accord 4-Door LX
 Test Program: 35mph Frontal Impact

NHTSA No.: M85302
 Test Date: 10/18/2007

TEST VEHICLE INFORMATION

Manufacturer	Honda
Model	Accord
Body Style	4-Door LX
NHTSA No.	M85302
VIN	1HGCP263X8A009754
Color	Taffeta White
Delivery Date	10/03/2007
Odometer Reading (mile)	44
Dealer	Wilde Honda
Transmission	Manual
Final Drive	Front
Number of Cylinders	4
Engine Displacement (L)	2.4
Engine Placement	Lateral
Automatic Door Lock (ADL)	Yes
Owners Manual Details Instructions on Disabling ADLs	Yes
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	No
All Wheel Drive	No
Power Seats	No

DATA FROM CERTIFICATION LABEL

Manufactured By	Honda of America Mfg., Inc.
Date of Manufacture	09/07

GVWR (kg)	1950
GAWR Front (kg)	1060
GAWR Rear (kg)	915

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench		
Number of Occupants	2	3		5
Capacity Wt. (VCW) (kg)				385
Cargo Wt. (RCLW) (kg)				45

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

Test Vehicle: 2008 Honda Accord 4-Door LX
 Test Program: 35mph Frontal Impact

NHTSA No.: M85302
 Test Date: 10/18/2007

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	449.1	299.4		498.1	356.1	
Right	kg	440.9	293.9		480.8	345.2	
Ratio	%	60.0	40.0		58.3	41.7	
Totals	kg	890.0	593.3	1483.3	978.9	701.3	1680.2

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1483.3
Weight of 2 P572E ATDs	kg	156.0
Rated Cargo/Luggage Weight (RCLW)	kg	45
Calculated Vehicle Target Weight (TVTW)	kg	1684.3

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	703	697	703	707	1119
As Tested	mm	690	687	682	681	1168
Post Test	mm	715	742	684	688	

Vehicle Wheelbase (mm): 2798

Weight of Ballast secured in cargo area (kg): 0

Vehicle Components Removed: Rear door windows, trunk lid and mounting arms, spare tire, jack, trunk carpet, exhaust, tail lights, rear bumper and cover, rear headrests, and mirrors.

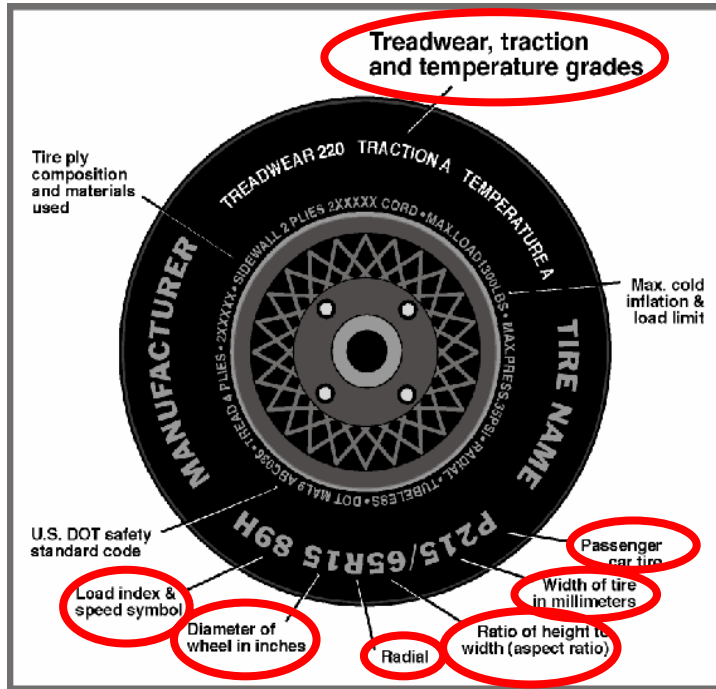
Ballast weight does not include instrumentation and data acquisition system.

DATA SHEET NO. 3

TEST VEHICLE TIRE INFORMATION

Test Vehicle: 2008 Honda Accord 4-Door LX
 Test Program: 35mph Frontal Impact

NHTSA No.: M85302
 Test Date: 10/18/2007



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	210	210
Recommended Tire Size	P215/60R16	P215/60R16
Tire Size on Vehicle	P215/60R16	P215/60R16
Tire Manufacturer	Dunlop	Dunlop
Tire Name	SP Sport 2000	SP Sport 2000
Tire Type	Passenger	Passenger
Tire Width (mm)	215	215
Ratio of Height to Width (aspect ratio)	60	60
Radial	R	R
Wheel Diameter	16	16
Load Index & Speed Symbol	94H	94H
Treadwear	340	340
Traction Grade	A	A
Temperature Grade	A	A

DATA SHEET NO. 4
TEST VEHICLE INFORMATION

Test Vehicle: 2008 Honda Accord 4-Door LX
Test Program: 35mph Frontal Impact

NHTSA No.: M85302
Test Date: 10/18/2007

NORMAL DESIGN RIDING POSITION

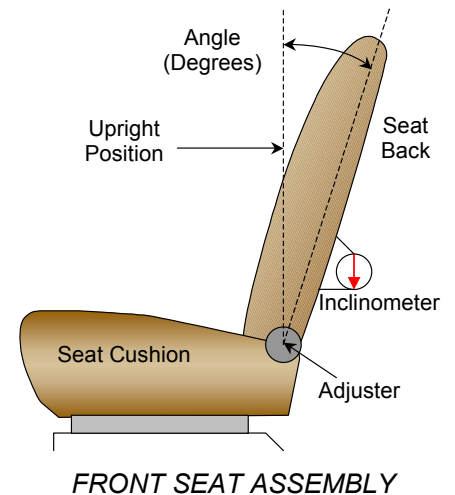
The driver and passenger seat back is positioned to the manufacturer's designated angle. The procedure is as follows: For both the driver and front passenger set in the 4th detent with the forward-most detent defined as 0 (39 total detents).

Driver seat back angle: 4th detent (1st as 0)

Passenger seat back angle: 4th detent (1st as 0)

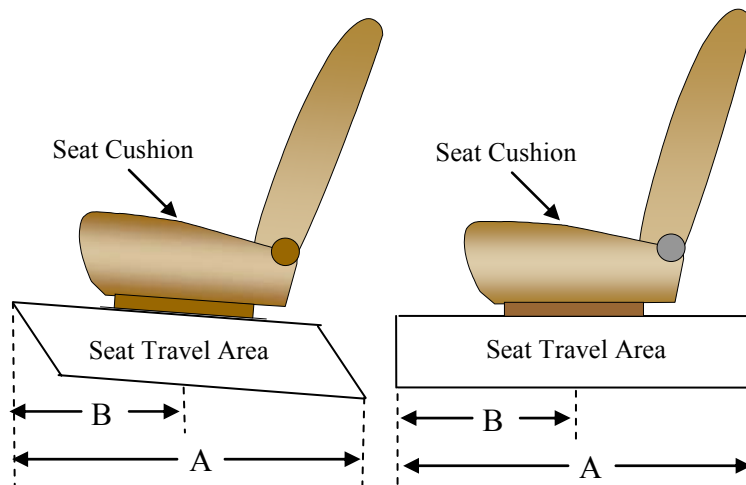
SEAT FORE/AFT POSITIONING

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	25 detents	11 th detent (1 st as 0)
Passenger Seat	25 detents	12 th detent (1 st as 0)



ADJUSTABLE D-RING POSITION

The driver and passenger D-rings were set in the uppermost position.



DATA SHEET NO. 4...(CONTINUED)

TEST VEHICLE INFORMATION

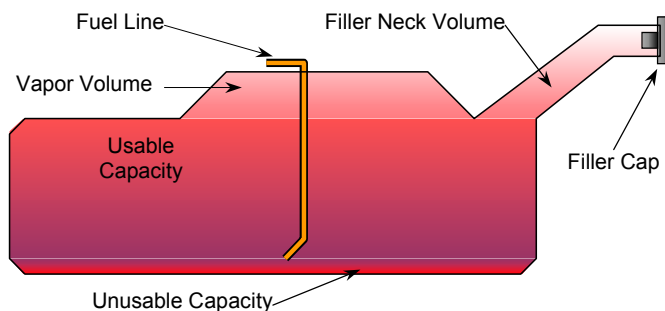
Test Vehicle: 2008 Honda Accord 4-Door LX
Test Program: 35mph Frontal Impact

NHTSA No.: M85302
Test Date: 10/18/2007

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	70.0
Usable Capacity of "Optional" Tank	
92-94% of Usable Capacity	64.4 – 65.8
Actual Amount of Solvent used	58.7
1/3 of Usable Capacity	23.3

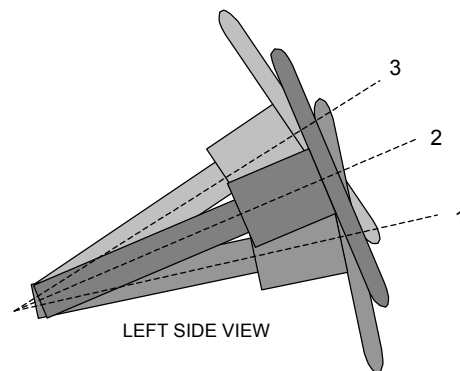
The test vehicle is equipped with an electric fuel pump. After the ignition key is turned from LOCK (0) to ON (II) position, the pump will be filled up for two seconds and then the pressure is maintained.



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	0	64.5
Geometric center position No. 2	17	68.0
Uppermost position No. 3	35	71.5

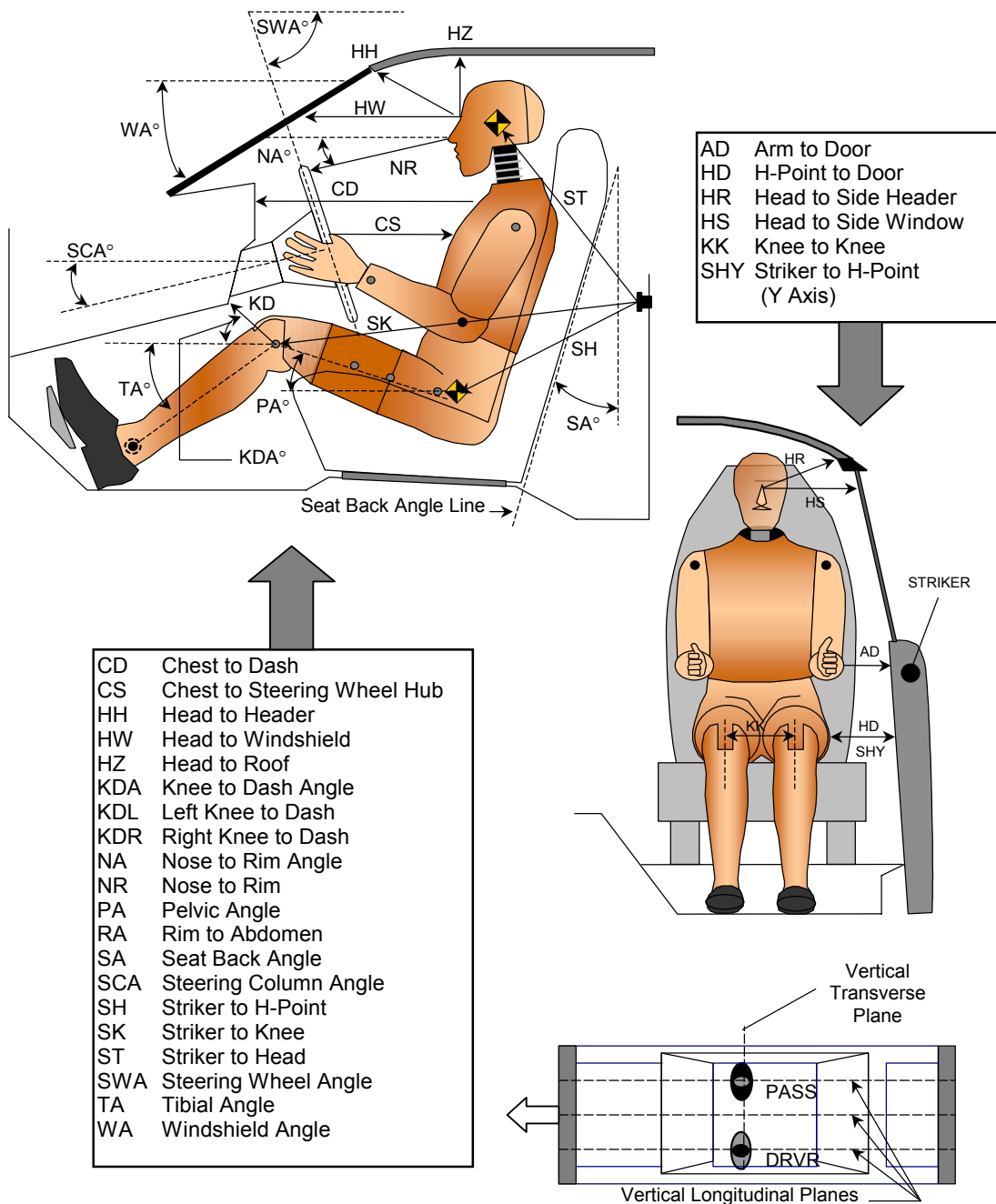
DATA SHEET NO. 5

DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2008 Honda Accord 4-Door LX
 Test Program: 35mph Frontal Impact

NHTSA No.: M85302
 Test Date: 10/18/2007

DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS



DATA SHEET NO. 5... (CONTINUED)

DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2008 Honda Accord 4-Door LX
 Test Program: 35mph Frontal Impact

NHTSA No.: M85302
 Test Date: 10/18/2007

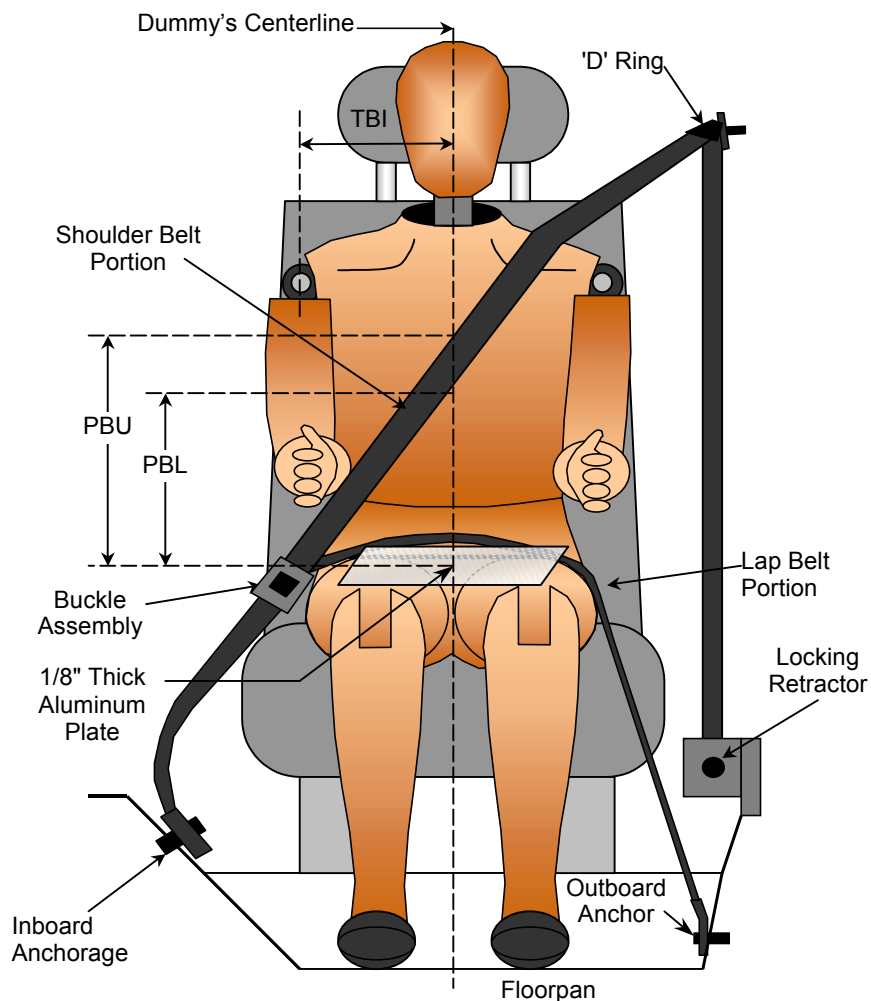
TEST DUMMY POSITION MEASUREMENTS

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA	Windshield Angle		29.6		
SWA	Steering Wheel Angle		68.0		
SCA	Steering Column Angle		22.1		
SA	Seat Back Angle (on headrest post)		9.2		9.9
HZ	Head to Roof (Z)	209	90	188	90
HH	Head to Header	342	22.7	341	24.2
HW	Head to Windshield	615	0	623	0
HR	Head to Side Header (Y)	208		203	
NR	Nose to Rim	389	7.3		
CD	Chest to Dash	552		502	
CS	Chest to Steering Hub	319	0.9		
RA	Rim to Abdomen	196	0		
KDL	Left Knee to Dash	153	30.3	127	
KDR	Right Knee to Dash	122		141	44.0
PA	Pelvic Angle		23.1		22.8
TA	Tibia Angle		43.1		48.0
KK	Knee to Knee (Y)	339		271	
SK	Striker to Knee	592	93.3	607	95.4
ST	Striker to Head	484	9.9	491	11.9
SH	Striker to H-Point	268	125.5	250	125.0
SHY	Striker to H-Point (Y)	274		266	
HS	Head to Side Window	324		317	
HD	H-Point to Door (Y)	167		161	
AD	Arm to Door (Y)	149		151	
AA	Ankle to Ankle	327		215	

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

Test Vehicle: 2008 Honda Accord 4-Door LX
 Test Program: 35mph Frontal Impact

NHTSA No.: M85302
 Test Date: 10/18/2007



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU - Top surface of reference to belt upper edge	mm	346	350
PBL - To surface of reference to belt lower edge	mm	266	265

DATA SHEET NO. 7
VEHICLE ACCELEROMETER LOCATIONS

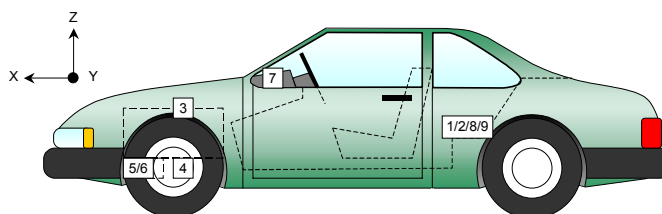
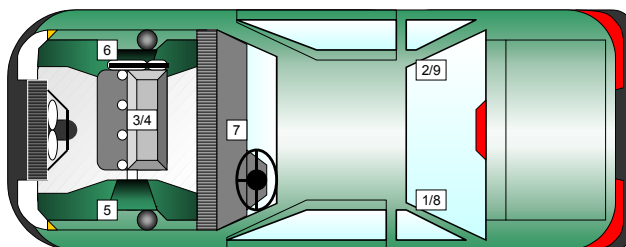
Test Vehicle: 2008 Honda Accord 4-Door LX
 Test Program: 35mph Frontal Impact

NHTSA No.: M85302
 Test Date: 10/18/2007

VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear X-Member X	1960	-377	314
2	Right Rear X-Member X	1960	380	318
3	Engine Top X	4082	0	826
4	Engine Bottom X	4206	30	211
5	Left Brake Caliper X	4071	-707	237
6	Right Brake Caliper X	4072	707	237
7	Instrument Panel X			
8	Left Rear X-Member Z	1960	-377	314
9	Right Rear X-Member Z	1960	380	318

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: 2008 Honda Accord 4-Door LX
 Test Program: 35mph Frontal Impact

NHTSA No.: M85302
 Test Date: 10/18/2007

Windshield Mounting Details:

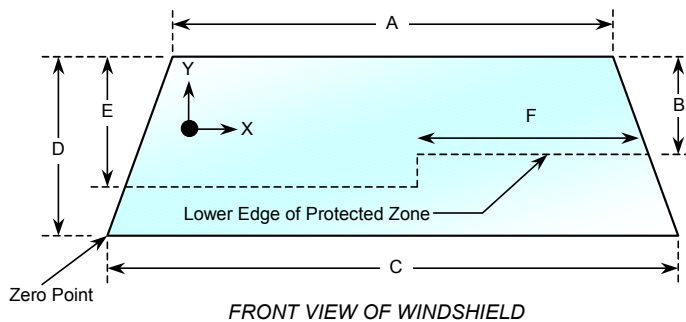
Windshield glass is secured to the vehicle frame with a rubber trim and glue.

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	2173	2173	100
Right Side	2173	2173	100
Total	4346	4346	100



Item	Units	Value
A	mm	1200
B	mm	488
C	mm	1526
D	mm	810
E	mm	560
F	mm	515

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: 2008 Honda Accord 4-Door LX
 Test Program: 35mph Frontal Impact

NHTSA No.: M85302
 Test Date: 10/18/2007

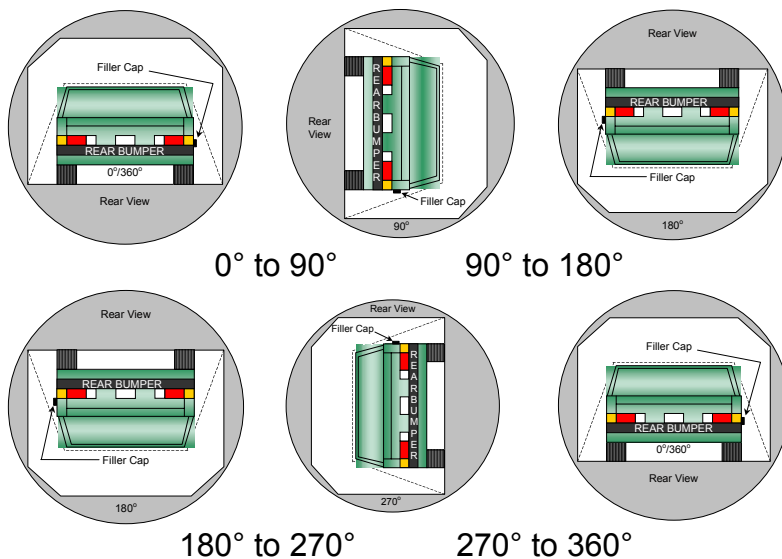
FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21° C Test Time: 10:31 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°	120	300	0
90° to 180°	118	300	0
180° to 270°	117	300	0
270° to 360°	121	300	0

DATA SHEET NO. 10
VEHICLE MEASUREMENTS

Test Vehicle: 2008 Honda Accord 4-Door LX
Test Program: 35mph Frontal Impact

NHTSA No.: M85302
Test Date: 10/18/2007

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total length of vehicle at centerline	mm	4898	4277	621
2	RSOV to front of engine	mm	4378	4128	250
3	RSOV to firewall centerline	mm	3787	3818	-31
4	RSOV to leading edge of right door	mm	3398	3404	-6
5	RSOV to leading edge of left door	mm	3392	3394	-2
6	RSOV to lower leading edge of right door	mm	3402	3395	7
7	RSOV to lower leading edge of left door	mm	3401	3397	4
8	RSOV to upper leading edge of right door	mm	2252	2262	-10
9	RSOV to upper leading edge of left door	mm	2250	2249	1
10	RSOV to lower trailing edge of right door	mm	2280	2283	-3
11	RSOV to lower trailing edge of left door	mm	2280	2282	-2
12	RSOV to bottom of right 'A' pillar	mm	3388	3388	0
13	RSOV to bottom of left 'A' pillar	mm	3398	3392	6
14	RSOV to firewall on right side	mm	3768	3757	11
15	RSOV to firewall on left side	mm	3760	3756	4
16	RSOV to steering column	mm	2925	2942	-17
17	Center of steering column to left 'A' pillar	mm	350	341	9
18	Center of steering column to headlining	mm	412	422	-10
19	RSOV to right side of front bumper	mm	4772	4284	488
20	RSOV to left side of front bumper	mm	4773	4284	489
21	Length of engine block	mm	490	490	0
RD	RSOV to right side of dash panel	mm	3030	3020	10
CD	RSOV to center of dash panel	mm	3128	3131	-3
LD	RSOV to left side of dash panel	mm	3025	3012	13

DATA SHEET NO. 10... (continued)

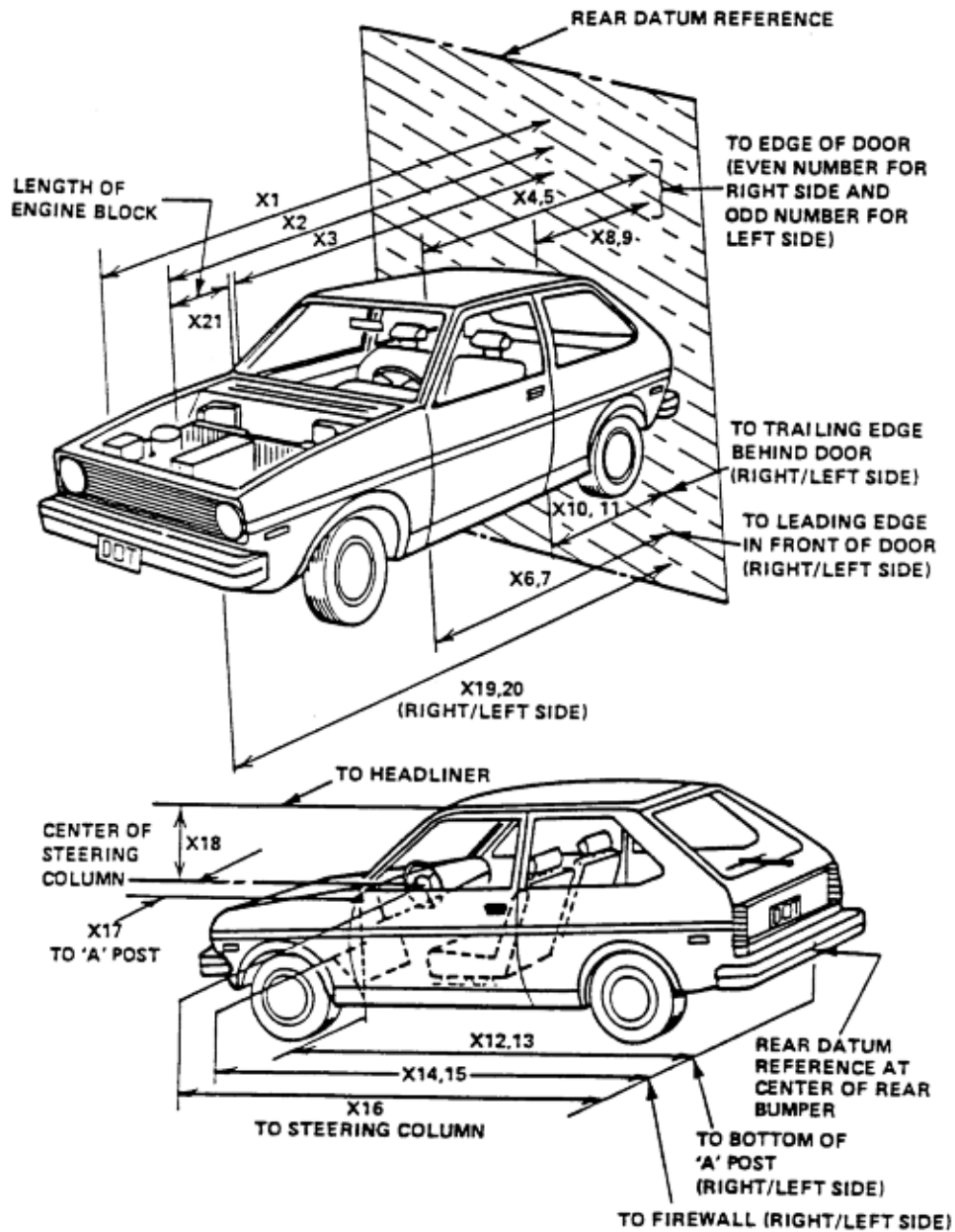
VEHICLE MEASUREMENTS

Test Vehicle: 2008 Honda Accord 4-Door LX

NHTSA No.: M85302

Test Program: 35mph Frontal Impact

Test Date: 10/18/2007



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

Test Vehicle: 2008 Honda Accord 4-Door LX
Test Program: 35mph Frontal Impact

NHTSA No.: M85302
Test Date: 10/18/2007

Target Vehicle Structural Measurement

	Elements	Pre-Test (mm)
1	Total Length	4898
2	Total Width	1846
3	Bumper Top Height	530
4	Bumper Bottom Height	430
5	Longitudinal Member Top Height	540
6	Distance between Longitudinal Members	940
7	Longitudinal Member Width	100
8	Engine Top Height	828
9	Engine Bottom Height	175
10	Engine and gearbox width	850
11	Front bumper-engine distance	505
12	Front shock absorber fixing height	834
13	Bonnet leading edge height	740
14	Front shock absorber fixing width	980
15	Front bumper – front axle distance	996
16	Front axle – a pillar distance	440
17	A-pillar – B-pillar distance	1186
18	B-Pillar – rear axle distance	1170
19	B-pillar – C-pillar distance	742
20	Roof sill bottom height	1328
21	Roof sill top height	1424
22	Floor sill bottom height	200
23	Floor sill top height	325

DATA SHEET NO. 11
CAMERA LOCATIONS

Test Vehicle: 2008 Honda Accord 4-Door LX
Test Program: 35mph Frontal Impact

NHTSA No.: M85302
Test Date: 10/18/2007

No.	Camera View	Location (mm) *			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Side View				13	24
2	Left Front View	1300	-4650	1190	24	1000
3	Steering Column Top	1100	-5210	1210	25	1000
4	Steering Column Bottom	1110	-5220	1200	25	1000
5	Driver Close-up	1380	-5200	1280	35	1000
6	Driver Angle	6850	-5120	2230	50	1000
7	On board Driver Side				8	1000
8	On board Passenger Side				8	1000
9	Right Overall	1650	6800	1280	24	1000
10	Right Passenger Half	1310	4700	1230	24	1000
11	Right Close-up	1400	5300	1320	35	1000
12	Right Angle	6800	5280	2200	50	1000
13	Windshield	-285	0	2860	12.5	1000
14	Top Driver	-135	-470	2180	24	1000
15	Top Passenger	-110	420	2180	24	1000
16	Pit Front	1210	0	-3150	24	1000
17	Pit Rear	3220	0	-3150	24	1000

***COORDINATES:**

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

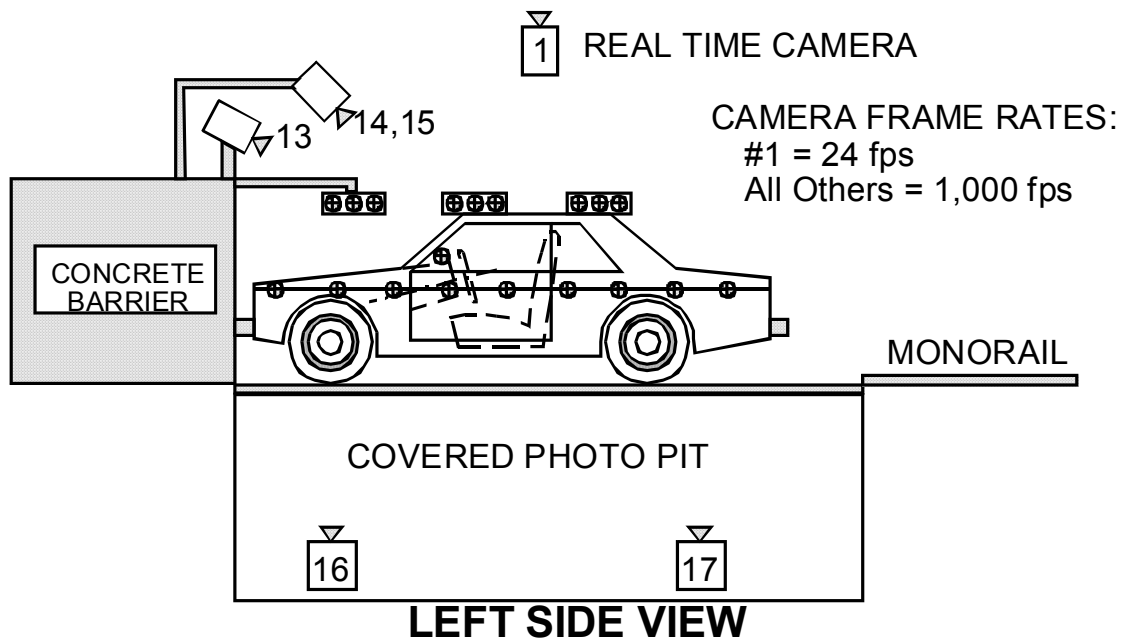
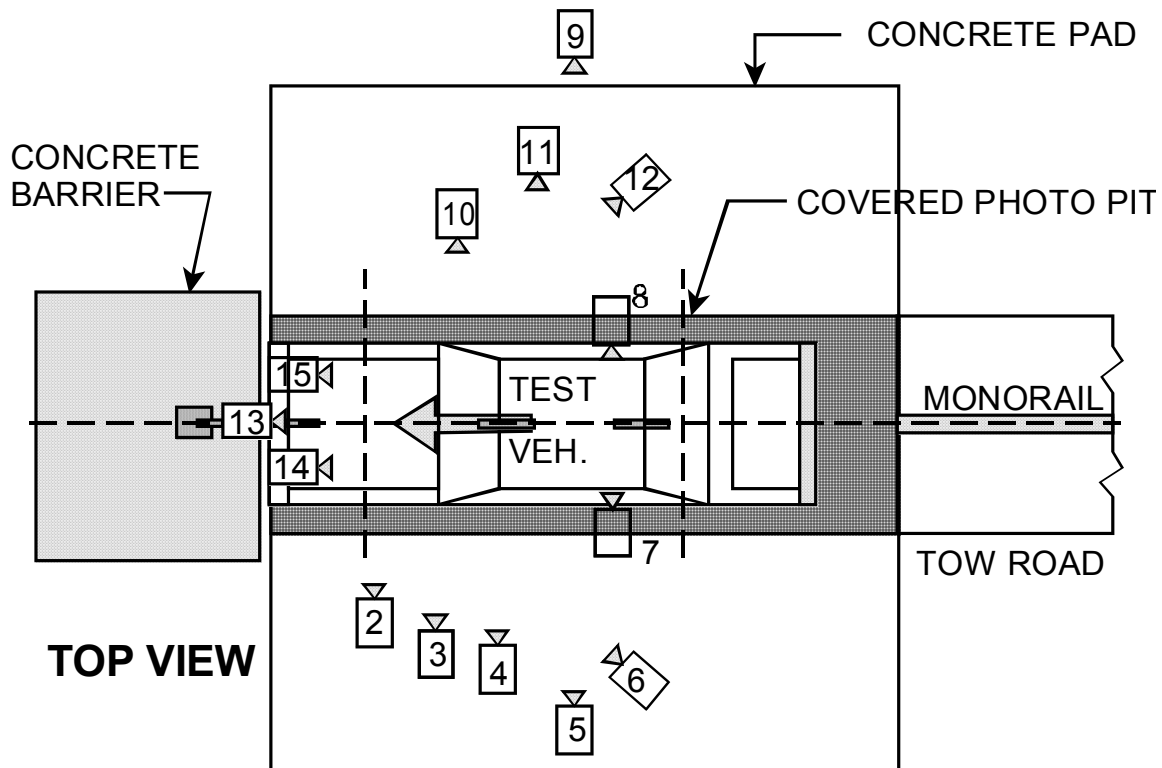
DATA SHEET NO. 11... (continued)

CAMERA LOCATIONS

Test Vehicle: 2008 Honda Accord 4-Door LX
Test Program: 35mph Frontal Impact

NHTSA No.: M85302
Test Date: 10/18/2007

CAMERA POSITIONS FOR FRONTAL IMPACTS

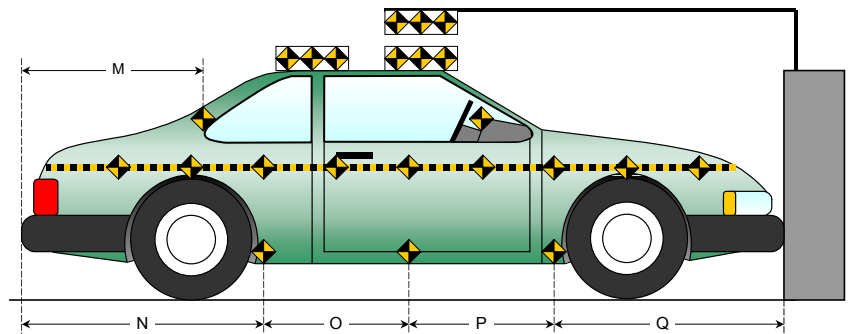
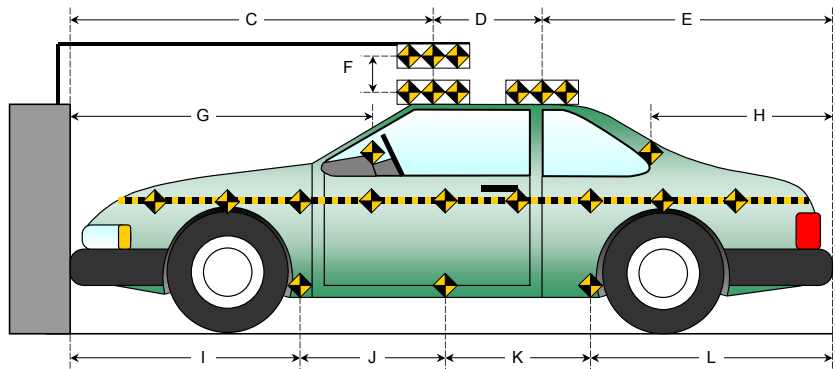
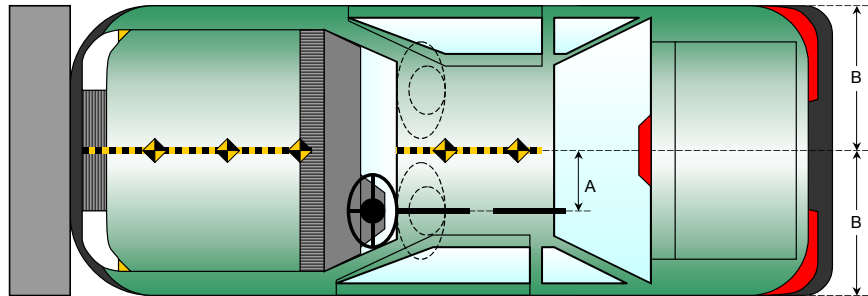


DATA SHEET NO. 12 **PHOTOGRAPHIC REFERENCE TARGET LOCATIONS**

Test Vehicle: 2008 Honda Accord 4-Door LX
 Test Program: 35mph Frontal Impact

NHTSA No.: M85302
 Test Date: 10/18/2007

Item	Value
A	385
B	923
C	2446
D	790
E	1662
F	
G	
H	1046
I	1434
J	964
K	964
L	1536
M	1028
N	1537
O	962
P	962
Q	1437



DATA SHEET NO. 13
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2008 Honda Accord 4-Door LX
 Test Program: 35mph Frontal Impact

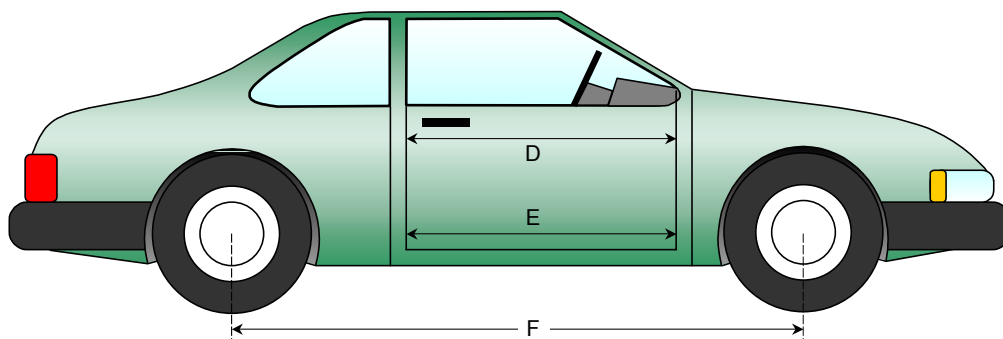
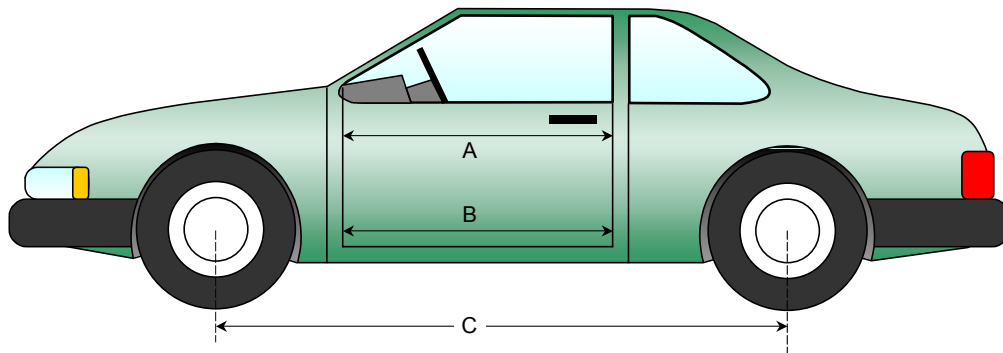
NHTSA No.: M85302
 Test Date: 10/18/2007

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	1064	1059	5
B	Left Side Lower	mm	977	977	0
D	Right Side Upper	mm	1064	1057	7
E	Right Side Lower	mm	977	977	0

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2798	2684	114
F	Right Side Wheelbase	mm	2798	2695	103



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

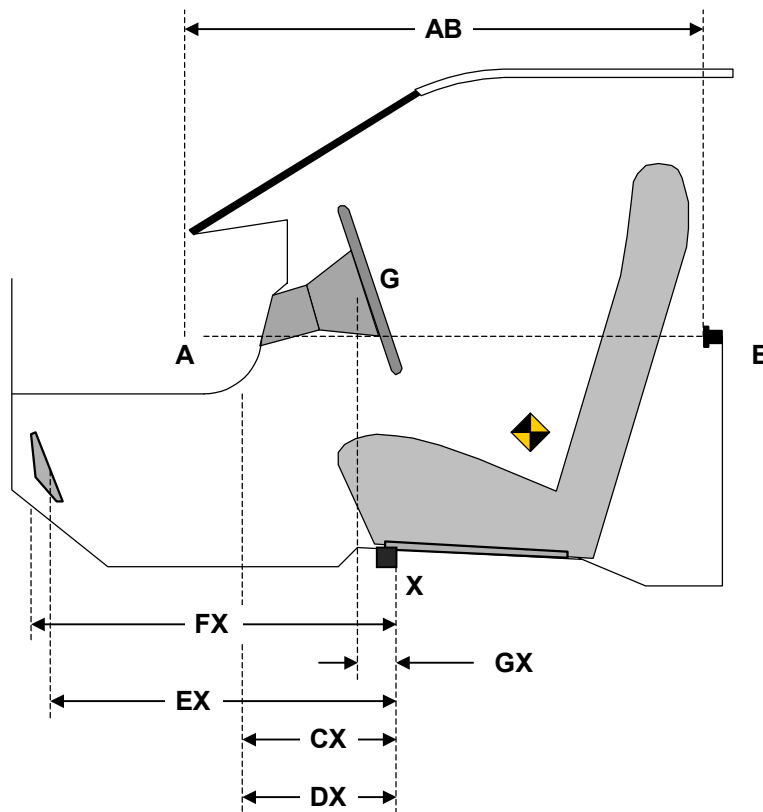
Test Vehicle: 2008 Honda Accord 4-Door LX
 Test Program: 35mph Frontal Impact

NHTSA No.: M85302
 Test Date: 10/18/2007

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside window jam)	mm	810	810	0
CX	Left Knee Bolster to X	mm	265	275	-10
DX	Right Knee Bolster to X	mm	267	276	-9
EX	Brake Pedal to X	mm	580	564	16
FX	Foot Rest to X	mm	588	588	0
GX	Center of Steering Column Wheel Hub to X	mm	85	127	-42

X = Front of Seat Track (stationary)

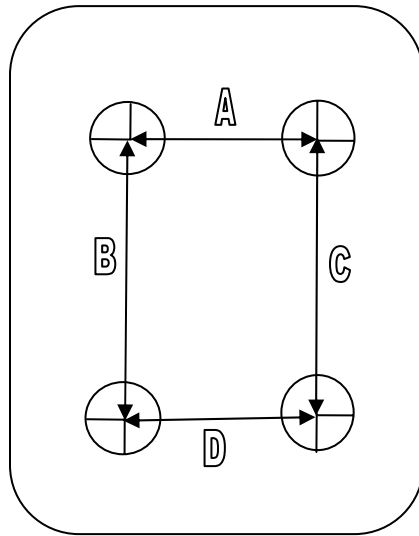


DRIVER COMPARTMENT

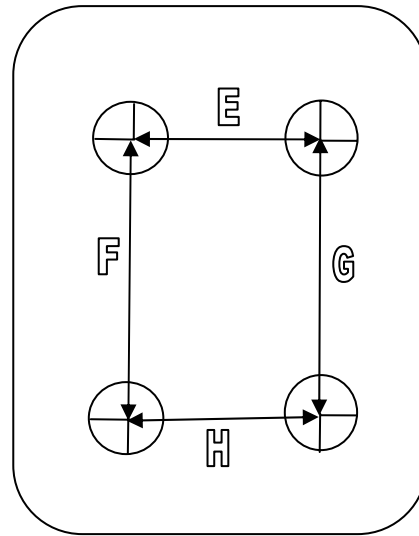
DATA SHEET NO. 13... (continued)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2008 Honda Accord 4-Door LX
Test Program: 35mph Frontal Impact

NHTSA No.: M85302
Test Date: 10/18/2007



Driver



Passenger

UNDERBODY FLOORBOARD DEFORMATION

Measurement	Pre-Test	Post-Test	Difference
A	268	267	1
B	282	282	0
C	275	275	0
D	282	281	1
E	286	286	0
F	263	263	0
G	258	258	0
H	296	296	0

DATA SHEET NO. 14

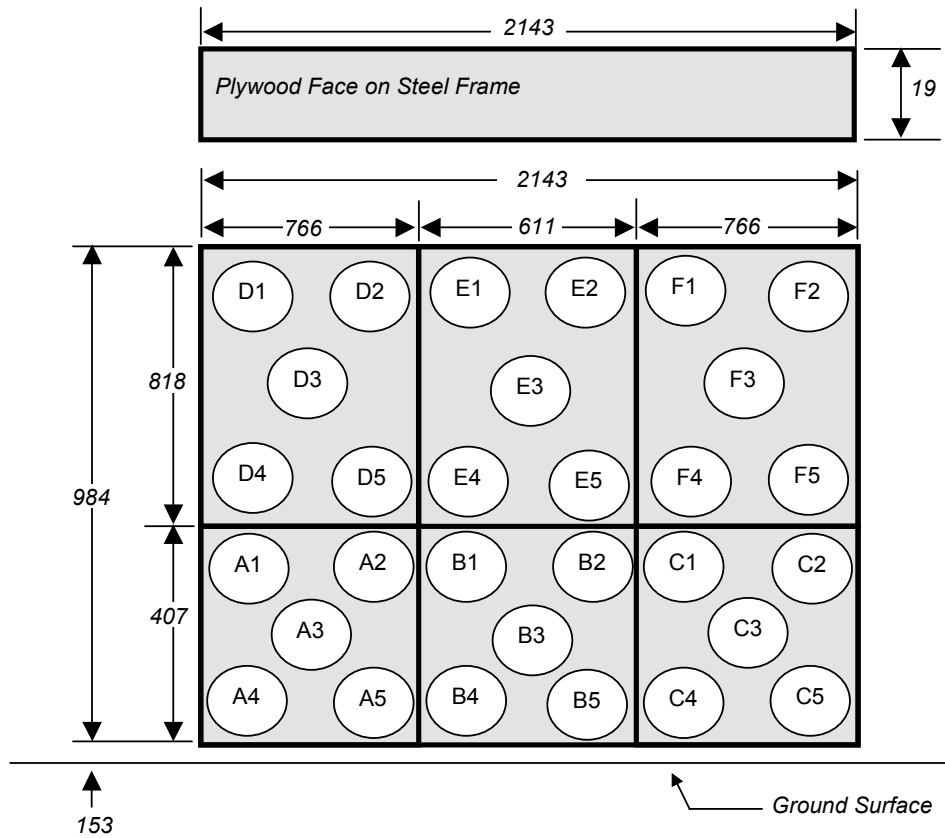
LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2008 Honda Accord 4-Door LX
 Test Program: 35mph Frontal Impact

NHTSA No.: M85302
 Test Date: 10/18/2007

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: 2008 Honda Accord 4-Door LX
 Test Program: 35mph Frontal Impact

NHTSA No.: M85302
 Test Date: 10/18/2007

VEHICLE INFORMATION

VIN: 1HGCP263X8A009754 Wheelbase (mm) : 2798
 Vehicle Size Category: Sedan Test Weight (kg) : 1680.2

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): 56.3
 Velocity Change (km/h): 65.8 Time of Separation (msec): 115

CRUSH PROFILE

Collision Deformation Classification: Frontal Midpoint of Damage: Centerline
 Damage Region Length (mm): 1158 Impact Mode: Frontal

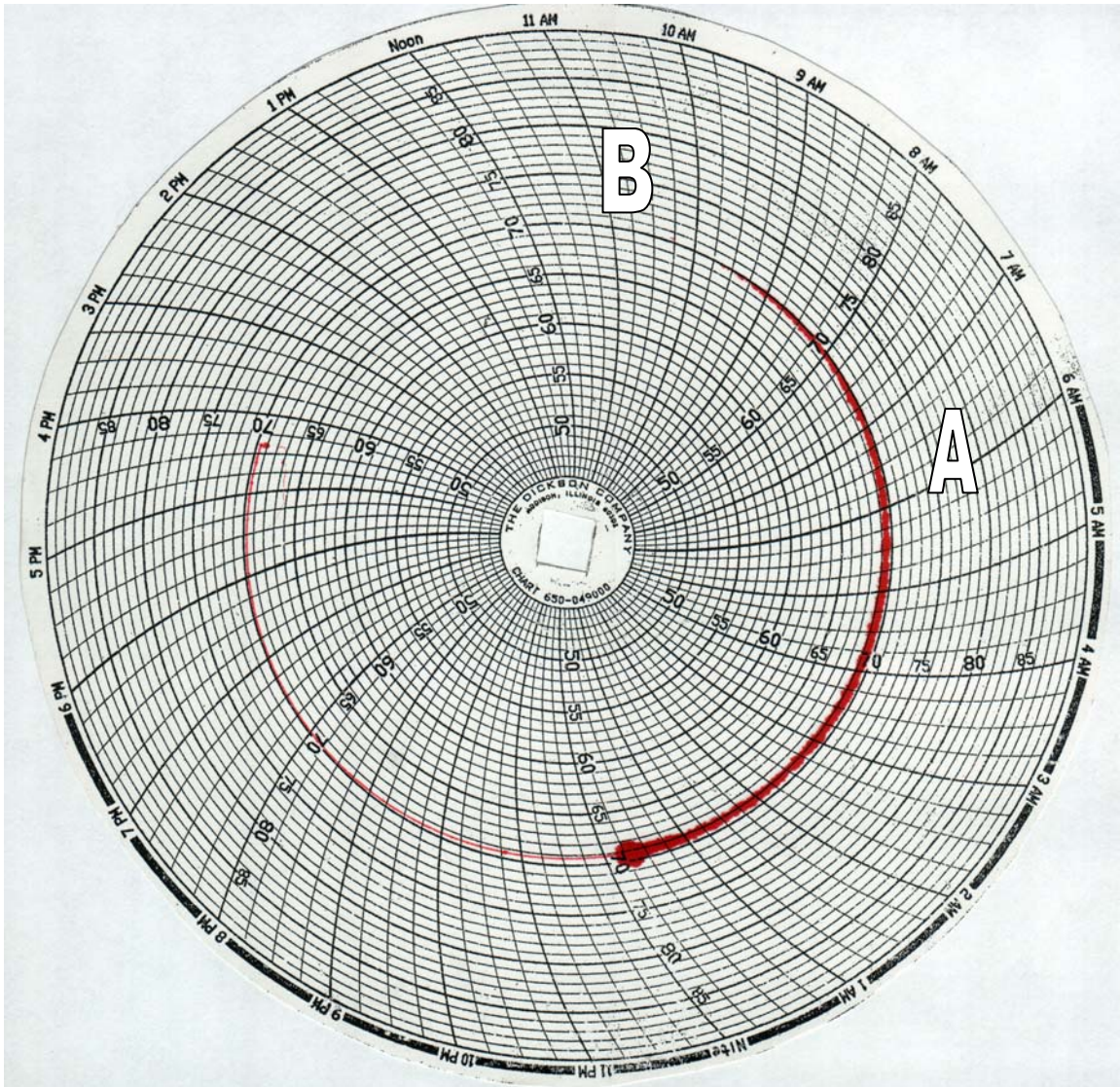
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	Mm	4773	4284	489
C2	Crush zone 2 at left side	mm	4846	4278	568
C3	Crush zone 3 at left side	mm	4885	4294	591
C4	Crush zone 4 at right side	mm	4885	4272	613
C5	Crush zone 5 at right side	mm	4846	4252	594
C6	Crush zone 6 at right side	mm	4772	4284	488
L	C1 TO C6	mm	1158	1135	23

DATA SHEET NO. 16

DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2008 Honda Accord 4-Door LX
Test Program: 35mph Frontal Impact

NHTSA No.: M85302
Test Date: 10/18/2007



A = Dummies installed in vehicle at 6:00 am

B = Test conducted at 10:31 am

APPENDIX A
PHOTOGRAPHS

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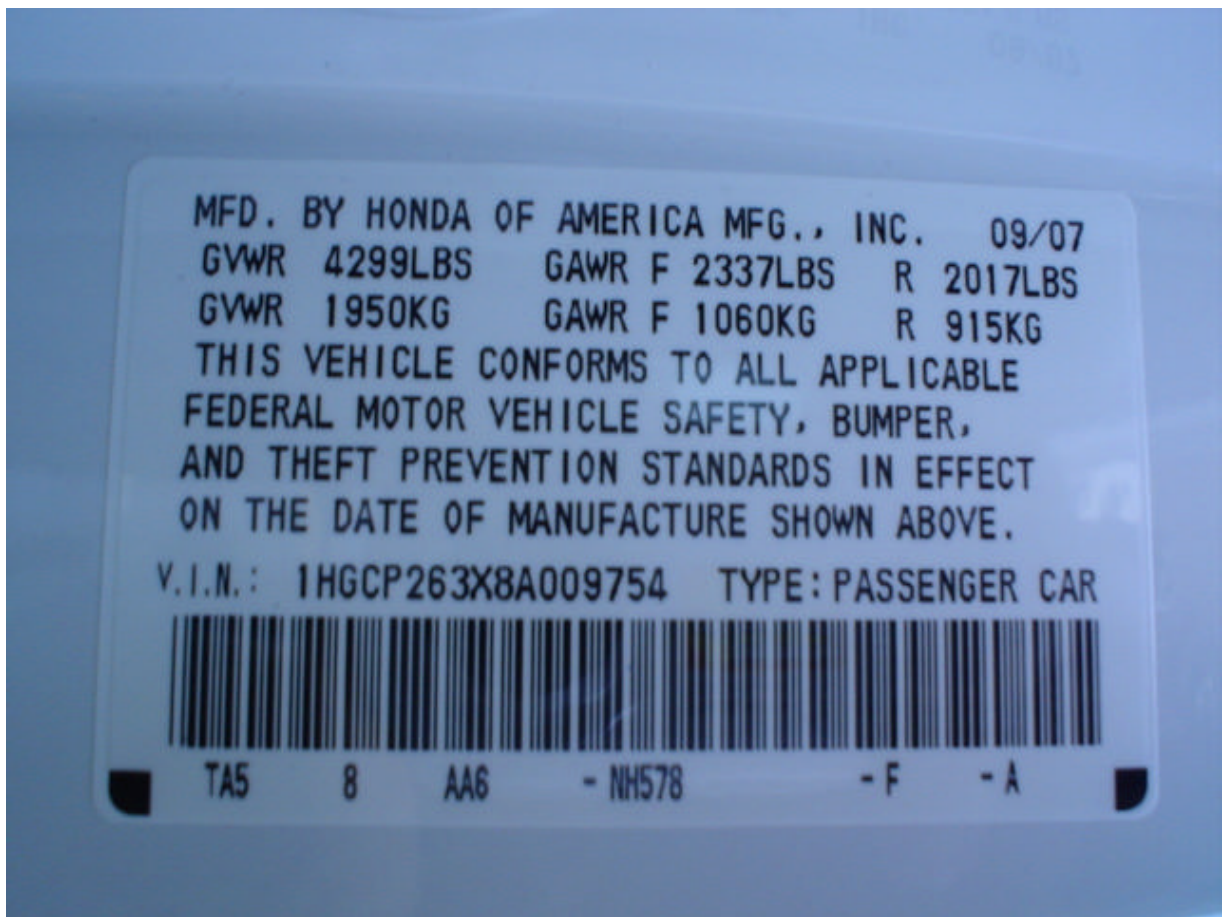
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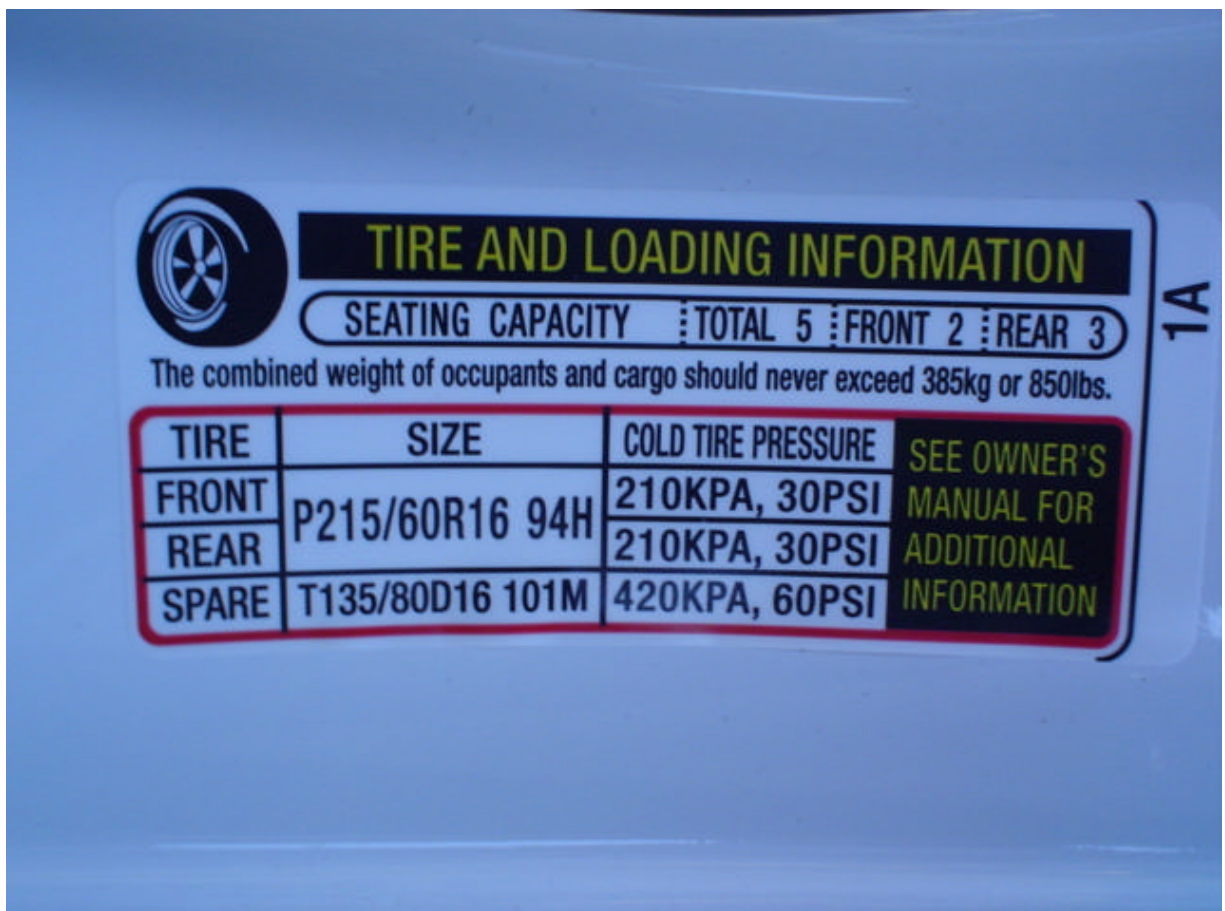
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Load Cell Location



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



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 3/4 View of Doors



Post-Test Right Side 3/4 View of Doors After Impact



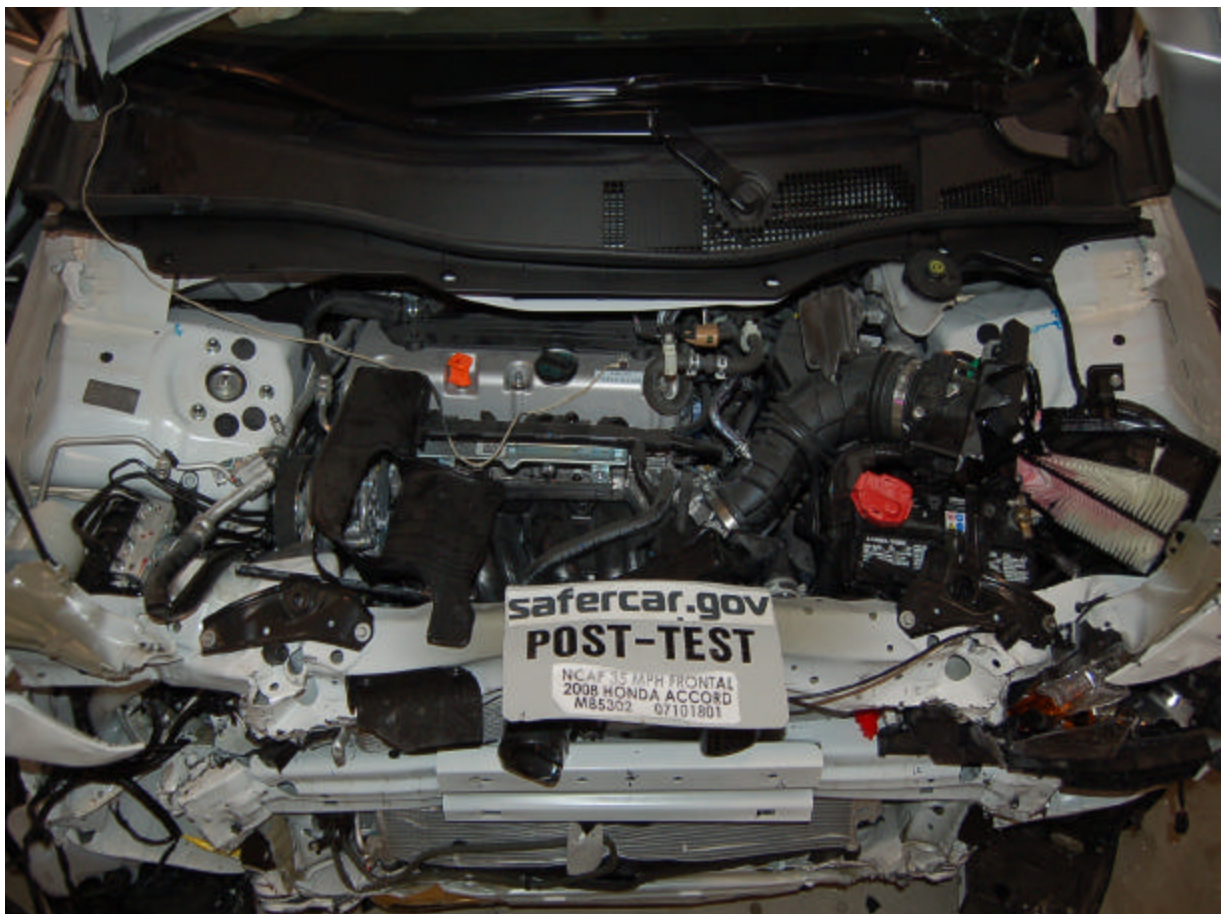
Pre-Test Windshield View



Post-Test Windshield View



Pre-Test Engine Compartment View



Post-Test Engine Compartment View



Pre-Test Fuel Cap View



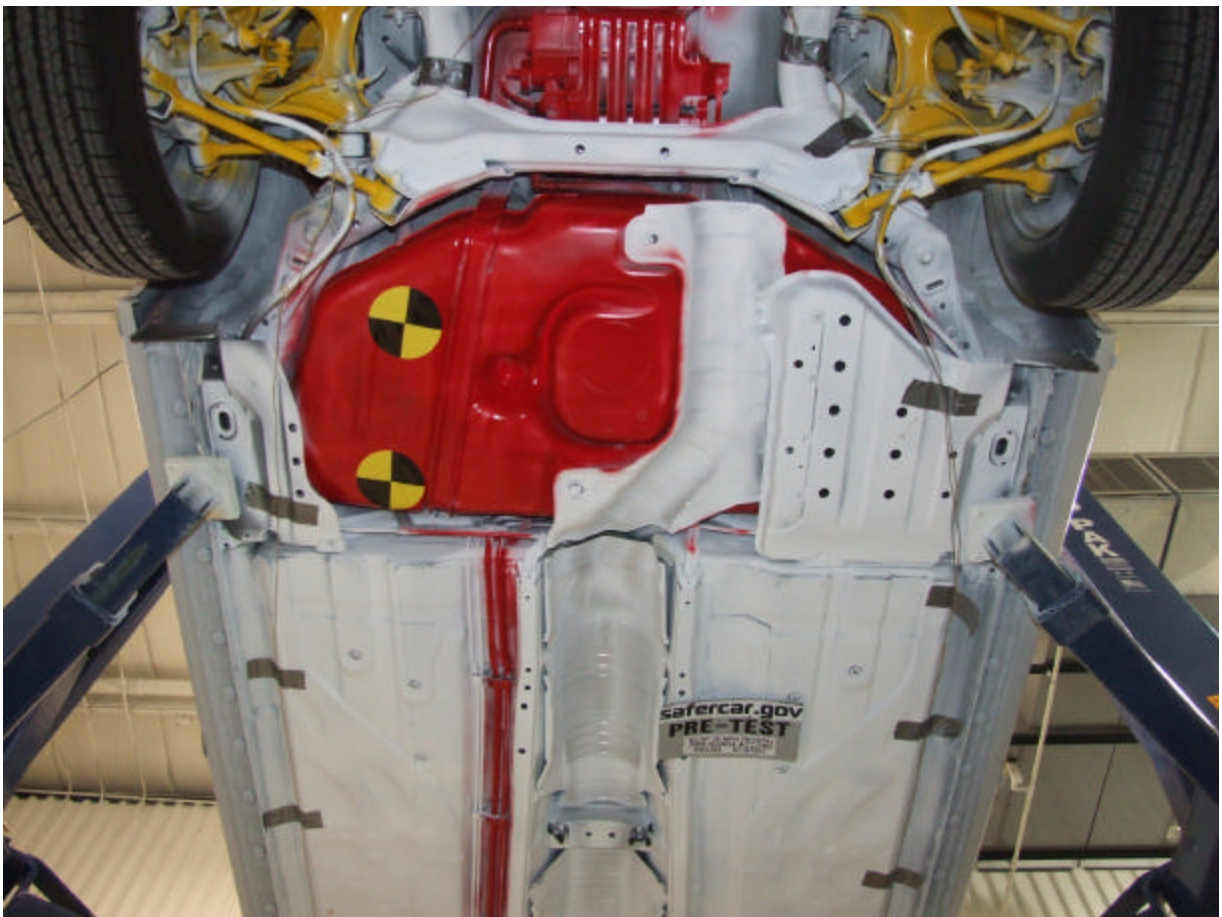
Post-Test Fuel Cap View



Pre-Test Front Underbody View



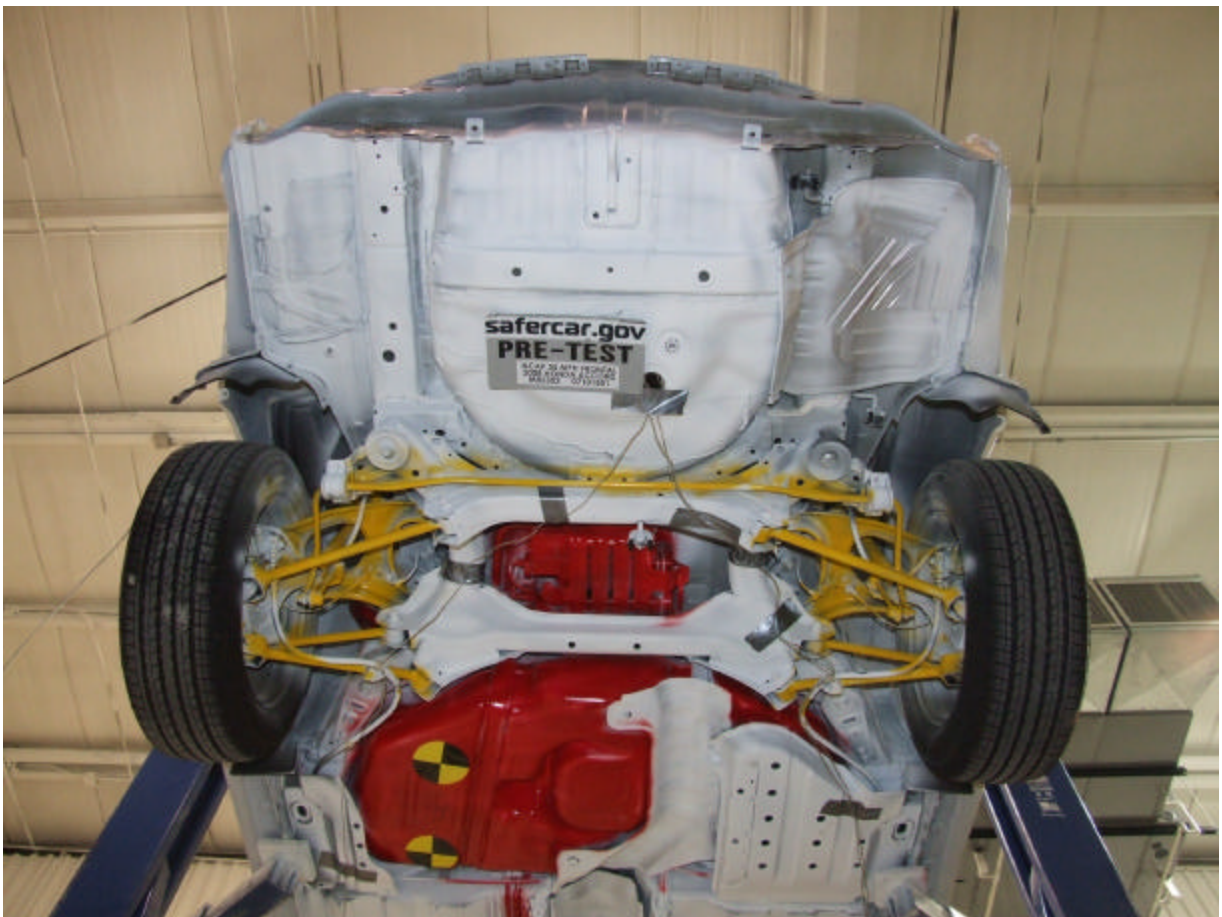
Post-Test Front Underbody View



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 (headrest)



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



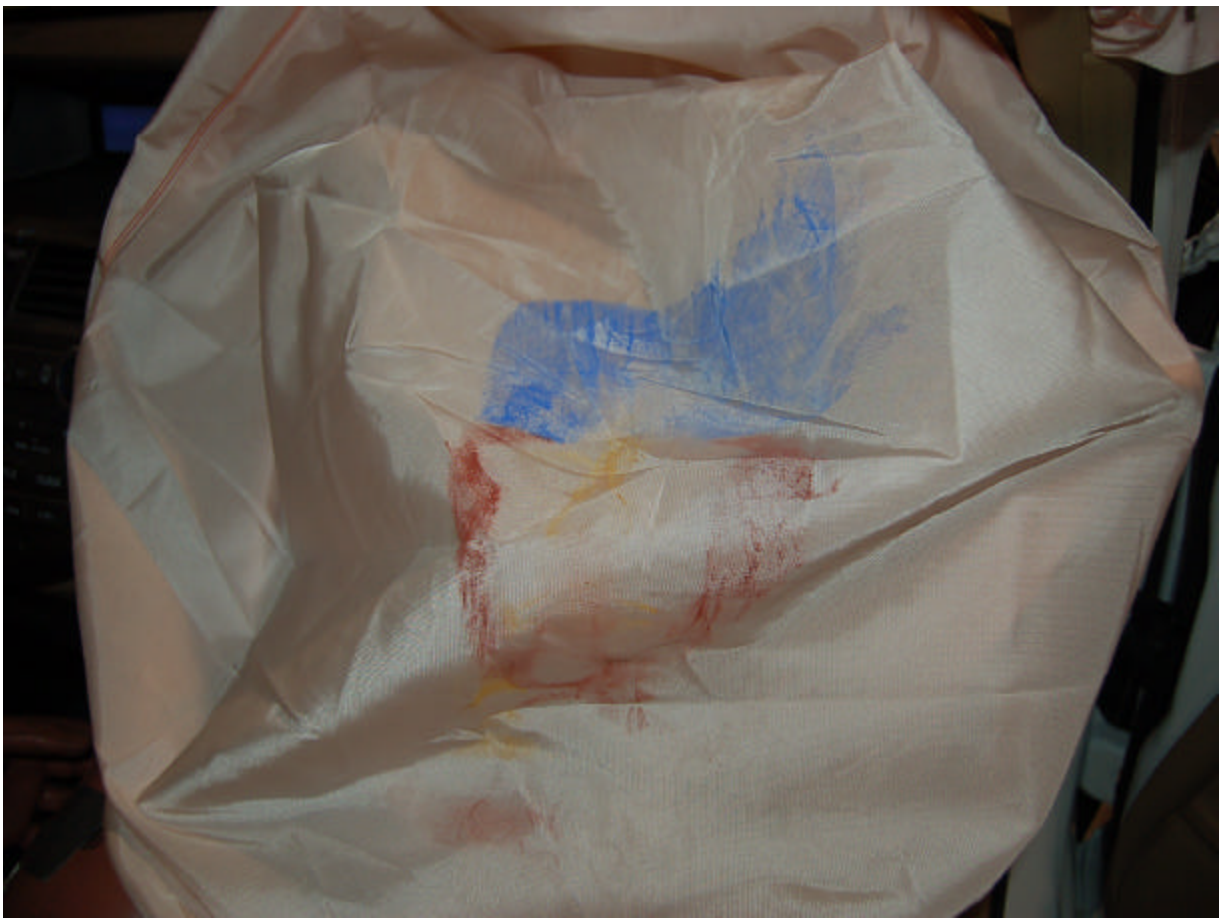
Post-Test Passenger Side Floor Pan



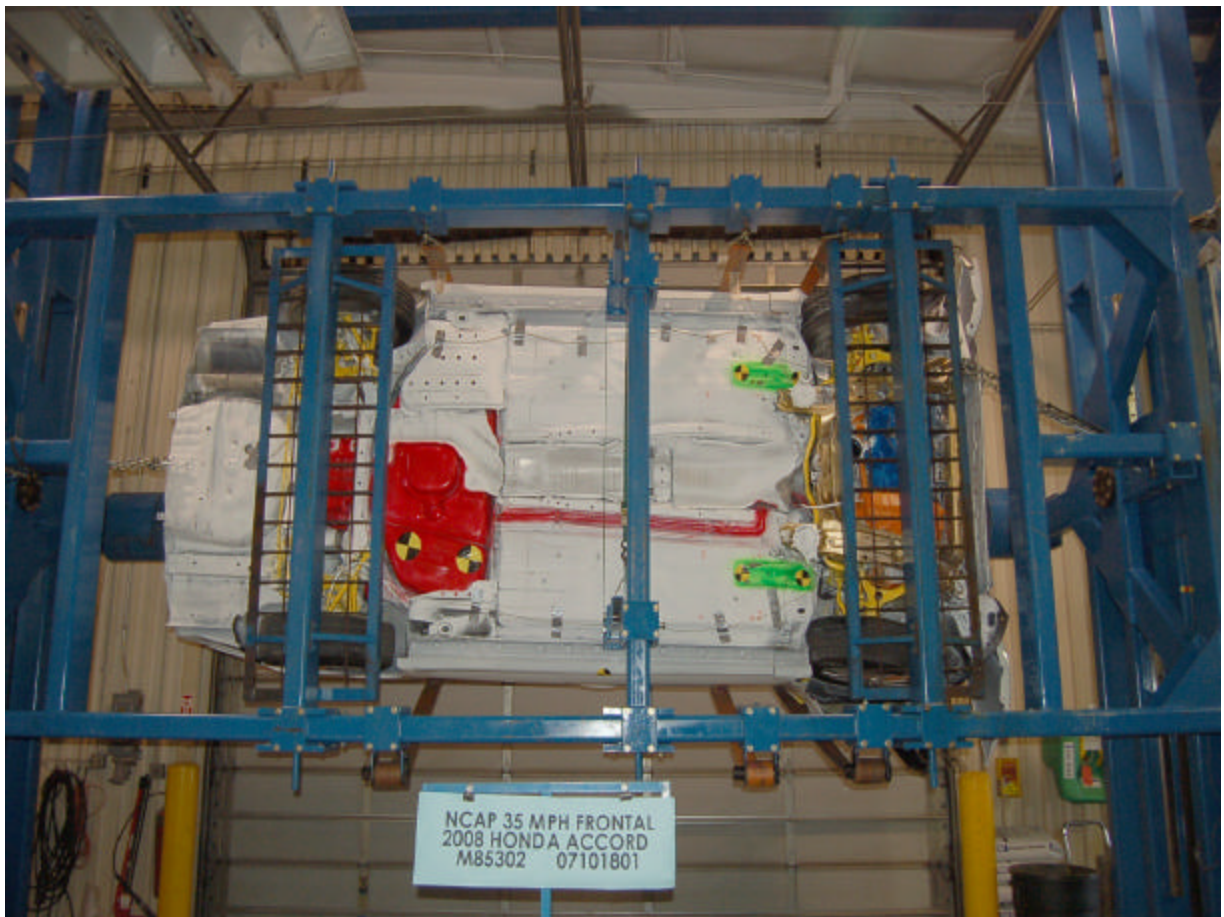
Post-Test Passenger Dummy Head Contact (headrest)



Post-Test Passenger Dummy Knee Contact



Post-Test Passenger Dummy Airbag Contact



Rollover 90 Degrees



Rollover 180 Degrees



Rollover 270 Degrees



Rollover 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

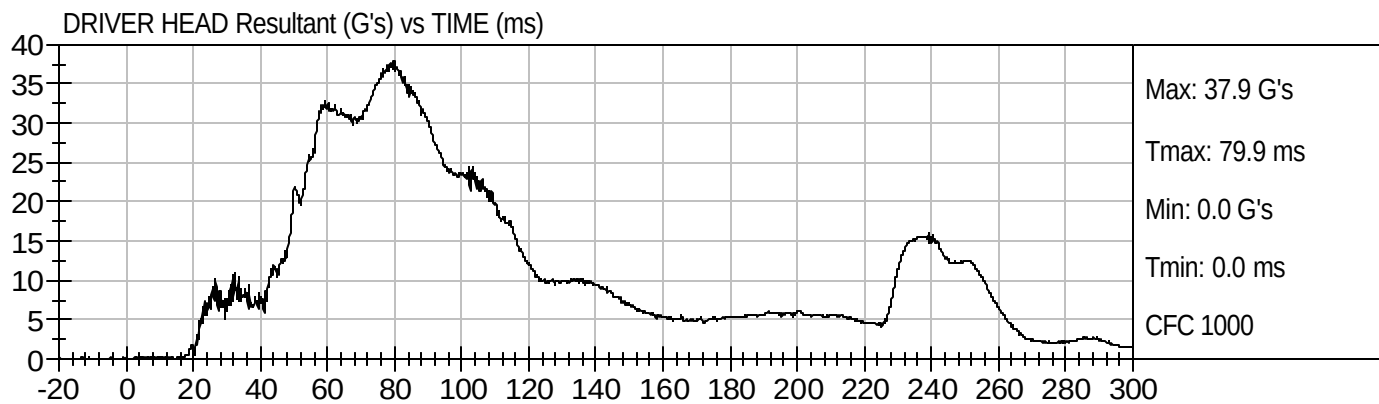
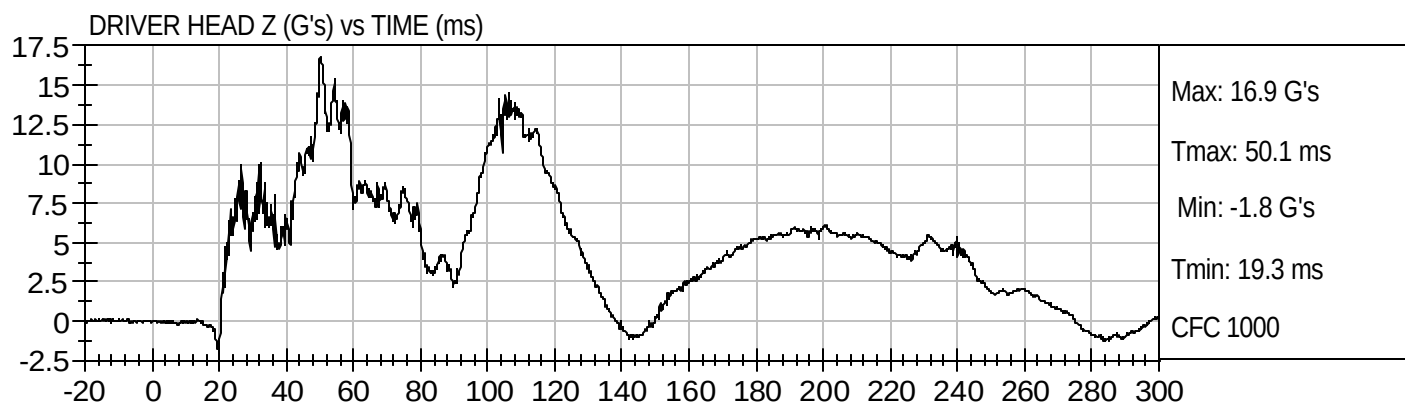
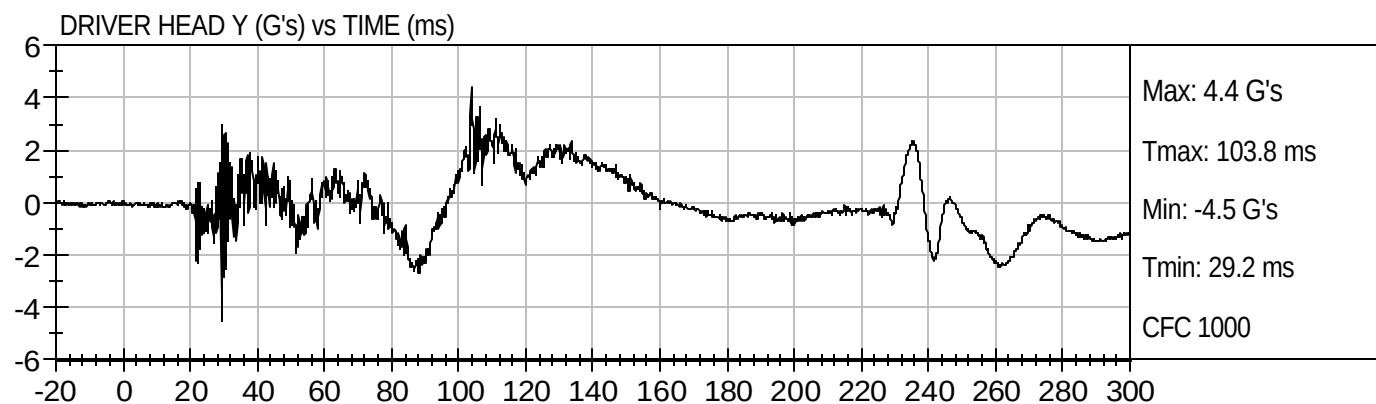
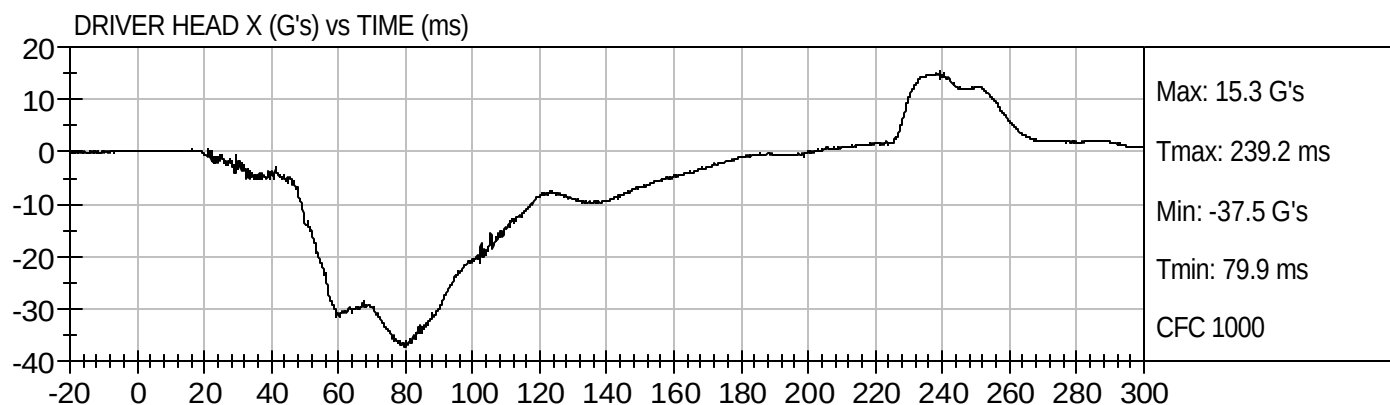
Passenger Left Lower Tibia Moment Y
Passenger Left Lower Tibia Force Z
Passenger Right Upper Tibia Moment X
Passenger Right Upper Tibia Moment Y
Passenger Right Upper Tibia Force Z
Passenger Right Lower Tibia Moment X
Passenger Right Lower Tibia Moment Y
Passenger Right Lower Tibia Force Z
Passenger 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
Barrier Force – Upper Left
Barrier Force – Upper Center
Barrier Force – Upper Right
Barrier Force – Lower Left
Barrier Force – Lower Center
Barrier Force – Lower Right

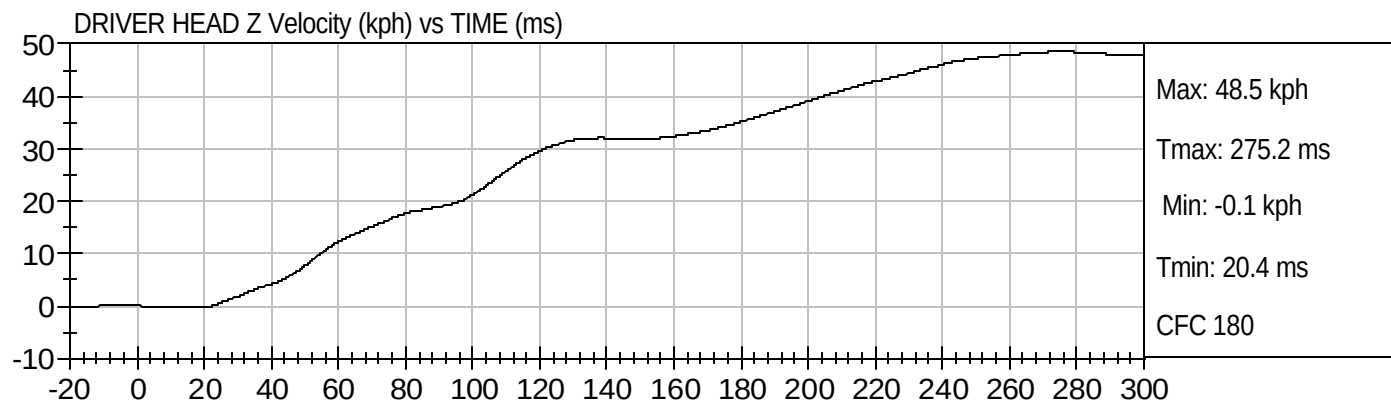
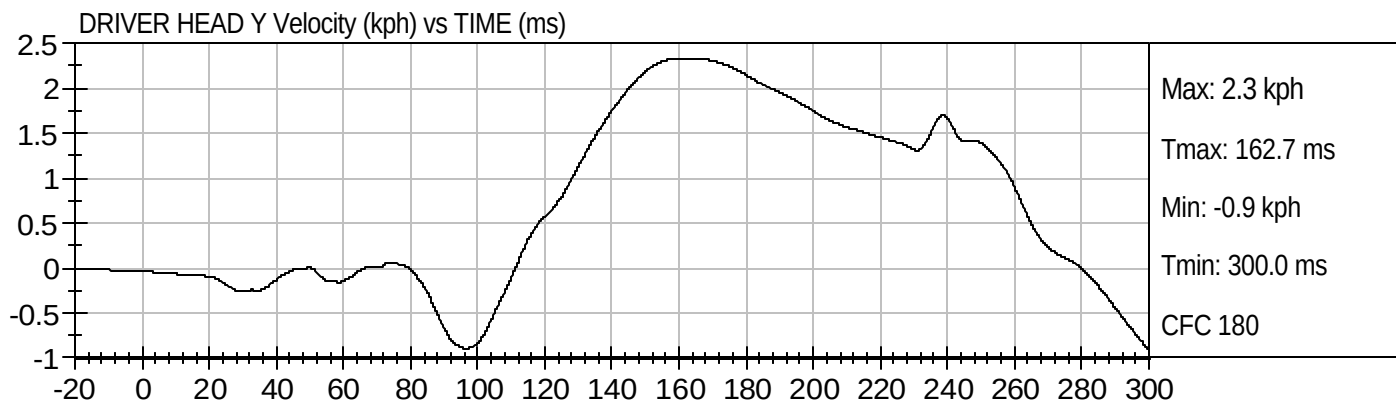
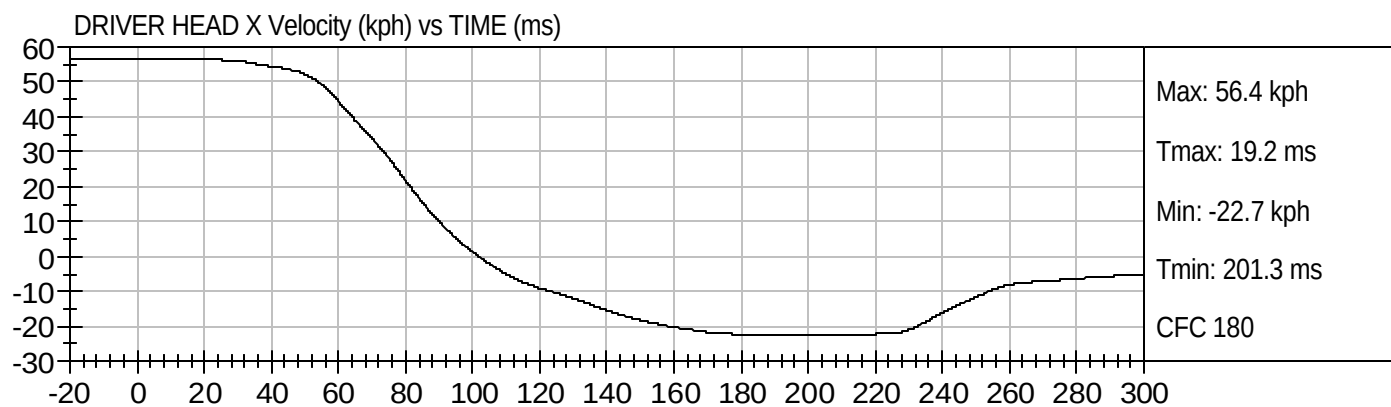


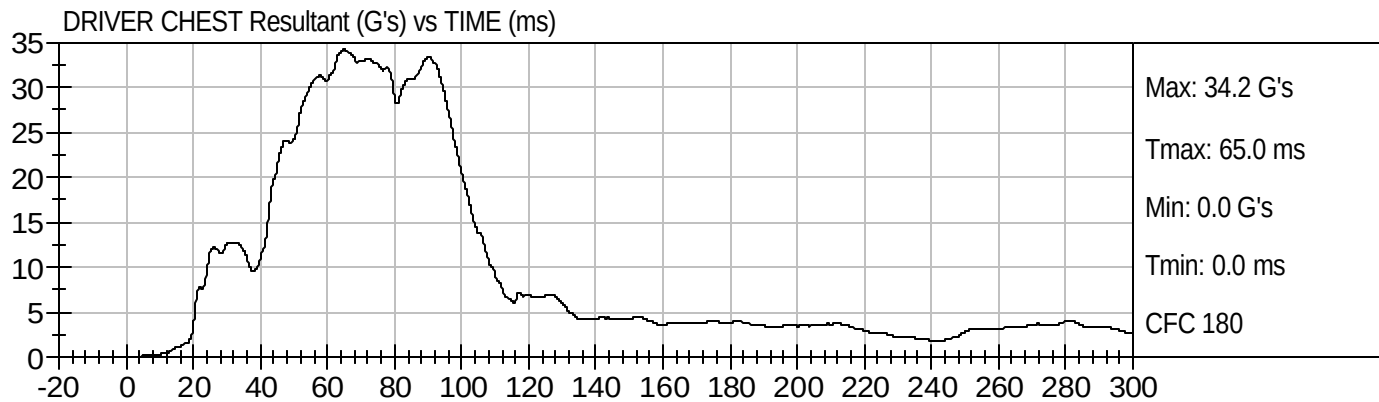
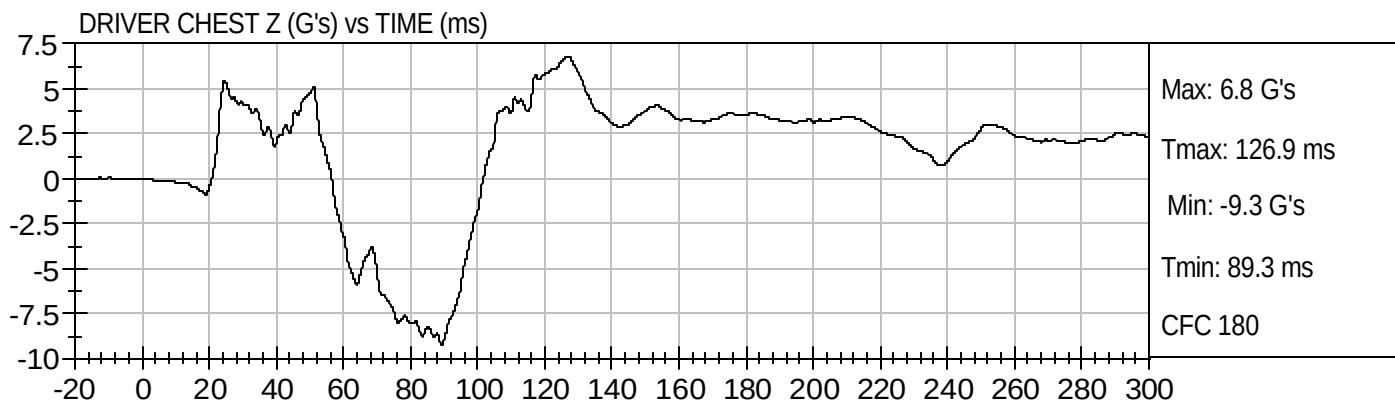
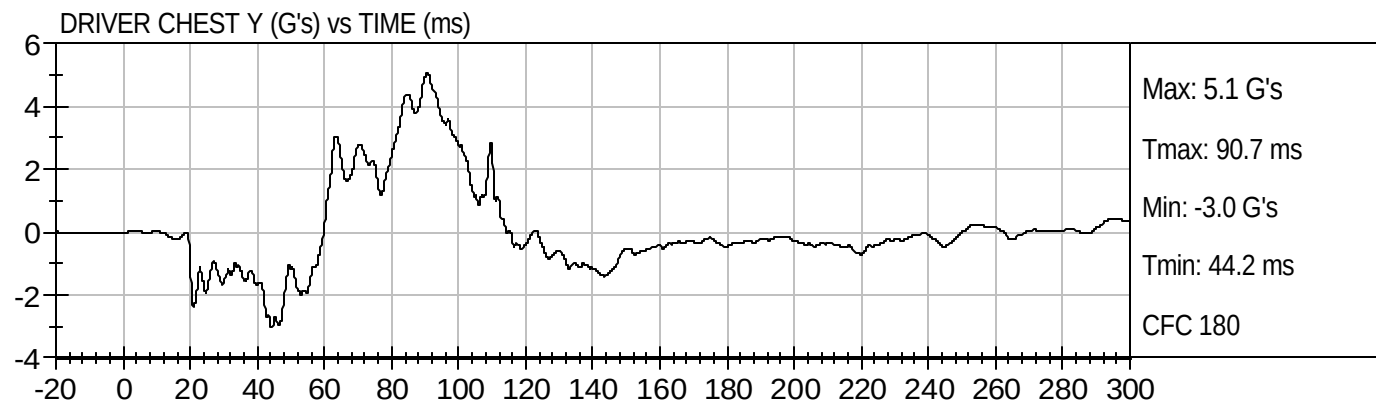
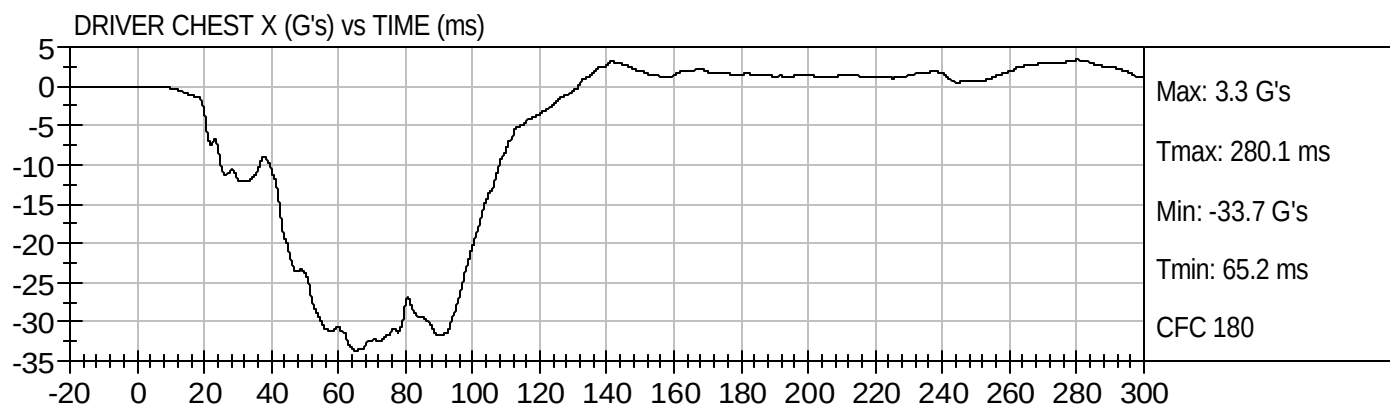
NCAP FRONTAL
2008 HONDA ACCORD

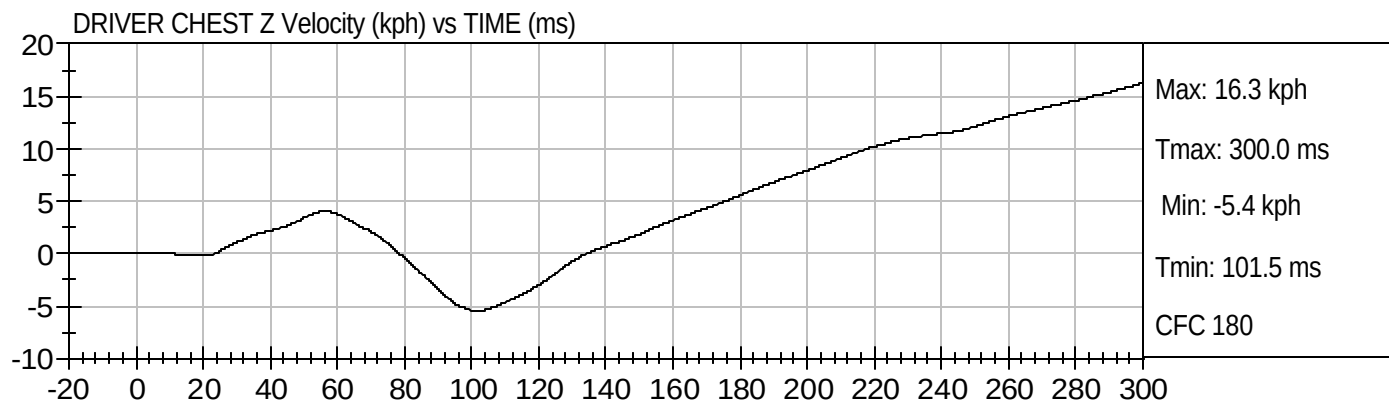
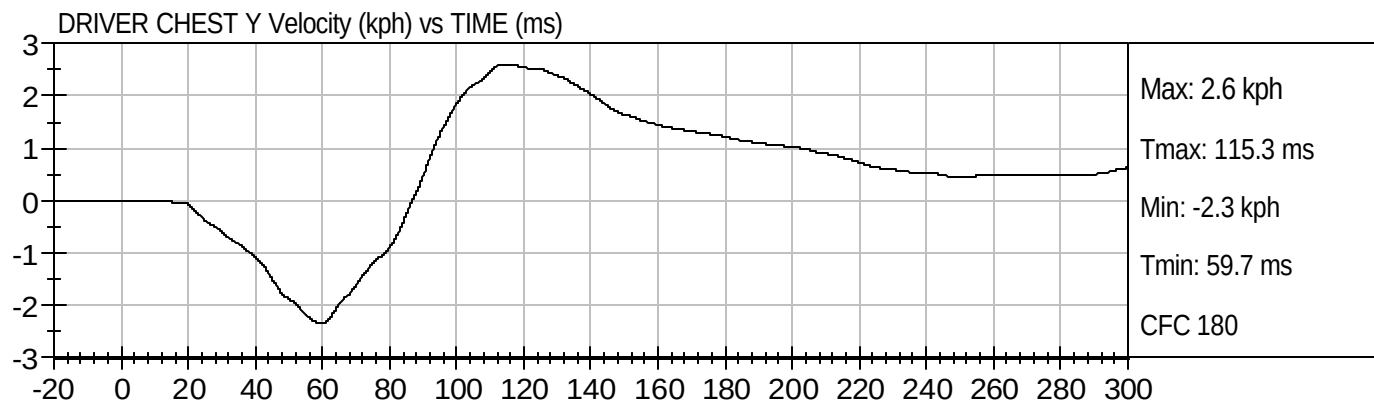
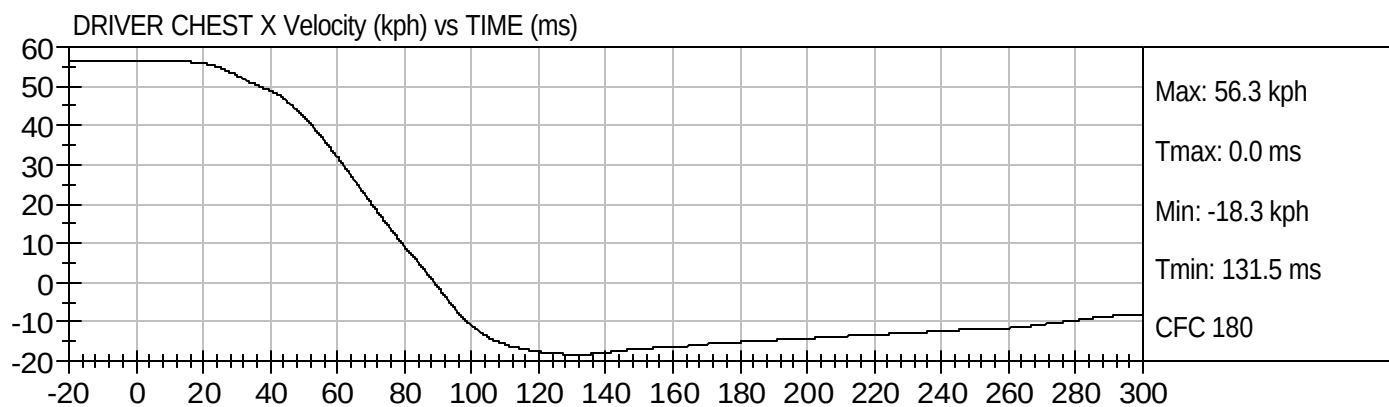
M85302

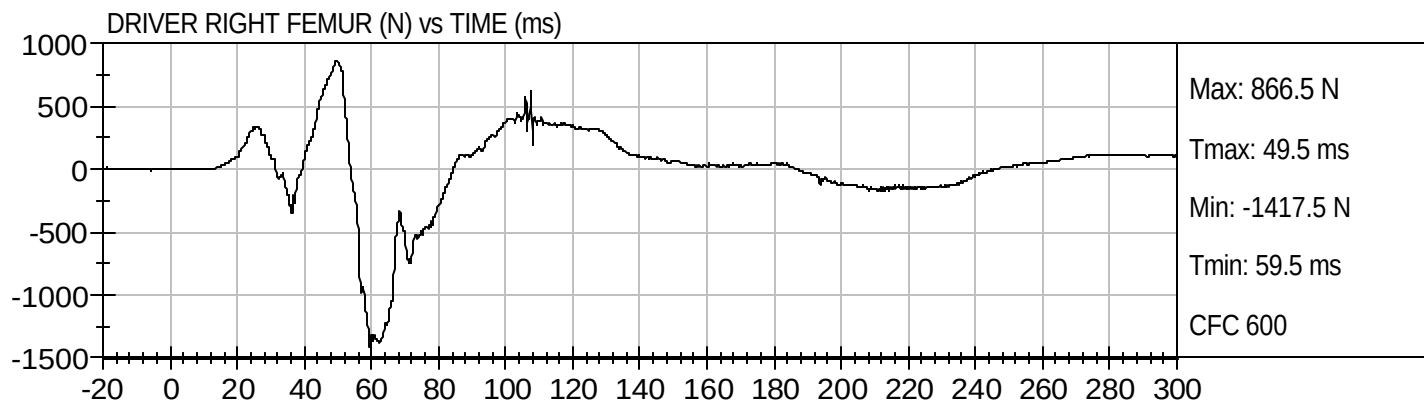
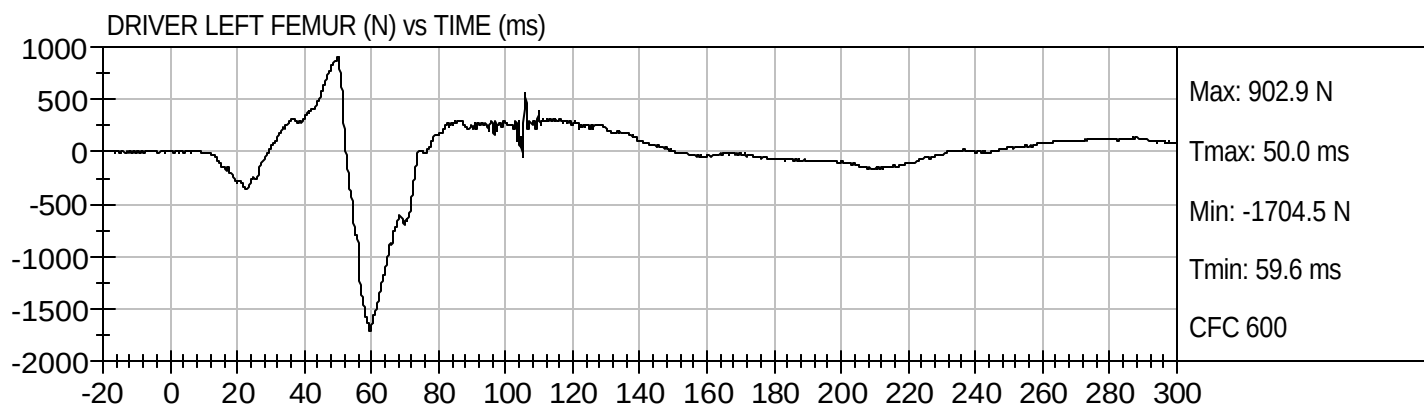
Test Date: 10/18/2007
Speed: 35.0 mph (56.3 km/h)











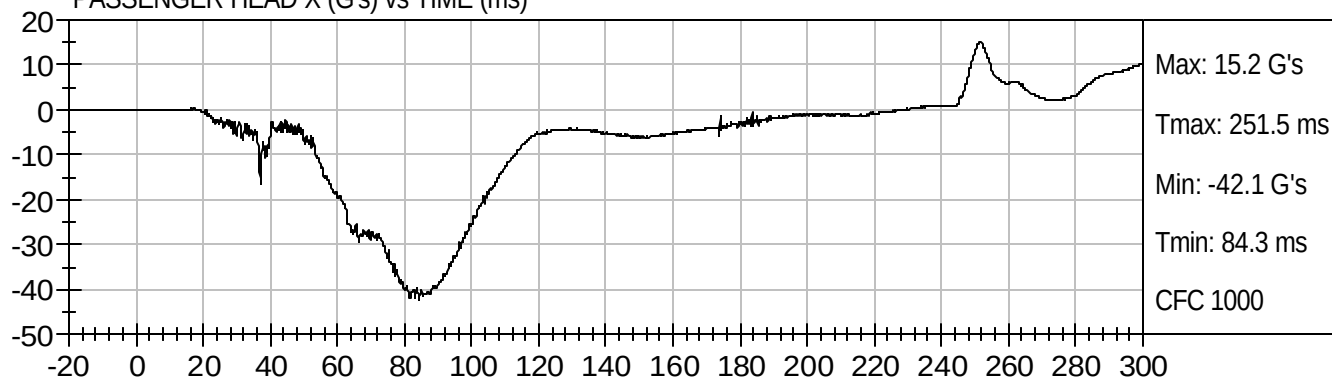


NCAP FRONTAL
2008 HONDA ACCORD

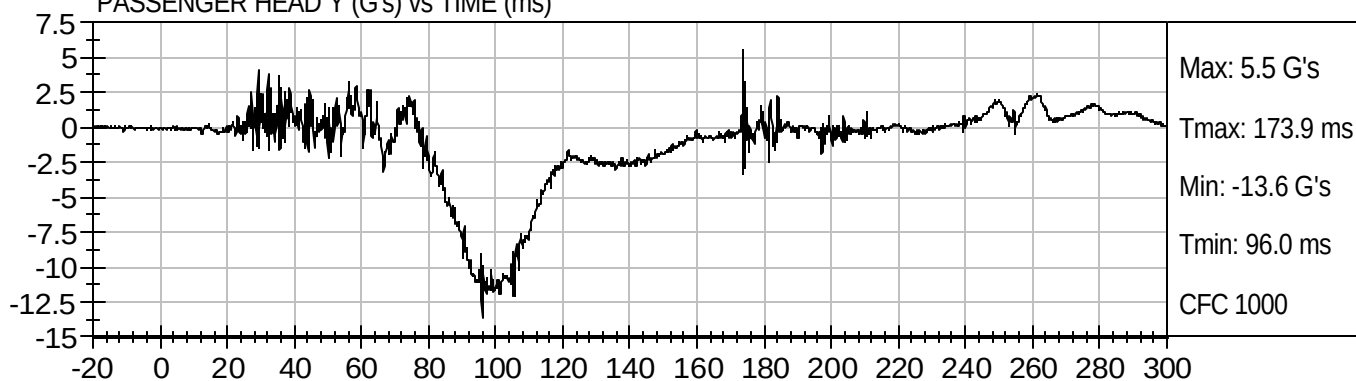
M85302

Test Date: 10/18/2007
Speed: 35.0 mph (56.3 km/h)

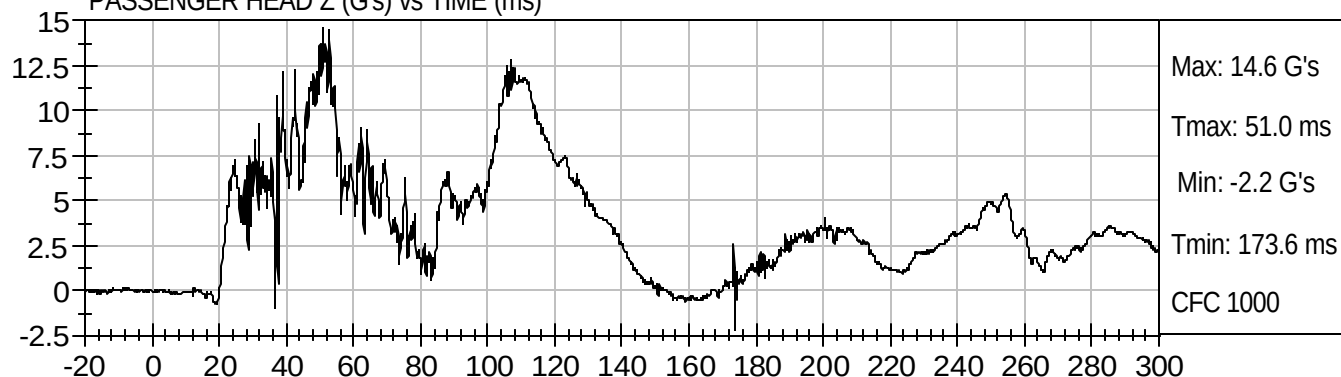
PASSENGER HEAD X (G's) vs TIME (ms)



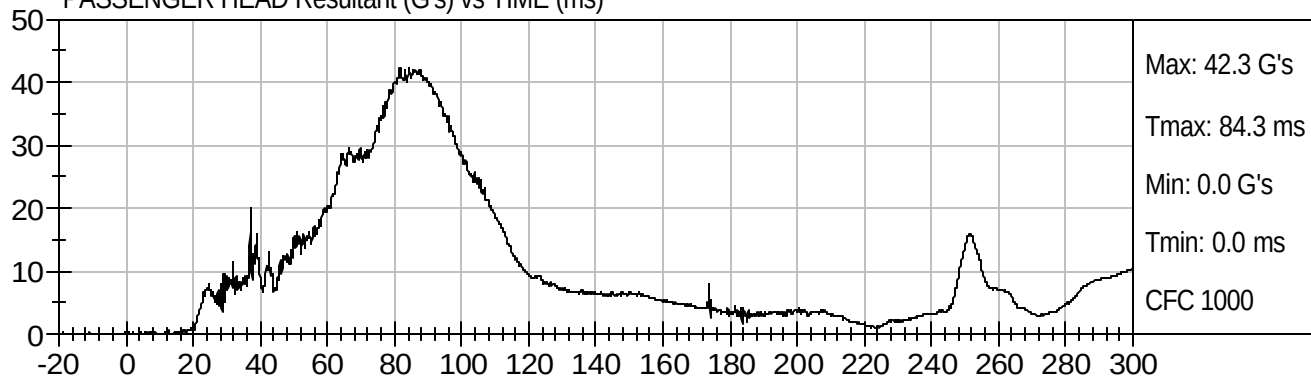
PASSENGER HEAD Y (G's) vs TIME (ms)

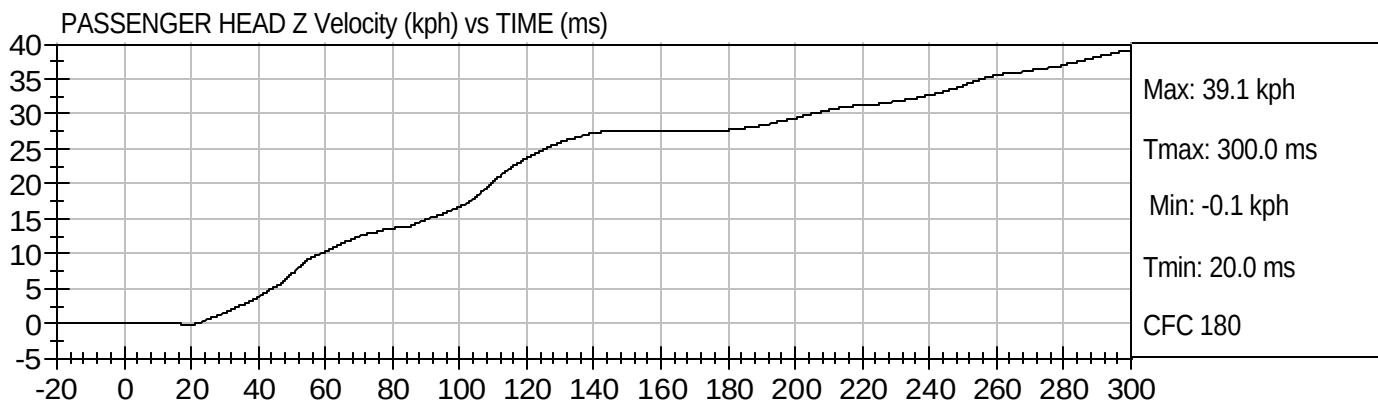
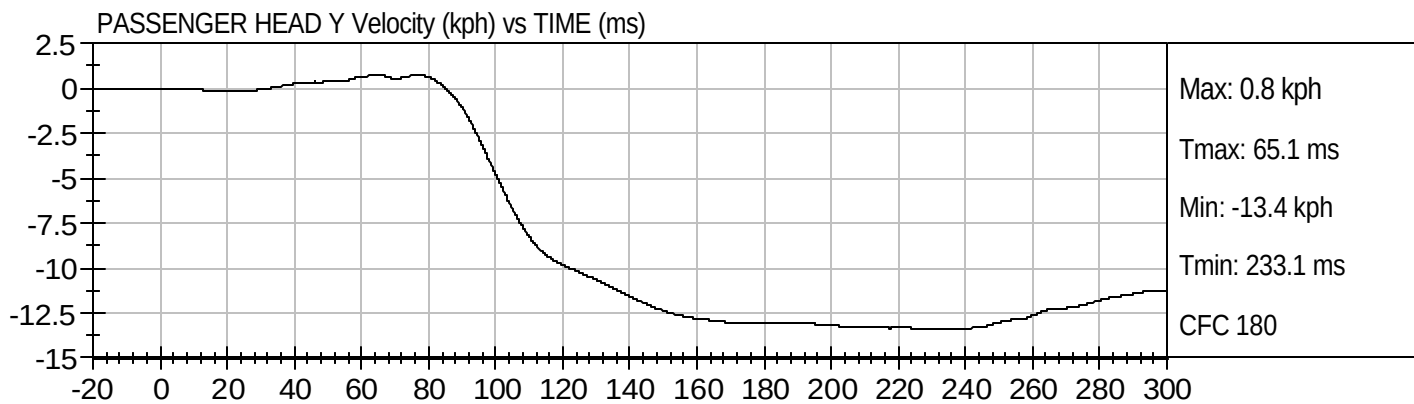
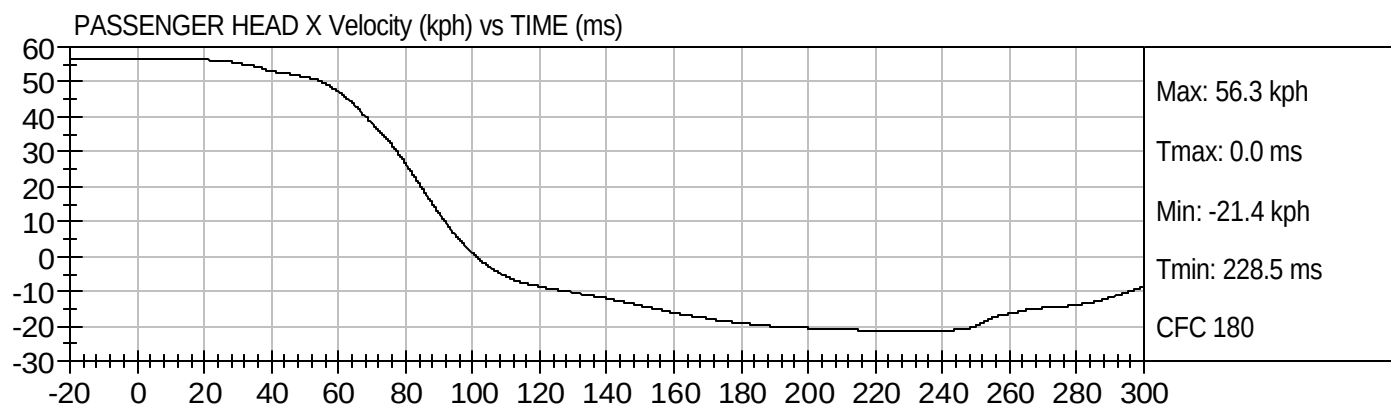


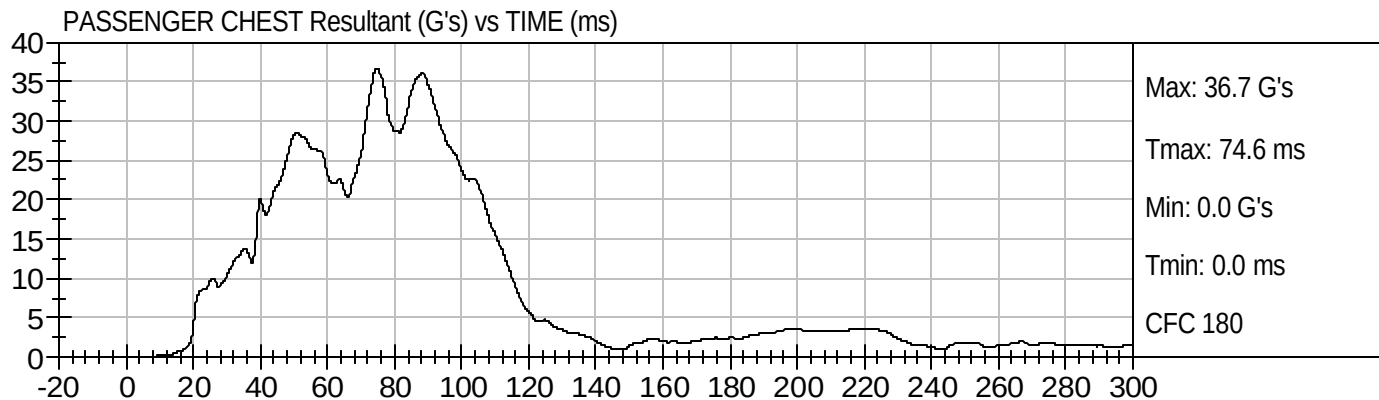
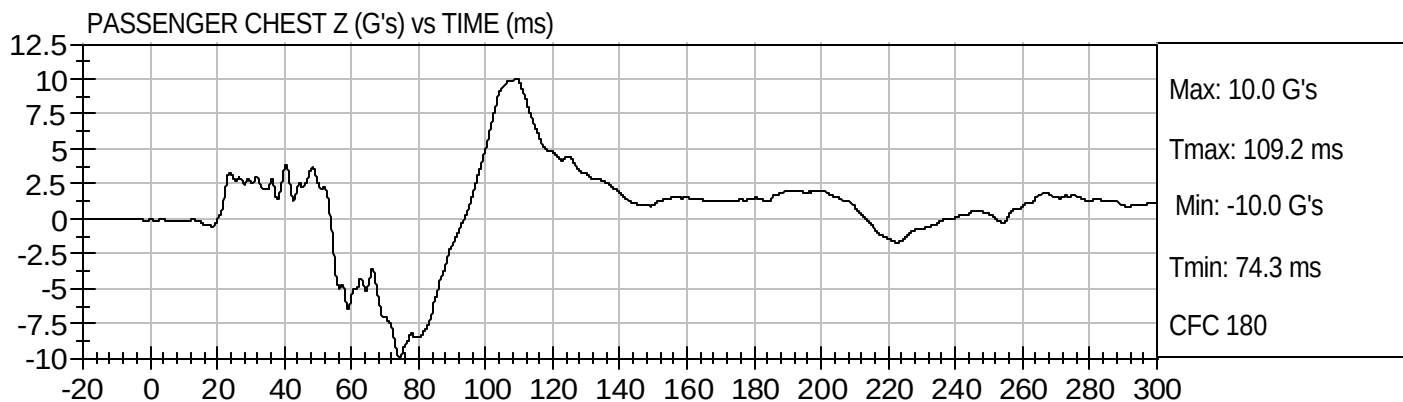
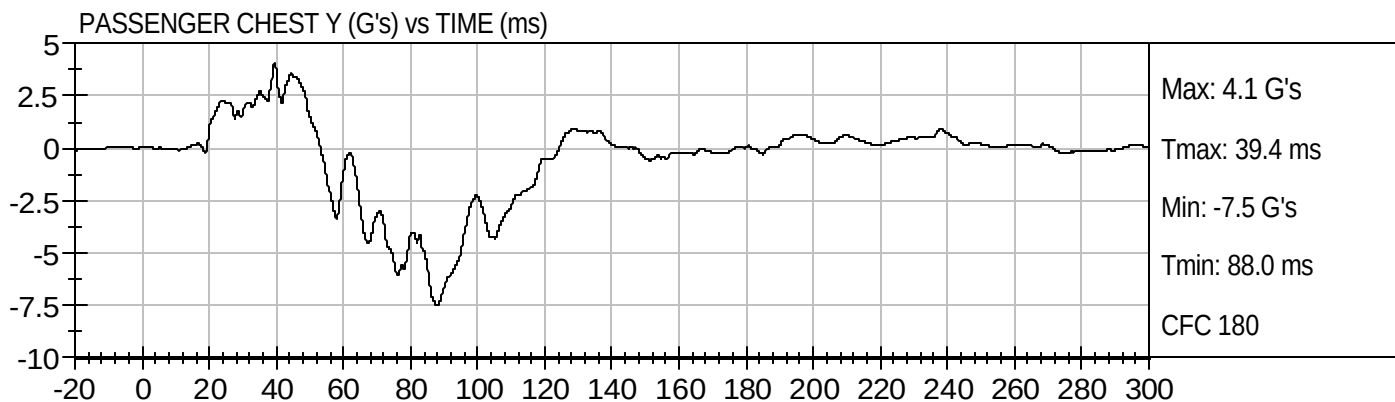
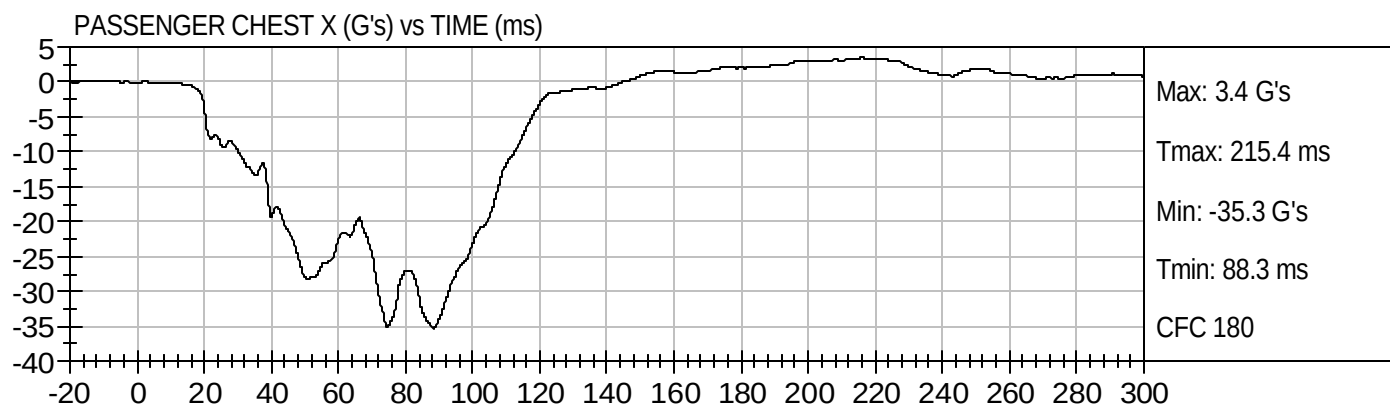
PASSENGER HEAD Z (G's) vs TIME (ms)

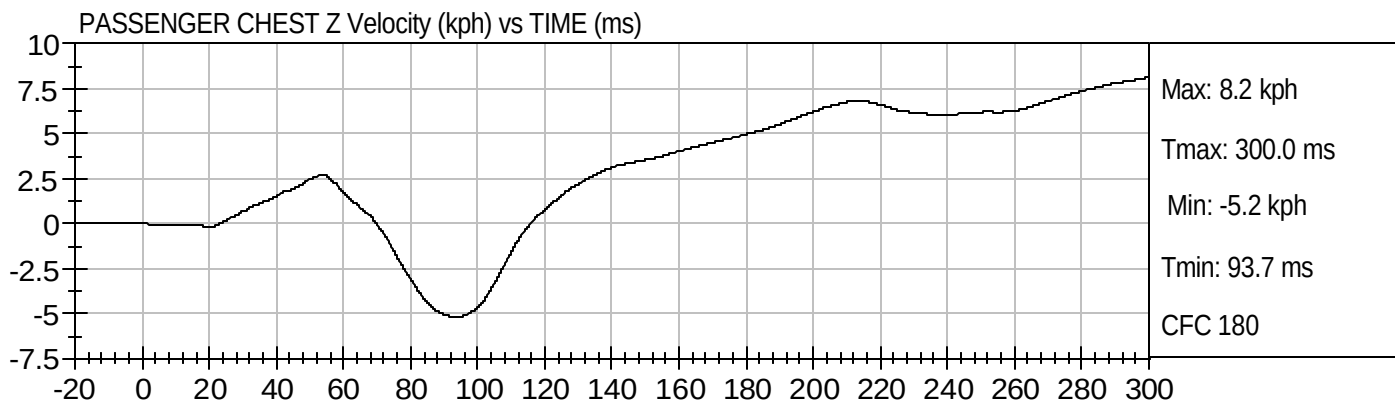
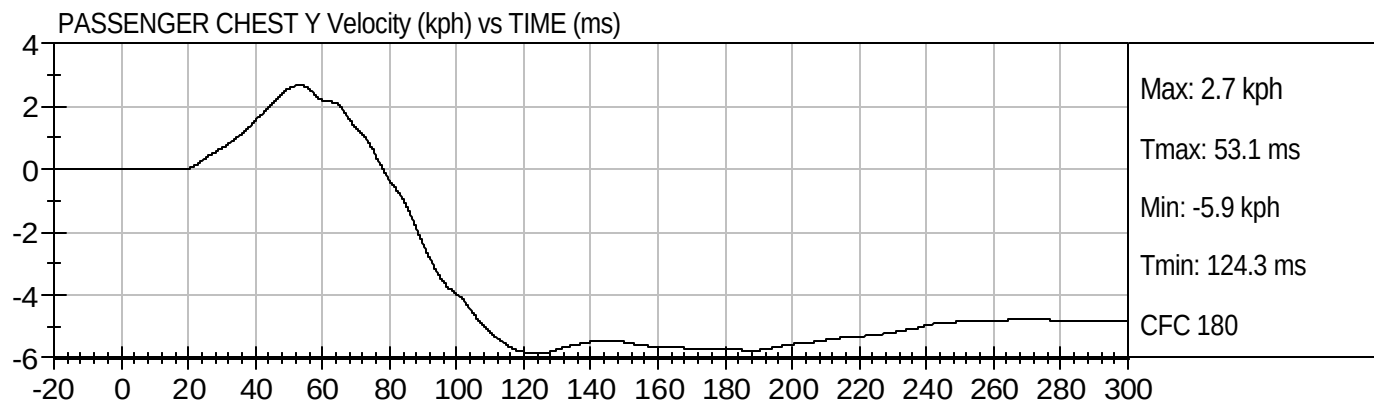
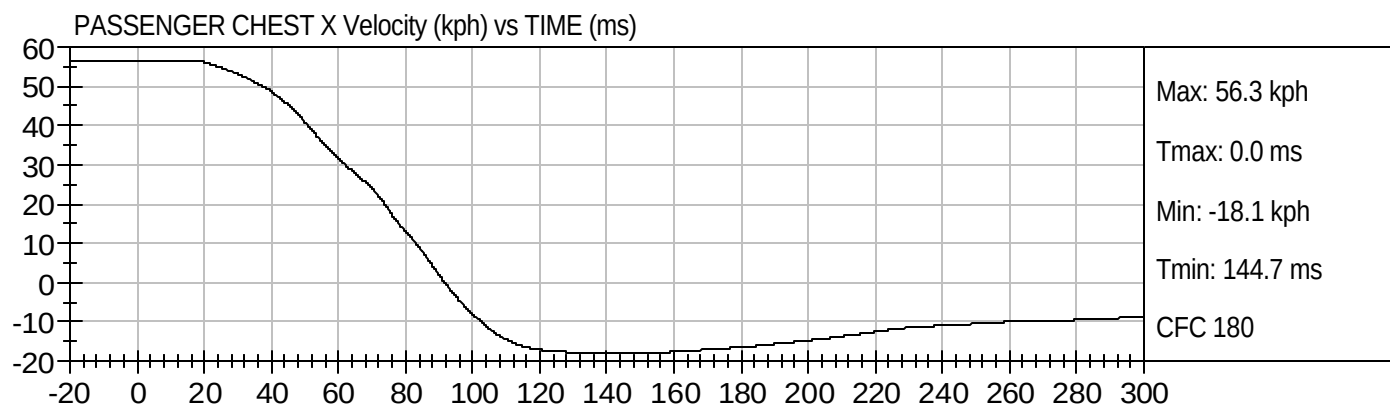


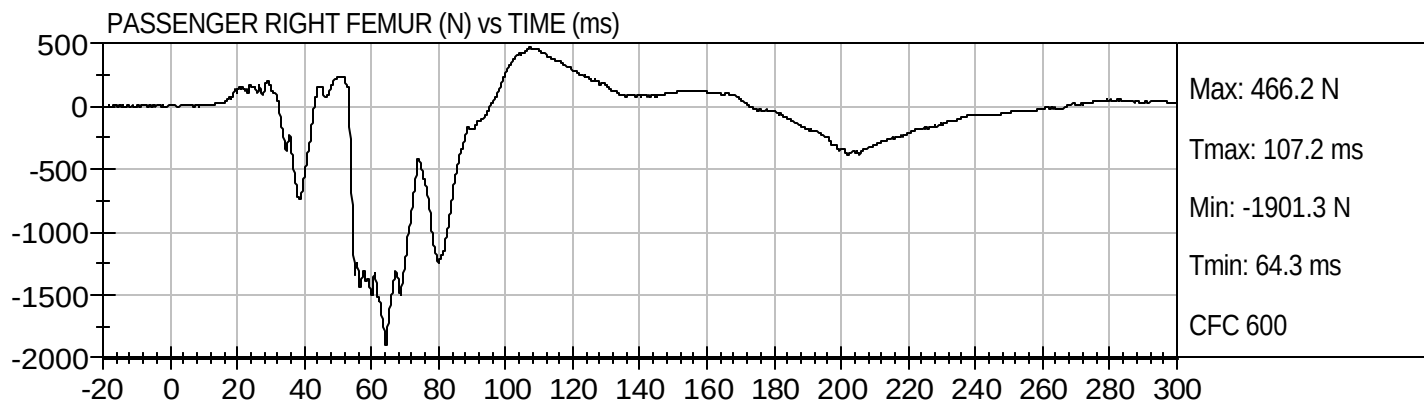
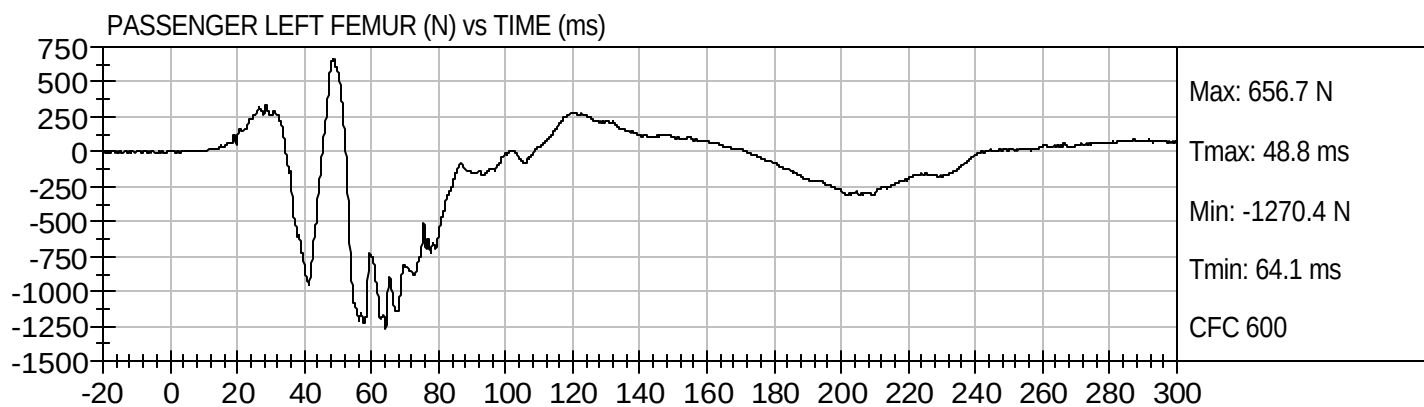
PASSENGER HEAD Resultant (G's) vs TIME (ms)











APPENDIX C
DUMMY CALIBRATION DATA

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

ATD Serial No: 066

Test ID: D073101

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.6	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	48	Pass
Peak Resultant Acceleration	G's	225 - 275	246	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-6.0	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician

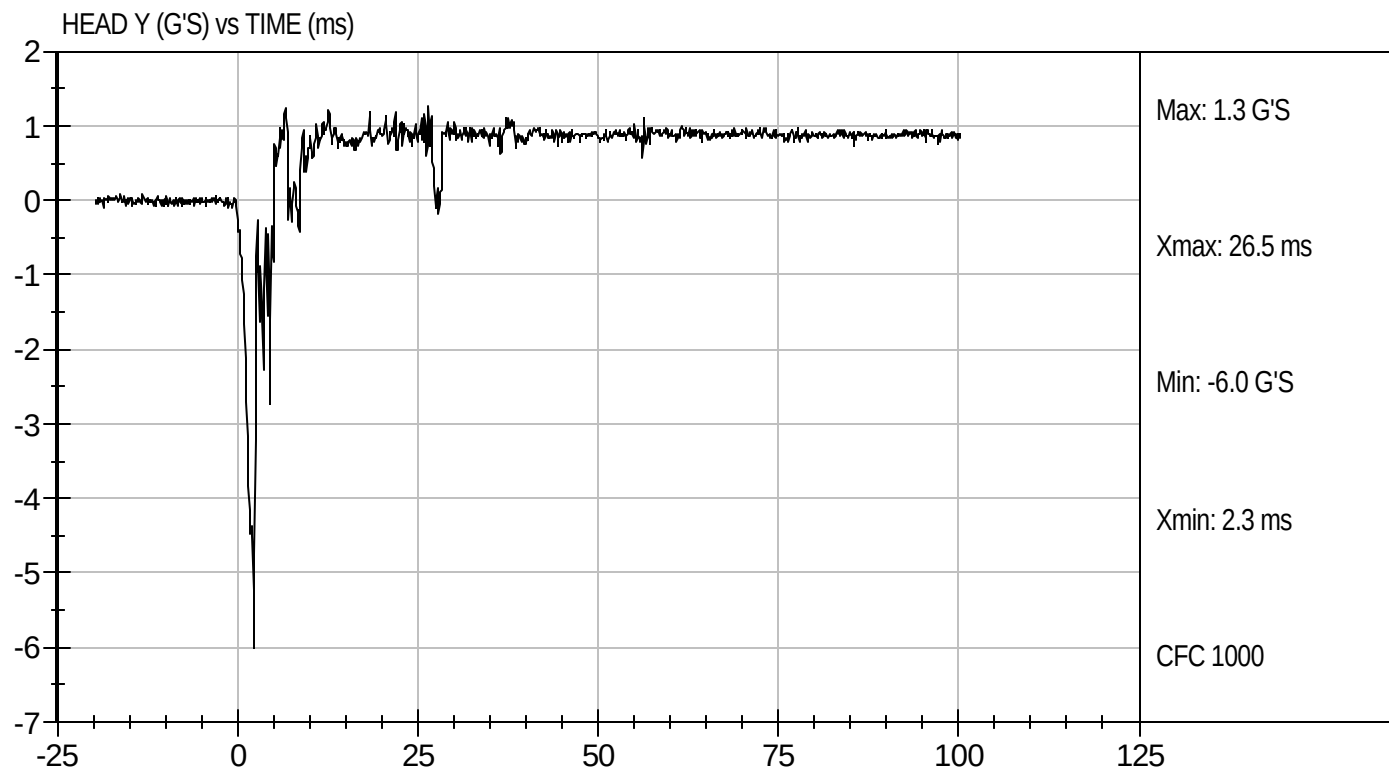
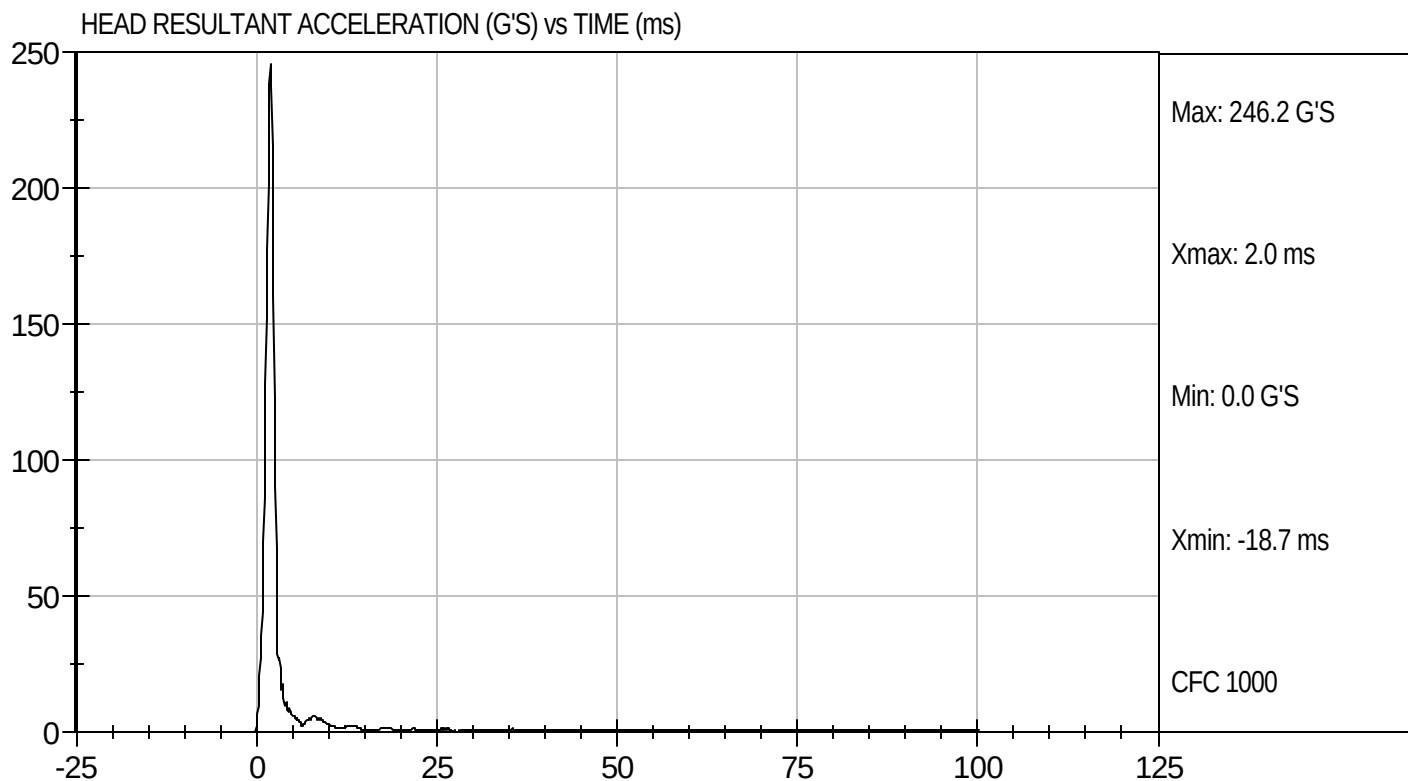

Approved By

10/3/07
Test Date



Test Desc: Head Drop
Component ID: D073101

Test Date: 10/3/07
Velocity: 0 ft/s, 0.00 m/s



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

ATD Serial No: 066

Test I.D: D073102

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	20.9	Pass
Laboratory Relative Humidity		%	10 to 70	40	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.05	Pass
Pendulum Deceleration	10 msec	G's	22.50 to 27.50	23.13	Pass
	20 msec	G's	17.60 to 22.60	20.11	Pass
	30 msec	G's	12.50 to 18.50	12.96	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 29.0	14.29	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	70.3	Pass
	Time	msec	57.0 to 64.0	57.2	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	113.0 to 128.0	113.4	Pass
Moment About Occipital Condyle	Maximum	N m	88.1 to 108.5	92.6	Pass
	Time	msec	47.0 to 58.0	52.0	Pass
Positive Moment Decay Time To Zero Crossing		msec	97.0 to 107.0	100.3	Pass
Overall Test Results					Pass


 Laboratory Technician

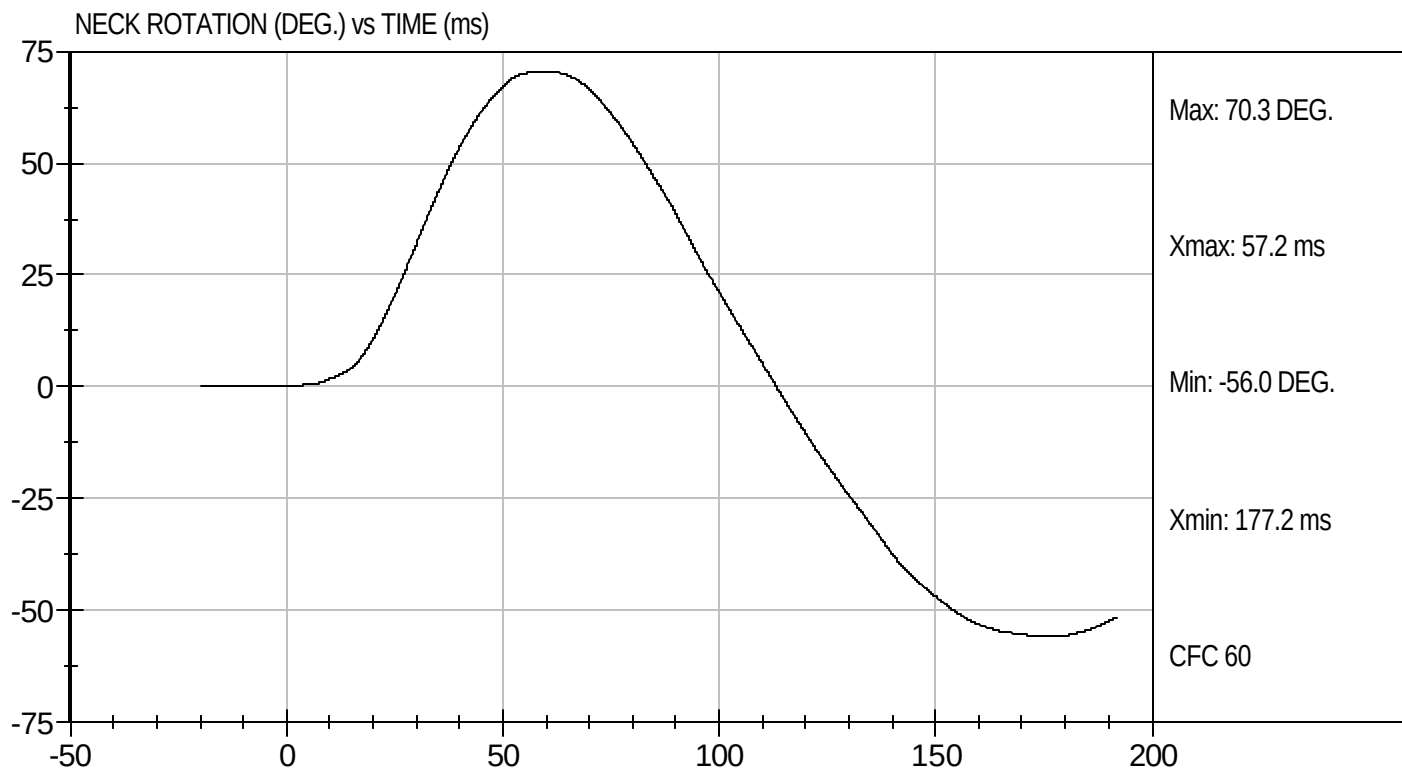
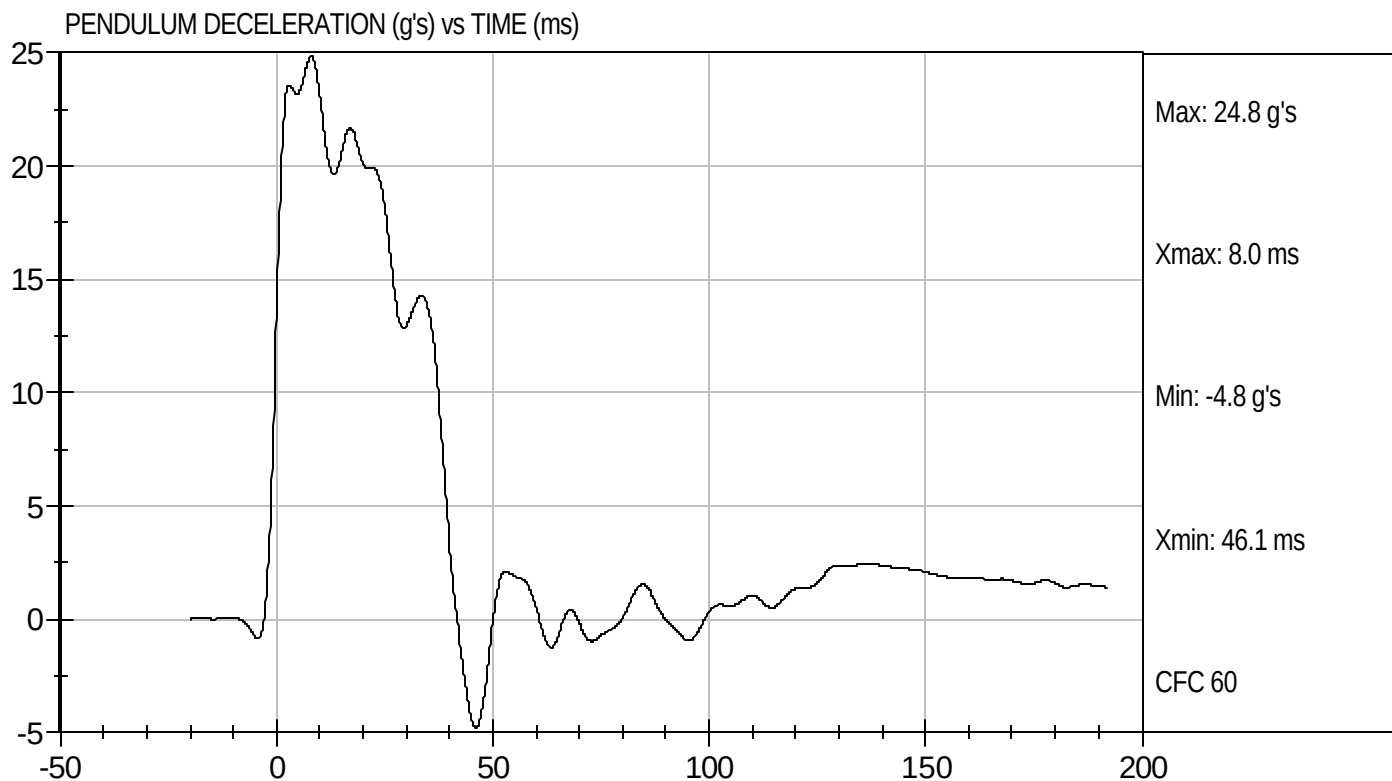
10/3/07
 Test Date


 Approved By



Test Desc: Neck Flexion
Component ID: D073102

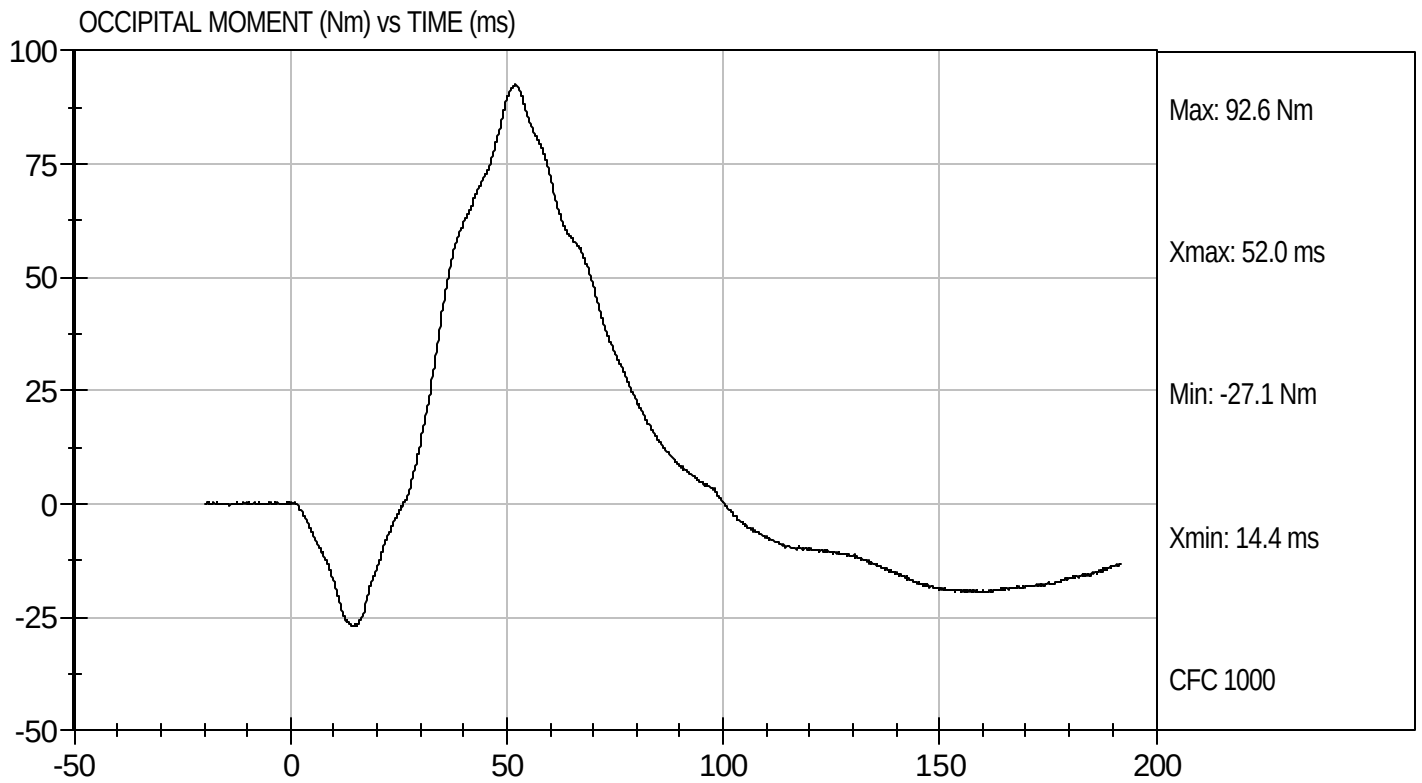
Test Date: 10/3/07
Velocity: 23.14 ft/s, 7.05 m/s





Test Desc: Neck Flexion
Component ID: D073102

Test Date: 10/3/07
Velocity: 23.14 ft/s, 7.05 m/s



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

ATD Serial No: 066

Test I.D: D073103

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	20.6	Pass
Laboratory Relative Humidity		%	10 to 70	38	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.12	Pass
Pendulum Deceleration	10 msec	G's	17.20 to 21.20	20.65	Pass
	20 msec	G's	14.00 to 19.00	16.68	Pass
	30 msec	G's	11.00 to 16.00	12.17	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 22.0	13.77	Pass
Deceleration Decay Time to Cross 5 G's		msec	38.0 to 46.0	38.1	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	100.2	Pass
	Time	msec	72.0 to 82.0	73.7	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	147.0 to 174.0	152.6	Pass
Moment About Occipital Condyle	Maximum	N m	-52.9 to -79.9	-67.8	Pass
	Time	msec	65.0 to 79.0	70.4	Pass
Negative Moment Decay Time To Zero Crossing		msec	120.0 to 148.0	142.8	Pass
Overall Test Results					Pass


 Laboratory Technician

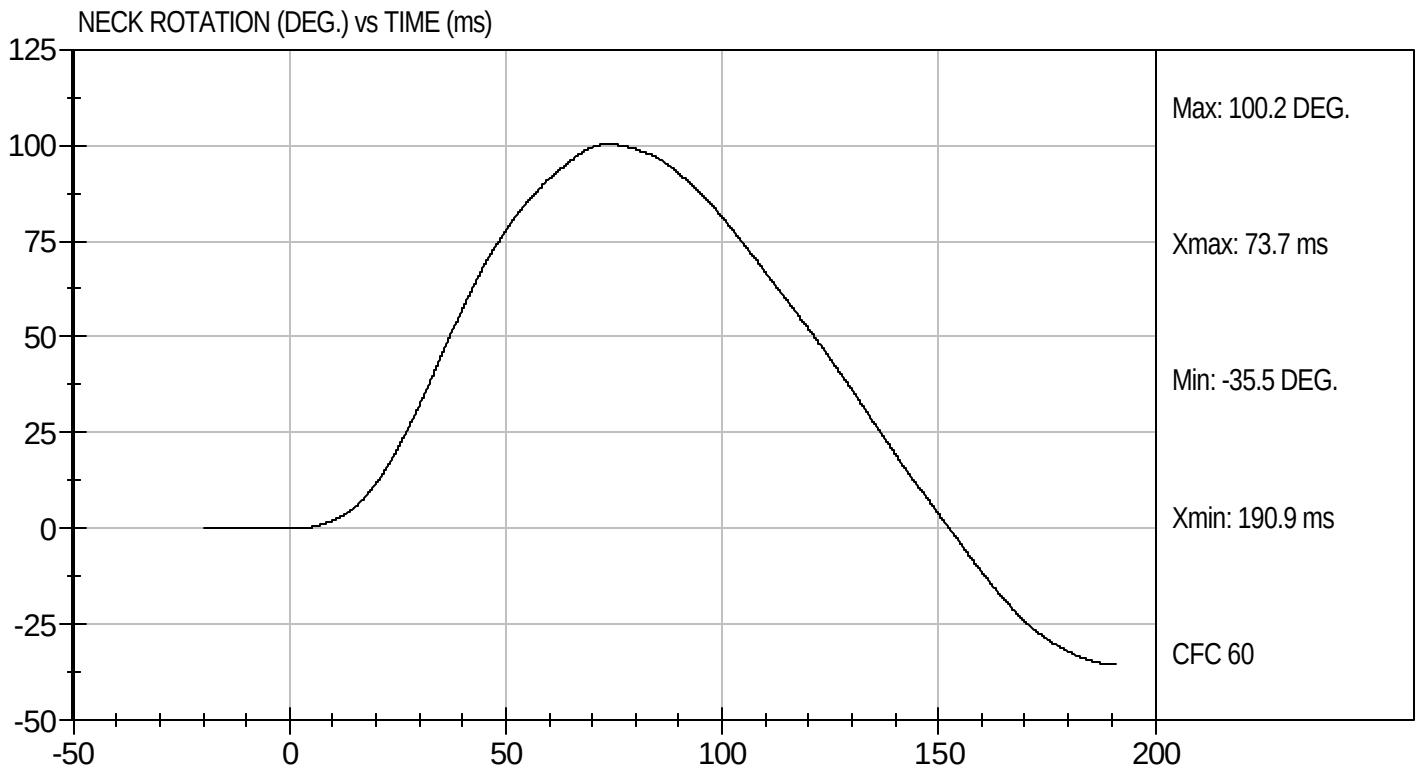
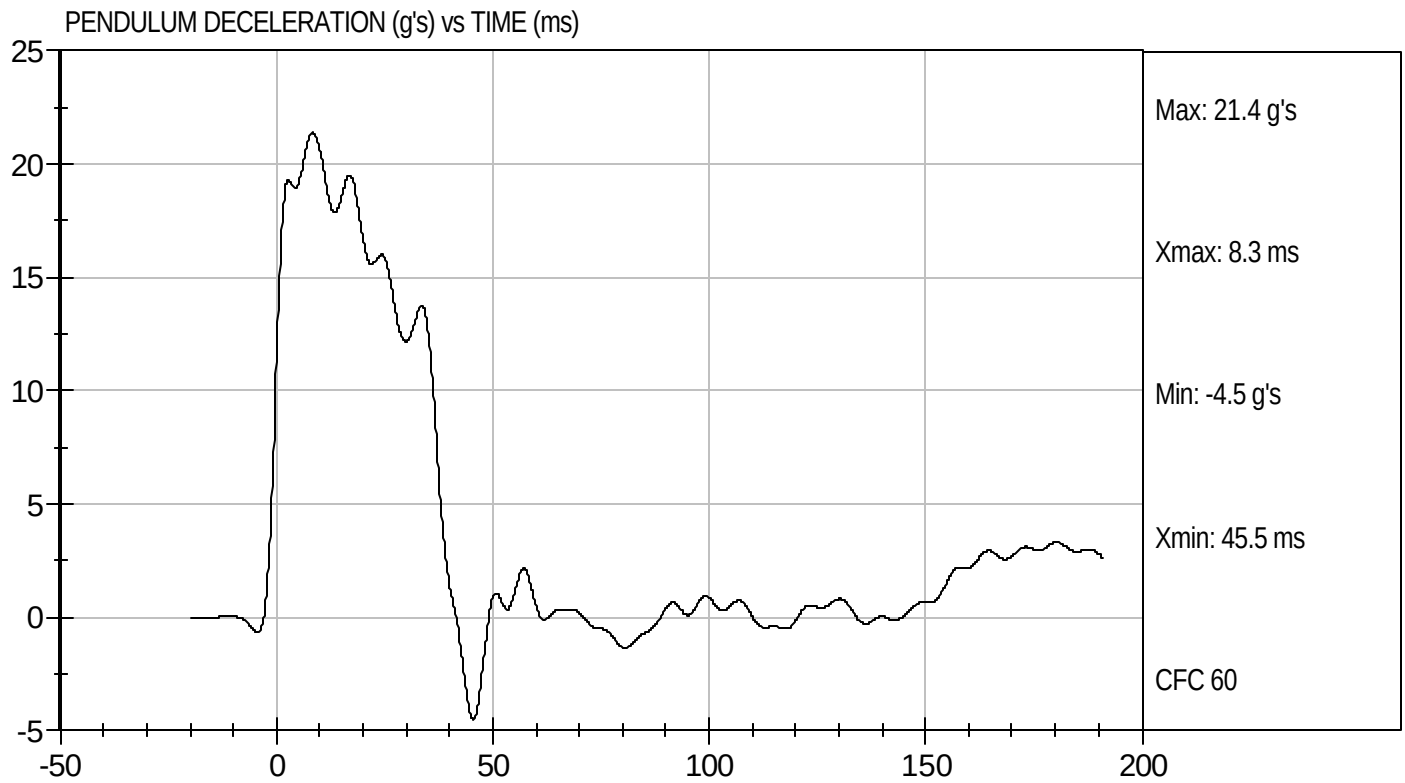
10/3/07
 Test Date


 Approved By



Test Desc: Neck Extension
Component ID: D073103

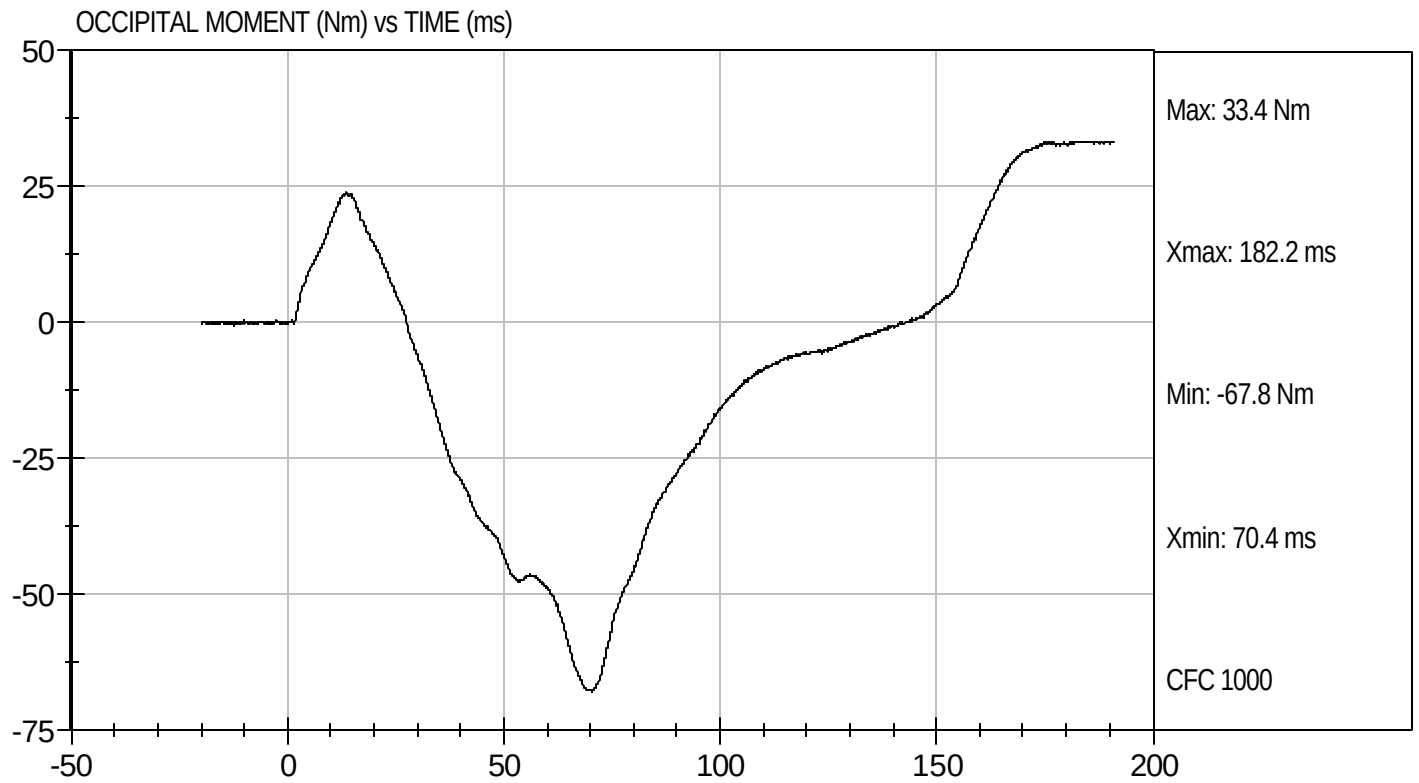
Test Date: 10/3/07
Velocity: 20.08 ft/s, 6.12 m/s





Test Desc: Neck Extension
Component ID: D073103

Test Date: 10/3/07
Velocity: 20.08 ft/s, 6.12 m/s



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 066

Test I.D: D073104

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	20.8	Pass
Laboratory Relative Humidity	%	10 to 70	43	Pass
Probe Velocity	m/s	6.58 to 6.82	6.77	Pass
Peak Probe Force	N	5159 to 5893	5,413	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.66	Pass
Internal Hysteresis	%	69 to 85	69	Pass
Overall Test Results			Pass	


Laboratory Technician

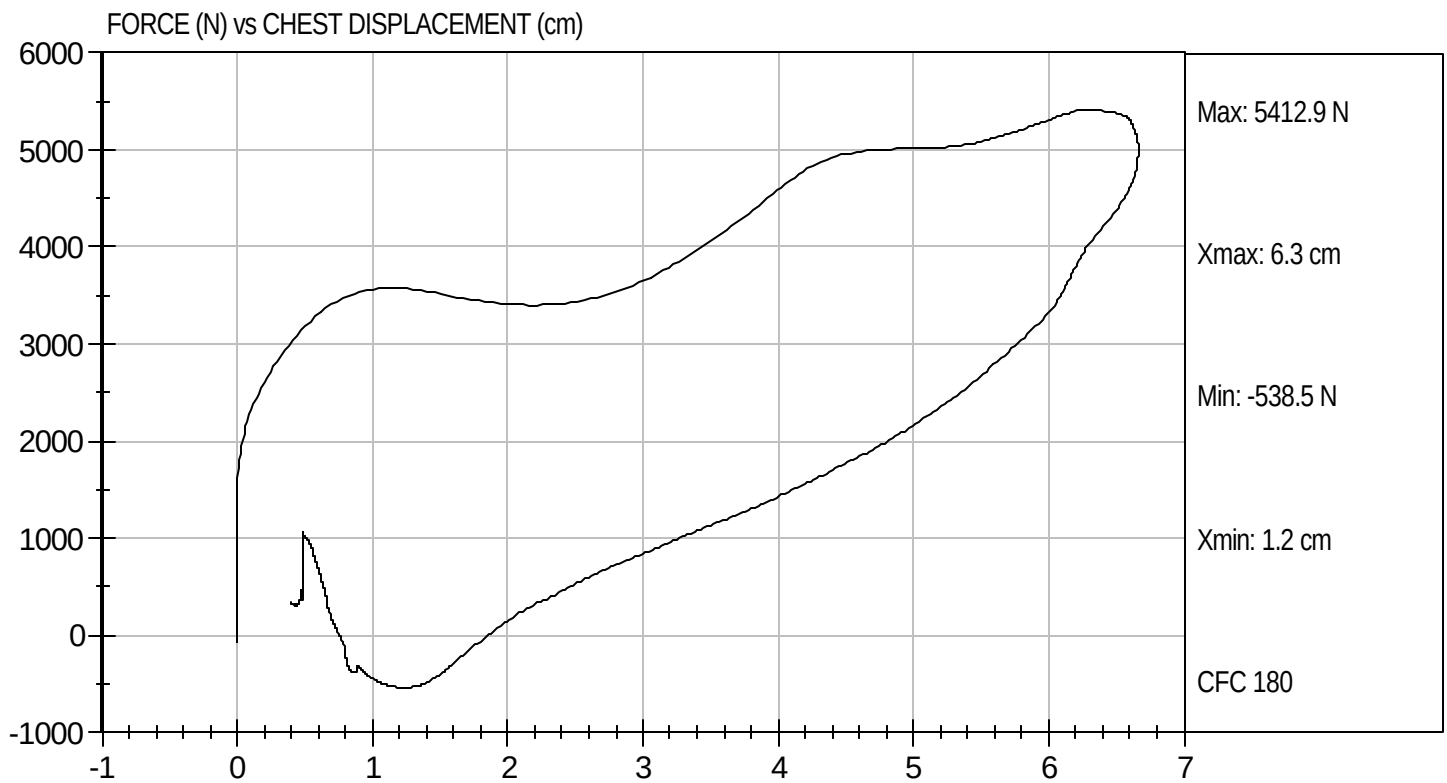

Approved By

10/3/07
Test Date



Test Desc: Thorax Impact
Component ID: D073104

Test Date: 10/3/07
Velocity: 22.22 ft/s, 6.77 m/s

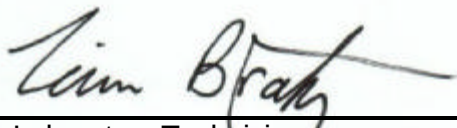


MGA RESEARCH CORPORATION
RIGHT KNEE IMPACT TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 066

Test I.D: D073105

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	39	Pass
Probe Velocity	m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force	Newtons	4715 to 5782	5,538	Pass
Overall Test Results				Pass



Laboratory Technician



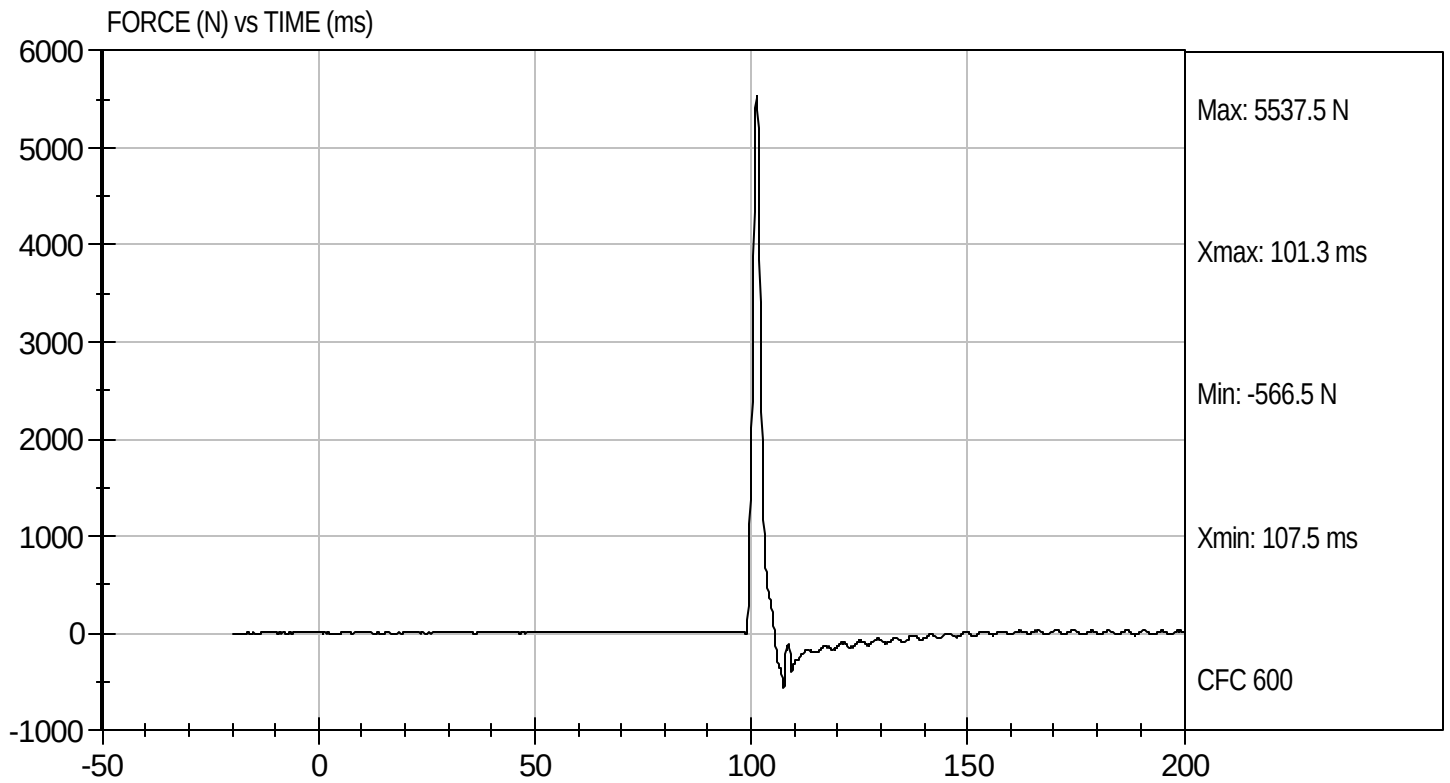
Approved By

10/3/07
Test Date



Test Desc: Right Knee
Component ID: D073105

Test Date: 10/3/07
Velocity: 6.83 ft/s, 2.08 m/s

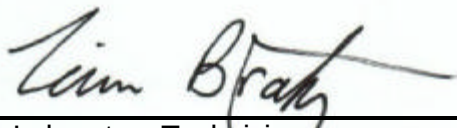


MGA RESEARCH CORPORATION
LEFT KNEE IMPACT TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 066

Test I.D: D073106

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	39	Pass
Probe Velocity	m/sec	2.07 to 2.13	2.11	Pass
Peak Probe Force	Newtons	4715 to 5782	5,298	Pass
Overall Test Results				Pass



Laboratory Technician

10/3/07
Test Date

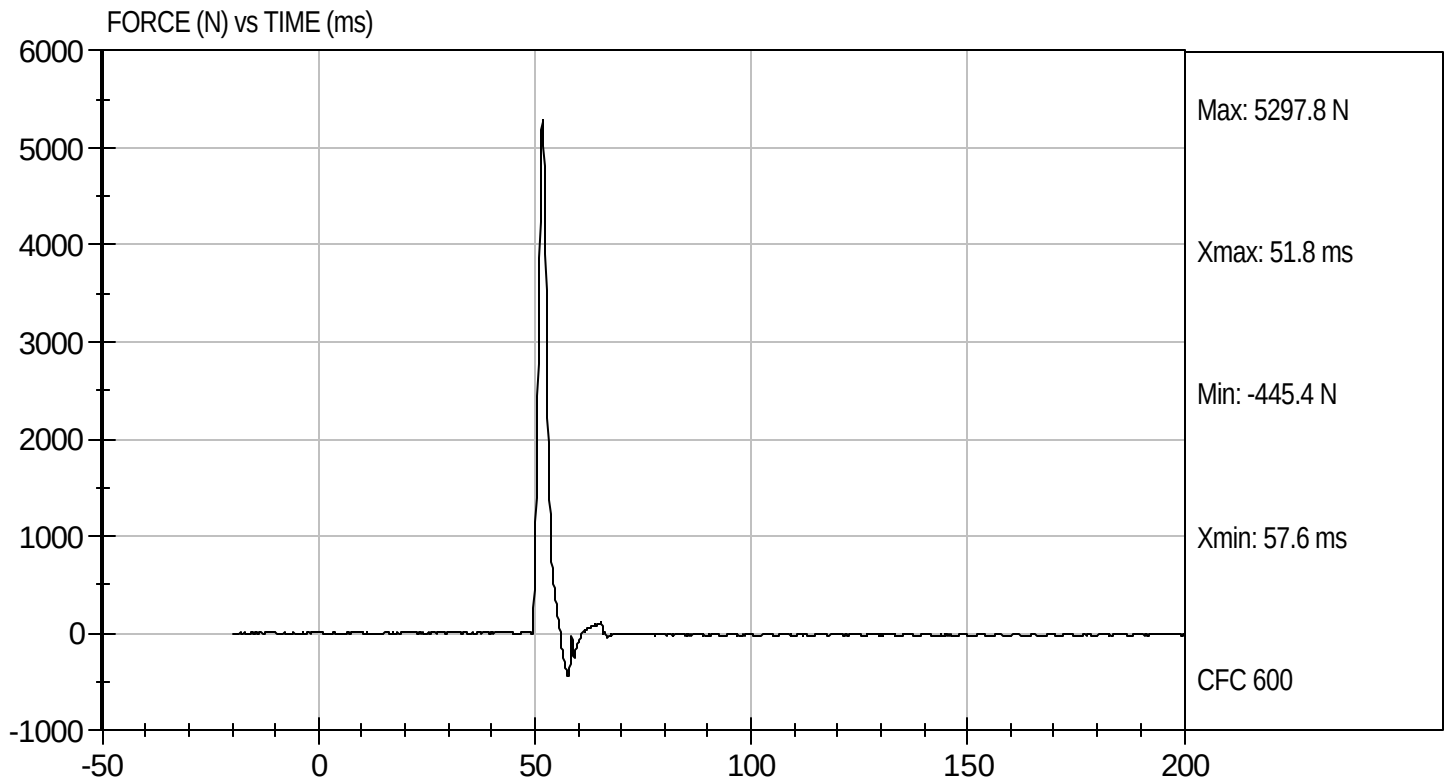


Approved By



Test Desc: Left Knee
Component ID: D073106

Test Date: 10/3/07
Velocity: 6.91 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: D073100

Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	20.8	20.8	Pass
Laboratory Relative Humidity	%	10 to 70	43	43	Pass
Rotation Rate	deg/sec	5 -10	8	8	Pass
30 Degrees	Nm	94.9 Nm Max	66.7	52.2	Pass
150 ft-lbf / 203.4 Nm	Deg	40- 50 Degree Max Rotation	41	42	Pass
Overall Test Results					Pass


 Laboratory Technician

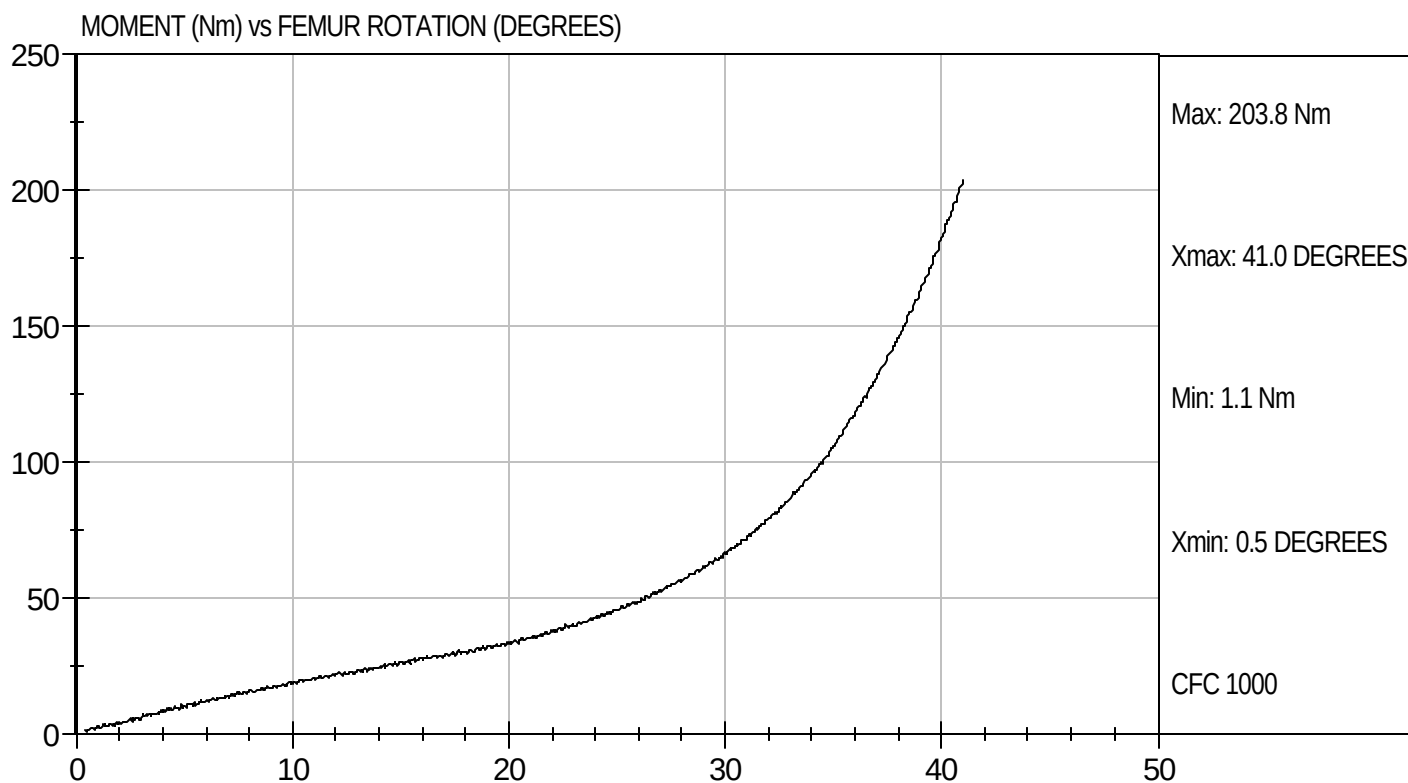
10/3/07
 Test Date


 Approved By



Test Desc: Hip Femur Flexion
Component ID: D073109

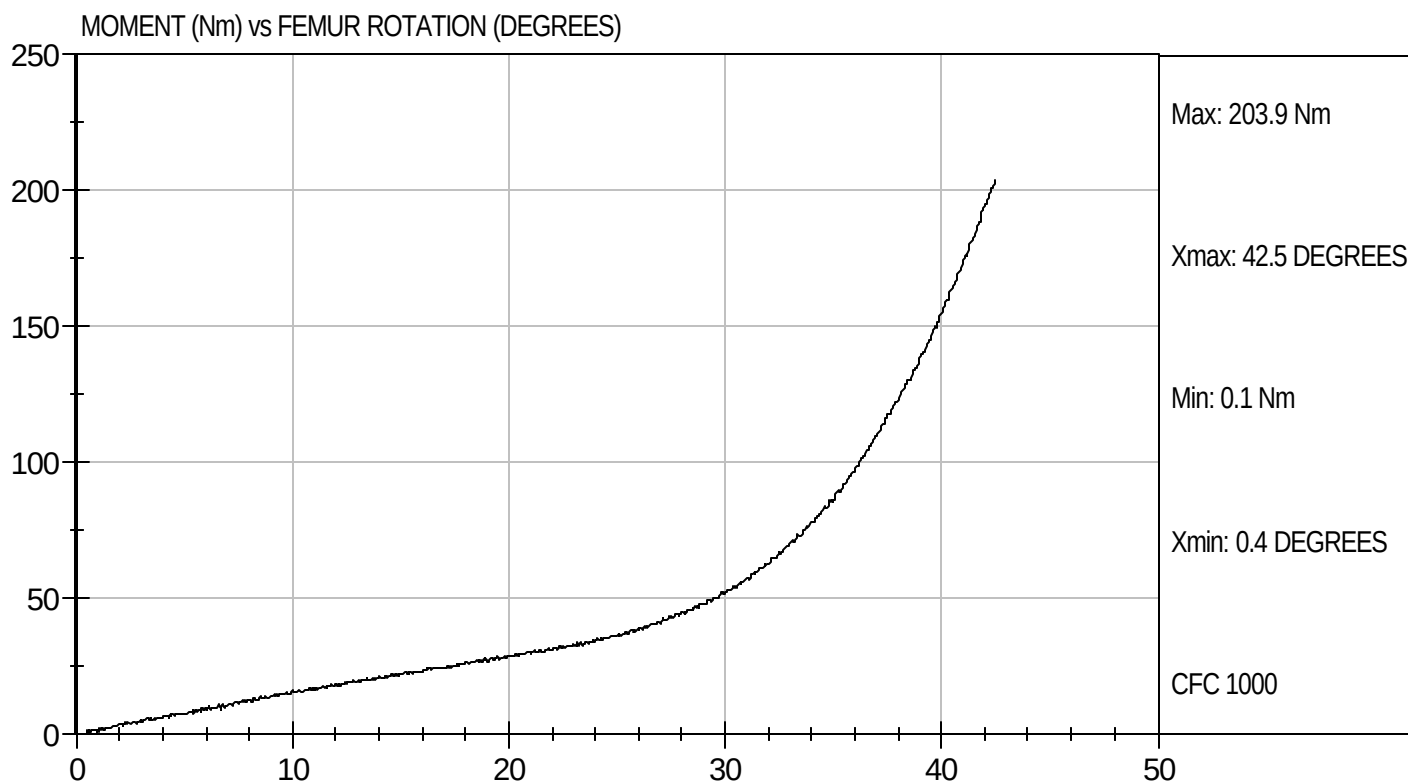
Test Date: 10/3/07
Velocity: 0 ft/s, 0.00 m/s





Test Desc: Hip Femur Flexion
Component ID: D073100

Test Date: 10/3/07
Velocity: 0 ft/s, 0.00 m/s



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

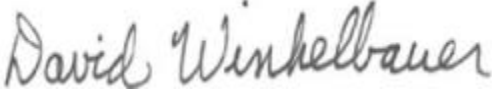
ATD Serial No: 065

Test ID: D073091

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.6	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	48	Pass
Peak Resultant Acceleration	G's	225 - 275	247	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-5.1	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results			Pass	


Laboratory Technician

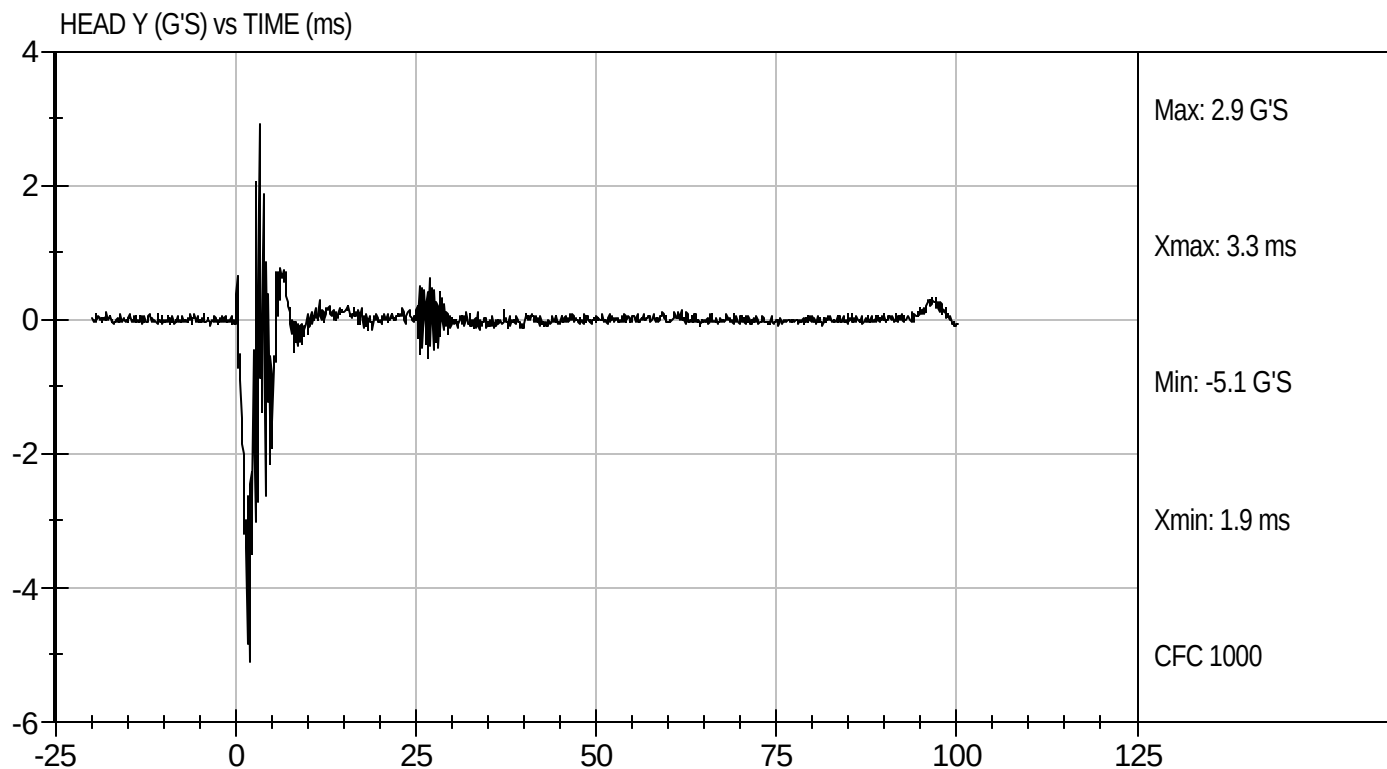
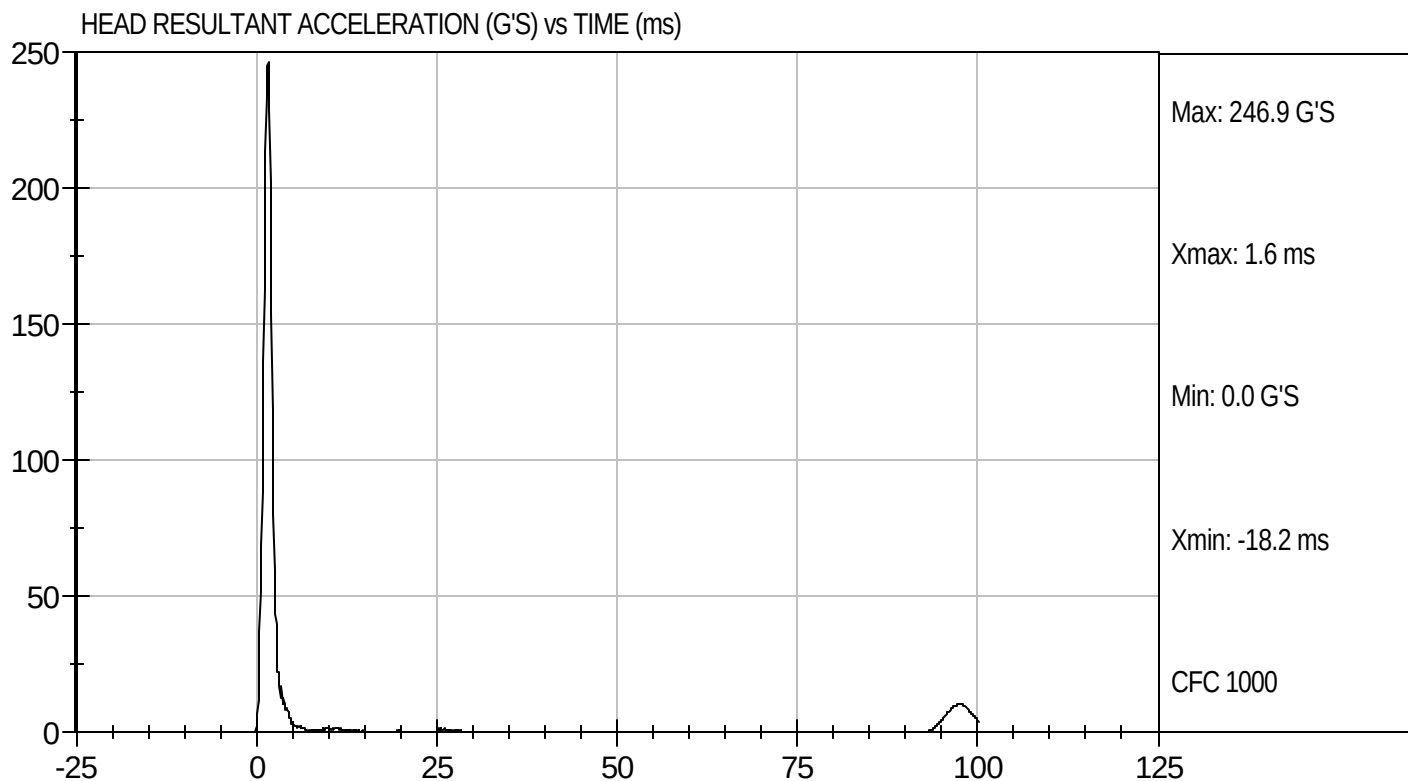
10/3/07
Test Date


Approved By



Test Desc: Head Drop
Component ID: D073091

Test Date: 10/3/07
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: D073092

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	20.8	Pass
Laboratory Relative Humidity		%	10 to 70	43	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.05	Pass
Pendulum Deceleration	10 msec	G's	22.50 to 27.50	22.84	Pass
	20 msec	G's	17.60 to 22.60	19.49	Pass
	30 msec	G's	12.50 to 18.50	14.22	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 29.0	14.21	Pass
Deceleration Decay Time to Cross 5 G's		msec	34.0 to 42.0	36.6	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	72.2	Pass
	Time	msec	57.0 to 64.0	60.3	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	113.0 to 128.0	113.2	Pass
Moment About Occipital Condyle	Maximum	N m	88.1 to 108.5	93.0	Pass
	Time	msec	47.0 to 58.0	47.7	Pass
Positive Moment Decay Time To Zero Crossing		msec	97.0 to 107.0	103.0	Pass
Overall Test Results					Pass


 Laboratory Technician

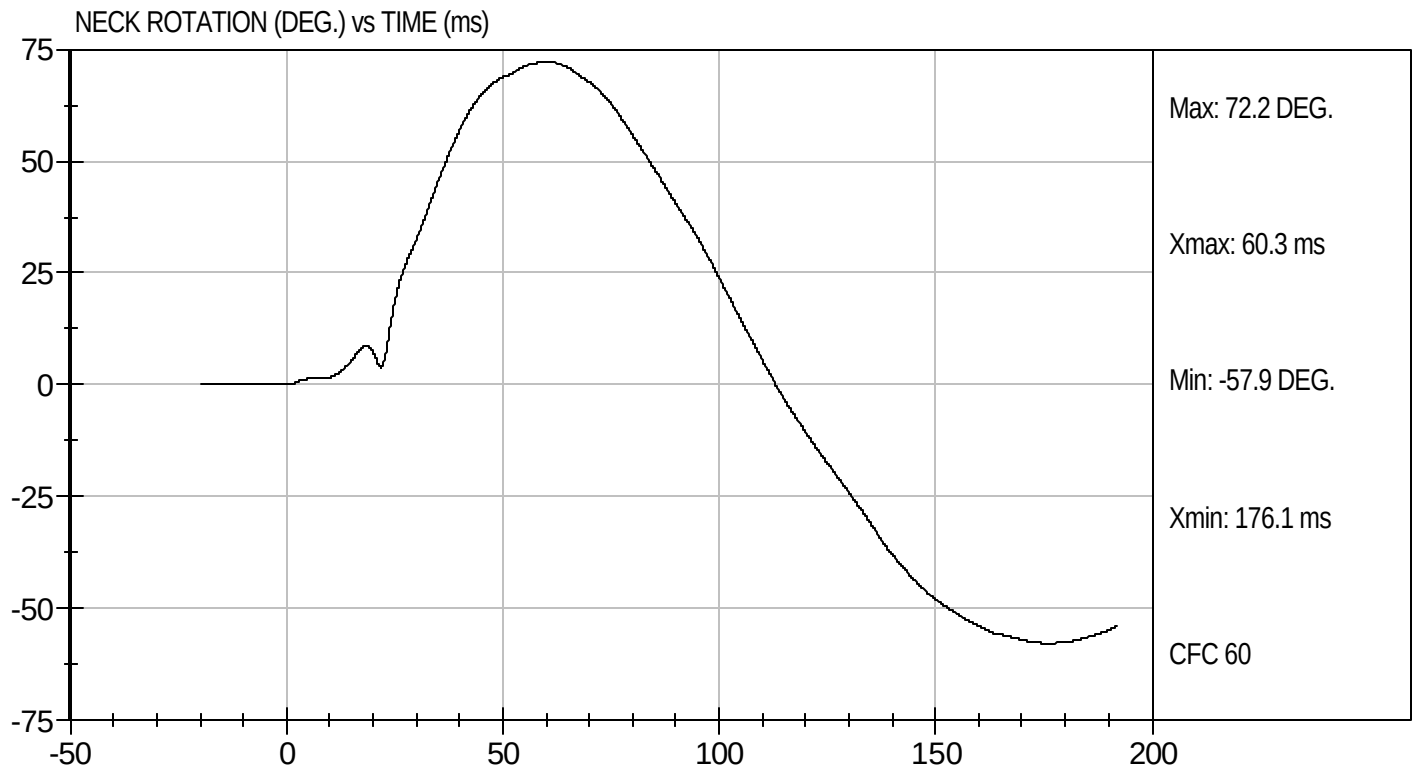
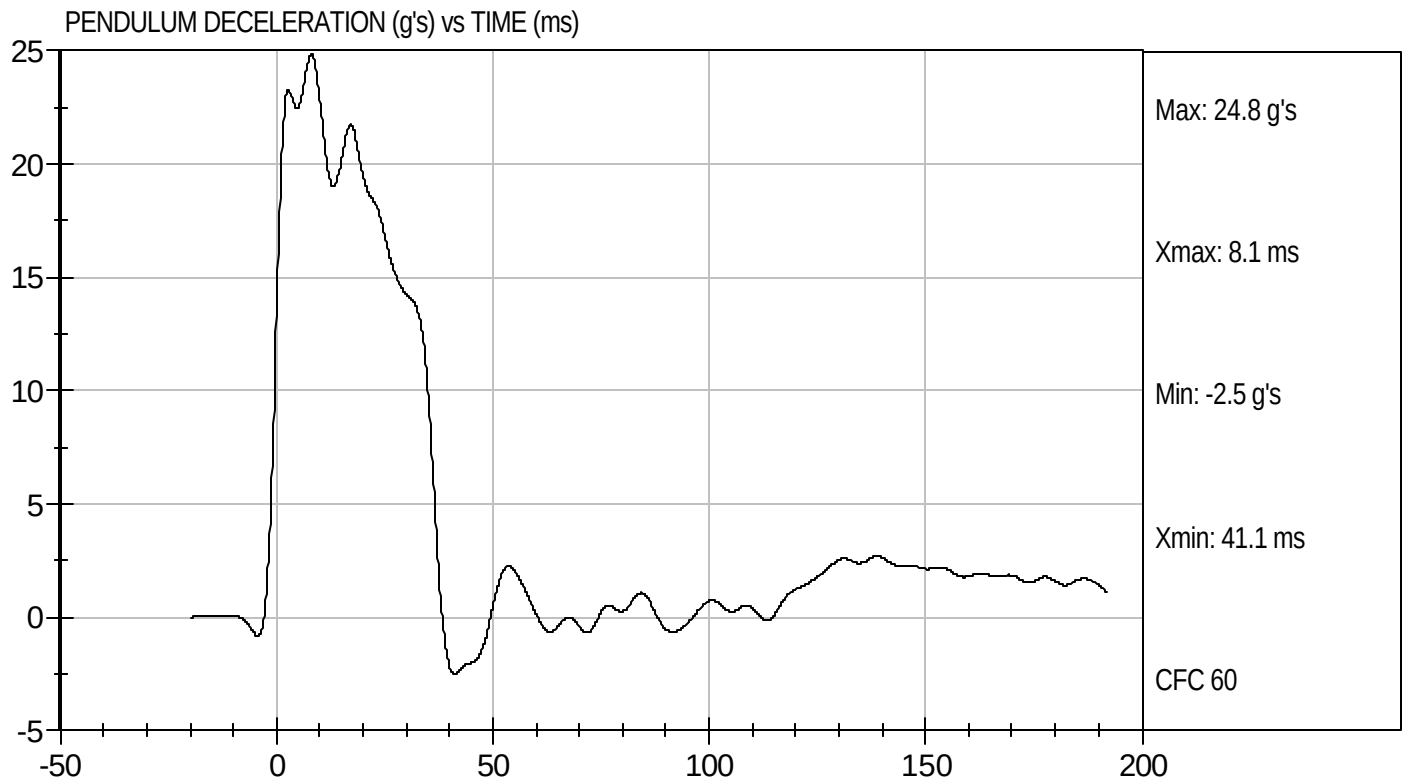
10/3/07
 Test Date


 Approved By



Test Desc: Neck Flexion
Component ID: D073092

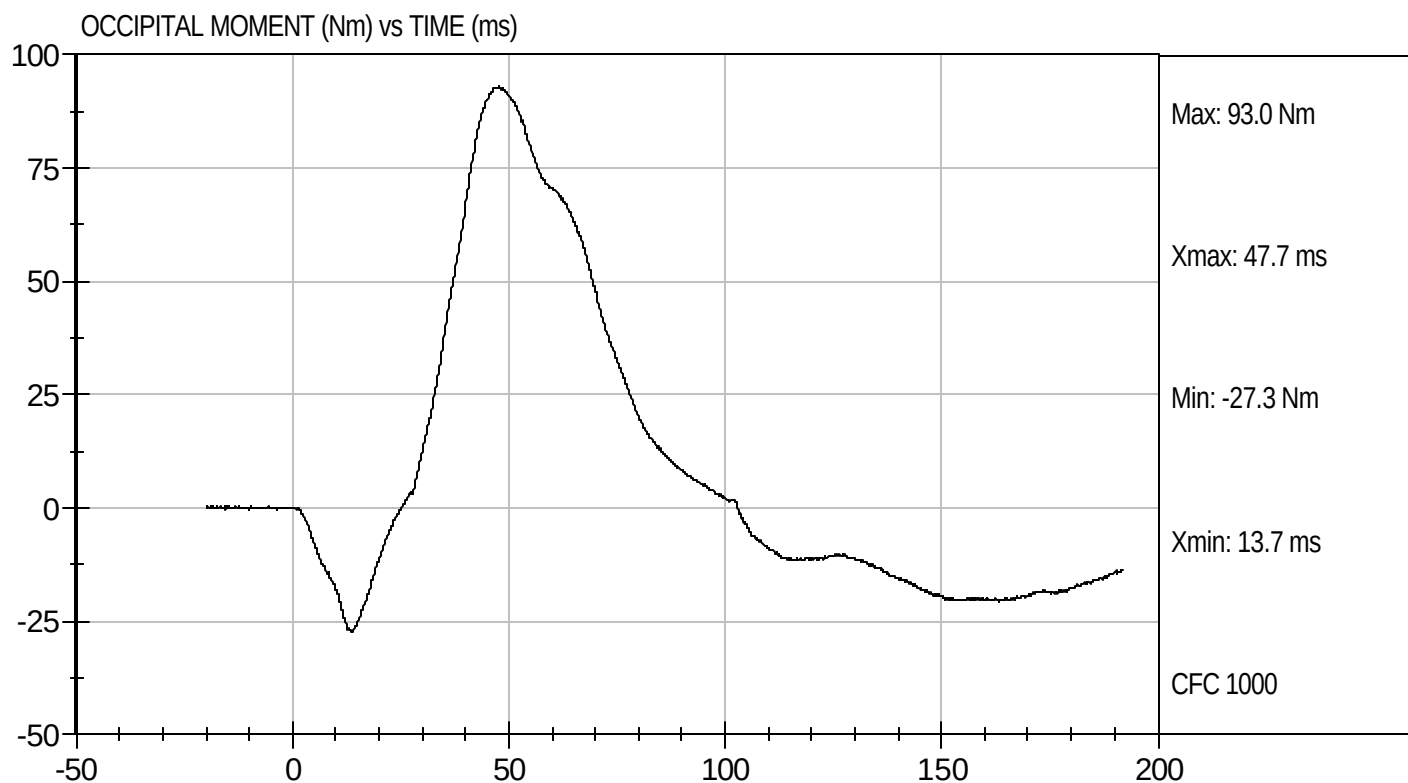
Test Date: 10/3/07
Velocity: 23.14 ft/s, 7.05 m/s





Test Desc: Neck Flexion
Component ID: D073092

Test Date: 10/3/07
Velocity: 23.14 ft/s, 7.05 m/s



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

ATD Serial No: 065

Test I.D: D073093

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	20.7	Pass
Laboratory Relative Humidity		%	10 to 70	40	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.12	Pass
Pendulum Deceleration	10 msec	G's	17.20 to 21.20	18.16	Pass
	20 msec	G's	14.00 to 19.00	15.37	Pass
	30 msec	G's	11.00 to 16.00	11.96	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 22.0	12.40	Pass
Deceleration Decay Time to Cross 5 G's		msec	38.0 to 46.0	39.1	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	83.8	Pass
	Time	msec	72.0 to 82.0	76.0	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	147.0 to 174.0	149.6	Pass
Moment About Occipital Condyle	Maximum	N m	-52.9 to -79.9	-61.9	Pass
	Time	msec	65.0 to 79.0	70.9	Pass
Negative Moment Decay Time To Zero Crossing		msec	120.0 to 148.0	140.7	Pass
Overall Test Results					Pass


 Laboratory Technician

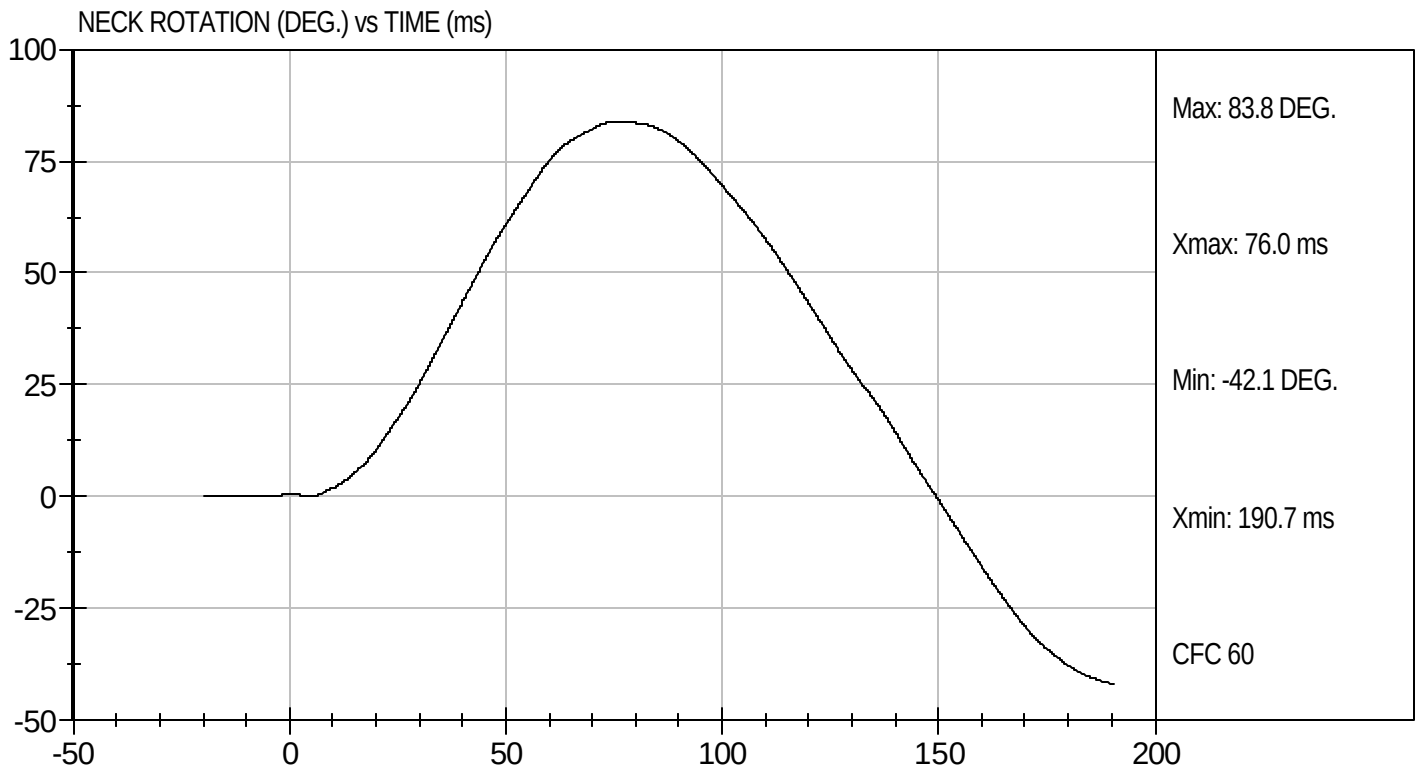
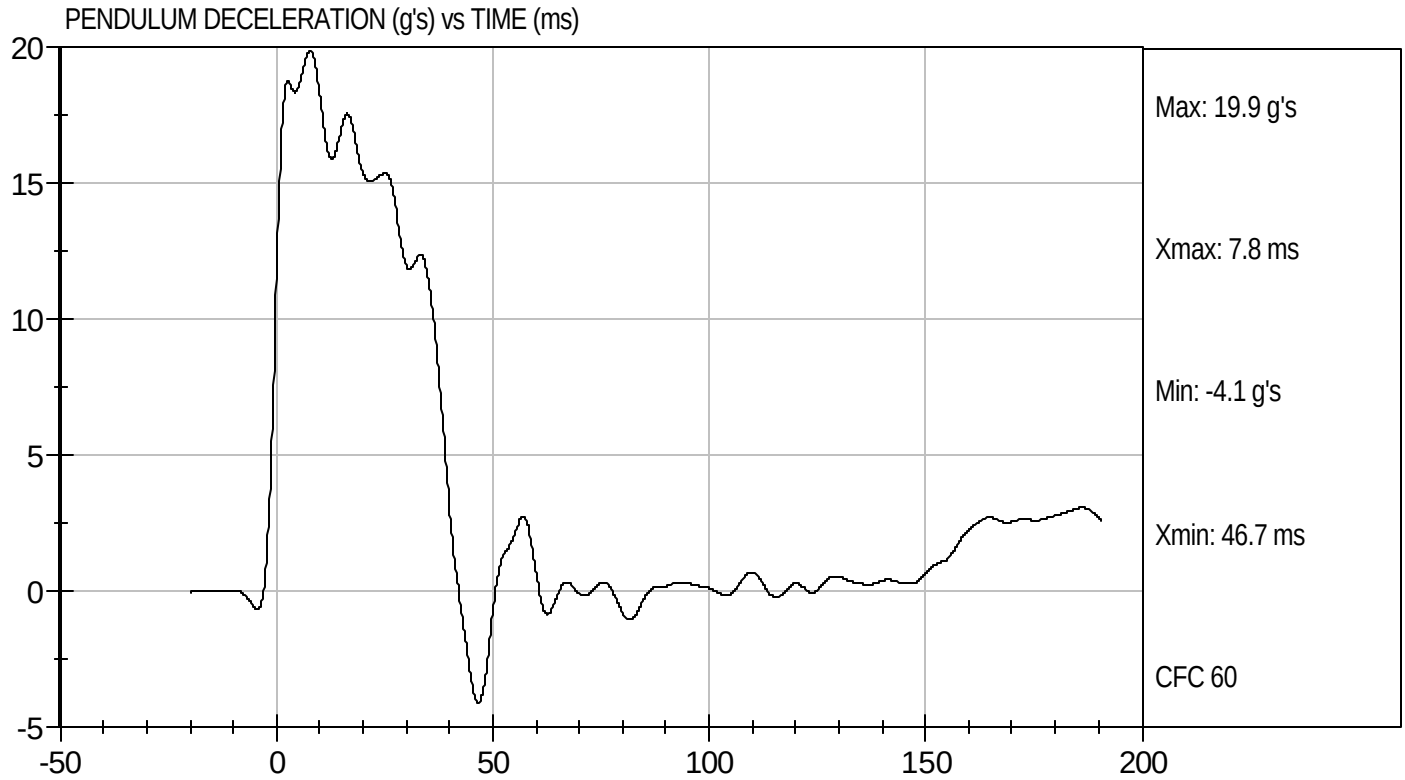
10/3/07
 Test Date


 Approved By



Test Desc: Neck Extension
Component ID: D073093

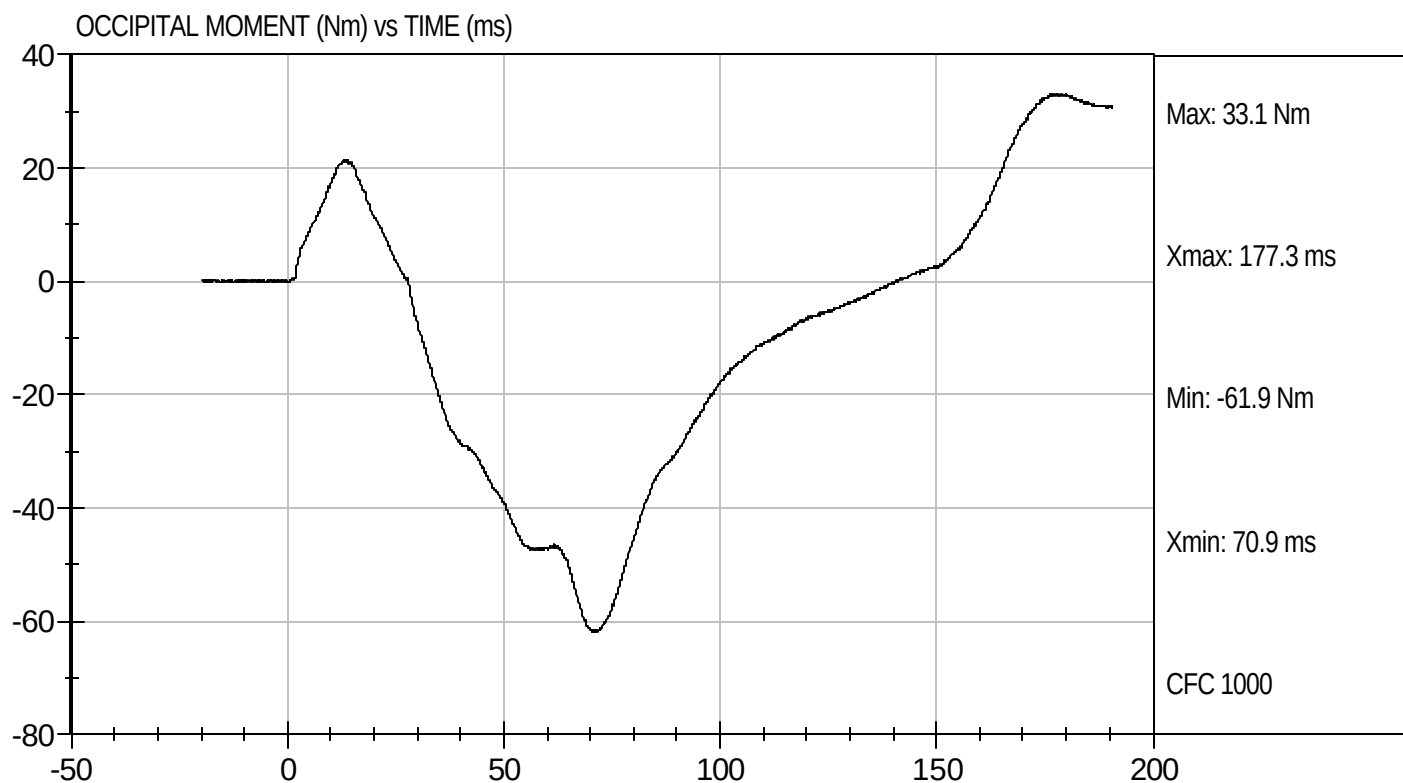
Test Date: 10/3/07
Velocity: 20.08 ft/s, 6.12 m/s





Test Desc: Neck Extension
Component ID: D073093

Test Date: 10/3/07
Velocity: 20.08 ft/s, 6.12 m/s



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 065

Test I.D: D073094

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	20.8	Pass
Laboratory Relative Humidity	%	10 to 70	43	Pass
Probe Velocity	m/s	6.58 to 6.82	6.77	Pass
Peak Probe Force	N	5159 to 5893	5,261	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.50	Pass
Internal Hysteresis	%	69 to 85	74	Pass
Overall Test Results			Pass	



Laboratory Technician



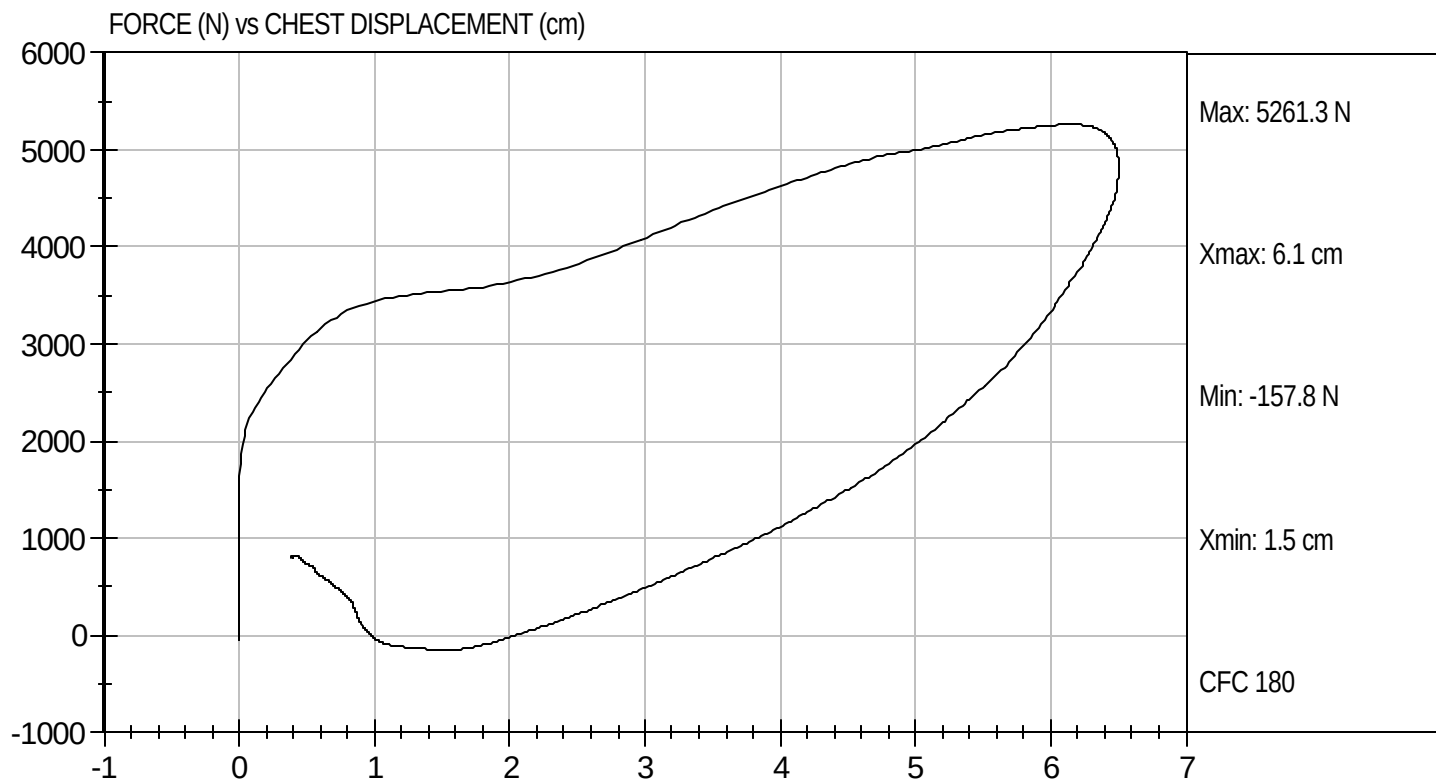
Approved By

10/3/07
Test Date



Test Desc: Thorax Impact
Component ID: D073094

Test Date: 10/3/07
Velocity: 22.22 ft/s, 6.77 m/s

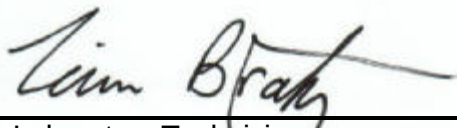


MGA RESEARCH CORPORATION
RIGHT KNEE IMPACT TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 065

Test I.D: D073095

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	39	Pass
Probe Velocity	m/sec	2.07 to 2.13	2.11	Pass
Peak Probe Force	Newtons	4715 to 5782	5,469	Pass
Overall Test Results				Pass



Laboratory Technician

10/3/07
Test Date

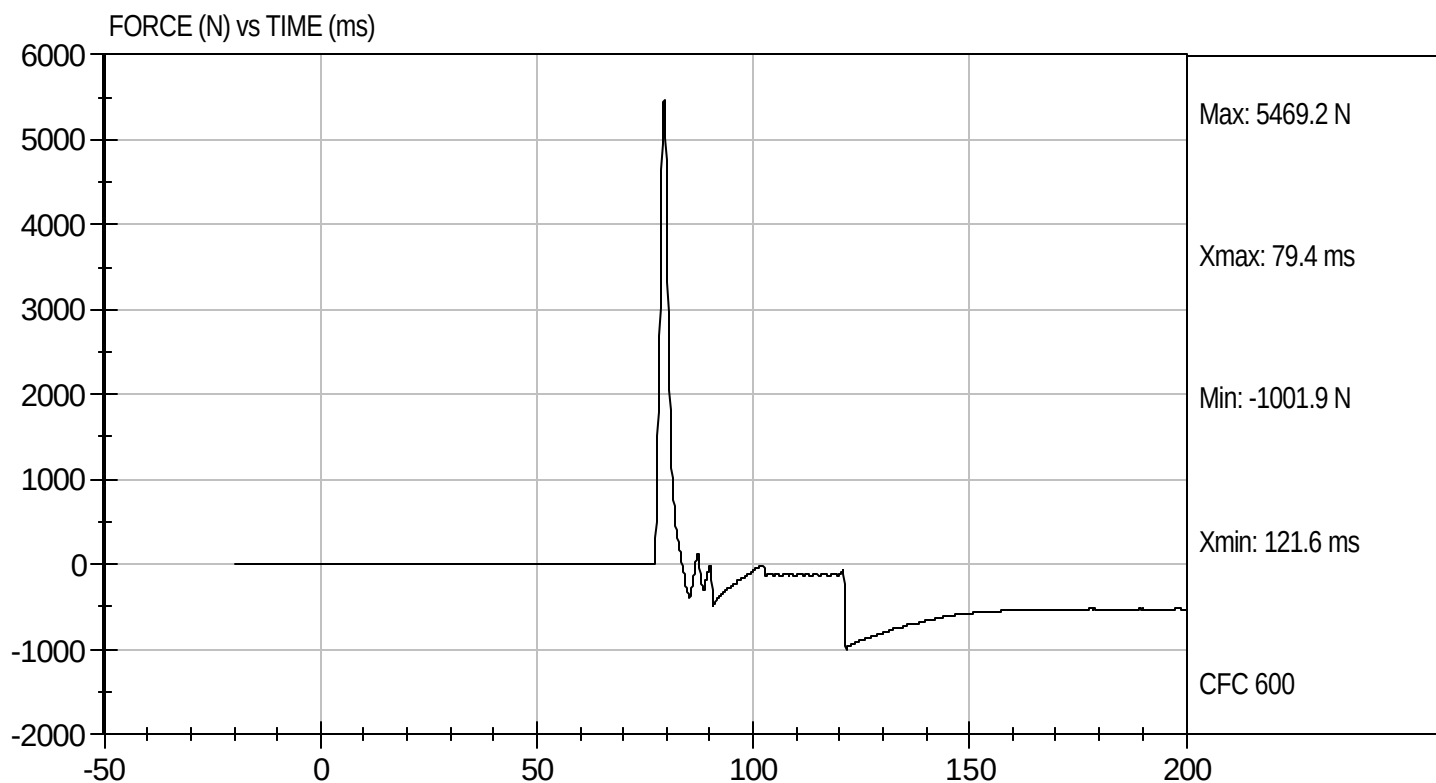


Approved By



Test Desc: Right Knee
Component ID: D073095

Test Date: 10/3/07
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: D073096

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	39	Pass
Probe Velocity	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	4715 to 5782	5,542	Pass
Overall Test Results				Pass


Laboratory Technician

10/3/07

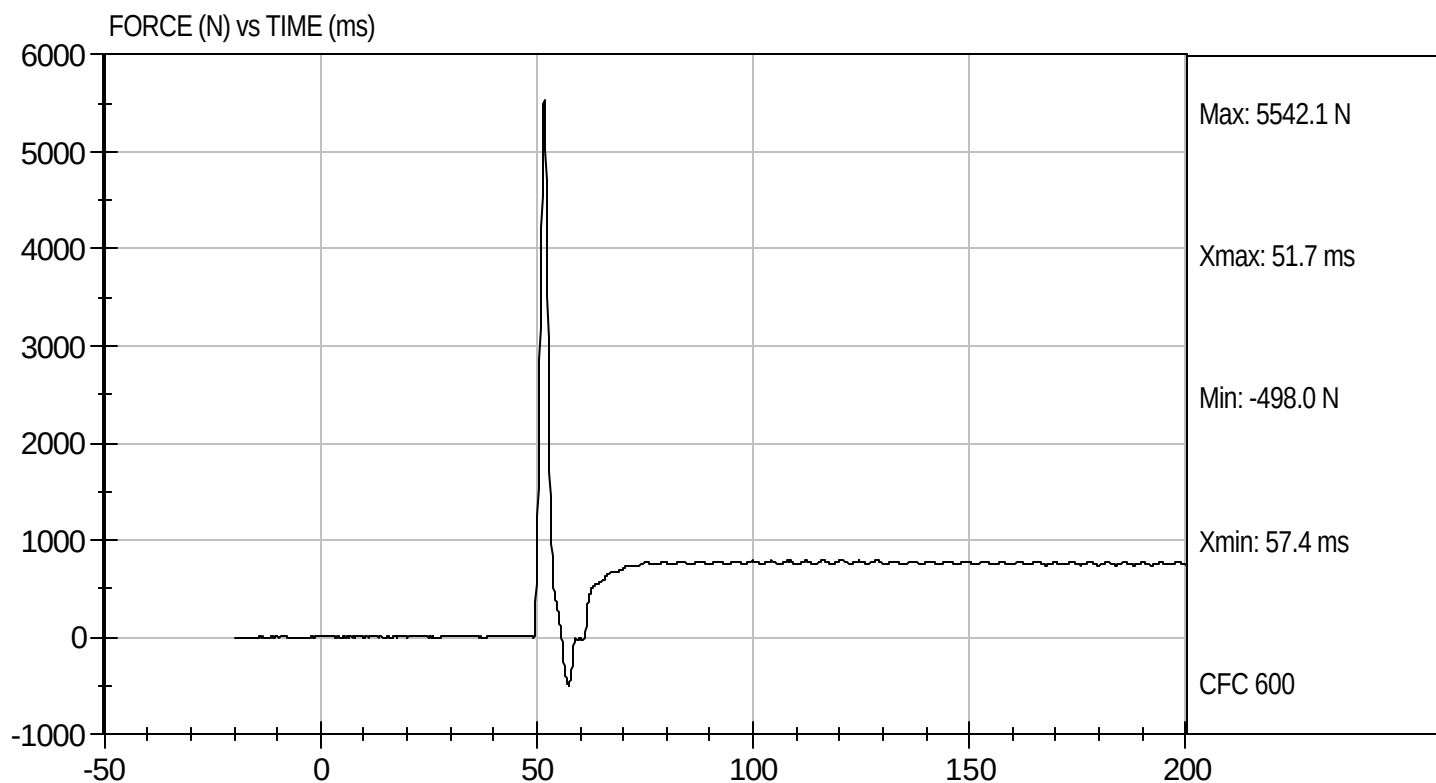
Test Date


Approved By



Test Desc: Left Knee
Component ID: D073096

Test Date: 10/3/07
Velocity: 6.86 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: D073090

Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	20.8	20.8	Pass
Laboratory Relative Humidity	%	10 to 70	48	48	Pass
Rotation Rate	deg/sec	5 -10	8	8	Pass
30 Degrees	Nm	94.9 Nm Max	62.5	59.4	Pass
150 ft-lbf / 203.4 Nm	Deg	40- 50 Degree Max Rotation	43	41	Pass
Overall Test Results					Pass


 Laboratory Technician

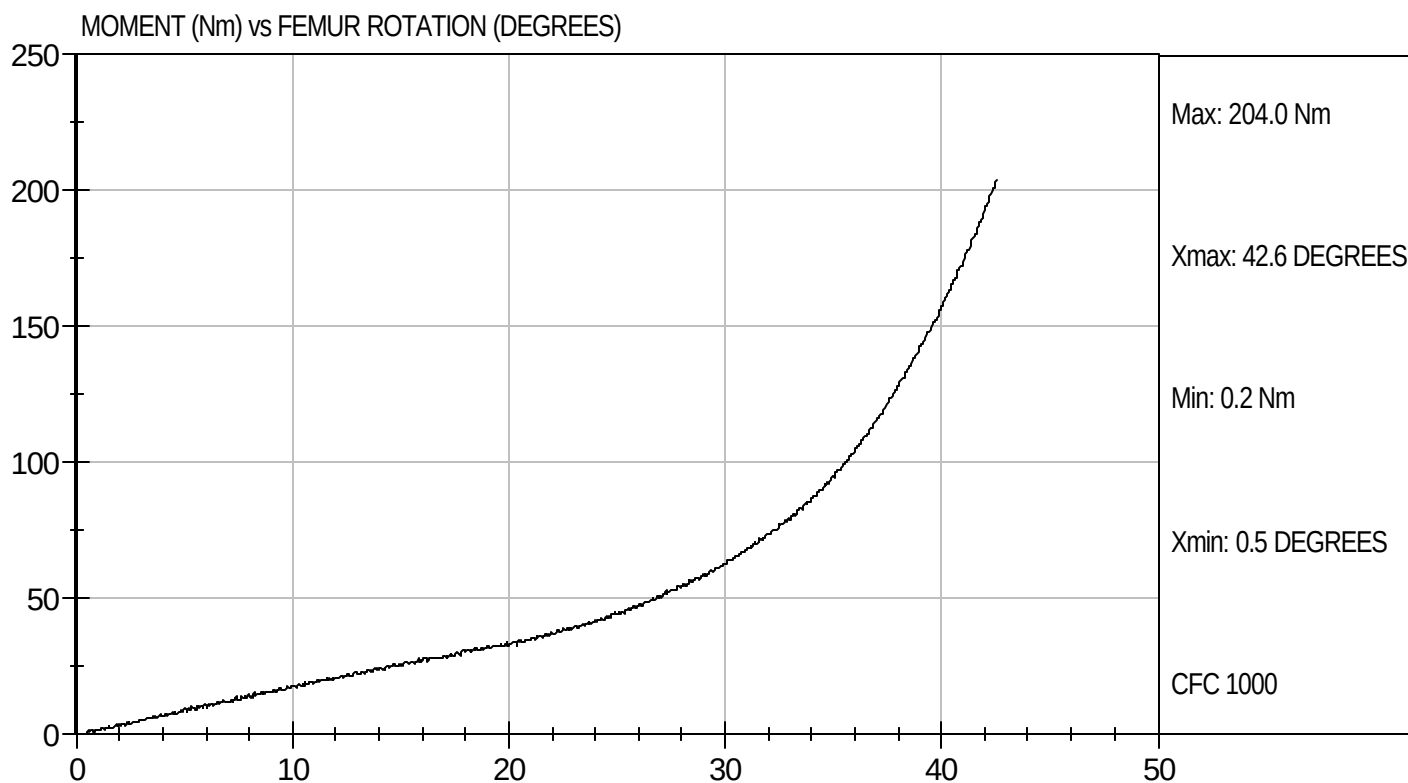
10/3/07
 Test Date


 Approved By



Test Desc: Hip Femur Flexion
Component ID: D073099

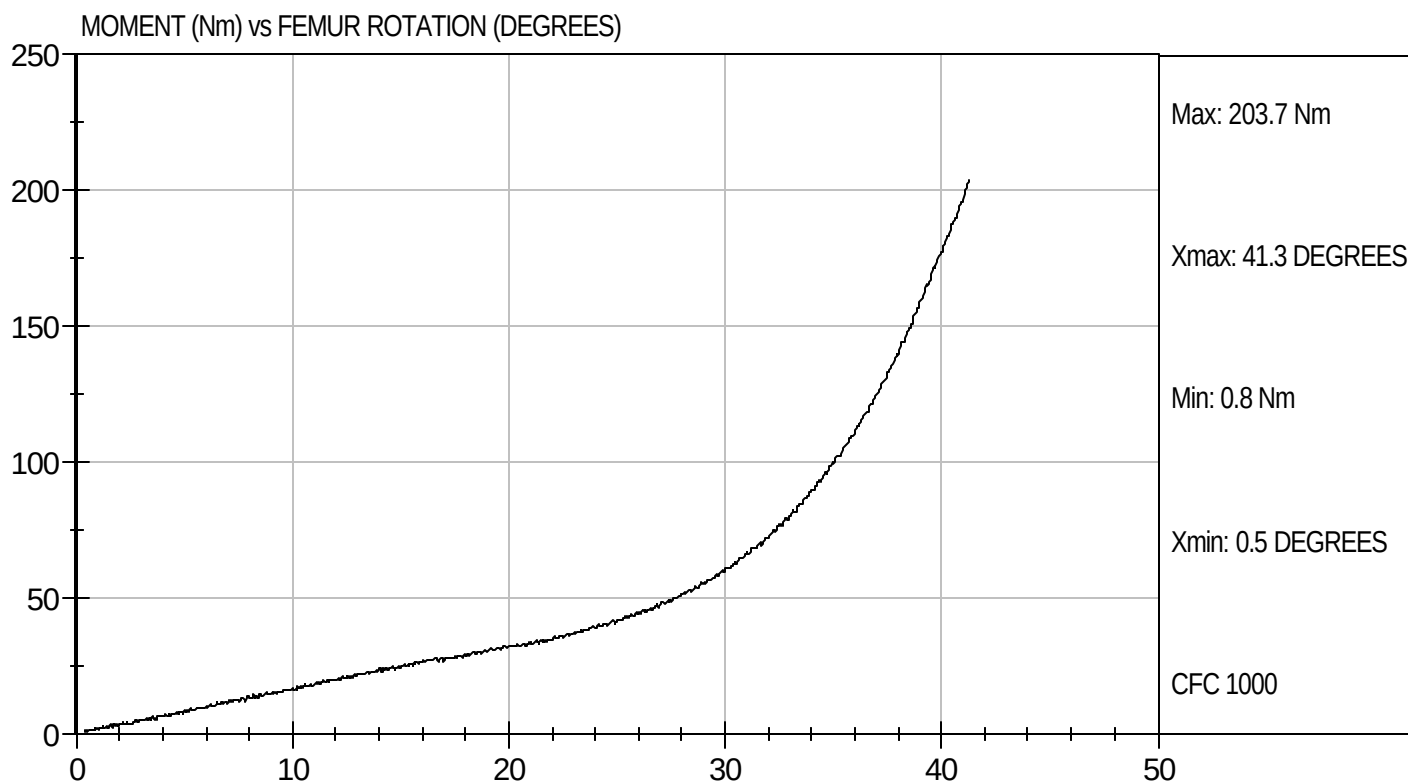
Test Date: 10/3/07
Velocity: 0 ft/s, 0.00 m/s





Test Desc: Hip Femur Flexion
Component ID: D073090

Test Date: 10/3/07
Velocity: 0 ft/s, 0.00 m/s



APPENDIX D
CHILD DUMMY DATA

SUMMARY OF TEST

Measurement Description	Units	Threshold	P3 ATD	P4 ATD
Head Injury Criteria (HIC36)	N/A	N/A	759	287
Head Injury Criteria (HIC15)	N/A	390	462	137
Max. Thorax Accel. (3msec Clip)	G's	50	52	36

Both child dummies were instrumented with head, chest, and upper six axial neck force and moment sensors.

The right rear (Position 3) child dummy (S/N 093) and left rear (Position 4) child dummy (S/N 090) were calibrated previous to this test. Child dummy certification information can be found in this Appendix.

Positions 3 and 4 were rear facing and used the vehicle LATCH attachment.

TEST VEHICLE WEIGHTS

	Units	As Tested (ATW) (Axle)		
		Front	Rear	Total
Left	kg	498.1	356.1	
Right	kg	480.8	345.2	
Ratio	%	58.3	41.7	
Totals	kg	978.9	701.3	1680.2

As tested weight of vehicle includes two ATDs, two CRABIs with CRS, cargo, equipment and instrumentation.

TEST NOTES

The P4 CRS became unfastened from its base.

TEST DUMMY INFORMATION

Description	Position 3 CRS	Position 4 CRS
Dummy Type / Serial No.	12 month old CRABI / 093	12 month old CRABI / 090
Number of Data Channels	12	12
Restraint System	Graco Safe Seat (Rear Facing)	Combi Centre (Rear Facing)

POST TEST SEAT DATA

Location	Seat Movement (mm)	Seat Back Failure
P1 (Left Front)	0	None
P2 (Right Front)	0	None
P3 (Right Rear)	0	None
P4 (Left Rear)	0	None

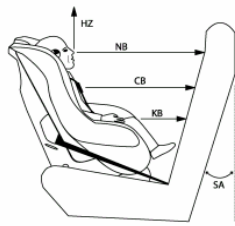
VISIBLE DUMMY CONTACT POINTS

Description	Position 3 CRS	Position 4 CRS
Head Contact	None	Driver seat back, headliner, And handle of child seat
Upper Torso Contact	None	None
Lower Torso Contact	None	None
Left Foot Contact	Foot to vehicle rear seat	Driver headrest
Right Foot Contact	Foot to vehicle rear seat	Driver headrest

CHILD DUMMY POSITIONING IN VEHICLE

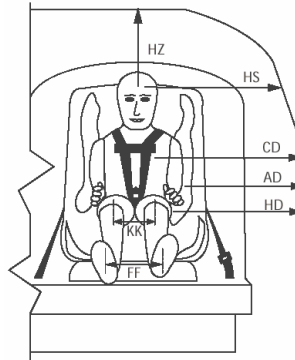
Child Restraint System (Position 3)	Graco Safe Seat (Rear Facing)
NHTSA No.	M85302

Dummy Measurements for Rear-facing CRS Passengers



X—Z View

HZ	-	Head to Roof
NB	-	Nose to Front of Back Seat
CB	-	Chest to Front of Back Seat
KB	-	Knee to Front of Back Seat
SA	-	Seat Back Angle



Y—Z View

X—Z View

HZ	-	Head to Roof
HS	-	Head to Side Window
CD	-	Chest to Door
AD	-	Arm to Door
HD	-	H-Point to Door
KK	-	Knee to Knee
FF	-	Foot to Foot
NB	-	Nose to Front Seat Back
CB	-	Chest to Front Seat Back
KB	-	Knee to Front Seat Back
TB	-	Toe to Front Seat Back
SA	-	Seat Back Angle

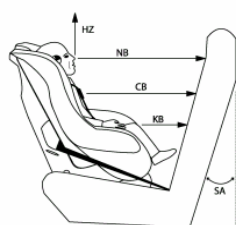
Measurement	Pre-Test (mm)	Post-Test (mm)
	P3 CRS (093)	P3 CRS (093)
SA (deg)	1.6	1.6
HS	391	354
CD	405	384
AD	279	371
HD	325	323
HZ	428	422
NB	531	553
CB	419	446
KK	105	111
FF	80	97
KB - LEFT	195	220
KB - RIGHT	175	225
TB - LEFT	47	113
TB - RIGHT	45	111

All dimensions in mm (unless noted)
P3 – Right Rear Passenger (Rear Facing)

CHILD DUMMY POSITIONING IN VEHICLE

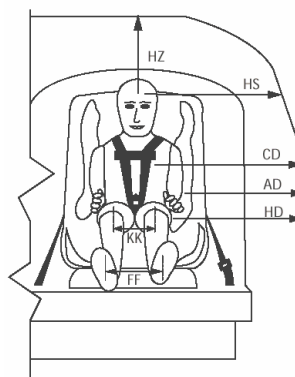
Child Restraint System (Position 4)	Combi Centre (Rear Facing)
NHTSA No.	M85302

Dummy Measurements for Rear-facing CRS Passengers



X—Z View

HZ	-	Head to Roof
NB	-	Nose to Front of Back Seat
CB	-	Chest to Front of Back Seat
KB	-	Knee to Front of Back Seat
SA	-	Seat Back Angle



Y—Z View

X—Z View

HZ	-	Head to Roof
HS	-	Head to Side Window
CD	-	Chest to Door
AD	-	Arm to Door
HD	-	H-Point to Door
KK	-	Knee to Knee
FF	-	Foot to Foot
NB	-	Nose to Front Seat Back
CB	-	Chest to Front Seat Back
KB	-	Knee to Front Seat Back
TB	-	Toe to Front Seat Back
SA	-	Seat Back Angle

Measurement	Pre-Test (mm)	Post-Test (mm)
	P4 CRS (090)	P4 CRS (090)
SA (deg)	1.7	1.7
HS	368	403
CD	391	480
AD	272	430
HD	323	492
HZ	434	566
NB	486	538
CB	393	373
KK	103	100
FF	96	92
KB - LEFT	184	172
KB - RIGHT	188	181
TB - LEFT	73	126
TB - RIGHT	81	108

All dimensions in mm (unless noted)
P4 – Left Rear Passenger (Rear facing)

CRS PERFORMANCE DATA

Child Restraint System (Position 3)	Graco Safe Seat (Rear Facing)
Child Restraint System (Position 4)	Combi Centre (Rear Facing)
NHTSA No.	M85302

POSITION 3 CRS POST-TEST INSPECTION

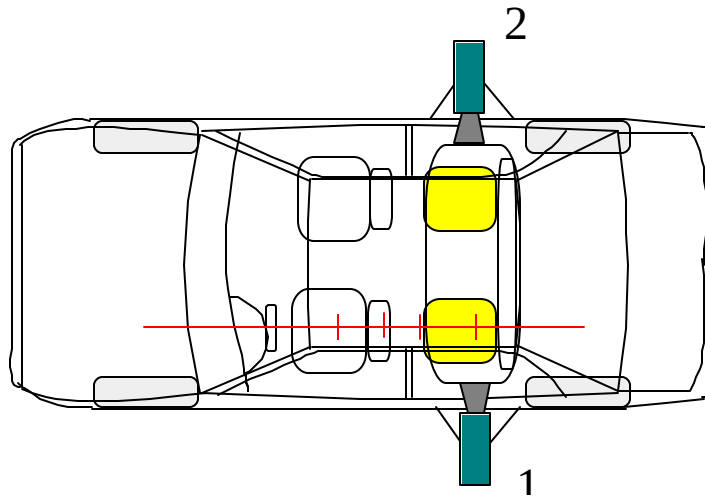
Location	Damage	Remarks
Upper Tether Strap		
Upper Tether Buckle		
Upper Tether Hook		
Vehicle Upper Tether Anchor		
Lower Anchor Strap		
Lower Anchor Buckle		
Lower Anchor Hooks	None	
Vehicle Lower CRS Anchors	None	
Five Point Harness Connections	None	
Cracks on CRS	None	
Fabric Tears on CRS	None	
Vehicle Seat Structure	None	
Vehicle Seat Fabric Tears	None	
Child Dummy	None	CRABI 12 Month Old

POSITION 4 CRS POST-TEST INSPECTION

Location	Damage	Remarks
Upper Tether Strap		
Upper Tether Buckle		
Upper Tether Hook		
Vehicle Upper Tether Anchor		
Lower Anchor Strap		
Lower Anchor Buckle		
Lower Anchor Hooks	None	
Vehicle Lower CRS Anchors	None	
Five Point Harness Connections	None	
Cracks on CRS	Yes	Broken Carrying Handle
Fabric Tears on CRS	None	
Vehicle Seat Structure	None	
Vehicle Seat Fabric Tears	None	
Child Dummy	None	CRABI 12 Month Old

CRS CAMERA DATA

Child Restraint System (Position 3)	Graco Safe Seat (Rear Facing)
Child Restraint System (Position 4)	Combi Centre (Rear Facing)
NHTSA No.	M85302



No.	Camera View	Location (mm) *			Angle (deg)	Lens (mm)	Speed (fps)
		X	Y	Z			
1	Left Side CRS Lateral View					8	1000
2	Right Side CRS Lateral View					8	1000

*COORDINATES:

+X = film plane rearward of barrier

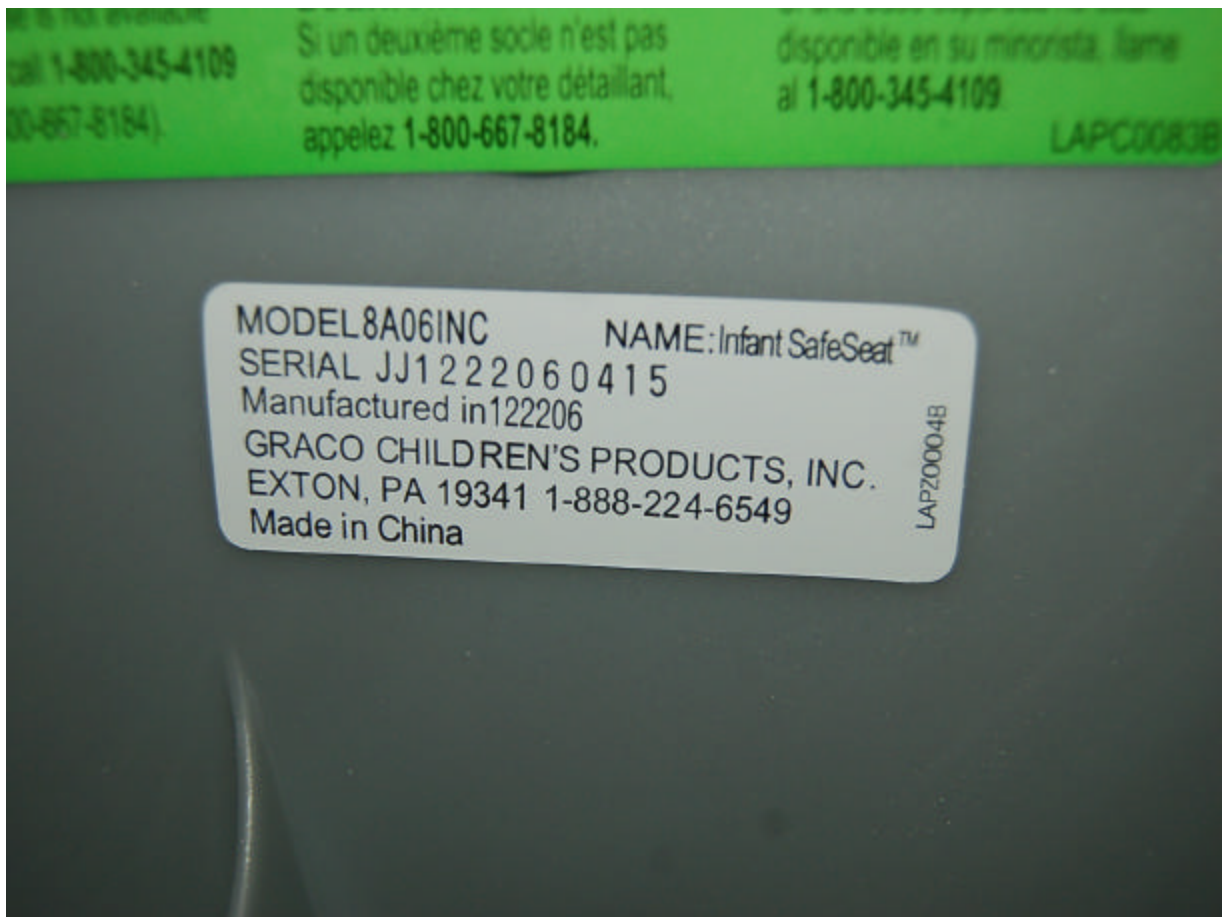
+Y = film plane to right of monorail centerline

+Z = film plane above ground level

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Close-up View of Position 3 CRS Label



Pre-Test Front View of Position 3 CRS



Post-Test Front View of Position 3 CRS



Pre-Test Rear View of Position 3 CRS



Post-Test Rear View of Position 3 CRS



Pre-Test Left Side View of Position 3 CRS



Post-Test Left Side View of Position 3 CRS



Pre-Test Right Side View of Position 3 CRS



Post-Test Right Side View of Position 3 CRS



Close-up View of Position 4 CRS Label



Pre-Test Front View of Position 4 CRS



Pre-Test Rear View of Position 4 CRS



Post-Test Rear View of Position 4 CRS



Pre-Test Left Side View of Position 4 CRS



Post-Test Left Side View of Position 4 CRS



Pre-Test Right Side View of Position 4 CRS



Post-Test Right Side View of Position 4 CRS



Pre-Test Position 3 Left Side View



Post-Test Position 3 Left Side View



Pre-Test Position 4 Left Side View



Post-Test Position 4 Left Side View



Pre-Test Position 3 Right Side View



Post-Test Position 3 Right Side View



Pre-Test Position 4 Right Side View



Post-Test Position 4 Right Side View



Post-Test Position 4 Head Contact (Driver Seatback)



Post-Test Position 4 Foot Contact (Driver Headrest)



Post-Test Position 4 Head Contact (Handle of CRS)



Post-Test Position 4 CRS Damage

CHILD DUMMY RESPONSE DATA TRACES

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

LRP Child Upper Neck Force X vs. Time

LRP Child Upper Neck Force Y vs. Time

LRP Child Upper Neck Force Z vs. Time

LRP Child Upper Neck Force Resultant vs. Time

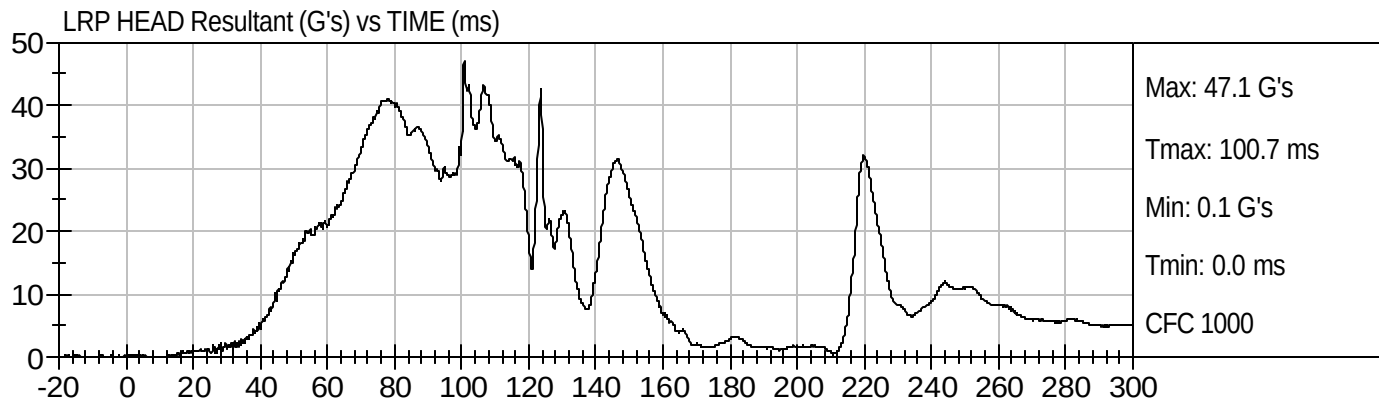
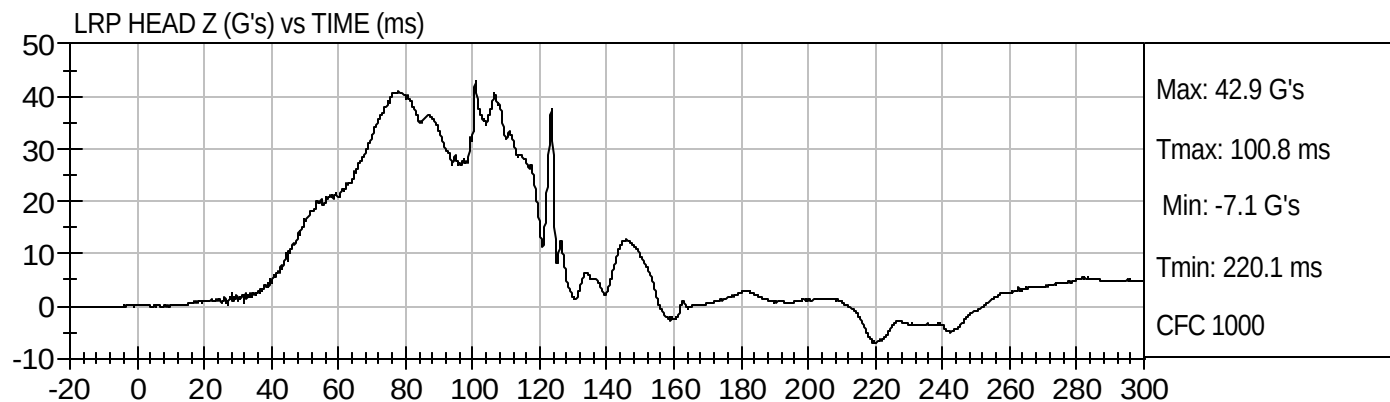
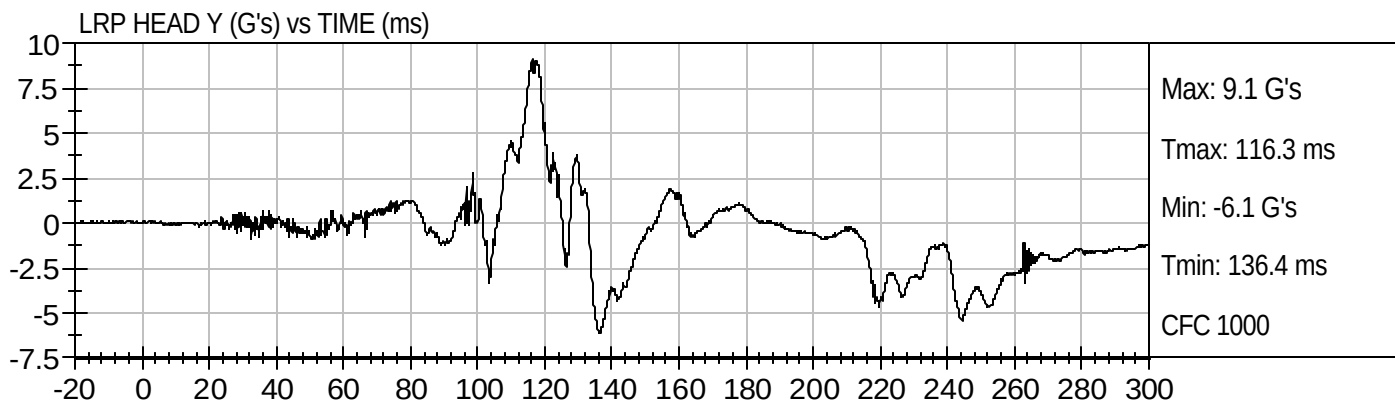
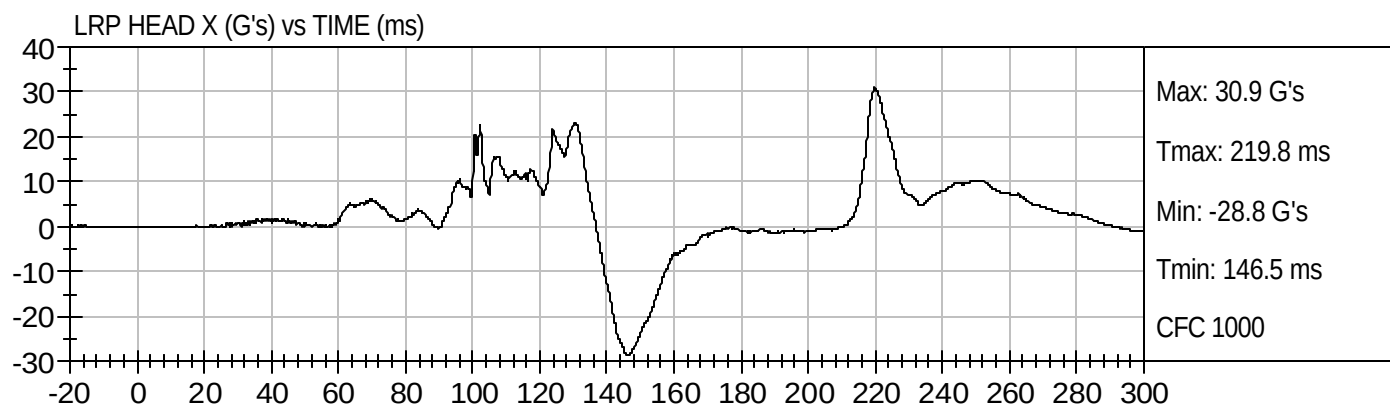
LRP Child Upper Neck Moment X vs. Time

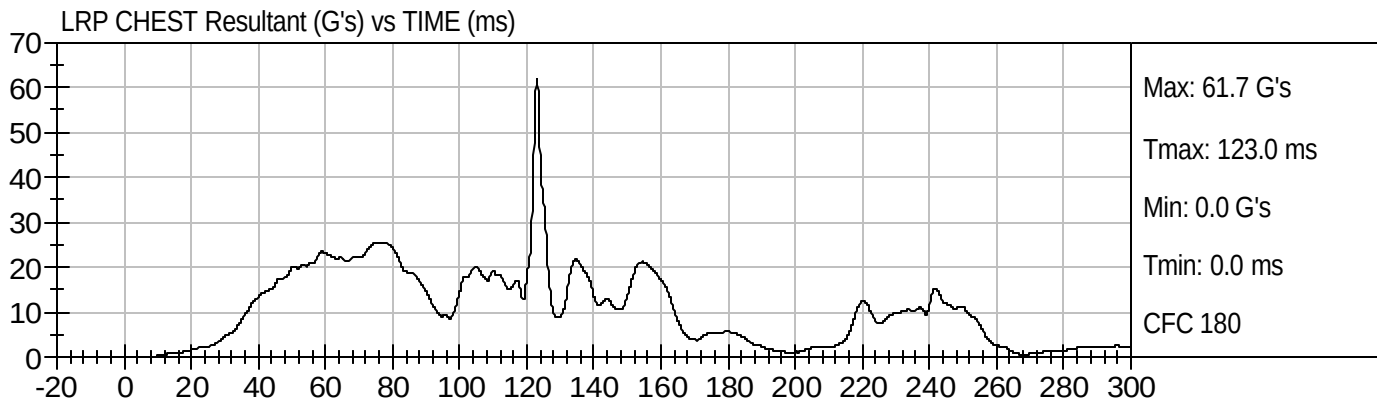
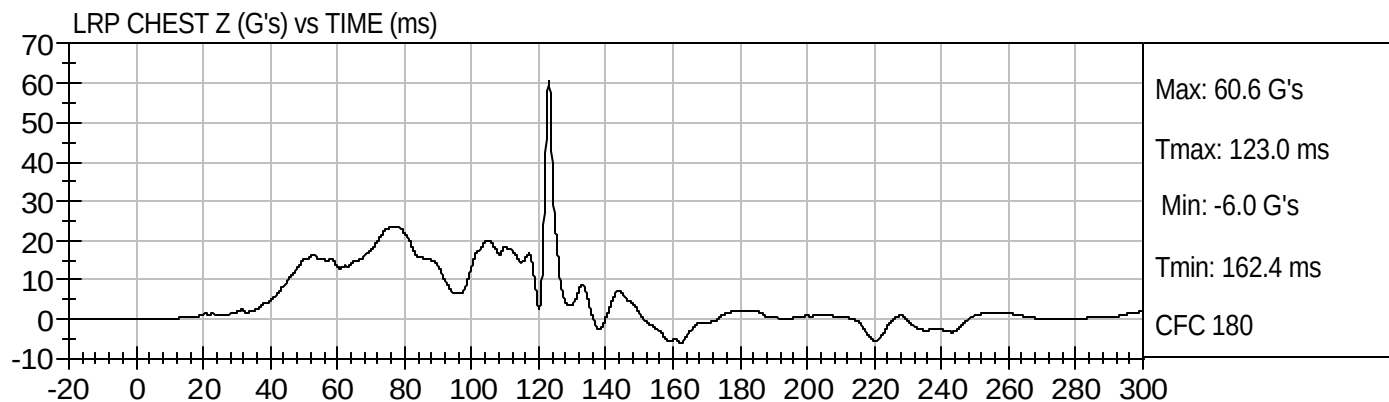
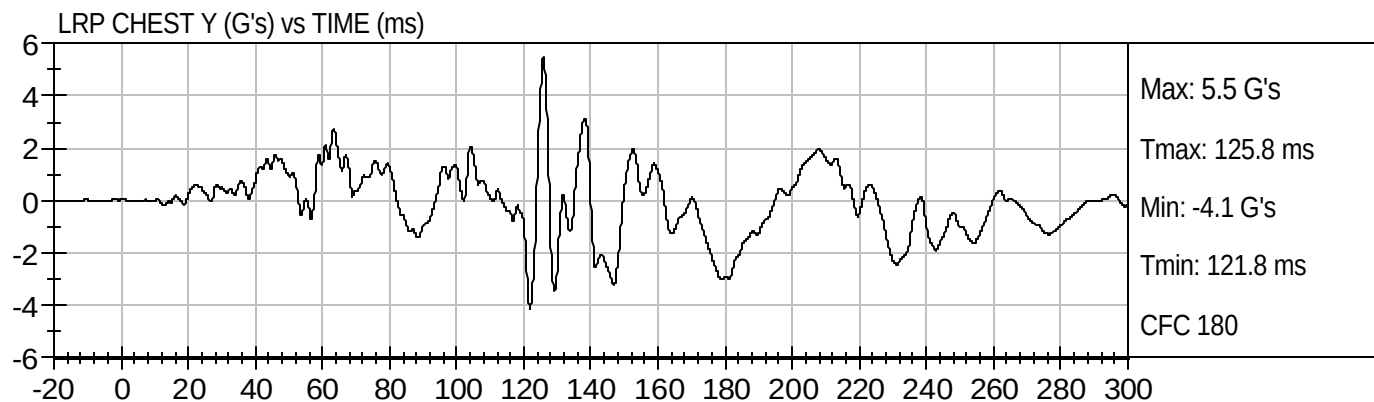
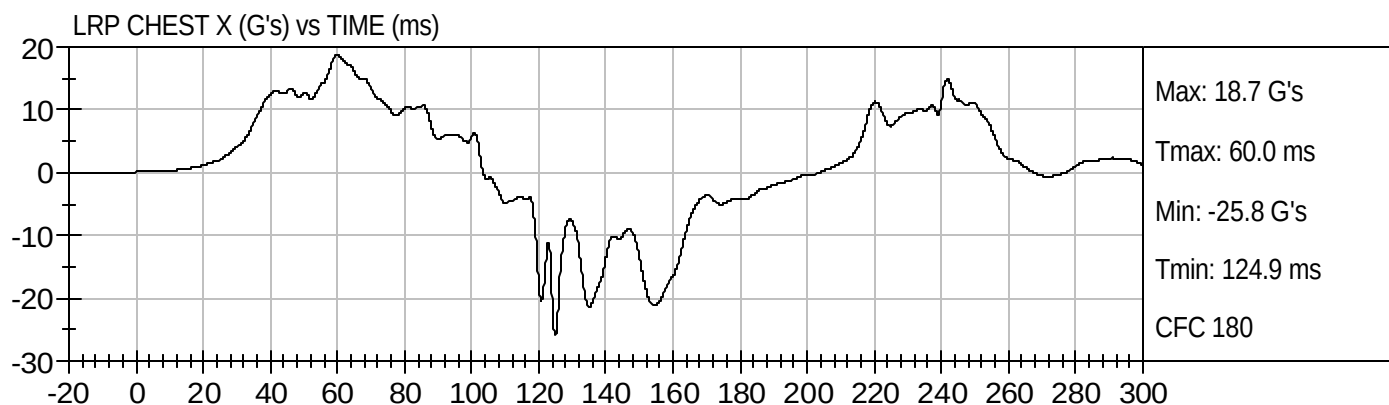
LRP Child Upper Neck Moment Y vs. Time

LRP Child Upper Neck Moment Z vs. Time

LRP Child Upper Neck Moment Resultant vs. Time

RRP Child Upper Neck Force X vs. Time
RRP Child Upper Neck Force Y vs. Time
RRP Child Upper Neck Force Z vs. Time
RRP Child Upper Neck Force Resultant vs. Time
RRP Child Upper Neck Moment X vs. Time
RRP Child Upper Neck Moment Y vs. Time
RRP Child Upper Neck Moment Z vs. Time
RRP Child Upper Neck Moment Resultant vs. Time
LRP Child Seat X Acceleration vs. Time
LRP Child Seat Y Acceleration vs. Time
LRP Child Seat Z Acceleration vs. Time
LRP Child Seat Resultant Acceleration vs. Time
RRP Child Seat X Acceleration vs. Time
RRP Child Seat Y Acceleration vs. Time
RRP Child Seat Z Acceleration vs. Time
RRP Child Seat Resultant Acceleration vs. Time



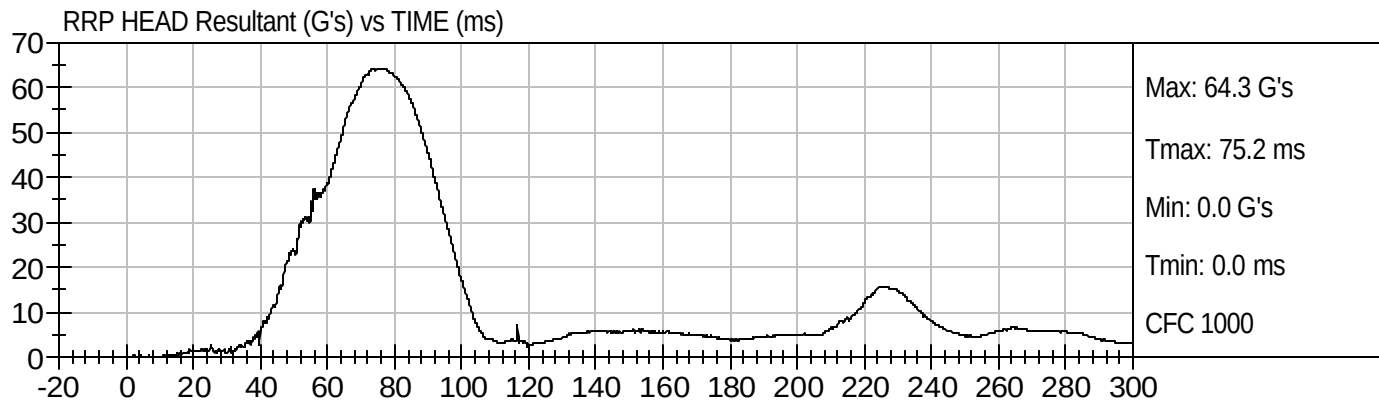
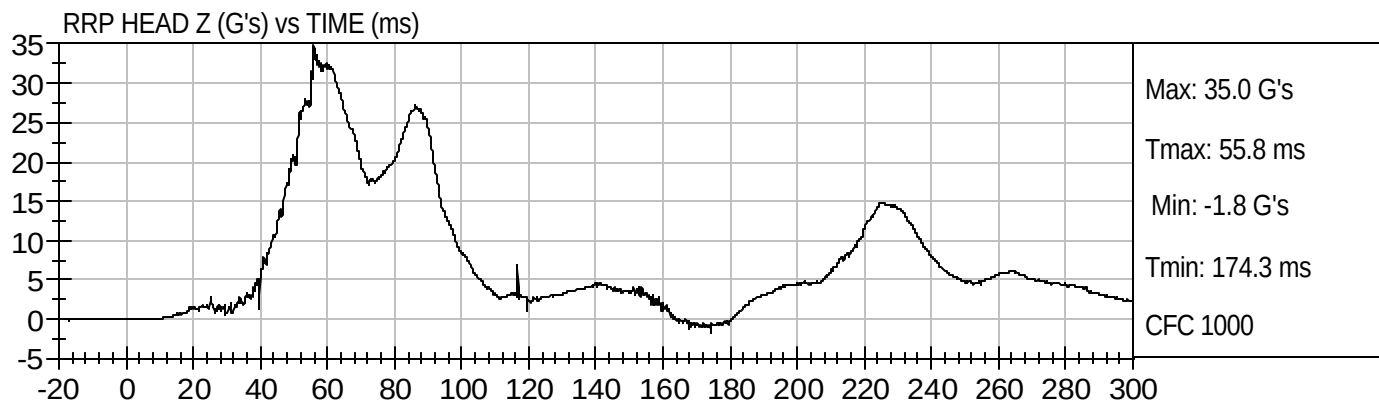
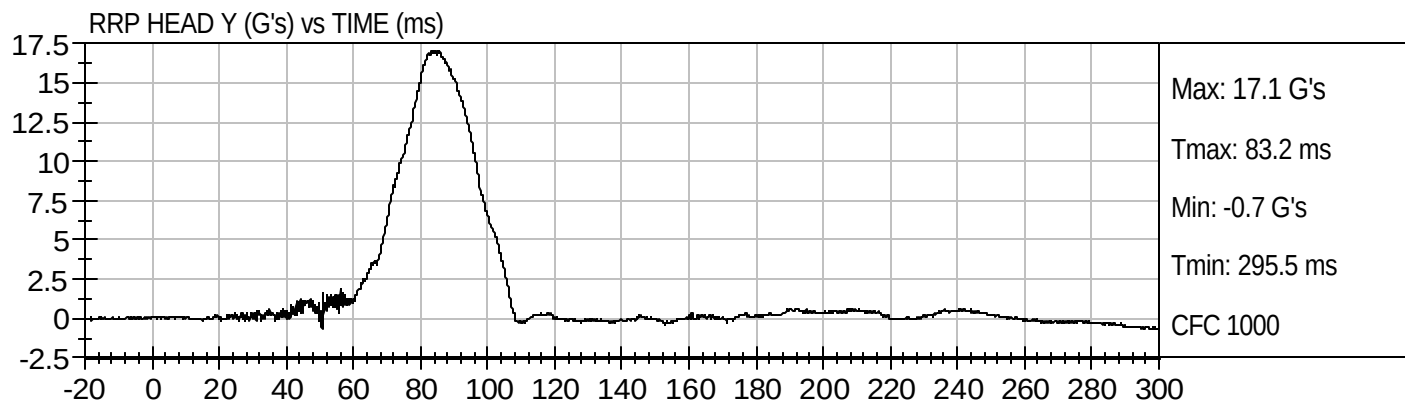
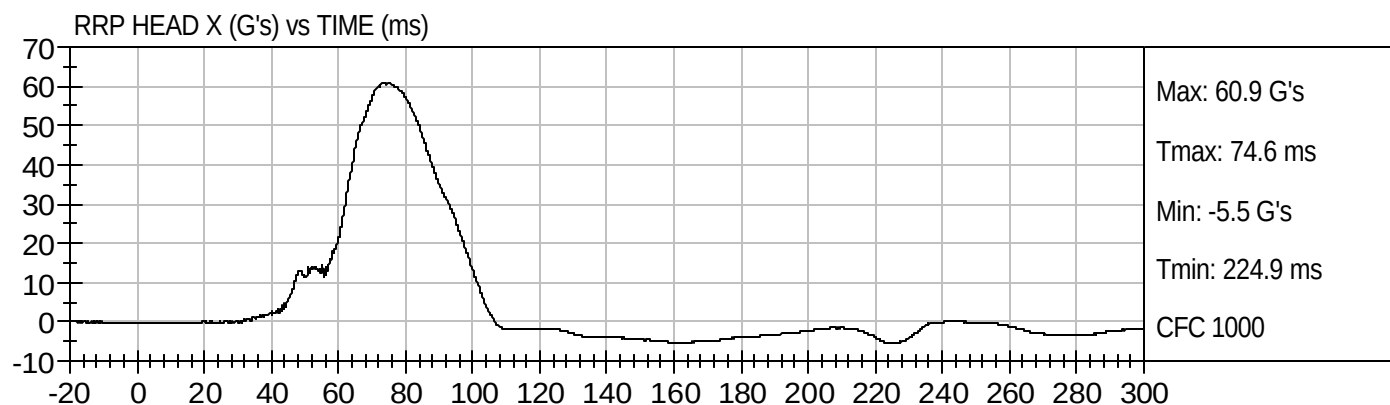


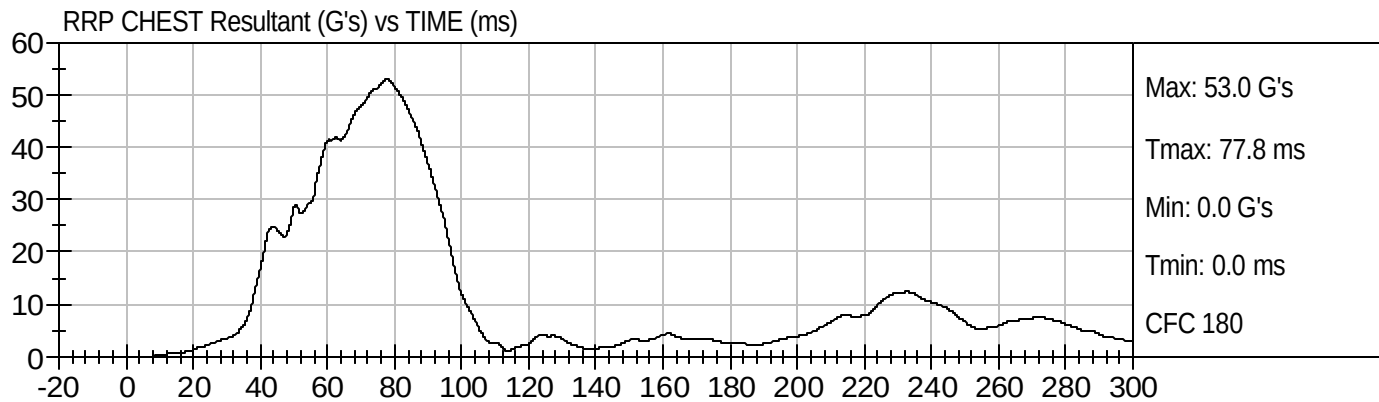
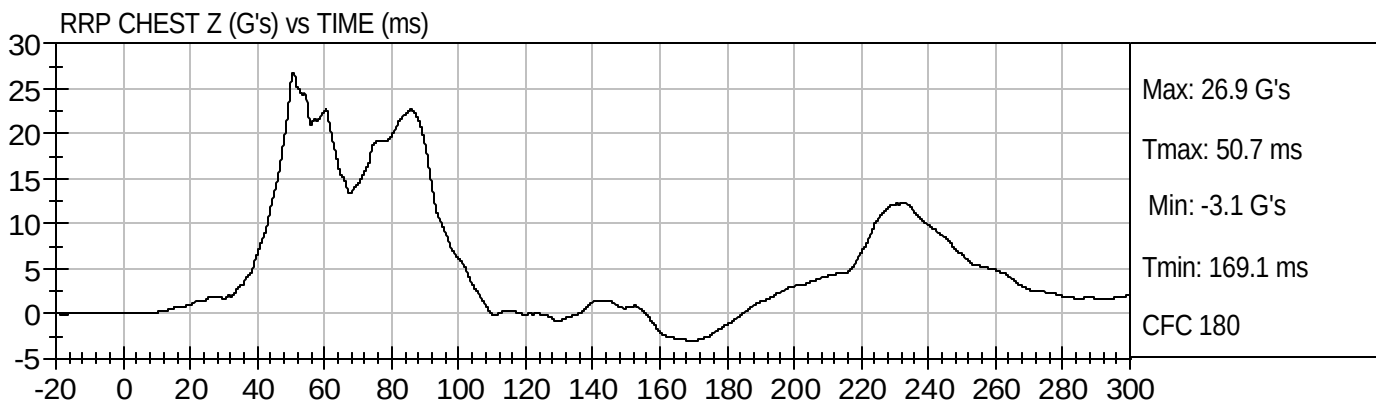
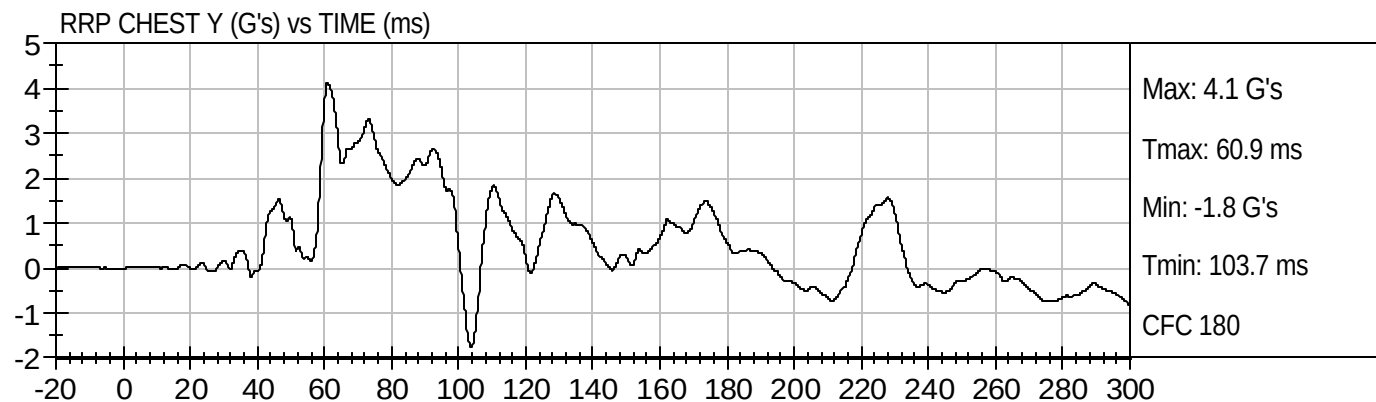
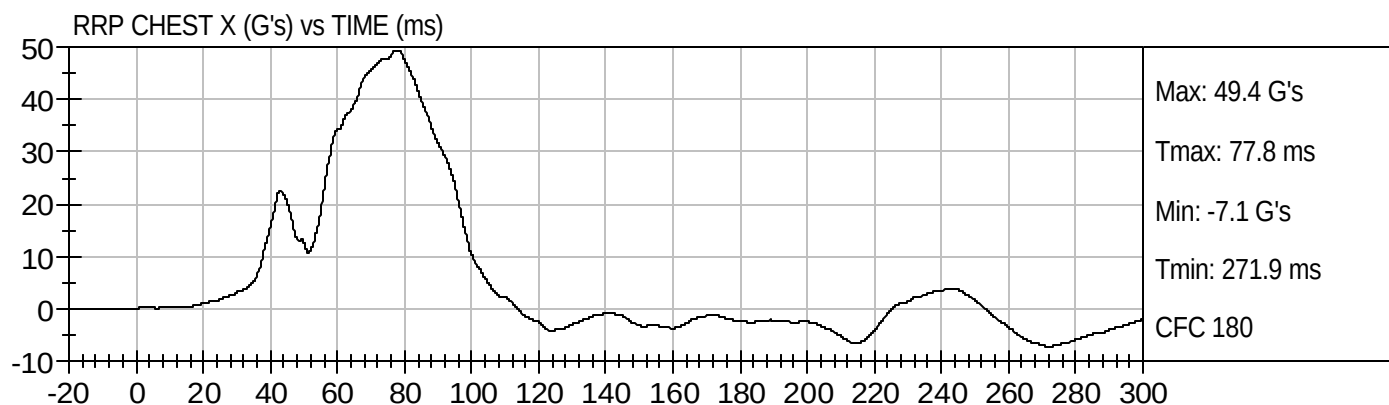


NCAP FRONTAL
2008 HONDA ACCORD

M85302

Test Date: 10/18/2007
Speed: 35.0 mph (56.3 km/h)





CHILD DUMMY CALIBRATION INFORMATION

MGA RESEARCH CORPORATION
FRONT HEAD DROP TEST
CRABI 12 MONTH

ATD Serial No: 093

Test ID: D072541

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	20.8	Pass
Laboratory Relative Humidity	%	10 to 70	47	Pass
Peak Resultant Acceleration	G's	100 to 120	110	Pass
Peak Lateral Acceleration	G's	+/- 15	-3	Pass
Unimodal	N/A	within 17% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician

8/23/07
Test Date

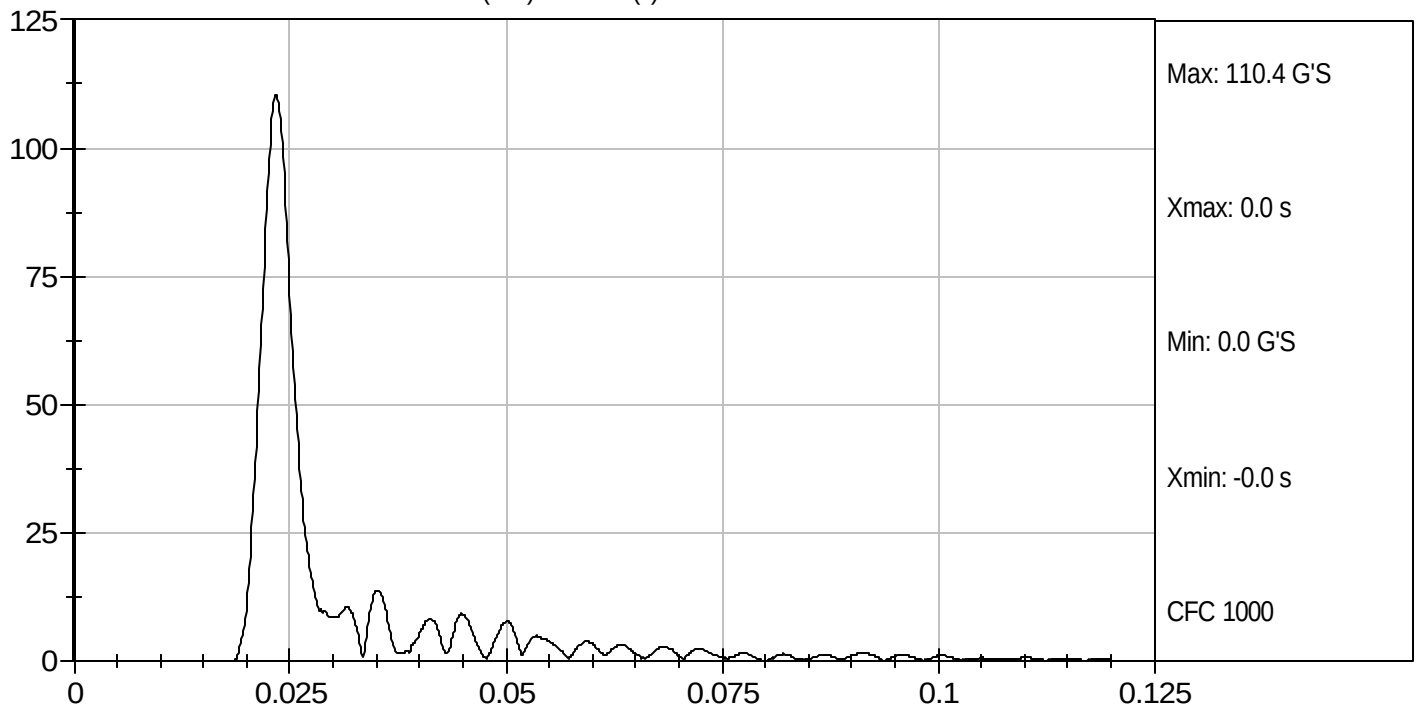

Approved By



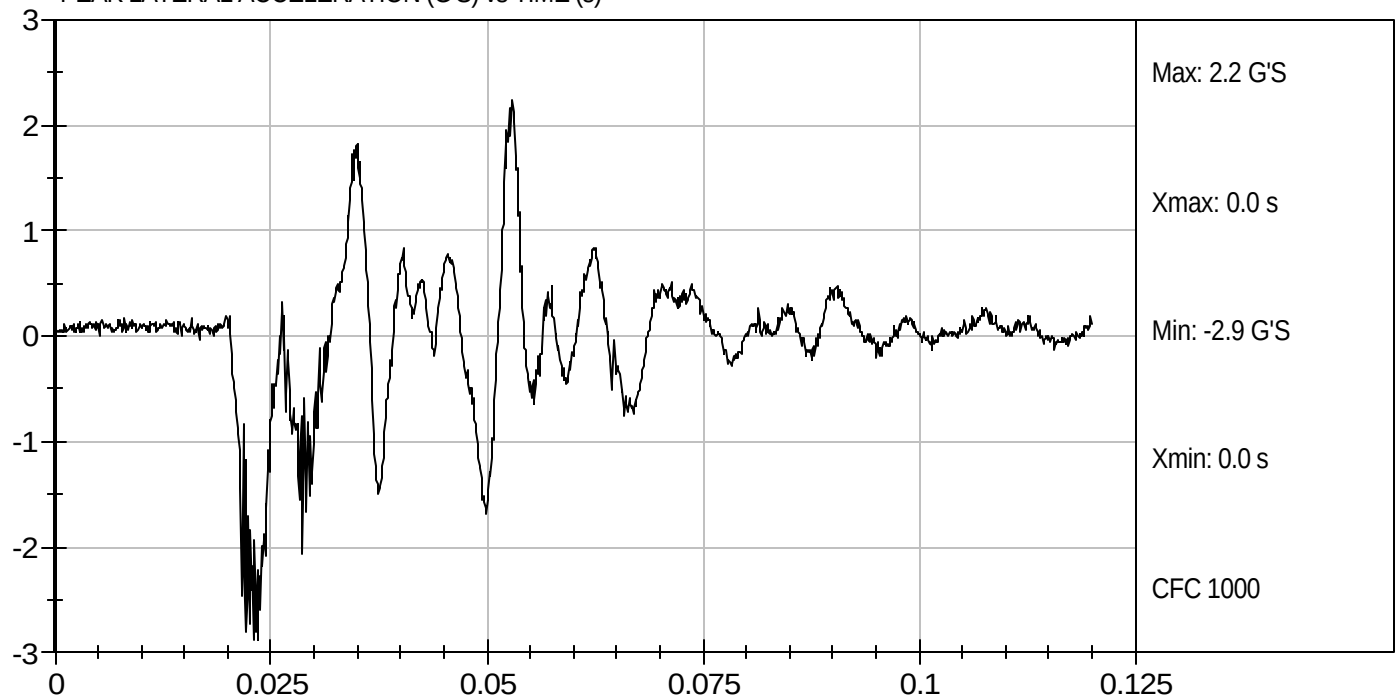
Test Desc: Head Drop
Component ID: D072541

Test Date: 8/23/07
Velocity: 0 ft/s, 0 m/s

PEAK RESULTANT ACCELERATION (G'S) vs TIME (s)



PEAK LATERAL ACCELERATION (G'S) vs TIME (s)



MGA RESEARCH CORPORATION
NECK FLEXION TEST
CRABI 12 MONTH

ATD Serial No: 093

Test I.D: D072542

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	20.8	Pass
Humidity		%	10 to 70	46	Pass
Impact Velocity		m/s	5.1 to 5.3	5.2	Pass
Pendulum Deceleration	10 msec	m/s	1.6 to 2.3	1.9	Pass
	20 msec	m/s	3.4 to 4.2	3.6	Pass
	25 msec	m/s	4.3 to 5.2	4.4	Pass
D Plane Rotation		deg	75.0 to 86.0	83.1	Pass
Moment About Occipital Condyle		Nm	36.0 to 45.0	40.2	Pass
Positive Moment - Time Curve Decay to 5 Nm		msec	60 to 80	74	Pass
Overall Test Results					Pass



Laboratory Technician

8/23/07

Test Date



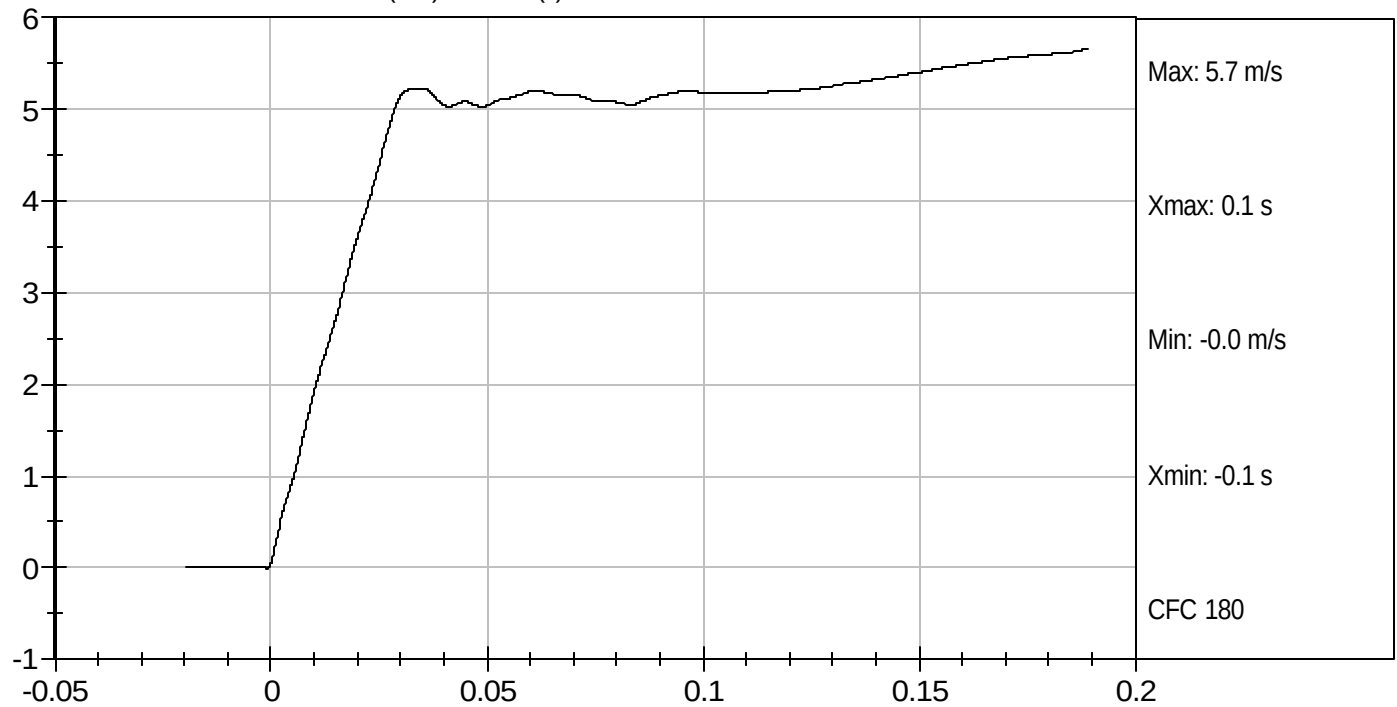
Approved By



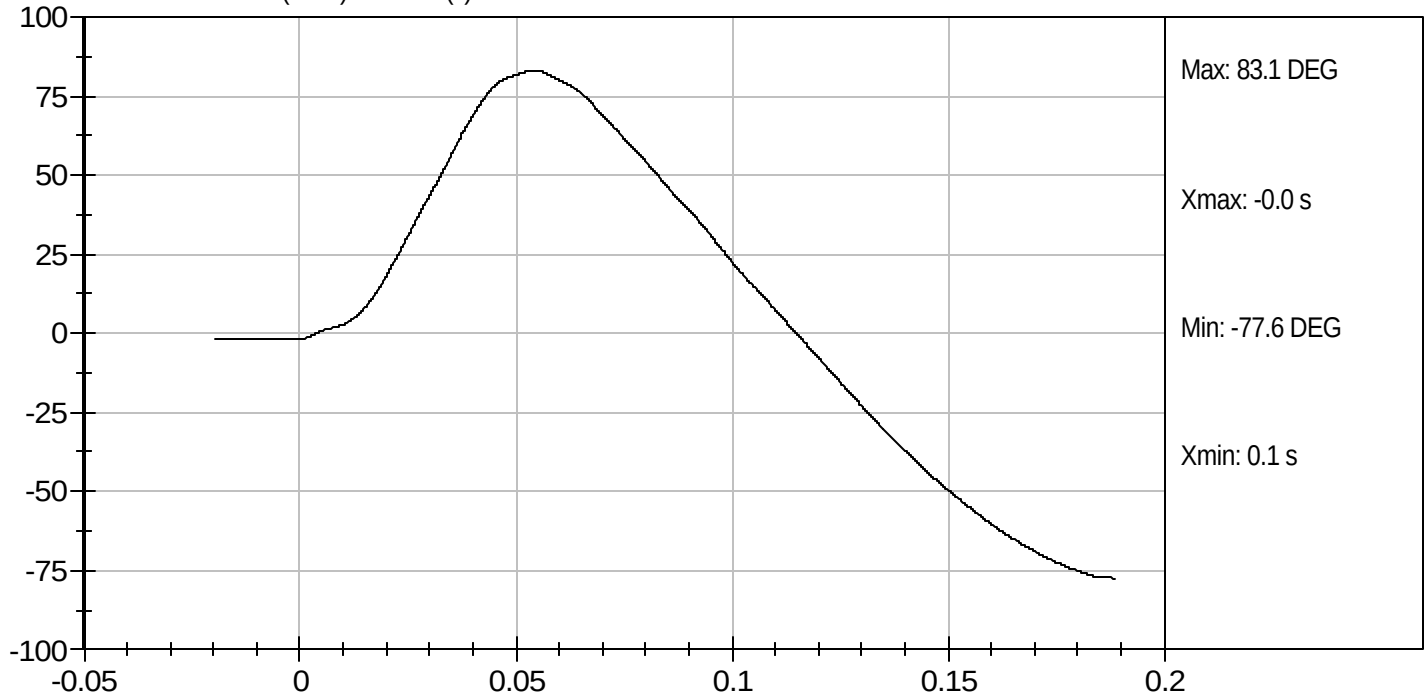
Test Desc: Neck Flexion
Component ID: D072542

Test Date: 8/23/07
Velocity: 17.006 ft/s, 5.2 m/s

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



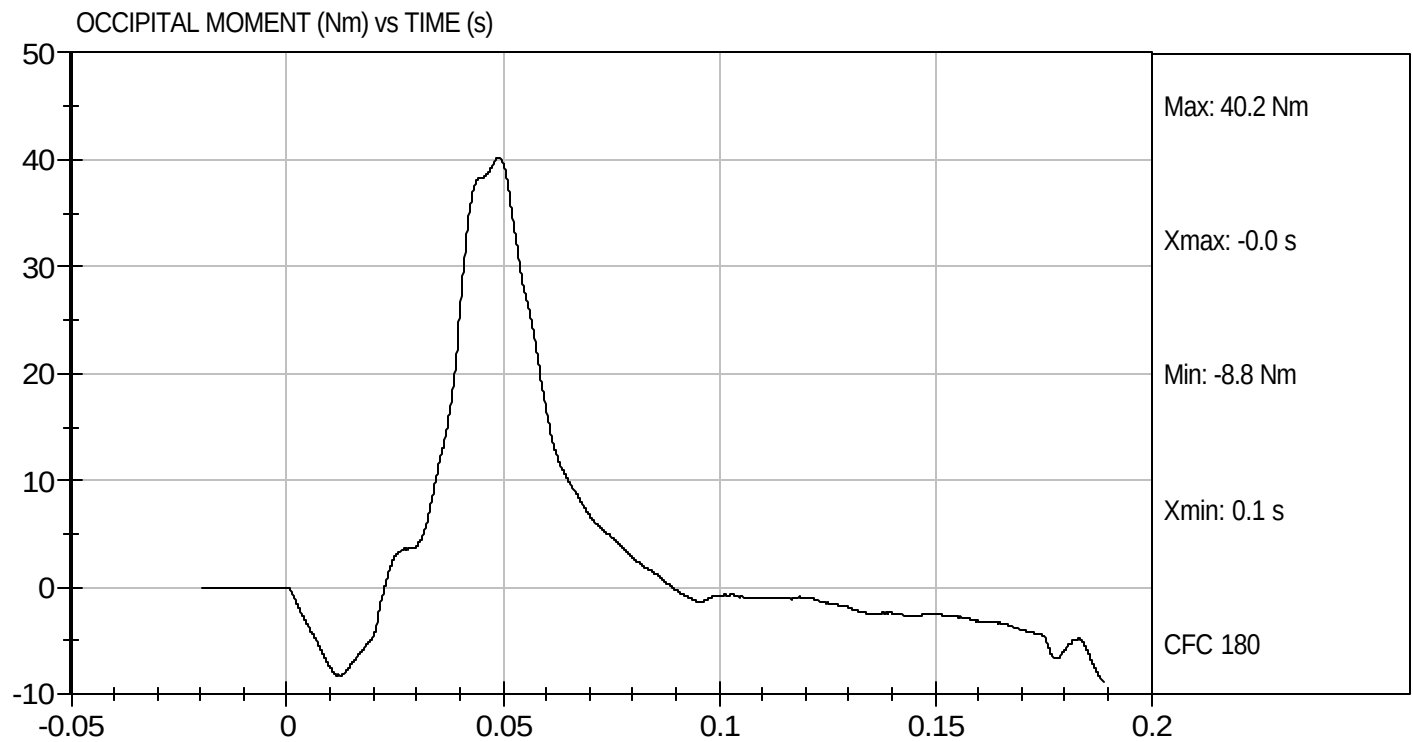
FLEXION ANGLE (DEG) vs TIME (s)





Test Desc: Neck Flexion
Component ID: D072542

Test Date: 8/23/07
Velocity: 17.006 ft/s, 5.2 m/s



MGA RESEARCH CORPORATION
NECK EXTENSION TEST
CRABI 12 MONTH

ATD Serial No: 093

Test I.D: D072543

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	20.8	Pass
Humidity		%	10 to 70	46	Pass
Pendulum Speed		m/s	2.4 to 2.6	2.5	Pass
Pendulum Deceleration	6 msec	m/s	0.8 to 1.2	1.0	Pass
	10 msec	m/s	1.5 to 2.1	2.0	Pass
	14 msec	m/s	2.2 to 2.9	2.3	Pass
D Plane Rotation		deg	80.0 to 92.0	80.3	Pass
Moment About Occipital Condyle		Nm	-23.0 to -12.0	-19.1	Pass
Negative Moment - Time Curve Decay to -5 Nm		msec	76 to 90	77	Pass
Overall Test Results				Pass	



Laboratory Technician

8/23/07

Test Date

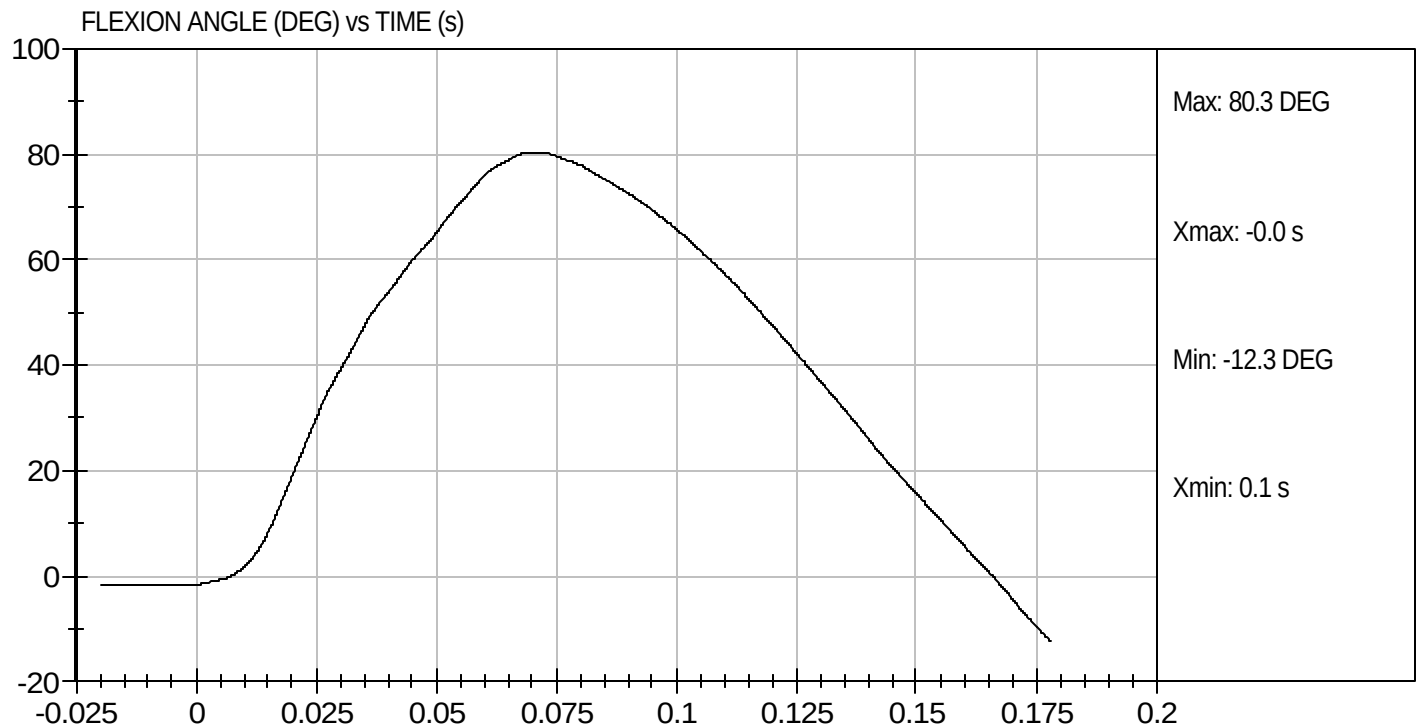
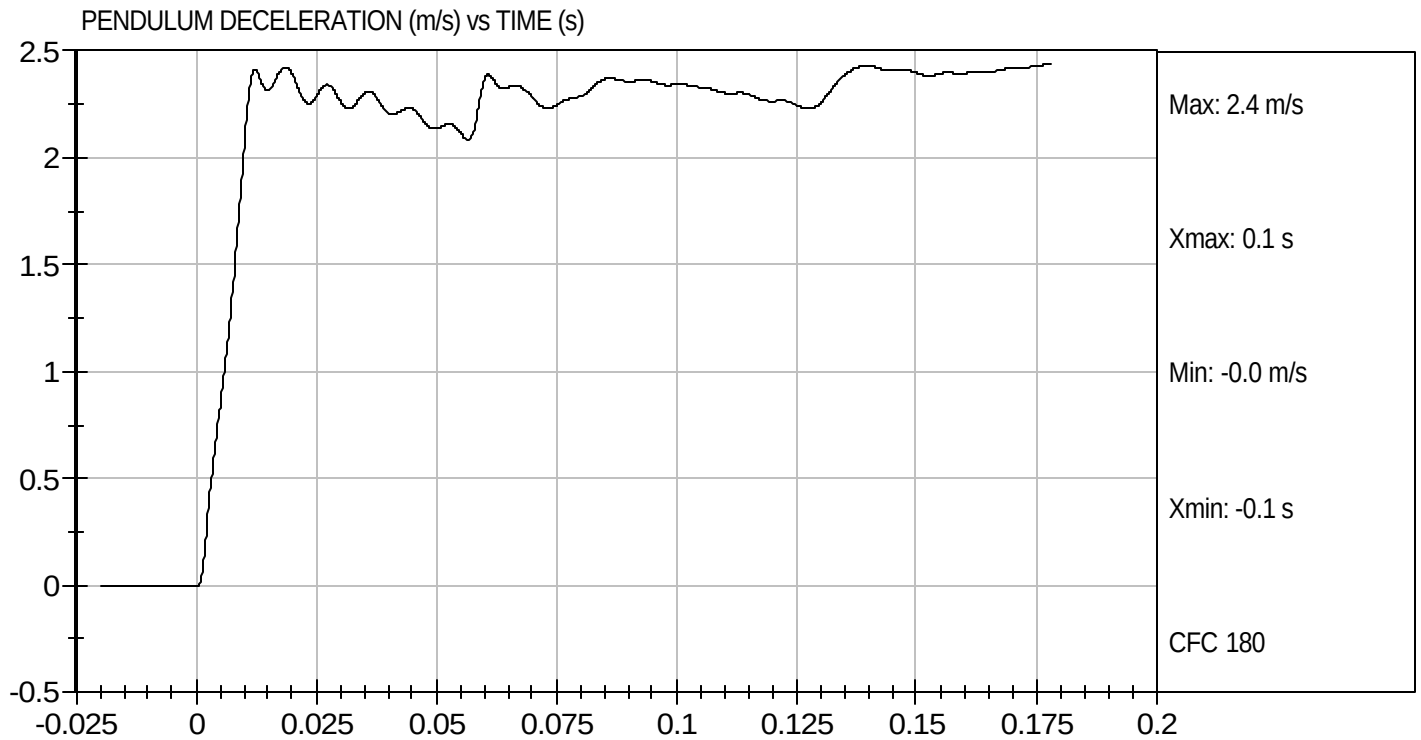


Approved By



Test Desc: Neck Extension
Component ID: D072543

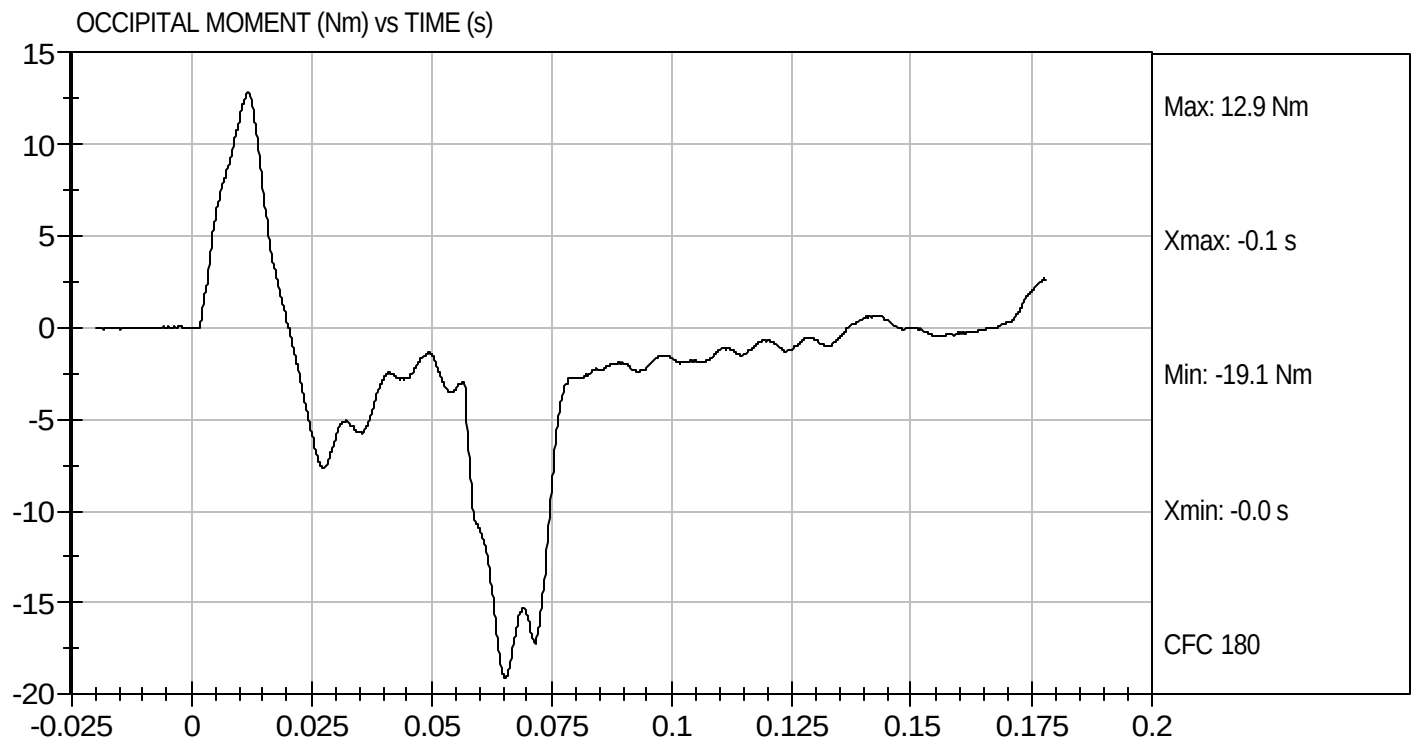
Test Date: 8/23/07
Velocity: 8.33 ft/s, 2.5 m/s





Test Desc: Neck Extension
Component ID: D072543

Test Date: 8/23/07
Velocity: 8.33 ft/s, 2.5 m/s



MGA RESEARCH CORPORATION
THORAX IMPACT TEST
CRABI 12 MONTH

ATD Serial No: 093

Test I.D: D072544

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	20.6	Pass
Laboratory Relative Humidity	%	10 to 70	43	Pass
Probe Speed	m/sec	4.9 to 5.1	5.03	Pass
Probe Force	kN	1.51 to 1.80	1.55	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

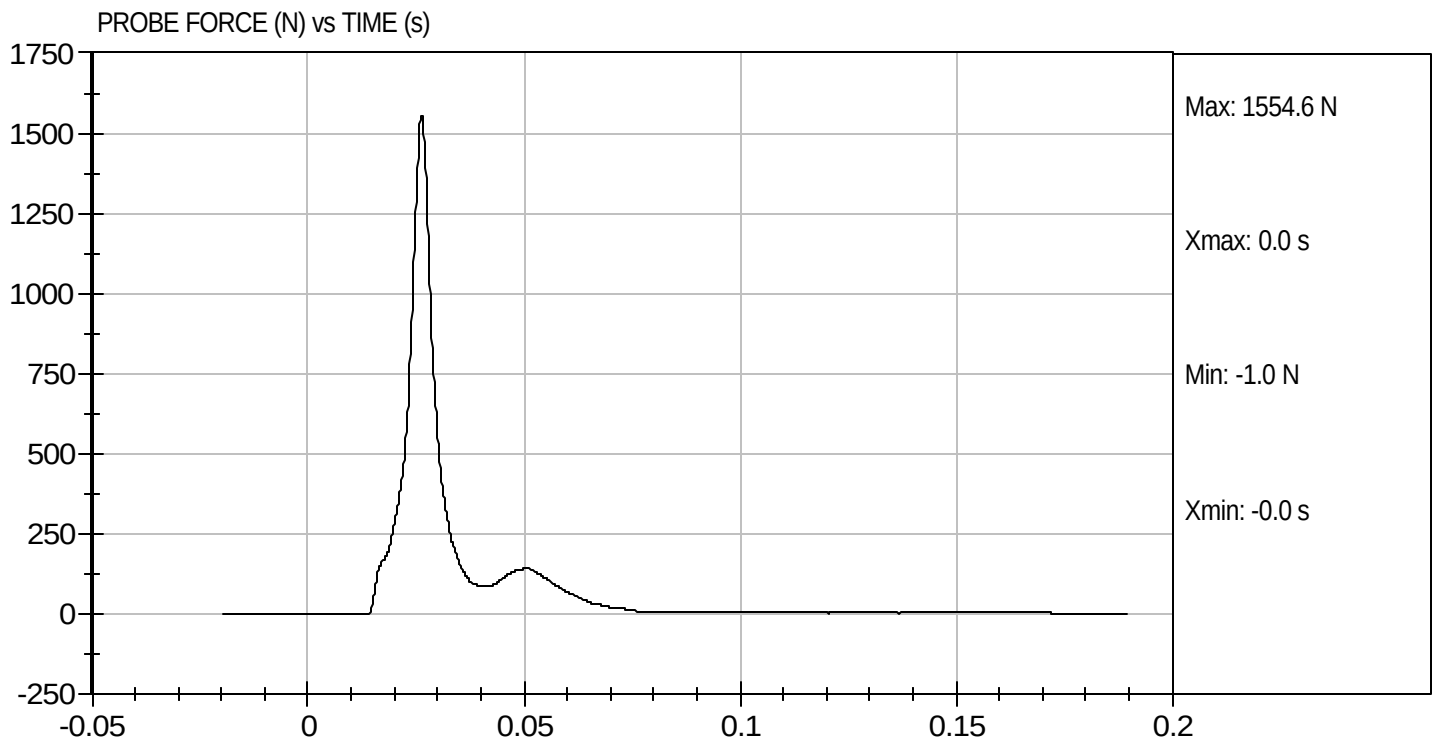
8/23/07

Test Date



Test Desc: Thorax Impact
Component ID: D072544

Test Date: 8/23/07
Velocity: 16.5 ft/s, 5.03 m/s



MGA RESEARCH CORPORATION
REAR HEAD DROP TEST
CRABI 12 MONTH

ATD Serial No: 093

Test ID: D072545

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	20.8	Pass
Laboratory Relative Humidity	%	10 to 70	47	Pass
Peak Resultant Acceleration	G's	55 to 71	69	Pass
Peak Lateral Acceleration	G's	+/- 15	3	Pass
Unimodal	N/A	within 17% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician

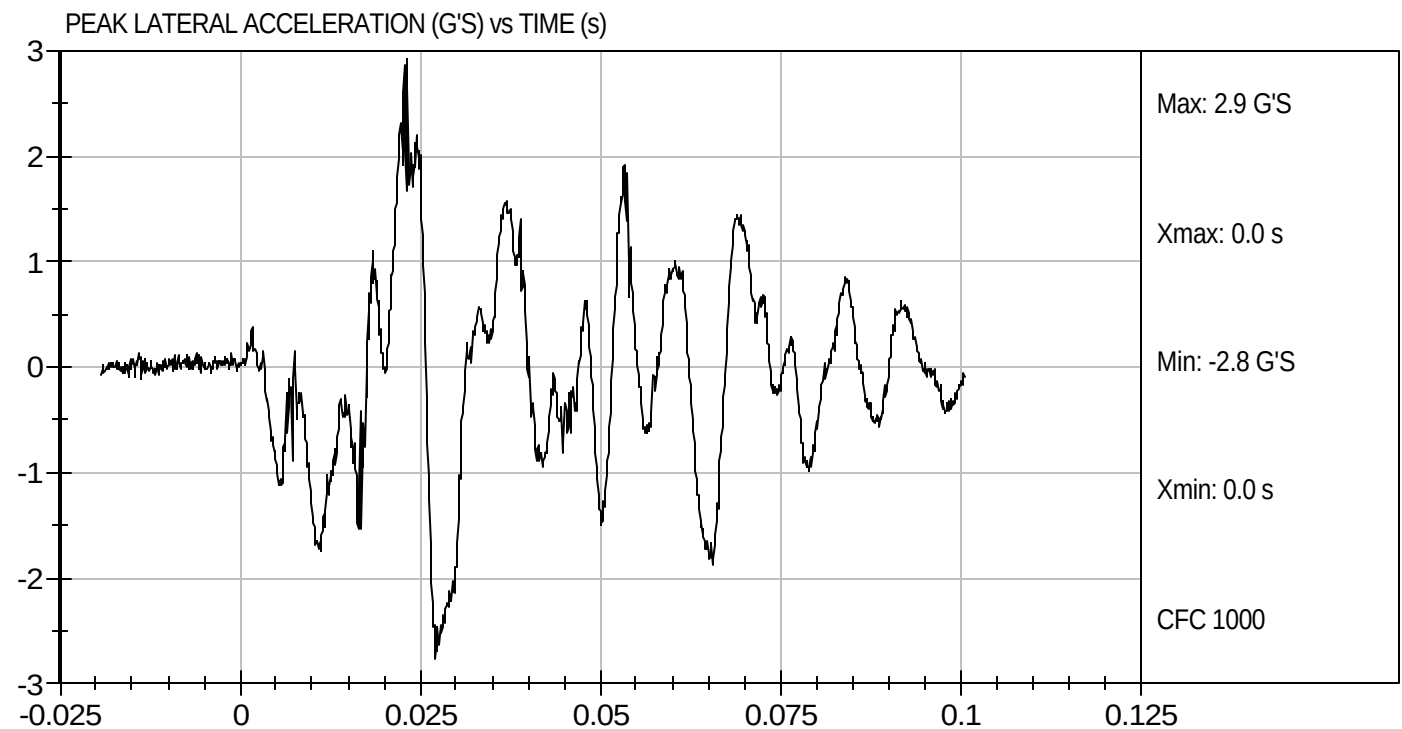
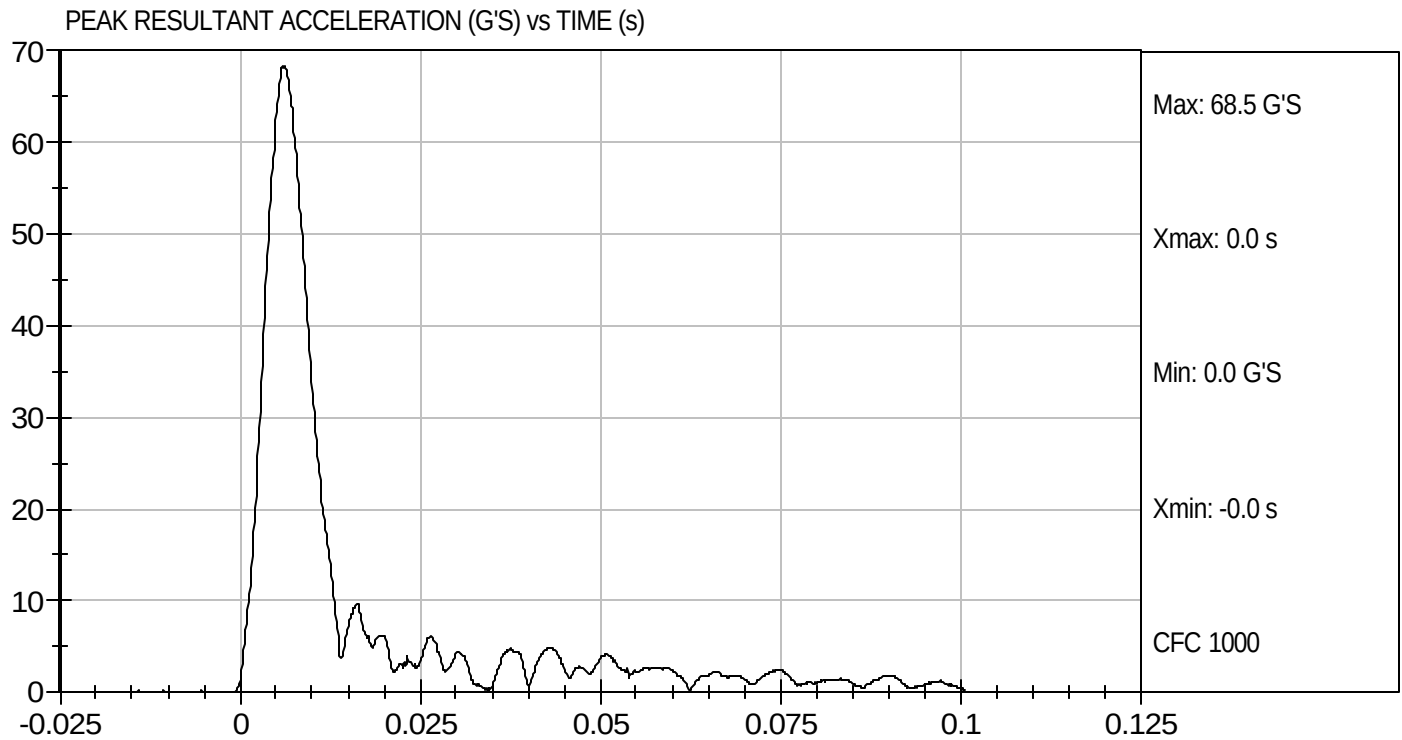

Approved By

8/23/07
Test Date



Test Desc: Head Drop
Component ID: D072545

Test Date: 8/23/07
Velocity: 0 ft/s, 0 m/s



MGA RESEARCH CORPORATION
FRONT HEAD DROP TEST
CRABI 12 MONTH

ATD Serial No: 090

Test ID: D072531

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Peak Resultant Acceleration	G's	100 to 120	108	Pass
Peak Lateral Acceleration	G's	+/- 15	-4	Pass
Unimodal	N/A	within 17% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

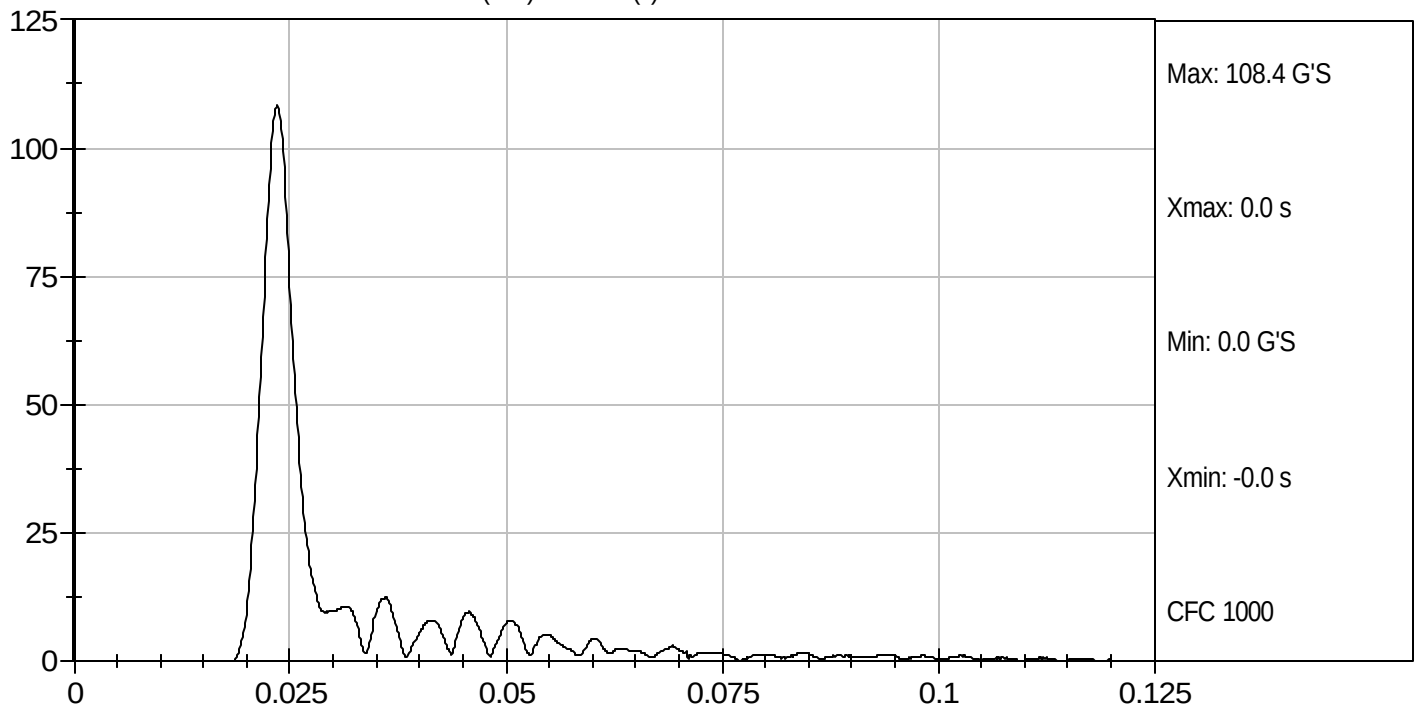
8/23/07
Test Date



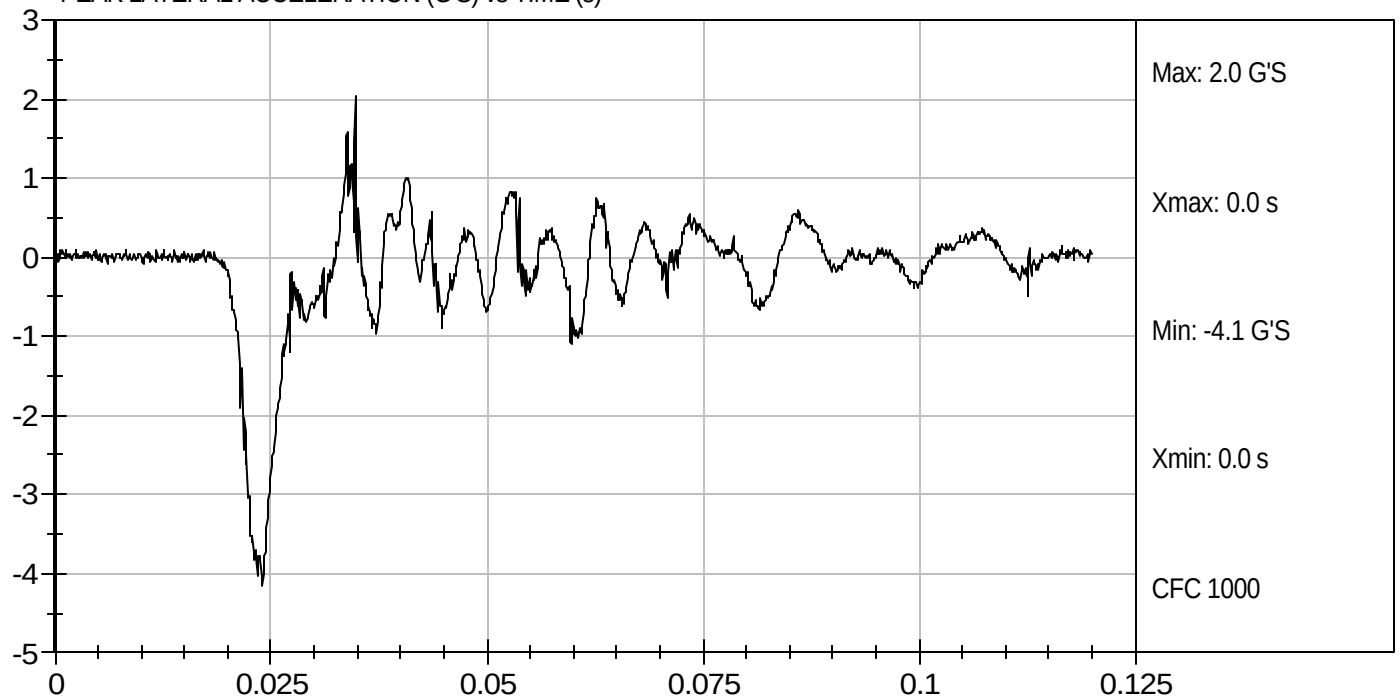
Test Desc: Head Drop
Component ID: D072531

Test Date: 8/23/07
Velocity: 0 ft/s, 0 m/s

PEAK RESULTANT ACCELERATION (G'S) vs TIME (s)



PEAK LATERAL ACCELERATION (G'S) vs TIME (s)



MGA RESEARCH CORPORATION
NECK FLEXION TEST
CRABI 12 MONTH

ATD Serial No: 090

Test I.D: D072532

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	20.7	Pass
Humidity		%	10 to 70	46	Pass
Impact Velocity		m/s	5.1 to 5.3	5.2	Pass
Pendulum Deceleration	10 msec	m/s	1.6 to 2.3	2.0	Pass
	20 msec	m/s	3.4 to 4.2	3.6	Pass
	25 msec	m/s	4.3 to 5.2	4.3	Pass
D Plane Rotation		deg	75.0 to 86.0	79.7	Pass
Moment About Occipital Condyle		Nm	36.0 to 45.0	37.0	Pass
Positive Moment - Time Curve Decay to 5 Nm		msec	60 to 80	75	Pass
Overall Test Results					Pass



Laboratory Technician

8/23/07

Test Date



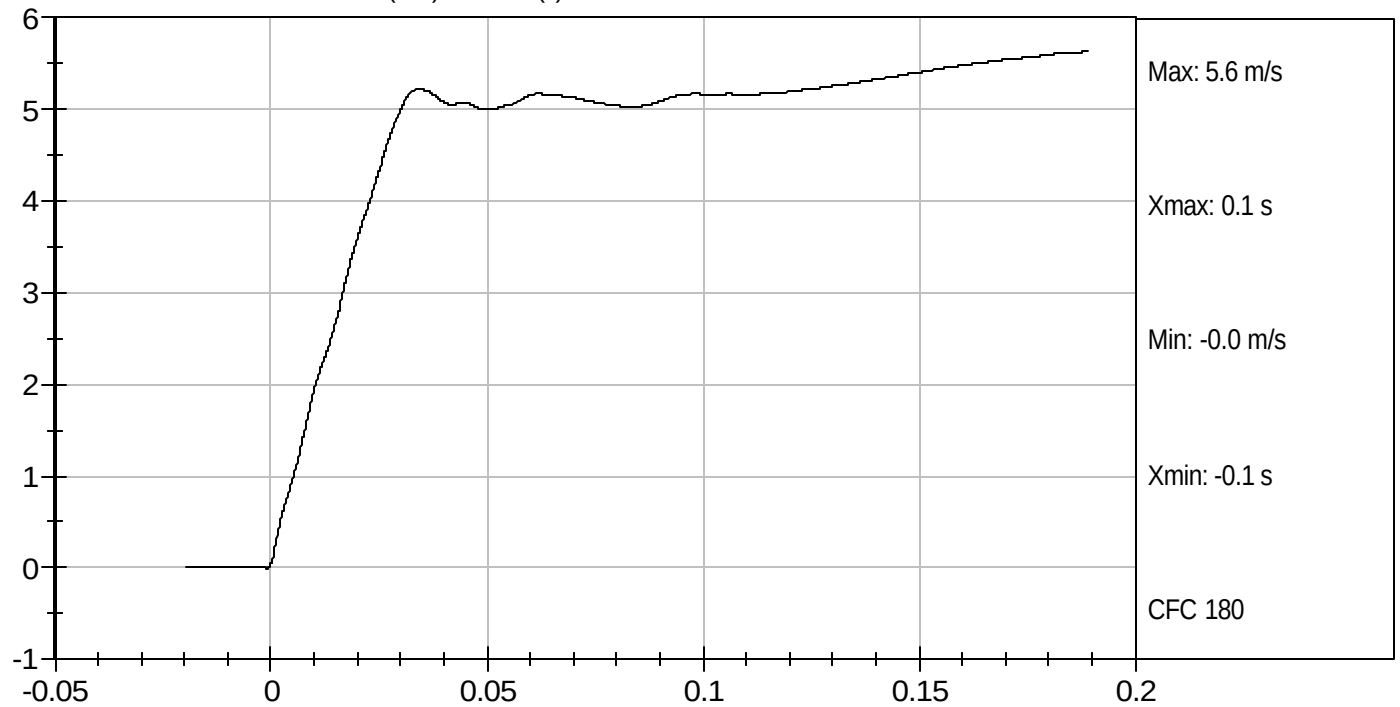
Approved By



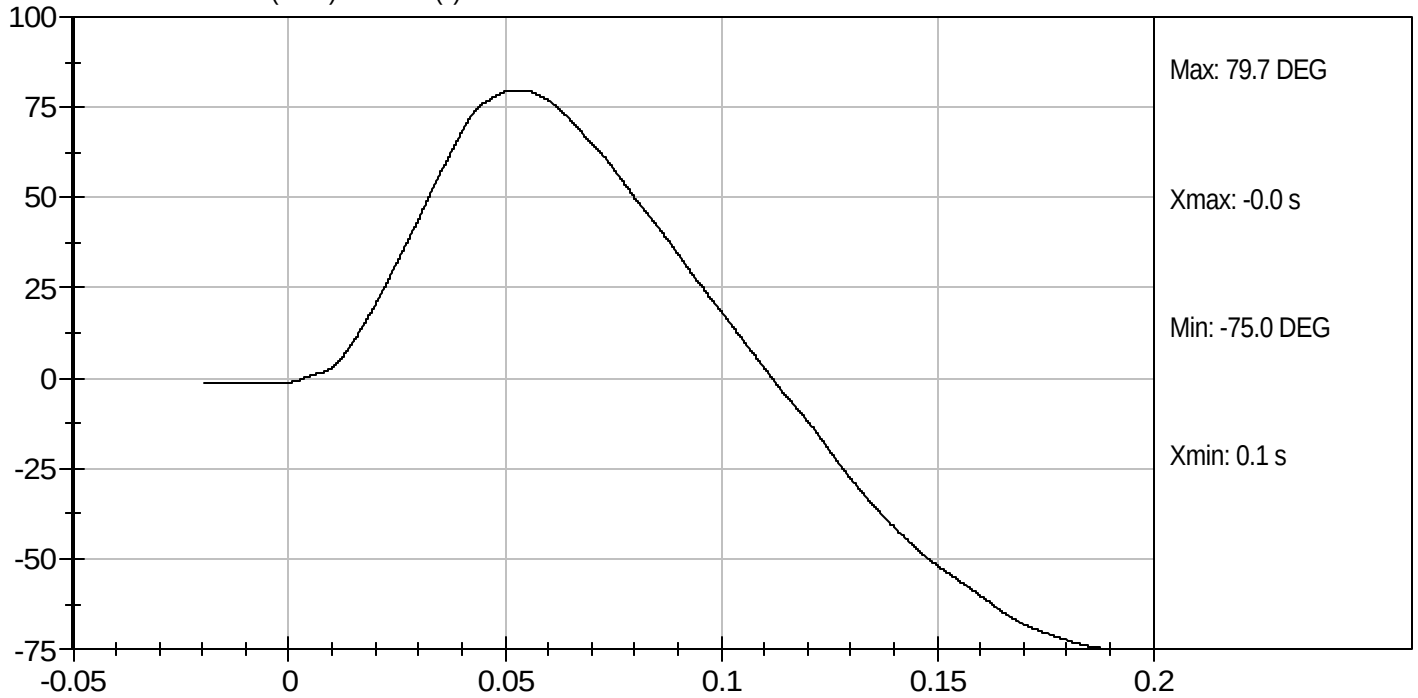
Test Desc: Neck Flexion
Component ID: D072532

Test Date: 8/23/07
Velocity: 17.182 ft/s, 5.2 m/s

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



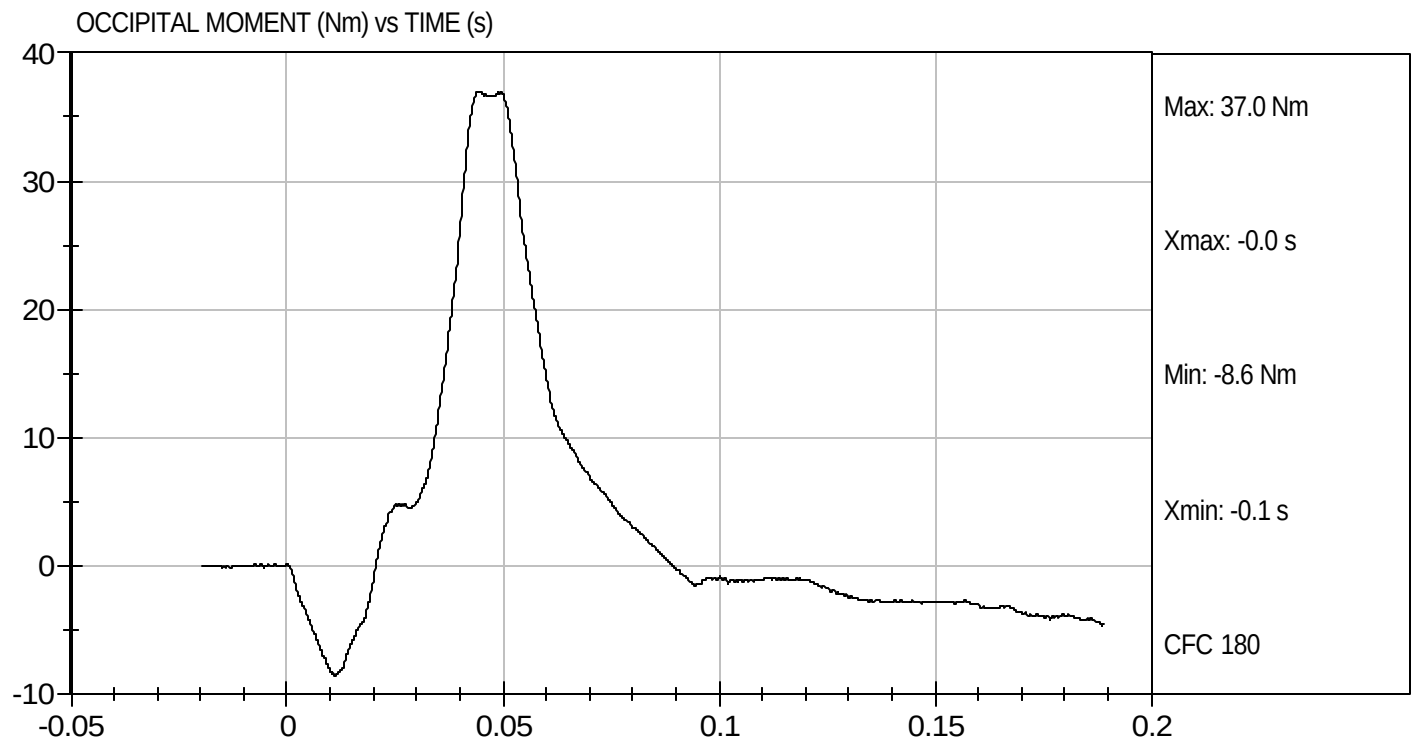
FLEXION ANGLE (DEG) vs TIME (s)





Test Desc: Neck Flexion
Component ID: D072532

Test Date: 8/23/07
Velocity: 17.182 ft/s, 5.2 m/s



MGA RESEARCH CORPORATION
NECK EXTENSION TEST
CRABI 12 MONTH

ATD Serial No: 090

Test I.D: D072533

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	20.7	Pass
Humidity		%	10 to 70	46	Pass
Pendulum Speed		m/s	2.4 to 2.6	2.5	Pass
Pendulum Deceleration	6 msec	m/s	0.8 to 1.2	0.9	Pass
	10 msec	m/s	1.5 to 2.1	1.7	Pass
	14 msec	m/s	2.2 to 2.9	2.3	Pass
D Plane Rotation		deg	80.0 to 92.0	80.2	Pass
Moment About Occipital Condyle		Nm	-23.0 to -12.0	-14.8	Pass
Negative Moment - Time Curve Decay to -5 Nm		msec	76 to 90	84	Pass
Overall Test Results				Pass	



Laboratory Technician

8/23/07

Test Date

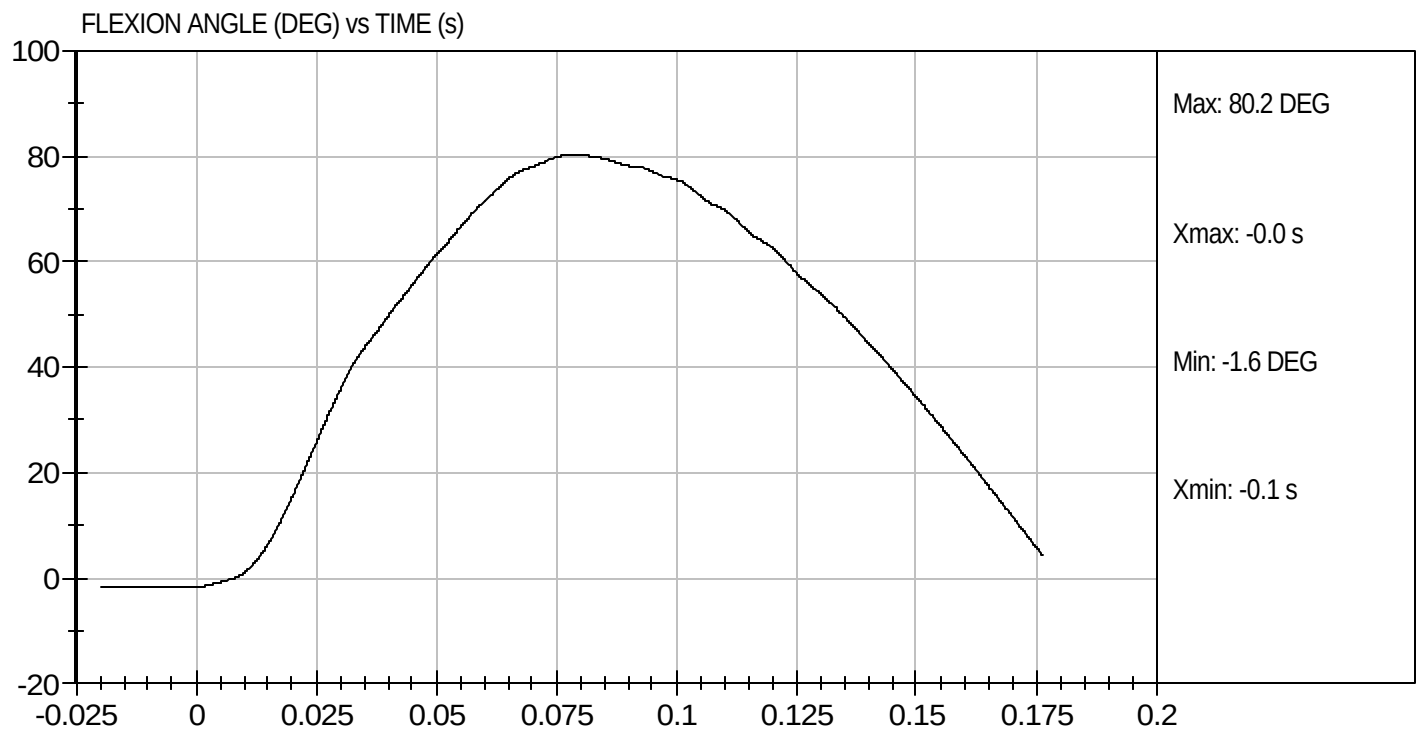
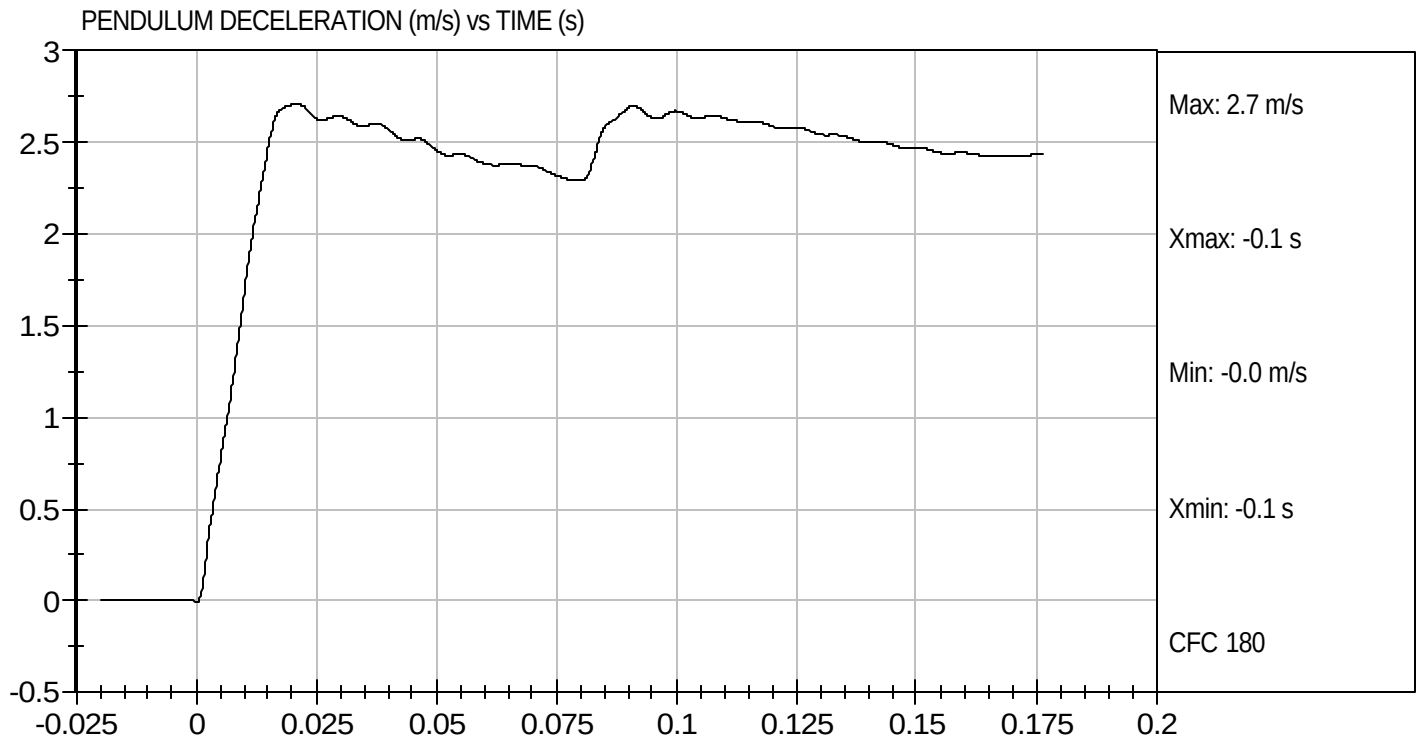


Approved By



Test Desc: Neck Flexion
Component ID: D072533

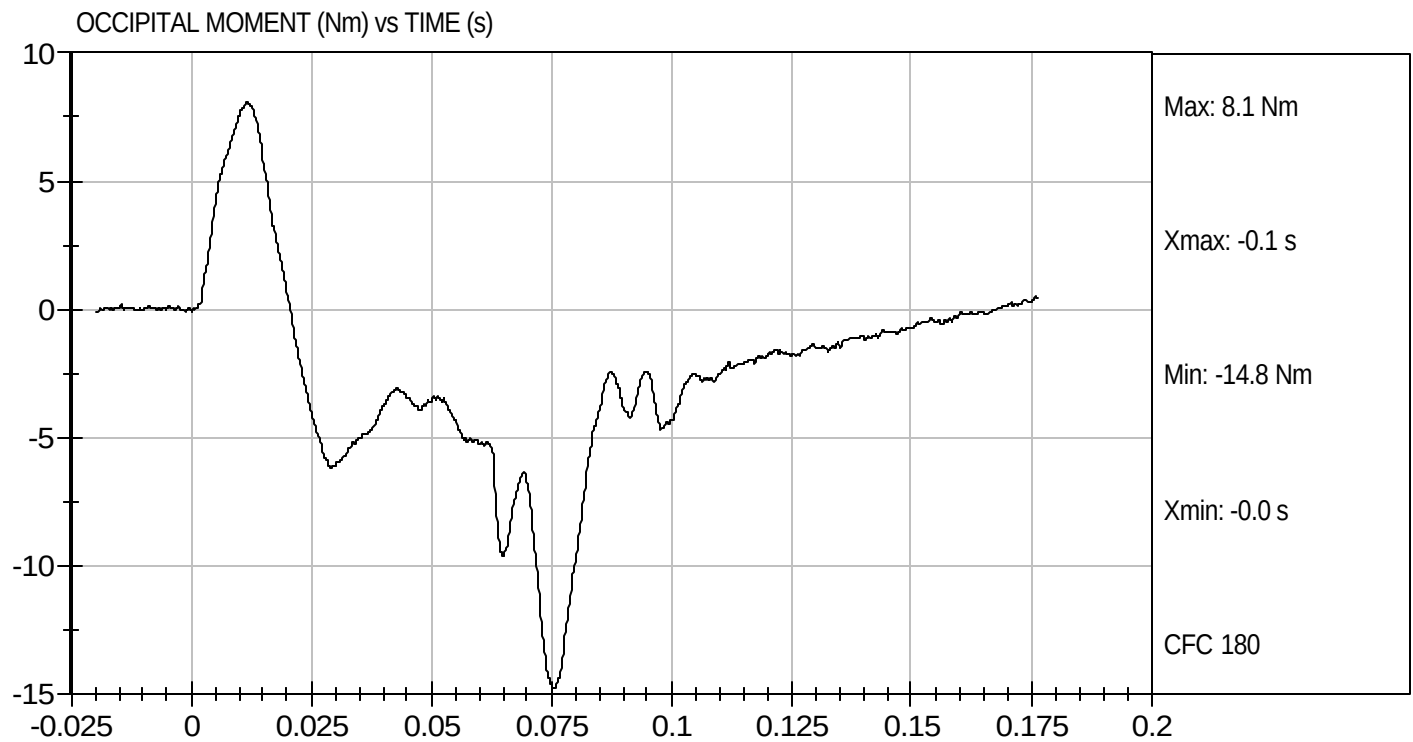
Test Date: 8/23/07
Velocity: 8.33 ft/s, 2.5 m/s





Test Desc: Neck Flexion
Component ID: D072533

Test Date: 8/23/07
Velocity: 8.33 ft/s, 2.5 m/s



MGA RESEARCH CORPORATION
THORAX IMPACT TEST
CRABI 12 MONTH

ATD Serial No: 090

Test I.D: D072534

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	20.6	Pass
Laboratory Relative Humidity	%	10 to 70	43	Pass
Probe Speed	m/sec	4.9 to 5.1	5.03	Pass
Probe Force	kN	1.51 to 1.80	1.55	Pass
Overall Test Results				Pass



Laboratory Technician

8/23/07

Test Date

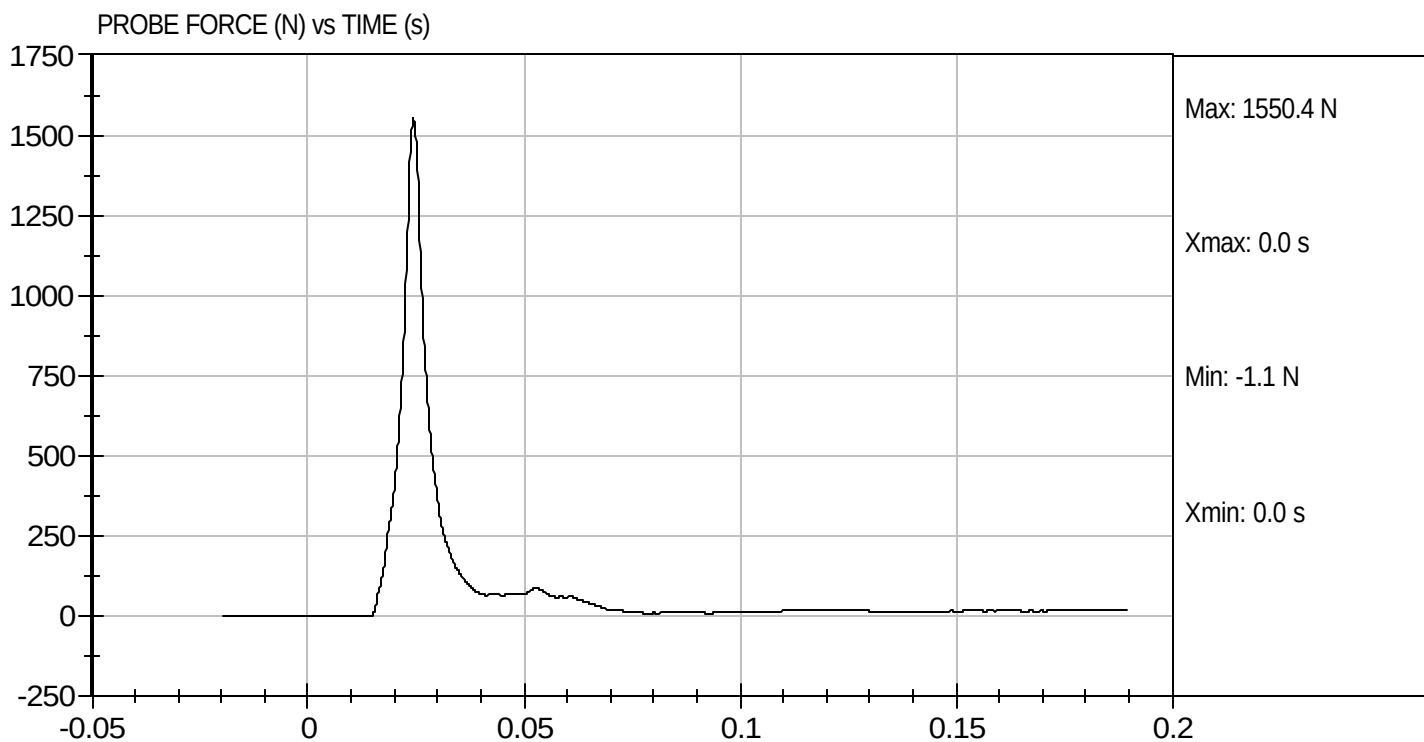


Approved By



Test Desc: Thorax Impact
Component ID: D072534

Test Date: 8/23/07
Velocity: 16.501 ft/s, 5.03 m/s



MGA RESEARCH CORPORATION
REAR HEAD DROP TEST
CRABI 12 MONTH

ATD Serial No: 090

Test ID: D072535

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Peak Resultant Acceleration	G's	55 to 71	67	Pass
Peak Lateral Acceleration	G's	+/- 15	-3	Pass
Unimodal	N/A	within 17% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

8/23/07
Test Date



Test Desc: Head Drop
Component ID: D072535

Test Date: 8/23/07
Velocity: 0 ft/s, 0 m/s

