

REPORT NUMBER: NCAP-MGA-2008-012

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

**NISSAN MOTOR COMPANY, LTD.
2008 INFINITI EX35 AWD JOURNEY
NHTSA NUMBER: M85212**

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



Test Date: January 22, 2008

Final Report Date: March 4, 2008

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 Infiniti EX35 AWD Journey at MGA Research Corporation on January 22, 2008. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and foot well intrusion performance. The impact velocity was 56.5 km/h. The ambient temperature at the barrier face at the time of impact was 21 degrees Celsius. The vehicle's maximum post test static crush is 635 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 border="1" style="width: 100%; border-collapse: collapse; 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>533</td> <td>1329</td> </tr> <tr> <td>Max. Thorax Accel. (3ms Clip)</td> <td>G's</td> <td>60</td> <td>41</td> <td>40</td> </tr> <tr> <td>Left Femur Force</td> <td>Newton</td> <td>10009</td> <td>-3600</td> <td>-3077</td> </tr> <tr> <td>Right Femur Force</td> <td>Newton</td> <td>10009</td> <td>-4702</td> <td>-1777</td> </tr> </tbody> </table> During the test, the front passenger airbag did not deploy. Post-test, the manufacturer determined that there was a software problem with the Airbag Control Unit (ACU) that led to the non-deployment. The manufacturer filed a part 573 letter and has uploaded new prototype software on all vehicles. As a result, the passenger injury readings recorded during the event may not be indicative of this vehicle's performance.				<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	533	1329	Max. Thorax Accel. (3ms Clip)	G's	60	41	40	Left Femur Force	Newton	10009	-3600	-3077	Right Femur Force	Newton	10009	-4702	-1777
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17. Key Words 56.3 km/h NCAP Frontal Barrier Impact Test New Car Assessment Program (NCAP) 2008 Infiniti EX35 AWD Journey NHTSA No: M85212		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Adm. Technical Ref. Division, 1200 New Jersey Ave, SE Washington, D.C. 20590																										
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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 Infiniti EX35 AWD Journey at a velocity of 56.5 kph. The test was performed at MGA Research Corporation on January 22, 2008. 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 635 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 contacted the visor, headliner, dash, and 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	533	59.2	95.2	41	62.2	65.3	-20	-3600	-4702
Passenger	1329	97.6	109.2	40	55.4	58.4	-20	-3077	-1777

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

TEST NOTES

There was no valid data collected for:

- Driver Right Ankle X after 50 msec.
- Driver Right Ankle Z after 50 msec.
- Driver Left Ankle X after 45 msec.
- Driver Left Ankle Z after 45 msec.
- Left Brake Caliper X after 80 msec.
- Driver Right Lower Tibia Force Z

SECTION 2
OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

DATA SHEET NO. 1
CRASH TEST SUMMARY

Test Vehicle: 2008 Infiniti EX35 AWD Journey
 Test Program: 35mph Frontal Impact

NHTSA No.: M85212
 Test Date: 1/22/2008

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	None	

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	1495
Center	mm	1490
Right Side	mm	1504
Average	mm	1496

BELT LENGTH DATA

Measurement Description	Units	Driver	Passenger
Shoulder belt length as measured on ATD	mm	890	885
Lap belt length as measured on ATD	mm	845	835
Remainder of belt on reel	mm	1332	1389
Total belt length for continuous webbing systems	mm	3067	3109

DATA SHEET NO. 2
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2008 Infiniti EX35 AWD Journey
 Test Program: 35mph Frontal Impact

NHTSA No.: M85212
 Test Date: 1/22/2008

TEST VEHICLE INFORMATION

Manufacturer	Infiniti
Model	EX35
Body Style	Passenger Car
NHTSA No.	M85212
VIN	JNKAJ09F68M350440
Color	Platinum Graphi
Delivery Date	1/15/2008
Odometer Reading (mile)	61
Dealer	Infiniti North Shore
Transmission	Automatic
Final Drive	AWD
Number of Cylinders	6
Engine Displacement (L)	3.5
Engine Placement	Longitudinal
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	Yes
All Wheel Drive	Yes
Power Seats	Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Nissan Motor Company, Ltd.
Date of Manufacture	11/07

GVWR (kg)	2281
GAWR Front (kg)	1130
GAWR Rear (kg)	1155

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench		
Number of Occupants	2	3		5
Capacity Wt. (VCW) (kg)				390
Cargo Wt. (RCLW) (kg)				50

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

Test Vehicle: 2008 Infiniti EX35 AWD Journey
 Test Program: 35mph Frontal Impact

NHTSA No.: M85212
 Test Date: 1/22/2008

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)			As Tested (ATW) (Axle)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	488.1	417.3		529.4	478.5	
Right	kg	489.0	433.2		526.6	494.4	
Ratio	%	53.5	46.5		52.0	48.0	
Totals	kg	977.1	850.5	1827.6	1056.0	972.9	2028.9

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1827.6
Weight of 2 P572E ATDs	kg	156.0
Rated Cargo/Luggage Weight (RCLW)	kg	50
Calculated Vehicle Target Weight (TVTW)	kg	2033.6

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	754	754	754	755	1302
As Tested	mm	741	743	734	739	1341
Post Test	mm	721	705	725	715	

Vehicle Wheelbase (mm): 2797
 Weight of Ballast secured in cargo area (kg): 0

Vehicle Components Removed: Exhaust up to catalyst converter, spare tire, jack, trunk carpet and plastic, rear wiper and motor, RR & LR windows, RF & LF mirrors, first aid kit, subwoofer, tools, all tail lights, muffler heat shield, rear floor mats, rear bumper beam and foam, and cargo cover.

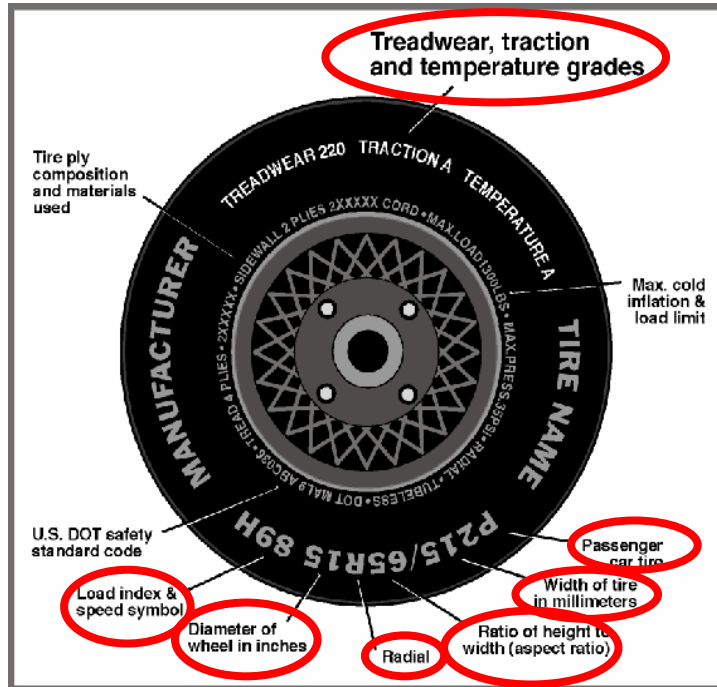
Ballast weight does not include instrumentation and data acquisition system.

DATA SHEET NO. 3

TEST VEHICLE TIRE INFORMATION

Test Vehicle: 2008 Infiniti EX35 AWD Journey
 Test Program: 35mph Frontal Impact

NHTSA No.: M85212
 Test Date: 1/22/2008



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	230	230
Recommended Tire Size	225/60R17	225/60R17
Tire Size on Vehicle	225/60R17	225/60R17
Tire Manufacturer	Dunlop	Dunlop
Tire Name	SP Sport 7000	SP Sport 7000
Tire Type	Passenger	Passenger
Tire Width (mm)	225	225
Ratio of Height to Width (aspect ratio)	60	60
Radial	R	R
Wheel Diameter	17	17
Load Index & Speed Symbol	98V	98V
Treadwear	340	340
Traction Grade	A	A
Temperature Grade	A	A

DATA SHEET NO. 4
TEST VEHICLE INFORMATION

Test Vehicle: 2008 Infiniti EX35 AWD Journey
Test Program: 35mph Frontal Impact

NHTSA No.: M85212
Test Date: 1/22/2008

NORMAL DESIGN RIDING POSITION

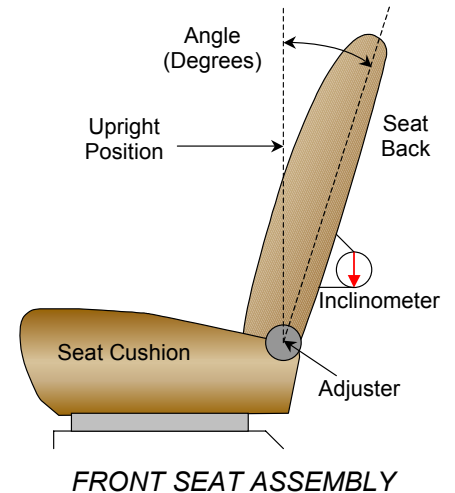
The driver and passenger seat back is positioned to the manufacturer's designated angle. The procedure is as follows: Set driver seat back angle 953 mm to rear striker per Form 1. Set passenger seat back angle 943 mm to rear striker per Form 1.

Driver seat back angle: 953 mm to rear striker

Passenger seat back angle: 943 mm to rear striker

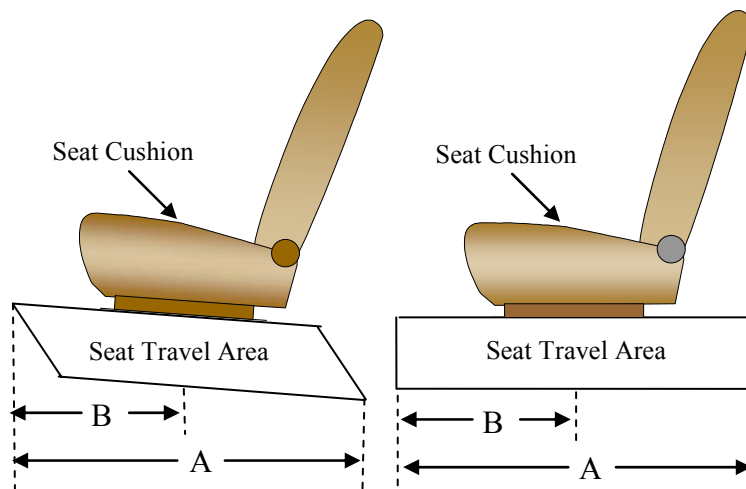
SEAT FORE/AFT POSITIONING

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	324 mm	162 mm
Passenger Seat	292 mm	146 mm



ADJUSTABLE D-RING POSITION

The driver and passenger D-rings were set at the upper-most position.



DATA SHEET NO. 4...(CONTINUED)

TEST VEHICLE INFORMATION

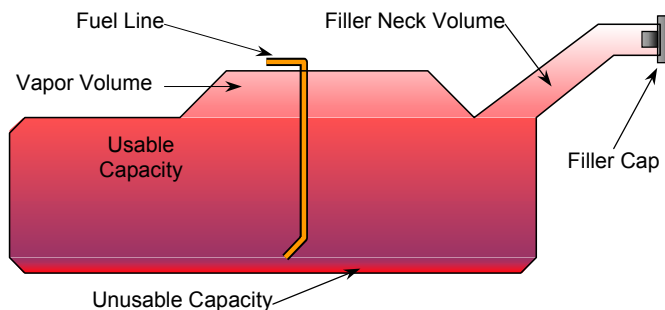
Test Vehicle: 2008 Infiniti EX35 AWD Journey
Test Program: 35mph Frontal Impact

NHTSA No.: M85212
Test Date: 1/22/2008

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	75.7
Usable Capacity of "Optional" Tank	
92-94% of Usable Capacity	69.6 to 71.2
Actual Amount of Solvent used	70.4
1/3 of Usable Capacity	25.2

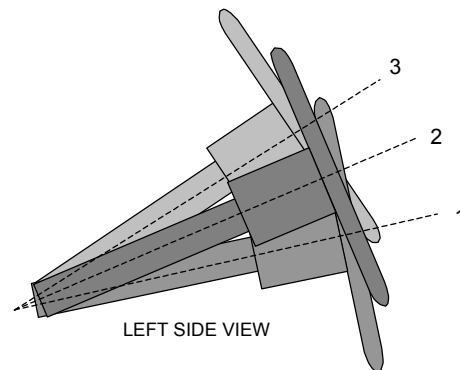
The test vehicle is equipped with an electric fuel pump. The fuel pump will pump fuel when the ignition key is in the "ON" position.



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.



STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONS

	Fore/Aft Position (mm)	Degrees
Lowermost position No. 1	0	63.8
Geometric center position No. 2	22 mm	66.3
Uppermost position No. 3	45 mm	68.8

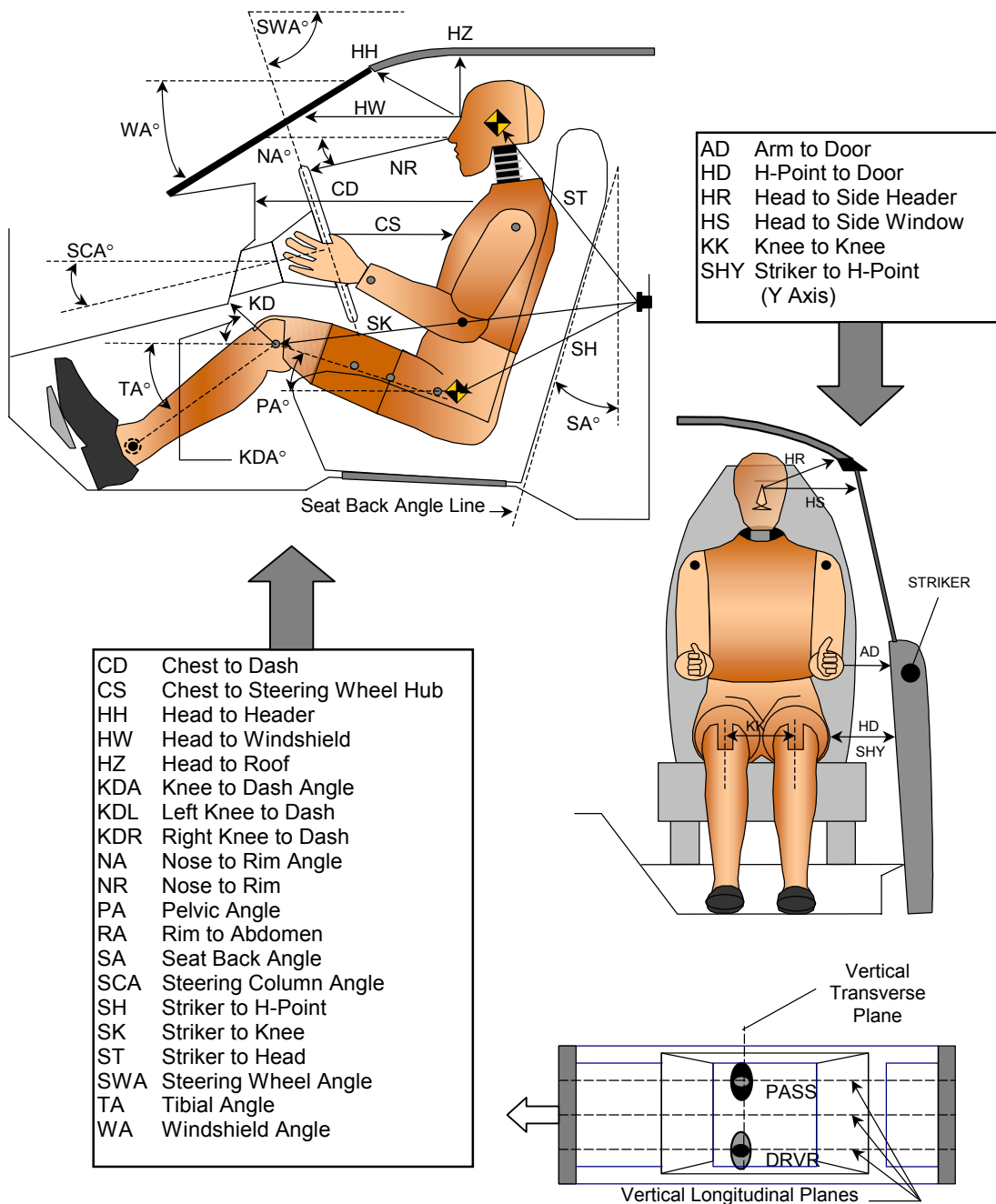
DATA SHEET NO. 5

DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2008 Infiniti EX35 AWD Journey
 Test Program: 35mph Frontal Impact

NHTSA No.: M85212
 Test Date: 1/22/2008

DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS



DATA SHEET NO. 5... (CONTINUED)

DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2008 Infiniti EX35 AWD Journey
 Test Program: 35mph Frontal Impact

NHTSA No.: M85212
 Test Date: 1/22/2008

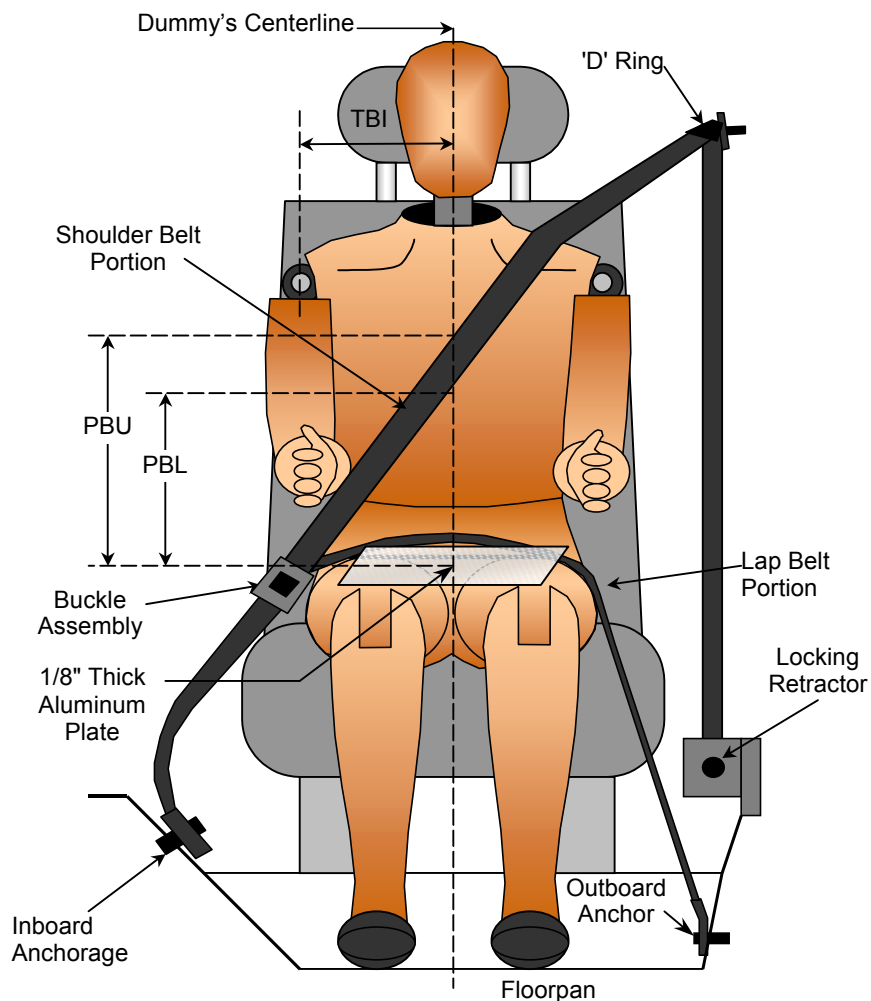
TEST DUMMY POSITION MEASUREMENTS

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA	Windshield Angle		27.9		
SWA	Steering Wheel Angle		66.3		
SCA	Steering Column Angle		21.4		
SA	Seat Back Angle (headrest post)		6.2		5.9
HZ	Head to Roof (Z)	146	90	152	90
HH	Head to Header	287	21.2	287	25.0
HW	Head to Windshield	542	0	531	0
HR	Head to Side Header (Y)	187		194	
NR	Nose to Rim	390	14.2		
CD	Chest to Dash	495		529	
CS	Chest to Steering Hub	287	6.5		
RA	Rim to Abdomen	180	0		
KDL	Left Knee to Dash	142	17.7	121	
KDR	Right Knee to Dash	87		150	30.8
PA	Pelvic Angle		23.6		24.2
TA	Tibia Angle		49.4		45.2
KK	Knee to Knee (Y)	318		255	
SK	Striker to Knee	634	84.5	642	94.3
ST	Striker to Head	559	12.8	562	12.4
SH	Striker to H-Point	259	112.4	260	116.2
SHY	Striker to H-Point (Y)	278		275	
HS	Head to Side Window	306		298	
HD	H-Point to Door (Y)	164		151	
AD	Arm to Door (Y)	89		90	
AA	Ankle to Ankle	313		205	

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

Test Vehicle: 2008 Infiniti EX35 AWD Journey
 Test Program: 35mph Frontal Impact

NHTSA No.: M85212
 Test Date: 1/22/2008



SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU - Top surface of reference to belt upper edge	mm	365	365
PBL - To surface of reference to belt lower edge	mm	285	285

DATA SHEET NO. 7
VEHICLE ACCELEROMETER LOCATIONS

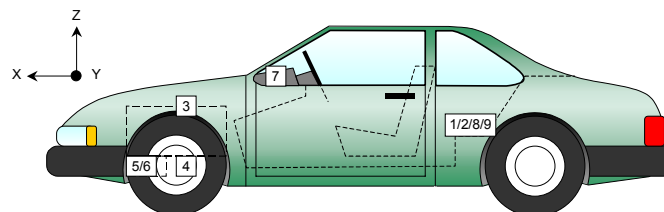
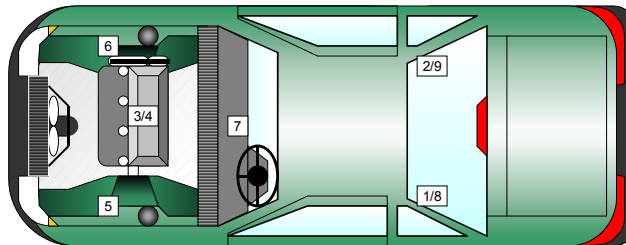
Test Vehicle: 2008 Infiniti EX35 AWD Journey
 Test Program: 35mph Frontal Impact

NHTSA No.: M85212
 Test Date: 1/22/2008

VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear X-Member X	1785	-380	236
2	Right Rear X-Member X	1786	365	237
3	Engine Top X	3936	-26	895
4	Engine Bottom X	3851	-25	192
5	Left Brake Caliper X	3839	-695	248
6	Right Brake Caliper X	3832	695	248
7	Instrument Panel X			
8	Left Rear X-Member Z	1785	-380	236
9	Right Rear X-Member Z	1786	365	237

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 Infiniti EX35 AWD Journey
 Test Program: 35mph Frontal Impact

NHTSA No.: M85212
 Test Date: 1/22/2008

Windshield Mounting Details:

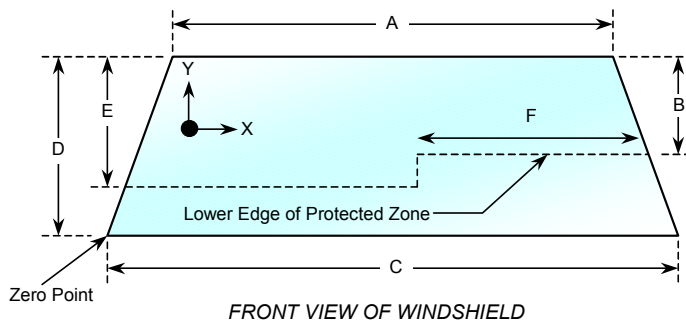
Windshield glass is secured to the vehicle frame with a rubber trim and glue.

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	2114	2114	100
Right Side	2114	2114	100
Total	4228	4228	100



Item	Units	Value
A	mm	1178
B	mm	518
C	mm	1380
D	mm	835
E	mm	527
F	mm	487

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 Infiniti EX35 AWD Journey
 Test Program: 35mph Frontal Impact

NHTSA No.: M85212
 Test Date: 1/22/2008

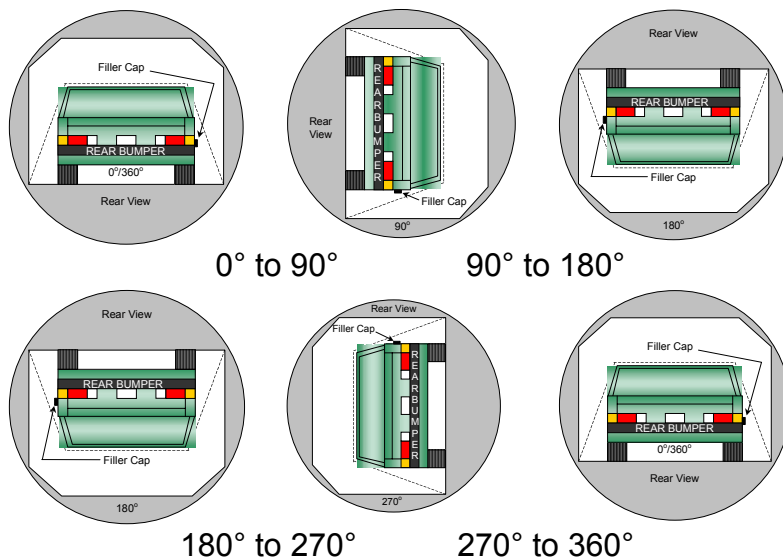
FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21° C Test Time: 11:52 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°	119	300	0
90° to 180°	117	300	0
180° to 270°	117	300	0
270° to 360°	117	300	0

DATA SHEET NO. 10
VEHICLE MEASUREMENTS

Test Vehicle: 2008 Infiniti EX35 AWD Journey
Test Program: 35mph Frontal Impact

NHTSA No.: M85212
Test Date: 1/22/2008

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
1	Total length of vehicle at centerline	mm	4598	3963	635
2	RSOV to front of engine	mm	3936	3758	178
3	RSOV to firewall centerline	mm	3337	3286	51
4	RSOV to leading edge of right door	mm	2978	2980	-2
5	RSOV to leading edge of left door	mm	2975	2984	-9
6	RSOV to lower leading edge of right door	mm	3075	3066	9
7	RSOV to lower leading edge of left door	mm	3080	3062	18
8	RSOV to upper leading edge of right door	mm	1927	1934	-7
9	RSOV to upper leading edge of left door	mm	1924	1928	-4
10	RSOV to lower trailing edge of right door	mm	1960	1954	6
11	RSOV to lower trailing edge of left door	mm	1966	1947	19
12	RSOV to bottom of right 'A' pillar	mm	3043	3061	-18
13	RSOV to bottom of left 'A' pillar	mm	3059	3058	1
14	RSOV to firewall on right side	mm	3239	3292	-53
15	RSOV to firewall on left side	mm	3306	3280	26
16	RSOV to steering column	mm	2579	2598	-19
17	Center of steering column to left 'A' pillar	mm	338	331	7
18	Center of steering column to headlining	mm	431	434	-3
19	RSOV to right side of front bumper	mm	4470	3960	510
20	RSOV to left side of front bumper	mm	4470	3933	537
21	Length of engine block	mm	471	471	0
RD	RSOV to right side of dash panel	mm	2742	2756	-14
CD	RSOV to center of dash panel	mm	2788	2821	-33
LD	RSOV to left side of dash panel	mm	2733	2737	-4

DATA SHEET NO. 10... (continued)

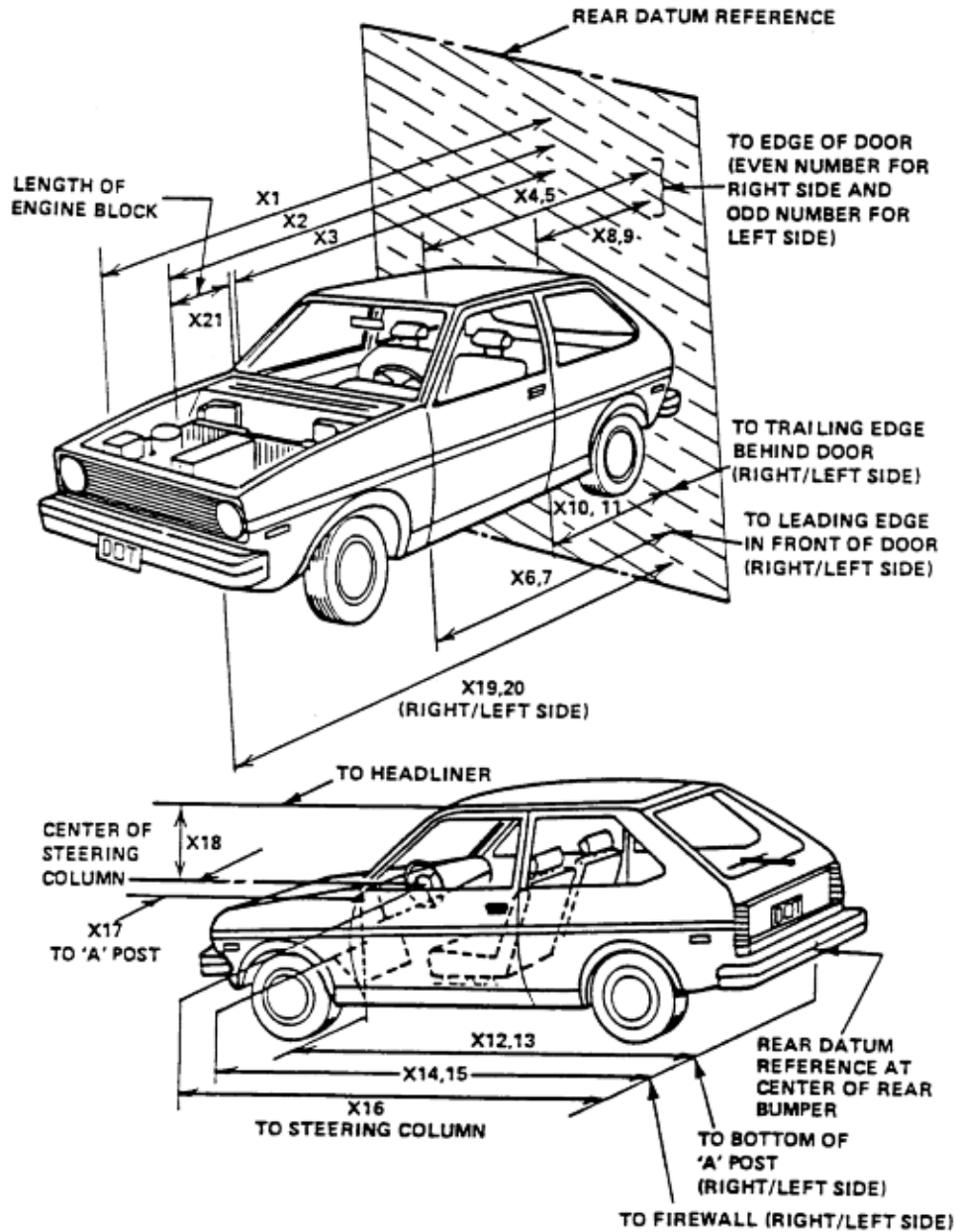
VEHICLE MEASUREMENTS

Test Vehicle: 2008 Infiniti EX35 AWD Journey

NHTSA No.: M85212

Test Program: 35mph Frontal Impact

Test Date: 1/22/2008



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

Test Vehicle: 2008 Infiniti EX35 AWD Journey
Test Program: 35mph Frontal Impact

NHTSA No.: M85212
Test Date: 1/22/2008

Target Vehicle Structural Measurement

	Elements	Pre-Test (mm)
1	Total Length	4598
2	Total Width	1780
3	Bumper Top Height	596
4	Bumper Bottom Height	442
5	Longitudinal Member Top Height	556
6	Distance between Longitudinal Members	868
7	Longitudinal Member Width	58
8	Engine Top Height	925
9	Engine Bottom Height	220
10	Engine and gearbox width	564
11	Front bumper-engine distance	561
12	Front shock absorber fixing height	821
13	Bonnet leading edge height	864
14	Front shock absorber fixing width	837
15	Front bumper – front axle distance	808
16	Front axle – a pillar distance	596
17	A-pillar – B-pillar distance	1147
18	B-Pillar – rear axle distance	1049
19	B-pillar – C-pillar distance	973
20	Roof sill bottom height	1492
21	Roof sill top height	1527
22	Floor sill bottom height	222
23	Floor sill top height	403

DATA SHEET NO. 11
CAMERA LOCATIONS

Test Vehicle: 2008 Infiniti EX35 AWD Journey
Test Program: 35mph Frontal Impact

NHTSA No.: M85212
Test Date: 1/22/2008

No.	Camera View	Location (mm) *			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Side View				13	24
2	Left Front View	1215	-4475	1175	24	1000
3	Steering Column Top	1025	-4885	1300	25	1000
4	Steering Column Bottom	1025	-4885	1290	25	1000
5	Driver Close-up	1285	-4700	1200	35	1000
6	Driver Angle	6800	-5050	2180	50	1000
7	On board Driver Side				8	1000
8	On board Passenger Side				8	1000
9	Right Overall	1600	6050	1350	24	1000
10	Right Passenger Half	1225	4505	1175	24	1000
11	Right Close-up	1285	3690	1210	35	1000
12	Right Angle	6750	4980	2190	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	1190	0	-3150	24	1000
17	Pit Rear	3100	0	-3150	24	1000

*COORDINATES:

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

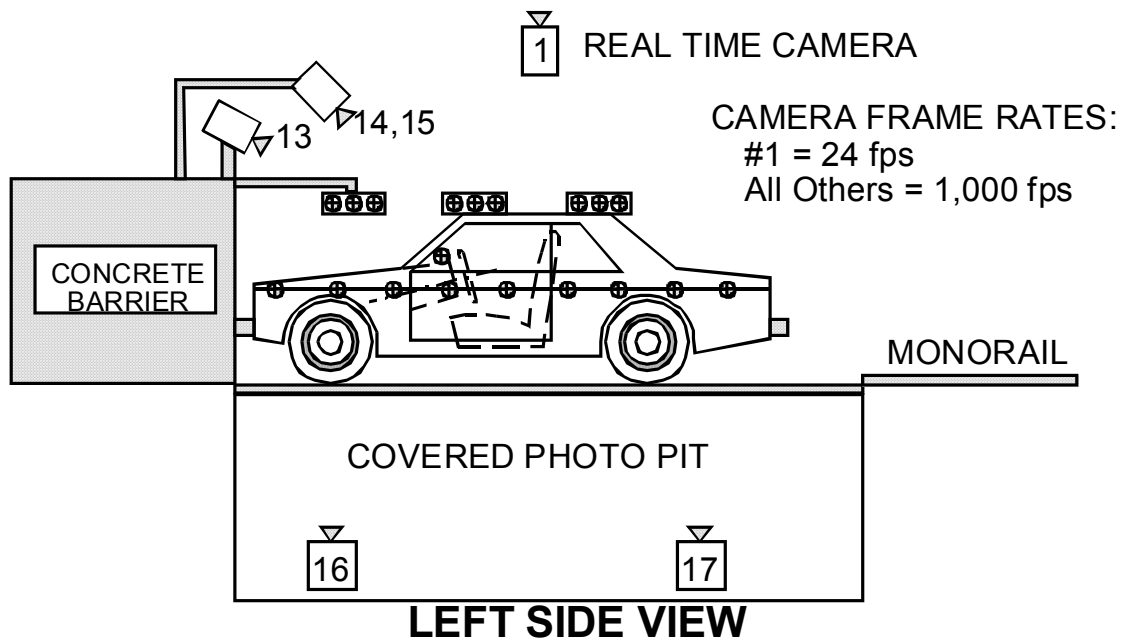
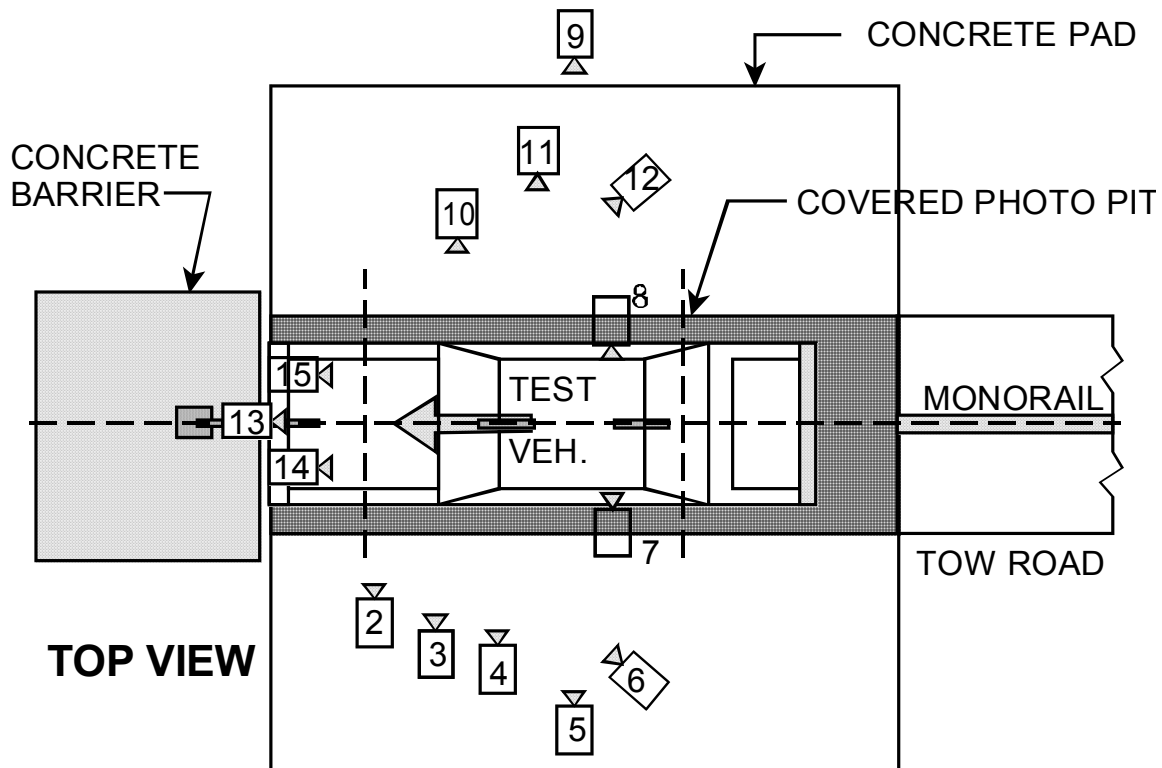
DATA SHEET NO. 11... (continued)

CAMERA LOCATIONS

Test Vehicle: 2008 Infiniti EX35 AWD Journey
Test Program: 35mph Frontal Impact

NHTSA No.: M85212
Test Date: 1/22/2008

CAMERA POSITIONS FOR FRONTAL IMPACTS

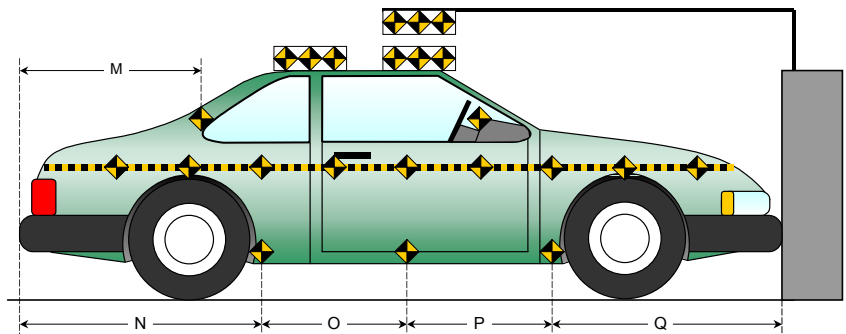
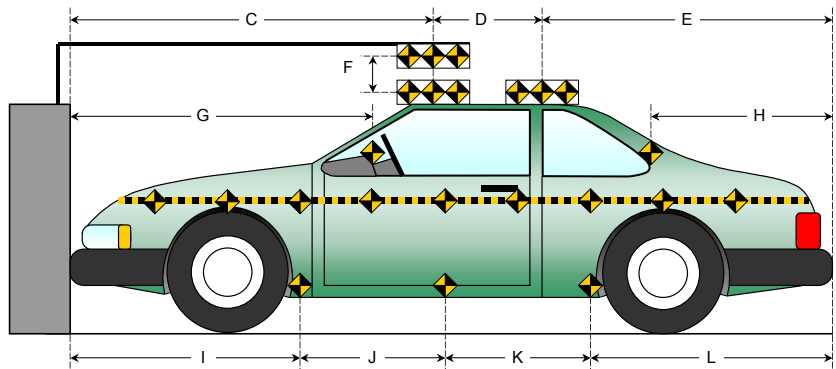
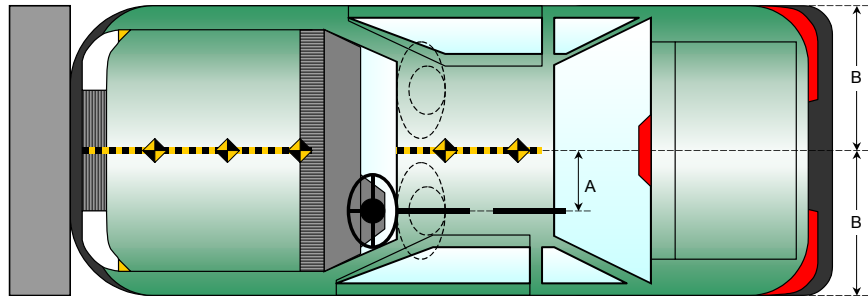


DATA SHEET NO. 12 **PHOTOGRAPHIC REFERENCE TARGET LOCATIONS**

Test Vehicle: 2008 Infiniti EX35 AWD Journey
 Test Program: 35mph Frontal Impact

NHTSA No.: M85212
 Test Date: 1/22/2008

Item	Value
A	370
B	890
C	2430
D	730
E	1438
F	1550
G	
H	730
I	1343
J	933
K	936
L	1386
M	722
N	1377
O	936
P	938
Q	1347



DATA SHEET NO. 13
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2008 Infiniti EX35 AWD Journey
 Test Program: 35mph Frontal Impact

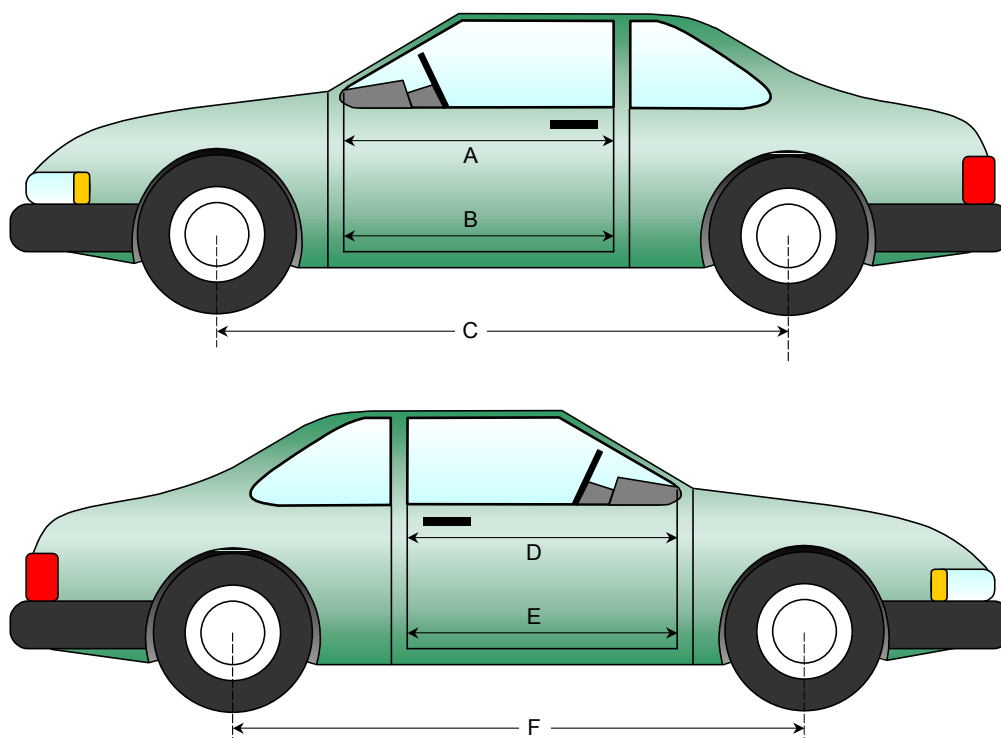
NHTSA No.: M85212
 Test Date: 1/22/2008

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	1016	1016	0
B	Left Side Lower	mm	920	920	0
D	Right Side Upper	mm	1016	1016	0
E	Right Side Lower	mm	921	921	0

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	2797	2751	46
F	Right Side Wheelbase	mm	2797	2741	56



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

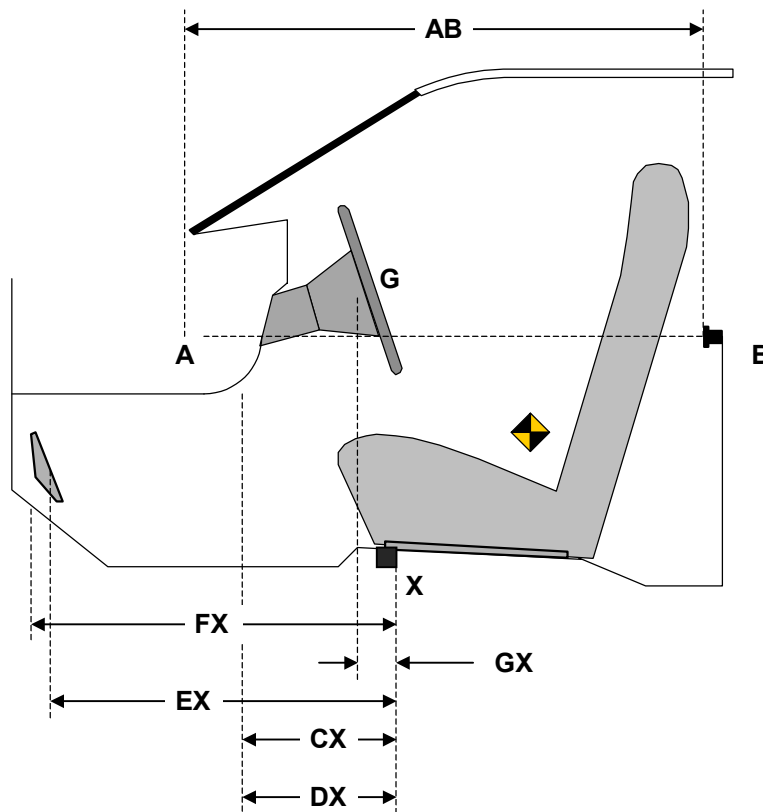
Test Vehicle: 2008 Infiniti EX35 AWD Journey
 Test Program: 35mph Frontal Impact

NHTSA No.: M85212
 Test Date: 1/22/2008

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside window jam)	mm	765	765	0
CX	Left Knee Bolster to X	mm	275	286	-11
DX	Right Knee Bolster to X	mm	277	267	10
EX	Brake Pedal to X	mm	451	472	-21
FX	Foot Rest to X	mm	566	545	21
GX	Center of Steering Column Wheel Hub to X	mm	26	62	-36

X = Front of Seat Track (stationary)

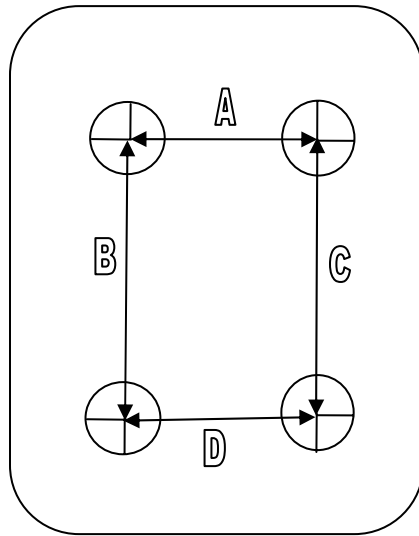


DRIVER COMPARTMENT

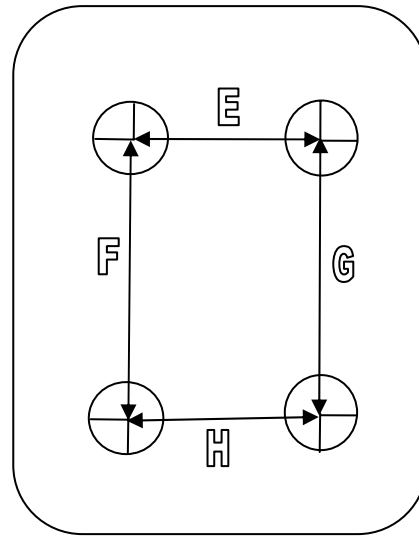
DATA SHEET NO. 13... (continued)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2008 Infiniti EX35 AWD Journey
 Test Program: 35mph Frontal Impact

NHTSA No.: M85212
 Test Date: 1/22/2008



Driver



Passenger

UNDERBODY FLOORBOARD DEFORMATION

Measurement	Pre-Test	Post-Test	Difference
A	174	173	1
B	272	270	2
C	274	273	1
D	194	192	2
E	184	181	3
F	275	275	0
G	255	272	-17
H	206	206	0

DATA SHEET NO. 14

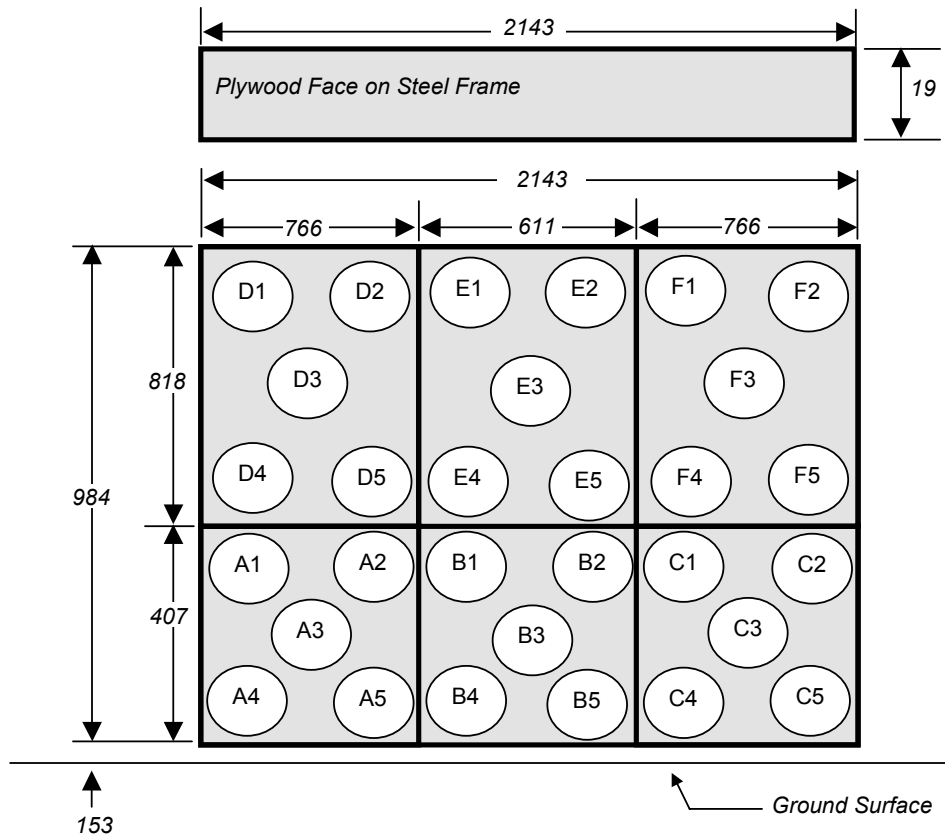
LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2008 Infiniti EX35 AWD Journey
 Test Program: 35mph Frontal Impact

NHTSA No.: M85212
 Test Date: 1/22/2008

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 Infiniti EX35 AWD Journey
 Test Program: 35mph Frontal Impact

NHTSA No.: M85212
 Test Date: 1/22/2008

VEHICLE INFORMATION

VIN: JNKAJ09F68M350440 Wheelbase (mm) : 2797
 Vehicle Size Category: Passenger Car Test Weight (kg) : 2028.9

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): 56.5
 Velocity Change (km/h): 63.5 Time of Separation (msec): 100

CRUSH PROFILE

Collision Deformation Classification: Frontal Midpoint of Damage: Centerline
 Damage Region Length (mm): 1164 Impact Mode: Frontal

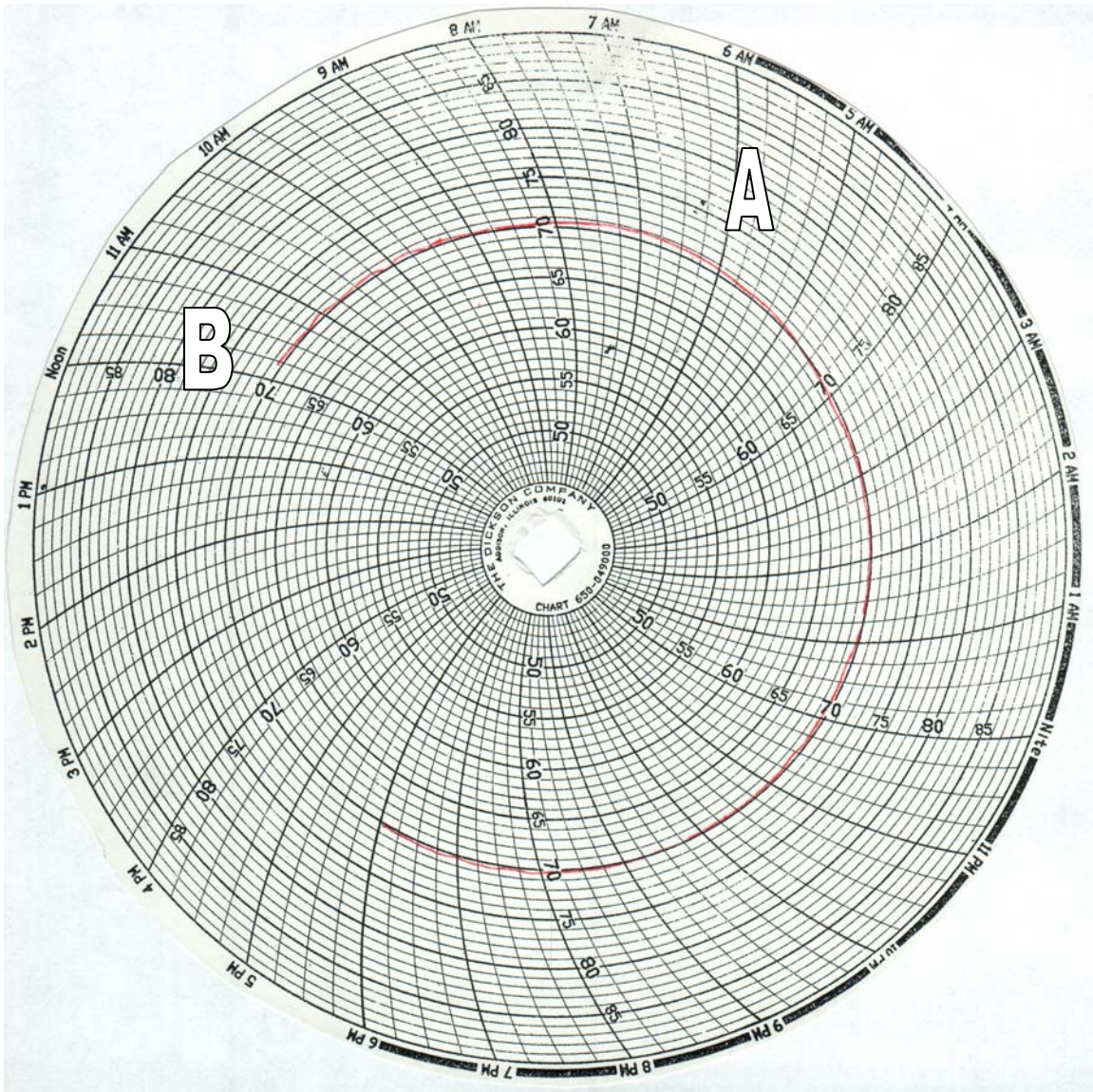
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	4473	3936	537
C2	Crush zone 2 at left side	mm	4531	3957	574
C3	Crush zone 3 at left side	mm	4569	3959	610
C4	Crush zone 4 at right side	mm	4568	3965	603
C5	Crush zone 5 at right side	mm	4531	3959	572
C6	Crush zone 6 at right side	mm	4470	3960	510
L	C1 TO C6	mm	1164	1161	3

DATA SHEET NO. 16

DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2008 Infiniti EX35 AWD Journey
Test Program: 35mph Frontal Impact

NHTSA No.: M85212
Test Date: 1/22/2008



A = Dummies installed in vehicle at 6:00 am

B = Test conducted at 11:52 pm

APPENDIX A
PHOTOGRAPHS

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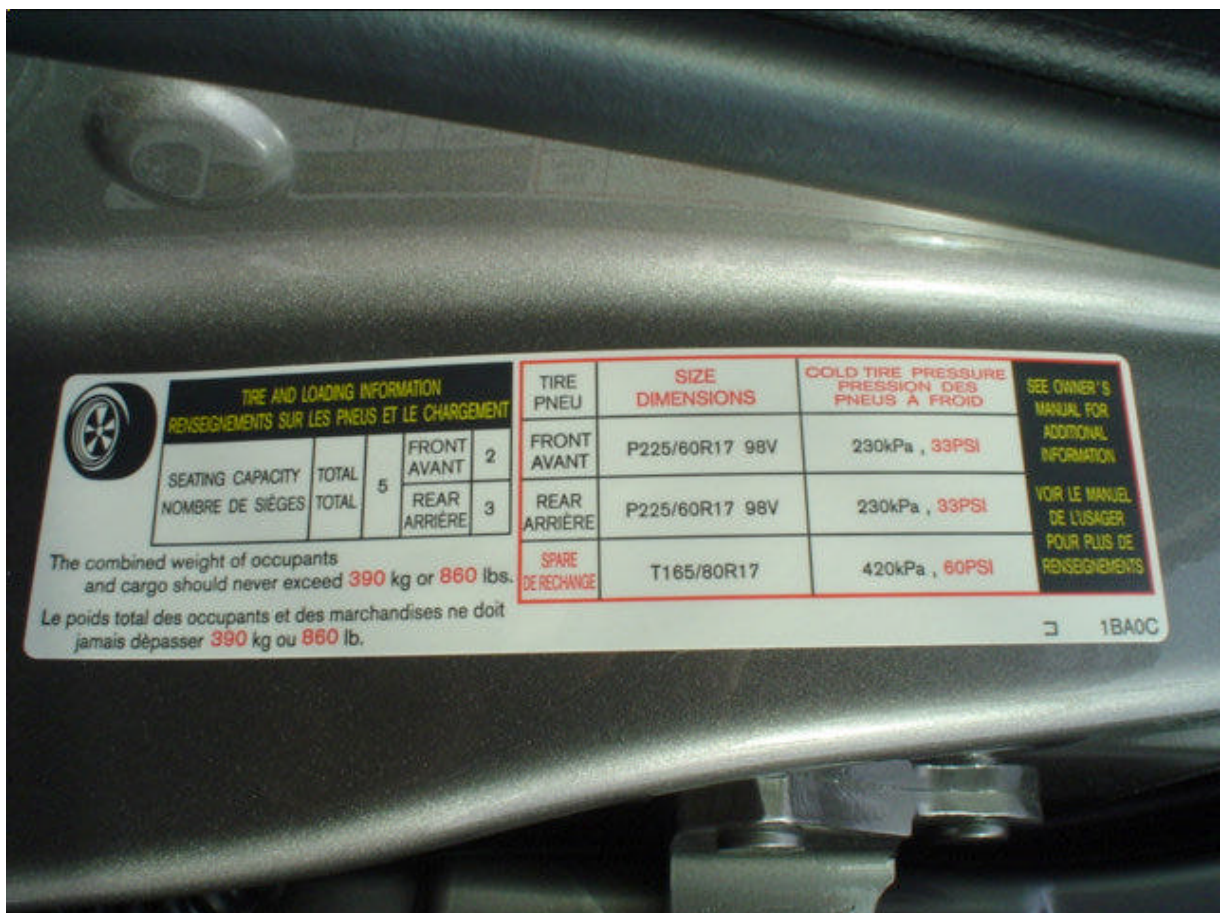
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Load Cell Location



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



Pre-Test Right Side View



Pre-Test Right Front ¾ View



Post-Test Right Front ¾ View



Pre-Test Left Rear 3/4 View



Post-Test Left Rear 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



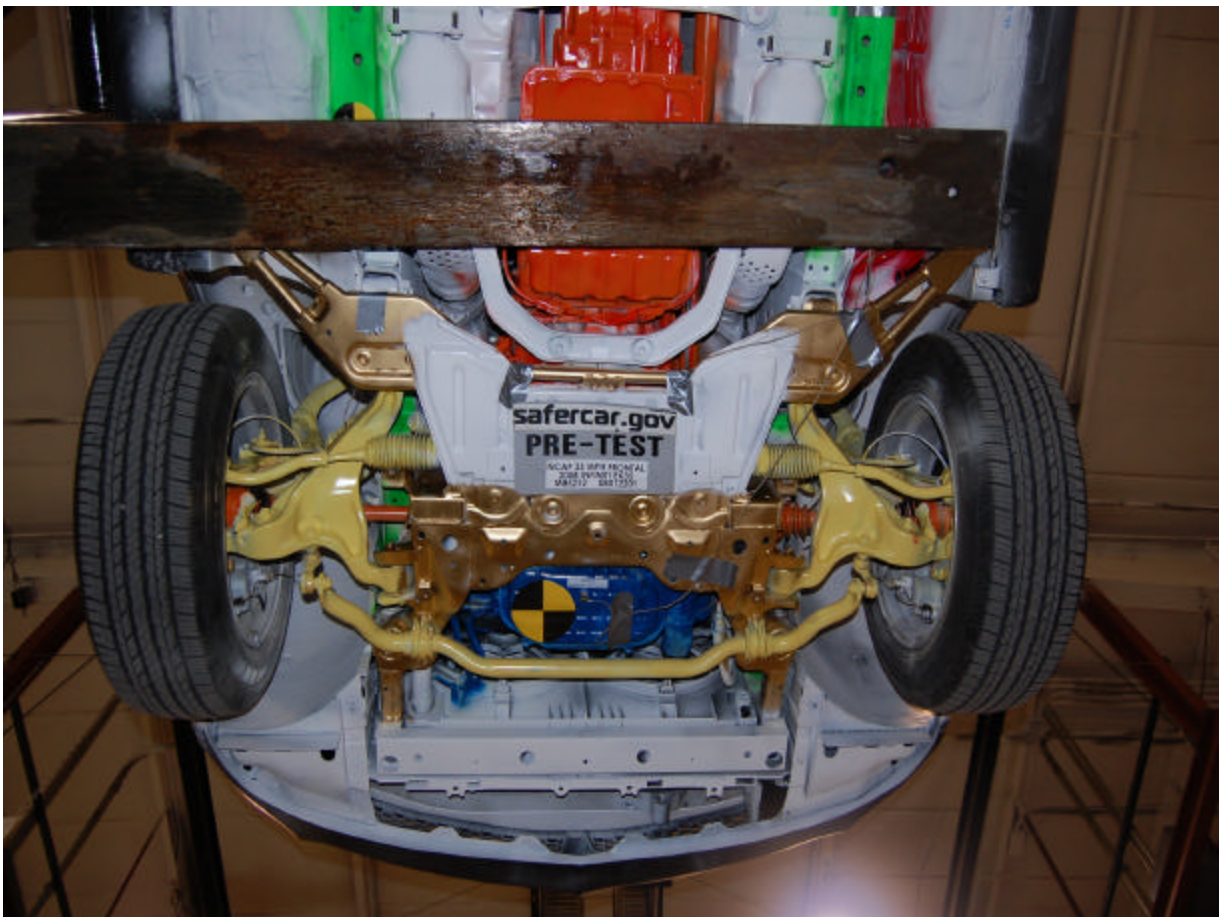
Post-Test Engine Compartment View



Pre-Test Fuel Cap View



Post-Test Fuel Cap View



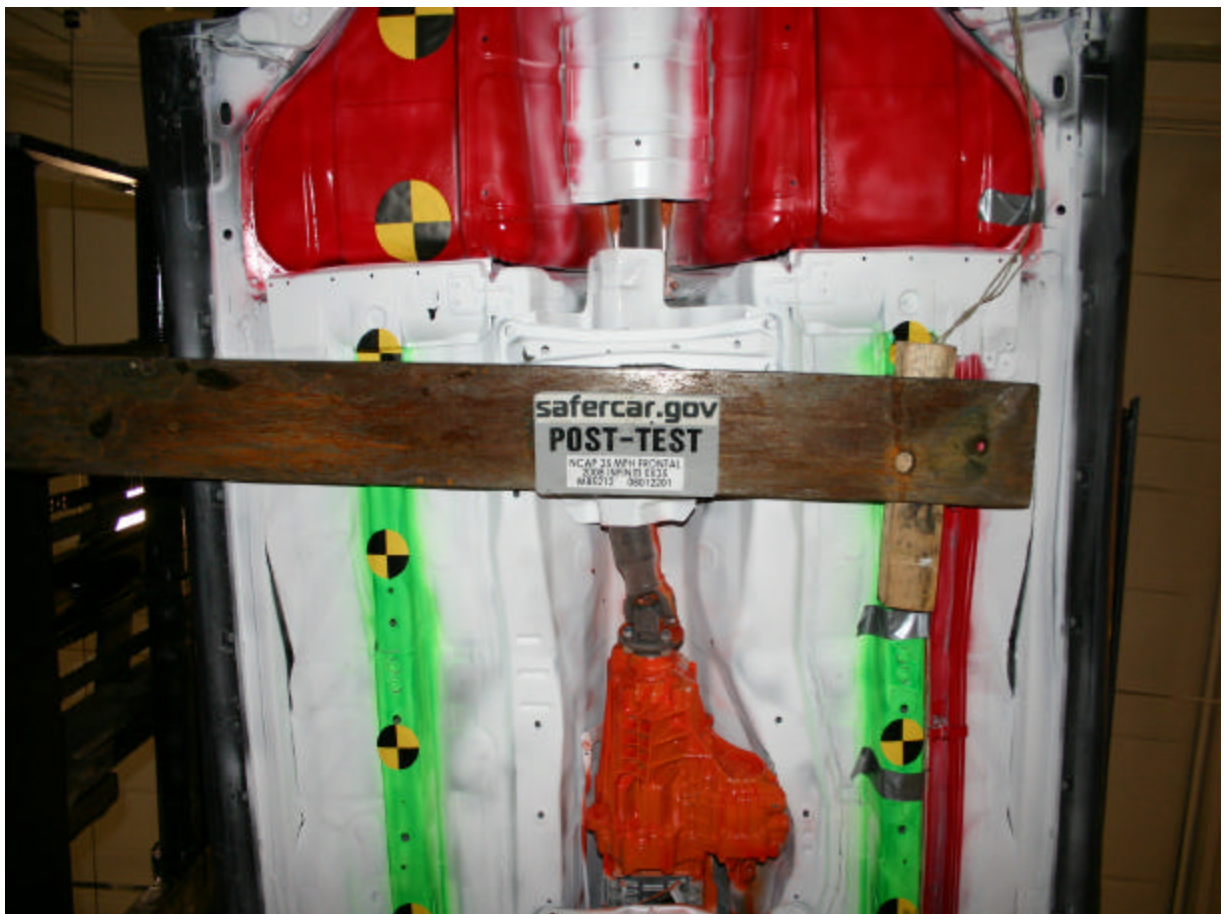
Pre-Test Front Underbody View



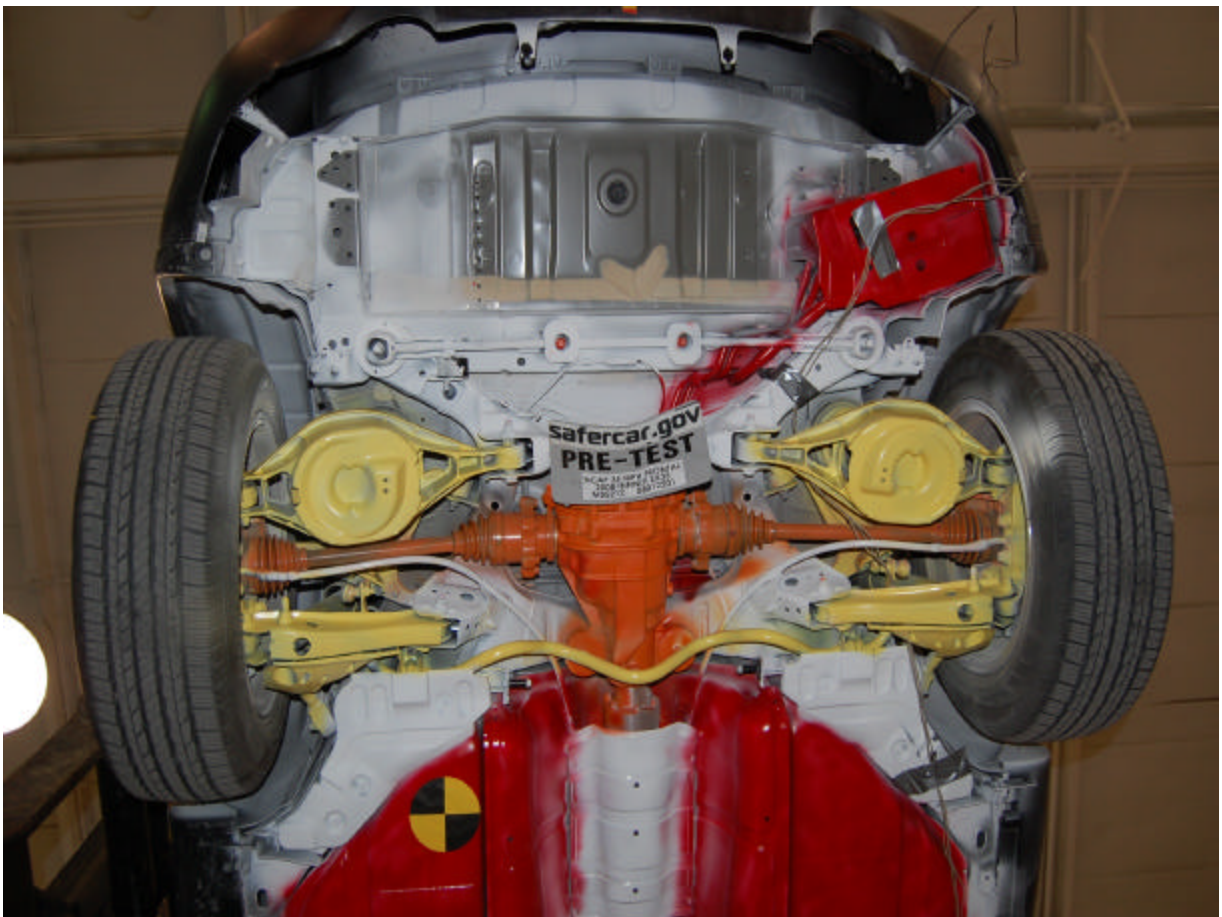
Post-Test Front Underbody View



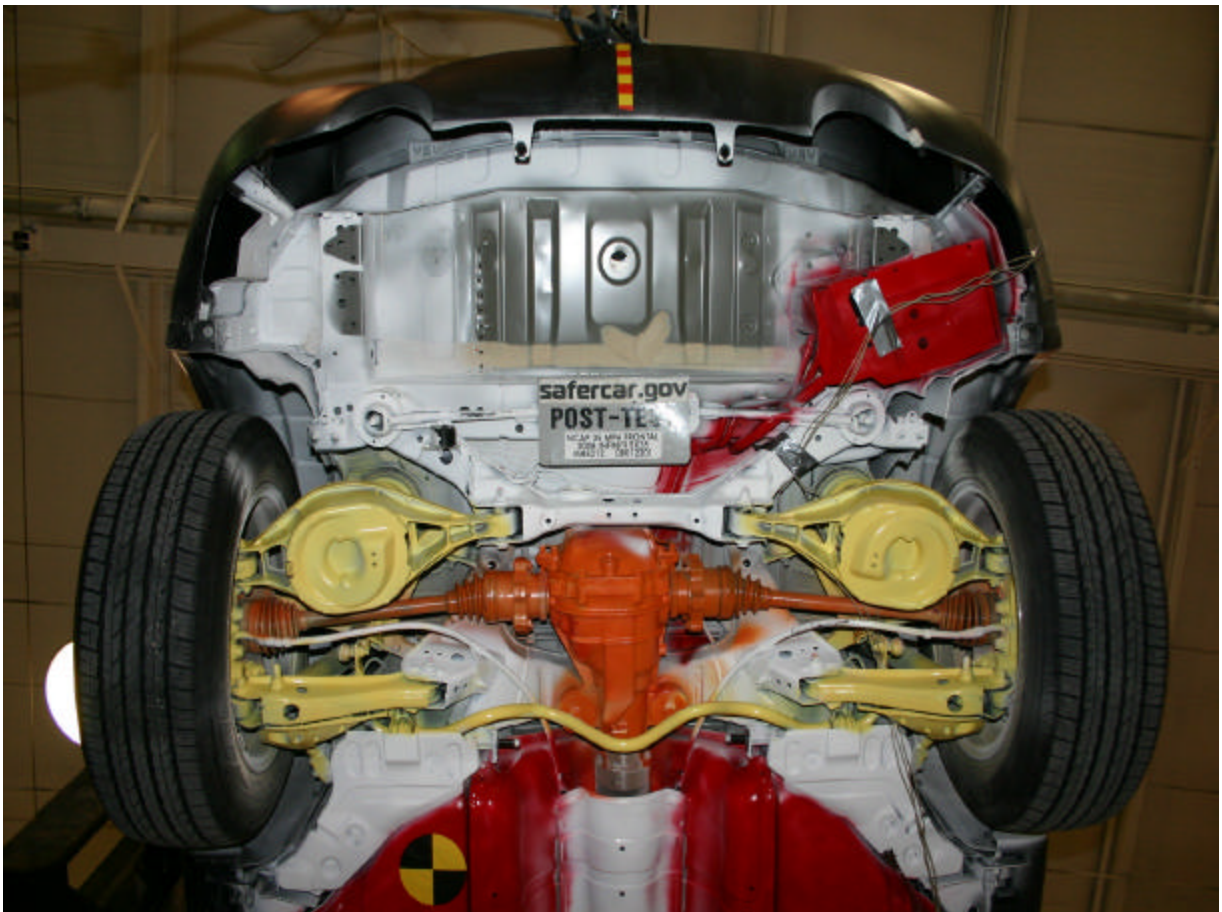
Pre-Test Mid Underbody View



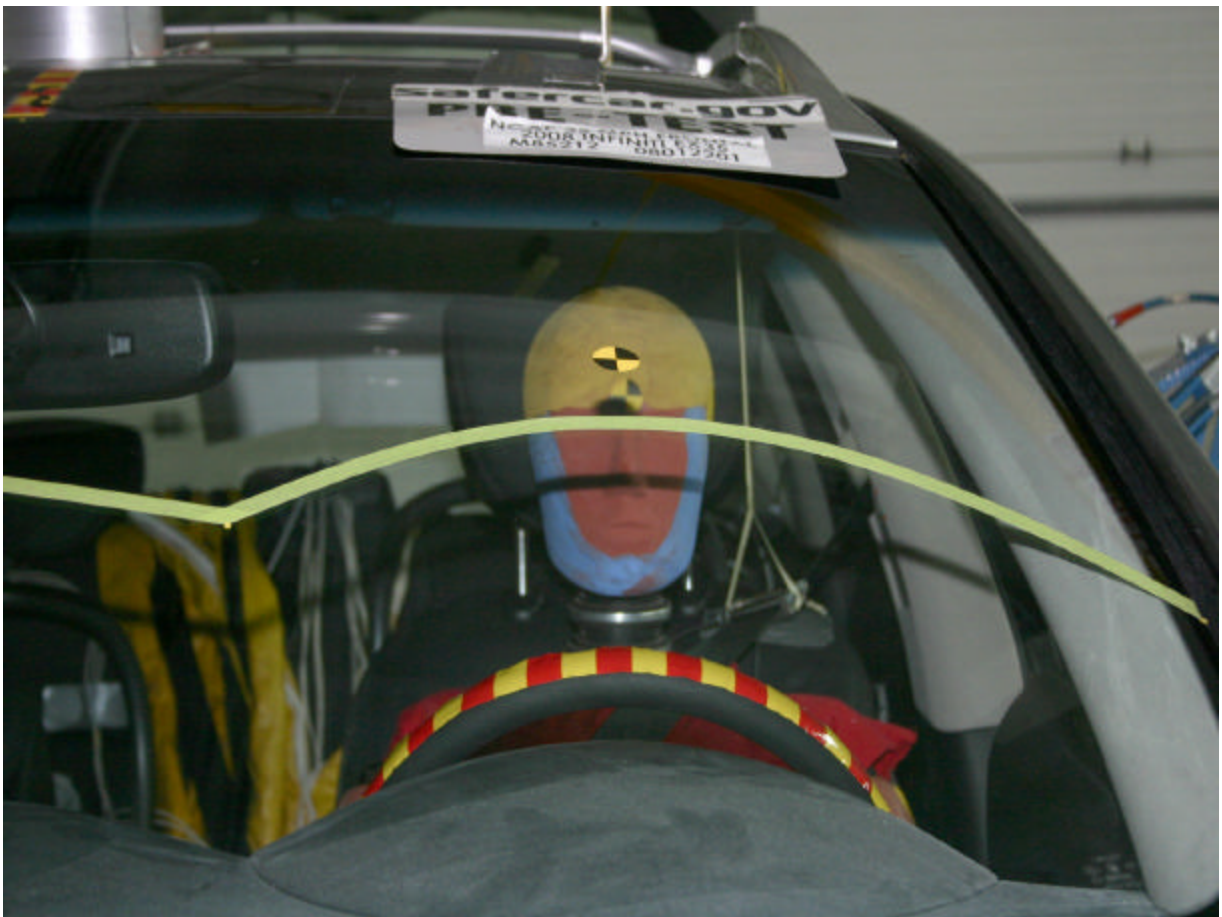
Post-Test Mid Underbody View



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 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 & Headliner)



Post-Test Passenger Dummy Head Contact (Dash)



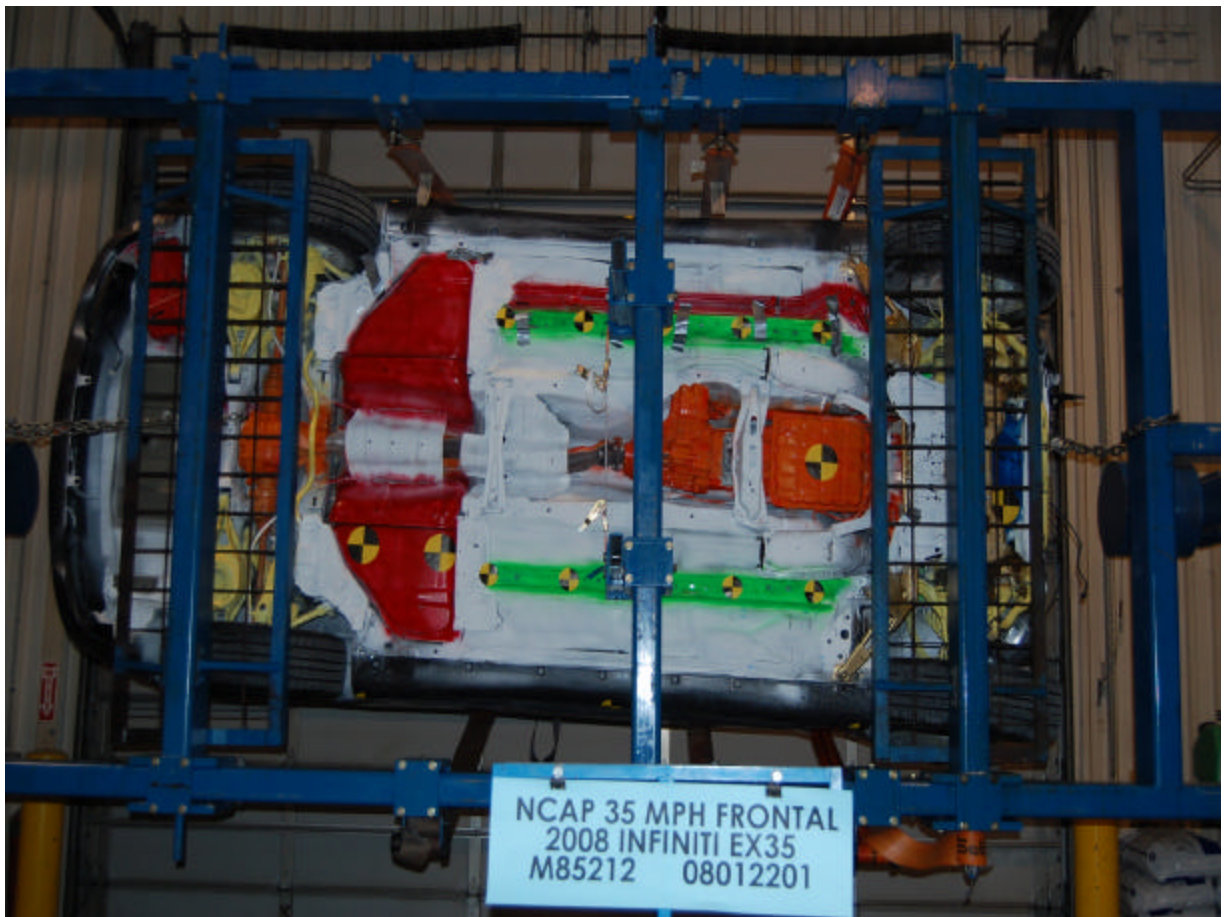
Post-Test Passenger Dummy Knee Contact



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

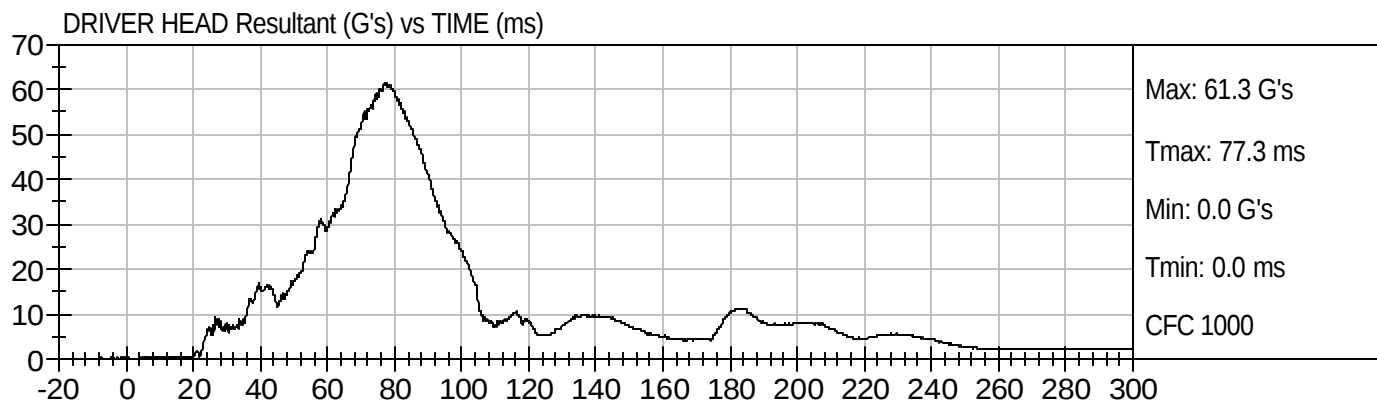
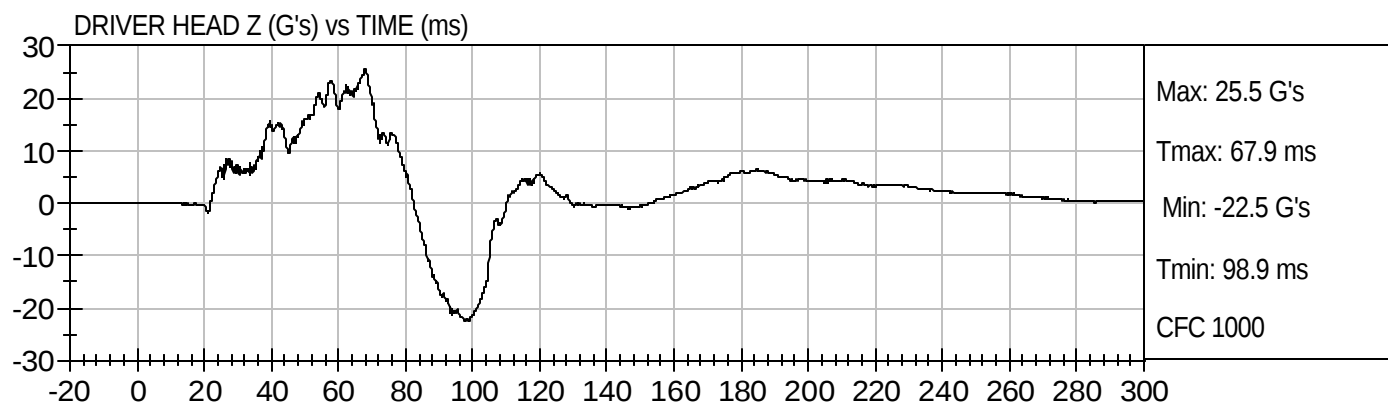
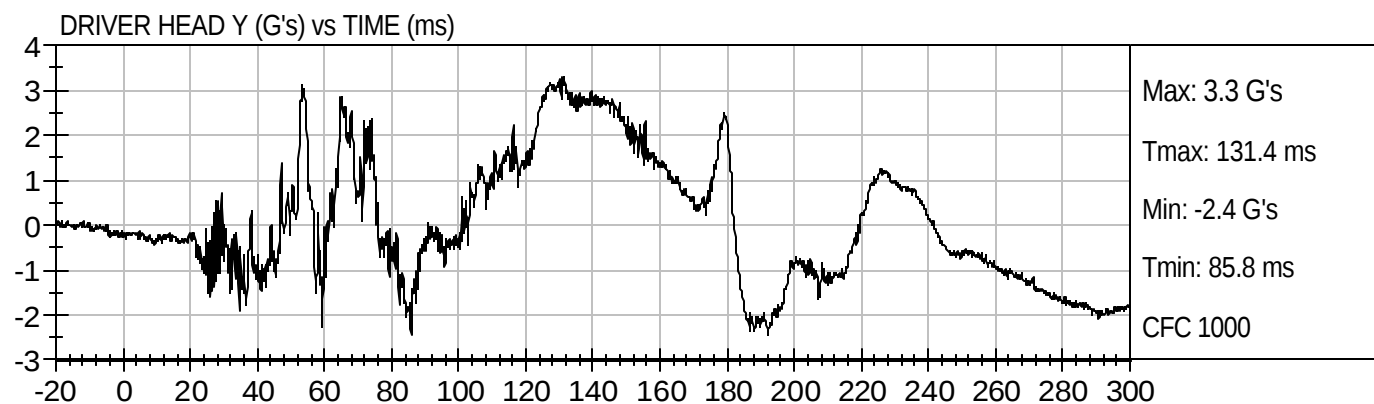
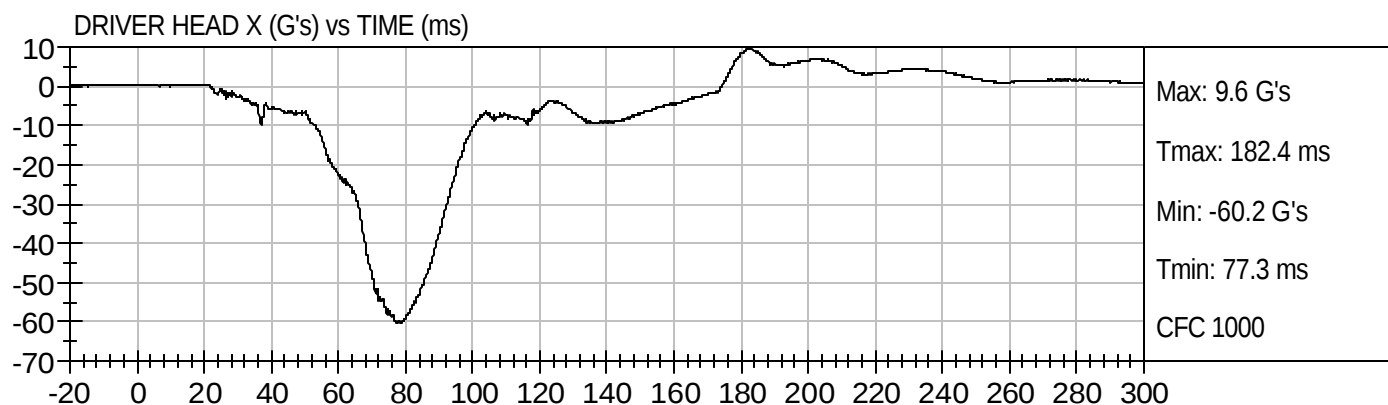
Passenger Left Lower Tibia Moment Y
Passenger Left Lower Tibia Force Z
Passenger Right Upper Tibia Moment X
Passenger Right Upper Tibia Moment Y
Passenger Right Upper Tibia Force Z
Passenger Right Lower Tibia Moment X
Passenger Right Lower Tibia Moment Y
Passenger Right Lower Tibia Force Z
Passenger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

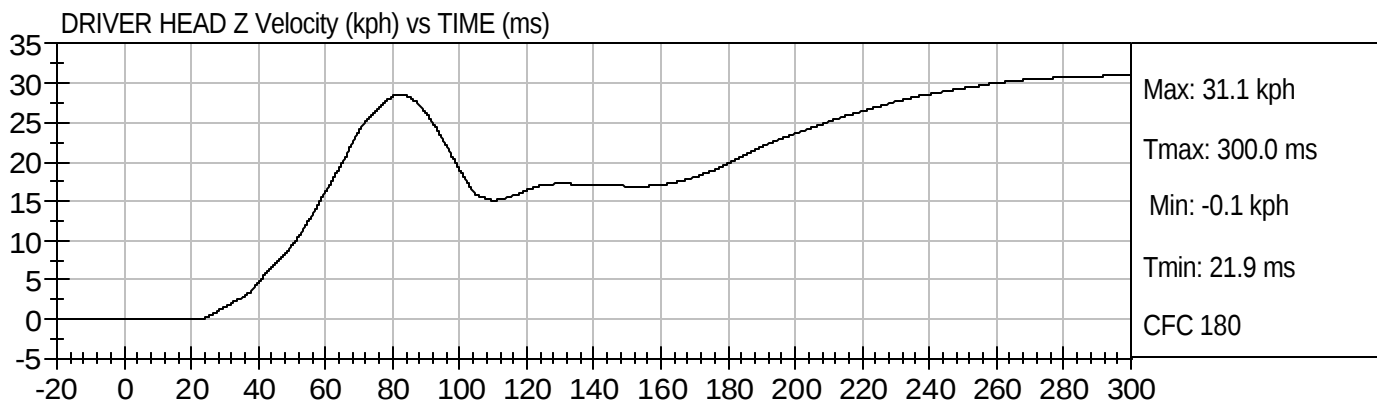
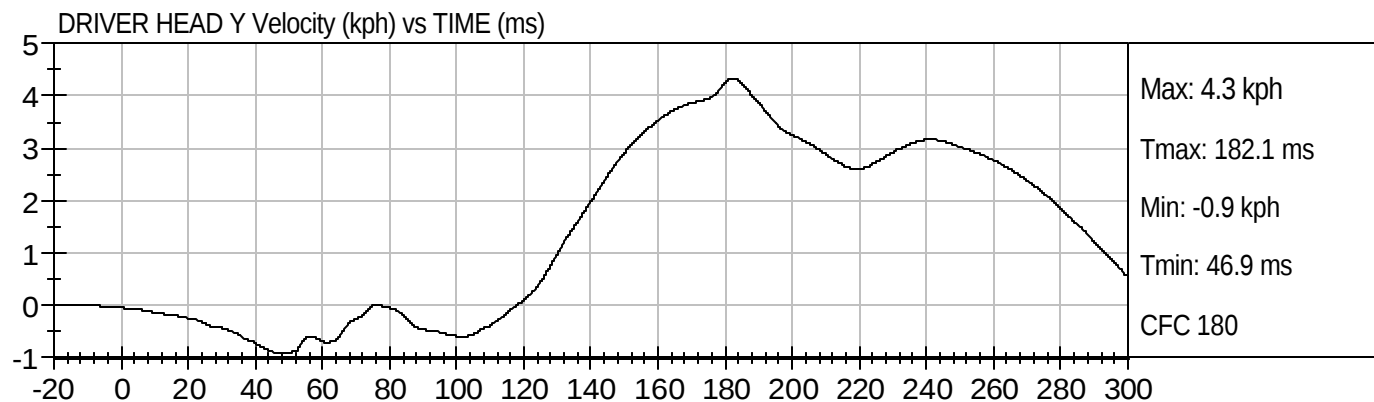
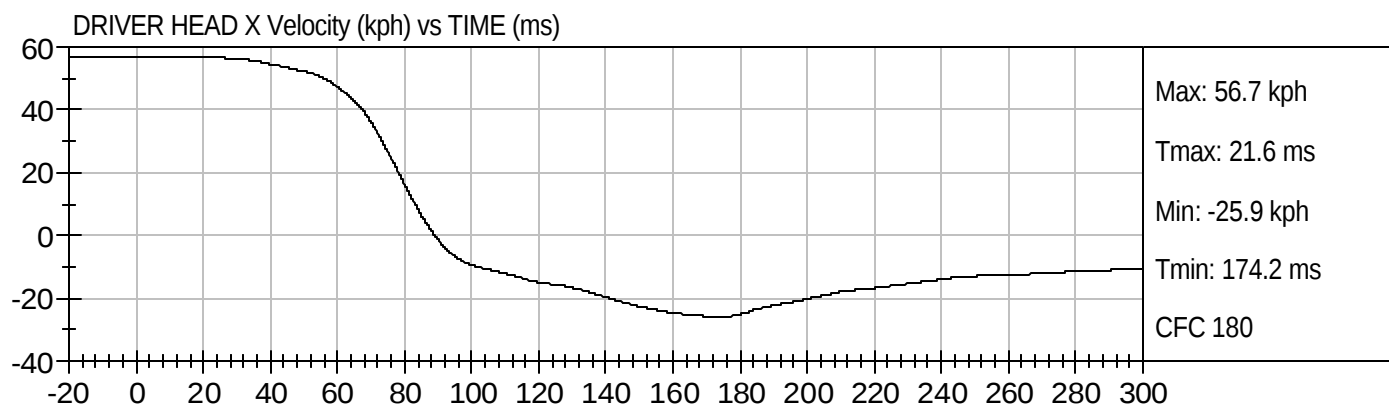


NCAP FRONTAL
2008 INFINITI EX35

M85212

Test Date: 01/22/2008
Speed: 35.1 mph (56.5 km/h)



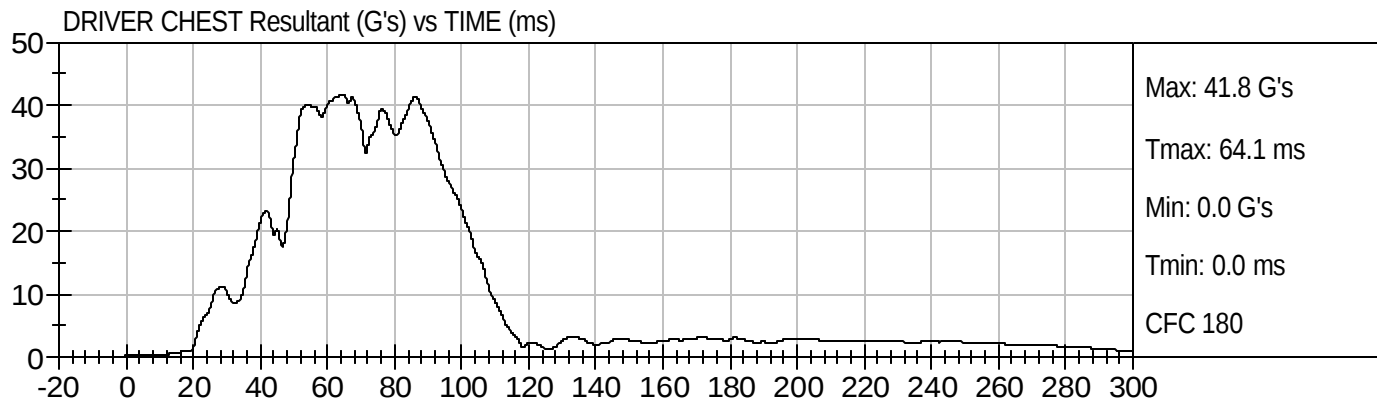
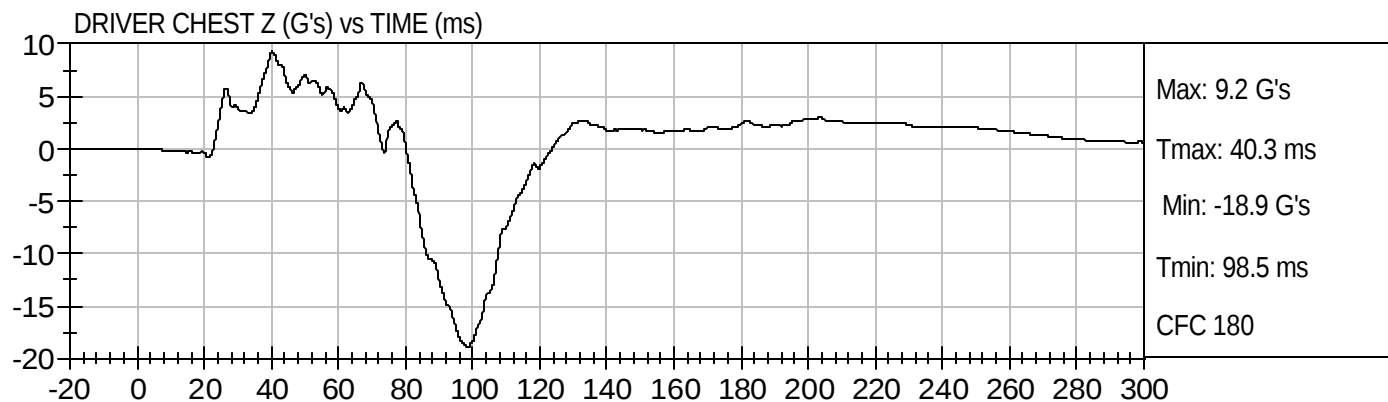
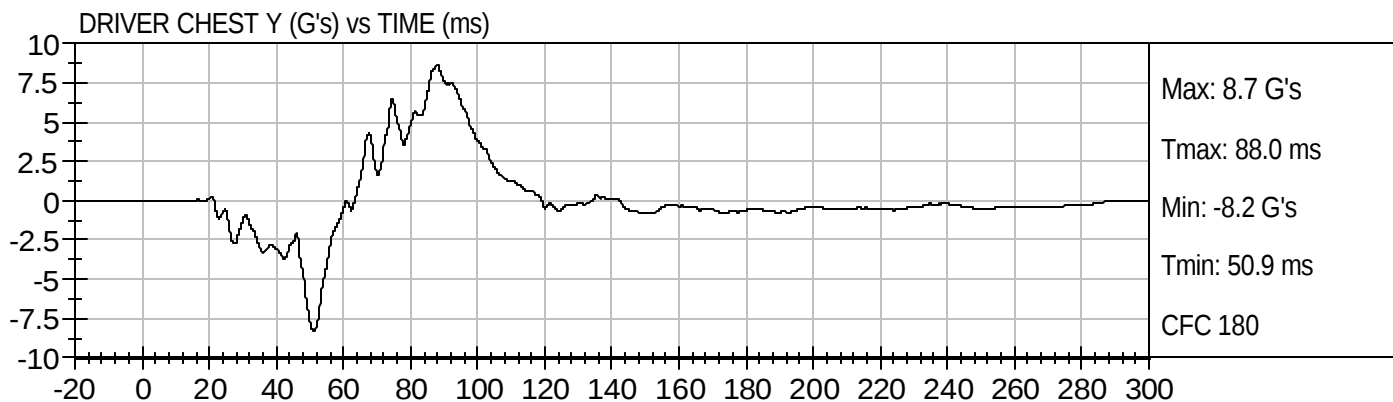
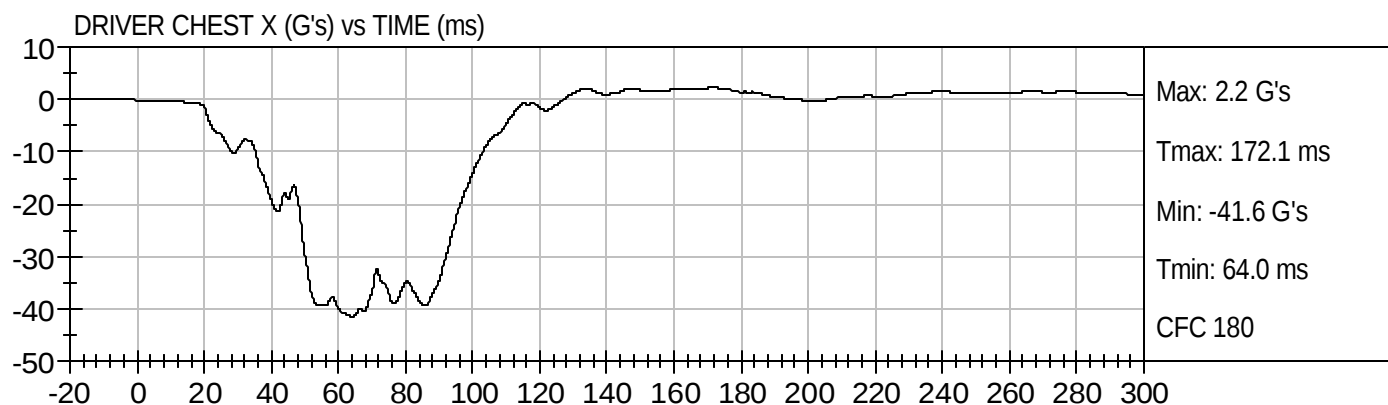


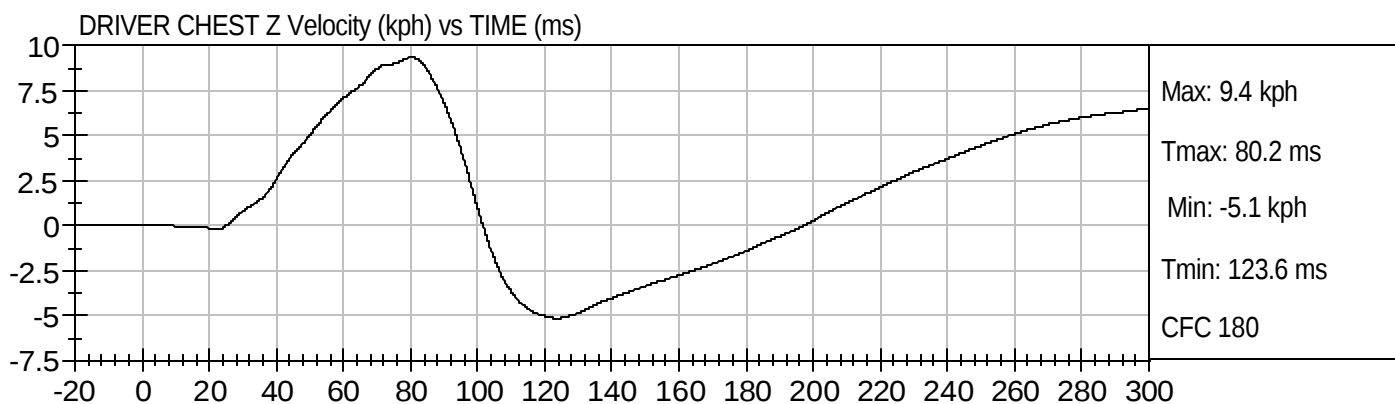
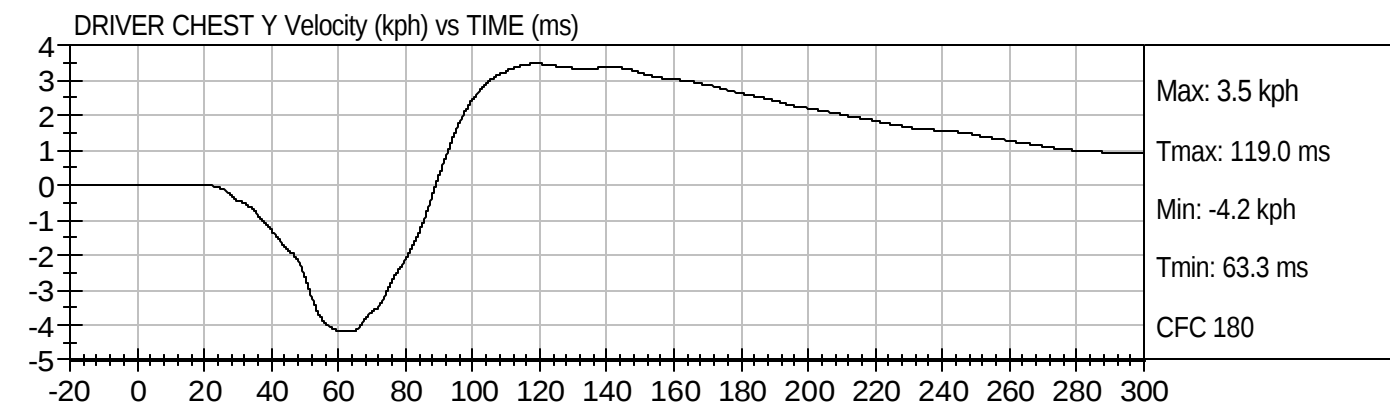
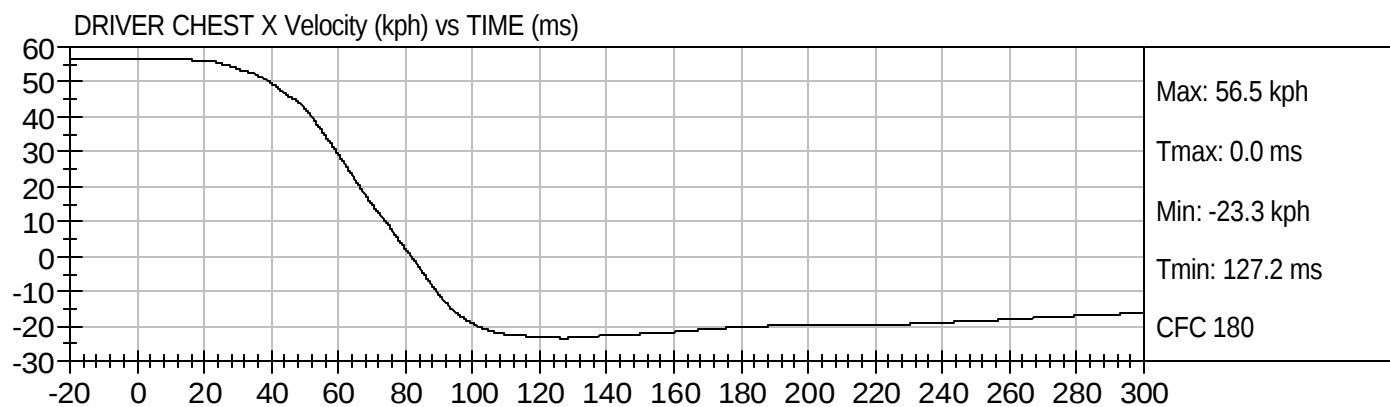


NCAP FRONTAL
2008 INFINITI EX35

M85212

Test Date: 01/22/2008
Speed: 35.1 mph (56.5 km/h)



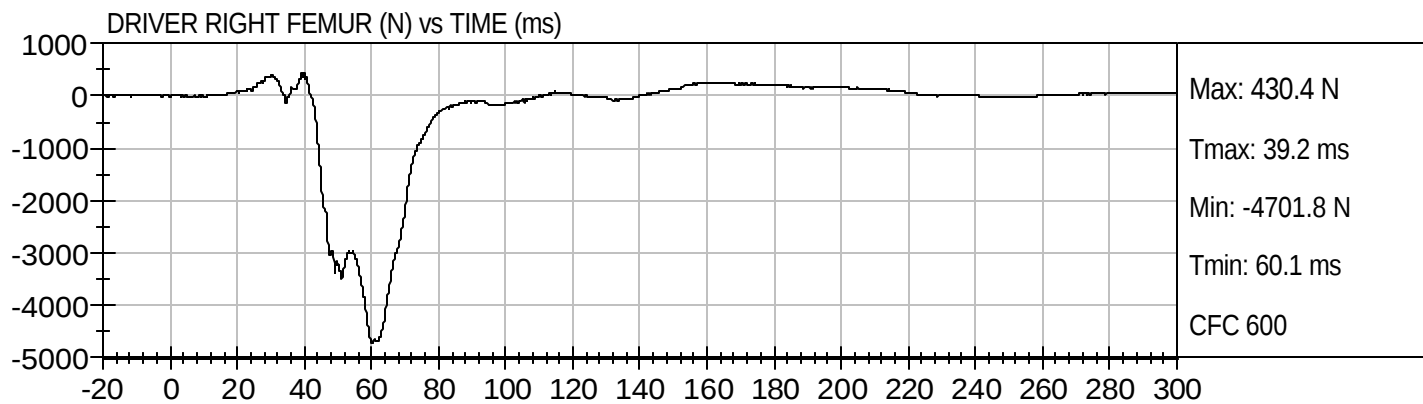
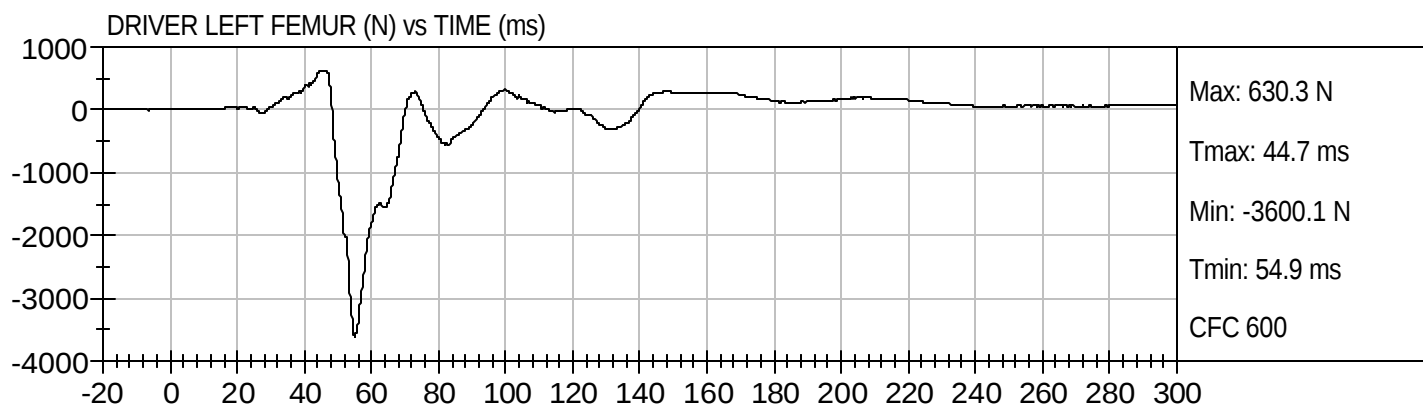




NCAP FRONTAL
2008 INFINITI EX35

M85212

Test Date: 01/22/2008
Speed: 35.1 mph (56.5 km/h)

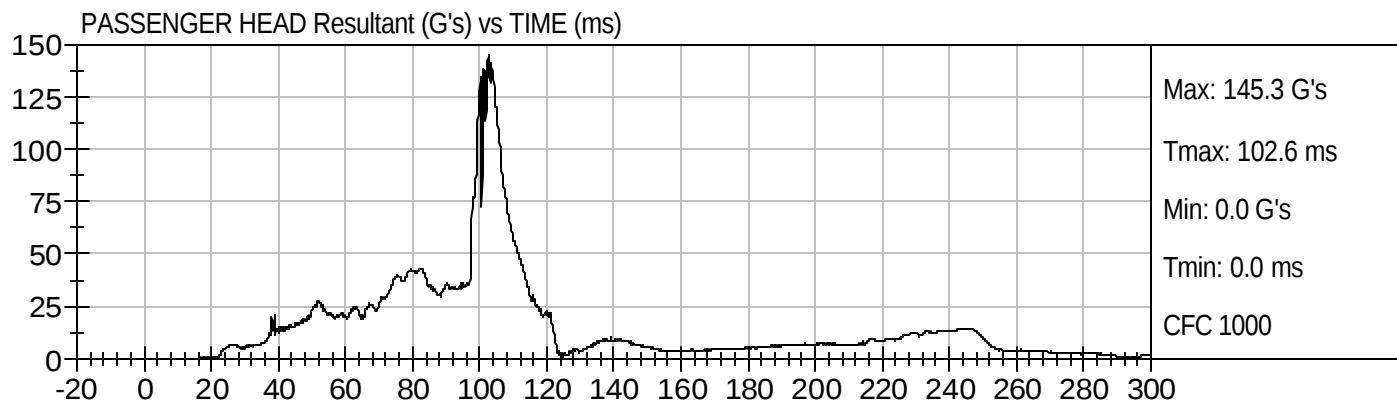
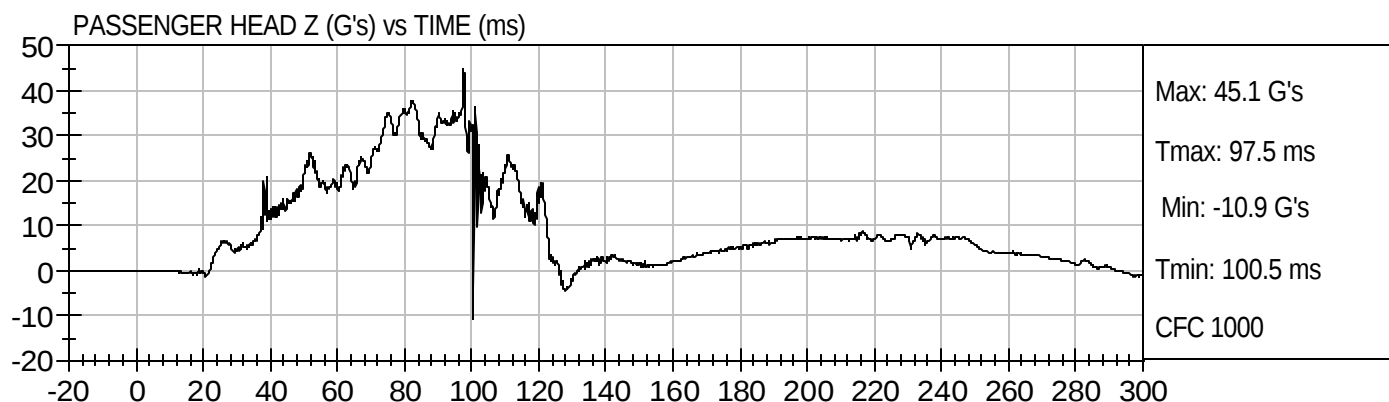
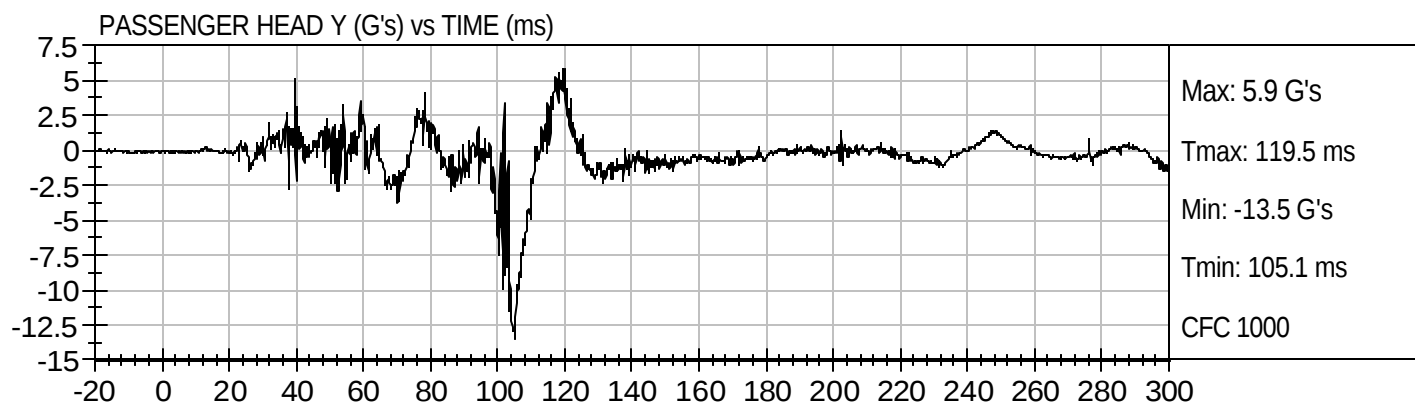
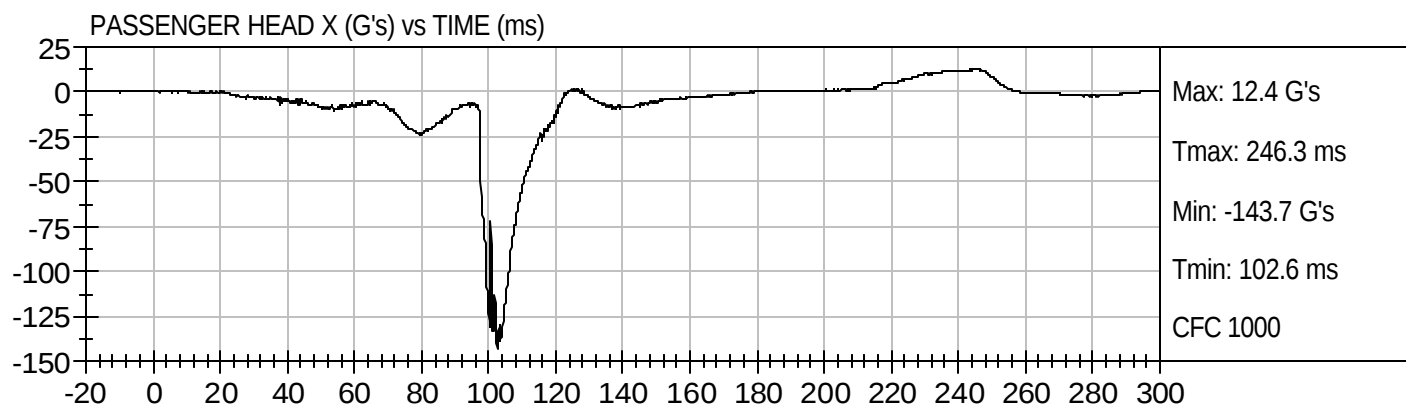


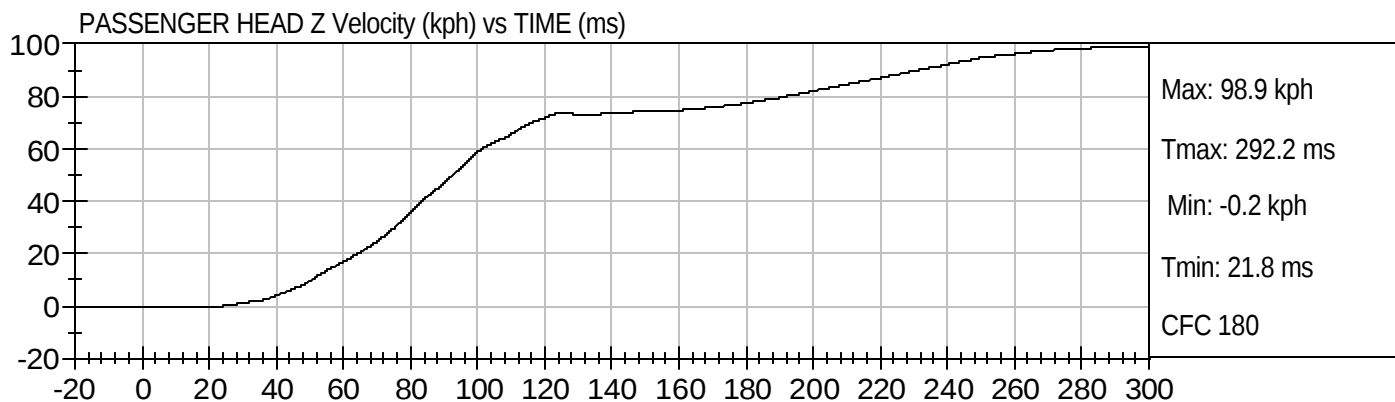
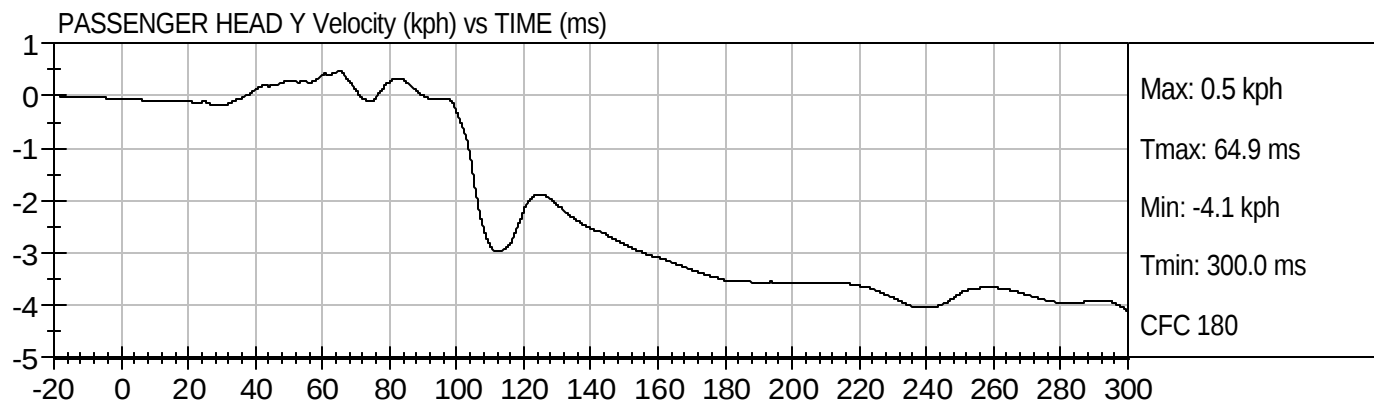
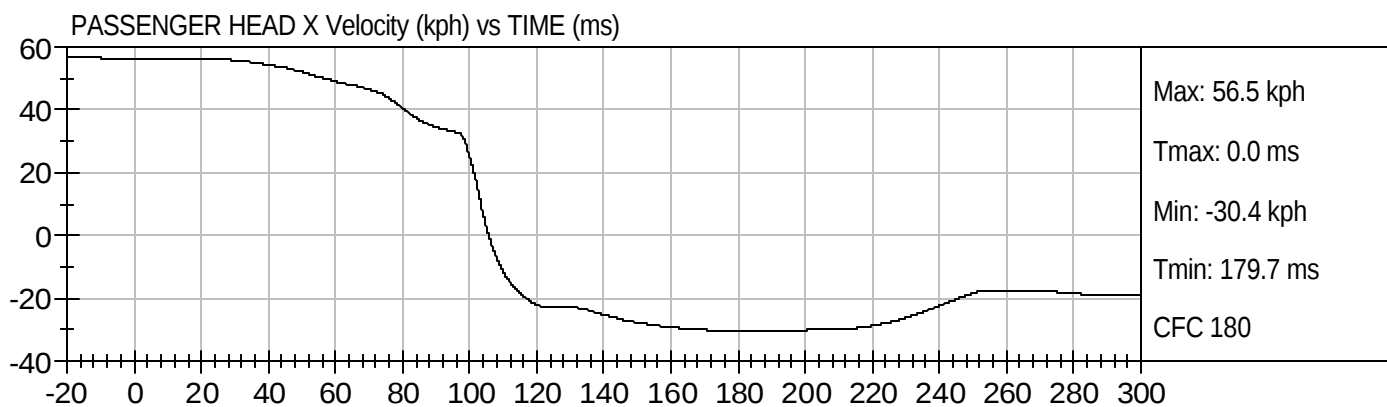


NCAP FRONTAL
2008 INFINITI EX35

M85212

Test Date: 01/22/2008
Speed: 35.1 mph (56.5 km/h)



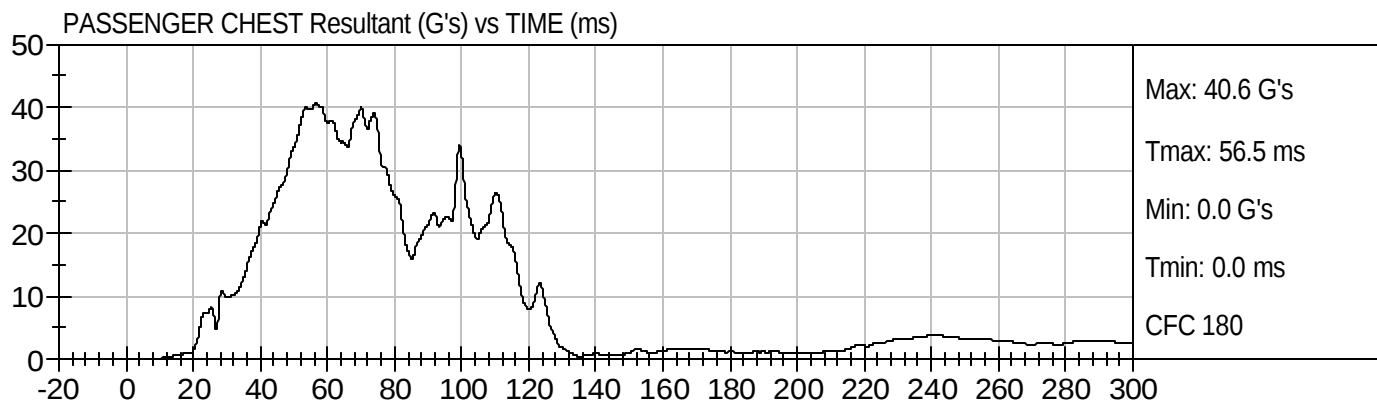
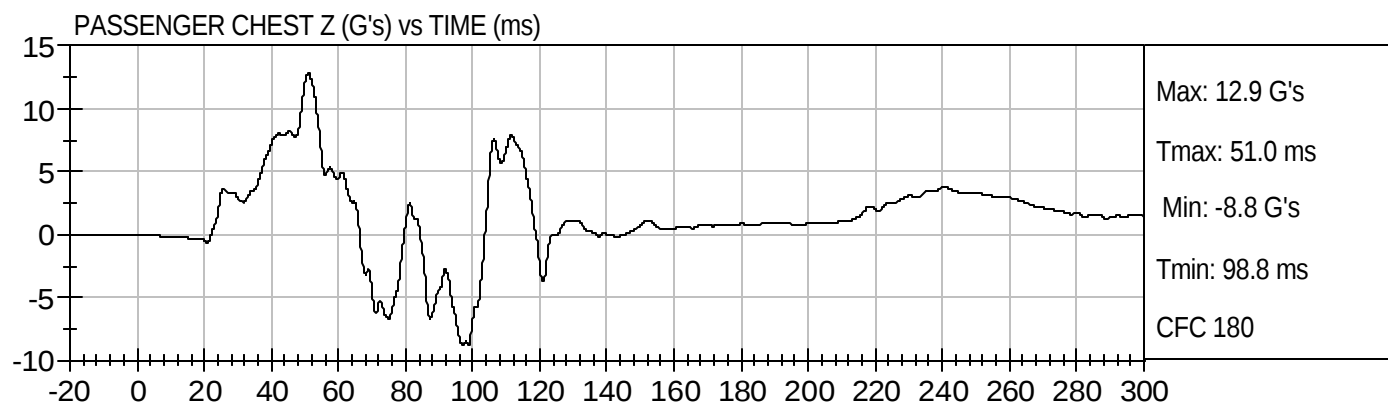
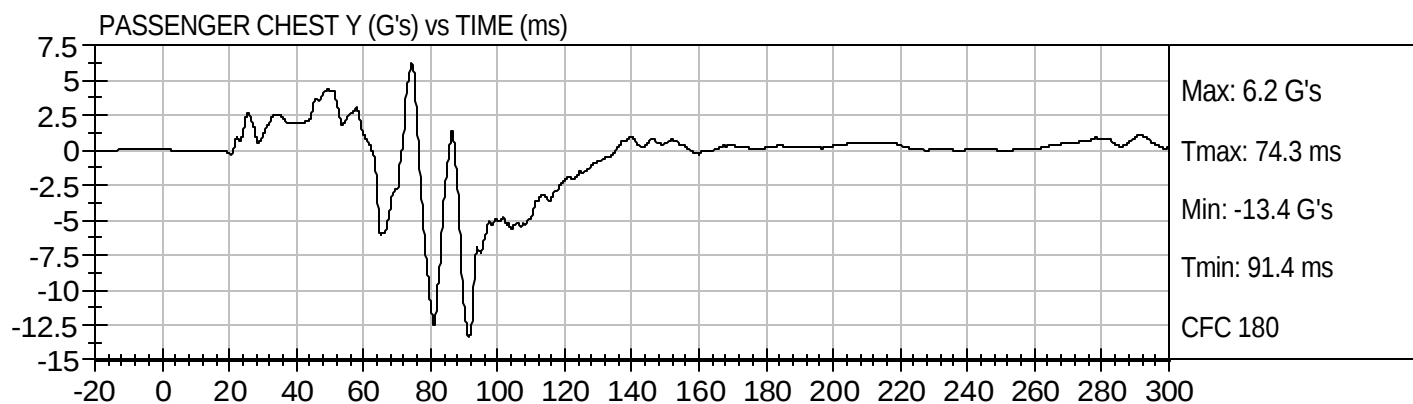
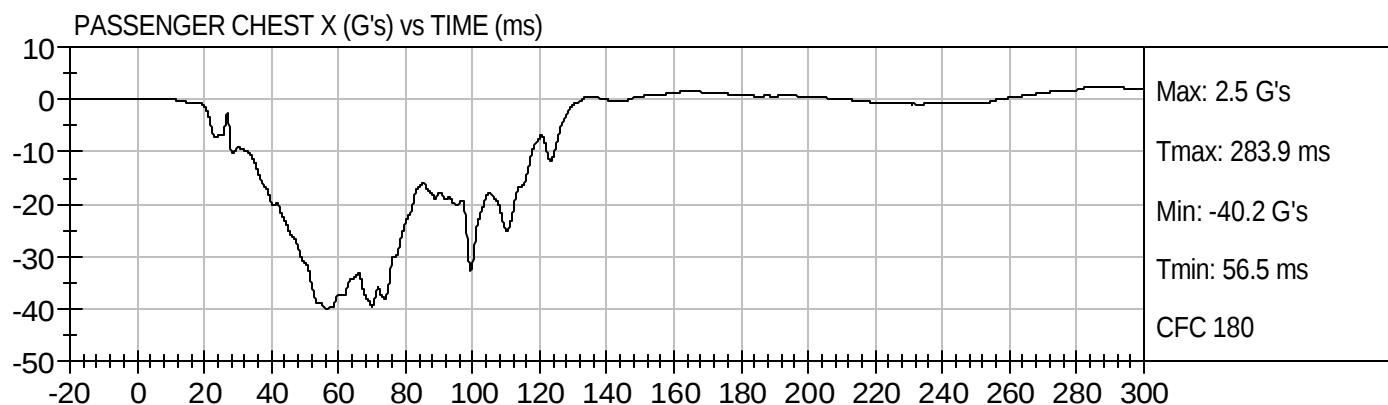


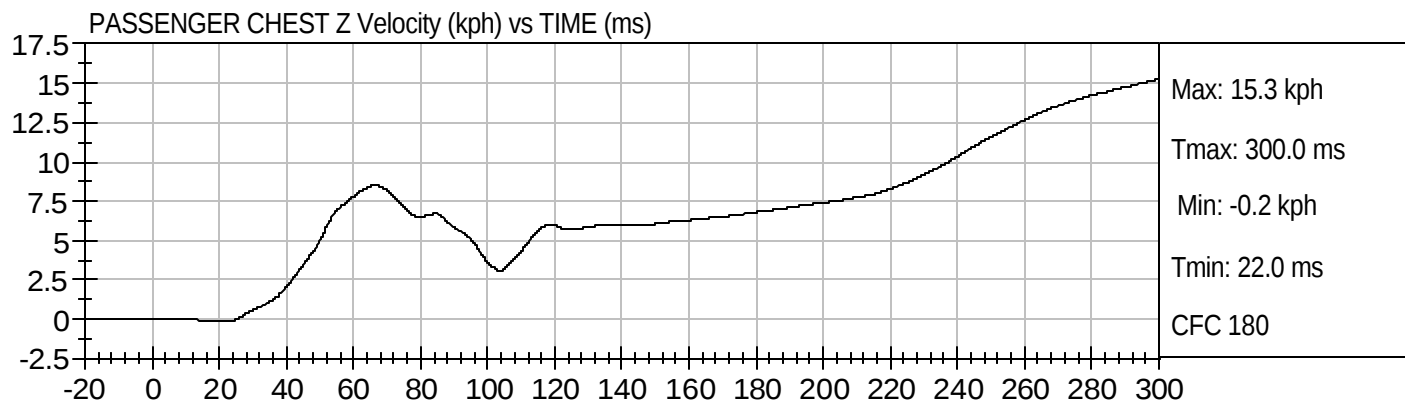
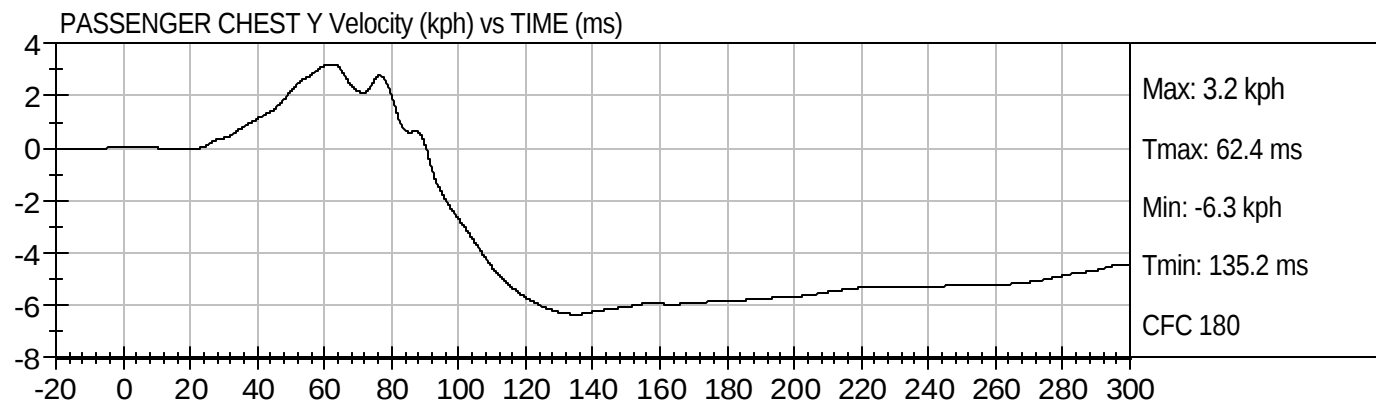
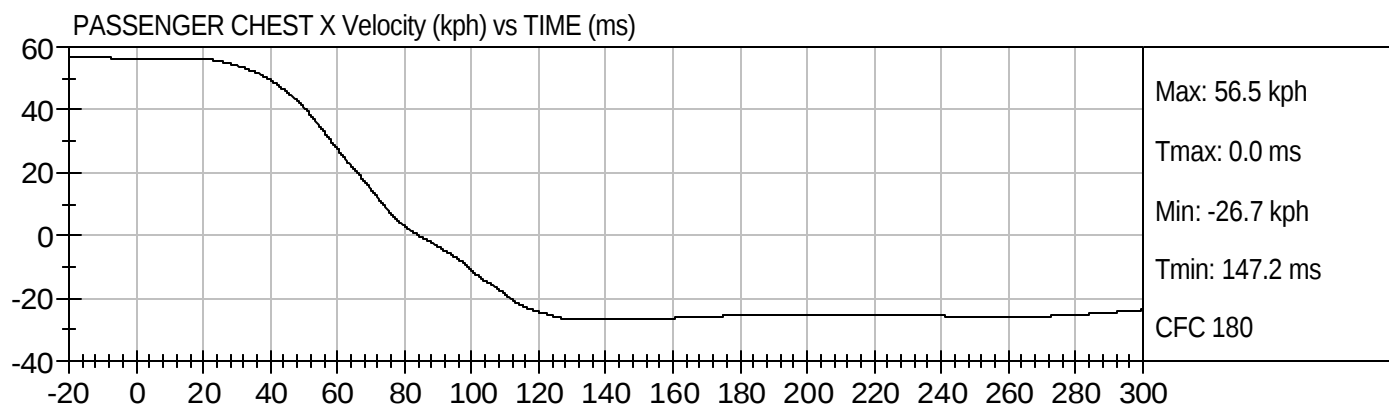


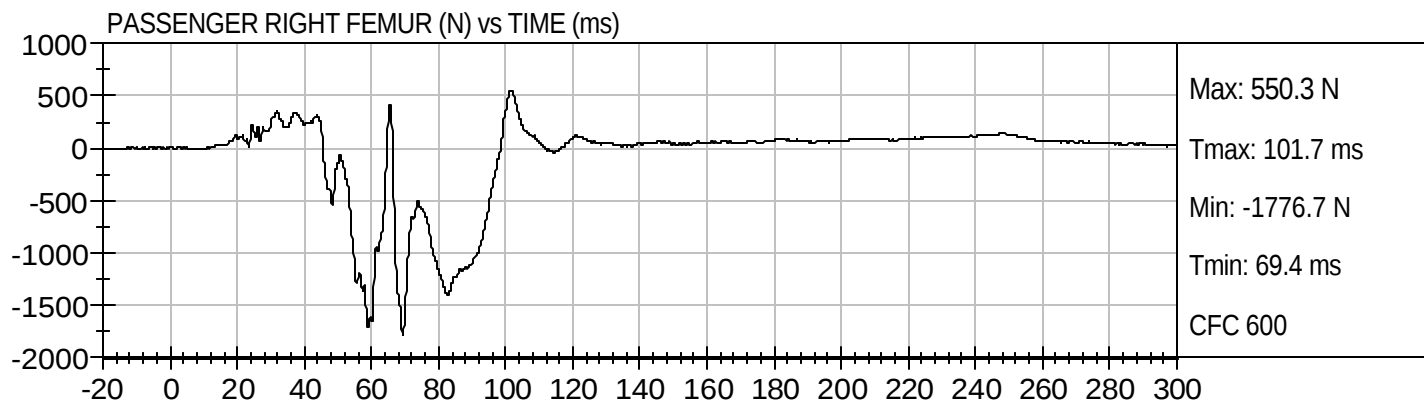
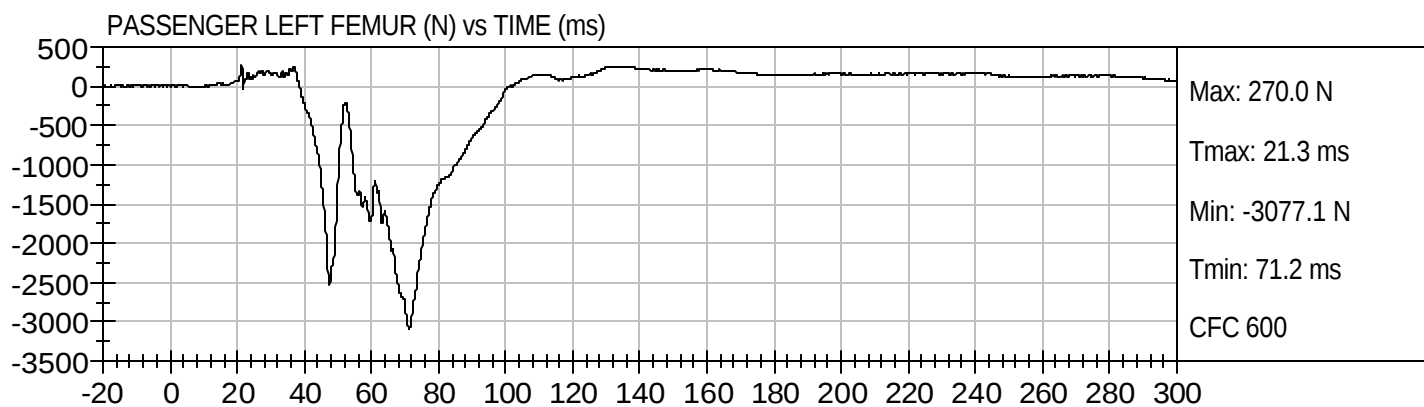
NCAP FRONTAL
2008 INFINITI EX35

M85212

Test Date: 01/22/2008
Speed: 35.1 mph (56.5 km/h)







APPENDIX C
DUMMY CALIBRATION DATA

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

ATD Serial No: 066

Test ID: D073671

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	24	Pass
Peak Resultant Acceleration	G's	225 - 275	266	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-6.3	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass



Laboratory Technician

12/26/07
Test Date

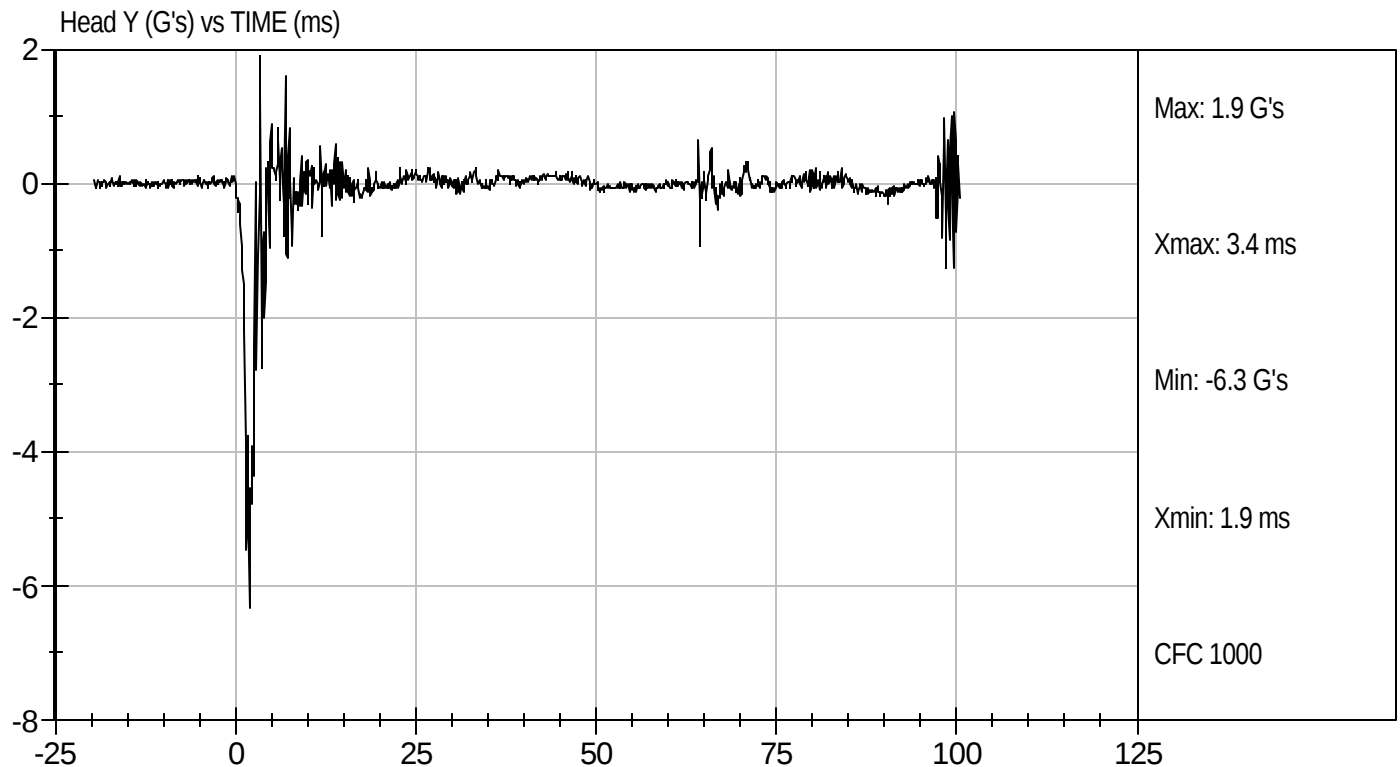
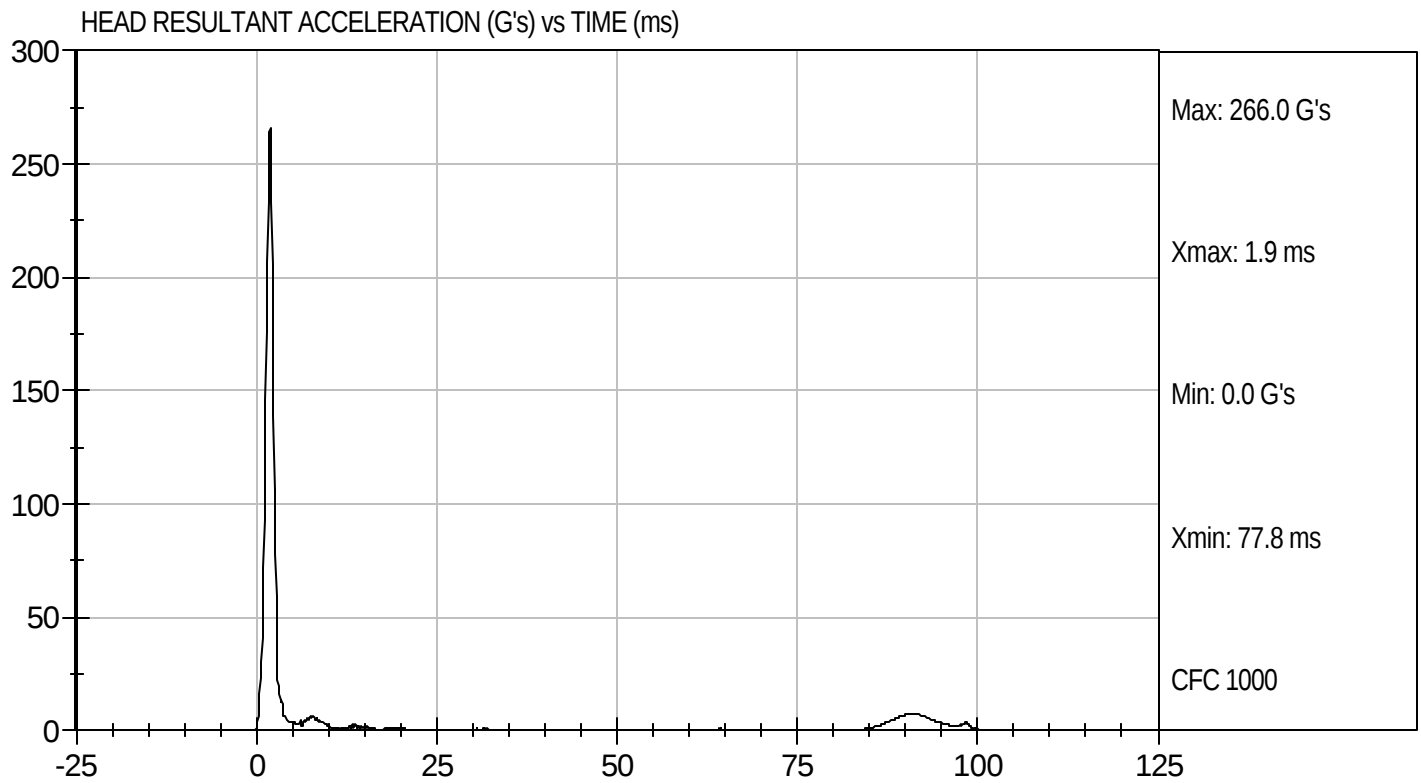


Approved By



Test Desc: Head Drop
Component ID: D073671

Test Date: 12/26/07
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: D073672

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	24	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.06	Pass
Pendulum Deceleration	10 msec	G's	22.50 to 27.50	25.14	Pass
	20 msec	G's	17.60 to 22.60	21.44	Pass
	30 msec	G's	12.50 to 18.50	17.49	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 29.0	17.38	Pass
Deceleration Decay Time to Cross 5 G's		msec	34.0 to 42.0	34.7	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	71.9	Pass
	Time	msec	57.0 to 64.0	59.4	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	113.0 to 128.0	113.8	Pass
Moment About Occipital Condyle	Maximum	N m	88.1 to 108.5	102.0	Pass
	Time	msec	47.0 to 58.0	47.9	Pass
Positive Moment Decay Time To Zero Crossing		msec	97.0 to 107.0	103.3	Pass
Overall Test Results					Pass

Jessica Hall
 Laboratory Technician

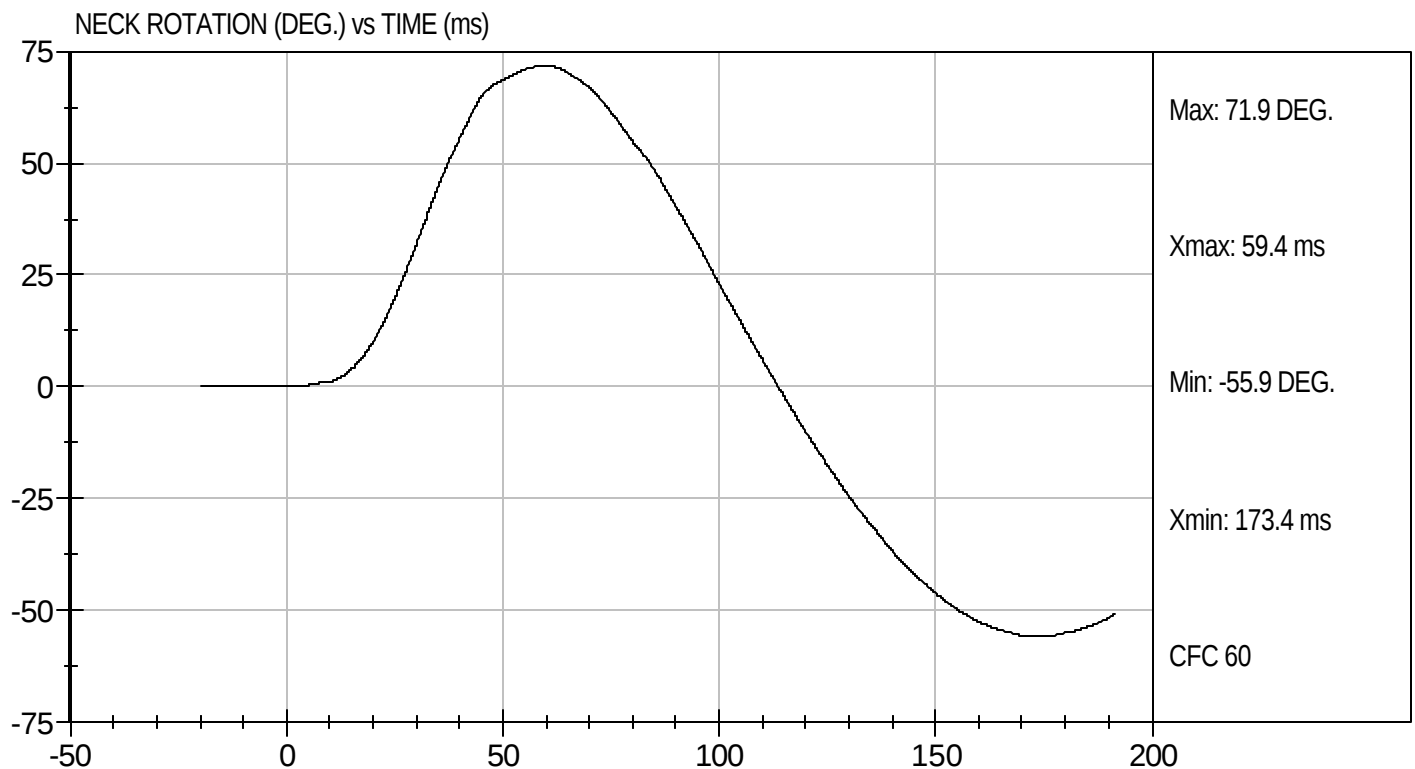
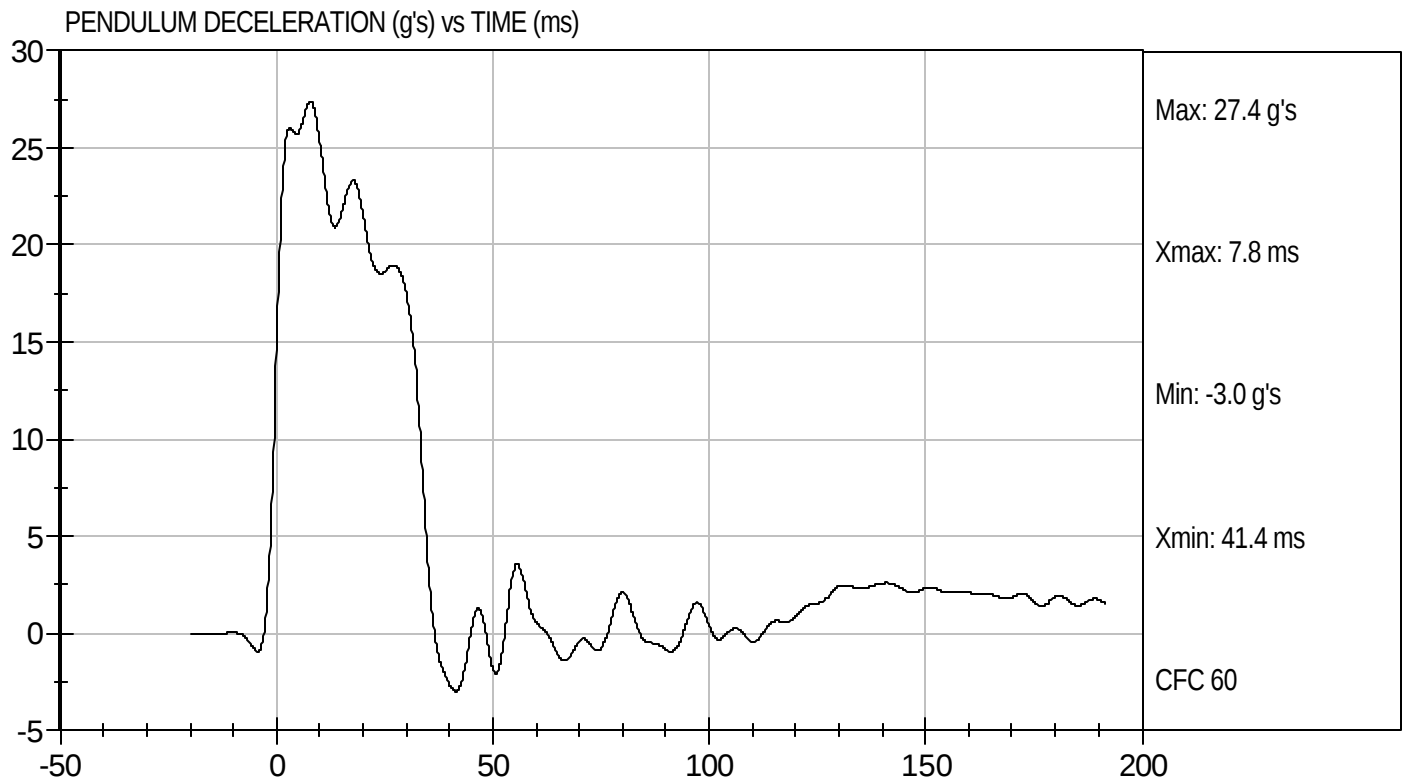
12/26/07
 Test Date

David Winkelbauer
 Approved By



Test Desc: Neck Flexion
Component ID: D073672

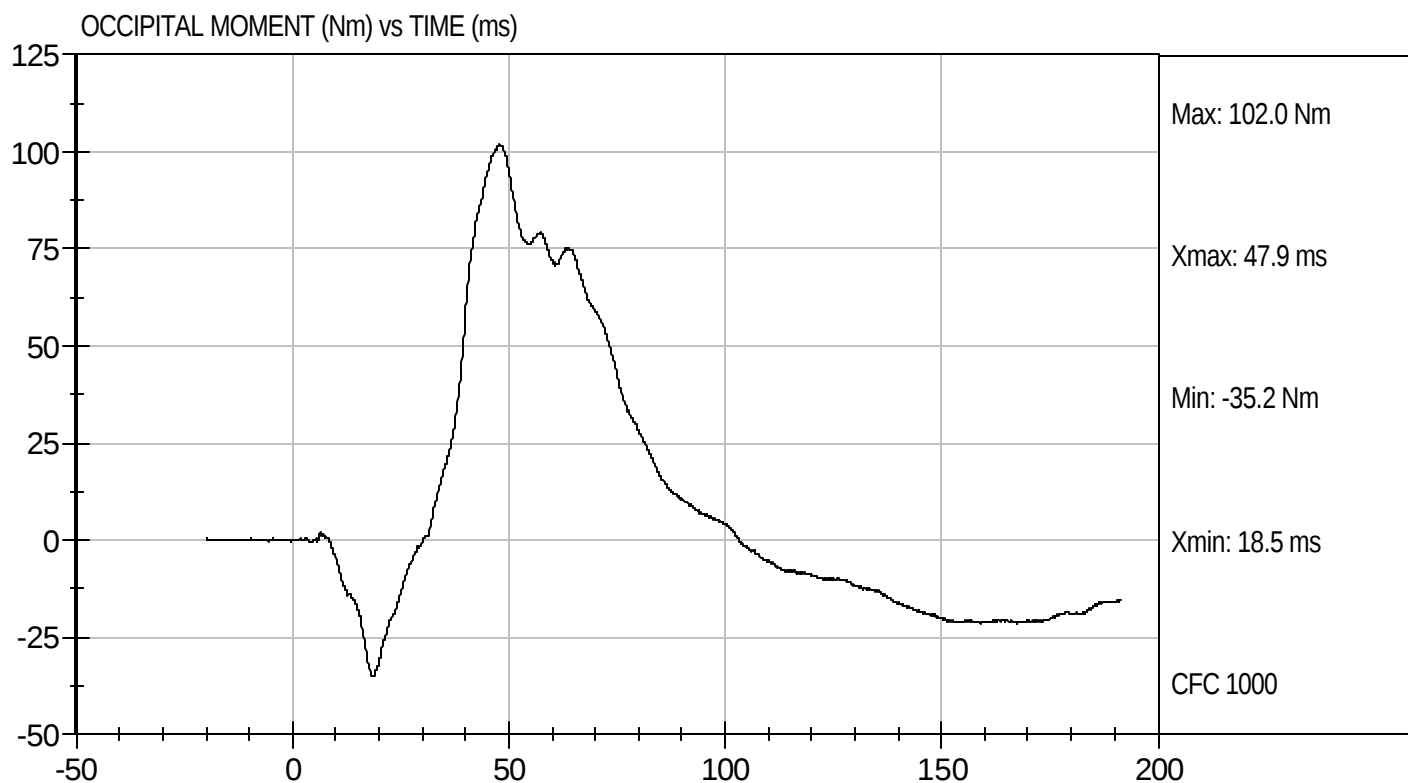
Test Date: 12/26/07
Velocity: 23.15 ft/s, 7.06 m/s





Test Desc: Neck Flexion
Component ID: D073672

Test Date: 12/26/07
Velocity: 23.15 ft/s, 7.06 m/s

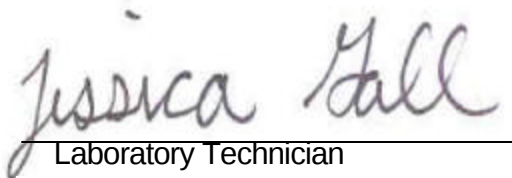


MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 50TH PERCENTILE MALE

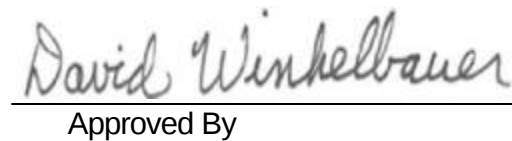
ATD Serial No: 066

Test I.D: D073673

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.5	Pass
Laboratory Relative Humidity		%	10 to 70	24	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.08	Pass
Pendulum Deceleration	10 msec	G's	17.20 to 21.20	20.20	Pass
	20 msec	G's	14.00 to 19.00	17.76	Pass
	30 msec	G's	11.00 to 16.00	14.37	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 22.0	14.28	Pass
Deceleration Decay Time to Cross 5 G's		msec	38.0 to 46.0	38.8	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	98.1	Pass
	Time	msec	72.0 to 82.0	76.3	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	147.0 to 174.0	154.1	Pass
Moment About Occipital Condyle	Maximum	N m	-52.9 to -79.9	-63.6	Pass
	Time	msec	65.0 to 79.0	69.1	Pass
Negative Moment Decay Time To Zero Crossing		msec	120.0 to 148.0	143.8	Pass
Overall Test Results					Pass


Laboratory Technician

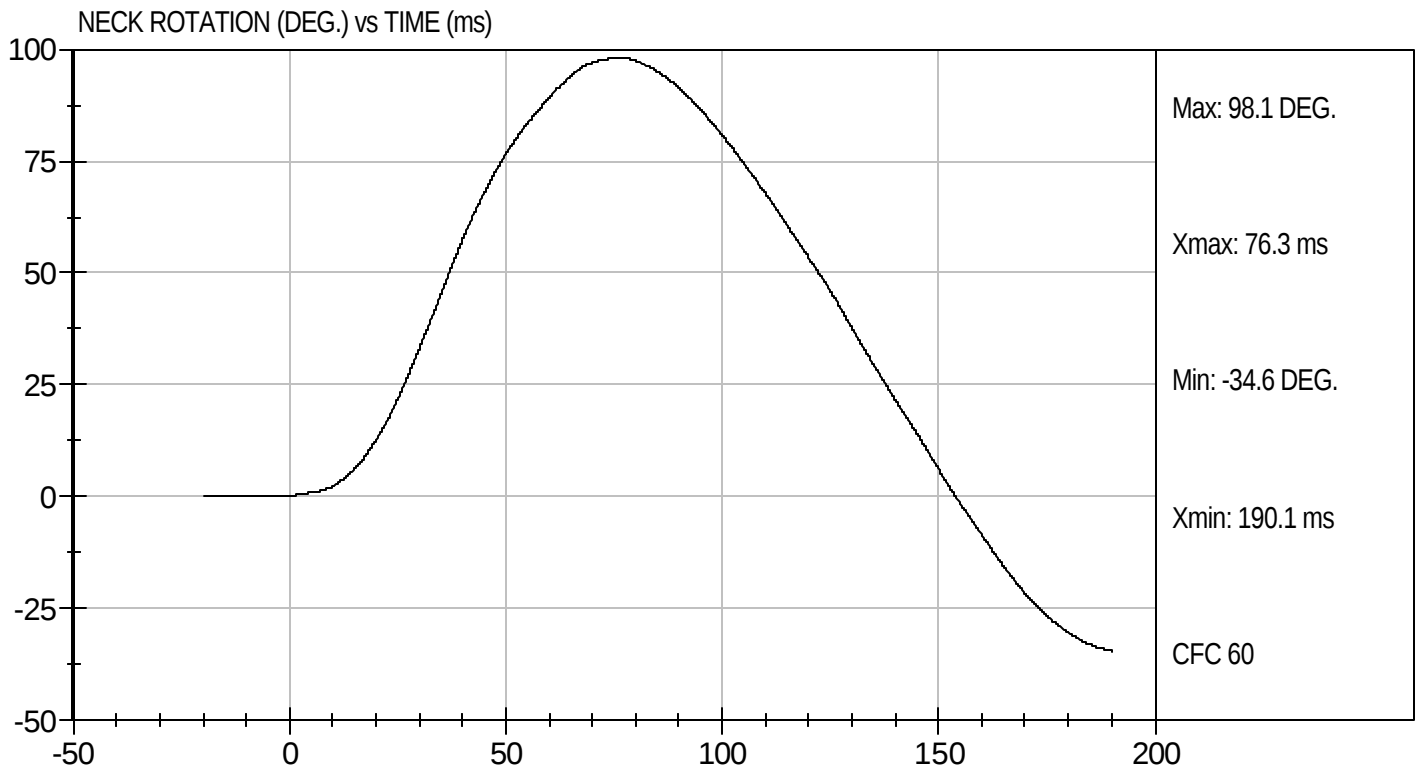
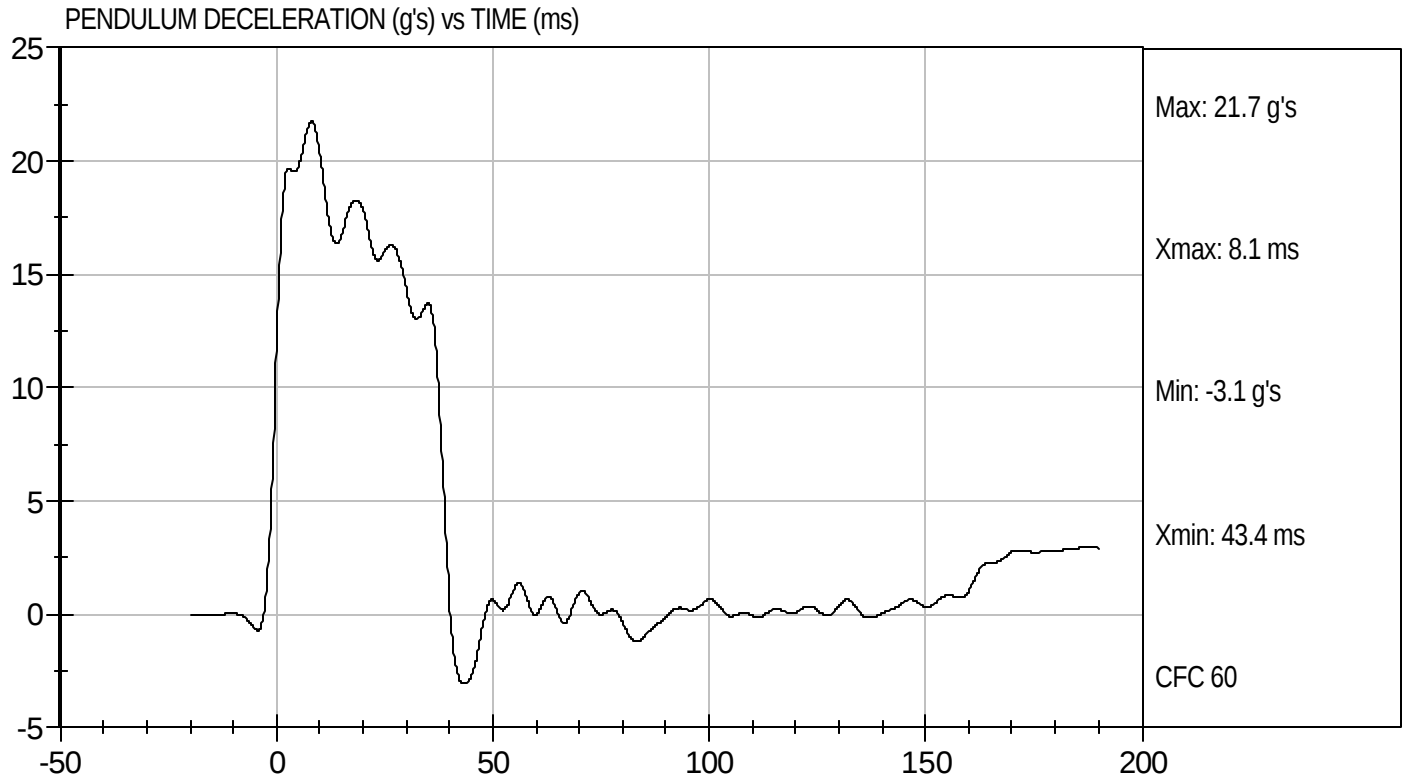
12/26/07
Test Date


Approved By



Test Desc: Neck Extension
Component ID: D073673

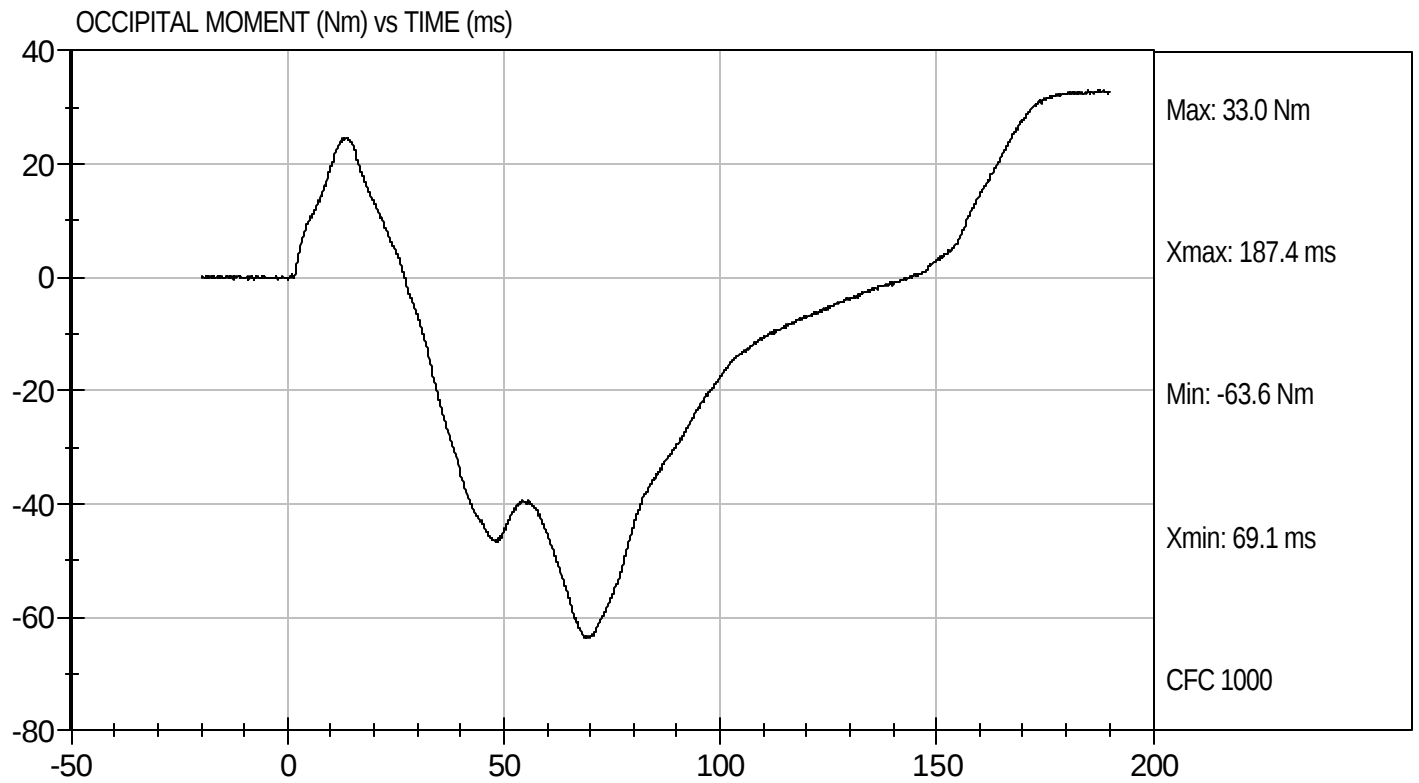
Test Date: 12/26/07
Velocity: 19.96 ft/s, 6.08 m/s





Test Desc: Neck Extension
Component ID: D073673

Test Date: 12/26/07
Velocity: 19.96 ft/s, 6.08 m/s



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 066

Test I.D: D073674

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.0	Pass
Laboratory Relative Humidity	%	10 to 70	31	Pass
Probe Velocity	m/s	6.58 to 6.82	6.68	Pass
Peak Probe Force	N	5159 to 5893	5,286	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.64	Pass
Internal Hysteresis	%	69 to 85	73	Pass
			Overall Test Results	Pass



Laboratory Technician

1/11/08

Test Date

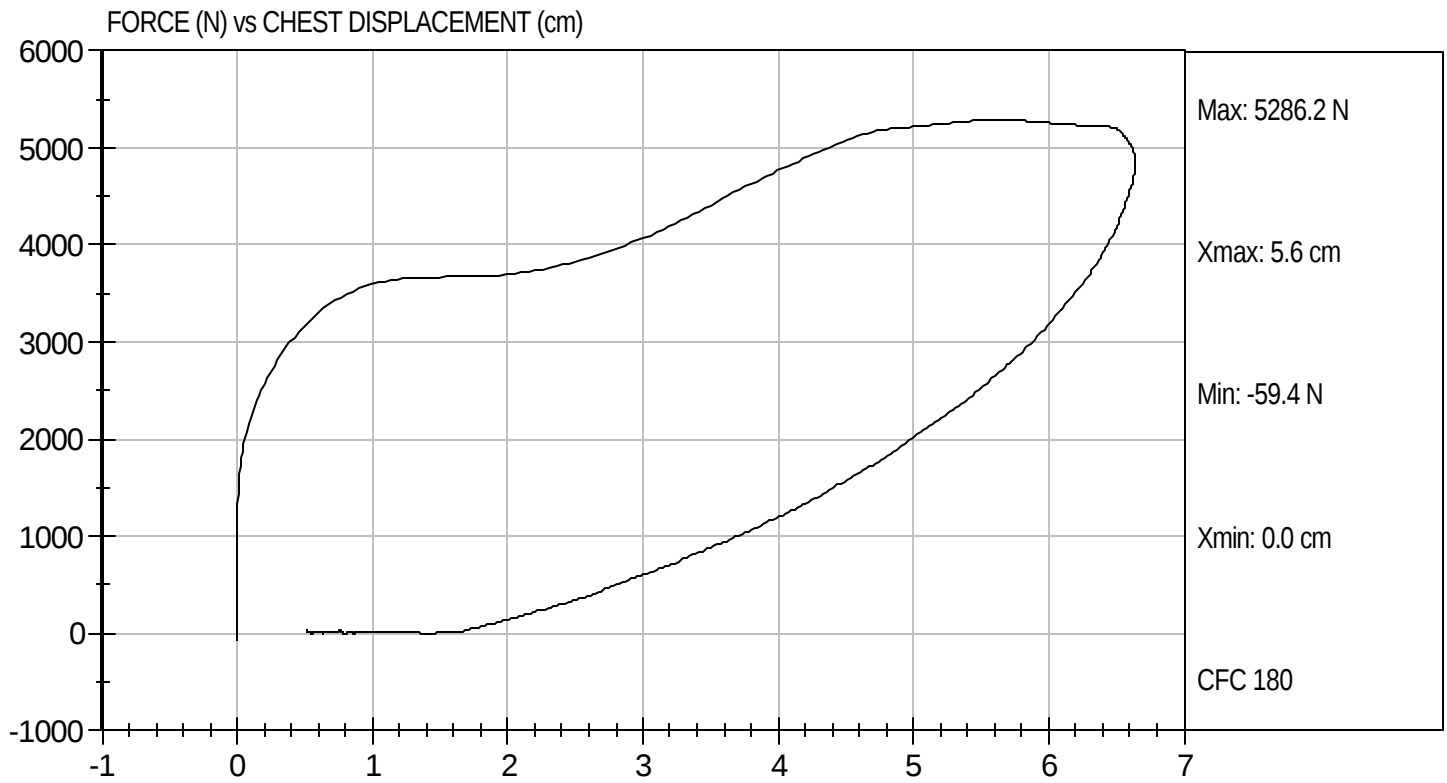


Approved By



Test Desc: Thorax Impact
Component ID: D073674

Test Date: 1/11/08
Velocity: 21.92 ft/s, 6.68 m/s



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

ATD Serial No: 066

Test I.D: D073675

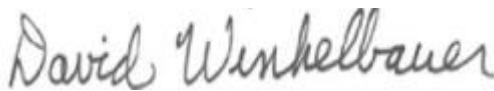
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	24	Pass
Probe Velocity	m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force	Newtons	4715 to 5782	5,176	Pass
Overall Test Results				Pass



Laboratory Technician

12/26/07

Test Date

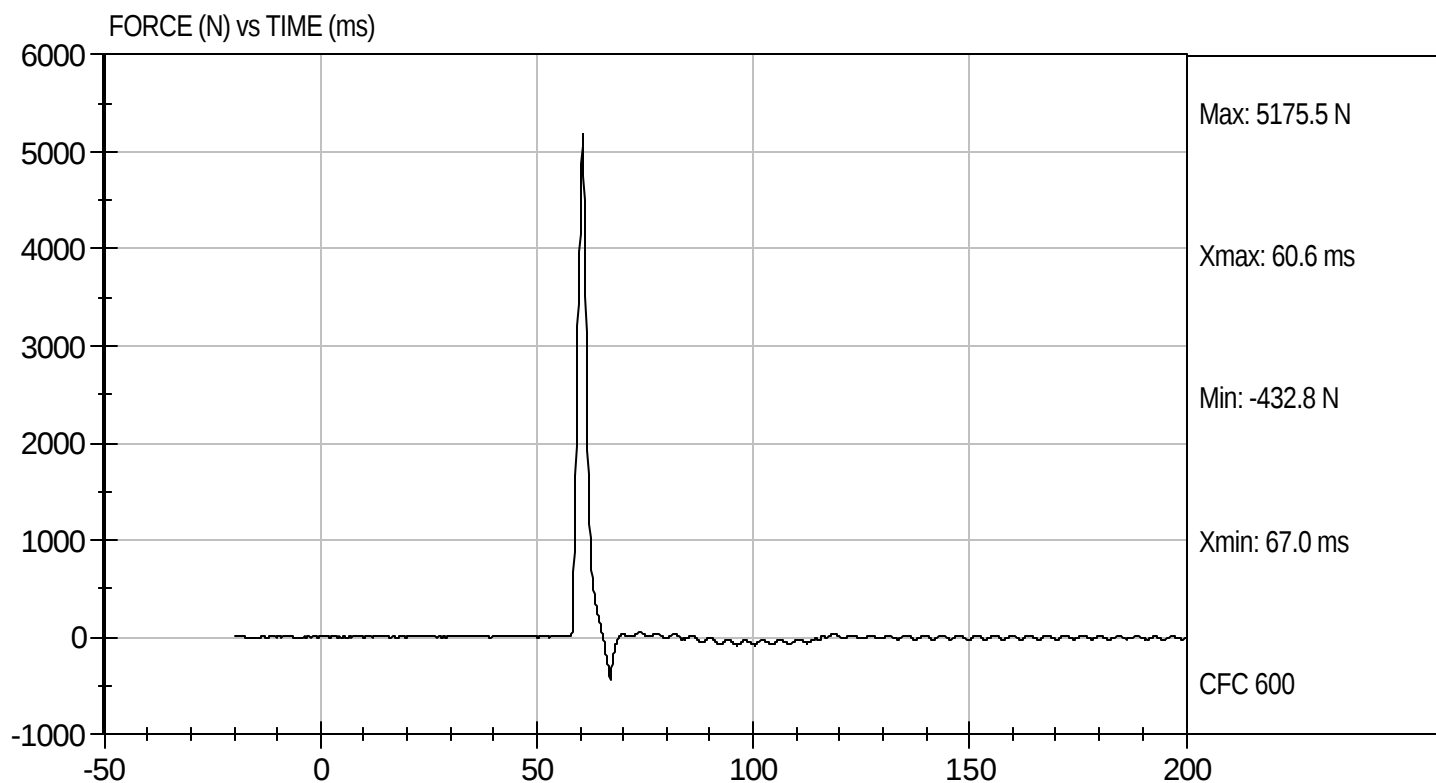


Approved By



Test Desc: Right Knee
Component ID: D073675

Test Date: 12/26/07
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: D073676

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	24	Pass
Probe Velocity	m/sec	2.07 to 2.13	2.07	Pass
Peak Probe Force	Newtons	4715 to 5782	4,979	Pass
Overall Test Results				Pass



Laboratory Technician

12/26/07

Test Date

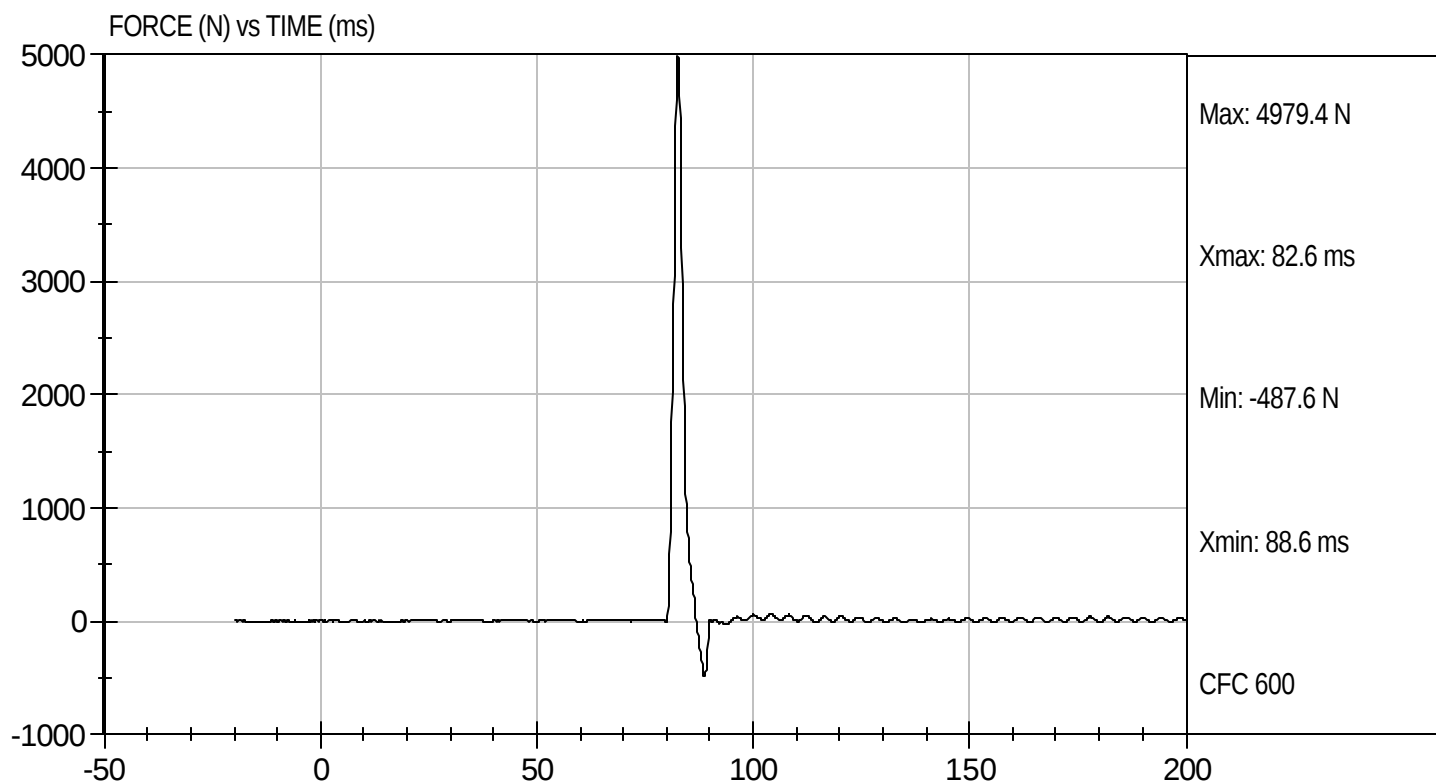


Approved By



Test Desc: Left Knee
Component ID: D073676

Test Date: 12/26/07
Velocity: 6.80 ft/s, 2.07 m/s



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

ATD Serial No: 066

Test I.D: D073670

Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.5	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	24	24	Pass
Rotation Rate	deg/sec	5 -10	8	8	Pass
30 Degrees	Nm	94.9 Nm Max	69.4	61.9	Pass
150 ft-lbf / 203.4 Nm	Deg	40- 50 Degree Max Rotation	40	40	Pass
Overall Test Results					Pass


 Laboratory Technician

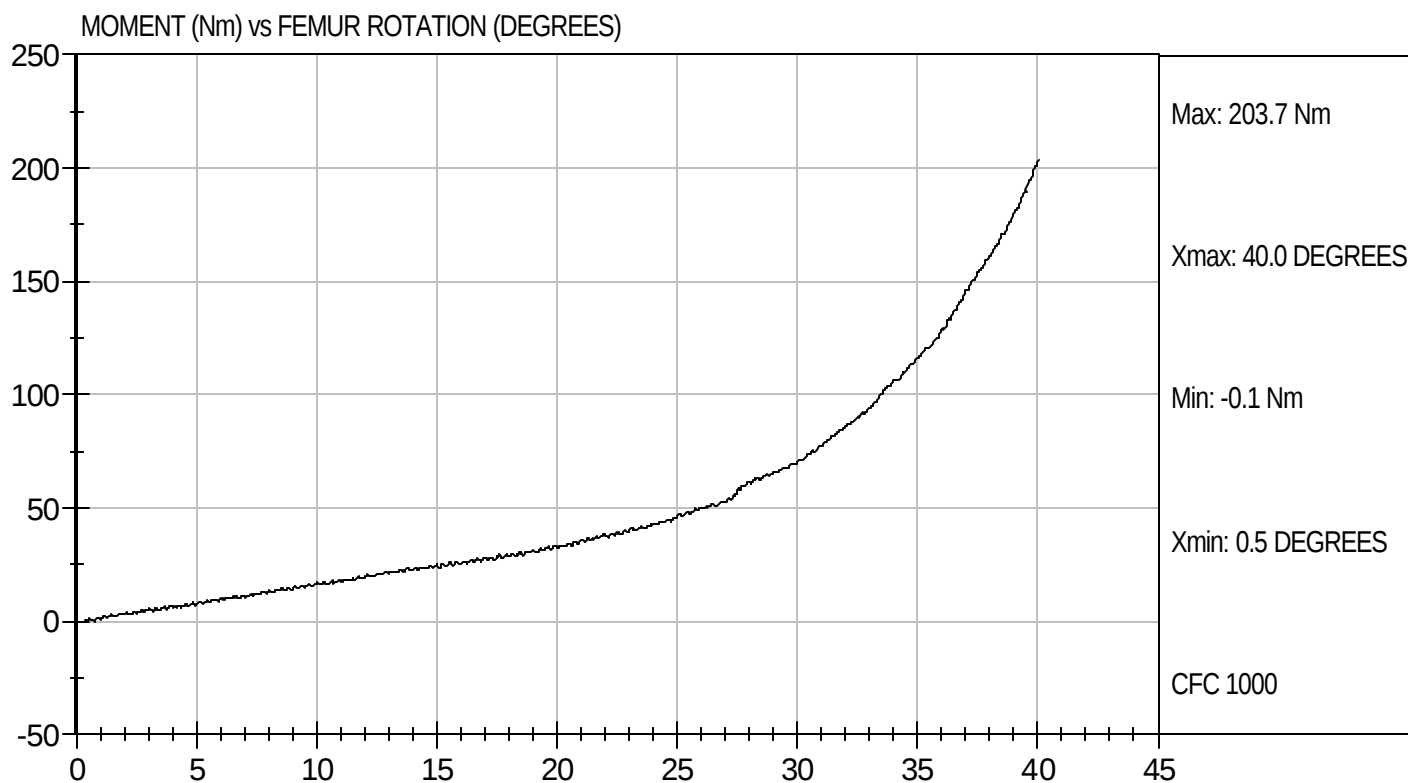
12/26/07
 Test Date


 Approved By



Test Desc: Hip Femur Flexion
Component ID: D073679

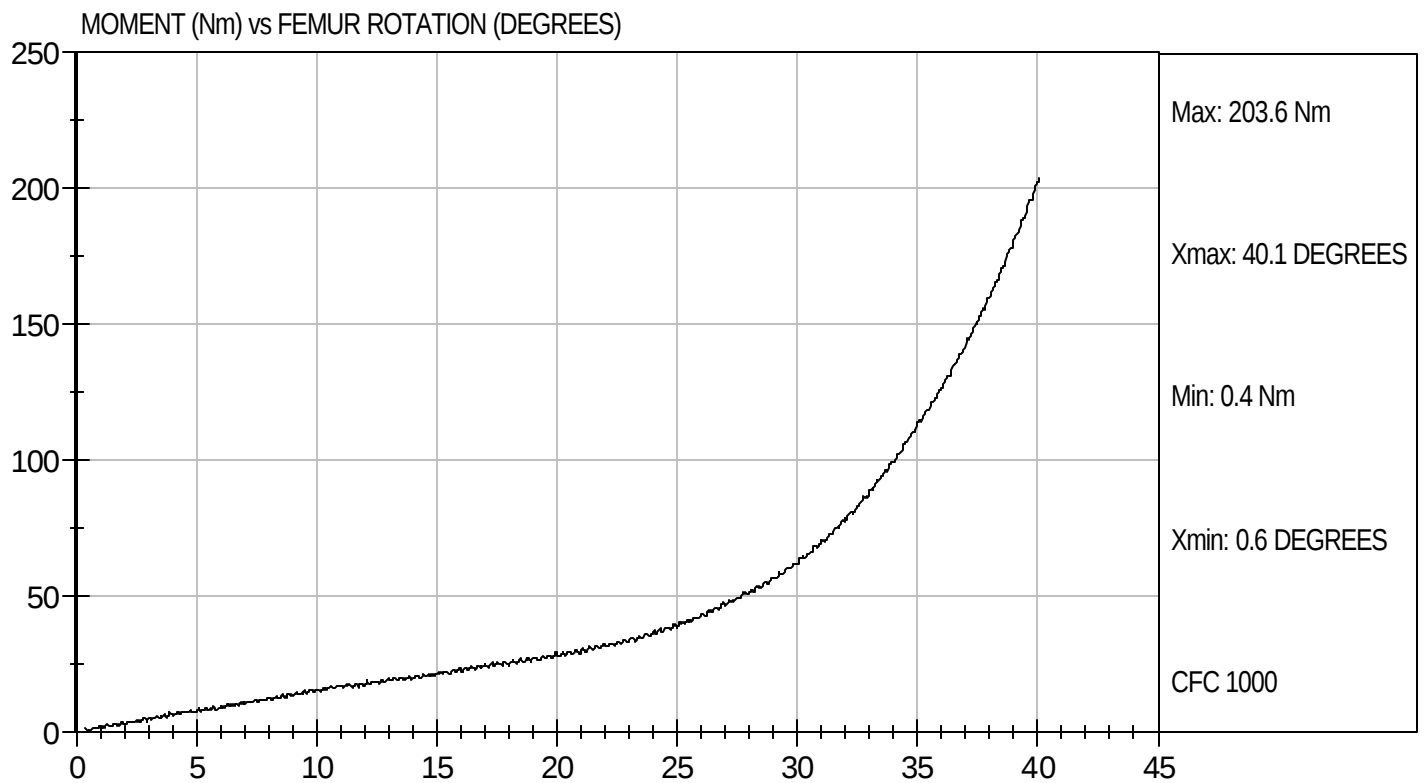
Test Date: 12/26/07
Velocity: 0 ft/s, 0.00 m/s





Test Desc: Hip Femur Flexion
Component ID: D073670

Test Date: 12/26/07
Velocity: 0 ft/s, 0.00 m/s

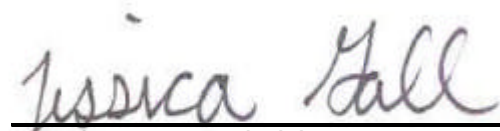


MGA RESEARCH CORPORATION
HEAD DROP TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 065

Test ID: D073661

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 - 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	23	Pass
Peak Resultant Acceleration	G's	225 - 275	231	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	10.2	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results			Pass	


Laboratory Technician

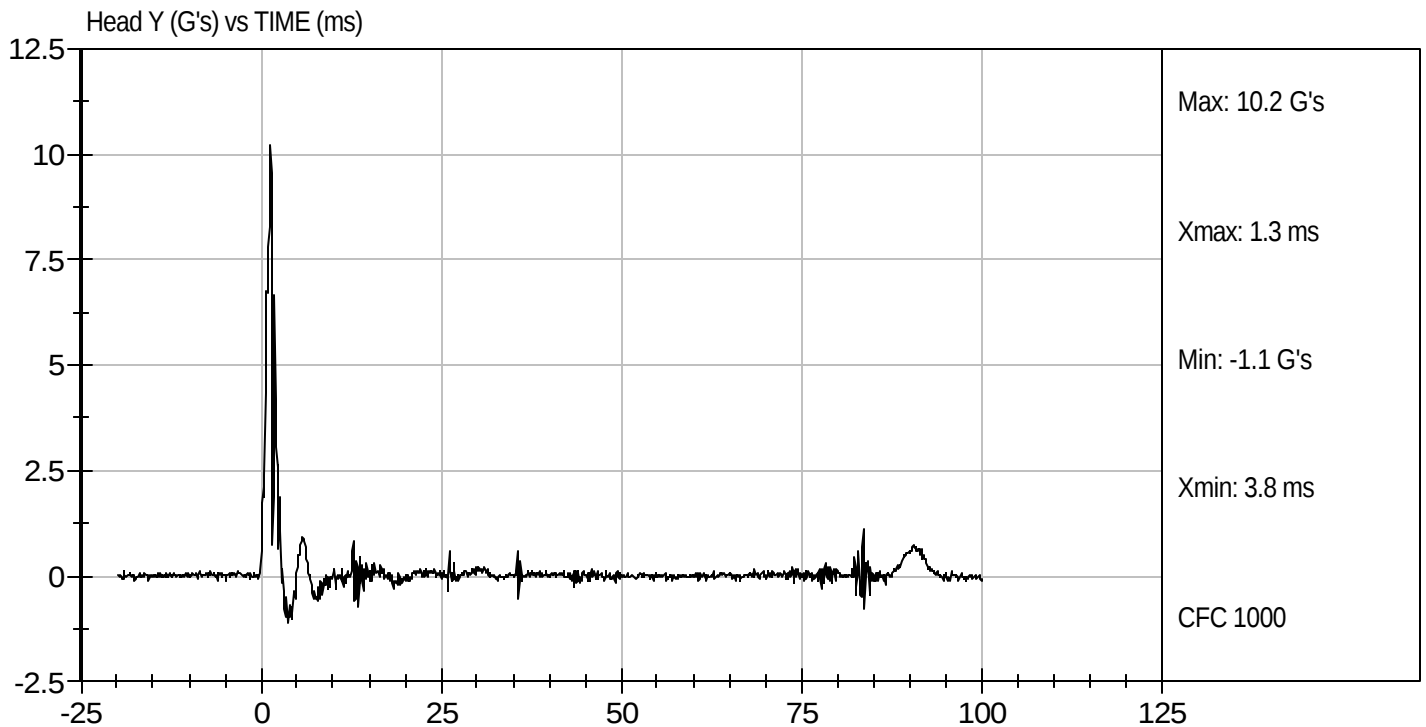
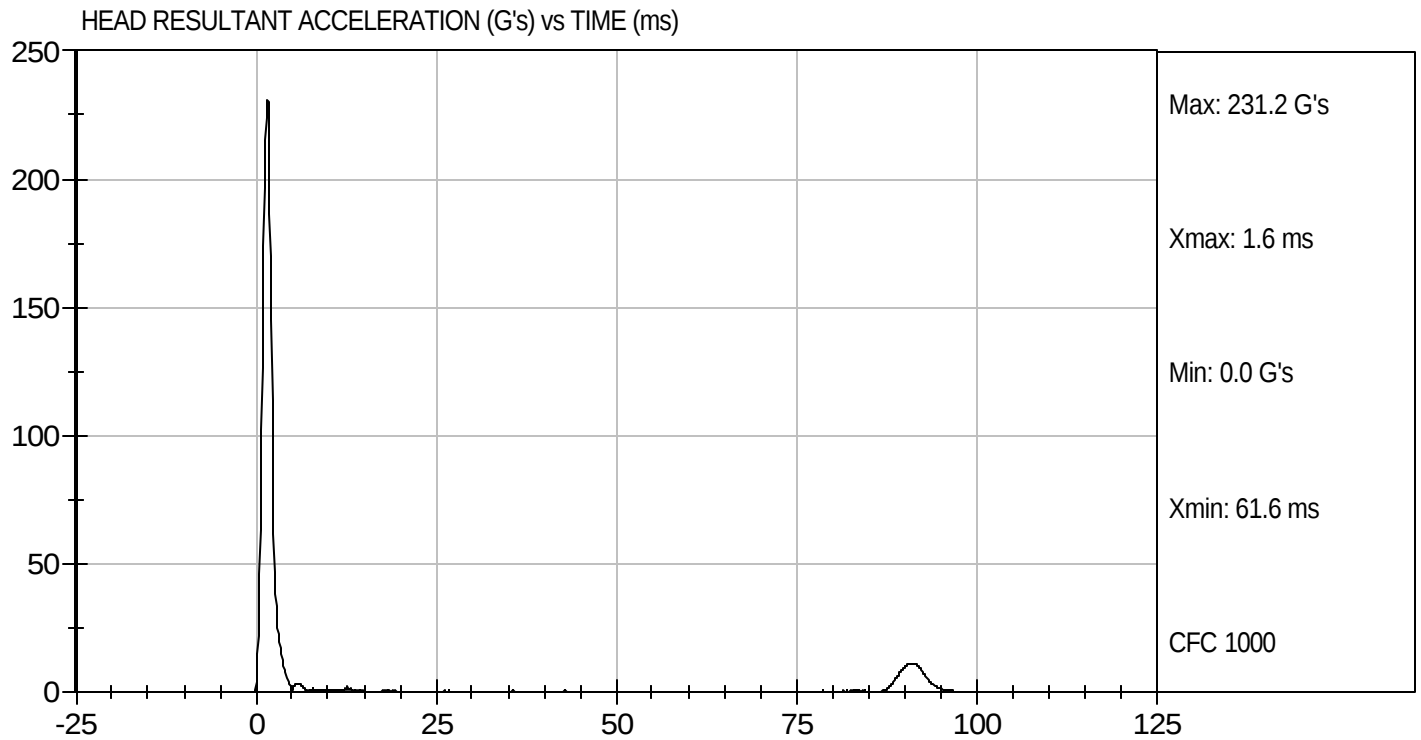

Approved By

12/26/07
Test Date



Test Desc: Head Drop
Component ID: D073661

Test Date: 12/26/07
Velocity: 0 ft/s, 0.00 m/s

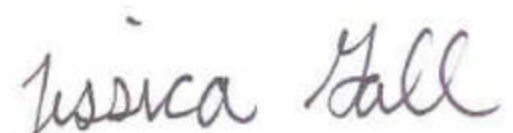


MGA RESEARCH CORPORATION
NECK FLEXION TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 065

Test I.D: D073662

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.0	Pass
Laboratory Relative Humidity		%	10 to 70	23	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.06	Pass
Pendulum Deceleration	10 msec	G's	22.50 to 27.50	26.48	Pass
	20 msec	G's	17.60 to 22.60	20.35	Pass
	30 msec	G's	12.50 to 18.50	13.59	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 29.0	13.48	Pass
Deceleration Decay Time to Cross 5 G's		msec	34.0 to 42.0	34.0	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	64.0 to 78.0	72.5	Pass
	Time	msec	57.0 to 64.0	61.4	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	113.0 to 128.0	113.9	Pass
Moment About Occipital Condyle	Maximum	N m	88.1 to 108.5	99.0	Pass
	Time	msec	47.0 to 58.0	47.4	Pass
Positive Moment Decay Time To Zero Crossing		msec	97.0 to 107.0	105.2	Pass
Overall Test Results					Pass


 Laboratory Technician

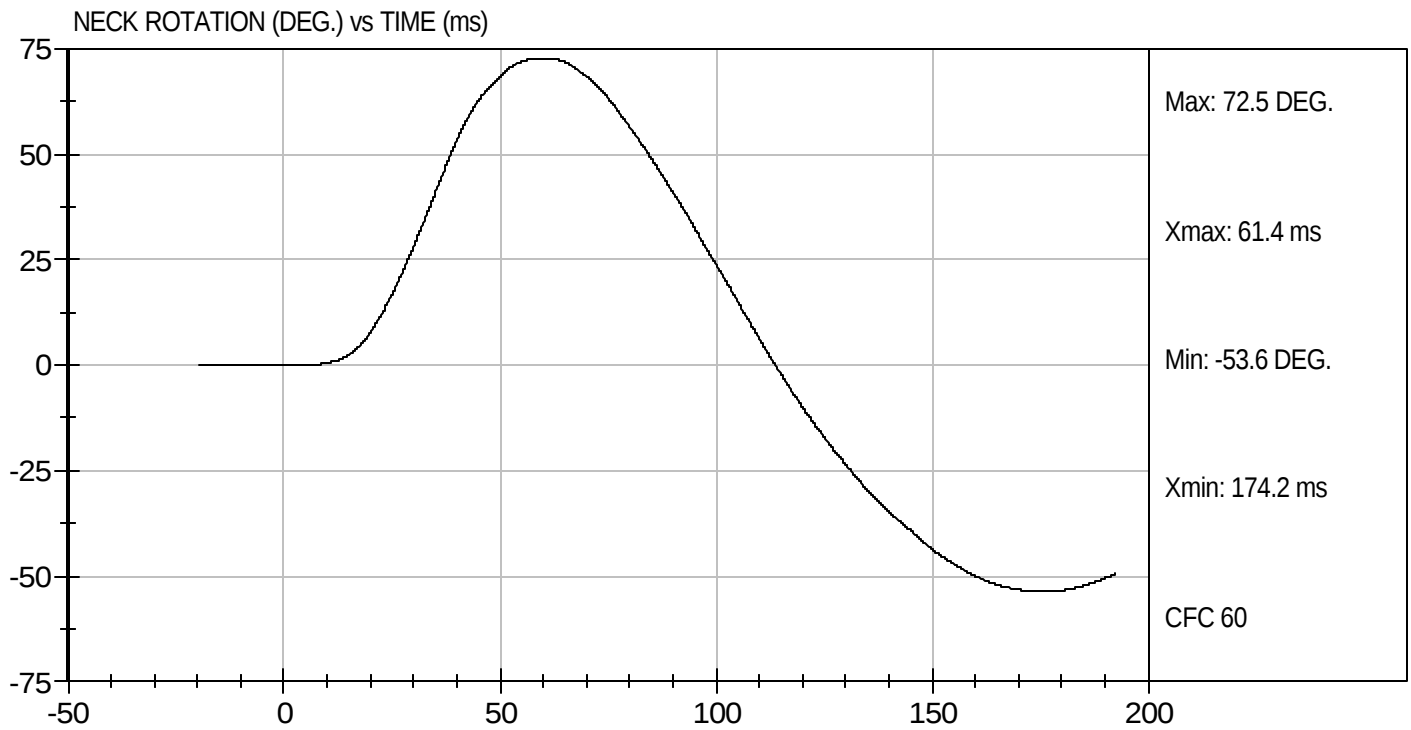
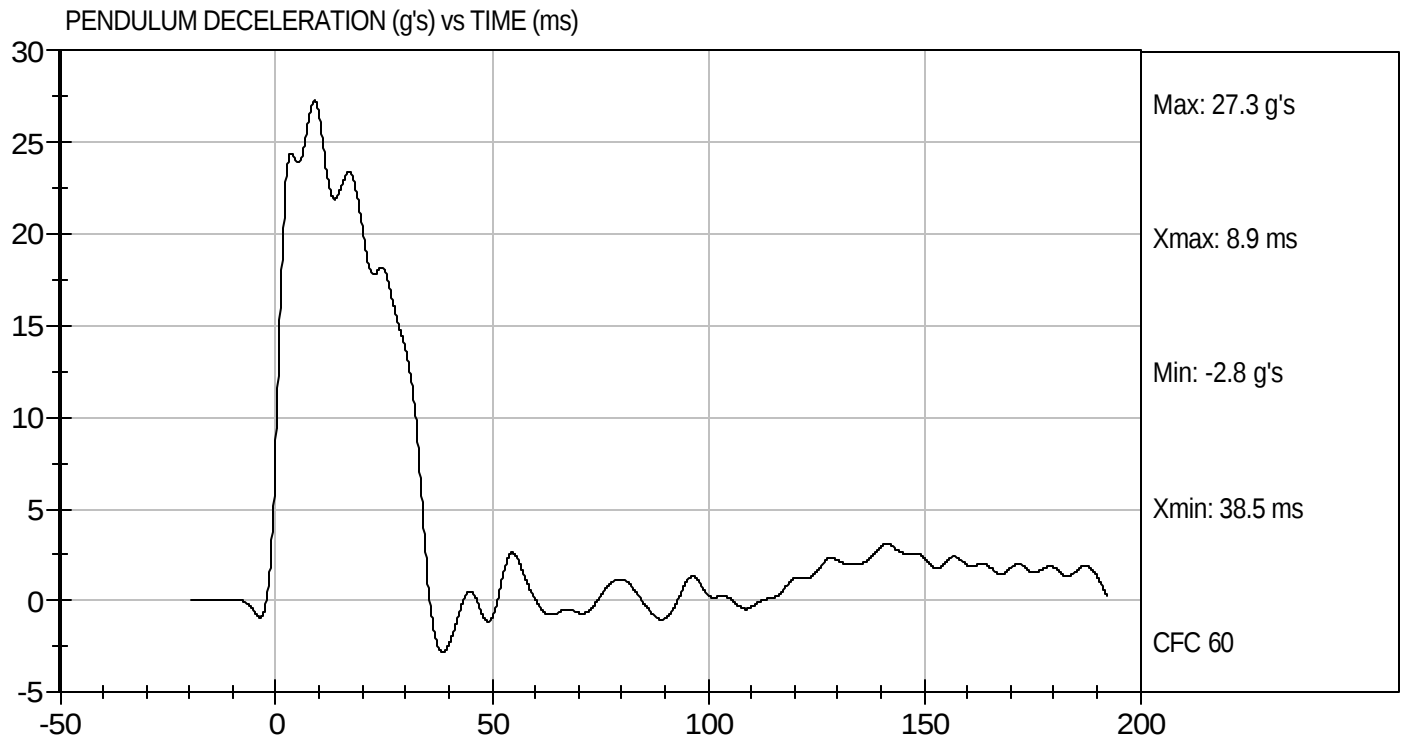
12/26/07
 Test Date


 Approved By



Test Desc: Neck Flexion
Component ID: D073662

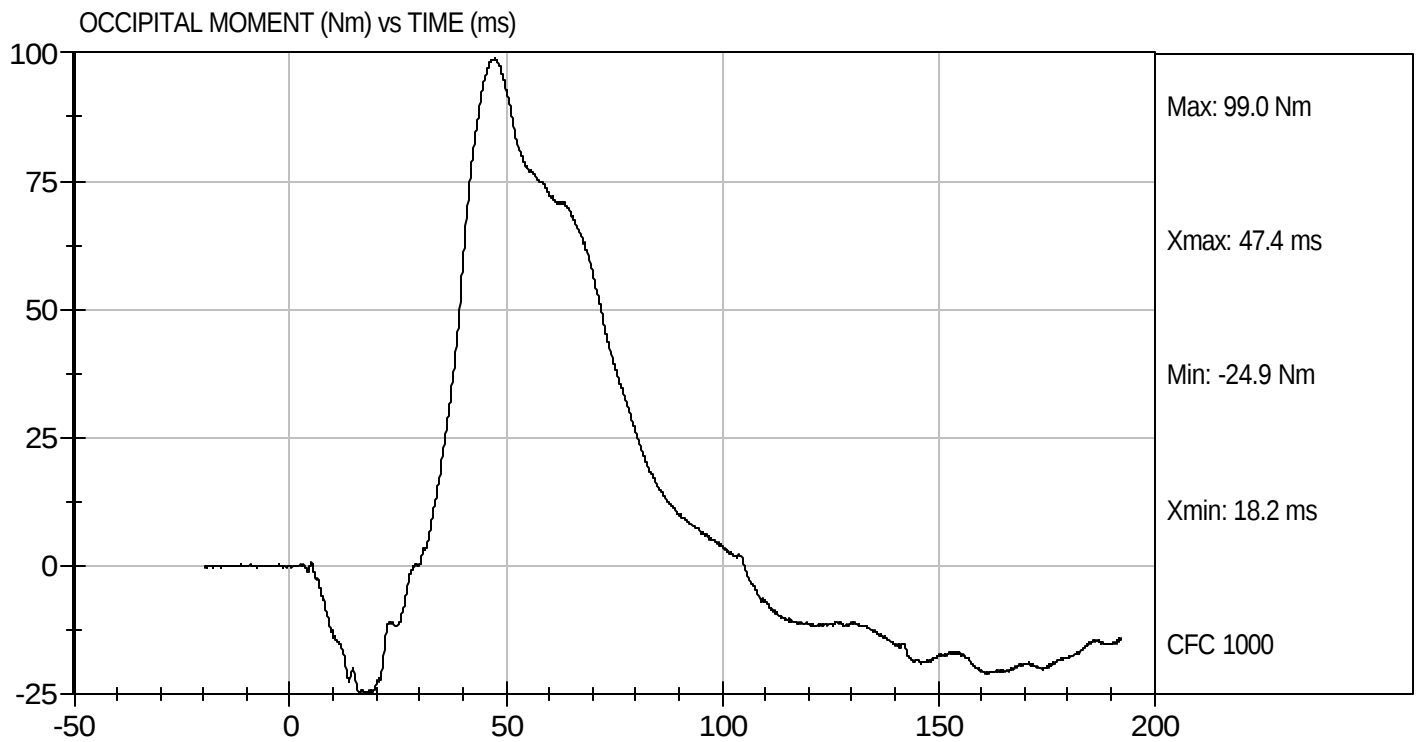
Test Date: 12/26/07
Velocity: 23.15 ft/s, 7.06 m/s





Test Desc: Neck Flexion
Component ID: D073662

Test Date: 12/26/07
Velocity: 23.15 ft/s, 7.06 m/s

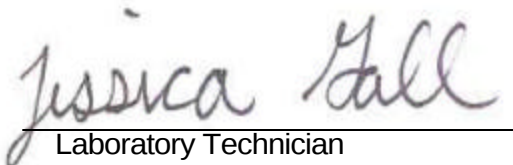


MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 065

Test I.D: D073663

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity		%	10 to 70	24	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.12	Pass
Pendulum Deceleration	10 msec	G's	17.20 to 21.20	20.75	Pass
	20 msec	G's	14.00 to 19.00	16.01	Pass
	30 msec	G's	11.00 to 16.00	14.91	Pass
Peak Pendulum Deceleration After 30 msec		G's	<= 22.0	14.80	Pass
Deceleration Decay Time to Cross 5 G's		msec	38.0 to 46.0	38.3	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	98.6	Pass
	Time	msec	72.0 to 82.0	77.1	Pass
"D" Plane Rotation Decay Time To Zero Crossing		msec	147.0 to 174.0	157.8	Pass
Moment About Occipital Condyle	Maximum	N m	-52.9 to -79.9	-62.0	Pass
	Time	msec	65.0 to 79.0	71.3	Pass
Negative Moment Decay Time To Zero Crossing		msec	120.0 to 148.0	144.1	Pass
Overall Test Results					Pass


 Laboratory Technician

12/26/07
 Test Date

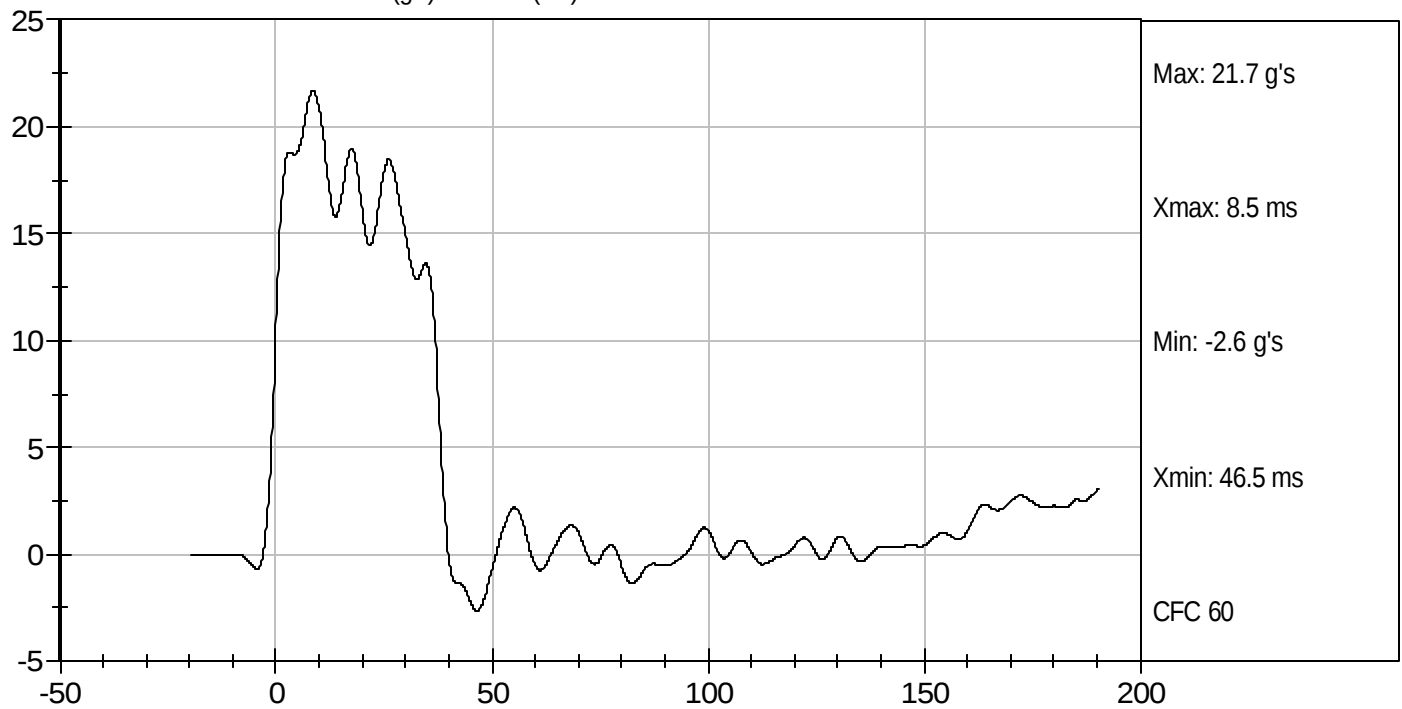

 Approved By



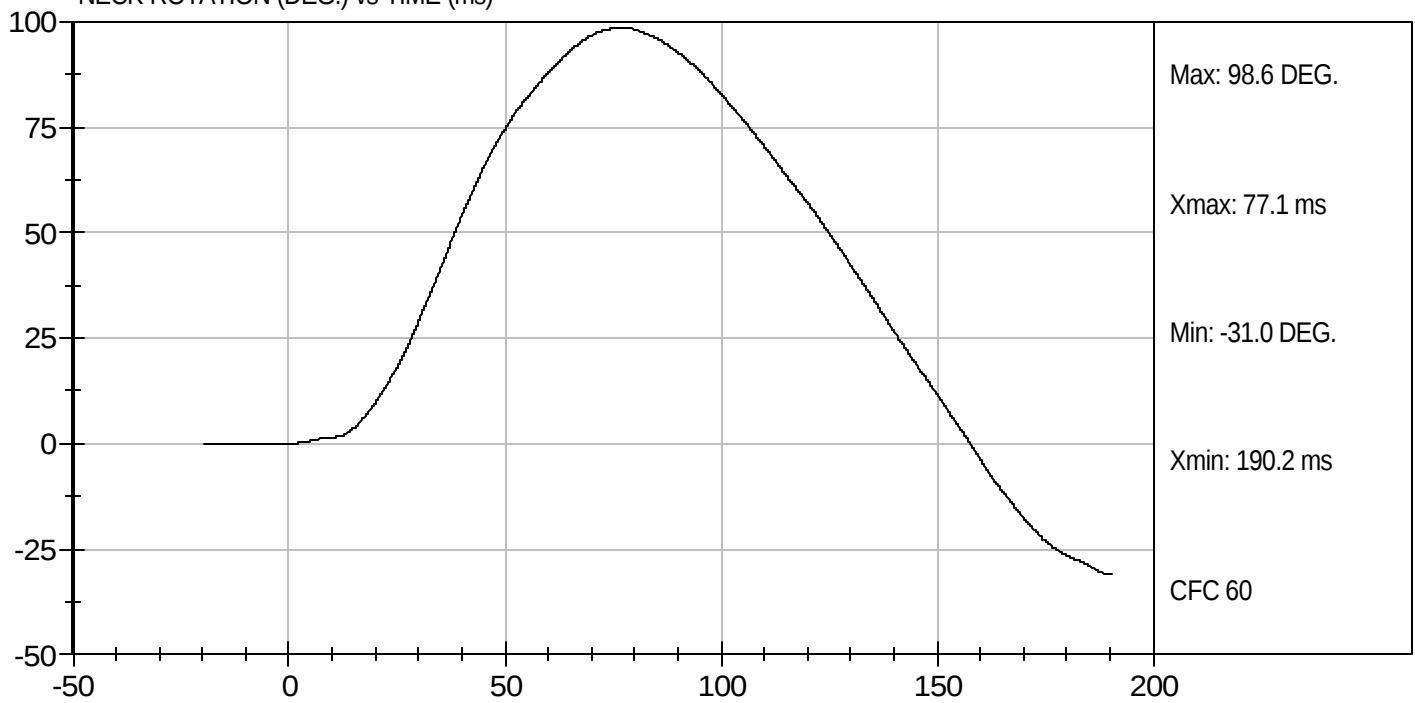
Test Desc: Neck Extension
Component ID: D073663

Test Date: 12/26/07
Velocity: 20.08 ft/s, 6.12 m/s

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



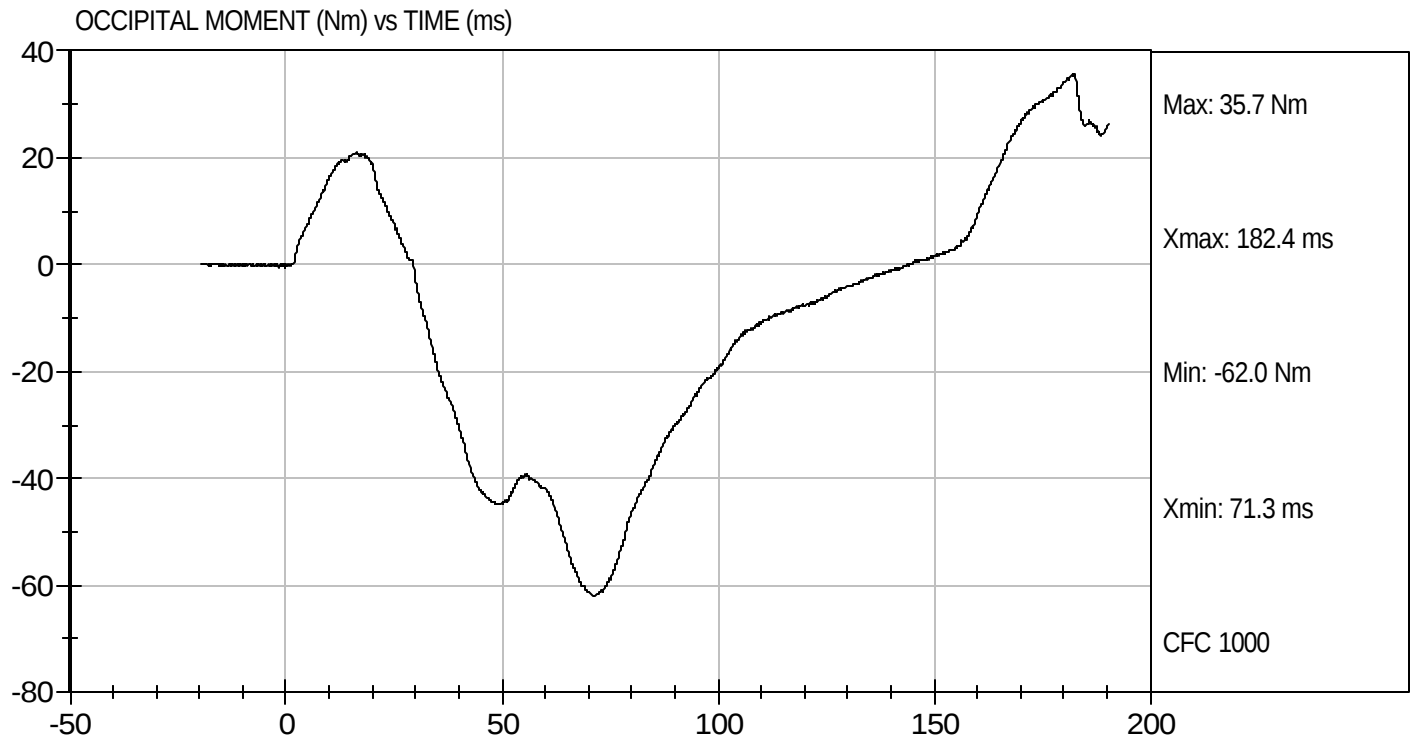
NECK ROTATION (DEG.) vs TIME (ms)





Test Desc: Neck Extension
Component ID: D073663

Test Date: 12/26/07
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: D073664

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.0	Pass
Laboratory Relative Humidity	%	10 to 70	23	Pass
Probe Velocity	m/s	6.58 to 6.82	6.68	Pass
Peak Probe Force	N	5159 to 5893	5,396	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.45	Pass
Internal Hysteresis	%	69 to 85	73	Pass
			Overall Test Results	Pass



Laboratory Technician



Approved By

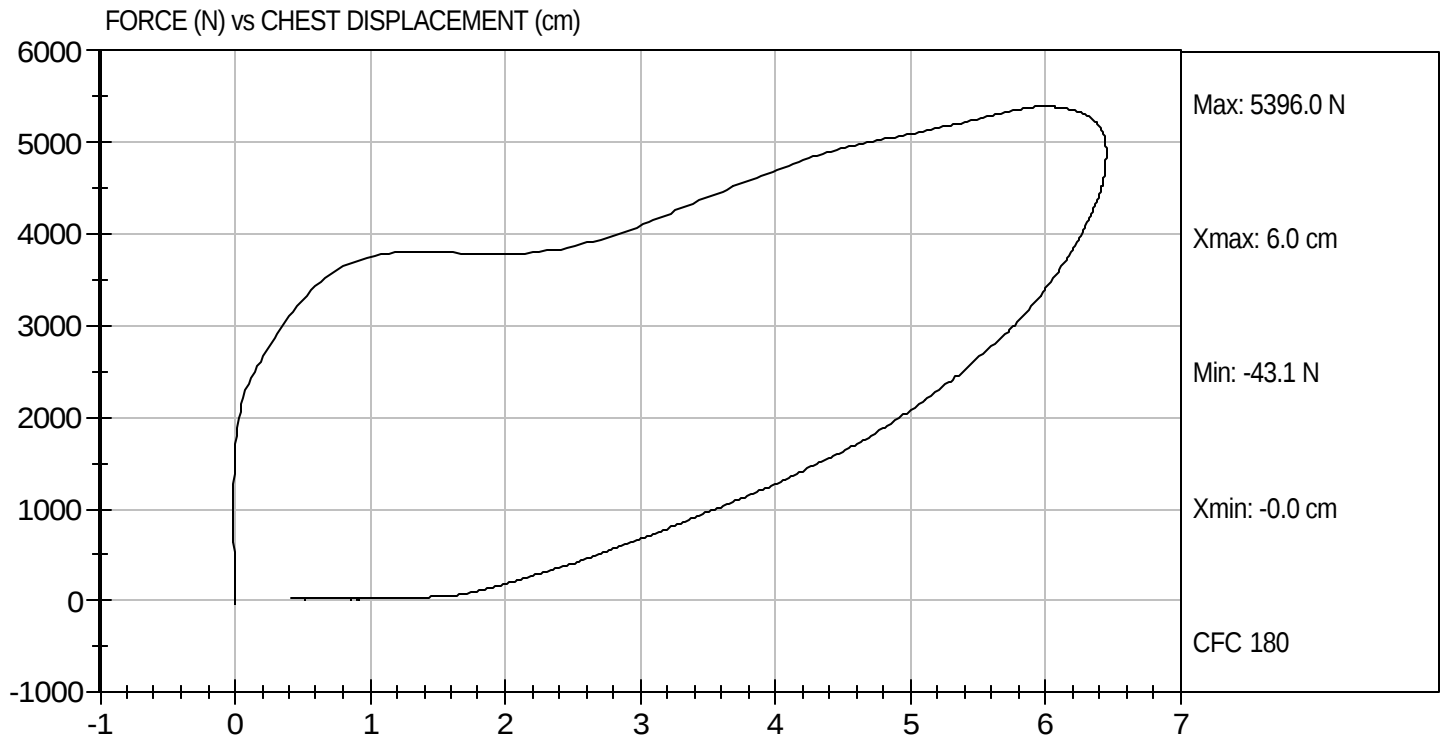
12/26/07

Test Date



Test Desc: Thorax Impact
Component ID: D073664

Test Date: 12/26/07
Velocity: 21.93 ft/s, 6.68 m/s



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

ATD Serial No: 065

Test I.D: D073665

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	24	Pass
Probe Velocity	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	4715 to 5782	5,344	Pass
Overall Test Results				Pass



Laboratory Technician

12/26/07

Test Date

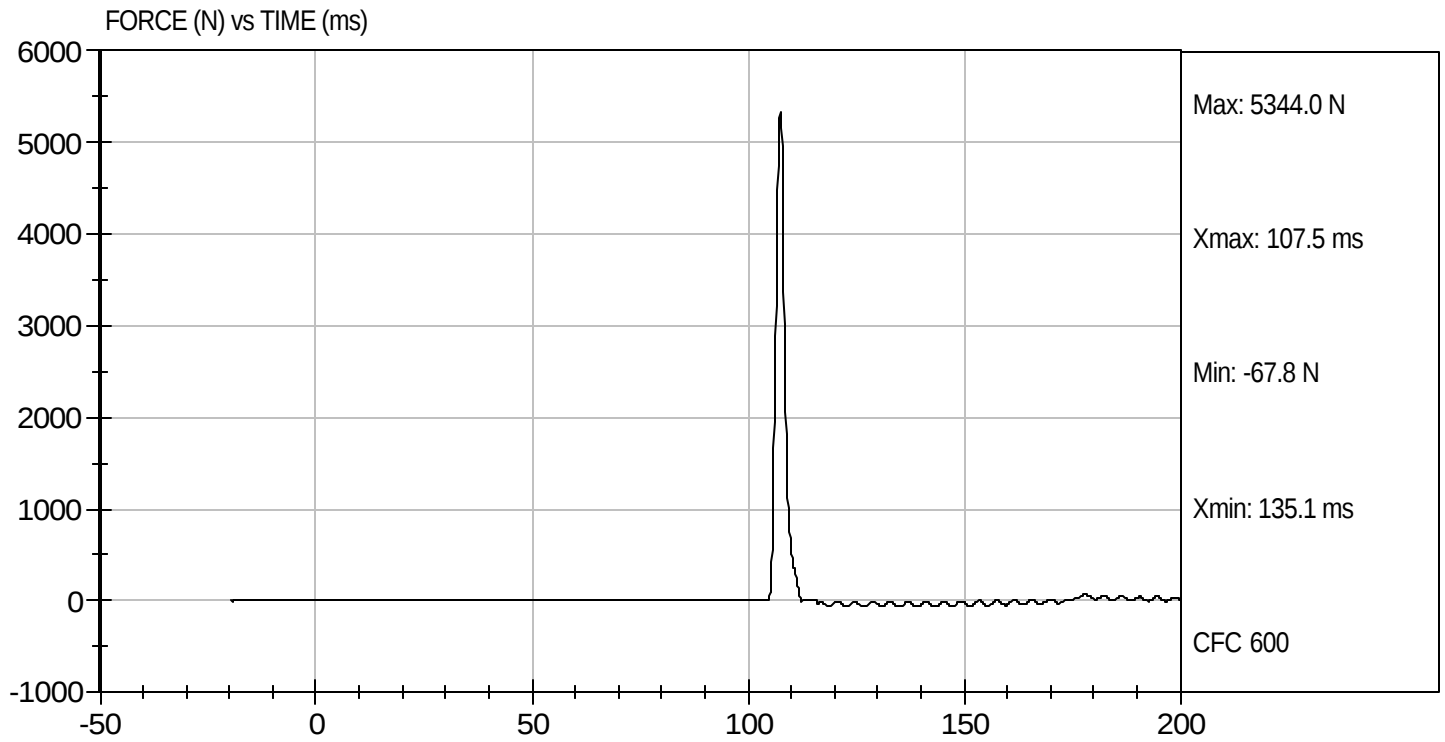


Approved By



Test Desc: Right Knee
Component ID: D073665

Test Date: 12/26/07
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: D073666

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.5	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	24	Pass
Probe Velocity	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	4715 to 5782	5,341	Pass
Overall Test Results				Pass



Laboratory Technician

12/26/07

Test Date

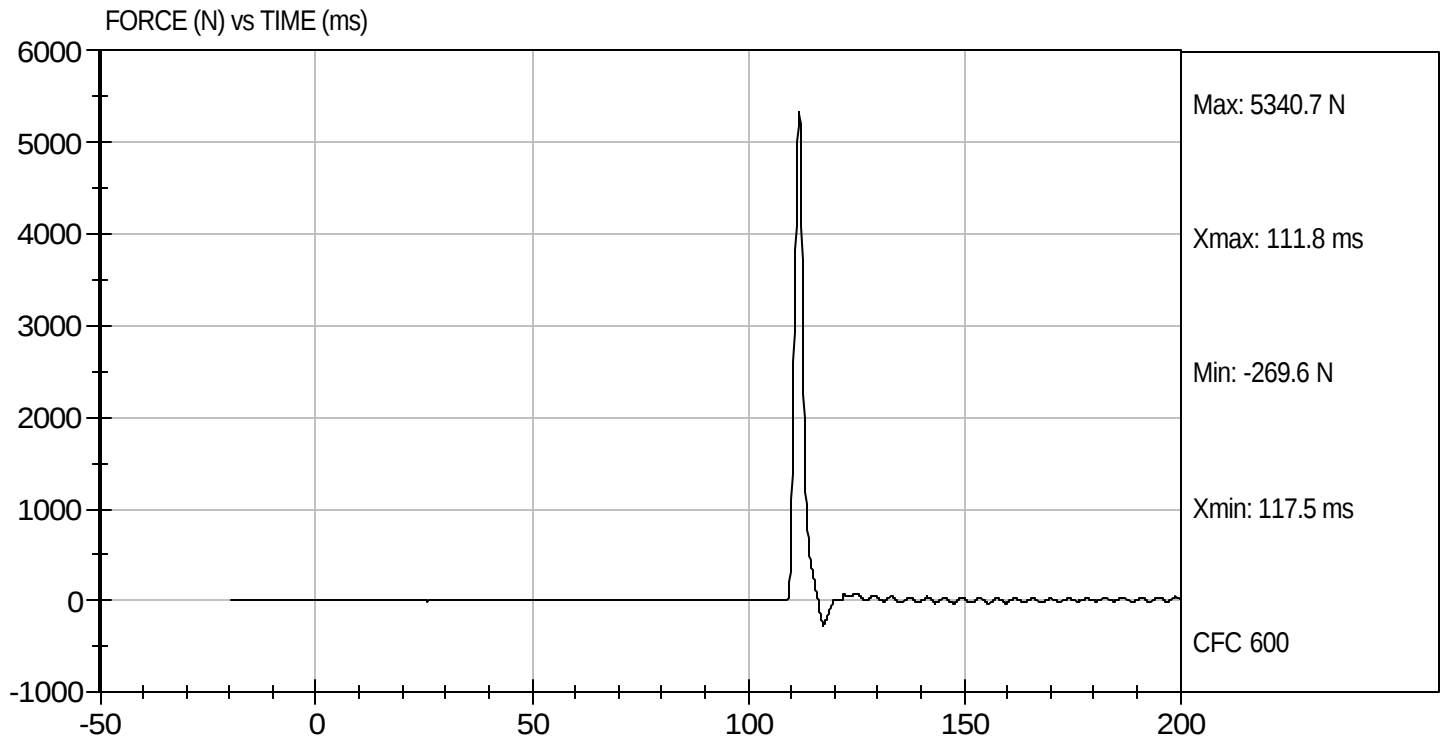


Approved By



Test Desc: Left Knee
Component ID: D073666

Test Date: 12/26/07
Velocity: 6.89 ft/s, 2.10 m/s



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

ATD Serial No: 065

Test I.D: D073660

Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	20.7	20.7	Pass
Laboratory Relative Humidity	%	10 to 70	25	25	Pass
Rotation Rate	deg/sec	5 -10	8	8	Pass
30 Degrees	Nm	94.9 Nm Max	69.2	53.1	Pass
150 ft-lbf / 203.4 Nm	Deg	40- 50 Degree Max Rotation	41	43	Pass
Overall Test Results					Pass



Laboratory Technician

12/26/07

Test Date

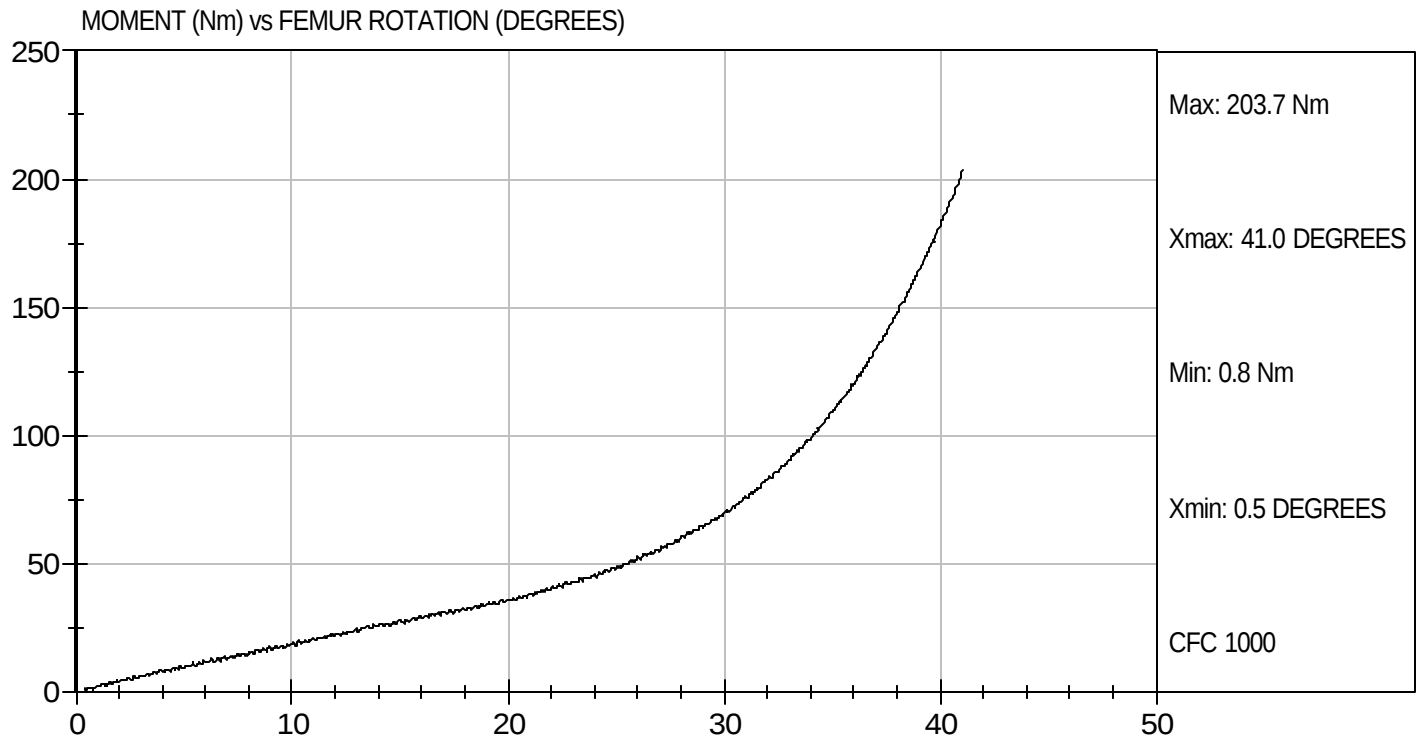


Approved By



Test Desc: Hip Femur Flexion
Component ID: D073669

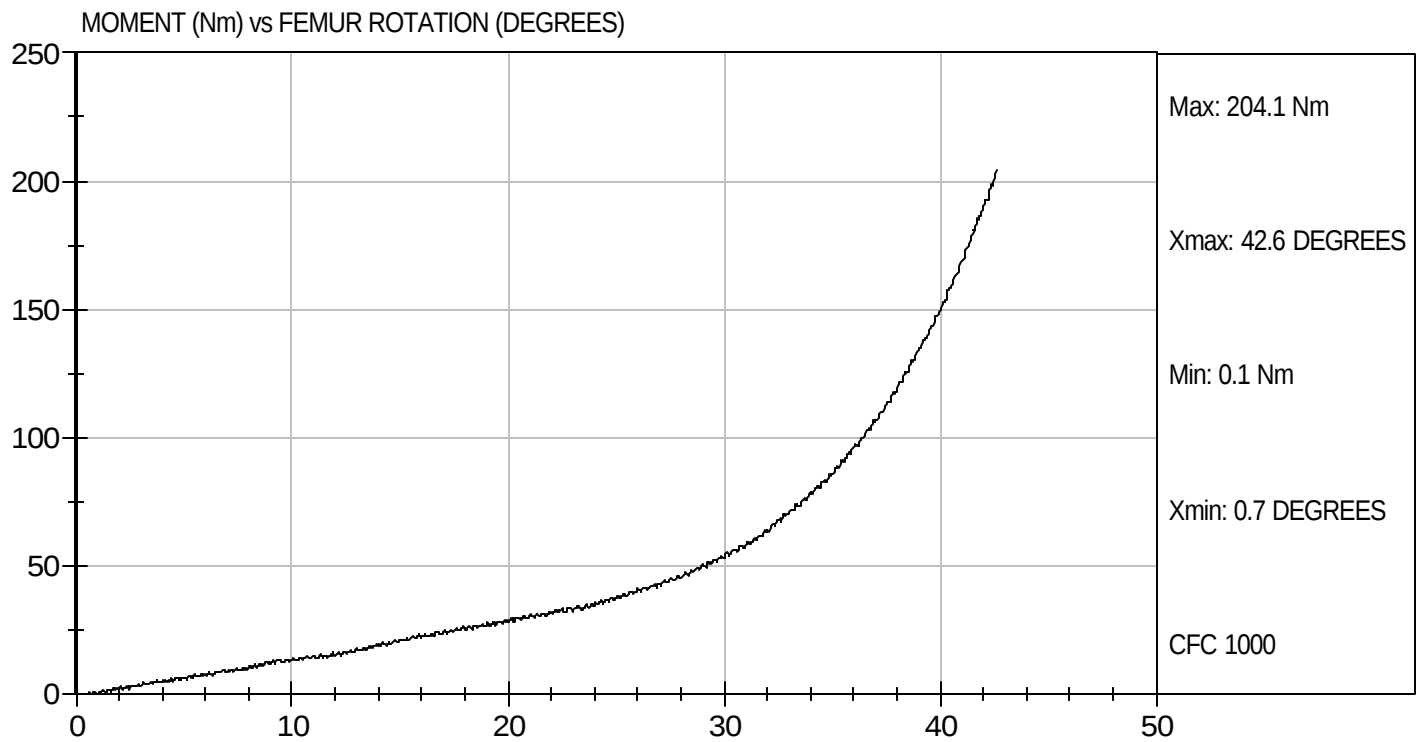
Test Date: 12/26/07
Velocity: 0 ft/s, 0.00 m/s





Test Desc: Hip Femur Flexion
Component ID: D073660

Test Date: 12/26/07
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	703	808
Head Injury Criteria (HIC15)	N/A	390	464	574
Max. Thorax Accel. (3msec Clip)	G's	50	No Data	58

Both child dummies were instrumented with head, chest, and upper six axial neck force and moment sensors. The shoulder and lap belts were instrumented with load cells for both positions.

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's belts for attachment to the vehicle. Position 4 also used the base. Position 3 did not use the base.

TEST VEHICLE WEIGHTS

	Units	As Tested (ATW) (Axle)		
		Front	Rear	Total
Left	kg	529.4	478.5	
Right	kg	526.6	494.4	
Ratio	%	52.0	48.0	
Totals	kg	1056.0	972.9	2028.9

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

TEST NOTES

There was no valid data collected for:
Right Rear Passenger Chest X after 60 msec.

The Position 4 seat became detached 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	Combi Centre (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

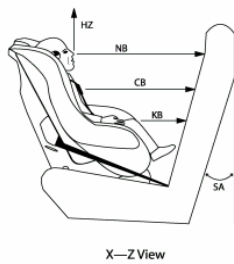
VISIBLE DUMMY CONTACT POINTS

Description	Position 3 CRS	Position 4 CRS
Head Contact	RF seatback	LF seatback
Upper Torso Contact	None	None
Lower Torso Contact	None	None
Left Foot Contact	Foot to vehicle rear seat	None
Right Foot Contact	Foot to vehicle rear seat	None

CHILD DUMMY POSITIONING IN VEHICLE

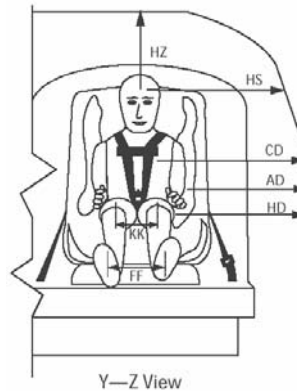
Child Restraint System (Position 3)	Combi Centre (Rear Facing)
NHTSA No.	M85212

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

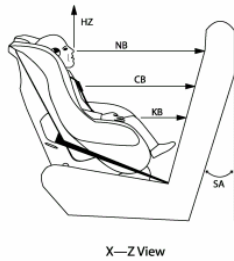
Measurement	Pre-Test (mm)	Post-Test (mm)
	P3 CRS (093)	P3 CRS (093)
SA (deg)		
HS	324	326
CD	370	368
AD	221	233
HD	285	272
HZ	476	461
NB	500	482
CB	362	374
KK	112	99
FF	110	75
KB - LEFT	145	172
KB - RIGHT	144	157
TB - LEFT	70	50
TB - RIGHT	74	58

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

CHILD DUMMY POSITIONING IN VEHICLE

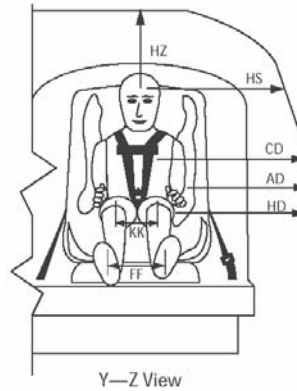
Child Restraint System (Position 4)	Combi Centre (Rear Facing)
NHTSA No.	M85212

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)		
HS	393	304
CD	406	330
AD	265	282
HD	314	304
HZ	380	445
NB	526	117
CB	378	211
KK	113	100
FF	124	82
KB - LEFT	174	200
KB - RIGHT	180	217
TB - LEFT	109	
TB - RIGHT	87	

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

Note: The Child Seat became detached from its base.

CRS PERFORMANCE DATA

Child Restraint System (Position 3)	Combi Centre (Rear Facing)
Child Restraint System (Position 4)	Combi Centre (Rear Facing)
NHTSA No.	M85212

POSITION 3 CRS POST-TEST INSPECTION

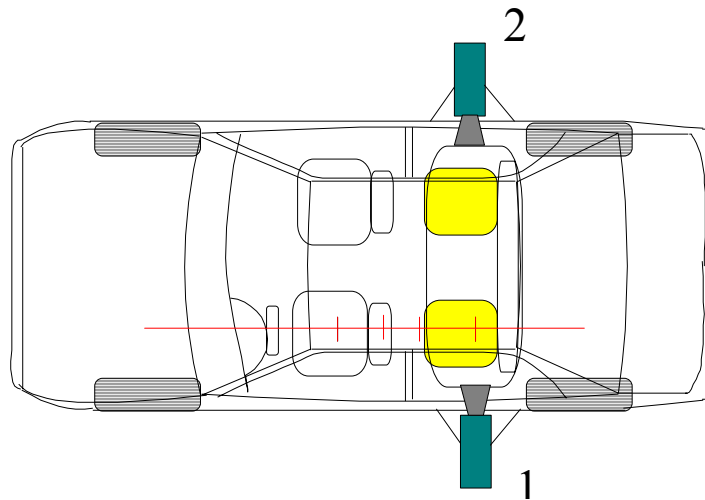
Location	Damage	Remarks
Upper Tether Strap		
Upper Tether Buckle		
Upper Tether Hook		
Vehicle Upper Tether Anchor		
Lower Anchor Strap		
Lower Anchor Buckle		
Lower Anchor Hooks		
Vehicle Lower CRS Anchors		
Five Point Harness Connections		
Cracks on CRS	None	
Fabric Tears on CRS	None	
Vehicle Seat Structure	Yes	Lower seat cushion detached
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		
Vehicle Lower CRS Anchors		
Five Point Harness Connections		
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
Child Seat with Base	None	Child Seat became detached from its base.

CRS CAMERA DATA

Child Restraint System (Position 3)	Combi Centre (Rear Facing)
Child Restraint System (Position 4)	Combi Centre (Rear Facing)
NHTSA No.	M85212



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

PHOTOGRAPHS

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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



Post-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



Pre-Test Position 3 Right Side View



Post-Test Position 3 Right Side View



Pre-Test Position 4 Left Side



Post-Test Position 4 Left Side View



Pre-Test Position 4 Right Side View



Post-Test Position 3 Feet Contact



Post-Test Position 4 Head Contact

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 Lap Belt Force vs. Time

LRP Child Shoulder Belt Force vs. Time

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

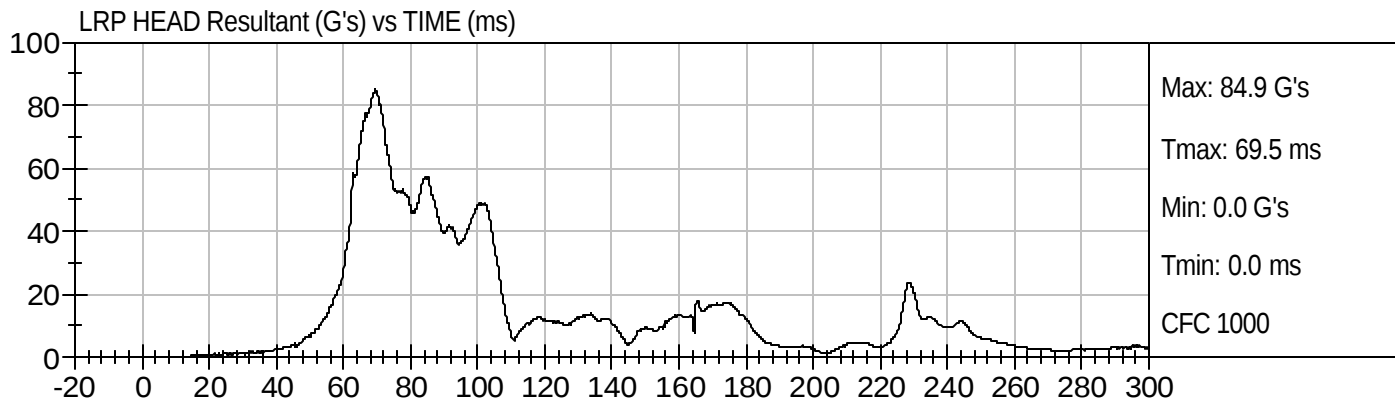
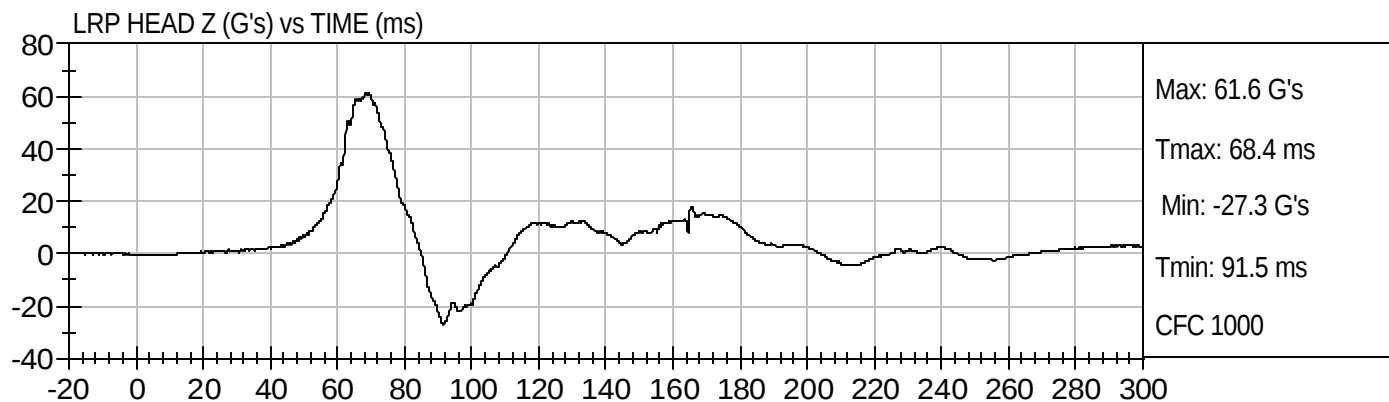
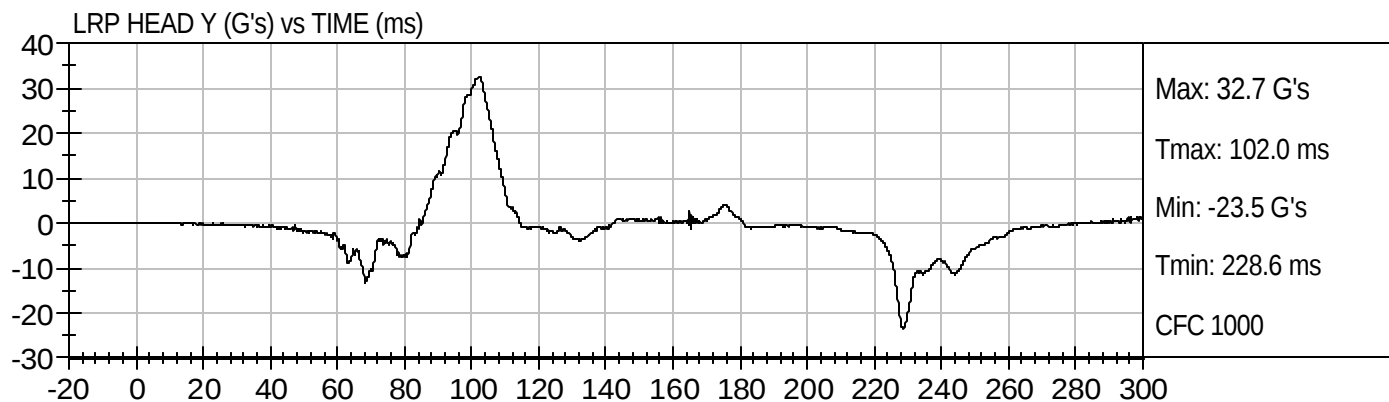
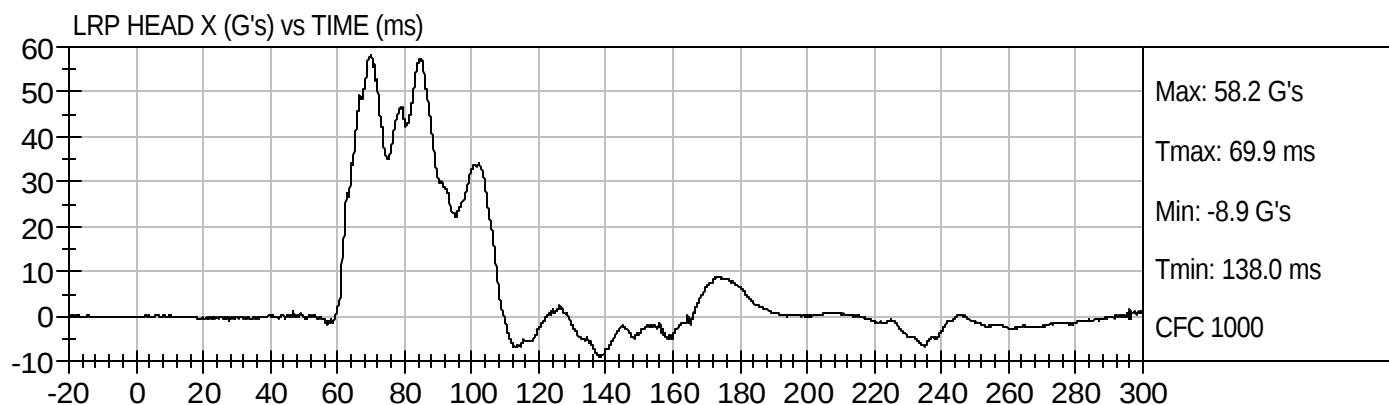
LRP Child Upper Neck Moment Z vs. Time
LRP Child Upper Neck Moment Resultant vs. Time
RRP Child Lap Belt Force vs. Time
RRP Child Shoulder Belt Force vs. Time
RRP Child Upper Neck Force X vs. Time
RRP Child Upper Neck Force Y vs. Time
RRP Child Upper Neck Force Z vs. Time
RRP Child Upper Neck Force Resultant 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
LRP Child Seat Base X Acceleration vs. Time
LRP Child Seat Base Y Acceleration vs. Time
LRP Child Seat Base Z Acceleration vs. Time
LRP Child Seat Base 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 INFINITI EX35

M85212

Test Date: 01/22/2008
Speed: 35.1 mph (56.5 km/h)

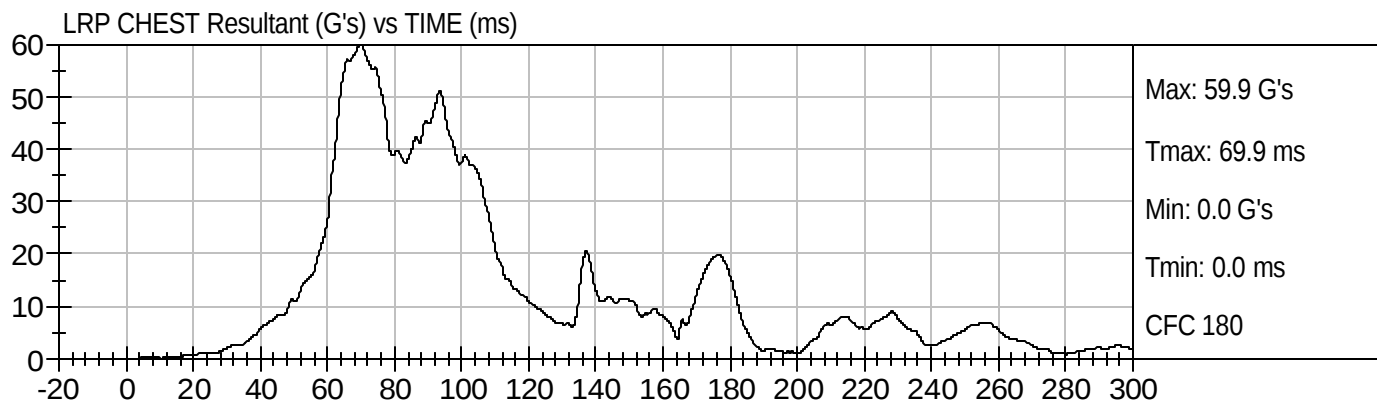
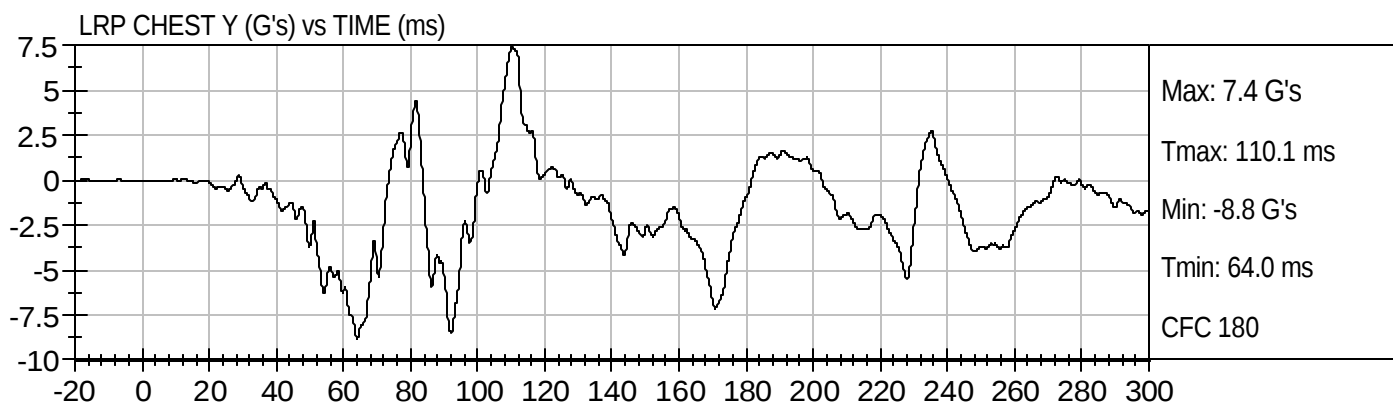
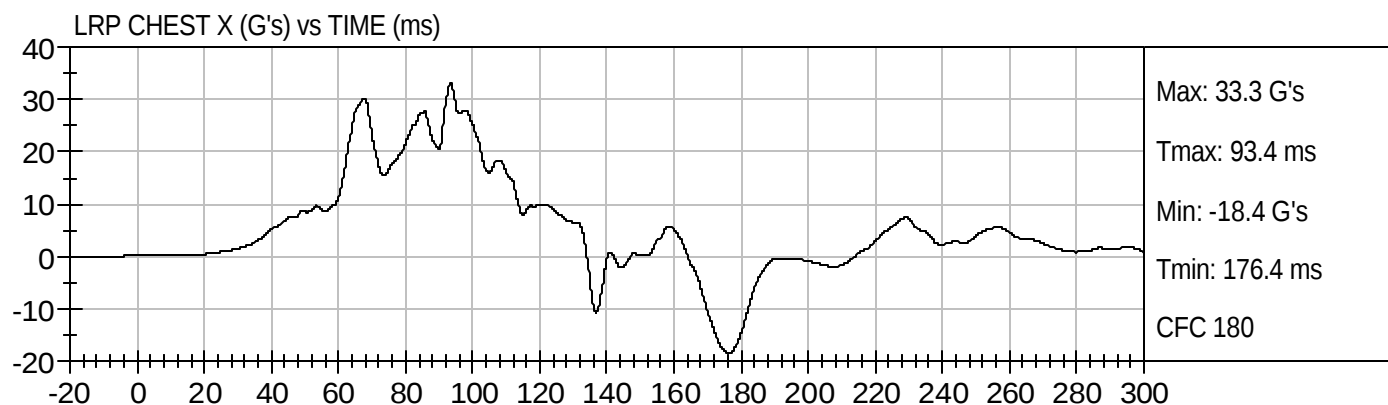




NCAP FRONTAL
2008 INFINITI EX35

M85212

Test Date: 01/22/2008
Speed: 35.1 mph (56.5 km/h)

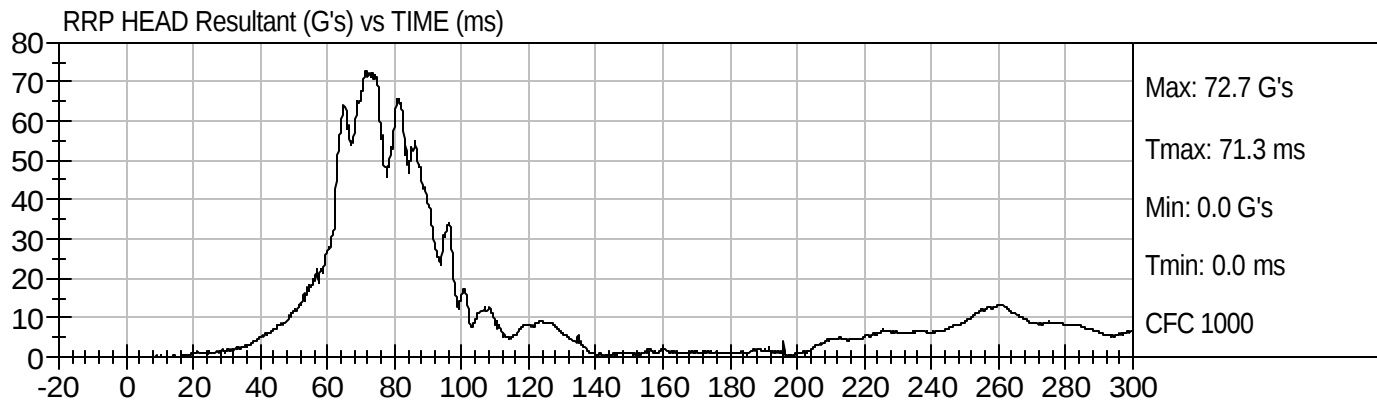
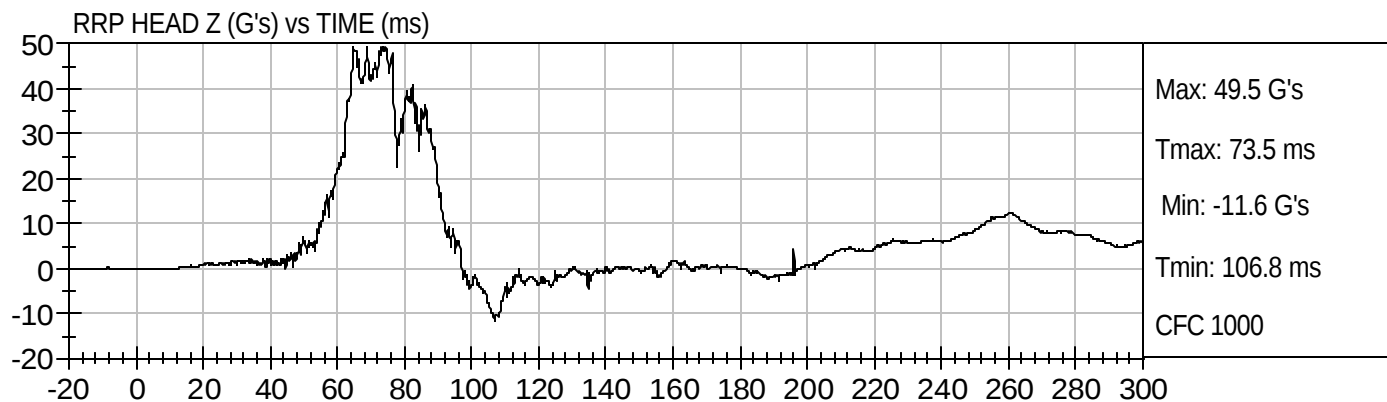
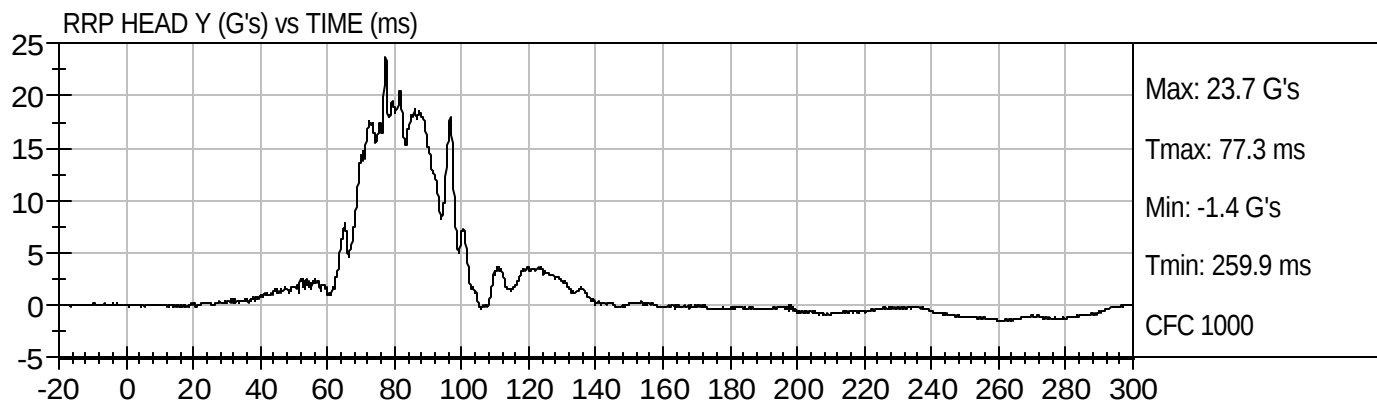
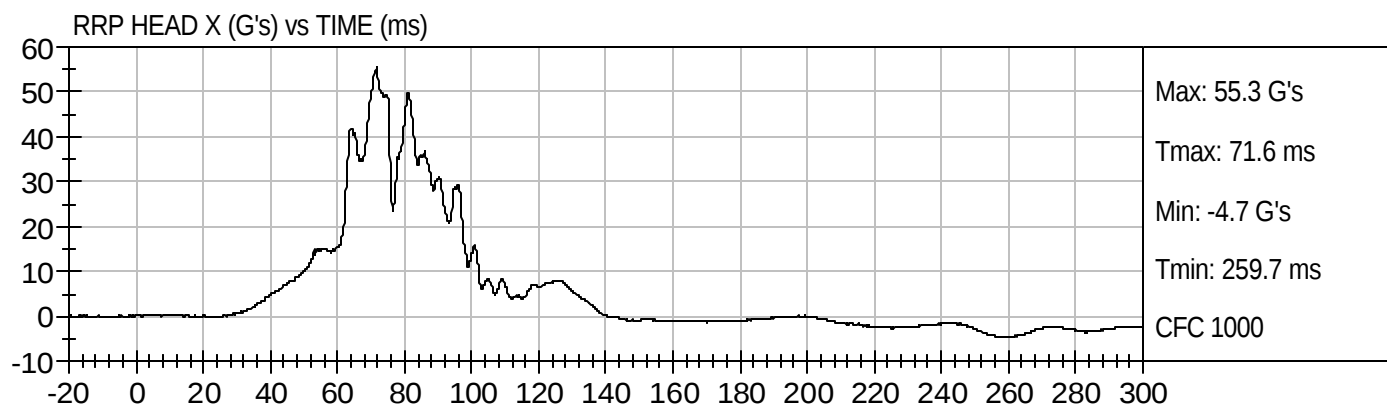




NCAP FRONTAL
2008 INFINITI EX35

M85212

Test Date: 01/22/2008
Speed: 35.1 mph (56.5 km/h)



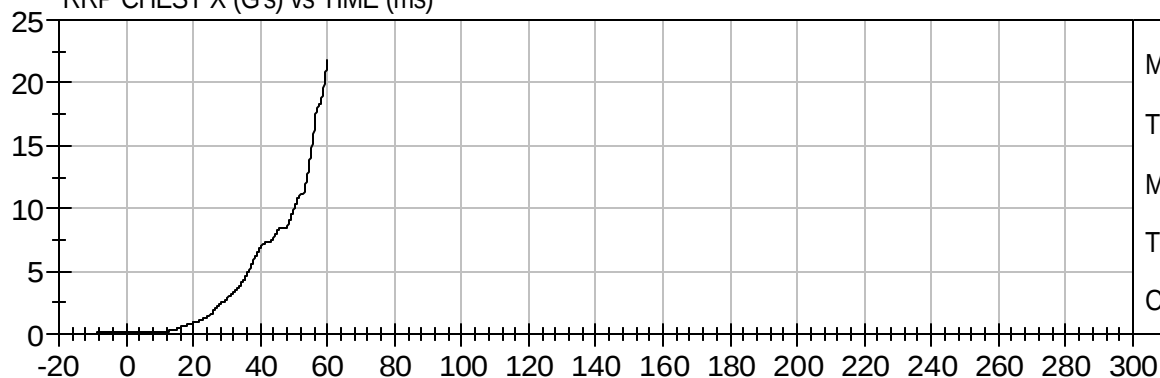


NCAP FRONTAL
2008 INFINITI EX35

M85212

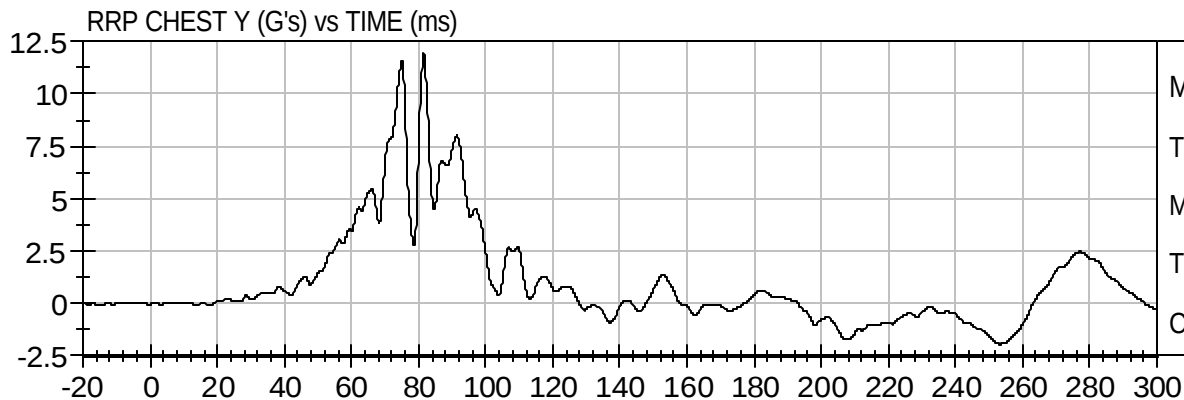
Test Date: 01/22/2008
Speed: 35.1 mph (56.5 km/h)

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



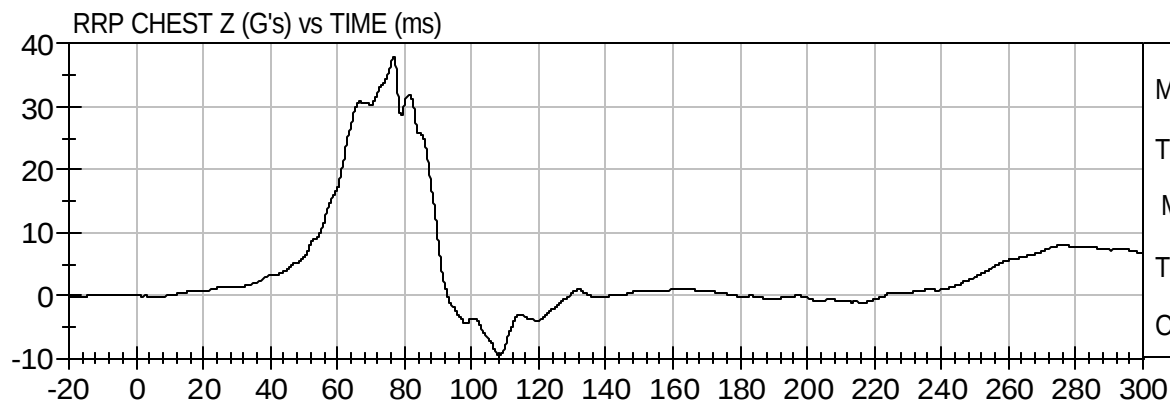
Max: 21.8 G's
Tmax: 60.0 ms
Min: 0.0 G's
Tmin: 0.0 ms
CFC 180

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



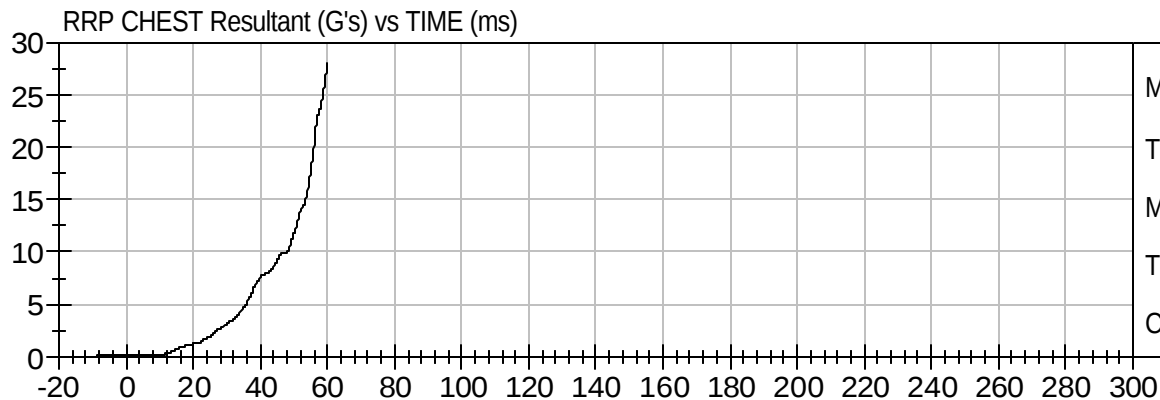
Max: 11.9 G's
Tmax: 81.5 ms
Min: -1.9 G's
Tmin: 253.3 ms
CFC 180

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



Max: 38.0 G's
Tmax: 76.7 ms
Min: -9.5 G's
Tmin: 108.3 ms
CFC 180

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



Max: 28.0 G's
Tmax: 60.0 ms
Min: 0.0 G's
Tmin: 0.0 ms
CFC 180

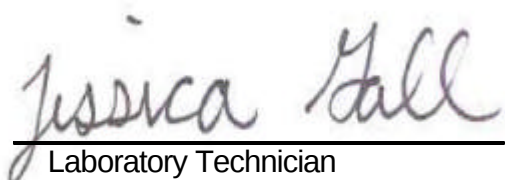
CHILD DUMMY CALIBRATION INFORMATION

MGA RESEARCH CORPORATION
FRONT HEAD DROP TEST
CRABI 12 MONTH

ATD Serial No: 093

Test ID: D073561

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Peak Resultant Acceleration	G's	100 to 120	106	Pass
Peak Lateral Acceleration	G's	+/- 15	-2	Pass
Unimodal	N/A	within 17% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician

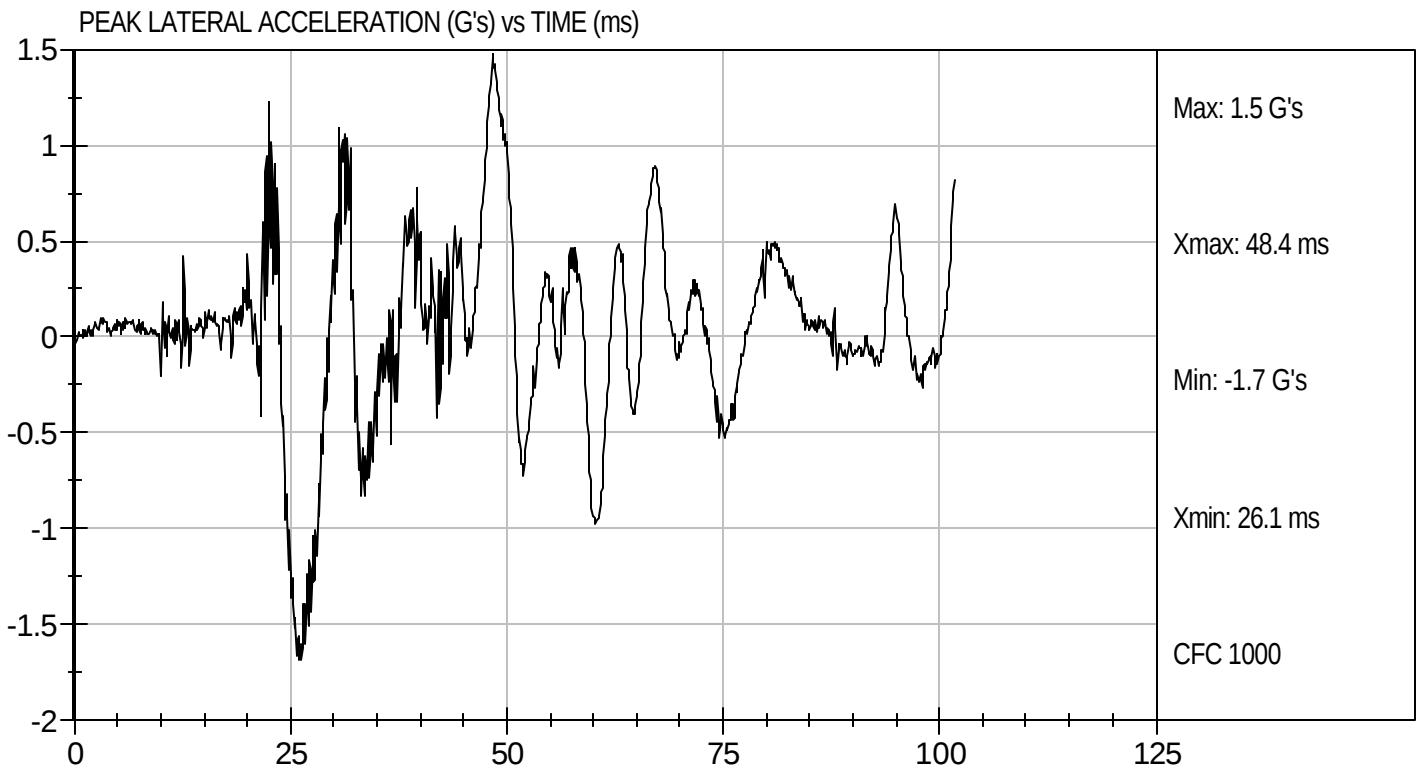
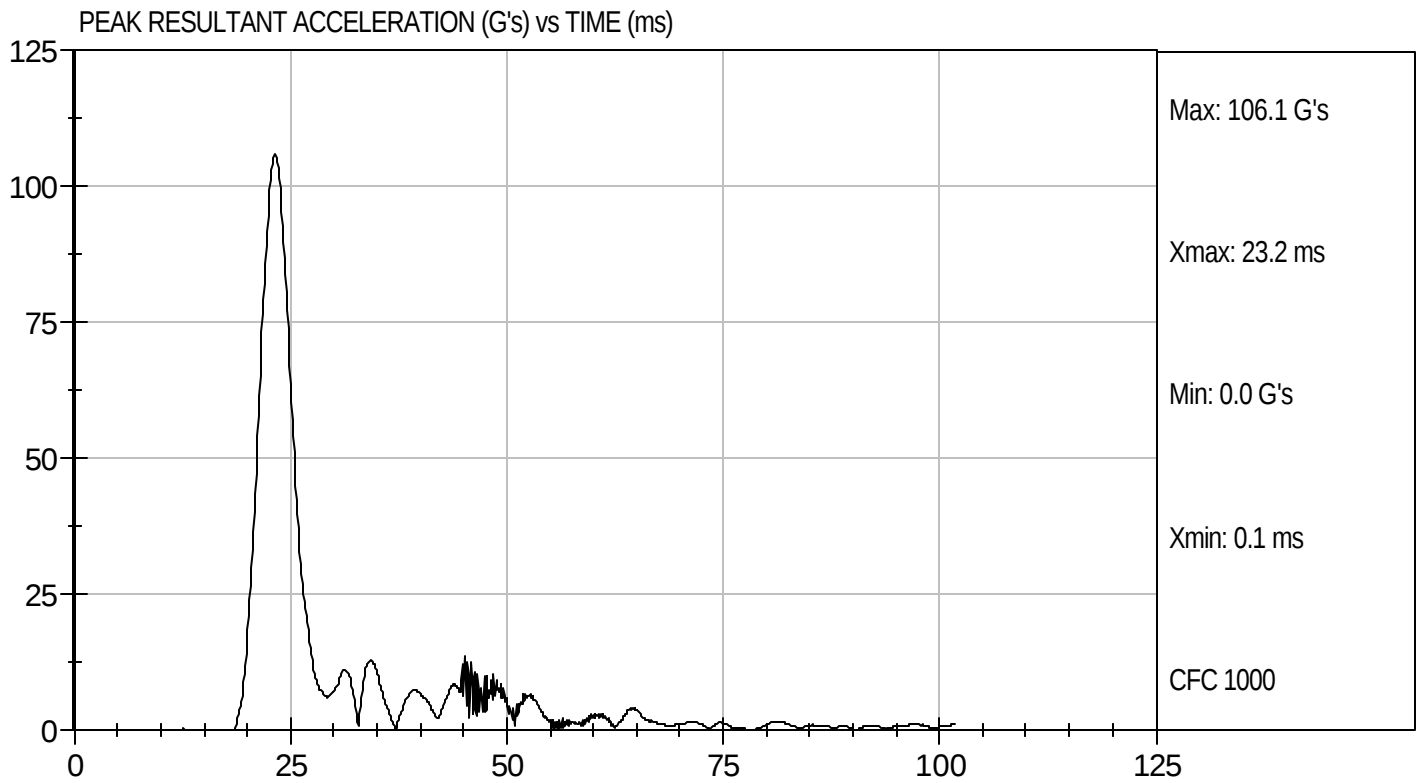
12/12/07
Test Date


Approved By



Test Desc: Head Drop
Component ID: D073561

Test Date: 12/12/07
Velocity: 0 ft/s, 0 m/s



MGA RESEARCH CORPORATION
NECK FLEXION TEST
CRABI 12 MONTH

ATD Serial No: 093

Test I.D: D073562

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	20.7	Pass
Humidity		%	10 to 70	25	Pass
Impact Velocity		m/s	5.1 to 5.3	5.3	Pass
Pendulum Deceleration	10 msec	m/s	1.6 to 2.3	2.1	Pass
	20 msec	m/s	3.4 to 4.2	3.8	Pass
	25 msec	m/s	4.3 to 5.2	4.5	Pass
D Plane Rotation		deg	75.0 to 86.0	80.6	Pass
Moment About Occipital Condyle		Nm	36.0 to 45.0	43.3	Pass
Positive Moment - Time Curve Decay to 5 Nm		msec	60 to 80	69	Pass
Overall Test Results					Pass


 Laboratory Technician

12/12/07
 Test Date

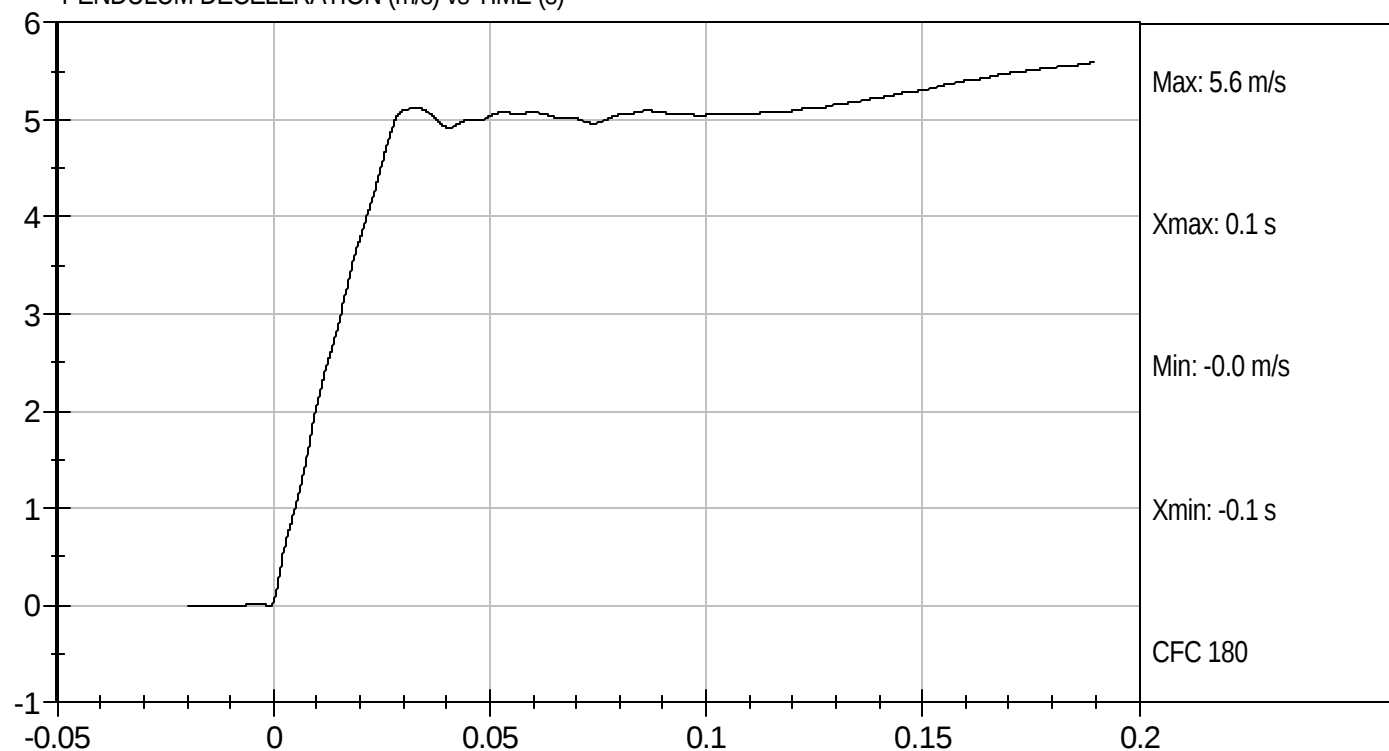

 Approved By



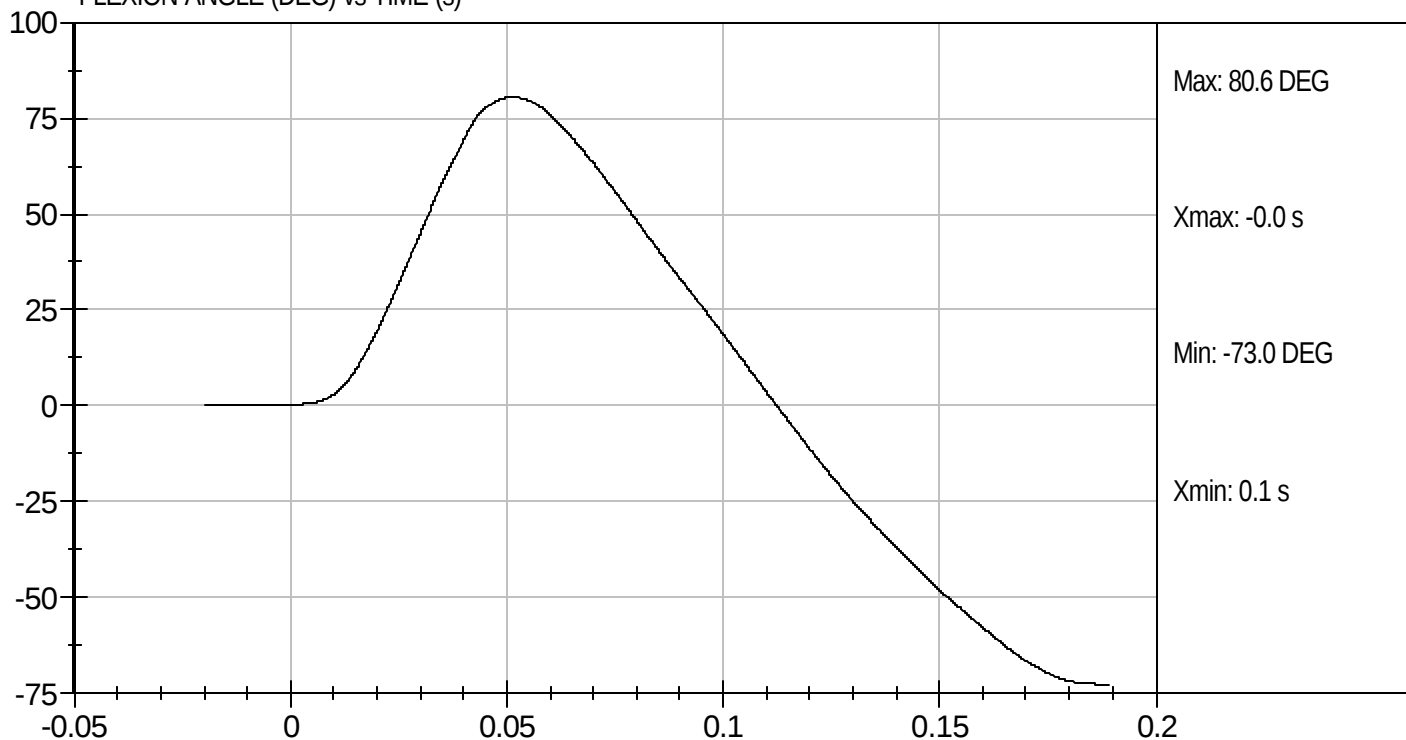
Test Desc: Neck Flexion
Component ID: D073562

Test Date: 12/12/07
Velocity: 17.36 ft/s, 5.3 m/s

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



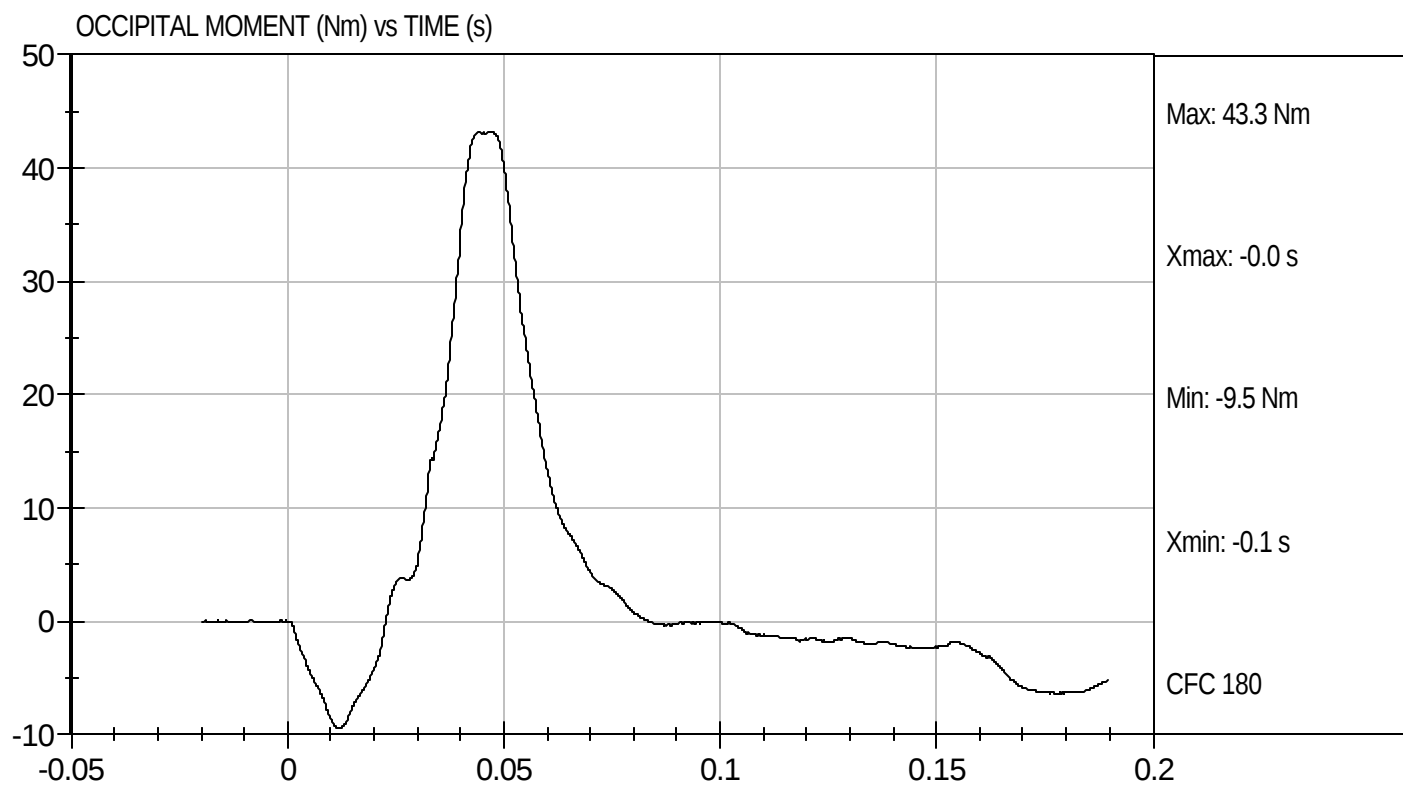
FLEXION ANGLE (DEG) vs TIME (s)





Test Desc: Neck Flexion
Component ID: D073562

Test Date: 12/12/07
Velocity: 17.36 ft/s, 5.3 m/s



MGA RESEARCH CORPORATION
NECK EXTENSION TEST
CRABI 12 MONTH

ATD Serial No: 093

Test I.D.: D073563

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	20.8	Pass
Humidity		%	10 to 70	25	Pass
Pendulum Speed		m/s	2.4 to 2.6	2.6	Pass
Pendulum Deceleration	6 msec	m/s	0.8 to 1.2	0.9	Pass
	10 msec	m/s	1.5 to 2.1	1.9	Pass
	14 msec	m/s	2.2 to 2.9	2.6	Pass
D Plane Rotation		deg	80.0 to 92.0	80.6	Pass
Moment About Occipital Condyle		Nm	-23.0 to -12.0	-19.0	Pass
Negative Moment - Time Curve Decay to -5 Nm		msec	76 to 90	85	Pass
Overall Test Results					Pass


 Laboratory Technician

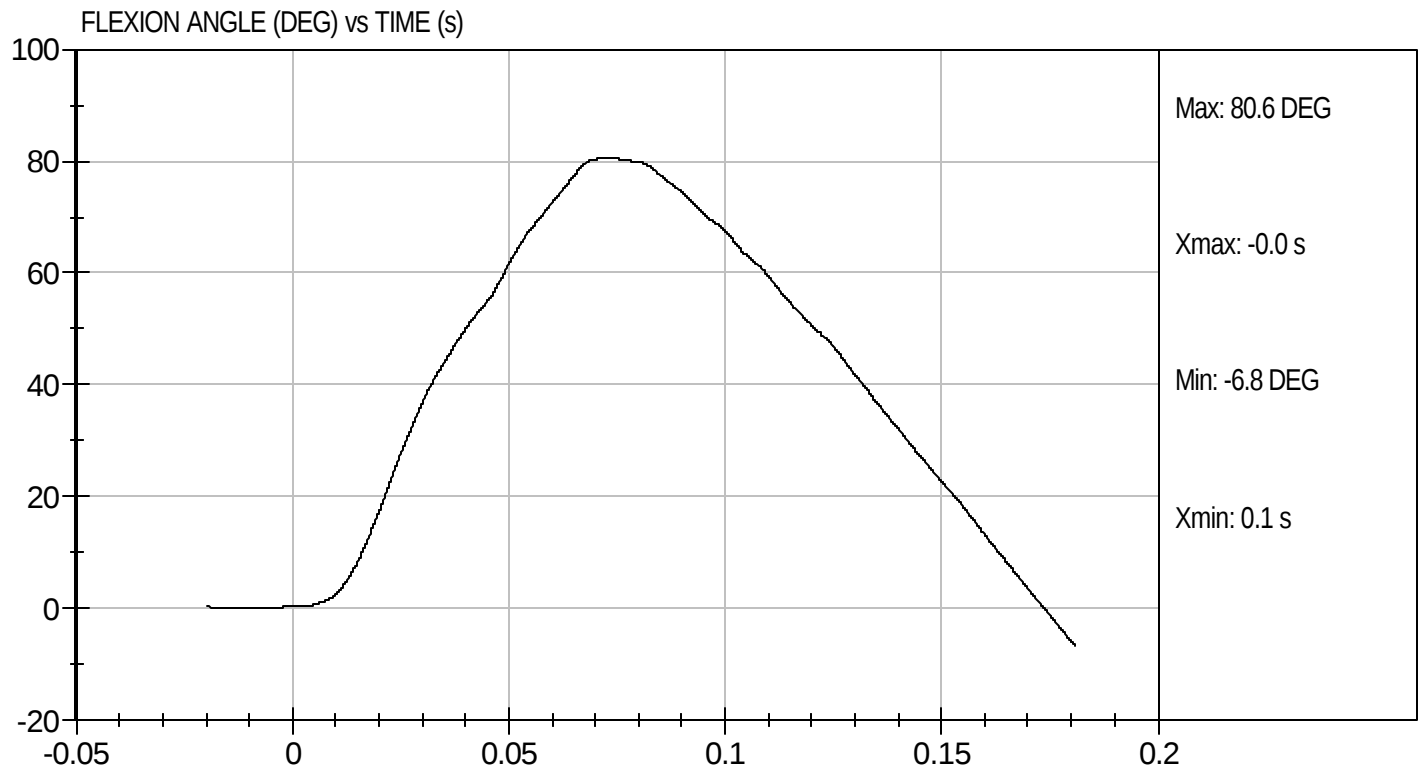
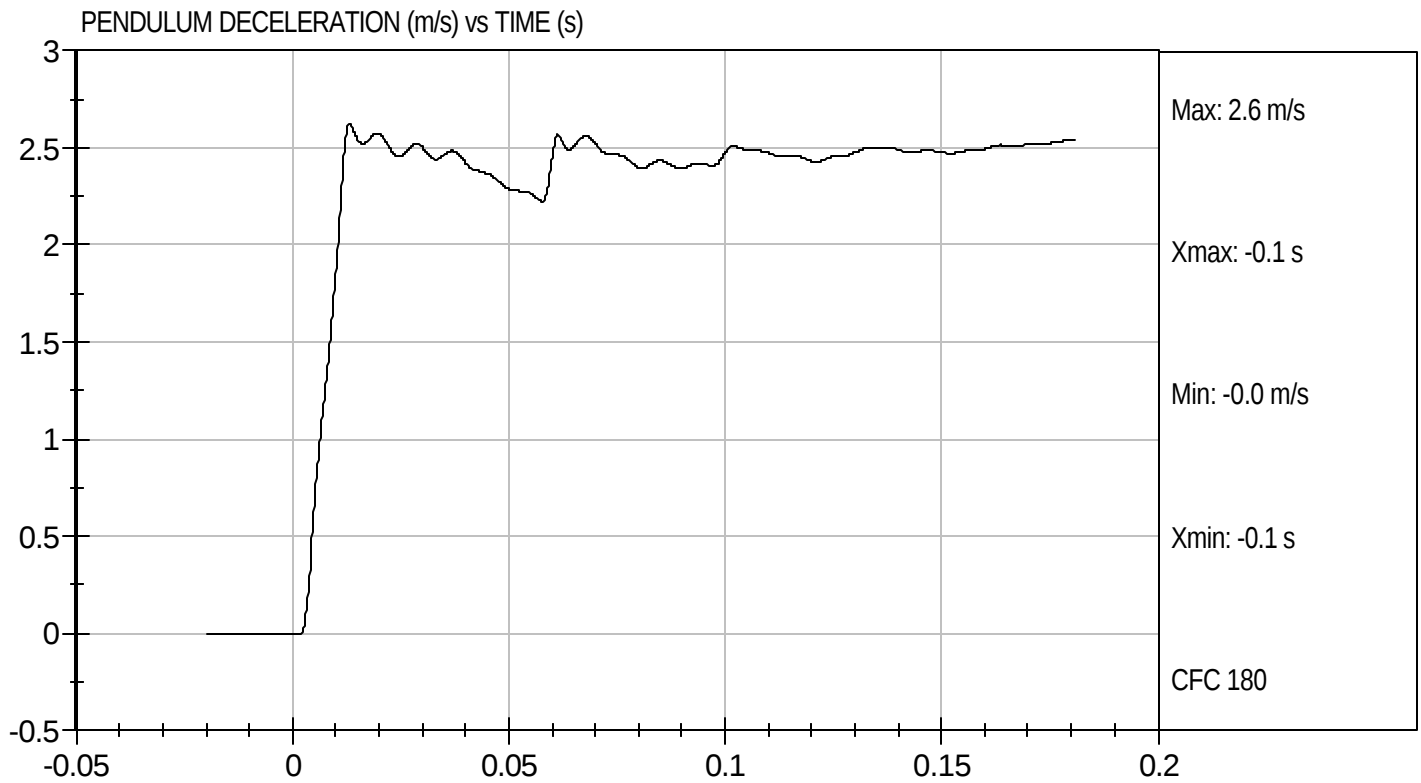
12/12/07
 Test Date


 Approved By



Test Desc: Neck Extension
Component ID: D073563

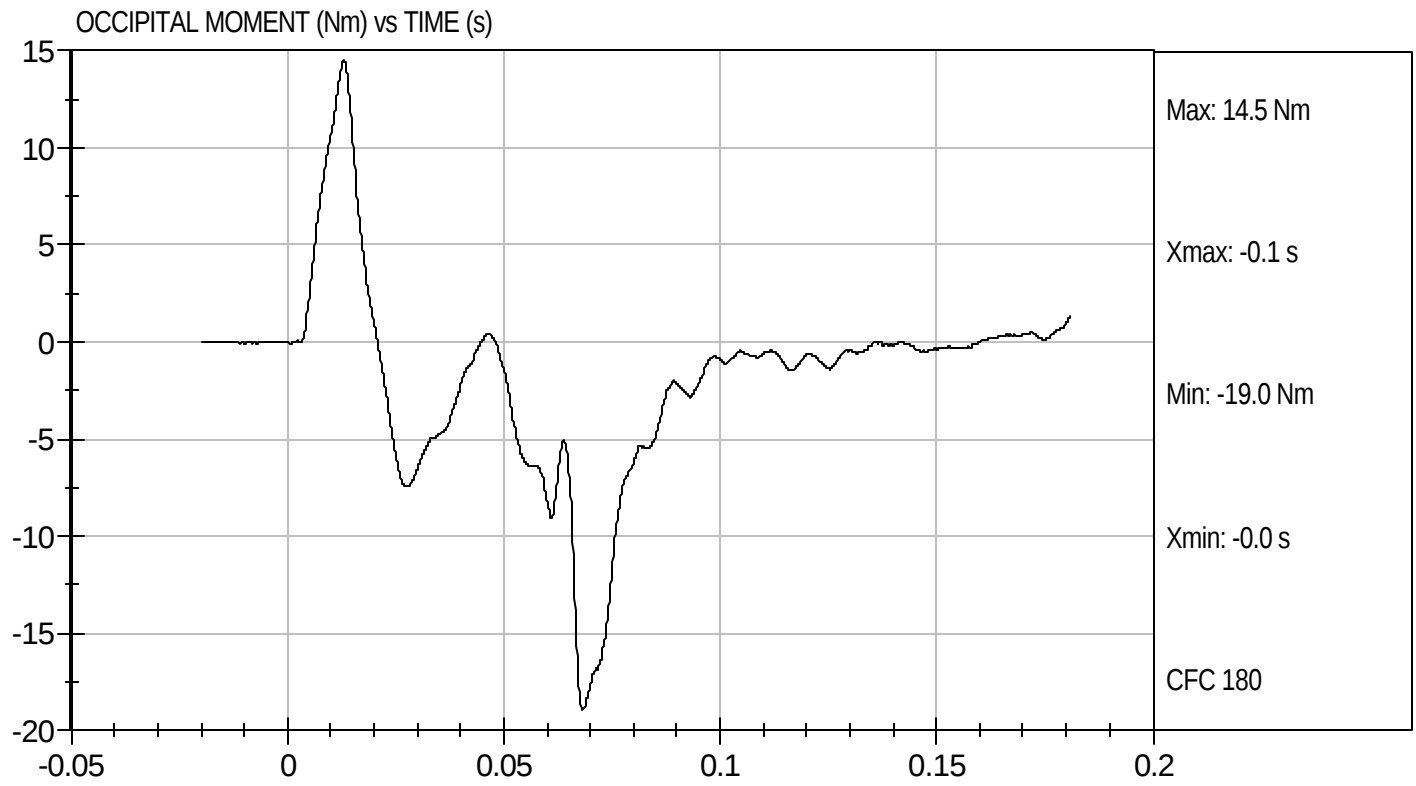
Test Date: 12/12/07
Velocity: 8.41 ft/s, 2.6 m/s





Test Desc: Neck Extension
Component ID: D073563

Test Date: 12/12/07
Velocity: 8.41 ft/s, 2.6 m/s

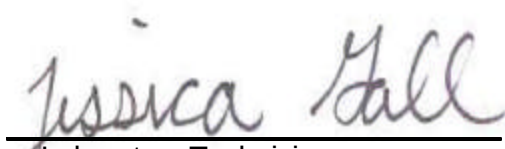


MGA RESEARCH CORPORATION
THORAX IMPACT TEST
CRABI 12 MONTH

ATD Serial No: 093

Test I.D: D073564

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	26	Pass
Probe Speed	m/sec	4.9 to 5.1	5.08	Pass
Probe Force	kN	1.51 to 1.80	1.54	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

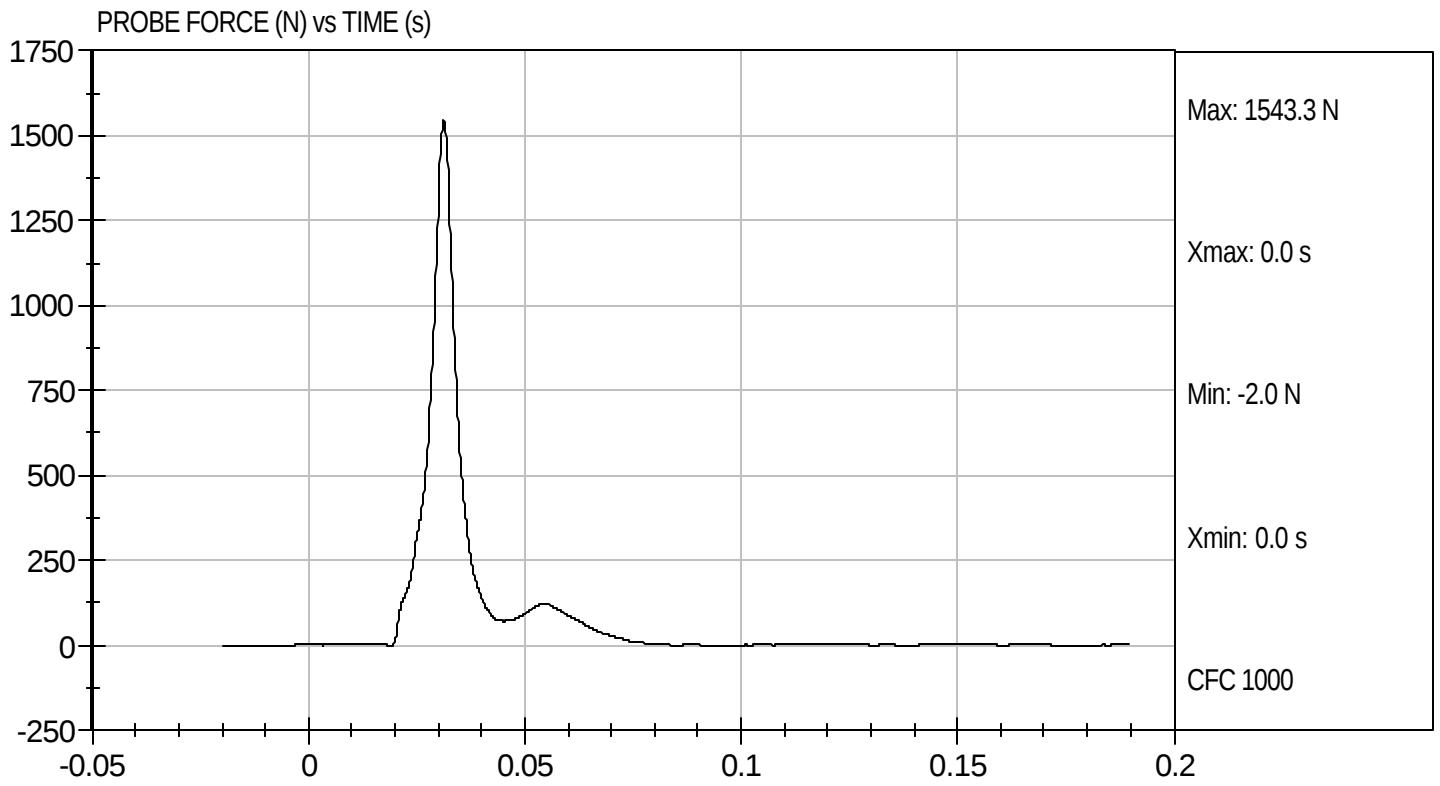
12/12/07

Test Date



Test Desc: Thorax Impact
Component ID: D073564

Test Date: 12/12/07
Velocity: 16.67 ft/s, 5.08 m/s

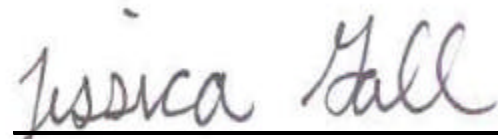


MGA RESEARCH CORPORATION
REAR HEAD DROP TEST
CRABI 12 MONTH

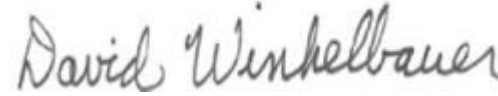
ATD Serial No: 093

Test ID: D073565

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Peak Resultant Acceleration	G's	55 to 71	64	Pass
Peak Lateral Acceleration	G's	+/- 15	-2	Pass
Unimodal	N/A	within 17% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician

12/12/07
Test Date

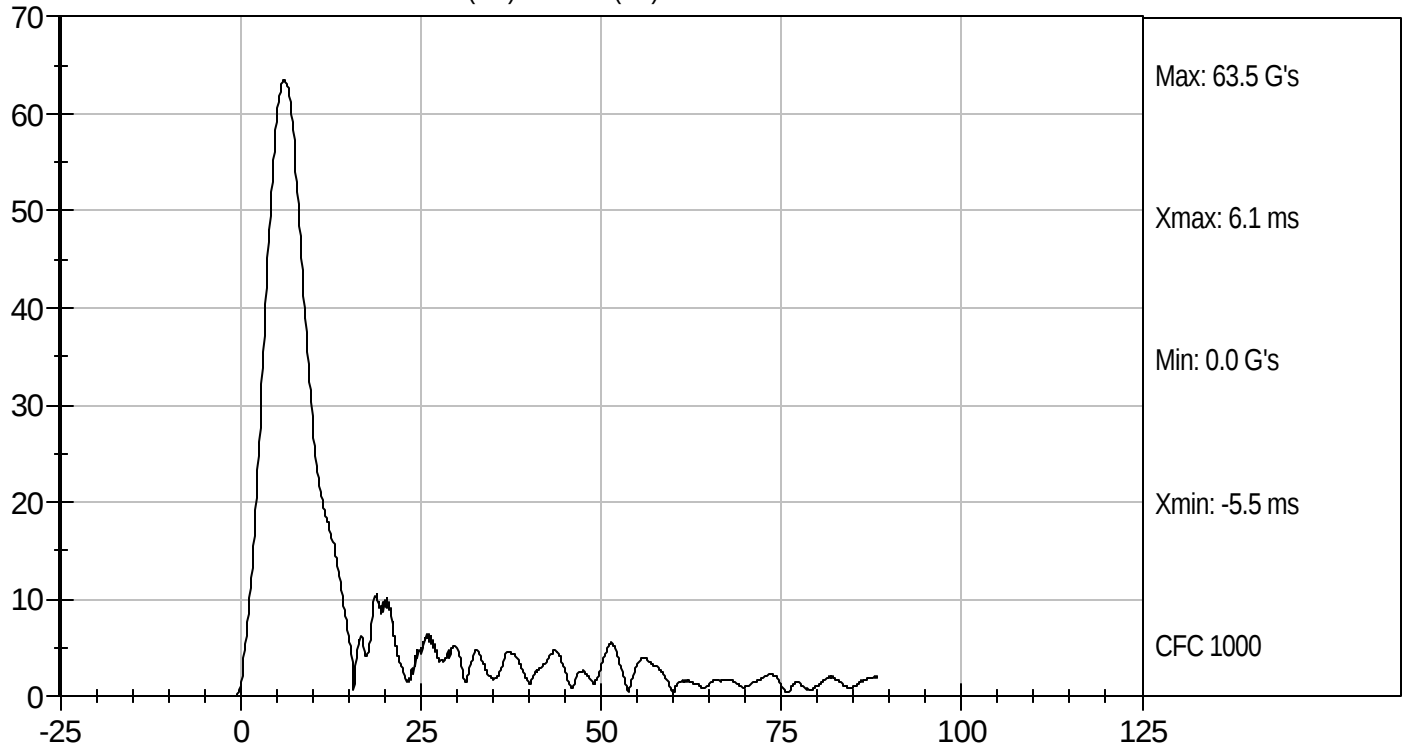

Approved By



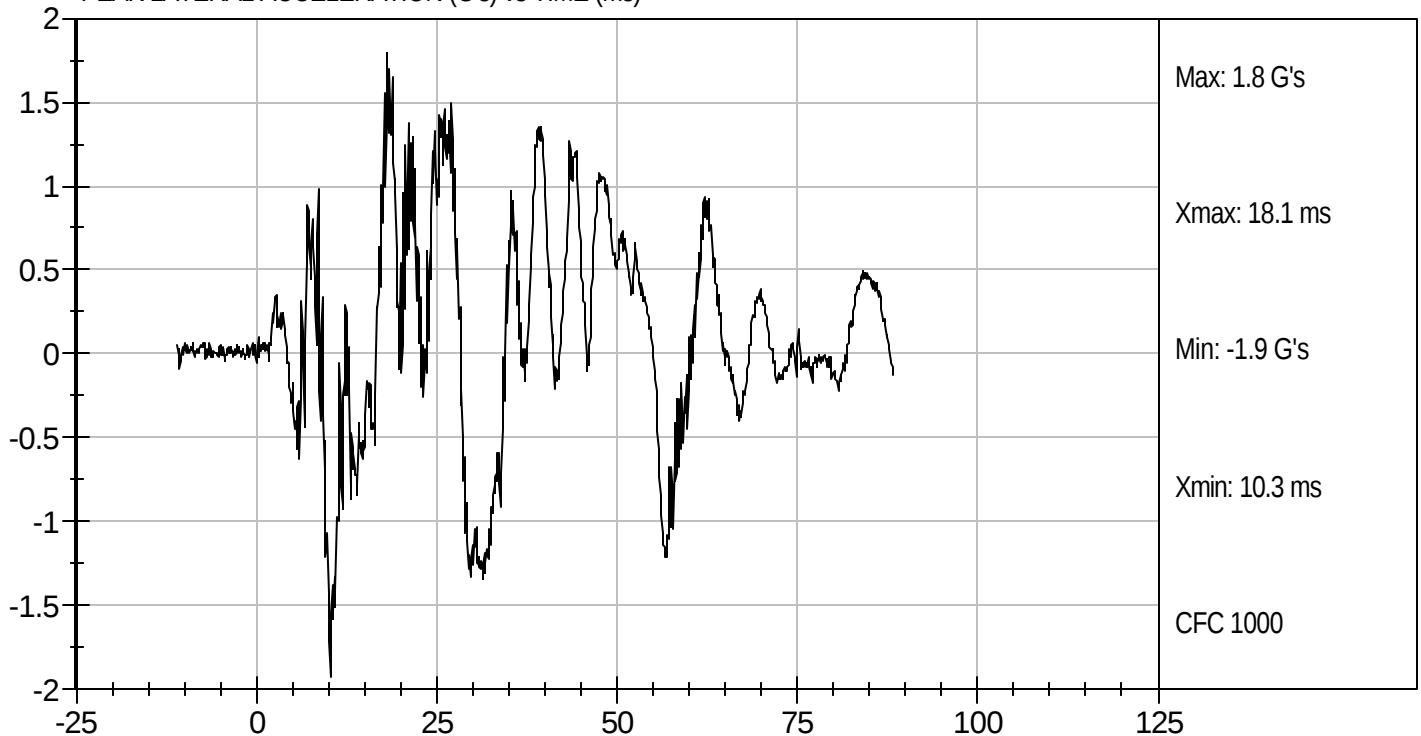
Test Desc: Head Drop
Component ID: D073565

Test Date: 12/12/07
Velocity: 0 ft/s, 0 m/s

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



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

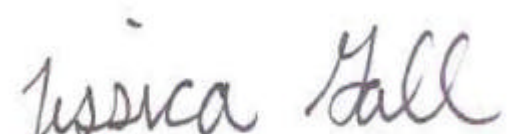


MGA RESEARCH CORPORATION
FRONT HEAD DROP TEST
CRABI 12 MONTH

ATD Serial No: 090

Test ID: D073551

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Peak Resultant Acceleration	G's	100 to 120	112	Pass
Peak Lateral Acceleration	G's	+/- 15	5	Pass
Unimodal	N/A	within 17% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician

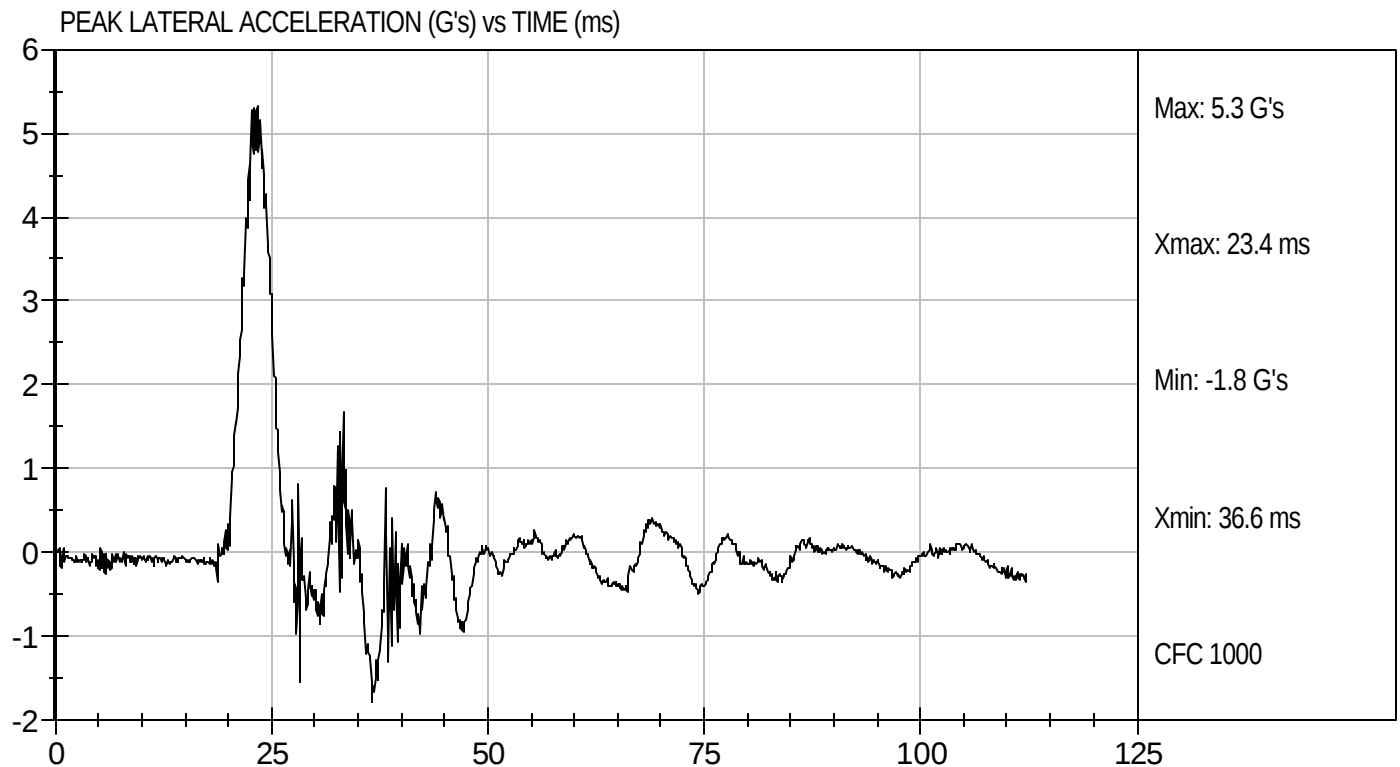
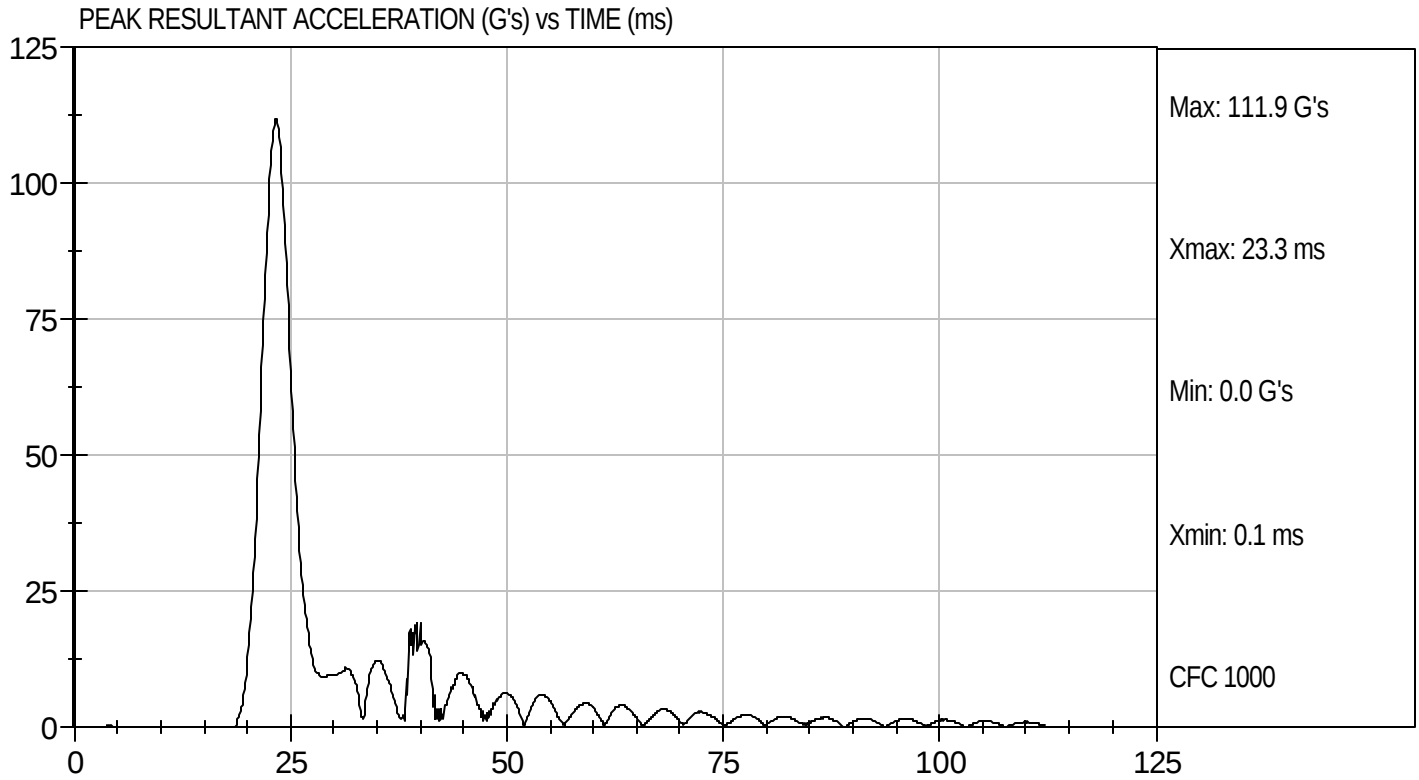

Approved By

12/12/07
Test Date



Test Desc: Head Drop
Component ID: D073551

Test Date: 12/12/07
Velocity: 0 ft/s, 0 m/s



MGA RESEARCH CORPORATION
NECK FLEXION TEST
CRABI 12 MONTH

ATD Serial No: 090

Test I.D: D073552

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	20.9	Pass
Humidity		%	10 to 70	27	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	80.4	Pass
Moment About Occipital Condyle		Nm	36.0 to 45.0	37.3	Pass
Positive Moment - Time Curve Decay to 5 Nm		msec	60 to 80	75	Pass
Overall Test Results					Pass


 Laboratory Technician

12/12/07
 Test Date

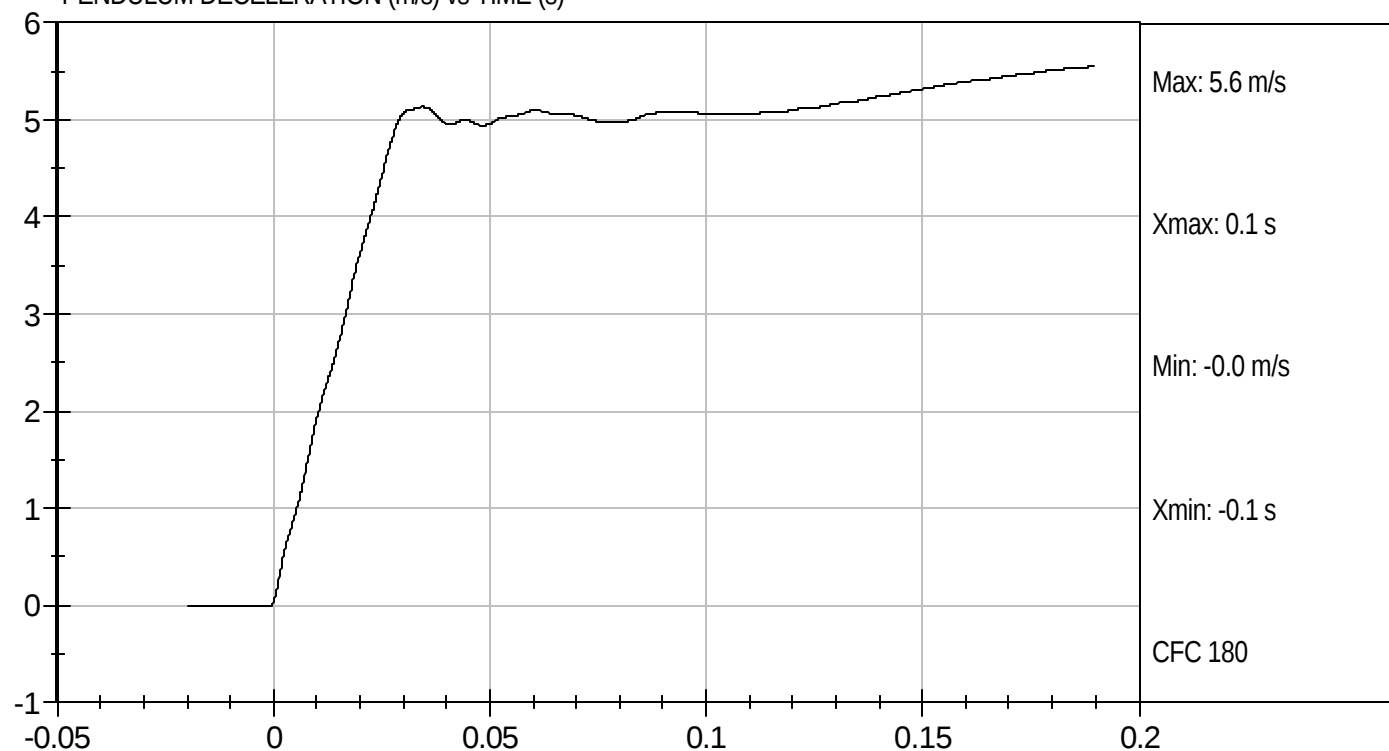

 Approved By



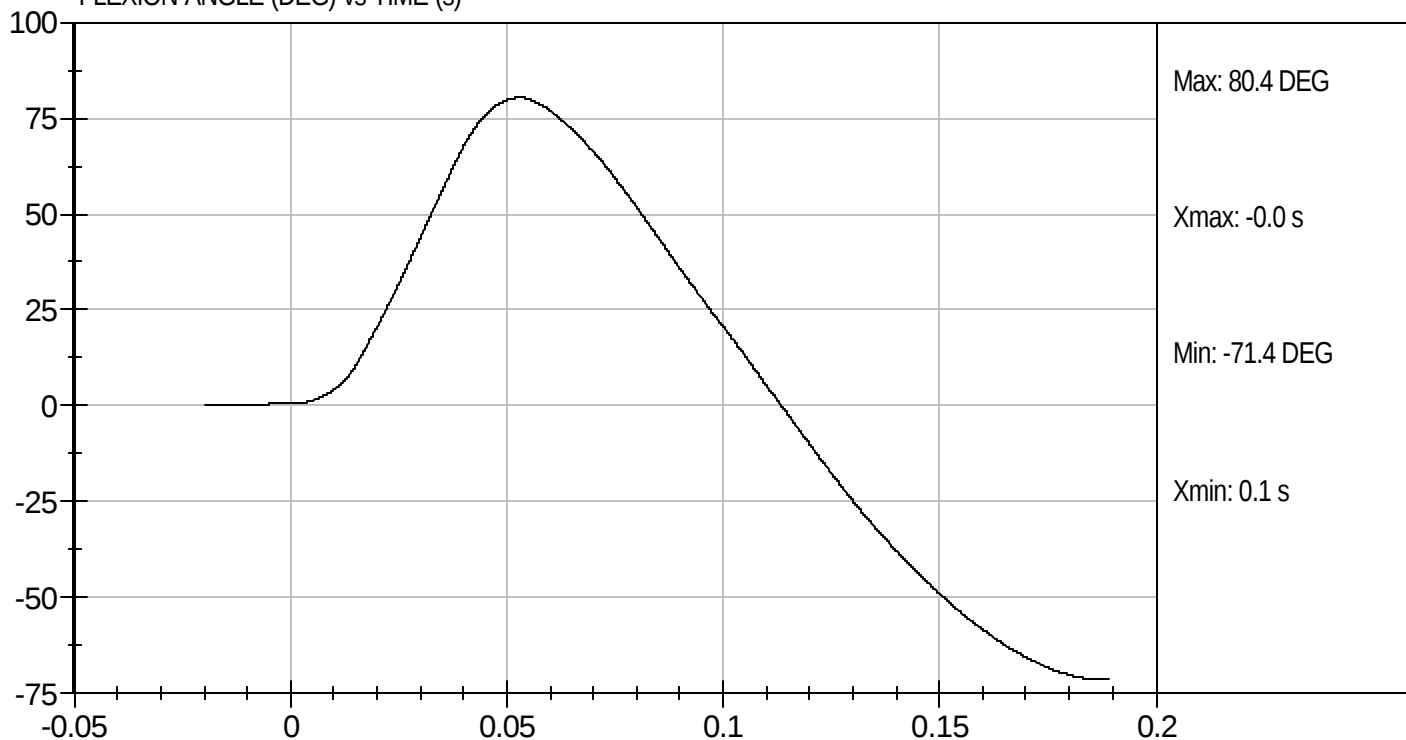
Test Desc: Neck Flexion
Component ID: D073552

Test Date: 12/12/07
Velocity: 17.00 ft/s, 5.2 m/s

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



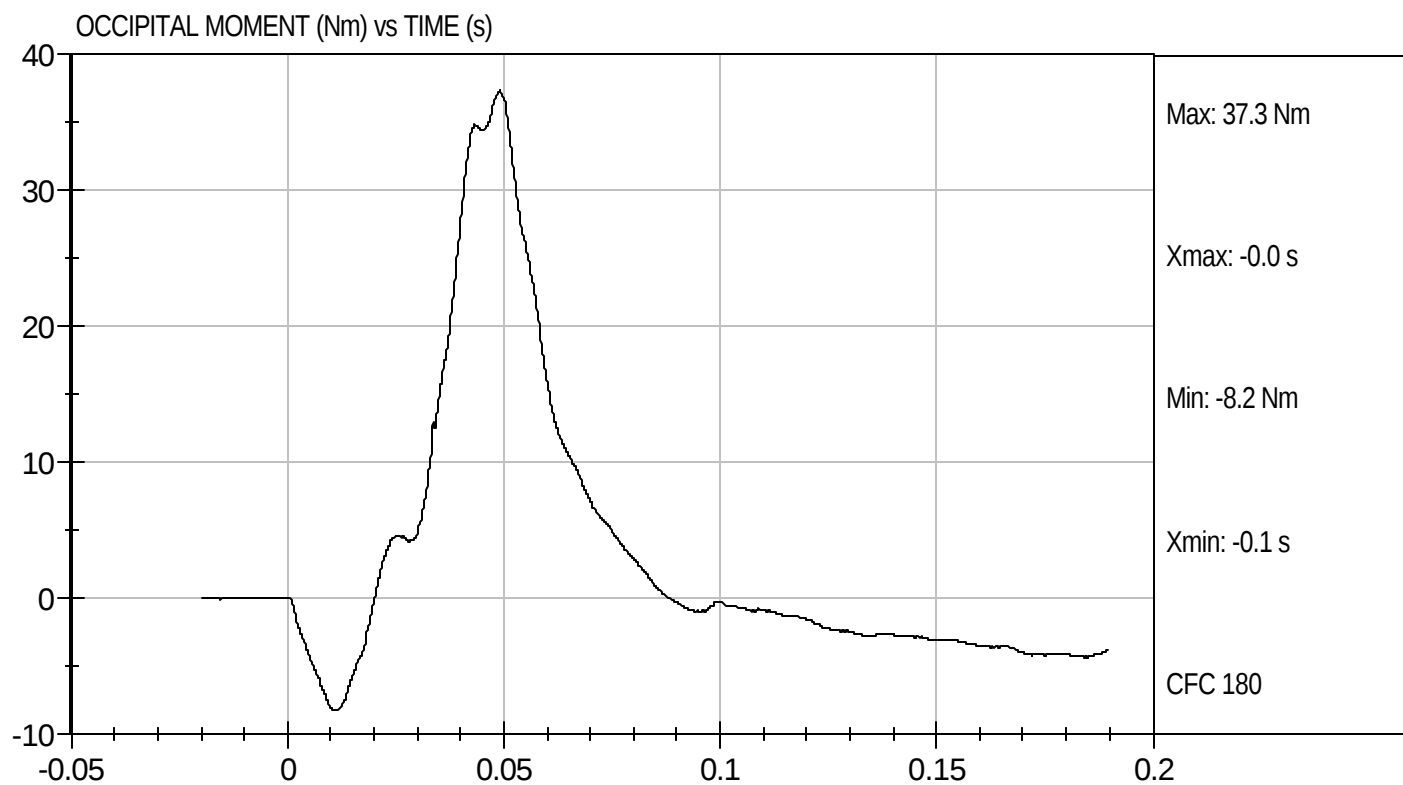
FLEXION ANGLE (DEG) vs TIME (s)





Test Desc: Neck Flexion
Component ID: D073552

Test Date: 12/12/07
Velocity: 17.00 ft/s, 5.2 m/s



MGA RESEARCH CORPORATION
NECK EXTENSION TEST
CRABI 12 MONTH

ATD Serial No: 090

Test I.D.: D073553

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	21.2	Pass
Humidity		%	10 to 70	25	Pass
Pendulum Speed		m/s	2.4 to 2.6	2.6	Pass
Pendulum Deceleration	6 msec	m/s	0.8 to 1.2	0.9	Pass
	10 msec	m/s	1.5 to 2.1	1.9	Pass
	14 msec	m/s	2.2 to 2.9	2.6	Pass
D Plane Rotation		deg	80.0 to 92.0	81.7	Pass
Moment About Occipital Condyle		Nm	-23.0 to -12.0	-13.2	Pass
Negative Moment - Time Curve Decay to -5 Nm		msec	76 to 90	86	Pass
Overall Test Results					Pass


 Laboratory Technician

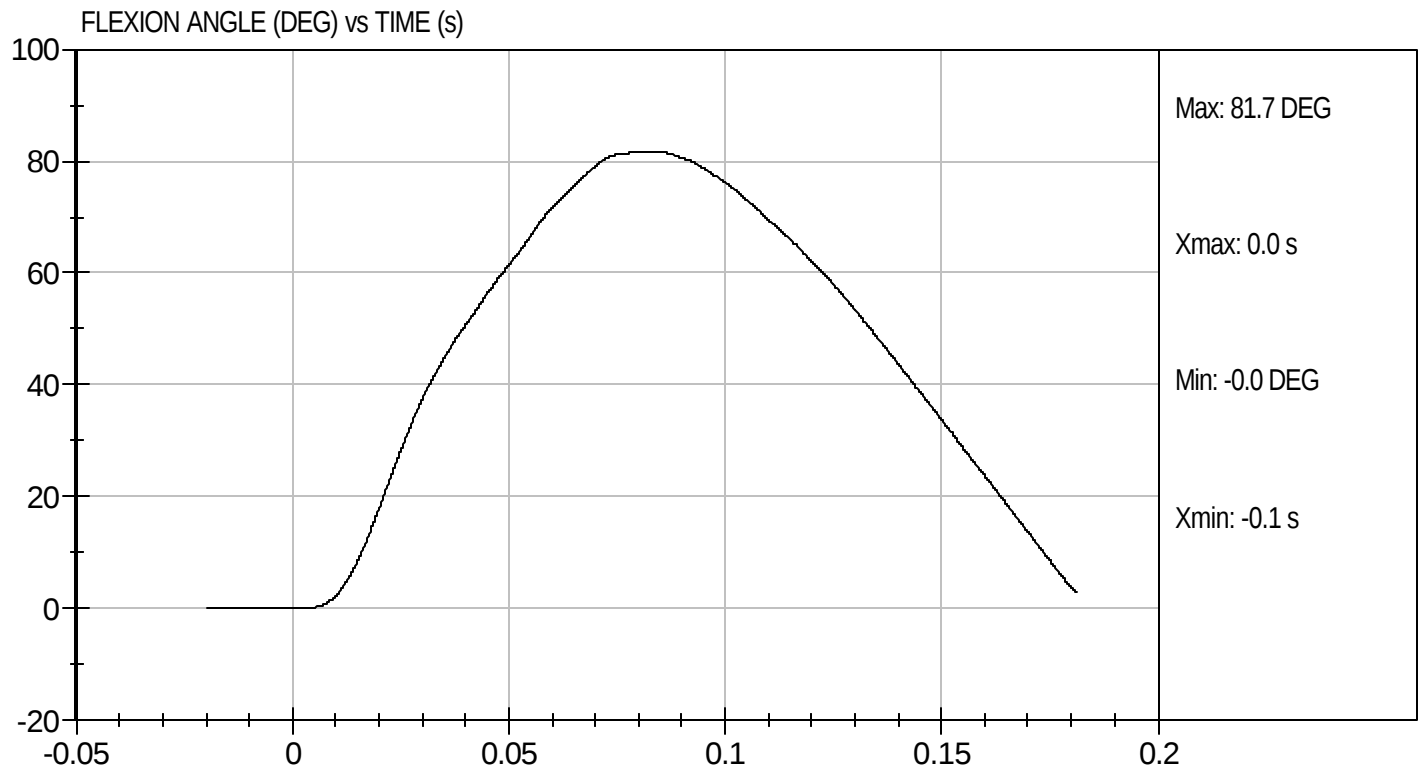
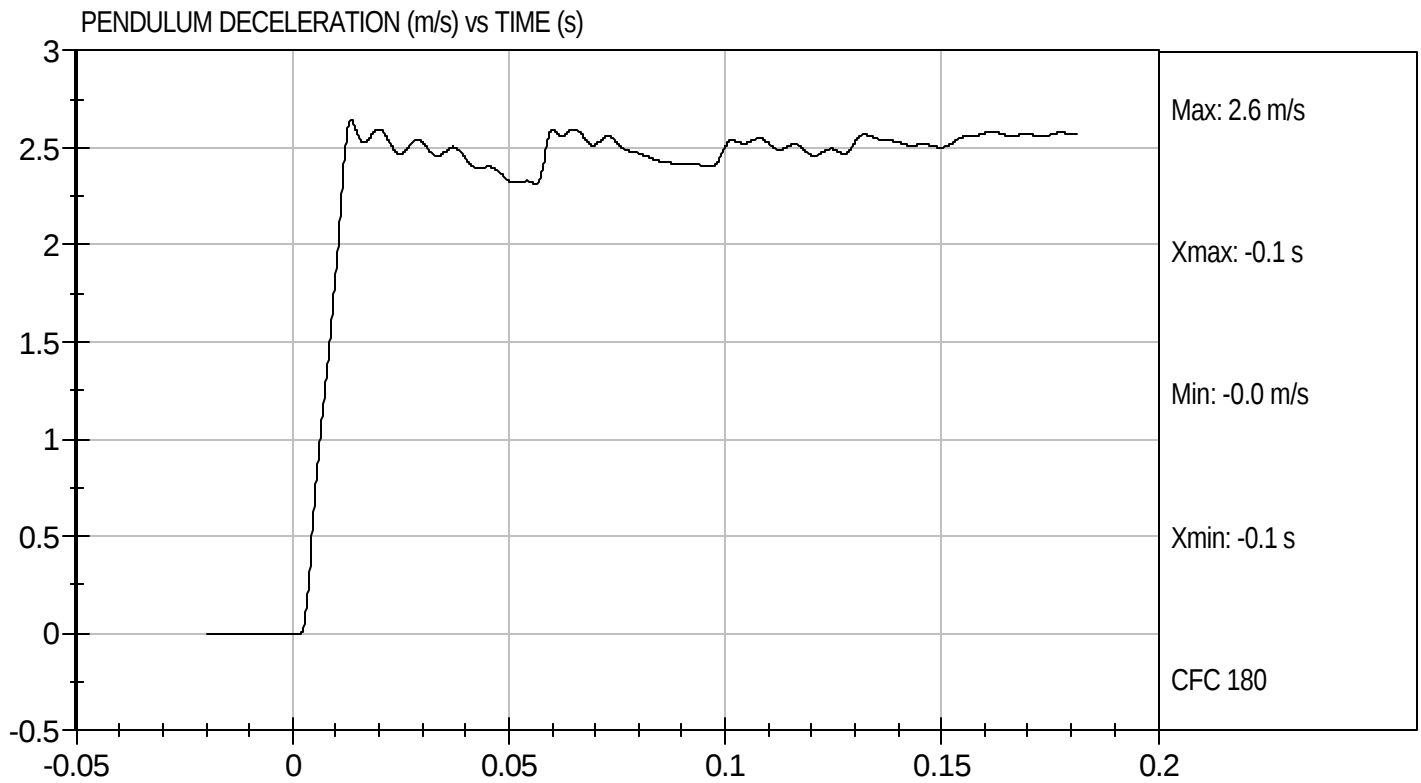
12/12/07
 Test Date


 Approved By



Test Desc: Neck Extension
Component ID: D073553

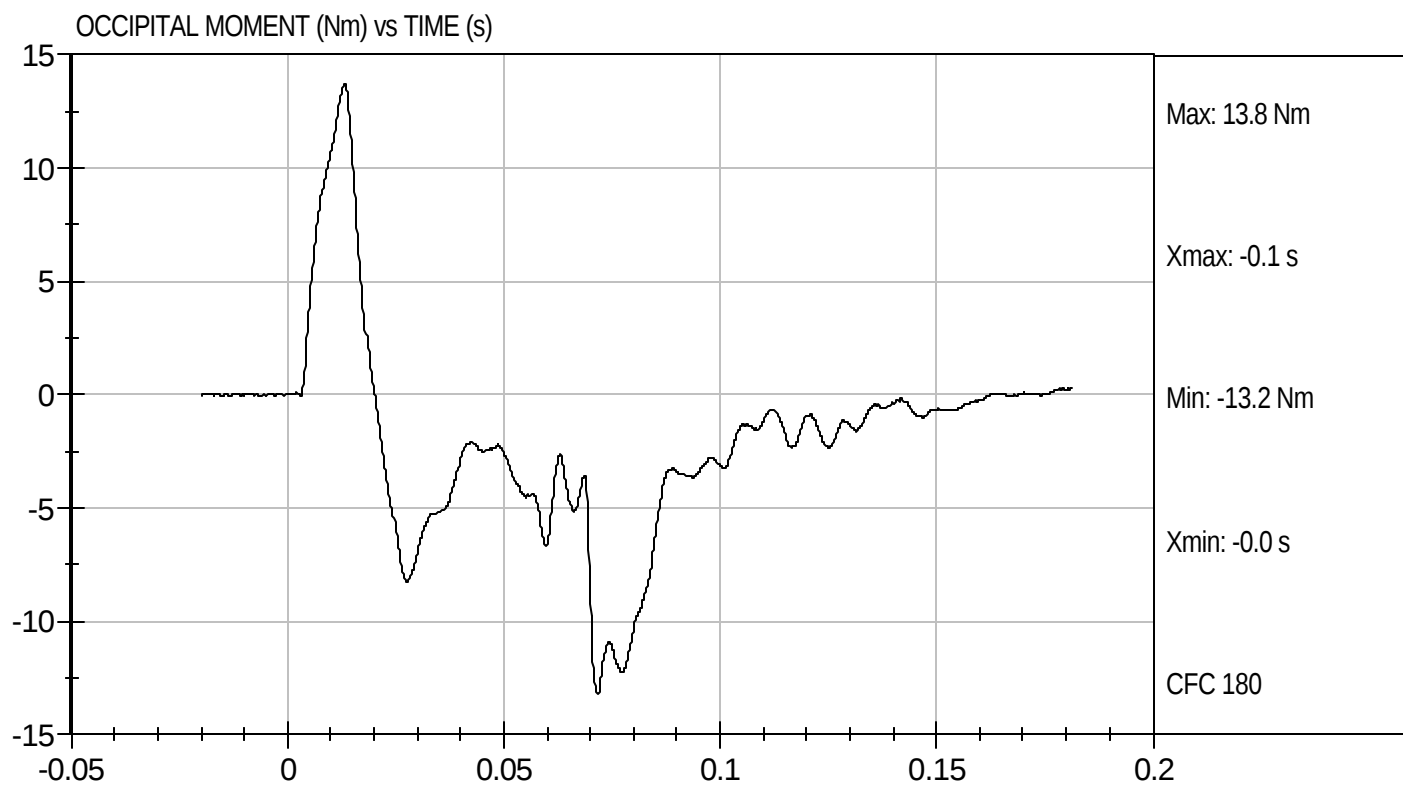
Test Date: 12/12/07
Velocity: 8.41 ft/s, 2.6 m/s





Test Desc: Neck Extension
Component ID: D073553

Test Date: 12/12/07
Velocity: 8.41 ft/s, 2.6 m/s



MGA RESEARCH CORPORATION

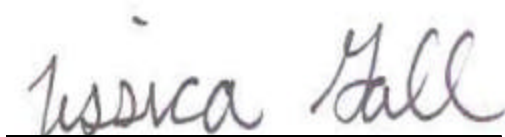
THORAX IMPACT TEST

CRABI 12 MONTH

ATD Serial No: 090

Test I.D: D073554

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	25	Pass
Probe Speed	m/sec	4.9 to 5.1	5.08	Pass
Probe Force	kN	1.51 to 1.80	1.59	Pass
Overall Test Results				Pass


Laboratory Technician


Approved By

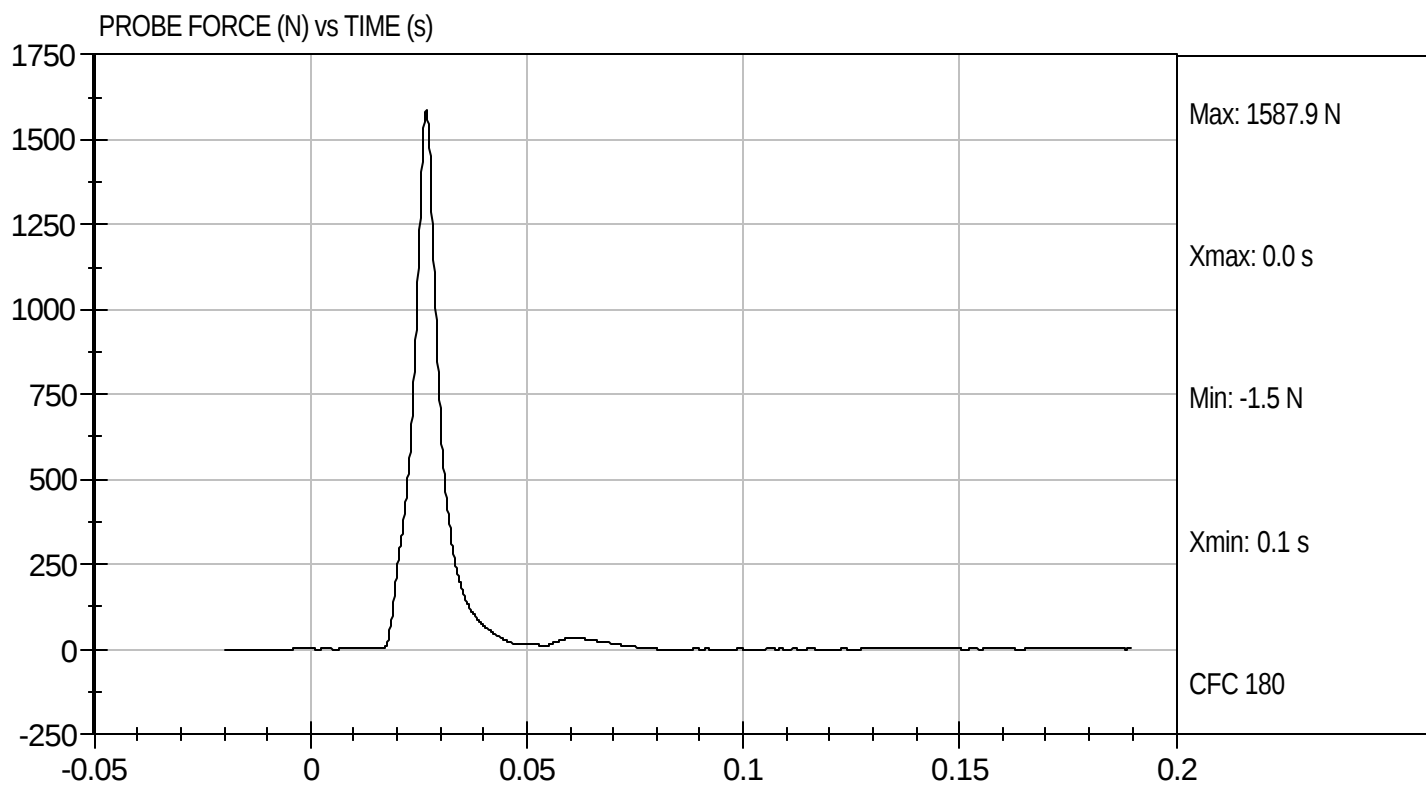
12/12/07

Test Date



Test Desc: Thorax Impact
Component ID: D073554

Test Date: 12/12/07
Velocity: 16.67 ft/s, 5.08 m/s

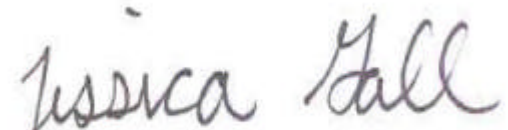


MGA RESEARCH CORPORATION
REAR HEAD DROP TEST
CRABI 12 MONTH

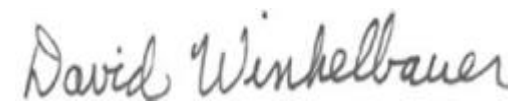
ATD Serial No: 090

Test ID: D073555

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	26	Pass
Peak Resultant Acceleration	G's	55 to 71	66	Pass
Peak Lateral Acceleration	G's	+/- 15	-4	Pass
Unimodal	N/A	within 17% of peak	Yes	Pass
Overall Test Results				Pass


 Laboratory Technician

12/12/07
 Test Date


 Approved By



Test Desc: Head Drop
Component ID: D073555

Test Date: 12/12/07
Velocity: 0 ft/s, 0 m/s

