

REPORT NUMBER: SPNCAP-MGA-2011-081

**NEW CAR ASSESSMENT PROGRAM (NCAP)
Side Impact Pole Test**

**GENERAL MOTORS LLC
2011 Chevrolet Volt 5-Dr Hatchback
NHTSA No.: MB0125**

**MGA RESEARCH CORPORATION
5000 Warren Road
Burlington, WI 53105**



Test Date: May 12, 2011

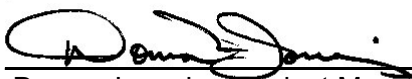
Final Report Date: June 7, 2011

FINAL REPORT

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

This final test report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, in response to Contract Number DTNH22-09-D-00124.

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Approved by: 
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Approval Date: June 7, 2011

FINAL REPORT ACCEPTANCE BY OCWS:

Division Chief, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: _____

COTR, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: _____

Technical Report Documentation Page

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15. Supplementary Notes																						
16. Abstract A 32.2 km/h (20 mph), 75° oblique impact NCAP Side Pole Test was conducted on the subject 2011 Chevrolet Volt 5-Dr Hatchback in accordance with the specifications of the Office of Crashworthiness Standards NCAP Side Pole Laboratory Test Procedure for the generation of consumer information on vehicle side pole crash protection. The test was conducted at MGA Research Corporation, in Burlington, Wisconsin, on May 12, 2011. The impact velocity was 32.4 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 21°C. The test vehicle post-test maximum crush was 305 mm at level 4. The test vehicle's performance was as follows: <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2" style="text-align: left;">Measurement Description</th> <th colspan="3">Driver ATD (SID-IIs)</th> </tr> <tr> <th>Units</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td style="text-align: left;">Head Injury Criteria (HIC₃₆)</td> <td>N/A</td> <td>1000</td> <td>188</td> </tr> <tr> <td style="text-align: left;">Resultant Lower Spine Acceleration</td> <td>Gs</td> <td>82</td> <td>39</td> </tr> <tr> <td style="text-align: left;">Combined Acetabular and Iliac Pelvic Force</td> <td>N</td> <td>5525</td> <td>2499</td> </tr> </tbody> </table> The two doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.				Measurement Description	Driver ATD (SID-IIs)			Units	Threshold	Result	Head Injury Criteria (HIC ₃₆)	N/A	1000	188	Resultant Lower Spine Acceleration	Gs	82	39	Combined Acetabular and Iliac Pelvic Force	N	5525	2499
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17. Key Words New Car Assessment Program (NCAP) Side Impact Pole Part 572V SID-IIs		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Adm. Technical Reference Division 1200 New Jersey Ave, SE Washington, D.C. 20590																				
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SECTION 1
TEST PURPOSE AND PROCEDURE

This side impact test is part of the MY 2011 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-09-D-00124. The purpose of this test is to generate comparative side impact performance in a 2011 Chevrolet Volt 5-Dr Hatchback. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Side NCAP Pole Laboratory Test Procedure, dated January 2010.

SECTION 2

SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a 2011 Chevrolet Volt 5-Dr Hatchback. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.4 km/h. The test was conducted by MGA Research Corporation in Burlington, Wisconsin, on May 12, 2011. Pre-test and post-test photographs of the test vehicle and side impact dummy (SID-IIs) are included in Appendix A of this report.

One Part 572V (SID-IIs) dummy was placed in the driver designated seating position according to instructions specified in the OCWS NCAP Side Pole Laboratory Test Procedure dated January 2010. Camera locations and other pertinent camera information are included in this report.

The Part 572V (SID-IIs) dummy was instrumented accordingly:

Head CG Triaxial Accelerometers
 Thorax Upper, Middle, and Lower Rib Displacement Potentiometers
 Abdomen Upper and Lower Rib Displacement Potentiometers
 Lower Spine Triaxial Accelerometers
 Iliac Load Cell
 Acetabulum Load Cell

Appendix B contains the vehicle and dummy response data. Dummy configuration and performance verification data can be found in Appendix C of this report.

The following table summarizes the results of the test:

DUMMY INJURY VALUES

Dummy	HIC (36ms)	Resultant Lower Spine Acceleration	Pelvic Force (N)	
SID-IIs 5 th Percentile Female	188	39	Iliac Wing	785
			Acetabular	1809
			Sum	2499

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Left Front (Driver) P1		Left Rear (Passenger) P4	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No	No	
Knee Airbag	Yes	No	No	
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso/Pelvis Airbag	Yes	Yes	No	
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes		No	

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

GENERAL COMMENTS

There was no valid data collected for:

- Rotation About Z Axis after 15 msec.
- Left Lower A-Post Y after 10 msec.
- Left Mid A-Post Y after 22 msec.
- Left Mid B-Post Y after 10 msec.
- Driver Seat Track Y after 30 msec.

MGA does not endorse or certify products. The manufacturer's name appears solely for identification purposes.

SECTION 3
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Chevrolet Volt 5-Dr Hatchback
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB0125
 Test Date: 5/12/2011

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	MB0125	Anti-Lock Brakes	Yes
Model Year	2011	All Wheel Drive	No
Make	Chevrolet	Power Steering	Yes
Model	Volt	Driver Front Airbag	Yes
Body Style	5-Dr Hatchback	Driver Curtain Airbag	Yes
VIN	1G1RD6E44BU102786	Driver Head/Torso Airbag	No
Body Color	Cyber Gray Metallic	Driver Torso Airbag	No
Delivery Date	5/06/2011	Driver Torso/Pelvis Airbag	Yes
Odometer (mi)	31	Driver Pelvis Airbag	No
Odometer (km)	50	Driver Knee Airbag	Yes
Dealer	West Herr Chevrolet of Hamburg	Rear Pass. Front Airbag	No
Transmission	Automatic	Rear Pass. Curtain Airbag	Yes
Final Drive	Front	Rear Pass. Head/Torso Airbag	No
Type/No. Cylinders	4	Rear Pass. Torso Airbag	No
Engine Displacement (L)	1.4	Rear Pass. Torso/Pelvis Airbag	No
Engine Placement	Lateral	Rear Pass. Pelvis Airbag	No
Roof Rack	No	Rear Pass. Knee Airbag	No
Sunroof/T-Top	No	Pretensioners	Yes
Tinted Glass	No	Load Limiters	Yes
Traction Control	Yes	Automatic Door Locks	Yes
Power Brakes	Yes	Bucket Seats	Yes
Front Disc	Yes	Tilt Steering	Yes
Rear Disc	Yes	Power Seats	No
Does owner's manual provide instruction to turn off automatic door locks?			No

DATA FROM CERTIFICATION LABEL

Manufactured By	General Motors LLC	GVWR (kg)	2067
Date of Manufacture	03/11	GAWR Front (kg)	1142
		GAWR Rear (kg)	925

VEHICLE SEATING AND WEIGHT CAPACITY DATA

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	2	2		4	
Capacity Weight (VCW) (kg)				340	(A)
DSC x 68.04 kg				272	(B)
Cargo Weight (RCLW) (kg)				68	(A-B)

VEHICLE SEAT TYPE

Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
Front Seat	X					w/Lever	
Rear or Second Row			X		X		
Third Row Seat							

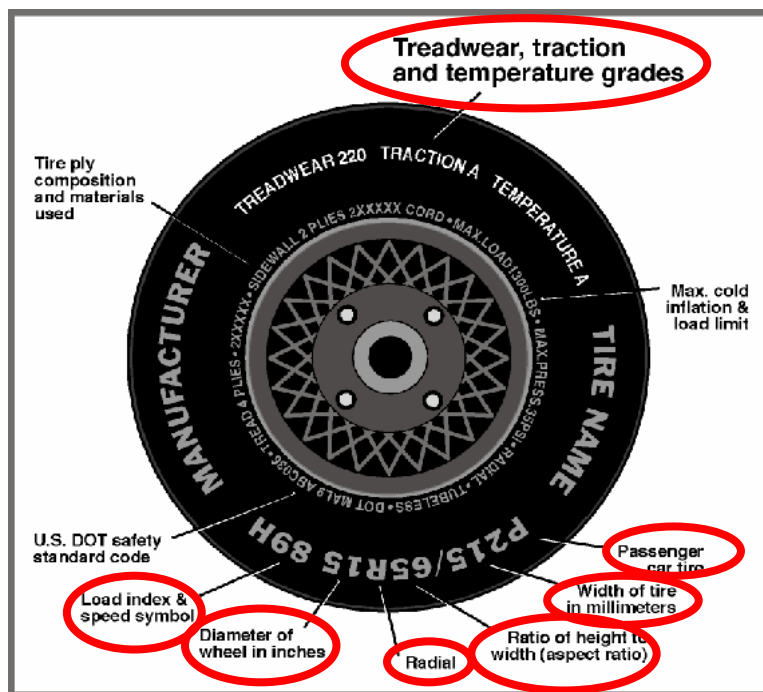
DATA SHEET NO. 1 (continued)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Chevrolet Volt 5-Dr Hatchback
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB0125
 Test Date: 5/12/2011

VEHICLE TIRE INFORMATION



Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	240	240
Recommended Tire Size	P215/55R17	P215/55R17
Tire Size on Vehicle	P215/55R17	P215/55R17
Tire Manufacturer	Goodyear	Goodyear
Tire Model	Assurance	Assurance
Treadwear	580	580
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	2	2
Tire Plies Body	4	4
Load Index & Speed Symbol	93H	93H
Tire Material	Rubber	Rubber
DOT Safety Code Right	4BPJ KAIR 0811	4BPJ KAIR 0811
DOT Safety Code Left	4BPJ KAIR 0811	4BPJ KAIR 0811

DATA SHEET NO. 1 (continued)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Chevrolet Volt 5-Dr Hatchback
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB0125
 Test Date: 5/12/2011

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	530.3	342.5		560.2	362.0		548.9	397.8	
Right	kg	507.1	333.8		544.8	359.6		509.8	377.4	
Ratio	%	60.5	39.5		60.5	39.5		57.7	42.3	
Totals	kg	1037.4	676.3	1713.7	1105.0	721.6	1826.6	1058.7	775.2	1833.9

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1713.7	(A)
Actual Weight of 1 P572V ATD (SID-IIs) ATD Used	kg	52.2	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	68	(C)
Calculated Target Vehicle Test Weight (TVTW)	kg	1833.9	(A+B+C)

TEST VEHICLE ATTITUDES AND CG

	Units	As Delivered	As Tested	Fully Loaded
Driver Door Sill Angle (front-to-rear)*	deg	0.0	0.0	0.2
Front Passenger Sill Angle (front-to-rear)*	deg	0.2	0.2	0.5
Front Bumper Angle (left-to-right)**	deg	0.0	0.0	-0.2
Rear Bumper Angle (left-to-right)**	deg	-0.2	-0.2	-0.2
Vehicle CG (Aft of Front Axle)	mm	1060	1061	1135
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	15	8	26

*Front up is positive ** Left up is positive

GENERAL VEHICLE TEST DATA

Measurement Description	Units	Value
Weight of Ballast in Cargo Area	kg	0.0
Weight of Vehicle Components Removed	kg	12.7

Vehicle components removed to meet target vehicle test weight: Right tail light, rear floor mats, trunk carpet, sun windshield cover, trunk plastics, cargo net, air pump.

TEST VEHICLE IMPACT POINT DATA

Measurement Parameter	Units	Value
Vertical Impact Reference Line (Aft of Front Axle)	mm	1119
Actual Impact Point (Aft of Front Axle)	mm	1123
Impact Point Difference (- forward / + rearward)	mm	4

DATA SHEET 1A
ELECTRIC VEHICLE PARAMETER DATA

Test Vehicle: 2011 Chevrolet Volt 5-Dr Hatchback
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB0125
 Test Date: 5/12/2011

Type of Electric Vehicle (Electric/Hybrid):	Electric
Propulsion Battery Type:	Lithium-Ion
Nominal Voltage (V):	370 V
Physical Location of Automatic Propulsion Battery Disconnect:	Accessed by removing lower console bin in storage area
Auxiliary Battery Type:	12 V AGM (Absorbent Glass Mat)

PROPULSION BATTERY SYSTEM DATA (COTR SUPPLIED DATA)

Electrolyte Fluid Type:	1 molar concentration of a lithium salt, lithium hexafluorophosphate (LiPF ₆) dissolved in a mixture of various organic carbonates that includes ethylene carbonate as the base solvent.	
Electrolyte Fluid Specific Gravity:	1.15 g/ml estimated	
Electrolyte Kinematic Viscosity (centistokes):	Liquid, no specific physical data available	
Electrolyte Fluid Color:	Clear, pale yellow	
Propulsion Battery Coolant Type, Color, Specific Gravity (if applicable):	DEX-COOL	
Location of Battery Modules:		Inside Passenger Compartment
	X	Outside Passenger Compartment

MEASURE AND RECORD BATTERY STATE OF CHARGE

X	Maximum State of Charge recommended by manufacturer:	390 V
	Test Voltage (>95% of Maximum State of Charge):	
	Test Voltage (Within Normal Operating Voltage Range):	

VEHICLE CHASSIS GROUND POINT(S) LOCATION(S)

Details of Vehicle Chassis Ground Point(s) & Locations(s)	Use either the 12V negative battery cable attachment to the body or the propulsion battery tray ground strap to body attachment on the underside of the vehicle
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PROPULSION BATTERY SYSTEM

Details of Propulsion Battery Components	Service Disconnect
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DATA SHEET NO. 2

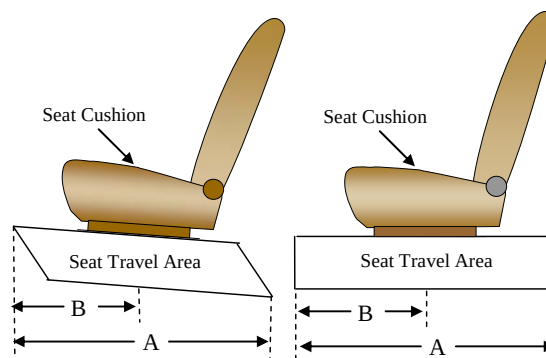
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

Test Vehicle: 2011 Chevrolet Volt 5-Dr Hatchback
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB0125
 Test Date: 5/12/2011

SEAT FORE/AFT POSITIONS

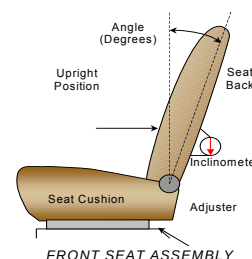
The driver seat was a manual fore/aft adjustable seat with manual height/angle adjustment. The seat travel was set as specified in Appendix B of the TP dated January 2010. The right front passenger seat was set to match the driver seat. The rear passenger seats were fixed.



SEAT FORE/AFT POSITIONING	Total Fore/Aft Travel	Placed in Detent # or Position
Driver Seat	54 detents (1 st as 0)	0 (forward-most as 0)
Front Passenger Seat	54 detents (1 st as 0)	0 (forward-most as 0)
Rear Seat – Struck Side		Fixed
Rear Seat – Non-Struck Side		Fixed

SEAT BACK ANGLE POSITION

The seat back was set as specified in Appendix B of the TP dated January 2010. The seat back angle measurement was made relative to the rocker sill on the headrest post.



SEAT BACK ANGLE	Degrees	Detents
Driver Seat Back Angle with Seated Dummy	-18.3	
Front Passenger Seat Back Angle	-18.2	
Struck Side Rear Seat Back Angle		Fixed
Non-Struck Side Rear Passenger Seat Back Angle		Fixed

SEAT BELT UPPER ANCHORAGE

The driver seat belt upper anchorage was set at the manufacturer's specified placement in Form 1.

SEAT BELT UPPER ANCHORAGES	Total # of Positions	Placed in Position #
Driver Seat	Fixed	Fixed

DATA SHEET NO. 2 (CONTINUED)

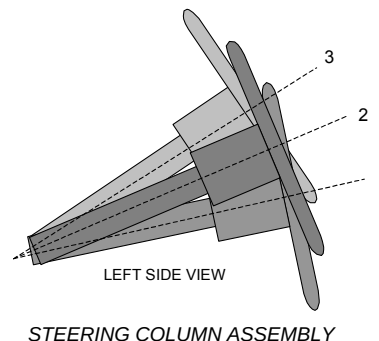
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

Test Vehicle: 2011 Chevrolet Volt 5-Dr Hatchback
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB0125
 Test Date: 5/12/2011

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.

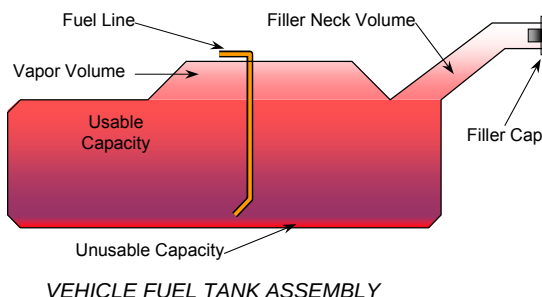


STEERING COLUMN POSITIONING

	Degrees	Fore/Aft Position (mm)
Lowermost - Position 1	71.1	195
Geometric Center – Position 2	68.9	168
Uppermost – Position 3	66.7	140
Telescoping Steering Wheel Travel		55
Test Position	68.9	168

FUEL PUMP

Describe the fuel pump type, its behavior, and the location of the fuel filler pipe. The vehicle is equipped with an electric fuel pump. Fuel pump will run when the gasoline generator is commanded to start. The fuel pipe is on the right side.



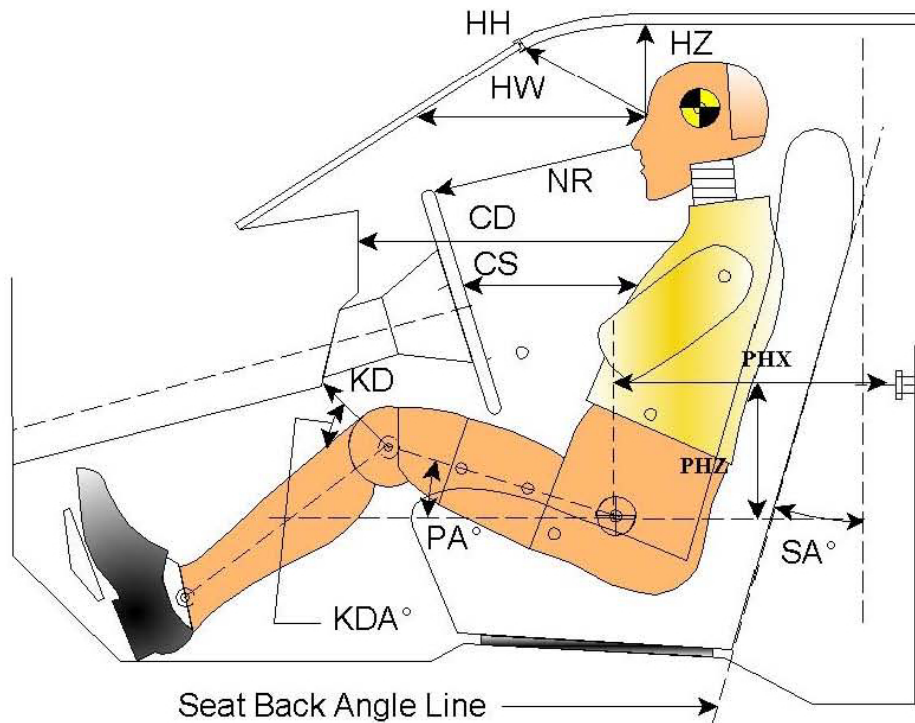
FUEL TANK CAPACITY DATA

	Liters
Usable Capacity of "Standard" Tank	35.2
Usable Capacity of "Optional" Tank	
Usable Capacity of Standard Tank as Specified in Owner's Manual	35.2
Usable Capacity of Optional Tank as Specified in Owner's Manual	
92-94% of Usable Capacity	32.4 to 33.1
Actual Amount of Solvent Used	32.6
1/3 of Usable Capacity	11.7

.DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Chevrolet Volt 5-Dr Hatchback
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB0125
 Test Date: 5/12/2011

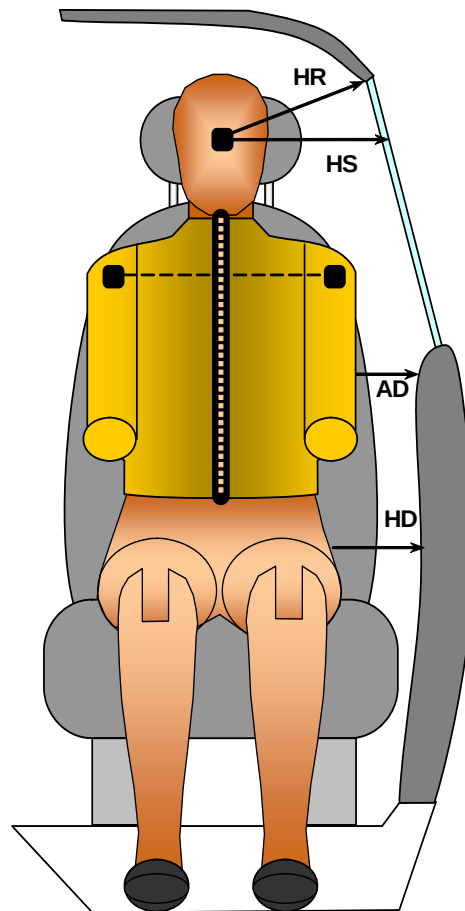


Code	Measurement Description	Driver S/N 296	
		Length (mm)	Angle (°)
HH	Head to Header	302	
HW	Head to Windshield	709	
HZ	Head to Roof	212	
NR	Nose to Rim	241	
CD	Chest to Dash	432	
CS	Chest to Steering Wheel	198	
KDL/KDAL	Left Knee to Dash	172	22.9
KDR/KDAR	Right Knee to Dash	169	24.1
PA	Pelvic Angle		20.2
PHX	H-Point to Striker (X-Axis)	275	
PHZ	H-Point to Striker (Z-Axis)	147	
SA	Seat Back Angle		-18.3

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Chevrolet Volt 5-Dr Hatchback
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB0125
 Test Date: 5/12/2011



FRONT VIEW OF DUMMY

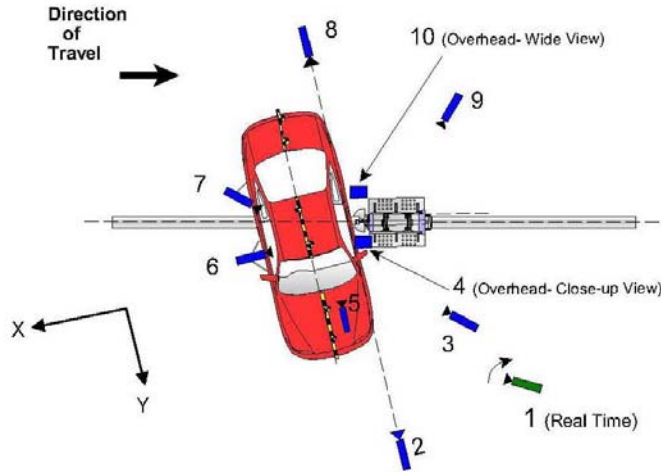
Code	Measurement Description	Driver S/N 296
		Length (mm)
HR	Head to Side Header	219
HS	Head to Side Window	350
AD	Arm to Door	169
HD	H-Point to Door	168

DATA SHEET NO. 5

CAMERA LOCATIONS AND DATA

Test Vehicle: 2011 Chevrolet Volt 5-Dr Hatchback
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB0125
 Test Date: 5/12/2011



Reference: (from Point of Impact for X and Y; from Ground for Z):
 +X = Forward of Impact, + Y = Right of Impact, +Z = Down

Camera No.	View	Coordinates (mm)			Lens (mm)	Film Speed (fps)
		X*	Y*	Z*		
1	Real-Time Pan View					30
2	Front Ground Level	30	5290	-1700	24	1000
3	Impact Side 45° Forward	-2180	3810	-1810	20	1000
4	Overhead Closeup	50	0	-4520	50	1000
5	Onboard – Driver Front				16	1000
6	Onboard – Driver Side				8	1000
7	Onboard – Driver Rear				8	1000
8	Rear Ground Level	30	-5550	-1720	24	1000
9	Impact Side 45° Rearward	-3780	-3100	-1790	20	1000
10	Overhead Wide View	260	0	-4610	14	1000
11	Real-Time Dummy Front View					30

* All measurements accurate to ± 6 mm

Note: Vehicle was at a 15° angle to the rigid pole.

INSTRUMENTATION

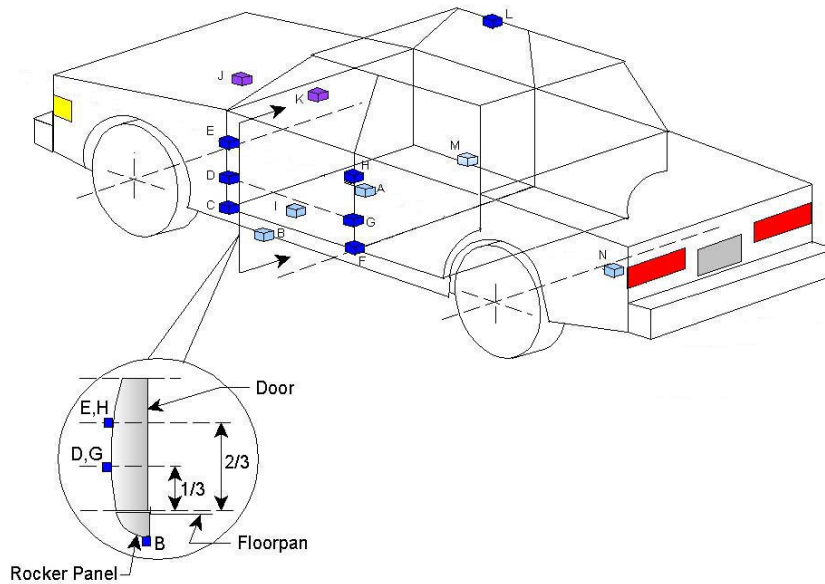
	Number of Channels
Driver Dummy	16
Vehicle Structure	21
Pole Load Cells – Not used	8
Contact Switches - Not used	3
Airbag Timing – Not used	2
Total No. of Data Channels	50

DATA SHEET NO. 6

VEHICLE ACCELEROMETER DATA

Test Vehicle: 2011 Chevrolet Volt 5-Dr Hatchback
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB0125
 Test Date: 5/12/2011



	Accelerometer Location			
	ID	Coordinates (mm)		
		X	Y	Z
A	Vehicle CG	2337	400	165
	Vehicle CG Sensor	2532	400	165
B	Left Floor Sill	2588	-725	175
C	A Pillar Sill	3016	-725	170
D	A Pillar Low	2845	-700	495
E	A Pillar Mid	2976	-800	755
F	B Pillar Sill	1928	-725	175
G	B Pillar Low	1895	-727	500
H	B Pillar Mid	1895	-738	735
I	Driver Seat	2033	-530	270
L	Engine Top	3720	70	780
J	Firewall	3452	0	885
K	Right Roof	2048	555	1425
M	Right Floor Sill	2048	725	185
N	Rear Floorpan	296	0	370

Reference: From Point of Impact for X and Y; from Ground for Z):
 +X = Forward of Vehicle, + Y = Right of Vehicle, +Z = Down

DATA SHEET NO. 7
RIGID POLE LOAD CELL DATA

Test Vehicle: 2011 Chevrolet Volt 5-Dr Hatchback
Test Program: NCAP Side Pole Impact Test

NHTSA No. MB0125
Test Date: 5/12/2011



254 mm Diameter Rigid Pole

The pole was not instrumented.

Load Cell Locations	
ID	Height From Ground (m)
1	
2	
3	
4	
5	
6	
7	
8	

DATA SHEET NO. 8**POST-TEST OBSERVATIONS**Test Vehicle: 2011 Chevrolet Volt 5-Dr HatchbackNHTSA No. MB0125Test Program: NCAP Side Pole Impact TestTest Date: 5/12/2011**TEST DUMMY INFORMATION AND CONTACT**

Description	Driver
Dummy Type / Serial No.	SID-IIs / 296
Head Contact	Curtain Airbag, Headrest
Upper Torso Contact	Side Airbag
Lower Torso Contact	Side Airbag
Left Knee Contact	Door Panel
Right Knee Contact	Left Knee

POST TEST DOOR OPENING AND SEAT TRACK INFORMATION

Description	Front	Rear
Left Side Doors	Remained closed and jammed shut	Remained closed and jammed shut
Right Side Doors	Remained closed and operational	Remained closed and operational
Hatch and Other Doors	Remained closed and operational	Remained closed and operational
Seat Movement	0	0
Seat Back Failure	None	None

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No Separation
Sill Separation	None
Windshield Damage	Cracked
Window Damage	Left Front Window Broke
Other Notable Effects	None

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Left Front (Driver) P1		Left Rear (Passenger) P4	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No	No	
Knee Airbag	Yes	No	No	
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso/Pelvis Airbag	Yes	Yes	No	
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes		No	

VEHICLE SPEED AND IMPACT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset from Vertical Impact Reference Line	mm	+/- 38	4
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	32.4
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.5

DATA SHEET NO. 9

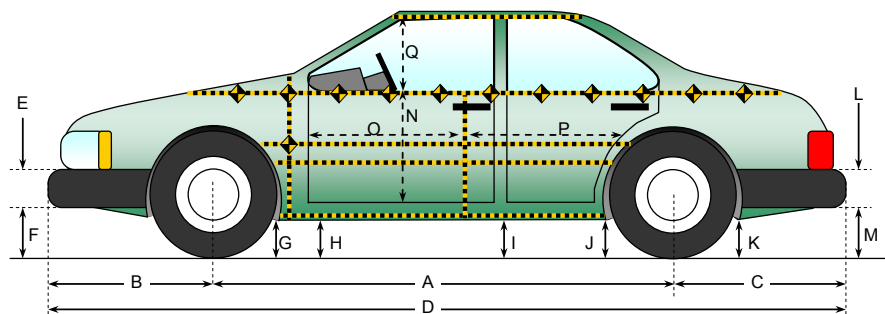
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2011 Chevrolet Volt 5-Dr Hatchback

NHTSA No. MB0125

Test Program: NCAP Side Pole Impact Test

Test Date: 5/12/2011



All measurements in (mm) with tolerance of ± 3 mm

LEFT SIDE VIEW

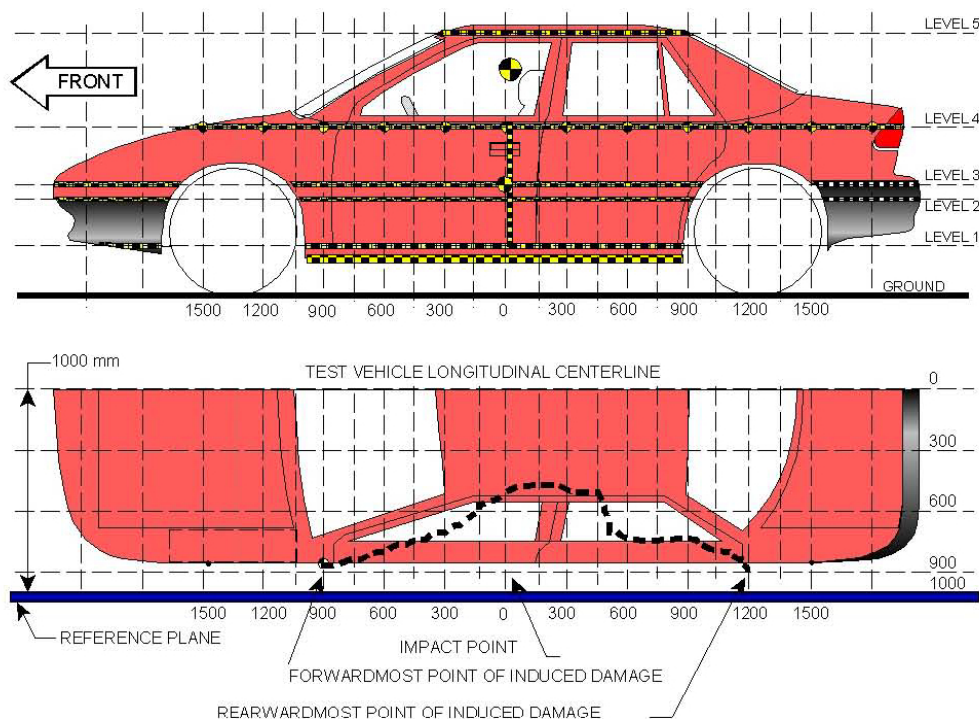
VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2685	2620	65
B	Front Axle to FSOV	1005	970	35
C	Rear Axle to RSOV	810	810	0
D1	Total Vehicle Length at Left Side	3165	3076	89
D2	Total Vehicle Length at Centerline	4500	4400	100
D3	Total Vehicle Length at Right Side	3165	3171	-6
E	Front Bumper Thickness	150	150	0
F	Front Bumper Bottom to Ground	211	235	-24
G	Sill Height at Front Wheel Well	156	150	6
H	Sill Height at Front Door Leading Edge	163	178	-15
I	Sill Height at B Pillar	162	193	-31
J1	Sill Height at Rear Wheel Well	177	183	-6
J2	Pinch Weld Height at Rear Wheel Well	170	184	-14
K	Sill Height Aft of Rear Wheel Well	208	209	-1
L	Rear Bumper Thickness	90	90	0
M	Rear Bumper Bottom to Ground	232	231	1
N	Sill Height to Window Bottom Sill	750	748	2
O	Front Door Leading Edge to Impact CL	700	700	0
P	Rear Door Trailing Edge to Impact CL	1198	1255	-57
Q	Front Window Opening	410	365	45
R	Right Side Length	3165	3171	-6
S	Left Side Length	3165	3076	89
T	Vehicle Width at B Post	1785	1730	55

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Chevrolet Volt 5-Dr Hatchback
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB0125
 Test Date: 5/12/2011



NOTE: The measurements are taken along the vertical impact reference line.
 Vehicle measurements forward of the vertical impact reference line are negative.

Level	Measurement Description	Height Above Ground (mm)
1	Sill Top	220
2	Mid Door	525
3	Occupant H-Point	590
4	Window Sill	860
5	Window Top	1345

DATA SHEET NO. 10 (CONTINUED)
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Chevrolet Volt 5-Dr Hatchback
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB0125
 Test Date: 5/12/2011

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-1500				281					259					-22	
-1350				256					245					-11	
-1200				243					239					-4	
-1050				244					237					-7	
-900				245					242					-3	
-750	236	214	213	241		239	213	218	238		3	-1	5	-3	
-675	236	216	221	239		251	222	225	236		15	6	4	-3	
-600	235	222	225	237		270	247	251	270		35	25	26	33	
-525	234	224	225	236		292	274	276	296		58	50	51	60	
-450	233	223	224	235		321	316	311	328		88	93	87	93	
-375	233	221	222	234	486	344	350	348	362	538	111	129	126	128	52
-300	233	220	221	233	485	382	397	398	407	552	149	177	177	174	67
-225	234	219	220	232	485	418	435	438	453	563	184	216	218	221	78
-150	234	218	218	233	488	457	475	482	495	580	223	257	264	262	92
-75	234	216	217	233	491	493	513	518	536	610	259	297	301	303	119
0	233	216	216	233	495	494	514	519	538	604	261	298	303	305	109
75	233	215	215	234	498	438	475	485	510	587	205	260	270	276	89
150	233	214	214	234	502	390	420	431	465	578	157	206	217	231	76
225	232	214	214	235	505	344	354	367	399	567	112	140	153	164	62
300	232	213	213	236	505	309	301	301	337	559	77	88	88	101	54
375	232	213	213	236	508	279	242	244	282	546	47	29	31	46	38
450	232	212	212	237	510	259	233	234	267	537	27	21	22	30	27
600	231	211	211	240	511	239	224	227	264	521	8	13	16	24	10
750	230	211	211	244	512	226	215	217	257	511	-4	4	6	13	-1
900	230	211	212	249	512	214	204	208	253	509	-16	-7	-4	4	-3
1050	230	211	212	254	516	207	192	196	247	513	-23	-19	-16	-7	-3
1200		211	206	260	523		196	191	241	519		-15	-15	-19	-4
1350				266					259					-7	
1500				273					267					-6	

NOTE: The measurements are taken along the vertical impact reference line.
 Vehicle measurements forward of the vertical impact reference line are negative.

DATA SHEET NO. 10 (CONTINUED)
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Chevrolet Volt 5-Dr Hatchback
Test Program: NCAP Side Pole Impact Test

NHTSA No. MB0125
Test Date: 5/12/2011

MAXIMUM CRUSH DATA

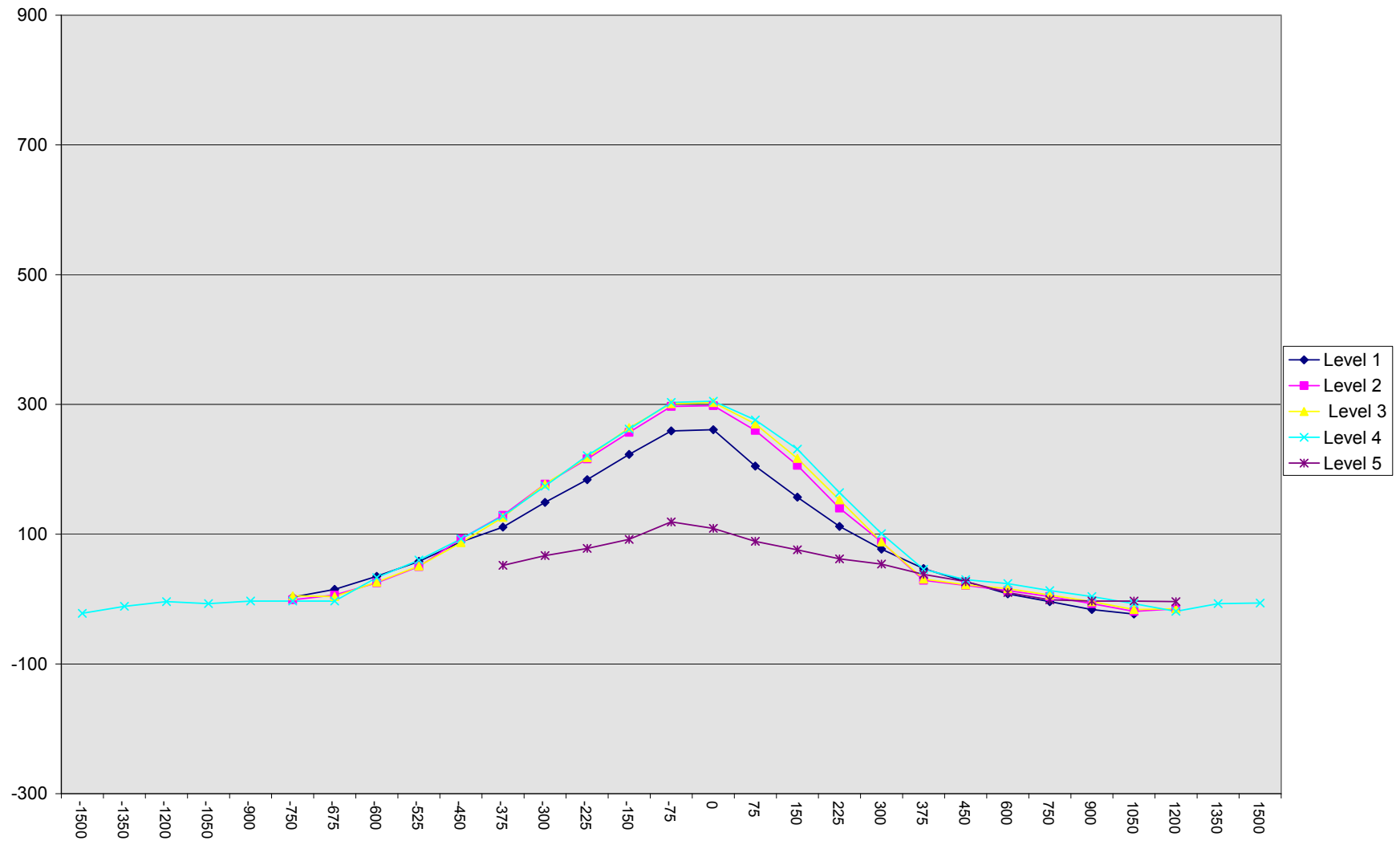
	Level 1	Level 2	Level 3	Level 4	Level 5
Maximum Crush (mm)	261	298	303	305	119
Distance From Impact (mm)	0	0	0	0	-75

Note: Pre-test measurements are taken when the vehicle is in the "As Tested" weight condition. Vehicle measurements forward of the vertical impact reference line are negative. The crush profile grid is established prior to test based on an estimated impact point. The final distance to impact is determined after the final dummy positioning and the pole is aligned with the center of gravity of the dummy's head.

DATA SHEET NO. 10 (CONTINUED)
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Chevrolet Volt 5-Dr Hatchback
Test Program: NCAP Side Pole Impact Test

NHTSA No. MB0125
Test Date: 5/12/2011



DATA SHEET NO. 11A

FMVSS 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2011 Chevrolet Volt 5-Dr Hatchback

NHTSA No. MB0125

Test Program: NCAP Side Pole Impact Test

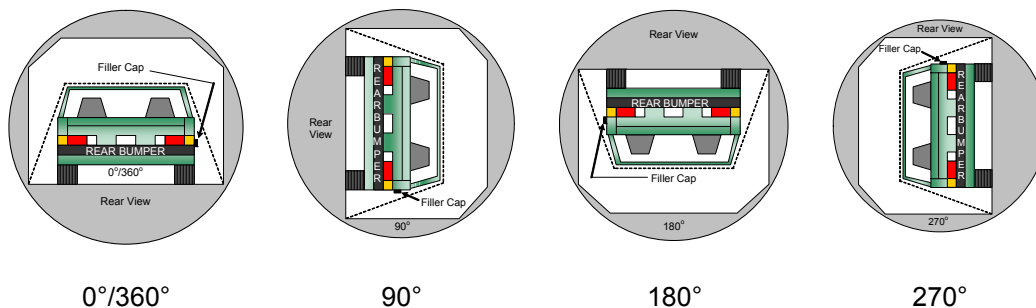
Test Date: 5/12/2011

Test Time: 11:32 am

Temperature: 21° C

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

FMVSS 301 STATIC ROLLOVER DATA



ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	119	300	419
90° to 180°	114	300	414
180° to 270°	109	300	409
270° to 360°	118	300	418

FMVSS 301 ROLLOVER SPILLAGE TABLE (units in ounces)

Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eight Minute
0° to 90°	0	0	0	0
90° to 180°	0	0	0	0
180° to 270°	0	0	0	0
270° to 360°	0	0	0	0

ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

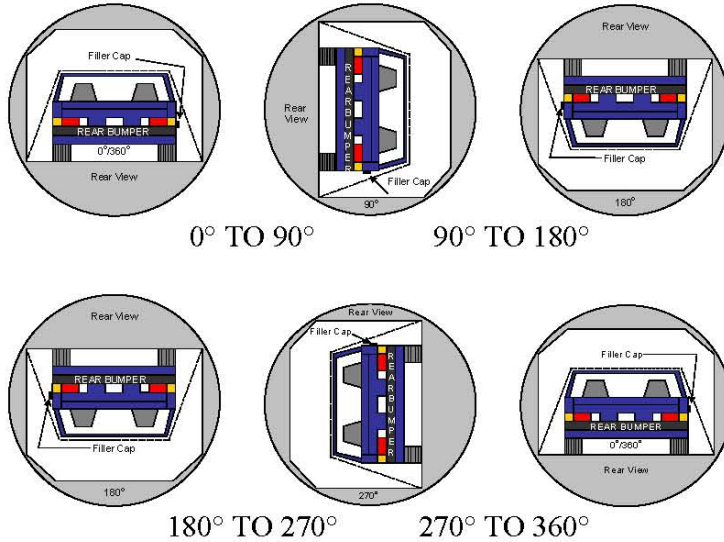
Test Phase	Spillage Location
0° to 90°	
90° to 180°	
180° to 270°	
270° to 360°	

DATA SHEET 11B

FMVSS 305 STATIC ROLLOVER RESULTS FOR ELECTRIC-POWERED VEHICLES

Test Vehicle: 2011 Chevrolet Volt 5-Dr Hatchback
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB0125
 Test Date: 5/12/2011



1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. Details of electrolyte spillage: **None**

ELECTROLYTE COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	119	300	419
90° to 180°	114	300	414
180° to 270°	109	300	409
270° to 360°	118	300	418

FMVSS 305 ELECTROLYTE SPILLAGE LOCATION TABLE (units in liters)

Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eight Minute
0° to 90°	0	0	0	0
90° to 180°	0	0	0	0
180° to 270°	0	0	0	0
270° to 360°	0	0	0	0

Total Spillage: 0 L

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

DATA SHEET 11B (CONTINUED)

FMVSS 305 STATIC ROLLOVER RESULTS FOR ELECTRIC-POWERED VEHICLES

Test Vehicle: 2011 Chevrolet Volt 5-Dr Hatchback

NHTSA No. MB0125

Test Program: NCAP Side Pole Impact Test

Test Date: 5/12/2011

VOLTMETER INFORMATION

Make:	Fluke
Model:	11
Serial Number:	68541895
Internal Impedance Value (MΩ):	>10 MΩ < 100 pF
Nominal Propulsion Battery Voltage (Vb) (V):	370

ELECTRICAL ISOLATION MEASUREMENT

V1 =	0.1	V	90°	Time:	2	Minutes	07	s
V1 =	0.1	V	180°	Time:	2	Minutes	03	s
V1 =	0.2	V	270°	Time:	1	Minutes	59	s
V1 =	0.2	V	360°	Time:	2	Minutes	08	s
V2 =	0.2	V	90°	Time:	2	Minutes	15	s
V2 =	0	V	180°	Time:	2	Minutes	15	s
V2 =	0.2	V	270°	Time:	2	Minutes	09	s
V2 =	0.2	V	360°	Time:	2	Minutes	18	s
V1' =	0	V	90°	Time:	2	Minutes	12	s
V1' =	0	V	180°	Time:	2	Minutes	10	s
V1' =	0	V	270°	Time:	2	Minutes	04	s
V1' =	0	V	360°	Time:	2	Minutes	13	s
V2' =	0	V	90°	Time:	2	Minutes	20	s
V2' =	0	V	180°	Time:	2	Minutes	18	s
V2' =	0	V	270°	Time:	2	Minutes	13	s
V2' =	0	V	360°	Time:	2	Minutes	22	s

DATA SHEET 11B (CONTINUED)

FMVSS 305 STATIC ROLLOVER RESULTS FOR ELECTRIC-POWERED VEHICLES

Test Vehicle: 2011 Chevrolet Volt 5-Dr Hatchback
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB0125
 Test Date: 5/12/2011

ELECTRICAL ISOLATION CALCULATION

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

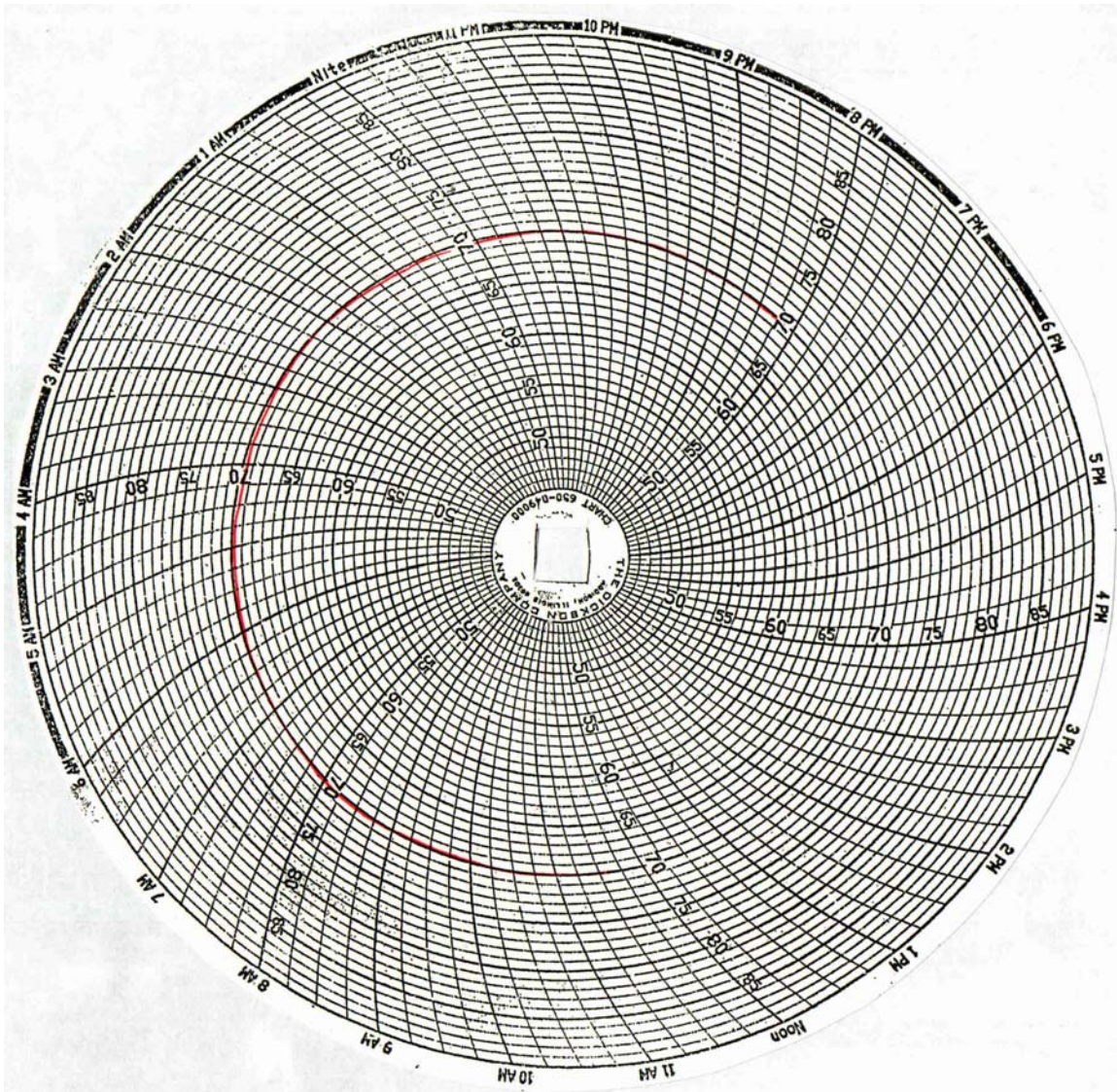
$R_{i1} = R_o (1 + V_2/V_1) [(V_1 - V_1')/V_1']$								
Ri1 =	Zero volts	Ω	90°	Time:	2	Minutes	15	s
Ri1 =	Zero volts	Ω	180°	Time:	2	Minutes	15	s
Ri1 =	Zero volts	Ω	270°	Time:	2	Minutes	09	s
Ri1 =	Zero volts	Ω	360°	Time:	2	Minutes	18	s
$R_{i2} = R_o (1 + V_1/V_2) [(V_2 - V_2')/V_2']$								
Ri2 =	Zero volts	Ω	90°	Time:	2	Minutes	20	s
Ri2 =	Zero volts	Ω	180°	Time:	2	Minutes	18	s
Ri2 =	Zero volts	Ω	270°	Time:	2	Minutes	13	s
Ri2 =	Zero volts	Ω	360°	Time:	2	Minutes	22	s
Ri = The lesser of Ri1 and Ri2								
Ri =	Zero volts	Ω	90°	Time:	2	Minutes	20	s
Ri =	Zero volts	Ω	180°	Time:	2	Minutes	18	s
Ri =	Zero volts	Ω	270°	Time:	2	Minutes	13	s
Ri =	Zero volts	Ω	360°	Time:	2	Minutes	22	s
Ri/Vb = Electrical Isolation Value/Nominal Battery Voltage Minimum Electrical Isolation Value is 500 Ω /V								
Ri/Vb =	Zero volts	Ω/V	90°	Time:	2	Minutes	20	s
Ri/Vb =	Zero volts	Ω/V	180°	Time:	2	Minutes	18	s
Ri/Vb =	Zero volts	Ω/V	270°	Time:	2	Minutes	13	s
Ri/Vb =	Zero volts	Ω/V	360°	Time:	2	Minutes	22	s

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

DATA SHEET NO. 12
DUMMY/VEHICLE TEMPERATURE STABILIZATION DATA

Test Vehicle: 2011 Chevrolet Volt 5-Dr Hatchback
Test Program: NCAP Side Pole Impact Test

NHTSA No. MB0125
Test Date: 5/12/2011



DATA SHEET 13

PRE-IMPACT ELECTRIC ISOLATION MEASUREMENTS AND CALCULATIONS

Test Vehicle: 2011 Chevrolet Volt 5-Dr Hatchback

NHTSA No. MB0125

Test Program: NCAP Side Pole Impact Test

Test Date: 5/12/2011

VOLTMETER INFORMATION

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

PROPULSION BATTERY VOLTAGE

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

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

Vb (V):	374.2
---------	-------

PROPULSION BATTERY TO VEHICLE CHASSIS

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

V1 (V):	177.8
V2 (V):	240.3

PROPULSION BATTERY TO VEHICLE CHASSIS ACROSS RESISTOR

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

Ro (Ω):	200 K Ω
------------------	----------------

DATA SHEET 13 (CONTINUED)

PRE-IMPACT ELECTRIC ISOLATION MEASUREMENTS AND CALCULATIONS

Test Vehicle: 2011 Chevrolet Volt 5-Dr Hatchback
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB0125
 Test Date: 5/12/2011

ELECTRICAL ISOLATION MEASUREMENT

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

V1' (V):	60.1 V
$R_{i1} = R_o (1 + V_2/V_1) [(V_1 - V_1')/V_1']$	
Ri1 (Ω):	921 K Ω
V2' (V):	56.1 V
$R_{i2} = R_o (1 + V_1/V_2) [(V_2 - V_2')/V_2']$	
Ri2 (Ω):	1143 K Ω
Ri = The lesser of Ri1 and Ri2	
Ri Pre-Test ((Ω):	921 K Ω
Ri/Vb (Ω/V):	2461.3 Ω/V (Electrical Isolation Value)
Minimum Electrical Isolation Value is 500 Ω/V	

Note: Measured 5 minutes 45 seconds before impact.

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

DATA SHEET 14

POST-IMPACT ELECTRIC ISOLATION MEASUREMENTS AND CALCULATIONS

Test Vehicle: 2011 Chevrolet Volt 5-Dr Hatchback
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB0125
 Test Date: 5/12/2011

VOLTMETER INFORMATION

Make:	Fluke
Model:	11
Serial Number:	68541895
Internal Impedance Value (MΩ):	> 10 MΩ < 100 pF
Nominal Propulsion Battery Voltage (Vb) (V):	370

PROPULSION BATTERY VOLTAGE

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

VB =	1.7	V	Impact Time:	0	Minutes	22	s
V1 =	1.4	V	Impact Time:	0	Minutes	34	s
V2 =	0.2	V	Impact Time:	0	Minutes	54	s
V1' =	0.2	V	Impact Time:	1	Minutes	06	s
V2' =	0.0	V	Impact Time:	1	Minutes	08	s

ELECTRICAL ISOLATION MEASUREMENT

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

$R_{i1} = R_o (1 + V_2/V_1) [(V_1 - V_1')/V_1']$							
Ri1 =	1371 K	Ω	Impact Time:	1	Minutes	06	s
$R_{i2} = R_o (1 + V_1/V_2) [(V_2 - V_2')/V_2']$							
Ri2 =	Zero volts	Ω	Impact Time:	1	Minutes	08	s
Ri = The lesser of Ri1 and Ri2							
Ri =	Zero volts	Ω	Impact Time:	1	Minutes	08	s
Ri/Vb = electrical Isolation Value/Nominal Battery Voltage							
Minimum Electrical Value is 500 Ω/V							
Ri/Vb =	Zero volts	Ω/V	Impact Time:	1	Minutes	08	s

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

DATA SHEET 14 (CONTINUED)

POST-IMPACT ELECTRIC ISOLATION MEASUREMENTS AND CALCULATIONS

Test Vehicle: 2011 Chevrolet Volt 5-Dr Hatchback
Test Program: NCAP Side Pole Impact Test

NHTSA No. MB0125
Test Date: 5/12/2011

PROPULSION BATTERY SYSTEM COMPONENTS

Describe Propulsion Battery Module movement within the passenger compartment [Supply photographs as appropriate]:
Not Applicable

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

Describe intrusion of an outside Propulsion Battery Component into the passenger compartment [Supply photographs as appropriate]:
No Intrusion

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

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

APPENDIX A
PHOTOGRAPHS

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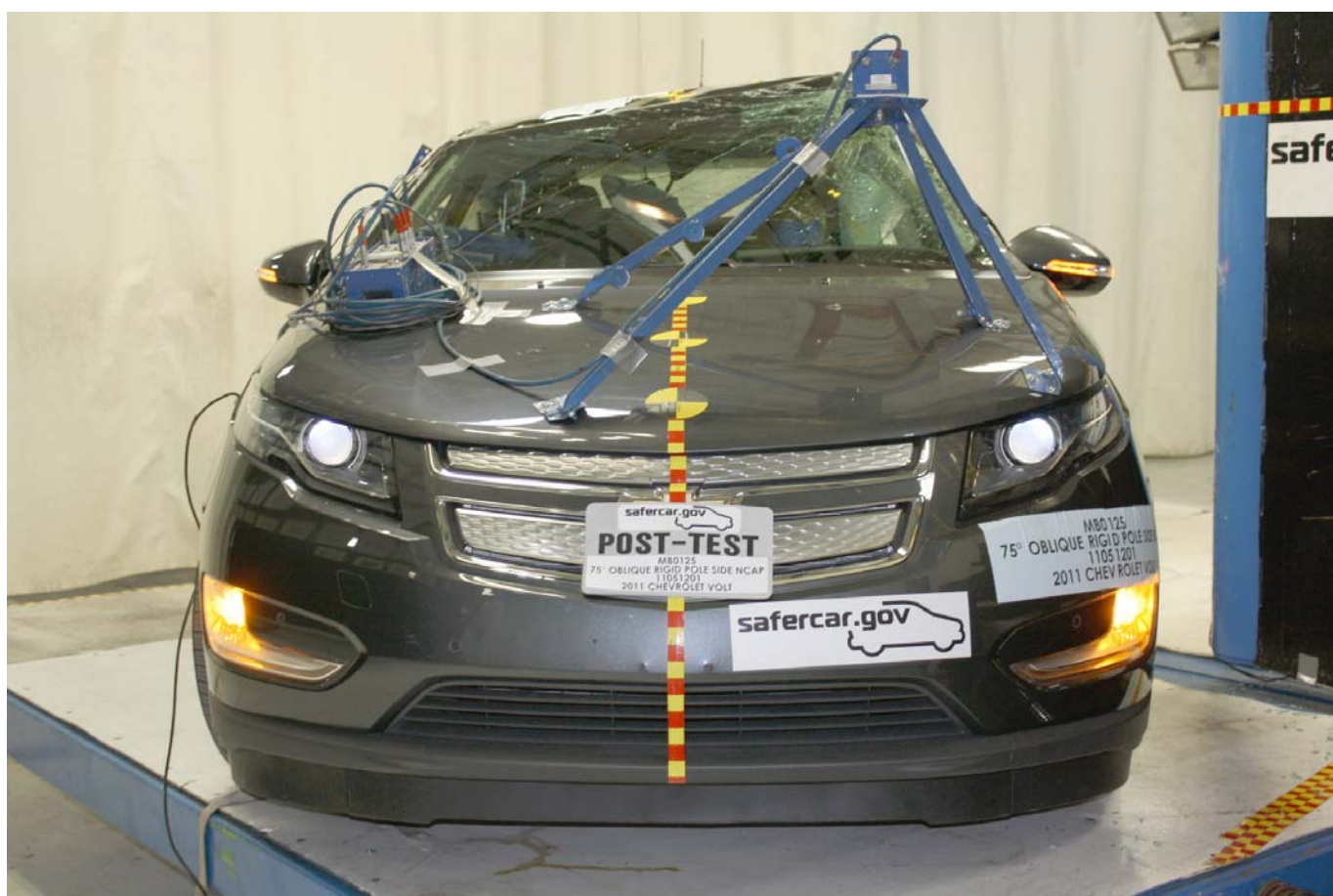
As Delivered Right Front $\frac{3}{4}$ View of Test Vehicle



As Delivered Left Rear $\frac{3}{4}$ View of Test Vehicle



Pre-Test Frontal View of Test Vehicle



Post-Test Frontal View of Test Vehicle



Pre-Test Left Front $\frac{3}{4}$ View of Test Vehicle



Post-Test Left Front $\frac{3}{4}$ View of Test Vehicle



Pre-Test Left Side View of Test Vehicle



Post-Test Left Side View of Test Vehicle



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



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



Pre-Test Rear View of Test Vehicle



Post-Test Rear View of Test Vehicle



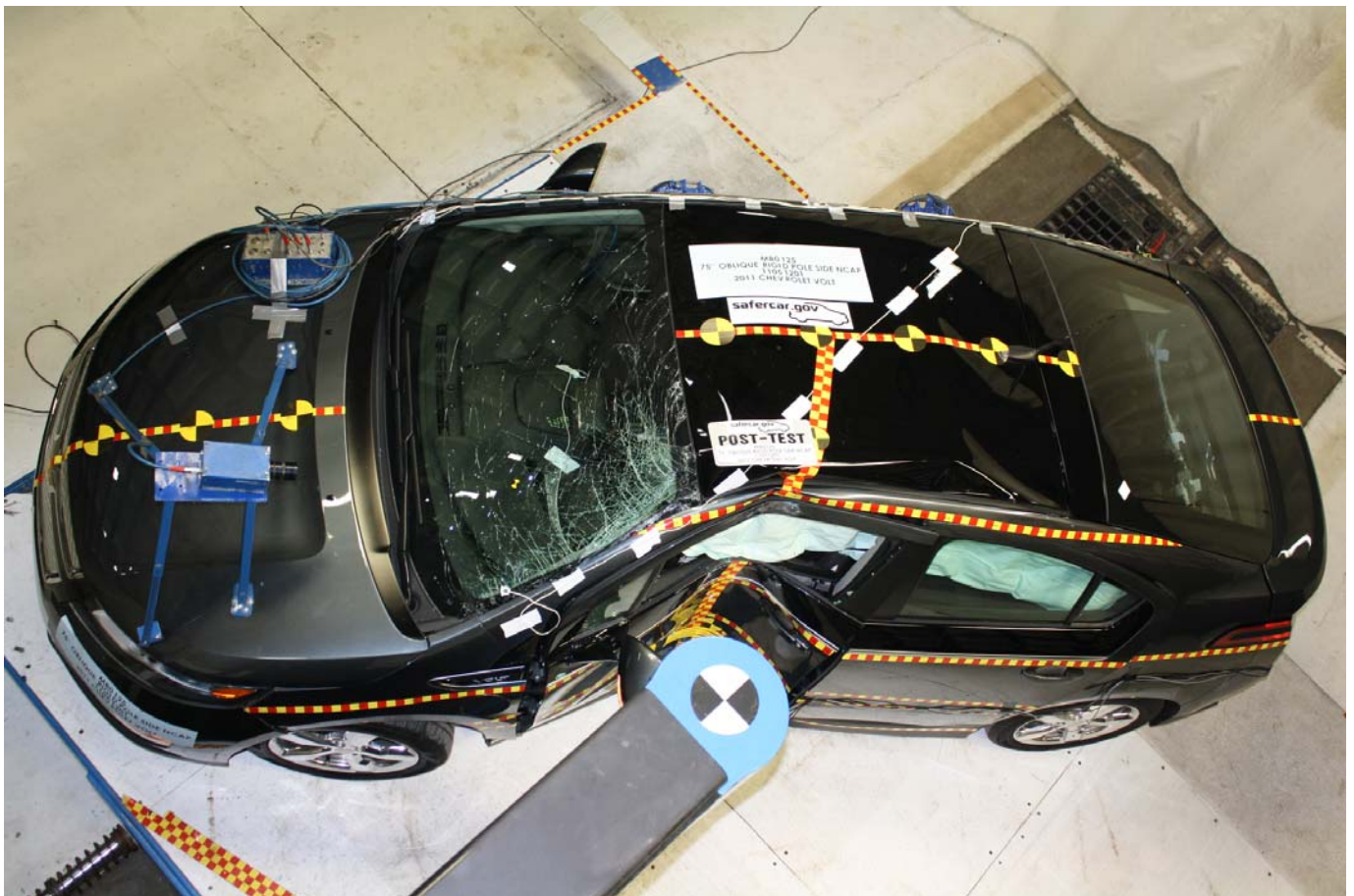
Pre-Test Right Side View of Test Vehicle

PHOTOGRAPH NOT AVAILABLE

Post-Test Right Side View of Test Vehicle



Pre-Test Overhead View of Test Vehicle and Pole



Post-Test Overhead View of Test Vehicle and Pole



Pre-Test Left Side View of Pole Positioned Against Side of Vehicle at Ideal Impact Point



Pre-Test Right Side View of Pole Positioned Against Side of Vehicle at Ideal Impact Point



Pre-Test Close-Up View of Impact Point Target



Post-Test Close-Up View of Impact Point Target Showing Impact Location



Pre-Test Front Close-Up View of Dummy



Post-Test Front Close-Up View of Dummy



Pre-Test Left Side View of Dummy Showing Belts, Chalking, and Contact Switches (Door Open)



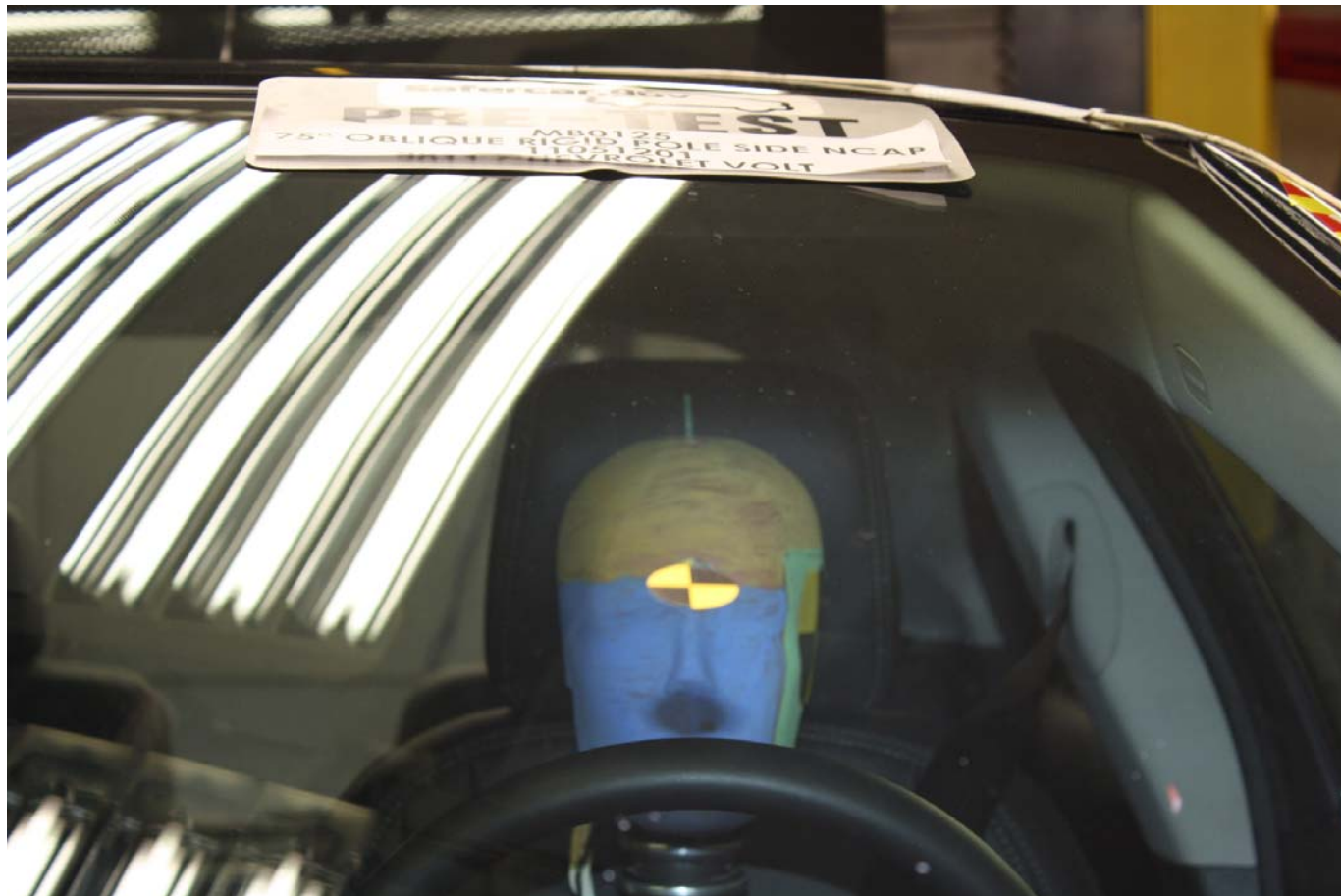
Pre-Test Left Side View of Dummy Shoulder and Door Top View



Post-Test Left Side View of Dummy Shoulder and Door Top View



Pre-Test Frontal View of Seat Back Prior to Dummy Positioning



Pre-Test Frontal View of Dummy Head and Shoulders in Relation to Head Restraint



Pre-Test Frontal View of Seat Pan Prior to Dummy Positioning



Pre-Test Overhead View of Dummy Thighs on Seat Pan



Pre-Test View of Dummy's Neck Showing Position of Adjustable Neck Bracket



Pre-Test View of Dummy's Head Showing Dummy's Head is Level



Pre-Test Placement of Dummy's Feet



Pre-Test View of Belt Anchorage for Dummy to Show Position



Pre-Test Left Side View of Steering Wheel to Show Position



Pre-Test View of Parking Brake



Pre-Test Close-Up Left Side View of Driver Seat Track Showing Test Position



Pre-Test Close-Up Left Side View of Driver Seat Back Showing Test Position



Pre-Test Close-Up View of Driver Seat Back or Head Restraint Showing Seat Back Test Position



Pre-Test Dummy and Door Clearance View



Post-Test Dummy and Door Clearance View



Pre-Test Right Side View of Dummy and Front Seat Occupant Compartment



Post-Test Right Side View of Dummy and Front Seat Occupant Compartment



Pre-Test Inner Driver Door Panel View



Post-Test Inner Driver Door Panel View Showing Dummy Contact Location



Post-Test Dummy Close-Up Head Contact with Vehicle Interior View



Post-Test Dummy Close-Up Head Contact with Side Airbag View



Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View



Post-Test Dummy Close-Up Torso Contact with Side Airbag View



Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View



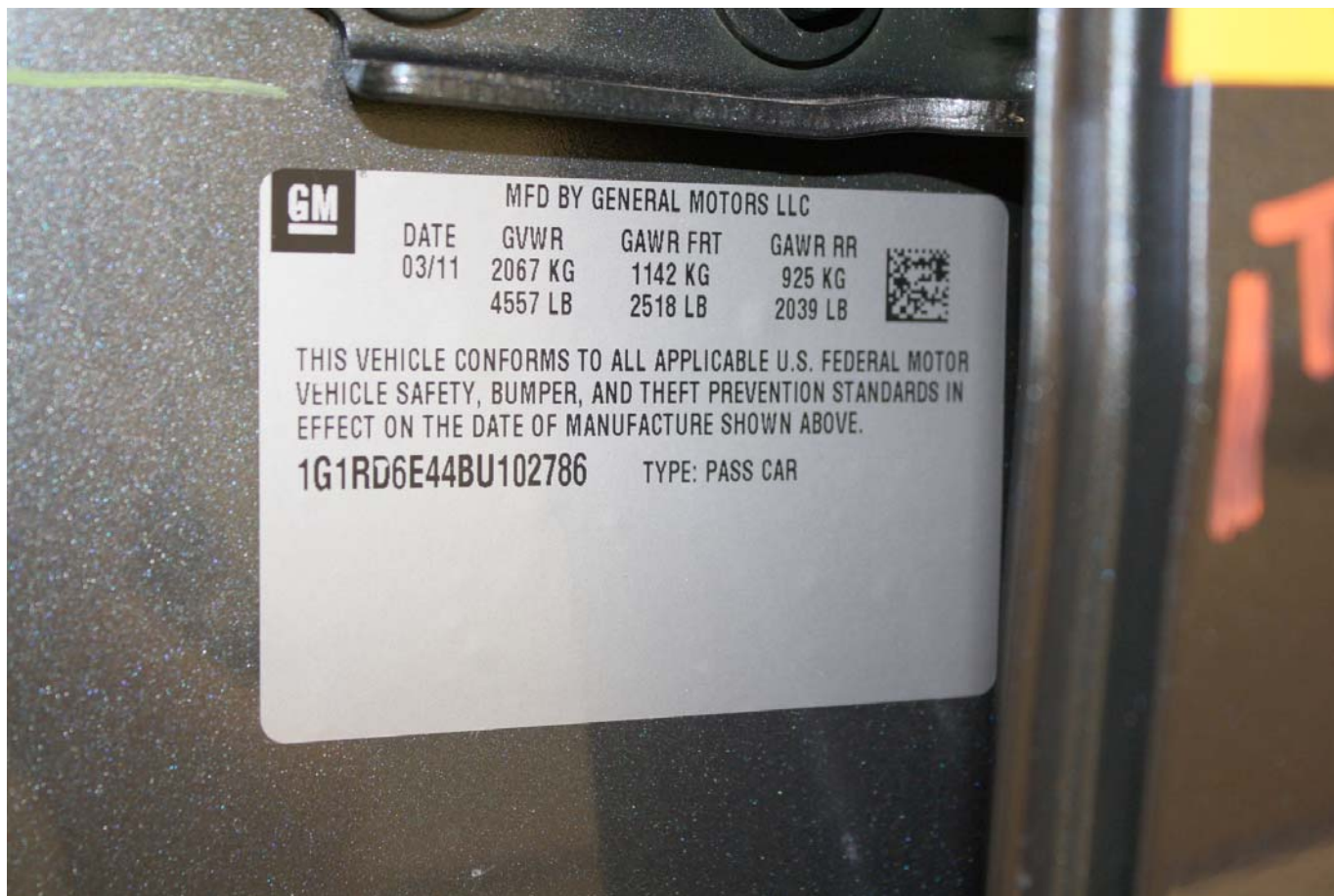
Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View



Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



Post-Test View of Fuel Filler Cap or Fuel Filler Neck



Close-Up View of Vehicle's Certification Label



Close-Up View of Vehicle's Tire Information Placard or Label

PHOTOGRAPH NOT AVAILABLE

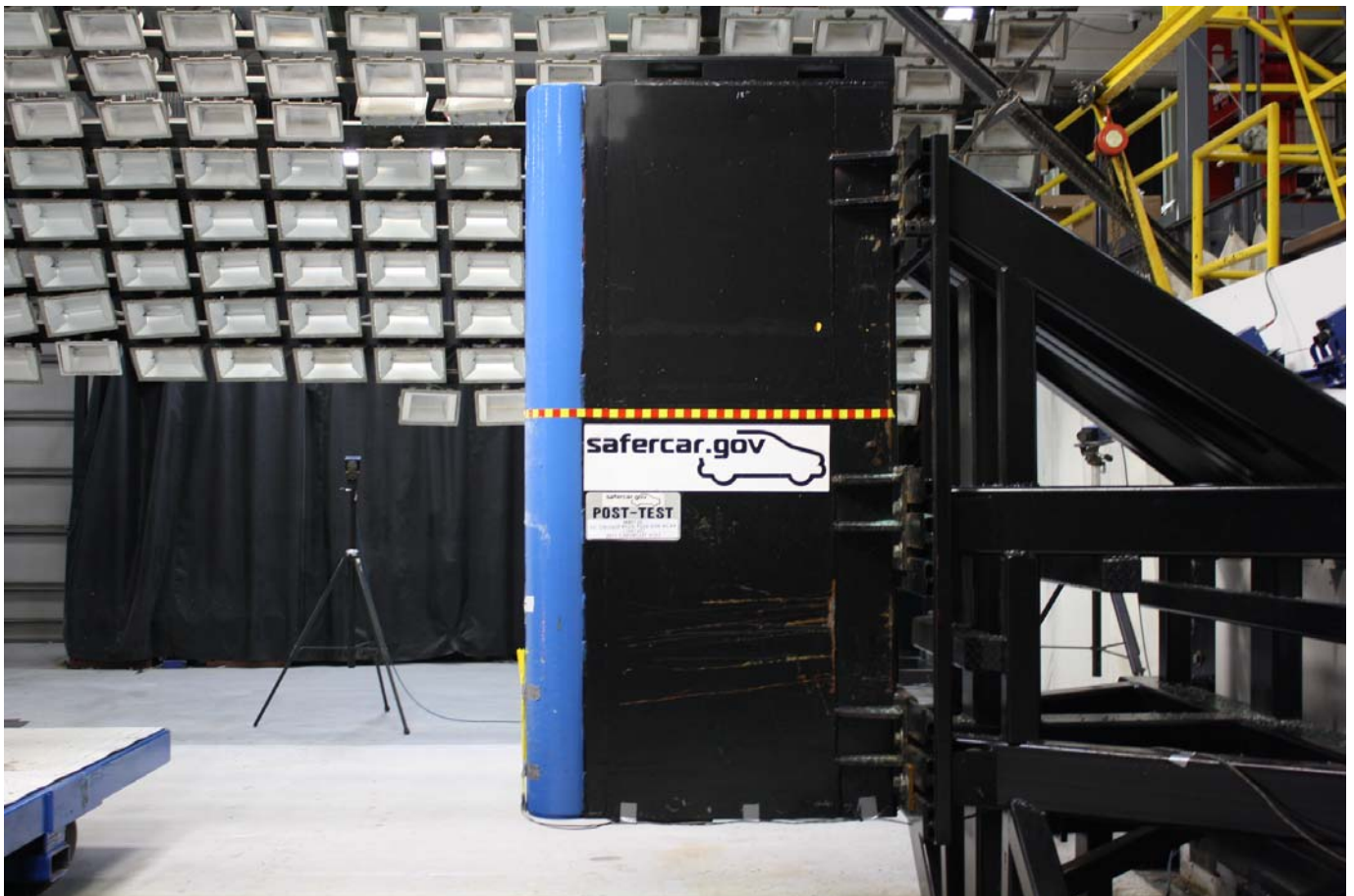
Pre-Test Pole Barrier Front View



Post-Test Pole Barrier Front View

PHOTOGRAPH NOT AVAILABLE

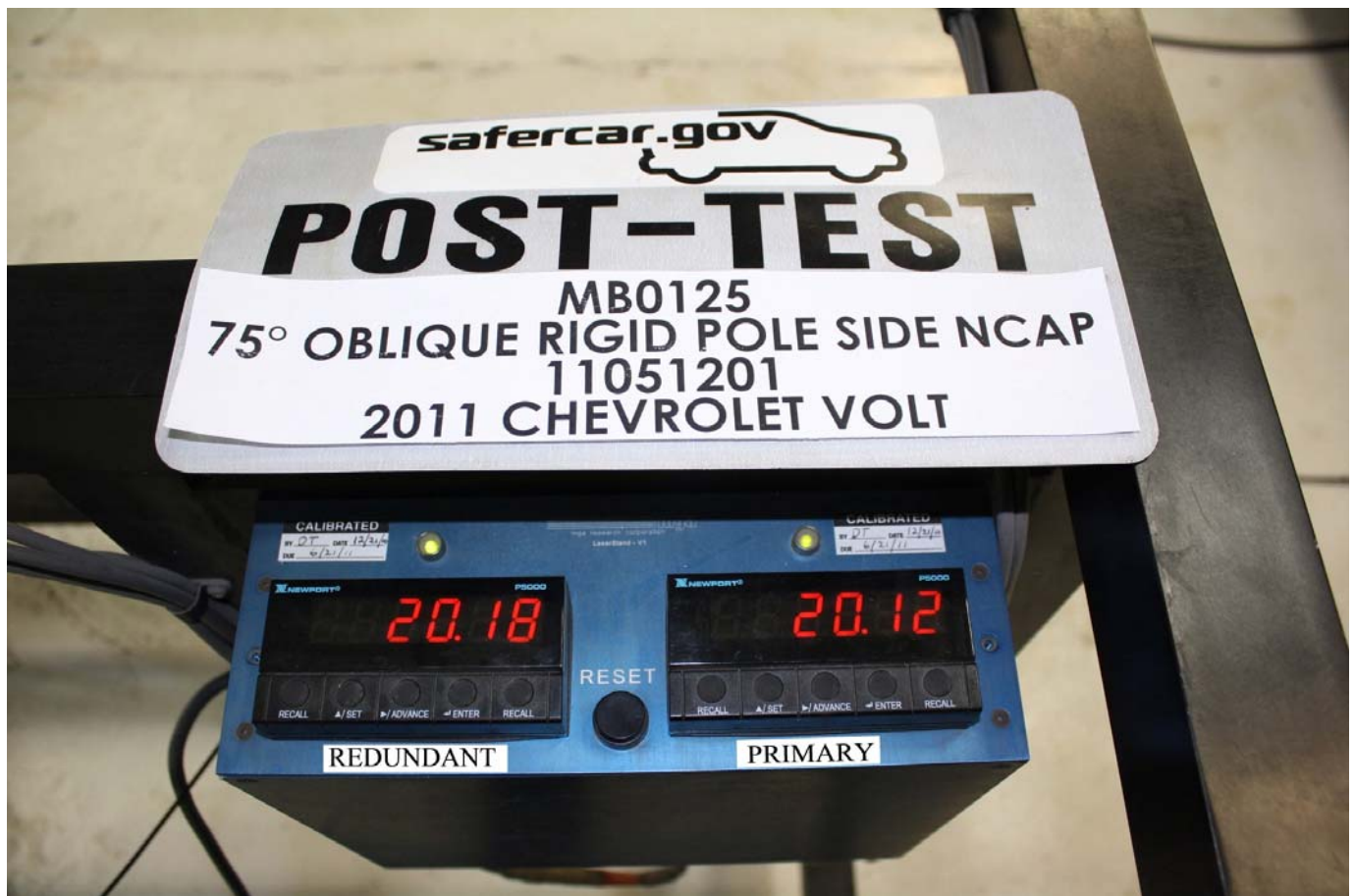
Pre-Test Pole Barrier Side View



Post-Test Pole Barrier Side View

PHOTOGRAPH NOT APPLICABLE

Pre-Test Ballast View



Post-Test Primary and Redundant Speed Trap Read-Out



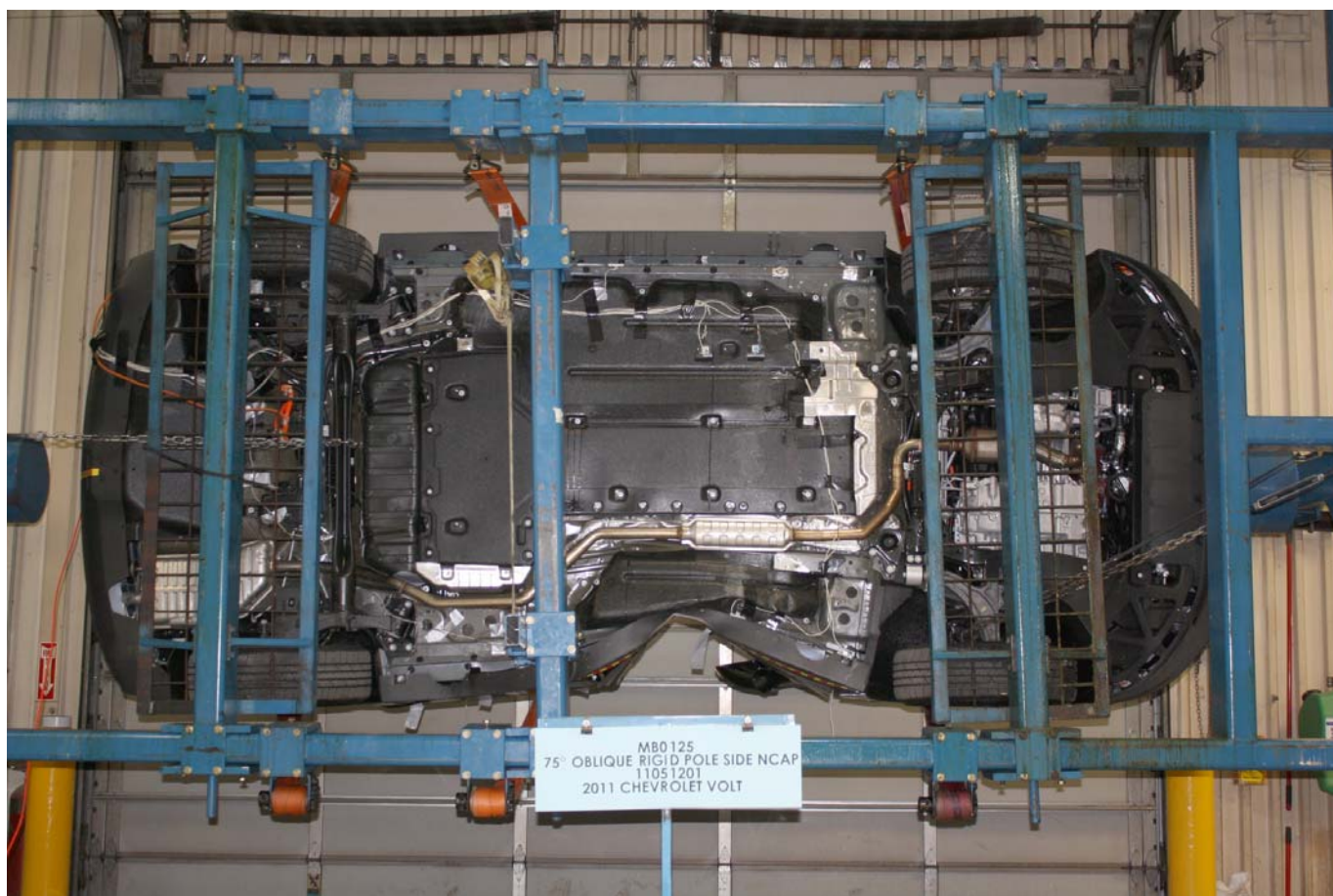
FMVSS No. 301/305 Rollover 0 Degrees



FMVSS No. 301/305 Rollover 90 Degrees



FMVSS No. 301/305 Rollover 180 Degrees



FMVSS No. 301/305 Rollover 270 Degrees



FMVSS No. 301/305 Rollover 360 Degrees



Impact Event



EXTERIOR: CYBER GRAY METALLIC
INTERIOR: JET BLACK/DARK ACCENTS
ENGINE, RANGE EXTENDER, 1.4L
ELECTRIC DRIVE UNIT, VOLTEC

Monroney Label

3-2 Seats and Restraints

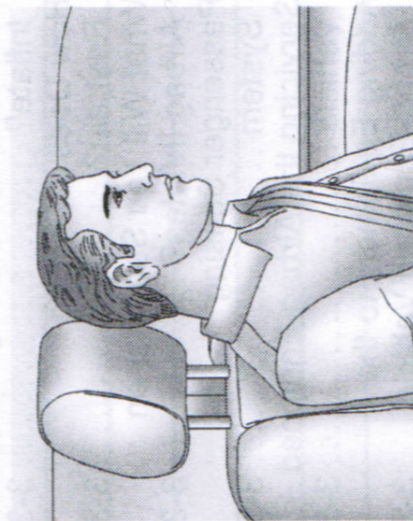
Head Restraints

WARNING

With head restraints that are not installed and adjusted properly, there is a greater chance that occupants will suffer a neck/spinal injury in a crash. Do not drive until the head restraints for all occupants are installed and adjusted properly.

Front Seats

The vehicle's front seats have adjustable head restraints in the outboard seating positions.



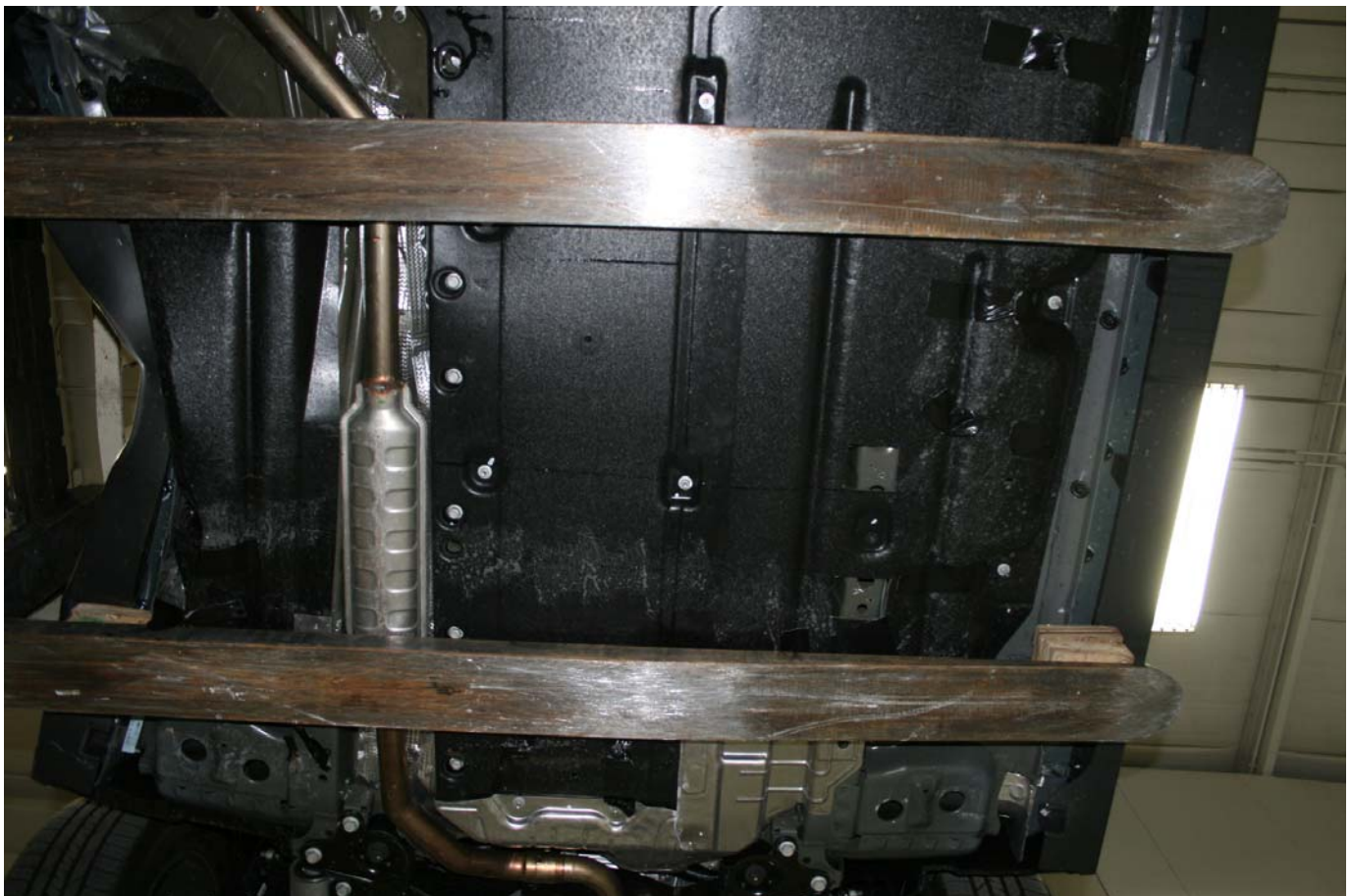
Adjust the head restraint so that the top of the restraint is at the same height as the top of the occupant's head. This position reduces the chance of a neck injury in a crash.



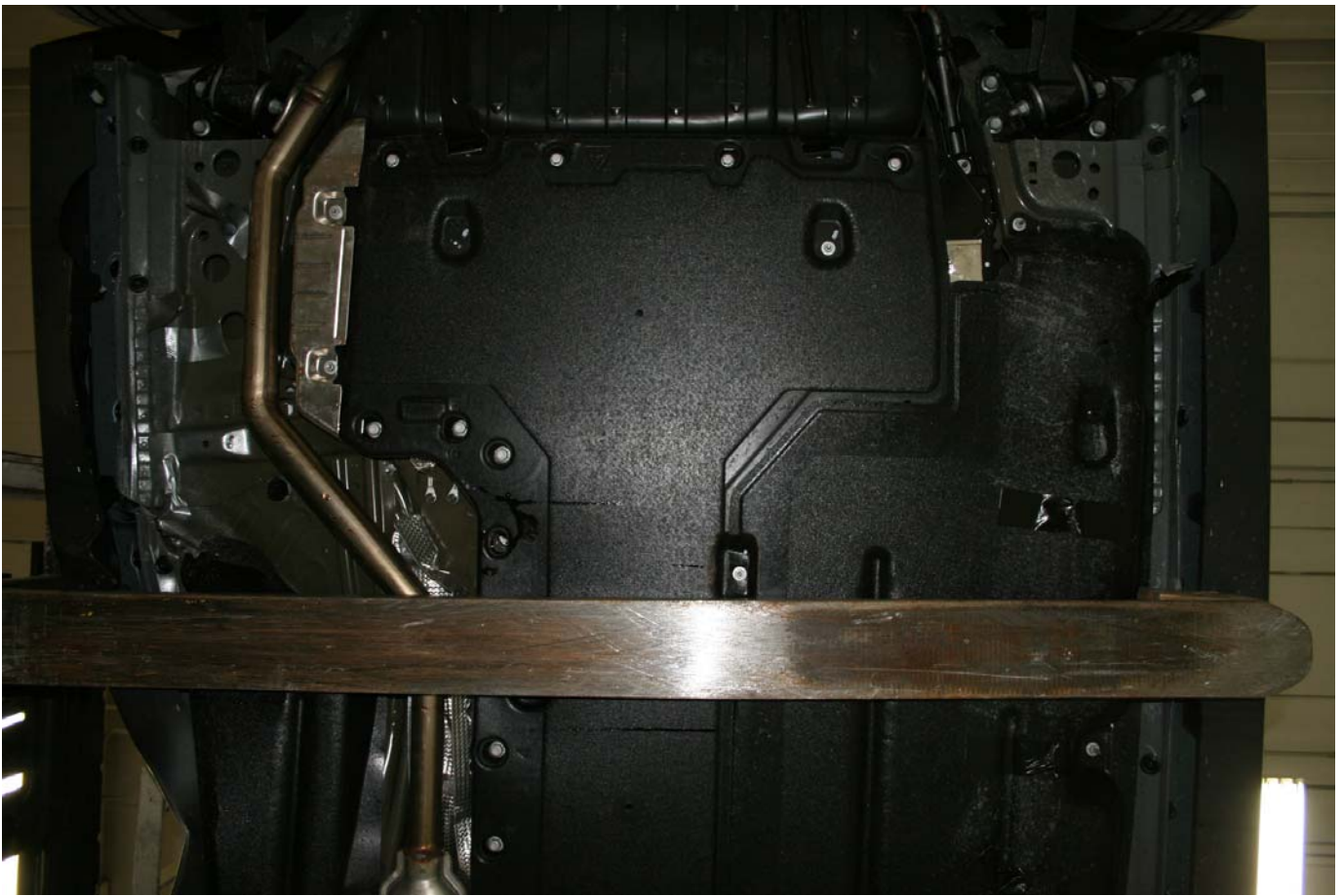
To raise or lower the head restraint, press the button located on the side of the head restraint and pull up or push the head restraint down and release the button.



Pre-Test View of Propulsion Battery



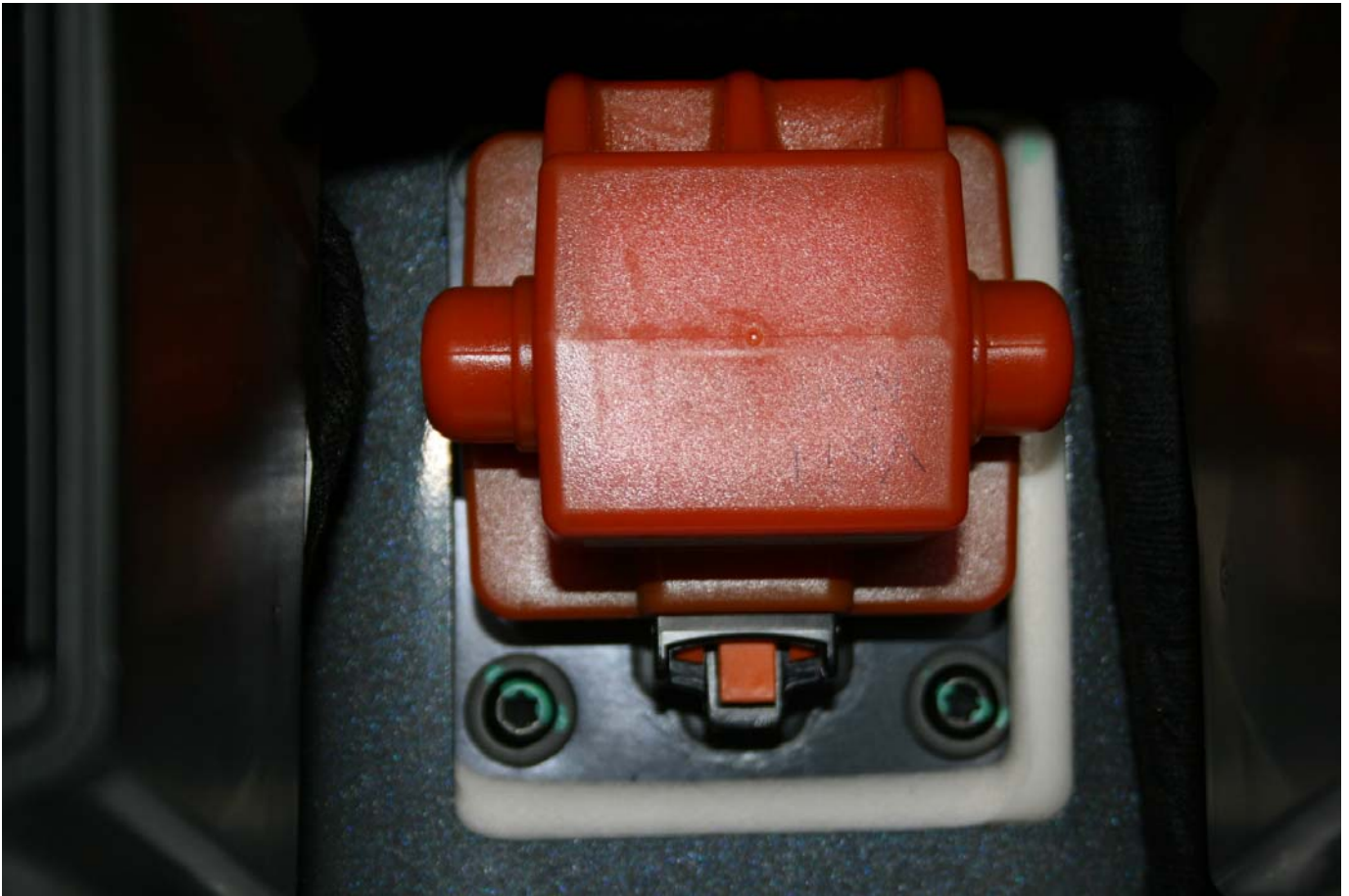
Post-Test View of Propulsion Battery (Front View)



Post-Test View of Propulsion Battery (Rear View)



View of Electric Propulsion Drive



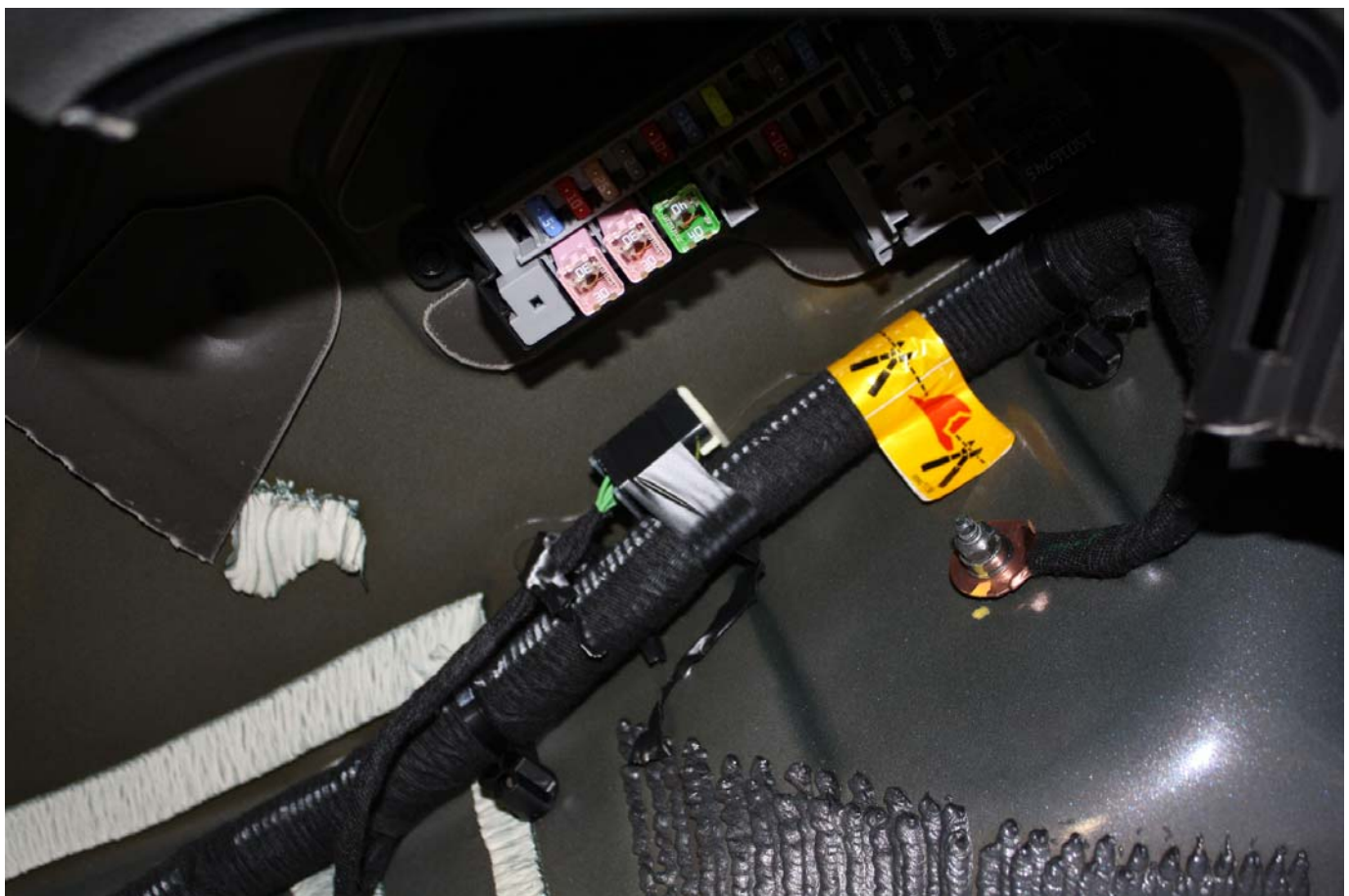
Manual High Voltage Service Disconnect



Manual High Voltage Service Disconnect



First Responder Warning Label



First Responder Warning Location



Auxiliary Power Module Warning Label



Power Inverter Warning Label



Close-Up of Ground Lead Attached



Close-Up of High Voltage Leads Attached

APPENDIX B
DUMMY RESPONSE DATA

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Figure No. 2.	Driver Head Acceleration (Y) Primary vs. Time	B-1
Figure No. 3.	Driver Head Acceleration (Z) Primary vs. Time	B-1
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Figure No. 5.	Driver Lower Spine T12 Acceleration (X) vs. Time	B-2
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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 Acceleration (X) Redundant

Driver Head Acceleration (Y) Redundant

Driver Head Acceleration (Z) Redundant

Driver Upper Thorax Rib Deflection (Y)

Driver Middle Thorax Rib Deflection (Y)

Driver Lower Thorax Rib Deflection (Y)

Driver Upper Abdomen Rib Deflection (Y)

Driver Lower Abdomen Rib Deflection (Y)

Driver Shoulder Contact Switch

Driver Torso Contact Switch

Driver Pelvis Contact Switch

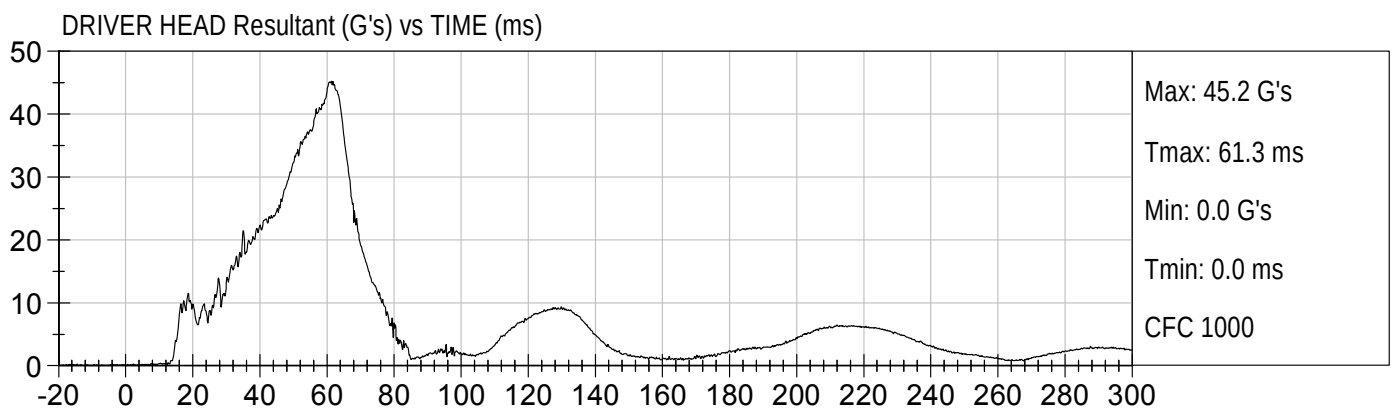
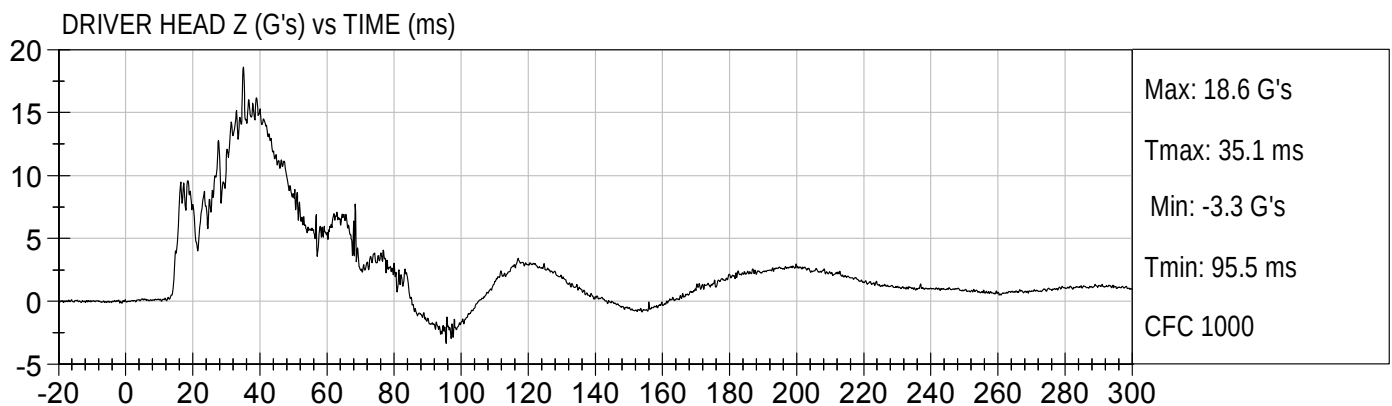
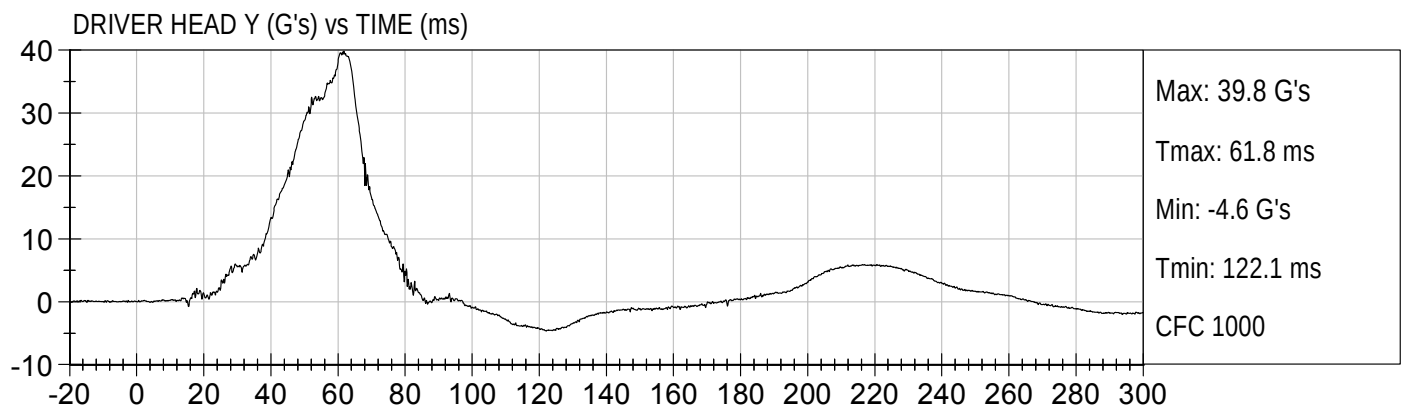
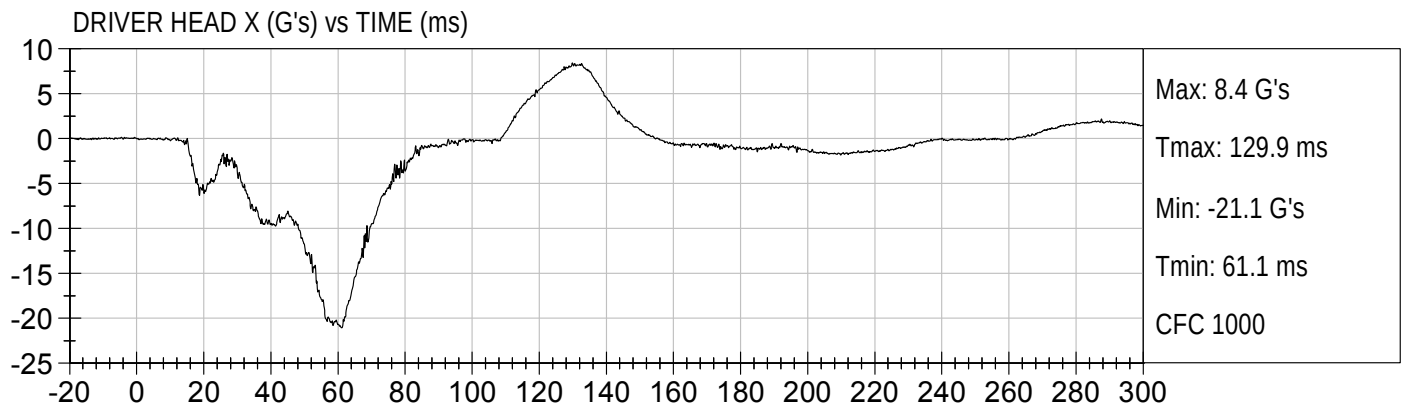
Vehicle CG Acceleration (X)

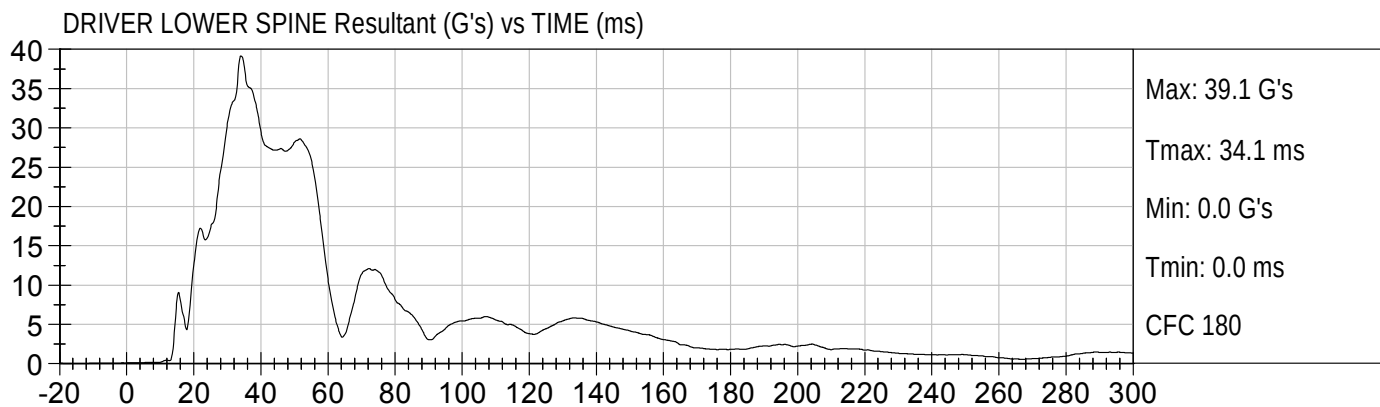
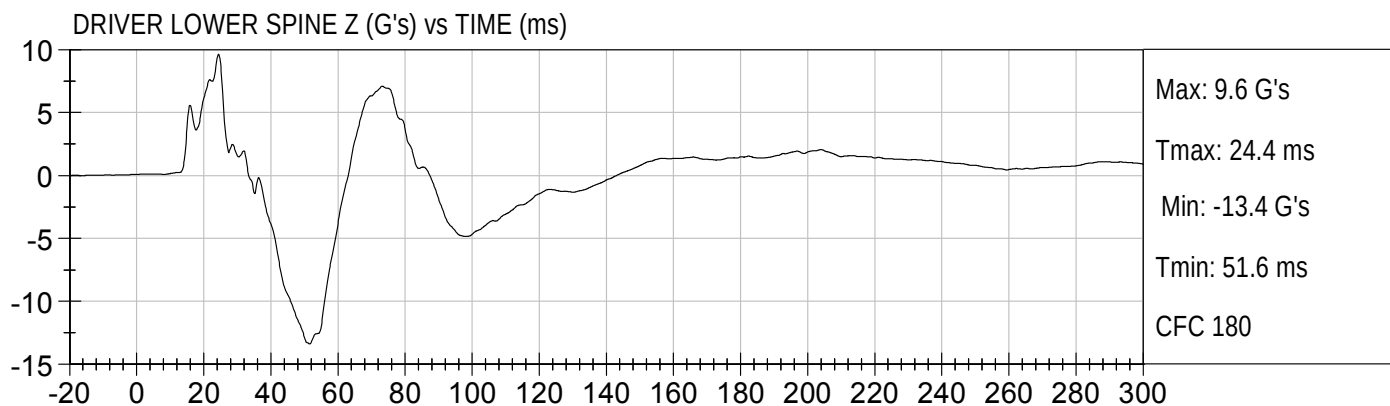
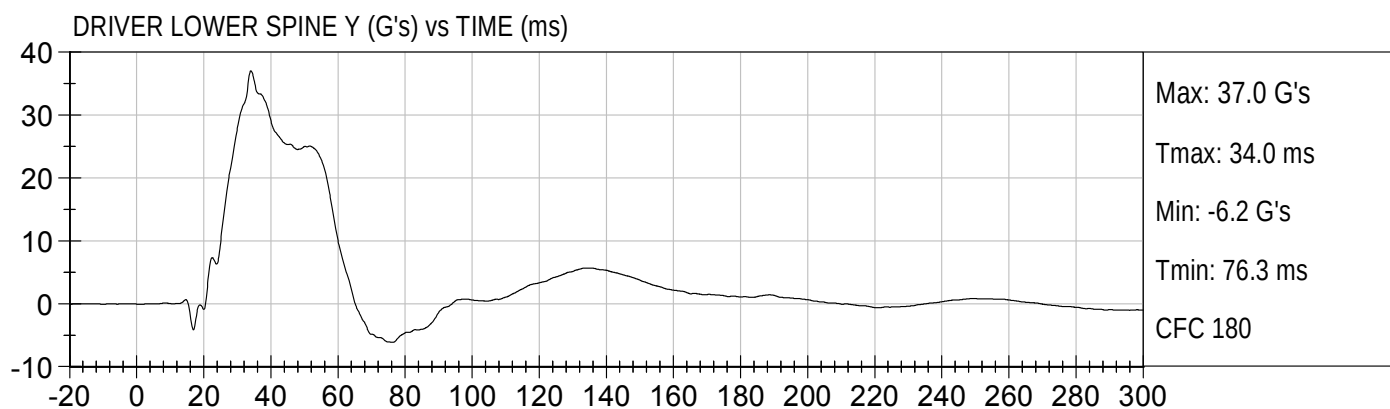
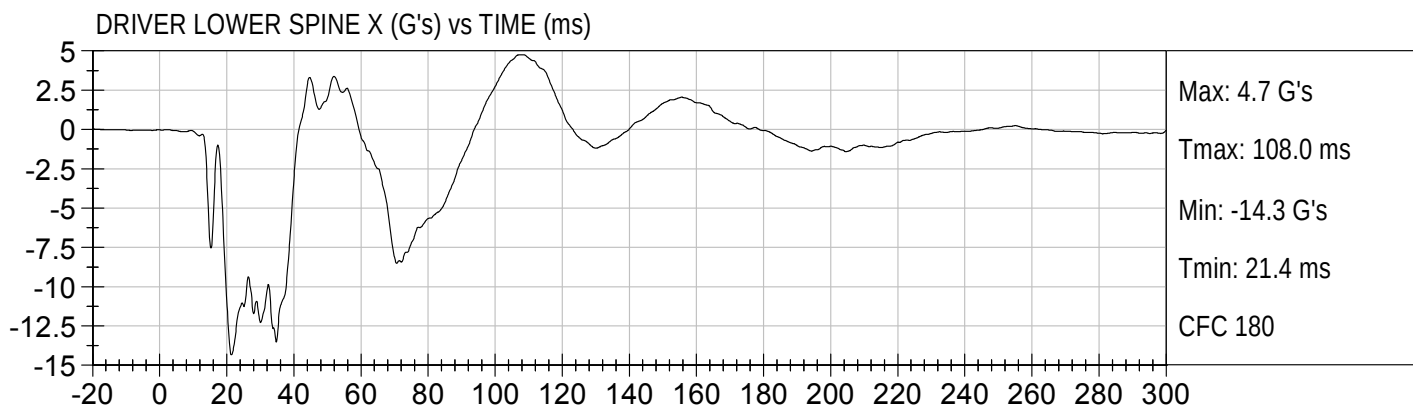
Vehicle CG Acceleration (Y)

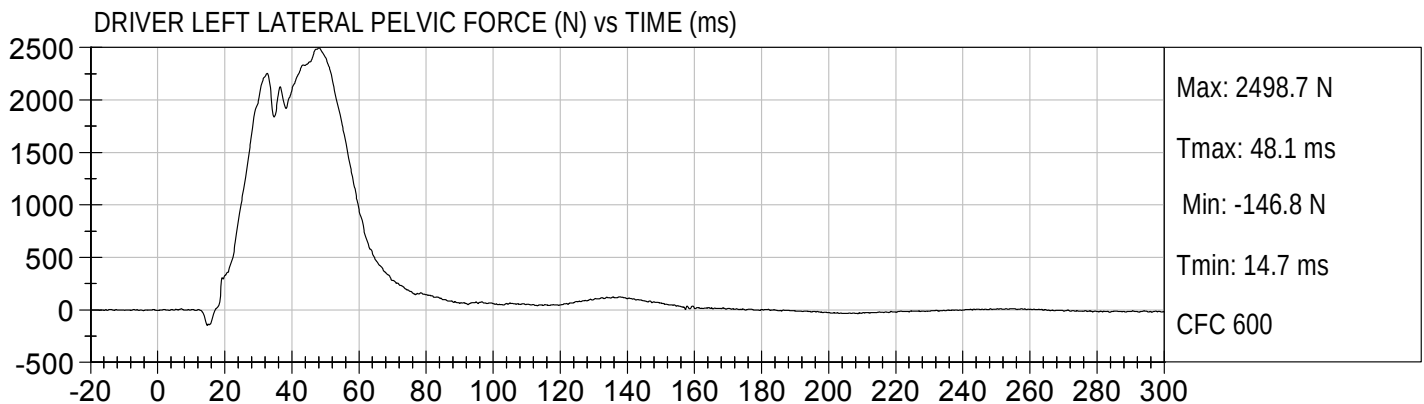
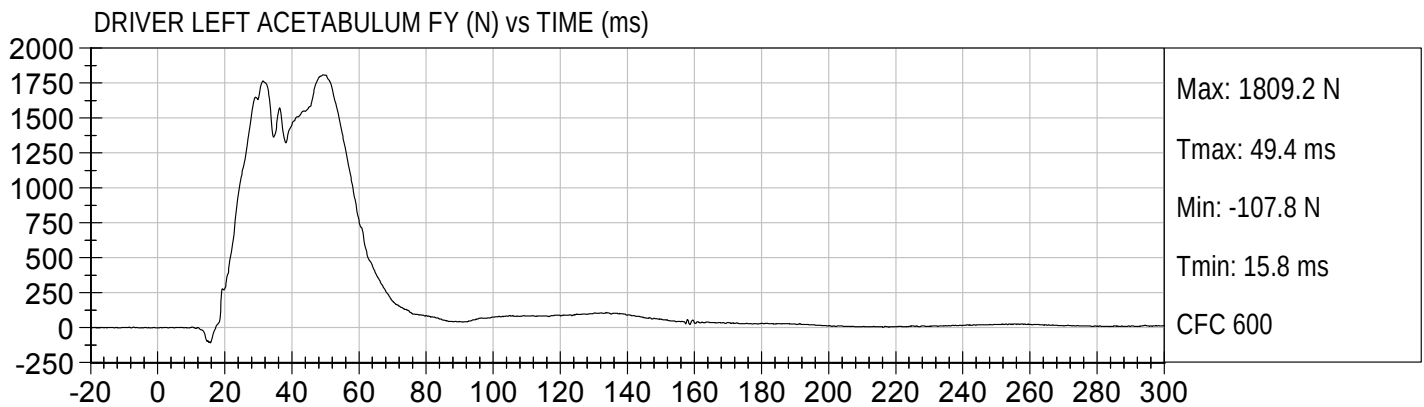
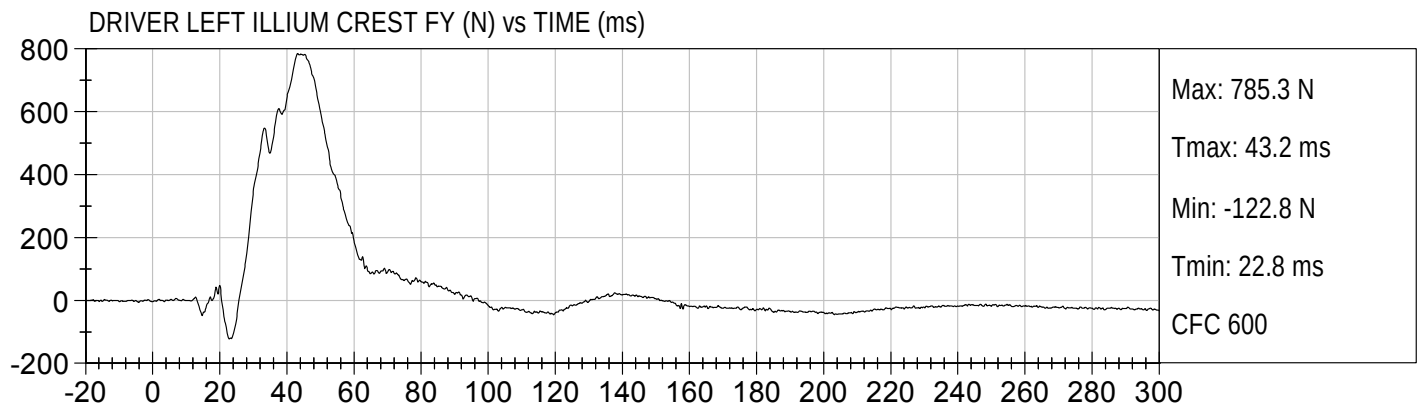
Vehicle CG Acceleration (Z)

Vehicle CG Angular Rate About X (Roll)

Vehicle CG Angular Rate About Y (Pitch)
Vehicle CG Angular Rate About Z (Yaw)
Left Floor Sill Acceleration (Y)
Left A-Pillar Sill Acceleration (Y)
Left Lower A-Pillar Acceleration (Y)
Left Mid A-Pillar Acceleration (Y)
Left B-Pillar Sill Acceleration (Y)
Left Lower B-Pillar Acceleration (Y)
Left Mid B-Pillar Acceleration (Y)
Driver Seat Track at Dummy H-Point Acceleration (Y)
Engine Top Acceleration (X)
Engine Top Acceleration (Y)
Firewall Center Acceleration (Y)
Right Roof at Vertical Impact Reference Line Acceleration (Y)
Right Sill at Vertical Impact Reference Line Acceleration (Y)
Rear Floorpan Behind Rear Axle at Centerline Acceleration (X)
Rear Floorpan Behind Rear Axle at Centerline Acceleration (Y)
Driver Side Airbag Timing – Not Installed
Driver Side Curtain Airbag Timing – Not Installed
Load Cell Pole Barrier #1 Force (Y) – Not used
Load Cell Pole Barrier #2 Force (Y) – Not used
Load Cell Pole Barrier #3 Force (Y) – Not used
Load Cell Pole Barrier #4 Force (Y) – Not used
Load Cell Pole Barrier #5 Force (Y) – Not used
Load Cell Pole Barrier #6 Force (Y) – Not used
Load Cell Pole Barrier #7 Force (Y) – Not used
Load Cell Pole Barrier #8 Force (Y) – Not used







APPENDIX C

DUMMY CALIBRATION AND PERFORMANCE VERIFICATION DATA

MGA RESEARCH CORPORATION
HEAD DROP TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test ID: D111701

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	35	Pass
Peak Resultant Acceleration	G's	115 to 137	128	Pass
Peak Lateral Acceleration	G's	+/- 15	-2.8	Pass
Unimodal	N/A	<15%	Yes	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

5/9/11
Test Date

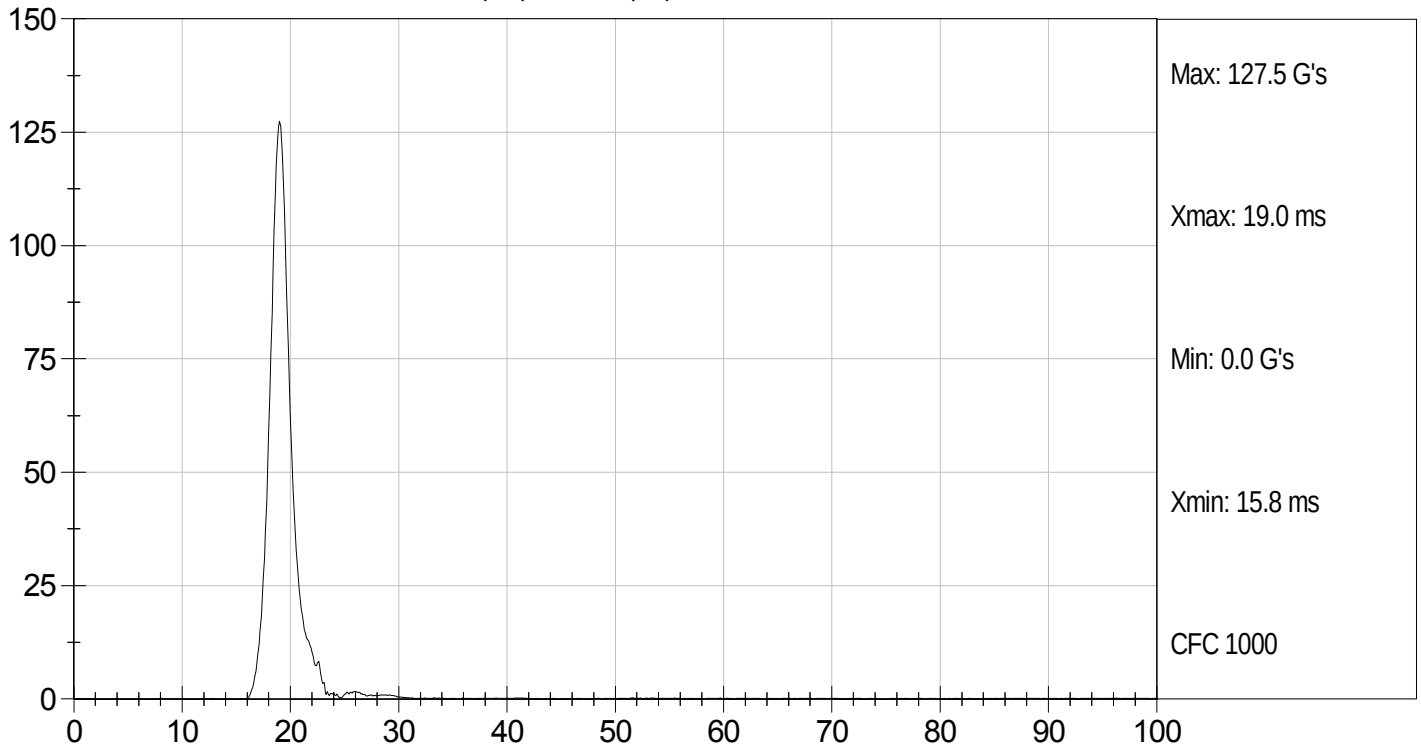
David Winkelbauer
Approved By



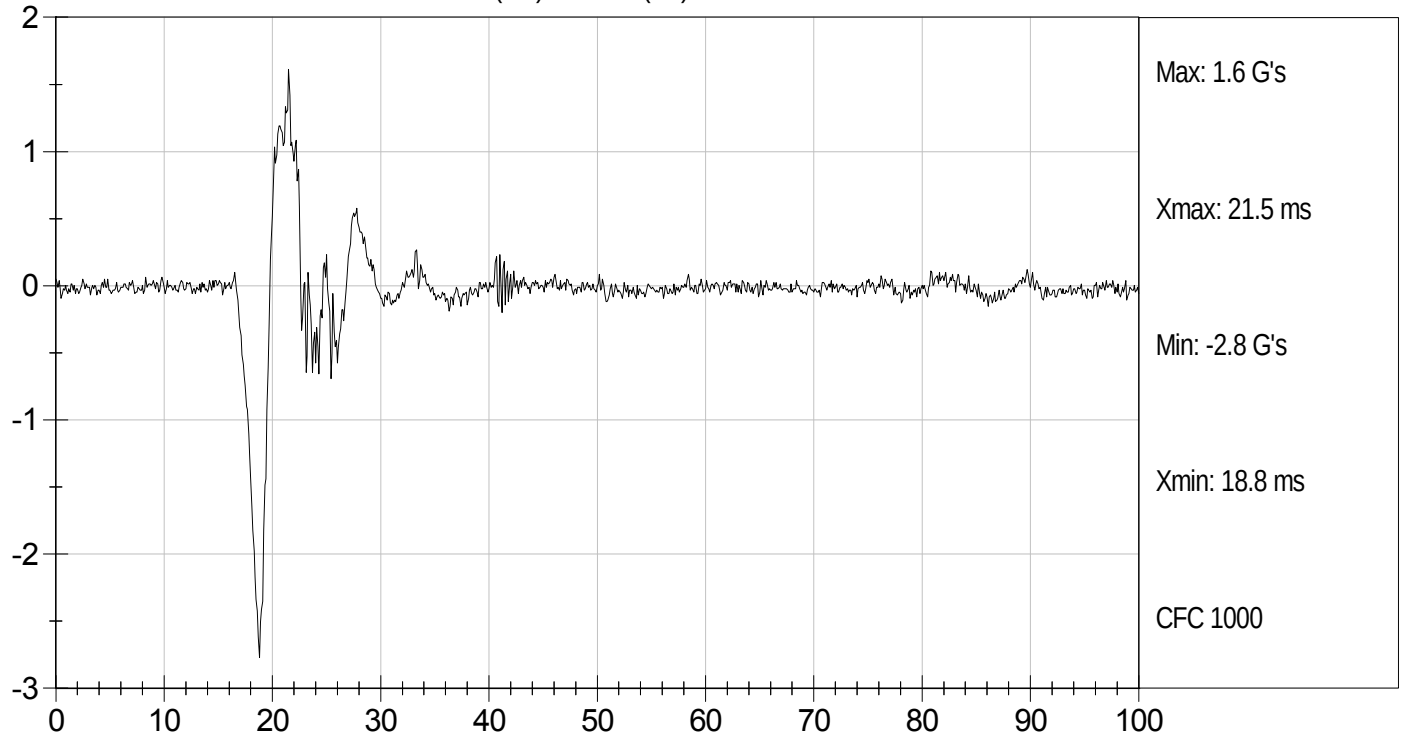
Test Desc: Head Drop
Component ID: D111701

Test Date: 5/9/11
Velocity: 0 ft/s, 0 m/s

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



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



MGA RESEARCH CORPORATION
LATERAL NECK PENDULUM TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D111702

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	21.9	Pass
Humidity		%	10 to 70	31	Pass
Impact Velocity		m/s	5.51 to 5.63	5.52	Pass
Delta Velocity	10 ms	m/s	2.20 to 2.80	2.47	Pass
	15 ms	m/s	3.30 to 4.10	3.47	Pass
	20 ms	m/s	4.40 to 5.40	4.59	Pass
	25 ms	m/s	5.40 to 6.10	5.48	Pass
	25-100 ms	m/s	5.50 to 6.20	5.87	Pass
Maximum D-Plane Rotation		deg	71 to 81	75	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	60	Pass
Maximum Occipital Condyle Moment during Rotation Interval Nm			-44 to -36	-40	Pass
Time of Moment Decay to 0 Nm		ms	102 to 126	121	Pass
Overall Test Results				Pass	


 Laboratory Technician

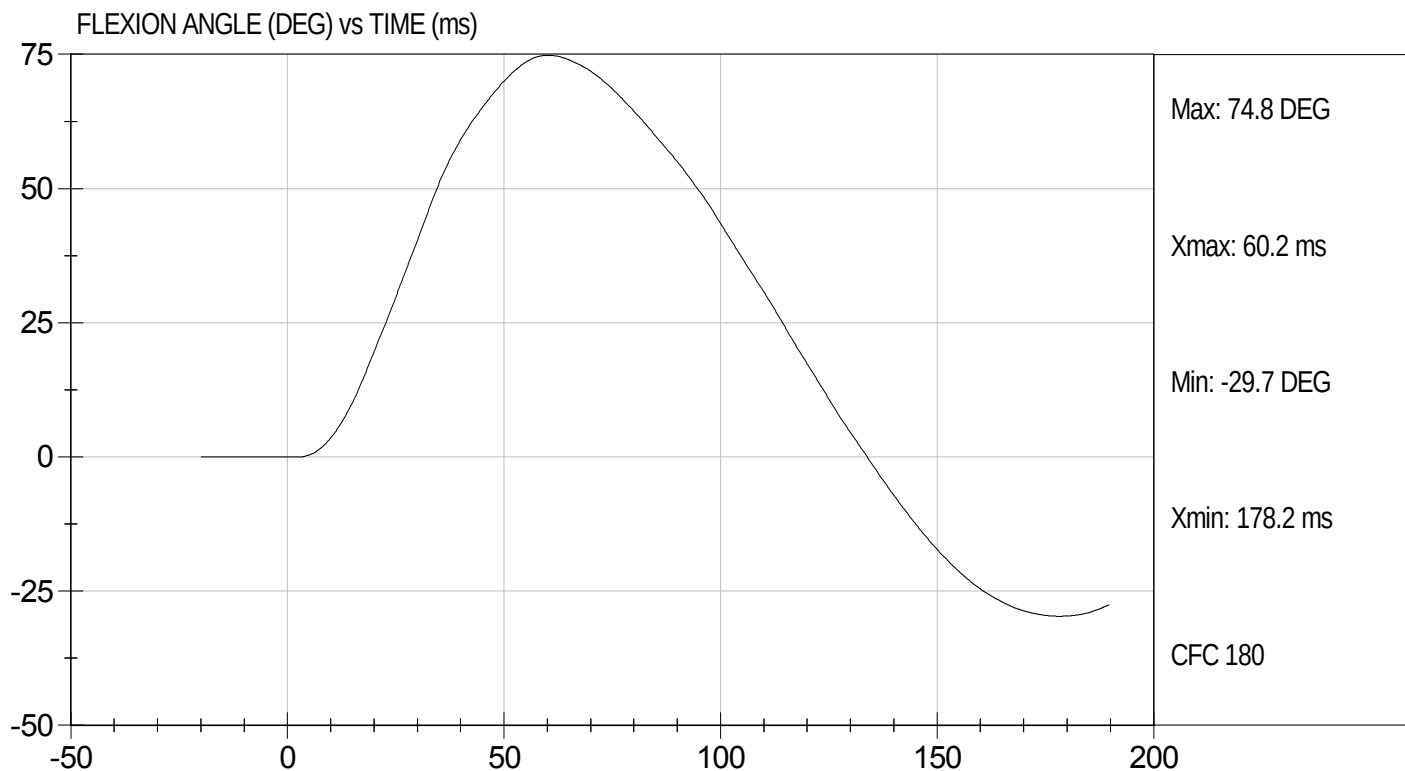
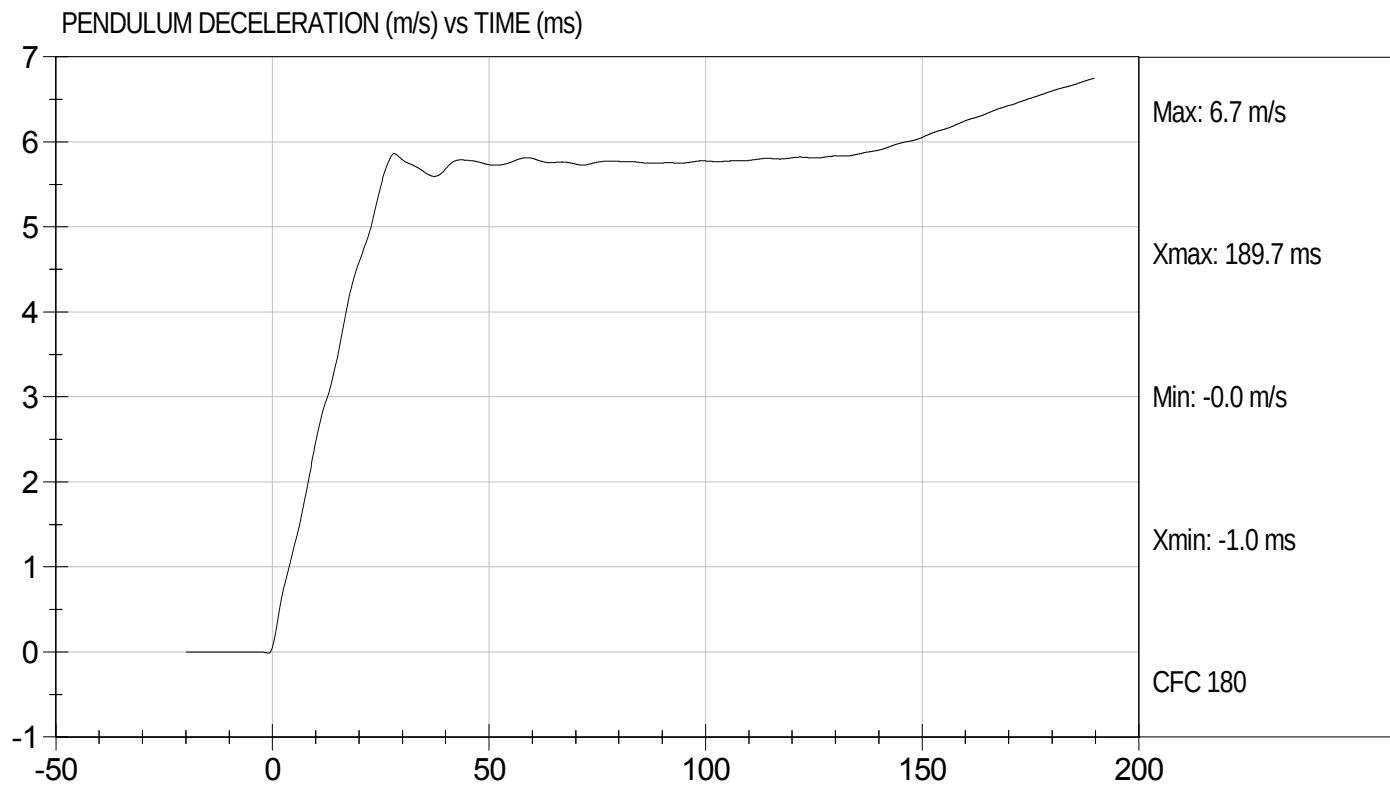
5/9/11
 Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D111702

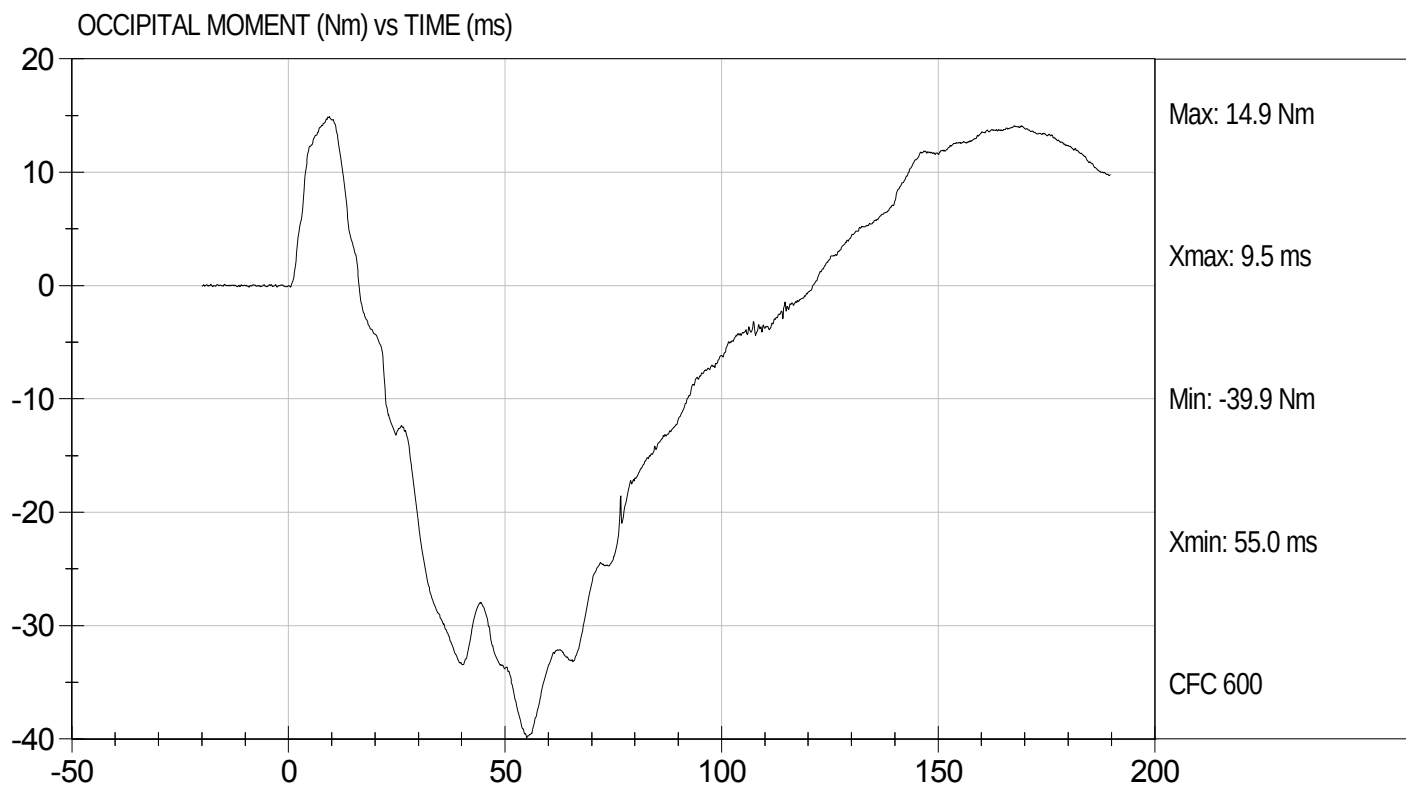
Test Date: 5/9/11
Velocity: 18.12 ft/s, 5.52 m/s





Test Desc: Neck Bending
Component ID: D111702

Test Date: 5/9/11
Velocity: 18.12 ft/s, 5.52 m/s

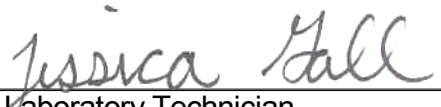


MGA RESEARCH CORPORATION
SHOULDER IMPACT TEST
SID-ILs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test ID: D111703

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	22.0	Pass
Laboratory Relative Humidity	%	10 to 70	35	Pass
Impact Velocity	m/s	4.20 to 4.40	4.38	Pass
Maximum Probe Acceleration	G's	13 to 18	15	Pass
Shoulder Displacement	mm	28 to 37	32	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	18	Pass
Overall Test Results				Pass


Laboratory Technician

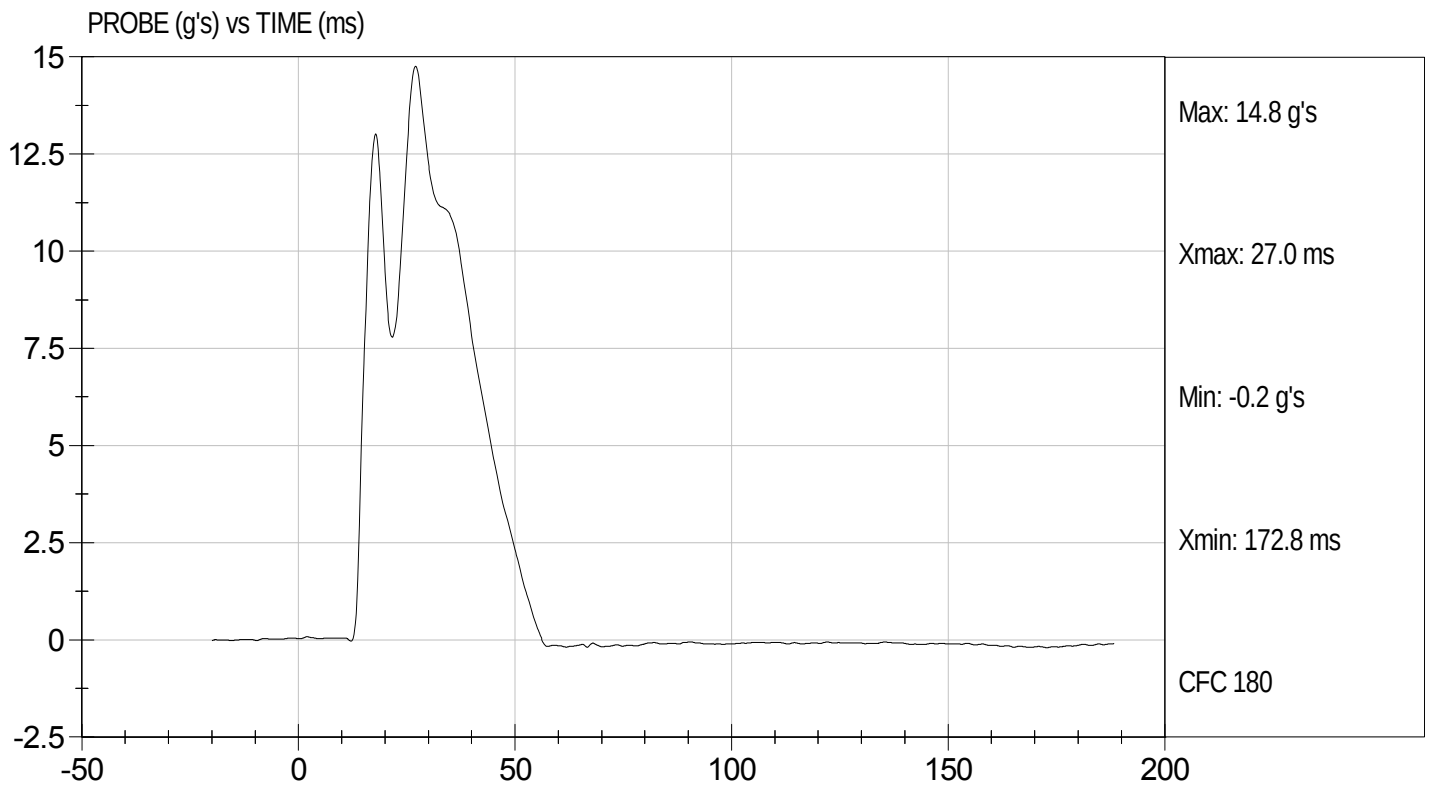
5/9/11
Test Date


Approved By



Test Desc: Shoulder Impact
Component ID: D111703

Test Date: 5/9/11
Velocity: 14.37 ft/s, 4.38 m/s

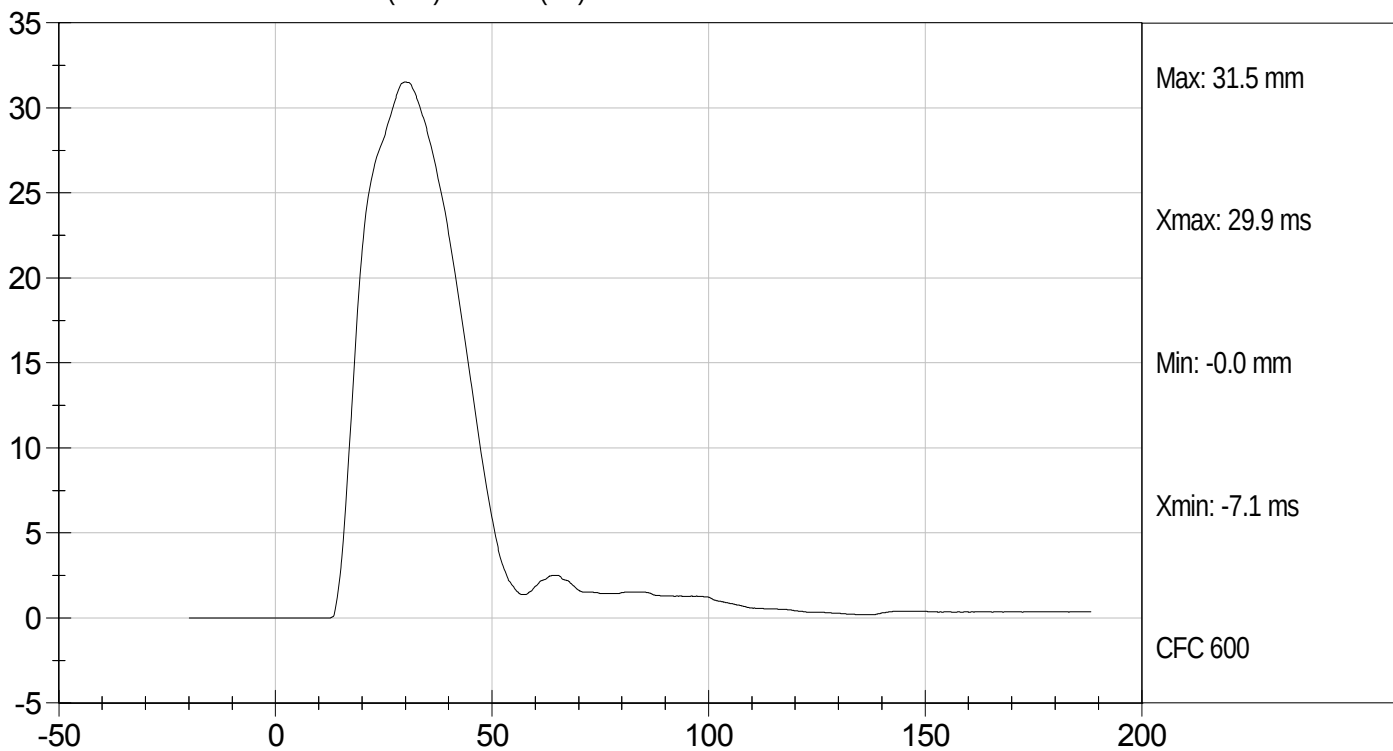




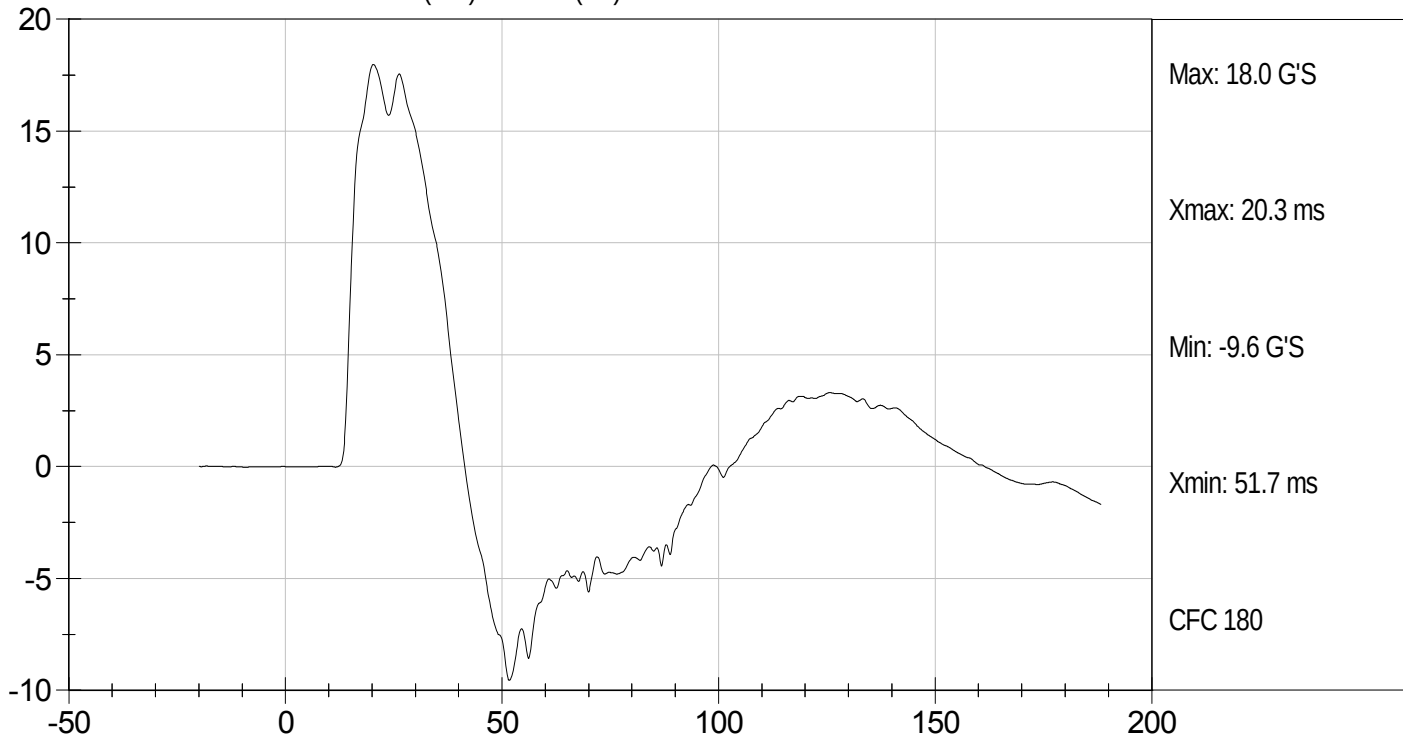
Test Desc: Shoulder Impact
Component ID: D111703

Test Date: 5/9/11
Velocity: 14.37 ft/s, 4.4 m/s

SHOULDER DISPLACEMENT (mm) vs TIME (ms)



UPPER SPINE ACCELERATION (G'S) vs TIME (ms)



MGA RESEARCH CORPORATION
THORAX (WITH ARM) IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D111704

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	34	Pass
Impact Velocity	m/s	6.60 to 6.80	6.77	Pass
Peak Impactor Acceleration	G's	30 to 36	32	Pass
Shoulder Displacement	mm	31 to 40	37	Pass
Upper Rib Displacement	mm	25 to 32	31	Pass
Middle Rib Displacement	mm	30 to 36	32	Pass
Lower Rib Displacement	mm	32 to 38	33	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	36	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	34	Pass
Overall Test Results				Pass

Jessica Gall
Laboratory Technician

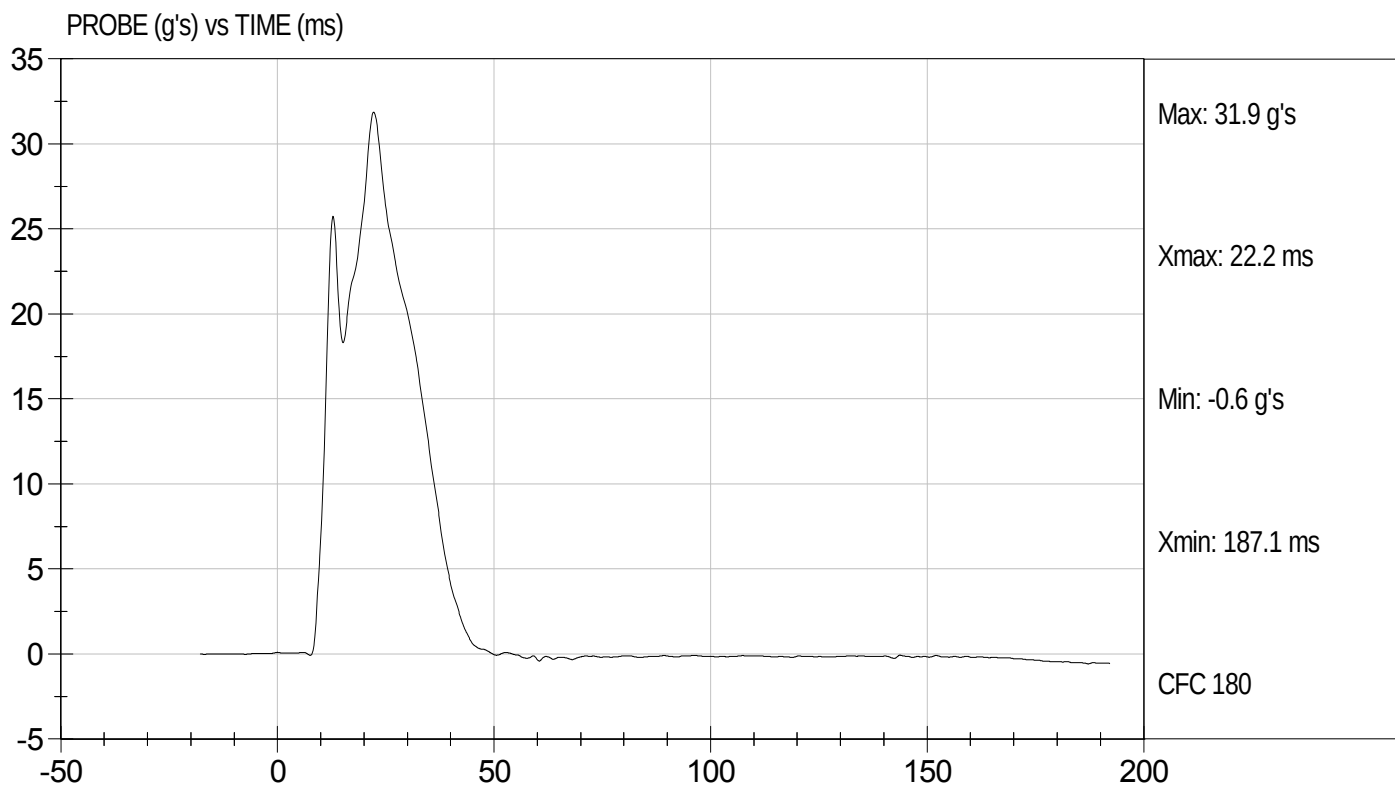
5/9/11
Test Date

David Winkelbauer
Approved By



Test Desc: Thorax With Arm
Component ID: D111704

Test Date: 5/9/11
Velocity: 22.22 ft/s, 6.77 m/s

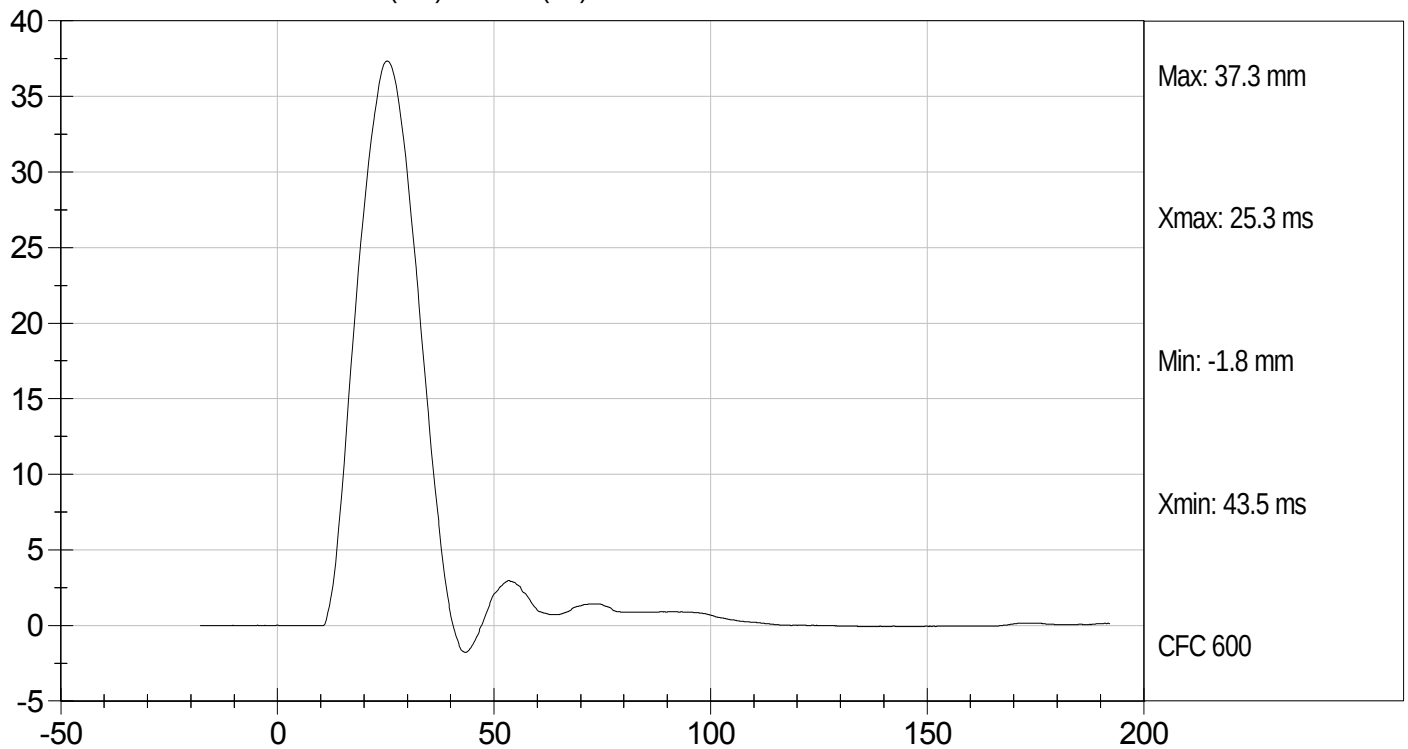




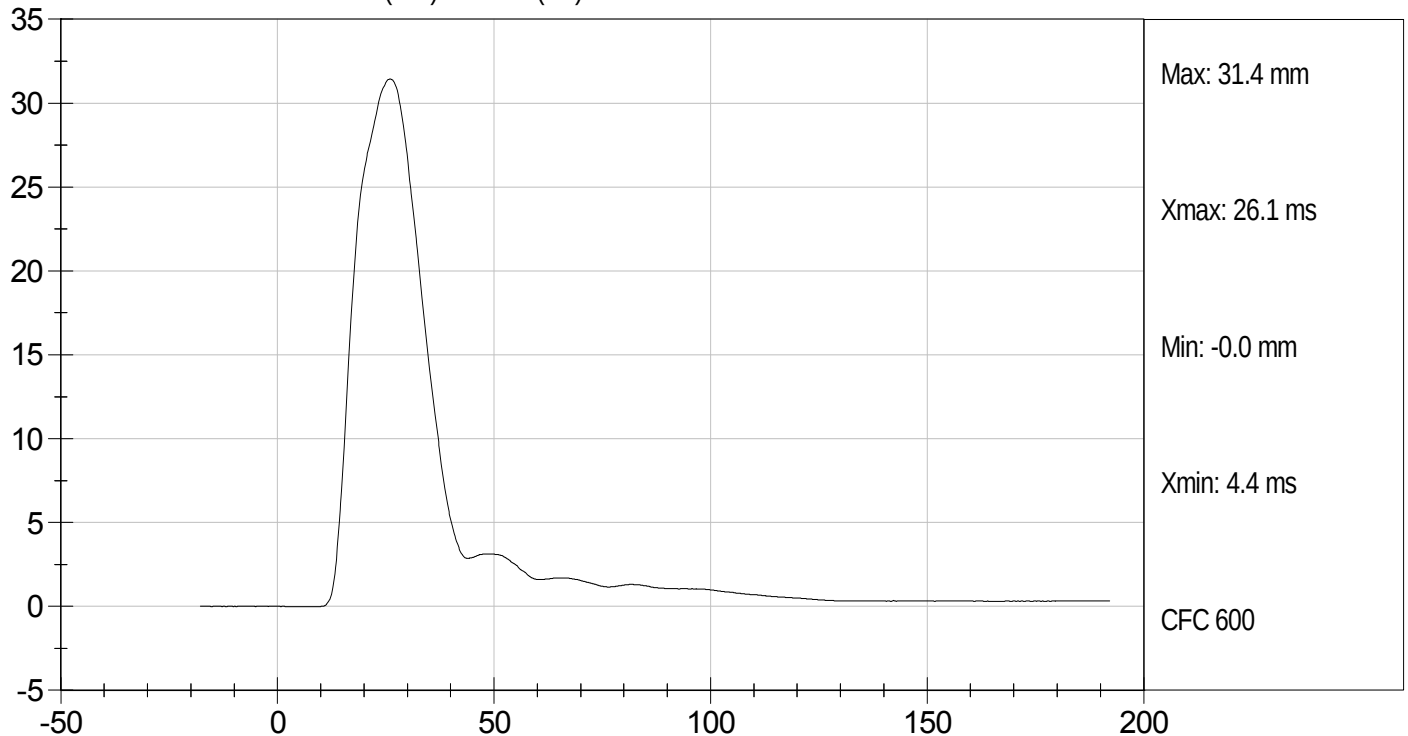
Test Desc: Thorax With Arm
Component ID: D111704

Test Date: 5/9/11
Velocity: 22.22 ft/s, 6.77 m/s

SHOULDER DISPLACEMENT (mm) vs TIME (ms)



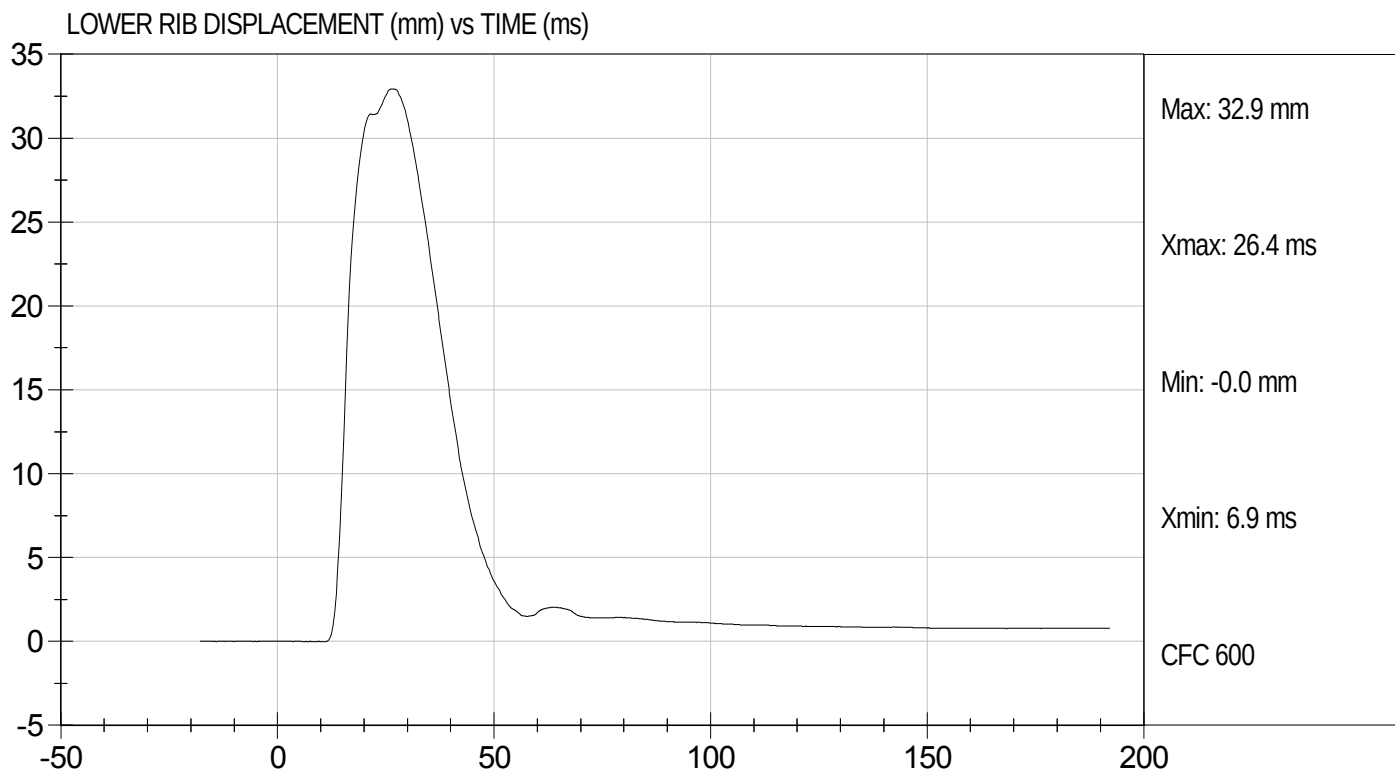
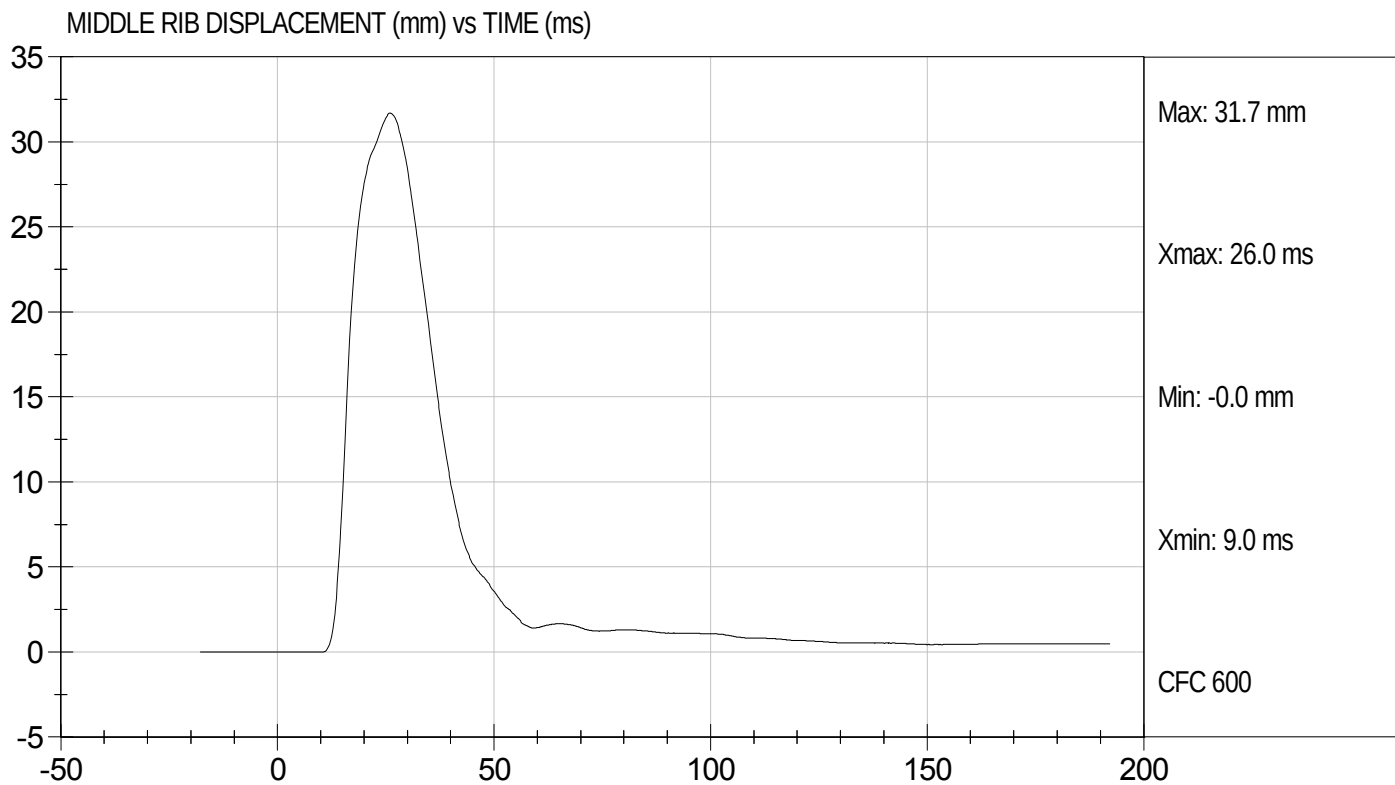
UPPER RIB DISPLACEMENT (mm) vs TIME (ms)





Test Desc: Thorax With Arm
Component ID: D111704

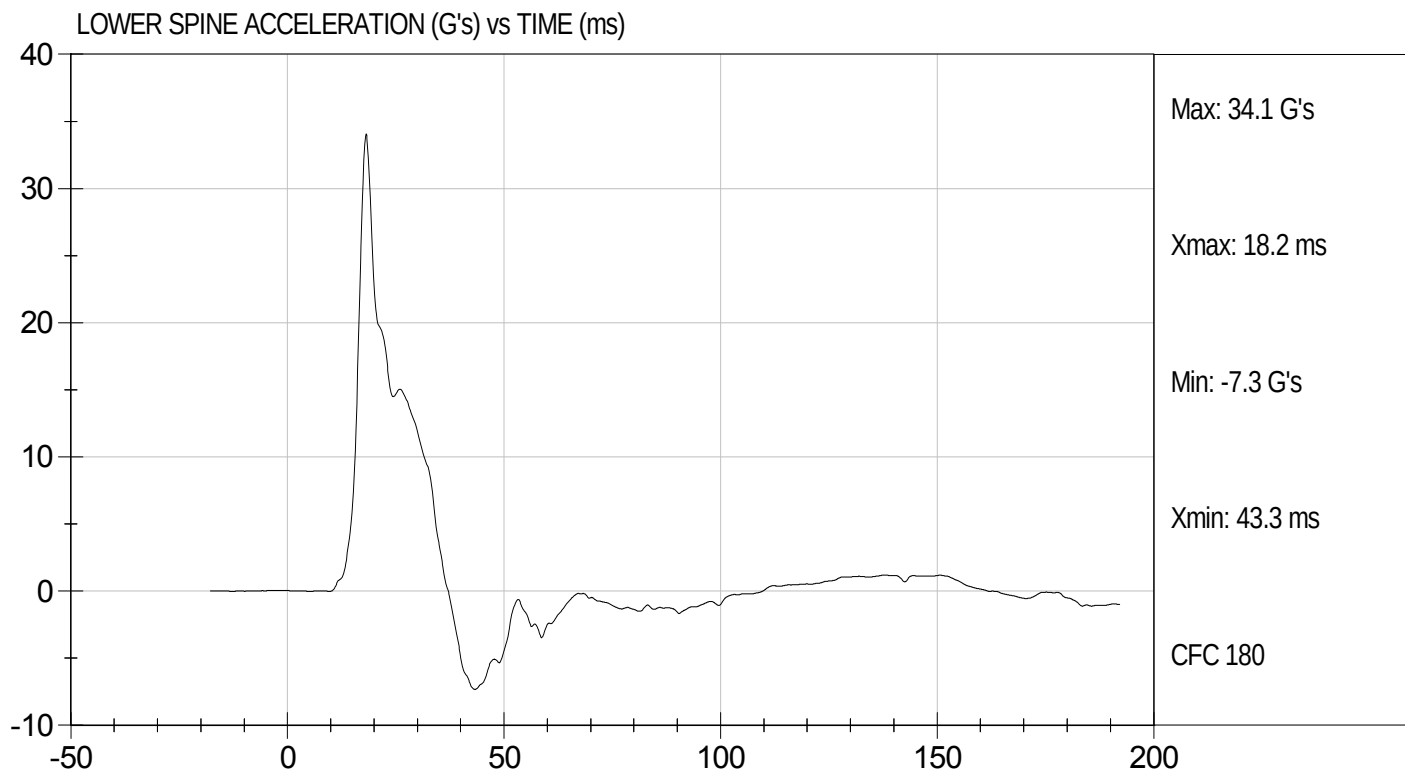
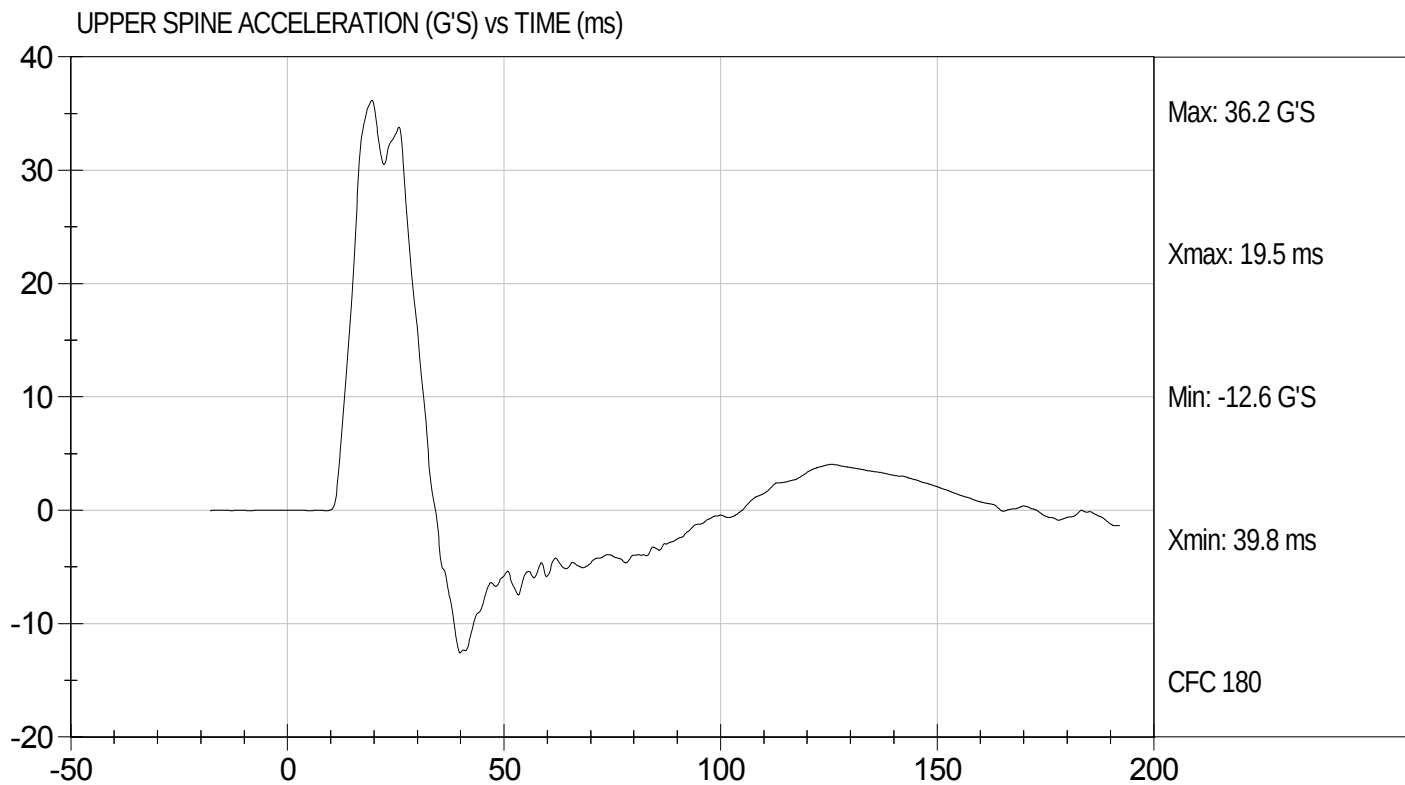
Test Date: 5/9/11
Velocity: 22.22 ft/s, 6.77 m/s





Test Desc: Thorax With Arm
Component ID: D111704

Test Date: 5/9/11
Velocity: 22.22 ft/s, 6.77 m/s



MGA RESEARCH CORPORATION
THORAX (WITHOUT ARM) IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D111705

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	22.0	Pass
Humidity	%	10 to 70	34	Pass
Impact Velocity	m/s	4.20 to 4.40	4.30	Pass
Peak Impactor Force	G's	14 to 18	15	Pass
Upper Rib Displacement	mm	32 to 40	38	Pass
Middle Rib Displacement	mm	39 to 45	42	Pass
Lower Rib Displacement	mm	35 to 43	40	Pass
Upper Spine (T1) Y Acceleration	G's	13 to 17	13	Pass
Lower Spine (T12) Y Acceleration	G's	7 to 11	9	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

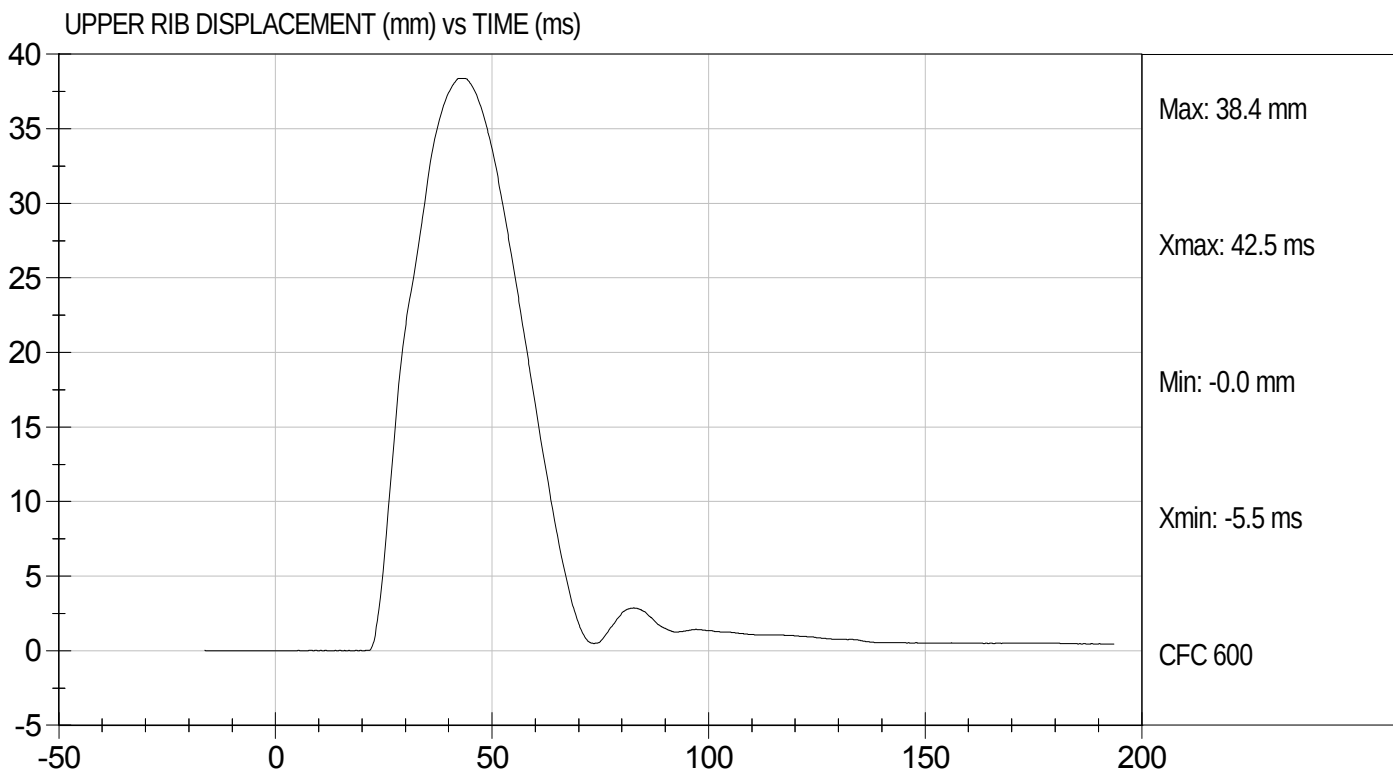
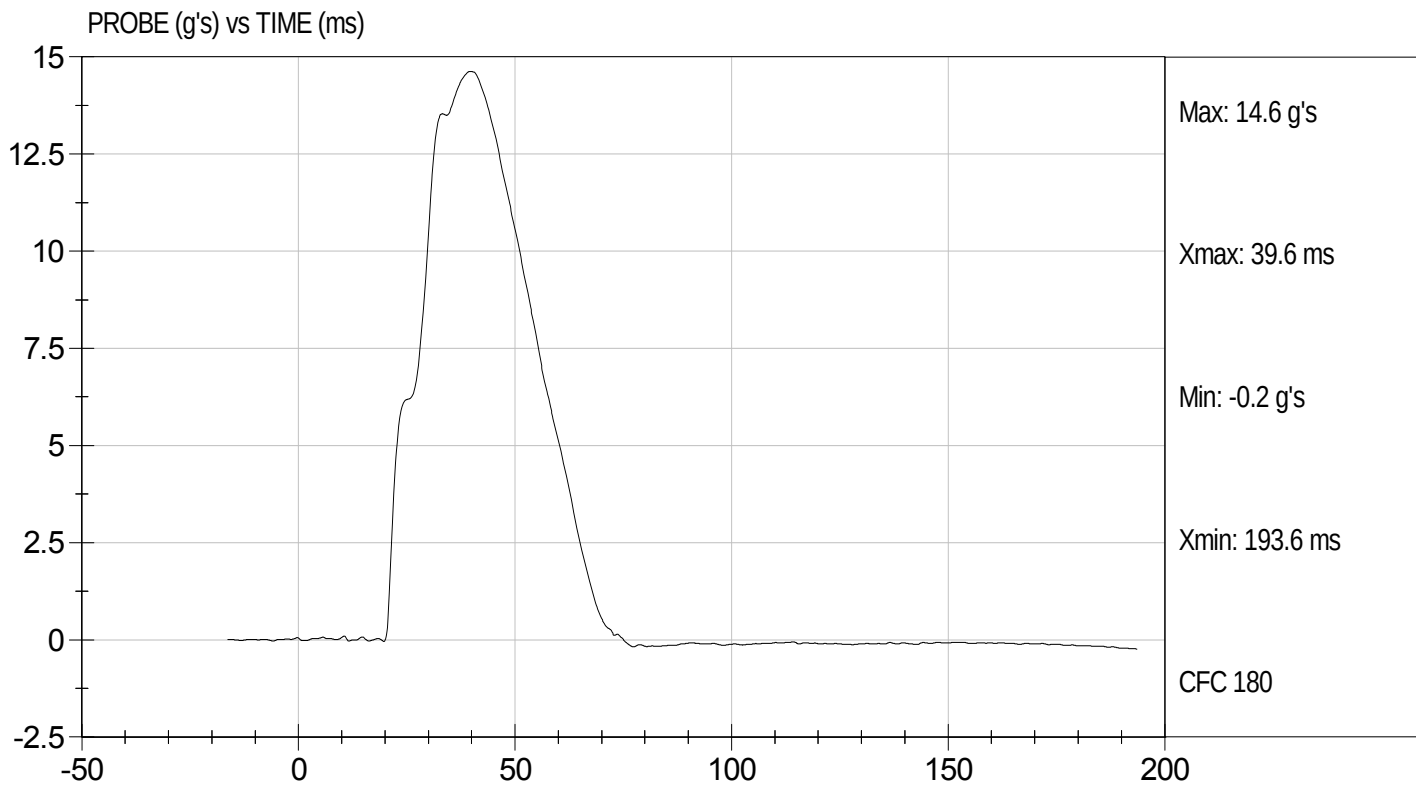
5/9/11
Test Date

David Winkelbauer
Approved By



Test Desc: Thorax Without Arm
Component ID: D111705

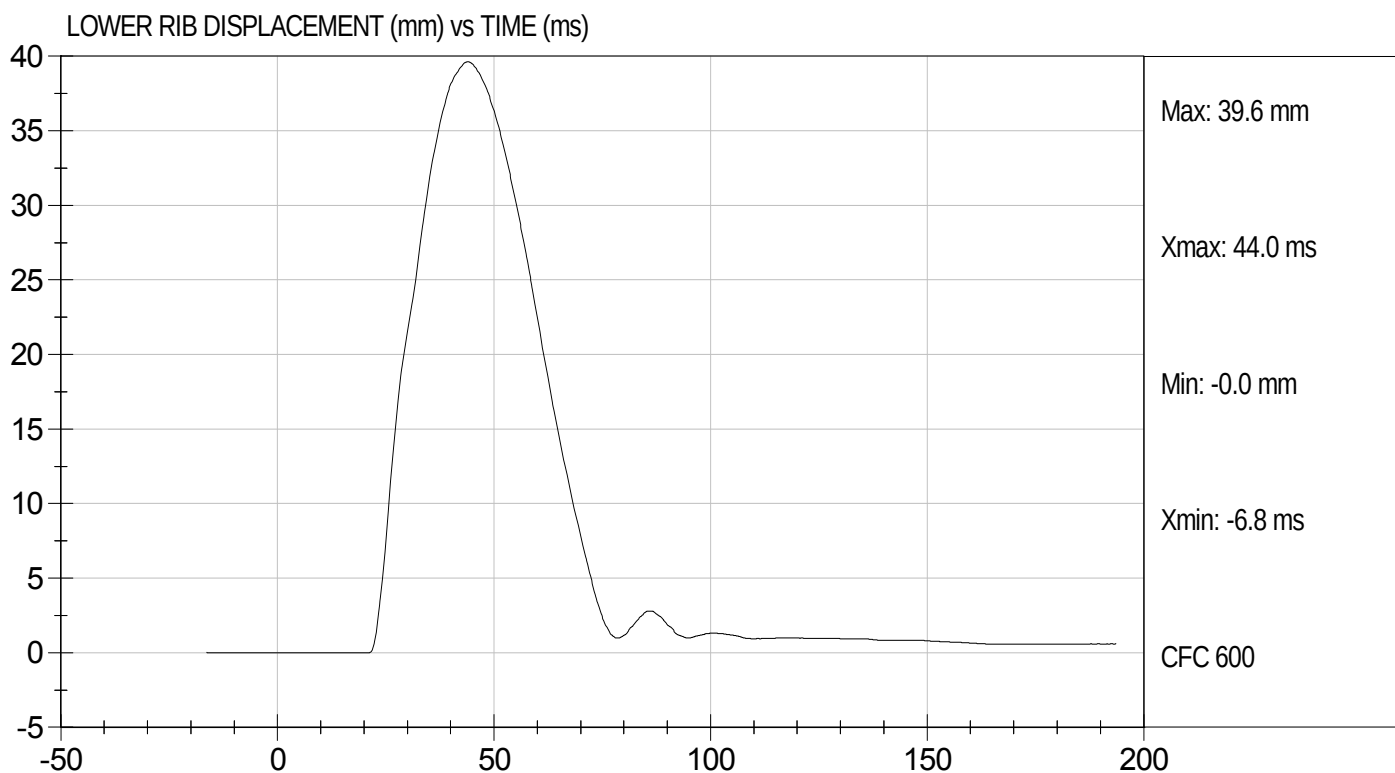
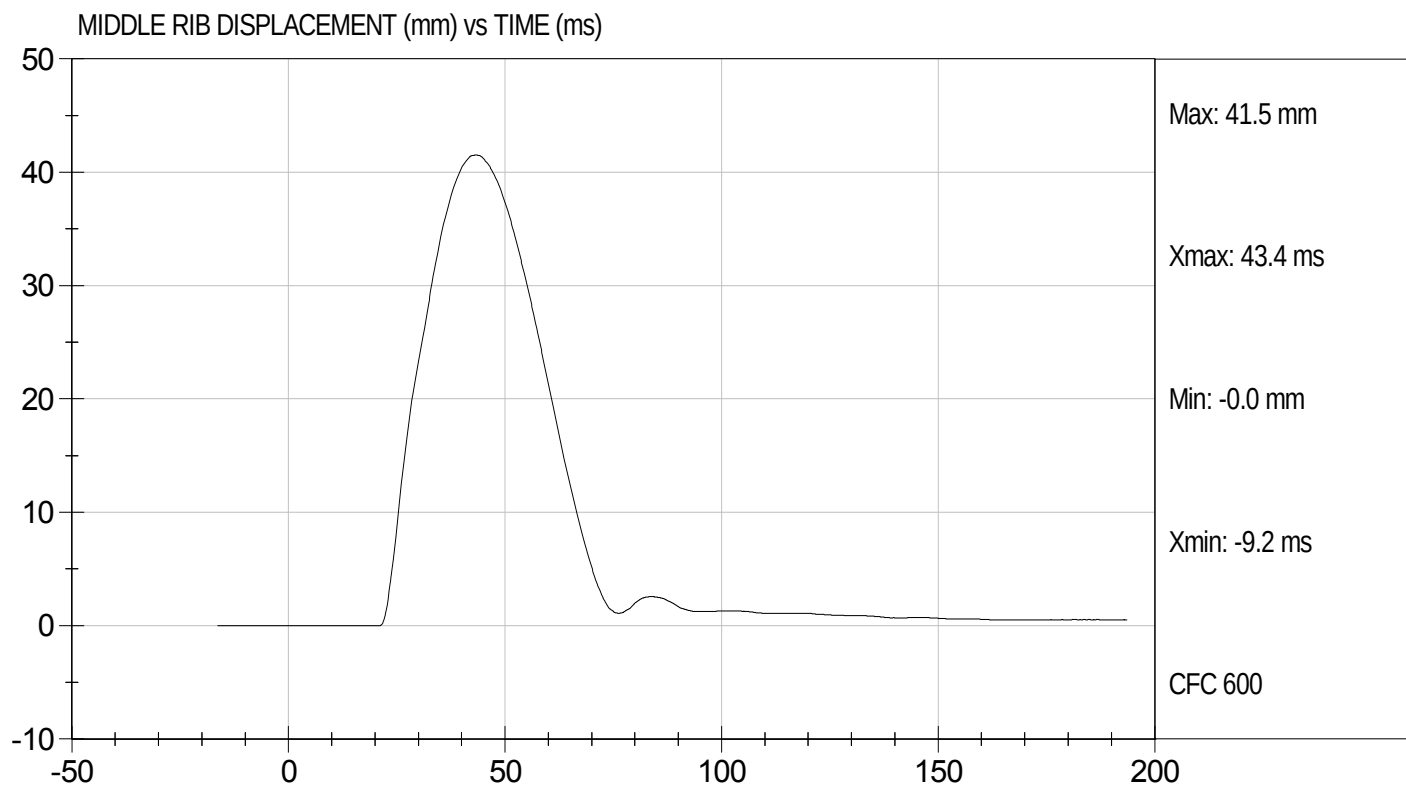
Test Date: 5/9/11
Velocity: 14.12 ft/s, 4.30 m/s





Test Desc: Thorax Without Arm
Component ID: D111705

Test Date: 5/9/11
Velocity: 14.12 ft/s, 4.30 m/s

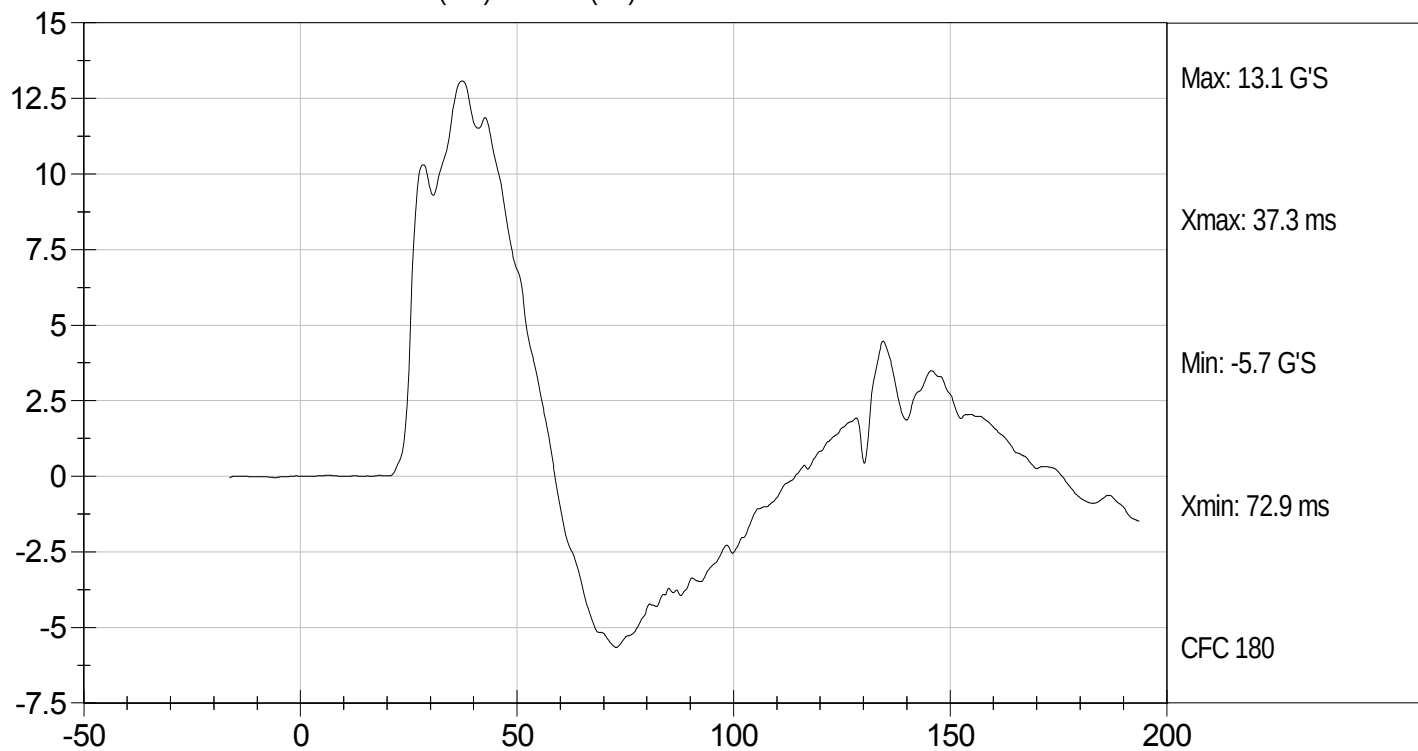




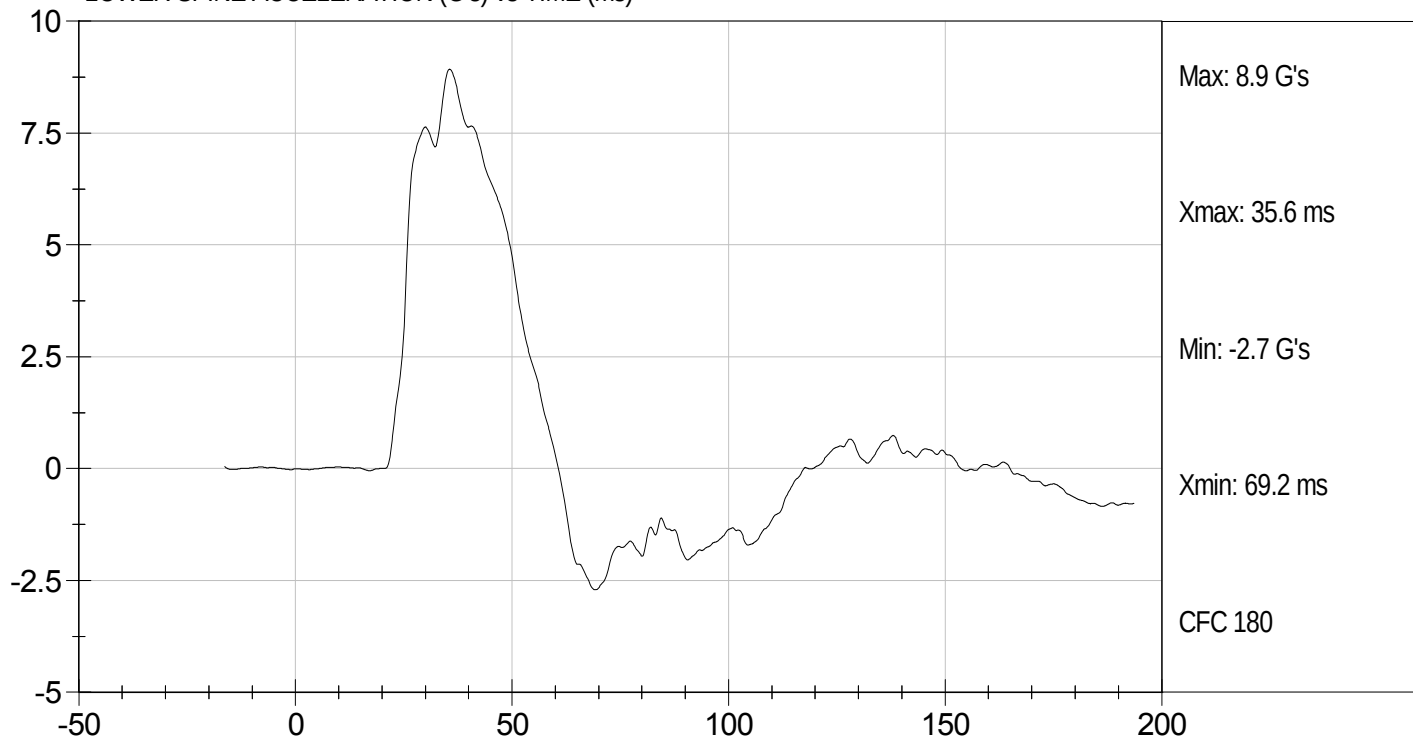
Test Desc: Thorax Without Arm
Component ID: D111705

Test Date: 5/9/11
Velocity: 14.12 ft/s, 4.30 m/s

UPPER SPINE ACCELERATION (G'S) vs TIME (ms)



LOWER SPINE ACCELERATION (G's) vs TIME (ms)

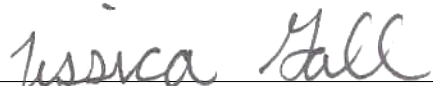


MGA RESEARCH CORPORATION
ABDOMINAL IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D111706

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	35	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Peak Impactor Acceleration	G's	12 to 16	14	Pass
Upper Rib Displacement	mm	36 to 47	43	Pass
Lower Rib Displacement	mm	33 to 44	35	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	10	Pass
Overall Test Results			Pass	


Laboratory Technician

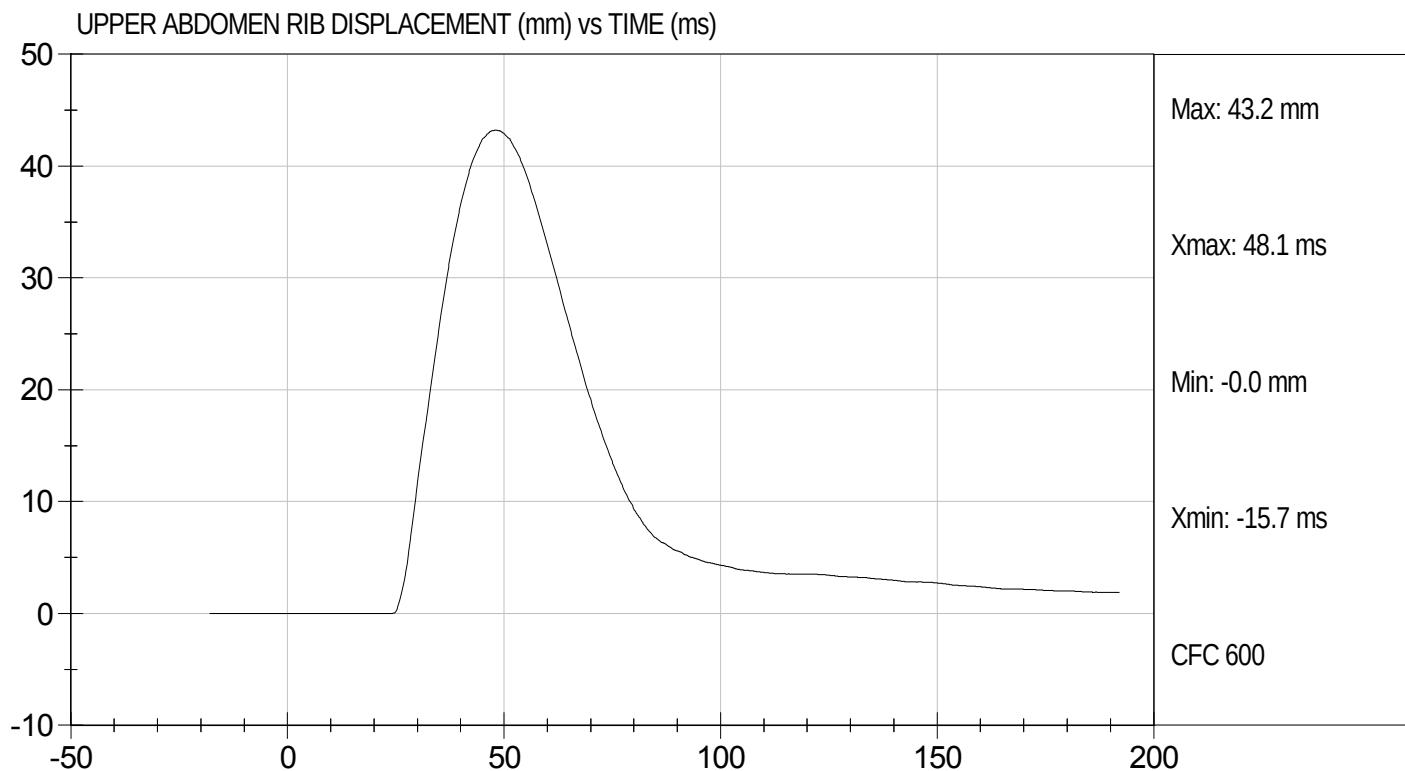
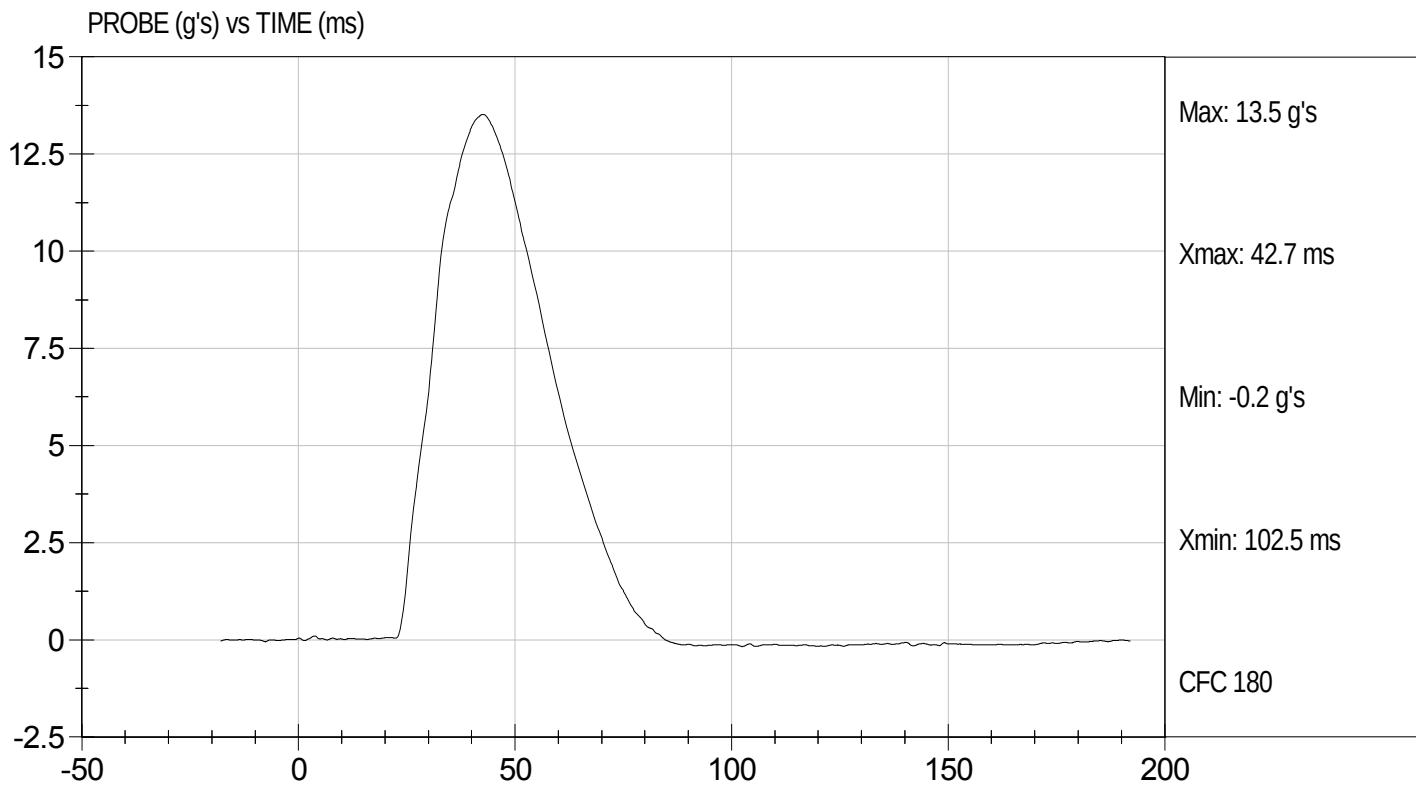
5/9/11
Test Date


Approved By



Test Desc: Abdomen Impact
Component ID: D111706

Test Date: 5/9/11
Velocity: 14.25 ft/s, 4.34 m/s

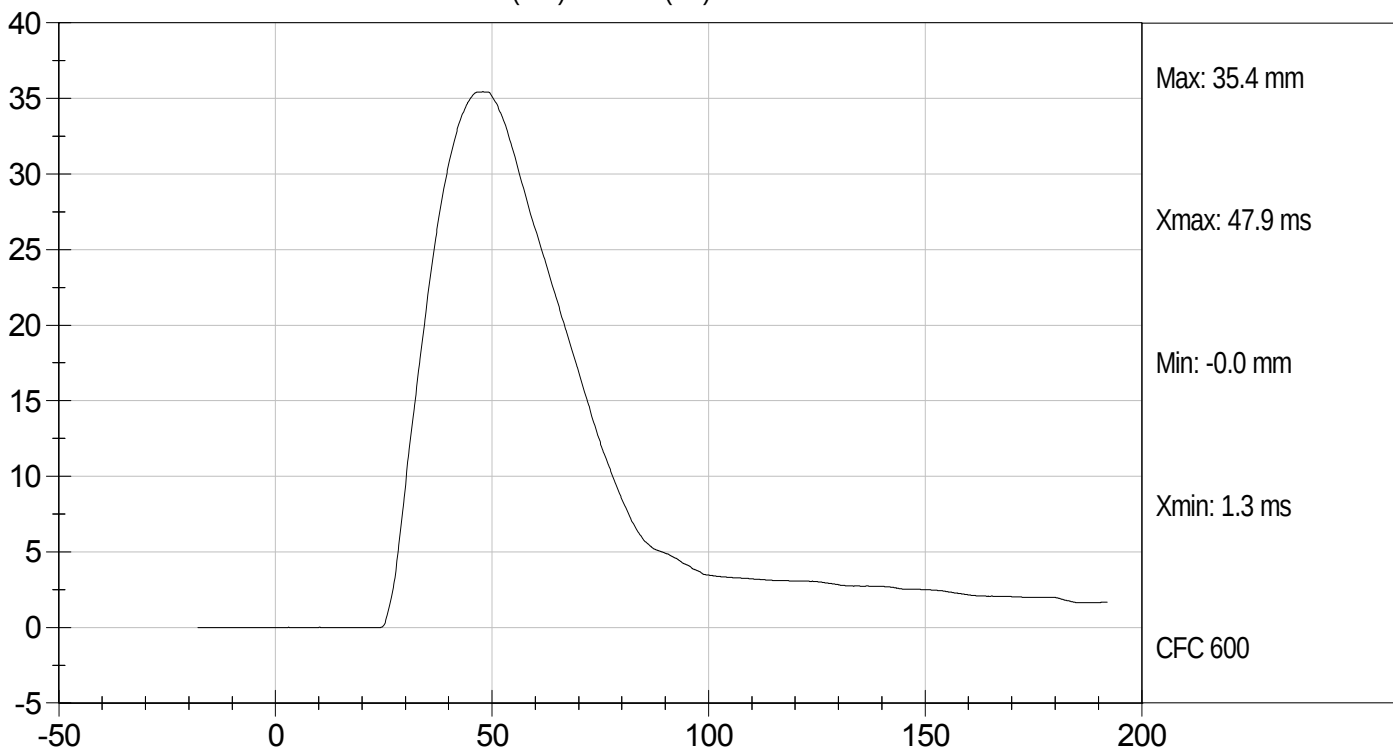




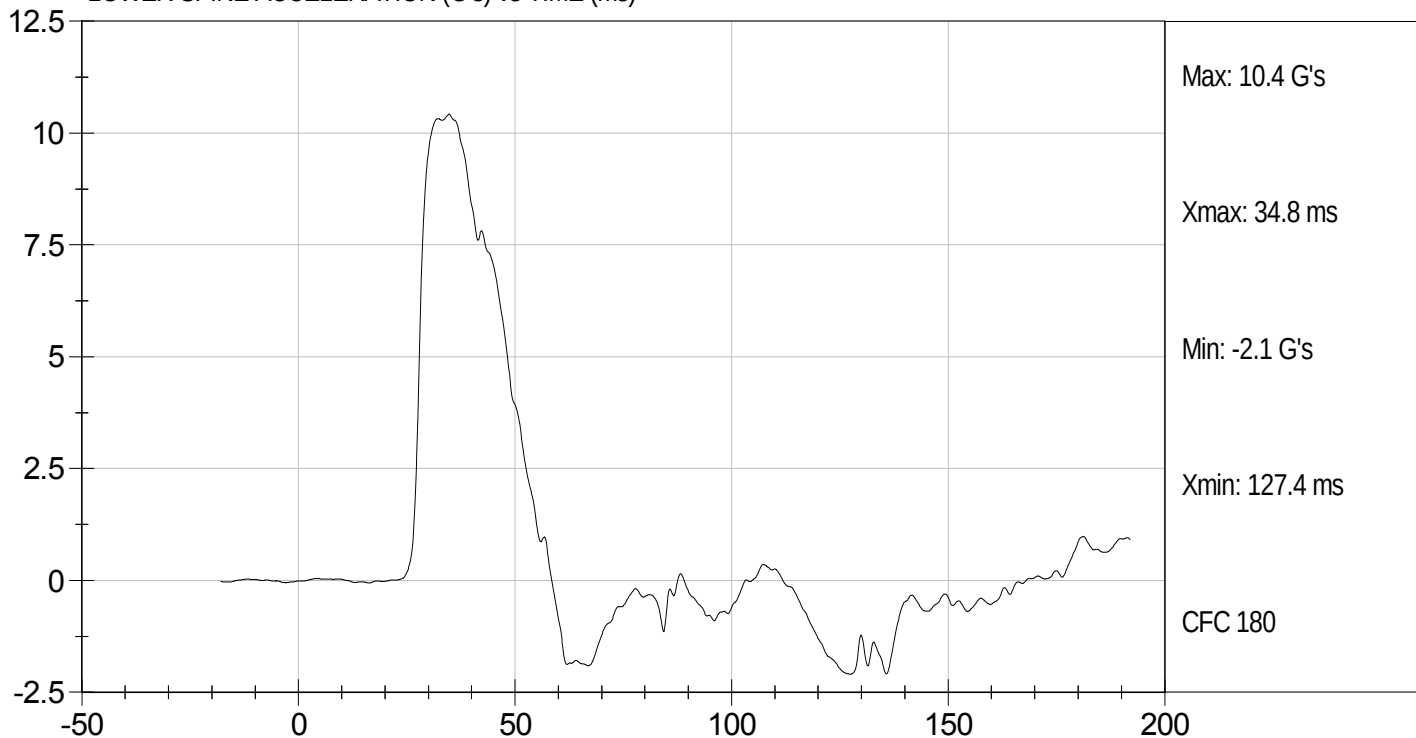
Test Desc: Abdomen Impact
Component ID: D111706

Test Date: 5/9/11
Velocity: 14.25 ft/s, 4.34 m/s

LOWER ABDOMEN RIB DISPLACEMENT (mm) vs TIME (ms)



LOWER SPINE ACCELERATION (G's) vs TIME (ms)



MGA RESEARCH CORPORATION
PELVIS IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D111707

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	35	Pass
Impact Velocity	m/s	6.60 to 6.80	6.71	Pass
Peak Impactor Acceleration	G's	38 to 47	43	Pass
Pelvis Y Acceleration after 6 ms	G's	34 to 42	42	Pass
Peak Acetabulum Force	N	3600 to 4300	3826	Pass
Overall Test Results				Pass


Laboratory Technician

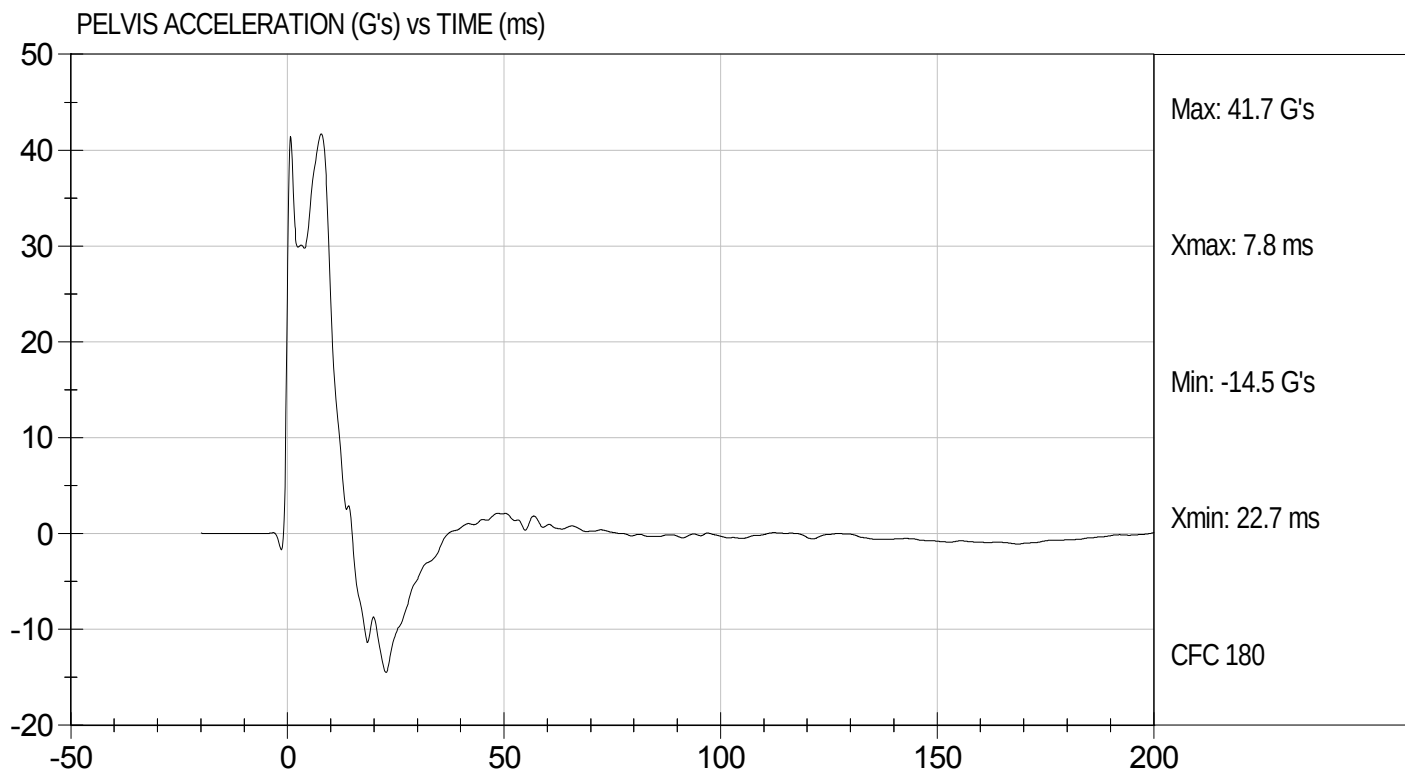
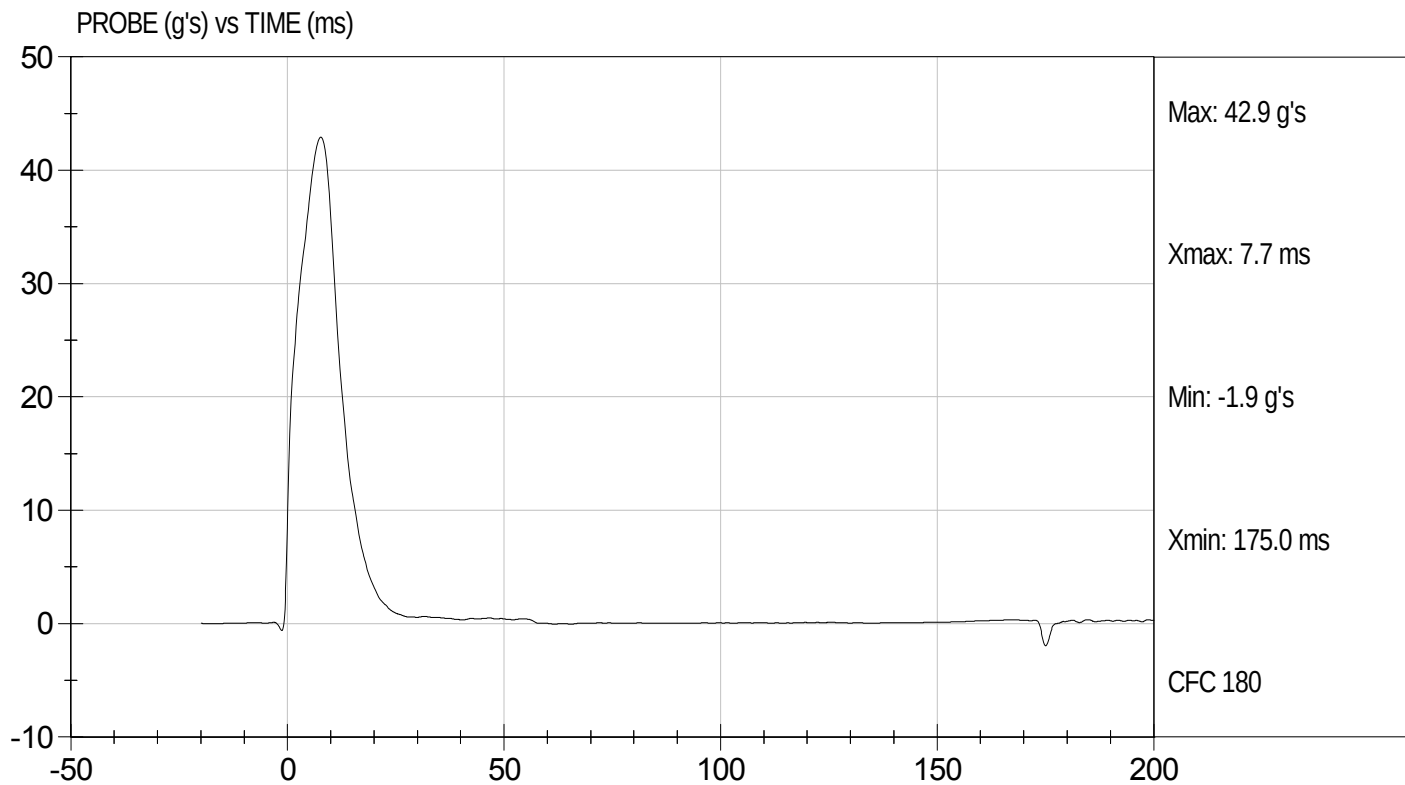
5/9/11
Test Date


Approved By



Test Desc: Pelvis Impact
Component ID: D111707

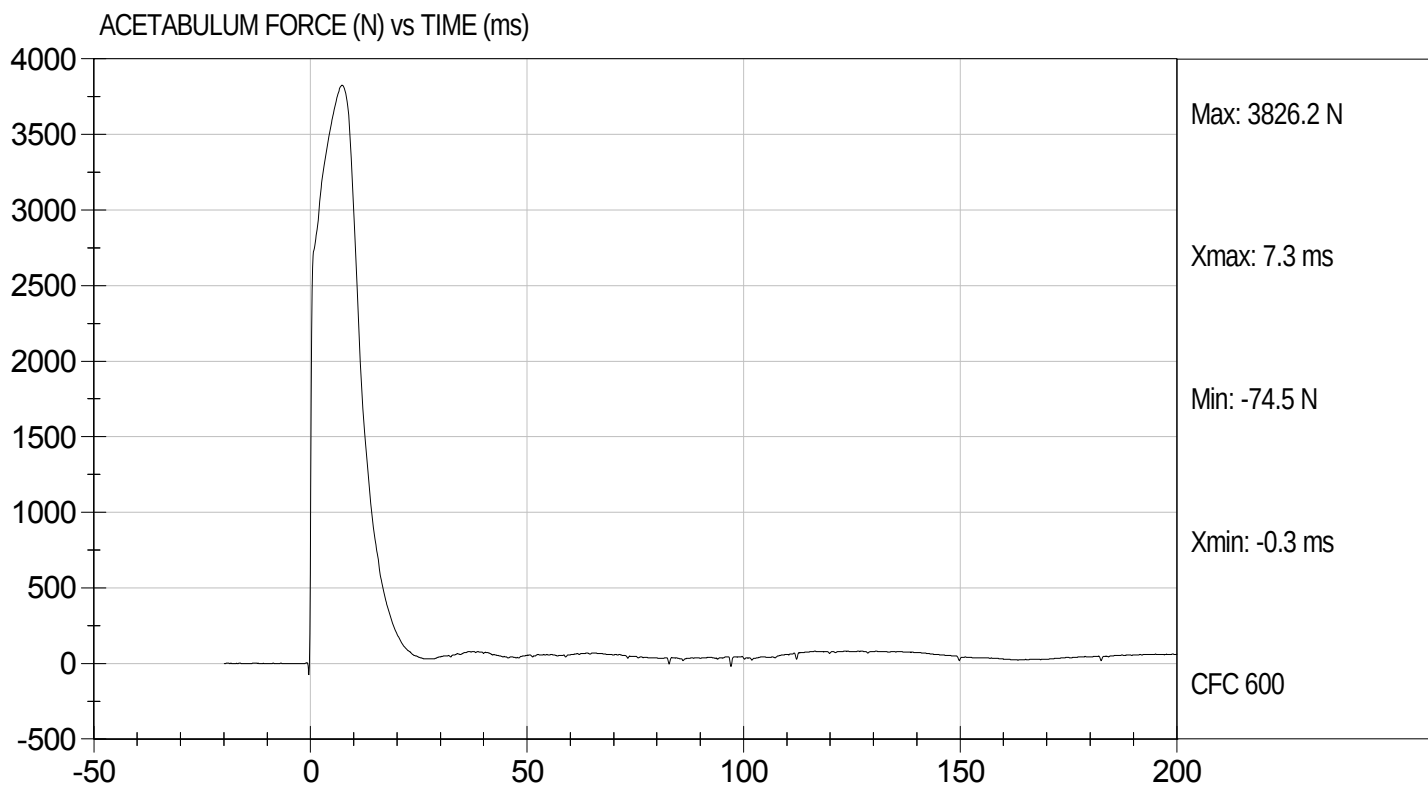
Test Date: 5/9/11
Velocity: 22.00 ft/s, 6.71 m/s





Test Desc: Pelvis Impact
Component ID: D111707

Test Date: 5/9/11
Velocity: 22.00 ft/s, 6.71 m/s

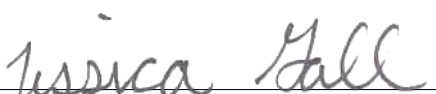


MGA RESEARCH CORPORATION
ILIAC IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D111708

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Humidity	%	10 to 70	35	Pass
Impact Velocity	m/s	4.20 to 4.40	4.38	Pass
Peak Impactor Acceleration	G's	36 to 45	37	Pass
Pelvis Y Acceleration	G's	28 to 39	29	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4489	Pass
Overall Test Results				Pass


Laboratory Technician

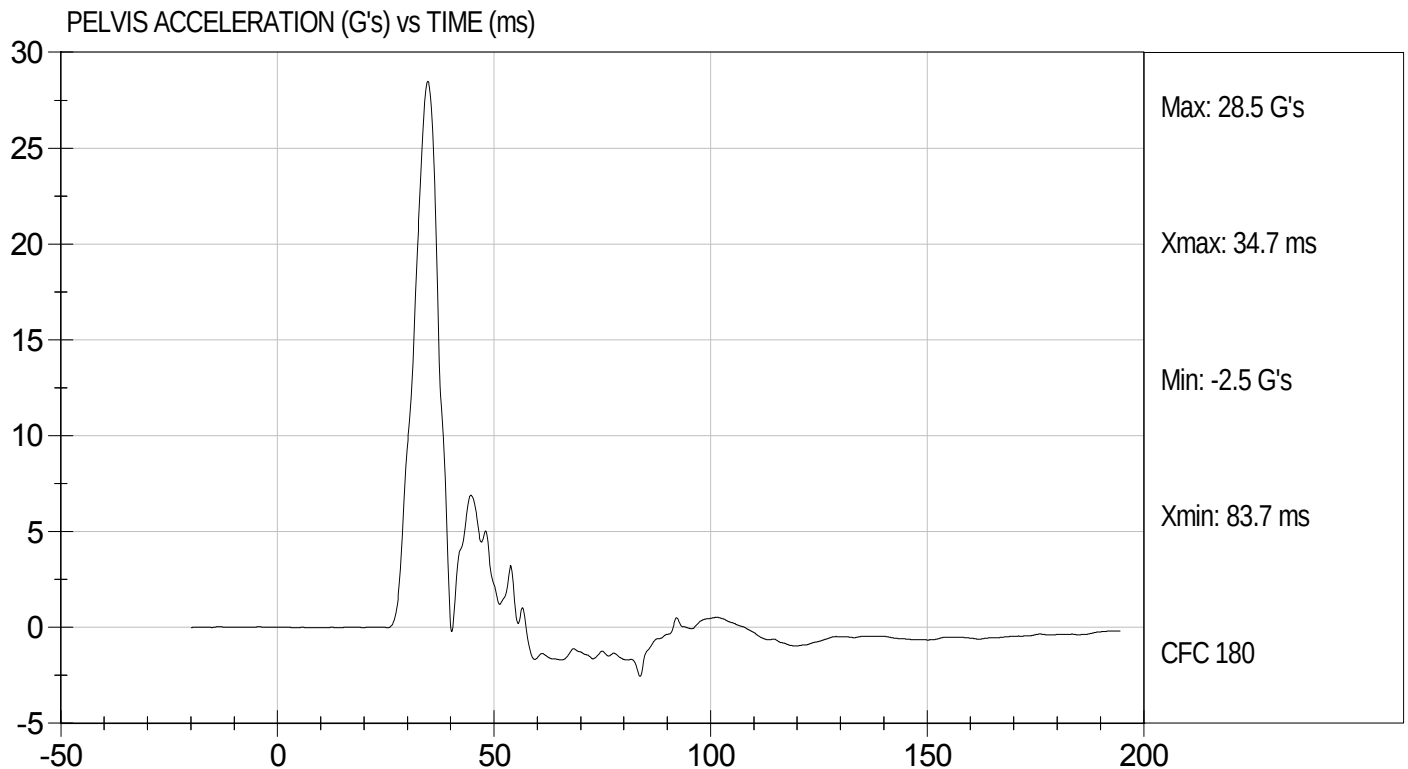
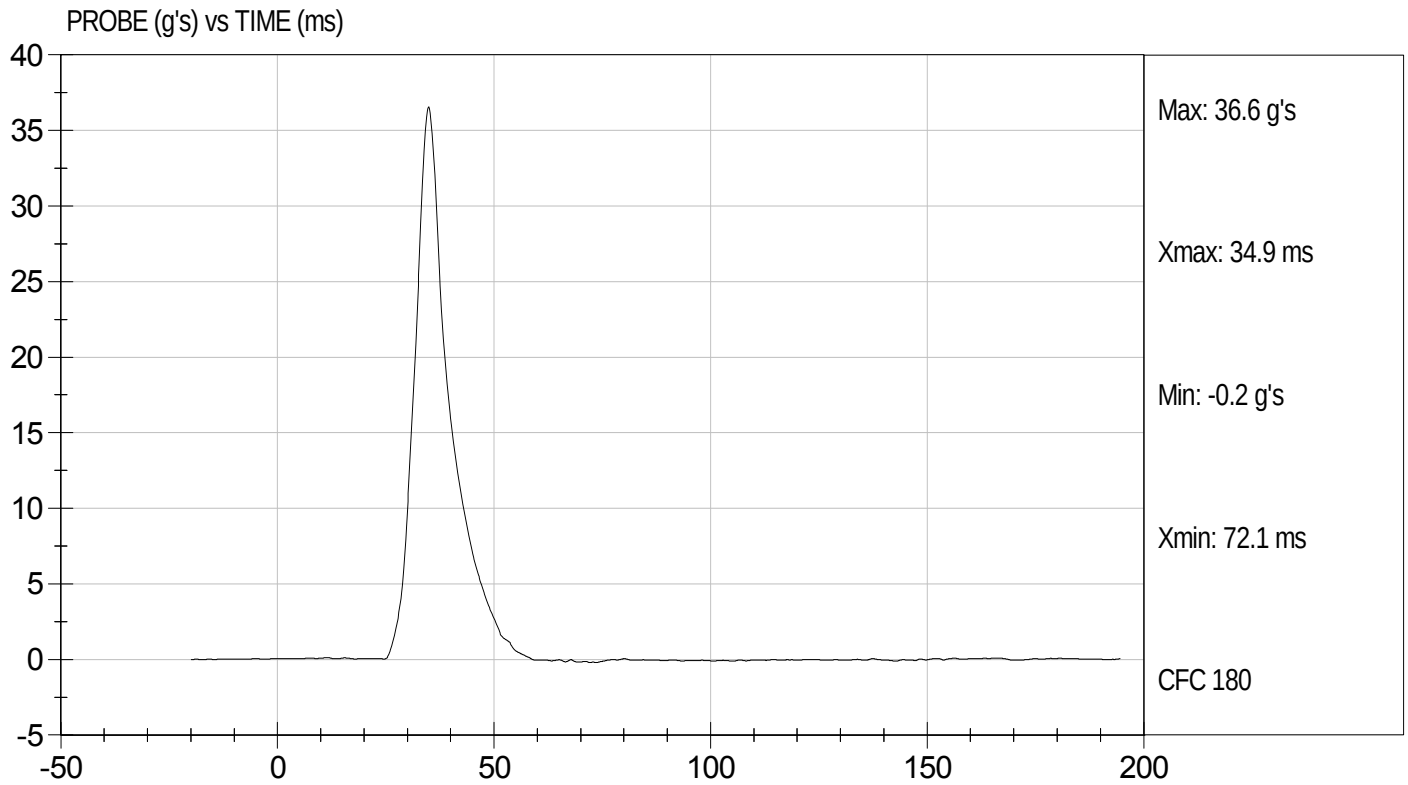
5/9/11
Test Date


Approved By



Test Desc: Iliac Impact
Component ID: D111708

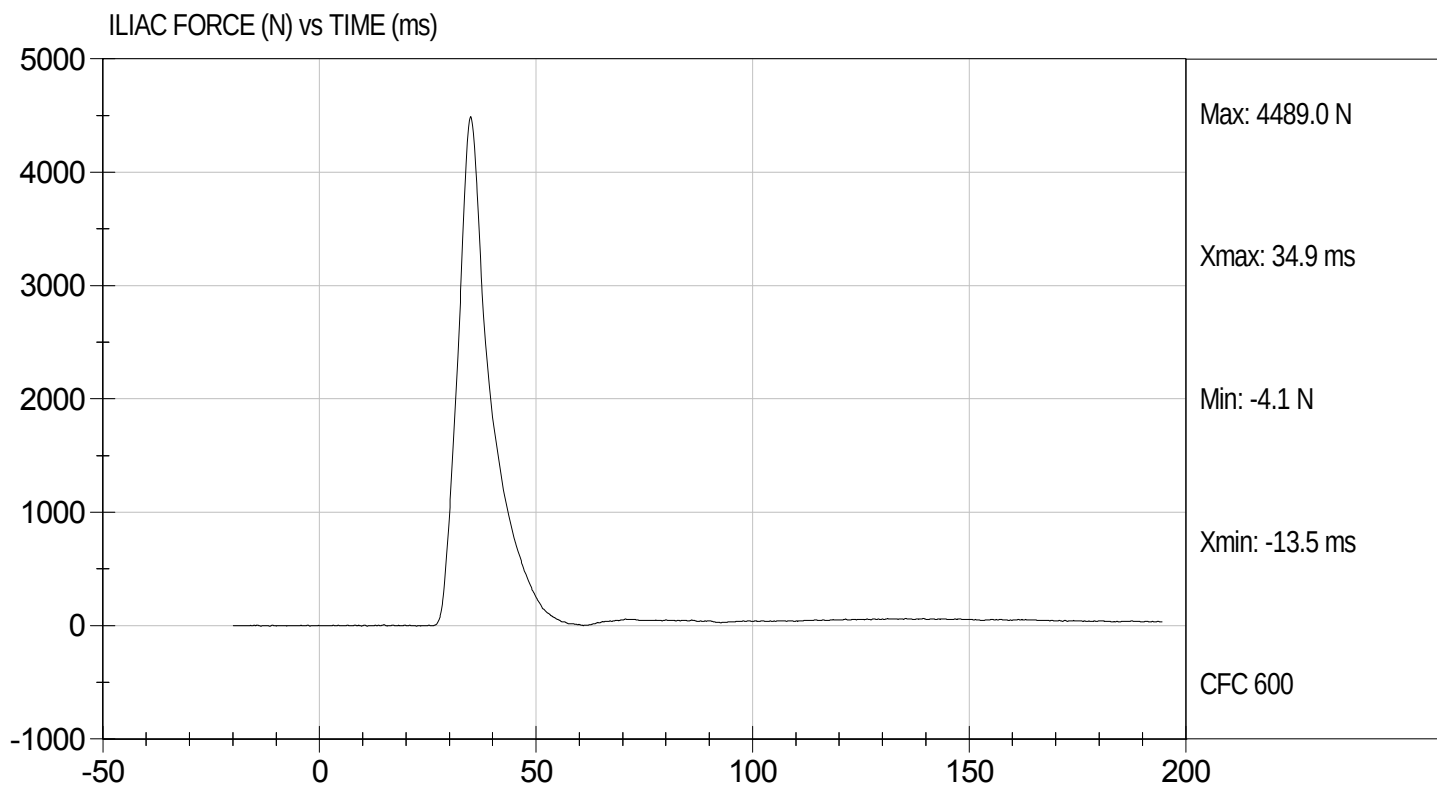
Test Date: 5/9/11
Velocity: 14.37 ft/s, 4.38 m/s





Test Desc: Iliac Impact
Component ID: D111708

Test Date: 5/9/11
Velocity: 14.37 ft/s, 4.38 m/s



MGA RESEARCH CORPORATION
HEAD DROP TEST
SID-Its BUILD LEVEL D DUMMY

ATD Serial No: 296

Test ID: D111761

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	49	Pass
Peak Resultant Acceleration	G's	115 to 137	123	Pass
Peak Lateral Acceleration	G's	+/- 15	2.4	Pass
Unimodal	N/A	<15%	Yes	Pass
Overall Test Results				Pass


Laboratory Technician

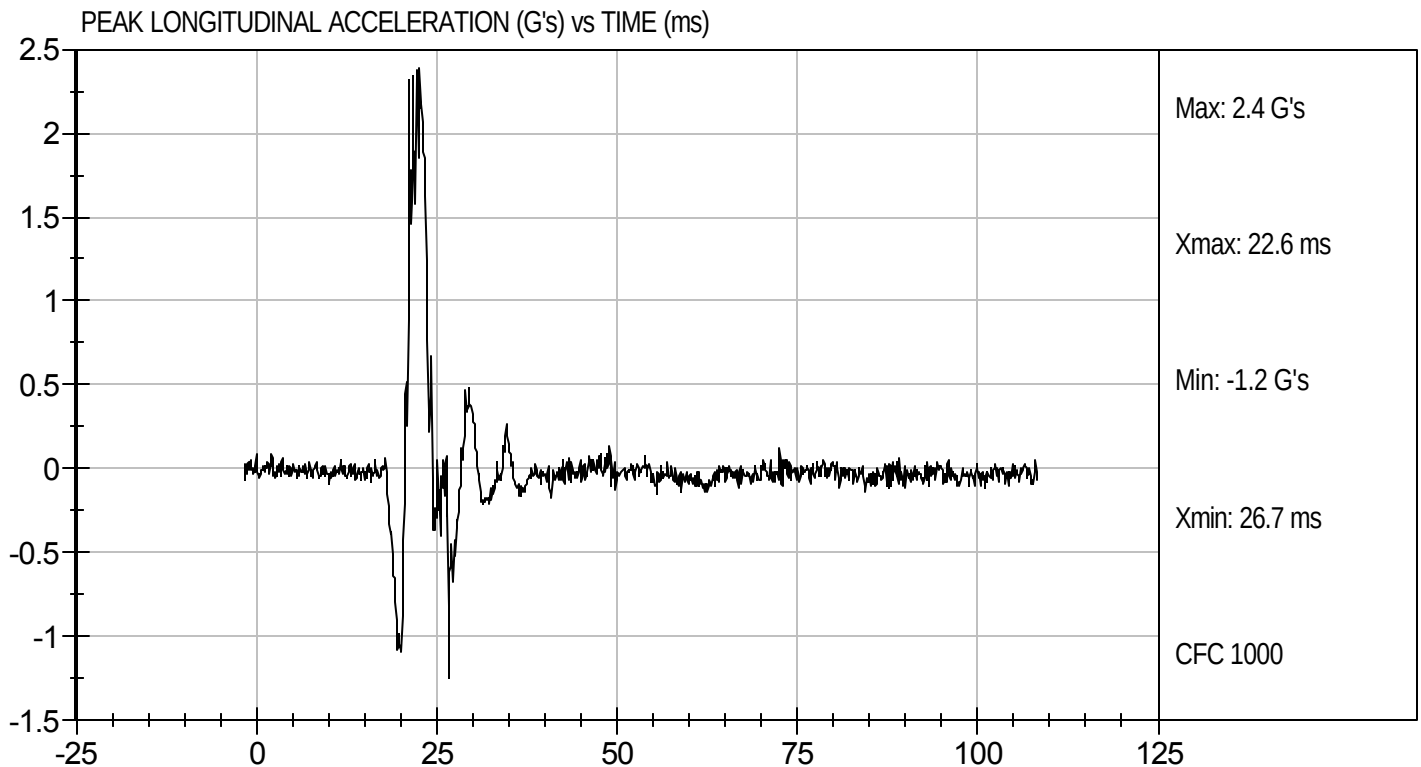
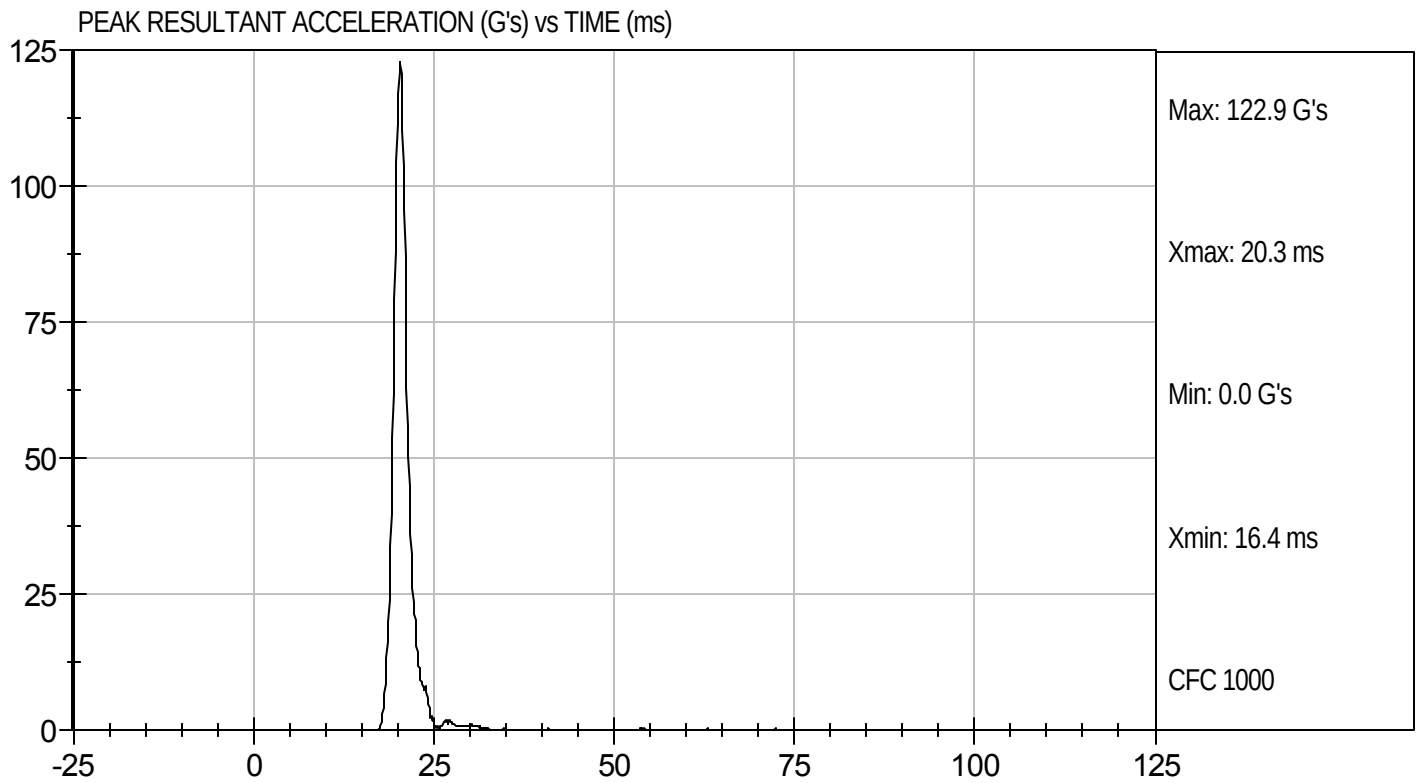
5/13/11
Test Date


Approved By



Test Desc: Head Drop
Component ID: D111761

Test Date: 5/13/11
Velocity: 0 ft/s, 0 m/s

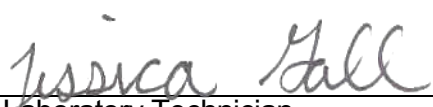


MGA RESEARCH CORPORATION
LATERAL NECK PENDULUM TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D111762

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	20.9	Pass
Humidity		%	10 to 70	48	Pass
Impact Velocity		m/s	5.51 to 5.63	5.58	Pass
Delta Velocity	10 ms	m/s	2.20 to 2.80	2.68	Pass
	15 ms	m/s	3.30 to 4.10	3.72	Pass
	20 ms	m/s	4.40 to 5.40	4.90	Pass
	25 ms	m/s	5.40 to 6.10	5.58	Pass
	25-100 ms	m/s	5.50 to 6.20	5.61	Pass
Maximum D-Plane Rotation		deg	71 to 81	72	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	56	Pass
Maximum Occipital Condyle Moment during Rotation Interval Nm			-44 to -36	-42	Pass
Time of Moment Decay to 0 Nm		ms	102 to 126	118	Pass
Overall Test Results				Pass	


 Laboratory Technician

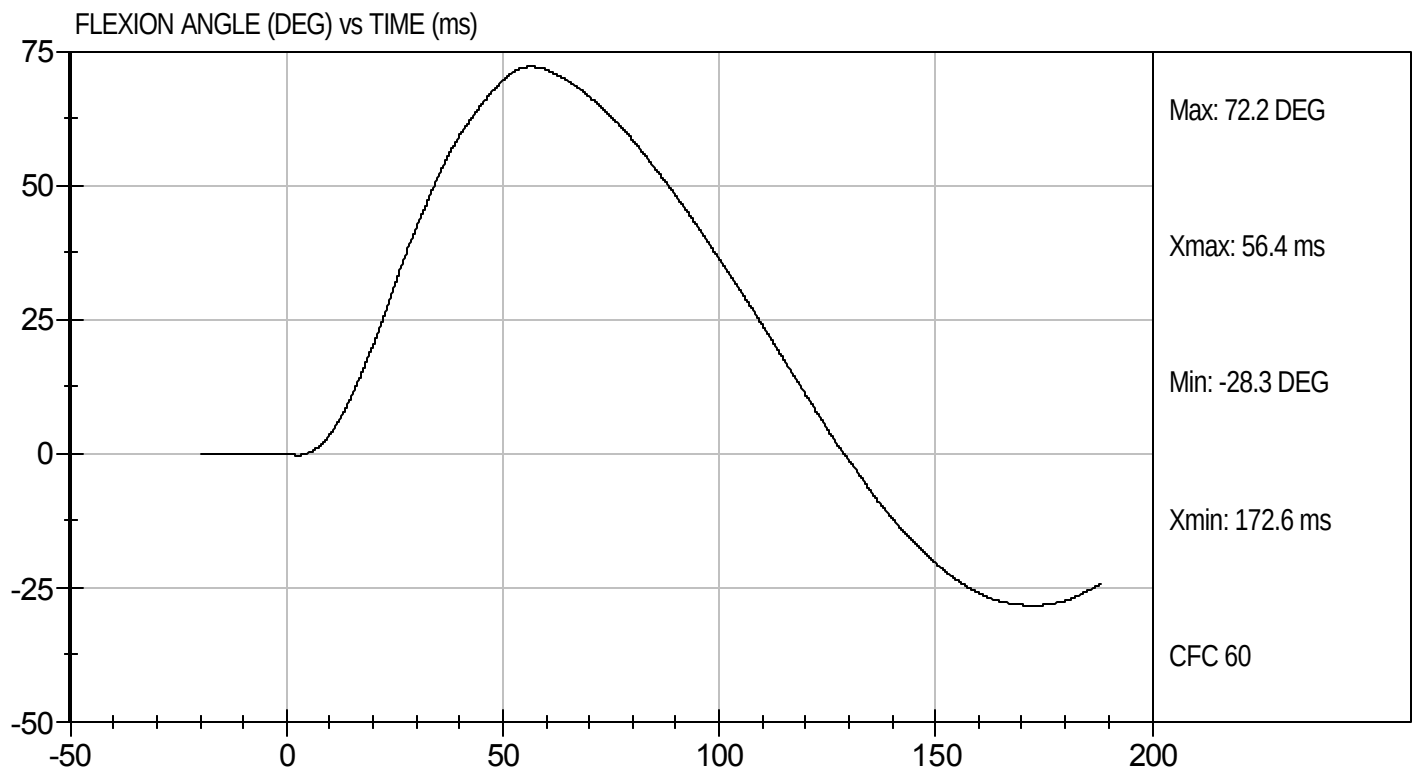
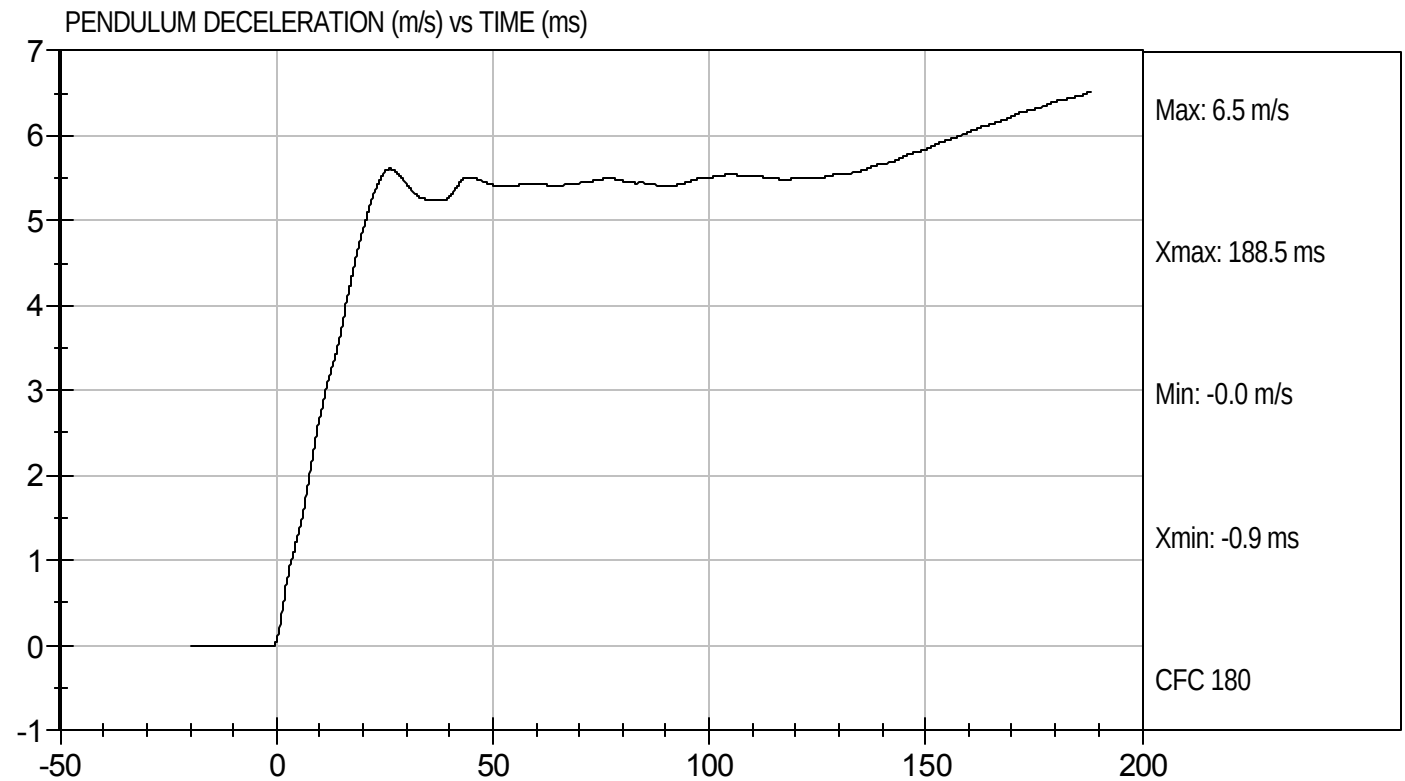
5/13/11
 Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D111762

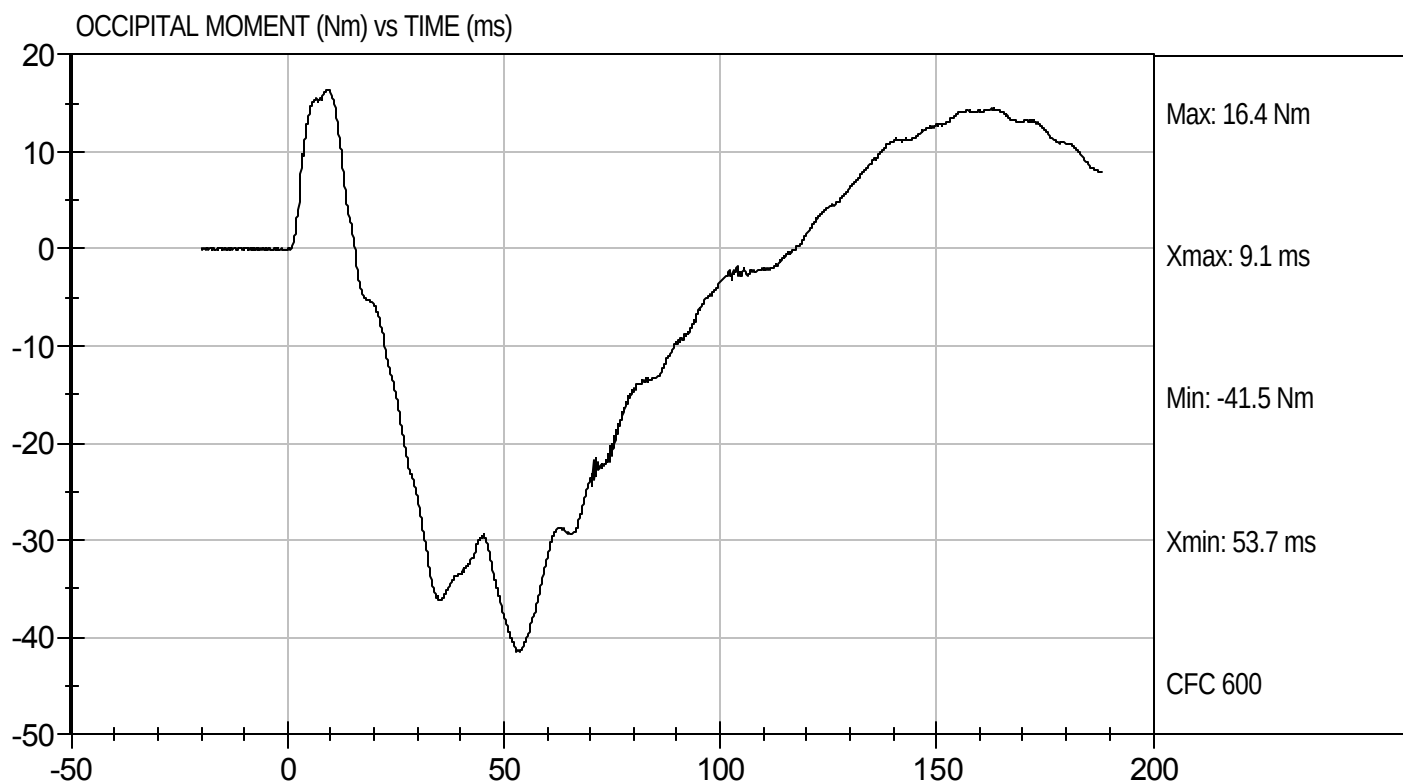
Test Date: 5/13/11
Velocity: 18.32 ft/s, 5.58 m/s





Test Desc: Neck Bending
Component ID: D111762

Test Date: 5/13/11
Velocity: 18.32 ft/s, 5.58 m/s



MGA RESEARCH CORPORATION
SHOULDER IMPACT TEST
SID-11s BUILD LEVEL D DUMMY

ATD Serial No: 296

Test ID: D111763

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	48	Pass
Impact Velocity	m/s	4.20 to 4.40	4.38	Pass
Maximum Probe Acceleration	G's	13 to 18	15	Pass
Shoulder Displacement	mm	28 to 37	31	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	18	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

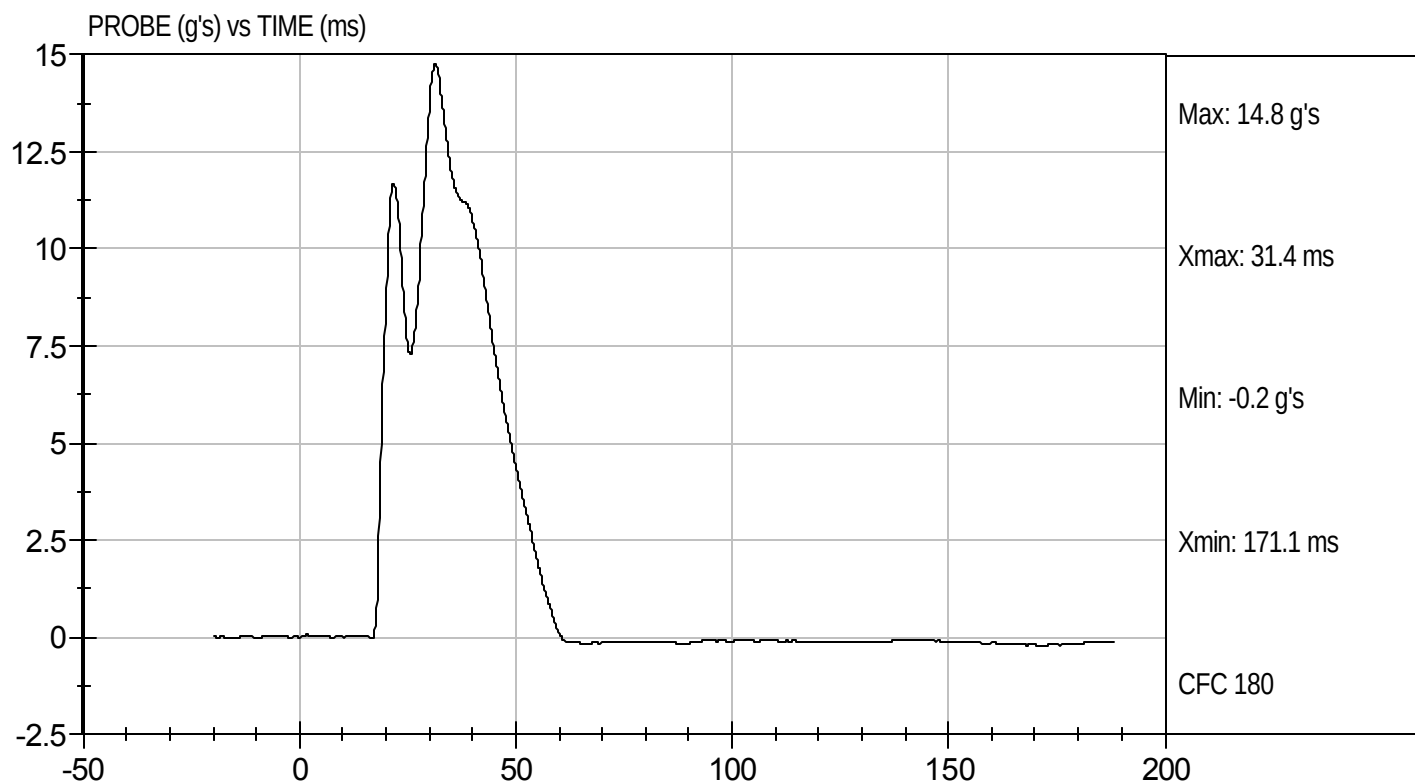
5/12/11
Test Date

David Winkelbauer
Approved By



Test Desc: Shoulder Impact
Component ID: D111763

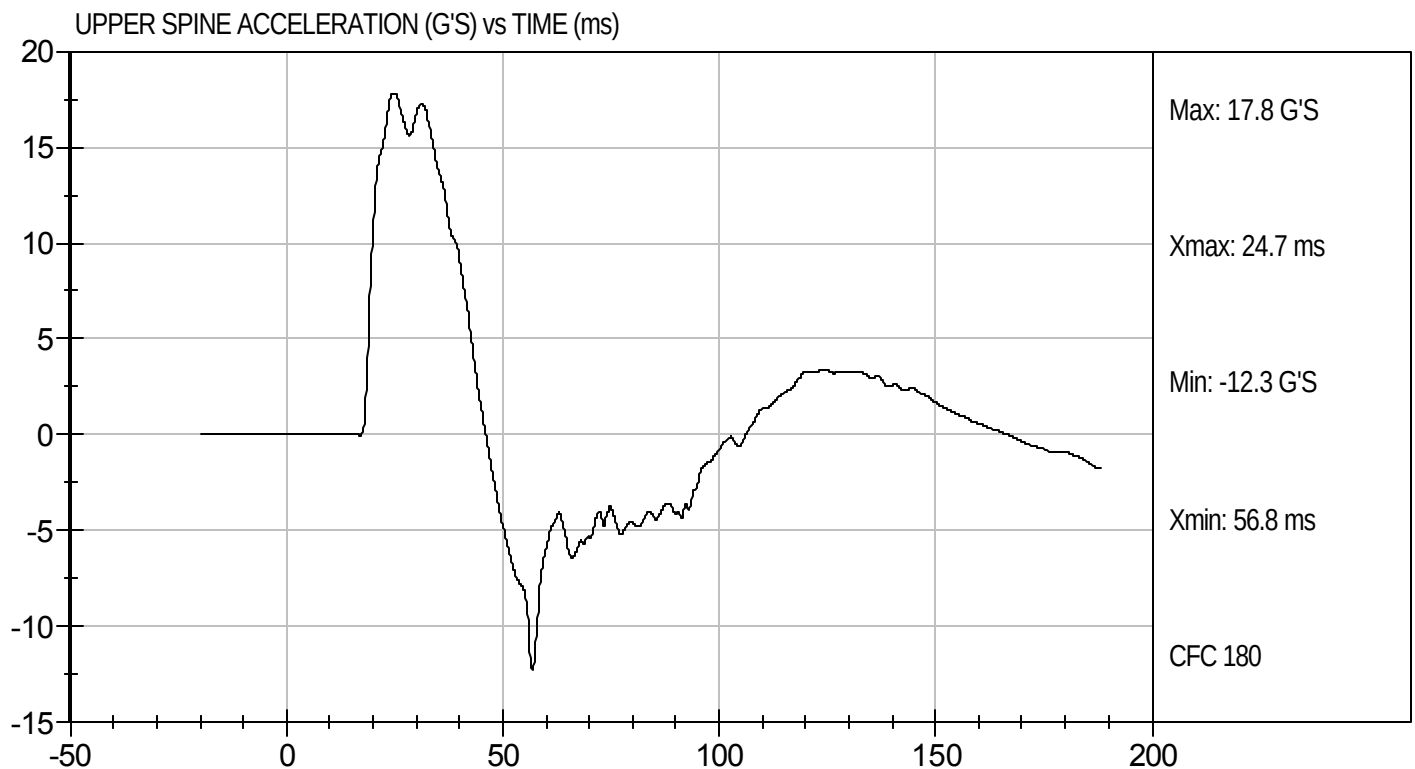
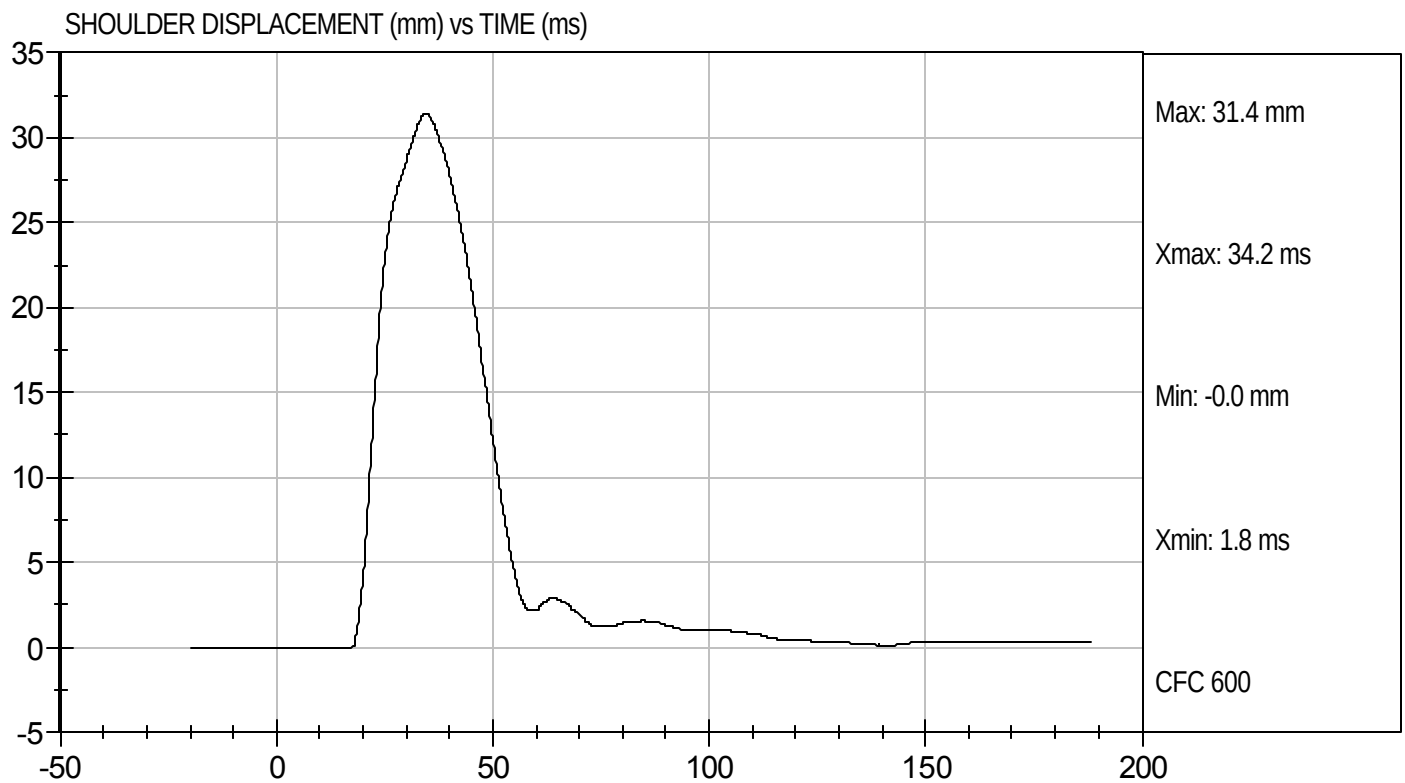
Test Date: 5/12/11
Velocity: 14.36 ft/s, 4.38 m/s





Test Desc: Shoulder Impact
Component ID: D111763

Test Date: 5/12/11
Velocity: 14.36 ft/s, 4.38 m/s



MGA RESEARCH CORPORATION
THORAX (WITH ARM) IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D111764

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.8	Pass
Humidity	%	10 to 70	48	Pass
Impact Velocity	m/s	6.60 to 6.80	6.77	Pass
Peak Impactor Acceleration	G's	30 to 36	31	Pass
Shoulder Displacement	mm	31 to 40	38	Pass
Upper Rib Displacement	mm	25 to 32	31	Pass
Middle Rib Displacement	mm	30 to 36	31	Pass
Lower Rib Displacement	mm	32 to 38	32	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	36	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	34	Pass
Overall Test Results			Pass	


Laboratory Technician

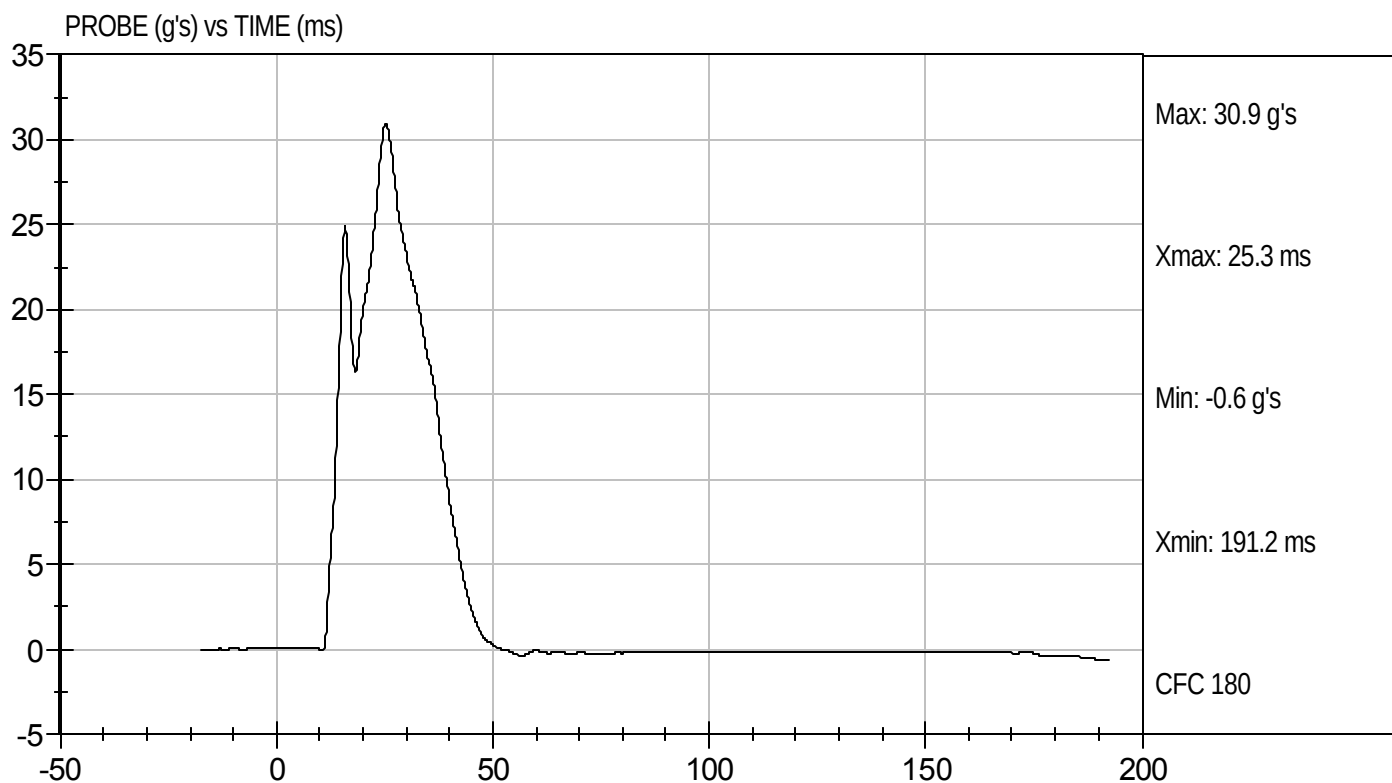
5/12/11
Test Date


Approved By



Test Desc: Thorax With Arm
Component ID: D111764

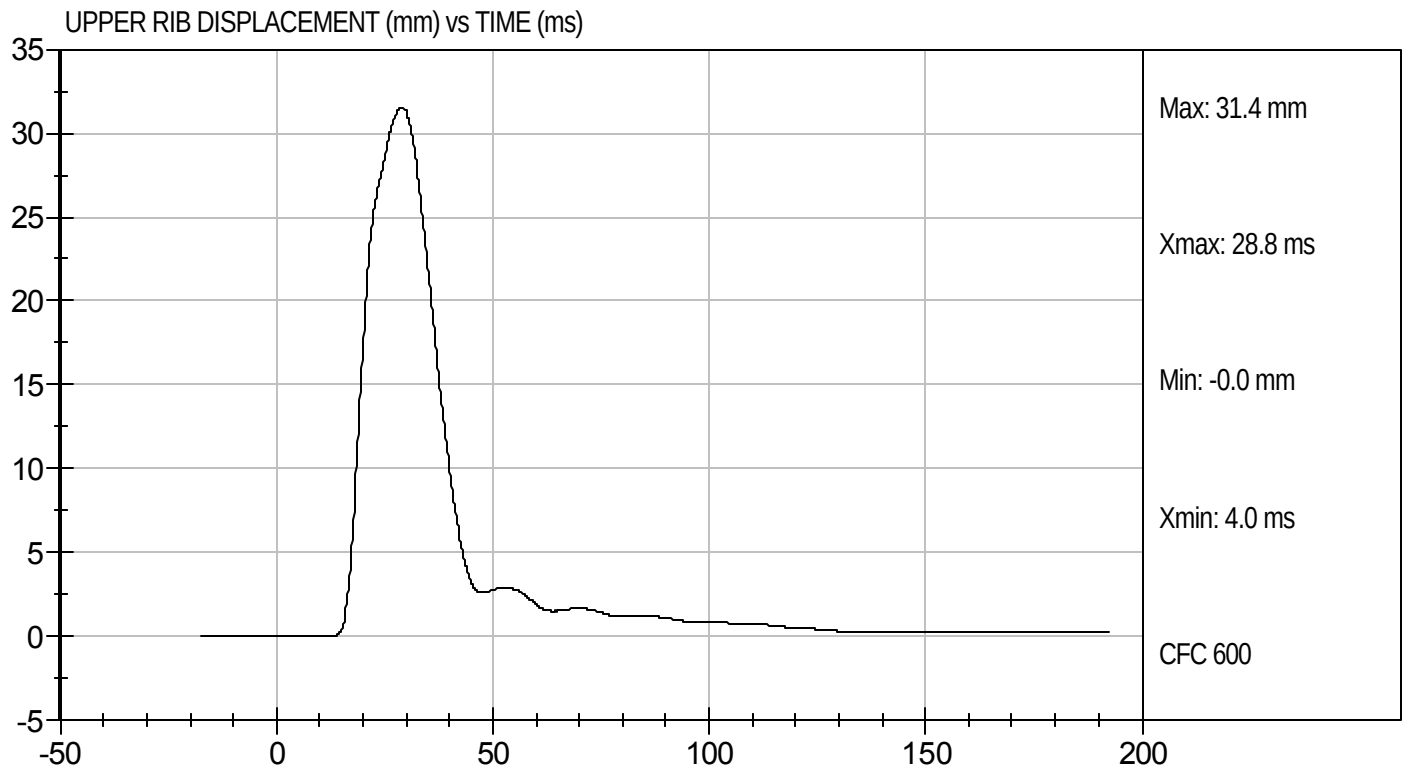
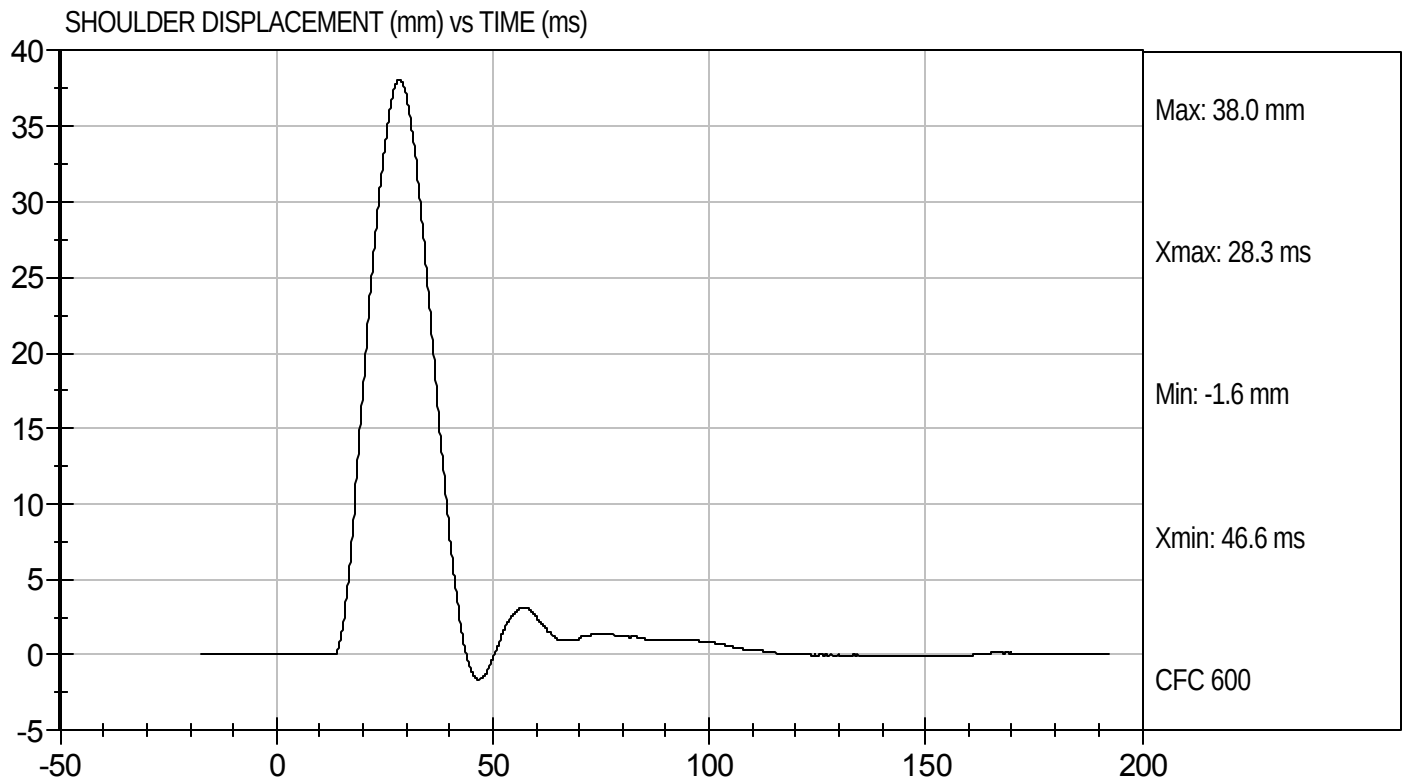
Test Date: 5/12/11
Velocity: 22.2 ft/s, 6.77 m/s





Test Desc: Thorax With Arm
Component ID: D111764

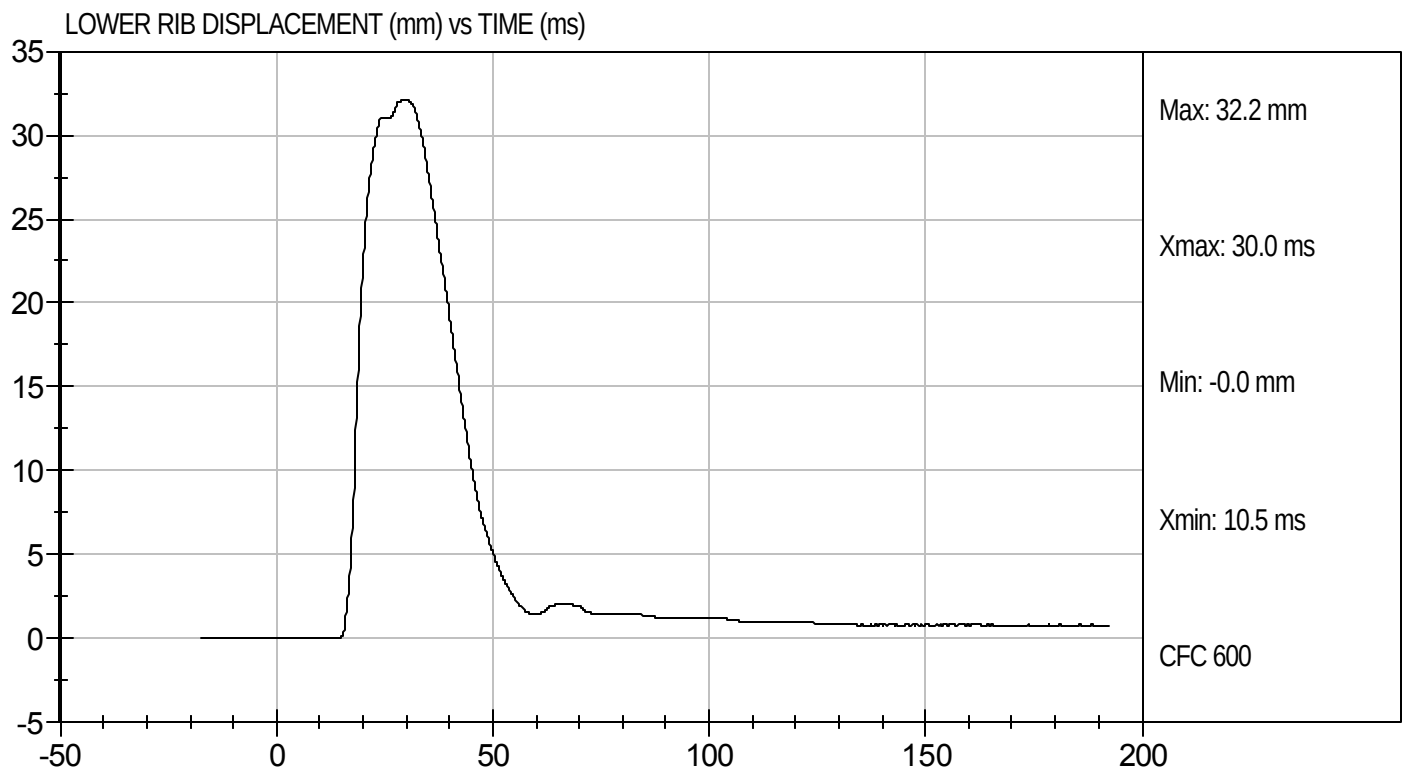
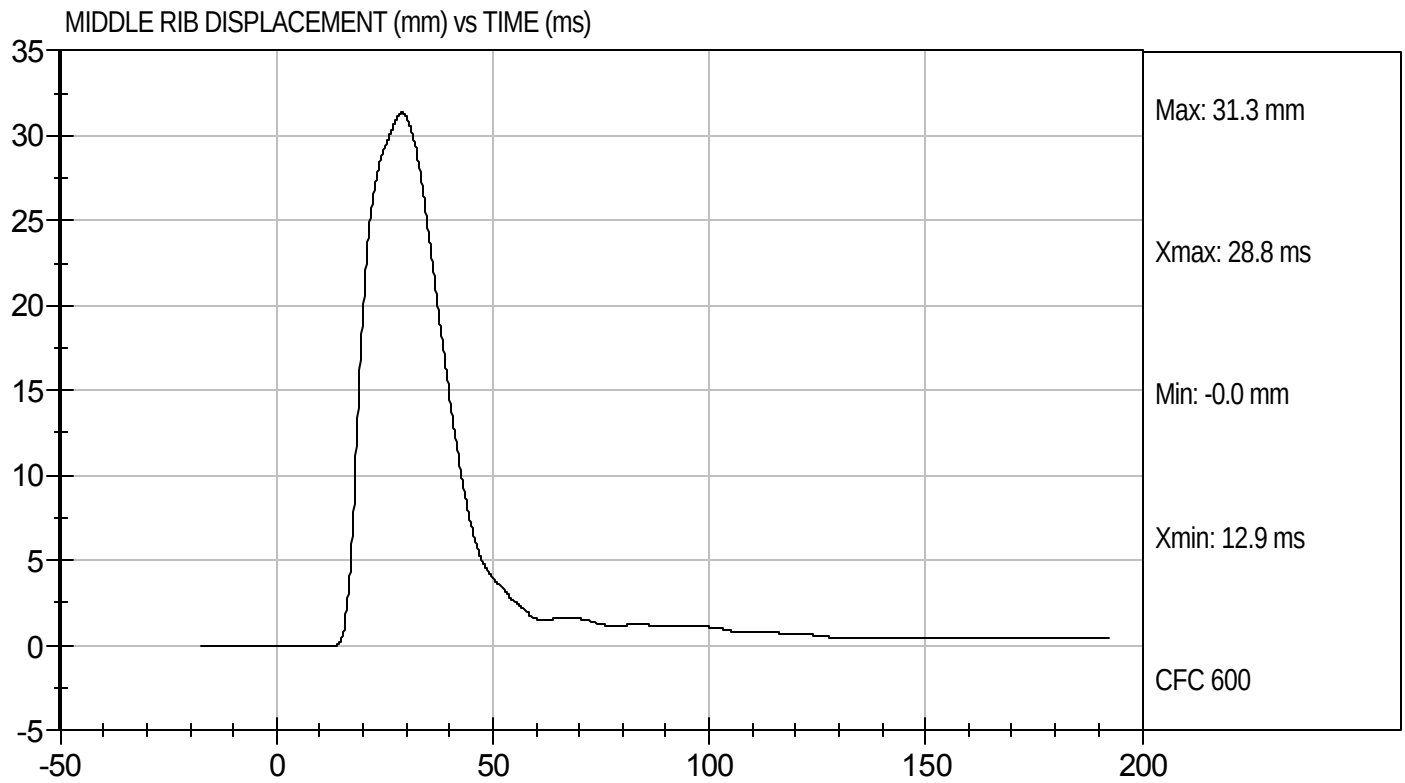
Test Date: 5/12/11
Velocity: 22.2 ft/s, 6.77 m/s





Test Desc: Thorax With Arm
Component ID: D111764

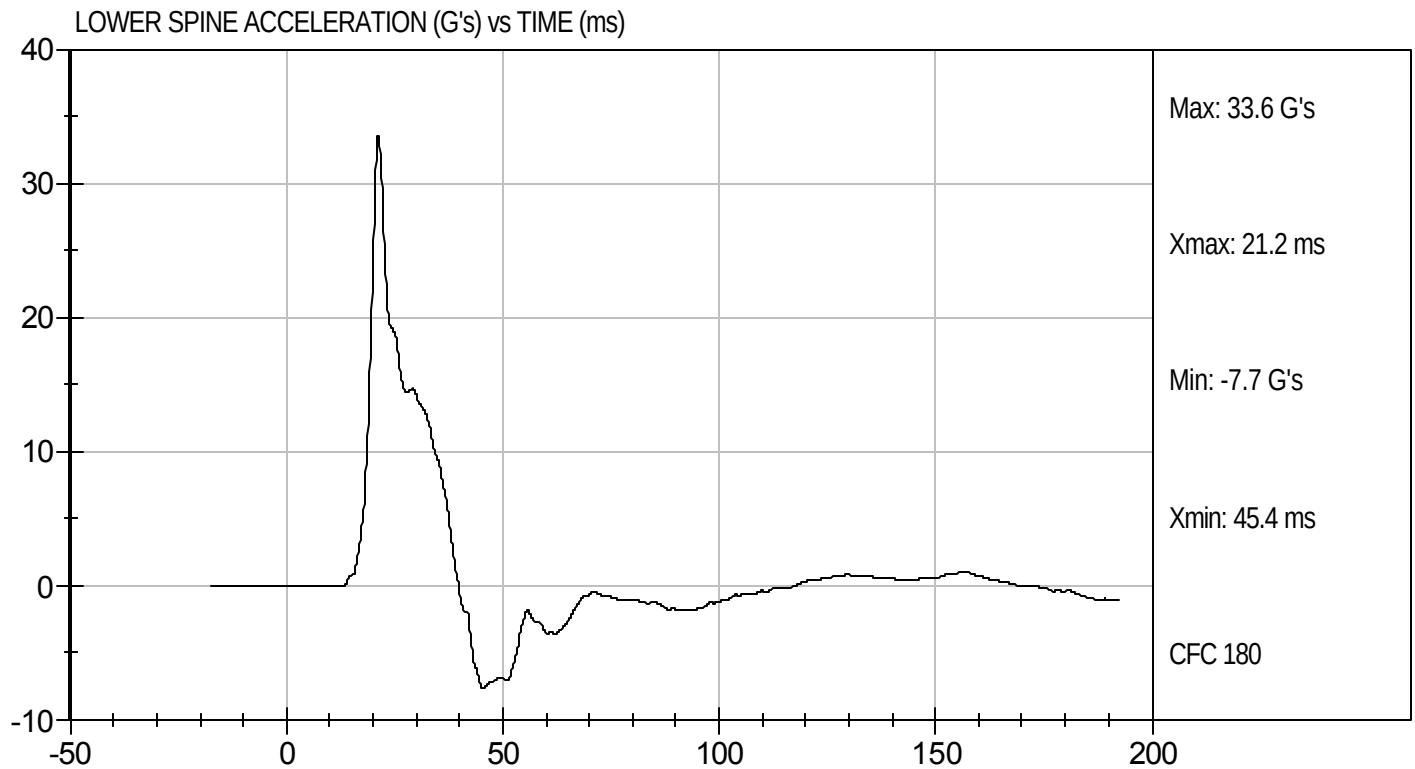
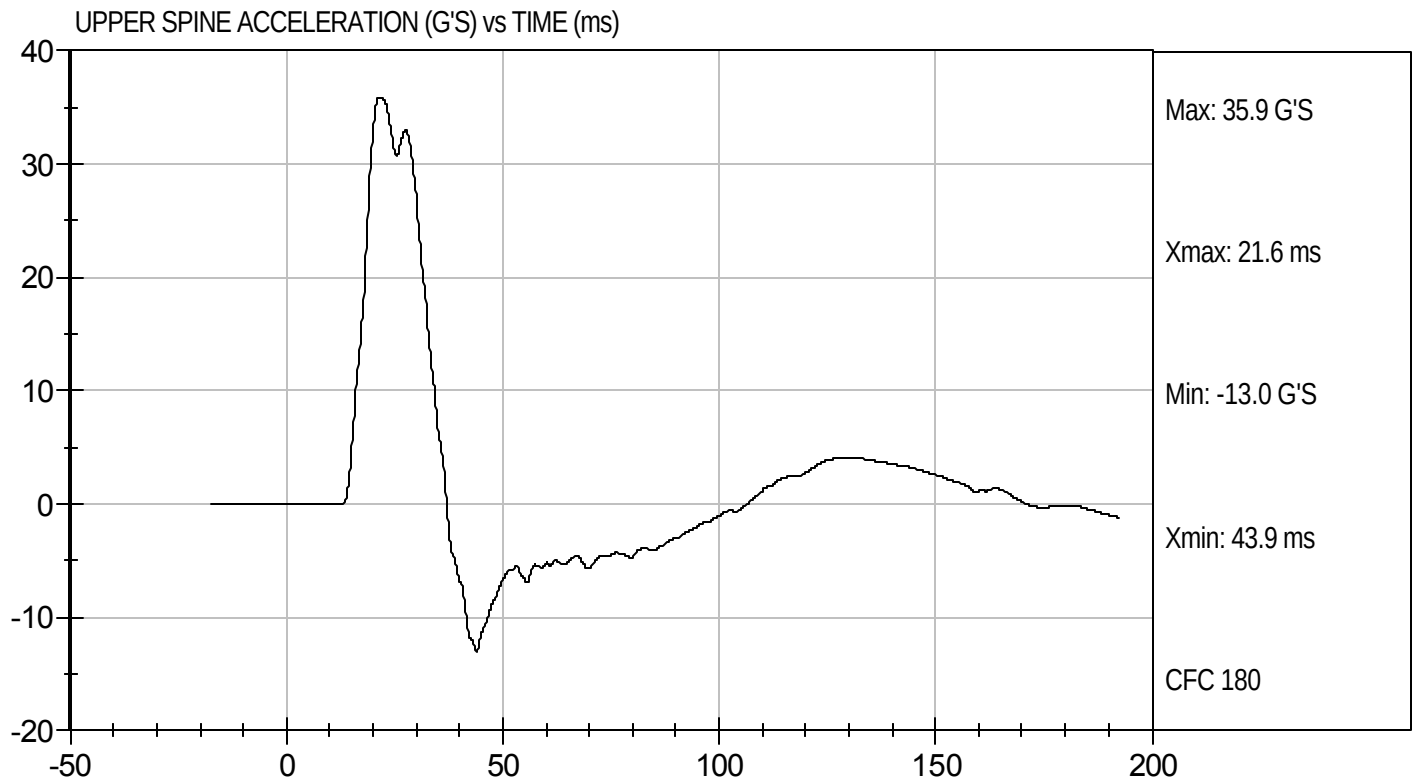
Test Date: 5/12/11
Velocity: 22.2 ft/s, 6.77 m/s





Test Desc: Thorax With Arm
Component ID: D111764

Test Date: 5/12/11
Velocity: 22.2 ft/s, 6.77 m/s



MGA RESEARCH CORPORATION
THORAX (WITHOUT ARM) IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D111765

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.8	Pass
Humidity	%	10 to 70	48	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Peak Impactor Force	G's	14 to 18	15	Pass
Upper Rib Displacement	mm	32 to 40	40	Pass
Middle Rib Displacement	mm	39 to 45	42	Pass
Lower Rib Displacement	mm	35 to 43	40	Pass
Upper Spine (T1) Y Acceleration	G's	13 to 17	14	Pass
Lower Spine (T12) Y Acceleration	G's	7 to 11	9	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

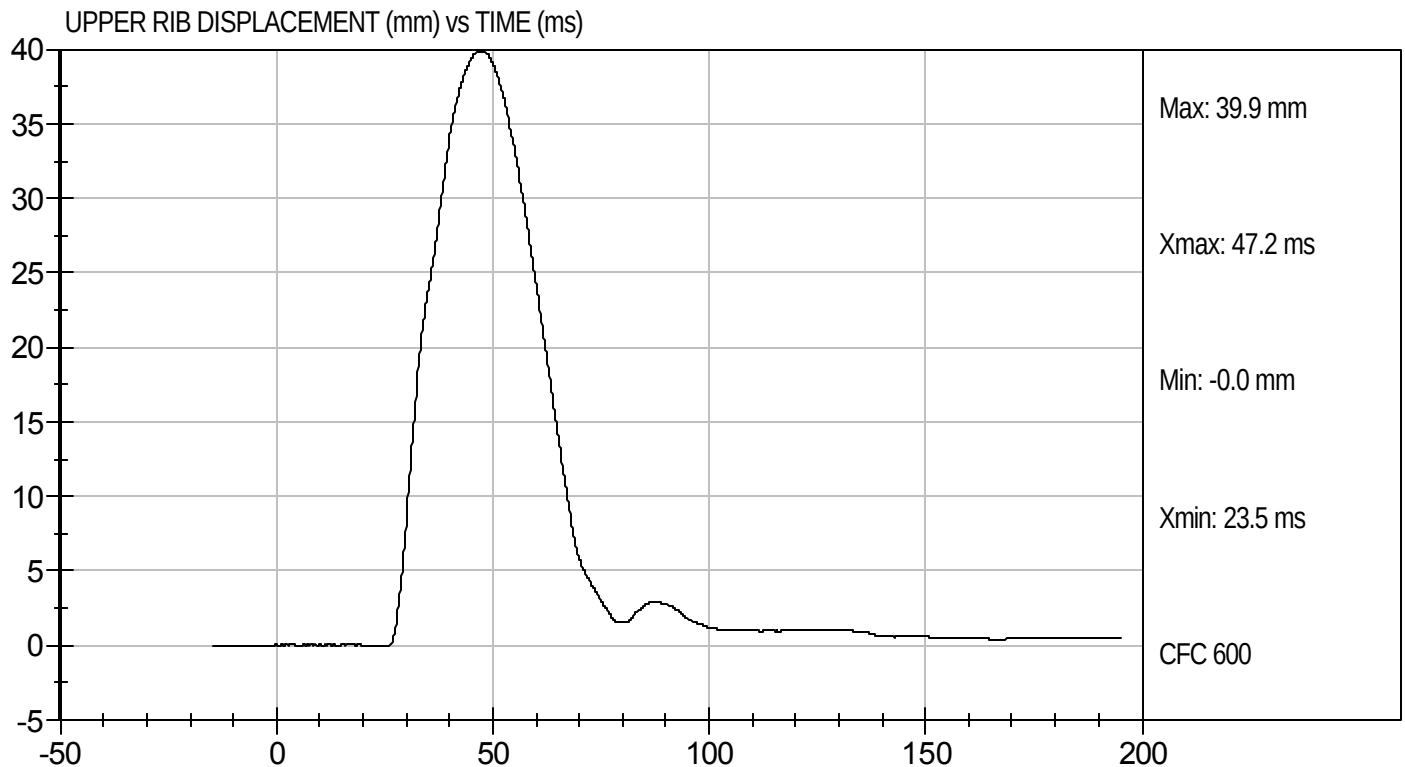
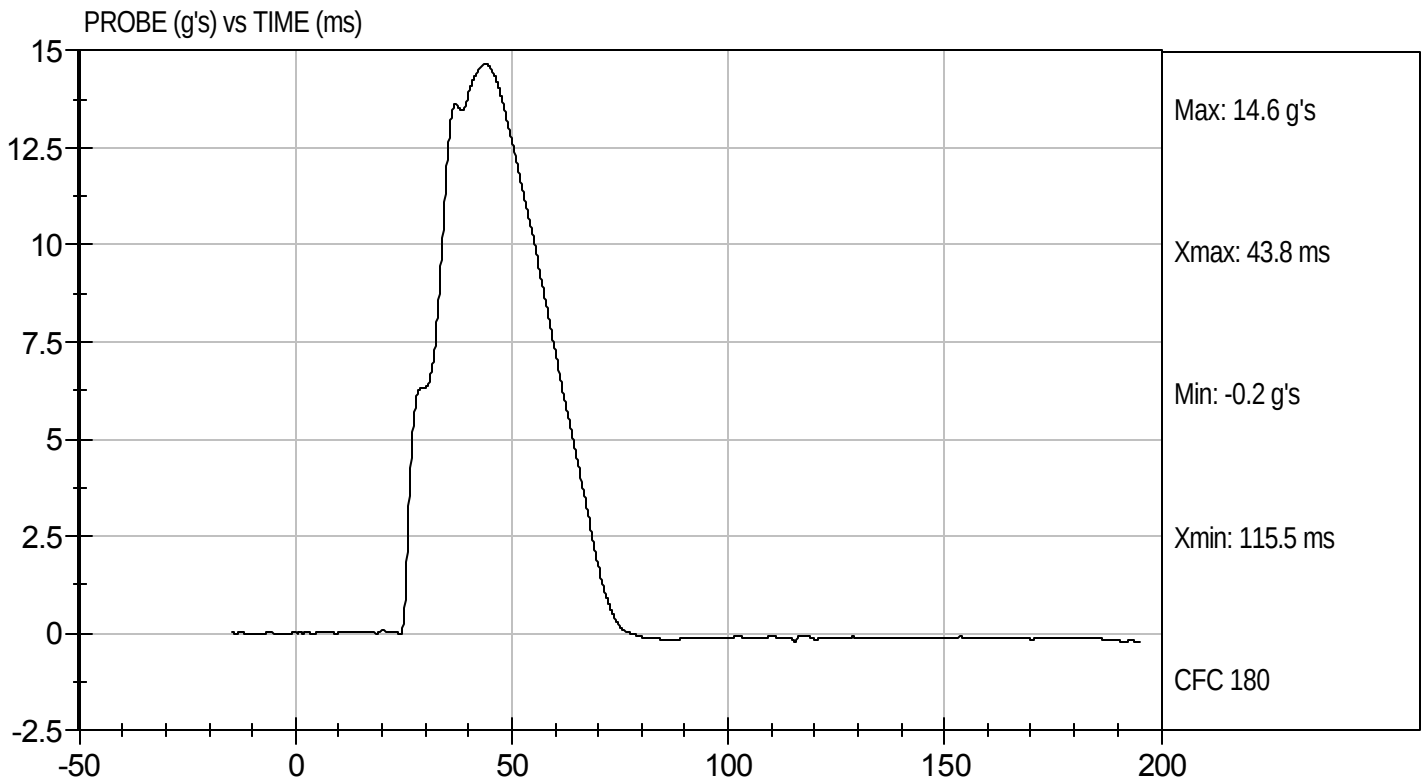
5/12/11
Test Date

David Winkelbauer
Approved By



Test Desc: Thorax Without Arm
Component ID: D111765

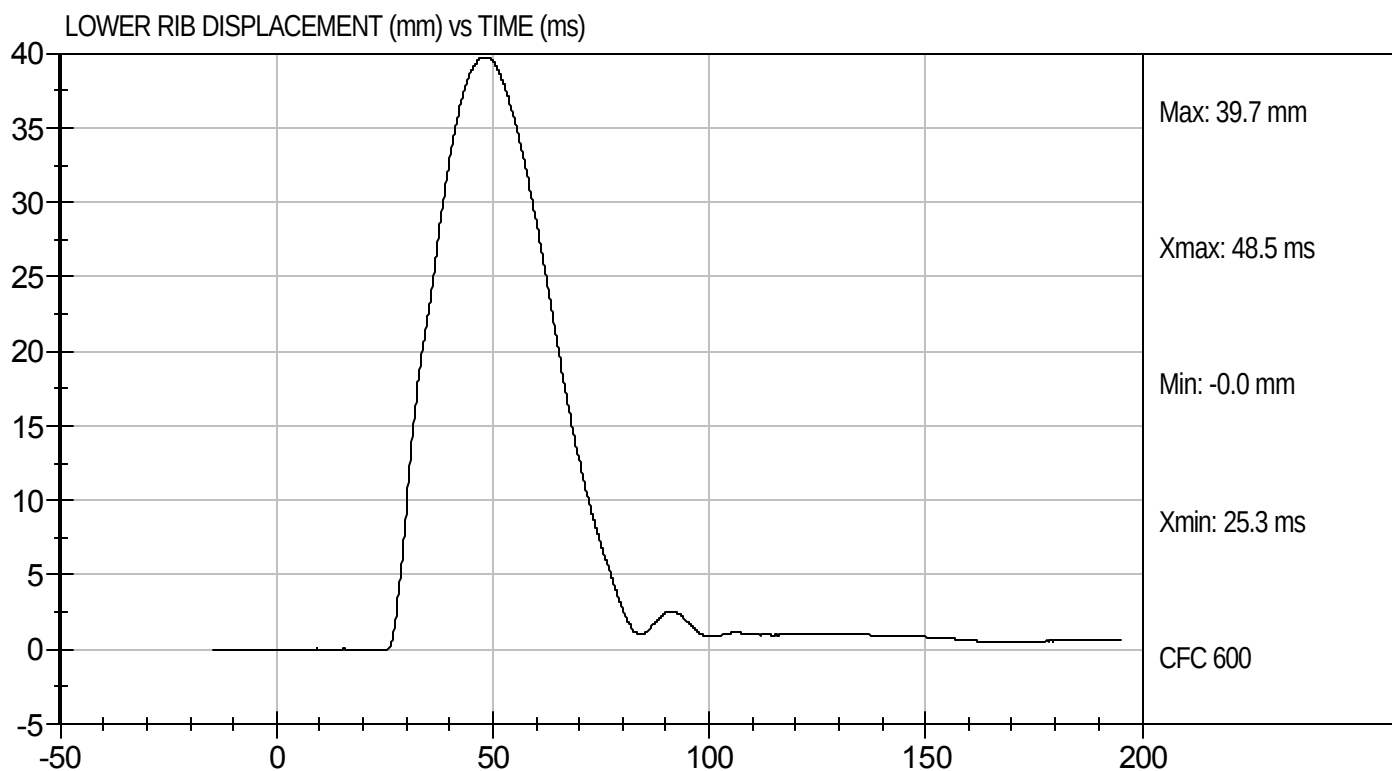
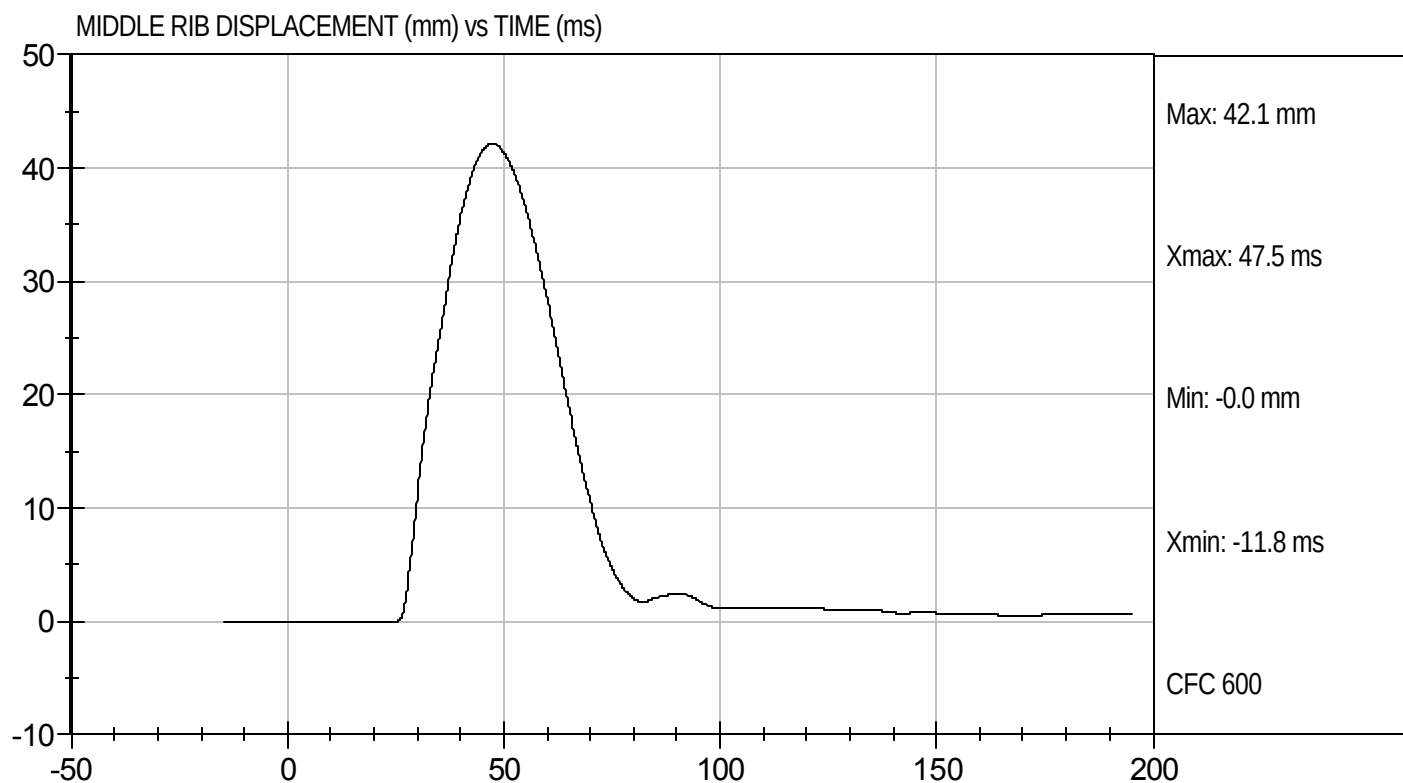
Test Date: 5/12/11
Velocity: 14.24 ft/s, 4.34 m/s





Test Desc: Thorax Without Arm
Component ID: D111765

Test Date: 5/12/11
Velocity: 14.24 ft/s, 4.34 m/s

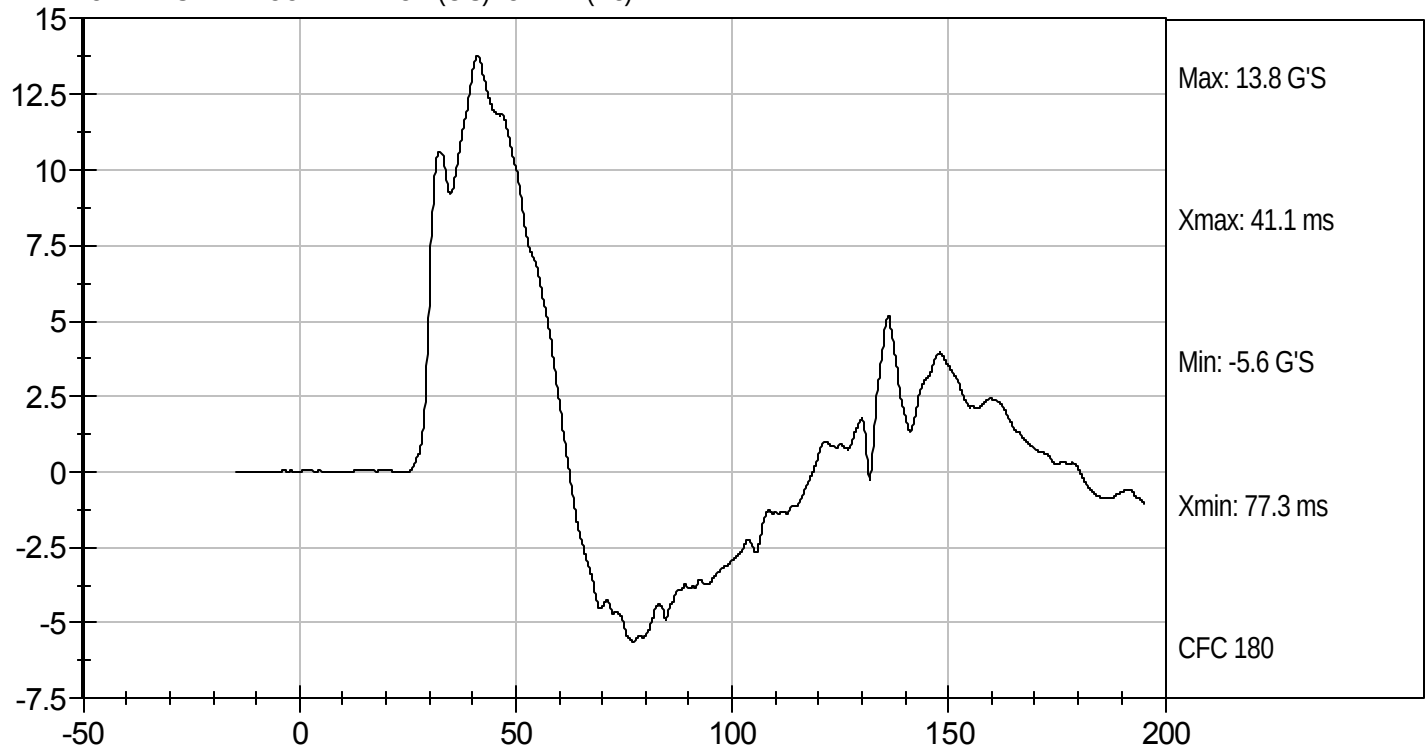




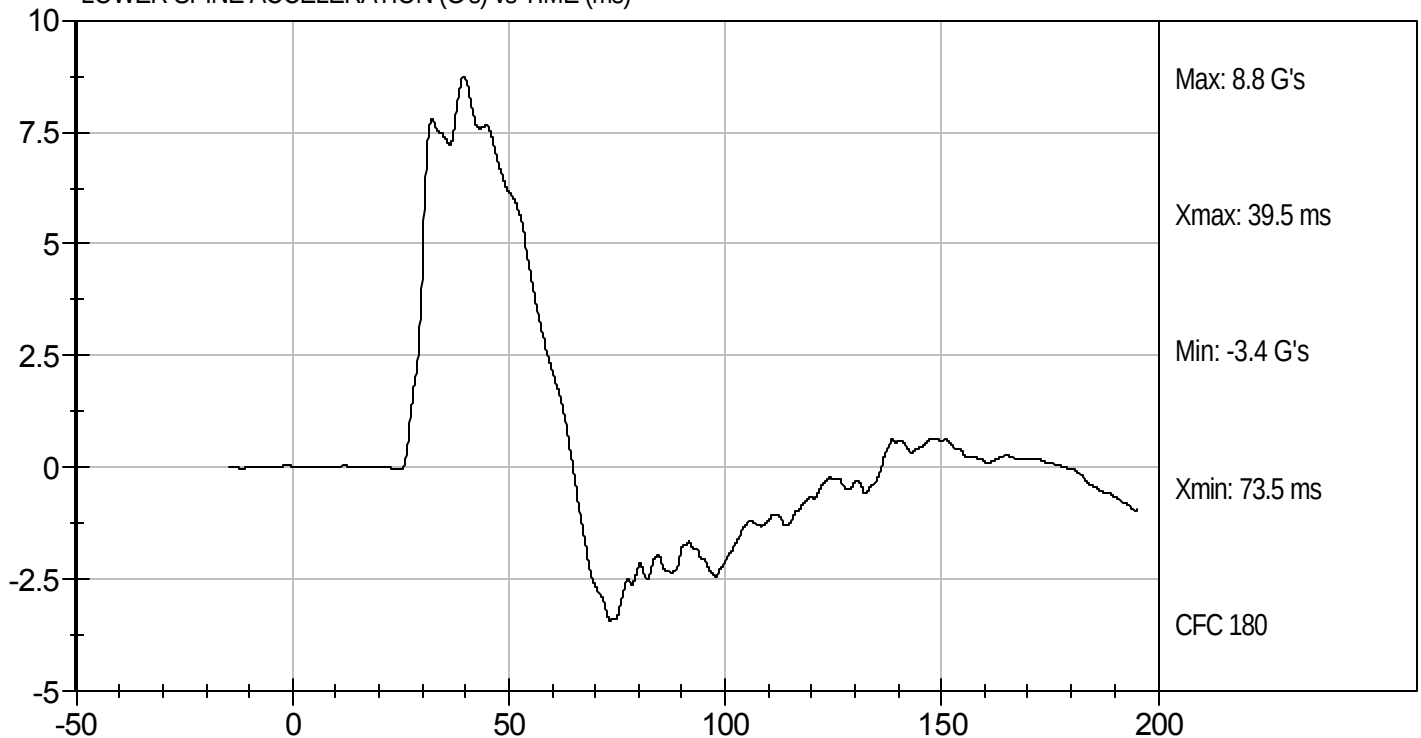
Test Desc: Thorax Without Arm
Component ID: D111765

Test Date: 5/12/11
Velocity: 14.24 ft/s, 4.34 m/s

UPPER SPINE ACCELERATION (G'S) vs TIME (ms)



LOWER SPINE ACCELERATION (G's) vs TIME (ms)



MGA RESEARCH CORPORATION
ABDOMINAL IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D111766

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.8	Pass
Humidity	%	10 to 70	48	Pass
Impact Velocity	m/s	4.20 to 4.40	4.38	Pass
Peak Impactor Acceleration	G's	12 to 16	13	Pass
Upper Rib Displacement	mm	36 to 47	39	Pass
Lower Rib Displacement	mm	33 to 44	40	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	11	Pass
Overall Test Results			Pass	


Laboratory Technician

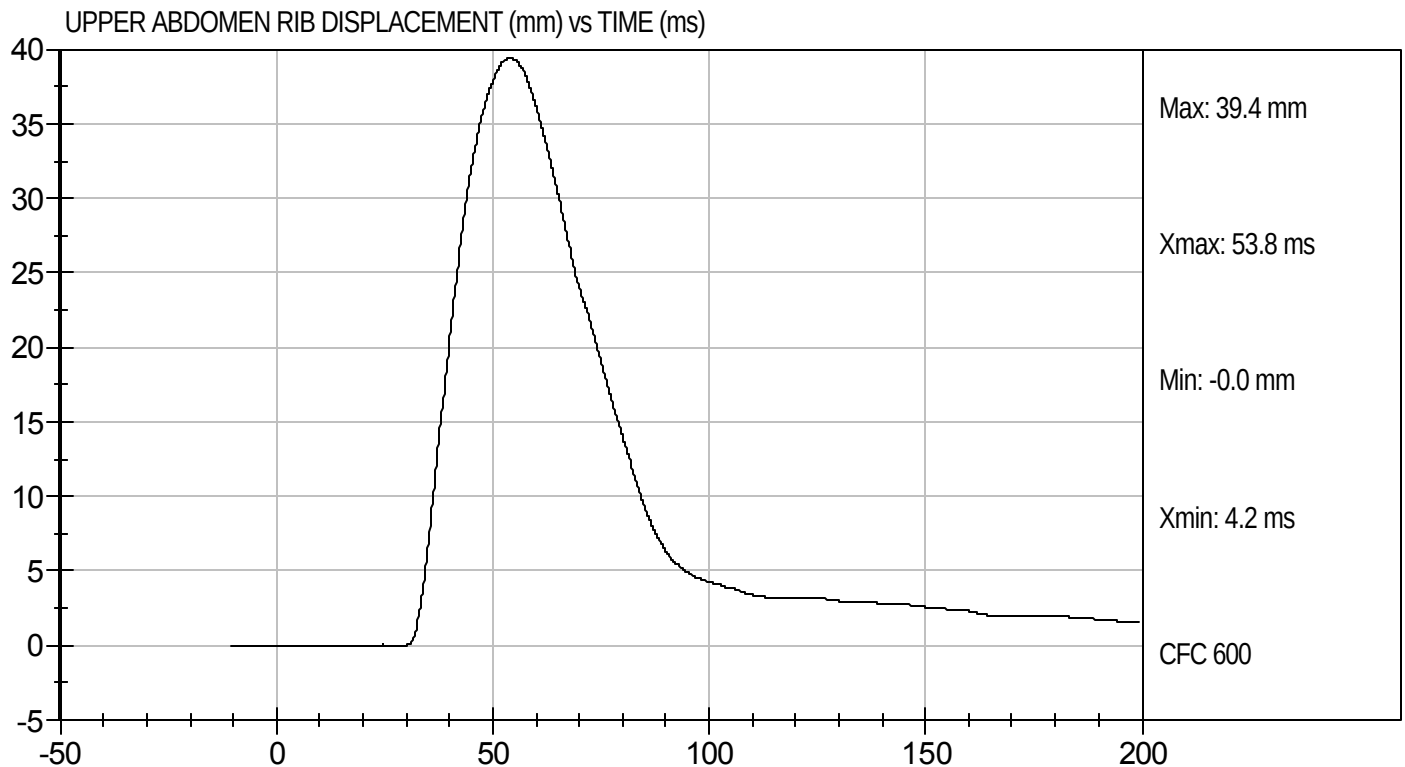
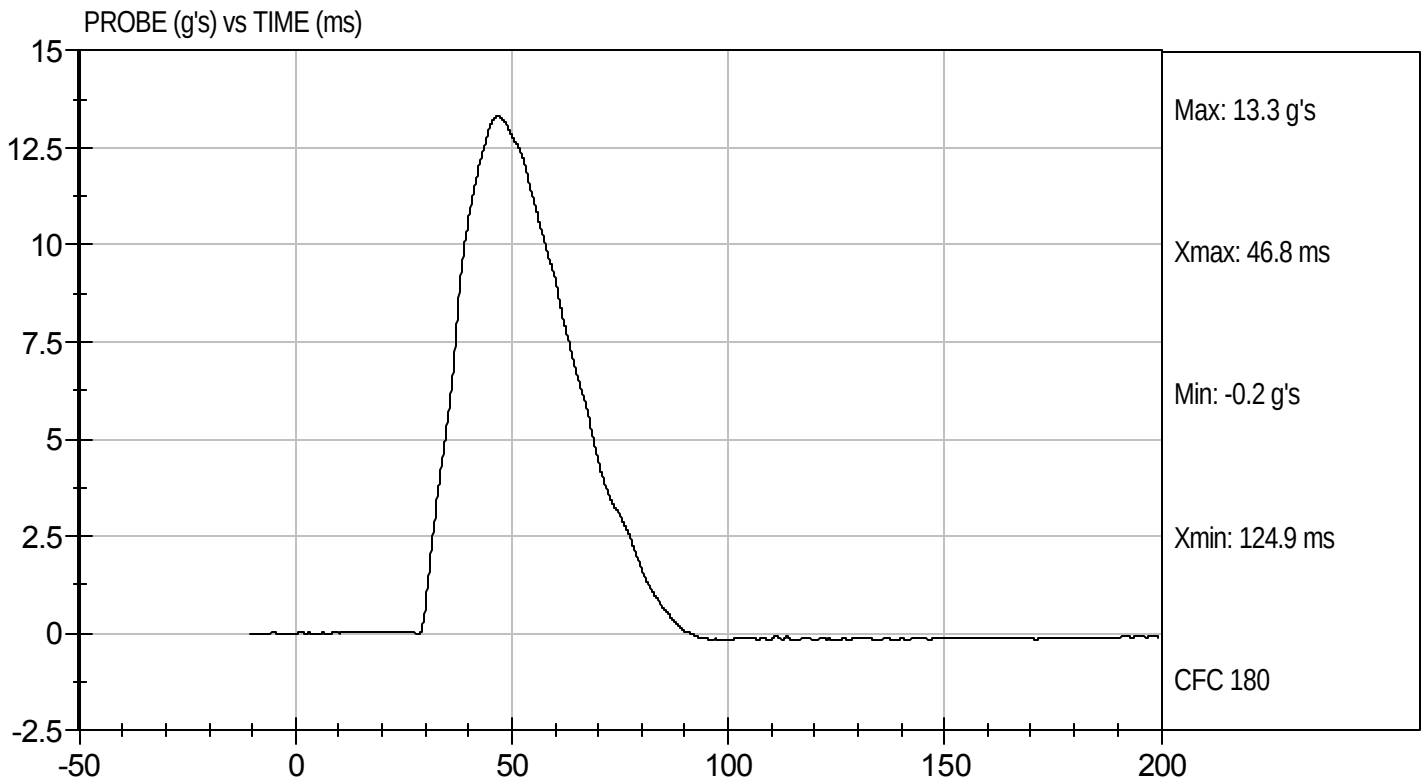
5/12/11
Test Date


Approved By



Test Desc: Abdomen Impact
Component ID: D111766

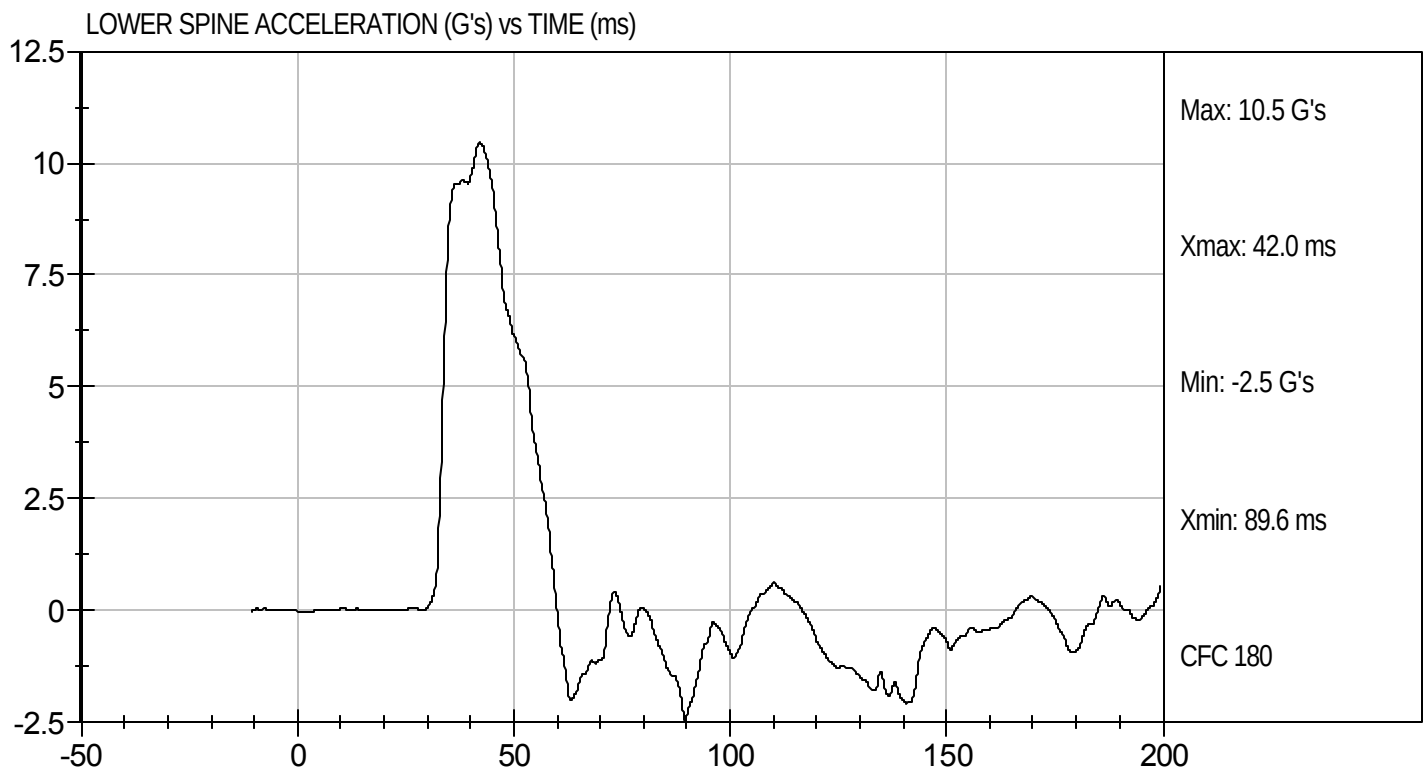
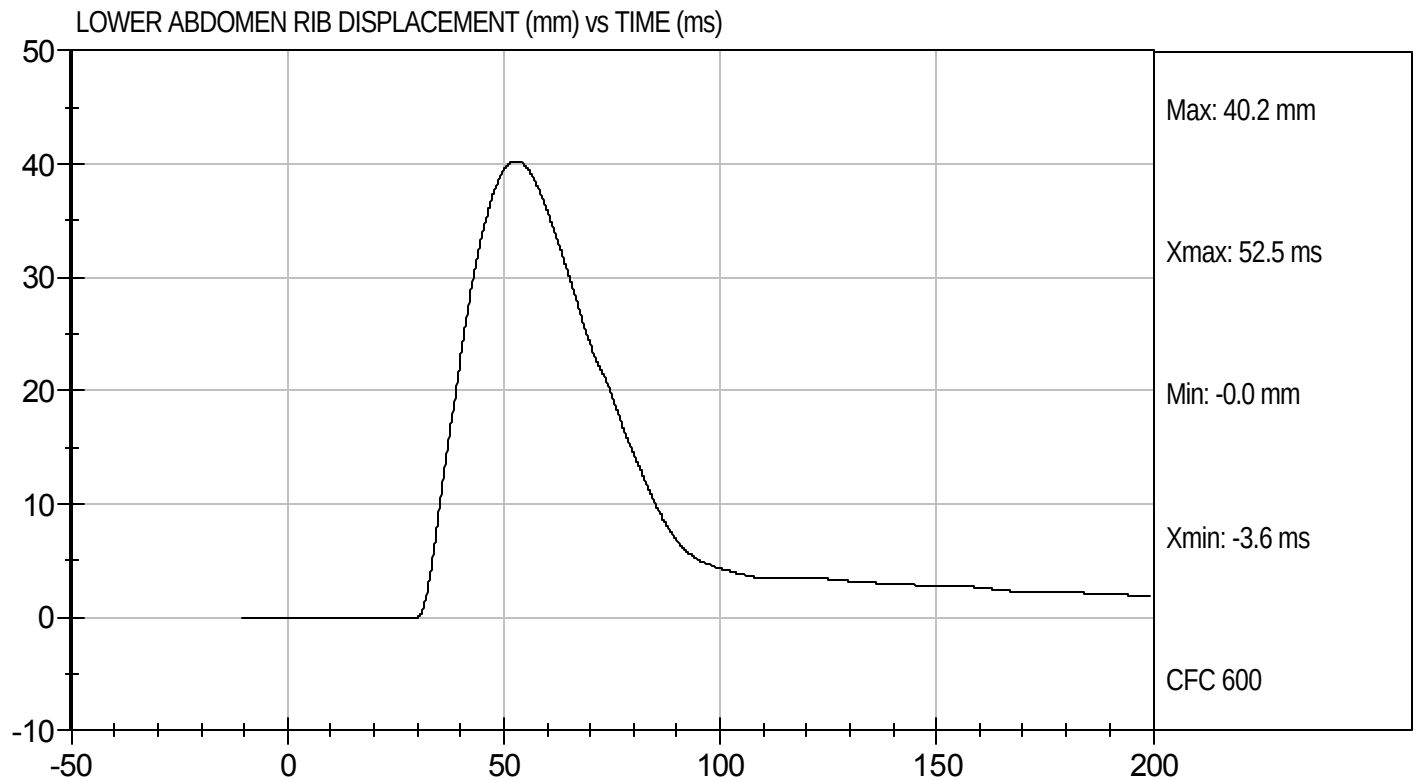
Test Date: 5/12/11
Velocity: 14.36 ft/s, 4.38 m/s





Test Desc: Abdomen Impact
Component ID: D111766

Test Date: 5/12/11
Velocity: 14.36 ft/s, 4.38 m/s



MGA RESEARCH CORPORATION
PELVIS IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D111767

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	20.8	Pass
Humidity	%	10 to 70	48	Pass
Impact Velocity	m/s	6.60 to 6.80	6.77	Pass
Peak Impactor Acceleration	G's	38 to 47	42	Pass
Pelvis Y Acceleration after 6 ms	G's	34 to 42	41	Pass
Peak Acetabulum Force	N	3600 to 4300	3755	Pass
Overall Test Results				Pass


Laboratory Technician

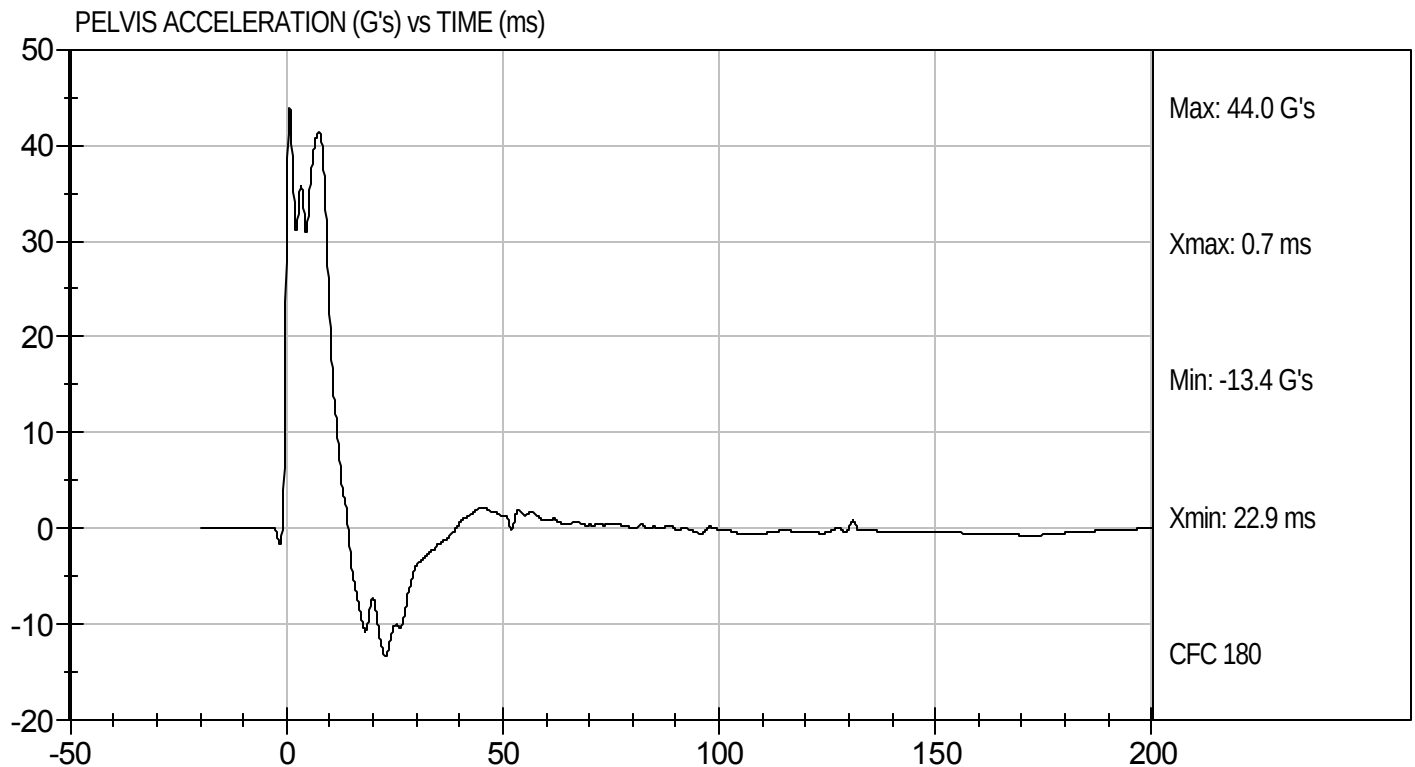
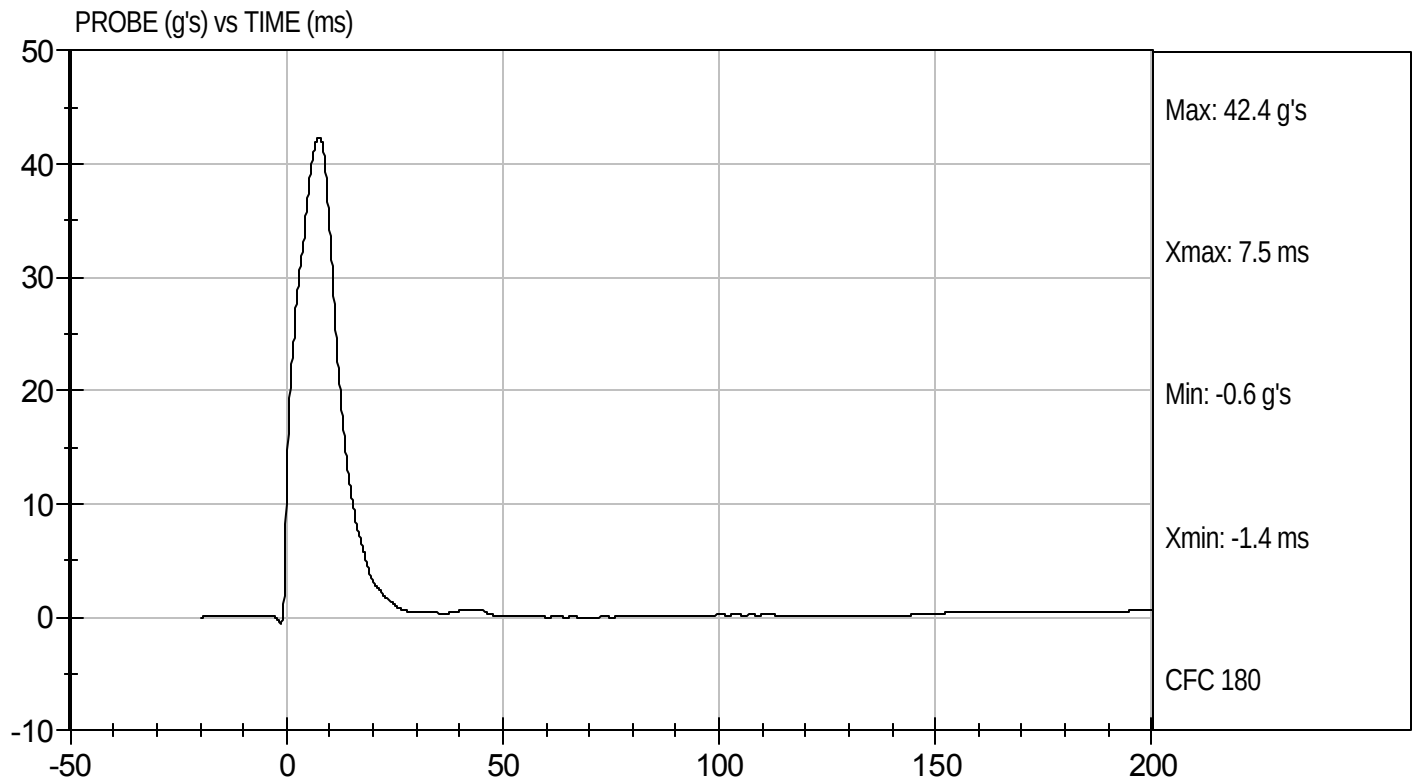
5/12/11
Test Date


Approved By



Test Desc: Pelvis Impact
Component ID: D111767

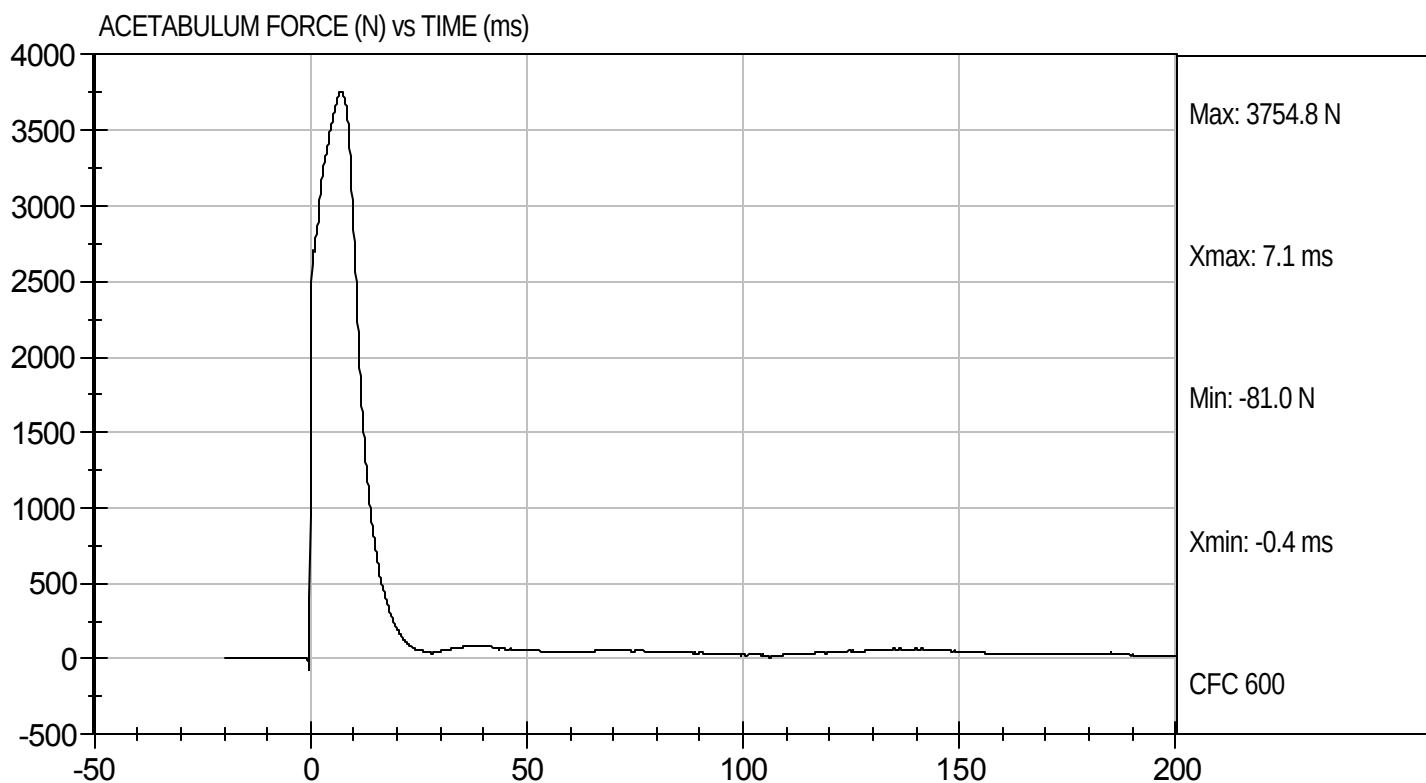
Test Date: 5/12/11
Velocity: 22.2 ft/s, 6.77 m/s





Test Desc: Pelvis Impact
Component ID: D111767

Test Date: 5/12/11
Velocity: 22.2 ft/s, 6.77 m/s



MGA RESEARCH CORPORATION
ILIAC IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D111768

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.2	Pass
Humidity	%	10 to 70	49	Pass
Impact Velocity	m/s	4.20 to 4.40	4.38	Pass
Peak Impactor Acceleration	G's	36 to 45	37	Pass
Pelvis Y Acceleration	G's	28 to 39	31	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4649	Pass
Overall Test Results			Pass	

Jessica Hall
Laboratory Technician

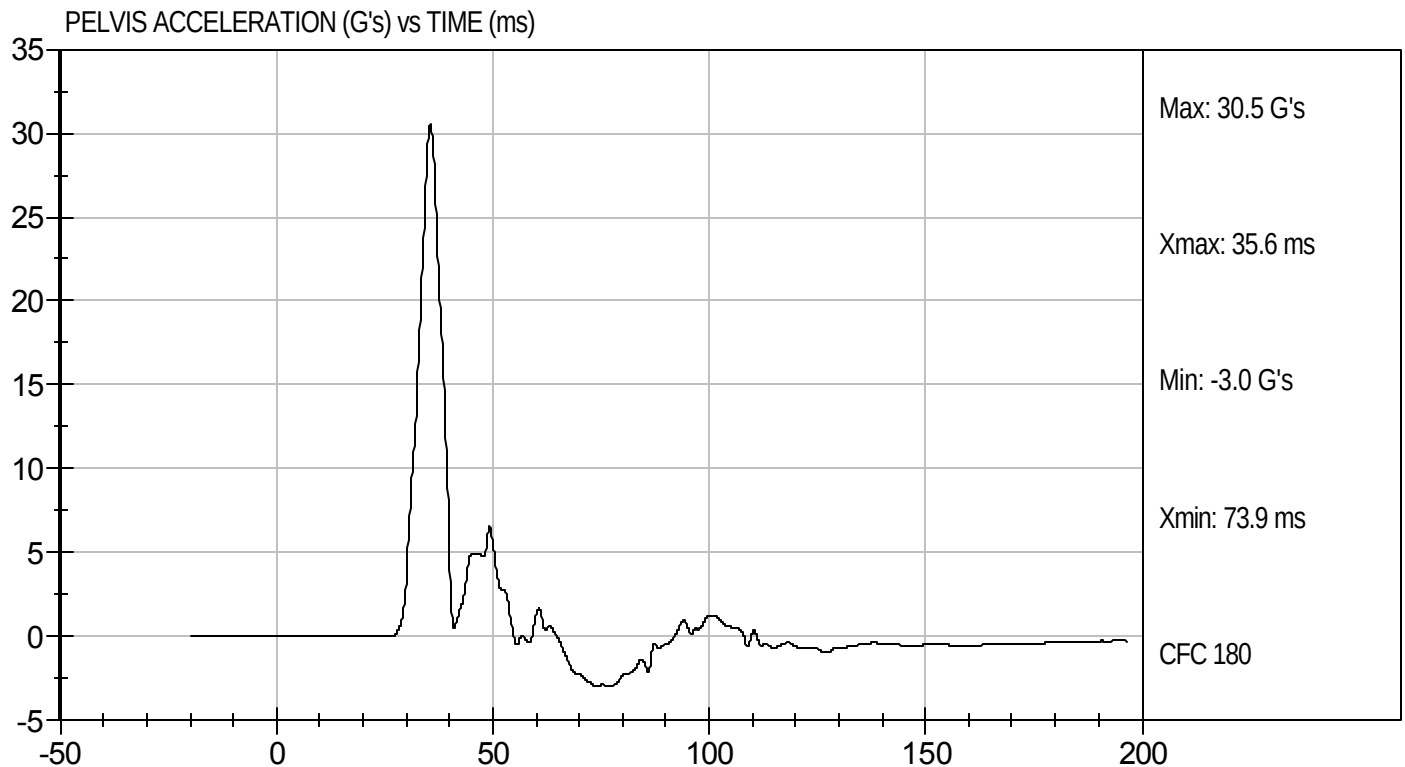
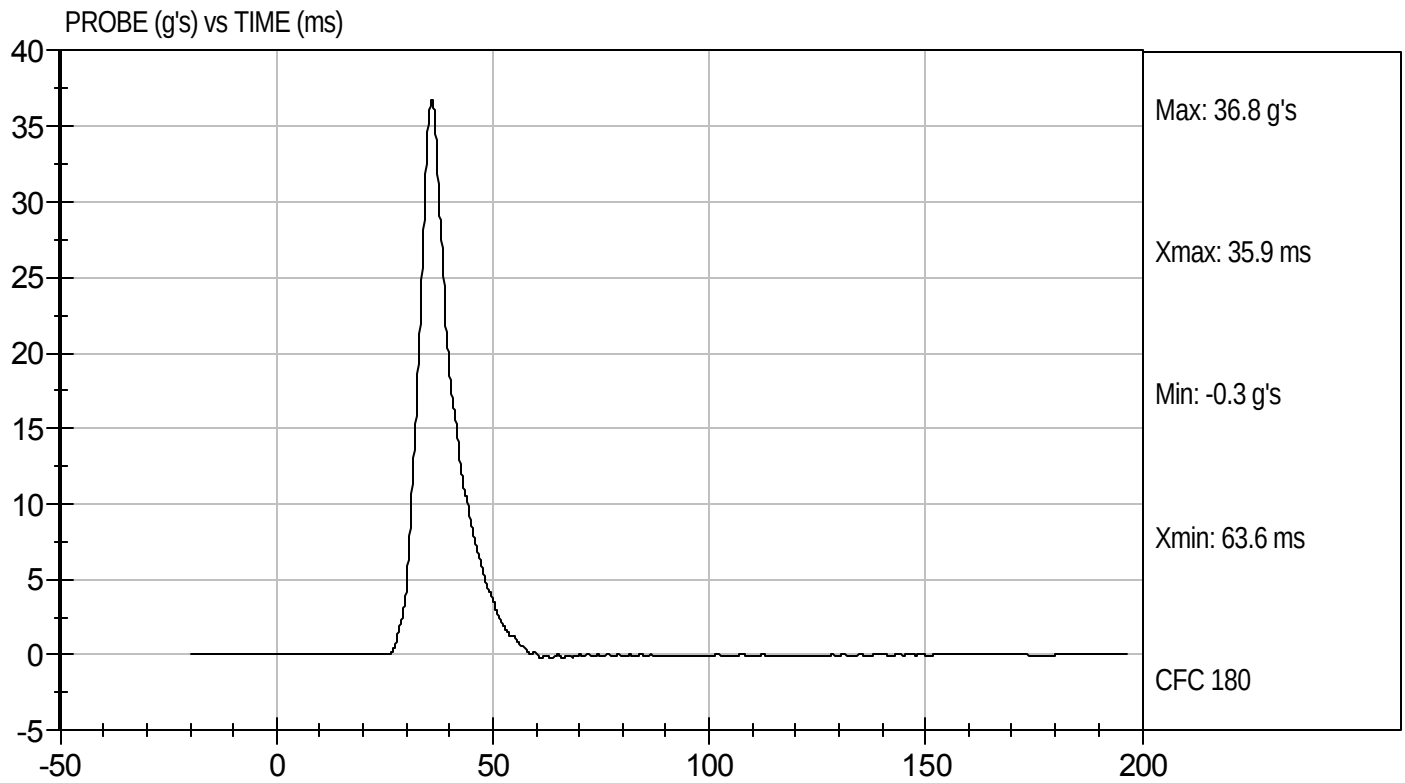
5/13/11
Test Date

David Winkelbauer
Approved By



Test Desc: Iliac Impact
Component ID: D111768

Test Date: 5/13/11
Velocity: 14.37 ft/s, 4.38 m/s





Test Desc: Iliac Impact
Component ID: D111768

Test Date: 5/13/11
Velocity: 14.37 ft/s, 4.38 m/s

