

REPORT NUMBER: SPNCAP-MGA-2011-051

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

**VOLKSWAGEN DE MEXICO S.A. DE C.V.
2011 Volkswagen Jetta S 4-Dr Sedan
NHTSA No.: MB5803**

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



Test Date: December 7, 2010

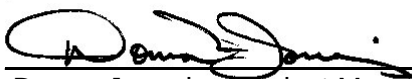
Final Report Date: January 26, 2011

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.

This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

Prepared by: 
Donna Janovicz, Project Manager

Approved by: 
Ben Fischer, Project Engineer

Approval Date: January 26, 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

1. Report No. SPNCAP-MGA-2011-051		2. Government Accession No.		3. Recipient's Catalog No.																				
4. Title and Subtitle Final Report of New Car Assessment Program Side Impact Pole Testing of 2011 Volkswagen Jetta S 4-Dr Sedan NHTSA No.: MB5803			5. Report Date January 26, 2011																					
			6. Performing Organization Code MGA																					
7. Author(s) Donna Janovicz, Project Manager Ben Fischer, Project Engineer			8. Performing Organization Report No. SPNCAP-MGA-2011-051																					
9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105			10. Work Unit No.																					
			11. Contract or Grant No. DTNH22-09-D-00124																					
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards 1200 New Jersey Ave, SE, Room W43-410 Washington, DC 20590			13. Type of Report and Period Covered: Final Test Report December 7, 2010 to January 26, 2011																					
			14. Sponsoring Agency Code NVS-111																					
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 Volkswagen Jetta S 4-Dr Sedan 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 December 7, 2010. The impact velocity was 32.5 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 390 mm at level 3. 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>323</td> </tr> <tr> <td style="text-align: left;">Resultant Lower Spine Acceleration</td> <td>Gs</td> <td>82</td> <td>51</td> </tr> <tr> <td style="text-align: left;">Combined Acetabular and Iliac Pelvic Force</td> <td>N</td> <td>5525</td> <td>3182</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	323	Resultant Lower Spine Acceleration	Gs	82	51	Combined Acetabular and Iliac Pelvic Force	N	5525	3182
Measurement Description	Driver ATD (SID-IIs)																							
	Units	Threshold	Result																					
Head Injury Criteria (HIC ₃₆)	N/A	1000	323																					
Resultant Lower Spine Acceleration	Gs	82	51																					
Combined Acetabular and Iliac Pelvic Force	N	5525	3182																					
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																					
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 126		22. Price																				

TABLE OF CONTENTS

<u>Section</u>	<u>Page No.</u>
----------------	-----------------

1	Test Purpose and Procedure	1
2	Summary of Test Results	2
3	Occupant and Vehicle Information	4

<u>Data Sheet No.</u>	<u>Page No.</u>
-----------------------	-----------------

1	General Test and Vehicle Parameter Data	5
2	Seat, Seat Belt, Steering Wheel Adjustment, and Fuel System Data	8
3	Dummy Longitudinal Clearance Dimensions	10
4	Dummy Lateral Clearance Dimensions	11
5	Camera and Instrumentation Data	12
6	Vehicle Accelerometer Data	13
7	Rigid Pole Load Cell Data	14
8	Post Test Observations	15
9	Vehicle Profile Measurements	16
10	Vehicle Exterior Crush Measurements	17
11	FMVSS 301 Fuel System Integrity Post-Impact Data	21
12	Dummy/Vehicle Temperature Stabilization Data	22

Appendix

A	Photographs	A
B	Dummy Response Data	B
C	Dummy Calibration and Performance Verification Data	C

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 Volkswagen Jetta S 4-Dr Sedan. 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 Volkswagen Jetta S 4-Dr Sedan. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.5 km/h. The test was conducted by MGA Research Corporation in Burlington, Wisconsin, on December 7, 2010. 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	323	51	Iliac Wing	1162
			Acetabular	2021
			Sum	3182

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	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:

- Left Floor Sill Y after 25 msec.
- Left B-Post @ Sill Y after 25 msec.
- Left Lower B-Post Y after 10 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 Volkswagen Jetta S 4-Dr Sedan	NHTSA No.	MB5803
Test Program:	NCAP Side Pole Impact Test	Test Date:	12/07/2010

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	MB5803	Anti-Lock Brakes	Yes
Model Year	2011	All Wheel Drive	No
Make	Volkswagen	Power Steering	Yes
Model	Jetta	Driver Front Airbag	Yes
Body Style	Sedan	Driver Curtain Airbag	Yes
VIN	3VW2K7AJ2BM020847	Driver Head/Torso Airbag	No
Body Color	Tempest Blue Metallic	Driver Torso Airbag	No
Delivery Date	11/11/2010	Driver Torso/Pelvis Airbag	Yes
Odometer (mi)	88	Driver Pelvis Airbag	No
Odometer (km)	142	Driver Knee Airbag	No
Dealer	Fox Valley Volkswagen	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)	2.0	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	No	Power Seats	No
Does owner's manual provide instruction to turn off automatic door locks?			No

DATA FROM CERTIFICATION LABEL

Manufactured By	Volkswagen de Mexico S.A. de C.V.	GVWR (kg)	1850
Date of Manufacture	10.10	GAWR Front (kg)	940
		GAWR Rear (kg)	960

VEHICLE SEATING AND WEIGHT CAPACITY DATA

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	2	3		5	
Capacity Weight (VCW) (kg)				495	(A)
DSC x 68.04 kg				340	(B)
Cargo Weight (RCLW) (kg)				155	(A-B)

VEHICLE SEAT TYPE

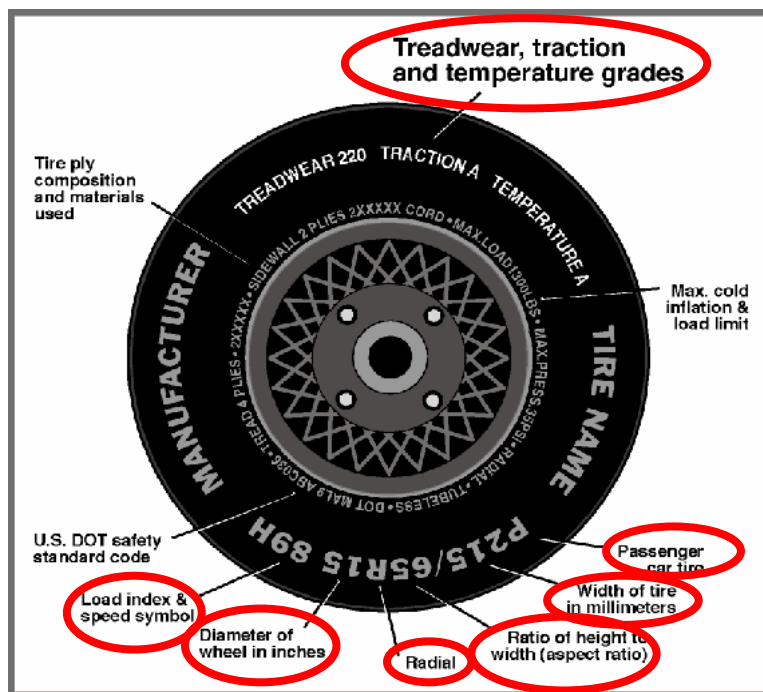
Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						Manual	Power
Front Seat	X					w/Lever	
Rear or Second Row			X		X		
Third Row Seat							

DATA SHEET NO. 1 (continued)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	<u>2011 Volkswagen Jetta S 4-Dr Sedan</u>	NHTSA No.	<u>MB5803</u>
Test Program:	<u>NCAP Side Pole Impact Test</u>	Test Date:	<u>12/07/2010</u>

VEHICLE TIRE INFORMATION



Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	220	220
Recommended Tire Size	205/55R16	205/55R16
Tire Size on Vehicle	205/55R16	205/55R16
Tire Manufacturer	Hankook	Hankook
Tire Model	Optimo	Optimo
Treadwear	340	340
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	2	2
Tire Plies Body	5	5
Load Index & Speed Symbol	91H	91H
Tire Material	Rubber	Rubber
DOT Safety Code Right	1GRP DYH	1GRP DYH
DOT Safety Code Left	1GRP DYH	1GRP DYH

DATA SHEET NO. 1 (continued)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	2011 Volkswagen Jetta S 4-Dr Sedan	NHTSA No.	MB5803
Test Program:	NCAP Side Pole Impact Test	Test Date:	12/07/2010

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	398.3	287.1		411.0	384.6		410.5	396.4	
Right	kg	404.6	276.3		403.2	367.0		388.7	377.4	
Ratio	%	58.8	41.2		52.0	48.0		50.8	49.2	
Totals	kg	802.9	563.4	1366.3	814.2	751.6	1565.8	799.2	773.8	1573.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1366.3	(A)
Actual Weight of 1 P572V ATD (SID-IIIs) ATD Used	kg	52.2	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	155	(C)
Calculated Target Vehicle Test Weight (TVTW)	kg	1573.5	(A+B+C)

TEST VEHICLE ATTITUDES AND CG

	Units	As Delivered	As Tested	Fully Loaded
Driver Door Sill Angle (front-to-rear)*	deg	-1.0	-0.6	-0.1
Front Passenger Sill Angle (front-to-rear)*	deg	-1.1	-0.6	-0.2
Front Bumper Angle (left-to-right)**	deg	-0.5	-0.6	-0.8
Rear Bumper Angle (left-to-right)**	deg	-0.1	-0.1	-0.2
Vehicle CG (Aft of Front Axle)	mm	1095	1275	1307
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	3	12	20

*Front up is positive ** Left up is positive

GENERAL VEHICLE TEST DATA

Measurement Description	Units	Value
Weight of Ballast in Cargo Area	kg	93.0
Weight of Vehicle Components Removed	kg	28.1

Vehicle components removed to meet target vehicle test weight: Right tail light, right side mirror, spare tire, jack & tools, trunk carpet.

TEST VEHICLE IMPACT POINT DATA

Measurement Parameter	Units	Value
Vertical Impact Reference Line (Aft of Front Axle)	mm	1103
Actual Impact Point (Aft of Front Axle)	mm	1115
Impact Point Difference (- forward / + rearward)	mm	12

DATA SHEET NO. 2

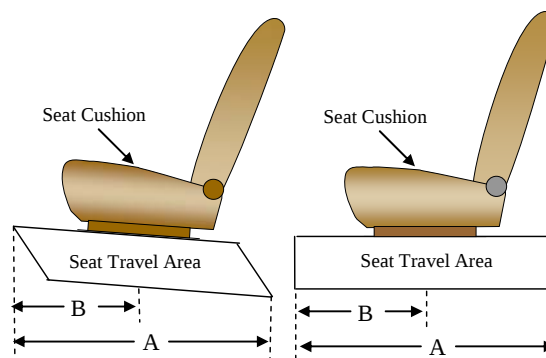
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

Test Vehicle: 2011 Volkswagen Jetta S 4-Dr Sedan
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB5803
 Test Date: 12/07/2010

SEAT FORE/AFT POSITIONS

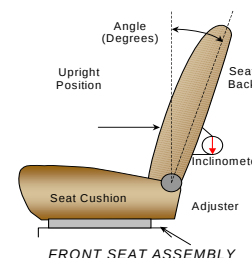
The driver seat was a manual fore/aft adjustable seat with manual height/angle adjustment. The seat travel was set as specified in Appendix B of the TP dated January 2010. The right front passenger seat was set to match the driver seat. The rear passenger seats were set as specified in Appendix B of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



SEAT FORE/AFT POSITIONING	Total Fore/Aft Travel	Placed in Detent # or Position
Driver Seat	38 detents (1 st as 1)	0 ((forward-most as 0)
Front Passenger Seat	26 detents (1 st as 1)	0 ((forward-most as 0)
Rear Seat – Struck Side		Rearmost
Rear Seat – Non-Struck Side		Rearmost

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	1.2	
Front Passenger Seat Back Angle	1.8	
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	4 detents (1 st as 1)	3 (uppermost as 0)

DATA SHEET NO. 2 (CONTINUED)

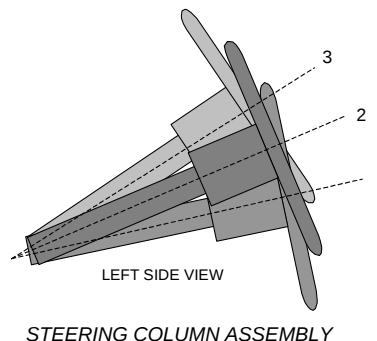
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

Test Vehicle: 2011 Volkswagen Jetta S 4-Dr Sedan
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB5803
 Test Date: 12/07/2010

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.

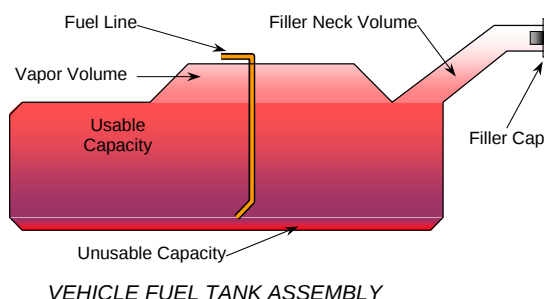


STEERING COLUMN POSITIONING

	Degrees	Fore/Aft Position (mm)
Lowermost - Position 1	67.8	140
Geometric Center – Position 2	65.3	112
Uppermost – Position 3	62.8	84
Telescoping Steering Wheel Travel		56
Test Position	65.3	112

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. The fuel pump runs for 2 seconds after ignition is switched on. If the engine doesn't run, the fuel pump stops running. If there is a crash signal, it will also stop running. The fuel pipe is on the right side.



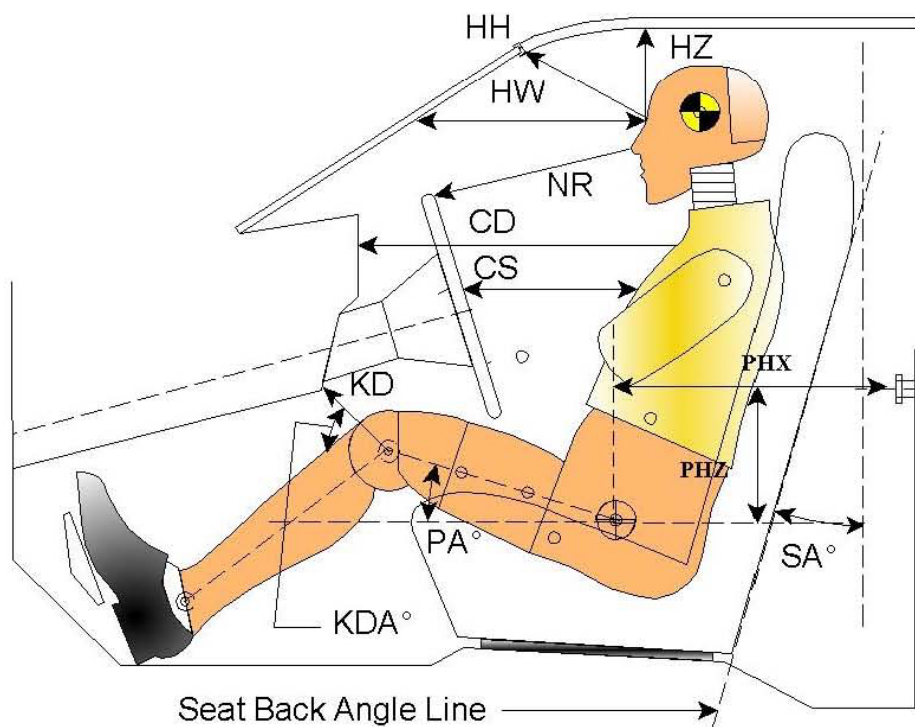
FUEL TANK CAPACITY DATA

	Liters
Usable Capacity of "Standard" Tank	55.0
Usable Capacity of "Optional" Tank	
Usable Capacity of Standard Tank as Specified in Owner's Manual	55.0
Usable Capacity of Optional Tank as Specified in Owner's Manual	
92-94% of Usable Capacity	50.6 to 51.7
Actual Amount of Solvent Used	51.1
1/3 of Usable Capacity	18.3

.DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Volkswagen Jetta S 4-Dr Sedan
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB5803
 Test Date: 12/07/2010

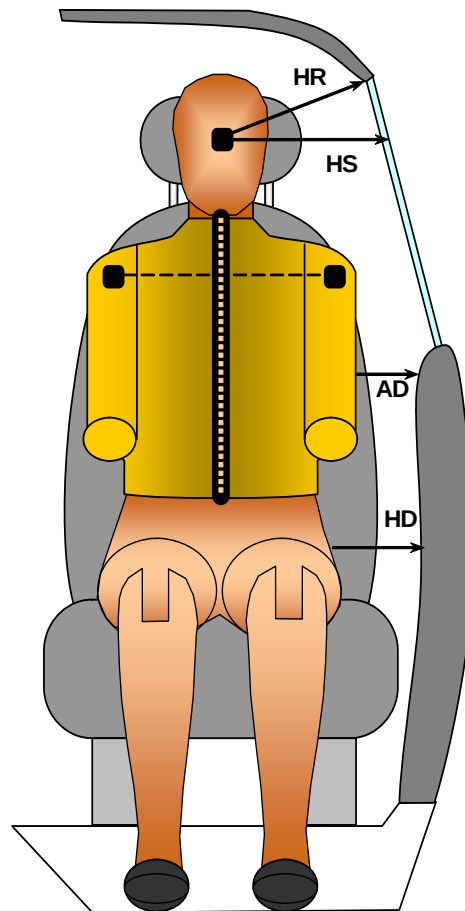


Code	Measurement Description	Driver S/N 296	
		Length (mm)	Angle (°)
HH	Head to Header	259	
HW	Head to Windshield	602	
HZ	Head to Roof	196	
NR	Nose to Rim	273	
CD	Chest to Dash	446	
CS	Chest to Steering Wheel	220	
KDL/KDAL	Left Knee to Dash	167	38.2
KDR/KDAR	Right Knee to Dash	174	35.7
PA	Pelvic Angle		22.2
PHX	H-Point to Striker (X-Axis)	324	
PHZ	H-Point to Striker (Z-Axis)	200	
SA	Seat Back Angle		1.2

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Volkswagen Jetta S 4-Dr Sedan
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB5803
 Test Date: 12/07/2010



FRONT VIEW OF DUMMY

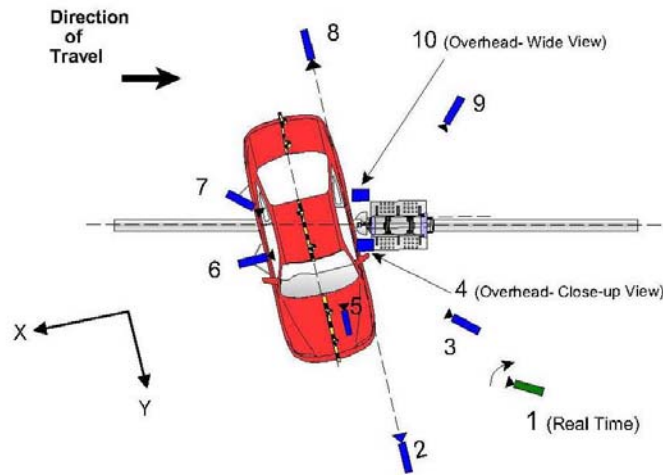
Code	Measurement Description	Driver S/N 296
		Length (mm)
HR	Head to Side Header	237
HS	Head to Side Window	373
AD	Arm to Door	179
HD	H-Point to Door	168

DATA SHEET NO. 5

CAMERA LOCATIONS AND DATA

Test Vehicle: 2011 Volkswagen Jetta S 4-Dr Sedan
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB5803
 Test Date: 12/07/2010



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	60	5560	-1490	24	1000
3	Impact Side 45° Forward	-1680	4170	-1570	20	1000
4	Overhead Closeup	40	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	0	-6580	-1500	24	1000
9	Impact Side 45° Rearward	-3590	-2890	-1610	20	1000
10	Overhead Wide View	220	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

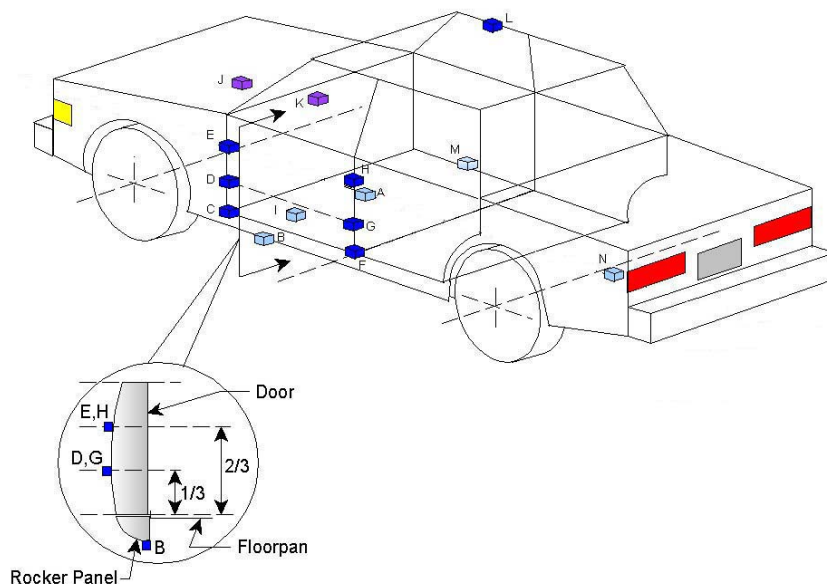
	Number of Channels
Driver Dummy	16
Vehicle Structure	21
Pole Load Cells – Not used	8
Contact Switches	3
Airbag Timing	2
Total No. of Data Channels	50

DATA SHEET NO. 6

VEHICLE ACCELEROMETER DATA

Test Vehicle: 2011 Volkswagen Jetta S 4-Dr Sedan
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB5803
 Test Date: 12/07/2010



	Accelerometer Location			
	ID	Coordinates (mm)		
		X	Y	Z
A	Vehicle CG	2390	205	-156
	Vehicle CG Sensor	2420	205	-156
B	Left Floor Sill	2785	-723	-172
C	A Pillar Sill	3200	-723	-174
D	A Pillar Low	3210	-609	-421
E	A Pillar Mid	3240	-694	-730
F	B Pillar Sill	2111	-723	-175
G	B Pillar Low	2110	-685	-440
H	B Pillar Mid	2120	-734	-751
I	Driver Seat	2290	-570	-385
L	Engine Top	3842	40	-756
J	Firewall	3826	40	-852
K	Right Roof	2268	535	-1410
M	Right Floor Sill	2615	723	-176
N	Rear Floorpan	915	0	-424

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 Volkswagen Jetta S 4-Dr Sedan
Test Program: NCAP Side Pole Impact Test

NHTSA No. MB5803
Test Date: 12/07/2010



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 Volkswagen Jetta S 4-Dr Sedan NHTSA No. MB5803
 Test Program: NCAP Side Pole Impact Test Test Date: 12/07/2010

TEST DUMMY INFORMATION AND CONTACT

Description	Driver
Dummy Type / Serial No.	SID-IIs / 296
Head Contact	Curtain Airbag, Headrest
Upper Torso Contact	Side Airbag, Seatback
Lower Torso Contact	Side Airbag, Seat
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	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	12
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	32.5
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.5

DATA SHEET NO. 9

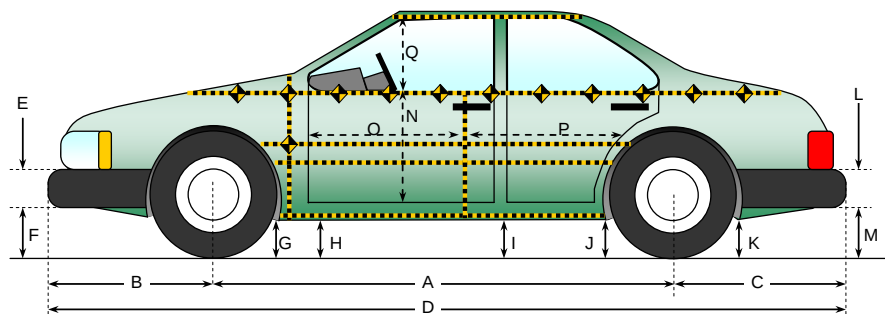
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2011 Volkswagen Jetta S 4-Dr Sedan

NHTSA No. MB5803

Test Program: NCAP Side Pole Impact Test

Test Date: 12/07/2010



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

LEFT SIDE VIEW

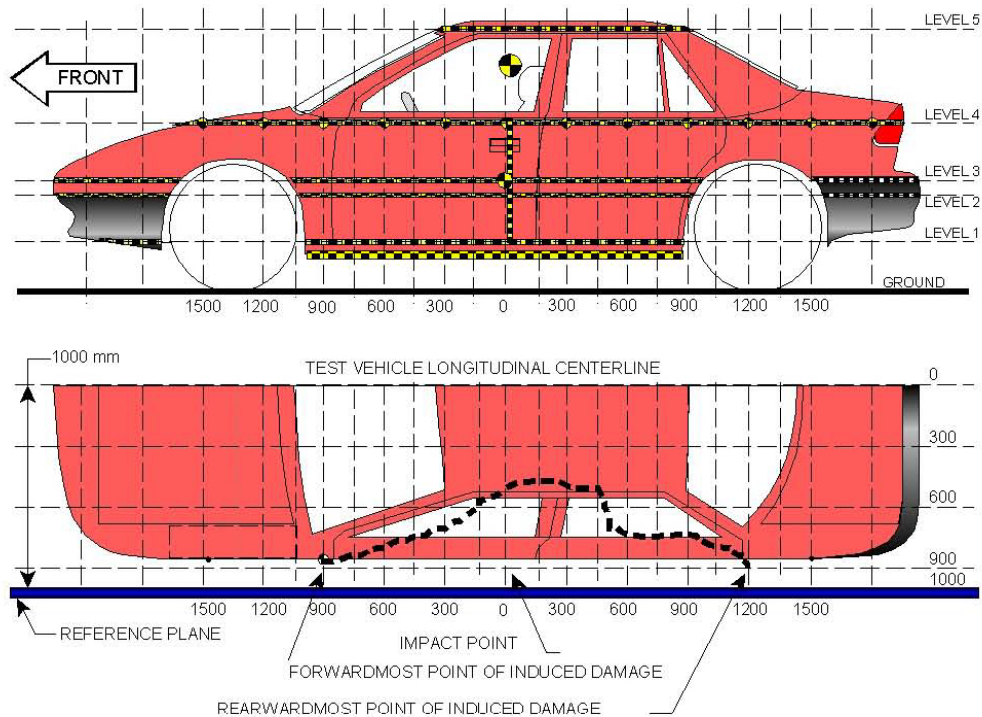
VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2656	2515	141
B	Front Axle to FSOV	884	916	-32
C	Rear Axle to RSOV	1090	1151	-61
D1	Total Vehicle Length at Left Side	3746	3602	144
D2	Total Vehicle Length at Centerline	4630	4582	48
D3	Total Vehicle Length at Right Side	3746	3765	-19
E	Front Bumper Thickness	130	130	0
F	Front Bumper Bottom to Ground	234	260	-26
G	Sill Height at Front Wheel Well	153	156	-3
H	Sill Height at Front Door Leading Edge	159	162	-3
I	Sill Height at B Pillar	154	171	-17
J1	Sill Height at Rear Wheel Well	150	172	-22
J2	Pinch Weld Height at Rear Wheel Well	155	180	-25
K	Sill Height Aft of Rear Wheel Well	215	226	-11
L	Rear Bumper Thickness	175	175	0
M	Rear Bumper Bottom to Ground	295	282	13
N	Sill Height to Window Bottom Sill	692	699	-7
O	Front Door Leading Edge to Impact CL	676	650	26
P	Rear Door Trailing Edge to Impact CL	1230	1262	-32
Q	Front Window Opening	438	386	52
R	Right Side Length	3746	3765	-19
S	Left Side Length	3746	3602	144
T	Vehicle Width at B Post	1786	1645	141

DATA SHEET NO. 10 **VEHICLE EXTERIOR CRUSH MEASUREMENTS**

Test Vehicle: 2011 Volkswagen Jetta S 4-Dr Sedan
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB5803
 Test Date: 12/07/2010



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	238
2	Mid Door	502
3	Occupant H-Point	608
4	Window Sill	918
5	Window Top	1356

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

Test Vehicle: 2011 Volkswagen Jetta S 4-Dr Sedan
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB5803
 Test Date: 12/07/2010

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900			219	322				223	320				4	-2	
-750	245	222	225	310		241	228	228	314		-5	6	3	4	
-600	245	235	229	303		301	281	271	326		56	46	42	23	
-525	242	234	227	299		329	324	316	345		87	90	89	46	
-450	239	233	226	297		367	376	363	374		128	143	137	77	
-375	237	231	224	294		405	389	396	413		168	158	172	119	
-300	235	230	223	293		440	430	432	456		205	200	209	163	
-225	234	228	222	290		482	486	469	499		248	258	247	209	
-150	233	228	220	290	523	539	530	526	546	641	306	302	306	246	118
-75	232	227	220	289	524	583	595	580	600	654	351	368	360	311	130
0	231	226	219	288	519	599	601	609	614	658	368	375	390	326	139
75	231	226	219	290	514	573	585	586	585	629	342	359	367	295	115
150	230	226	219	288	514	532	537	546	538	625	302	311	327	250	111
225	230	226	218	288	514	477	473	479	499	614	247	247	261	211	100
300	230	226	218	288	514	420	408	417	549	600	190	182	199	261	86
375	230	226	218	288	513	389	365	361	500	591	159	139	143	212	78
450	231	227	219	288	513	367	348	338	449	583	136	121	119	161	70
525	232	227	220	289	514	342	332	324	408	573	110	105	104	119	59
600	232	228	220	289	516	318	313	308	409	565	86	85	88	120	49
750	234	230	222	291	516	279	285	288	388	552	45	55	66	97	36
900	238	233	226	295	519	255	271	272	355	551	17	38	46	60	32
1050	239	234	229	300	522	229	248	254	336	543	-10	14	25	36	21
1200		217	221	305	533		215	227	325	548		-2	6	20	15
1350			214	313				222	317				8	4	

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

368DATA SHEET NO. 10 (CONTINUED)
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Volkswagen Jetta S 4-Dr Sedan NHTSA No. MB5803
Test Program: NCAP Side Pole Impact Test Test Date: 12/07/2010

MAXIMUM CRUSH DATA

	Level 1	Level 2	Level 3	Level 4	Level 5
Maximum Crush (mm)	368	375	390	326	139
Distance From Impact (mm)	0	0	0	0	0

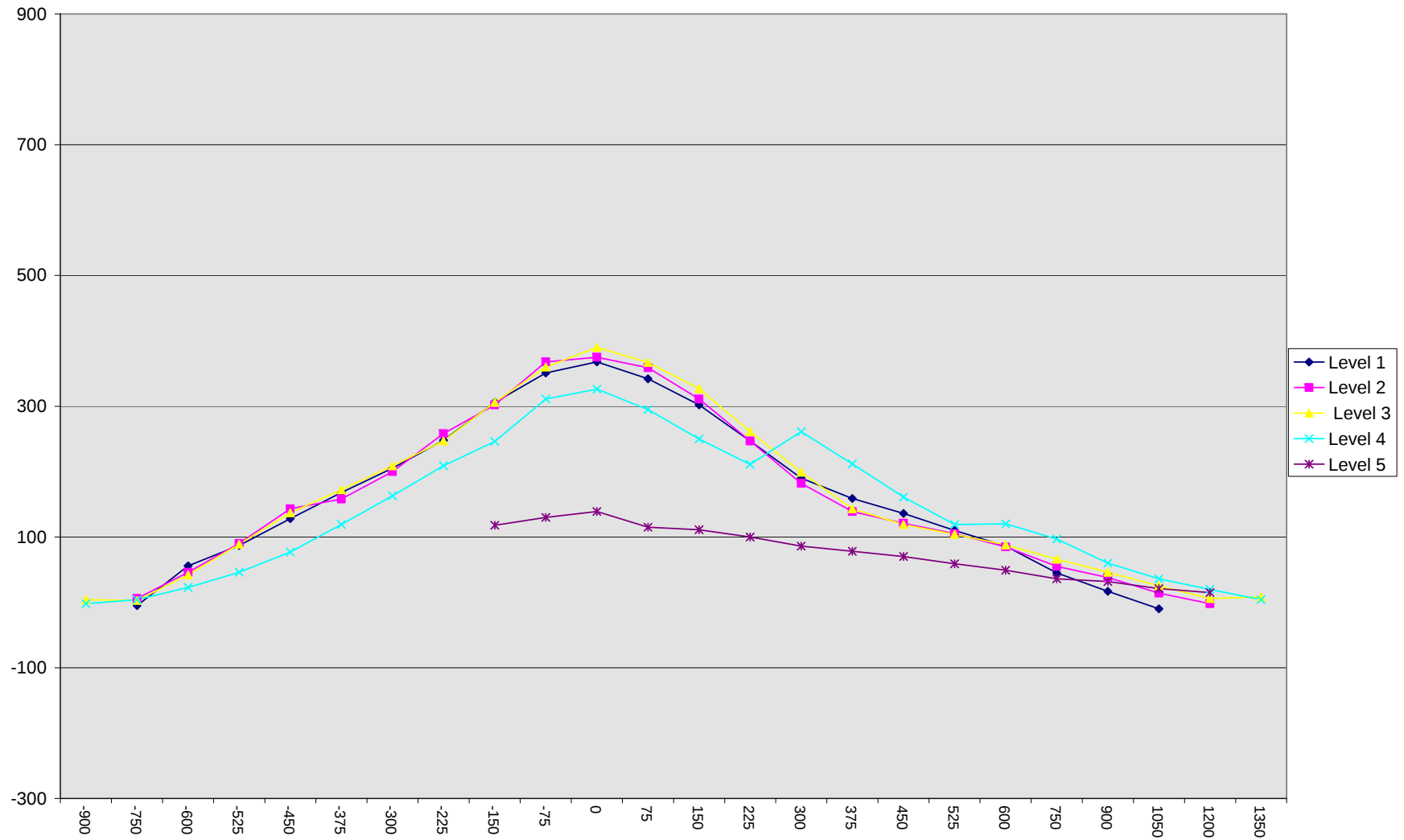
Note: Pre-test measurements are taken when the vehicle is in the "As Tested" weight condition. Vehicle measurements forward of the vertical impact reference line are negative. The crush profile grid is established prior to test based on an estimated impact point. The final distance to impact is determined 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 Volkswagen Jetta S 4-Dr Sedan
Test Program: NCAP Side Pole Impact Test

NHTSA No. MB5803
Test Date: 12/07/2010

20



DATA SHEET NO. 11

FMVSS 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2011 Volkswagen Jetta S 4-Dr Sedan

NHTSA No. MB5803

Test Program: NCAP Side Pole Impact Test

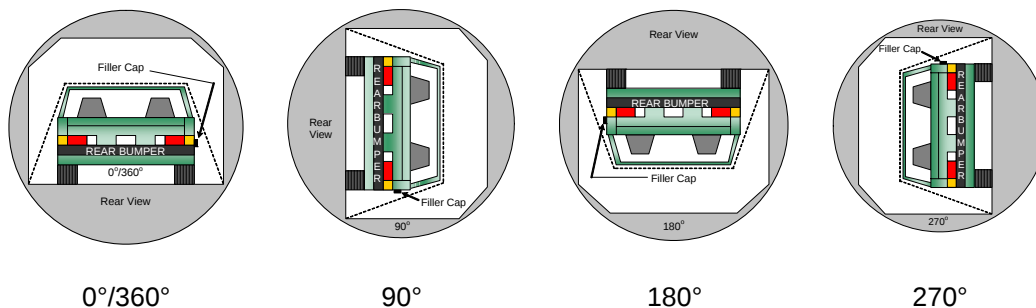
Test Date: 12/07/2010

Test Time: 10:01 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°	112	300	412
90° to 180°	110	300	410
180° to 270°	101	300	401
270° to 360°	116	300	416

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

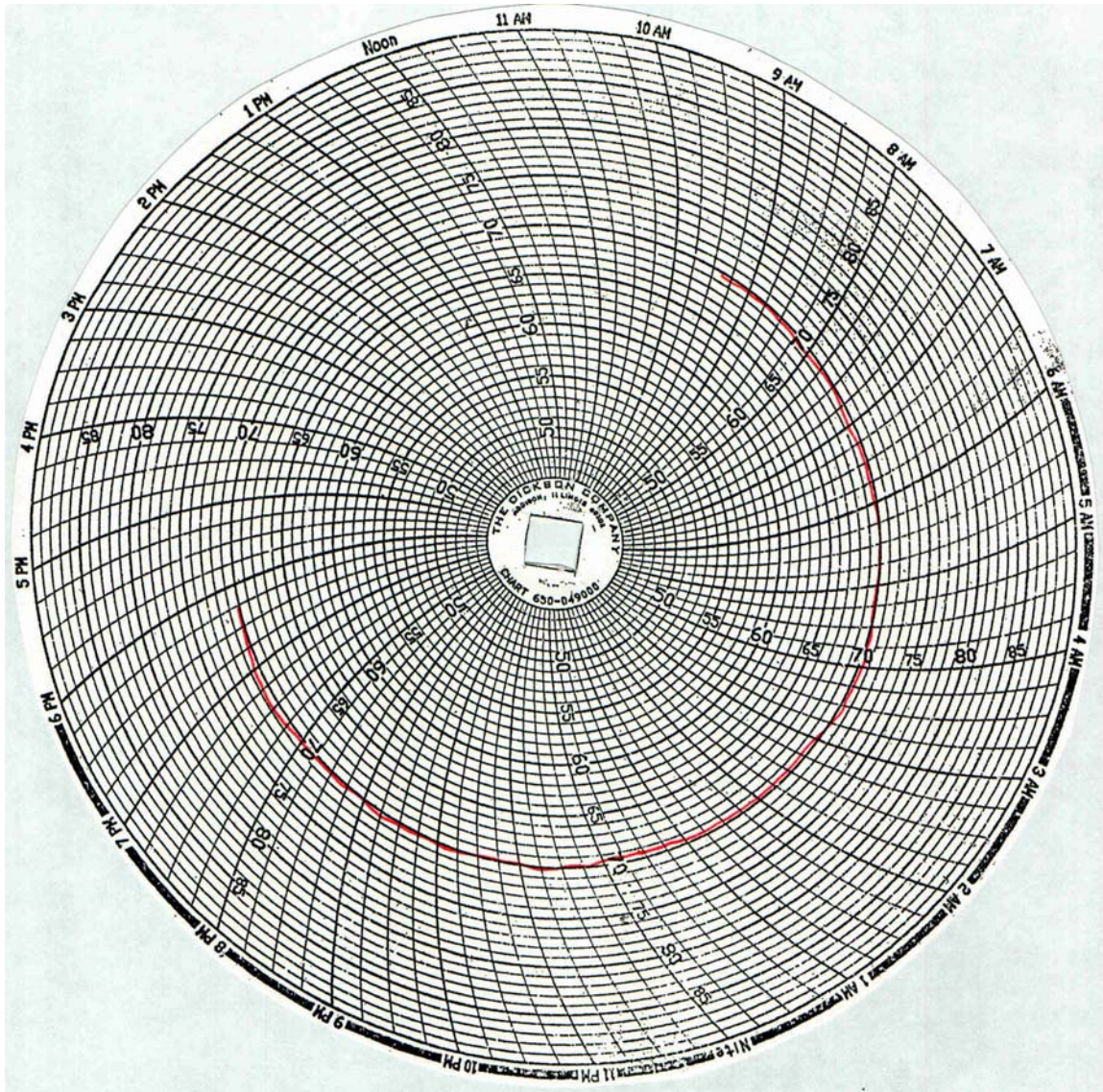
Test Phase	Spillage Location
0° to 90°	
90° to 180°	
180° to 270°	
270° to 360°	

DATA SHEET NO. 12

DUMMY/VEHICLE TEMPERATURE STABILIZATION DATA

Test Vehicle: 2011 Volkswagen Jetta S 4-Dr Sedan
Test Program: NCAP Side Pole Impact Test

NHTSA No. MB5803
Test Date: 12/07/2010



APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

	<u>Page No.</u>
Photo No. 1. As Delivered Right Front $\frac{3}{4}$ View of Test Vehicle	A-1
Photo No. 2. As Delivered Left Rear $\frac{3}{4}$ View of Test Vehicle	A-1
Photo No. 3. Pre-Test Frontal View of Test Vehicle	A-2
Photo No. 4. Post-Test Frontal View of Test Vehicle	A-2
Photo No. 5. Pre-Test Left Front $\frac{3}{4}$ View of Test Vehicle	A-3
Photo No. 6. Post-Test Left Front $\frac{3}{4}$ View of Test Vehicle	A-3
Photo No. 7. Pre-Test Left Side View of Test Vehicle	A-4
Photo No. 8. Post-Test Left Side View of Test Vehicle	A-4
Photo No. 9. Pre-Test Left Rear $\frac{3}{4}$ View of Test Vehicle	A-5
Photo No. 10. Post-Test Left Rear $\frac{3}{4}$ View of Test Vehicle	A-5
Photo No. 11. Pre-Test Rear View of Test Vehicle	A-6
Photo No. 12. Post-Test Rear View of Test Vehicle	A-6
Photo No. 13. Pre-Test Right Side View of Test Vehicle	A-7
Photo No. 14. Post-Test Right Side View of Test Vehicle	A-7
Photo No. 15. Pre-Test Overhead View of Test Vehicle and Pole	A-8
Photo No. 16. Post-Test Overhead View of Test Vehicle and Pole	A-8
Photo No. 17. Pre-Test Left Side View of Pole Positioned Against Side of Vehicle	A-9
Photo No. 18. Pre-Test Right Side View of Pole Positioned Against Side of Vehicle	A-9
Photo No. 19. Pre-Test Close-Up View of Impact Point Target	A-10
Photo No. 20. Post-Test Close-Up View of Impact Point Target Showing Impact Location	A-10

		<u>Page No.</u>
Photo No. 21.	Pre-Test Front Close-Up View of Dummy (through front window)	A-11
Photo No. 22.	Post-Test Front Close-Up View of Dummy (through front window)	A-11
Photo No. 23.	Pre-Test Left Side View of Dummy Showing Belts, Chalking, and Contact Switches (Door Open)	A-12
Photo No. 24.	Pre-Test Left Side View of Dummy Shoulder and Door Top View	A-12
Photo No. 25.	Post-Test Left Side View of Dummy Shoulder and Door Top View	A-13
Photo No. 26.	Pre-Test Frontal View of Seat Back Prior to Dummy Positioning	A-13
Photo No. 27.	Pre-Test Frontal View of Dummy Head and Shoulders in Relation to Head Restraint	A-14
Photo No. 28.	Pre-Test Frontal View of Seat Pan Prior to Dummy Positioning	A-14
Photo No. 29.	Pre-Test Overhead View of Dummy Thighs on Seat Pan	A-15
Photo No. 30.	Pre-Test View of Dummy's Neck Showing Position of Adjustable Neck Bracket	A-15
Photo No. 31.	Pre-Test View of Dummy's Head Showing Dummy's Head is Level	A-16
Photo No. 32.	Pre-Test Placement of Dummy's Feet	A-16
Photo No. 33.	Pre-Test View of Belt Anchorage for Dummy to Show Position	A-17
Photo No. 34.	Pre-Test Left Side View of Steering Wheel to Show Position	A-17
Photo No. 35.	Pre-Test View of Parking Brake	A-18
Photo No. 36.	Pre-Test Close-Up Left Side View of Driver Seat Track Showing Test Position	A-18
Photo No. 37.	Pre-Test Close-Up Left Side View of Driver Seat Back Showing Test Position	A-19
Photo No. 38.	Pre-Test Close-Up View of Driver Seat Back or Head Restraint Showing Seat Back Test Position	A-19
Photo No. 39.	Pre-Test Dummy and Door Clearance View	A-20
Photo No. 40.	Post-Test Dummy and Door Clearance View	A-20

		<u>Page No.</u>
Photo No. 41.	Pre-Test Right Side View of Dummy and Front Seat Occupant Compartment	A-21
Photo No. 42.	Post-Test Right Side View of Dummy and Front Seat Occupant Compartment	A-21
Photo No. 43.	Pre-Test Inner Driver Door Panel View	A-22
Photo No. 44.	Post-Test Inner Driver Door Panel View Showing Dummy Contact Location	A-22
Photo No. 45.	Post-Test Dummy Close-Up Head Contact with Vehicle Interior View	A-23
Photo No. 46.	Post-Test Dummy Close-Up Head Contact with Side Airbag View	A-23
Photo No. 47.	Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View	A-24
Photo No. 48.	Post-Test Dummy Close-Up Torso Contact with Side Airbag View	A-24
Photo No. 49.	Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View	A-25
Photo No. 50.	Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View	A-25
Photo No. 51.	Pre-Test View of Fuel Filler Cap or Fuel Filler Neck	A-26
Photo No. 52.	Post-Test View of Fuel Filler Cap or Fuel Filler Neck	A-26
Photo No. 53.	Close-Up View of Vehicle's Certification Label	A-27
Photo No. 54.	Close-Up View of Vehicle's Tire Information Placard or Label	A-27
Photo No. 55.	Pre-Test Pole Barrier Front View	A-28
Photo No. 56.	Post-Test Pole Barrier Front View	A-28
Photo No. 57.	Pre-Test Pole Barrier Side View	A-29
Photo No. 58.	Post-Test Pole Barrier Side View	A-29
Photo No. 59.	Pre-Test Ballast View	A-30
Photo No. 60.	Post-Test Primary and Redundant Speed Trap Read-Out	A-30
Photo No. 61.	FMVSS No. 301/305 Rollover 0 Degrees	A-31

	<u>Page No.</u>
Photo No. 62. FMVSS No. 301/305 Rollover 90 Degrees	A-31
Photo No. 63. FMVSS No. 301/305 Rollover 180 Degrees	A-32
Photo No. 64. FMVSS No. 301/305 Rollover 270 Degrees	A-32
Photo No. 65. FMVSS No. 301/305 Rollover 360 Degrees	A-33
Photo No. 66. Impact Event	A-33
Photo No. 67. Monroney Label	A-34
Photo No. 68. Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-35
Photo No. 69. Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-36



As Delivered Right Front ¾ View of Test Vehicle



As Delivered Left Rear ¾ View of Test Vehicle



Pre-Test Frontal View of Test Vehicle



Post-Test Frontal View of Test Vehicle



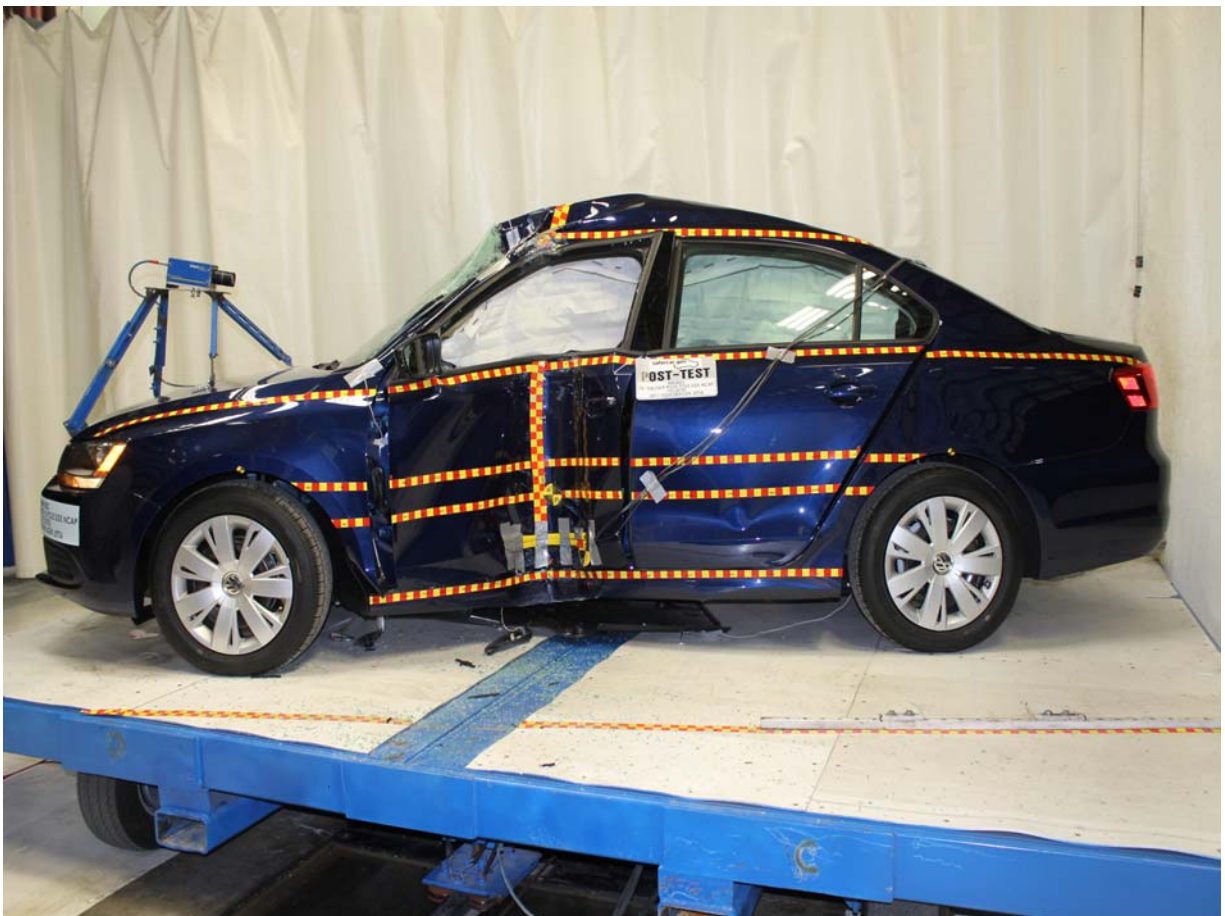
Pre-Test Left Front ¾ View of Test Vehicle



Post-Test Left Front ¾ View of Test Vehicle



Pre-Test Left Side View of Test Vehicle



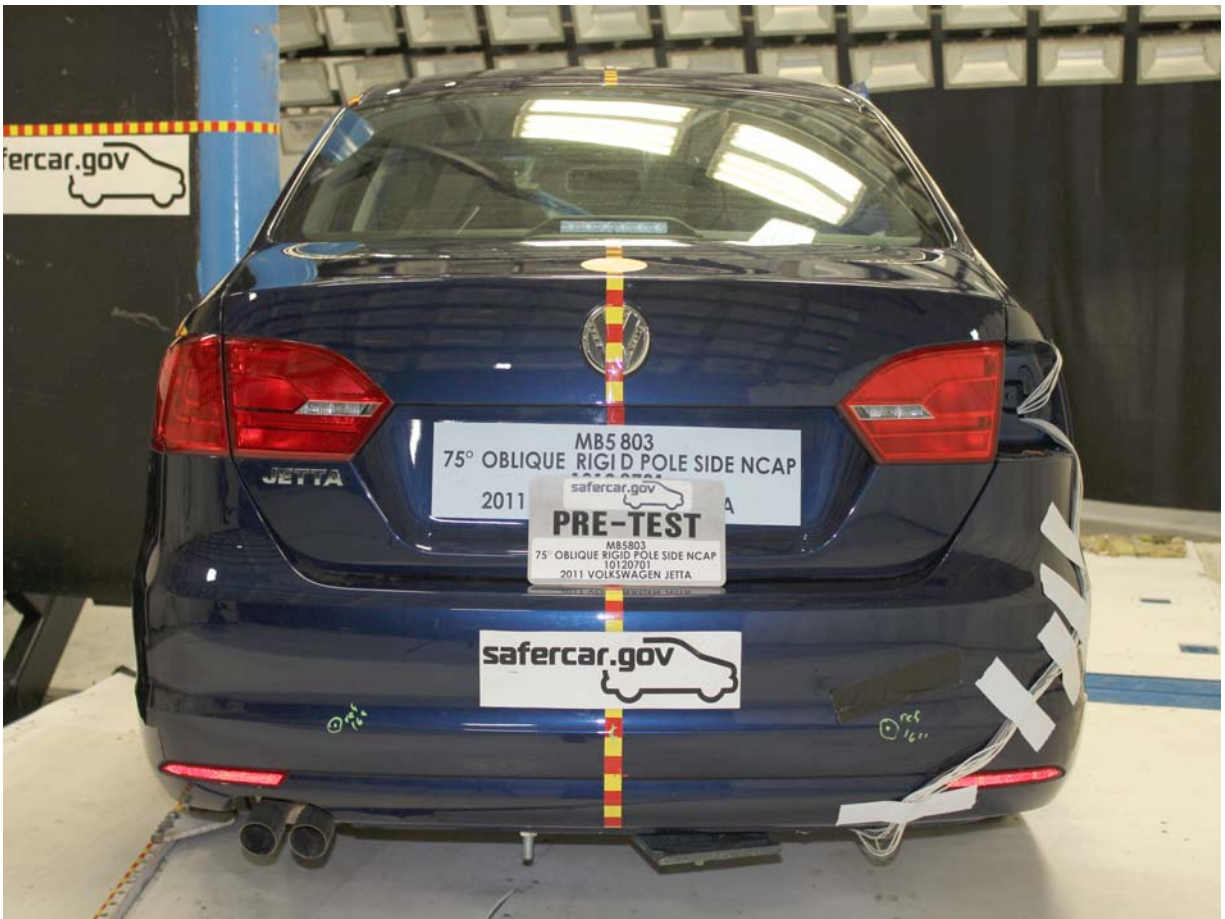
Post-Test Left Side View of Test Vehicle



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



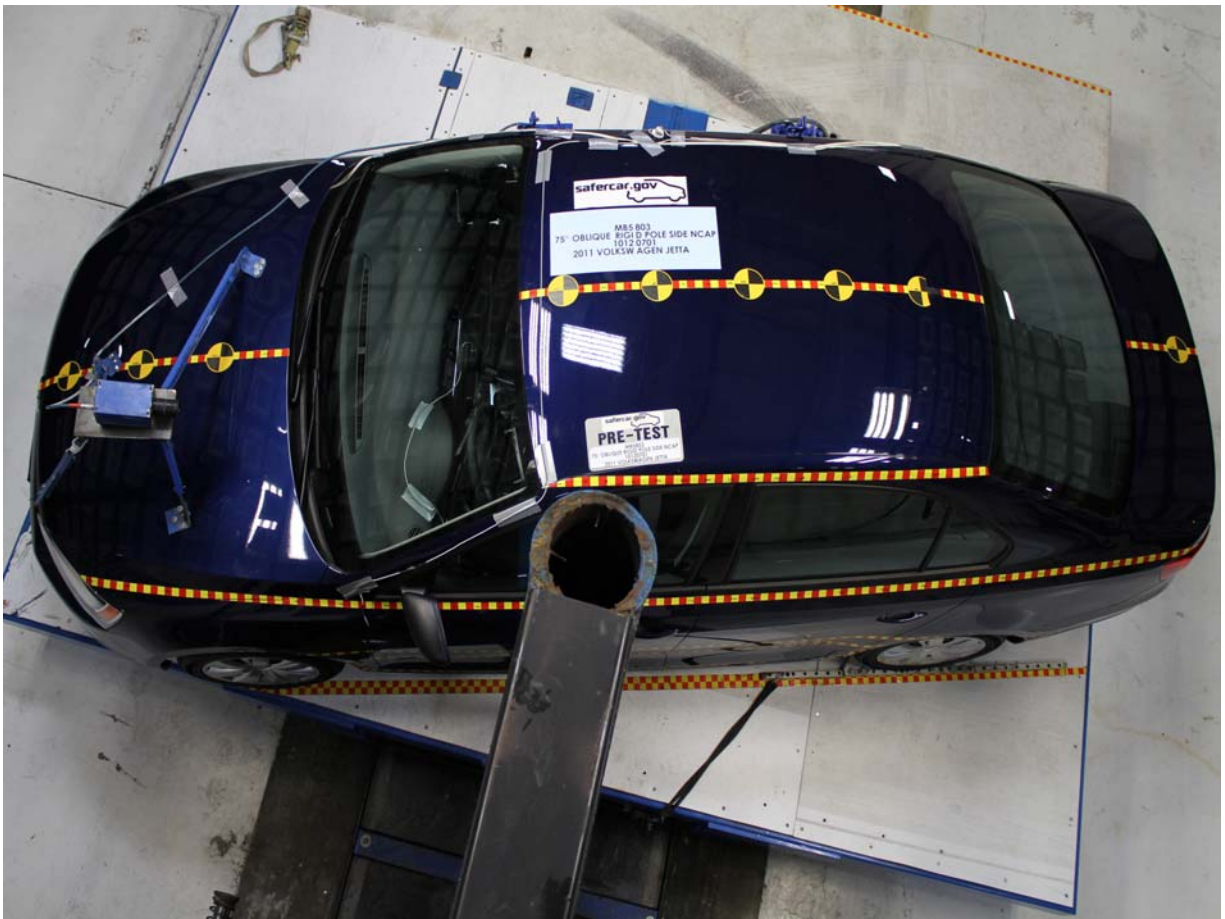
Post-Test Rear View of Test Vehicle



Pre-Test Right Side View of Test Vehicle



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



Pre-Test Right Side View of Pole Positioned Against Side of Vehicle



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 (through front window)



Post-Test Front Close-Up View of Dummy (through front window)



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



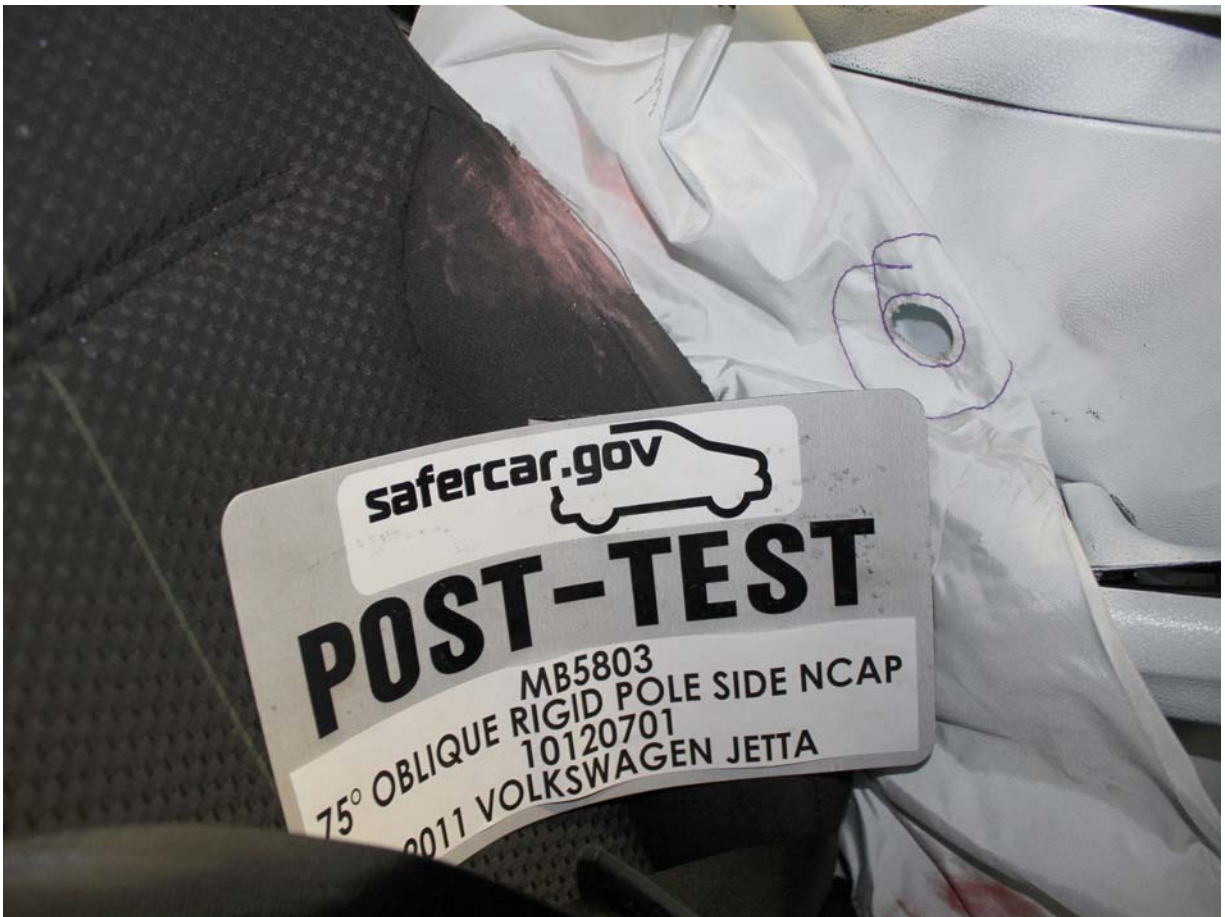
Post-Test Inner Driver Door Panel View Showing Dummy Contact Location



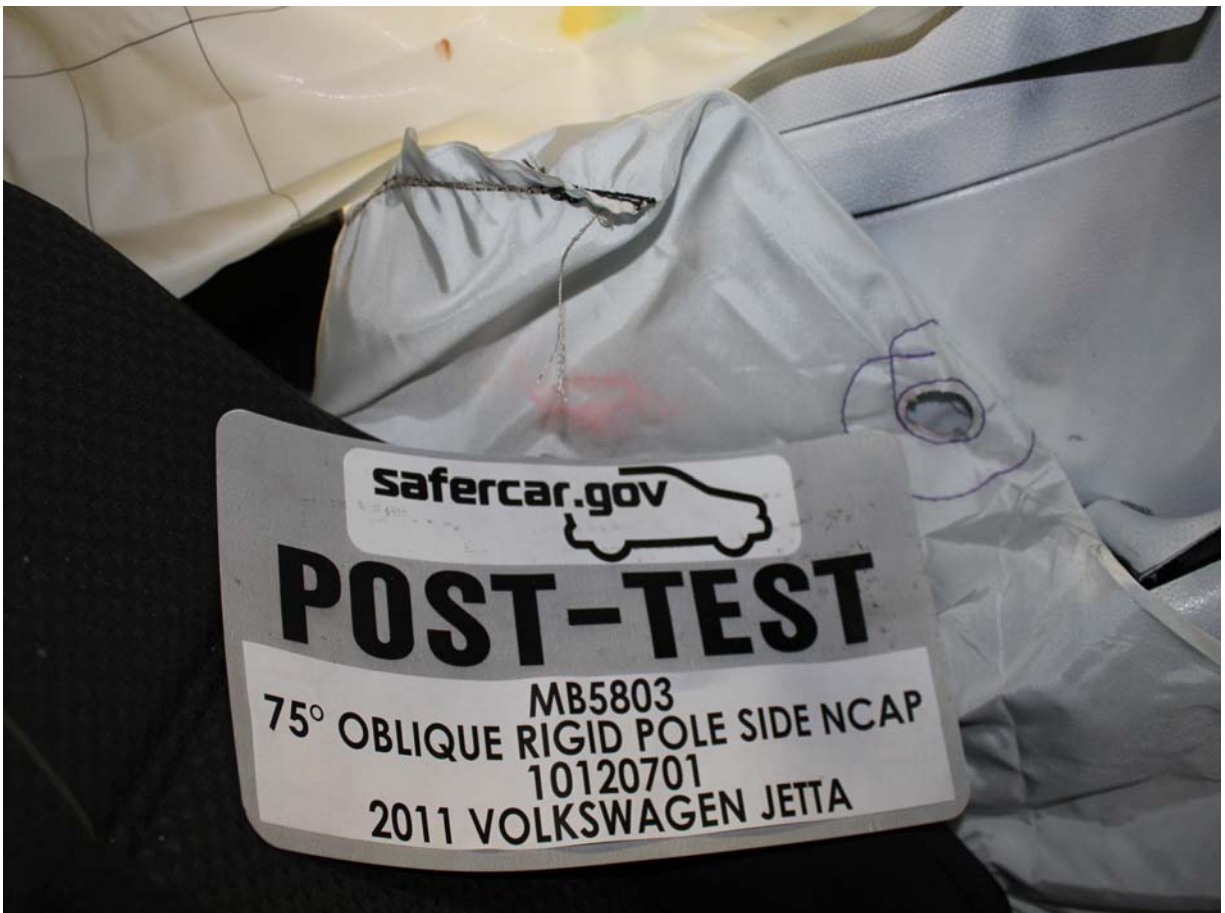
Post-Test Dummy Close-Up Head Contact with Vehicle Interior View



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



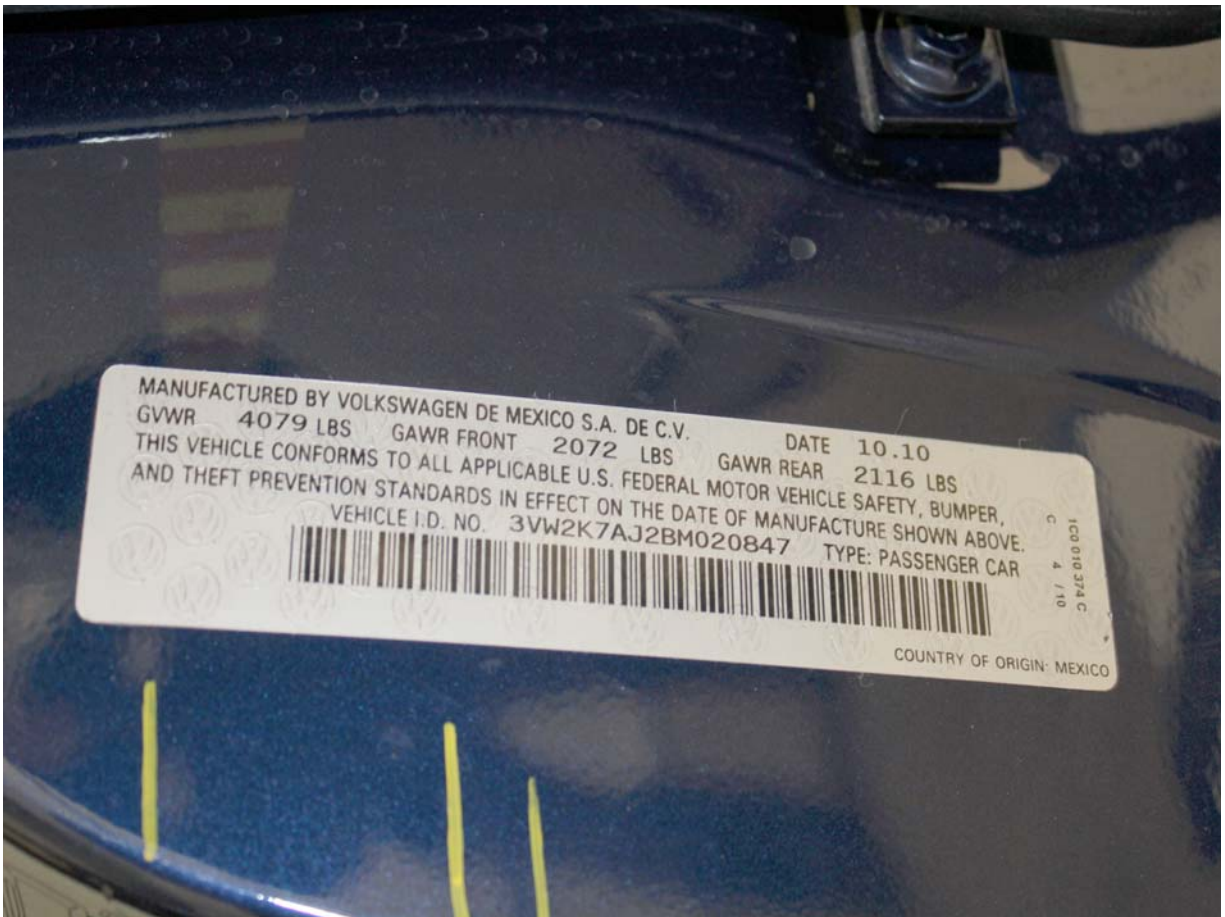
Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View



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



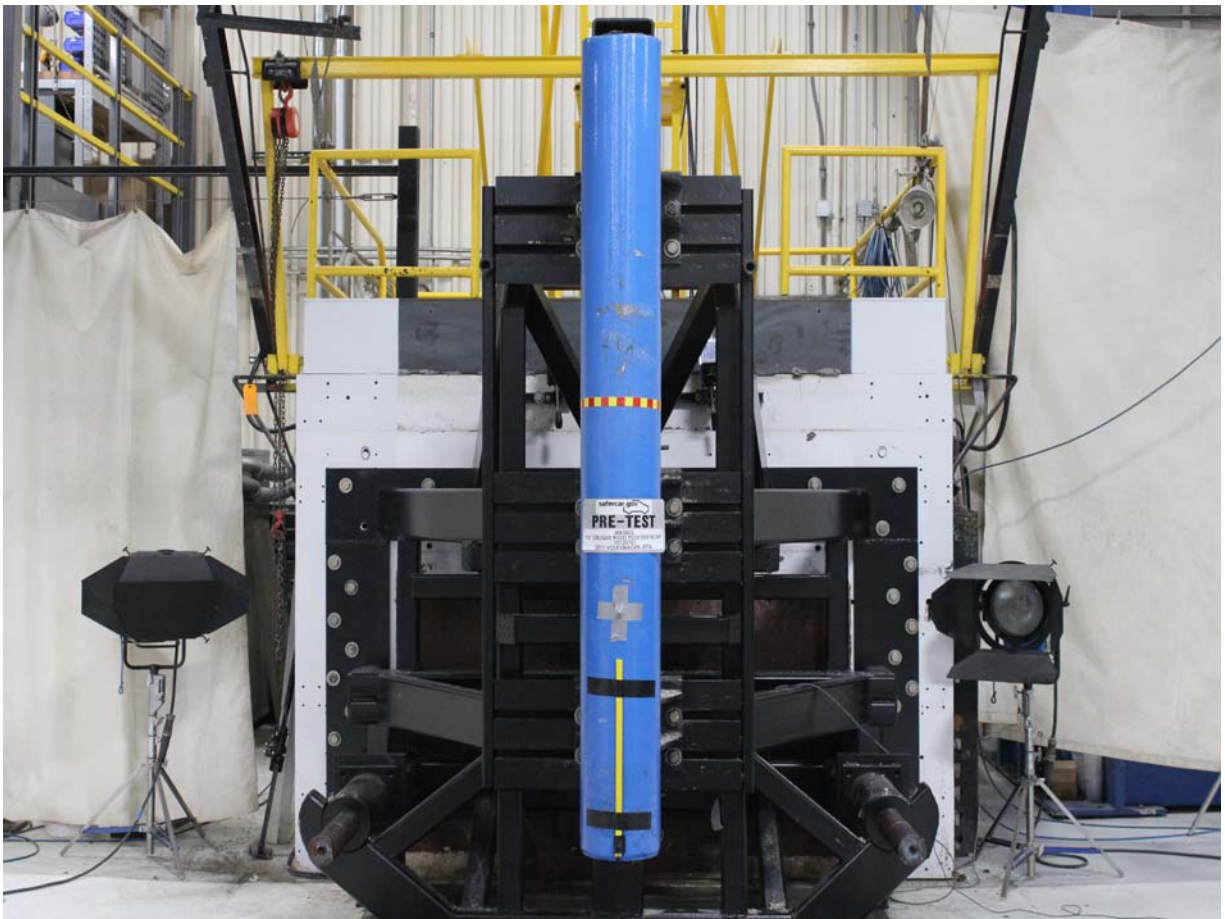
Post-Test View of Fuel Filler Cap or Fuel Filler Neck



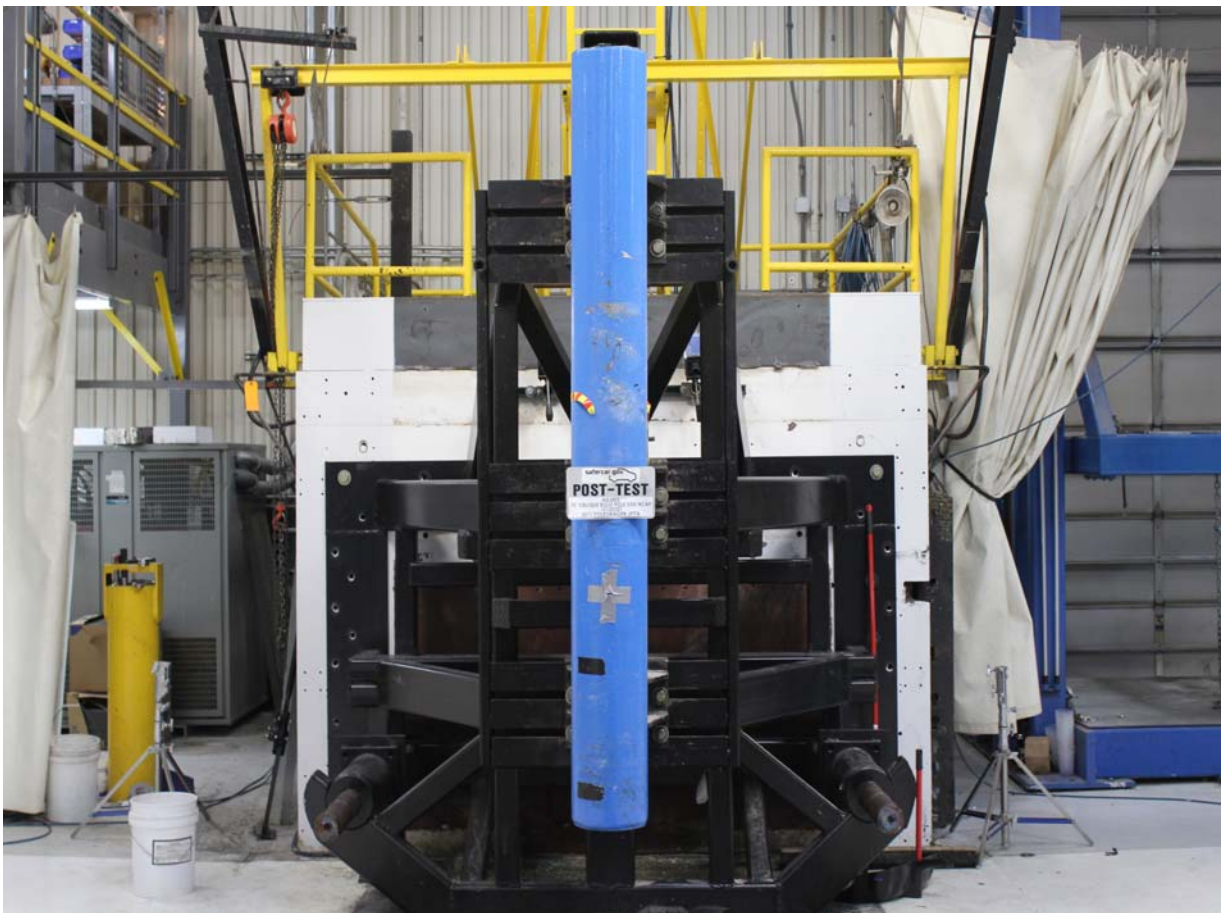
Close-Up View of Vehicle's Certification Label



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



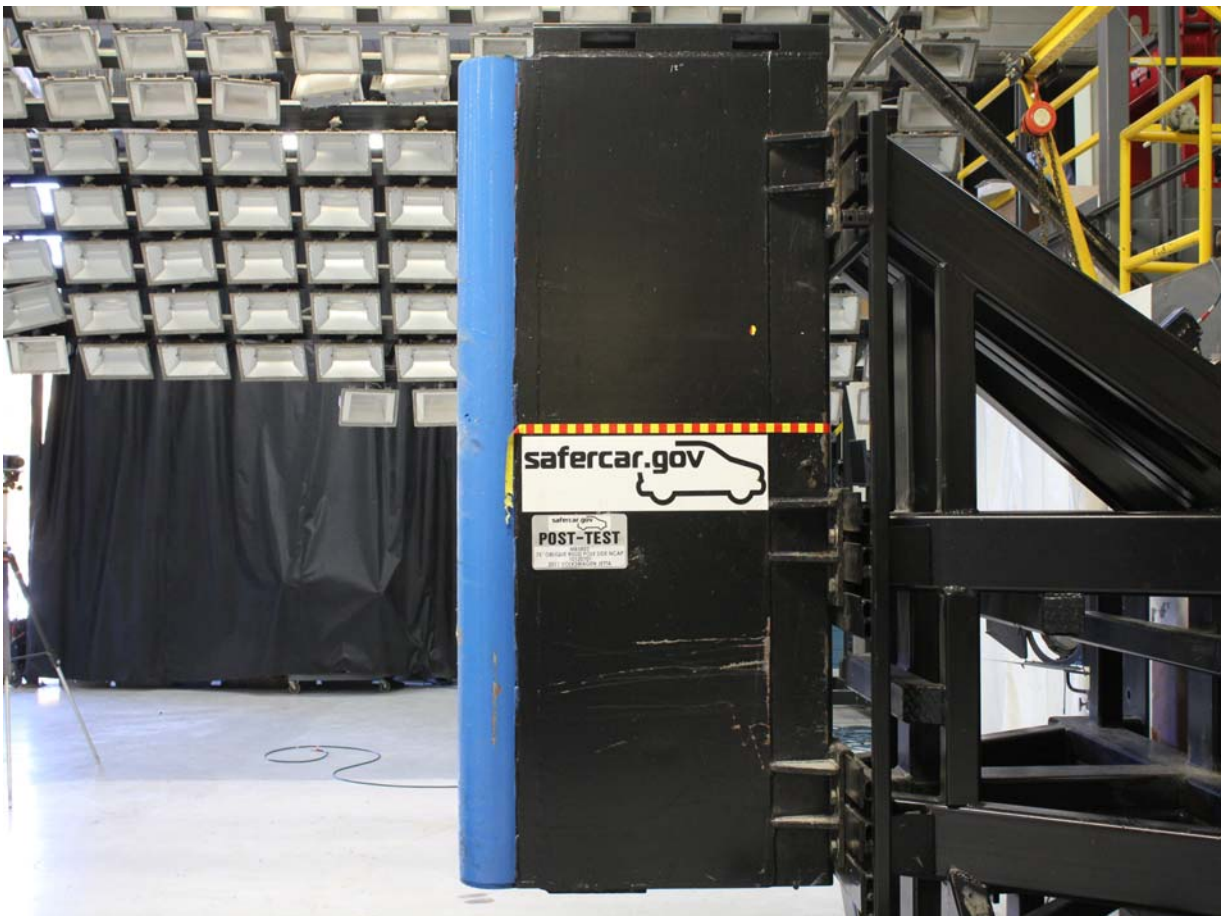
Pre-Test Pole Barrier Front View



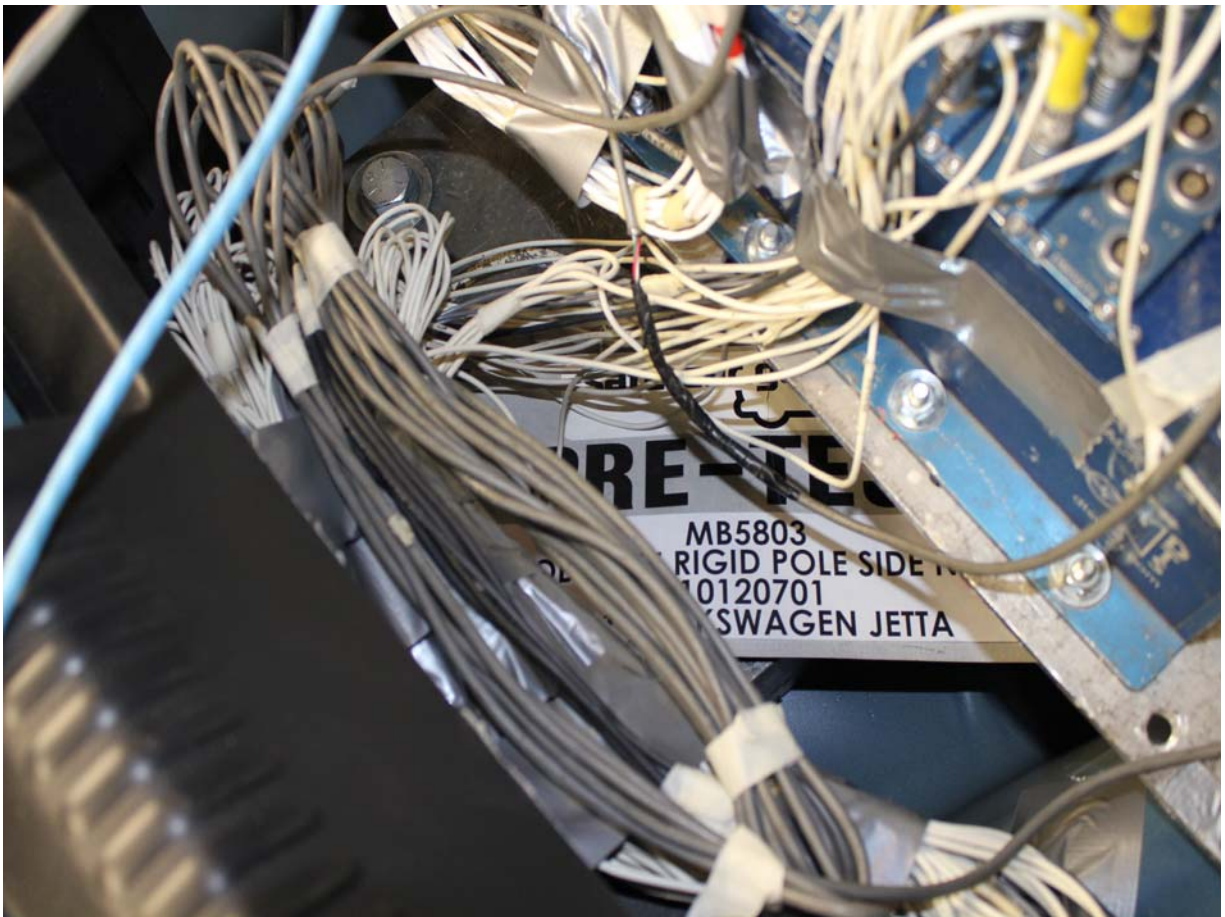
Post-Test Pole Barrier Front View



Pre-Test Pole Barrier Side View



Post-Test Pole Barrier Side View



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

2011 Jetta S

Exterior: Tempest Blue Metallic Exterior

Interior: Titan Black Interior

STANDARD FEATURES (unless replaced by options)

- PERFORMANCE/HANDLING**
- 2.0L 115 horsepower, 125 lbs-ft torque, in-line 4 cylinder engine
 - Front-Wheel Drive
 - Anti-Lock Braking system (ABS)
 - Anti-Slip Regulation (ASR)
 - Electronic Stability Control (ESC)
 - Electronic differential lock (EDL)
 - 15" steel wheels w/ full wheel covers & all-season tires

SAFETY/DURABILITY

- Driver & front passenger airbag supplemental restraint system
- Driver & front passenger side airbag supplemental restraint system
- 3-point safety belts, all seating positions
- Head restraints for all seating positions
- Lower Anchors & Tethers for Children (LATCH)
- Child safety rear door locks
- Daytime Running Lights (DRL)
- Side-impact protection beams
- Side-impact protection beams
- Tire Pressure Monitoring System (TPMS)

COMFORT/CONVENIENCE

- Air conditioning, CFC-free
- RCD 310 radio w/ single CD player, aux. input & 4 speakers
- 6-speaker audio system
- 60/40 split fold-down rear seat
- Height adjustable, telescoping steering column
- Vanity mirrors
- Remote keyless locking system
- Power windows w/ pinch protection
- Power, heated exterior mirrors
- Immobiliser theft deterrent system

Manufacturer's Suggested Retail Price:

\$17,095.00

DRIVER CARE PACKAGE

- WARRANTY INFORMATION**
- Volkswagen New Vehicle Limited Warranty
 - 3 years/50,000 miles (whichever occurs first)
 - 5 years/100,000 miles (whichever occurs first)
 - 5 years/100,000 miles (whichever occurs first)
 - Limited Warranty against Corrosion Perforation
 - 12 years/unlimited mileage
 - 24-HOUR ROADSIDE ASSISTANCE
 - 3 years/50,000 miles (whichever occurs first)
 - 5 years/100,000 miles (whichever occurs first)
 - 5 years/100,000 miles (whichever occurs first)
 - Provided by a third party supplier

- VOLKSWAGEN CAREFREE MAINTENANCE**
- Scheduled maintenance services described in the Volkswagen Maintenance booklets are covered at no charge for 3 years/36,000 miles (whichever occurs first)

PACKAGES/OPTIONS

- Tempest Blue Metallic Exterior
- Titan Black Interior
- Rubber Mats (set of 4) and Trunk Liner
- 16" Steel Wheels w/ Full Wheel Covers & All-Season Tires
- 6-Speed Automatic, Tiptronic® Transmission

No Charge
No Charge
\$735.00
\$120.00
No Charge

Destination Charge

\$770.00
\$18,200.00

Total Price:

Fuel, license, title fees, taxes and dealer-installed accessories are not included.

PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS CARLINE: U.S./CANADIAN
FINAL ASSEMBLY POINT: PUEBLA, MEXICO
COUNTRY OF ORIGIN: MEXICO
ENGINE: MEXICO
TRANSMISSION: JAPAN
MEXICO: 40%
GERMANY: 20%

NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION OR OTHER NON-PARTS COSTS.



Great. For The Price Of Good.

EPA Fuel Economy Estimates

These estimates reflect new EPA methods beginning with 2008 models.

CITY MPG
23
Expected range for most drivers
19 to 27 MPG

HIGHWAY MPG
29
Expected range for most drivers
24 to 34 MPG

Estimated
Annual Fuel Cost
\$1,800
based on 15,000 miles
at \$3.00 per gallon

Combined Fuel Economy

This Vehicle

25

14 All Compact Cars

Your actual mileage will vary depending on how you drive and maintain your vehicle.



See the FREE Fuel Economy Guide at dealers or www.fueleconomy.gov

Volkswagen of America, Inc.

SOLD TO: 402133
FOX VALLEY VOLKSWAGEN SCHAUMBURG
1000 EAST GOLF ROAD
SCHAUMBURG, IL 60173

SUP TO: 402133
FOX VALLEY VOLKSWAGEN SCHAUMBURG
1000 EAST GOLF ROAD
SCHAUMBURG, IL 60173

VIN: 3VW2K7AJ2BM020847
Port of Entry: HOUSTON
Transportation Method: TRUCK
COMM NUM: E22035

GOVERNMENT SAFETY RATINGS

Frontal Crash Driver Not Rated
Passenger Not Rated

Star ratings based on the risk of injury in a frontal impact. Frontal ratings should ONLY be compared to other vehicles of similar size and weight.

Side Crash Front Seat Not Rated
Rear Seat Not Rated

Star ratings based on the risk of injury in a side impact.

Rollover Not Rated

Star ratings based on the risk of rollover in a single vehicle crash.

Star ratings range from 1 to 5 stars (★ ★ ★ ★ ★) with 5 being the highest. Source: National Highway Traffic Safety Administration (NHTSA).

www.safercar.gov or 1-888-327-4236

Who better to get you into a Volkswagen than us? Volkswagen Credit



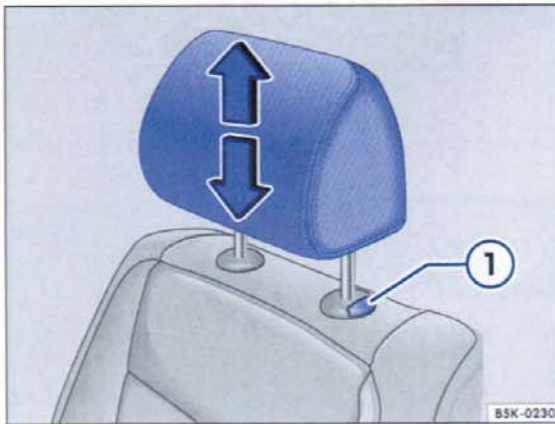


Fig. 34 Adjusting the front head restraints.



Please first read and note the introductory information and heed the **WARNINGS** ⚠ on page 53.

All seats are equipped with head restraints. The rear center head restraint is designed only for the center seat on the rear bench. Therefore, only install the center head restraint in the center position.

Adjusting the height

- Push the head restraint up in the direction of the arrow or down when the button ⇒ fig. 34 ① or ⇒ fig. 35 ① is pressed ⇒ ⚠.
- The head restraint must lock securely in the position selected.

Proper head restraint adjustment

Adjust head restraints so that the upper edge of the head restraint is at least at eye level or higher. Position the back of the head as close as possible to the head restraint.

Adjusting the head restraint for short people

Push the head restraint down as far as it will go, even if this means the person's head is still below

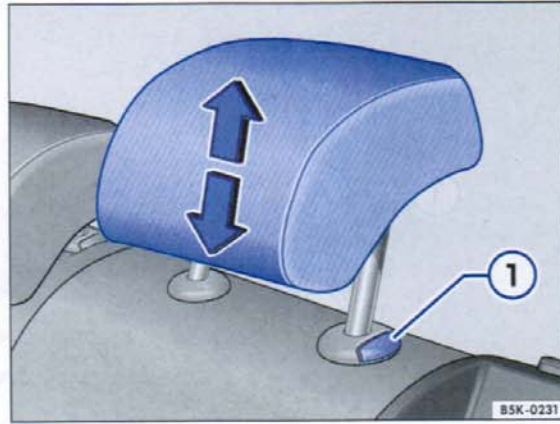


Fig. 35 Adjusting rear head restraints.

the top edge of the head restraint. A small gap may remain between the head restraint and the backrest when the head restraint is all the way down.

Adjusting the head restraint for tall people

Pull the head restraint up as far as it will go.

⚠ WARNING

Driving without head restraints or with improperly adjusted head restraints increases the risk of serious injuries in a collision.

- Always drive with the head restraints in place and properly adjusted.
- Every person in the vehicle must have a properly adjusted head restraint in order to minimize the risk of neck injury in a crash. Each head restraint must be adjusted according to the occupants' size so that the upper edge is even with the top of the person's head, but no lower than eye level. Always hold your head so that the back of your head is as close as possible to the head restraint.
- Never adjust head restraint while driving. ◀

Before driving

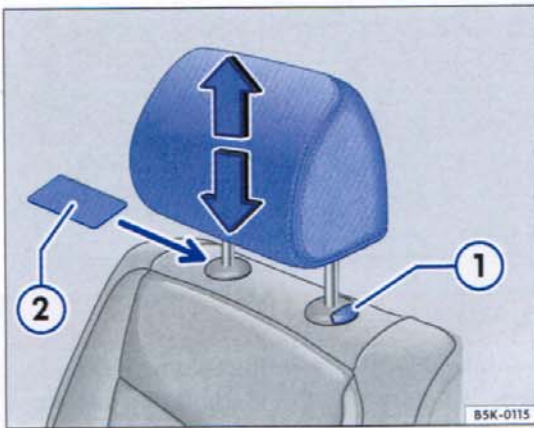


Fig. 36 Removing front head restraints.

Please first read and note the introductory information and heed the WARNINGS on page 53.

All seats are equipped with head restraints. The rear center head restraint is designed only for the center seat on the rear bench. Therefore, only install the center head restraint in the center position.

Removing the front head restraints

- Pull the head restraint all the way up in *Adjusting, removing and reinstalling head restraints* on page 58.
- If necessary, slide a flat object such as a plastic card between the backrest cover and the cover cap of the head restraint guide rod $\Rightarrow$ fig. 36 ② to unlock the head restraint.
- While pressing button ①, pull the head restraint out completely.

Installing the front head restraints

- Position head restraint properly over the head restraint guides of the respective seat back and insert the head restraint into the guides.
- Push the head restraint down while pressing button ①.
- Adjust the head restraint according to the occupant's size $\Rightarrow$ page 58.

Removing the rear head restraint

- Unlock the rear bench and fold it forward $\Rightarrow$ page 139.
- Pull the head restraint all the way up $\Rightarrow$.

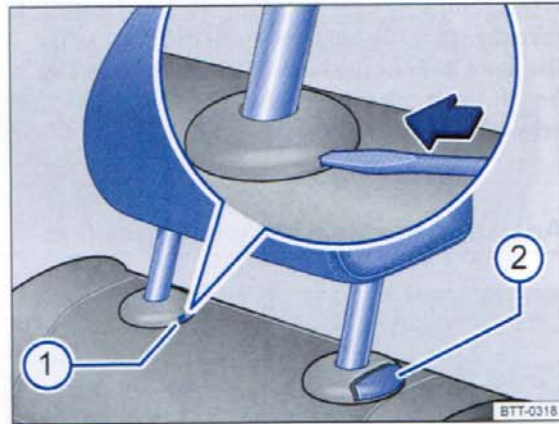


Fig. 37 Removing rear head restraints.

- If necessary, press the flat blade of the screwdriver from the vehicle tool kit into the slit of the trim cap $\Rightarrow$ fig. 37 ① in the direction of the arrow and hold it in this position.
- At the same time press button ② while a second person pulls out the head restraint completely.
- Fold the backrest of the rear bench back so that it locks securely.

Reinstalling the rear head restraint

- Unlock the rear bench and fold it forward $\Rightarrow$ page 139.
- Position head restraint properly over the head restraint guides of the respective seat back and insert the head restraint into the guides.
- Push the head restraint down while pressing button ②.
- Fold the backrest of the rear bench back so that it locks securely.
- Adjust the head restraint according to the occupant's size $\Rightarrow$ page 58.

WARNING

Driving without head restraints or with improperly adjusted head restraints increases the risk of serious injuries in a collision.

- Always drive with the head restraints in place and properly adjusted.
- Always reinstall head restraints as soon as possible so that vehicle occupants are properly protected.

APPENDIX B
DUMMY RESPONSE DATA

TABLE OF DATA PLOTS

		<u>Page No.</u>
List of Data Plots Provided in the Test Report		
Figure No. 1.	Driver Head Acceleration (X) Primary vs. Time	B-1
Figure No. 2.	Driver Head Acceleration (Y) Primary vs. Time	B-1
Figure No. 3.	Driver Head Acceleration (Z) Primary vs. Time	B-1
Figure No. 4.	Driver Head Resultant Primary Acceleration vs. Time	B-1
Figure No. 5.	Driver Lower Spine T12 Acceleration (X) vs. Time	B-2
Figure No. 6.	Driver Lower Spine T12 Acceleration (Y) vs. Time	B-2
Figure No. 7.	Driver Lower Spine T12 Acceleration (Z) vs. Time	B-2
Figure No. 8.	Driver Lower Spine T12 Resultant Acceleration vs. Time	B-2
Figure No. 9.	Driver Iliac Wing Force on Impact Side (Y) vs. Time	B-3
Figure No. 10.	Driver Acetabulum Force on Impact Side (Y) vs. Time	B-3
Figure No. 11.	Driver Total Pelvis Force on Impact Side (Y) vs. Time	B-3

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

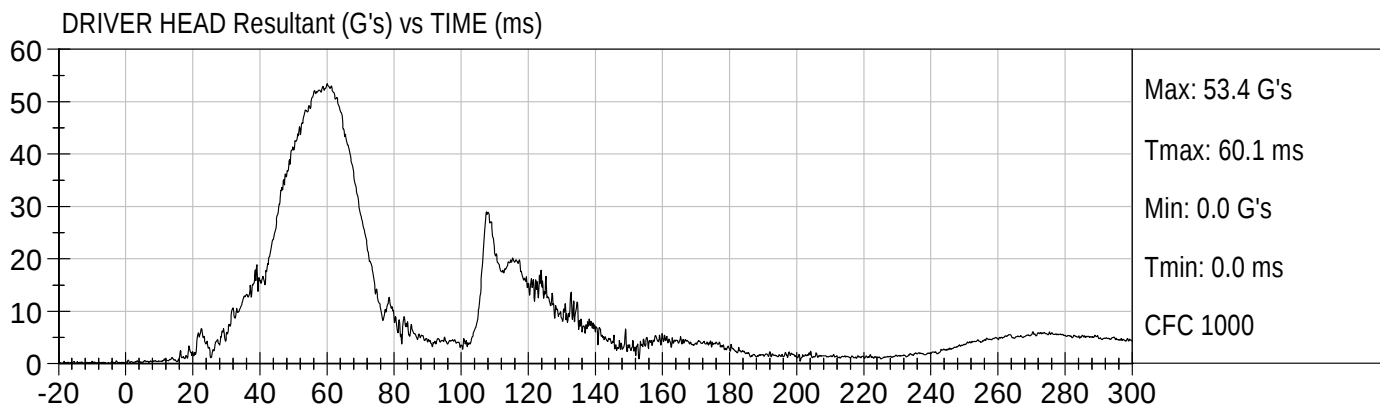
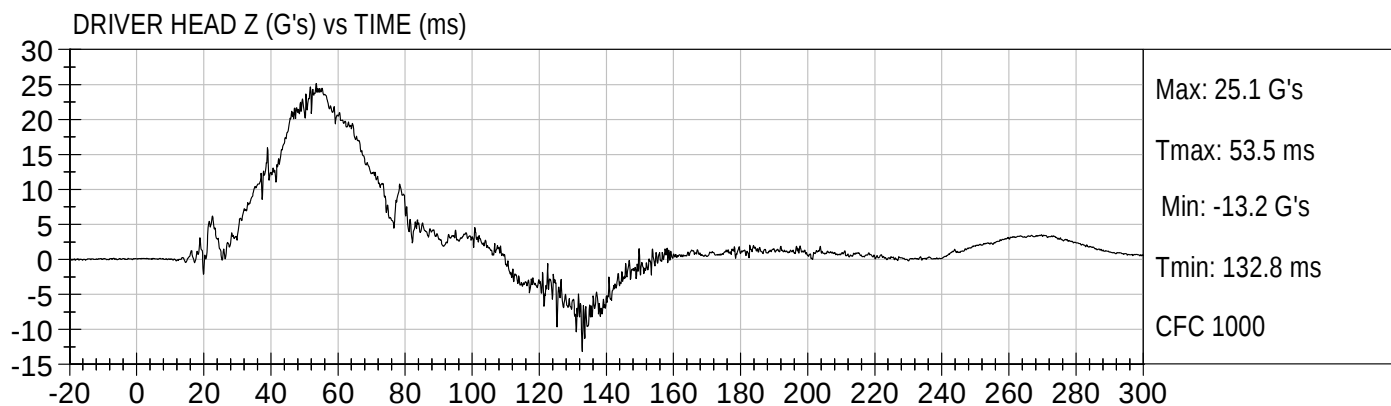
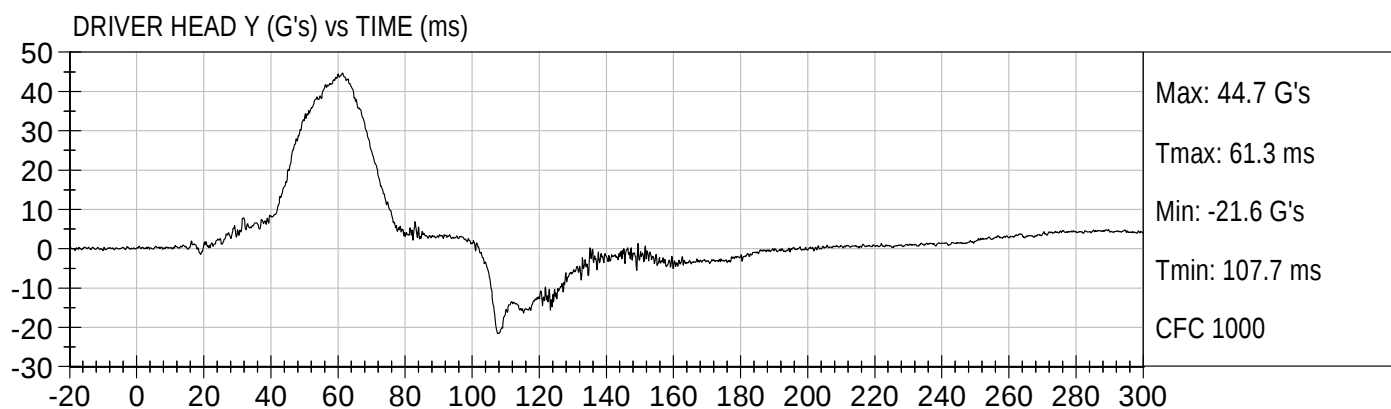
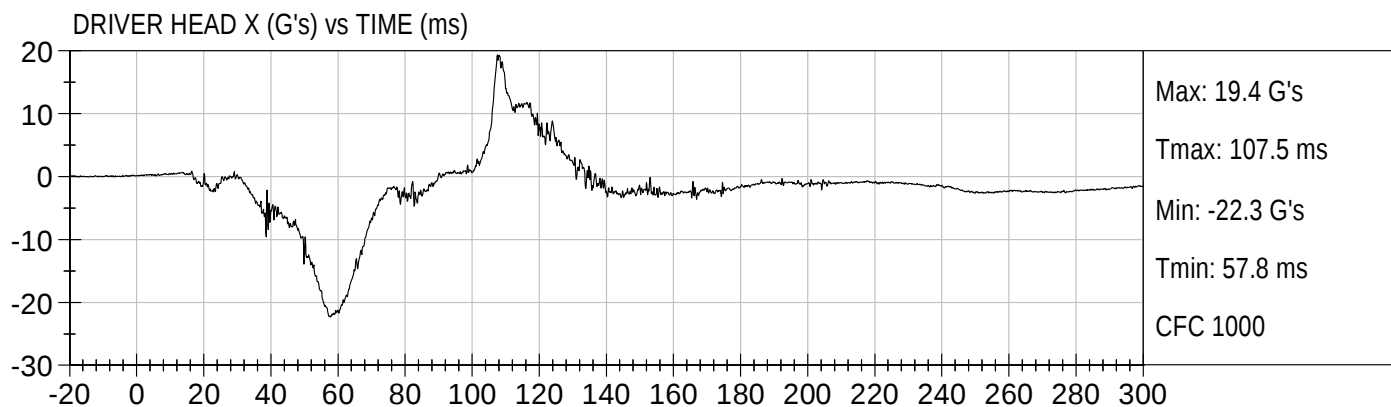
Vehicle CG Acceleration (X)

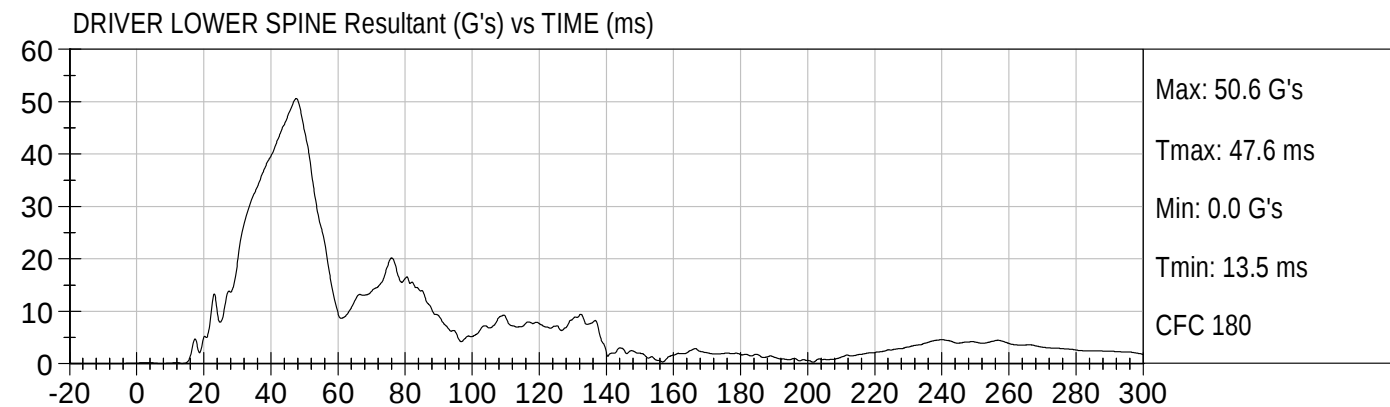
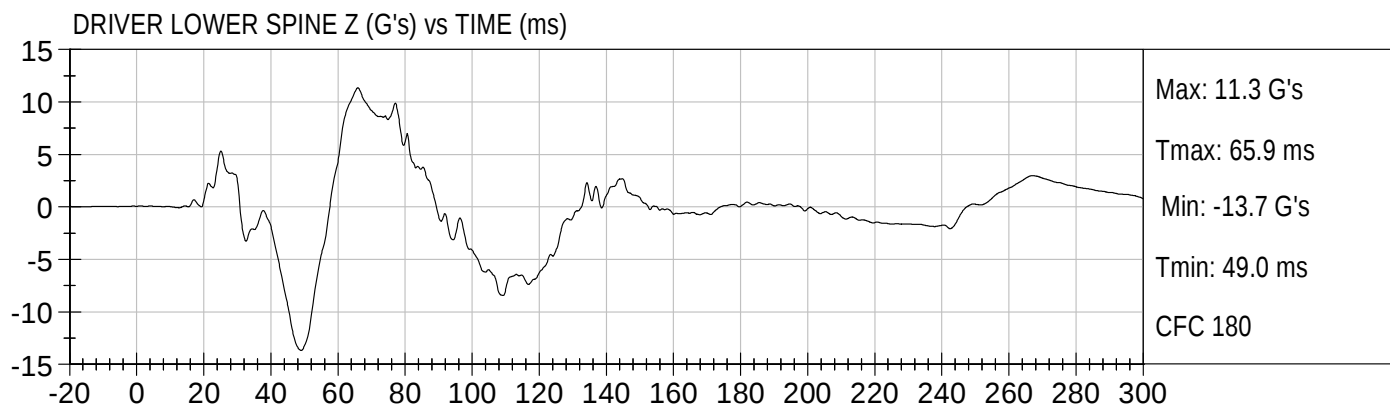
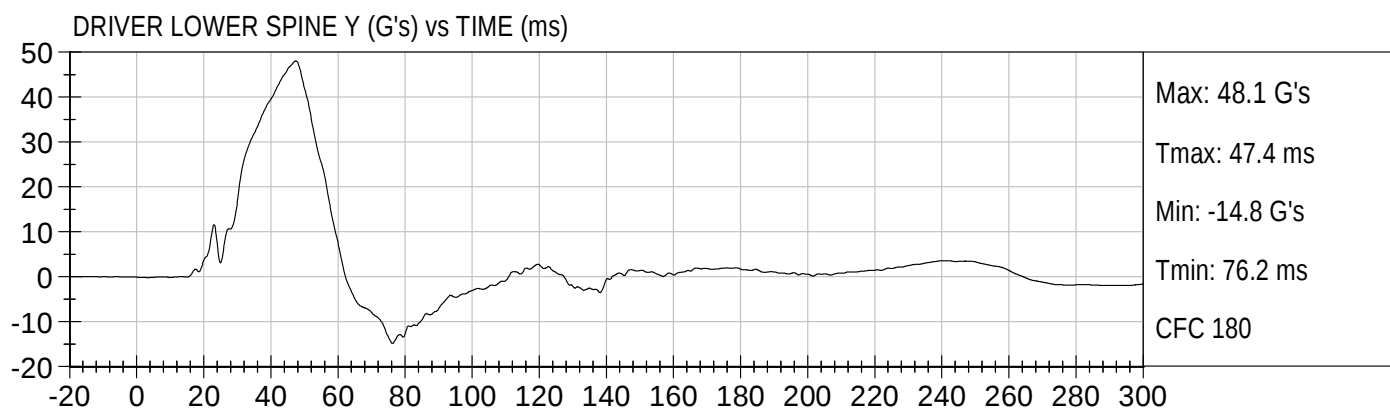
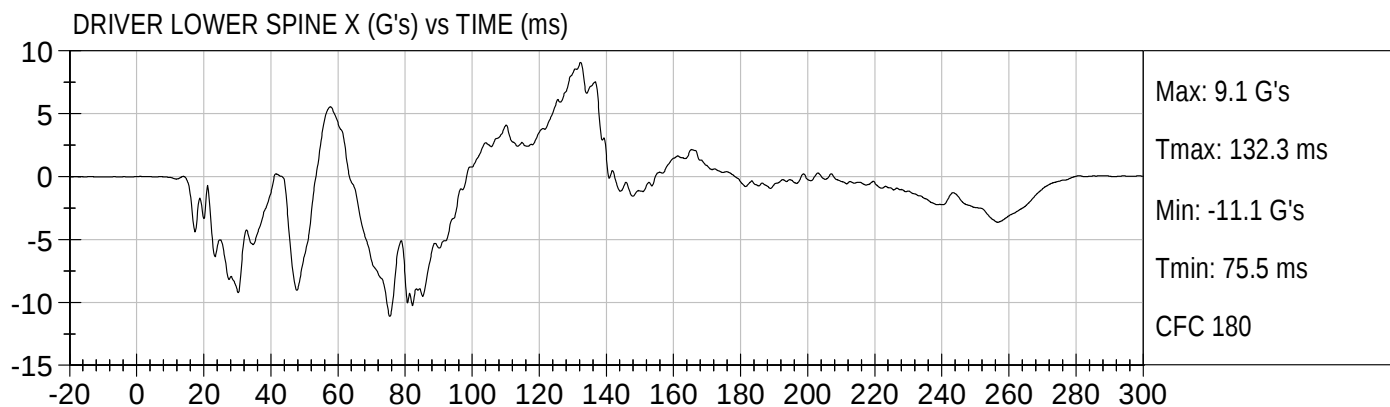
Vehicle CG Acceleration (Y)

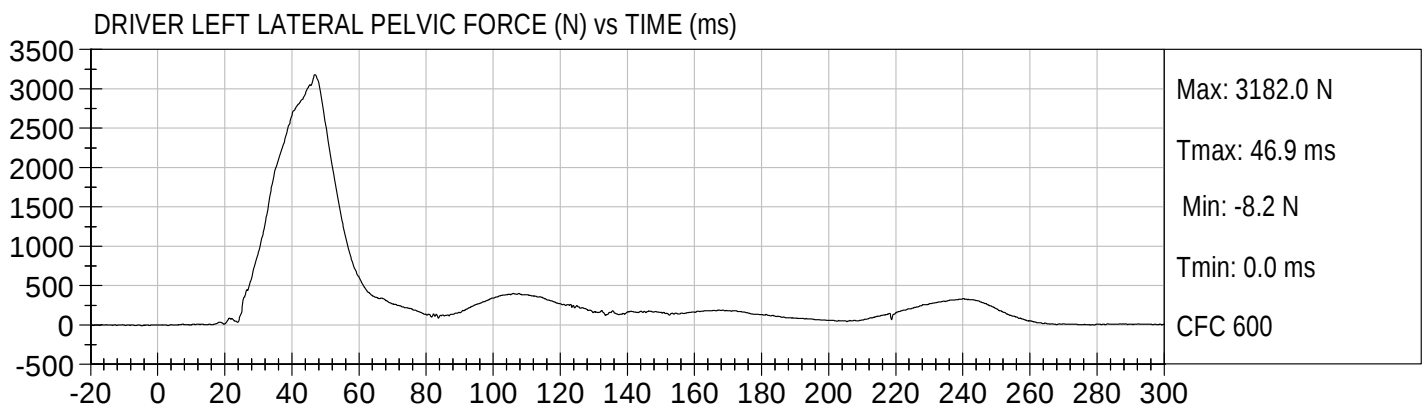
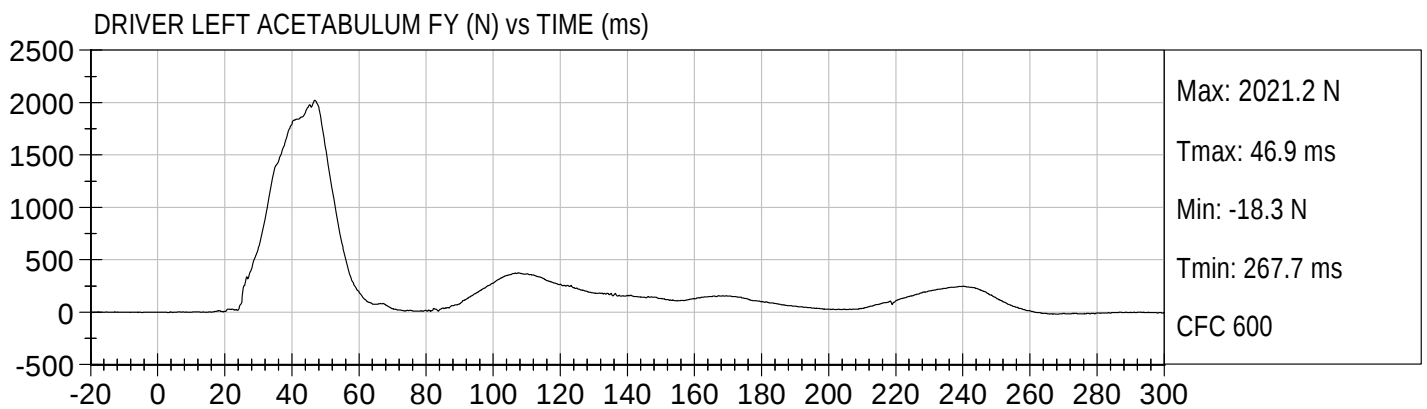
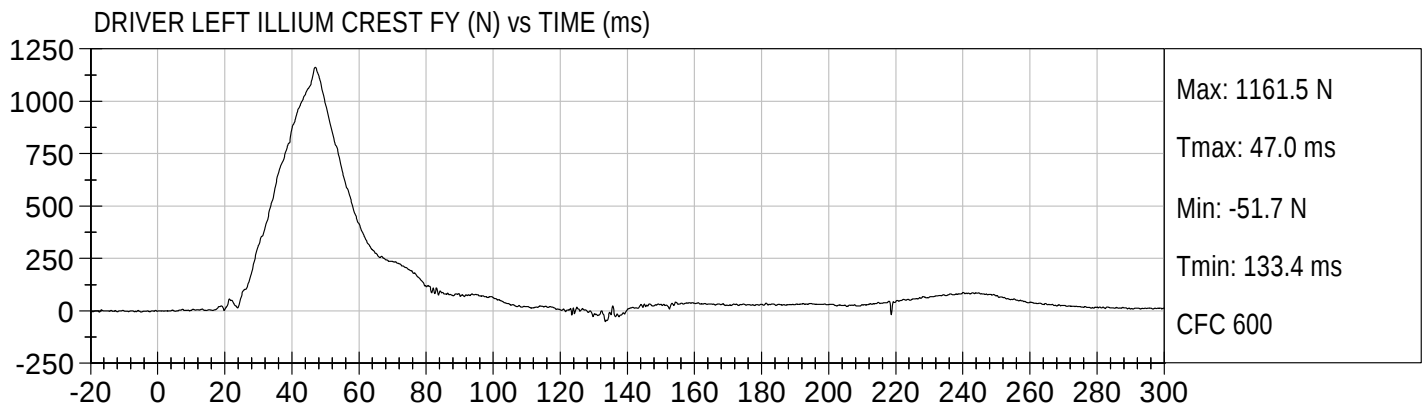
Vehicle CG Acceleration (Z)

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
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-Its BUILD LEVEL D DUMMY

ATD Serial No: 296

Test ID: D104221

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	19	Pass
Peak Resultant Acceleration	G's	115 to 137	124	Pass
Peak Lateral Acceleration	G's	+/- 15	-12.2	Pass
Unimodal	N/A	<15%	Yes	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

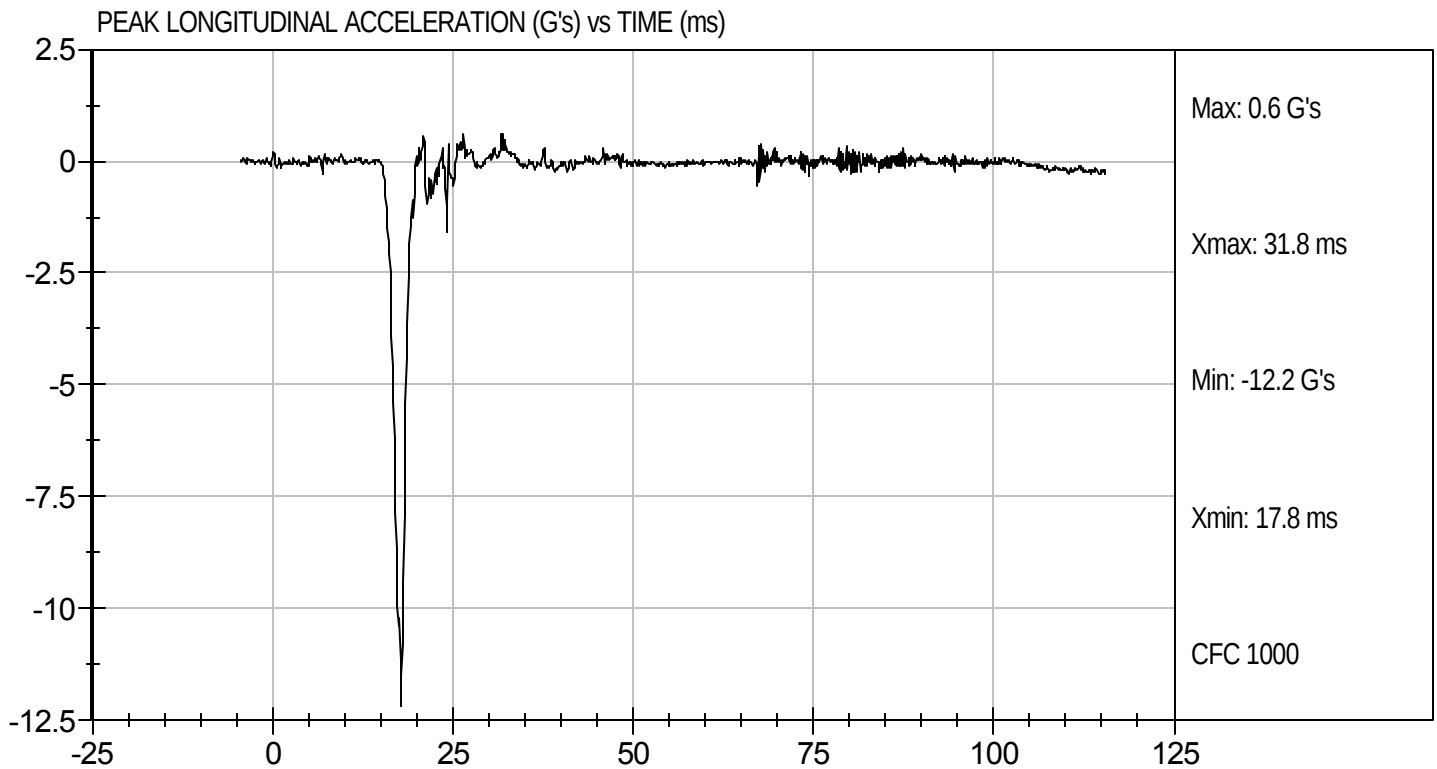
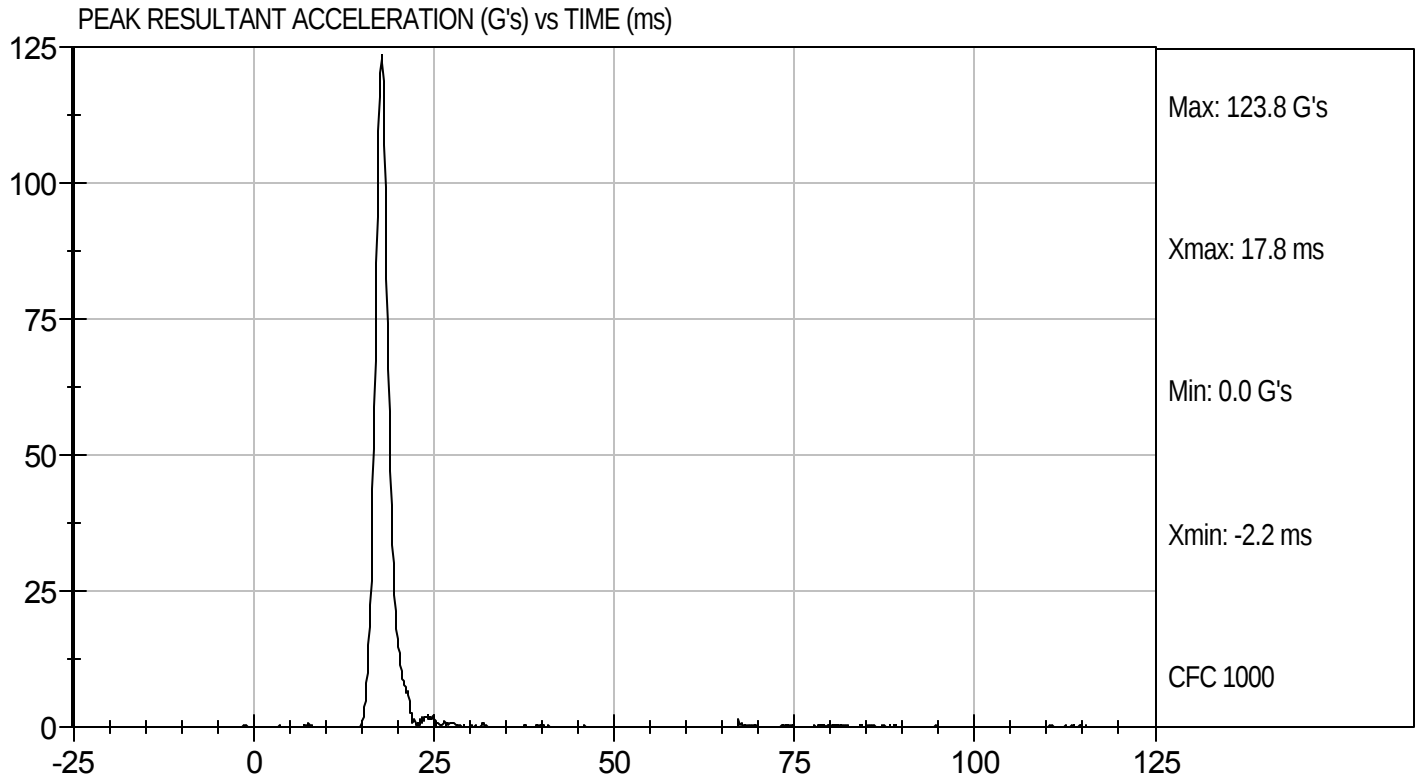
12/2/10
Test Date

David Winkelbauer
Approved By



Test Desc: Head Drop
Component ID: D104221

Test Date: 12/2/10
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: D104222

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	22.0	Pass
Humidity		%	10 to 70	18	Pass
Impact Velocity		m/s	5.51 to 5.63	5.58	Pass
Delta Velocity	10 ms	m/s	2.20 to 2.80	2.44	Pass
	15 ms	m/s	3.30 to 4.10	3.40	Pass
	20 ms	m/s	4.40 to 5.40	4.53	Pass
	25 ms	m/s	5.40 to 6.10	5.54	Pass
	25-100 ms	m/s	5.50 to 6.20	5.57	Pass
Maximum D-Plane Rotation		deg	71 to 81	72	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	63	Pass
Maximum Occipital Condyle Moment during Rotation Interval Nm			-44 to -36	-41	Pass
Time of Moment Decay to 0 Nm		ms	102 to 126	118	Pass
Overall Test Results				Pass	


 Laboratory Technician

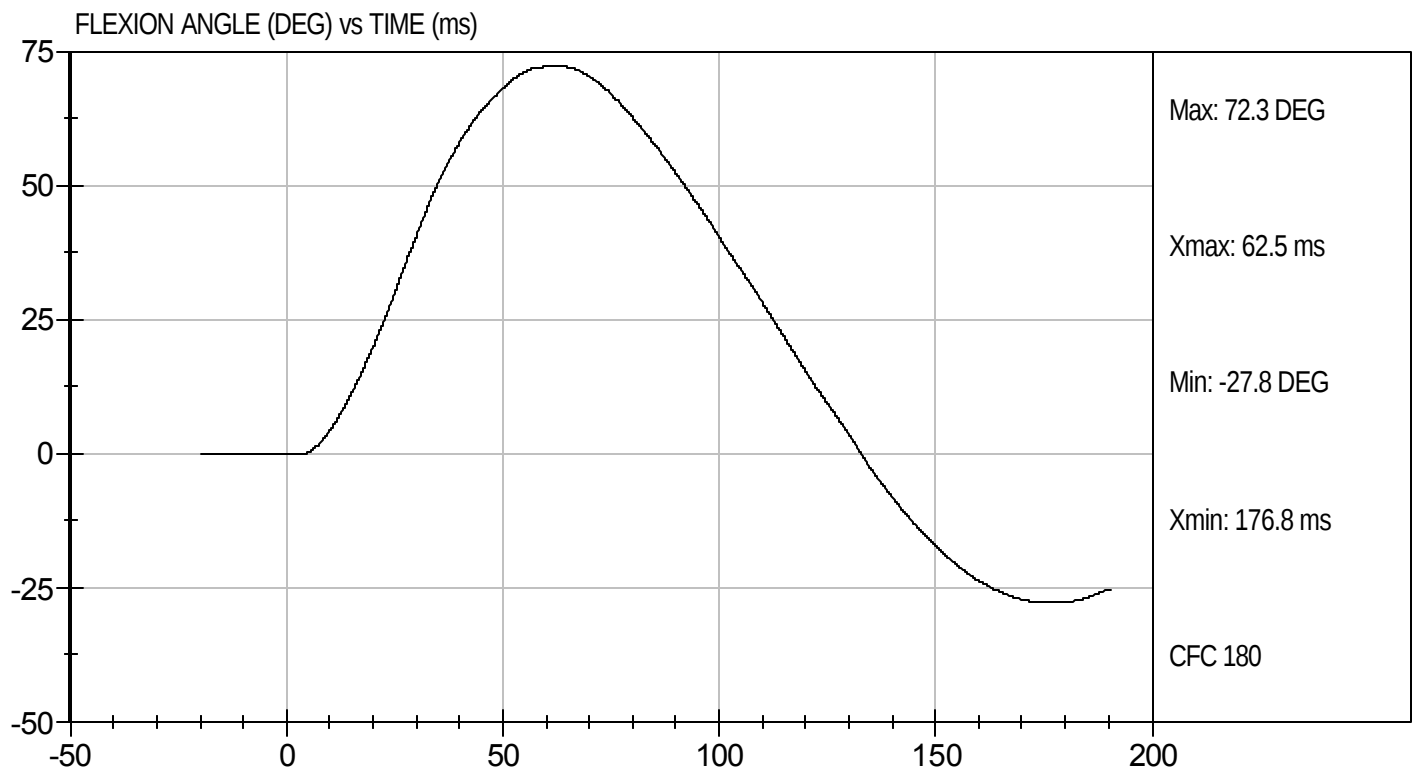
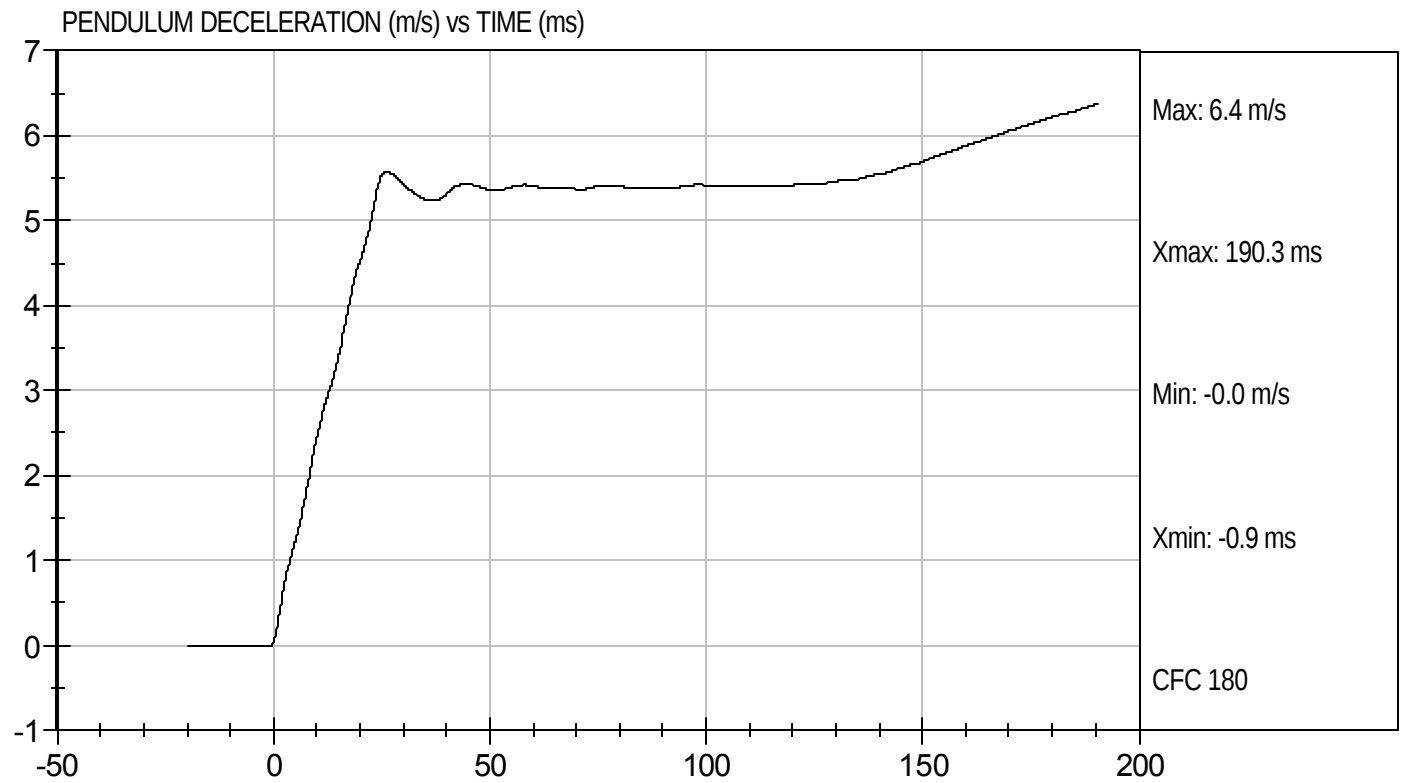
12/2/10
 Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D104222

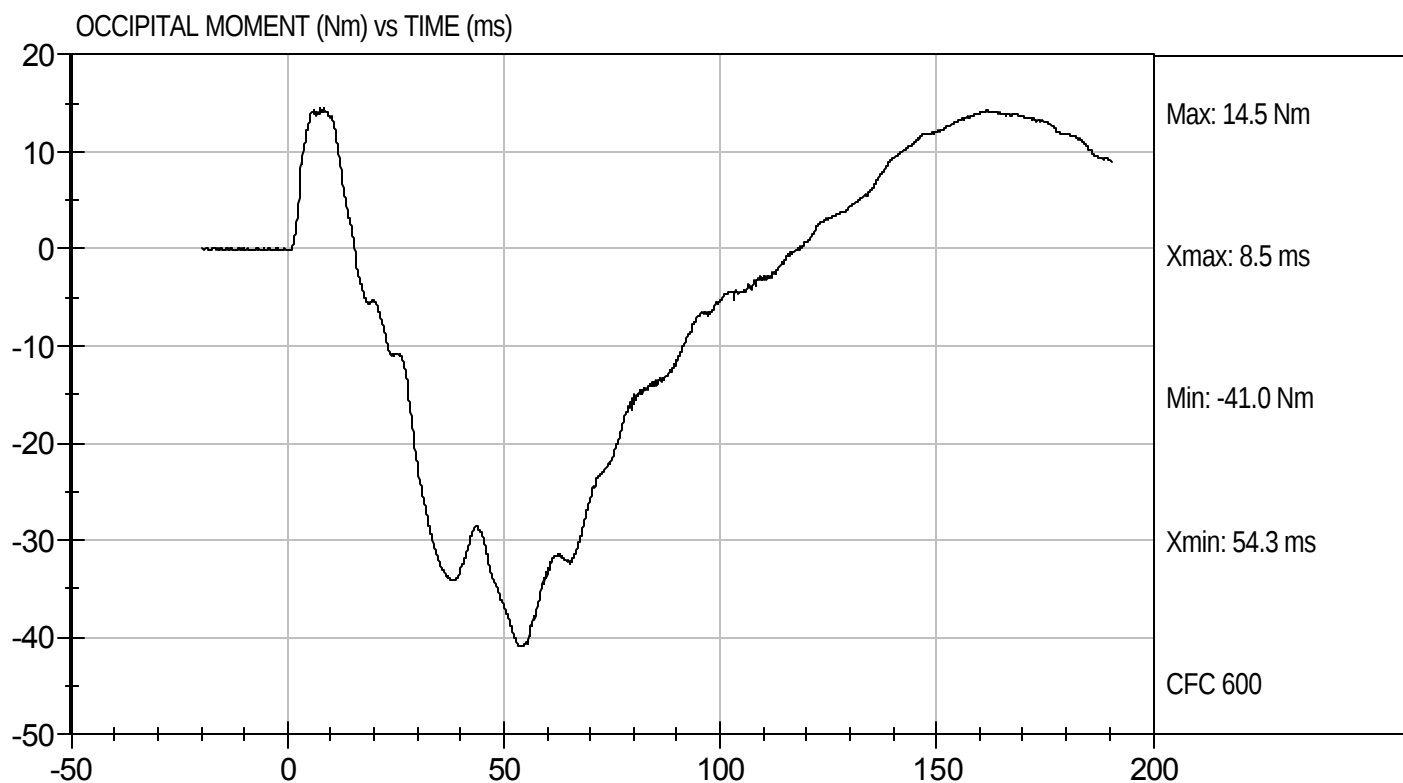
Test Date: 12/2/10
Velocity: 18.32 ft/s, 5.58 m/s





Test Desc: Neck Bending
Component ID: D104222

Test Date: 12/2/10
Velocity: 18.32 ft/s, 5.58 m/s



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

ATD Serial No: 296

Test ID: D104223

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	18	Pass
Impact Velocity	m/s	4.20 to 4.40	4.38	Pass
Maximum Probe Acceleration	G's	13 to 18	16	Pass
Shoulder Displacement	mm	28 to 37	31	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	19	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

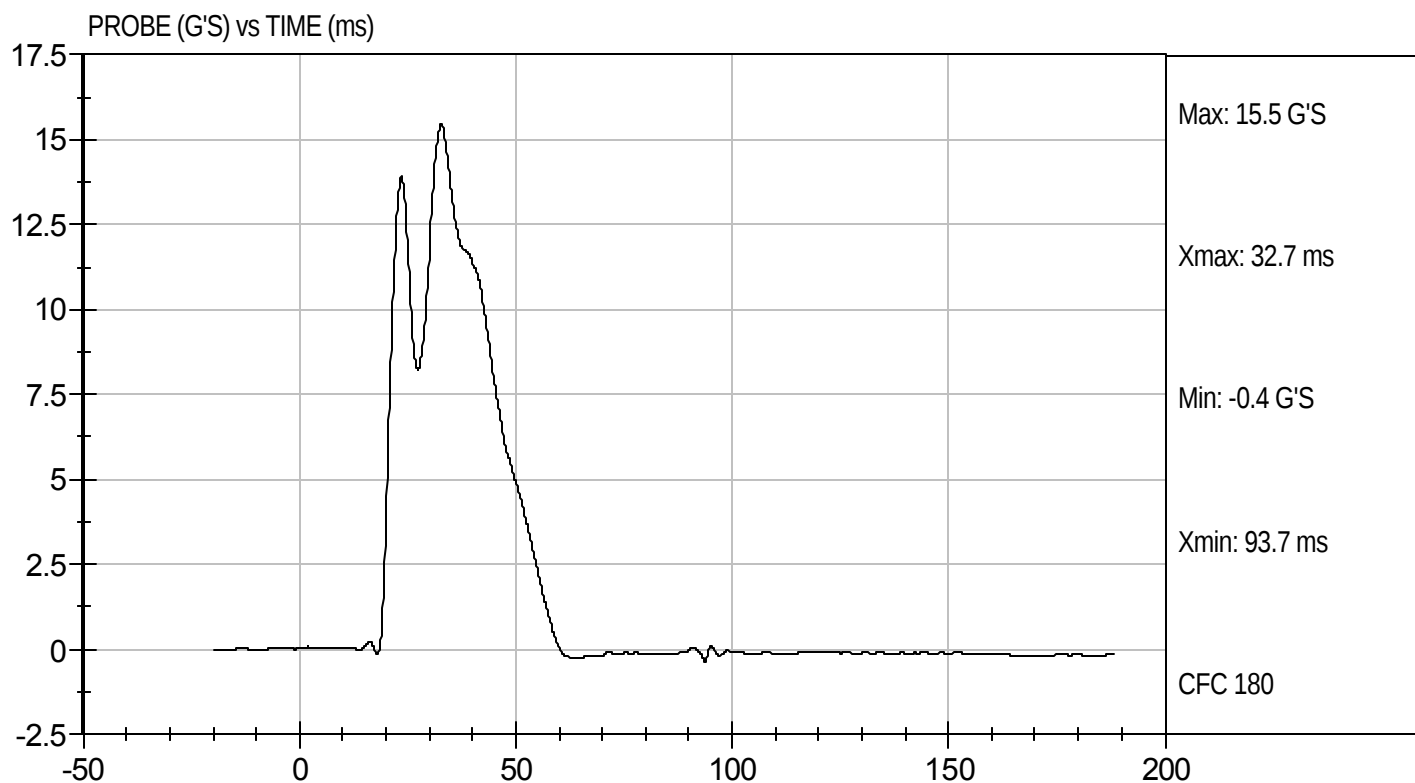
12/2/10
Test Date

David Winkelbauer
Approved By



Test Desc: Shoulder Impact
Component ID: D104223

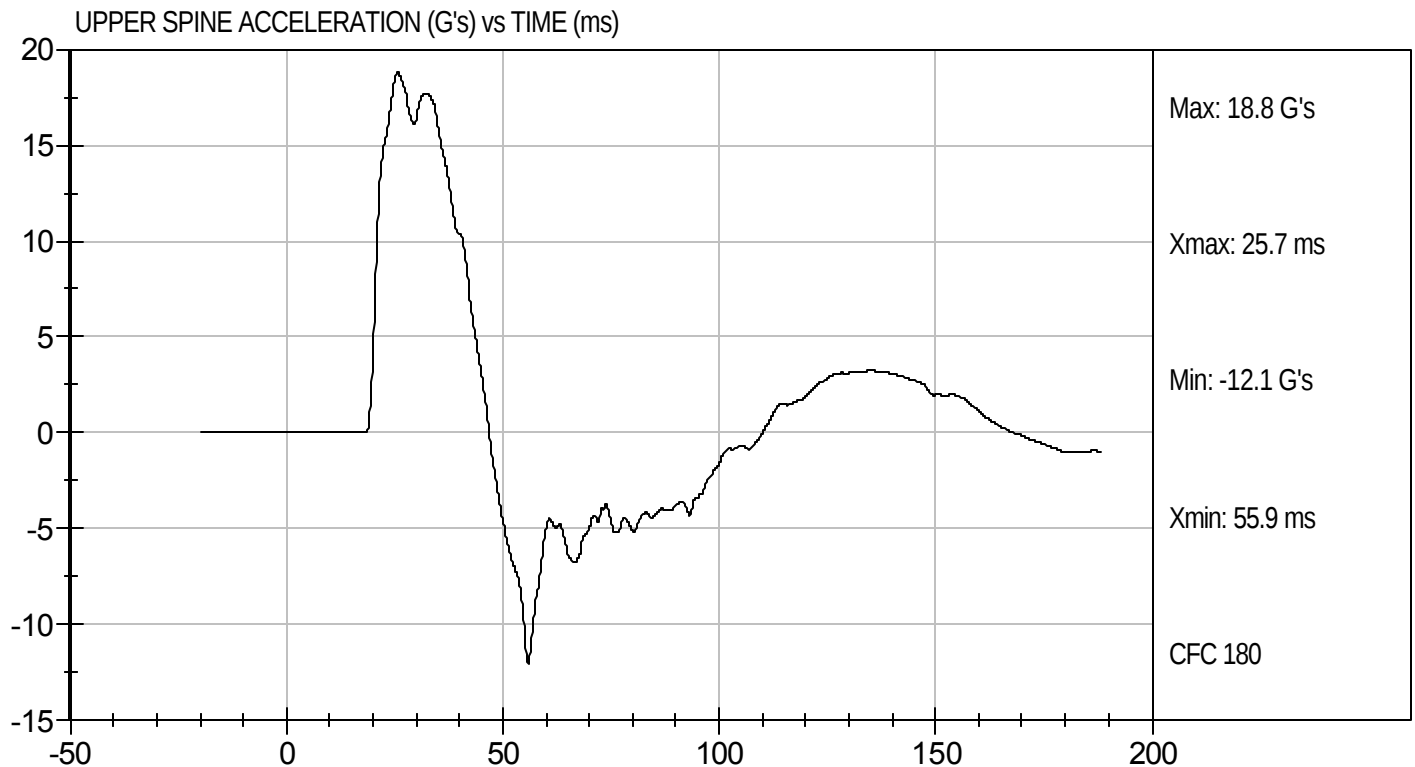
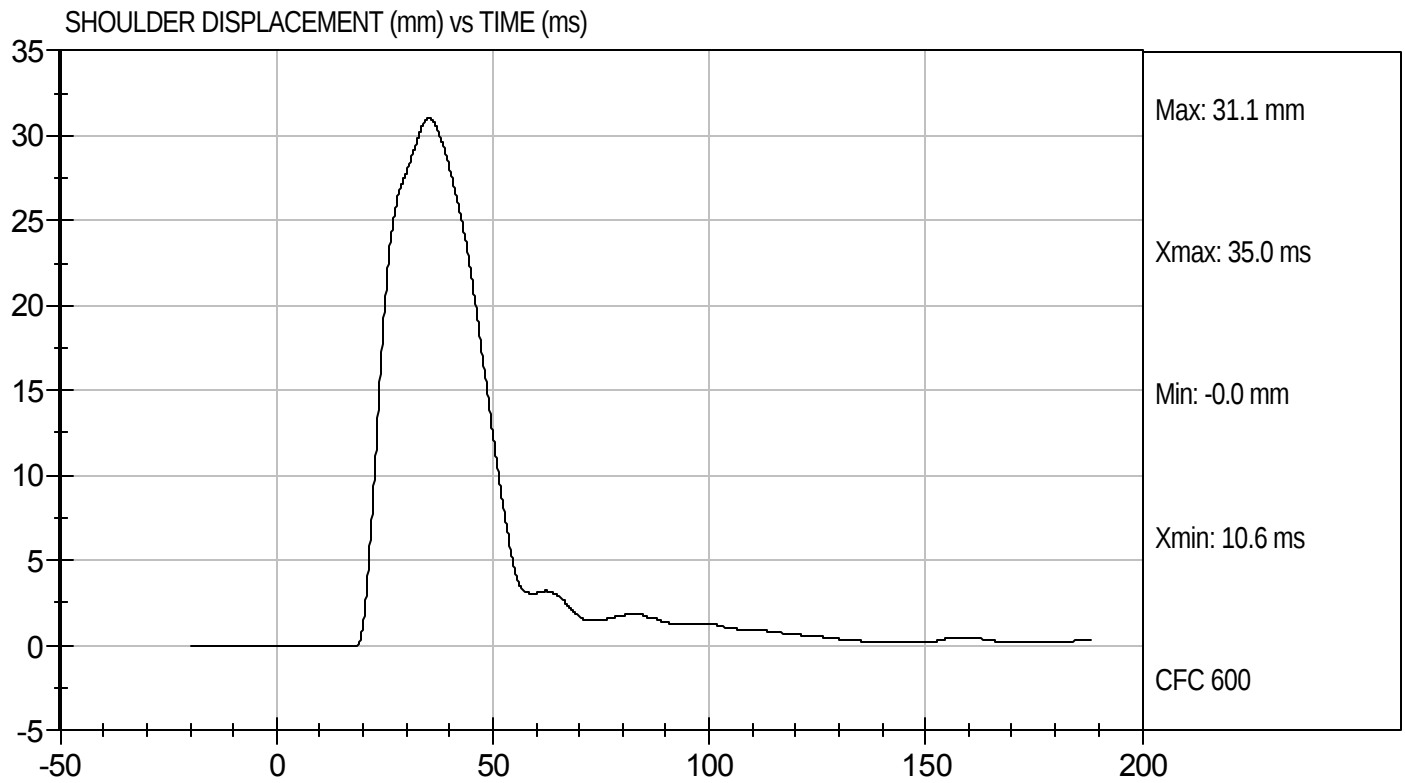
Test Date: 12/2/10
Velocity: 14.37 ft/s, 4.38 m/s





Test Desc: Shoulder Impact
Component ID: D104223

Test Date: 12/2/10
Velocity: 14.37 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: D104224

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	22.0	Pass
Humidity	%	10 to 70	18	Pass
Impact Velocity	m/s	6.60 to 6.80	6.68	Pass
Peak Impactor Acceleration	G's	30 to 36	33	Pass
Shoulder Displacement	mm	31 to 40	33	Pass
Upper Rib Displacement	mm	25 to 32	29	Pass
Middle Rib Displacement	mm	30 to 36	31	Pass
Lower Rib Displacement	mm	32 to 38	34	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	38	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	32	Pass
Overall Test Results				Pass

Jessica Gall
Laboratory Technician

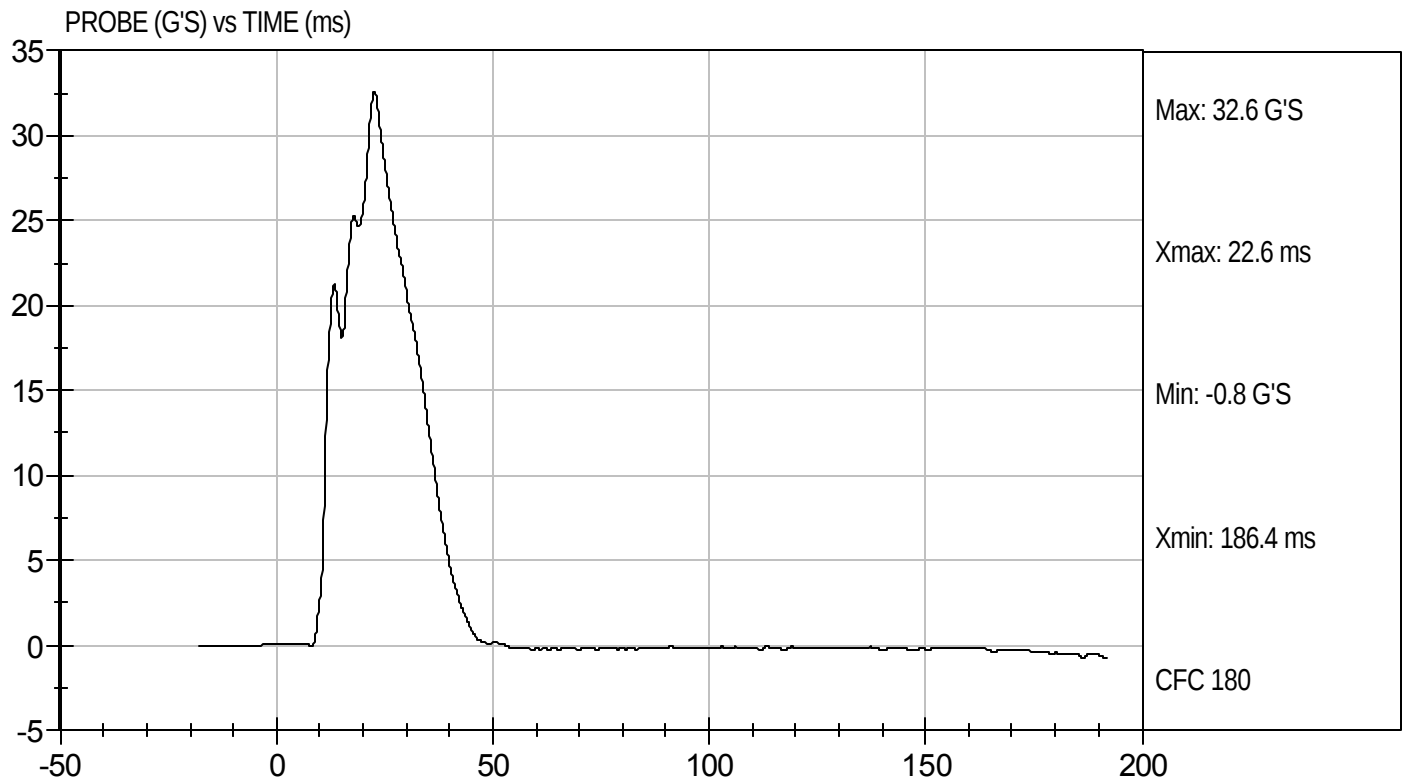
12/2/10
Test Date

David Winkelbauer
Approved By



Test Desc: Thorax With Arm
Component ID: D104224

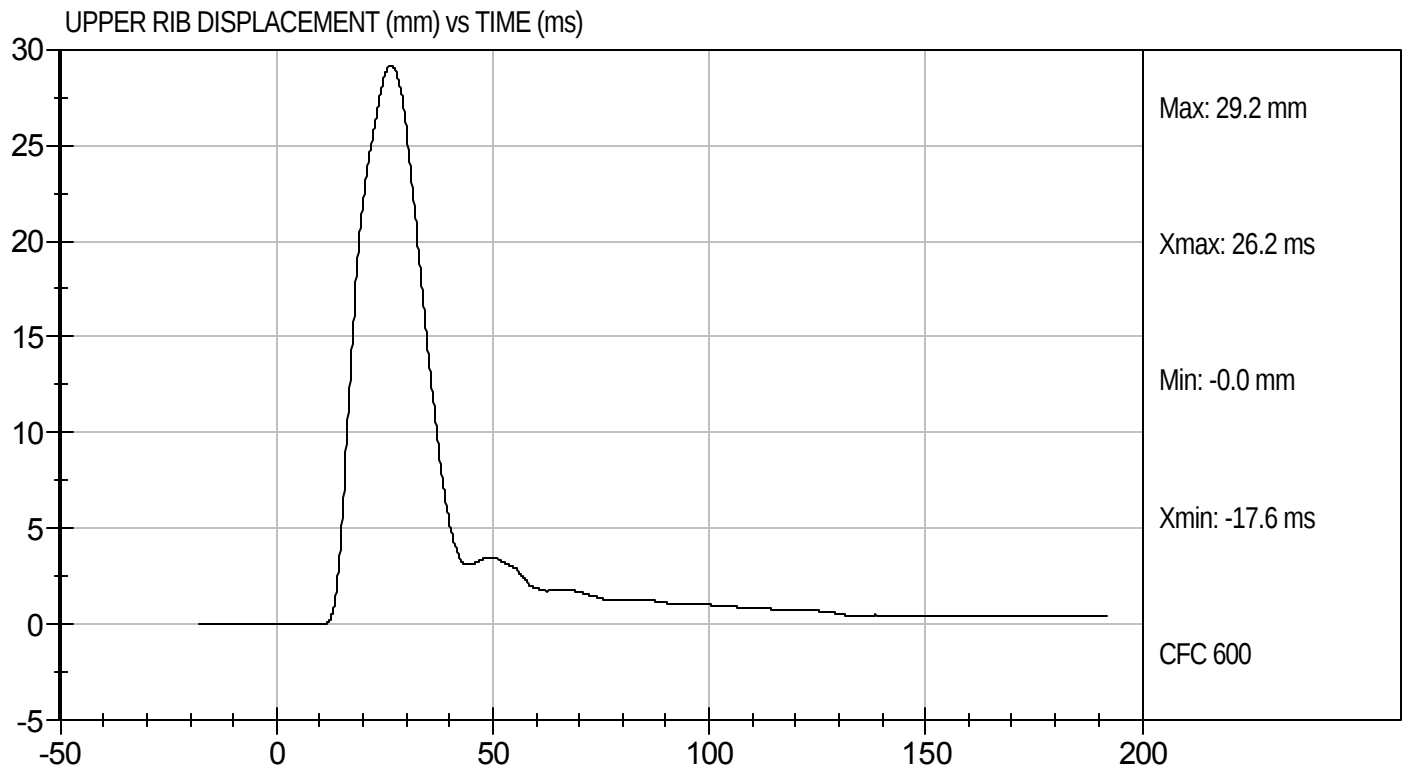
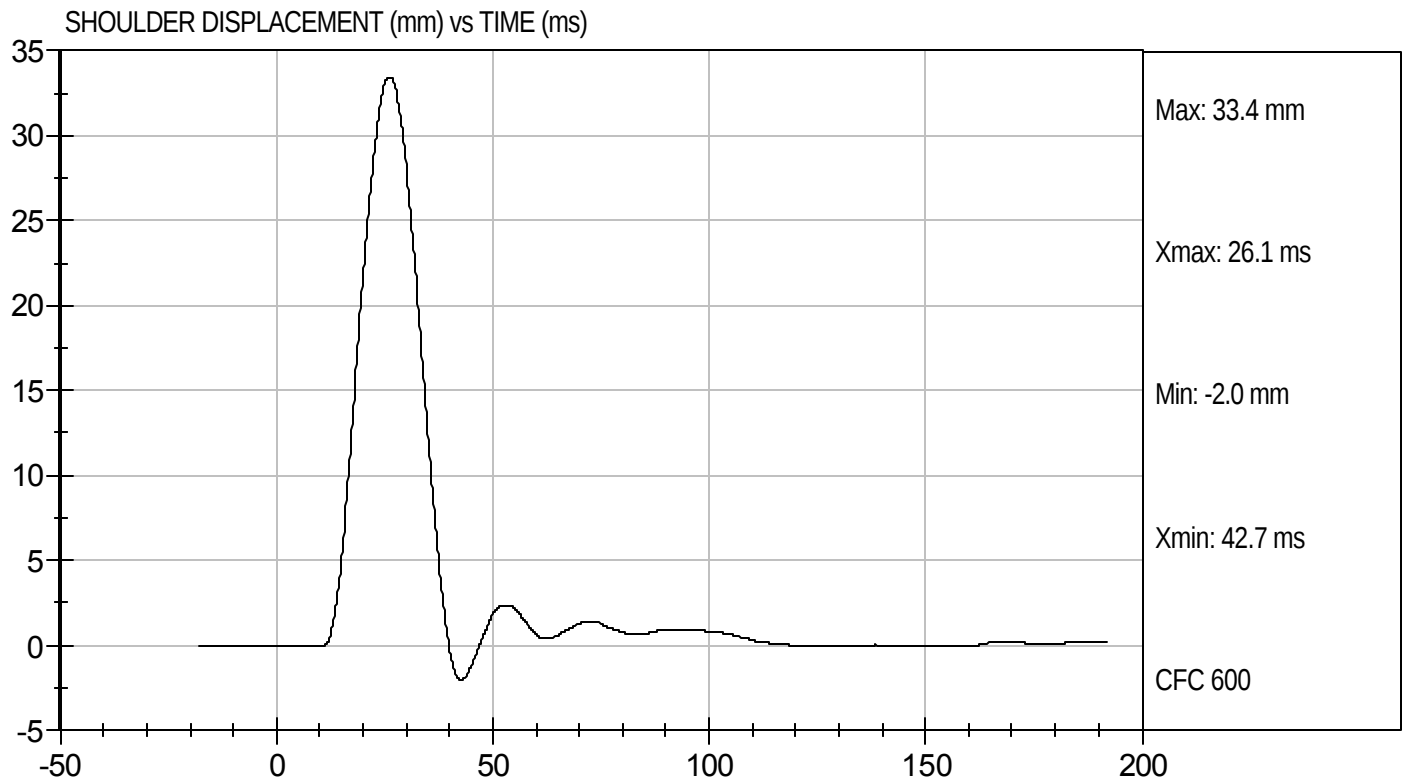
Test Date: 12/2/10
Velocity: 21.93 ft/s, 6.68 m/s





Test Desc: Thorax With Arm
Component ID: D104224

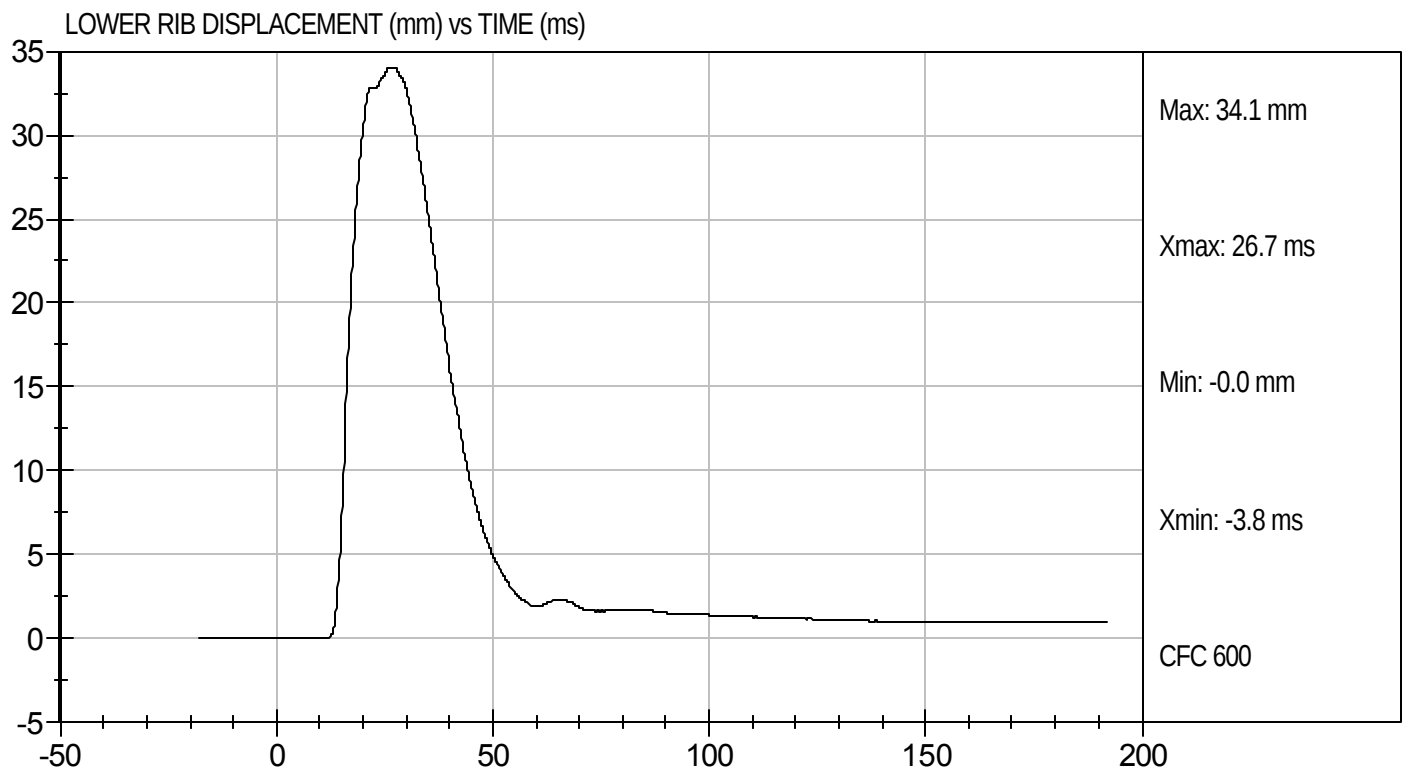
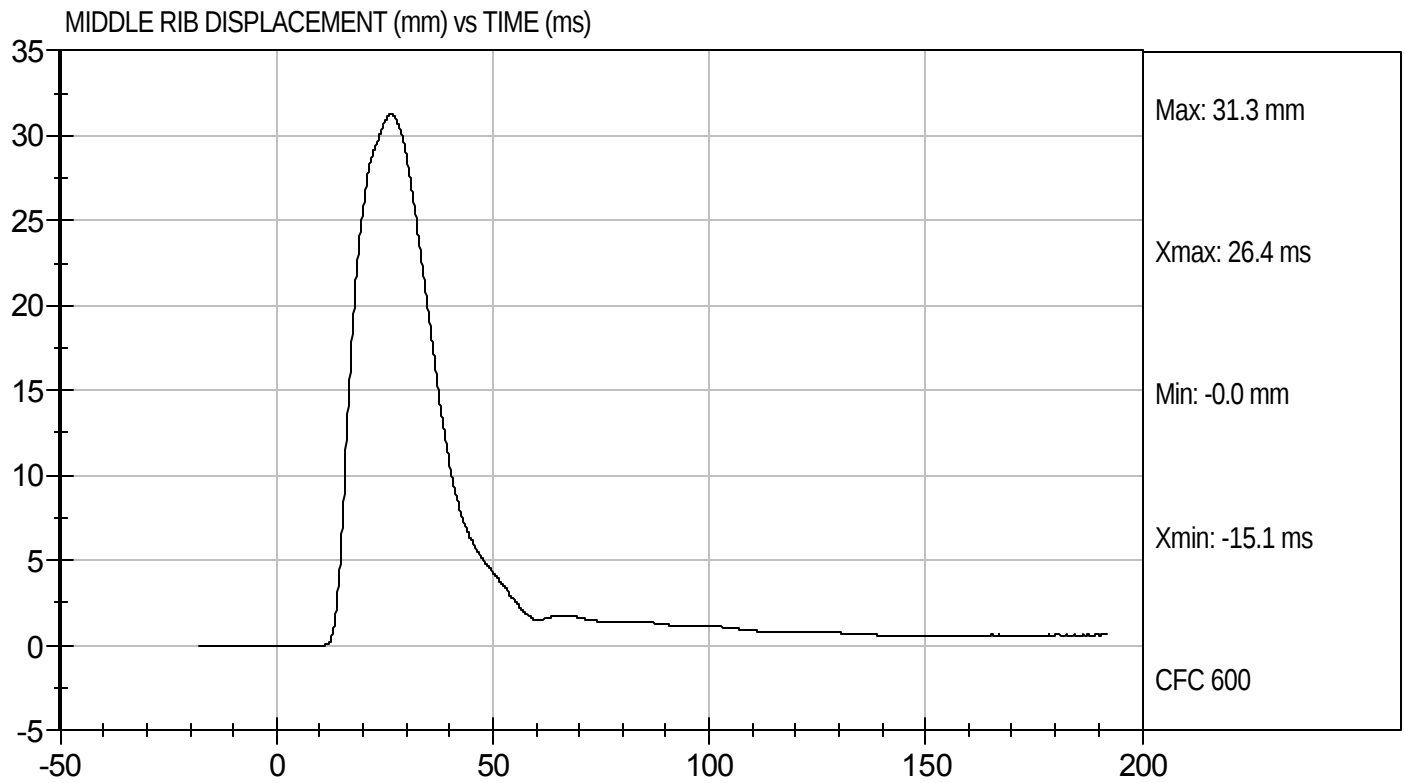
Test Date: 12/2/10
Velocity: 21.93 ft/s, 6.68 m/s





Test Desc: Thorax With Arm
Component ID: D104224

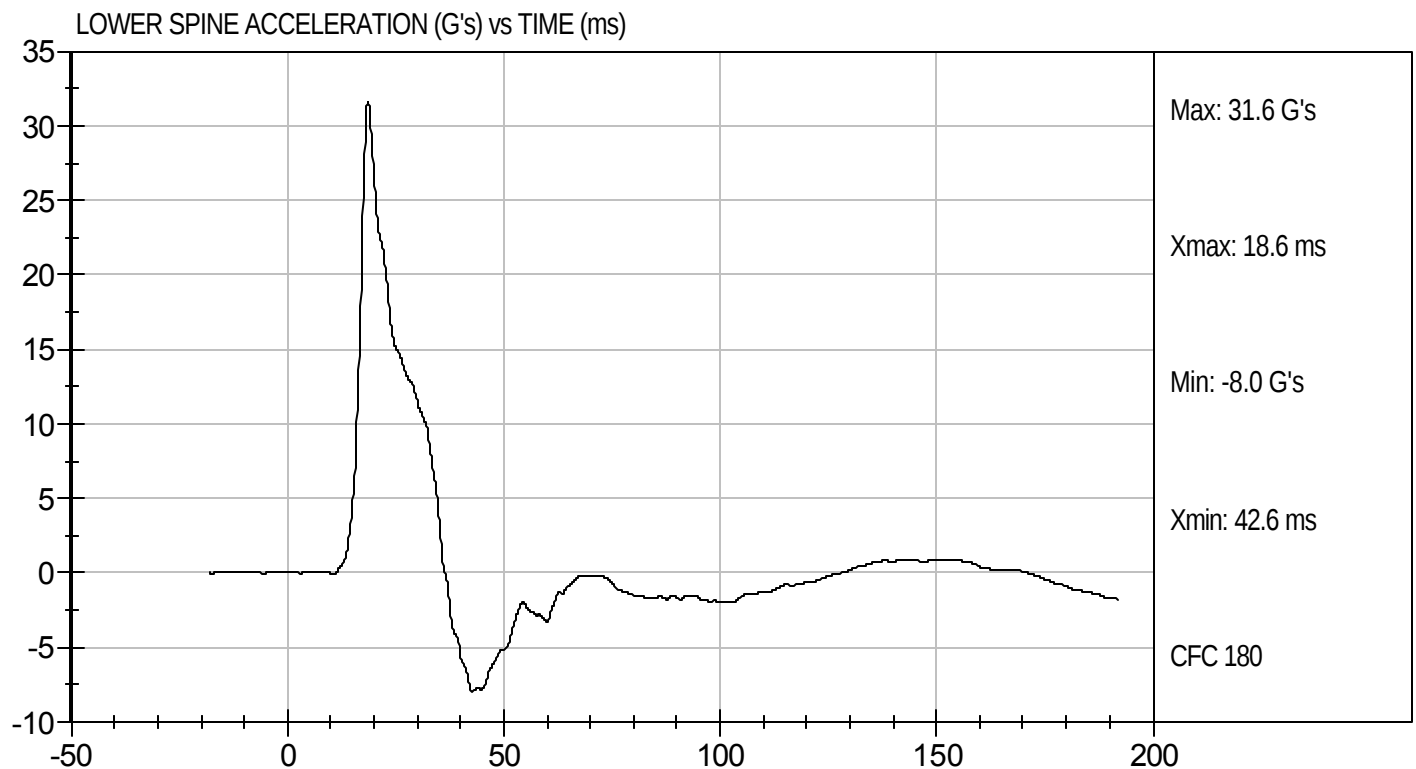
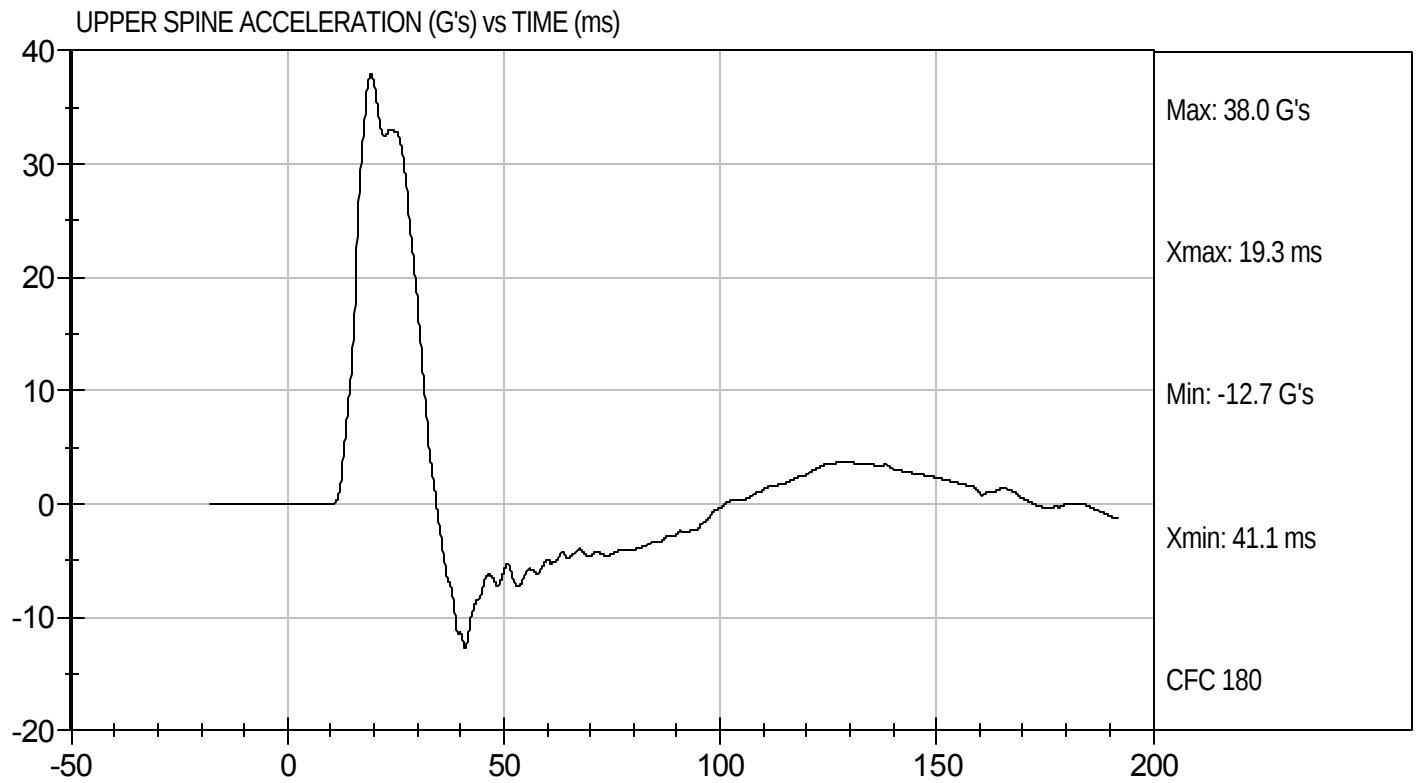
Test Date: 12/2/10
Velocity: 21.93 ft/s, 6.68 m/s





Test Desc: Thorax With Arm
Component ID: D104224

Test Date: 12/2/10
Velocity: 21.93 ft/s, 6.68 m/s

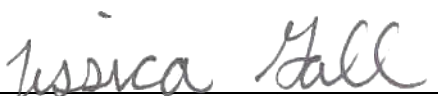


MGA RESEARCH CORPORATION
THORAX (WITHOUT ARM) IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D104225

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	17	Pass
Impact Velocity	m/s	4.20 to 4.40	4.34	Pass
Peak Impactor Force	G's	14 to 18	16	Pass
Upper Rib Displacement	mm	32 to 40	39	Pass
Middle Rib Displacement	mm	39 to 45	43	Pass
Lower Rib Displacement	mm	35 to 43	42	Pass
Upper Spine (T1) Y Acceleration	G's	13 to 17	14	Pass
Lower Spine (T12) Y Acceleration	G's	7 to 11	10	Pass
Overall Test Results			Pass	


Laboratory Technician

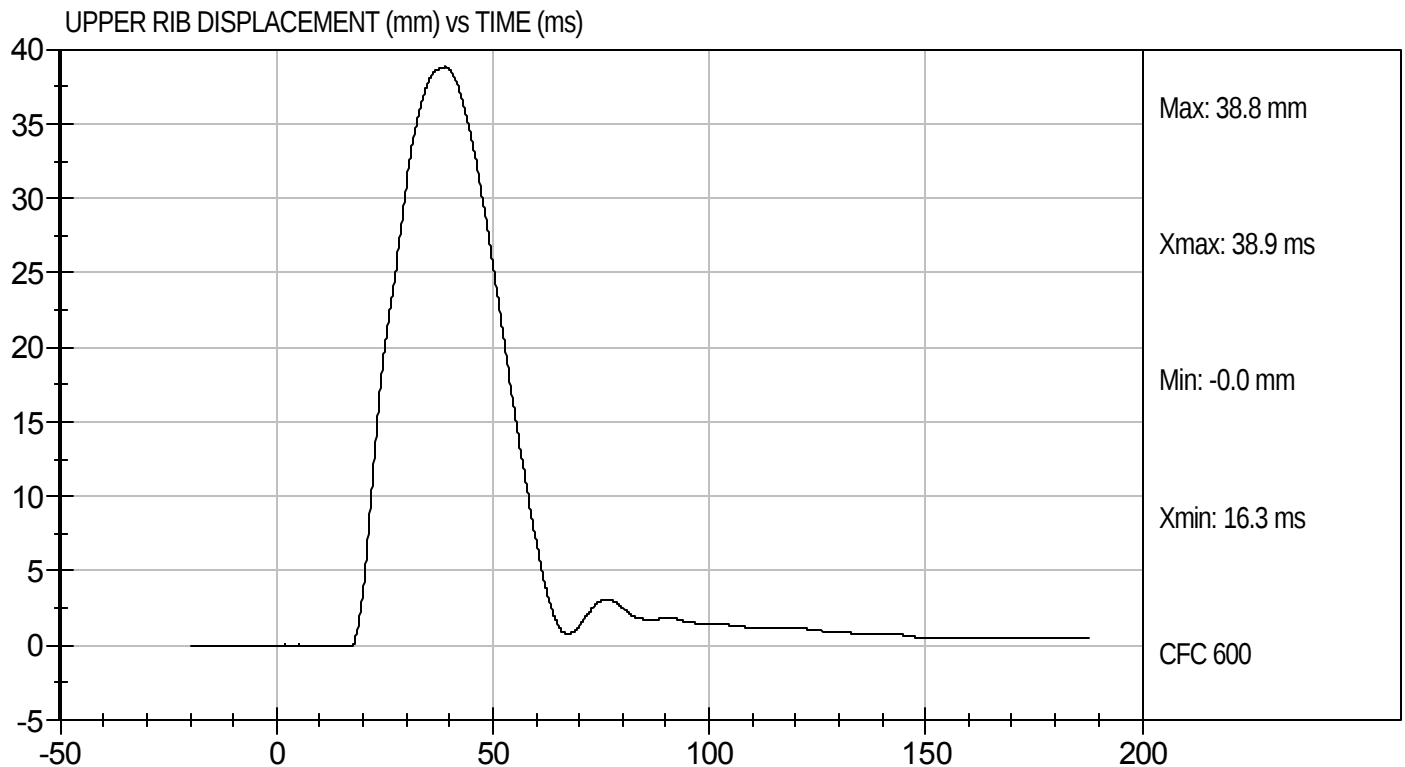
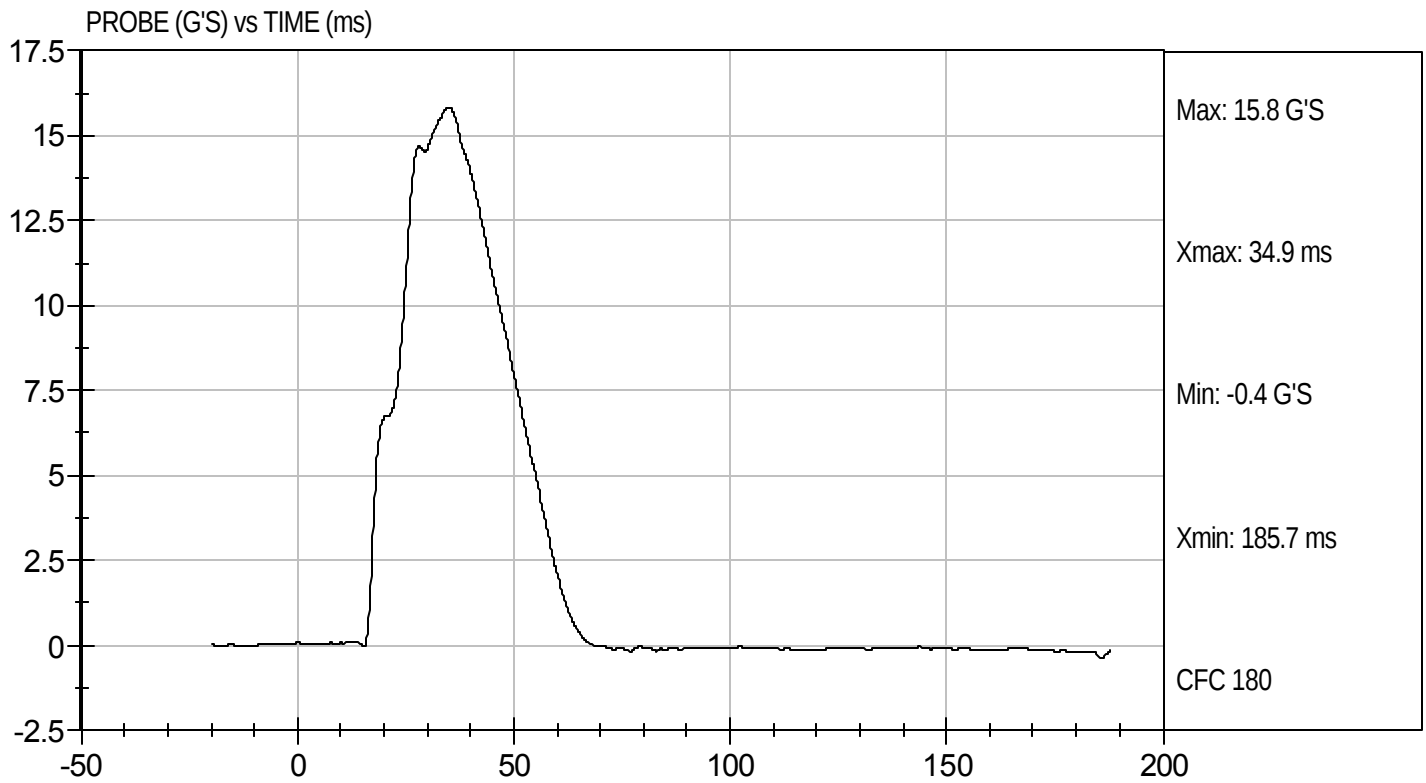
12/2/10
Test Date


Approved By



Test Desc: Thorax Without Arm
Component ID: D104225

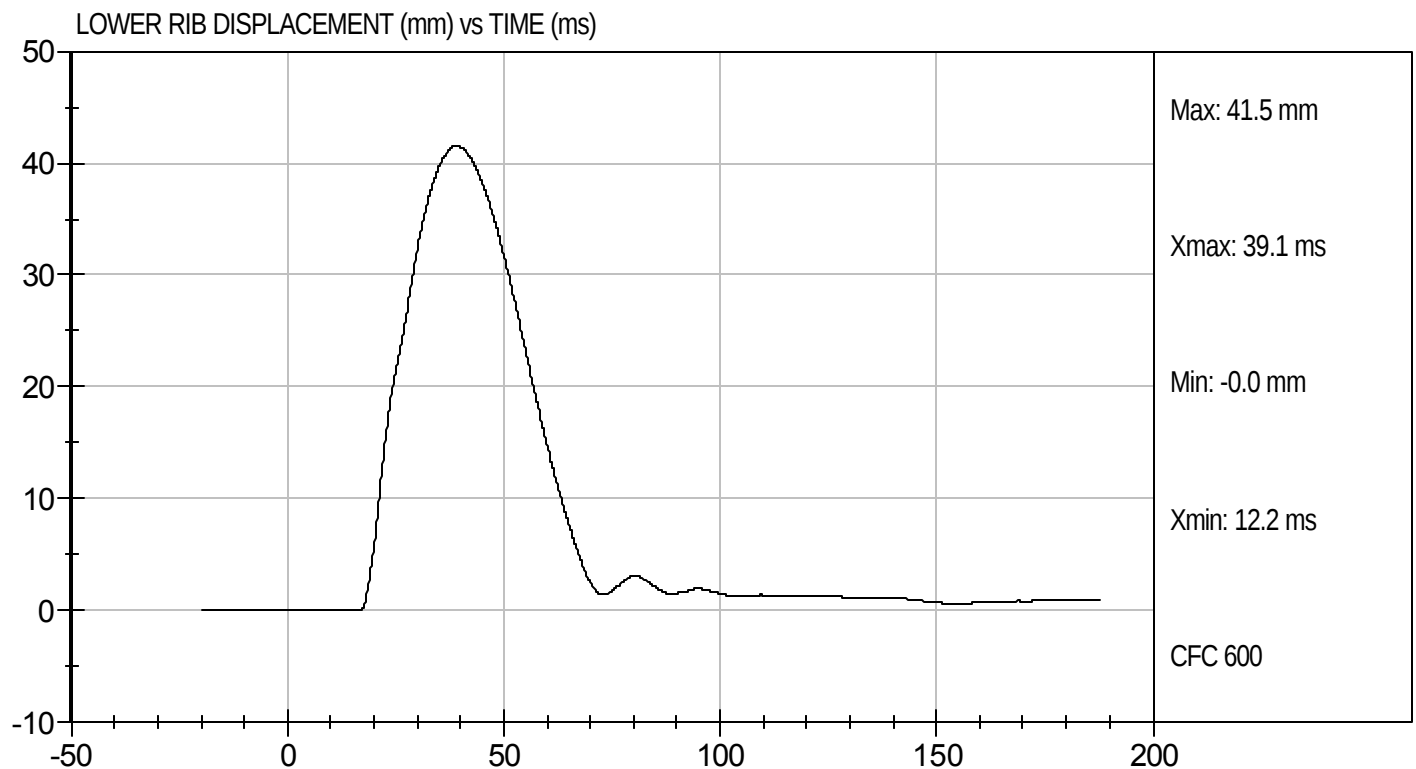
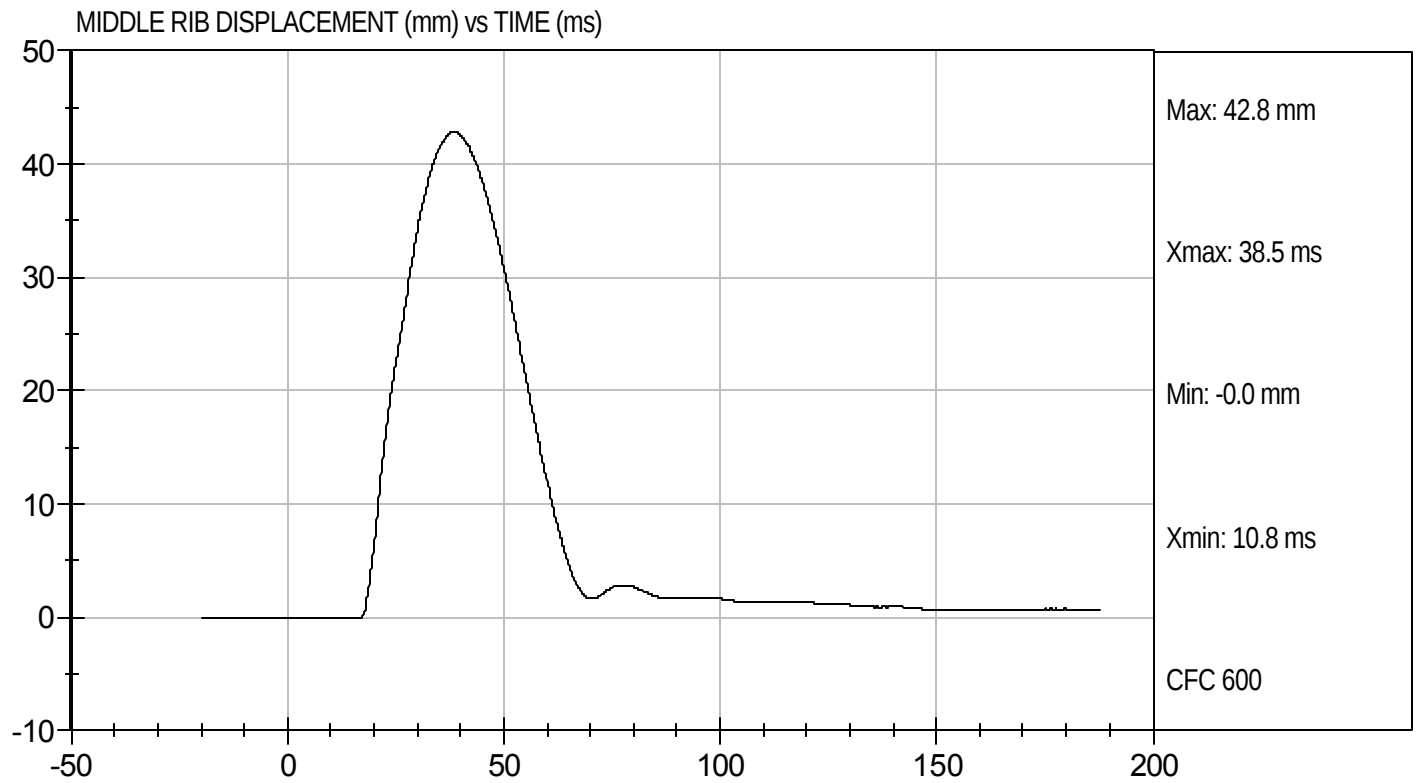
Test Date: 12/2/10
Velocity: 14.25 ft/s, 4.34 m/s





Test Desc: Thorax Without Arm
Component ID: D104225

Test Date: 12/2/10
Velocity: 14.25 ft/s, 4.34 m/s

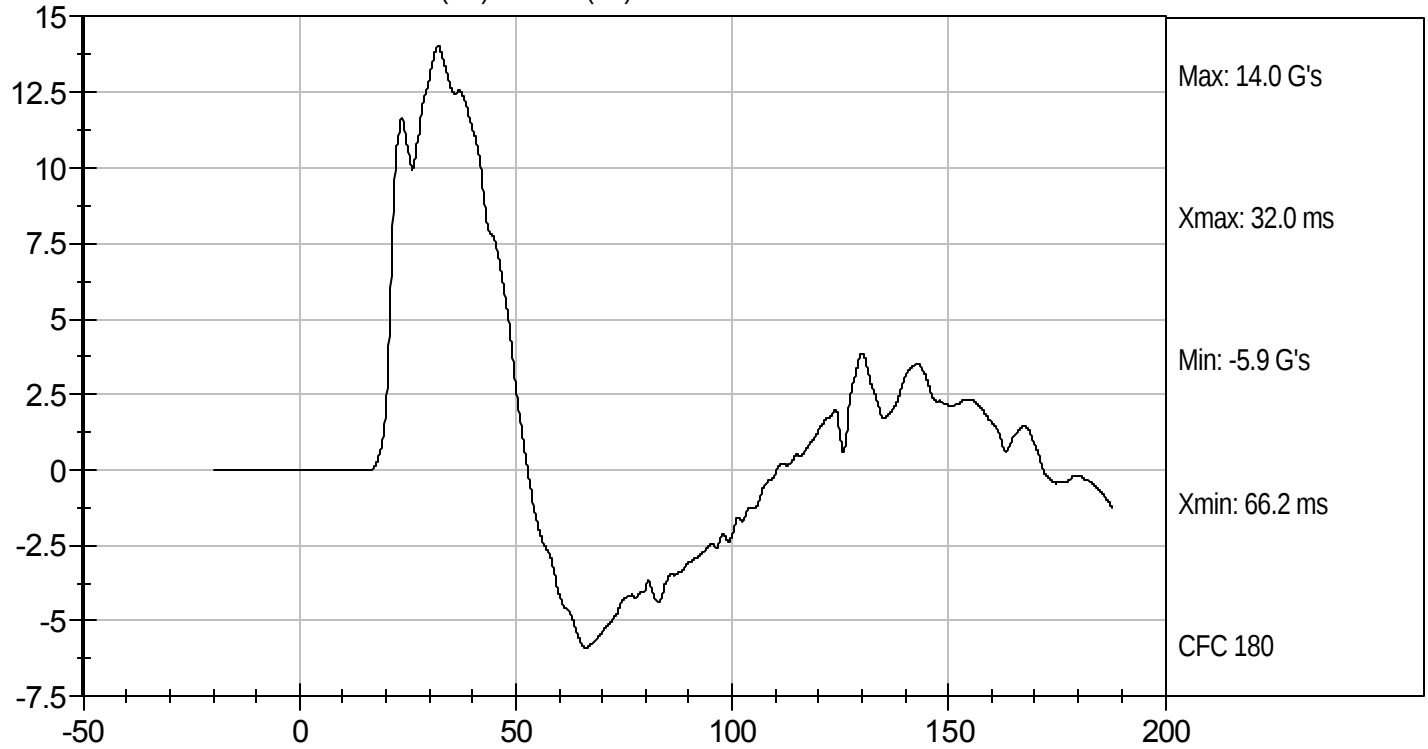




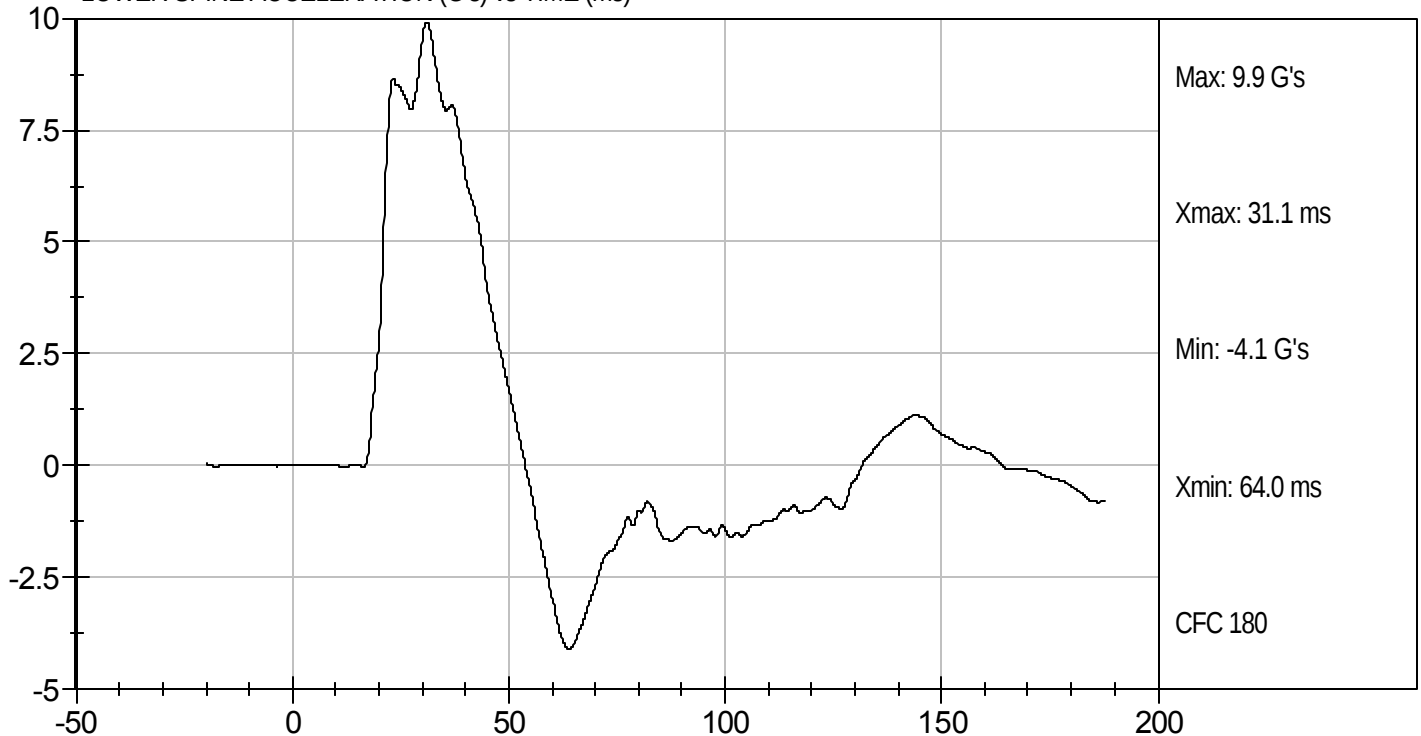
Test Desc: Thorax Without Arm
Component ID: D104225

Test Date: 12/2/10
Velocity: 14.25 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: D104226

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	17	Pass
Impact Velocity	m/s	4.20 to 4.40	4.38	Pass
Peak Impactor Acceleration	G's	12 to 16	14	Pass
Upper Rib Displacement	mm	36 to 47	42	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

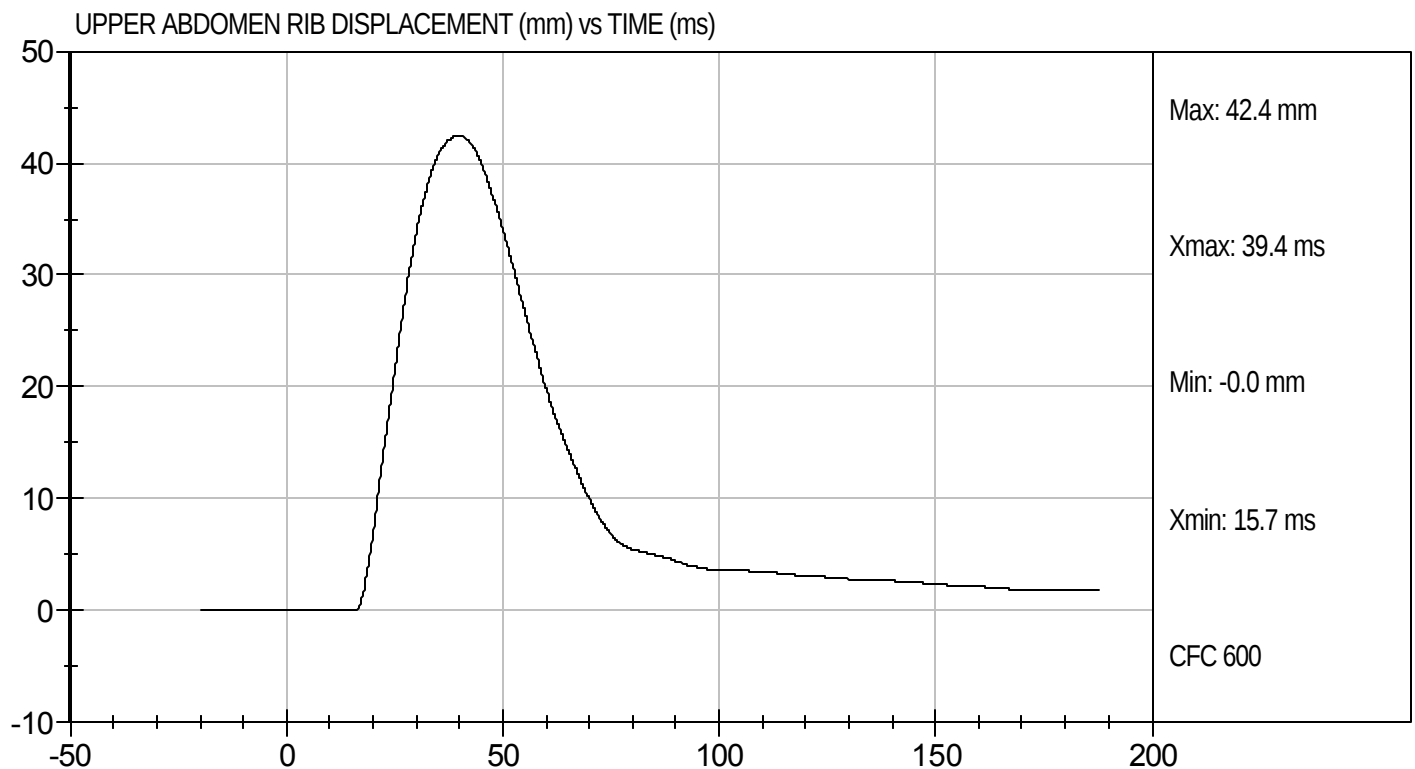
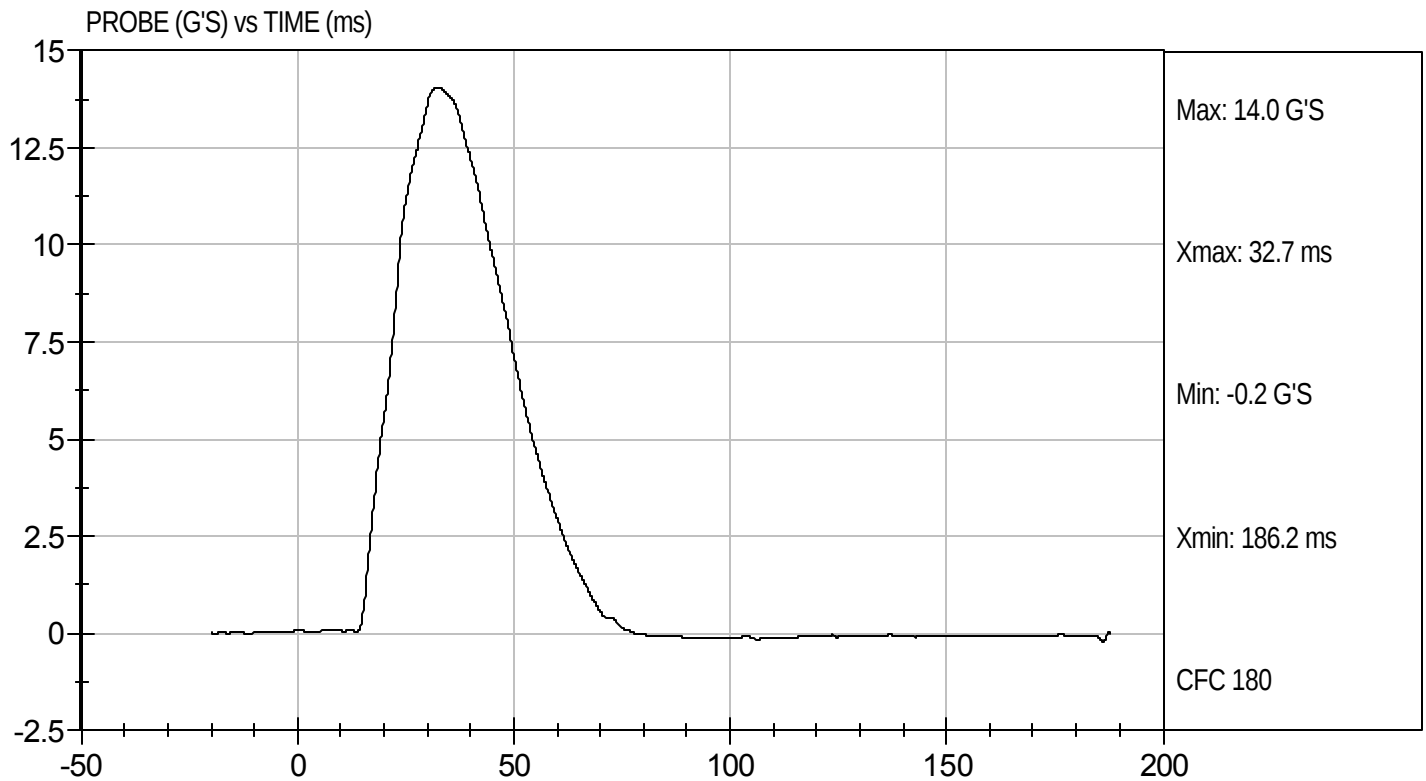
12/2/10
Test Date


Approved By



Test Desc: Abdomen Impact
Component ID: D104226

Test Date: 12/2/10
Velocity: 14.37 ft/s, 4.38 m/s

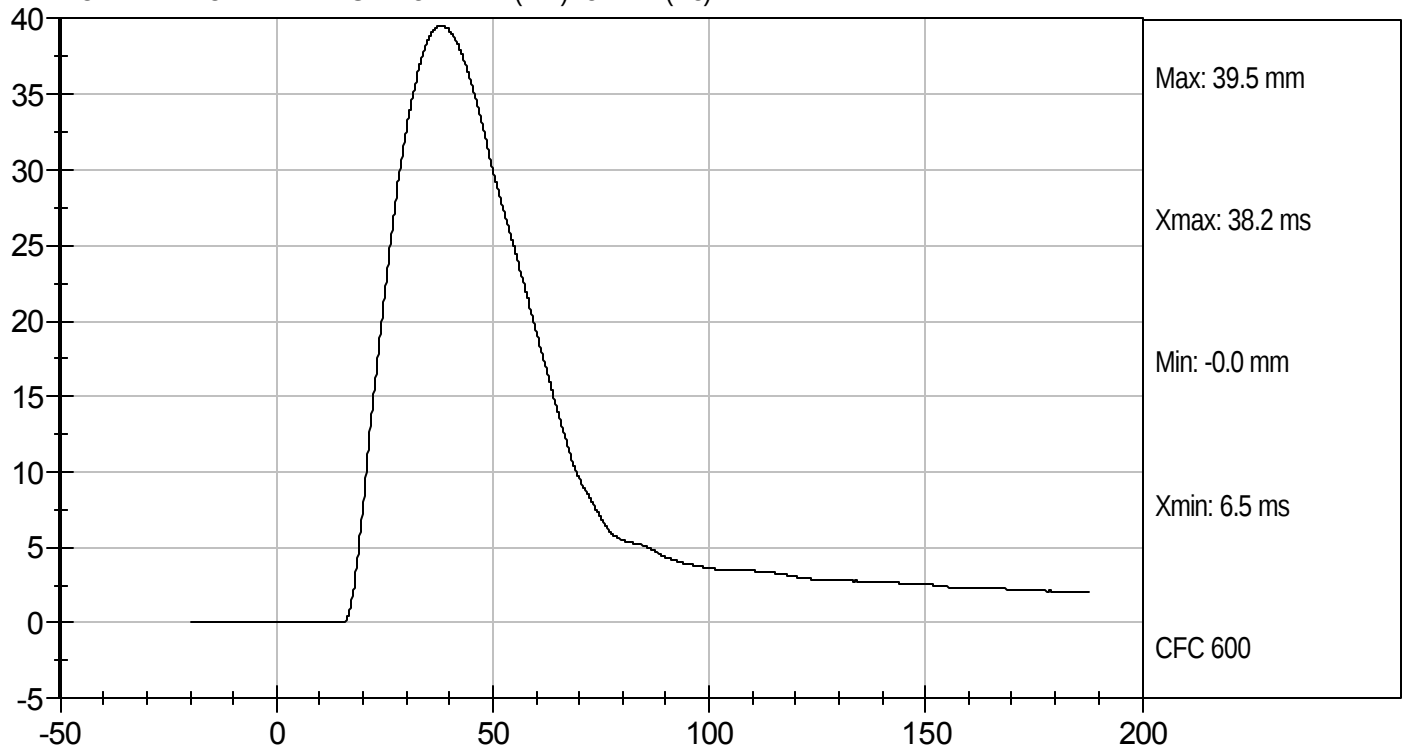




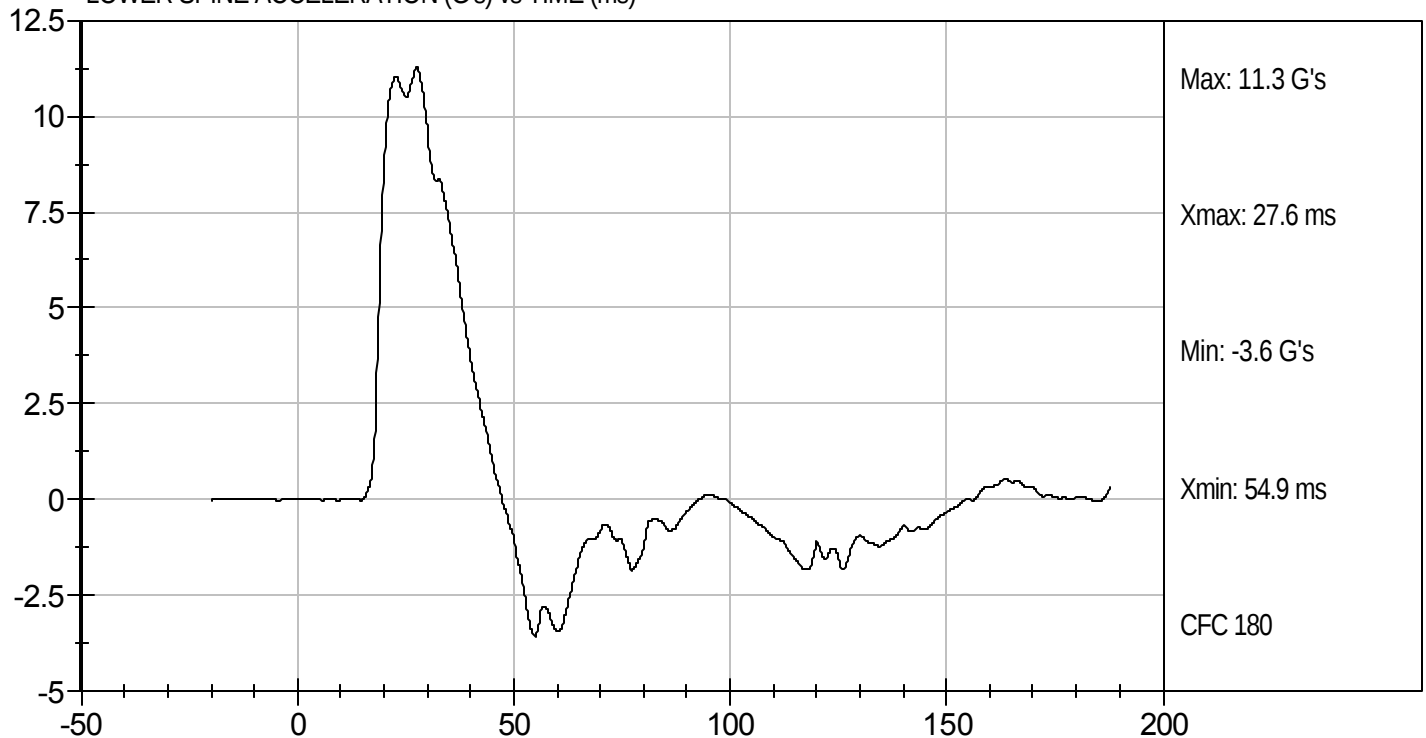
Test Desc: Abdomen Impact
Component ID: D104226

Test Date: 12/2/10
Velocity: 14.37 ft/s, 4.38 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: D104227

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.8	Pass
Humidity	%	10 to 70	17	Pass
Impact Velocity	m/s	6.60 to 6.80	6.77	Pass
Peak Impactor Acceleration	G's	38 to 47	44	Pass
Pelvis Y Acceleration after 6 ms	G's	34 to 42	39	Pass
Peak Acetabulum Force	N	3600 to 4300	4243	Pass
Overall Test Results				Pass


Laboratory Technician

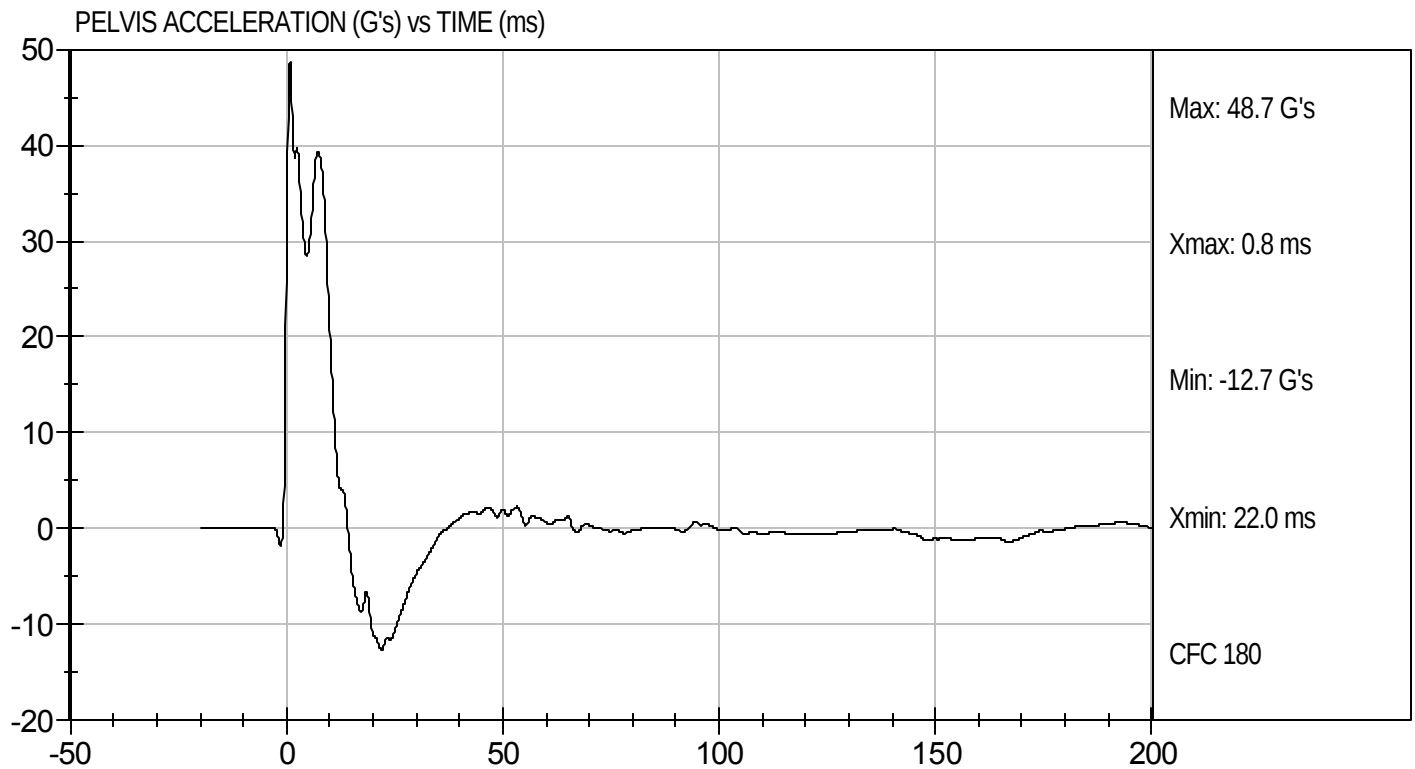
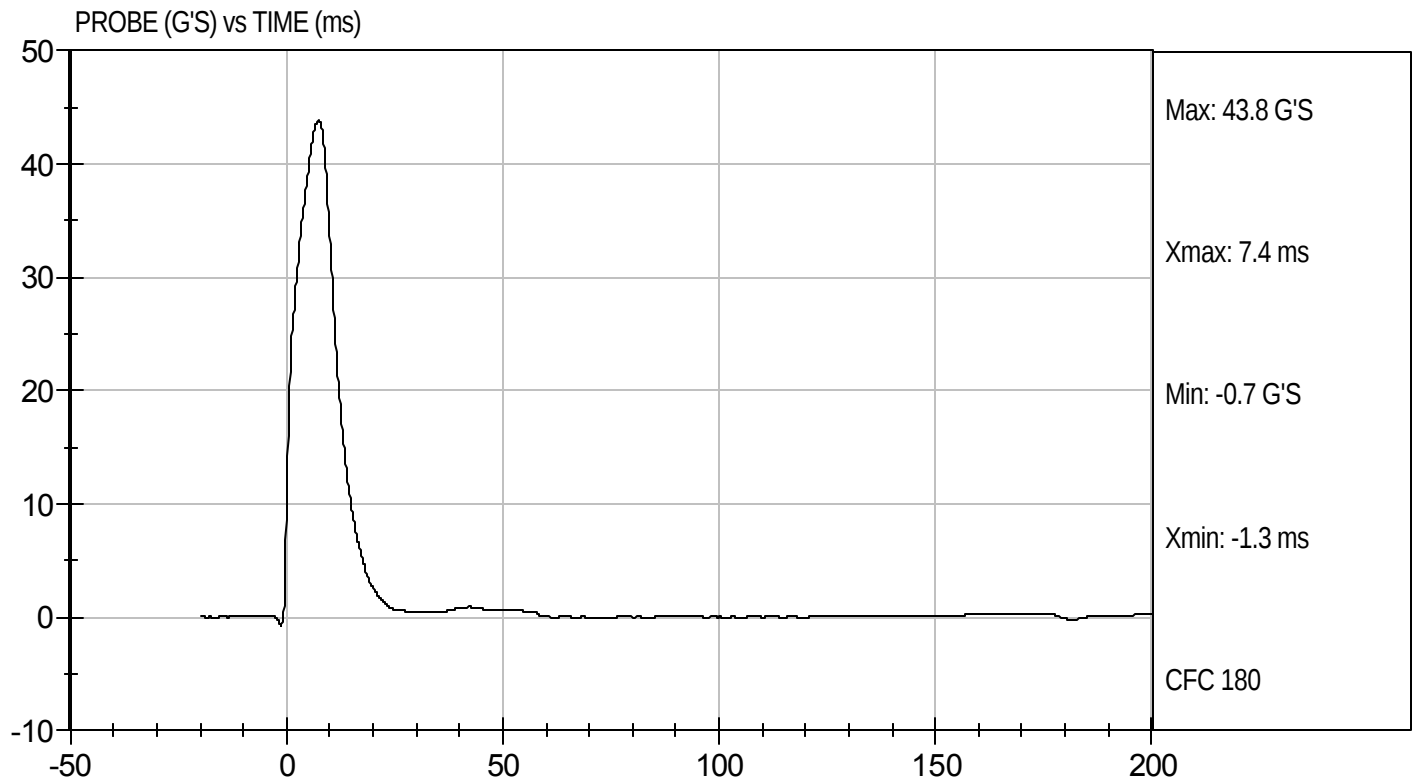
12/2/10
Test Date


Approved By



Test Desc: Pelvis Impact
Component ID: D104227

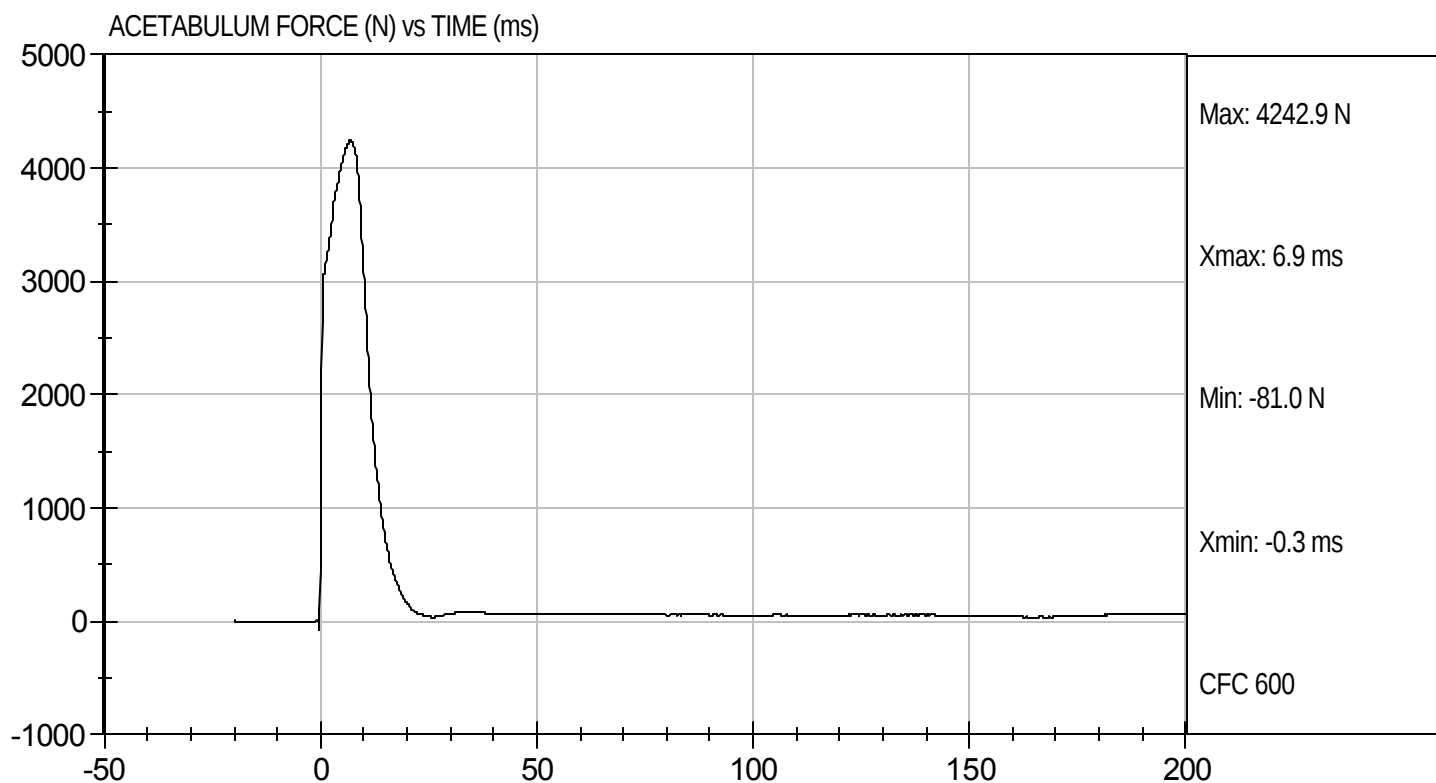
Test Date: 12/2/10
Velocity: 22.22 ft/s, 6.77 m/s





Test Desc: Pelvis Impact
Component ID: D104227

Test Date: 12/2/10
Velocity: 22.22 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: D104228

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	18	Pass
Impact Velocity	m/s	4.20 to 4.40	4.38	Pass
Peak Impactor Acceleration	G's	36 to 45	38	Pass
Pelvis Y Acceleration	G's	28 to 39	32	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4614	Pass
Overall Test Results			Pass	


Laboratory Technician

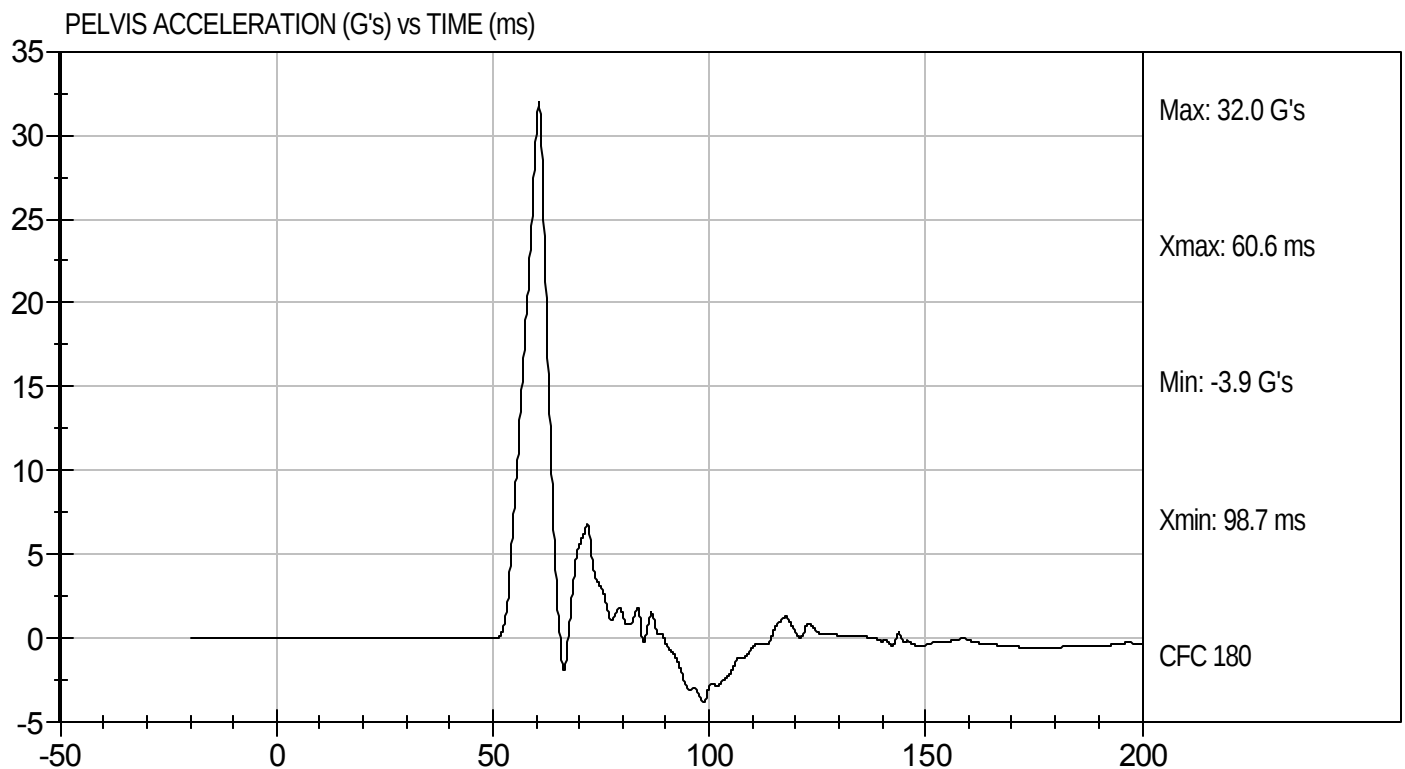
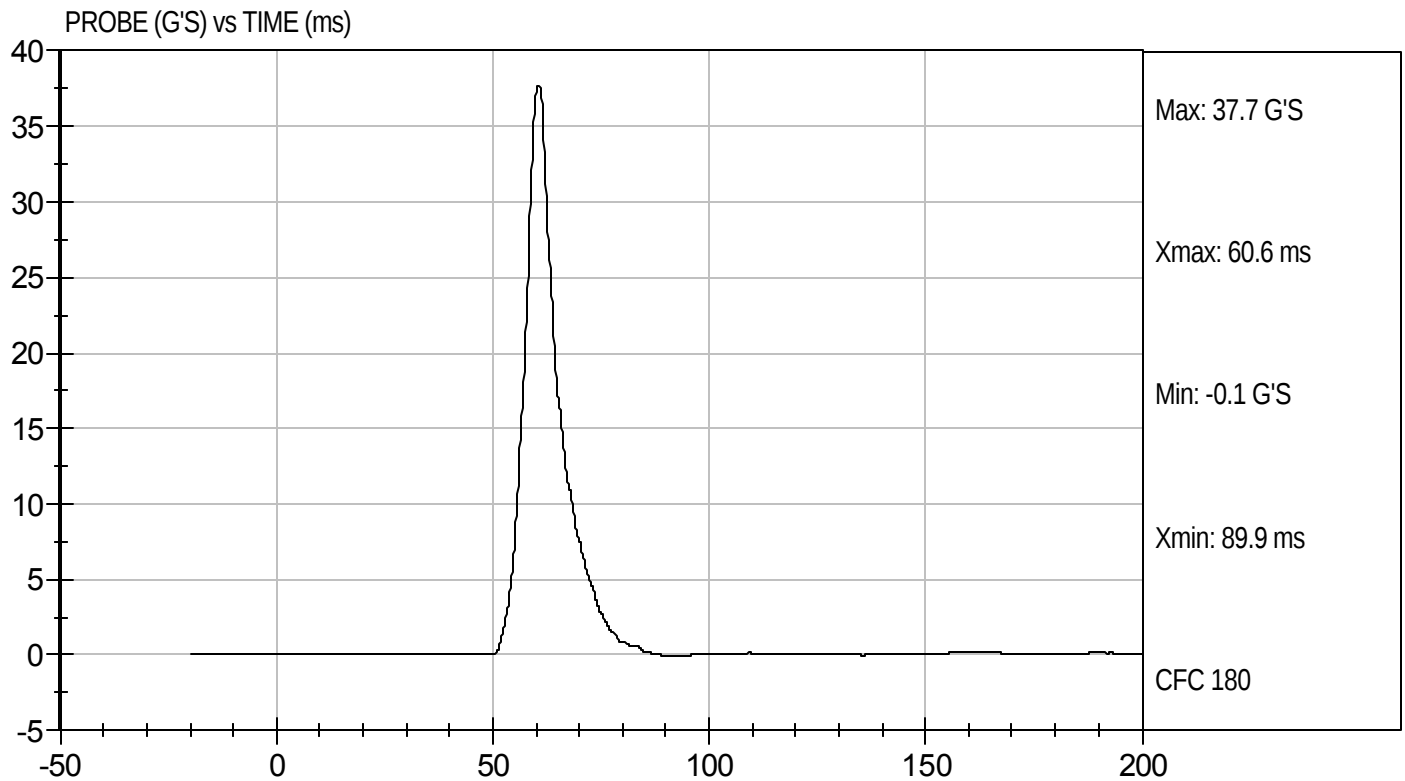
12/2/10
Test Date


Approved By



Test Desc: Iliac Impact
Component ID: D104228

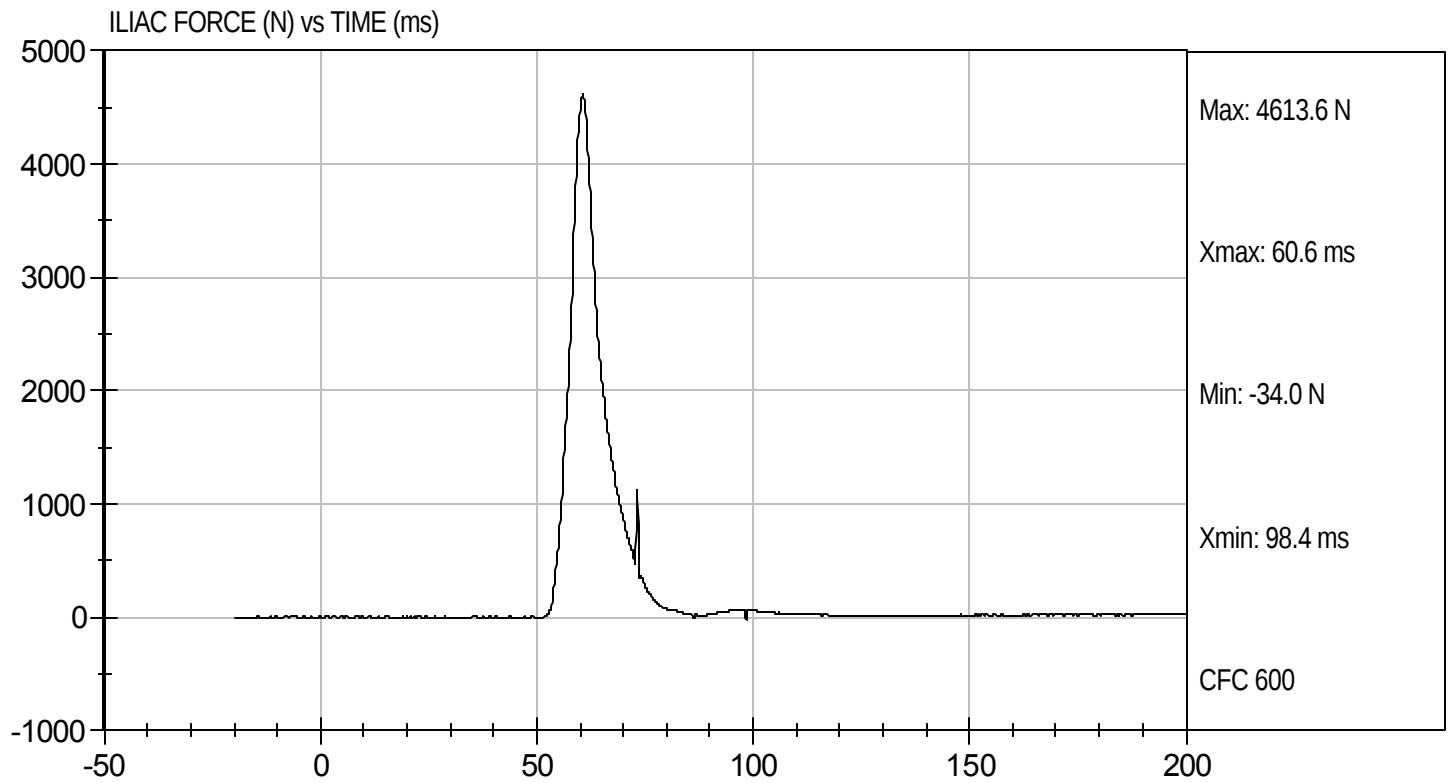
Test Date: 12/2/10
Velocity: 14.37 ft/s, 4.38 m/s





Test Desc: Iliac Impact
Component ID: D104228

Test Date: 12/2/10
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: D104301

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	20.9	Pass
Laboratory Relative Humidity	%	10 to 70	15	Pass
Peak Resultant Acceleration	G's	115 to 137	120	Pass
Peak Lateral Acceleration	G's	+/- 15	-9.3	Pass
Unimodal	N/A	<15%	Yes	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

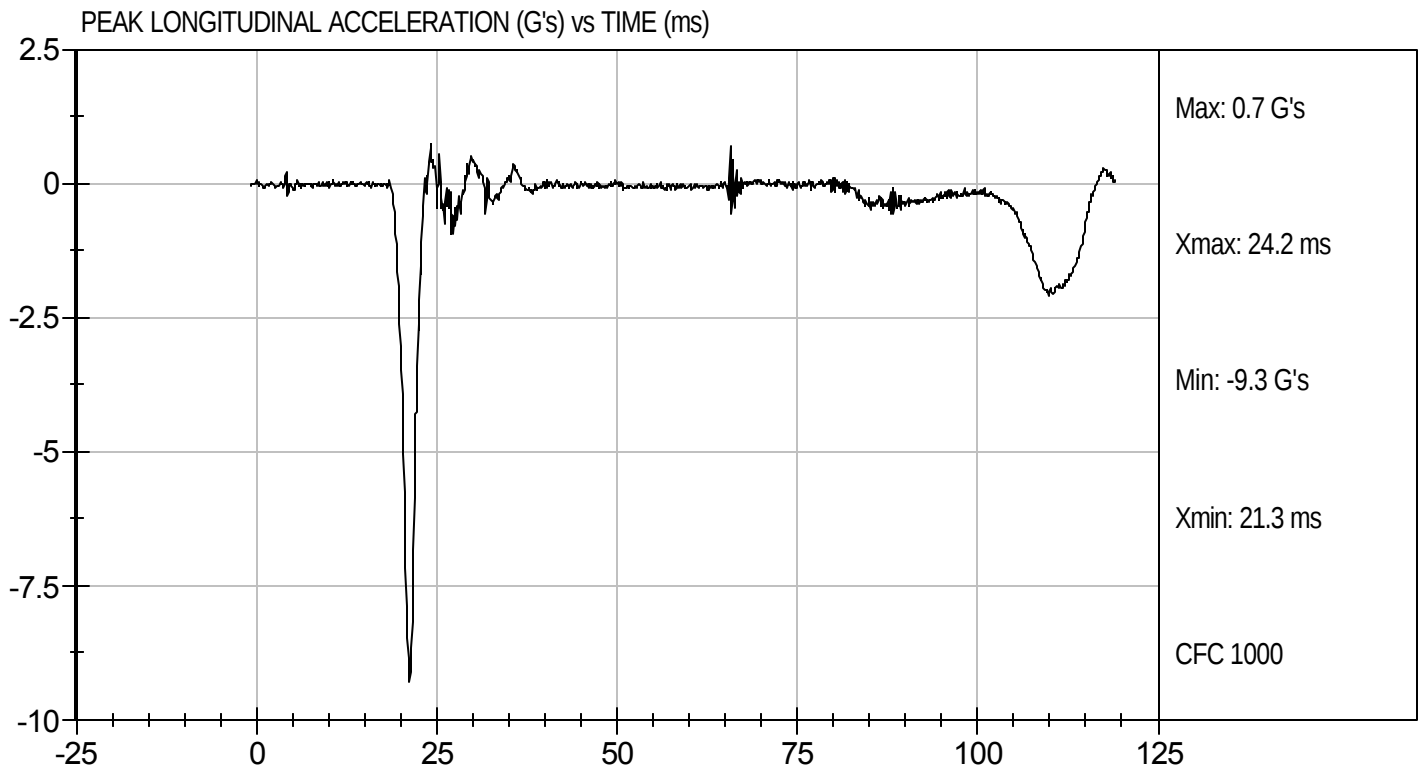
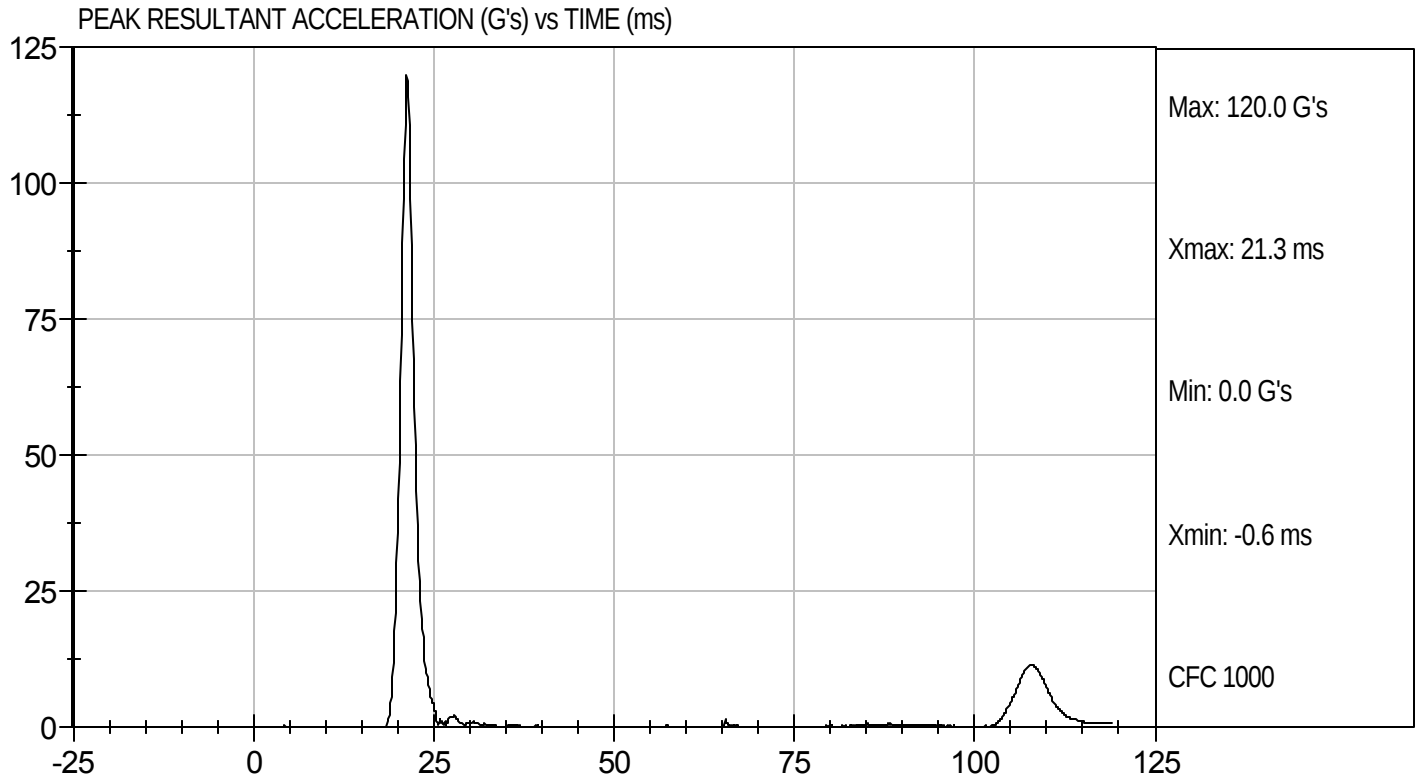
12/7/10
Test Date

David Winkelbauer
Approved By



Test Desc: Head Drop
Component ID: D104301

Test Date: 12/7/10
Velocity: 0 ft/s, 0 m/s

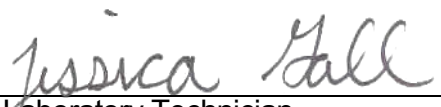


MGA RESEARCH CORPORATION
LATERAL NECK PENDULUM TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D104302

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	20.8	Pass
Humidity		%	10 to 70	16	Pass
Impact Velocity		m/s	5.51 to 5.63	5.52	Pass
Delta Velocity	10 ms	m/s	2.20 to 2.80	2.40	Pass
	15 ms	m/s	3.30 to 4.10	3.38	Pass
	20 ms	m/s	4.40 to 5.40	4.49	Pass
	25 ms	m/s	5.40 to 6.10	5.43	Pass
	25-100 ms	m/s	5.50 to 6.20	5.64	Pass
Maximum D-Plane Rotation		deg	71 to 81	74	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	65	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

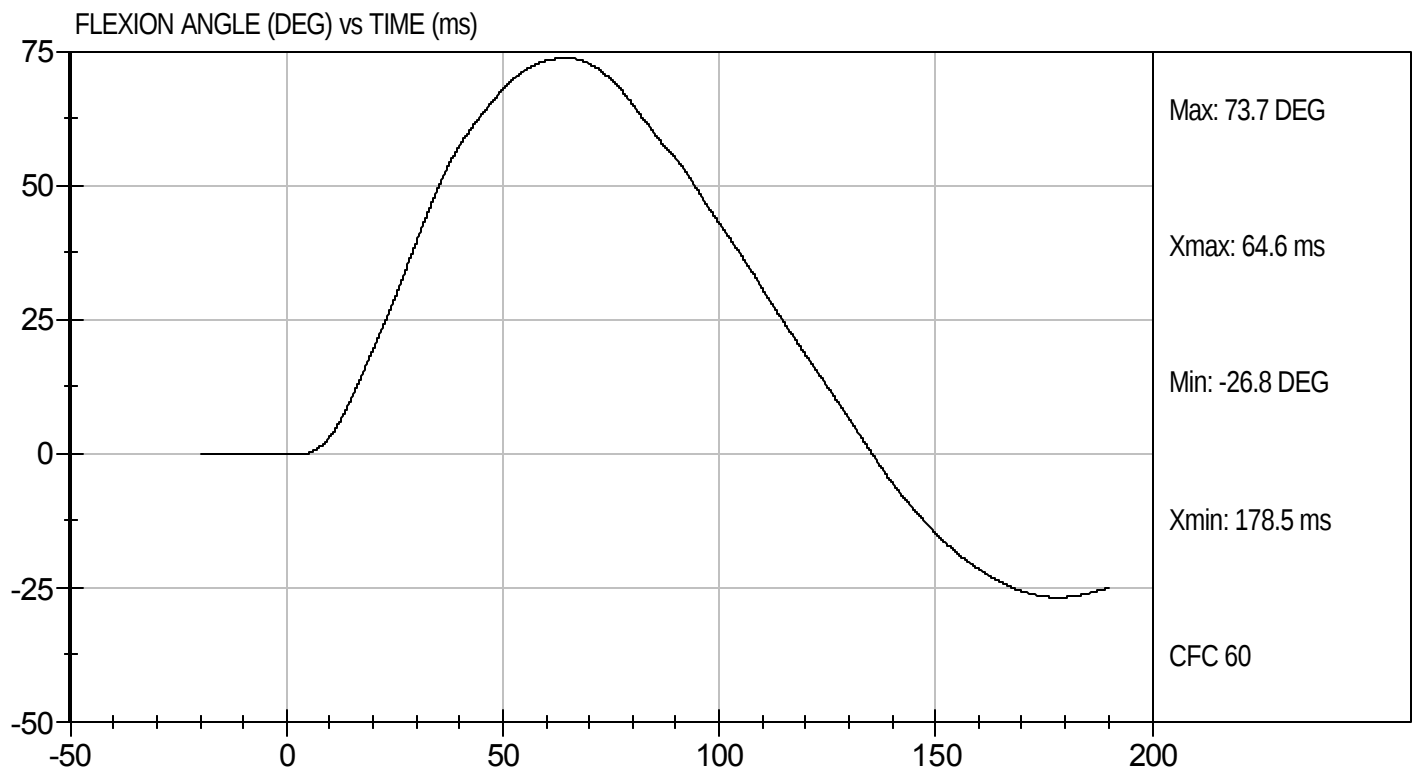
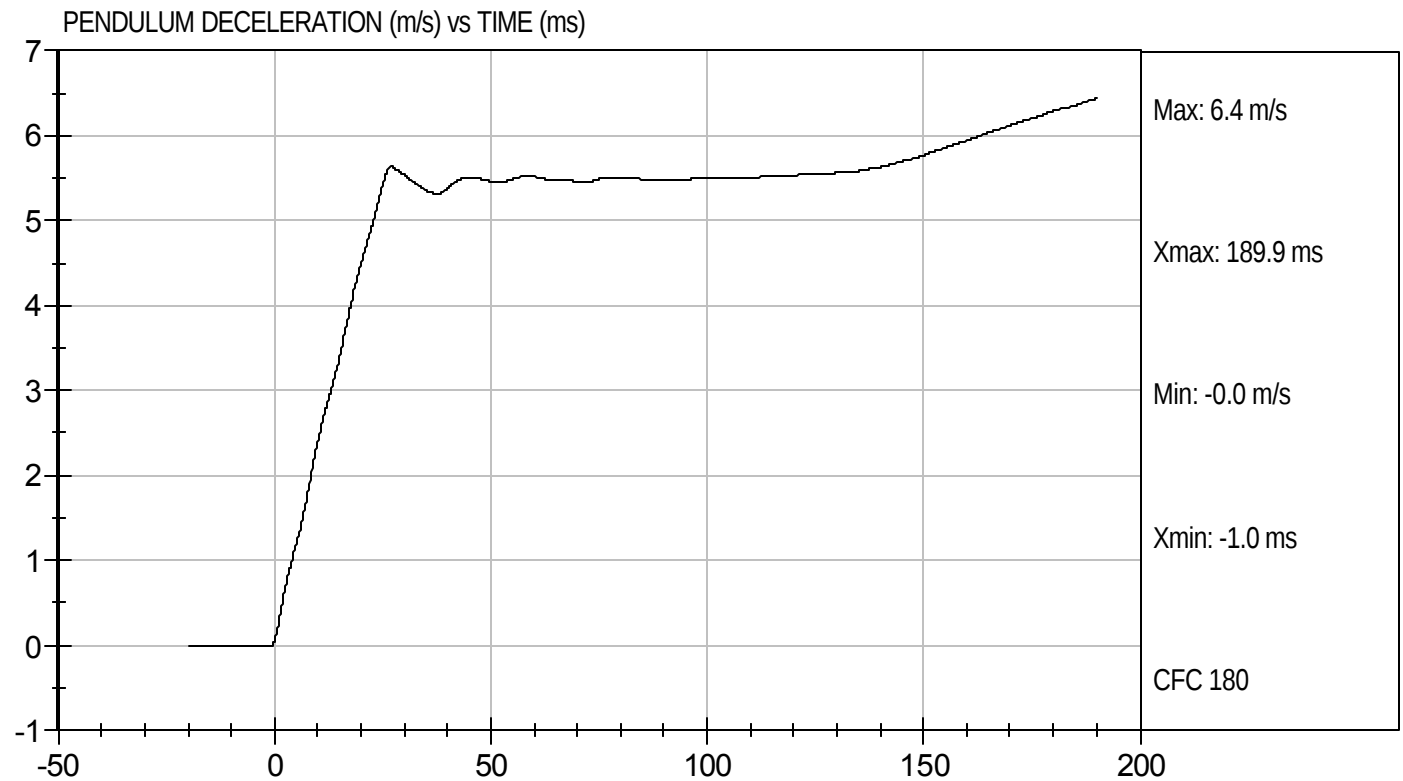
12/7/10
 Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D104302

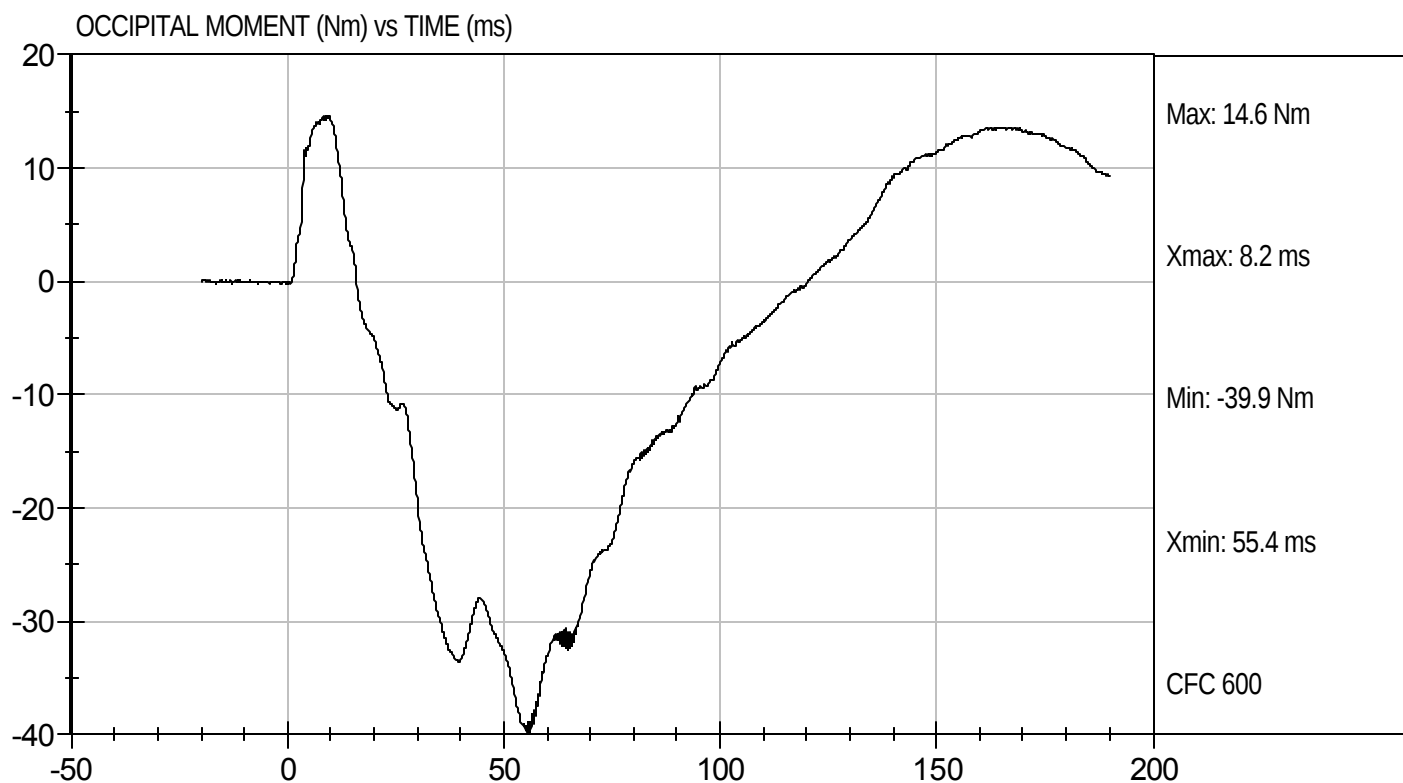
Test Date: 12/7/10
Velocity: 18.12 ft/s, 5.52 m/s





Test Desc: Neck Bending
Component ID: D104302

Test Date: 12/7/10
Velocity: 18.12 ft/s, 5.52 m/s

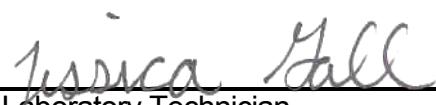


MGA RESEARCH CORPORATION
SHOULDER IMPACT TEST
SID-Its BUILD LEVEL D DUMMY

ATD Serial No: 296

Test ID: D104303

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	15	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	19	Pass
Overall Test Results				Pass


Laboratory Technician

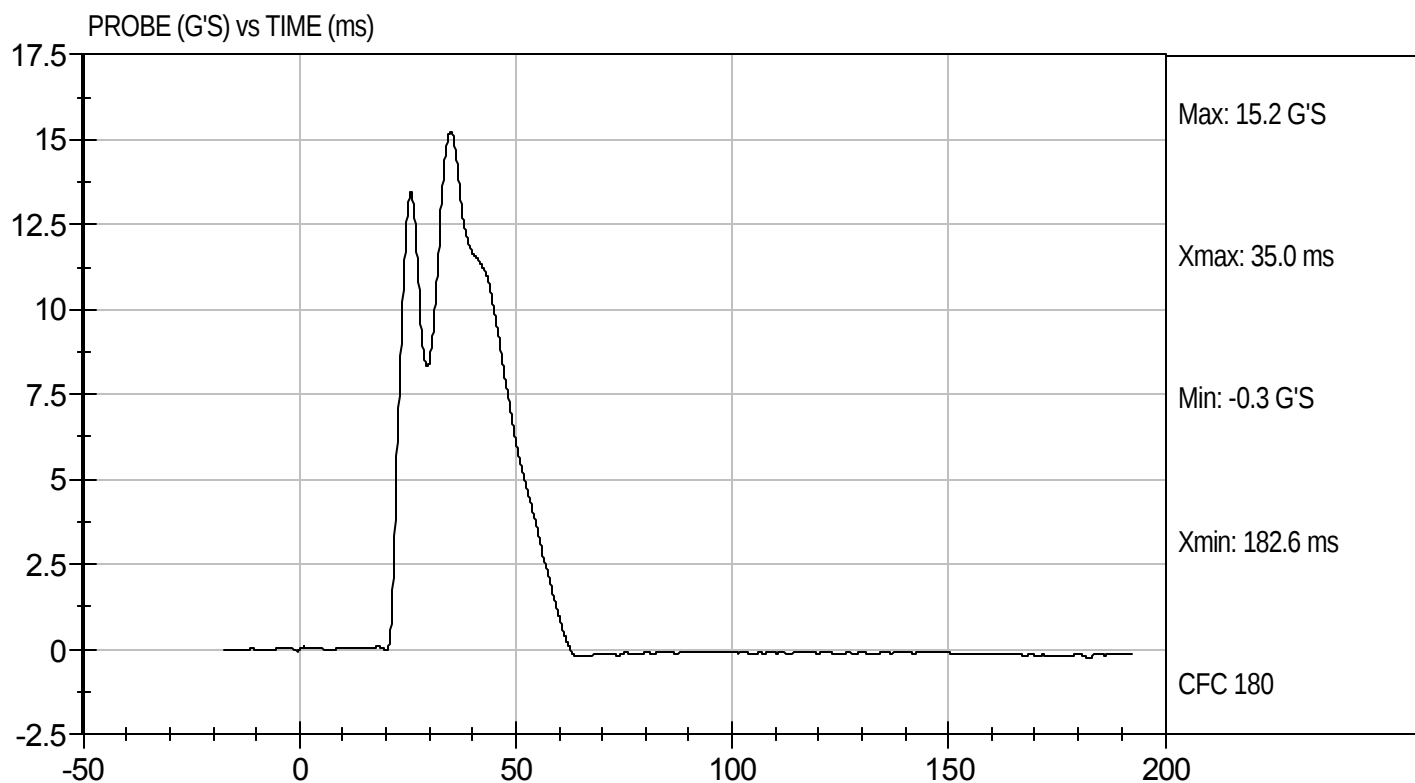
12/7/10
Test Date


Approved By



Test Desc: Shoulder Impact
Component ID: D104303

Test Date: 12/7/10
Velocity: 14.37 ft/s, 4.38 m/s

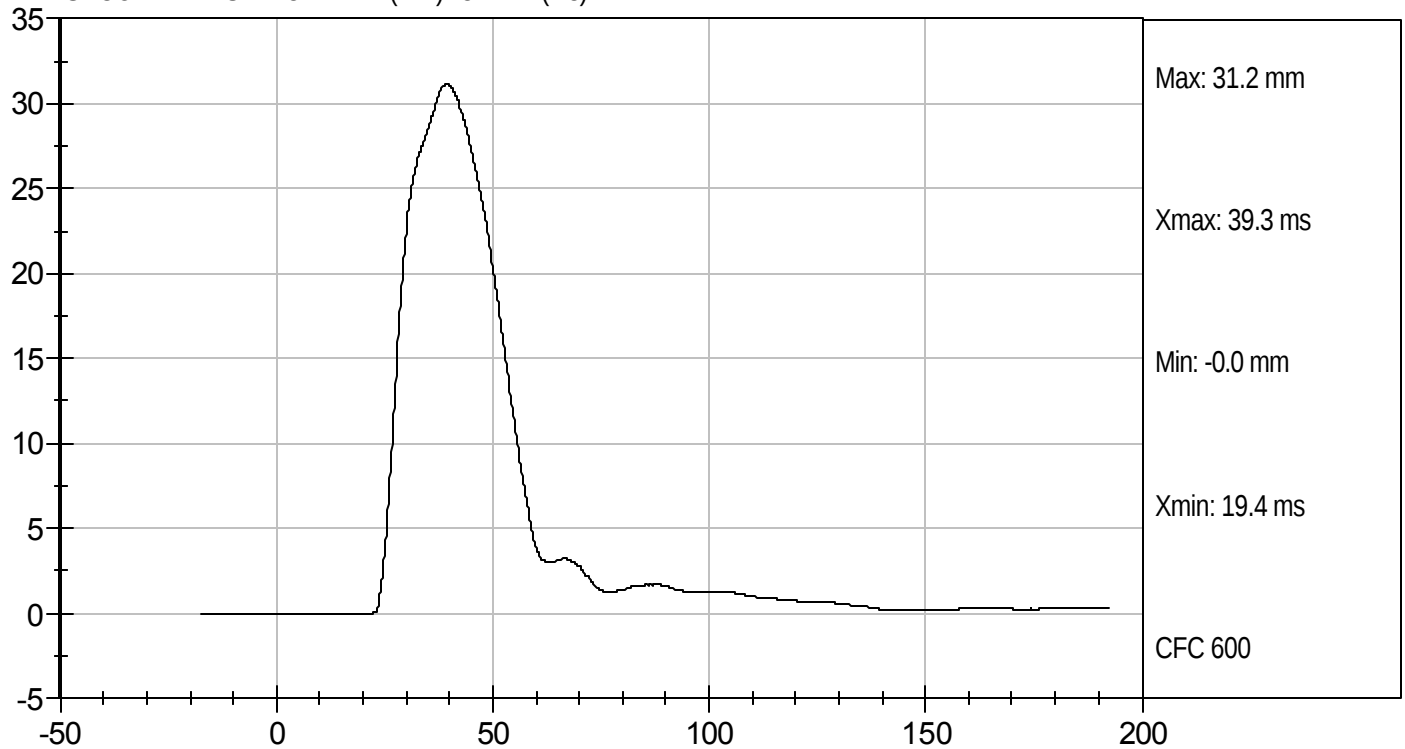




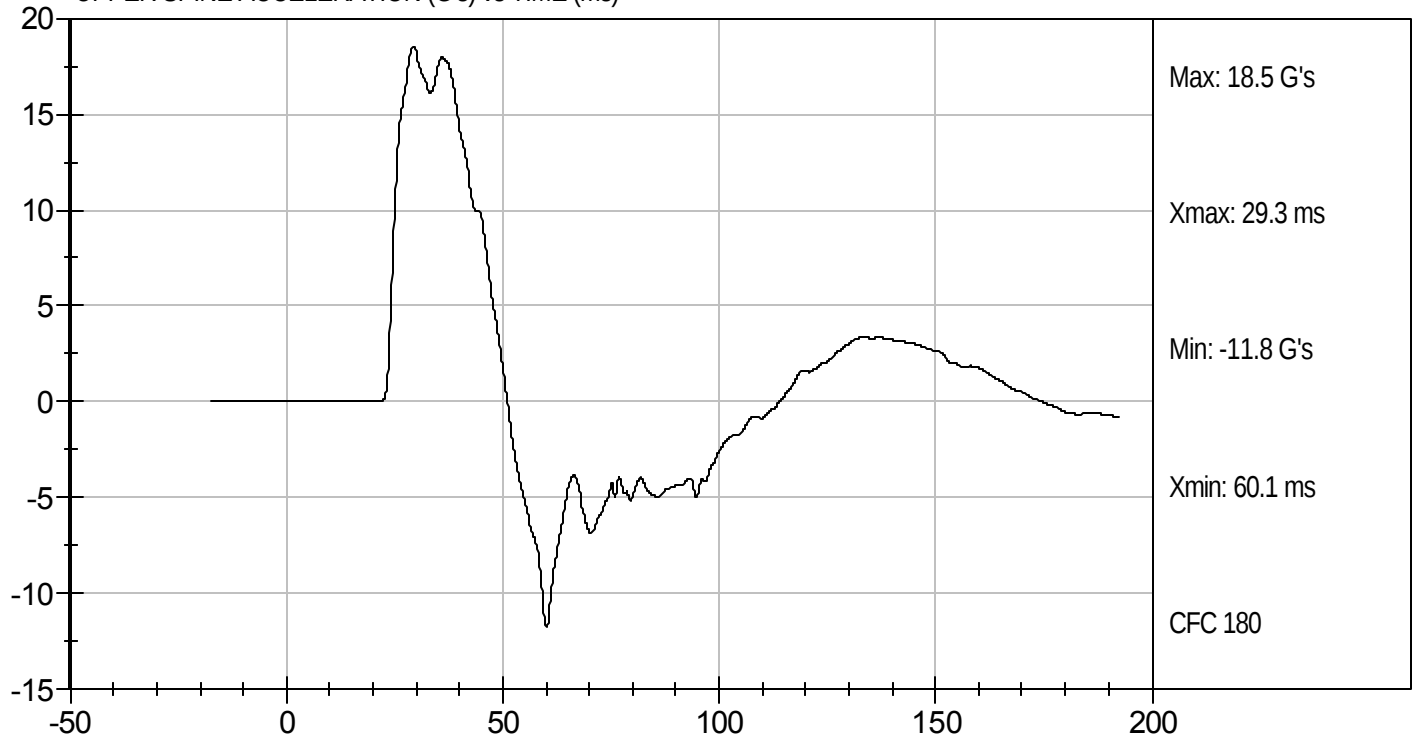
Test Desc: Shoulder Impact
Component ID: D104303

Test Date: 12/7/10
Velocity: 14.37 ft/s, 4.38 m/s

SHOULDER DISPLACEMENT (mm) vs TIME (ms)



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

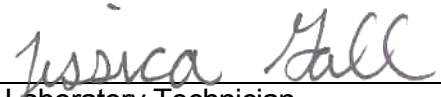


MGA RESEARCH CORPORATION
THORAX (WITH ARM) IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D104304

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.6	Pass
Humidity	%	10 to 70	15	Pass
Impact Velocity	m/s	6.60 to 6.80	6.68	Pass
Peak Impactor Acceleration	G's	30 to 36	33	Pass
Shoulder Displacement	mm	31 to 40	35	Pass
Upper Rib Displacement	mm	25 to 32	30	Pass
Middle Rib Displacement	mm	30 to 36	31	Pass
Lower Rib Displacement	mm	32 to 38	33	Pass
Upper Spine (T1) Y Acceleration	G's	34 to 43	38	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	33	Pass
Overall Test Results			Pass	


Laboratory Technician

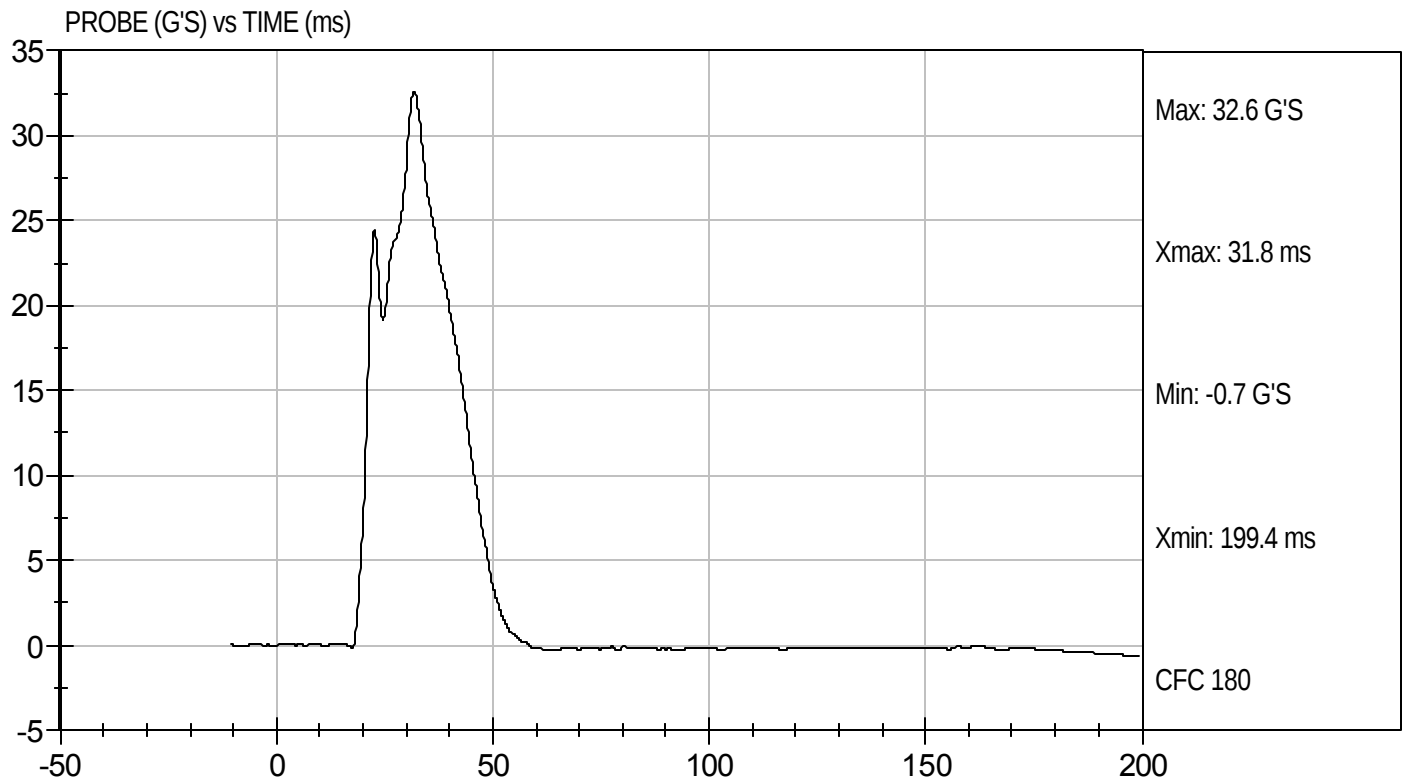
12/7/10
Test Date


Approved By



Test Desc: Thorax With Arm
Component ID: D104304

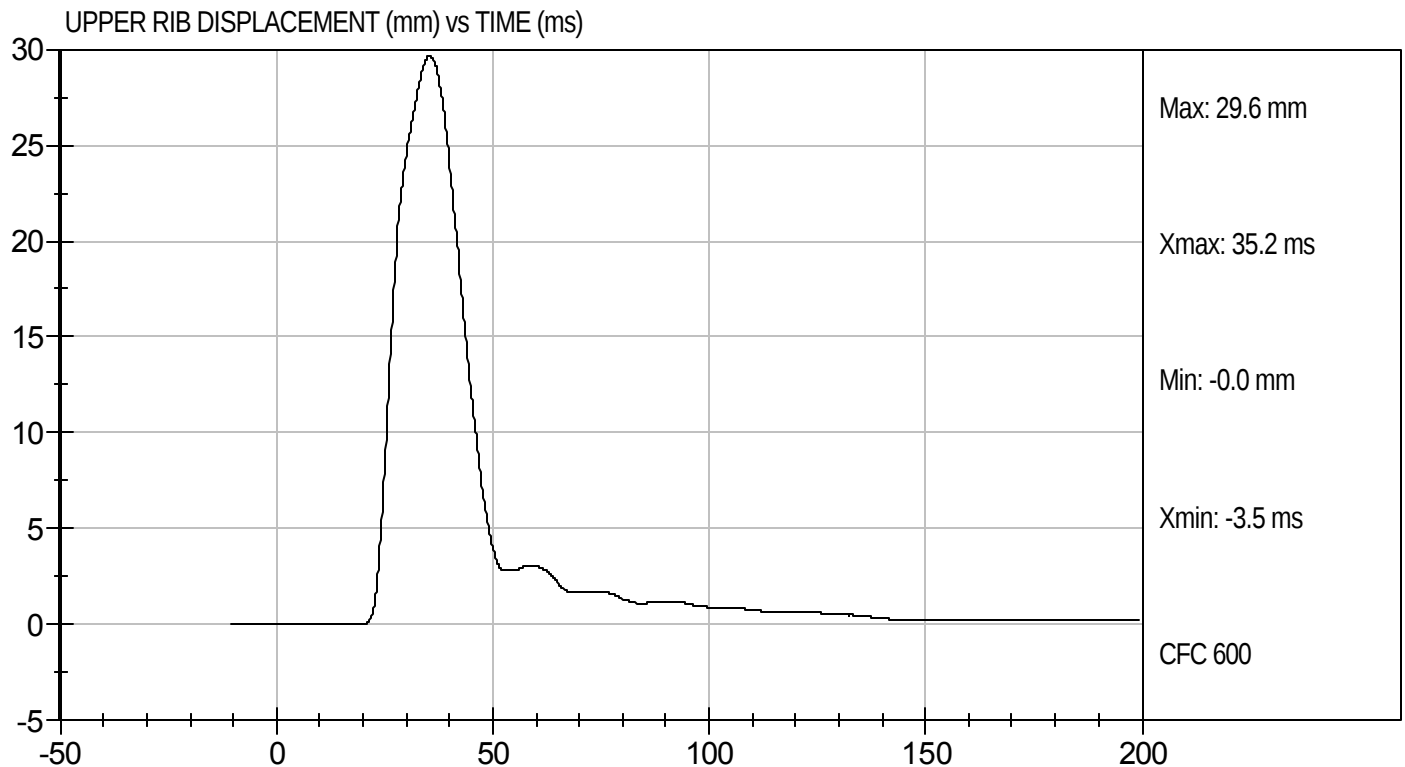
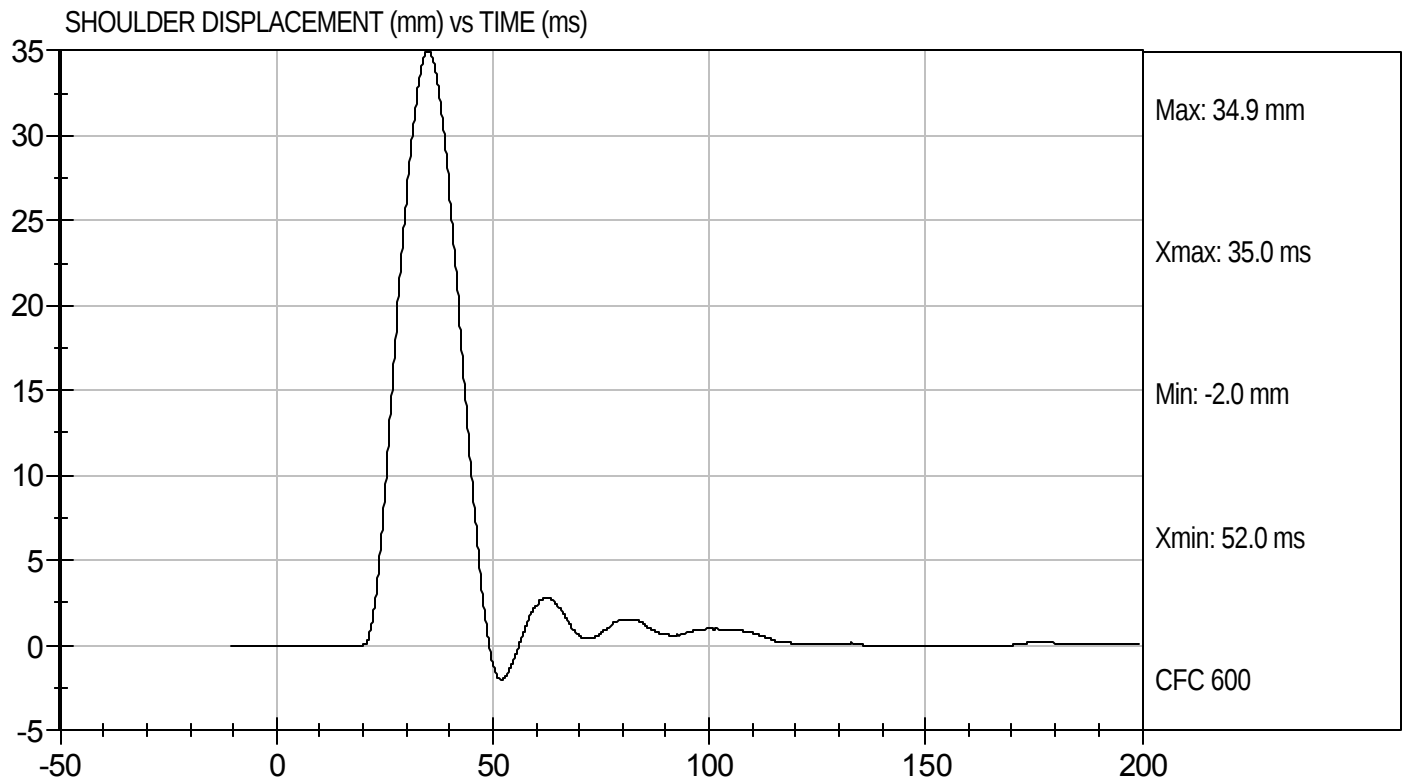
Test Date: 12/7/10
Velocity: 21.93 ft/s, 6.68 m/s





Test Desc: Thorax With Arm
Component ID: D104304

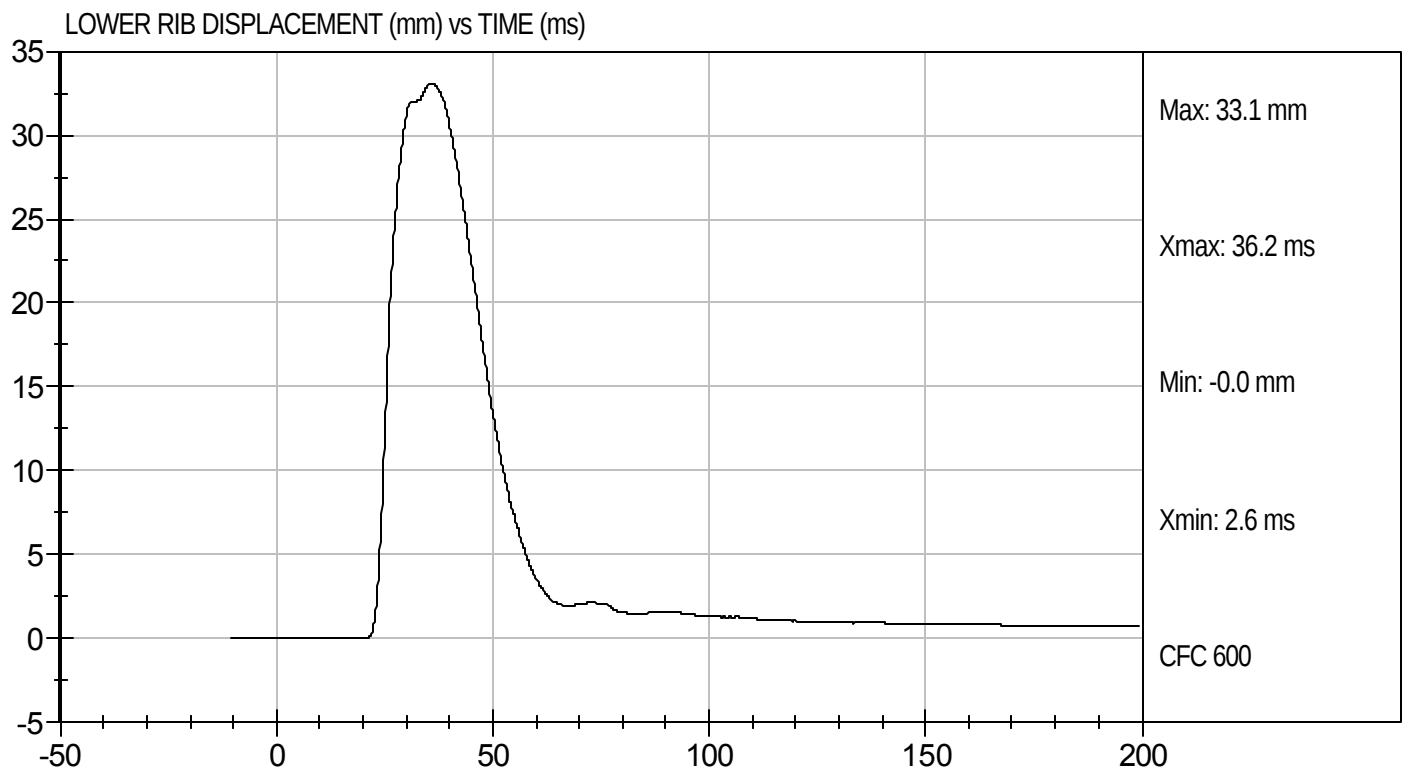
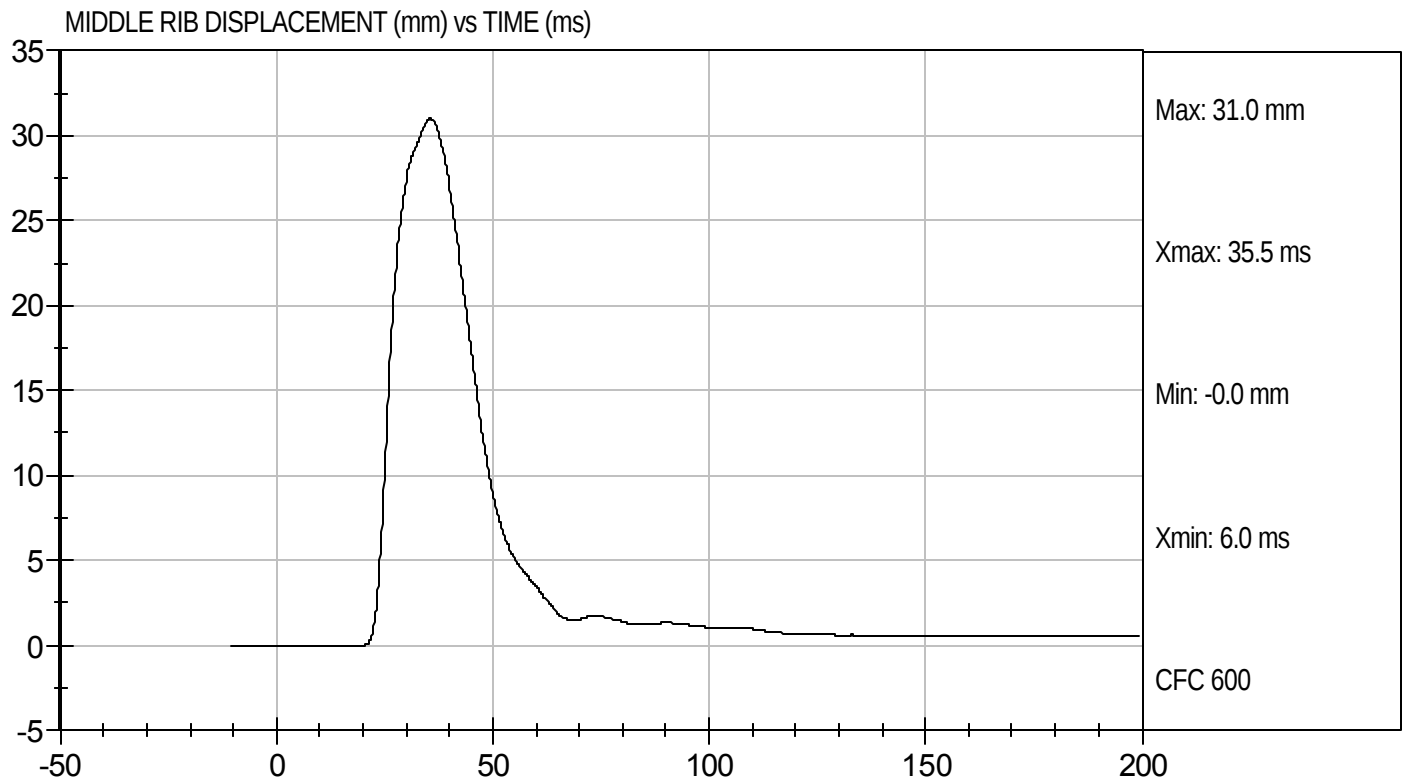
Test Date: 12/7/10
Velocity: 21.93 ft/s, 6.68 m/s





Test Desc: Thorax With Arm
Component ID: D104304

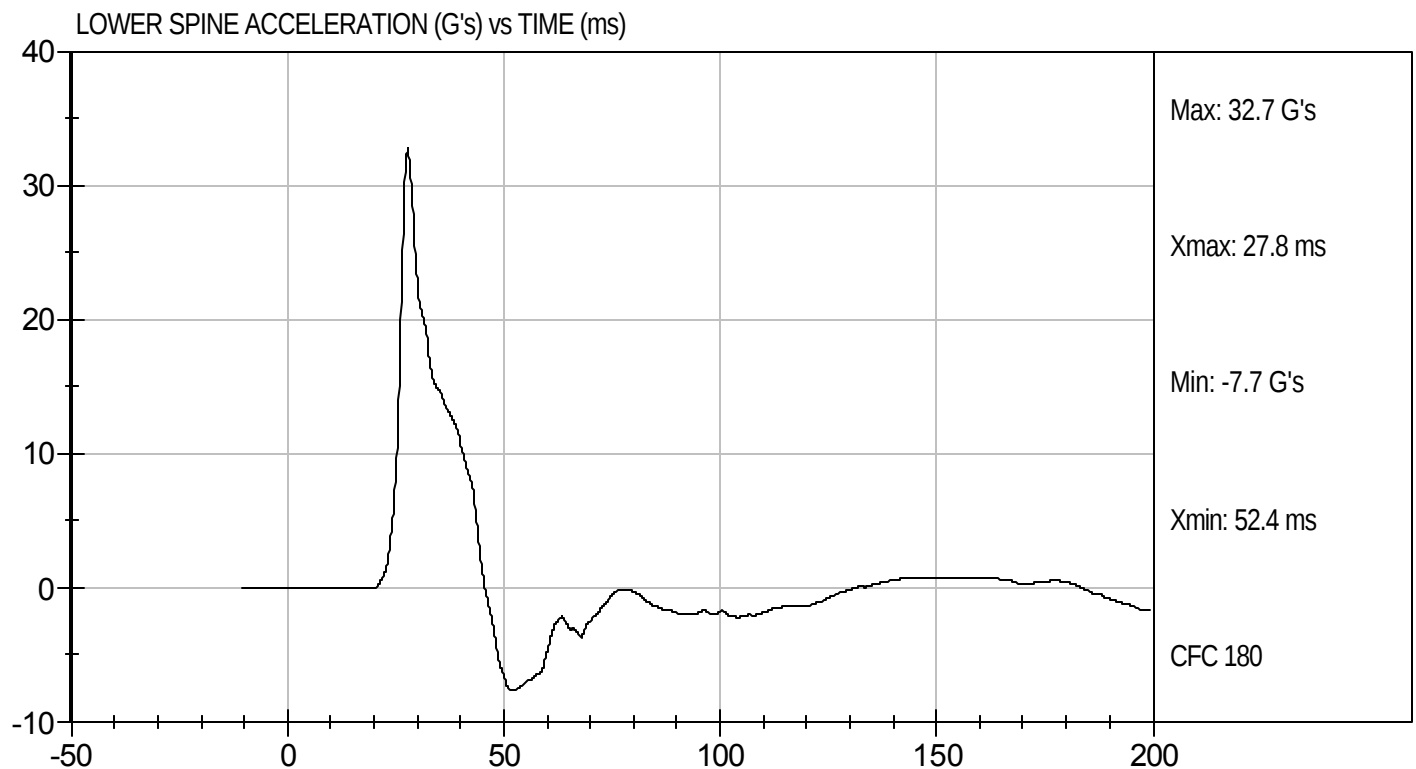
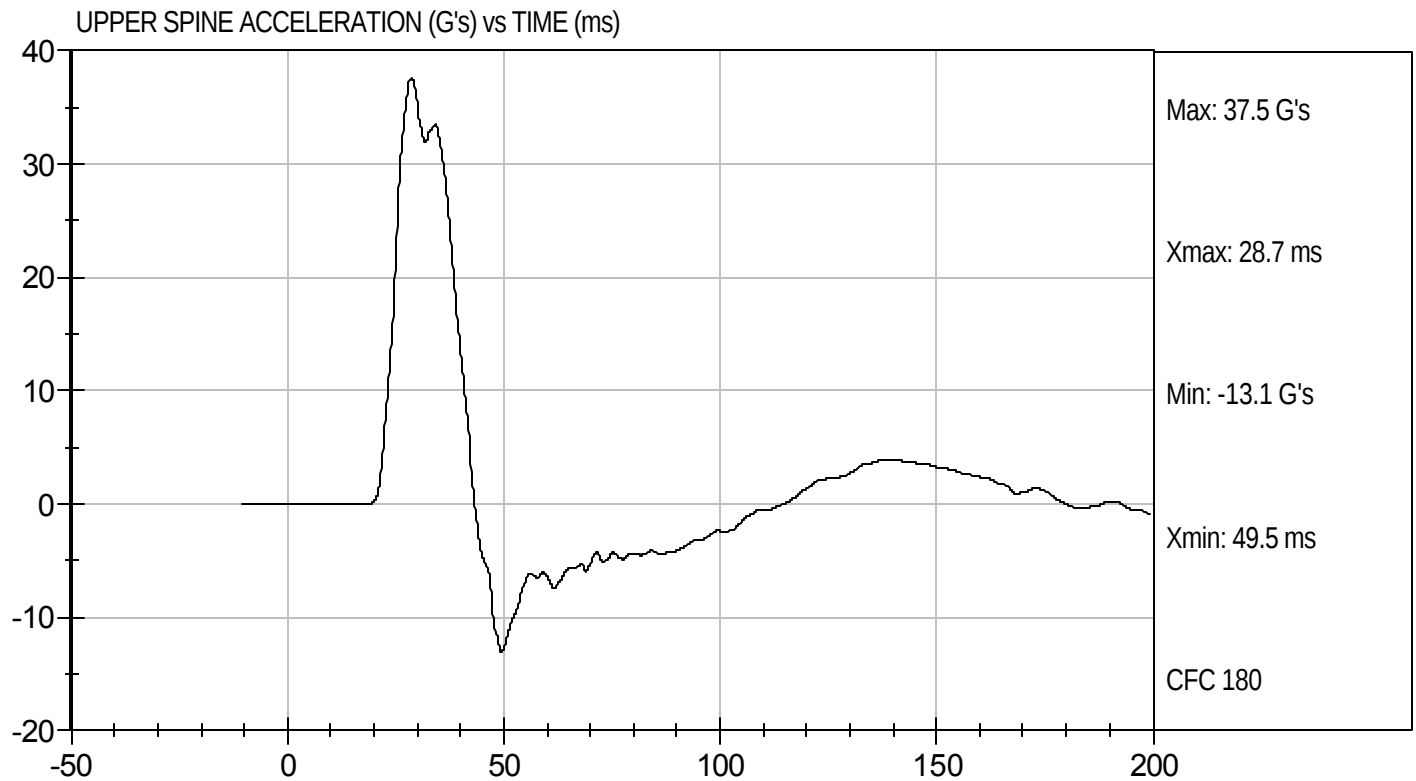
Test Date: 12/7/10
Velocity: 21.93 ft/s, 6.68 m/s





Test Desc: Thorax With Arm
Component ID: D104304

Test Date: 12/7/10
Velocity: 21.93 ft/s, 6.68 m/s



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

ATD Serial No: 296

Test I.D: D104305

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.5	Pass
Humidity	%	10 to 70	15	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	39	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	


Laboratory Technician

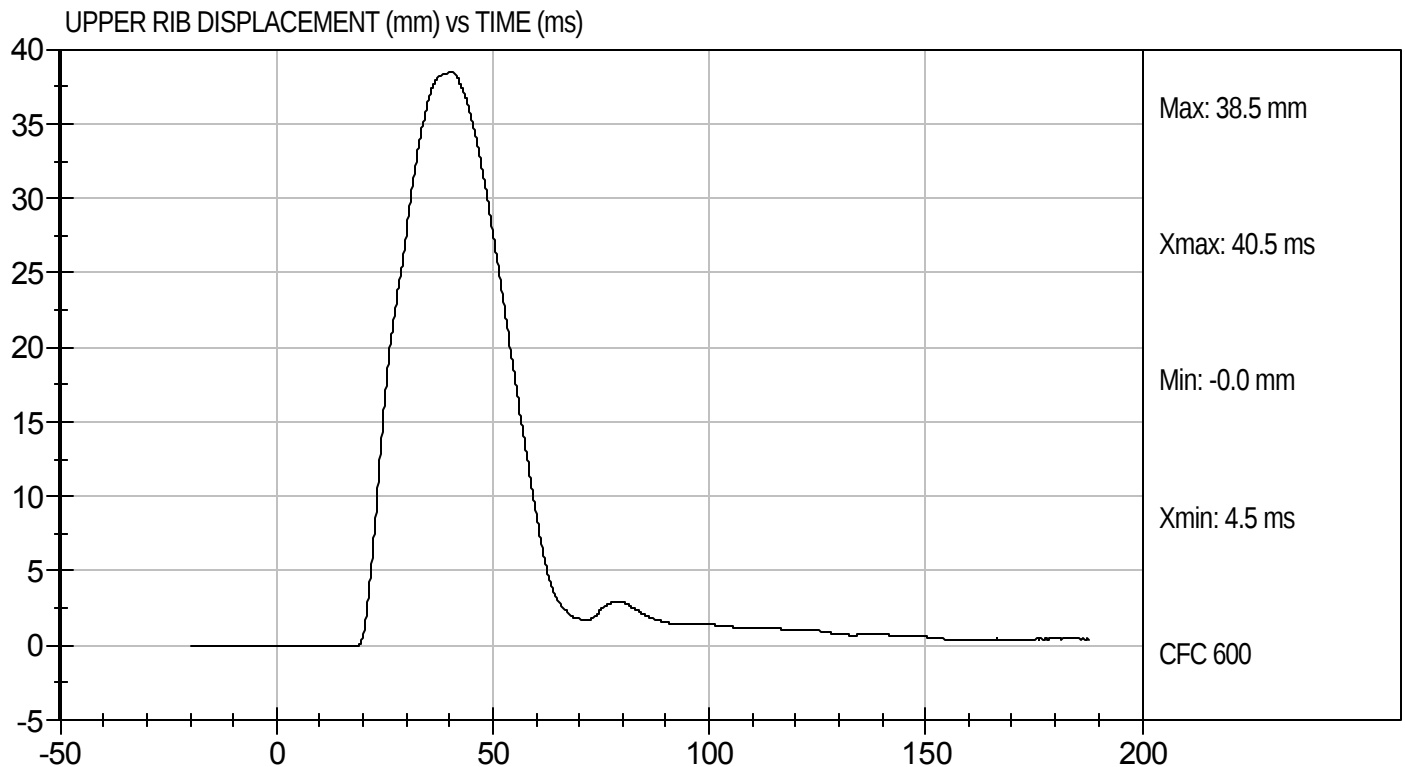
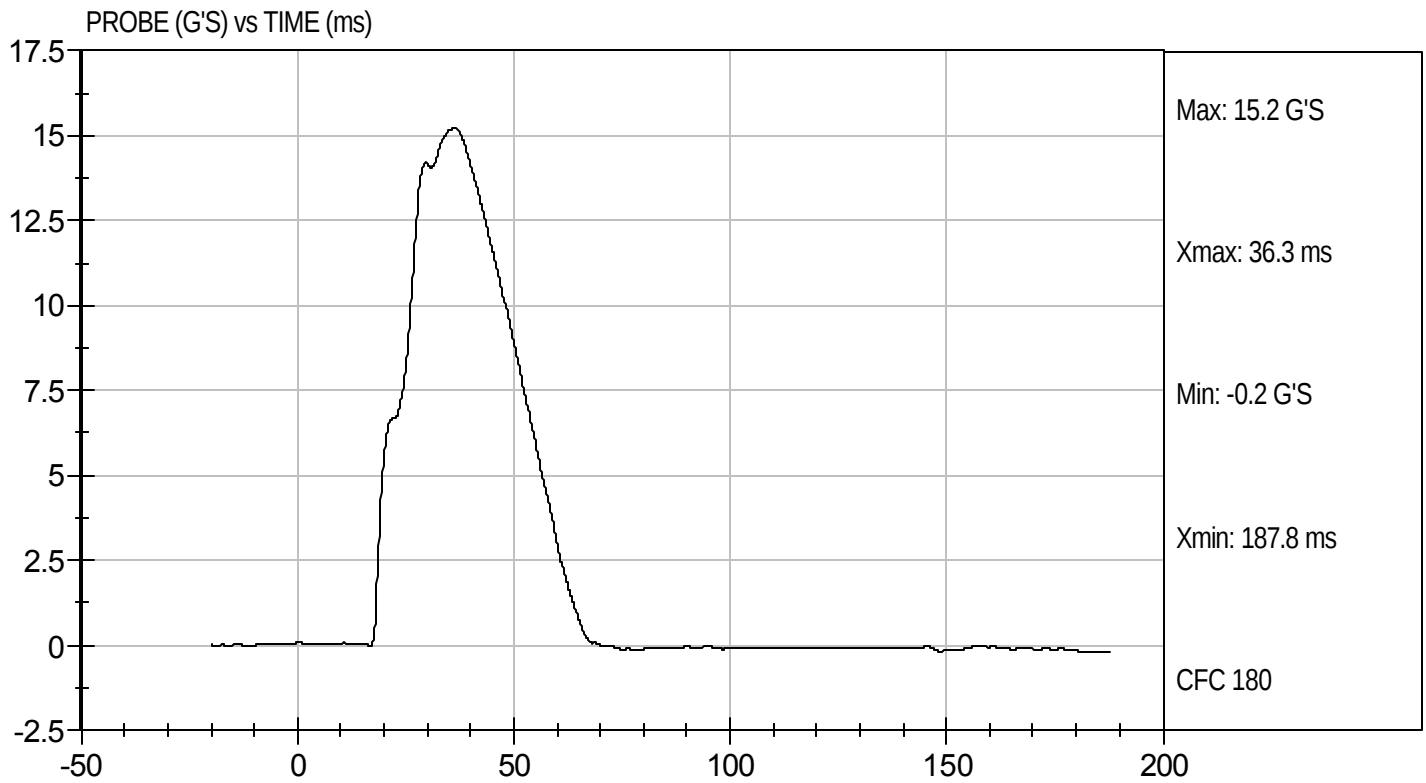
12/7/10
Test Date


Approved By



Test Desc: Thorax Without Arm
Component ID: D104305

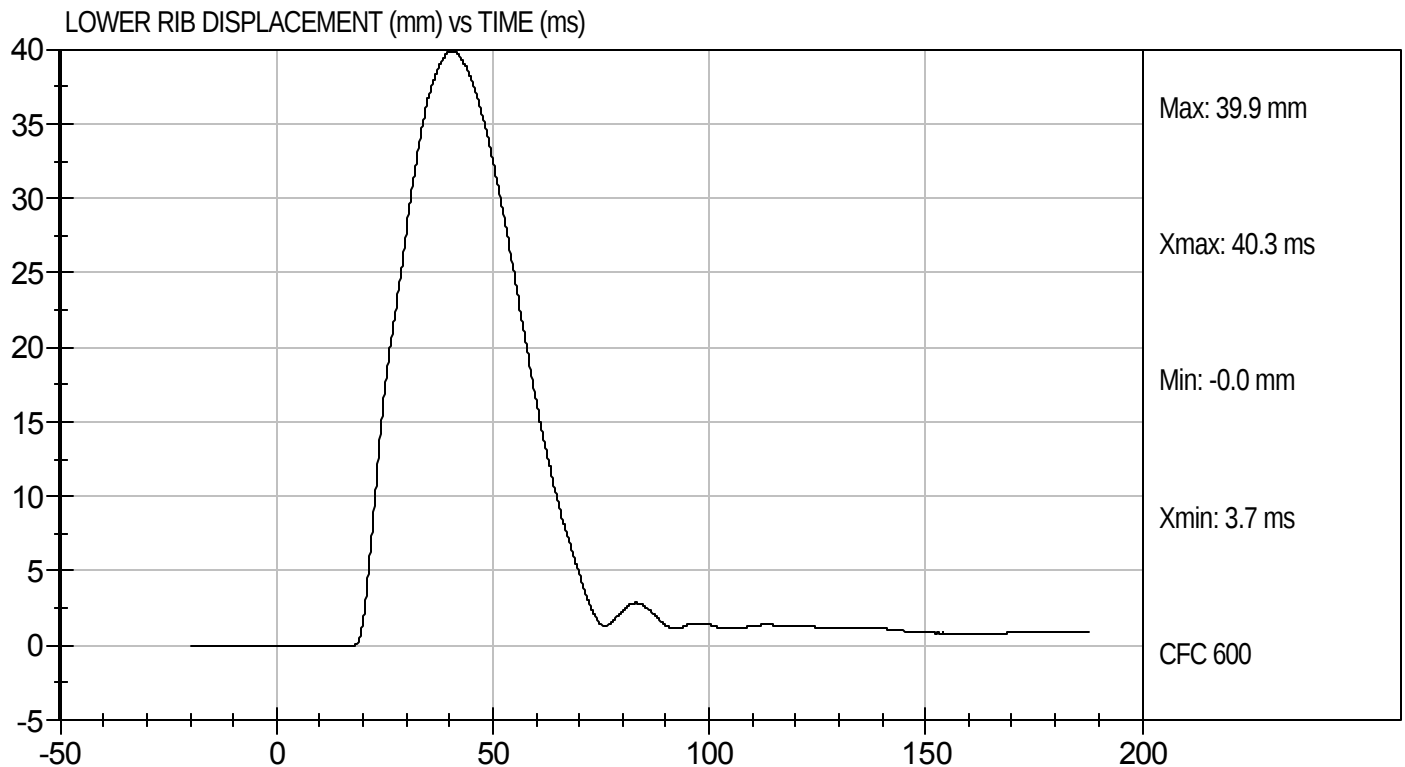
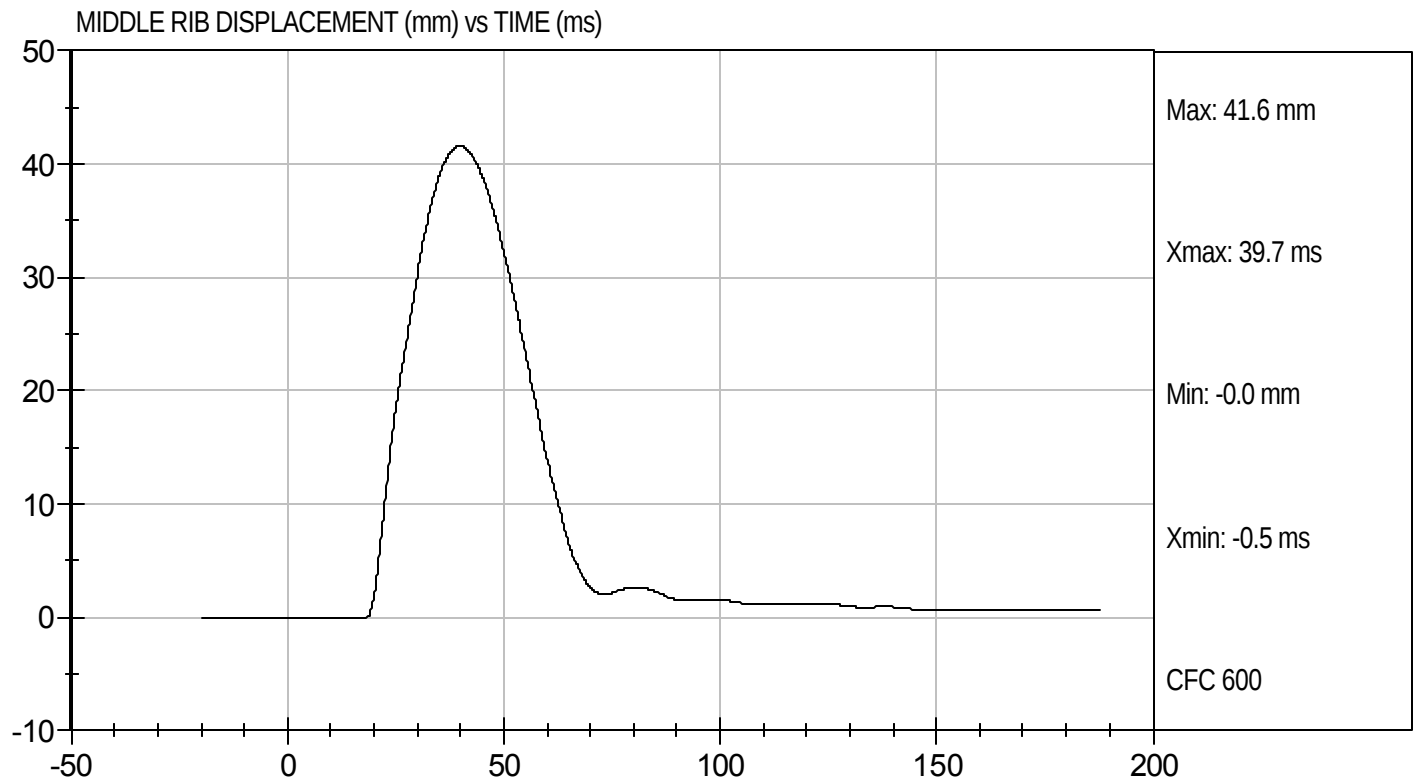
Test Date: 12/7/10
Velocity: 14.12 ft/s, 4.30 m/s





Test Desc: Thorax Without Arm
Component ID: D104305

Test Date: 12/7/10
Velocity: 14.12 ft/s, 4.30 m/s

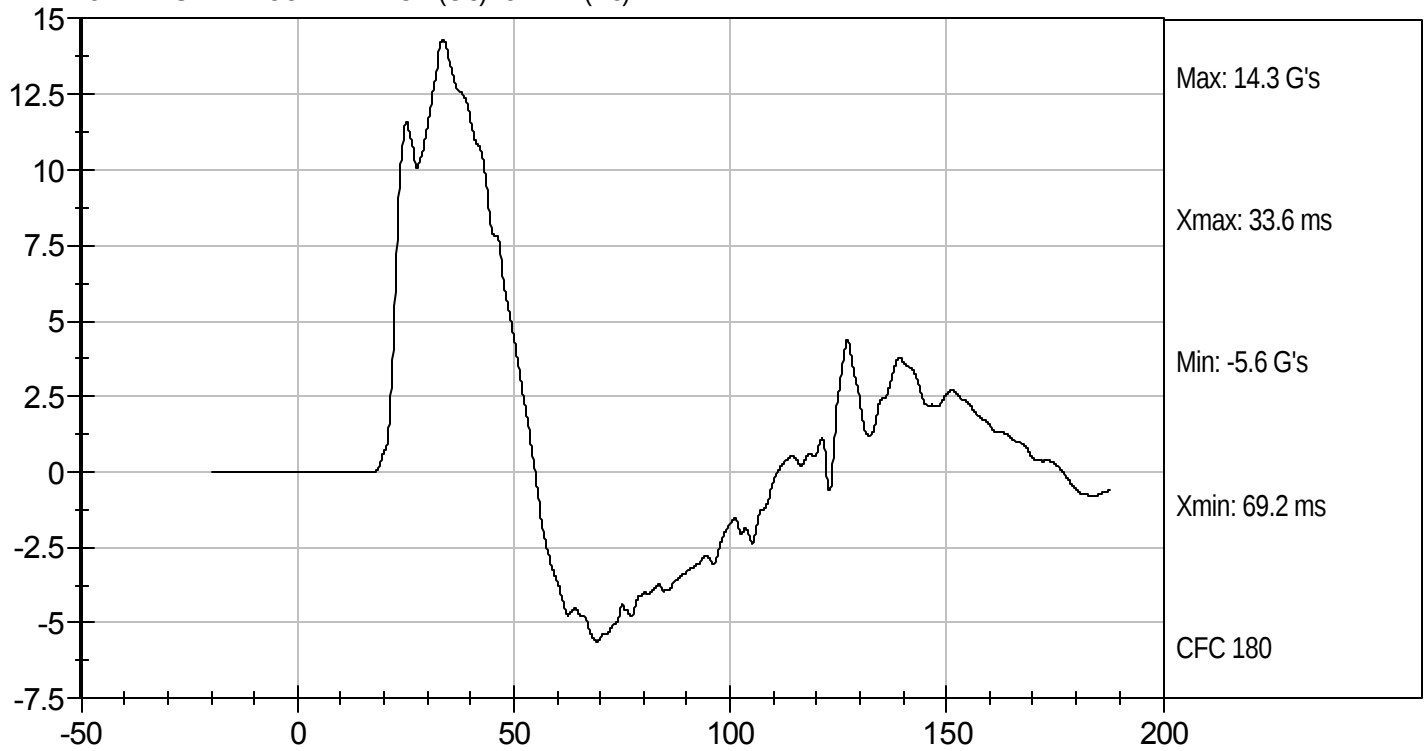




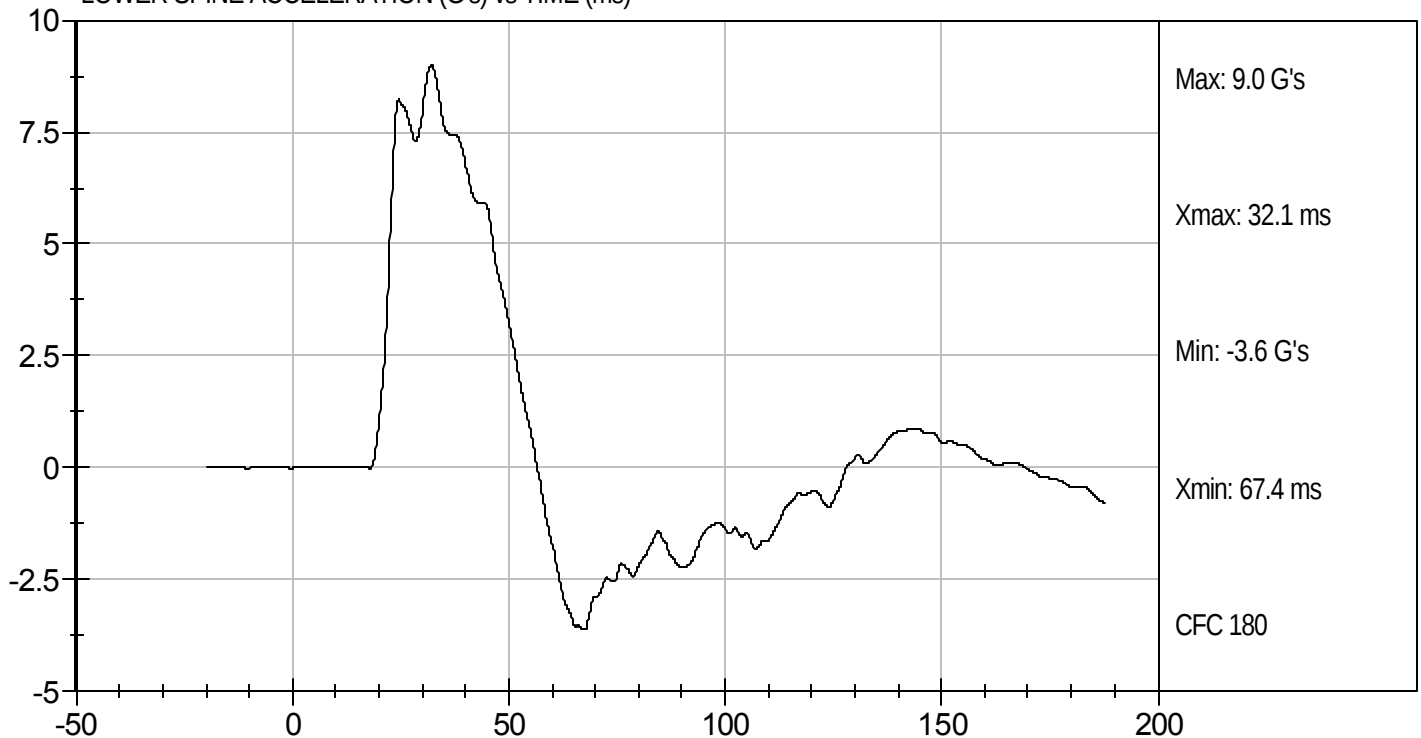
Test Desc: Thorax Without Arm
Component ID: D104305

Test Date: 12/7/10
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: D104306

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.4	Pass
Humidity	%	10 to 70	15	Pass
Impact Velocity	m/s	4.20 to 4.40	4.38	Pass
Peak Impactor Acceleration	G's	12 to 16	14	Pass
Upper Rib Displacement	mm	36 to 47	42	Pass
Lower Rib Displacement	mm	33 to 44	39	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	11	Pass
			Overall Test Results	Pass


Laboratory Technician

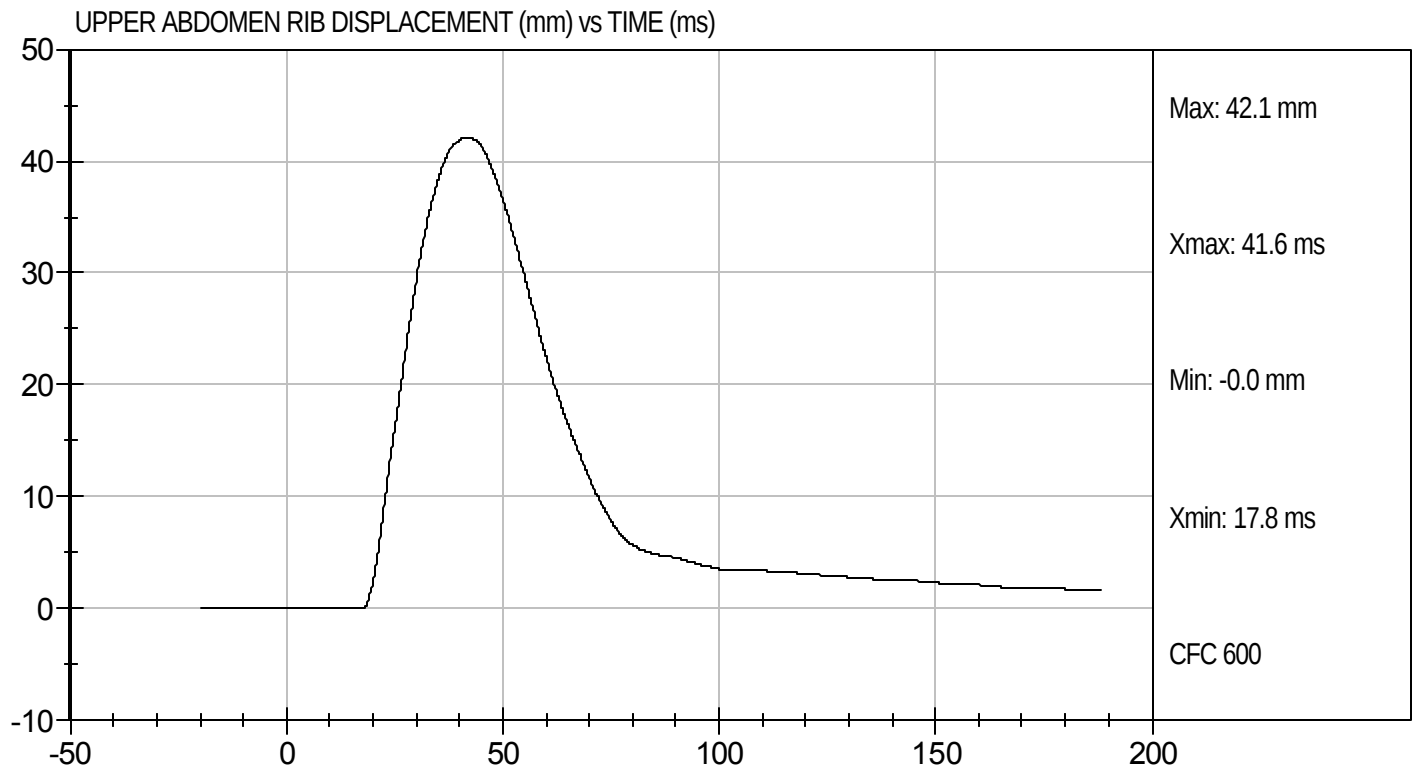
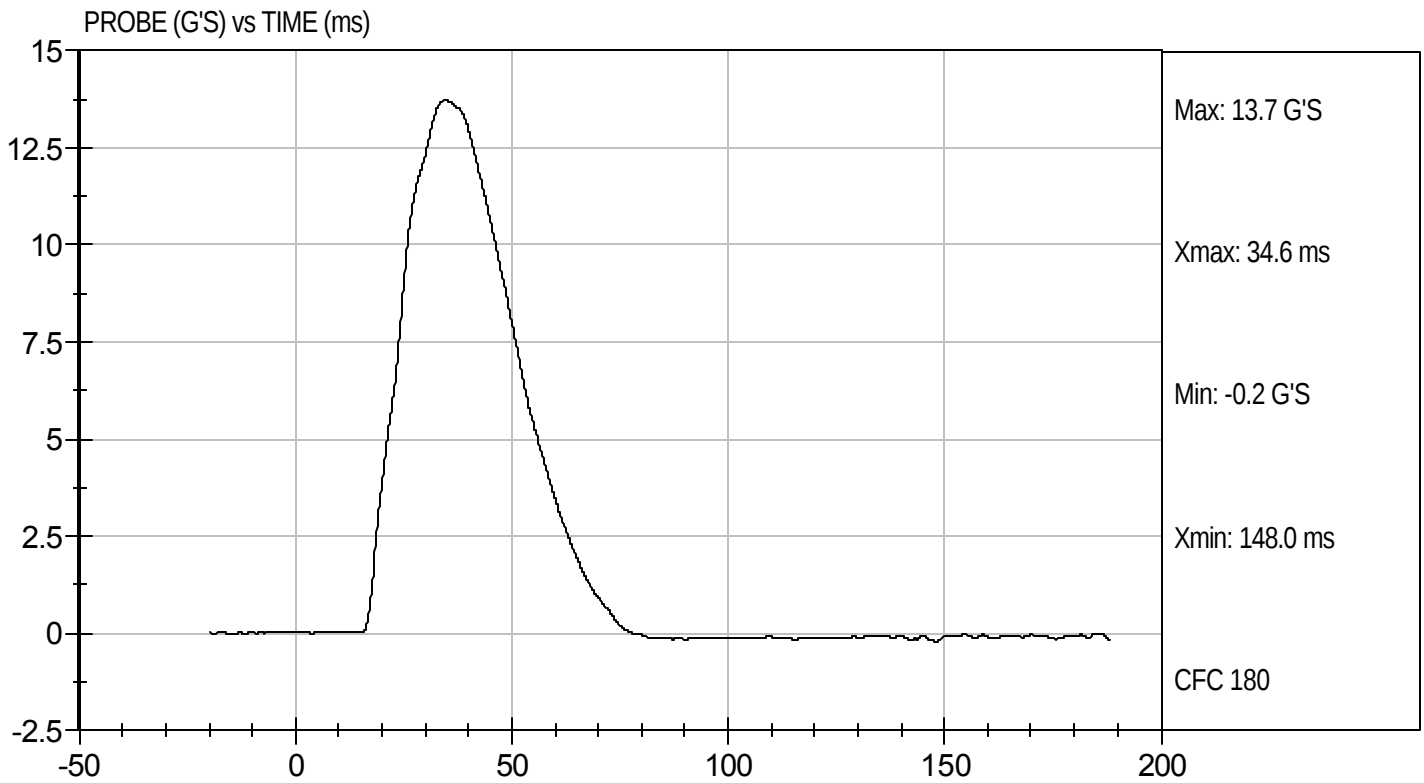
12/7/10
Test Date


Approved By



Test Desc: Abdomen Impact
Component ID: D104306

Test Date: 12/7/10
Velocity: 14.37 ft/s, 4.38 m/s

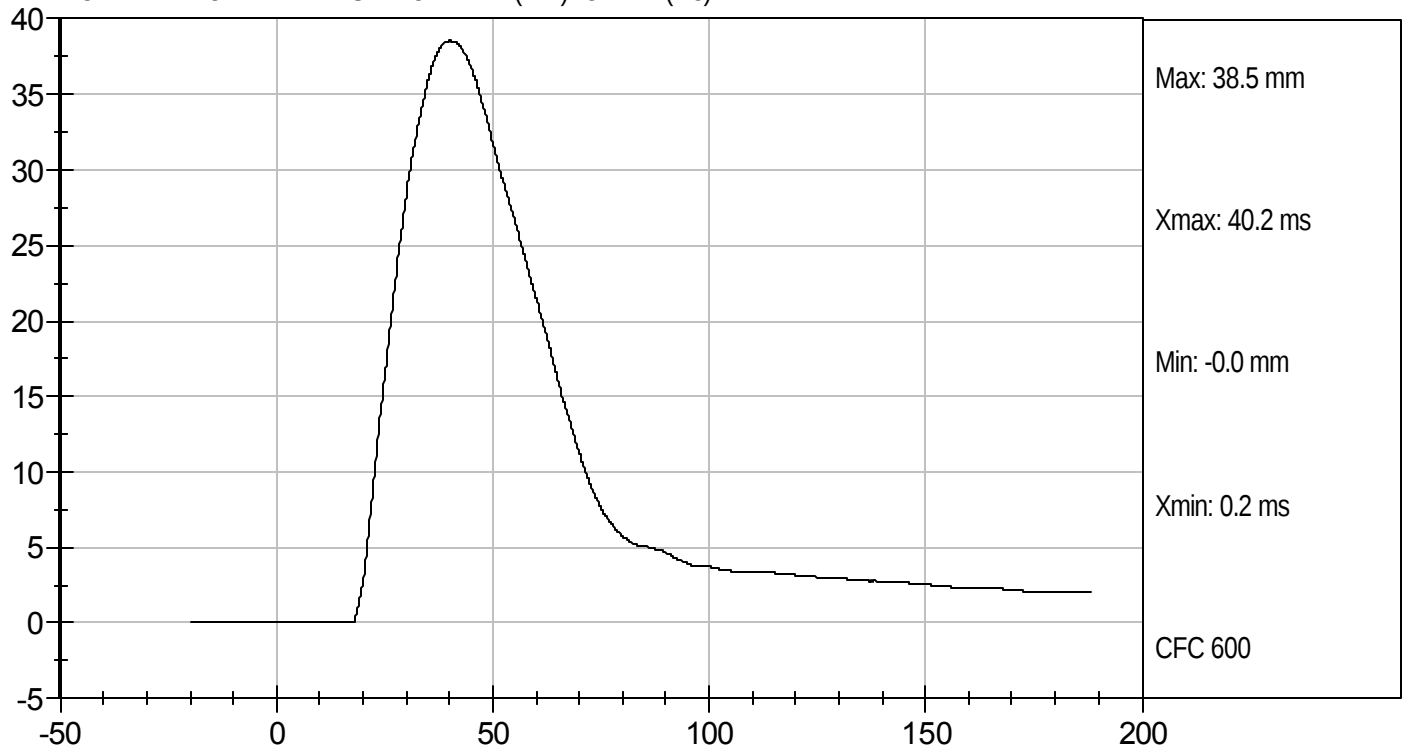




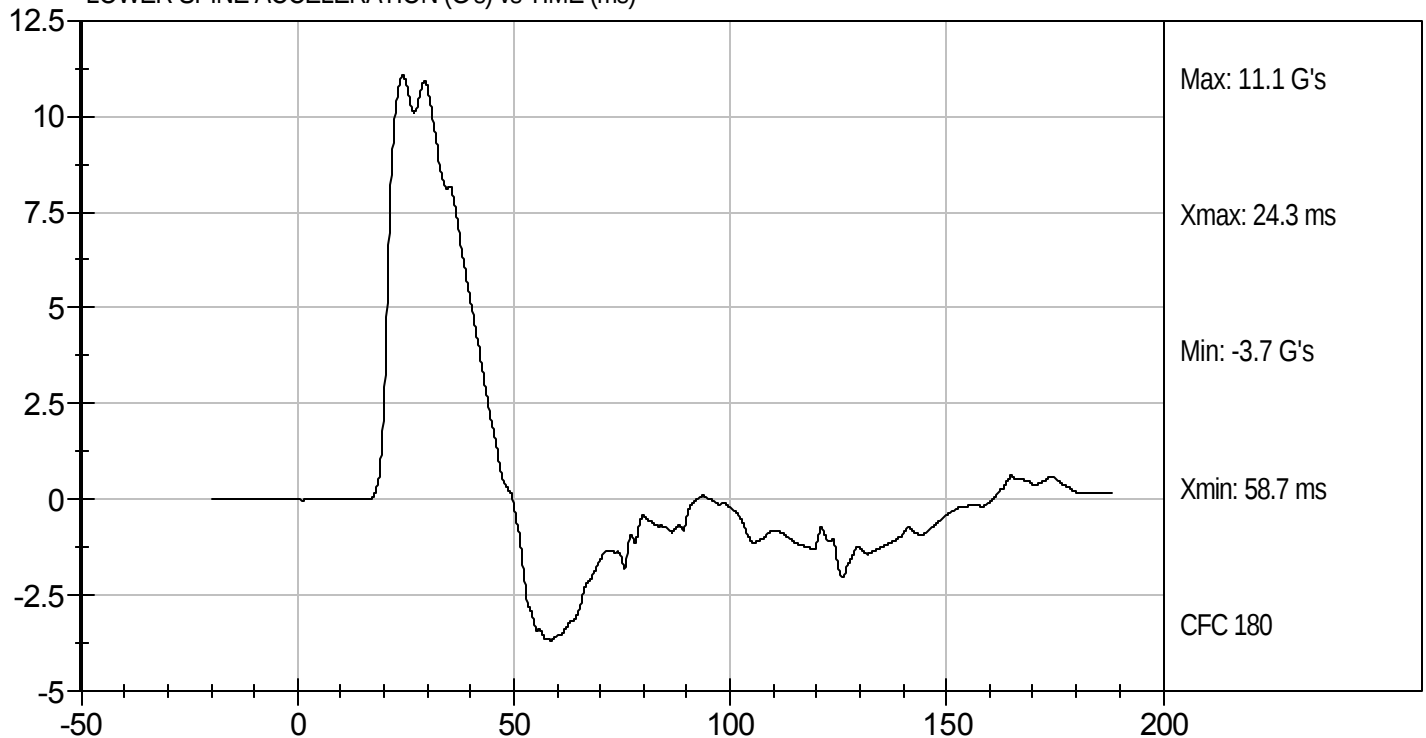
Test Desc: Abdomen Impact
Component ID: D104306

Test Date: 12/7/10
Velocity: 14.37 ft/s, 4.38 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: D104307

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.3	Pass
Humidity	%	10 to 70	14	Pass
Impact Velocity	m/s	6.60 to 6.80	6.64	Pass
Peak Impactor Acceleration	G's	38 to 47	44	Pass
Pelvis Y Acceleration after 6 ms	G's	34 to 42	40	Pass
Peak Acetabulum Force	N	3600 to 4300	4230	Pass
Overall Test Results			Pass	


Laboratory Technician

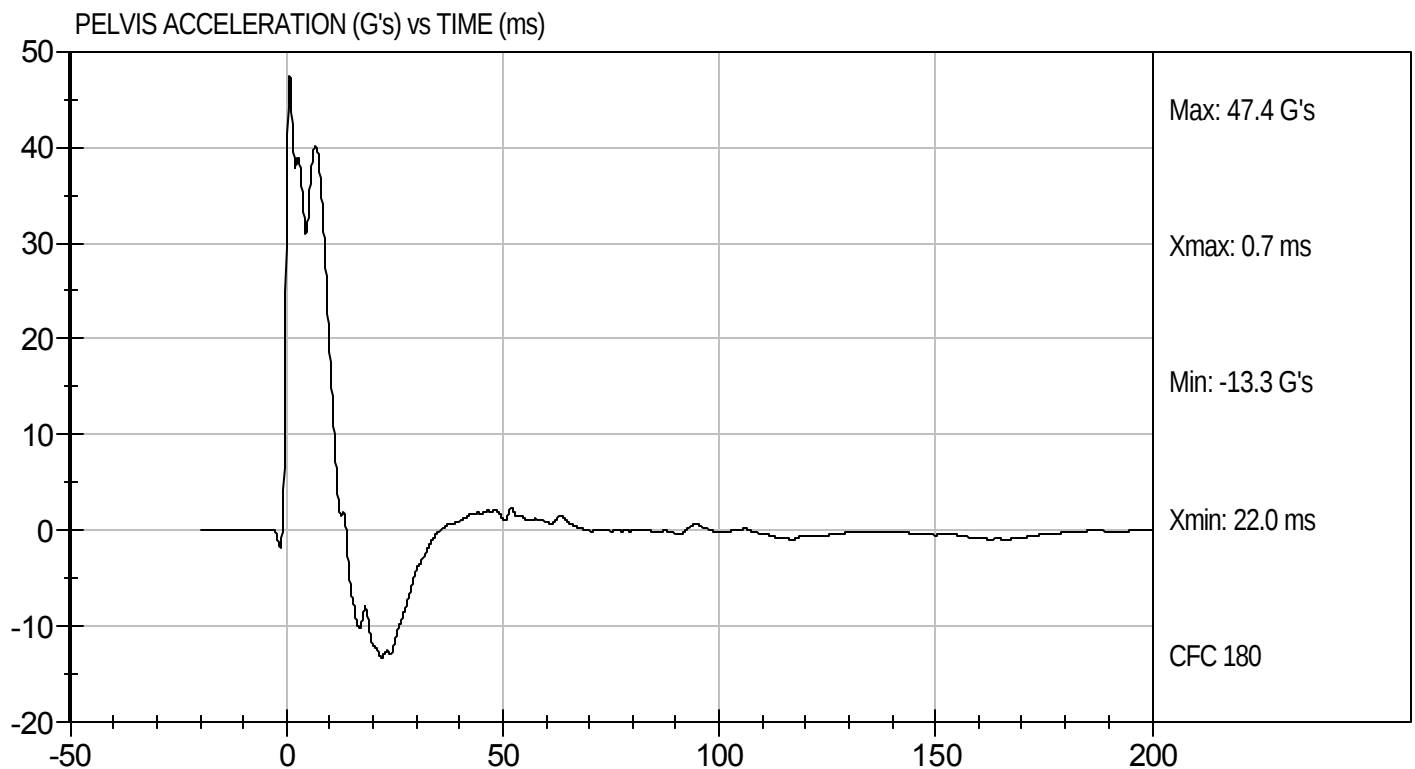
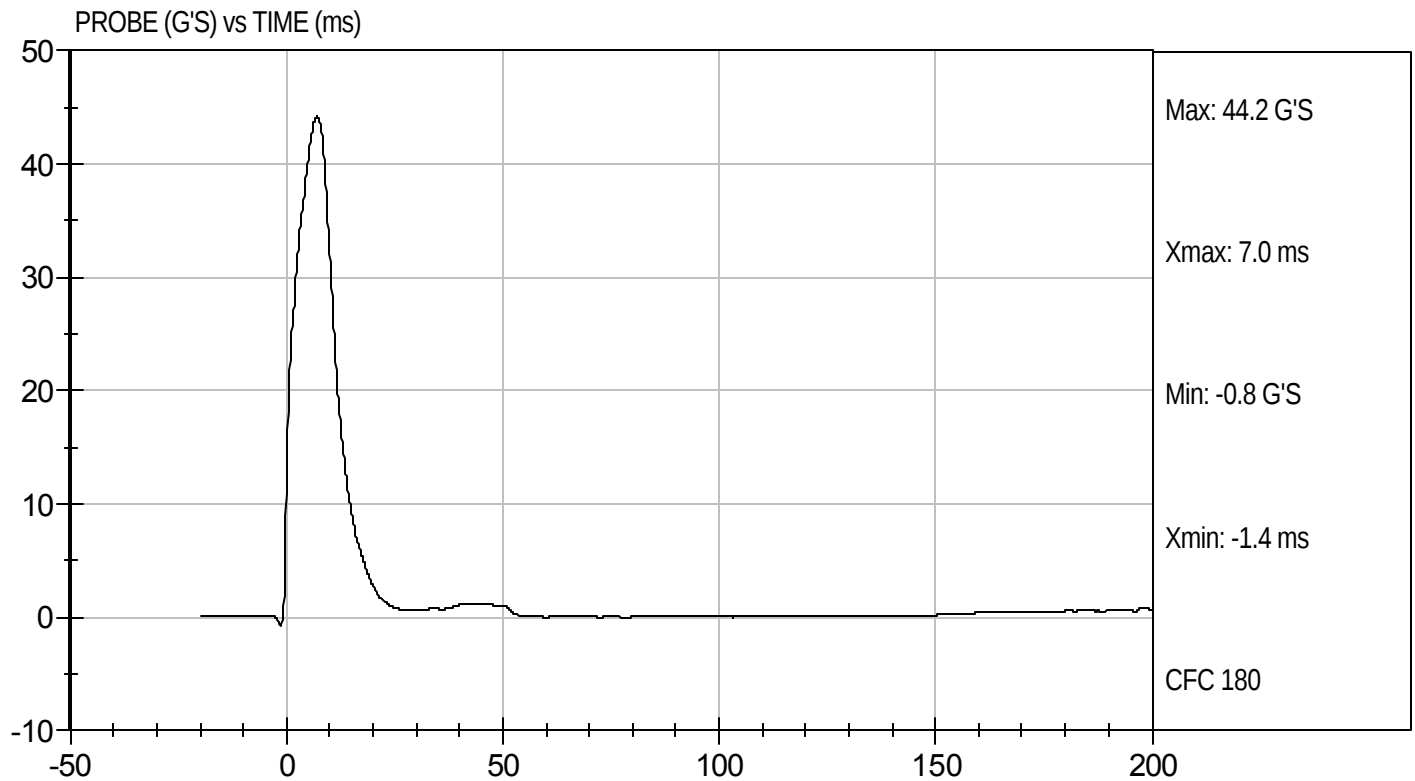
12/7/10
Test Date


Approved By



Test Desc: Pelvis Impact
Component ID: D104307

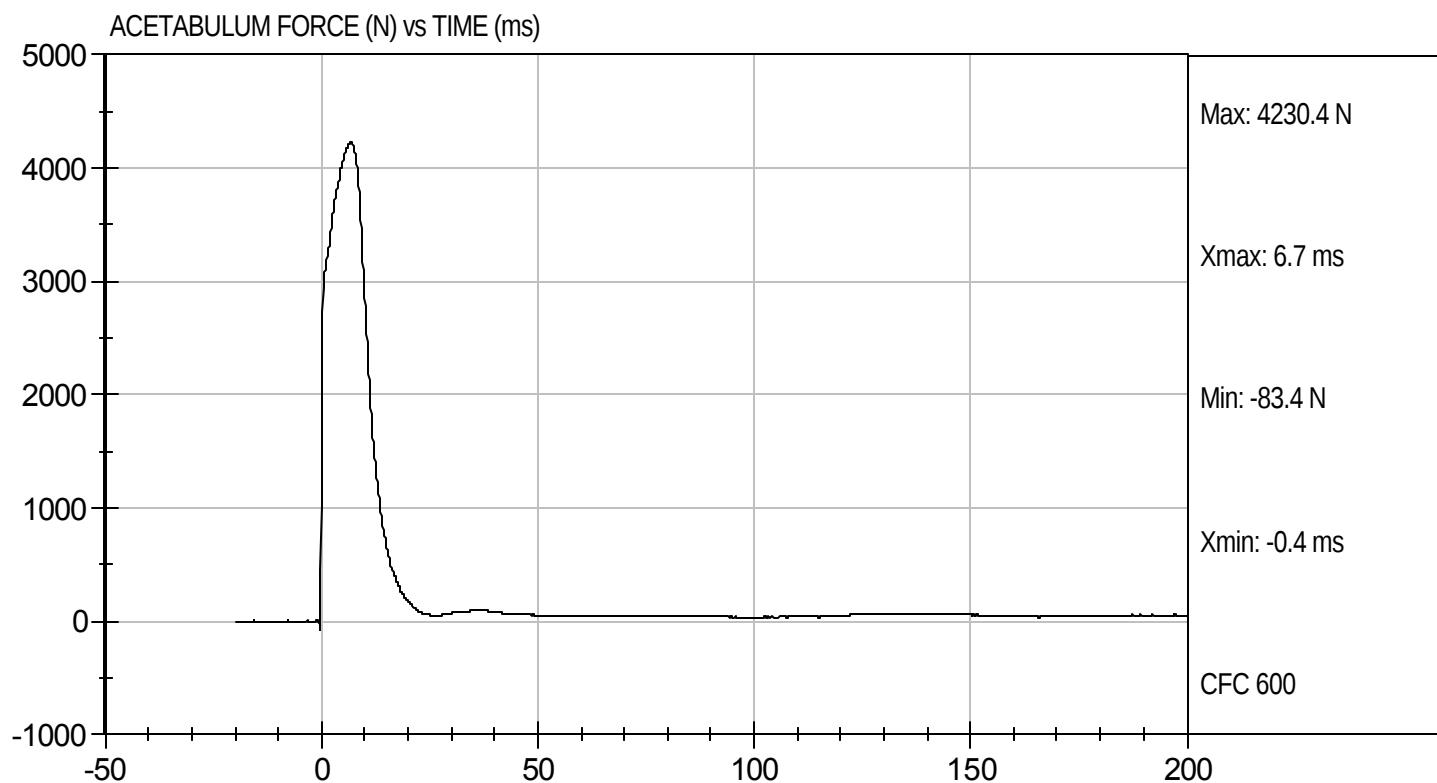
Test Date: 12/7/10
Velocity: 21.80 ft/s, 6.64 m/s





Test Desc: Pelvis Impact
Component ID: D104307

Test Date: 12/7/10
Velocity: 21.80 ft/s, 6.64 m/s



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

ATD Serial No: 296

Test I.D: D104308

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.4	Pass
Humidity	%	10 to 70	14	Pass
Impact Velocity	m/s	4.20 to 4.40	4.38	Pass
Peak Impactor Acceleration	G's	36 to 45	36	Pass
Pelvis Y Acceleration	G's	28 to 39	30	Pass
Peak Pelvis Iliac Force	N	4100 to 5100	4319	Pass
Overall Test Results			Pass	


Laboratory Technician

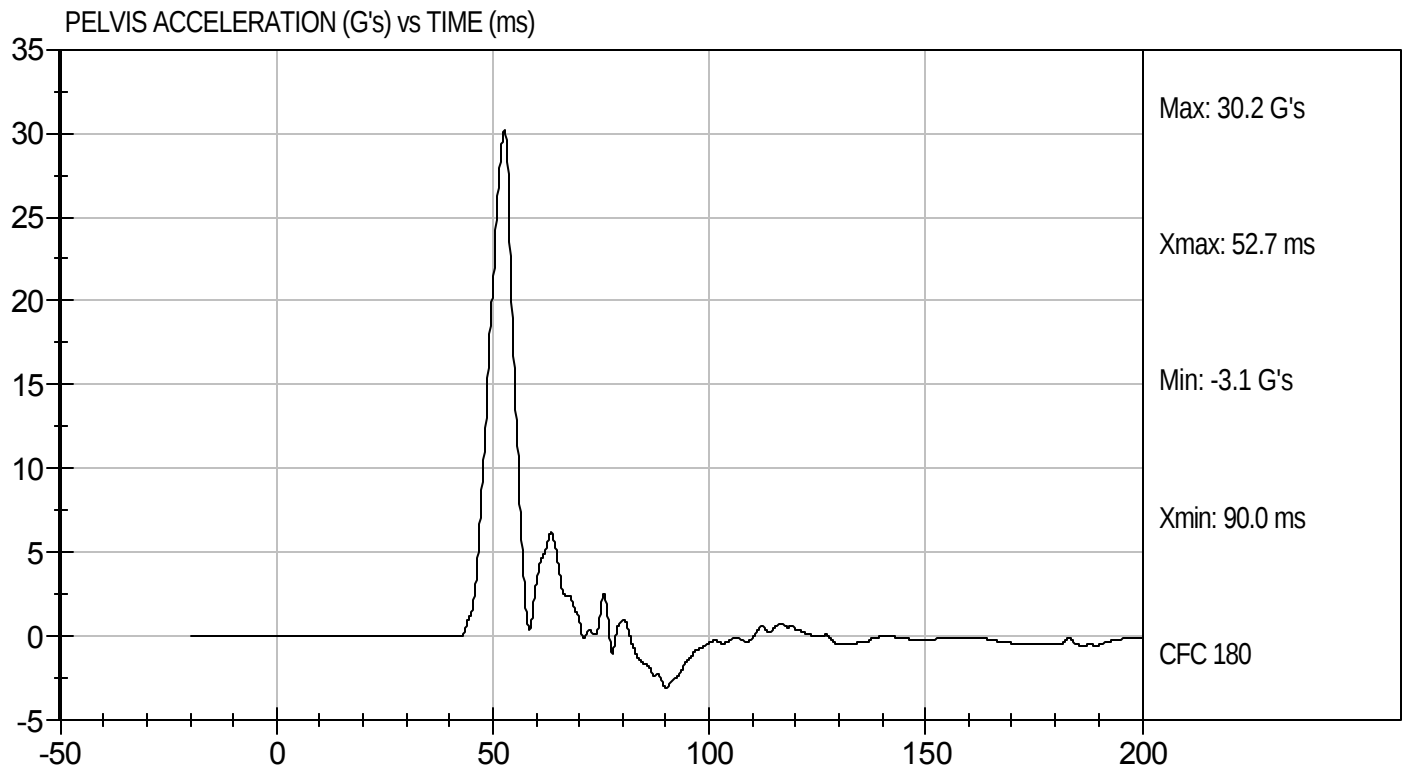
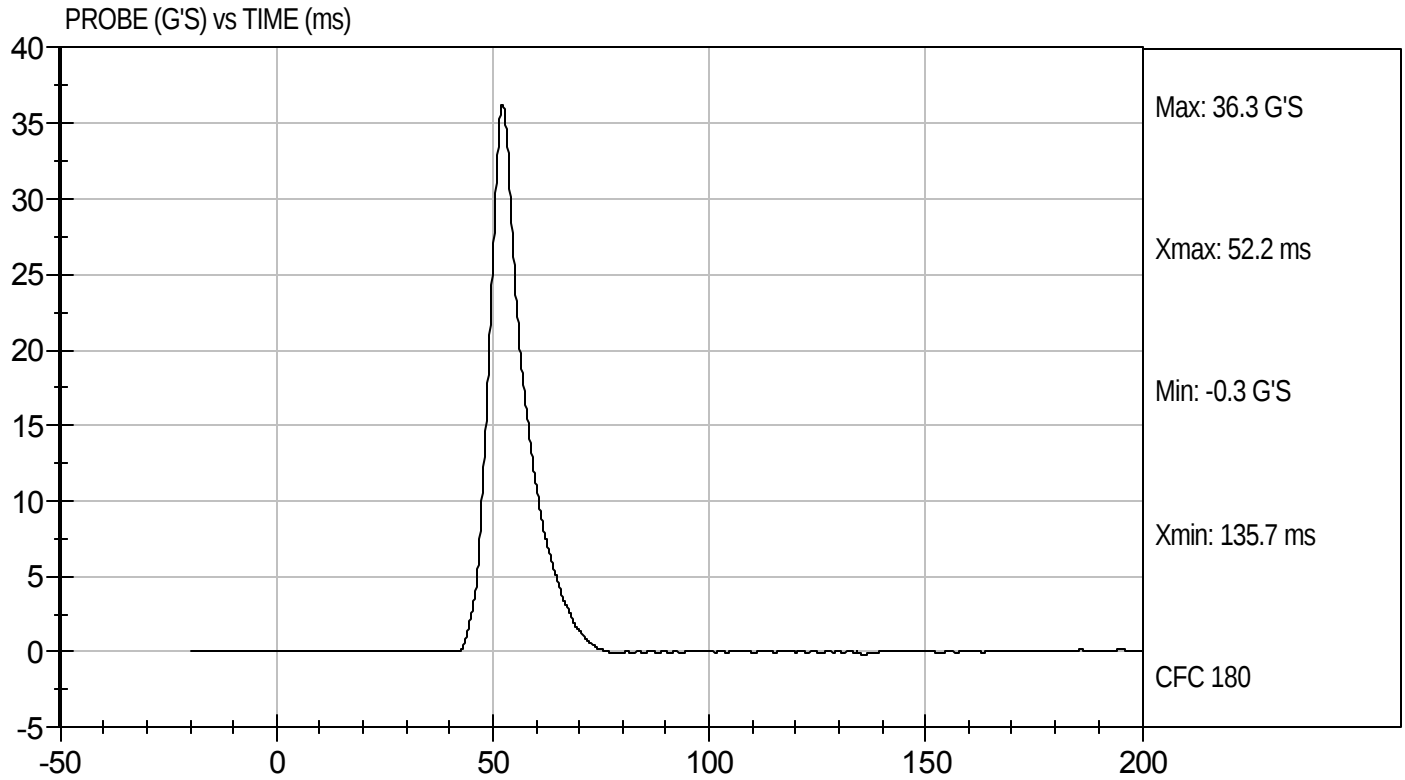
12/7/10
Test Date


Approved By



Test Desc: Iliac Impact
Component ID: D104308

Test Date: 12/7/10
Velocity: 14.37 ft/s, 4.38 m/s





Test Desc: Iliac Impact
Component ID: D104308

Test Date: 12/7/10
Velocity: 14.37 ft/s, 4.38 m/s

