

REPORT NUMBER: SPNCAP-MGA-2011-043

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

**HONDA OF AMERICA MFG., INC.
2011 Honda CR-V LX 5-Dr SUV
NHTSA No.: MB5306**

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



Test Date: November 17, 2010

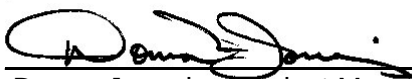
Final Report Date: December 28, 2010

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: December 28, 2010

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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16. Abstract A 32.2 km/h (20 mph), 75° oblique impact NCAP Side Pole Test was conducted on the subject 2011 Honda CR-V LX 5-Dr SUV 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 November 17, 2010. The impact velocity was 32.3 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 413 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>622</td> </tr> <tr> <td style="text-align: left;">Resultant Lower Spine Acceleration</td> <td>Gs</td> <td>82</td> <td>61</td> </tr> <tr> <td style="text-align: left;">Combined Acetabular and Iliac Pelvic Force</td> <td>N</td> <td>5525</td> <td>4801</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	622	Resultant Lower Spine Acceleration	Gs	82	61	Combined Acetabular and Iliac Pelvic Force	N	5525	4801
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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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TABLE OF CONTENTS

<u>Section</u>		<u>Page No.</u>
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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 Honda CR-V LX 5-Dr SUV. 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 Honda CR-V LX 5-Dr SUV. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.3 km/h. The test was conducted by MGA Research Corporation in Burlington, Wisconsin, on November 17, 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	622	61	Iliac Wing	1101
			Acetabular	3803
			Sum	4801

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 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 70 msec.

Left Lower B-Post Y after 10 msec.

Driver Seat Track Y after 20 msec.

Vehicle CG 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 Honda CR-V LX 5-Dr SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB5306
 Test Date: 11/17/2010

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	MB5306	Anti-Lock Brakes	Yes
Model Year	2011	All Wheel Drive	No
Make	Honda	Power Steering	Yes
Model	CR-V	Driver Front Airbag	Yes
Body Style	MPV	Driver Curtain Airbag	Yes
VIN	5J6RE3H30BL000214	Driver Head/Torso Airbag	No
Body Color	Urban Titanium M.	Driver Torso Airbag	Yes
Delivery Date	10/26/10	Driver Torso/Pelvis Airbag	No
Odometer (mi)	110	Driver Pelvis Airbag	No
Odometer (km)	177	Driver Knee Airbag	No
Dealer	Rosen Honda	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)	2.4	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?			Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Honda of America Mfg., Inc.	GVWR (kg)	2070
Date of Manufacture	09/10	GAWR Front (kg)	1050
		GAWR Rear (kg)	1040

VEHICLE SEATING AND WEIGHT CAPACITY DATA

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	2	3		5	
Capacity Weight (VCW) (kg)				385	(A)
DSC x 68.04 kg				340	(B)
Cargo Weight (RCLW) (kg)				45	(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			w/Lever	
Third Row Seat							

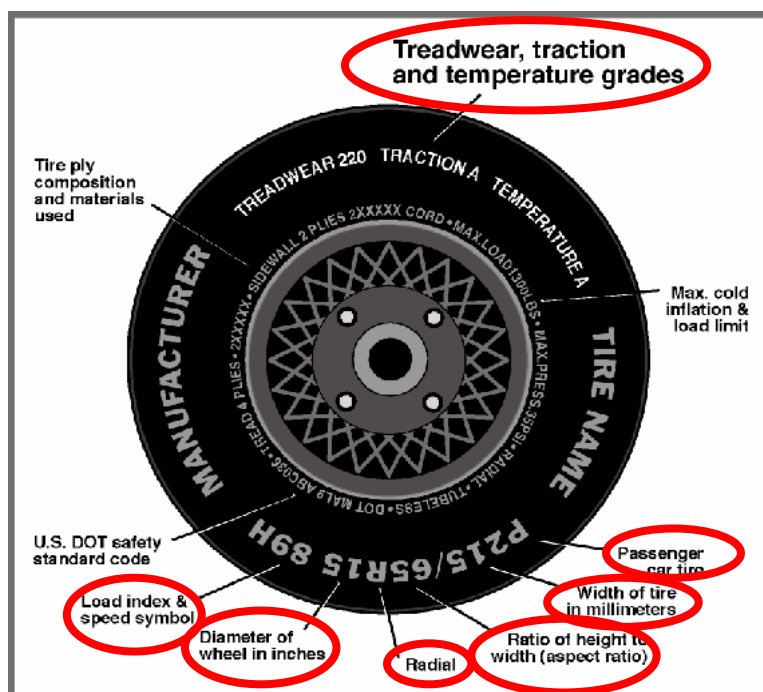
DATA SHEET NO. 1 (continued)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Honda CR-V LX 5-Dr SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB5306
 Test Date: 11/17/2010

VEHICLE TIRE INFORMATION



Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	210	210
Recommended Tire Size	225/65R17	225/65R17
Tire Size on Vehicle	225/65R17	225/65R17
Tire Manufacturer	Bridgestone	Bridgestone
Tire Model	Dueler H/T	Dueler H/T
Treadwear	360	360
Traction	B	B
Temperature Grades	B	B
Tire Plies Sidewall	2	2
Tire Plies Body	6	6
Load Index & Speed Symbol	102T	102T
Tire Material	Rubber	Rubber
DOT Safety Code Right	OB2Y	OB2Y
DOT Safety Code Left	OB2Y	OB2Y

DATA SHEET NO. 1 (continued)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Honda CR-V LX 5-Dr SUV

NHTSA No. MB5306

Test Program: NCAP Side Pole Impact Test

Test Date: 11/17/2010

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	452.7	318.9		475.4	352.9		473.5	359.7	
Right	kg	445.0	322.5		457.7	344.7		451.8	351.5	
Ratio	%	58.3	41.7		57.2	42.8		56.5	43.5	
Totals	kg	897.7	641.4	1539.1	933.1	697.6	1630.7	925.3	711.2	1636.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1539.1	(A)
Actual Weight of 1 P572V ATD (SID-IIs) ATD Used	kg	52.2	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	45	(C)
Calculated Target Vehicle Test Weight (TVTW)	kg	1636.3	(A+B+C)

TEST VEHICLE ATTITUDES AND CG

	Units	As Delivered	As Tested	Fully Loaded
Driver Door Sill Angle (front-to-rear)*	deg	-0.1	-0.1	0.0
Front Passenger Sill Angle (front-to-rear)*	deg	-0.4	-0.3	-0.1
Front Bumper Angle (left-to-right)**	deg	-0.1	-0.1	-0.2
Rear Bumper Angle (left-to-right)**	deg	0.0	0.0	-0.2
Vehicle CG (Aft of Front Axle)	mm	1092	1121	1139
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	2	12	14

*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	29.0

Vehicle components removed to meet target vehicle test weight: Trunk carpet and lid, jack & tools, spare tire, left/right C-pillar covers, right tail light.

TEST VEHICLE IMPACT POINT DATA

Measurement Parameter	Units	Value
Vertical Impact Reference Line (Aft of Front Axle)	mm	1074
Actual Impact Point (Aft of Front Axle)	mm	1071
Impact Point Difference (- forward / + rearward)	mm	-3

DATA SHEET NO. 2

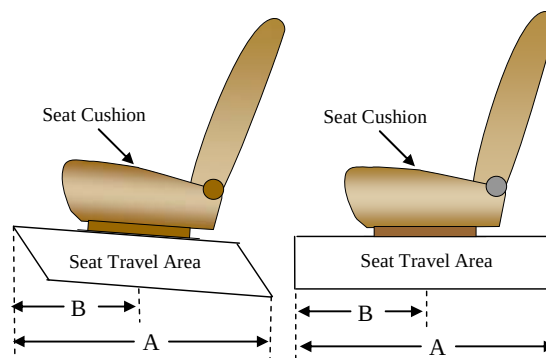
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

Test Vehicle: 2011 Honda CR-V LX 5-Dr SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB5306
 Test Date: 11/17/2010

SEAT FORE/AFT POSITIONS

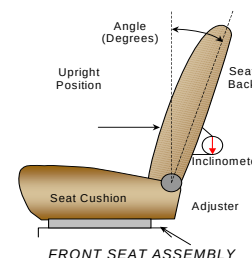
The driver seat was a manual fore/aft adjustable seat with a manual height/angle adjustment. The seat travel was set as specified in Appendix B of the TP dated January 2010. The right front passenger seat was set to match the driver seat. The rear passenger seats were set as specified in Appendix B of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



SEAT FORE/AFT POSITIONING	Total Fore/Aft Travel	Placed in Detent # or Position
Driver Seat	25 detents	0 detent (full forward)
Front Passenger Seat	25 detents	0 detent (full forward)
Rear Seat – Struck Side		full rearward
Rear Seat – Non-Struck Side		full rearward

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	6.0	0 detent (forward locking position)
Front Passenger Seat Back Angle	6.0	0 detent (forward locking position)
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	0 (uppermost as 0)

DATA SHEET NO. 2 (CONTINUED)

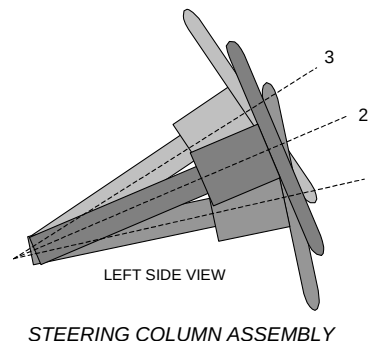
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

Test Vehicle: 2011 Honda CR-V LX 5-Dr SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No. MB5306
Test Date: 11/17/2010

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.

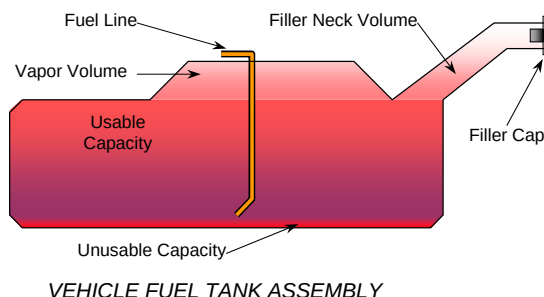


STEERING COLUMN POSITIONING

	Degrees	Fore/Aft Position (mm)
Lowermost - Position 1	64.6	238
Geometric Center – Position 2	62.2	223
Uppermost – Position 3	59.8	208
Telescoping Steering Wheel Travel		30
Test Position	62.6	223

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. After the ignition key is turned from LOCK (0) to ON (II) position, the pump will be filled up for two seconds, and then the pressure is maintained. The fuel pipe is on the left side.



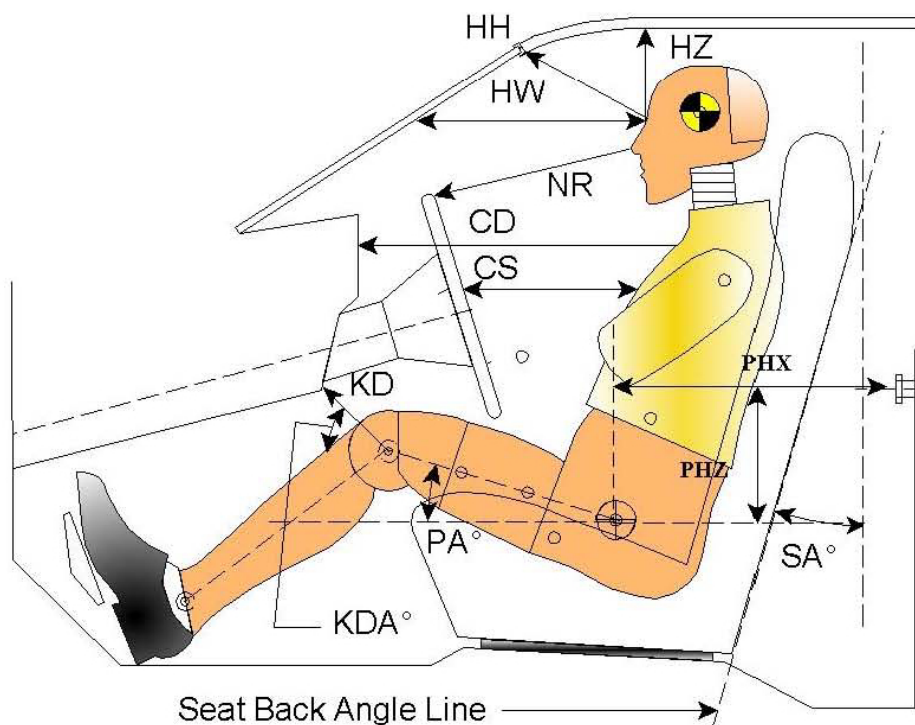
FUEL TANK CAPACITY DATA

	Liters
Usable Capacity of "Standard" Tank	58.0
Usable Capacity of "Optional" Tank	
Usable Capacity of Standard Tank as Specified in Owner's Manual	58.0
Usable Capacity of Optional Tank as Specified in Owner's Manual	
92-94% of Usable Capacity	53.4 to 54.5
Actual Amount of Solvent Used	53.7
1/3 of Usable Capacity	19.3

.DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Honda CR-V LX 5-Dr SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB5306
 Test Date: 11/17/2010

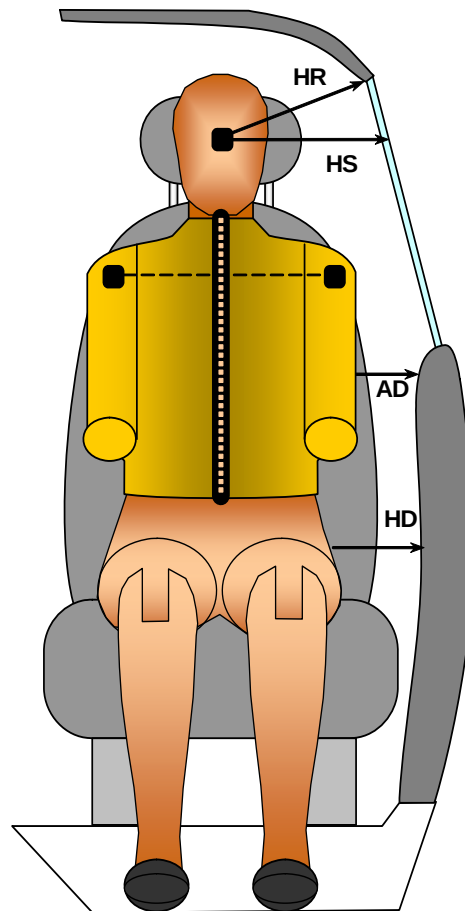


Code	Measurement Description	Driver S/N 296	
		Length (mm)	Angle (°)
HH	Head to Header	273	
HW	Head to Windshield	595	
HZ	Head to Roof	199	
NR	Nose to Rim	261	
CD	Chest to Dash	440	
CS	Chest to Steering Wheel	183	
KDL/KDAL	Left Knee to Dash	83	26.5
KDR/KDAR	Right Knee to Dash	62	27.3
PA	Pelvic Angle		19.3
PHX	H-Point to Striker (X-Axis)	382	
PHZ	H-Point to Striker (Z-Axis)	73	
SA	Seat Back Angle		6.0

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Honda CR-V LX 5-Dr SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB5306
 Test Date: 11/17/2010



FRONT VIEW OF DUMMY

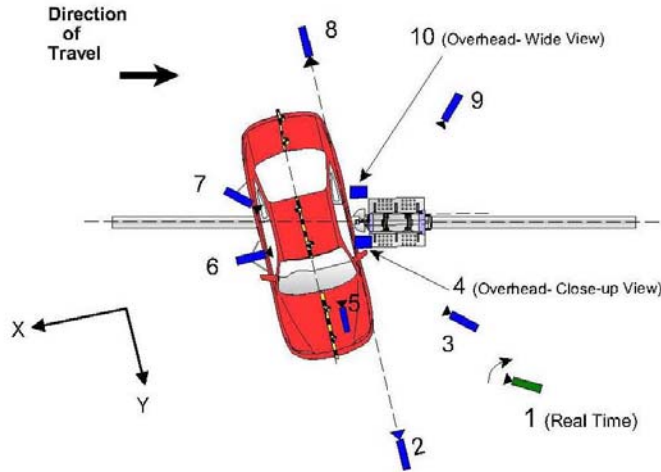
Code	Measurement Description	Driver S/N 296
		Length (mm)
HR	Head to Side Header	241
HS	Head to Side Window	354
AD	Arm to Door	162
HD	H-Point to Door	213

DATA SHEET NO. 5

CAMERA LOCATIONS AND DATA

Test Vehicle: 2011 Honda CR-V LX 5-Dr SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB5306
 Test Date: 11/17/2010



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	20	5590	-1580	24	1000
3	Impact Side 45° Forward	-1890	4120	-1670	20	1000
4	Overhead Closeup	30	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	-1530	24	1000
9	Impact Side 45° Rearward	-3530	-2840	-1620	20	1000
10	Overhead Wide View	150	0	-4960	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

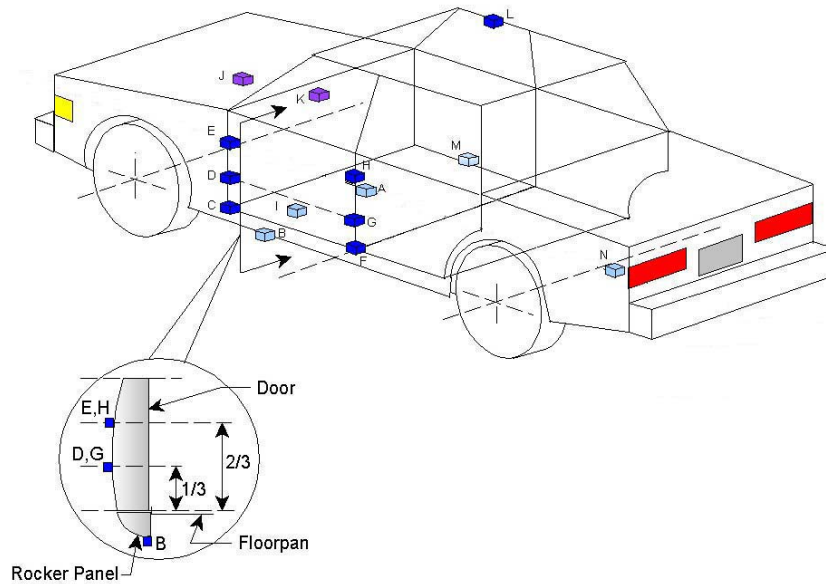
	Number of Channels
Driver Dummy	16
Vehicle Structure	21
Pole Load Cells – Not used	8
Contact Switches	3
Airbag Timing	2
Total No. of Data Channels	50

DATA SHEET NO. 6

VEHICLE ACCELEROMETER DATA

Test Vehicle: 2011 Honda CR-V LX 5-Dr SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB5306
 Test Date: 11/17/2010



	Accelerometer Location			
	ID	Coordinates (mm)		
		X	Y	Z
A	Vehicle CG	2483	70	-340
	Vehicle CG Sensor	2483	70	-340
B	Left Floor Sill	2565	-728	-330
C	A Pillar Sill	3106	-728	-335
D	A Pillar Low	3056	-725	-645
E	A Pillar Mid	3145	-820	-855
F	B Pillar Sill	2035	-728	-350
G	B Pillar Low	2013	-720	-665
H	B Pillar Mid	2010	-725	-900
I	Driver Seat	2278	-545	-482
L	Engine Top	3813	0	-870
J	Firewall	3610	0	-965
K	Right Roof	2275	610	-1620
M	Right Floor Sill	2527	728	-325
N	Rear Floorpan	770	0	-420

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 Honda CR-V LX 5-Dr SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No. MB5306
Test Date: 11/17/2010



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 Honda CR-V LX 5-Dr SUVNHTSA No. MB5306Test Program: NCAP Side Pole Impact TestTest Date: 11/17/2010**TEST DUMMY INFORMATION AND CONTACT**

Description	Driver
Dummy Type / Serial No.	SID-IIs / 296
Head Contact	Curtain Airbag, Headrest
Upper Torso Contact	Side Airbag
Lower Torso Contact	Door Panel
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 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	3
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	32.3
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.5

DATA SHEET NO. 9

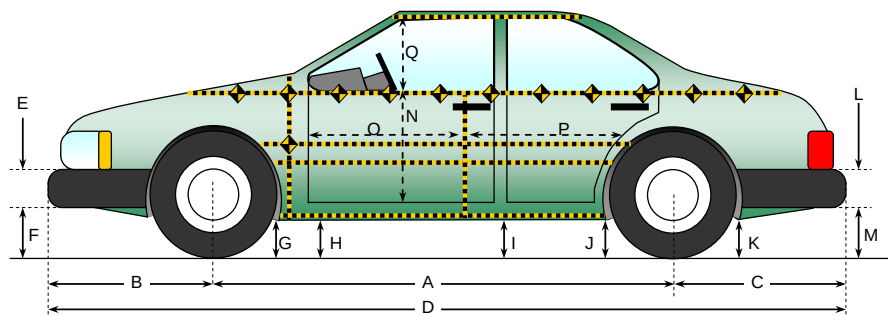
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2011 Honda CR-V LX 5-Dr SUV

NHTSA No. MB5306

Test Program: NCAP Side Pole Impact Test

Test Date: 11/17/2010



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

LEFT SIDE VIEW

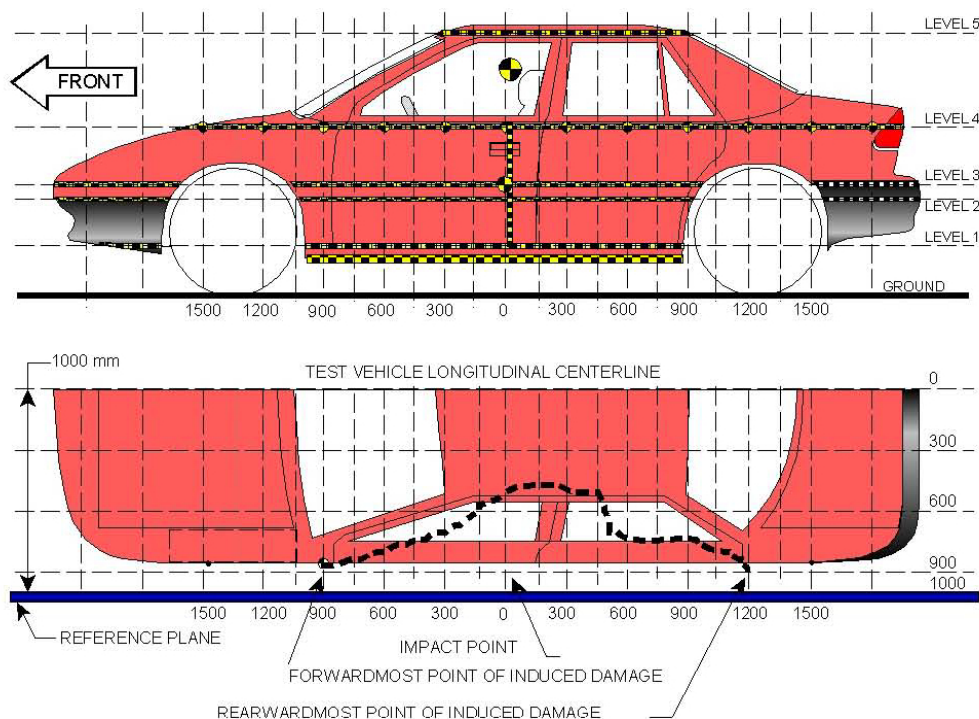
VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2620	2502	118
B	Front Axle to FSOV	912	921	-9
C	Rear Axle to RSOV	1014	1018	-4
D1	Total Vehicle Length at Left Side	3504	3355	149
D2	Total Vehicle Length at Centerline	4546	4441	105
D3	Total Vehicle Length at Right Side	3504	3512	-8
E	Front Bumper Thickness	90	90	0
F	Front Bumper Bottom to Ground	235	260	-25
G	Sill Height at Front Wheel Well	273	274	-1
H	Sill Height at Front Door Leading Edge	275	265	10
I	Sill Height at B Pillar	282	264	18
J1	Sill Height at Rear Wheel Well	284	318	-34
J2	Pinch Weld Height at Rear Wheel Well	286	294	-8
K	Sill Height Aft of Rear Wheel Well	308	309	-1
L	Rear Bumper Thickness	90	90	0
M	Rear Bumper Bottom to Ground	360	348	12
N	Sill Height to Window Bottom Sill	785	775	10
O	Front Door Leading Edge to Impact CL	630	620	10
P	Rear Door Trailing Edge to Impact CL	1275	1280	-5
Q	Front Window Opening	474	427	47
R	Right Side Length	3504	3512	-8
S	Left Side Length	3504	3355	149
T	Vehicle Width at B Post	1800	1664	136

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Honda CR-V LX 5-Dr SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB5306
 Test Date: 11/17/2010



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	323
2	Occupant H-Point	744
3	Mid-Door	718
4	Window Sill	1088
5	Window Top	1575

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

Test Vehicle: 2011 Honda CR-V LX 5-Dr SUV
 Test Program: NCAP Side Pole Impact Test

NHTSA No. MB5306
 Test Date: 11/17/2010

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-1200				317					314					-3	
-1050				299					310					11	
-900				286					290					4	
-750		192	191	278			200	203	281			8	12	3	
-600	251	208	207	270		270	244	243	282		19	36	36	12	
-525	256	214	214	267		304	283	282	317		48	69	68	50	
-450	259	215	216	266		344	314	314	350		85	99	98	84	
-375	257	214	215	264		367	370	369	397		110	156	154	133	
-300	257	212	213	260		425	421	420	444		168	209	207	184	
-225	260	211	212	260		469	473	473	491		209	262	261	231	
-150	260	210	212	259		515	527	528	543		255	317	316	284	
-75	257	210	210	259		563	584	584	600		306	374	374	341	
0	258	209	210	259	489	612	621	623	625	671	354	412	413	366	182
75	260	209	210	258	485	583	616	617	623	660	323	407	407	365	175
150	255	208	209	257	481	524	580	581	580	650	269	372	372	323	169
225	252	208	209	256	478	476	508	509	529	631	224	300	300	273	153
300	256	208	209	257	478	442	449	450	475	619	186	241	241	218	141
375	258	208	209	257	477	412	413	412	415	607	154	205	203	158	130
450	254	208	209	258	478	380	372	371	389	594	126	164	162	131	116
525	255	209	210	258	478	358	333	333	387	582	103	124	123	129	104
600	260	210	210	258	479	335	316	318	374	564	75	106	108	116	85
750	259	211	212	260	480	283	287	288	348	544	24	76	76	88	64
900	264	213	212	262	481	238	257	258	325	523	-26	44	46	63	42
1050	260	209	207	269	484	190	210	218	300	508	-70	1	11	31	24
1200		191	190	270	489		167	169	280	510		-24	-21	10	21
1350				277	494				254	507				-23	13
1500				282	501				287	508				5	7
1650				289	511				293	516				4	5

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 Honda CR-V LX 5-Dr SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No. MB5306
Test Date: 11/17/2010

MAXIMUM CRUSH DATA

	Level 1	Level 2	Level 3	Level 4	Level 5
Maximum Crush (mm)	354	412	413	366	182
Distance From Impact (mm)	0	0	0	0	0

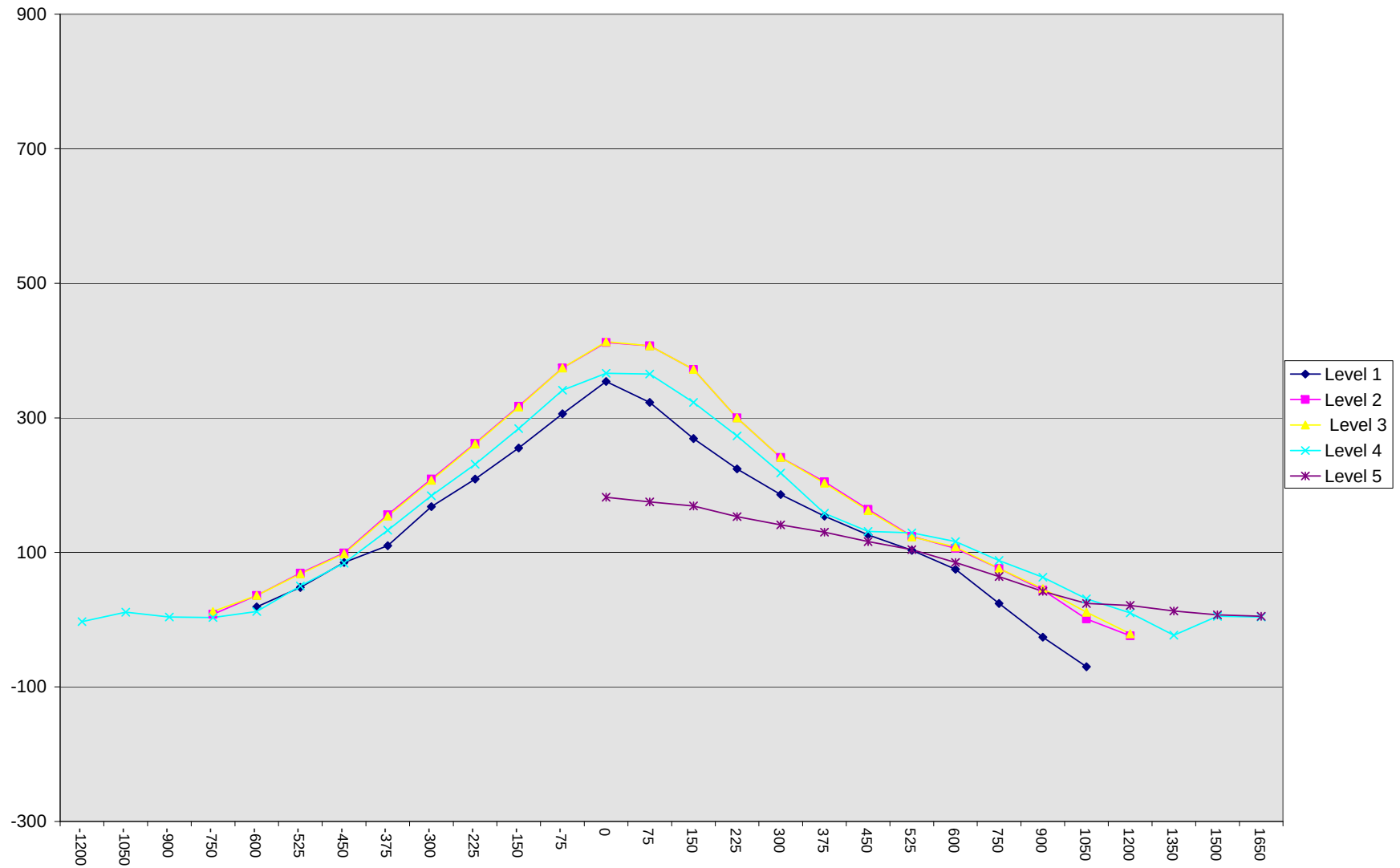
Note: Pre-test measurements are taken when the vehicle is in the "As Tested" weight condition. Vehicle measurements forward of the vertical impact reference line are negative. The crush profile grid is established prior to test based on an estimated impact point. The final distance to impact is determined 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 Honda CR-V LX 5-Dr SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No. MB5306
Test Date: 11/17/2010

20



DATA SHEET NO. 11

FMVSS 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2011 Honda CR-V LX 5-Dr SUV

NHTSA No. MB5306

Test Program: NCAP Side Pole Impact Test

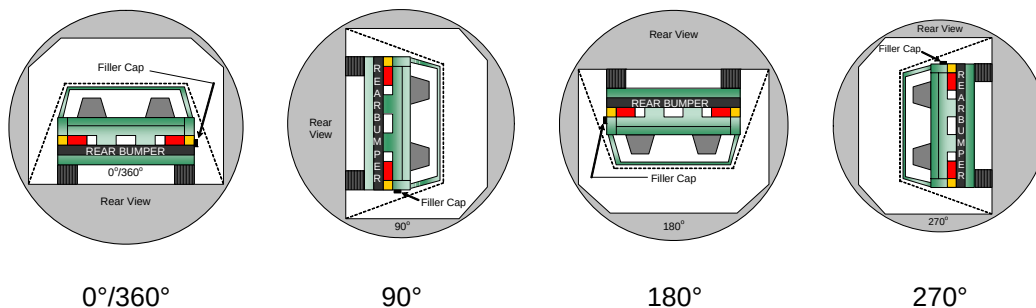
Test Date: 11/17/2010

Test Time: 10:07 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°	110	300	410
90° to 180°	111	300	411
180° to 270°	103	300	403
270° to 360°	112	300	412

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

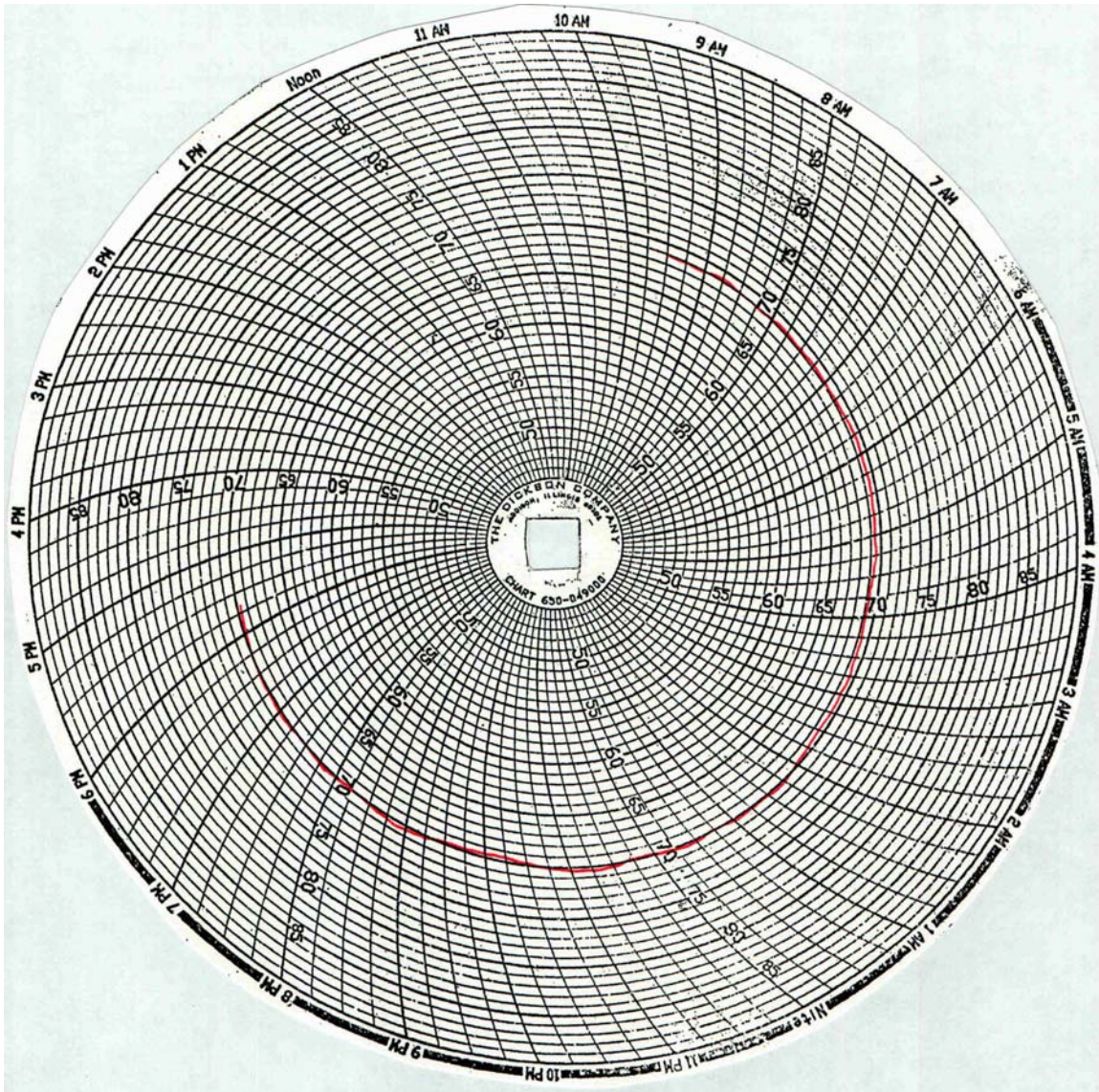
Test Phase	Spillage Location
0° to 90°	
90° to 180°	
180° to 270°	
270° to 360°	

DATA SHEET NO. 12

DUMMY/VEHICLE TEMPERATURE STABILIZATION DATA

Test Vehicle: 2011 Honda CR-V LX 5-Dr SUV
Test Program: NCAP Side Pole Impact Test

NHTSA No. MB5306
Test Date: 11/17/2010



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
Photo No. 70. Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-37



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



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



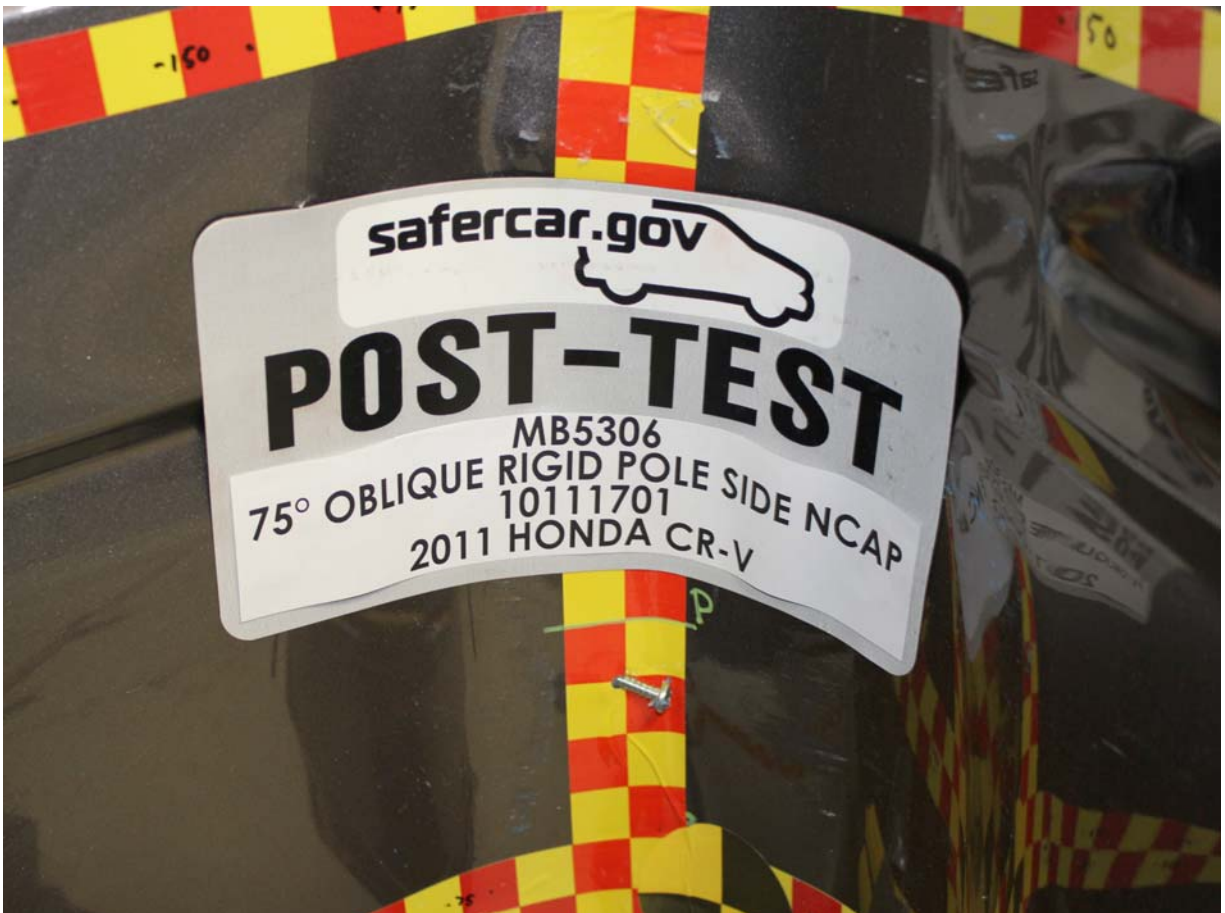
Pre-Test Left Side View of Pole Positioned Against Side of Vehicle at Ideal Impact Point



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



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 (including head restraint) 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



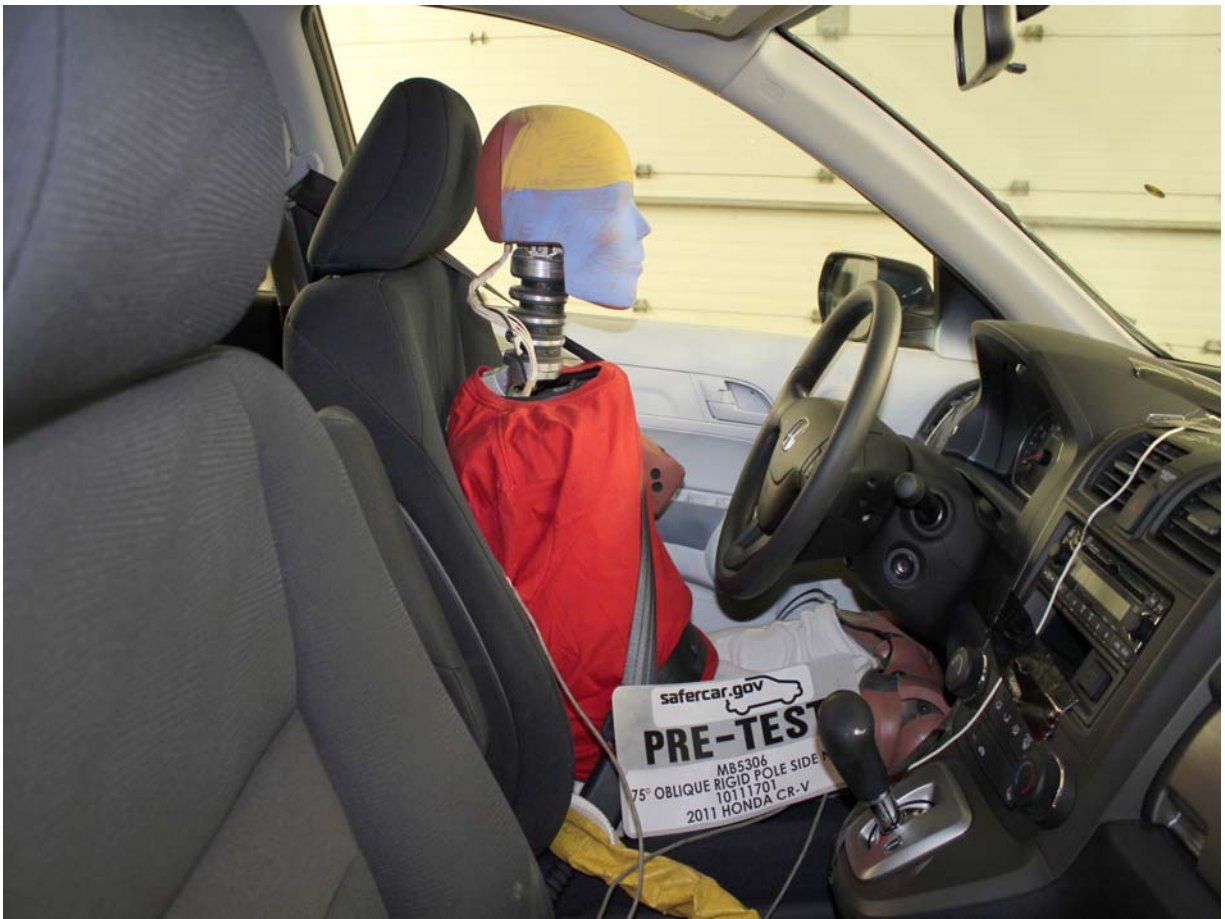
Pre-Test Close-Up View of Driver Seat Back or Head Restraint Showing Seat Back Test Position



Pre-Test Dummy and Door Clearance View



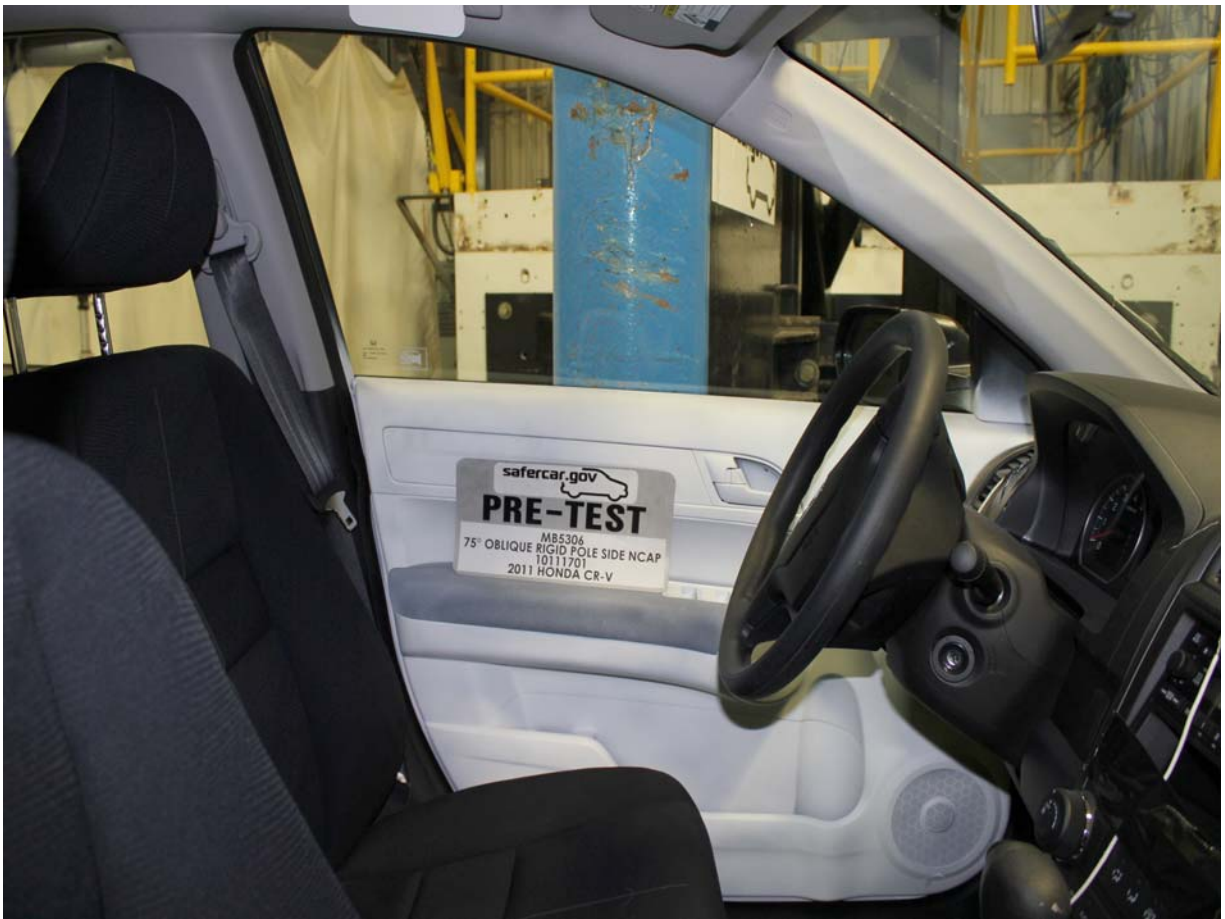
Post-Test Dummy and Door Clearance View



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

PHOTOGRAPH NOT APPLICABLE

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



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



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

PHOTOGRAPH NOT APPLICABLE

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



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



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



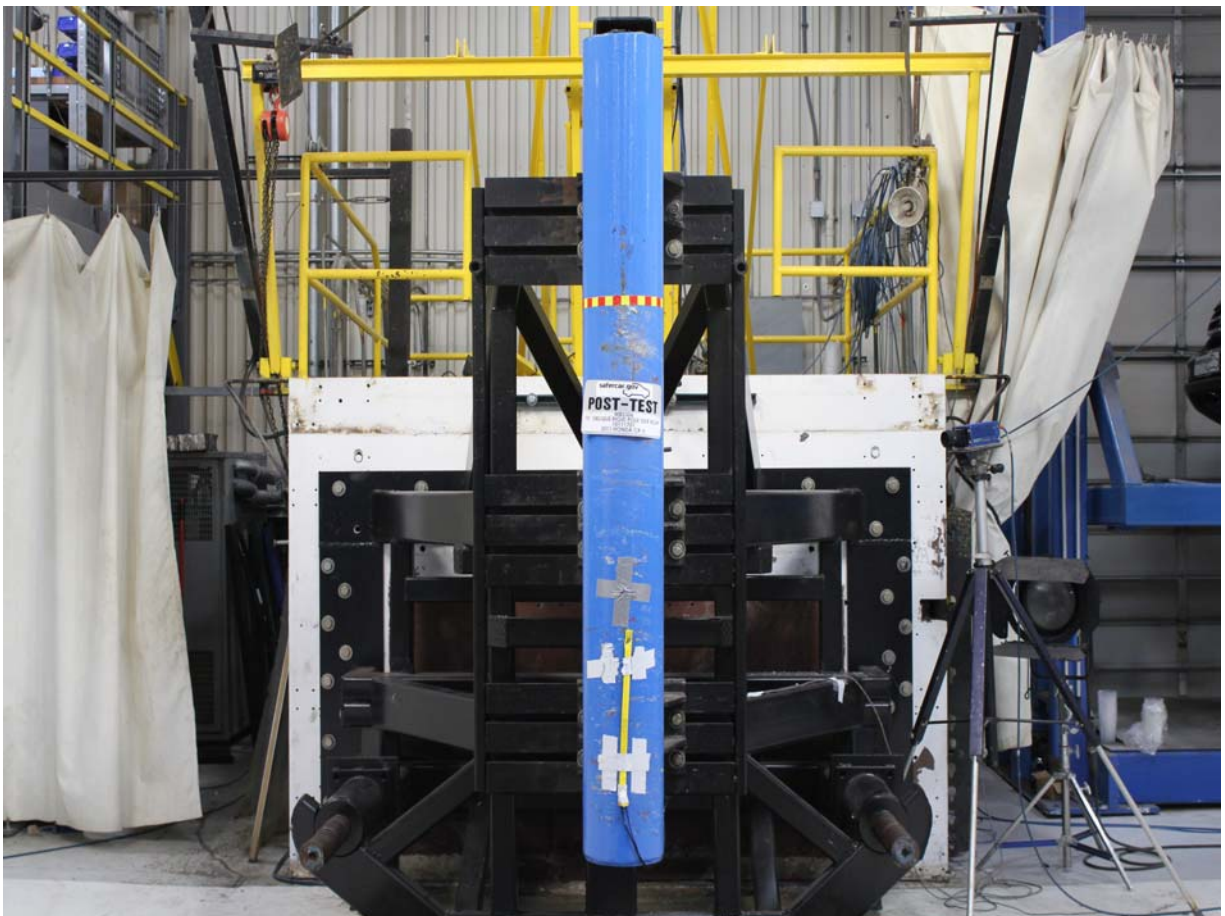
Close-Up View of Vehicle's Certification Label



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



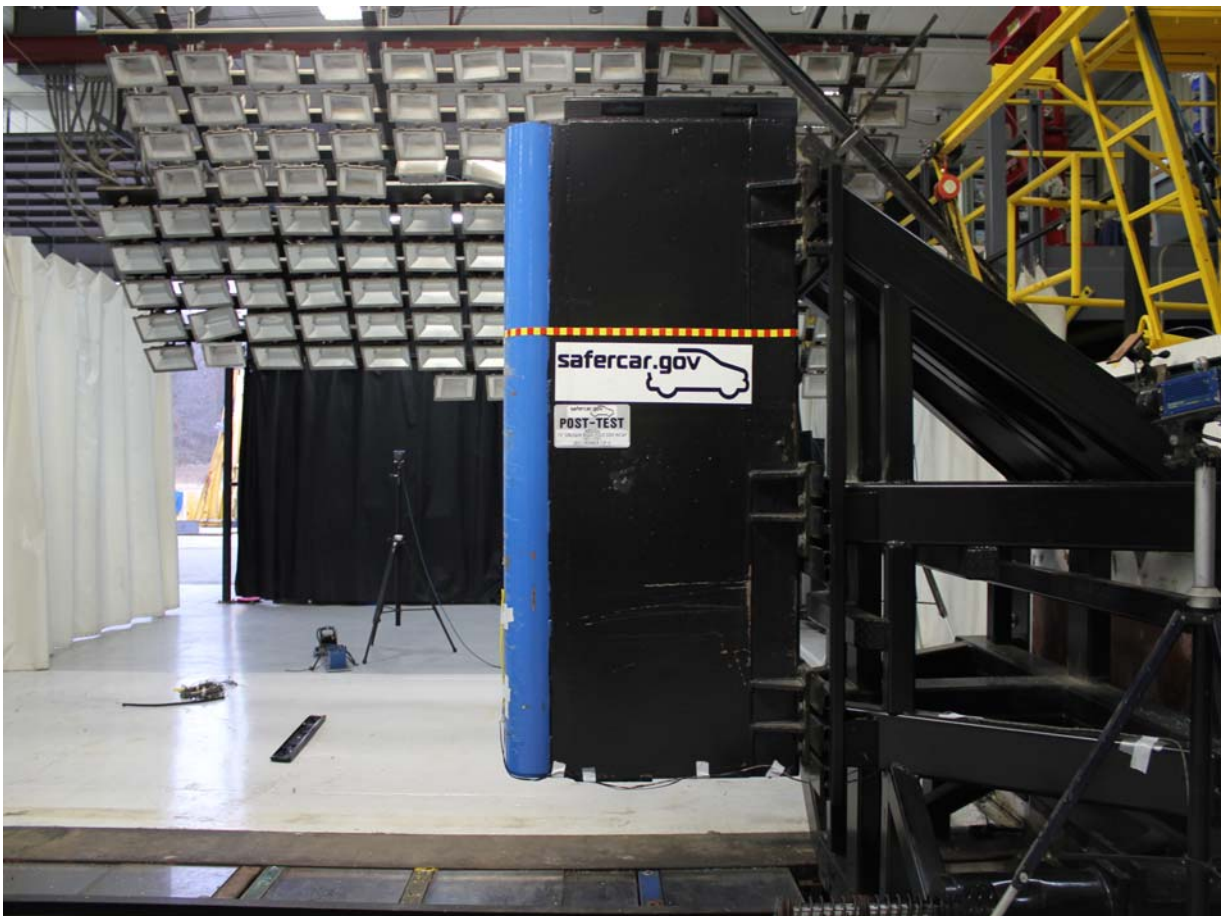
Pre-Test Pole Barrier Front View



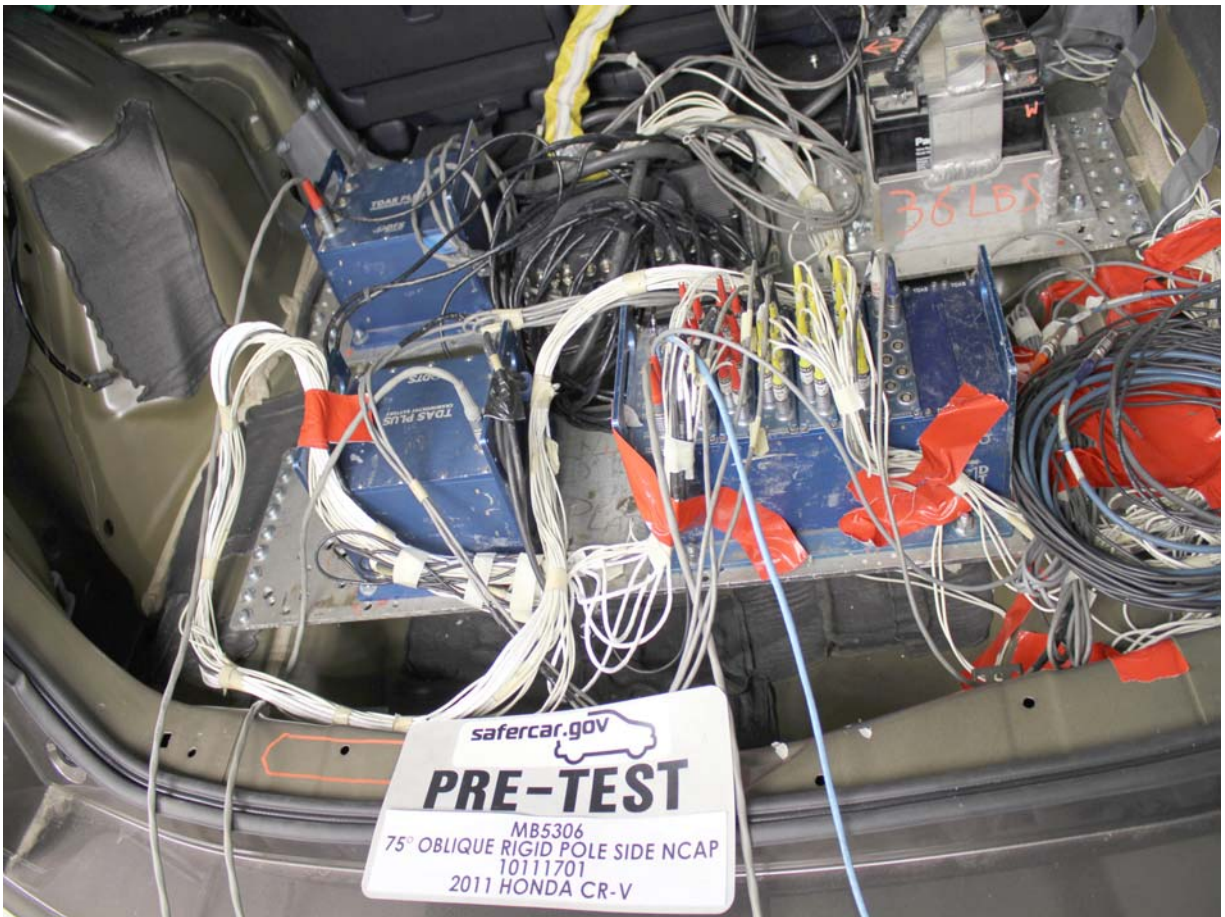
Post-Test Pole Barrier Front View



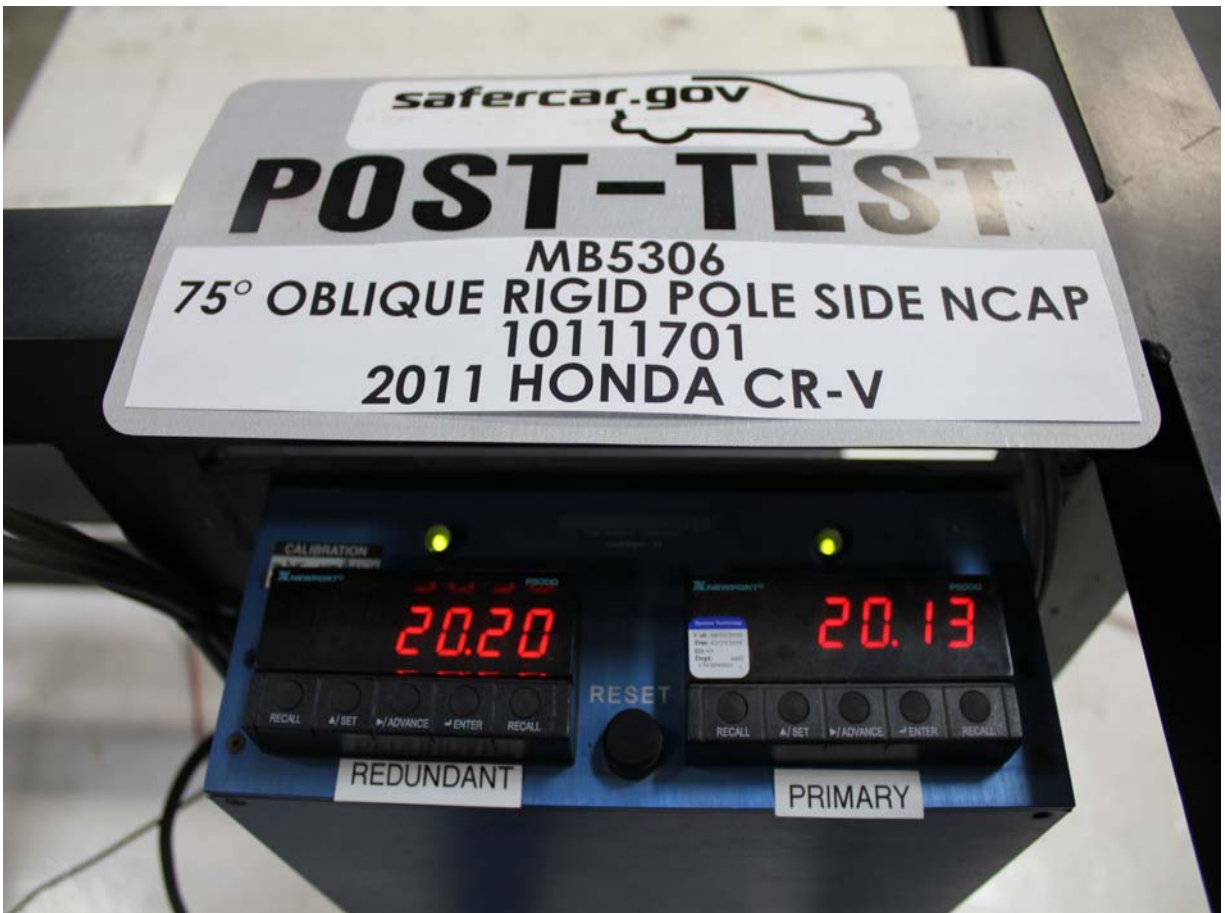
Pre-Test Pole Barrier Side View



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 CR-V 5DR 2WD LX
VEHICLE NUMBER: 5J6RE3H30BL000214
ENGINE NUMBER: K24Z6-2000247 EXT: URBAN TITANIUM M.
CONTROL NUMBER: 933726 INT: BLACK

STANDARD EQUIPMENT AT NO EXTRA COST

- TECHNICAL FEATURES ***
 - 180hp 2.4-ltr DOHC 16-V valve
 - 1-VEEC 4-Cylinder Engine
 - 5-Speed Automatic Transmission with Grade Logic Control
 - 4-Wheel Disc Brakes
 - Front MacPherson Strut Suspension
 - Rear Multi-Link Suspension
 - Drive-by-Wire Throttle System
 - Variable-Assist Rack-and-Pinion Power Steering
 - Front and Rear Stabilizer Bars
 - Immobilizer Theft-Deterrent System
- SAFETY FEATURES ***
 - Driver's and Front Passenger's Dual-Stage Airbags (SRS)
 - Driver's and Front Passenger's Side Airbags
 - Side Curtain Airbags with Rollover Sensor
 - Vehicle Stability Assist (VSA)
 - Anti-Lock Braking System (ABS)
 - Electronic Brake Distribution (EBD)
 - Brake Assist
 - 3-Point Seat Belts
 - Active Front Head Restraints
 - Side-Impact Door Beams
 - Tire Pressure Monitoring System
 - ACE Body Structure
 - Front and Rear Crumple Zones
 - LATCH System for Child Seats

- INTERIOR FEATURES ***
 - AM/FM/CD Audio System with 6 Speakers
 - MP3/Auxiliary Input Jack
 - Air Conditioning with Air Filtration System
 - Driver's Seat Height Adjustment
 - 60/40 Split Sliding Fold and Tumble Rear Seats
 - Fold-Down Rear Seat Center Armrest
 - Power Windows and Door Locks
 - Driver's Auto Up/Down Window
 - 12-Volt Power Outlets
 - Cruise Control
 - Floor Mats
 - Folding Center Tray Table
 - Sunshade Holder with Conversation Mirror
 - Maintenance Minder System
- EXTERIOR FEATURES ***
 - 17" x 6.5" Steel Wheels
 - P225/65 R17 All-Season Tires
 - Intermittent Windshield Wipers
 - Power Door Mirrors
 - Rear Wiper with Washer
 - Rear Window Defroster
 - Remote Entry System

Manufacturer's Suggested Retail Price
\$21,695.00
Full Tank of Fuel
No Charge

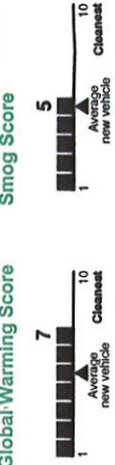
H35804

Destination and Handling
780.00
TOTAL VEHICLE PRICE
(Includes Pre-Delivery Service)
\$22,475.00

License and title fees, state and local taxes and dealer options and accessories are not included in the manufacturer's suggested retail price.

Environmental Performance

Protect the environment, choose vehicles with higher scores:



Vehicle emissions are a primary contributor to global warming and smog. Scores are determined by the California Air Resources Board based on this vehicle's measured emissions. Please visit www.DriveClean.ca.gov for more information. AIR RESOURCES BOARD

CASTLE HONDA
6900 W. DEMPSTER STREET
MORTON GROVE, IL 60053
PORT OF ENTRY: EAST LIBERTY
DELIVERY POINT: SCHAUMBURG
SHIP#: 619-019
ROW/SPACE: TRUCK
TRANS METHOD: TRUCK
VIN: 5J6RE3H30BL000214
ORIG. DLR: 207385
REF. NO: 20397
HN CODE: HN-8790
EMISSION: 50 STATE
DEALER: 207385



EPA Fuel Economy Estimates

CITY MPG
21
Expected range for most drivers
17 to 23 MPG

Estimated Annual Fuel Cost
\$1,876
based on 15,000 miles at \$3.00 per gallon

HIGHWAY MPG
28
Expected range for most drivers
23 to 33 MPG

Combined Fuel Economy
24
This Vehicle

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

10 24 32
All SUVs

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



PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS CARLINE
U.S./Canadian Parts Content: **60 %**
Major Sources of Foreign Parts Content:
JAPAN 35 %

NOTE: Parts content does not include final assembly, distribution or other non-parts costs.

GOVERNMENT SAFETY RATINGS

Frontal Crash	Driver Passenger	Not Rated	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 Rear seat	Not Rated	Not Rated
Star ratings based on the risk of injury in a side impact.			

Rollover
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).

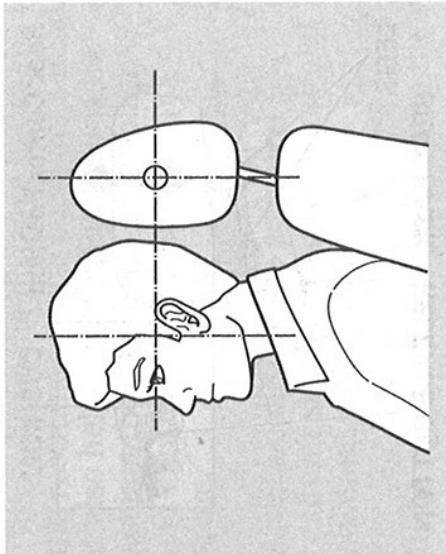
www.safercar.gov or 1-888-327-4236

FOR THIS VEHICLE
Final Assembly Point:
USA
Country of Origin: Engine:
U.S.A.
Transmission:
U.S.A.

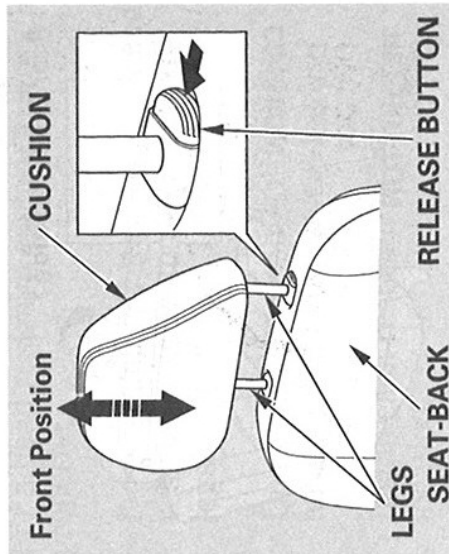
Head Restraints

See page 14 for important safety information and a warning about improperly positioning head restraints.

Your vehicle is equipped with head restraints in all seating positions to help protect you and your passengers from the likelihood of whiplash and other injuries.



They are most effective when you adjust them so the center of the back of the occupant's head rests against the center of the restraint.

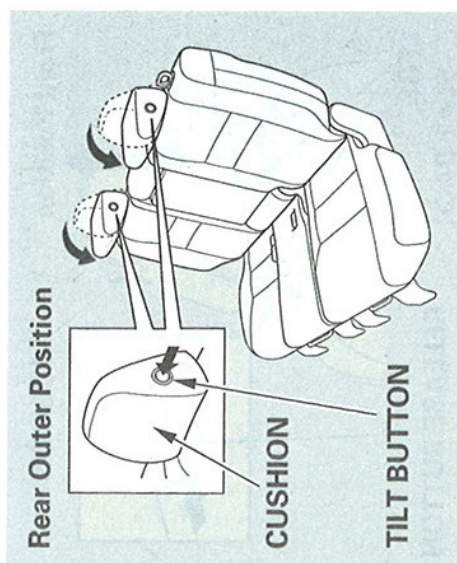


Adjusting the Head Restraint

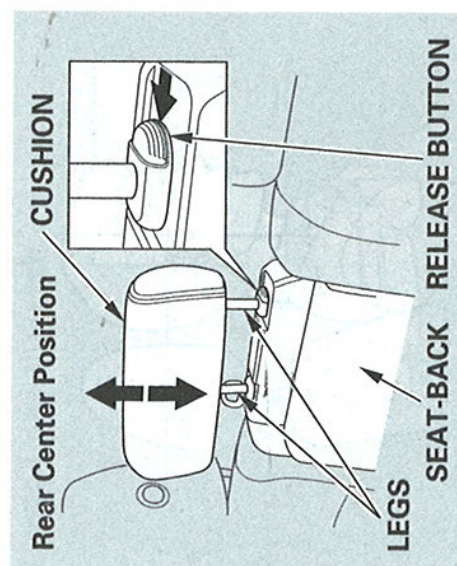
The head restraints adjust for height. You need both hands to adjust the restraint. Do not attempt to adjust it while driving. To raise a front or rear center head restraint, pull upward. To lower the restraint, push the release button sideways, and push the restraint down.

CONTINUED

Seats



To pivot the outer head restraint down for better visibility, press the tilt button on the side of the head restraint. It folds down forward. To raise the head restraint, pivot it up by hand. Make sure the head restraint locks in position.



Removing the Head Restraint
To remove a front or rear center head restraint, pull it up as far as it will go. Push the release button, then pull the restraint out of the seat-back.

When a passenger is seated in the rear center seating position, make sure the center head restraint is properly adjusted.

⚠ WARNING

Failure to reinstall the head restraints can result in severe injury during a crash.

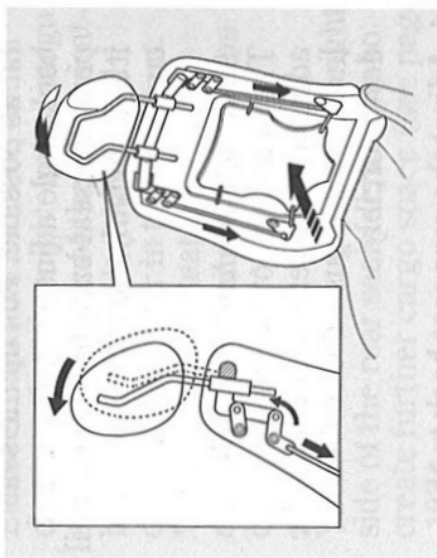
Always replace the head restraints before driving.

Make sure the removed head restraints are securely stored.

When reinstalling a head restraint, put the legs back in place. Then adjust it to the appropriate height while pressing the release button.

Make sure the head restraint locks in position when you reinstall it.

Active Head Restraints



The driver's and front passenger's seats have active head restraints. If the vehicle is struck severely from the rear, the occupant properly secured with the seat belt will be pushed against the seat-back and the head restraint will automatically move forward.

This reduces the distance between the restraint and the occupant's head. It also helps protect the occupants against the likelihood of whiplash and injuries to the neck and upper spine.

After a collision, the activated restraint should return to its normal position.

If the restraints do not return to their normal position, or in the event of a severe collision, have the vehicle inspected by a Honda dealer.

For a head restraint system to work properly:

- Do not hang any items on the head restraints, or from the restraint legs.
- Do not place any object between an occupant and the seat-back.
- Install each restraint in its proper location.
- Only use genuine Honda replacement head restraints.

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

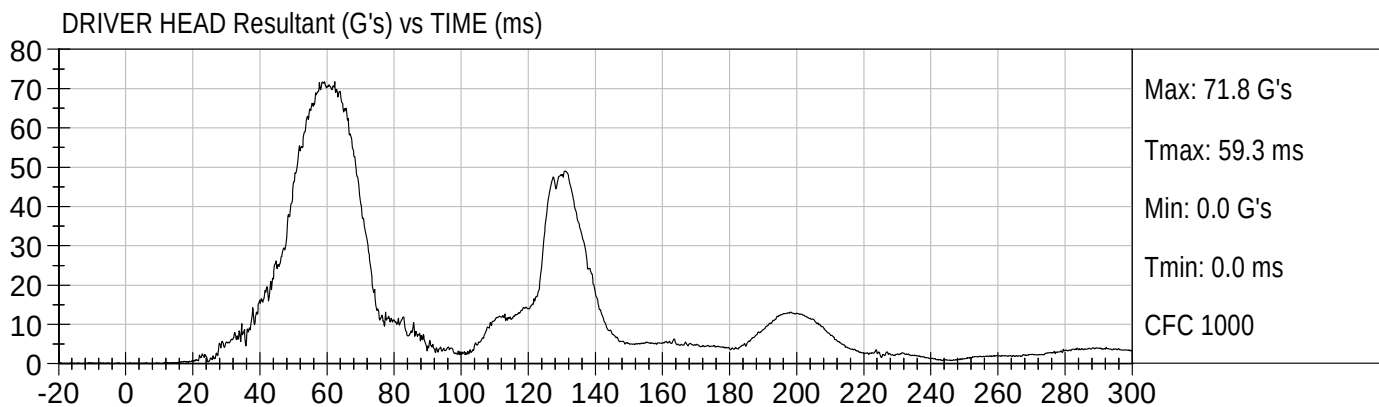
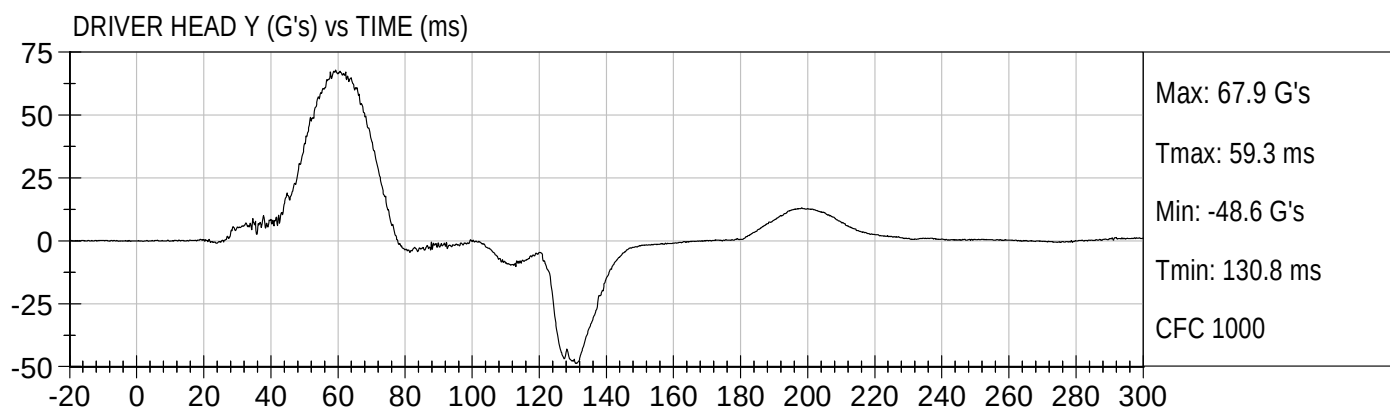
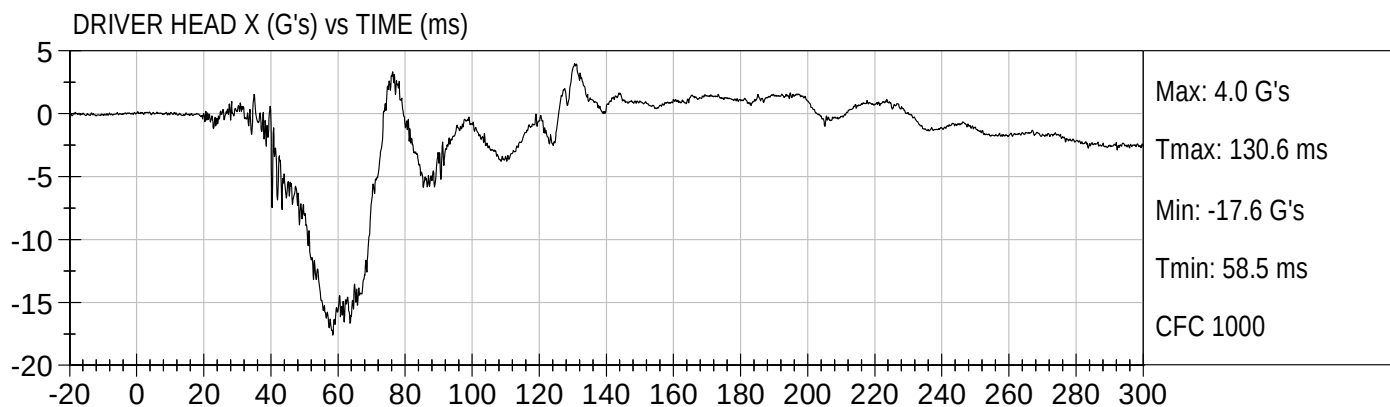
Vehicle CG Acceleration (X)

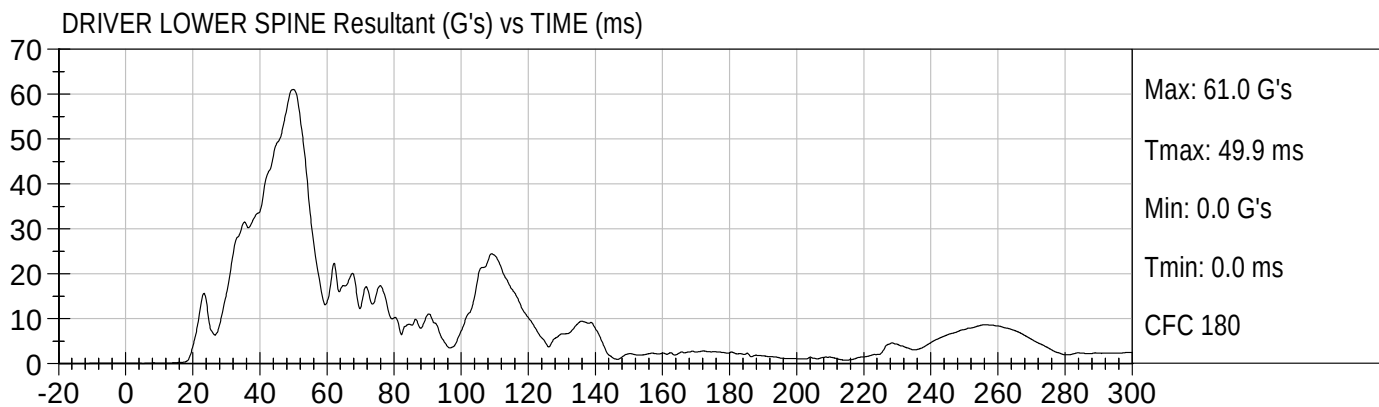
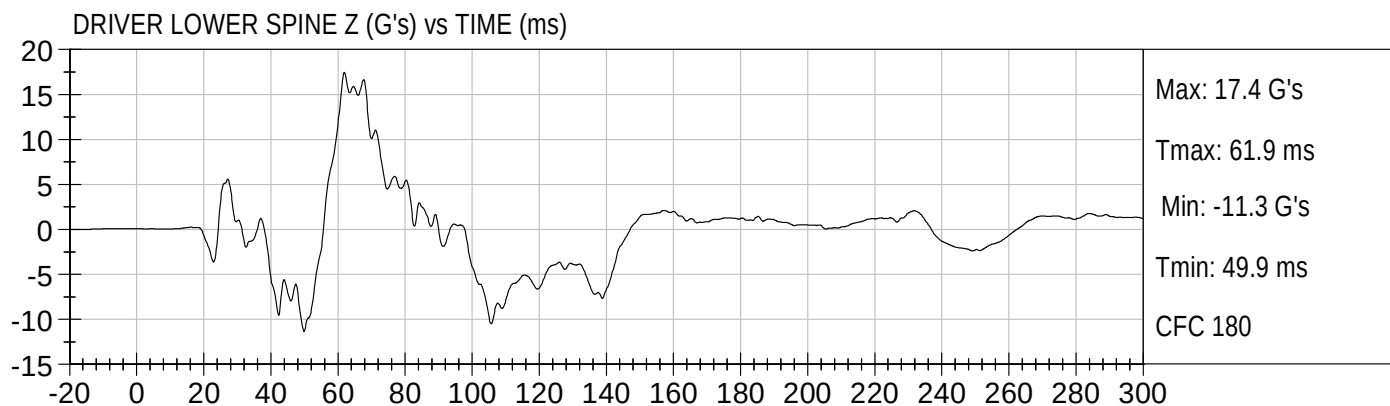
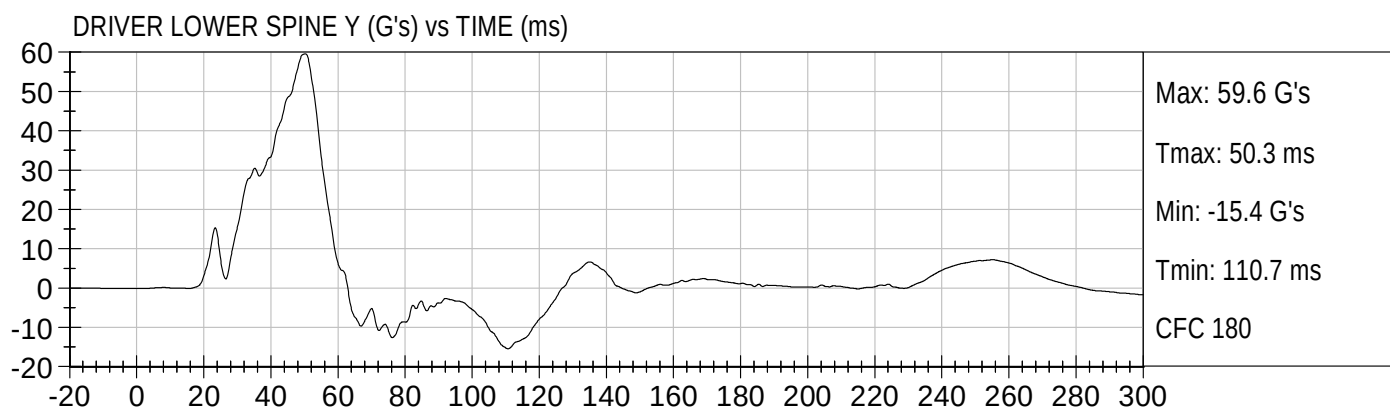
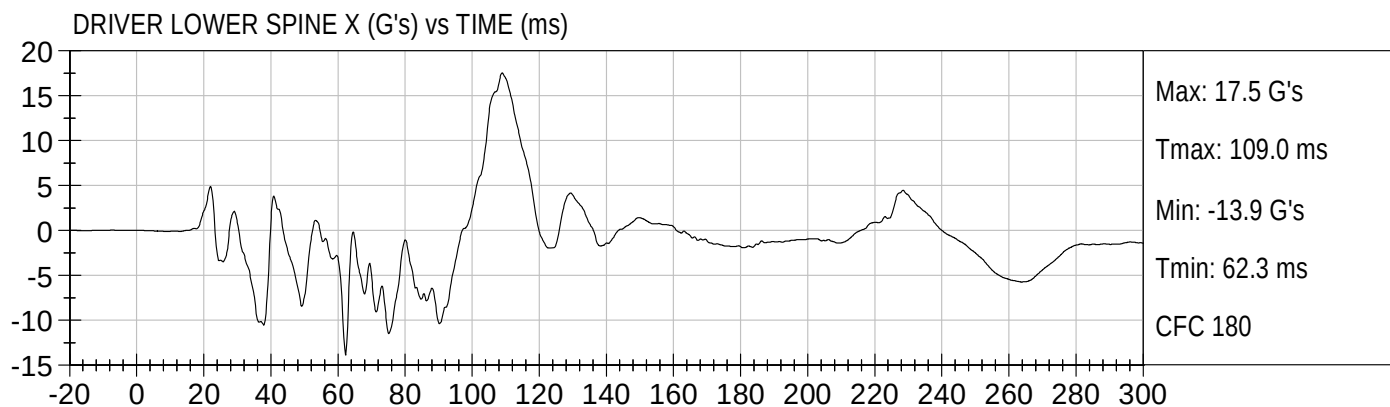
Vehicle CG Acceleration (Y)

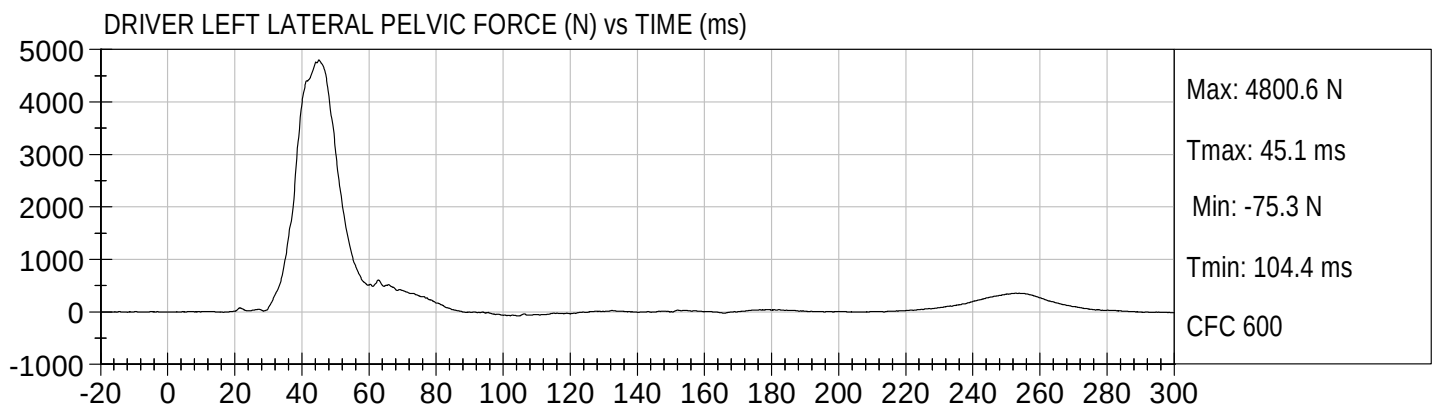
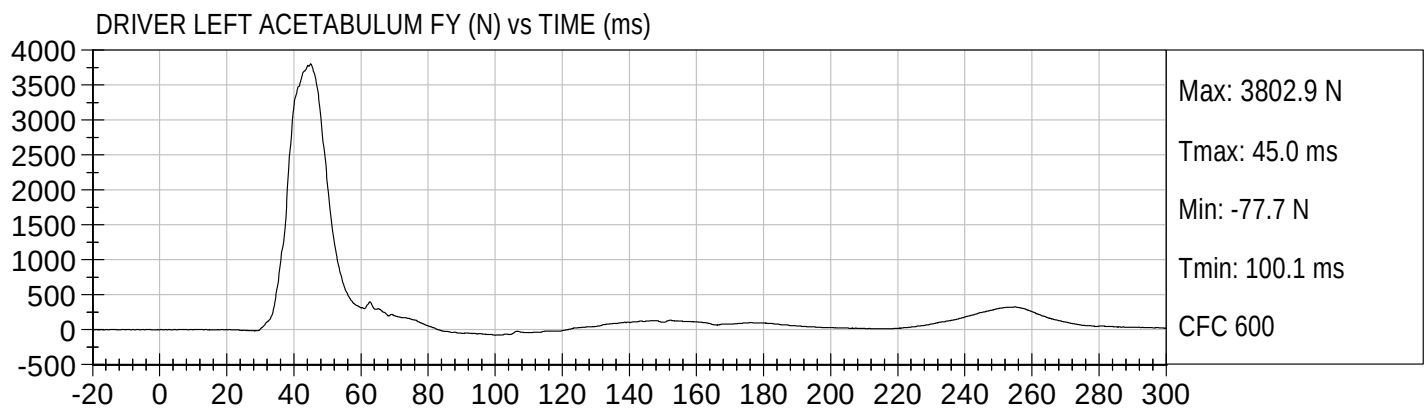
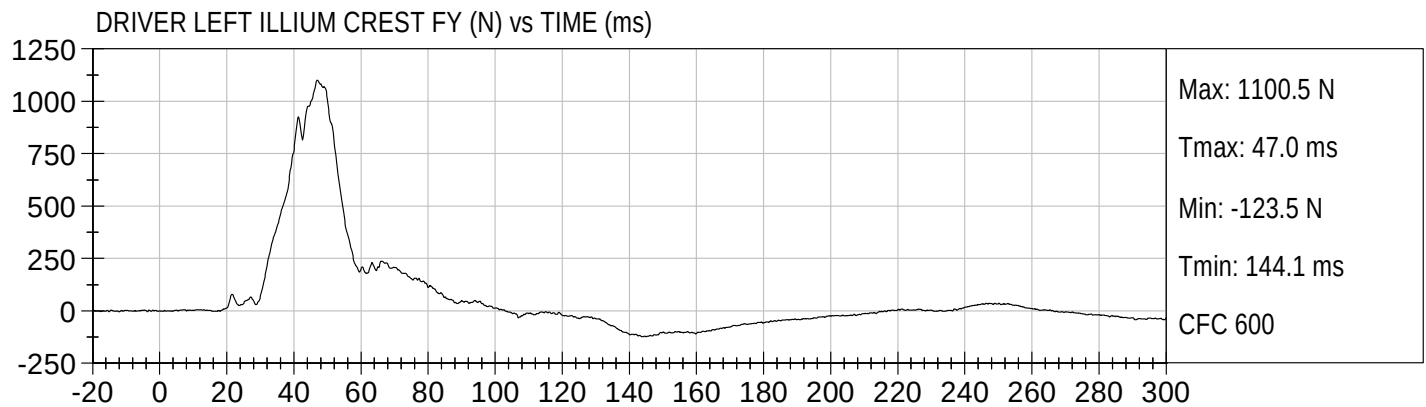
Vehicle CG Acceleration (Z)

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: D103861

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	28	Pass
Peak Resultant Acceleration	G's	115 to 137	123	Pass
Peak Lateral Acceleration	G's	+/- 15	2	Pass
Unimodal	N/A	<15%	Yes	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

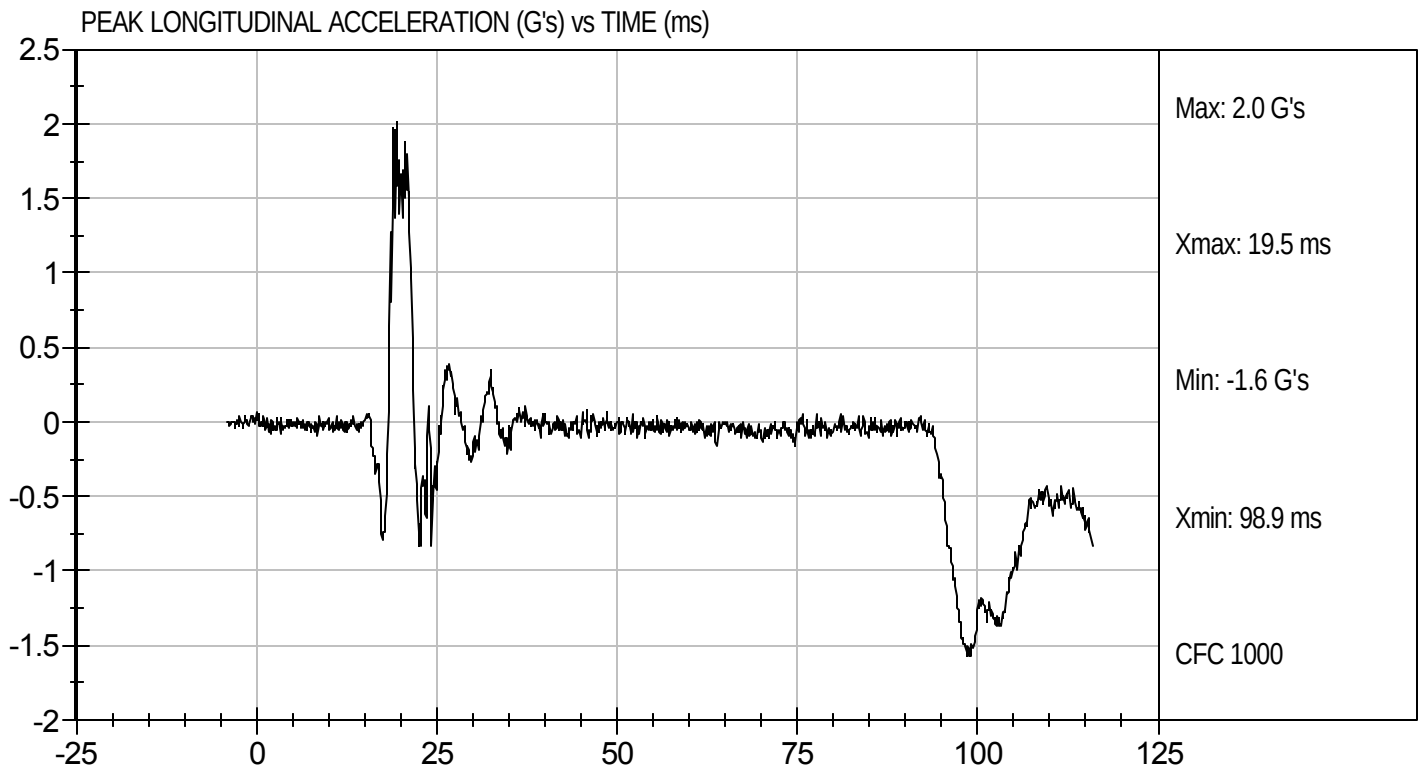
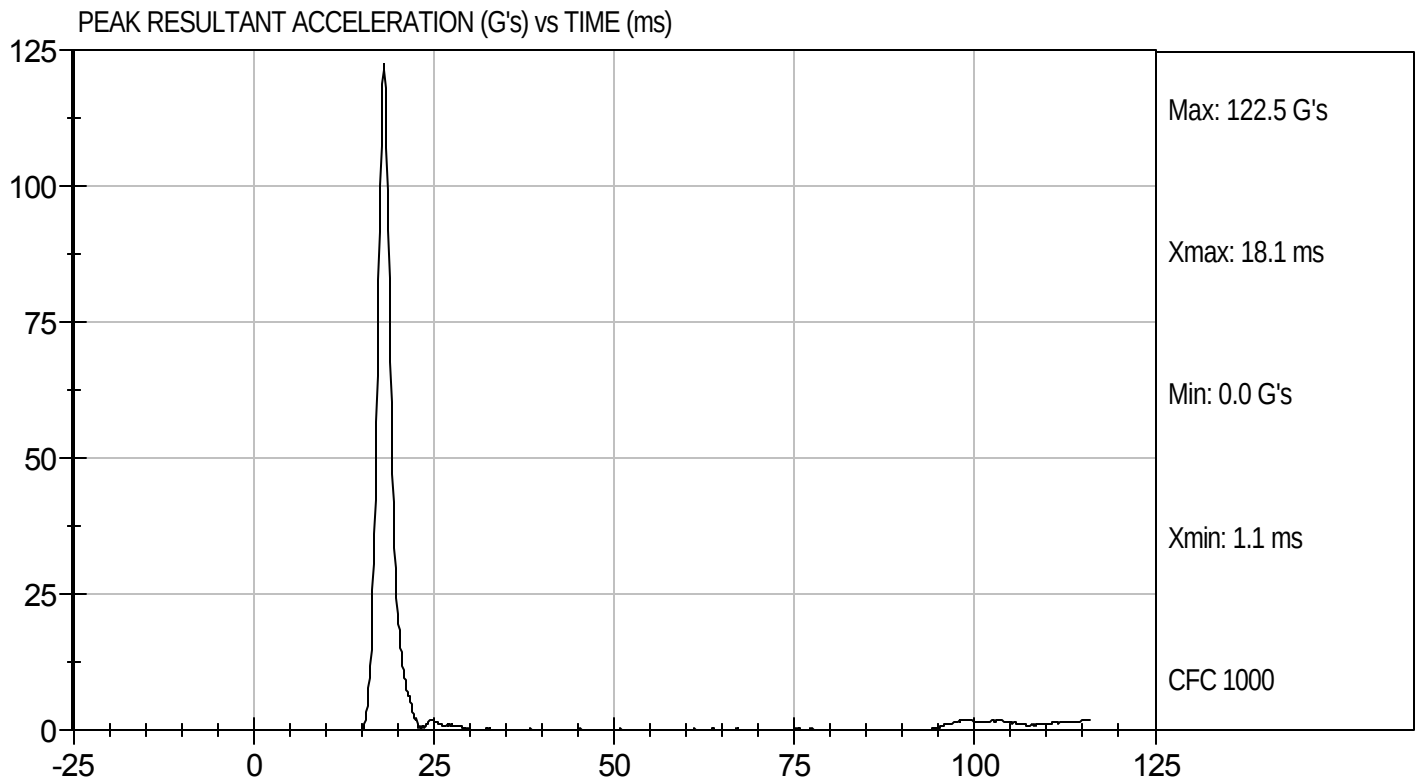
11/8/10
Test Date

David Winkelbauer
Approved By



Test Desc: Head Drop
Component ID: D103861

Test Date: 11/8/10
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: D103862

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	22.0	Pass
Humidity		%	10 to 70	31	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	3.48	Pass
	20 ms	m/s	4.40 to 5.40	4.74	Pass
	25 ms	m/s	5.40 to 6.10	5.54	Pass
	25-100 ms	m/s	5.50 to 6.20	5.55	Pass
Maximum D-Plane Rotation		deg	71 to 81	71	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	60	Pass
Maximum Occipital Condyle Moment during Rotation Interval Nm			-44 to -36	-38	Pass
Time of Moment Decay to 0 Nm		ms	102 to 126	115	Pass
Overall Test Results				Pass	

Jessica Hall
Laboratory Technician

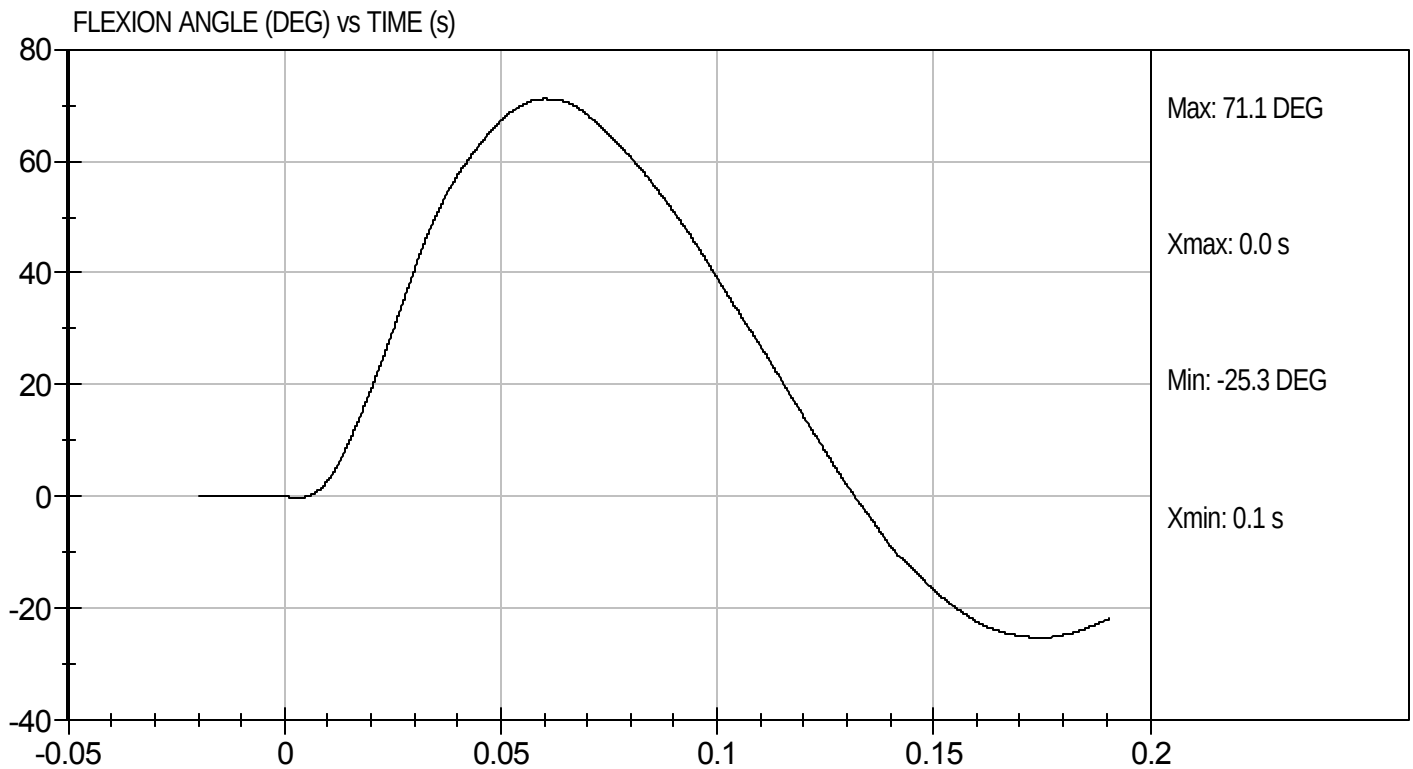
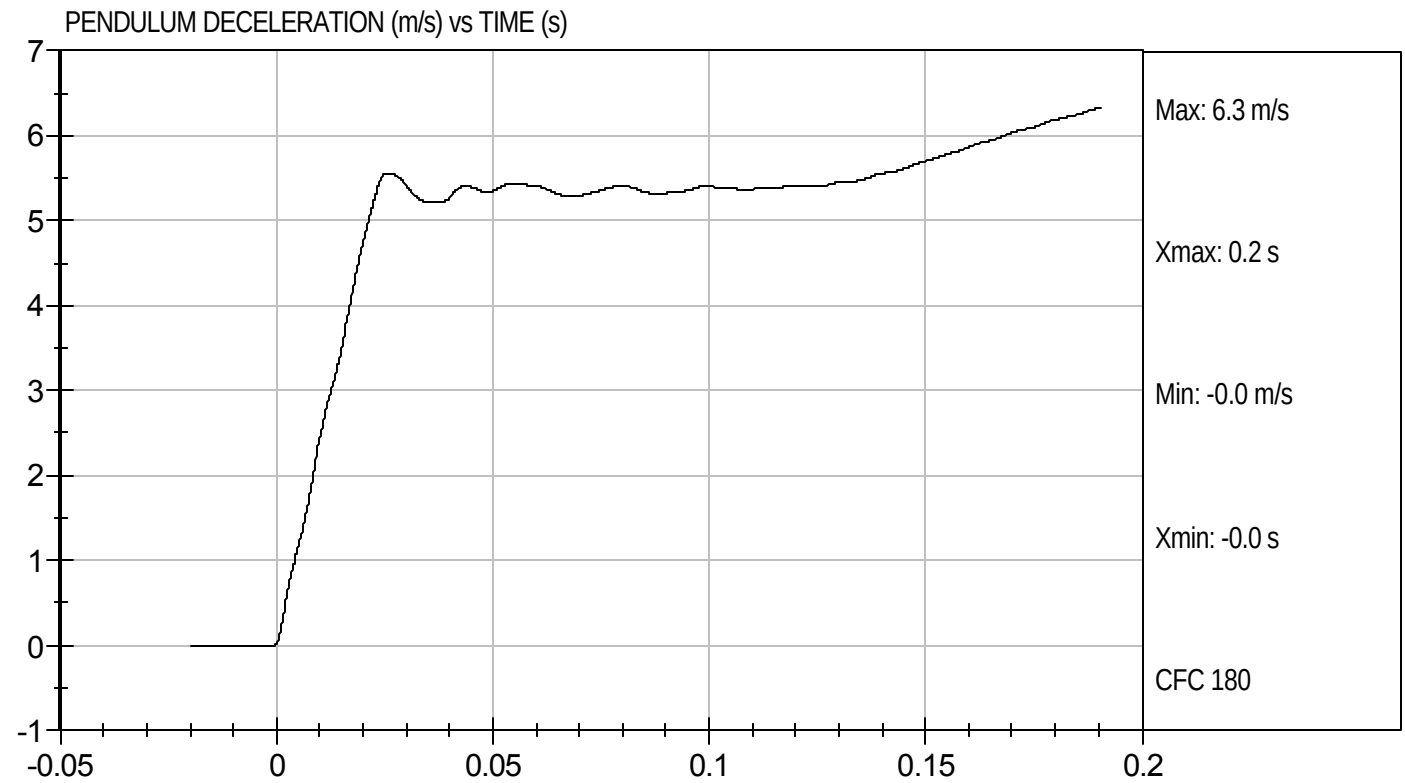
11/8/10
Test Date

David Winkelbauer
Approved By



Test Desc: Neck Bending
Component ID: D103862

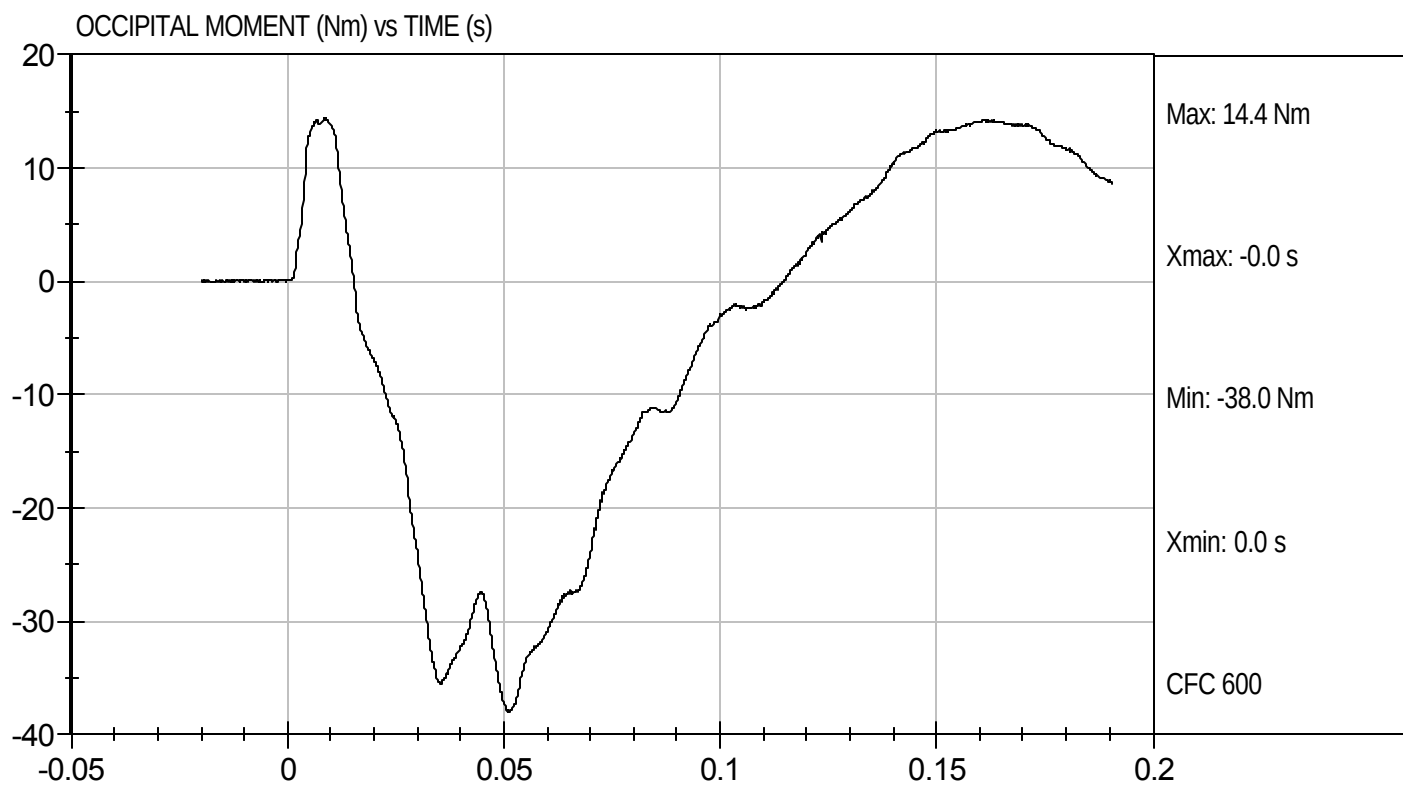
Test Date: 11/8/10
Velocity: 18.32 ft/s, 5.58 m/s





Test Desc: Neck Bending
Component ID: D103862

Test Date: 11/8/10
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: D103863

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	22.1	Pass
Laboratory Relative Humidity	%	10 to 70	28	Pass
Impact Velocity	m/s	4.20 to 4.40	4.30	Pass
Maximum Probe Acceleration	G's	13 to 18	15	Pass
Shoulder Displacement	mm	28 to 37	33	Pass
Upper Spine (T1) Y Acceleration	G's	17 to 22	19	Pass
Overall Test Results				Pass


Laboratory Technician

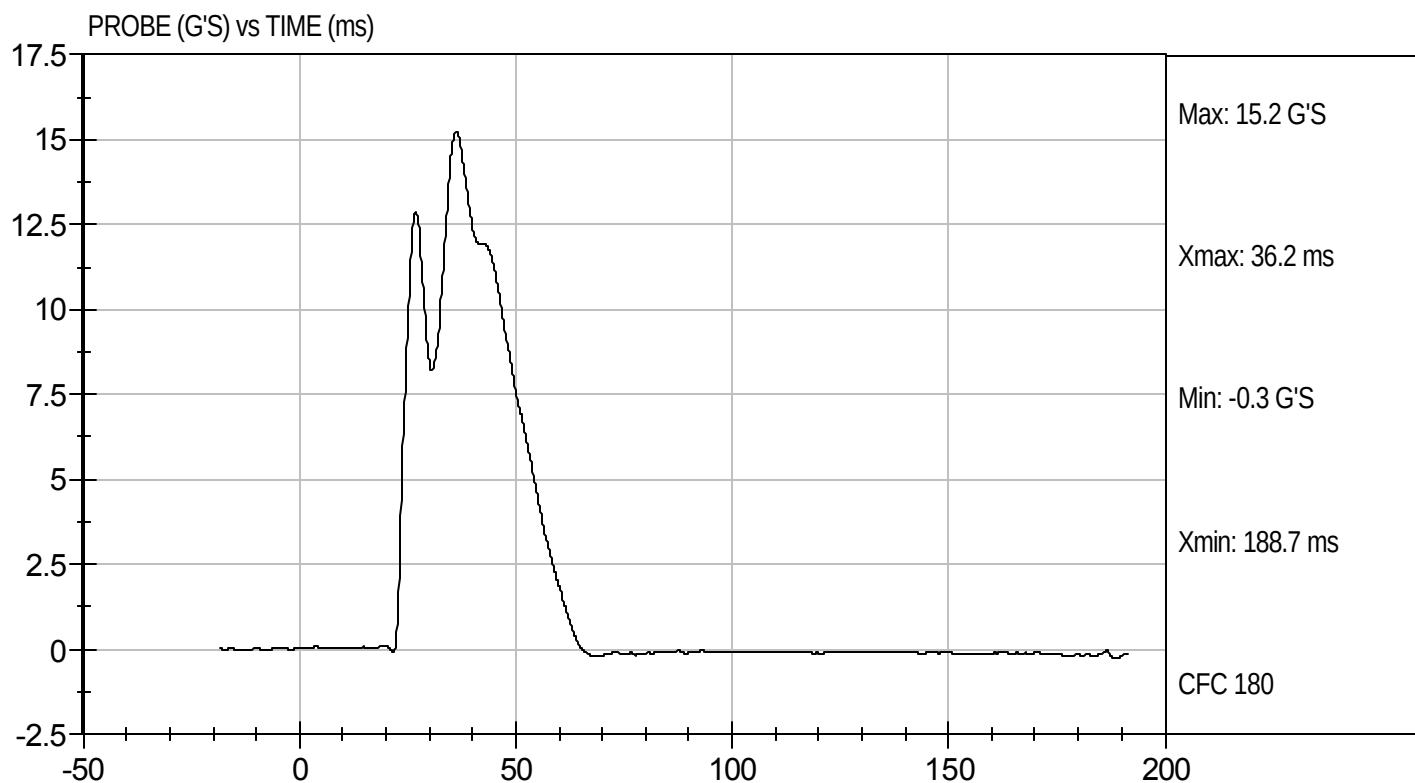
11/8/10
Test Date


Approved By



Test Desc: Shoulder Impact
Component ID: D103863

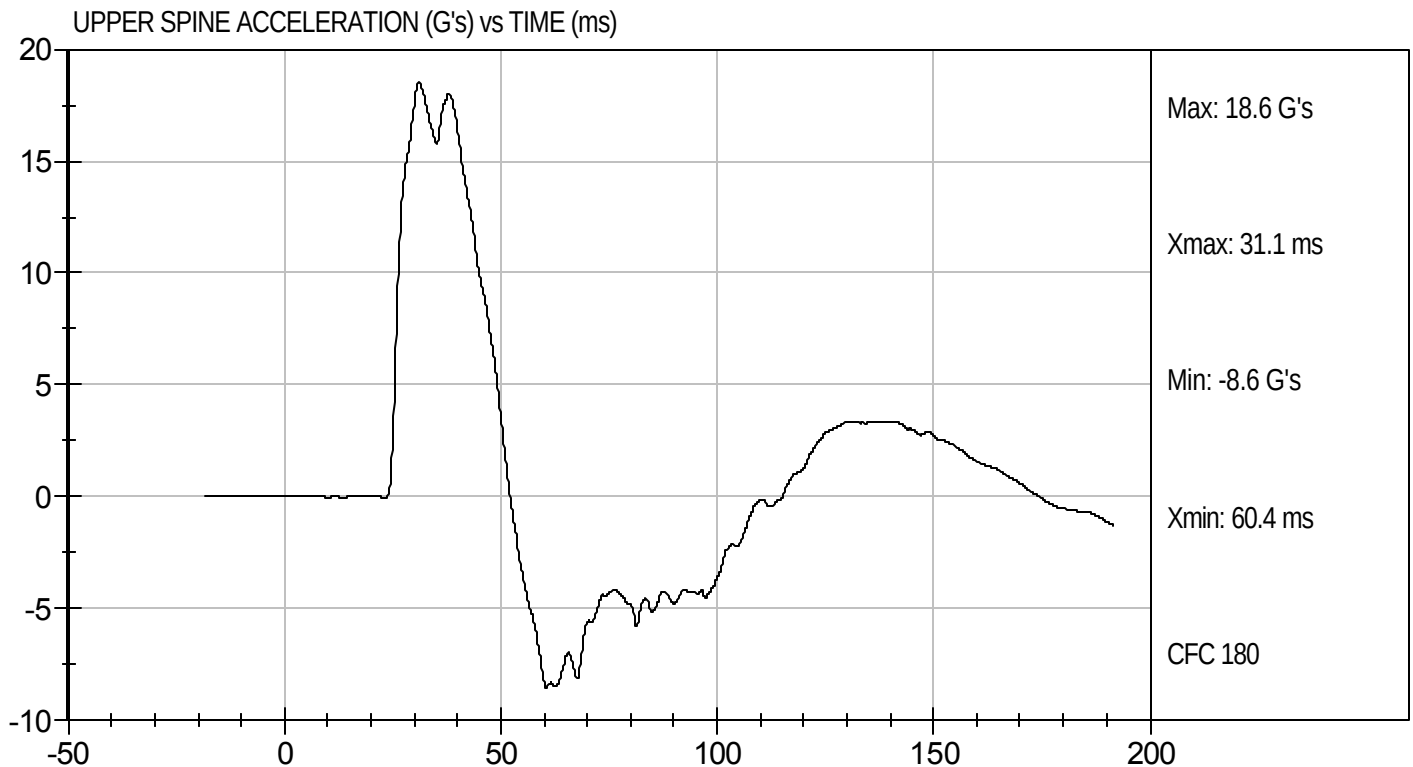
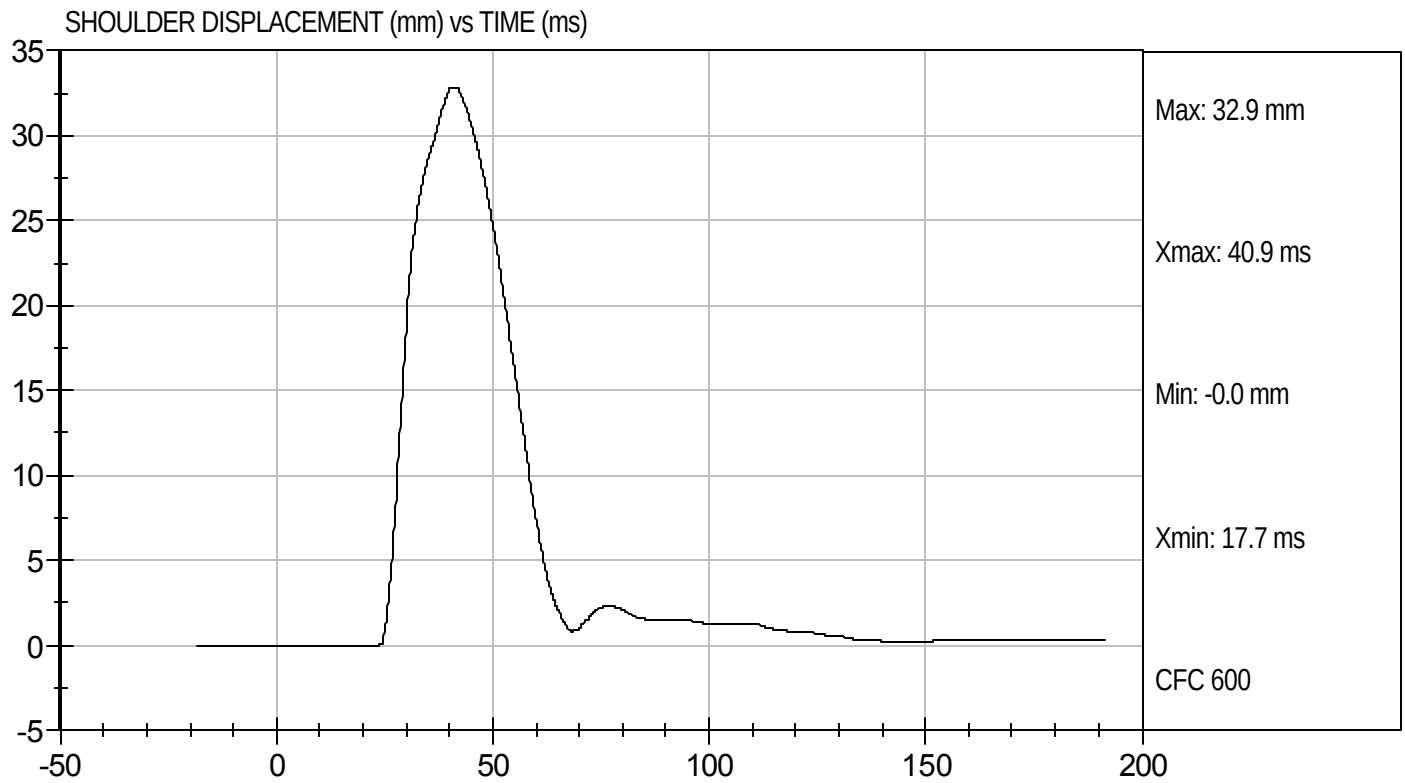
Test Date: 11/8/10
Velocity: 14.12 ft/s, 4.30 m/s





Test Desc: Shoulder Impact
Component ID: D103863

Test Date: 11/8/10
Velocity: 14.12 ft/s, 4.30 m/s



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

ATD Serial No: 296

Test I.D: D103864

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	22.0	Pass
Humidity	%	10 to 70	26	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	37	Pass
Upper Rib Displacement	mm	25 to 32	28	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	37	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	33	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

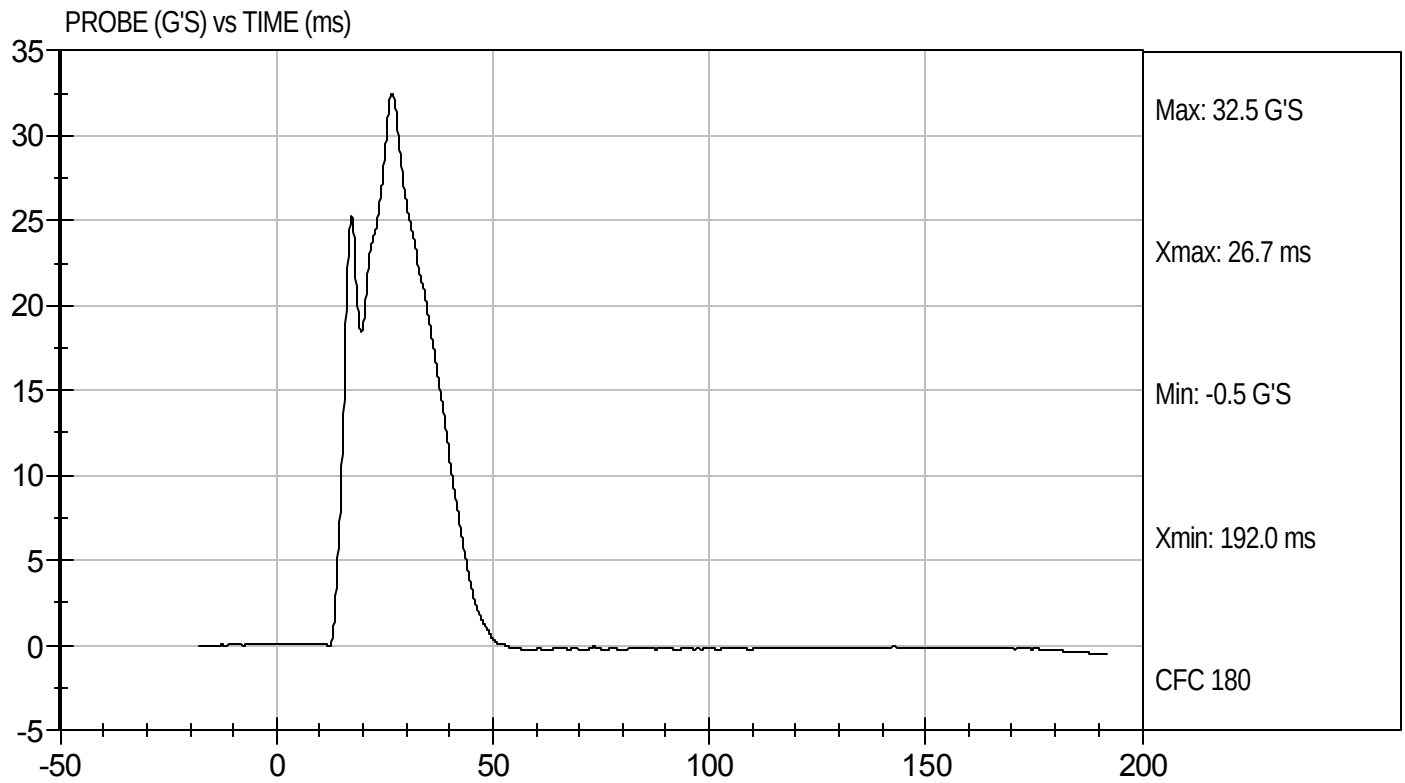
11/8/10
Test Date

David Winkelbauer
Approved By



Test Desc: Thorax With Arm
Component ID: D103864

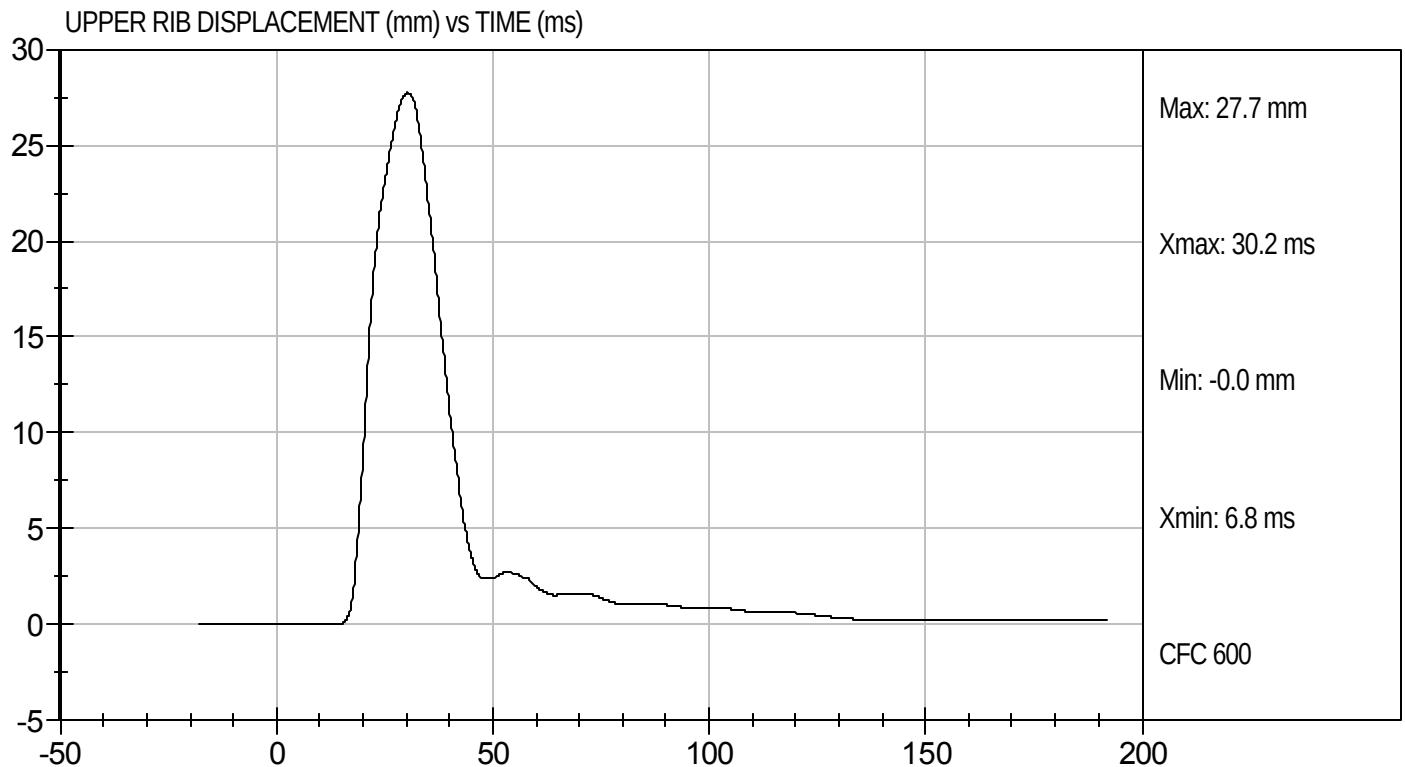
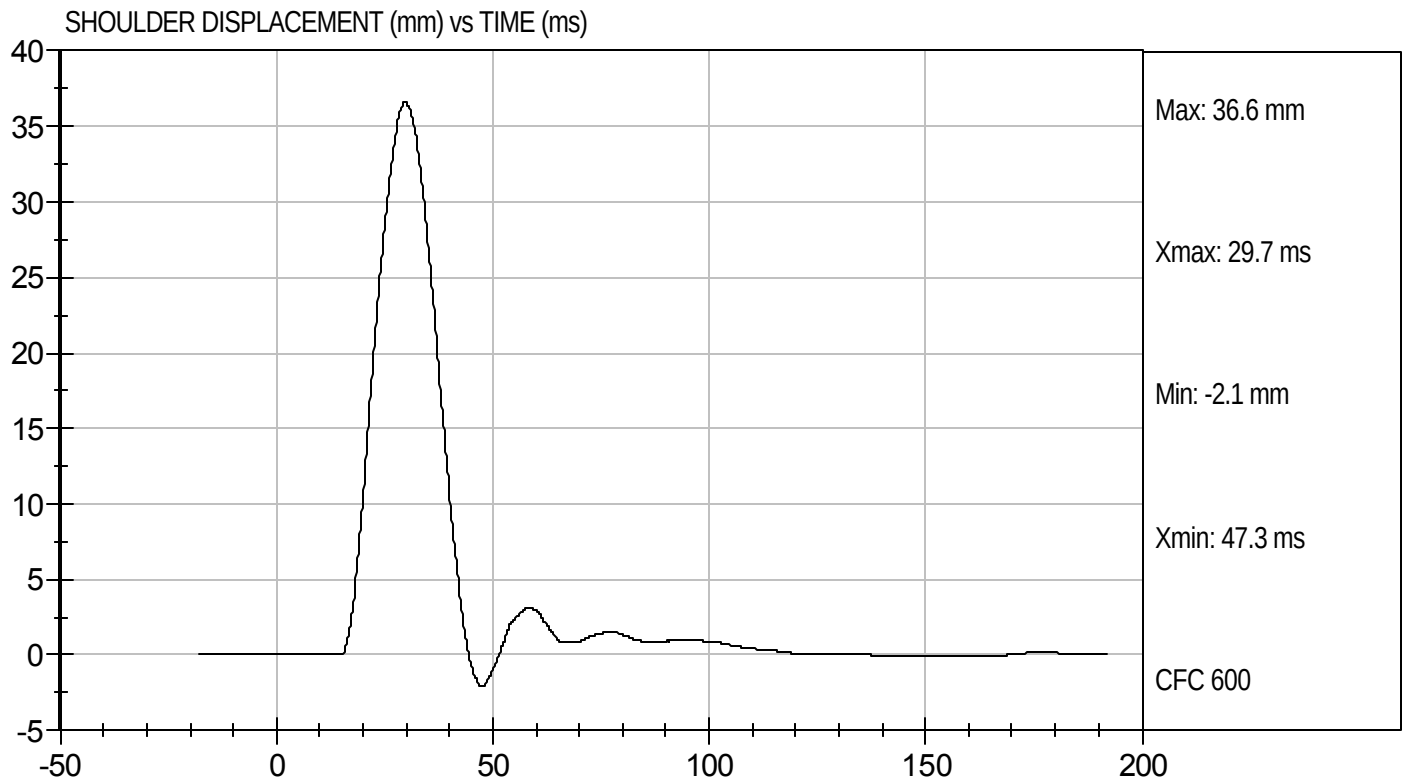
Test Date: 11/8/10
Velocity: 21.9 ft/s, 6.68 m/s





Test Desc: Thorax With Arm
Component ID: D103864

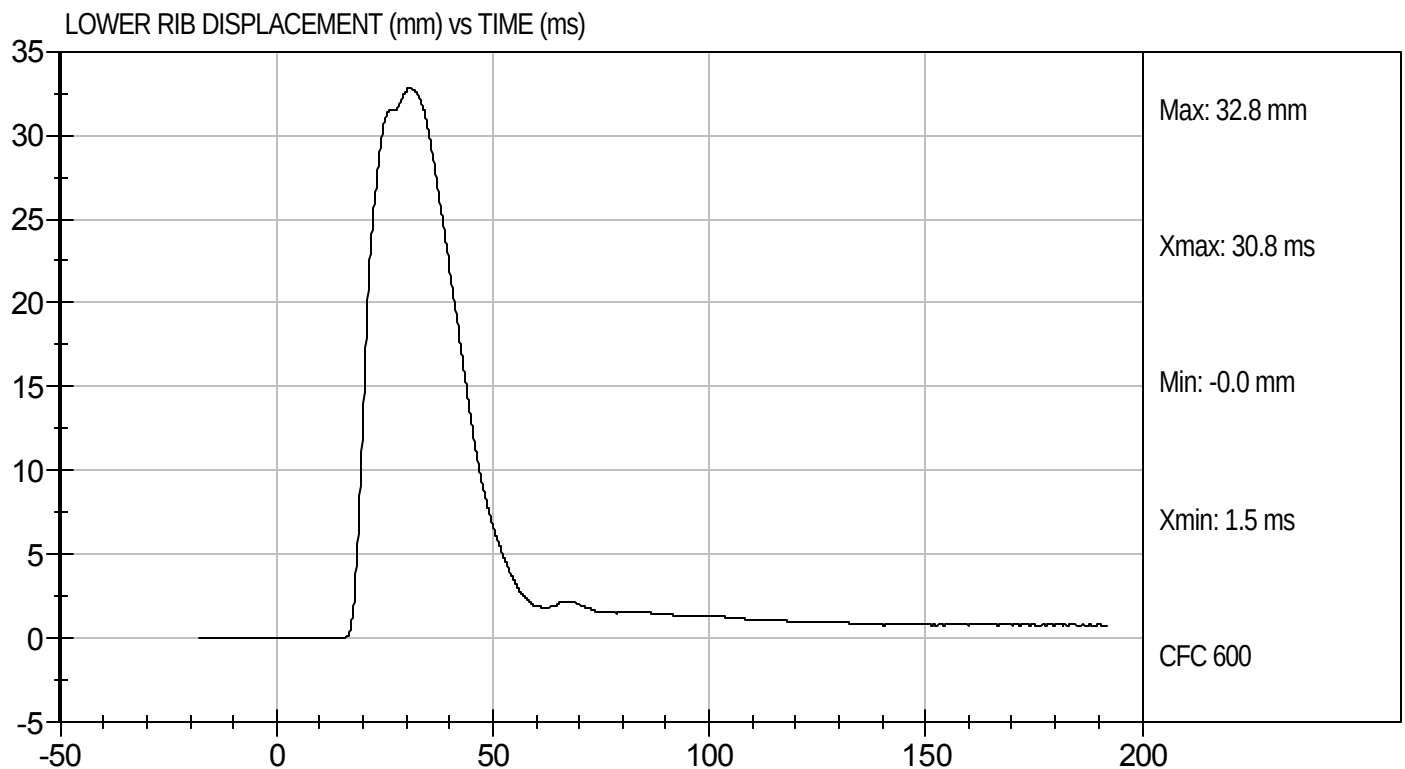
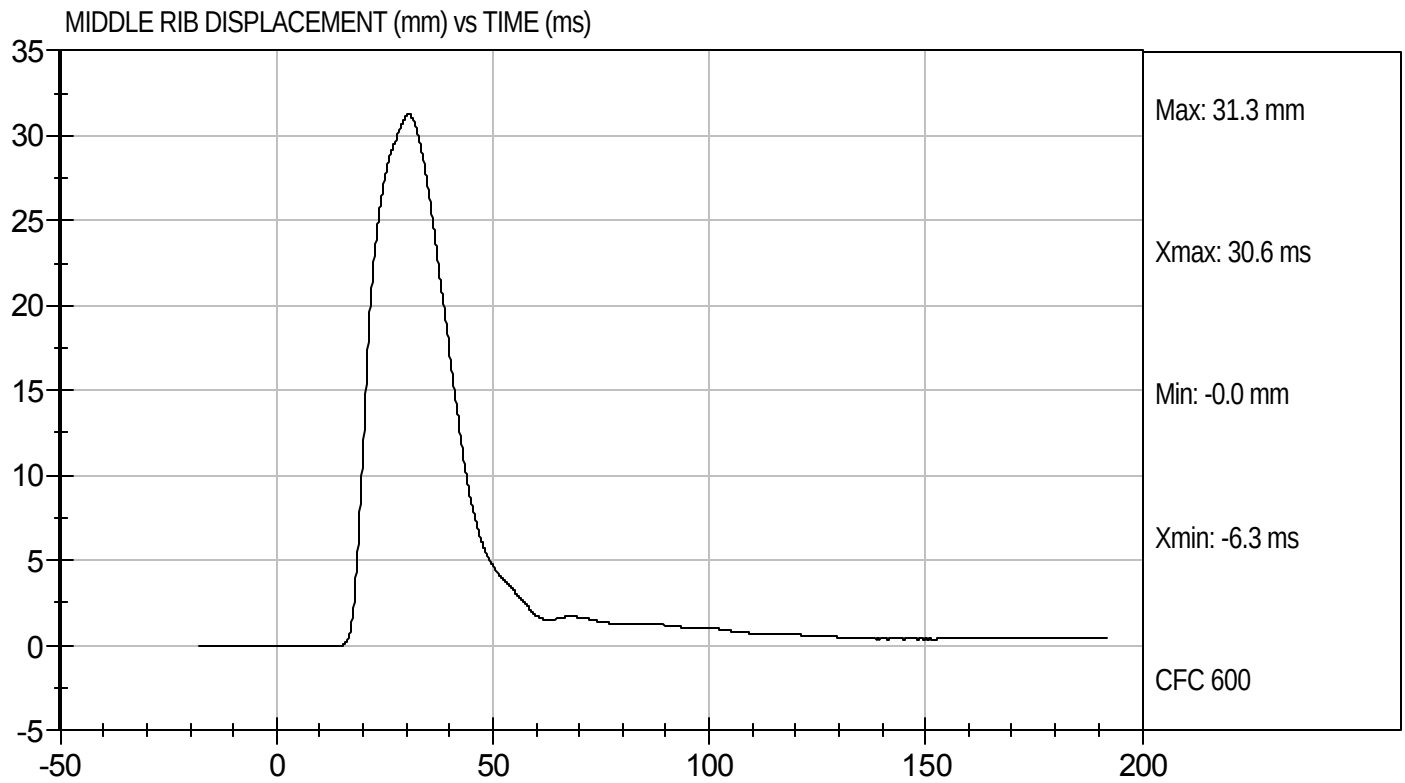
Test Date: 11/8/10
Velocity: 21.9 ft/s, 6.68 m/s





Test Desc: Thorax With Arm
Component ID: D103864

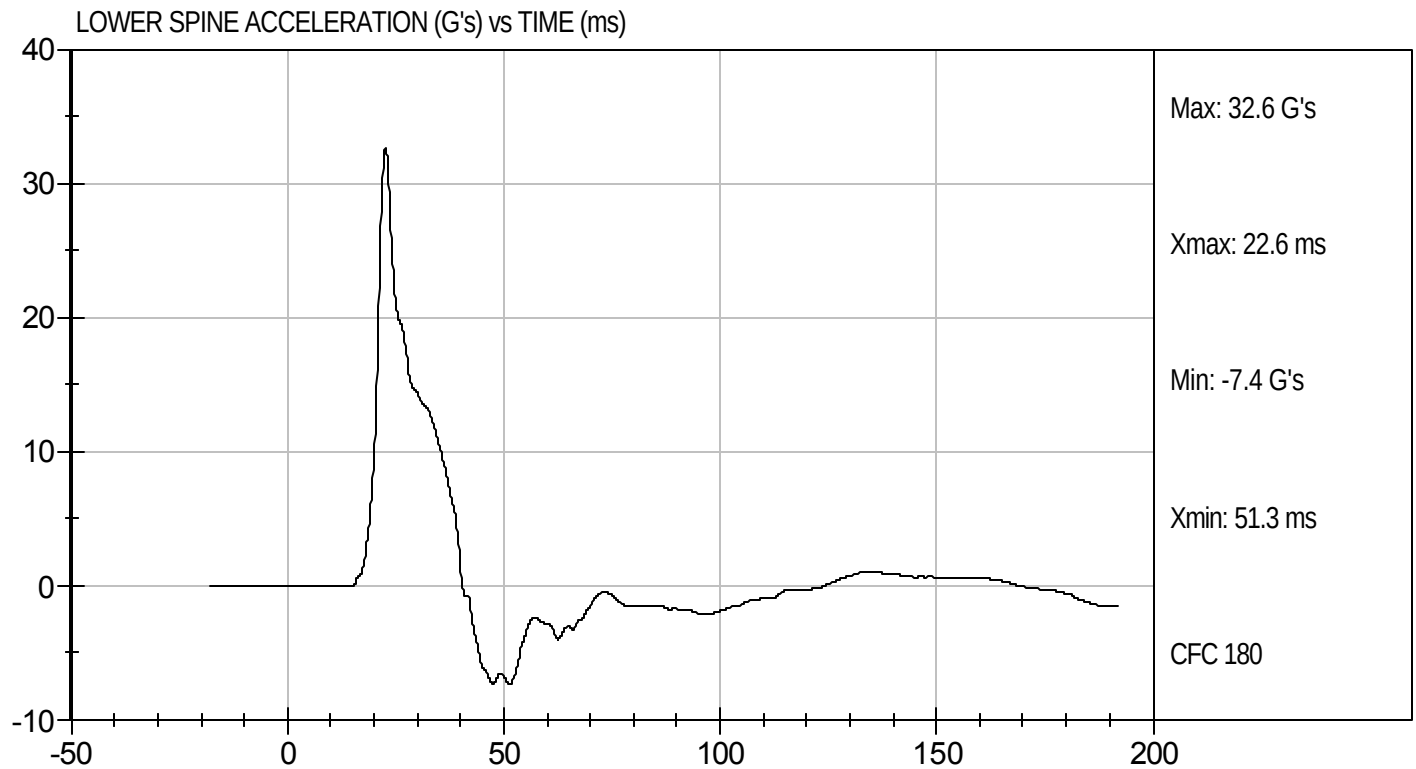
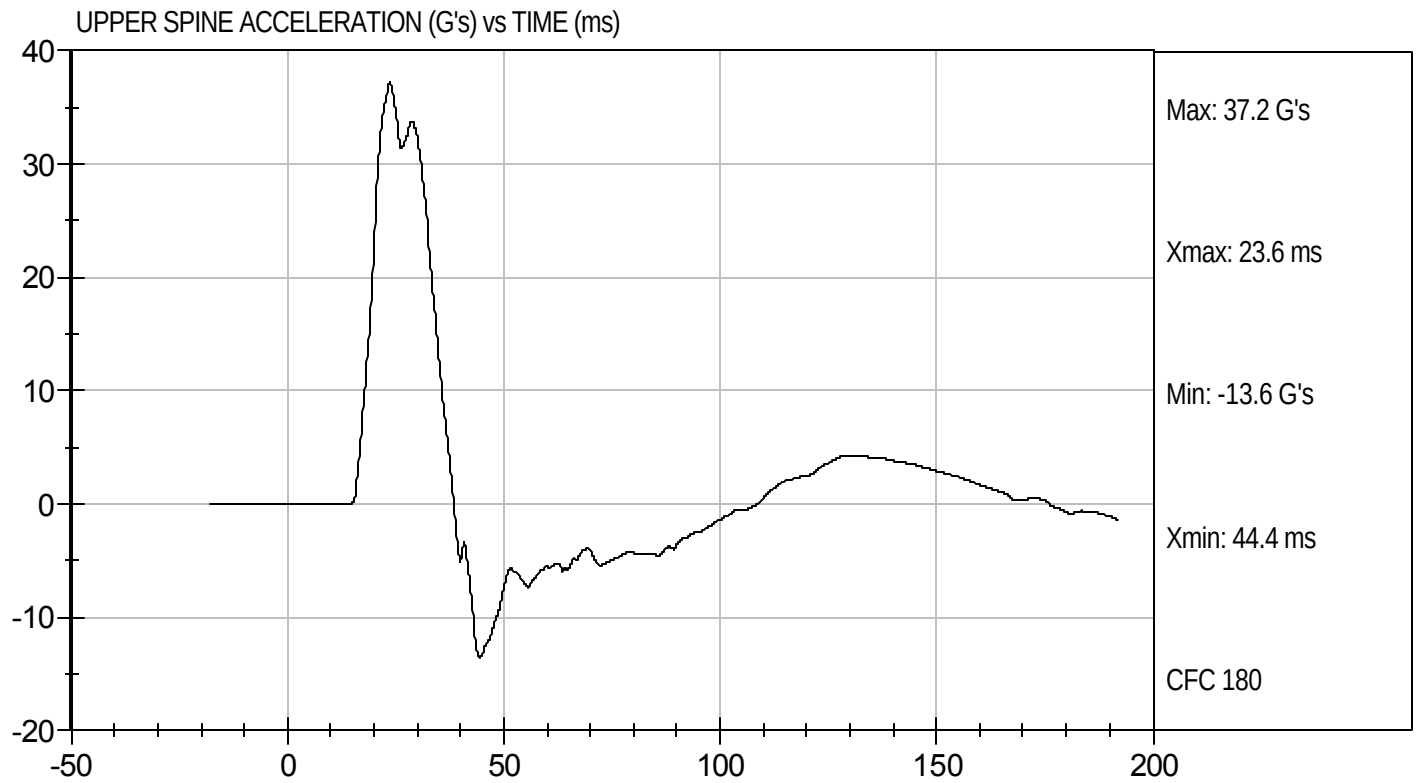
Test Date: 11/8/10
Velocity: 21.9 ft/s, 6.68 m/s





Test Desc: Thorax With Arm
Component ID: D103864

Test Date: 11/8/10
Velocity: 21.9 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: D103865

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	22.0	Pass
Humidity	%	10 to 70	26	Pass
Impact Velocity	m/s	4.20 to 4.40	4.23	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	37	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

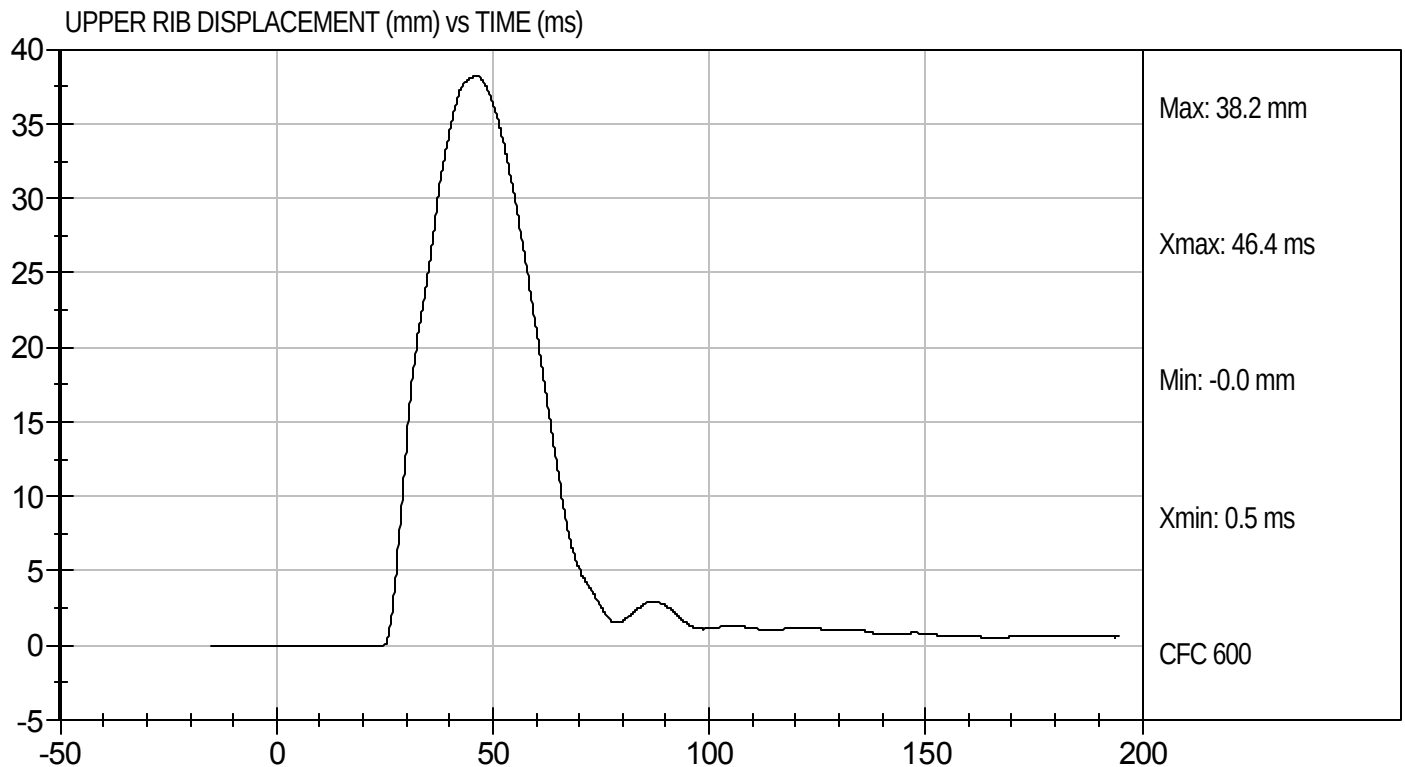
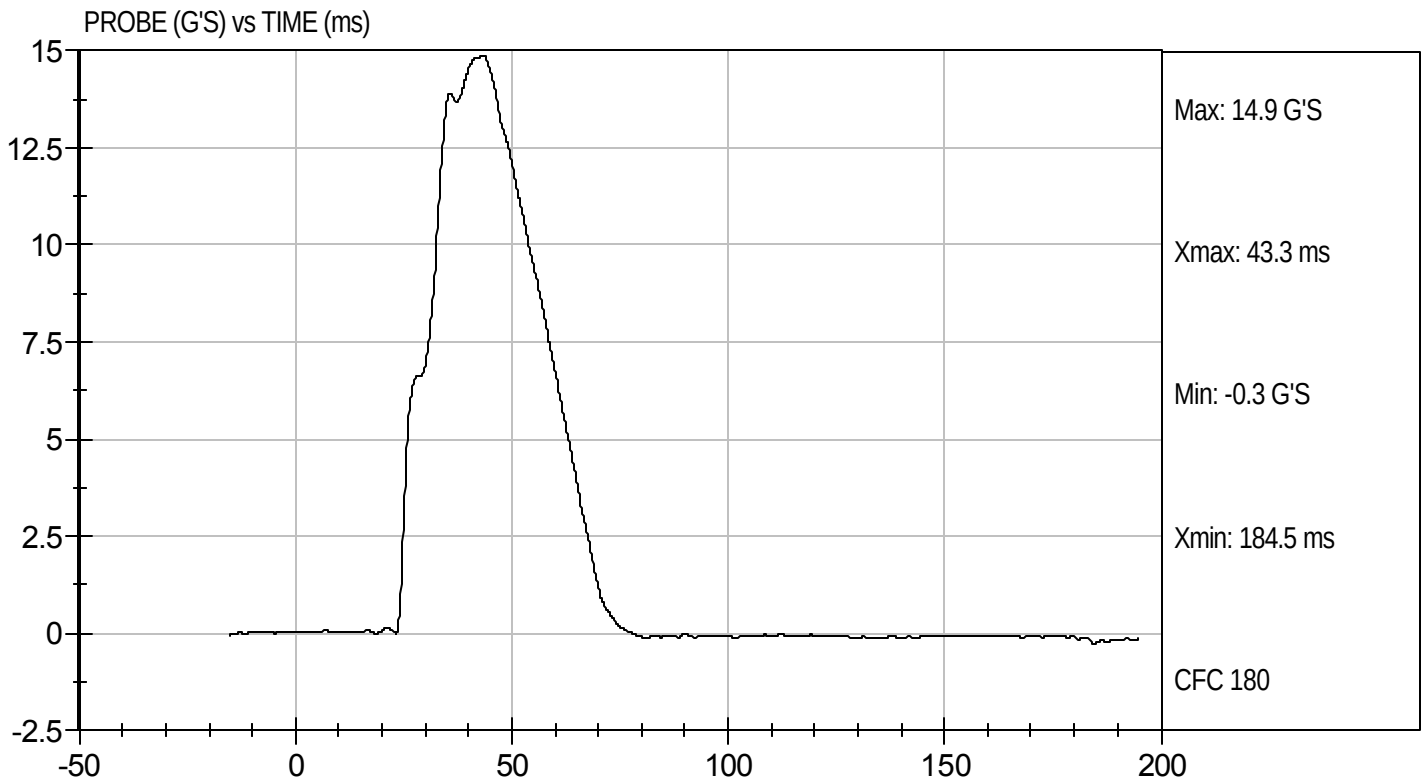
11/8/10
Test Date

David Winkelbauer
Approved By



Test Desc: Thorax Without Arm
Component ID: D103865

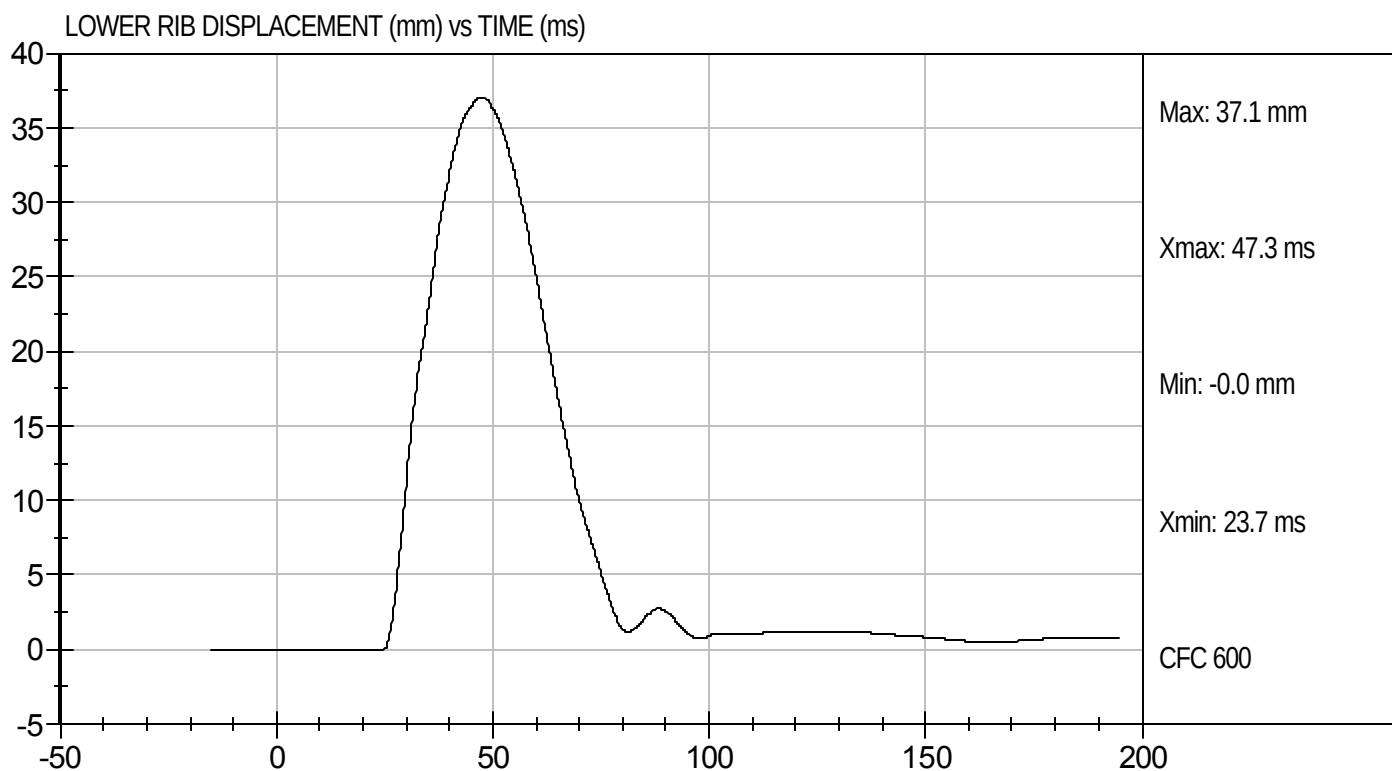
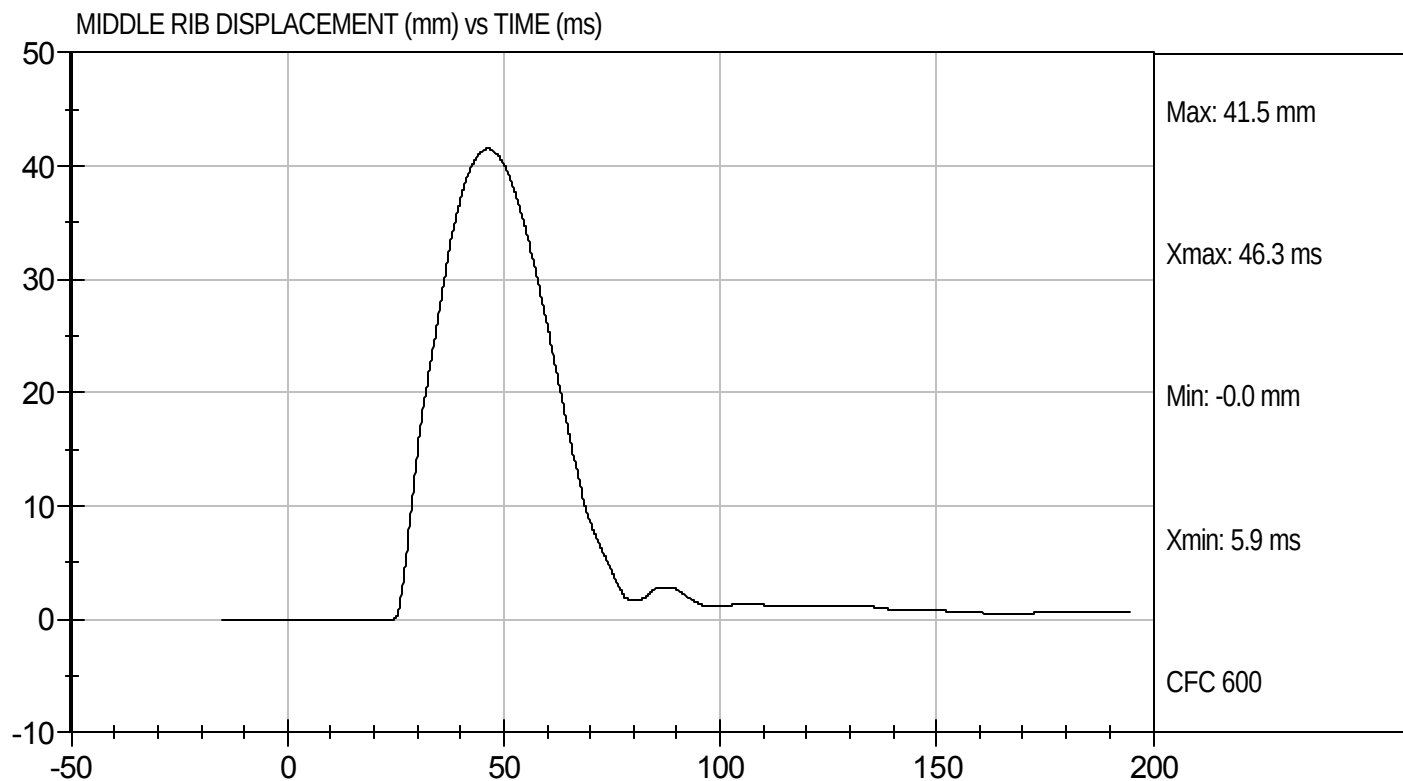
Test Date: 11/8/10
Velocity: 13.88 ft/s, 4.23 m/s





Test Desc: Thorax Without Arm
Component ID: D103865

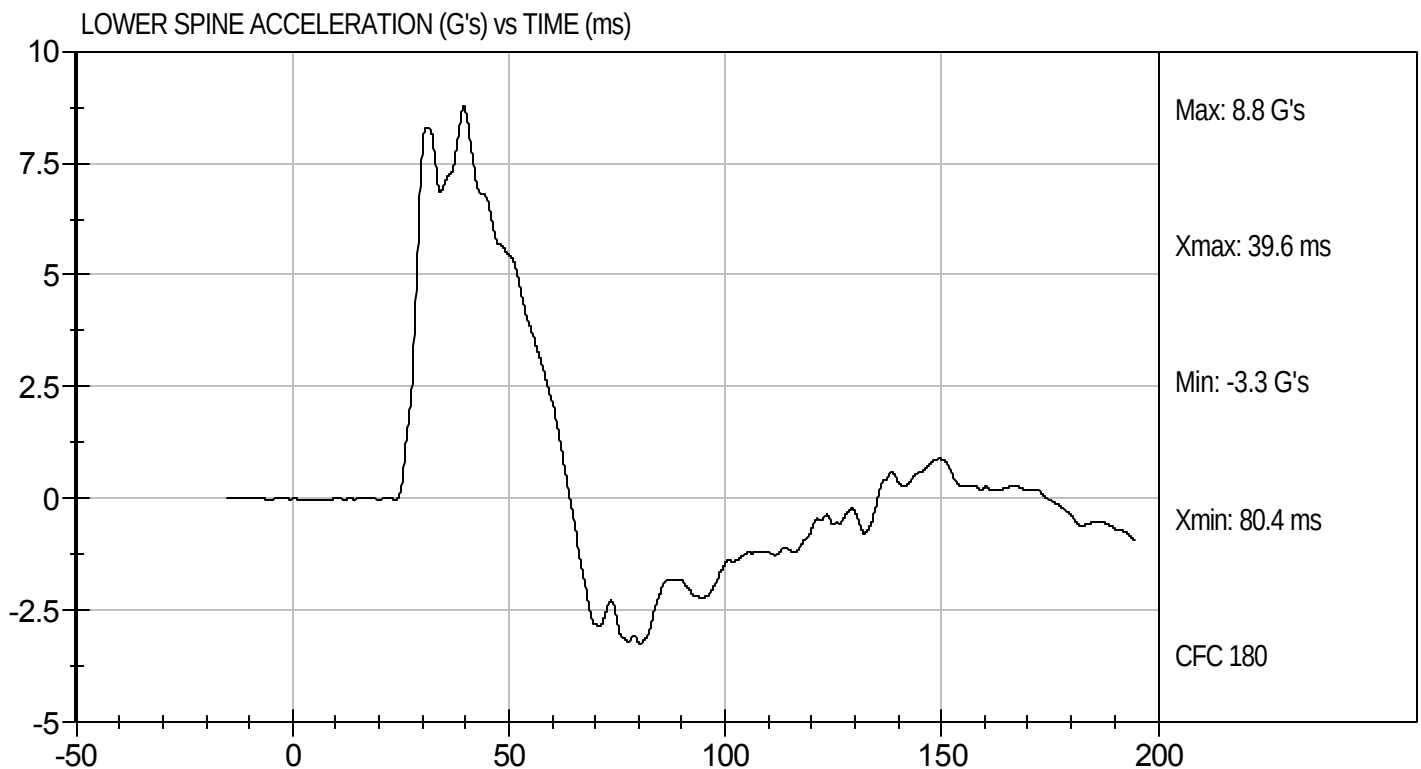
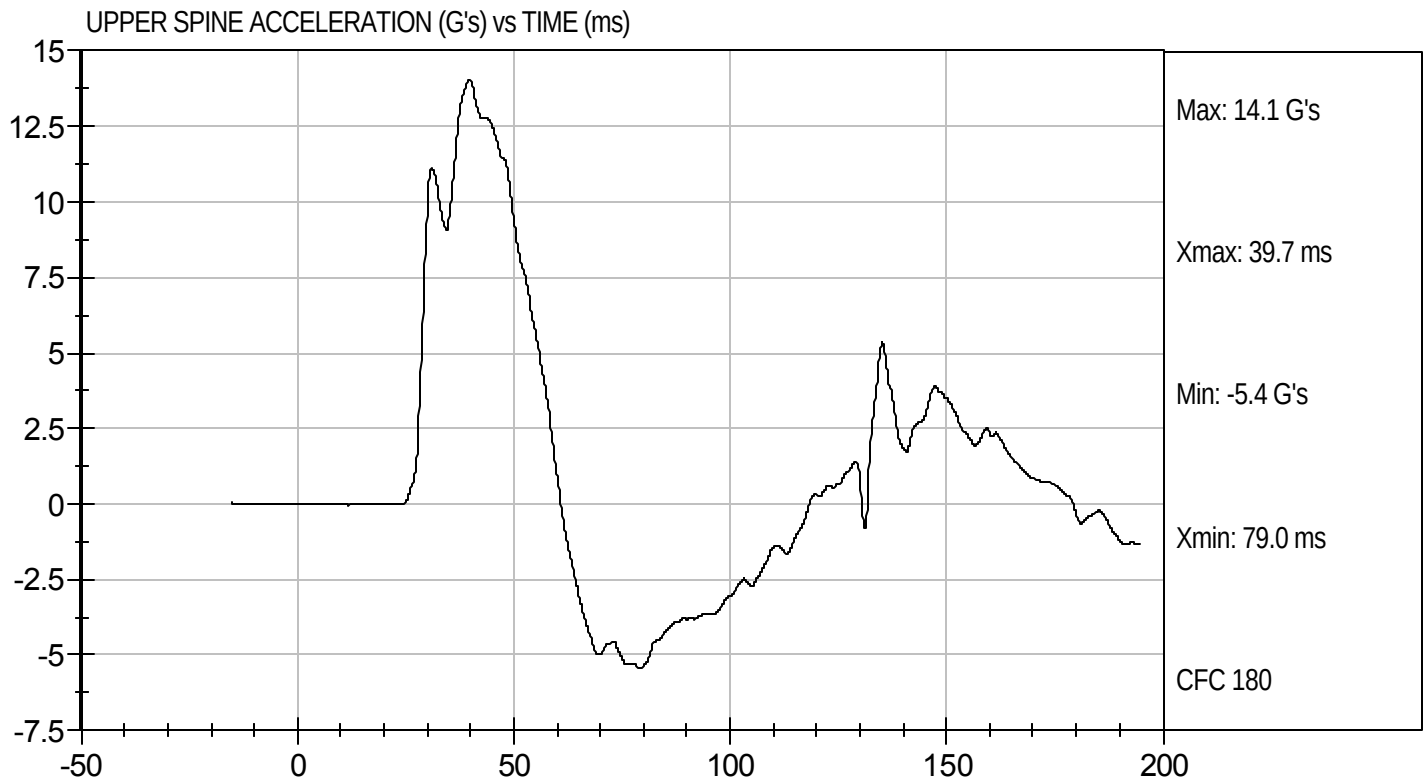
Test Date: 11/8/10
Velocity: 13.88 ft/s, 4.23 m/s





Test Desc: Thorax Without Arm
Component ID: D103865

Test Date: 11/8/10
Velocity: 13.88 ft/s, 4.23 m/s



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

ATD Serial No: 296

Test I.D: D103866

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	22.0	Pass
Humidity	%	10 to 70	28	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	

Jessica Hall
Laboratory Technician

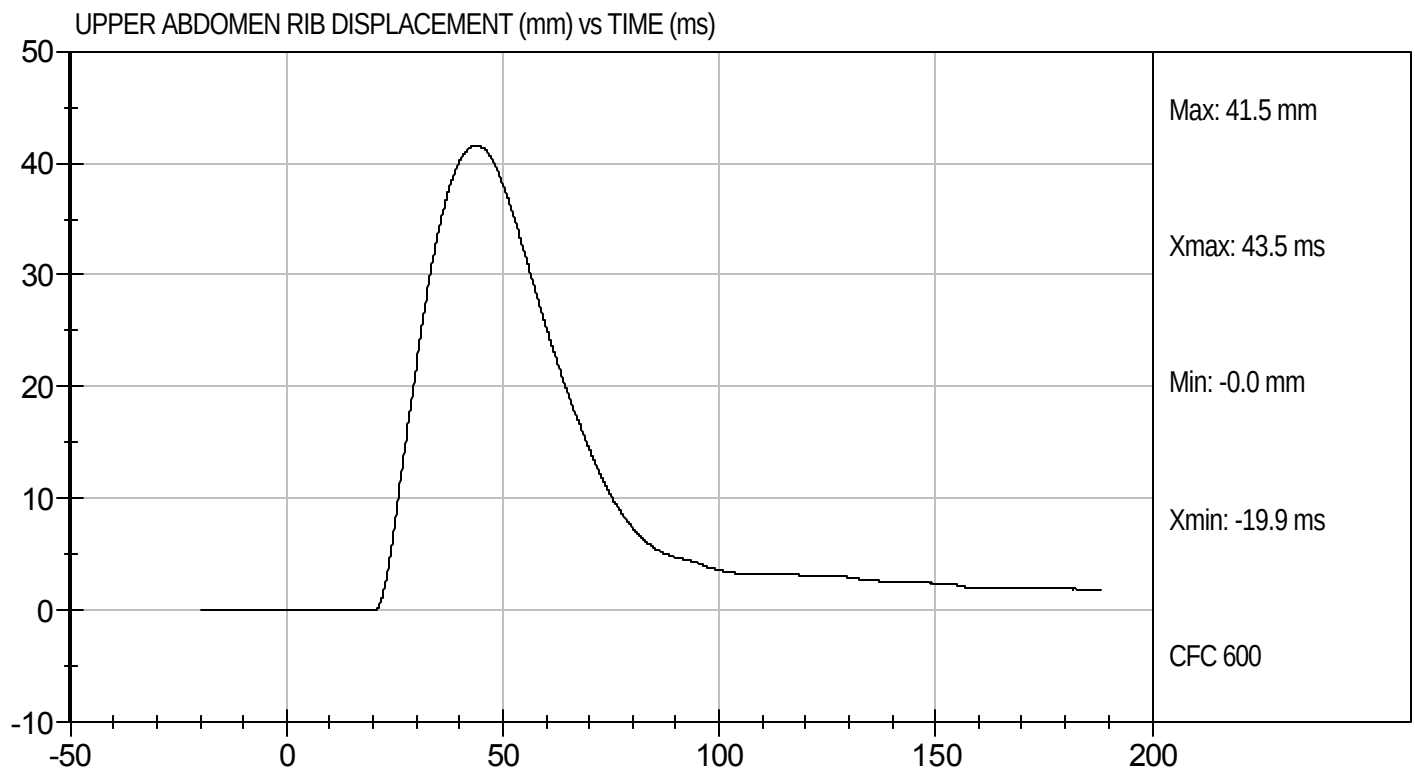
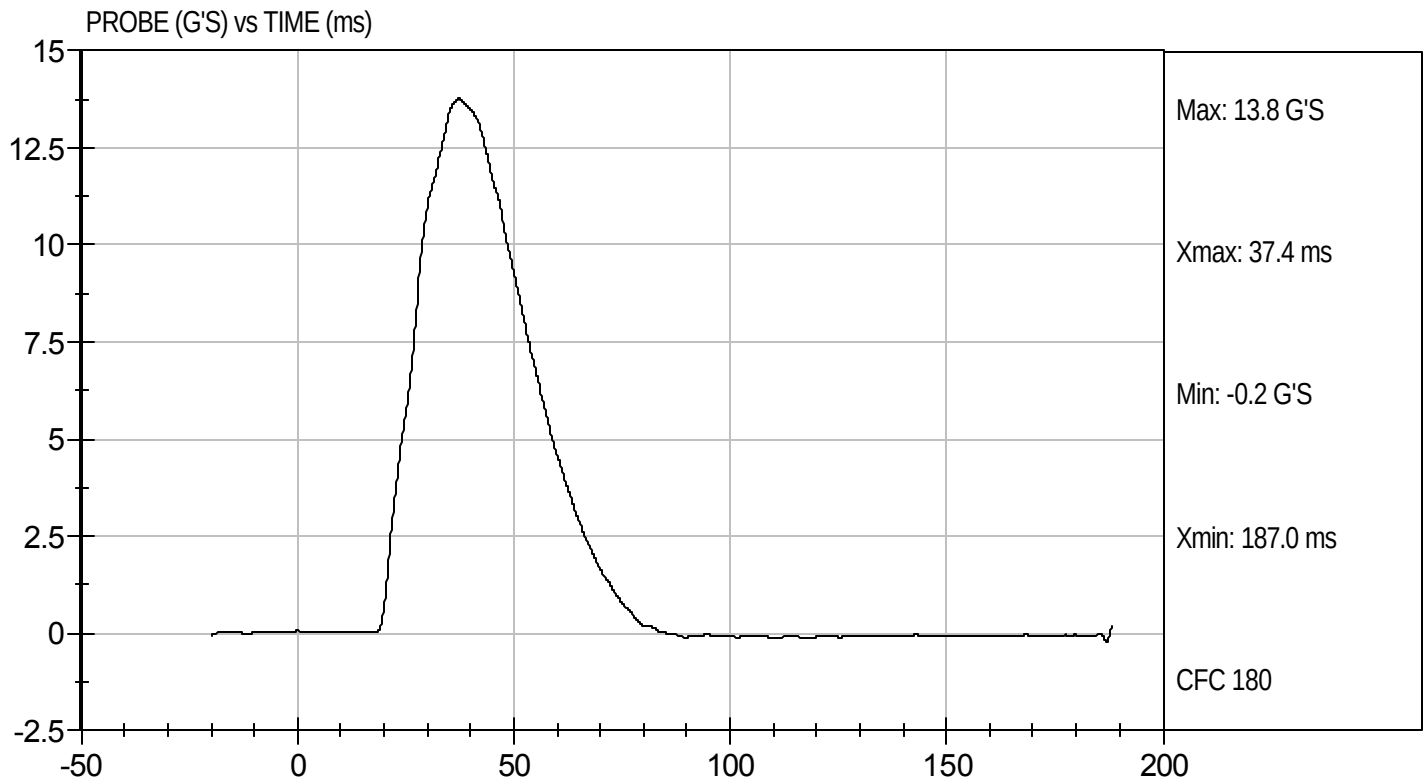
11/8/10
Test Date

David Winkelbauer
Approved By



Test Desc: Abdomen Impact
Component ID: D103866

Test Date: 11/8/10
Velocity: 14.36 ft/s, 4.38 m/s

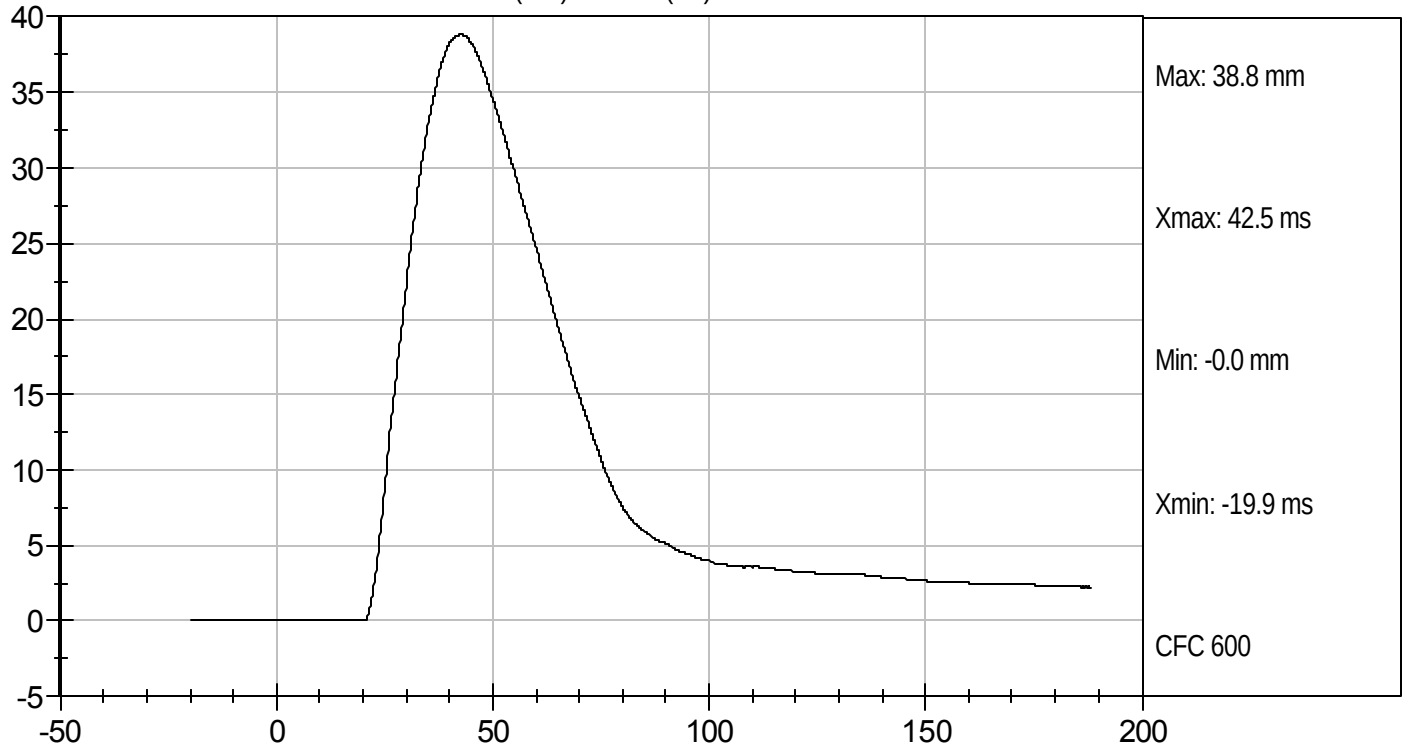




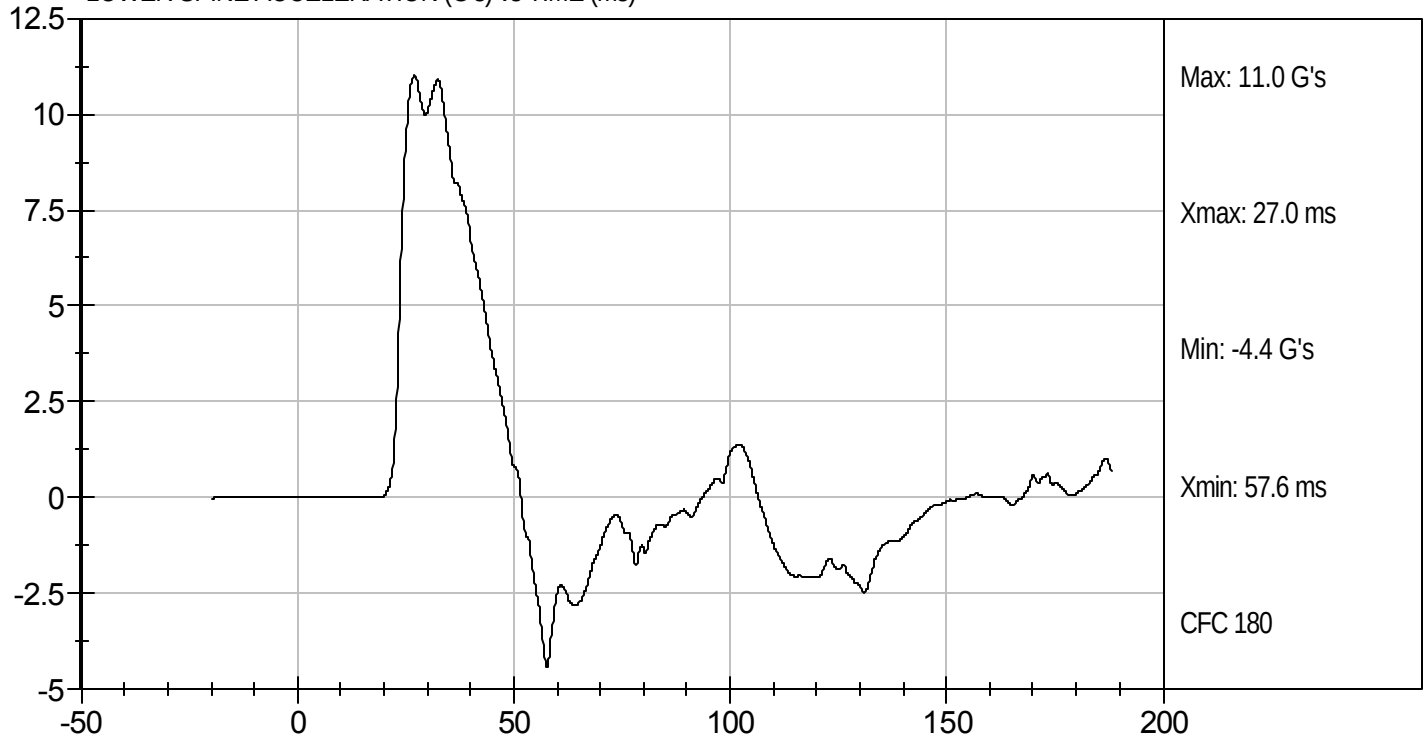
Test Desc: Abdomen Impact
Component ID: D103866

Test Date: 11/8/10
Velocity: 14.36 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: D103867

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	22.0	Pass
Humidity	%	10 to 70	28	Pass
Impact Velocity	m/s	6.60 to 6.80	6.74	Pass
Peak Impactor Acceleration	G's	38 to 47	44	Pass
Pelvis Y Acceleration after 6 ms	G's	34 to 42	42	Pass
Peak Acetabulum Force	N	3600 to 4300	4111	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

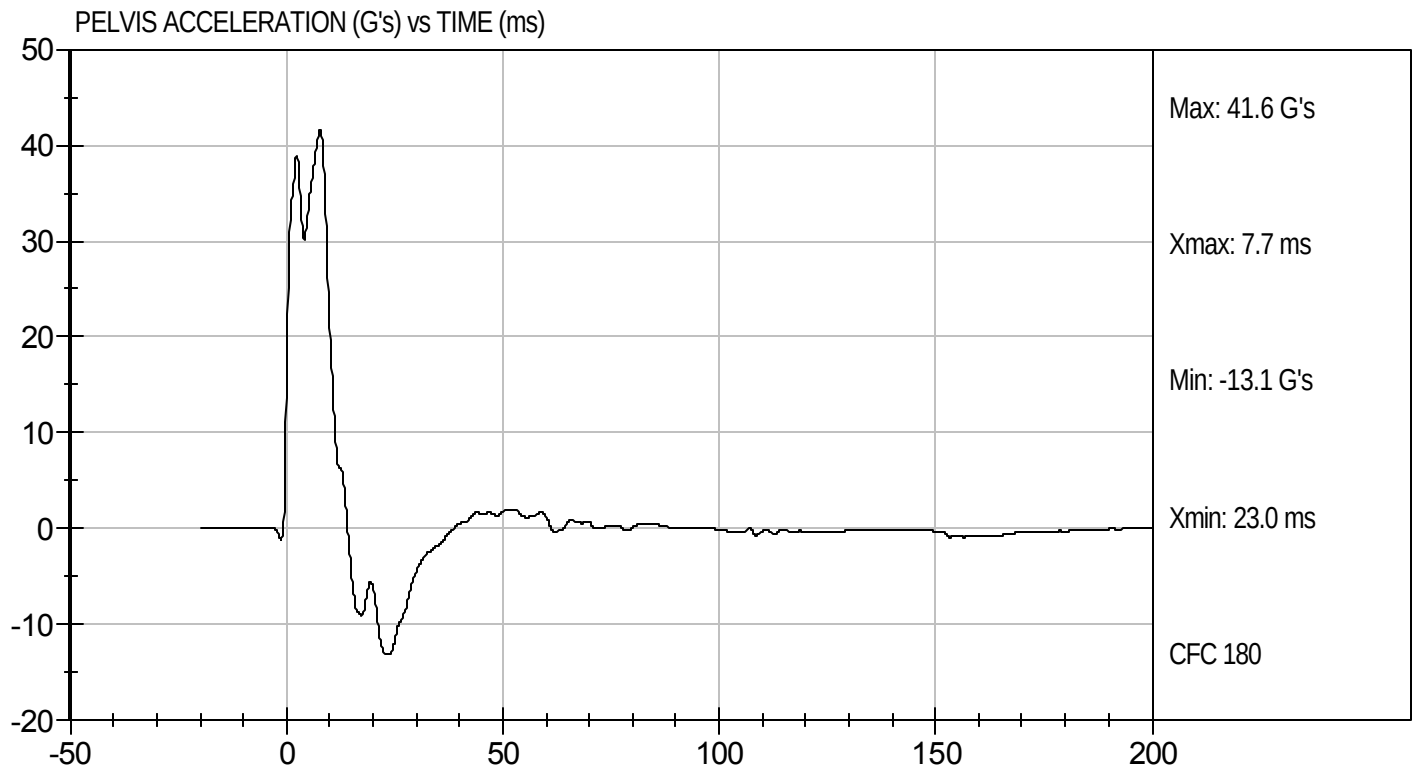
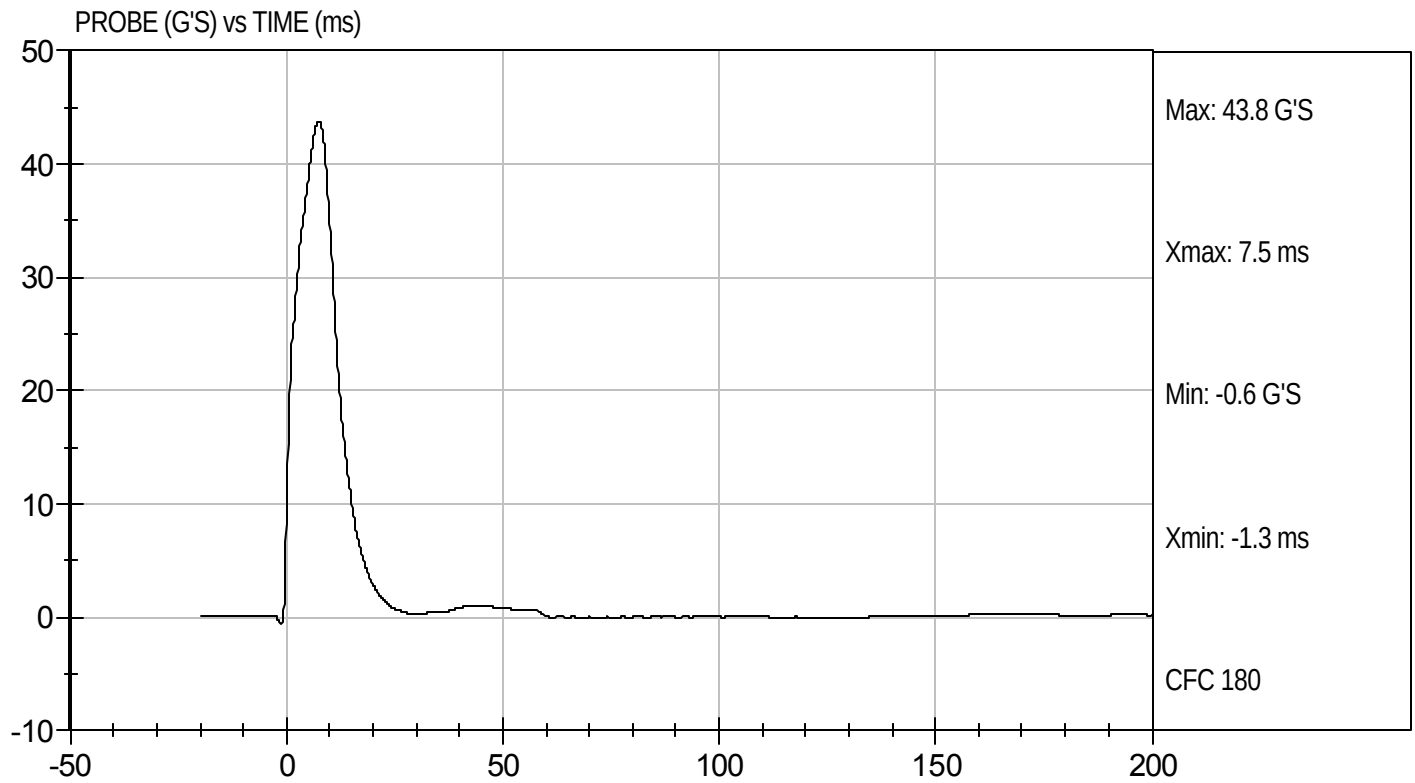
11/8/10
Test Date

David Winkelbauer
Approved By



Test Desc: Pelvis Impact
Component ID: D103867

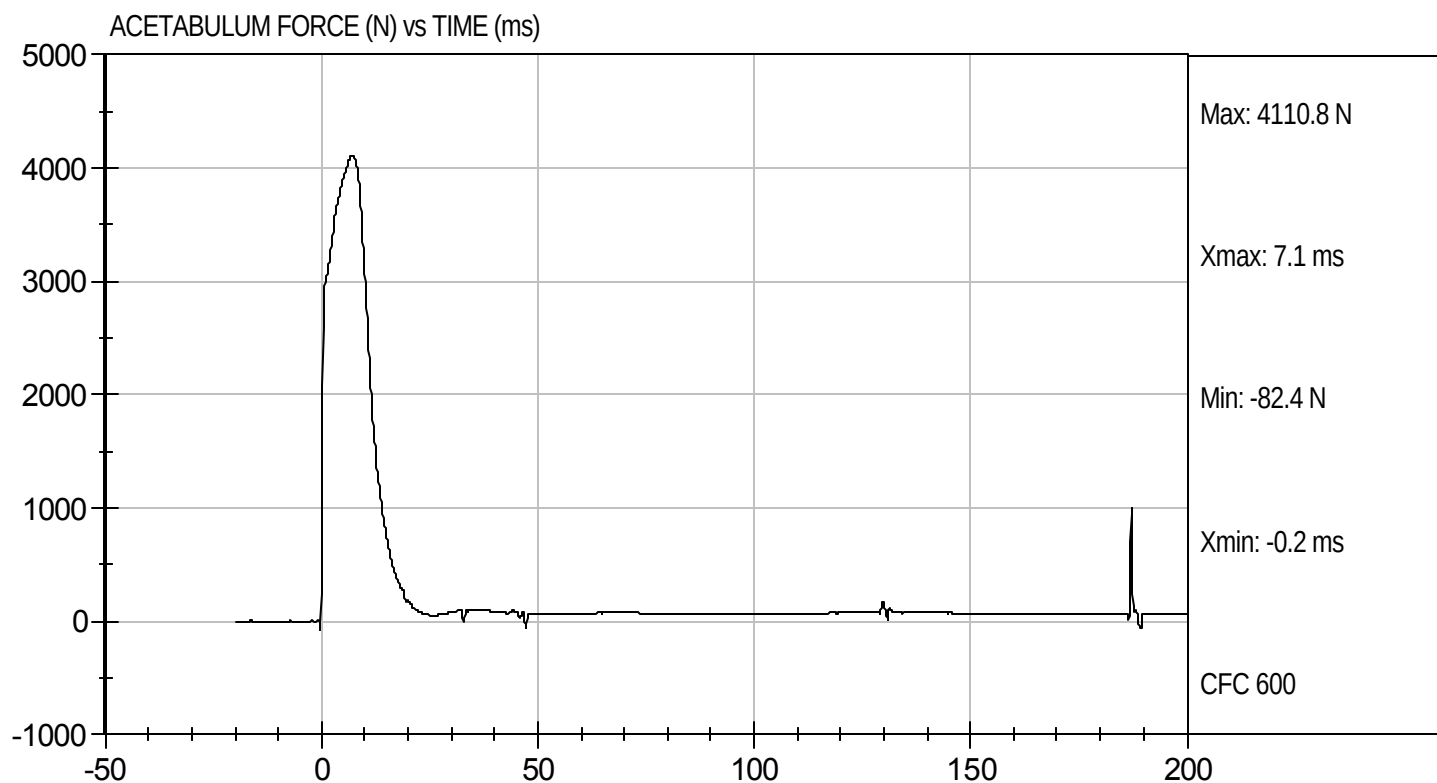
Test Date: 11/8/10
Velocity: 22.1 ft/s, 6.74 m/s





Test Desc: Pelvis Impact
Component ID: D103867

Test Date: 11/8/10
Velocity: 22.1 ft/s, 6.74 m/s



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

ATD Serial No: 296

Test I.D: D103868

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	22.0	Pass
Humidity	%	10 to 70	28	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	4390	Pass
Overall Test Results			Pass	


Laboratory Technician

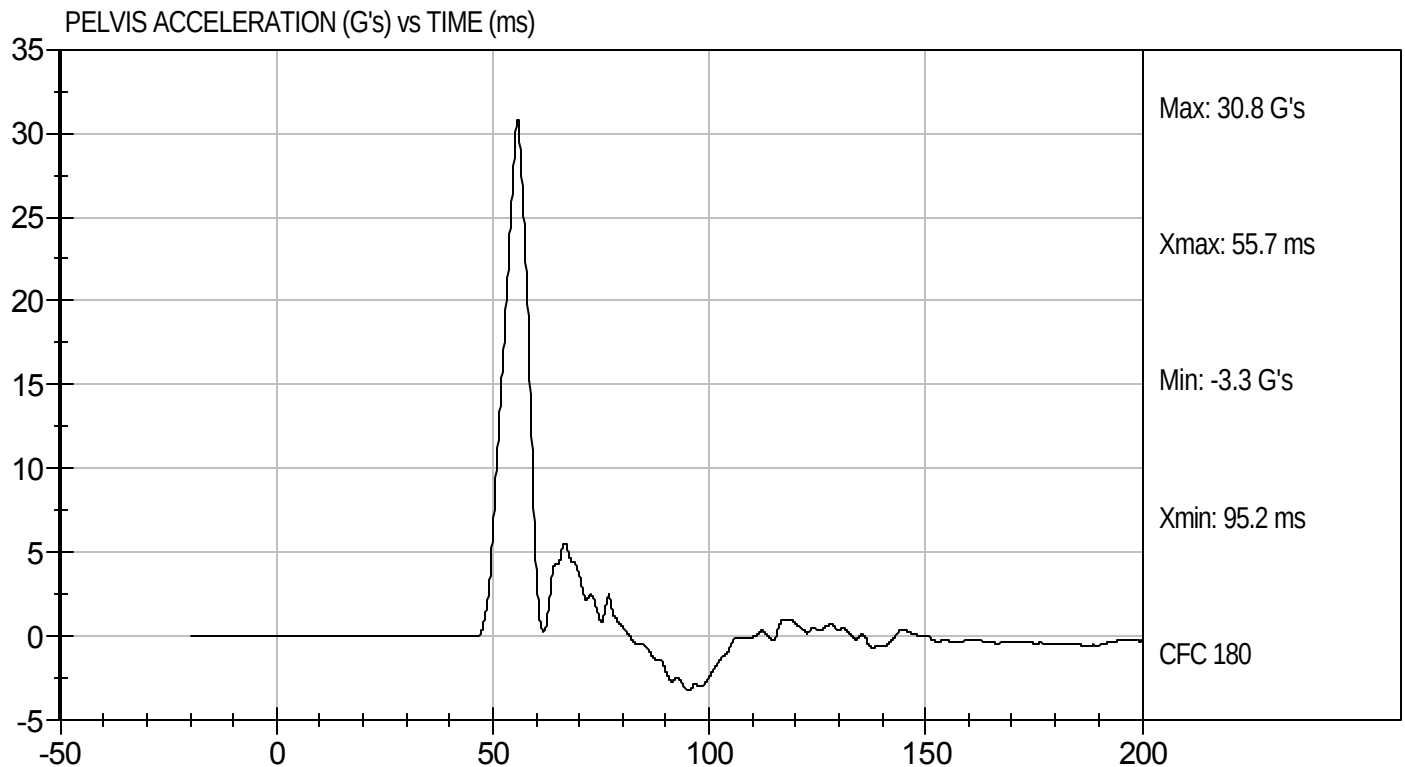
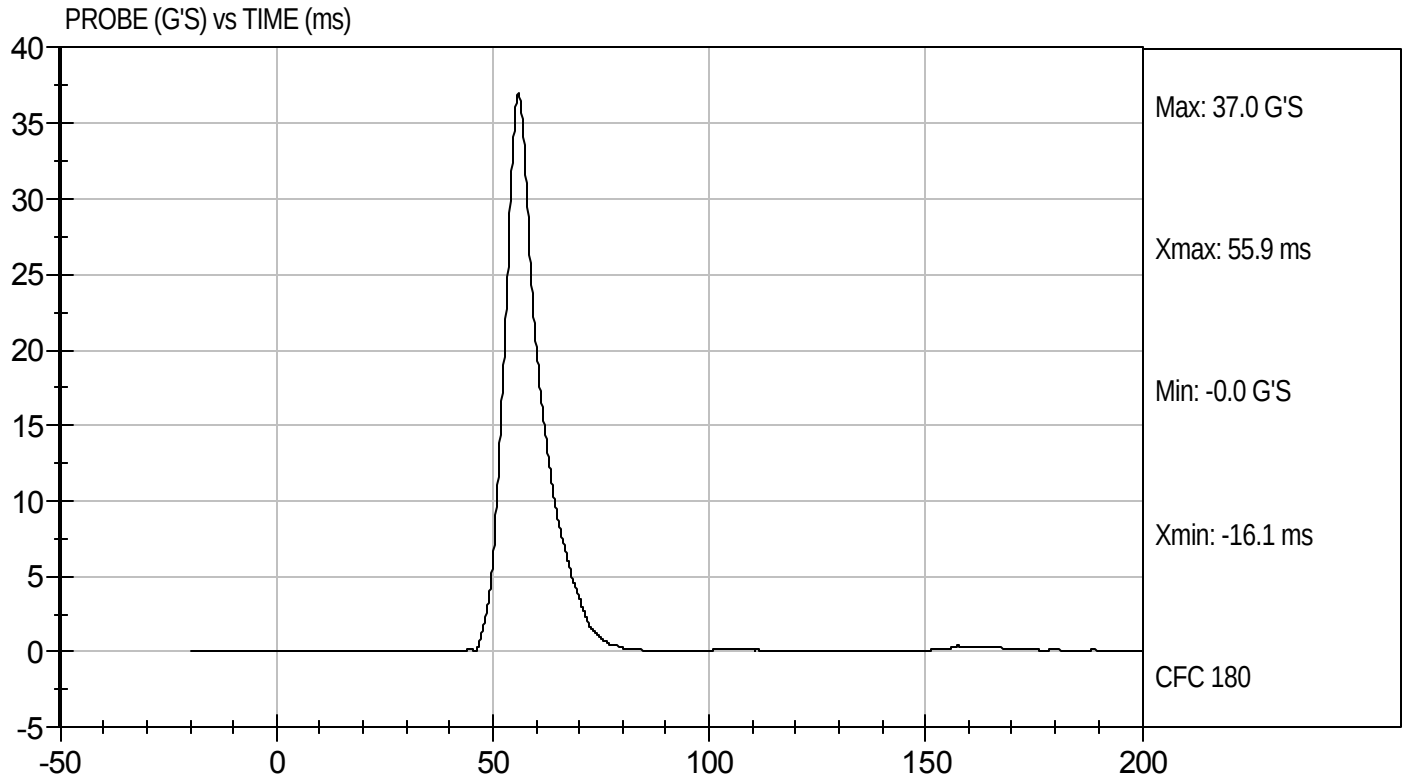
11/8/10
Test Date


Approved By



Test Desc: Iliac Impact
Component ID: D103868

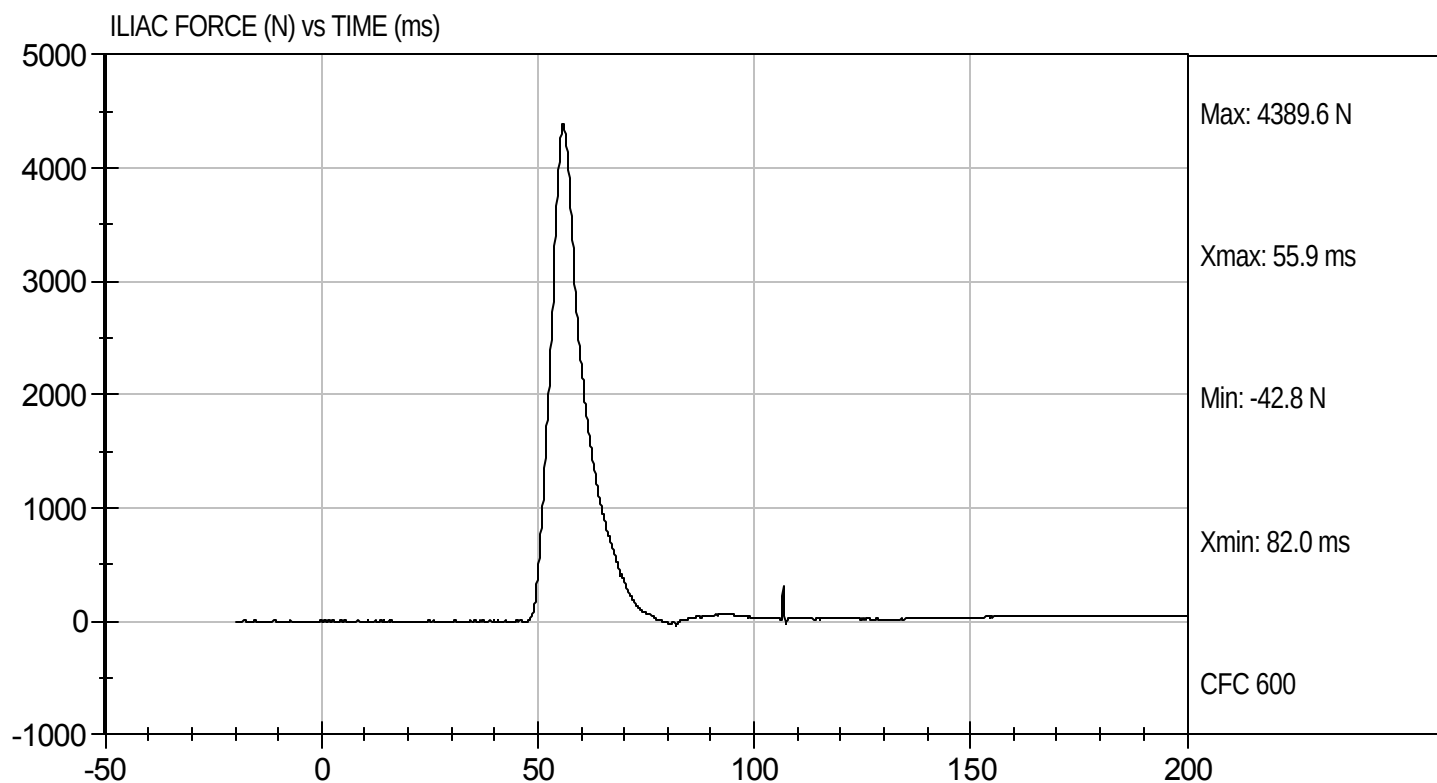
Test Date: 11/8/10
Velocity: 14.36 ft/s, 4.38 m/s





Test Desc: Iliac Impact
Component ID: D103868

Test Date: 11/8/10
Velocity: 14.36 ft/s, 4.38 m/s



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

ATD Serial No: 296

Test ID: D104041

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	34	Pass
Peak Resultant Acceleration	G's	115 to 137	123	Pass
Peak Lateral Acceleration	G's	+/- 15	-6.6	Pass
Unimodal	N/A	<15%	Yes	Pass
Overall Test Results				Pass

Jessica Hall
Laboratory Technician

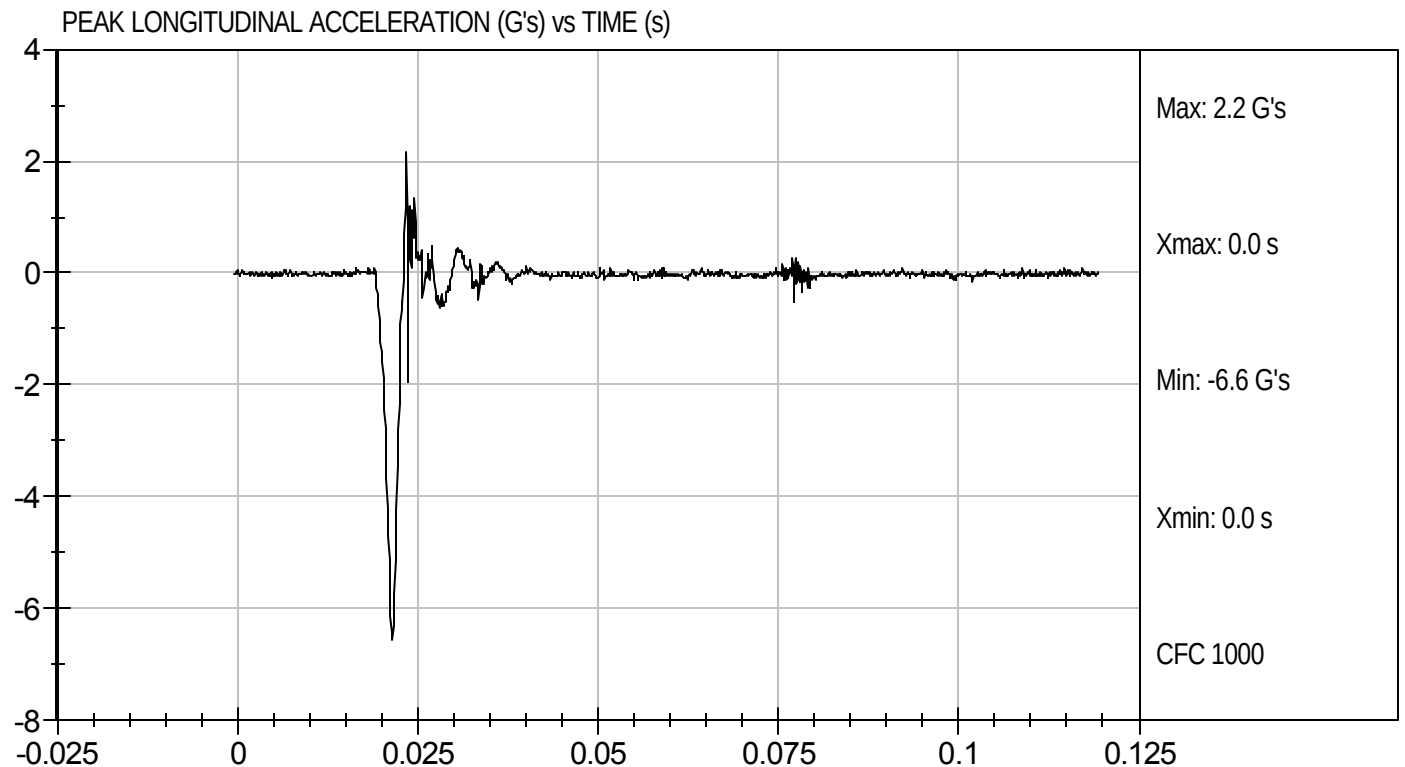
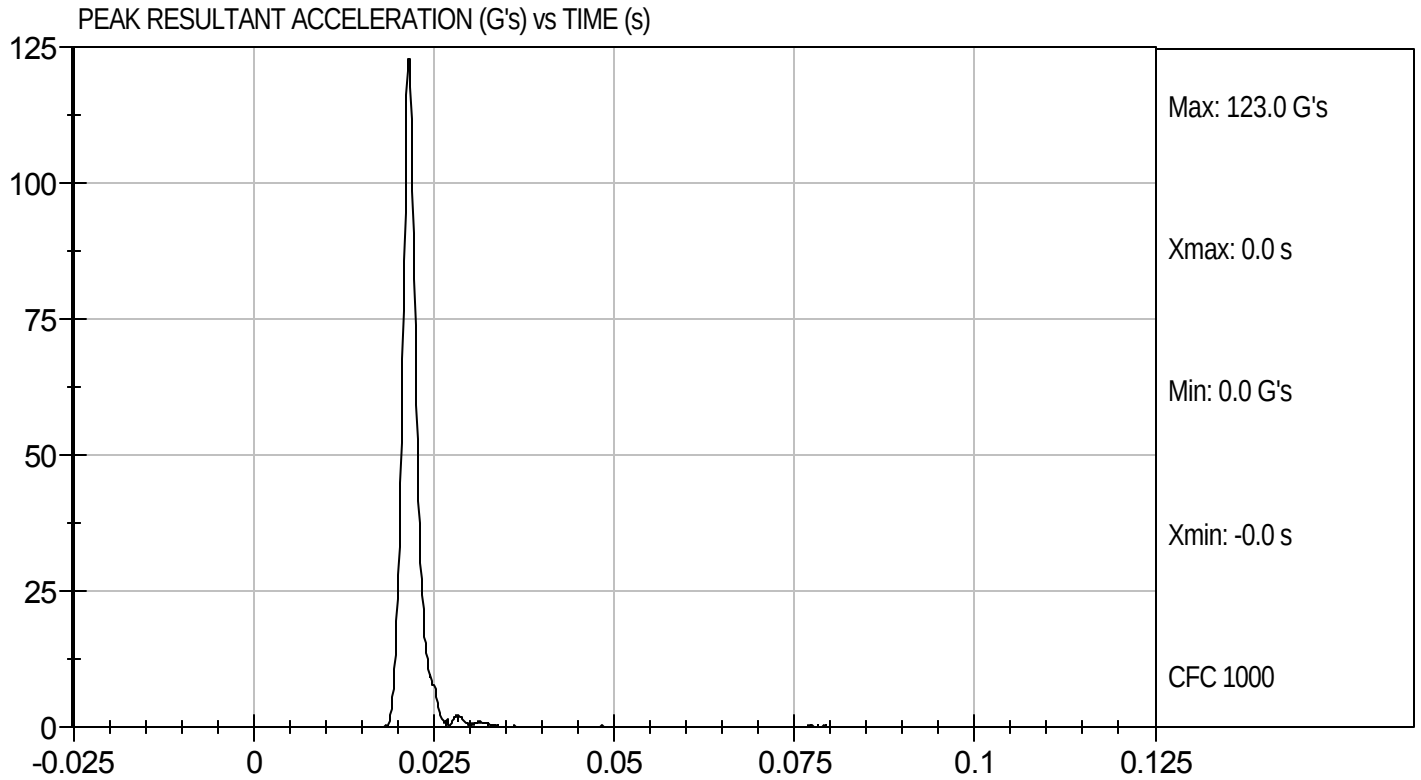
11/17/10
Test Date

David Winkelbauer
Approved By



Test Desc: Head Drop
Component ID: D104041

Test Date: 11/17/10
Velocity: 0 ft/s, 0 m/s

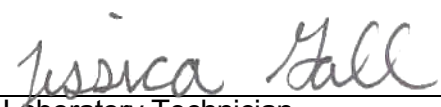


MGA RESEARCH CORPORATION
LATERAL NECK PENDULUM TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

Test I.D: D104042

Tested Parameter		Units	Specification	Result	Pass/Fail
Temperature		deg C	20.6 to 22.2	21.8	Pass
Humidity		%	10 to 70	30	Pass
Impact Velocity		m/s	5.51 to 5.63	5.58	Pass
Delta Velocity	10 ms	m/s	2.20 to 2.80	2.46	Pass
	15 ms	m/s	3.30 to 4.10	3.52	Pass
	20 ms	m/s	4.40 to 5.40	4.65	Pass
	25 ms	m/s	5.40 to 6.10	5.51	Pass
	25-100 ms	m/s	5.50 to 6.20	5.53	Pass
Maximum D-Plane Rotation		deg	71 to 81	74	Pass
Time of Maximum D-Plane Rotation		ms	50 to 70	62	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	120	Pass
Overall Test Results				Pass	


 Laboratory Technician

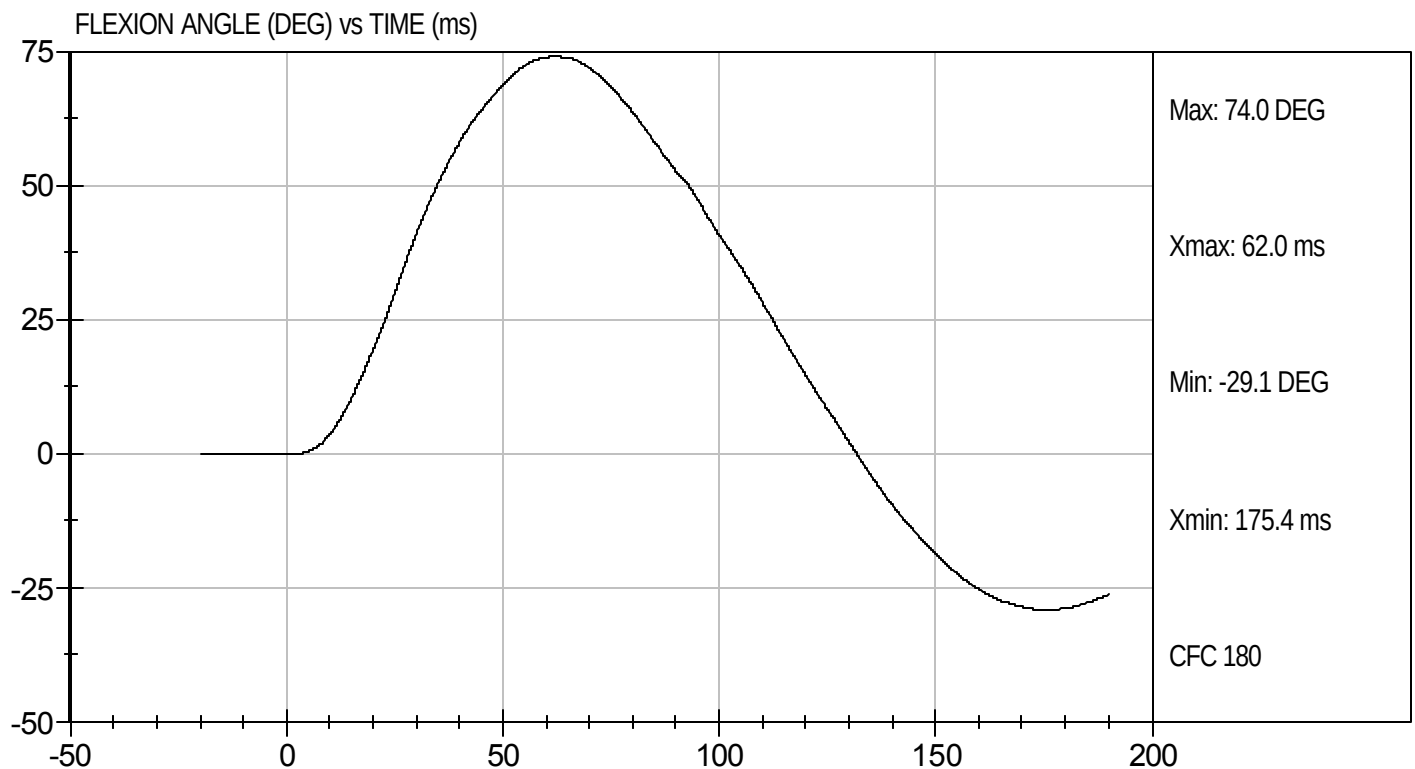
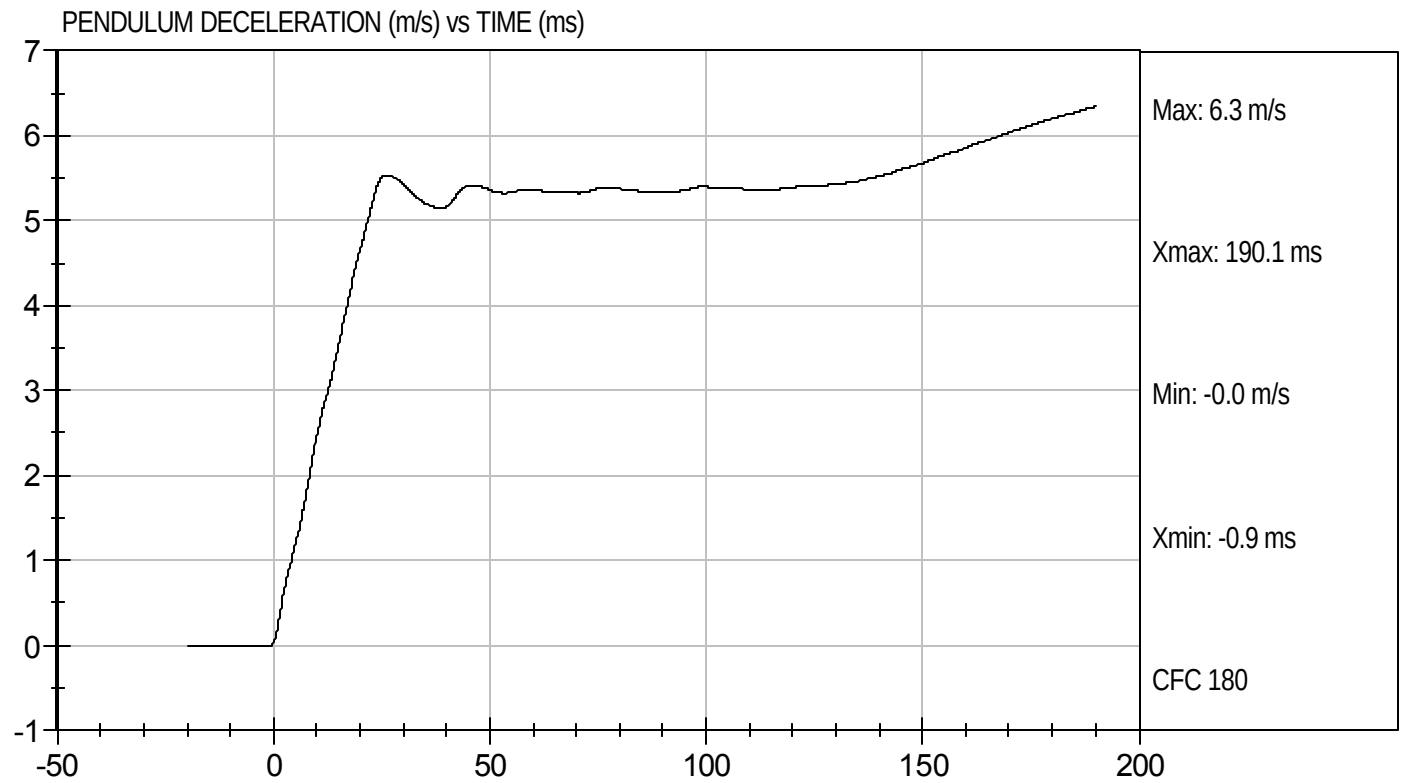
11/17/10
 Test Date


 Approved By



Test Desc: Neck Bending
Component ID: D104042

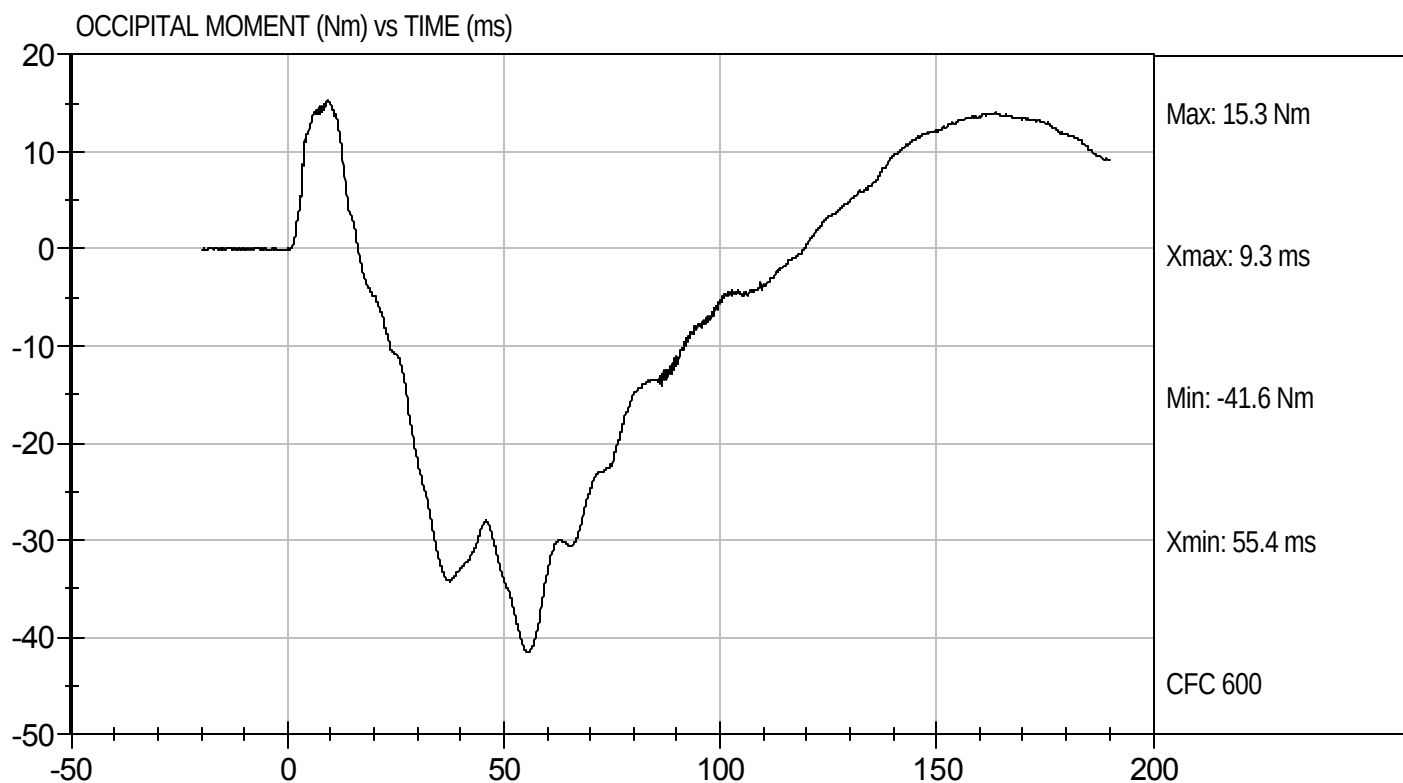
Test Date: 11/17/10
Velocity: 18.31 ft/s, 5.58 m/s





Test Desc: Neck Bending
Component ID: D104042

Test Date: 11/17/10
Velocity: 18.31 ft/s, 5.58 m/s



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

ATD Serial No: 296

Test ID: D104043

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	22.1	Pass
Laboratory Relative Humidity	%	10 to 70	34	Pass
Impact Velocity	m/s	4.20 to 4.40	4.30	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	19	Pass
			Overall Test Results	Pass


Laboratory Technician

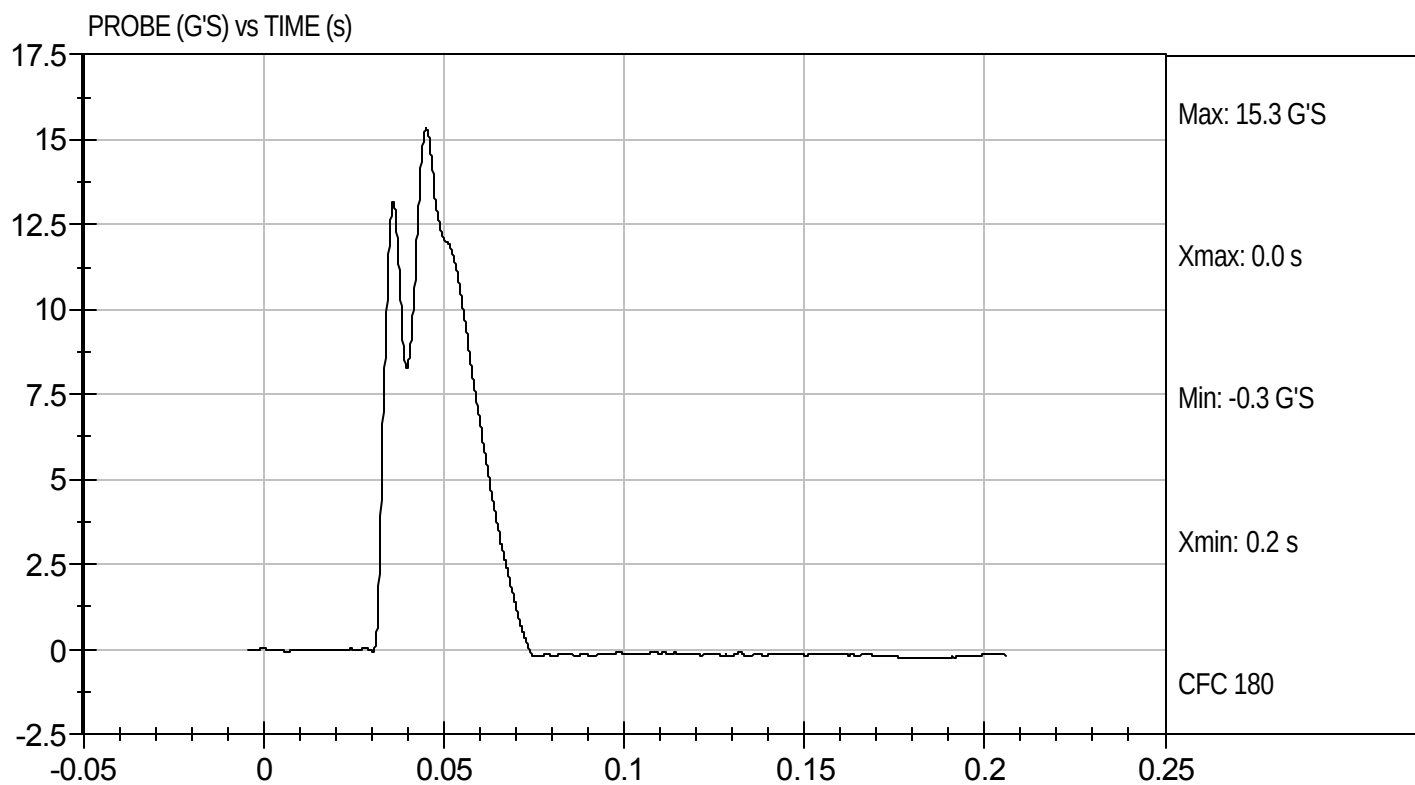
11/17/10
Test Date


Approved By



Test Desc: Shoulder Impact
Component ID: D104043

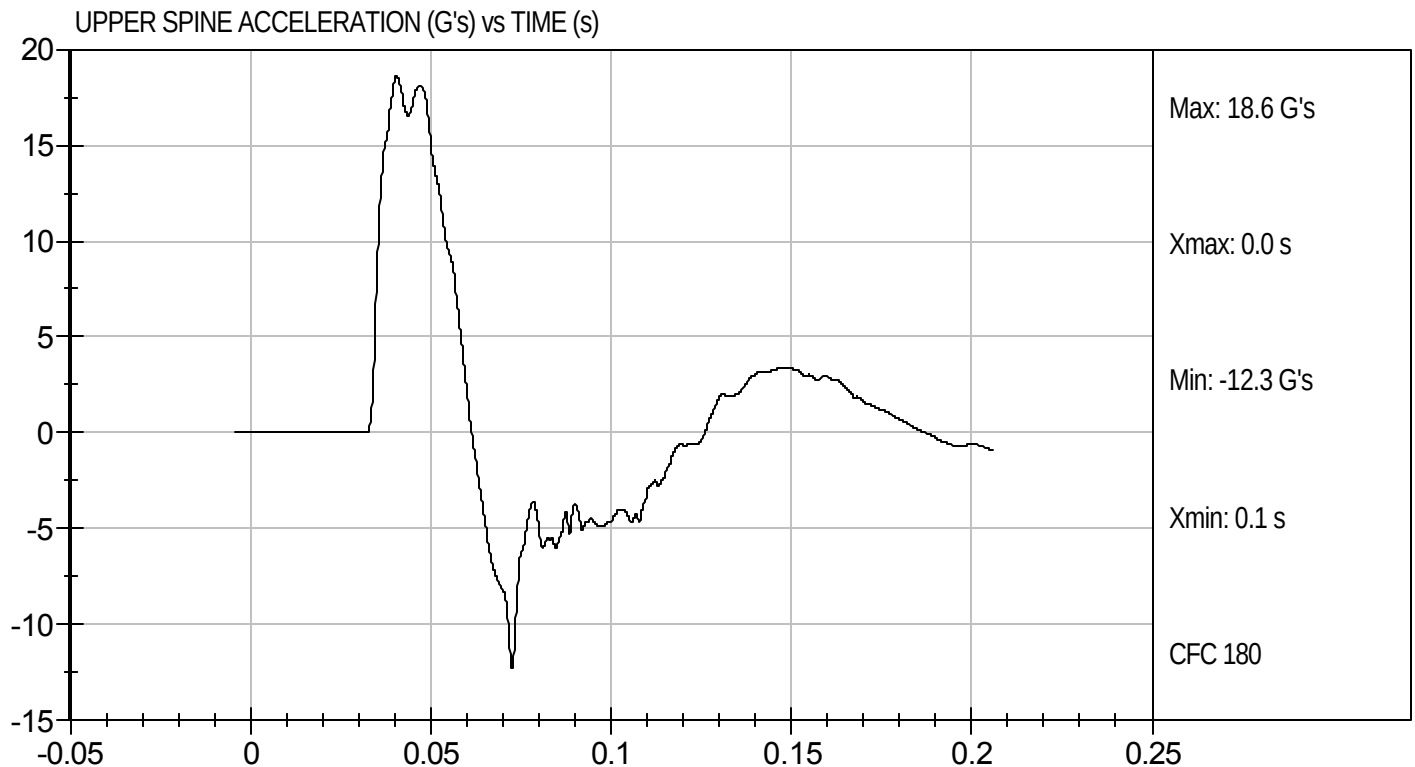
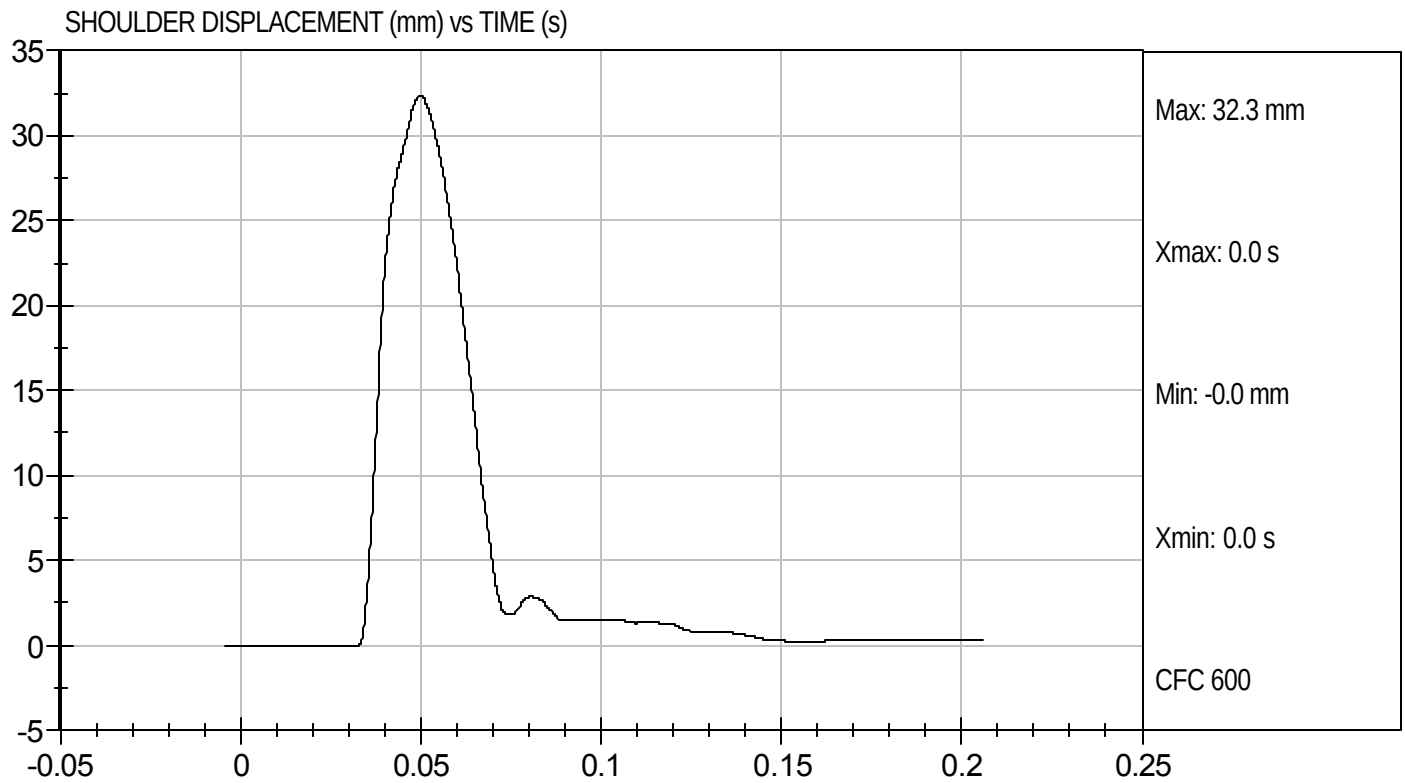
Test Date: 11/17/10
Velocity: 14.12 ft/s, 4.30 m/s





Test Desc: Shoulder Impact
Component ID: D104043

Test Date: 11/17/10
Velocity: 14.12 ft/s, 4.30 m/s



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

ATD Serial No: 296

Test I.D: D104044

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	22.1	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	38	Pass
Upper Rib Displacement	mm	25 to 32	28	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	37	Pass
Lower Spine (T12) Y Acceleration	G's	29 to 37	33	Pass
			Overall Test Results	Pass


Laboratory Technician

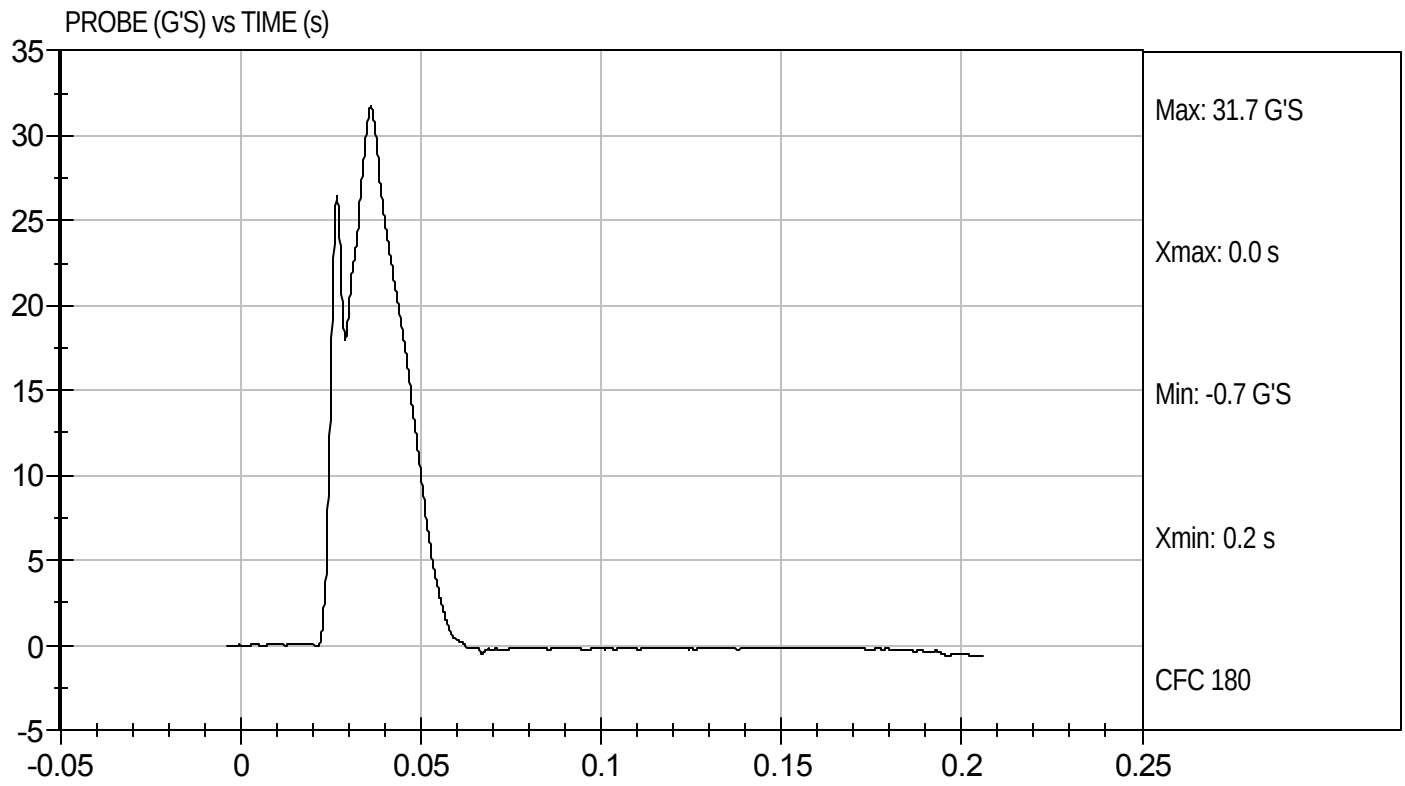
11/17/10
Test Date


Approved By



Test Desc: Thorax With Arm
Component ID: D104044

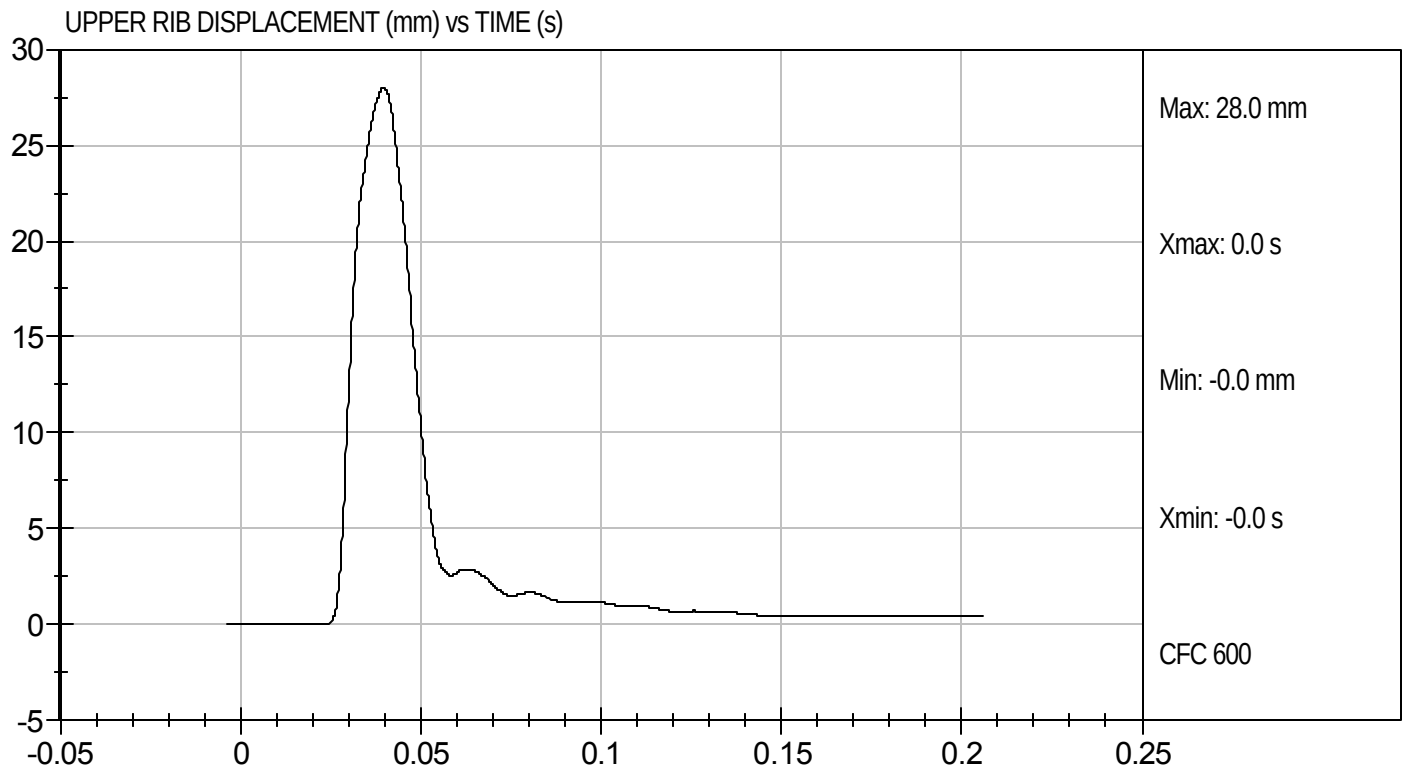
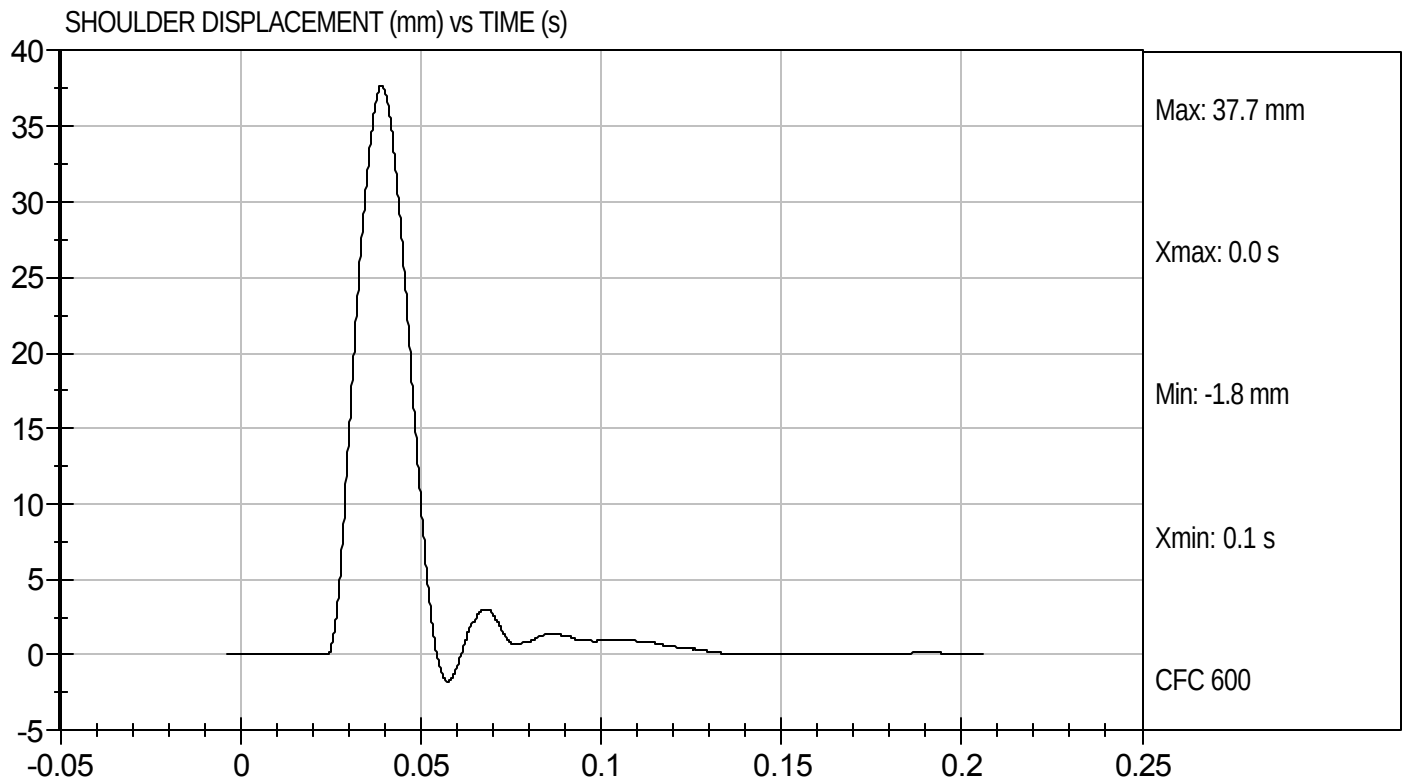
Test Date: 11/17/10
Velocity: 22.22 ft/s, 6.77 m/s





Test Desc: Thorax With Arm
Component ID: D104044

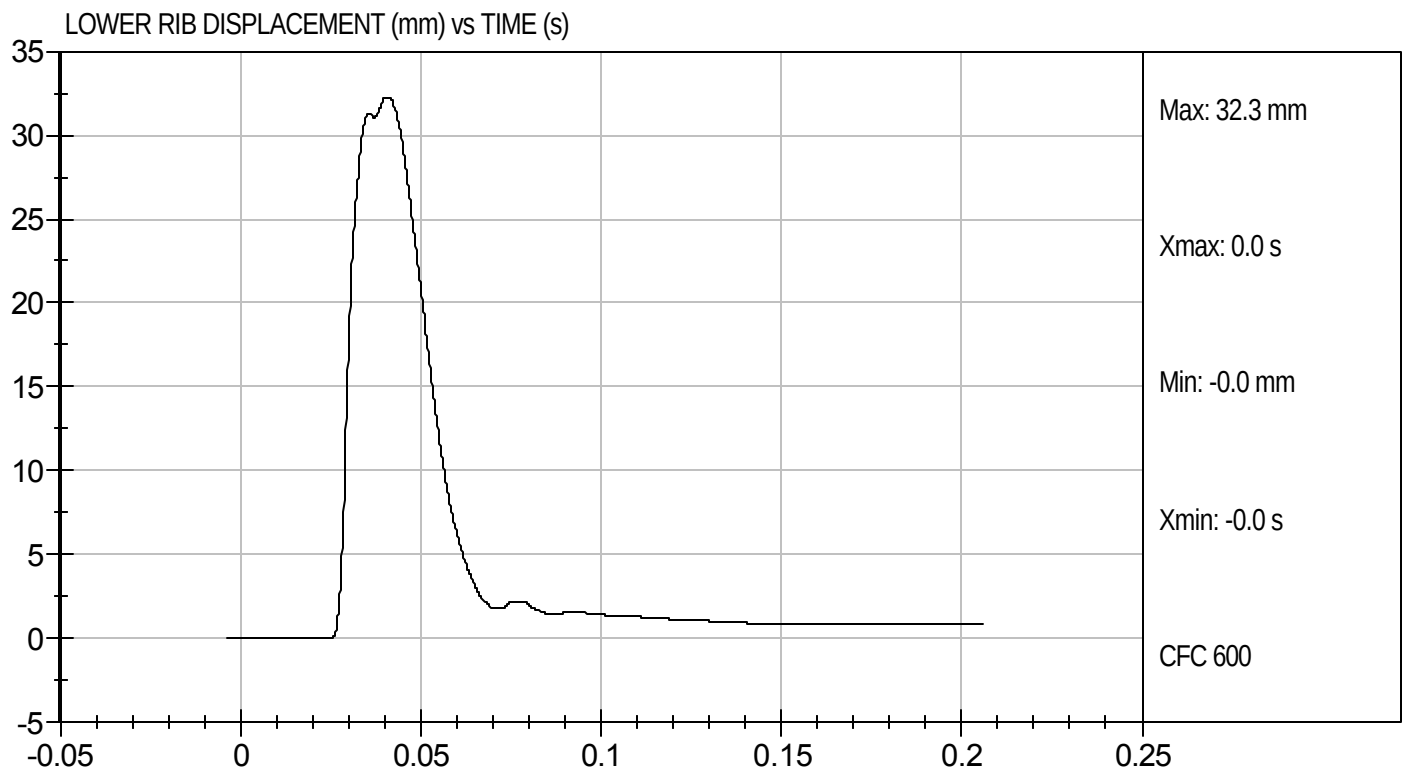
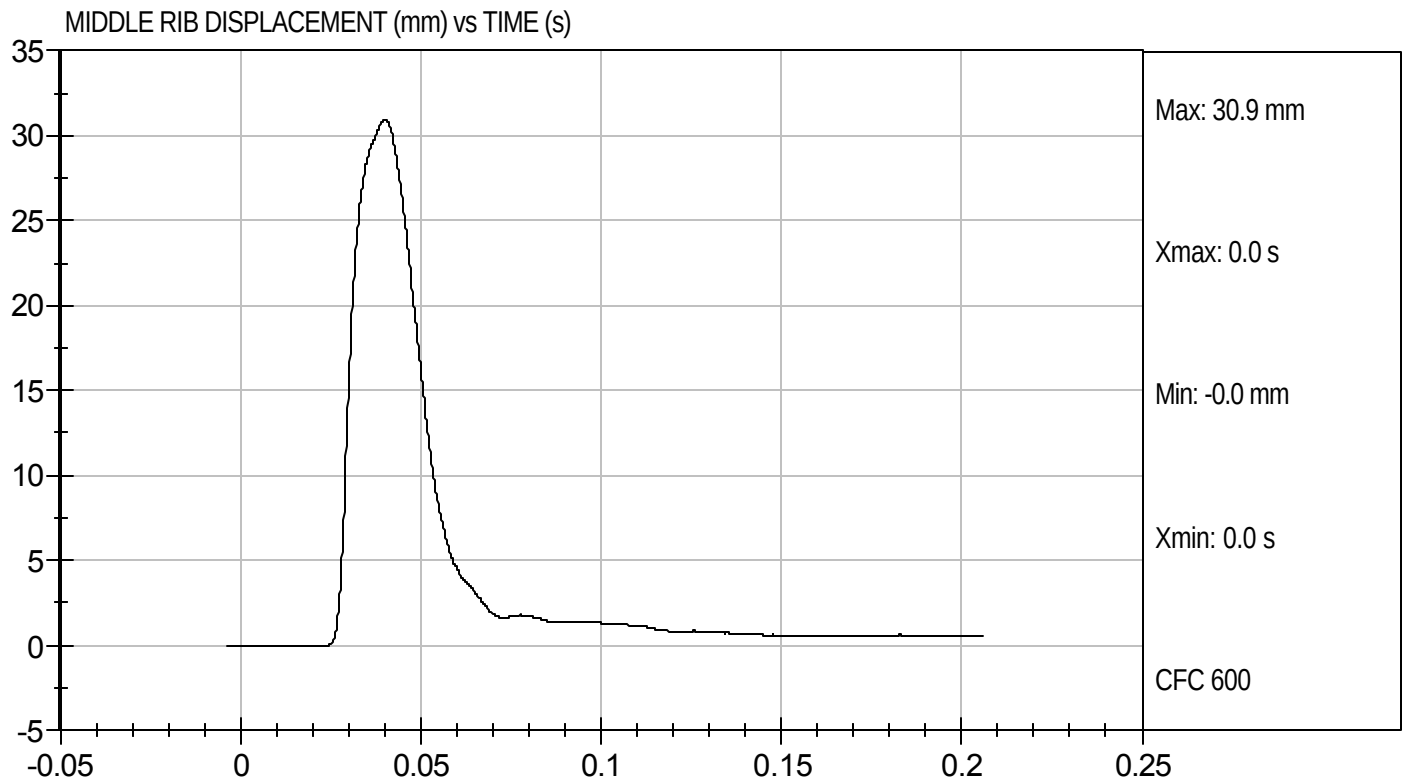
Test Date: 11/17/10
Velocity: 22.22 ft/s, 6.77 m/s





Test Desc: Thorax With Arm
Component ID: D104044

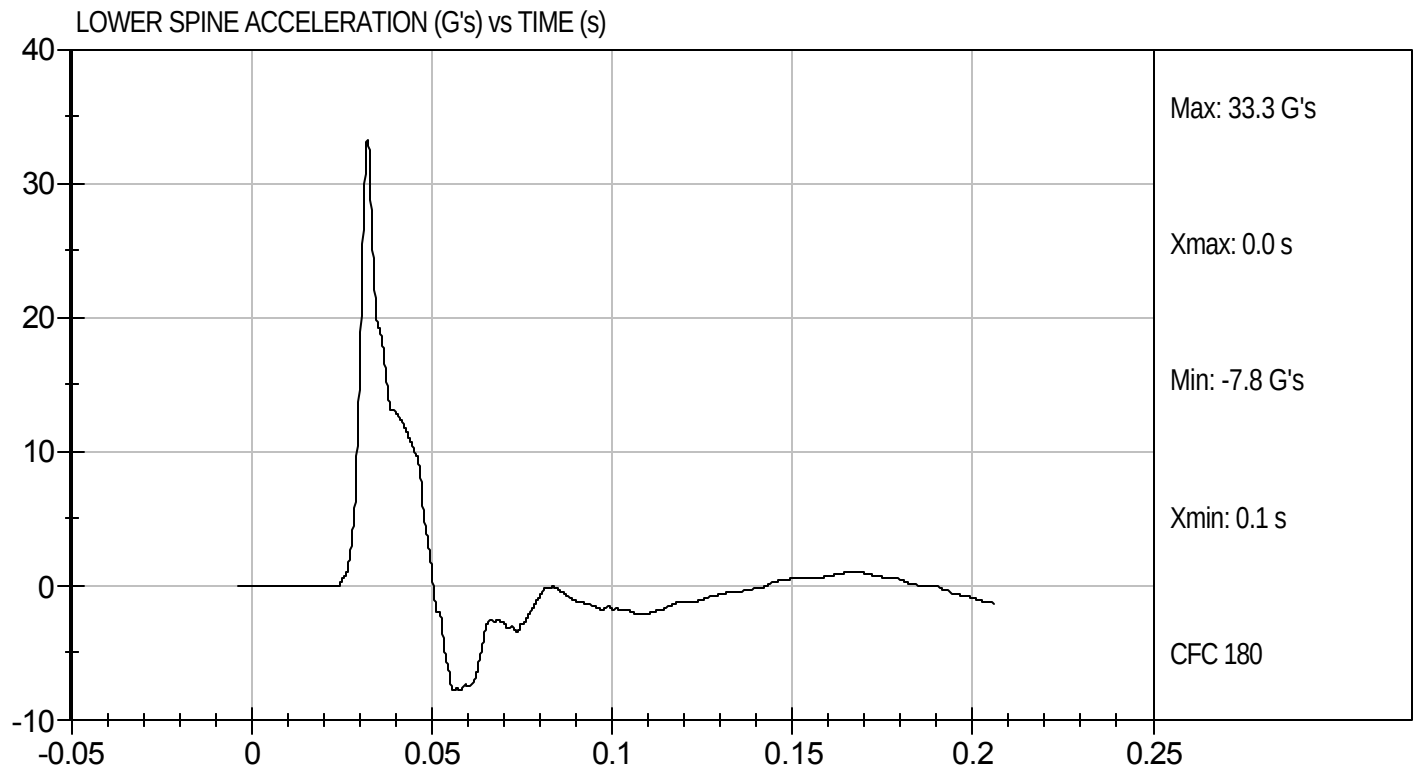
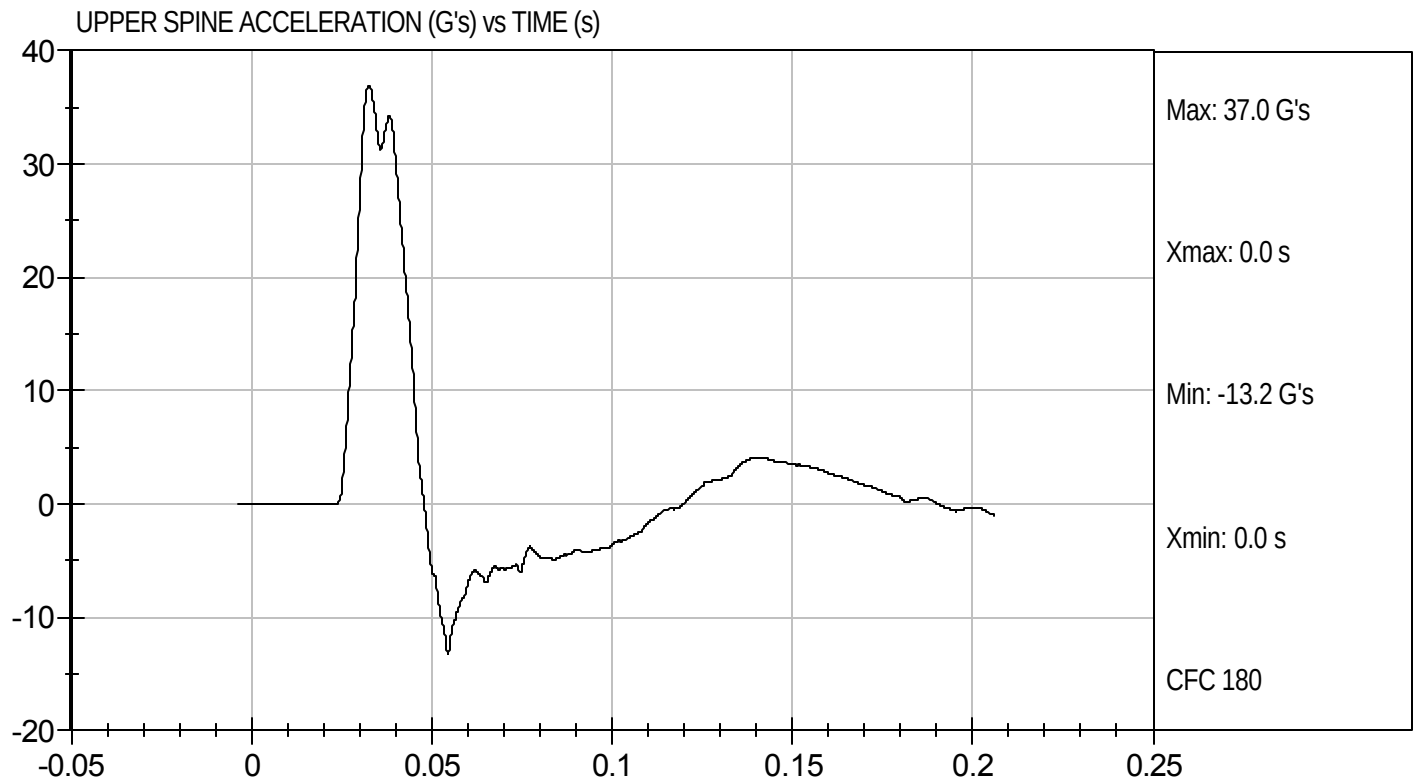
Test Date: 11/17/10
Velocity: 22.22 ft/s, 6.77 m/s





Test Desc: Thorax With Arm
Component ID: D104044

Test Date: 11/17/10
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: D104045

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	4.34	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	37	Pass
Upper Spine (T1) Y Acceleration	G's	13 to 17	14	Pass
Lower Spine (T12) Y Acceleration	G's	7 to 11	8	Pass
Overall Test Results				Pass

Jessica Gall
Laboratory Technician

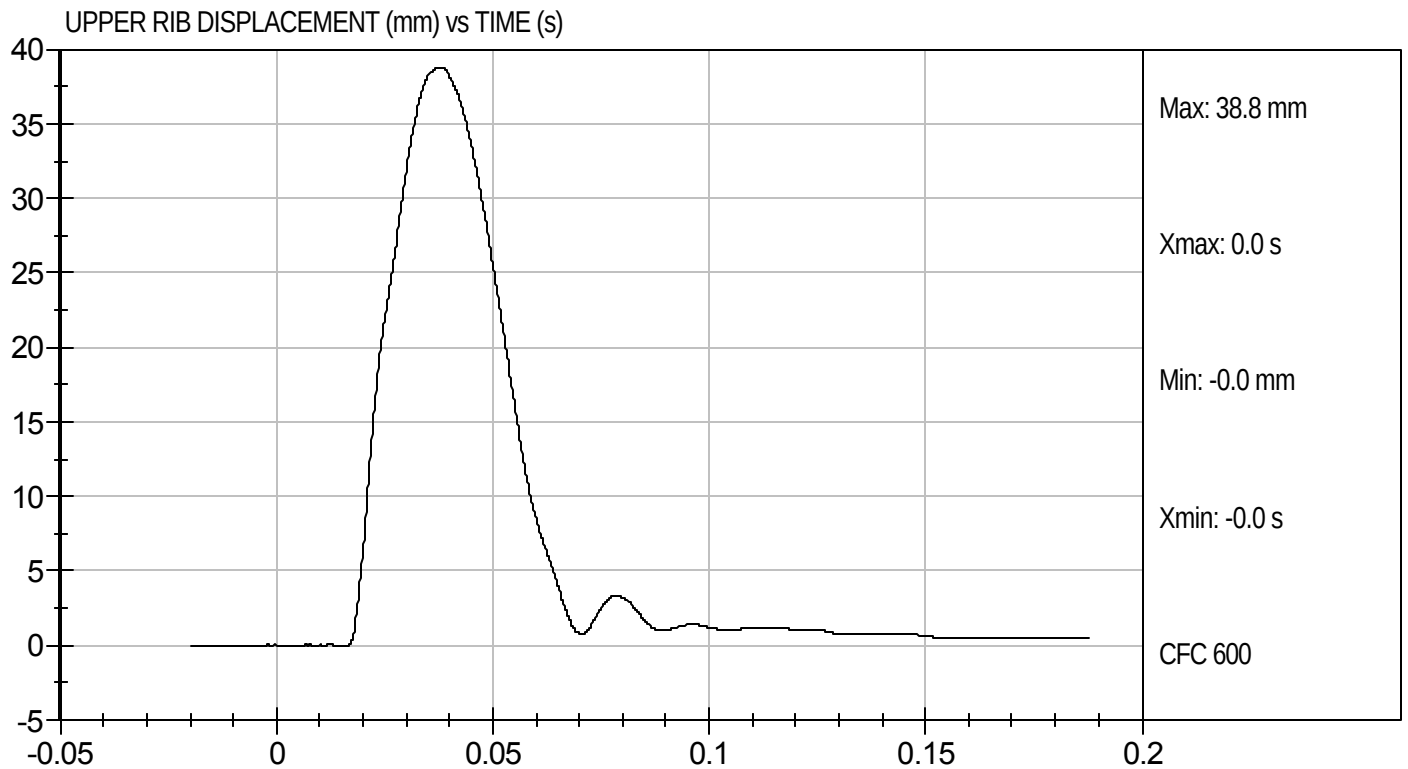
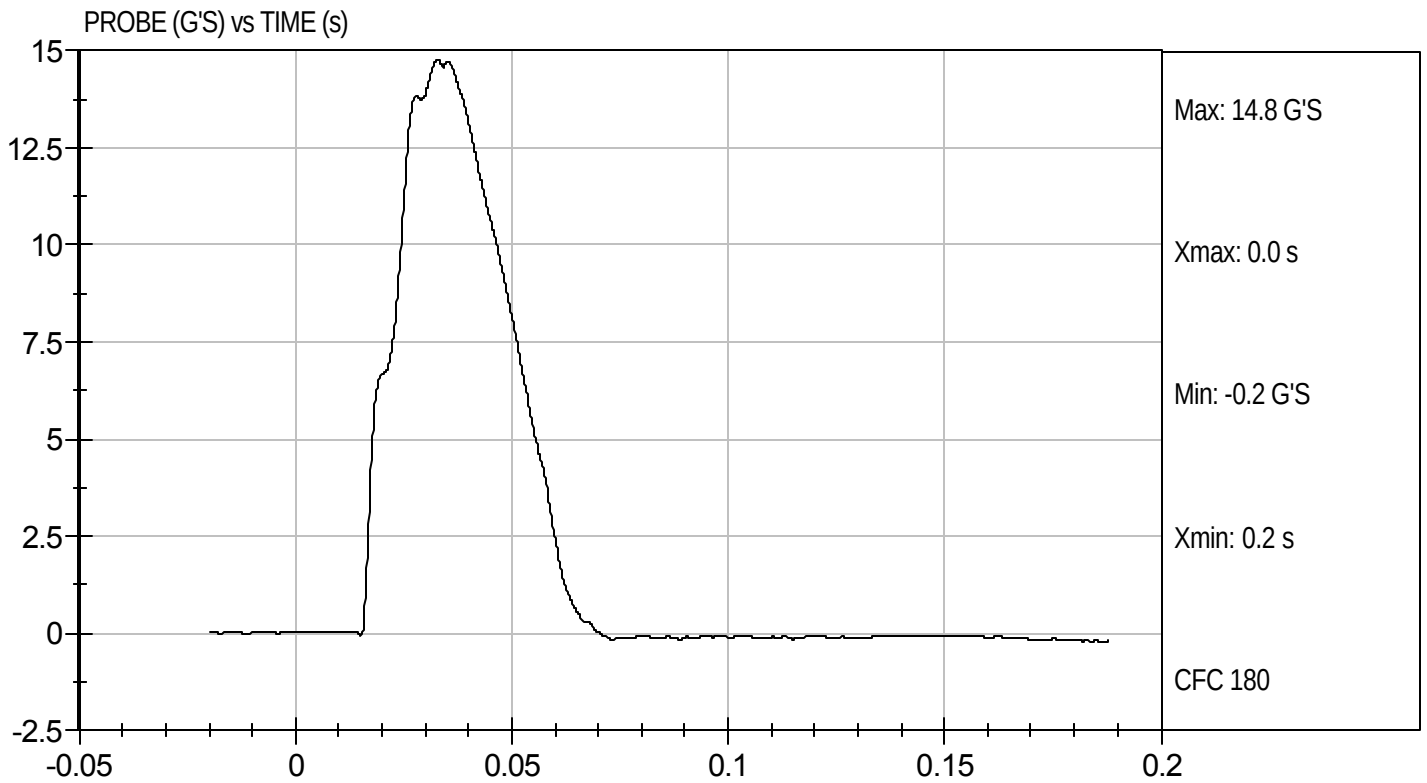
11/17/10
Test Date

David Winkelbauer
Approved By



Test Desc: Thorax Without Arm
Component ID: D104045

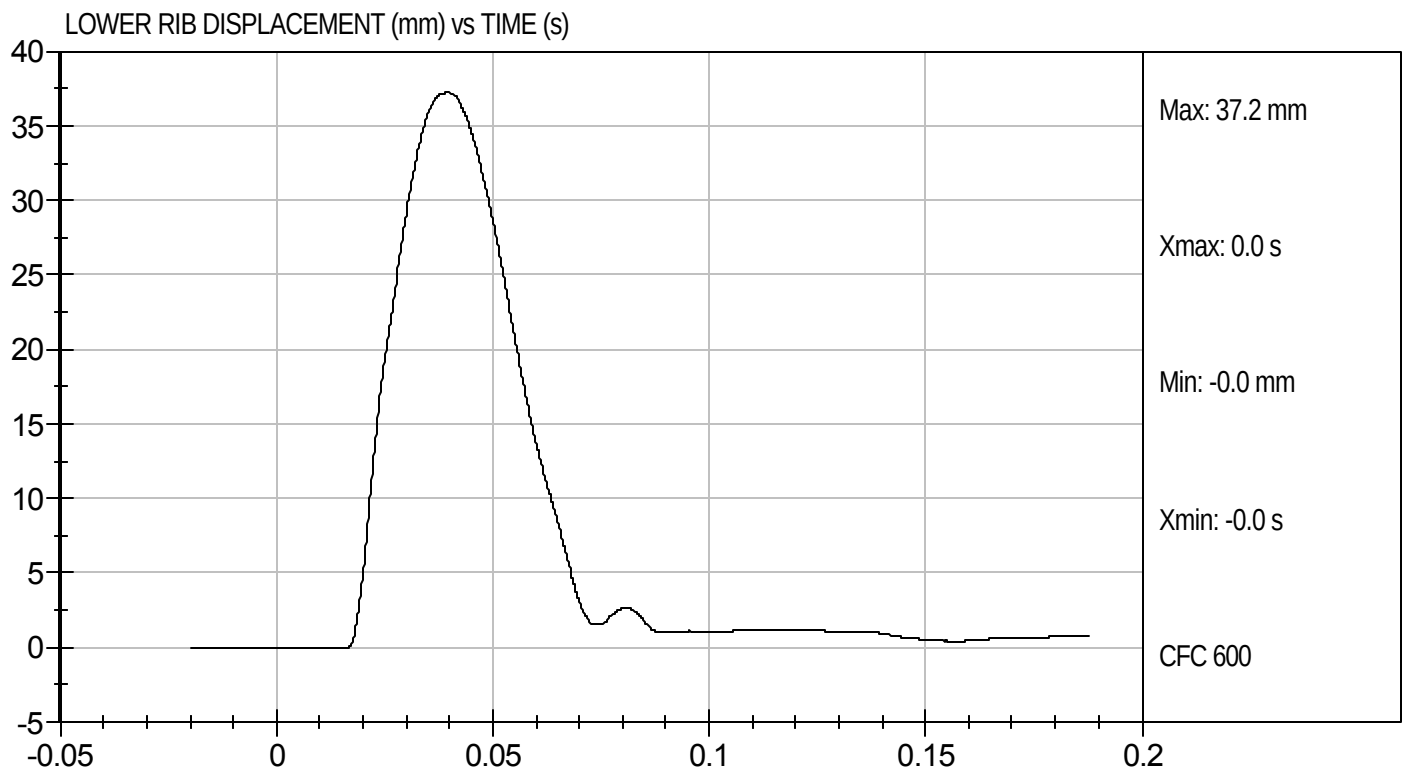
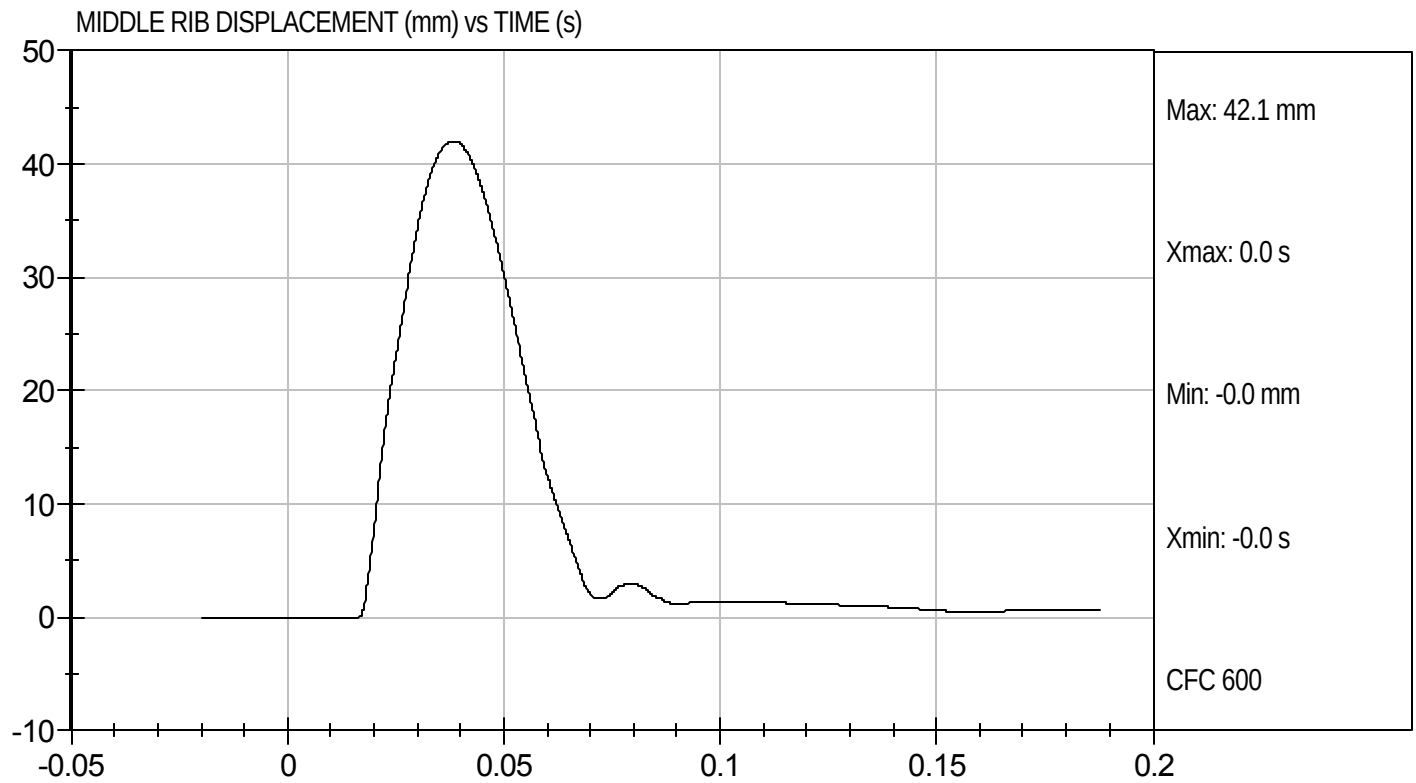
Test Date: 11/17/10
Velocity: 14.25 ft/s, 4.34 m/s





Test Desc: Thorax Without Arm
Component ID: D104045

Test Date: 11/17/10
Velocity: 14.25 ft/s, 4.34 m/s

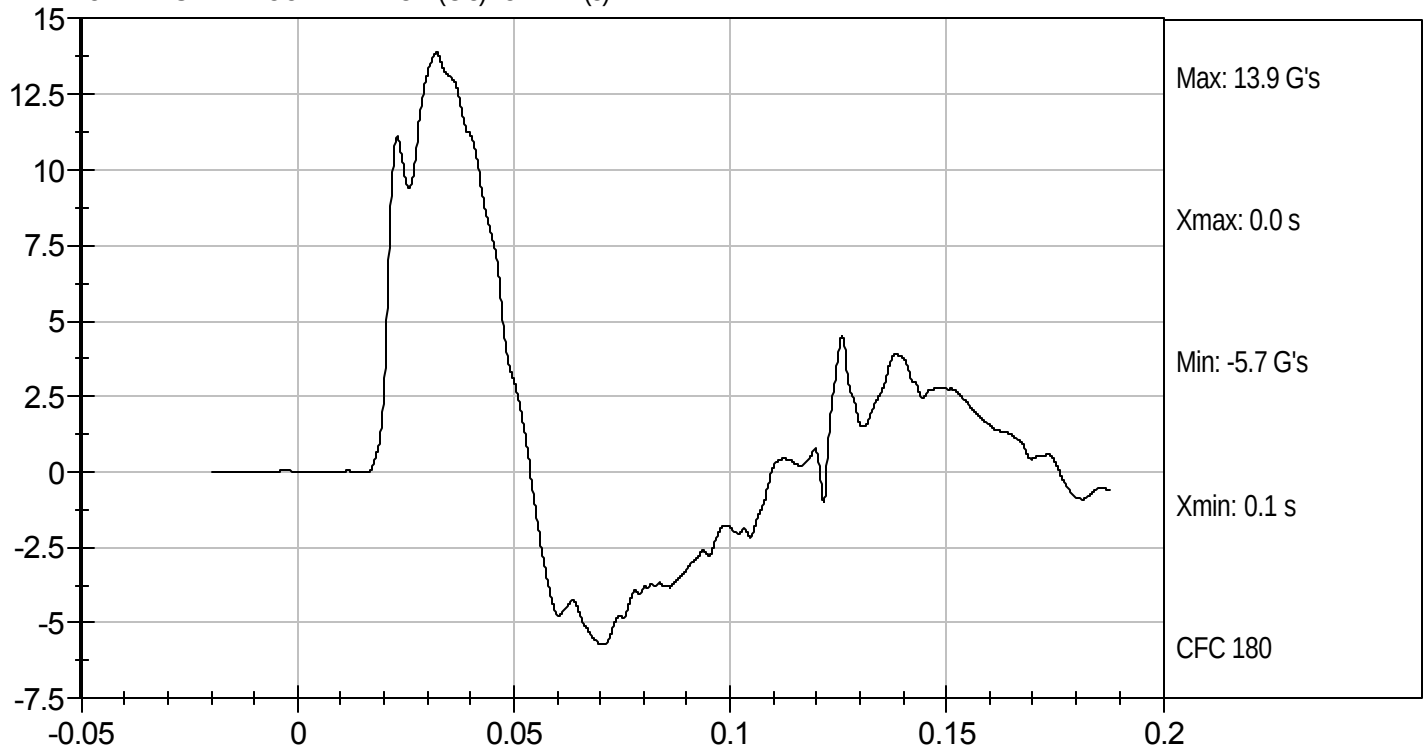




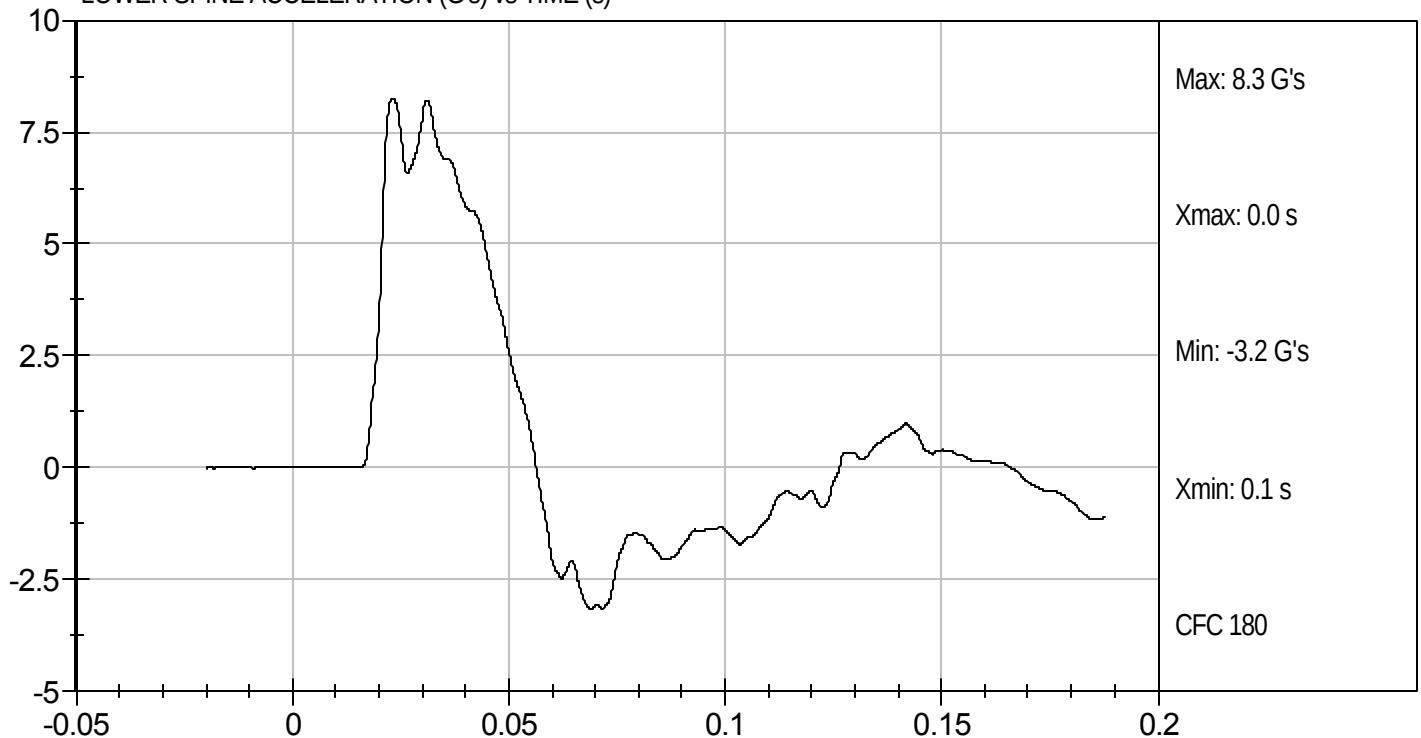
Test Desc: Thorax Without Arm
Component ID: D104045

Test Date: 11/17/10
Velocity: 14.25 ft/s, 4.34 m/s

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



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



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

ATD Serial No: 296

Test I.D: D104046

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	4.38	Pass
Peak Impactor Acceleration	G's	12 to 16	14	Pass
Upper Rib Displacement	mm	36 to 47	44	Pass
Lower Rib Displacement	mm	33 to 44	36	Pass
Lower Spine (T12) Y Acceleration	G's	9 to 14	11	Pass
Overall Test Results			Pass	


Laboratory Technician

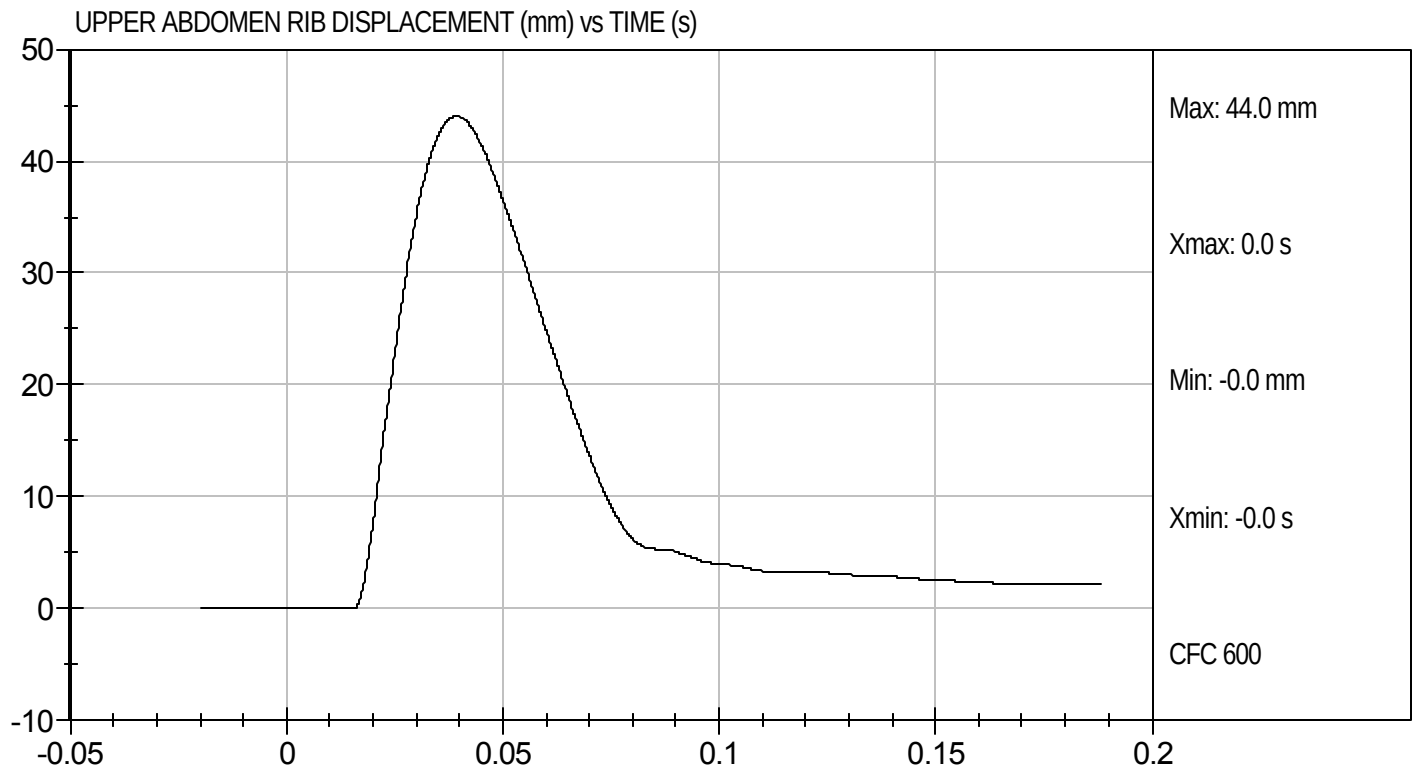
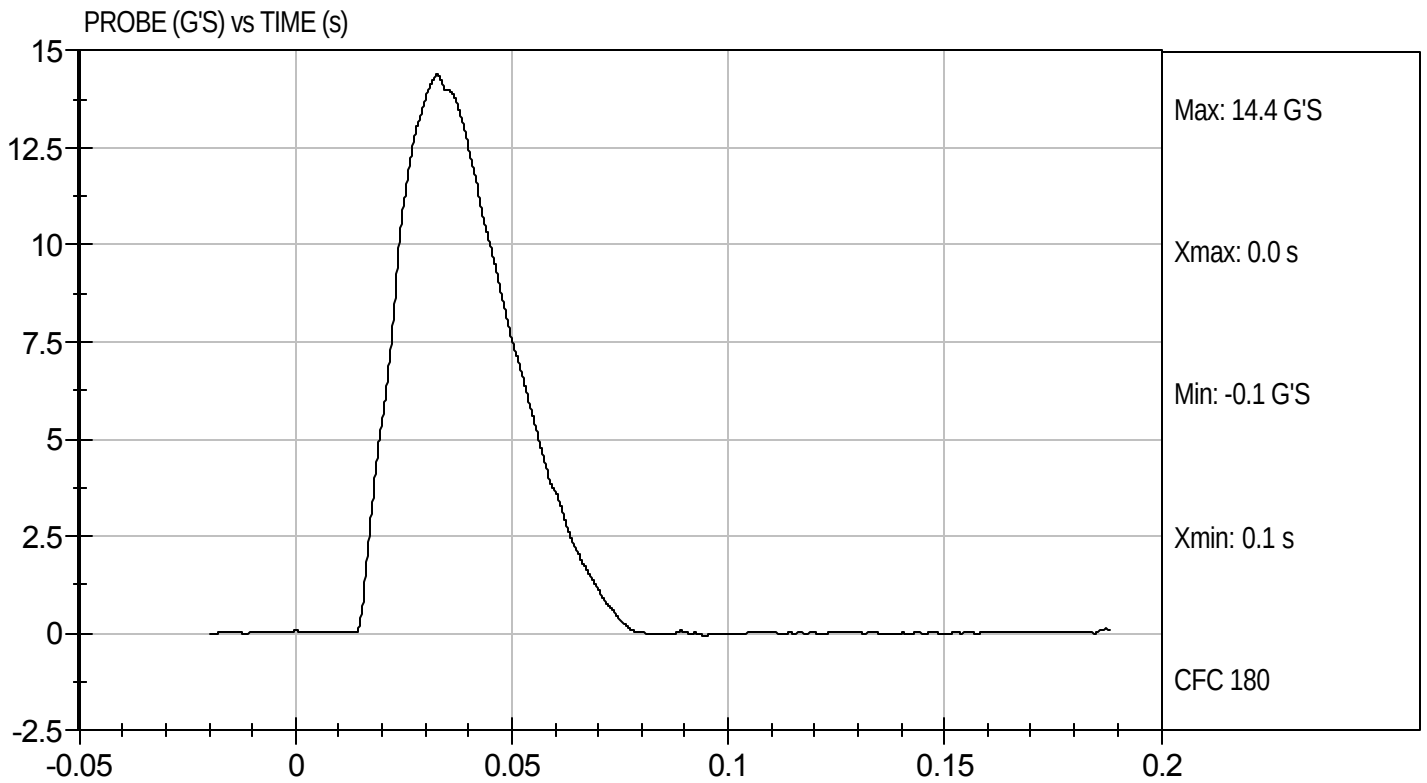
11/17/10
Test Date


Approved By



Test Desc: Abdomen Impact
Component ID: D104046

Test Date: 11/17/10
Velocity: 14.37 ft/s, 4.38 m/s

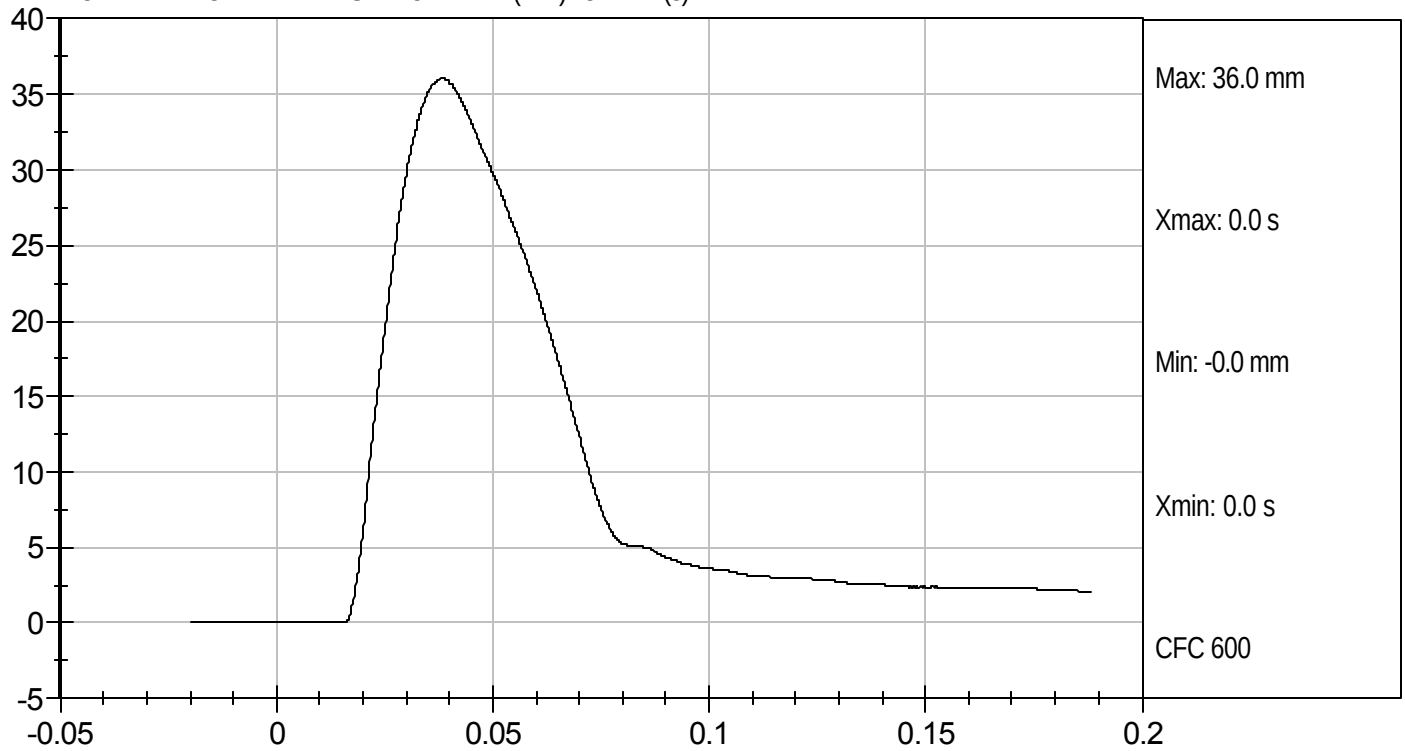




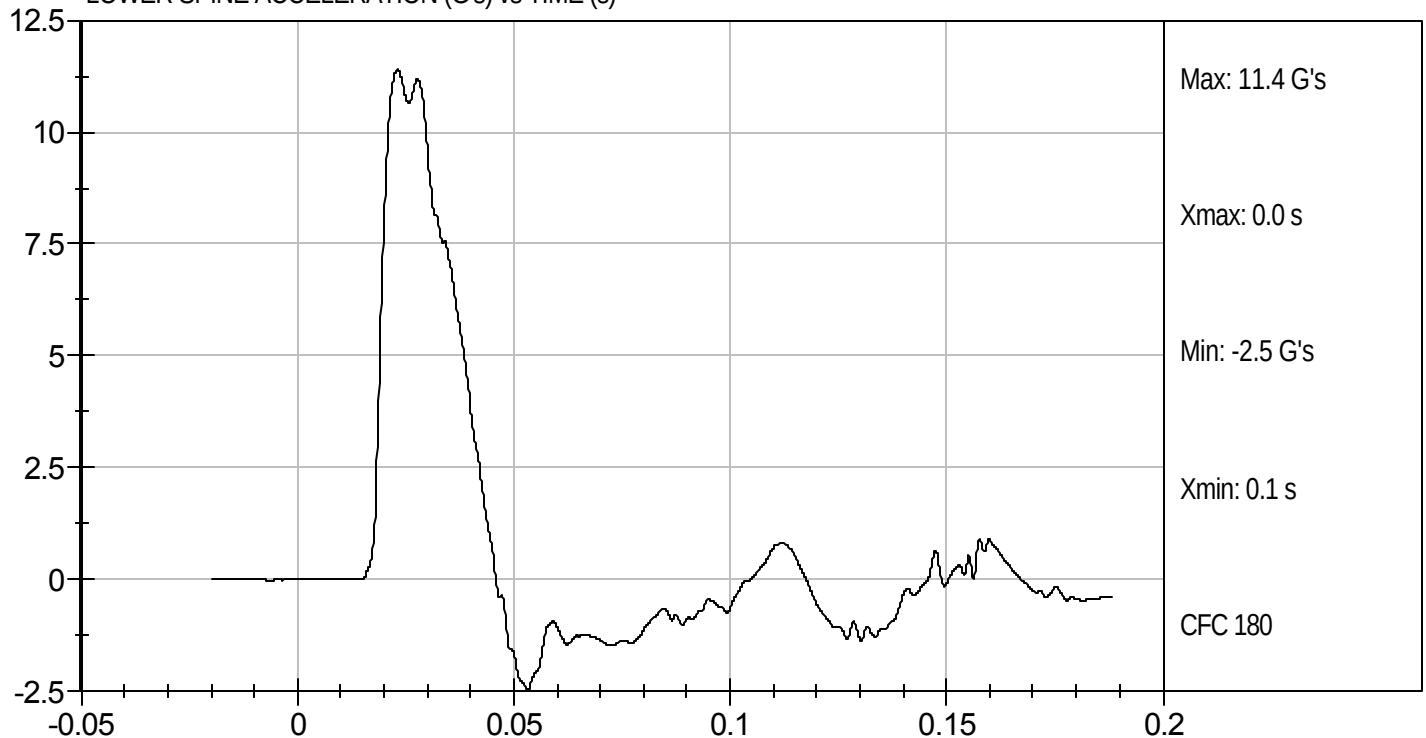
Test Desc: Abdomen Impact
Component ID: D104046

Test Date: 11/17/10
Velocity: 14.37 ft/s, 4.38 m/s

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



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



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

ATD Serial No: 296

Test I.D: D104047

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	33	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	41	Pass
Peak Acetabulum Force	N	3600 to 4300	4151	Pass
Overall Test Results				Pass


Laboratory Technician

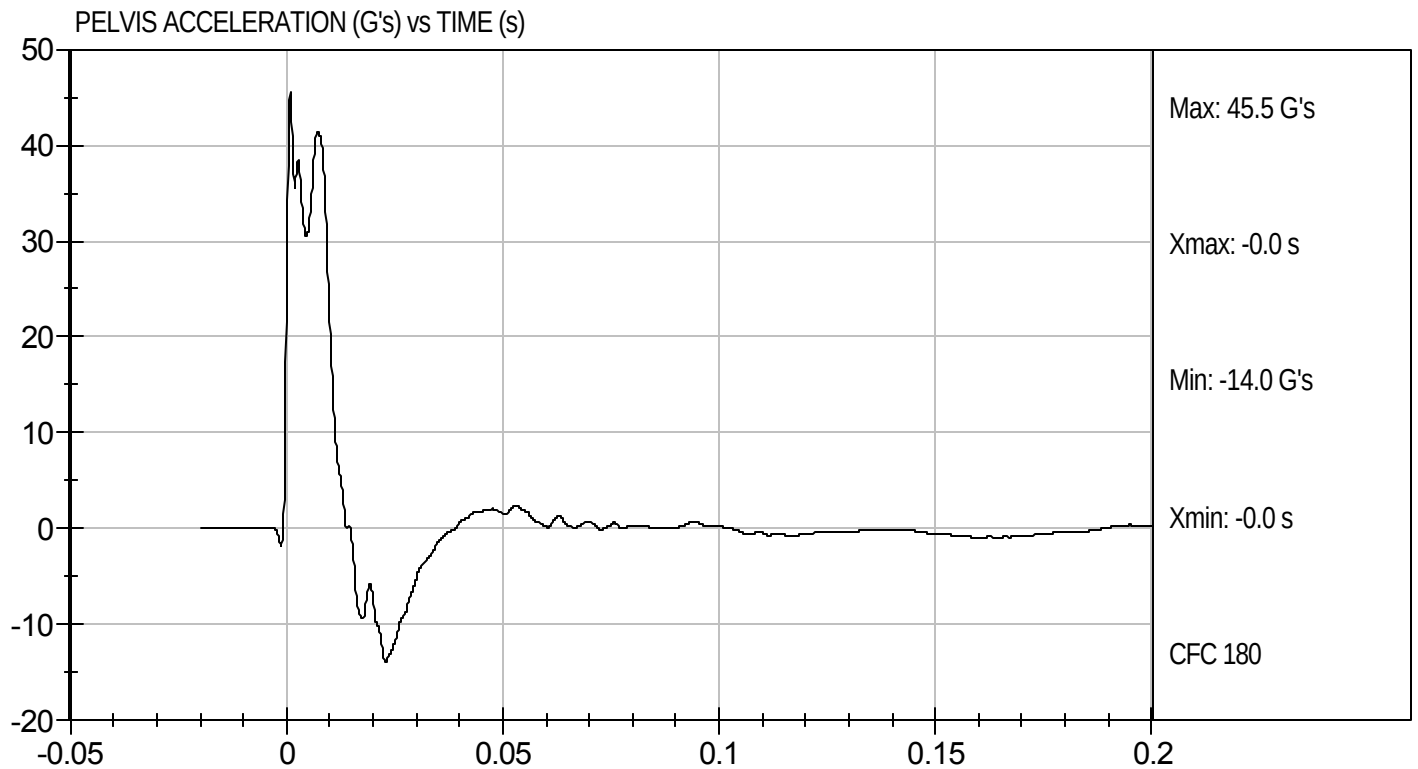
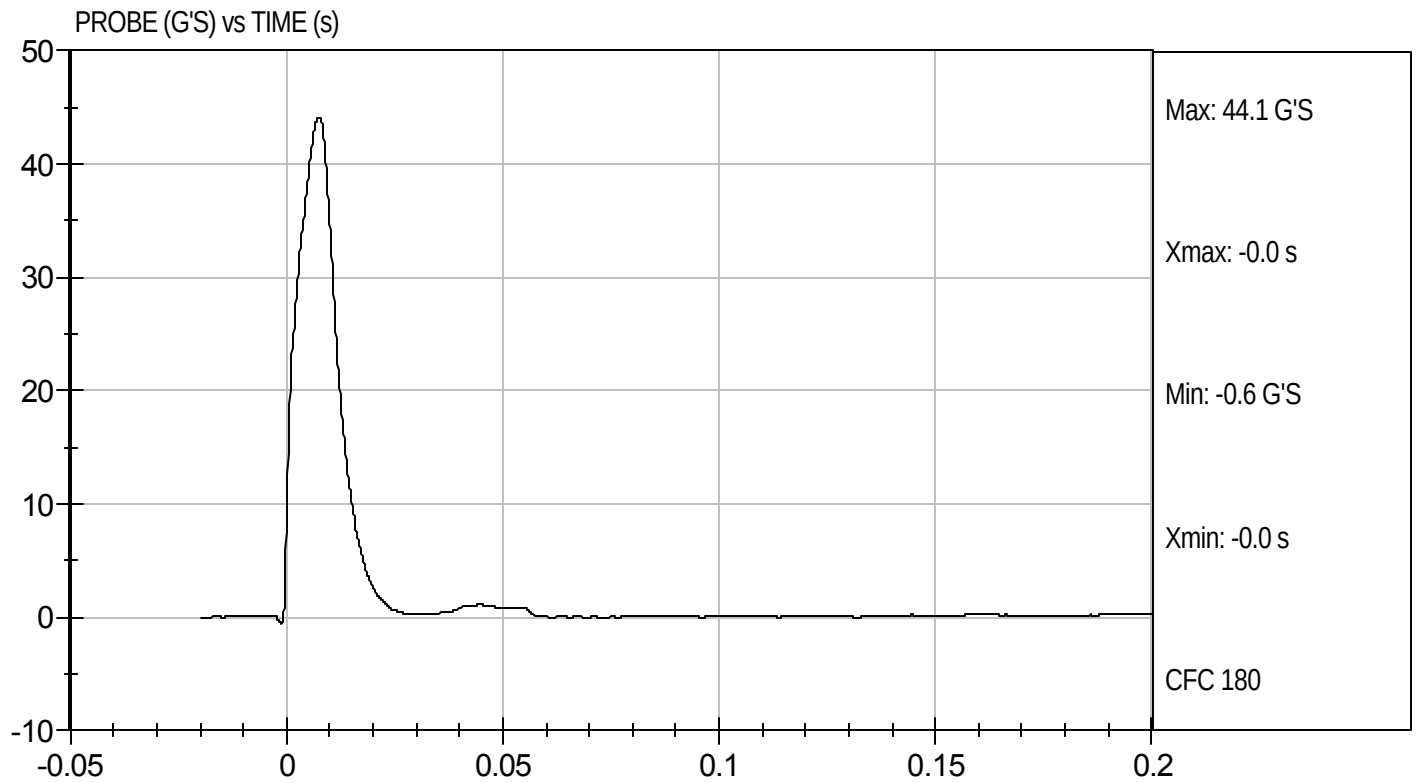
11/17/10
Test Date


Approved By



Test Desc: Pelvis Impact
Component ID: D104047

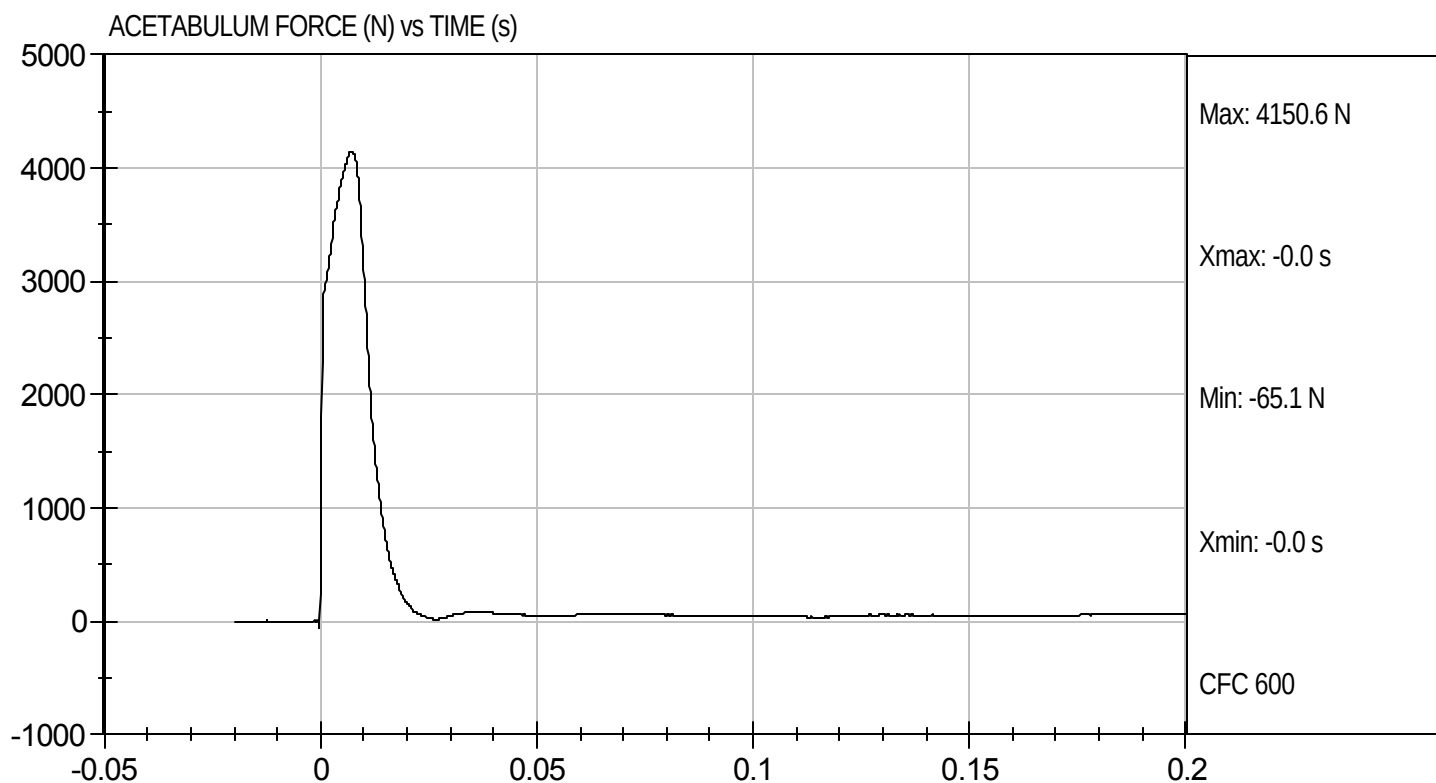
Test Date: 11/17/10
Velocity: 22.22 ft/s, 6.77 m/s





Test Desc: Pelvis Impact
Component ID: D104047

Test Date: 11/17/10
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: D104048

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.9	Pass
Humidity	%	10 to 70	33	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	4464	Pass
Overall Test Results			Pass	


Laboratory Technician

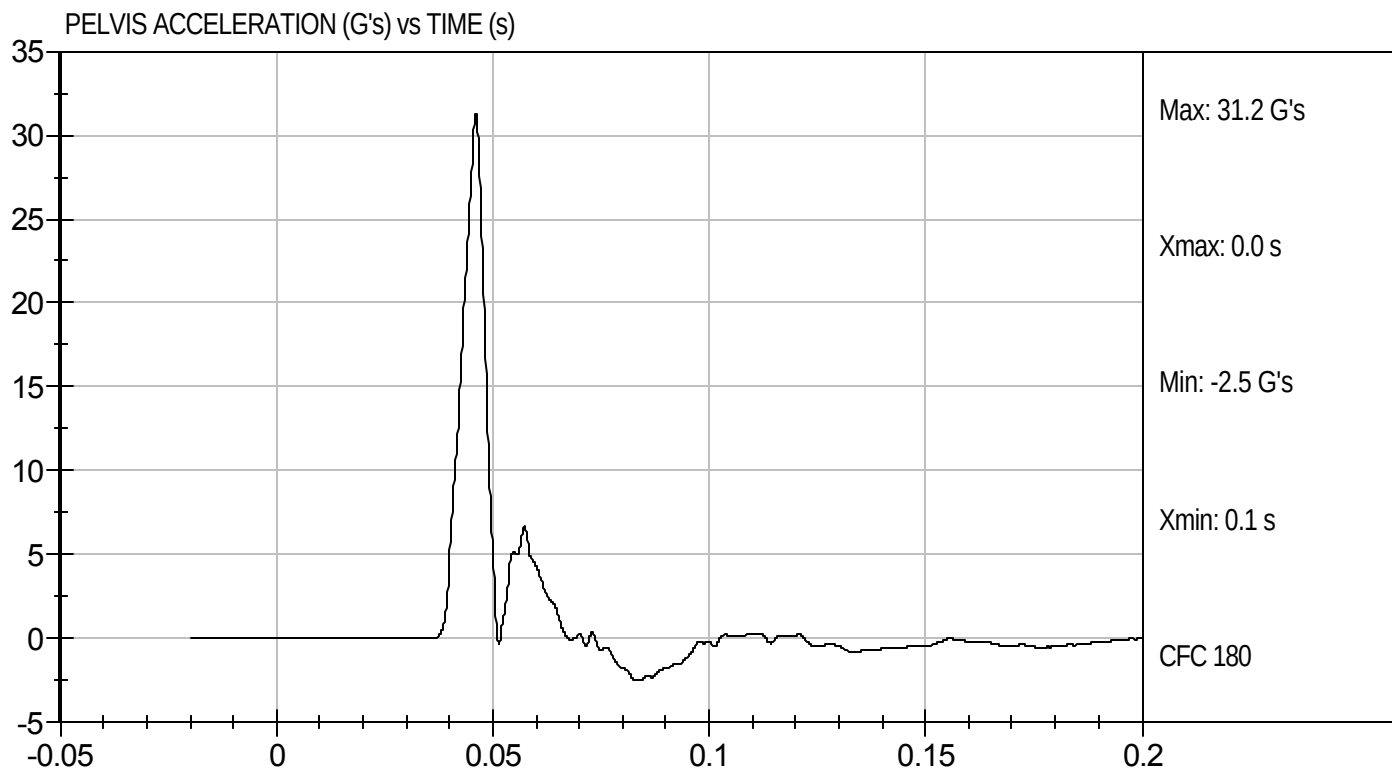
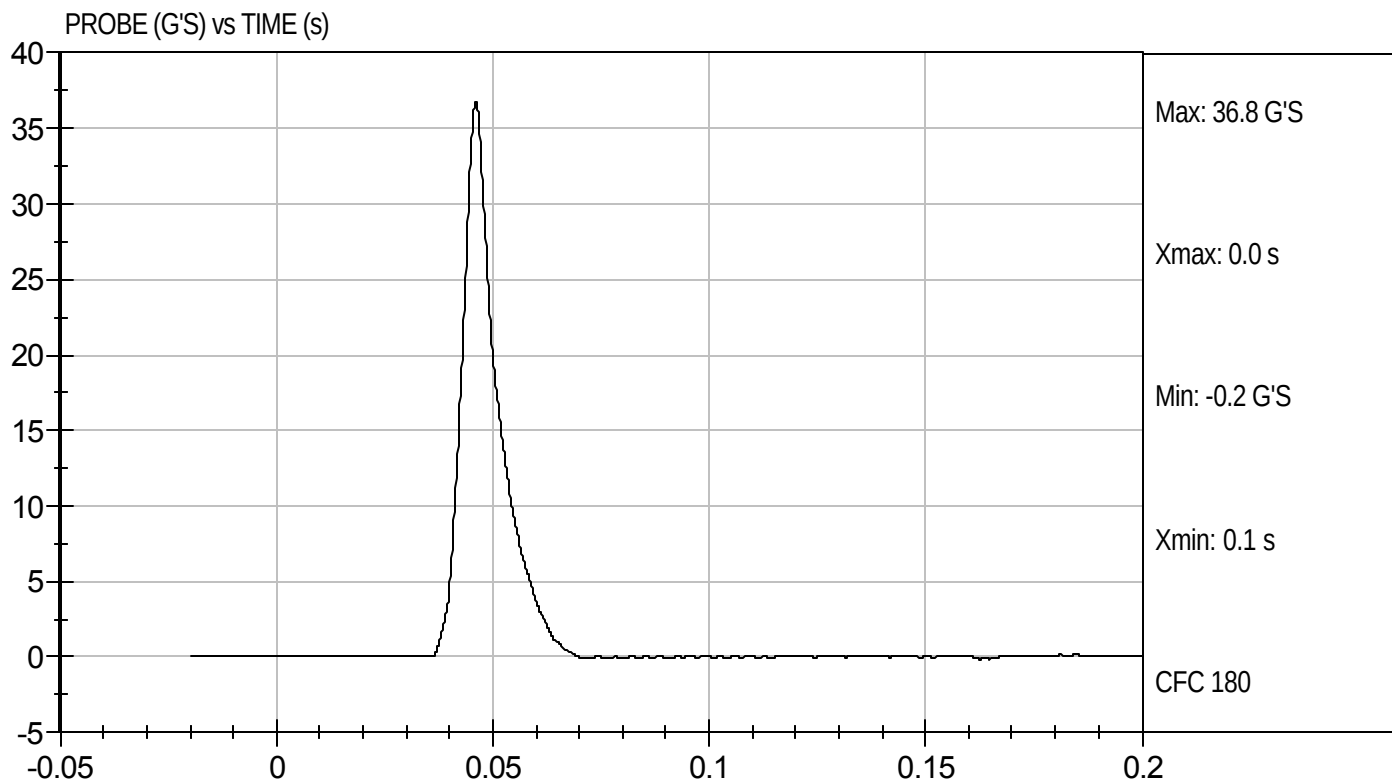
11/17/10
Test Date


Approved By



Test Desc: Iliac Impact
Component ID: D104048

Test Date: 11/17/10
Velocity: 14.37 ft/s, 4.38 m/s





Test Desc: Iliac Impact
Component ID: D104048

Test Date: 11/17/10
Velocity: 14.37 ft/s, 4.38 m/s

