

REPORT NUMBER: SNCAP-KAR-11-027

**NEW CAR ASSESSMENT PROGRAM (NCAP)
MOVING DEFORMABLE BARRIER SIDE IMPACT TEST**

**MAZDA MOTOR CORPORATION
2011 MAZDA3 I SPORT 4-DOOR SEDAN**

NHTSA No: MB5401

**PREPARED BY:
KARCO ENGINEERING, LLC.
9270 HOLLY ROAD
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OCTOBER 12, 2010

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
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16. Abstract

A 55/28 km/h 90 deg. Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2011 Mazda3 I Sport 4-Door Sedan in accordance with the specifications of the Office of Crash Worthiness Standards Test Procedure for the generation of consumer information on vehicle side crash protection. The test was conducted at KARCO Engineering, LLC in Adelanto, CA, on October 12, 2010.

The impact velocity of the Moving Deformable Barrier was 61.86 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 31.7 deg. C. The target vehicle's maximum post-test static crush was 254 mm located at level 2 and level 3. The test vehicle's occupant performance data is as follows:

Measurement Description	Driver ATD (ES-2re)		
	Units	Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	134.5
Maximum Thorax Rib Deflection	mm	44	29.5
Total Abdominal Force	N	2500	1089
Pubic Symphysis Force	N	6000	2191

Measurement Description	Passenger ATD (SID-IIs)		
	Units	Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	266.9
Lower Spine Resultant Acceleration	g	82	84
Total Pelvic Force (Sum of Acetubular and Iliac Forces)	N	5525	5899

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. The left rear passenger lower spine resultant acceleration and total pelvic force exceeded the threshold value.

17. Key Words New Car Assessment Program (NCAP) Side Impact Moving Deformable Barrier (MDB) ES-2re SID-IIs		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Admin. Technical Reference Division 1200 New Jersey Ave., SE Room W43-410 Washington, DC 20590	
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SECTION 1

PURPOSE AND SUMMARY OF TEST

PURPOSE

This moving deformable barrier 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 number DTNH22-09-D-00122. The purpose of this test is to generate comparative side impact performance in a 2011 Mazda3 I Sport 4-Door Sedan. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated January 2010.

SUMMARY

A 2011 Mazda3 I Sport 4-Door Sedan was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 61.86 km/h (38.44 mph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by KARCO Engineering, LLC. in Adelanto, California, on October 12, 2010. Pre- and post-test photographs of the test vehicle, the MDB, and the dummies (ES-2re and SID-IIs) are included in Appendix A of this report.

Dummies were placed in the driver and left rear designated seating positions according to instructions specified in the OCWS Side Impact Laboratory Test Procedure, dated January 2010. The side impact event was documented by 11 cameras. Camera locations are included in Data Sheet No. 5 of this report.

The dummies were instrumented in the following manner:

DRIVER ATD (ES-2re)

Head Accelerometers

Thorax Rib 1 to Rib 3 Potentiometers

Abdomen Forward, Middle, and Rear Load Cells

Lower Spine Accelerometers

Pubic Load Cell

PASSENGER ATD (SID-IIs)

Head Accelerometers

Thorax Upper, Middle and Lower Rib Potentiometers

Abdomen Upper and Lower Rib Potentiometers
 Lower Spine Accelerometers
 Iliac Load Cell
 Acetabulum Load Cell

Dummy injury values were recorded as follows:

Measurement Description	Units	Driver ATD (ES-2re)	
		Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	134.5
Maximum Thorax Rib Deflection	mm	44	29.5
Combined Abdominal Force	N	2500	1089
Pubic Symphysis Force	N	6000	2191

Measurement Description	Units	Passenger ATD (SID-IIs)	
		Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	266.9
Lower Spine (T12) Resultant Acceleration	g	82	84
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	5899

Supplemental restraint information is given below:

Restraint Type	Left Front (Driver)		Left Rear (Passenger)	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	Yes		
Knee Airbag	No		No	
Side Airbag 1 (Torso/Pelvis)	Yes	Yes	No	
Side Airbag 2 (Curtain)	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes	No	No	
Seat Belt Load Limiter	Yes	No	No	
Other				

GENERAL COMMENTS

Both the front and rear doors on the struck side of the vehicle remained closed and latched. There was no separation at the hinges or latches. Both doors on the non-struck side remained closed and latched. The passenger ATD lower spine resultant acceleration and total pelvic force exceeded the maximum values.

SECTION 2

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan

NHTSA No. MB5401

Test Program: MDB Side Impact Test

Test Date: 10/12/10

CONVERSION FACTORS

Quantity	Typical Application	Std Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	miles/hr	km/hr	1.609344
Length or Distance	Measurements	in	mm	25.4
Volume	Fuel Systems	gal	liter	3.785
Volume	Small Fluids	oz	mL	29.573
Pressure	Tire Pressures	lbf/in ²	kPa	7.0
Volume	Liquid	gal	liter	3.785
Temperature	General Use	°F	°C	$=(t_f - 32)/1.8$
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf/ft	Nm	1.355

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan

NHTSA No. MB5401

Test Program: MDB Side Impact Test

Test Date: 10/12/10

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	MB5401
Model Year	2011
Make	Mazda
Model	Mazda3 I Sport
Body Style	4-Door Sedan
VIN	JM1BL1UG8B1364578
Body Color	Liquid Silver Metallic
Delivery Date	9/4/2010
Odometer Reading (km / mi)	13/8
Dealer	Bob Baker Mazda
Transmission	5-Speed Automatic
Final Drive	Front
Type / No. of Cylinders	Inline 4
Engine Displacement (L)	2.0
Engine Placement	Transverse
Roof Rack	No
Sunroof / T-Top	No
Tinted Glass	No
Traction Control	Yes
Power Brakes	Yes
Front Disc	Yes
Rear Disc	Yes

Anti-Lock Brakes	Yes
All Wheel Drive	No
Power Steering	Yes
Driver Front Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	No
Driver Torso/Pelvis Airbag	Yes
Driver Pelvis Airbag	No
Driver Knee Airbag	No
Rear Pass. Curtain Airbag	Yes
Rear Pass. Head/Torso Airbag	No
Rear Pass. Torso Airbag	No
Rear Pass. Torso/Pelvis Airbag	No
Rear Pass. Pelvis Airbag	No
Pretensioners	Yes
Load Limiters	Yes
Automatic Door Locks	Yes
Bucket Seats	Yes
Tilt Steering	Yes
Other	
Other	

Does Owner's Manual provide instructions to turn off automatic door locks?

Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Mazda Motor Corporation
Date of Manufacture	Jul-10

GVWR (kg)	1800
GAWR Front (kg)	967
GAWR Rear (kg)	833

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Designated Seating Capacity	2	3		5
Capacity Weight (VCW) (kg)				385.0
DSC x 68.04 (kg)				340.2
Cargo Weight (RCLW) (kg)				44.8

A

B

A-B

VEHICLE SEAT TYPE

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

DATA SHEET NO. 1 ... (CONTINUED)

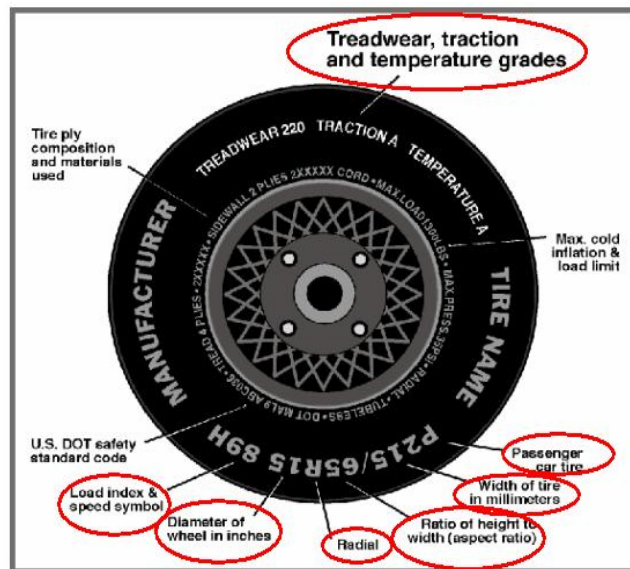
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan

NHTSA No. MB5401

Test Program: MDB Side Impact Test

Test Date: 10/12/10



VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	300	300
Cold Pressure (kpa)	240	240
Recommended Tire Size	P205/55R16	P205/55R16
Tire Size on Vehicle	P205/55R16	P205/55R16
Tire Model	Turanza	Turanza
Tire Manufacturer	Bridgestone	Bridgestone
Treadwear	300	300
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	1 Polyester, 2 Steel, 1 Nylon	1 Polyester, 2 Steel, 1 Nylon
Load Index/Speed Symbol	89H	89H
Tire Material	Polyester, Steel, Nylon	Polyester, Steel, Nylon
DOT Safety Code Right	H48K DHE 2910	H48K DHE 2910
DOT Safety Code Left	H48K DHE 2910	H48K DHE 2910

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan

NHTSA No. MB5401

Test Program: MDB Side Impact Test

Test Date: 10/12/10

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	409.0	263.0		446.0	333.0		447.5	342.0	
Right	kg	398.0	254.0		409.5	297.5		403.0	302.5	
Ratio	%	61.0%	39.0%	100.0%	57.6%	42.4%	100.0%	56.9%	43.1%	100.0%
Total	kg	807.0	517.0	1324.0	855.5	630.5	1486.0	850.5	644.5	1495.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1324.0	A
Actual Weight of 2 P572 ATDs Used	kg	125.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	44.8	C
Calculated Vehicle Target Wt (TVTWT)	kg	1493.8	A+B+C

TEST VEHICLE ATTITUDES

Condition	Units	LF	RF	LR	RR	CG (Aft of Front Axle)
Fully Loaded	mm	678	688	670	678	1139
As Tested	mm	679	679	665	671	1121

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheelbase	mm	2642
Total Vehicle Length at Left Side	mm	3013
Total Vehicle Length at Centerline	mm	4469
Total Vehicle Length at Right Side	mm	3015
Weight of Ballast in Cargo Area	kg	61.0
Weight of Vehicle Components Removed	kg	51.5
Amount of Stoddard Solvent in Fuel Tank	L	51.04

Vehicle components removed to make Target Vehicle Test Weight:

Tail lights (2.5 kg), Spare tire and tools (12.5 kg), Trunk liner (3.0 kg), Muffler (10.5 kg), Bumper and cover (16.0 kg), Outboard mirrors (2.0 kg), Non-struck side door panels (5.0 kg)

TEST VEHICLE VERTICAL IMPACT LINE DATA

Measurement Description	Units	Value
Target Impact Point Aft of Front Axle	mm	381
Actual Impact Point Aft of Front Axle	mm	381

DATA SHEET NO. 2

SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan

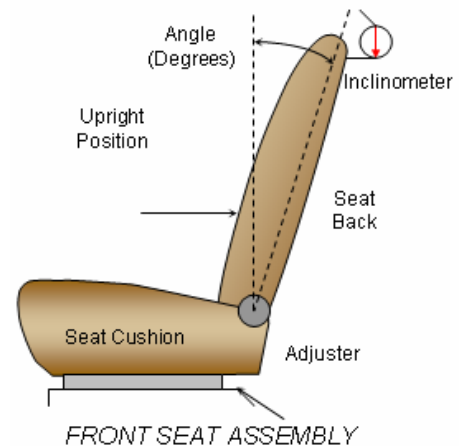
NHTSA No. MB5401

Test Program: MDB Side Impact Test

Test Date: 10/12/10

NOMINAL DESIGN RIDING POSITION

The driver's seat back is set to the manufacturer's designated seat back angle. The passenger's seat back is fixed. Seat back angles are measured at the headrest posts using a digital inclinometer.



SEAT BACK ANGLES

	Degrees (°)
Driver w/Seated Dummy	16.0
Passenger w/Seated Dummy	17.5

SEAT FORE/AFT POSITION

Driver seat travel is measured from the forward most possible position to the rear most possible position with the seat set at mid angle and lowest height. The driver's seat is set to the middle of the fore-aft travel. The passenger's seat is fixed.

SEAT FORE/AFT POSITIONS

Seating Position	Total Fore/Aft Travel	Placed in Position
Driver Seat	257 mm	130 mm
Rear Seat	Fixed	Fixed

SEAT BELT UPPER ANCHORAGE

The seat belt upper anchorage is positioned to the manufacturer's design position, the driver for a 50th percentile adult male ATD, the left rear passenger for a 5th percentile adult female ATD. Position zero (0) is the uppermost position. The rear passenger upper anchorage is fixed.

SEAT BELT UPPER ANCHORAGES

Seating Position	Total No. of Positions	Placed in Position
Driver Seat	4	0
Rear Seat	Fixed	Fixed

DATA SHEET NO. 2 ... (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan

NHTSA No. MB5401

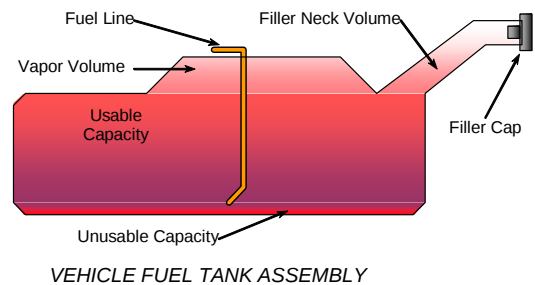
Test Program: MDB Side Impact Test

Test Date: 10/12/10

FUEL TANK CAPACITY

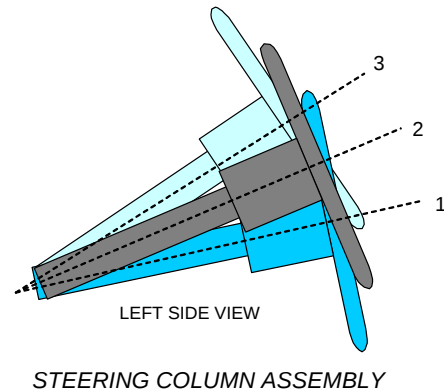
Description	Liters
Usable Capacity of "Standard Tank"	54.88
Usable Capacity of "Optional Tank"	
Usable Capacity Used for FMVSS 301	54.88
Actual Amount of Stoddard Solvent Used	51.04

The test vehicle is equipped with an electric fuel pump. The fuel pump operates when the starter or engine is activated. The fuel filler door is located on the right rear fender. The standard fuel tank occupies the area under the rear seat.



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. A digital inclinometer is used to measure a plate which is placed across the rim of the steering wheel for angular measurements. A tape measure is used with a reference mark on the steering column to measure telescoping travel.



STEERING COLUMN POSITIONING

	Degrees	Fore-Aft Position (mm)
Lowermost Position, No. 1	20.0	0
Geometric Center Position, No. 2	22.65	23.5
Uppermost Position, No. 3	25.3	47
Telescoping Steering Wheel Travel		47
Test Position	22.6	23

DATA SHEET NO. 3

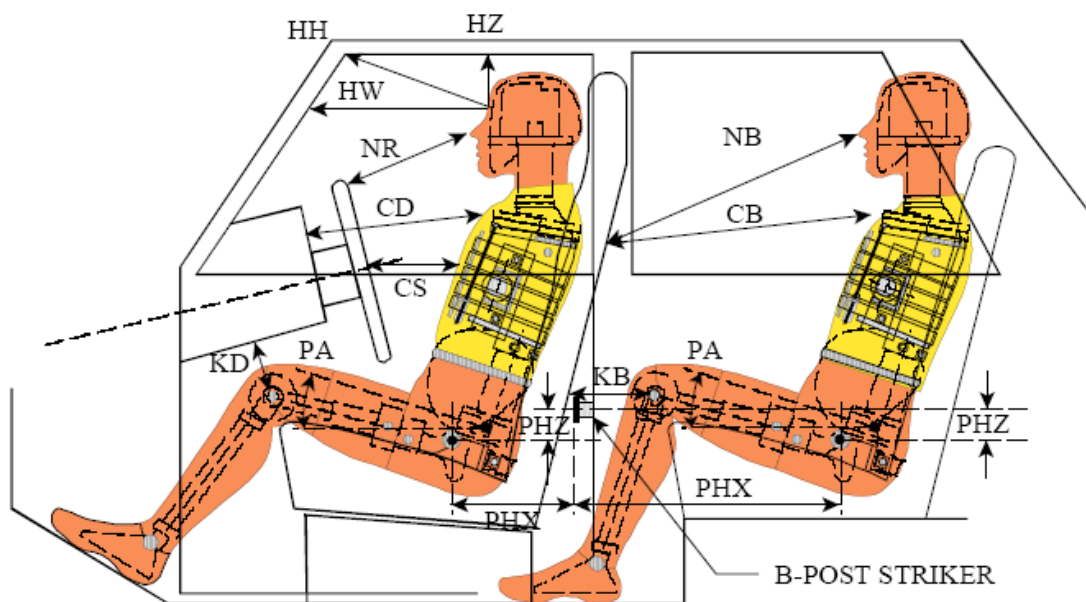
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan

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LEFT SIDE VIEW

NOTE: 2-DOOR VEHICLE SHOWN.
REAR DUMMY PHX & PHZ
MEASUREMENTS FOR A 4-DOOR
VEHICLE WOULD USE THE C-POST
STRIKER AS A REFERENCE POINT

DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Description	Driver		Passenger	
			Length (mm)	Angle (°)	Length (mm)	Angle (°)
HH		Head to Header	392	12.6		
HW		Head to Windshield	601	0.0		
HZ	HZ	Head to Roof	160	90.0	260	90.0
NR	NB	Nose to Rim/Seat Back	495	12.0	513	12.2
CD	CB	Chest to Dash/Seat Back	609	5.5	473	14.4
CS		Chest to Steering Wheel	380	13.8		
KDL	KBL	Left Knee to Dash/Seat Back	143	26.0	202	17.4
KDR	KBR	Right Knee to Dash/Seat Back	80		218	16.4
PA	PA	Pelvic Angle		18.4		25.9
PHX	PHX	H-Point to Striker (x-axis)	221	0.0	246	0.0
PHZ	PHZ	H-Point to Striker (z-axis)	142	90.0	307	90.0
SA	SA	Seat Back Angle		16.0		17.5

DATA SHEET NO. 4

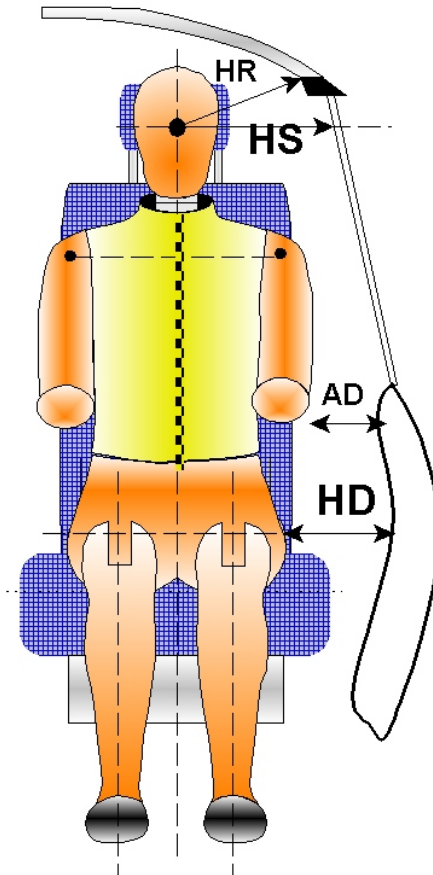
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan

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DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	182	236
HS	Head to Side Window	mm	319	364
AD	Arm to Door	mm	112	160
HD	H-Point to Door	mm	166	178

DATA SHEET NO. 5

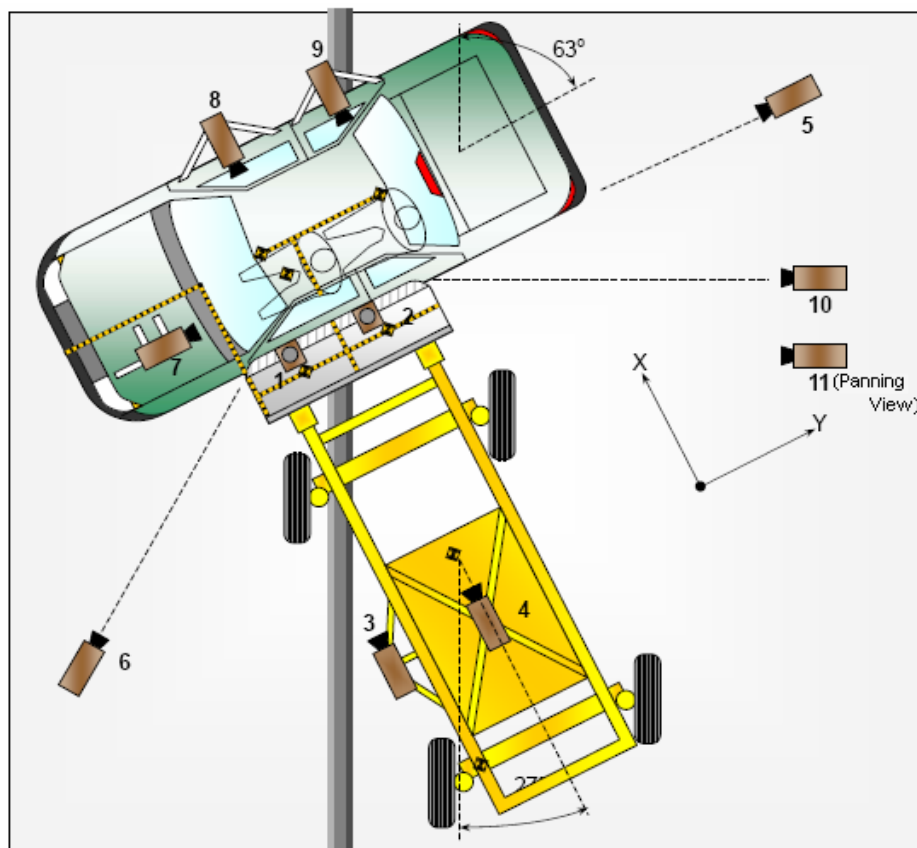
CAMERA LOCATIONS AND DATA

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan

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CAMERA LOCATIONS AND DATA

Camera No.	View	Coordinates (mm)			Angle (°)	Lens (mm)	Film Speed (fps)
		X*	Y*	Z*			
1	Overhead Overall	1220	2287	-5486	90	14	1000
2	Overhead Close-Up	609	2287	-5102	90	Zoom	1000
3	Left Impact Point (MDB)	-2134	0	-1143	7.5	25	1000
4	Side Overall (MDB)	-3912	838	-1829	11.9	12	1000
5	Rear	-64	2485	-1348	0	105	1000
6	Left Front	-2266	-3564	-1475	0	24	1000
7	Driver Front (On-Board)	482	-524	621	8.8	35	1000
8	Driver Side (On-Board)	1476	724	445	8	14	1000
9	Passenger Side (On-Board)	1524	1622	517	12.8	14	1000
10	Real Time Left Rear					Zoom	30
11	Real Time Inrun	-2484	-3958	-1506		Zoom	30

Reference: Impact Point Projected to Ground

+X = To Front of MDB, +Y = To Right of MDB, +Z = Down

*All measurements accurate to ± 6 mm

DATA SHEET NO. 6

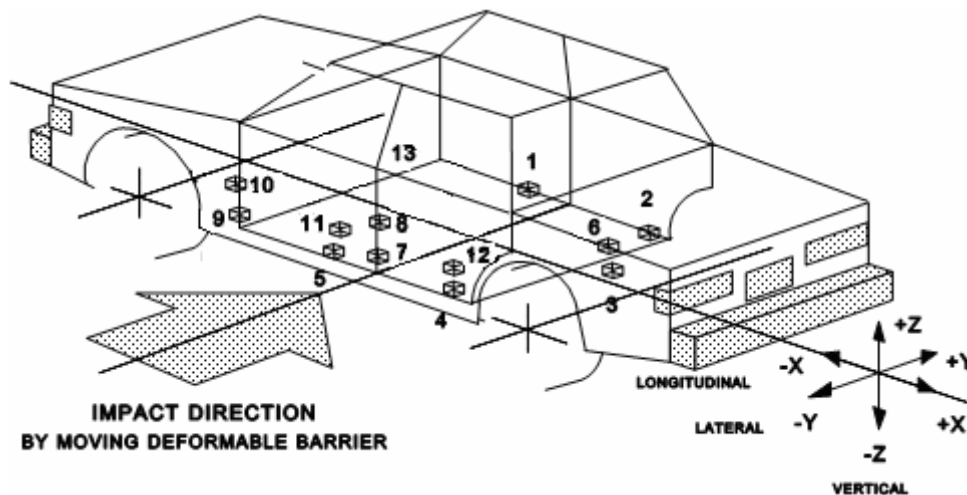
VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan

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VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Right Sill at Front Seat	2445	700	360
2	Right Sill at Rear Seat	1670	700	360
3	Rear Floorpan Above Axle	820	-370	535
4	Left Sill at Rear Door	1580	715	170
5	Left Sill at Front Door	2600	715	170
6	Right Rear Occupant Compartment	1850	525	220
7	B-Pillar Lower	1880	-735	510
8	B-Pillar Mid	180	-735	745
9	A-Pillar Lower	2920	-760	510
10	A-Pillar Mid	2920	-760	750
11	Front Seat Track	2180	-535	340
12	Rear Seat Structure			
13	Vehicle CG	1710	0	380

Reference: X – Rear surface of vehicle (+ forward)
Y – Vehicle centerline (+ to right)
Z – Ground plane (+ up)

DATA SHEET NO. 7

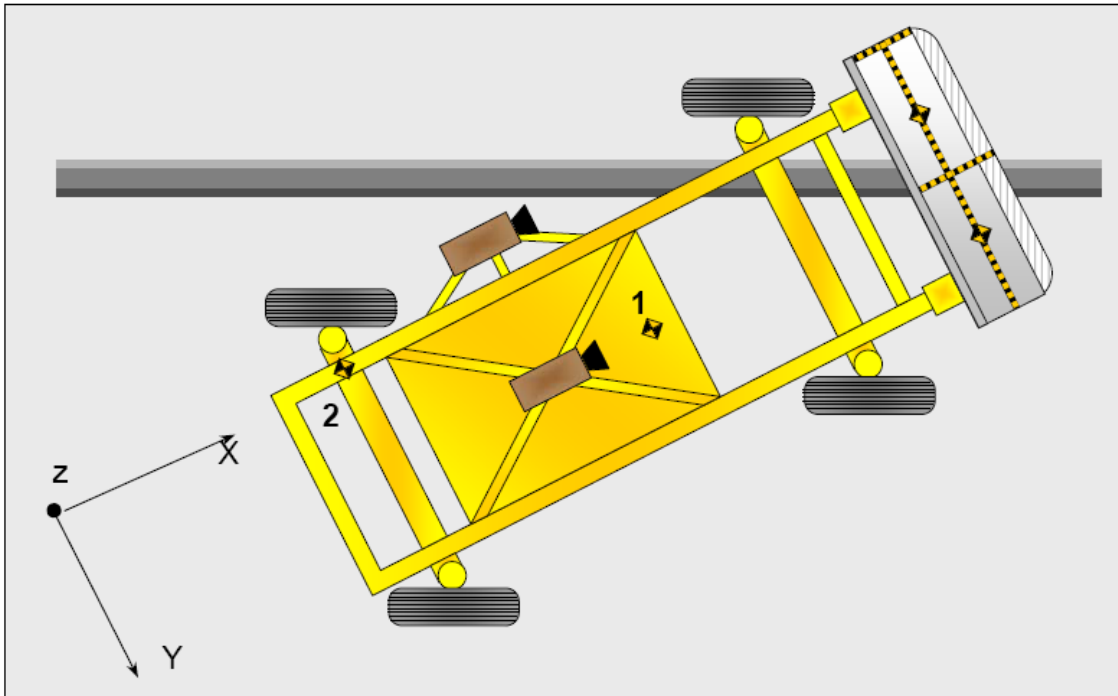
MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan

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MDB ACCELEROMETER LOCATIONS

Loc. No.	Accelerometer Location	Measurement		
		X	Y	Z
1	MDB CG	-1195	0	-430
2	MDB Rear	-2642	-593	-608

Reference: X – Face of MDB (+ Forward)
Y – MDB centerline (+ to Right)
Z – Ground Plane (+ Down)

DATA SHEET NO. 8**TEST VEHICLE SUMMARY OF RESULTS**Test Vehicle: 2011 Mazda3 I Sport 4-Door SedanNHTSA No. MB5401Test Program: MDB Side Impact TestTest Date: 10/12/10**MAXIMUM EXTERIOR CRUSH**

Level	Description	Units	Maximum Crush	Above Ground
1	Sill Top Height	mm	67	219
2	Occupant H-Point Height	mm	254	515
3	Mid-Door Height	mm	254	608
4	Window Sill Height	mm	242	873
5	Window Top Height	mm	18	1375
	Maximum Penetration	mm	254	

INSTRUMENTATION

Driver Dummy Channels	16
Passenger Dummy Channels	16
Airbag Timing Sensors	4
Vehicle Structure Accelerometers	21
MDB Accelerometers	5
Total No. of Contact Switches	8
Total	70

CAMERA COVERAGE

High-Speed Vehicle On-Board	3
High-Speed Vehicle Off-Board	5
High-Speed MDB On-Board	2
Real Time Panning	1
Total	11

DATA SHEET NO. 9**MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS**Test Vehicle: 2011 Mazda3 I Sport 4-Door SedanNHTSA No. MB5401Test Program: MDB Side Impact TestTest Date: 10/12/10**MDB SPECIFICATIONS**

Measurement Description	Length (mm)
Overall Width of Framework Carriage	1251
Overall Length including Honeycomb Face	4023
Wheel Base of Framework Carriage	2595
CG location aft of Front Axle	1118

MDB WEIGHTS

	Units	Front Axle	Rear Axle	Total
Left	kg	402	298	
Right	kg	377	292	
Ratio	%	56.9%	43.1%	
Totals	kg	779	590	1368

SPEED AND IMPACT DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	61.86
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	61.76
MDB CL to Target Vehicle CL	degrees	88.5-91.5	90.0

MAXIMUM STATIC CRUSH OF HONEYCOMB FACE

Vertical Location			From Centerline		Max. Crush (mm)
Row	Description	Height (mm)	Distance (mm)	Direction	
1	Center of Bumper	432	800	Left	216
2	Top of Bumper	533	800	Right	101
3	Mid Level	686	800	Right	108
4	Top of Stack	813	800	Right	106

MDB INSTRUMENTATION AND CAMERAS

Accelerometers	5
Contact Switches	2

DATA SHEET NO. 10
POST-TEST OBSERVATIONS

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan

NHTSA No. MB5401

Test Program: MDB Side Impact Test

Test Date: 10/12/10

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat Dummy (ES-2re)	Rear Seat Dummy (SID-IIs)
Dummy Type/Serial No.	ES-2re, S/N: F035	SID-IIs, S/N: 307
Head Contact	Curtain Airbag, Side Header, Head Restraint	Curtain Airbag, Side Header, Head Restraint
Upper Torso Contact	Torso/Pelvis Airbag	Door Panel
Lower Torso Contact	Torso/Pelvis Airbag, Door Panel	Door Panel
Left Knee Contact	Door Panel, Steering Column, Right Knee	Door Panel, Right Knee
Right Knee Contact	Left Knee	Left Knee

POST-TEST DOOR OPENING AND SEAT TRACK INFORMATION

Description	Front	Rear
Left Side Door Opening	Jammed shut	Jammed shut
Right Side Door Opening	Remained closed and operational	Remained closed and operational
Hatch and Other Doors	Remained closed and operational	Remained closed and operational
Seat Movement	None	None
Seatback Failure	No	No

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions	
Pillar Performance	No separation occurred	
Sill Separation	No separation occurred	
Windshield Damage	None	
Window Damage	Broken	Broken
Other Notable Effects	Broken Curtain Airbag Mount	

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear (Passenger) Occupant Location 4	
	Installed	Deployed	Installed	Deployed
Frontal Airbag	Yes	No	No	
Knee Airbag	No		No	
Side Airbag 1 (Torso/Pelvis)	Yes	Yes	No	
Side Airbag 2 (Curtain)	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes	No	No	
Seat Belt Load Limiter	Yes	No	No	
Other				

MDB LEFT EDGE IMPACT POINT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	0
Vertical Offset	mm	+/- 20	+7 (Up)

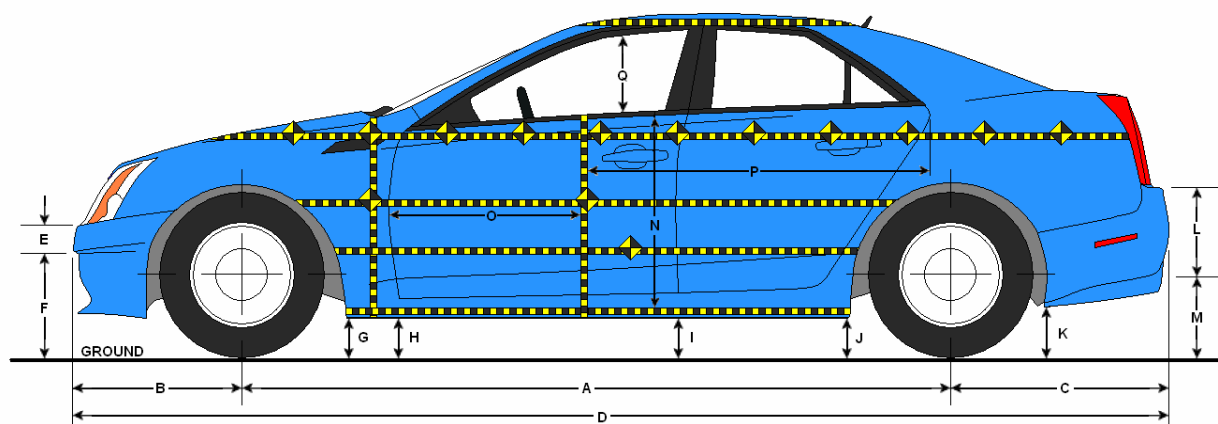
DATA SHEET NO. 11
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan

NHTSA No. MB5401

Test Program: MDB Side Impact Test

Test Date: 10/12/10



LEFT SIDE VIEW

VEHICLE PRE AND POST-TEST MEASUREMENT INFORMATION

Code	Dimension	Measurement (mm)		
		Pre	Post	Difference
A	Wheelbase	2642	2632	-10
B	Front Axle to FSOV	963	968	5
C	Rear Axle to RSOV	864	861	-3
D	Total Length at Centerline	4469	4461	-8
E	Front Bumper Thickness	86	85	-1
F	Front Bumper Bottom to Ground	450	457	7
G	Sill Height at Front Wheel Well	192	208	16
H	Sill Height at Front Door Leading Edge	189	204	15
I	Sill Height at B-Pillar	189	281	92
J1	Sill Height at Rear Wheel Well	184	258	74
J2	Pinch Weld Height at Rear Wheel Well	141	203	62
K	Sill Height Aft of Rear Wheel Well	423	492	69
L	Rear Bumper Thickness	65	63	-2
M	Bottom of Rear Bumper to Ground	557	631	74
N	Sill Height to Window Bottom Sill	600	602	2
O	Front Door Leading Edge to Impact CL	762	706	-56
P	Rear Door Trailing Edge to Impact CL	1270	1223	-47
Q	Front Window Opening	436	454	18
R	Right Side Length	3015	3017	2
S	Left Side Length	3013	2984	-29
T	Vehicle Width at B-Pillar	1750	1576	-174

All measurements in mm with tolerance of ± 3 mm

DATA SHEET NO. 12

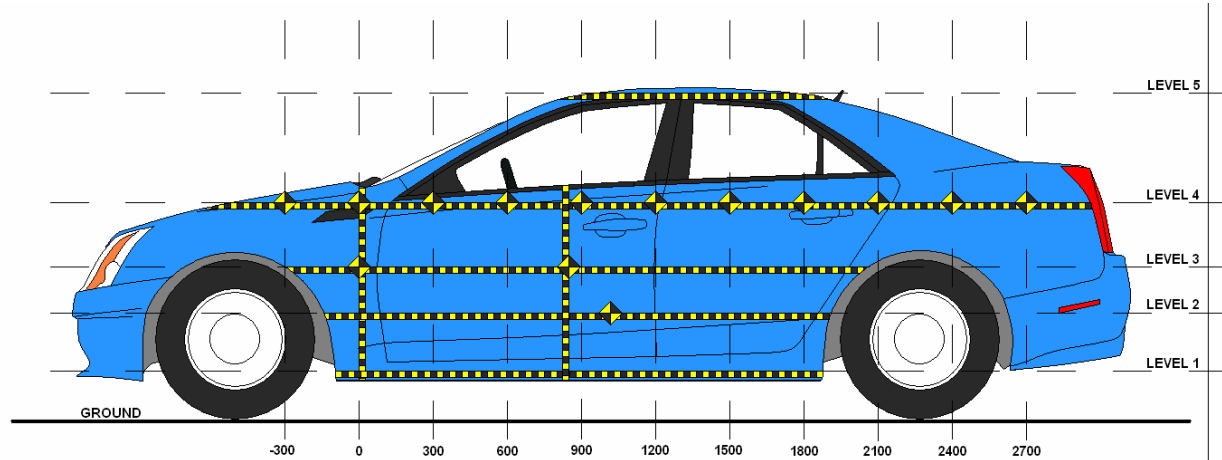
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan

NHTSA No. MB5401

Test Program: MDB Side Impact Test

Test Date: 10/12/10



LEFT SIDE VIEW

Level	Description	Height Above Ground (mm)
1	Sill Top Height	219
2	Occupant H-Point Height	515
3	Mid-Door Height	608
4	Window Sill Height	873
5	Window Top Height	1375

DATA SHEET NO. 12 ... (CONTINUED)

VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan

NHTSA No. MB5401

Test Program: MDB Side Impact Test

Test Date: 10/12/10

	Pre-Test (mm)					Post-Test (mm)					Difference (mm)				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900															
-750															
-600															
-450															
-300															
-150			618	716				620	750				2	34	
0	669	624	627	708		676	646	653	739		7	22	26	31	
150	666	634	633	699		686	794	744	751		20	160	111	52	
300	667	634	632	691		719	849	818	779		52	215	186	88	
450	667	632	630	683		723	868	848	817		56	236	218	134	
600	667	631	628	675		725	878	853	832		58	247	225	157	
750	668	630	626	668		728	878	839	836		60	248	213	168	
900	667	630	625	661	922	733	878	836	840	935	66	248	211	179	13
1050	667	630	625	656	907	726	884	836	826	923	59	254	211	170	16
1200	669	631	626	651	904	727	880	880	810	922	58	249	254	159	18
1350	670	632	627	647	907	737	875	875	861	925	67	243	248	214	18
1500	670	635	630	644	911	727	860	862	886	927	57	225	232	242	16
1650	671	637	633	646	921	715	857	857	871	934	44	220	224	225	13
1800	670	634	634	645	944	679	829	827	834	952	9	195	193	189	8
1950			624	653				673	742				49	89	
2100				659					716					57	
2250				667					694					27	
2400															
2550															
2700															
2850															

MAXIMUM CRUSH DATA

	Level 1	Level 2	Level 3	Level 4	Level 5
Maximum Crush (mm)	67	254	254	242	18
Distance from Impact (mm)	1350	1050	1200	1500	1200

DATA SHEET NO. 12 ... (CONTINUED)

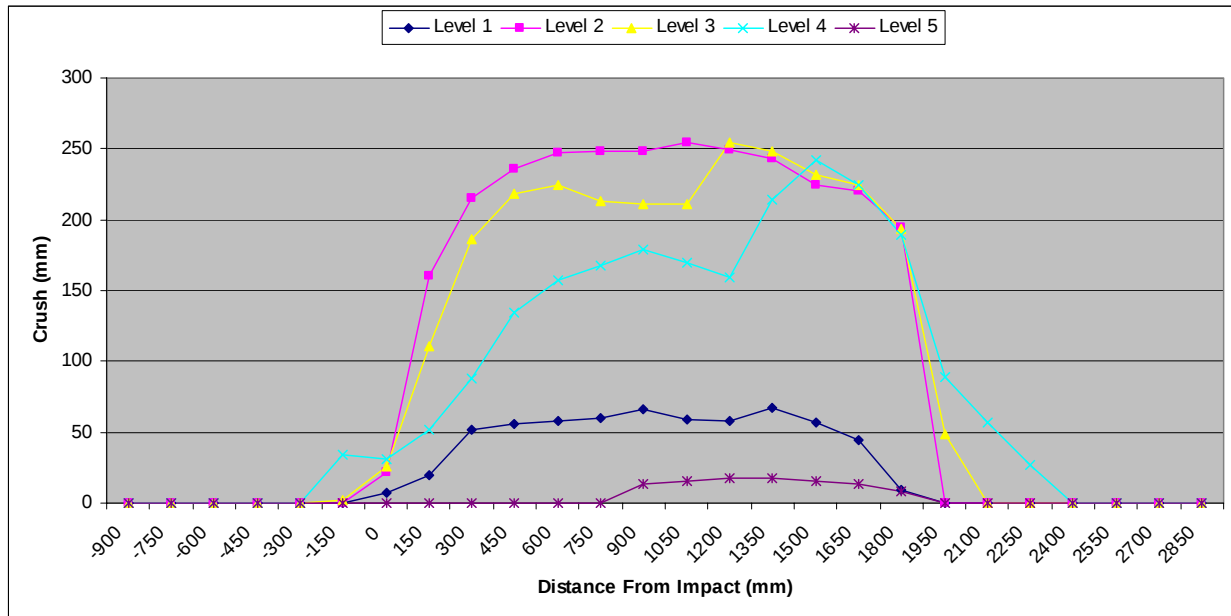
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan

NHTSA No. MB5401

Test Program: MDB Side Impact Test

Test Date: 10/12/10



DATA SHEET NO. 13

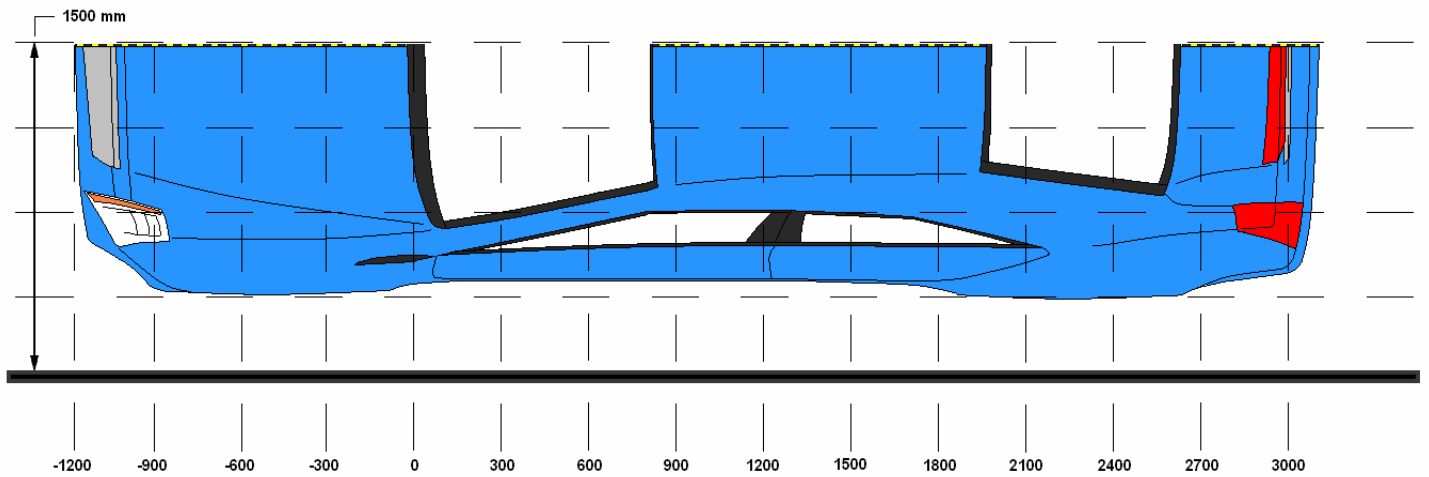
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan

NHTSA No. MB5401

Test Program: MDB Side Impact Test

Test Date: 10/12/10



DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point in mm	Level	Pre-Test (mm)	Post-Test (mm)	Max. Static Crush (mm)
1	2100	4	659	716	57
2	1650	4	646	871	225
3	1200	3	626	880	254
4	750	2	630	878	248
5	300	2	634	849	215
6	-150	4	716	750	34

DATA SHEET NO. 14

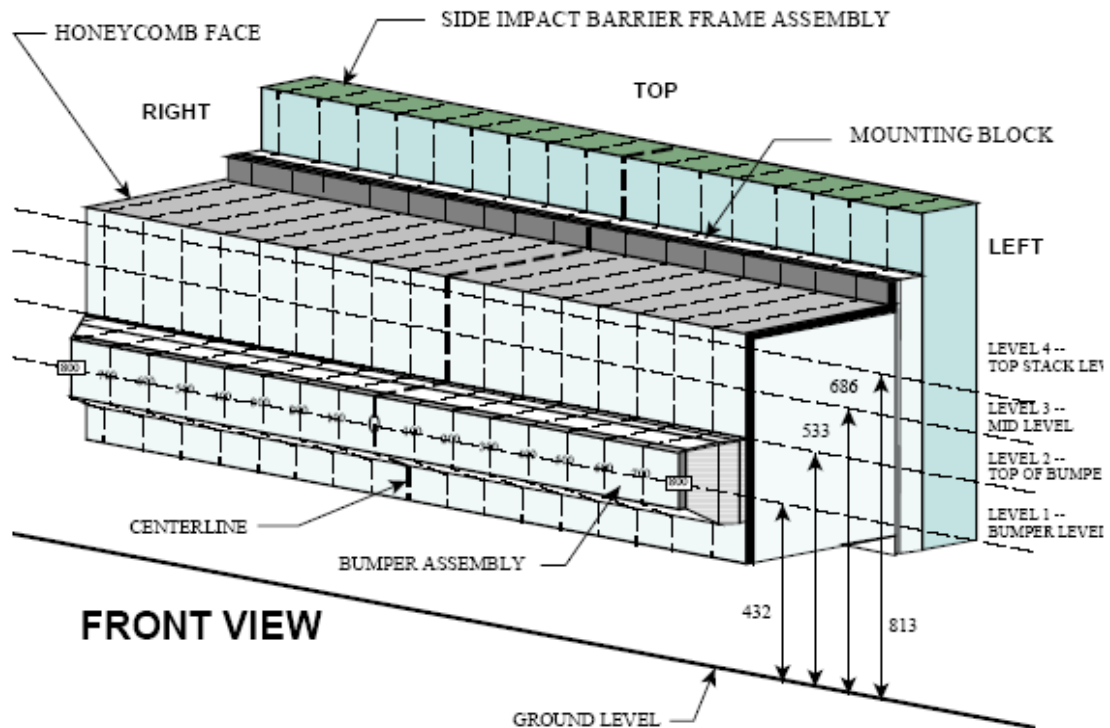
EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan

NHTSA No. MB5401

Test Program: MDB Side Impact Test

Test Date: 10/12/10



NOTE: Dimensions are shown in millimeters, mm

DEFORMABLE BARRIER STATIC CRUSH

Stack Level	Distance Right of Center								C/L	Distance Left of Center							
	800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
1	186	169	154	148	144	137	136	134	144	140	143	150	150	161	177	196	216
2	101	81	70	64	59	56	46	42	47	50	44	41	39	42	51	67	76
3	108	52	24	17	14	12	10	13	19	28	49	34	27	26	29	35	44
4	106	74	37	14	10	10	10	23	46	74	76	46	14	5	3	17	54

All dimensions in millimeters.

DATA SHEET NO. 15

FMVSS NO. 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan

NHTSA No. MB5401

Test Program: MDB Side Impact Test

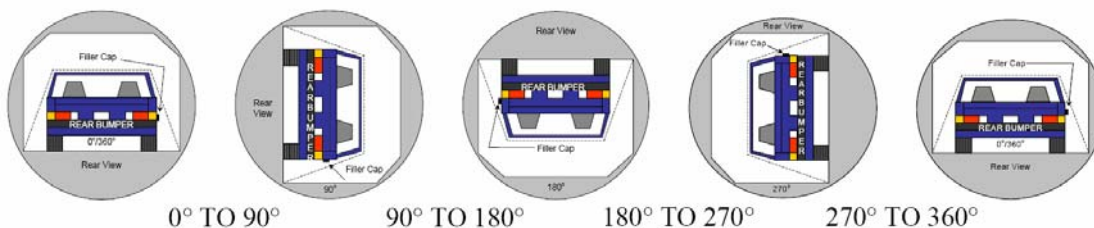
Test Date: 10/12/10

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 31.7° C

Test Time: 12:10 PM

- A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable = 1 oz.)
- B. For the 5 minute period after motion ceases: 0 oz.
(Maximum allowable = 5 oz.)
- C. For the following 25 minutes: 0 oz.
(Maximum allowable = 1 oz./minute)
- D. Spillage Details: No spillage occurred



SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	86	300	386
90° To 180°	78	300	378
180° To 270°	77	300	377
270° To 360°	76	300	376

FMVSS 301 SPILLAGE TABLE

Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0° To 90°	0			
90° To 180°	0			
180° To 270°	0			
270° To 360°	0			

SOLVENT SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0° To 90°	None
90° To 180°	None
180° To 270°	None
270° To 360°	None

DATA SHEET NO. 16

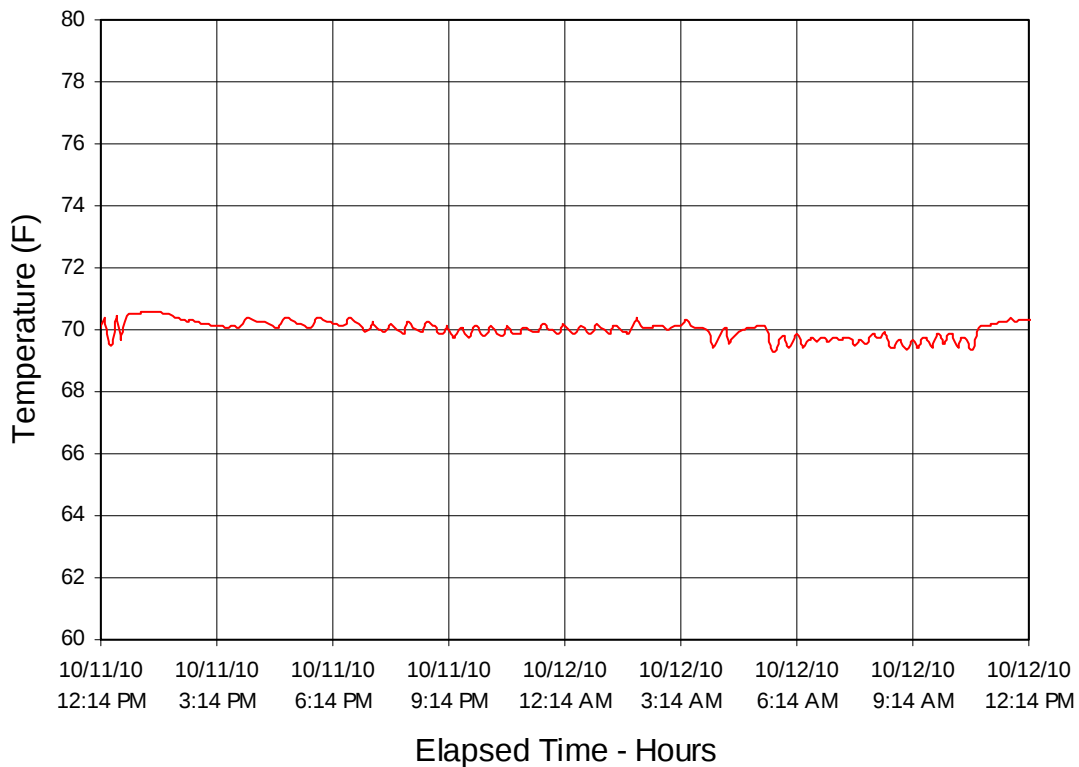
DUMMY / VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan

NHTSA No. MB5401

Test Program: MDB Side Impact Test

Test Date: 10/12/10



APPENDIX A
PHOTOGRAPHS

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FIGURE 1. As-Delivered Right Front Three-Quarter View of Test Vehicle



FIGURE 2. As-Delivered Left Rear Three-Quarter View of Test Vehicle



FIGURE 3. Pre-Test Frontal View of Test Vehicle



FIGURE 4. Post-Test Frontal View of Test Vehicle



FIGURE 5. Pre-Test Left Front Three-Quarter View of the Test Vehicle



FIGURE 6. Post-Test Left Front Three-Quarter View of the Test Vehicle



FIGURE 7. Pre-Test Left Side View of Test Vehicle



FIGURE 8. Post-Test Left Side View of Test Vehicle



FIGURE 9. Pre-Test Left Rear Three-Quarter View of Test Vehicle



FIGURE 10. Post-Test Left Rear Three-Quarter View of Impact Zone



FIGURE 11. Pre-Test Rear View of Test Vehicle



FIGURE 12. Post-Test Rear View of Test Vehicle



FIGURE 13. Pre-Test Right Side View of Test Vehicle



FIGURE 14. Post-Test Right Side View of Test Vehicle



FIGURE 15. Pre-Test Overhead View of Test Vehicle with MDB Positioned Against Side of Test Vehicle



FIGURE 16. Post-Test Overhead View of Test Vehicle and MDB



FIGURE 17. Pre-Test Left Side View of MDB Positioned
Against Side of Test Vehicle at Ideal Impact Point



FIGURE 18. Pre-Test Right Side View of MDB Positioned
Against Side of Test Vehicle at Ideal Impact Point



FIGURE 19. Pre-Test Close-Up View of Impact Point Target



FIGURE 20. Post-Test Close-Up View of Impact Point Target
Showing Impact Point Location



FIGURE 21. Pre-Test Left Front Door Latch Close-Up



FIGURE 22. Post-Test Left Front Door Latch Close-Up



FIGURE 23. Pre-Test Left Rear Door Latch Close-Up



FIGURE 24. Post-Test Left Rear Door Latch Close-Up



FIGURE 25. Pre-Test Front Close-Up View of Driver Dummy



FIGURE 26. Post-Test Front Close-Up View of Driver Dummy



FIGURE 27. Pre-Test Left Side View of Driver Dummy
Showing Belt, Chalking, and Contact Switches



FIGURE 28. Pre-Test Left Side View of Driver Dummy Shoulder and Door Top View



FIGURE 29. Post-Test Left Side View of Driver Dummy Shoulder and Door Top View



FIGURE 30. Pre-Test Frontal View of Driver Seat Back Prior to Dummy Positioning



FIGURE 31. Pre-Test Frontal View of Driver Dummy Head and Shoulders in Relation to Head Restraint



FIGURE 32. Pre-Test Frontal View of Driver Seat Pan Prior to Dummy Positioning



FIGURE 33. Pre-Test Overhead View of Driver Dummy Thighs on Seat Pan



FIGURE 34. Pre-Test Placement of Driver Dummy's Feet

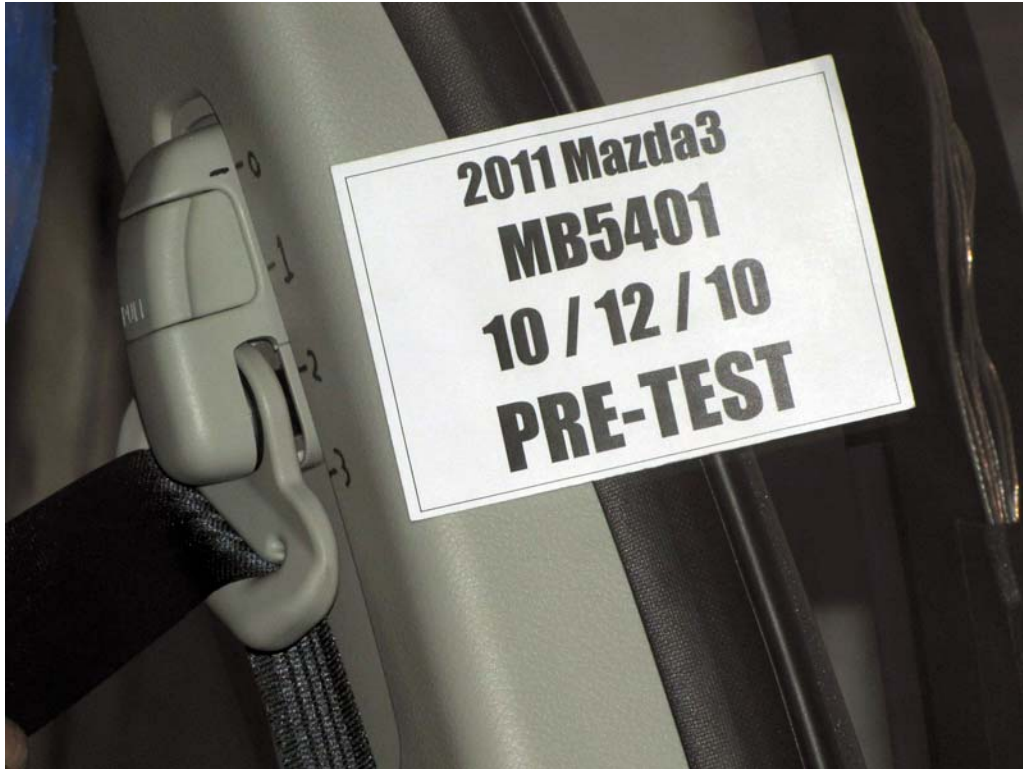


FIGURE 35. Pre-Test View of Belt Anchorage for Driver Dummy

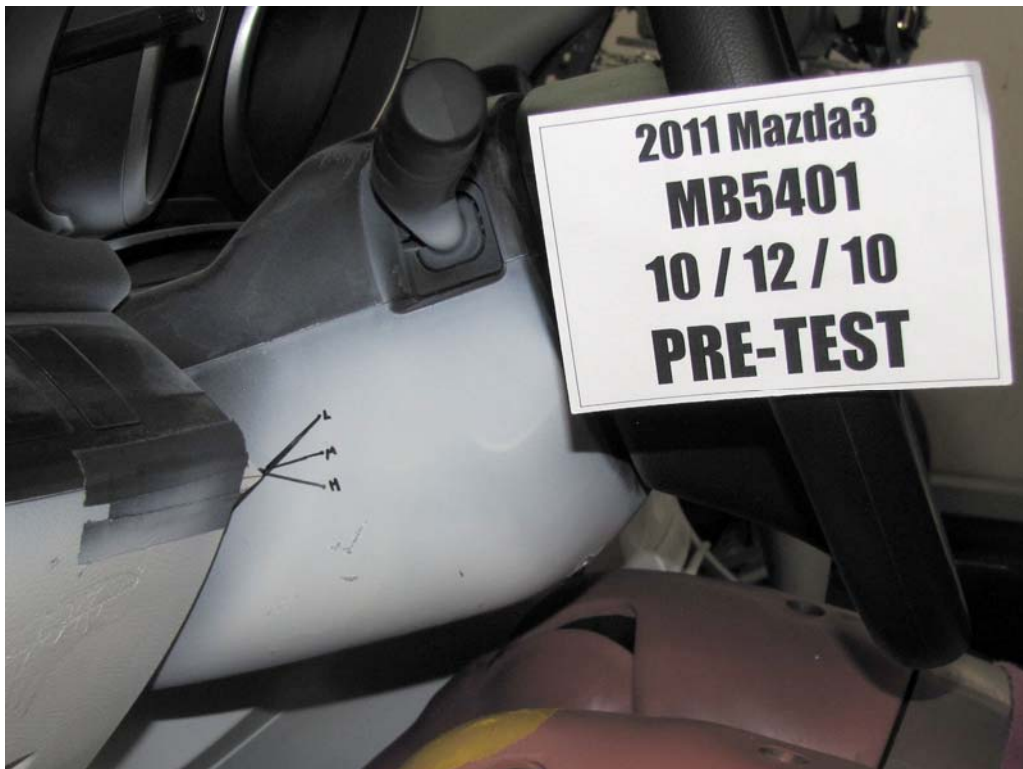


FIGURE 36. Pre-Test Left Side View of Steering Wheel



FIGURE 37. Pre-Test View of Parking Brake



FIGURE 38. Pre-Test Close-Up Left Side View of Driver Seat Track



FIGURE 39. Pre-Test Close-Up Left Side View of Driver Seat Back



FIGURE 40. Pre-Test Close-Up View of Driver Seat Back or Head Restraint



FIGURE 41. Pre-Test Driver Dummy and Door Clearance View



FIGURE 42. Post-Test Driver Dummy and Door Clearance View



FIGURE 43. Pre-Test Right Side View of Driver Dummy and Front Seat Occupant Compartment



FIGURE 44. Post-Test Right Side View of Driver Dummy and Front Seat Occupant Compartment



FIGURE 45. Pre-Test Driver Inner Door Panel View



FIGURE 46. Post-Test Driver Dummy Inner Door Panel View
Showing Driver Dummy Contact Locations



FIGURE 47. Post-Test Driver Dummy Close-Up Head Contact With Vehicle Interior View



FIGURE 48. Post-Test Driver Dummy Close-Up Head Contact with Side Airbag View

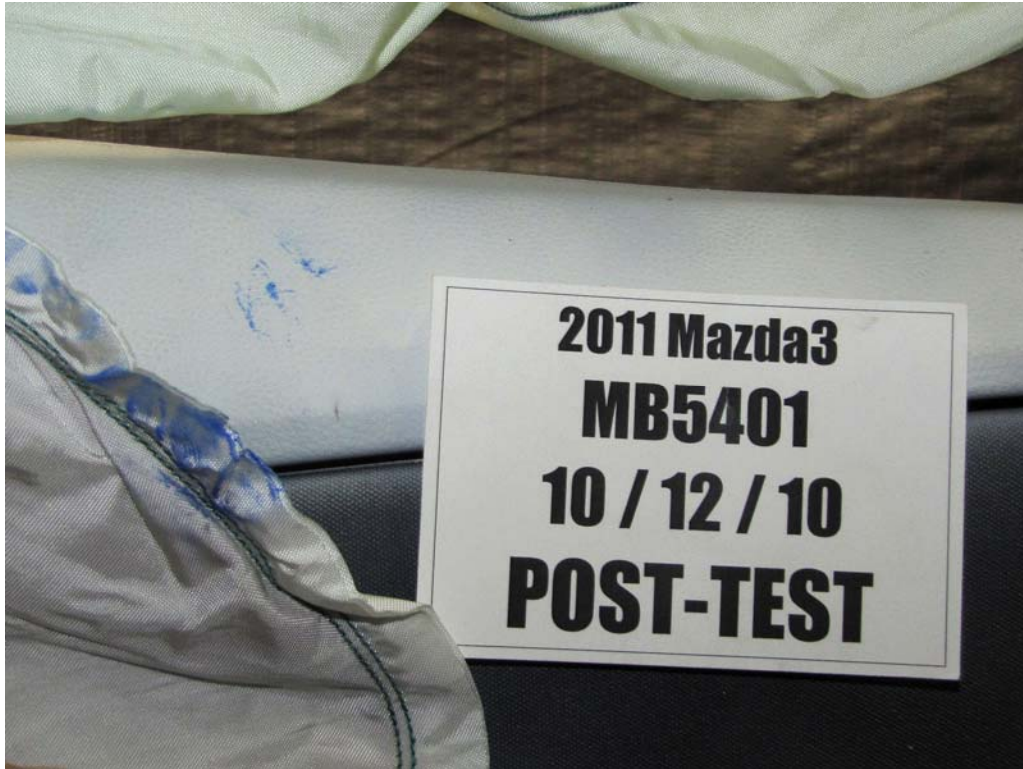


FIGURE 49. Post-Test Driver Dummy Close-Up Torso Contact with Vehicle Interior View



FIGURE 50. Post-Test Driver Dummy Close-Up Torso Contact with Side Airbag View



FIGURE 51. Post-Test Driver Dummy Close-Up Pelvis Contact with Vehicle Interior View



FIGURE 52. Post-Test Driver Dummy Close-Up Pelvis Contact with Side Airbag View



FIGURE 53. Pre-Test Left Side View of Rear Passenger Dummy
Showing Belt, Chalking, and Contact Switches



FIGURE 54. Pre-Test Left Side View of Rear Passenger Dummy
Shoulder and Door Top View



FIGURE 55. Post-Test Left Side View of Rear Passenger Dummy
Shoulder and Door Top View



FIGURE 56. Pre-Test Frontal View of Rear Passenger Seat Back Prior to Dummy Positioning



FIGURE 57. Pre-Test Frontal View of Rear Passenger Dummy
Head and Shoulders in Relation to Head Restraint



FIGURE 58. Pre-Test Overhead View of Rear Passenger
Seat Pan Prior to Dummy Positioning



FIGURE 59. Pre-Test Overhead View of Rear Passenger Dummy Thighs on Seat Pan



FIGURE 60. Pre-Test View of Rear Passenger Dummy's Neck
Showing Position of Adjustable Neck Bracket



FIGURE 61. Pre-Test View of Rear Passenger Dummy's Head
Showing Dummy's Head is Level



FIGURE 62. Pre-Test Placement of Rear Passenger Dummy's Feet



FIGURE 63. Pre-Test View of Belt Anchorage for Rear Passenger Dummy

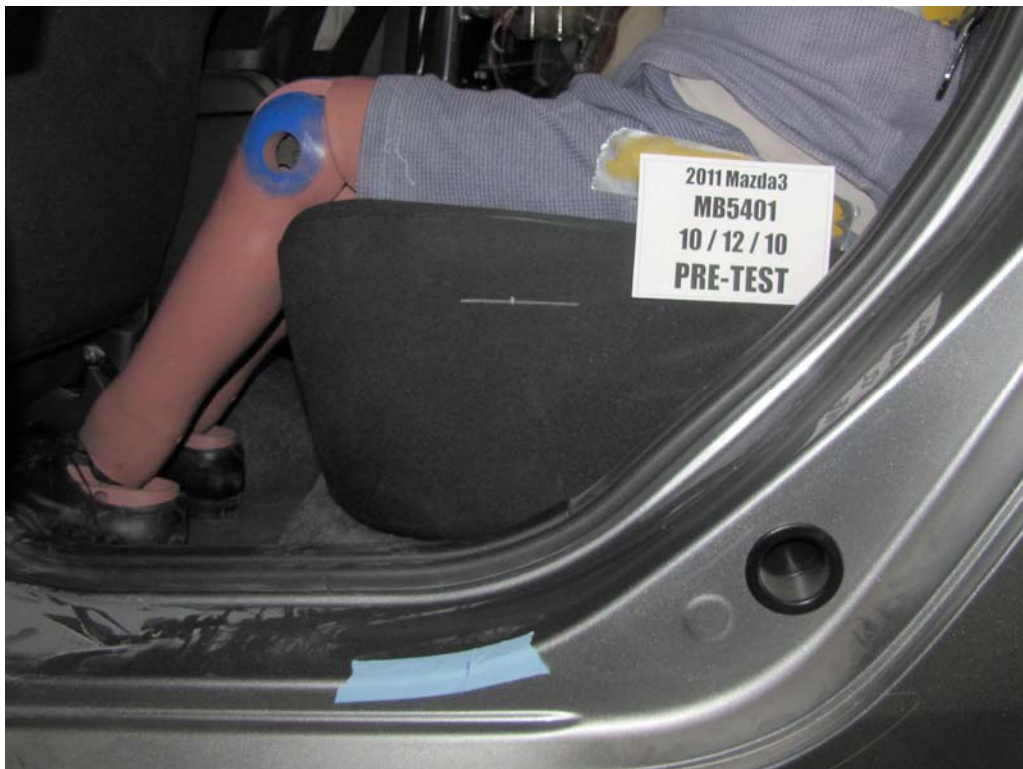


FIGURE 64. Pre-Test Close-Up Left Side View of Rear Passenger Seat Track



FIGURE 65. Pre-Test Close-Up Left Side View of Rear Passenger Seat Back



FIGURE 66. Pre-Test Close-Up View of Rear Passenger Seat Back or Head Restraint



FIGURE 67. Pre-Test Rear Passenger Dummy and Door Clearance View



FIGURE 68. Post-Test Rear Passenger Dummy and Door Clearance View



FIGURE 69. Pre-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment



FIGURE 70. Post-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment



FIGURE 71. Pre-Test Rear Passenger Inner Door Panel View



FIGURE 72. Post-Test Rear Passenger Inner Door Panel View
Showing Rear Passenger Dummy Contact Locations



FIGURE 73. Post-Test Rear Passenger Dummy Close-Up
Head Contact with Vehicle Interior View



FIGURE 74. Post-Test Rear Passenger Dummy Close-Up
Head Contact With Side Airbag View



FIGURE 75. Post-Test Rear Passenger Dummy Close-Up
Torso Contact with Vehicle Interior View

Photograph Not Applicable
No Dummy Torso Contact
With Side Airbag

FIGURE 76. Post-Test Rear Passenger Dummy Close-Up
Torso Contact with Side Airbag View



FIGURE 77. Post-Test Rear Passenger Dummy Close-Up
Pelvis Contact with Vehicle Interior View

**Photograph Not Applicable
No Dummy Pelvis Contact
With Side Airbag**

FIGURE 78. Post-Test Rear Passenger Dummy Close-Up
Pelvis Contact with Side Airbag View



FIGURE 79. Pre-Test View of Fuel Filler Cap



FIGURE 80. Post-Test View of Fuel Filler Cap



FIGURE 81. Pre-Test Front View of MDB Impactor Face



FIGURE 82. Post-Test Front View of MDB Impactor Face



FIGURE 83. Pre-Test Top View of MDB Impactor Face



FIGURE 84. Post-Test Top View of MDB Impactor Face



FIGURE 85. Pre-Test Left Side View of MDB Impactor Face



FIGURE 86. Post-Test Left Side View of MDB Impactor Face



FIGURE 87. Pre-Test Right Side View of MDB Impactor Face



FIGURE 88. Post-Test Right Side View of MDB Impactor Face



FIGURE 89. Close-Up View of Vehicle's Certification Label



FIGURE 90. Close-Up View of Vehicle's Tire Information Placard

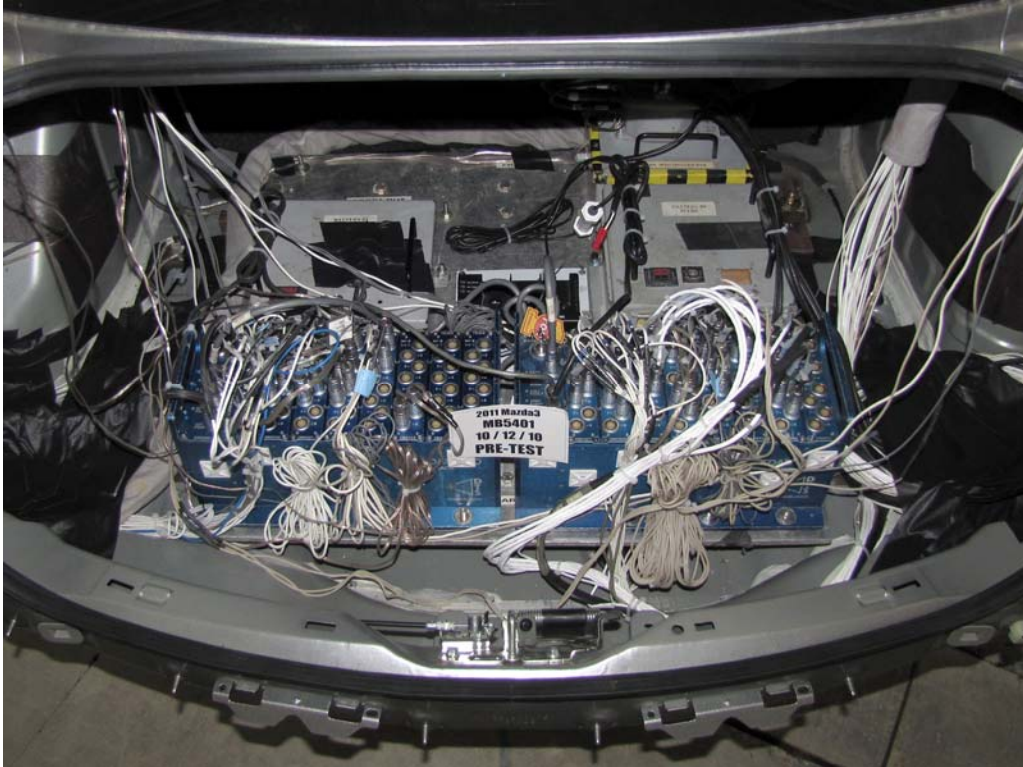


FIGURE 91. Pre-Test Ballast View

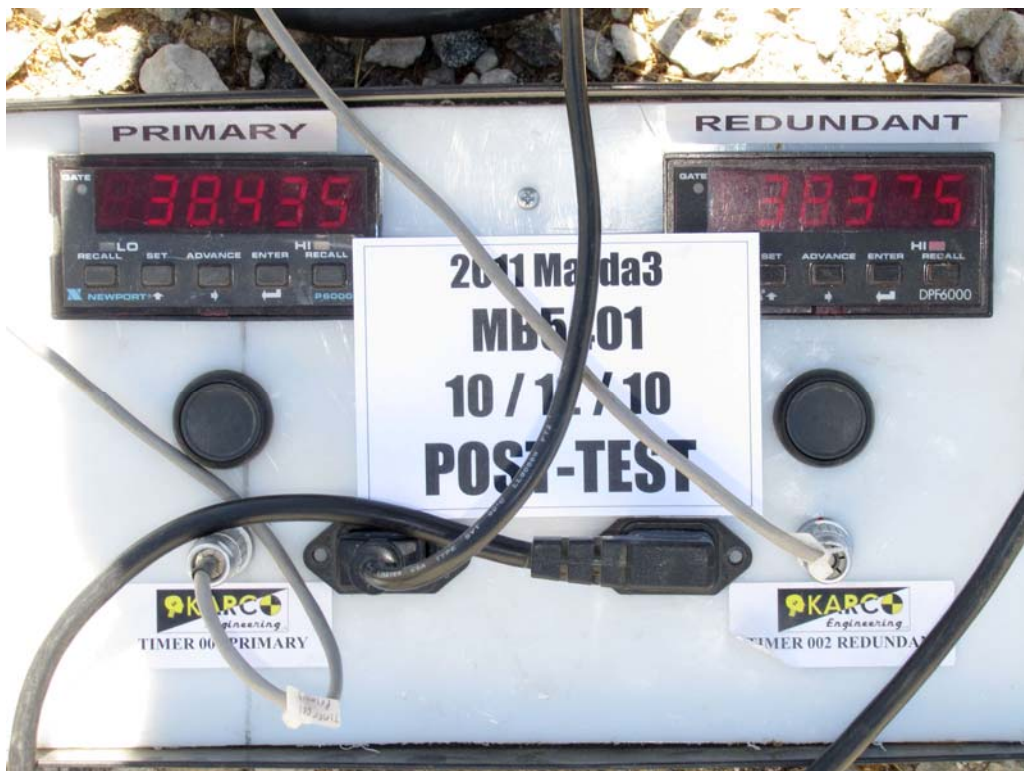


FIGURE 92. Post-Test Primary and Redundant Speed Trap Read-Out



FIGURE 93. FMVSS No. 301/305 Rollover 0 Degrees



FIGURE 94. FMVSS No. 301/305 Rollover 90 Degrees



FIGURE 95. FMVSS No. 301/305 Rollover 180 Degrees



FIGURE 96. FMVSS No. 301/305 Rollover 270 Degrees



FIGURE 97. FMVSS No. 301/305 Rollover 360 Degrees



FIGURE 98. Impact Event

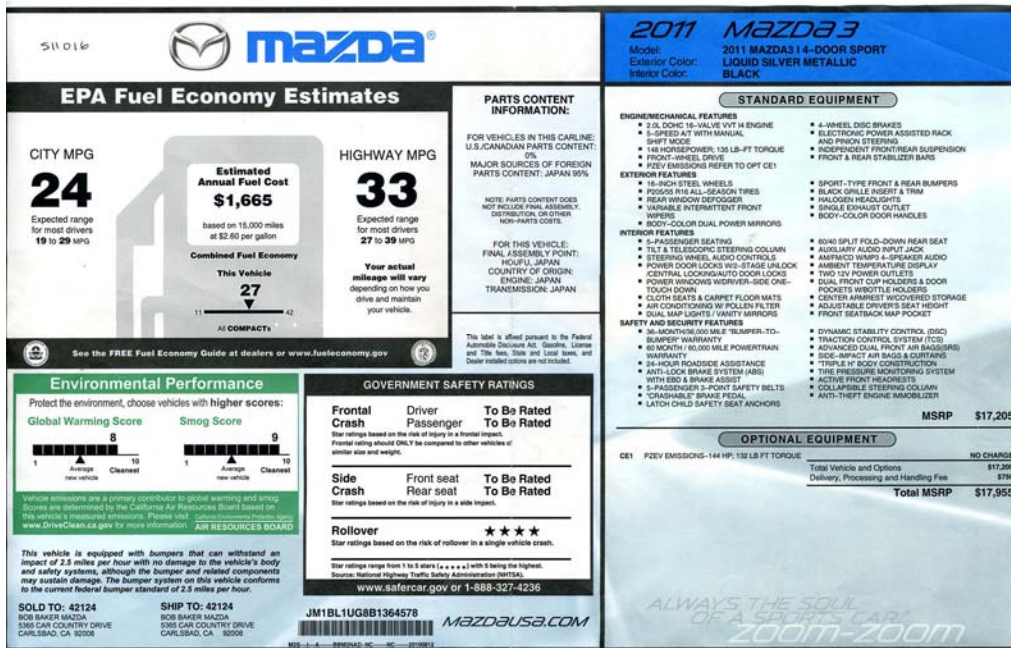


FIGURE 99. Monroney Label

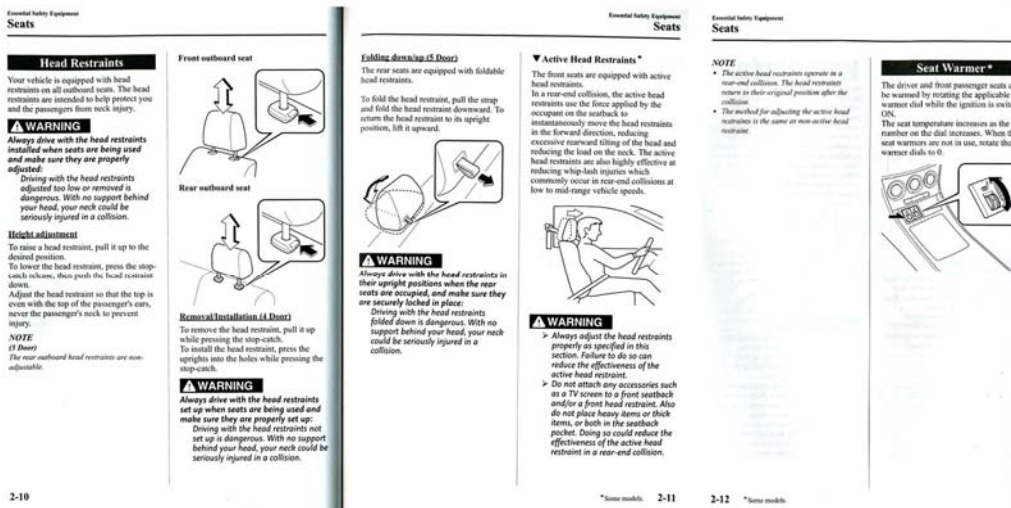


FIGURE 100. Driver Head Restraint Use and Adjustment
Information from Vehicle Manual

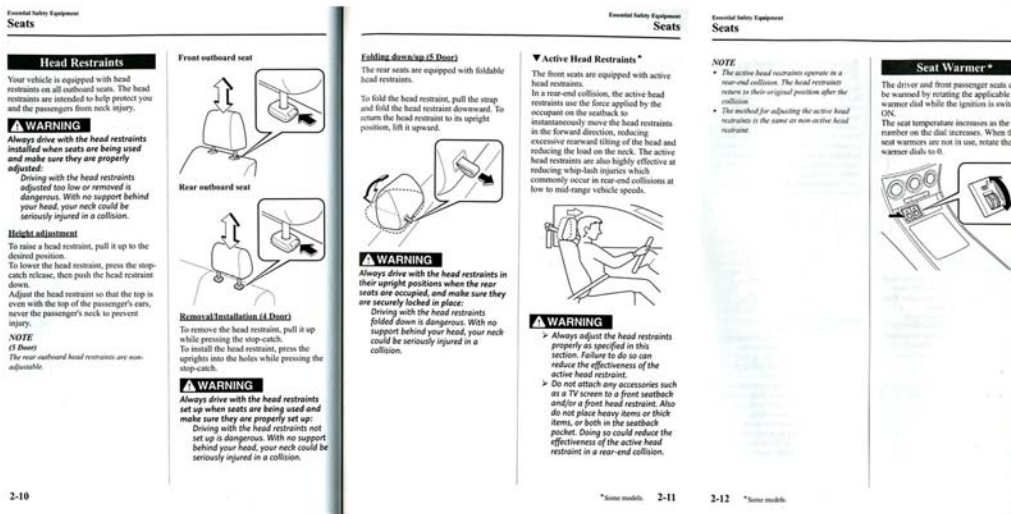


FIGURE 101. Left Rear Passenger Head Restraint Use and Adjustment
Information from Vehicle Manual

APPENDIX B
DUMMY RESPONSE DATA

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3	Driver Head Acceleration (Z) Primary vs. Time	B-1
4	Driver Head Resultant Acceleration Primary vs. Time	B-1
5	Driver Upper Thorax Rib Deflection (Y) vs. Time	B-2
6	Driver Middle Thorax Rib Deflection (Y) vs. Time	B-2
7	Driver Lower Thorax Rib Deflection (Y) vs. Time	B-2
8	Driver Thorax Rib Deflection Maximum vs. Time	B-2
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12	Driver Total Abdominal Force (Y) vs. Time	B-3
13	Driver Pubic Symphysis Force (Y) vs. Time	B-4
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15	Passenger Head Acceleration (Y) vs. Time Primary	B-5
16	Passenger Head Acceleration (Z) vs. Time Primary	B-5
17	Passenger Head Resultant Acceleration Primary vs. Time	B-5
18	Passenger Lower Spine T12 Acceleration (X) vs. Time	B-6
19	Passenger Lower Spine T12 Acceleration (Y) vs. Time	B-6
20	Passenger Lower Spine T12 Acceleration (Z) vs. Time	B-6
21	Passenger Lower Spine T12 Resultant Acceleration vs. Time	B-6
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24	Passenger Total Pelvic Force on Impact Side (Y) vs. Time	B-7

The following additional data for this test can be obtained from the Research and Development section of the NHTSA website. The website can be found at

www.NHTSA.dot.gov

Driver & Passenger Dummy Instrumentation Data

Driver Lower Spine T12 Acceleration (X)

Driver Lower Spine T12 Acceleration (Y)

Driver Lower Spine T12 Acceleration (Z)

Passenger Upper Thorax Rib Deflection (Y)

Passenger Middle Thorax Rib Deflection (Y)

Passenger Lower Thorax Rib Deflection (Y)
Passenger Upper Abdomen Rib Deflection (Y)
Passenger Lower Abdomen Rib Deflection (Y)
Driver Head Acceleration Redundant (X)
Driver Head Acceleration Redundant (Y)
Driver Head Acceleration Redundant (Z)
Driver Shoulder Contact Switch
Driver Torso Contact Switch
Driver Pelvis Contact Switch
Passenger Head Acceleration Redundant (X)
Passenger Head Acceleration Redundant (Y)
Passenger Head Acceleration Redundant (Z)
Passenger Shoulder Contact Switch
Passenger Torso Contact Switch
Passenger Pelvis Contact Switch

Vehicle Instrumentation Data

Driver Side Airbag Timing
Driver Side Curtain Airbag Timing
Passenger Side Airbag Timing (if applicable)
Passenger Side Curtain Airbag Timing (if different from Driver)
Right Side Sill at Front Seat Acceleration (X)
Right Side Sill at Front Seat Acceleration (Y)
Right Side Sill at Front Seat Acceleration (Z)
Right Side Sill at Rear Seat Acceleration (X)
Right Side Sill at Rear Seat Acceleration (Y)
Right Side Sill at Rear Seat Acceleration (Z)
Rear Floorpan Above Axle Acceleration (X)
Rear Floorpan Above Axle Acceleration (Y)
Rear Floorpan Above Axle Acceleration (Z)
Left Side Sill at Front Seat Acceleration (Y)
Left Side Sill at Rear Seat Acceleration (Y)
Right Rear Occupant Compartment Acceleration (Y)
Lower A-Post Acceleration (Y)
Upper A-Post Acceleration (Y)
Lower B-Post Acceleration (Y)
Upper B-Post Acceleration (Y)

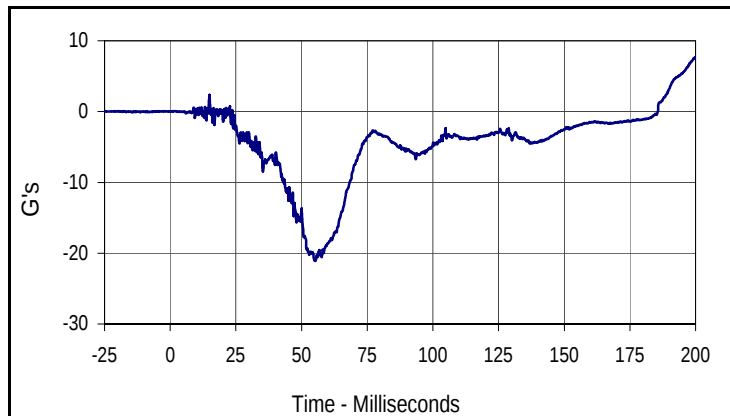
Front Seat Track Acceleration (Y)
Rear Seat Track Acceleration (Y)
Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)

MDB Instrumentation Data

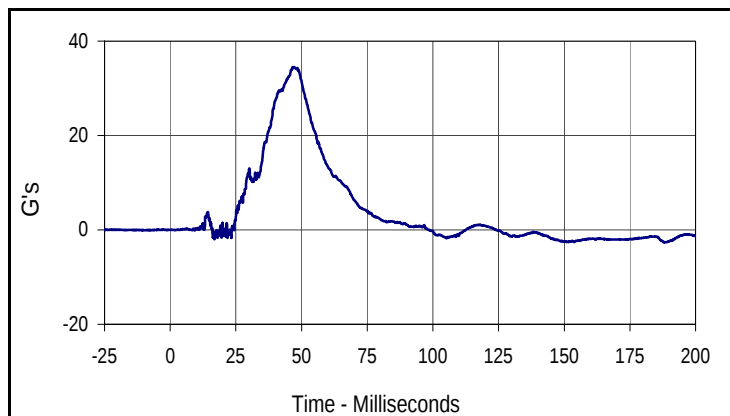
MDB Center of Gravity Acceleration (X)
MDB Center of Gravity Acceleration (Y)
MDB Center of Gravity Acceleration (Z)
MDB Rear Acceleration (X)
MDB Rear Acceleration (Y)
Left MDB Contact Switch
Right MDB Contact Switch

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

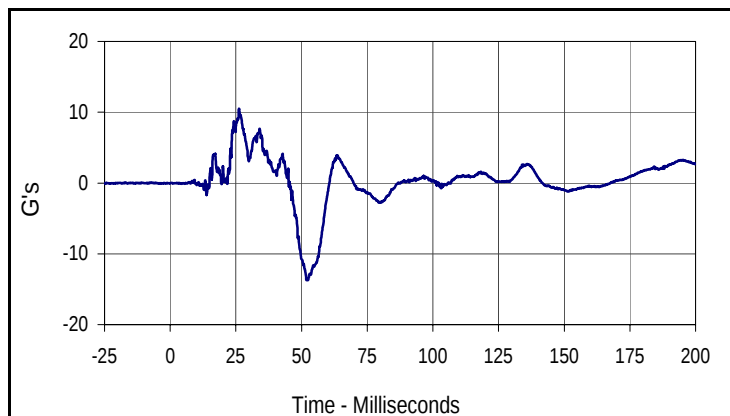
Test Date: 10/12/10
 NHTSA No.: MB5401



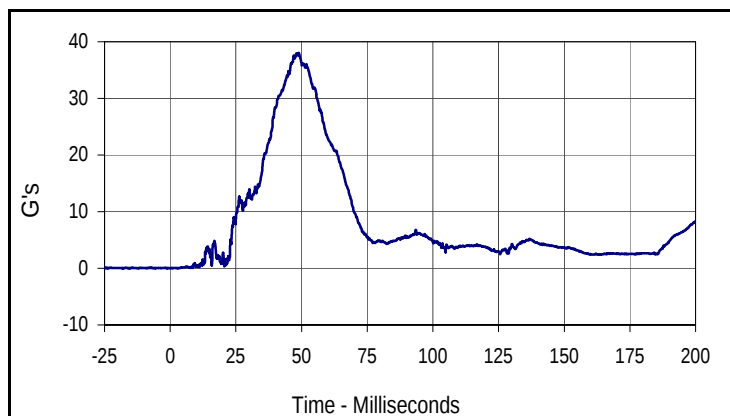
Curve Description			
Driver Head Acceleration X Primary			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
7.7	200.0	-21.1	55.2



Curve Description			
Driver Head Acceleration Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
34.5	47.1	-2.6	187.8



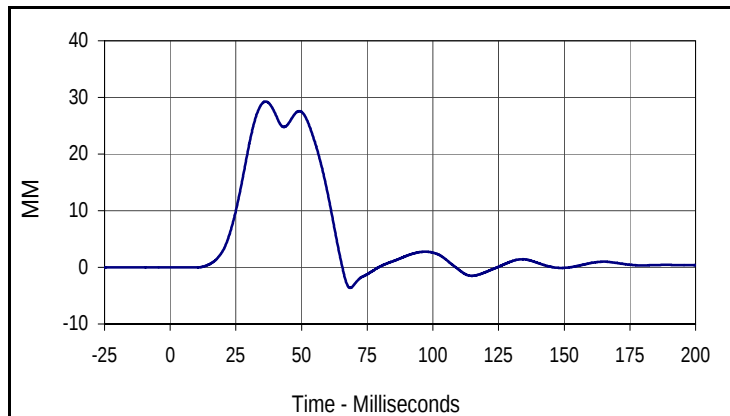
Curve Description			
Driver Head Acceleration Z Primary			
CURNO	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
10.5	26.2	-13.7	52.0



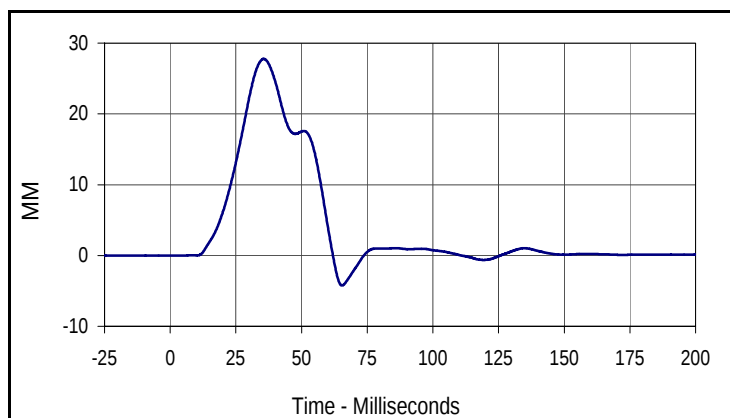
Curve Description			
Driver Head Resultant Acceleration Primary			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
38.0	49.0	0.0	2.6

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

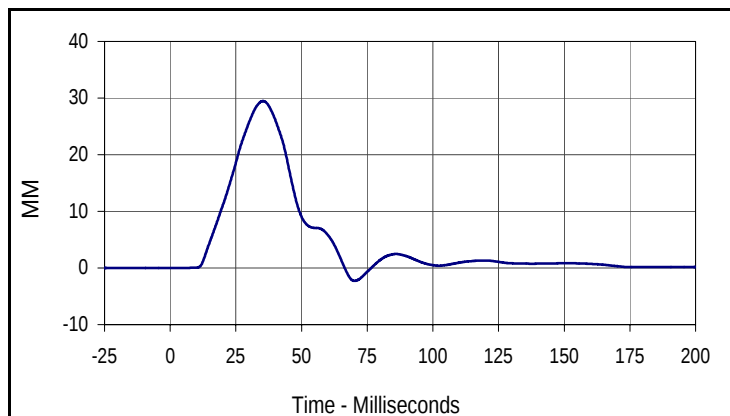
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 NHTSA No.: MB5401



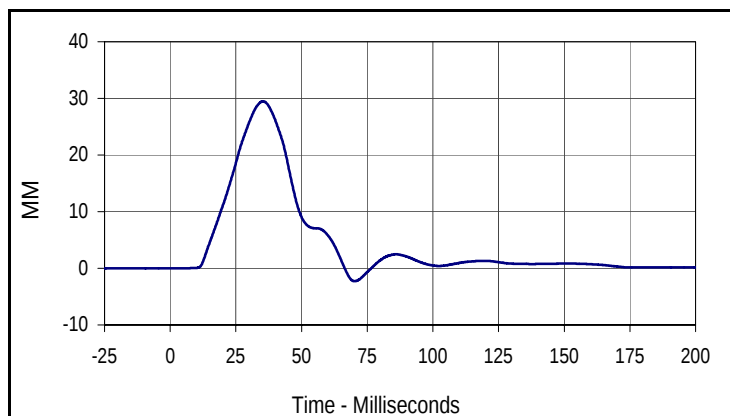
Curve Description			
Driver Upper Thorax Rib Deflection Y			
CURNO	Type	SAE Class	Units
007	FIL	180	MM
Max	Time	Min	Time
29.3	36.3	-3.6	68.5



Curve Description			
Driver Middle Thorax Rib Deflection Y			
CURNO	Type	SAE Class	Units
008	FIL	180	MM
Max	Time	Min	Time
27.8	35.6	-4.2	65.4



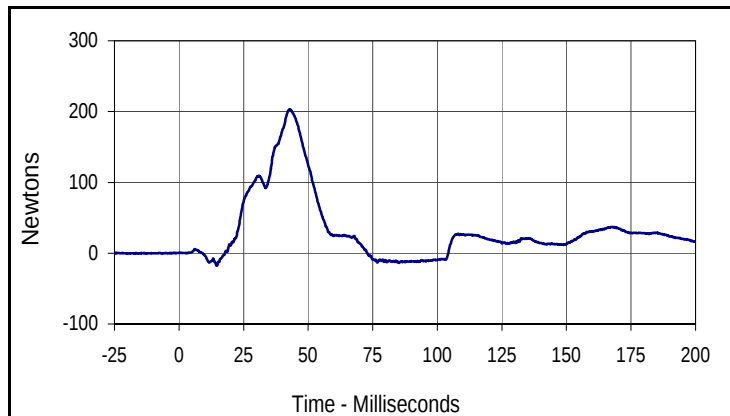
Curve Description			
Driver Lower Thorax Rib Deflection Y			
CURNO	Type	SAE Class	Units
009	FIL	180	MM
Max	Time	Min	Time
29.5	35.3	-2.3	70.2



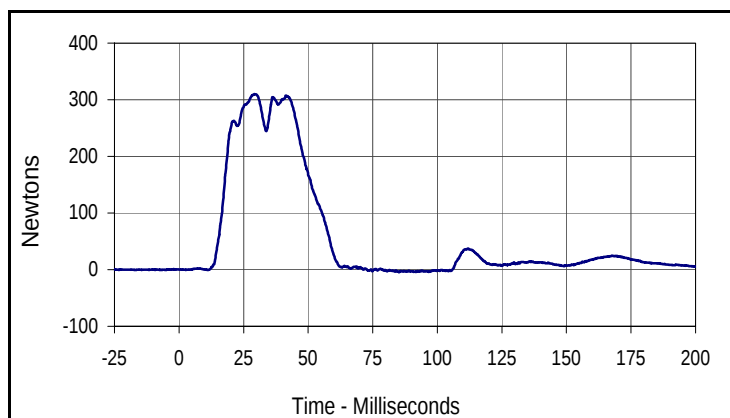
Curve Description			
Driver Thorax Rib Deflection Maximum			
CURNO	Type	SAE Class	Units
010	FIL	180	MM
Max	Time	Min	Time
29.5	35.3	-2.3	70.2

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

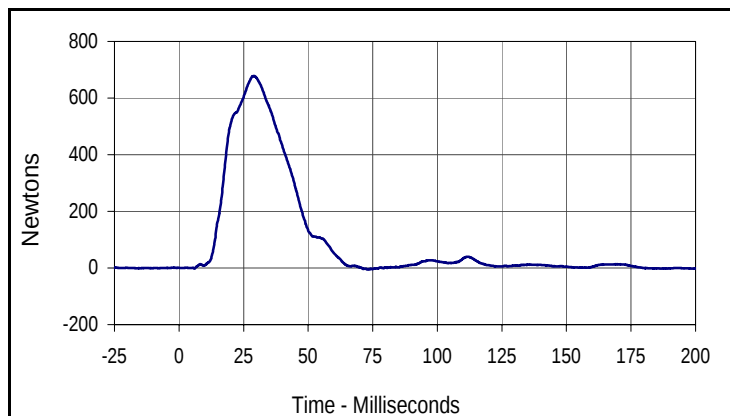
Test Date: 10/12/10
 NHTSA No.: MB5401



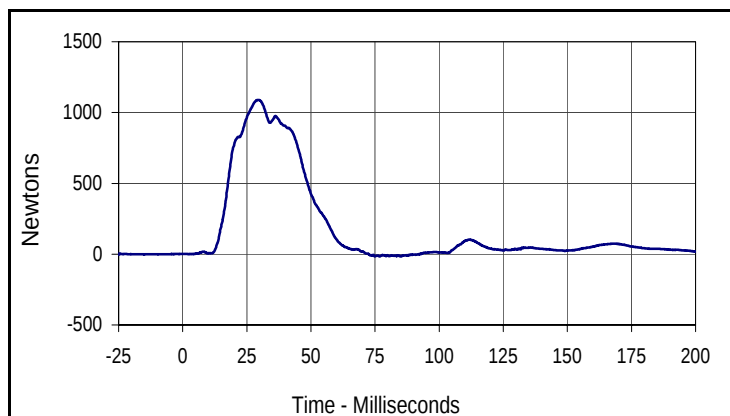
Curve Description			
Driver Anterior Abdominal Force Y			
CURNO	Type	SAE Class	Units
013	FIL	600	Newtons
Max	Time	Min	Time
203.5	42.8	-17.9	14.7



Curve Description			
Driver Middle Abdominal Force Y			
CURNO	Type	SAE Class	Units
014	FIL	600	Newtons
Max	Time	Min	Time
310.1	29.2	-4.4	85.2



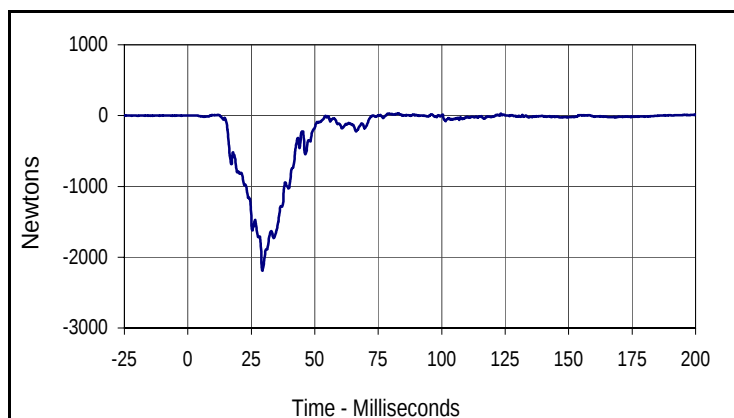
Curve Description			
Driver Posterior Abdominal Force Y			
CURNO	Type	SAE Class	Units
015	FIL	600	Newtons
Max	Time	Min	Time
678.2	29.0	-5.8	73.1



Curve Description			
Driver Total Abdominal Force			
CURNO	Type	SAE Class	Units
013	RES	600	Newtons
Max	Time	Min	Time
1089.1	29.2	-17.2	76.8

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan
Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

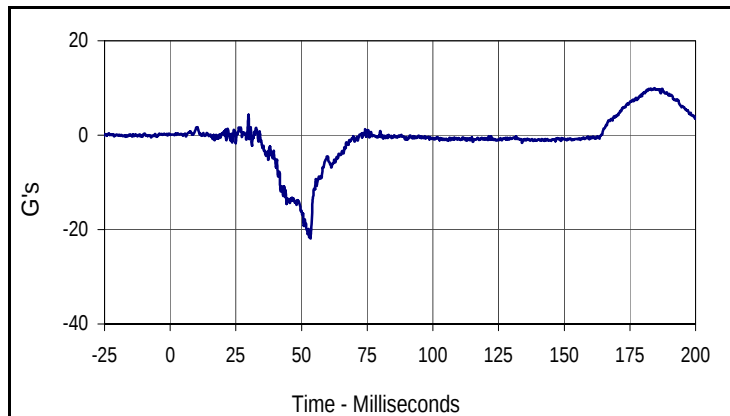
Test Date: 10/12/10
NHTSA No.: MB5401



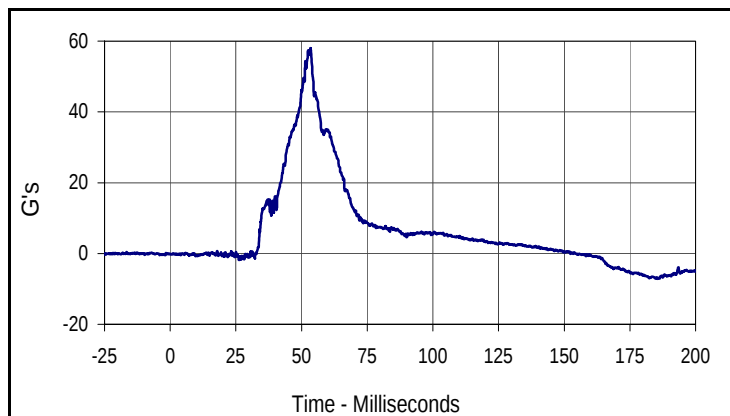
Curve Description			
Driver Pubic Symphysis Force Y			
CURNO	Type	SAE Class	Units
016	FIL	600	Newtons
Max	Time	Min	Time
31.8	82.9	-2191.5	29.4

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

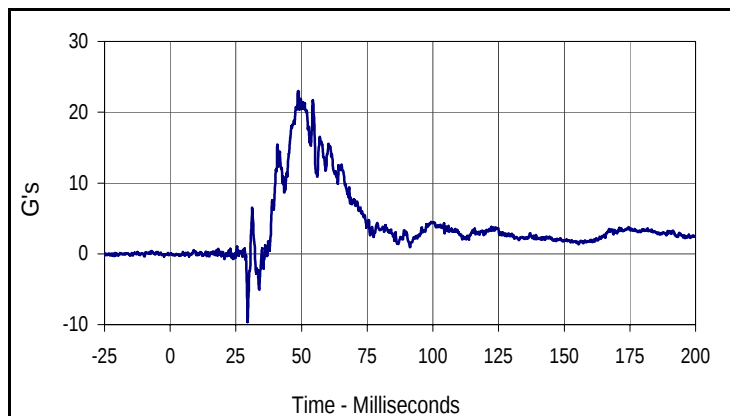
Test Date: 10/12/10
 NHTSA No.: MB5401



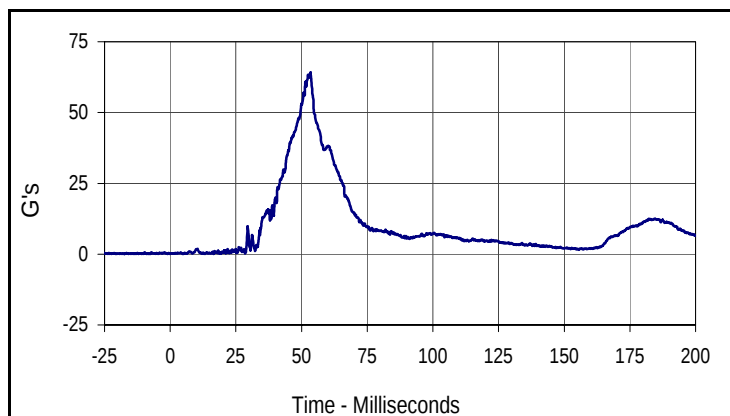
Curve Description			
Passenger Head Acceleration X Primary			
CURNO	Type	SAE Class	Units
021	FIL	1000	G's
Max	Time	Min	Time
10.0	184.3	-21.9	53.4



Curve Description			
Passenger Head Acceleration Y Primary			
CURNO	Type	SAE Class	Units
022	FIL	1000	G's
Max	Time	Min	Time
58.0	53.4	-7.2	185.4



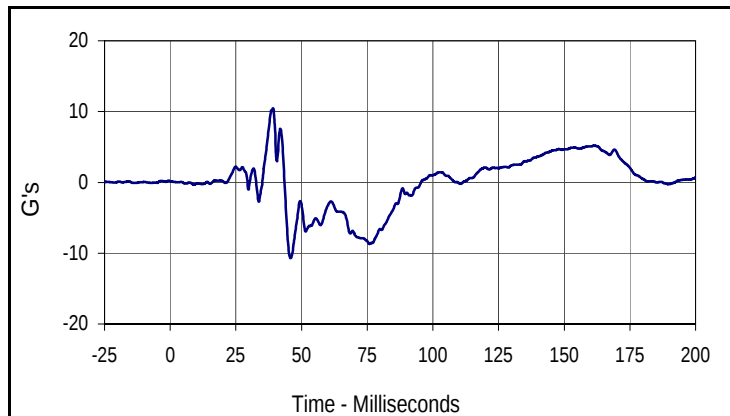
Curve Description			
Passenger Head Acceleration Z Primary			
CURNO	Type	SAE Class	Units
023	FIL	1000	G's
Max	Time	Min	Time
23.0	48.8	-9.7	29.5



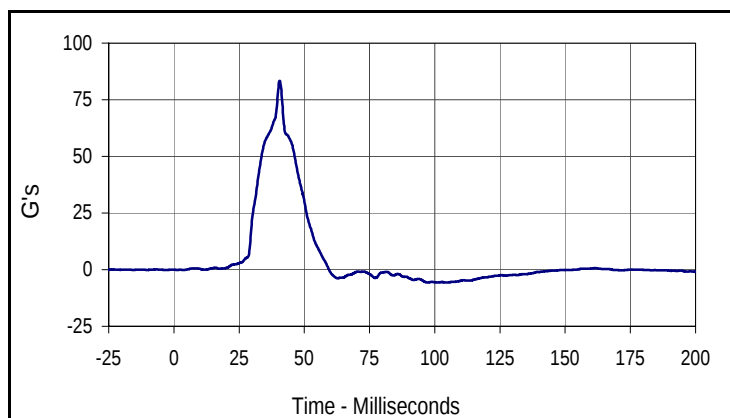
Curve Description			
Passenger Head Acceleration Resultant Primary			
CURNO	Type	SAE Class	Units
021	RES	1000	G's
Max	Time	Min	Time
64.1	53.4	0.1	4.7

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

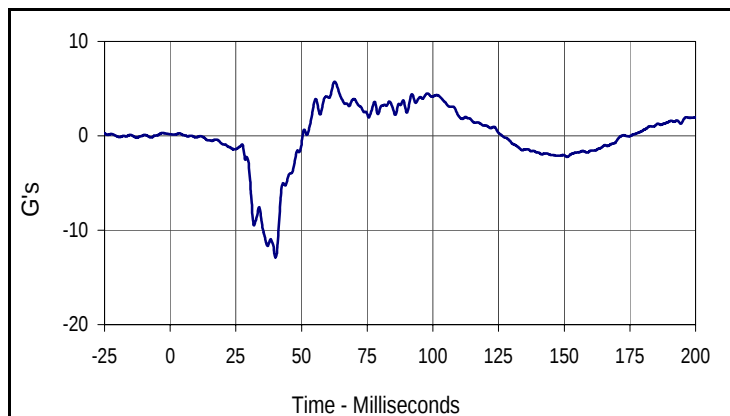
Test Date: 10/12/10
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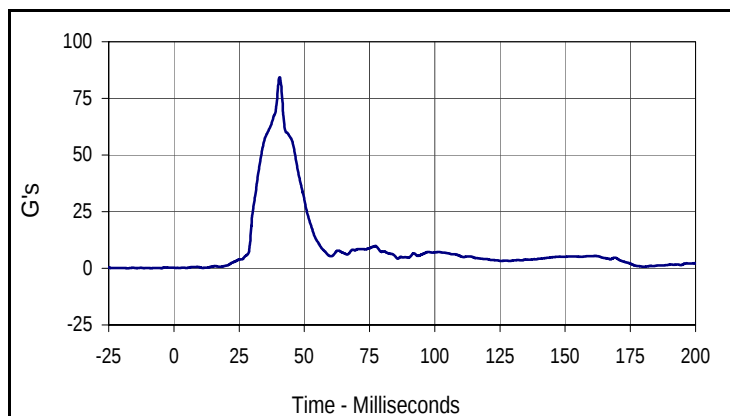
Curve Description			
Passenger Lower Spine T12 Acceleration X			
CURNO	Type	SAE Class	Units
037	FIL	180	G's
Max	Time	Min	Time
10.5	39.2	-10.7	45.8



Curve Description			
Passenger Lower Spine T12 Acceleration Y			
CURNO	Type	SAE Class	Units
038	FIL	180	G's
Max	Time	Min	Time
83.4	40.5	-5.7	97.2



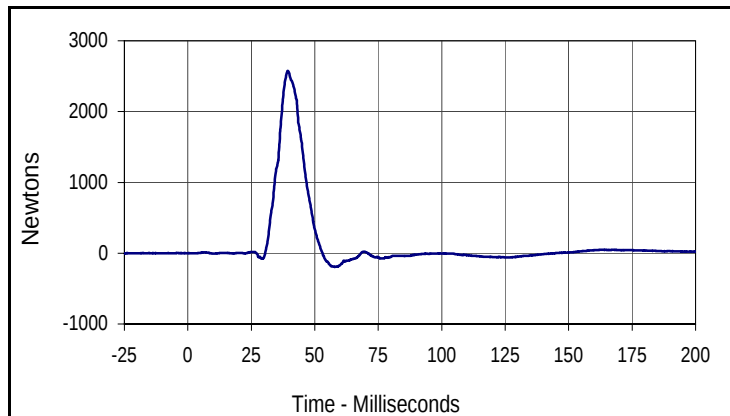
Curve Description			
Passenger Lower Spine T12 Acceleration Z			
CURNO	Type	SAE Class	Units
039	FIL	180	G's
Max	Time	Min	Time
5.7	62.6	-12.9	40.0



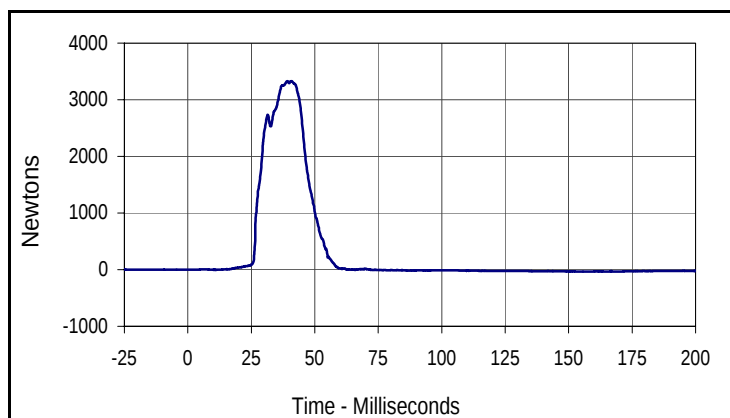
Curve Description			
Passenger Lower Spine T12 Acceleration Resultant			
CURNO	Type	SAE Class	Units
037	RES	180	G's
Max	Time	Min	Time
84.3	40.5	0.1	4.8

Test Vehicle: 2011 Mazda3 I Sport 4-Door Sedan
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

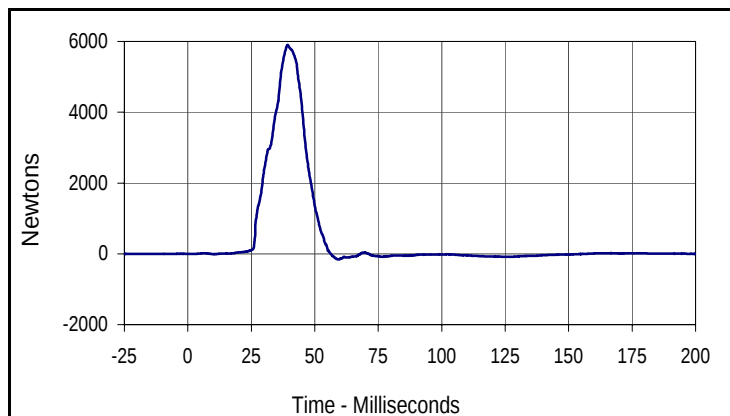
Test Date: 10/12/10
 NHTSA No.: MB5401



Curve Description			
Passenger Iliac Wing Force on Impact Side Y			
CURNO	Type	SAE Class	Units
043	FIL	600	Newtons
Max	Time	Min	Time
2574.1	39.4	-194.2	57.9



Curve Description			
Passenger Acetabulum Force on Impact Side Y			
CURNO	Type	SAE Class	Units
042	FIL	600	Newtons
Max	Time	Min	Time
3329.1	40.9	-34.1	168.2



Curve Description			
Passenger Total Pelvic Force			
CURNO	Type	SAE Class	Units
042	SUM	600	Newtons
Max	Time	Min	Time
5899.1	39.3	-157.5	59.4

APPENDIX C
DUMMY CALIBRATION DATA

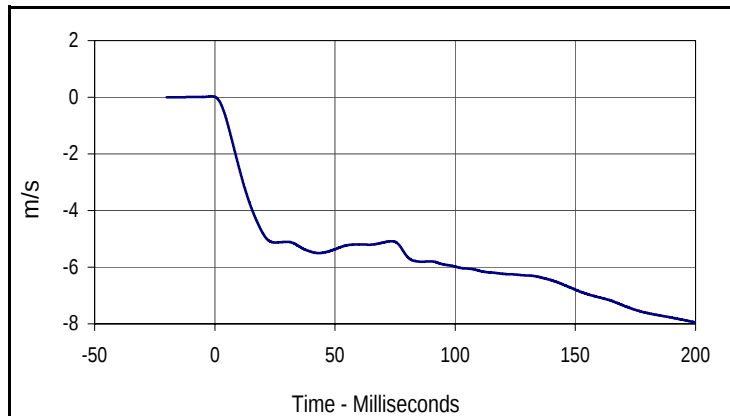
APPENDIX C
PRE-TEST / HIII CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program: ES2re Neck Calibration
 ATD Serial No.: F035

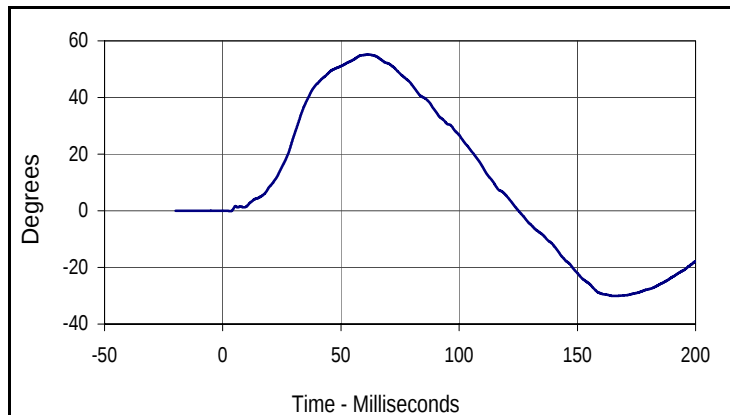
Test Date: 10/8/10
 Test I.D.: NB10A



Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	3.30 to 3.50	3.41	Pass
Pendulum Deceleration	1 msec	m/s	0.0 to -.050	-0.038	Pass
	3 msec	m/s	-.250 to -.375	-0.326	Pass
	14 msec	m/s	-3.20 to -3.70	-3.62	Pass
Headform Rotation	Max	Degrees	49.0 to 58.0	55.2	Pass
	Time	msec	54.0 to 66.0	61.5	Pass
Maximum Rotation To Time Zero Crossing		msec	53.0 to 88.0	63.7	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.2	-8.0	200.0



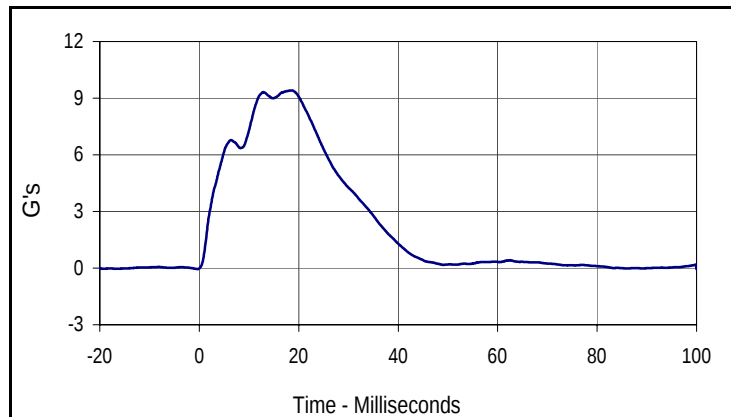
Curve Description			
Headform Rotation			
CURNO	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
55.2	61.5	-30.1	164.9

Test Program: ES2re Shoulder Calibration
 ATD Serial No.: F035

Test Date: 10/8/10
 Test I.D.: SH10A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.20 to 4.40	4.21	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	9.4	Pass
Overall Test Results				Pass



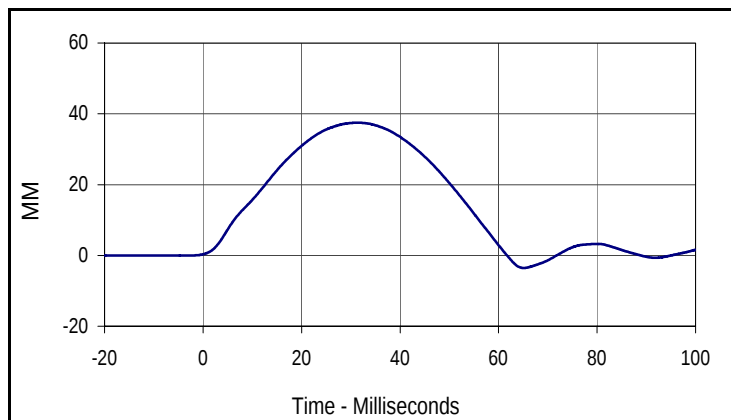
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
9.4	18.5	0.0	-0.4

Test Program: ES2re Rib Module Calibration
 ATD Serial No.: F035 Rib #1

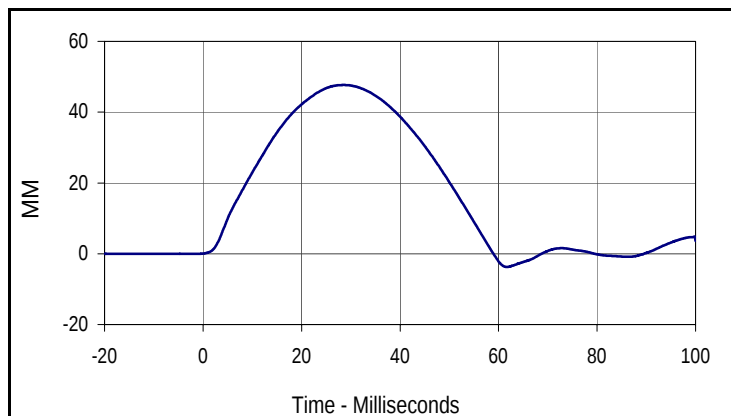
Test Date: 10/8/10
 Test I.D.: RIB10A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Rib Deflection at 459 MM Drop Height	MM	36 to 40	37.5	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	47.7	Pass
Overall Test Results			Pass	



Curve Description			
Upper Rib Deflection (459 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
37.5	31.4	-3.6	65.1



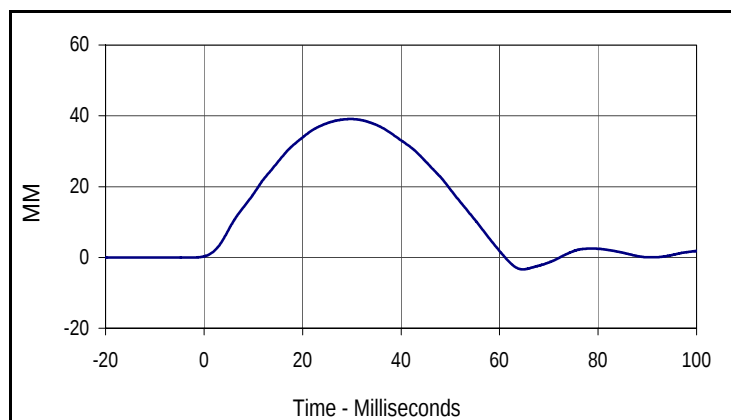
Curve Description			
Upper Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
47.7	28.6	-3.7	61.7

Test Program: ES2re Rib Module Calibration
 ATD Serial No.: F035 Rib #2

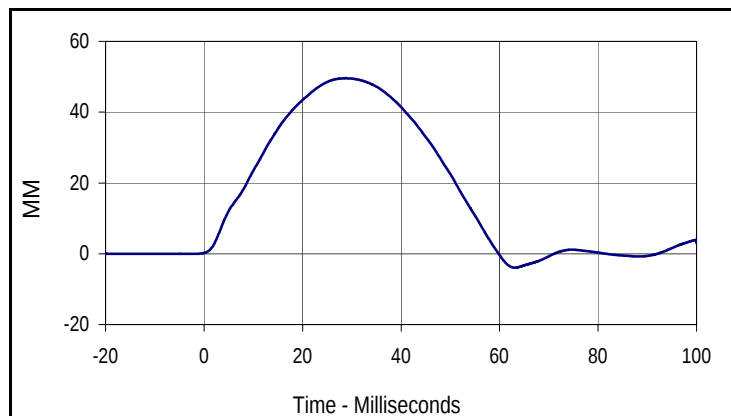
Test Date: 10/8/10
 Test I.D.: RIB10B



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Rib Deflection at 459 MM Drop Height	MM	36 to 40	39.1	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	49.6	Pass
Overall Test Results			Pass	



Curve Description			
Middle Rib Deflection (459 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
39.1	29.7	-3.4	64.7



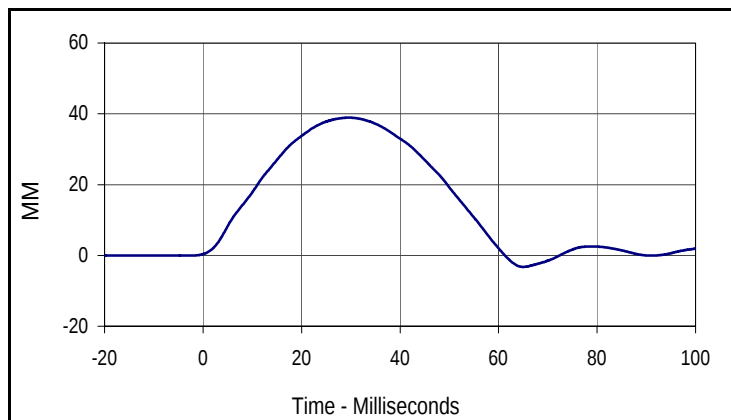
Curve Description			
Middle Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
49.6	28.7	-3.9	63.1

Test Program: ES2re Rib Module Calibration
 ATD Serial No.: F035 Rib #3

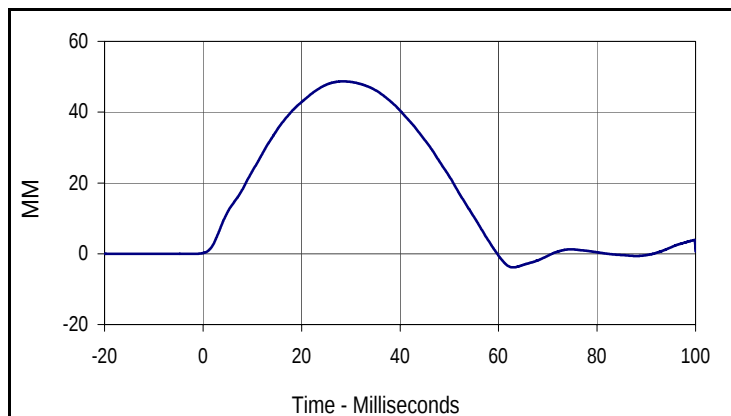
Test Date: 10/8/10
 Test I.D.: RIB10C



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Rib Deflection at 459 MM Drop Height	MM	36 to 40	38.9	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	48.7	Pass
Overall Test Results			Pass	



Curve Description			
Lower Rib Deflection (459 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
38.9	29.6	-3.2	65.0



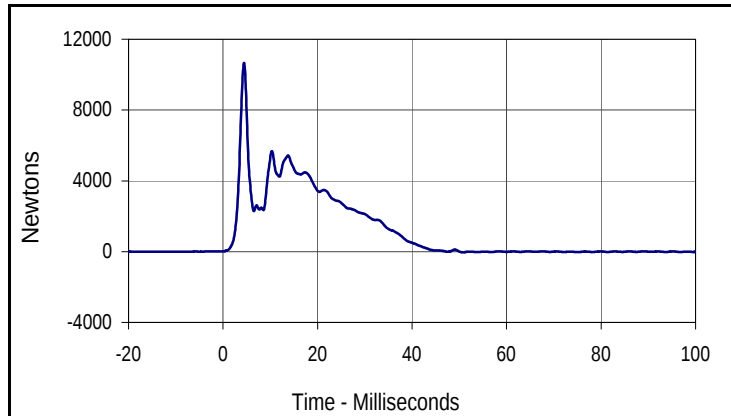
Curve Description			
Lower Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
48.7	28.4	-3.9	63.0

Test Program: ES2re Thorax Calibration
 ATD Serial No.: F035

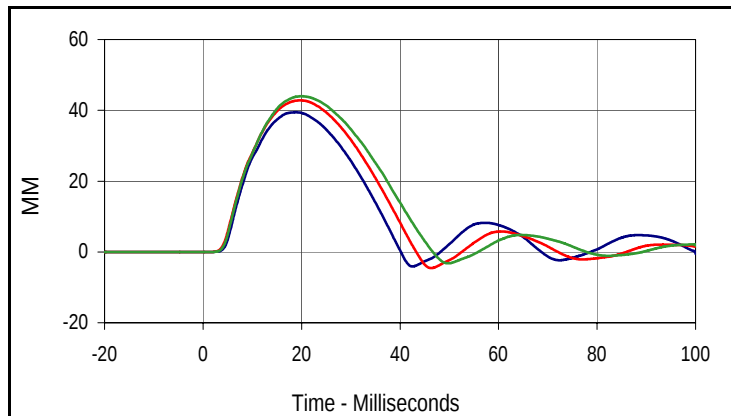
Test Date: 10/8/10
 Test I.D.: TH10A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	5.40 to 5.60	5.49	Pass
Impactor Force	N	5100 to 6200	5673.2	Pass
	msec	> 6.0 msec	9.9	Pass
Upper Rib Deflection	MM	34 to 41	39.4	Pass
Middle Rib Deflection	MM	37 to 45	42.8	Pass
Lower Rib Deflection	MM	37 to 44	44.0	Pass
Overall Test Results			Pass	



Curve Description			
Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
10643.8	4.4	-42.5	50.7



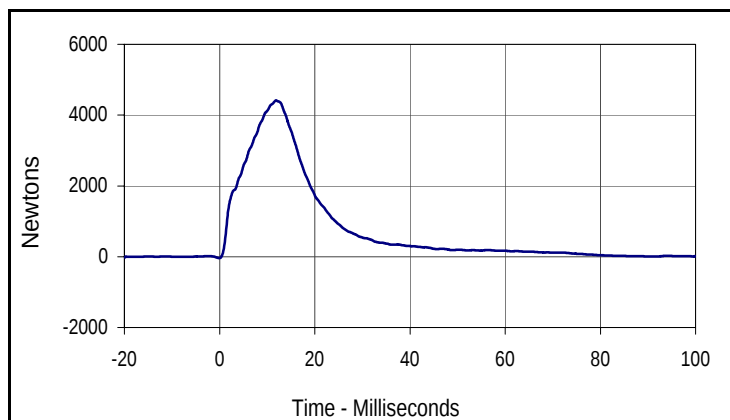
Curve Description			
Upper, Middle, Lower Rib Deflections			
CURNO(s)	Type	SAE Class	Units
002-003-004	FIL	180	MM
Max (Upper)	Time	Min (Upper)	Time
39.4	18.8	-4.1	42.5
Max (Middle)	Time	Min (Middle)	Time
42.8	19.7	-4.6	46.3
Max (Lower)	Time	Min (Lower)	Time
44.0	20.0	-3.2	49.8

Test Program: ES2re Abdomen Calibration
 ATD Serial No.: F035

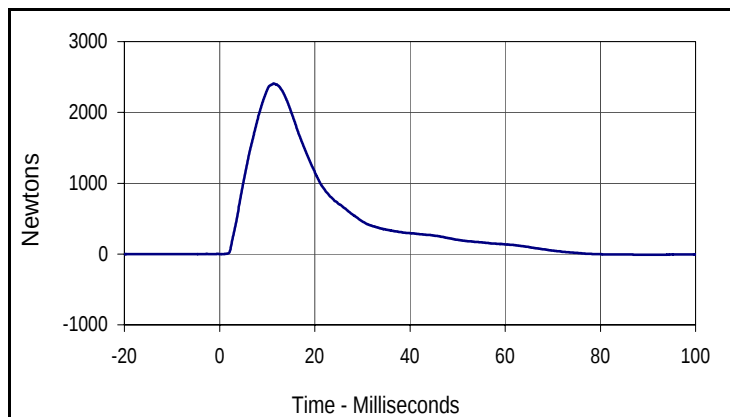
Test Date: 10/8/10
 Test I.D.: ABD10A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	3.90 to 4.10	3.97	Pass
Impactor Force	N	4000 to 4800	4415.4	Pass
	msec	10.6 to 13.0	11.9	Pass
Abdominal Force	N	2200 to 2700	2406.1	Pass
	msec	10.0 to 12.3	11.4	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4415.4	11.9	-40.6	-0.1



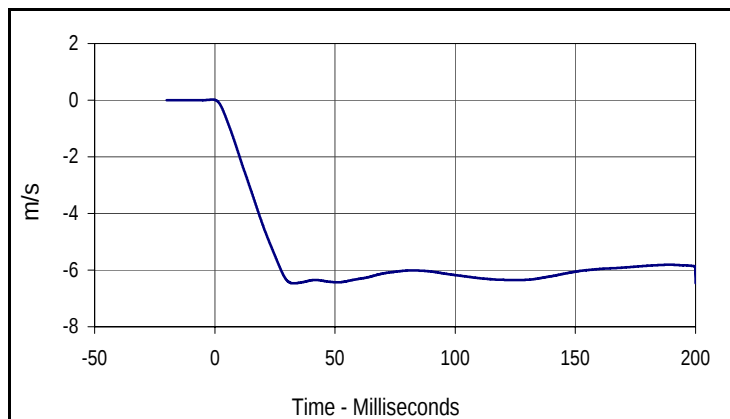
Curve Description			
Abdomen Sum Resultant			
CURNO	Type	SAE Class	Units
002	RES	600	Newtons
Max	Time	Min	Time
2406.1	11.4	-11.3	89.3

Test Program: ES2re Lumbar Spine Calibration
 ATD Serial No.: F035

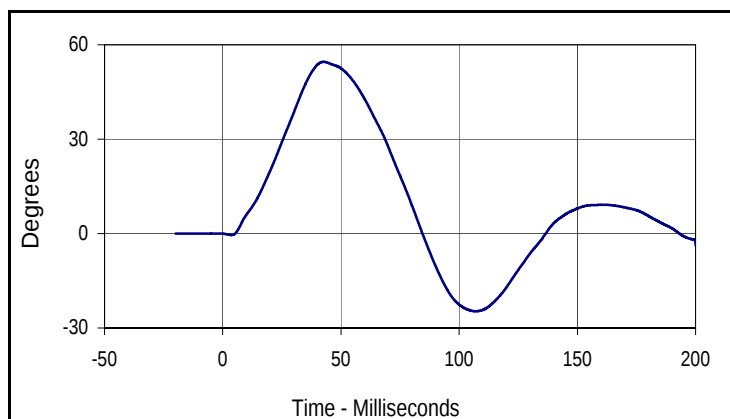
Test Date: 10/8/10
 Test I.D.: SP10A



Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.95 to 6.15	6.02	Pass
Pendulum Deceleration	1 msec	m/s	0.0 to -.050	-0.030	Pass
	3.7 msec	m/s	-.240 to -.425	-0.418	Pass
	27 msec	m/s	-5.80 to -6.50	-5.89	Pass
	30 msec	m/s	< -6.50	-6.36	Pass
Headform Rotation	Max	Degrees	45.0 to 55.0	54.6	Pass
	Time	msec	39.0 to 53.0	42.6	Pass
Maximum Rotation To Time Zero Crossing		msec	37.0 to 57.0	41.9	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.0	-6.5	32.8



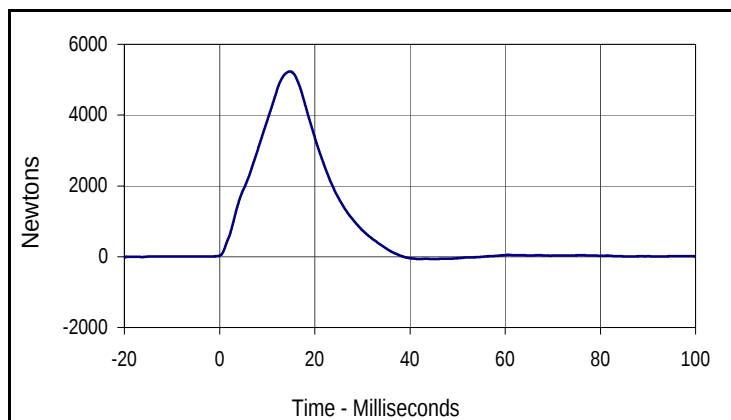
Curve Description			
Headform Rotation			
CURNO	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
54.6	42.6	-24.7	107.0

Test Program: ES2re Pelvis Calibration
 ATD Serial No.: F035

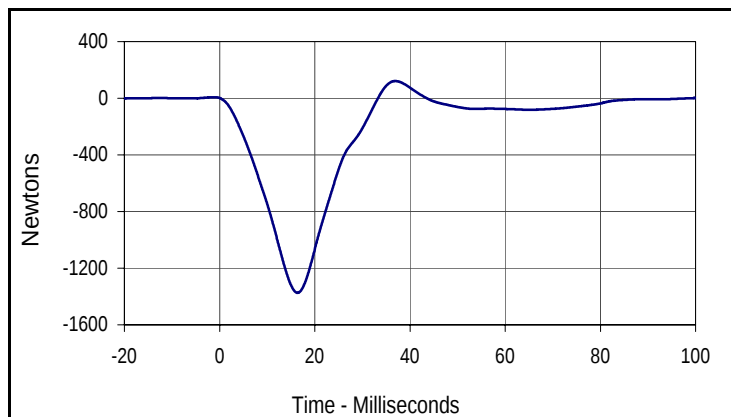
Test Date: 10/8/10
 Test I.D.: PL10A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.20 to 4.40	4.32	Pass
Impactor Force	N	4700 to 5400	5235.6	Pass
	msec	11.8 to 16.1	14.8	Pass
Pubic Symphysis Load	N	-1230 to -1590	-1374.0	Pass
	msec	12.2 to 17.0	16.4	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
5235.6	14.8	-67.4	45.3



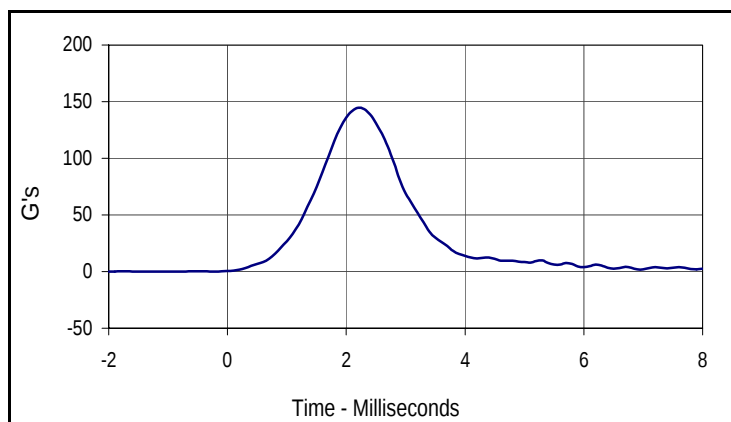
Curve Description			
Pubic FY			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
121.4	36.9	-1374.0	16.4

Test Program: ES2re Lateral Head Drop Calibration
 ATD Serial No.: F035

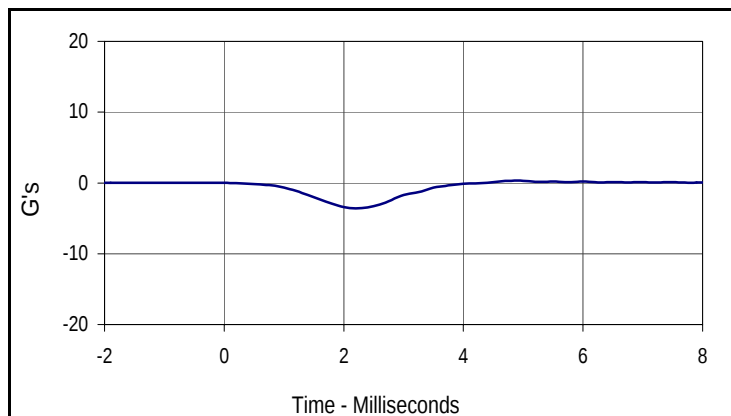
Test Date: 10/8/10
 Test I.D.: HD10A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	125 to 155	144.5	Pass
Peak Longitudinal Acceleration	G's	≤15	3.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	6.8	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
144.5	2.2	0.1	-1.2



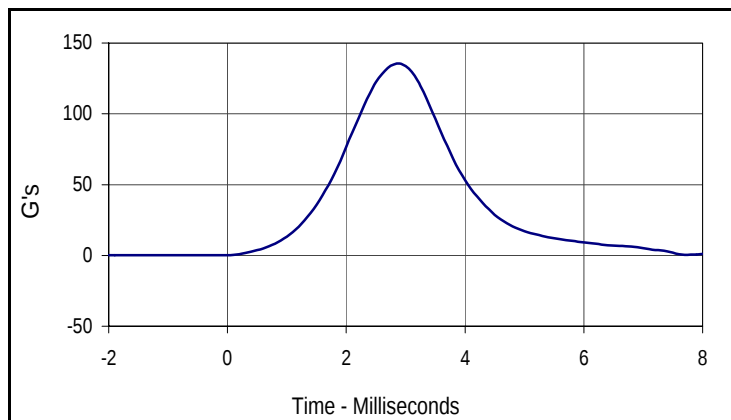
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.3	4.9	-3.6	2.2

Test Program: SID IIs Lateral Head Drop Calibration
 ATD Serial No.: 307

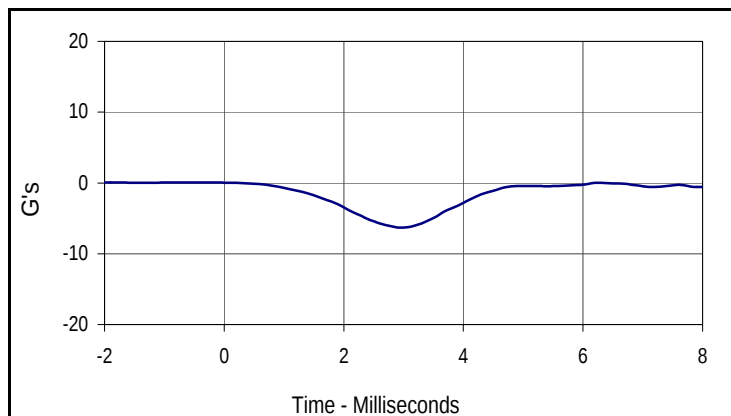
Test Date: 10/8/10
 Test I.D.: HDF10A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	115 to 137	135.5	Pass
Peak Longitudinal Acceleration	G's	≤15	6.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	12.6	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
135.5	2.9	0.1	-1.7



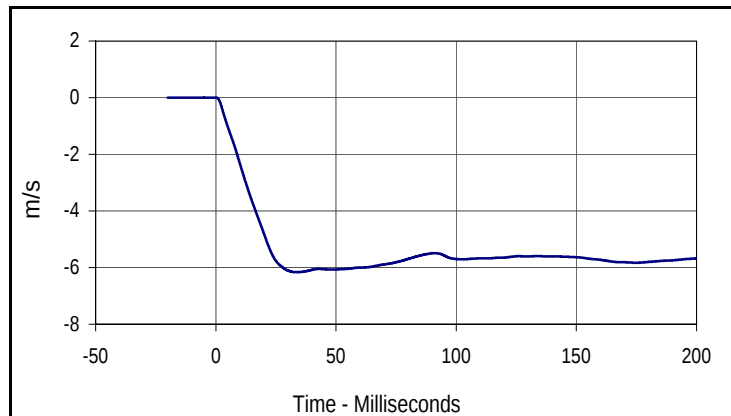
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.1	-0.4	-6.3	3.0

Test Program: SID IIs Neck Calibration
 ATD Serial No.: 307

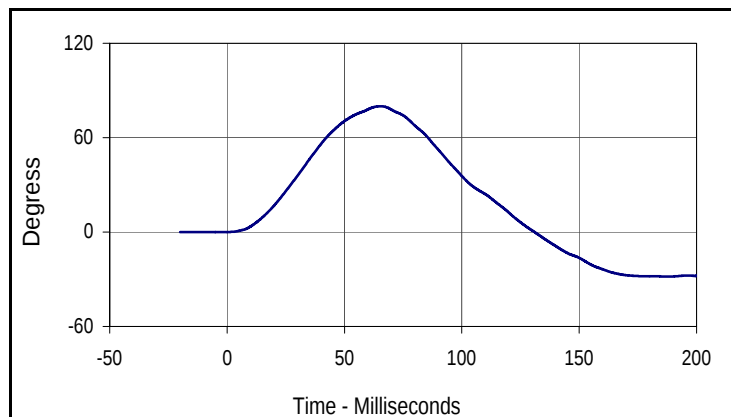
Test Date: 10/9/10
 Test I.D.: NBF10A



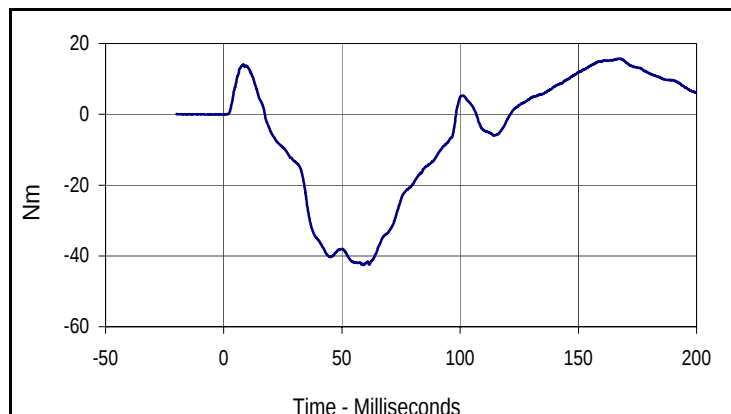
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.55	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.3	Pass
	15 msec	m/s	-3.30 to -4.10	-3.6	Pass
	20 msec	m/s	-4.40 to -5.40	-4.8	Pass
	25 msec	m/s	-5.40 to -6.10	-5.8	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.2	Pass
Translation-Rotation	Max	Degrees	71.0 to 81.0	80.0	Pass
	Time	msec	50.0 to 70.0	65.4	Pass
Peak Occipital Condyle Moment		Nm	-36.0 to -44.0	-42.6	Pass
Decaying Moment Time to Cross 0 Nm		msec	102.0 to 126.0	121.3	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.1	-6.2	33.8



Curve Description			
Maximum Translation Rotation			
CURNO	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
80.0	65.4	-28.3	187.5



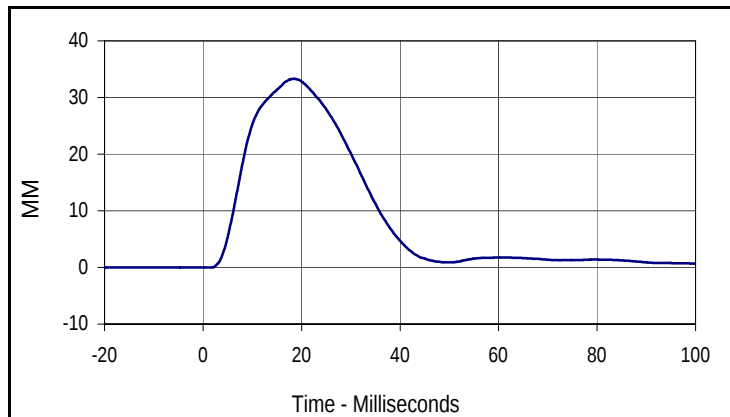
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
15.7	166.8	-42.6	59.0

Test Program: SID IIs Shoulder Calibration
 ATD Serial No.: 307

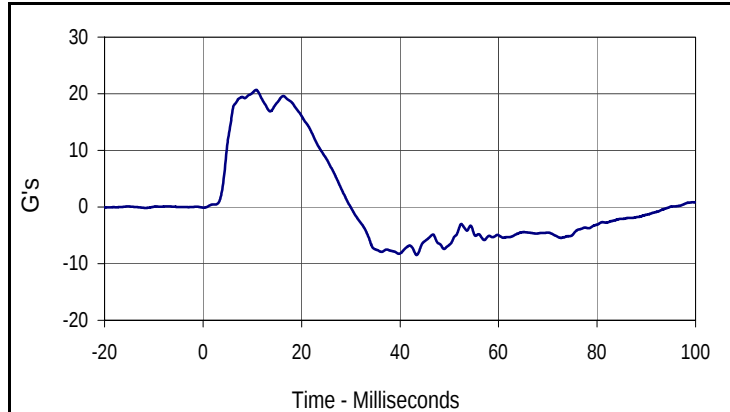
Test Date: 10/9/10
 Test I.D.: SHF10A



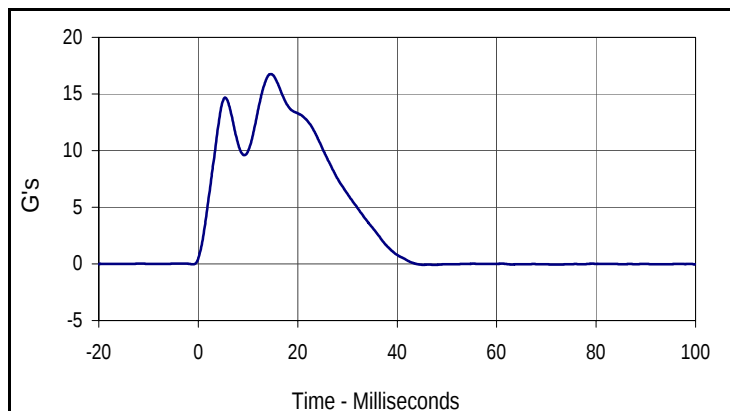
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.35	Pass
Shoulder Deflection	MM	28 to 37	33.3	Pass
Peak Upper Spine Y Acceleration	G's	17 to 22	20.7	Pass
Peak Impactor Acceleration	G's	13 to 18	16.8	Pass
Overall Test Results			Pass	



Curve Description			
Shoulder Acceleration			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
33.3	18.5	0.0	-14.7



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
20.7	10.8	-8.5	43.4



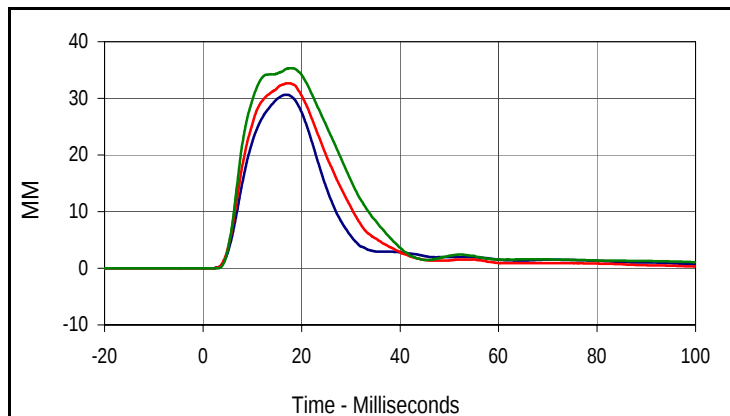
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
16.8	14.6	-0.1	47.6

Test Program: SID IIs Thorax with Arm Calibration
 ATD Serial No.: 307

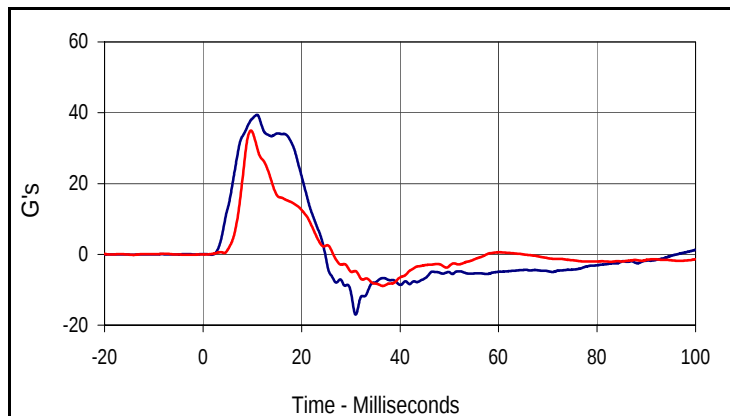
Test Date: 10/9/10
 Test I.D.: THF10A



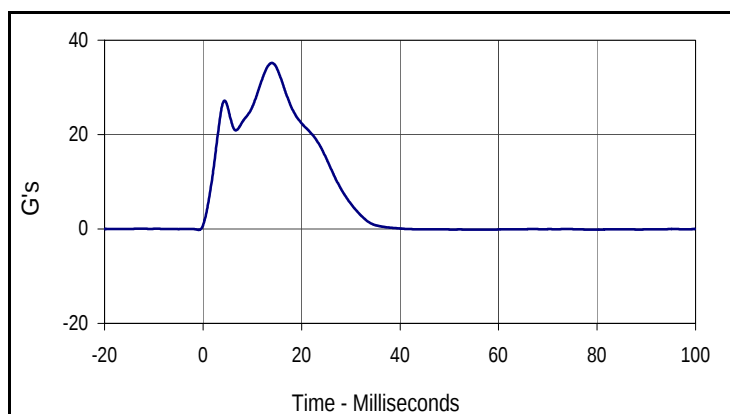
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.64	Pass
Shoulder Deflection	MM	31 to 40	37.9	Pass
Upper Thorax Rib Deflection	MM	25 to 32	30.6	Pass
Middle Thorax Rib Deflection	MM	30 to 36	32.7	Pass
Lower Thorax Rib Deflection	MM	32 to 38	35.3	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	39.4	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	35.0	Pass
Peak Impactor Acceleration After 5 msec.	G's	30 to 36	35.2	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
30.6	16.9	0.0	1.1
Middle Thorax Deflection			
Max	Time	Min	Time
32.7	17.2	0.0	-3.9
Lower Thorax Deflection			
Max	Time	Min	Time
35.3	17.8	0.0	2.9



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
39.4	11.0	-17.0	31.0
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
35.0	9.7	-8.9	36.5



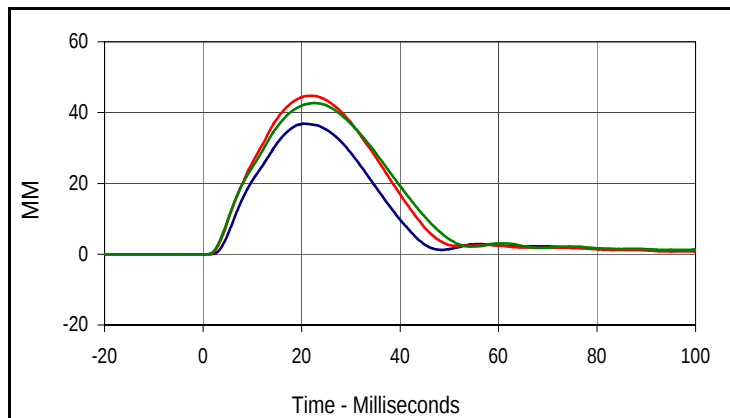
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
35.2	14.0	-0.2	-0.9

Test Program: SID IIs Thorax w/o Arm Calibration
 ATD Serial No.: 307

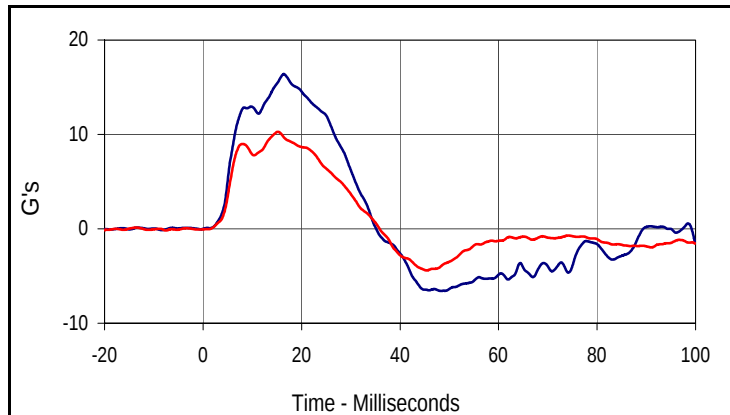
Test Date: 10/9/10
 Test I.D.: TOA10A



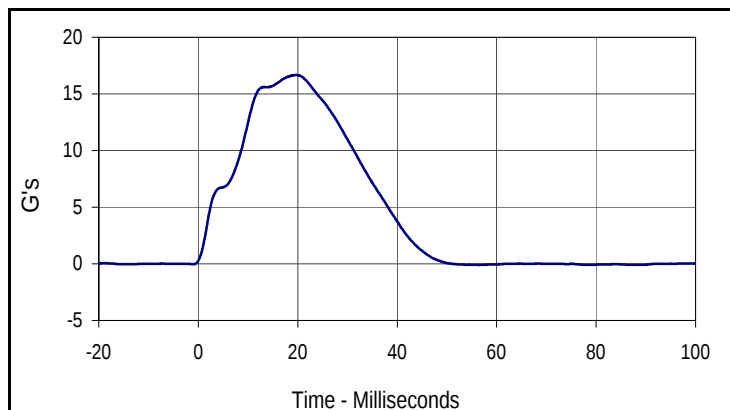
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.39	Pass
Upper Thorax Rib Deflection	MM	32 to 40	36.8	Pass
Middle Thorax Rib Deflection	MM	39 to 45	44.7	Pass
Lower Thorax Rib Deflection	MM	35 to 43	42.7	Pass
Peak Upper Spine Y Acceleration	G's	13 to 17	16.4	Pass
Peak Lower Spine Y Acceleration	G's	7 to 11	10.3	Pass
Peak Impactor Acceleration	G's	14 to 18	16.7	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
36.8	20.7	0.0	-4.1
Middle Thorax Deflection			
Max	Time	Min	Time
44.7	22.0	0.0	-13.4
Lower Thorax Deflection			
Max	Time	Min	Time
42.7	22.6	0.0	-3.3



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
16.4	16.4	-6.6	48.2
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
10.3	15.2	-4.4	45.4



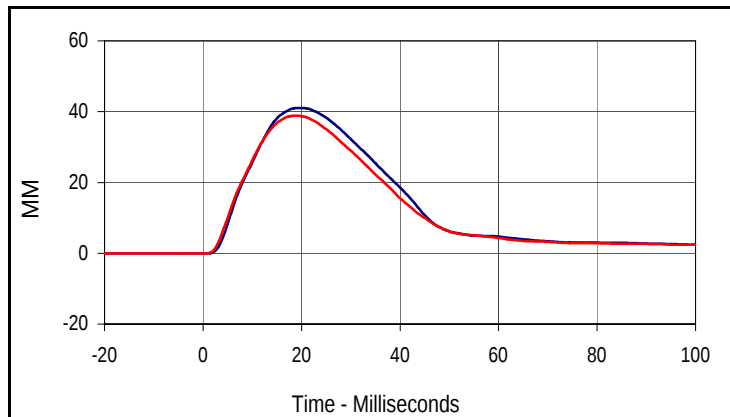
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
16.7	19.7	-0.1	56.5

Test Program: SID IIs Abdomen Calibration
 ATD Serial No.: 307

Test Date: 10/9/10
 Test I.D.: ABDF10A

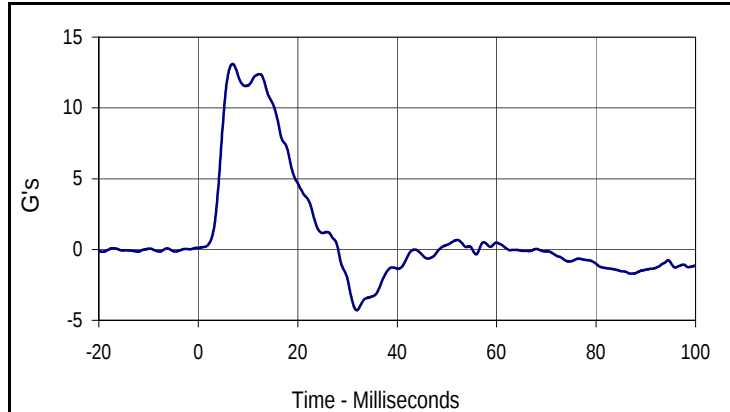


Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.33	Pass
Upper Abdominal Rib Deflection	MM	36 to 47	41.0	Pass
Lower Abdominal Rib Deflection	MM	33 to 44	38.9	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	13.1	Pass
Peak Impactor Acceleration	G's	12 to 16	14.9	Pass
Overall Test Results			Pass	

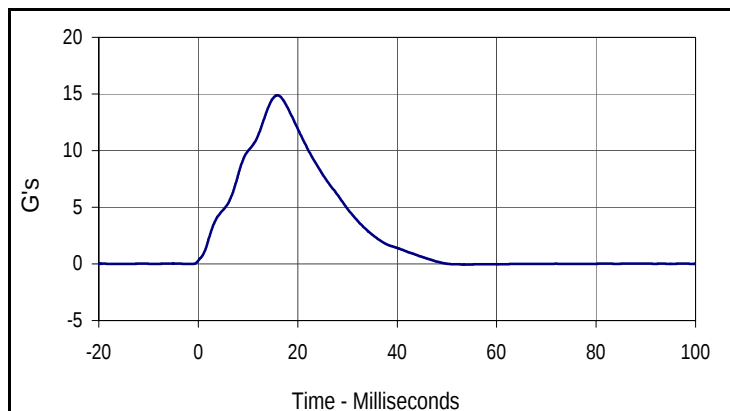


Curve Description			
Upper Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
41.0	19.3	0.0	-5.8

Curve Description			
Lower Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
38.9	18.8	0.0	-3.0



Curve Description			
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
13.1	6.9	-4.3	31.9



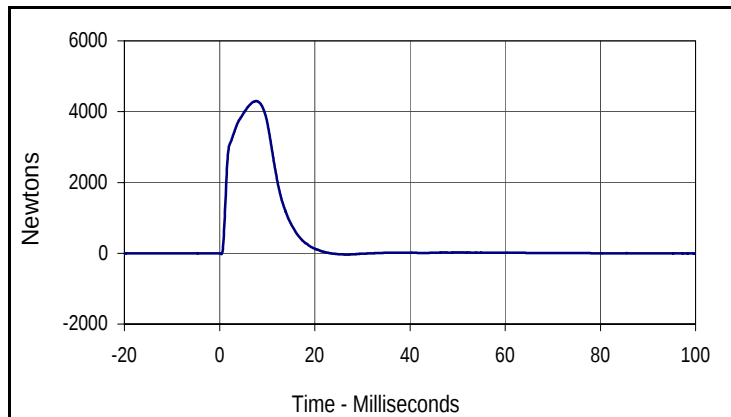
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.9	15.9	-0.1	54.3

Test Program: SID IIs Pelvis Acetabulum Calibration
 ATD Serial No.: 307

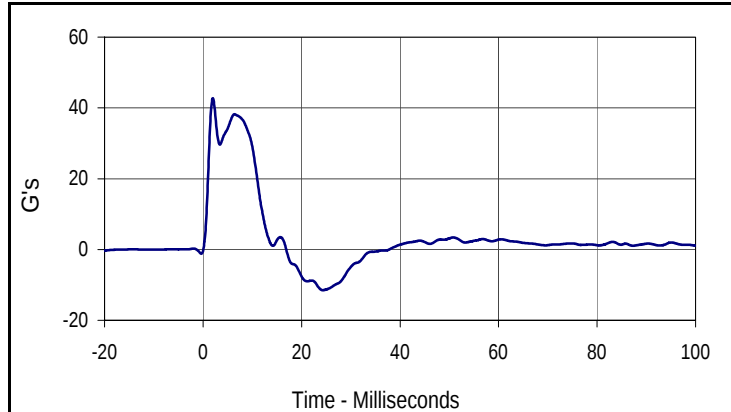
Test Date: 10/9/10
 Test I.D.: PA10A



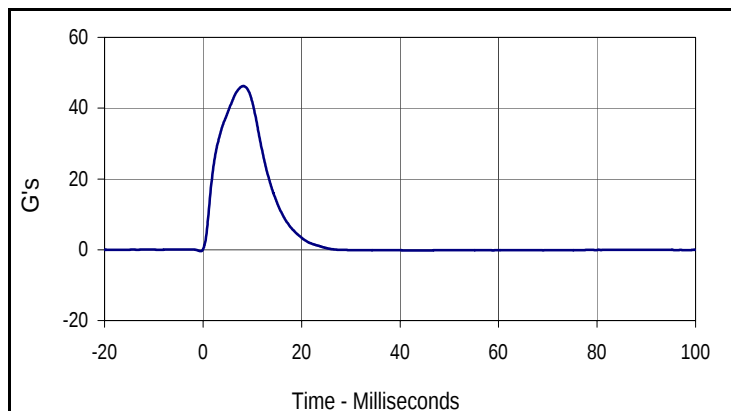
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.75	Pass
Peak Acetabulum Force	Newtons	3600 to 4300	4297.6	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	38.2	Pass
Peak Impactor Acceleration	G's	38 to 47	46.2	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4297.6	7.7	-38.5	27.0



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
42.8	2.0	-11.5	24.3



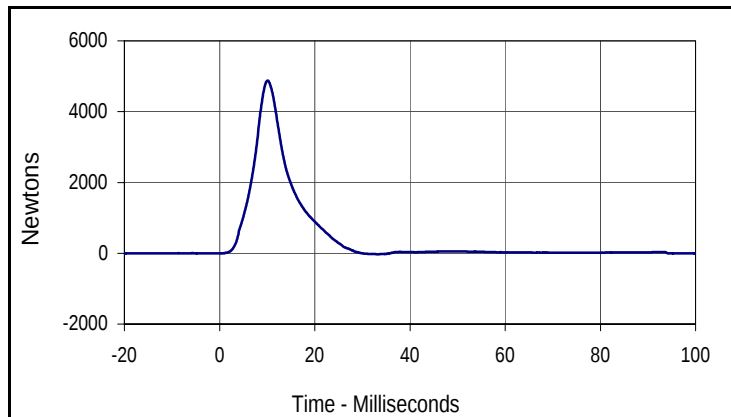
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
46.2	8.2	-0.4	-0.5

Test Program: SID IIs Pelvis Iliac Calibration
 ATD Serial No.: 307

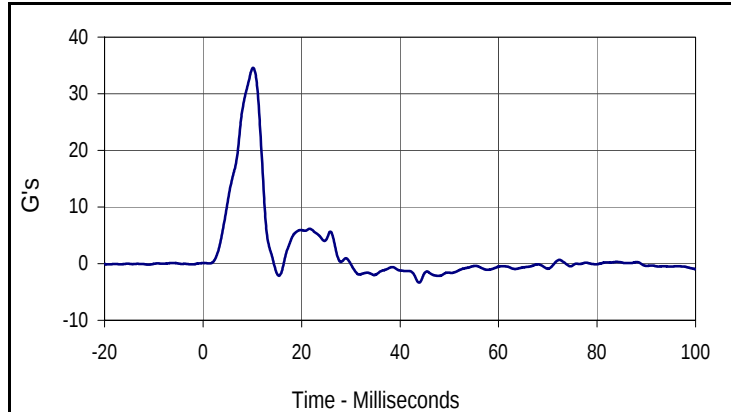
Test Date: 10/9/10
 Test I.D.: PLF10A



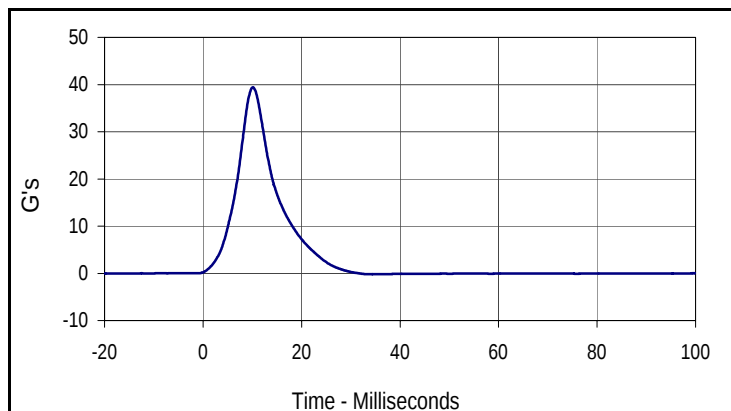
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.36	Pass
Peak Iliac Force	Newtons	4100 to 5100	4878.2	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	34.6	Pass
Peak Impactor Acceleration	G's	36 to 45	39.4	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Iliac Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4878.2	10.1	-28.1	33.3



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
34.6	10.2	-3.4	43.9



Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
39.4	10.1	-0.2	36.8

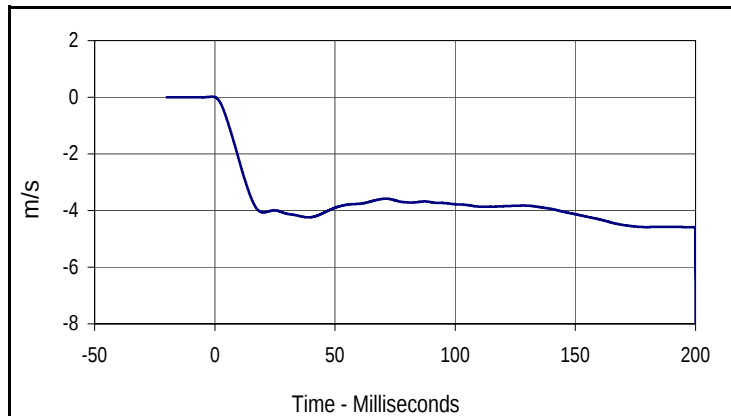
APPENDIX C
POST-TEST / HIII CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program: ES2re Neck Calibration
 ATD Serial No.: F035

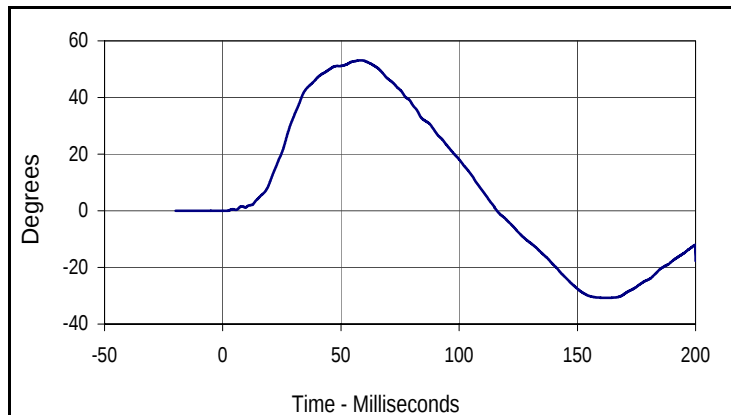
Test Date: 10/13/10
 Test I.D.: NB10B



Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	3.30 to 3.50	3.43	Pass
Pendulum Deceleration	1 msec	m/s	0.0 to -.050	-0.044	Pass
	3 msec	m/s	-.250 to -.375	-0.316	Pass
	14 msec	m/s	-3.20 to -3.70	-3.30	Pass
Headform Rotation	Max	Degrees	49.0 to 58.0	53.2	Pass
	Time	msec	54.0 to 66.0	58.4	Pass
Maximum Rotation To Time Zero Crossing		msec	53.0 to 88.0	57.6	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.2	-8.0	200.0



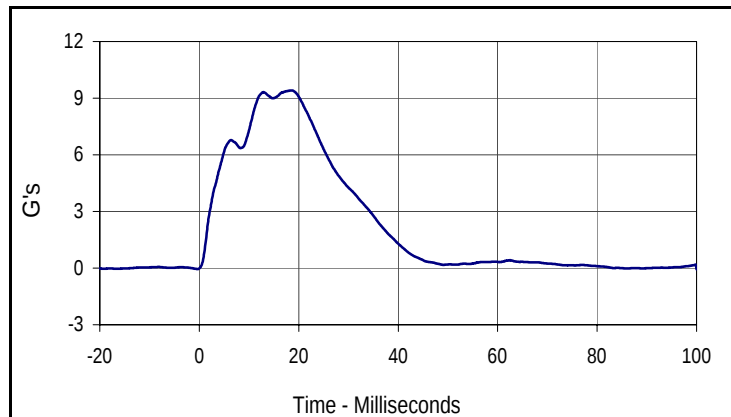
Curve Description			
Headform Rotation			
CURNO	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
53.2	58.4	-30.7	161.9

Test Program: ES2re Shoulder Calibration
 ATD Serial No.: F035

Test Date: 10/13/10
 Test I.D.: SH10B



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.20 to 4.40	4.24	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	9.4	Pass
Overall Test Results				Pass



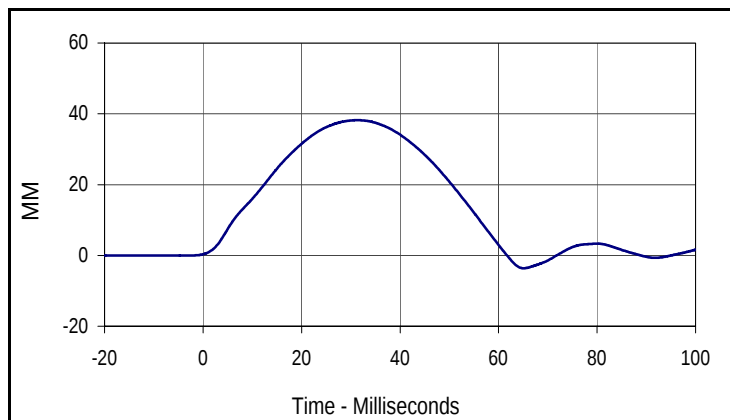
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
9.4	18.5	0.0	-0.4

Test Program: ES2re Rib Module Calibration
 ATD Serial No.: F035 Rib #1

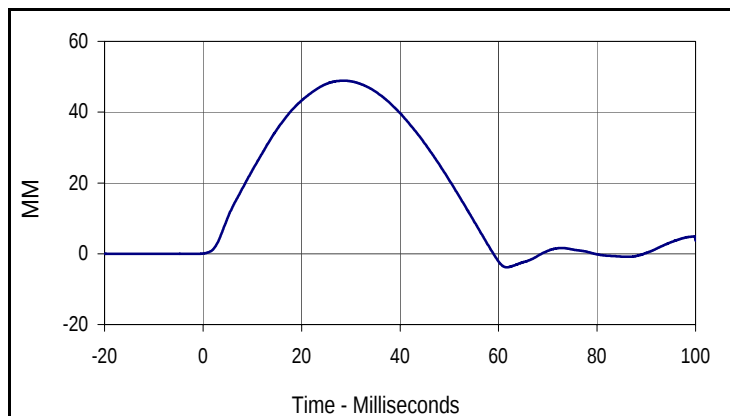
Test Date: 10/13/10
 Test I.D.: RIB10D



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Rib Deflection at 459 MM Drop Height	MM	36 to 40	38.2	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	48.9	Pass
Overall Test Results			Pass	



Curve Description			
Upper Rib Deflection (459 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
38.2	31.4	-3.6	65.1



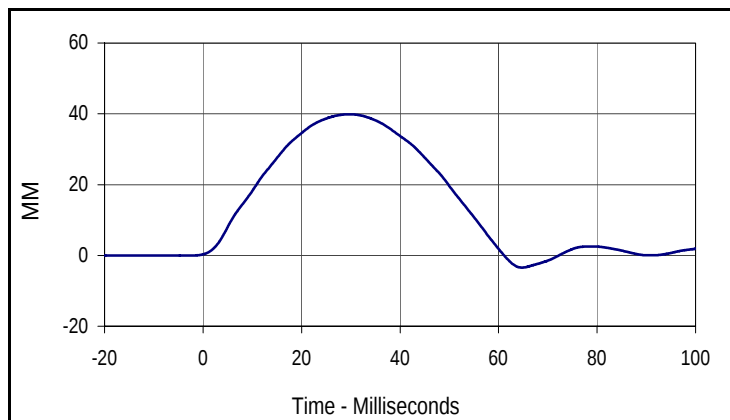
Curve Description			
Upper Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
48.9	28.6	-3.8	61.7

Test Program: ES2re Rib Module Calibration
 ATD Serial No.: F035 Rib #2

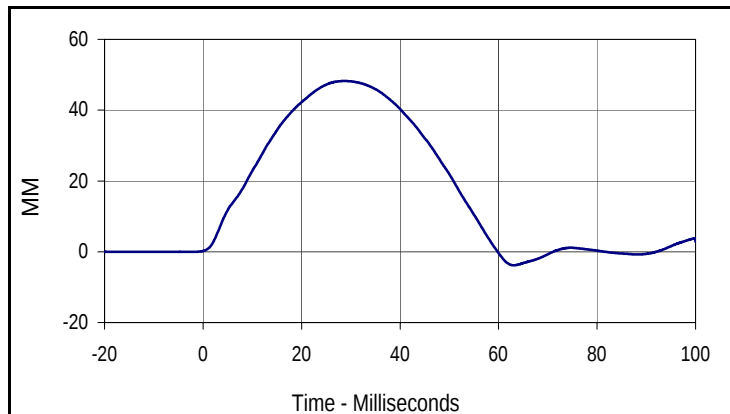
Test Date: 10/13/10
 Test I.D.: RIB10E



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Rib Deflection at 459 MM Drop Height	MM	36 to 40	39.9	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	48.2	Pass
Overall Test Results			Pass	



Curve Description			
Middle Rib Deflection (459 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
39.9	29.7	-3.4	64.7



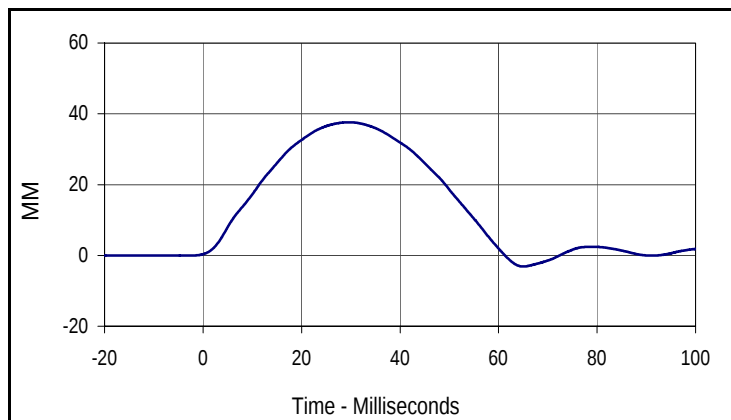
Curve Description			
Middle Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
48.2	28.7	-3.8	63.1

Test Program: ES2re Rib Module Calibration
 ATD Serial No.: F035 Rib #3

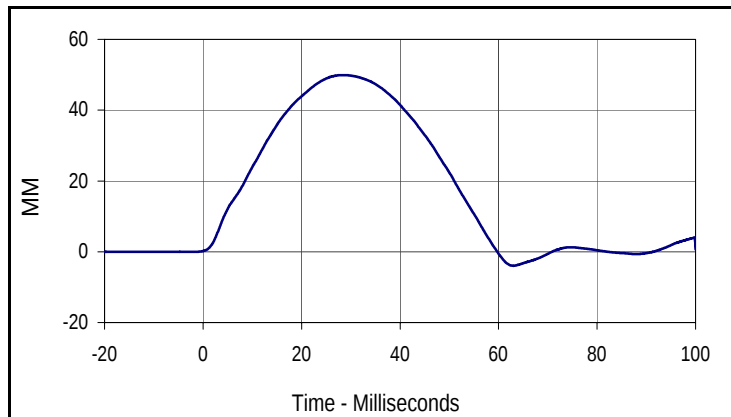
Test Date: 10/13/10
 Test I.D.: RIB10F



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Rib Deflection at 459 MM Drop Height	MM	36 to 40	37.6	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	49.9	Pass
Overall Test Results			Pass	



Curve Description			
Lower Rib Deflection (459 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
37.6	29.6	-3.1	65.0



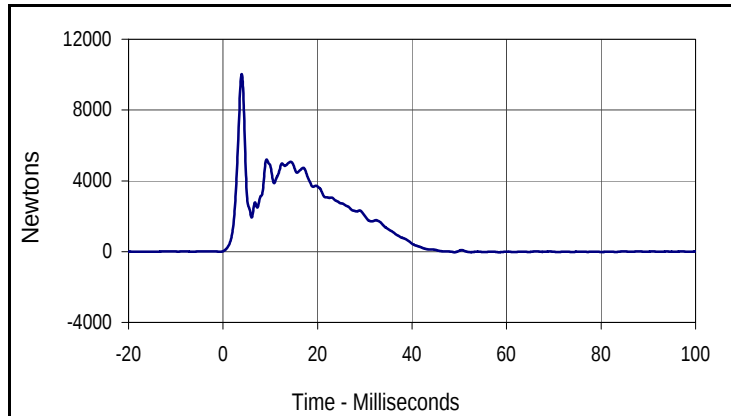
Curve Description			
Lower Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
49.9	28.4	-4.0	63.0

Test Program: ES2re Thorax Calibration
 ATD Serial No.: F035

Test Date: 10/13/10
 Test I.D.: TH10B



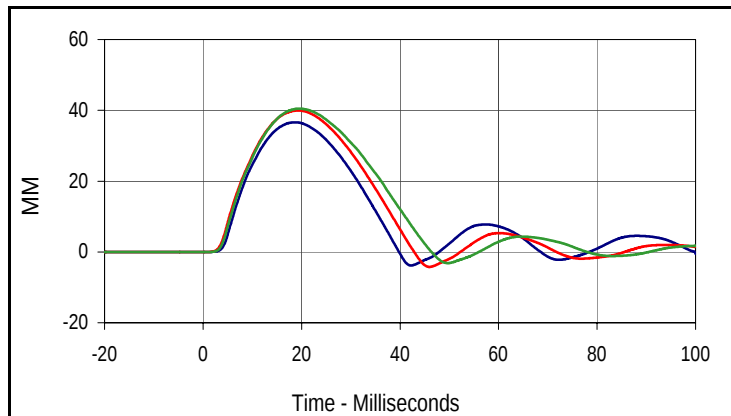
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	5.40 to 5.60	5.42	Pass
Impactor Force	N	5100 to 6200	5210.4	Pass
	msec	> 6.0 msec	9.9	Pass
Upper Rib Deflection	MM	34 to 41	36.6	Pass
Middle Rib Deflection	MM	37 to 45	39.9	Pass
Lower Rib Deflection	MM	37 to 44	40.5	Pass
Overall Test Results			Pass	



Curve Description

Impactor Force

CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
10020.4	4.0	-33.9	58.3



Curve Description

Upper, Middle, Lower Rib Deflections

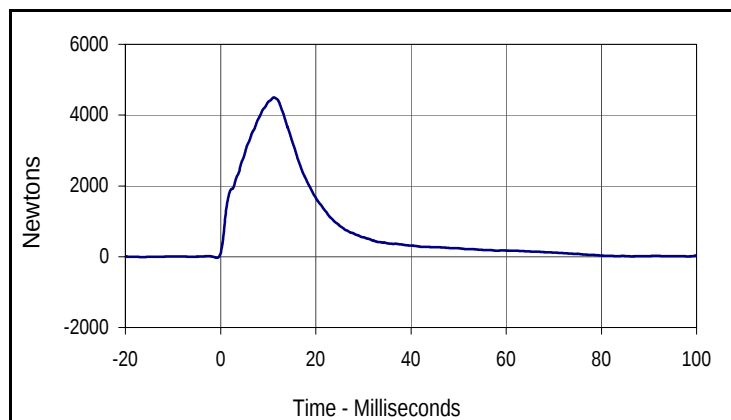
CURNO(s)	Type	SAE Class	Units
002-003-004	FIL	180	MM
Max (Upper)	Time	Min (Upper)	Time
36.6	18.7	-3.8	42.2
Max (Middle)	Time	Min (Middle)	Time
39.9	19.4	-4.2	46.0
Max (Lower)	Time	Min (Lower)	Time
40.5	19.5	-3.2	49.7

Test Program: ES2re Abdomen Calibration
 ATD Serial No.: F035

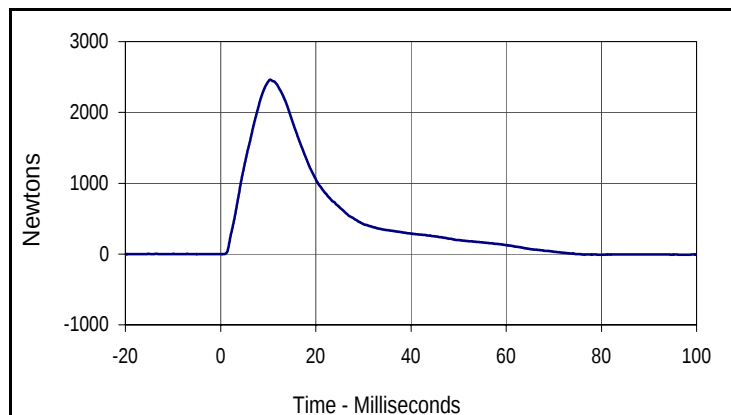
Test Date: 10/13/10
 Test I.D.: ABD10B



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	3.90 to 4.10	3.98	Pass
Impactor Force	N	4000 to 4800	4498.0	Pass
	msec	10.6 to 13.0	11.2	Pass
Abdominal Force	N	2200 to 2700	2463.8	Pass
	msec	10.0 to 12.3	10.4	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4498.0	11.2	-32.1	-0.8



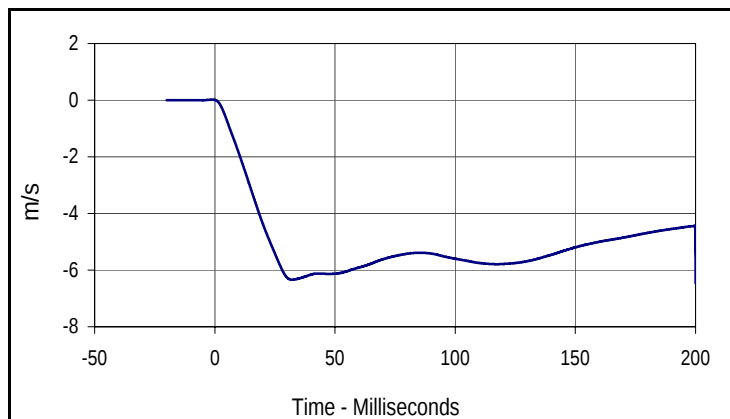
Curve Description			
Abdomen Sum Resultant			
CURNO	Type	SAE Class	Units
002	RES	600	Newtons
Max	Time	Min	Time
2463.8	10.4	-9.3	80.5

Test Program: ES2re Lumbar Spine Calibration
 ATD Serial No.: F035

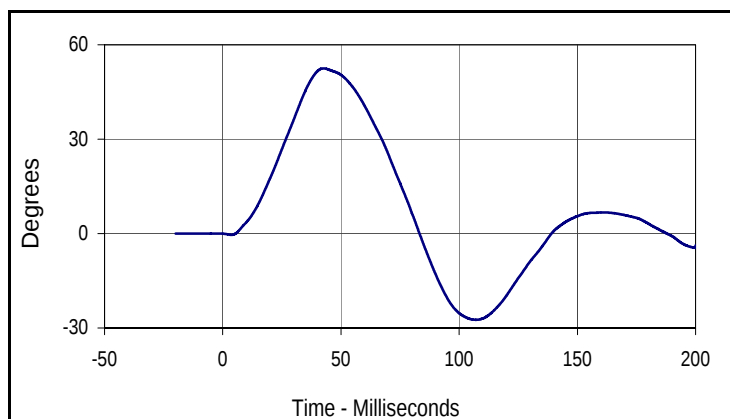
Test Date: 10/13/10
 Test I.D.: SP10B



Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.95 to 6.15	5.97	Pass
Pendulum Deceleration	1 msec	m/s	0.0 to -.050	-0.031	Pass
	3.7 msec	m/s	-.240 to -.425	-0.425	Pass
	27 msec	m/s	-5.80 to -6.50	-5.81	Pass
	30 msec	m/s	< -6.50	-6.26	Pass
Headform Rotation	Max	Degrees	45.0 to 55.0	52.5	Pass
	Time	msec	39.0 to 53.0	42.6	Pass
Maximum Rotation To Time Zero Crossing		msec	37.0 to 57.0	40.7	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.0	-6.5	200.0



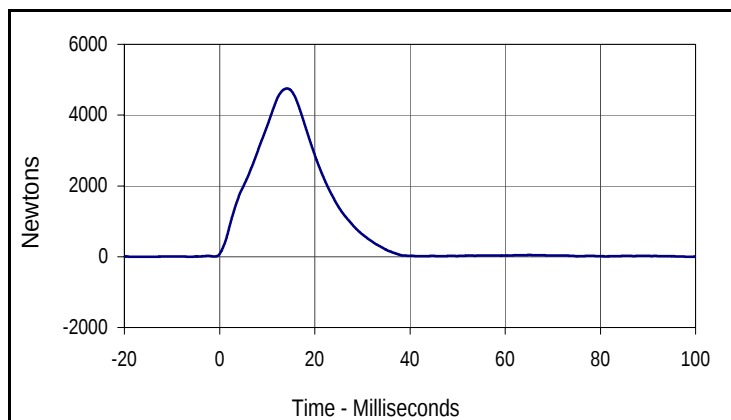
Curve Description			
Headform Rotation			
CURNO	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
52.5	42.6	-27.4	107.0

Test Program: ES2re Pelvis Calibration
 ATD Serial No.: F035

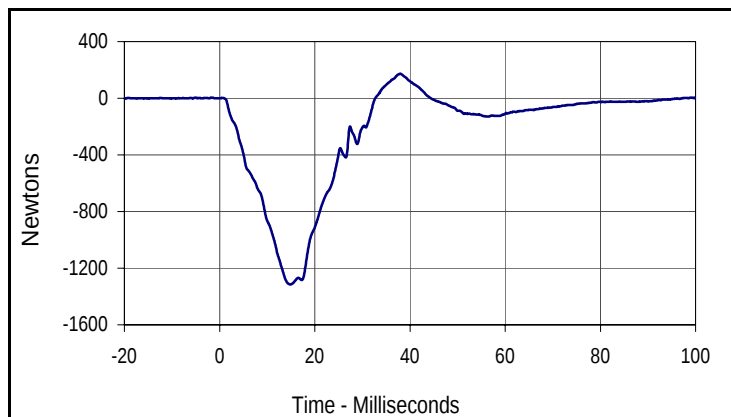
Test Date: 10/13/10
 Test I.D.: PL10B



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.20 to 4.40	4.28	Pass
Impactor Force	N	4700 to 5400	4750.5	Pass
	msec	11.8 to 16.1	14.1	Pass
Pubic Symphysis Load	N	-1230 to -1590	-1314.4	Pass
	msec	12.2 to 17.0	14.8	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4750.5	14.1	-3.3	-17.5



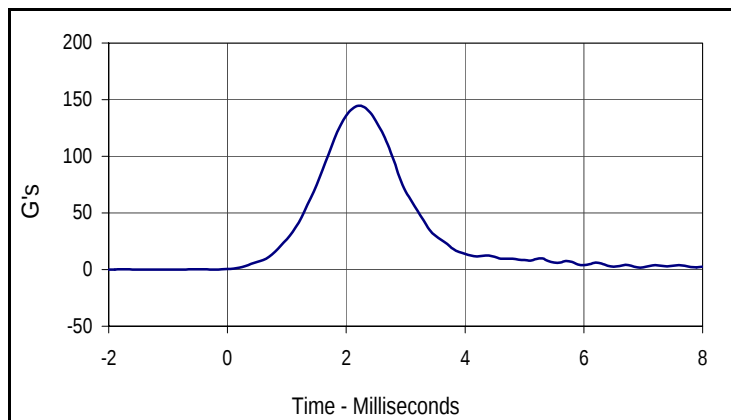
Curve Description			
Pubic FY			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
173.0	38.0	-1314.4	14.8

Test Program: ES2re Lateral Head Drop Calibration
 ATD Serial No.: F035

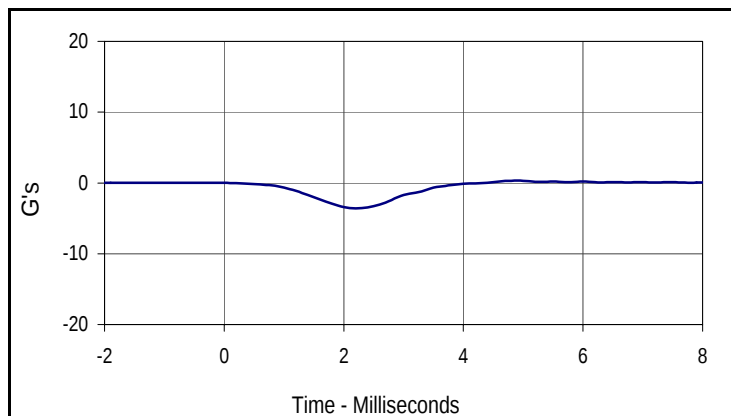
Test Date: 10/13/10
 Test I.D.: HD10B



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	125 to 155	144.5	Pass
Peak Longitudinal Acceleration	G's	≤15	3.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	6.8	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
144.5	2.2	0.1	-1.2



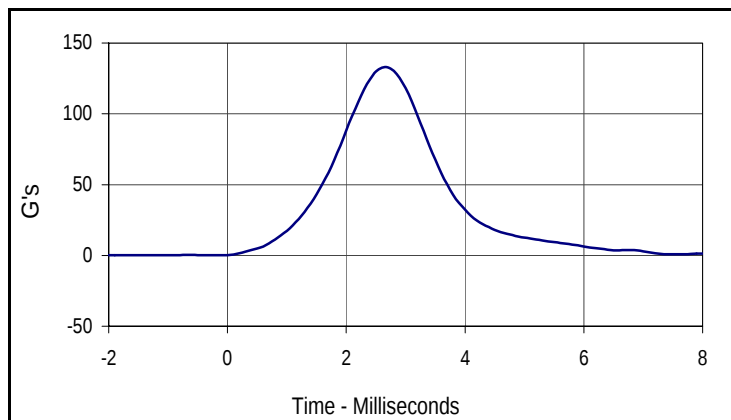
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.3	4.9	-3.6	2.2

Test Program: SID IIs Lateral Head Drop Calibration
 ATD Serial No.: 307

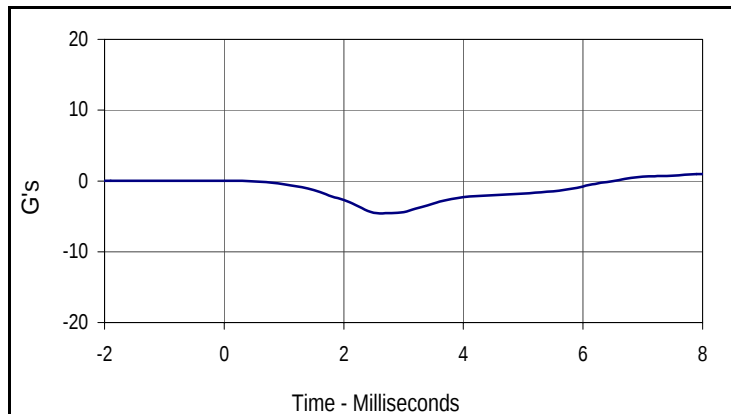
Test Date: 10/14/10
 Test I.D.: HDF10B



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	115 to 137	132.8	Pass
Peak Longitudinal Acceleration	G's	≤15	4.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	9.5	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
132.8	2.7	0.1	-2.0



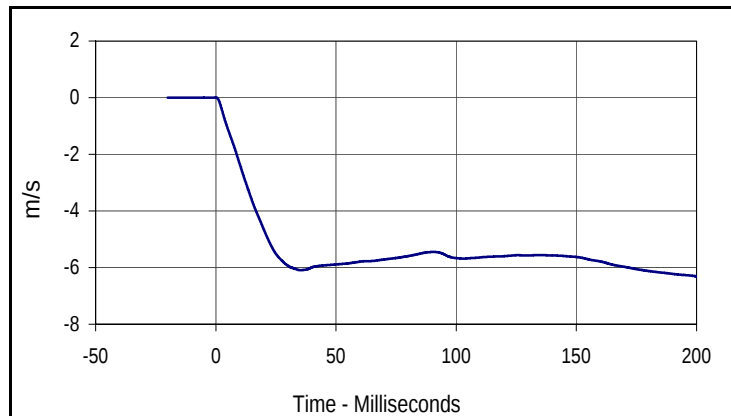
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.0	-1.7	-4.6	2.6

Test Program: SID IIs Neck Calibration
 ATD Serial No.: 307

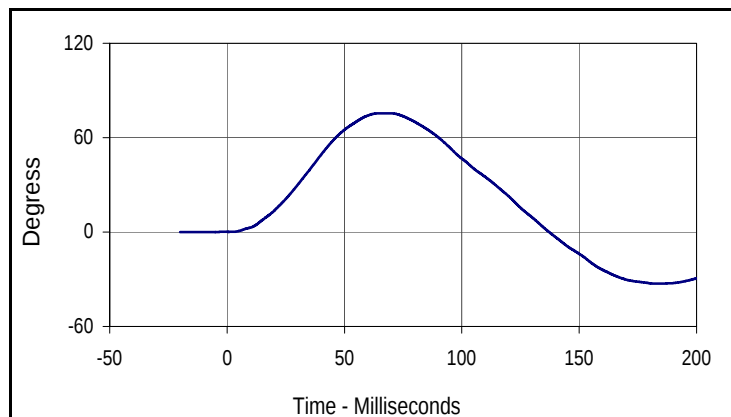
Test Date: 10/14/10
 Test I.D.: NBF10B



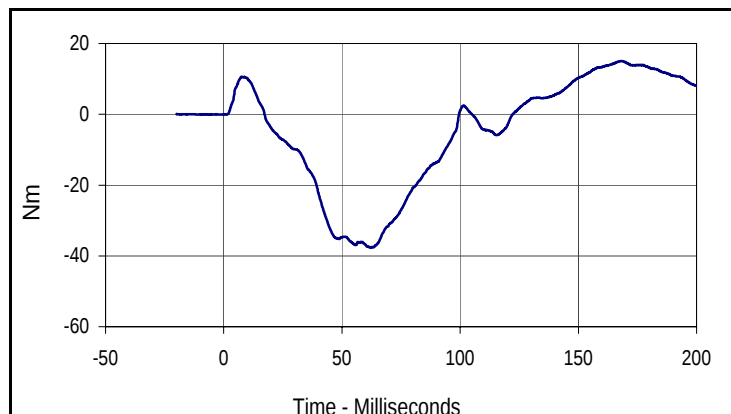
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.61	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.4	Pass
	15 msec	m/s	-3.30 to -4.10	-3.6	Pass
	20 msec	m/s	-4.40 to -5.40	-4.7	Pass
	25 msec	m/s	-5.40 to -6.10	-5.5	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.1	Pass
Translation-Rotation	Max	Degrees	71.0 to 81.0	75.5	Pass
	Time	msec	50.0 to 70.0	64.9	Pass
Peak Occipital Condyle Moment		Nm	-36.0 to -44.0	-37.7	Pass
Decaying Moment Time to Cross 0 Nm		msec	102.0 to 126.0	122.3	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.2	-6.3	200.0



Curve Description			
Maximum Translation Rotation			
CURNO	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
75.5	64.9	-32.8	182.6



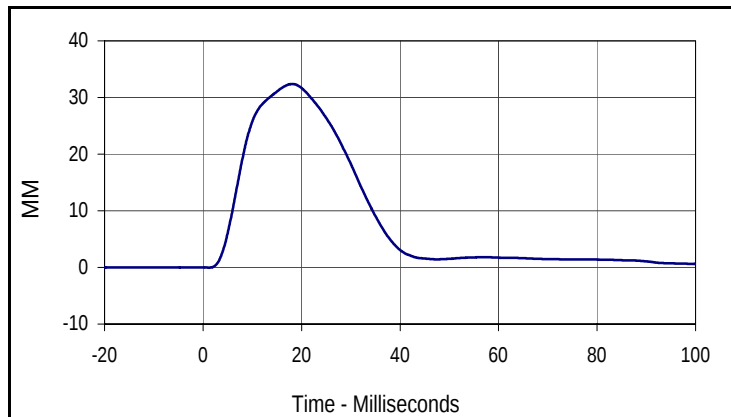
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
15.1	168.3	-37.7	61.9

Test Program: SID IIs Shoulder Calibration
 ATD Serial No.: 307

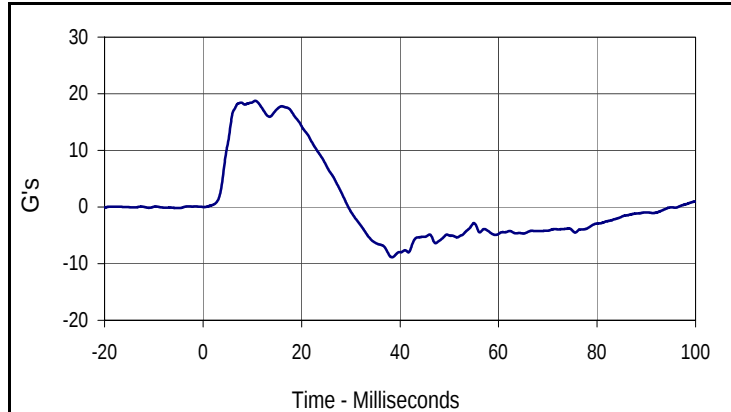
Test Date: 10/14/10
 Test I.D.: SHF10B



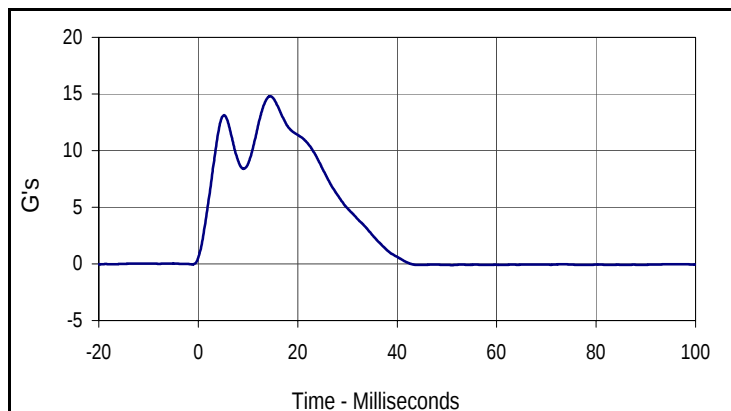
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.35	Pass
Shoulder Deflection	MM	28 to 37	32.4	Pass
Peak Upper Spine Y Acceleration	G's	17 to 22	18.8	Pass
Peak Impactor Acceleration	G's	13 to 18	14.8	Pass
Overall Test Results			Pass	



Curve Description			
Shoulder Acceleration			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
32.4	18.1	0.0	1.3



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
18.8	10.6	-8.9	38.4



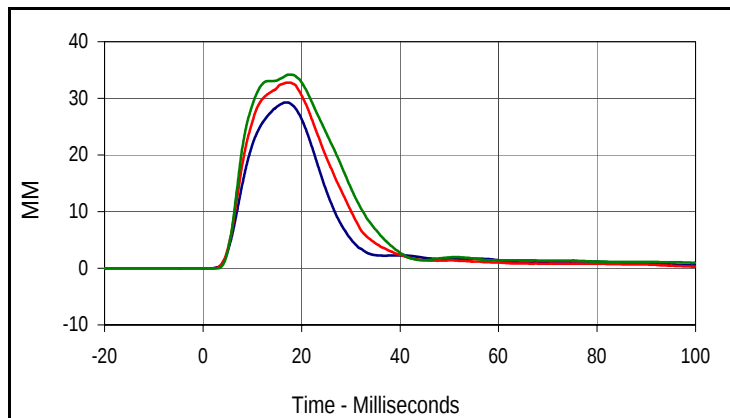
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
14.8	14.5	-0.1	51.1

Test Program: SID IIs Thorax with Arm Calibration
 ATD Serial No.: 307

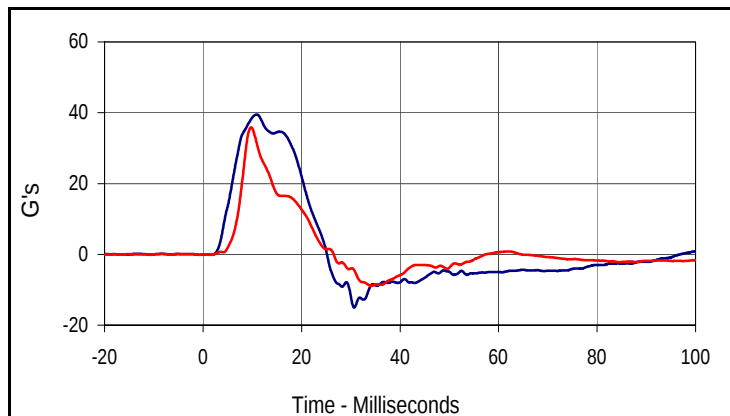
Test Date: 10/14/10
 Test I.D.: THF10B



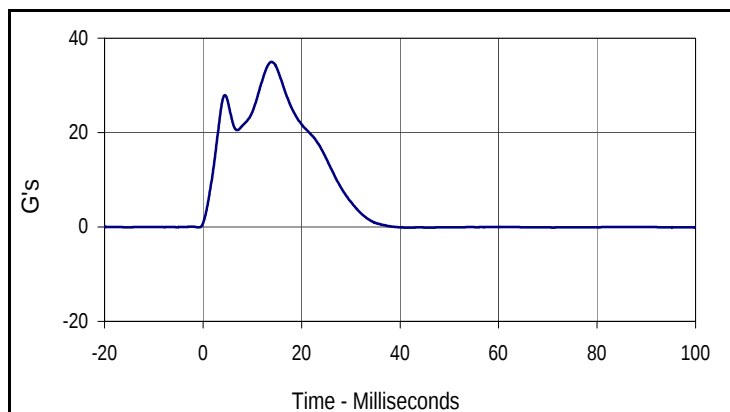
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.66	Pass
Shoulder Deflection	MM	31 to 40	38.7	Pass
Upper Thorax Rib Deflection	MM	25 to 32	29.3	Pass
Middle Thorax Rib Deflection	MM	30 to 36	32.8	Pass
Lower Thorax Rib Deflection	MM	32 to 38	34.2	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	39.5	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	35.9	Pass
Peak Impactor Acceleration After 5 msec.	G's	30 to 36	35.0	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
29.3	16.8	0.0	-5.9
Middle Thorax Deflection			
Max	Time	Min	Time
32.8	17.2	0.0	-7.0
Lower Thorax Deflection			
Max	Time	Min	Time
34.2	17.7	0.0	-3.3



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
39.5	10.9	-15.1	30.7
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
35.9	9.7	-8.9	34.2



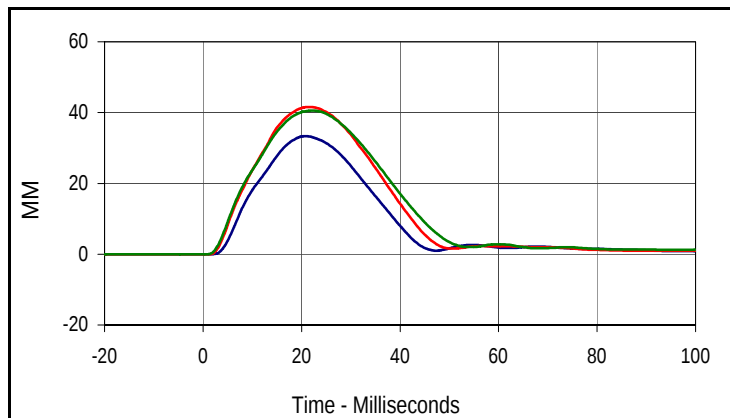
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
35.0	13.9	-0.1	42.5

Test Program: SID IIs Thorax w/o Arm Calibration
 ATD Serial No.: 307

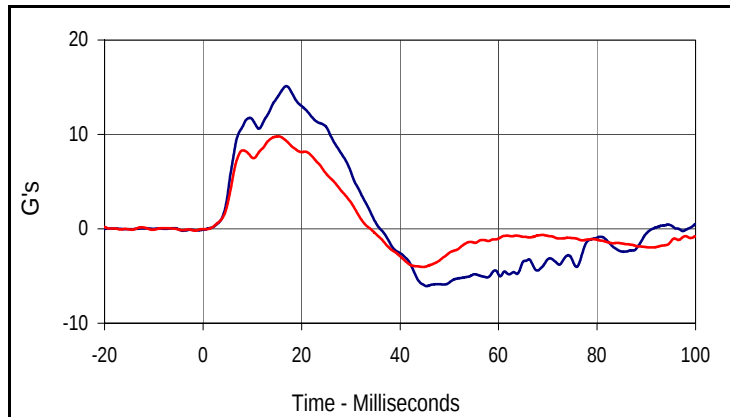
Test Date: 10/14/10
 Test I.D.: TOA10B



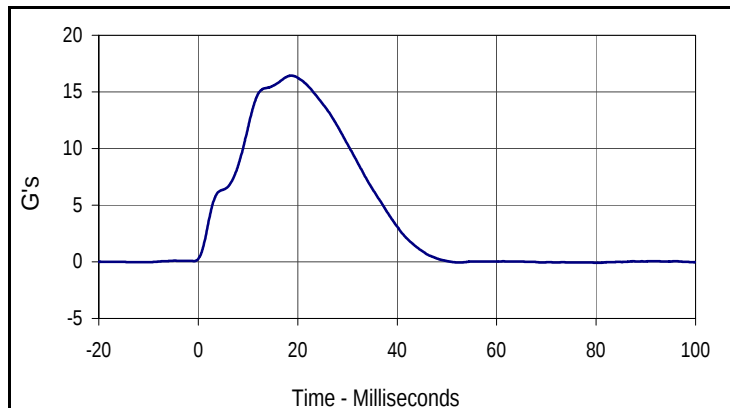
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.20	Pass
Upper Thorax Rib Deflection	MM	32 to 40	33.3	Pass
Middle Thorax Rib Deflection	MM	39 to 45	41.6	Pass
Lower Thorax Rib Deflection	MM	35 to 43	40.6	Pass
Peak Upper Spine Y Acceleration	G's	13 to 17	15.1	Pass
Peak Lower Spine Y Acceleration	G's	7 to 11	9.8	Pass
Peak Impactor Acceleration	G's	14 to 18	16.4	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
33.3	20.8	0.0	-18.5
Middle Thorax Deflection			
Max	Time	Min	Time
41.6	21.5	0.0	-11.3
Lower Thorax Deflection			
Max	Time	Min	Time
40.6	22.2	0.0	-12.5



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.1	16.9	-6.1	45.4
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
9.8	15.3	-4.0	44.7



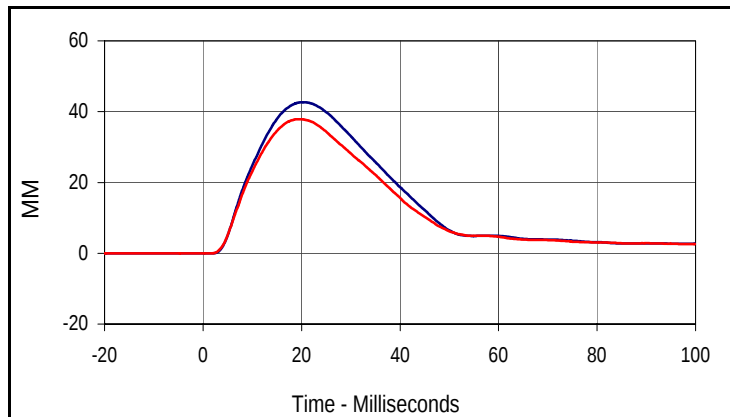
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
16.4	18.7	-0.1	80.0

Test Program: SID IIs Abdomen Calibration
 ATD Serial No.: 307

Test Date: 10/14/10
 Test I.D.: ABDF10B

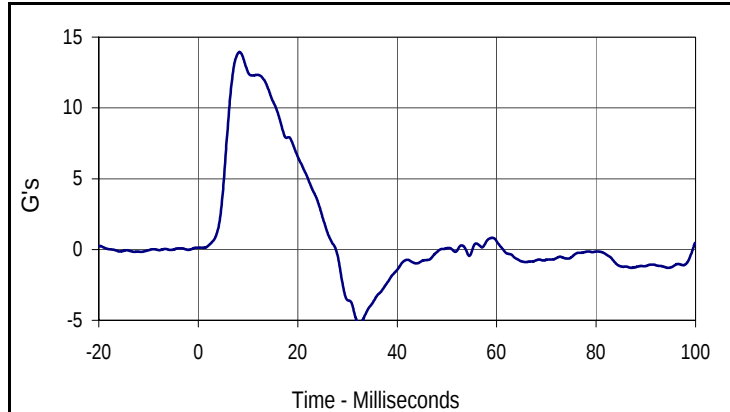


Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.35	Pass
Upper Abdominal Rib Deflection	MM	36 to 47	42.7	Pass
Lower Abdominal Rib Deflection	MM	33 to 44	37.9	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	14.0	Pass
Peak Impactor Acceleration	G's	12 to 16	15.3	Pass
Overall Test Results			Pass	

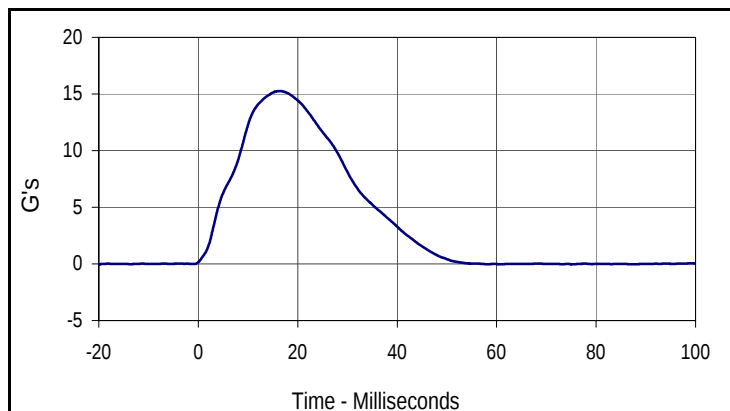


Curve Description			
Upper Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
42.7	20.2	0.0	-2.7

Curve Description			
Lower Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
37.9	19.5	0.0	-2.3



Curve Description			
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
14.0	8.3	-5.2	32.4



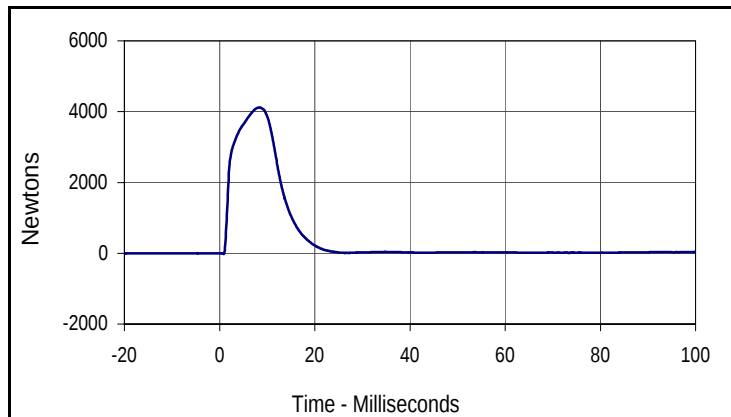
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.3	16.3	0.0	-20.0

Test Program: SID IIs Pelvis Acetabulum Calibration
 ATD Serial No.: 307

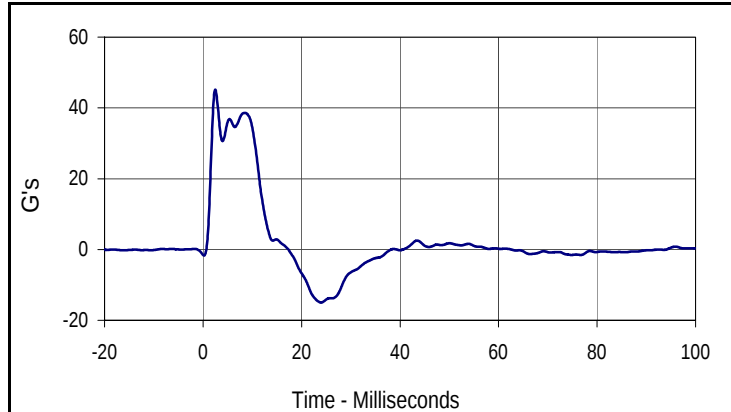
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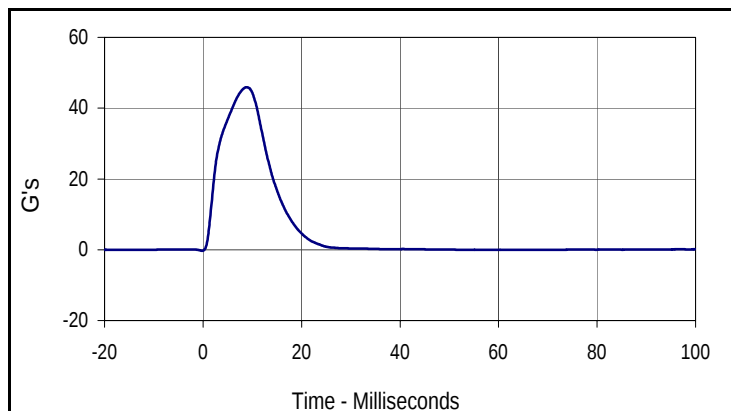
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.71	Pass
Peak Acetabulum Force	Newtons	3600 to 4300	4116.7	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	38.6	Pass
Peak Impactor Acceleration	G's	38 to 47	45.9	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4116.7	8.4	-22.0	0.8



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
45.2	2.5	-15.0	24.0



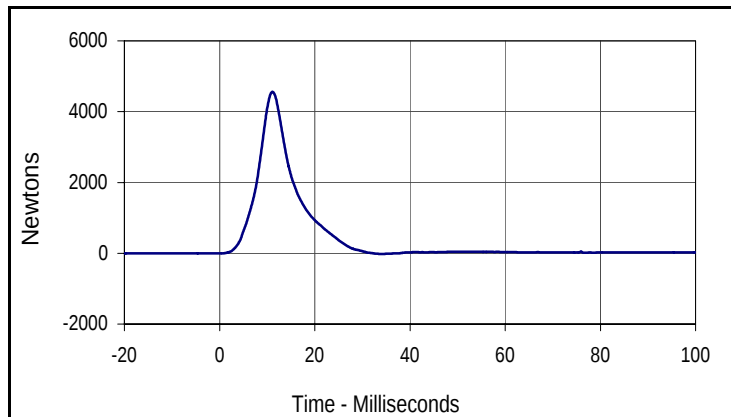
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
45.9	8.8	-0.3	-0.2

Test Program: SID IIs Pelvis Iliac Calibration
 ATD Serial No.: 307

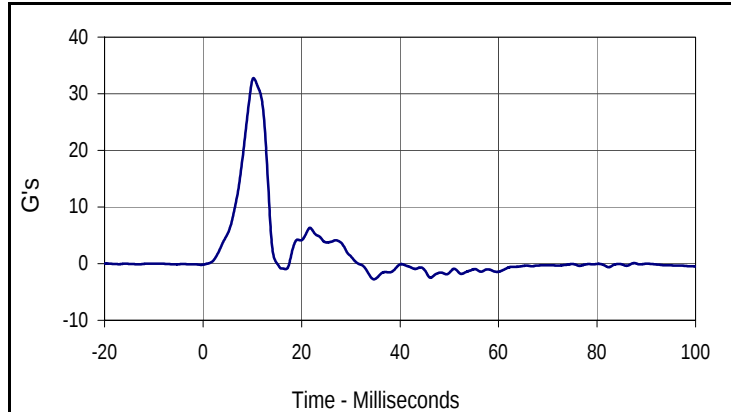
Test Date: 10/14/10
 Test I.D.: PLF10B



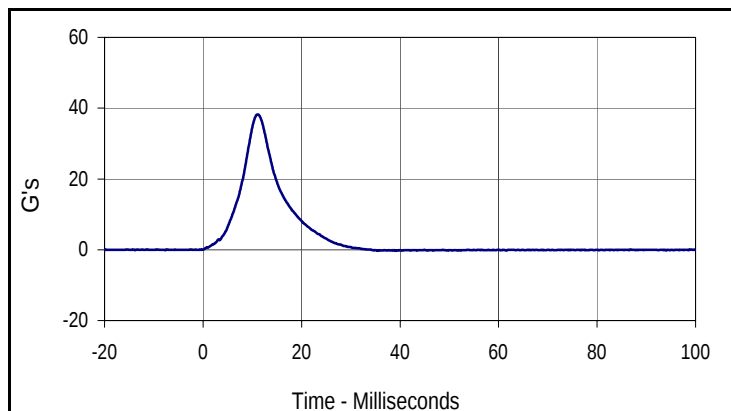
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.31	Pass
Peak Iliac Force	Newtons	4100 to 5100	4558.5	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	32.8	Pass
Peak Impactor Acceleration	G's	36 to 45	38.2	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Iliac Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4558.5	11.1	-19.8	34.5



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
32.8	10.3	-2.8	34.7



Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
38.2	11.0	-0.3	39.2