

REPORT NUMBER: SNCAP-KAR-11-001

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

**TOYOTA MOTOR MANUFACTURING, KENTUCKY, INC.
2011 TOYOTA CAMRY LE 4-DOOR SEDAN**

NHTSA No: MB5101

**PREPARED BY:
KARCO ENGINEERING, LLC.
9270 HOLLY ROAD
ADELANTO, CA 92301**



JULY 6, 2010

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
1200 NEW JERSEY AVE, SE
ROOM W43-410
WASHINGTON, D.C. 20590**

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

Prepared By: 
Mr. Kelsey A. Chiu, Engineering Department Supervisor
KARCO Engineering, LLC.

Reviewed By: 
Ms. Angie Valenzuela, Quality Assurance Manager
KARCO Engineering, LLC.

Approved By: 
Mr. Frank D. Richardson, Program Manager
KARCO Engineering, LLC.

Approval Date: July 6, 2010

FINAL REPORT ACCEPTANCE BY OCWS:


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

Date: _____


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

Date: _____

TECHNICAL REPORT DOCUMENTATION PAGE

1. Report No. SNCAP-KAR-11-001	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle Final Report of New Car Assessment Program Side Impact Testing of a 2011 Toyota Camry LE 4-Door Sedan NHTSA No. MB5101		5. Report Date July 6, 2010
		6. Performing Organization Code KAR
7. Authors Mr. Kelsey A. Chiu, Engineering Department Supervisor, KARCO Mr. Frank Richardson, Program Manager, KARCO		8. Performing Organization Report No. TR-P30003-06-NC
9. Performing Organization Name and Address KARCO Engineering, LLC. 9270 Holly Rd. Adelanto, CA, 92301		10. Work Unit No.
		11. Contract or Grant No. DTNH22-09-D-00127
12. Sponsoring Agency Name and Address U. S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards 1200 New Jersey Ave., SE, Room W43-410 Washington, D.C 20590		13. Type of Report and Period Covered Final Test Report, July 2010
		14. Sponsoring Agency Code NPS-10
15. Supplementary Notes		

16. Abstract

A 55/28 km/h 90 deg. Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2011 Toyota Camry LE 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 June 23, 2010.

The impact velocity of the Moving Deformable Barrier was 62.16 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 32.2 deg. C. The target vehicle's maximum post-test static crush was 287 mm located at level 2. 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	141
Maximum Thorax Rib Deflection	mm	44	23
Total Abdominal Force	N	2500	1422
Pubic Symphysis Force	N	6000	2603

Measurement Description	Passenger ATD (SID-IIs)		
	Units	Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	180
Lower Spine Resultant Acceleration	g	82	79
Total Pelvic Force (Sum of Acetubular and Iliac Forces)	N	5525	5656

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.

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	
19. Security Classification of this report UNCLASSIFIED	20. Security Classification of this page UNCLASSIFIED	21. No. of Pages 134	22. Price

TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
1	Purpose and Summary of the Test	1
2	Occupant and Vehicle Information/Data Sheets	3
<u>Data Sheet</u>		<u>Page</u>
1	General Test and Vehicle Parameter Data	4
2	Seat Adjustment, Fuel Systems, and Steering Wheel Data	7
3	Dummy Longitudinal Clearance Dimensions	9
4	Dummy Lateral Clearance Dimensions	10
5	Camera Locations and Data	11
6	Vehicle Accelerometer Locations	12
7	MDB Accelerometer Locations	13
8	Test Vehicle Summary of Results	14
9	Moving Deformable Barrier (MDB) Summary of Results	15
10	Post-Test Observations	16
11	Vehicle Profile Measurements	17
12	Vehicle Exterior Crush Measurements	18
13	Vehicle Damage Profile Distances	21
14	Exterior Static Crush for Impactor Face	22
15	FMVSS No. 301 Fuel System Integrity Post-Impact Data	23
16	Dummy/Vehicle Temperature Stabilization	24
<u>Appendix</u>		<u>Page</u>
A	Photographs	A
B	Dummy Response Data	B
C	Dummy Calibration Data	C

SECTION 1

PURPOSE AND SUMMARY OF TEST

PURPOSE

This moving deformable barrier side impact test is part of the FY 2010 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 Toyota Camry LE 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 Toyota Camry LE 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 62.16 km/h (38.62 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 June 23, 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	141.3
Maximum Thorax Rib Deflection	mm	44	23.3
Combined Abdominal Force	N	2500	1422
Pubic Symphysis Force	N	6000	2603

Measurement Description	Units	Passenger ATD (SID-IIs)	
		Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	179.9
Lower Spine (T12) Resultant Acceleration	g	82	79
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	5656

Supplemental restraint information is given below:

Restraint Type	Left Front (Driver)		Left Rear (Passenger)	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No	No	
Knee Airbag	Yes	No	No	
Side Airbag 1 (Torso)	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 total pelvic force for the left rear passenger (SID-IIs) exceeded the threshold value.

SECTION 2

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2011 Toyota Camry LE 4-door Sedan

NHTSA No. MB5101

Test Program: MDB Side Impact Test

Test Date: 06/23/10

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 Toyota Camry LE 4-door Sedan

NHTSA No. MB5101

Test Program: MDB Side Impact Test

Test Date: 06/23/10

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	MB5101
Model Year	2011
Make	Toyota
Model	Camry LE
Body Style	4-Door Sedan
VIN	4T1BF3EK0BU148501
Body Color	Magnetic Grey Metallic
Delivery Date	5/26/2010
Odometer Reading (km / mi)	101 / 63
Dealer	Crown Toyota
Transmission	6-Speed Automatic
Final Drive	Front
Type / No. of Cylinders	Inline 4
Engine Displacement (L)	2.5
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	Yes
Driver Torso/Pelvis Airbag	No
Driver Pelvis Airbag	No
Driver Knee Airbag	Yes
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	TPMS
Other	

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

Yes

TA FROM CERTIFICATION LABEL

Manufactured By	Toyota Motor Manufacturing, Kentucky, Inc.
Date of Manufacture	Apr-10

GVWR (kg)	1971
GAWR Front (kg)	1210
GAWR Rear (kg)	1070

TING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity	2	3		5	
Capacity Weight (VCW) (kg)				406.0	A
DSC x 68.04 (kg)				340.2	B
Cargo Weight (RCLW) (kg)				65.8	A-B

VEHICLE SEAT TYPE

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

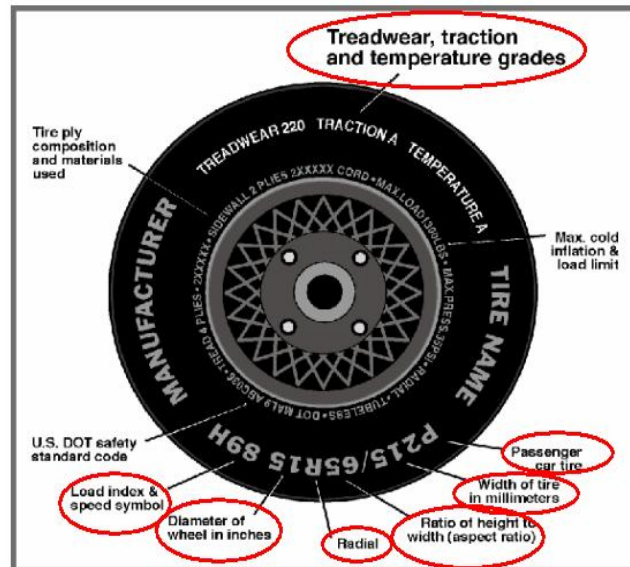
DATA SHEET NO. 1 ... (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Toyota Camry LE 4-door Sedan

NHTSA No. MB5101

Test Program: MDB Side Impact Test

Test Date: 06/23/10



Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	300	300
Cold Pressure (kpa)	230	230
Recommended Tire Size	P215/60R16	P215/60R16
Tire Size on Vehicle	P215/60R16	P215/60R16
Tire Model	Energy MXV4	Energy MXV4
Tire Manufacturer	Michelin	Michelin
Treadwear	440	440
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	1	1
Tire Plies Body	4	4
Load Index/Speed Symbol	94V	94V
Tire Material	Polyester, Polyamide, Steel	Polyester, Polyamide, Steel
DOT Safety Code Right	HN49 JUAX 0110	HN49 JUAX 0110
DOT Safety Code Left	HN49 JUAX 0110	HN49 JUAX 0110

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Toyota Camry LE 4-door Sedan

NHTSA No. MB5101

Test Program: MDB Side Impact Test

Test Date: 06/23/10

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	461.0	298.5		506.0	369.5		497.0	388.0	
Right	kg	446.0	290.5		463.5	339.0		447.5	352.5	
Ratio	%	60.6%	39.4%	100.0%	57.8%	42.2%	100.0%	56.1%	43.9%	100.0%
Total	kg	907.0	589.0	1496.0	969.5	708.5	1678.0	944.5	740.5	1685.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1496.0	A
Actual Weight of 2 P572 ATDs Used	kg	125.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	65.8	C
Calculated Vehicle Target Wt (TVTW)	kg	1686.8	A+B+C

TEST VEHICLE ATTITUDES

Condition	Units	LF	RF	LR	RR	CG (Aft of Front Axle)
Fully Loaded	mm	705	705	688	700	1553
As Tested	mm	700	695	689	702	1601

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheelbase	mm	2771
Total Vehicle Length at Left Side	mm	3183
Total Vehicle Length at Centerline	mm	4804
Total Vehicle Length at Right Side	mm	3183
Weight of Ballast in Cargo Area	kg	0.0
Weight of Vehicle Components Removed	kg	33.0
Amount of Stoddard Solvent in Fuel Tank	L	65.12

Vehicle components removed to make Target Vehicle Test Weight:

Door panels, hub caps, spare tire, jack and tools, trunk liner, trunk trim

TEST VEHICLE VERTICAL IMPACT LINE DATA

Measurement Description	Units	Value
Target Impact Point Aft of Front Axle	mm	440
Actual Impact Point Aft of Front Axle	mm	481

DATA SHEET NO. 2

SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2011 Toyota Camry LE 4-door Sedan

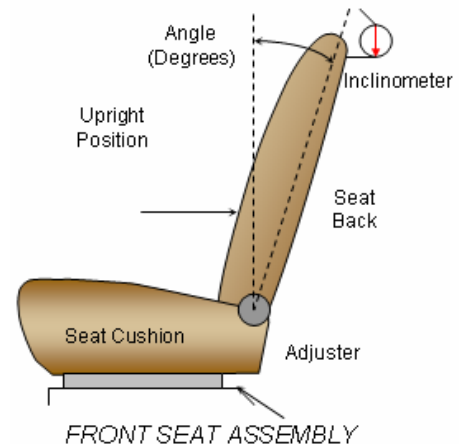
NHTSA No. MB5101

Test Program: MDB Side Impact Test

Test Date: 06/23/10

NOMINAL DESIGN RIDING POSITION

The driver's seat back is set to the manufacturer's designated seat angle, measured from the headrest post relative to the rocker sill. The passenger's seat back is fixed.



SEAT BACK ANGLES

	Degrees (°)
Driver w/Seated Dummy	3.0
Passenger w/Seated Dummy	3.0

SEAT FORE/AFT POSITIONS

Driver seat travel is measured with the seat cushion at the mid angle and the lowermost position. The seat is set to the middle of the fore-aft travel. The passenger seat is fixed.

Seating Position	Total Fore/Aft Travel	Placed in Position
Driver Seat	255	128
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 number one (1) is the uppermost position.

Seating Position	Total No. of Positions	Placed in Position
Driver Seat	4	2
Rear Seat	Fixed	Fixed

DATA SHEET NO. 2 ... (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2011 Toyota Camry LE 4-door Sedan

NHTSA No. MB5101

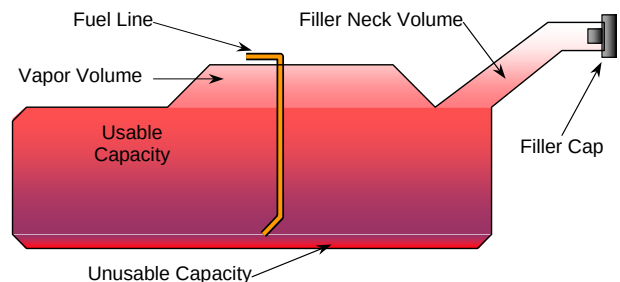
Test Program: MDB Side Impact Test

Test Date: 06/23/10

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank"	70.02
Usable Capacity of "Optional Tank"	
Usable Capacity Used for FMVSS 301	70.02
Actual Amount of Stoddard Solvent Used	65.12

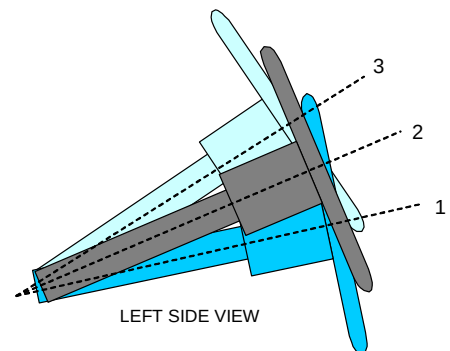
The test vehicle is equipped with an electric fuel pump. The fuel pump is activated when the ignition is turned on. The fuel filler door is located on the left rear fender. The standard fuel tank occupies the area under the rear seat.



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. 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 ASSEMBLY

STEERING COLUMN POSITIONING

	Degrees	Fore-Aft Position (mm)
Lowermost Position, No. 1	23.0	95
Geometric Center Position, No. 2	25.0	113
Uppermost Position, No. 3	27.0	130
Telescoping Steering Wheel Travel		35
Test Position	27.0	113

DATA SHEET NO. 3

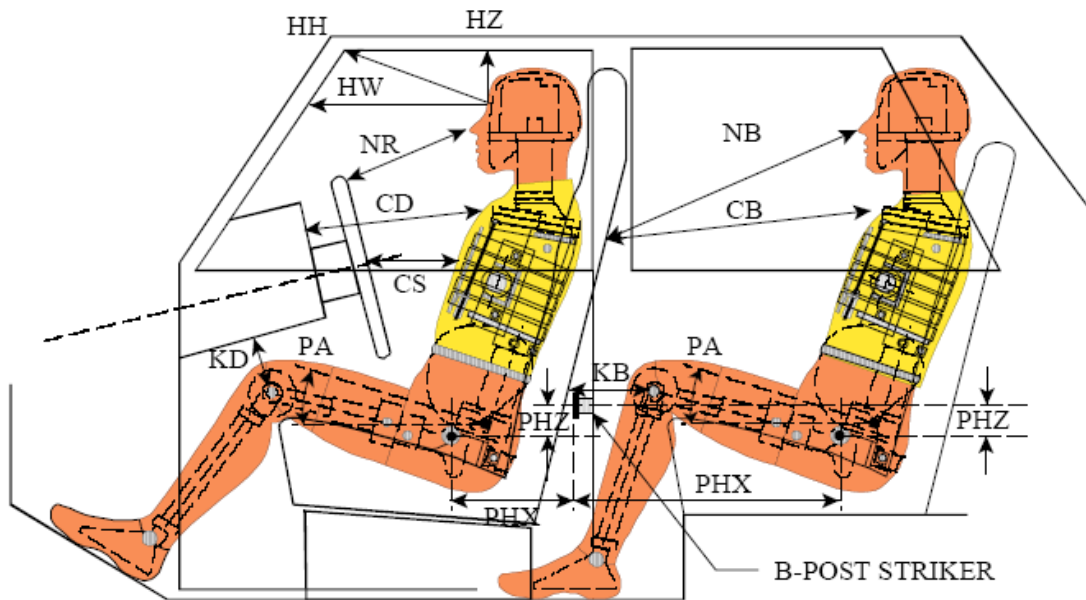
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Toyota Camry LE 4-door Sedan

NHTSA No. MB5101

Test Program: MDB Side Impact Test

Test Date: 06/23/10



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	381	10.1		
HW		Head to Windshield	611	0.0		
HZ	HZ	Head to Roof	163	90.0	271	90.0
NR	NB	Nose to Rim/Seat Back	481	15.7	612	14.8
CD	CB	Chest to Dash/Seat Back	593	3.0	554	2.4
CS		Chest to Steering Wheel	414	15.2		
KDL	KBL	Left Knee to Dash/Seat Back	175	22.7	313	40.6
KDR	KBR	Right Knee to Dash/Seat Back	146	27.4	310	40.4
PA	PA	Pelvic Angle		18.1		20.4
PHX	PHX	H-Point to Striker (x-axis)	226	0.0	404	0.0
PHZ	PHZ	H-Point to Striker (z-axis)	250	90.0	349	90.0
SA	SA	Seat Back Angle		3.0		3.0

DATA SHEET NO. 4

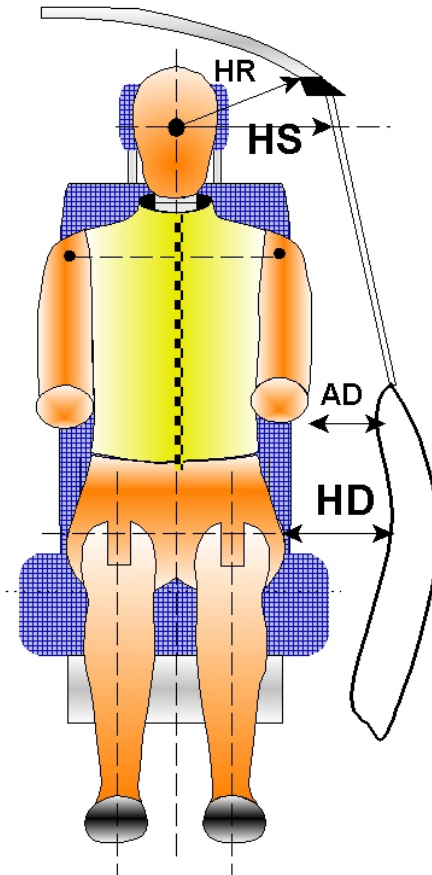
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Toyota Camry LE 4-door Sedan

NHTSA No. MB5101

Test Program: MDB Side Impact Test

Test Date: 06/23/10



DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	203	199
HS	Head to Side Window	mm	277	283
AD	Arm to Door	mm	99	140
HD	H-Point to Door	mm	149	162

DATA SHEET NO. 5

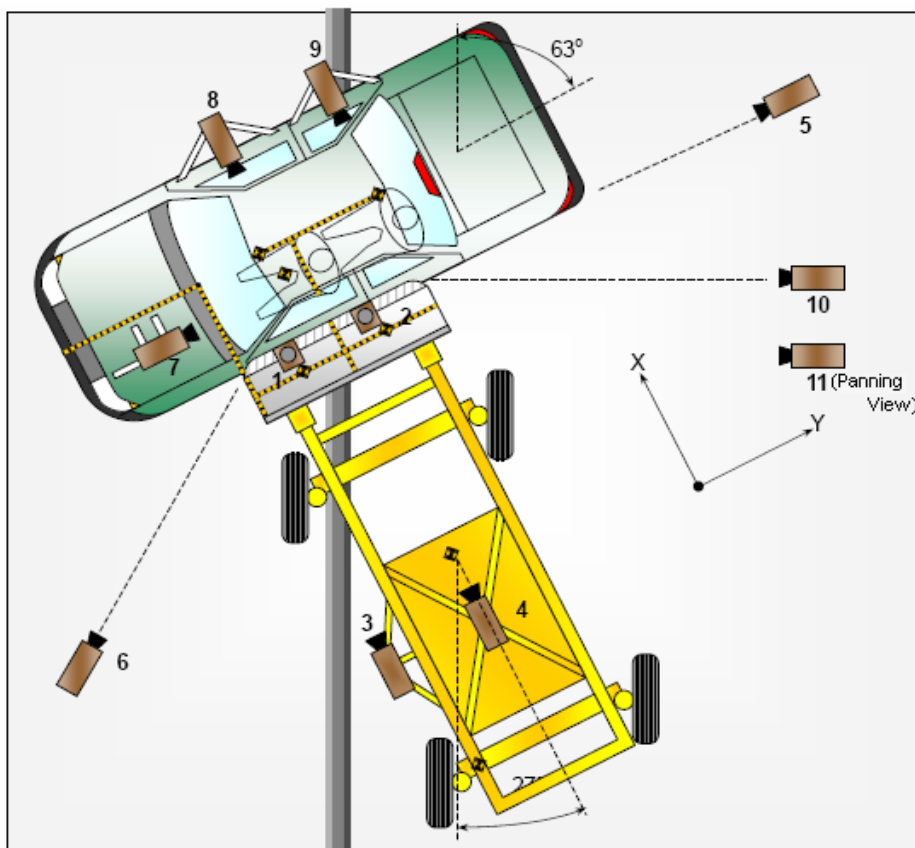
CAMERA LOCATIONS AND DATA

Test Vehicle: 2011 Toyota Camry LE 4-door Sedan

NHTSA No. MB5101

Test Program: MDB Side Impact Test

Test Date: 06/23/10



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	-4	25	1000
4	Side Overall (MDB)	-3912	838	-1829	-1	12	1000
5	Rear	-64	2485	-1348	0	105	400
6	Left Front	-2266	-3564	-1475	0	24	1000
7	Driver Front (On-Board)	593	728	-1148	-3	35	1000
8	Driver Side (On-Board)	1584	-752	-1072	-1	14	1000
9	Passenger Side (On-Board)	1547	-1724	-1091	-1	20	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

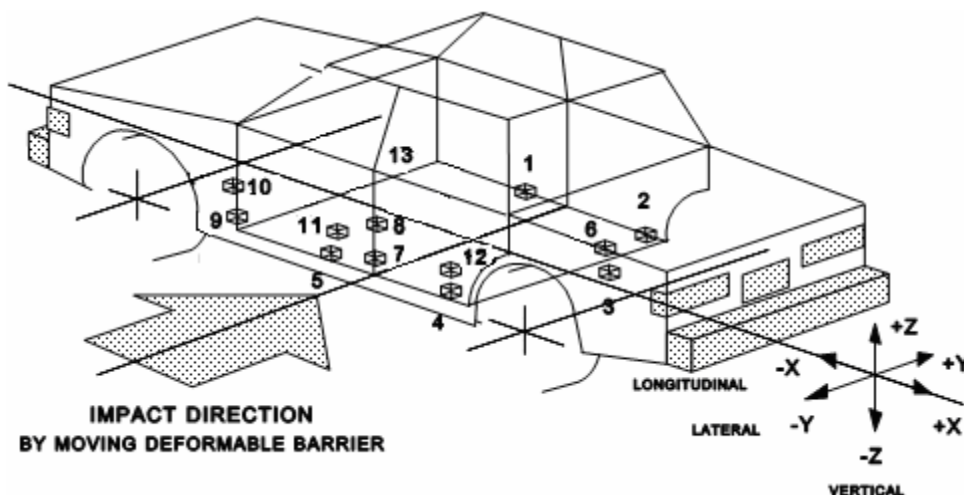
VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2011 Toyota Camry LE 4-door Sedan

NHTSA No. MB5101

Test Program: MDB Side Impact Test

Test Date: 06/23/10



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Right Sill at Front Seat	2930	700	330
2	Right Sill at Rear Seat	1955	710	330
3	Rear Floorpan Above Axle	810	20	590
4	Left Sill at Rear Door	1825	-750	180
5	Left Sill at Front Door	2695	-730	190
6	Right Rear Occupant Compartment	1860	240	190
7	B-Pillar Lower	2195	-760	480
8	B-Pillar Mid	2195	-760	900
9	A-Pillar Lower	3245	-810	520
10	A-Pillar Mid	3245	-810	760
11	Front Seat Track	2385	-530	385
12	Rear Seat Structure			
13	Vehicle CG	2025	0	200

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

¹ – Not installed.

DATA SHEET NO. 7

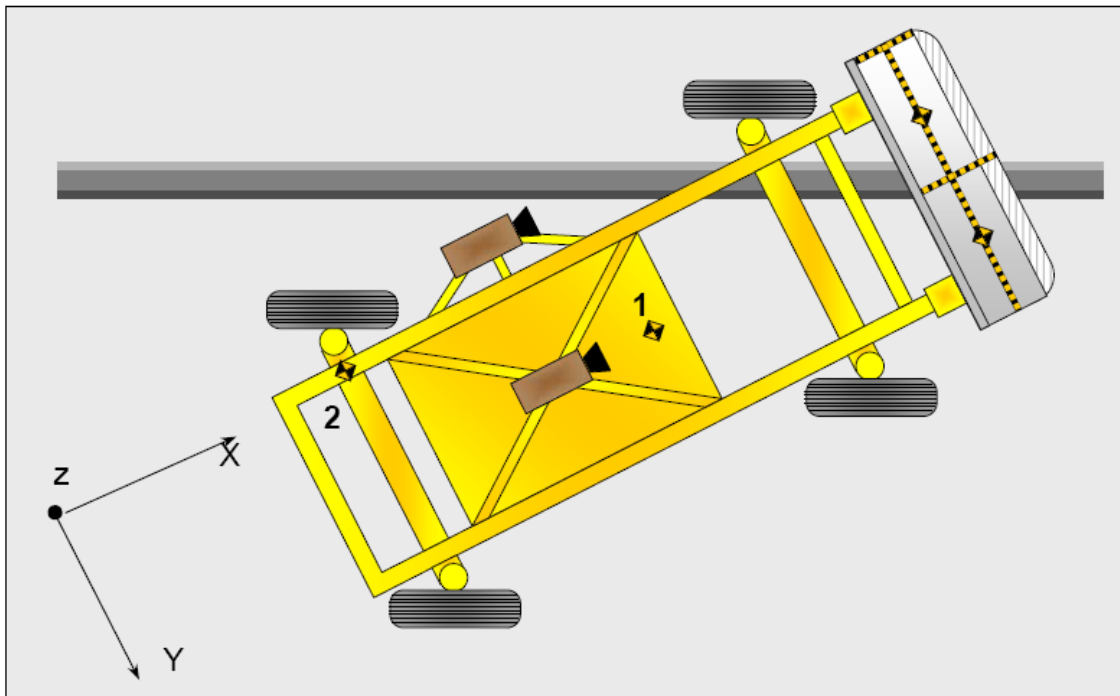
MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2011 Toyota Camry LE 4-door Sedan

NHTSA No. MB5101

Test Program: MDB Side Impact Test

Test Date: 06/23/10



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 (+ rearward)
Y – MDB Centerline (+ to right)
Z – Ground plane (+ up)

DATA SHEET NO. 8**TEST VEHICLE SUMMARY OF RESULTS**Test Vehicle: 2011 Toyota Camry LE 4-door SedanNHTSA No. MB5101Test Program: MDB Side Impact TestTest Date: 06/23/10**MAXIMUM EXTERIOR CRUSH**

Level	Description	Units	Maximum Crush	Above Ground
1	Sill Top Height	mm	59	236
2	Occupant H-Point Height	mm	287	527
3	Mid-Door Height	mm	278	530
4	Window Sill Height	mm	185	924
5	Window Top Height	mm	49	1392
	Maximum Penetration	mm	287	

INSTRUMENTATION

Driver Dummy Channels	19
Passenger Dummy Channels	19
Vehicle Structure Accelerometers	8
MDB Accelerometers	2
Total No. of Contact Switches	2
Total	50

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 Toyota Camry LE 4-door SedanNHTSA No. MB5101Test Program: MDB Side Impact TestTest Date: 06/23/10**MDB SPECIFICATIONS**

Measurement Description	Length (mm)
Overall Width of Framework Carriage	1251
Overall Length including Honeycomb Face	4023
Wheel Base of Framework Carriage	2595
C.G. 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	62.16
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	62.16
MDB CL to Target Vehicle CL	degrees	88.5-91.5	89.6

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	184
2	Top of Bumper	533	800	Left	109
3	Mid Level	686	800	Right	68
4	Top of Stack	813	800	Right	102

MDB INSTRUMENTATION AND CAMERAS

Accelerometers	5
Contact Switches	2

DATA SHEET NO. 10
POST-TEST OBSERVATIONS

Test Vehicle: 2011 Toyota Camry LE 4-door Sedan

NHTSA No. MB5101

Test Program: MDB Side Impact Test

Test Date: 06/23/10

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, Headrest	Curtain Airbag, Center Headrest
Upper Torso Contact	Door Panel, Side Airbag, Curtain Airbag	Door Panel, Curtain Airbag, Seat Back
Lower Torso Contact	Side Airbag	Door Panel, Seat Back
Left Knee Contact	Door Panel	Door Panel
Right Knee Contact	None	None

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	Left rear window broken
Other Notable Effects	None

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	Yes	No	No	
Side Airbag 1 (Torso)	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				

VEHICLE SPEED AND IMPACT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	+41 (Right)
Vertical Offset	mm	+/- 20	0

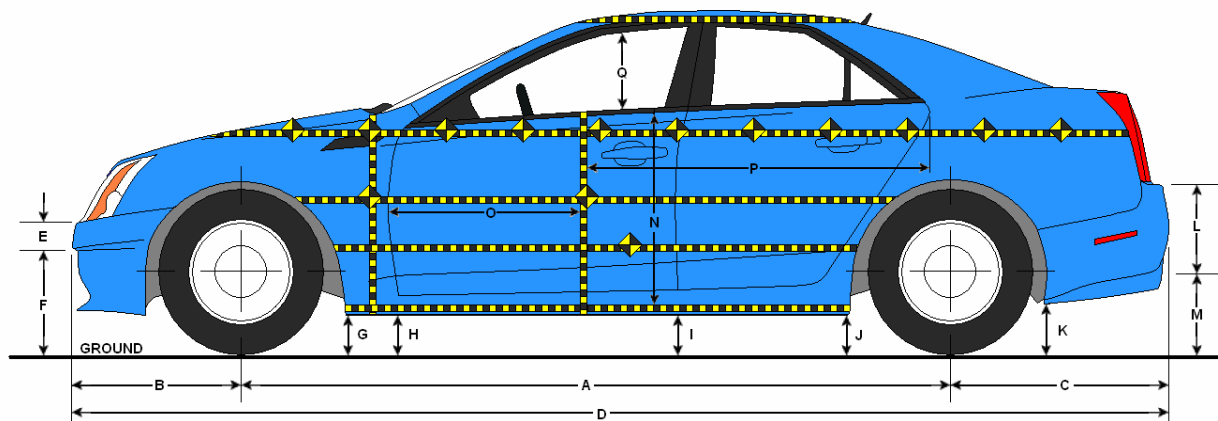
DATA SHEET NO. 11
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2011 Toyota Camry LE 4-door Sedan

NHTSA No. MB5101

Test Program: MDB Side Impact Test

Test Date: 06/23/10



VEHICLE PRE AND POST-TEST MEASUREMENT INFORMATION

Code	Dimension	Measurement (mm)		
		Pre	Post	Difference
A	Wheelbase	2771	2749	-22
B	Front Axle to FSOV	945	965	20
C	Rear Axle to RSOV	1077	1070	-7
D	Total Length at Centerline	4804	4784	-20
E	Front Bumper Thickness	151	151	0
F	Front Bumper Bottom to Ground	381	398	17
G	Sill Height at Front Wheel Well	198	224	26
H	Sill Height at Front Door Leading Edge	247	274	27
I	Sill Height at B-Pillar	263	315	52
J1	Sill Height at Rear Wheel Well	198	255	57
J2	Pinch Weld Height at Rear Wheel Well	171	219	48
K	Sill Height Aft of Rear Wheel Well	247	299	52
L	Rear Bumper Thickness	233	233	0
M	Bottom of Rear Bumper to Ground	405	456	51
N	Sill Height to Window Bottom Sill	668	561	-107
O	Front Door Leading Edge to Impact CL	19	15	-4
P	Rear Door Trailing Edge to Impact CL	2310	2211	-99
Q	Front Window Opening	435	454	19
R	Right Side Length	3183	3143	-40
S	Left Side Length	3183	3192	9
T	Vehicle Width at B-Pillar	1829	1668	-161

DATA SHEET NO. 12

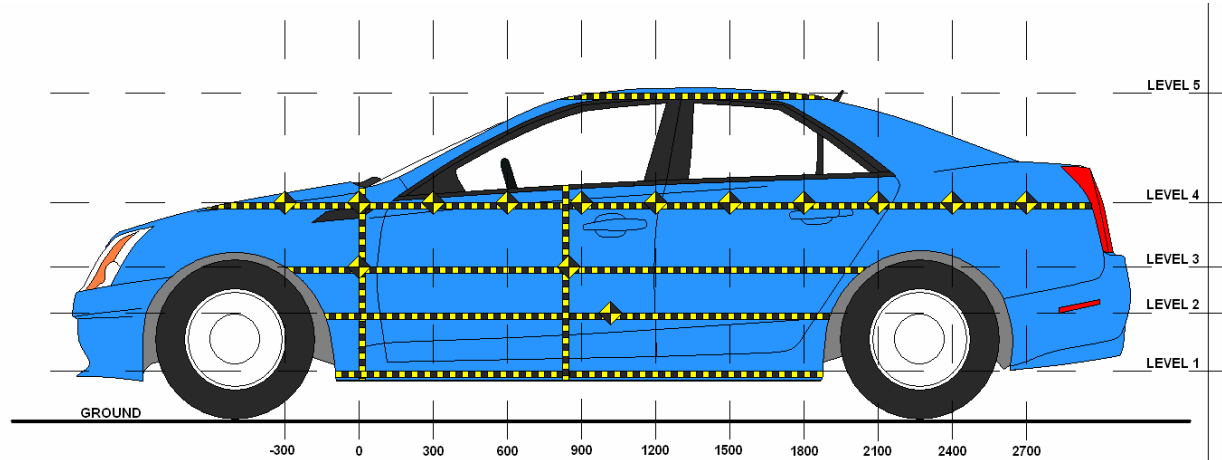
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Toyota Camry LE 4-door Sedan

NHTSA No. MB5101

Test Program: MDB Side Impact Test

Test Date: 06/23/10



Level	Description	Height Above Ground (mm)
1	Sill Top Height	236
2	Occupant H-Point Height	527
3	Mid-Door Height	530
4	Window Sill Height	924
5	Window Top Height	1392

DATA SHEET NO. 12 ... (CONTINUED)

VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Toyota Camry LE 4-door Sedan

NHTSA No. MB5101

Test Program: MDB Side Impact Test

Test Date: 06/23/10

	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			571	695				613	726				42	31	
0	596	578	584	679		641	670	671	712		45	92	87	33	
150	605	579	581	669		653	792	768	711		48	213	187	42	
300	608	577	578	658		654	851	831	735		46	274	253	77	
450	607	576	575	644		652	863	840	757		45	287	265	113	
600	607	575	573	637		648	857	851	771		41	282	278	134	
750	607	575	573	633		649	854	839	777		42	279	266	144	
900	608	575	572	629	930	650	853	842	774	961	42	278	270	145	31
1050	610	577	573	626	907	655	837	845	769	944	45	260	272	143	37
1200	614	578	574	625	902	662	839	820	779	944	48	261	246	154	42
1350	619	583	577	625	898	669	824	825	788	947	50	241	248	163	49
1500	624	587	580	624	902	676	804	839	809	948	52	217	259	185	46
1650	627	592	584	626	918	682	790	829	809	957	55	198	245	183	39
1800	622	596	588	627	952	681	789	810	761	990	59	193	222	134	38
1950		582	585	630			665	743	730			83	158	100	
2100			574	650				665	717				91	67	
2250				641					687					46	
2400				650					700					50	
2550				662					703					41	
2700				676					709					33	
2850				695					719					24	

MAXIMUM CRUSH DATA

	Level 1	Level 2	Level 3	Level 4	Level 5
Maximum Crush (mm)	59	287	278	185	49
Distance from Impact (mm)	1800	450	600	1500	1350

DATA SHEET NO. 12 ... (CONTINUED)

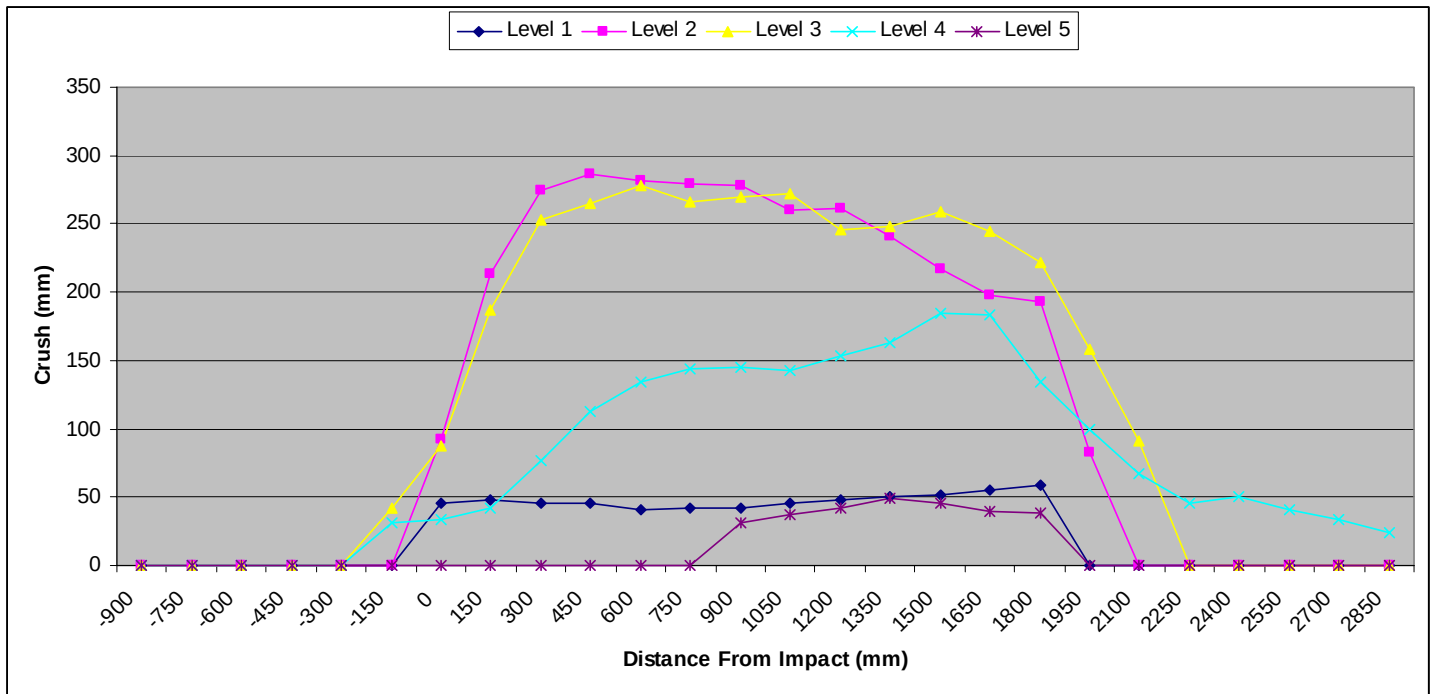
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Toyota Camry LE 4-door Sedan

NHTSA No. MB5101

Test Program: MDB Side Impact Test

Test Date: 06/23/10



DATA SHEET NO. 13

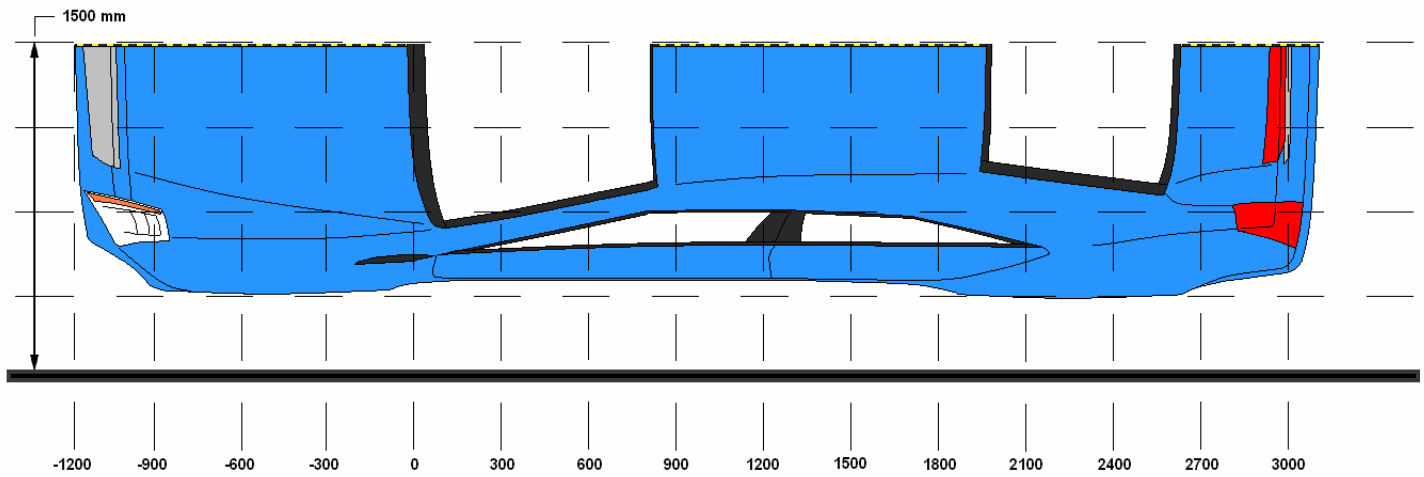
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2011 Toyota Camry LE 4-door Sedan

NHTSA No. MB5101

Test Program: MDB Side Impact Test

Test Date: 06/23/10



TOP VIEW

DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point in mm	Level	Pre-Test (mm)	Post-Test (mm)	Max. Static Crush (mm)
1	2250	4	641	687	46
2	1800	3	588	810	222
3	1350	3	577	825	248
4	900	2	575	853	278
5	450	2	576	863	287
6	0	2	578	670	92

DATA SHEET NO. 14

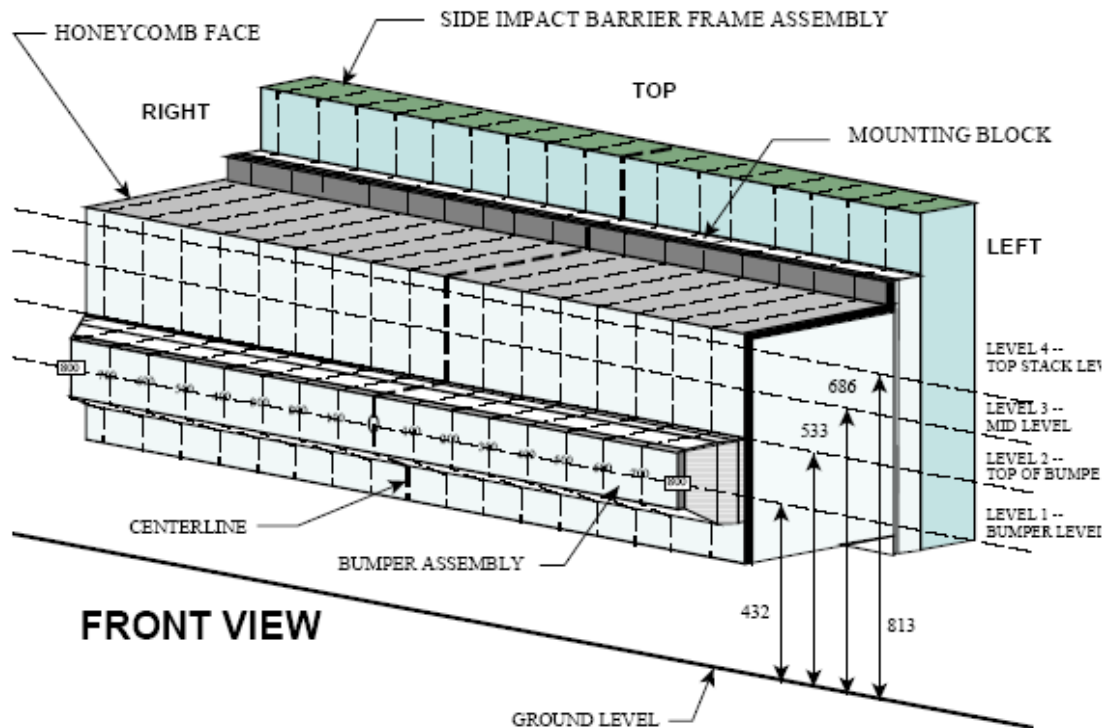
EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

Test Vehicle: 2011 Toyota Camry LE 4-door Sedan

NHTSA No. MB5101

Test Program: MDB Side Impact Test

Test Date: 06/23/10



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	130	112	108	112	114	119	123	129	138	142	145	150	150	156	160	167	184
2	53	47	43	41	41	41	40	43	47	55	47	51	62	72	87	107	109
3	68	47	28	15	14	14	15	19	37	61	49	31	21	17	14	25	52
4	102	73	46	35	28	25	31	45	80	102	78	53	20	7	6	19	54

All dimensions in millimeters.

DATA SHEET NO. 15

FMVSS NO. 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2011 Toyota Camry LE 4-door Sedan

NHTSA No. MB5101

Test Program: MDB Side Impact Test

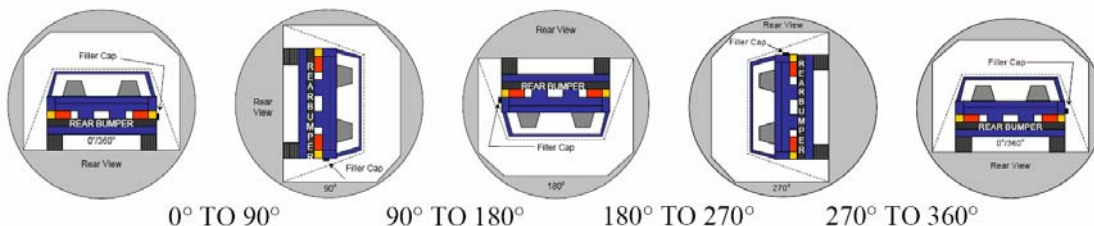
Test Date: 06/23/10

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 32.2°

Test Time: 3:27 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°	84	300	384
90° To 180°	83	300	383
180° To 270°	77	301	378
270° To 360°	89	300	389

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	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

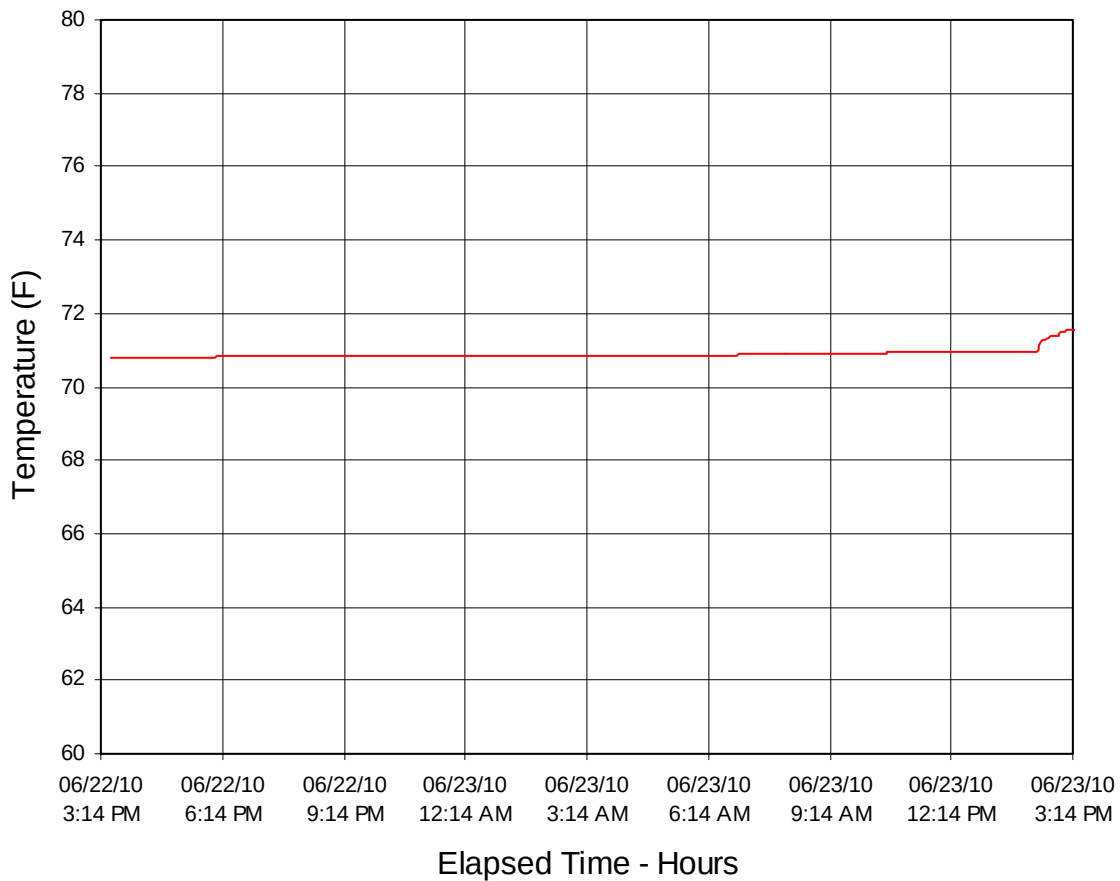
DUMMY / VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2011 Toyota Camry LE 4-door Sedan

NHTSA No. MB5101

Test Program: MDB Side Impact Test

Test Date: 06/23/10



APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

Figure		Page
1	As-Delivered Right Front $\frac{3}{4}$ View of Test Vehicle	A-1
2	As-Delivered Left Rear $\frac{3}{4}$ View of Test Vehicle	A-1
3	Pre-Test Frontal View of the Target Vehicle	A-2
4	Post-Test Frontal View of Test Vehicle	A-2
5	Pre-Test Left Front $\frac{3}{4}$ View of Test Vehicle	A-3
6	Post-Test Left Front $\frac{3}{4}$ View of Test Vehicle	A-3
7	Pre-Test Left Side View of Test Vehicle	A-4
8	Post-Test Left Side View of Test Vehicle	A-4
9	Pre-Test Left Rear $\frac{3}{4}$ View of Test Vehicle	A-5
10	Post-Test Left Rear $\frac{3}{4}$ View of Impact Zone	A-5
11	Pre-Test Rear View of Test Vehicle	A-6
12	Post-Test Rear View of Test Vehicle	A-6
13	Pre-Test Right Side View of Test Vehicle	A-7
14	Post-Test Right Side View of Test Vehicle	A-7
15	Pre-Test Overhead View of Test Vehicle with MDB Positioned Against Side of Target Vehicle at Ideal Impact Point	A-8
16	Post-Test Overhead View of Test Vehicle and MDB	A-8
17	Pre-Test Left Side View of MDB Positioned Against Side of Target Vehicle at Ideal Impact Point	A-9
18	Pre-Test Right Side View of MDB Positioned Against Side of Target Vehicle at Ideal Impact Point	A-9
19	Pre-Test Close-Up View of Impact Point Target	A-10
20	Post-Test Close-Up View of Impact Point Target Showing Impact Point Location	A-10
21	Pre-Test Left Front Door Latch Close-Up (Door Closed)	A-11
22	Post-Test Left Front Door Latch Close-Up (Door Closed)	A-11
23	Pre-Test Left Rear Door Latch Close-Up (Door Closed)	A-12
24	Post-Test Left Rear Door Latch Close-Up (Door Closed)	A-12
25	Pre-Test Front Close-Up View of Driver Dummy (Through Front Window)	A-13
26	Post-Test Front Close-Up View of Driver Dummy (Through Front Window)	A-13
27	Pre-Test Left Side View of Driver Dummy Showing Belt, Chalking, and Contact Switches (Door Open)	A-14
28	Pre-Test Left Side View of Driver Dummy Shoulder and Door Top View (Door Closed)	A-14
29	Post-Test Left Side View of Driver Dummy Shoulder and Door Top View (Door Closed)	A-15
30	Pre-Test Frontal View of Driver Seat Back (Including Head Restraint) Prior to Dummy Positioning	A-15
31	Pre-Test Frontal View of Driver Dummy Head and Shoulders in Relation to Head Restraint	A-16
32	Pre-Test Frontal View of Driver Seat Pan Prior to Dummy Positioning	A-16
33	Pre-Test Overhead View of Driver Dummy Thighs on Seat Pan	A-17
34	Pre-Test Placement of Driver Dummy's Feet	A-17
35	Pre-Test View of Belt Anchorage for Driver Dummy to Show Position	A-18

TABLE OF PHOTOGRAPHS ... (CONTINUED)

Figure		Page
36	Pre-Test Left Side View of Steering Wheel to Show Position	A-18
37	Pre-Test View of Parking Brake	A-19
38	Pre-Test Close-Up Left Side View of Driver Seat Track Showing Test Position	A-19
39	Pre-test Close-Up Left Side View of Driver Seat Back Showing Test Position	A-20
40	Pre-Test Close-Up View of Driver Seat Back or Head Restraint Showing Seat Back Test Position	A-20
41	Pre-Test Driver Dummy and Door Clearance View	A-21
42	Post-Test Driver Dummy and Door Clearance View	A-21
43	Pre-Test Right Side View of Driver Dummy and Front Seat of Occupant Compartment	A-22
44	Post-Test Right Side View of Driver Dummy and Front Seat Occupant Compartment	A-22
45	Pre-Test Driver Inner Door Panel View	A-23
46	Post-Test Driver Inner Door Panel View Showing Driver Dummy Contact Locations	A-23
47	Post-Test Driver Dummy Close-Up Head Contact with Vehicle View	A-24
48	Post-Test Driver Dummy Close-Up Head Contact with Side Airbag View	A-24
49	Post-Test Driver Dummy Close-Up Torso Contact with Vehicle Interior View	A-25
50	Post-Test Driver Dummy Close-Up Torso Contact with Side Airbag View	A-25
51	Post-Test Driver Dummy Close-Up Pelvis Contact View	A-26
52	Post-Test Driver Dummy Close-Up Pelvis Contact with Side Airbag View	A-26
53	Pre-Test Left Side View of Rear Passenger Dummy Showing Belt, Chalking, and Contact Switches	A-27
54	Pre-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View	A-27
55	Post-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View	A-28
56	Pre-Test Frontal View of Rear Passenger Seat Back Prior to Dummy Positioning	A-28
57	Pre-Test Frontal View of Rear Passenger Dummy Head and Shoulders in Relation to Head Restraint	A-29
58	Pre-Test Overhead View of Rear Passenger Seat Pan Prior to Dummy Positioning	A-29
59	Pre-Test Overhead View of Rear Passenger Dummy Thighs on Seat Pan	A-30
60	Pre-Test View of Rear Passenger Dummy's Neck Showing Position of Adjustable Neck Bracket	A-30
61	Pre-Test View of Rear Passenger Dummy's Head Showing Dummy's Head is Level	A-31
62	Pre-Test Placement of Rear Passenger Dummy's Feet	A-31
63	Pre-Test View of Belt Anchorage for Rear Passenger Dummy to Show Position	A-32
64	Pre-Test Close-Up Left Side View of Rear Passenger Seat Track Showing Test Position	A-32
65	Pre-Test Close-Up Left Side View of Rear Passenger Seat Back Showing Test Position	A-33
66	Pre-Test Close-Up View of Rear Passenger Seat Back or Head Restraint Showing Seat Back Test Position	A-33
67	Pre-Test Rear Passenger Dummy and Door Clearance View	A-34
68	Post-Test Rear Passenger Dummy and Door Clearance View	A-34
69	Pre-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment	A-35
70	Post-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment	A-35

TABLE OF PHOTOGRAPHS ... (CONTINUED)

Figure		Page
71	Pre-Test Rear Passenger Inner Door Panel View	A-36
72	Post-Test Rear Passenger Inner Door Panel View Showing Rear Passenger Dummy Contact Locations	A-36
73	Post-Test Rear Passenger Dummy Close-Up Head Contact with Vehicle View	A-37
74	Post-Test Rear Passenger Dummy Close-Up Head Contact with Side Airbag View	A-37
75	Post-Test Rear Passenger Dummy Close-Up Torso Contact with Vehicle Interior View	A-38
76	Post-Test Rear Passenger Dummy Close-Up Torso Contact with Side Airbag View	A-38
77	Post-Test Rear Passenger Dummy Close-Up Pelvis Contact View	A-39
78	Post-Test Rear Passenger Dummy Close-Up Pelvis Contact with Side Airbag View	A-39
79	Pre-Test View of Fuel Filler Cap or Fuel Filler Neck	A-40
80	Post-Test View of Fuel Filler Cap or Fuel Filler Neck	A-40
81	Pre-Test Front View of MDB Impactor Face	A-41
82	Post-Test Front View of MDB Impactor Face	A-41
83	Pre-Test Top View of MDB Impactor Face	A-42
84	Post-Test Top View of MDB Impactor Face	A-42
85	Pre-Test Left Side View of MDB Impactor Face	A-43
86	Post-Test Left Side View of MDB Impactor Face	A-43
87	Pre-Test Right Side View of MDB Impactor Face	A-44
88	Post-Test Right Side View of MDB Impactor Face	A-44
89	Close-Up View of Vehicle's Certification Label	A-45
90	Close-Up View of Vehicle's Tire Information Placard or Label	A-45
91	Pre-Test Ballast View	A-46
92	Post-Test Primary and Redundant Speed Trap Read-Out	A-46
93	FMVSS No. 301/305 Rollover 0°	A-47
94	FMVSS No. 301/305 Rollover 90°	A-47
95	FMVSS No. 301/305 Rollover 180°	A-48
96	FMVSS No. 301/305 Rollover 270°	A-48
97	FMVSS No. 301/305 Rollover 360°	A-49
98	Impact Event (Impact Side)	A-49
99	Monroney Label	A-50
100	Driver Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-50
101	Left Rear Passenger Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-51



FIGURE 1. As-Delivered Right Front $\frac{3}{4}$ View of Test Vehicle



FIGURE 2. As-Delivered Left Rear $\frac{3}{4}$ View of Test Vehicle



FIGURE 3. Pre-Test Frontal View of Target Vehicle



FIGURE 4. Post-Test Frontal View of Test Vehicle



FIGURE 5. Pre-Test Left Front $\frac{3}{4}$ View of the Test Vehicle



FIGURE 6. Post-Test Left Front $\frac{3}{4}$ 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 $\frac{3}{4}$ View of Test Vehicle



FIGURE 10. Post-Test Left Rear $\frac{3}{4}$ View of Test Vehicle



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 Target Vehicle at Ideal Impact Point

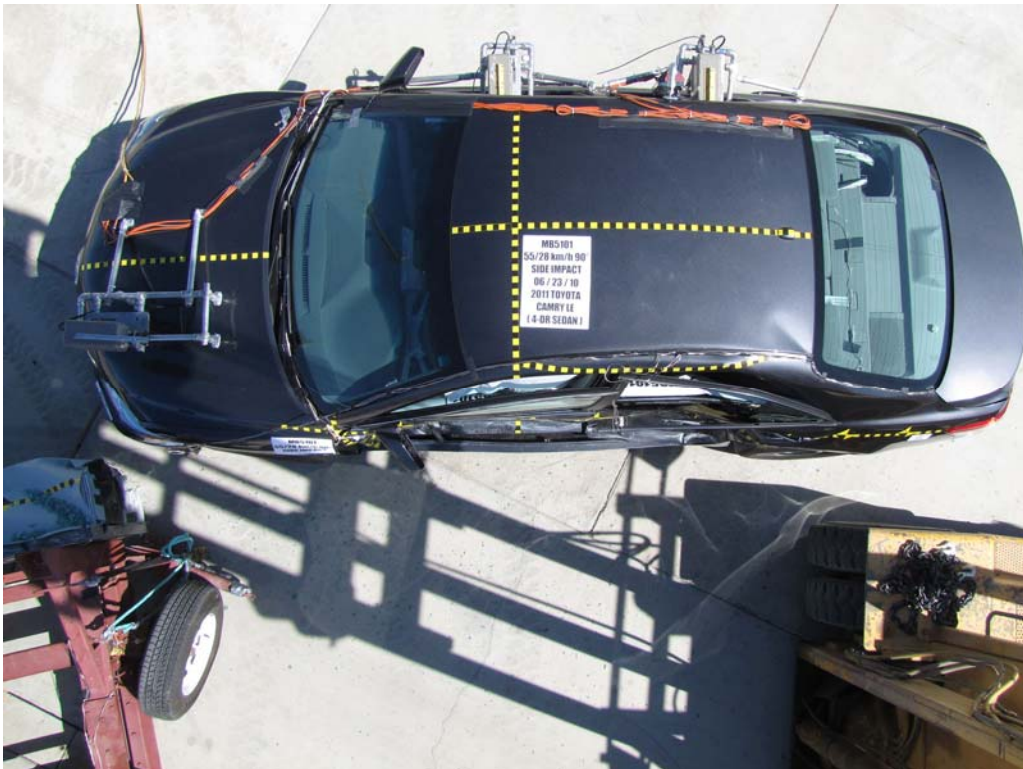


FIGURE 16. Post-Test Overhead View of Test Vehicle and MDB



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



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



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

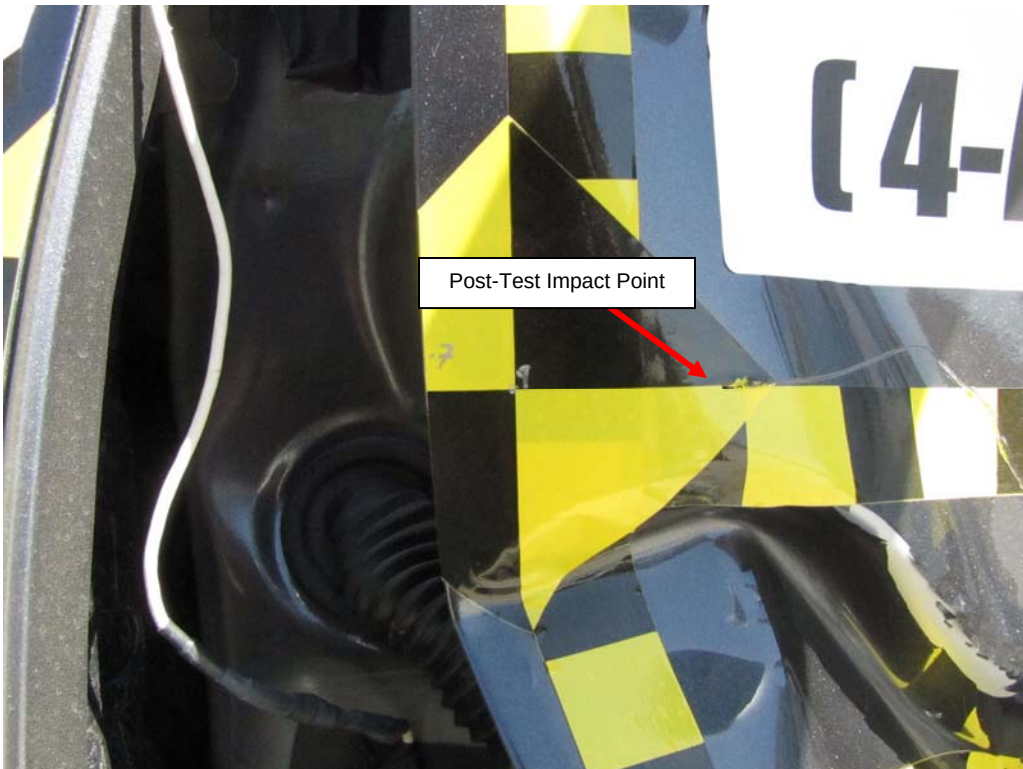


FIGURE 20. Post-Test Close-Up View of Impact Point Target
Showing Impact Point Location



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 to Show Position



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



FIGURE 37. Pre-Test View of Parking Brake



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



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



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



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 of 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

**Photograph Not
Applicable**

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

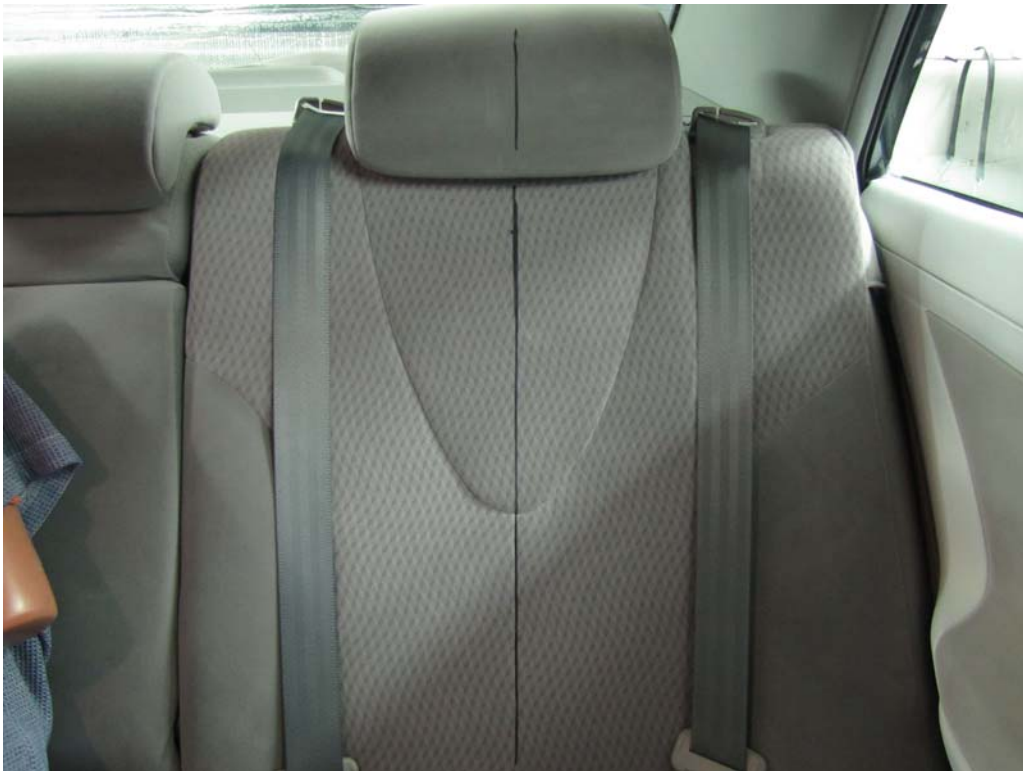


FIGURE 56. Pre-Test Frontal View of Rear Passenger Seat Back Prior to Dummy Positioning



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 to Show Position



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



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



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



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

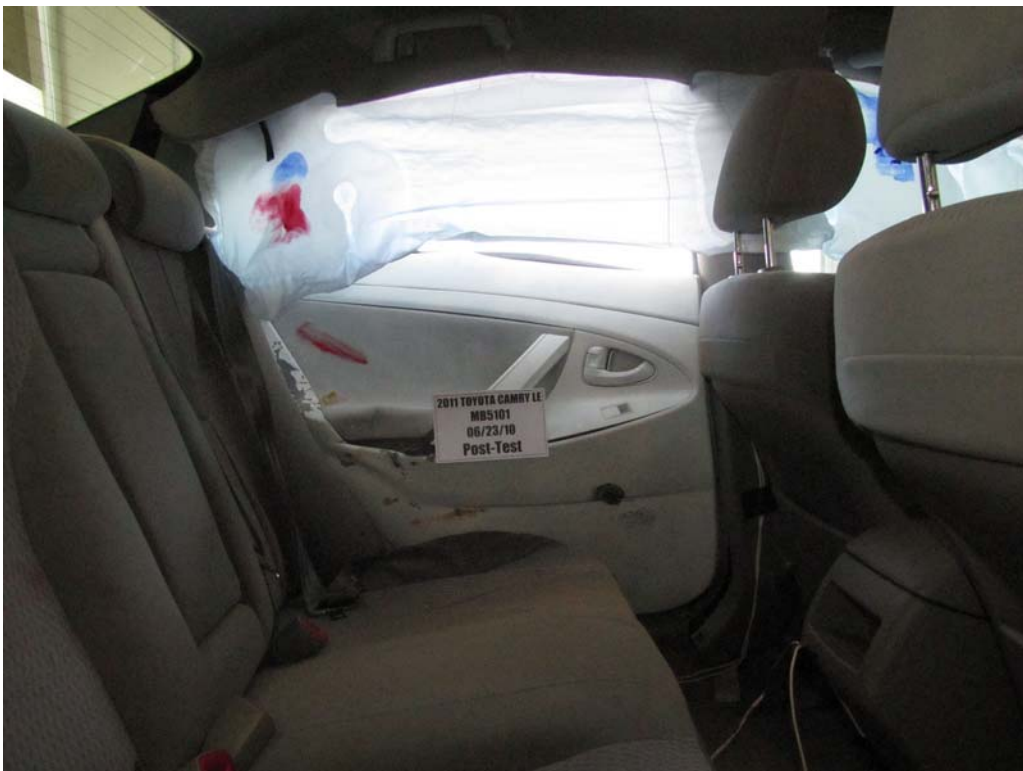


FIGURE 72. Post-Test Rear Passenger Inner Door Panel View
Showing Rear Passenger Dummy Contact Locations



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**

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**

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

Photograph Not Available

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°



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



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



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



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



FIGURE 98. Impact Event

TOYOTA
moving forward

DESC: **CAMRY** 4-DOOR LE SEDAN
VIN: **4T1BF3EK0BU148501**
YR/MOL: 2011/2532A
CLR: MAGNETIC GRAY MET./FB13 (R1C3/13)
PORT/PLANT: Georgetown, KY/TMMK RAL/HEAD

GOVERNMENT SAFETY RATINGS
S/NCAP M B5to1

This vehicle has not been rated by the government for frontal crash, side crash or rollover risk.
Source: National Highway Traffic Safety Administration (NHTSA).

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

EPA Fuel Economy Estimates

CITY MPG
22
Expected range for most drivers
18 to 26 MPG

Estimated Annual Fuel Cost
\$1,502
based on 15,000 miles
at \$2.69 per gallon

Highway MPG
32
Expected range for most drivers
26 to 38 MPG

Combined Fuel Economy
This Vehicle
26

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

STANDARD EQUIPMENT

MECHANICAL & PERFORMANCE

- 2.5L 4-Cyl. 24V 188-hp Dual VVT-i Engine
- 16" Steel Wheels w/ Covers
- Variable-Adjustable Power Rack-and-Pinion
- Permanently Fitted Solid Foil One-Lap Spare Tire

SAFETY

- Seat Safety System Includes VSC w/TRAC, ABS w/EBL, 8 Airbags
- Dr & Fr Pass Seat-Mounted Side Airbags
- Front & Rear Side Curtain Airbags
- Driver's Knee Airbag
- LAUNCH Anchor & Tether for Children
- Outboard Rear Seating Positions Only
- Direct Tire Pressure Monitor System

EXTERIOR

- Projector-Beam Headlamps with Auto On/Off Feature
- Daytime Running Lights (DRL) with On/Off Feature
- Color-Matched Power Outside Mirrors

COMFORT & CONVENIENCE

- Air Conditioning w/Active Filter
- AM/FM/CD Player w/MP3/WMA Capability
- 6 Speakers, XM Composite and Auxiliary Audio Jack
- Power Driver's Seat w/Lumbar Support
- 60/40 Fold Rear Bench w/ Adjustable Headrests and Center Armrest w/ Cup Holders
- Cruise Control
- Power Windows w/Auto Up/Down, Jam Protection & Retained-Power Features
- Power Door Locks
- U/L Automatic Steering Wheel w/Audio Controls
- Remote Keyless Entry System
- Variable Intermittent Windshield Wipers
- Center Console Armrest
- Rear Window Wiper w/Timer
- Full Tank of Gas

MANUFACTURER'S SUGGESTED RETAIL PRICE \$22,100.00

OPTIONAL EQUIPMENT

CA California Emissions:
On Certain Areas, 4-Cylinder Automatic Models are Equipped as Partial Zero Emission Vehicles (PZEV). For Camry 4-Cylinder Models Certified as Partial Zero Emission Vehicles (PZEV), All Emission Components are Covered for 15 Years or 150,000 Miles, Whichever Occurs First, For Performance or Defect, Curb/Trunk Max Wt.

CF 200.00
EF Rear Bumper Applique 69.00

DELIVERY PROCESSING AND HANDLING FEE 750.00

TOTAL \$23,119.00

The New Vehicle Limited Warranty provides 3 years/50,000 miles basic coverage. 5-year/100,000-mile powertrain coverage. See dealer for details. An extended service contract may be available for the vehicle. See dealer for details.

Dealer Name / Address: 00554 Ship to
JOHN LEMAY'S CAMRY TOYOTA
1201 KLEINER DRIVE
ONTARIO, ONTARIO CAN/751

FIGURE 99. Monroney Label

1-3. Adjustable components (seats, mirrors, steering wheel)

Head restraints

Head restraints are provided for all seats.

1 Up
Pull the head restraints up.

2 Down
Push the head restraint down while pushing the lock release button.

Removing the head restraints
Pull the head restraint up while pressing the lock release button.

Installing the head restraints
Align the head restraint with the installation holes and push it down to the lock position. Press and hold the lock release button when lowering the head restraint.

Adjusting the height of the head restraints
Make sure that the head restraints are adjusted so that the center of the head restraint is closest to the top of your ears.

Adjusting the rear center seat head restraint
Always raise the head restraint one level from the stowed position when using.

CAUTION

Head restraint precautions
Observe the following precautions regarding the head restraints. Failure to do so may result in death or serious injury.

- Use the head restraints designed for each respective seat.
- Adjust the head restraints to the correct position at all times.
- After adjusting the head restraints, push down on them and make sure they are locked in position.
- Do not drive with the head restraints removed.

NOTICE
When right head restraint is folded down, make sure the luggage stored in the rear cargo area will not interfere with the rear window seat belt.

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

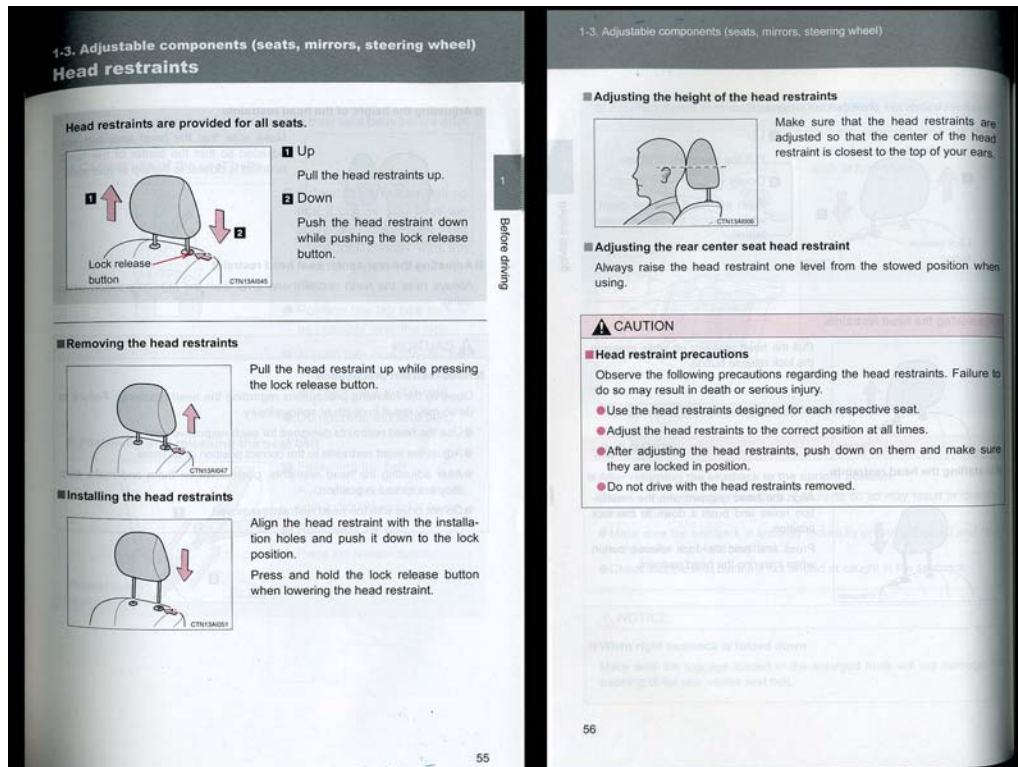


FIGURE 101. Left Rear Passenger Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

APPENDIX B
DUMMY RESPONSE DATA

TABLE OF DATA PLOTS

Plot		Page
1	Driver Head Acceleration (X) Primary vs. Time	B-1
2	Driver Head Acceleration (Y) Primary vs. Time	B-1
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
9	Driver Anterior Abdominal Force (Y) vs. Time	B-3
10	Driver Middle Abdominal Force (Y) vs. Time	B-3
11	Driver Posterior Abdominal Force (Y) vs. Time	B-3
12	Driver Total Abdominal Force (Y) vs. Time	B-3
13	Driver Pubic Symphysis Force (Y) vs. Time	B-4
14	Passenger Head Acceleration (X) vs. Time Primary	B-5
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
22	Passenger Iliac Force on Impact Side (Y) vs. Time	B-7
23	Passenger Acetabulum Force on Impact Side (Y) vs. Time	B-7
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)

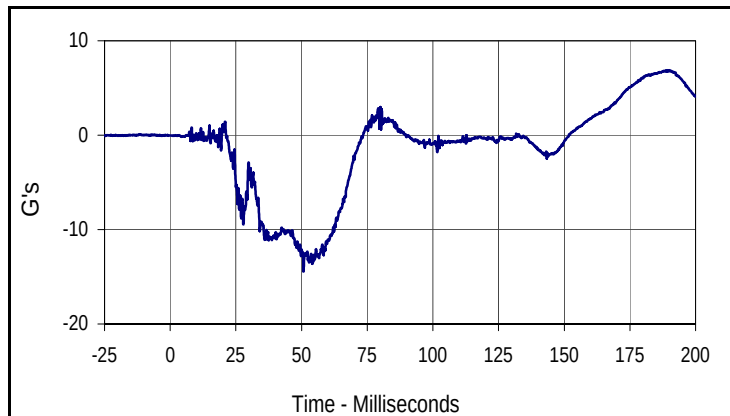
Front Seat Track Acceleration (Y)
Rear Seat Track Acceleration (Y)
Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)

MDB Instrumentation Data

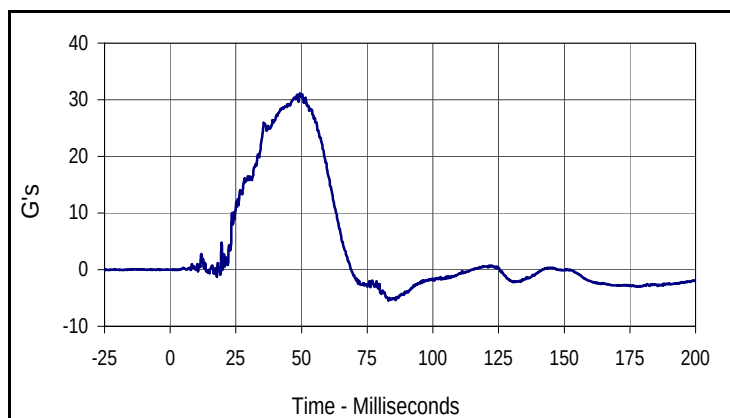
MDB Center of Gravity Acceleration (X)
MDB Center of Gravity Acceleration (Y)
MDB Center of Gravity Acceleration (Z)
MDB Rear Acceleration (X)
MDB Rear Acceleration (Y)
Left MDB Contact Switch
Right MDB Contact Switch

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

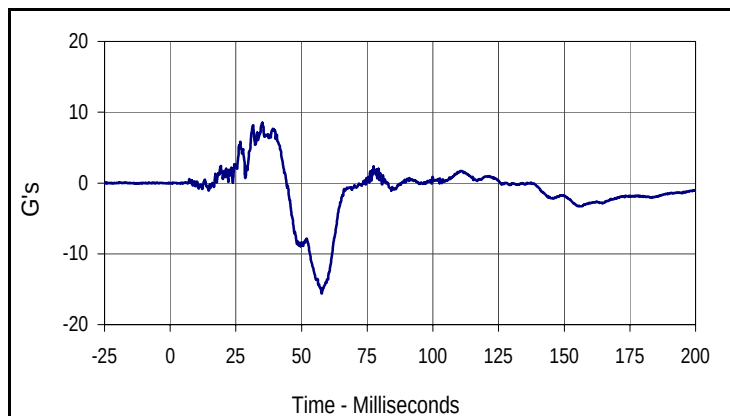
Test Date: 6/23/10
 NHTSA No.: MB5101



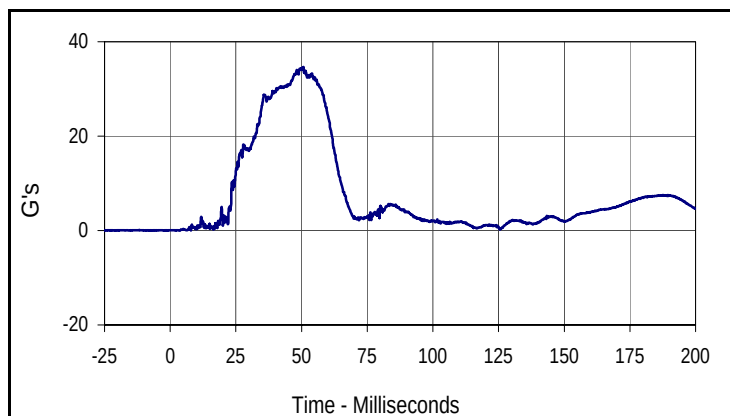
Curve Description			
Driver Head Acceleration X Primary			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
6.9	190.0	-14.4	50.8



Curve Description			
Driver Head Acceleration Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
31.1	49.4	-5.4	83.1



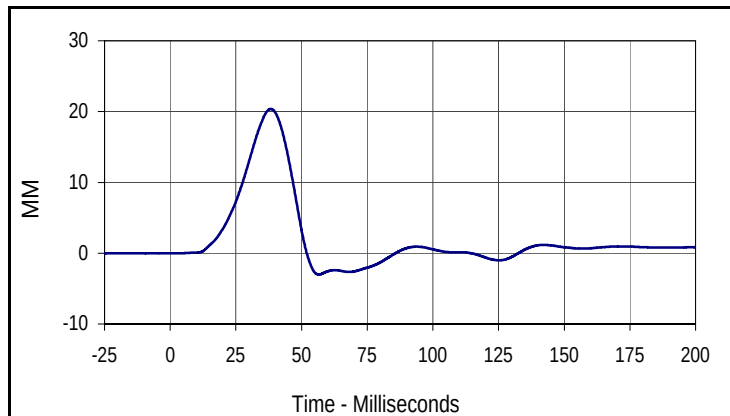
Curve Description			
Driver Head Acceleration Z Primary			
CURNO	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
8.5	35.0	-15.6	57.7



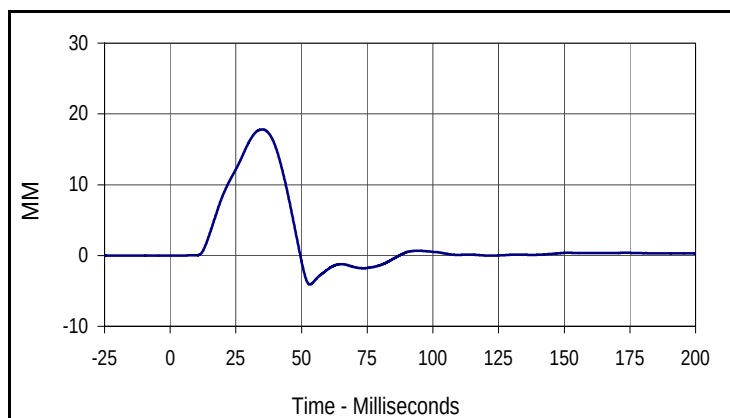
Curve Description			
Driver Head Resultant Acceleration Primary			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
34.6	50.7	0.0	2.2

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

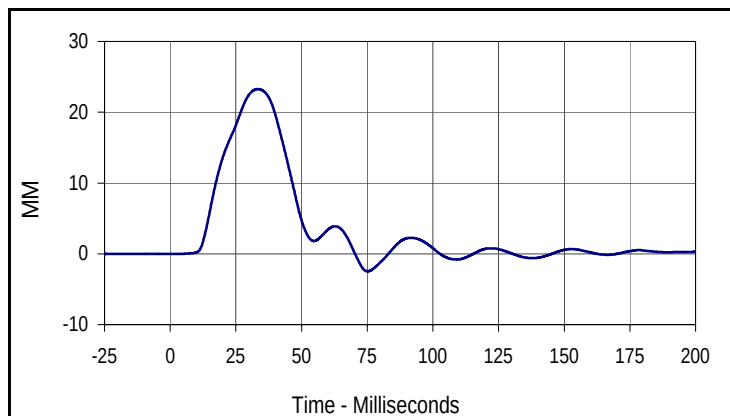
Test Date: 6/23/10
 NHTSA No.: MB5101



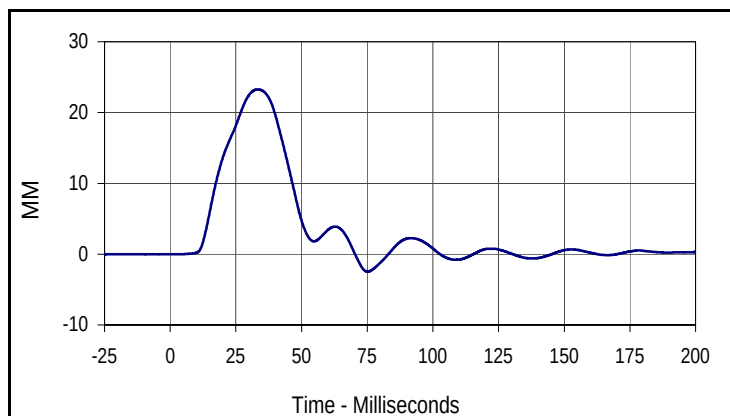
Curve Description			
Driver Upper Thorax Rib Deflection Y			
CURNO	Type	SAE Class	Units
007	FIL	180	MM
Max	Time	Min	Time
20.4	38.3	-3.0	56.5



Curve Description			
Driver Middle Thorax Rib Deflection Y			
CURNO	Type	SAE Class	Units
008	FIL	180	MM
Max	Time	Min	Time
17.8	35.0	-4.1	53.2



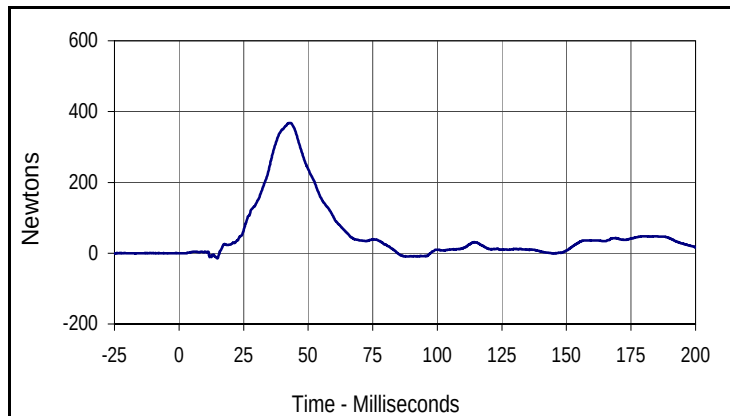
Curve Description			
Driver Lower Thorax Rib Deflection Y			
CURNO	Type	SAE Class	Units
009	FIL	180	MM
Max	Time	Min	Time
23.3	33.3	-2.5	75.2



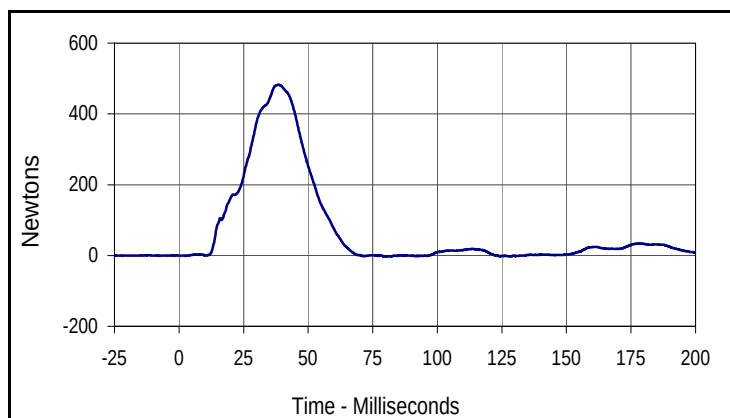
Curve Description			
Driver Thorax Rib Deflection Maximum			
CURNO	Type	SAE Class	Units
010	FIL	180	MM
Max	Time	Min	Time
23.3	33.3	-2.5	75.2

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

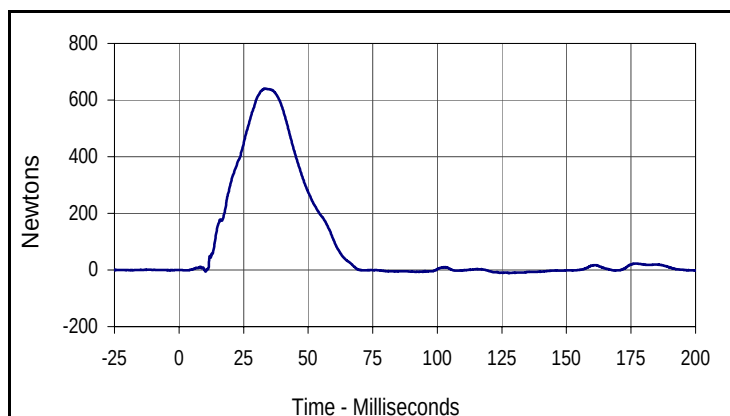
Test Date: 6/23/10
 NHTSA No.: MB5101



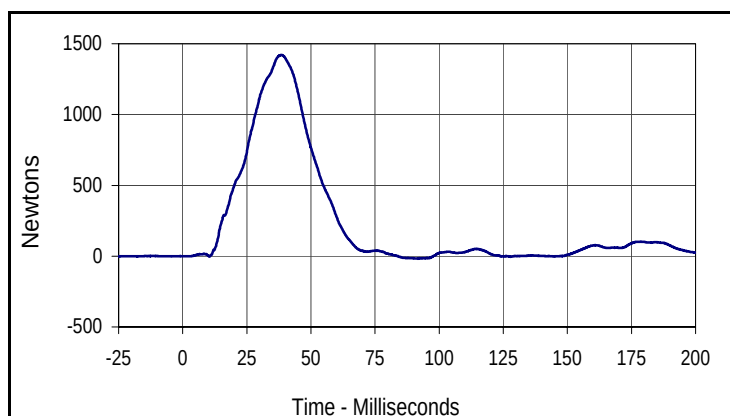
Curve Description			
Driver Anterior Abdominal Force Y			
CURNO	Type	SAE Class	Units
013	FIL	600	Newtons
Max	Time	Min	Time
368.1	42.9	-14.5	14.9



Curve Description			
Driver Middle Abdominal Force Y			
CURNO	Type	SAE Class	Units
014	FIL	600	Newtons
Max	Time	Min	Time
482.4	38.6	-3.5	79.2



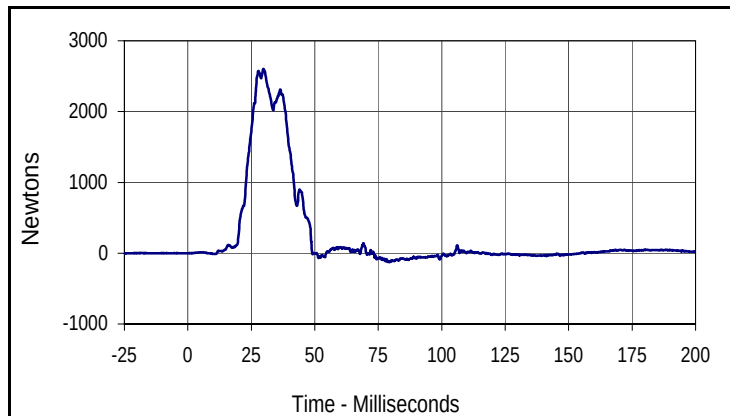
Curve Description			
Driver Posterior Abdominal Force Y			
CURNO	Type	SAE Class	Units
015	FIL	600	Newtons
Max	Time	Min	Time
640.5	33.3	-11.2	127.8



Curve Description			
Driver Total Abdominal Force Y			
CURNO	Type	SAE Class	Units
013	RES	600	Newtons
Max	Time	Min	Time
1421.7	38.6	-17.9	91.7

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

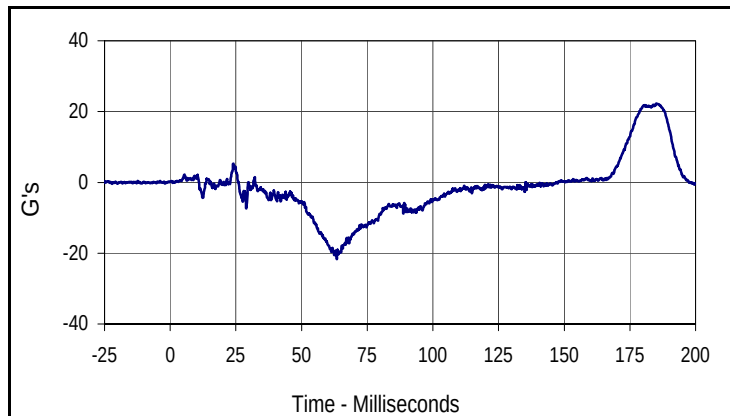
Test Date: 6/23/10
 NHTSA No.: MB5101



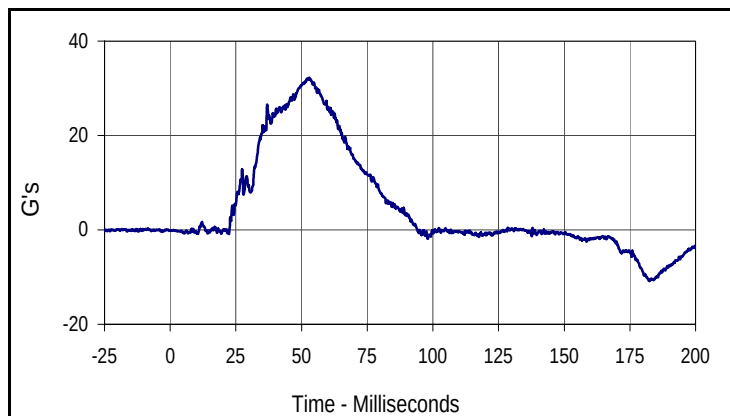
Curve Description			
Driver Pubic Symphysis Force Y			
CURNO	Type	SAE Class	Units
016	FIL	600	Newtons
Max	Time	Min	Time
2603.4	29.8	-127.1	79.2

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

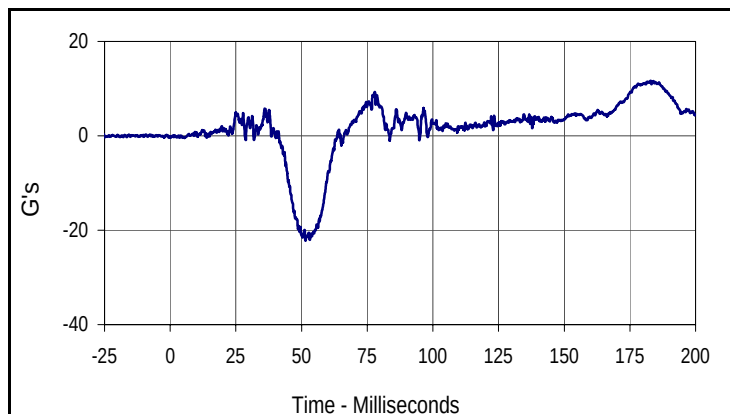
Test Date: 6/23/10
 NHTSA No.: MB5101



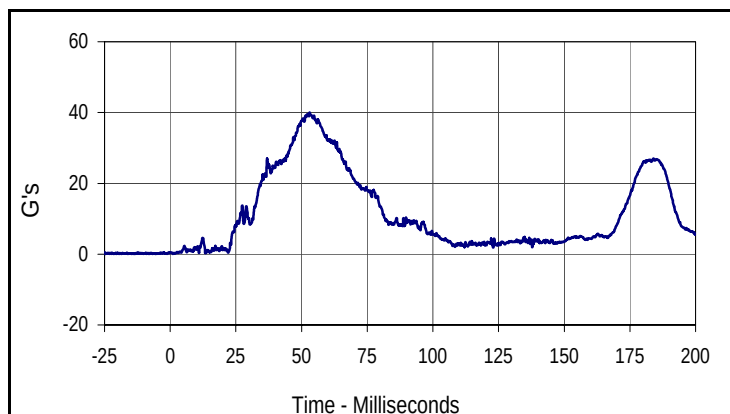
Curve Description			
Passenger Head Acceleration X Primary			
CURNO	Type	SAE Class	Units
021	FIL	1000	G's
Max	Time	Min	Time
22.3	185.0	-21.6	63.4



Curve Description			
Passenger Head Acceleration Y Primary			
CURNO	Type	SAE Class	Units
022	FIL	1000	G's
Max	Time	Min	Time
32.3	53.0	-10.9	182.3



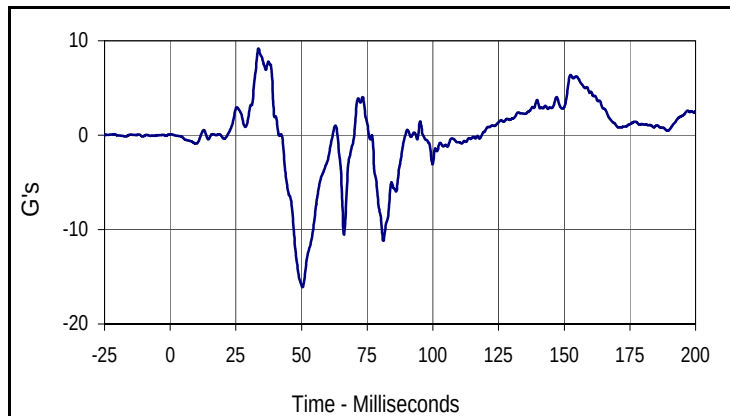
Curve Description			
Passenger Head Acceleration Z Primary			
CURNO	Type	SAE Class	Units
023	FIL	1000	G's
Max	Time	Min	Time
11.7	182.9	-22.2	51.5



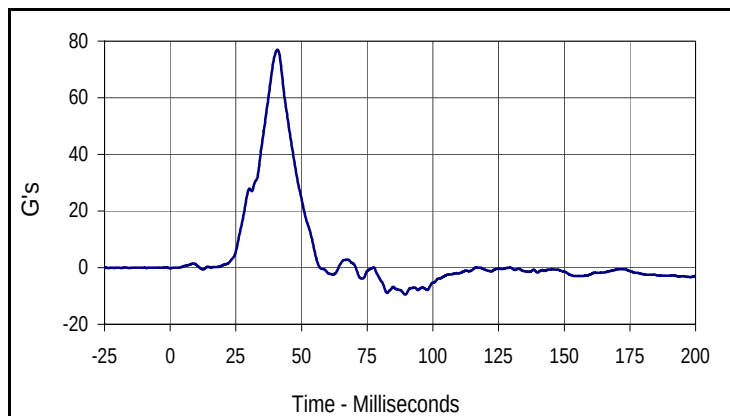
Curve Description			
Passenger Head Resultant Acceleration Primary			
CURNO	Type	SAE Class	Units
021	RES	1000	G's
Max	Time	Min	Time
40.0	53.1	0.1	1.1

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

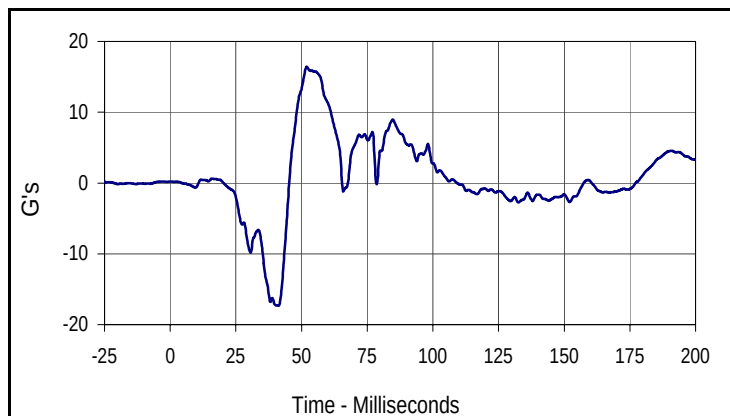
Test Date: 6/23/10
 NHTSA No.: MB5101



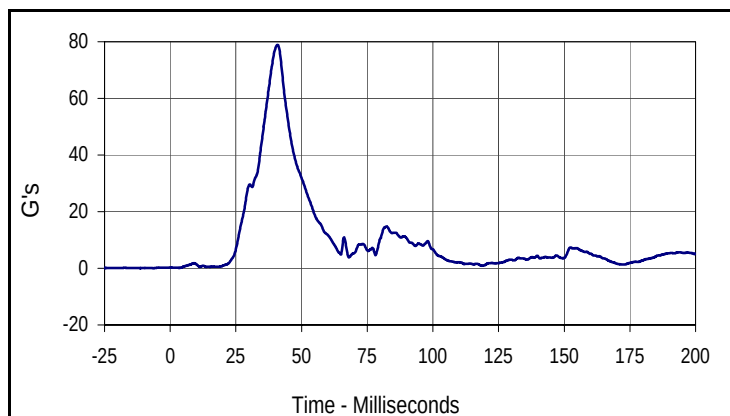
Curve Description			
Passenger Lower Spine T12 Acceleration X			
CURNO	Type	SAE Class	Units
037	FIL	180	G's
Max	Time	Min	Time
9.2	33.6	-16.1	50.4



Curve Description			
Passenger Lower Spine T12 Acceleration Y			
CURNO	Type	SAE Class	Units
038	FIL	180	G's
Max	Time	Min	Time
77.0	40.8	-9.5	89.4



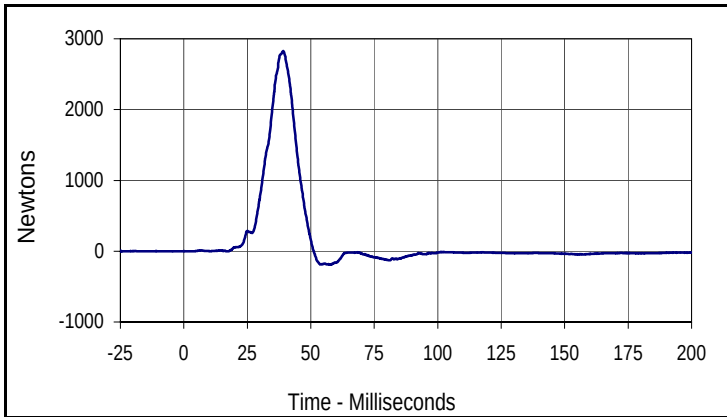
Curve Description			
Passenger Lower Spine T12 Acceleration Z			
CURNO	Type	SAE Class	Units
039	FIL	180	G's
Max	Time	Min	Time
16.4	52.0	-17.3	41.1



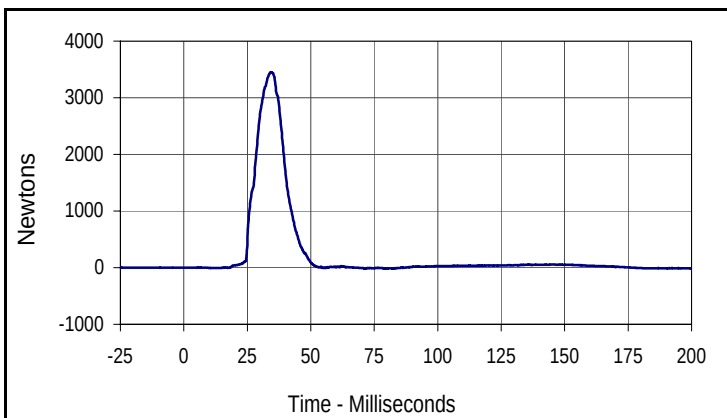
Curve Description			
Passenger Lower Spine T12 Resultant Acceleration			
CURNO	Type	SAE Class	Units
037	RES	180	G's
Max	Time	Min	Time
78.9	40.8	0.2	3.7

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

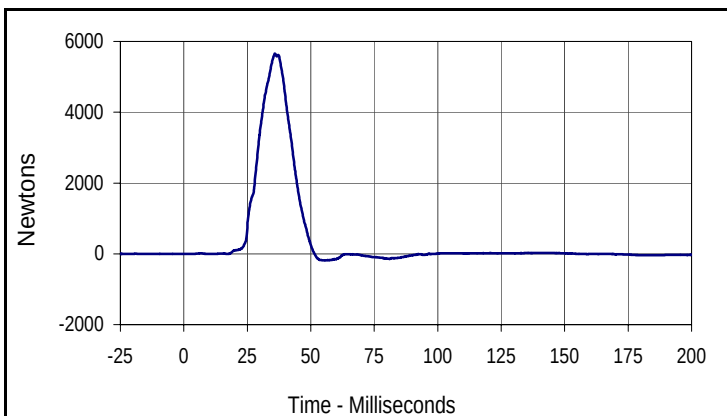
Test Date: 6/23/10
 NHTSA No.: MB5101



Curve Description			
Passenger Iliac Force on Impact Side Y			
CURNO	Type	SAE Class	Units
043	FIL	600	Newtons
Max	Time	Min	Time
2827.7	39.1	-190.2	57.7



Curve Description			
Passenger Acetabulum Force on Impact Side Y			
CURNO	Type	SAE Class	Units
042	FIL	600	Newtons
Max	Time	Min	Time
3453.1	34.3	-17.3	79.3



Curve Description			
Passenger Total Pelvic Force on Impact Side Y			
CURNO	Type	SAE Class	Units
042	SUM	600	Newtons
Max	Time	Min	Time
5656.5	35.9	-185.4	57.1

APPENDIX C
DUMMY CALIBRATION DATA

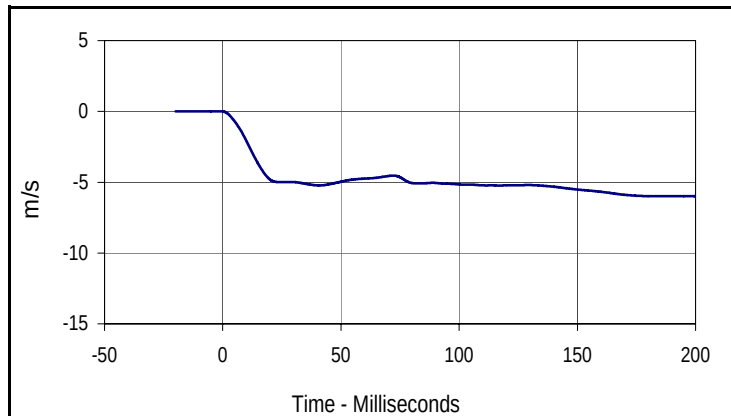
APPENDIX C
PRE-TEST / HIII CONFIGURATION AND PERFORMANCE VERIFICATION DATA

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

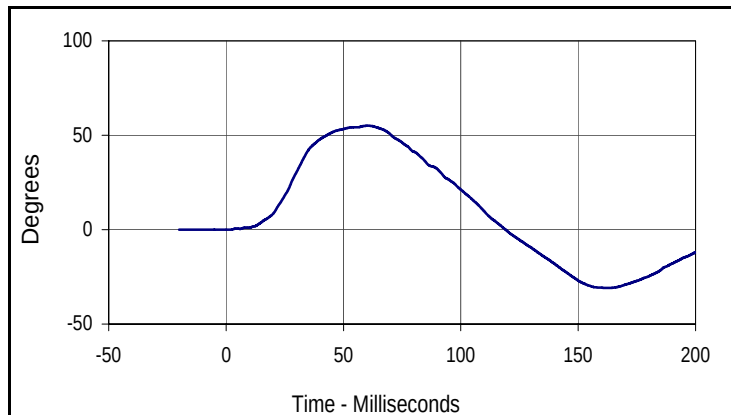
Test Date: 6/11/10
 Test I.D.: NB06A



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	3.36	Pass
Pendulum Deceleration	1 msec	m/s	0.0 to -.050	-0.046	Pass
	3 msec	m/s	-.250 to -.375	-0.297	Pass
	14 msec	m/s	-3.20 to -3.70	-3.40	Pass
Headform Rotation	Max	Degrees	49.0 to 58.0	55.0	Pass
	Time	msec	54.0 to 66.0	60.8	Pass
Maximum Rotation To Time Zero Crossing		msec	53.0 to 88.0	58.3	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	-1.3	-6.0	200.0



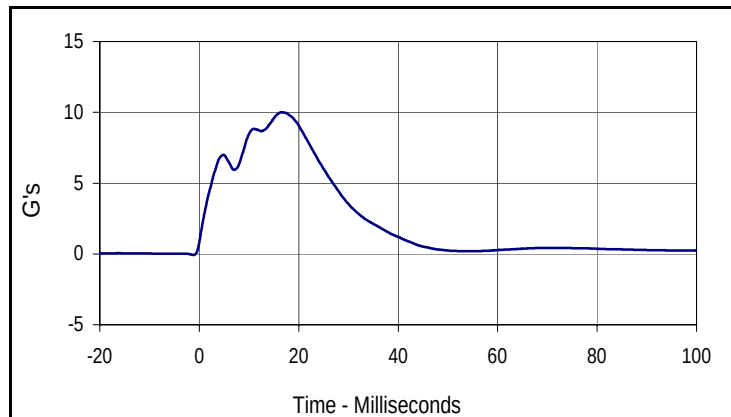
Curve Description			
Headform Rotation			
CURNO	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
55.0	60.8	-30.8	162.5

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

Test Date: 6/11/10
 Test I.D.: SH06A



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	4.22	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	10.0	Pass
Overall Test Results			Pass	



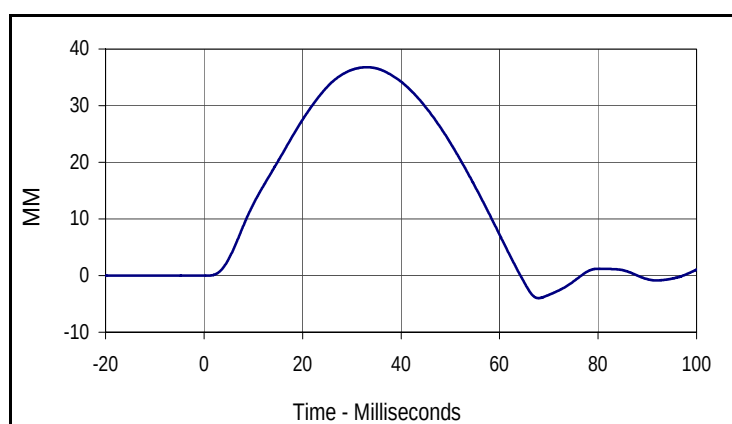
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
10.0	16.6	-0.1	-1.2

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

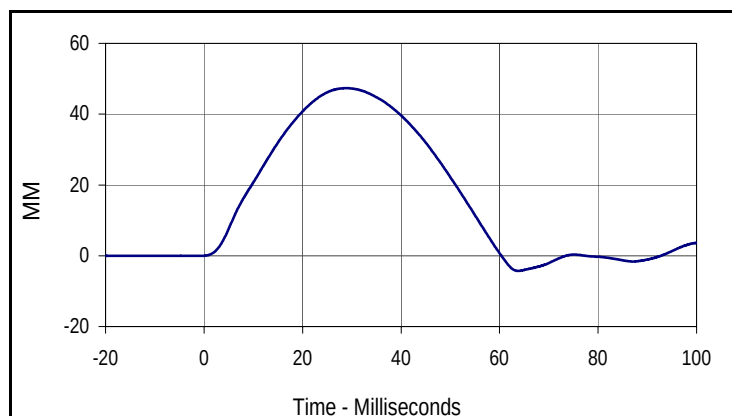
Test Date: 6/11/10
 Test I.D.: RIB06A



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	36.8	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	47.3	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
36.8	33.1	-4.0	67.9



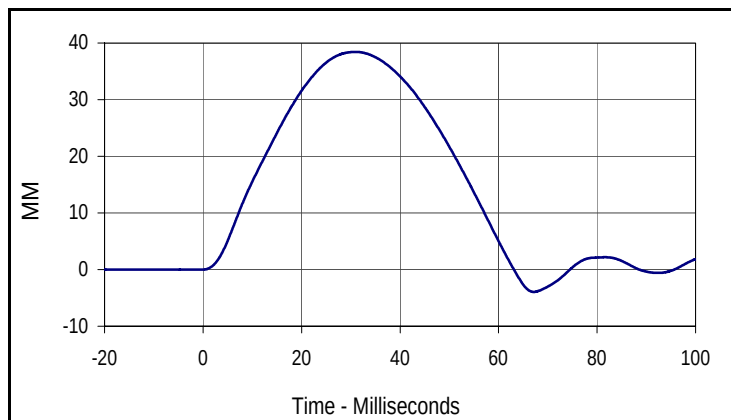
Curve Description			
Upper Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
47.3	28.9	-4.3	63.7

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

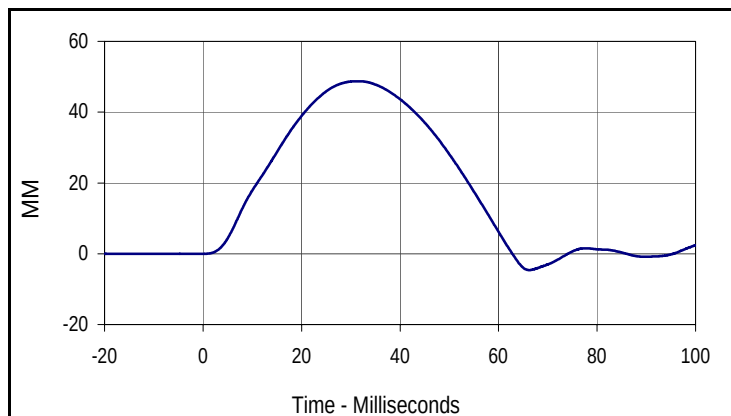
Test Date: 6/11/10
 Test I.D.: RIB06A



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	38.4	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	48.7	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
38.4	30.9	-3.9	67.2



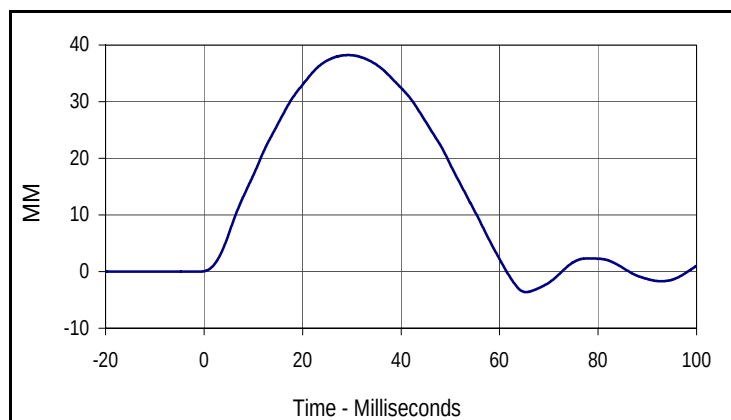
Curve Description			
Middle Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
48.7	31.5	-4.6	66.2

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

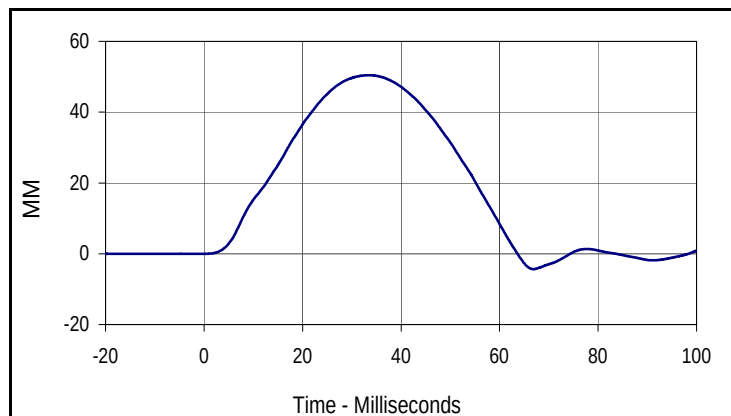
Test Date: 6/11/10
 Test I.D.: RIB06A



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	50.4	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
38.2	29.3	-3.6	65.4



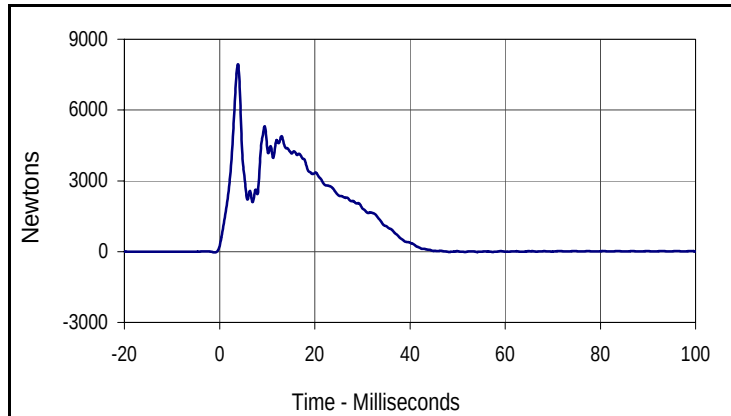
Curve Description			
Lower Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
50.4	33.4	-4.3	66.9

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

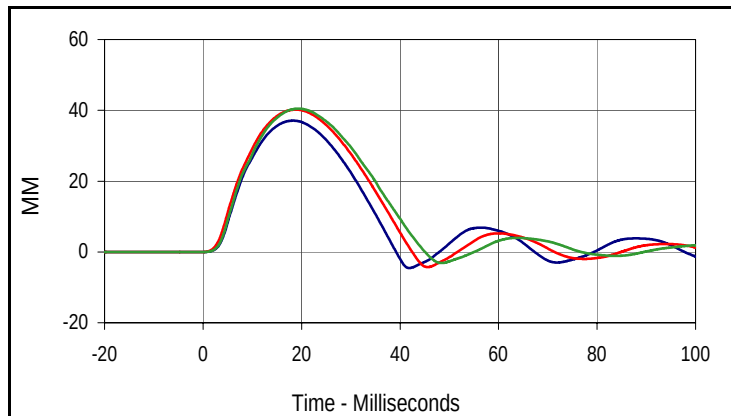
Test Date: 6/11/10
 Test I.D.: TH06A



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	5.43	Pass
Impactor Force	N	5100 to 6200	5312.1	Pass
	msec	> 6.0 msec	9.5	Pass
Upper Rib Deflection	MM	34 to 41	37.1	Pass
Middle Rib Deflection	MM	37 to 45	40.2	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
7932.7	3.8	-32.2	-1.0



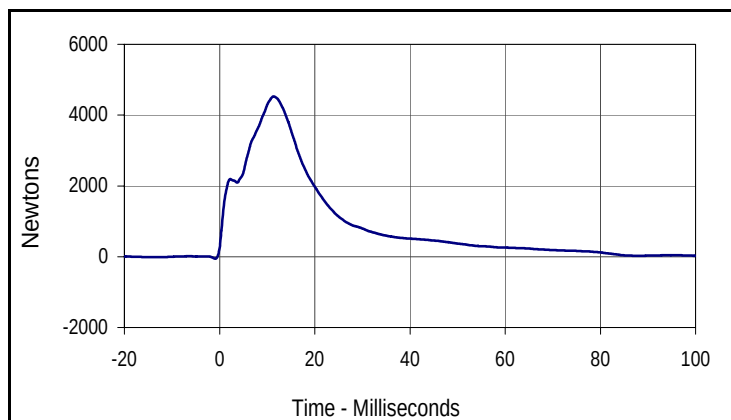
Curve Description			
Upper, Middle, Lower Rib Deflections			
CURNO(s)	Type	SAE Class	Units
002-003-004	FIL	180	MM
Max (Upper)	Time	Min (Upper)	Time
37.1	18.3	-4.6	41.9
Max (Middle)	Time	Min (Middle)	Time
40.2	18.9	-4.3	45.6
Max (Lower)	Time	Min (Lower)	Time
40.5	19.4	-3.1	48.4

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

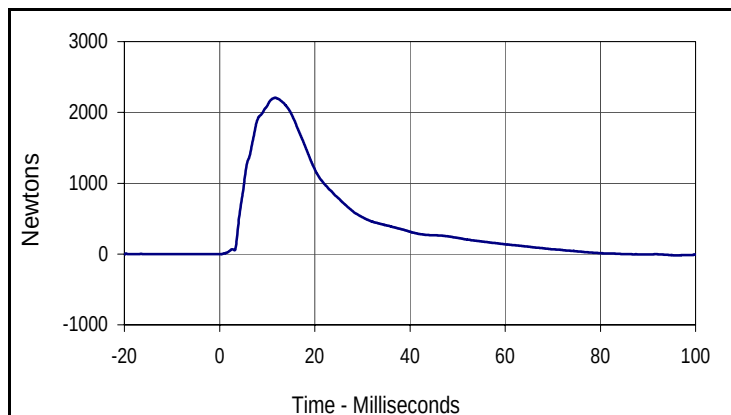
Test Date: 6/12/10
 Test I.D.: AB06A



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	3.96	Pass
Impactor Force	N	4000 to 4800	4527.7	Pass
	msec	10.6 to 13.0	11.3	Pass
Abdominal Force	N	2200 to 2700	2206.8	Pass
	msec	10.0 to 12.3	11.7	Pass
Overall Test Results				Pass



Curve Description			
Corrected Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4527.7	11.3	-54.0	-0.9



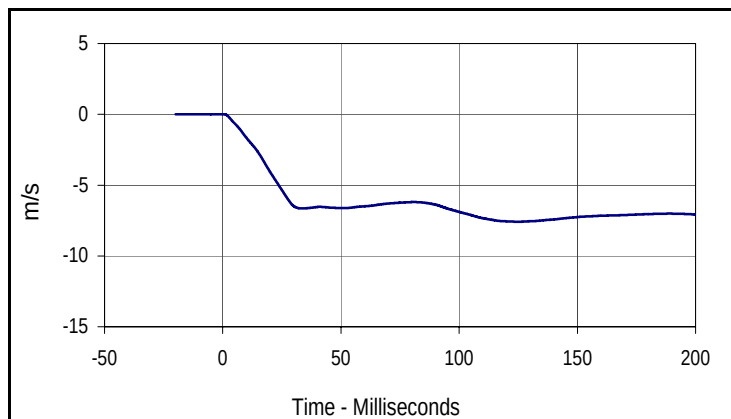
Curve Description			
Abdomen Sum Resultant			
CURNO	Type	SAE Class	Units
002	RES	600	Newtons
Max	Time	Min	Time
2206.8	11.7	-18.9	96.1

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

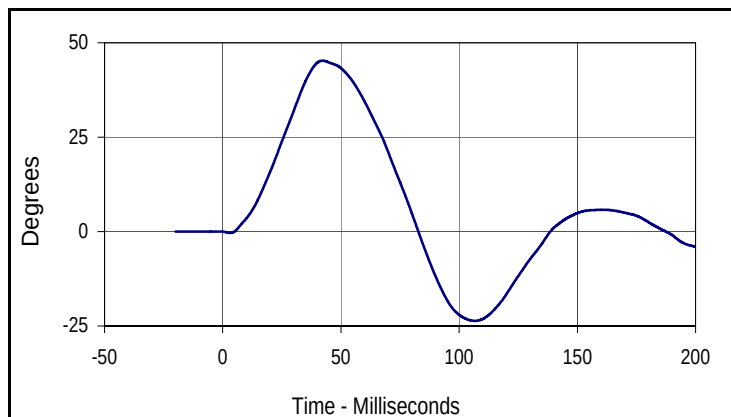
Test Date: 6/12/10
 Test I.D.: SP06A



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	6.08	Pass
Pendulum Deceleration	1 msec	m/s	0.0 to -.050	-0.004	Pass
	3.7 msec	m/s	-.240 to -.425	-0.405	Pass
	27 msec	m/s	-5.80 to -6.50	-5.86	Pass
	30 msec	m/s	< -6.50	-6.48	Pass
Headform Rotation	Max	Degrees	45.0 to 55.0	45.3	Pass
	Time	msec	39.0 to 53.0	42.2	Pass
Maximum Rotation To Time Zero Crossing		msec	37.0 to 57.0	40.6	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	0.4	-7.6	125.0



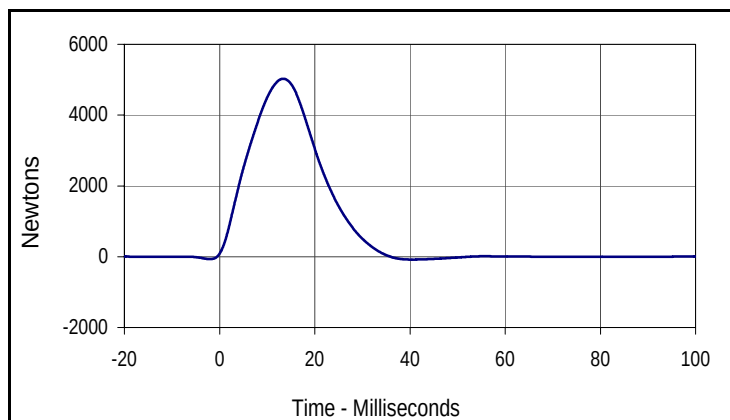
Curve Description			
Headform Rotation			
CURNO	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
45.3	42.2	-23.6	106.6

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

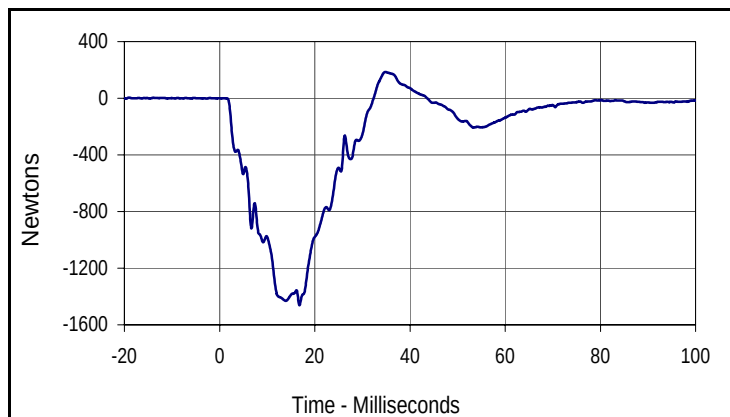
Test Date: 6/12/10
 Test I.D.: PL06A



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	4.26	Pass
Impactor Force	N	4700 to 5400	5027.6	Pass
	msec	11.8 to 16.1	13.4	Pass
Pubic Symphysis Load	N	-1230 to -1590	-1463.1	Pass
	msec	12.2 to 17.0	16.8	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	60	Newtons
Max	Time	Min	Time
5027.6	13.4	-80.3	40.4



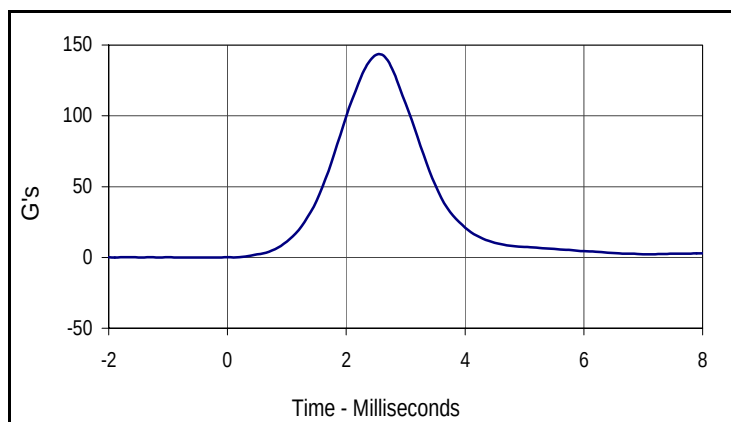
Curve Description			
Pubic FY			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
185.9	34.8	-1463.1	16.8

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

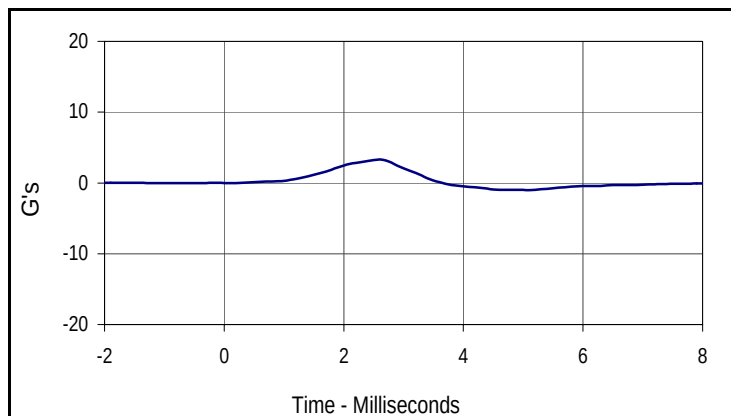
Test Date: 6/12/10
 Test I.D.: HD06A



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	143.3	Pass
Peak Longitudinal Acceleration	G's	≤15	3.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	5.2	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
143.3	2.6	0.0	-0.2



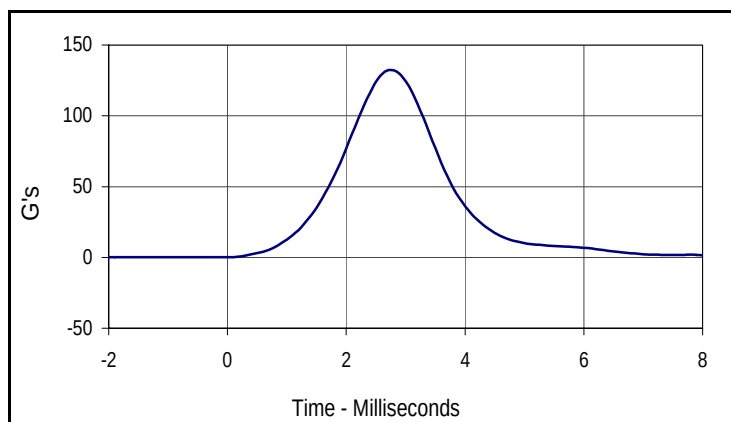
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
3.3	2.6	-1.0	5.1

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

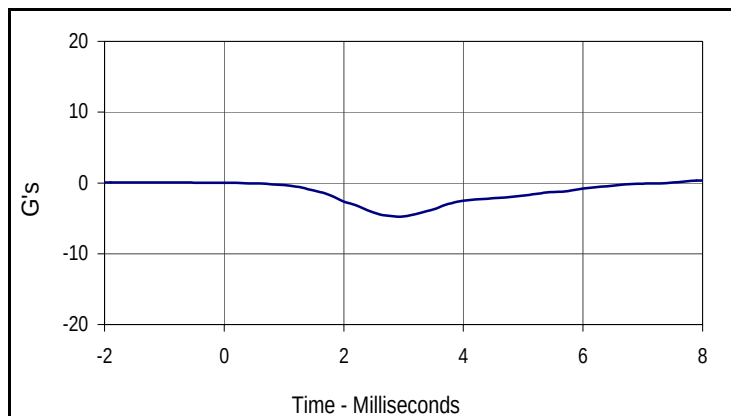
Test Date: 6/22/10
 Test I.D.: HD06B



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	132.2	Pass
Peak Longitudinal Acceleration	G's	≤15	4.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	7.6	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
132.2	2.8	0.1	-0.7



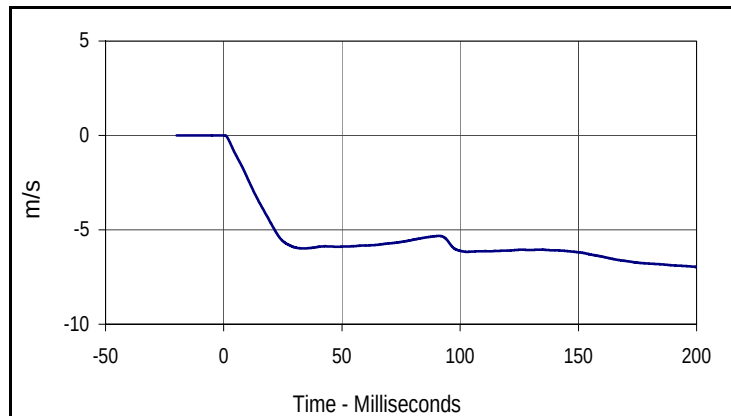
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.1	-0.8	-4.8	2.9

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

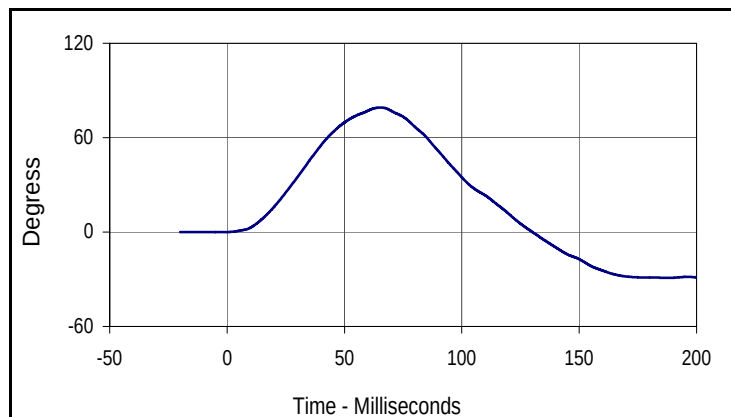
Test Date: 6/22/10
 Test I.D.: NB06B



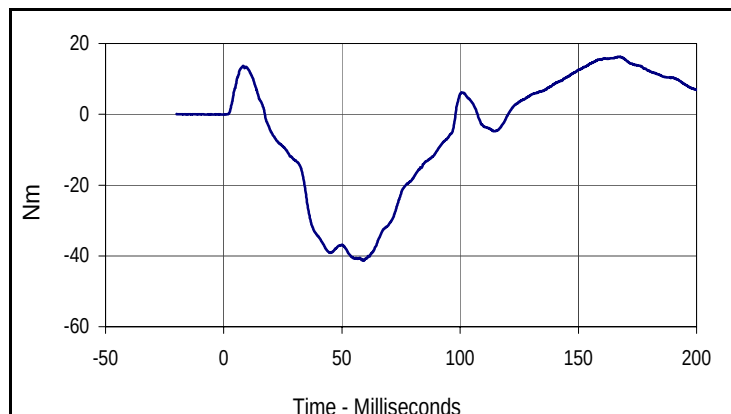
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.61	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.3	Pass
	15 msec	m/s	-3.30 to -4.10	-3.5	Pass
	20 msec	m/s	-4.40 to -5.40	-4.7	Pass
	25 msec	m/s	-5.40 to -6.10	-5.6	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.1	Pass
Translation-Rotation	Max	Degrees	71.0 to 81.0	79.1	Pass
	Time	msec	50.0 to 70.0	65.4	Pass
Peak Occipital Condyle Moment		Nm	-36.0 to -44.0	-41.3	Pass
Decaying Moment Time to Cross 0 Nm		msec	102.0 to 126.0	120.3	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	-7.0	200.0



Curve Description			
Maximum Translation Rotation			
CURNO	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
79.1	65.4	-29.1	187.5



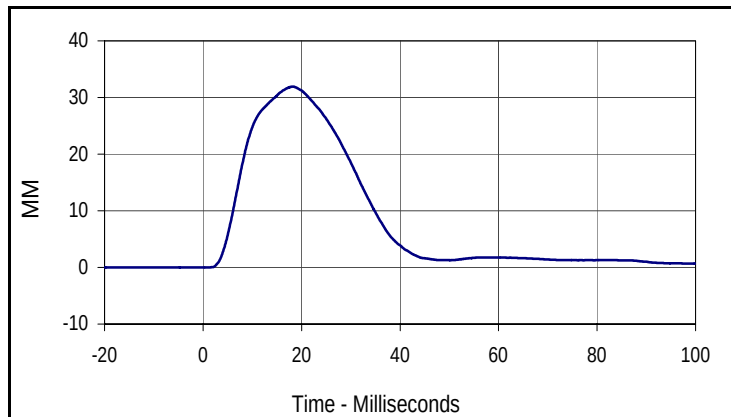
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
16.3	166.8	-41.3	59.0

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

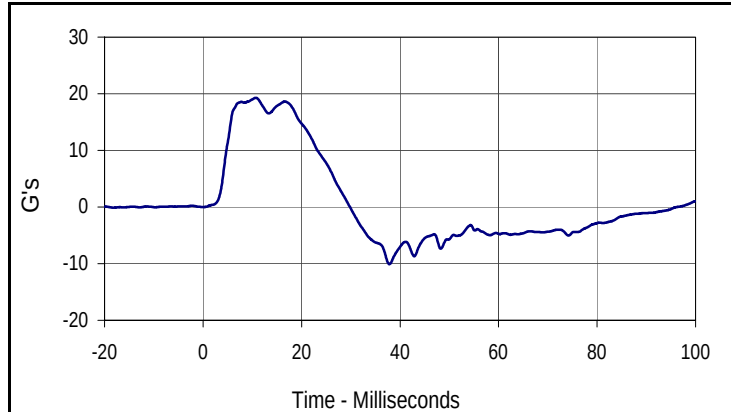
Test Date: 6/22/10
 Test I.D.: SH06B



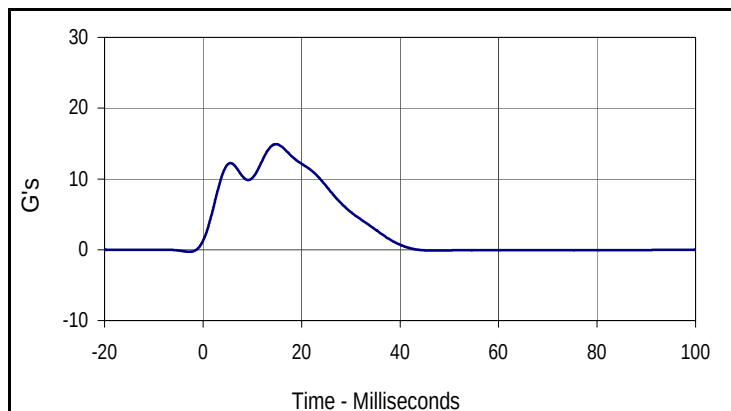
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.33	Pass
Shoulder Deflection	MM	28 to 37	31.9	Pass
Peak Upper Spine Y Acceleration	G's	17 to 22	19.3	Pass
Peak Impactor Acceleration	G's	13 to 18	14.9	Pass
Overall Test Results			Pass	



Curve Description			
Shoulder Acceleration			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
31.9	18.3	0.0	0.4



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
19.3	10.7	-10.1	37.8



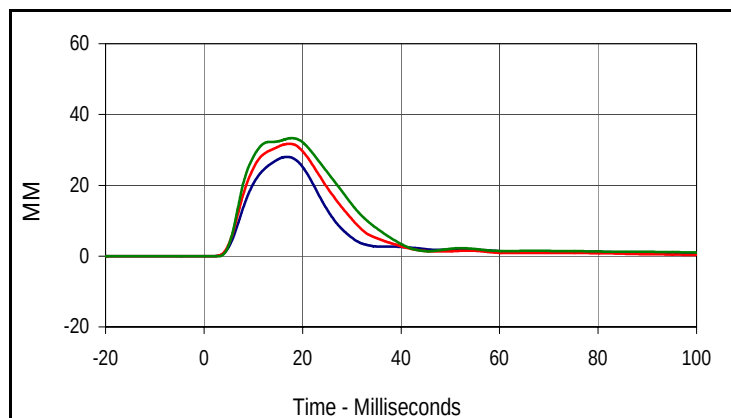
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	60	G's
Max	Time	Min	Time
14.9	14.8	-0.3	-2.8

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

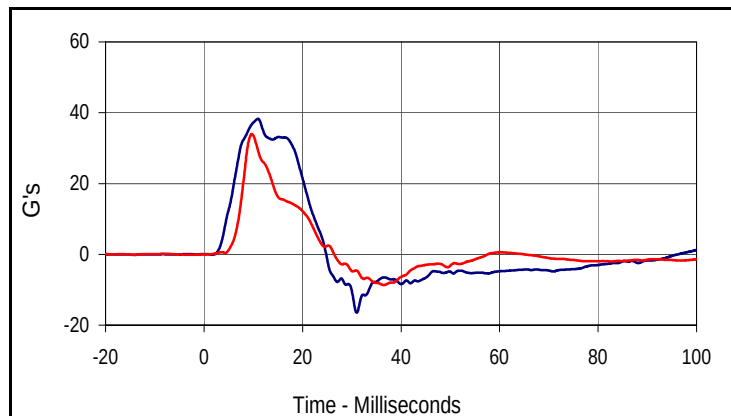
Test Date: 6/22/10
 Test I.D.: TH06B



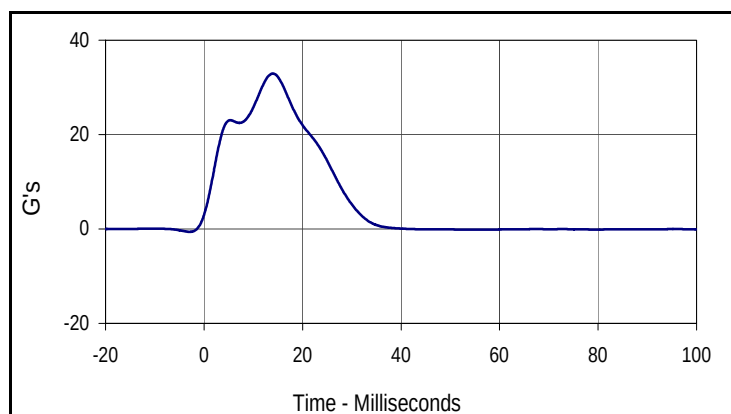
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.74	Pass
Shoulder Deflection	MM	31 to 40	36.8	Pass
Upper Thorax Rib Deflection	MM	25 to 32	28.0	Pass
Middle Thorax Rib Deflection	MM	30 to 36	31.7	Pass
Lower Thorax Rib Deflection	MM	32 to 38	33.3	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	38.3	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	33.9	Pass
Peak Impactor Acceleration After 5 msec.	G's	30 to 36	32.9	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
28.0	16.9	0.0	1.6
Middle Thorax Deflection			
Max	Time	Min	Time
31.7	17.4	0.0	2.0
Lower Thorax Deflection			
Max	Time	Min	Time
33.3	17.8	-0.1	2.7



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
38.3	11.0	-16.5	31.0
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
33.9	9.7	-8.7	36.5



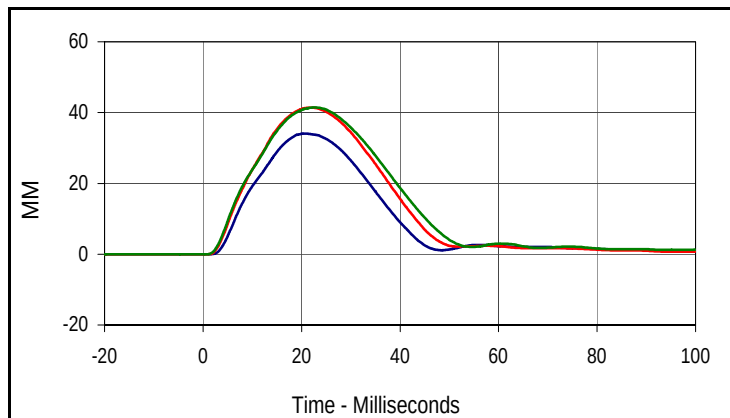
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	60	G's
Max	Time	Min	Time
32.9	14.0	-0.6	-2.9

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

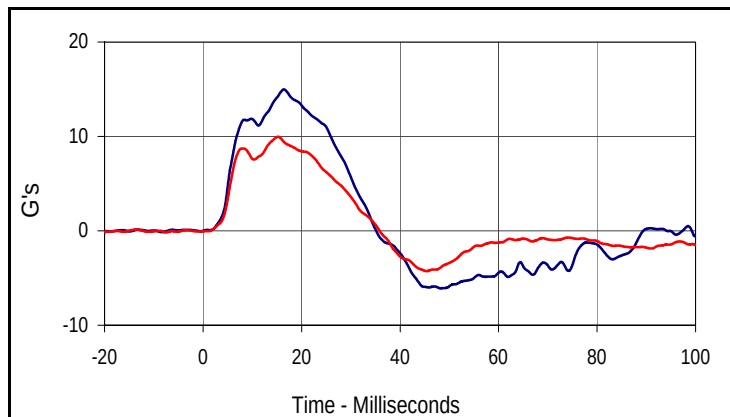
Test Date: 6/22/10
 Test I.D.: TOA6B



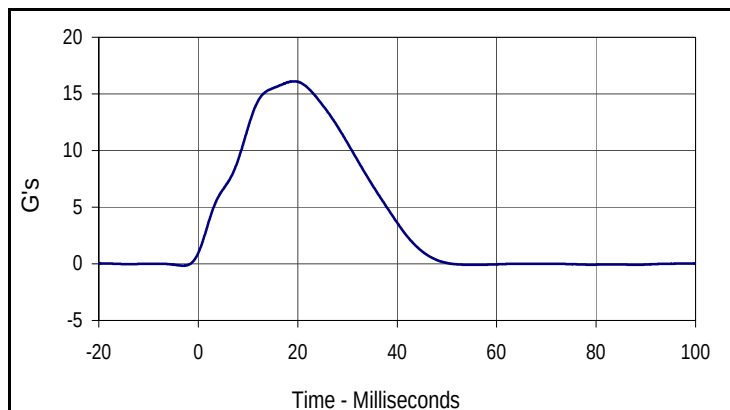
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.28	Pass
Upper Thorax Rib Deflection	MM	32 to 40	34.1	Pass
Middle Thorax Rib Deflection	MM	39 to 45	41.4	Pass
Lower Thorax Rib Deflection	MM	35 to 43	41.5	Pass
Peak Upper Spine Y Acceleration	G's	13 to 17	15.0	Pass
Peak Lower Spine Y Acceleration	G's	7 to 11	10.0	Pass
Peak Impactor Acceleration	G's	14 to 18	16.1	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
34.1	20.7	0.0	-4.1
Middle Thorax Deflection			
Max	Time	Min	Time
41.4	22.0	0.0	-13.4
Lower Thorax Deflection			
Max	Time	Min	Time
41.5	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
15.0	16.4	-6.1	48.2
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
10.0	15.2	-4.3	45.4



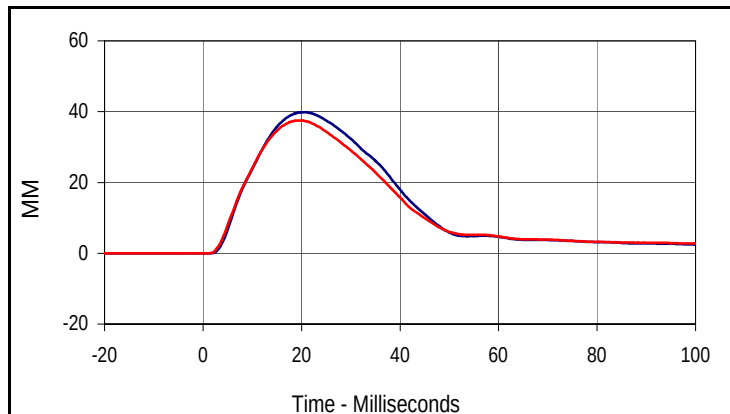
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	60	G's
Max	Time	Min	Time
16.1	19.3	-0.2	-3.0

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

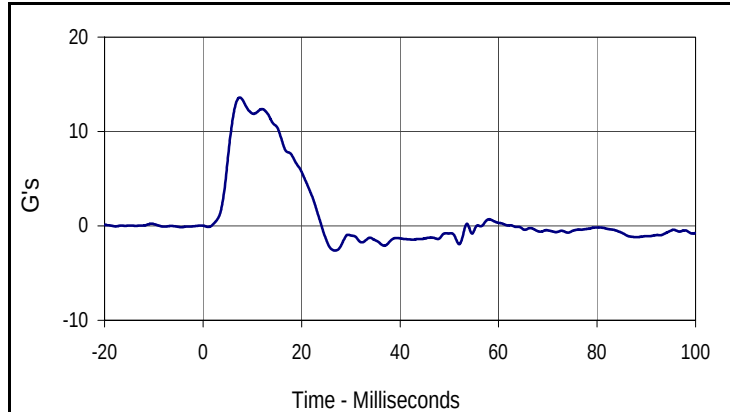
Test Date: 6/22/10
 Test I.D.: AB06B



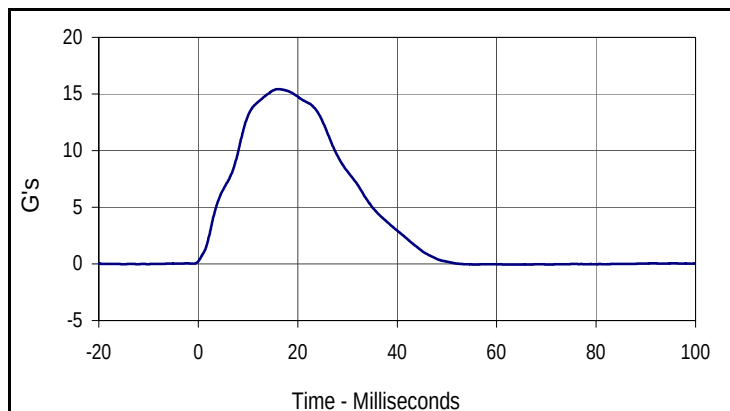
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.31	Pass
Upper Abdominal Rib Deflection	MM	36 to 47	39.8	Pass
Lower Abdominal Rib Deflection	MM	33 to 44	37.5	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	13.6	Pass
Peak Impactor Acceleration	G's	12 to 16	15.4	Pass
Overall Test Results			Pass	



Curve Description			
Upper Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
39.8	20.2	0.0	-8.9



Curve Description			
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
13.6	7.5	-2.6	26.8



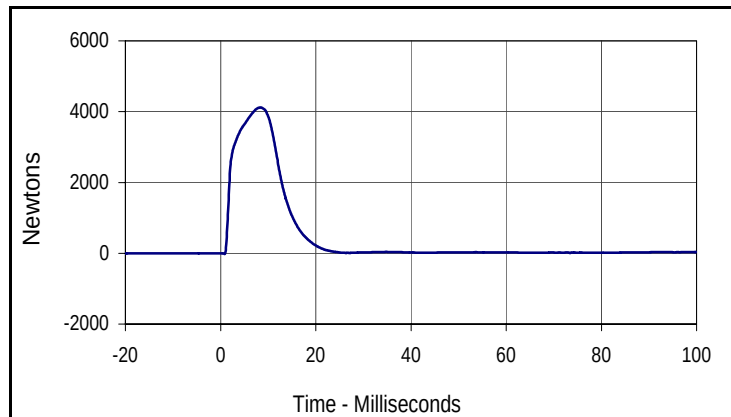
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.4	16.1	-0.1	64.2

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

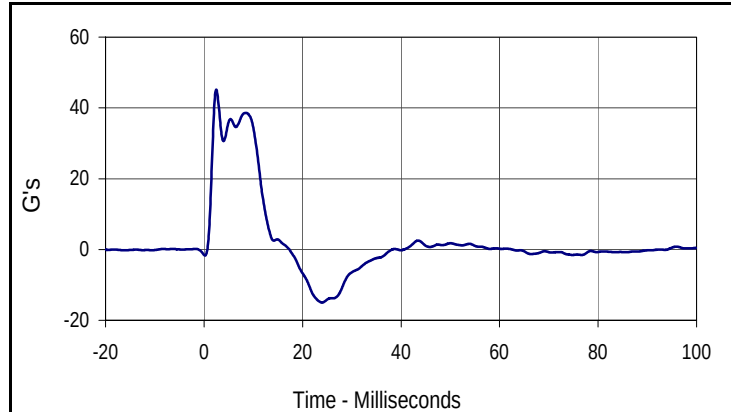
Test Date: 6/22/10
 Test I.D.: PA06B



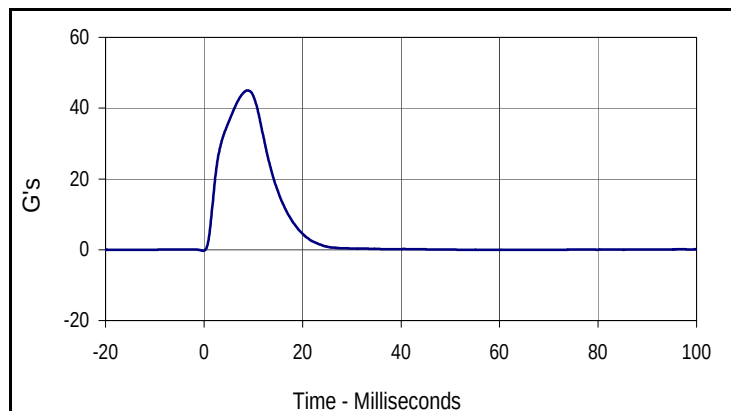
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.75	Pass
Peak Acetabulum Force	Newtons	3600 to 4300	4116.7	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	38.6	Pass
Peak Impactor Acceleration	G's	38 to 47	45.0	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



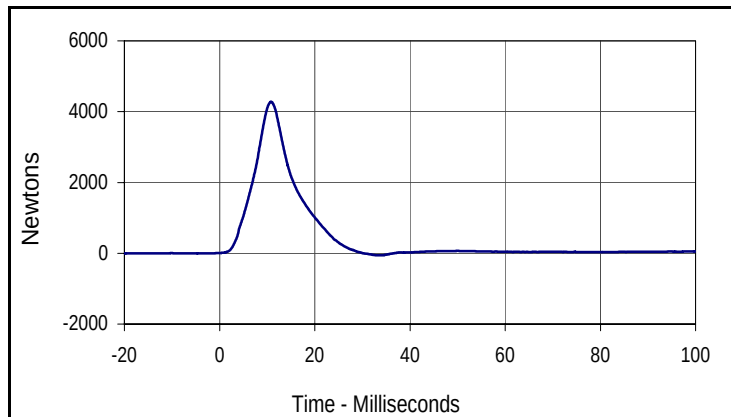
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
45.0	8.8	-0.3	-0.2

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

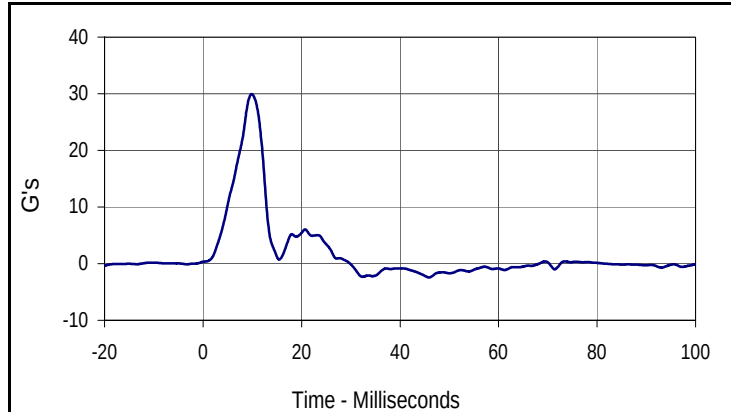
Test Date: 6/22/10
 Test I.D.: PL06B



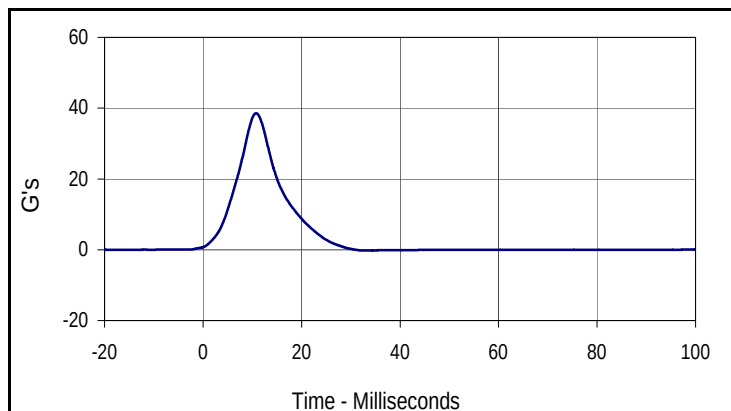
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.28	Pass
Peak Iliac Force	Newtons	4100 to 5100	4280.1	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	29.9	Pass
Peak Impactor Acceleration	G's	36 to 45	38.6	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Iliac Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4280.1	10.8	-61.0	34.1



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
29.9	9.9	-2.4	45.9



Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
38.6	10.8	-0.2	32.6

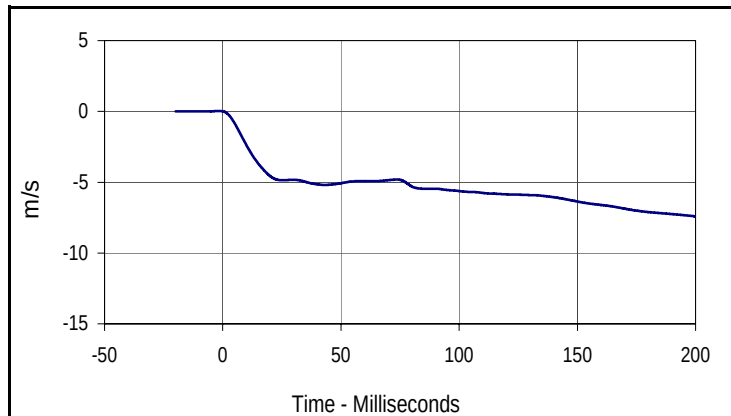
APPENDIX C
POST-TEST / HIII CONFIGURATION AND PERFORMANCE VERIFICATION DATA

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

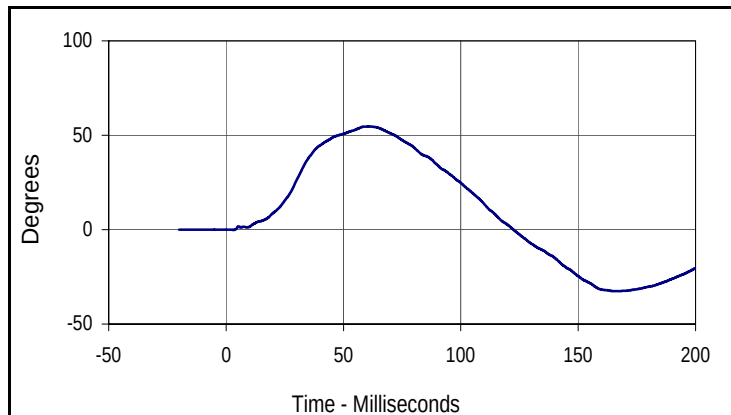
Test Date: 6/25/10
 Test I.D.: NB06B



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	-0.049	Pass
	3 msec	m/s	-.250 to -.375	-0.336	Pass
	14 msec	m/s	-3.20 to -3.70	-3.45	Pass
Headform Rotation	Max	Degrees	49.0 to 58.0	54.7	Pass
	Time	msec	54.0 to 66.0	61.0	Pass
Maximum Rotation To Time Zero Crossing		msec	53.0 to 88.0	61.5	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	-1.4	-7.4	200.0



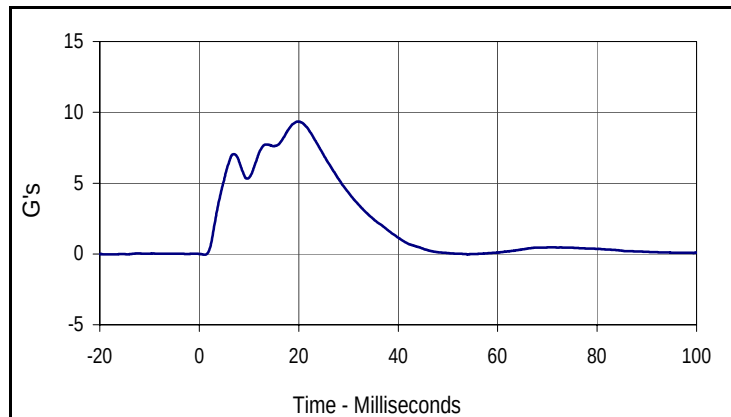
Curve Description			
Headform Rotation			
CURNO	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
54.7	61.0	-32.5	164.9

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

Test Date: 6/25/10
 Test I.D.: SH06B



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	4.26	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	9.3	Pass
Overall Test Results			Pass	



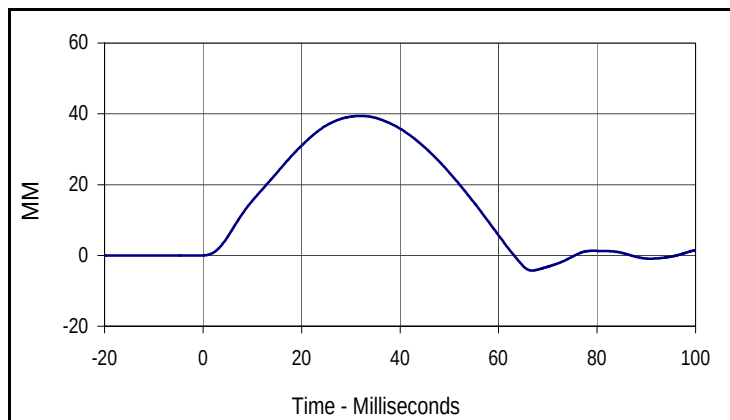
Curve Description			
Probe Impactor Acceleration			
CURNO	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
9.3	19.8	-0.1	1.1

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

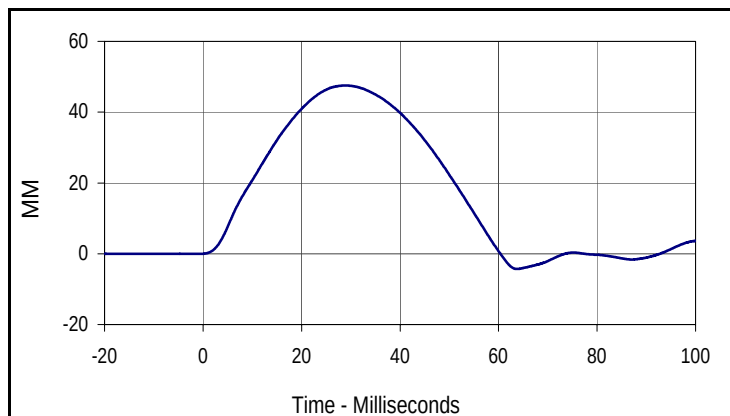
Test Date: 6/25/10
 Test I.D.: RIB106B



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	39.4	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	47.5	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
39.4	32.0	-4.3	66.8



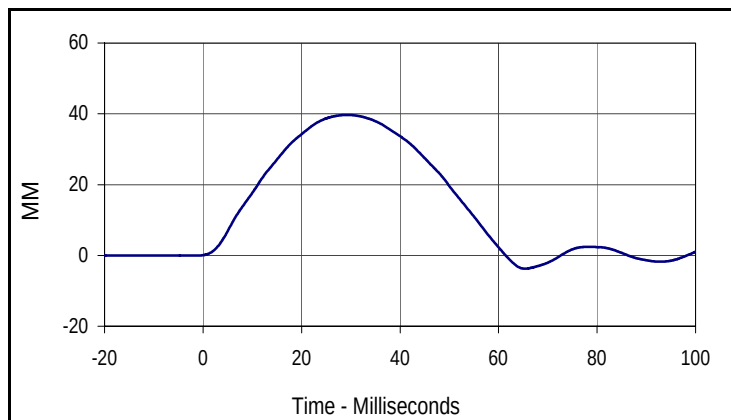
Curve Description			
Upper Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
47.5	28.9	-4.3	63.7

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

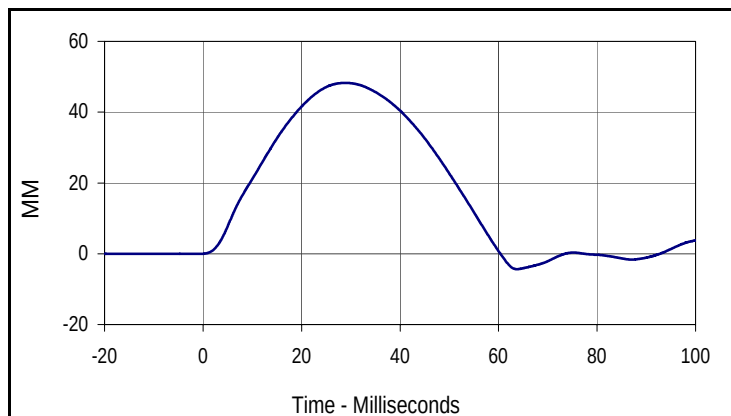
Test Date: 6/11/10
 Test I.D.: RIB206A



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	39.7	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	48.3	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
39.7	29.3	-3.8	65.4



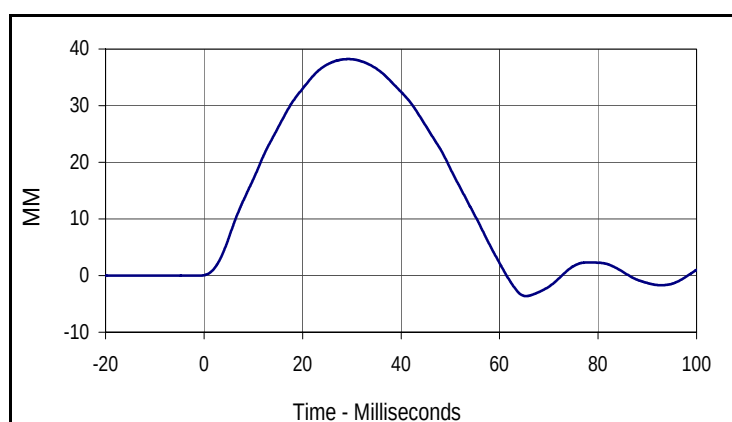
Curve Description			
Middle Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
48.3	28.9	-4.4	63.7

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

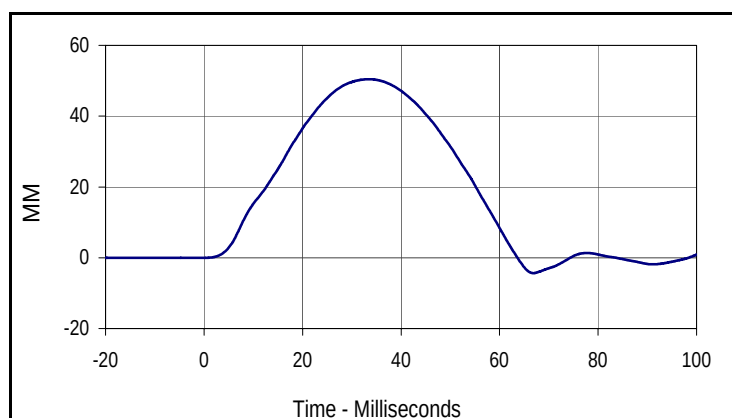
Test Date: 6/25/10
 Test I.D.: RIB306B



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	50.4	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
38.2	29.3	-3.6	65.4



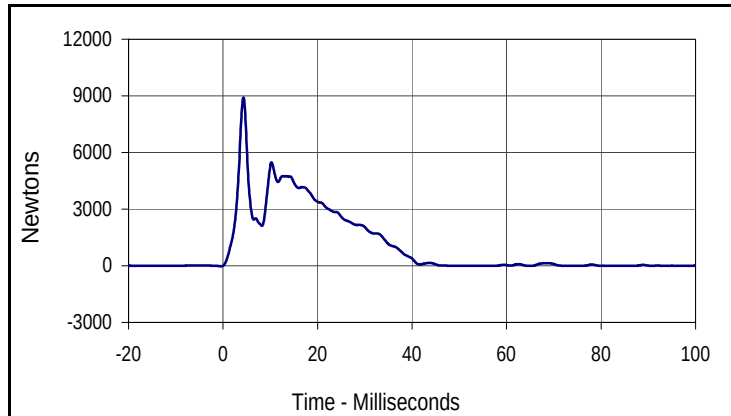
Curve Description			
Lower Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
50.4	33.4	-4.3	66.9

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

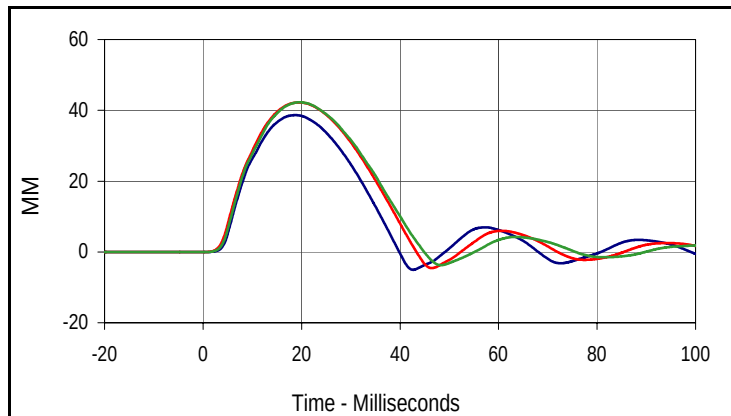
Test Date: 6/25/10
 Test I.D.: TH06B



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	5481.8	Pass
	msec	> 6.0 msec	10.3	Pass
Upper Rib Deflection	MM	34 to 41	38.6	Pass
Middle Rib Deflection	MM	37 to 45	42.2	Pass
Lower Rib Deflection	MM	37 to 44	42.3	Pass
Overall Test Results			Pass	



Curve Description			
Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
8915.6	4.3	-26.8	-0.4



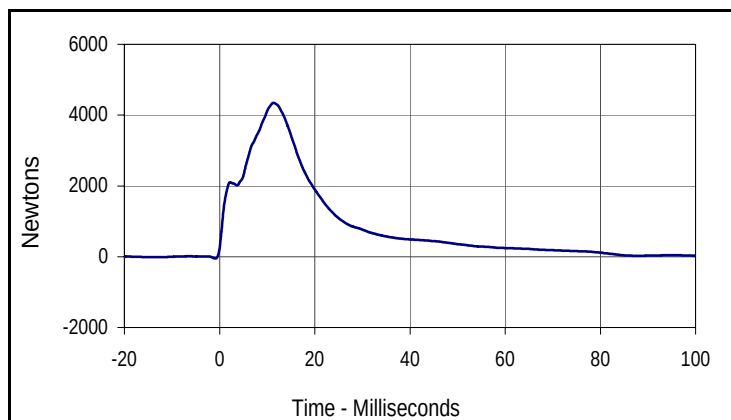
Curve Description			
Upper, Middle, Lower Rib Deflections			
CURNO(s)	Type	SAE Class	Units
002-003-004	FIL	180	MM
Max (Upper)	Time	Min (Upper)	Time
38.6	18.8	-5.0	42.6
Max (Middle)	Time	Min (Middle)	Time
42.2	19.5	-4.6	46.5
Max (Lower)	Time	Min (Lower)	Time
42.3	19.6	-3.7	48.3

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

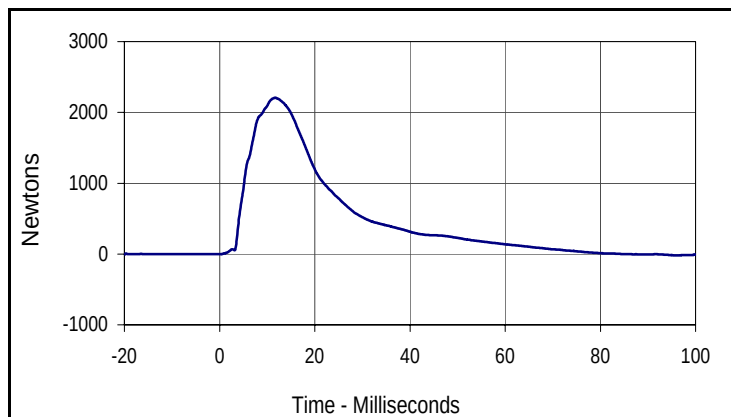
Test Date: 6/25/10
 Test I.D.: ABD06B



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	4.07	Pass
Impactor Force	N	4000 to 4800	4348.9	Pass
	msec	10.6 to 13.0	11.3	Pass
Abdominal Force	N	2200 to 2700	2206.8	Pass
	msec	10.0 to 12.3	11.7	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4348.9	11.3	-51.6	-0.9



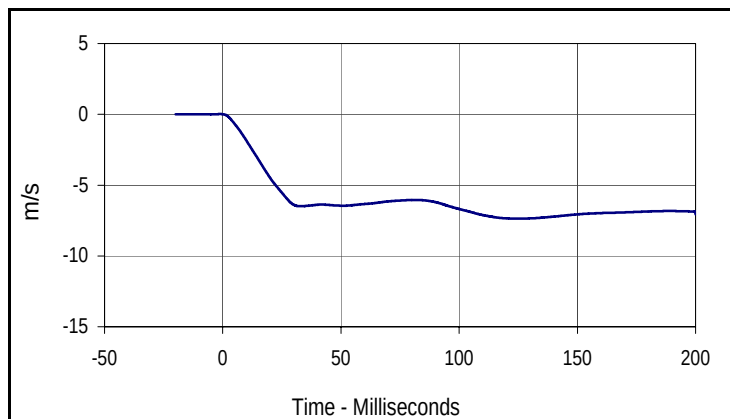
Curve Description			
Abdomen Sum Resultant			
CURNO	Type	SAE Class	Units
002	RES	600	Newtons
Max	Time	Min	Time
2206.8	11.7	-18.9	96.1

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

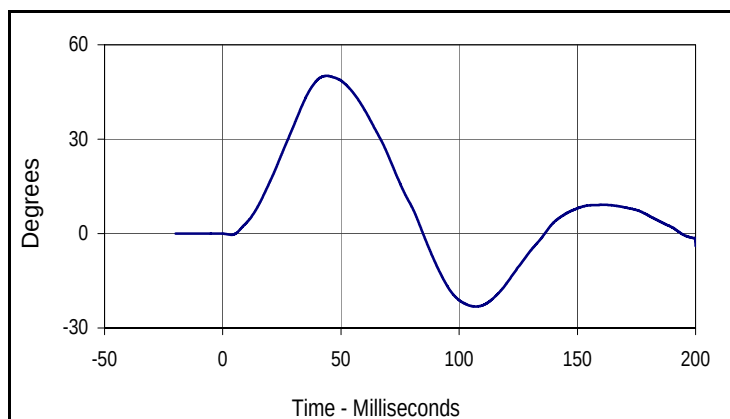
Test Date: 6/25/10
 Test I.D.: SP06B



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	6.10	Pass
Pendulum Deceleration	1 msec	m/s	0.0 to -.050	-0.029	Pass
	3.7 msec	m/s	-.240 to -.425	-0.400	Pass
	27 msec	m/s	-5.80 to -6.50	-5.93	Pass
	30 msec	m/s	< -6.50	-6.39	Pass
Headform Rotation	Max	Degrees	45.0 to 55.0	50.1	Pass
	Time	msec	39.0 to 53.0	43.9	Pass
Maximum Rotation To Time Zero Crossing		msec	37.0 to 57.0	40.9	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	-7.4	125.4



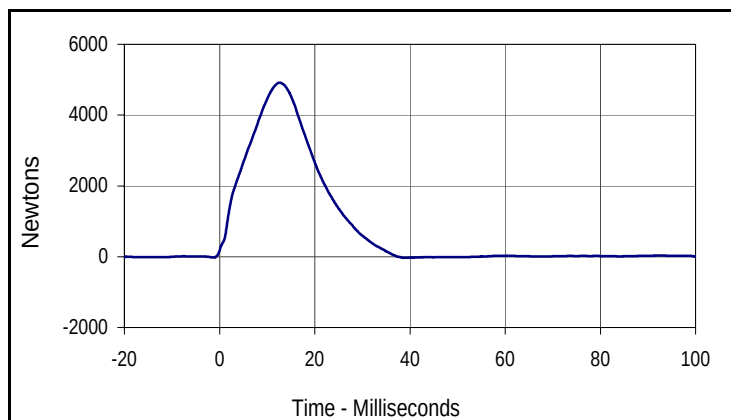
Curve Description			
Headform Rotation			
CURNO	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
50.1	43.9	-23.2	107.0

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

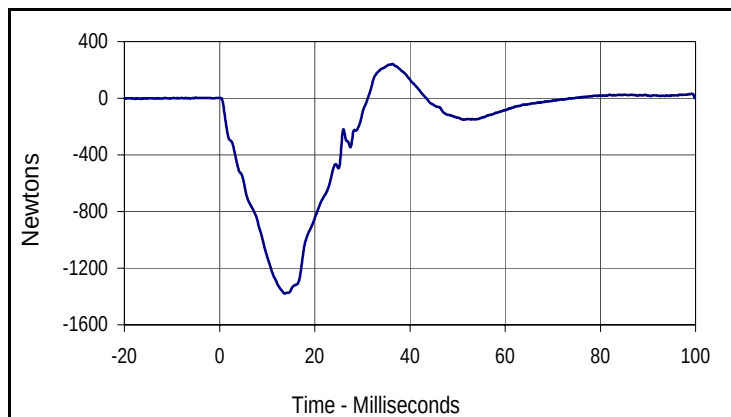
Test Date: 6/25/10
 Test I.D.: PL06B



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	4.26	Pass
Impactor Force	N	4700 to 5400	4918.4	Pass
	msec	11.8 to 16.1	12.6	Pass
Pubic Symphysis Load	N	-1230 to -1590	-1379.4	Pass
	msec	12.2 to 17.0	13.7	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4918.4	12.6	-30.1	39.4



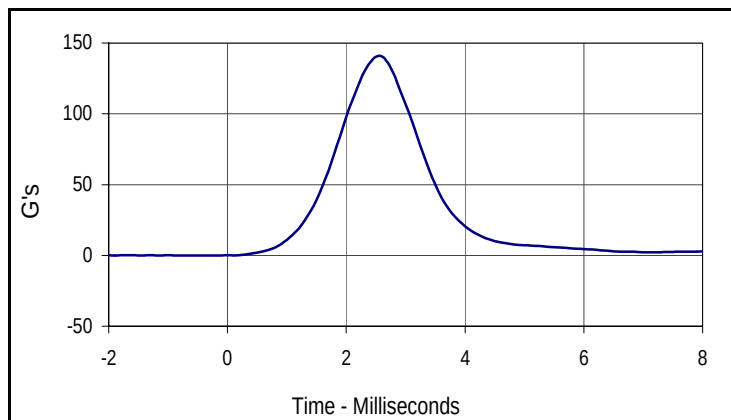
Curve Description			
Pubic FY			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
242.0	36.3	-1379.4	13.7

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

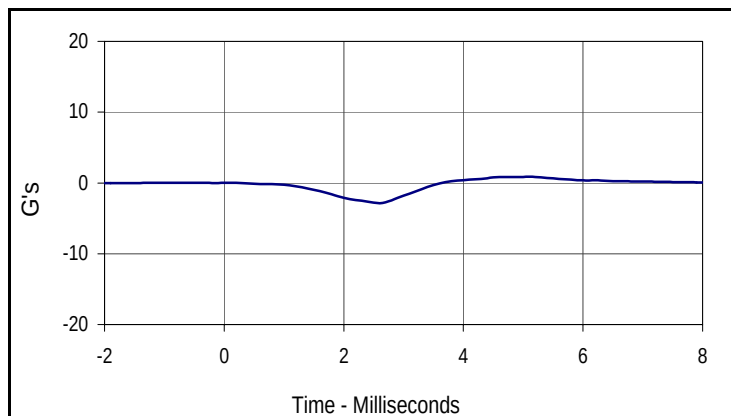
Test Date: 6/25/10
 Test I.D.: HD06B



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	140.4	Pass
Peak Longitudinal Acceleration	G's	≤15	2.9	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	5.2	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
140.4	2.6	0.0	-0.2



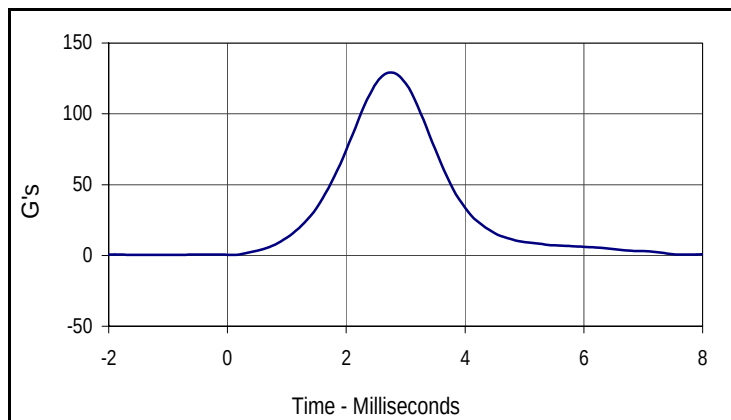
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.9	5.1	-2.9	2.6

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

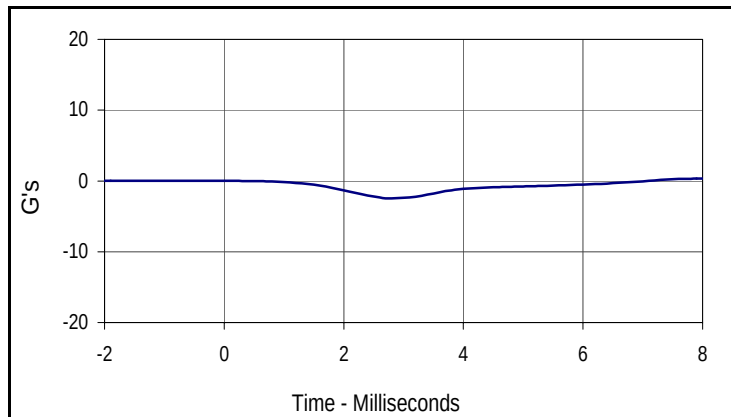
Test Date: 6/26/10
 Test I.D.: HD06C



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	129.0	Pass
Peak Longitudinal Acceleration	G's	≤15	2.5	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	7.3	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
129.0	2.8	0.3	0.1



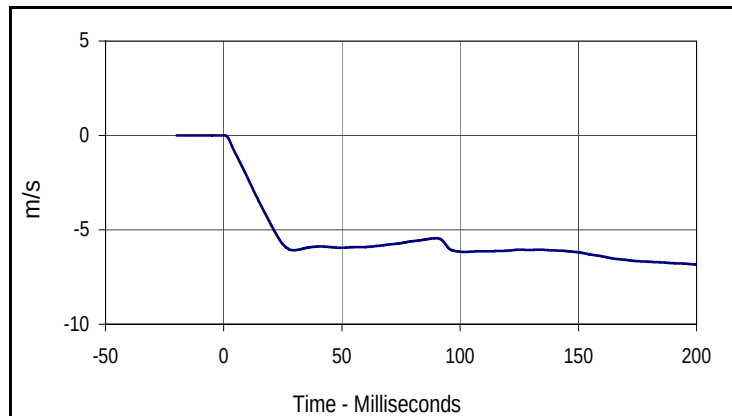
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.0	-2.0	-2.5	2.8

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

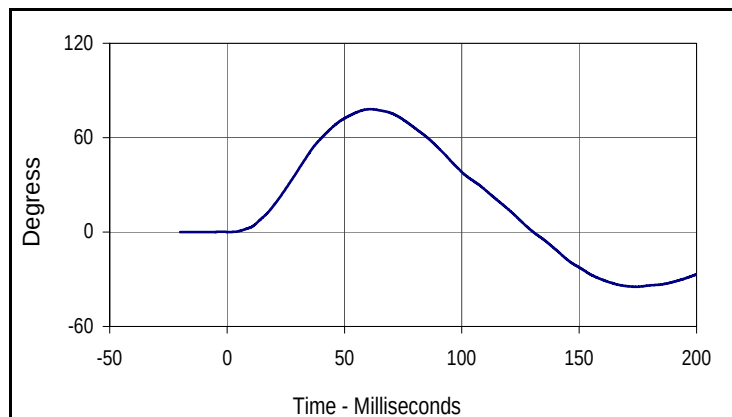
Test Date: 6/26/10
 Test I.D.: NB06C



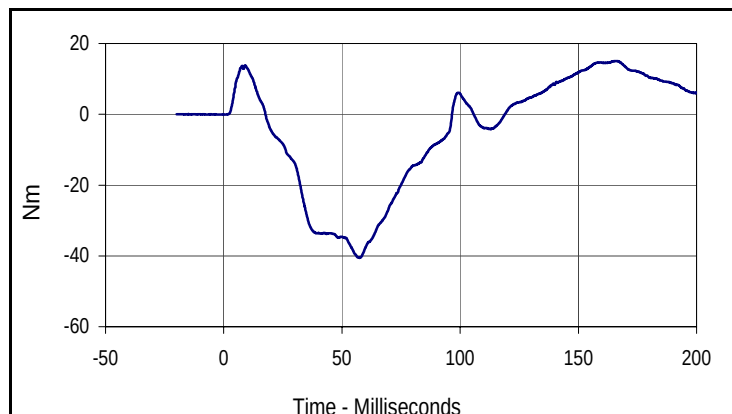
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.57	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.2	Pass
	15 msec	m/s	-3.30 to -4.10	-3.5	Pass
	20 msec	m/s	-4.40 to -5.40	-4.7	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	78.1	Pass
	Time	msec	50.0 to 70.0	61.0	Pass
Peak Occipital Condyle Moment		Nm	-36.0 to -44.0	-40.5	Pass
Decaying Moment Time to Cross 0 Nm		msec	102.0 to 126.0	118.9	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	-6.8	200.0



Curve Description			
Maximum Translation Rotation			
CURNO	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
78.1	61.0	-34.7	174.1



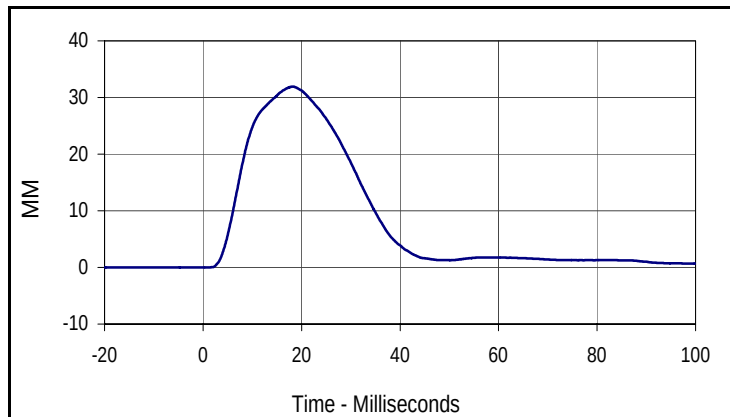
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
15.1	166.3	-40.5	57.4

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

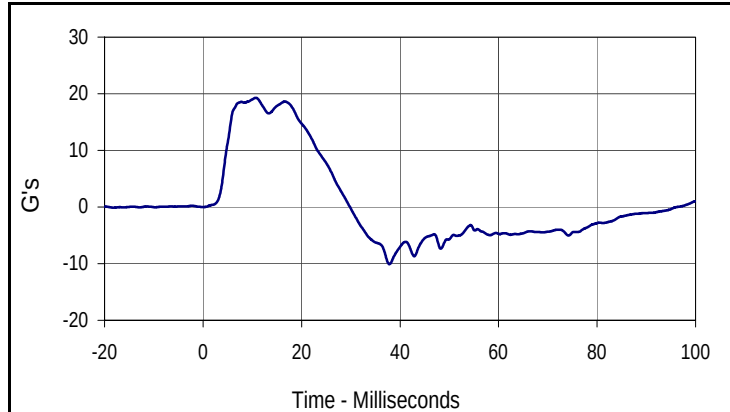
Test Date: 6/26/10
 Test I.D.: SH06C



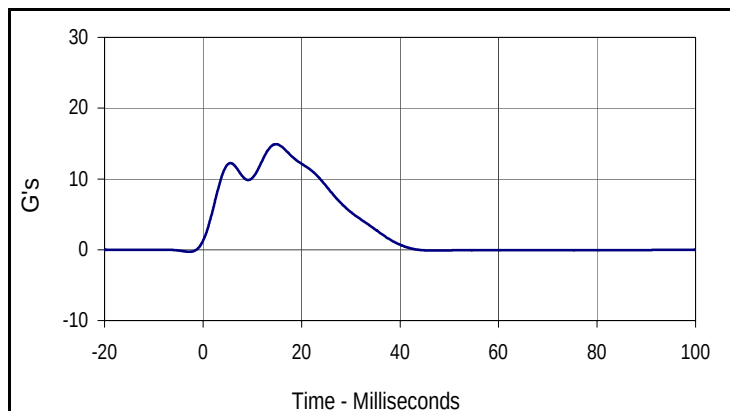
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.31	Pass
Shoulder Deflection	MM	28 to 37	31.9	Pass
Peak Upper Spine Y Acceleration	G's	17 to 22	19.3	Pass
Peak Impactor Acceleration	G's	13 to 18	14.9	Pass
Overall Test Results			Pass	



Curve Description			
Shoulder Acceleration			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
31.9	18.3	0.0	0.4



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
19.3	10.7	-10.1	37.8



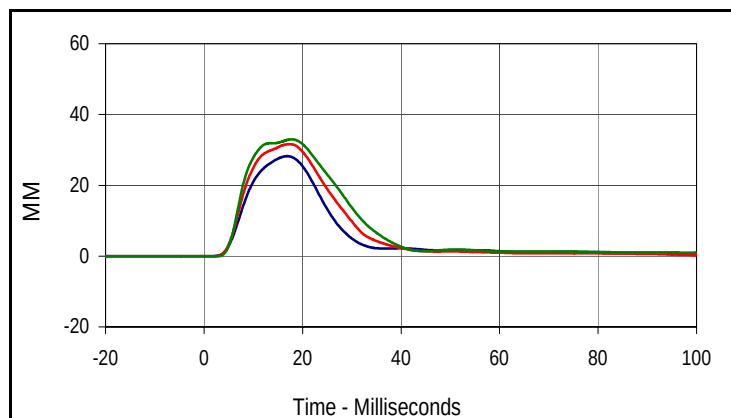
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	60	G's
Max	Time	Min	Time
14.9	14.8	-0.3	-2.8

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

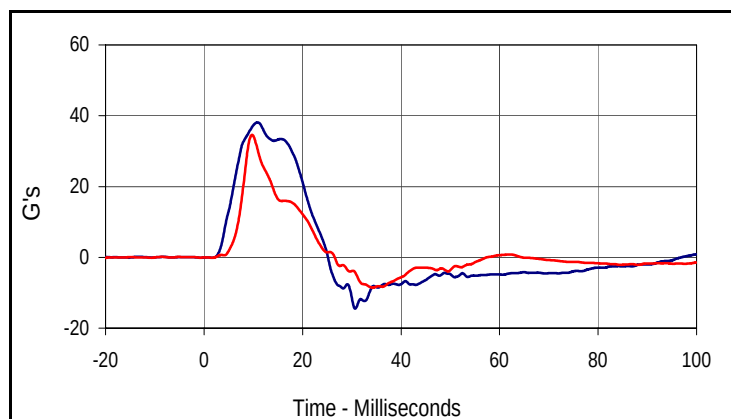
Test Date: 6/26/10
 Test I.D.: TH06C



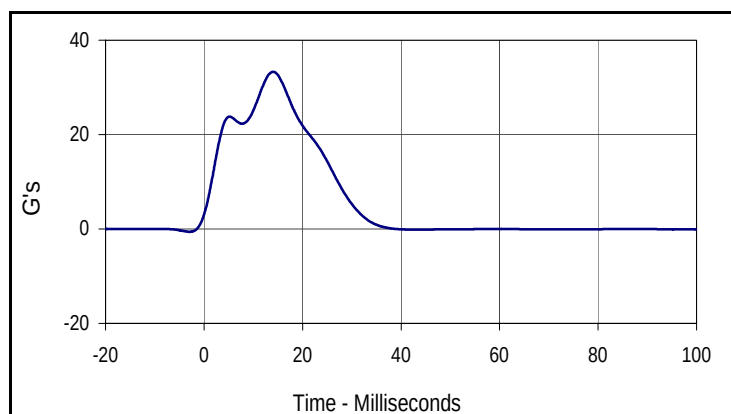
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.75	Pass
Shoulder Deflection	MM	31 to 40	37.3	Pass
Upper Thorax Rib Deflection	MM	25 to 32	28.2	Pass
Middle Thorax Rib Deflection	MM	30 to 36	31.6	Pass
Lower Thorax Rib Deflection	MM	32 to 38	33.0	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	38.1	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	34.6	Pass
Peak Impactor Acceleration After 5 msec.	G's	30 to 36	33.3	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
28.2	16.9	0.0	-5.8
Middle Thorax Deflection			
Max	Time	Min	Time
31.6	17.4	0.0	2.2
Lower Thorax Deflection			
Max	Time	Min	Time
33.0	17.7	0.0	2.7



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
38.1	10.9	-14.5	30.7
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
34.6	9.7	-8.6	34.2



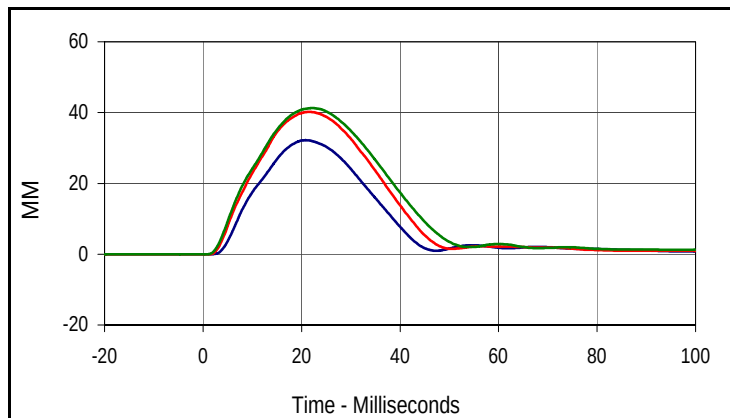
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	60	G's
Max	Time	Min	Time
33.3	14.0	-0.6	-2.9

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

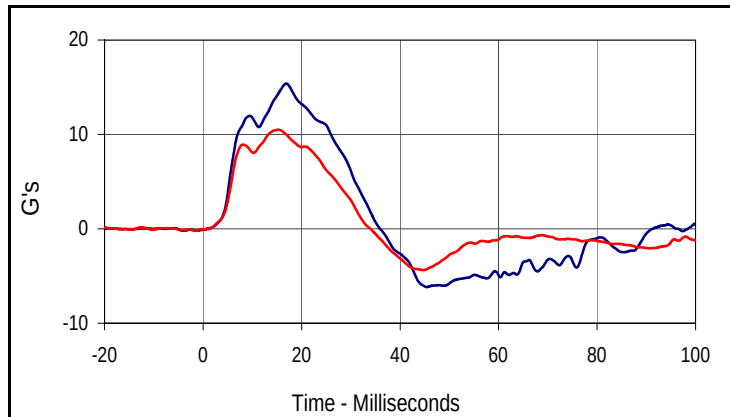
Test Date: 6/26/10
 Test I.D.: TOA6C



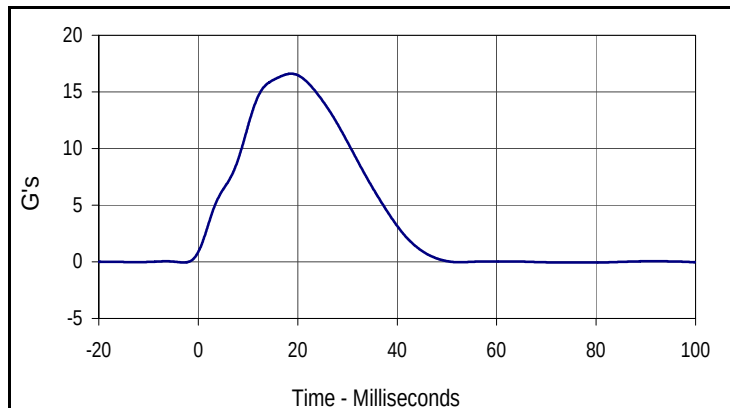
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.30	Pass
Upper Thorax Rib Deflection	MM	32 to 40	32.2	Pass
Middle Thorax Rib Deflection	MM	39 to 45	40.2	Pass
Lower Thorax Rib Deflection	MM	35 to 43	41.3	Pass
Peak Upper Spine Y Acceleration	G's	13 to 17	15.4	Pass
Peak Lower Spine Y Acceleration	G's	7 to 11	10.5	Pass
Peak Impactor Acceleration	G's	14 to 18	16.6	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
32.2	20.8	0.0	-18.5
Middle Thorax Deflection			
Max	Time	Min	Time
40.2	21.5	0.0	-11.3
Lower Thorax Deflection			
Max	Time	Min	Time
41.3	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
15.4	16.9	-6.2	45.4
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
10.5	15.3	-4.4	44.7



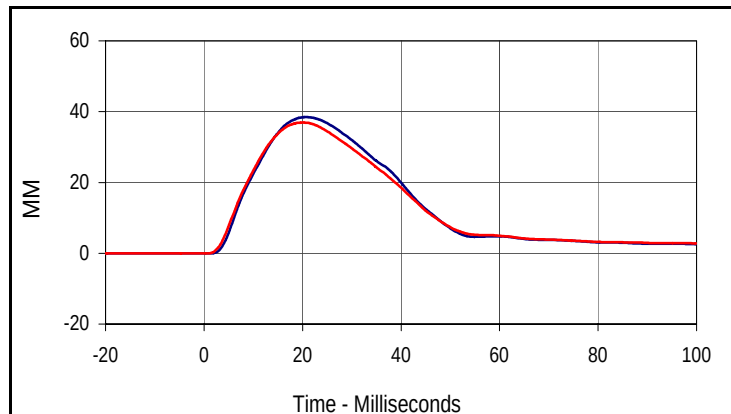
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	60	G's
Max	Time	Min	Time
16.6	18.7	-0.1	79.9

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

Test Date: 6/26/10
 Test I.D.: AB06C

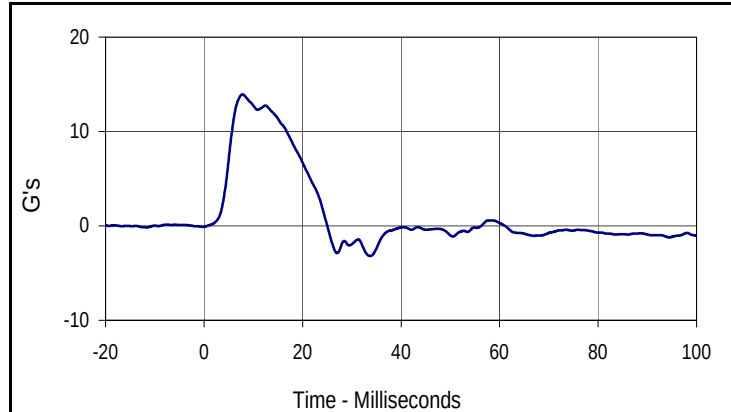


Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.28	Pass
Upper Abdominal Rib Deflection	MM	36 to 47	38.5	Pass
Lower Abdominal Rib Deflection	MM	33 to 44	36.9	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	13.9	Pass
Peak Impactor Acceleration	G's	12 to 16	14.9	Pass
Overall Test Results			Pass	

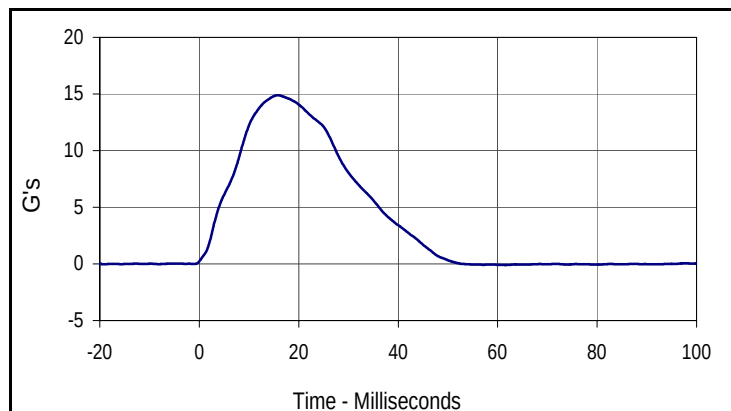


Curve Description			
Upper Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
38.5	20.6	0.0	-5.6

Curve Description			
Lower Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
36.9	20.0	0.0	0.7



Curve Description			
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
13.9	7.8	-3.2	33.7



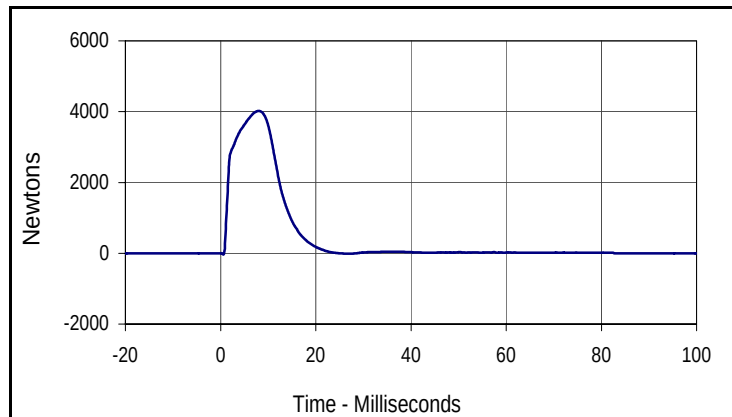
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.9	15.8	-0.1	61.6

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

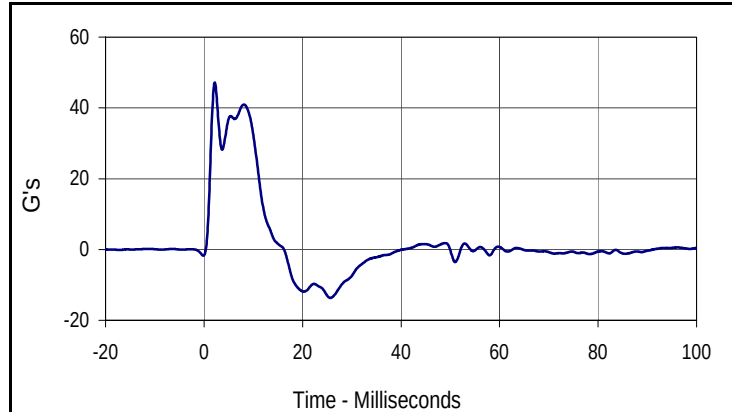
Test Date: 6/26/10
 Test I.D.: PA06C



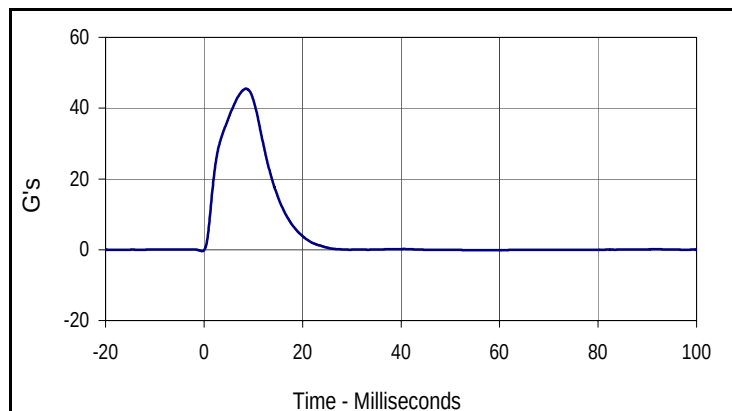
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.72	Pass
Peak Acetabulum Force	Newtons	3600 to 4300	4021.1	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	40.9	Pass
Peak Impactor Acceleration	G's	38 to 47	45.5	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4021.1	8.0	-34.5	0.6



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
47.1	2.2	-13.7	25.6



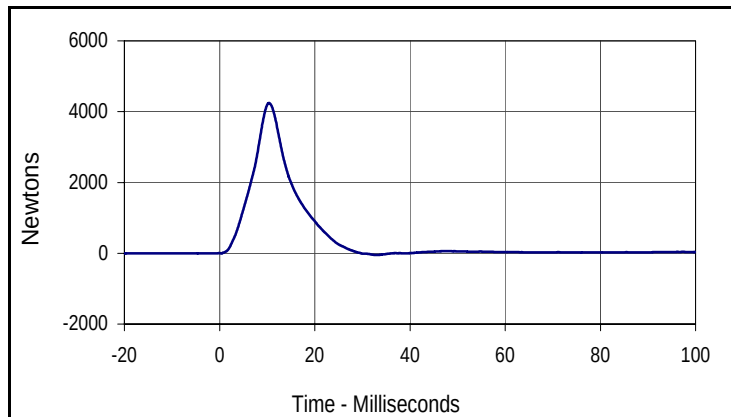
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
45.5	8.5	-0.4	-0.4

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

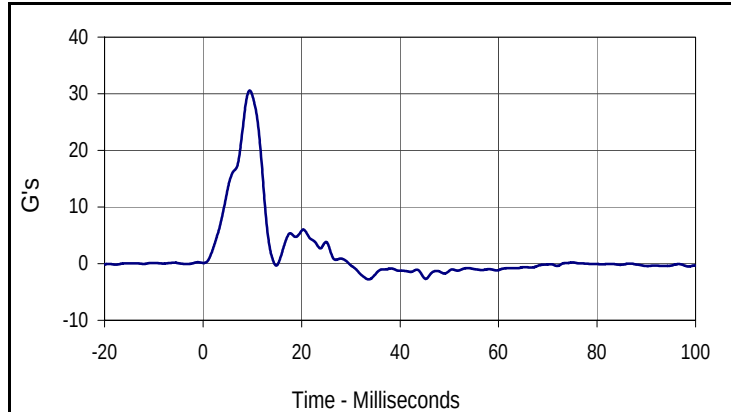
Test Date: 6/26/10
 Test I.D.: PL06C



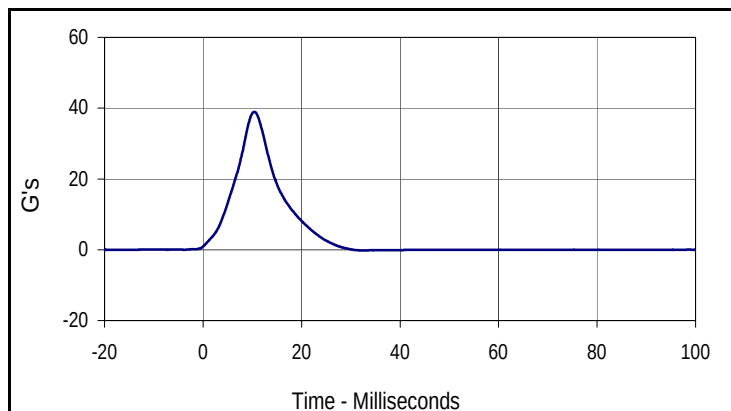
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.29	Pass
Peak Iliac Force	Newtons	4100 to 5100	4243.2	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	30.5	Pass
Peak Impactor Acceleration	G's	36 to 45	39.0	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Iliac Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4243.2	10.4	-115.4	0.0



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
30.5	9.5	-2.8	33.6



Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
39.0	10.4	-0.2	32.3