

REPORT NUMBER: SNCAP-KAR-11-038

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

**TOYOTA MOTOR MANUFACTURING
2011 LEXUS RX350 5-DOOR MPV**

NHTSA No: MB5119

**PREPARED BY:
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NOVEMBER 9, 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**

TECHNICAL REPORT DOCUMENTATION PAGE

1. Report No. SNCAP-KAR-11-038	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 Lexus RX350 5-Door MPV NHTSA No. MB5119		5. Report Date November 23, 2010
		6. Performing Organization Code KAR
7. Authors Mr. Denver J. Schaffarzick, Project Engineer, KARCO Mr. Frank Richardson, Program Manager, KARCO		8. Performing Organization Report No. TR-P30003-18-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-00122
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 Report, November 2010
		14. Sponsoring Agency Code NVS-111
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 Lexus RX350 5-Door MPV 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 November 9, 2010.

The impact velocity of the Moving Deformable Barrier was 61.67 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 18.9 deg. C. The target vehicle's maximum post-test static crush was 238 mm located at level 3. The test vehicle's occupant performance data is as follows:

Measurement Description	Driver ATD (ES-2re)		
	Units	Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	43.0
Maximum Thorax Rib Deflection	mm	44	14.8
Total Abdominal Force	N	2500	774
Pubic Symphysis Force	N	6000	1472

Measurement Description	Passenger ATD (SID-IIs)		
	Units	Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	110.1
Lower Spine Resultant Acceleration	g	82	41
Total Pelvic Force (Sum of Acetubular and Iliac Forces)	N	5525	4460

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

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SECTION 1

PURPOSE AND SUMMARY OF TEST

PURPOSE

This moving deformable barrier side impact test is part of the MY 2011 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract number DTNH22-09-D-00122. The purpose of this test is to generate comparative side impact performance in a 2011 Lexus RX350 5-Door MPV. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated January 2010.

SUMMARY

A 2011 Lexus RX350 5-Door MPV was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 61.67 km/h (38.32 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 November 9, 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	43.0
Maximum Thorax Rib Deflection	mm	44	14.8
Combined Abdominal Force	N	2500	774
Pubic Symphysis Force	N	6000	1472

Measurement Description	Units	Passenger ATD (SID-IIs)	
		Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	110.1
Lower Spine (T12) Resultant Acceleration	g	82	41
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	4460

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/Pelvis)	Yes	Yes	No	
Side Airbag 2 (Curtain)	Yes	Yes	Yes	Yes
Side Airbag 3 (Torso)	No		Yes	Yes
Seat Belt Pretensioner	Yes	No	Yes	No
Seat Belt Load Limiter	Yes	No	Yes	No

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. There were no ATD values that exceeded limits.

SECTION 2

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2011 Lexus RX350 5-Door MPV

NHTSA No. MB5119

Test Program: MDB Side Impact Test

Test Date: 11/09/10

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 Lexus RX350 5-Door MPV

NHTSA No. MB5119

Test Program: MDB Side Impact Test

Test Date: 11/09/10

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	MB5119
Model Year	2011
Make	Lexus
Model	RX350
Body Style	5-Door MPV
VIN	2T2ZK1BA7BC041601
Body Color	Smoky Granite Mica
Delivery Date	10/28/2010
Odometer Reading (km / mi)	18/11
Dealer	Motor City Lexus of Bakersfield
Transmission	6-Speed Automatic
Final Drive	Front
Type / No. of Cylinders	V6
Engine Displacement (L)	3.5
Engine Placement	Transverse
Roof Rack	Yes
Sunroof / T-Top	Yes
Tinted Glass	Yes
Traction Control	Yes
Power Brakes	Yes
Front Disc	Yes
Rear Disc	Yes

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

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

No

DATA FROM CERTIFICATION LABEL

Manufactured By	Toyota Motor Manufacturing
Date of Manufacture	Aug-10

GVWR (kg)	2520
GAWR Front (kg)	1360
GAWR Rear (kg)	1385

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Designated Seating Capacity	2	3		5
Capacity Weight (VCW) (kg)				390.0
DSC x 68.04 (kg)				340.2
Cargo Weight (RCLW) (kg)				49.8

A

B

A-B

VEHICLE SEAT TYPE

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

DATA SHEET NO. 1 ... (CONTINUED)

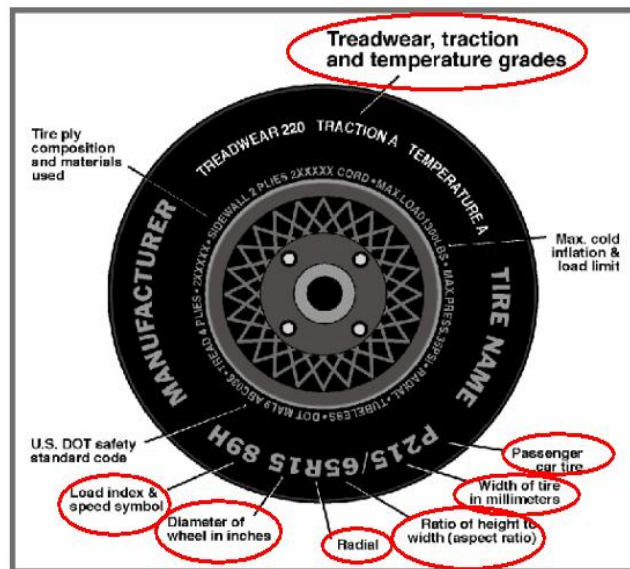
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Lexus RX350 5-Door MPV

NHTSA No. MB5119

Test Program: MDB Side Impact Test

Test Date: 11/09/10



VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	350	350
Cold Pressure (kpa)	220	220
Recommended Tire Size	P235/60R18	P235/60R18
Tire Size on Vehicle	P235/60R18	P235/60R18
Tire Model	Dueler H/L	Dueler H/L
Tire Manufacturer	Bridgestone	Bridgestone
Treadwear	260	260
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 2 Steel, 1 Nylon	2 Polyester, 2 Steel, 1 Nylon
Load Index/Speed Symbol	102V	102V
Tire Material	Polyester, Steel, Nylon	Polyester, Steel, Nylon
DOT Safety Code Right	0B7A 702 2910	0B7A 702 2910
DOT Safety Code Left	0B7A 702 3010	0B7A 702 2910

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Lexus RX350 5-Door MPV

NHTSA No. MB5119

Test Program: MDB Side Impact Test

Test Date: 11/09/10

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	558.0	411.0		589.0	477.5		590.0	496.0	
Right	kg	529.0	400.5		537.5	462.0		530.5	461.5	
Ratio	%	57.3%	42.7%	100.0%	54.5%	45.5%	100.0%	53.9%	46.1%	100.0%
Total	kg	1087.0	811.5	1898.5	1126.5	939.5	2066.0	1120.5	957.5	2078.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1898.5	A
Actual Weight of 2 P572 ATDs Used	kg	125.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	49.8	C
Calculated Vehicle Target Wt (TVTWT)	kg	2073.3	A+B+C

TEST VEHICLE ATTITUDES

Condition	Units	LF	RF	LR	RR	CG (Aft of Front Axle)
Fully Loaded	mm	808	810	796	801	1259
As Tested	mm	805	802	790	798	1242

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheelbase	mm	2732
Total Vehicle Length at Left Side	mm	3275
Total Vehicle Length at Centerline	mm	4764
Total Vehicle Length at Right Side	mm	3276
Weight of Ballast in Cargo Area	kg	59.0
Weight of Vehicle Components Removed	kg	52.5
Amount of Stoddard Solvent in Fuel Tank	L	67.60

Vehicle components removed to make Target Vehicle Test Weight:

Non-struck side door panels and windows (13.0 kg), Spare tire and tools (25.0 kg), Trunk liner and mat (14.5 kg)

TEST VEHICLE VERTICAL IMPACT LINE DATA

Measurement Description	Units	Value
Target Impact Point Aft of Front Axle	mm	426
Actual Impact Point Aft of Front Axle	mm	435

DATA SHEET NO. 2

SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2011 Lexus RX350 5-Door MPV

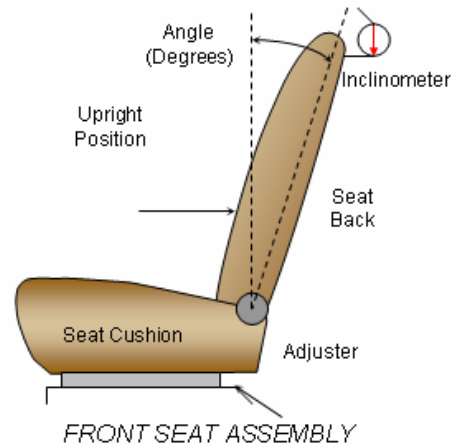
NHTSA No. MB5119

Test Program: MDB Side Impact Test

Test Date: 11/09/10

NOMINAL DESIGN RIDING POSITION

The driver's seat back is set to the manufacturer's designated seat back angle. The passenger's seat back is set to level the passenger ATD's head transverse instrumentation platform as close as possible. Seat back angles are measured at the headrest posts using a digital inclinometer.



SEAT BACK ANGLES

	Degrees (°)
Driver w/Seated Dummy	3.0
Passenger w/Seated Dummy	2.9

SEAT FORE/AFT POSITION

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

SEAT FORE/AFT POSITIONS

Seating Position	Total Fore/Aft Travel	Placed in Position
Driver Seat	258 mm	129 mm
Rear Seat	118 mm	118 mm

SEAT BELT UPPER ANCHORAGE

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

SEAT BELT UPPER ANCHORAGES

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

DATA SHEET NO. 2 ... (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2011 Lexus RX350 5-Door MPV

NHTSA No. MB5119

Test Program: MDB Side Impact Test

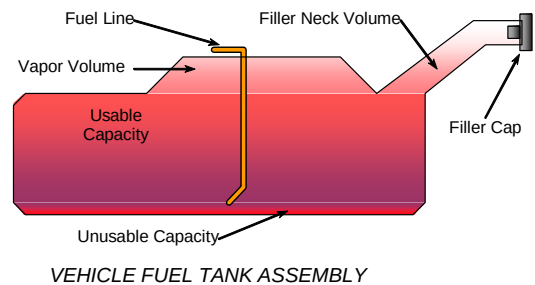
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FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank"	72.67
Usable Capacity of "Optional Tank"	
Usable Capacity Used for FMVSS 301	72.67
Actual Amount of Stoddard Solvent Used	67.60

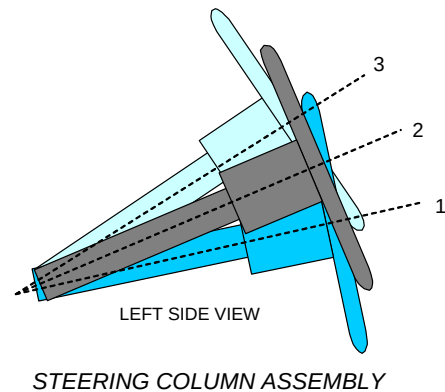
FUEL PUMP

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



STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. A digital inclinometer is used to measure a plate which is placed across the rim of the steering wheel for angular measurements. A tape measure is used with a reference mark on the steering column to measure telescoping travel.



STEERING COLUMN POSITIONING

	Degrees	Fore-Aft Position (mm)
Lowermost Position, No. 1	24.5	0
Geometric Center Position, No. 2	26.7	21.5
Uppermost Position, No. 3	28.9	43
Telescoping Steering Wheel Travel		43
Test Position	26.7	21.5

DATA SHEET NO. 3

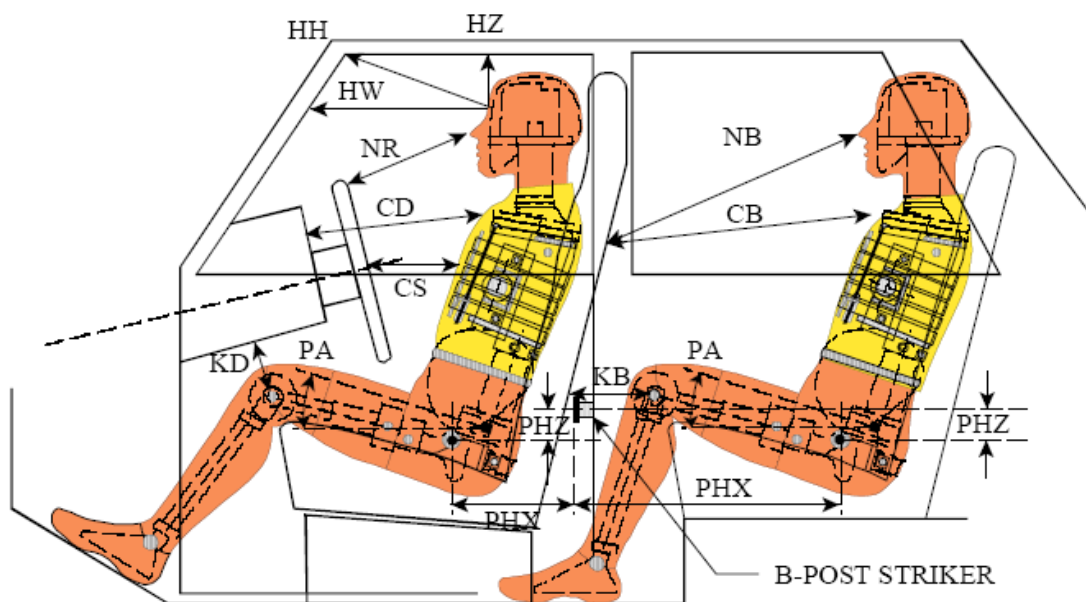
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Lexus RX350 5-Door MPV

NHTSA No. MB5119

Test Program: MDB Side Impact Test

Test Date: 11/09/10



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	472	12.7		
HW		Head to Windshield	749	0.0		
HZ	HZ	Head to Roof	167	90.0	290	90.0
NR	NB	Nose to Rim/Seat Back	510	12.9	548	10.6
CD	CB	Chest to Dash/Seat Back	595	7.3	525	9.9
CS		Chest to Steering Wheel	387	14.8		
KDL	KBL	Left Knee to Dash/Seat Back	162	31.8	268	27.8
KDR	KBR	Right Knee to Dash/Seat Back	162	27.1	266	30.5
PA	PA	Pelvic Angle		16.4		22.4
PHX	PHX	H-Point to Striker (x-axis)	207	0.0	360	0.0
PHZ	PHZ	H-Point to Striker (z-axis)	163	90.0	277	90.0
SA	SA	Seat Back Angle		3.0		2.9

DATA SHEET NO. 4

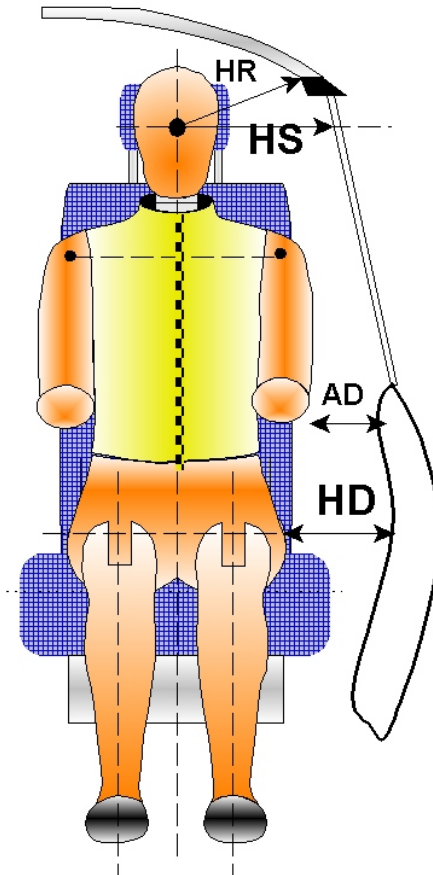
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Lexus RX350 5-Door MPV

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DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	199	265
HS	Head to Side Window	mm	316	387
AD	Arm to Door	mm	108	187
HD	H-Point to Door	mm	167	199

DATA SHEET NO. 5

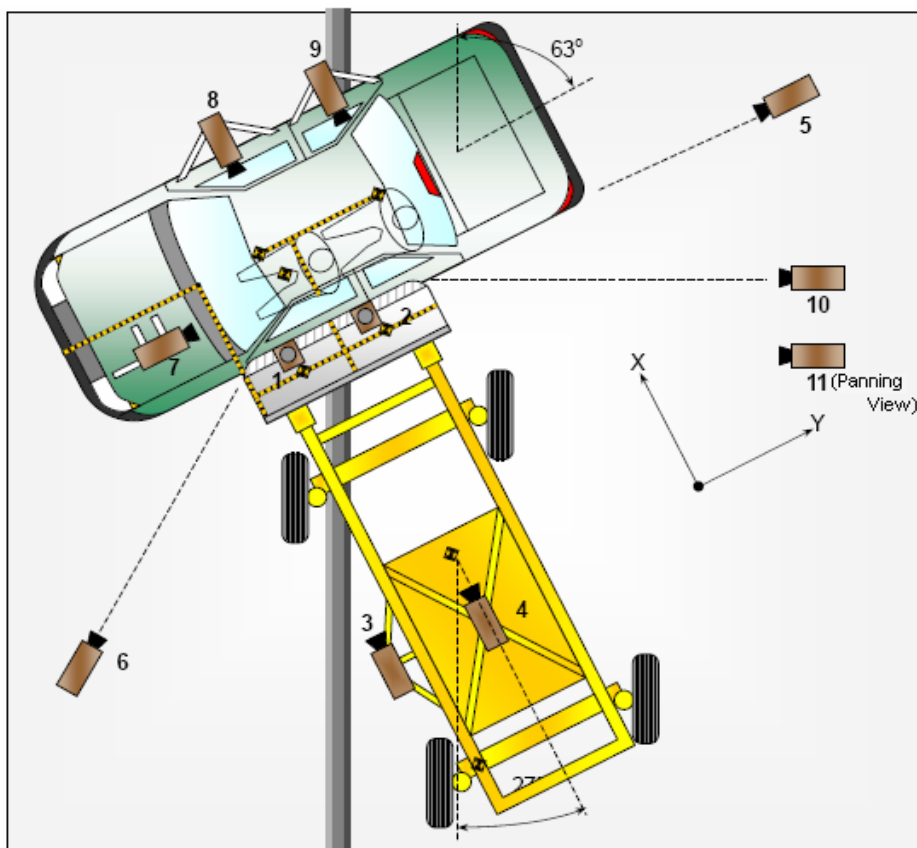
CAMERA LOCATIONS AND DATA

Test Vehicle: 2011 Lexus RX350 5-Door MPV

NHTSA No. MB5119

Test Program: MDB Side Impact Test

Test Date: 11/09/10



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	7.5	25	1000
4	Side Overall (MDB)	-3912	838	-1829	11.9	12	1000
5	Rear	-64	2485	-1348	0	105	1000
6	Left Front	-2266	-3564	-1475	0	24	1000
7	Driver Front (On-Board)	602	-889	626	3.8	35	1000
8	Driver Side (On-Board)	1594	774	507	10.5	14	1000
9	Passenger Side (On-Board)	1582	1790	538	11.1	14	1000
10	Real Time Overall					Zoom	30
11	Real Time Inrun					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

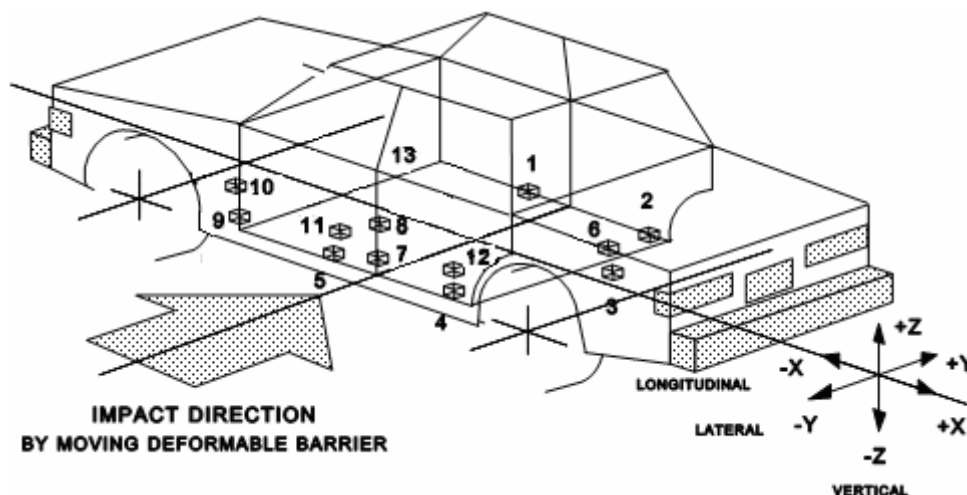
VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2011 Lexus RX350 5-Door MPV

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VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Right Sill at Front Seat	2610	722	455
2	Right Sill at Rear Seat	1730	717	465
3	Rear Floorpan Above Axle	990	455	560
4	Left Sill at Rear Door	1730	-695	265
5	Left Sill at Front Door	2640	-689	265
6	Right Rear Occupant Compartment	1870	399	395
7	B-Pillar Lower	2120	-766	700
8	B-Pillar Mid	2120	-766	995
9	A-Pillar Lower	3210	-835	660
10	A-Pillar Mid	3210	-835	830
11	Front Seat Track	2400	-572	520
12	Rear Seat Structure	1670	-497	489
13	Vehicle CG	1960	0	395

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

DATA SHEET NO. 7

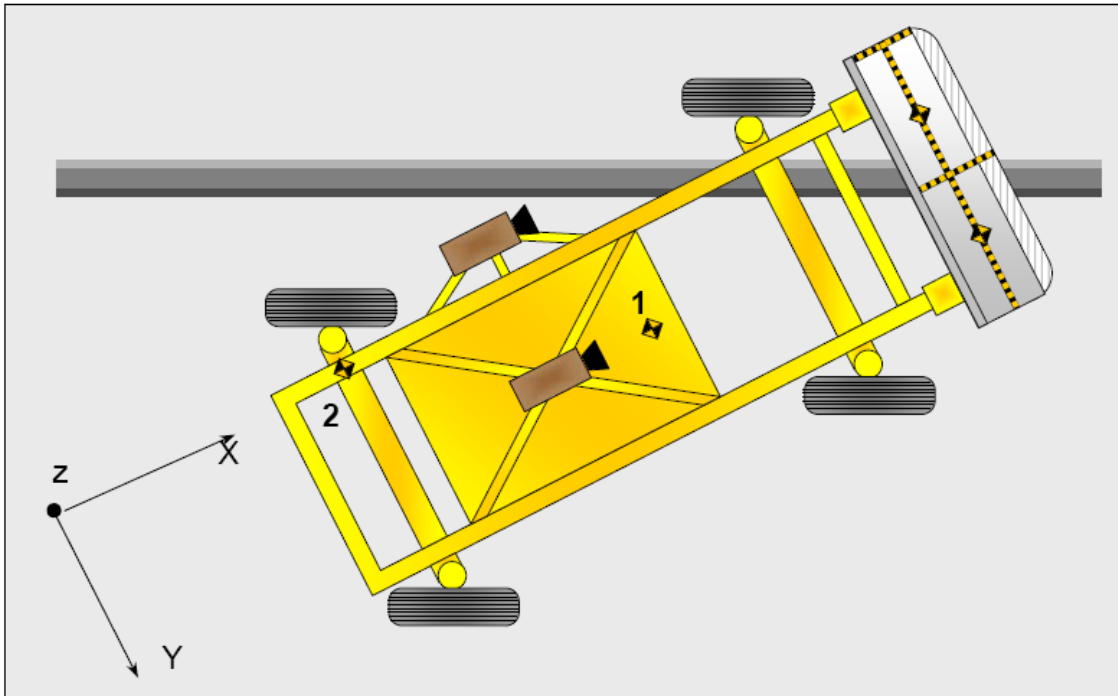
MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2011 Lexus RX350 5-Door MPV

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MDB ACCELEROMETER LOCATIONS

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

Reference: X – Face of MDB (+ forward)
Y – MDB centerline (+ to right)
Z – Ground plane (+ down)

DATA SHEET NO. 8**TEST VEHICLE SUMMARY OF RESULTS**Test Vehicle: 2011 Lexus RX350 5-Door MPVNHTSA No. MB5119Test Program: MDB Side Impact TestTest Date: 11/09/10**MAXIMUM EXTERIOR CRUSH**

Level	Description	Units	Maximum Crush	Above Ground
1	Sill Top Height	mm	85	345
2	Occupant H-Point Height	mm	230	675
3	Mid-Door Height	mm	238	710
4	Window Sill Height	mm	129	1022
5	Window Top Height	mm	-13	1611
	Maximum Penetration	mm	238	

INSTRUMENTATION

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

CAMERA COVERAGE

High-Speed Vehicle On-Board	3
High-Speed Vehicle Off-Board	4
High-Speed MDB On-Board	2
Real Time	2
Total	11

DATA SHEET NO. 9**MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS**Test Vehicle: 2011 Lexus RX350 5-Door MPVNHTSA No. MB5119Test Program: MDB Side Impact TestTest Date: 11/09/10**MDB SPECIFICATIONS**

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

MDB WEIGHTS

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

SPEED AND IMPACT DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	61.67
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	61.64
MDB CL to Target Vehicle CL	degrees	88.5-91.5	89.8

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	Right	283
2	Top of Bumper	533	800	Right	168
3	Mid Level	686	800	Left	146
4	Top of Stack	813	800	Left	159

MDB INSTRUMENTATION AND CAMERAS

Accelerometers	5
Contact Switches	2

DATA SHEET NO. 10
POST-TEST OBSERVATIONS

Test Vehicle: 2011 Lexus RX350 5-Door MPV

NHTSA No. MB5119

Test Program: MDB Side Impact Test

Test Date: 11/09/10

TEST DUMMY INFORMATION AND CONTACT POINTS

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

POST-TEST DOOR OPENING AND SEAT TRACK INFORMATION

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

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions	
Pillar Performance	No separation occurred	
Sill Separation	No separation occurred	
Windshield Damage	None	
Window Damage	None	None
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/Pelvis)	Yes	Yes	No	
Side Airbag 2 (Curtain)	Yes	Yes	Yes	Yes
Side Airbag 3 (Torso)	No		Yes	Yes
Seat Belt Pretensioner	Yes	No	Yes	No
Seat Belt Load Limiter	Yes	No	Yes	No

MDB LEFT EDGE IMPACT POINT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	+9 (Right)
Vertical Offset	mm	+/- 20	+8 (Up)

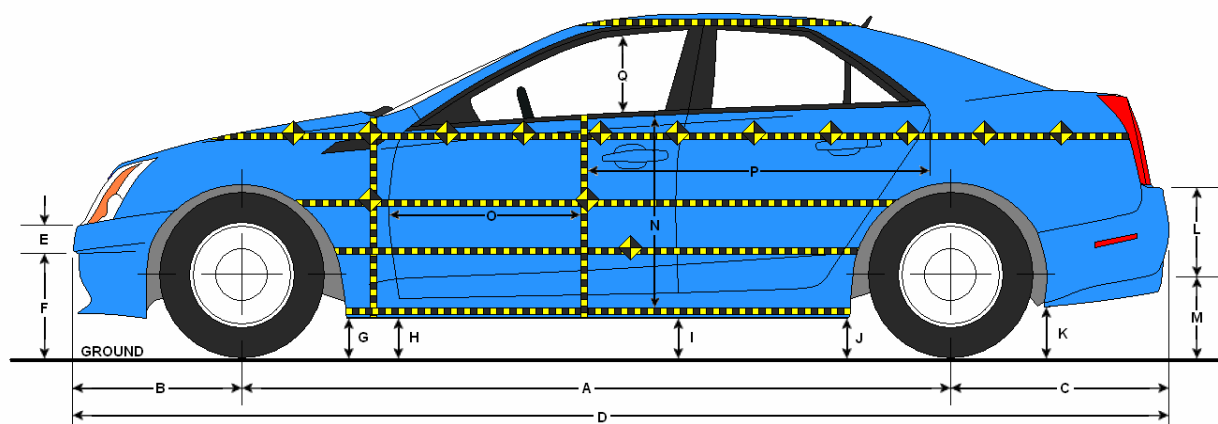
DATA SHEET NO. 11
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2011 Lexus RX350 5-Door MPV

NHTSA No. MB5119

Test Program: MDB Side Impact Test

Test Date: 11/09/10



LEFT SIDE VIEW

VEHICLE PRE AND POST-TEST MEASUREMENT INFORMATION

Code	Dimension	Measurement (mm)		
		Pre	Post	Difference
A	Wheelbase	2732	2741	9
B	Front Axle to FSOV	992	1025	33
C	Rear Axle to RSOV	1039	1026	-13
D	Total Length at Centerline	4764	4792	28
E	Front Bumper Thickness	199	198	-1
F	Front Bumper Bottom to Ground	476	479	3
G	Sill Height at Front Wheel Well	247	265	18
H	Sill Height at Front Door Leading Edge	260	282	22
I	Sill Height at B-Pillar	276	294	18
J1	Sill Height at Rear Wheel Well	244	300	56
J2	Pinch Weld Height at Rear Wheel Well	269	307	38
K	Sill Height Aft of Rear Wheel Well	284	322	38
L	Rear Bumper Thickness	306	306	0
M	Bottom of Rear Bumper to Ground	401	457	56
N	Sill Height to Window Bottom Sill	696	739	43
O	Front Door Leading Edge to Impact CL	740	733	-7
P	Rear Door Trailing Edge to Impact CL	1331	1319	-12
Q	Front Window Opening	418	435	17
R	Right Side Length	3276	3278	2
S	Left Side Length	3275	3394	119
T	Vehicle Width at B-Pillar	1858	1763	-95

All measurements in mm with tolerance of ± 3 mm

DATA SHEET NO. 12

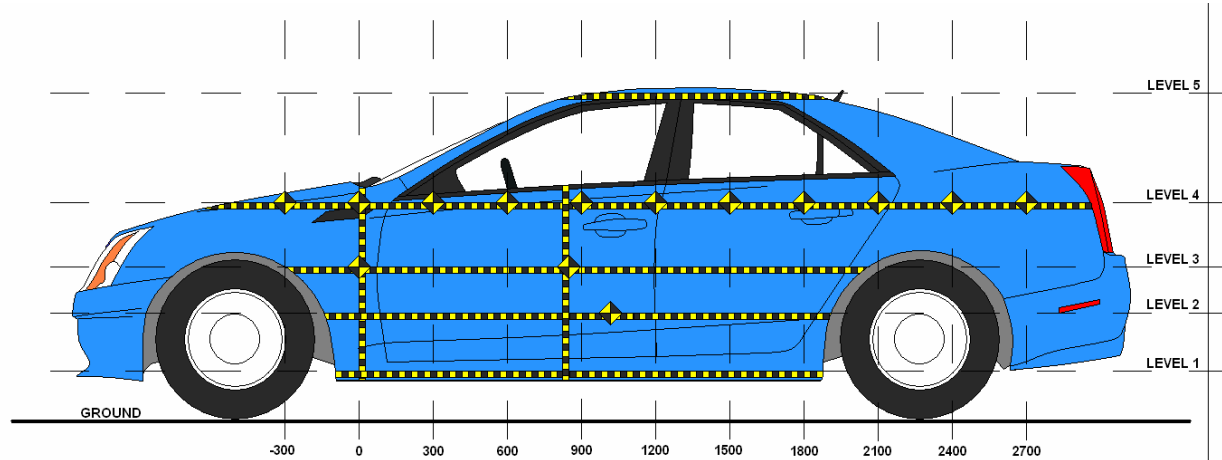
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Lexus RX350 5-Door MPV

NHTSA No. MB5119

Test Program: MDB Side Impact Test

Test Date: 11/09/10



LEFT SIDE VIEW

Level	Description	Height Above Ground (mm)
1	Sill Top Height	345
2	Occupant H-Point Height	675
3	Mid-Door Height	710
4	Window Sill Height	1022
5	Window Top Height	1611

DATA SHEET NO. 12 ... (CONTINUED)

VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Lexus RX350 5-Door MPV

NHTSA No. MB5119

Test Program: MDB Side Impact Test

Test Date: 11/09/10

	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				660					663					3	
-300				654					657					3	
-150				646					638					-8	
0		559	559	636			601	600	628			42	41	-8	
150	574	561	561	631		646	649	652	627		72	88	91	-4	
300	576	562	562	625		657	717	725	644		81	155	163	19	
450	579	562	561	618		659	730	741	655		80	168	180	37	
600	580	562	561	610		657	740	753	686		77	178	192	76	
750	581	562	561	606	901	656	748	762	682	883	75	186	201	76	-18
900	582	563	561	602	896	655	755	771	668	879	73	192	210	66	-17
1050	583	564	562	602	892	658	744	766	658	878	75	180	204	56	-14
1200	583	566	564	598	892	666	731	744	663	879	83	165	180	65	-13
1350	584	569	566	597	889	666	774	785	678	875	82	205	219	81	-14
1500	584	569	567	597	887	669	785	796	702	874	85	216	229	105	-13
1650	583	567	565	596	889	667	797	803	725	874	84	230	238	129	-15
1800	579	561	561	593	893	657	777	787	678	877	78	216	226	85	-16
1950			556	584	898			658	636	882			102	52	-16
2100				567					587					20	
2250				586					584					-2	
2400				589					583					-6	
2550				594					585					-9	
2700				607					595					-12	
2850				646					633					-13	

MAXIMUM CRUSH DATA

	Level 1	Level 2	Level 3	Level 4	Level 5
Maximum Crush (mm)	85	230	238	129	-13
Distance from Impact (mm)	1500	1650	1650	1650	1500

DATA SHEET NO. 12 ... (CONTINUED)

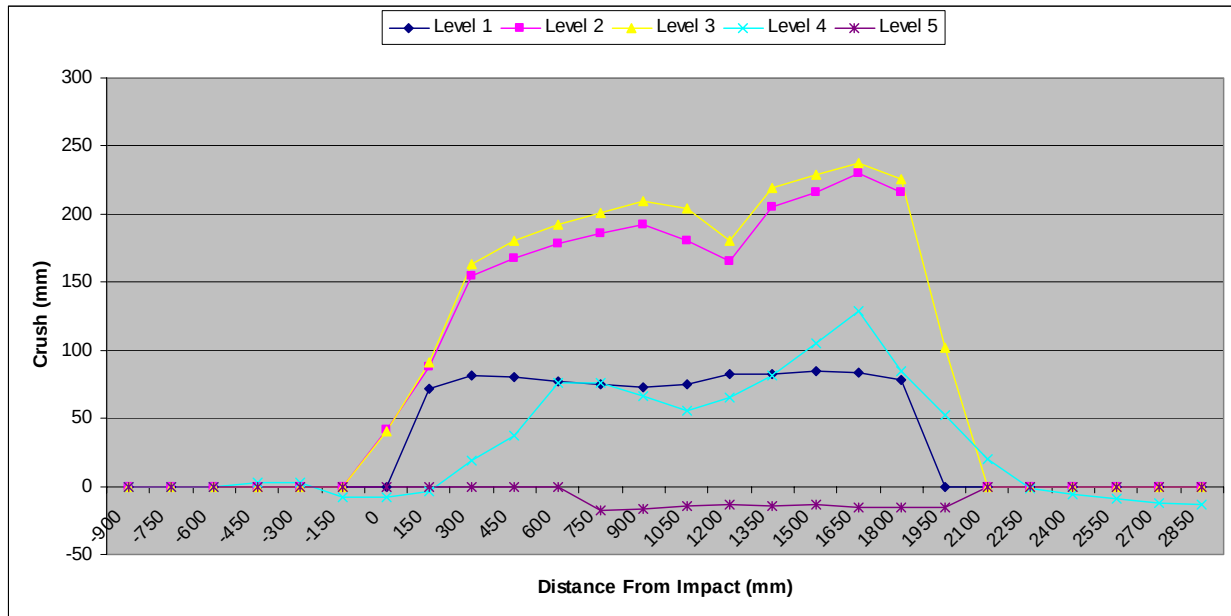
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Lexus RX350 5-Door MPV

NHTSA No. MB5119

Test Program: MDB Side Impact Test

Test Date: 11/09/10



DATA SHEET NO. 13

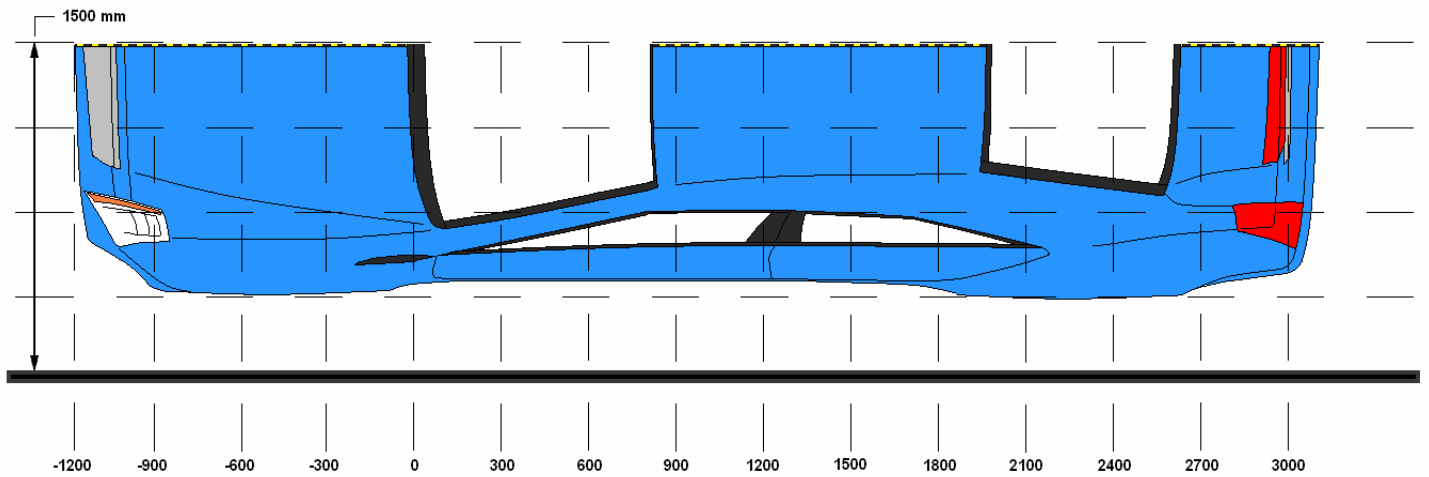
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2011 Lexus RX350 5-Door MPV

NHTSA No. MB5119

Test Program: MDB Side Impact Test

Test Date: 11/09/10



TOP VIEW

DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point in mm	Level	Pre-Test (mm)	Post-Test (mm)	Max. Static Crush (mm)
1	2550	4	594	585	-9
2	1950	3	556	658	102
3	1350	3	566	785	219
4	750	3	561	762	201
5	150	3	561	652	91
6	-450	4	660	663	3

DATA SHEET NO. 14

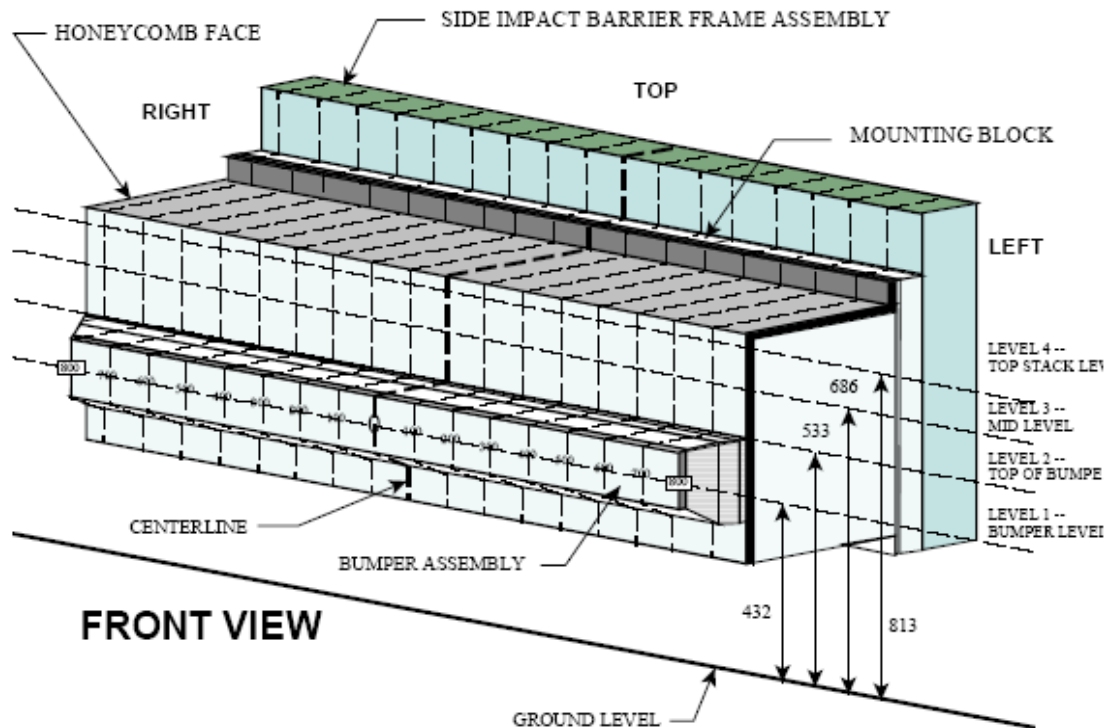
EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

Test Vehicle: 2011 Lexus RX350 5-Door MPV

NHTSA No. MB5119

Test Program: MDB Side Impact Test

Test Date: 11/09/10



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	283	274	272	268	264	263	259	254	257	252	248	246	239	240	242	249	272
2	168	159	157	149	140	131	135	140	137	129	129	134	138	137	139	147	156
3	99	99	83	84	87	107	127	118	101	71	68	67	70	75	85	101	146
4	90	81	81	79	79	89	124	116	79	67	63	66	78	95	110	126	159

All dimensions in millimeters.

DATA SHEET NO. 15

FMVSS NO. 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2011 Lexus RX350 5-Door MPV

NHTSA No. MB5119

Test Program: MDB Side Impact Test

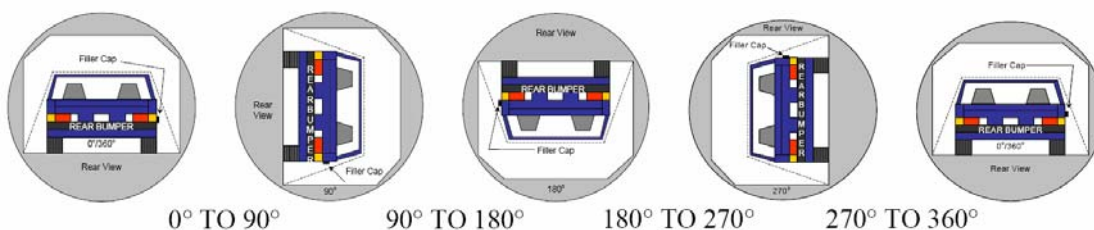
Test Date: 11/09/10

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 18.9° C

Test Time: 12:45 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	305	389
90° To 180°	81	300	381
180° To 270°	77	336	413
270° To 360°	81	300	381

FMVSS 301 SPILLAGE TABLE

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

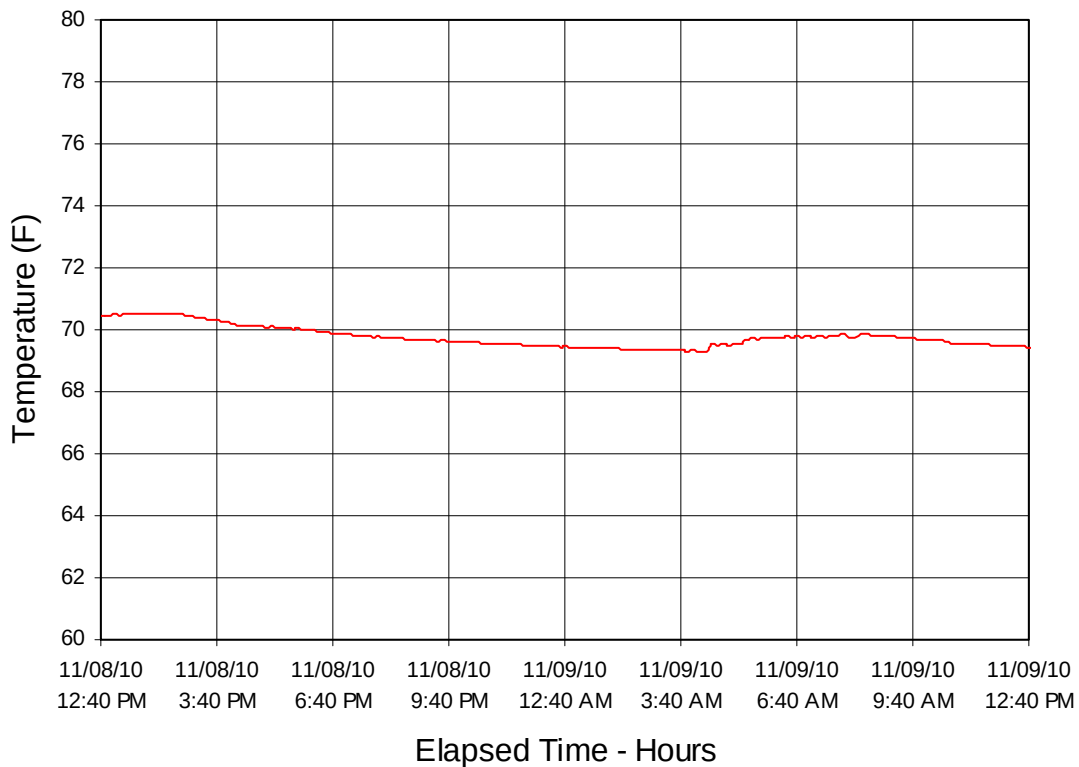
DUMMY / VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2011 Lexus RX350 5-Door MPV

NHTSA No. MB5119

Test Program: MDB Side Impact Test

Test Date: 11/09/10



APPENDIX A
PHOTOGRAPHS

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



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



FIGURE 3. Pre-Test Frontal View of Test Vehicle



FIGURE 4. Post-Test Frontal View of Test Vehicle



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



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



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



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



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



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



FIGURE 11. Pre-Test Rear View of Test Vehicle



FIGURE 12. Post-Test Rear View of Test Vehicle



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



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

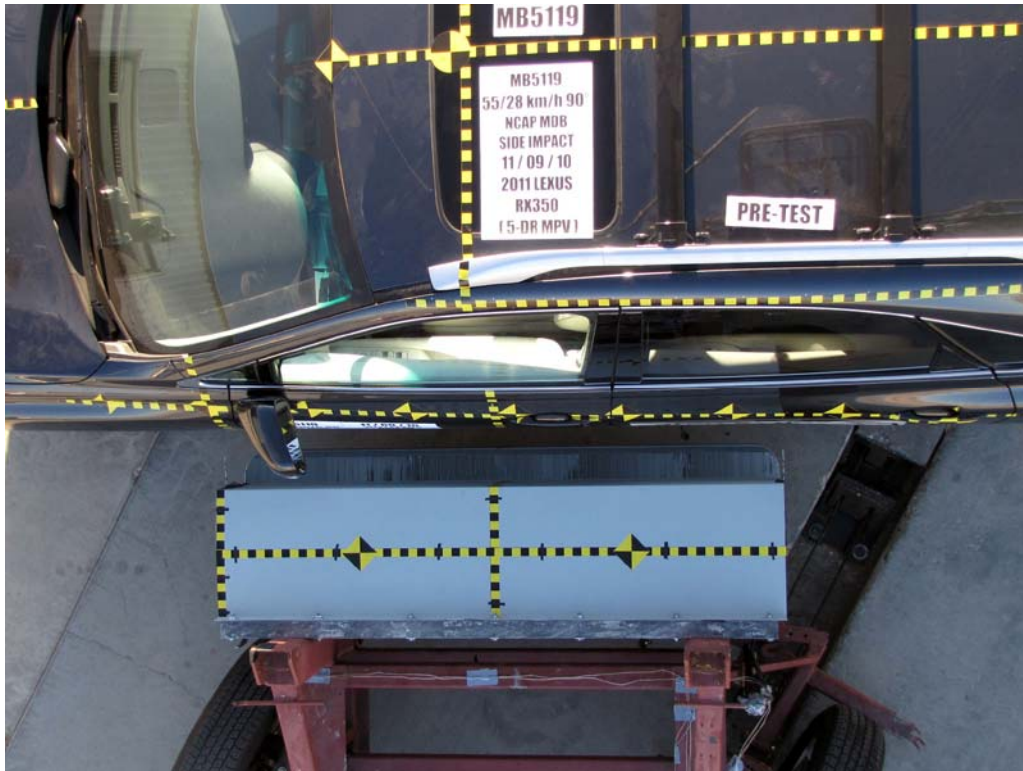


FIGURE 15. Pre-Test Overhead View of Test Vehicle with MDB Positioned Against Side of Test Vehicle



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



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



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



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



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



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



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



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



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

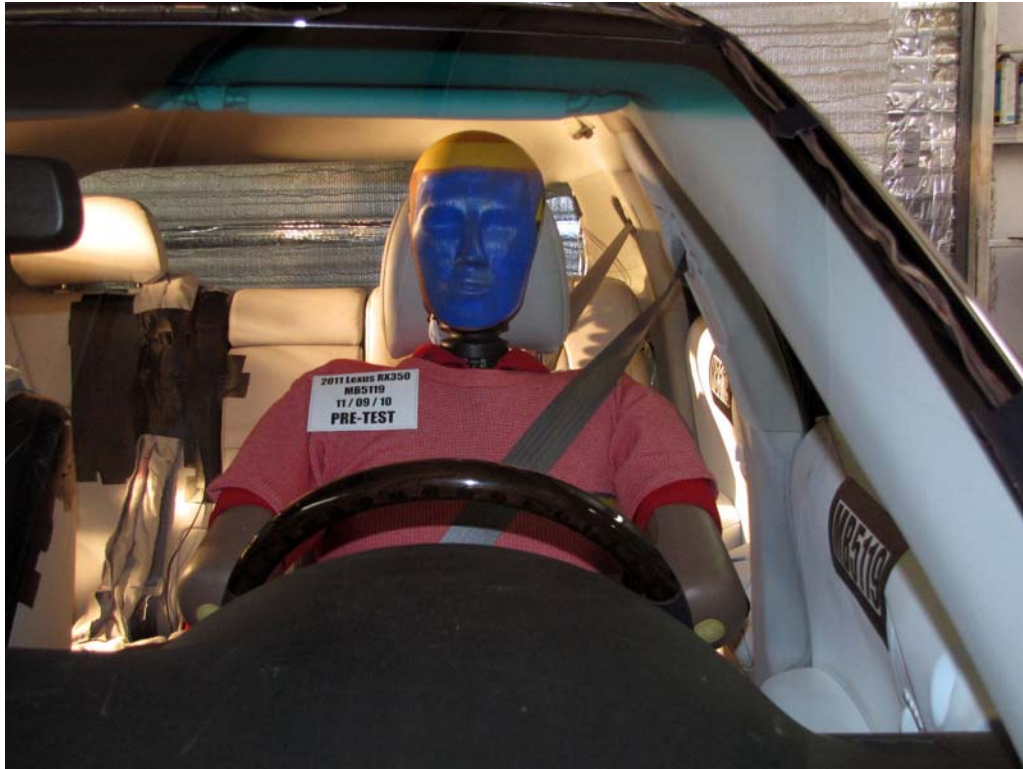


FIGURE 25. Pre-Test Front Close-Up View of Driver Dummy



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



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



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



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



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



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



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



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



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



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



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

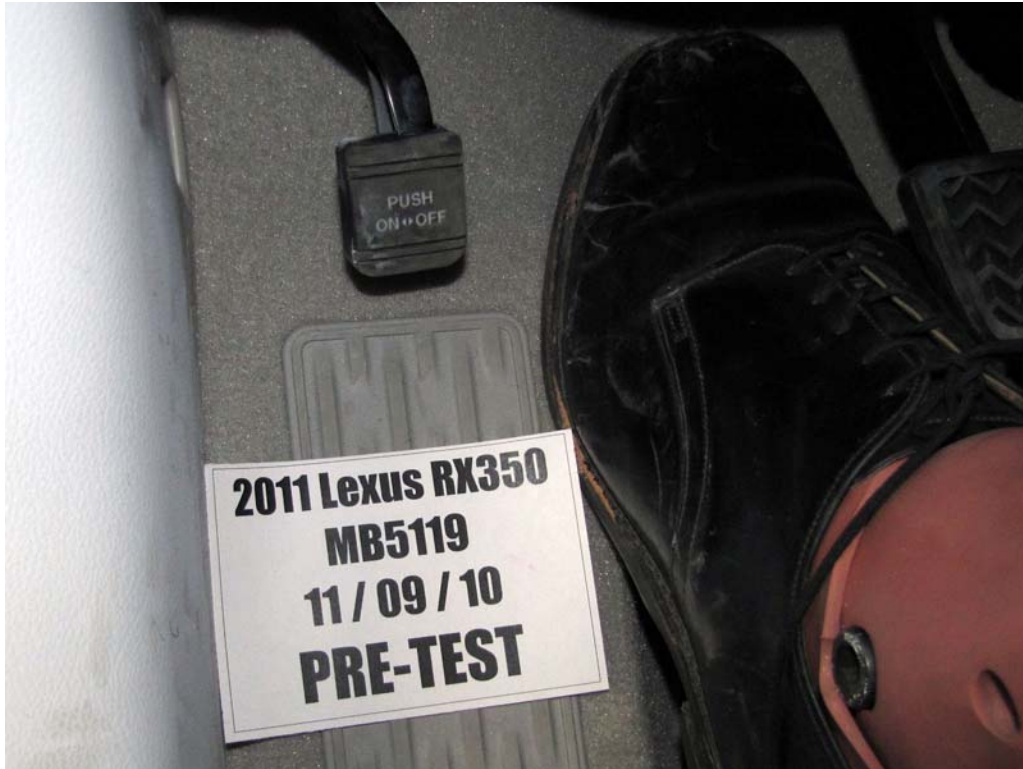


FIGURE 37. Pre-Test View of Parking Brake



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



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



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



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



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



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



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



FIGURE 45. Pre-Test Driver Inner Door Panel View



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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

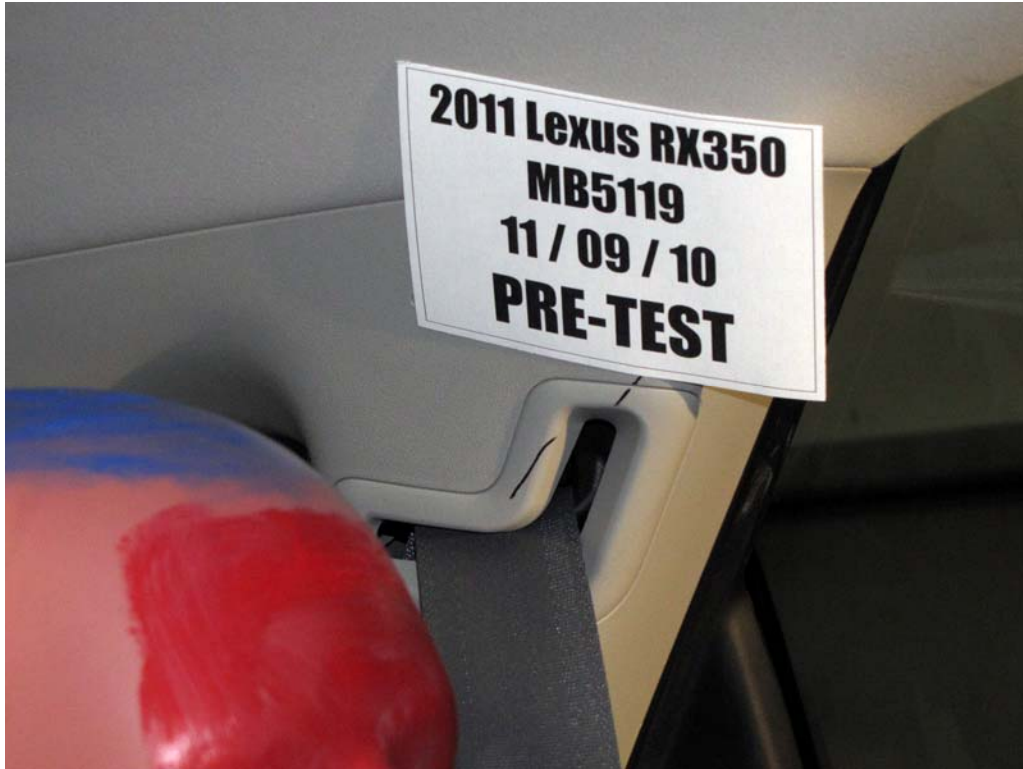


FIGURE 63. Pre-Test View of Belt Anchorage for Rear Passenger Dummy



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



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



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



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



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



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



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



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



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



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



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



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



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



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

Photograph Not Applicable

No Dummy Pelvis Contact
With Side Airbag

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



FIGURE 79. Pre-Test View of Fuel Filler Cap



FIGURE 80. Post-Test View of Fuel Filler Cap



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



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



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



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



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



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



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



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



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

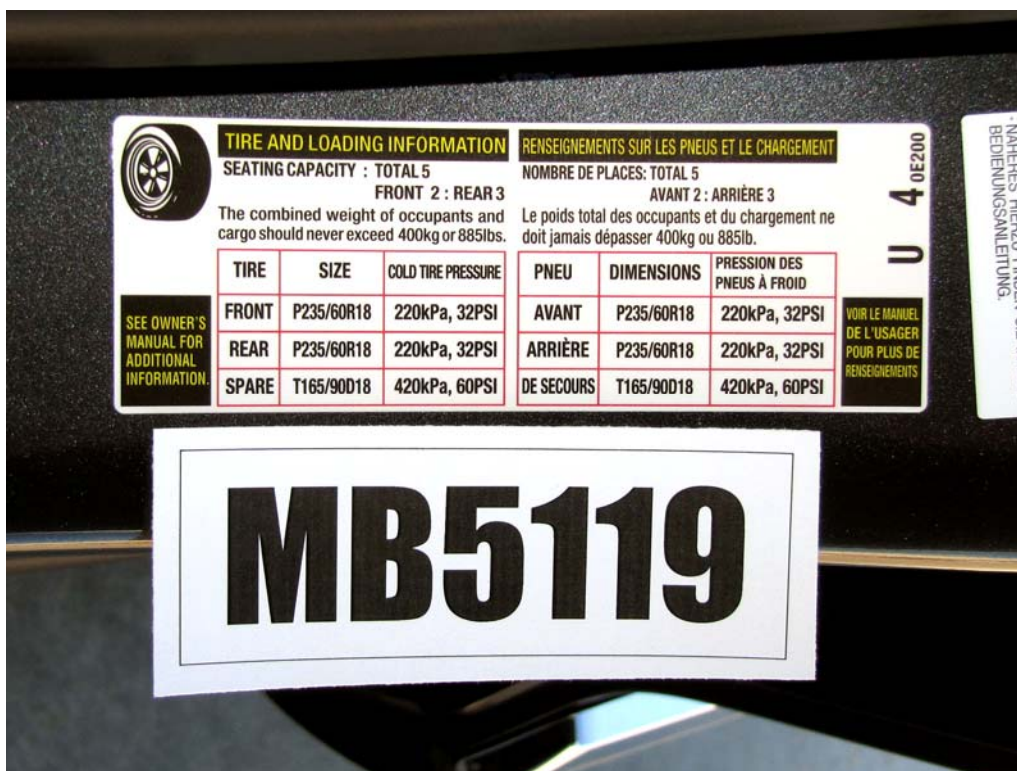


FIGURE 90. Close-Up View of Vehicle's Tire Information Placard



FIGURE 91. Pre-Test Ballast View

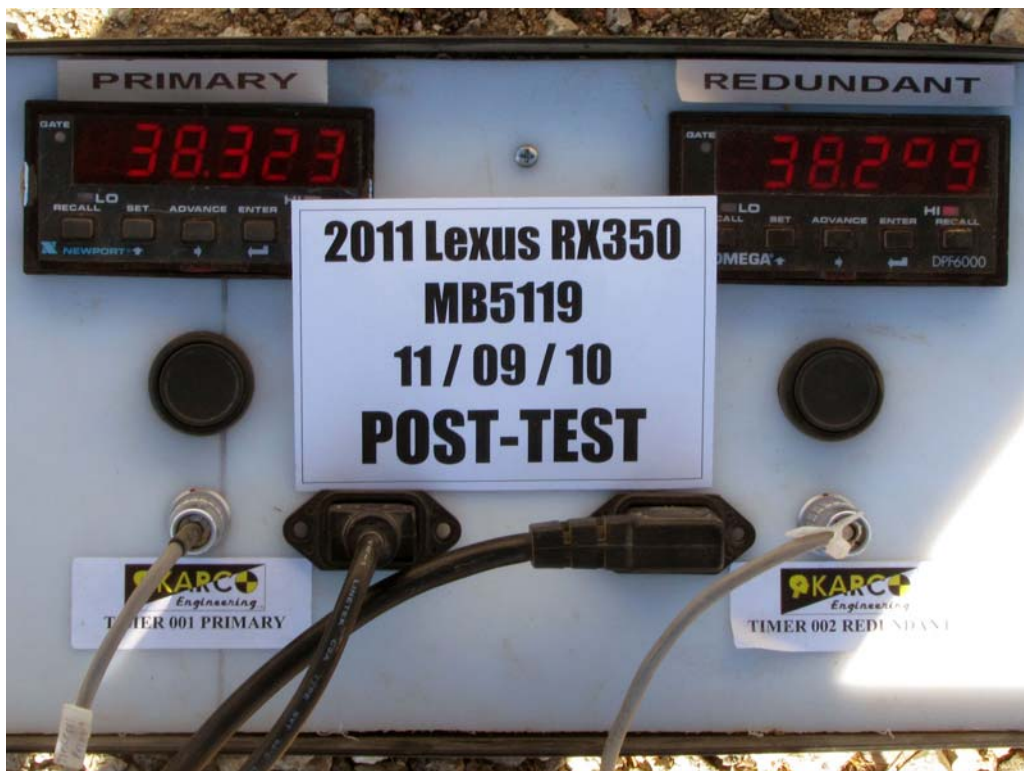


FIGURE 92. Post-Test Primary and Redundant Speed Trap Read-Out



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



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



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



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

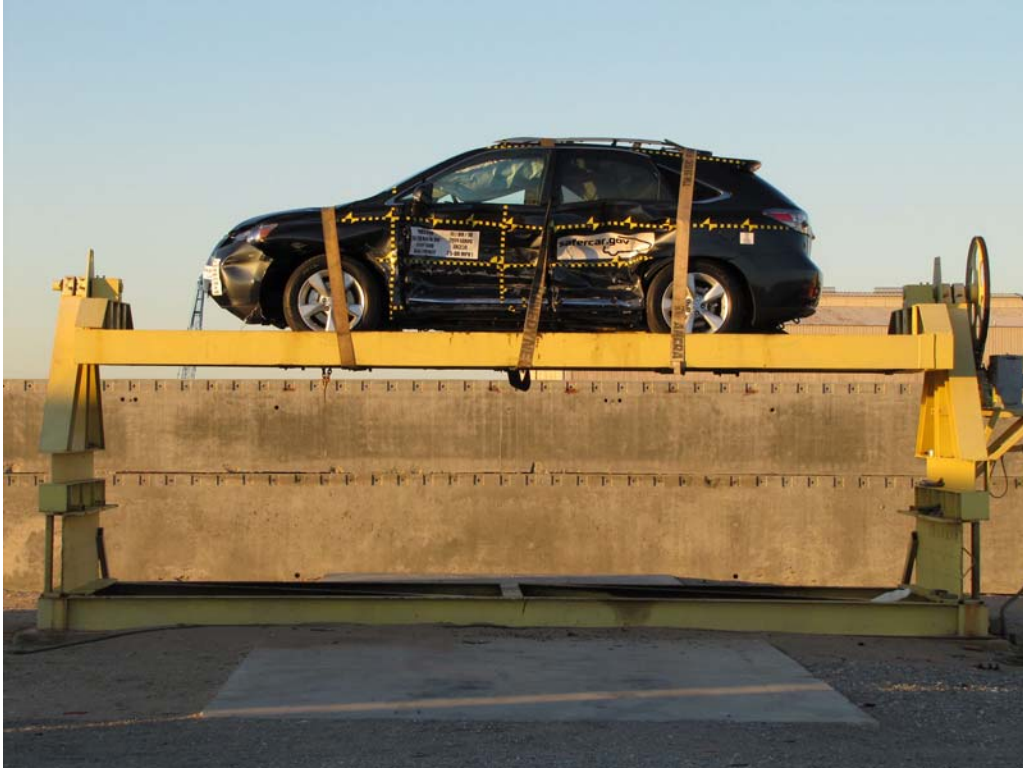


FIGURE 97. FMVSS No. 301/305 Rollover 360 Degrees



FIGURE 98. Impact Event

LEXUS
The Pursuit of Perfection

DESCRIPTION: 2011 / 9420A RX 350 5-DR SUV
COLOR: SMOKY GRANITE MICA
VIN: 2T2ZK1B7BC041601
PORT/PLANT: Detroit, MI/TMMC

Seller Name / Address:
MOTOR CITY LEXUS OF
BAKERSFIELD
5101 GASOLINE ALLEY DRIVE
BAKERSFIELD CA93313

Skip to (Seller, unless otherwise indicated)

STANDARD EQUIPMENT & INSTALLED OPTIONS

PERFORMANCE FEATURES

- 3.5 Liter 275HP Four Cam 24-Valve V6 Engine with Variable Valve Timing (VVT-i)
- 6-Sp Automatic Transmission w/ "Snow Mode"
- Electric Power Rack-and-Pinion Steering
- 4-Wheel Power Assist - w/ Ventilated Front & Solid Rear Disc Brakes
- 18" Aluminum Alloy Wheels

SAFETY FEATURES

- Dual Advanced Front Airbags, Driver & Passenger
- Knee Airbag, Front & Rear Side Curtain Airbags
- Front & Rear Seat Mounted Side Airbags
- 3-Point Safety Belts for All Seating Positions
- Front and Rear Outboard Seat Belt Pretensioners w/ Force Limiters, Fr Manual Height Adj. Anchors
- Front Active Headrests
- 4-Wheel Anti-Lock Braking System (ABS) with Electronic Brakeforce Distribution (EBD), Brake Assist (BA) / Vehicle Stability Control (VSC)
- Smart Stop Technology
- Energy Managing Crumple Zones, Side Door Beams
- Vehicle Theft-Deterrent Sys w/ Engine Immobilizer
- Automatic On/Off Headlamps / Integrated Fog Lamps
- Daytime Running Lamps (DRL)
- Safety Connect: Automatic Collision Notification, Stolen Vehicle Location, Emergency Assist Button (SOS), and Enhanced Roadside Assistance (1-year trial subscription included)

LUXURY AND CONVENIENCE FEATURES

- Variable Intermittent Front Wipers
- Tire Pressure Monitoring System
- Tool Kit and First Aid Kit
- Lexus Premium Audio System, Automatic Sound Levelizer (ASL), and In-Cash Single Feed 6-Disc CD Auto-Change, In-Glass Antenna w/ FM Diversity System, Bluetooth Technology, XM Satellite Radio (90-day trial subscription included)
- Auto Dual Zone Climate Control Sys w/ Rear Vents
- 10-Way Power Driver's & Front Passenger's Seats
- Power Tilt-and-Telescope Steering Column
- Height Adjustable Headrests for All Seats
- Reclining/Sliding 40/20/40 Split Rear Seat
- 3-Spoke Steering Wheel with Audio Controls
- Cruise Control
- Power Windows w/ One-Touch Auto Open/Close Feature
- Power Door Locks with Anti-Lock Out Feature
- Lexus HomeLink Universal Transceiver
- SmartAccess Passive Entry System
- Rear Black Privacy Glass/Integrated Rear Spoiler
- Genuine Wood Interior Trim
- Premium Roof Rails
- LCD Screen for Ventilation, Audio Settings
- Multi-Information Display with Lexus Personalized Settings, Trip Computer & Outside Temp Display
- Tonneau Cover
- Carpeted Floor Mats

MANUFACTURER'S SUGGESTED RETAIL PRICE

\$ 37,975.00

- Backup Camera mounted in Rearview Mirror
- Heated and Ventilated Front Seats
- Premium Package Includes: Leather Trim Interior, One-Touch Open/Close Moonroof, Auto-Dimming Electrochromic Power Heated Outside Mirrors, Power Rear Door, USB Audio Plug, Driver's Seat/Steering/Mirror Memory-3 settings
- Wood & Leather Trimmed Steering Wheel & Shift Knob
- Acry Plg: Cargo Mat, Cargo Net and Wheel Locks
- Cross Bars
- Cargo Spiler Net
- Premium Floor Mats

350.00
640.00
2,400.00
330.00
242.00
259.00
49.00
265.00

EPA Fuel Economy Estimates

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

Estimated Annual Fuel Cost \$ 1,999
based on 15,000 miles at \$3.20 per gallon

HIGHWAY MPG
25
Expected range for most drivers
20 to 36 MPG

Combined Fuel Economy
This Vehicle
21

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

GOVERNMENT SAFETY RATINGS

Frontal Crash	Driver Passenger	Not Rated
Star ratings based on the risk of injury in a frontal impact. Frontal ratings should ONLY be compared to other vehicles of similar size and weight.		
Side Crash	Front seat	Not Rated
Star ratings based on the risk of injury in a side impact.		
Rollover	Rear seat	Not Rated
Star ratings based on the risk of rollover in a single vehicle crash.		

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

SUB-TOTAL \$ 42,510.00
DELIVERY, PROCESSING AND HANDLING FEE 875.00
TOTAL \$ 43,385.00

APPLICABLE FEDERAL TAXES NOT INCLUDED

Manufacturer's suggested retail price includes manufacturer's recommended pre-delivery service. License and title fees, state, local and applicable federal taxes, and dealer installed options and accessories are not included in the manufacturer's suggested retail price.

LEXUS NEW VEHICLE LIMITED WARRANTY
Limited warranty coverage highlights include:
• 4 yr / 50,000 mile basic coverage
• 6 yr / 70,000 mile powertrain coverage
• 8 yr / Unlimited mile corrosion perforation warranty

See your Warranty and Service Guide for details.

LEXUS IS PLEASED TO OFFER THE FOLLOWING OWNER SUPPORT PACKAGE WITH EACH NEW LEXUS:
• 24 hour, 365 days roadside assistance plan
• Complimentary 1st and 2nd scheduled maintenance services
• Lodging for emergency breakdown 100 miles from home

An extended service contract may be available for this vehicle. Ask dealer for details.

24GBF0 735 MLI A1312

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 pressing the lock release button.

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.

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

Adjusting the height of the head restraints (front seats)
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 seat head restraints
Always raise the head restraints to the uppermost lock position during use.

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.

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

Photograph Not Applicable

No Passenger Head Restraint Use
And Adjustment Information
In Vehicle Manual

FIGURE 101. Left Rear Passenger Head Restraint Use and Adjustment
Information from Vehicle 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
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16	Passenger Head Acceleration (Z) vs. Time Primary	B-5
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18	Passenger Lower Spine T12 Acceleration (X) vs. Time	B-6
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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)

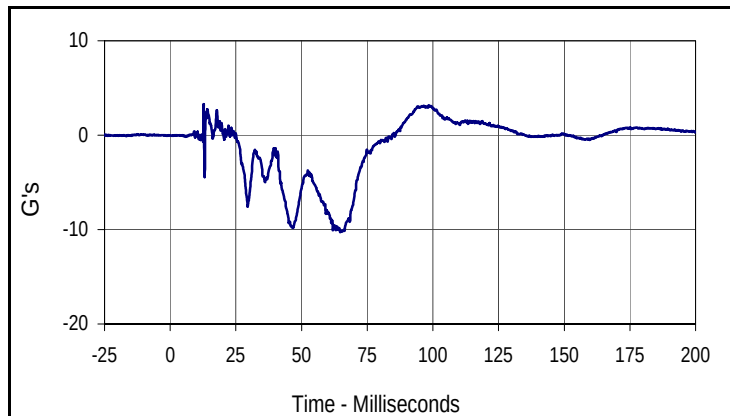
Front Seat Track Acceleration (Y)
Rear Seat Track Acceleration (Y)
Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)

MDB Instrumentation Data

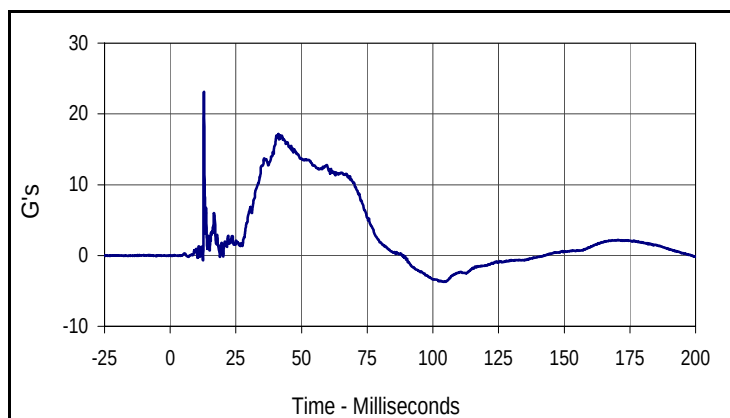
MDB Center of Gravity Acceleration (X)
MDB Center of Gravity Acceleration (Y)
MDB Center of Gravity Acceleration (Z)
MDB Rear Acceleration (X)
MDB Rear Acceleration (Y)
Left MDB Contact Switch
Right MDB Contact Switch

Test Vehicle: 2011 Lexus RX350 5-Door MPV
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

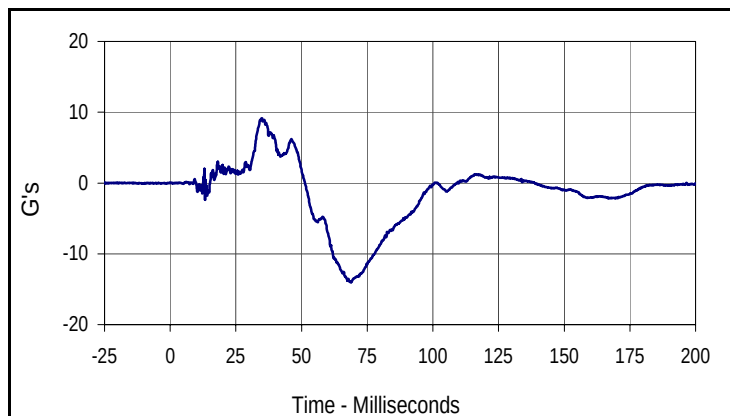
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 NHTSA No.: MB5119



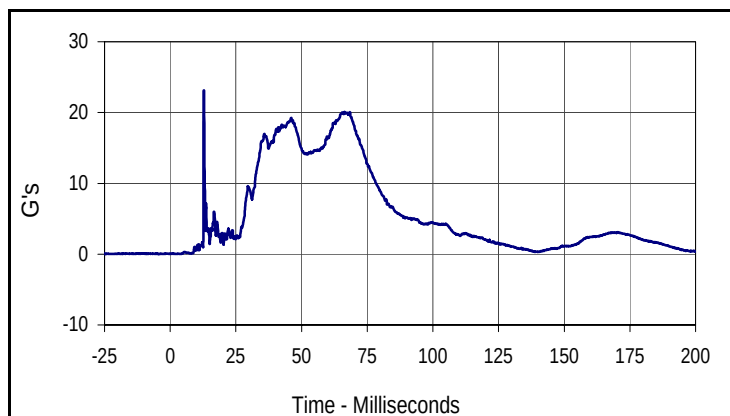
Curve Description			
Driver Head Acceleration X Primary			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
3.3	12.8	-10.3	64.8



Curve Description			
Driver Head Acceleration Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
23.1	12.9	-3.7	104.9



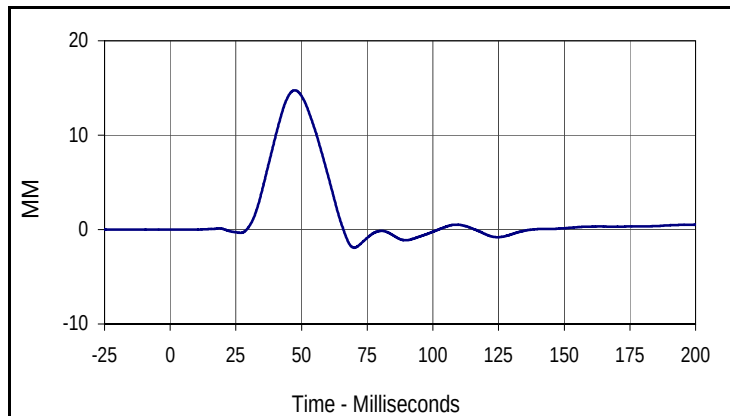
Curve Description			
Driver Head Acceleration Z Primary			
CURNO	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
9.1	34.8	-14.0	68.8



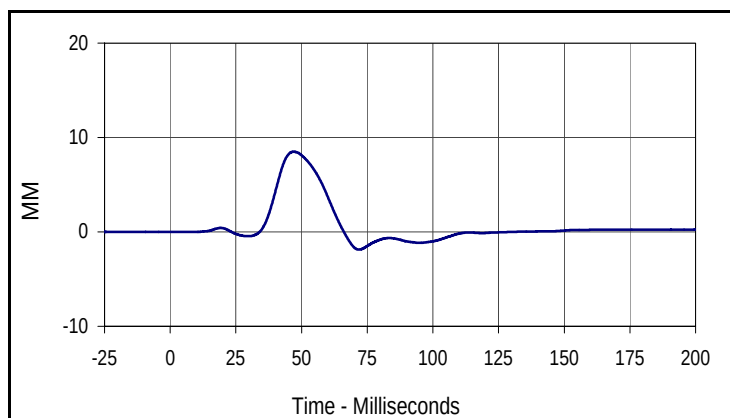
Curve Description			
Driver Head Resultant Acceleration Primary			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
23.1	12.9	0.0	1.8

Test Vehicle: 2011 Lexus RX350 5-Door MPV
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

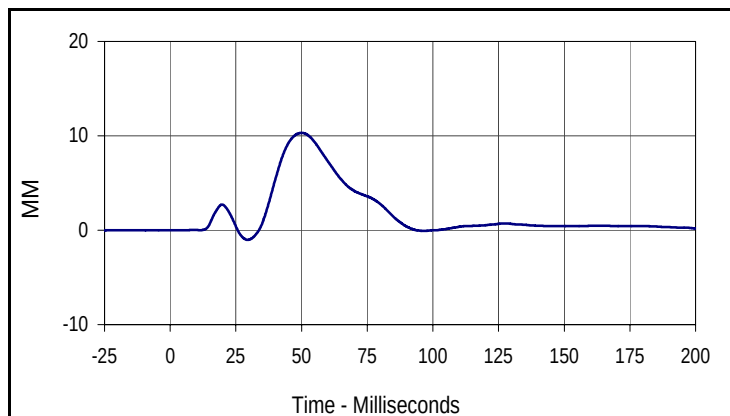
Test Date: 11/9/10
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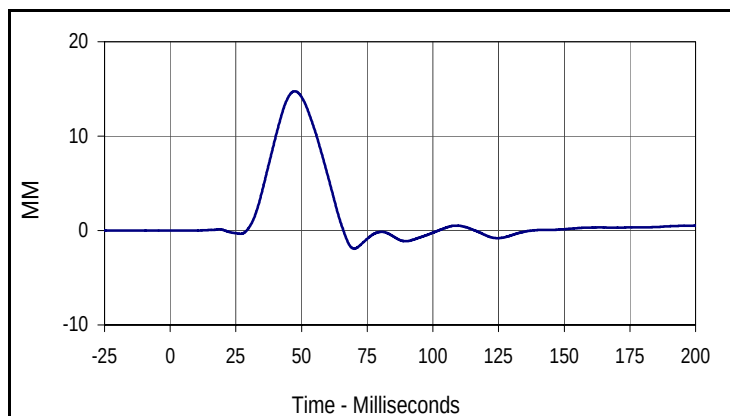
Curve Description			
Driver Upper Thorax Rib Deflection Y			
CURNO	Type	SAE Class	Units
007	FIL	180	MM
Max	Time	Min	Time
14.8	47.4	-1.9	70.0



Curve Description			
Driver Middle Thorax Rib Deflection Y			
CURNO	Type	SAE Class	Units
008	FIL	180	MM
Max	Time	Min	Time
8.5	47.0	-1.9	71.9



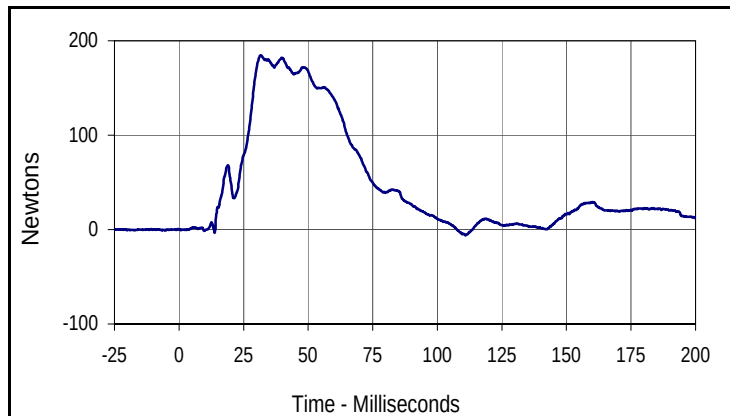
Curve Description			
Driver Lower Thorax Rib Deflection Y			
CURNO	Type	SAE Class	Units
009	FIL	180	MM
Max	Time	Min	Time
10.3	50.1	-1.0	29.5



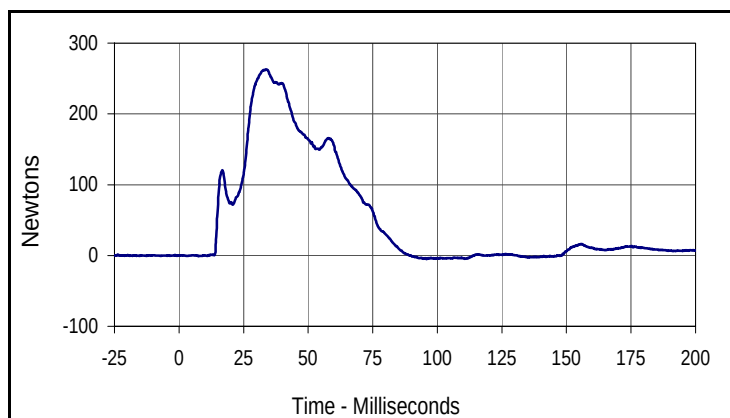
Curve Description			
Driver Thorax Rib Deflection Maximum			
CURNO	Type	SAE Class	Units
010	FIL	180	MM
Max	Time	Min	Time
14.8	47.4	-1.9	70.0

Test Vehicle: 2011 Lexus RX350 5-Door MPV
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

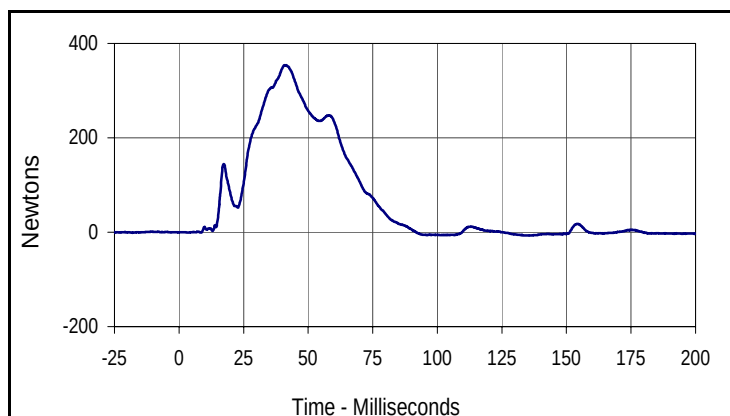
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 NHTSA No.: MB5119



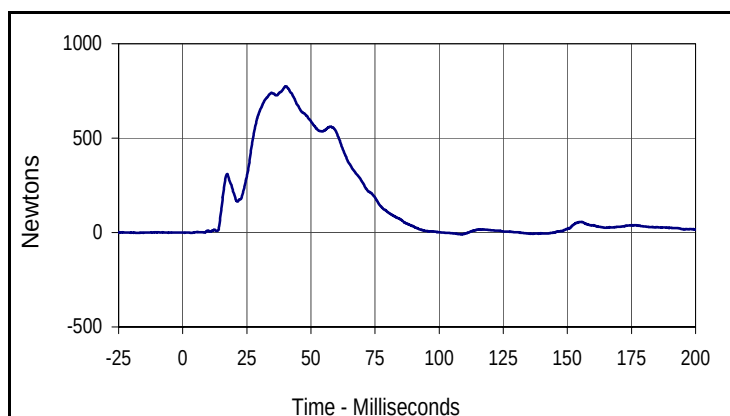
Curve Description			
Driver Anterior Abdominal Force Y			
CURNO	Type	SAE Class	Units
013	FIL	600	Newtons
Max	Time	Min	Time
184.7	31.8	-6.2	110.9



Curve Description			
Driver Middle Abdominal Force Y			
CURNO	Type	SAE Class	Units
014	FIL	600	Newtons
Max	Time	Min	Time
263.0	33.6	-5.1	95.8



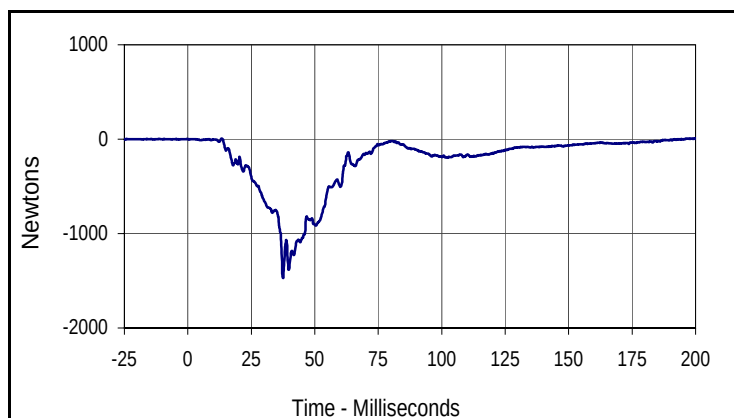
Curve Description			
Driver Posterior Abdominal Force Y			
CURNO	Type	SAE Class	Units
015	FIL	600	Newtons
Max	Time	Min	Time
353.8	40.8	-7.1	136.5



Curve Description			
Driver Total Abdominal Force			
CURNO	Type	SAE Class	Units
013	RES	600	Newtons
Max	Time	Min	Time
774.2	40.4	-9.6	108.7

Test Vehicle: 2011 Lexus RX350 5-Door MPV
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

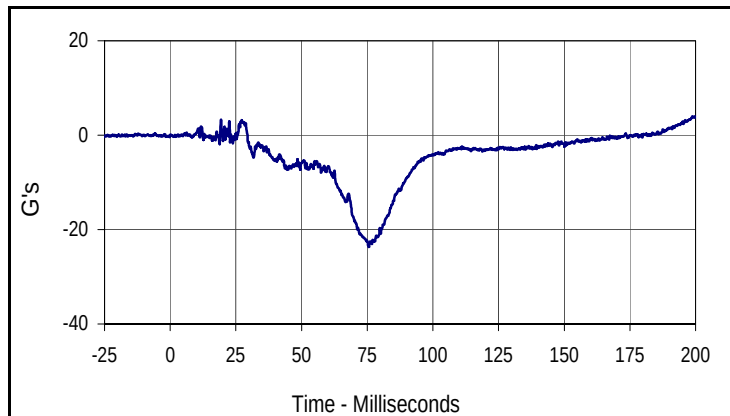
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 NHTSA No.: MB5119



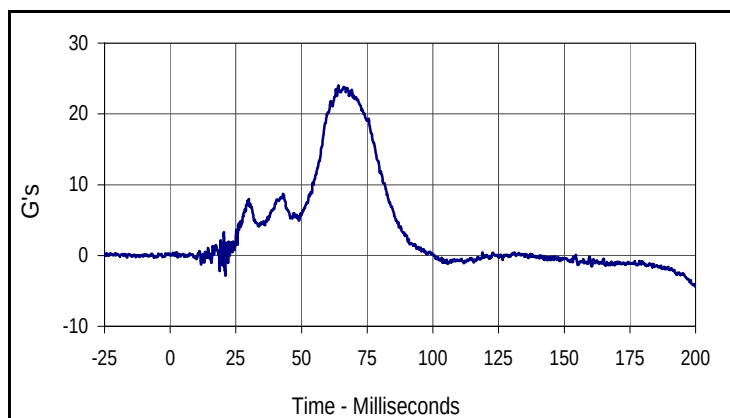
Curve Description			
Driver Pubic Symphysis Force Y			
CURNO	Type	SAE Class	Units
016	FIL	600	Newtons
Max	Time	Min	Time
7.9	196.8	-1472.0	37.5

Test Vehicle: 2011 Lexus RX350 5-Door MPV
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

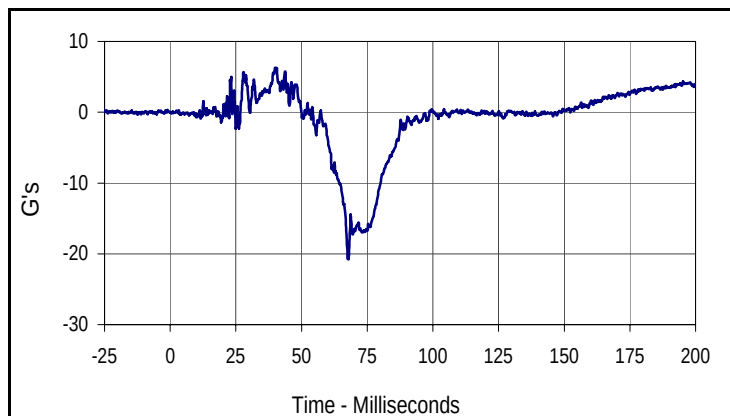
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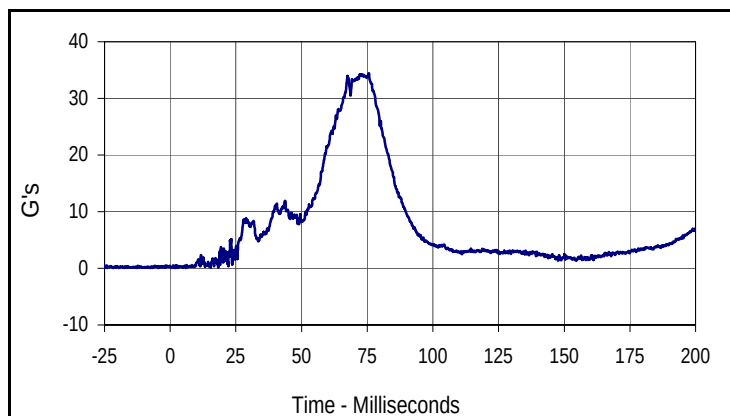
Curve Description			
Passenger Head Acceleration X Primary			
CURNO	Type	SAE Class	Units
021	FIL	1000	G's
Max	Time	Min	Time
4.0	198.9	-23.7	75.6



Curve Description			
Passenger Head Acceleration Y Primary			
CURNO	Type	SAE Class	Units
022	FIL	1000	G's
Max	Time	Min	Time
24.0	64.0	-4.5	200.0



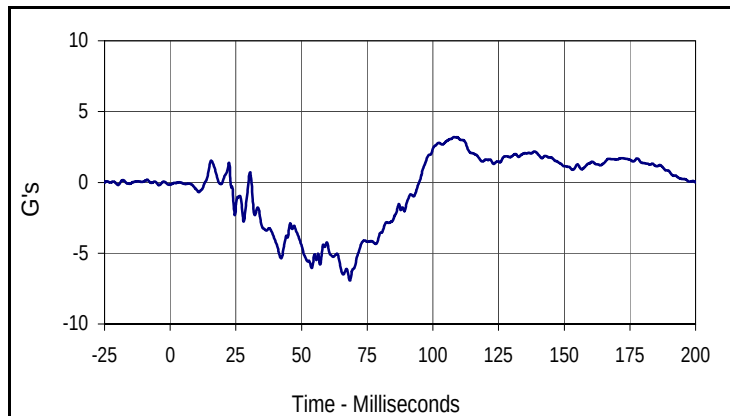
Curve Description			
Passenger Head Acceleration Z Primary			
CURNO	Type	SAE Class	Units
023	FIL	1000	G's
Max	Time	Min	Time
6.3	39.9	-20.8	67.9



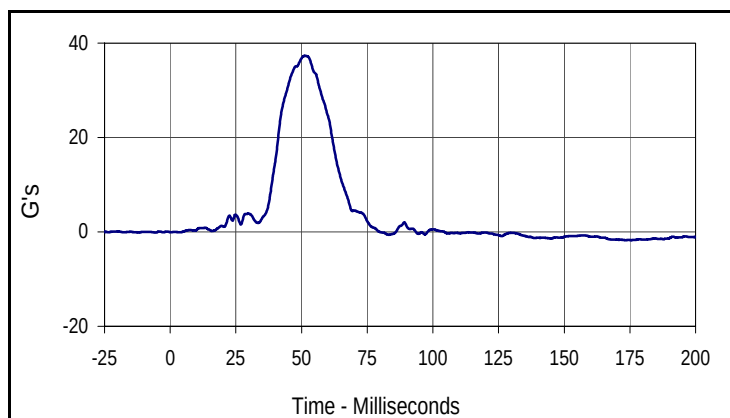
Curve Description			
Passenger Head Acceleration Resultant Primary			
CURNO	Type	SAE Class	Units
021	RES	1000	G's
Max	Time	Min	Time
34.4	75.6	0.0	1.9

Test Vehicle: 2011 Lexus RX350 5-Door MPV
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

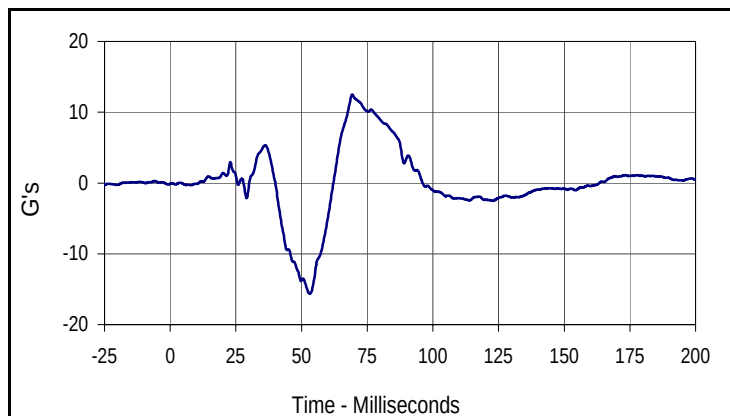
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 NHTSA No.: MB5119



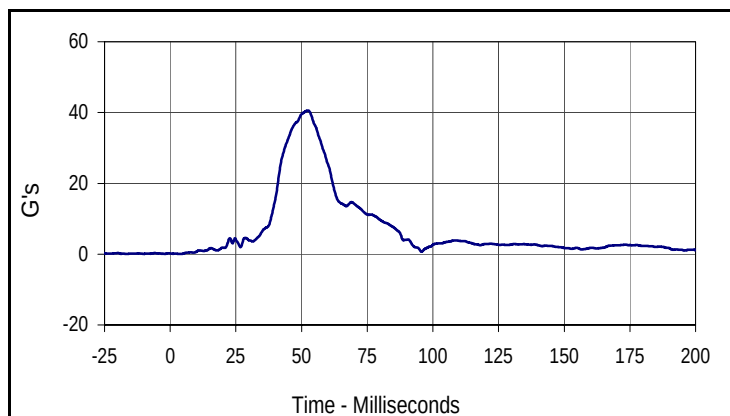
Curve Description			
Passenger Lower Spine T12 Acceleration X			
CURNO	Type	SAE Class	Units
037	FIL	180	G's
Max	Time	Min	Time
3.2	108.1	-6.9	68.4



Curve Description			
Passenger Lower Spine T12 Acceleration Y			
CURNO	Type	SAE Class	Units
038	FIL	180	G's
Max	Time	Min	Time
37.3	51.3	-1.8	173.4



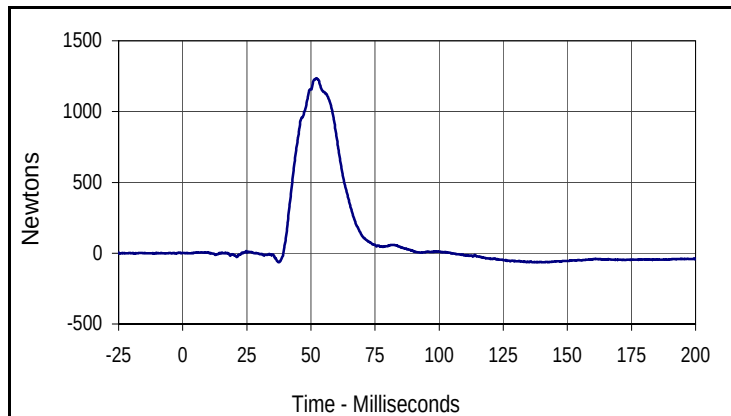
Curve Description			
Passenger Lower Spine T12 Acceleration Z			
CURNO	Type	SAE Class	Units
039	FIL	180	G's
Max	Time	Min	Time
12.5	69.3	-15.6	53.1



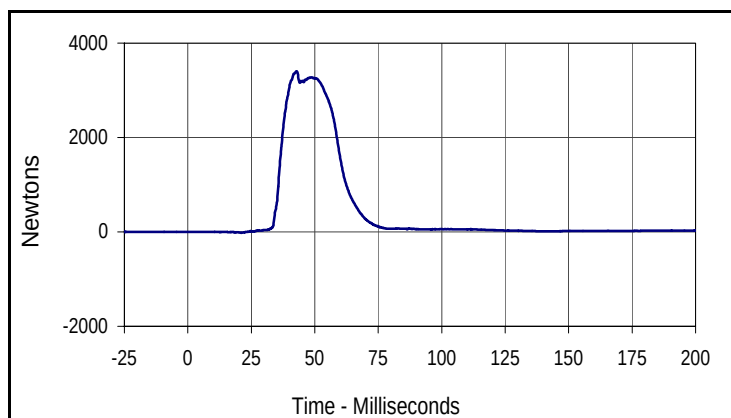
Curve Description			
Passenger Lower Spine T12 Acceleration Resultant			
CURNO	Type	SAE Class	Units
037	RES	180	G's
Max	Time	Min	Time
40.6	52.5	0.1	4.4

Test Vehicle: 2011 Lexus RX350 5-Door MPV
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

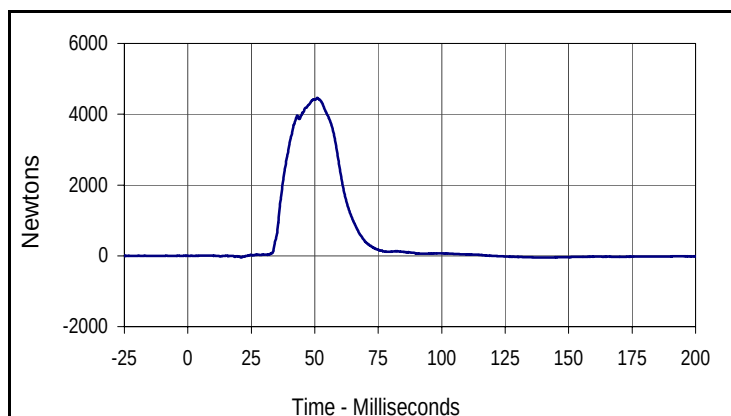
Test Date: 11/9/10
 NHTSA No.: MB5119



Curve Description			
Passenger Iliac Wing Force on Impact Side Y			
CURNO	Type	SAE Class	Units
043	FIL	600	Newtons
Max	Time	Min	Time
1235.6	52.1	-64.8	37.5



Curve Description			
Passenger Acetabulum Force on Impact Side Y			
CURNO	Type	SAE Class	Units
042	FIL	600	Newtons
Max	Time	Min	Time
3402.0	42.9	-18.3	21.0



Curve Description			
Passenger Total Pelvic Force			
CURNO	Type	SAE Class	Units
042	SUM	600	Newtons
Max	Time	Min	Time
4459.7	51.0	-51.5	140.2

APPENDIX C
DUMMY CALIBRATION DATA

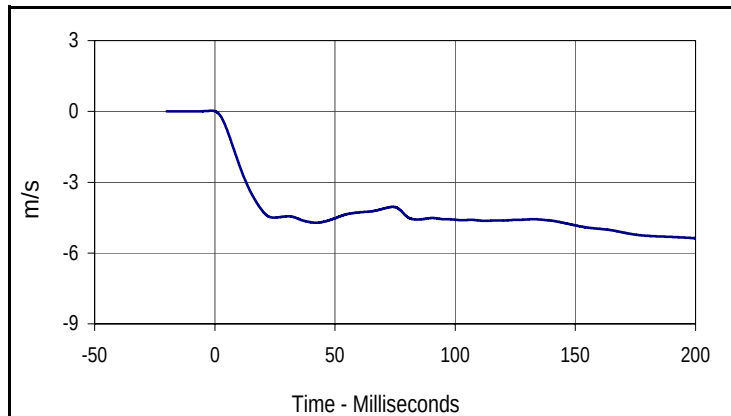
APPENDIX C
PRE-TEST / HIII CONFIGURATION AND PERFORMANCE VERIFICATION DATA

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

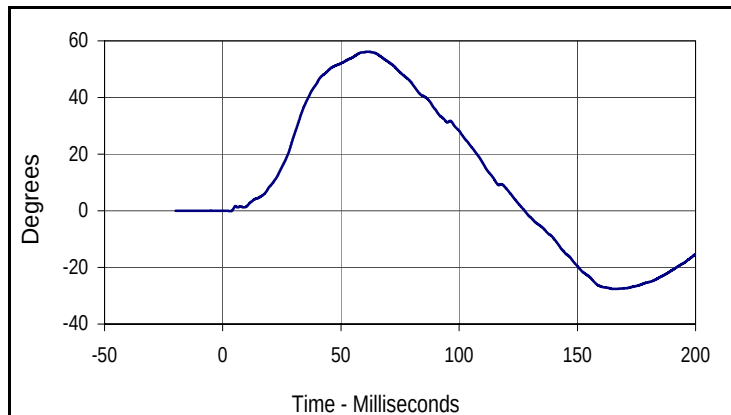
Test Date: 10/30/10
 Test I.D.: NB10E



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	3.35	Pass
Pendulum Deceleration	1 msec	m/s	0.0 to -.050	-0.038	Pass
	3 msec	m/s	-.250 to -.375	-0.301	Pass
	14 msec	m/s	-3.20 to -3.70	-3.23	Pass
Headform Rotation	Max	Degrees	49.0 to 58.0	56.2	Pass
	Time	msec	54.0 to 66.0	61.5	Pass
Maximum Rotation To Time Zero Crossing		msec	53.0 to 88.0	66.3	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	-5.4	200.0



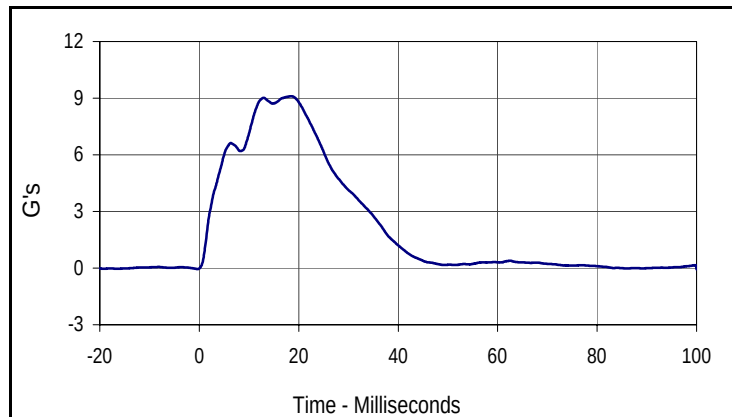
Curve Description			
Headform Rotation			
CURNO	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
56.2	61.5	-27.6	164.9

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

Test Date: 10/30/10
 Test I.D.: SH10E



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	4.25	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	9.1	Pass
Overall Test Results			Pass	



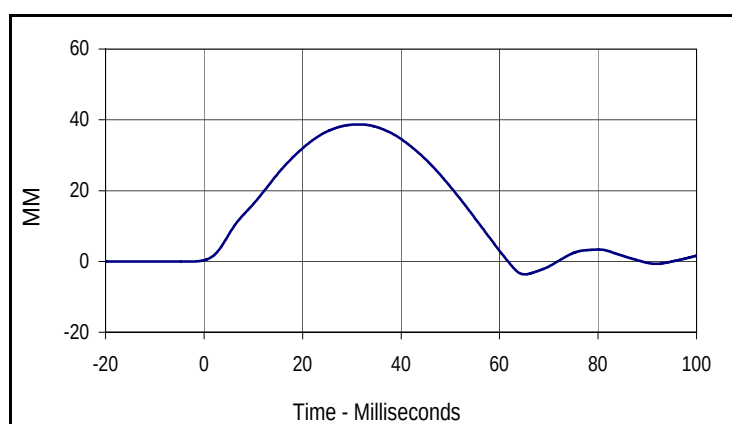
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
9.1	18.5	0.0	-0.4

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

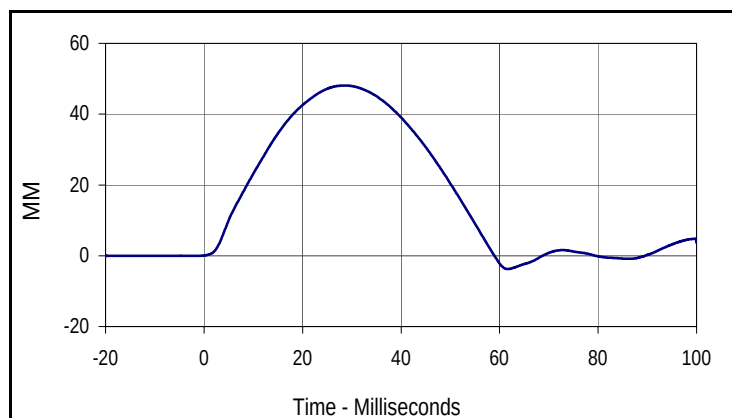
Test Date: 10/30/10
 Test I.D.: RIB10M



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	38.7	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	48.1	Pass
Overall Test Results			Pass	



Curve Description			
Upper Rib Deflection (459 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
38.7	31.4	-3.7	65.1



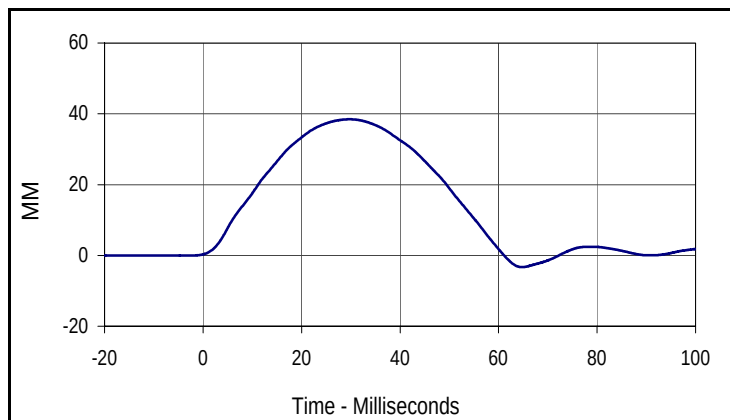
Curve Description			
Upper Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
48.1	28.6	-3.8	61.7

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

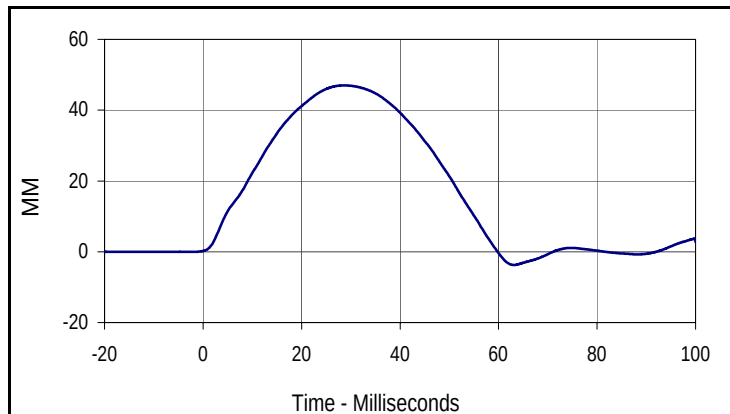
Test Date: 10/30/10
 Test I.D.: RIB10N



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	38.5	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	47.0	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
38.5	29.7	-3.3	64.7



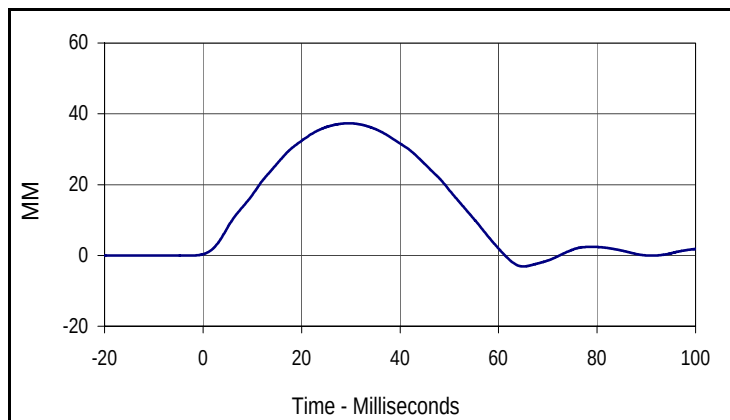
Curve Description			
Middle Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
47.0	28.7	-3.7	63.1

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

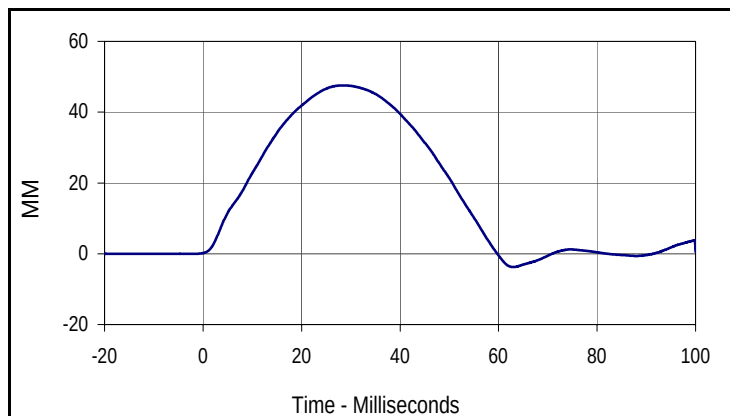
Test Date: 10/30/10
 Test I.D.: RIB100



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Rib Deflection at 459 MM Drop Height	MM	36 to 40	37.3	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	47.6	Pass
Overall Test Results			Pass	



Curve Description			
Lower Rib Deflection (459 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
37.3	29.6	-3.1	65.0



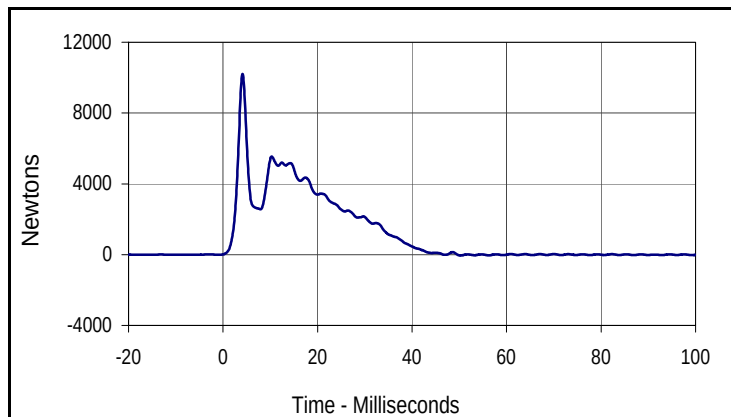
Curve Description			
Lower Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
47.6	28.4	-3.8	63.0

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

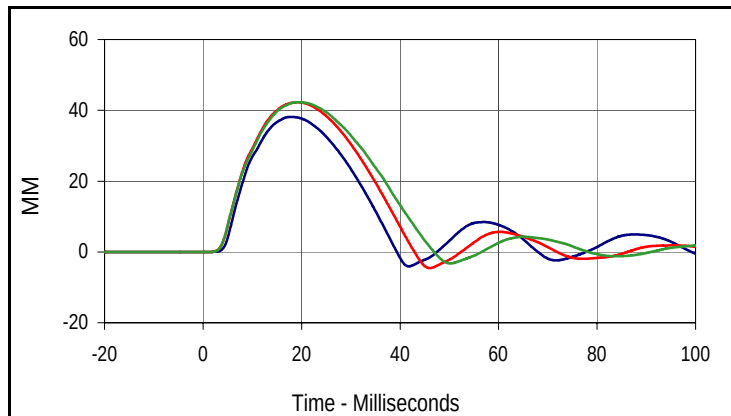
Test Date: 10/30/10
 Test I.D.: TH10E



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	5547.1	Pass
	msec	> 6.0 msec	10.3	Pass
Upper Rib Deflection	MM	34 to 41	38.1	Pass
Middle Rib Deflection	MM	37 to 45	42.3	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
10205.5	4.1	-49.9	50.2



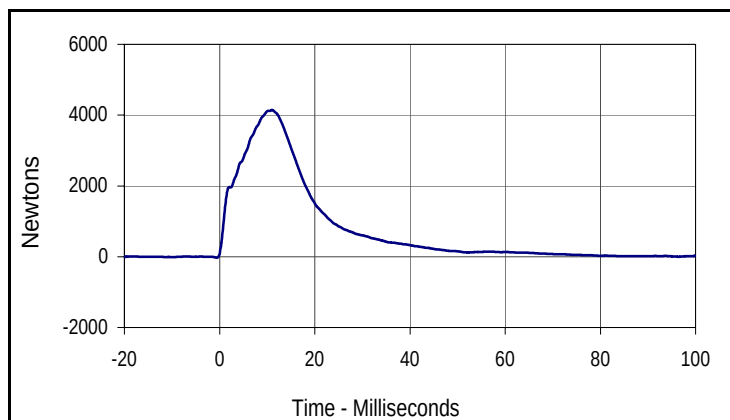
Curve Description			
Upper, Middle, Lower Rib Deflections			
CURNO(s)	Type	SAE Class	Units
002-003-004	FIL	180	MM
Max (Upper)	Time	Min (Upper)	Time
38.1	17.8	-4.1	41.8
Max (Middle)	Time	Min (Middle)	Time
42.3	19.2	-4.6	46.0
Max (Lower)	Time	Min (Lower)	Time
42.3	19.3	-3.2	50.2

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

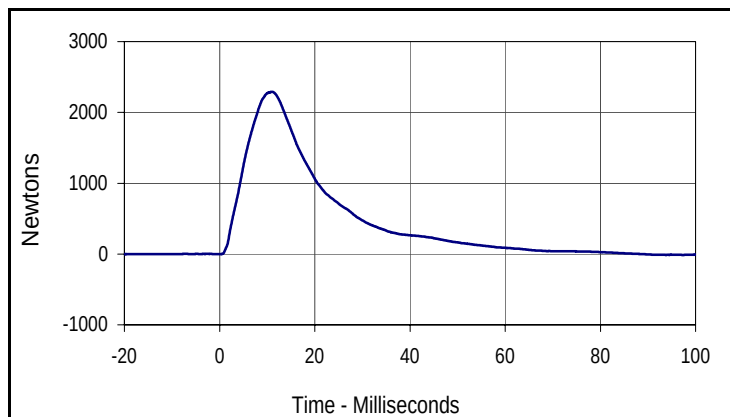
Test Date: 10/30/10
 Test I.D.: ABD10E



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	3.94	Pass
Impactor Force	N	4000 to 4800	4142.6	Pass
	msec	10.6 to 13.0	11.0	Pass
Abdominal Force	N	2200 to 2700	2292.3	Pass
	msec	10.0 to 12.3	11.1	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4142.6	11.0	-28.1	-0.6



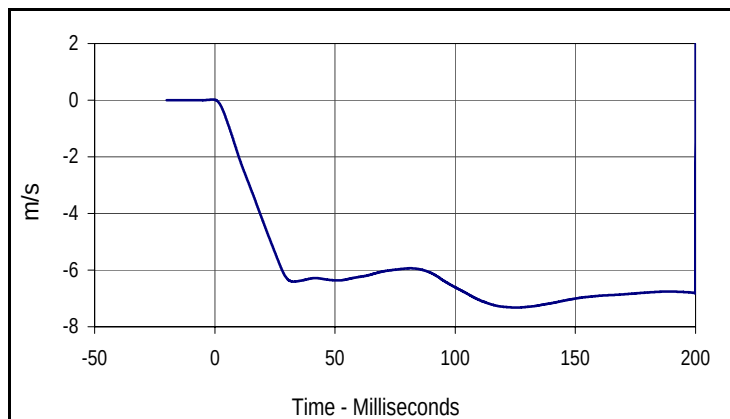
Curve Description			
Abdomen Sum Resultant			
CURNO	Type	SAE Class	Units
002	RES	600	Newtons
Max	Time	Min	Time
2292.3	11.1	-12.8	97.4

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

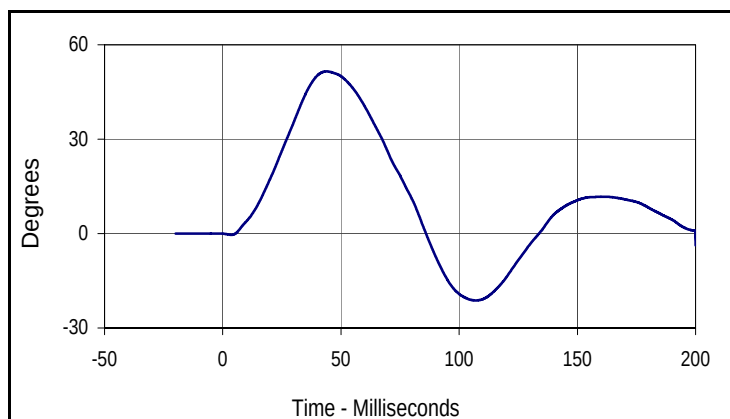
Test Date: 10/30/10
 Test I.D.: SP10E



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	-0.027	Pass
	3.7 msec	m/s	-.240 to -.425	-0.424	Pass
	27 msec	m/s	-5.80 to -6.50	-5.80	Pass
	30 msec	m/s	< -6.50	-6.30	Pass
Headform Rotation	Max	Degrees	45.0 to 55.0	51.5	Pass
	Time	msec	39.0 to 53.0	43.9	Pass
Maximum Rotation To Time Zero Crossing		msec	37.0 to 57.0	42.1	Pass
Overall Test Results					Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
3.7	200.0	-7.3	125.4



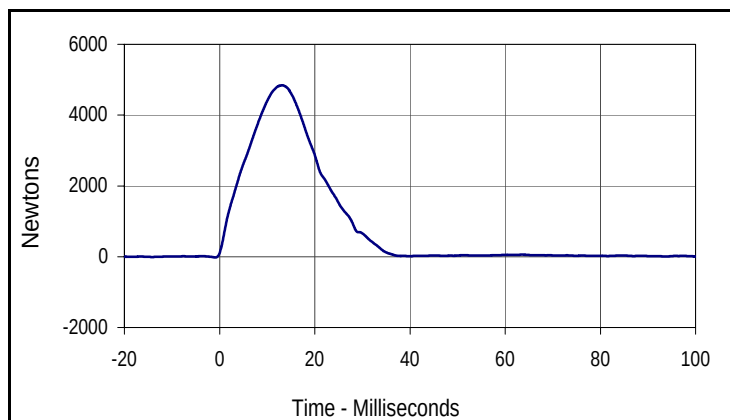
Curve Description			
Headform Rotation			
CURNO	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
51.5	43.9	-21.2	107.0

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

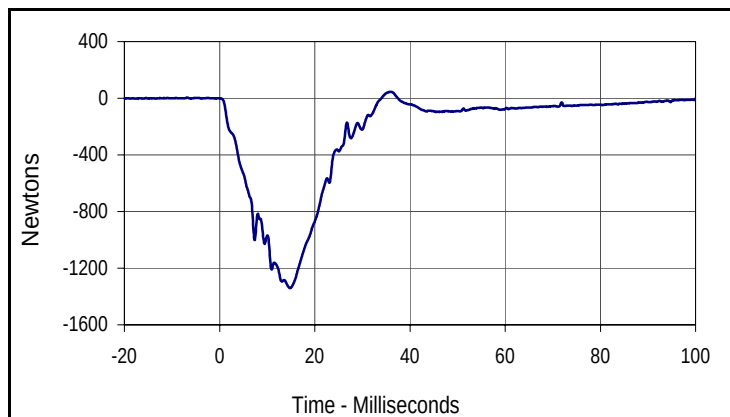
Test Date: 10/30/10
 Test I.D.: PL10E



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	4.25	Pass
Impactor Force	N	4700 to 5400	4841.3	Pass
	msec	11.8 to 16.1	13.2	Pass
Pubic Symphysis Load	N	-1230 to -1590	-1339.9	Pass
	msec	12.2 to 17.0	14.8	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4841.3	13.2	-21.0	-0.9



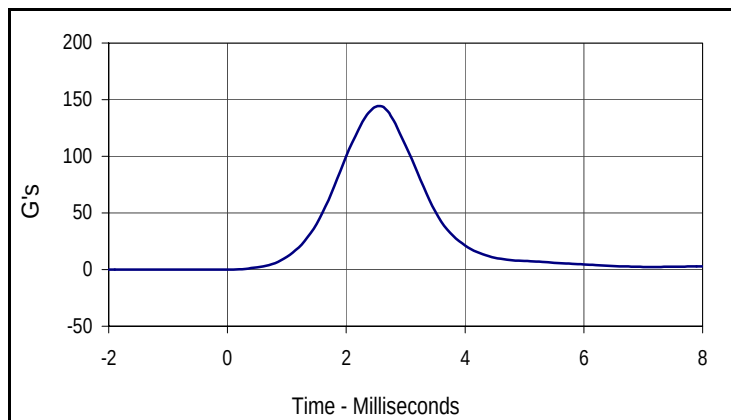
Curve Description			
Pubic FY			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
45.2	36.0	-1339.9	14.8

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

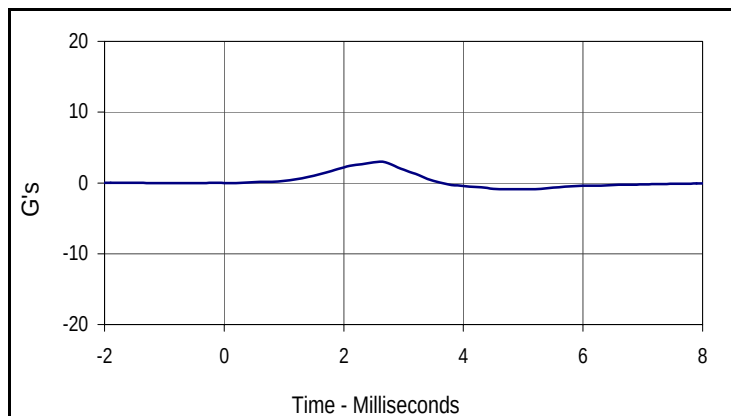
Test Date: 10/30/10
 Test I.D.: HD10E



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	125 to 155	144.0	Pass
Peak Longitudinal Acceleration	G's	≤15	3.0	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	5.3	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
144.0	2.6	0.0	-0.2



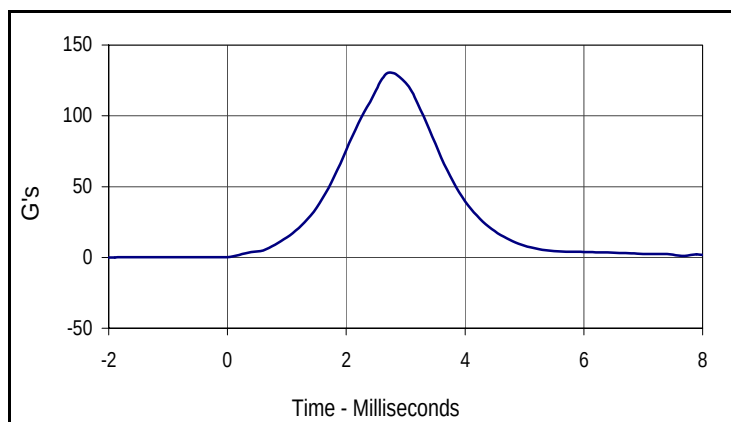
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
3.0	2.6	-0.9	5.1

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

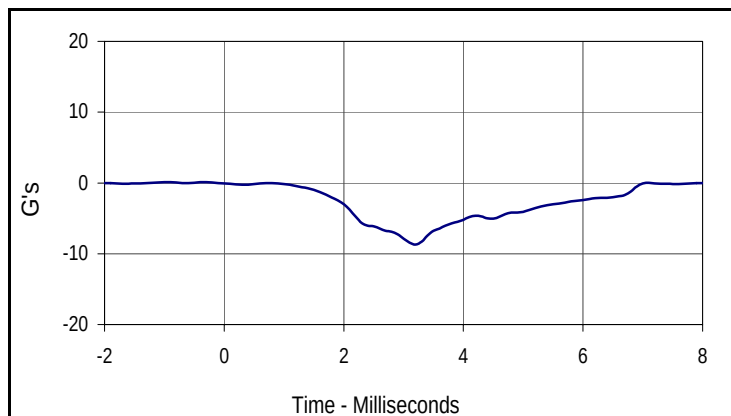
Test Date: 10/30/10
 Test I.D.: HDF10E



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	130.4	Pass
Peak Longitudinal Acceleration	G's	≤15	8.7	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	6.4	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
130.4	2.7	0.0	-2.0



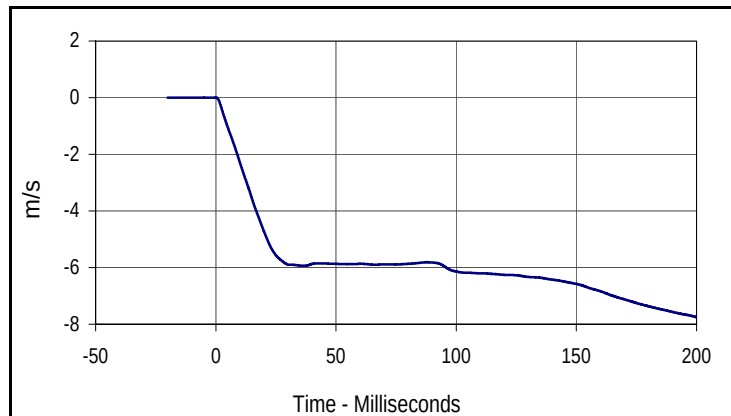
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.1	-1.0	-8.7	3.2

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

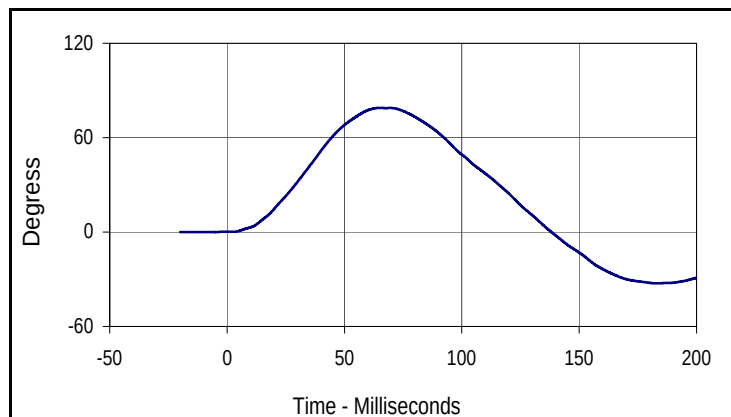
Test Date: 10/30/10
 Test I.D.: NBF10E



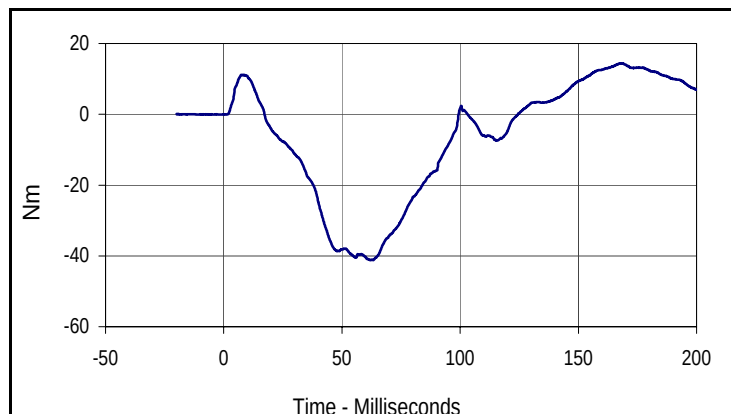
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.54	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.3	Pass
	15 msec	m/s	-3.30 to -4.10	-3.6	Pass
	20 msec	m/s	-4.40 to -5.40	-4.7	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	78.9	Pass
	Time	msec	50.0 to 70.0	64.9	Pass
Peak Occipital Condyle Moment		Nm	-36.0 to -44.0	-41.2	Pass
Decaying Moment Time to Cross 0 Nm		msec	102.0 to 126.0	124.5	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	-7.7	200.0



Curve Description			
Maximum Translation Rotation			
CURNO	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
78.9	64.9	-32.6	182.6



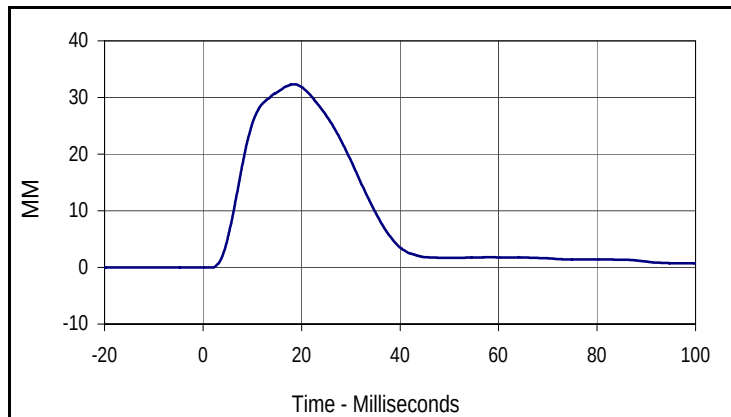
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
14.4	168.3	-41.2	61.9

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

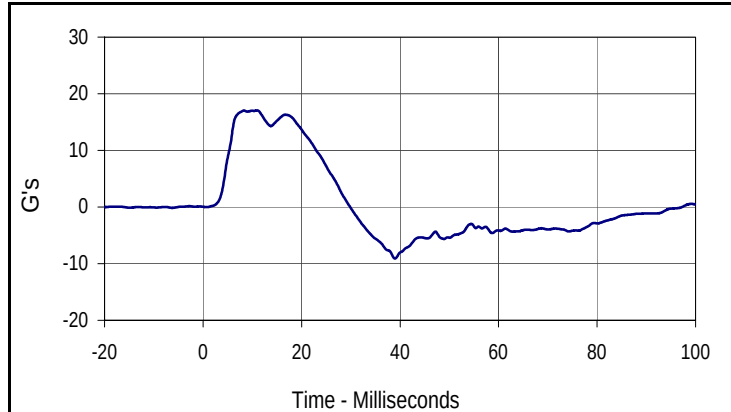
Test Date: 10/30/10
 Test I.D.: SHF10E



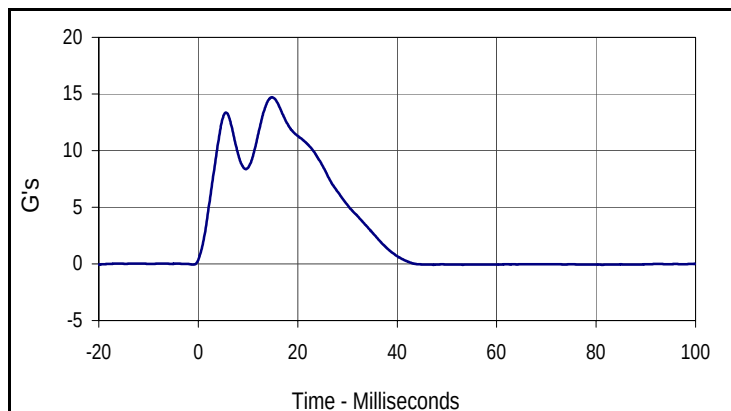
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.27	Pass
Shoulder Deflection	MM	28 to 37	32.3	Pass
Peak Upper Spine Y Acceleration	G's	17 to 22	17.1	Pass
Peak Impactor Acceleration	G's	13 to 18	14.7	Pass
Overall Test Results			Pass	



Curve Description			
Shoulder Acceleration			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
32.3	18.6	0.0	1.0



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
17.1	11.0	-9.1	39.0



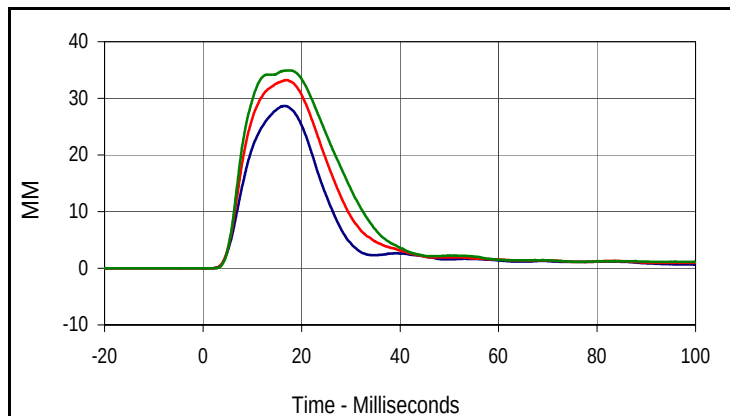
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
14.7	14.8	-0.1	81.3

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

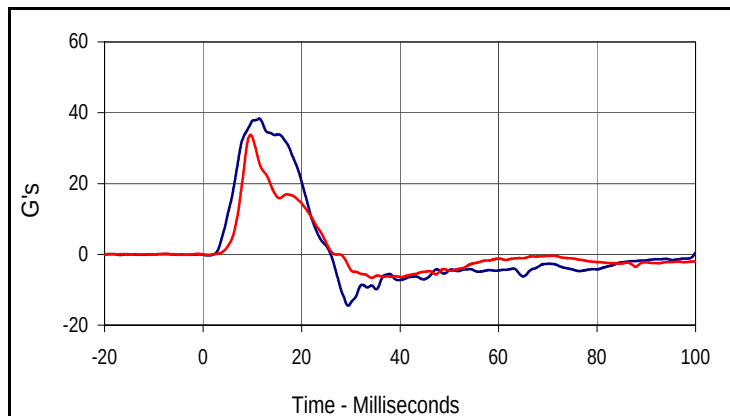
Test Date: 10/30/10
 Test I.D.: THF10E



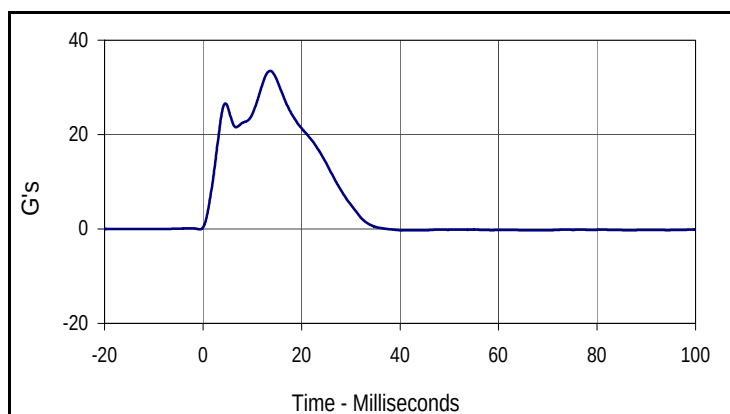
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.69	Pass
Shoulder Deflection	MM	31 to 40	35.8	Pass
Upper Thorax Rib Deflection	MM	25 to 32	28.7	Pass
Middle Thorax Rib Deflection	MM	30 to 36	33.2	Pass
Lower Thorax Rib Deflection	MM	32 to 38	34.9	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	38.4	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	33.8	Pass
Peak Impactor Acceleration After 5 msec.	G's	30 to 36	33.5	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
28.7	16.5	0.0	-8.8
Middle Thorax Deflection			
Max	Time	Min	Time
33.2	16.9	0.0	-15.7
Lower Thorax Deflection			
Max	Time	Min	Time
34.9	17.2	0.0	-10.7



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
38.4	11.4	-14.5	29.5
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
33.8	9.6	-6.6	34.2



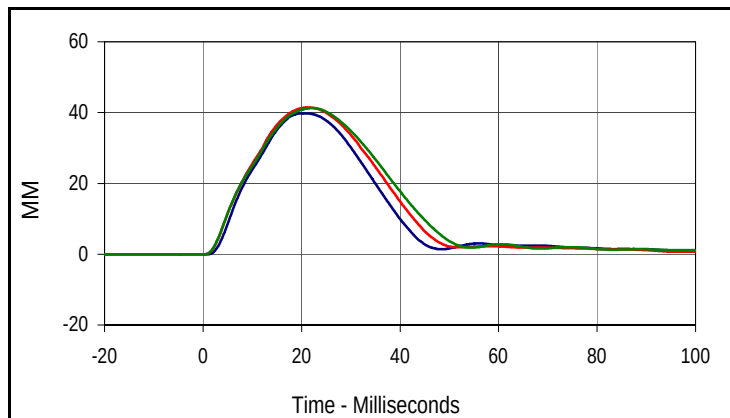
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
33.5	13.6	-0.3	40.8

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

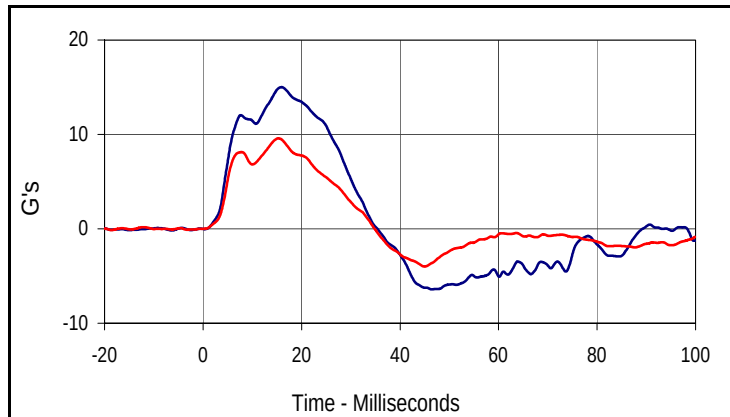
Test Date: 10/30/10
 Test I.D.: TOA10E



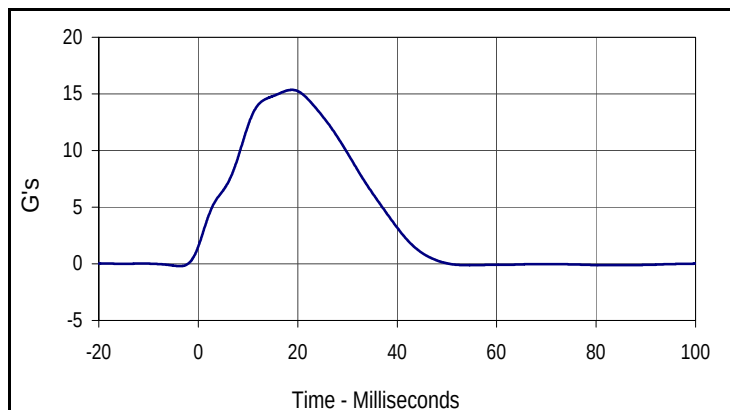
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.26	Pass
Upper Thorax Rib Deflection	MM	32 to 40	39.8	Pass
Middle Thorax Rib Deflection	MM	39 to 45	41.4	Pass
Lower Thorax Rib Deflection	MM	35 to 43	41.3	Pass
Peak Upper Spine Y Acceleration	G's	13 to 17	15.0	Pass
Peak Lower Spine Y Acceleration	G's	7 to 11	9.6	Pass
Peak Impactor Acceleration	G's	14 to 18	15.4	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
39.8	20.5	0.0	-0.1
Middle Thorax Deflection			
Max	Time	Min	Time
41.4	21.4	0.0	-4.1
Lower Thorax Deflection			
Max	Time	Min	Time
41.3	22.0	0.0	0.2



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.0	15.9	-6.4	46.5
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
9.6	15.3	-4.0	45.0



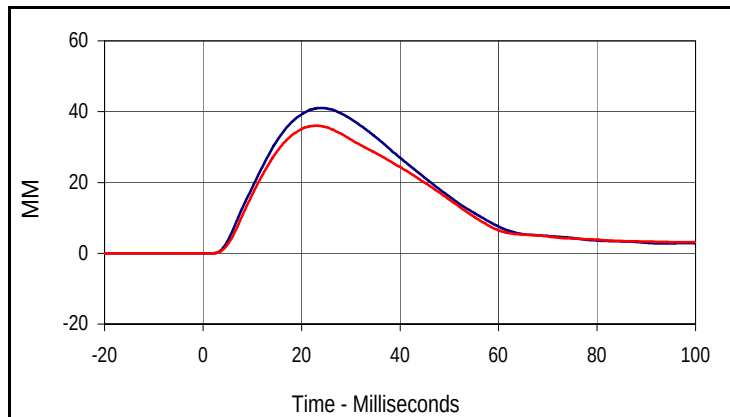
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	60	G's
Max	Time	Min	Time
15.4	18.8	-0.2	-3.7

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

Test Date: 10/30/10
 Test I.D.: ABDF10E

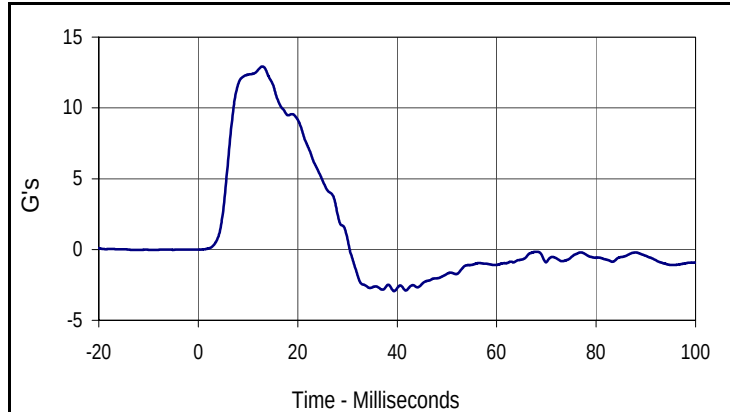


Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.28	Pass
Upper Abdominal Rib Deflection	MM	36 to 47	41.0	Pass
Lower Abdominal Rib Deflection	MM	33 to 44	36.0	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	12.9	Pass
Peak Impactor Acceleration	G's	12 to 16	14.9	Pass
Overall Test Results			Pass	

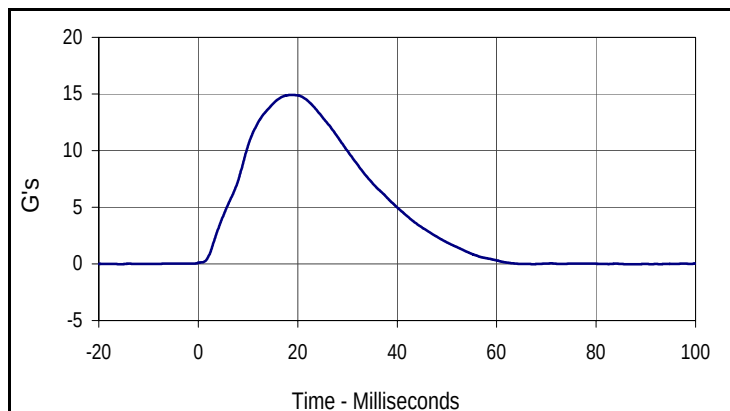


Curve Description			
Upper Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
41.0	23.8	0.0	-15.9

Curve Description			
Lower Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
36.0	23.1	0.0	-17.3



Curve Description			
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
12.9	12.9	-2.9	39.4



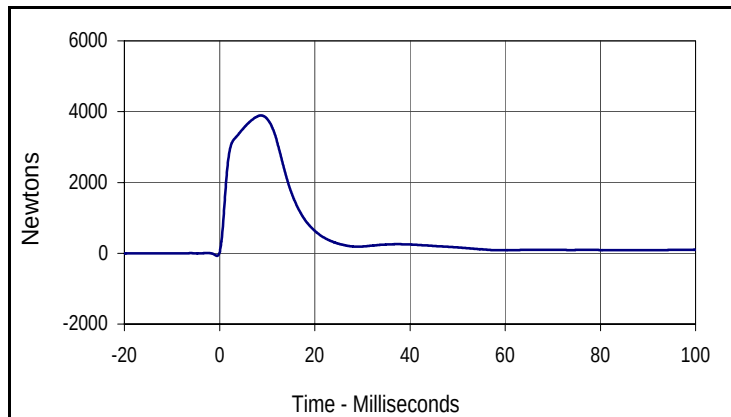
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.9	18.7	0.0	88.0

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

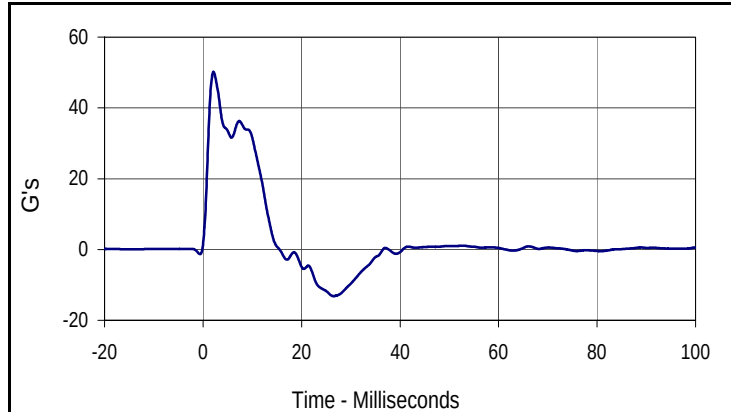
Test Date: 10/30/10
 Test I.D.: PA10E



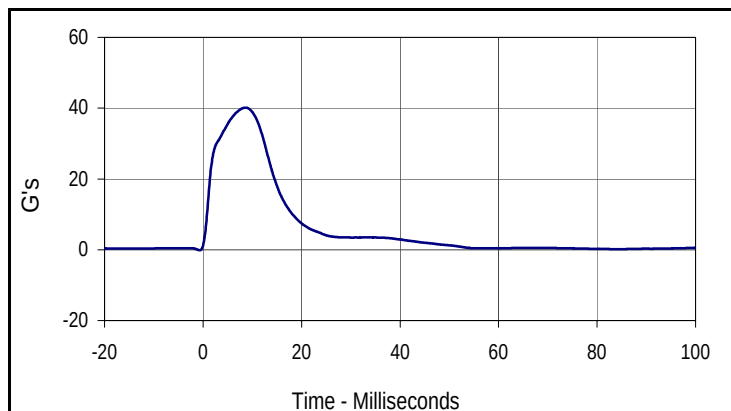
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.68	Pass
Peak Acetabulum Force	Newtons	3600 to 4300	3893.3	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	36.3	Pass
Peak Impactor Acceleration	G's	38 to 47	40.1	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3893.3	8.7	-70.9	-0.5



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
50.2	2.1	-13.2	26.5



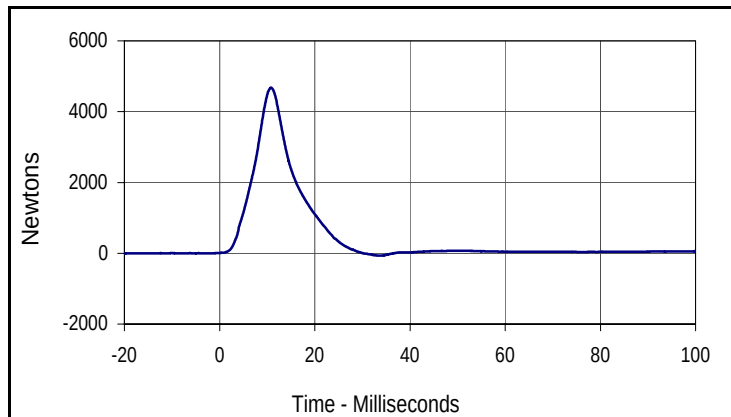
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
40.1	8.7	-0.2	-0.7

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

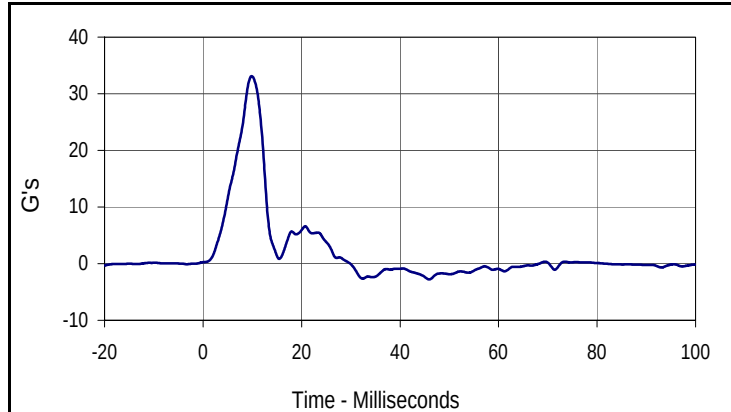
Test Date: 10/30/10
 Test I.D.: PLF10E



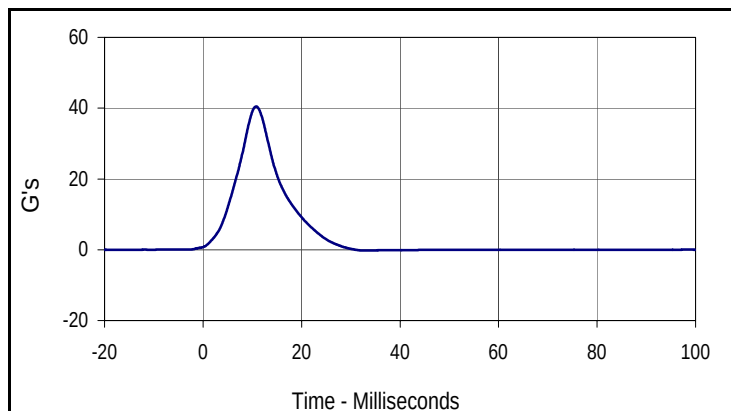
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.32	Pass
Peak Iliac Force	Newtons	4100 to 5100	4675.9	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	33.1	Pass
Peak Impactor Acceleration	G's	36 to 45	40.5	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Iliac Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4675.9	10.8	-66.4	34.1



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
33.1	9.9	-2.8	45.9



Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
40.5	10.8	-0.2	32.6

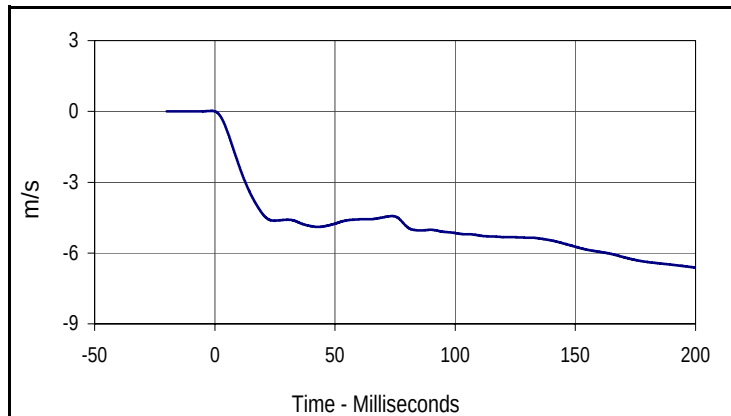
APPENDIX C
POST-TEST / HIII CONFIGURATION AND PERFORMANCE VERIFICATION DATA

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

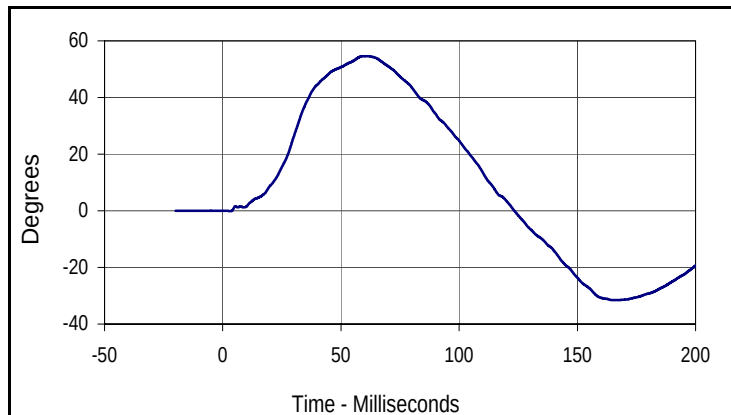
Test Date: 11/11/10
 Test I.D.: NB11A



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	3.35	Pass
Pendulum Deceleration	1 msec	m/s	0.0 to -.050	-0.047	Pass
	3 msec	m/s	-.250 to -.375	-0.318	Pass
	14 msec	m/s	-3.20 to -3.70	-3.31	Pass
Headform Rotation	Max	Degrees	49.0 to 58.0	54.6	Pass
	Time	msec	54.0 to 66.0	61.0	Pass
Maximum Rotation To Time Zero Crossing		msec	53.0 to 88.0	62.4	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	-6.6	200.0



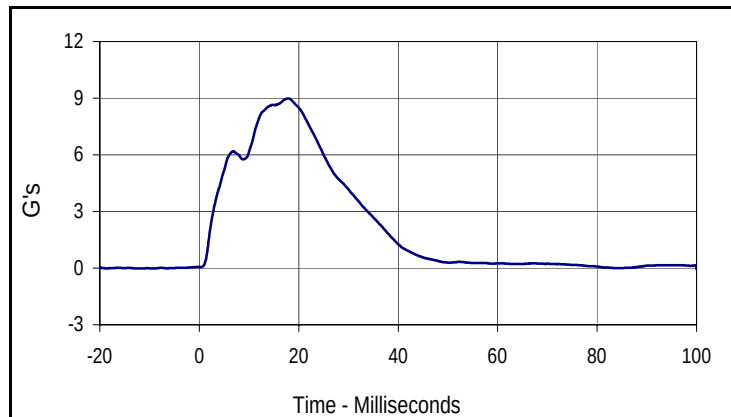
Curve Description			
Headform Rotation			
CURNO	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
54.6	61.0	-31.6	164.9

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

Test Date: 11/11/10
 Test I.D.: SH11A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.20 to 4.40	4.24	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	9.0	Pass
Overall Test Results			Pass	



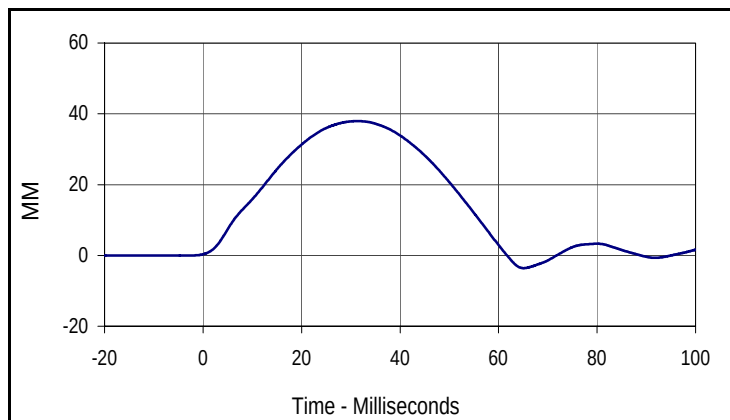
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
9.0	17.9	0.0	-12.4

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

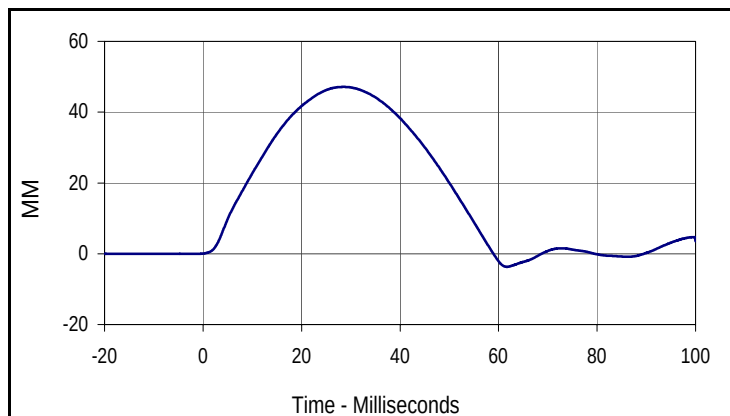
Test Date: 11/11/10
 Test I.D.: RIB11A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Rib Deflection at 459 MM Drop Height	MM	36 to 40	37.9	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	47.1	Pass
Overall Test Results			Pass	



Curve Description			
Upper Rib Deflection (459 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
37.9	31.4	-3.6	65.1



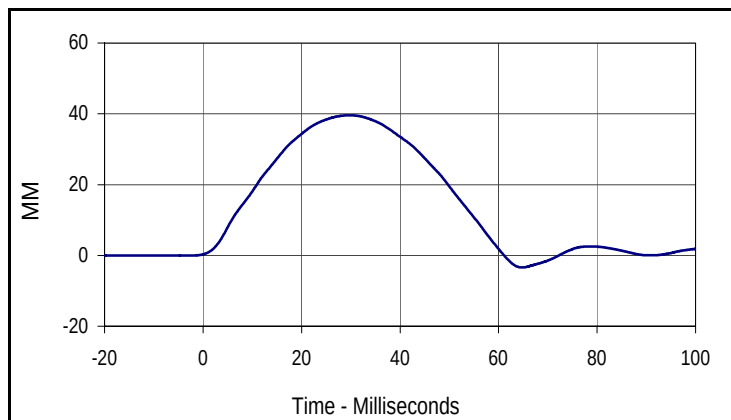
Curve Description			
Upper Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
47.1	28.6	-3.7	61.7

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

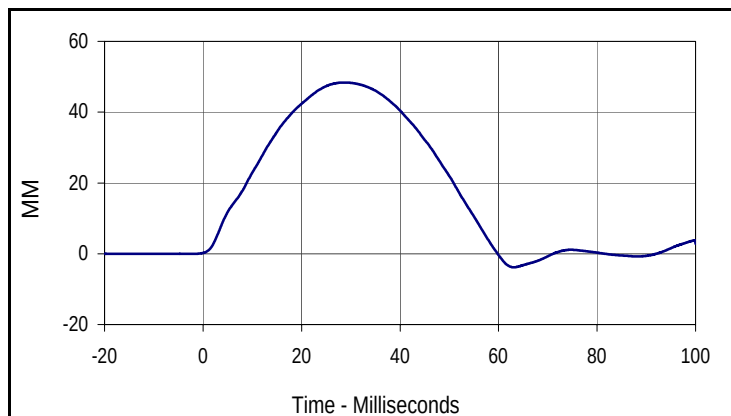
Test Date: 11/11/10
 Test I.D.: RIB11B



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	39.6	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	48.4	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
39.6	29.7	-3.4	64.7



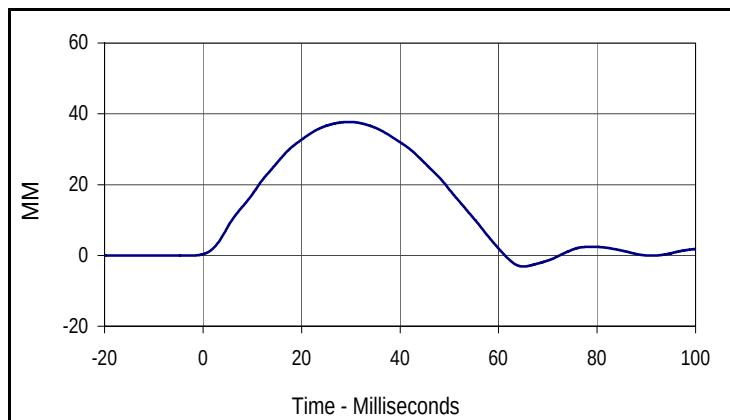
Curve Description			
Middle Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
48.4	28.7	-3.8	63.1

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

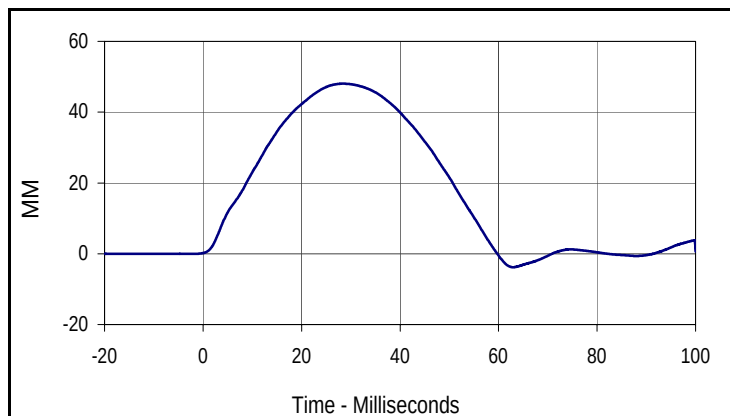
Test Date: 11/11/10
 Test I.D.: RIB11C



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Rib Deflection at 459 MM Drop Height	MM	36 to 40	37.7	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	48.0	Pass
Overall Test Results			Pass	



Curve Description			
Lower Rib Deflection (459 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
37.7	29.6	-3.1	65.0



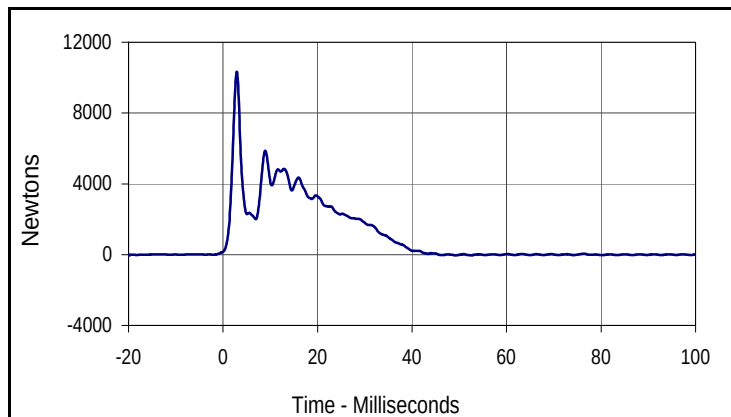
Curve Description			
Lower Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
48.0	28.4	-3.8	63.0

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

Test Date: 11/11/10
 Test I.D.: TH11A



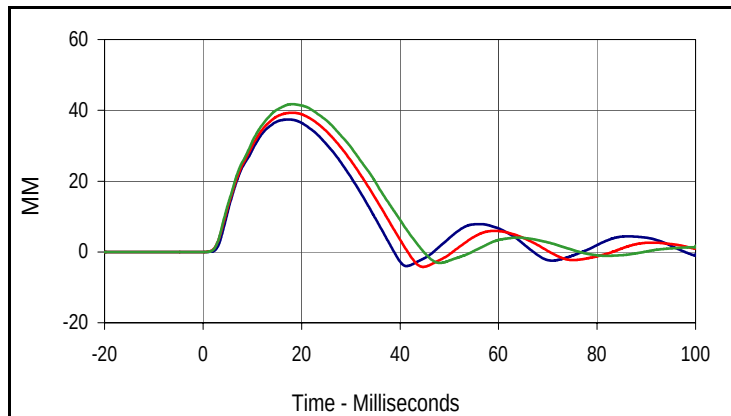
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	5.40 to 5.60	5.43	Pass
Impactor Force	N	5100 to 6200	5865.4	Pass
	msec	> 6.0 msec	8.9	Pass
Upper Rib Deflection	MM	34 to 41	37.4	Pass
Middle Rib Deflection	MM	37 to 45	39.3	Pass
Lower Rib Deflection	MM	37 to 44	41.7	Pass
Overall Test Results			Pass	



Curve Description

Impactor Force

CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
10331.5	2.9	-47.1	49.2



Curve Description

Upper, Middle, Lower Rib Deflections

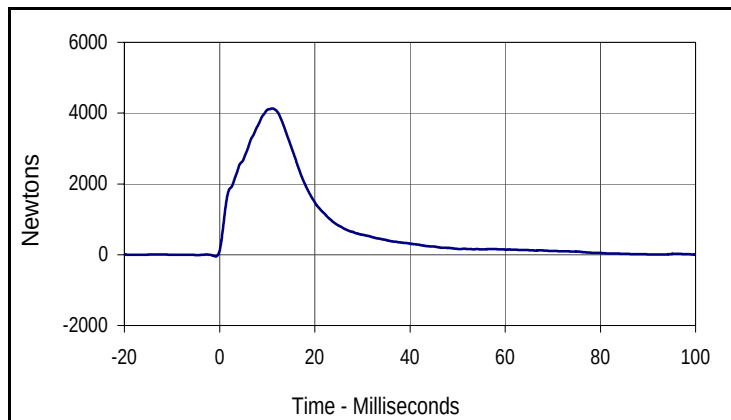
CURNO(s)	Type	SAE Class	Units
002-003-004	FIL	180	MM
Max (Upper)	Time	Min (Upper)	Time
37.4	17.3	-4.0	41.3
Max (Middle)	Time	Min (Middle)	Time
39.3	18.2	-4.2	44.7
Max (Lower)	Time	Min (Lower)	Time
41.7	18.1	-3.1	48.1

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

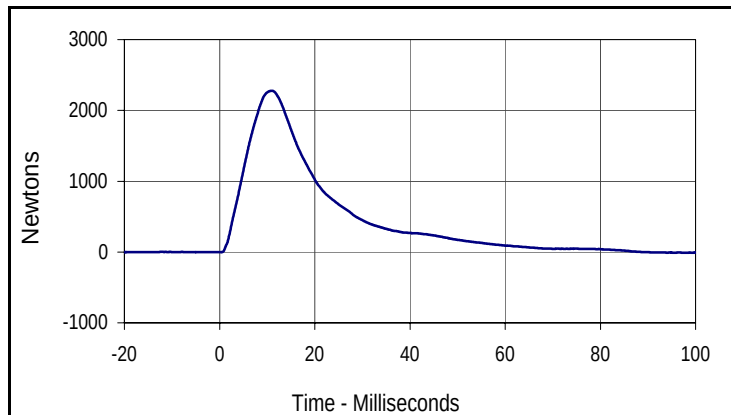
Test Date: 11/11/10
 Test I.D.: ABD11A



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	3.94	Pass
Impactor Force	N	4000 to 4800	4133.3	Pass
	msec	10.6 to 13.0	11.1	Pass
Abdominal Force	N	2200 to 2700	2276.0	Pass
	msec	10.0 to 12.3	11.1	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4133.3	11.1	-44.4	-0.8



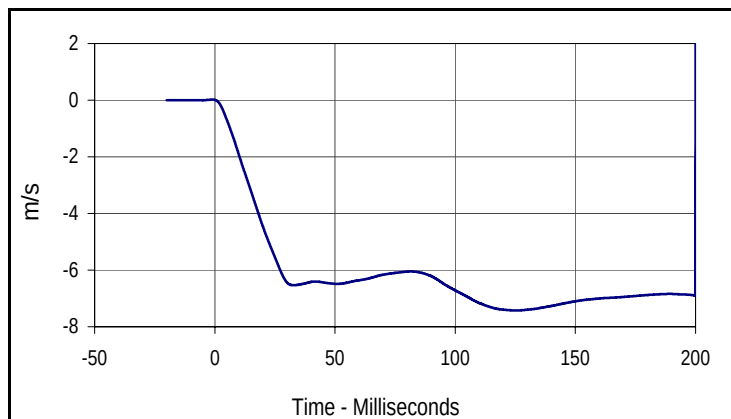
Curve Description			
Abdomen Sum Resultant			
CURNO	Type	SAE Class	Units
002	RES	600	Newtons
Max	Time	Min	Time
2276.0	11.1	-9.4	97.8

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

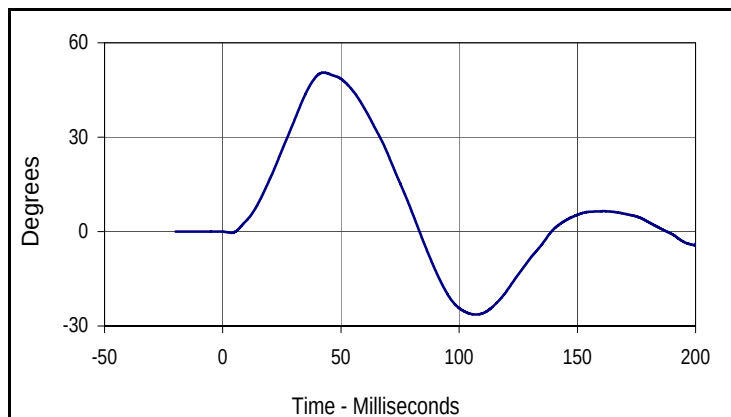
Test Date: 11/11/10
 Test I.D.: SP11A



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	6.09	Pass
Pendulum Deceleration	1 msec	m/s	0.0 to -.050	-0.030	Pass
	3.7 msec	m/s	-.240 to -.425	-0.415	Pass
	27 msec	m/s	-5.80 to -6.50	-5.96	Pass
	30 msec	m/s	< -6.50	-6.43	Pass
Headform Rotation	Max	Degrees	45.0 to 55.0	50.5	Pass
	Time	msec	39.0 to 53.0	42.6	Pass
Maximum Rotation To Time Zero Crossing		msec	37.0 to 57.0	40.7	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
3.7	200.0	-7.4	125.3



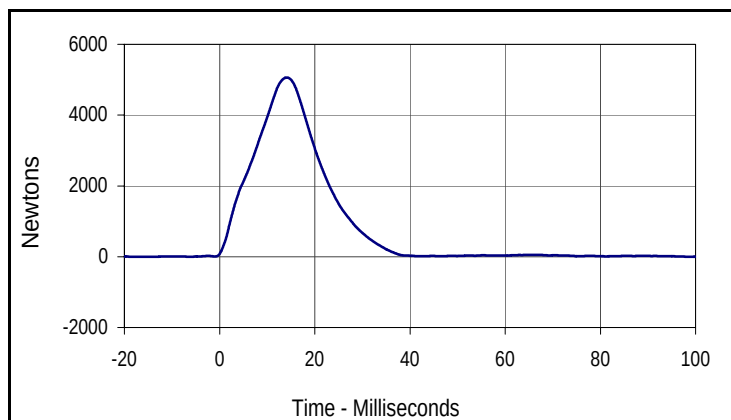
Curve Description			
Headform Rotation			
CURNO	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
50.5	42.6	-26.4	107.0

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

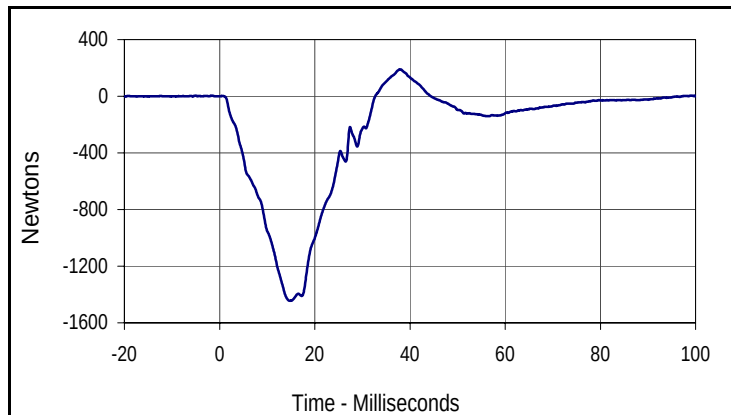
Test Date: 11/11/10
 Test I.D.: PL11A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.20 to 4.40	4.28	Pass
Impactor Force	N	4700 to 5400	5063.5	Pass
	msec	11.8 to 16.1	14.2	Pass
Pubic Symphysis Load	N	-1230 to -1590	-1444.5	Pass
	msec	12.2 to 17.0	14.8	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
5063.5	14.2	-3.3	-17.5



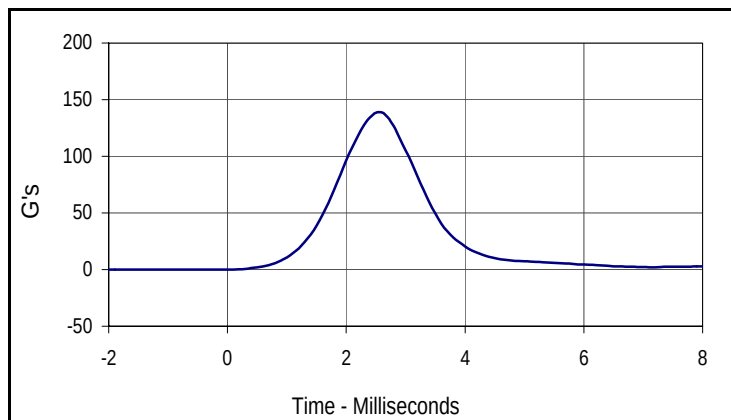
Curve Description			
Pubic FY			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
190.1	38.0	-1444.5	14.8

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

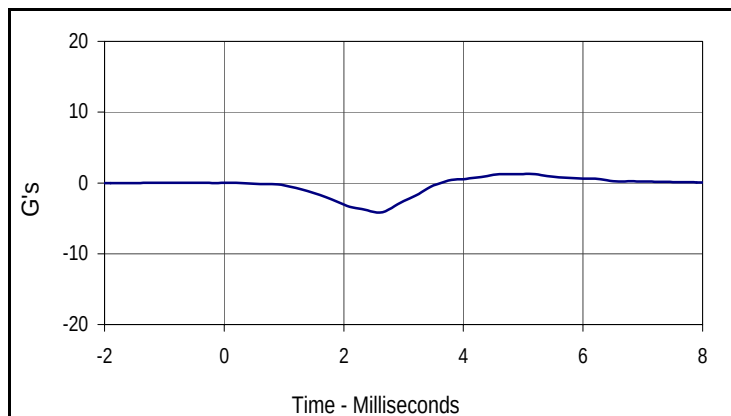
Test Date: 11/11/10
 Test I.D.: HD11A



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	138.6	Pass
Peak Longitudinal Acceleration	G's	≤15	4.2	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	5.3	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
138.6	2.6	0.0	-0.2



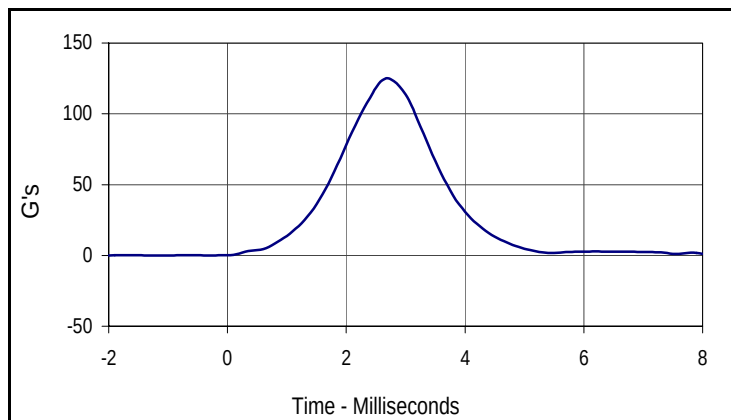
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
1.3	5.1	-4.2	2.6

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

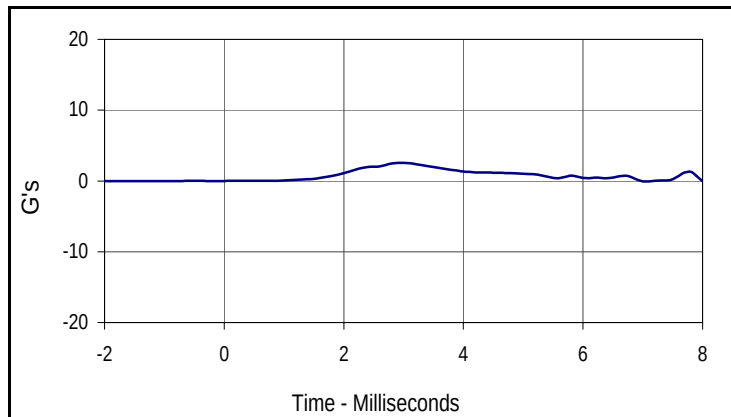
Test Date: 11/11/10
 Test I.D.: HDF11A



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	125.1	Pass
Peak Longitudinal Acceleration	G's	≤15	2.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	3.8	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
125.1	2.7	0.0	-0.4



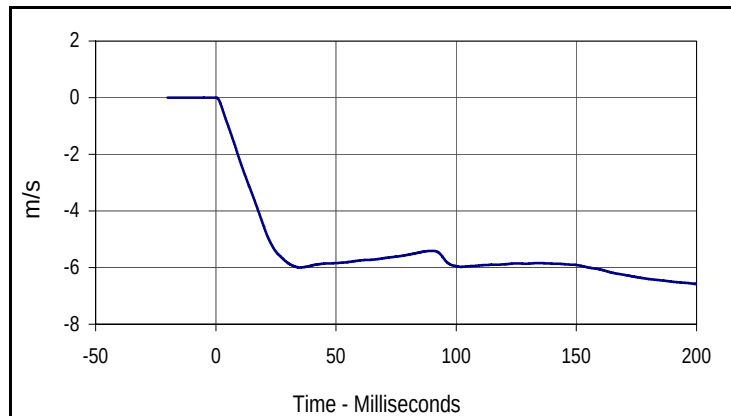
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
2.6	2.9	0.0	-1.6

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

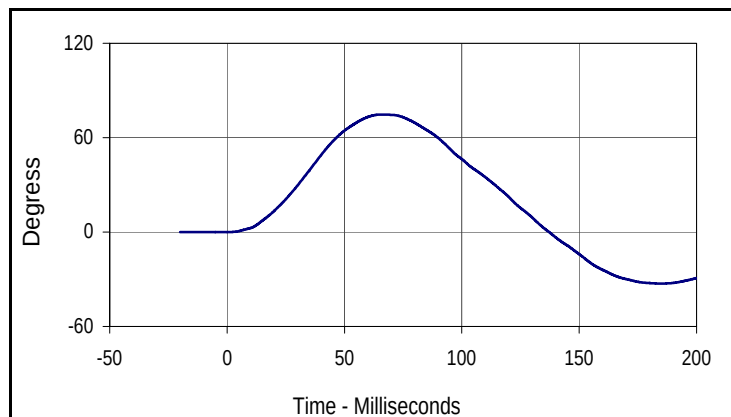
Test Date: 11/11/10
 Test I.D.: NBF11A



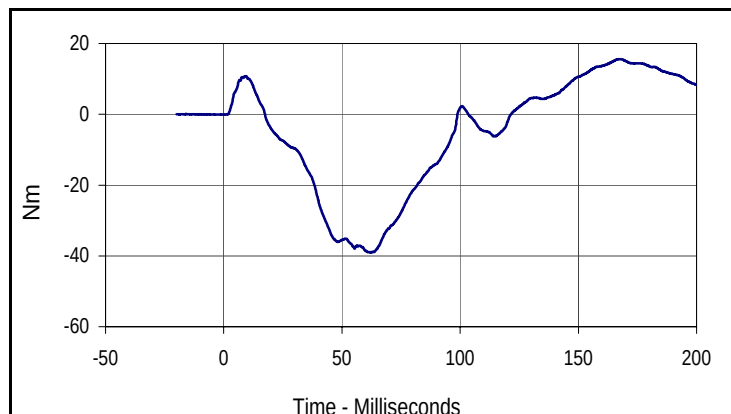
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.55	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.2	Pass
	15 msec	m/s	-3.30 to -4.10	-3.4	Pass
	20 msec	m/s	-4.40 to -5.40	-4.6	Pass
	25 msec	m/s	-5.40 to -6.10	-5.4	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.0	Pass
Translation-Rotation	Max	Degrees	71.0 to 81.0	74.7	Pass
	Time	msec	50.0 to 70.0	65.5	Pass
Peak Occipital Condyle Moment		Nm	-36.0 to -44.0	-39.0	Pass
Decaying Moment Time to Cross 0 Nm		msec	102.0 to 126.0	121.5	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	-6.6	200.0



Curve Description			
Maximum Translation Rotation			
CURNO	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
74.7	65.5	-32.7	184.8



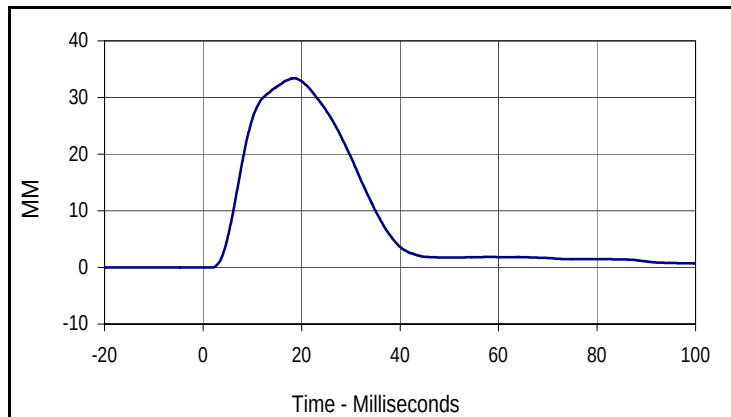
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
15.6	167.2	-39.0	62.5

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

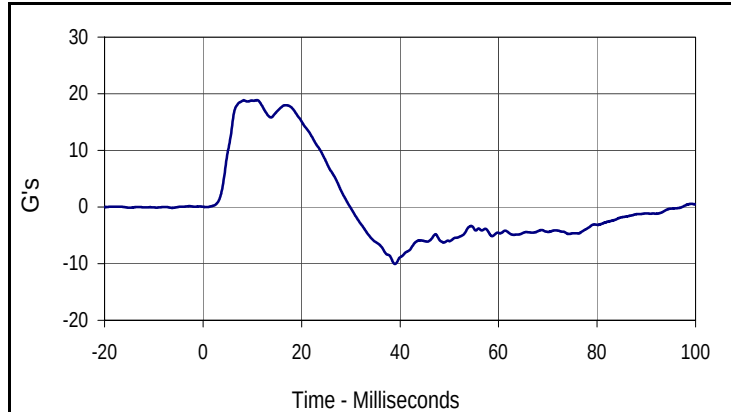
Test Date: 11/11/10
 Test I.D.: SHF11A



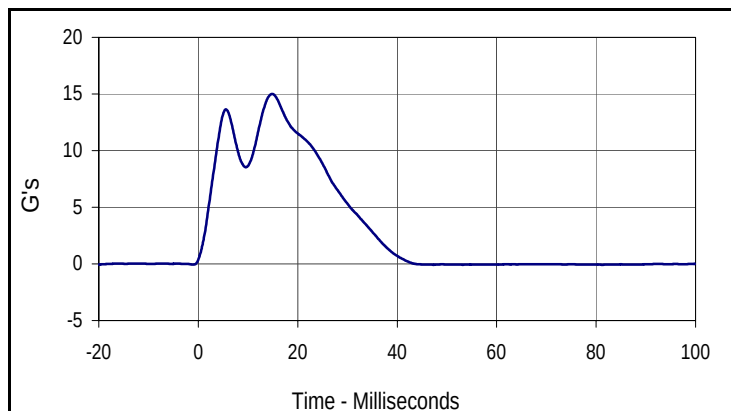
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.28	Pass
Shoulder Deflection	MM	28 to 37	33.4	Pass
Peak Upper Spine Y Acceleration	G's	17 to 22	18.9	Pass
Peak Impactor Acceleration	G's	13 to 18	15.0	Pass
Overall Test Results			Pass	



Curve Description			
Shoulder Acceleration			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
33.4	18.6	0.0	1.0



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
18.9	11.0	-10.0	39.0



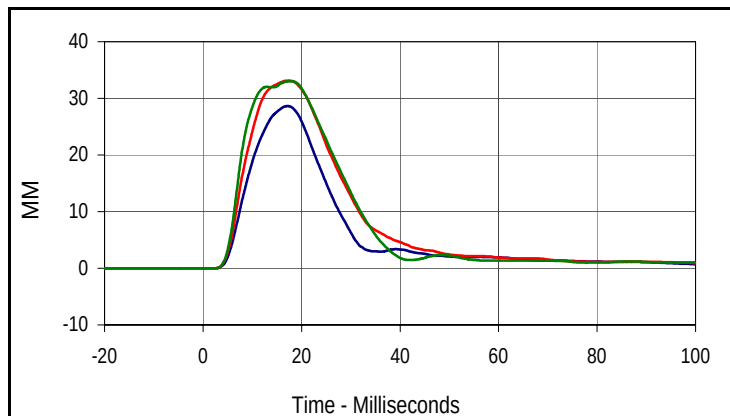
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
15.0	14.8	-0.1	81.3

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

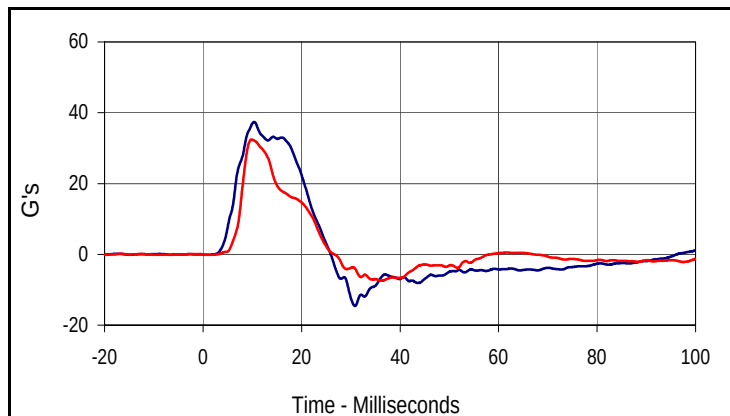
Test Date: 11/11/10
 Test I.D.: THF11A



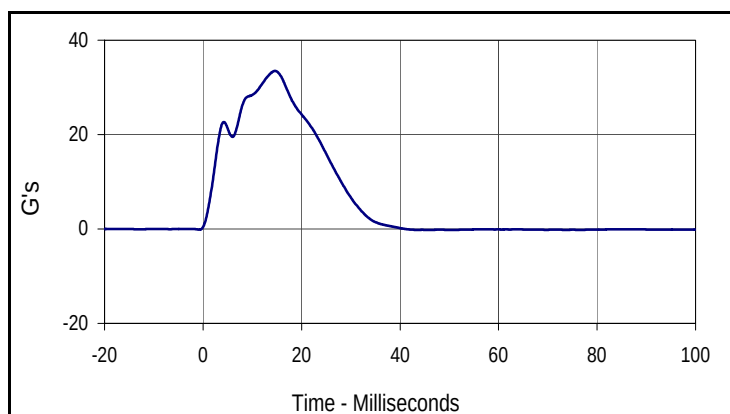
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.68	Pass
Shoulder Deflection	MM	31 to 40	34.7	Pass
Upper Thorax Rib Deflection	MM	25 to 32	28.6	Pass
Middle Thorax Rib Deflection	MM	30 to 36	33.1	Pass
Lower Thorax Rib Deflection	MM	32 to 38	33.0	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	37.4	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	32.5	Pass
Peak Impactor Acceleration After 5 msec.	G's	30 to 36	33.5	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
28.6	17.2	0.0	-12.8
Middle Thorax Deflection			
Max	Time	Min	Time
33.1	17.4	0.0	-3.0
Lower Thorax Deflection			
Max	Time	Min	Time
33.0	17.5	0.0	-5.1



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
37.4	10.4	-14.6	30.8
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
32.5	9.9	-7.5	36.2



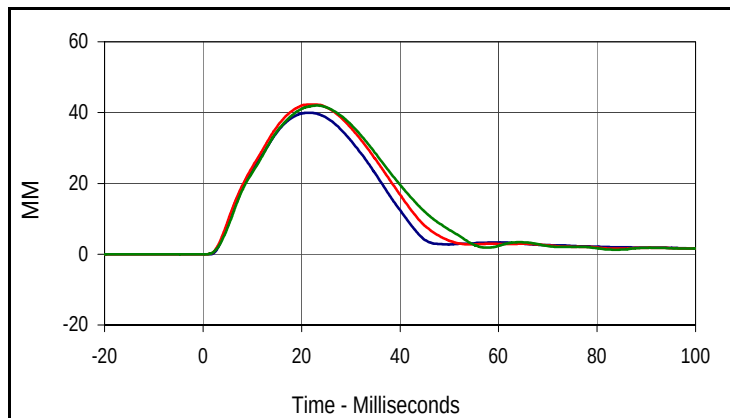
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
33.5	14.6	-0.2	50.4

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

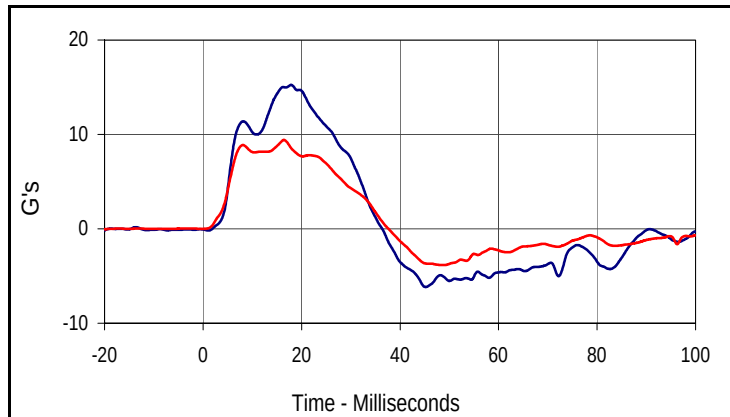
Test Date: 11/11/10
 Test I.D.: TOA11A



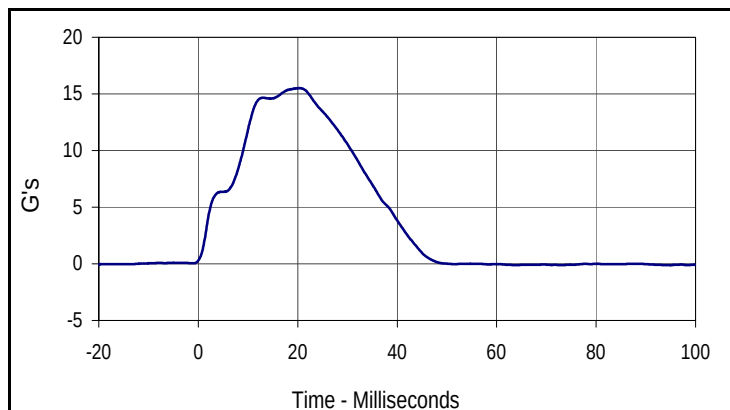
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.27	Pass
Upper Thorax Rib Deflection	MM	32 to 40	40.0	Pass
Middle Thorax Rib Deflection	MM	39 to 45	42.3	Pass
Lower Thorax Rib Deflection	MM	35 to 43	42.0	Pass
Peak Upper Spine Y Acceleration	G's	13 to 17	15.2	Pass
Peak Lower Spine Y Acceleration	G's	7 to 11	9.4	Pass
Peak Impactor Acceleration	G's	14 to 18	15.5	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
40.0	21.5	0.0	-12.8
Middle Thorax Deflection			
Max	Time	Min	Time
42.3	22.2	0.0	-18.7
Lower Thorax Deflection			
Max	Time	Min	Time
42.0	23.3	0.0	-10.8



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.2	17.9	-6.2	45.2
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
9.4	16.4	-3.8	49.0



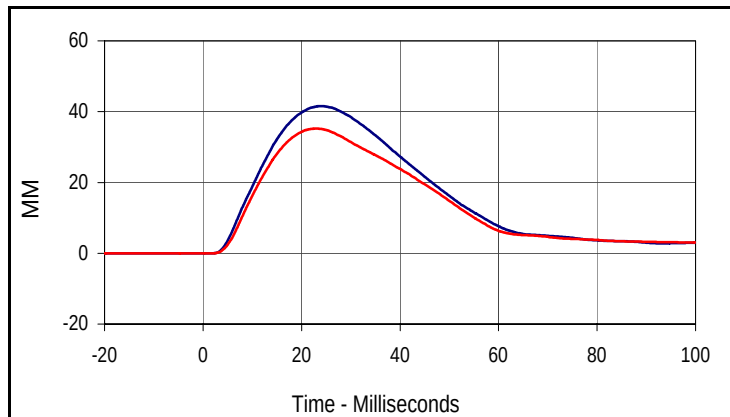
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
15.5	20.3	-0.1	94.1

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

Test Date: 11/11/10
 Test I.D.: ABDF11A

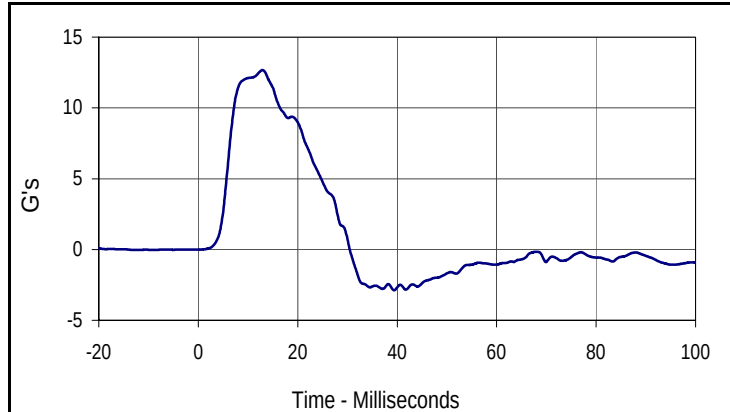


Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.28	Pass
Upper Abdominal Rib Deflection	MM	36 to 47	41.6	Pass
Lower Abdominal Rib Deflection	MM	33 to 44	35.2	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	12.7	Pass
Peak Impactor Acceleration	G's	12 to 16	14.6	Pass
Overall Test Results			Pass	

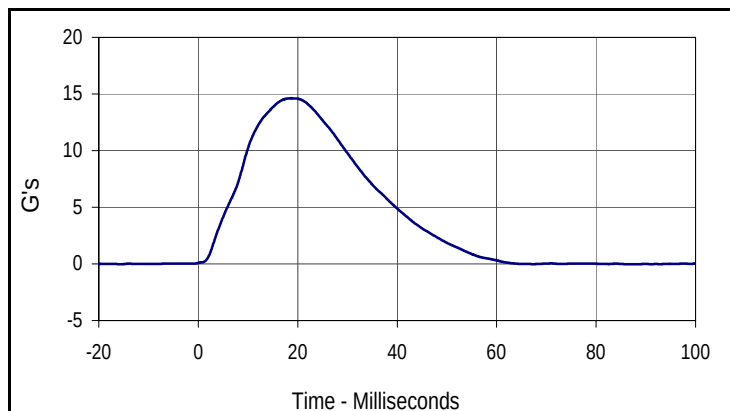


Curve Description			
Upper Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
41.6	23.8	0.0	-15.9

Curve Description			
Lower Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
35.2	23.1	0.0	-17.3



Curve Description			
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
12.7	12.9	-2.9	39.4



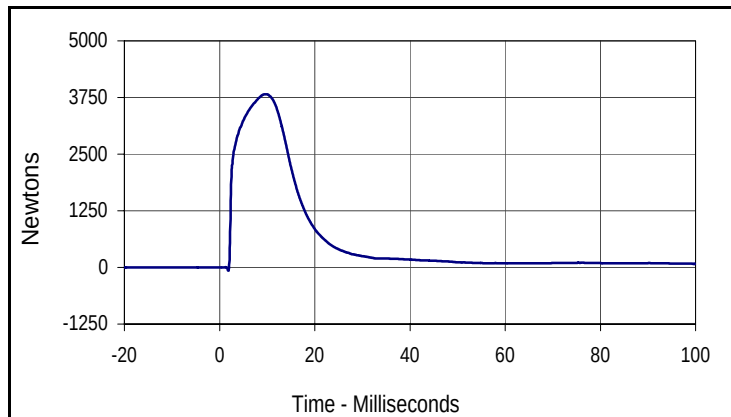
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.6	18.7	0.0	88.0

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

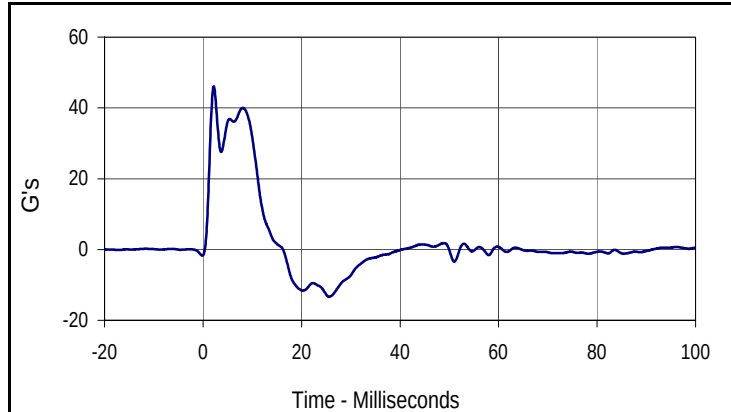
Test Date: 11/11/10
 Test I.D.: PA11A



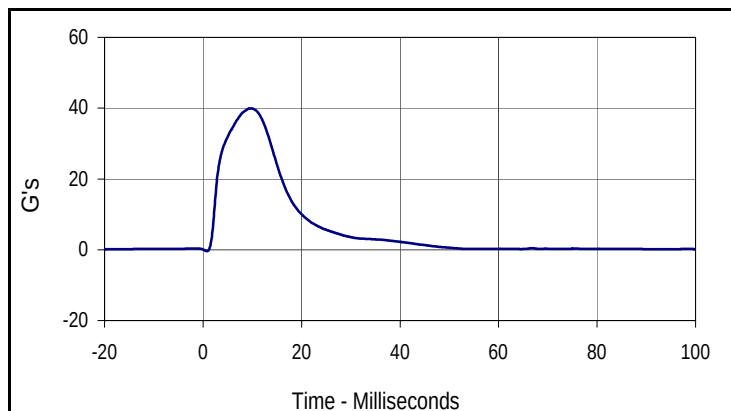
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.68	Pass
Peak Acetabulum Force	Newtons	3600 to 4300	3822.2	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	40.0	Pass
Peak Impactor Acceleration	G's	38 to 47	39.9	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3822.2	9.6	-68.8	1.8



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
46.1	2.2	-13.4	25.6



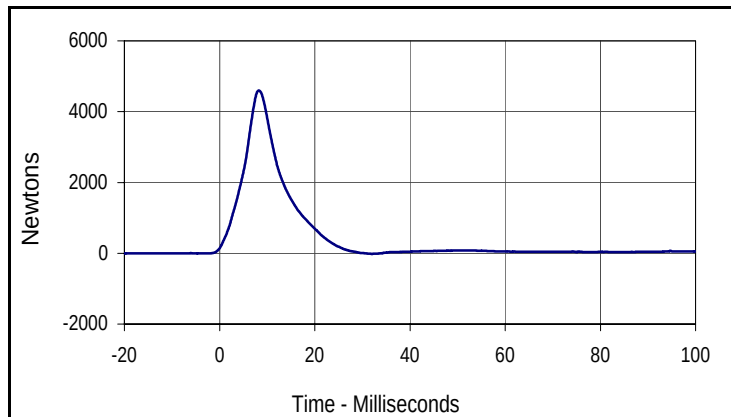
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
39.9	9.7	-0.4	0.8

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

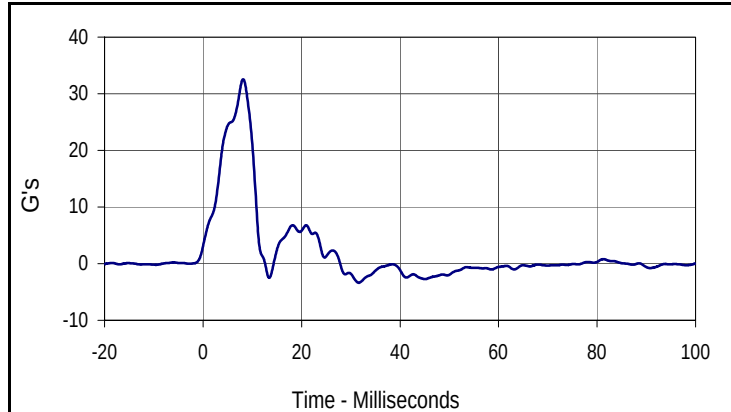
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 Test I.D.: PLF11A



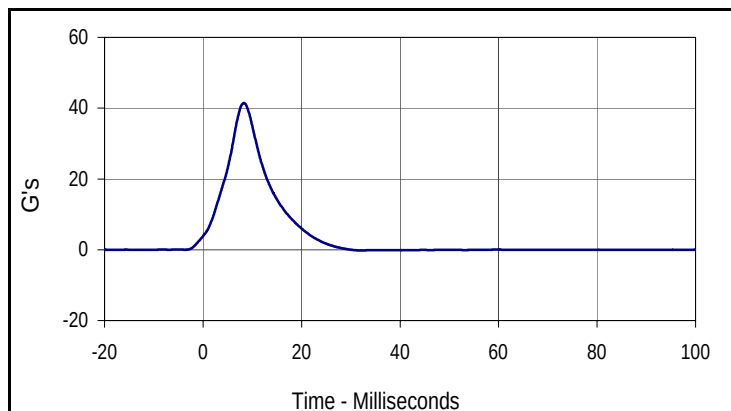
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.27	Pass
Peak Iliac Force	Newtons	4100 to 5100	4597.7	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	32.6	Pass
Peak Impactor Acceleration	G's	36 to 45	41.4	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Iliac Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4597.7	8.3	-17.8	32.0



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
32.6	8.1	-3.4	31.6



Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
41.4	8.3	-0.2	31.9