REPORT NUMBER: SNCAP-KAR-11-004

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

NISSAN MOTOR CO., LTD.

2011 INFINITI M37 4-DOOR SEDAN

NHTSA No: MB5204

PREPARED BY:

KARCO ENGINEERING, LLC.

9270 HOLLY ROAD

ADELANTO, CA 92301

AUGUST 4, 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

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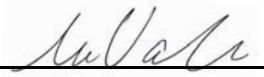
Reviewed By: 

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Approval Date: August 17, 2010

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date:

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

Date:

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Final Report of New Car Assessment Program Side Impact Testing of a 2011 Infiniti M37 4-Door Sedan NHTSA No. MB5204	August 17, 2010
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7. Authors Mr. Kelsey A. Chiu, Engineering Department Supervisor, KARCO Mr. Frank Richardson, Program Manager, KARCO	**8. Performing Organization Report No.** TR-P30003-07-NC
9. Performing Organization Name and Address KARCO Engineering, LLC. 9270 Holly Rd. Adelanto, CA, 92301	**10. Work Unit No.**
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	14. Sponsoring Agency Code NPS-10

15. Supplementary Notes

16. Abstract

A 55/28 km/h 90 deg. Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2011 Infiniti M37 4-door sedan in accordance with the specifications of the Office of Crash Worthiness Standards Test Procedure for the generation of consumer information on vehicle side crash protection. The test was conducted at KARCO Engineering, LLC in Adelanto, CA, on August 4, 2010.

The impact velocity of the Moving Deformable Barrier was 61.97 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 37.2 deg. C. The target vehicle's maximum post-test static crush was 292 mm located at level 2. The test vehicle's occupant performance data is as follows:

Measurement Description	Driver ATD (ES-2re)		
	Units	Threshold	Result
Head Injury Criteria (HIC_{36})		1000	135
Maximum Thorax Rib Deflection	mm	44	37
Total Abdominal Force	N	2500	939
Pubic Symphysis Force	N	6000	1962

Measurement Description	Passenger ATD (SID-IIs)		
	Units	Threshold	Result
Head Injury Criteria (HIC_{36})		1000	407
Lower Spine Resultant Acceleration	g	82	46
Total Pelvic Force (Sum of Acetubular and Iliac Forces)	N	5525	2353

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		18. Distribution Statement	
New Car Assessment Program (NCAP) Side Impact Moving Deformable Barrier (MDB) ES-2re SID-IIs		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	**20. Security Classification of this page**	**21. No. of Pages**	**22. Price**
UNCLASSIFIED	UNCLASSIFIED	134	

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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 Infiniti M37 4-door sedan. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated January 2010.

SUMMARY

A 2011 Infiniti M37 4-door sedan was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 61.97 km/h (38.50 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 August 4, 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

Illiac Load Cell

Acetabulum Load Cell

Dummy injury values were recorded as follows:

Measurement Description	Units	Driver ATD (ES-2re)	
		Threshold	Result
Head Injury Criteria (HIC_{36})		1000	134.5
Maximum Thorax Rib Deflection	mm	44	37
Combined Abdominal Force	N	2500	939
Pubic Symphysis Force	N	6000	1962

Measurement Description	Units	Passenger ATD (SID-IIs)	
		Threshold	Result
Head Injury Criteria (HIC_{36})		1000	407.5
Lower Spine (T12) Resultant Acceleration	g	82	46
Total Pelvic Force (sum of acetabular and illiac forces	N	5525	2353

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	No		No	
Side Airbag 1 (Torso/Pelvis)	Yes	Yes	No	
Side Airbag 2 (Curtain)	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes	Yes	No	
Other				

GENERAL COMMENTS

Both the front and rear doors on the struck side of the vehicle remained closed and latched. There was no separation at the hinges or latches. Both doors on the non-struck side remained closed and latched. No dummy injury values exceeded the threshold values.

SECTION 2

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2011 Infiniti M37 4-Door Sedan NHTSA No. MB5204

Test Program: MDB Side Impact Test Test Date: 08/04/10

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	^oF	^oC	=(tf -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 Infiniti M37 4-Door Sedan NHTSA No. MB5204

Test Program: MDB Side Impact Test Test Date: 08/04/10

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	MB5204
Model Year	2011
Make	Infiniti
Model	M37
Body Style	4-Door Sedan
VIN	JN1BY1AP2BM323242
Body Color	Liquid Platinum
Delivery Date	7/13/2010
Odometer Reading (km / mi)	14/9
Dealer	Glendale Infiniti
Transmission	7-Speed Automatic
Final Drive	Rear
Type / No. of Cylinders	V6
Engine Displacement (L)	3.7
Engine Placement	Longitudinal
Roof Rack	No
Sunroof / T-Top	Yes
Tinted Glass	No
Traction Control	Yes
Power Brakes	Yes
Front Disc	Yes
Rear Disc	Yes

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

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

DATA FROM CERTIFICATION LABEL

Manufactured By	Nissan Motor Co., LTD.
Date of Manufacture	Jun-10

GVWR (kg)	2270
GAWR Front (kg)	1108
GAWR Rear (kg)	1200

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

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

VEHICLE SEAT TYPE

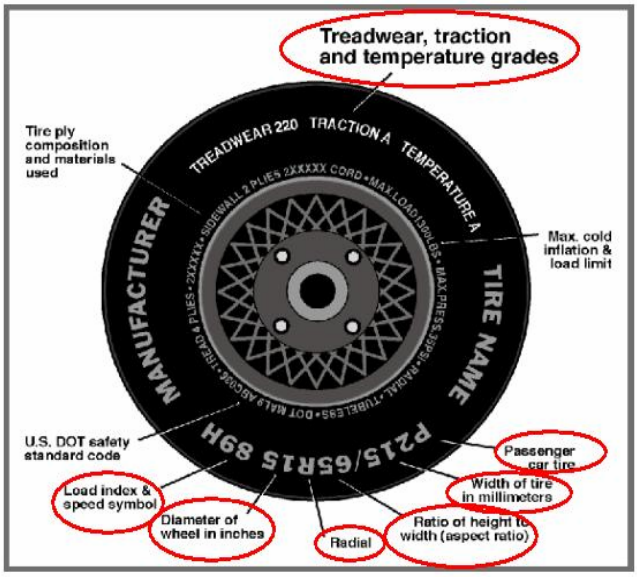
Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						w/ Lever	w/ Knob
Front Seat	Yes						Yes
Rear or Second Row Seat		Yes			Yes		
Third Row Seat							

DATA SHEET NO. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Infiniti M37 4-Door Sedan NHTSA No. MB5204

Test Program: MDB Side Impact Test Test Date: 08/04/10



Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	350	350
Cold Pressure (kpa)	230	230
Recommended Tire Size	P245/50R18	P245/50R18
Tire Size on Vehicle	P245/50R18	P245/50R18
Tire Model	Primacy MXM 4	Primacy MXM 4
Tire Manufacturer	Michelin	Michelin
Treadwear	500	500
Traction	AA	2 Polyester, 1 Polyamide,
Temperature Grades	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 1 Polyamide, 2 Steel	2 Polyester, 1 Polyamide, 2 Steel
Load Index/Speed Symbol	99V	99V
Tire Material	Polyester, Polyamide, Steel	Polyester, Polyamide, Steel
DOT Safety Code Right	B9XU 004X 1010	B9XU 004X 1010
DOT Safety Code Left	B9XU 004X 1010	B9XU 004X 1010

DATA SHEET NO. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Infiniti M37 4-Door Sedan NHTSA No. MB5204

Test Program: MDB Side Impact Test Test Date: 08/04/10

TEST VEHICLE AXLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	463.0	398.0		500.0	474.0		501.0	482.5	
Right	kg	462.5	395.0		465.5	446.0		462.5	450.5	
Ratio	%	53.9%	46.1%	100.0%	51.2%	48.8%	100.0%	50.8%	49.2%	100.0%
Total	kg	925.5	793.0	1718.5	965.5	920.0	1885.5	963.5	933.0	1896.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1718.5	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 (TVTW)	kg	1893.3	A+B+C

TEST VEHICLE ATTITUDES

Condition	Units	LF	RF	LR	RR	CG (Aft of Front Axle
Fully Loaded	mm	750	754	730	736	1474
As Tested	mm	745	747	729	734	1486

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheelbase	mm	2901
Total Vehicle Length at Left Side	mm	3422
Total Vehicle Length at Centerline	mm	4908
Total Vehicle Length at Right Side	mm	3422
Weight of Ballast in Cargo Area	kg	65.7
Weight of Vehicle Components Removed	kg	51.0
Amount of Stoddard Solvent in Fuel Tank	L	69.73

Vehicle components removed to make Target Vehicle Test Weight:

Non-struck side outboard mirror, speakers, door panels, and rear window; trunk carpeting, spare tire and tools, tail lights, rear bumper cover, hood liner, rear floor mats and sill covers.

TEST VEHICLE VERTICAL IMPACT LINE DATA

Measurement Description	Units	Value
Target Impact Point Aft of Front Axle	mm	506
Actual Impact Point Aft of Front Axle	mm	510

DATA SHEET NO. 2

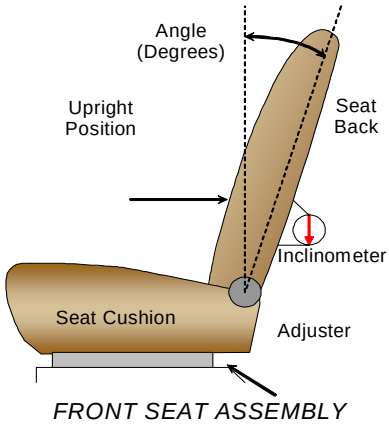
SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2011 Infiniti M37 4-Door Sedan NHTSA No. MB5204

Test Program: MDB Side Impact Test Test Date: 08/04/10

NOMINAL DESIGN RIDING POSITION

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



FRONT SEAT ASSEMBLY

SEAT BACK ANGLES

	Degrees (°)
Driver w/Seated Dummy	19.4
Passenger w/Seated Dummy	2.8

SEAT FORE/AFT POSITIONS

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

Seating Position	Total Fore/Aft Travel	Placed in Position
Driver Seat	259	130
Rear Seat	Fixed	Fixed

SEAT BELT UPPER ANCHORAGE

The seat belt upper anchorage is positioned to the manufacturer's design position, the driver for a 50th percentile adult male ATD, the left rear passenger for a 5th percentile adult female ATD. Position number one (1) is the uppermost position.

Seating Position	Total No. of Positions	Placed in Position
Driver Seat	4	1
Rear Seat	Fixed	Fixed

DATA SHEET NO. 2 … (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

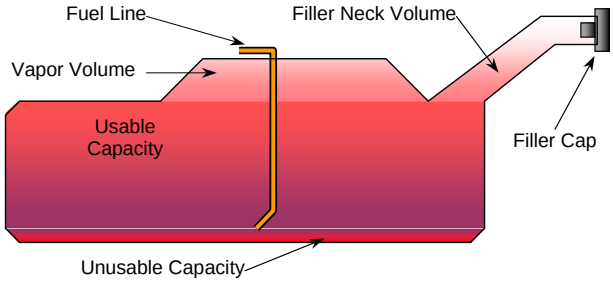
Test Vehicle: 2011 Infiniti M37 4-Door Sedan NHTSA No. MB5204

Test Program: MDB Side Impact Test Test Date: 08/04/10

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank"	74.98
Usable Capacity of "Optional Tank"	
Usable Capacity Used for FMVSS 301	74.98
Actual Amount of Stoddard Solvent Used	69.65

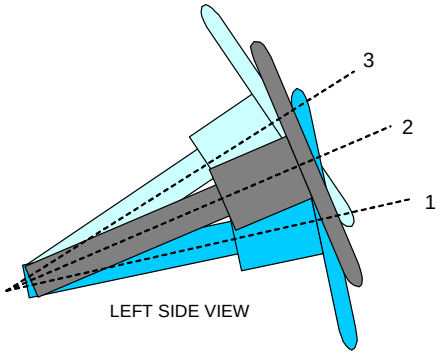
The test vehicle is equipped with an electric fuel pump. The fuel pump is activated when the ignition is in the “ON” position. The fuel filler door is located on the right rear fender. The standard fuel tank occupies the area under the rear seat.



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

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



STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONING

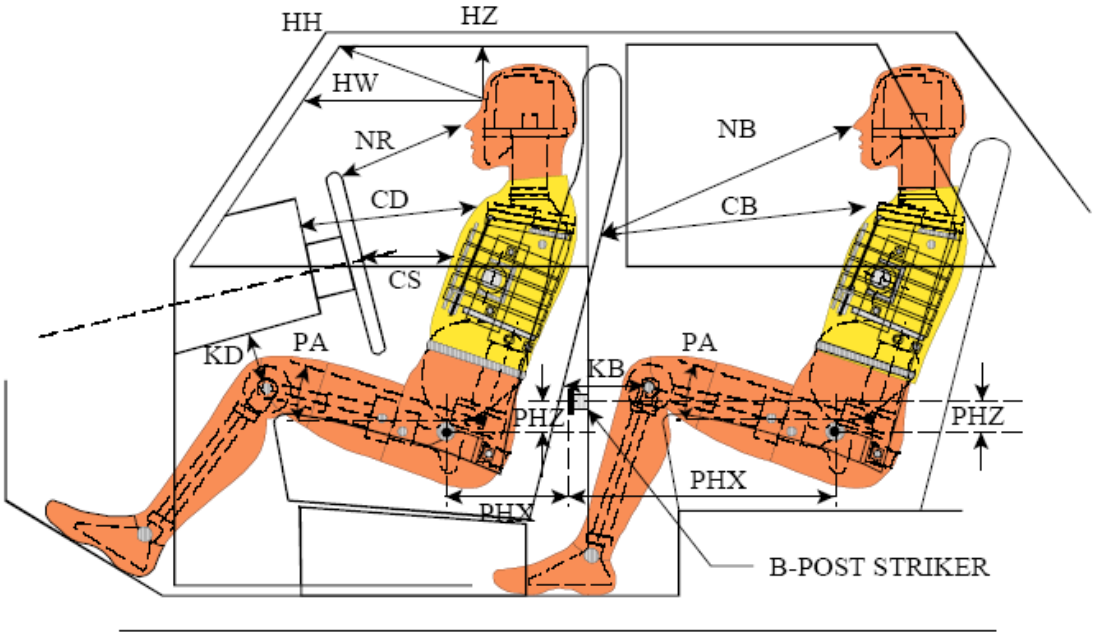
	Degrees	Fore-Aft Position (mm)
Lowermost Position, No. 1	10.1	128
Geometric Center Position, No. 2	20.1	148
Uppermost Position, No. 3	30.1	168
Telescoping Steering Wheel Travel		40
Test Position	20.1	148

DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Infiniti M37 4-Door Sedan NHTSA No. MB5204

Test Program: MDB Side Impact Test Test Date: 08/04/10



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

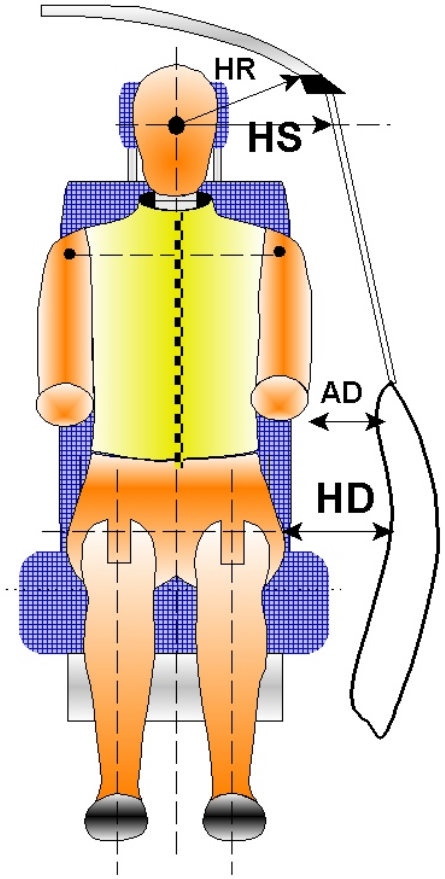
Driver Code	Pass. Code	Description	Driver		Passenger	
			Length (mm)	Angle (º)	Length (mm)	Angle (º)
HH		Head to Header	391	13.3		
HW		Head to Windshield	624	0.0		
HZ	HZ	Head to Roof	141	90.0	270	90.0
NR	NB	Nose to Rim/Seat Back	461	14.5	638	12.0
CD	CB	Chest to Dash/Seat Back	586	2.7	589	2.4
CS		Chest to Steering Wheel	372	11.0		
KDL	KBL	Left Knee to Dash/Seat Back	155	27.7	368	40.3
KDR	KBR	Right Knee to Dash/Seat Back	137	37.5	290	41.8
PA	PA	Pelvic Angle		19.9		18.4
PHX	PHX	H-Point to Striker (x-axis)	264	0.0	292	0.0
PHZ	PHZ	H-Point to Striker (z-axis)	189	90.0	327	90.0
SA	SA	Seat Back Angle		19.4		2.4

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Infiniti M37 4-Door Sedan NHTSA No. MB5204

Test Program: MDB Side Impact Test Test Date: 08/04/10



DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

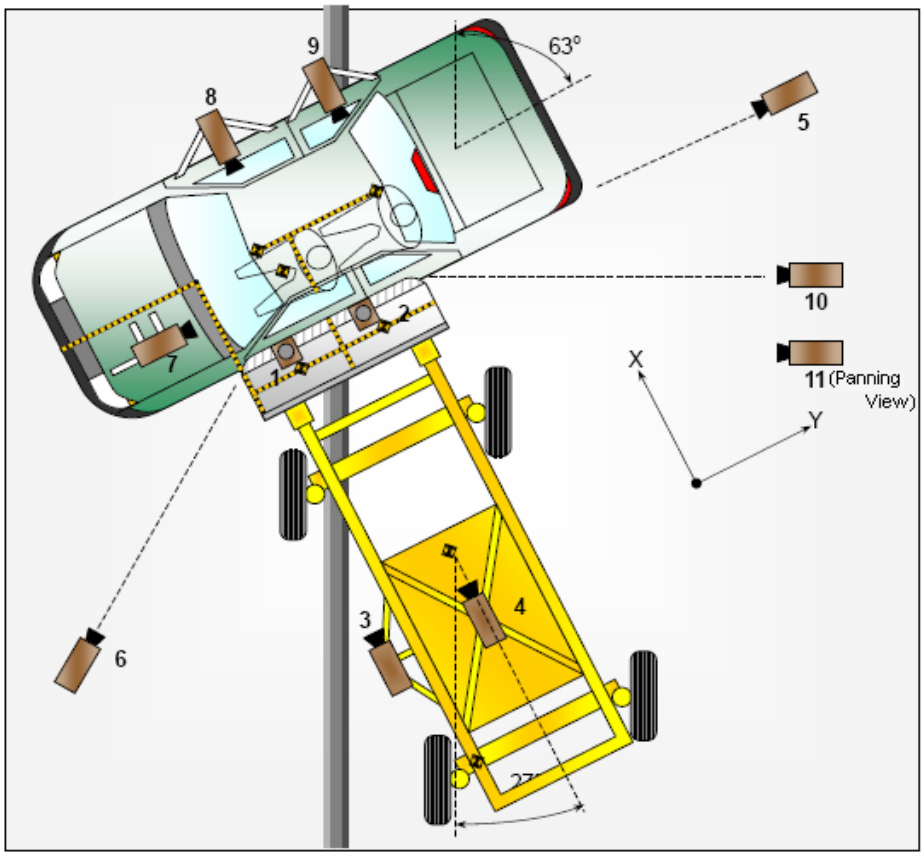
Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	235	250
HS	Head to Side Window	mm	338	367
AD	Arm to Door	mm	82	156
HD	H-Point to Door	mm	125	170

DATA SHEET NO. 5

CAMERA LOCATIONS AND DATA

Test Vehicle: 2011 Infiniti M37 4-Door Sedan NHTSA No. MB5204

Test Program: MDB Side Impact Test Test Date: 08/04/10



CAMERA LOCATIONS AND DATA

Camera No.	View	Coordinates (mm)			Angle	Lens (mm)	Film Speed (fps)
		X*	Y*	Z*			
1	Overhead Overall	1220	2287	-5486	90	14	1000
2	Overhead Close-Up	609	2287	-5102	90	Zoom	1000
3	Left Impact Point (MDB)	-2134	0	-1143	-4	25	1000
4	Side Overall (MDB)	-3912	838	-1829	-1	12	1000
5	Rear	-64	2485	-1348	0	105	400
6	Left Front	-2266	-3564	-1475	0	24	1000
7	Driver Front (On-Board)	593	728	-1148	-3	35	1000
8	Driver Side (On-Board)	1584	-752	-1072	-1	14	1000
9	Passenger Side (On-Board)	1547	-1724	-1091	-1	20	1000
10	Real Time Left Rear					Zoom	30
11	Real Time Inrun	-2484	-3958	-1506		Zoom	30

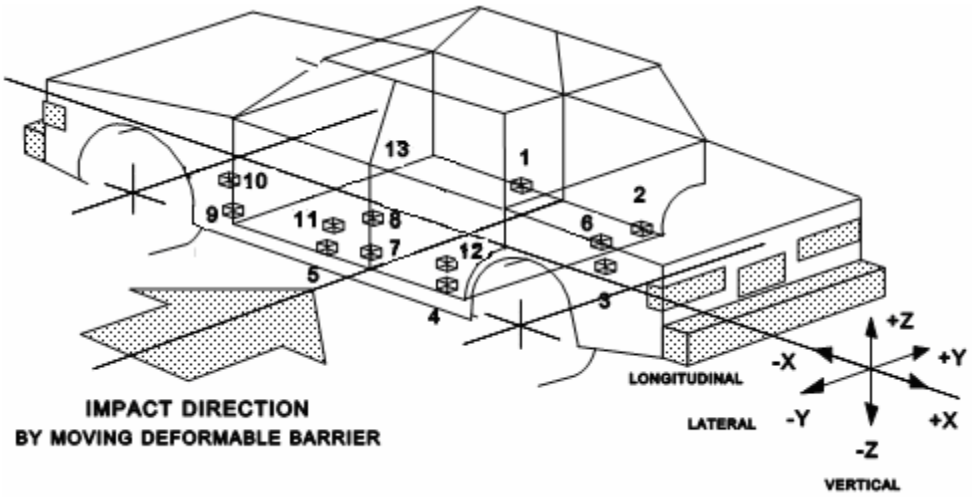
Reference: Impact Point Projected to Ground
+X = To Front of MDB, +Y = To Right of MDB, +Z = Down
*All measurements accurate to ±6 mm

DATA SHEET NO. 6

VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2011 Infiniti M37 4-Door Sedan NHTSA No. MB5204

Test Program: MDB Side Impact Test Test Date: 08/04/10



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Right Sill at Front Seat	2660	730	350
2	Right Sill at Rear Seat	1810	725	420
3	Rear Floorpan Above Axle	920	80	540
4	Left Sill at Rear Door	1930	-775	190
5	Left Sill at Front Door	2580	-775	180
6	Right Rear Occupant Compartment	2210	340	250
7	B-Pillar Lower	2200	-740	610
8	B-Pillar Mid	2200	-740	830
9	A-Pillar Lower	3360	-820	580
10	A-Pillar Mid	3360	-820	700
11	Front Seat Track	2540	-565	350
12	Rear Seat Structure			[1]
13	Vehicle CG	2090	0	500

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

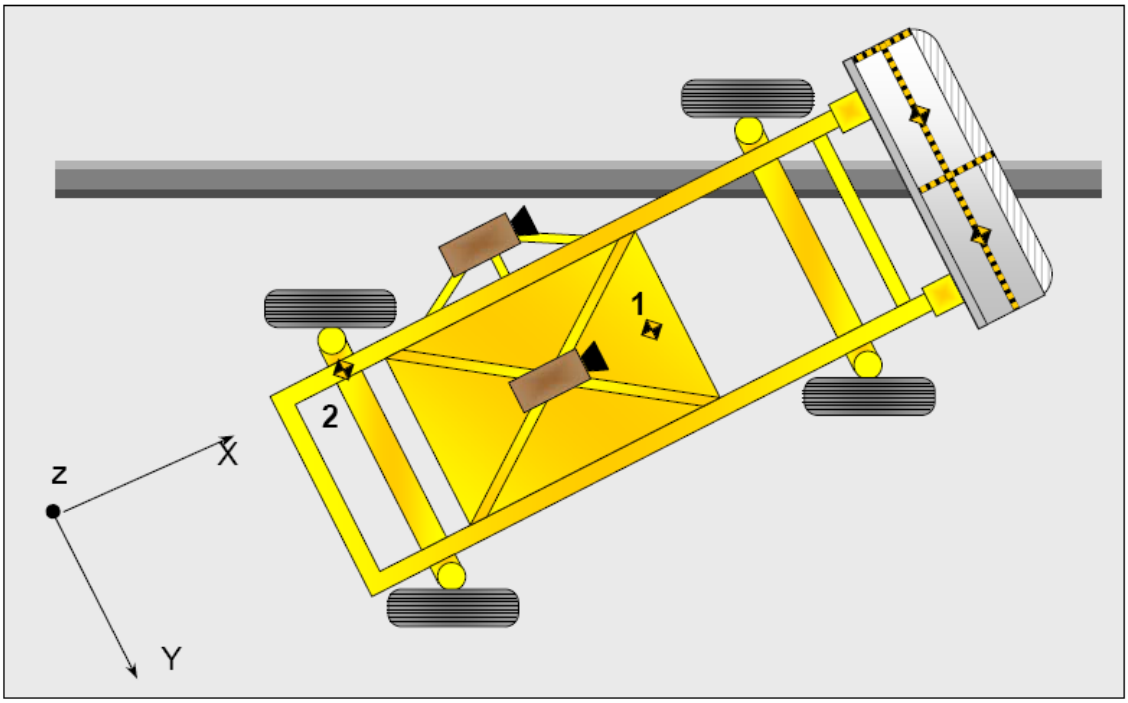
[1] – Not installed.

DATA SHEET NO. 7

MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2011 Infiniti M37 4-Door Sedan NHTSA No. MB5204

Test Program: MDB Side Impact Test Test Date: 08/04/10



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

Reference: X – Face of MDB (+ rearward)
Y – MDB Centerline (+ to right)
Z – Ground plane (+ up)

DATA SHEET NO. 8

TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2011 Infiniti M37 4-Door Sedan NHTSA No. MB5204

Test Program: MDB Side Impact Test Test Date: 08/04/10

MAXIMUM EXTERIOR CRUSH

Level	Description	Units	Maximum Crush	Above Ground
1	Sill Top Height	mm	114	256
2	Occupant H-Point Height	mm	292	536
3	Mid-Door Height	mm	279	647
4	Window Sill Height	mm	170	957
5	Window Top Height	mm	44	1435
	Maximum Penetration	mm	292	

INSTRUMENTATION

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

CAMERA COVERAGE

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

DATA SHEET NO. 9

MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

Test Vehicle: 2011 Infiniti M37 4-Door Sedan NHTSA No. MB5204

Test Program: MDB Side Impact Test Test Date: 08/04/10

MDB SPECIFICATIONS

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

MDB WEIGHTS

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

SPEED AND IMPACT DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	61.97
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	61.80
MDB CL to Target Vehicle CL	degrees	88.5-91.5	89.6

MAXIMUM STATIC CRUSH OF HONEYCOMB FACE

Vertical Location			From Centerline		Max. Crush (mm)
Row	Description	Height (mm)	Distance (mm)	Direction	
1	Center of Bumper	432	800	Right	260
2	Top of Bumper	533	800	Right	122
3	Mid Level	686	800	Left	131
4	Top of Stack	813	800	Left	169

MDB INSTRUMENTATION AND CAMERAS

Accelerometers	5
Contact Switches	2

DATA SHEET NO. 10

POST-TEST OBSERVATIONS

Test Vehicle: 2011 Infiniti M37 4-Door Sedan NHTSA No. MB5204

Test Program: MDB Side Impact Test Test Date: 08/04/10

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat Dummy (ES-2re)	Rear Seat Dummy (SID-IIs)
Dummy Type/Serial No.	ES-2re, S/N: F035	SID-IIs, S/N: 307
Head Contact	Curtain Airbag, Side Header, Headrest	Curtain Airbag, Seat Back, Center Headrest
Upper Torso Contact	Side Airbag	Door Panel
Lower Torso Contact	Side Airbag	None
Left Knee Contact	Door Panel	Door Panel
Right Knee Contact	None	None

POST-TEST DOOR OPENING AND SEAT TRACK INFORMATION

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

POST-TEST STRUCUTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No separation occurred
Sill Seperation	No separation occurred
Windshield Damage	None
Window Damage	Left rear window broken
Other Notable Effects	None

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

VEHICLE SPEED AND IMPACT DATA

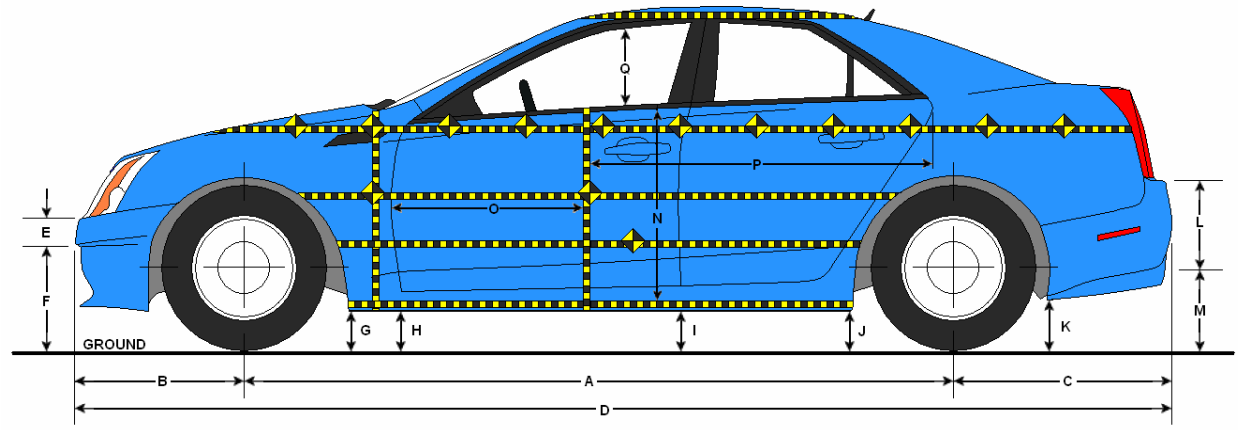
Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	+4 (Right)
Vertical Offset	mm	+/- 20	+5 (Up)

DATA SHEET NO. 11

VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2011 Infiniti M37 4-Door Sedan NHTSA No. MB5204

Test Program: MDB Side Impact Test Test Date: 08/04/10



VEHICLE PRE AND POST-TEST MEASUREMENT INFORMATION

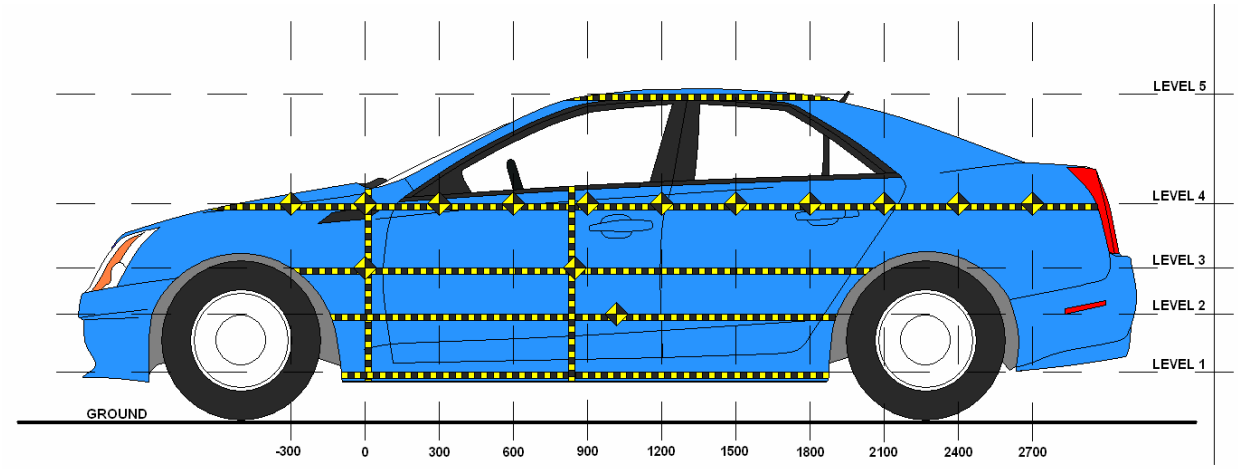
Code	Dimension	Measurement (mm)		
		Pre	Post	Difference
A	Wheelbase	2901	2882	-19
B	Front Axle to FSOV	894	904	10
C	Rear Axle to RSOV	1113	1120	7
D	Total Length at Centerline	4908	4906	2
E	Front Bumper Thickness	120	120	0
F	Front Bumper Bottom to Ground	361	385	24
G	Sill Height af Front Wheel Well	161	192	31
H	Sill Height at Front Door Leading Edge	163	219	56
I	Sill Height at B-Pillar	172	253	81
J1	Sill Height at Rear Wheel Well	171	257	86
J2	Pinch Weld Height at Rear Wheel Well	178	232	54
K	Sill Height Aft of Rear Wheel Well	221	279	58
L	Rear Bumper Thickness	142	138	-4
M	Bottom of Rear Bumper to Ground	360	424	64
N	Sill Height to Window Bottom Sill	624	658	34
O	Front Door Leading Edge to Impact CL	731	705	-26
P	Rear Door Trailing Edge to Impact CL	1442	1386	-56
Q	Front Window Opening	406	423	17
R	Right Side Length	3422	3400	-22
S	Left Side Length	3422	3426	4
T	Vehicle Width at B-Pillar	1837	1673	-164

DATA SHEET NO. 12

VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Infiniti M37 4-Door Sedan NHTSA No. MB5204

Test Program: MDB Side Impact Test Test Date: 08/04/10



LEFT SIDE VIEW

Level	Description	Height Above Ground (mm)
1	Sill Top Height	256
2	Occupant H-Point Height	536
3	Mid-Door Height	647
4	Window Sill Height	957
5	Window Top Height	1435

DATA SHEET NO. 12 … (CONTINUED)

VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Infiniti M37 4-Door Sedan NHTSA No. MB5204

Test Program: MDB Side Impact Test Test Date: 08/04/10

	Pre-Test (mm)					Post-Test (mm)					Difference (mm)				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900															
-750															
-600															
-450															
-300				724					739					15	
-150		580	582	706			597	613	720			17	31	14	
0	621	590	593	692		672	628	625	706		51	38	32	14	
150	639	594	592	680		735	773	716	695		96	179	124	15	
300	646	593	589	672		760	838	805	712		114	245	216	40	
450	647	591	585	666		757	844	848	724		110	253	263	58	
600	647	589	582	660		757	851	857	739		110	262	275	79	
750	647	588	580	655		757	860	846	753		110	272	266	98	
900	647	587	579	650		756	867	842	768		109	280	263	118	
1050	647	587	579	648	924	753	869	832	792	949	106	282	253	144	25
1200	645	588	579	646	898	749	851	831	765	932	104	263	252	119	34
1350	644	589	581	646	893	754	864	817	801	934	110	275	236	155	41
1500	642	589	582	645	894	732	881	843	815	937	90	292	261	170	43
1650	637	590	583	644	898	723	860	862	799	942	86	270	279	155	44
1800	624	588	584	643	910	698	801	829	785	948	74	213	245	142	38
1950	601	579	580	638	945	623	691	734	763	980	22	112	154	125	35
2100			573	629				647	708				74	79	
2250				626					668					42	
2400				630					672					42	
2550				639					675					36	
2700				651					681					30	
2850															

MAXIMUM CRUSH DATA

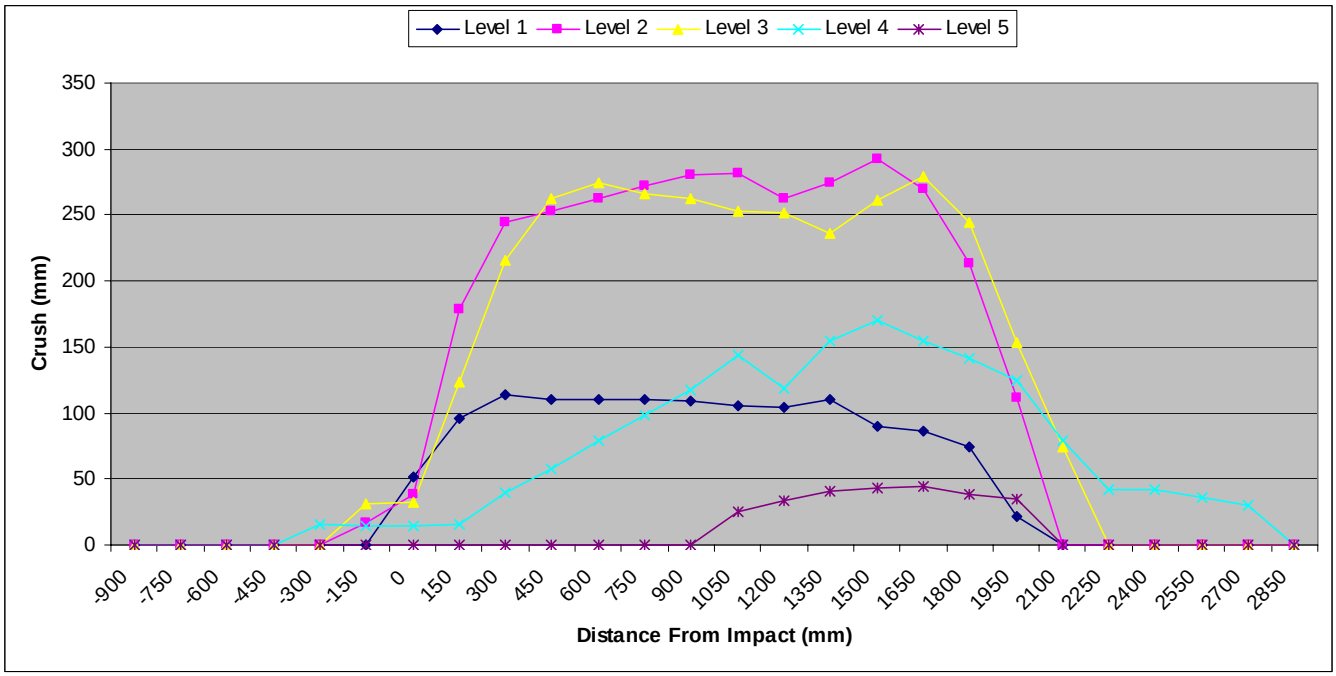
	Level 1	Level 2	Level 3	Level 4	Level 5
Maximum Crush (mm)	114	292	279	170	44
Distance from Impact (mm)	300	1500	1650	1500	1650

DATA SHEET NO. 12 … (CONTINUED)

VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Infiniti M37 4-Door Sedan NHTSA No. MB5204

Test Program: MDB Side Impact Test Test Date: 08/04/10

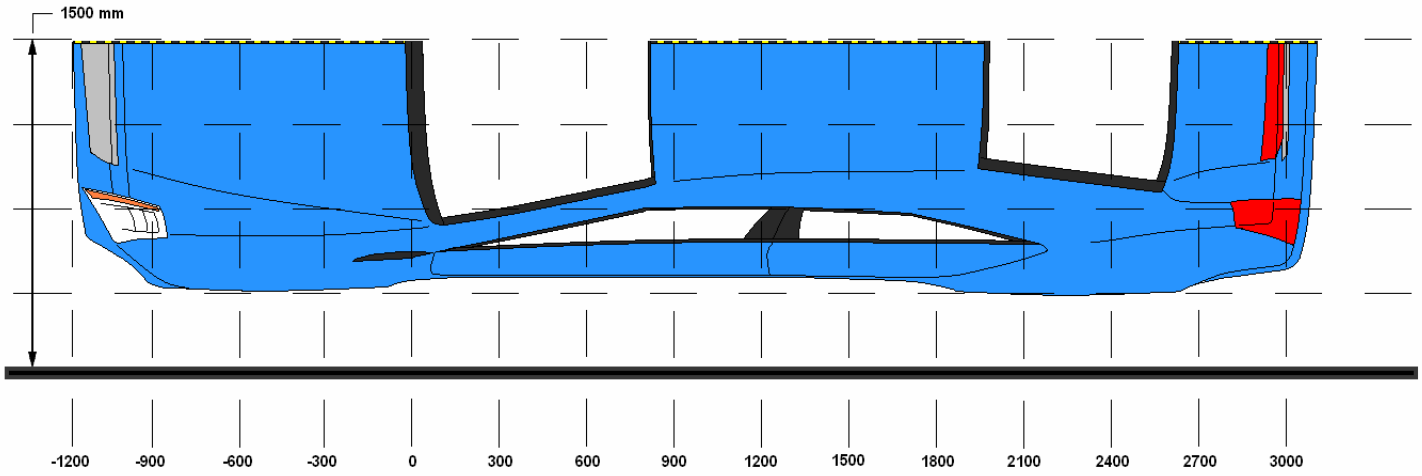


DATA SHEET NO. 13

VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2011 Infiniti M37 4-Door Sedan NHTSA No. MB5204

Test Program: MDB Side Impact Test Test Date: 08/04/10



TOP VIEW

DAMAGE PROFILE DISTANCES

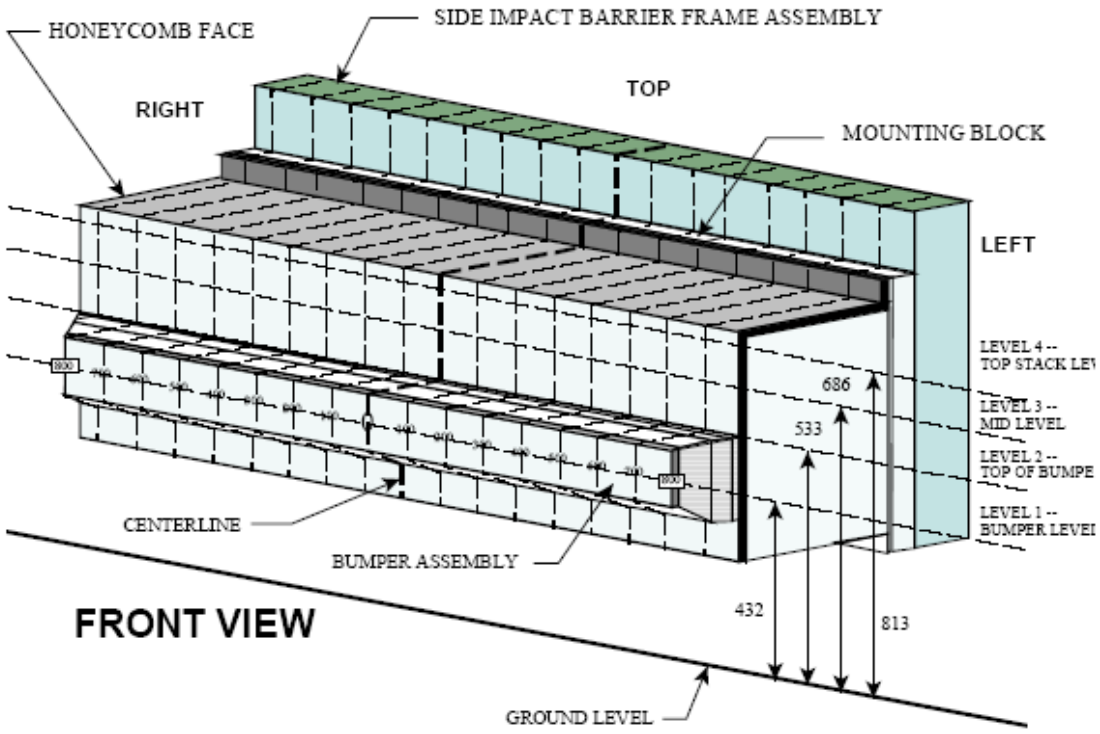
DPD	Distance From Impact Point in mm	Level	Pre-Test (mm)	Post-Test (mm)	Max. Static Crush (mm)
1	1950	4	580	734	154
2	1500	3	589	881	292
3	1050	3	587	869	282
4	600	2	582	857	275
5	150	2	594	773	179
6	-300	2	724	739	15

DATA SHEET NO. 14

EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

Test Vehicle: 2011 Infiniti M37 4-Door Sedan NHTSA No. MB5204

Test Program: MDB Side Impact Test Test Date: 08/04/10



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	0	100	200	300	400	500	600	700	800
1	260	223	196	181	172	166	156	151	146	140	132	130	126	119	121	137	156
2	122	100	82	69	66	69	64	52	51	53	55	54	58	61	64	66	74
3	76	45	43	52	78	82	51	24	14	9	5	4	5	14	31	74	131
4	76	50	36	45	84	93	64	37	12	14	16	28	40	60	84	114	169

All dimensions in millimeters.

DATA SHEET NO. 15

FMVSS NO. 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2011 Infiniti M37 4-Door Sedan NHTSA No. MB5204

Test Program: MDB Side Impact Test Test Date: 08/04/10

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

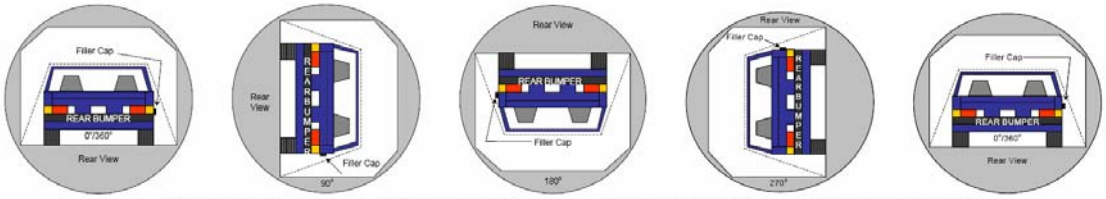
Temperature at Time of Impact: 32.2° Test Time: 3:27 PM

A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable = 1 oz.)

B. For the 5 minute period after motion ceases: 0 oz.
(Maximum allowable = 5 oz.)

C. For the following 25 minutes: 0 oz.
(Maximum allowable = 1 oz./minute)

D. Spillage Details: No spillage occurred



0° TO 90° 90° TO 180° 180° TO 270° 270° TO 360°

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	81	324	405
90° To 180°	81	300	381
180° To 270°	78	300	378
270° To 360°	83	300	383

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			
270° To 360°	0			

SOLVENT SPILLAGE LOCATION TABLE

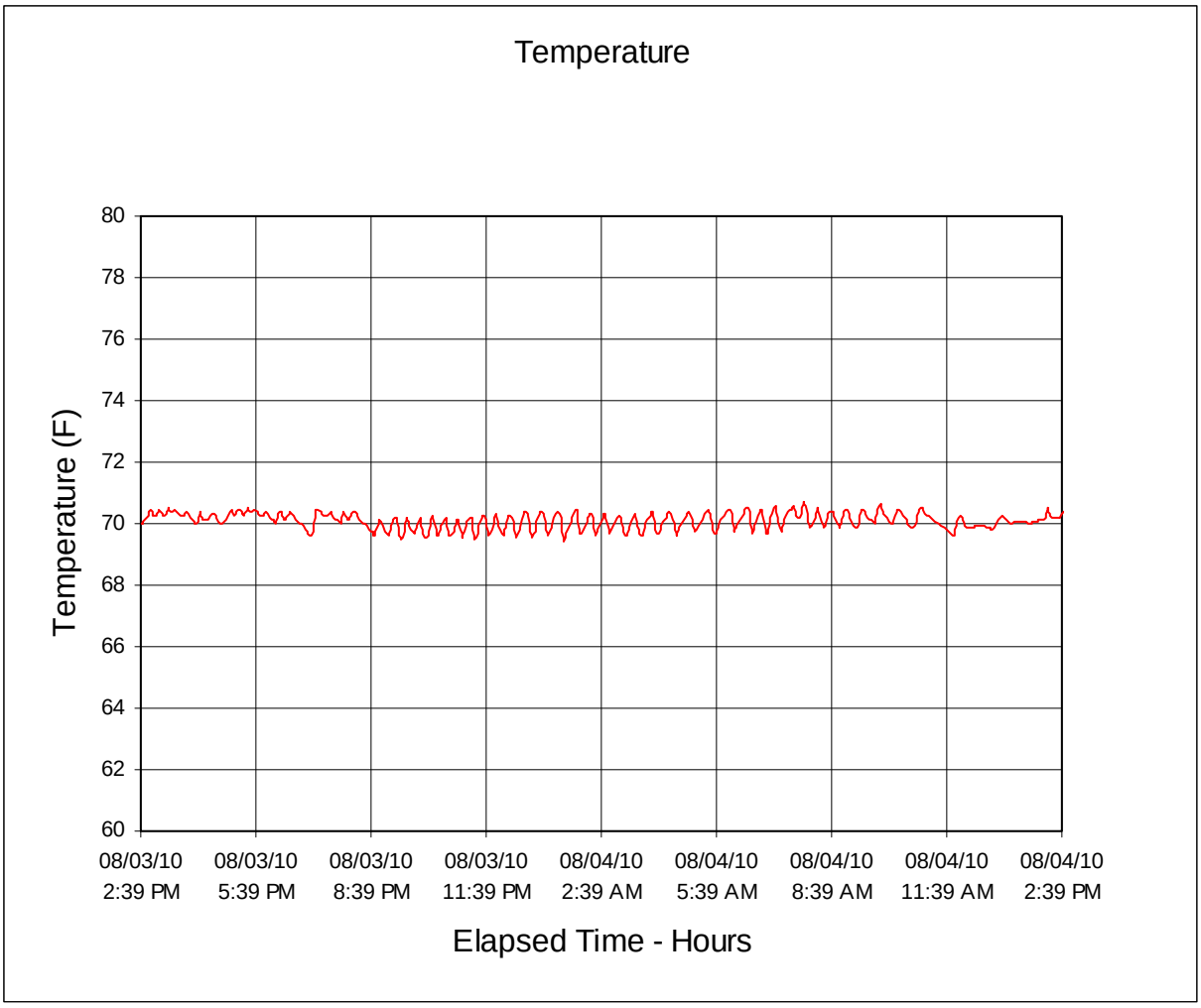
Test Phase	Spillage Location
0° To 90°	None
90° To 180°	None
180° To 270°	None
270° To 360°	None

DATA SHEET NO. 16

DUMMY / VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2011 Infiniti M37 4-Door Sedan NHTSA No. MB5204

Test Program: MDB Side Impact Test Test Date: 08/04/10



APPENDIX A

PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

TABLE OF PHOTOGRAPHS … (CONTINUED)

TABLE OF PHOTOGRAPHS … (CONTINUED)

FIGURE 1. 2011 Infiniti M37 Side MDB As Delivered

FIGURE 2. 2011 Infiniti M37 Side MDB As Delivered

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 Test Vehicle

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

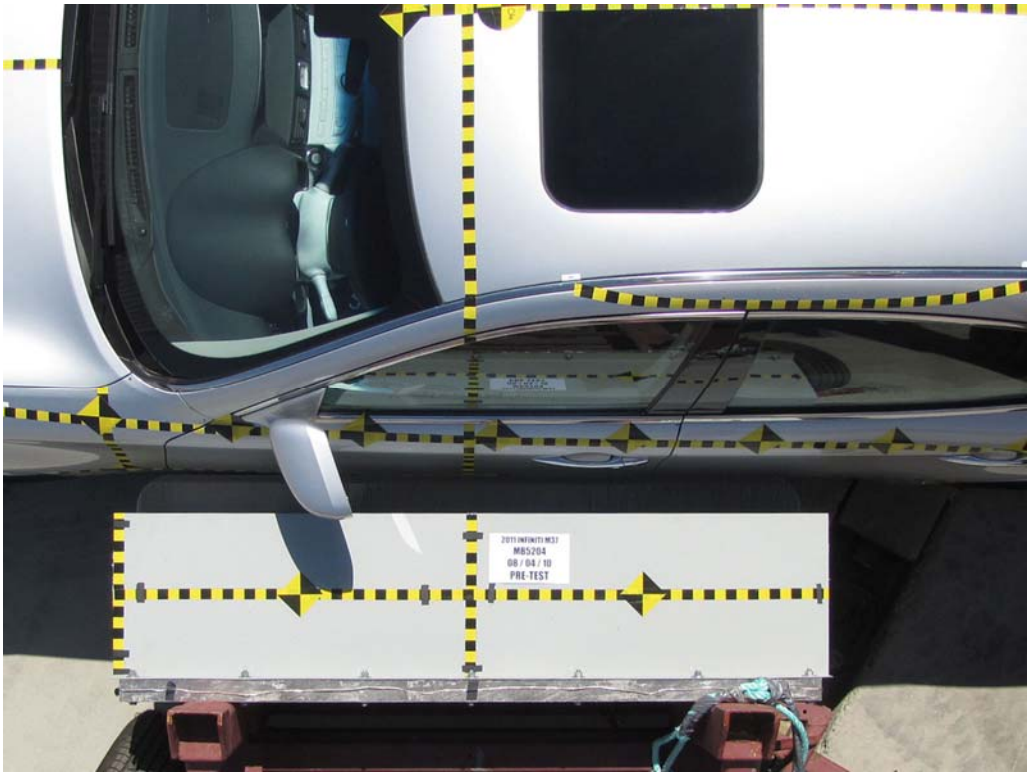


FIGURE 15. Pre-Test Overhead View of Test Vehicle
with MDB Positioned Against Side of Test Vehicle

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

FIGURE 18. Pre-Test Right Side View of MDB Positioned Against Side of Test Vehicle

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

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

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

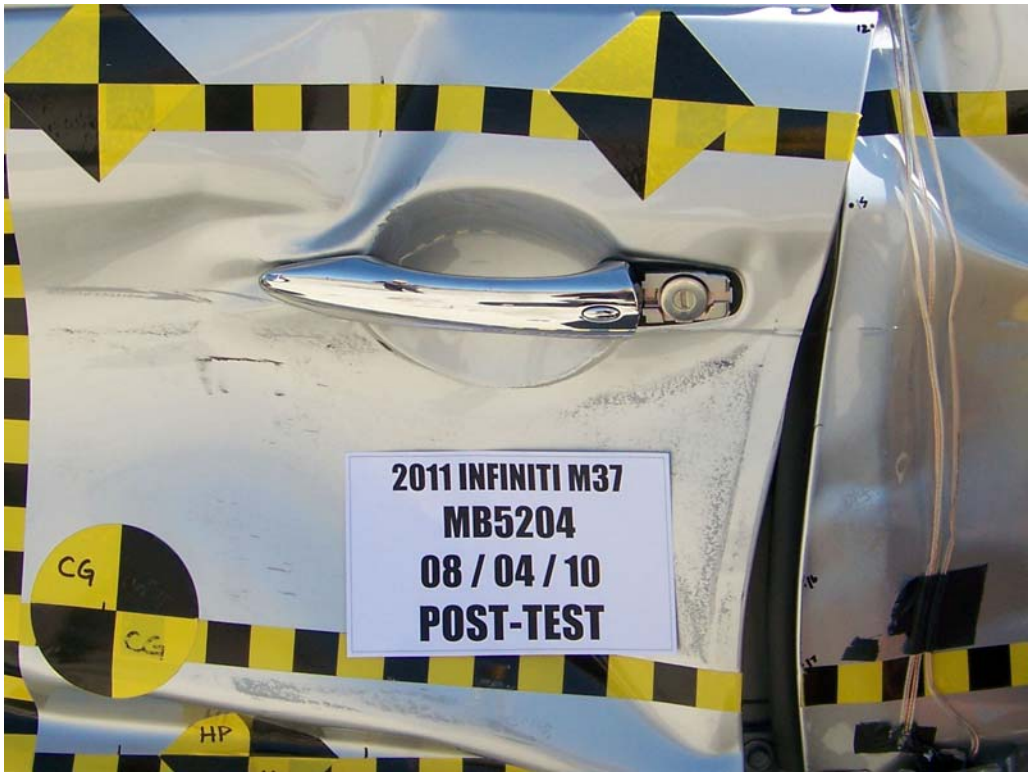


FIGURE 22. Post-Test Left Front Door Latch Close-Up

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

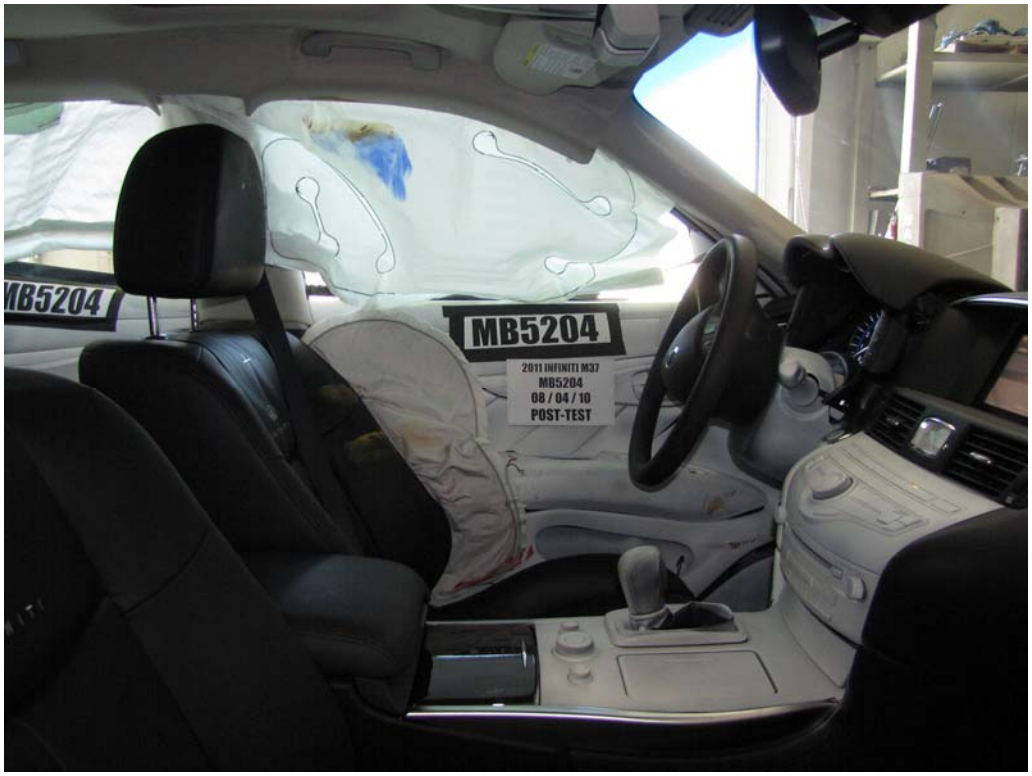


FIGURE 46. Post-Test Driver Inner Door Panel View
Showing Driver Dummy Contact Locations

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

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

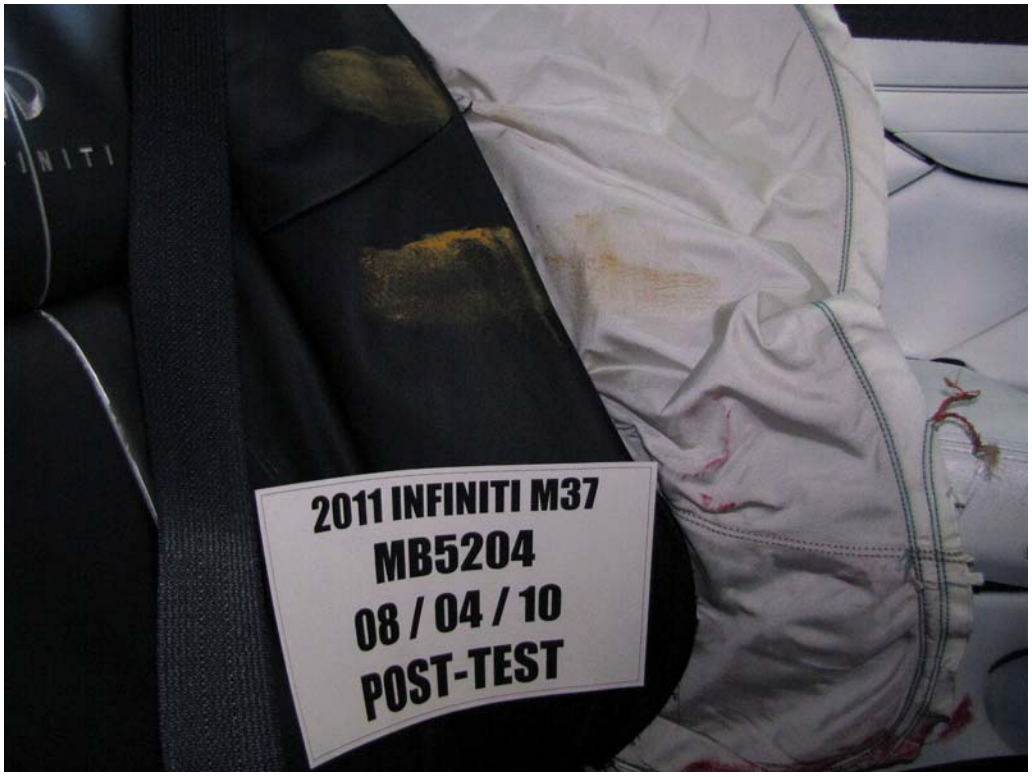


FIGURE 49. Post-Test Driver Dummy Close-Up Torso Contact with Vehicle Interior View

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

FIGURE 51. Post-Test Driver Dummy Close-Up Pelvis Contact

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 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 Dummy Contact Locations

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

No Dummy Torso Contact with Side Airbag

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

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

No Dummy Pelvis Contact with Side Airbag

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

Photograph
Not Available

FIGURE 79. Pre-Test View of Fuel Filler Cap or Fuel Filler Neck

FIGURE 80. Post-Test View of Fuel Filler Cap or Fuel Filler Neck

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

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

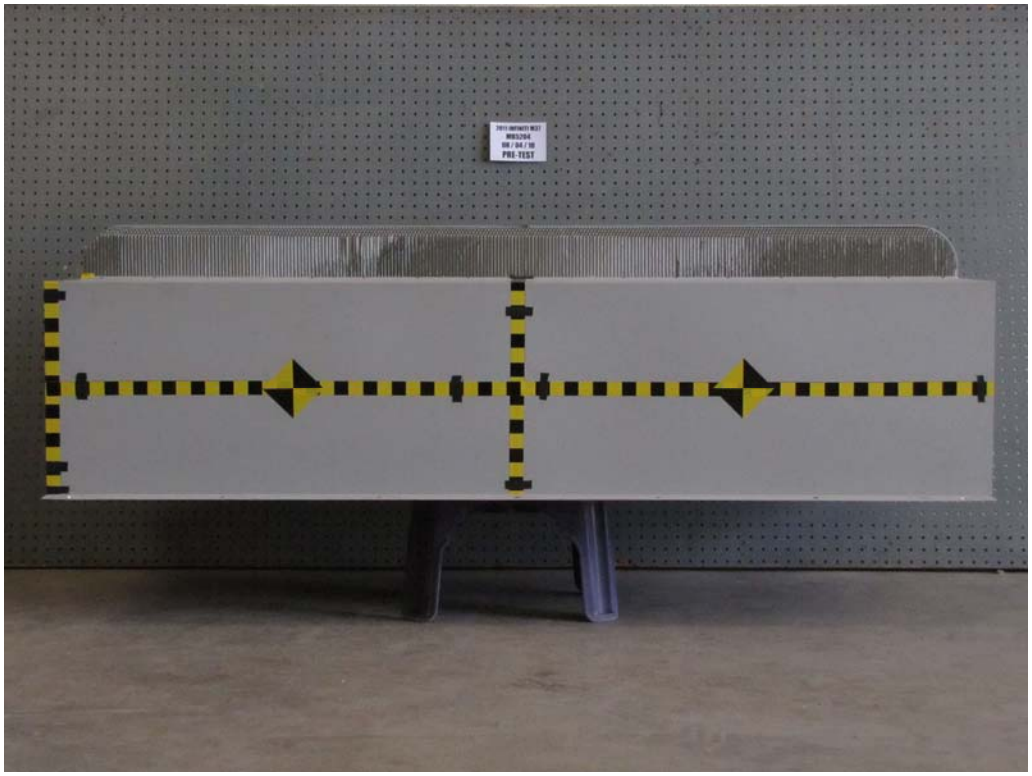


FIGURE 83. Pre-Test Top View of MDB Impactor Face

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

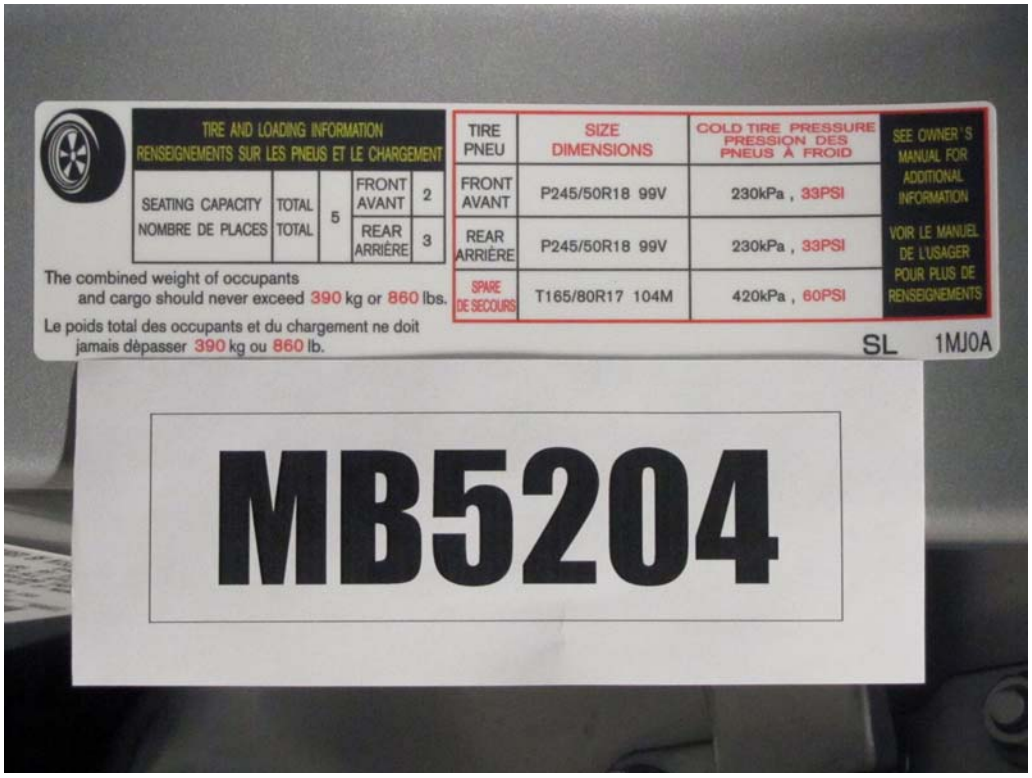


FIGURE 90. Close-Up View of Vehicle's Tire Information Placard

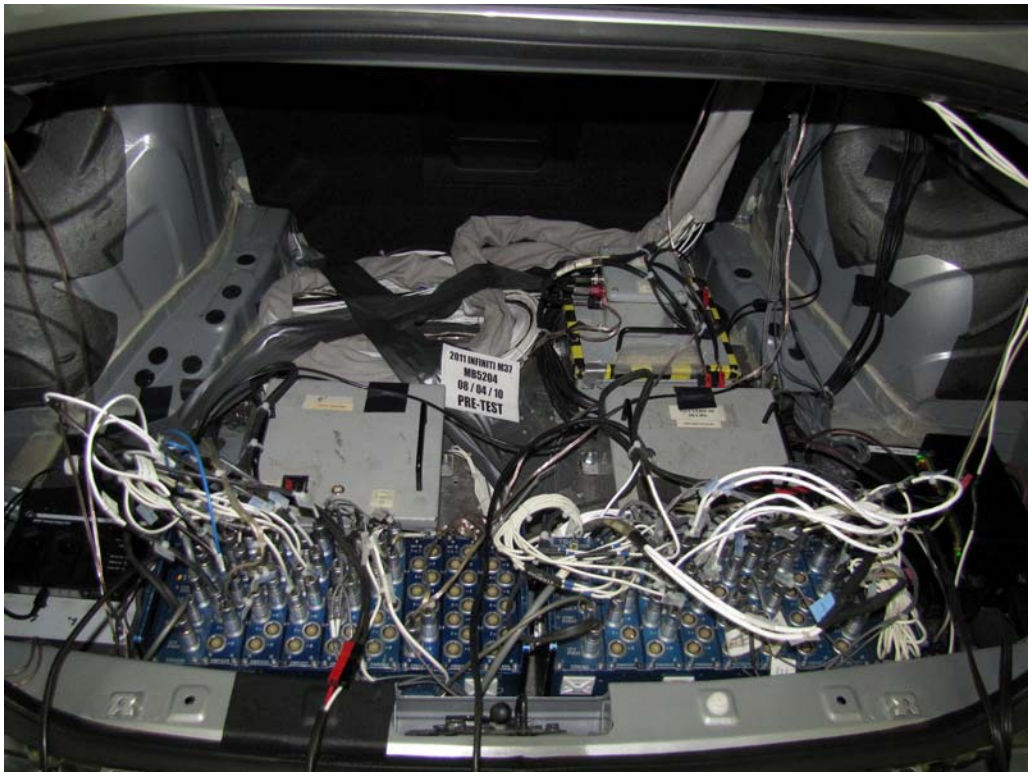


FIGURE 91. Pre-Test Ballast View

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

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

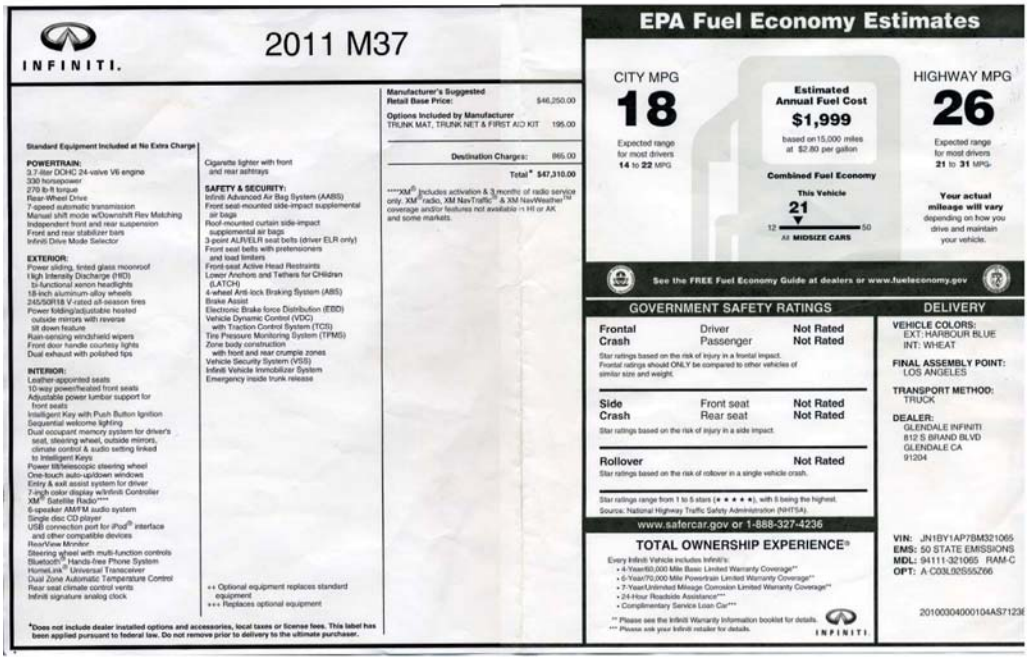
FIGURE 94. FMVSS No. 301-305 Rollover 90 Degrees

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. 2011 Infiniti M37 Side MDB Impact Event



INFINITI.

2011 M37

Manufacturer's Suggested Retail Base Price: $46,250.00

Options Included by Manufacturer
TRUNK MAT, TRUNK NET & FIRST AID KIT 195.00

Destination Charges: 865.00

Total* $47,310.00

*****XM® includes activation & 3 months of radio service only. XM® radio, XM NavTraffic™ & XM NavWeather™ coverage and/or features not available in HI or AK and some markets.

Standard Equipment Included at No Extra Charge

POWERTRAIN:
3.7-liter DOHC 24-valve V6 engine
330 horsepower
270 lb-ft torque
Rear-Wheel Drive
7-speed automatic transmission
Manual shift mode w/Downshift Rev Matching
Independent front and rear suspension
Front and rear stabilizer bars
Infiniti Drive Mode Selector

EXTERIOR:
Power sliding, tinted glass moonroof
High Intensity Discharge (HID) bi-functional xenon headlights
18-inch aluminum-alloy wheels
245/50R18 V-rated all-season tires
Power folding/adjustable heated outside mirrors with reverse tilt down feature
Rain-sensing windshield wipers
Front door handle courtesy lights
Dual exhaust with polished tips

INTERIOR:
Leather-appointed seats
10-way power/heated front seats
Adjustable power lumbar support for front seats
Intelligent Key with Push Button Ignition
Sequential welcome lighting
Dual occupant memory system for driver's seat, steering wheel, outside mirrors, climate control & audio setting linked to Intelligent Keys
Power tilt/telescopic steering wheel
One-touch auto-up/down windows
Entry & exit assist system for driver
7-inch color display w/Infiniti Controller
XM® Satellite Radio****
6-speaker AM/FM audio system
Single disc CD player
USB connection port for iPod® interface and other compatible devices
RearView Monitor
Steering wheel with multi-function controls
Bluetooth® Hands-free Phone System
HomeLink® Universal Transceiver
Dual Zone Automatic Temperature Control
Rear seat climate control vents
Infiniti signature analog clock
Cigarette lighter with front and rear ashtrays

SAFETY & SECURITY:
Infiniti Advanced Air Bag System (AABS)
Front seat-mounted side-impact supplemental air bags
Roof-mounted curtain side-impact supplemental air bags
3-point ALR/ELR seat belts (driver ELR only)
Front seat belts with pretensioners and load limiters
Front-seat Active Head Restraints
Lower Anchors and Tethers for CHildren (LATCH)
4-wheel Anti-lock Braking System (ABS)
Brake Assist
Electronic Brake force Distribution (EBD)
Vehicle Dynamic Control (VDC) with Traction Control System (TCS)
Tire Pressure Monitoring System (TPMS)
Zone body construction with front and rear crumple zones
Vehicle Security System (VSS)
Infiniti Vehicle Immobilizer System
Emergency inside trunk release

++ Optional equipment replaces standard equipment
+++ Replaces optional equipment

*Does not include dealer installed options and accessories, local taxes or license fees. This label has been applied pursuant to federal law. Do not remove prior to delivery to the ultimate purchaser.

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 $2.80 per gallon

Combined Fuel Economy
This Vehicle **21**
12 ▼ 50
All MIDSIZE CARS

HIGHWAY MPG **26**
Expected range for most drivers **21** to **31** MPG

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

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

GOVERNMENT SAFETY RATINGS

Frontal Crash	Driver	Not Rated
	Passenger	Not Rated

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

Side Crash	Front seat	Not Rated
	Rear seat	Not Rated

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

Rollover Not Rated
Star ratings based on the risk of rollover in a single vehicle crash.

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

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

TOTAL OWNERSHIP EXPERIENCE®

Every Infiniti Vehicle includes Infiniti's:
- 4-Year/60,000 Mile Basic Limited Warranty Coverage**
- 6-Year/70,000 Mile Powertrain Limited Warranty Coverage**
- 7-Year/Unlimited Mileage Corrosion Limited Warranty Coverage**
- 24-Hour Roadside Assistance***
- Complimentary Service Loan Car***

** Please see the Infiniti Warranty Information booklet for details.
*** Please ask your Infiniti retailer for details.

INFINITI

DELIVERY

VEHICLE COLORS:
EXT: HARBOUR BLUE
INT: WHEAT

FINAL ASSEMBLY POINT:
LOS ANGELES

TRANSPORT METHOD:
TRUCK

DEALER:
GLENDALE INFINITI
812 S BRAND BLVD
GLENDALE CA
91204

VIN: JN1BY1AP7BM321065
EMS: 50 STATE EMISSIONS
MDL: 94111-321065 RAM-C
OPT: A C03L0S555Z66

20100304000104AS7123

FIGURE 99. Monroney Label

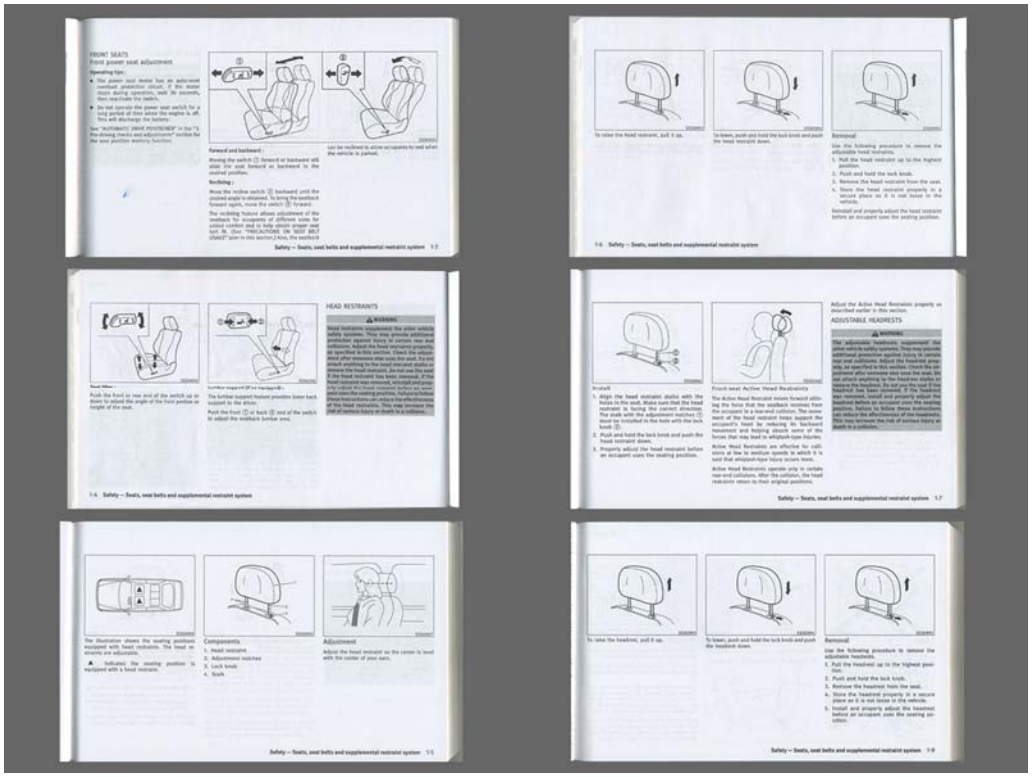


FIGURE 100. Driver Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

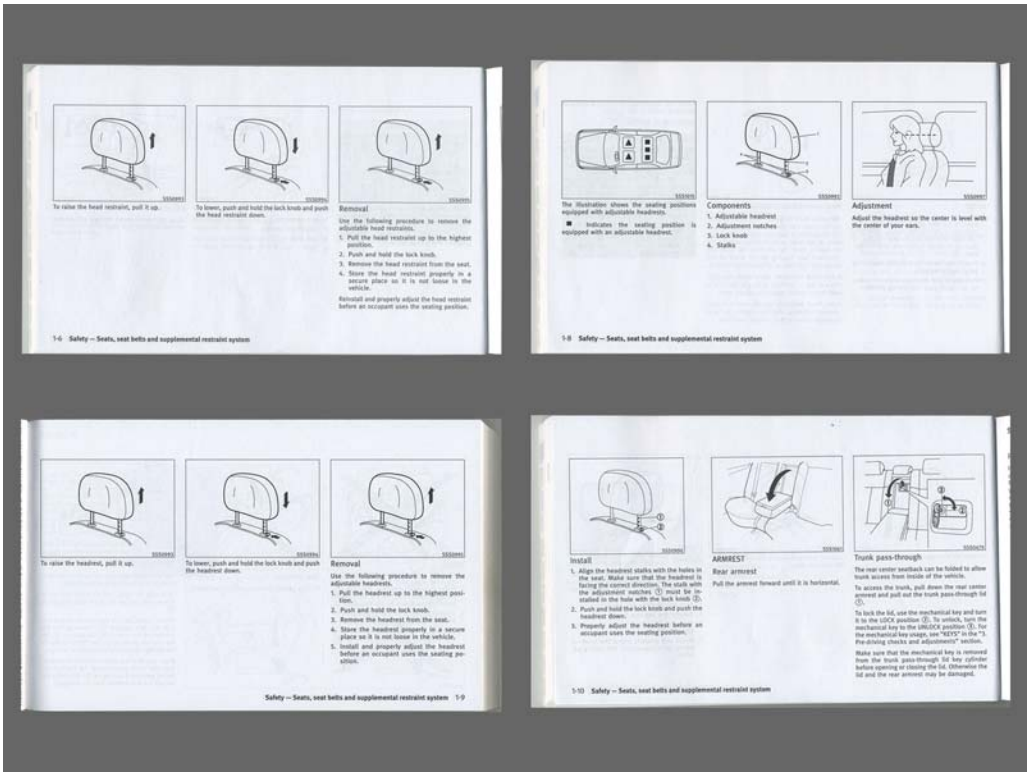


FIGURE 101. Left Rear Passenger Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

APPENDIX B
DUMMY RESPONSE DATA

TABLE OF DATA PLOTS

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)

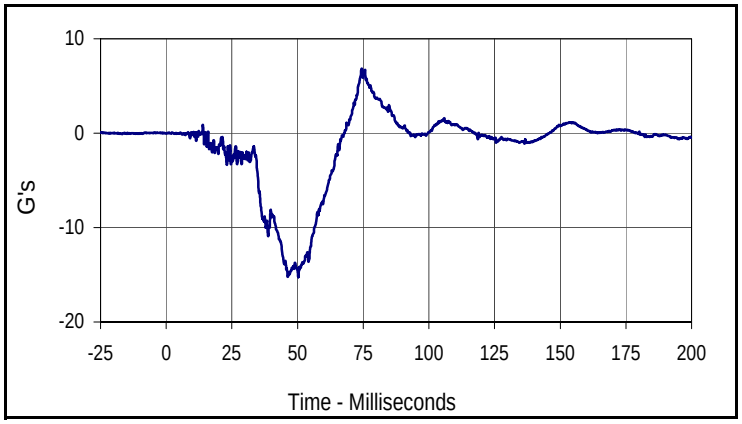
MDB Center of Gravity Acceleration (Z)

MDB Rear Acceleration (X)

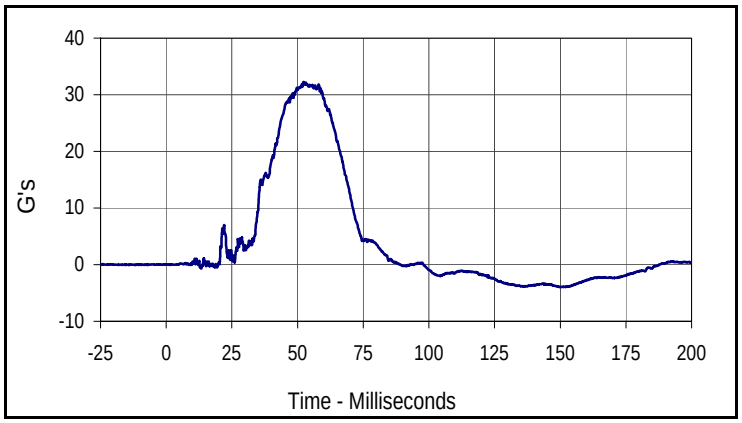
MDB Rear Acceleration (Y)

Left MDB Contact Switch

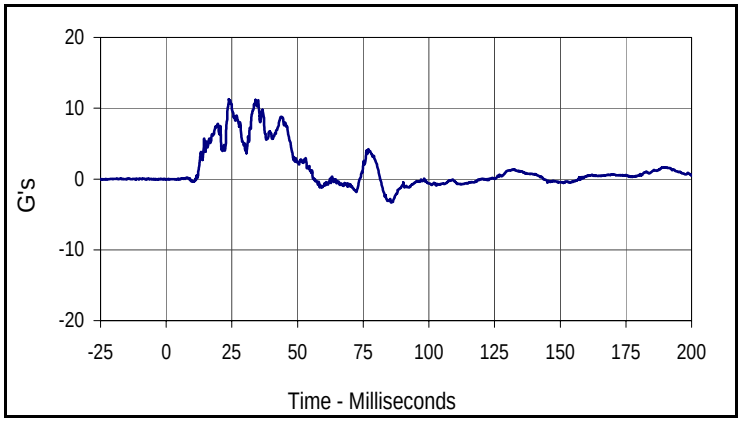
Right MDB Contact Switch



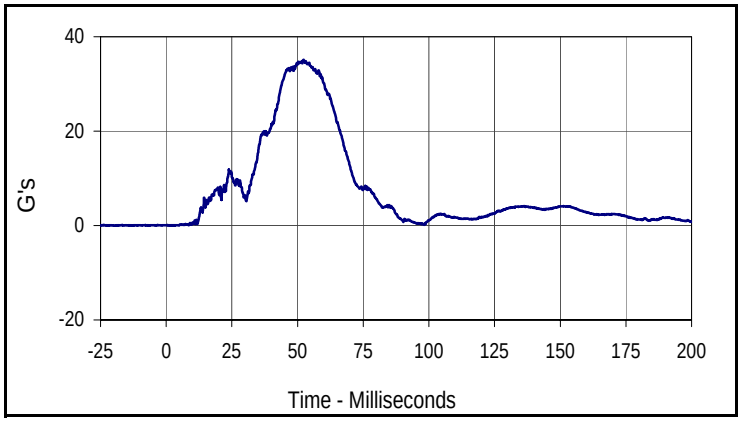
Curve Description			
Driver Head Acceleration X Primary			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
6.9	74.4	-15.3	50.3



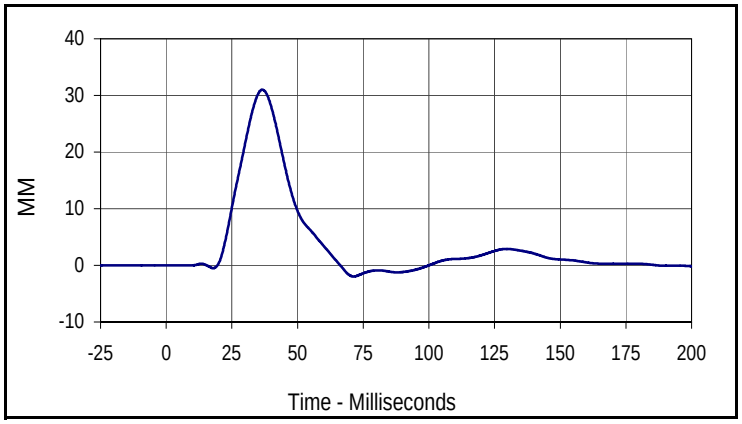
Curve Description			
Driver Head Acceleration Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
32.2	52.2	-4.0	150.3



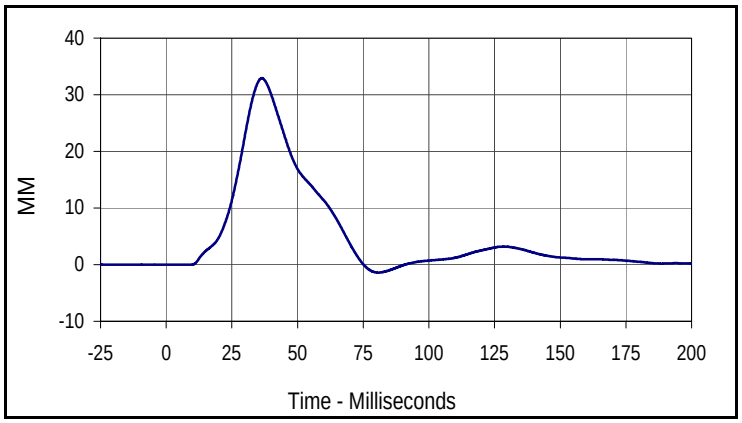
Curve Description			
Driver Head Acceleration Z Primary			
CURNO	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
11.3	23.9	-3.3	85.7



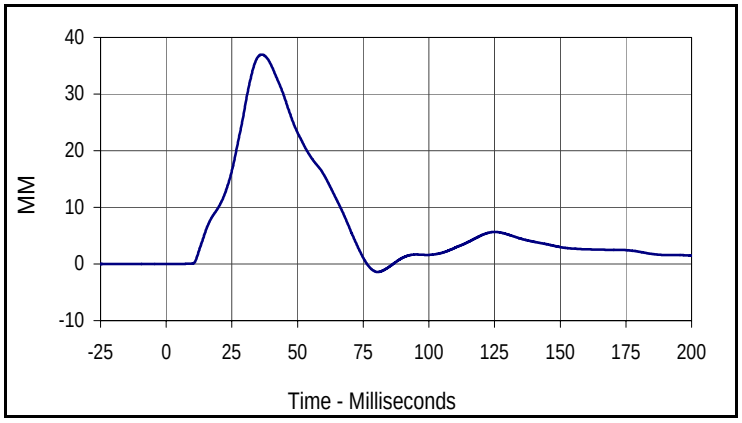
Curve Description			
Driver Head Resultant Acceleration Primary			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
35.1	52.2	0.0	0.9



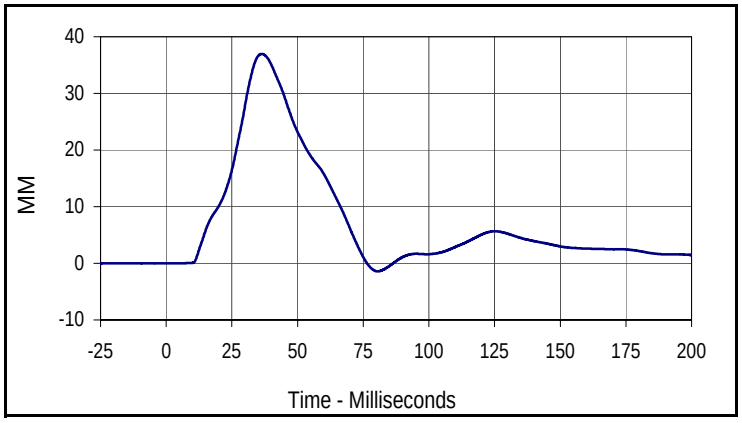
Curve Description			
Driver Upper Thorax Rib Deflection Y			
CURNO	Type	SAE Class	Units
007	FIL	180	MM
Max	Time	Min	Time
31.0	36.6	-2.0	71.4



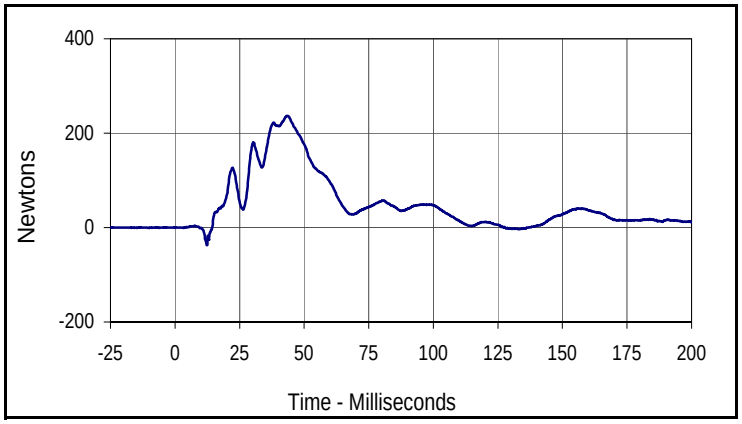
Curve Description			
Driver Middle Thorax Rib Deflection Y			
CURNO	Type	SAE Class	Units
008	FIL	180	MM
Max	Time	Min	Time
32.9	36.4	-1.4	80.8



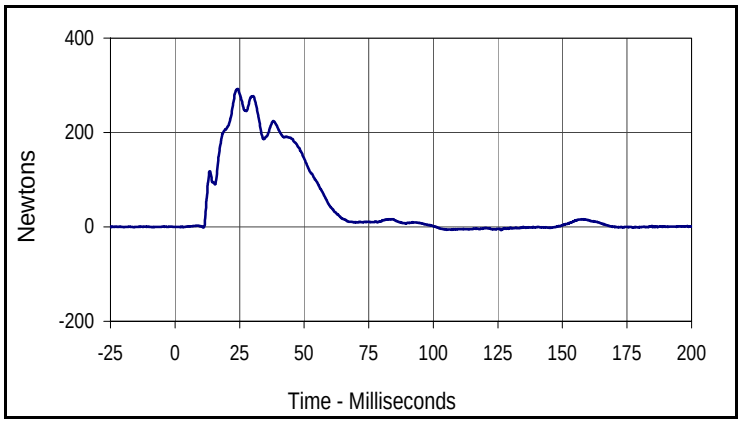
Curve Description			
Driver Lower Thorax Rib Deflection Y			
CURNO	Type	SAE Class	Units
009	FIL	180	MM
Max	Time	Min	Time
37.0	36.4	-1.4	80.5



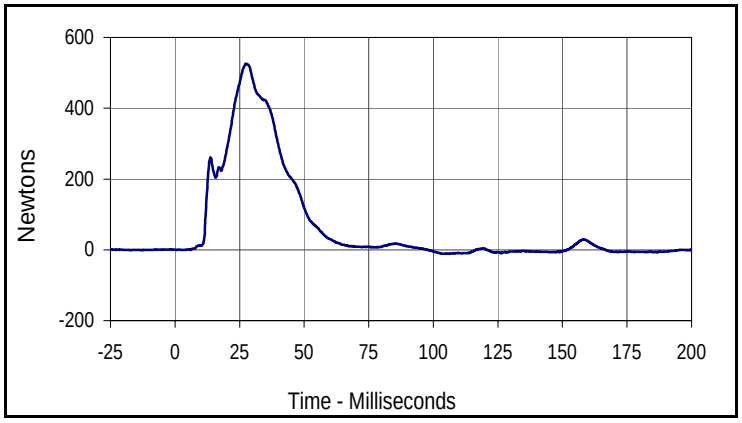
Curve Description			
Driver Thorax Rib Deflection Maximum			
CURNO	Type	SAE Class	Units
010	FIL	180	MM
Max	Time	Min	Time
37.0	36.4	-1.4	80.5



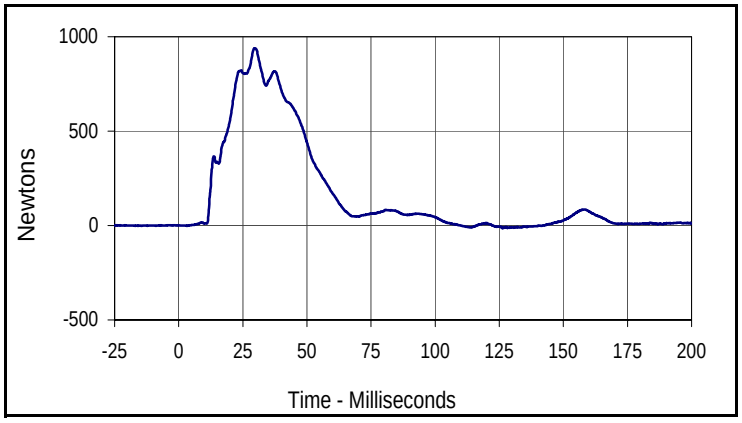
Curve Description			
Driver Anterior Abdominal Force Y			
CURNO	Type	SAE Class	Units
013	FIL	600	Newtons
Max	Time	Min	Time
236.9	43.6	-37.1	12.4



Curve Description			
Driver Middle Abdominal Force Y			
CURNO	Type	SAE Class	Units
014	FIL	600	Newtons
Max	Time	Min	Time
292.5	24.4	-7.1	126.3

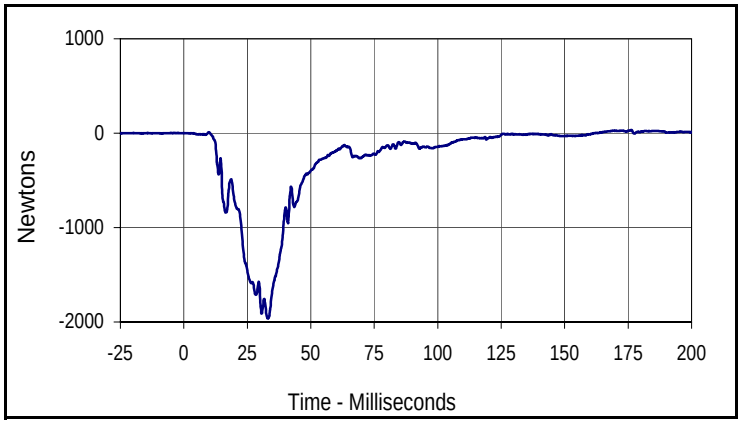


Curve Description			
Driver Posterior Abdominal Force Y			
CURNO	Type	SAE Class	Units
015	FIL	600	Newtons
Max	Time	Min	Time
526.0	27.4	-11.4	106.1

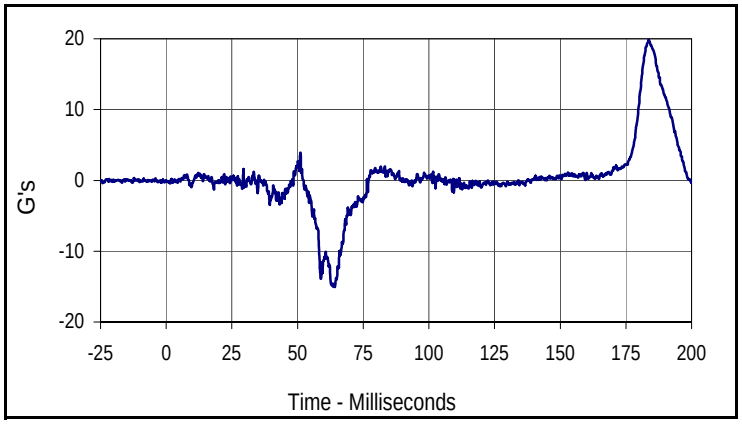


Curve Description			
Driver Total Abdominal Force			
CURNO	Type	SAE Class	Units
013	RES	600	Newtons
Max	Time	Min	Time
938.8	29.7	-15.7	126.3

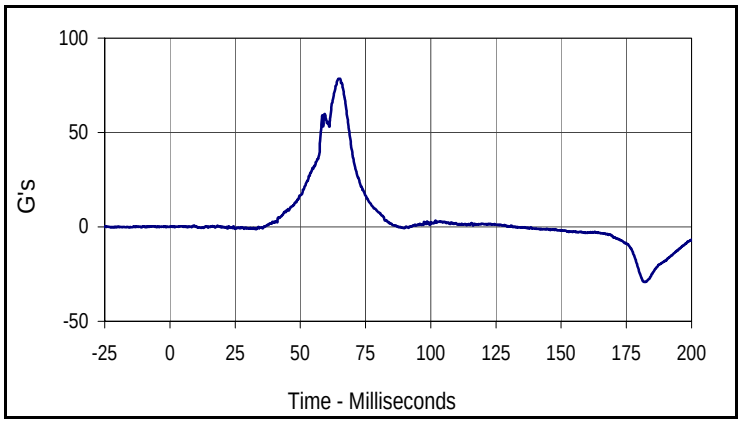
Test Vehicle:	2011 Infiniti M37 4-Door Sedan	Test Date:	8/4/10
Test Program:	61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test	NHTSA No.:	MB5204



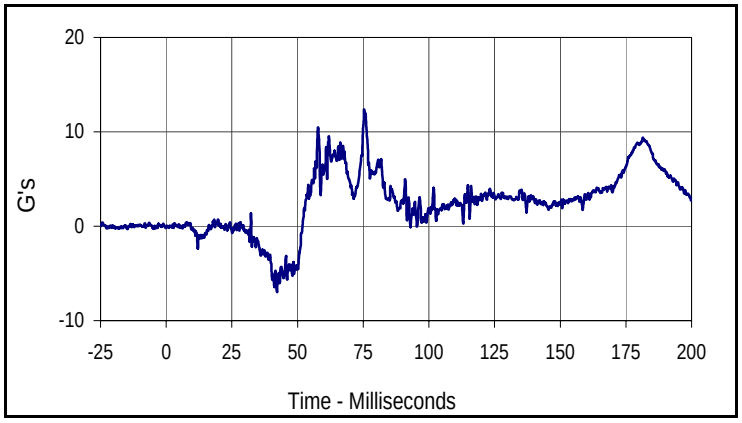
Curve Description			
Driver Pubic Symphysis Force Y			
CURNO	Type	SAE Class	Units
016	FIL	600	Newtons
Max	Time	Min	Time
34.5	176.2	-1961.6	33.1



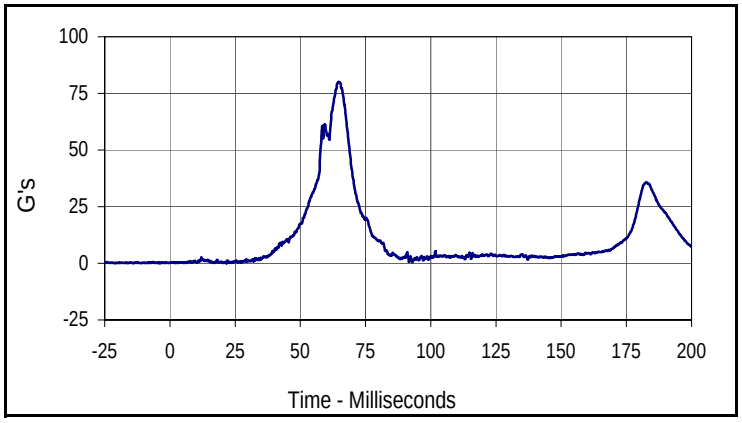
Curve Description			
Passenger Head Acceleration X Primary			
CURNO	Type	SAE Class	Units
021	FIL	1000	G's
Max	Time	Min	Time
19.8	183.7	-15.1	64.2



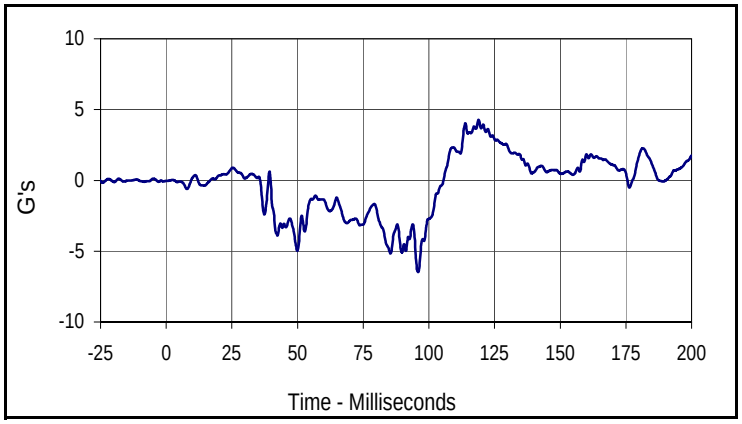
Curve Description			
Passenger Head Acceleration Y Primary			
CURNO	Type	SAE Class	Units
022	FIL	1000	G's
Max	Time	Min	Time
78.6	64.7	-29.2	182.2



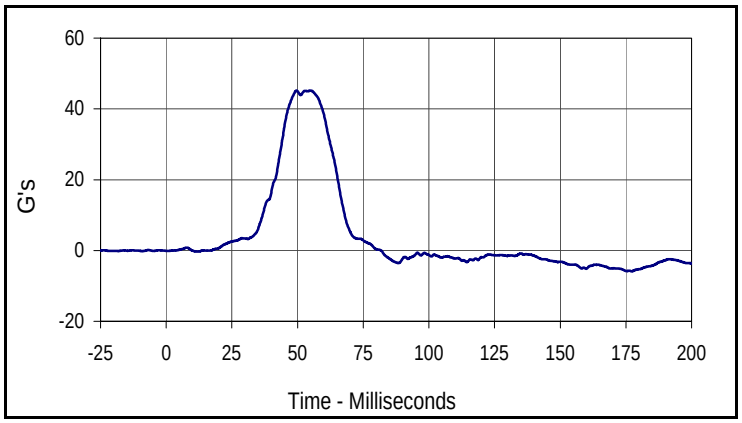
Curve Description			
Passenger Head Acceleration Z Primary			
CURNO	Type	SAE Class	Units
023	FIL	1000	G's
Max	Time	Min	Time
12.4	75.4	-7.0	42.2



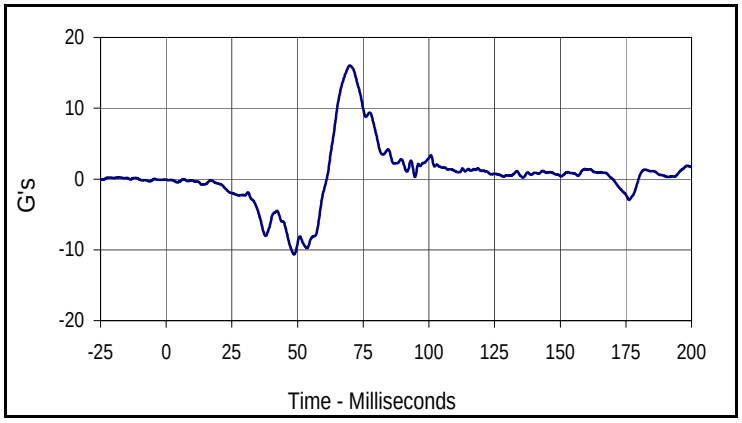
Curve Description			
Passenger Head Acceleration Resultant Primary			
CURNO	Type	SAE Class	Units
021	RES	1000	G's
Max	Time	Min	Time
80.1	64.7	0.1	21.7



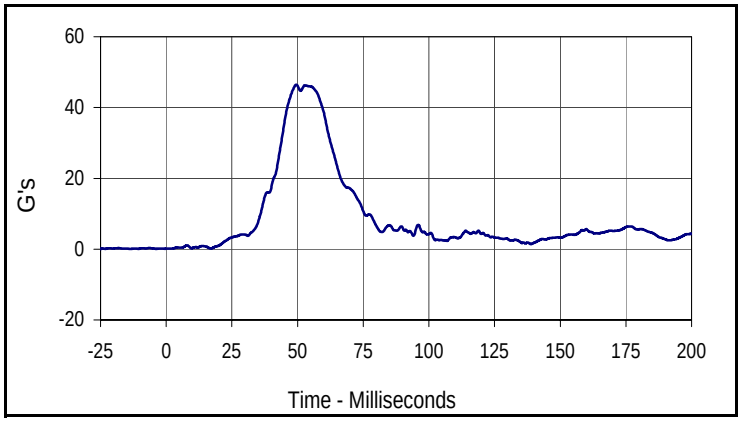
Curve Description			
Passenger Lower Spine T12 Acceleration X			
CURNO	Type	SAE Class	Units
037	FIL	180	G's
Max	Time	Min	Time
4.3	118.9	-6.5	95.9



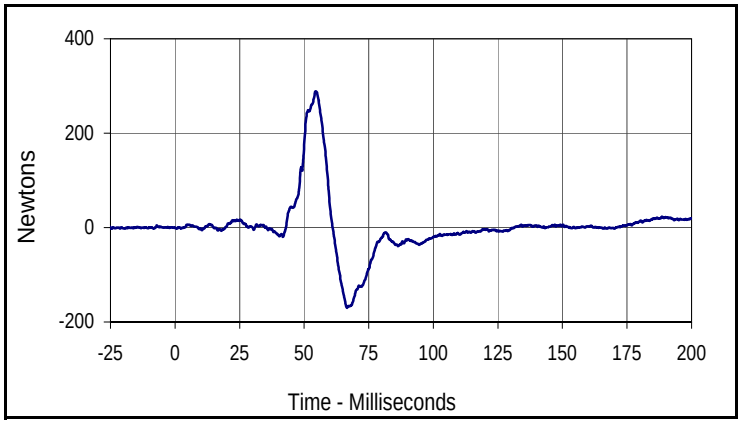
Curve Description			
Passenger Lower Spine T12 Acceleration Y			
CURNO	Type	SAE Class	Units
038	FIL	180	G's
Max	Time	Min	Time
45.2	55.0	-5.9	177.3



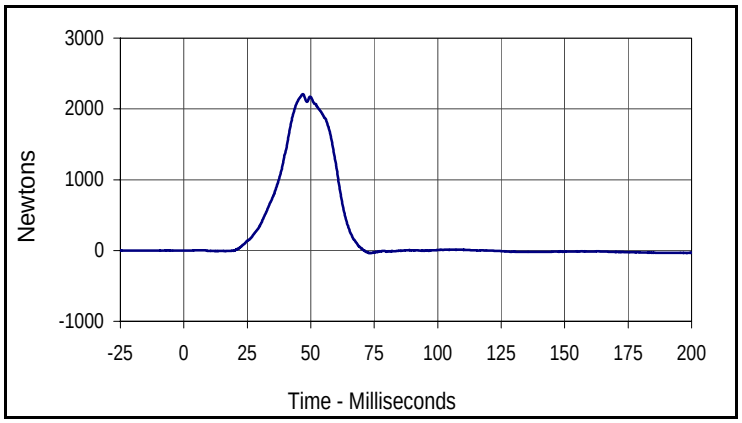
Curve Description			
Passenger Lower Spine T12 Acceleration Z			
CURNO	Type	SAE Class	Units
039	FIL	180	G's
Max	Time	Min	Time
16.0	69.8	-10.6	48.7



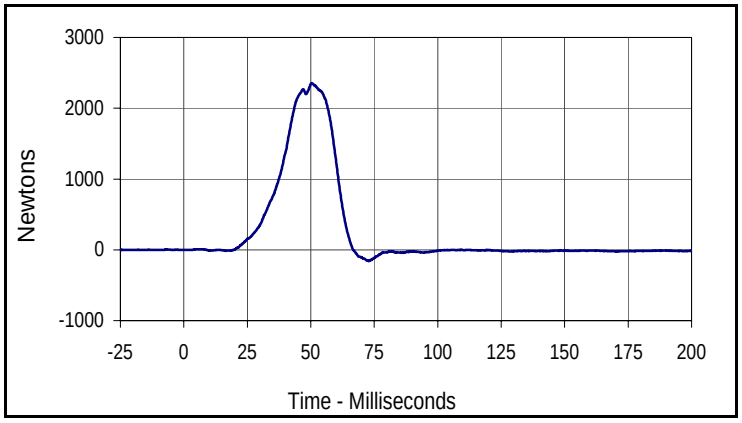
Curve Description			
Passenger Lower Spine T12 Acceleration Resultant			
CURNO	Type	SAE Class	Units
037	RES	180	G's
Max	Time	Min	Time
46.5	49.5	0.1	0.0



Curve Description			
Passenger Iliac Wing Force on Impact Side Y			
CURNO	Type	SAE Class	Units
043	FIL	600	Newtons
Max	Time	Min	Time
289.0	54.5	-170.4	66.6



Curve Description			
Passenger Acetabulum Force on Impact Side Y			
CURNO	Type	SAE Class	Units
042	FIL	600	Newtons
Max	Time	Min	Time
2209.5	46.9	-37.3	73.6



Curve Description			
Passenger Total Pelvic Force			
CURNO	Type	SAE Class	Units
042	SUM	600	Newtons
Max	Time	Min	Time
2353.5	50.3	-157.3	72.8

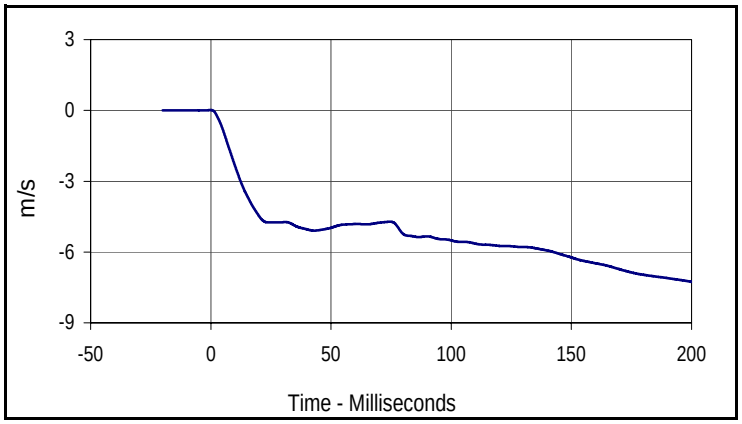
APPENDIX C

DUMMY CALIBRATION DATA

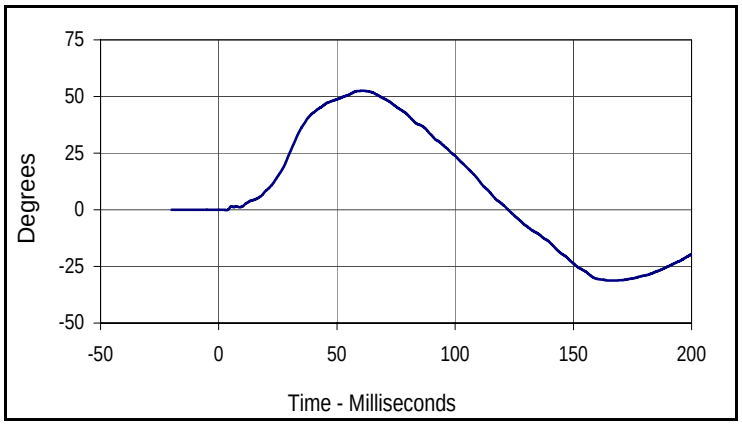
APPENDIX C
PRE-TEST / HIII CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program:	ES2re Neck Calibration	Test Date:	7/28/10
ATD Serial No.:	F035	Test I.D.:	NB07A

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	3.40	Pass
Pendulum Deceleration	1 msec	m/s	0.0 to -.050	-0.008	Pass
	3 msec	m/s	-.250 to -.375	-0.323	Pass
	14 msec	m/s	-3.20 to -3.70	-3.39	Pass
Headform Rotation	Max	Degrees	49.0 to 58.0	52.5	Pass
	Time	msec	54.0 to 66.0	60.9	Pass
Maximum Rotation To Time Zero Crossing		msec	53.0 to 88.0	61.6	Pass
			Overall Test Results		Pass



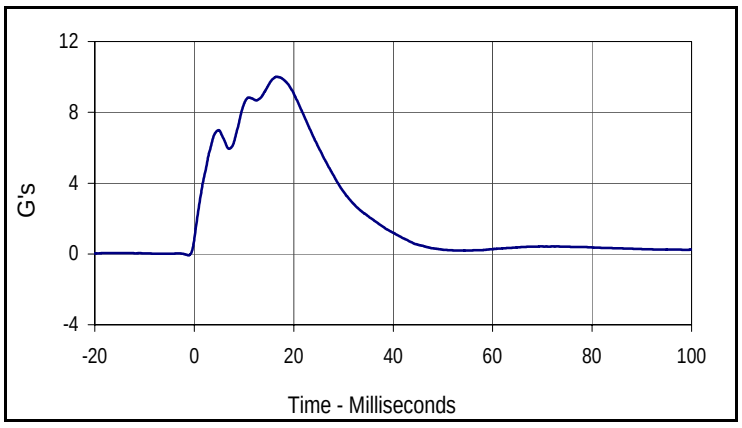
Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	0.1	-7.3	200.0



Curve Description			
Headform Rotation			
CURNO	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
52.5	60.9	-31.3	164.9

Test Program:	ES2re Shoulder Calibration	Test Date:	7/28/10
ATD Serial No.:	F035	Test I.D.:	SH06A

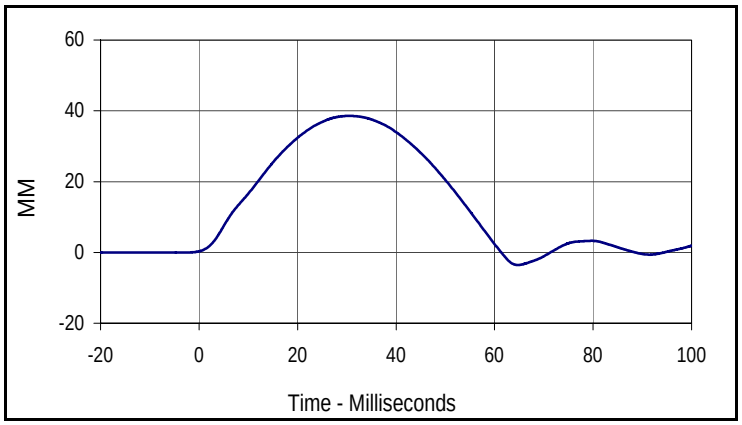
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.20 to 4.40	4.25	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	10.0	Pass
		Overall Test Results		Pass



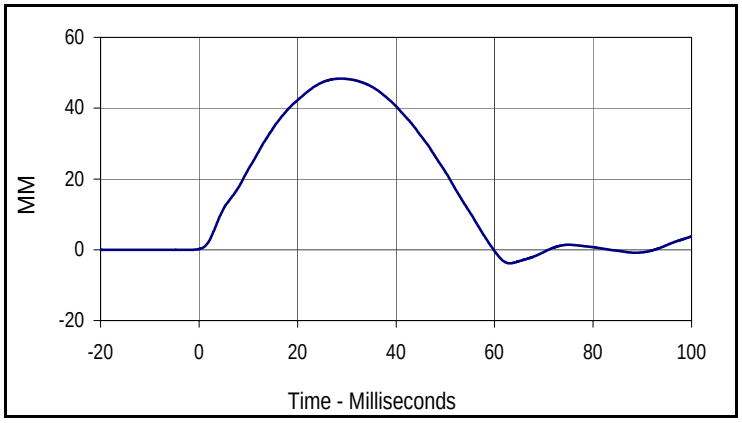
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
10.0	16.6	-0.1	-1.2

Test Program:	ES2re Rib Module Calibration	Test Date:	7/28/10
ATD Serial No.:	F035 Rib #1	Test I.D.:	RIB07C

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	38.6	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	48.3	Pass
		Overall Test Results		Pass



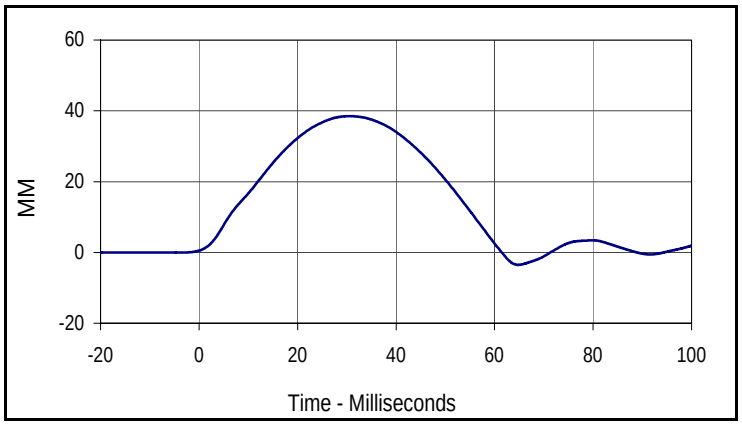
Curve Description			
Upper Rib Deflection (459 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
38.6	30.6	-3.6	64.7



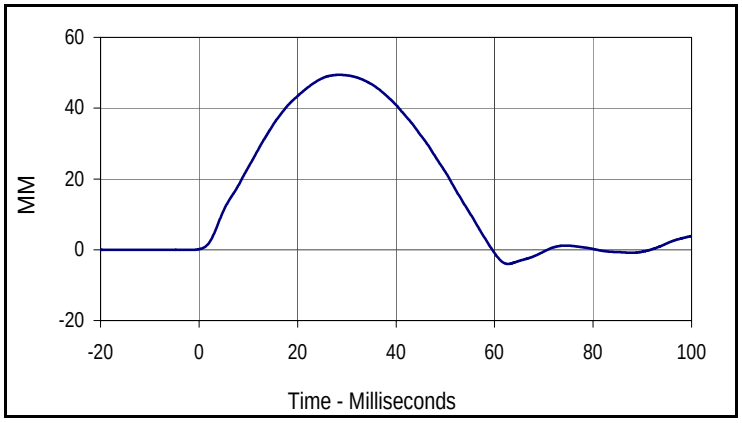
Curve Description			
Upper Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
48.3	28.8	-3.8	63.1

Test Program:	ES2re Rib Module Calibration	Test Date:	7/28/10
ATD Serial No.:	F035 Rib #2	Test I.D.:	RIB07B

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	49.4	Pass
		Overall Test Results		Pass



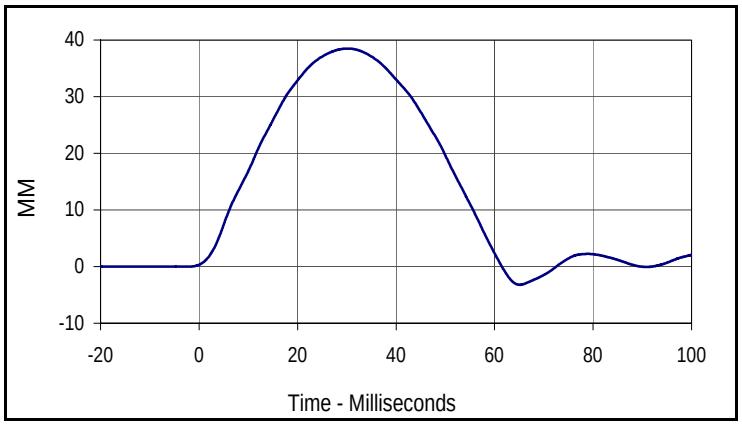
Curve Description			
Middle Rib Deflection (459 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
38.5	30.6	-3.5	64.8



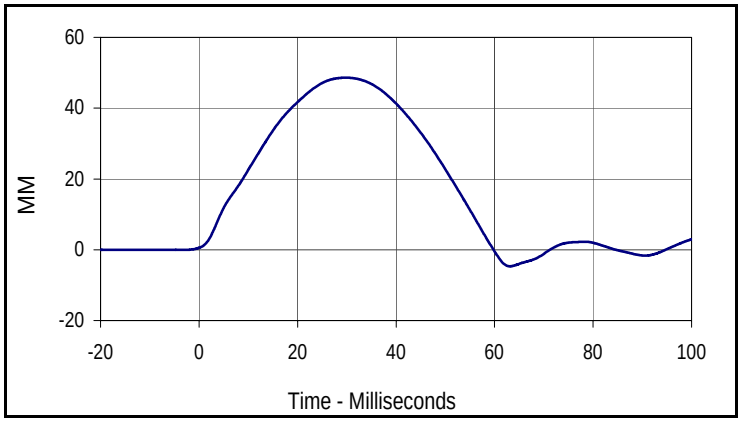
Curve Description			
Middle Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
49.4	28.5	-4.0	62.7

Test Program:	ES2re Rib Module Calibration	Test Date:	7/28/10
ATD Serial No.:	F035 Rib #3	Test I.D.:	RIB07A

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	48.6	Pass
		Overall Test Results		Pass



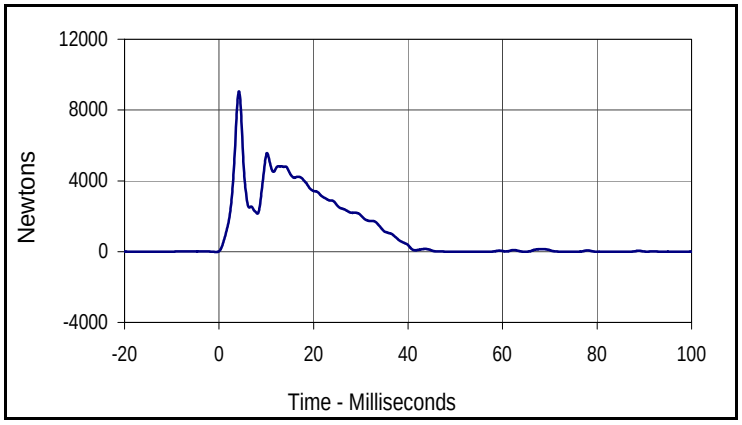
Curve Description			
Lower Rib Deflection (459 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
38.5	30.1	-3.2	65.1



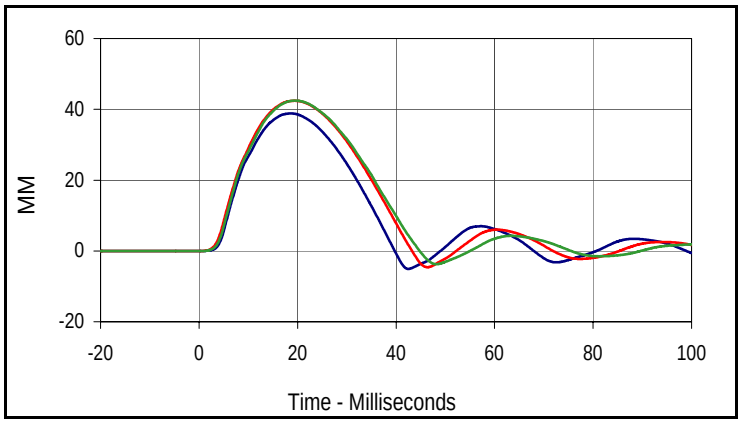
Curve Description			
Lower Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
48.6	29.8	-4.7	63.1

Test Program:	ES2re Thorax Calibration	Test Date:	7/28/10
ATD Serial No.:	F035	Test I.D.:	TH07A

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	5.47	Pass
Impactor Force	N	5100 to 6200	5563.2	Pass
	msec	> 6.0 msec	10.2	Pass
Upper Rib Deflection	MM	34 to 41	38.8	Pass
Middle Rib Deflection	MM	37 to 45	42.4	Pass
Lower Rib Deflection	MM	37 to 44	42.5	Pass
		Overall Test Results		Pass



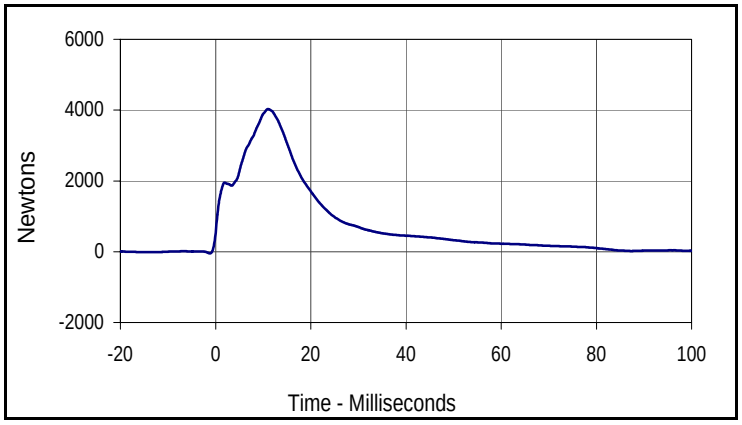
Curve Description			
Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
9047.9	4.2	-27.1	-0.5



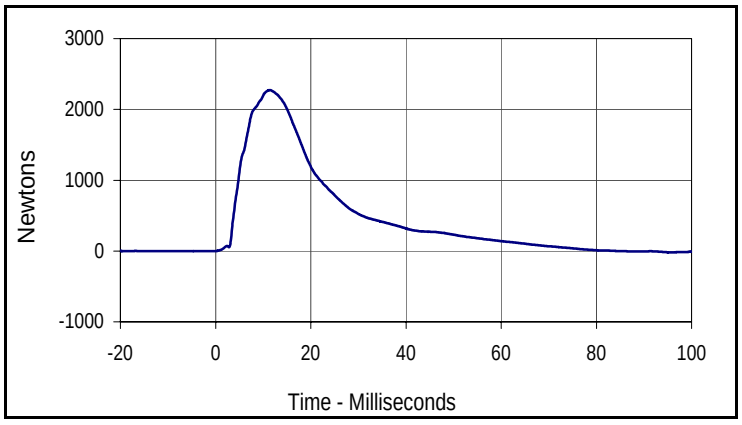
Curve Description			
Upper, Middle, Lower Rib Deflections			
CURNO(s)	Type	SAE Class	Units
002-003-004	FIL	180	MM
Max (Upper)	Time	Min (Upper)	Time
38.8	18.7	-5.1	42.5
Max (Middle)	Time	Min (Middle)	Time
42.4	19.4	-4.6	46.4
Max (Lower)	Time	Min (Lower)	Time
42.5	19.5	-3.7	48.2

Test Program:	ES2re Abodomen Calibration	Test Date:	7/28/10
ATD Serial No.:	F035	Test I.D.:	AB07A

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	3.93	Pass
Impactor Force	N	4000 to 4800	4029.0	Pass
	msec	10.6 to 13.0	11.0	Pass
Abdominal Force	N	2200 to 2700	2273.0	Pass
	msec	10.0 to 12.3	11.4	Pass
		Overall Test Results		Pass



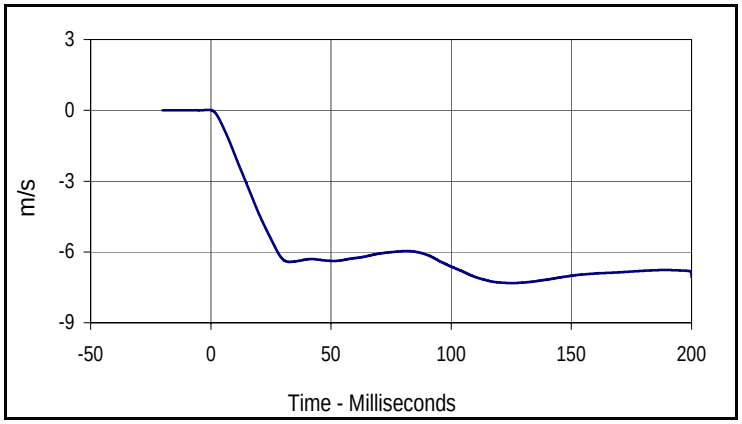
Curve Description			
Corrected Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4029.0	11.0	-47.3	-1.2



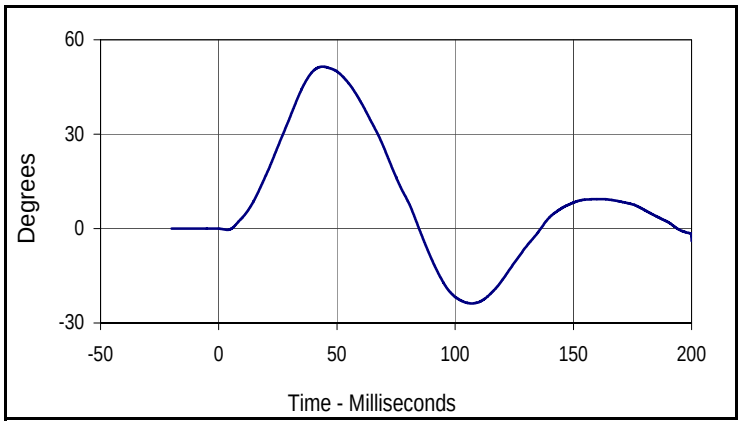
Curve Description			
Abdomen Sum Resultant			
CURNO	Type	SAE Class	Units
002	RES	600	Newtons
Max	Time	Min	Time
2273.0	11.4	-19.3	95.8

Test Program:	ES2re Lumbar Spine Calibration	Test Date:	7/28/10
ATD Serial No.:	F035	Test I.D.:	SP07A

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	-0.030	Pass
	3.7 msec	m/s	-.240 to -.425	-0.408	Pass
	27 msec	m/s	-5.80 to -6.50	-5.85	Pass
	30 msec	m/s	< -6.50	-6.32	Pass
Headform Rotation	Max	Degrees	45.0 to 55.0	51.5	Pass
	Time	msec	39.0 to 53.0	44.0	Pass
Maximum Rotation To Time Zero Crossing		msec	37.0 to 57.0	40.8	Pass
			Overall Test Results		Pass



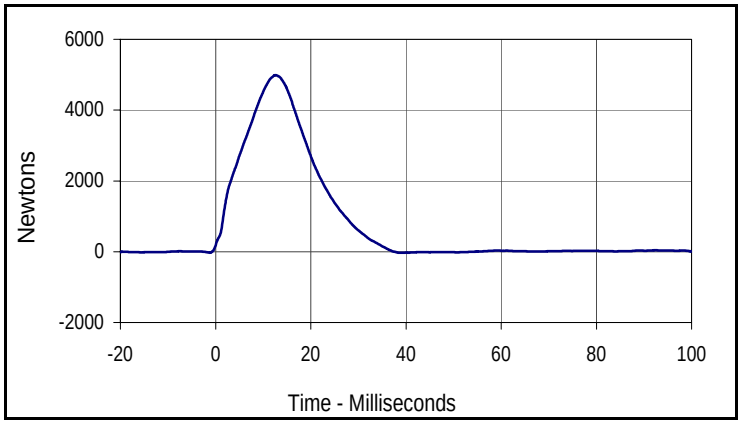
Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.0	-7.3	125.4



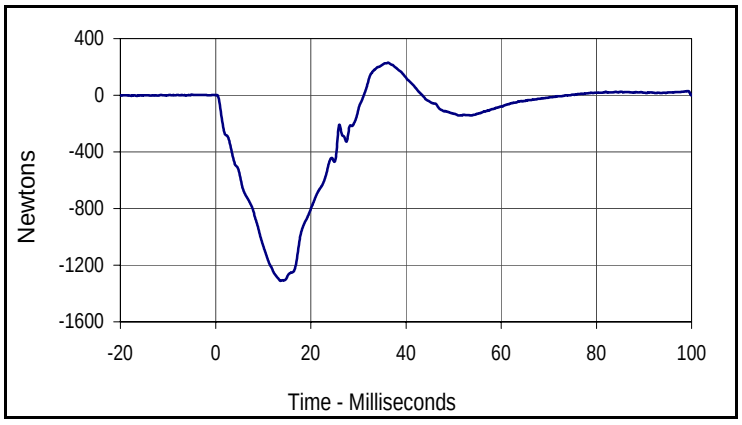
Curve Description			
Headform Rotation			
CURNO	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
51.5	44.0	-23.8	107.0

Test Program:	ES2re Pelvis Calibration	Test Date:	7/28/10
ATD Serial No.:	F035	Test I.D.:	PL07A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.20 to 4.40	4.22	Pass
Impactor Force	N	4700 to 5400	4986.8	Pass
	msec	11.8 to 16.1	12.6	Pass
Pubic Symphysis Load	N	-1230 to -1590	-1310.5	Pass
	msec	12.2 to 17.0	13.7	Pass
		Overall Test Results		Pass



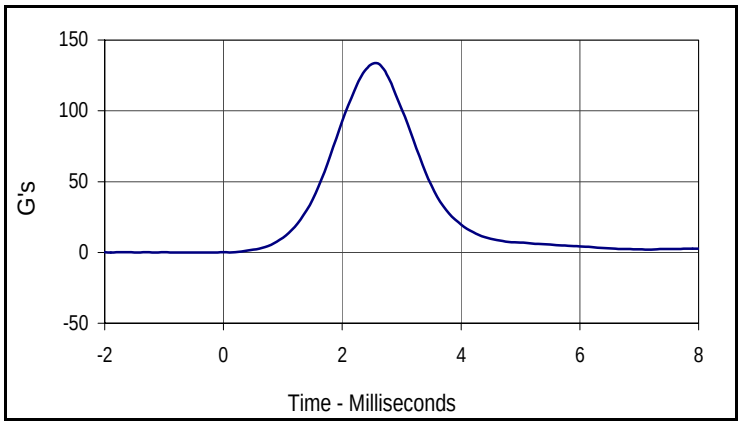
Curve Description			
Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4986.8	12.6	-30.7	39.4



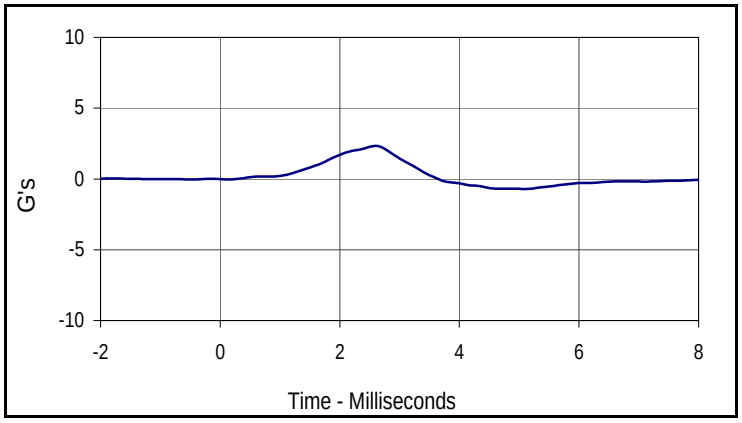
Curve Description			
Pubic FY			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
229.9	36.3	-1310.5	13.7

Test Program:	ES2re Lateral Head Drop Calibration	Test Date:	7/28/10
ATD Serial No.:	F035	Test I.D.:	HD07A

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	133.4	Pass
Peak Longitudinal Acceleration	G's	≤15	2.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	5.1	Pass
		Overall Test Results		Pass



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
133.4	2.6	0.0	-0.2

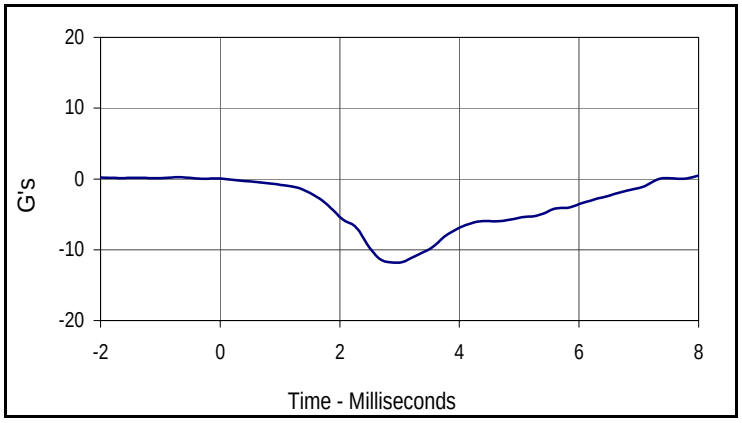


Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
2.3	2.6	-0.7	5.1

Test Program:	SID IIs Lateral Head Drop Calibration	Test Date:	7/29/10
ATD Serial No.:	307	Test I.D.:	HD07A

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	134.9	Pass
Peak Longitudinal Acceleration	G's	≤15	11.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	10.1	Pass
		Overall Test Results		Pass

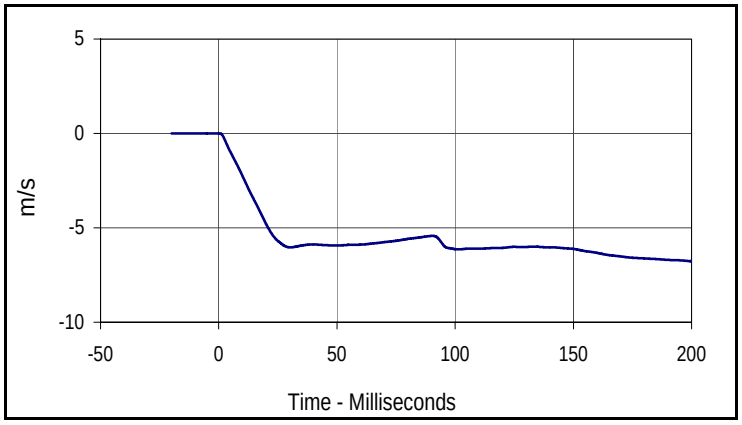
Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
134.9	2.9	0.0	-0.3



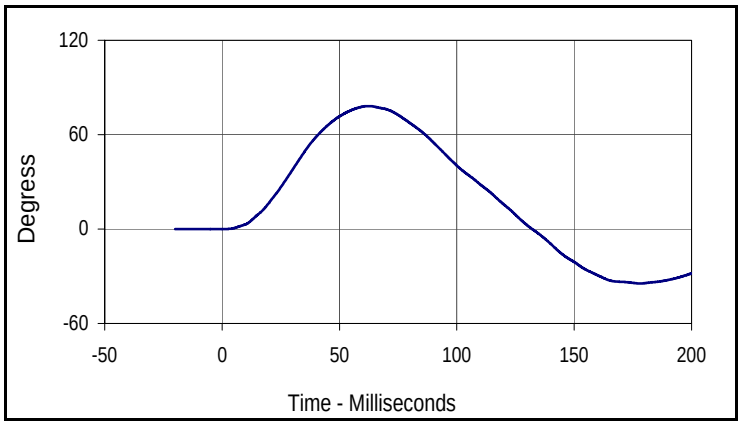
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.2	-0.7	-11.8	2.9

Test Program:	SID IIs Neck Calibration	Test Date:	7/29/10
ATD Serial No.:	307	Test I.D.:	NB07A

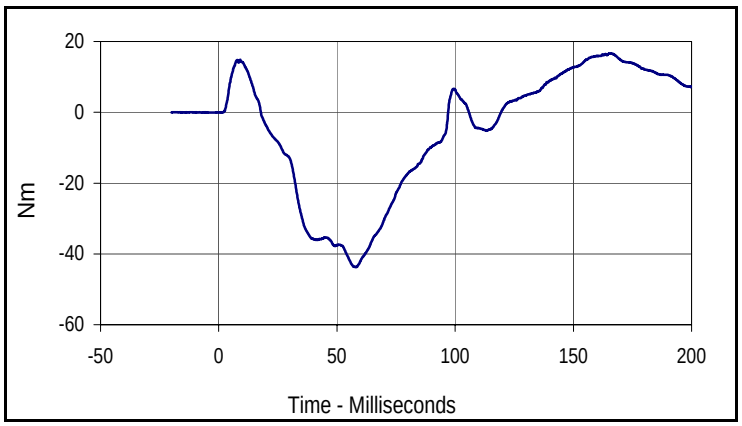
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.54	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.2	Pass
	15 msec	m/s	-3.30 to -4.10	-3.5	Pass
	20 msec	m/s	-4.40 to -5.40	-4.8	Pass
	25 msec	m/s	-5.40 to -6.10	-5.7	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.1	Pass
Translation-Rotation	Max	Degrees	71.0 to 81.0	78.2	Pass
	Time	msec	50.0 to 70.0	62.4	Pass
Peak Occipital Condyle Moment		Nm	-36.0 to -44.0	-43.8	Pass
Decaying Moment Time to Cross 0 Nm		msec	102.0 to 126.0	119.4	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
0.0	0.1	-6.8	200.0



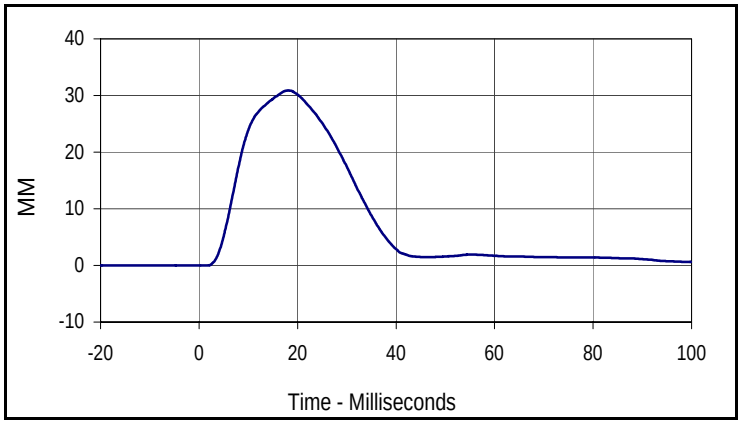
Curve Description			
Maximum Translation Rotation			
CURNO	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
78.2	62.4	-34.6	178.1



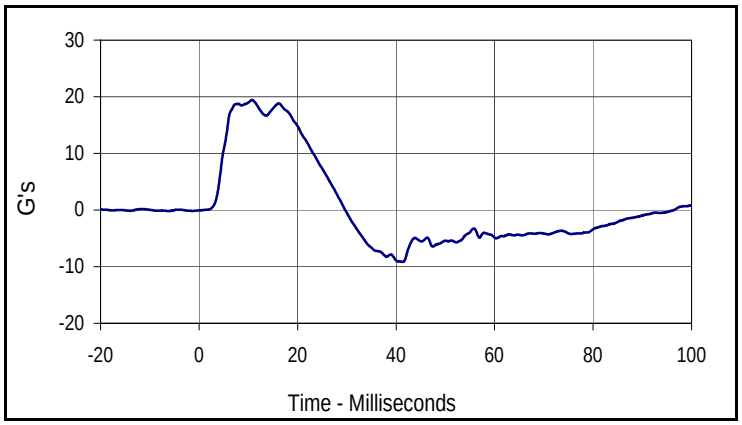
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
16.6	165.3	-43.8	58.1

Test Program:	SID IIs Shoulder Calibration	Test Date:	7/29/10
ATD Serial No.:	307	Test I.D.:	SH07A

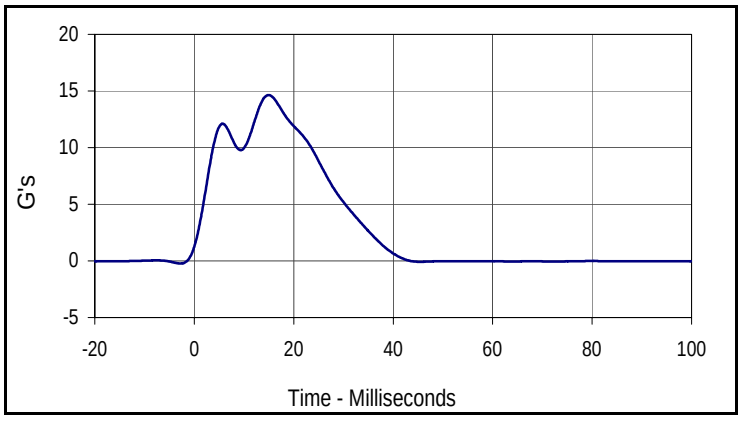
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.26	Pass
Shoulder Deflection	MM	28 to 37	30.9	Pass
Peak Upper Spine Y Acceleration	G's	17 to 22	19.4	Pass
Peak Impactor Acceleration	G's	13 to 18	14.6	Pass
		Overall Test Results		Pass



Curve Description			
Shoulder Acceleration			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
30.9	18.1	0.0	-16.5



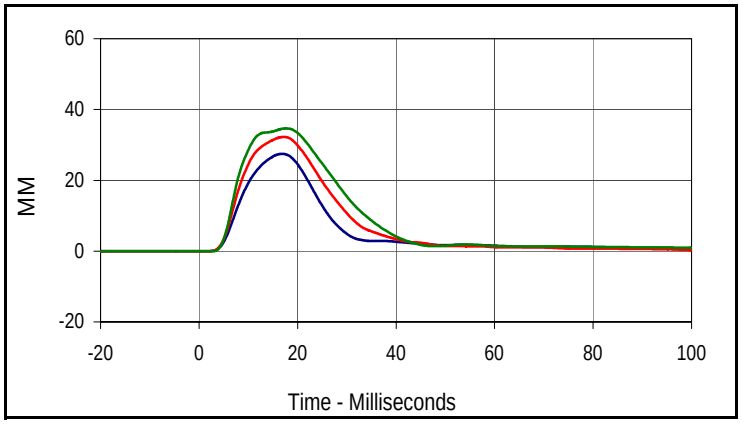
Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
19.4	10.8	-9.2	41.4



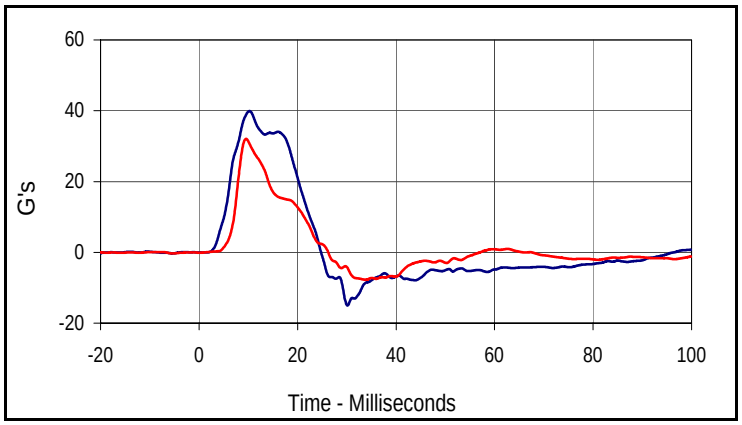
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
14.6	14.9	-0.2	-2.8

Test Program:	SID IIs Thorax with Arm Calibration	Test Date:	7/29/10
ATD Serial No.:	307	Test I.D.:	TH07A

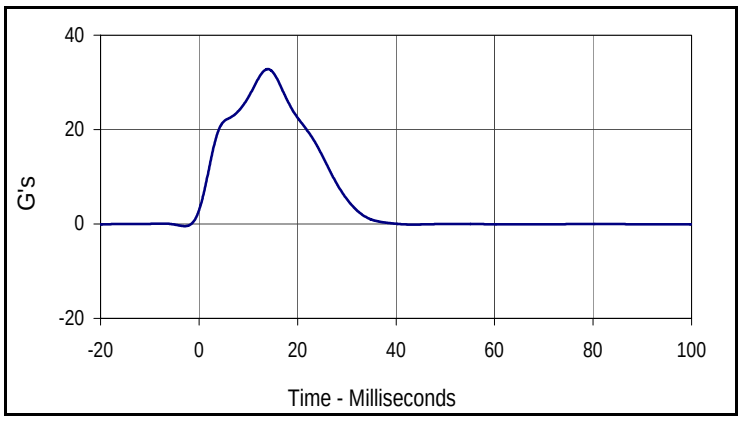
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.67	Pass
Shoulder Deflection	MM	31 to 40	34.6	Pass
Upper Thorax Rib Deflection	MM	25 to 32	27.5	Pass
Middle Thorax Rib Deflection	MM	30 to 36	32.2	Pass
Lower Thorax Rib Deflection	MM	32 to 38	34.7	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	39.9	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	32.1	Pass
Peak Impactor Acceleration After 5 msec.	G's	30 to 36	32.8	Pass
		Overall Test Results		Pass



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
27.5	16.9	0.0	-13.4
Middle Thorax Deflection			
Max	Time	Min	Time
32.2	17.2	0.0	2.1
Lower Thorax Deflection			
Max	Time	Min	Time
34.7	17.7	0.0	2.6



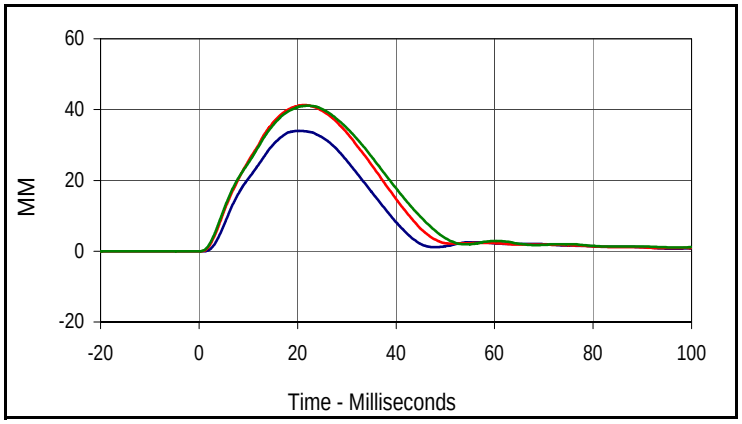
Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
39.9	10.2	-15.0	30.1
Curve Description			
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
32.1	9.5	-7.8	33.8



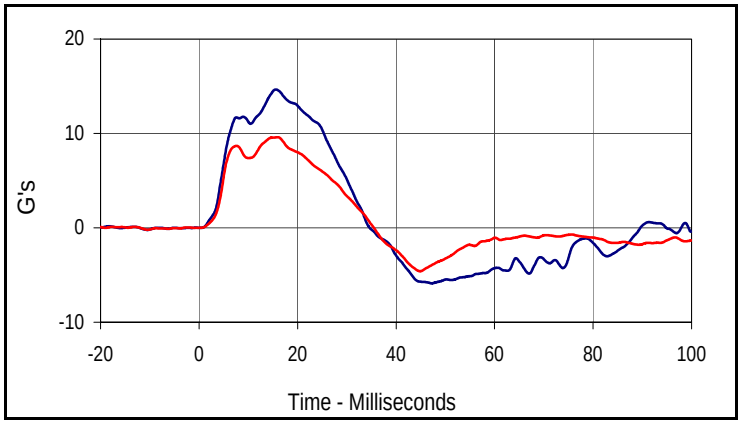
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
32.8	14.0	-0.4	-2.9

Test Program:	SID IIs Thorax w/o Arm Calibration	Test Date:	7/29/10
ATD Serial No.:	307	Test I.D.:	TOA7A

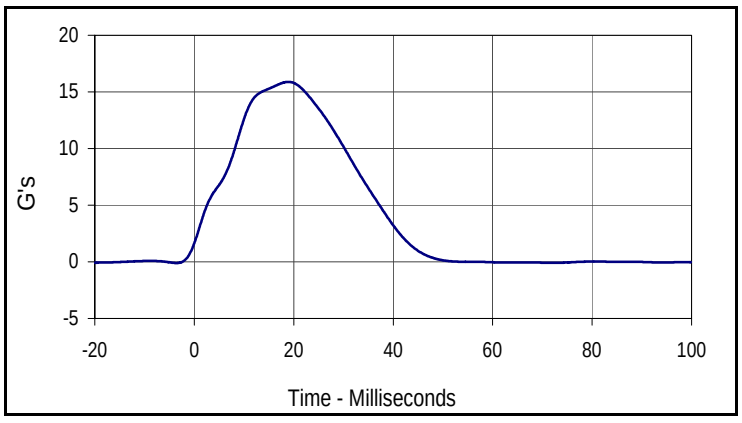
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.22	Pass
Upper Thorax Rib Deflection	MM	32 to 40	34.0	Pass
Middle Thorax Rib Deflection	MM	39 to 45	41.3	Pass
Lower Thorax Rib Deflection	MM	35 to 43	41.1	Pass
Peak Upper Spine Y Acceleration	G's	13 to 17	14.7	Pass
Peak Lower Spine Y Acceleration	G's	7 to 11	9.6	Pass
Peak Impactor Acceleration	G's	14 to 18	15.9	Pass
		Overall Test Results		Pass



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
34.0	20.2	0.0	-16.8
Middle Thorax Deflection			
Max	Time	Min	Time
41.3	21.3	0.0	-17.6
Lower Thorax Deflection			
Max	Time	Min	Time
41.1	22.1	0.0	0.1



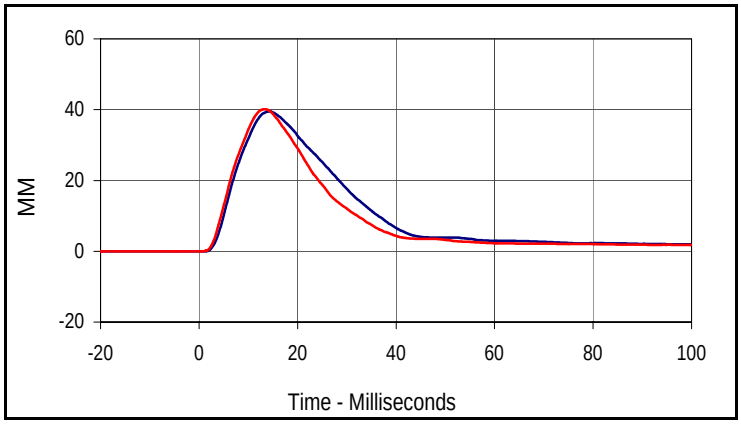
Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.7	15.6	-5.9	47.2
Curve Description			
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
9.6	15.9	-4.6	44.9



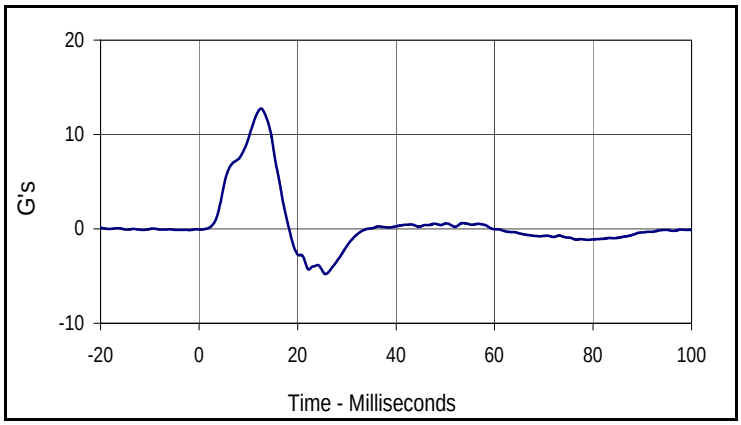
Curve Description			
Impactor Accleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
15.9	18.9	-0.1	-3.6

Test Program:	SID IIs Abdomen Calibration	Test Date:	7/29/10
ATD Serial No.:	307	Test I.D.:	AB07A

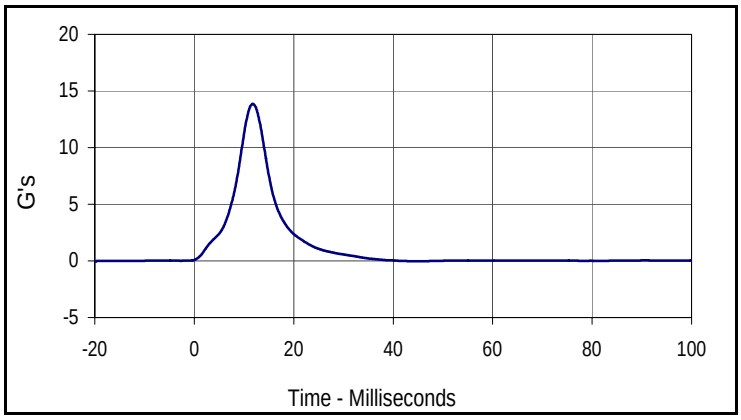
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.26	Pass
Upper Abdominal Rib Deflection	MM	36 to 47	39.5	Pass
Lower Abdominal Rib Deflection	MM	33 to 44	40.1	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	12.8	Pass
Peak Impactor Acceleration	G's	12 to 16	13.9	Pass
		Overall Test Results		Pass



Curve Description			
Upper Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
39.5	14.2	0.0	-13.8
Curve Description			
Lower Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
40.1	13.3	0.0	-13.2



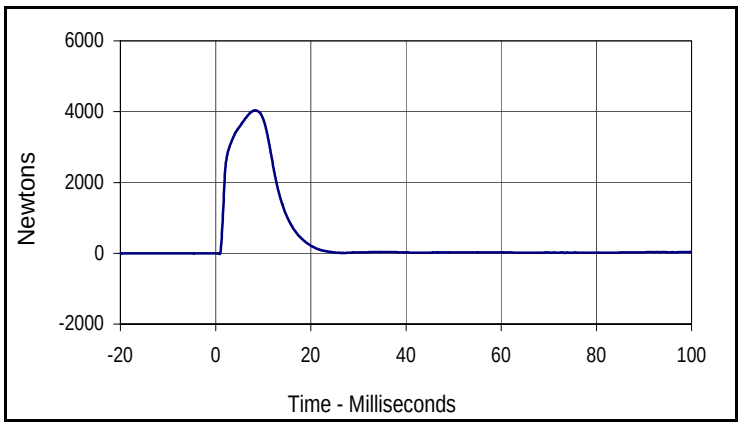
Curve Description			
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
12.8	12.6	-4.8	25.7



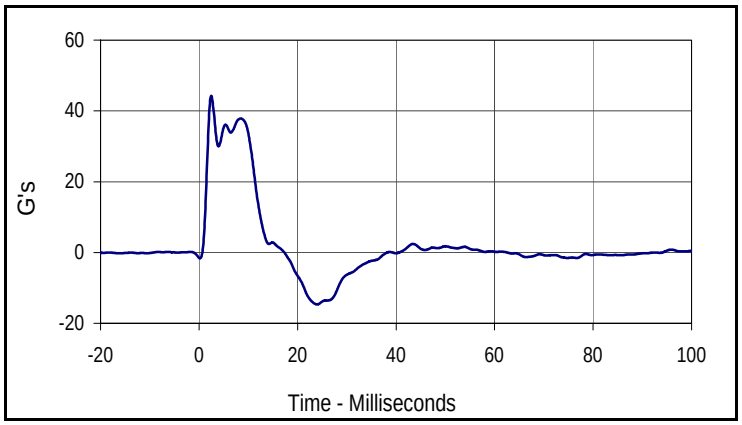
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
13.9	11.8	0.0	44.3

Test Program:	SID IIs Pelvis Acetabulum Calibration	Test Date:	7/29/10
ATD Serial No.:	307	Test I.D.:	PA07A

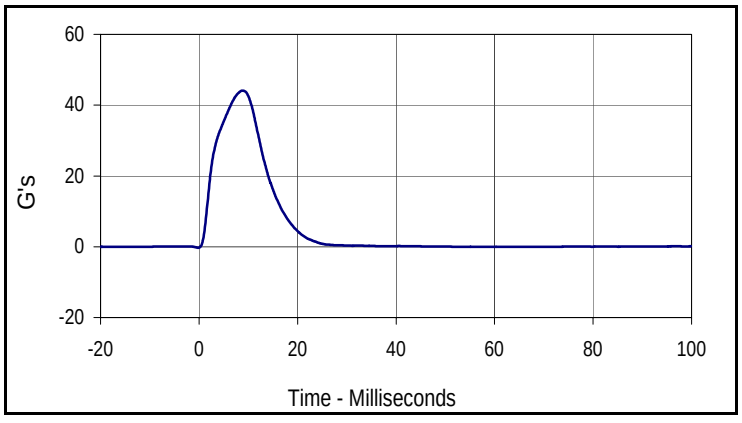
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.73	Pass
Peak Acetabulum Force	Newtons	3600 to 4300	4034.4	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	37.8	Pass
Peak Impactor Acceleration	G's	38 to 47	44.1	Pass
		Overall Test Results		Pass



Curve Description			
Pelvis Acetabulum Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4034.4	8.4	-21.6	0.8



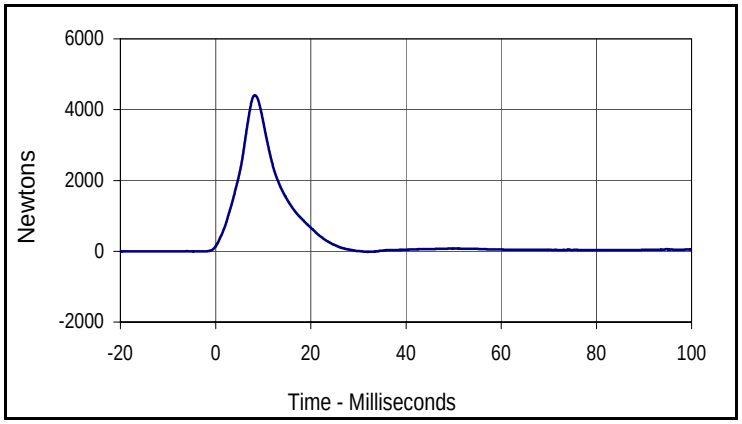
Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
44.3	2.5	-14.7	23.9



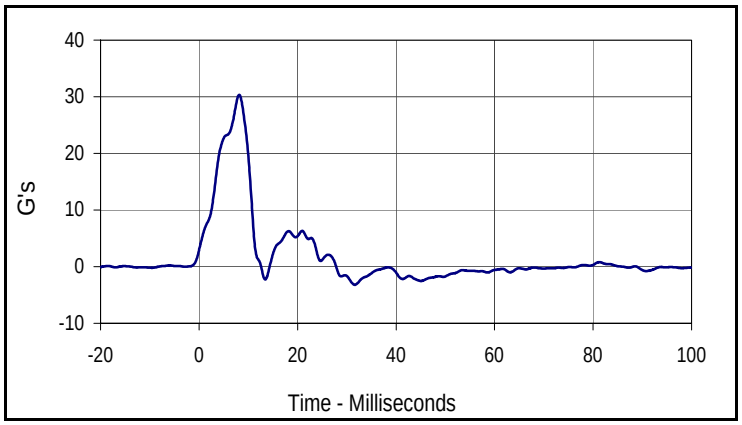
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
44.1	8.8	-0.3	-0.2

Test Program:	SID IIs Pelvis Iliac Calibration	Test Date:	7/29/10
ATD Serial No.:	307	Test I.D.:	PL07A

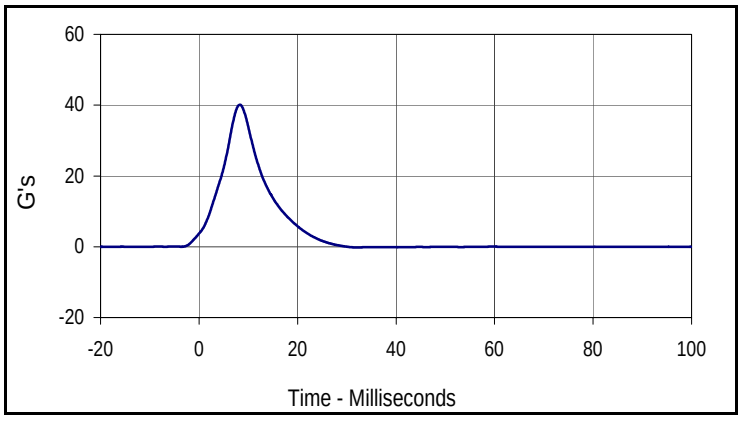
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.25	Pass
Peak Iliac Force	Newtons	4100 to 5100	4406.6	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	30.3	Pass
Peak Impactor Acceleration	G's	36 to 45	40.1	Pass
		Overall Test Results		Pass



Curve Description			
Pelvis Iliac Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4406.6	8.3	-16.9	32.0



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
30.3	8.1	-3.2	31.6

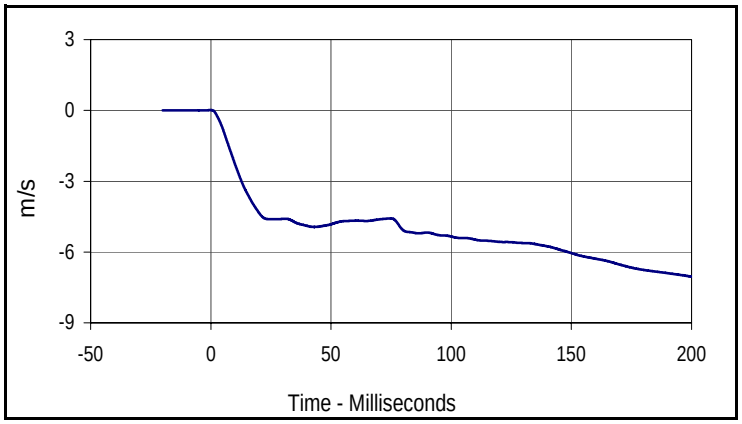


Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
40.1	8.3	-0.2	31.9

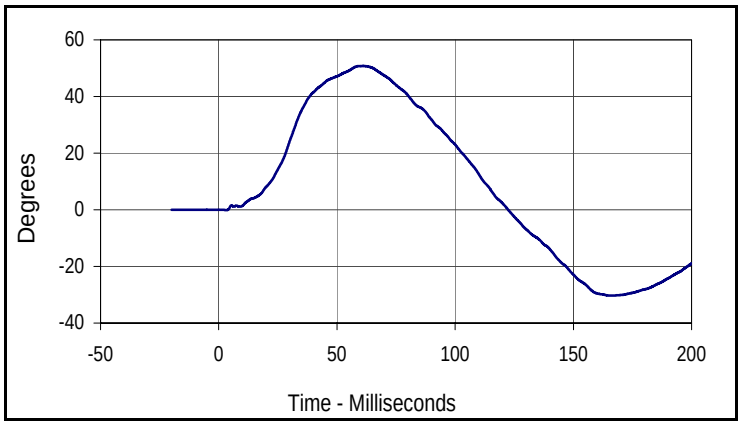
APPENDIX C
POST-TEST / HIII CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program:	ES2re Neck Calibration	Test Date:	8/6/10
ATD Serial No.:	F035	Test I.D.:	NB07B

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	3.30 to 3.50	3.36	Pass
Pendulum Deceleration	1 msec	m/s	0.0 to -.050	-0.007	Pass
	3 msec	m/s	-.250 to -.375	-0.314	Pass
	14 msec	m/s	-3.20 to -3.70	-3.29	Pass
Headform Rotation	Max	Degrees	49.0 to 58.0	50.8	Pass
	Time	msec	54.0 to 66.0	60.9	Pass
Maximum Rotation To Time Zero Crossing		msec	53.0 to 88.0	61.6	Pass
			Overall Test Results		Pass



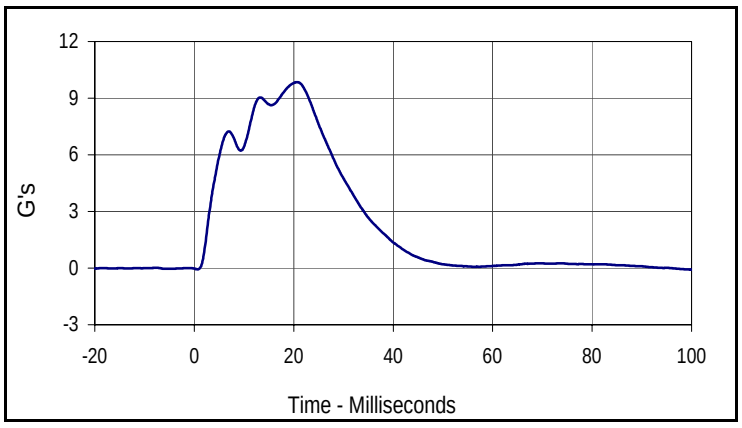
Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	0.1	-7.0	200.0



Curve Description			
Headform Rotation			
CURNO	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
50.8	60.9	-30.3	164.9

Test Program:	ES2re Shoulder Calibration	Test Date:	8/6/10
ATD Serial No.:	F035	Test I.D.:	SH07B

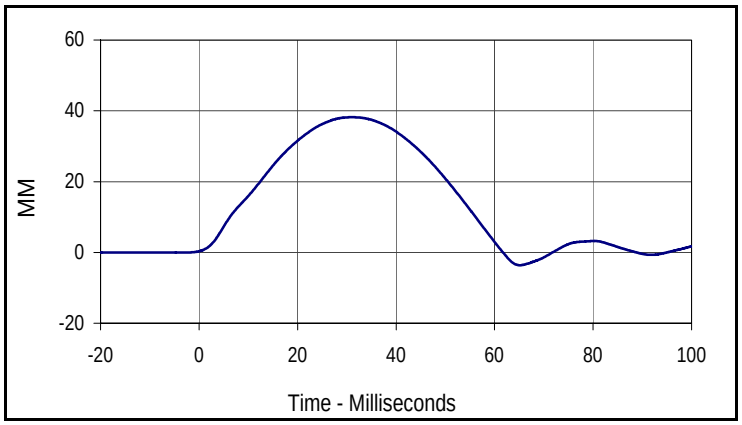
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.20 to 4.40	4.27	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	9.9	Pass
		Overall Test Results		Pass



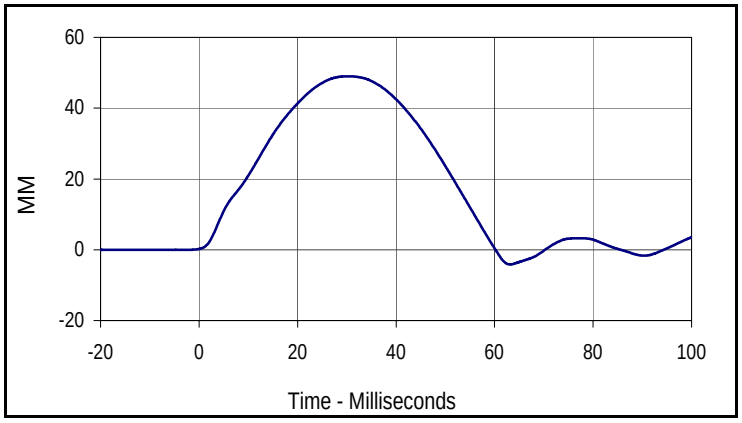
Curve Description			
Probe Impactor Acceleration			
CURNO	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
9.9	20.7	-0.1	99.9

Test Program:	ES2re Rib Module Calibration	Test Date:	8/6/10
ATD Serial No.:	F035 Rib #1	Test I.D.:	RIB07D

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Rib Deflection at 459 MM Drop Height	MM	36 to 40	38.2	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	49.0	Pass
		Overall Test Results		Pass



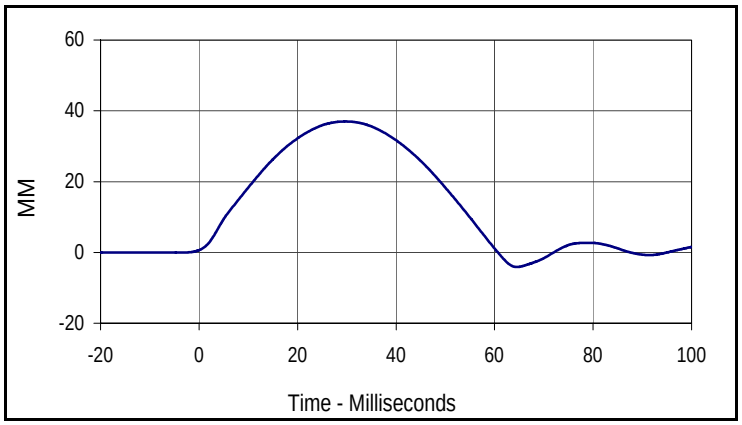
Curve Description			
Upper Rib Deflection (459 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
38.2	31.1	-3.6	65.1



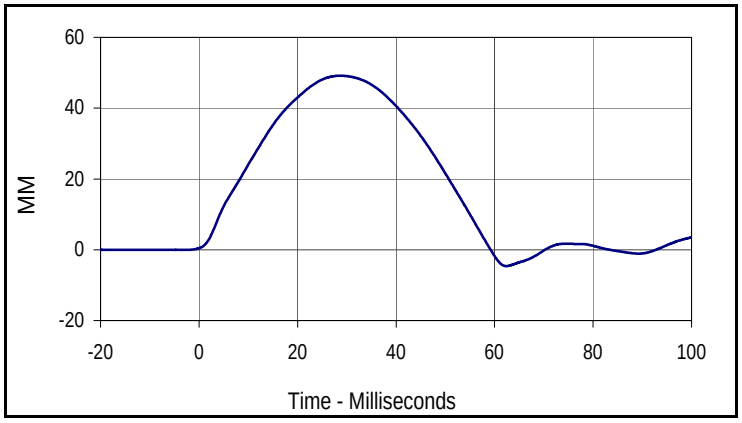
Curve Description			
Upper Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
49.0	30.2	-4.1	63.2

Test Program:	ES2re Rib Module Calibration	Test Date:	8/6/10
ATD Serial No.:	F035 Rib #2	Test I.D.:	RIB07E

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	37.0	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	49.2	Pass
		Overall Test Results		Pass



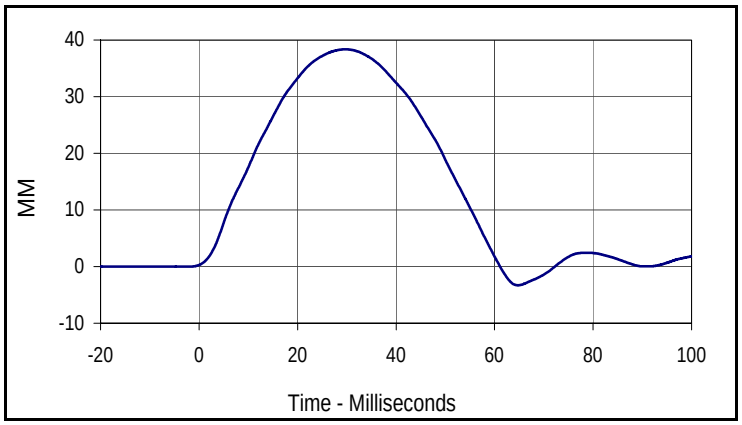
Curve Description			
Middle Rib Deflection (459 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
37.0	29.7	-4.1	64.5



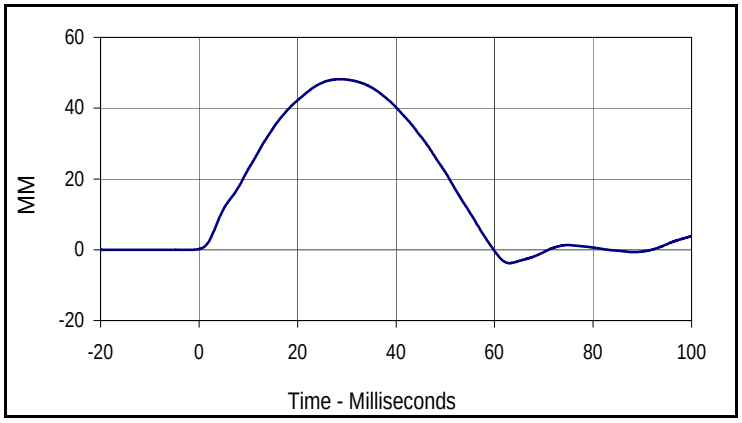
Curve Description			
Middle Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
49.2	28.7	-4.6	62.4

Test Program:	ES2re Rib Module Calibration	Test Date:	8/6/10
ATD Serial No.:	F035 Rib #3	Test I.D.:	RIB07F

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Rib Deflection at 459 MM Drop Height	MM	36 to 40	38.4	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	48.2	Pass
		Overall Test Results		Pass



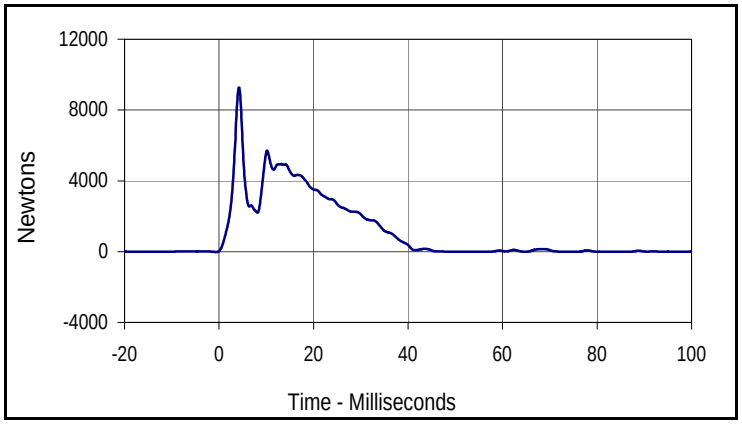
Curve Description			
Lower Rib Deflection (459 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
38.4	29.7	-3.3	64.7



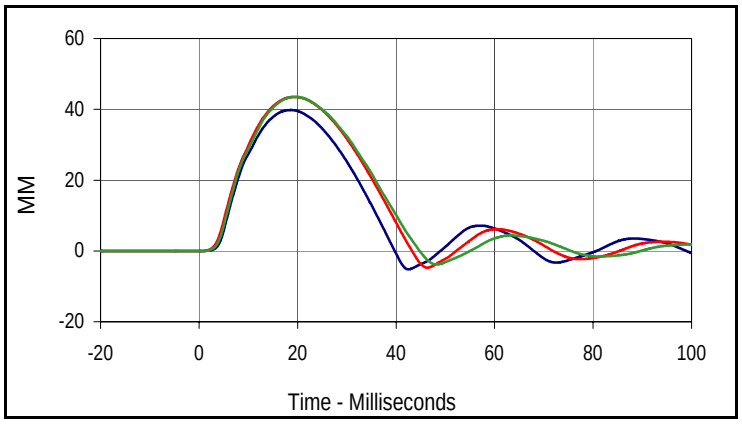
Curve Description			
Lower Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
48.2	28.6	-3.8	63.0

Test Program:	ES2re Thorax Calibration	Test Date:	8/6/10
ATD Serial No.:	F035	Test I.D.:	TH07A

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	5.40 to 5.60	5.49	Pass
Impactor Force	N	5100 to 6200	5702.2	Pass
	msec	> 6.0 msec	10.2	Pass
Upper Rib Deflection	MM	34 to 41	39.8	Pass
Middle Rib Deflection	MM	37 to 45	43.5	Pass
Lower Rib Deflection	MM	37 to 44	43.5	Pass
		Overall Test Results		Pass



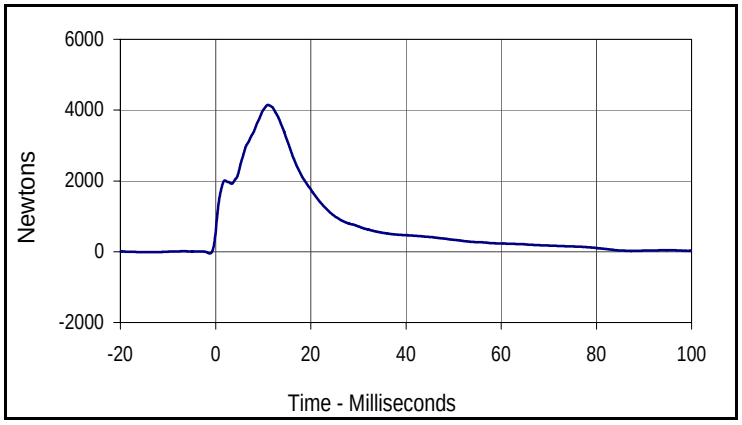
Curve Description			
Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
9274.1	4.2	-27.8	-0.5



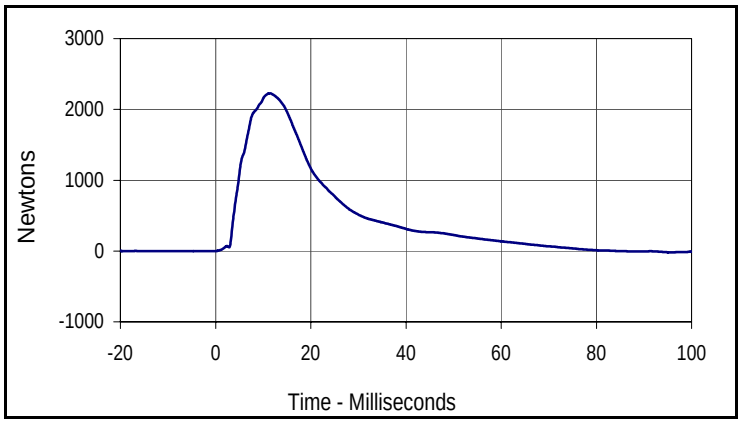
Curve Description			
Upper, Middle, Lower Rib Deflections			
CURNO(s)	Type	SAE Class	Units
002-003-004	FIL	180	MM
Max (Upper)	Time	Min (Upper)	Time
39.8	18.7	-5.2	42.5
Max (Middle)	Time	Min (Middle)	Time
43.5	19.4	-4.7	46.4
Max (Lower)	Time	Min (Lower)	Time
43.5	19.5	-3.8	48.2

Test Program:	ES2re Abodomen Calibration	Test Date:	8/6/10
ATD Serial No.:	F035	Test I.D.:	ABD07B

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	3.90 to 4.10	4.07	Pass
Impactor Force	N	4000 to 4800	4146.1	Pass
	msec	10.6 to 13.0	11.0	Pass
Abdominal Force	N	2200 to 2700	2227.5	Pass
	msec	10.0 to 12.3	11.4	Pass
		Overall Test Results		Pass



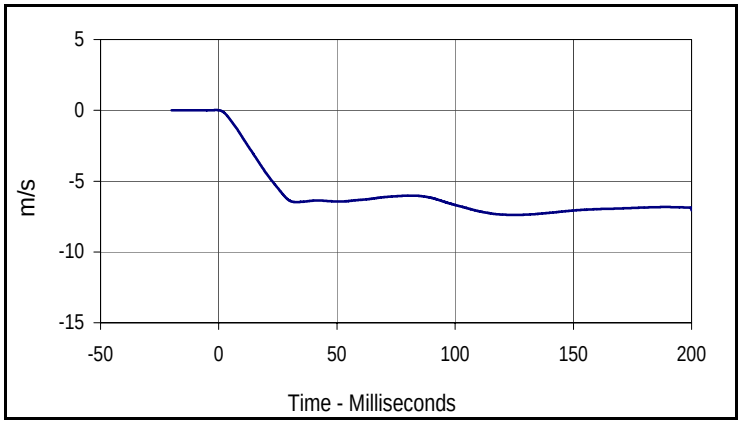
Curve Description			
Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4146.1	11.0	-48.9	-1.2



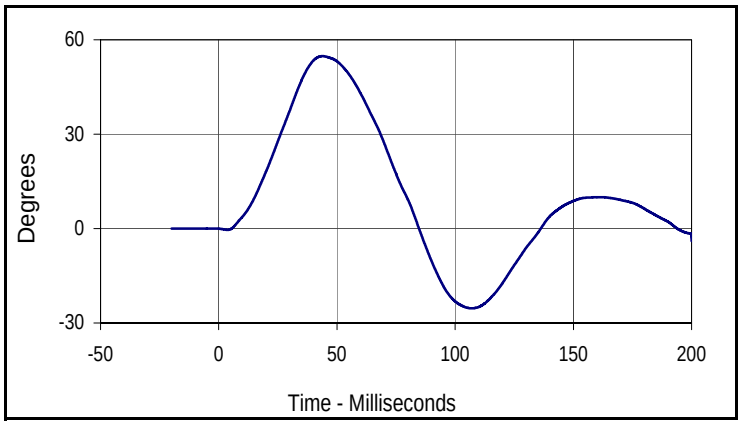
Curve Description			
Abdomen Sum Resultant			
CURNO	Type	SAE Class	Units
002	RES	600	Newtons
Max	Time	Min	Time
2227.5	11.4	-18.9	95.8

Test Program:	ES2re Lumbar Spine Calibration	Test Date:	8/6/10
ATD Serial No.:	F035	Test I.D.:	SP07B

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.95 to 6.15	6.02	Pass
Pendulum Deceleration	1 msec	m/s	0.0 to -.050	-0.030	Pass
	3.7 msec	m/s	-.240 to -.425	-0.412	Pass
	27 msec	m/s	-5.80 to -6.50	-5.90	Pass
	30 msec	m/s	< -6.50	-6.38	Pass
Headform Rotation	Max	Degrees	45.0 to 55.0	54.8	Pass
	Time	msec	39.0 to 53.0	43.9	Pass
Maximum Rotation To Time Zero Crossing		msec	37.0 to 57.0	40.9	Pass
			Overall Test Results		Pass



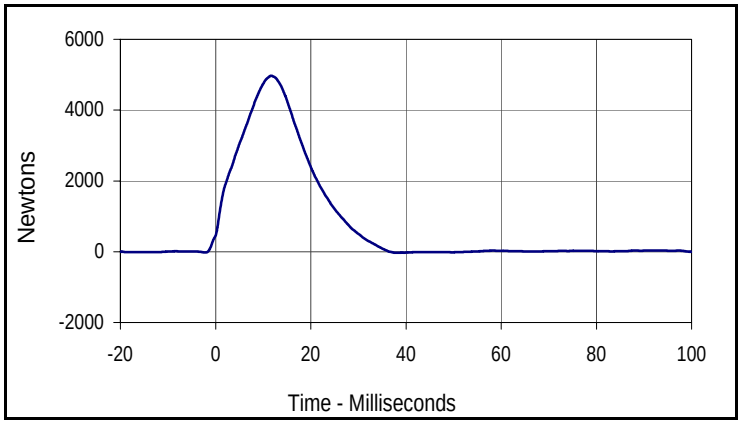
Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.0	-7.4	125.4



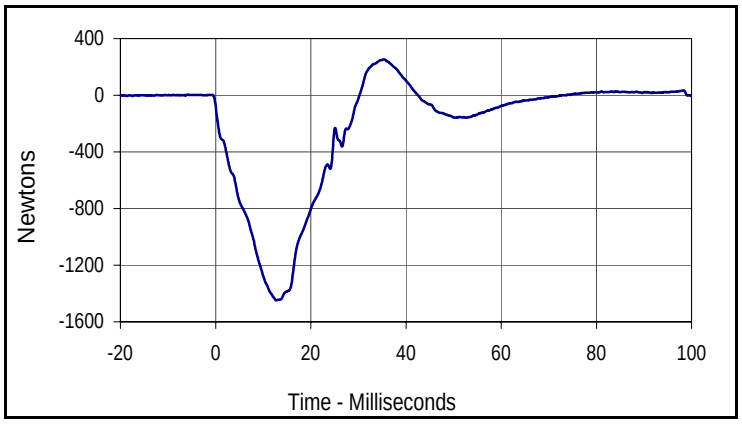
Curve Description			
Headform Rotation			
CURNO	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
54.8	43.9	-25.3	107.0

Test Program:	ES2re Pelvis Calibration	Test Date:	8/6/10
ATD Serial No.:	F035	Test I.D.:	PL06B

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.20 to 4.40	4.27	Pass
Impactor Force	N	4700 to 5400	4967.9	Pass
	msec	11.8 to 16.1	11.8	Pass
Pubic Symphysis Load	N	-1230 to -1590	-1448.4	Pass
	msec	12.2 to 17.0	12.8	Pass
		Overall Test Results		Pass



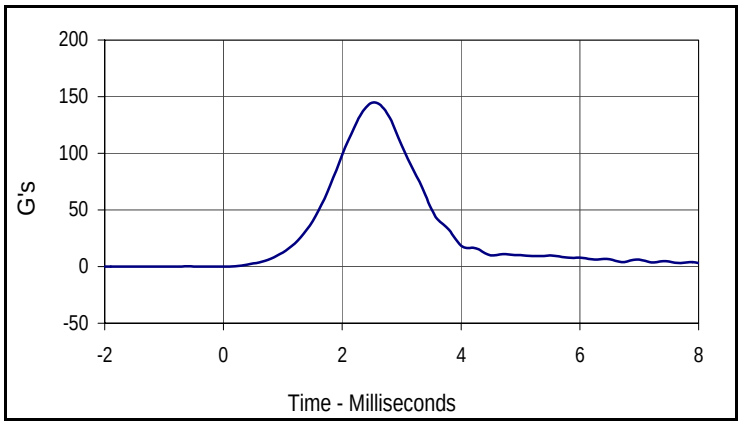
Curve Description			
Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4969.1	11.7	-30.3	38.5



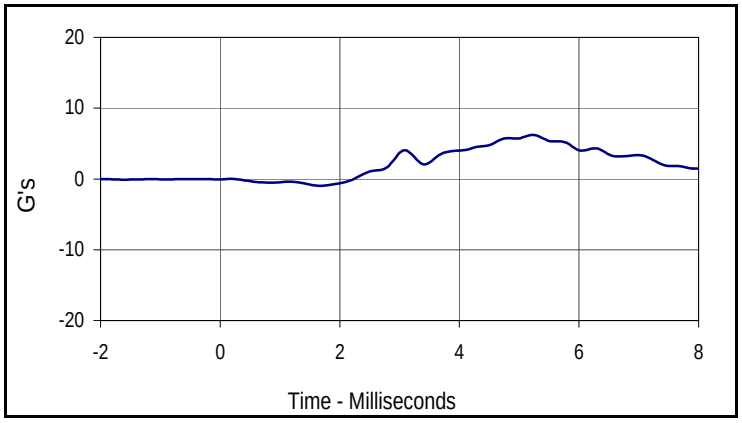
Curve Description			
Pubic FY			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
254.1	35.4	-1448.4	12.8

Test Program:	ES2re Lateral Head Drop Calibration	Test Date:	8/6/10
ATD Serial No.:	F035	Test I.D.:	HD07B

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	144.6	Pass
Peak Longitudinal Acceleration	G's	≤15	6.2	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	7.1	Pass
		Overall Test Results		Pass



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
144.6	2.5	0.0	-2.0

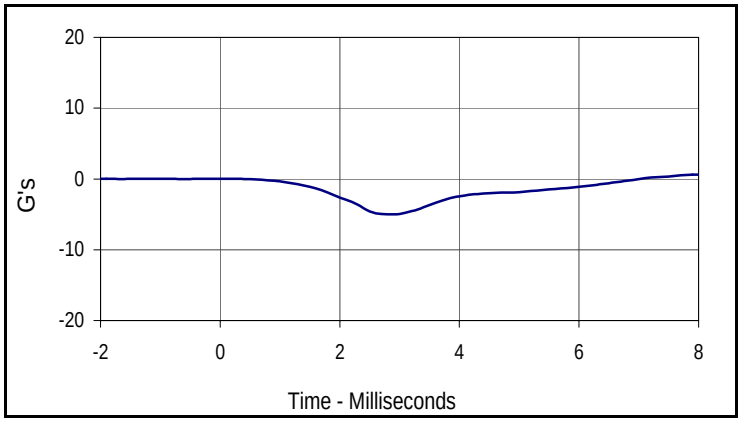


Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
6.2	5.2	-1.0	1.7

Test Program:	SID IIs Lateral Head Drop Calibration	Test Date:	8/7/10
ATD Serial No.:	307	Test I.D.:	HD07B

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	134.4	Pass
Peak Longitudinal Acceleration	G's	≤15	5.0	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	7.8	Pass
		Overall Test Results		Pass

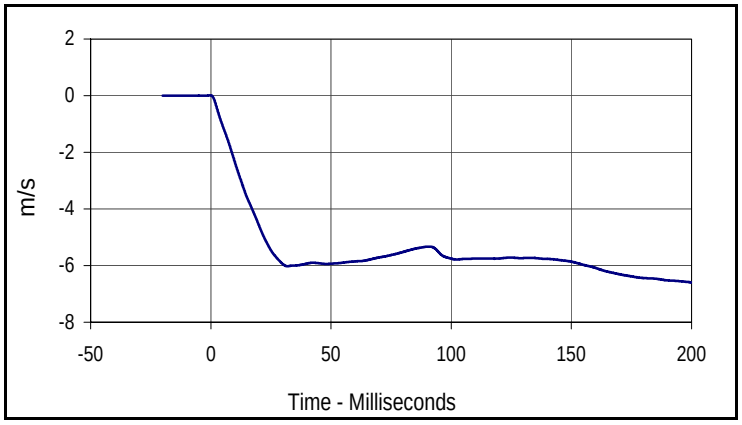
Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
134.4	2.8	0.0	-1.9



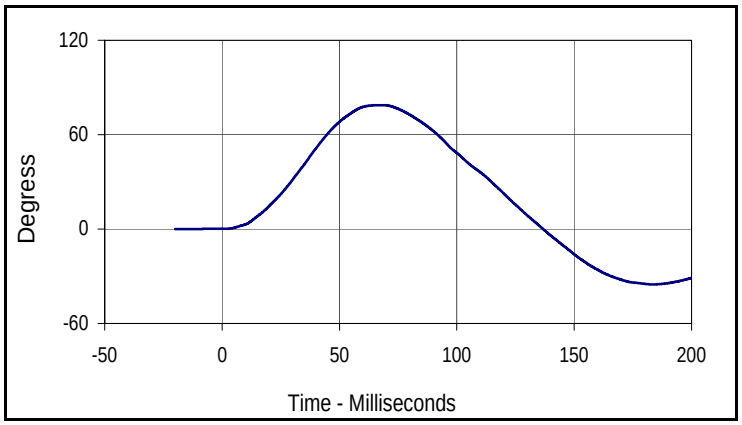
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.0	-0.1	-5.0	2.9

Test Program:	SID IIs Neck Calibration	Test Date:	8/7/10
ATD Serial No.:	307	Test I.D.:	NB07B

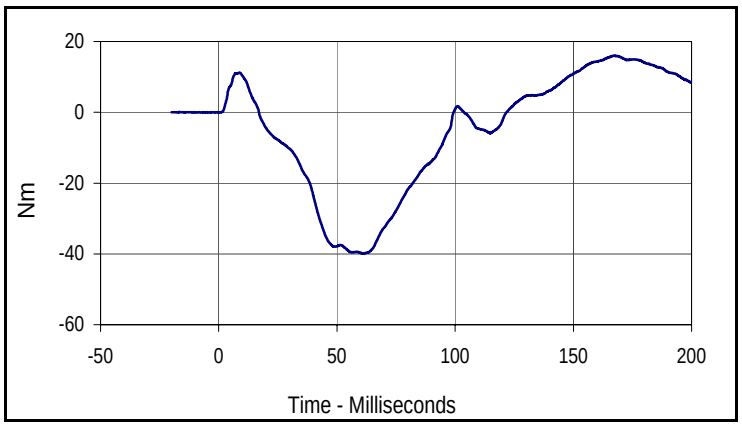
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.59	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.3	Pass
	15 msec	m/s	-3.30 to -4.10	-3.6	Pass
	20 msec	m/s	-4.40 to -5.40	-4.6	Pass
	25 msec	m/s	-5.40 to -6.10	-5.5	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.0	Pass
Translation-Rotation	Max	Degrees	71.0 to 81.0	78.8	Pass
	Time	msec	50.0 to 70.0	68.1	Pass
Peak Occipital Condyle Moment		Nm	-36.0 to -44.0	-39.9	Pass
Decaying Moment Time to Cross 0 Nm		msec	102.0 to 126.0	121.8	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	-0.3	-6.6	200.0



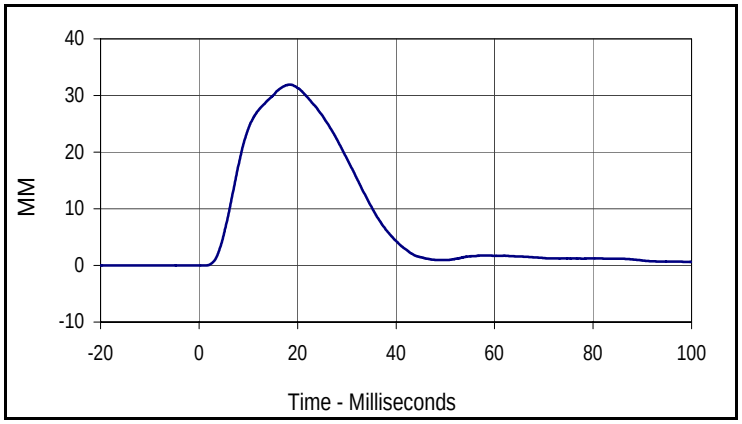
Curve Description			
Maximum Translation Rotation			
CURNO	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
78.8	68.1	-35.2	183.4



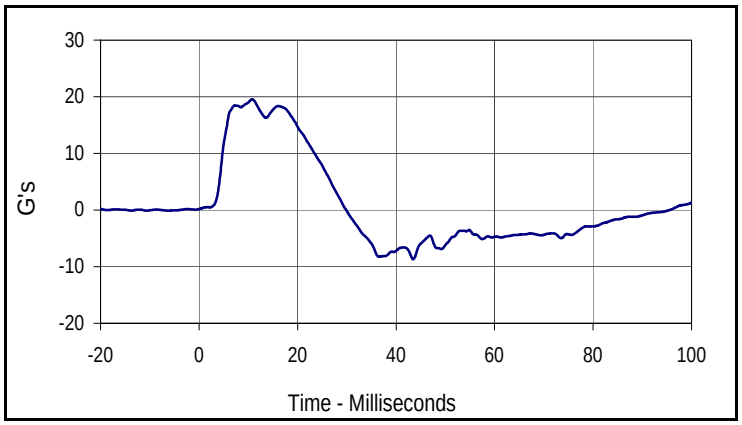
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
16.0	167.5	-39.9	61.2

Test Program:	SID IIs Shoulder Calibration	Test Date:	8/7/10
ATD Serial No.:	307	Test I.D.:	SH06C

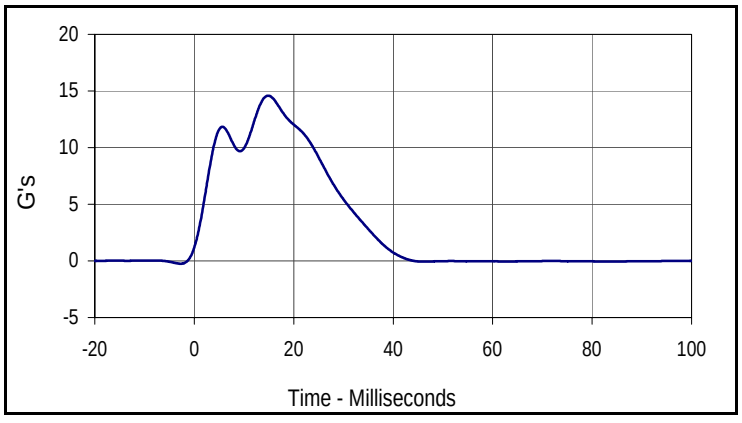
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.27	Pass
Shoulder Deflection	MM	28 to 37	31.9	Pass
Peak Upper Spine Y Acceleration	G's	17 to 22	19.6	Pass
Peak Impactor Acceleration	G's	13 to 18	14.6	Pass
		Overall Test Results		Pass



Curve Description			
Shoulder Acceleration			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
31.9	18.5	0.0	-19.4



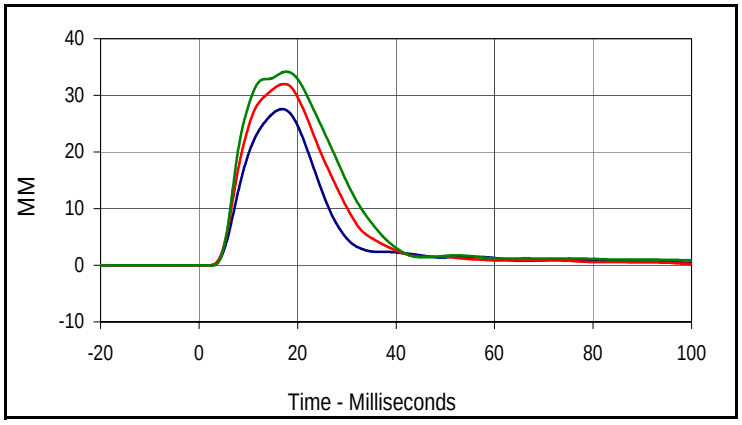
Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
19.6	10.8	-8.7	43.5



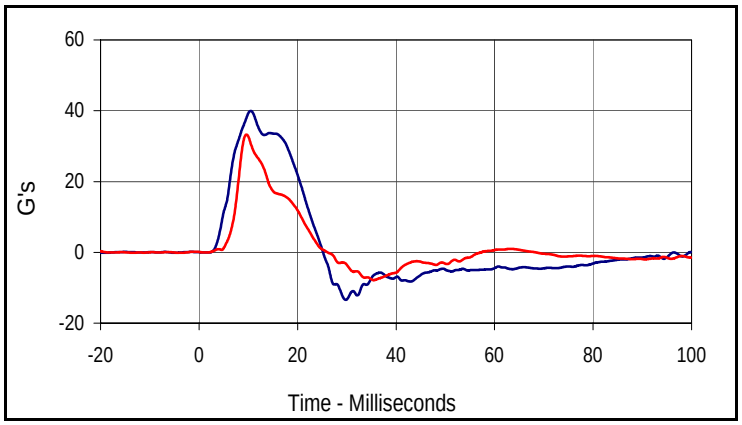
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
14.6	14.9	-0.2	-2.7

Test Program:	SID IIs Thorax with Arm Calibration	Test Date:	8/7/10
ATD Serial No.:	307	Test I.D.:	TH07B

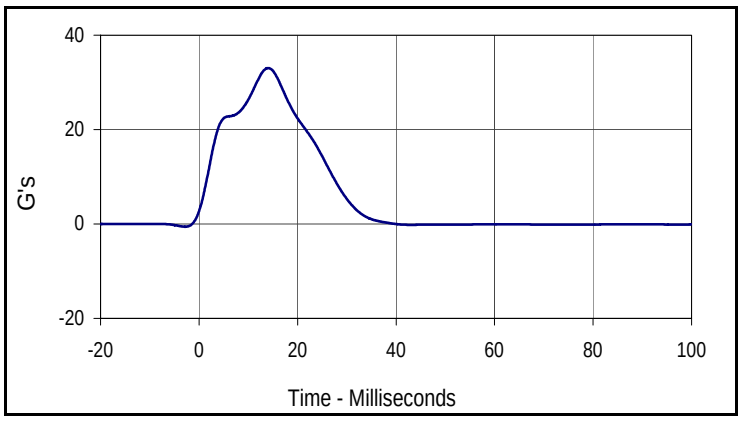
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.73	Pass
Shoulder Deflection	MM	31 to 40	35.3	Pass
Upper Thorax Rib Deflection	MM	25 to 32	27.6	Pass
Middle Thorax Rib Deflection	MM	30 to 36	32.0	Pass
Lower Thorax Rib Deflection	MM	32 to 38	34.2	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	39.9	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	33.3	Pass
Peak Impactor Acceleration After 5 msec.	G's	30 to 36	33.0	Pass
		Overall Test Results		Pass



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
27.6	16.9	0.0	1.9
Middle Thorax Deflection			
Max	Time	Min	Time
32.0	17.3	0.0	2.0
Lower Thorax Deflection			
Max	Time	Min	Time
34.2	17.7	0.0	2.7



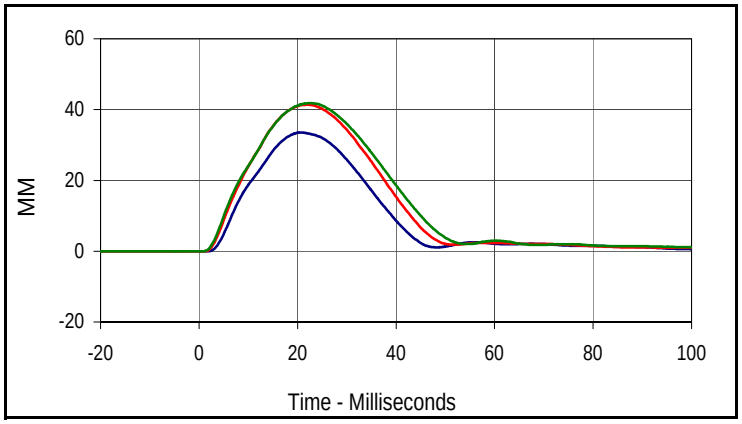
Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
39.9	10.5	-13.4	29.8
Curve Description			
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
33.3	9.6	-7.9	35.5



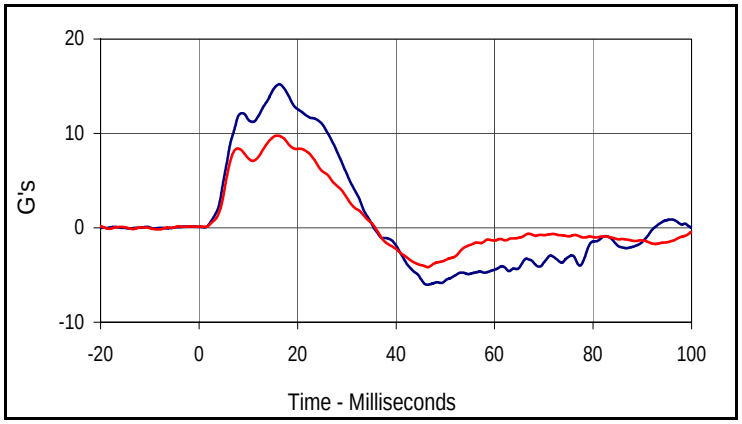
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
33.0	14.0	-0.6	-2.8

Test Program:	SID IIs Thorax w/o Arm Calibration	Test Date:	8/7/10
ATD Serial No.:	307	Test I.D.:	TOA07A

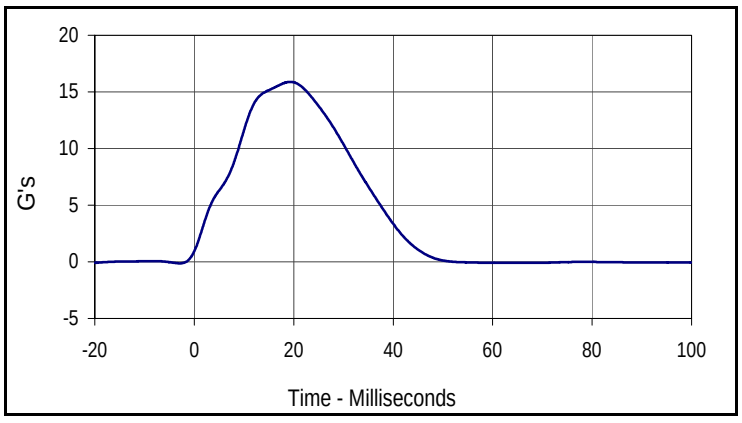
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.27	Pass
Upper Thorax Rib Deflection	MM	32 to 40	33.5	Pass
Middle Thorax Rib Deflection	MM	39 to 45	41.3	Pass
Lower Thorax Rib Deflection	MM	35 to 43	41.8	Pass
Peak Upper Spine Y Acceleration	G's	13 to 17	15.2	Pass
Peak Lower Spine Y Acceleration	G's	7 to 11	9.8	Pass
Peak Impactor Acceleration	G's	14 to 18	15.9	Pass
		Overall Test Results		Pass



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
33.5	20.6	0.0	0.3
Middle Thorax Deflection			
Max	Time	Min	Time
41.3	22.0	0.0	-17.4
Lower Thorax Deflection			
Max	Time	Min	Time
41.8	22.4	0.0	-18.3



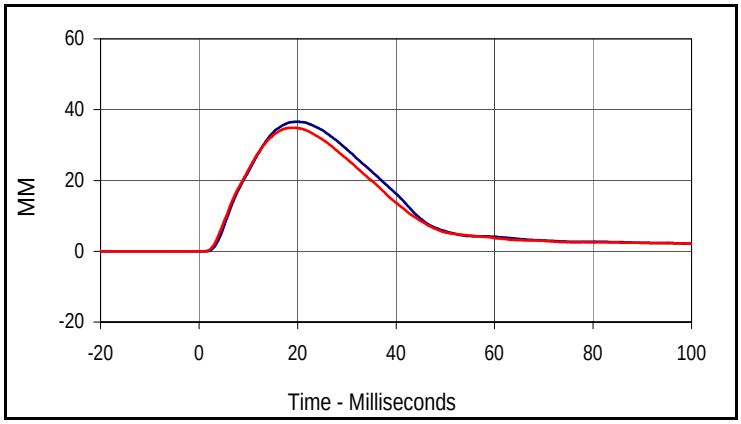
Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.2	16.3	-6.0	46.3
Curve Description			
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
9.8	15.9	-4.2	46.5



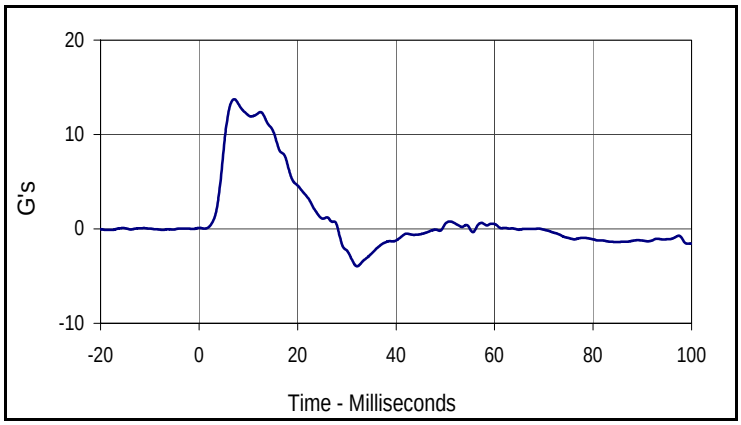
Curve Description			
Impactor Accleration			
CURNO	Type	SAE Class	Units
006	FIL	60	G's
Max	Time	Min	Time
15.9	19.3	-0.1	-2.9

Test Program:	SID IIs Abdomen Calibration	Test Date:	8/7/10
ATD Serial No.:	307	Test I.D.:	AB07B

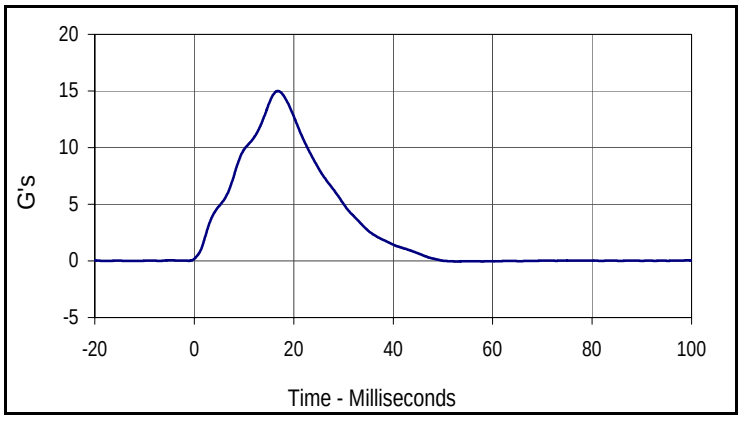
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.20	Pass
Upper Abdominal Rib Deflection	MM	36 to 47	36.6	Pass
Lower Abdominal Rib Deflection	MM	33 to 44	34.9	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	13.7	Pass
Peak Impactor Acceleration	G's	12 to 16	15.0	Pass
		Overall Test Results		Pass



Curve Description			
Upper Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
36.6	19.8	0.0	-14.9
Curve Description			
Lower Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
34.9	18.9	0.0	-11.6



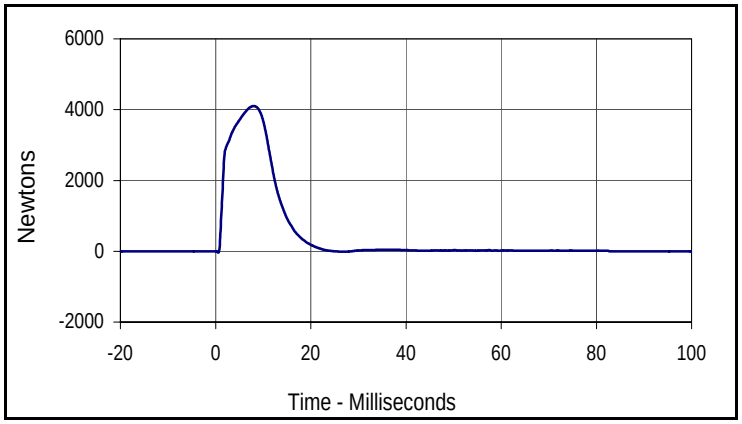
Curve Description			
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
13.7	7.1	-4.0	32.1



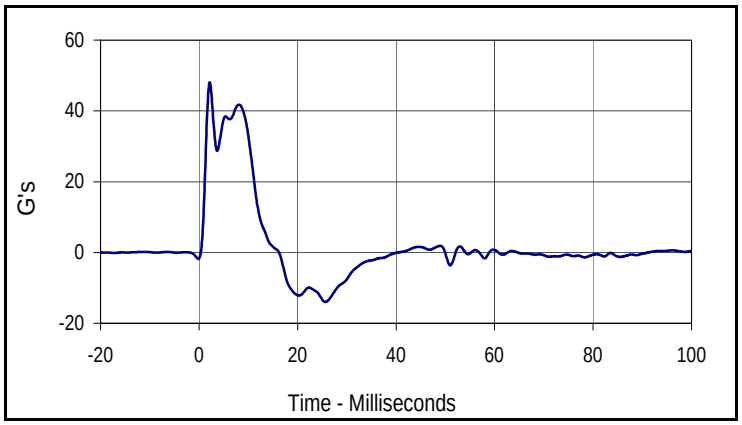
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.0	16.8	-0.1	52.9

Test Program:	SID IIs Pelvis Acetabulum Calibration	Test Date:	8/7/10
ATD Serial No.:	307	Test I.D.:	PA07B

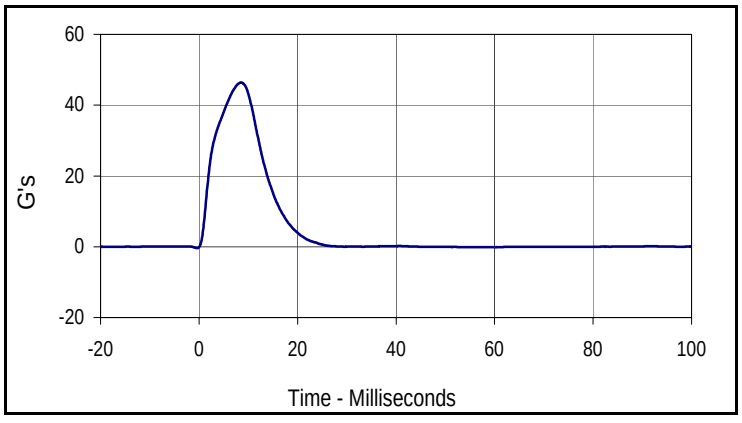
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.69	Pass
Peak Acetabulum Force	Newtons	3600 to 4300	4101.5	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	41.7	Pass
Peak Impactor Acceleration	G's	38 to 47	46.4	Pass
		Overall Test Results		Pass



Curve Description			
Pelvis Acetabulum Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4101.5	8.0	-35.2	0.6



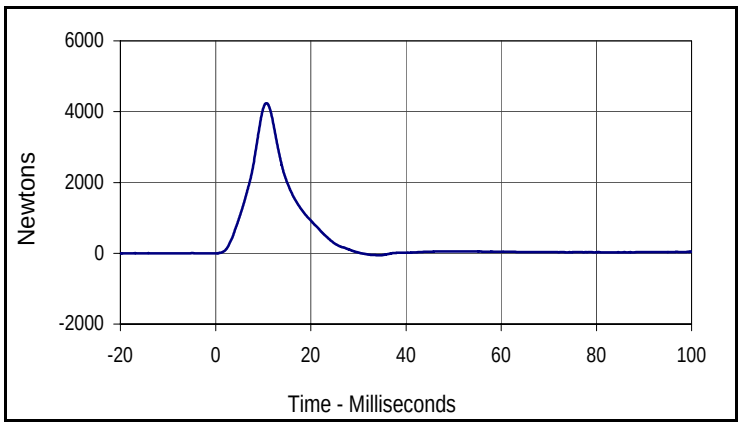
Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
48.1	2.2	-14.0	25.6



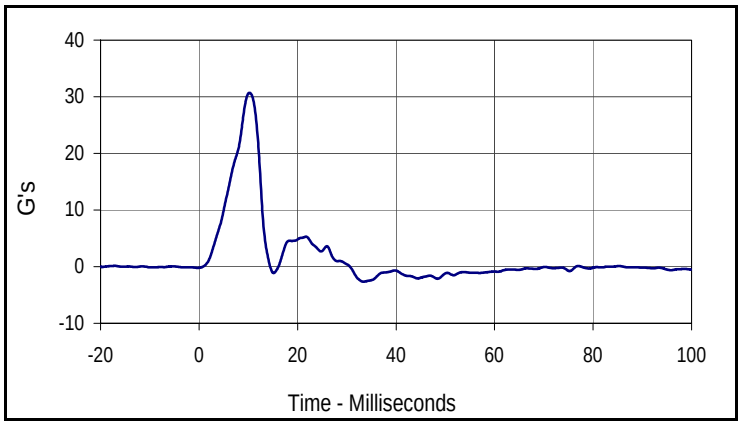
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
46.4	8.5	-0.4	-0.4

Test Program:	SID IIs Pelvis Iliac Calibration	Test Date:	8/7/10
ATD Serial No.:	307	Test I.D.:	PL07B

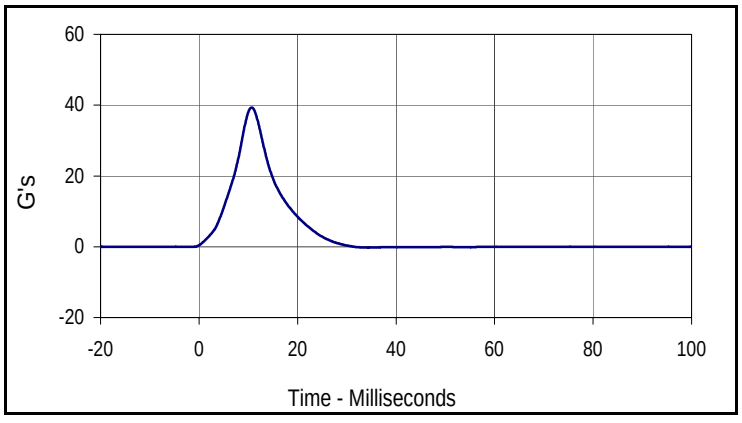
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.20	Pass
Peak Iliac Force	Newtons	4100 to 5100	4238.7	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	30.7	Pass
Peak Impactor Acceleration	G's	36 to 45	39.3	Pass
		Overall Test Results		Pass



Curve Description			
Pelvis Iliac Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4238.7	10.7	-58.7	34.4



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
30.7	10.2	-2.7	33.4



Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
39.3	10.7	-0.2	35.3