

REPORT NUMBER: SNCAP-KAR-11-035

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

**NISSAN MOTOR CO., LTD.
2011 NISSAN SENTRA 2.0 4-DOOR SEDAN**

NHTSA No: MB5213

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



OCTOBER 28, 2010

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
1200 NEW JERSEY AVE, SE
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16. Abstract

A 55/28 km/h 90 deg. Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2011 Nissan Sentra 2.0 4-Door Sedan in accordance with the specifications of the Office of Crash Worthiness Standards Test Procedure for the generation of consumer information on vehicle side crash protection. The test was conducted at KARCO Engineering, LLC in Adelanto, CA, on October 28, 2010.

The impact velocity of the Moving Deformable Barrier was 61.53 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 22.2 deg. C. The target vehicle's maximum post-test static crush was 303 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	229.2
Maximum Thorax Rib Deflection	mm	44	24.1
Total Abdominal Force	N	2500	1085
Pubic Symphysis Force	N	6000	2731

Measurement Description	Passenger ATD (SID-IIs)		
	Units	Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	445.8
Lower Spine Resultant Acceleration	g	82	72
Total Pelvic Force (Sum of Acetubular and Iliac Forces)	N	5525	5271

The two doors on the struck side of the vehicle did not separate from the body at the hinges or latches, and the opposite doors did not open during the side impact event.

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

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

SECTION 1

PURPOSE AND SUMMARY OF TEST

PURPOSE

This moving deformable barrier side impact test is part of the 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 Nissan Sentra 2.0 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 Nissan Sentra 2.0 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 61.53 km/h (38.24 mph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by KARCO Engineering, LLC. in Adelanto, California, on October 28, 2010. Pre- and post-test photographs of the test vehicle, the MDB, and the dummies (ES-2re and SID-IIs) are included in Appendix A of this report.

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

The dummies were instrumented in the following manner:

DRIVER ATD (ES-2re)

Head Accelerometers

Thorax Rib 1 to Rib 3 Potentiometers

Abdomen Forward, Middle, and Rear Load Cells

Lower Spine Accelerometers

Pubic Load Cell

PASSENGER ATD (SID-IIs)

Head Accelerometers

Thorax Upper, Middle and Lower Rib Potentiometers

Abdomen Upper and Lower Rib Potentiometers

Lower Spine Accelerometers

Iliac Load Cell

Acetabulum Load Cell

Dummy injury values were recorded as follows:

Measurement Description	Units	Driver ATD (ES-2re)	
		Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	229.2
Maximum Thorax Rib Deflection	mm	44	24.1
Combined Abdominal Force	N	2500	1085
Pubic Symphysis Force	N	6000	2731

Measurement Description	Units	Passenger ATD (SID-IIs)	
		Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	445.8
Lower Spine (T12) Resultant Acceleration	g	82	72
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	5271

Supplemental restraint information is given below:

Restraint Type	Left Front (Driver)		Left Rear (Passenger)	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	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. There were no ATD values that exceeded limits.

SECTION 2

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan

NHTSA No. MB5213

Test Program: MDB Side Impact Test

Test Date: 10/28/10

CONVERSION FACTORS

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

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan

NHTSA No. MB5213

Test Program: MDB Side Impact Test

Test Date: 10/28/10

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	MB5213
Model Year	2011
Make	Nissan
Model	Sentra 2.0
Body Style	4-Door Sedan
VIN	3N1AB6AP0BL612740
Body Color	Magnetic Gray
Delivery Date	9/28/2010
Odometer Reading (km / mi)	119/74
Dealer	Nissan of San Bernardino
Transmission	CVT
Final Drive	Front
Type / No. of Cylinders	Inline 4
Engine Displacement (L)	2.0
Engine Placement	Transverse
Roof Rack	No
Sunroof / T-Top	No
Tinted Glass	No
Traction Control	Yes
Power Brakes	Yes
Front Disc	Yes
Rear Disc	No

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

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

Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Nissan Motor Co., Ltd.
Date of Manufacture	Sep-10

GVWR (kg)	1792
GAWR Front (kg)	1010
GAWR Rear (kg)	821

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

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

A

B

A-B

VEHICLE SEAT TYPE

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

DATA SHEET NO. 1 ... (CONTINUED)

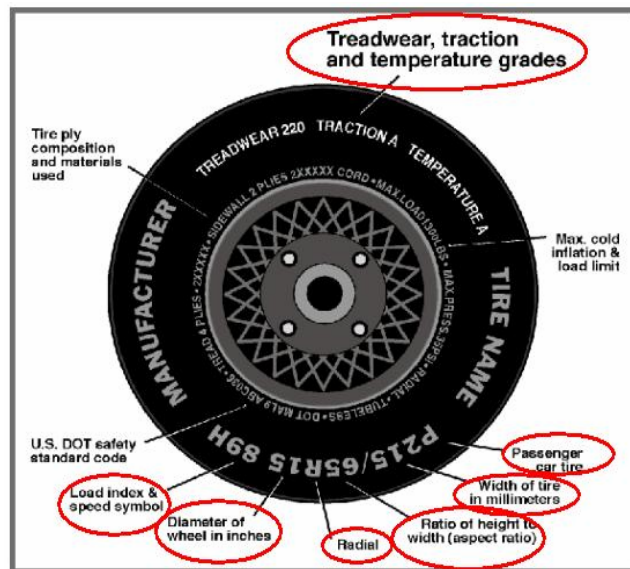
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan

NHTSA No. MB5213

Test Program: MDB Side Impact Test

Test Date: 10/28/10



VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	275	275
Cold Pressure (kpa)	230	230
Recommended Tire Size	P205/60R15	P205/60R15
Tire Size on Vehicle	P205/60R15	P205/60R15
Tire Model	Turanza EL400	Turanza EL400
Tire Manufacturer	Bridgestone	Bridgestone
Treadwear	300	300
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	1 Polyester	1 Polyester
Tire Plies Body	1 Polyester, 2 Steel, 1 Nylon	1 Polyester, 2 Steel, 1 Nylon
Load Index/Speed Symbol	90H	90H
Tire Material	Polyester, Steel, Nylon	Polyester, Steel, Nylon
DOT Safety Code Right	V6UN TE0 2710	V6UN TE0 2710
DOT Safety Code Left	V6UN TE0 2710	V6UN TE0 2710

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan

NHTSA No. MB5213

Test Program: MDB Side Impact Test

Test Date: 10/28/10

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	421.5	255.0		455.0	335.5		460.0	332.5	
Right	kg	404.0	245.5		406.0	293.5		408.5	293.0	
Ratio	%	62.3%	37.7%	100.0%	57.8%	42.2%	100.0%	58.1%	41.9%	100.0%
Total	kg	825.5	500.5	1326.0	861.0	629.0	1490.0	868.5	625.5	1494.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1326.0	A
Actual Weight of 2 P572 ATDs Used	kg	125.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	44.8	C
Calculated Vehicle Target Wt (TVTWT)	kg	1495.8	A+B+C

TEST VEHICLE ATTITUDES

Condition	Units	LF	RF	LR	RR	CG (Aft of Front Axle)
Fully Loaded	mm	682	693	668	666	1122
As Tested	mm	685	688	658	662	1131

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheelbase	mm	2680
Total Vehicle Length at Left Side	mm	3104
Total Vehicle Length at Centerline	mm	4558
Total Vehicle Length at Right Side	mm	3109
Weight of Ballast in Cargo Area	kg	66.0
Weight of Vehicle Components Removed	kg	36.0
Amount of Stoddard Solvent in Fuel Tank	L	48.90

Vehicle components removed to make Target Vehicle Test Weight:

Spare tire and tools (15.0 kg), Non-struck side door panels (4.0 kg), Non-struck side window (8.0 kg), Non-struck side mirror (1.5 kg), Tail lights (3.5 kg), Trunk liner (1.0 kg), Speaker (3.0 kg),

TEST VEHICLE VERTICAL IMPACT LINE DATA

Measurement Description	Units	Value
Target Impact Point Aft of Front Axle	mm	400
Actual Impact Point Aft of Front Axle	mm	400

DATA SHEET NO. 2

SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan

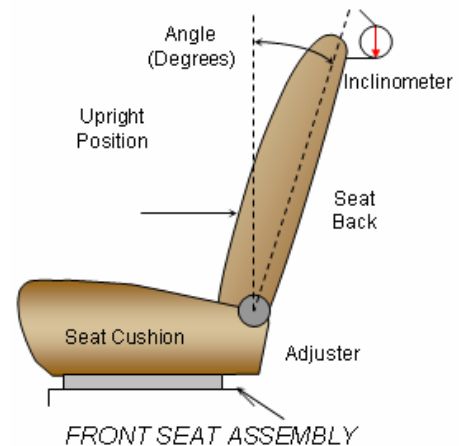
NHTSA No. MB5213

Test Program: MDB Side Impact Test

Test Date: 10/28/10

NOMINAL DESIGN RIDING POSITION

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



SEAT BACK ANGLES

	Degrees (°)
Driver w/Seated Dummy	10.4
Passenger w/Seated Dummy	8.5

SEAT FORE/AFT POSITION

Driver seat travel is measured from the forward most possible position to the rear most possible position. The driver's seat is set to the middle of the fore-aft travel. The passenger's seat is fixed.

SEAT FORE/AFT POSITIONS

Seating Position	Total Fore/Aft Travel	Placed in Position
Driver Seat	240 mm	120 mm
Rear Seat	Fixed	Fixed

SEAT BELT UPPER ANCHORAGE

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

SEAT BELT UPPER ANCHORAGES

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

DATA SHEET NO. 2 ... (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan

NHTSA No. MB5213

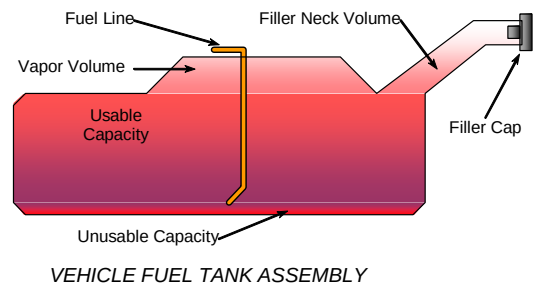
Test Program: MDB Side Impact Test

Test Date: 10/28/10

FUEL TANK CAPACITY

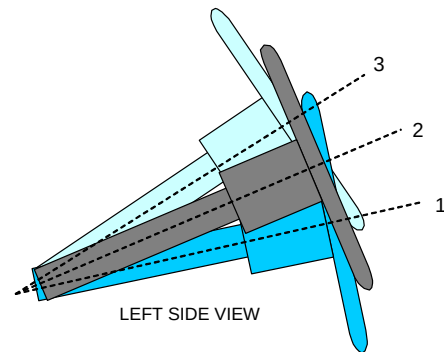
Description	Liters
Usable Capacity of "Standard Tank"	52.61
Usable Capacity of "Optional Tank"	
Usable Capacity Used for FMVSS 301	52.61
Actual Amount of Stoddard Solvent Used	48.90

The test vehicle is equipped with an electric fuel pump. The fuel pump will pump fuel for 1.0 second after the ignition is switched "on", while the engine is running, and for 1.5 seconds after the engine stops running. The fuel filler door is located on the right rear fender. The standard fuel tank occupies the area under the rear seat.



STEERING COLUMN ADJUSTMENT

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



STEERING COLUMN POSITIONING

	Degrees	Fore-Aft Position (mm)
Lowermost Position, No. 1	24.6	
Geometric Center Position, No. 2	26.9	
Uppermost Position, No. 3	29.1	
Telescoping Steering Wheel Travel		
Test Position	26.8	

DATA SHEET NO. 3

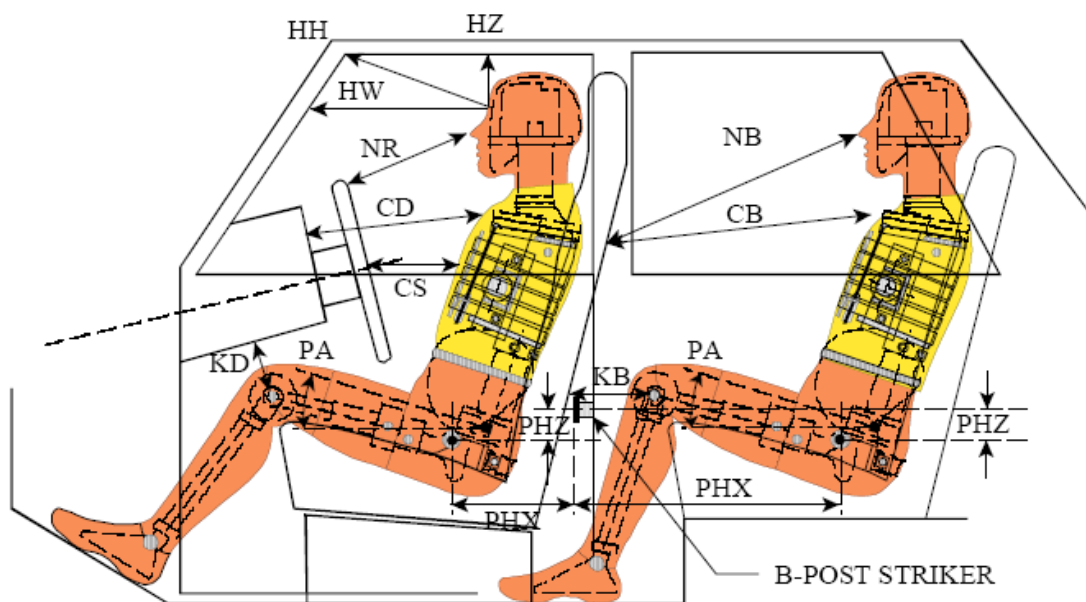
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan

NHTSA No. MB5213

Test Program: MDB Side Impact Test

Test Date: 10/28/10



LEFT SIDE VIEW

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

DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Description	Driver		Passenger	
			Length (mm)	Angle (°)	Length (mm)	Angle (°)
HH		Head to Header	309	9.2		
HW		Head to Windshield	585	0.0		
HZ	HZ	Head to Roof	155	90.0	246	90.0
NR	NB	Nose to Rim/Seat Back	444	19.5	545	12.3
CD	CB	Chest to Dash/Seat Back	559	2.1	532	8.7
CS		Chest to Steering Wheel	377	17.9		
KDL	KBL	Left Knee to Dash/Seat Back	161	16.0	260	18.8
KDR	KBR	Right Knee to Dash/Seat Back	136	35.4	251	20.7
PA	PA	Pelvic Angle		14.8		21.6
PHX	PHX	H-Point to Striker (x-axis)	224	0.0	284	0.0
PHZ	PHZ	H-Point to Striker (z-axis)	105	90.0	251	90.0
SA	SA	Seat Back Angle		10.4		8.5

DATA SHEET NO. 4

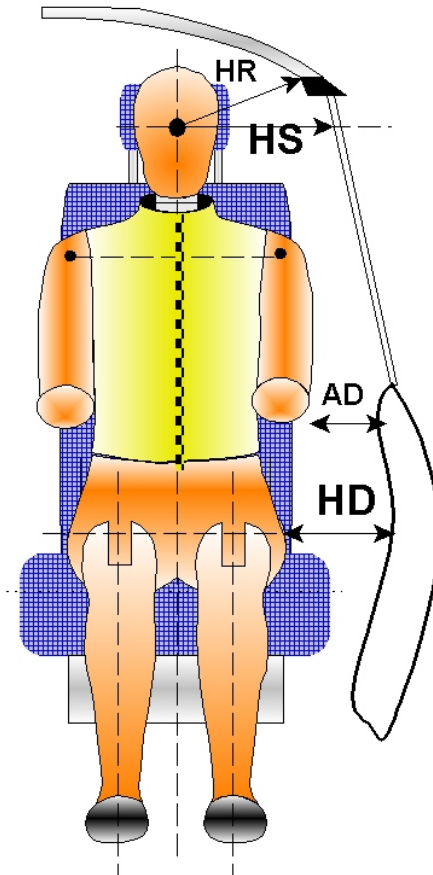
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan

NHTSA No. MB5213

Test Program: MDB Side Impact Test

Test Date: 10/28/10



DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	235	251
HS	Head to Side Window	mm	329	355
AD	Arm to Door	mm	102	141
HD	H-Point to Door	mm	164	189

DATA SHEET NO. 5

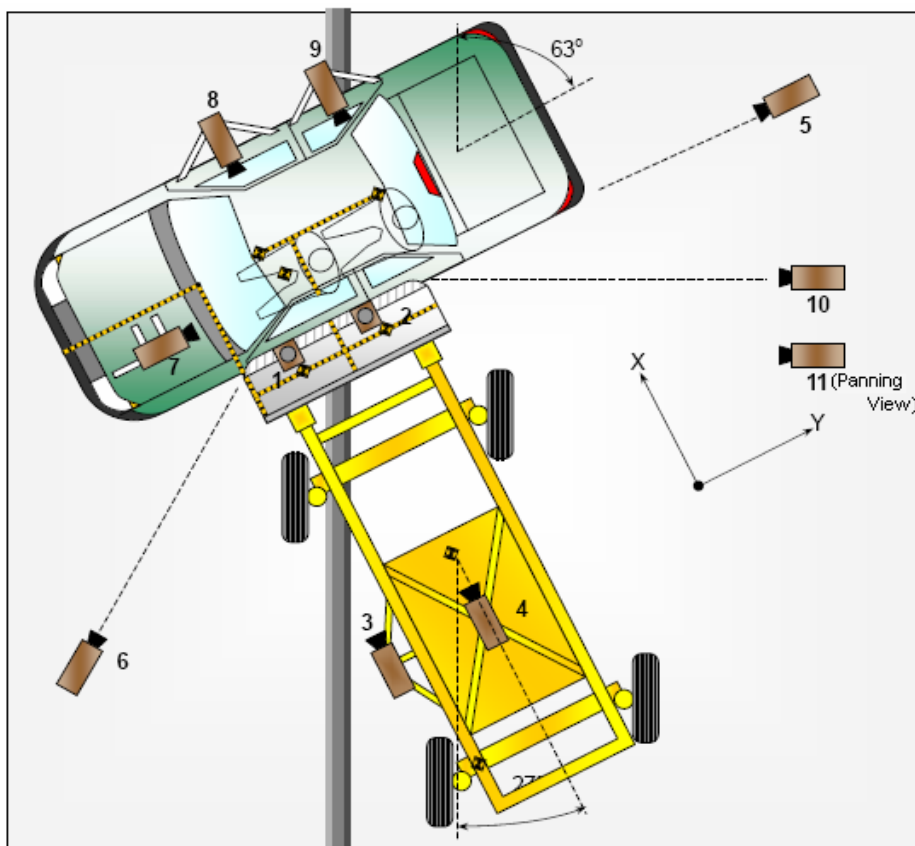
CAMERA LOCATIONS AND DATA

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan

NHTSA No. MB5213

Test Program: MDB Side Impact Test

Test Date: 10/28/10



CAMERA LOCATIONS AND DATA

Camera No.	View	Coordinates (mm)			Angle (°)	Lens (mm)	Film Speed (fps)
		X*	Y*	Z*			
1	Overhead Overall	1220	2287	-5486	90	14	1000
2	Overhead Close-Up	609	2287	-5102	90	Zoom	1000
3	Left Impact Point (MDB)	-2134	0	-1143	7.5	25	1000
4	Side Overall (MDB)	-3912	838	-1829	11.9	12	1000
5	Rear	-64	2485	-1348	0	105	1000
6	Left Front	-2266	-3564	-1475	0	24	1000
7	Driver Front (On-Board)	514	-568	584	5	35	1000
8	Driver Side (On-Board)	1538	719	444	11.2	14	1000
9	Passenger Side (On-Board)	1502	1646	495	13.4	14	1000
10	Real Time Left Rear					Zoom	30
11	Real Time Inrun	-2484	-3958	-1506		Zoom	30

Reference: Impact Point Projected to Ground

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

*All measurements accurate to ± 6 mm

DATA SHEET NO. 6

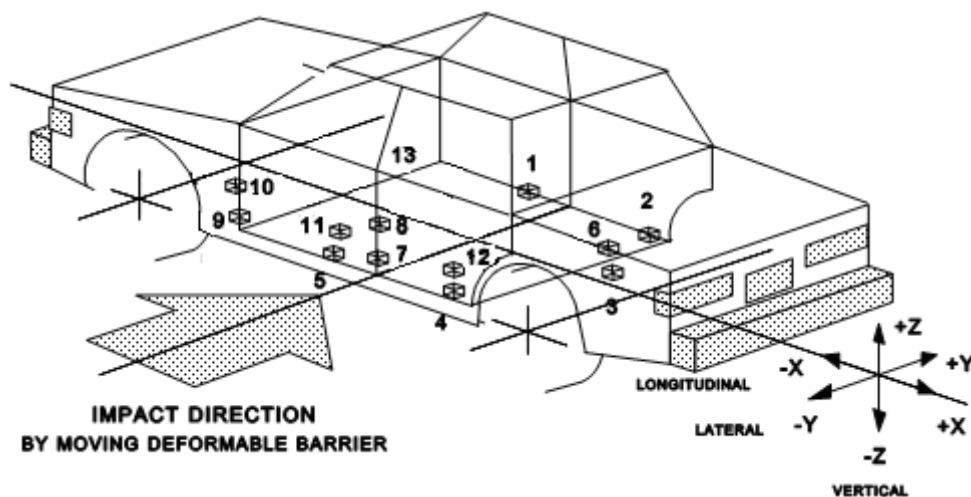
VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan

NHTSA No. MB5213

Test Program: MDB Side Impact Test

Test Date: 10/28/10



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Right Sill at Front Seat	2768	705	340
2	Right Sill at Rear Seat	1742	669	353
3	Rear Floorpan Above Axle	679	-446	530
4	Left Sill at Rear Door	1725	-710	185
5	Left Sill at Front Door	2576	-703	173
6	Right Rear Occupant Compartment	2042	425	199
7	B-Pillar Lower	2103	-718	485
8	B-Pillar Mid	2103	-718	773
9	A-Pillar Lower	3172	-773	512
10	A-Pillar Mid	3172	-773	821
11	Front Seat Track	2259	594	232
12	Rear Seat Structure			
13	Vehicle CG	1995	0	330

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

DATA SHEET NO. 7

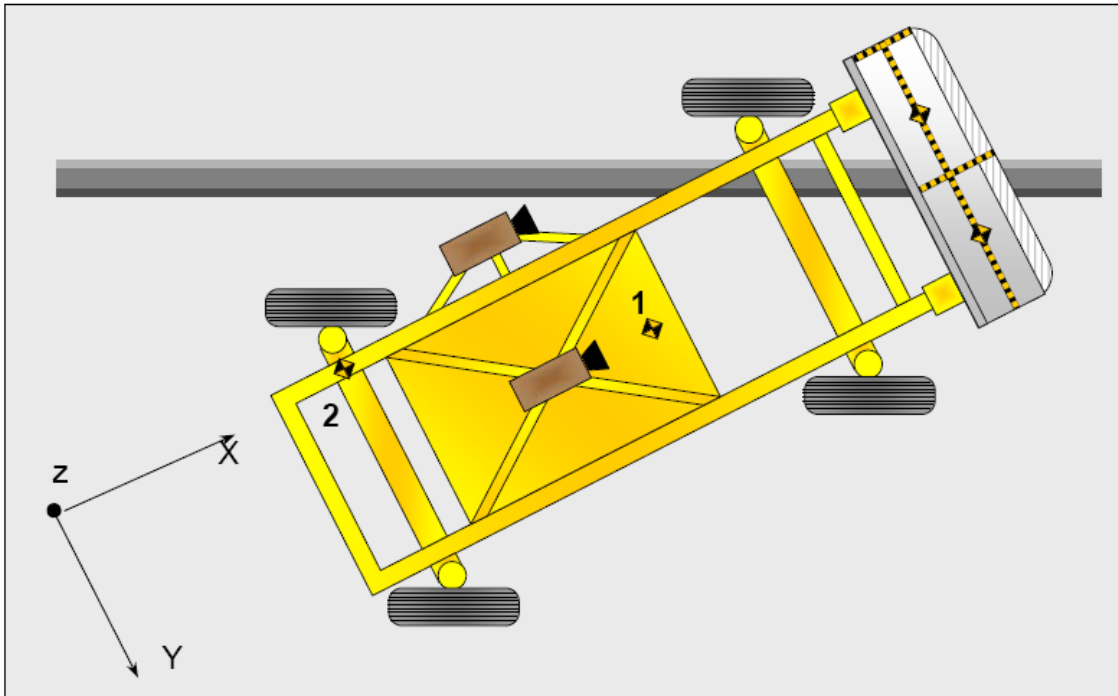
MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan

NHTSA No. MB5213

Test Program: MDB Side Impact Test

Test Date: 10/28/10



MDB ACCELEROMETER LOCATIONS

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

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

DATA SHEET NO. 8**TEST VEHICLE SUMMARY OF RESULTS**Test Vehicle: 2011 Nissan Sentra 2.0 4-Door SedanNHTSA No. MB5213Test Program: MDB Side Impact TestTest Date: 10/28/10**MAXIMUM EXTERIOR CRUSH**

Level	Description	Units	Maximum Crush	Above Ground
1	Sill Top Height	mm	101	248
2	Occupant H-Point Height	mm	303	549
3	Mid-Door Height	mm	287	617
4	Window Sill Height	mm	253	880
5	Window Top Height	mm	29	1398
	Maximum Penetration	mm	303	

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 Nissan Sentra 2.0 4-Door SedanNHTSA No. MB5213Test Program: MDB Side Impact TestTest Date: 10/28/10**MDB SPECIFICATIONS**

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

MDB WEIGHTS

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

SPEED AND IMPACT DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	61.53
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	61.47
MDB CL to Target Vehicle CL	degrees	88.5-91.5	89.7

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	186
2	Top of Bumper	533	800	Right	77
3	Mid Level	686	800	Left	115
4	Top of Stack	813	800	Left	165

MDB INSTRUMENTATION AND CAMERAS

Accelerometers	5
Contact Switches	2

DATA SHEET NO. 10
POST-TEST OBSERVATIONS

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan

NHTSA No. MB5213

Test Program: MDB Side Impact Test

Test Date: 10/28/10

TEST DUMMY INFORMATION AND CONTACT POINTS

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

POST-TEST DOOR OPENING AND SEAT TRACK INFORMATION

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

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions	
Pillar Performance	No separation occurred	
Sill Separation	150 mm separation under rear door	
Windshield Damage	None	
Window Damage	Broken	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				

MDB LEFT EDGE IMPACT POINT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	0
Vertical Offset	mm	+/- 20	+3 (Up)

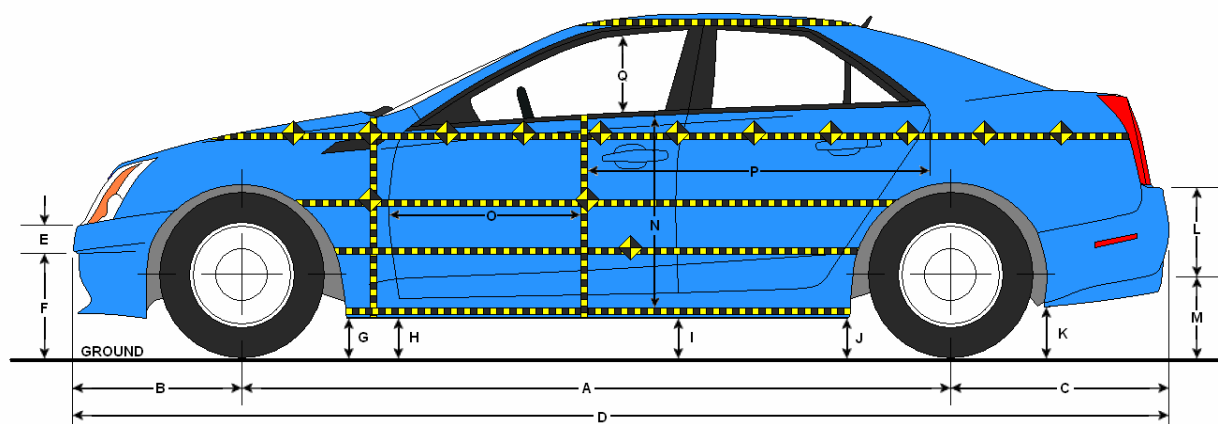
DATA SHEET NO. 11
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan

NHTSA No. MB5213

Test Program: MDB Side Impact Test

Test Date: 10/28/10



LEFT SIDE VIEW

VEHICLE PRE AND POST-TEST MEASUREMENT INFORMATION

Code	Dimension	Measurement (mm)		
		Pre	Post	Difference
A	Wheelbase	2680	2672	-8
B	Front Axle to FSOV	928	932	4
C	Rear Axle to RSOV	950	946	-4
D	Total Length at Centerline	4558	4548	-10
E	Front Bumper Thickness	111	110	-1
F	Front Bumper Bottom to Ground	427	443	16
G	Sill Height at Front Wheel Well	158	181	23
H	Sill Height at Front Door Leading Edge	210	229	19
I	Sill Height at B-Pillar	211	341	130
J1	Sill Height at Rear Wheel Well	215	299	84
J2	Pinch Weld Height at Rear Wheel Well	172	245	73
K	Sill Height Aft of Rear Wheel Well	194	260	66
L	Rear Bumper Thickness	240	242	2
M	Bottom of Rear Bumper to Ground	333	409	76
N	Sill Height to Window Bottom Sill	596	529	-67
O	Front Door Leading Edge to Impact CL	779	729	-50
P	Rear Door Trailing Edge to Impact CL	1306	1279	-27
Q	Front Window Opening	460	494	34
R	Right Side Length	3109	3111	2
S	Left Side Length	3104	3081	-23
T	Vehicle Width at B-Pillar	1759	1672	-87

All measurements in mm with tolerance of ± 3 mm

DATA SHEET NO. 12

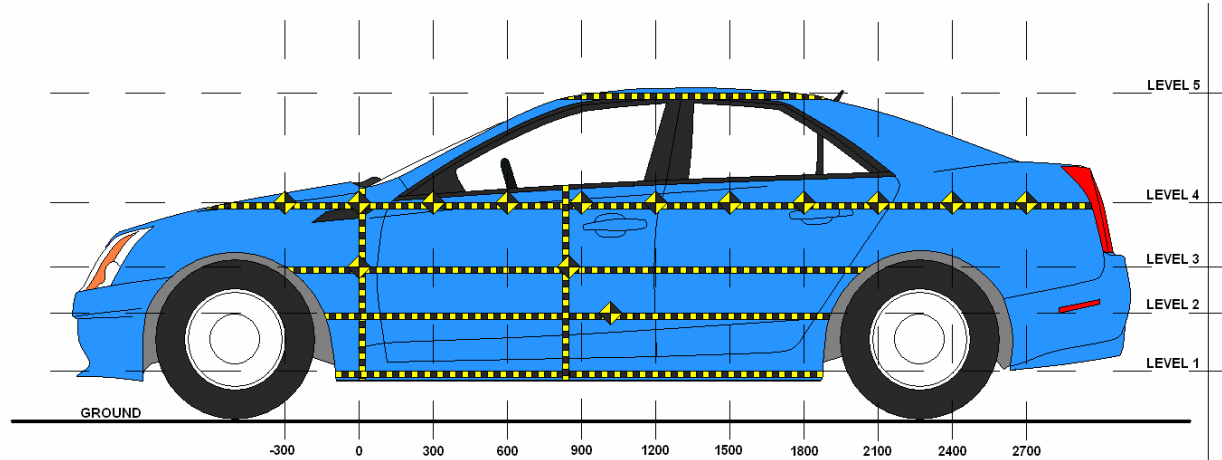
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan

NHTSA No. MB5213

Test Program: MDB Side Impact Test

Test Date: 10/28/10



LEFT SIDE VIEW

Level	Description	Height Above Ground (mm)
1	Sill Top Height	248
2	Occupant H-Point Height	549
3	Mid-Door Height	617
4	Window Sill Height	880
5	Window Top Height	1398

DATA SHEET NO. 12 ... (CONTINUED)

VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan

NHTSA No. MB5213

Test Program: MDB Side Impact Test

Test Date: 10/28/10

	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				709					728					19	
-300				691					705					14	
-150			612	681				623	696				11	15	
0	611	615	620	670		617	636	646	692		6	21	26	22	
150	659	622	623	664		760	869	840	741		101	247	217	77	
300	667	620	620	659		759	907	886	791		92	287	266	132	
450	668	617	616	657		759	920	903	842		91	303	287	185	
600	667	615	614	654		760	913	886	888		93	298	272	234	
750	667	614	613	650	901	761	912	882	903	914	94	298	269	253	13
900	667	614	612	647	886	762	902	884	889	903	95	288	272	242	17
1050	667	615	613	644	886	765	889	884	881	909	98	274	271	237	23
1200	666	616	614	642	887	764	823	842	853	914	98	207	228	211	27
1350	666	617	614	640	890	762	863	846	881	919	96	246	232	241	29
1500	666	618	616	640	894	734	860	859	868	921	68	242	243	228	27
1650	665	620	618	642	900	718	852	866	827	922	53	232	248	185	22
1800	656	620	620	644	916	706	848	840	788	935	50	228	220	144	19
1950			615	660	944			746	742	964			131	82	20
2100				651					677					26	
2250				657					692					35	
2400				666					691					25	
2550				681					696					15	
2700				699					709					10	
2850															

MAXIMUM CRUSH DATA

	Level 1	Level 2	Level 3	Level 4	Level 5
Maximum Crush (mm)	101	303	287	253	29
Distance from Impact (mm)	150	450	450	750	1350

DATA SHEET NO. 12 ... (CONTINUED)

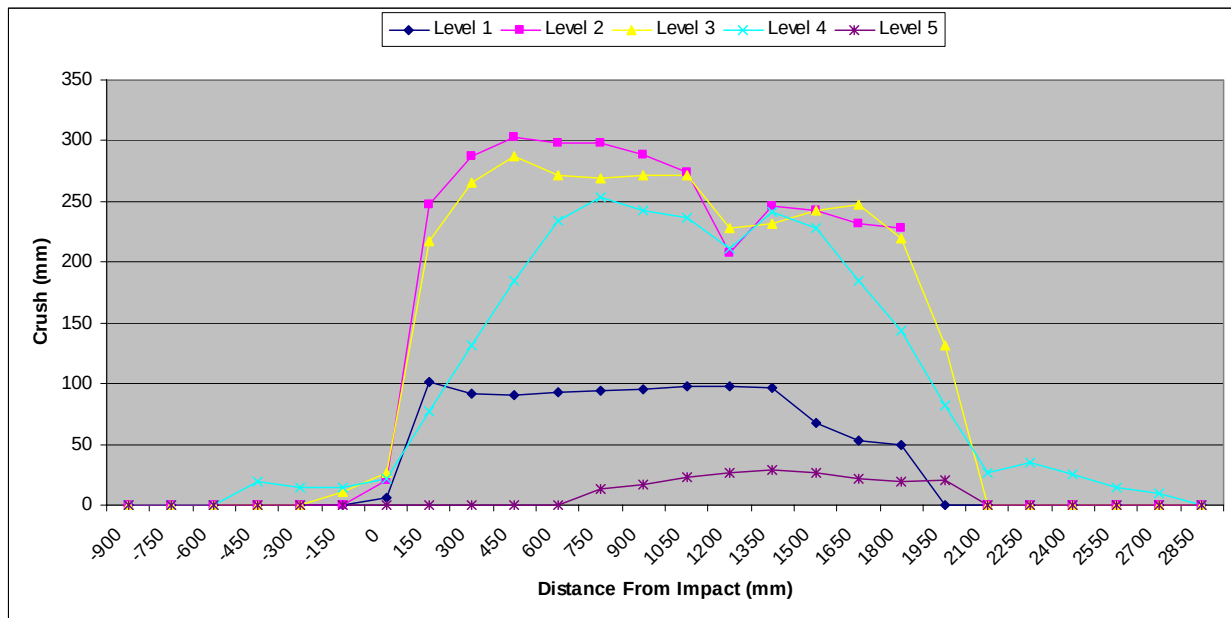
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan

NHTSA No. MB5213

Test Program: MDB Side Impact Test

Test Date: 10/28/10



DATA SHEET NO. 13

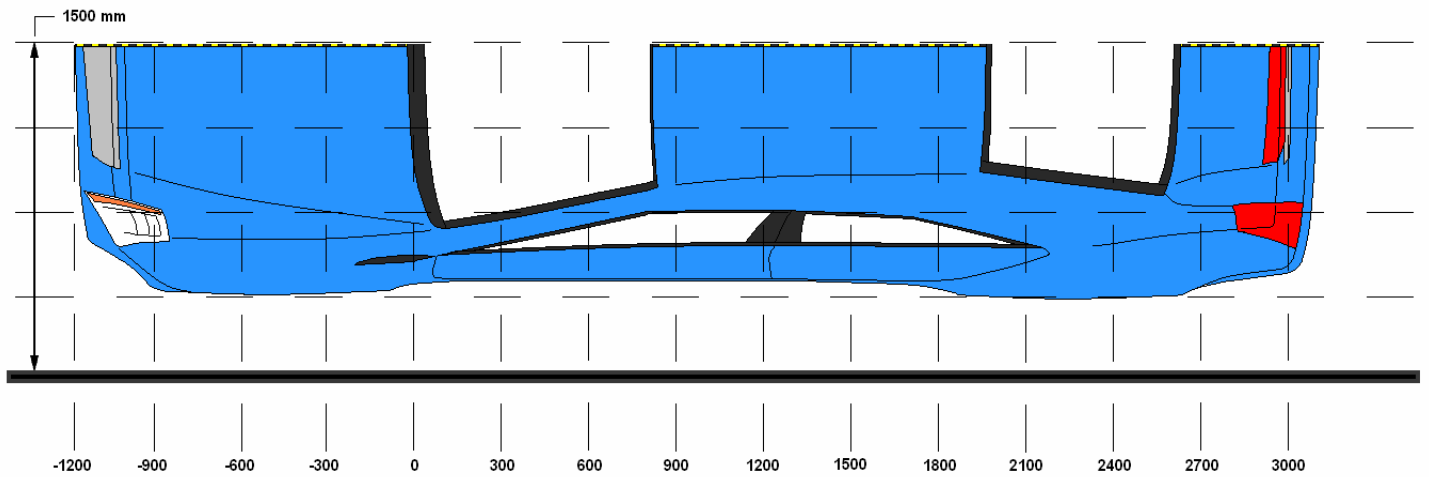
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan

NHTSA No. MB5213

Test Program: MDB Side Impact Test

Test Date: 10/28/10



DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point in mm	Level	Pre-Test (mm)	Post-Test (mm)	Max. Static Crush (mm)
1	2550	4	681	696	15
2	1950	3	615	746	131
3	1350	2	617	863	246
4	750	2	614	912	298
5	150	2	622	869	247
6	-450	4	709	728	19

DATA SHEET NO. 14

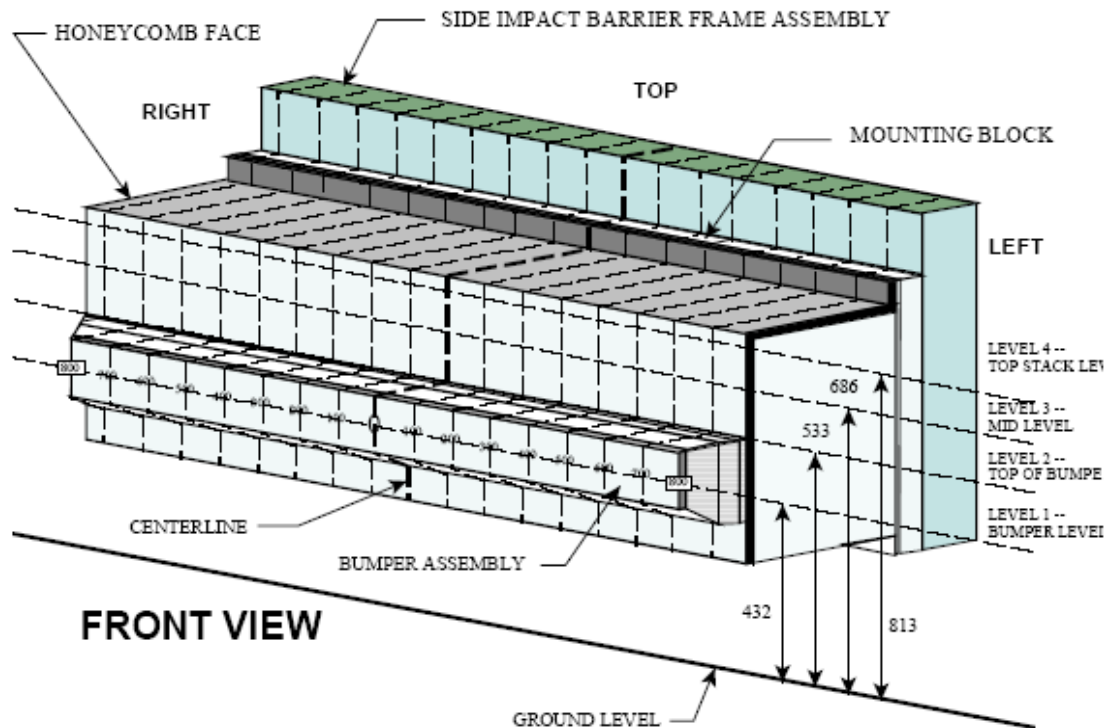
EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan

NHTSA No. MB5213

Test Program: MDB Side Impact Test

Test Date: 10/28/10



NOTE: Dimensions are shown in millimeters, mm

DEFORMABLE BARRIER STATIC CRUSH

Stack Level	Distance Right of Center								C/L	Distance Left of Center							
	800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
1	186	158	145	140	138	134	130	127	125	125	119	117	123	123	116	123	153
2	77	65	57	49	40	40	46	54	43	37	38	45	48	51	55	58	64
3	86	41	27	21	17	23	38	44	23	9	10	9	13	20	33	57	115
4	109	72	38	18	12	30	64	46	31	18	13	22	20	52	80	123	165

All dimensions in millimeters.

DATA SHEET NO. 15

FMVSS NO. 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan

NHTSA No. MB5213

Test Program: MDB Side Impact Test

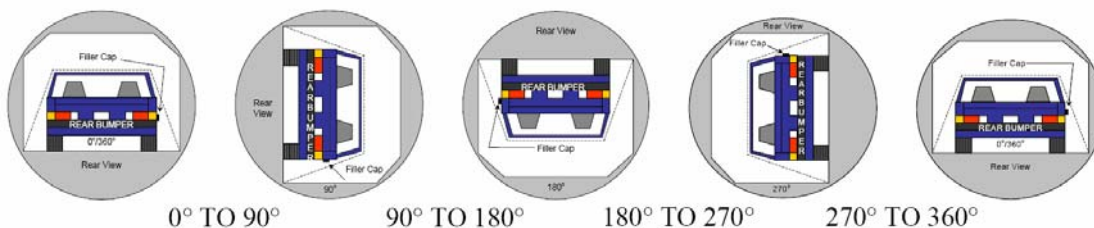
Test Date: 10/28/10

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 22.2° C

Test Time: 4:05 PM

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



SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	83	300	383
90° To 180°	82	300	382
180° To 270°	77	305	382
270° To 360°	79	300	379

FMVSS 301 SPILLAGE TABLE

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

SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 16

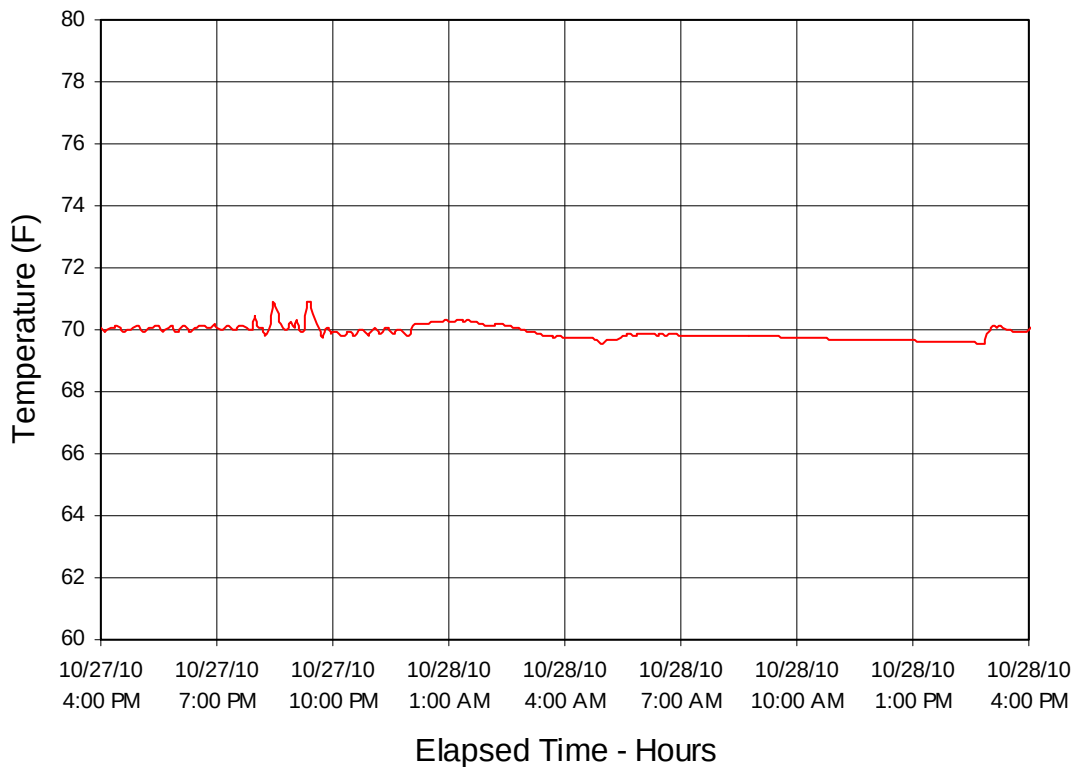
DUMMY / VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan

NHTSA No. MB5213

Test Program: MDB Side Impact Test

Test Date: 10/28/10



APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

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

TABLE OF PHOTOGRAPHS ... (CONTINUED)

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

TABLE OF PHOTOGRAPHS ... (CONTINUED)

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



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



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



FIGURE 3. Pre-Test Frontal View of Test Vehicle



FIGURE 4. Post-Test Frontal View of Test Vehicle



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



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



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



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



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

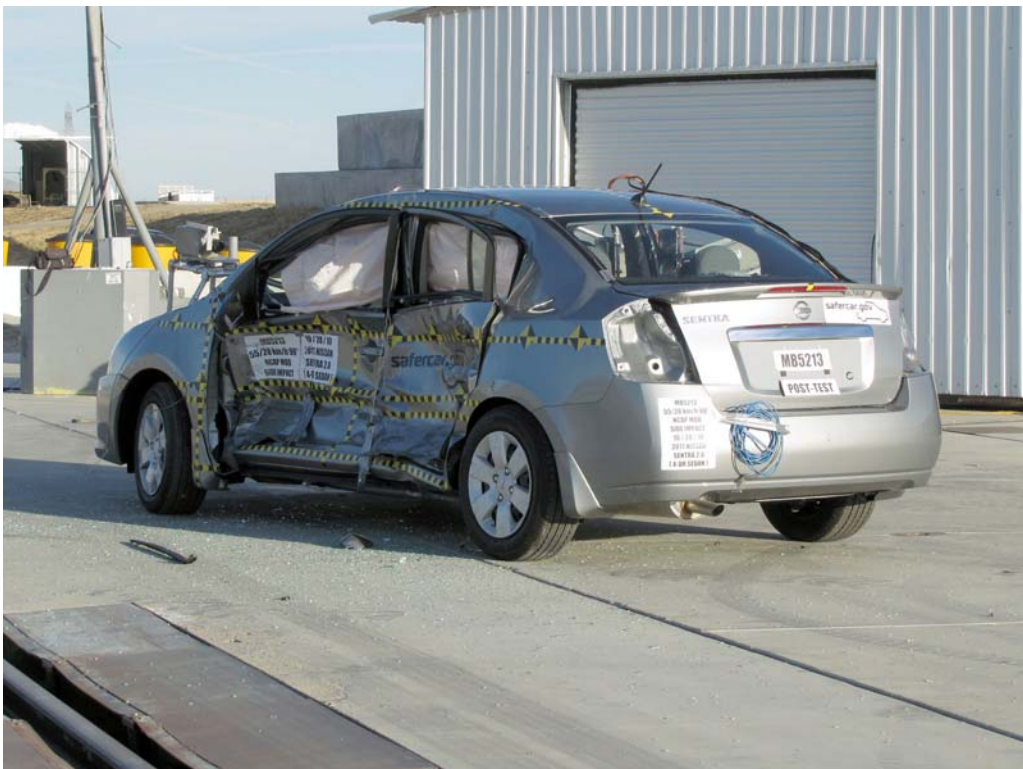


FIGURE 10. Post-Test Left Rear Three-Quarter View of Impact Zone



FIGURE 11. Pre-Test Rear View of Test Vehicle



FIGURE 12. Post-Test Rear View of Test Vehicle



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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

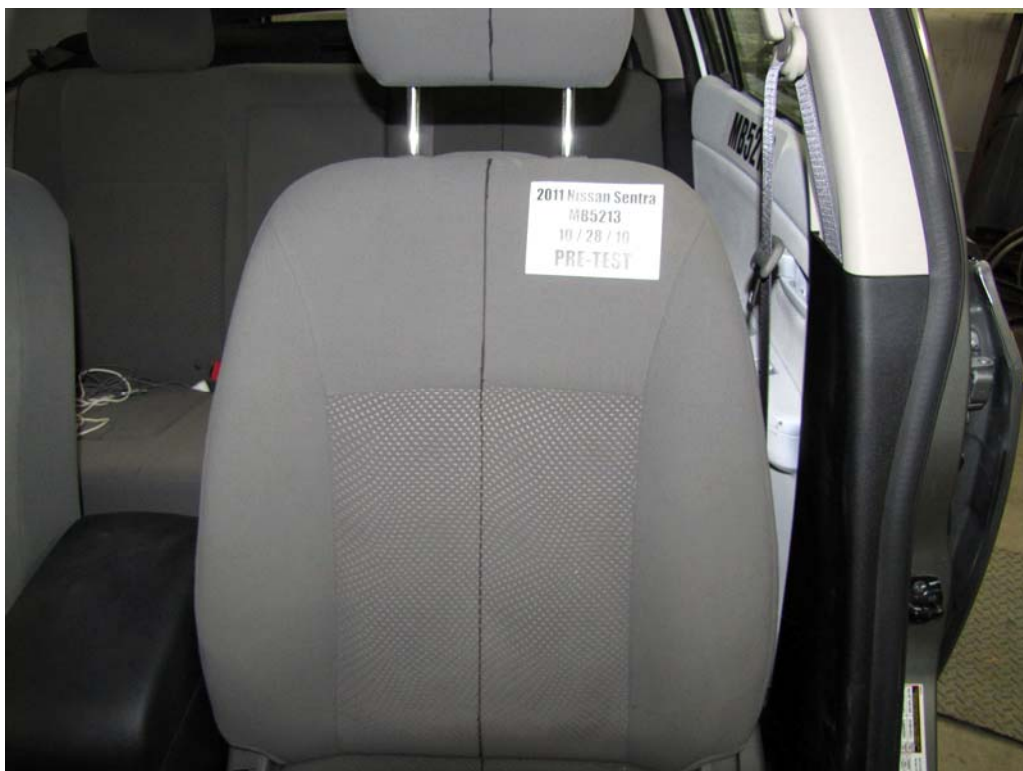


FIGURE 30. Pre-Test Frontal View of Driver Seat Back Prior to Dummy Positioning



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



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



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



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

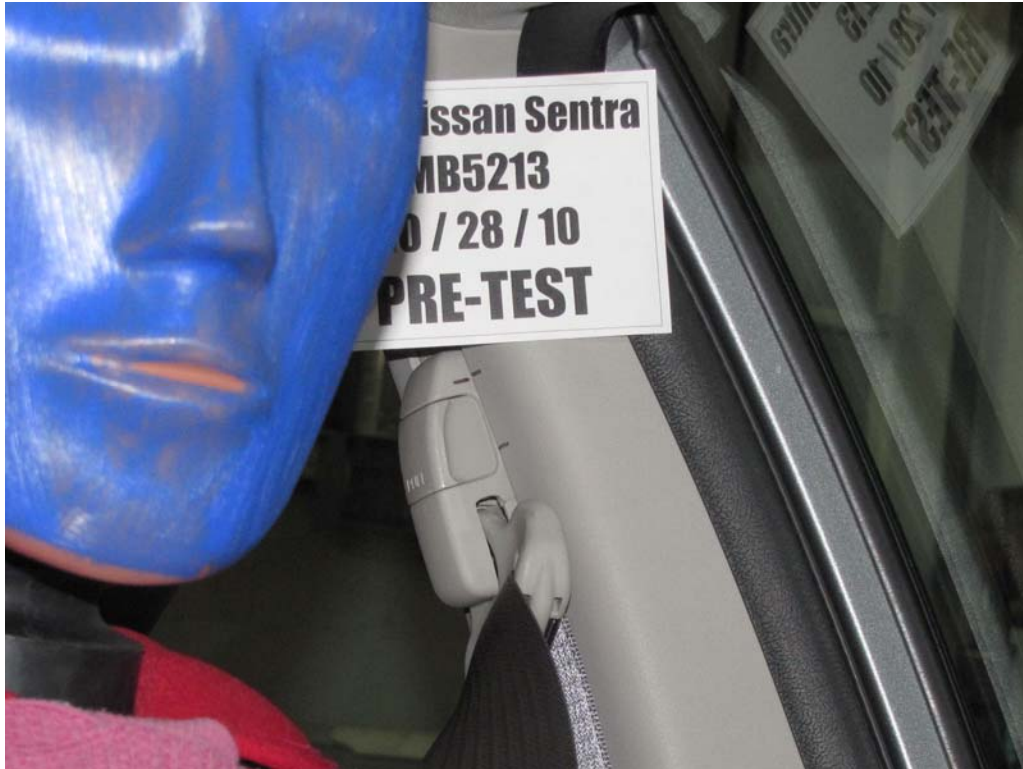


FIGURE 35. Pre-Test View of Belt Anchorage for Driver Dummy



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



FIGURE 37. Pre-Test View of Parking Brake



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



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



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



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



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



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



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



FIGURE 45. Pre-Test Driver Inner Door Panel View



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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

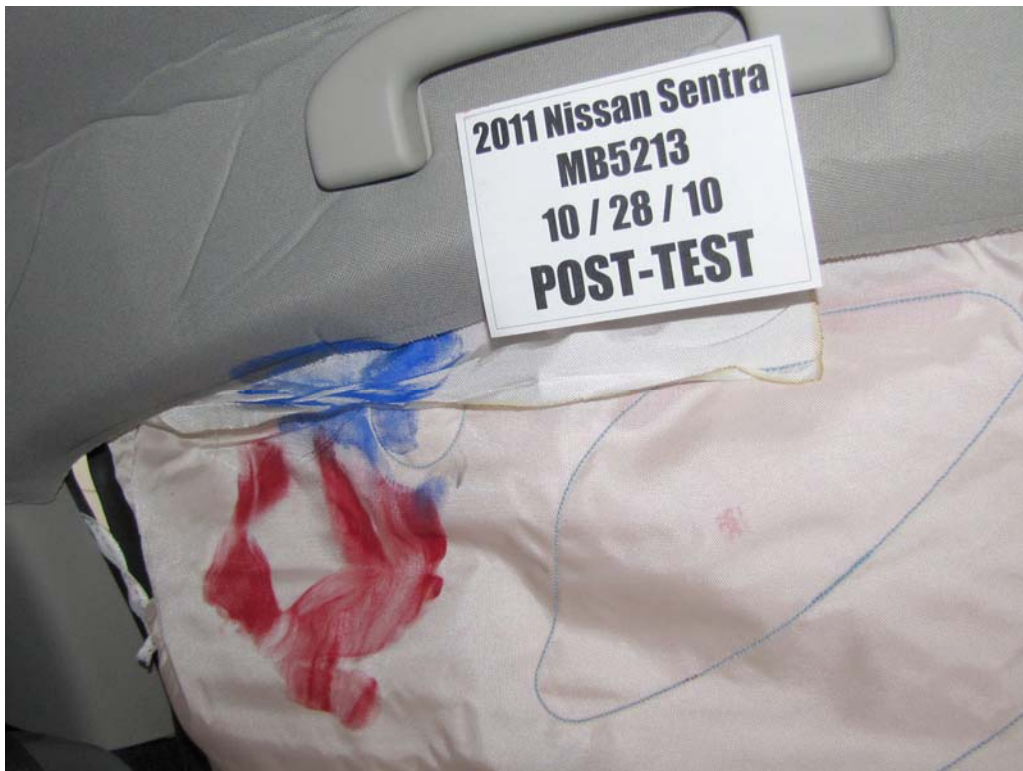


FIGURE 74. Post-Test Rear Passenger Dummy Close-Up
Head Contact With Side Airbag View



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

Photography Not Applicable
Vehicle Not Equipped with
Rear Side Airbag

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



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

Photography Not Applicable
Vehicle Not Equipped with
Rear Side Airbag

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



FIGURE 79. Pre-Test View of Fuel Filler Cap



FIGURE 80. Post-Test View of Fuel Filler Cap



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



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



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



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



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



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



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



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



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



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

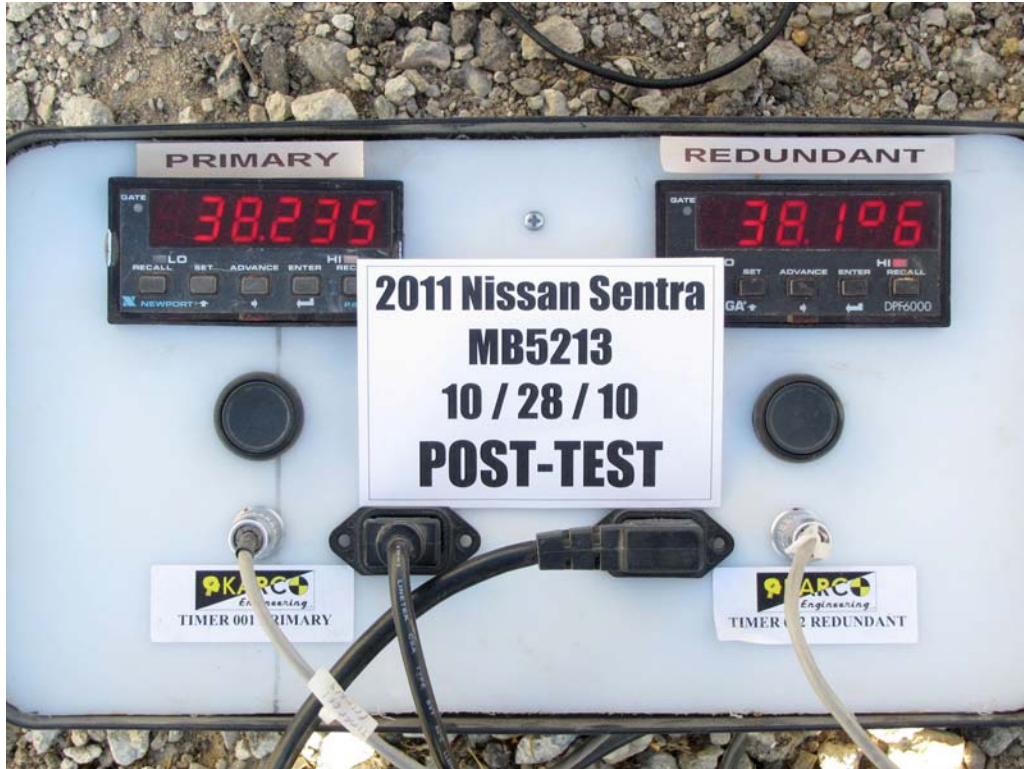


FIGURE 91. Pre-Test Ballast View

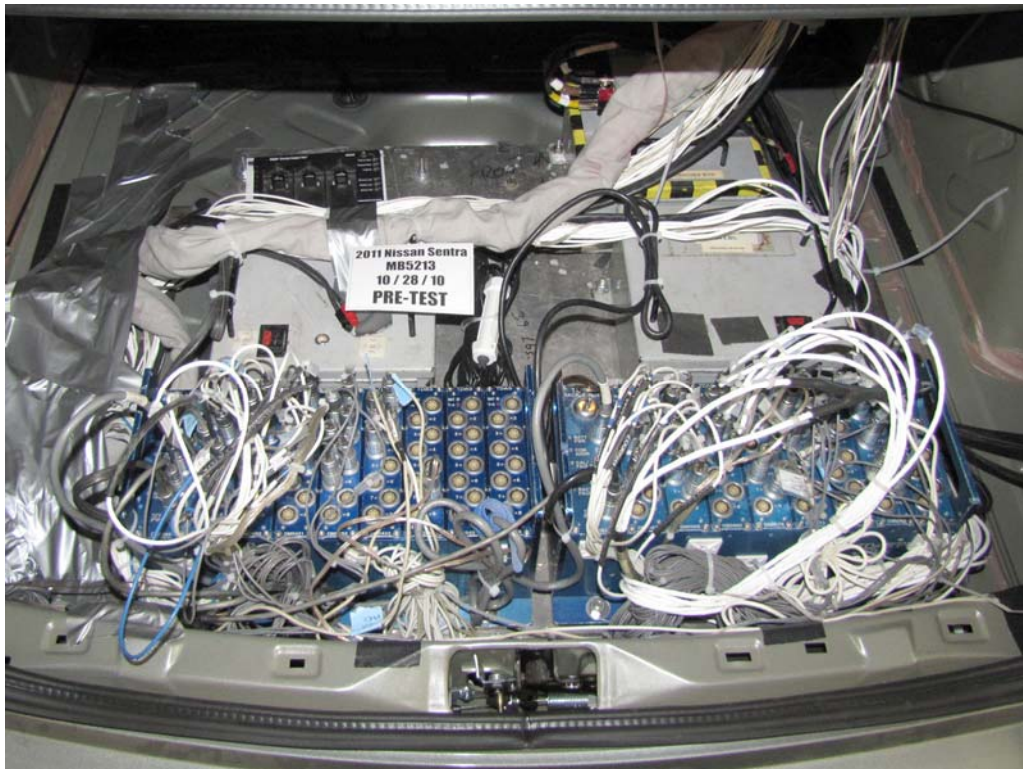


FIGURE 92. Post-Test Primary and Redundant Speed Trap Read-Out



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

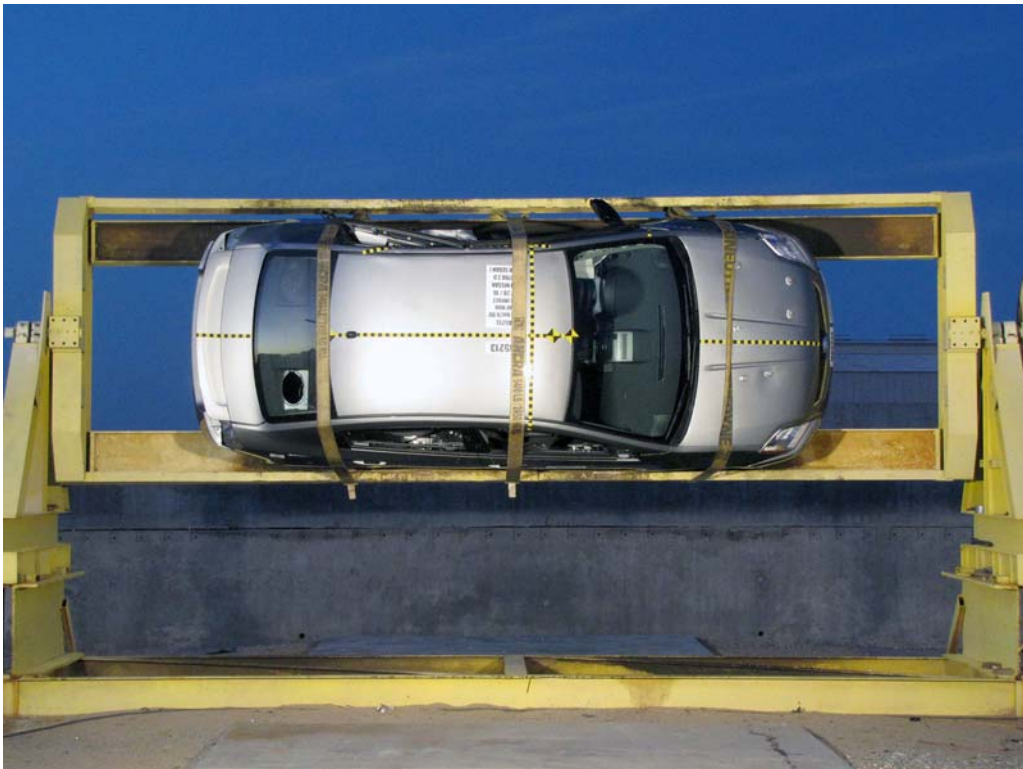


FIGURE 94. FMVSS No. 301/305 Rollover 90 Degrees



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



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

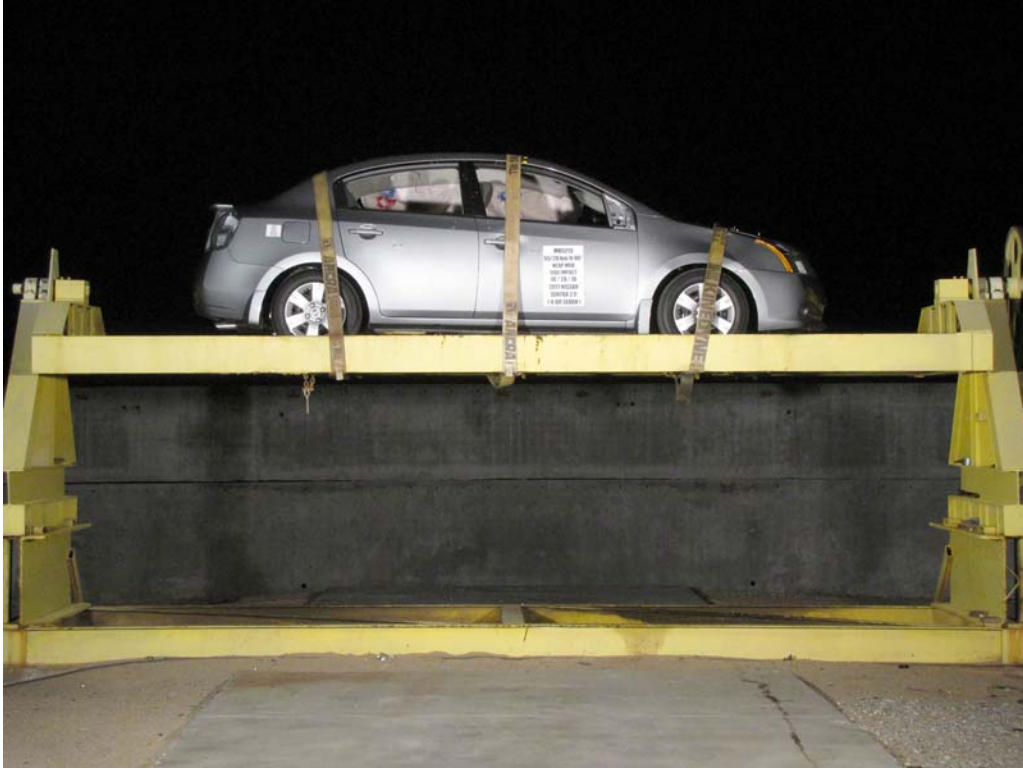


FIGURE 97. FMVSS No. 301/305 Rollover 360 Degrees



FIGURE 98. Impact Event

2011 SENTRA 2.0

Sensible With A Sense of Style

Standard Equipment Included at No Extra Charge

MECHANICAL & PERFORMANCE

- 2.0 Liter DOHC 4-Cylinder Engine
- 140 Horsepower & 147 lb-ft Torque
- 130 HP & 142 lb-ft Torque w/COAL Emissions
- Xtreme CVT™
- (Continuously Variable Transmission)
- Ultra Low Emissions Vehicle (ULEV) Rating
- (7/2011 EPA Rating w/COAL Emissions)
- Torsion Beam Rear Suspension
- Integrated Stabilizer Bar
- Independent Strut Front Suspension
- Front Stabilizer Bar
- Power-Assisted Steering
- Front Disc/Rear Drum Brakes
- Electric Power Assisted Steering
- 17" Steel Wheels w/Full Wheel Covers
- 205/60R15 All-Season Tires

SAFETY AND SECURITY

- Anti-Lock Brake System (ABS)
- Electronic Brake Force Distribution (EBD)
- Vehicle Dynamic Control (VDC)
- Traction Control System (TCS)
- Nissan Advanced Air Bag System (AABS)
- Driver and Front Passenger Side-Impact Supplemental Air Bags
- Roof-Mounted Curtain
- Side-Impact Supplemental Air Bags
- Front-Seat Active Head Restraints
- Front Seat Belts w/Inertia Lockers
- Load Limiters & Adjustable Upper Anchors
- 3-Point ALTELL Seat Belts for All Seating Positions (Driver ELB Only)
- Fasten Driver Seat Belt Warning Chime/Light
- Child Safety Rear Door Locks
- Lower Anchors and Tethers for Children (LATCH)
- Pipe-Style Steel Side Door Guard Beams
- Hood Buckling Chime & Safety Stop
- Energy-Absorbing Steering Column
- Tire Pressure Monitoring System (TPMS)
- Nissan Vehicle Immobilizer System

COMFORT & CONVENIENCE

- Air Conditioning w/Cabin Microfilter
- Power Windows w/Driver's One Touch
- Auto Up/Down w/Auto-Reverse Feature
- Power Door Locks w/Auto-Locking Feature
- 4-Speaker Audio System w/AM/FM/CD
- Auxiliary Input Jack
- Covered Upper Console Storage Bin
- Suede Cloth Seat Trim
- 60/40 Split Fold-Flat Rear Seats
- 4-Way Adjustable Driver's Seat
- Driver & Passenger Door Storage Pockets
- 16 Steering Column
- Variable Intermittent Windshield Wipers
- Electric Rear Window Defroster w/Timer
- Remote Fuel Filler Door & Trunk Release
- Passenger Side Covered Viper Varsity Mirror
- Front & Rear Passenger Side Folding-Style Assist Grips
- Rear Seat Center Armrest w/Cup Holders

EXTERIOR FEATURES

- Chrome Trunk Lid Finisher
- Body-Color Fenders & Door Handles
- Body-Color Manual Adj. Side Mirrors
- Rear Decklid Spoiler w/Integrated Brake Light

Monroney's Suggested Retail Base Price: \$16,700.00

Options Included by Manufacturer:

- SPLASH GUARDS: 140.00
- FLOOR MATS (4pc): 110.00

Destination Charge: 750.00

Total: \$17,700.00

EPA Fuel Economy Estimates

CITY MPG	Estimated Annual Fuel Cost	HIGHWAY MPG
27	\$1,498	34

Expected range for most drivers: **22 to 32 MPG**

Based on 15,000 miles at \$3.00 per gallon

Combined Fuel Economy

This Vehicle: **30**

AT MIDSIZE CARS

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

GOVERNMENT SAFETY RATINGS

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

Side Crash	Front seat Rear seat	To Be Rated To Be Rated
Star ratings based on the risk of injury in a side impact.		

Rollover

Star ratings based on the risk of rollover in a single vehicle crash.

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

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

This Vehicle qualifies for Nissan's **Security+Plus Vehicle Protection Plan**

The only service agreement backed by Nissan. Ask your dealer for details, or call 1-800-NISSAN-1 for more information.

DELIVERY

VEHICLE COLORS: EX1 MAGNETIC GRAY INT. CHARCOAL

FINAL ASSEMBLY POINT: AGUAS/ABV/MEX

TRANSPORT METHOD: TRUCK

DEALER: NISSAN OF SAN BERNARDINO 735 SHOWCASE DR S SAN BERNARDINO CA 92408

VIN: 3N1AB6AP0BL612740
 EMS: CALIFORNIA EMISSIONS
 MDL: 12011-612740 K36-X
 OPT: A-B10C01B2

20100827015930R03472

FIGURE 99. Monroney Label

HEAD RESTRAINTS

WARNING

Head restraints supplement the other vehicle safety systems. They may provide additional protection against injury in certain rear-end collisions. Adjust the head restraints properly, as specified in this section. Check the adjustment after someone else uses the seat. Do not attach anything to the head restraint stalks or remove the head restraint. Do not use the seat if the head restraint has been removed. If the head restraint was removed, reinstall and properly adjust the head restraint before an occupant uses the seating position. Failure to follow these instructions can reduce the effectiveness of the head restraints. This may increase the risk of serious injury or death in a collision.

Center armrest (if so equipped): Pull the armrest down until it is horizontal.

1-8 Safety—Seats, seat belts and supplemental restraint system

Components

- Head restraint
- Adjustment notches
- Lock knob
- Stake

Adjustment

Adjust the head restraint so the center is level with the center of the seat occupant's ears.

To raise the head restraint, pull it up.

1-9 Safety—Seats, seat belts and supplemental restraint system

Removal

- Use the following procedure to remove the adjustable head restraints.
1. Pull the head restraint up to the highest position.
2. Push and hold the lock knob.
3. Remove the head restraint from the seat.
4. Store the head restraint properly as it is not to be used in the vehicle.
5. Reinstall and properly adjust the head restraint before an occupant uses the seating position.

Install

1. Align the head restraint stalk with the holes in the seat. Make sure the head restraint is facing the correct direction. The stalk with the adjustment notches (2) must be installed in the hole with the lock knob (3).
2. Push and hold the lock knob and push the head restraint down.
3. Properly adjust the head restraint before an occupant uses the seating position.

Front-seat Active Head Restraints

The Active Head Restraint moves forward utilizing the force that the seatback receives from the occupant in a rear-end collision. The movement of the head restraint helps support the occupant's head by reducing the backward movement and helping absorb some of the forces that may lead to whiplash-type injuries.

Active Head Restraints are effective for collisions at low to medium speeds in which it is said that whiplash injury occurs most.

Active Head Restraints operate only in certain rear-end collisions. After the collision, the head restraints return to their original position.

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

Photograph Not Applicable

No Passenger Head Restraint
Use and Adjustment
Information in Vehicle Manual

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

APPENDIX B
DUMMY RESPONSE DATA

TABLE OF DATA PLOTS

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

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

www.NHTSA.dot.gov.

Driver & Passenger Dummy Instrumentation Data

Driver Lower Spine T12 Acceleration (X)

Driver Lower Spine T12 Acceleration (Y)

Driver Lower Spine T12 Acceleration (Z)

Passenger Upper Thorax Rib Deflection (Y)

Passenger Middle Thorax Rib Deflection (Y)

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

Vehicle Instrumentation Data

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

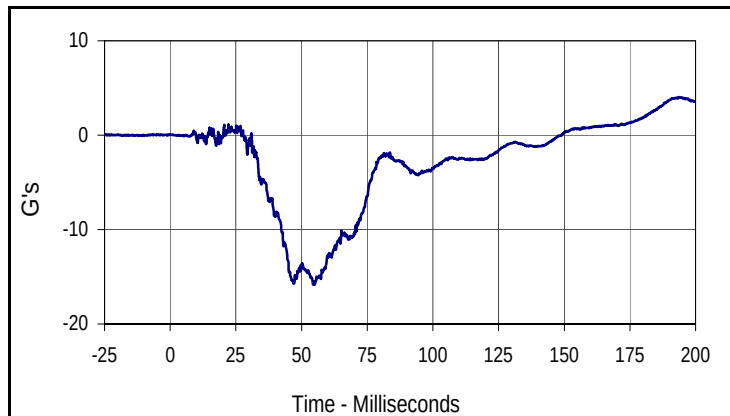
Front Seat Track Acceleration (Y)
Rear Seat Track Acceleration (Y)
Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)

MDB Instrumentation Data

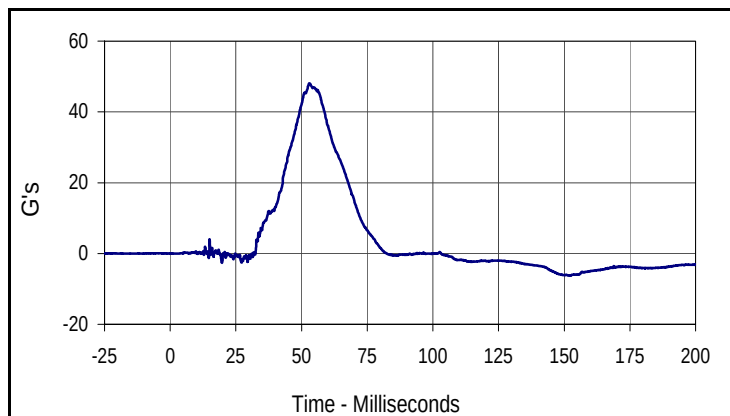
MDB Center of Gravity Acceleration (X)
MDB Center of Gravity Acceleration (Y)
MDB Center of Gravity Acceleration (Z)
MDB Rear Acceleration (X)
MDB Rear Acceleration (Y)
Left MDB Contact Switch
Right MDB Contact Switch

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

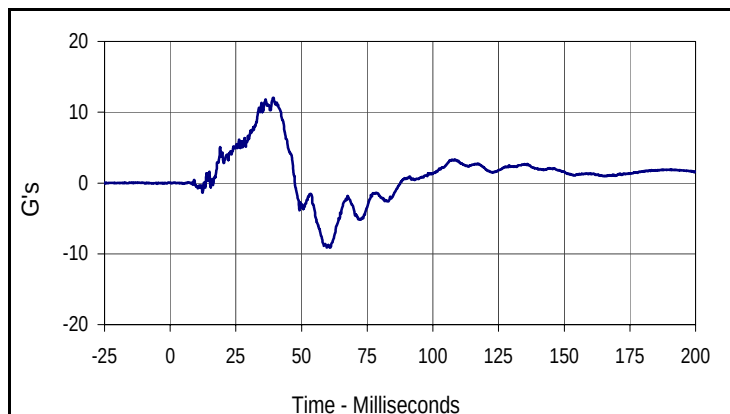
Test Date: 10/28/10
 NHTSA No.: MB5213



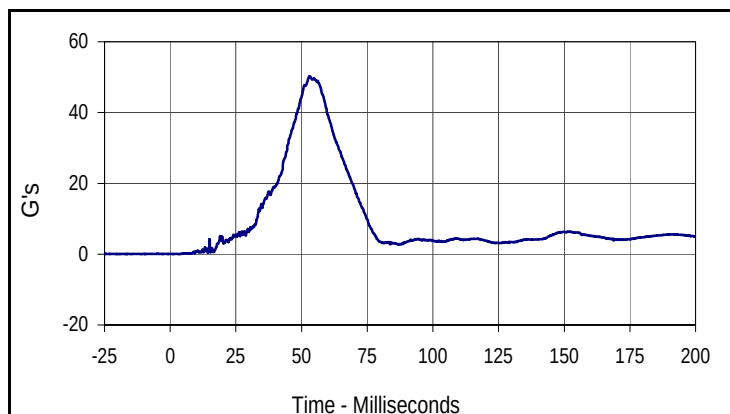
Curve Description			
Driver Head Acceleration X Primary			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
4.0	193.7	-15.9	54.9



Curve Description			
Driver Head Acceleration Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
48.0	53.1	-6.3	151.7



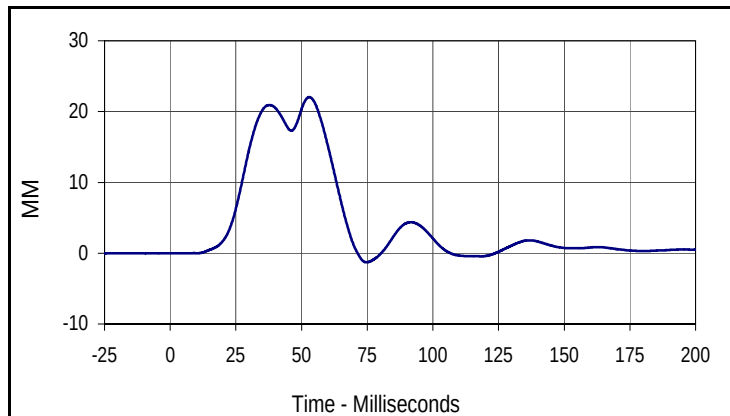
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CURNO	Type	SAE Class	Units
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Max	Time	Min	Time
12.0	39.3	-9.1	61.0



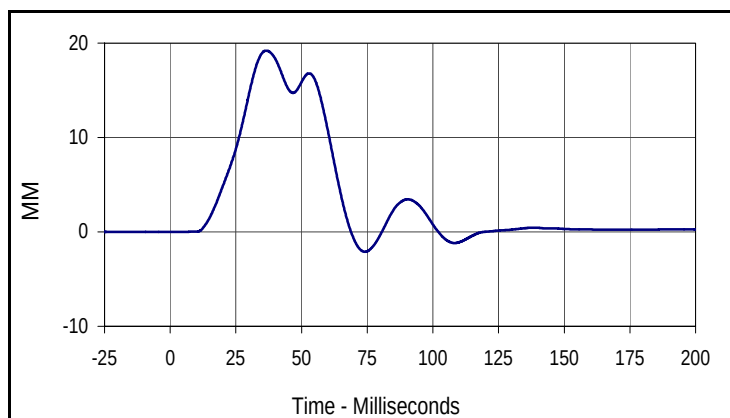
Curve Description			
Driver Head Resultant Acceleration Primary			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
50.3	53.1	0.0	1.2

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

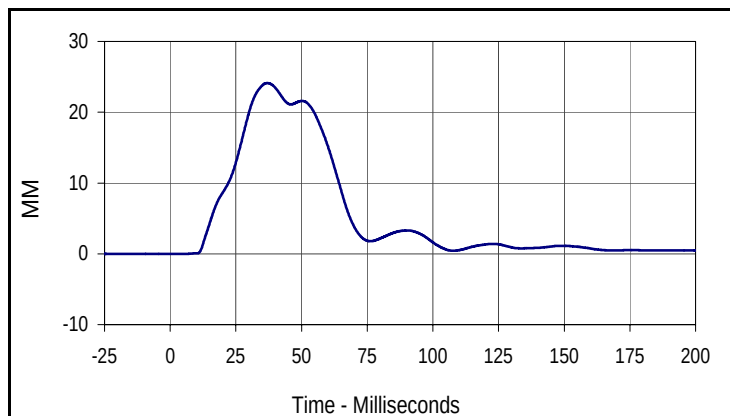
Test Date: 10/28/10
 NHTSA No.: MB5213



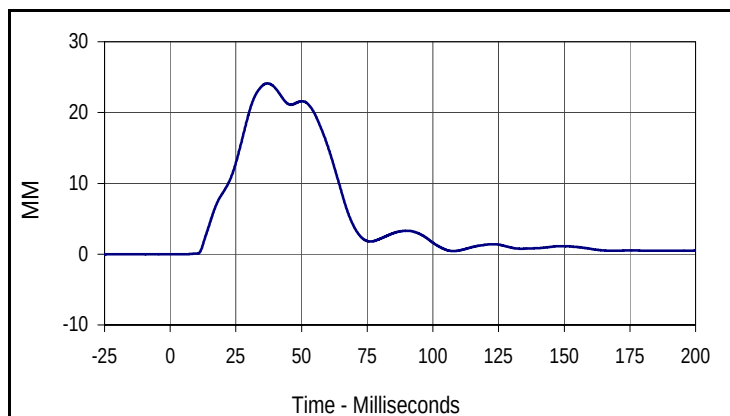
Curve Description			
Driver Upper Thorax Rib Deflection Y			
CURNO	Type	SAE Class	Units
007	FIL	180	MM
Max	Time	Min	Time
22.0	53.0	-1.3	74.8



Curve Description			
Driver Middle Thorax Rib Deflection Y			
CURNO	Type	SAE Class	Units
008	FIL	180	MM
Max	Time	Min	Time
19.2	36.6	-2.1	74.2



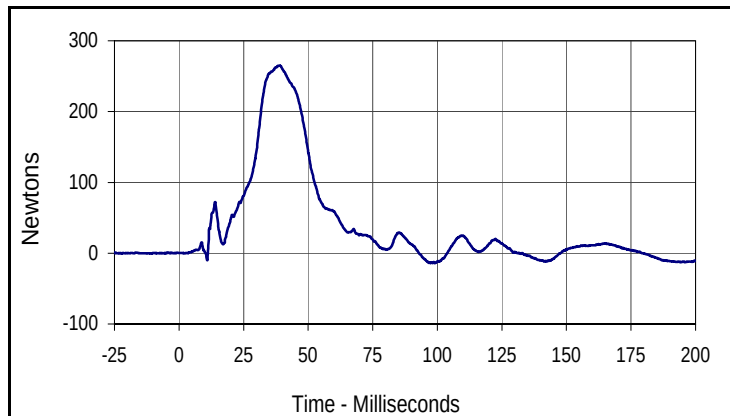
Curve Description			
Driver Lower Thorax Rib Deflection Y			
CURNO	Type	SAE Class	Units
009	FIL	180	MM
Max	Time	Min	Time
24.1	36.9	0.0	3.5



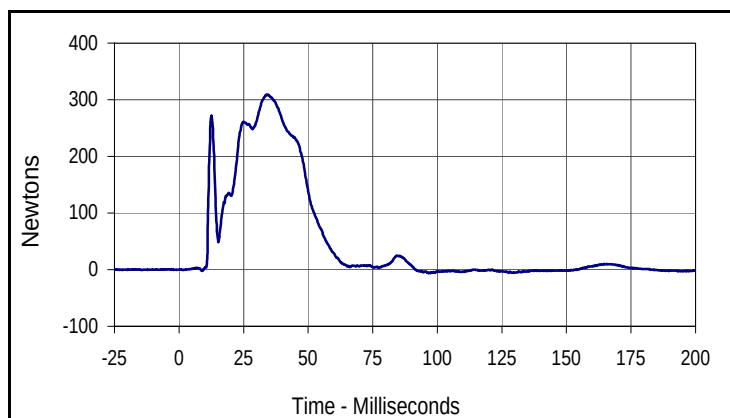
Curve Description			
Driver Thorax Rib Deflection Maximum			
CURNO	Type	SAE Class	Units
010	FIL	180	MM
Max	Time	Min	Time
24.1	36.9	0.0	3.5

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

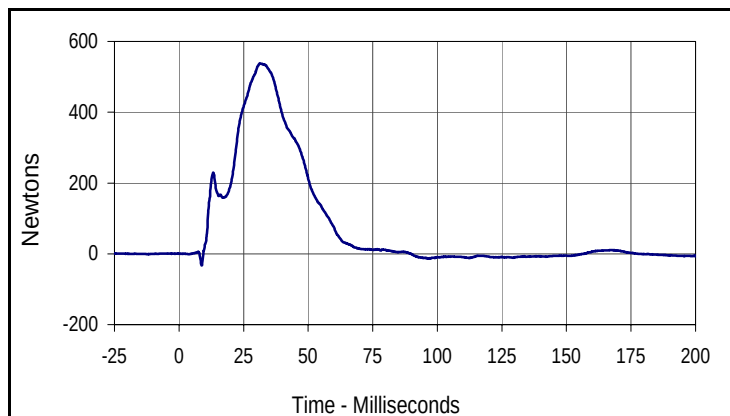
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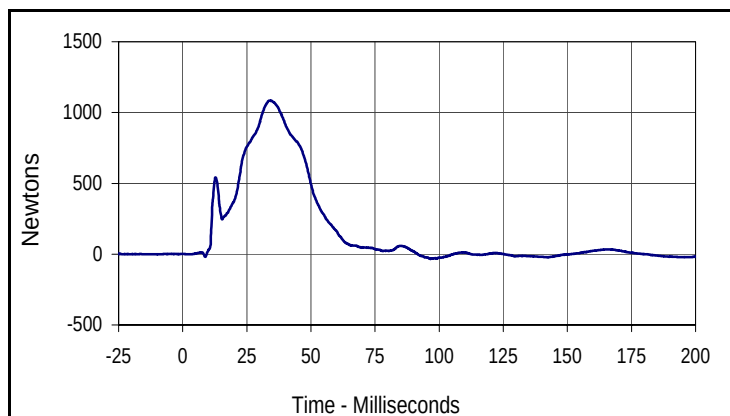
Curve Description			
Driver Anterior Abdominal Force Y			
CURNO	Type	SAE Class	Units
013	FIL	600	Newtons
Max	Time	Min	Time
265.0	39.0	-14.1	98.1



Curve Description			
Driver Middle Abdominal Force Y			
CURNO	Type	SAE Class	Units
014	FIL	600	Newtons
Max	Time	Min	Time
308.9	34.5	-6.3	96.7



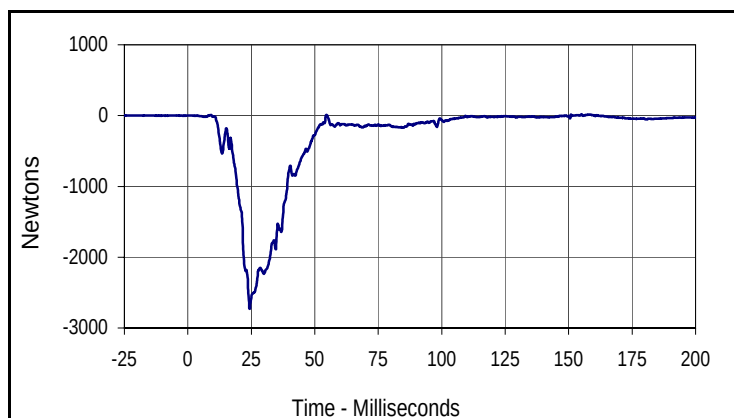
Curve Description			
Driver Posterior Abdominal Force Y			
CURNO	Type	SAE Class	Units
015	FIL	600	Newtons
Max	Time	Min	Time
538.2	31.3	-32.5	8.8



Curve Description			
Driver Total Abdominal Force			
CURNO	Type	SAE Class	Units
013	RES	600	Newtons
Max	Time	Min	Time
1085.0	33.8	-33.4	96.7

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

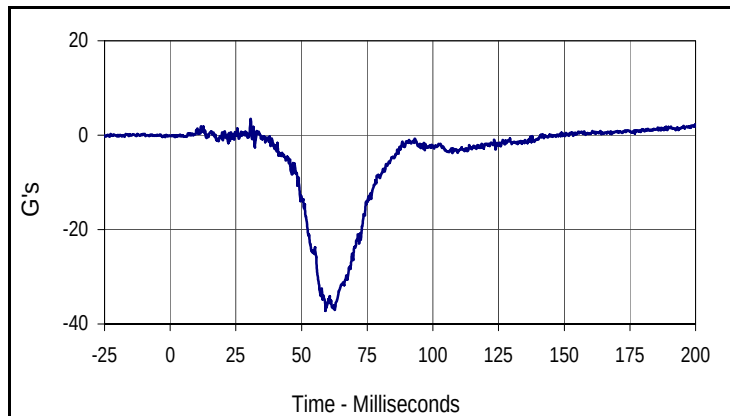
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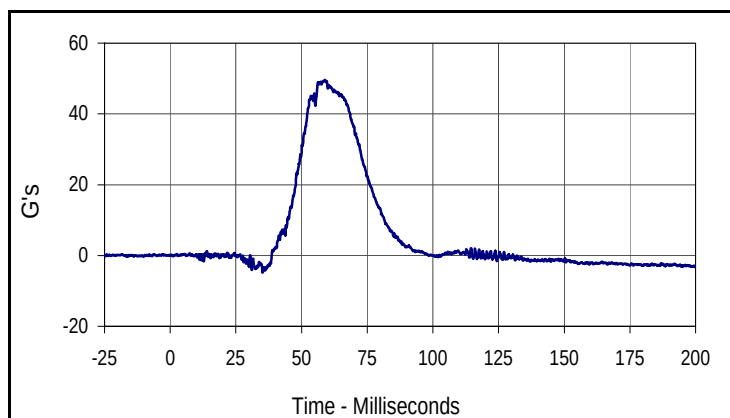
Curve Description			
Driver Pubic Symphysis Force Y			
CURNO	Type	SAE Class	Units
016	FIL	600	Newtons
Max	Time	Min	Time
18.2	155.0	-2730.9	24.4

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

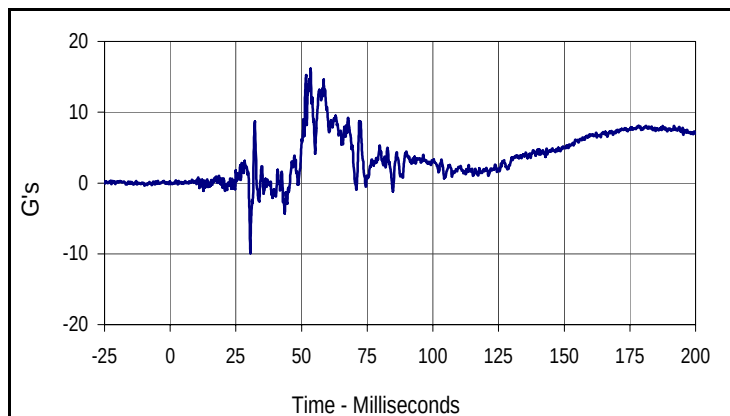
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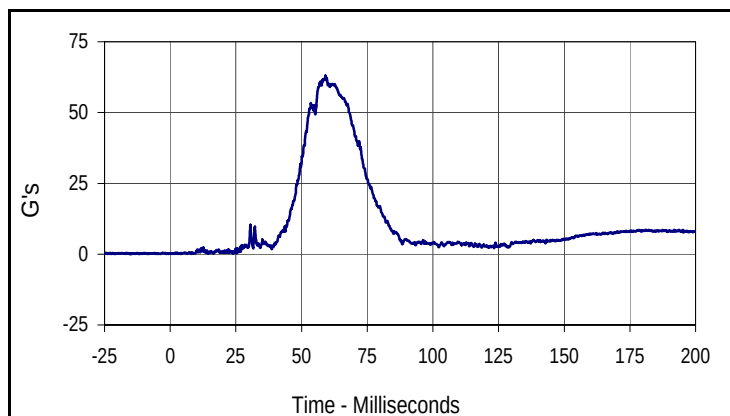
Curve Description			
Passenger Head Acceleration X Primary			
CURNO	Type	SAE Class	Units
021	FIL	1000	G's
Max	Time	Min	Time
3.5	30.7	-37.2	59.1



Curve Description			
Passenger Head Acceleration Y Primary			
CURNO	Type	SAE Class	Units
022	FIL	1000	G's
Max	Time	Min	Time
49.6	58.9	-4.8	35.2



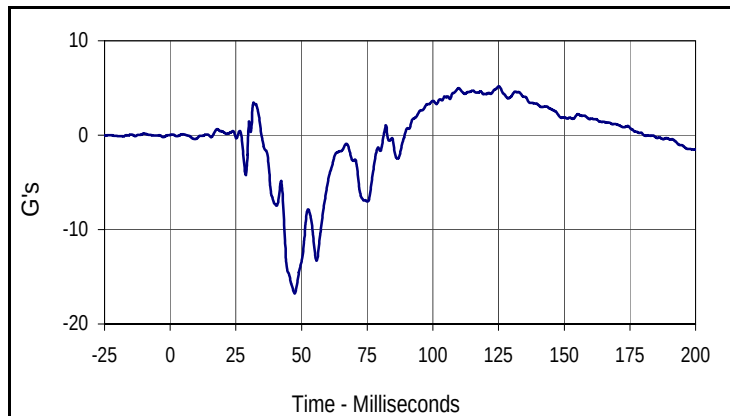
Curve Description			
Passenger Head Acceleration Z Primary			
CURNO	Type	SAE Class	Units
023	FIL	1000	G's
Max	Time	Min	Time
16.1	53.5	-9.9	30.5



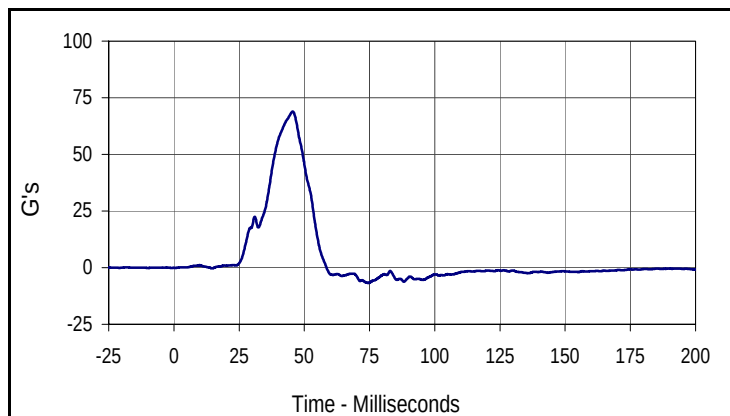
Curve Description			
Passenger Head Acceleration Resultant Primary			
CURNO	Type	SAE Class	Units
021	RES	1000	G's
Max	Time	Min	Time
63.0	59.1	0.1	8.0

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

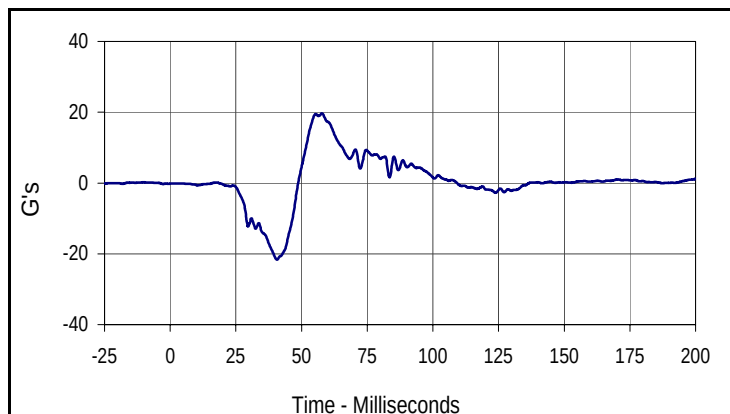
Test Date: 10/28/10
 NHTSA No.: MB5213



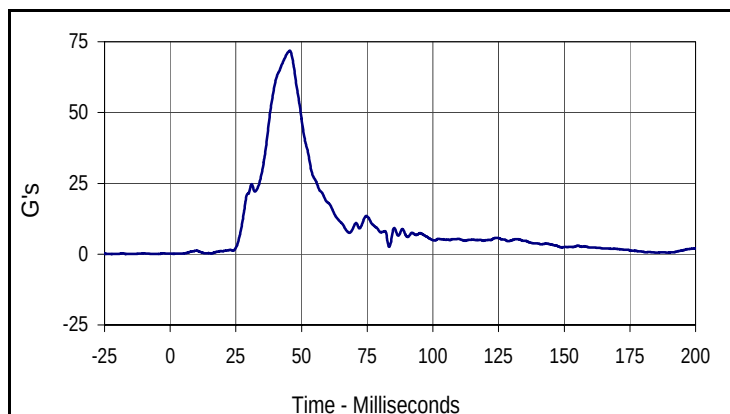
Curve Description			
Passenger Lower Spine T12 Acceleration X			
CURNO	Type	SAE Class	Units
037	FIL	180	G's
Max	Time	Min	Time
5.2	125.0	-16.8	47.4



Curve Description			
Passenger Lower Spine T12 Acceleration Y			
CURNO	Type	SAE Class	Units
038	FIL	180	G's
Max	Time	Min	Time
68.9	45.5	-6.7	74.5



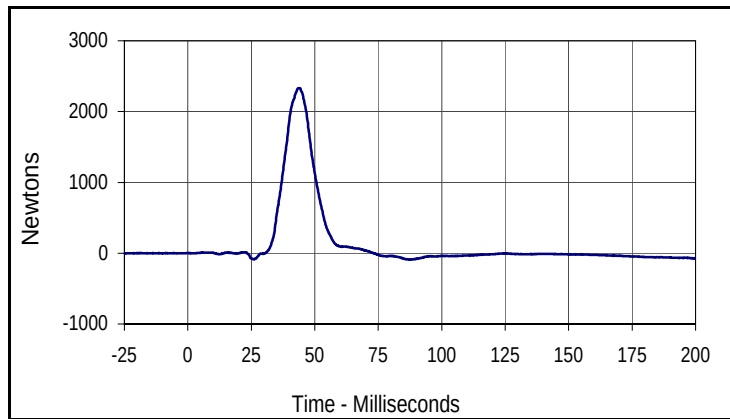
Curve Description			
Passenger Lower Spine T12 Acceleration Z			
CURNO	Type	SAE Class	Units
039	FIL	180	G's
Max	Time	Min	Time
19.6	57.8	-21.7	40.6



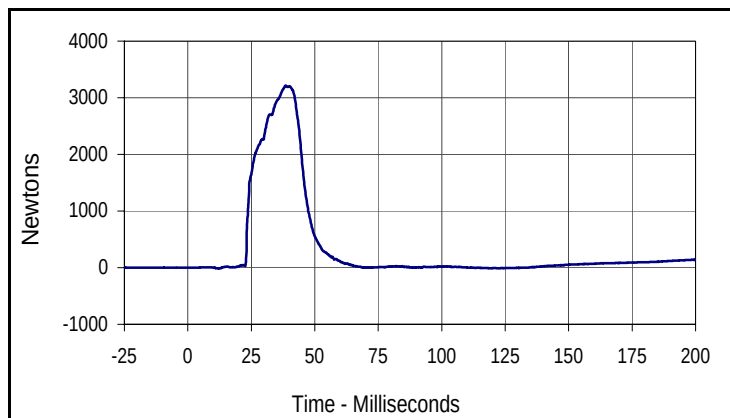
Curve Description			
Passenger Lower Spine T12 Acceleration Resultant			
CURNO	Type	SAE Class	Units
037	RES	180	G's
Max	Time	Min	Time
71.8	45.5	0.1	1.4

Test Vehicle: 2011 Nissan Sentra 2.0 4-Door Sedan
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

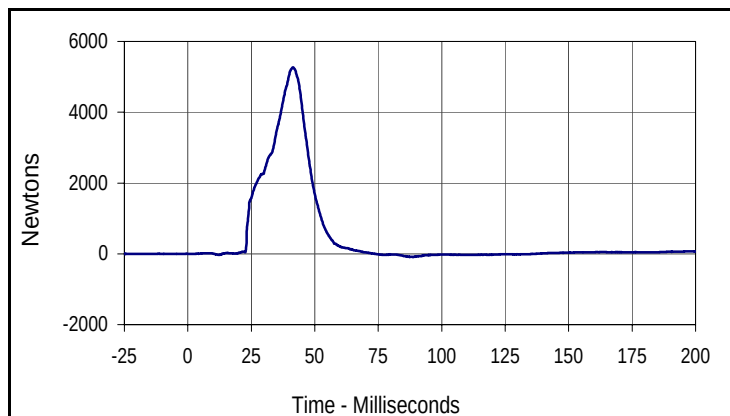
Test Date: 10/28/10
 NHTSA No.: MB5213



Curve Description			
Passenger Iliac Wing Force on Impact Side Y			
CURNO	Type	SAE Class	Units
043	FIL	600	Newtons
Max	Time	Min	Time
2332.5	43.6	-91.7	87.4



Curve Description			
Passenger Acetabulum Force on Impact Side Y			
CURNO	Type	SAE Class	Units
042	FIL	600	Newtons
Max	Time	Min	Time
3213.5	38.5	-14.2	11.9



Curve Description			
Passenger Total Pelvic Force			
CURNO	Type	SAE Class	Units
042	SUM	600	Newtons
Max	Time	Min	Time
5271.4	41.4	-89.5	87.4

APPENDIX C
DUMMY CALIBRATION DATA

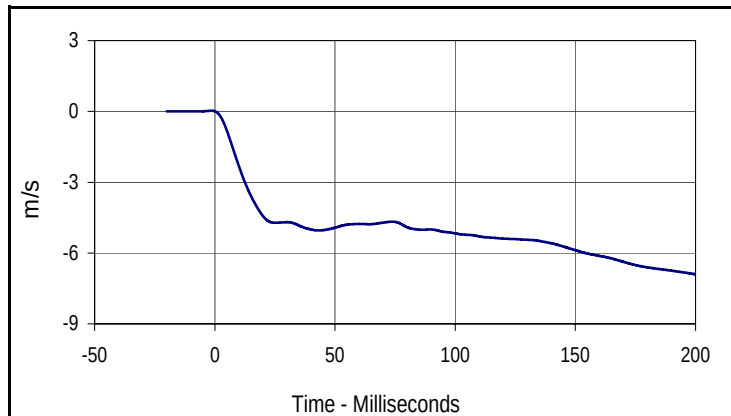
APPENDIX C
PRE-TEST / HIII CONFIGURATION AND PERFORMANCE VERIFICATION DATA

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

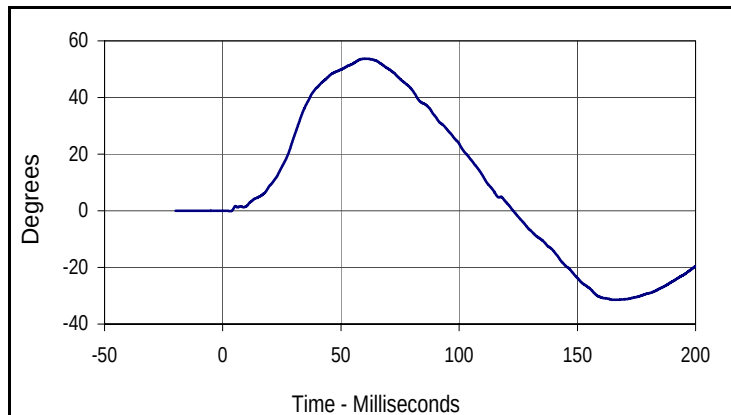
Test Date: 10/22/10
 Test I.D.: NB10D



Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	3.30 to 3.50	3.41	Pass
Pendulum Deceleration	1 msec	m/s	0.0 to -.050	-0.048	Pass
	3 msec	m/s	-.250 to -.375	-0.327	Pass
	14 msec	m/s	-3.20 to -3.70	-3.36	Pass
Headform Rotation	Max	Degrees	49.0 to 58.0	53.7	Pass
	Time	msec	54.0 to 66.0	60.9	Pass
Maximum Rotation To Time Zero Crossing		msec	53.0 to 88.0	62.0	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.4	-6.9	200.0



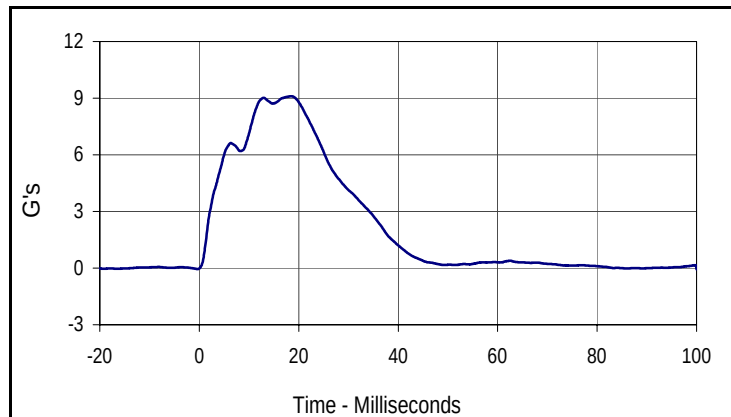
Curve Description			
Headform Rotation			
CURNO	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
53.7	60.9	-31.4	164.9

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

Test Date: 10/22/10
 Test I.D.: SH10D



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.20 to 4.40	4.24	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	9.1	Pass
Overall Test Results				Pass



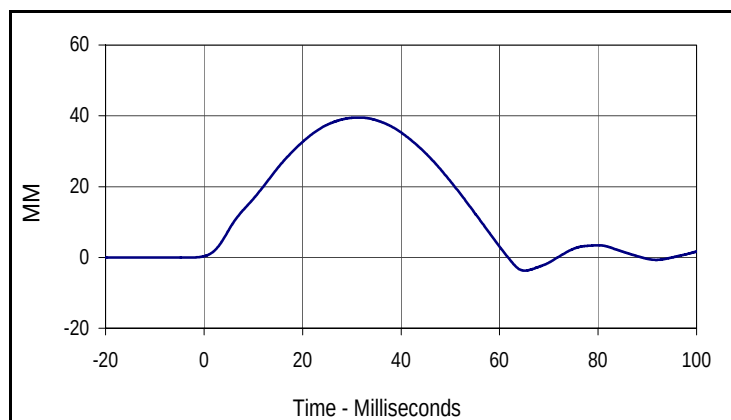
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
9.1	18.5	0.0	-0.4

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

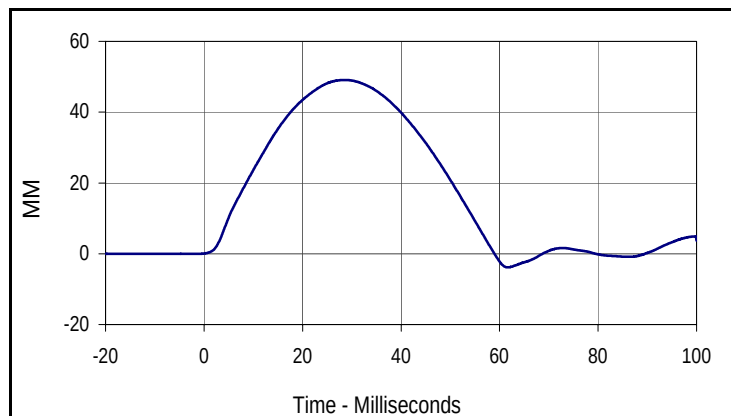
Test Date: 10/22/10
 Test I.D.: RIB10J



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Rib Deflection at 459 MM Drop Height	MM	36 to 40	39.5	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	49.1	Pass
Overall Test Results			Pass	



Curve Description			
Upper Rib Deflection (459 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
39.5	31.4	-3.7	65.1



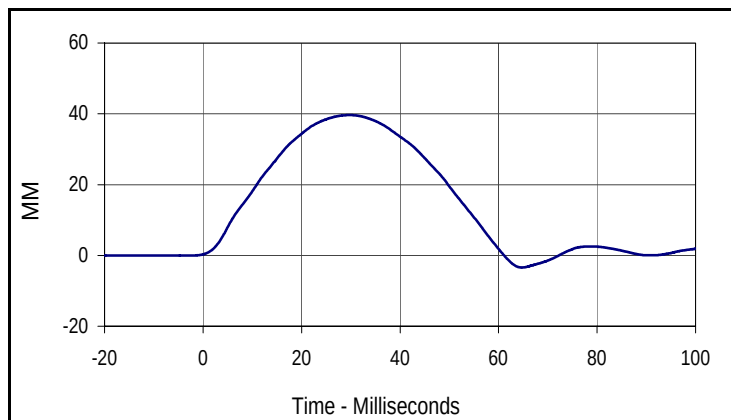
Curve Description			
Upper Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
49.1	28.6	-3.9	61.7

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

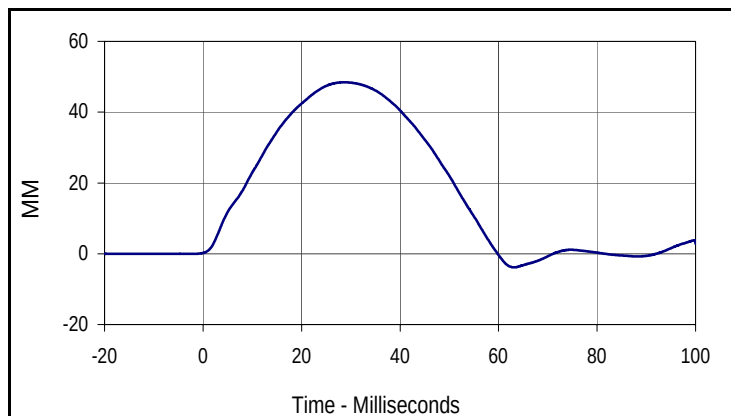
Test Date: 10/22/10
 Test I.D.: RIB10K



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Rib Deflection at 459 MM Drop Height	MM	36 to 40	39.6	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	48.4	Pass
Overall Test Results			Pass	



Curve Description			
Middle Rib Deflection (459 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
39.6	29.7	-3.4	64.7



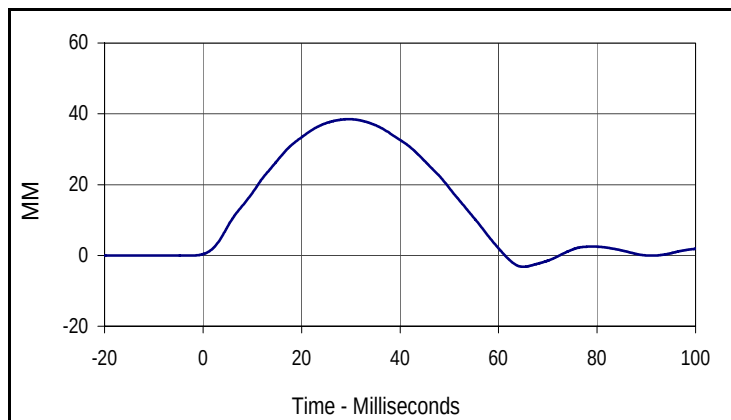
Curve Description			
Middle Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
48.4	28.7	-3.8	63.1

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

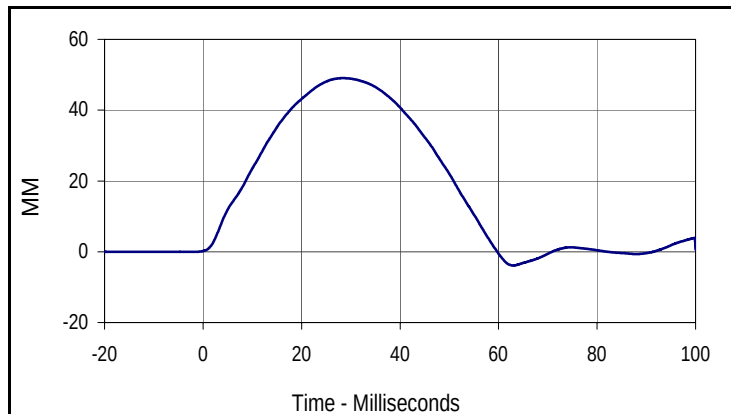
Test Date: 10/22/10
 Test I.D.: RIB10L



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	49.0	Pass
Overall Test Results			Pass	



Curve Description			
Lower Rib Deflection (459 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
38.5	29.6	-3.2	65.0



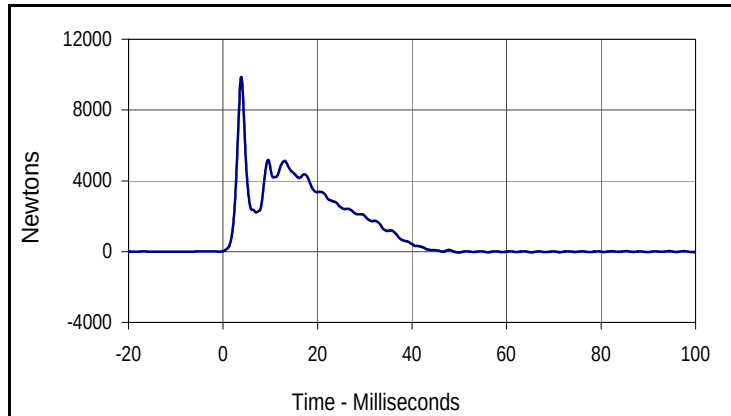
Curve Description			
Lower Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
49.0	28.4	-3.9	63.0

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

Test Date: 10/22/10
 Test I.D.: TH10C



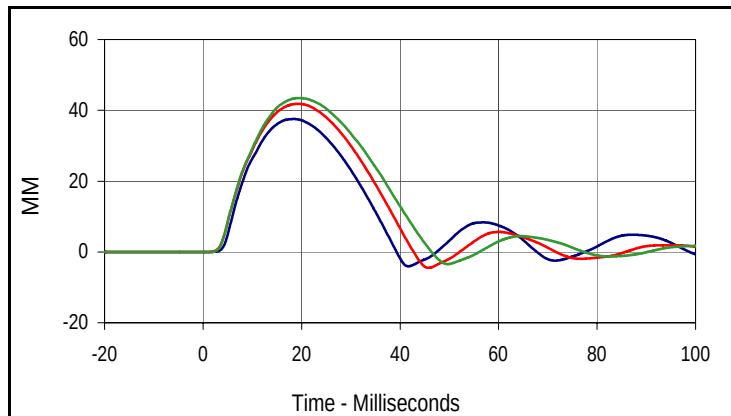
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	5.40 to 5.60	5.42	Pass
Impactor Force	N	5100 to 6200	5186.0	Pass
	msec	> 6.0 msec	9.5	Pass
Upper Rib Deflection	MM	34 to 41	37.6	Pass
Middle Rib Deflection	MM	37 to 45	41.8	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
9861.0	3.9	-50.2	49.8



Curve Description

Upper, Middle, Lower Rib Deflections

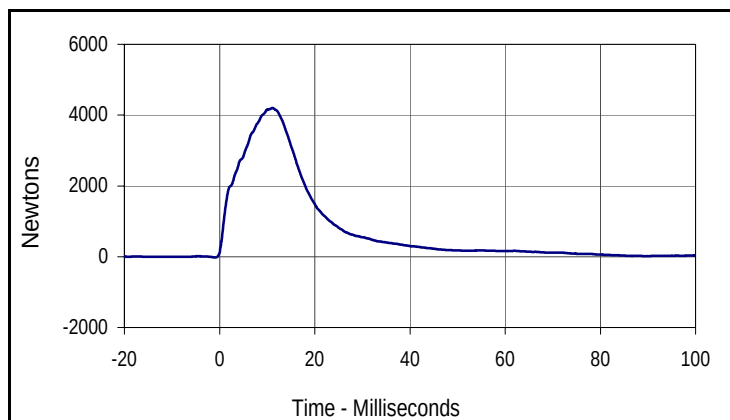
CURNO(s)	Type	SAE Class	Units
002-003-004	FIL	180	MM
Max (Upper)	Time	Min (Upper)	Time
37.6	18.4	-4.1	41.7
Max (Middle)	Time	Min (Middle)	Time
41.8	19.4	-4.5	45.8
Max (Lower)	Time	Min (Lower)	Time
43.5	19.5	-3.4	49.7

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

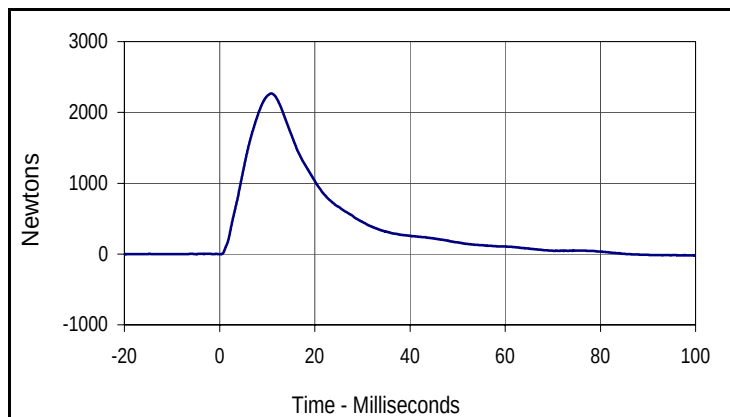
Test Date: 10/22/10
 Test I.D.: ABD10D



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	3.95	Pass
Impactor Force	N	4000 to 4800	4199.6	Pass
	msec	10.6 to 13.0	11.1	Pass
Abdominal Force	N	2200 to 2700	2267.5	Pass
	msec	10.0 to 12.3	10.9	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4199.6	11.1	-23.4	-0.9



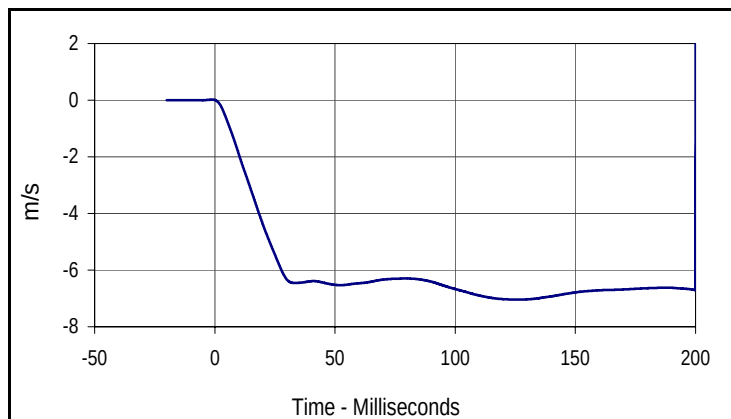
Curve Description			
Abdomen Sum Resultant			
CURNO	Type	SAE Class	Units
002	RES	600	Newtons
Max	Time	Min	Time
2267.5	10.9	-18.7	98.8

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

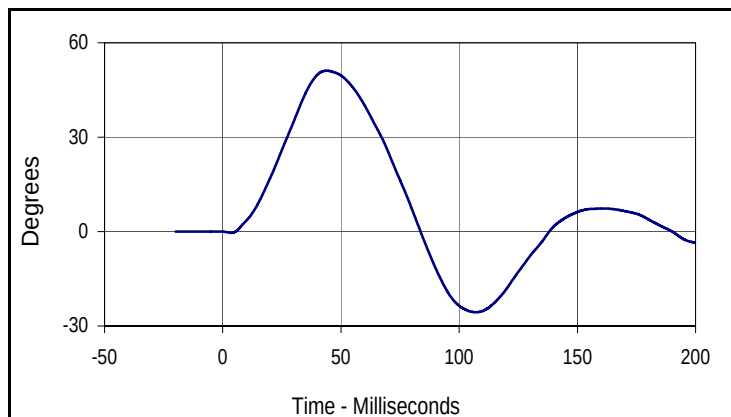
Test Date: 10/22/10
 Test I.D.: SP10D



Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.95 to 6.15	6.08	Pass
Pendulum Deceleration	1 msec	m/s	0.0 to -.050	-0.036	Pass
	3.7 msec	m/s	-.240 to -.425	-0.422	Pass
	27 msec	m/s	-5.80 to -6.50	-5.86	Pass
	30 msec	m/s	< -6.50	-6.34	Pass
Headform Rotation	Max	Degrees	45.0 to 55.0	51.1	Pass
	Time	msec	39.0 to 53.0	43.9	Pass
Maximum Rotation To Time Zero Crossing		msec	37.0 to 57.0	39.8	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
3.7	200.0	-7.0	126.0



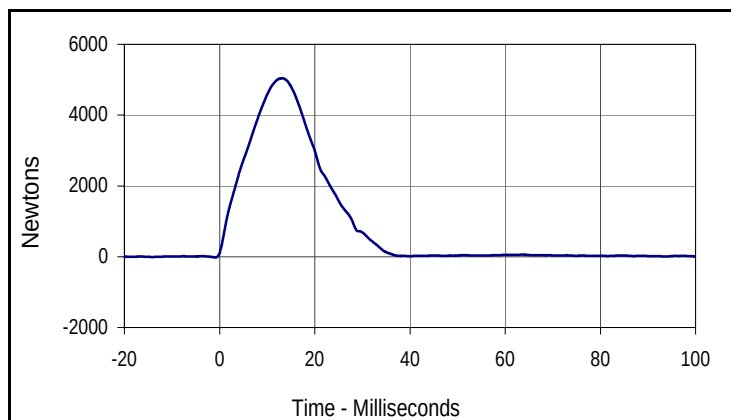
Curve Description			
Headform Rotation			
CURNO	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
51.1	43.9	-25.6	107.0

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

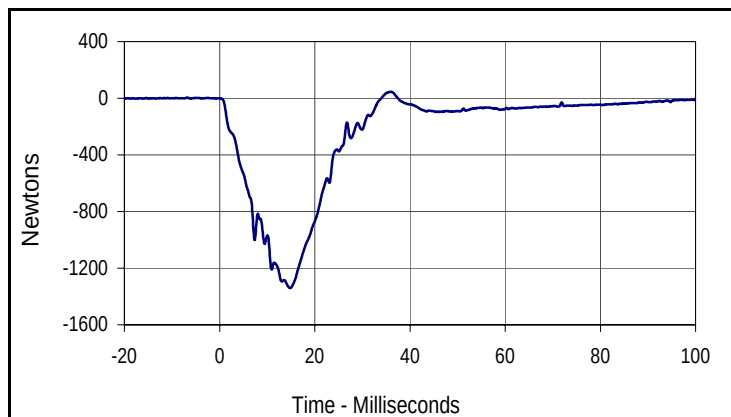
Test Date: 10/22/10
 Test I.D.: PL10D



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	5040.1	Pass
	msec	11.8 to 16.1	13.2	Pass
Pubic Symphysis Load	N	-1230 to -1590	-1339.9	Pass
	msec	12.2 to 17.0	14.8	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
5040.1	13.2	-22.0	-0.9



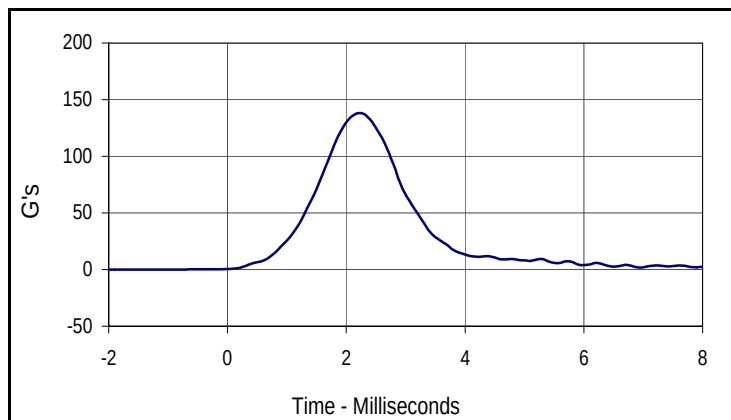
Curve Description			
Pubic FY			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
45.2	36.0	-1339.9	14.8

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

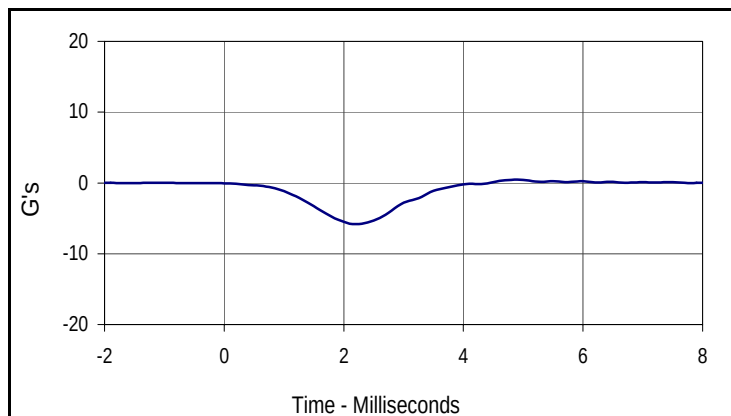
Test Date: 10/22/10
 Test I.D.: HD10D



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	125 to 155	138.1	Pass
Peak Longitudinal Acceleration	G's	≤15	5.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	6.8	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
138.1	2.2	0.0	-2.0



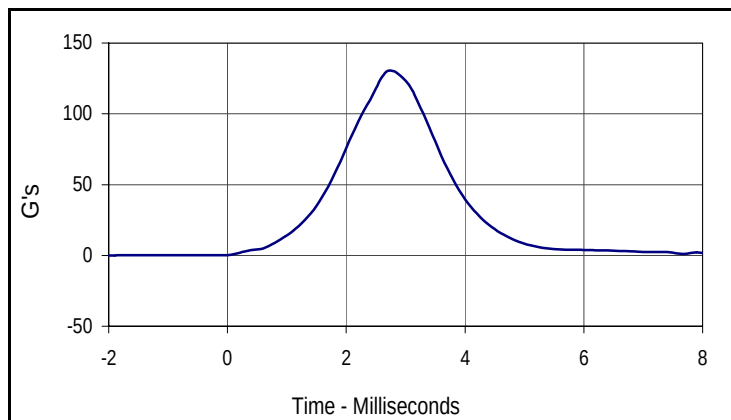
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.5	4.9	-5.8	2.2

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

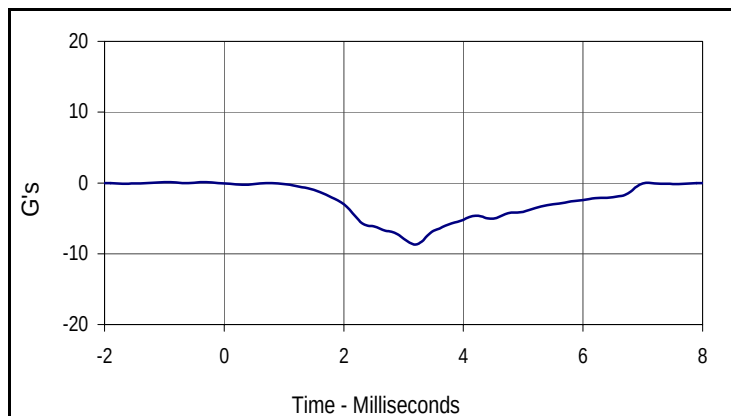
Test Date: 10/22/10
 Test I.D.: HDF10D



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	115 to 137	130.4	Pass
Peak Longitudinal Acceleration	G's	≤15	8.7	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	6.4	Pass
Overall Test Results			Pass	



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



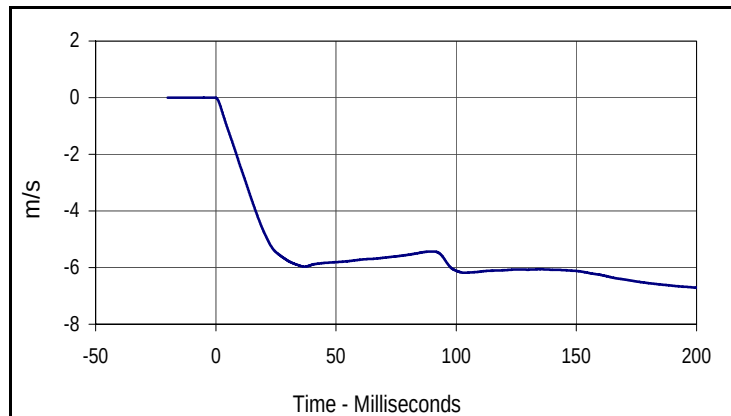
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.1	-1.0	-8.7	3.2

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

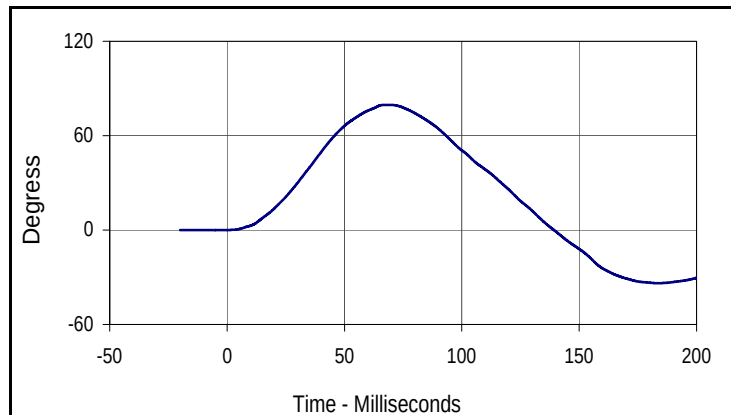
Test Date: 10/22/10
 Test I.D.: NBF10D



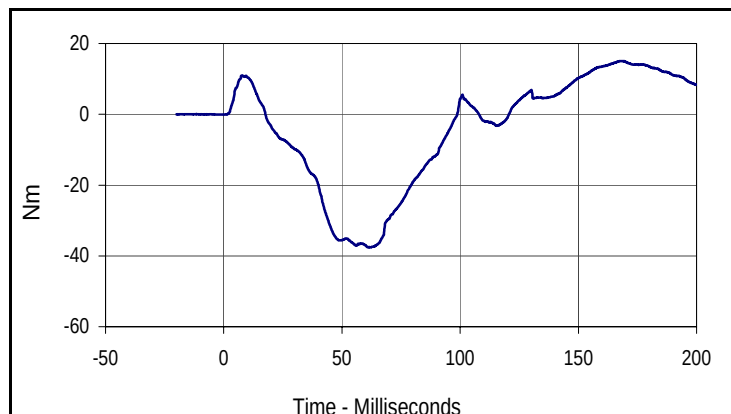
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.55	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.4	Pass
	15 msec	m/s	-3.30 to -4.10	-3.6	Pass
	20 msec	m/s	-4.40 to -5.40	-4.7	Pass
	25 msec	m/s	-5.40 to -6.10	-5.5	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.1	Pass
Translation-Rotation	Max	Degrees	71.0 to 81.0	79.6	Pass
	Time	msec	50.0 to 70.0	67.2	Pass
Peak Occipital Condyle Moment		Nm	-36.0 to -44.0	-37.6	Pass
Decaying Moment Time to Cross 0 Nm		msec	102.0 to 126.0	120.7	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	-0.6	-6.7	200.0



Curve Description			
Maximum Translation Rotation			
CURNO	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
79.6	67.2	-33.7	183.5



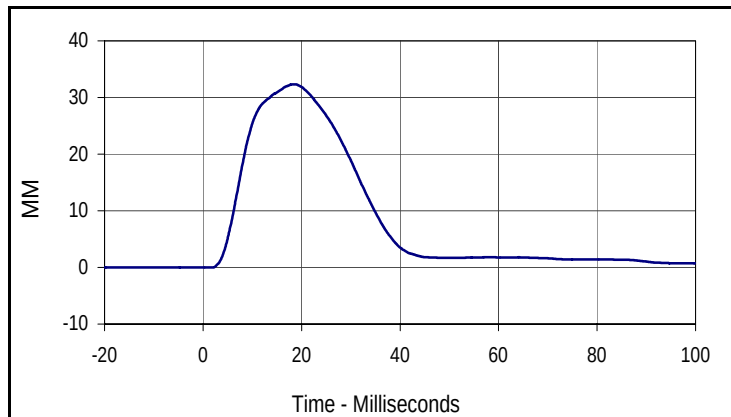
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
15.1	168.5	-37.6	62.0

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

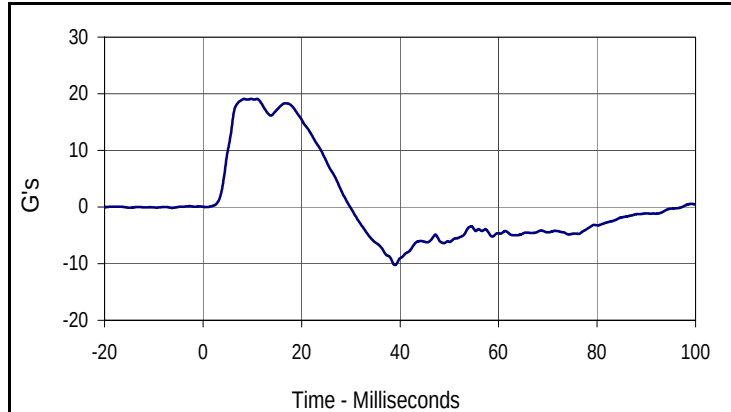
Test Date: 10/22/10
 Test I.D.: SHF10D



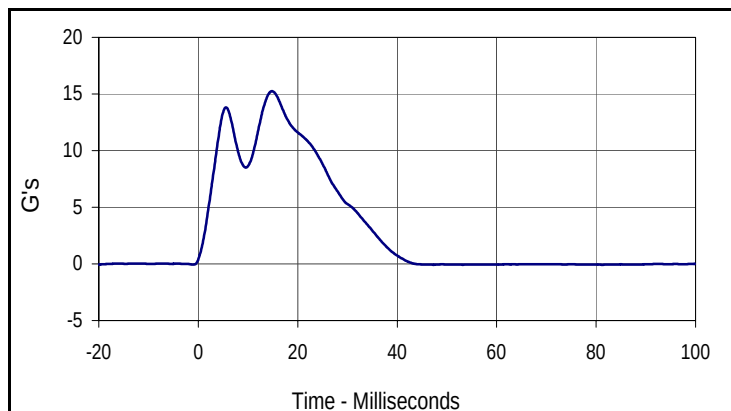
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.28	Pass
Shoulder Deflection	MM	28 to 37	32.3	Pass
Peak Upper Spine Y Acceleration	G's	17 to 22	19.1	Pass
Peak Impactor Acceleration	G's	13 to 18	15.2	Pass
Overall Test Results			Pass	



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



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
19.1	8.3	-10.2	39.0



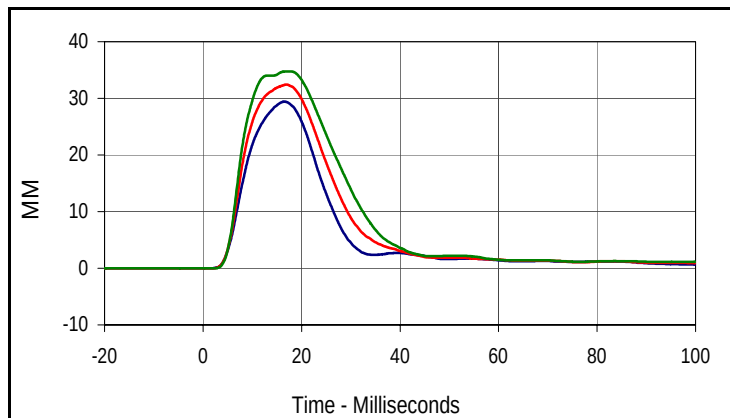
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
15.2	14.8	-0.1	81.3

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

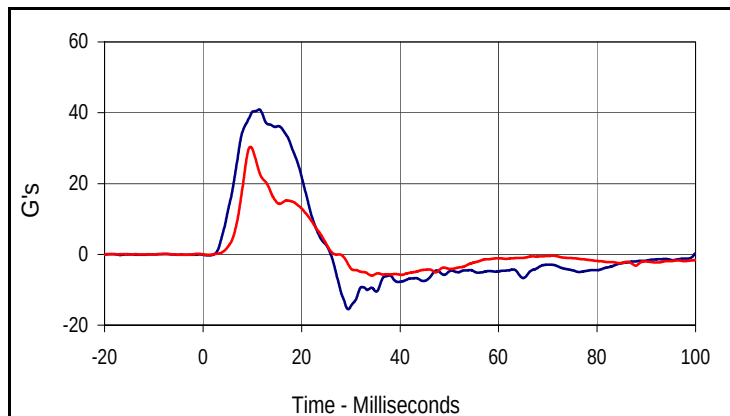
Test Date: 10/22/10
 Test I.D.: THF10D



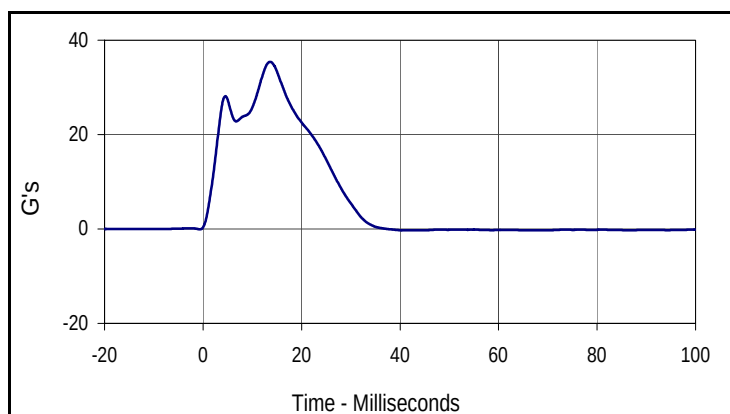
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.69	Pass
Shoulder Deflection	MM	31 to 40	38.2	Pass
Upper Thorax Rib Deflection	MM	25 to 32	29.4	Pass
Middle Thorax Rib Deflection	MM	30 to 36	32.4	Pass
Lower Thorax Rib Deflection	MM	32 to 38	34.8	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	41.0	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	30.4	Pass
Peak Impactor Acceleration After 5 msec.	G's	30 to 36	35.4	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
29.4	16.5	0.0	-8.8
Middle Thorax Deflection			
Max	Time	Min	Time
32.4	16.9	0.0	-15.7
Lower Thorax Deflection			
Max	Time	Min	Time
34.8	17.2	0.0	-10.7



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
41.0	11.4	-15.5	29.5
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
30.4	9.6	-6.0	34.2



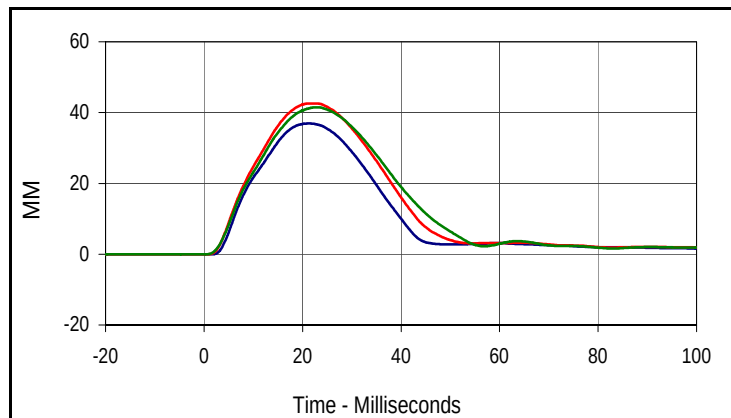
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
35.4	13.6	-0.3	40.8

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

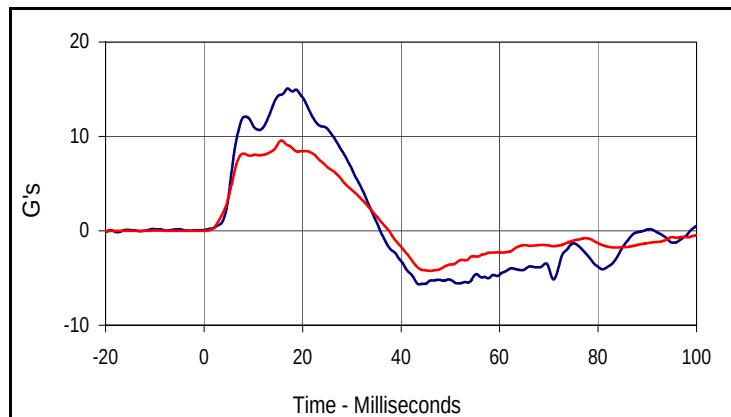
Test Date: 10/22/10
 Test I.D.: TOA10D



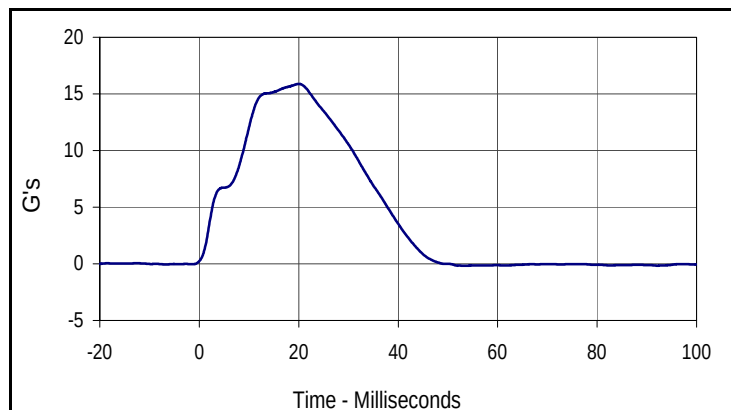
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.21	Pass
Upper Thorax Rib Deflection	MM	32 to 40	36.9	Pass
Middle Thorax Rib Deflection	MM	39 to 45	42.6	Pass
Lower Thorax Rib Deflection	MM	35 to 43	41.5	Pass
Peak Upper Spine Y Acceleration	G's	13 to 17	15.1	Pass
Peak Lower Spine Y Acceleration	G's	7 to 11	9.6	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
36.9	21.3	0.0	1.0
Middle Thorax Deflection			
Max	Time	Min	Time
42.6	22.1	0.0	-3.0
Lower Thorax Deflection			
Max	Time	Min	Time
41.5	22.8	0.0	-4.7



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.1	17.0	-5.7	43.7
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
9.6	15.7	-4.2	45.9



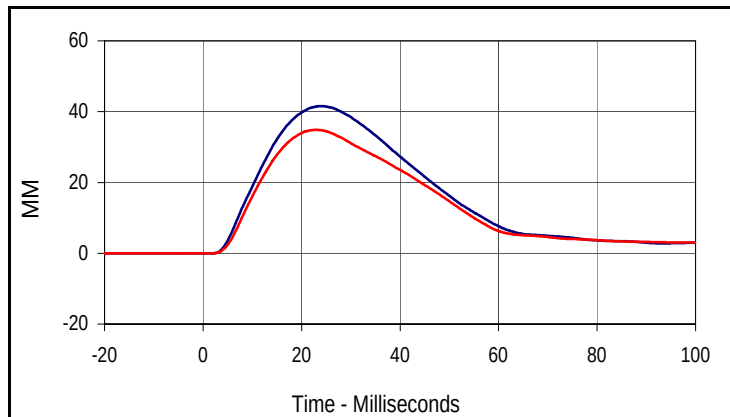
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
15.9	20.0	-0.2	53.5

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

Test Date: 10/22/10
 Test I.D.: ABDF10D

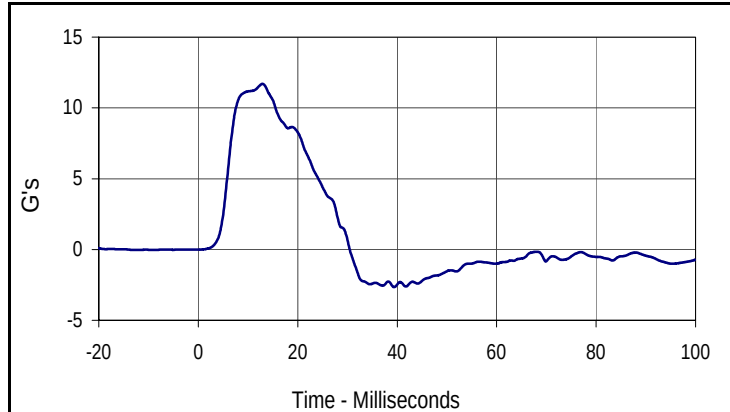


Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.29	Pass
Upper Abdominal Rib Deflection	MM	36 to 47	41.6	Pass
Lower Abdominal Rib Deflection	MM	33 to 44	34.8	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	11.7	Pass
Peak Impactor Acceleration	G's	12 to 16	14.0	Pass
Overall Test Results			Pass	

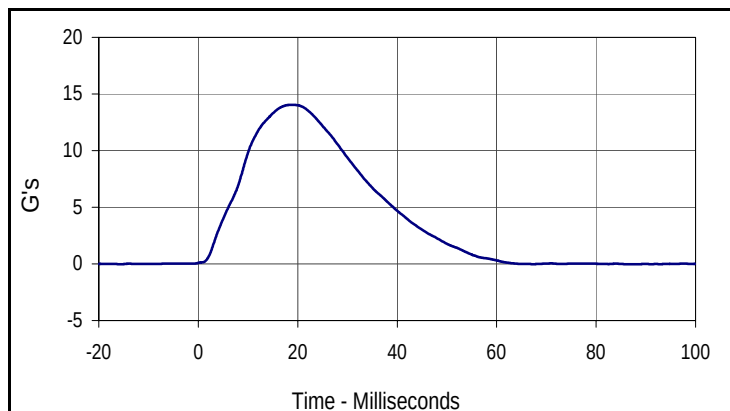


Curve Description			
Upper Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
41.6	23.8	0.0	-15.9

Curve Description			
Lower Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
34.8	23.1	0.0	-17.3



Curve Description			
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
11.7	12.9	-2.7	39.4



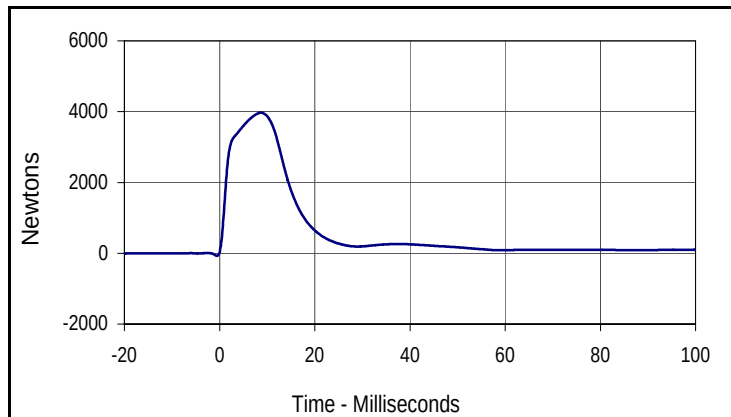
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.0	18.7	0.0	88.0

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

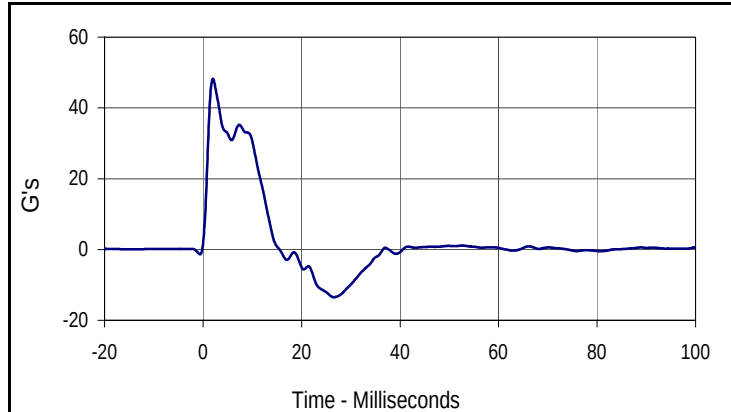
Test Date: 10/22/10
 Test I.D.: PA10D



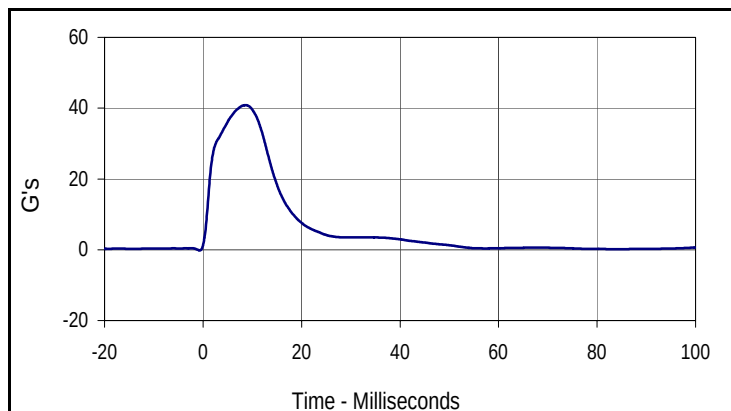
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.69	Pass
Peak Acetabulum Force	Newtons	3600 to 4300	3971.4	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	35.2	Pass
Peak Impactor Acceleration	G's	38 to 47	40.9	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
3971.4	8.7	-72.4	-0.5



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
48.2	2.0	-13.5	26.5



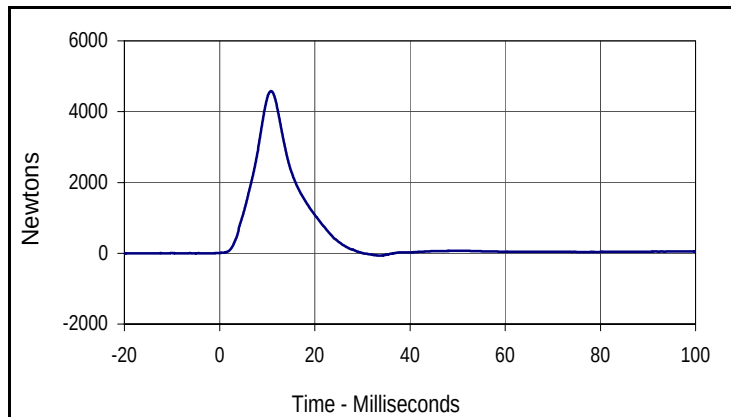
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
40.9	8.7	-0.2	-0.7

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

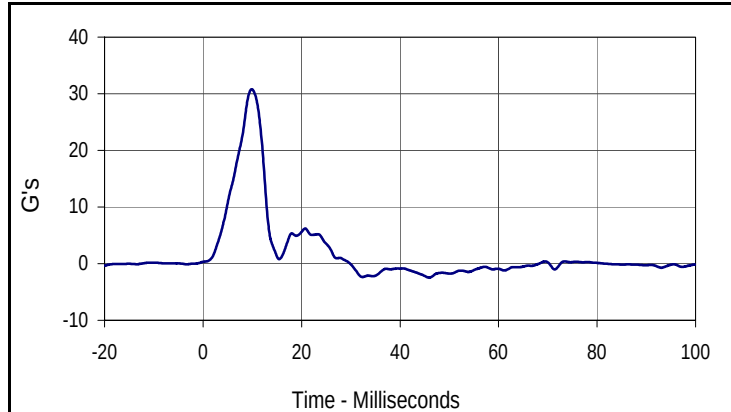
Test Date: 10/22/10
 Test I.D.: PLF10D



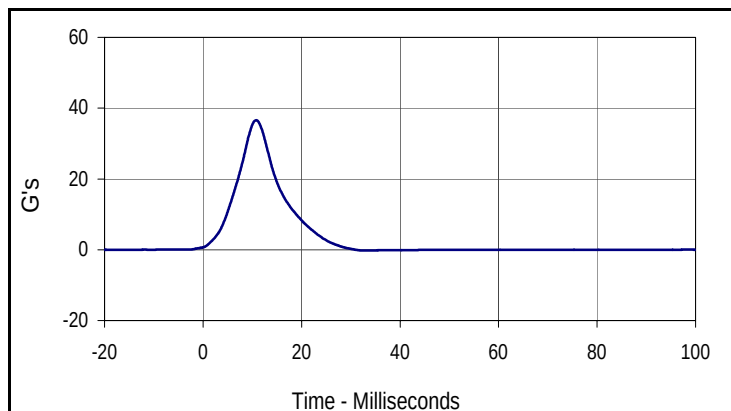
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.32	Pass
Peak Iliac Force	Newtons	4100 to 5100	4582.4	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	30.8	Pass
Peak Impactor Acceleration	G's	36 to 45	36.6	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Iliac Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4582.4	10.8	-65.4	34.1



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
30.8	9.9	-2.5	45.9



Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
36.6	10.8	-0.2	32.6

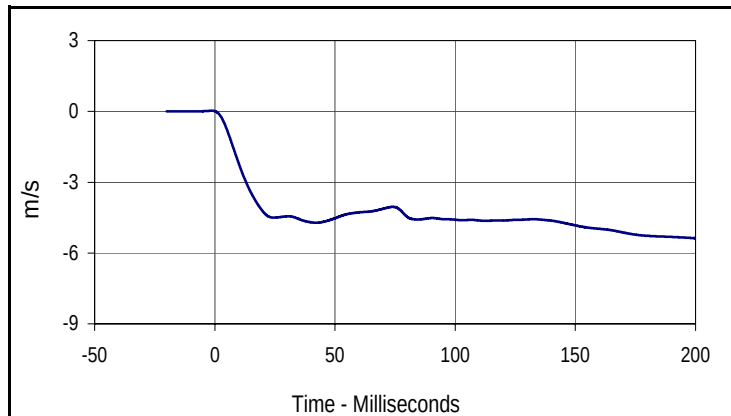
APPENDIX C
POST-TEST / HIII CONFIGURATION AND PERFORMANCE VERIFICATION DATA

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

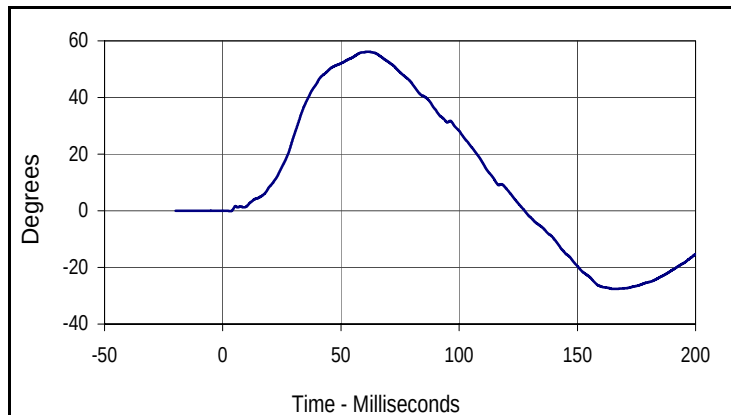
Test Date: 10/30/10
 Test I.D.: NB10E



Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	3.30 to 3.50	3.35	Pass
Pendulum Deceleration	1 msec	m/s	0.0 to -.050	-0.038	Pass
	3 msec	m/s	-.250 to -.375	-0.301	Pass
	14 msec	m/s	-3.20 to -3.70	-3.23	Pass
Headform Rotation	Max	Degrees	49.0 to 58.0	56.2	Pass
	Time	msec	54.0 to 66.0	61.5	Pass
Maximum Rotation To Time Zero Crossing		msec	53.0 to 88.0	66.3	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.3	-5.4	200.0



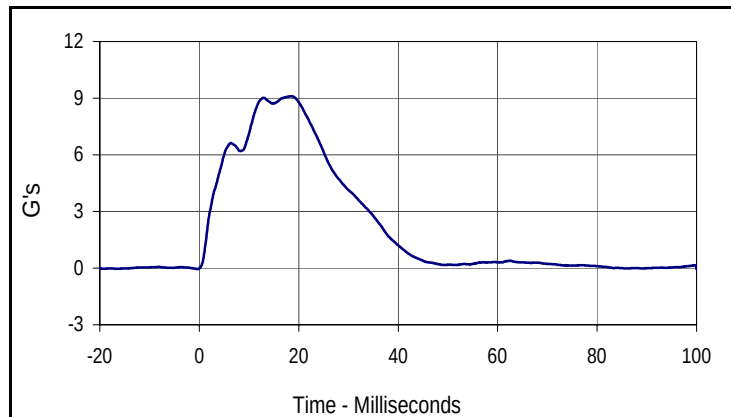
Curve Description			
Headform Rotation			
CURNO	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
56.2	61.5	-27.6	164.9

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

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



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.20 to 4.40	4.25	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	9.1	Pass
Overall Test Results				Pass



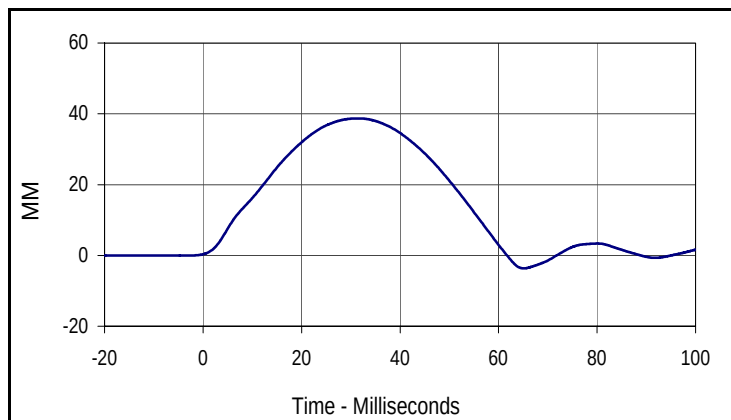
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
9.1	18.5	0.0	-0.4

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

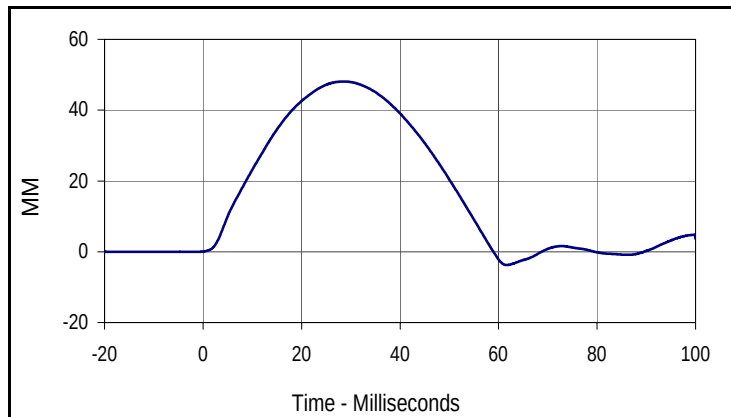
Test Date: 10/30/10
 Test I.D.: RIB10M



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Rib Deflection at 459 MM Drop Height	MM	36 to 40	38.7	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	48.1	Pass
Overall Test Results			Pass	



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



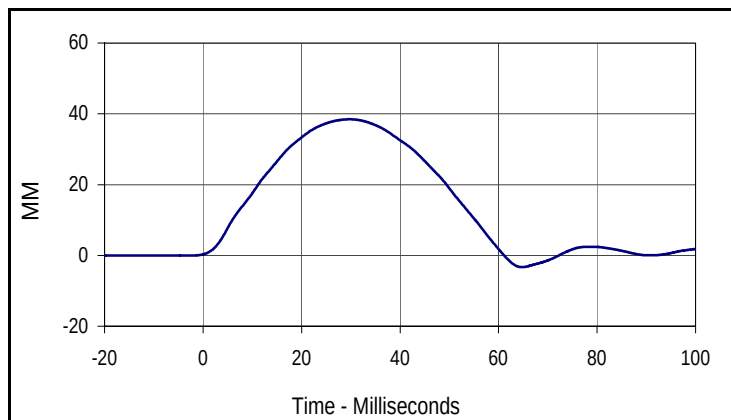
Curve Description			
Upper Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
48.1	28.6	-3.8	61.7

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

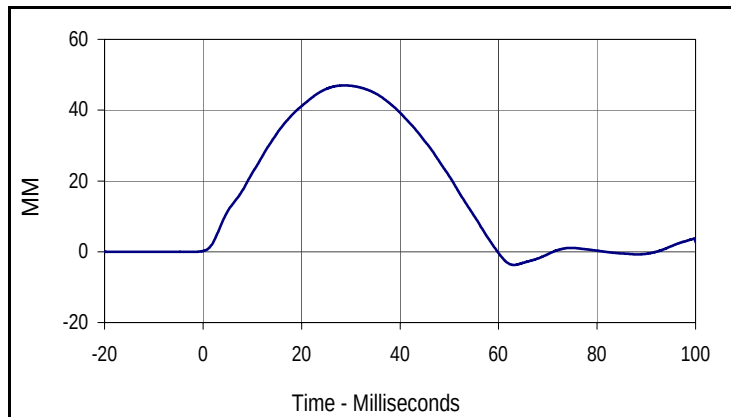
Test Date: 10/30/10
 Test I.D.: RIB10N



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Rib Deflection at 459 MM Drop Height	MM	36 to 40	38.5	Pass
Peak Rib Deflection at 815 MM Drop Height	MM	46 to 51	47.0	Pass
Overall Test Results			Pass	



Curve Description			
Middle Rib Deflection (459 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
38.5	29.7	-3.3	64.7



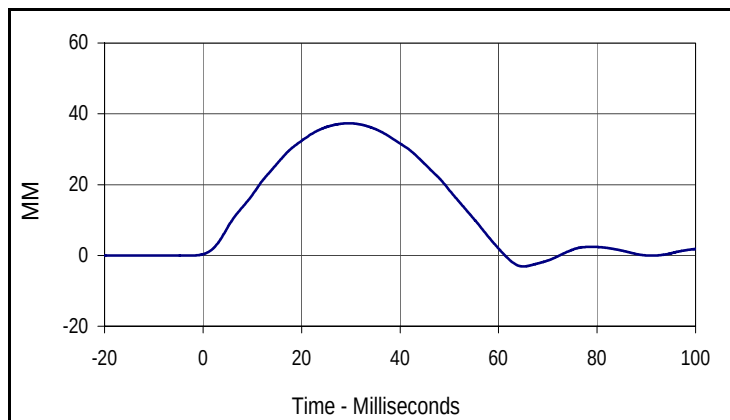
Curve Description			
Middle Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
47.0	28.7	-3.7	63.1

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

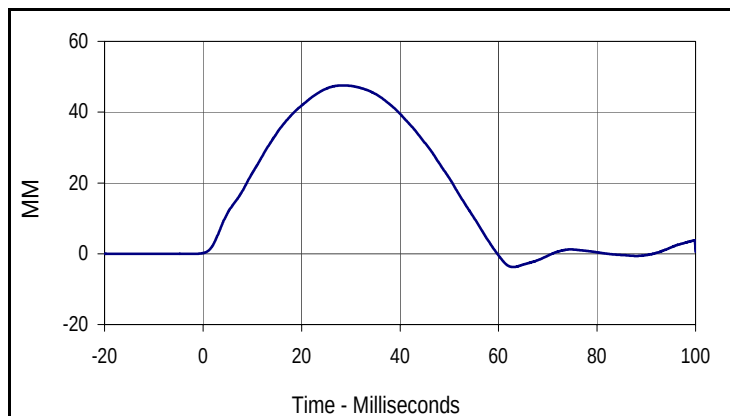
Test Date: 10/30/10
 Test I.D.: RIB100



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



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



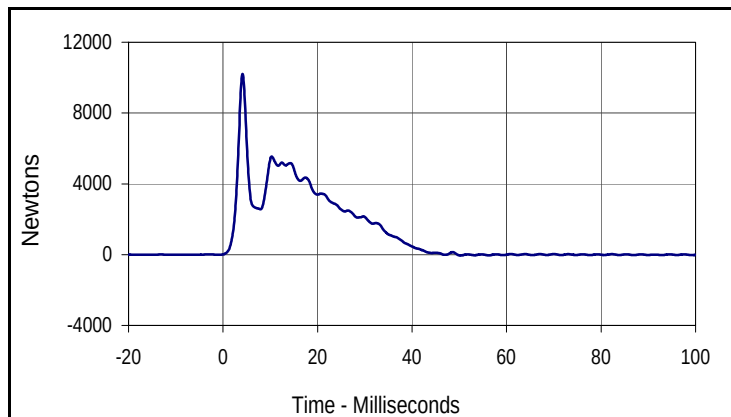
Curve Description			
Lower Rib Deflection (815 MM Drop Height)			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
47.6	28.4	-3.8	63.0

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

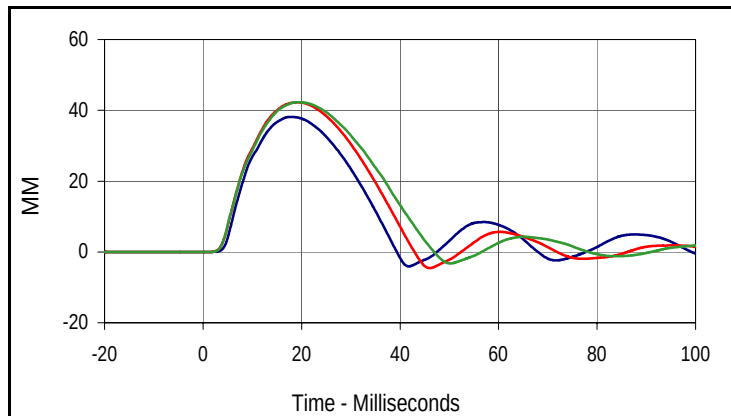
Test Date: 10/30/10
 Test I.D.: TH10E



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	5.40 to 5.60	5.42	Pass
Impactor Force	N	5100 to 6200	5547.1	Pass
	msec	> 6.0 msec	10.3	Pass
Upper Rib Deflection	MM	34 to 41	38.1	Pass
Middle Rib Deflection	MM	37 to 45	42.3	Pass
Lower Rib Deflection	MM	37 to 44	42.3	Pass
Overall Test Results			Pass	



Curve Description			
Impactor Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
10205.5	4.1	-49.9	50.2



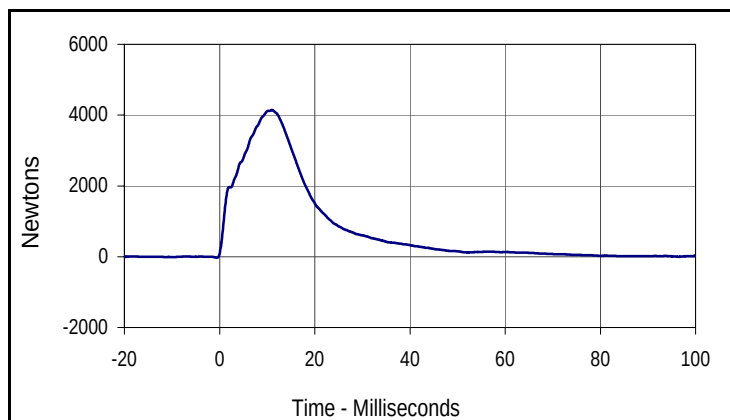
Curve Description			
Upper, Middle, Lower Rib Deflections			
CURNO(s)	Type	SAE Class	Units
002-003-004	FIL	180	MM
Max (Upper)	Time	Min (Upper)	Time
38.1	17.8	-4.1	41.8
Max (Middle)	Time	Min (Middle)	Time
42.3	19.2	-4.6	46.0
Max (Lower)	Time	Min (Lower)	Time
42.3	19.3	-3.2	50.2

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

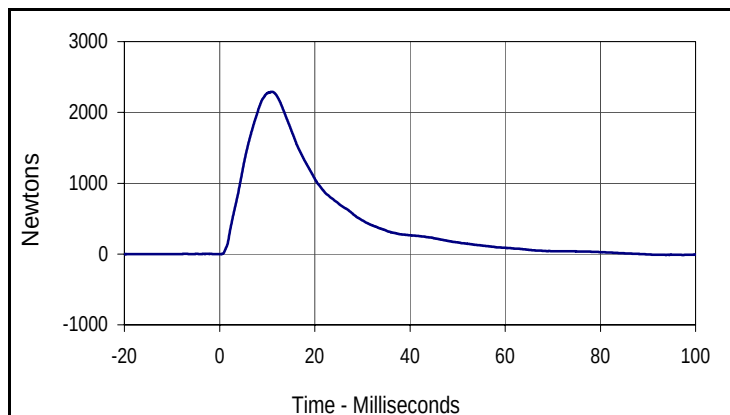
Test Date: 10/30/10
 Test I.D.: ABD10E



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	3.90 to 4.10	3.94	Pass
Impactor Force	N	4000 to 4800	4142.6	Pass
	msec	10.6 to 13.0	11.0	Pass
Abdominal Force	N	2200 to 2700	2292.3	Pass
	msec	10.0 to 12.3	11.1	Pass
Overall Test Results				Pass



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



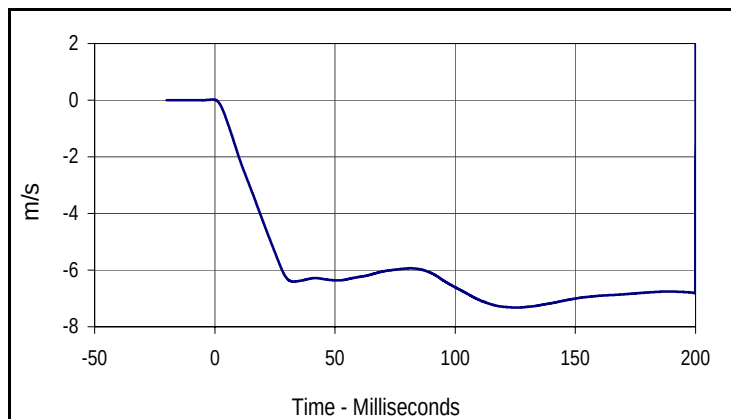
Curve Description			
Abdomen Sum Resultant			
CURNO	Type	SAE Class	Units
002	RES	600	Newtons
Max	Time	Min	Time
2292.3	11.1	-12.8	97.4

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

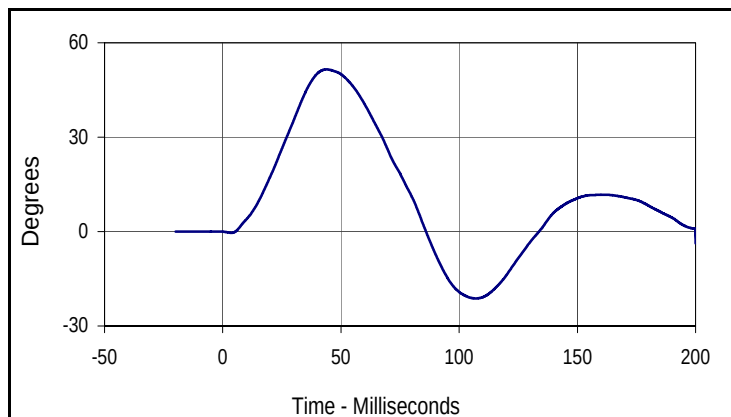
Test Date: 10/30/10
 Test I.D.: SP10E



Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.95 to 6.15	6.10	Pass
Pendulum Deceleration	1 msec	m/s	0.0 to -.050	-0.027	Pass
	3.7 msec	m/s	-.240 to -.425	-0.424	Pass
	27 msec	m/s	-5.80 to -6.50	-5.80	Pass
	30 msec	m/s	< -6.50	-6.30	Pass
Headform Rotation	Max	Degrees	45.0 to 55.0	51.5	Pass
	Time	msec	39.0 to 53.0	43.9	Pass
Maximum Rotation To Time Zero Crossing		msec	37.0 to 57.0	42.1	Pass
			Overall Test Results		Pass



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



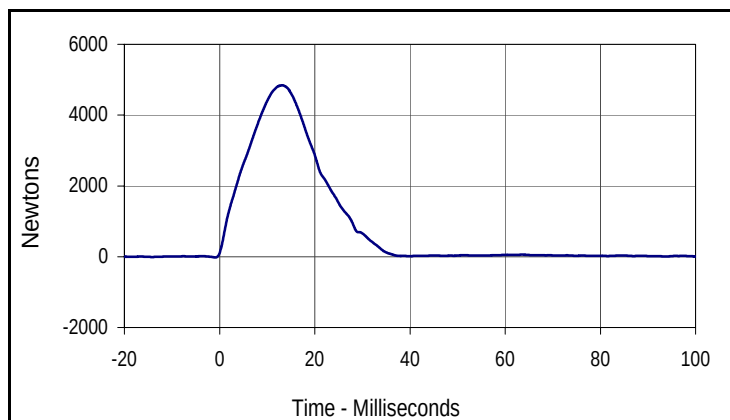
Curve Description			
Headform Rotation			
CURNO	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
51.5	43.9	-21.2	107.0

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

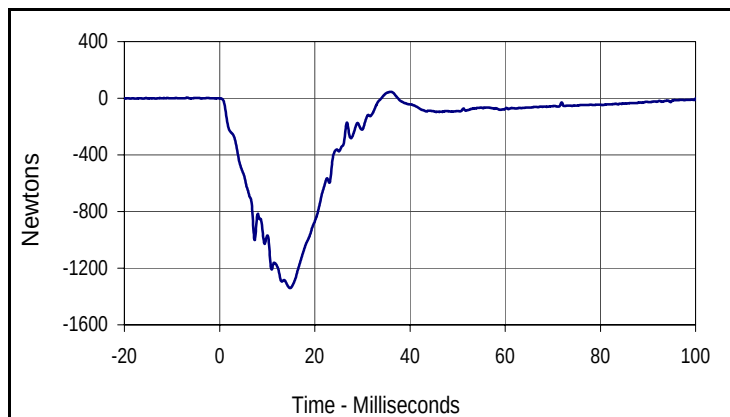
Test Date: 10/30/10
 Test I.D.: PL10E



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.20 to 4.40	4.25	Pass
Impactor Force	N	4700 to 5400	4841.3	Pass
	msec	11.8 to 16.1	13.2	Pass
Pubic Symphysis Load	N	-1230 to -1590	-1339.9	Pass
	msec	12.2 to 17.0	14.8	Pass
Overall Test Results				Pass



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



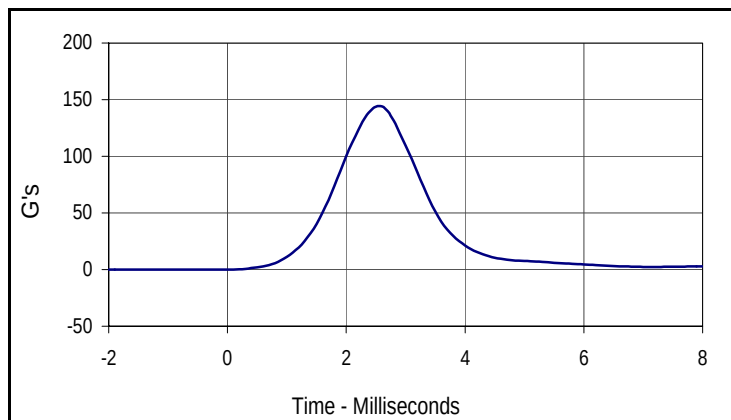
Curve Description			
Pubic FY			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
45.2	36.0	-1339.9	14.8

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

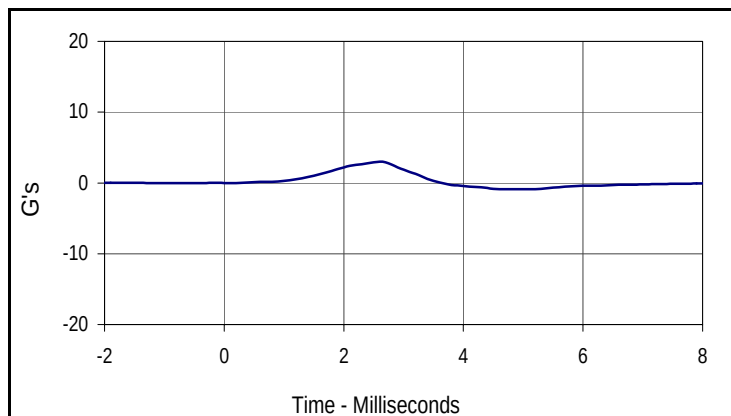
Test Date: 10/30/10
 Test I.D.: HD10E



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



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



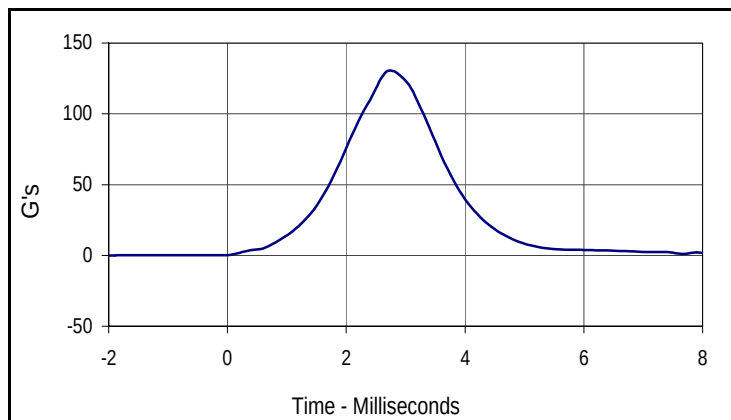
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
3.0	2.6	-0.9	5.1

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

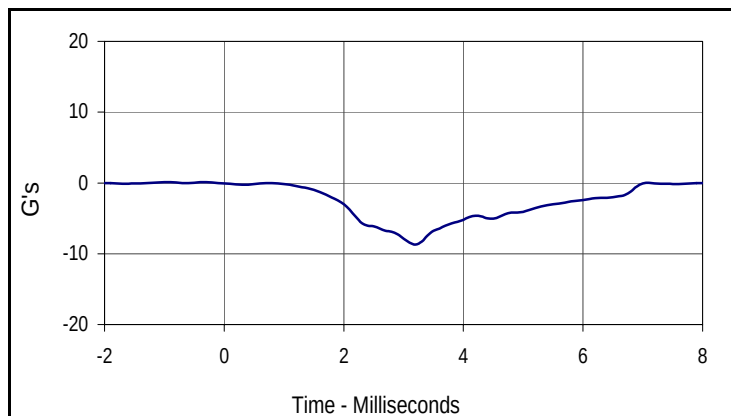
Test Date: 10/30/10
 Test I.D.: HDF10E



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	115 to 137	130.4	Pass
Peak Longitudinal Acceleration	G's	≤15	8.7	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	6.4	Pass
Overall Test Results			Pass	



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



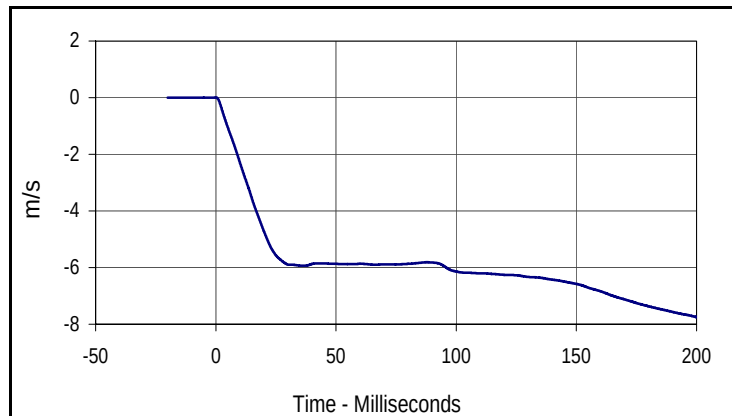
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.1	-1.0	-8.7	3.2

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

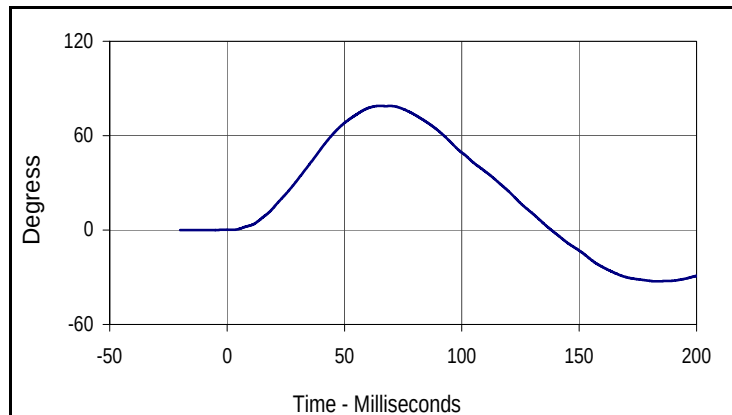
Test Date: 10/30/10
 Test I.D.: NBF10E



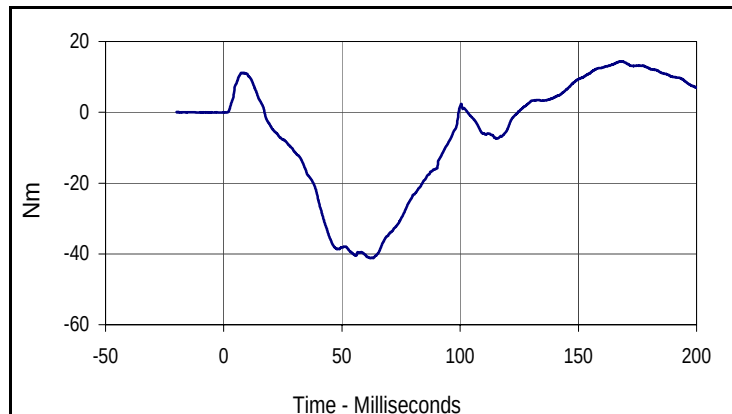
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.54	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.3	Pass
	15 msec	m/s	-3.30 to -4.10	-3.6	Pass
	20 msec	m/s	-4.40 to -5.40	-4.7	Pass
	25 msec	m/s	-5.40 to -6.10	-5.6	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.1	Pass
Translation-Rotation	Max	Degrees	71.0 to 81.0	78.9	Pass
	Time	msec	50.0 to 70.0	64.9	Pass
Peak Occipital Condyle Moment		Nm	-36.0 to -44.0	-41.2	Pass
Decaying Moment Time to Cross 0 Nm		msec	102.0 to 126.0	124.5	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.2	-7.7	200.0



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



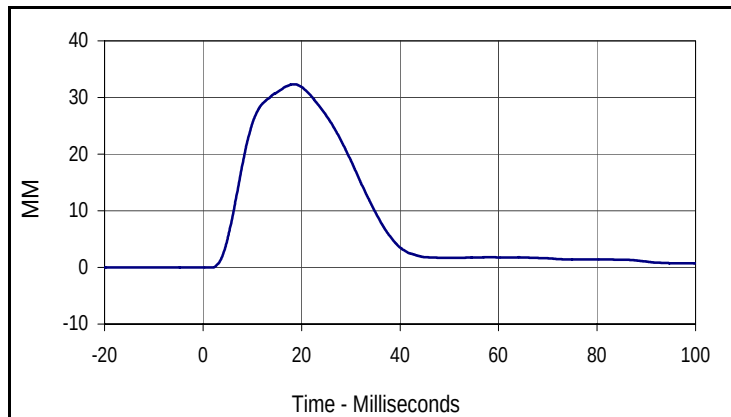
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
14.4	168.3	-41.2	61.9

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

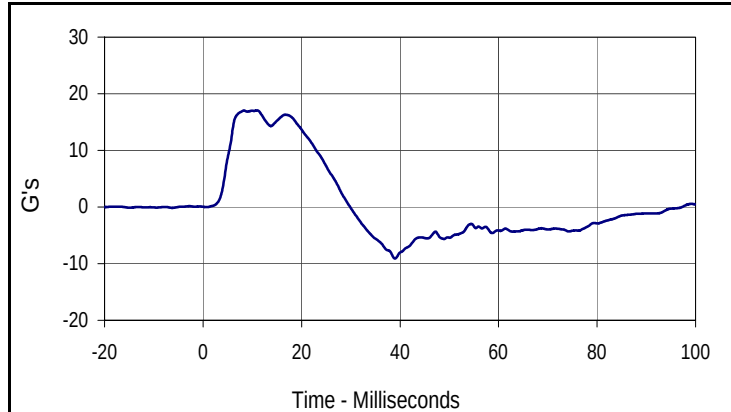
Test Date: 10/30/10
 Test I.D.: SHF10E



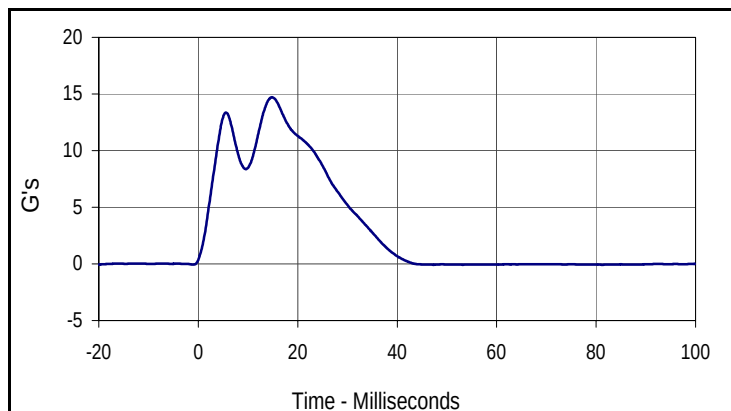
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.27	Pass
Shoulder Deflection	MM	28 to 37	32.3	Pass
Peak Upper Spine Y Acceleration	G's	17 to 22	17.1	Pass
Peak Impactor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



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



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



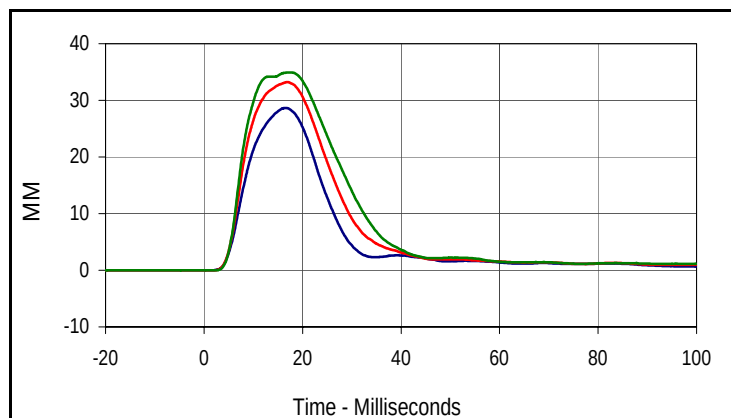
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
14.7	14.8	-0.1	81.3

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

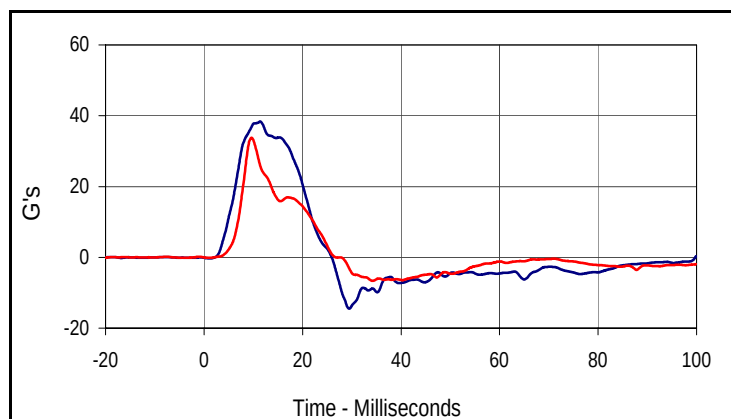
Test Date: 10/30/10
 Test I.D.: THF10E



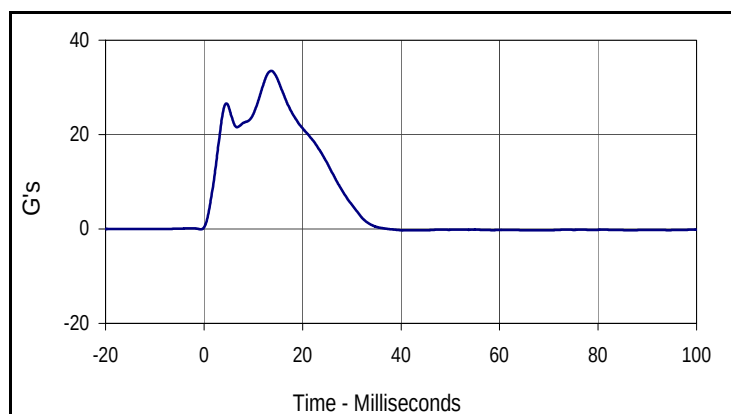
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.69	Pass
Shoulder Deflection	MM	31 to 40	35.8	Pass
Upper Thorax Rib Deflection	MM	25 to 32	28.7	Pass
Middle Thorax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



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



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



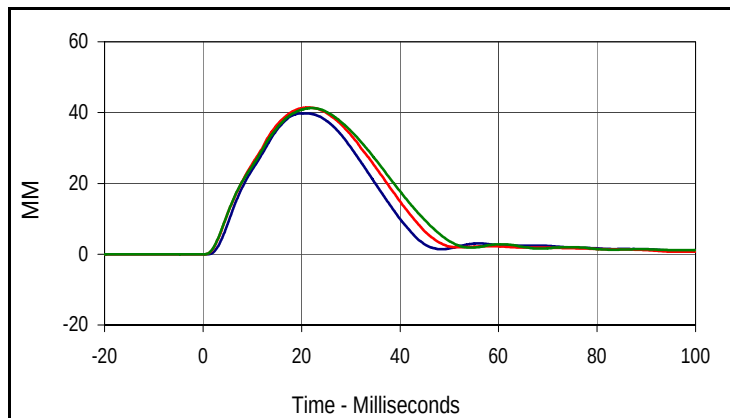
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
33.5	13.6	-0.3	40.8

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

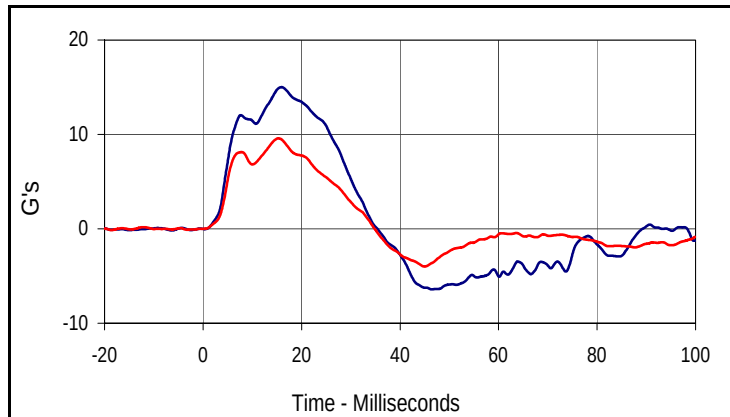
Test Date: 10/30/10
 Test I.D.: TOA10E



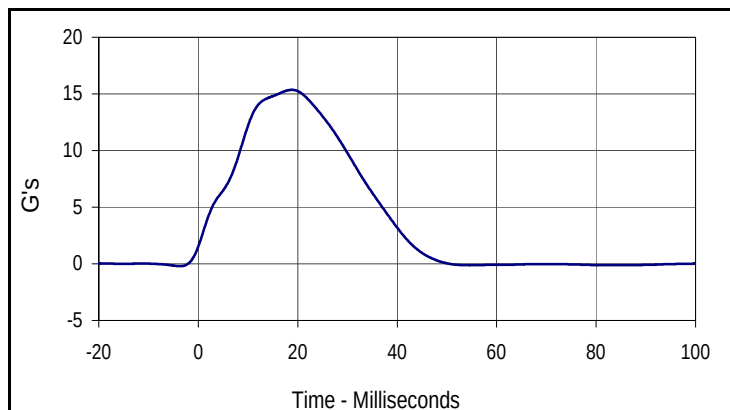
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.26	Pass
Upper Thorax Rib Deflection	MM	32 to 40	39.8	Pass
Middle Thorax Rib Deflection	MM	39 to 45	41.4	Pass
Lower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



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



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



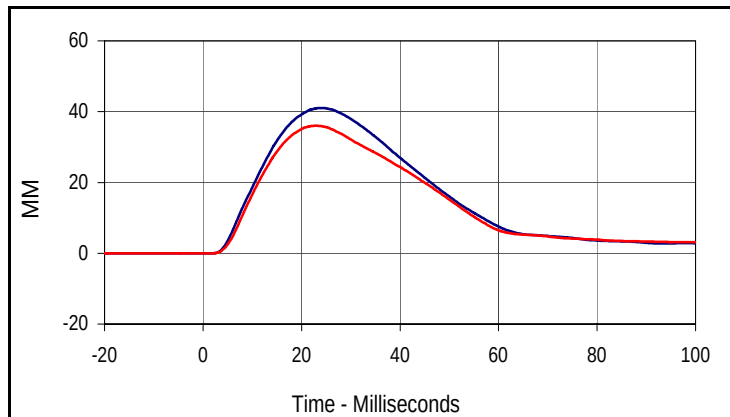
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	60	G's
Max	Time	Min	Time
15.4	18.8	-0.2	-3.7

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

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

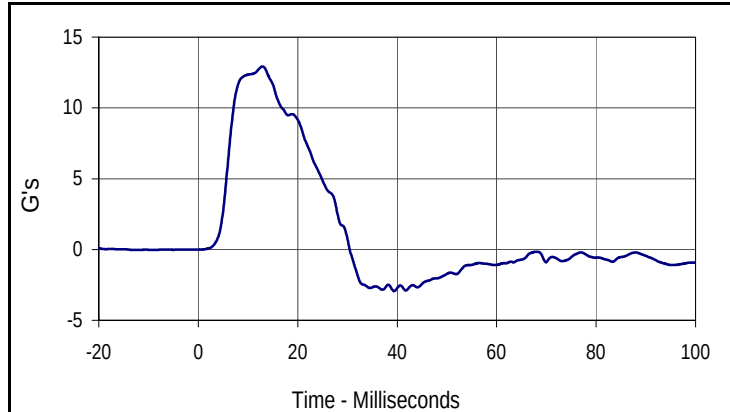


Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.28	Pass
Upper Abdominal Rib Deflection	MM	36 to 47	41.0	Pass
Lower Abdominal Rib Deflection	MM	33 to 44	36.0	Pass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

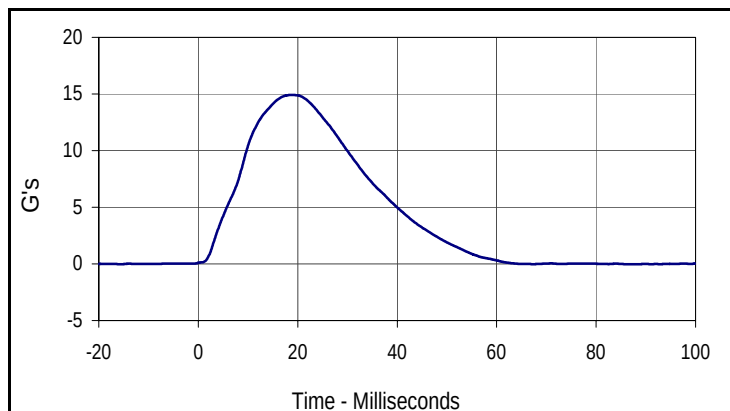


Curve Description			
Upper Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
41.0	23.8	0.0	-15.9

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



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



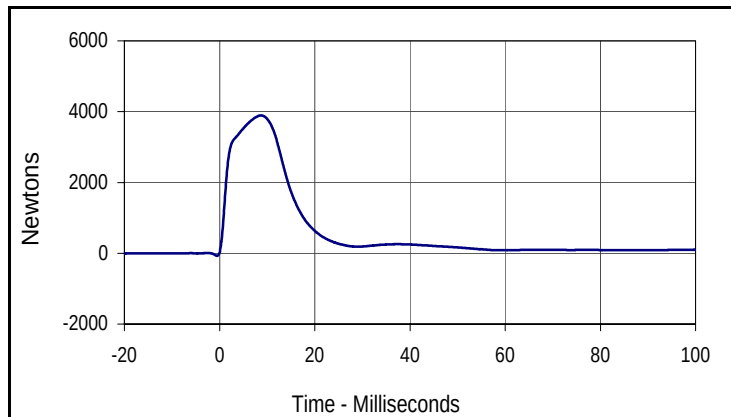
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.9	18.7	0.0	88.0

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

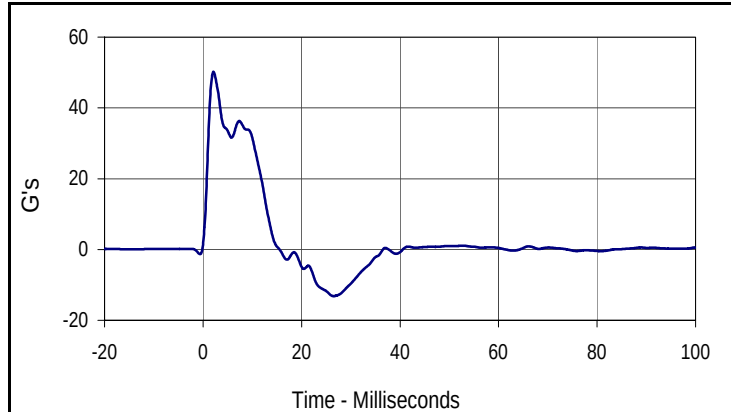
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 Test I.D.: PA10E



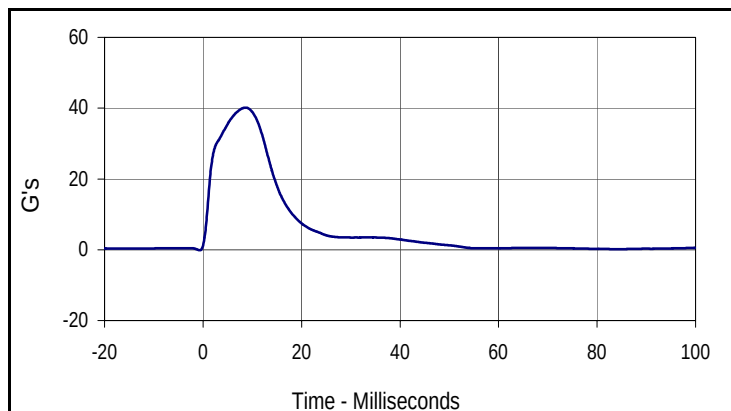
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.68	Pass
Peak Acetabulum Force	Newtons	3600 to 4300	3893.3	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to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



Curve Description			
Pelvis Acetabulum Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
3893.3	8.7	-70.9	-0.5



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



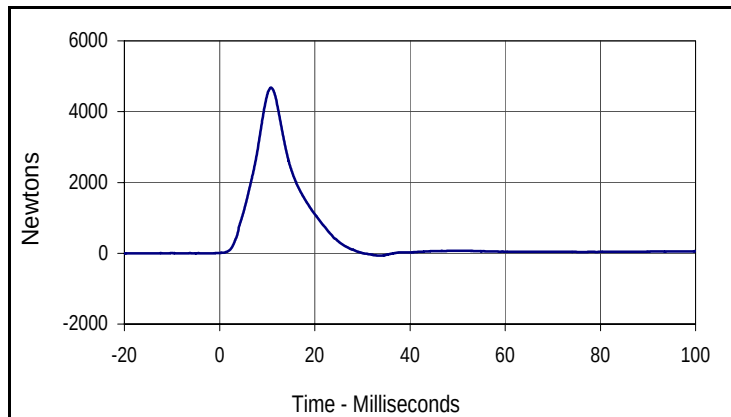
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
40.1	8.7	-0.2	-0.7

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

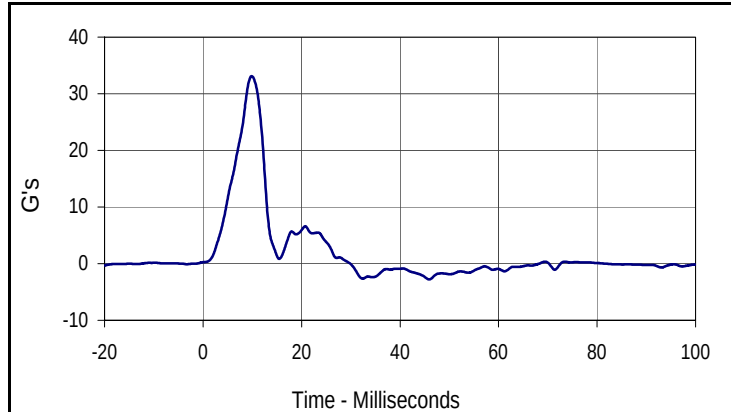
Test Date: 10/30/10
 Test I.D.: PLF10E



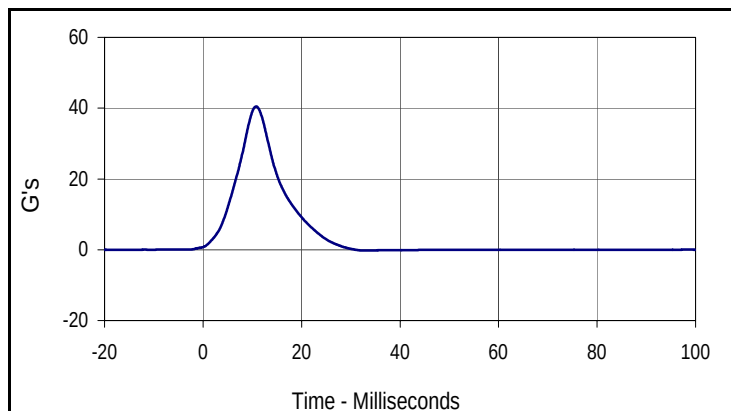
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.32	Pass
Peak Iliac Force	Newtons	4100 to 5100	4675.9	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	33.1	Pass
Peak Impactor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



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



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



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