

REPORT NUMBER: SINCAP-KAR-12-022

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

**HONDA OF AMERICA MFG., INC.
2012 ACURA TL 4-DOOR SEDAN**

NHTSA No: MC5314

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



DECEMBER 20, 2011

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
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OFFICE OF CRASHWORTHINESS STANDARDS
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16. Abstract

A 55/28 km/h 90 deg. Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2012 Acura TL 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 the KARCO Engineering, LLC. facility in Adelanto, California on December 6, 2011.

The impact velocity of the Moving Deformable Barrier was 62.1 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 9.4 deg. C. The target vehicle's maximum post-test static crush was 267 mm located at level 3. The test vehicle's occupant performance data is as follows:

Measurement Description	Driver ATD (ES-2re)		
	Units	IARV	Result
Head Injury Criteria (HIC ₃₆)		1000	145
Maximum Thorax Rib Deflection	mm	44	35
Total Abdominal Force	N	2500	1534
Pubic Symphysis Force	N	6000	1999

Measurement Description	Passenger ATD (SID-IIs)		
	Units	IARV	Result
Head Injury Criteria (HIC ₃₆)		1000	475
Resultant Lower Spine Acceleration	g	82	61
Total Pelvic Force (Sum of Acetubular and Iliac Forces)	N	5525	4032
Maximum Thoracic Rib Deflection	mm	38*	33
Maximum Abdominal Rib Deflection	mm	45*	32

The 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.

* Proposed IARV

TR-P31003-03-NC

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SECTION 1

TEST PURPOSE AND PROCEDURE

This moving deformable barrier side impact test is part of the MY 2012 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 2012 Acura TL 4-door sedan. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated August 2011.

SECTION 2

SUMMARY OF TEST RESULTS

A 2012 Acura TL 4-door sedan was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 62.1 km/h (38.6 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 December 6, 2011. 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 August 2011. 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)

Primary and redundant head CG tri-axial accelerometers

Chest upper rib, middle rib and lower rib y-axis displacement potentiometers

Abdomen forward, middle, and rear y-axis load cells

Lower spine (12) tri-axial accelerometers

Pubic symphysis y-axis load cell

PASSENGER ATD (SID-IIs)

Primary and redundant head CG tri-axial accelerometers

Chest upper rib, middle rib and lower rib y-axis displacement potentiometers

Abdomen upper rib and lower rib y-axis displacement potentiometers

Lower spine (12) tri-axial accelerometers

Acetabulum and iliac wing y-axis load cells

Appendix B contains the vehicle and dummy response data. Dummy configuration and performance verification data can be found in Appendix C of this report.

Dummy injury readings were recorded as follows:

Measurement Description	Units	Driver ATD (ES-2re)	
		Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	145
Maximum Thorax Rib Deflection	mm	44	35
Combined Abdominal Force	N	2500	1534
Pubic Symphysis Force	N	6000	1999

Measurement Description	Units	Passenger ATD (SID-IIs)	
		Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	475
Lower Spine (T12) Resultant Acceleration	g	82	61
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	4032
Maximum Thoracic Rib Deflection	mm	38*	33
Maximum Abdominal Rib Deflection	mm	45*	32

*Proposed IARV

Supplemental restraint information is given below:

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

GENERAL COMMENTS

The doors on the struck side of the vehicle remained closed and latched. There was no separation at the hinges or latches. The driver's door skin partially separated. The doors on the non-struck side remained closed and latched. There were no ATD values that exceeded limits.

SECTION 3

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2012 Acura TL 4-Door Sedan NHTSA No. MC5314
Test Program: NCAP MDB Side Impact Test Test Date: 12/06/11

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	29.574
Pressure	Tire Pressures	lbf/in ²	kPa	6.895
Temperature	General Use	°F	°C	$=(t_f - 32)/1.8$
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf-ft	N•m	1.355

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2012 Acura TL 4-Door Sedan

NHTSA No. MC5314

Test Program: NCAP MDB Side Impact Test

Test Date: 12/06/11

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	MC5314
Model Year	2012
Make	Acura
Model	TL
Body Style	4-Door Sedan
VIN	19UUA8F24CA004767
Body Color	Forged Silver Metallic
Odometer Reading (km / mi)	61 / 38
Engine Displacement (L)	3.5
Type / No. of Cylinders	V6
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	6
Overdrive	Yes
Final Drive	Front
Roof Rack	No
Sunroof / T-Top	Yes
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	Yes
Anti-Lock Brakes (ABS)	Yes
All Wheel Drive (AWD)	No

Traction Control System (TCS)	Yes
Auto-Leveling System	No
Automatic Door Locks	Yes
Power Window Auto-Reverse	Yes
Other Optional Feature	None
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
Driver Seat Belt Pretensioner	Yes
Rear Pass. Seat Belt Pretensioner	No
Driver Load Limiter	Yes
Rear Pass. Load Limiter	No
Other Safety Restraint	Active Head Restraint

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

Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Honda of America Mfg., Inc.
Date of Manufacture	Apr-11
Vehicle Type	Passenger Car

GVWR (kg)	2130
GAWR Front (kg)	1165
GAWR Rear (kg)	975

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

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

VEHICLE SEAT TYPE

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

DATA SHEET NO. 1 ... (CONTINUED)

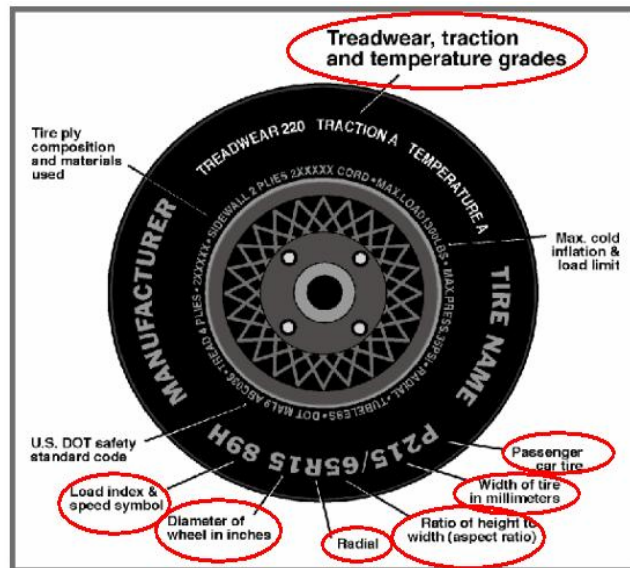
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2012 Acura TL 4-Door Sedan

NHTSA No. MC5314

Test Program: NCAP MDB Side Impact Test

Test Date: 12/06/11



TIRE PLACARD INFORMATION

Measured Parameter	Front	Rear
Recommended Cold Tire Pressure (kPa)	220	220
Recommended Tire Size	245/50R17	245/50R17

VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	350	350
Tire Size on Vehicle	245/50R17	245/50R17
Tire Manufacturer	Bridgestone	Bridgestone
Tire Name	Turanza	Turanza
Tire Type	Passenger	Passenger
Tire Width	245	245
Aspect Ratio	50	50
Radial	Yes	Yes
Wheel Diameter	17	17
Load Index/Speed Symbol	98V	98V
Treadware	260	260
Traction Grade	A	A
Temperature Grade	A	A
Tire Material	Polyester, Steel, Nylon	Polyester, Steel, Nylon

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2012 Acura TL 4-Door Sedan

NHTSA No. MC5314

Test Program: NCAP MDB Side Impact Test

Test Date: 12/06/11

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	190	190	190	190
Tire Placard	kPa	220	220	220	220
Owner's Manual	kPa	220	220	220	220
As Tested	kPa	220	220	220	220

MDB TIRE SPECIFICATIONS

	Units	Requirement	LF	RF	LR	RR
Tire Size		P205/75R15	P205/75R15	P205/75R15	P205/75R15	P205/75R15
Tire Pressure	kPa	200 ± 21	200	200	200	200

TEST VEHICLE AXLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	525.5	338.0		554.0	414.0		561.0	413.0	
Right	kg	507.5	322.0		502.5	384.0		509.5	377.0	
Ratio	%	61.0%	39.0%	100.0%	57.0%	43.0%	100.0%	57.5%	42.5%	100.0%
Total	kg	1033.0	660.0	1693.0	1056.5	798.0	1854.5	1070.5	790.0	1860.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1693.0	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 (TVTW)	kg	1862.8	A+B+C

Does the measured As Tested Vehicle Weight lie within the required weight range (i.e.

Calculated Test Vehicle Target Weight -4.5 kg to -9 kg)? ☒ Yes ☐ No

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Non-Struck Side Door Panels	8.0
Trunk Liner	10.0
Spare Tire	14.5
Tools	4.0
Rear Tail Lights	3.0
Rear Bumper Cover	6.0
Head Lights	6.0
Front Bumper Cover	9.0
Non-Struck Side Outboard Mirror	1.5
Ballast / Equipment Added	112.0

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

Test Vehicle: 2012 Acura TL 4-Door Sedan NHTSA No. MC5314
Test Program: NCAP MDB Side Impact Test Test Date: 12/06/11

TEST VEHICLE ATTITUDE AND CG

Measurement Description	Units	Fully Loaded	As Tested	Meets Requirement***
LF	mm	706	711	Yes
RF	mm	718	717	Yes
RR	mm	706	697	Yes
LR	mm	693	689	Yes
Vehicle CG (Aft of Front Axle)	mm	1180	1196	
Vehicle CG (Left (+)/Right (-) from Longitudinal Centerline)	mm	38	35	

***The "As Tested" vehicle attitude measurements must be equal to or within ± 10 mm of the "Fully Loaded" vehicle attitude measurements at each wheel well. Indicate "Yes" or "No" for "Meets Requirement"

DATA SHEET NO. 2**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA**Test Vehicle: 2012 Acura TL 4-Door SedanNHTSA No. MC5314Test Program: NCAP MDB Side Impact TestTest Date: 12/06/11**SEAT POSITIONING**

The driver's seat, front center seat (if applicable), and right front passenger's seat should be set to the mid-track, lowest, mid-angle position. The struck side rear passenger's seat, rear center seat, and non-struck side rear passenger's seats should be set to the rear-most, lowest, mid-angle position.

SCRL ANGLE RANGE

Seat	SCRL (°)		
	Max	Min	Mid
Driver Seat	6.8	0.0	3.4
Front Passenger Seat	7.0	0.0	3.5
Front Center Seat			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle	As Tested SCRP Height	SCRP Height Position	SCRP Height (mm)		
				Rearmost	Mid Fore/Aft	Forwardmost
Driver Seat	3.4	478	Max	516	527	540
			Mid	492	503	515
			Min	467	478	490
Front Passenger Seat	3.5	510	Max	548	559	572
			Mid	523	535	547
			Min	498	510	522
Front Center Seat			Max			
			Mid			
			Min			
Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed

DATA SHEET NO. 2 ... (CONTINUED)

SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA

Test Vehicle: 2012 Acura TL 4-Door Sedan

NHTSA No. MC5314

Test Program: NCAP MDB Side Impact Test

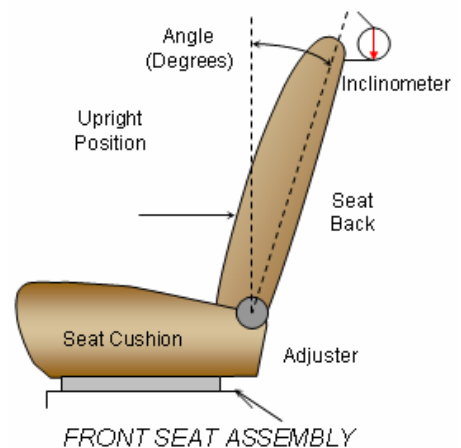
Test Date: 12/06/11

SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position From Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	238		119	
Front Passenger Seat	238		119	
Front Center Seat				
Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed	Fixed

SEAT BACK ADJUSTMENT

The driver's seat back is positioned to the manufacturer's designated design angle. The front center and front passenger's seat backs are positioned in a similar manner as the driver's seat back. The struck side rear seat back is positioned such that the dummy's head is level. The rear center and non-struck side rear outboard seat backs are positioned in a similar manner as the struck side rear seat back.



Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degree	Detent*
Driver Seat w/Seated Dummy	78.1		12.4	
Front Passenger Seat	77.6		12.4	
Front Center Seat				
Struck Side Rear Seat w/Seated Dummy	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed	Fixed

DATA SHEET NO. 2 ... (CONTINUED)**SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA**Test Vehicle: 2012 Acura TL 4-Door SedanNHTSA No. MC5314Test Program: NCAP MDB Side Impact TestTest Date: 12/06/11**SEAT BELT ANCHORAGE ADJUSTMENT**

Seat belt anchorages are adjusted in accordance with the information provided by the manufacturer on Form No. 1.

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

HEAD RESTRAINT ADJUSTMENT

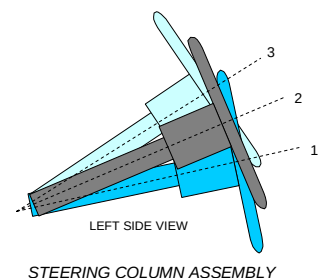
The driver's head restraint is adjusted to the highest and most full forward in-use position. The struck-side rear passenger's head restraint is adjusted to the lowest and most full forward in-use position.

	Total No. of Positions	Placed in Position
Driver Seat	6 Vertical	Full Up
Rear Seat	Fixed	Fixed

STEERING COLUMN ADJUSTMENT

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

	Degrees	Fore-Aft Position (mm)
Lowermost - Position 1	18.7	0
Geometric Center - Position 2	21.5	17
Uppermost - Position 3	24.3	34
Telescoping Steering Wheel Travel		34
Test Position	21.5	17



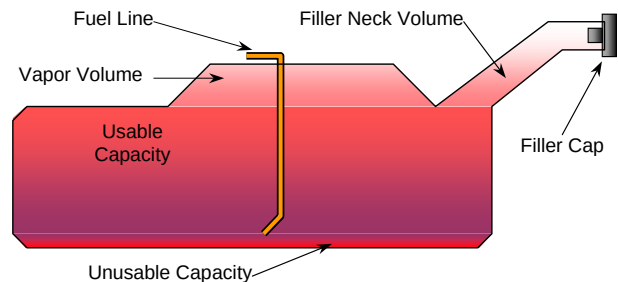
DATA SHEET NO. 2 ... (CONTINUED)**SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA**Test Vehicle: 2012 Acura TL 4-Door SedanNHTSA No. MC5314Test Program: NCAP MDB Side Impact TestTest Date: 12/06/11**FUEL TANK CAPACITY**

Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	70.02
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of "Standard Tank" (see Owner's Manual)	
Usable Capacity of "Optional Tank" (see Owner's Manual)	
93% of Usable Capacity	65.14
Actual amount of Solvent Used in Test	65.14
1/3 of Usable Capacity	23.34

Is the Actual Amount of Solvent Used in the test equal to $93\% \pm 1\%$ of the Usable Capacity stated in the Form No. 1? ☒ **Yes** ☐ **No**

FUEL PUMP

The vehicle is equipped with an electric fuel pump. After the ignition is turned to the "on" position, the fuel pump will be filled up for two seconds and then the pressure is maintained.

**VEHICLE FUEL TANK ASSEMBLY**

DATA SHEET NO. 3

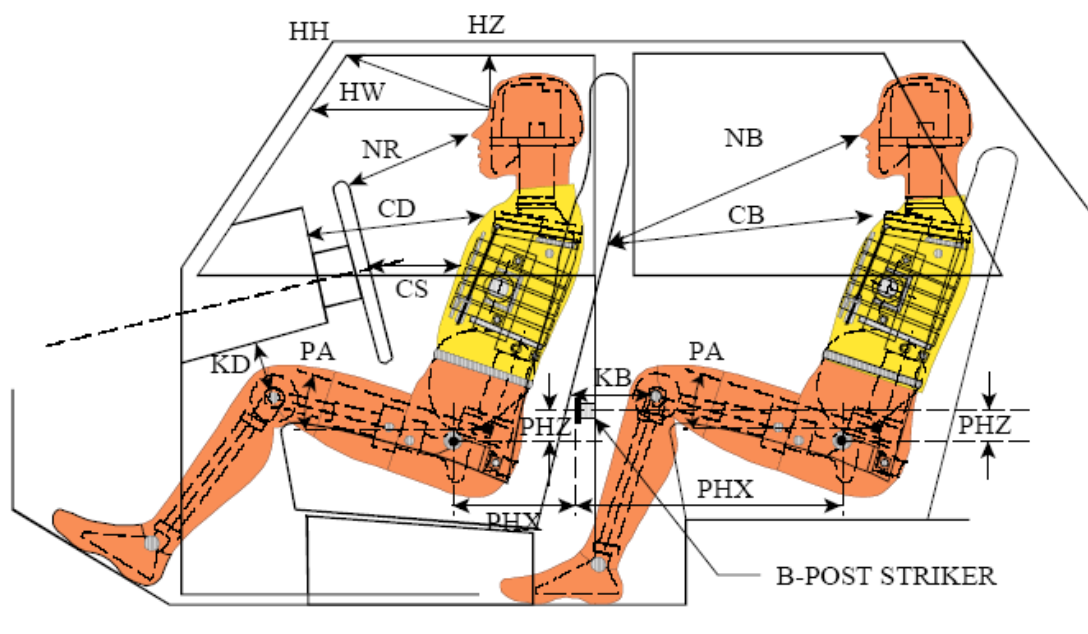
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2012 Acura TL 4-Door Sedan

NHTSA No. MC5314

Test Program: NCAP MDB Side Impact Test

Test Date: 12/06/11



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	365			
HW		Head to Windshield	631			
HZ	HZ	Head to Roof	171		241	
NR	NB	Nose to Rim/Seat Back	453		562	
CD	CB	Chest to Dash/Seat Back	582		530	
CS		Chest to Steering Wheel	351			
KD(L)/KDA(L)°	KB(L)/KBA(L)°	Left Knee to Dash/Seat Back	200	39.6	274	46.0
KD(R)/KDA(R)°	KB(R)/KBA(R)°	Right Knee to Dash/Seat Back	194	41.5	286	8.6
PAX°	PAX°	Pelvic Tilt Angle X		15.4		22.4
	PAY°	Pelvic Tilt Angle Y				0.3
PHX	PHX	Hip Point to Striker (x-axis)	170		186	
PHZ	PHZ	Hip Point to Striker (z-axis)	215		256	

DATA SHEET NO. 4

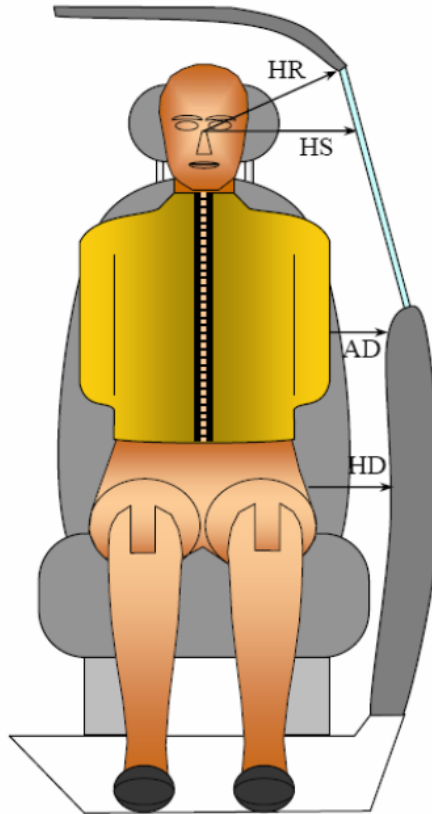
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2012 Acura TL 4-Door Sedan

NHTSA No. MC5314

Test Program: NCAP MDB Side Impact Test

Test Date: 12/06/11



FRONT VIEW OF DUMMY

DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	200	270
HS	Head to Side Window	mm	318	374
AD	Arm to Door	mm	104	170
HD	H-Point to Door	mm	156	214

DATA SHEET NO. 5

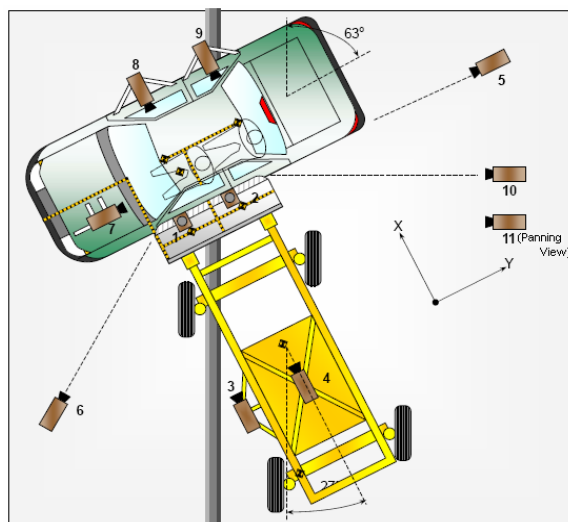
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2012 Acura TL 4-Door Sedan

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CAMERA LOCATIONS AND DATA

No.	View	Coordinates (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X	Y	Z		
1	Overhead Overall	1220	2287	-5486	14	1000
2	Overhead Close-Up	609	2287	-5102	35	1000
3	Left Impact Point (MDB)	-2134	0	-1143	25	1000
4	Side Overall (MDB)	-3912	838	-1829	12.5	1000
5	Rear	-64	2485	-1348	85	1000
6	Left Front	-2266	-3564	-1475	24	1000
7	Driver Front (On-Board)	440	-601	-655	35	1000
8	Driver Side (On-Board)	1622	755	-485	14	1000
9	Passenger Side (On-Board)	1649	1591	-517	14	1000
10	Real Time Overall				Zoom	30
11	Real Time Inrun				Zoom	30

Reference: Impact Point Projected to Ground; +X = To Front of MDB, +Y = To Right of MDB, +Z = Down

*All measurements accurate to ± 6 mm

INSTRUMENTATION

Driver Dummy Channels	16
Passenger Dummy Channels	16
Vehicle Structure Accelerometers	23
MDB Accelerometers	5
Total	60

DATA SHEET NO. 6

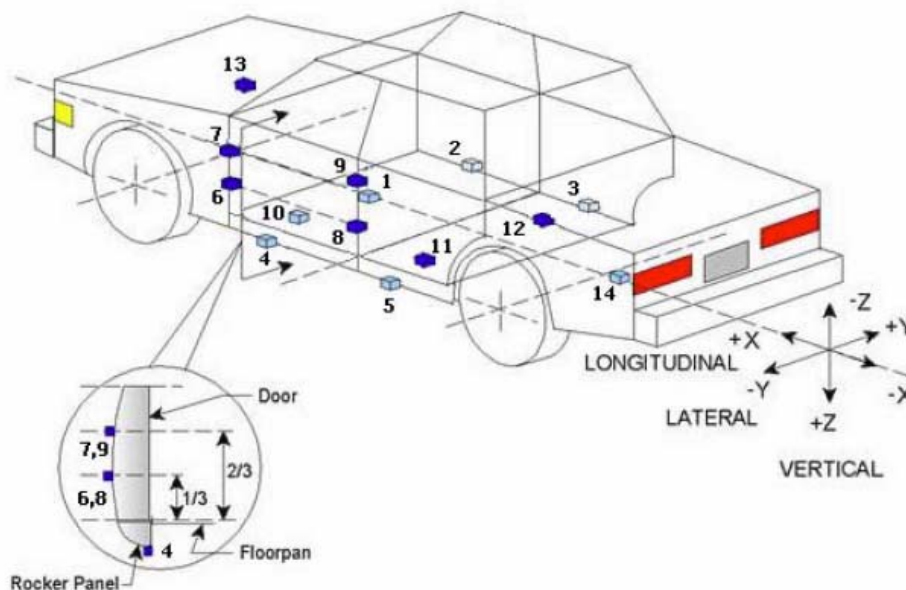
TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2012 Acura TL 4-Door Sedan

NHTSA No. MC5314

Test Program: NCAP MDB Side Impact Test

Test Date: 12/06/11



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2040	0	-375
2	Right Sill at Front Seat	2705	725	-345
3	Right Sill at Rear Seat	1840	740	-350
4	Left Sill at Front Door	3136	-625	-165
5	Left Sill at Rear Door	1965	-510	-165
6	A-Pillar Lower	3379	-845	-500
7	A-Pillar Middle	3379	-845	-737
8	B-Pillar Lower	2225	-758	-460
9	B-Pillar Middle	2225	-758	-785
10	Front Seat Track	2450	-580	-210
11	Rear Seat Structure			
12	Right Rear Occupant Compartment	2085	395	-190
13	Engine Block	4105	-315	-675
14	Rear Floorpan Above Axle	465	-595	-482

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

DATA SHEET NO. 7

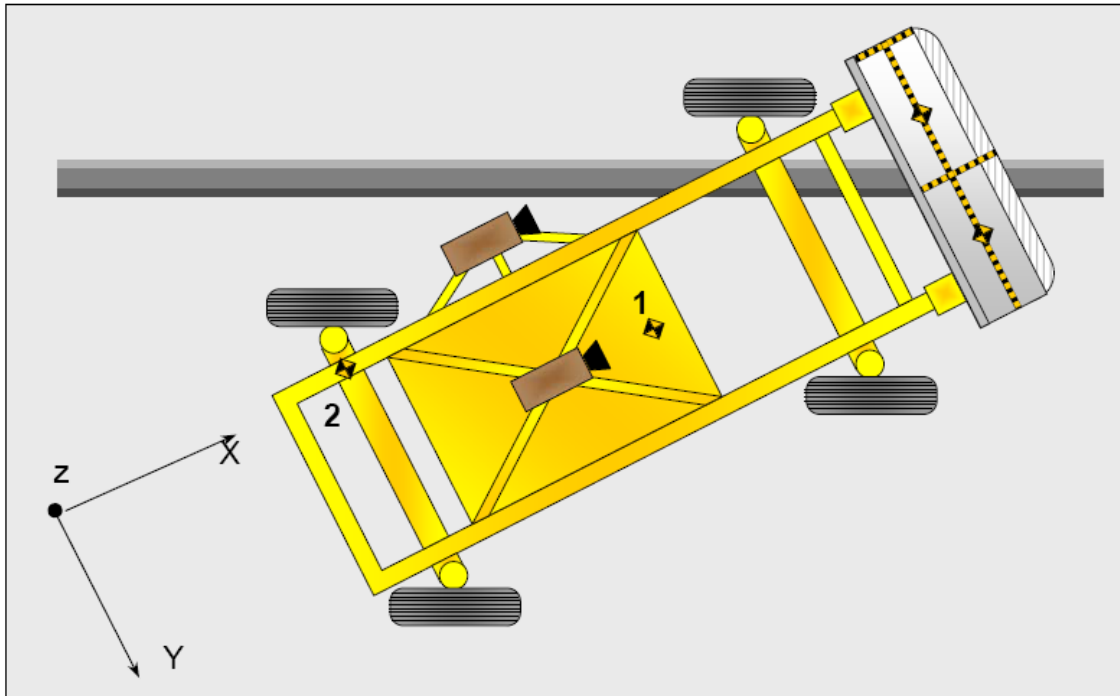
MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2012 Acura TL 4-Door Sedan

NHTSA No. MC5314

Test Program: NCAP MDB Side Impact Test

Test Date: 12/06/11



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**POST-TEST OBSERVATIONS**Test Vehicle: 2012 Acura TL 4-Door SedanNHTSA No. MC5314Test Program: NCAP MDB Side Impact TestTest Date: 12/06/11**TEST DUMMY INFORMATION AND CONTACT POINTS**

Dummy Body Part	Front Seat Dummy (ES-2re)	Rear Seat Dummy (SID-IIs)
Face	Curtain Airbag	Curtain Airbag
Top of Head	Curtain Airbag	Curtain Airbag, Side Header
Left Side of Head	Curtain Airbag	Curtain Airbag
Back of Head	Curtain Airbag, Headrest	Curtain Airbag, Side Header
Left Shoulder	Torso/Pelvis Airbag, Door Panel	Door Panel
Upper Torso	Torso/Pelvis Airbag	Seat
Lower Torso	Seat, Torso/Pelvis Airbag	Seat, Door Panel
Left Hip	Seat, Torso/Pelvis Airbag, Door Panel	Seat, Door Panel
Left Knee	Right Knee	Door Panel, Right Knee

POST-TEST DOOR PERFORMANCE

Description	Struck Side		Non-Struck Side		Rear Hatch/Oth
	Front	Rear	Front	Rear	
Remained Closed and Operational	No	No	Yes	Yes	Yes
Total Separation from Vehicle at Hinges or Latches	No	No	No	No	No
Latch or Hinge System Pulled Out of Their Anchorages	No	No	No	No	No
Disengaged from Latched Position	No	No	No	No	No
Latch Separated from Striker	No	No	No	No	No
Jammed Shut	Yes	Yes	No	No	No
If Door Opened at Striker, Record Width of Opening at Striker (mm)	N/A	N/A	N/A	N/A	N/A

POST-TEST SEAT PERFORMANCE

Description	Struck Side		Non-Struck Side	
	Front	Rear	Front	Rear
Seat Movement Along Seat Track	No	No	No	No
Seat Disengagement from Floor Pan	No	No	No	No
Seat Back Movement from Initial Position	No	No	No	No
Seat Back Collapse	No	No	No	No

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No Separation
Sill Separation	No Separation
Windshield Damage	None
Side Window Damage	Left Front Window Broken
Other Notable Effects	Driver's Side Partial Door Skin Separation

DATA SHEET NO. 8 ... (CONTINUED)**POST-TEST OBSERVATIONS**

Test Vehicle: 2012 Acura TL 4-Door Sedan NHTSA No. MC5314
Test Program: NCAP MDB Side Impact Test Test Date: 12/06/11

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vehicle Wheel Base	mm		2779
Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point)	mm		451
Actual Impact Point (Aft of Front Axle)	mm		451
Horizontal Offset (+ forward / - rearward)	mm	± 50 of Intended Impact Point	0
Vertical Offset (+ down / - up)	mm	± 20 of Intended Impact Point	-5

DATA SHEET NO. 9**MDB SUMMARY OF RESULTS**Test Vehicle: 2012 Acura TL 4-Door SedanNHTSA No. MC5314Test Program: NCAP MDB Side Impact TestTest Date: 12/06/11**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	700
Right	kg	377	292	669
Ratio	%	56.9%	43.1%	100.0%
Totals	kg	779	590	1368

SPEED AND IMPACT DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	62.10
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	62.02
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	90.4
MDB Forward Line of Motion to Target Vehicle CL	degrees	62.5 to 63.5	62.6
MDB Crabbed Angle to MDB Forward Line of Motion	degrees	26.0 to 28.0	27.8

MAXIMUM STATIC CRUSH OF HONEYCOMB FACE

Vertical Location			From Centerline		Max. Crush (mm)
Row	Description	Height (mm)	Distance (mm)	Direction	
A	Center of Bumper	432	800	Right	239
B	Top of Bumper	533	800	Left	93
C	Mid Level	686	800	Right	105
D	Top of Stack	813	800	Left	142

DATA SHEET NO. 10

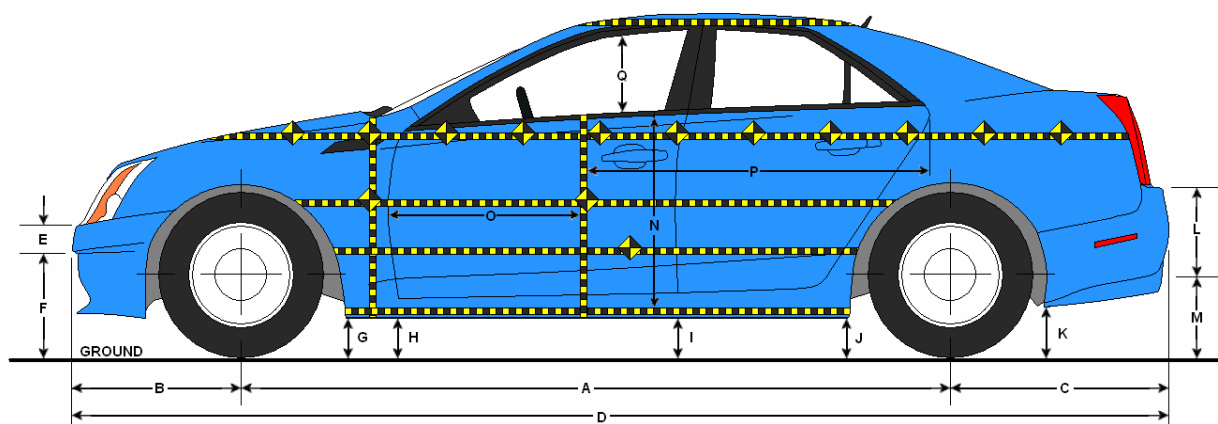
TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2012 Acura TL 4-Door Sedan

NHTSA No. MC5314

Test Program: NCAP MDB Side Impact Test

Test Date: 12/06/11



LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2779	2777	-2
B	Front Axle to FSOV	998	1003	5
C	Rear Axle to RSOV	1077	1079	2
D	Total Length at Centerline	4853	4858	5
E	Front Bumper Thickness	99	100	1
F	Front Bumper Bottom to Ground	430	433	3
G	Sill Height at Front Wheel Well	179	190	11
H	Sill Height at Front Door Leading Edge	179	195	16
I	Sill Height at B-Pillar	242	242	0
J1	Sill Height at Rear Wheel Well	167	167	0
J2	Pinch Weld Height at Rear Wheel Well	166	171	5
K	Sill Height Aft of Rear Wheel Well	450	452	2
L	Rear Bumper Thickness	88	82	-6
M	Rear Bumper Bottom to Ground	387	396	9
N	Sill Height to Bottom of Front Window Sill	601	535	-66
O	Front Door Leading Edge to Impact CL	756	731	-25
P	Rear Door Trailing Edge to Impact CL	1329	1332	3
Q	Front Window Opening	389	430	41
R	Right Side Length	3301	3304	3
S	Left Side Length	3298	3282	-16
T	Vehicle Width at B-Pillar	1853	1665	-188

All measurements in mm with tolerance of ± 3 mm

DATA SHEET NO. 11

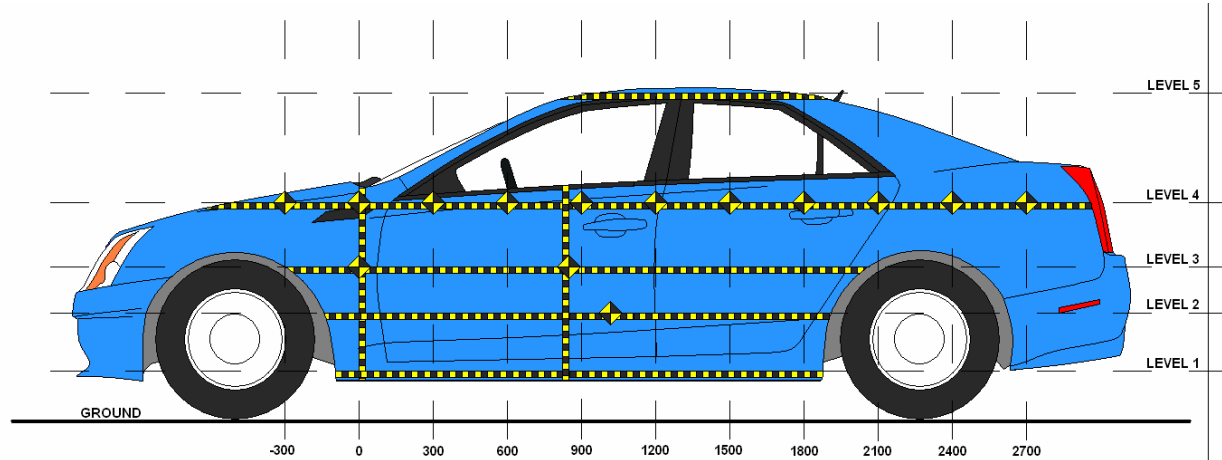
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2012 Acura TL 4-Door Sedan

NHTSA No. MC5314

Test Program: NCAP MDB Side Impact Test

Test Date: 12/06/11



MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	234	4	150
2	Occupant H-Point	478	236	1350
3	Mid-Door	620	267	1650
4	Window Sill	900	196	900
5	Window Top	1381	27	1200

DATA SHEET NO. 11 ... (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2012 Acura TL 4-Door Sedan

NHTSA No. MC5314

Test Program: NCAP MDB Side Impact Test

Test Date: 12/06/11

EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

	Pre-Test (mm)					Post-Test (mm)					Difference (mm)				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900															
-750															
-600															
-450															
-300				695					709					14	
-150			562	684				574	703				12	19	
0		573	580	676		599	575	590	701			2	10	25	
150	611	582	579	671		615	721	731	694		4	139	152	23	
300	612	580	576	665		611	766	766	732		-1	186	190	67	
450	611	578	574	658		605	779	782	796		-6	201	208	138	
600	609	576	573	653		602	784	784	830		-7	208	211	177	
750	609	576	572	647		600	788	787	835		-9	212	215	188	
900	610	576	572	641	886	598	794	791	837	900	-12	218	219	196	14
1050	611	576	572	635	885	596	802	798	811	905	-15	226	226	176	20
1200	612	578	574	630	884	596	812	801	785	911	-16	234	227	155	27
1350	613	579	576	625	884	601	815	820	794	906	-12	236	244	169	22
1500	615	580	578	622	882	605	814	831	815	900	-10	234	253	193	18
1650	614	582	580	620	882	605	811	847	795	896	-9	229	267	175	14
1800	605	580	582	611	883	603	788	827	758	893	-2	208	245	147	10
1950		566	574	597	885		629	741	678	892		63	167	81	7
2100			559	627	892			612	666	900			53	39	8
2250				634					658					24	
2400				640					651					11	
2550															
2700															
2850															

DATA SHEET NO. 11 ... (CONTINUED)

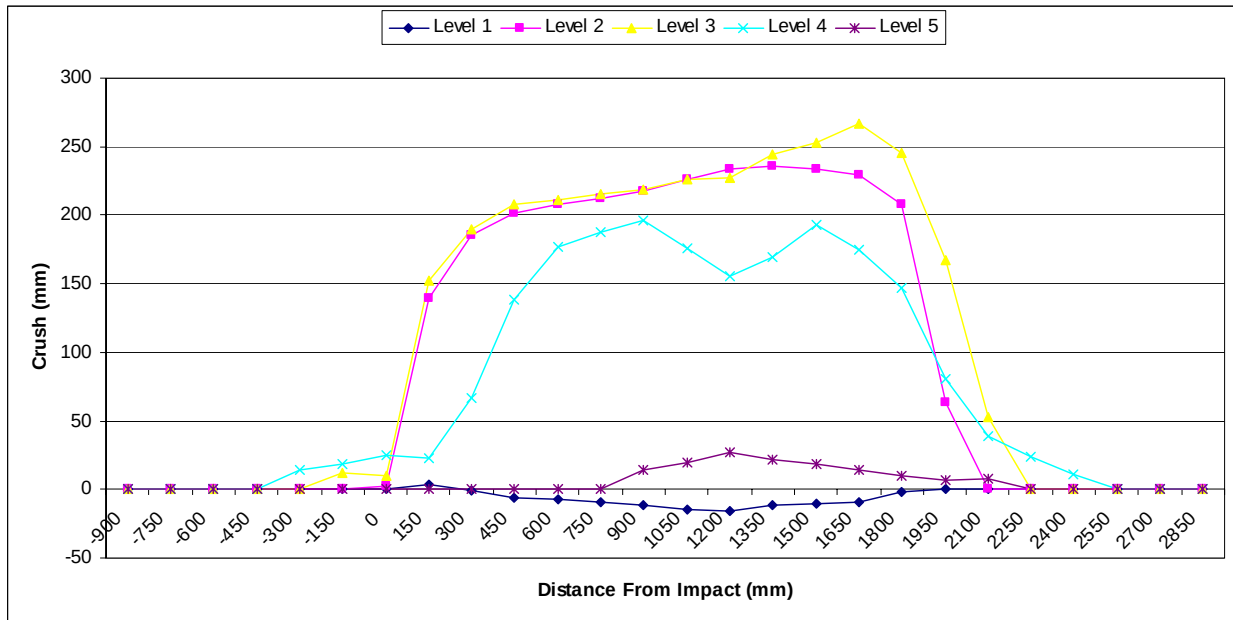
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2012 Acura TL 4-Door Sedan

NHTSA No. MC5314

Test Program: NCAP MDB Side Impact Test

Test Date: 12/06/11



DATA SHEET NO. 12

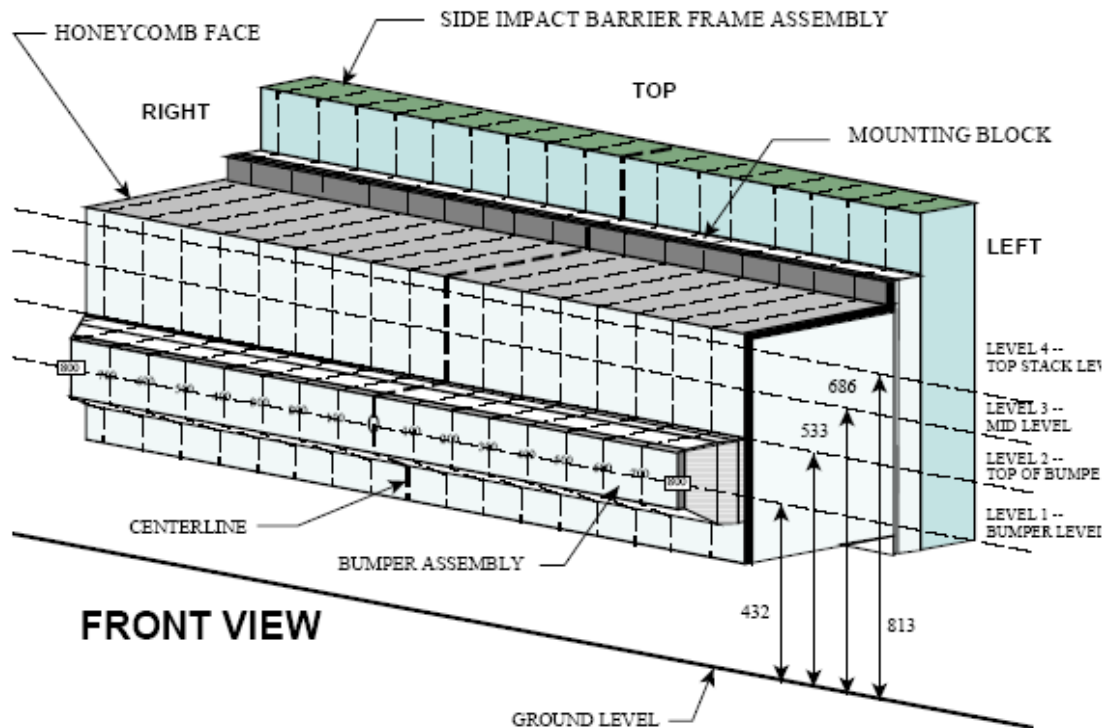
MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2012 Acura TL 4-Door Sedan

NHTSA No. MC5314

Test Program: NCAP MDB Side Impact Test

Test Date: 12/06/11



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	239	224	202	196	190	186	184	179	175	169	167	163	160	155	155	154	167
2	87	90	87	77	67	64	70	82	76	72	68	69	70	68	64	64	93
3	105	70	49	37	36	44	76	61	38	23	15	20	23	24	32	58	102
4	103	77	58	47	49	53	87	87	70	50	13	13	16	21	41	84	142

All dimensions in millimeters.

DATA SHEET NO. 13

FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2012 Acura TL 4-Door Sedan

NHTSA No. MC5314

Test Program: NCAP MDB Side Impact Test

Test Date: 12/06/11

Temperature at Time of Impact: 9.4° C

Test Time: 12:50 PM

A. From impact until vehicle motion ceases: 0 oz.

(Maximum allowable = 1 oz.)

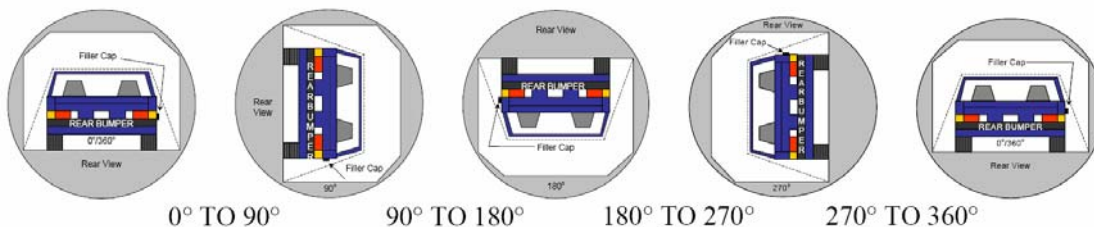
B. For the 5 minute period after motion ceases: 0 oz.

(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°	84	300	384
180° To 270°	78	300	378
270° To 360°	78	300	378

FMVSS 301 SPILLAGE TABLE

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

SOLVENT SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0° To 90°	No Spillage Occurred
90° To 180°	No Spillage Occurred
180° To 270°	No Spillage Occurred
270° To 360°	No Spillage Occurred

DATA SHEET NO. 14

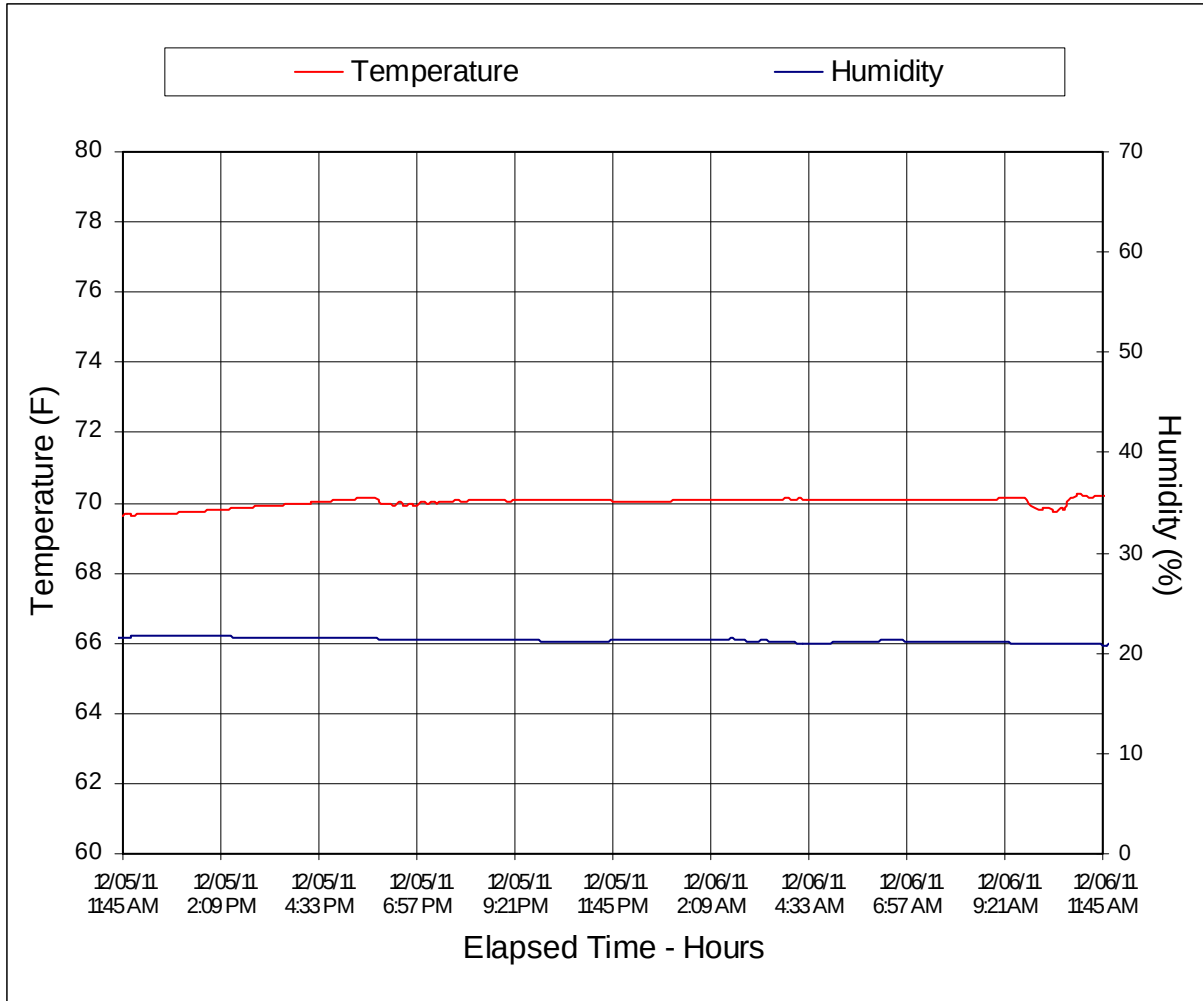
DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION

Test Vehicle: 2012 Acura TL 4-Door Sedan

NHTSA No. MC5314

Test Program: NCAP MDB Side Impact Test

Test Date: 12/06/11



APPENDIX A
PHOTOGRAPHS

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



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



FIGURE 3. Pre-Test Frontal View of Test Vehicle



FIGURE 4. Post-Test Frontal View of Test Vehicle



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



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



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



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



FIGURE 9. Pre-Test Left Rear $\frac{3}{4}$ View of Test Vehicle



FIGURE 10. Post-Test Left Rear $\frac{3}{4}$ 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 Area



FIGURE 16. Post-Test Overhead View of Test Area



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. View of Disengaged Parking Brake



FIGURE 38. Pre-Test View of Parking Brake



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



FIGURE 40. Pre-Test Close-Up Left Side View of Driver Seat Back



FIGURE 41. Pre-Test Close-Up View of Driver Seat Back or Head Restraint



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



FIGURE 43. Post-Test Driver Dummy and Door Clearance View



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



FIGURE 45. Post-Test Right Side View of Driver Dummy and Front Seat Occupant Compartment



FIGURE 46. Pre-Test Driver Inner Door Panel View



FIGURE 47. Post-Test Driver Inner Door Panel View



FIGURE 48. Post-Test Driver Dummy Close-Up Head Contact with Vehicle Interior View



FIGURE 49. Post-Test Driver Dummy Close-Up Head Contact with Side Airbag View



FIGURE 50. Post-Test Driver Dummy Close-Up Torso Contact with Vehicle Interior View



FIGURE 51. Post-Test Driver Dummy Close-Up Torso Contact with Side Airbag View



FIGURE 52. Post-Test Driver Dummy Close-Up Pelvis Contact with Vehicle Interior View



FIGURE 53. Post-Test Driver Dummy Close-Up Pelvis Contact with Side Airbag View



FIGURE 54. Pre-Test Left Side View of Rear Passenger Dummy
Showing Belt, Chalking, and Contact Switches

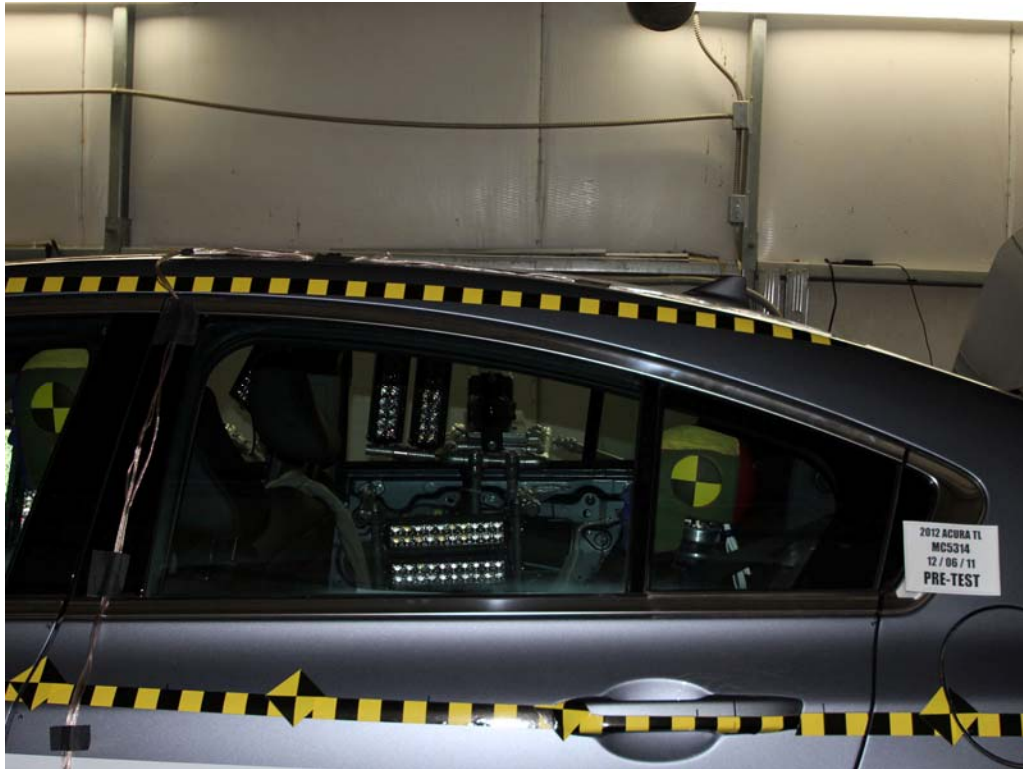


FIGURE 55. Pre-Test Left Side View of Rear Passenger Dummy
Shoulder and Door Top View



FIGURE 56. Post-Test Left Side View of Rear Passenger Dummy
Shoulder and Door Top View



FIGURE 57. Pre-Test Frontal View of Rear Passenger Seat Back
Prior to Dummy Positioning



FIGURE 58. Pre-Test Frontal View of Rear Passenger Dummy
Head and Shoulders in Relation to Head Restraint



FIGURE 59. Pre-Test Overhead View of Rear Passenger
Seat Pan Prior to Dummy Positioning



FIGURE 60. Pre-Test Overhead View of Rear Passenger Dummy Thighs on Seat Pan



FIGURE 61. Pre-Test View of Rear Passenger Dummy's Neck
Showing Position of Adjustable Neck Bracket



FIGURE 62. Pre-Test View of Rear Passenger Dummy's Head
Showing Dummy's Head is Level



FIGURE 63. Pre-Test Placement of Rear Passenger Dummy's Feet



FIGURE 64. Pre-Test View of Belt Anchorage for Rear Passenger Dummy



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



FIGURE 66. Pre-Test Close-Up Left Side View of Rear Passenger Seat Back



FIGURE 67. Pre-Test Close-Up View of Rear Passenger Seat Back or Head Restraint

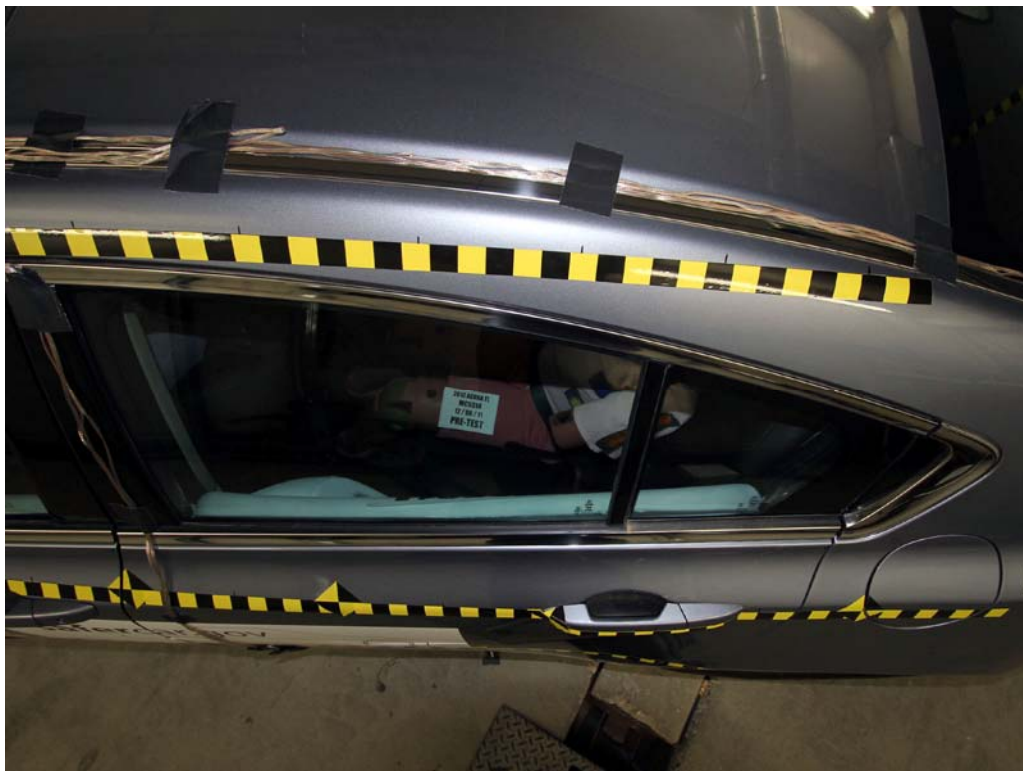


FIGURE 68. Pre-Test Rear Passenger Dummy and Door Clearance View

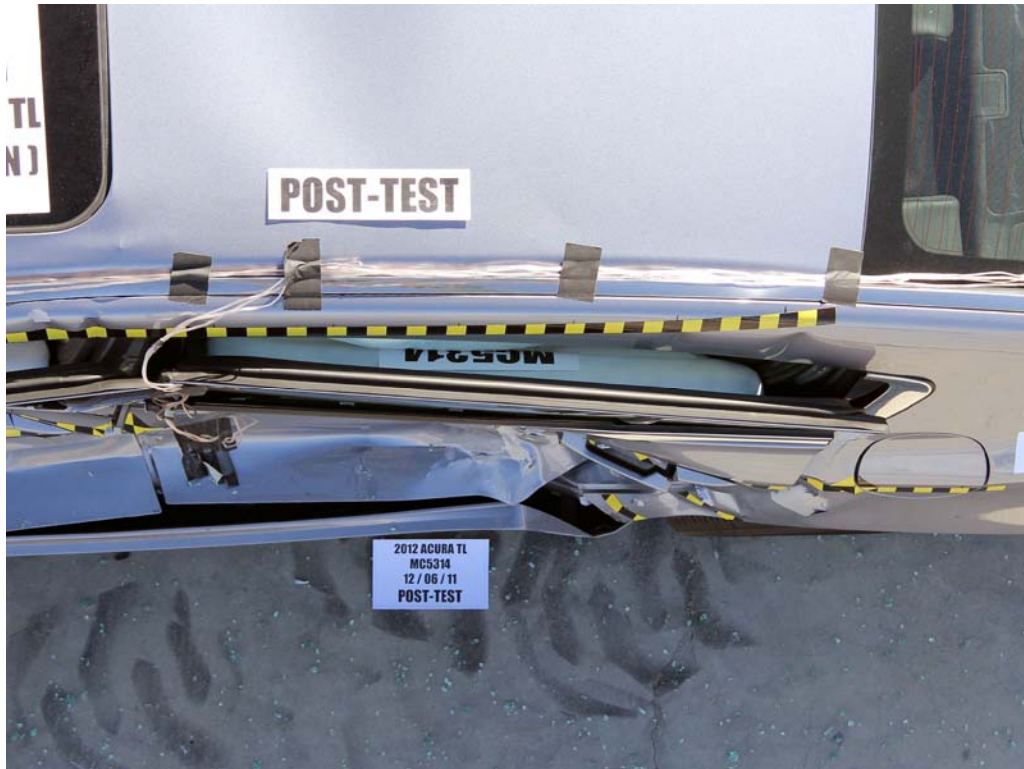


FIGURE 69. Post-Test Rear Passenger Dummy and Door Clearance View



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



FIGURE 71. Post-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment



FIGURE 72. Pre-Test Rear Passenger Inner Door Panel View



FIGURE 73. Post-Test Rear Passenger Inner Door Panel View



FIGURE 74. Post-Test Rear Passenger Dummy Close-Up
Head Contact with Vehicle Interior View

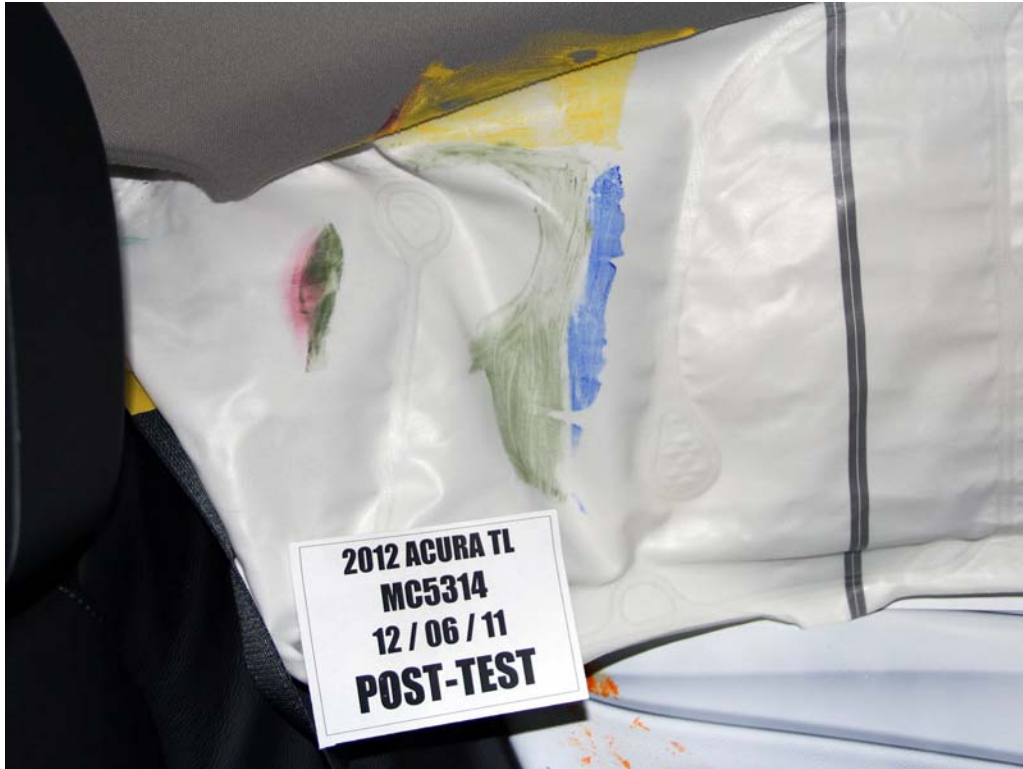


FIGURE 75. Post-Test Rear Passenger Dummy Close-Up
Head Contact with Side Airbag View

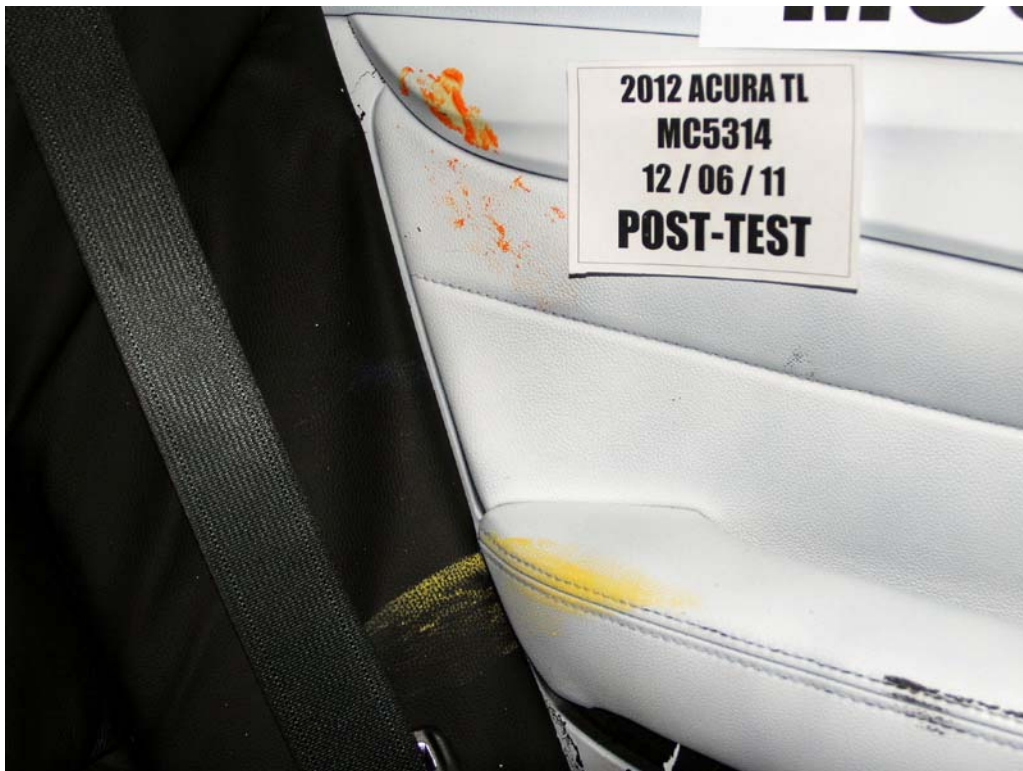


FIGURE 76. Post-Test Rear Passenger Dummy Close-Up
Torso Contact with Vehicle Interior View

Photograph Not Applicable

Vehicle Not Equipped With Rear Passenger Side Airbag

FIGURE 77. Post-Test Rear Passenger Dummy Close-Up
Torso Contact with Side Airbag View

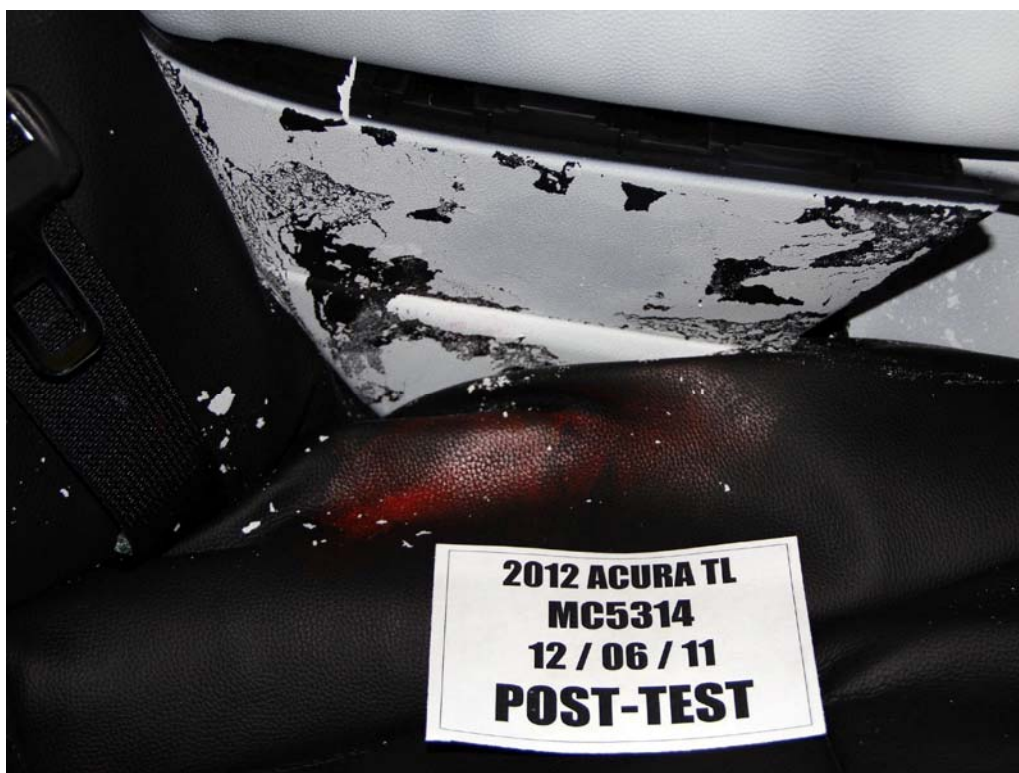


FIGURE 78. Post-Test Rear Passenger Dummy Close-Up
Pelvis Contact with Vehicle Interior View

Photograph Not Applicable

Vehicle Not Equipped With Rear Passenger Side Airbag

FIGURE 79. Post-Test Rear Passenger Dummy Close-Up
Pelvis Contact with Side Airbag View



FIGURE 80. Pre-Test View of Fuel Filler Cap



FIGURE 81. Post-Test View of Fuel Filler Cap



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



FIGURE 83. Post-Test Front View of MDB Impactor Face

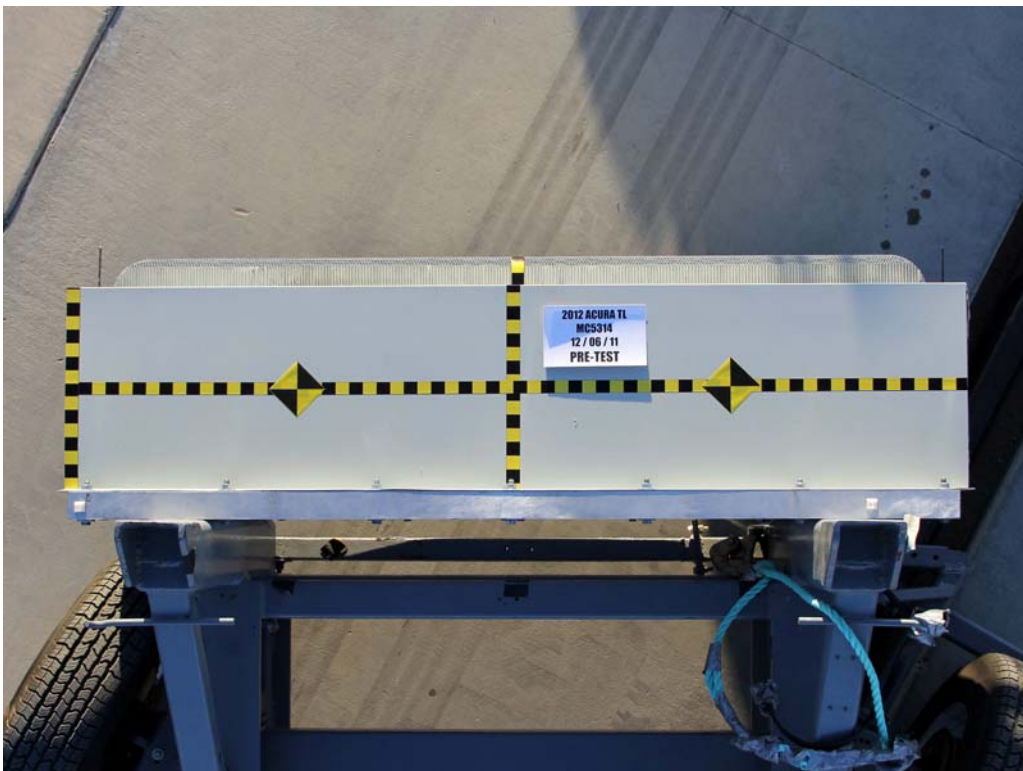


FIGURE 84. Pre-Test Top View of MDB Impactor Face



FIGURE 85. Post-Test Top View of MDB Impactor Face



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



FIGURE 87. Post-Test Left Side View of MDB Impactor Face



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



FIGURE 89. Post-Test Right Side View of MDB Impactor Face

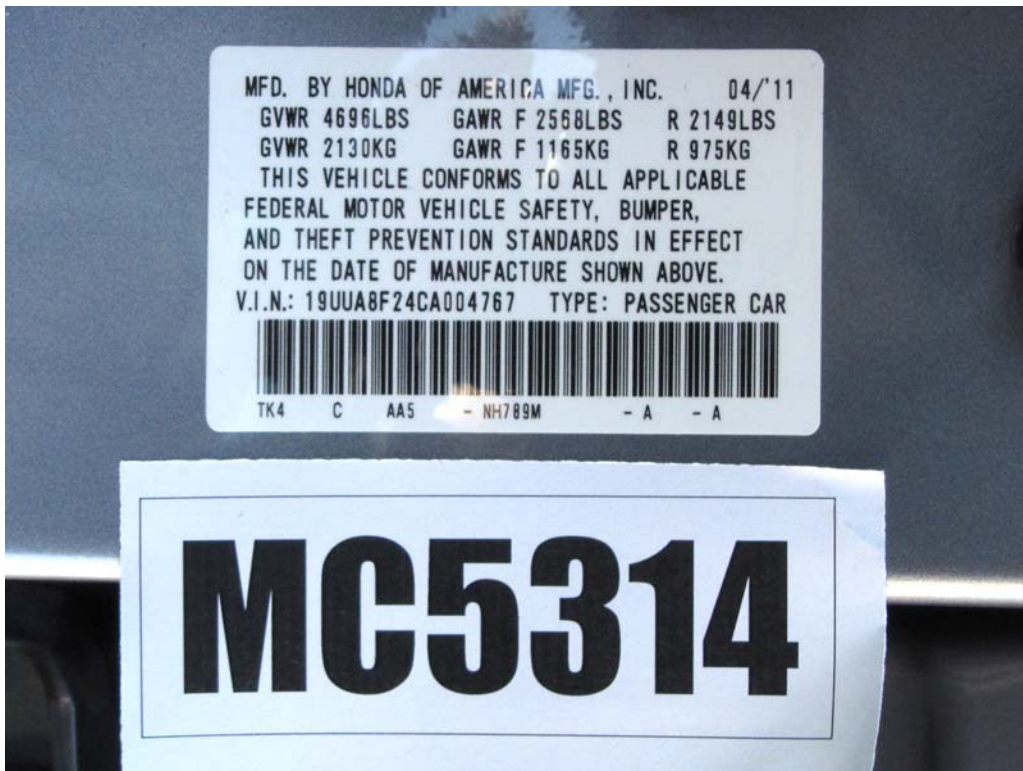


FIGURE 90. Close-Up View of Vehicle's Certification Label

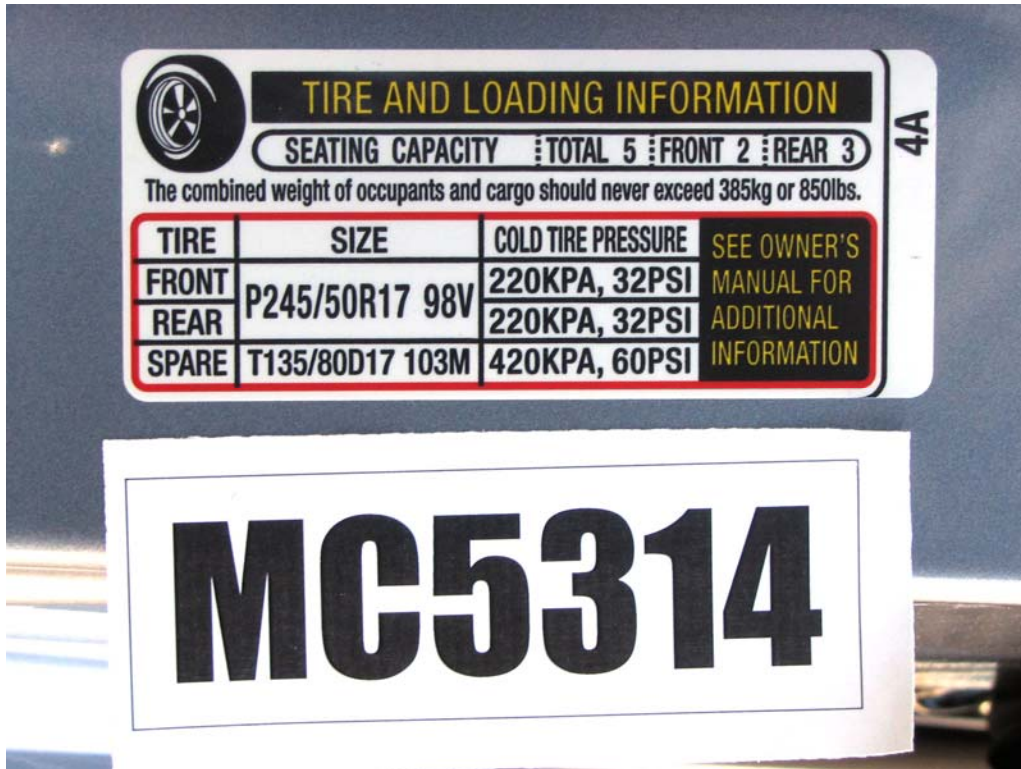


FIGURE 91. Close-Up View of Vehicle's Tire Information Placard



FIGURE 92. Pre-Test Ballast View

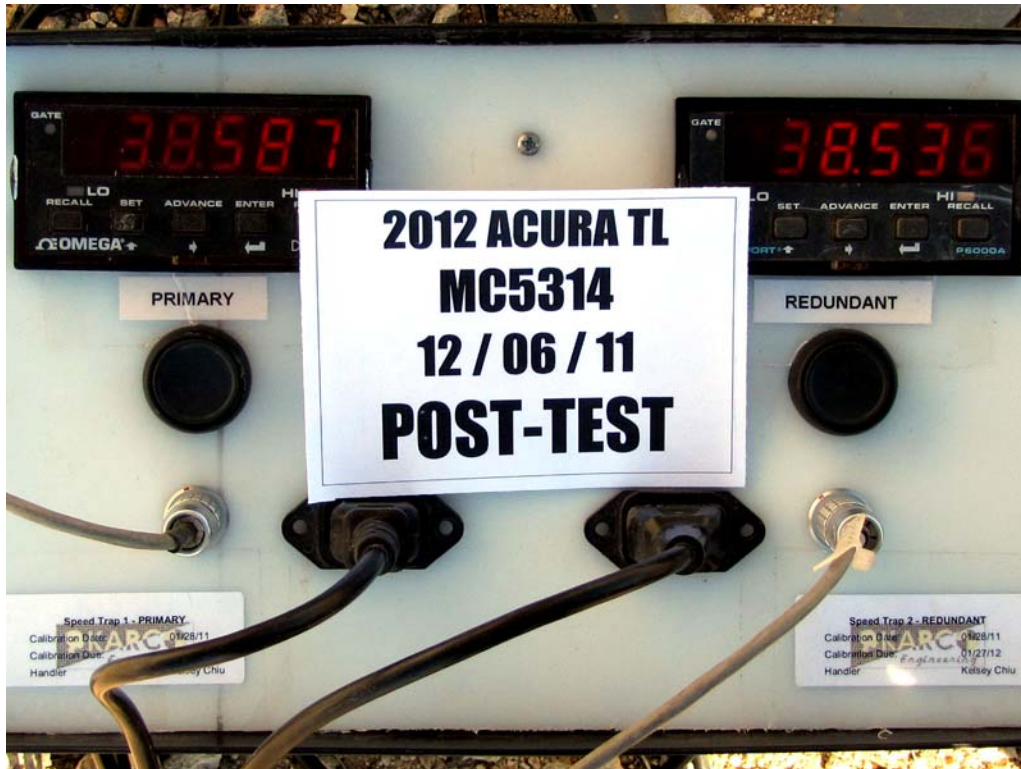


FIGURE 93. Post-Test Primary and Redundant Speed Trap Read-Out

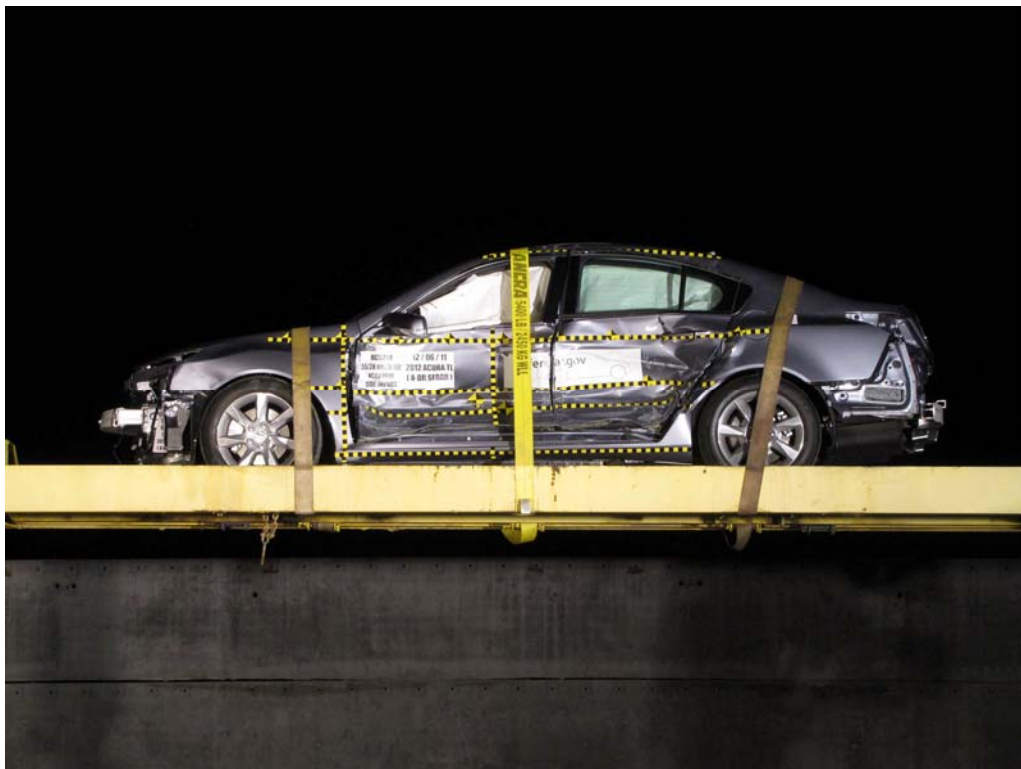


FIGURE 94. FMVSS No. 301 Static Rollover 0 Degrees

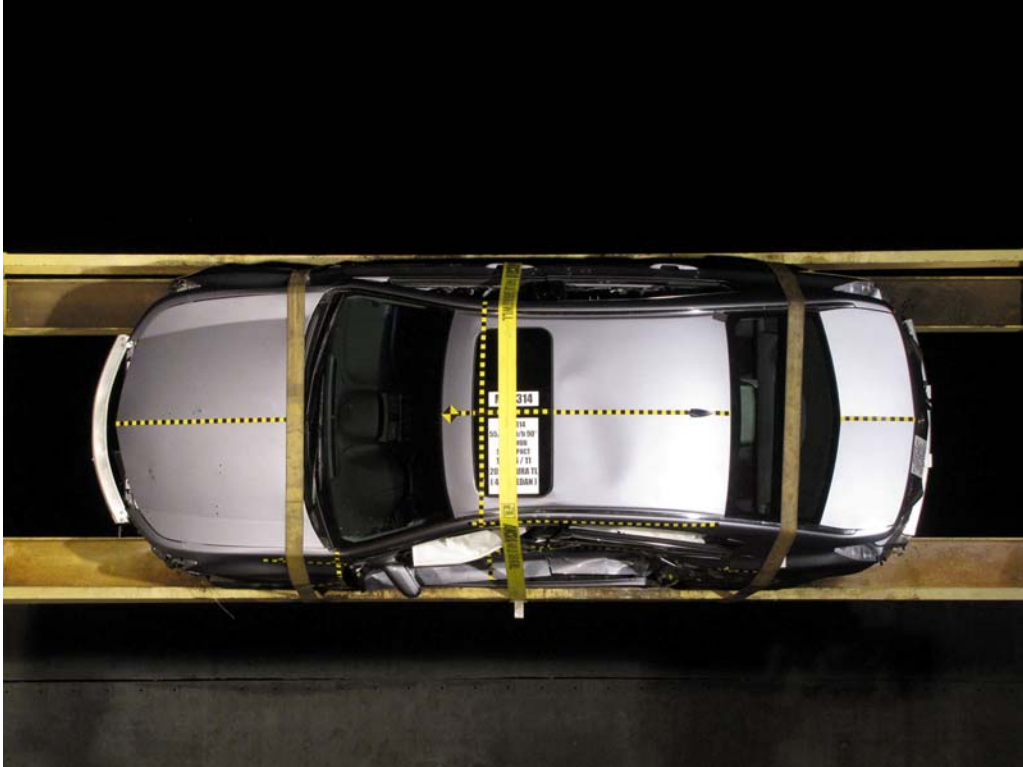


FIGURE 95. FMVSS No. 301 Static Rollover 90 Degrees

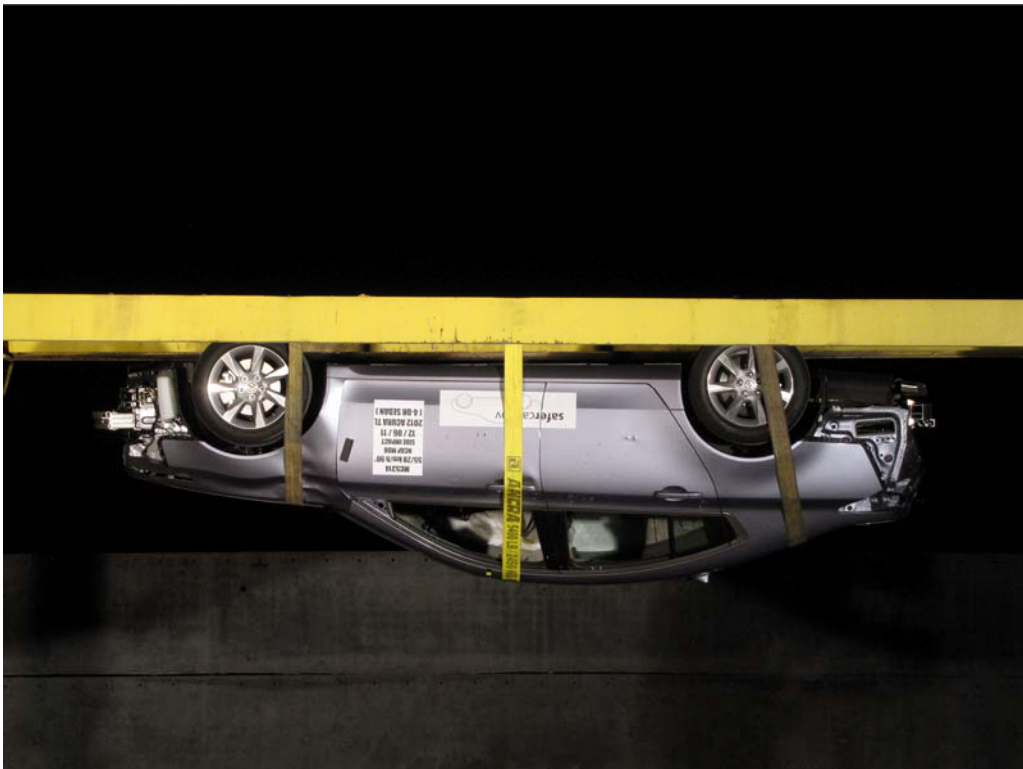


FIGURE 96. FMVSS No. 301 Static Rollover 180 Degrees

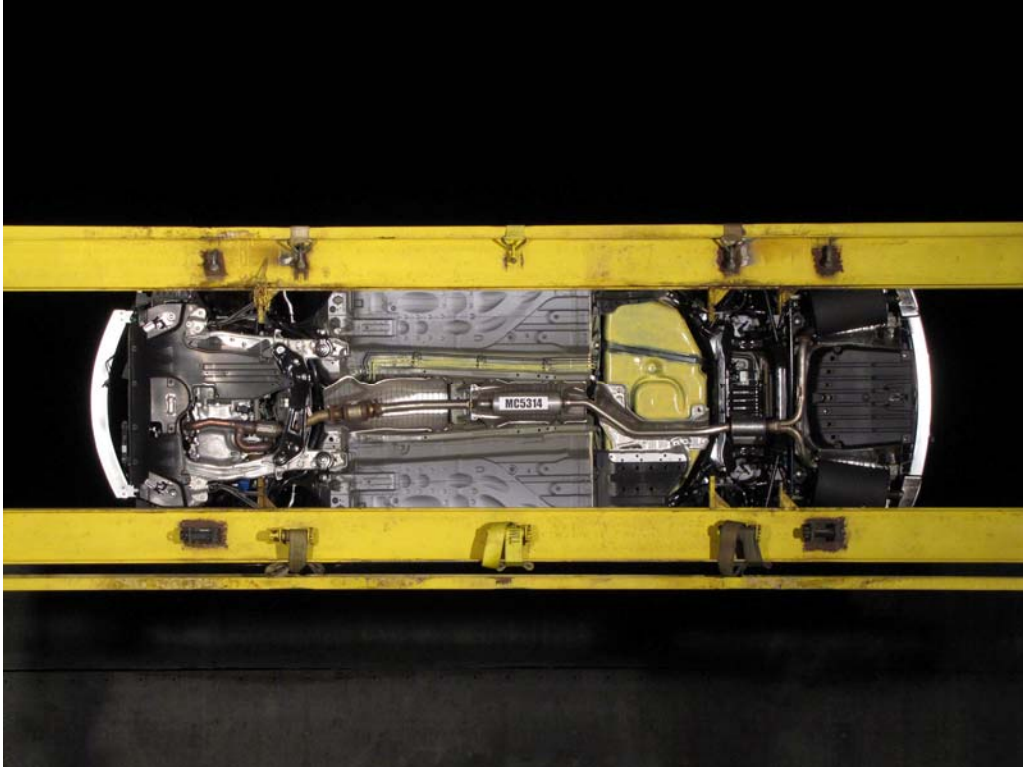


FIGURE 97. FMVSS No. 301 Static Rollover 270 Degrees

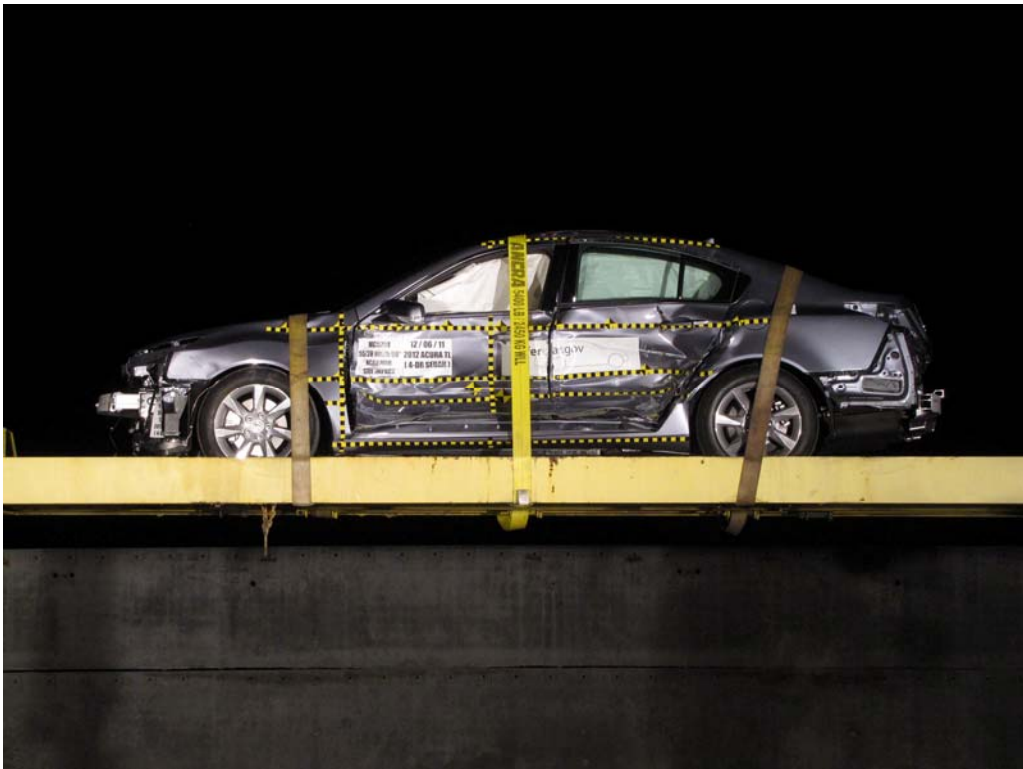


FIGURE 98. FMVSS No. 301 Static Rollover 360 Degrees



FIGURE 99. Impact Event

2012 TL
VEHICLE NUMBER: 19UUA8F24CA004767
ENGINE NUMBER: 3202-6004972 ECU: FORGED SILVER M.
CONTROL NUMBER: 266268 INT: EB0KY

STANDARD EQUIPMENT AT NO EXTRA COST

*** TECHNICAL FEATURES ***

- 300hp 3.5 Liter SOHC 24 Valve VTEC V6 Engine
- 6-Speed Automatic Transmission with Sequential SportShift
- 4-Wheel Disc Brakes
- Front Double Wishbone Suspension
- Rear Multi-Link Suspension
- Electric Power-Assisted Rack and Pinion Steering
- Drive-by Wire Throttle System
- Immobilizer Theft Deterrent System
- High-Flow Sport-Tuned Exhaust System

*** SAFETY FEATURES ***

- Driver's and Front Passenger's Dual-Stage Airbags (SRS)
- Driver's and Front Passenger's Side Airbags
- Side Curtain Airbags
- Vehicle Stability Assist (VSA)
- Anti-Lock Braking System (ABS)
- Electronic Brake Distribution (EBD)
- Cruise Assist
- 3 Point Seat Belts
- Front Seat Belts with Automatic Tensioning System
- Active Front Head Restraints
- Tire Pressure Monitoring System
- ACE Body Structure
- Day Time Running Lights (DRL)
- LATCH System for Child Seats

*** INTERIOR FEATURES ***

- Sport Seats with Leather Trim
- Acura Premium Sound System with 8 Speakers
- and AMFMS-Disc In-Dash CD
- XM Satellite Radio
- MP3/Auxiliary Input Jack
- USB Audio Interface
- Driver Recognition Memory System
- Driver's 10-Way Power Seat
- Front Passenger's 6-Way Power Seat
- Heated Front Seats
- HomeLink System
- Bluetooth HandsFreeLink
- Steering Wheel Mounted Controls
- Dual-Zone Auto Climate Control with Air Filtration System
- Power Windows and Door Locks
- Front Auto Up/Down Windows
- Maintenance Minder System
- Auto Dimming Rearview Mirror

*** EXTERIOR FEATURES ***

- Power Moonroof with TR Feature
- 17" x 6.5" Alloy Wheels
- P245/50 R17 All-Season Tires
- LED Illuminated Tail Lights
- Fog Lights
- Remote Entry with Security System

Manufacturer's Suggested Retail Price: **\$35,605.00**

MSRP includes:
-4YR/70K Mile Powertrain Warranty
-4YR/50K Mile Ltd Vehicle Warranty
-Full Tank of Fuel
-3 Months Free XM Radio Service

XM Radio is available in the 48 contiguous states

Destination and Handling: **\$650.00**

TOTAL VEHICLE PRICE
(includes Pre-Delivery Service)
\$36,465.00

License and title fees, state and local taxes and dealer options and accessories are not included in the manufacturer's suggested retail price.

Environmental Performance

Protect the environment, choose vehicles with **higher scores**:

Global Warming Score **7**

Smog Score **6**

Vehicle emissions are a primary contributor to global warming and smog. Scores are determined by the California Air Resources Board based on the vehicle's measured emissions. Please visit californiaairresourcesboard.com

POWER ACURA SOUTH BAY
25341 CRENSHAW BLVD.
TORRANCE, CA 90505

PORT OF ENTRY: MARYSVILLE
DELIVERY POINT: LOS ANGELES

ROWSPACE: 725-613
TRANSMETHOD: A76 SAN BERNARDINO

VIN: 19UUA8F24CA004767

ORIG. DLR: 281439
REF. NO.: 40174
HN CODE: AL 1877
EMISSION: 50 STATE

DEALER: 251439

FOR THIS VEHICLE
Final Assembly Plant: **MARYSVILLE, OHIO USA**
Country of Origin: Engine: **U.S.A.**
Transmission: **JAPAN**

EPA Fuel Economy Estimates

CITY MPG
20
Expected range for model driven 16 to 24 MPG

Estimated Annual Fuel Cost
\$2,088
based on 15,000 miles at \$3.20 per gallon

HIGHWAY MPG
29
Expected range for model driven 24 to 34 MPG

Combined Fuel Economy
This Vehicle **23**
All MS20es

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

PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS CARLINE
U.S. Canadian Parts Content: **60 %**
Major Sources of Foreign Parts Content: **JAPAN 20 %**

NOTE: Parts content does not include final assembly, distribution or other non-parts costs.

GOVERNMENT SAFETY RATINGS

Frontal Crash	Driver Passenger	Not Rated
Star ratings based on the risk of injury in a frontal impact. Frontal ratings should ONLY be compared to other vehicles of similar size and weight.		
Side Crash	Front seat Rear seat	Not Rated Not 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 is equipped with bumpers that can withstand an impact of 2.5 miles per hour with no damage to the vehicle's body and safety systems, although the bumper and related components may sustain damage. The bumper system on this vehicle conforms to the current federal bumper standard of 2.5 miles per hour.

FIGURE 100. Monroney Label

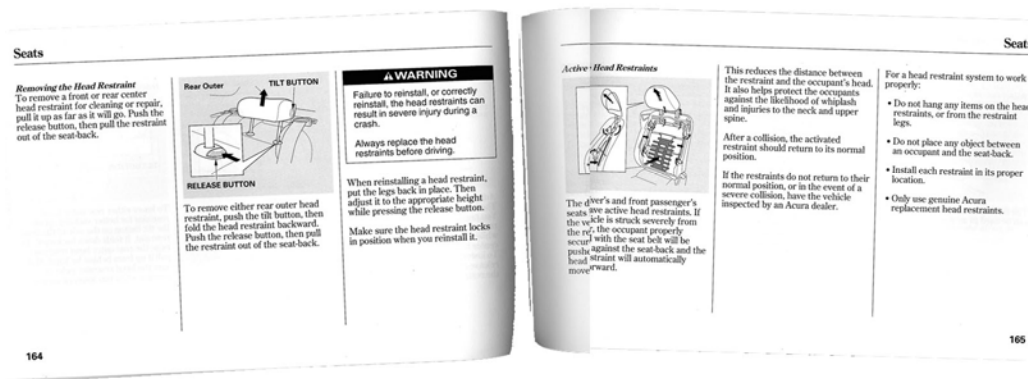


FIGURE 101. Driver Head Restraint Use and Adjustment
Information from Vehicle Owner's Manual

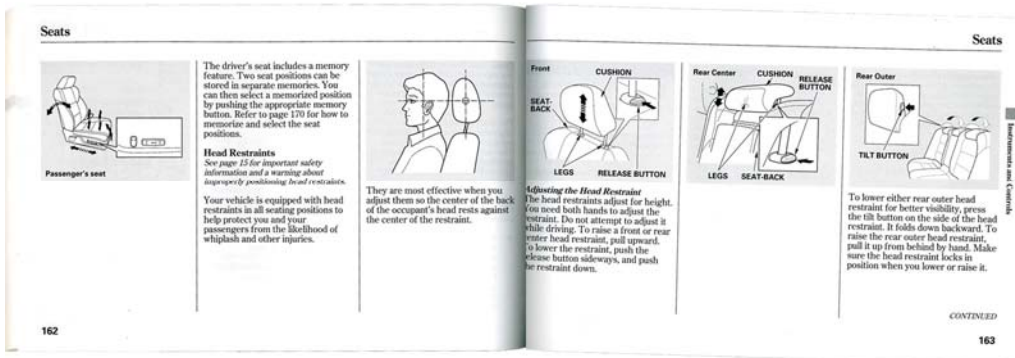


FIGURE 102. Left Rear Passenger Head Restraint
Use and Adjustment Information from Vehicle Owner's Manual

APPENDIX B
DUMMY RESPONSE DATA

TABLE OF DATA PLOTS

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

The following additional data for this test can be obtained from the Research and Development section of the NHTSA website (www.NHTSA.dot.gov)

Additional 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)
Passenger Head Acceleration Redundant (X)
Passenger Head Acceleration Redundant (Y)
Passenger Head Acceleration Redundant (Z)

Vehicle Instrumentation Data

Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
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)
Left Side Sill at Front Seat Acceleration (Y)
Left Side Sill at Rear Seat Acceleration (Y)
Lower A-Post Acceleration (Y)
Middle A-Post Acceleration (Y)
Lower B-Post Acceleration (Y)
Middle B-Post Acceleration (Y)
Front Seat Track Acceleration (Y)
Rear Seat Structure Acceleration (Y)
Right Rear Occupant Compartment Acceleration (Y)
Engine Block (X)
Engine Block (Y)
Rear Floorpan Above Axle Acceleration (X)
Rear Floorpan Above Axle Acceleration (Y)
Rear Floorpan Above Axle 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)

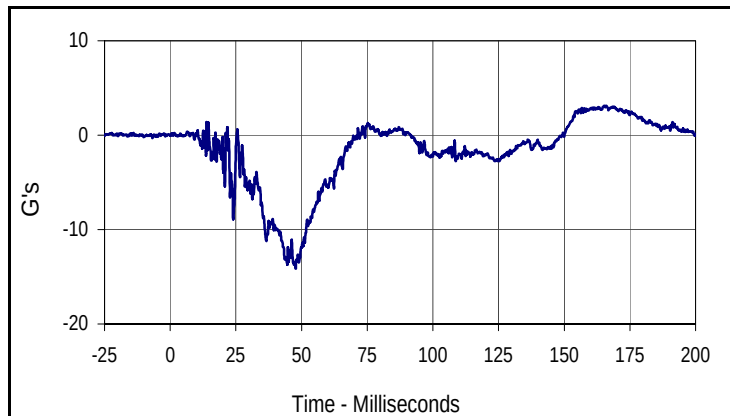
MDB Rear Acceleration (Y)

Left MDB Contact Switch

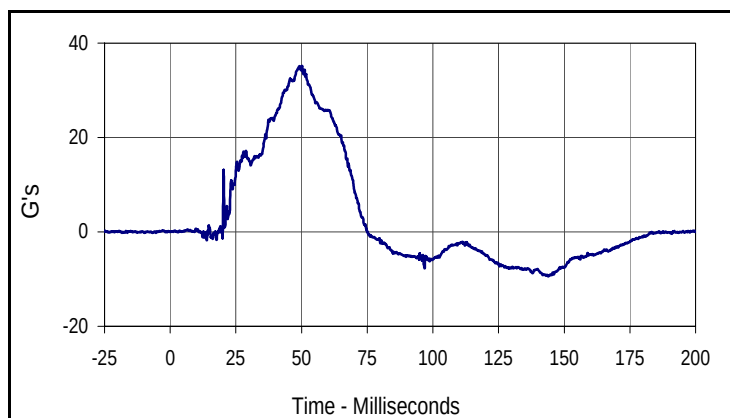
Right MDB Contact Switch

Test Vehicle: 2012 Acura TL 4-Door Sedan
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

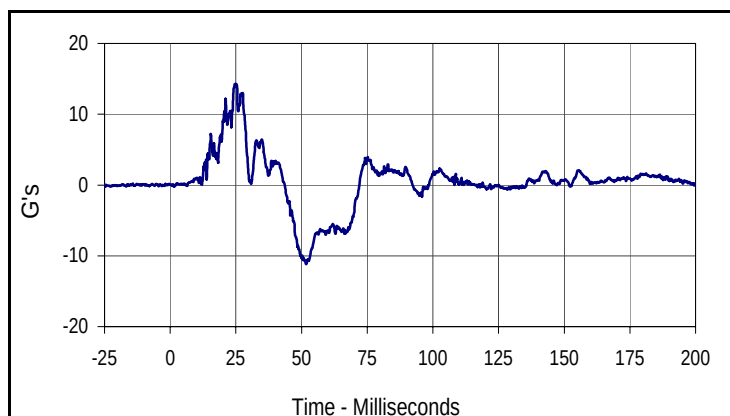
NHTSA No.: MC5314
 Test Date: 12/6/11



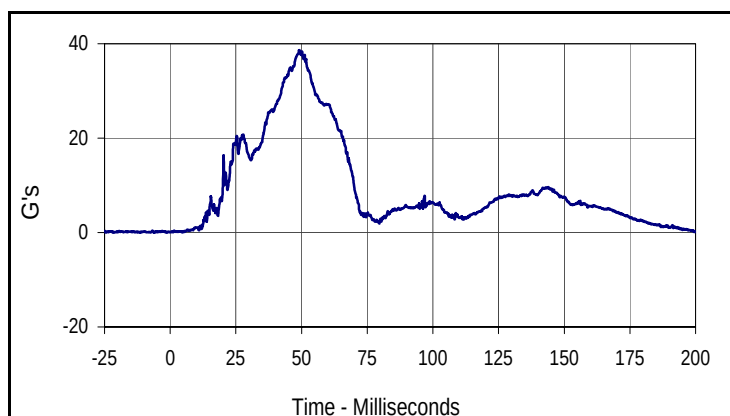
Curve Description			
Driver Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
3.1	165.2	-14.1	47.7



Curve Description			
Driver Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
35.2	50.2	-9.4	143.9



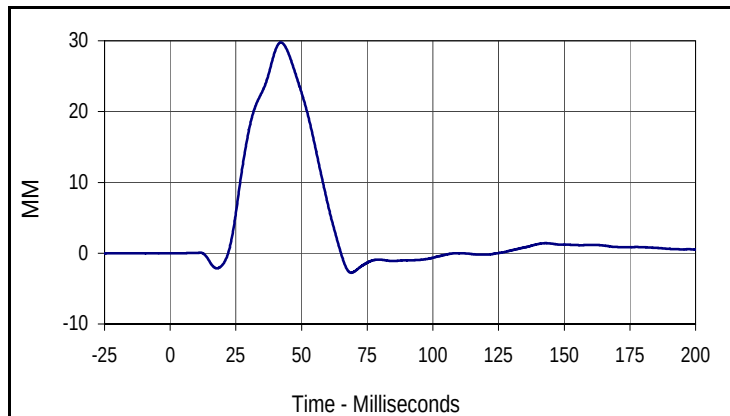
Curve Description			
Driver Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
14.3	24.9	-11.2	51.8



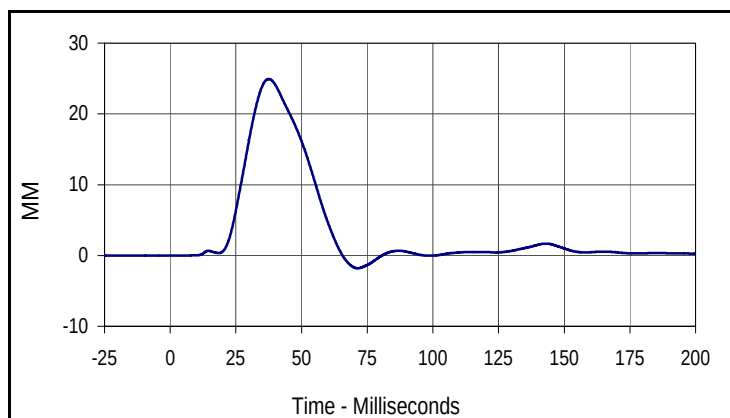
Curve Description			
Driver Head Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
004	RES	1000	G's
Max	Time	Min	Time
38.6	49.2	0.1	0.3

Test Vehicle: 2012 Acura TL 4-Door Sedan
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

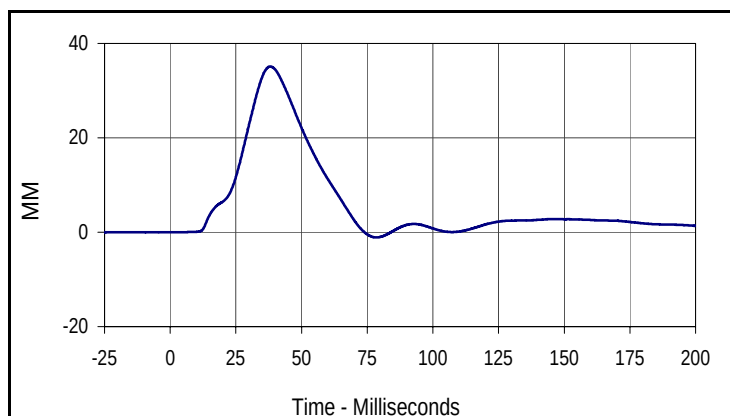
NHTSA No.: MC5314
 Test Date: 12/6/11



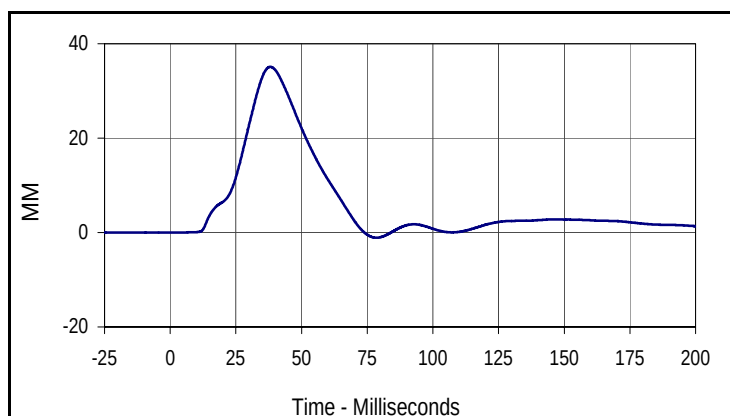
Curve Description			
Driver Upper Thorax Rib Deflection Y			
Plot No.	Type	SAE Class	Units
005	FIL	180	MM
Max	Time	Min	Time
29.8	42.1	-2.8	68.9



Curve Description			
Driver Middle Thorax Rib Deflection Y			
Plot No.	Type	SAE Class	Units
006	FIL	180	MM
Max	Time	Min	Time
24.9	37.5	-1.8	71.4



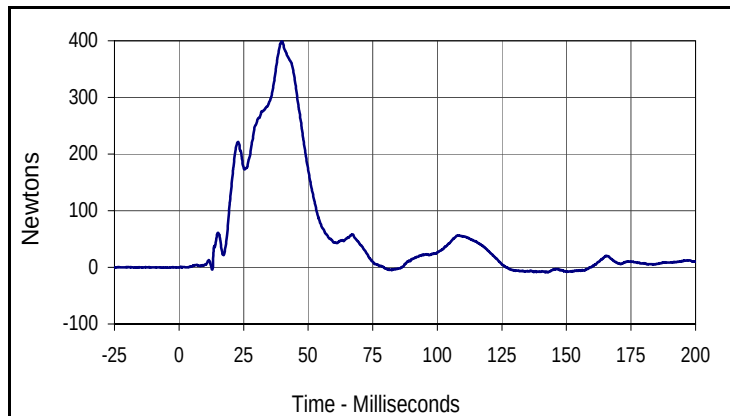
Curve Description			
Driver Lower Thorax Rib Deflection Y			
Plot No.	Type	SAE Class	Units
007	FIL	180	MM
Max	Time	Min	Time
35.1	38.1	-1.1	78.5



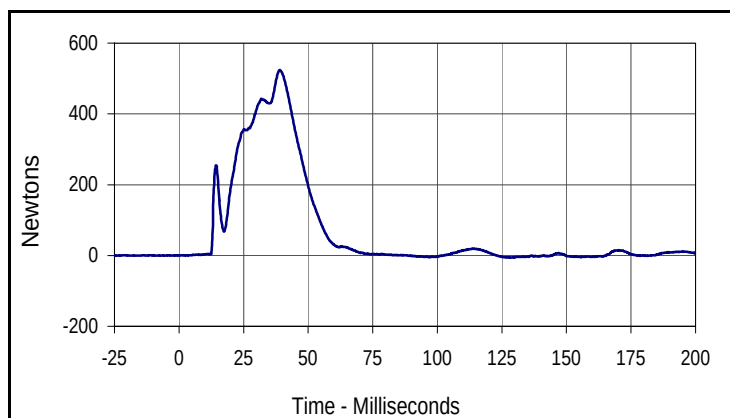
Curve Description			
Driver Thorax Rib Deflection Maximum			
Plot No.	Type	SAE Class	Units
010	FIL	180	MM
Max	Time	Min	Time
35.1	38.1	-1.1	78.5

Test Vehicle: 2012 Acura TL 4-Door Sedan
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

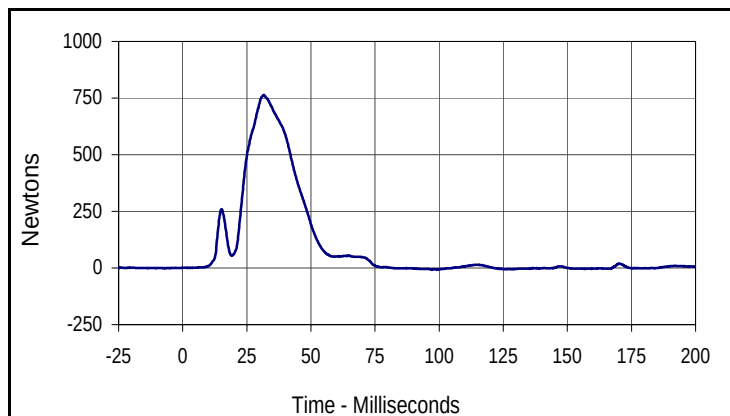
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 Test Date: 12/6/11



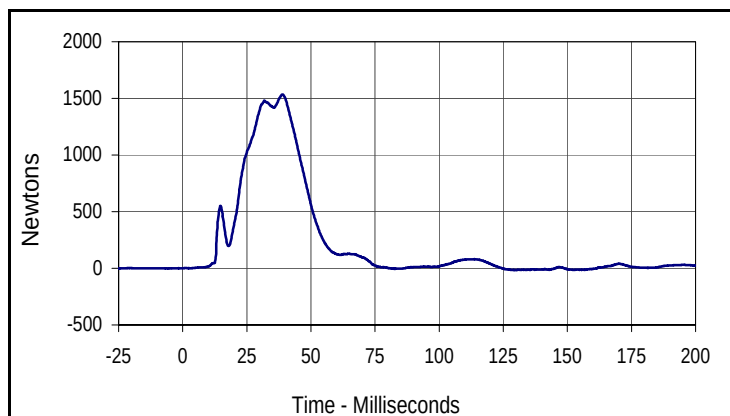
Curve Description			
Driver Anterior Abdominal Force Y			
Plot No.	Type	SAE Class	Units
008	FIL	600	Newtons
Max	Time	Min	Time
398.4	39.8	-9.1	142.8



Curve Description			
Driver Middle Abdominal Force Y			
Plot No.	Type	SAE Class	Units
009	FIL	600	Newtons
Max	Time	Min	Time
523.8	38.9	-5.8	129.2



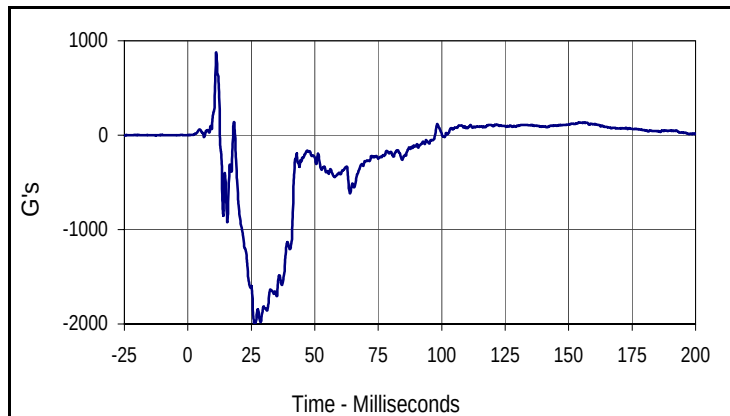
Curve Description			
Driver Posterior Abdominal Force Y			
Plot No.	Type	SAE Class	Units
011	FIL	600	Newtons
Max	Time	Min	Time
763.8	31.6	-7.2	99.4



Curve Description			
Driver Total Abdominal Force			
Plot No.	Type	SAE Class	Units
012	SUM	600	Newtons
Max	Time	Min	Time
1533.8	38.9	-15.7	130.1

Test Vehicle: 2012 Acura TL 4-Door Sedan
Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

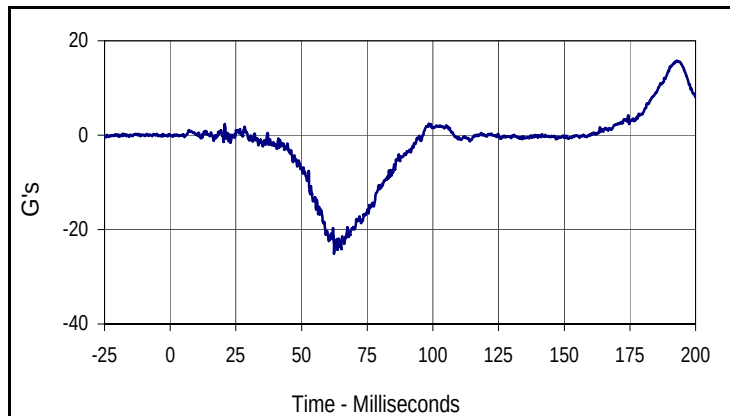
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Test Date: 12/6/11



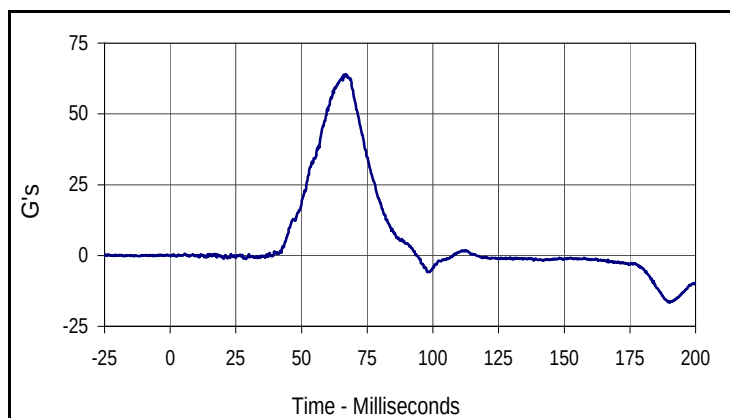
Curve Description			
Driver Pubic Symphysis Force Y			
Plot No.	Type	SAE Class	Units
013	FIL	600	G's
Max	Time	Min	Time
879.5	11.2	-1999.0	26.4

Test Vehicle: 2012 Acura TL 4-Door Sedan
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

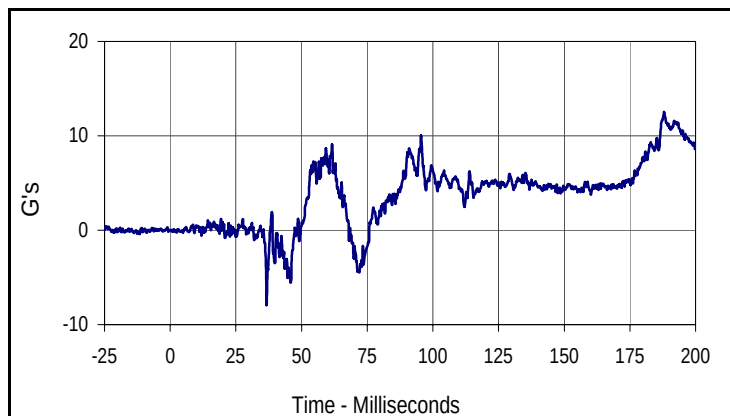
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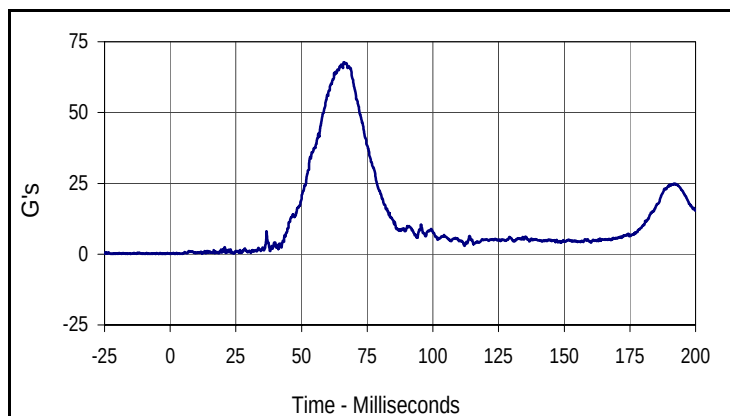
Curve Description			
Passenger Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
014	FIL	1000	G's
Max	Time	Min	Time
15.8	193.0	-25.1	62.4



Curve Description			
Passenger Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
015	FIL	1000	G's
Max	Time	Min	Time
63.9	66.6	-16.6	190.1



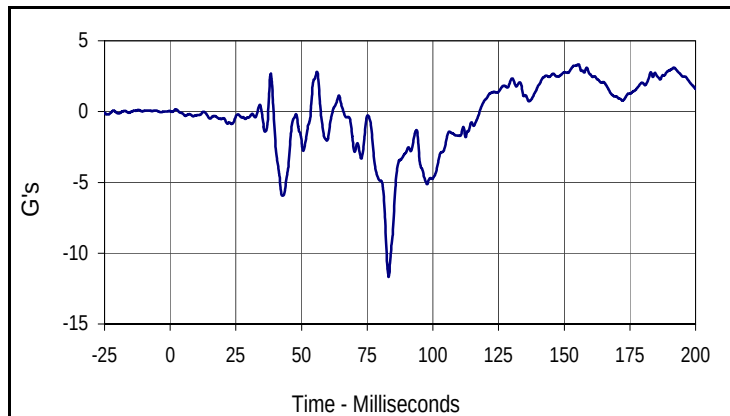
Curve Description			
Passenger Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
016	FIL	1000	G's
Max	Time	Min	Time
12.5	188.0	-7.9	36.7



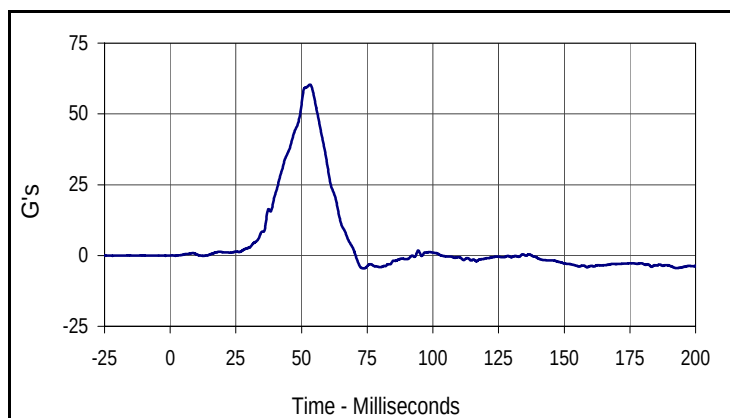
Curve Description			
Passenger Head Acceleration Resultant Primary			
Plot No.	Type	SAE Class	Units
017	RES	1000	G's
Max	Time	Min	Time
67.7	66.1	0.1	2.0

Test Vehicle: 2012 Acura TL 4-Door Sedan
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

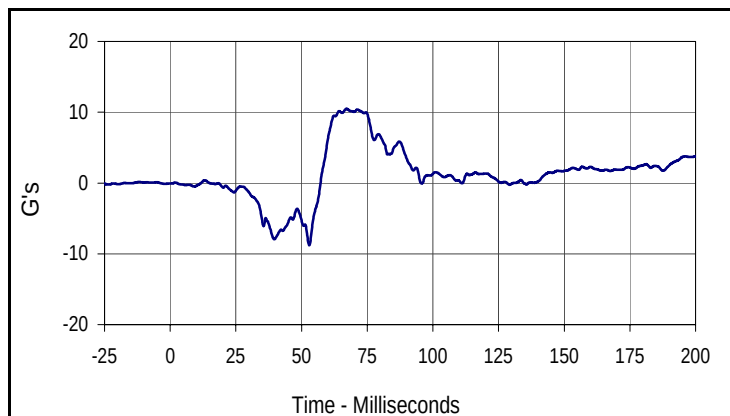
NHTSA No.: MC5314
 Test Date: 12/6/11



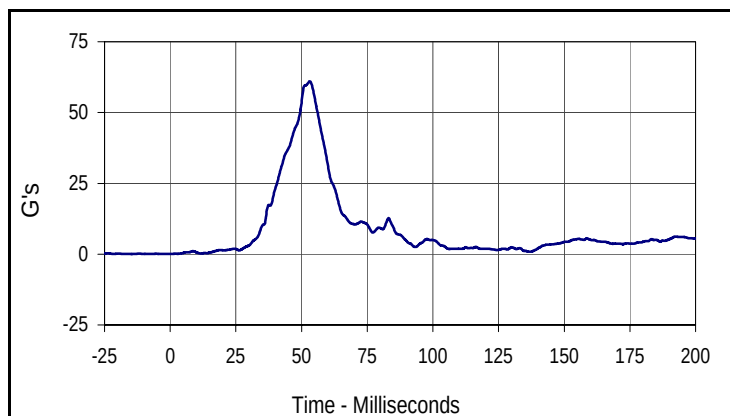
Curve Description			
Passenger Lower Spine T12 Acceleration X			
Plot No.	Type	SAE Class	Units
019	FIL	180	G's
Max	Time	Min	Time
3.3	155.3	-11.7	83.2



Curve Description			
Passenger Lower Spine T12 Acceleration Y			
Plot No.	Type	SAE Class	Units
020	FIL	180	G's
Max	Time	Min	Time
60.3	53.2	-4.5	73.8



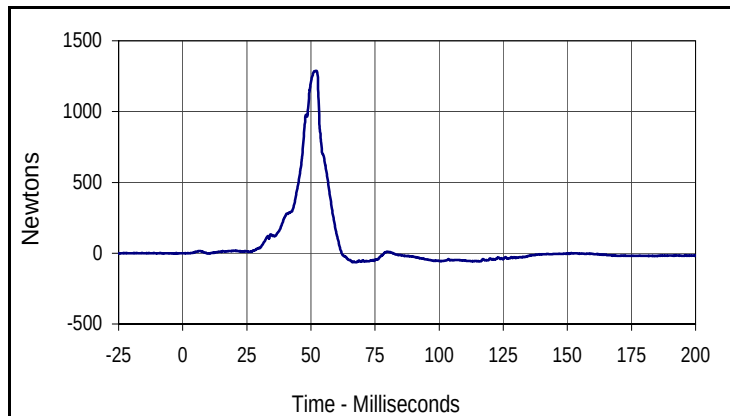
Curve Description			
Passenger Lower Spine T12 Acceleration Z			
Plot No.	Type	SAE Class	Units
021	FIL	180	G's
Max	Time	Min	Time
10.5	67.2	-8.8	52.9



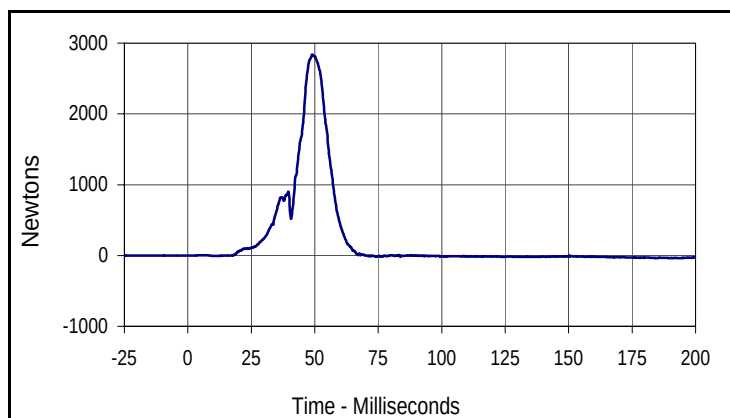
Curve Description			
Passenger Lower Spine T12 Acceleration Res.			
Plot No.	Type	SAE Class	Units
022	RES	180	G's
Max	Time	Min	Time
61.0	53.2	0.0	1.2

Test Vehicle: 2012 Acura TL 4-Door Sedan
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

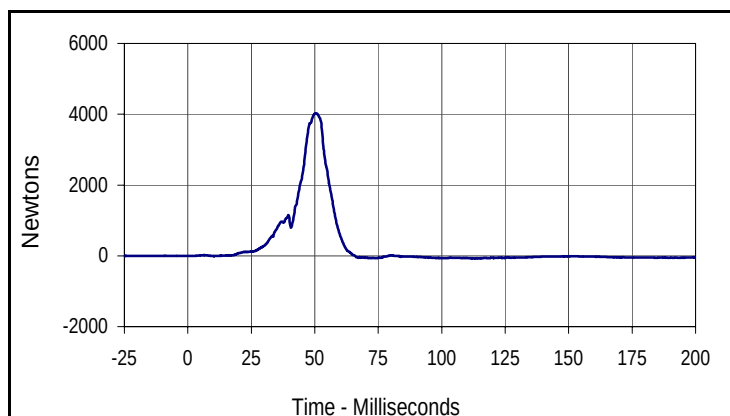
NHTSA No.: MC5314
 Test Date: 12/6/11



Curve Description			
Passenger Iliac Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
023	FIL	600	Newtons
Max	Time	Min	Time
1287.8	52.2	-64.4	67.4



Curve Description			
Passenger Acetabulum Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
024	FIL	600	Newtons
Max	Time	Min	Time
2838.5	49.0	-38.7	191.1



Curve Description			
Passenger Total Pelvic Force			
Plot No.	Type	SAE Class	Units
018	SUM	600	Newtons
Max	Time	Min	Time
4031.6	50.2	-73.4	112.7

APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

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

Test Program: ES2re External Measurements
 ATD Serial No.: F037

Test Date: 11/17/11
 Test I.D.: N/A



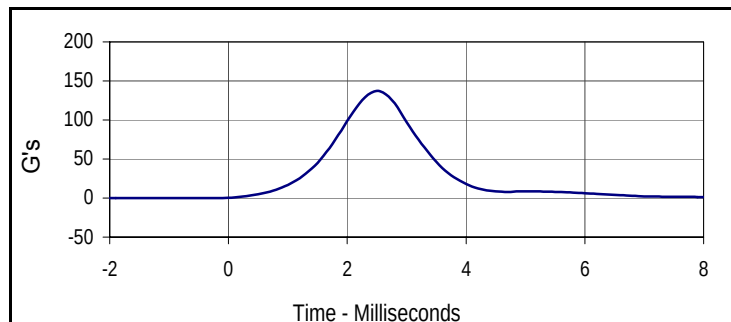
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	36	Pass
1	Sitting Height	mm	900 - 918	904	Pass
2	Seat to Shoulder Joint	mm	558 - 572	562	Pass
3	Seat to Lower Face of Thoracic Spine Box	mm	346 - 356	350	Pass
4	Seat to Hip Joint (Center of Bolt)	mm	97 - 103	100	Pass
5	Sole to Seat, Sitting	mm	333 - 451	375	Pass
6	Head Width	mm	152 - 158	156	Pass
7	Shoulder / Arm Width	mm	461 - 479	470	Pass
8	Thorax Width	mm	322 - 332	330	Pass
9	Abdomen Width	mm	273 - 287	280	Pass
10	Pelvis Lap Width	mm	359 - 373	360	Pass
11	Head Depth	mm	196 - 206	201	Pass
12	Thorax Depth	mm	262 - 272	270	Pass
13	Abdomen Width	mm	194 - 204	200	Pass
14	Pelvis Depth	mm	235 - 245	240	Pass
15	Back of Buttocks to Hip Joint (Center of Bolt)	mm	150 - 160	155	Pass
16	Back of Buttocks to Front Knee	mm	597 - 615	610	Pass
Overall Test Results					Pass

Test Program: ES2re Head Drop Test
 ATD Serial No.: F037

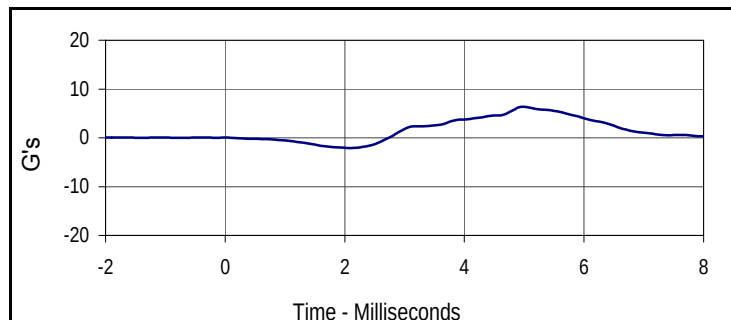
Test Date: 11/17/11
 Test I.D.: F037HD015



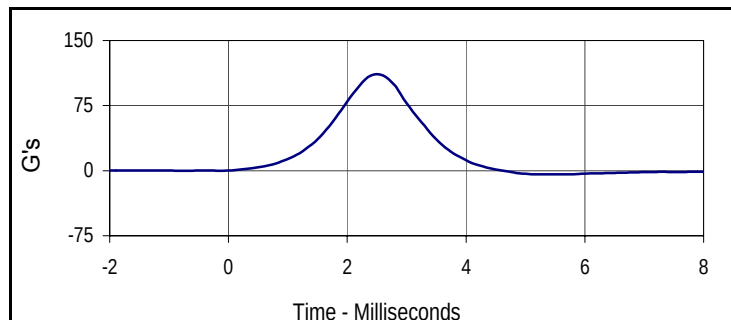
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	249	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	36.3	Pass
Peak Head Resultant Acceleration	G's	125 to 155	137.1	Pass
Peak Head X Acceleration	G's	≤15	6.4	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	6.4	Pass
Overall Test Results				Pass



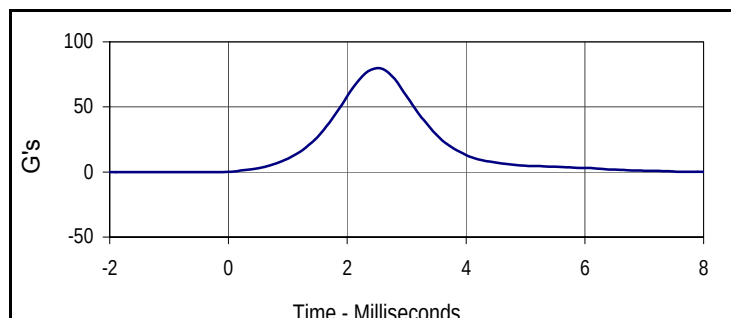
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
137.1	2.5	0.0	-0.9



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
6.4	5.0	-2.1	2.1



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
111.4	2.5	-4.2	5.2



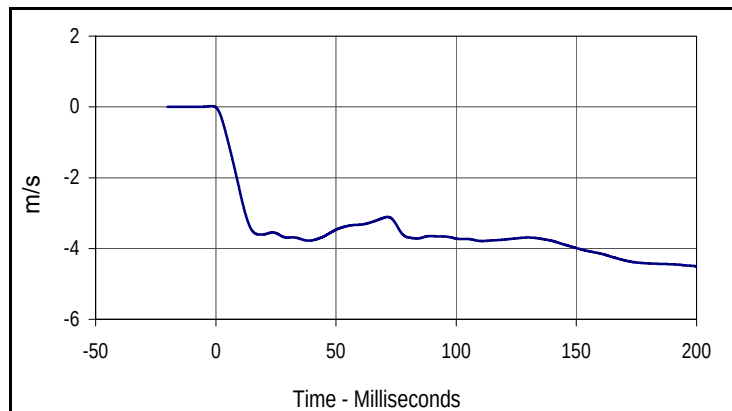
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
79.9	2.5	-0.2	-0.2

Test Program: ES2re Neck Flexion Test
 ATD Serial No.: F037

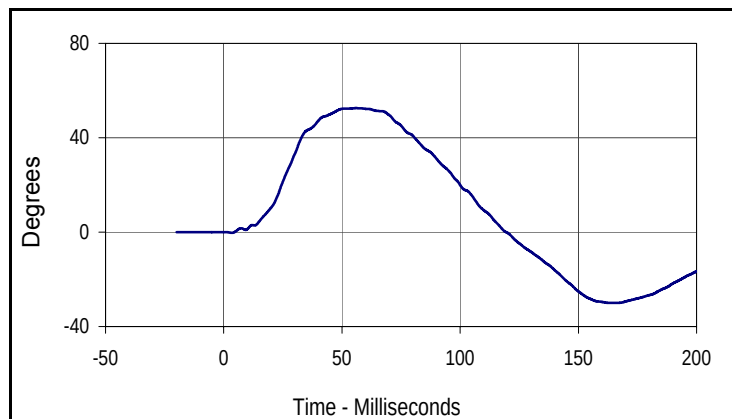
Test Date: 11/17/11
 Test I.D.: F037NB015



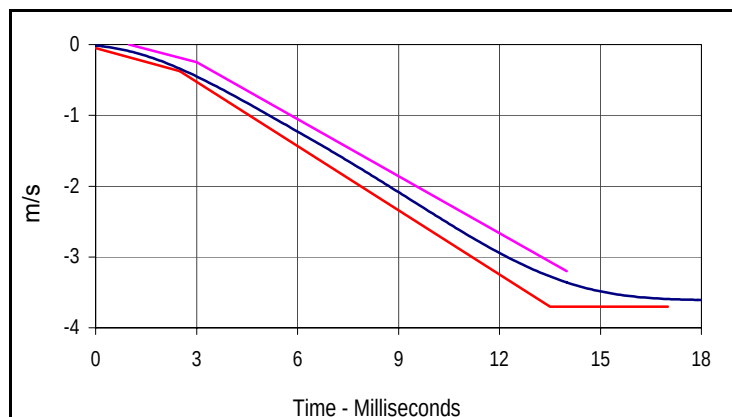
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	274	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	36.2	Pass
Pendulum Velocity	m/s	3.3 to 3.5	3.3	Pass
Headform Flexion	Max	49 to 59	52.6	Pass
	Time	54 to 66	56.0	Pass
Headform Flexion Decay (Peak to Zero)	msec	53 to 88	63.4	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.7	-4.5	200.0



Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
52.6	56.0	-30.0	163.9



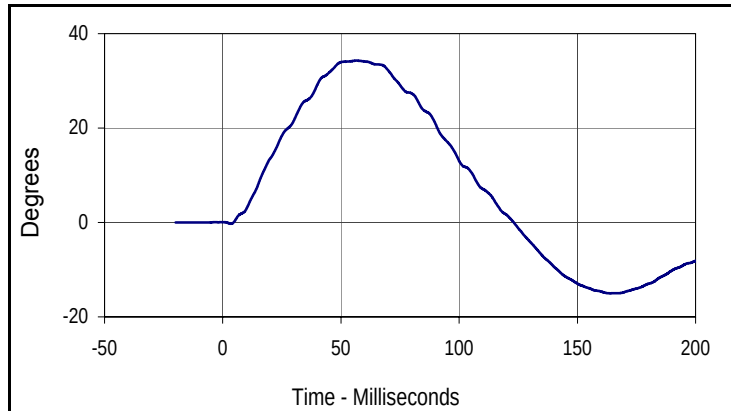
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.7	-4.5	200.0

Velocity Corridors

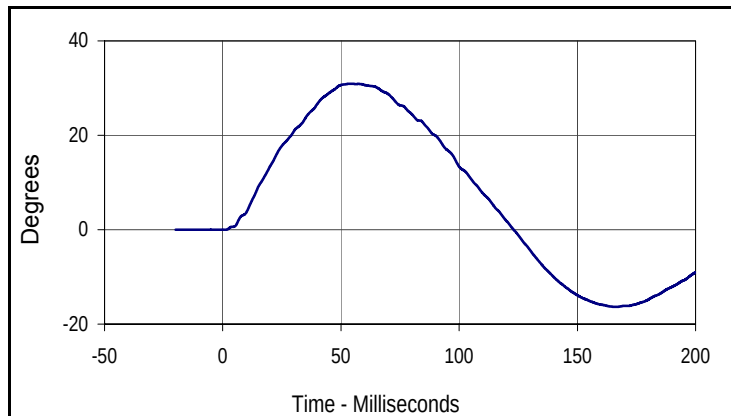
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.0	-0.03	2.5	-0.375
14.0	-3.20	13.5	-3.70
		17.0	-3.70

Test Program: ES2re Neck Flexion Test
 ATD Serial No.: F037

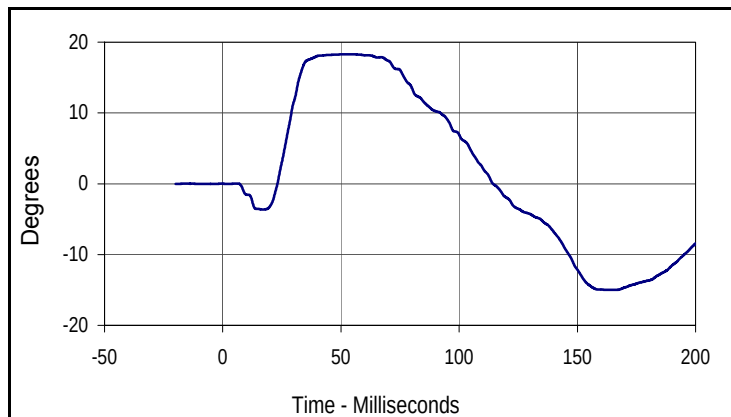
Test Date: 11/17/11
 Test I.D.: F037NB015



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
34.3	56.6	-15.0	163.9



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
30.9	54.3	-16.3	166.2



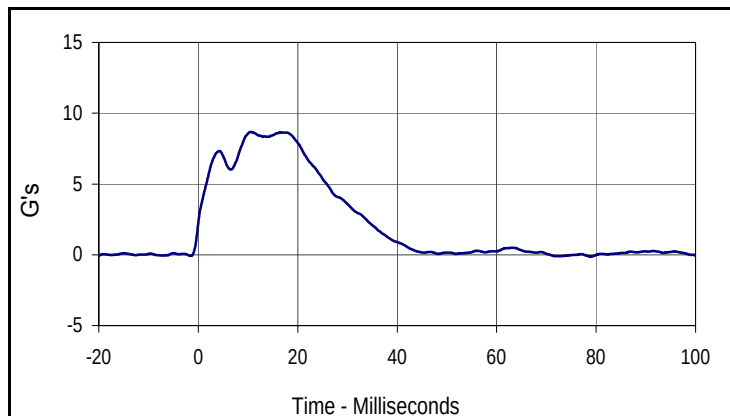
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
18.3	54.6	-15.0	162.5

Test Program: ES2re Shoulder Impact Test
 ATD Serial No.: F037

Test Date: 11/17/11
 Test I.D.: F037SH015



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	319	Pass
Temperature During Soak	Max	20.6 to 22.2	21.9	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	36.1	Pass
Pendulum Speed	m/s	4.2 to 4.4	4.3	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	8.7	Pass
Overall Test Results			Pass	



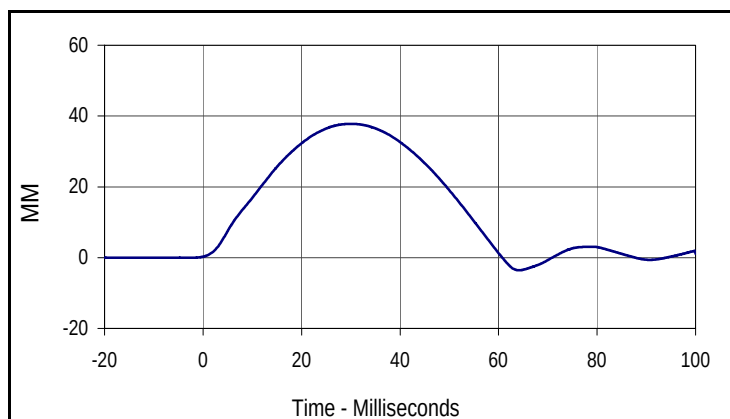
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
8.7	10.5	-0.1	78.9

Test Program: ES2re Thorax - Rib Drop Test
 ATD Serial No.: F037 Rib #1

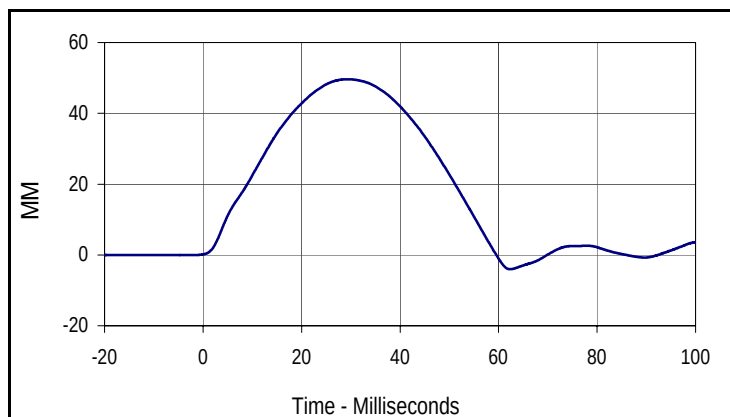
Test Date: 11/17/11
 Test I.D.: F037RB1015



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	354	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	36.6	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	37.8	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	49.6	Pass
Overall Test Results			Pass	



Curve Description			
Upper Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
37.8	30.0	-3.6	64.1



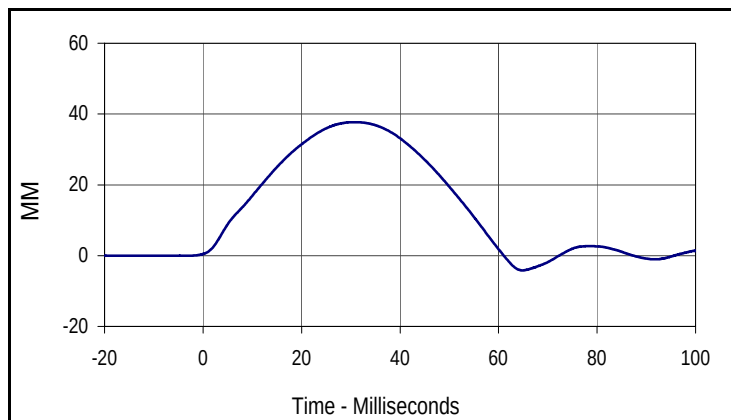
Curve Description			
Upper Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
49.6	29.4	-4.0	62.4

Test Program: ES2re Thorax - Rib Drop Test
 ATD Serial No.: F037 Rib #2

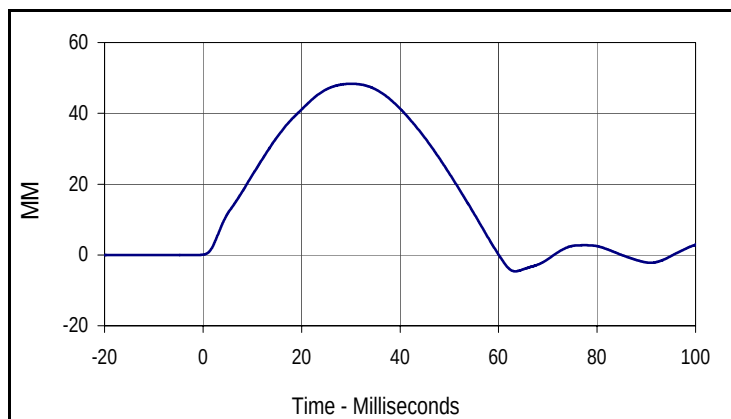
Test Date: 11/17/11
 Test I.D.: F037RB2015



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	379	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	36.8	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	37.7	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	48.4	Pass
Overall Test Results				Pass



Curve Description			
Middle Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
37.7	30.8	-4.2	64.8



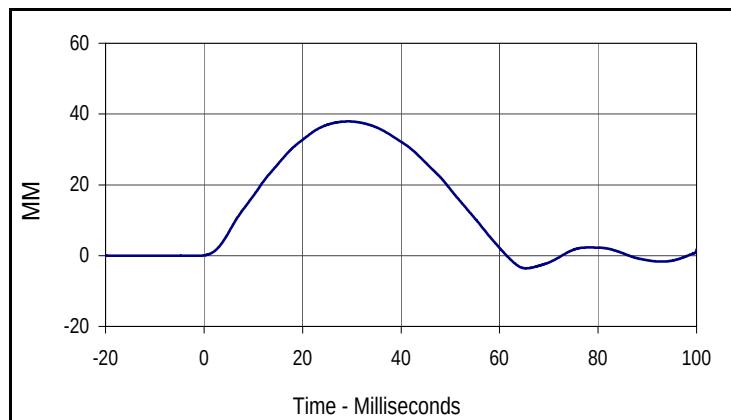
Curve Description			
Middle Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
48.4	30.1	-4.6	63.4

Test Program: ES2re Thorax - Rib Drop Test
 ATD Serial No.: F037 Rib # 3

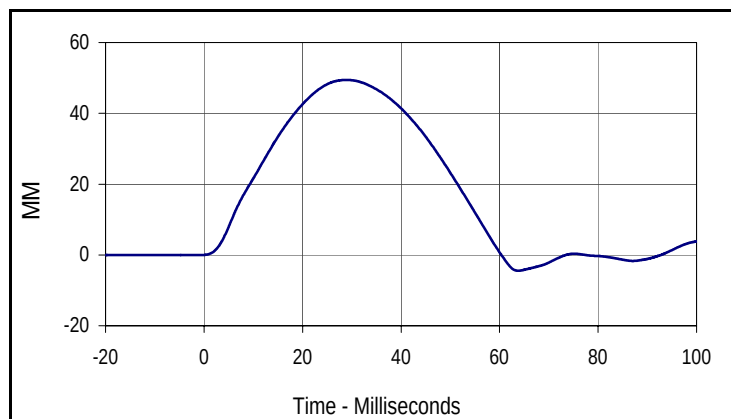
Test Date: 11/17/11
 Test I.D.: F037RB3015



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	399	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	36.1	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	37.9	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	49.4	Pass
Overall Test Results				Pass



Curve Description			
Lower Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
37.9	29.3	-3.6	65.4



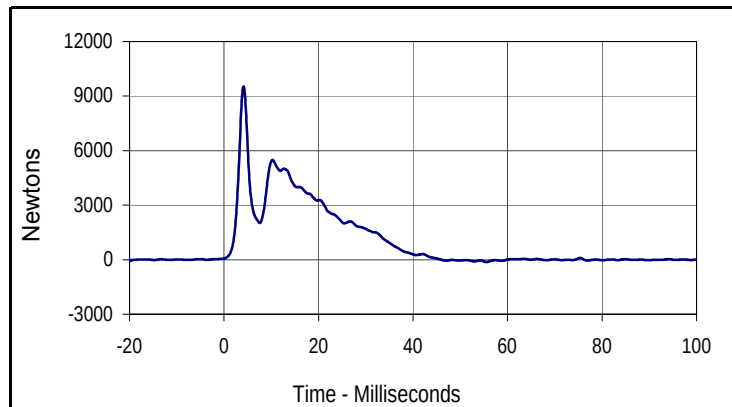
Curve Description			
Lower Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
49.4	28.9	-4.5	63.7

Test Program: ES2re Thorax - Full Body Impact Test
 ATD Serial No.: F037

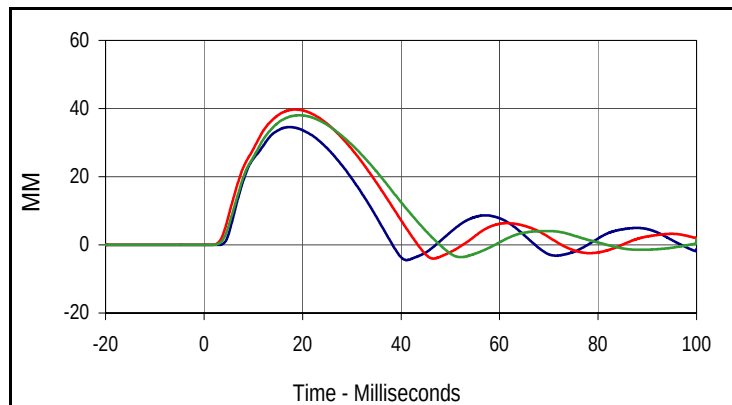
Test Date: 11/17/11
 Test I.D.: F037TH015



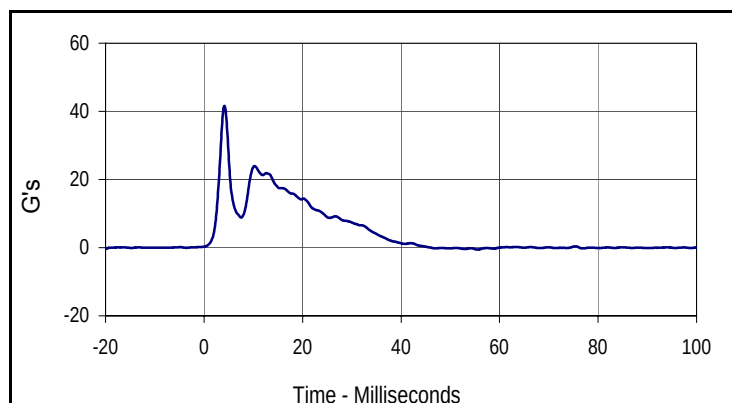
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	444	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	36.9	Pass
Peak Impactor Velocity	m/s	5.4 to 5.6	5.5	Pass
Peak Impactor Force	N	5100 to 6200	5490.5	Pass
	msec	> 6.0 msec	10.3	Pass
Peak Upper Rib Deflection	mm	34 to 41	34.5	Pass
Peak Middle Rib Deflection	mm	37 to 45	39.7	Pass
Peak Lower Rib Deflection	mm	37 to 44	38.0	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
9534.8	4.1	-127.9	55.5



Curve Description			
Upper, Middle, Lower Rib Deflections			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max (Upper)	Time	Min (Upper)	Time
34.5	17.4	-4.5	41.1
Max (Middle)	Time	Min (Middle)	Time
39.7	18.4	-4.0	46.6
Max (Lower)	Time	Min (Lower)	Time
38.0	19.3	-3.6	52.1



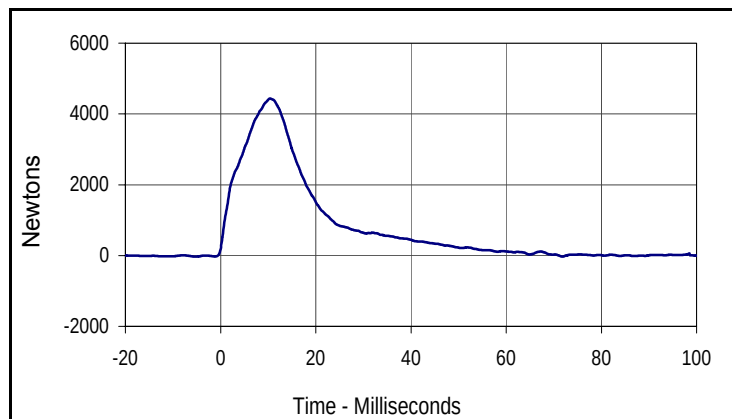
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
41.6	4.1	-0.6	55.5

Test Program: ES2re Abdomen Impact Test
 ATD Serial No.: F037

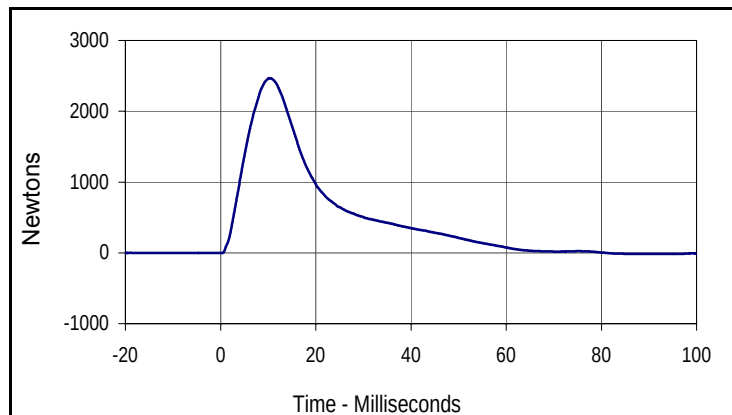
Test Date: 11/17/11
 Test I.D.: F037ABD015



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	464	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	36.4	Pass
Probe Velocity	m/s	3.9 to 4.1	3.9	Pass
Peak Impactor Force	N	4000 to 4800	4435.2	Pass
	msec	10.6 to 13.0	11.8	Pass
Sum of Abdominal Forces	N	2200 to 2700	2468.3	Pass
	msec	10.0 to 12.3	11.7	Pass
Overall Test Results				Pass



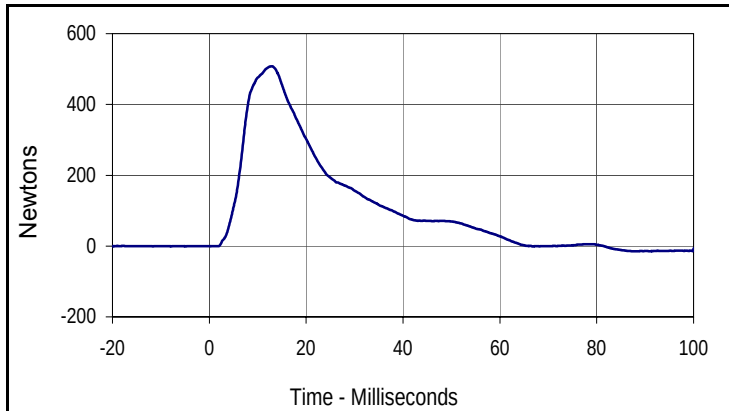
Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4435.2	11.8	-32.3	73.2



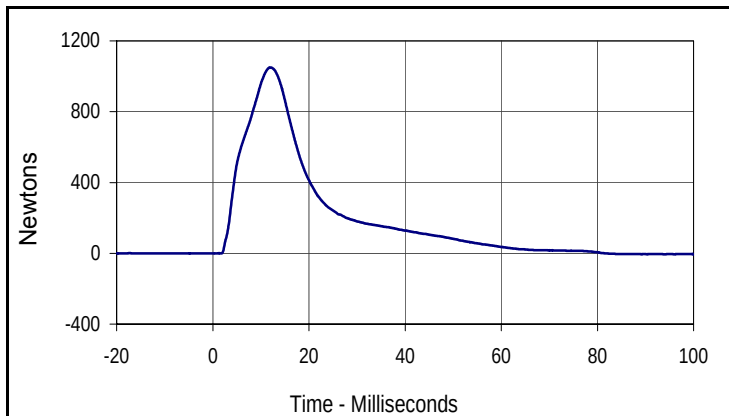
Curve Description			
Abdomen Sum Resultant			
Plot No.	Type	SAE Class	Units
002	RES	600	Newtons
Max	Time	Min	Time
2468.3	11.7	-16.4	94.0

Test Program: ES2re Abdomen Impact Test
 ATD Serial No.: F037

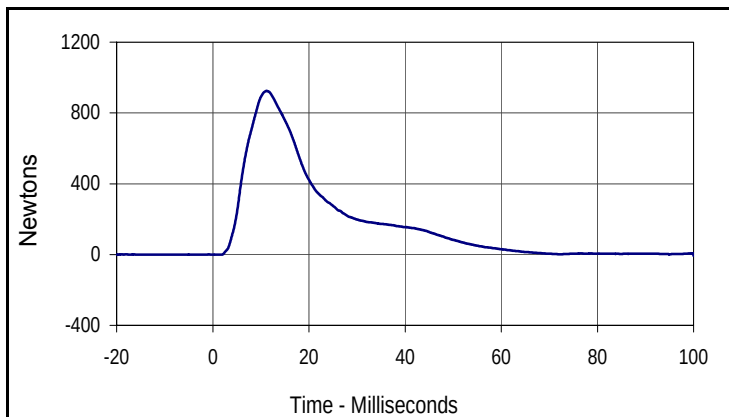
Test Date: 11/17/11
 Test I.D.: F037ABD015



Curve Description			
Front Abdomen Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
508.1	12.9	-14.8	87.8



Curve Description			
Middle Abdomen Force			
Plot No.	Type	SAE Class	Units
004	FIL	600	Newtons
Max	Time	Min	Time
1049.4	12.0	-8.5	0.0



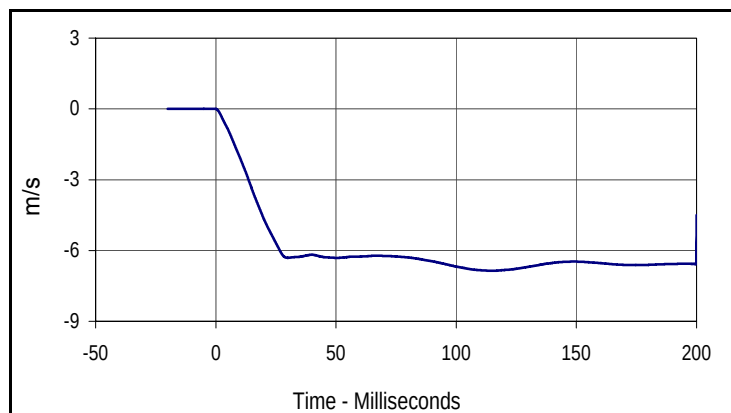
Curve Description			
Rear Abdomen Force			
Plot No.	Type	SAE Class	Units
005	FIL	600	Newtons
Max	Time	Min	Time
924.5	11.2	-8.5	0.0

Test Program: ES2re Lumbar Flexion Test
 ATD Serial No.: F037

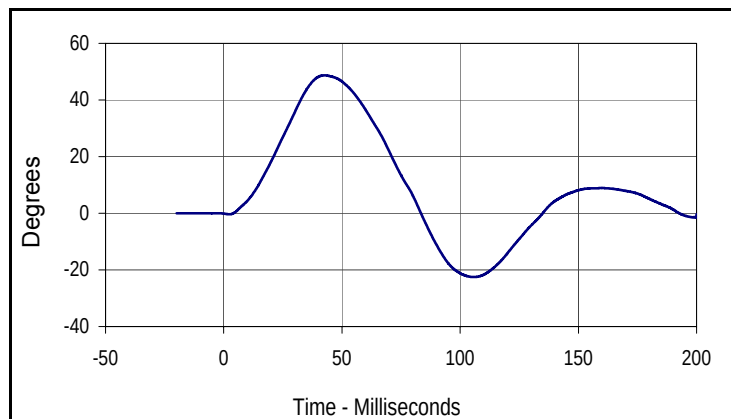
Test Date: 11/17/11
 Test I.D.: F037LB015



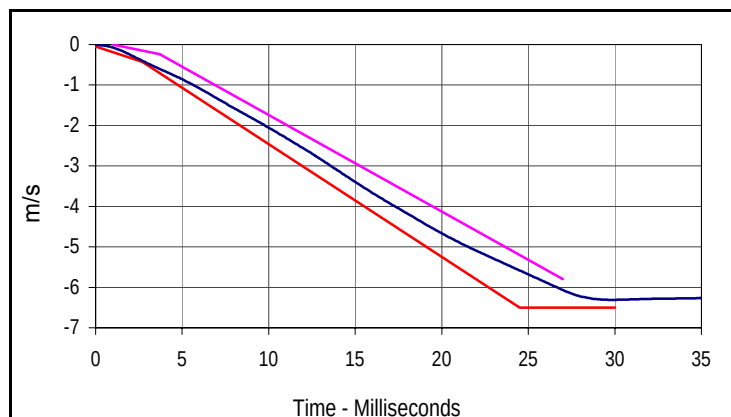
Tested Parameter	Units	Specification	Result	Pass/Fail
Lumbar Spine Assembly Soak Time	Minutes	≥240	369	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	36.4	Pass
Pendulum Velocity	m/s	5.95 to 6.15	5.99	Pass
Headform Rotation	Max	45 to 55	48.7	Pass
	Time	39 to 53	42.7	Pass
Time of Decay to Zero Angle from Peak	msec	37 to 57	40.8	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.6	-6.9	114.9



Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
48.7	42.7	-22.5	105.7



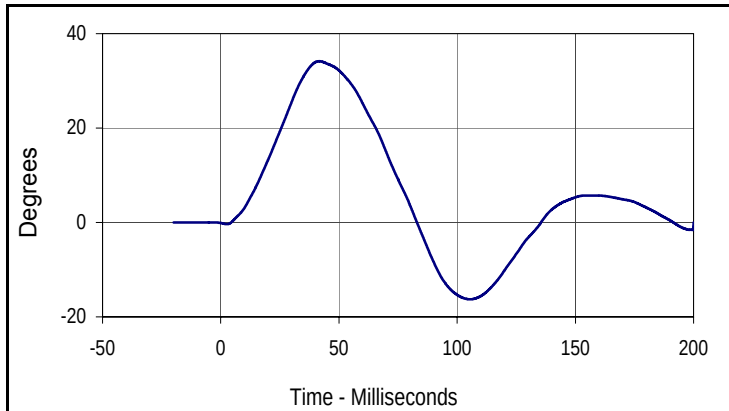
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.6	-6.9	114.9

Velocity Corridors

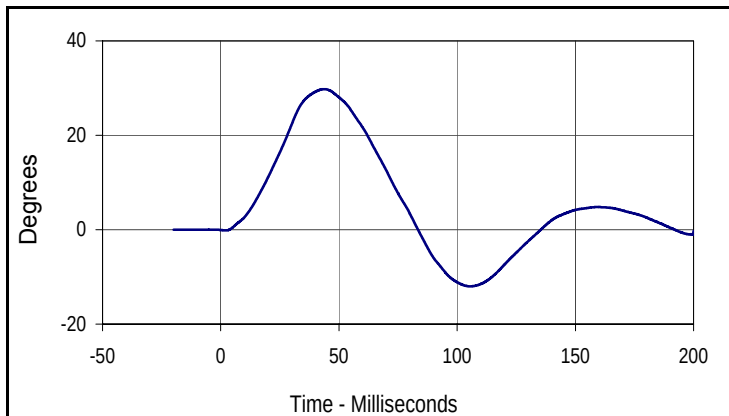
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.7	-0.24	2.7	-0.425
27.0	-5.80	24.5	-6.50
		30.0	-6.50

Test Program: ES2re Lumbar Flexion Test
 ATD Serial No.: F037

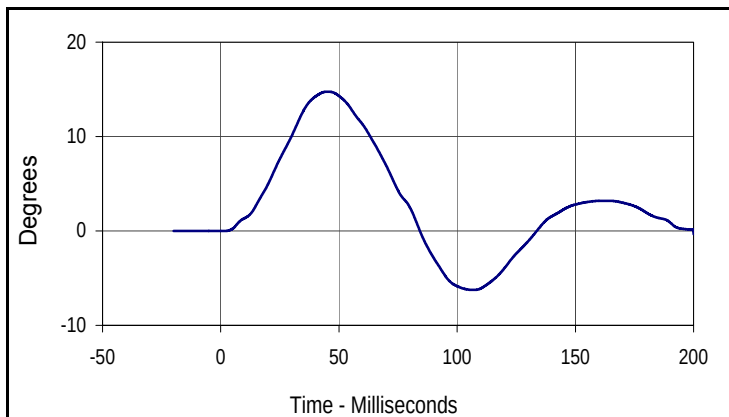
Test Date: 11/17/11
 Test I.D.: F037LB015



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
34.1	41.7	-16.3	105.4



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
29.8	43.8	-12.0	105.5



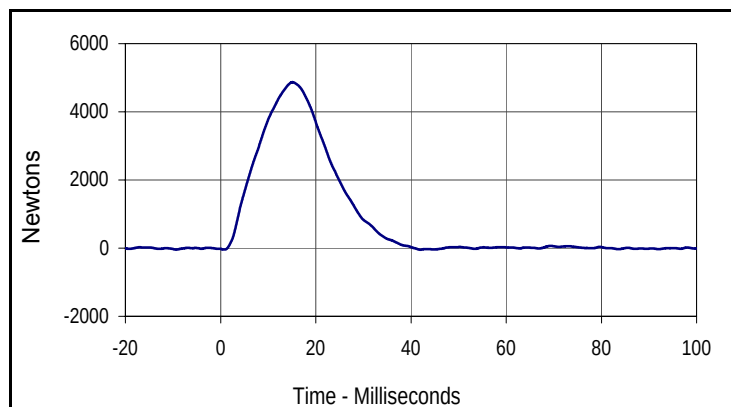
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
14.8	45.3	-6.3	106.9

Test Program: ES2re Pelvis Impact Test
 ATD Serial No.: F037

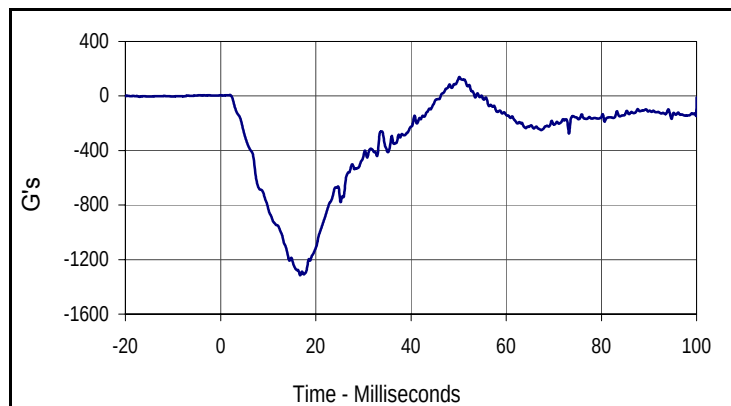
Test Date: 11/17/11
 Test I.D.: F037PL015



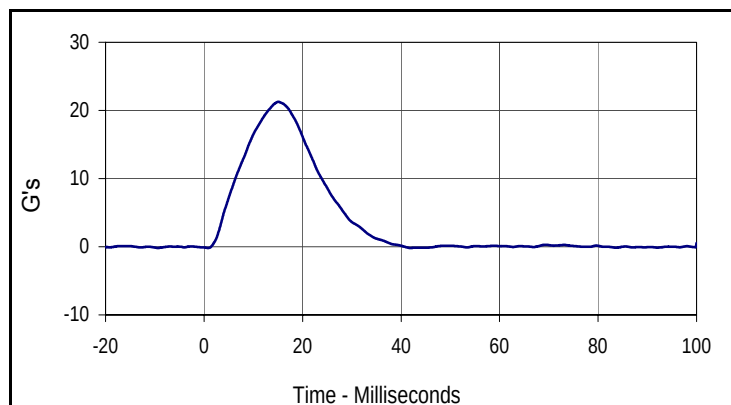
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	498	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	36.4	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.4	Pass
Peak Impactor Force	N	4700 to 5400	4869.0	Pass
	msec	11.8 to 16.1	15.1	Pass
Peak Pubic Symphysis Load	N	-1230 to -1590	-1315.2	Pass
	msec	12.2 to 17.0	16.7	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4869.0	15.1	-44.8	42.0



Curve Description			
Pubic Symphysis Force Y			
Plot No.	Type	SAE Class	Units
002	FIL	600	G's
Max	Time	Min	Time
139.7	50.2	-1315.2	16.7



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
21.3	15.1	-0.2	42.0

Test Program: SID IIs External Measurements
 ATD Serial No.: 307

Test Date: 12/1/11
 Test I.D.: N/A



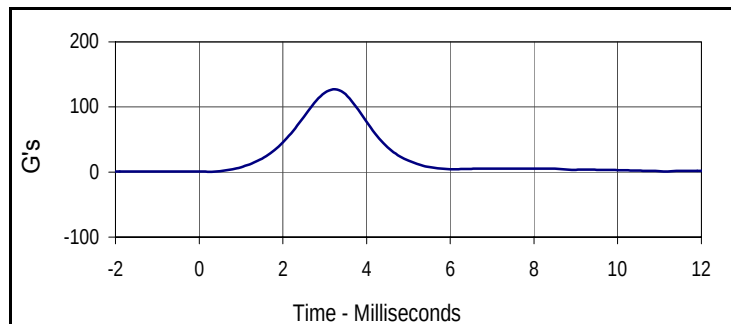
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity		%	10 to 70	34	Pass
A	Sitting Height	mm	772 - 788	775	Pass
B	Shoulder Pivot Height	mm	437 - 453	440	Pass
C	H-Point Height	mm	79 - 89	80	Pass
D	H-Point from Seatback	mm	141 - 151	149	Pass
E	Shoulder Pivot from Backline	mm	97 - 107	102	Pass
F	Thigh Clearance	mm	119 - 135	125	Pass
G	Head Breadth	mm	140 - 148	145	Pass
H	Head Back from Backline	mm	40 - 46	43	Pass
I	Head Depth	mm	178 - 188	182	Pass
J	Head Circumference	mm	541 - 551	548	Pass
K	Buttock to Knee Length	mm	514 - 540	525	Pass
L	Popliteal Height	mm	343 - 369	348	Pass
M	Knee Pivot to Floor Height	mm	392 - 409	399	Pass
N	Buttock Popliteal Length	mm	416 - 442	430	Pass
O	Chest Depth w/o Jacket	mm	195 - 211	204	Pass
P	Foot Length	mm	216 - 232	219	Pass
Q	Hip Breadth with Pelvic Plug	mm	313 - 323	316	Pass
R	Arm Length	mm	249 - 259	251	Pass
S	Knee Joint to Seatback	mm	477 - 493	480	Pass
V	Shoulder Width	mm	341 - 357	351	Pass
W	Foot Width	mm	78 - 94	89	Pass
Y	Chest Circumference with Jacket	mm	851 - 881	875	Pass
Z	Waist Circumference	mm	760 - 791	773	Pass
Overall Test Results					Pass

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

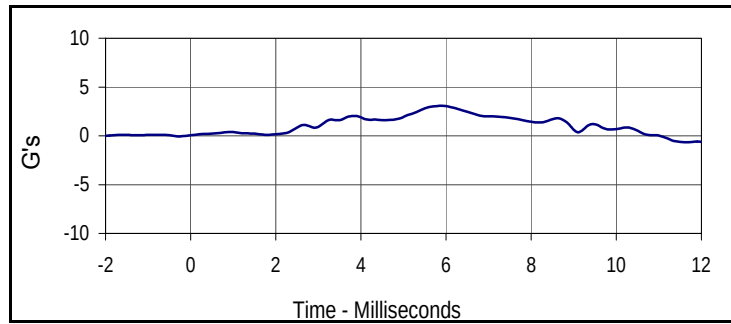
Test Date: 12/1/11
 Test I.D.: 307HD021



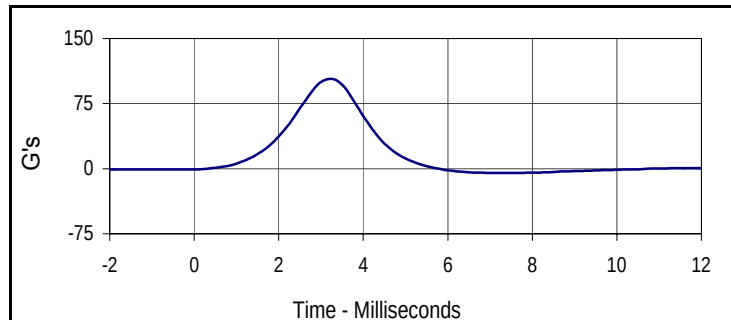
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	245	Pass
Temperature During Soak	Max	18.9 to 25.6	22.2	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.7	Pass
Peak Head Resultant Acceleration	G's	115 to 137	127.0	Pass
Peak Head X Acceleration	G's	<15	3.1	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	13.9	Pass
Overall Test Results				Pass



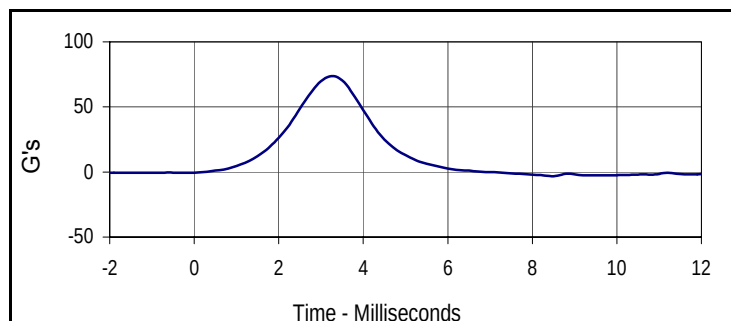
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
127.0	3.2	0.3	0.3



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
3.1	5.9	-0.1	-0.3



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
103.6	3.2	-4.9	7.5



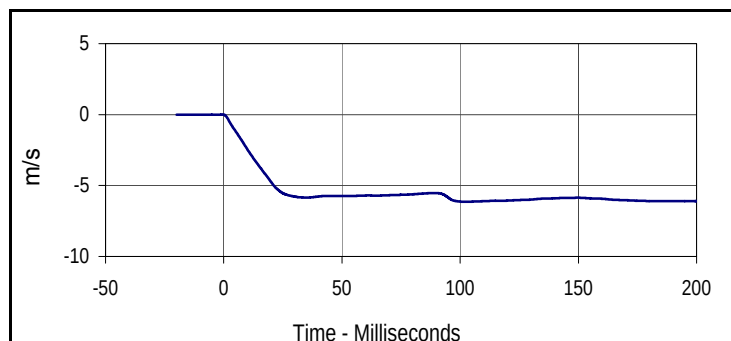
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
73.6	3.3	-3.3	8.5

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

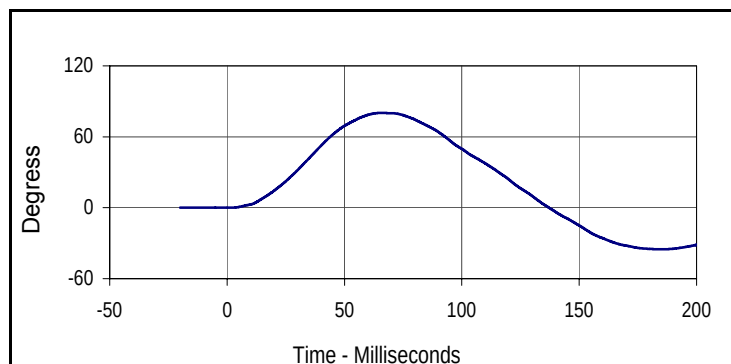
Test Date: 12/1/11
 Test I.D.: 307NB021



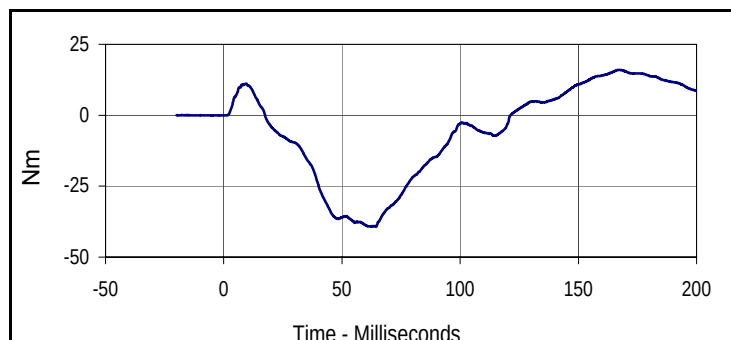
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	250	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	40.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.6	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	31.1	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.57	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.45	Pass
	15 msec	m/s	-3.30 to -4.10	-3.63	Pass
	20 msec	m/s	-4.40 to -5.40	-4.75	Pass
	25 msec	m/s	-5.40 to -6.10	-5.55	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.13	Pass
D-Plane Rotation	Max	Degrees	71 to 81	80.2	Pass
	Time	msec	50 to 70	65.6	Pass
Peak Occipital Condyle Moment		Nm	-36 to -44	-39.3	Pass
Decaying Moment Time to Cross 0 Nm		msec	102 to 126	121.4	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.6	-6.2	102.0



Curve Description			
Maximum Translation Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
80.2	65.6	-35.1	184.8



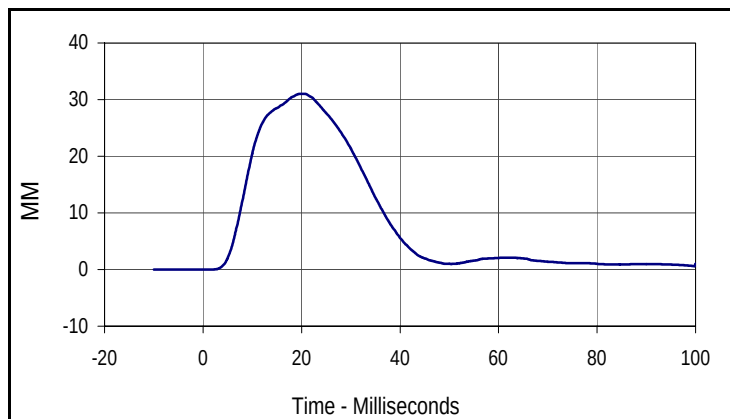
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
16.0	167.2	-39.3	64.4

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

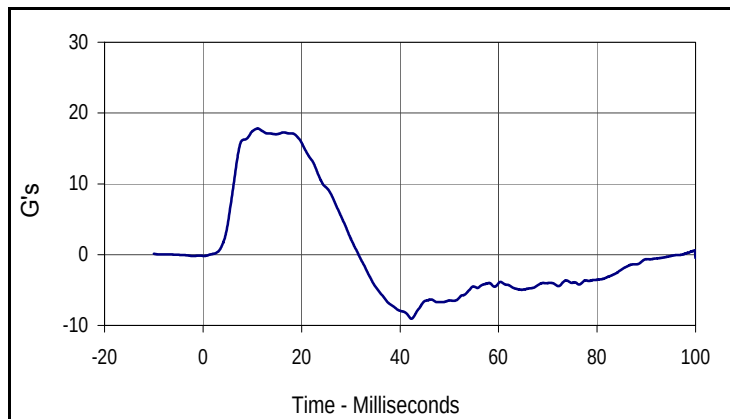
Test Date: 12/1/11
 Test I.D.: 307SH021



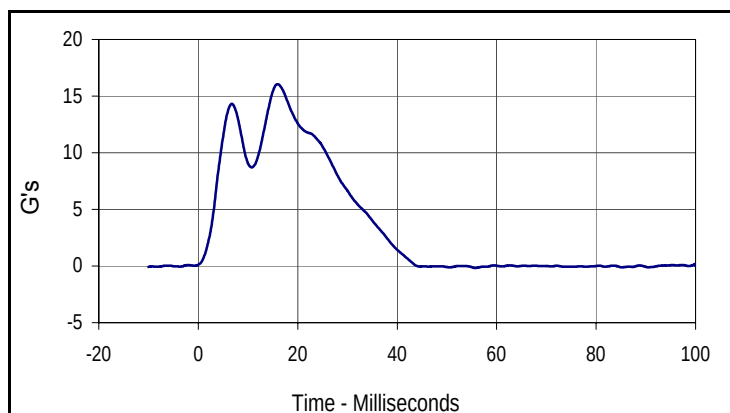
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	290	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	40.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.6	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.2	Pass
Impactor Velocity		m/s	4.20 to 4.40	4.29	Pass
Peak Shoulder Deflection		mm	28 to 37	31.0	Pass
Peak Lateral Spine Acceleration Y		G's	17 to 22	17.8	Pass
Peak Impactor Acceleration		G's	13 to 18	16.1	Pass
Overall Test Results				Pass	



Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
31.0	20.4	0.0	-6.6



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
17.8	11.1	-9.1	42.3



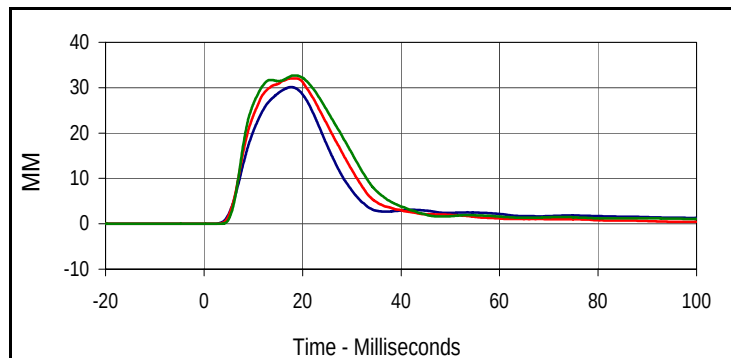
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
16.1	15.9	-0.2	55.7

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

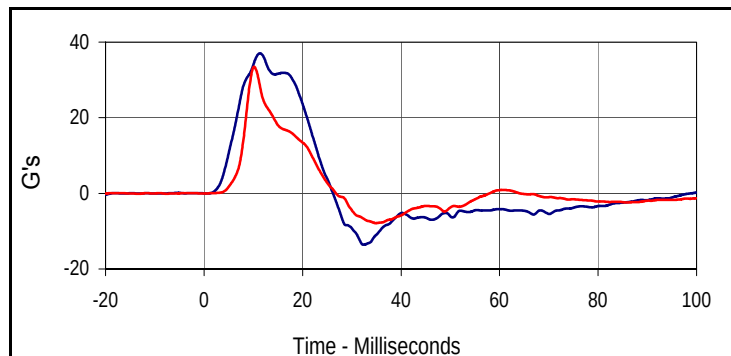
Test Date: 12/1/11
 Test I.D.: 307TWA021



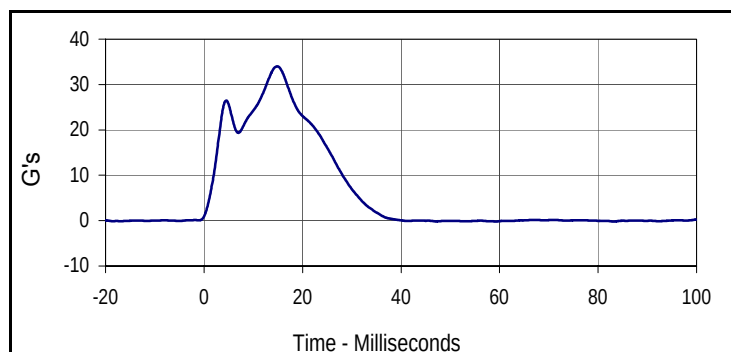
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	300	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.5	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.7	Pass
Peak Shoulder Deflection	mm	31 to 40	38.4	Pass
Peak Upper Thorax Rib Deflection	mm	25 to 32	30.1	Pass
Peak Middle Thorax Rib Deflection	mm	30 to 36	32.1	Pass
Peak Lower Thorax Rib Deflection	mm	32 to 38	32.7	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	37.0	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	33.5	Pass
Peak Impactor Acceleration	G's	30 to 36	34.0	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
30.1	17.7	0.0	-15.7
Middle Thorax Deflection			
Max	Time	Min	Time
32.1	17.9	0.0	-6.1
Lower Thorax Deflection			
Max	Time	Min	Time
32.7	18.3	0.0	-7.1



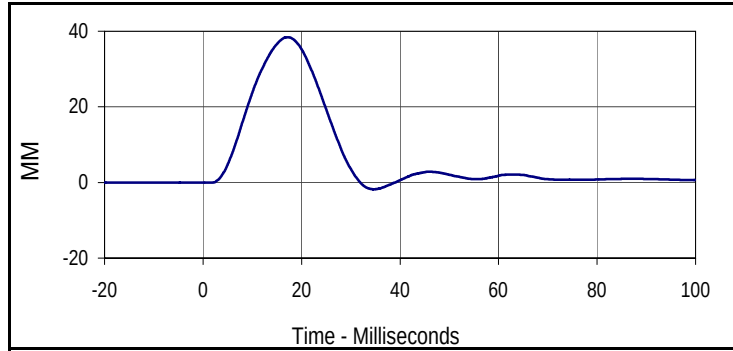
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
37.0	11.4	-13.6	32.4
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
33.5	10.2	-7.9	34.9



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
34.0	14.8	-0.2	0.0

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

Test Date: 12/1/11
 Test I.D.: 307TWA021



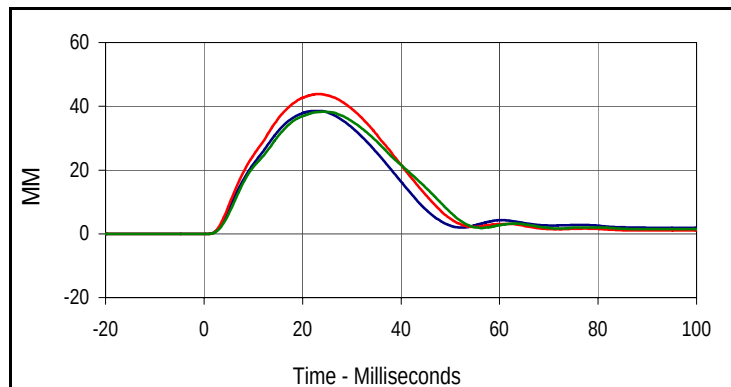
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	MM
Max	Time	Min	Time
38.4	17.2	-1.8	34.7

Test Program: SID IIs Thorax without Arm Impact Test
 ATD Serial No.: 307

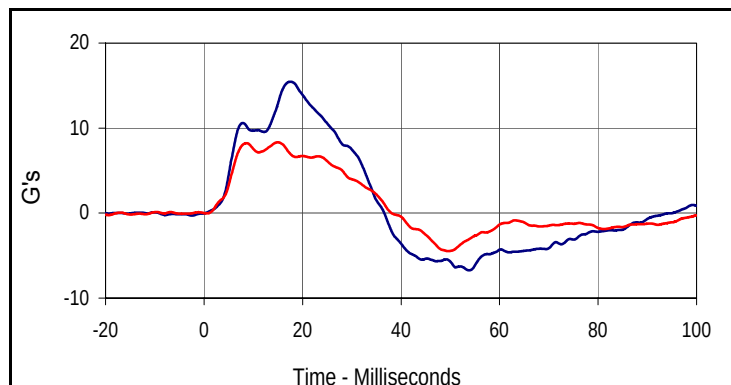
Test Date: 12/1/11
 Test I.D.: 307TWOA021



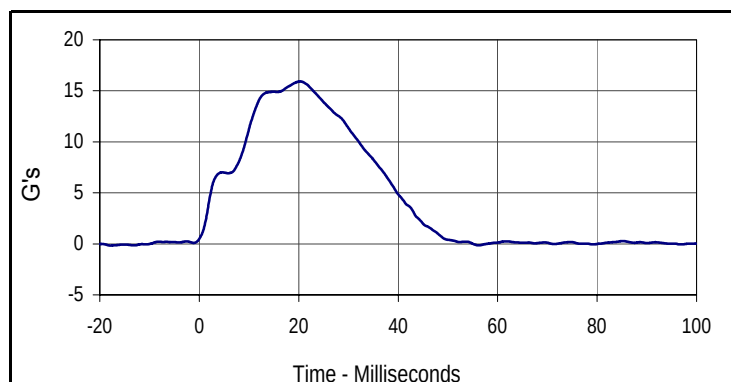
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	320	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	40.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	32.8	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.3	Pass
Peak Upper Thorax Rib Deflection		mm	32 to 40	38.6	Pass
Peak Middle Thorax Rib Deflection		mm	39 to 45	43.9	Pass
Peak Lower Thorax Rib Deflection		mm	35 to 43	38.3	Pass
Peak Upper Spine Y Acceleration		G's	13 to 17	15.5	Pass
Peak Lower Spine Y Acceleration		G's	7 to 11	8.3	Pass
Peak Impactor Acceleration		G's	14 to 18	15.9	Pass
Overall Test Results				Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
38.6	22.8	0.0	-11.8
Middle Thorax Deflection			
Max	Time	Min	Time
43.9	23.3	0.0	-17.8
Lower Thorax Deflection			
Max	Time	Min	Time
38.3	24.3	0.0	-10.0



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.5	17.5	-6.7	53.8
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
8.3	15.0	-4.5	49.5



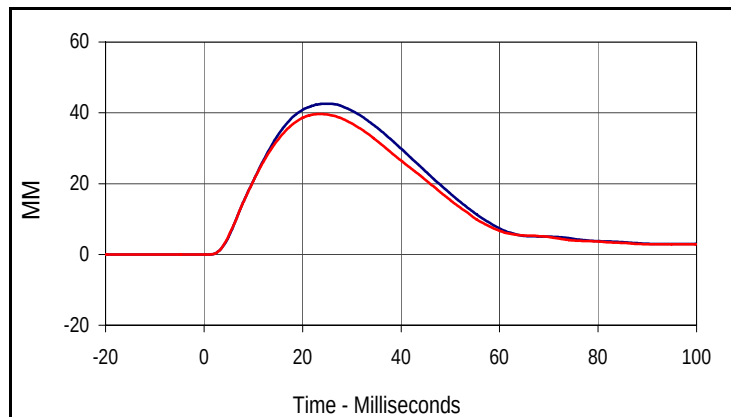
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
15.9	20.3	-0.2	-17.8

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

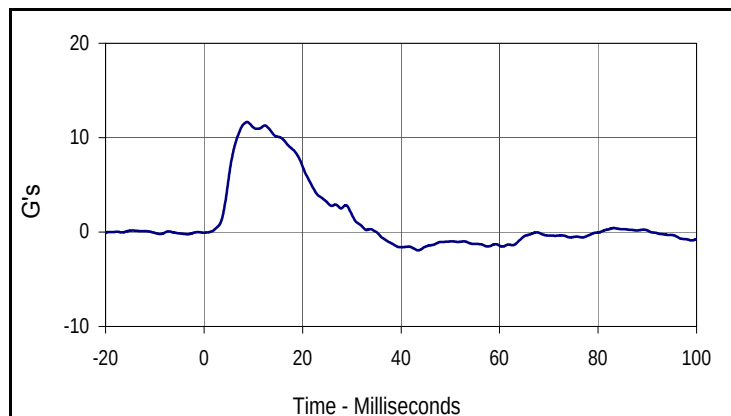
Test Date: 12/1/11
 Test I.D.: 307ABD021



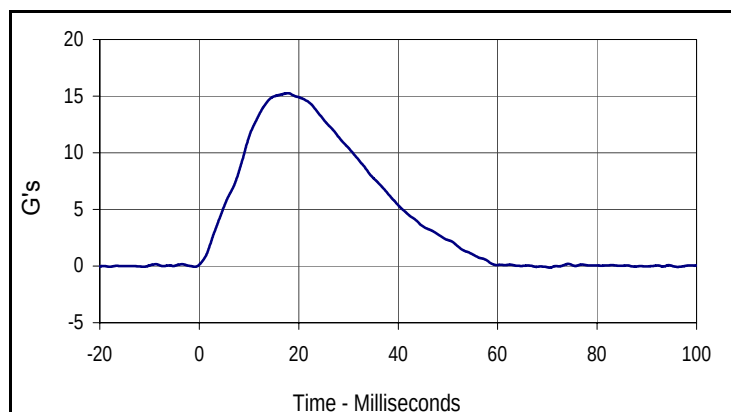
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	340	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.6	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	36.5	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.3	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	42.6	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	39.7	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	11.7	Pass
Peak Impactor Acceleration	G's	12 to 16	15.3	Pass
Overall Test Results			Pass	



Curve Description			
Upper Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
42.6	25.1	0.0	-13.0
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
39.7	23.7	0.0	-13.9

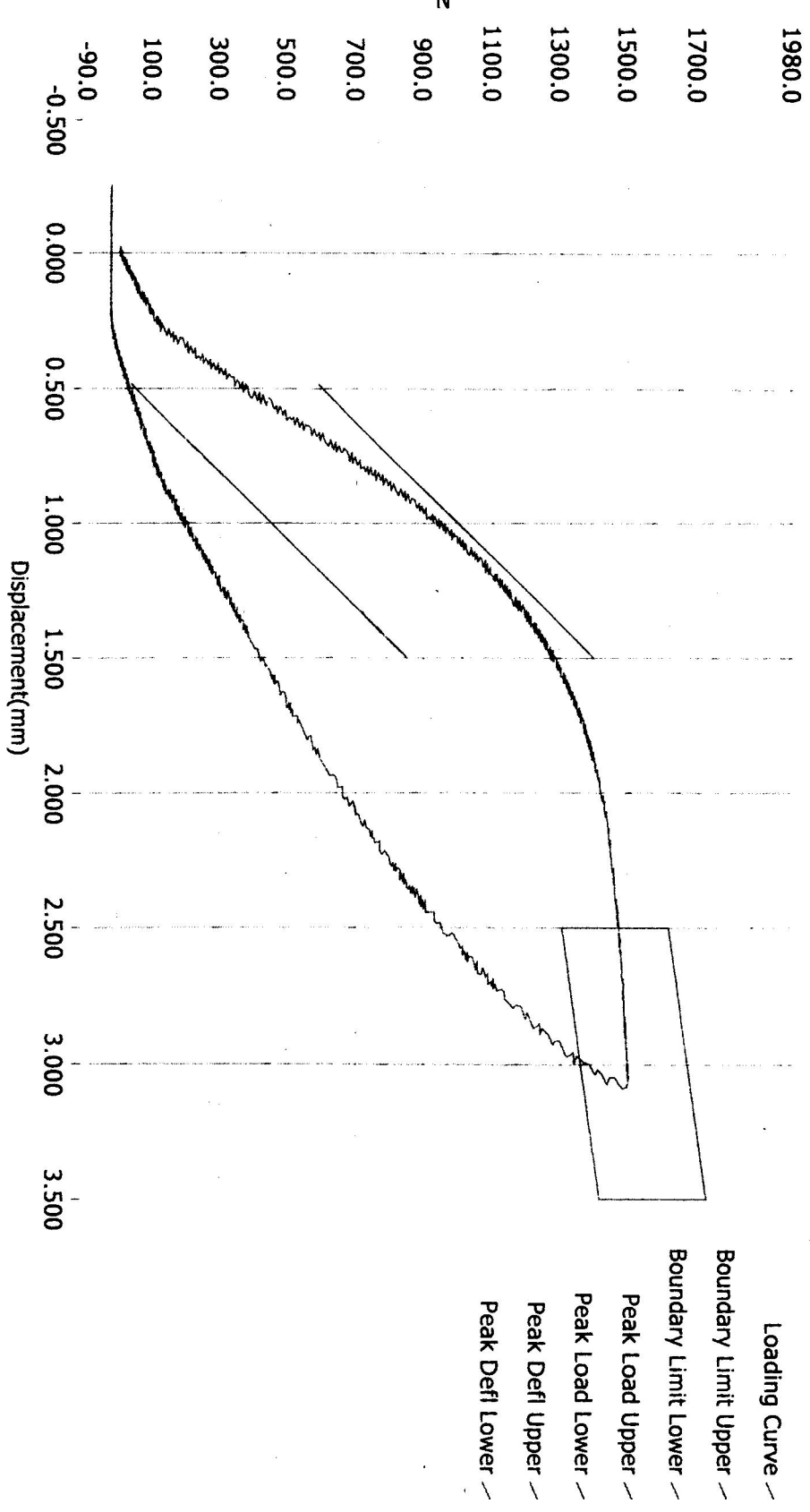


Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
11.7	8.7	-2.4	0.0



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.3	17.8	-0.1	70.5

Resultant Data - SIDIIs Plug Compression



ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
Cert ID	ATD Serial Number	10/6/2010	4:48 PM
	36844	SIDIIs	

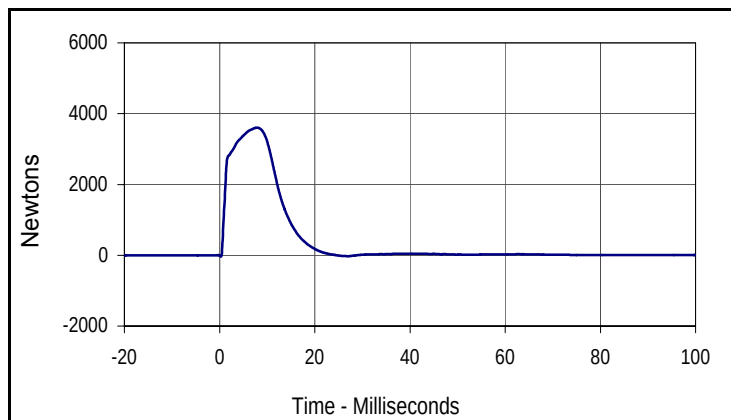
Current Date : 10/6/2010 Current Time : 16:49:30

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

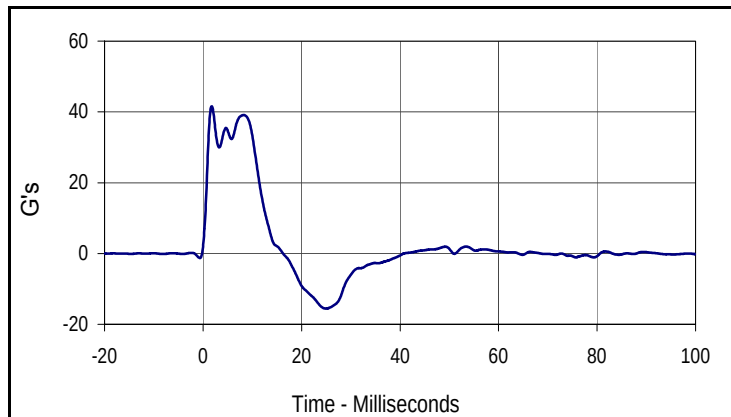
Test Date: 12/1/11
 Test I.D.: 307ACE021



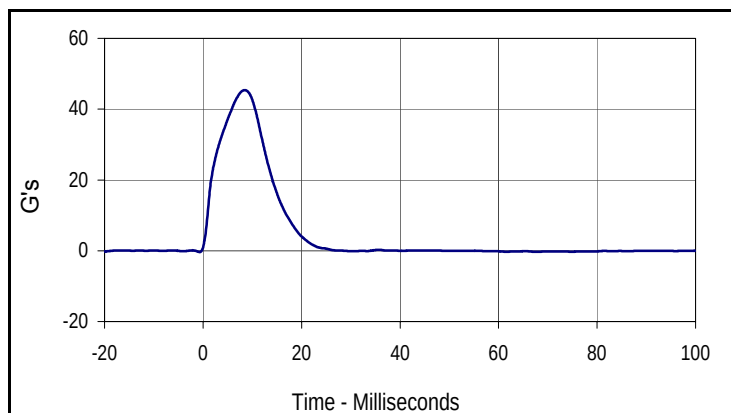
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	370	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	34.0	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.7	Pass
Peak Acetabulum Force Y	Newtons	3600 to 4300	3604.9	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	39.1	Pass
Peak Impactor Acceleration	G's	38 to 47	45.4	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3604.9	7.9	-36.7	0.3



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
41.6	1.8	-15.6	25.0



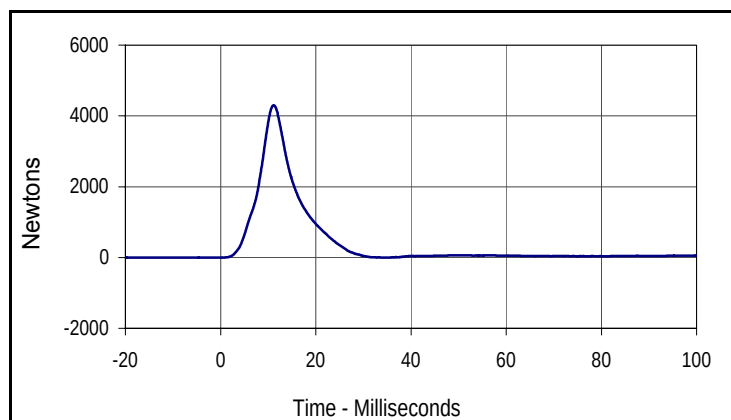
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
45.4	8.5	-0.4	-0.7

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

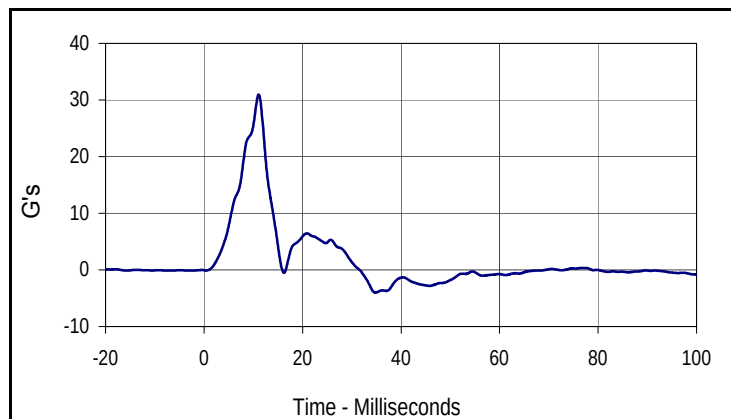
Test Date: 12/1/11
 Test I.D.: 307PL021



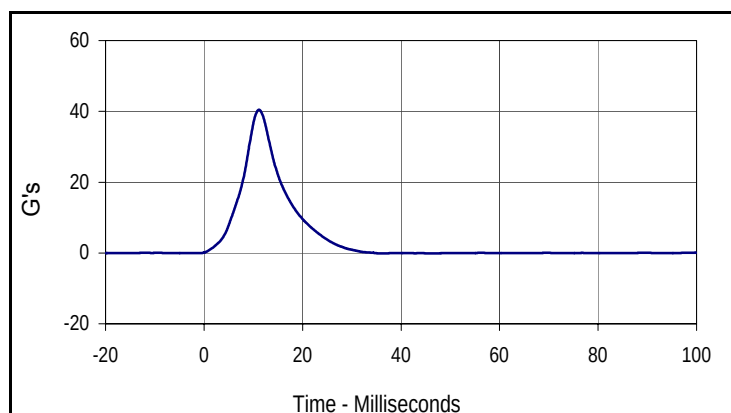
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	420	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.6	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	31.1	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.3	Pass
Peak Iliac Force	Newtons	4100 to 5100	4298.8	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	31.0	Pass
Peak Impactor Acceleration	G's	36 to 45	40.4	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Iliac Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4298.8	11.1	-2.7	-2.1



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
31.0	11.1	-4.0	34.8



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
40.4	11.2	-0.1	36.2

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

Test Program: ES2re External Measurements
 ATD Serial No.: F037

Test Date: 12/8/11
 Test I.D.: N/A



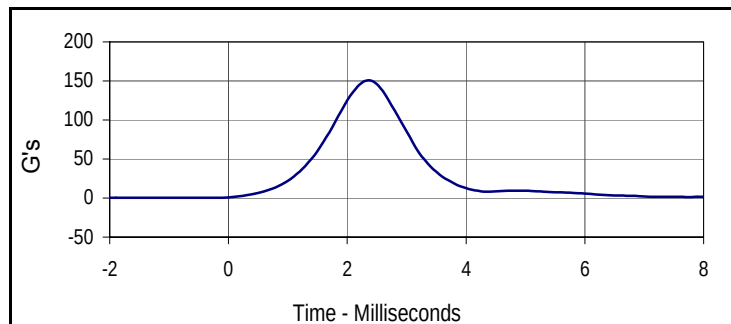
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.5	Pass
Laboratory Relative Humidity		%	10 to 70	35	Pass
1	Sitting Height	mm	900 - 918	906	Pass
2	Seat to Shoulder Joint	mm	558 - 572	562	Pass
3	Seat to Lower Face of Thoracic Spine Box	mm	346 - 356	350	Pass
4	Seat to Hip Joint (Center of Bolt)	mm	97 - 103	100	Pass
5	Sole to Seat, Sitting	mm	333 - 451	380	Pass
6	Head Width	mm	152 - 158	156	Pass
7	Shoulder / Arm Width	mm	461 - 479	470	Pass
8	Thorax Width	mm	322 - 332	329	Pass
9	Abdomen Width	mm	273 - 287	280	Pass
10	Pelvis Lap Width	mm	359 - 373	360	Pass
11	Head Depth	mm	196 - 206	201	Pass
12	Thorax Depth	mm	262 - 272	270	Pass
13	Abdomen Width	mm	194 - 204	200	Pass
14	Pelvis Depth	mm	235 - 245	240	Pass
15	Back of Buttocks to Hip Joint (Center of Bolt)	mm	150 - 160	155	Pass
16	Back of Buttocks to Front Knee	mm	597 - 615	610	Pass
Overall Test Results					Pass

Test Program: ES2re Head Drop Test
 ATD Serial No.: F037

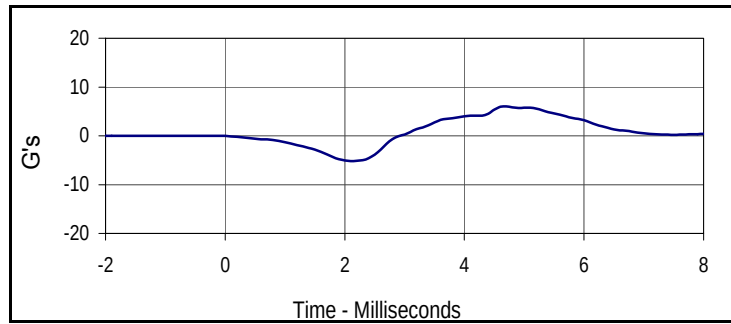
Test Date: 12/8/11
 Test I.D.: F037HD016



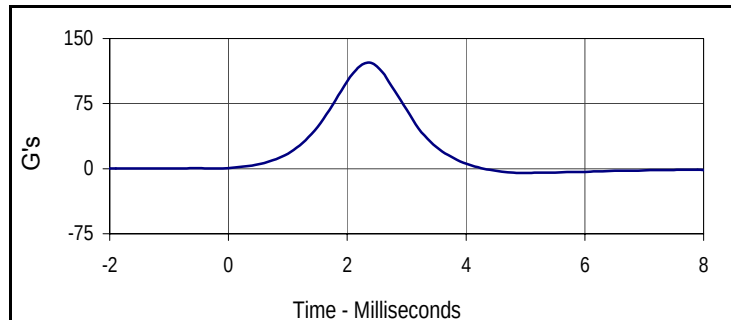
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	250	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	35.0	Pass
Peak Head Resultant Acceleration	G's	125 to 155	150.3	Pass
Peak Head X Acceleration	G's	≤15	6.0	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	8.5	Pass
Overall Test Results				Pass



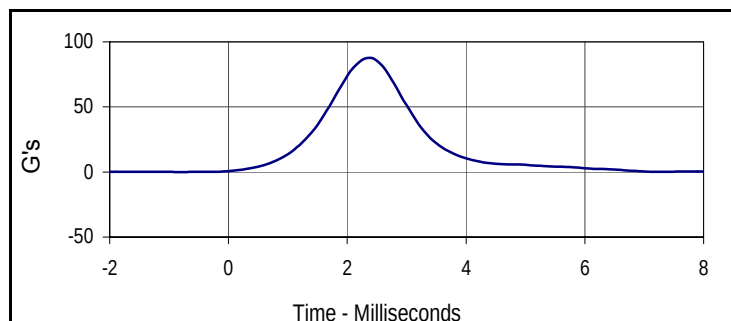
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
150.3	2.4	0.2	-2.9



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
6.0	4.7	-5.2	2.1



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
122.0	2.4	-5.1	4.9



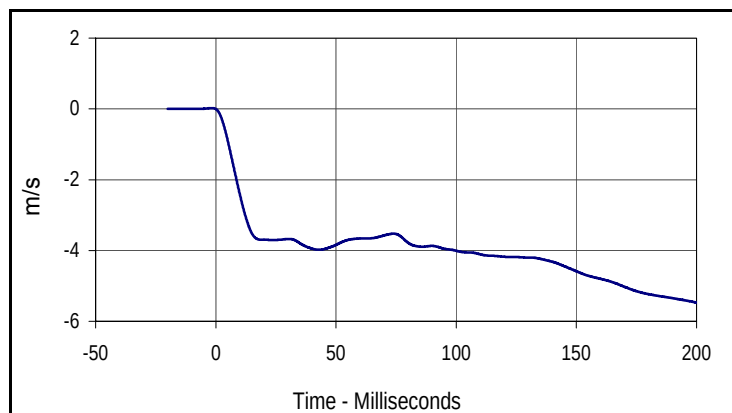
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
87.6	2.4	0.0	-0.8

Test Program: ES2re Neck Flexion Test
 ATD Serial No.: F037

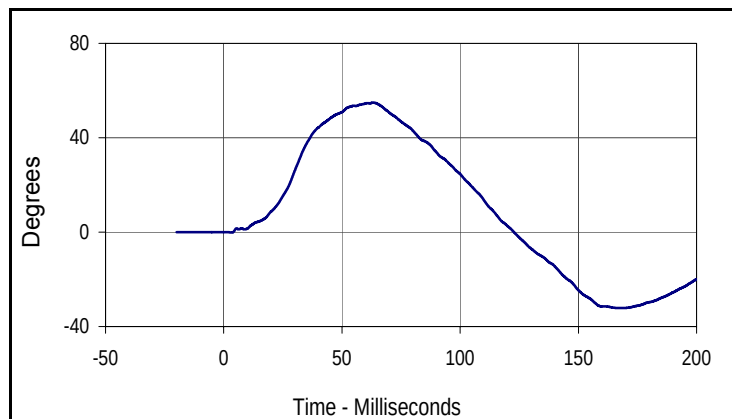
Test Date: 12/8/11
 Test I.D.: F037NB016



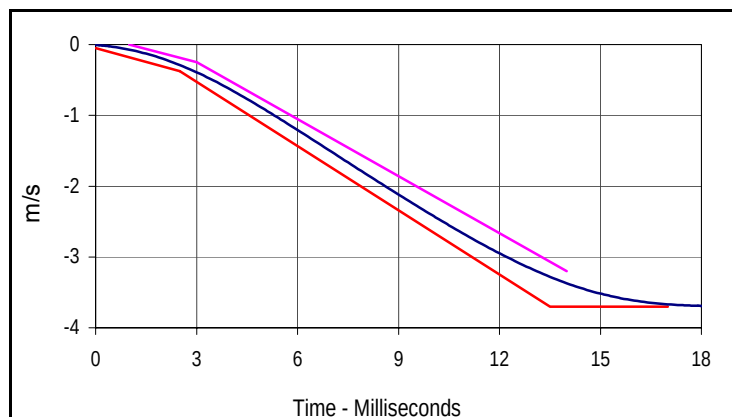
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	280	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	35.4	Pass
Pendulum Velocity	m/s	3.3 to 3.5	3.4	Pass
Headform Flexion	Max	49 to 59	54.9	Pass
	Time	54 to 66	63.3	Pass
Headform Flexion Decay (Peak to Zero)	msec	53 to 88	59.5	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.6	-5.5	200.0



Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
54.9	63.3	-32.2	167.0



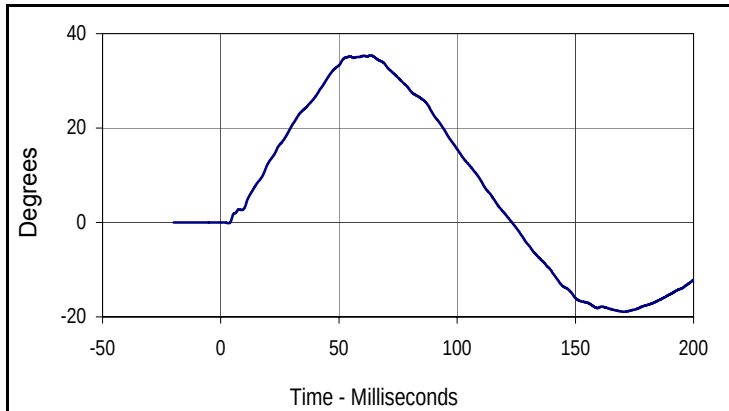
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.6	-5.5	200.0

Velocity Corridors

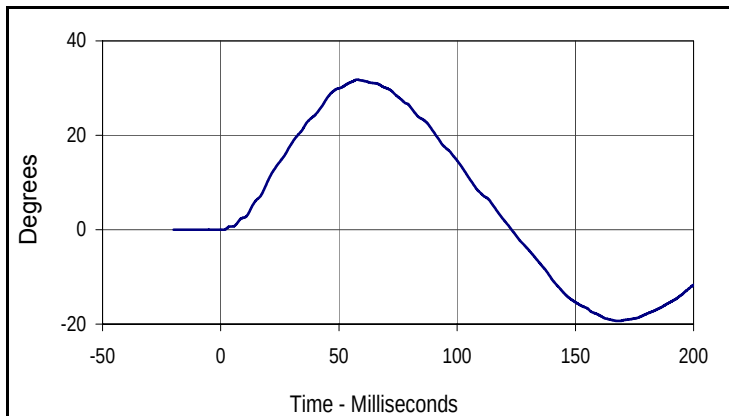
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.0	-0.03	2.5	-0.375
14.0	-3.20	13.5	-3.70
		17.0	-3.70

Test Program: ES2re Neck Flexion Test
 ATD Serial No.: F037

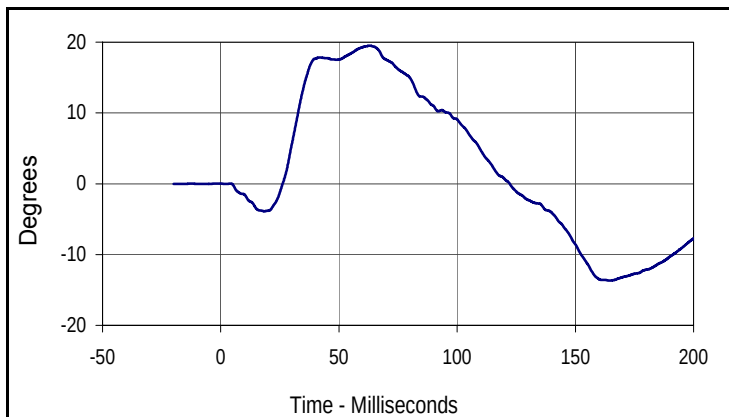
Test Date: 12/8/11
 Test I.D.: F037NB016



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
35.4	63.4	-18.9	170.7



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
31.8	57.7	-19.3	168.7



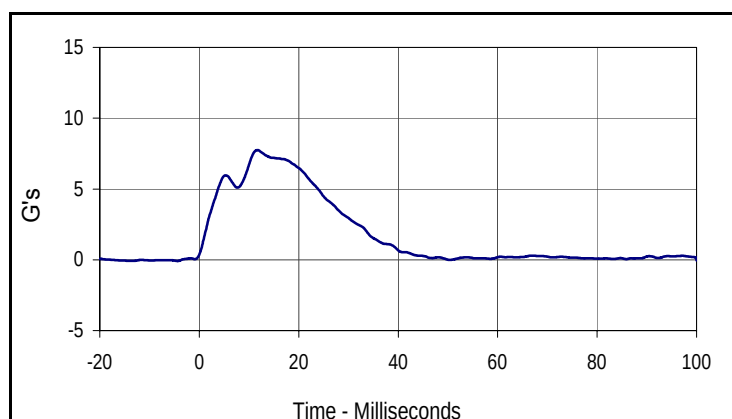
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
19.5	63.0	-13.7	164.4

Test Program: ES2re Shoulder Impact Test
 ATD Serial No.: F037

Test Date: 12/8/11
 Test I.D.: F037SH016



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	320	Pass
Temperature During Soak	Max	20.6 to 22.2	21.9	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	35.8	Pass
Pendulum Speed	m/s	4.2 to 4.4	4.3	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	7.7	Pass
Overall Test Results			Pass	



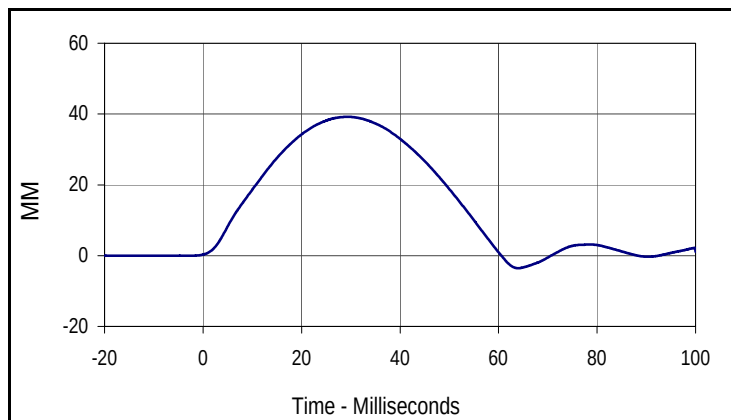
Curve Description			
Probe Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
7.7	11.7	-0.1	-4.3

Test Program: ES2re Thorax - Rib Drop Test
 ATD Serial No.: F037 Rib #1

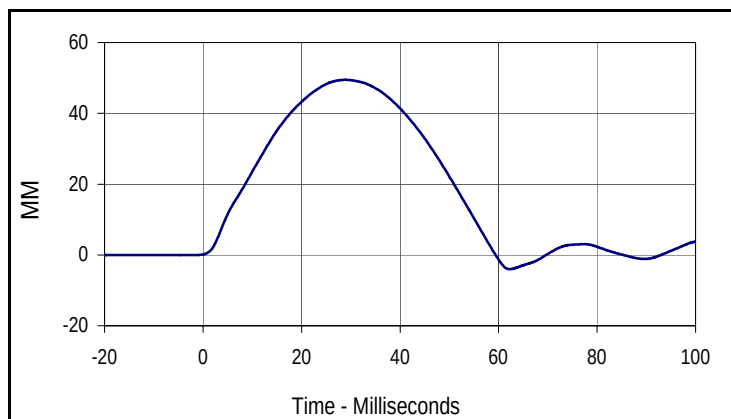
Test Date: 12/8/11
 Test I.D.: F037RB1016



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	360	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	34.2	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	39.2	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	49.5	Pass
Overall Test Results				Pass



Curve Description			
Upper Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
39.2	29.4	-3.5	64.0



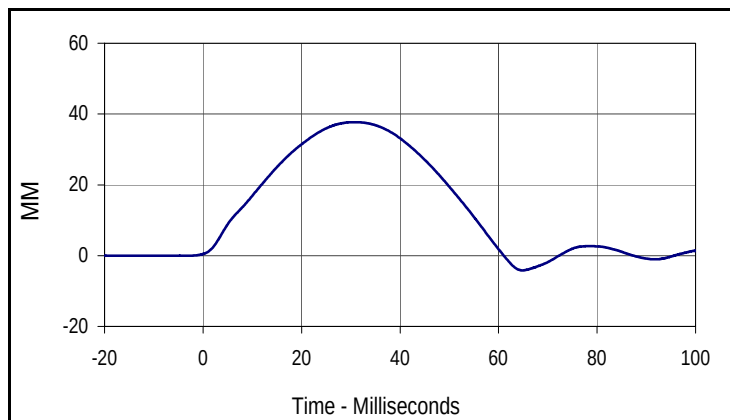
Curve Description			
Upper Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
49.5	28.9	-4.0	62.3

Test Program: ES2re Thorax - Rib Drop Test
 ATD Serial No.: F037 Rib #2

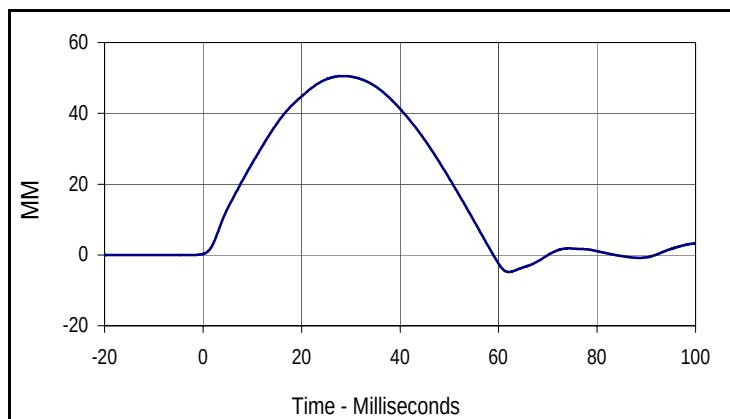
Test Date: 12/8/11
 Test I.D.: F037RB2016



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	380	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.6	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	34.6	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	37.7	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	50.6	Pass
Overall Test Results				Pass



Curve Description			
Middle Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
37.7	30.8	-4.2	64.8



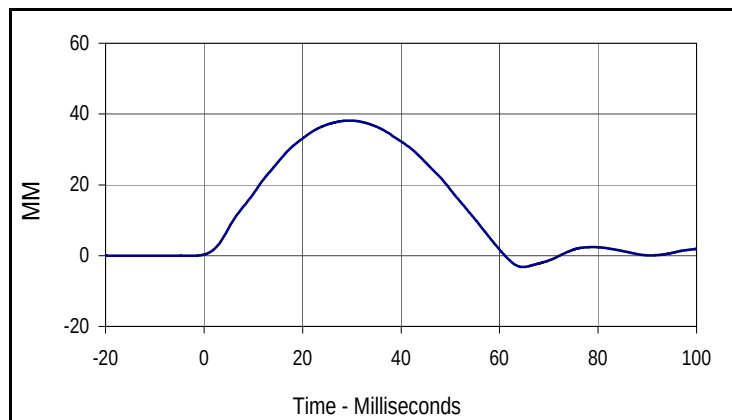
Curve Description			
Middle Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
50.6	28.5	-4.8	62.1

Test Program: ES2re Thorax - Rib Drop Test
 ATD Serial No.: F037 Rib # 3

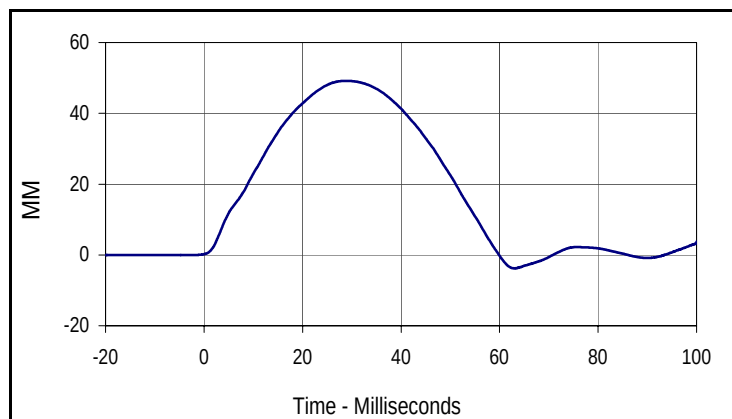
Test Date: 12/8/11
 Test I.D.: F037RB3016



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	400	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	35.1	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	38.2	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	49.2	Pass
Overall Test Results				Pass



Curve Description			
Lower Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
38.2	29.6	-3.2	64.8



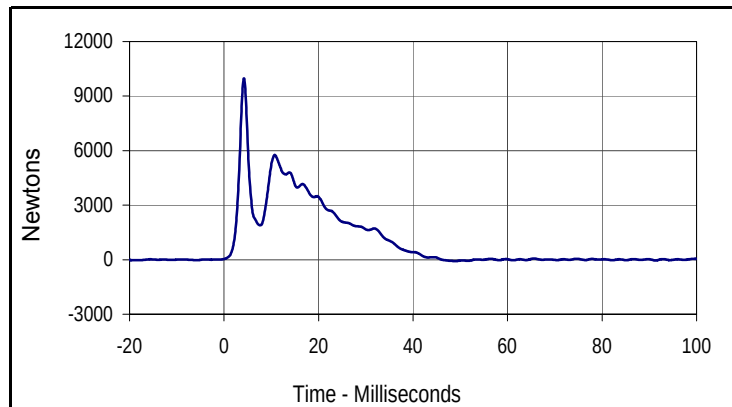
Curve Description			
Lower Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
49.2	28.8	-3.8	63.0

Test Program: ES2re Thorax - Full Body Impact Test
 ATD Serial No.: F037

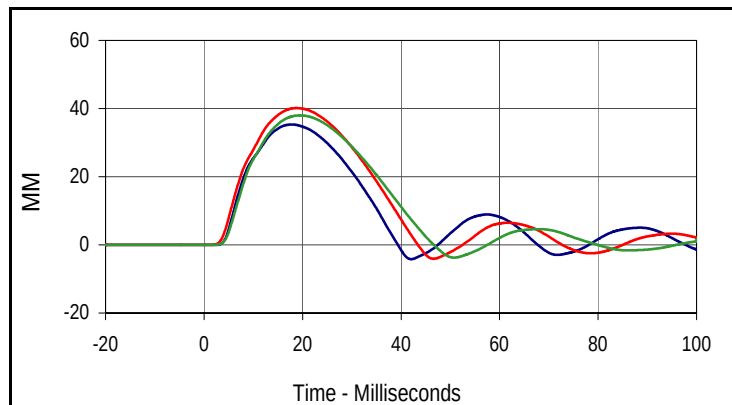
Test Date: 12/8/11
 Test I.D.: F037TH016



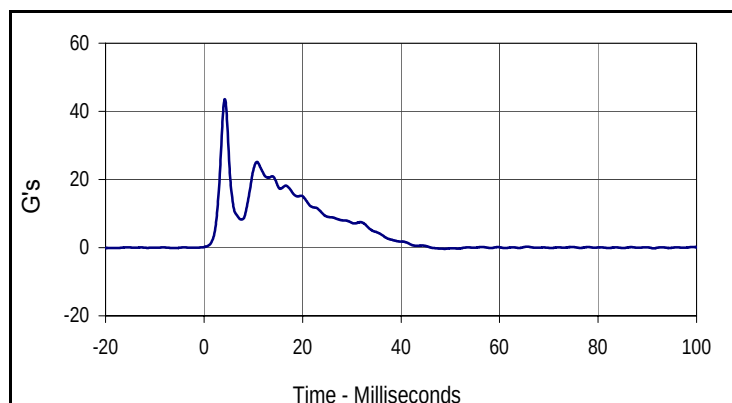
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	440	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	34.8	Pass
Peak Impactor Velocity	m/s	5.4 to 5.6	5.5	Pass
Peak Impactor Force	N	5100 to 6200	5760.4	Pass
	msec	> 6.0 msec	10.7	Pass
Peak Upper Rib Deflection	mm	34 to 41	35.3	Pass
Peak Middle Rib Deflection	mm	37 to 45	40.1	Pass
Peak Lower Rib Deflection	mm	37 to 44	38.0	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
9972.1	4.2	-76.1	48.8



Curve Description			
Upper, Middle, Lower Rib Deflections			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max (Upper)	Time	Min (Upper)	Time
35.3	17.8	-4.2	42.0
Max (Middle)	Time	Min (Middle)	Time
40.1	18.8	-4.1	46.6
Max (Lower)	Time	Min (Lower)	Time
38.0	19.5	-3.8	50.7



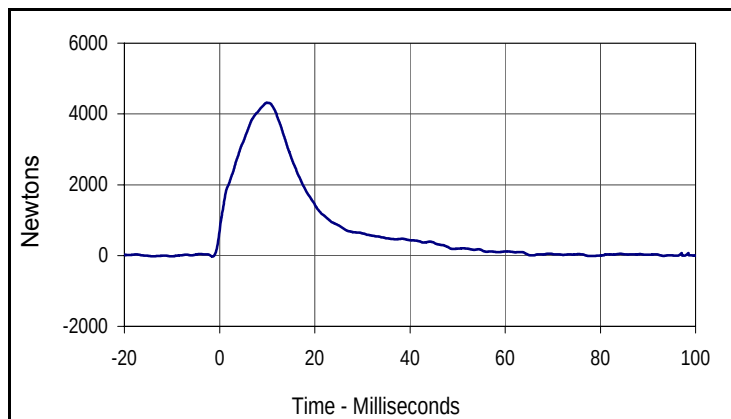
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
43.5	4.2	-0.3	48.8

Test Program: ES2re Abdomen Impact Test
 ATD Serial No.: F037

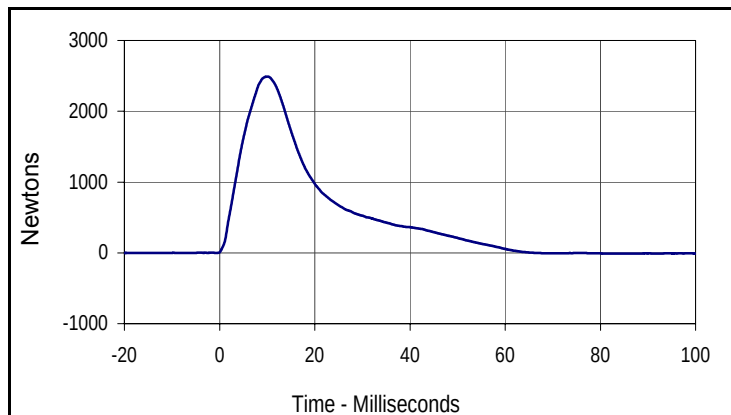
Test Date: 12/8/11
 Test I.D.: F037ABD016



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	460	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	35.8	Pass
Probe Velocity	m/s	3.9 to 4.1	4.0	Pass
Peak Impactor Force	N	4000 to 4800	4314.6	Pass
	msec	10.6 to 13.0	11.4	Pass
Sum of Abdominal Forces	N	2200 to 2700	2490.0	Pass
	msec	10.0 to 12.3	11.5	Pass
Overall Test Results				Pass



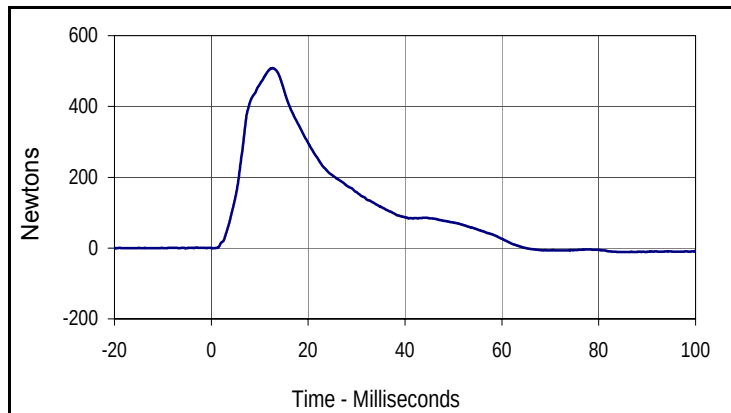
Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4314.6	11.4	-25.0	-0.1



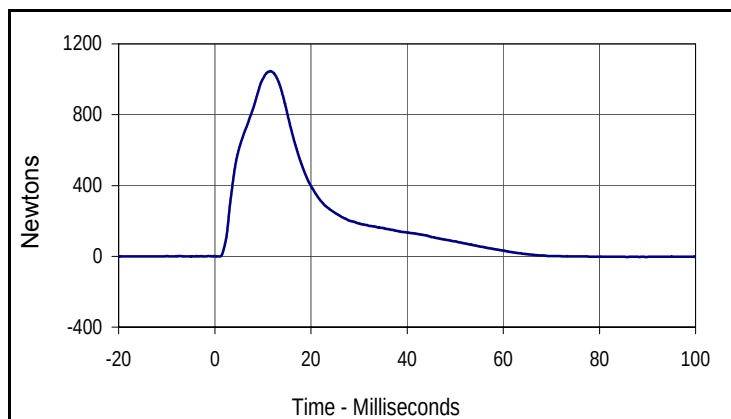
Curve Description			
Abdomen Sum Resultant			
Plot No.	Type	SAE Class	Units
002	RES	600	Newtons
Max	Time	Min	Time
2490.0	11.5	-11.1	89.7

Test Program: ES2re Abdomen Impact Test
 ATD Serial No.: F037

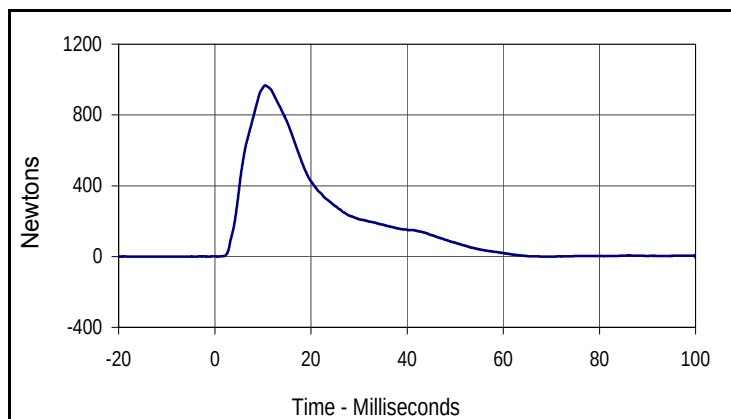
Test Date: 12/8/11
 Test I.D.: F037ABD016



Curve Description			
Front Abdomen Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
508.4	12.7	-11.5	86.1



Curve Description			
Middle Abdomen Force			
Plot No.	Type	SAE Class	Units
004	FIL	600	Newtons
Max	Time	Min	Time
1045.7	11.6	-8.5	0.0



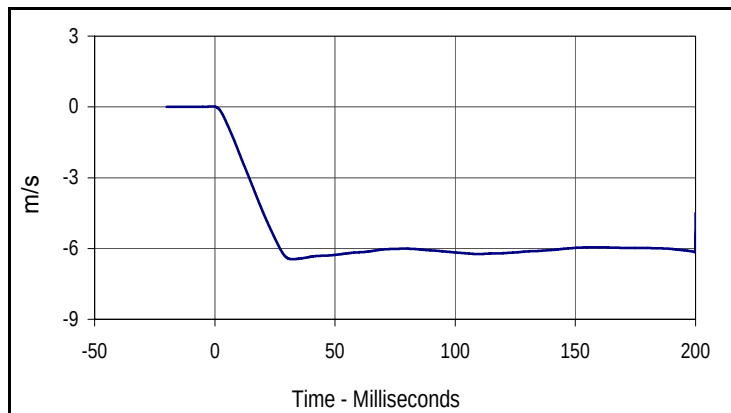
Curve Description			
Rear Abdomen Force			
Plot No.	Type	SAE Class	Units
005	FIL	600	Newtons
Max	Time	Min	Time
967.4	10.5	-8.5	0.0

Test Program: ES2re Lumbar Flexion Test
 ATD Serial No.: F037

Test Date: 12/8/11
 Test I.D.: F037LB016



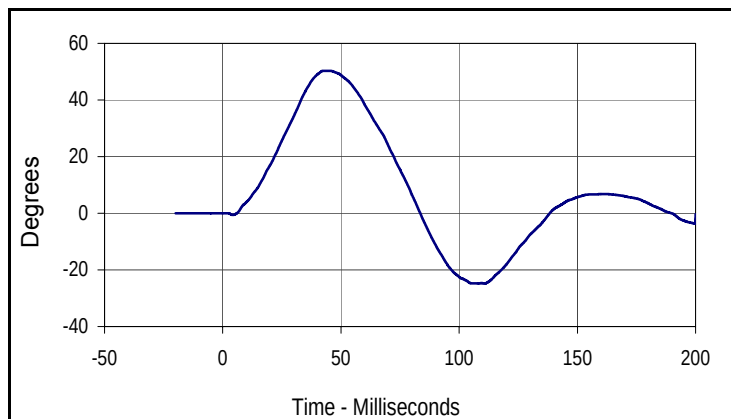
Tested Parameter	Units	Specification	Result	Pass/Fail
Lumbar Spine Assembly Soak Time	Minutes	≥240	370	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	34.8	Pass
Pendulum Velocity	m/s	5.95 to 6.15	6.04	Pass
Headform Rotation	Max	45 to 55	50.3	Pass
	Time	39 to 53	44.4	Pass
Time of Decay to Zero Angle from Peak	msec	37 to 57	39.2	Pass
Overall Test Results				Pass



Curve Description

Pendulum Velocity

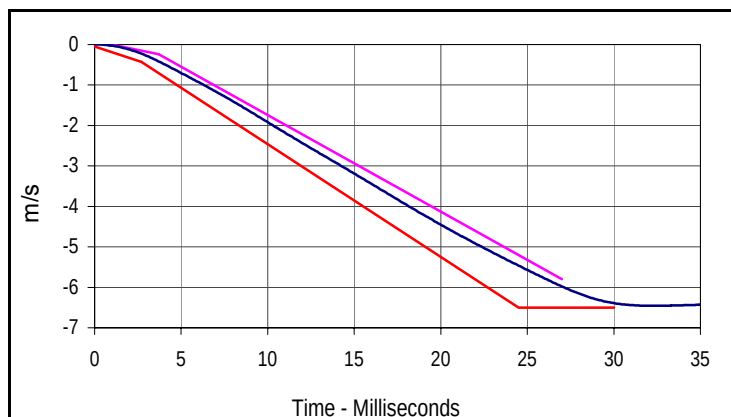
Plot No.	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.0	-6.5	32.3



Curve Description

Headform Rotation

Plot No.	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
50.3	44.4	-24.9	110.8



Curve Description

Pendulum Velocity

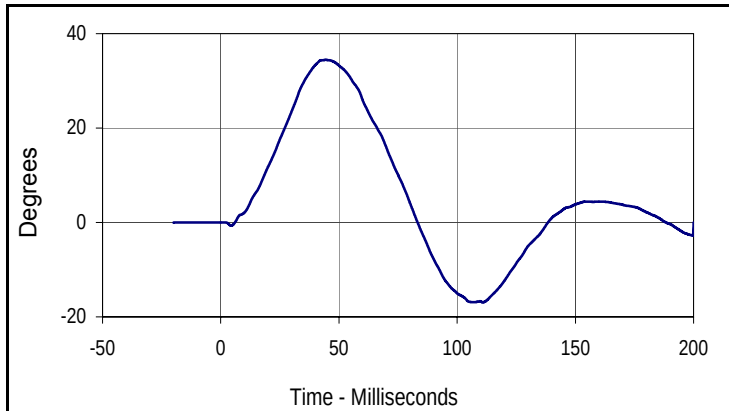
Plot No.	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.0	-6.5	32.3

Velocity Corridors

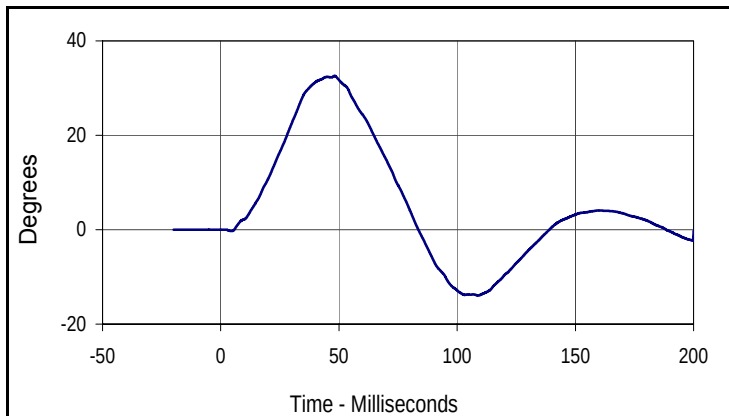
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.7	-0.24	2.7	-0.425
27.0	-5.80	24.5	-6.50
		30.0	-6.50

Test Program: ES2re Lumbar Flexion Test
 ATD Serial No.: F037

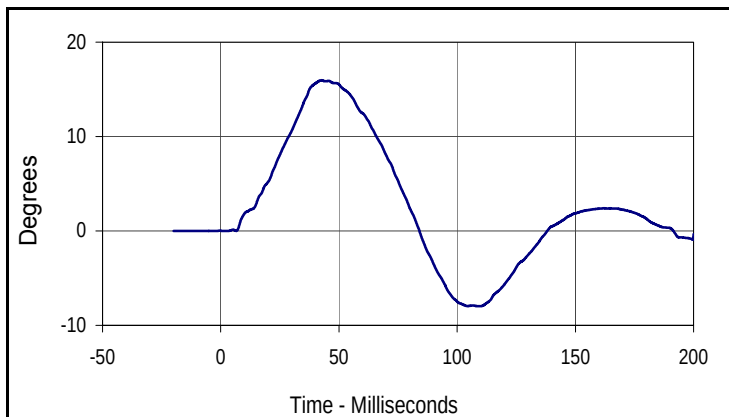
Test Date: 12/8/11
 Test I.D.: F037LB016



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
34.5	44.4	-16.9	110.9



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
32.6	48.2	-13.9	108.8



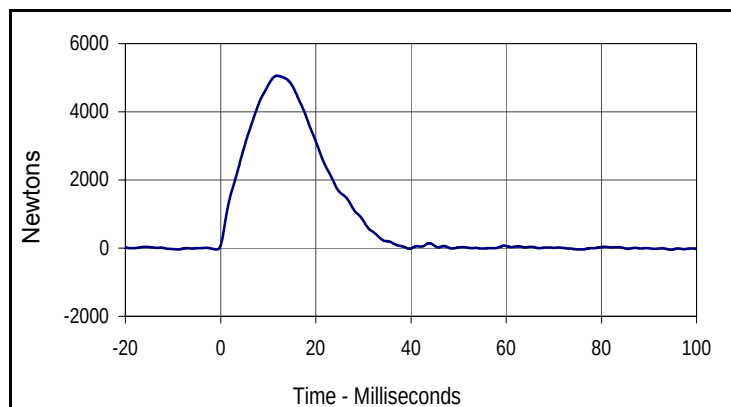
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
16.0	42.5	-8.0	108.4

Test Program: ES2re Pelvis Impact Test
 ATD Serial No.: F037

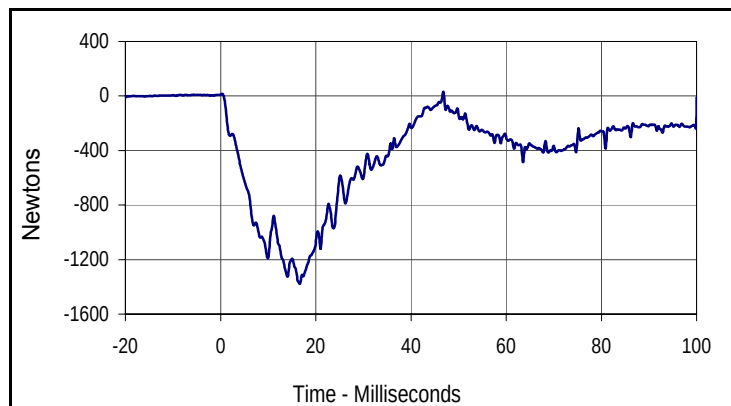
Test Date: 12/8/11
 Test I.D.: F037PL016



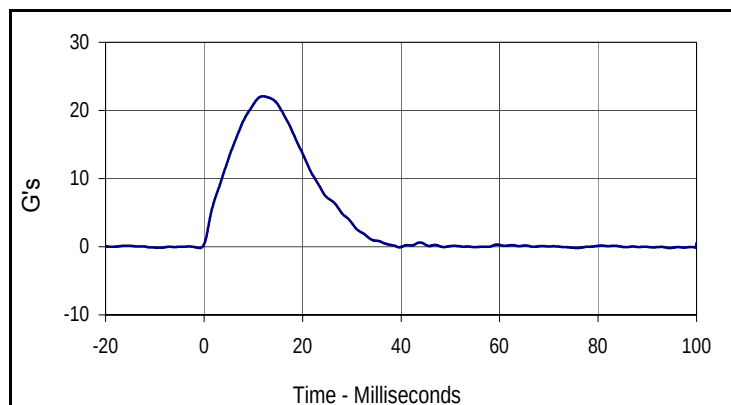
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	500	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	34.8	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.3	Pass
Peak Impactor Force	N	4700 to 5400	5057.6	Pass
	msec	11.8 to 16.1	11.9	Pass
Peak Pubic Symphysis Load	N	-1230 to -1590	-1376.7	Pass
	msec	12.2 to 17.0	16.7	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
5057.6	11.9	-46.7	94.6



Curve Description			
Pubic Symphysis Force Y			
Plot No.	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
30.3	46.8	-1376.7	16.7



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
22.1	11.9	-0.2	94.6

Test Program: SID IIs External Measurements
 ATD Serial No.: 307

Test Date: 12/8/11
 Test I.D.: N/A



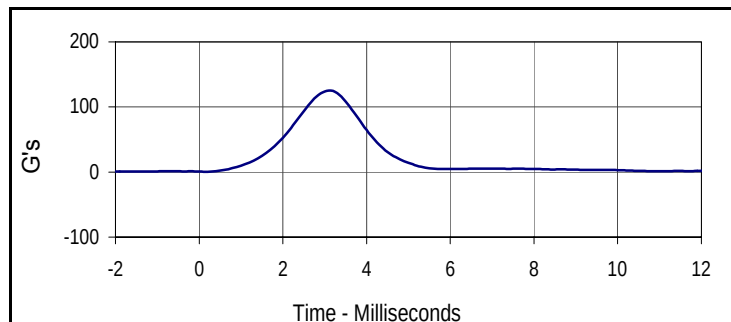
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity		%	10 to 70	35	Pass
A	Sitting Height	mm	772 - 788	776	Pass
B	Shoulder Pivot Height	mm	437 - 453	440	Pass
C	H-Point Height	mm	79 - 89	80	Pass
D	H-Point from Seatback	mm	141 - 151	149	Pass
E	Shoulder Pivot from Backline	mm	97 - 107	103	Pass
F	Thigh Clearance	mm	119 - 135	125	Pass
G	Head Breadth	mm	140 - 148	145	Pass
H	Head Back from Backline	mm	40 - 46	43	Pass
I	Head Depth	mm	178 - 188	182	Pass
J	Head Circumference	mm	541 - 551	548	Pass
K	Buttock to Knee Length	mm	514 - 540	525	Pass
L	Popliteal Height	mm	343 - 369	348	Pass
M	Knee Pivot to Floor Height	mm	392 - 409	400	Pass
N	Buttock Popliteal Length	mm	416 - 442	430	Pass
O	Chest Depth w/o Jacket	mm	195 - 211	204	Pass
P	Foot Length	mm	216 - 232	219	Pass
Q	Hip Breadth with Pelvic Plug	mm	313 - 323	316	Pass
R	Arm Length	mm	249 - 259	251	Pass
S	Knee Joint to Seatback	mm	477 - 493	480	Pass
V	Shoulder Width	mm	341 - 357	351	Pass
W	Foot Width	mm	78 - 94	89	Pass
Y	Chest Circumference with Jacket	mm	851 - 881	875	Pass
Z	Waist Circumference	mm	760 - 791	773	Pass
Overall Test Results				Pass	

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

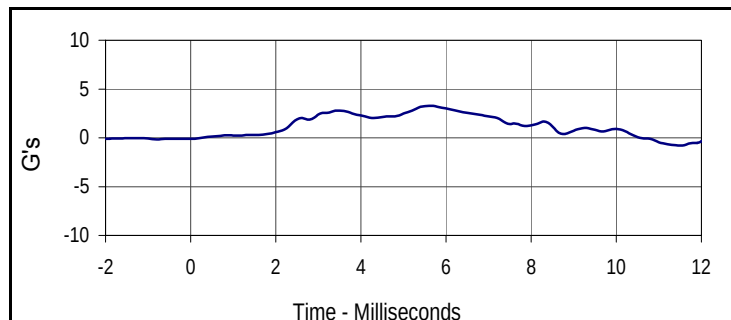
Test Date: 12/8/11
 Test I.D.: 307HD022



Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	245	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	22.2	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	40.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	31.8	Pass
Peak Head Resultant Acceleration		G's	115 to 137	125.1	Pass
Peak Head X Acceleration		G's	<15	3.3	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse		%	<15	11.4	Pass
Overall Test Results				Pass	



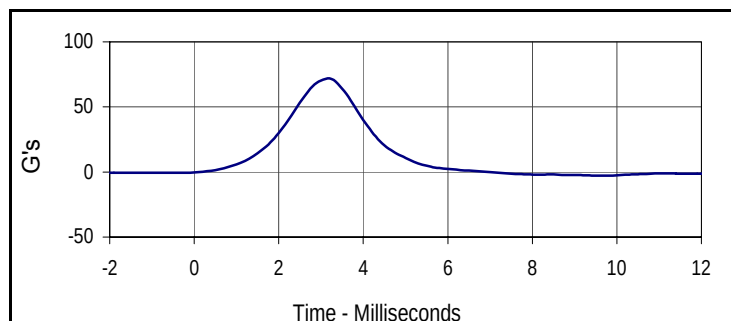
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
125.1	3.1	0.2	0.2



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
3.3	5.6	-0.2	-0.8



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
102.6	3.1	-4.7	7.6



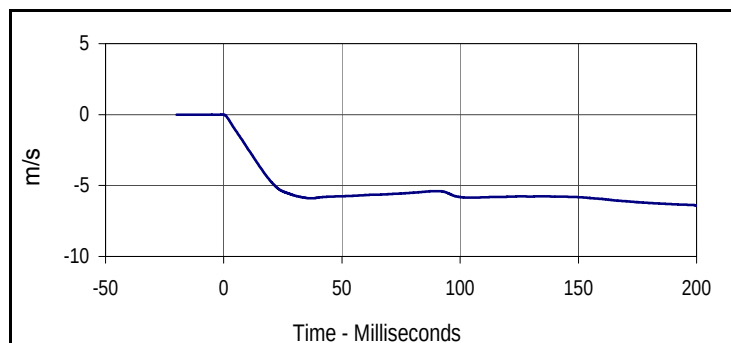
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
71.9	3.2	-2.8	9.6

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

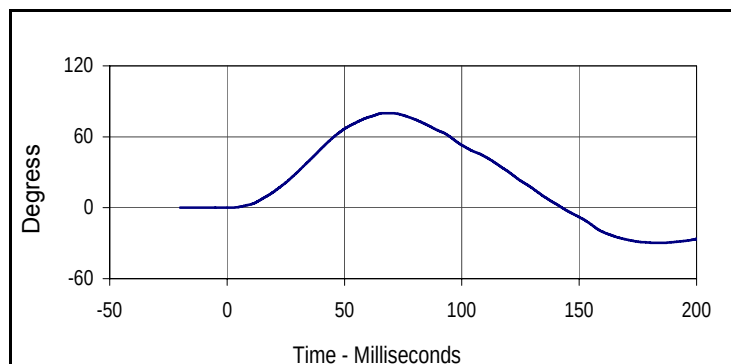
Test Date: 12/8/11
 Test I.D.: 307NB022



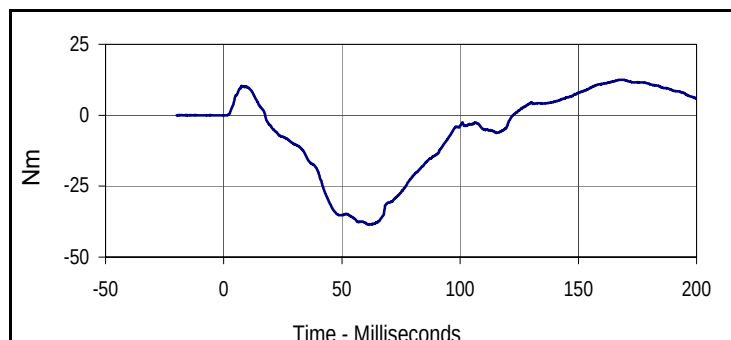
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	250	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.8	Pass
Pendulum Velocity	m/s	5.51 to 5.63	5.58	Pass
Pendulum Deceleration	10 msec	-2.20 to -2.80	-2.37	Pass
	15 msec	-3.30 to -4.10	-3.61	Pass
	20 msec	-4.40 to -5.40	-4.73	Pass
	25 msec	-5.40 to -6.10	-5.42	Pass
	25-100 msec	-5.50 to -6.20	-5.90	Pass
D-Plane Rotation	Max	71 to 81	80.1	Pass
	Time	50 to 70	67.2	Pass
Peak Occipital Condyle Moment	Nm	-36 to -44	-38.5	Pass
Decaying Moment Time to Cross 0 Nm	msec	102 to 126	122.4	Pass
Overall Test Results			Pass	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.6	-6.4	200.0



Curve Description			
Maximum Translation Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
80.1	67.2	-29.8	183.4



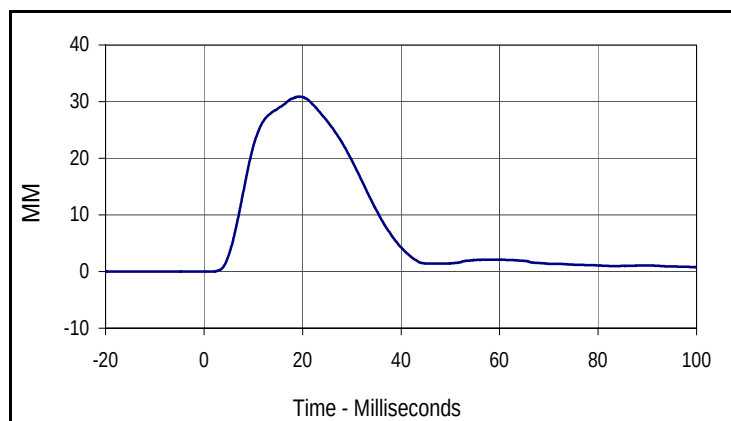
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
12.5	168.5	-38.5	62.0

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

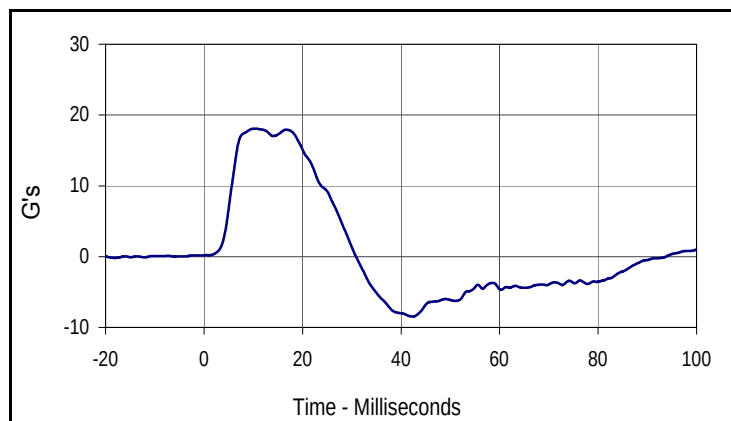
Test Date: 12/8/11
 Test I.D.: 307SH022



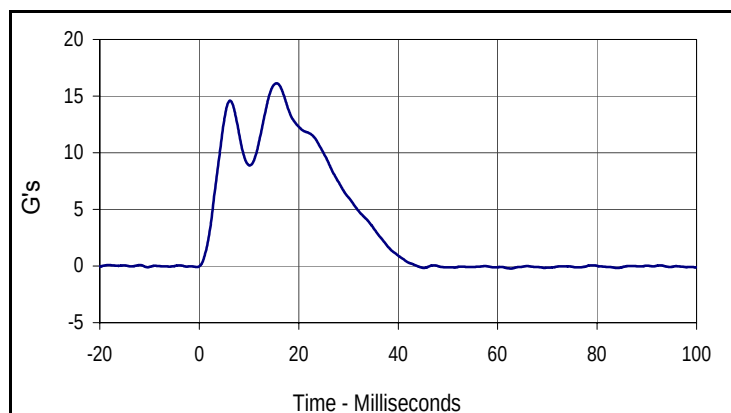
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	280	Pass
Temperature During Soak	Max °C	20.6 to 22.2	21.7	Pass
	Min °C		20.7	Pass
Humidity During Soak	Max %	10.0 to 70.0	40.0	Pass
	Min %		28.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	33.2	Pass
Impactor Velocity	m/s	4.20 to 4.40	4.30	Pass
Peak Shoulder Deflection	mm	28 to 37	30.9	Pass
Peak Lateral Spine Acceleration Y	G's	17 to 22	18.1	Pass
Peak Impactor Acceleration	G's	13 to 18	16.1	Pass
Overall Test Results			Pass	



Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
30.9	19.3	0.0	-9.1



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
18.1	10.4	-8.5	42.4



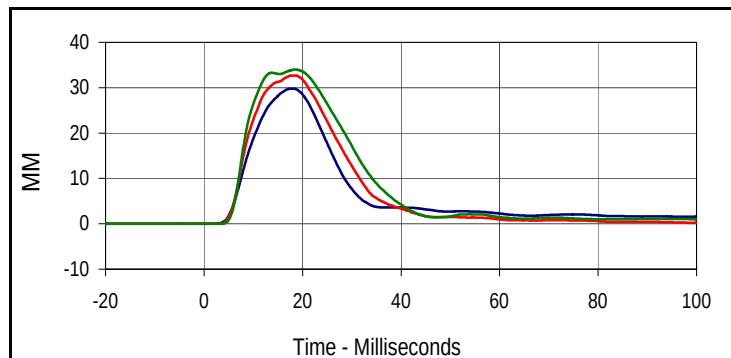
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
16.1	15.6	-0.2	62.7

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

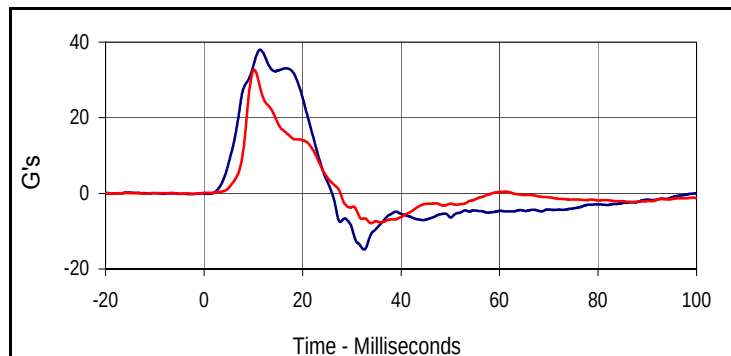
Test Date: 12/8/11
 Test I.D.: 307TWA022



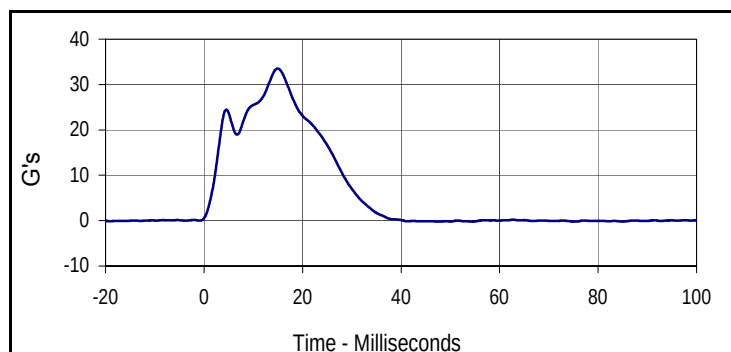
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	290	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	31.8	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.7	Pass
Peak Shoulder Deflection	mm	31 to 40	36.7	Pass
Peak Upper Thorax Rib Deflection	mm	25 to 32	29.8	Pass
Peak Middle Thorax Rib Deflection	mm	30 to 36	32.7	Pass
Peak Lower Thorax Rib Deflection	mm	32 to 38	34.0	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	38.0	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	32.8	Pass
Peak Impactor Acceleration	G's	30 to 36	33.5	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
29.8	17.8	0.0	-15.6
Middle Thorax Deflection			
Max	Time	Min	Time
32.7	17.9	0.0	-13.5
Lower Thorax Deflection			
Max	Time	Min	Time
34.0	18.5	0.0	-20.0



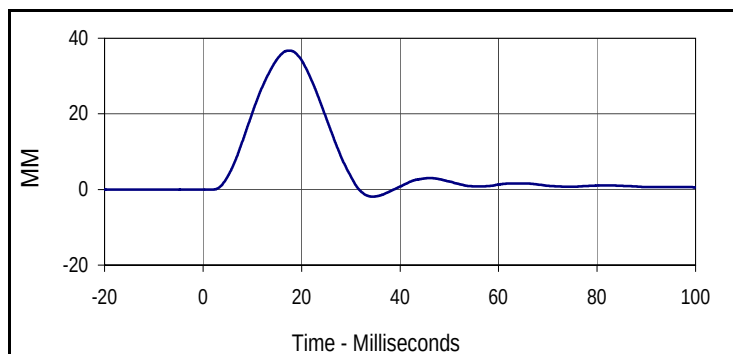
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
38.0	11.4	-14.9	32.5
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
32.8	10.2	-7.9	33.9



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
33.5	15.0	-0.2	0.0

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

Test Date: 12/8/11
 Test I.D.: 307TWA022



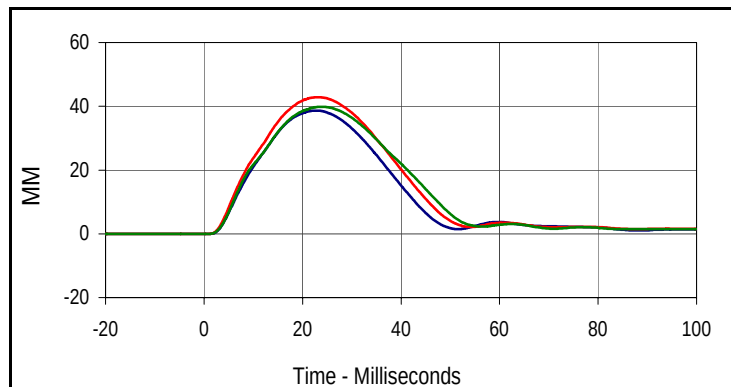
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	MM
Max	Time	Min	Time
36.7	17.6	-1.9	34.5

Test Program: SID IIs Thorax without Arm Impact Test
 ATD Serial No.: 307

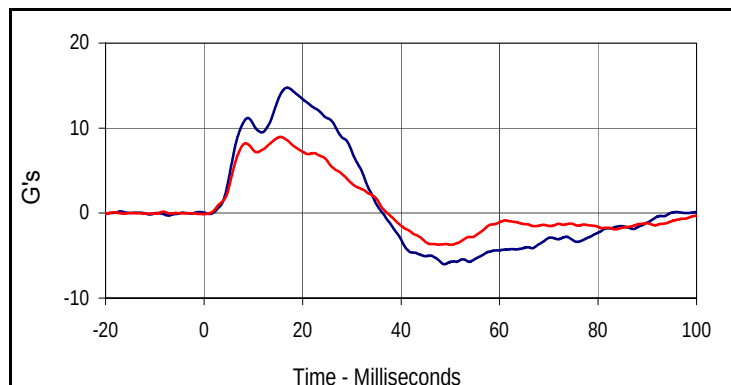
Test Date: 12/8/11
 Test I.D.: 307TWOA022



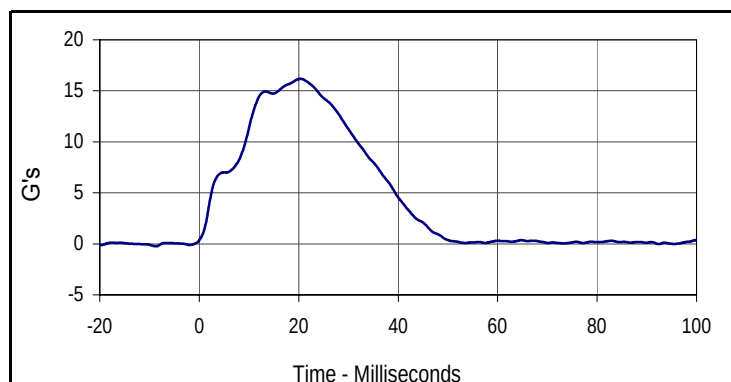
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	320	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	40.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	31.5	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.3	Pass
Peak Upper Thorax Rib Deflection		mm	32 to 40	38.6	Pass
Peak Middle Thorax Rib Deflection		mm	39 to 45	42.8	Pass
Peak Lower Thorax Rib Deflection		mm	35 to 43	39.9	Pass
Peak Upper Spine Y Acceleration		G's	13 to 17	14.8	Pass
Peak Lower Spine Y Acceleration		G's	7 to 11	9.0	Pass
Peak Impactor Acceleration		G's	14 to 18	16.2	Pass
Overall Test Results				Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
38.6	22.7	0.0	-1.9
Middle Thorax Deflection			
Max	Time	Min	Time
42.8	23.1	0.0	-20.0
Lower Thorax Deflection			
Max	Time	Min	Time
39.9	23.7	0.0	-20.0



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.8	16.9	-6.0	48.8
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
9.0	15.5	-3.7	50.1



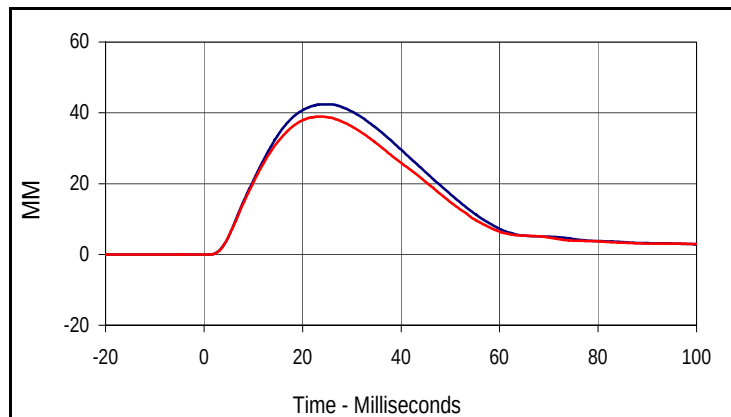
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
16.2	20.3	-0.2	-8.8

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

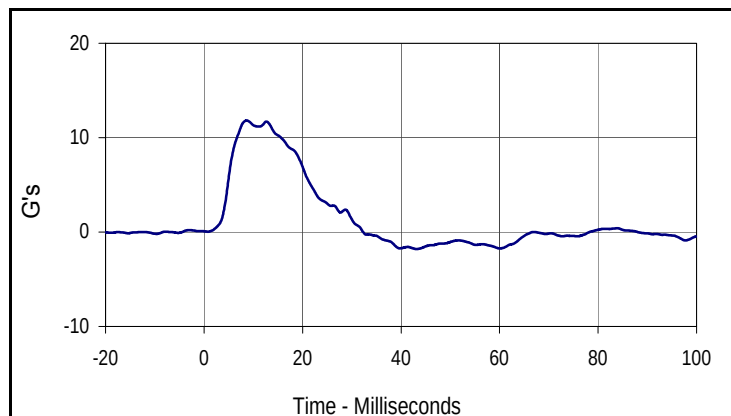
Test Date: 12/8/11
 Test I.D.: 307ABD022



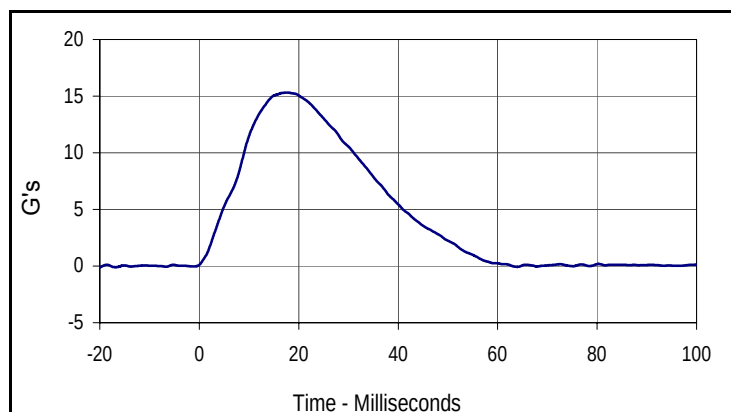
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	340	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.8	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.3	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	42.4	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	38.9	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	11.8	Pass
Peak Impactor Acceleration	G's	12 to 16	15.3	Pass
Overall Test Results			Pass	



Curve Description			
Upper Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
42.4	24.6	0.0	0.2
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
38.9	23.6	0.0	-2.2



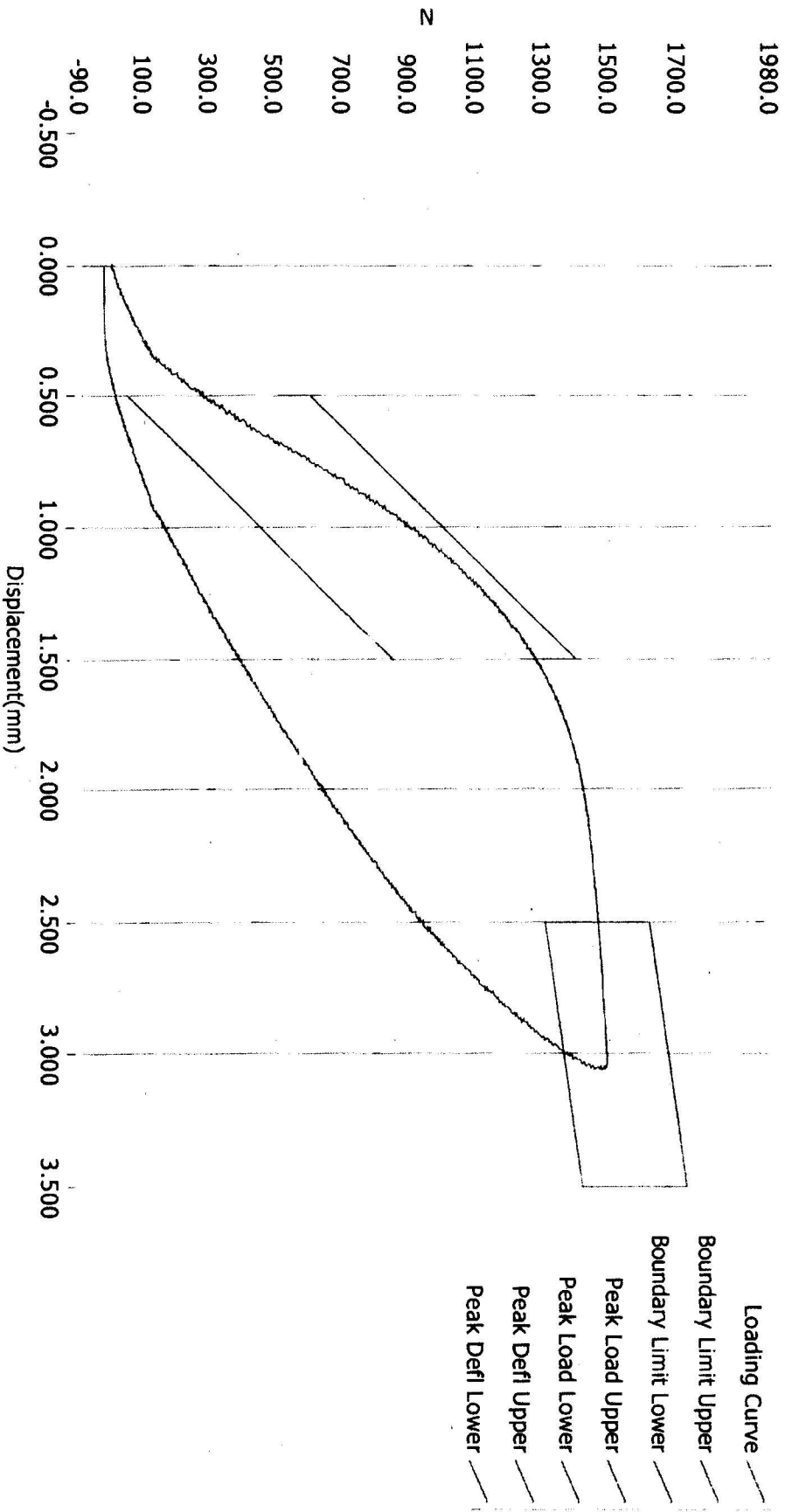
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
11.8	8.7	-2.4	0.0



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.3	17.8	-0.1	-20.0

MC5314 POST TEST

Resultant Data - SIDIIs Plug Compression



ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
Cert ID	ATD Serial Number	ATD Type	
	36319	SIDIIs	

Current Date : 9/22/2010

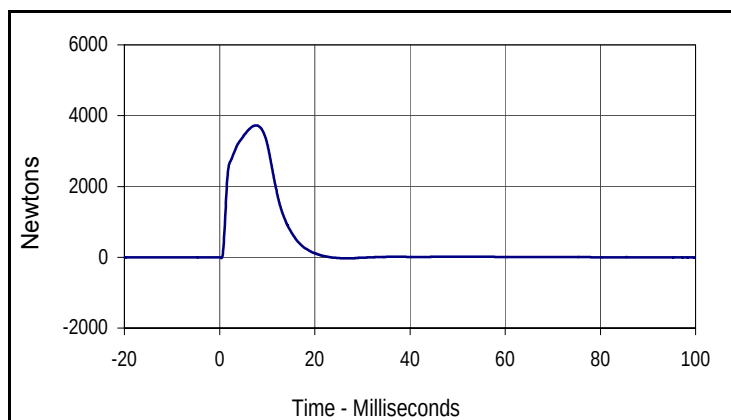
Current Time : 13:14:32

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

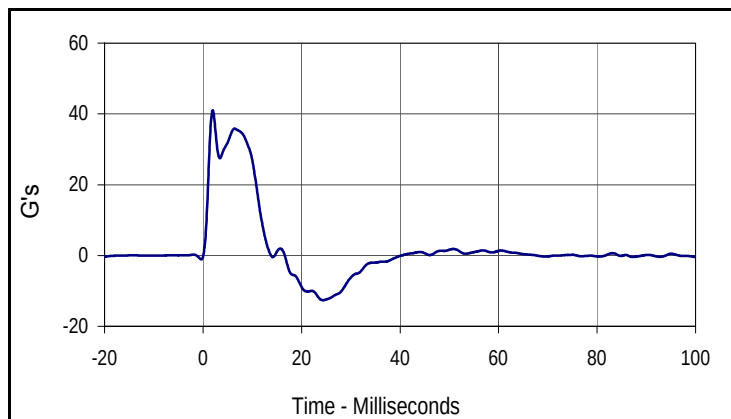
Test Date: 12/8/11
 Test I.D.: 307ACE022



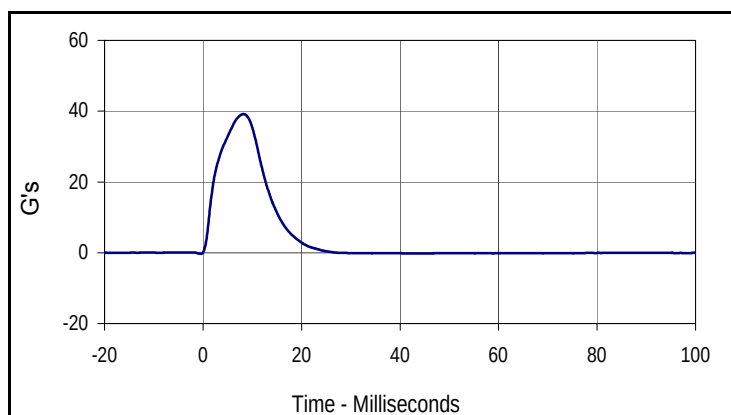
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	360	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	33.6	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.7	Pass
Peak Acetabulum Force Y	Newtons	3600 to 4300	3724.9	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	35.8	Pass
Peak Impactor Acceleration	G's	38 to 47	39.2	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3724.9	7.7	-33.1	27.0



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
41.0	2.0	-12.6	24.3



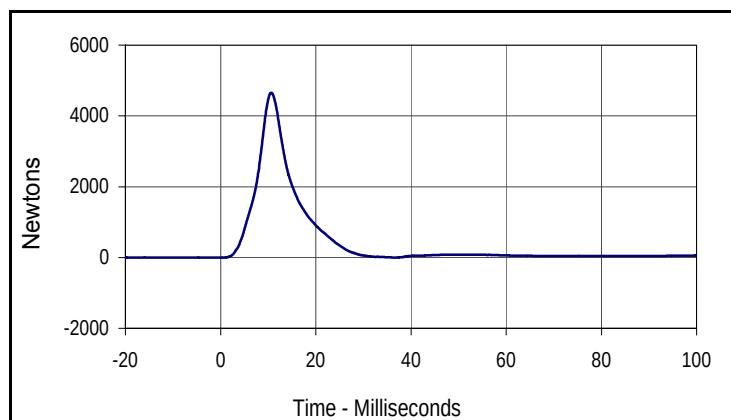
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
39.2	8.2	-0.3	-0.5

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

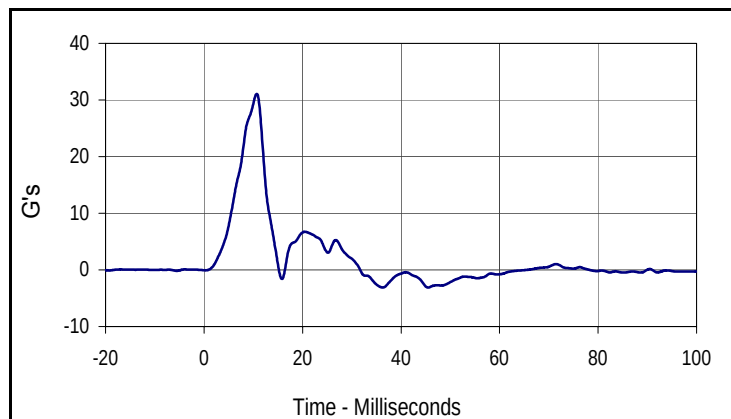
Test Date: 12/8/11
 Test I.D.: 307PL022



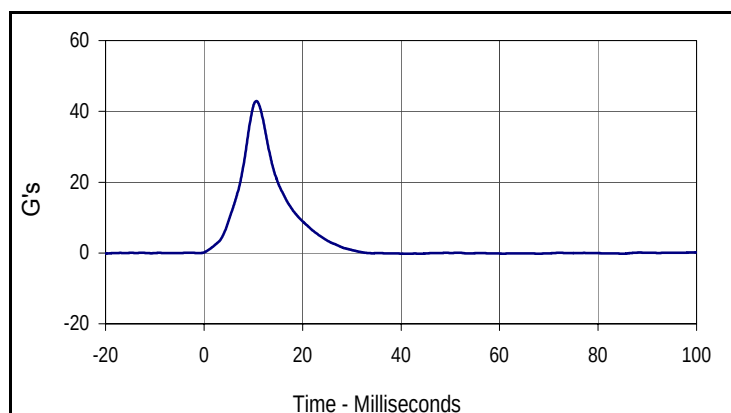
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	400	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.8	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.3	Pass
Peak Iliac Force	Newtons	4100 to 5100	4653.4	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	31.1	Pass
Peak Impactor Acceleration	G's	36 to 45	42.9	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Iliac Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4653.4	10.6	-5.8	36.9



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
31.1	10.7	-3.1	45.5



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
42.9	10.6	-0.2	85.2

APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

TABLE 1 – Dummy Instrumentation (ES-2re)

			ES-2re S/N F037		
			Serial Number	Manufacturer	Calibration
Head Accelerometers		X	P58858	Endevco	5/24/11
		Y	P58865	Endevco	5/24/11
		Z	P58867	Endevco	5/24/11
Thorax Rib Displacement Potentiometers	Upper	Y	209	FTSS	6/2/11
	Middle	Y	210	FTSS	6/2/11
	Lower	Y	207	FTSS	6/2/11
Abdomen Load Cells	Forward	Y	1504	Denton	6/10/11
	Middle	Y	1505	Denton	6/29/11
	Rear	Y	1506	Denton	6/10/11
Lower Spine Accelerometers (T12)		X	04J04107-Z15	Endevco	6/2/11
		Y	P58876	Endevco	6/2/11
		Z	P58877	Endevco	5/31/11
Pubic Symphysis Load Cell		Y	464	Denton	6/9/11

TABLE 2 – Dummy Instrumentation (SID-IIs)

				SID-IIs S/N 307			
				Serial Number	Manufacturer	Calibration	
Head Accelerometers				X	P58900	Endevco	7/5/11
				Y	P58902	Endevco	7/5/11
				Z	P58983	Endevco	7/5/11
Displacement Potentiometers	Shoulder			Y	1244	FTSS	7/1/11
	Thoracic Rib	Upper	Y	1249	FTSS	7/1/11	
		Middle	Y	1265	FTSS	7/1/11	
		Lower	Y	1277	FTSS	7/1/11	
	Abdominal Rib	Upper	Y	1286	FTSS	7/1/11	
		Lower	Y	1290	FTSS	7/1/11	
Lower Spine Accelerometers (T12)				X	P59007	Endevco	7/1/11
				Y	P59015	Endevco	7/1/11
				Z	P59016	Endevco	7/1/11
Acetabulum Load Cell				Y	277	Denton	6/10/11
Iliac Wing Load Cell				Y	289	Denton	6/10/11
Pelvis Plug (Struck Side)					36400	FTSS	9/23/10
Pelvis Plug (Non-Struck Side)					36380	FTSS	9/23/10

TABLE 3 – Vehicle Instrumentation

Vehicle Instrumentation			Serial Number	Manufacturer	Calibration Date
1	Vehicle Center of Gravity	X	Ketx5a	ICSensor	6/20/11
	Vehicle Center of Gravity	Y	Ketx5b	ICSensor	6/20/11
	Vehicle Center of Gravity	Z	Ketx5c	ICSensor	6/20/11
2	Right Sill at Front Seat	X	Keva201X	ICSensor	11/28/11
	Right Sill at Front Seat	Y	Keva201Y	ICSensor	11/28/11
	Right Sill at Front Seat	Z	Keva201Z	ICSensor	11/28/11
3	Right Sill at Rear Seat	X	Ketx12a	ICSensor	7/20/11
	Right Sill at Rear Seat	Y	Ketx12y	ICSensor	7/21/11
	Right Sill at Rear Seat	Z	Ketx12z	ICSensor	7/21/11
4	Left Sill at Front Door	Y	00L20-A20	Entrans	10/28/11
5	Left Sill at Rear Door	Y	AJ7Y4	Endevco	3/30/11
6	Left A-Post Lower	Y	BY98H	Endevco	3/15/11
7	Left A-Post Middle	Y	J21735	Endevco	4/1/11
8	Left B-Post Lower	Y	J24533	Endevco	4/1/11
9	Left B-Post Middle	Y	CY06H	Endevco	3/15/11
10	Front Seat Track	Y	J21907	Endevco	3/30/11
11	Rear Seat Structure	Y	N/A	N/A	N/A
12	Right Rear Occ. Compartment	Y	Keva004	ICSensor	5/8/11
13	Engine Block	X	BI60H	Endevco	7/22/11
	Engine Block	Y	AR17	Endevco	7/22/11
14	Rear Floorpan Above Axle	X	AK29	Endevco	3/15/11
	Rear Floorpan Above Axle	Y	J21735	Endevco	4/1/11
	Rear Floorpan Above Axle	Z	J27055	Endevco	4/29/11

TABLE 4 – MDB Instrumentation

		Serial Number	Manufacturer	Calibration Date
MDB Center of Gravity	X	00L13-F37	Entrans	6/22/11
MDB Center of Gravity	Y	02I10-N16	Entrans	6/22/11
MDB Center of Gravity	Z	03J13_Z09	Entrans	6/22/11
Left Frame at Rear Axle Centerline	X	P58705	Endevco	11/6/11
Left Frame at Rear Axle Centerline	Y	05616-L03	Entrans	6/22/11