

REPORT NUMBER: SINCAP-KAR-13-050

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

**HONDA MFG. OF INDIANA, LLC
2013 HONDA CIVIC HYBRID 4-DOOR SEDAN**

NHTSA No: MD5311

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



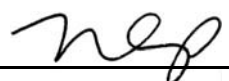
APRIL 10, 2013

FINAL REPORT

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U.S. DEPARTMENT OF TRANSPORTATION
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Division Chief, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: 


COTR, New Car Assessment Program
NHTSA, 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 2013 Honda Civic Hybrid 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 March 28, 2013.

The impact velocity of the Moving Deformable Barrier was 61.54 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 27.4 deg. C. The target vehicle's maximum post-test static crush was 229 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	155.8
Maximum Thorax Rib Deflection	mm	44	22
Total Abdominal Force	N	2500	968
Pubic Symphysis Force	N	6000	1758

Measurement Description	Passenger ATD (SID-Is)		
	Units	IARV	Result
Head Injury Criteria (HIC ₃₆)		1000	393.9
Resultant Lower Spine Acceleration	g	82	72
Total Pelvic Force (Sum of Acetubular and Iliac Forces)	N	5525	3402
Maximum Thoracic Rib Deflection	mm	38*	24
Maximum Abdominal Rib Deflection	mm	45*	36

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

* Proposed IARV

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SECTION 1

TEST PURPOSE AND PROCEDURE

This moving deformable barrier side impact test is part of the MY 2013 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 2013 Honda Civic Hybrid 4-door sedan. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated September 2012.

SECTION 2

SUMMARY OF TEST RESULTS

A 2013 Honda Civic Hybrid 4-door sedan was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 61.54 km/h (38.24 mph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by KARCO Engineering, LLC. in Adelanto, California, on March 28, 2013. 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 September 2012. 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. Appendix D of this report contains the test equipment and instrumentation calibration data.

Dummy injury readings were recorded as follows:

Measurement Description	Units	Driver ATD (ES-2re)	
		Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	155.8
Maximum Thorax Rib Deflection	mm	44	22
Combined Abdominal Force	N	2500	968
Pubic Symphysis Force	N	6000	1758

Measurement Description	Units	Passenger ATD (SID-IIs)	
		Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	393.9
Lower Spine (T12) Resultant Acceleration	g	82	72
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3402
Maximum Thoracic Rib Deflection	mm	38*	24
Maximum Abdominal Rib Deflection	mm	45*	36

*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)	Yes	Yes	No	
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes	Yes	No	
Other	No		No	

GENERAL COMMENTS

The two doors on the struck side of the vehicle remained closed and latched. There was no separation at the hinges or latches. 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: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5311
Test Program: NCAP MDB Side Impact Test Test Date: 03/28/13

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: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5311
 Test Program: NCAP MDB Side Impact Test Test Date: 03/28/13

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	MD5311
Model Year	2013
Make	Honda
Model	Civic Hybrid
Body Style	4-Door Sedan
VIN	19XFB4F25DE200549
Body Color	Polished Metal M.
Odometer Reading (km / mi)	180 / 112
Engine Displacement (L)	1.5
Type / No. of Cylinders	Inline 4
Engine Placement	Transverse
Transmission Type	CVT
Transmission Speeds	1
Overdrive	Yes
Final Drive	Front
Roof Rack	No
Sunroof / T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes

Traction Control System (TCS)	Yes
Auto-Leveling System	No
Automatic Door Locks	Yes
Power Window Auto-Reverse	Yes
Other Optional Feature	No
Driver Front Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	Yes
Driver Torso/Pelvis Airbag	No
Driver Pelvis Airbag	No
Driver Knee Airbag	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	No

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

Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Honda Mfg. of Indiana, LLC
Date of Manufacture	Feb-13
Vehicle Type	Passenger Car

GVWR (kg)	1740
GAWR Front (kg)	910
GAWR Rear (kg)	840

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

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

A
B
A-B

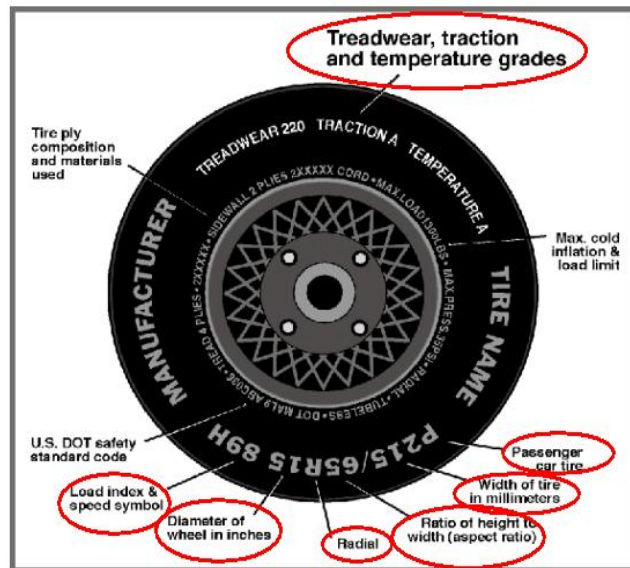
VEHICLE SEAT TYPE

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

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5311
 Test Program: NCAP MDB Side Impact Test Test Date: 03/28/13



VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	300	300
Cold Pressure (kPa)	220	220
Recommended Tire Size	P195/65R15	P195/65R15
Tire Size on Vehicle	P195/65R15	P195/65R15
Tire Manufacturer	Bridgestone	Bridgestone
Tire Model	Ecopia	Ecopia
Treadware	380	380
Traction Grade	B	B
Temperature Grade	B	B
Tire Plies Sidewall	1 Polyester	1 Polyester
Tire Plies Body	1 Polyester, 2 Steel, 1 Nylon	1 Polyester, 2 Steel, 1 Nylon
Load Index/Speed Symbol	89S	89S
Tire Material	Polyester, Steel, Nylon	Polyester, Steel, Nylon
DOT Safety Code Left	EL9N JHN 0312	EL9N JHN 0212
DOT Safety Code Right	EL9N JHN 0312	EL9N JHN 0212

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5311
 Test Program: NCAP MDB Side Impact Test Test Date: 03/28/13

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	240	240	240	240
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	403.0	265.0		438.5	344.5		446.0	342.0	
Right	kg	375.0	259.0		371.0	310.0		374.5	307.5	
Ratio	%	59.8%	40.2%	100.0%	55.3%	44.7%	100.0%	55.8%	44.2%	100.0%
Total	kg	778.0	524.0	1302.0	809.5	654.5	1464.0	820.5	649.5	1470.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1302.0	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	1471.8	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 -9.0 kg)? ☒ Yes ☐ No

TEST VEHICLE ATTITUDE AND CG

Measurement Description	Units	Fully Loaded	As Tested	Meets Requirement***
LF	mm	651	660	Yes
RF	mm	678	670	Yes
RR	mm	653	650	Yes
LR	mm	667	663	Yes
Vehicle CG (Aft of Front Axle)	mm	1182	1196	
Vehicle CG (Left (+)/Right (-) from Longitudinal Centerline)	mm	55	53	

***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. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5311

Test Program: NCAP MDB Side Impact Test Test Date: 03/28/13

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Trunk Trim and Tire Pump	9.5
Non-Struck Side Outboard Mirror	1.5
Non-Struck Side Door Trim and Windows	10.0
Ballast / Equipment Added	68.0

DATA SHEET NO. 2**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA**Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5311Test Program: NCAP MDB Side Impact Test Test Date: 03/28/13**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	1.2	0.0	0.6
Front Passenger Seat	Fixed	Fixed	Fixed
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

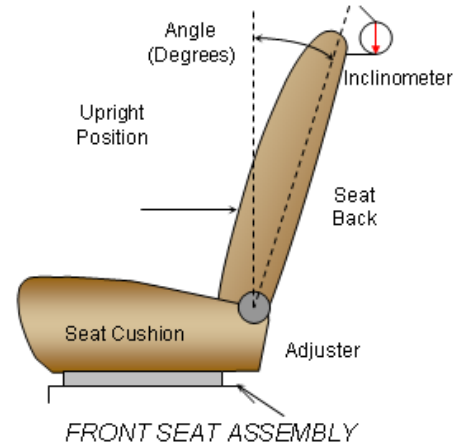
Seat	As Tested SCRL Angle	As Tested SCRP Height	SCRP Height Position	SCRP Height (mm)		
				Rearmost	Mid Fore/Aft	Forwardmost
Driver Seat	0.6	486	Max	474	486	497
			Mid	474	486	497
			Min	474	486	497
Front Passenger Seat	Fixed	498	Max	486	498	512
			Mid	486	498	512
			Min	486	498	512
Front Center Seat			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: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5311Test Program: NCAP MDB Side Impact Test Test Date: 03/28/13**SEAT FORE/AFT POSITION**

Seat	Total Fore/Aft Travel		Test Position From Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	240	25	120	12
Front Passenger Seat	240	25	120	12
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 right front passenger's seat back is 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 back angle is measured at the headrest post.

**SEAT BACK POSITION**

Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degree	Detent*
Driver Seat w/Seated Dummy	63.2	32	8.5	4
Front Passenger Seat	61.5	32	9.2	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: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5311

Test Program: NCAP MDB Side Impact Test Test Date: 03/28/13

SEAT BELT ANCHORAGE ADJUSTMENT

Seat belt anchorages are adjusted in accordance with the information provided by the manufacturer on Form No. 1. The positions are marked H, M1,..., L from top to bottom.

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

HEAD RESTRAINT ADJUSTMENT

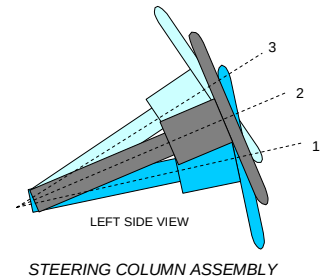
The driver's head restraint is adjusted to the highest and most full forward in-use position. The struck-side rear passenger's head restraint is adjusted to the lowest and most full forward in-use position.

	Total No. of Positions	Placed in Position
Driver Seat	6	Full Up
Rear Seat	2	Full Down

STEERING COLUMN ADJUSTMENT

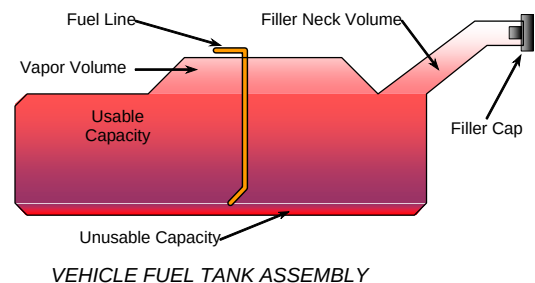
Steering wheel and column adjustments are made so that the steering wheel hub is at the center of the geometric locus it describes when it moves through its full range of motion.

	Degrees	Fore-Aft Position (mm)
Lowermost - Position 1	20.2	85
Geometric Center - Position 2	22.9	98
Uppermost - Position 3	25.6	110
Telescoping Steering Wheel Travel		25
Test Position	22.9	98



FUEL PUMP

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



DATA SHEET NO. 2 ... (CONTINUED)**SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA**Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5311Test Program: NCAP MDB Side Impact Test Test Date: 03/28/13**FUEL TANK CAPACITY**

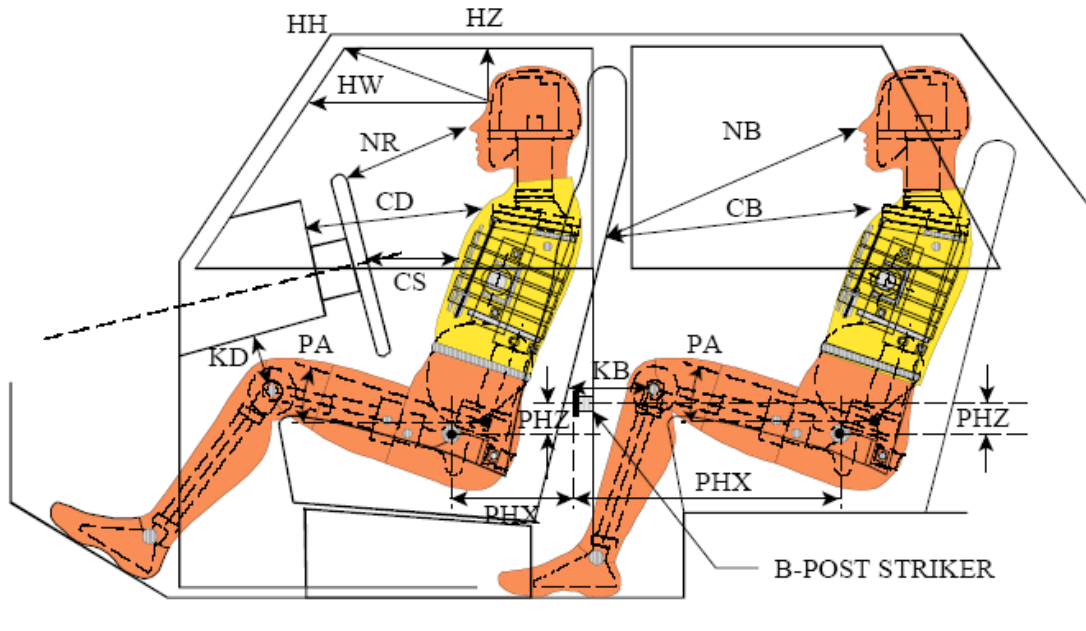
Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	49.96
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of "Standard Tank" (see Owner's Manual)	
Usable Capacity of "Optional Tank" (see Owner's Manual)	
93% of Usable Capacity	46.46
Actual amount of Solvent Used in Test	46.46
1/3 of Usable Capacity	16.65

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**

DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5311
 Test Program: NCAP MDB Side Impact Test Test Date: 03/28/13



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

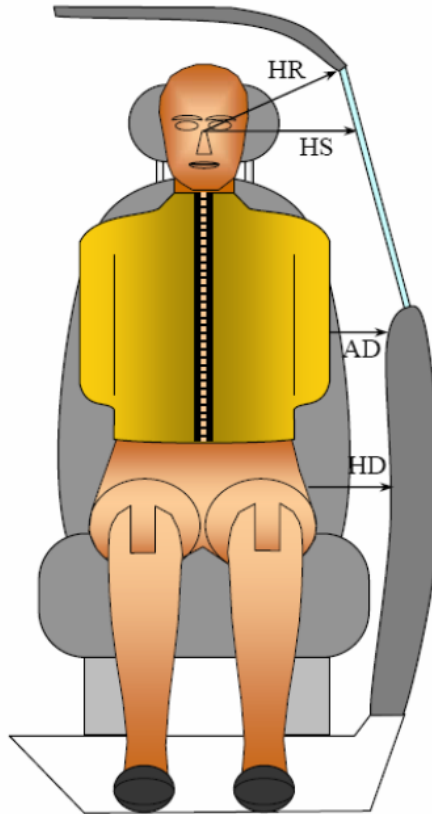
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Description	Driver		Passenger	
			Length (mm)	Angle (°)	Length (mm)	Angle (°)
HH		Head to Header	342			
HW		Head to Windshield	570			
HZ	HZ	Head to Roof	159		246	
NR	NB	Nose to Rim/Seat Back	437		587	
CD	CB	Chest to Dash/Seat Back	573		564	
CS		Chest to Steering Wheel	306			
KD(L)/KDA(L)°	KB(L)/KBA(L)°	Left Knee to Dash/Seat Back	124	26.0	289	17.8
KD(R)/KDA(R)°	KB(R)/KBA(R)°	Right Knee to Dash/Seat Back	119	30.3	292	20.4
PAX°	PAX°	Pelvic Tilt Angle X		17.0		22.4
	PAY°	Pelvic Tilt Angle Y				0.4
PHX	PHX	Hip Point to Striker (x-axis)	234		299	
PHZ	PHZ	Hip Point to Striker (z-axis)	210		329	

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5311
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FRONT VIEW OF DUMMY

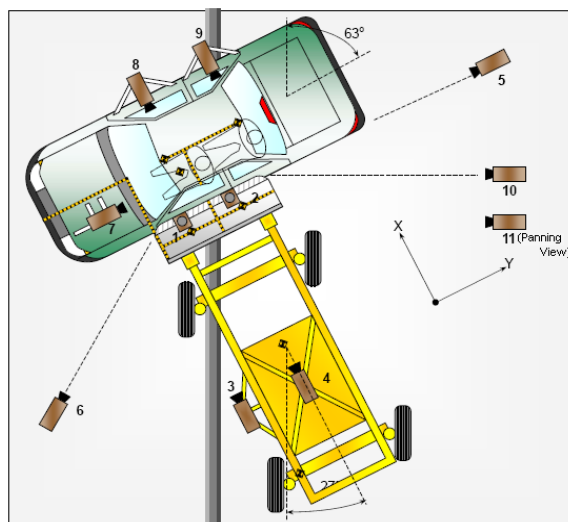
DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	222	232
HS	Head to Side Window	mm	237	359
AD	Arm to Door	mm	90	140
HD	H-Point to Door	mm	158	194

DATA SHEET NO. 5

CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5311
 Test Program: NCAP MDB Side Impact Test Test Date: 03/28/13



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)	539	-834	-682	35	1000
8	Driver Side (On-Board)	1664	799	-441	14	1000
9	Passenger Side (On-Board)	1599	1711	-469	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

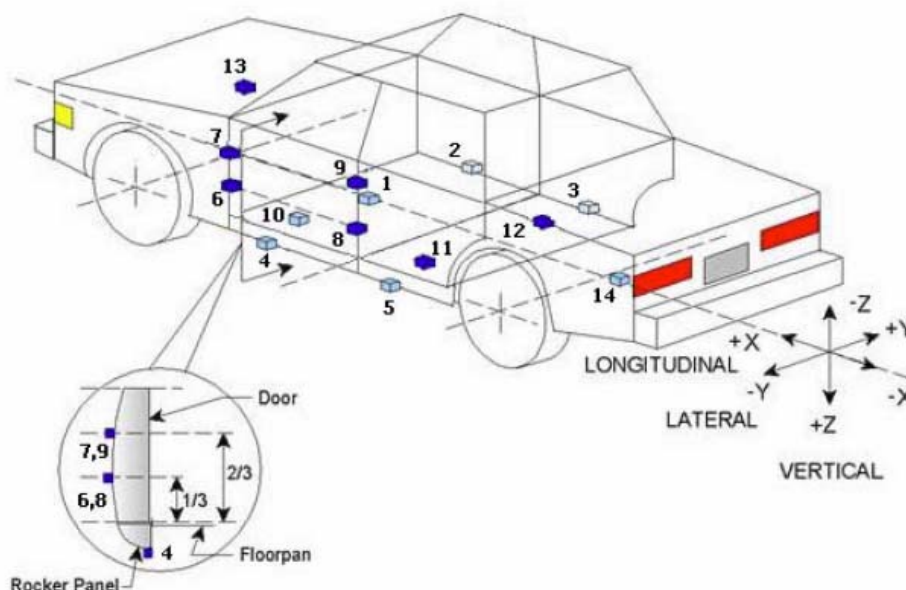
INSTRUMENTATION

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: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5311
 Test Program: NCAP MDB Side Impact Test Test Date: 03/28/13



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

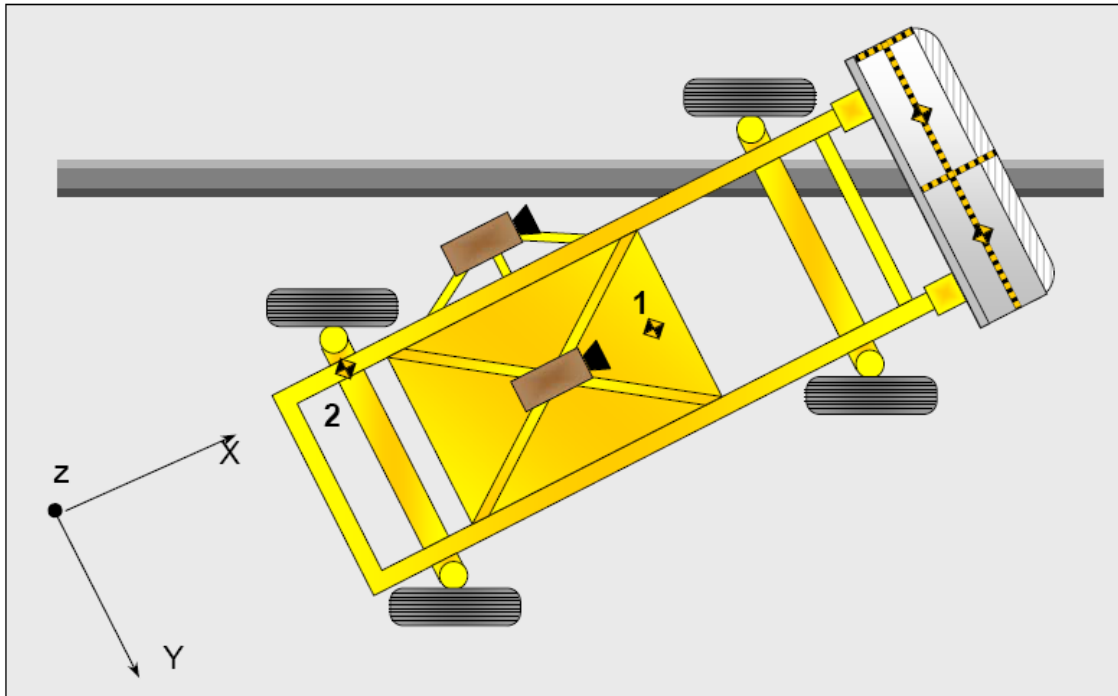
Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	1865	0	-248
2	Right Sill at Front Seat	2388	694	-230
3	Right Sill at Rear Seat	1745	708	-225
4	Left Sill at Front Door	1865	-819	-195
5	Left Sill at Rear Door	1634	-808	-197
6	A-Pillar Lower	3336	-823	-839
7	A-Pillar Middle	3310	-814	-488
8	B-Pillar Lower	1958	-758	-345
9	B-Pillar Middle	1935	-768	-733
10	Front Seat Track	2293	-572	-278
11	Rear Seat Structure			
12	Right Rear Occupant Compartment	1865	340	-229
13	Engine Block	3682	185	-775
14	Rear Floorpan Above Axle	754	419	-462

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: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5311
Test Program: NCAP MDB Side Impact Test Test Date: 03/28/13



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: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5311Test Program: NCAP MDB Side Impact Test Test Date: 03/28/13**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	Side Header	Side Header, Curtain Airbag, Center Seat Headrest
Left Side of Head	Side Header, Curtain Airbag	Curtain Airbag
Back of Head	Side Header, Curtain Airbag, Headrest	Side Header, Headrest, Center Seat Headrest
Left Shoulder	Curtain Airbag, Torso Airbag	Seat, Door Panel
Upper Torso	Seat, Torso Airbag	Seat, Door Panel
Lower Torso	Seat, Torso Airbag	Seat, Door Panel
Left Hip	Seat, Torso Airbag, Door Panel	Seat
Left Knee	Door Panel, 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	Cracked
Side Window Damage	Both struck side windows broken
Other Notable Effects	None

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

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5311
 Test Program: NCAP MDB Side Impact Test Test Date: 03/28/13

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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)	Yes	Yes	No	
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes	Yes	No	
Seat Cushion Airbag	No		No	

IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vehicle Wheel Base	mm		2676
Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point)	mm		398
Actual Impact Point (Aft of Front Axle)	mm		393
Horizontal Offset (+ forward / - rearward)	mm	± 50 of Intended Impact Point	5
Vertical Offset (+ down / - up)	mm	± 20 of Intended Impact Point	12

DATA SHEET NO. 9**MDB SUMMARY OF RESULTS**

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5311
 Test Program: NCAP MDB Side Impact Test Test Date: 03/28/13

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	401.8	298.0	699.8
Right	kg	376.9	291.6	668.5
Ratio	%	56.9%	43.1%	100.0%
Totals	kg	778.7	589.6	1368.3

SPEED AND IMPACT DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	61.54
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	61.56
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	89.9
MDB Forward Line of Motion to Target Vehicle CL	degrees	62.5 to 63.5	62.8
MDB Crabbed Angle to MDB Forward Line of Motion	degrees	26.0 to 28.0	27.1

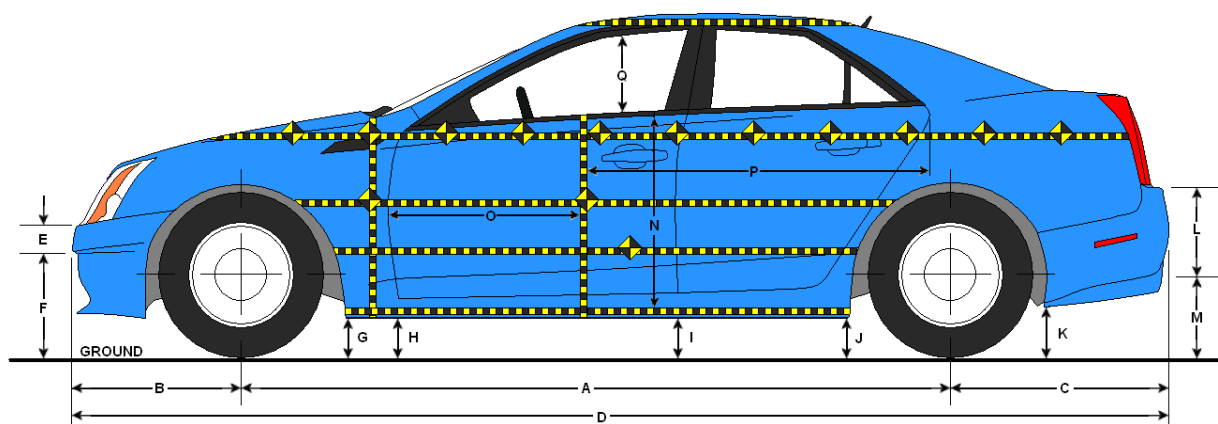
MAXIMUM STATIC CRUSH OF HONEYCOMB FACE

Vertical Location			From Centerline		Max. Crush (mm)
Row	Description	Height (mm)	Distance (mm)	Direction	
A	Center of Bumper	432	800	Left	226
B	Top of Bumper	533	800	Left	94
C	Mid Level	686	800	Left	99
D	Top of Stack	813	800	Left	134

DATA SHEET NO. 10

TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5311
 Test Program: NCAP MDB Side Impact Test Test Date: 03/28/13



LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

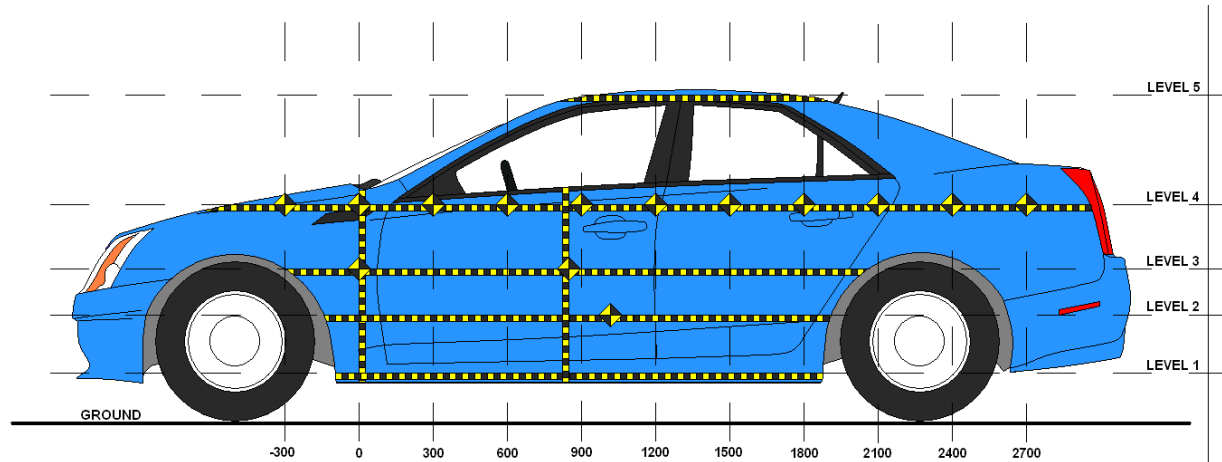
Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2676	2674	-2
B	Front Axle to FSOV	927	926	-1
C	Rear Axle to RSOV	953	951	-2
D	Total Length at Centerline	4556	4551	-5
E	Front Bumper Thickness	111	111	0
F	Front Bumper Bottom to Ground	358	355	-3
G	Sill Height at Front Wheel Well	192	193	1
H	Sill Height at Front Door Leading Edge	190	195	5
I	Sill Height at B-Pillar	198	270	72
J1	Sill Height at Rear Wheel Well	194	256	62
J2	Pinch Weld Height at Rear Wheel Well	161	201	40
K	Sill Height Aft of Rear Wheel Well	241	277	36
L	Rear Bumper Thickness	211	211	0
M	Rear Bumper Bottom to Ground	401	444	43
N	Sill Height to Bottom of Front Window Sill	647	583	-64
O	Front Door Leading Edge to Impact CL	783	708	-75
P	Rear Door Trailing Edge to Impact CL	1333	1315	-18
Q	Front Window Opening	403	418	15
R	Right Side Length	3150	3153	3
S	Left Side Length	3155	3148	-7
T	Vehicle Width at B-Pillar	1745	1638	-107

All measurements in mm with tolerance of ± 3 mm

DATA SHEET NO. 11

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5311
Test Program: NCAP MDB Side Impact Test Test Date: 03/28/13



LEFT SIDE VIEW

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	224	61	1800
2	Occupant H-Point	484	216	1350
3	Mid-Door	615	229	1650
4	Window Sill	860	164	450
5	Window Top	1348	19	1350

DATA SHEET NO. 11 ... (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5311
 Test Program: NCAP MDB Side Impact Test Test Date: 03/28/13

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				741					744					3	
-300				713					721					8	
-150			623	702				637	716				14	14	
0	652	626	628	693		651	638	650	717		-1	12	22	24	
150	660	632	630	685		650	792	796	744		-10	160	166	59	
300	663	633	630	645		685	835	835	758		22	202	205	113	
450	663	633	629	677		683	839	833	841		20	206	204	164	
600	662	633	629	674		685	833	831	828		23	200	202	154	
750	661	632	628	674		688	823	857	822		27	191	229	148	
900	660	631	627	672	897	694	836	841	818	909	34	205	214	146	12
1050	660	631	626	672	885	697	846	831	813	900	37	215	205	141	15
1200	659	631	626	668	883	698	832	809	773	901	39	201	183	105	18
1350	659	633	627	667	885	700	849	833	787	904	41	216	206	120	19
1500	659	634	628	662	891	704	848	856	816	908	45	214	228	154	17
1650	658	635	629	658	903	706	846	858	814	918	48	211	229	156	15
1800	655	633	630	654	922	716	834	856	782	932	61	201	226	128	10
1950		624	626	641	940		702	816	721	953		78	190	80	13
2100			619	640				712	695				93	55	
2250				662					702					40	
2400				668					687					19	
2550				680					692					12	
2700				695					703					8	
2850															

DATA SHEET NO. 11 ... (CONTINUED)

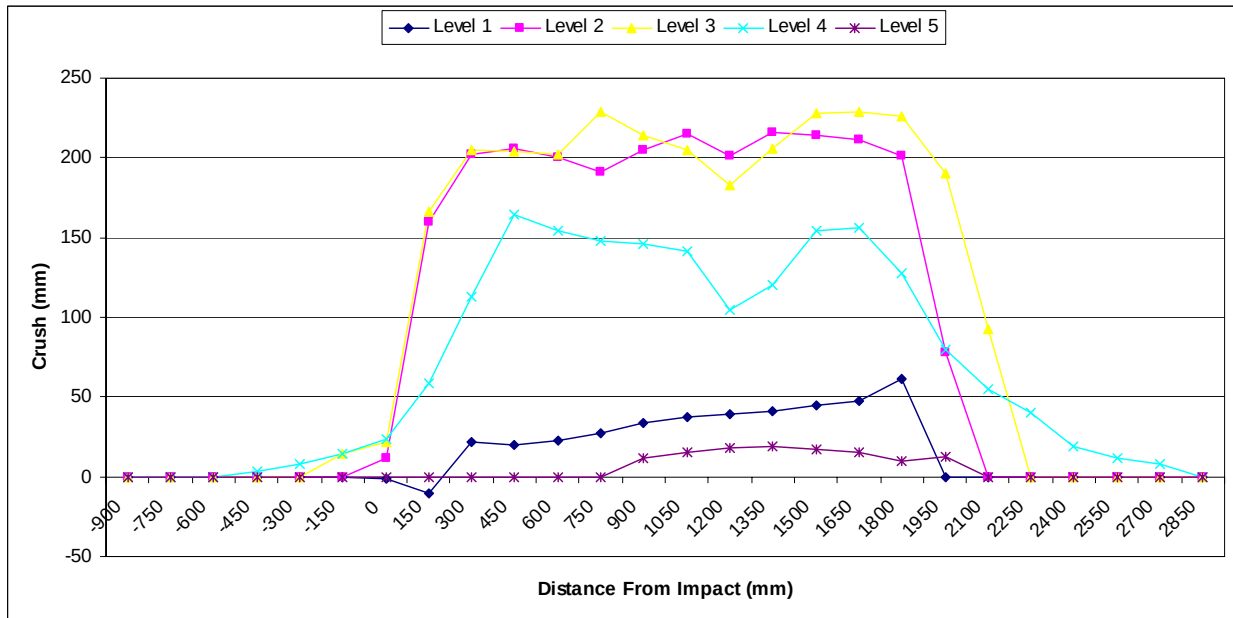
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan

NHTSA No. MD5311

Test Program: NCAP MDB Side Impact Test

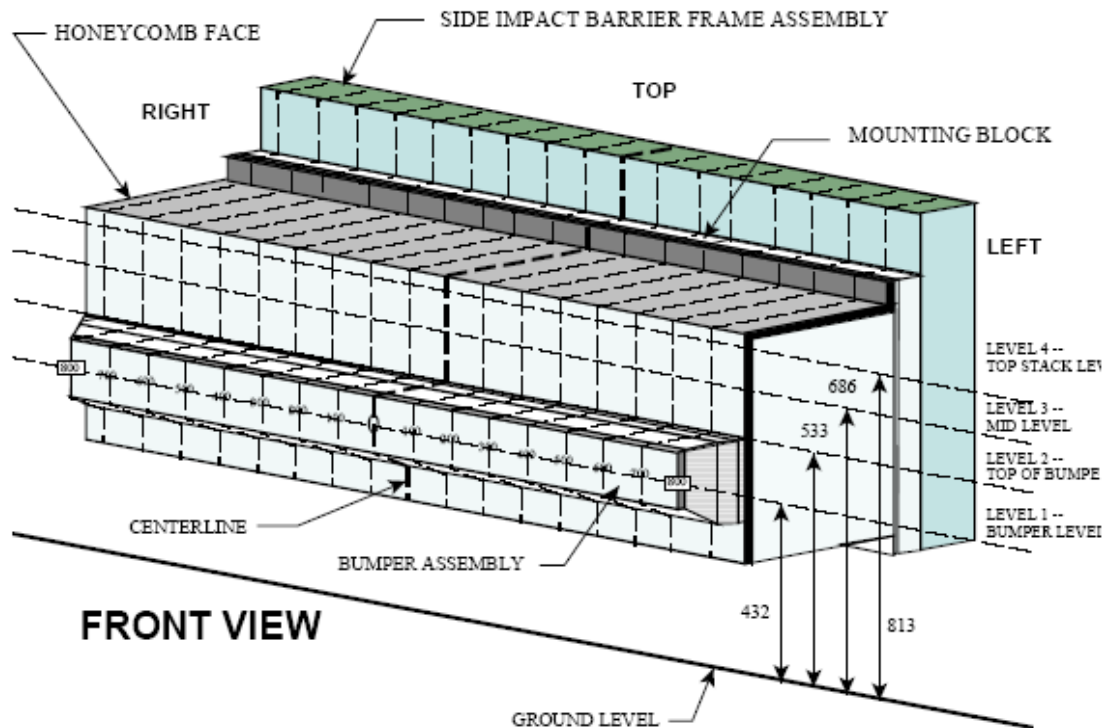
Test Date: 03/28/13



DATA SHEET NO. 12

MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5311
 Test Program: NCAP MDB Side Impact Test Test Date: 03/28/13



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	196	193	189	191	191	196	192	190	191	186	186	190	185	189	186	201	226
2	75	71	66	59	59	66	74	74	59	59	59	64	69	73	77	84	94
3	39	26	24	35	54	84	87	79	46	28	19	21	22	27	35	56	99
4	75	49	44	54	64	98	122	109	70	29	20	20	22	33	64	97	134

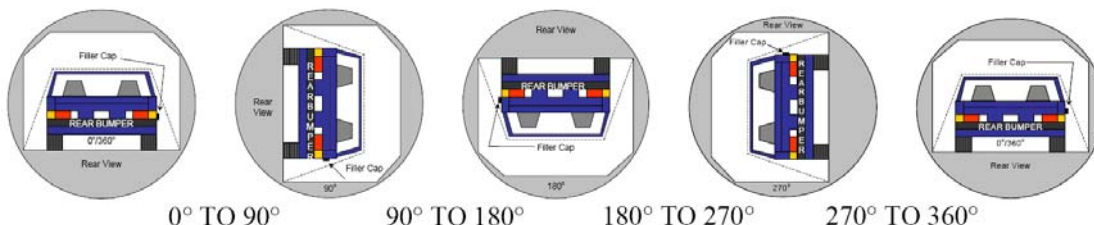
All dimensions in millimeters.

DATA SHEET NO. 13

FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5311
 Test Program: NCAP MDB Side Impact Test Test Date: 03/28/13
 Temperature at Time of Impact: 27.4° C Test Time: 1:53 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°	82	300	382
90° To 180°	82	300	382
180° To 270°	78	300	378
270° To 360°	82	300	382

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			

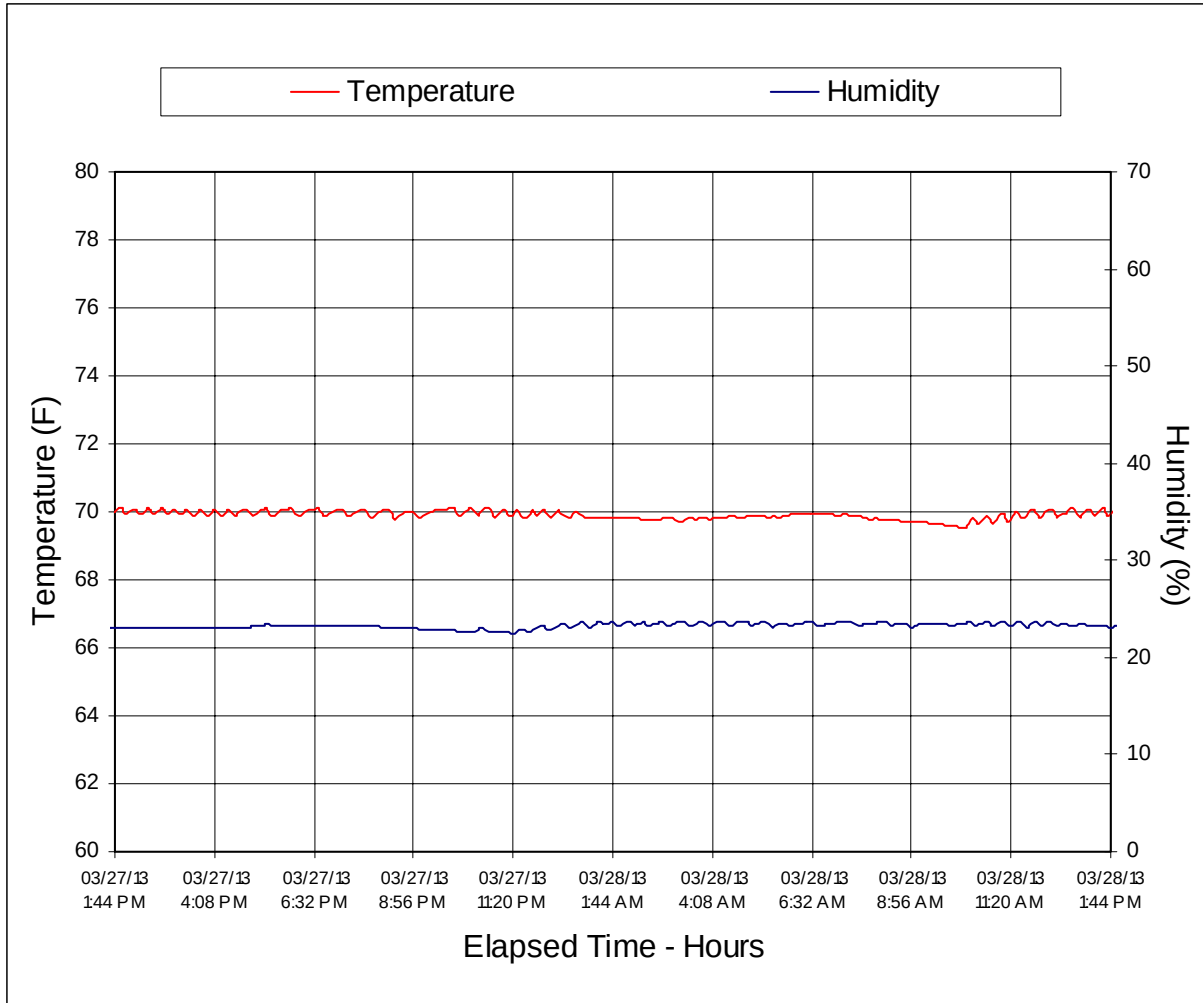
SOLVENT SPILLAGE LOCATION TABLE

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: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5311
Test Program: NCAP MDB Side Impact Test Test Date: 03/28/13



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

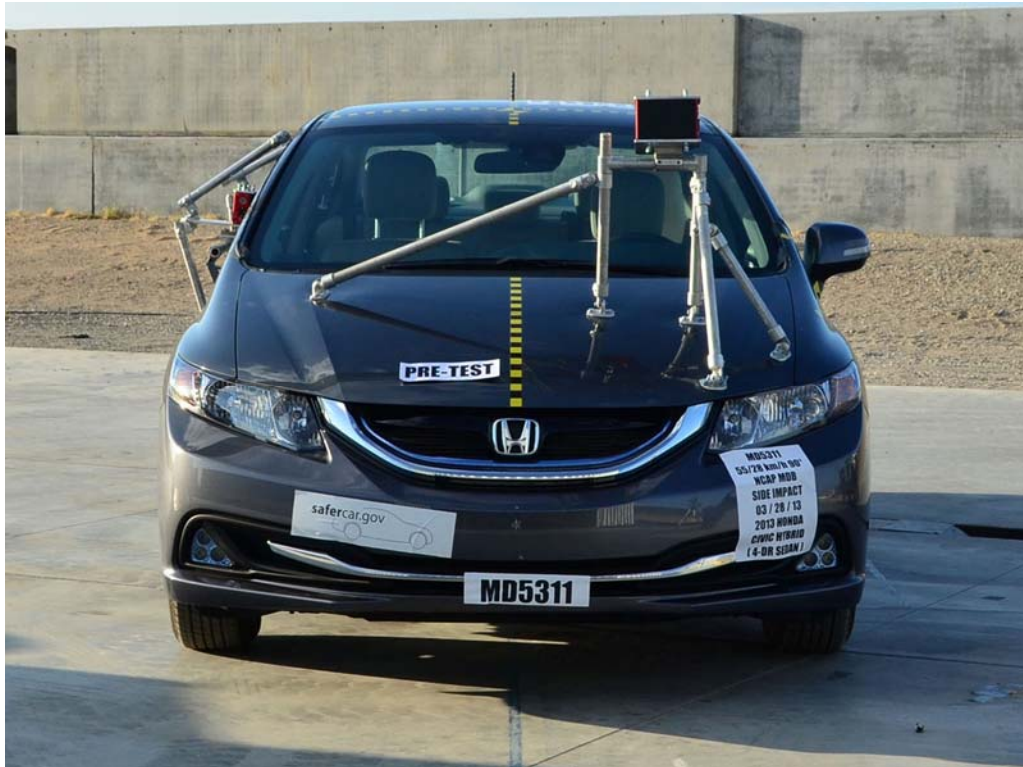


FIGURE 3. Pre-Test Frontal View of Test Vehicle



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 Test Vehicle



FIGURE 11. Pre-Test Rear View of Test Vehicle



FIGURE 12. Post-Test Rear View of Test Vehicle



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



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



FIGURE 15. Pre-Test Overhead View of Test 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



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



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



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



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



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



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



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



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



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



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



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 Overhead 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

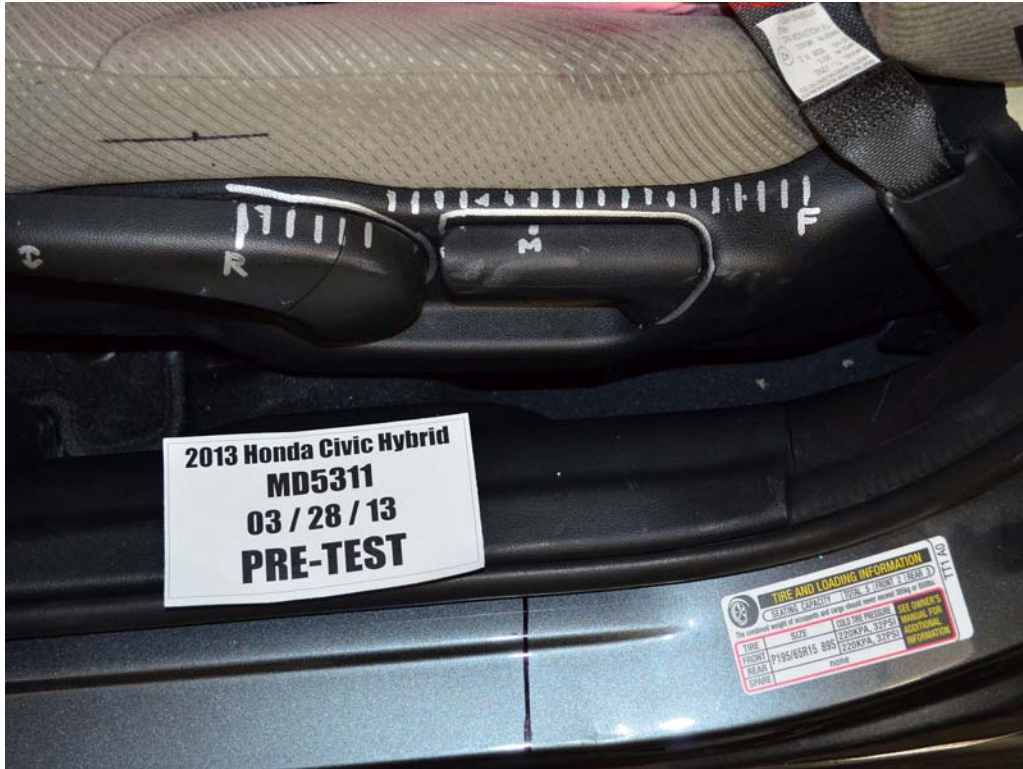


FIGURE 39. Pre-Test Close-Up Left Side View of Driver Seat Track

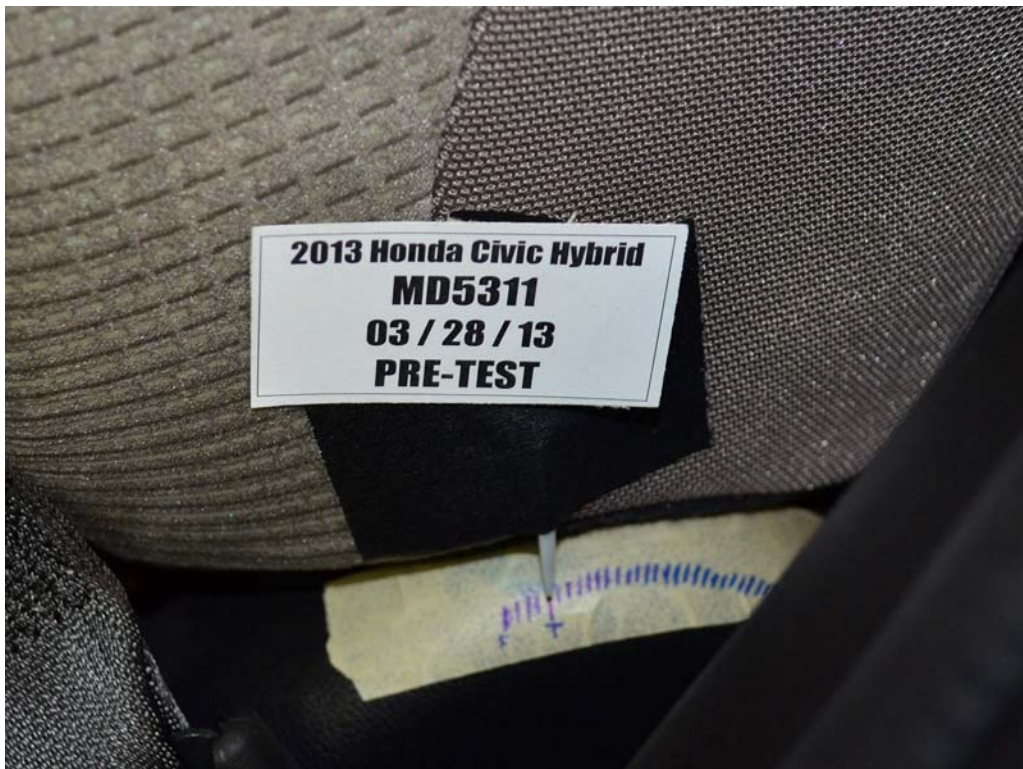


FIGURE 40. Pre-Test Close-Up Left Side View of Driver Seat Back



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 of Occupant Compartment



FIGURE 45. Post-Test Right Side View of Driver Dummy and Front Seat of 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. Post-Test Driver Dummy Close-Up Knee Contact View



FIGURE 55. Pre-Test Left Side View of Rear Passenger Dummy
Showing Belt and Chalking

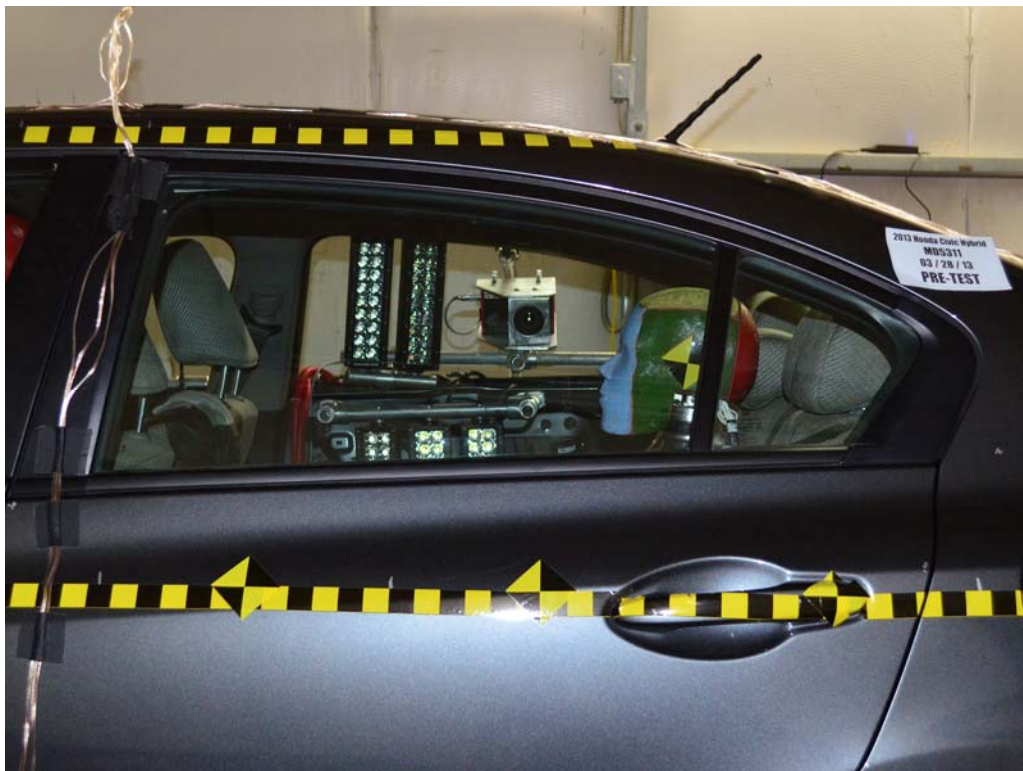


FIGURE 56. Pre-Test Left Side View of Rear Passenger Dummy
Shoulder and Door Top View



FIGURE 57. Post-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View



FIGURE 58. Pre-Test Frontal View of Rear Passenger Seat Back Prior to Dummy Positioning



FIGURE 59. Pre-Test Frontal View of Rear Passenger Dummy
Head and Shoulders in Relation to Head Restraint



FIGURE 60. Pre-Test Overhead View of Rear Passenger
Seat Pan Prior to Dummy Positioning



FIGURE 61. Pre-Test Overhead View of Rear Passenger Dummy Thighs on Seat Pan



FIGURE 62. Pre-Test View of Rear Passenger Dummy's Neck
Showing Position of Adjustable Neck Bracket



FIGURE 63. Pre-Test View of Rear Passenger Dummy's Head
Showing Dummy's Head is Level



FIGURE 64. Pre-Test Placement of Rear Passenger Dummy's Feet



FIGURE 65. Pre-Test View of Belt Anchorage for Rear Passenger Dummy

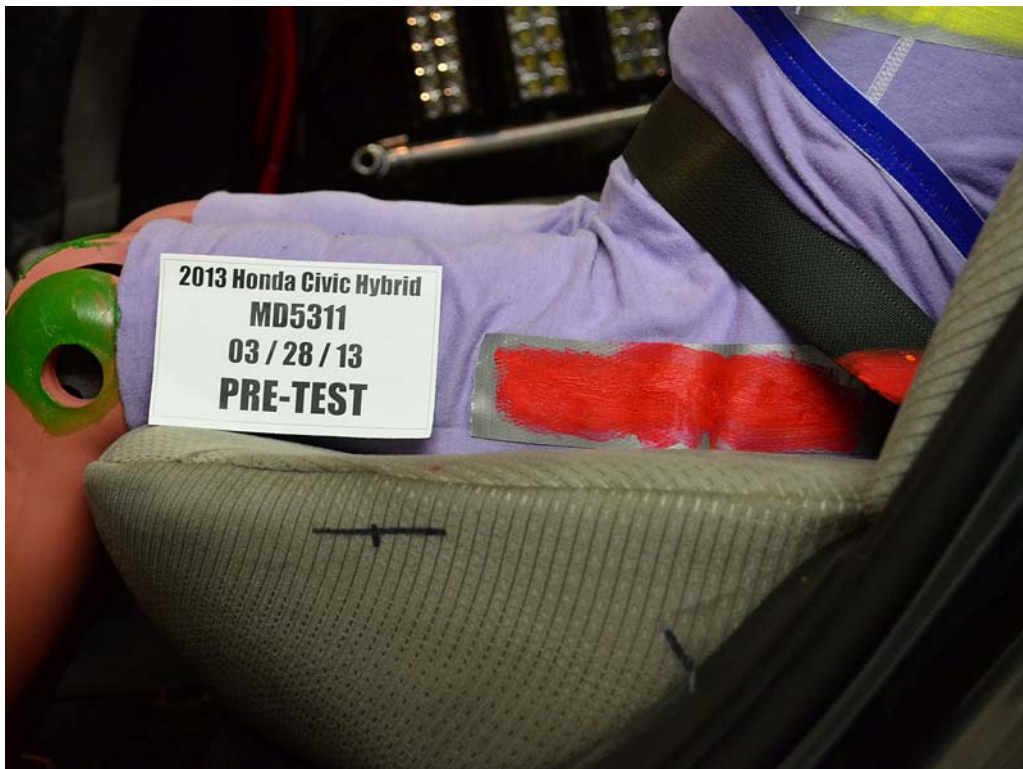


FIGURE 66. Pre-Test Close-Up Left Side View of Rear Passenger Seat Track

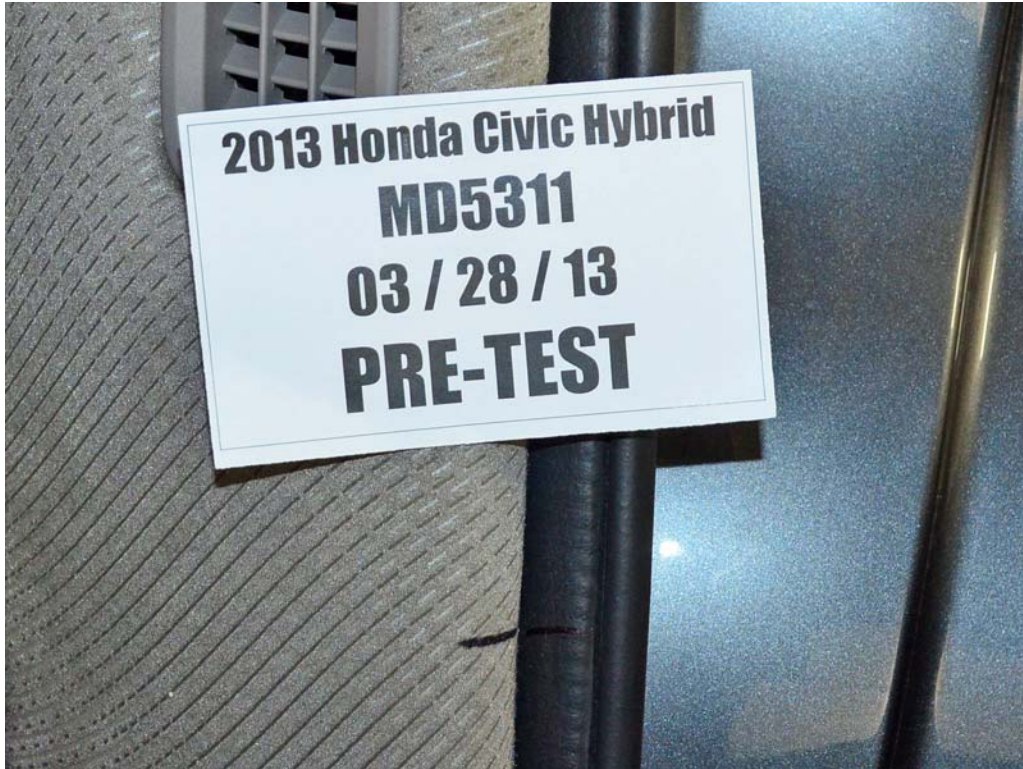


FIGURE 67. Pre-Test Close-Up Left Side View of Rear Passenger Seat Back



FIGURE 68. Pre-Test Close-Up View of Rear Passenger Seat Back or Head Restraint



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



FIGURE 70. Post-Test Rear Passenger Dummy and Door Clearance View



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



FIGURE 72. Post-Test Right Side View of Rear Passenger Dummy and Rear Seat of Occupant Compartment



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

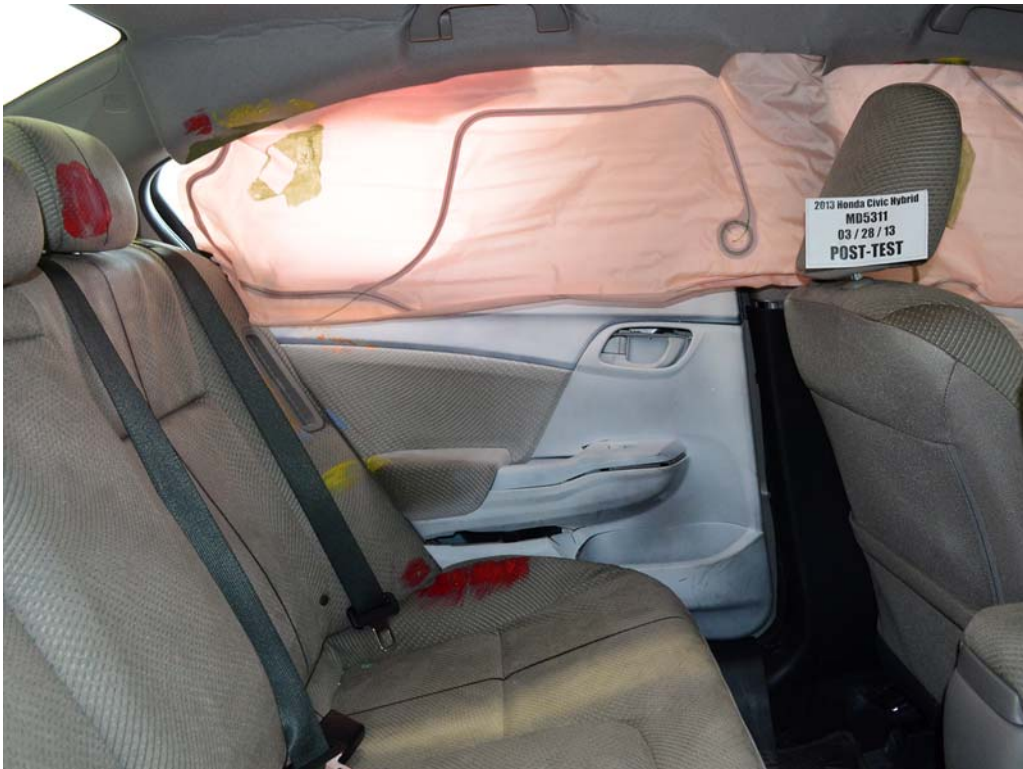


FIGURE 74. Post-Test Rear Passenger Inner Door Panel View



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

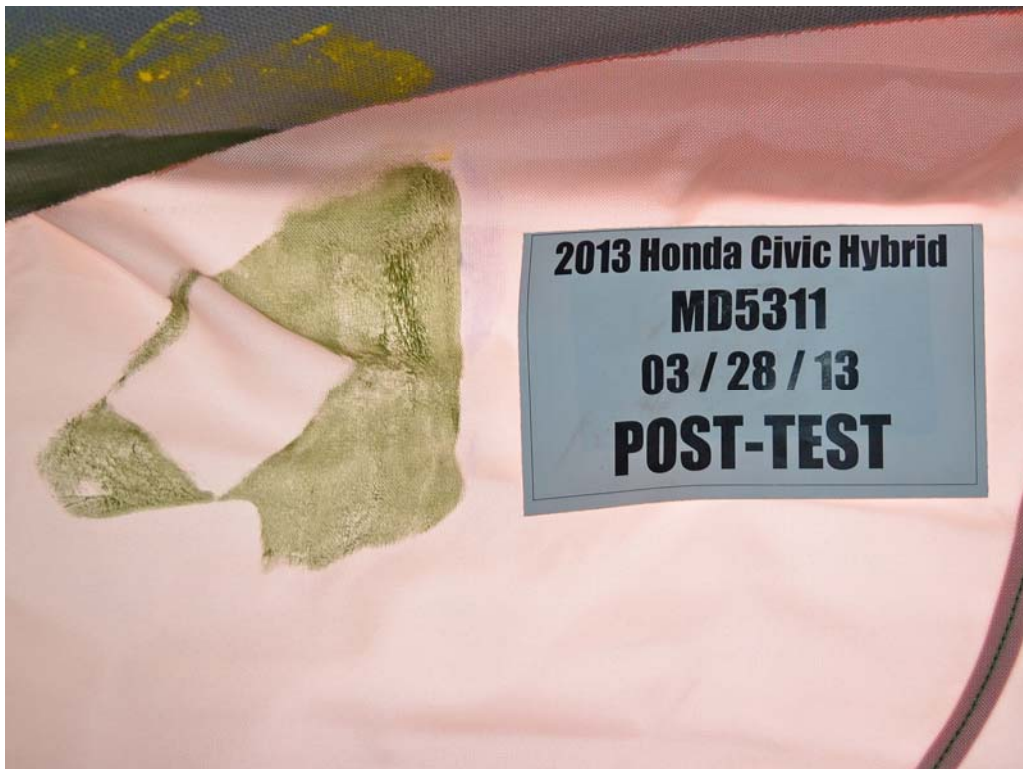


FIGURE 76. Post-Test Rear Passenger Dummy Close-Up
Head Contact with Side Airbag View



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

Photograph Not Applicable

Vehicle Not Equipped with
Rear Passenger Side Airbags

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



FIGURE 79. Post-Test Rear Passenger Dummy Close-Up
Pelvis Contact with Vehicle Interior View

Photograph Not Applicable

Vehicle Not Equipped with
Rear Passenger Side Airbags

FIGURE 80. Post-Test Rear Passenger Dummy Close-Up
Pelvis Contact with Side Airbag View



FIGURE 81. Post-Test Rear Passenger Dummy Close-Up Knee Contact View



FIGURE 82. Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



FIGURE 83. Post-Test View of Fuel Filler Cap or Fuel Filler Neck



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



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



FIGURE 86. Pre-Test Top View of MDB Impactor Face



FIGURE 87. Post-Test Top View of MDB Impactor Face



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



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



FIGURE 90. Pre-Test Right Side View of MDB Impactor Face



FIGURE 91. Post-Test Right Side View of MDB Impactor Face

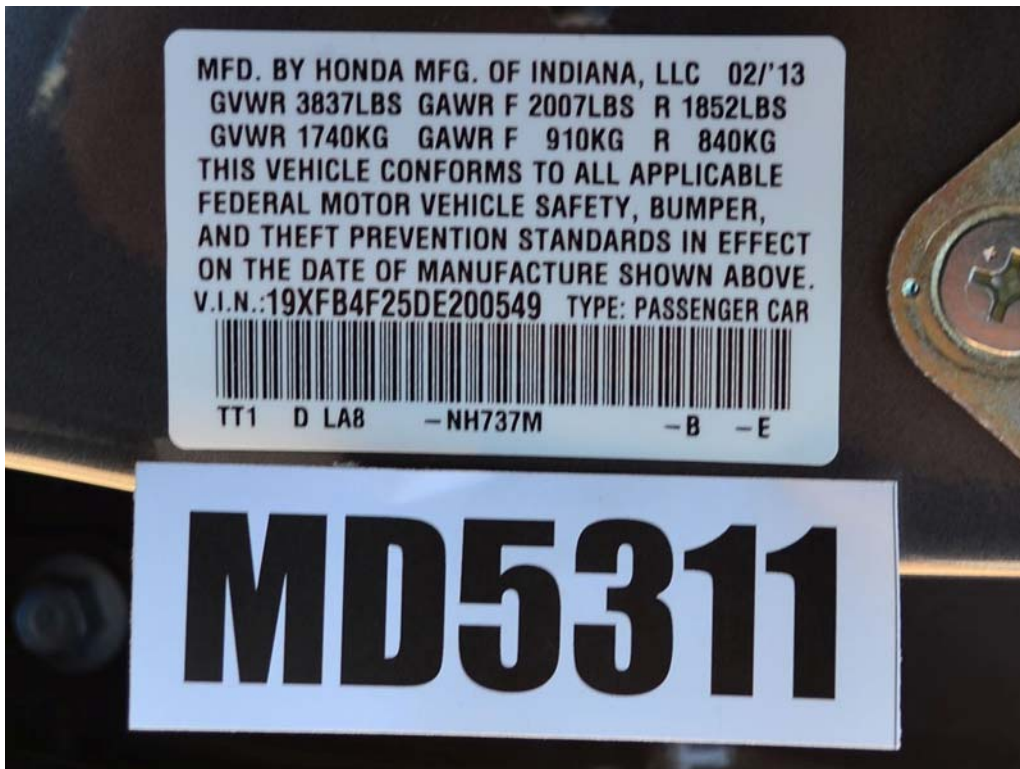


FIGURE 92. Close-Up View of Vehicle's Certification Label



FIGURE 93. Close-Up View of Vehicle's Tire Information Placard or Label

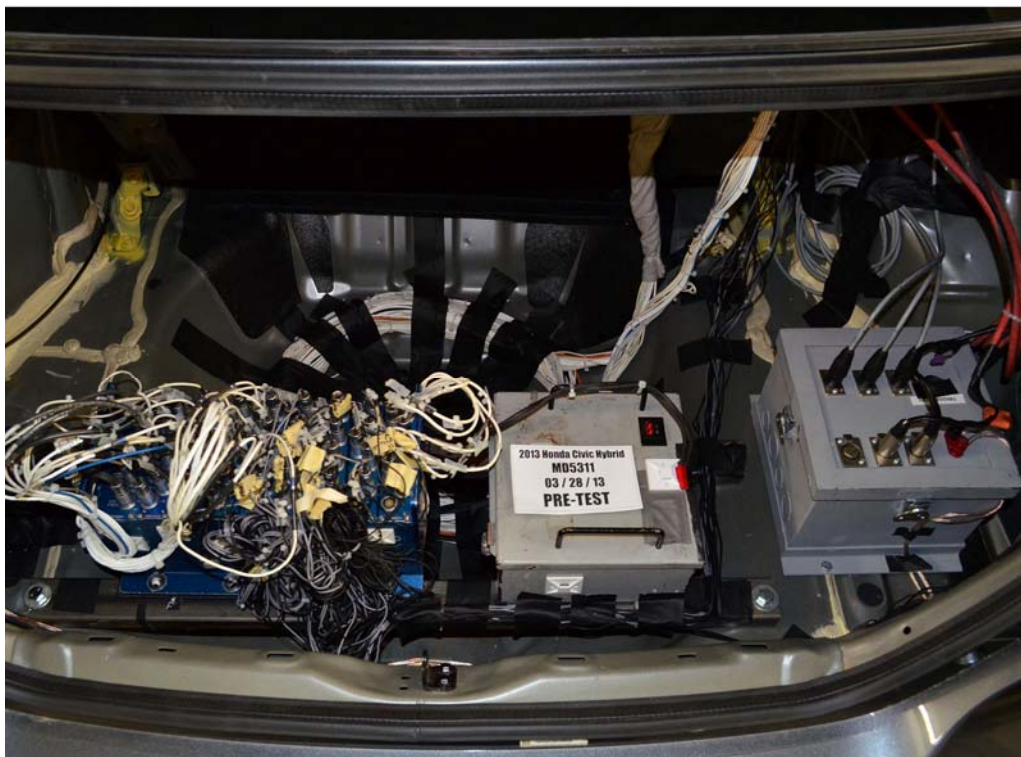


FIGURE 94. Pre-Test Ballast View



FIGURE 95. Post-Test Primary and Redundant Speed Trap Read-Out



FIGURE 96. FMVSS No. 301 Static Rollover 0 Degrees



FIGURE 97. FMVSS No. 301 Static Rollover 90 Degrees



FIGURE 98. FMVSS No. 301 Static Rollover 180 Degrees



FIGURE 99. FMVSS No. 301 Static Rollover 270 Degrees

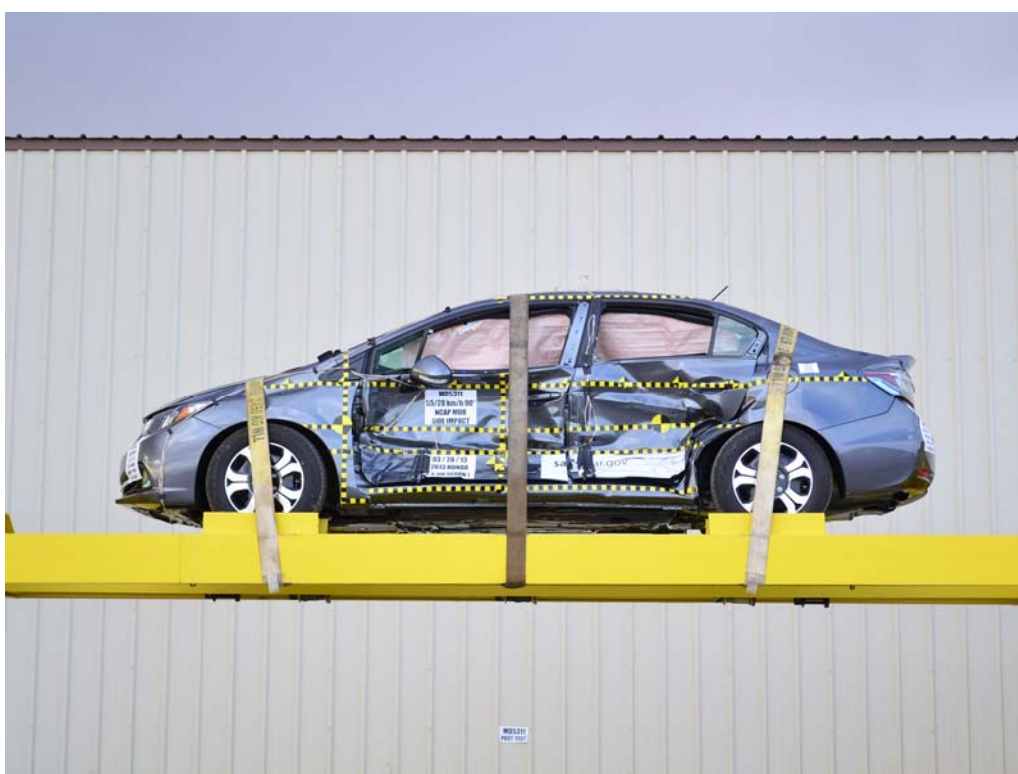


FIGURE 100. FMVSS No. 301 Static Rollover 360 Degrees



FIGURE 101. Impact Event

HONDA		2013 CIVIC IMA 4DR HYB EXT. POLISHED METAL M. ENGINE NUMBER: LEA2-2001317 EXT. GRAY	
STANDARD EQUIPMENT AT NO EXTRA COST		Manufacturer's Suggested Retail Price \$24,360.00	
* TECHNICAL FEATURES * 118hp 1.8-liter i-VTEC 4-Cylinder Engine with Integrated Motor Assist (IMA) - Idle Stop Feature - Continuously Variable Transmission (CVT) - Front MacPherson Strut Suspension - Rear Multi-Link Suspension - Electric Power Assisted Rack and Pinion Steering - CARB Certified A1 F12V - Immediate Throttle Disengagement System		Full Tank of Fuel No Charge	
* SAFETY FEATURES * - Driver's and Front Passenger's Dual-Stage Airbags (SRS) - Side Airbags w/ SmartVent - Side Curtain Airbags with Roll-over Sensor - Forward Collision Warning - Lane Departure Warning - Anti-Lock Braking System (ABS) - Brake Assist - Electronic Brake Distribution (EBD) - Vehicle Stability Assist (VSA) 3-Point Seat Belts - Front Seat Belts with Automatic Tensioning System - Tire Pressure Monitoring System - Side Impact Door Beams - Front and Rear Crumple Zones - ACE Body Structures - Daytime Running Lights (DRL) - LATCH System for Child Seats		KEY STANDARD FEATURES *Steering Wheel Mounted Controls *Bluetooth HandsFreeLink *Pandora Internet Radio Interface *SMS Text Messaging Functionality *USB Audio Interface *MP3/Auxiliary Input Jack *Intelligent Music Information Display (i-MID) w/ Fluorescent Controls *Automatic Climate Control System with Air Filtration System *Driver's Seat Height Adjustment *Front Center Console with Armrest *Power Windows and Door Locks *Driver's Auto Up/Down Window *8 & Telescopic Steering Column *Front Map Lights & Cargo Area Light *12 Volt Power Outlets *Cruise Control *Exterior Temperature Display *Floor Mats *Microphone Monitor System	
* EXTERIOR FEATURES * 17" x 6.5" Lightweight Alloy Wheels - PANORAMIC GLASS SUNROOF - Auto On/Off Headlights - Variable Intermittent Windshield Wipers - Rear Window Wiper - Power Door Mirrors - With Turn Indicators - Remote Entry System with Trunk Opener - Security System - Rear Crossed Spoiler - Tire Sealant and Inflator Kit (in place of spare tire)		Destination and Handling 750.00	
* INTERIOR FEATURES * 160 Watt AM/FM/CD Audio System with 6 Speakers incl. MP3/WMA Playback - XM Satellite Radio		TOTAL VEHICLE PRICE \$25,150.00	
Berkeley Honda Automobile 2650 SHATTUCK AVE. BERKELEY, CA 94704 PORT OF ENTRY: INDIANA DELIVERY POINT: RICHMOND ZIP: 94704 ROWNSPACE: 700-000 TRANS METHOD: 000 FROM GND VIN: 19XFB4F25DE000549 		CPO# DLR: 20603 REF NO: 4056 HN CODE: HN 7660 EMISSION: CALIF CPO# CONTROL NO: 40106 DEALER: 20603 	
HSC 20037.05 Low Emission Motor Vehicle		FOR THIS VEHICLE: First Assembly Plant: GREENSBURG, INDIANA USA Country of Origin: Engine: JAPAN Transmission: JAPAN	

EPA DOT Fuel Economy and Environment Gasoline Vehicle	
Fuel Economy 44 MPG combined city/hwy 2.3 gallons per 100 miles	You Save \$5,600 in fuel costs over 5 years compared to the average new vehicle.
Annual fuel cost \$1,200	Fuel Economy & Greenhouse Gas Rating (outside only) Smog Rating (outside only)
Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 27 MPG and costs \$1.00 to fuel over 5 years. Cost estimates are based on 10,000 miles per year at \$3.35 per gallon. 44MPG is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.	
fuel economy.gov Calculate personalized estimates and compare vehicles	
PARTS CONTENT INFORMATION FOR VEHICLES IN THIS CLASSLINE U.S.-Canadian Parts Content: 65 % Major Sources of Foreign Parts Content: JAPAN 20 % NOTE: Parts content does not include final assembly, distribution or other non-parts costs.	
GOVERNMENT 5-STAR SAFETY RATINGS Overall Vehicle Score Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight.	
Frontal Driver Passenger	Not Rated Not Rated
Crash Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.	Not Rated
Side Front seat Rear seat	Not Rated Not Rated
Crash Based on the risk of injury in a side impact.	Not Rated
Rollover Based on the risk of rollover in a single vehicle crash.	Not Rated
Star Ratings range from 1 to 5 stars (*****), with 5 being the highest. Source: National Highway Traffic Safety Administration (NHTSA). www.safercar.gov or 1-888-327-4226	
This vehicle is equipped with a front bumper of a type that has been tested at an impact speed of 5 miles per hour, and a rear bumper of a type that has been tested at an impact speed of 2 miles per hour, resulting in no damage to the vehicle's body and safety systems and no damage to the bumper and attachment hardware. "Minor damage to the bumper" means minor cosmetic damage that can be repaired with the use of common repair materials and without replacing any parts. The stronger the bumper, the less likely the vehicle will require repair after a low speed collision. This vehicle exceeds the current federal bumper standard of 2.5 miles per hour.	

FIGURE 102. Monroney Label

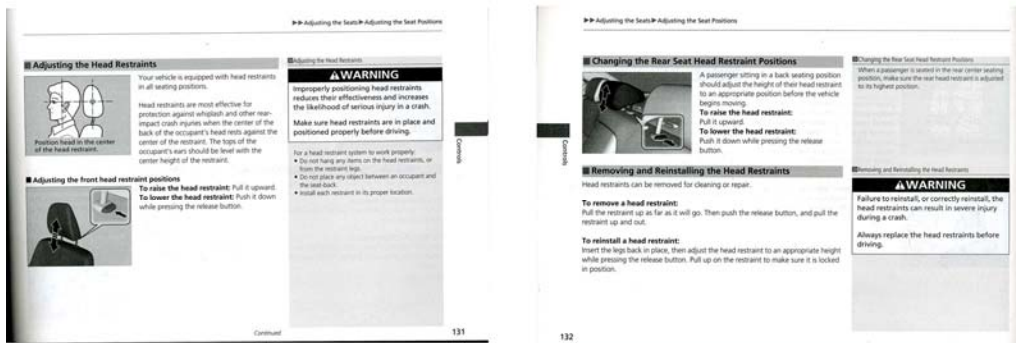


FIGURE 103. Driver Head Restraint Use and Adjustment
Information from Vehicle Owner's Manual

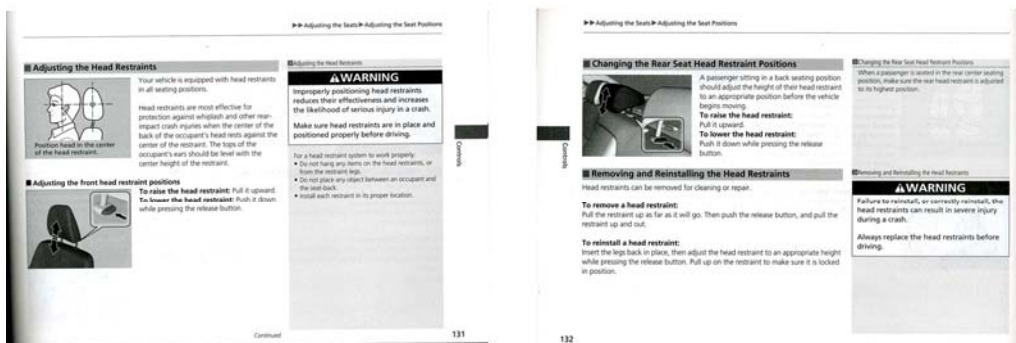


FIGURE 104. Left Rear Passenger Head Restraint
Use and Adjustment Information from Vehicle Owner's Manual

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)

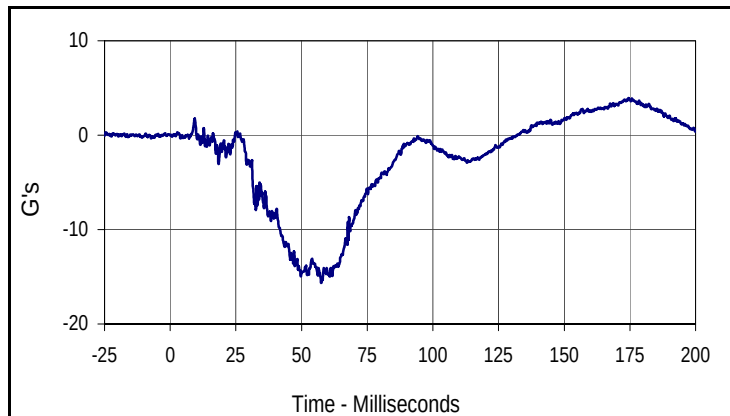
MDB Rear Acceleration (Y)

Left MDB Contact Switch

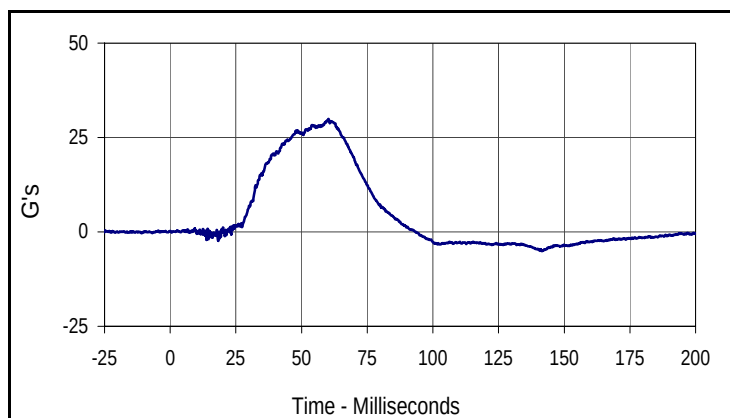
Right MDB Contact Switch

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

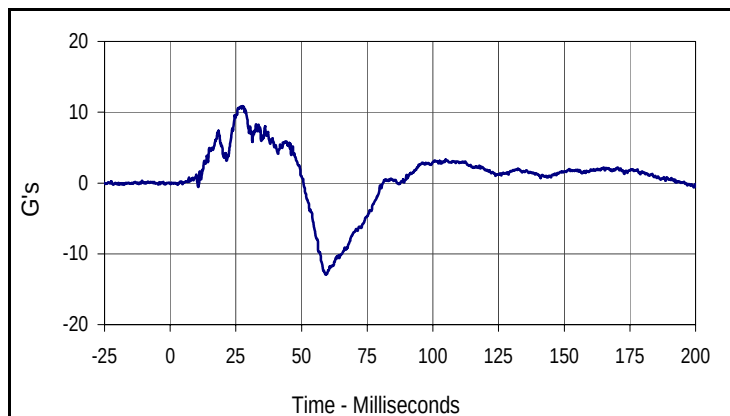
NHTSA No.: MD5311
 Test Date: 3/28/13



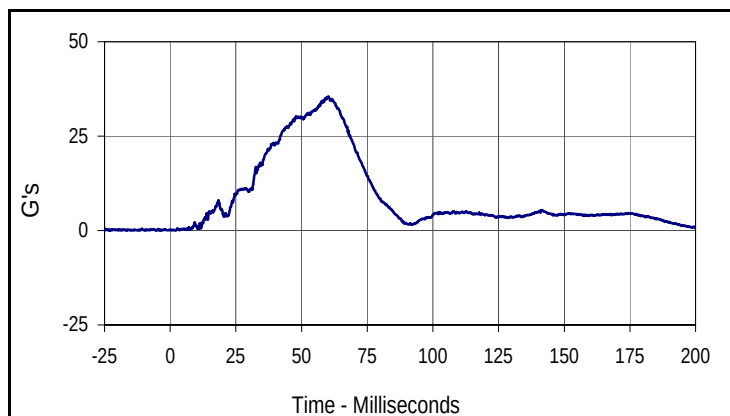
Curve Description			
Driver Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
3.9	174.5	-15.7	57.5



Curve Description			
Driver Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
29.9	60.3	-5.1	141.5



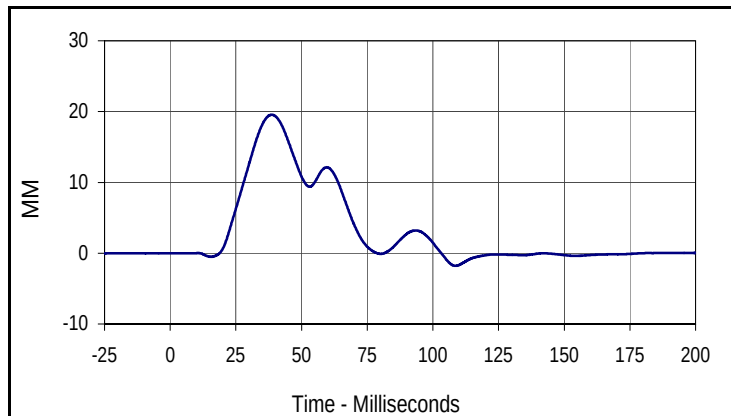
Curve Description			
Driver Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
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Max	Time	Min	Time
10.9	27.5	-13.0	59.2



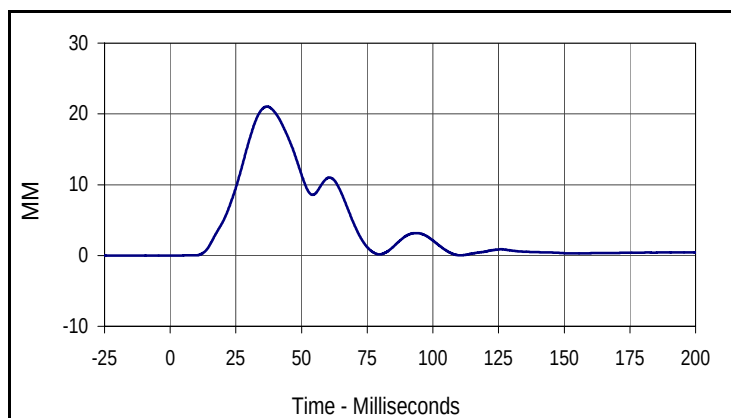
Curve Description			
Driver Head Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
004	RES	1000	G's
Max	Time	Min	Time
35.5	60.3	0.0	2.0

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

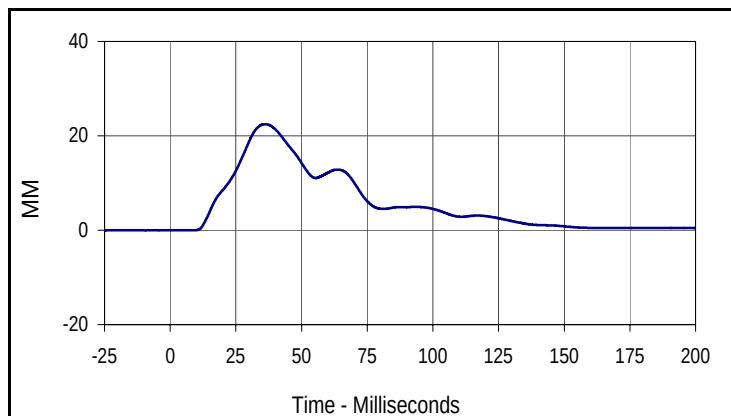
NHTSA No.: MD5311
 Test Date: 3/28/13



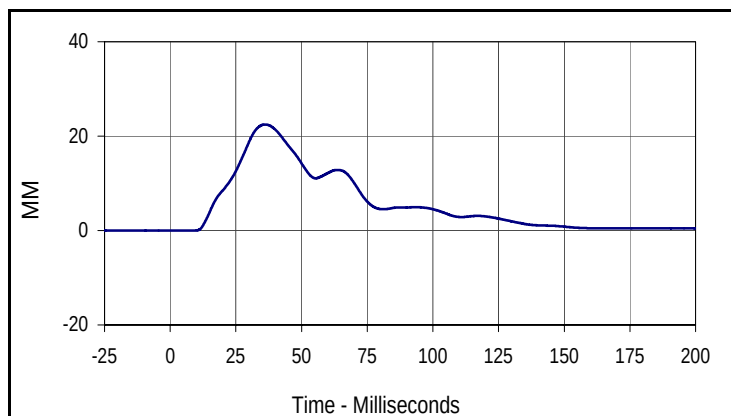
Curve Description			
Driver Upper Thorax Rib Deflection Y			
Plot No.	Type	SAE Class	Units
005	FIL	180	MM
Max	Time	Min	Time
19.5	38.7	-1.8	108.7



Curve Description			
Driver Middle Thorax Rib Deflection Y			
Plot No.	Type	SAE Class	Units
006	FIL	180	MM
Max	Time	Min	Time
21.0	36.9	0.0	0.0



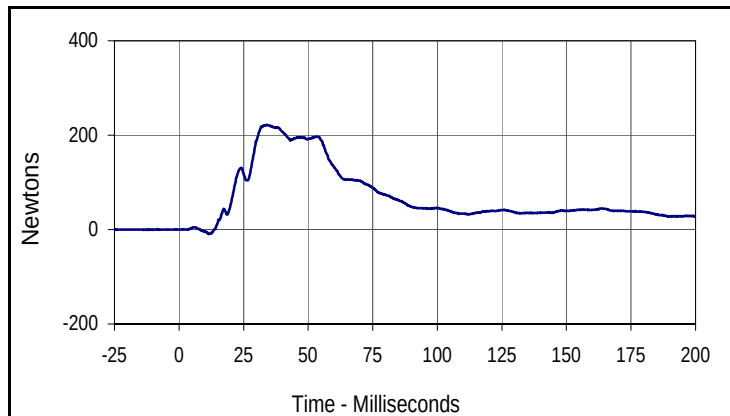
Curve Description			
Driver Lower Thorax Rib Deflection Y			
Plot No.	Type	SAE Class	Units
007	FIL	180	MM
Max	Time	Min	Time
22.5	36.2	0.0	2.9



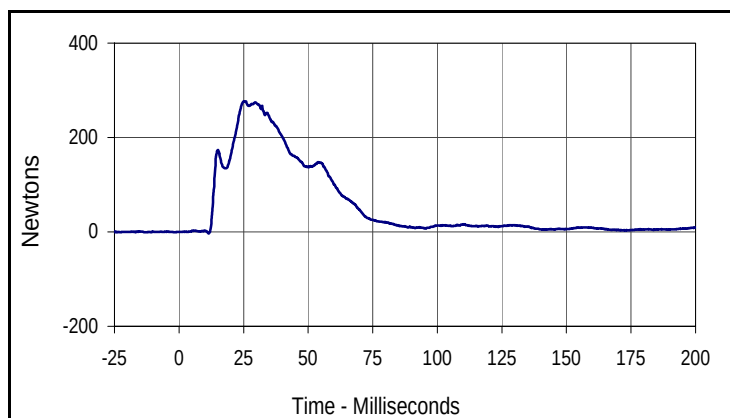
Curve Description			
Driver Thorax Rib Deflection Maximum			
Plot No.	Type	SAE Class	Units
010	FIL	180	MM
Max	Time	Min	Time
22.5	36.2	0.0	2.9

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

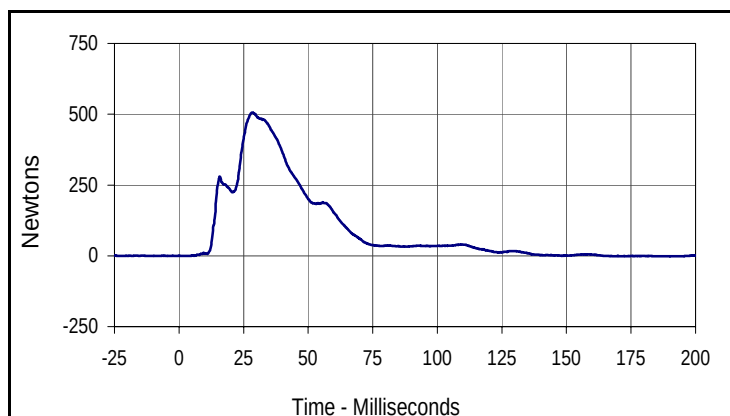
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 Test Date: 3/28/13



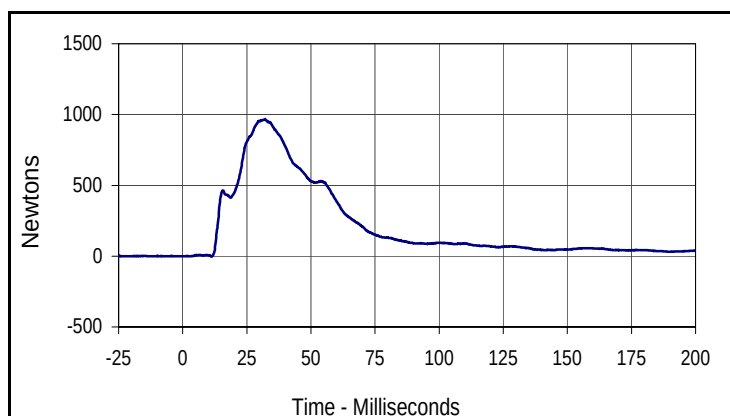
Curve Description			
Driver Anterior Abdominal Force Y			
Plot No.	Type	SAE Class	Units
008	FIL	600	Newtons
Max	Time	Min	Time
222.0	34.2	-9.6	11.4



Curve Description			
Driver Middle Abdominal Force Y			
Plot No.	Type	SAE Class	Units
009	FIL	600	Newtons
Max	Time	Min	Time
276.7	25.8	-3.2	11.4



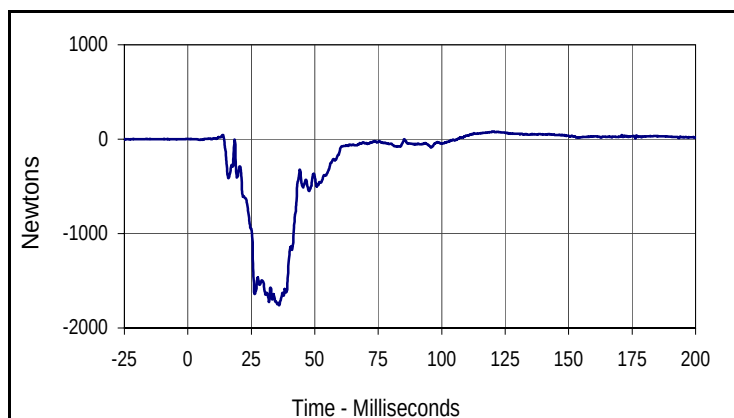
Curve Description			
Driver Posterior Abdominal Force Y			
Plot No.	Type	SAE Class	Units
011	FIL	600	Newtons
Max	Time	Min	Time
505.9	28.3	-1.9	189.1



Curve Description			
Driver Total Abdominal Force			
Plot No.	Type	SAE Class	Units
012	SUM	600	Newtons
Max	Time	Min	Time
967.9	32.1	-3.1	11.3

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

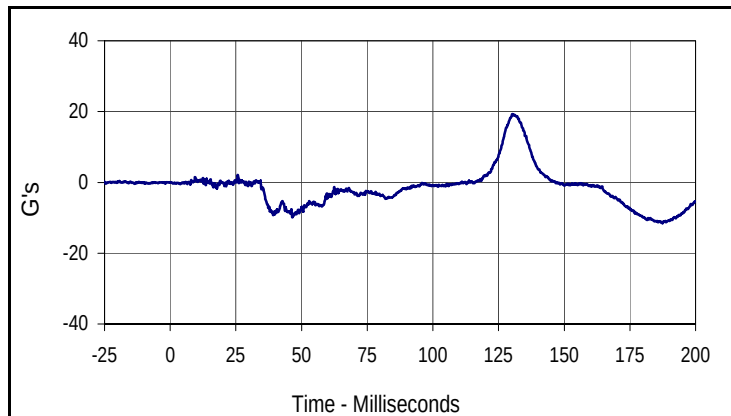
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 Test Date: 3/28/13



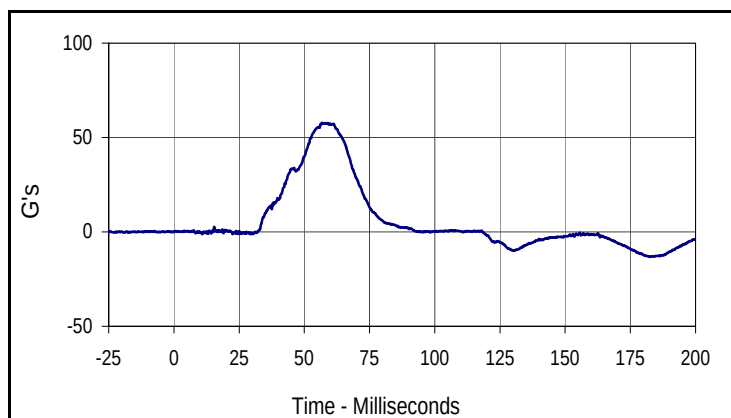
Curve Description			
Driver Pubic Symphysis Force Y			
Plot No.	Type	SAE Class	Units
013	FIL	600	Newtons
Max	Time	Min	Time
81.1	120.2	-1757.7	36.0

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

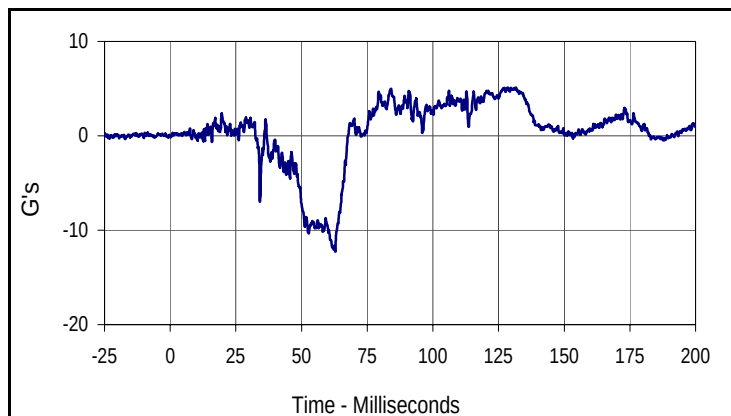
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 Test Date: 3/28/13



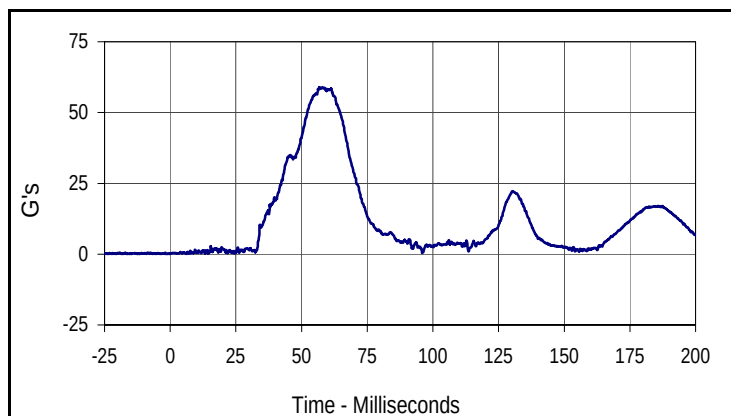
Curve Description			
Passenger Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
014	FIL	1000	G's
Max	Time	Min	Time
19.3	130.3	-11.5	187.5



Curve Description			
Passenger Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
015	FIL	1000	G's
Max	Time	Min	Time
57.8	56.7	-13.2	182.2



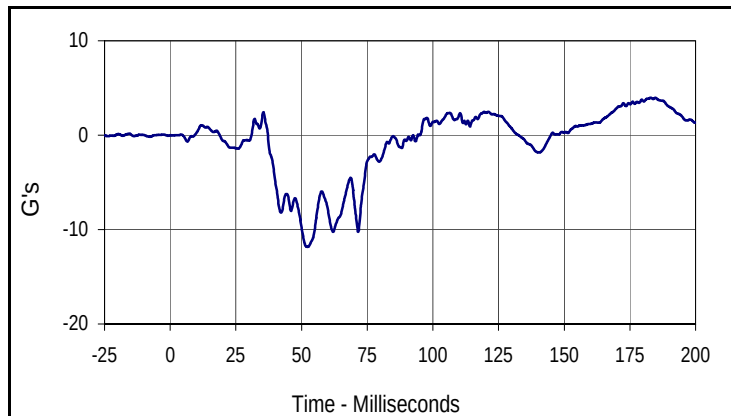
Curve Description			
Passenger Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
016	FIL	1000	G's
Max	Time	Min	Time
5.1	128.5	-12.3	62.8



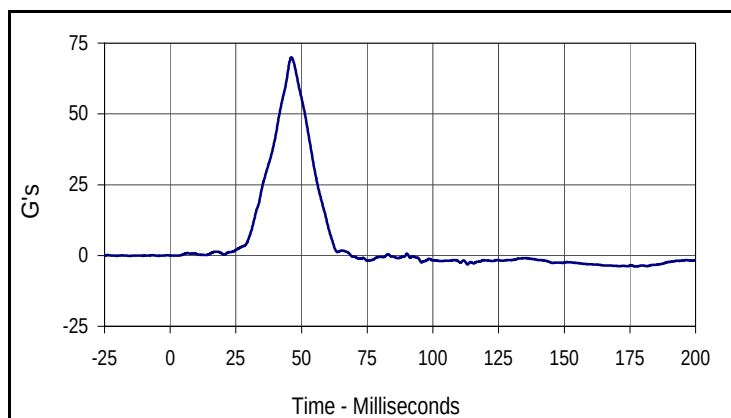
Curve Description			
Passenger Head Acceleration Resultant Primary			
Plot No.	Type	SAE Class	Units
017	RES	1000	G's
Max	Time	Min	Time
58.9	56.7	0.1	6.0

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

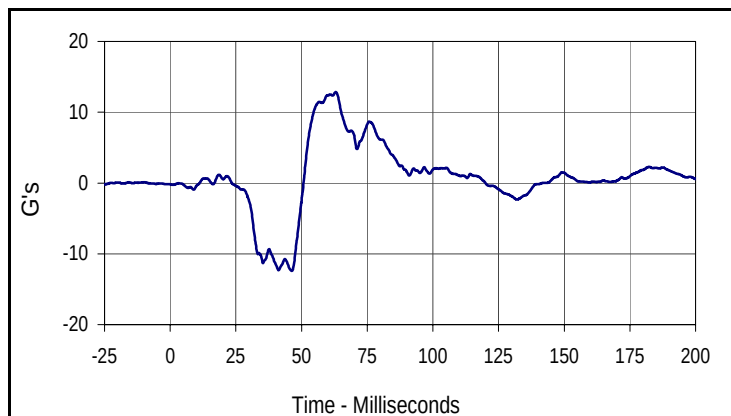
NHTSA No.: MD5311
 Test Date: 3/28/13



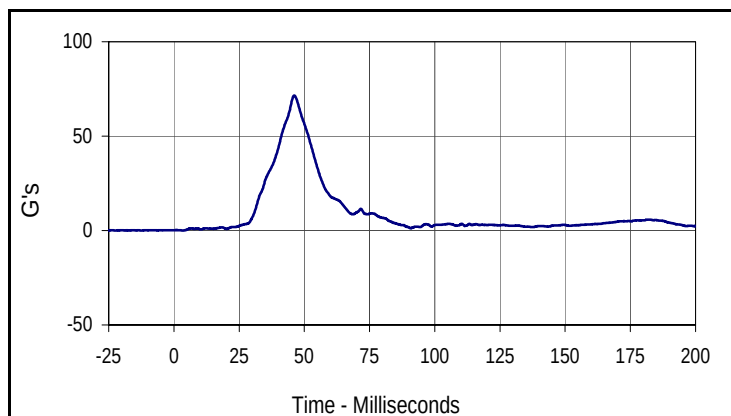
Curve Description			
Passenger Lower Spine T12 Acceleration X			
Plot No.	Type	SAE Class	Units
019	FIL	180	G's
Max	Time	Min	Time
4.0	184.7	-11.8	52.3



Curve Description			
Passenger Lower Spine T12 Acceleration Y			
Plot No.	Type	SAE Class	Units
020	FIL	180	G's
Max	Time	Min	Time
70.0	46.1	-3.9	177.5



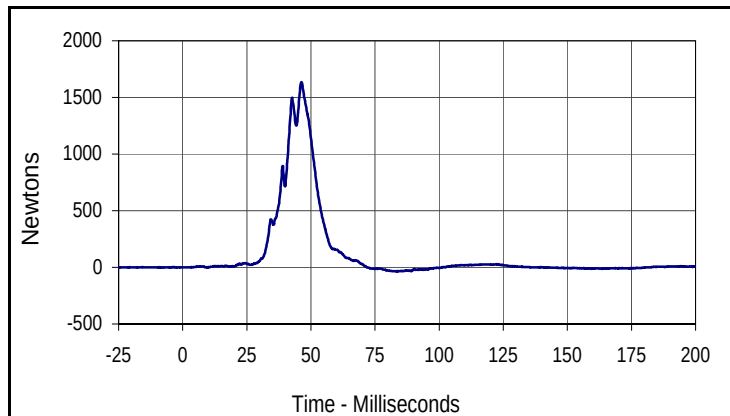
Curve Description			
Passenger Lower Spine T12 Acceleration Z			
Plot No.	Type	SAE Class	Units
021	FIL	180	G's
Max	Time	Min	Time
12.8	63.0	-12.4	46.3



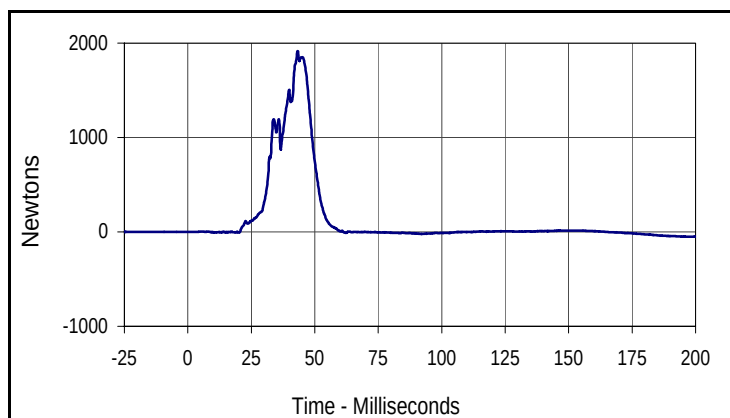
Curve Description			
Passenger Lower Spine T12 Acceleration Res.			
Plot No.	Type	SAE Class	Units
022	RES	180	G's
Max	Time	Min	Time
71.5	46.1	0.1	3.4

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

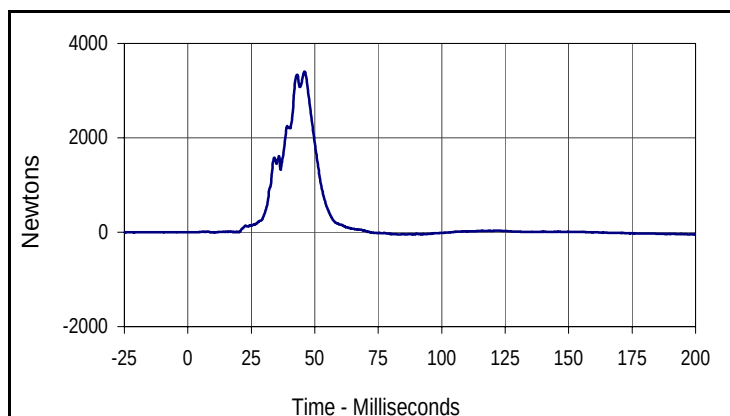
NHTSA No.: MD5311
 Test Date: 3/28/13



Curve Description			
Passenger Iliac Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
023	FIL	600	Newtons
Max	Time	Min	Time
1636.7	46.3	-35.6	83.4



Curve Description			
Passenger Acetabulum Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
024	FIL	600	Newtons
Max	Time	Min	Time
1916.8	43.3	-51.2	196.4



Curve Description			
Passenger Total Pelvic Force			
Plot No.	Type	SAE Class	Units
018	SUM	600	Newtons
Max	Time	Min	Time
3402.0	46.0	-48.7	89.1

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.: F035

Test Date: 3/4/13
 Test I.D.: N/A



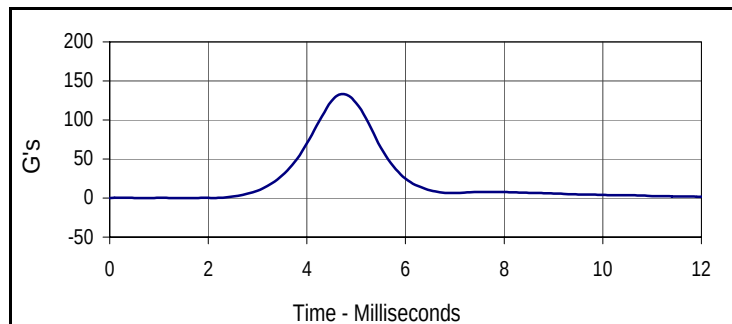
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	30.3	Pass
1	Sitting Height	mm	900 - 918	907	Pass
2	Seat to Shoulder Joint	mm	558 - 572	564	Pass
3	Seat to Lower Face of Thoracic Spine Box	mm	346 - 356	350	Pass
4	Seat to Hip Joint (Center of Bolt)	mm	97 - 103	100	Pass
5	Sole to Seat, Sitting	mm	333 - 451	389	Pass
6	Head Width	mm	152 - 158	155	Pass
7	Shoulder / Arm Width	mm	461 - 479	470	Pass
8	Thorax Width	mm	322 - 332	324	Pass
9	Abdomen Width	mm	273 - 287	280	Pass
10	Pelvis Lap Width	mm	359 - 373	365	Pass
11	Head Depth	mm	196 - 206	202	Pass
12	Thorax Depth	mm	262 - 272	269	Pass
13	Abdomen Width	mm	194 - 204	198	Pass
14	Pelvis Depth	mm	235 - 245	239	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	611	Pass
Overall Test Results					Pass

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

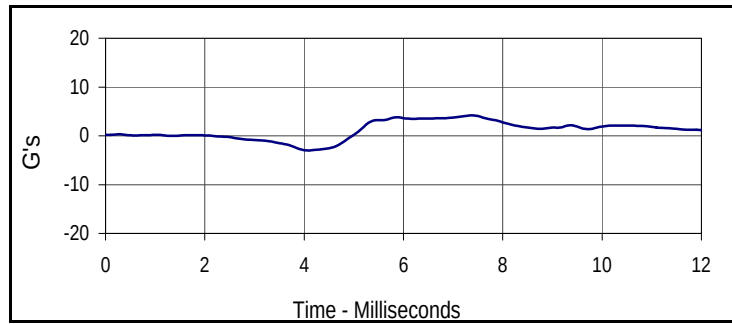
Test Date: 3/4/13
 Test I.D.: F035HD046



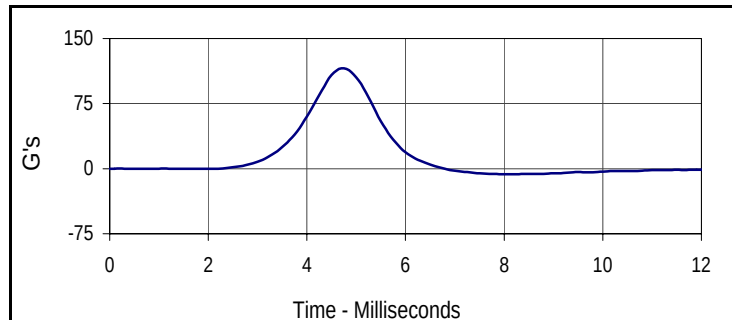
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	420	Pass
Temperature During Soak	Max	20.6 to 22.2	21.8	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	30.5	Pass
	Min		28.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.3	Pass
Peak Head Resultant Acceleration	G's	125 to 155	133.2	Pass
Peak Head X Acceleration	G's	≤15	4.2	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	5.9	Pass
Overall Test Results				Pass



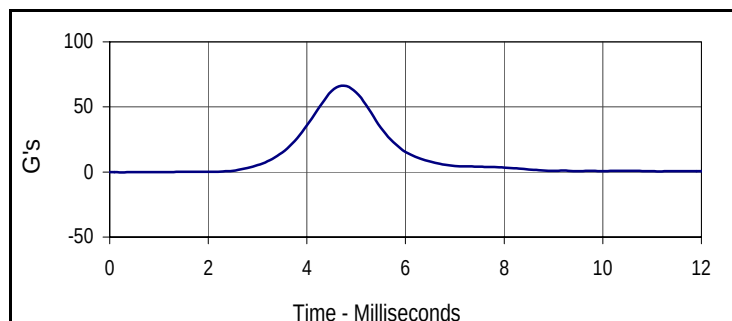
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
133.2	4.7	0.1	1.2



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
4.2	7.4	-3.0	4.1



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
115.5	4.7	-6.4	8.1



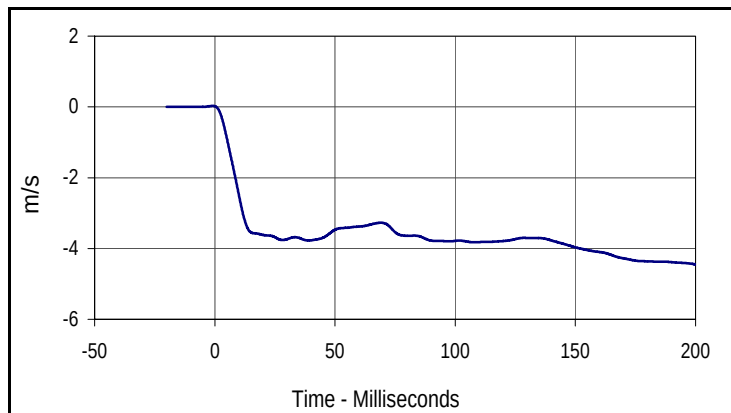
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
66.3	4.7	-0.2	0.3

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

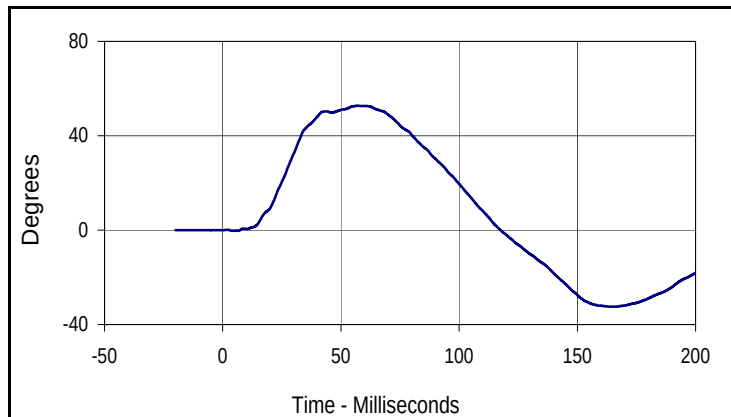
Test Date: 3/4/13
 Test I.D.: F035NB046



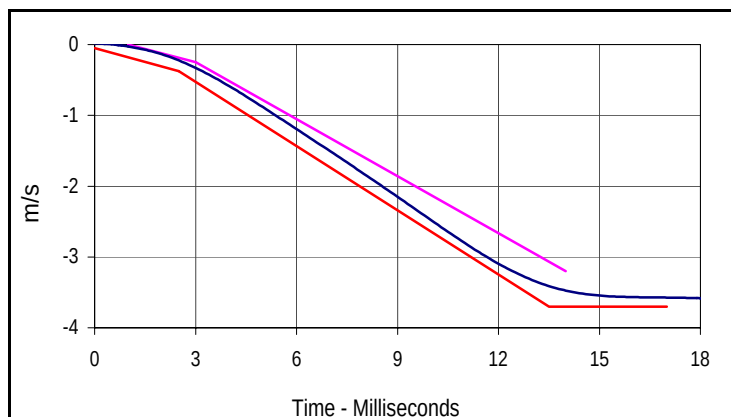
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	460	Pass
Temperature During Soak	Max	20.6 to 22.2	21.8	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	30.5	Pass
	Min		28.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.2	Pass
Pendulum Velocity	m/s	3.3 to 3.5	3.47	Pass
Headform Flexion	Max	49 to 59	52.7	Pass
	Time	54 to 66	57.0	Pass
Headform Flexion Decay (Peak to Zero)	msec	53 to 88	60.6	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	-0.9	-4.4	200.0



Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
52.7	57.0	-32.4	164.2



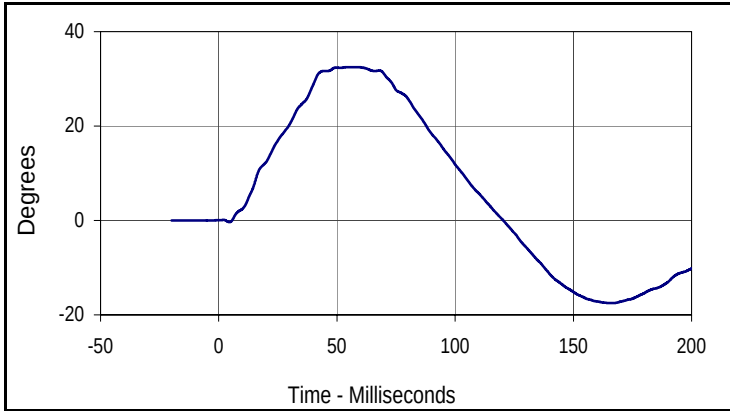
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.9	-4.4	200.0

Velocity Corridors

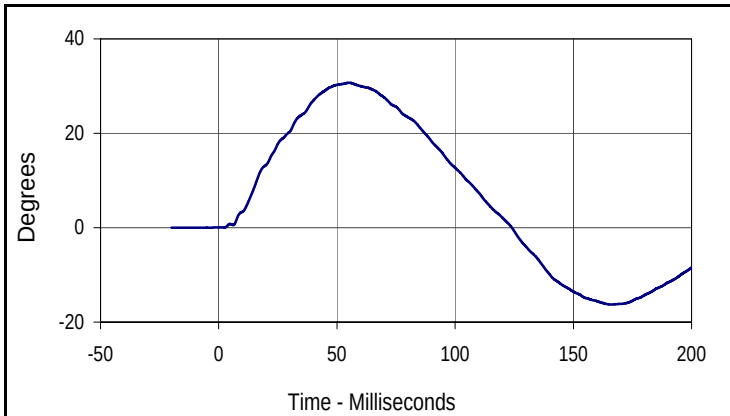
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.0	-0.03	2.5	-0.375
14.0	-3.20	13.5	-3.70
		17.0	-3.70

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

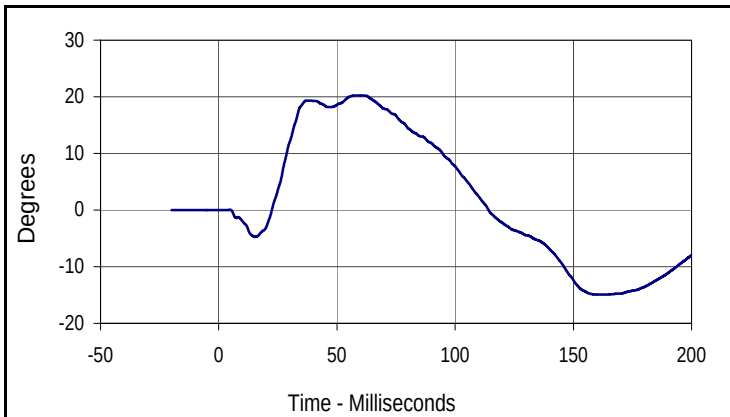
Test Date: 3/4/13
 Test I.D.: F035NB046



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
32.5	55.6	-17.5	167.0



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
30.7	55.1	-16.2	166.8



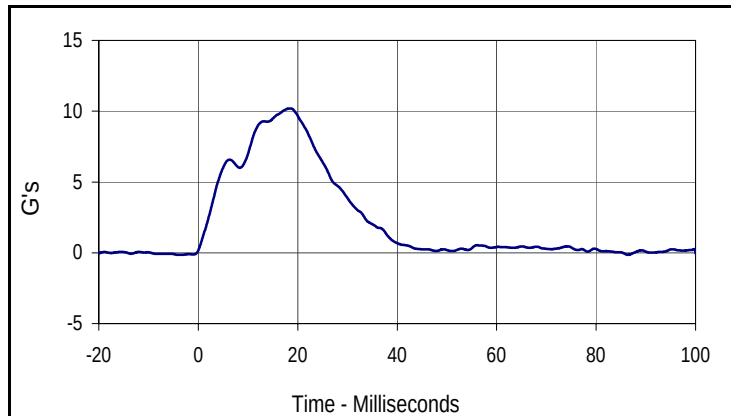
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
20.2	59.9	-14.9	162.7

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

Test Date: 3/4/13
 Test I.D.: F035SH046



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	495	Pass
Temperature During Soak	Max	20.6 to 22.2	21.8	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	30.5	Pass
	Min		28.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.2	Pass
Pendulum Speed	m/s	4.2 to 4.4	4.32	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	10.2	Pass
Overall Test Results			Pass	



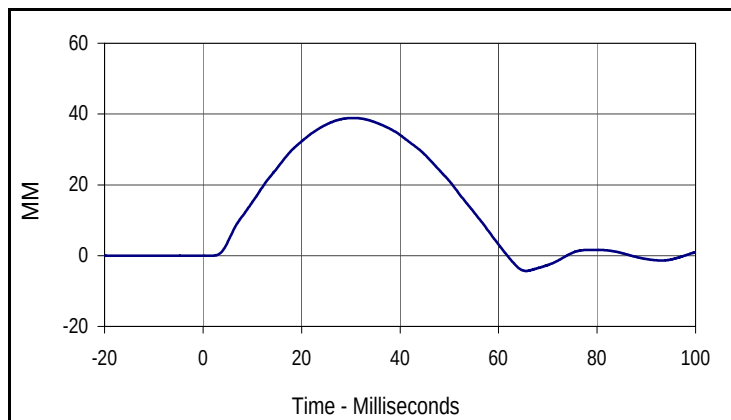
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
10.2	18.5	-0.1	-3.9

Test Program: ES2re Thorax - Rib Drop Test
 ATD Serial No.: F035 Rib # 1

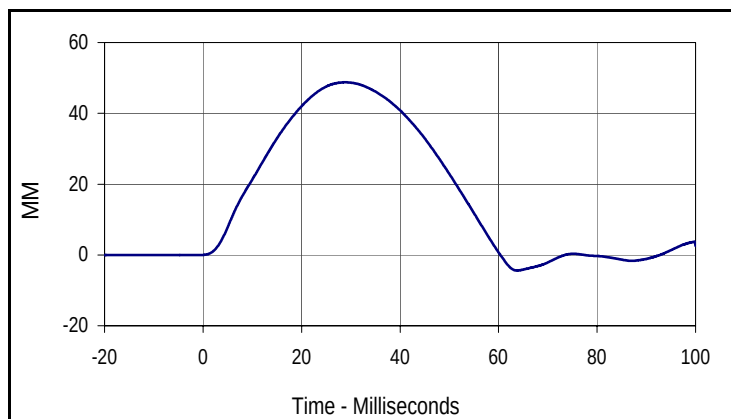
Test Date: 3/4/13
 Test I.D.: F035RB1046



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	520	Pass
Temperature During Soak	Max	20.6 to 22.2	21.8	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	30.5	Pass
	Min		28.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.2	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	38.9	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	48.8	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
38.9	30.5	-4.3	65.6



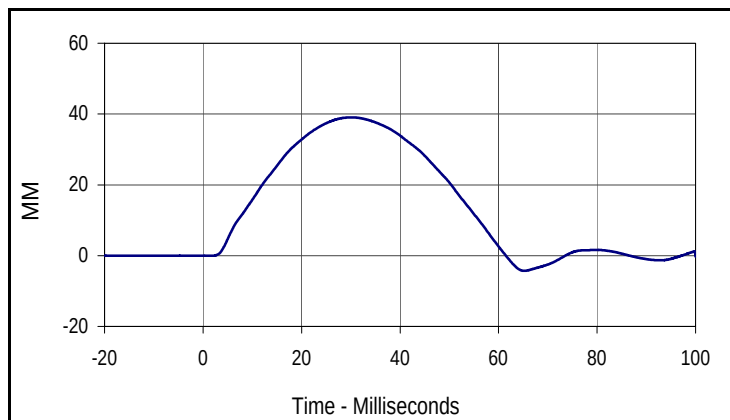
Curve Description			
Upper Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
48.8	28.9	-4.4	63.7

Test Program: ES2re Thorax - Rib Drop Test
 ATD Serial No.: F035 Rib # 2

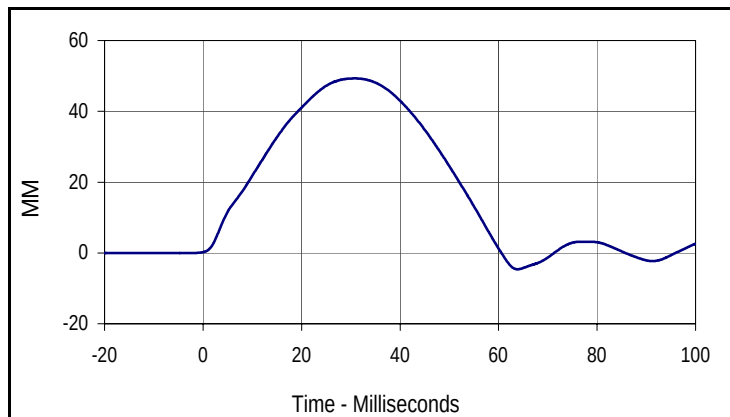
Test Date: 3/4/13
 Test I.D.: F035RB2046



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	535	Pass
Temperature During Soak	Max	20.6 to 22.2	21.8	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	30.5	Pass
	Min		28.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.2	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	39.1	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	49.3	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
39.1	30.1	-4.3	65.2



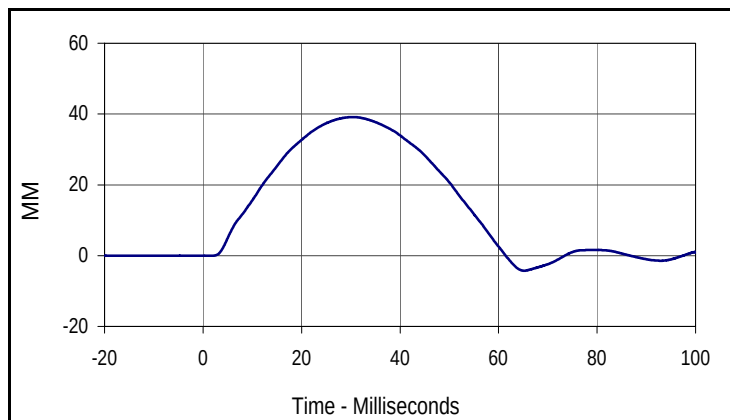
Curve Description			
Middle Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
49.3	30.8	-4.6	63.9

Test Program: ES2re Thorax - Rib Drop Test
 ATD Serial No.: F035 Rib # 3

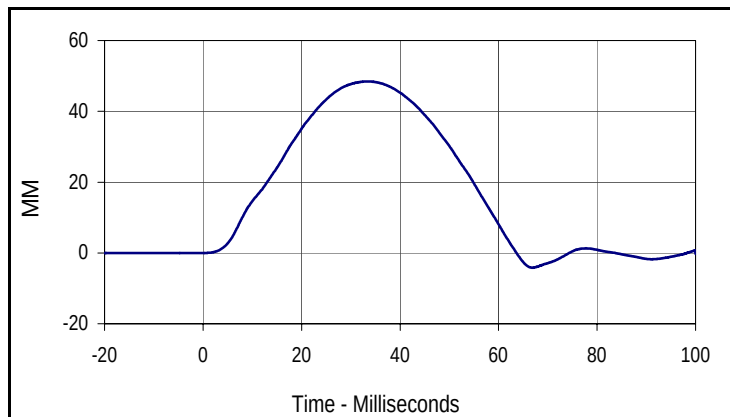
Test Date: 3/4/13
 Test I.D.: F035RB3046



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	550	Pass
Temperature During Soak	Max	20.6 to 22.2	21.8	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	30.5	Pass
	Min		28.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.3	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	39.1	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	48.4	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
39.1	30.5	-4.3	65.2



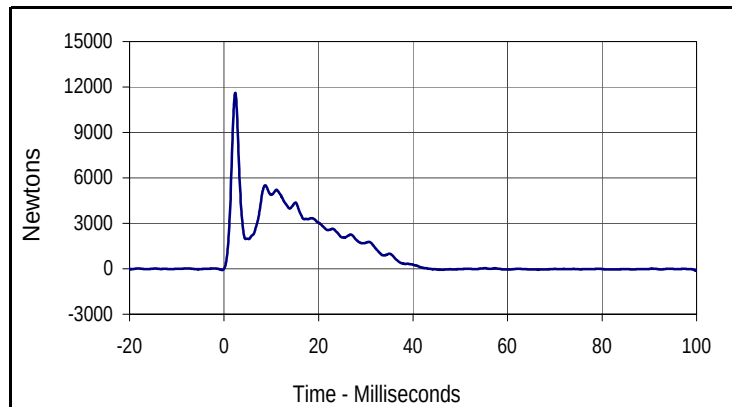
Curve Description			
Lower Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
48.4	33.4	-4.2	66.9

Test Program: ES2re Thorax - Full Body Impact Test
 ATD Serial No.: F035

Test Date: 3/4/13
 Test I.D.: F035TH046



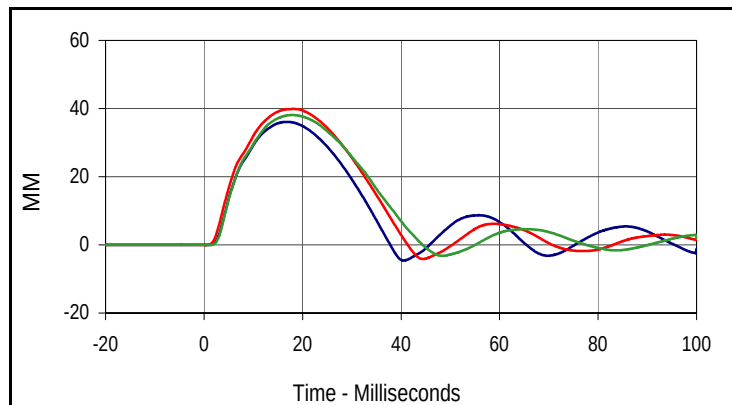
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	590	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.8	Pass
	Min	°C		20.8	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.5	Pass
	Min	%		28.6	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.3	Pass
Peak Impactor Velocity		m/s	5.4 to 5.6	5.46	Pass
Peak Impactor Force	N		5100 to 6200	5505.6	Pass
	msec		> 6.0 msec	8.7	Pass
Peak Upper Rib Deflection		mm	34 to 41	36.1	Pass
Peak Middle Rib Deflection		mm	37 to 45	39.9	Pass
Peak Lower Rib Deflection		mm	37 to 44	38.1	Pass
Overall Test Results					Pass



Curve Description

Impactor Force

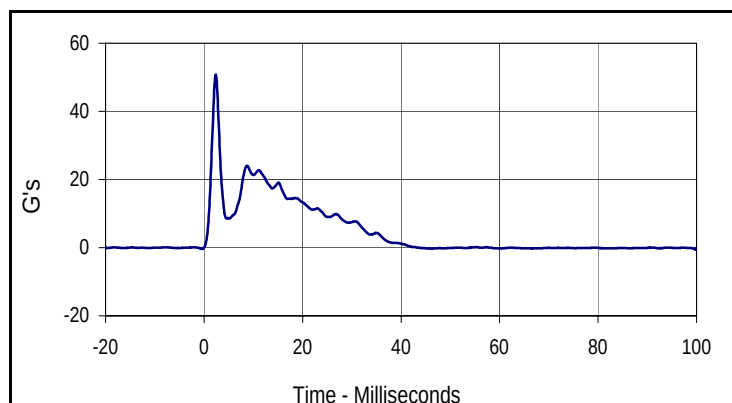
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
11628.9	2.4	-133.5	99.9



Curve Description

Upper, Middle, Lower Rib Deflections

Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max (Upper)	Time	Min (Upper)	Time
36.1	16.8	-4.6	40.6
Max (Middle)	Time	Min (Middle)	Time
39.9	18.3	-4.2	44.5
Max (Lower)	Time	Min (Lower)	Time
38.1	17.9	-3.2	48.4



Curve Description

Impactor Acceleration

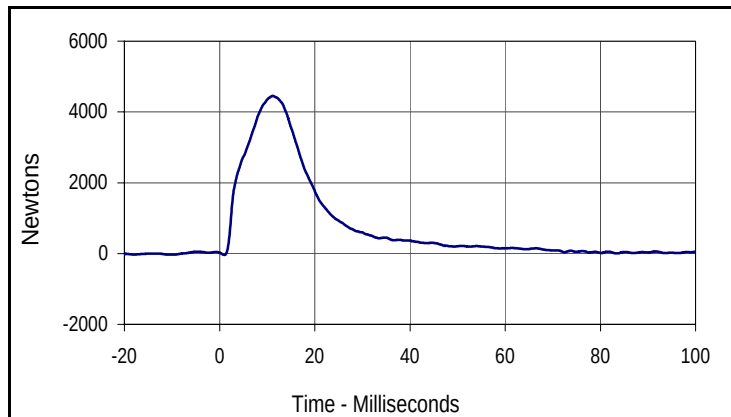
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
50.8	2.4	-0.6	99.9

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

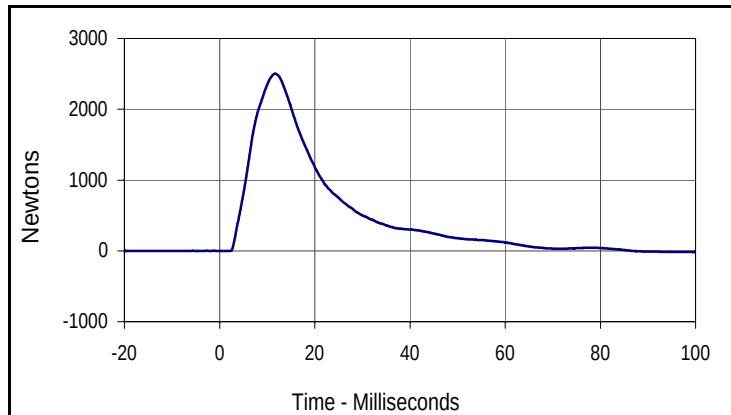
Test Date: 3/4/13
 Test I.D.: F035ABD046



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	610	Pass
Temperature During Soak	Max	20.6 to 22.2	21.8	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	30.5	Pass
	Min		28.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.3	Pass
Probe Velocity	m/s	3.9 to 4.1	3.95	Pass
Peak Impactor Force	N	4000 to 4800	4452.5	Pass
	msec	10.6 to 13.0	11.1	Pass
Sum of Abdominal Forces	N	2200 to 2700	2503.6	Pass
	msec	10.0 to 12.3	11.7	Pass
Overall Test Results				Pass



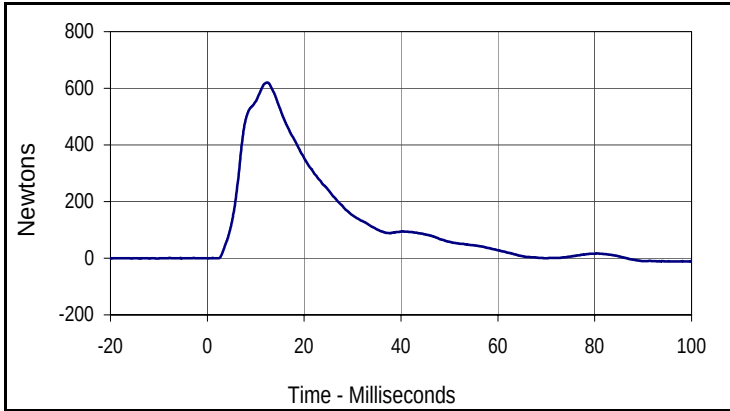
Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4452.5	11.1	-39.3	1.0



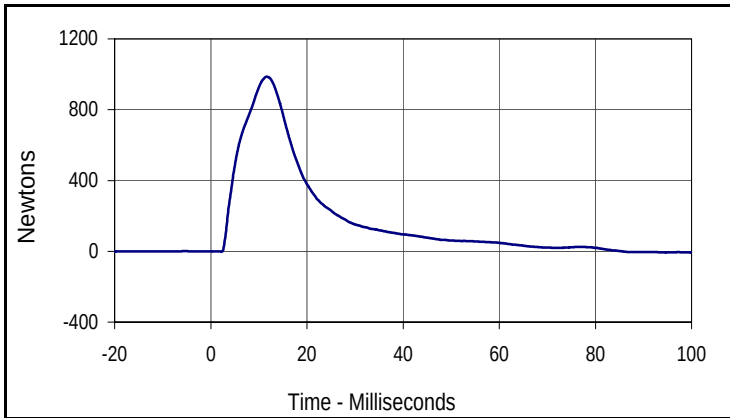
Curve Description			
Abdomen Sum Resultant			
Plot No.	Type	SAE Class	Units
002	RES	600	Newtons
Max	Time	Min	Time
2503.6	11.7	-17.0	99.4

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

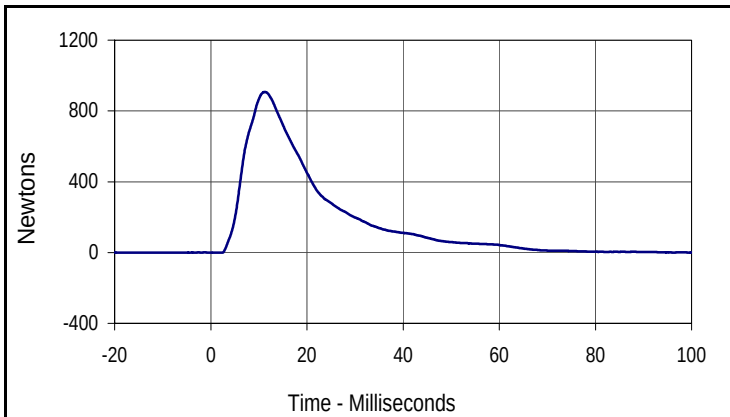
Test Date: 3/4/13
 Test I.D.: F035ABD046



Curve Description			
Front Abdomen Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
620.4	12.4	-11.7	98.7



Curve Description			
Middle Abdomen Force			
Plot No.	Type	SAE Class	Units
004	FIL	600	Newtons
Max	Time	Min	Time
986.6	11.6	-6.3	94.6



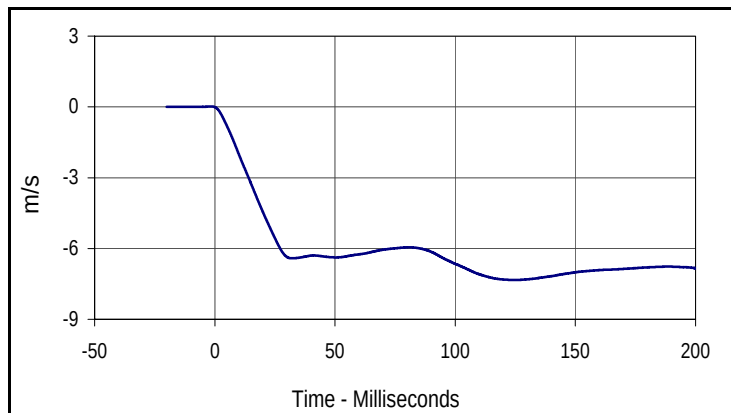
Curve Description			
Rear Abdomen Force			
Plot No.	Type	SAE Class	Units
005	FIL	600	Newtons
Max	Time	Min	Time
907.3	11.2	-1.1	2.3

Test Program: ES2re Lumbar Flexion Test
 ATD Serial No.: F035

Test Date: 3/4/13
 Test I.D.: F035LB046



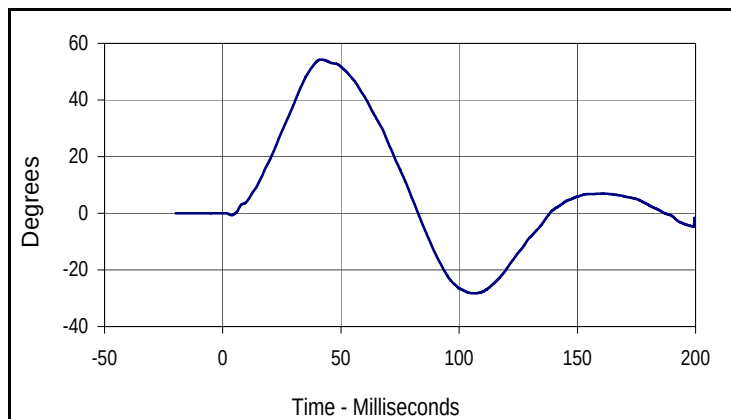
Tested Parameter	Units	Specification	Result	Pass/Fail
Lumbar Spine Assembly Soak Time	Minutes	≥240	665	Pass
Temperature During Soak	Max	20.6 to 22.2	21.8	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	30.5	Pass
	Min		28.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.2	Pass
Pendulum Velocity	m/s	5.95 to 6.15	5.97	Pass
Headform Rotation	Max	45 to 55	54.3	Pass
	Time	39 to 53	42.3	Pass
Time of Decay to Zero Angle from Peak	msec	37 to 57	44.0	Pass
Overall Test Results				Pass



Curve Description

Pendulum Velocity

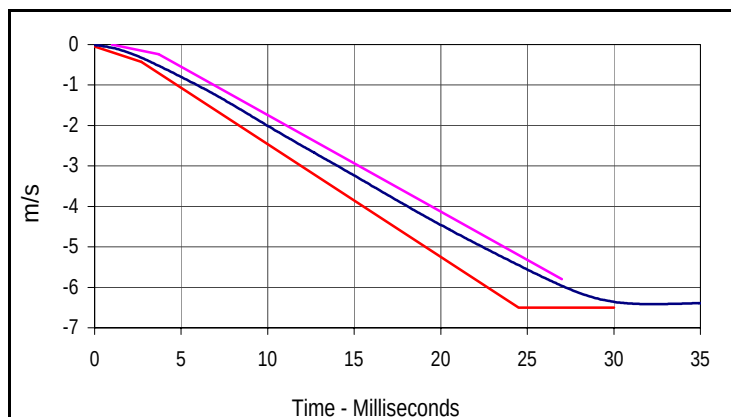
Plot No.	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.0	-7.3	125.4



Curve Description

Headform Rotation

Plot No.	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
54.3	42.3	-28.3	106.8



Curve Description

Pendulum Velocity

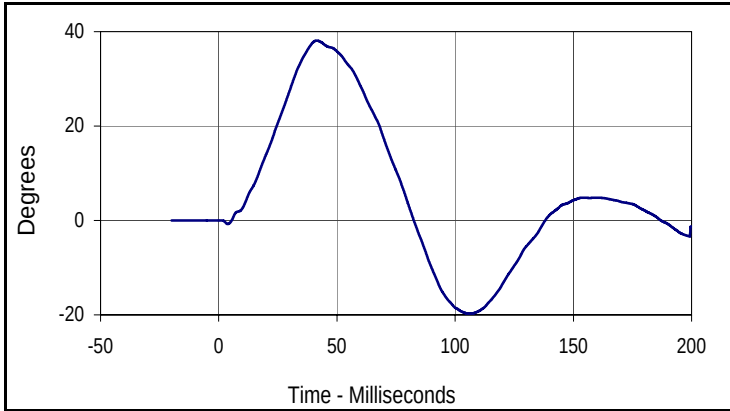
Plot No.	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.0	-7.3	125.4

Velocity Corridors

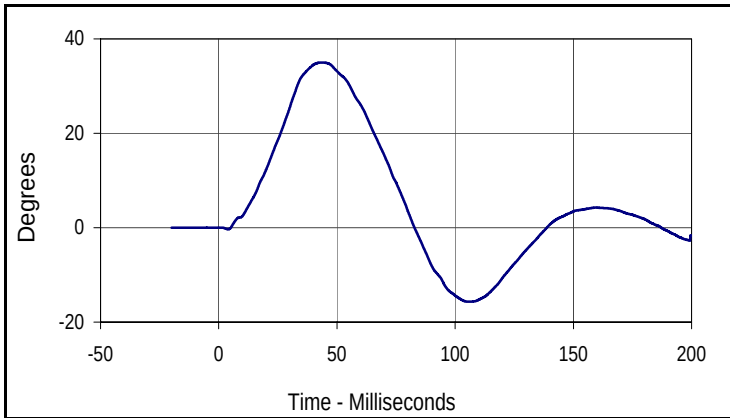
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.7	-0.24	2.7	-0.425
27.0	-5.80	24.5	-6.50
		30.0	-6.50

Test Program: ES2re Lumbar Flexion Test
 ATD Serial No.: F035

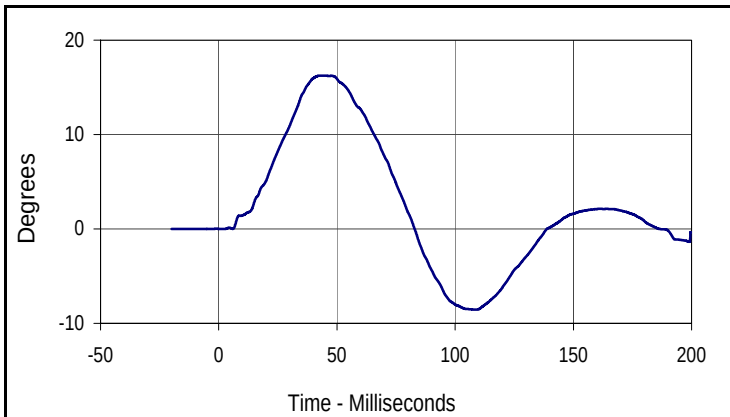
Test Date: 3/4/13
 Test I.D.: F035LB046



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
38.1	42.0	-19.8	106.6



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
35.0	44.3	-15.7	106.4



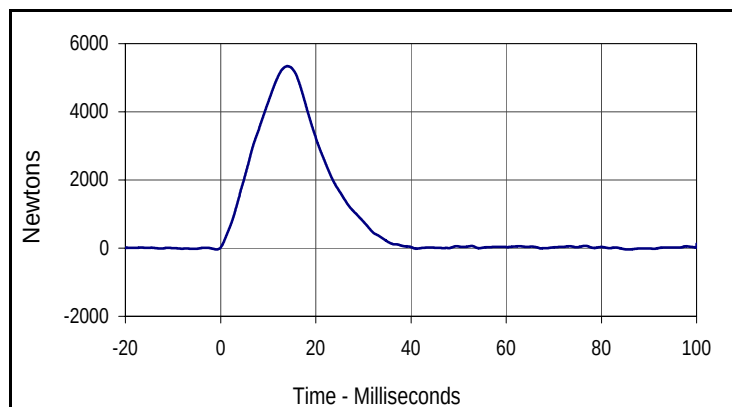
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
16.3	43.7	-8.6	109.7

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

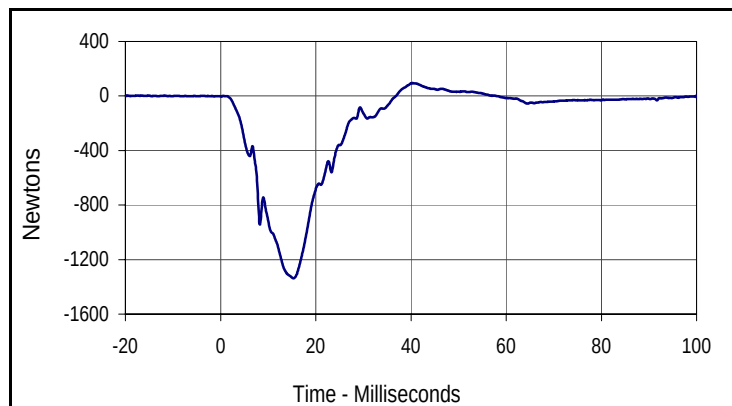
Test Date: 3/4/13
 Test I.D.: F035PL046



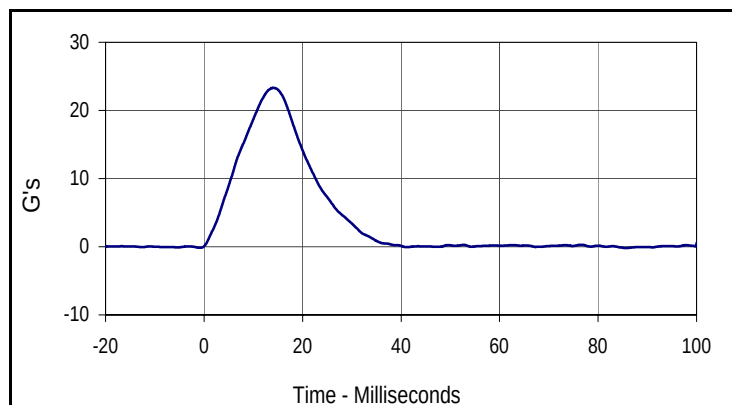
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	725	Pass
Temperature During Soak	Max	20.6 to 22.2	21.8	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	30.5	Pass
	Min		28.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.2	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.32	Pass
Peak Impactor Force	N	4700 to 5400	5339.7	Pass
	msec	11.8 to 16.1	14	Pass
Peak Pubic Symphysis Load	N	-1230 to -1590	-1337.1	Pass
	msec	12.2 to 17.0	15.3	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
5339.7	14.0	-40.2	85.8



Curve Description			
Pubic Symphysis Force Y			
Plot No.	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
93.8	40.3	-1337.1	15.3



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
23.3	14.0	-0.2	85.8

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

Test Date: 3/5/13
 Test I.D.: N/A



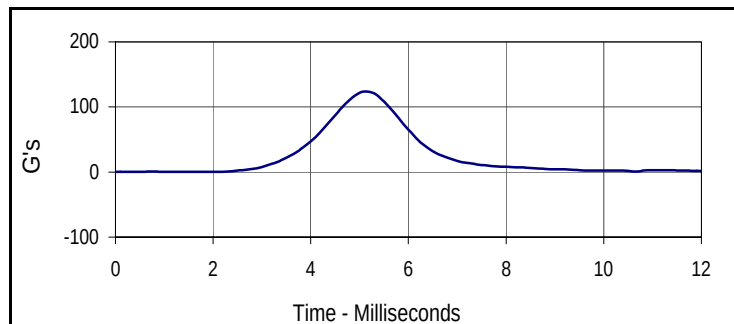
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
A	Sitting Height	mm	772 - 788	778	Pass
B	Shoulder Pivot Height	mm	437 - 453	443	Pass
C	H-Point Height	mm	79 - 89	85	Pass
D	H-Point from Seatback	mm	141 - 151	144	Pass
E	Shoulder Pivot from Backline	mm	97 - 107	102	Pass
F	Thigh Clearance	mm	119 - 135	128	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	185	Pass
J	Head Circumference	mm	541 - 551	546	Pass
K	Buttock to Knee Length	mm	514 - 540	525	Pass
L	Popliteal Height	mm	343 - 369	351	Pass
M	Knee Pivot to Floor Height	mm	392 - 409	400	Pass
N	Buttock Popliteal Length	mm	416 - 442	432	Pass
O	Chest Depth w/o Jacket	mm	195 - 211	205	Pass
P	Foot Length	mm	216 - 232	223	Pass
Q	Hip Breadth with Pelvic Plug	mm	313 - 323	319	Pass
R	Arm Length	mm	249 - 259	254	Pass
S	Knee Joint to Seatback	mm	477 - 493	483	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	872	Pass
Z	Waist Circumference	mm	760 - 791	774	Pass
Overall Test Results					Pass

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

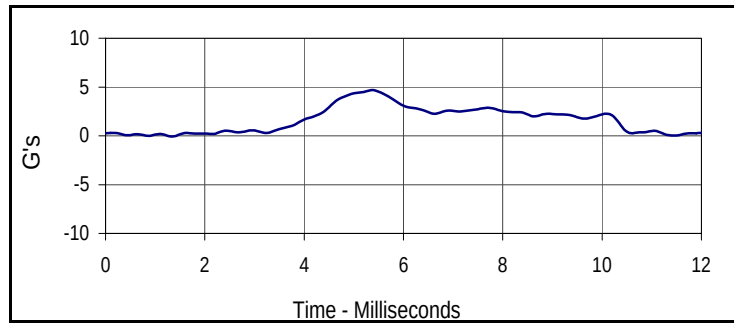
Test Date: 3/5/13
 Test I.D.: 307HD053



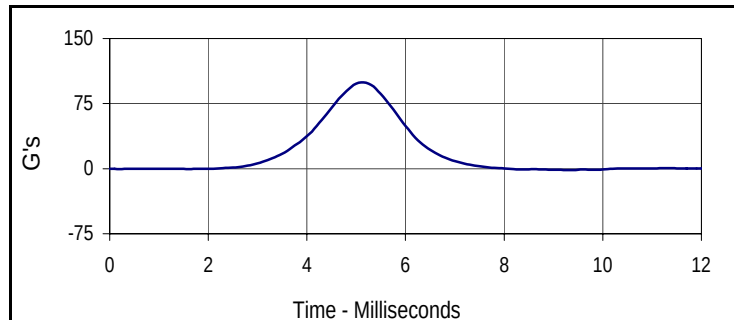
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	355	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.8	Pass
	Min	°C		20.8	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.6	Pass
	Min	%		28.6	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.2	Pass
Peak Head Resultant Acceleration		G's	115 to 137	123.9	Pass
Peak Head X Acceleration		G's	<15	4.7	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse		%	<15	3.6	Pass
Overall Test Results				Pass	



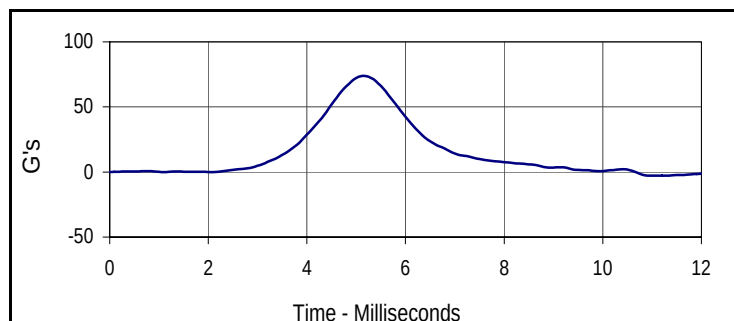
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
123.9	5.1	0.2	2.1



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
4.7	5.4	-0.1	1.3



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
99.6	5.1	-1.5	9.3



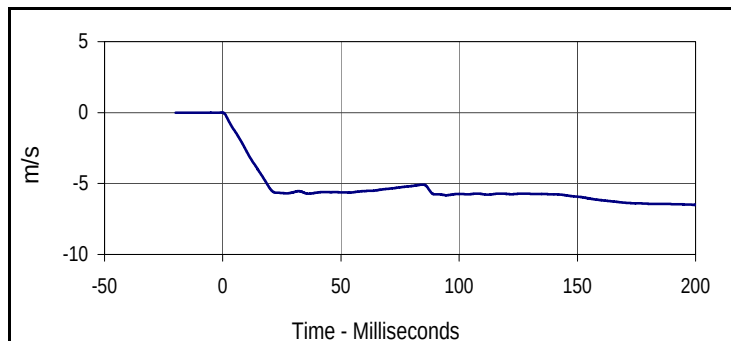
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
73.7	5.2	-2.8	11.0

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

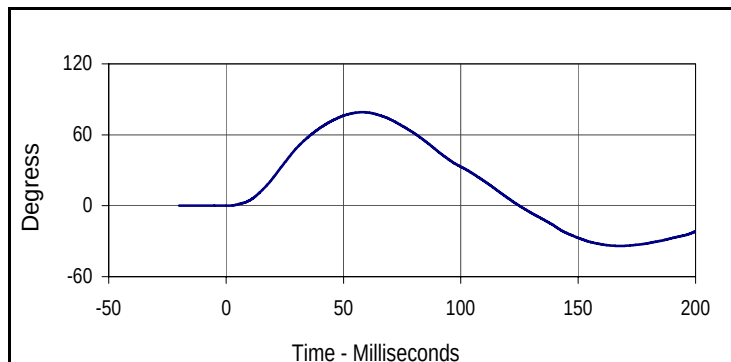
Test Date: 3/5/13
 Test I.D.: 307NB053



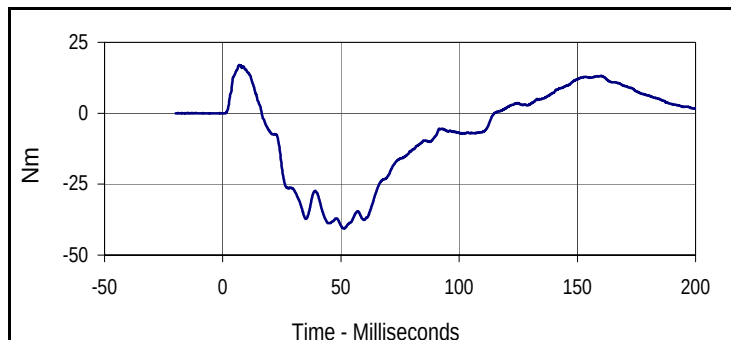
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	410	Pass
Temperature During Soak	Max	20.6 to 22.2	21.8	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	30.6	Pass
	Min		28.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.2	Pass
Pendulum Velocity	m/s	5.51 to 5.63	5.54	Pass
Pendulum Deceleration	10 msec	-2.20 to -2.80	-2.71	Pass
	15 msec	-3.30 to -4.10	-4.05	Pass
	20 msec	-4.40 to -5.40	-5.36	Pass
	25 msec	-5.40 to -6.10	-5.67	Pass
	25-100 msec	-5.50 to -6.20	-5.82	Pass
D-Plane Rotation	Max	71 to 81	79.1	Pass
	Time	50 to 70	58.1	Pass
Peak Occipital Condyle Moment	Nm	-36 to -44	-40.7	Pass
Decaying Moment Time to Cross 0 Nm	msec	102 to 126	115.0	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	-0.4	-6.5	200.0



Curve Description			
Maximum Translation Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
79.1	58.1	-34.0	167.8



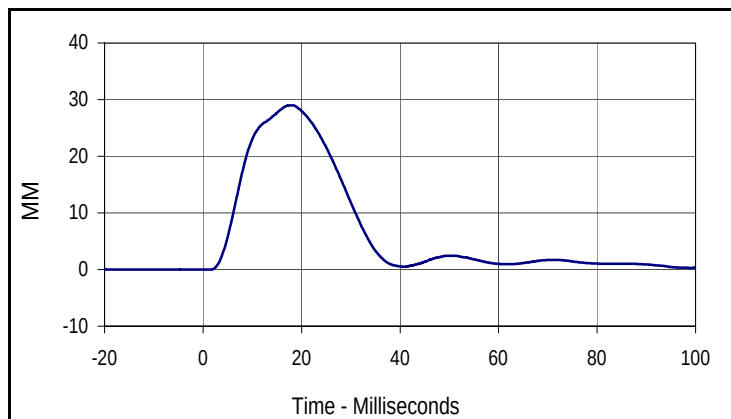
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
17.0	7.0	-40.7	51.2

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

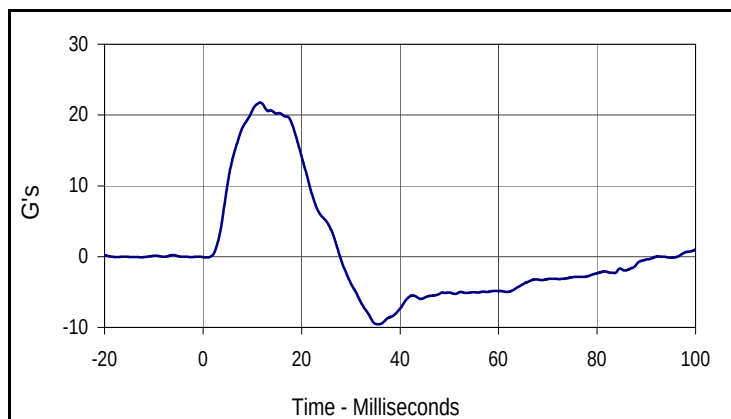
Test Date: 3/5/13
 Test I.D.: 307SH053



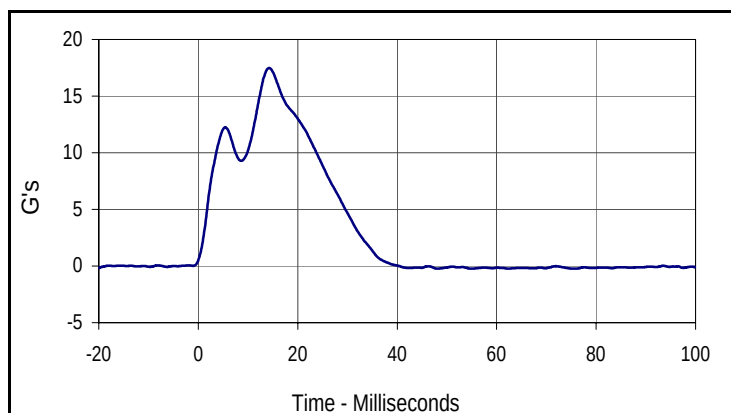
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	445	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.8	Pass
	Min	°C		20.8	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.6	Pass
	Min	%		28.6	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.2	Pass
Impactor Velocity		m/s	4.20 to 4.40	4.32	Pass
Peak Shoulder Deflection		mm	28 to 37	29.0	Pass
Peak Lateral Spine Acceleration Y		G's	17 to 22	21.8	Pass
Peak Impactor Acceleration		G's	13 to 18	17.5	Pass
Overall Test Results				Pass	



Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
29.0	17.6	0.0	-6.1



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
21.8	11.6	-9.6	35.5



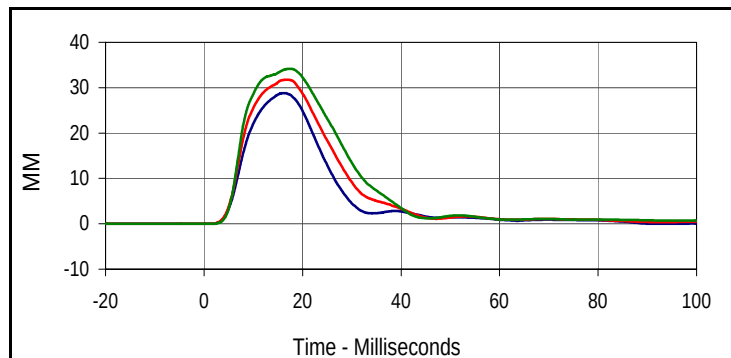
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
17.5	14.2	-0.2	75.9

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

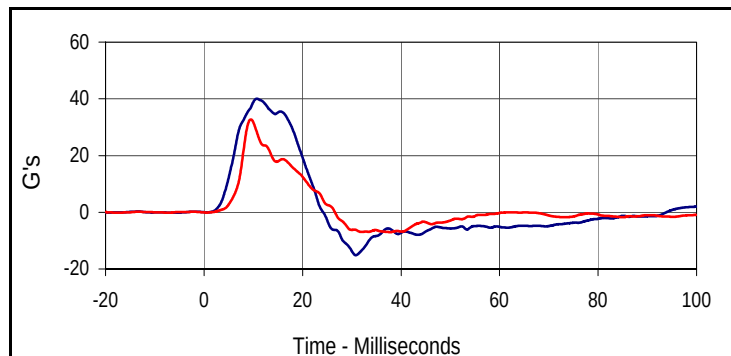
Test Date: 3/5/13
 Test I.D.: 307TWA053



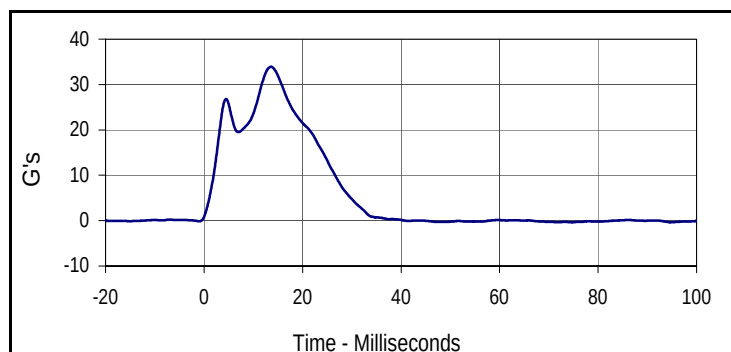
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	465	Pass
Temperature During Soak	Max	20.6 to 22.2	21.8	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	30.6	Pass
	Min		28.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.3	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.65	Pass
Peak Shoulder Deflection	mm	31 to 40	36.4	Pass
Peak Upper Thorax Rib Deflection	mm	25 to 32	28.8	Pass
Peak Middle Thorax Rib Deflection	mm	30 to 36	31.8	Pass
Peak Lower Thorax Rib Deflection	mm	32 to 38	34.2	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	40.0	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	32.7	Pass
Peak Impactor Acceleration	G's	30 to 36	33.9	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
28.8	16.2	0.0	-13.5
Middle Thorax Deflection			
Max	Time	Min	Time
31.8	16.6	0.0	-14.5
Lower Thorax Deflection			
Max	Time	Min	Time
34.2	17.4	0.0	-13.8



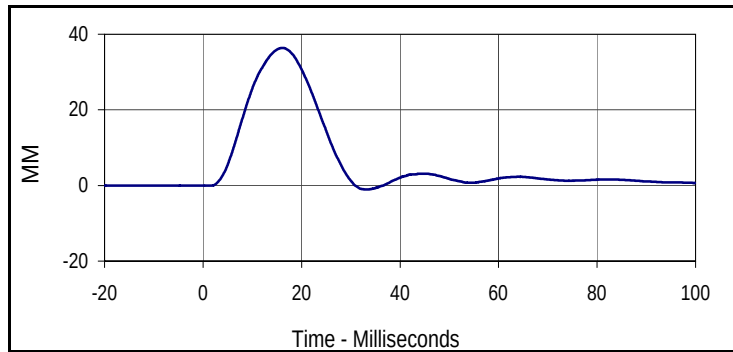
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
40.0	10.7	-15.1	30.8
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
32.7	9.5	-7.0	37.8



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
33.9	13.6	-0.4	74.7

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

Test Date: 3/5/13
Test I.D.: 307TWA053



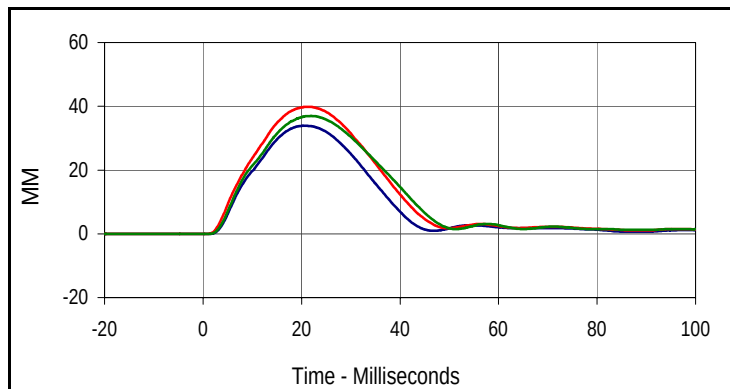
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	MM
Max	Time	Min	Time
36.4	16.2	-1.0	33.3

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

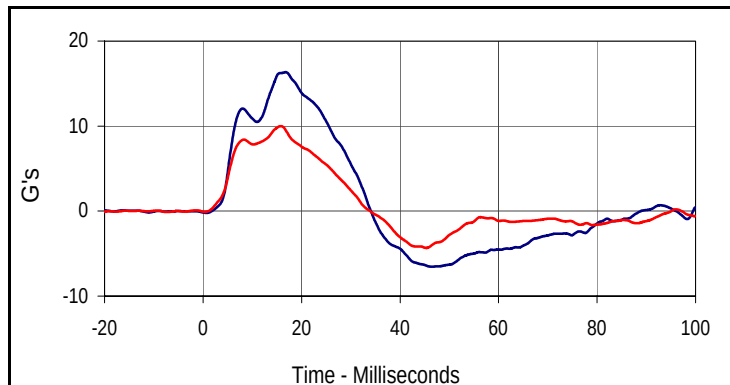
Test Date: 3/5/13
 Test I.D.: 307TWOA053



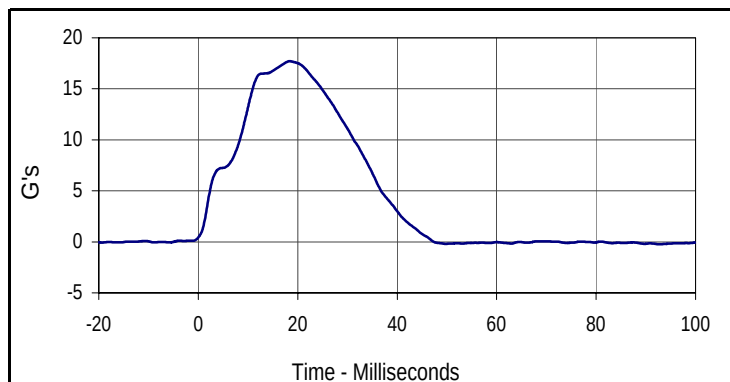
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	490	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.8	Pass
	Min	°C		20.8	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.6	Pass
	Min	%		28.6	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.3	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.32	Pass
Peak Upper Thorax Rib Deflection		mm	32 to 40	33.9	Pass
Peak Middle Thorax Rib Deflection		mm	39 to 45	39.9	Pass
Peak Lower Thorax Rib Deflection		mm	35 to 43	37.0	Pass
Peak Upper Spine Y Acceleration		G's	13 to 17	16.3	Pass
Peak Lower Spine Y Acceleration		G's	7 to 11	10.0	Pass
Peak Impactor Acceleration		G's	14 to 18	17.7	Pass
Overall Test Results				Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
33.9	20.6	0.0	-9.3
Middle Thorax Deflection			
Max	Time	Min	Time
39.9	21.2	0.0	-9.9
Lower Thorax Deflection			
Max	Time	Min	Time
37.0	22.0	0.0	-16.3



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
16.3	16.8	-6.5	46.5
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
10.0	15.8	-4.3	45.3



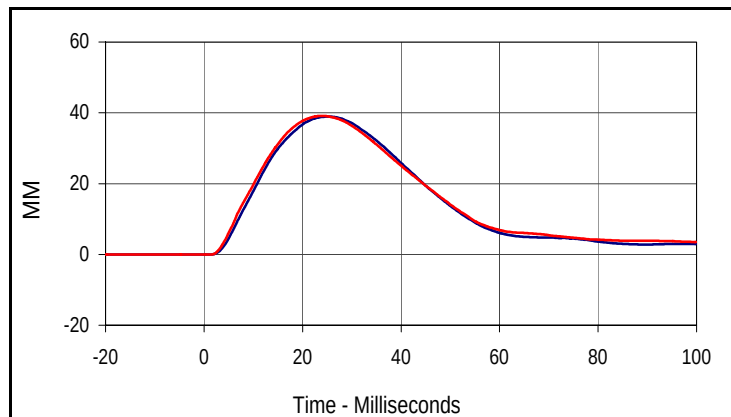
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
17.7	18.4	-0.2	92.7

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

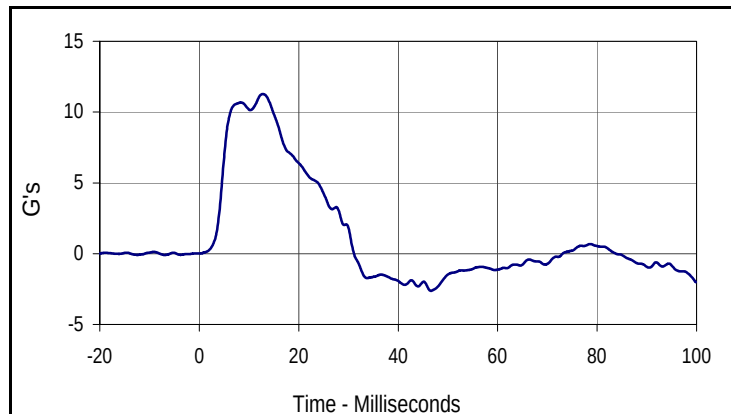
Test Date: 3/5/13
 Test I.D.: 307ABD053



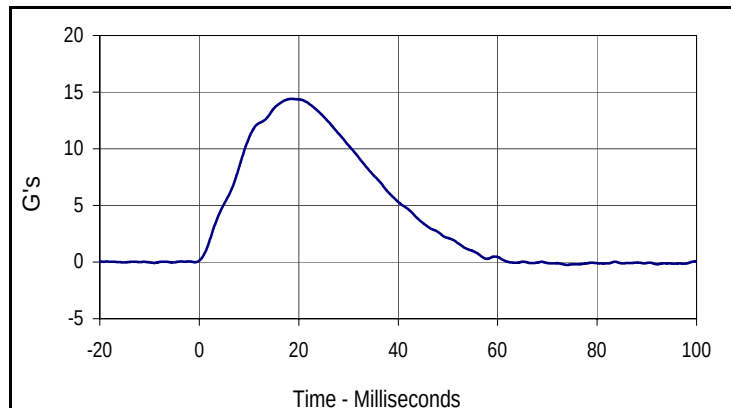
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	510	Pass
Temperature During Soak	Max	20.6 to 22.2	21.8	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	30.6	Pass
	Min		28.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.3	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.32	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	38.9	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	39.1	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	11.3	Pass
Peak Impactor Acceleration	G's	12 to 16	14.4	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
38.9	25.0	0.0	-20.0
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
39.1	23.7	0.0	-0.3



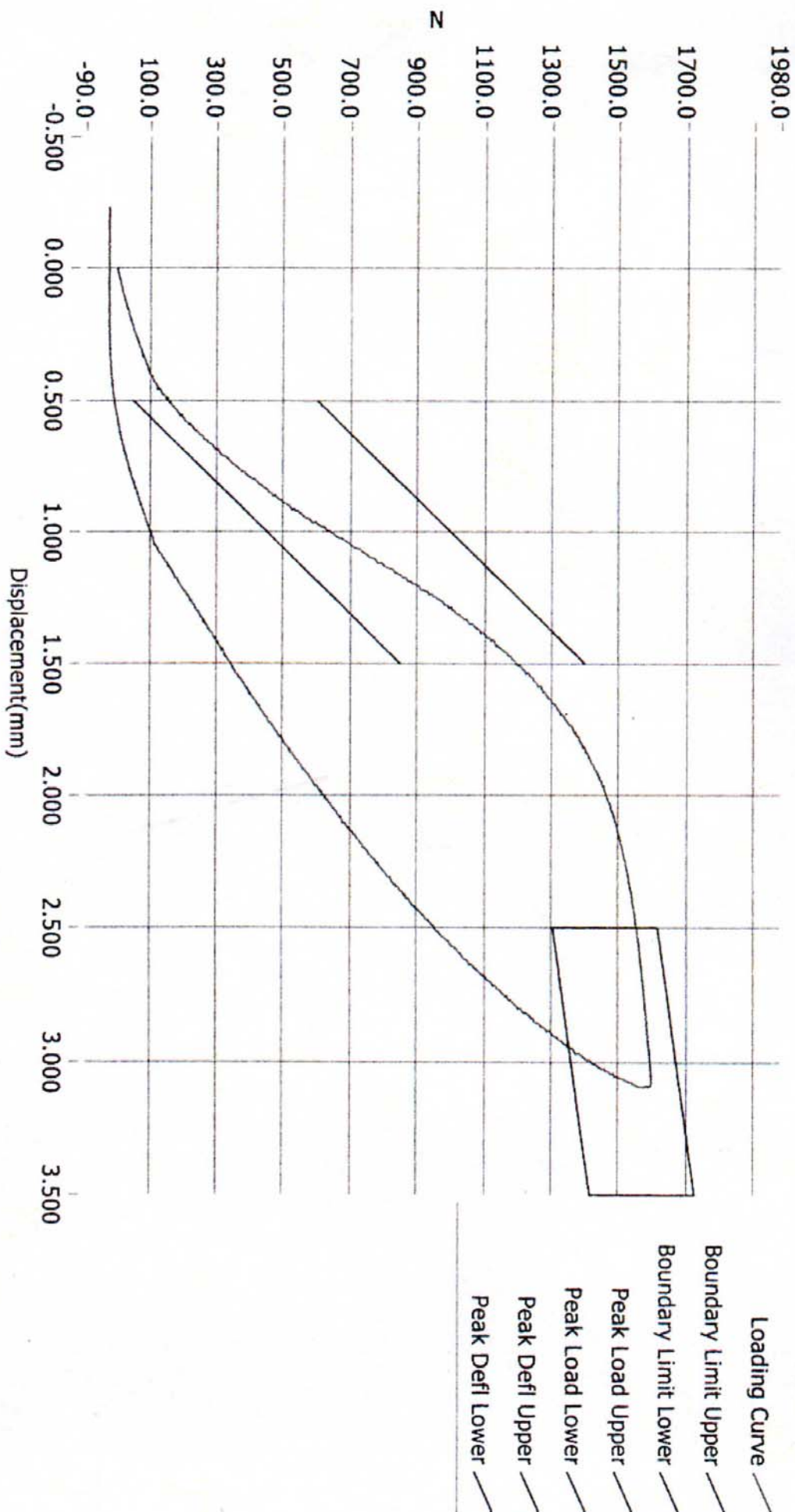
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
11.3	12.8	-2.6	46.6



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.4	18.5	-0.3	74.0

MD5311 PRE TEST

Resultant Data - SIDIIs Plug Compression



ATD Calibration Lab

<u>Test ID</u>	<u>Part Serial Number</u>	<u>Test Date</u>	<u>Test Time</u>
	48945	12/6/2011	8:24 PM
<u>Cert ID</u>	<u>ATD Serial Number</u>	<u>ATD Type</u>	
	N/A	SIDIIs	

Current Date : 12/6/2011

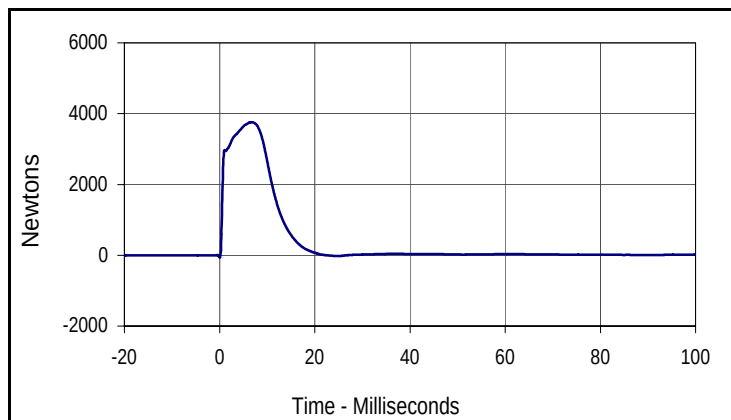
Current Time : 20:25:12

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

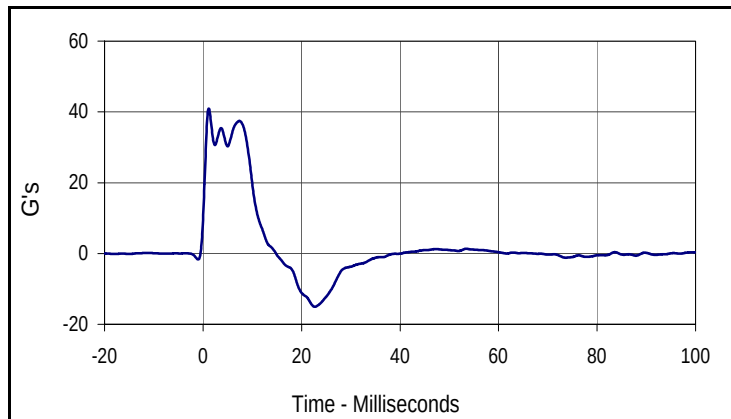
Test Date: 3/5/13
 Test I.D.: 307ACET053



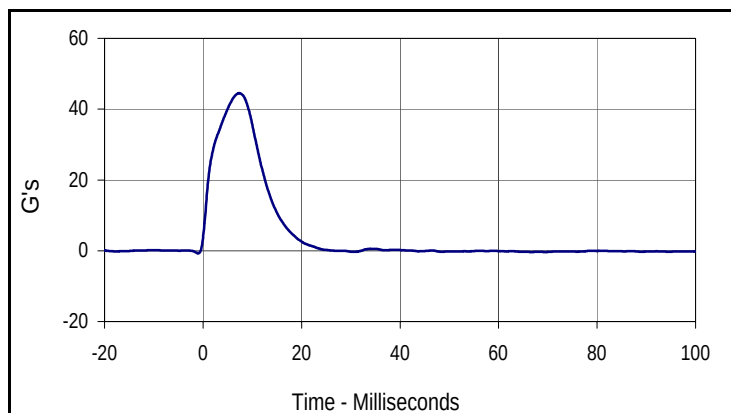
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	545	Pass
Temperature During Soak	Max	20.6 to 22.2	21.8	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	30.6	Pass
	Min		28.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.3	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.68	Pass
Peak Acetabulum Force Y	Newtons	3600 to 4300	3760.0	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	37.4	Pass
Peak Impactor Acceleration	G's	38 to 47	44.5	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3760.0	6.7	-67.0	0.1



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
41.0	1.2	-15.1	22.7



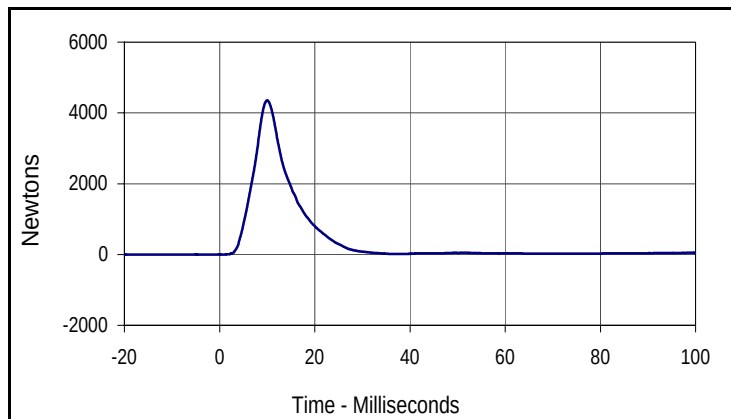
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
44.5	7.3	-0.7	-1.0

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

Test Date: 3/5/13
 Test I.D.: 307PL053



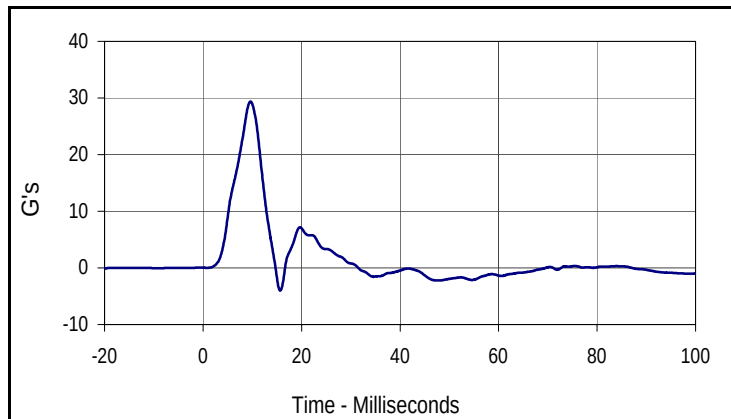
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	600	Pass
Temperature During Soak	Max	20.6 to 22.2	21.8	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	30.6	Pass
	Min		28.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.3	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.29	Pass
Peak Iliac Force	Newtons	4100 to 5100	4355.5	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	29.4	Pass
Peak Impactor Acceleration	G's	36 to 45	40.4	Pass
Overall Test Results			Pass	



Curve Description

Pelvis Iliac Force

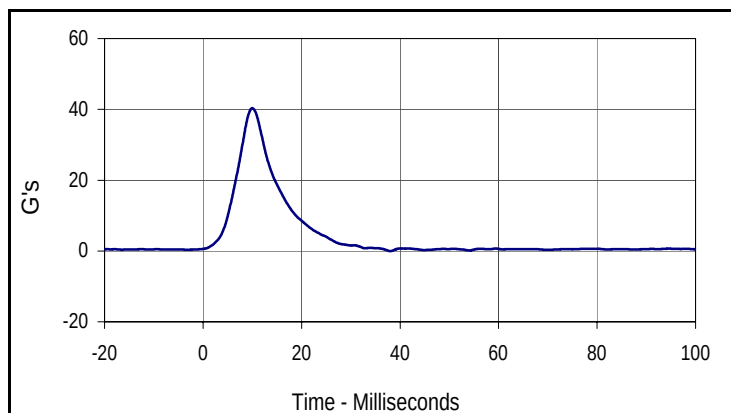
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4355.5	10.0	-1.5	-6.1



Curve Description

Pelvis Y Acceleration

Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
29.4	9.6	-4.0	15.7



Curve Description

Impactor Acceleration

Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
40.4	10.0	0.0	38.0

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

Test Program: ES2re External Measurements
 ATD Serial No.: F035

Test Date: 4/2/13
 Test I.D.: N/A



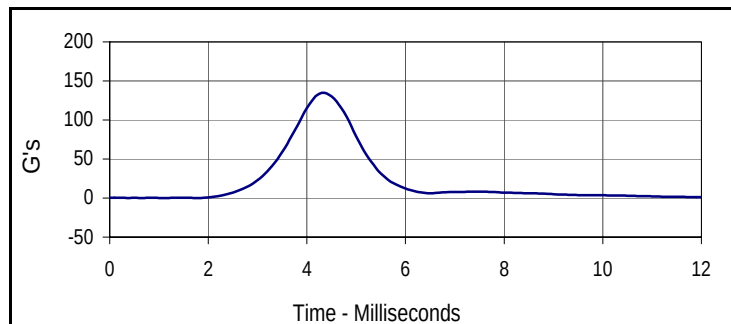
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	30.3	Pass
1	Sitting Height	mm	900 - 918	907	Pass
2	Seat to Shoulder Joint	mm	558 - 572	564	Pass
3	Seat to Lower Face of Thoracic Spine Box	mm	346 - 356	350	Pass
4	Seat to Hip Joint (Center of Bolt)	mm	97 - 103	100	Pass
5	Sole to Seat, Sitting	mm	333 - 451	389	Pass
6	Head Width	mm	152 - 158	155	Pass
7	Shoulder / Arm Width	mm	461 - 479	470	Pass
8	Thorax Width	mm	322 - 332	324	Pass
9	Abdomen Width	mm	273 - 287	280	Pass
10	Pelvis Lap Width	mm	359 - 373	365	Pass
11	Head Depth	mm	196 - 206	202	Pass
12	Thorax Depth	mm	262 - 272	269	Pass
13	Abdomen Width	mm	194 - 204	198	Pass
14	Pelvis Depth	mm	235 - 245	239	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	611	Pass
Overall Test Results					Pass

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

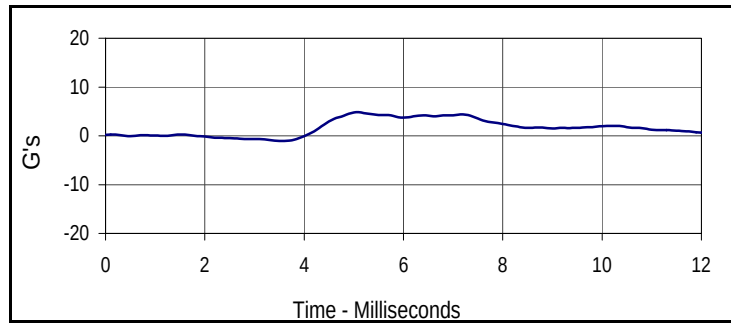
Test Date: 4/2/13
 Test I.D.: F035HD047



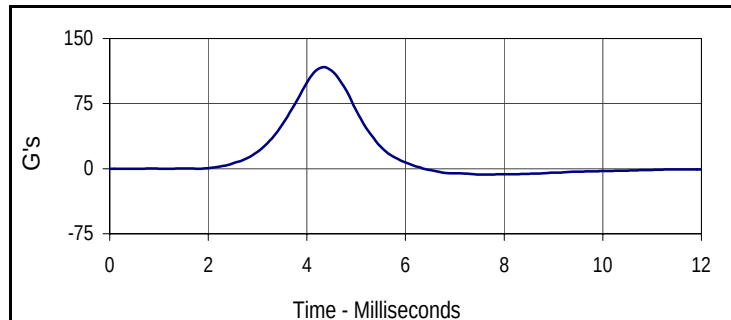
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	325	Pass
Temperature During Soak	Max	20.6 to 22.2	21.5	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	30.4	Pass
	Min		29.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.8	Pass
Peak Head Resultant Acceleration	G's	125 to 155	134.6	Pass
Peak Head X Acceleration	G's	≤15	4.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	6.1	Pass
Overall Test Results				Pass



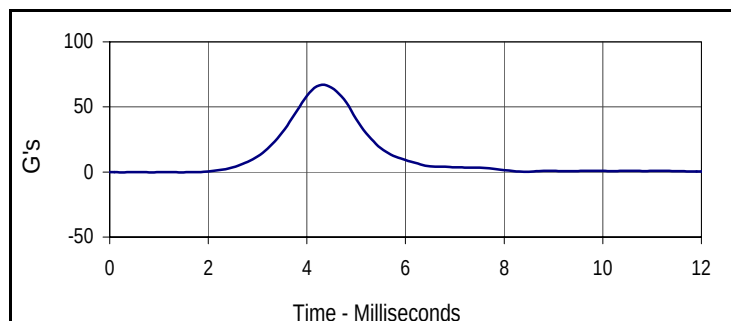
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
134.6	4.3	0.0	1.8



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
4.8	5.1	-1.1	3.6



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
116.7	4.3	-6.8	7.6



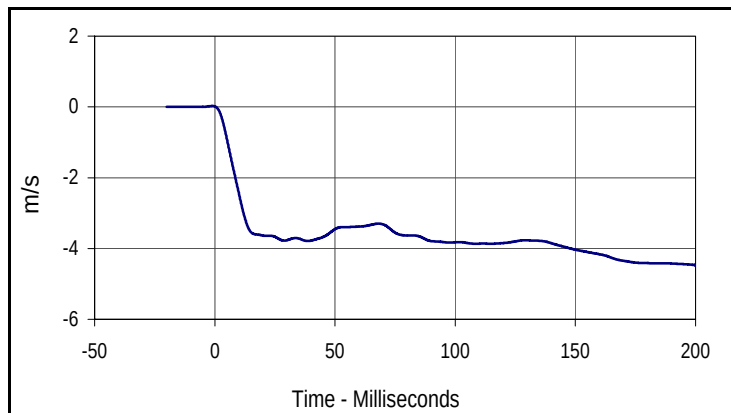
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
67.1	4.3	-0.3	1.4

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

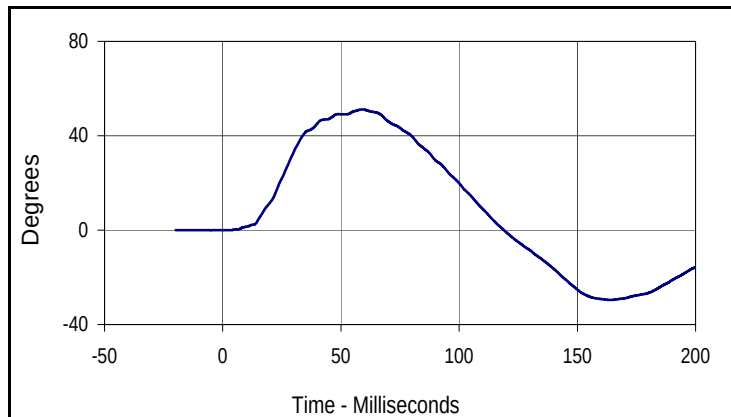
Test Date: 4/2/13
 Test I.D.: F035NB047



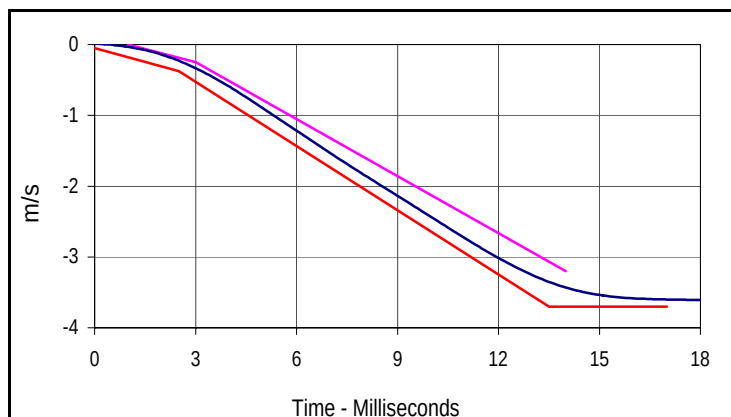
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	365	Pass
Temperature During Soak	Max	20.6 to 22.2	21.5	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	30.4	Pass
	Min		29.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.7	Pass
Pendulum Velocity	m/s	3.3 to 3.5	3.39	Pass
Headform Flexion	Max	49 to 59	51.2	Pass
	Time	54 to 66	59.2	Pass
Headform Flexion Decay (Peak to Zero)	msec	53 to 88	59.7	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	-4.5	200.0



Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
51.2	59.2	-29.6	164.2



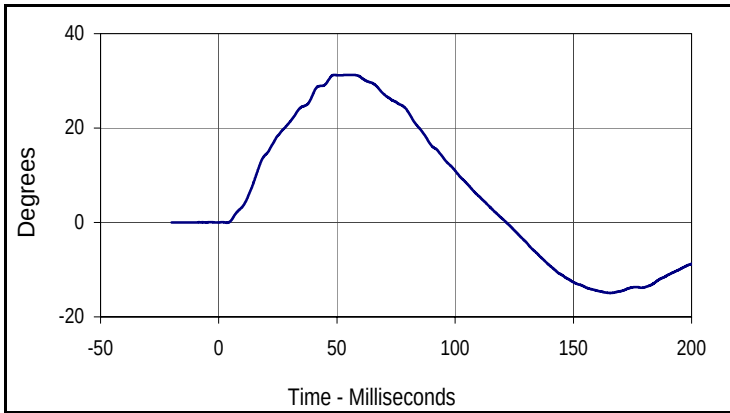
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.0	-4.5	200.0

Velocity Corridors

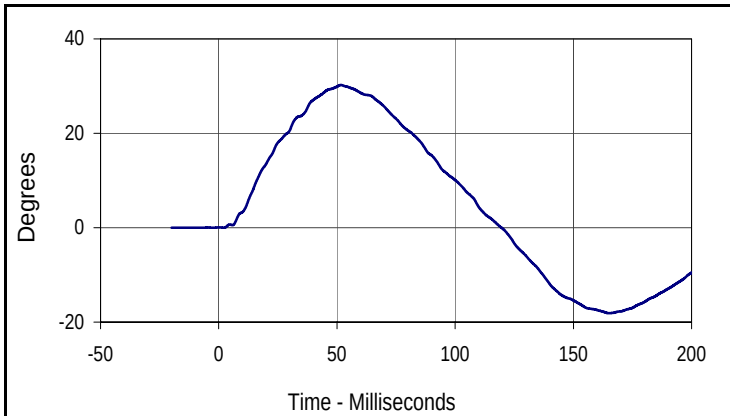
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.0	-0.03	2.5	-0.375
14.0	-3.20	13.5	-3.70
		17.0	-3.70

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

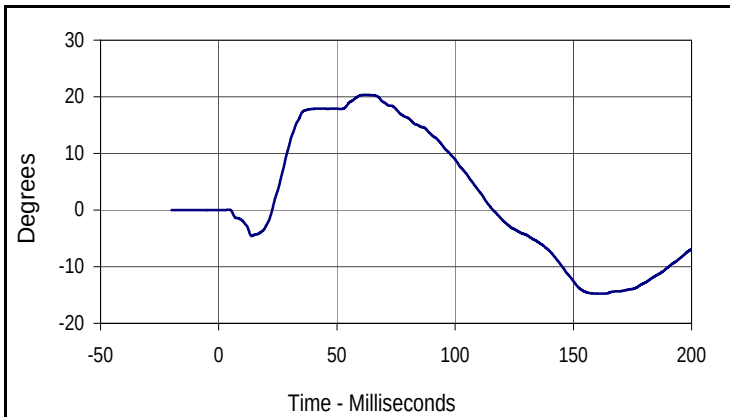
Test Date: 4/2/13
 Test I.D.: F035NB047



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
31.3	56.4	-14.9	165.5



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
30.2	51.7	-18.1	164.9



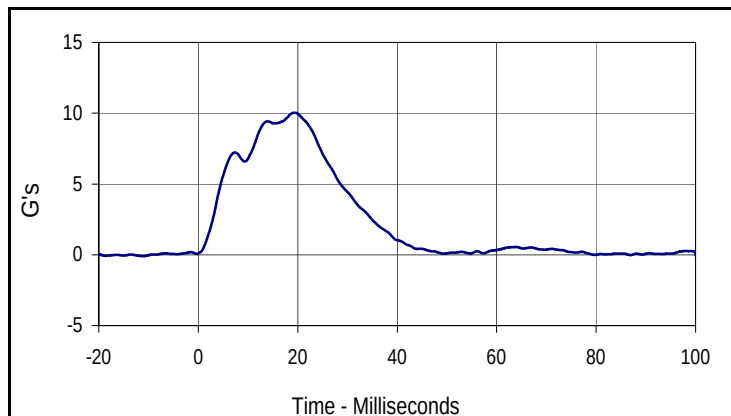
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
20.3	62.7	-14.7	162.7

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

Test Date: 4/2/13
 Test I.D.: F035SH047



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	400	Pass
Temperature During Soak	Max	20.6 to 22.2	21.5	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	30.4	Pass
	Min		29.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.8	Pass
Pendulum Speed	m/s	4.2 to 4.4	4.23	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	10.0	Pass
Overall Test Results				Pass



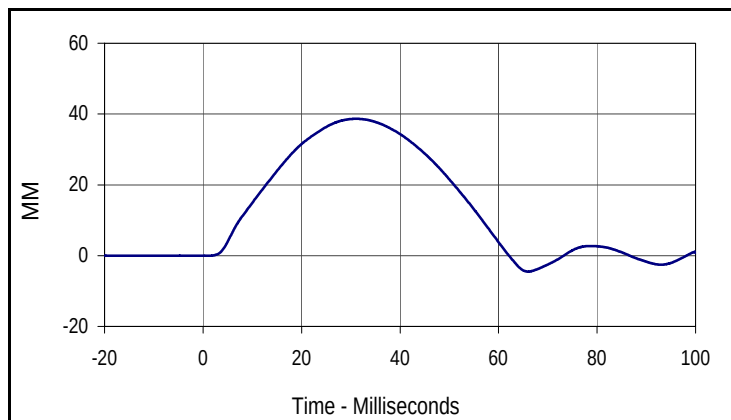
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
10.0	19.4	-0.1	-11.1

Test Program: ES2re Thorax - Rib Drop Test
 ATD Serial No.: F035 Rib # 1

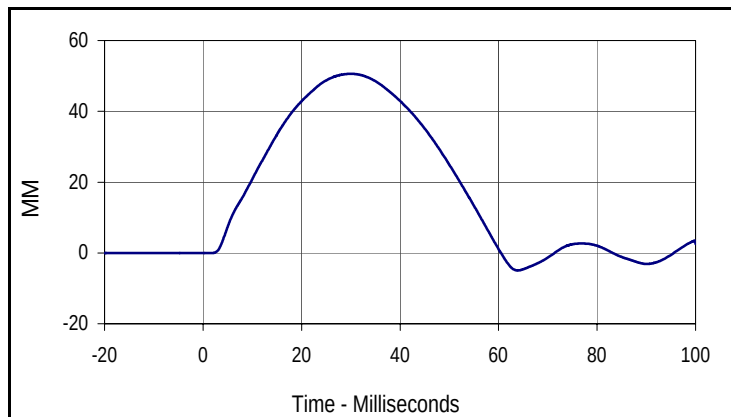
Test Date: 4/2/13
 Test I.D.: F035RB1047



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	425	Pass
Temperature During Soak	Max	20.6 to 22.2	21.5	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	30.4	Pass
	Min		29.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.8	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	38.6	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	50.6	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
38.6	31.1	-4.5	66.0



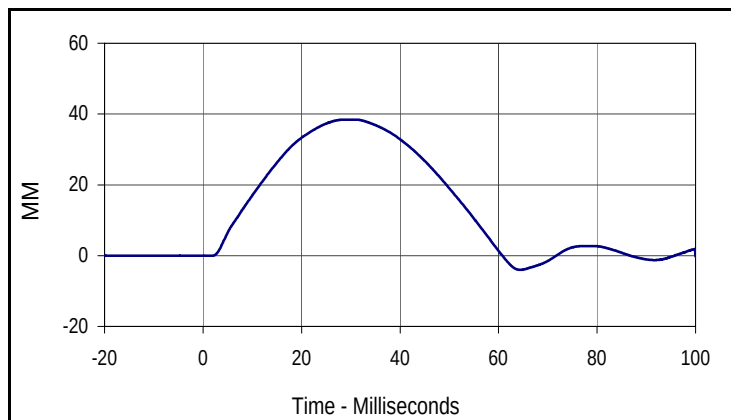
Curve Description			
Upper Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
50.6	30.0	-5.0	63.9

Test Program: ES2re Thorax - Rib Drop Test
 ATD Serial No.: F035 Rib # 2

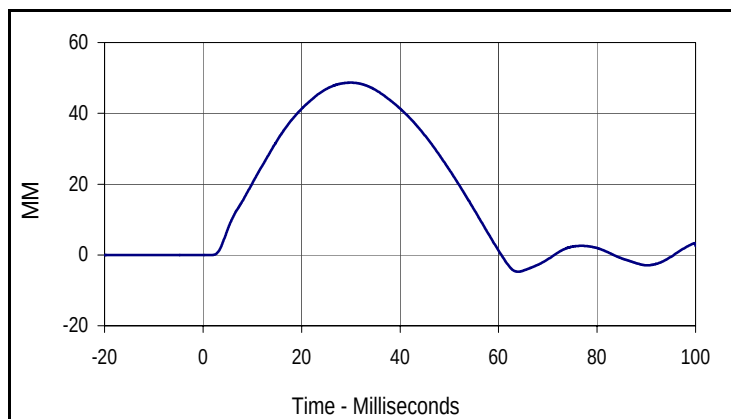
Test Date: 4/2/13
 Test I.D.: F035RB2047



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	440	Pass
Temperature During Soak	Max	20.6 to 22.2	21.5	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	30.4	Pass
	Min		29.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.8	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	38.4	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	48.7	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
38.4	30.6	-4.0	64.4



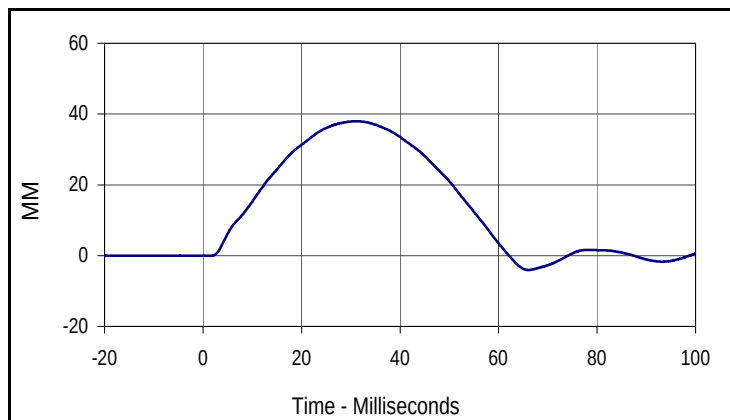
Curve Description			
Middle Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
48.7	30.0	-4.8	63.9

Test Program: ES2re Thorax - Rib Drop Test
 ATD Serial No.: F035 Rib # 3

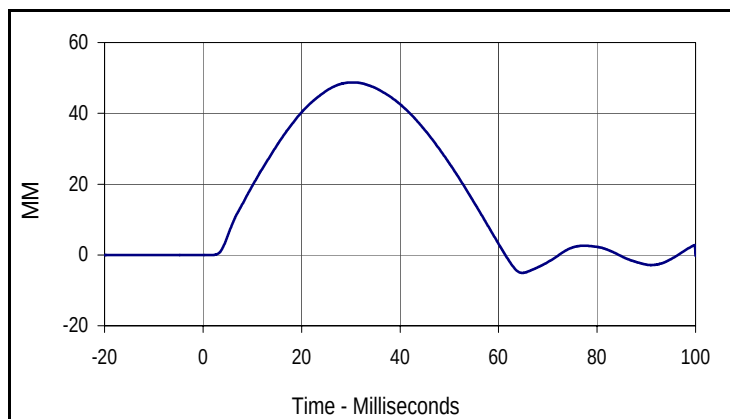
Test Date: 4/2/13
 Test I.D.: F035RB3047



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	455	Pass
Temperature During Soak	Max	20.6 to 22.2	21.5	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	30.4	Pass
	Min		29.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.8	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	38.0	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	48.7	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
38.0	31.1	-4.1	66.1



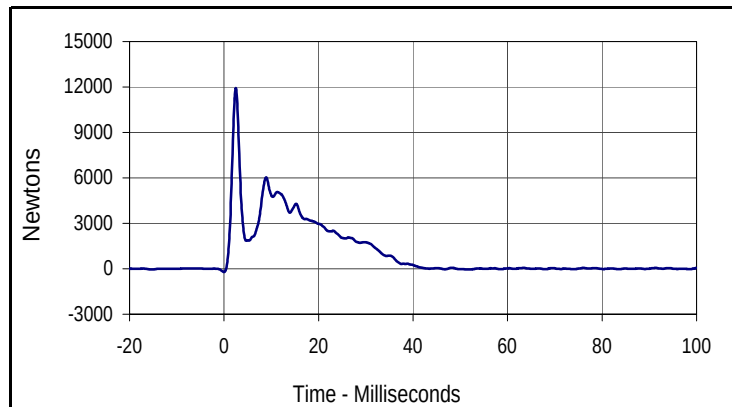
Curve Description			
Lower Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
48.7	30.4	-5.1	64.8

Test Program: ES2re Thorax - Full Body Impact Test
 ATD Serial No.: F035

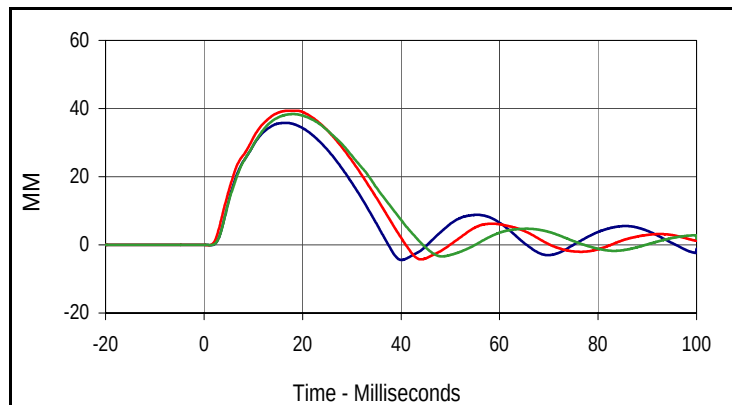
Test Date: 4/2/13
 Test I.D.: F035TH047



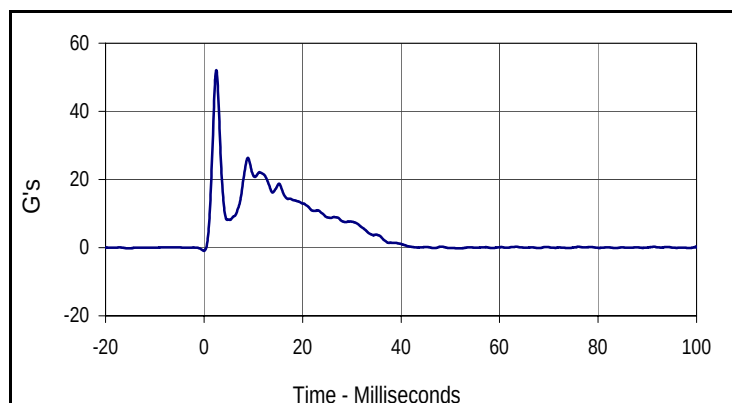
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	495	Pass
Temperature During Soak	Max °C	20.6 to 22.2	21.5	Pass
	Min °C		21.1	Pass
Humidity During Soak	Max %	10.0 to 70.0	30.4	Pass
	Min %		29.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.7	Pass
Peak Impactor Velocity	m/s	5.4 to 5.6	5.45	Pass
Peak Impactor Force	N	5100 to 6200	6037.1	Pass
	msec	> 6.0 msec	8.9	Pass
Peak Upper Rib Deflection	mm	34 to 41	35.8	Pass
Peak Middle Rib Deflection	mm	37 to 45	39.4	Pass
Peak Lower Rib Deflection	mm	37 to 44	38.4	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
11939.4	2.5	-212.3	0.0



Curve Description			
Upper, Middle, Lower Rib Deflections			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max (Upper)	Time	Min (Upper)	Time
35.8	16.5	-4.4	40.1
Max (Middle)	Time	Min (Middle)	Time
39.4	18.4	-4.3	44.1
Max (Lower)	Time	Min (Lower)	Time
38.4	18.0	-3.4	48.3



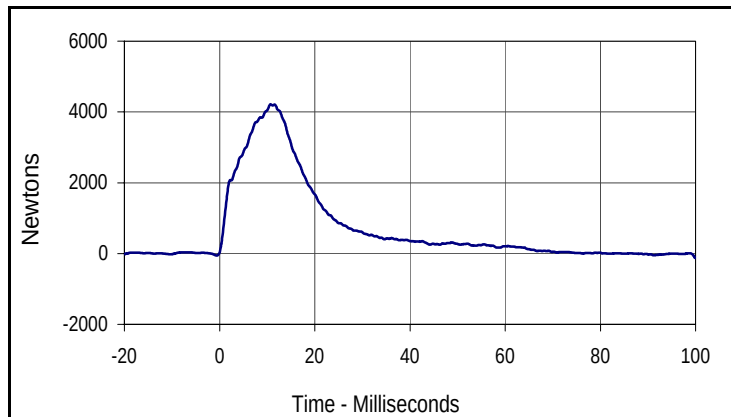
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
52.1	2.5	-0.9	0.0

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

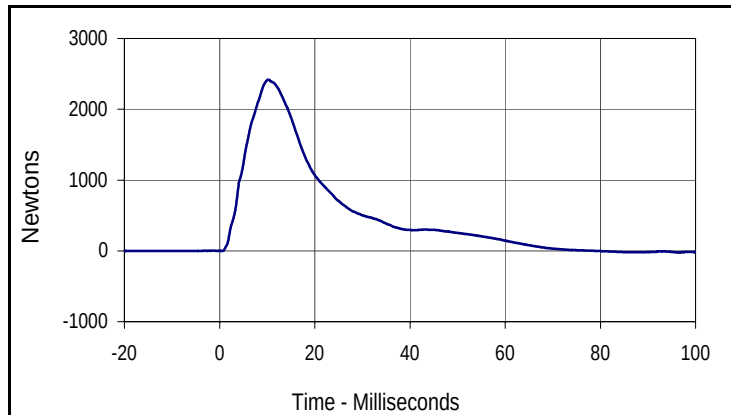
Test Date: 4/2/13
 Test I.D.: F035ABD047



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	515	Pass
Temperature During Soak	Max	20.6 to 22.2	21.5	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	30.4	Pass
	Min		29.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.7	Pass
Probe Velocity	m/s	3.9 to 4.1	3.92	Pass
Peak Impactor Force	N	4000 to 4800	4215.3	Pass
	msec	10.6 to 13.0	10.7	Pass
Sum of Abdominal Forces	N	2200 to 2700	2419.2	Pass
	msec	10.0 to 12.3	10.3	Pass
Overall Test Results				Pass



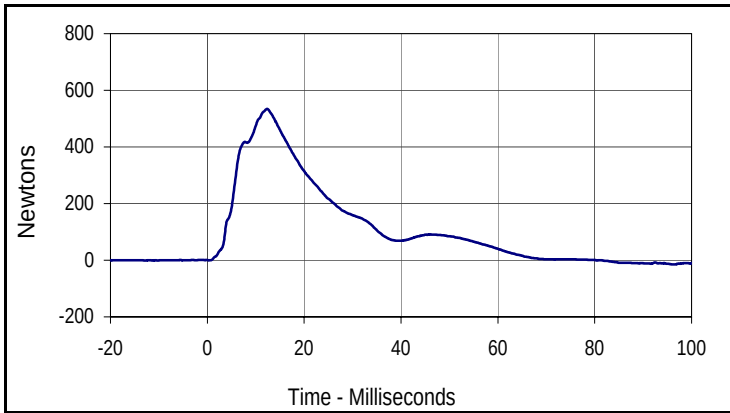
Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4215.3	10.7	-130.5	99.9



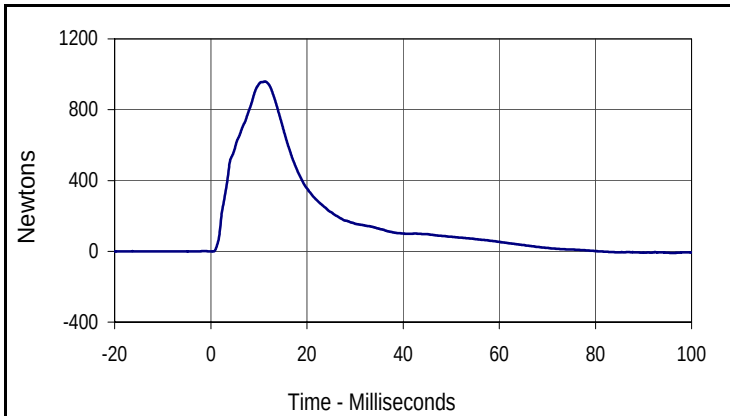
Curve Description			
Abdomen Sum Resultant			
Plot No.	Type	SAE Class	Units
002	RES	600	Newtons
Max	Time	Min	Time
2419.2	10.3	-22.3	96.4

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

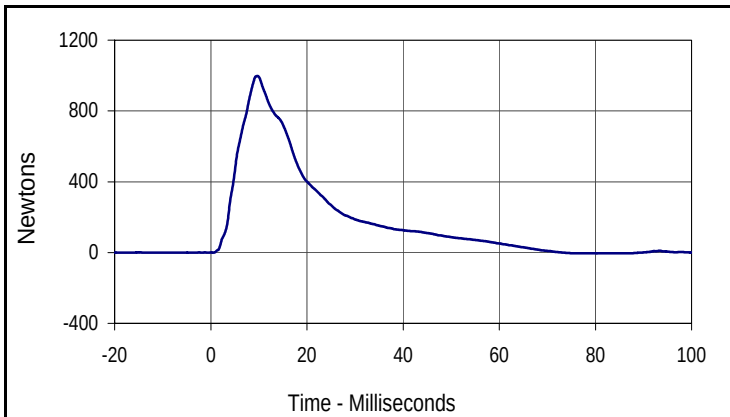
Test Date: 4/2/13
 Test I.D.: F035ABD047



Curve Description			
Front Abdomen Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
534.0	12.3	-14.7	96.5



Curve Description			
Middle Abdomen Force			
Plot No.	Type	SAE Class	Units
004	FIL	600	Newtons
Max	Time	Min	Time
959.9	11.3	-9.7	96.2



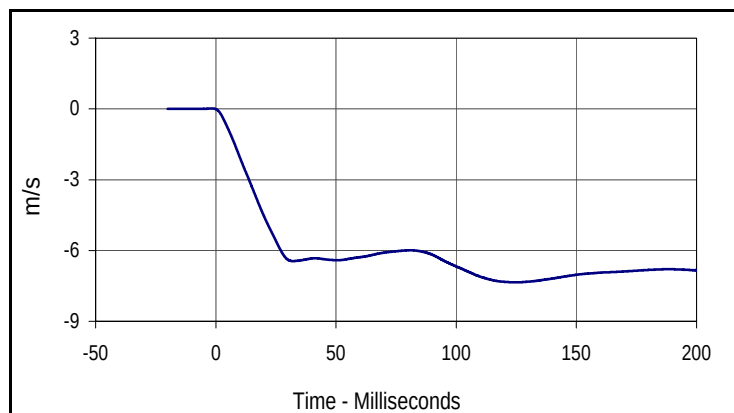
Curve Description			
Rear Abdomen Force			
Plot No.	Type	SAE Class	Units
005	FIL	600	Newtons
Max	Time	Min	Time
998.0	9.7	-4.9	82.7

Test Program: ES2re Lumbar Flexion Test
 ATD Serial No.: F035

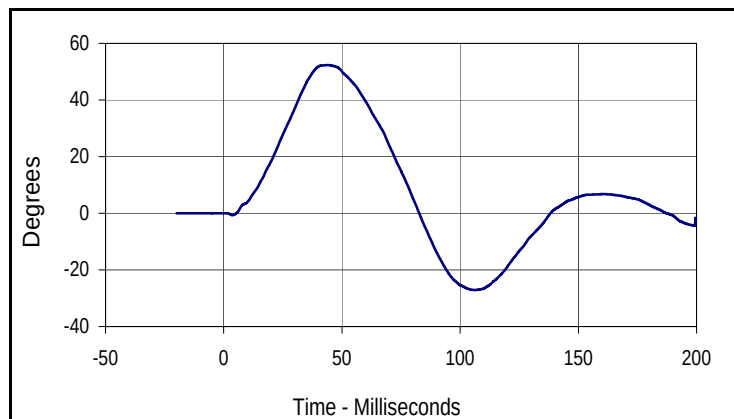
Test Date: 4/2/13
 Test I.D.: F035LB047



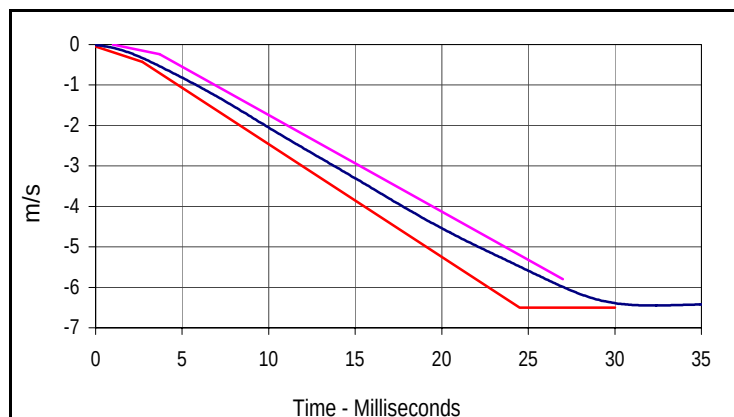
Tested Parameter	Units	Specification	Result	Pass/Fail
Lumbar Spine Assembly Soak Time	Minutes	≥240	570	Pass
Temperature During Soak	Max	20.6 to 22.2	21.5	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	30.4	Pass
	Min		29.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.7	Pass
Pendulum Velocity	m/s	5.95 to 6.15	5.98	Pass
Headform Rotation	Max	45 to 55	52.3	Pass
	Time	39 to 53	44.5	Pass
Time of Decay to Zero Angle from Peak	msec	37 to 57	41.8	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	-1.0	-7.3	125.4



Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	180	Degrees
Max	Time	Min	Time
52.3	44.5	-27.1	106.8



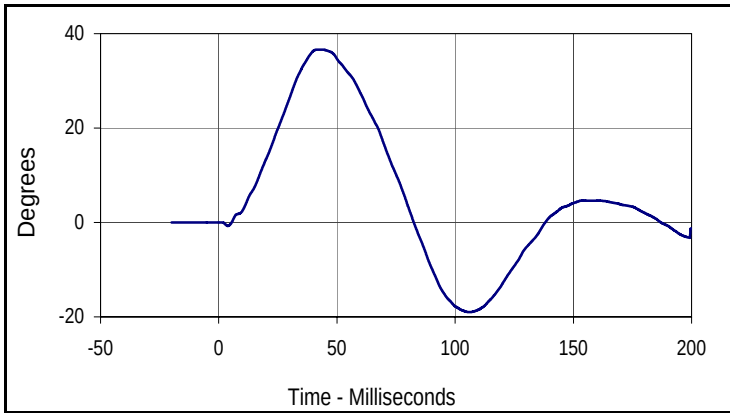
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.0	-7.3	125.4

Velocity Corridors

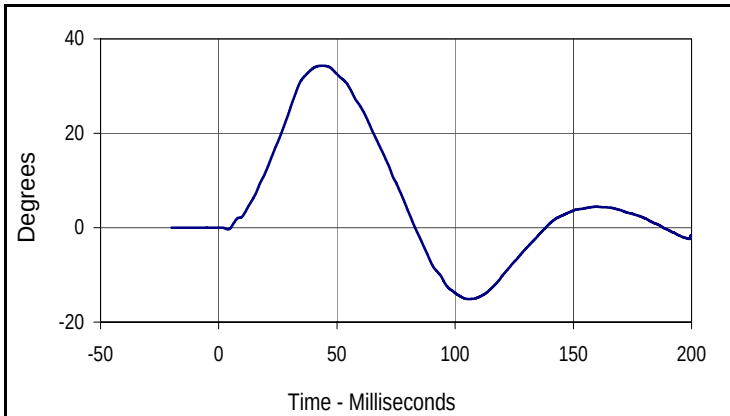
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.7	-0.24	2.7	-0.425
27.0	-5.80	24.5	-6.50
		30.0	-6.50

Test Program: ES2re Lumbar Flexion Test
 ATD Serial No.: F035

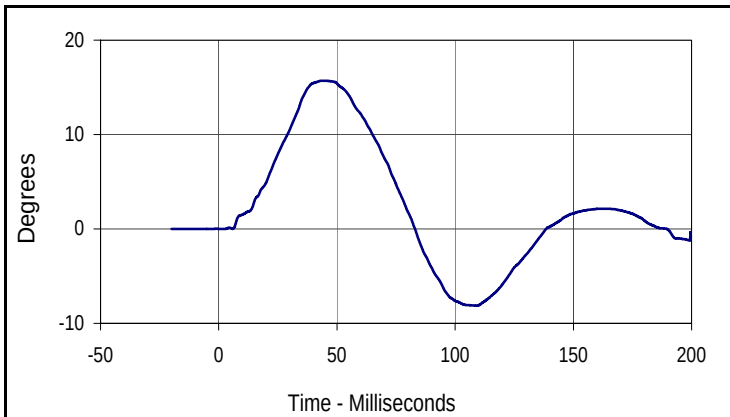
Test Date: 4/2/13
 Test I.D.: F035LB047



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
36.6	44.5	-19.0	106.6



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
34.3	44.3	-15.1	106.4



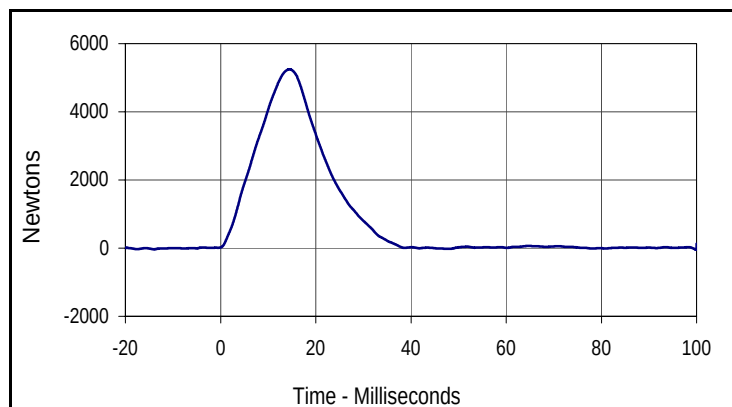
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
15.7	44.1	-8.1	109.7

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

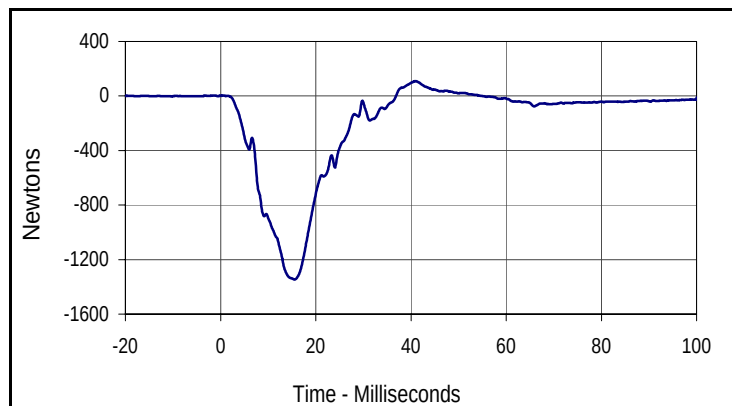
Test Date: 4/2/13
 Test I.D.: F035PL047



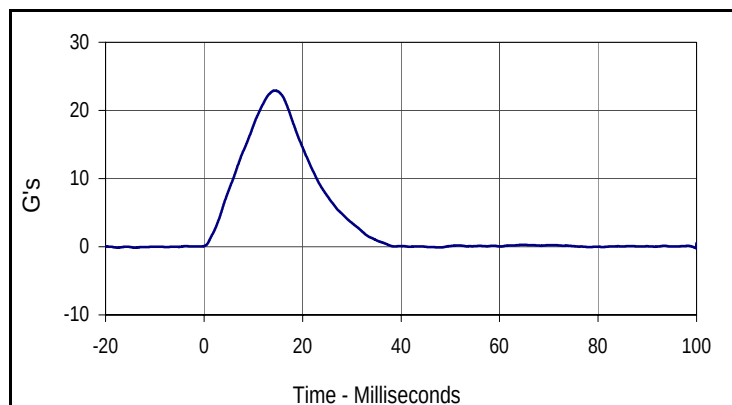
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	630	Pass
Temperature During Soak	Max	20.6 to 22.2	21.5	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	30.4	Pass
	Min		29.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.8	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.24	Pass
Peak Impactor Force	N	4700 to 5400	5247.3	Pass
	msec	11.8 to 16.1	14.4	Pass
Peak Pubic Symphysis Load	N	-1230 to -1590	-1346.4	Pass
	msec	12.2 to 17.0	15.6	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
5247.3	14.4	-45.0	99.9



Curve Description			
Pubic Symphysis Force Y			
Plot No.	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
109.0	41.0	-1346.4	15.6



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
22.9	14.4	-0.2	99.9

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

Test Date: 4/3/13
 Test I.D.: N/A



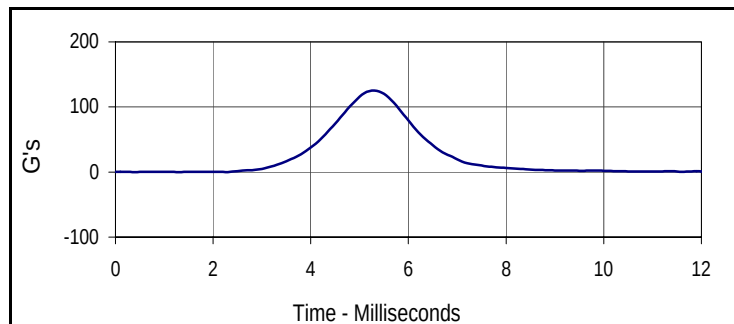
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
A	Sitting Height	mm	772 - 788	778	Pass
B	Shoulder Pivot Height	mm	437 - 453	443	Pass
C	H-Point Height	mm	79 - 89	85	Pass
D	H-Point from Seatback	mm	141 - 151	144	Pass
E	Shoulder Pivot from Backline	mm	97 - 107	102	Pass
F	Thigh Clearance	mm	119 - 135	128	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	185	Pass
J	Head Circumference	mm	541 - 551	546	Pass
K	Buttock to Knee Length	mm	514 - 540	525	Pass
L	Popliteal Height	mm	343 - 369	351	Pass
M	Knee Pivot to Floor Height	mm	392 - 409	400	Pass
N	Buttock Popliteal Length	mm	416 - 442	432	Pass
O	Chest Depth w/o Jacket	mm	195 - 211	205	Pass
P	Foot Length	mm	216 - 232	223	Pass
Q	Hip Breadth with Pelvic Plug	mm	313 - 323	319	Pass
R	Arm Length	mm	249 - 259	254	Pass
S	Knee Joint to Seatback	mm	477 - 493	483	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	872	Pass
Z	Waist Circumference	mm	760 - 791	774	Pass
Overall Test Results					Pass

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

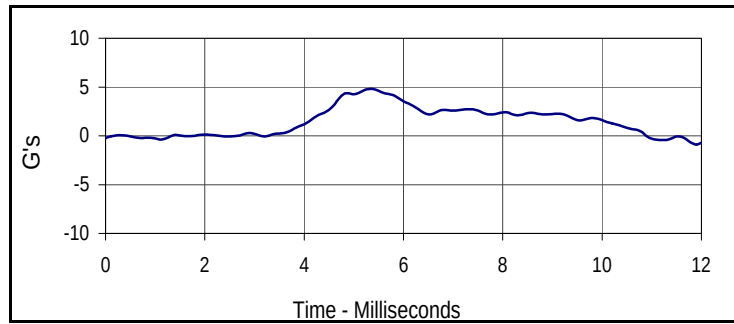
Test Date: 4/3/13
 Test I.D.: 307HD054



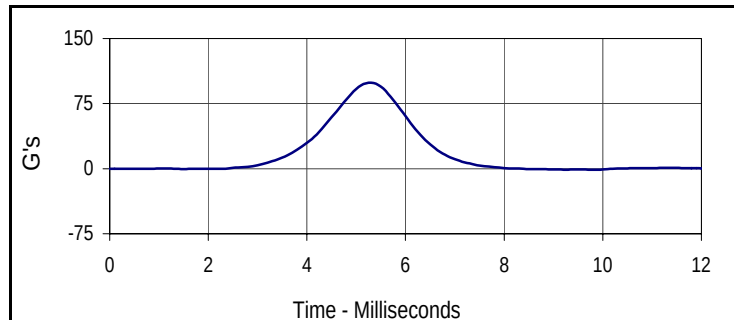
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	275	Pass
Temperature During Soak	Max	18.9 to 25.6	21.8	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	30.6	Pass
	Min		28.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.7	Pass
Peak Head Resultant Acceleration	G's	115 to 137	125.1	Pass
Peak Head X Acceleration	G's	<15	4.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	2.0	Pass
Overall Test Results				Pass



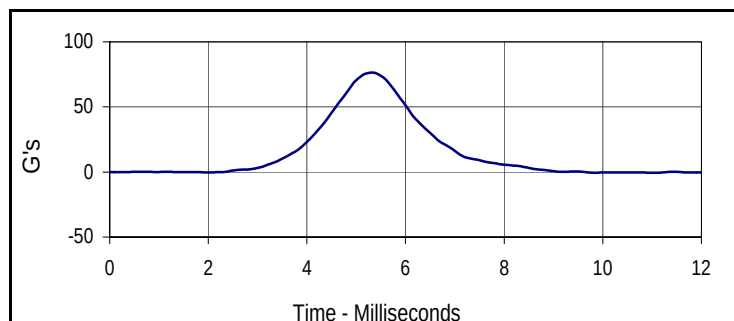
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
125.1	5.3	0.0	2.3



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
4.8	5.3	-0.4	1.1



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
99.0	5.3	-1.1	9.8



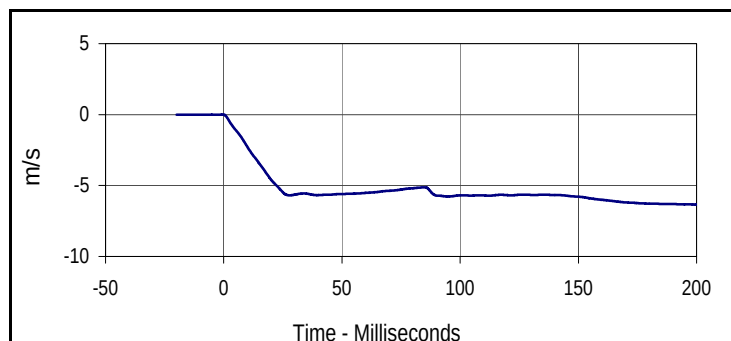
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
76.3	5.3	-0.5	11.1

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

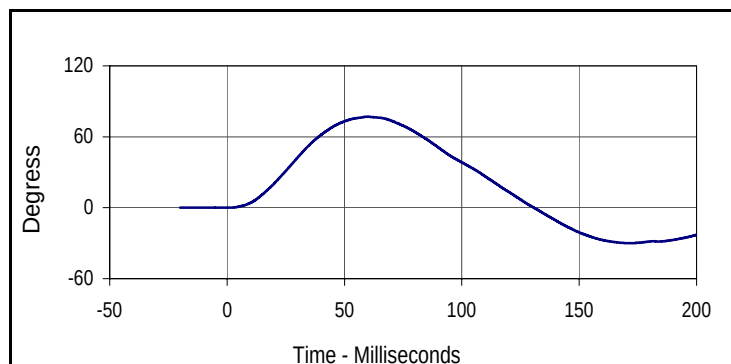
Test Date: 4/3/13
 Test I.D.: 307NB054



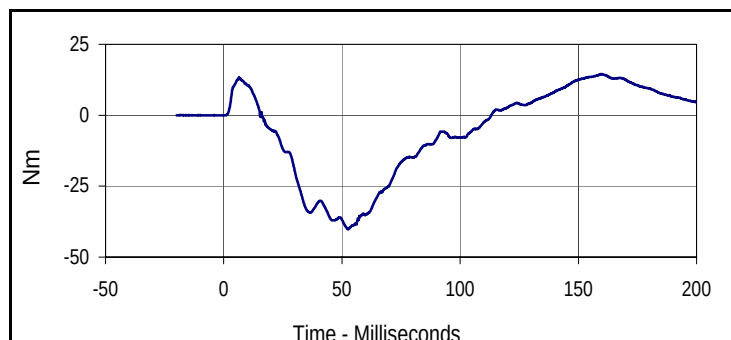
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	330	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.8	Pass
	Min	°C		20.8	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.6	Pass
	Min	%		28.6	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.6	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.55	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.28	Pass
	15 msec	m/s	-3.30 to -4.10	-3.43	Pass
	20 msec	m/s	-4.40 to -5.40	-4.59	Pass
	25 msec	m/s	-5.40 to -6.10	-5.47	Pass
	25-100 msec	m/s	-5.50 to -6.20	-5.77	Pass
D-Plane Rotation	Max	Degrees	71 to 81	77.0	Pass
	Time	msec	50 to 70	59.8	Pass
Peak Occipital Condyle Moment		Nm	-36 to -44	-40.2	Pass
Decaying Moment Time to Cross 0 Nm		msec	102 to 126	113.2	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	-0.5	-6.3	200.0



Curve Description			
Maximum Translation Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
77.0	59.8	-29.9	171.5



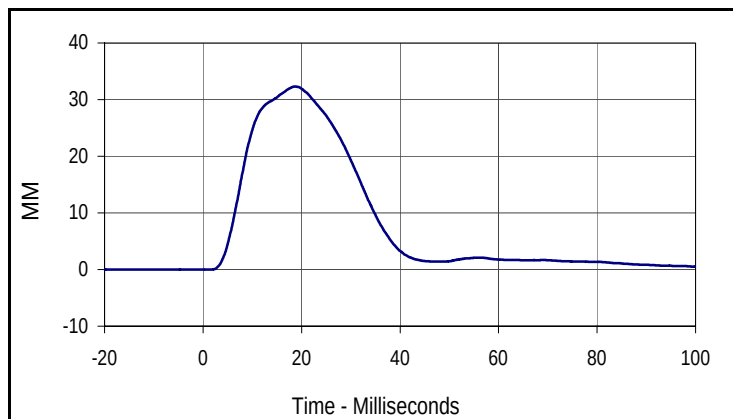
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
14.5	159.4	-40.2	52.6

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

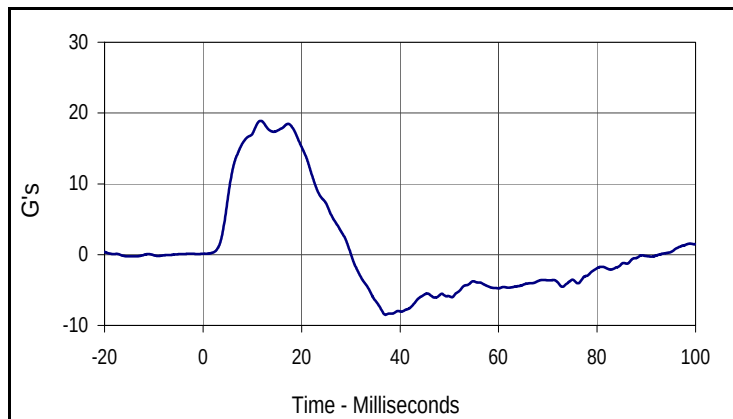
Test Date: 4/3/13
 Test I.D.: 307SH054



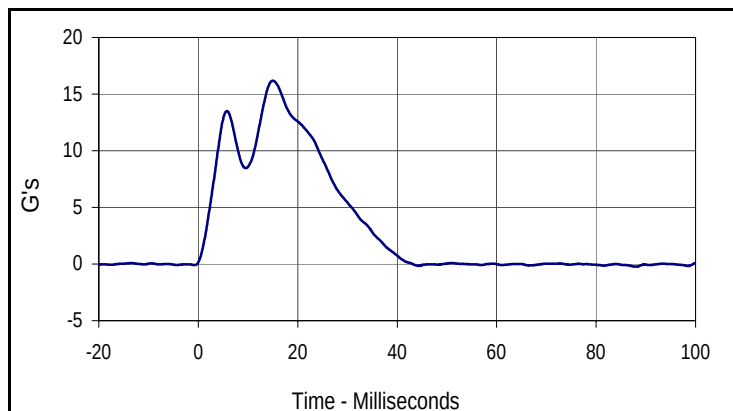
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	365	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.8	Pass
	Min	°C		20.8	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.6	Pass
	Min	%		28.6	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.7	Pass
Impactor Velocity		m/s	4.20 to 4.40	4.32	Pass
Peak Shoulder Deflection		mm	28 to 37	32.3	Pass
Peak Lateral Spine Acceleration Y		G's	17 to 22	18.9	Pass
Peak Impactor Acceleration		G's	13 to 18	16.2	Pass
Overall Test Results				Pass	



Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
32.3	18.6	0.0	-19.2



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
18.9	11.7	-8.5	37.0



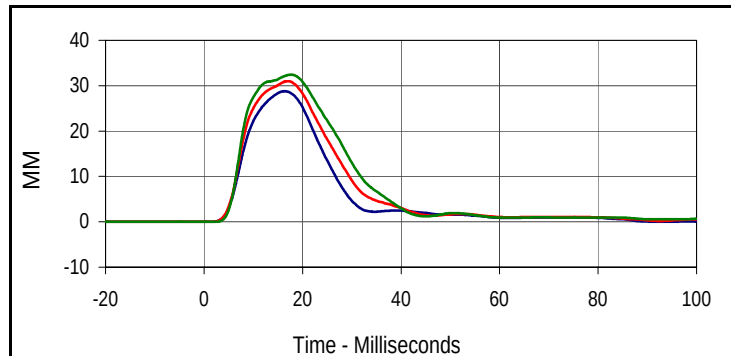
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
16.2	15.0	-0.2	88.1

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

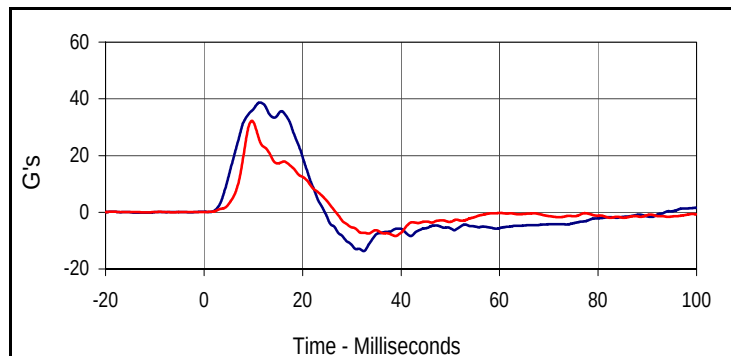
Test Date: 4/3/13
 Test I.D.: 307TWA054



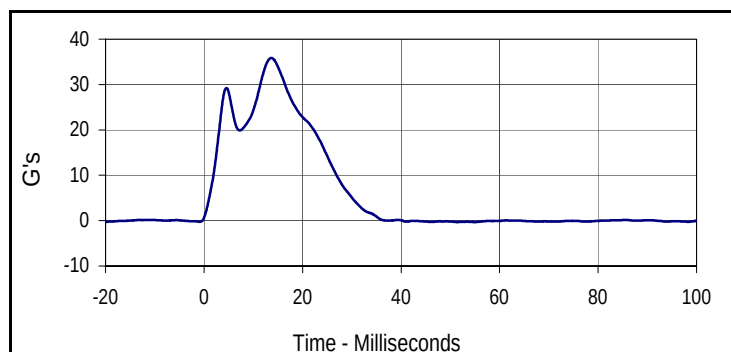
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	385	Pass
Temperature During Soak	Max	20.6 to 22.2	21.8	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	30.6	Pass
	Min		28.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.7	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.70	Pass
Peak Shoulder Deflection	mm	31 to 40	37.4	Pass
Peak Upper Thorax Rib Deflection	mm	25 to 32	28.8	Pass
Peak Middle Thorax Rib Deflection	mm	30 to 36	31.0	Pass
Peak Lower Thorax Rib Deflection	mm	32 to 38	32.4	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	38.7	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	32.2	Pass
Peak Impactor Acceleration	G's	30 to 36	35.8	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
28.8	16.4	0.0	-1.4
Middle Thorax Deflection			
Max	Time	Min	Time
31.0	16.8	0.0	-0.9
Lower Thorax Deflection			
Max	Time	Min	Time
32.4	17.6	0.0	-19.0



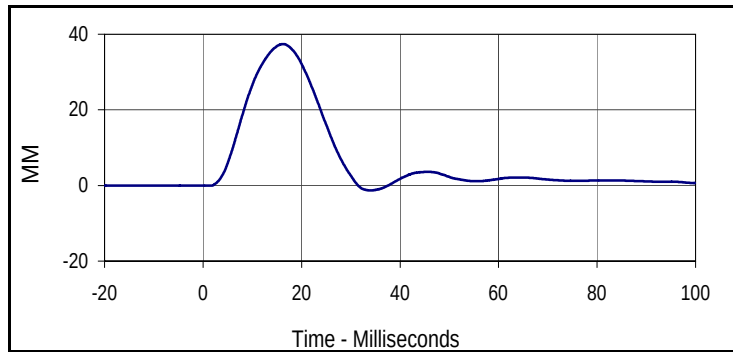
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
38.7	11.4	-13.7	32.4
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
32.2	9.7	-8.4	38.9



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
35.8	13.7	-0.3	55.0

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

Test Date: 4/3/13
 Test I.D.: 307TWA054



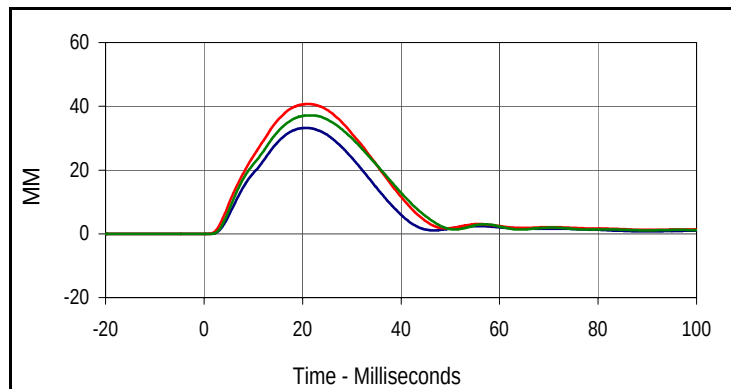
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	MM
Max	Time	Min	Time
37.4	16.3	-1.3	34.0

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

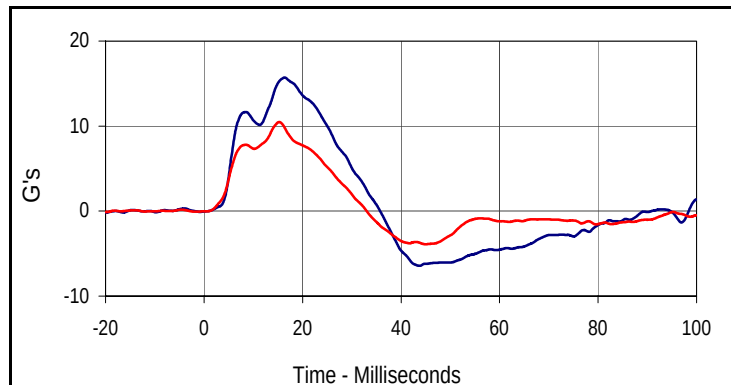
Test Date: 4/3/13
 Test I.D.: 307TWOA054



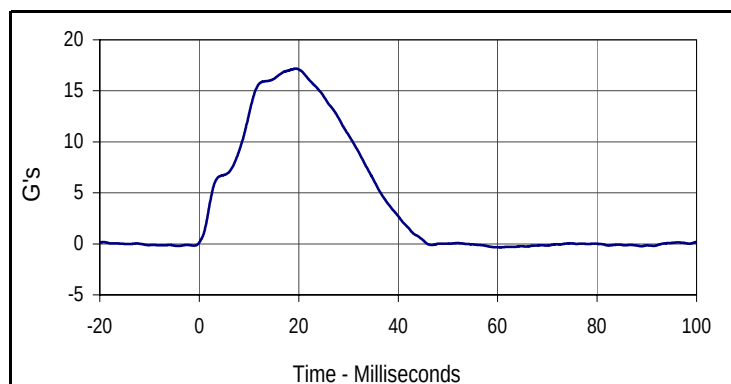
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	410	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.8	Pass
	Min	°C		20.8	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.6	Pass
	Min	%		28.6	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.6	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.36	Pass
Peak Upper Thorax Rib Deflection		mm	32 to 40	33.2	Pass
Peak Middle Thorax Rib Deflection		mm	39 to 45	40.7	Pass
Peak Lower Thorax Rib Deflection		mm	35 to 43	37.2	Pass
Peak Upper Spine Y Acceleration		G's	13 to 17	15.7	Pass
Peak Lower Spine Y Acceleration		G's	7 to 11	10.5	Pass
Peak Impactor Acceleration		G's	14 to 18	17.2	Pass
Overall Test Results				Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
33.2	20.6	0.0	-5.7
Middle Thorax Deflection			
Max	Time	Min	Time
40.7	21.0	0.0	-1.3
Lower Thorax Deflection			
Max	Time	Min	Time
37.2	21.3	0.0	-10.5



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.7	16.3	-6.4	43.7
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
10.5	15.3	-3.9	45.0



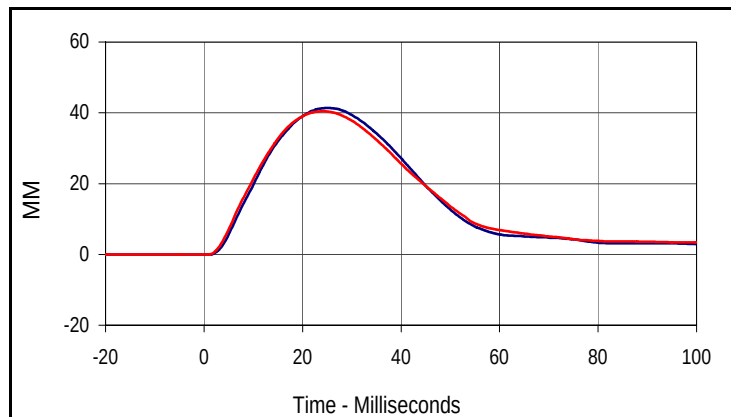
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
17.2	19.4	-0.3	60.5

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

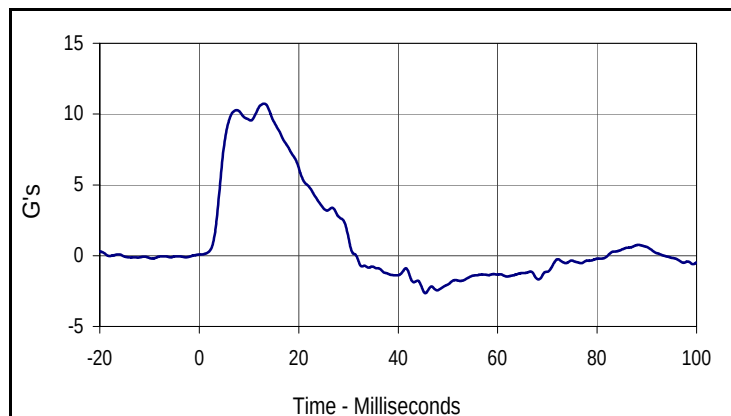
Test Date: 4/3/13
 Test I.D.: 307ABD054



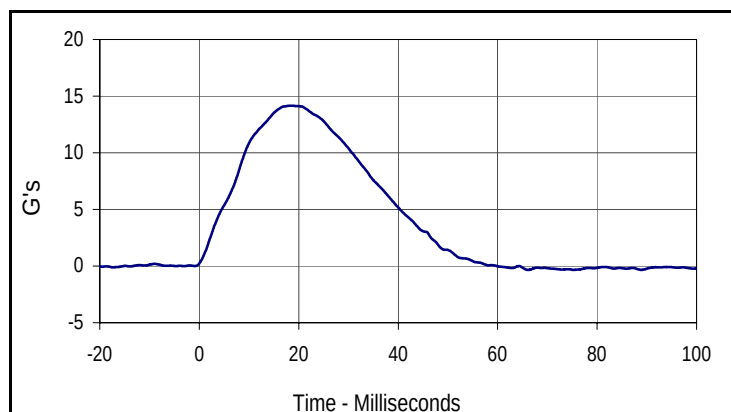
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	430	Pass
Temperature During Soak	Max	20.6 to 22.2	21.8	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	30.6	Pass
	Min		28.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.6	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.33	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	41.4	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	40.4	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	10.7	Pass
Peak Impactor Acceleration	G's	12 to 16	14.2	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
41.4	24.9	0.0	-18.2
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
40.4	24.2	0.0	-20.0



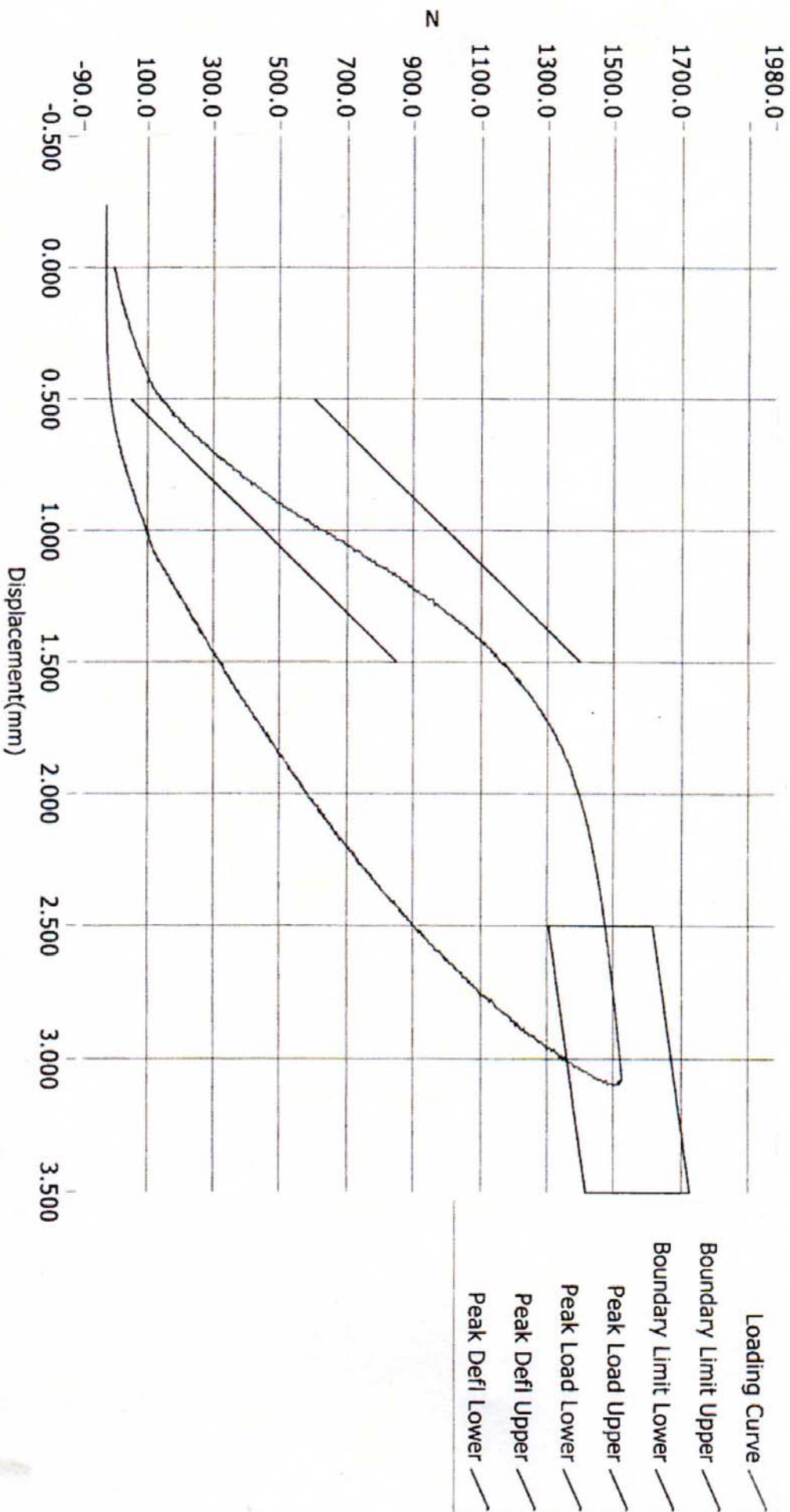
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
10.7	13.0	-2.6	45.4



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.2	18.6	-0.3	66.1

MD5311 POST TEST

Resultant Data - SIDIIs Plug Compression



ATD Calibration Lab

Test ID

Part Serial Number

Test Date

Test Time

49001

12/6/2011

11:37 PM

Cert ID

ATD Serial Number

ATD Type

N/A

SIDIIs

Current Date : 12/6/2011

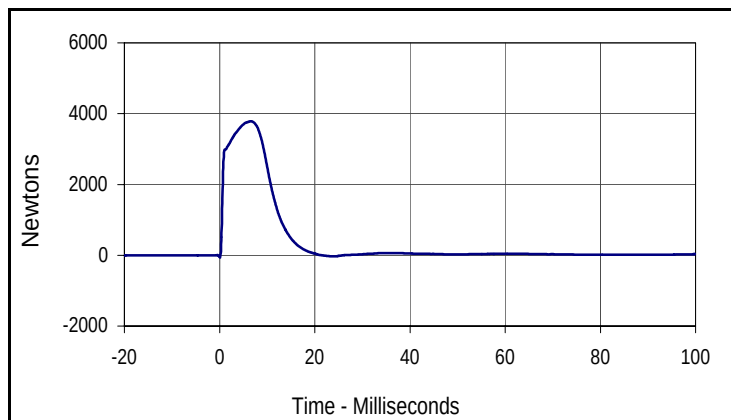
Current Time : 23:38:34

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

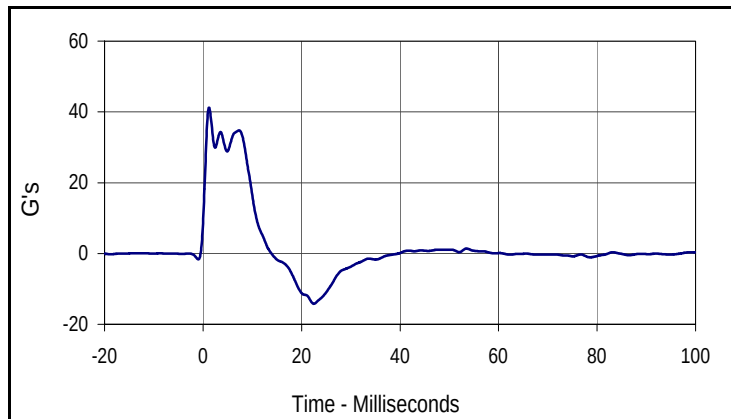
Test Date: 4/3/13
 Test I.D.: 307ACET054



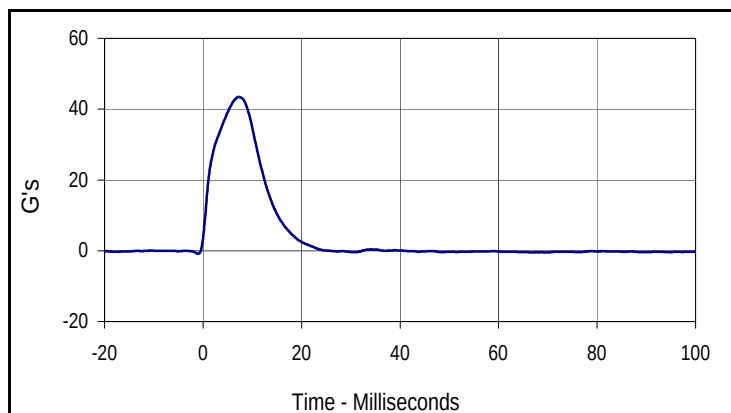
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	465	Pass
Temperature During Soak	Max	20.6 to 22.2	21.8	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	30.6	Pass
	Min		28.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.7	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.64	Pass
Peak Acetabulum Force Y	Newtons	3600 to 4300	3782.1	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	34.8	Pass
Peak Impactor Acceleration	G's	38 to 47	43.4	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3782.1	6.6	-67.8	0.1



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
41.2	1.2	-14.2	22.5



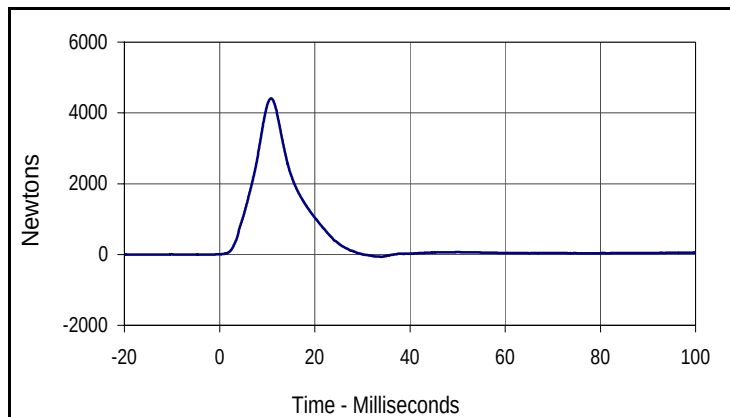
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
43.4	7.3	-0.8	-1.0

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

Test Date: 4/3/13
 Test I.D.: 307PL054



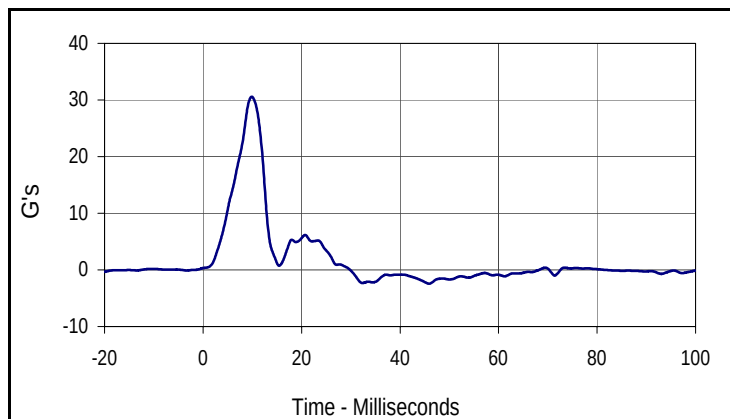
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	520	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.8	Pass
	Min	°C		20.8	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.6	Pass
	Min	%		28.6	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.6	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.38	Pass
Peak Iliac Force		Newtons	4100 to 5100	4409.6	Pass
Peak Pelvis Y Acceleration		G's	28 to 39	30.6	Pass
Peak Impactor Acceleration		G's	36 to 45	40.9	Pass
Overall Test Results				Pass	



Curve Description

Pelvis Iliac Force

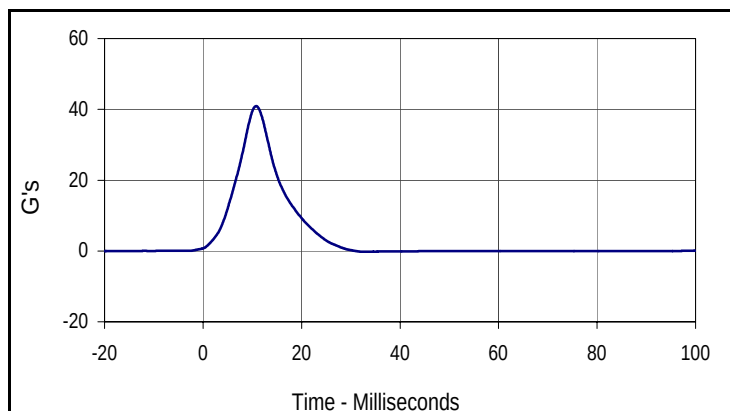
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4409.6	10.8	-62.6	34.1



Curve Description

Pelvis Y Acceleration

Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
30.6	9.9	-2.4	45.9



Curve Description

Impactor Acceleration

Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
40.9	10.8	-0.2	32.6

APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

TABLE 1 – Dummy Instrumentation (ES-2re)

			ES-2re S/N F035		
			Serial Number	Manufacturer	Calibration
Head Accelerometers		X	P58760	Endevco	8/30/12
		Y	P58763	Endevco	8/31/12
		Z	P52093	Endevco	8/31/12
Thorax Rib Displacement Potentiometers	Upper	Y	180	FTSS	6/22/12
	Middle	Y	177	FTSS	6/22/12
	Lower	Y	186	FTSS	6/22/12
Abdomen Load Cells	Forward	Y	1514	Denton	6/7/12
	Middle	Y	1510	Denton	6/7/12
	Rear	Y	1515	Denton	6/7/12
Lower Spine Accelerometers (T12)		X	P49165	Endevco	6/21/12
		Y	P49212	Endevco	6/21/12
		Z	P52113	Endevco	6/21/12
Pubic Symphysis Load Cell		Y	506	Denton	6/21/12

TABLE 2 – Dummy Instrumentation (SID-IIs)

				SID-IIs S/N 307			
				Serial Number	Manufacturer	Calibration	
Head Accelerometers				X	P58900	Endevco	8/15/12
				Y	P58902	Endevco	8/15/12
				Z	P58983	Endevco	8/15/12
Displacement Potentiometers	Shoulder			Y	1244	FTSS	8/17/12
	Thoracic Rib	Upper	Y	1249	FTSS	8/17/12	
		Middle	Y	1265	FTSS	8/17/12	
		Lower	Y	1277	FTSS	8/17/12	
	Abdominal Rib	Upper	Y	1286	FTSS	8/17/12	
		Lower	Y	1290	FTSS	8/17/12	
Lower Spine Accelerometers (T12)				X	P59007	Endevco	8/16/12
				Y	P59015	Endevco	8/16/12
				Z	P59016	Endevco	8/16/12
Acetabulum Load Cell				Y	277	Denton	5/24/12
Iliac Wing Load Cell				Y	289	Denton	5/24/12
Pelvis Plug (Struck Side)					49030	FTSS	12/7/11
Pelvis Plug (Non-Struck Side)					49025	FTSS	12/7/11

TABLE 3 – Vehicle Instrumentation

Vehicle Instrumentation			Serial Number	Manufacturer	Calibration Date
1	Vehicle Center of Gravity	X	Ketx5a	ICSensor	8/20/12
	Vehicle Center of Gravity	Y	Ketx5b	ICSensor	8/20/12
	Vehicle Center of Gravity	Z	Ketx5c	ICSensor	8/20/12
2	Right Sill at Front Seat	X	13476	Endevco	8/17/12
	Right Sill at Front Seat	Y	13660	Endevco	1/4/13
	Right Sill at Front Seat	Z	13463	Endevco	8/17/12
3	Right Sill at Rear Seat	X	13378	Endevco	6/26/12
	Right Sill at Rear Seat	Y	12418	Endevco	2/14/12
	Right Sill at Rear Seat	Z	12357	Endevco	2/14/12
4	Left Sill at Front Door	Y	13325	Endevco	6/18/12
5	Left Sill at Rear Door	Y	13713	Endevco	10/22/12
6	Left A-Post Lower	Y	13661	Endevco	1/4/13
7	Left A-Post Middle	Y	13474	Endevco	1/4/13
8	Left B-Post Lower	Y	13475	Endevco	1/4/13
9	Left B-Post Middle	Y	13653	Endevco	1/4/13
10	Front Seat Track	Y	13479	Endevco	8/17/12
11	Rear Seat Structure	Y	N/A	N/A	N/A
12	Right Rear Occ. Compartment	Y	13478	Endevco	8/17/12
13	Engine Block	X	13462	Endevco	8/17/12
	Engine Block	Y	13469	Endevco	12/11/12
14	Rear Floorpan Above Axle	X	12903	Endevco	1/11/12
	Rear Floorpan Above Axle	Y	13723	Endevco	10/22/12
	Rear Floorpan Above Axle	Z	13348	Endevco	6/18/12

TABLE 4 – MDB Instrumentation

		Serial Number	Manufacturer	Calibration Date
MDB Center of Gravity	X	13682	Endevco	11/14/12
MDB Center of Gravity	Y	13706	Endevco	11/14/12
MDB Center of Gravity	Z	13715	Endevco	11/14/12
Left Frame at Rear Axle Centerline	X	13705	Endevco	11/14/12
Left Frame at Rear Axle Centerline	Y	13711	Endevco	11/14/12