

REPORT NUMBER: SPNCAP-KAR-13-051

**NEW CAR ASSESSMENT PROGRAM (NCAP)
SIDE IMPACT POLE TEST**

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

NHTSA No: MD5310

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



APRIL 12, 2013

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
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15. Supplementary Notes																														
16. Abstract A 32.2 km/h (20 mph) 75 deg. oblique impact Side NCAP Test was conducted on the subject 2013 Honda Civic Hybrid 4-door sedan in accordance with the specifications of the Office of Crashworthiness Standards Side NCAP Pole Laboratory Test Procedure for the generation of consumer information on vehicle side pole crash protection. The test was conducted at the KARCO Engineering, LLC. facility in Adelanto, California on March 29, 2013. The impact velocity was 32.41 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 25.3 deg. C. The target vehicle's maximum post-test static crush was 395 mm located at level 3. The test vehicle's occupant performance data is as follows: <table border="1"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th colspan="3">Driver ATD (ES-2re)</th> </tr> <tr> <th>Units</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td></td> <td>1000</td> <td>246.9</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td>g</td> <td>82</td> <td>49</td> </tr> <tr> <td>Total Pelvic Force (Sum of Acetabular and Iliac Forces)</td> <td>N</td> <td>5525</td> <td>3644</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>38</td> <td>19</td> </tr> <tr> <td>Maximum Abdominal Rib Deflection</td> <td>mm</td> <td>45</td> <td>20</td> </tr> </tbody> </table> The two doors on the struck side of the vehicle did not separate from the body at the hinges or latches. The opposite doors did not open during the side impact event.				Measurement Description	Driver ATD (ES-2re)			Units	Threshold	Result	Head Injury Criteria (HIC ₃₆)		1000	246.9	Resultant Lower Spine Acceleration	g	82	49	Total Pelvic Force (Sum of Acetabular and Iliac Forces)	N	5525	3644	Maximum Thoracic Rib Deflection	mm	38	19	Maximum Abdominal Rib Deflection	mm	45	20
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17. Key Words New Car Assessment Program (NCAP) Side Impact Pole Part 572V SID-IIs		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Admin. Technical Information Services Division, NPO-411 1200 New Jersey Ave, SE Washington, DC 20590 e-mail: tis@nhtsa.dot.gov FAX: 202-493-2833																												
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SECTION 1

TEST PURPOSE AND PROCEDURE

This 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 rigid pole side impact test was conducted on a 2013 Honda Civic Hybrid 4-door sedan. The subject vehicle was towed into the rigid pole at an angle of 74.7° and a velocity of 32.41 km/h. The test was conducted by KARCO Engineering, LLC. in Adelanto, California on March 29, 2013. Pre- and post-test photographs of the test vehicle and side impact dummy (SID-IIs) are included in Appendix A of this report.

One Part 572V (SID-IIs) dummy was placed in the driver designated seating position according to instructions specified in the OCWS Side NCAP Pole Laboratory Test Procedure, dated September 2012. Camera locations and other pertinent camera information are included in this report.

The Part 572V (SID-IIs) was instrumented accordingly:

- Primary and Redundant Head CG tri-axial accelerometers
- Thorax upper, middle and lower rib displacement potentiometers
- Abdomen upper and lower rib displacement potentiometers
- Lower spine (12) tri-axial accelerometers
- Iliac load cell
- Acetabulum load cell

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 contains the test equipment and instrumentation calibration data.

Injury readings for the SID-IIs dummy were recorded as follows:

Measurement Description	Units	Passenger ATD (SID-IIs)	
		IARV	Result
Head Injury Criteria (HIC ₃₆)		1000	246.9
Lower Spine (T12) Resultant Acceleration	g	82	49
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3644
Maximum Thoracic Rib Deflection	mm	38*	19
Maximum Abdominal Rib Deflection	mm	45*	20

*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

Both the front and rear doors on the struck side of the vehicle remained closed and latched. There was no separation at the hinges or latches. Both doors on the non-struck side remained closed and latched. There were no ATD values that exceeded limits.

SECTION 3

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5310
Test Program: NCAP Side Pole Impact Test Test Date: 3/29/13

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. MD5310
 Test Program: NCAP Side Pole Impact Test Test Date: 3/29/13

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	MD5310
Model Year	2013
Make	Honda
Model	Civic Hybrid
Body Style	4-Door Sedan
VIN	19XFB4F26DE200561
Body Color	Polished Metal M.
Odometer Reading (km / mi)	111 / 69
Engine Displacement (L)	1.5
Type / No. of Cylinders	Inline 4
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	CVT
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	Yes
Driver Load Limiter	Yes
Rear Pass. Load Limiter	Yes
Other Safety Restraint	No

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

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	A
DSC x 68.04 (kg)				340.2	B
Cargo Weight (RCLW) (kg)				44.8	A-B

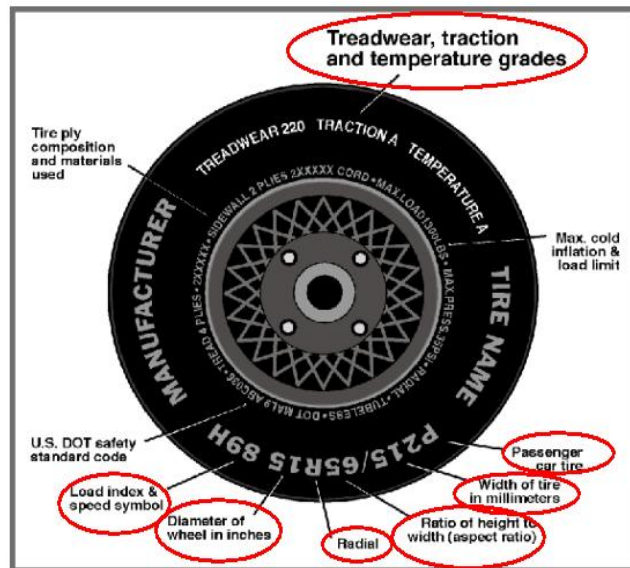
VEHICLE SEAT TYPE

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

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5310
 Test Program: NCAP Side Pole Impact Test Test Date: 3/29/13



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, Nylon, Steel	Polyester, Nylon, Steel
DOT Safety Code Left	EL9N JHN 0212	EL9N JHN 0212
DOT Safety Code Right	EL9N JHN 0212	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. MD5310
 Test Program: NCAP Side Pole Impact Test Test Date: 3/29/13

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

TEST VEHICLE AXLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	398.5	269.5		414.5	308.0		416.5	310.5	
Right	kg	378.0	254.5		378.0	285.0		380.0	287.5	
Ratio	%	59.7%	40.3%	100.0%	57.2%	42.8%	100.0%	57.1%	42.9%	100.0%
Total	kg	776.5	524.0	1300.5	792.5	593.0	1385.5	796.5	598.0	1394.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1300.5	A
Actual Weight of 1 P572 O ATD Used	kg	49.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	44.8	C
Calculated Vehicle Target Wt (TVTW)	kg	1394.3	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	As Delivered	As Tested	Fully Loaded	Meets Requirement***
Driver Door Sill Angle (front-to-rear)*	°	-0.5	-0.5	-0.2	Yes
Front Passenger Sill Angle (front-to-rear)*	°	0.1	-0.4	-0.4	Yes
Front Bumper-Line Angle (left-to-right)**	°	-0.2	-0.5	-0.5	Yes
Rear Bumper-Line Angle (left-to-right)**	°	0.0	-0.2	-0.2	Yes
Vehicle CG (Aft of Front Axle)	mm	1077	1144	1147	
Vehicle CG (Left (+)/Right (-) from Longitudinal Centerline)	mm	21	33	32	

*ND=Nose Down (-), NU=Nose Up (+) **LD=Left Down (-), LU=Left Up (+)

***The "As Tested" vehicle attitude angle measurements must be within "As Delivered" and the "Fully Loaded" vehicle attitude measurements at each location. 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. MD5310
Test Program: NCAP Side Pole Impact Test Test Date: 3/29/13

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Rear Bumper Cover	4.5
Trunk Trim and Tire Pump	9.5
Non-Struck Side Windows and Door Trim	10.0
Non Struck Outboard Mirror	1.5
Ballast / Equipment Added	50.5

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. MD5310
 Test Program: NCAP Side Pole Impact Test Test Date: 3/29/13

SEAT POSITIONING

The driver's seat is set to the forward most position where the ATD will not contact any interior panels at the mid-height and mid-angle position. The front center seat (if applicable) and right front passenger's seat should be set in a similar manner as the driver's seat. The struck side rear passenger's seat, rear center seat, and non-struck side rear passenger's seats should be set to the rearmost, lowest, mid-angle position.

SCRL ANGLE RANGE

Seat	SCRL (°)		
	Max	Min	Mid
Driver Seat	1.3	0.0	0.7
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	0.7	505	Max	481	493	505
			Mid	481	493	505
			Min	481	493	505
Front Passenger Seat	Fixed	515	Max	489	502	515
			Mid	489	502	515
			Min	489	502	515
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

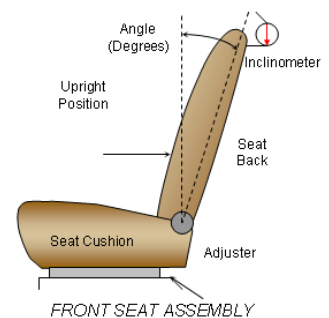
Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5310
 Test Program: NCAP Side Pole Impact Test Test Date: 3/29/13

SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position From Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	240	25	0	0
Front Passenger Seat	240	25	0	0
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 such that the dummy's head is level.
 The right front passenger seat back is set to the same angle as the driver's seat.



Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degree	Detent*
Driver Seat w/Seated Dummy	62.1	32	0.7	0
Front Passenger Seat	61.9	32	0.7	0
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, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5310
Test Program: NCAP Side Pole Impact Test Test Date: 3/29/13

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

HEAD RESTRAINT ADJUSTMENT

The driver'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 Down

DATA SHEET NO. 2 ... (CONTINUED)

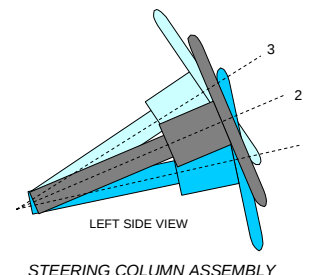
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA

Test Vehicle:	2013 Honda Civic Hybrid 4-Door Sedan	NHTSA No.	MD5310
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Test Program: NCAP Side Pole Impact Test Test Date: 3/29/13

STEERING COLUMN ADJUSTMENT

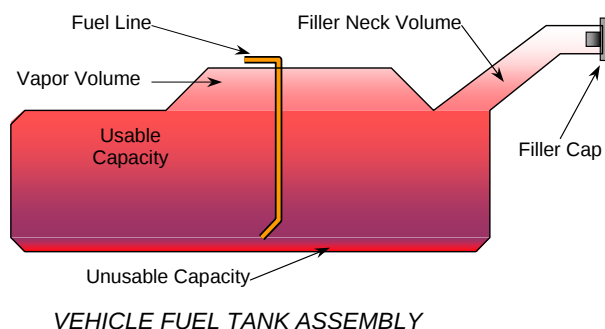
Steering wheel and column adjustments are made so that the steering wheel hub is at the center of the geometric locus it describes when it moves through its full range of motion.



	Degrees	Fore-Aft Position (mm)
Lowermost - Position 1	20.1	168
Geometric Center - Position 2	22.6	150
Uppermost - Position 3	25.2	132
Telescoping Steering Wheel Travel		36
Test Position	22.6	150

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.



FUEL TANK CAPACITY

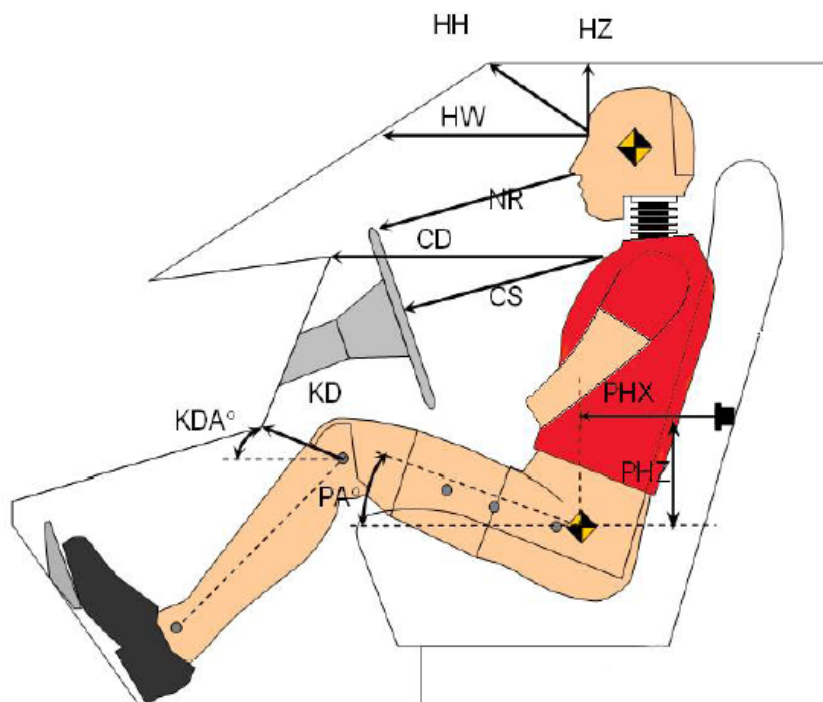
Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	49.96
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of "Standard Tank" (see Owner's Manual)	
Usable Capacity of "Optional Tank" (see Owner's Manual)	
93% of Usable Capacity	46.46
Actual amount of Solvent Used 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. MD5310
 Test Program: NCAP Side Pole Impact Test Test Date: 3/29/13



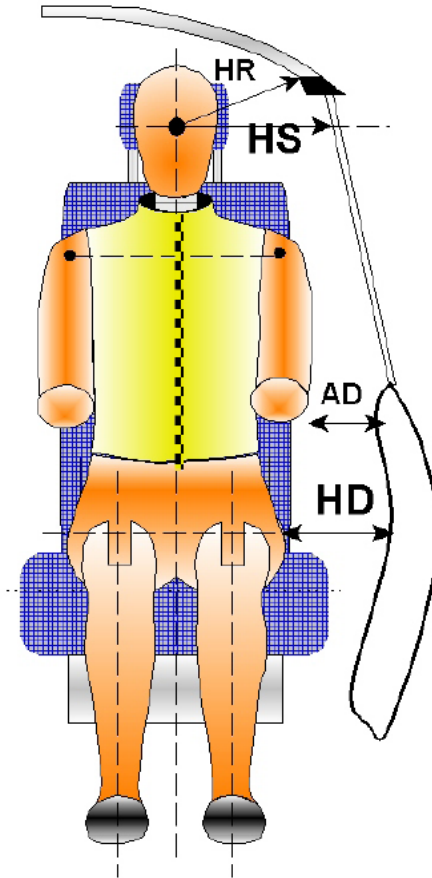
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	245	
HW	Head to Windshield	698	
HZ	Head to Roof	190	
NR	Nose to Rim	227	
CD	Chest to Dash	410	
CS	Chest to Steering Wheel	180	
KD(L)/KDA(L)°	Left Knee to Dash	90	41.6
KD(R)/KDA(R)°	Right Knee to Dash	88	42.5
PAX°	Pelvic Tilt Angle (x-axis)		20.7
PAY°	Pelvic Tilt Angle (y-axis)		0.2
PHX	Hip Point to Striker (x-axis)	379	
PHZ	Hip Point to Striker (z-axis)	191	

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5310
Test Program: NCAP Side Pole Impact Test Test Date: 3/29/13



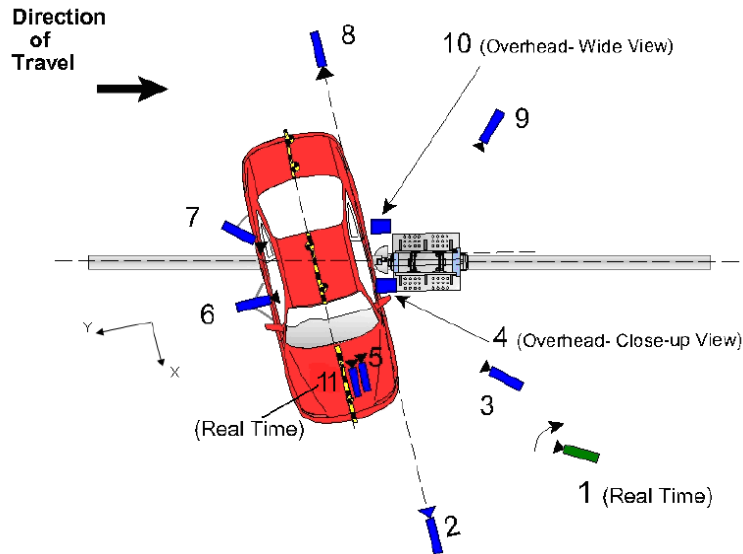
DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver
HR	Head to Side Header	mm	245
HS	Head to Side Window	mm	380
AD	Arm to Door	mm	154
HD	H-Point to Door	mm	174

DATA SHEET NO. 5

CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5310
 Test Program: NCAP Side Pole Impact Test Test Date: 3/29/13



CAMERA LOCATIONS AND DATA

Camera No.	View	Coordinates (m)			Lens (mm)	Film Speed (fps)
		X*	Y*	Z*		
1	Real Time Pan View of Impact	8.89	46.57	-3.04		30
2	Front Ground Level - Impact View	8.34	-0.05	-0.93	24	1000
3	Impact Side 45° - Forward Pole View	4.10	-2.15	-1.15	8.5	1000
4	Overhead Close-Up View of Impact	0.00	0.00	-5.79	12.5	1000
5	On-Board - Dummy Front View	0.56	1.46	-1.29	24	1000
6	On-Board - Dummy Side View	-0.93	2.45	-1.04	14	1000
7	On-Board - Dummy Rear Oblique View	-1.93	2.47	-1.08	20	1000
8	Rear Ground Level - Impact View	-6.12	-6.23	-0.96	24	1000
9	Impact Side 45° - Rearward Pole View	-8.02	0.04	-1.01	35	1000
10	Overhead Wide View of Impact	-0.06	0.22	-5.79	14	1000
11	Real Time Dummy Front View	0.51	1.49	-1.27		30

Reference from Point of Impact for X and Y; from Ground for Z):

+X = Forward of Vehicle, +Y = Right of Vehicle, +Z = Down

*All measurements accurate to ± 6 mm

INSTRUMENTATION

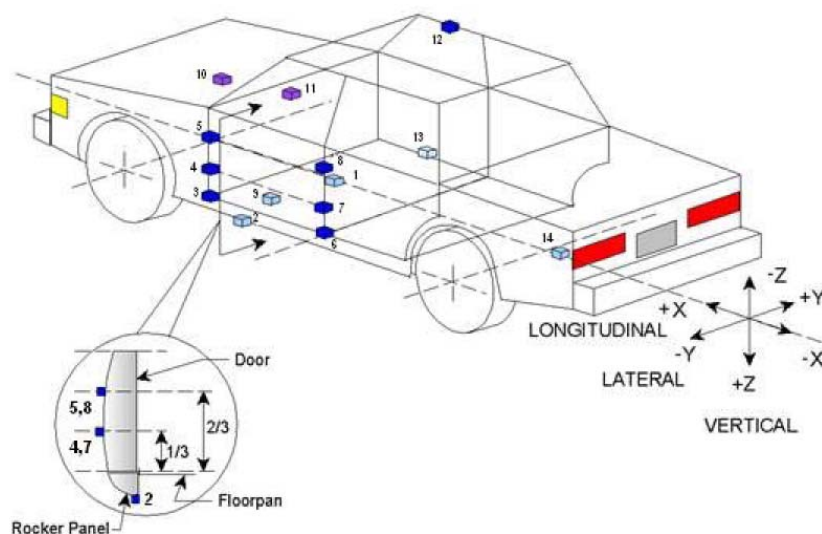
Driver Dummy Channels	16
Vehicle Structure Accelerometers	18
Pole Load Cells	8
Total	42

DATA SHEET NO. 6

TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5310

Test Program: NCAP Side Pole Impact Test Test Date: 3/29/13



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

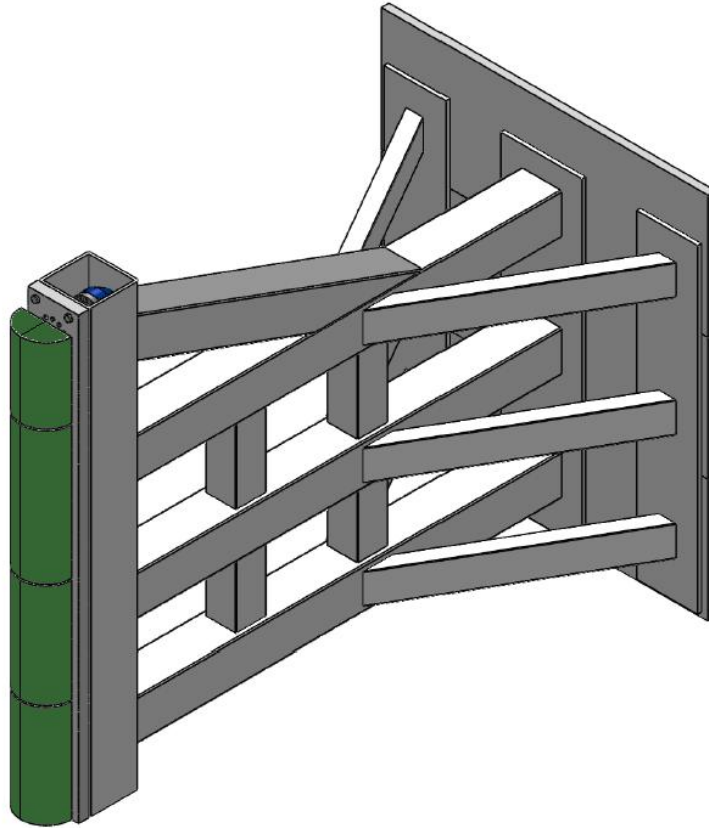
Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	1920	0	-237
2	Left Floor Sill	2987	-768	-183
3	A-Pillar Sill	3114	-848	-347
4	A-Pillar Low	3114	-848	-512
5	A-Pillar Mid	3114	-848	-823
6	B-Pillar Sill	2013	-735	-405
7	B-Pillar Low	2013	-735	-600
8	B-Pillar Mid	2013	-735	-782
9	Driver Seat Track	2468	-551	-309
10	Engine Top	3812	273	-856
11	Firewall	3744	0	-880
12	Right Roof	2165	492	-1425
13	Right Floor Sill	1956	730	-375
14	Rear Floorpan	1971	412	-565

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

DATA SHEET NO. 7

RIGID POLE LOAD CELL DATA

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5310
Test Program: NCAP Side Pole Impact Test Test Date: 3/29/13



RIGID POLE LOAD CELL LOCATIONS

ID	Units	Height From Ground
1	mm	87
2	mm	468
3	mm	648
4	mm	978
5	mm	1168
6	mm	1651
7	mm	1816
8	mm	2057

DATA SHEET NO. 8**POST-TEST OBSERVATIONS**Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5310Test Program: NCAP Side Pole Impact Test Test Date: 3/29/13**TEST DUMMY INFORMATION AND CONTACT POINTS**

Dummy Body Part	Driver SID-IIs Dummy
Face	Curtain Airbag
Top of Head	Curtain Airbag, Headrest
Left Side of Head	Curtain Airbag, Headrest
Back of Head	Curtain Airbag, Headrest, Seat Back
Left Shoulder	Seat, Torso Airbag
Upper Torso	Seat
Lower Torso	Seat, Torso Airbag
Left Hip	Seat, Torso Airbag, Door Panel
Left Knee	Door Panel, Right Knee

POST-TEST DOOR PERFORMANCE

Description	Struck Side		Non-Struck Side		Rear Hatch/Other Door
	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	Broken
Side Window Damage	Left Front Window Broken
Other Notable Effects	Roof Skin Separation

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

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5310
 Test Program: NCAP Side Pole Impact Test Test Date: 3/29/13

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side Driver		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No	No	
Knee Airbag	No		No	
Side Airbag 1 (Curtain)	Yes	Yes	Yes	Yes
Side Airbag 2 (Torso)	Yes	Yes	No	
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes	Yes	No	
Other	No		No	

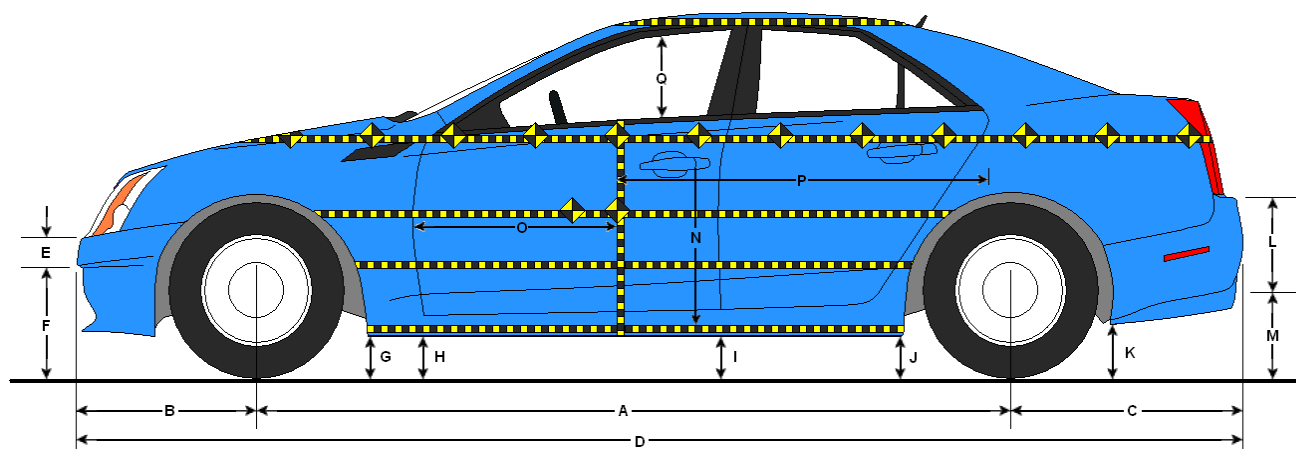
IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point)	mm		1087
Actual Impact Point (Aft of Front Axle)	mm		1067
Horizontal Offset (+ forward / - rearward)	mm	± 38 of Intended Impact Point	20
Angle Between Vehicle's Longitudinal Centerline and Line of Forward Motion	°	75 ± 3	74.7
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	32.51
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.45

DATA SHEET NO. 9

TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5310
 Test Program: NCAP Side Pole Impact Test Test Date: 3/29/13



LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

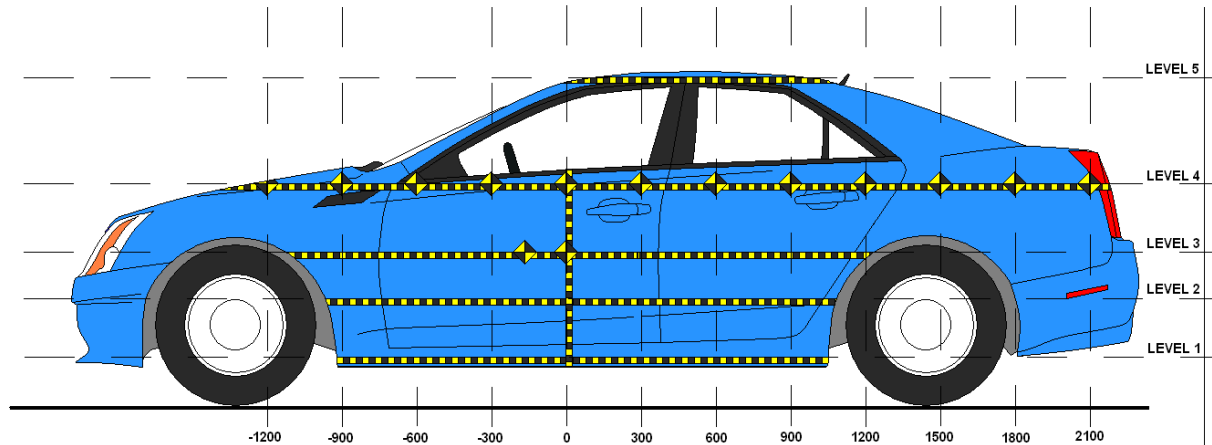
Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2674	2608	-66
B	Front Axle to FSOV	929	949	20
C	Rear Axle to RSOV	915	930	15
D	Total Length at Centerline	4518	4487	-31
E	Front Bumper Thickness	112	112	0
F	Front Bumper Bottom to Ground	356	372	16
G	Sill Height at Front Wheel Well	192	189	-3
H	Sill Height at Front Door Leading Edge	191	192	1
I	Sill Height at B-Pillar	198	228	30
J1	Sill Height at Rear Wheel Well	195	247	52
J2	Pinch Weld Height at Rear Wheel Well	158	217	59
K	Sill Height Aft of Rear Wheel Well	433	484	51
L	Rear Bumper Thickness	139	140	1
M	Rear Bumper Bottom to Ground	376	419	43
N	Sill Height to Bottom of Front Window Sill	646	643	-3
O	Front Door Leading Edge to Impact CL	-289	548	837
P	Rear Door Trailing Edge to Impact CL	2430	1424	-1006
Q	Front Window Opening	401	427	26
R	Right Side Length	3142	3150	8
S	Left Side Length	3142	3061	-81
T	Vehicle Width at B-Pillar	1744	1637	-107

All measurements in mm with tolerance of ± 3 mm

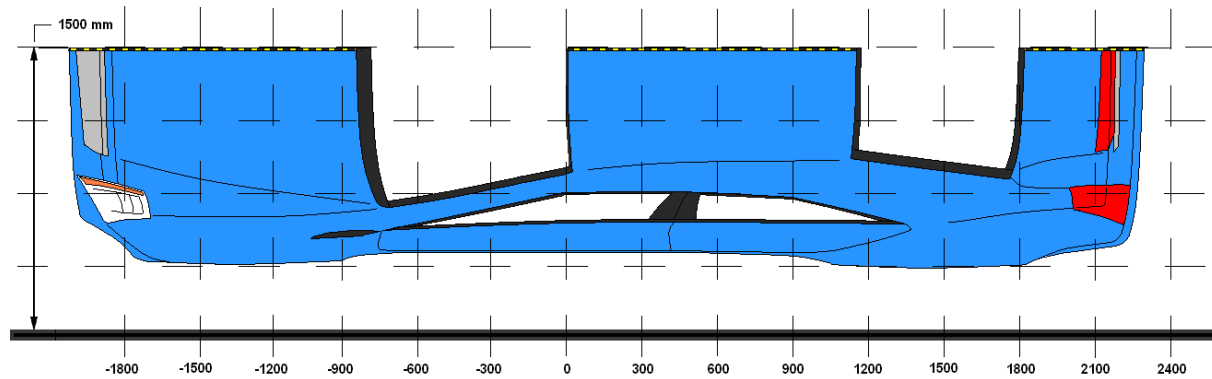
DATA SHEET NO. 10

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5310
 Test Program: NCAP Side Pole Impact Test Test Date: 3/29/13



LEFT SIDE VIEW



OVERHEAD VIEW

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	234	351	0
2	Occupant H-Point	504	387	0
3	Mid-Door	604	395	0
4	Window Sill	868	354	0
5	Window Top	1347	221	150

DATA SHEET NO. 10 ... (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5310

Test Program: NCAP Side Pole Impact Test Test Date: 3/29/13

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				705					746					41	
-750		621	623	694			669	672	739			48	49	45	
-600	654	628	628	688		705	710	709	765		51	82	81	77	
-450	660	631	629	683		795	782	782	811		135	151	153	128	
-300	661	631	629	675		861	854	857	866		200	223	228	191	
-150	660	632	629	677		932	931	935	951		272	299	306	274	
0	660	632	628	675		1011	1019	1023	1029		351	387	395	354	
150	659	631	628	676	895	978	993	1002	1019	1116	319	362	374	343	221
300	660	631	628	674	889	881	905	905	918	1072	221	274	277	244	183
450	660	631	628	672	884	827	806	801	836	1028	167	175	173	164	144
600	661	633	629	666	886	783	765	762	799	992	122	132	133	133	106
750	662	635	631	664	889	745	739	740	776	971	83	104	109	112	82
900	661	637	633	660	897	709	716	718	751	962	48	79	85	91	65
1050	659	638	635	657	909	673	691	695	731	965	14	53	60	74	56
1200	654	630	632	643	936	641	655	669	698	975	-13	25	37	55	39
1350			624	642				661	677				37	35	
1500				663					694					31	
1650				670					697					27	
1800				680					701					21	
1950				696					711					15	
2100															
2250															
2400															
2550															
2700															
2850															

DATA SHEET NO. 10 ... (CONTINUED)

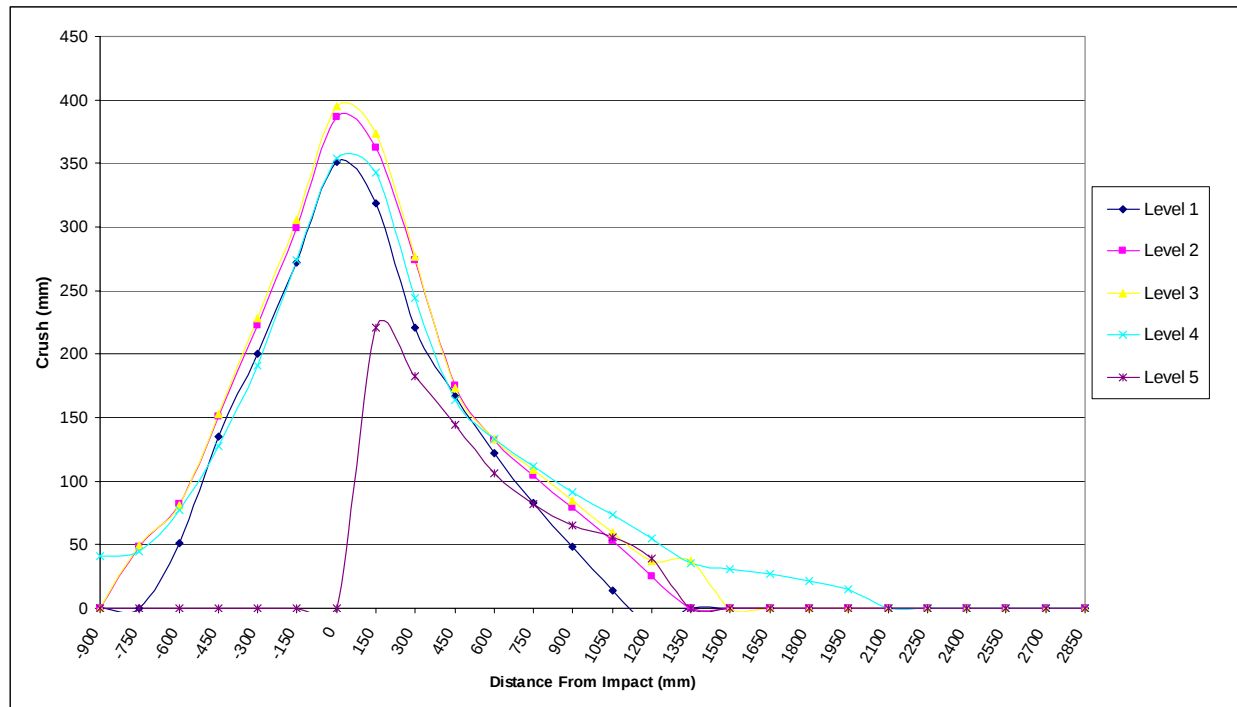
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan

NHTSA No. MD5310

Test Program: NCAP Side Pole Impact Test

Test Date: 3/29/13

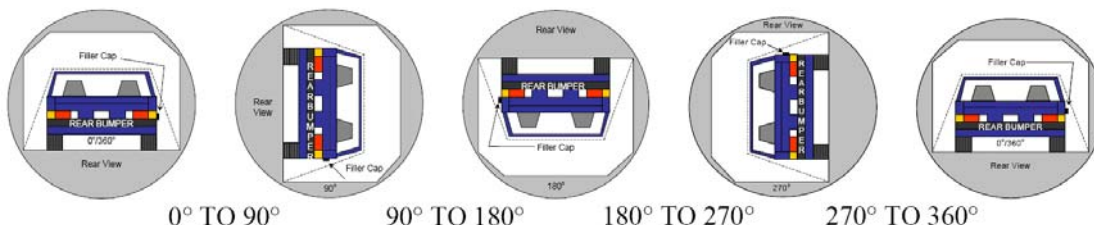


DATA SHEET NO. 11

FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan NHTSA No. MD5310
 Test Program: NCAP Side Pole Impact Test Test Date: 3/29/13
 Temperature at Time of Impact: 25.3 C Test Time: 4:53 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°	83	300	383
90° To 180°	83	300	383
180° To 270°	78	300	378
270° To 360°	81	300	381

FMVSS 301 SPILLAGE TABLE

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

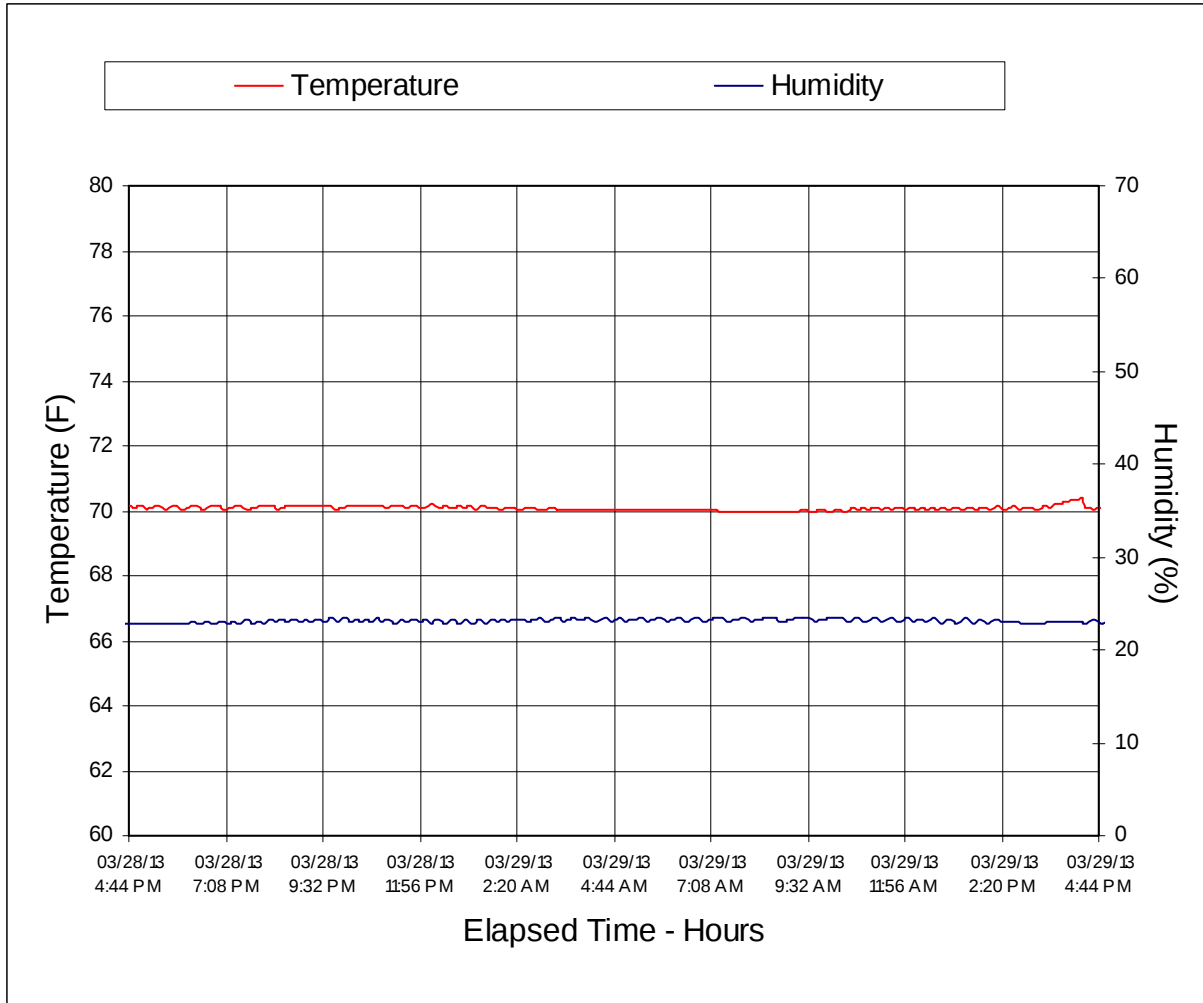
SOLVENT SPILLAGE LOCATION TABLE

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. MD5310
Test Program: NCAP Side Pole Impact Test Test Date: 3/29/13



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

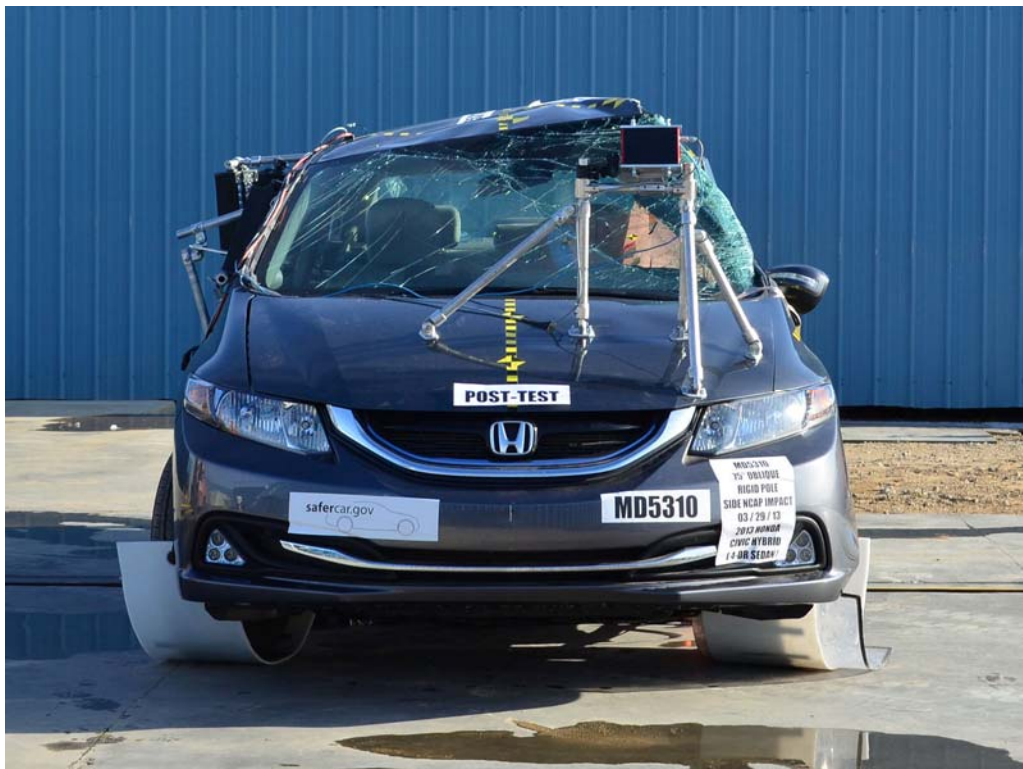


FIGURE 4. Post-Test Frontal View of Test Vehicle



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

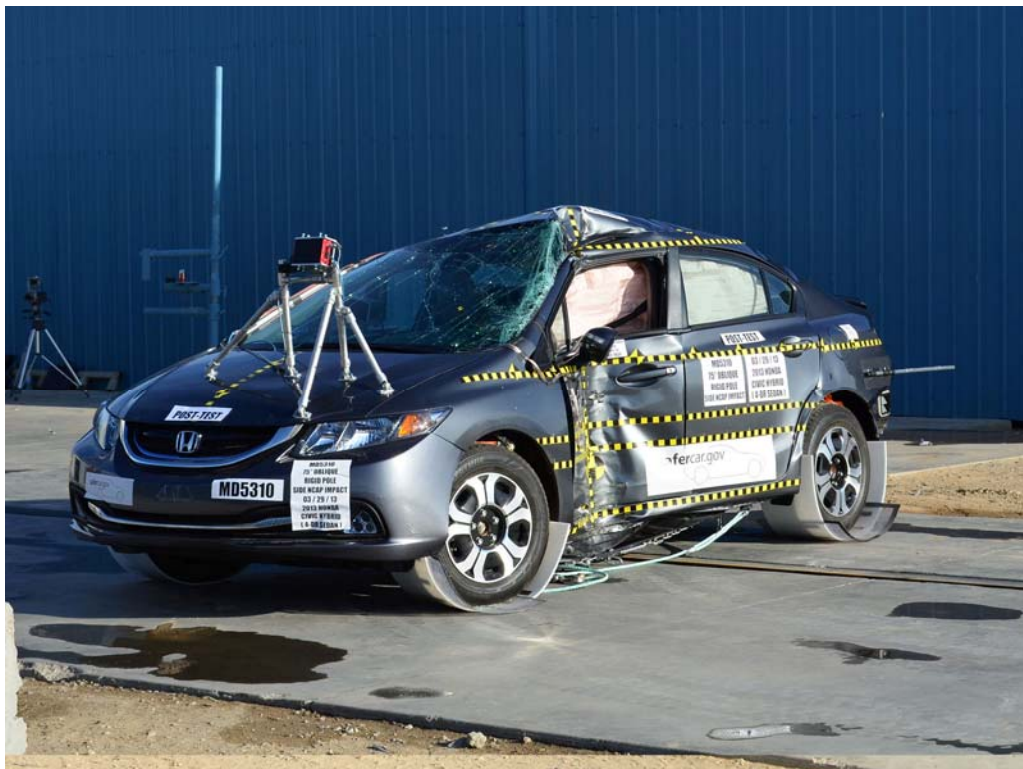


FIGURE 6. Post-Test Left Front $\frac{3}{4}$ View of Test Vehicle



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

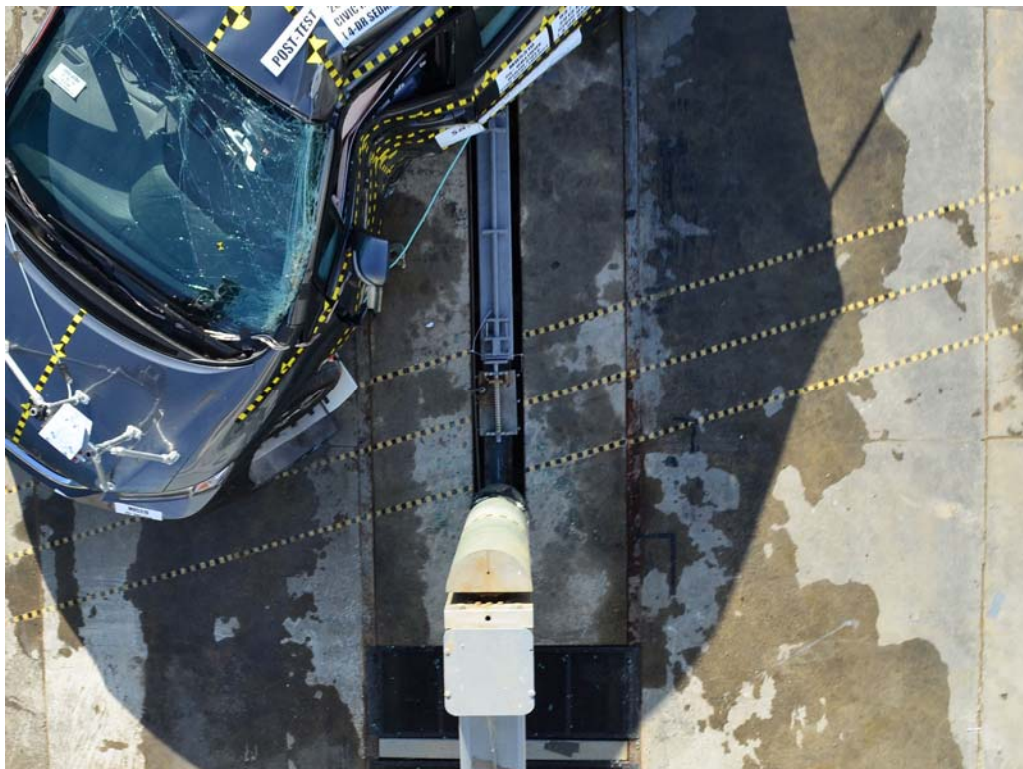


FIGURE 16. Post-Test Overhead View of Test Area



FIGURE 17. Pre-Test Left Side View of Pole
Positioned Against Side of Test Vehicle

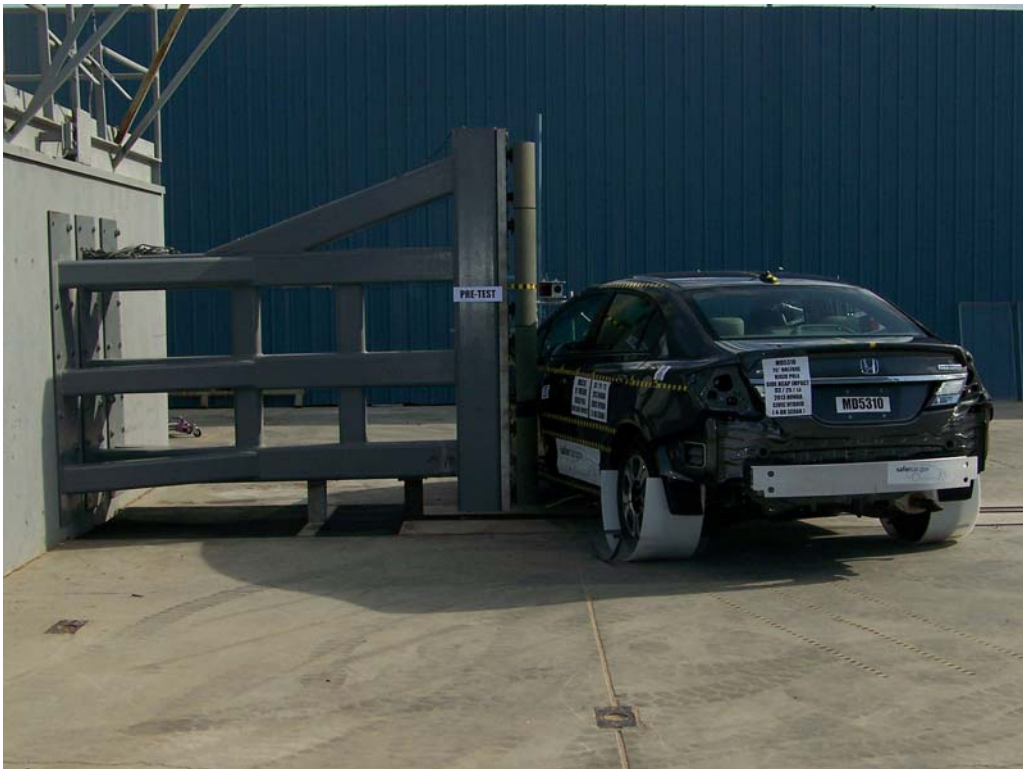


FIGURE 18. Pre-Test Right Side View of Pole
Positioned Against Side of Test Vehicle

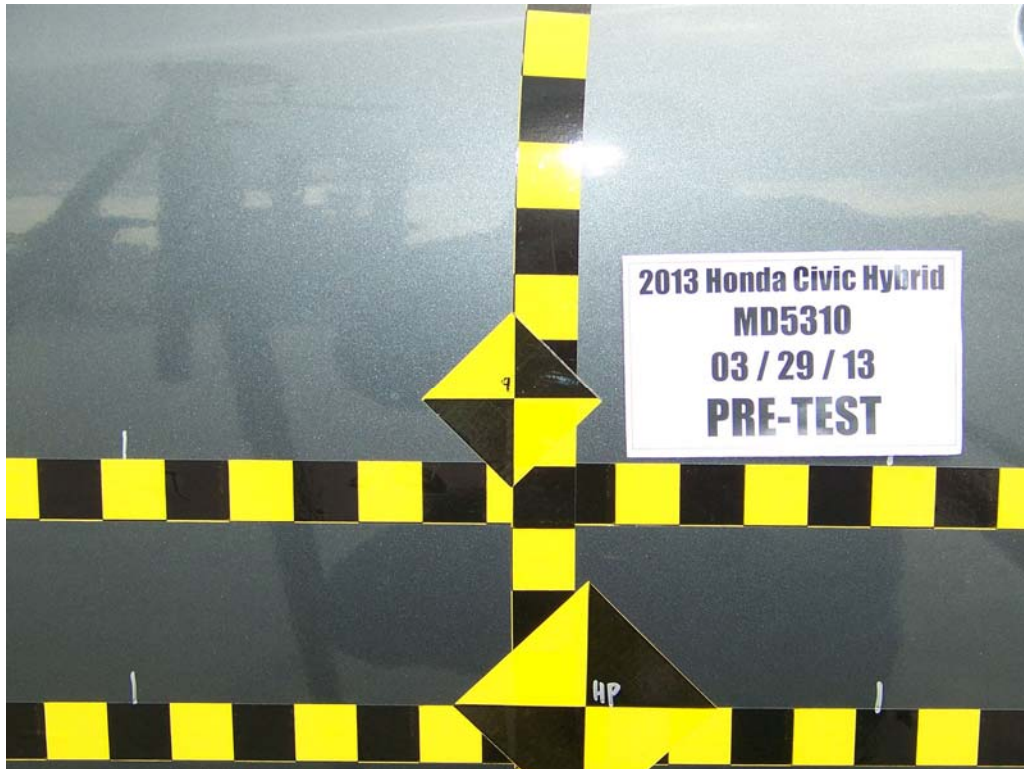


FIGURE 19. Pre-Test Close-Up View of Impact Point Target

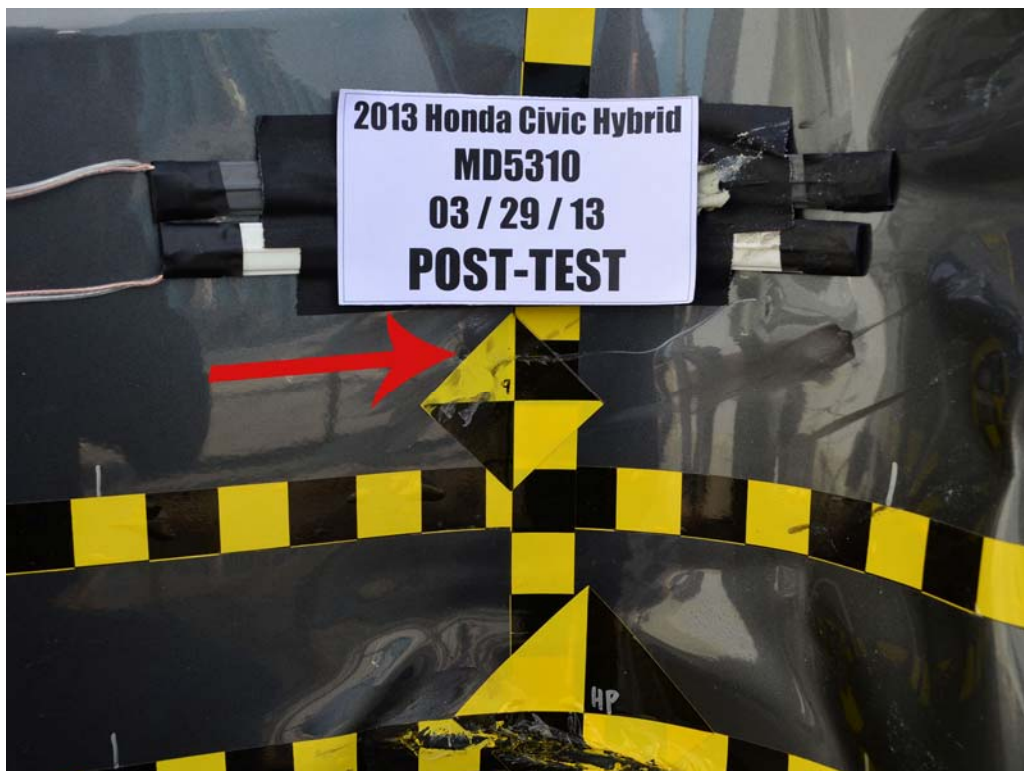


FIGURE 20. Post-Test Close-Up View of Impact Point Target



FIGURE 21. Pre-Test Front Close-Up View of Dummy Head and Chest

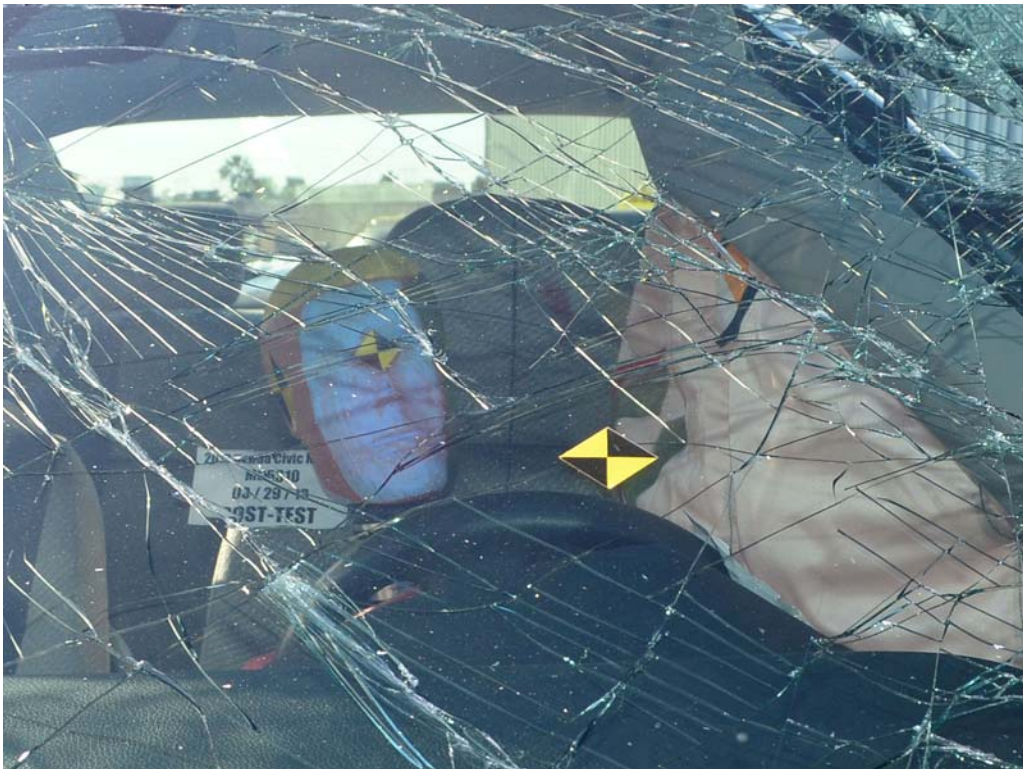


FIGURE 22. Post-Test Front Close-Up View of Dummy



FIGURE 23. Pre-Test Left Side View of Dummy Showing Belt and Chalking



FIGURE 24. Pre-Test Left Side View of Dummy Shoulder and Door Top View



FIGURE 25. Post-Test Left Side View of Dummy Shoulder and Door Top View



FIGURE 26. Pre-Test Frontal View of Seat Back Prior to Dummy Positioning



FIGURE 27. Pre-Test Frontal Close-Up View of Dummy Head and Shoulders in Relation to Head Restraint



FIGURE 28. Pre-Test Frontal View of Seat Pan Prior to Dummy Positioning



FIGURE 29. Pre-Test Overhead View of Dummy Thighs on Seat Pan



FIGURE 30. Pre-Test Left Side View of Dummy's Neck
Showing Position of Adjustable Neck Bracket



FIGURE 31. Pre-Test View of Dummy's Head Showing Dummy's Head Is Level



FIGURE 32. Pre-Test Placement of Dummy's Feet



FIGURE 33. Pre-Test View of Belt Anchorage for Dummy



FIGURE 34. Pre-Test Left Side View of Steering Wheel



FIGURE 35. Pre-Test View of Disengaged Parking Brake



FIGURE 36. Pre-Test View of Parking Brake



FIGURE 37. Pre-Test Close-Up Left Side View of Driver Seat Track



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



FIGURE 39. Pre-Test Close-Up View of Driver Seat Back or Head Restraint



FIGURE 40. Pre-Test Dummy and Door Clearance



FIGURE 41. Post-Test Dummy and Door Clearance



FIGURE 42. Pre-Test Right Side View of Dummy and Front Seat of Occupant Compartment



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



FIGURE 44. Pre-Test Inner Door Panel View



FIGURE 45. Post-Test Inner Door Panel View
Showing Dummy Contact Location



FIGURE 46. Post-Test Dummy Close-Up Head Contact with Vehicle Interior View



FIGURE 47. Post-Test Dummy Close-Up Head Contact with Side Airbag View



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

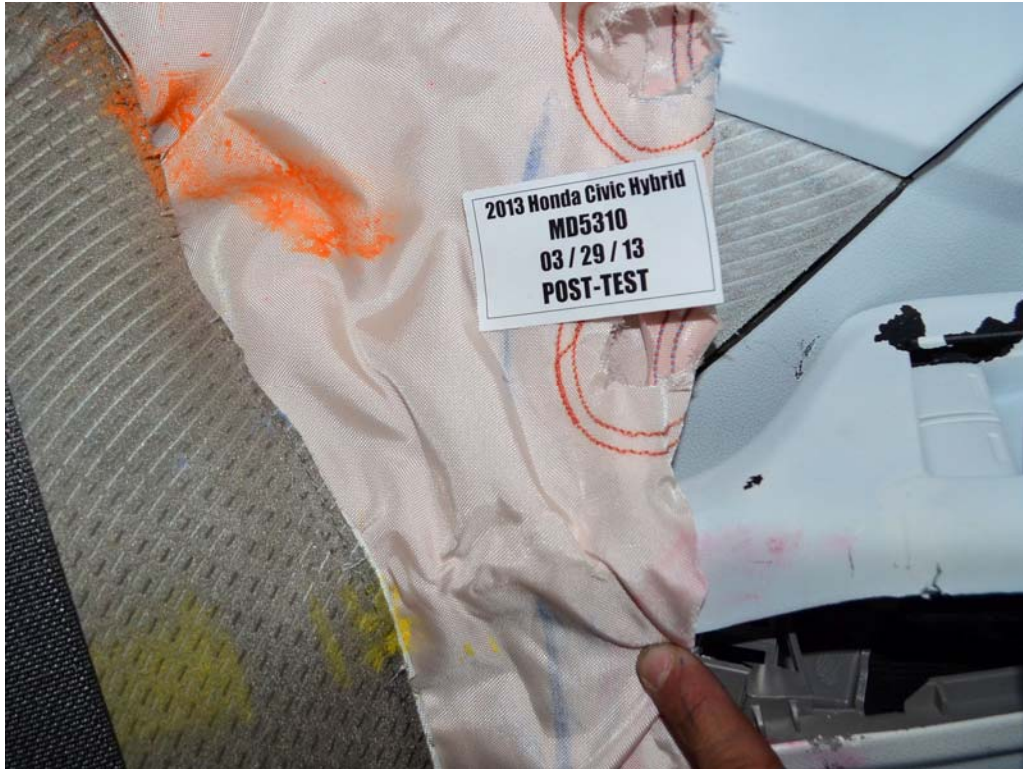


FIGURE 49. Post-Test Dummy Close-Up Torso Contact with Side Airbag View



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



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

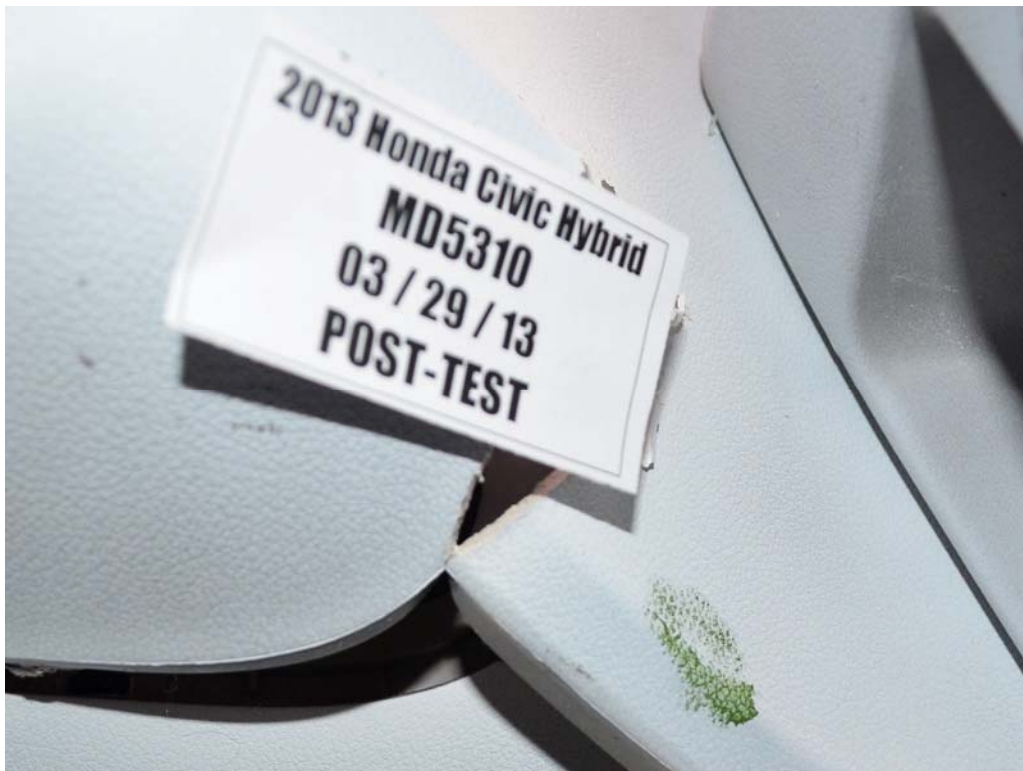


FIGURE 52. Post-Test Dummy Close-Up Knee Contact with Vehicle Interior View



FIGURE 53. Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



FIGURE 54. Post-Test View of Fuel Filler Cap or Fuel Filler Neck



FIGURE 55. Close-Up View of Vehicle's Certification Label

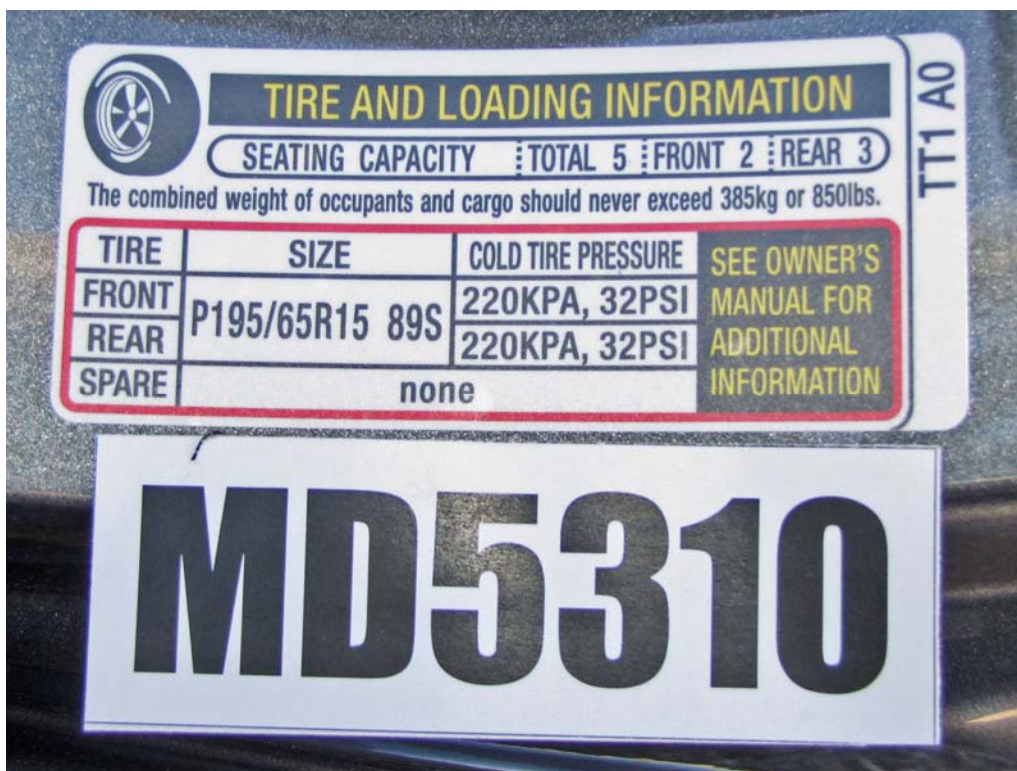


FIGURE 56. Close-Up View of Vehicle's Tire Information Placard or Label



FIGURE 57. Pre-Test Pole Barrier Front View



FIGURE 58. Post-Test Pole Barrier Front View



FIGURE 59. Pre-Test Pole Barrier Side View



FIGURE 60. Post-Test Pole Barrier Side View

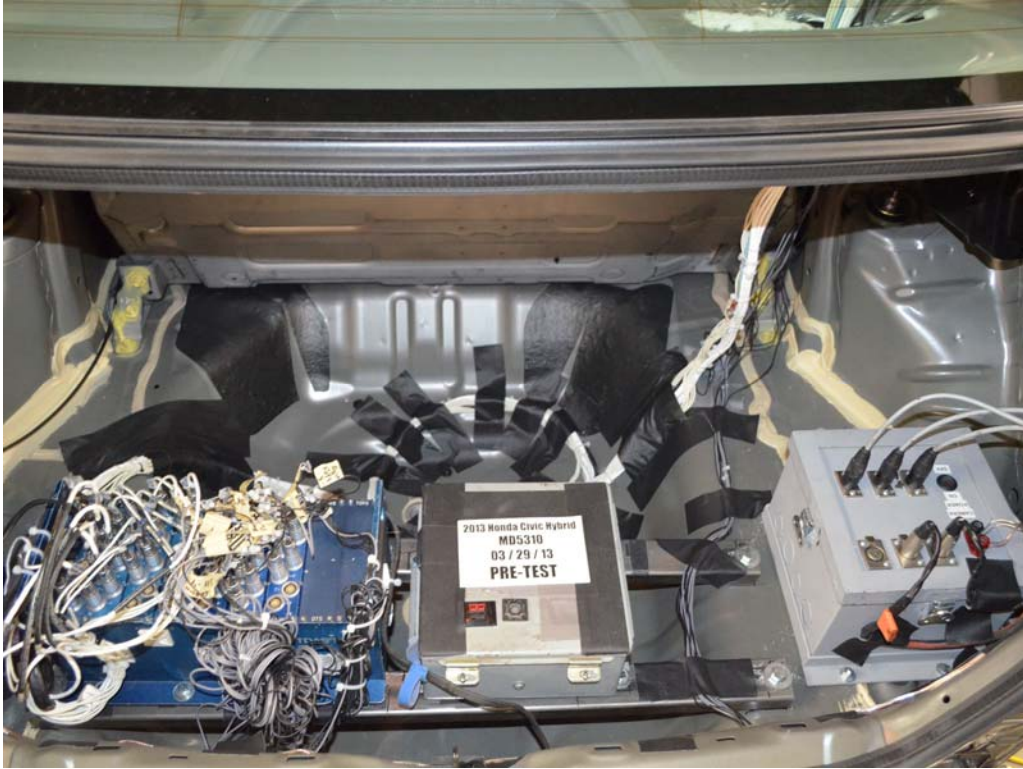


FIGURE 61. Pre-Test Ballast View



FIGURE 62. Post-Test Primary and Redundant Speed Trap Read-Out



FIGURE 63. FMVSS No. 301 Static Rollover 0 Degrees



FIGURE 64. FMVSS No. 301 Static Rollover 90 Degrees



FIGURE 65. FMVSS No. 301 Static Rollover 180 Degrees



FIGURE 66. FMVSS No. 301 Static Rollover 270 Degrees



FIGURE 67. FMVSS No. 301 Static Rollover 360 Degrees



FIGURE 68. Impact Event

2013 CIVIC IMA 4DR HYB
 EXT: POLISHED METAL M
 INT: GRAY

ENGINE NUMBER: LEAD-2301355

Manufacturer's Suggested Retail Price
\$24,360.00

Full Tank of Fuel
 XM Satellite Radio Includes Free Activation and 3 Months Free Service (cont. AK & HI)

KEY STANDARD FEATURES
 "Rearview Camera"
 "Bluetooth HandsFreeLink"
 "USB Audio Interface"
 "Side Curtain Airbags with Rollover Sensor"

EXTERIOR FEATURES *
 18" x 8.5" Lightweight Alloy Wheels
 17" x 8.5" x 11.5" Air Suspension Tires
 Auto-On/Off Headlights
 Variable Intermittent Wipers
 Power Window Defolter
 Power Door Mirrors with Turn Indicators
 Remote Entry System with Trunk Opener
 Security System
 Tire Sealant and Inflator Kit (in place of spare tire)

INTERIOR FEATURES *
 160 Watt AM/FM/CD Audio System with 6 Speakers incl. MP3/WMA Playback
 XM Satellite Radio

STANDARD EQUIPMENT AT NO EXTRA COST

***TECHNICAL FEATURES ***
 110hp 1.8-Liter SOHC 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 AT PZEV
 Immobilizer Theft Deterrent System

***SAFETY FEATURES ***
 Driver's and Front Passenger's Dual-Stage Airbags (DSB)
 Driver's and Front Passenger's Side Airbags w/ SmartVent
 Side Curtain Airbags with Rollover 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
 A/C Body Structure
 Daytime Running Lights (DRL)
 LATCH System for Child Seats

***EXTERIOR FEATURES ***
 18" x 8.5" Lightweight Alloy Wheels
 17" x 8.5" x 11.5" Air Suspension Tires
 Auto-On/Off Headlights
 Variable Intermittent Wipers
 Power Window Defolter
 Power Door Mirrors with Turn Indicators
 Remote Entry System with Trunk Opener
 Security System
 Tire Sealant and Inflator Kit (in place of spare tire)

INTERIOR FEATURES *
 160 Watt AM/FM/CD Audio System with 6 Speakers incl. MP3/WMA Playback
 XM Satellite Radio

Annual fuel cost
\$1,200

Fuel Economy
44 MPG
 combined city/hwy
 2.3 gallons per 100 miles

Fuel Economy and Greenhouse Gas Rating
 10 Best
 10 Worst

Smog Rating
 10 Best
 10 Worst

Parts Content Information
 FOR VEHICLES IN THIS CAPLINE:
 U.S./Canadian Parts Content: **65 %**
 Major Sources of Foreign Parts Content:
JAPAN 20 %

Government 5-Star Safety Ratings
 Overall Vehicle Score
 Frontal Crash
 Side Crash
 Rollover

FIGURE 69. Monroney Label

Adjusting the Head Restraints

Your vehicle is equipped with head restraints in all seating positions.

Head restraints are most effective for protection against whiplash and other non-injury crash injuries when the center of the back of the occupant's head rests against the center of the restraint. The top of the occupant's ears should be level with the center height of the restraint.

Adjusting the front head restraint positions

To raise the head restraint: Pull it upward.

To lower the head restraint: Push it down while pressing the release button.

Adjusting the Rear Head Restraints

WARNING

Improperly positioning head restraints reduces their effectiveness and increases the likelihood of serious injury in a crash. Make sure head restraints are in place and positioned properly before driving.

For a head restraint system to work properly:

- Do not hang any items on the head restraints, or from the restraint legs.
- Do not place any object between an occupant and the seat back.
- Install each restraint in its proper location.

Changing the Rear Seat Head Restraint Positions

A passenger sitting in a back seating position should adjust the height of their head restraint to an appropriate position before the vehicle begins moving.

To raise the head restraint: Pull it upward.

To lower the head restraint: Push it down while pressing the release button.

Removing and Reinstalling the Head Restraints

Head restraints can be removed for cleaning or repair.

To remove a head restraint: Pull the restraint up as far as it will go. Then push the release button, and pull the restraint up and out.

To reinstall a head restraint: Insert the top back in place, then adjust the head restraint to an appropriate height while pressing the release button. Pull up on the restraint to make sure it is locked in position.

WARNING

Failure to reinstall, or incorrectly reinstall, the head restraints can result in severe injury during a crash.

Always replace the head restraints before driving.

FIGURE 70. 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 Lower Spine T12 Acceleration (X) vs. Time	B-2
6	Driver Lower Spine T12 Acceleration (Y) vs. Time	B-2
7	Driver Lower Spine T12 Acceleration (Z) vs. Time	B-2
8	Driver Lower Spine T12 Resultant Acceleration vs. Time	B-2
9	Driver Iliac Wing Force on Impact Side (Y) vs. Time	B-3
10	Driver Acetabulum Force on Impact Side (Y) vs. Time	B-3
11	Driver Total Pelvis Force on Impact Side (Y) vs. Time	B-3

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

www.NHTSA.dot.gov

Additional Driver Dummy Instrumentation Data

Driver Head Acceleration Redundant (X)
Driver Head Acceleration Redundant (Y)
Driver Head Acceleration Redundant (Z)
Driver Upper Thorax Rib Deflection (Y)
Driver Middle Thorax Rib Deflection (Y)
Driver Lower Thorax Rib Deflection (Y)
Driver Upper Abdomen Rib Deflection (Y)
Driver Lower Abdomen Rib Deflection (Y)

Vehicle Instrumentation Data

Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
Left Floor Sill Acceleration (Y)
Left A-Pillar Sill Acceleration (Y)
Left Lower A-Pillar Acceleration (Y)
Left Mid A-Pillar Acceleration (Y)

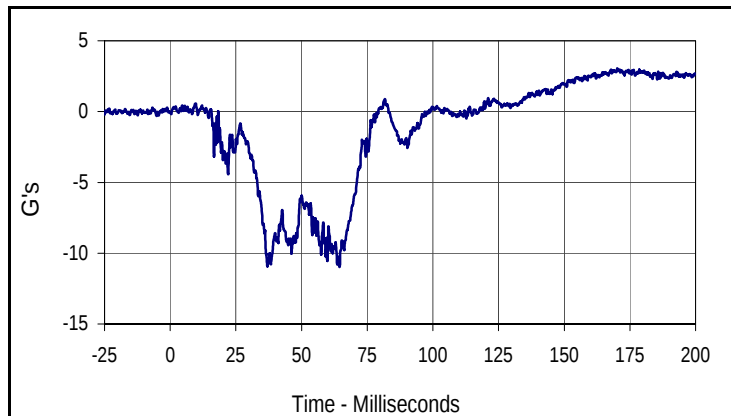
Left B-Pillar Sill Acceleration
Left Lower B-Pillar Acceleration (Y)
Left Mid B-Pillar Acceleration (Y)
Driver Seat Track at Dummy Hip Point Acceleration (Y)
Engine Top Acceleration (X)
Engine Top Acceleration (Y)
Firewall Center Acceleration (Y)
Right Roof at Vertical Impact Reference Line Acceleration (Y)
Right Sill at Vertical Impact Reference Line Acceleration (Y)
Rear Floorpan Behind Rear Axle at Centerline Acceleration (X)
Rear Floorpan Behind Rear Axle at Centerline Acceleration (Y)

Pole Instrumentation Data

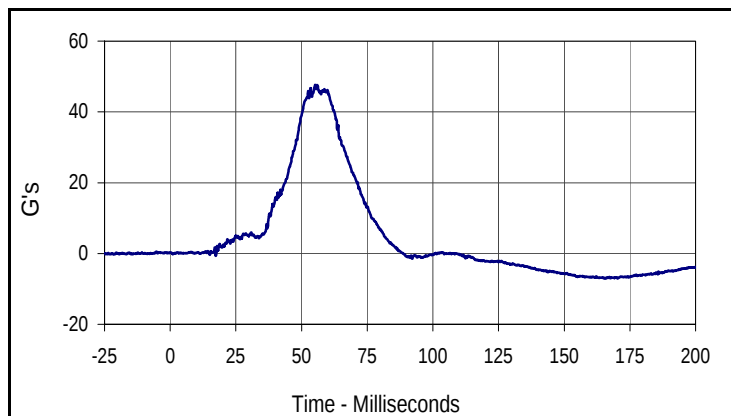
Load Cell Pole Barrier #1 Force (Y)
Load Cell Pole Barrier #2 Force (Y)
Load Cell Pole Barrier #3 Force (Y)
Load Cell Pole Barrier #4 Force (Y)
Load Cell Pole Barrier #5 Force (Y)
Load Cell Pole Barrier #6 Force (Y)
Load Cell Pole Barrier #7 Force (Y)
Load Cell Pole Barrier #8 Force (Y)

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test

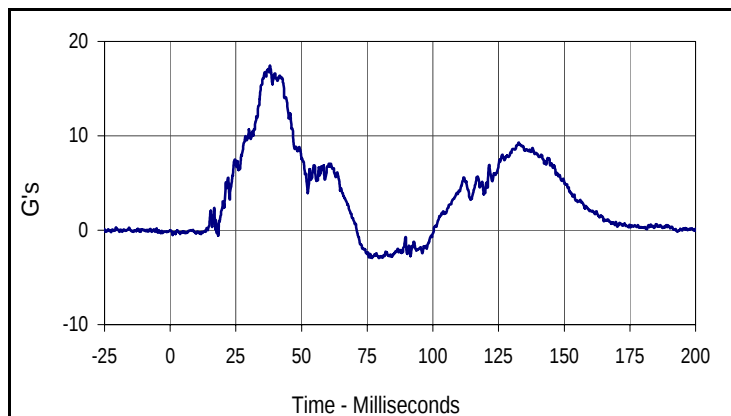
Test Date: 3/29/13
 NHTSA No.: MD5310



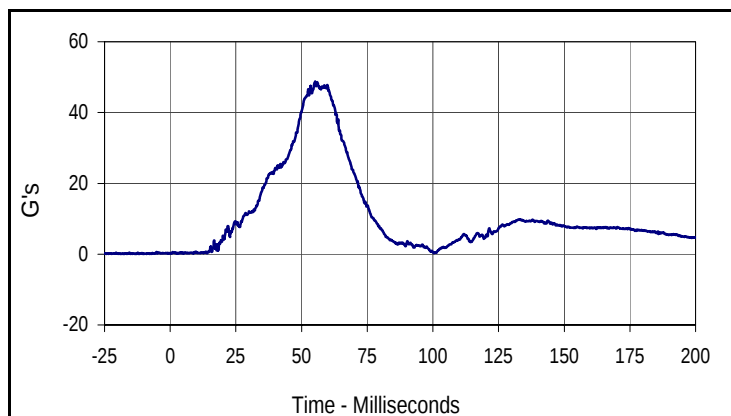
Curve Description			
Driver Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
3.1	170.2	-11.0	64.4



Curve Description			
Driver Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
47.6	55.9	-7.1	165.9



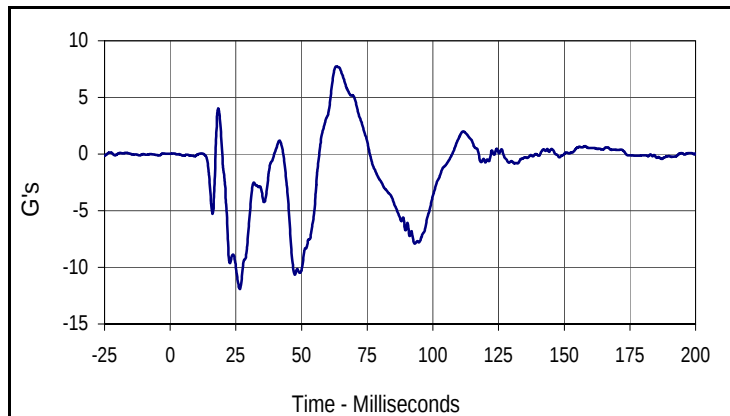
Curve Description			
Driver Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
17.4	38.0	-3.0	76.8



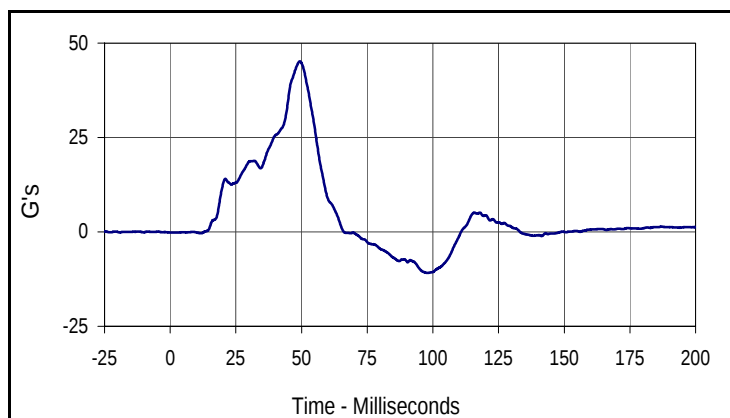
Curve Description			
Driver Head Acceleration Primary Res.			
Plot No.	Type	SAE Class	Units
004	RES	1000	G's
Max	Time	Min	Time
48.7	55.2	0.2	8.7

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test

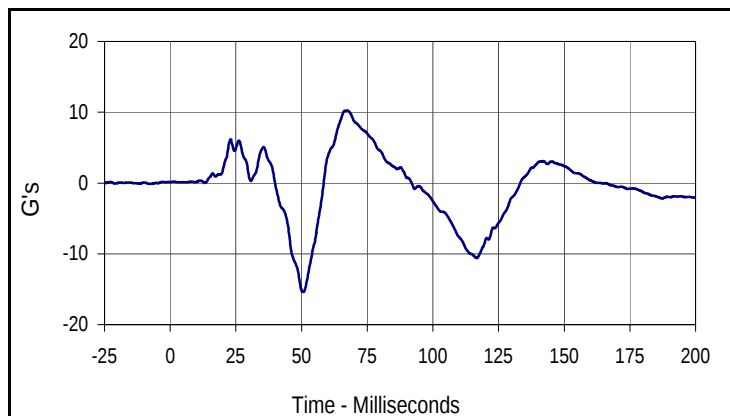
Test Date: 3/29/13
 NHTSA No.: MD5310



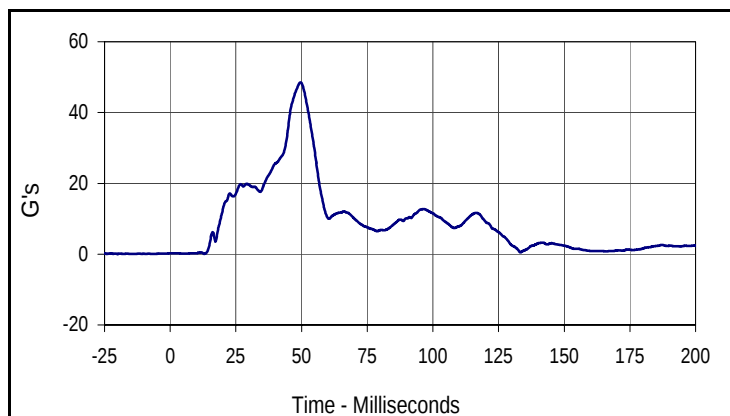
Curve Description			
Driver Lower Spine T12 Acceleration X			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
7.7	63.2	-11.9	26.5



Curve Description			
Driver Lower Spine T12 Acceleration Y			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
45.1	49.3	-10.9	97.9



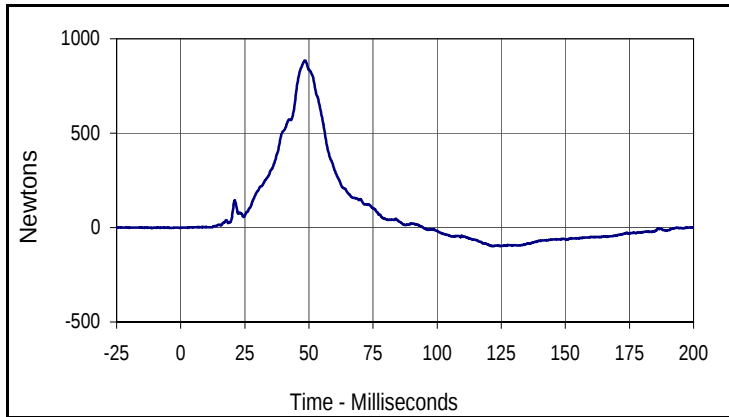
Curve Description			
Driver Lower Spine T12 Acceleration Z			
Plot No.	Type	SAE Class	Units
007	FIL	180	G's
Max	Time	Min	Time
10.2	67.4	-15.4	50.5



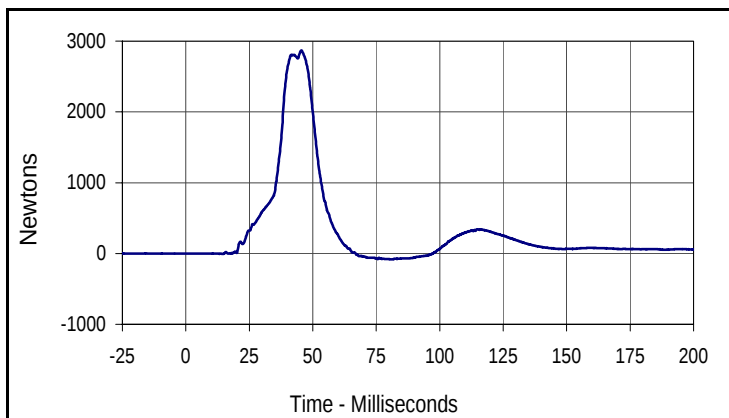
Curve Description			
Driver Lower Spine T12 Acceleration Res.			
Plot No.	Type	SAE Class	Units
008	RES	180	G's
Max	Time	Min	Time
48.5	49.6	0.1	13.0

Test Vehicle: 2013 Honda Civic Hybrid 4-Door Sedan
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test

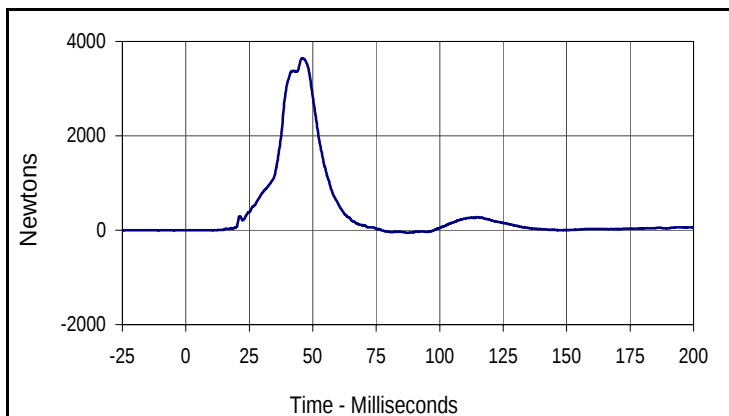
Test Date: 3/29/13
 NHTSA No.: MD5310



Curve Description			
Driver Iliac Wing Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
009	FIL	600	Newtons
Max	Time	Min	Time
884.9	48.5	-99.1	122.0



Curve Description			
Driver Acetabulum Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
010	FIL	600	Newtons
Max	Time	Min	Time
2869.9	45.5	-82.7	80.9



Curve Description			
Driver Total Pelvic Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
011	SUM	600	Newtons
Max	Time	Min	Time
3644.3	45.8	-55.1	87.4

APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

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

Test Program: SID IIs External Measurements
 ATD Serial No.: 299

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



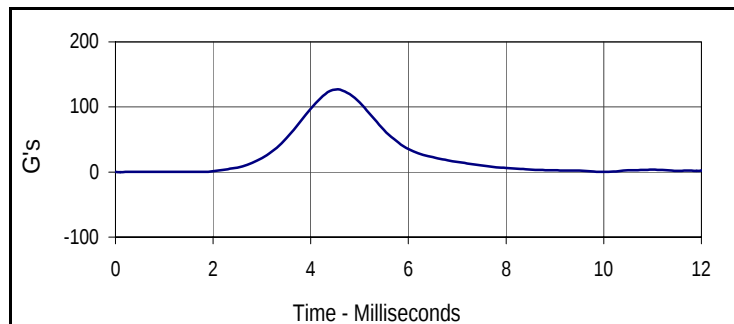
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
A	Sitting Height	mm	772 - 788	780	Pass
B	Shoulder Pivot Height	mm	437 - 453	445	Pass
C	H-Point Height	mm	79 - 89	85	Pass
D	H-Point from Seatback	mm	141 - 151	145	Pass
E	Shoulder Pivot from Backline	mm	97 - 107	102	Pass
F	Thigh Clearance	mm	119 - 135	125	Pass
G	Head Breadth	mm	140 - 148	145	Pass
H	Head Back from Backline	mm	40 - 46	44	Pass
I	Head Depth	mm	178 - 188	184	Pass
J	Head Circumference	mm	541 - 551	545	Pass
K	Buttock to Knee Length	mm	514 - 540	527	Pass
L	Popliteal Height	mm	343 - 369	352	Pass
M	Knee Pivot to Floor Height	mm	392 - 409	401	Pass
N	Buttock Popliteal Length	mm	416 - 442	432	Pass
O	Chest Depth w/o Jacket	mm	195 - 211	202	Pass
P	Foot Length	mm	216 - 232	221	Pass
Q	Hip Breadth with Pelvic Plug	mm	313 - 323	315	Pass
R	Arm Length	mm	249 - 259	252	Pass
S	Knee Joint to Seatback	mm	477 - 493	481	Pass
V	Shoulder Width	mm	341 - 357	352	Pass
W	Foot Width	mm	78 - 94	86	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.: 299

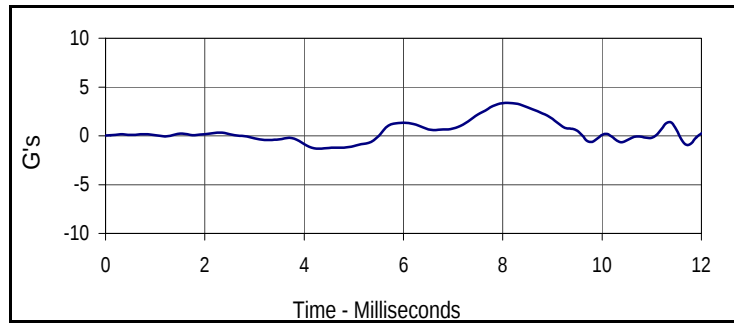
Test Date: 3/4/13
 Test I.D.: 299HD058



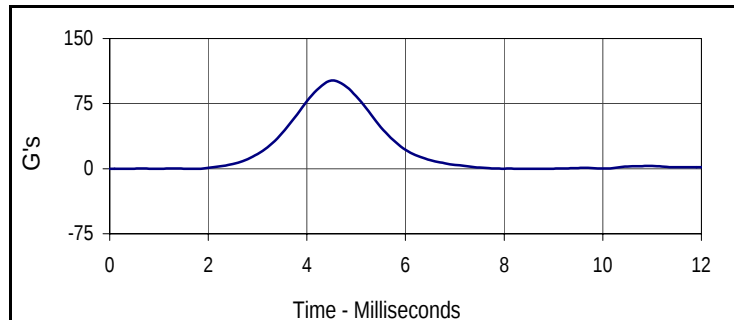
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	415	Pass
Temperature During Soak	Max	18.9 to 25.6	22.1	Pass
	Min		20.9	Pass
Humidity During Soak	Max	10.0 to 70.0	33.2	Pass
	Min		25.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.2	Pass
Peak Head Resultant Acceleration	G's	115 to 137	126.9	Pass
Peak Head X Acceleration	G's	<15	3.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	2.9	Pass
Overall Test Results				Pass



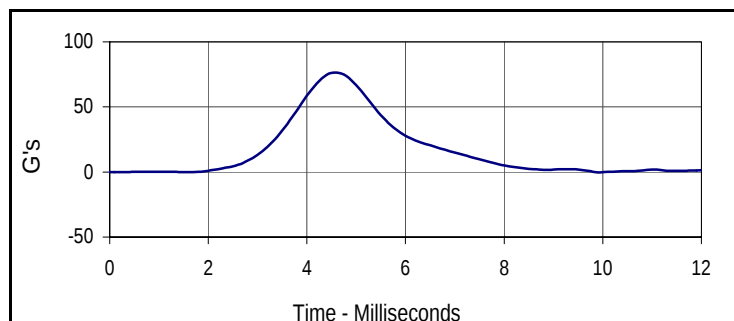
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
126.9	4.5	0.1	0.1



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
3.3	8.0	-1.3	4.3



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
101.6	4.5	-0.2	8.7



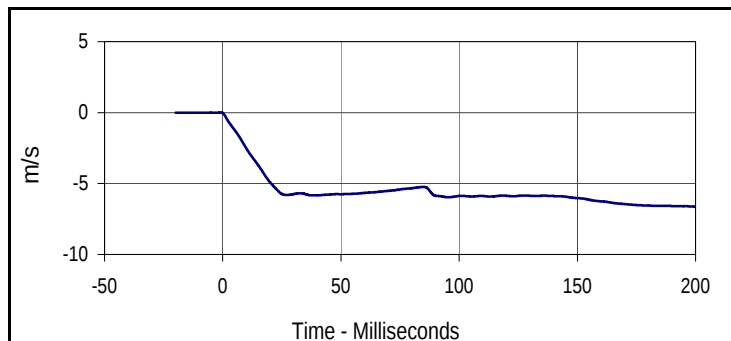
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
76.4	4.6	-0.3	9.9

Test Program: SID IIs Neck Flexion Test
 ATD Serial No.: 299

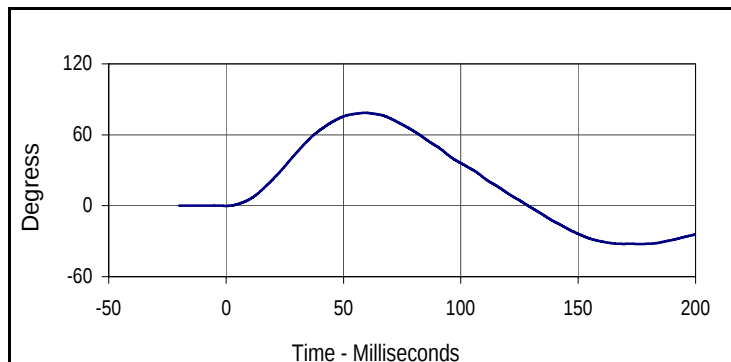
Test Date: 3/4/13
 Test I.D.: 299NB058



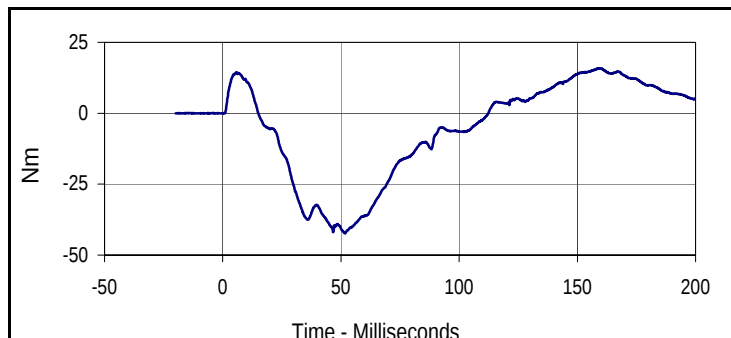
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	445	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	22.1	Pass
	Min	°C		20.9	Pass
Humidity During Soak	Max	%	10.0 to 70.0	33.2	Pass
	Min	%		25.6	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.2	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.57	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.53	Pass
	15 msec	m/s	-3.30 to -4.10	-3.70	Pass
	20 msec	m/s	-4.40 to -5.40	-4.91	Pass
	25 msec	m/s	-5.40 to -6.10	-5.74	Pass
	25-100 msec	m/s	-5.50 to -6.20	-5.96	Pass
D-Plane Rotation	Max	Degrees	71 to 81	78.6	Pass
	Time	msec	50 to 70	59.2	Pass
Peak Occipital Condyle Moment		Nm	-36 to -44	-42.3	Pass
Decaying Moment Time to Cross 0 Nm		msec	102 to 126	112.4	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.8	-6.6	200.0



Curve Description			
Maximum Translation Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
78.6	59.2	-32.3	176.7



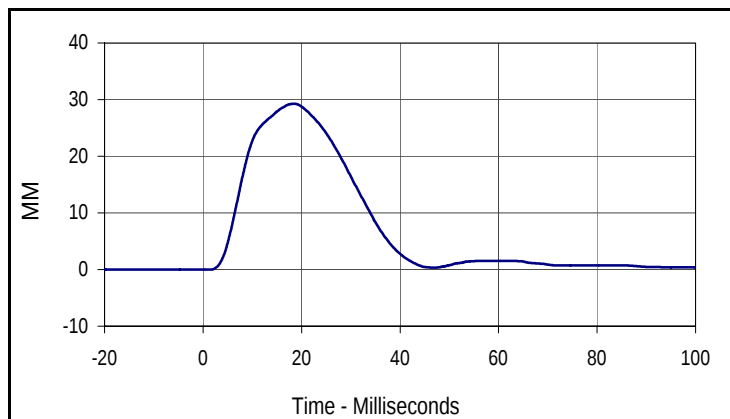
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
15.8	159.5	-42.3	51.7

Test Program: SID IIs Shoulder Impact Test
 ATD Serial No.: 299

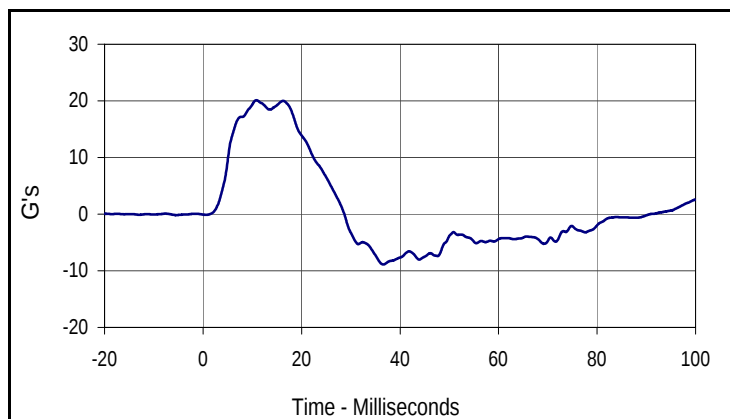
Test Date: 3/4/13
 Test I.D.: 299SH058



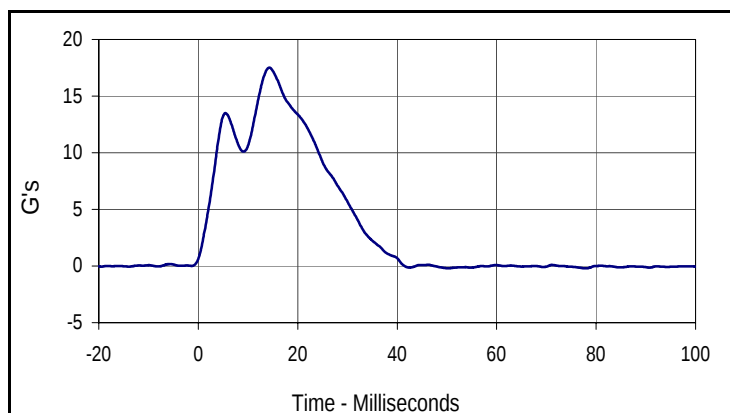
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	505	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	22.1	Pass
	Min	°C		20.9	Pass
Humidity During Soak	Max	%	10.0 to 70.0	33.2	Pass
	Min	%		25.6	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.3	Pass
Impactor Velocity		m/s	4.20 to 4.40	4.33	Pass
Peak Shoulder Deflection		mm	28 to 37	29.2	Pass
Peak Lateral Spine Acceleration Y		G's	17 to 22	20.1	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
29.2	18.7	0.0	-20.0



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
20.1	10.8	-8.9	36.6



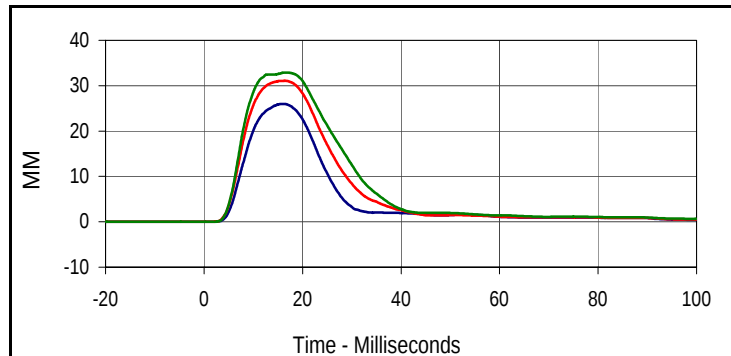
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
17.5	14.3	-0.2	78.0

Test Program: SID IIs Thorax with Arm Impact Test
 ATD Serial No.: 299

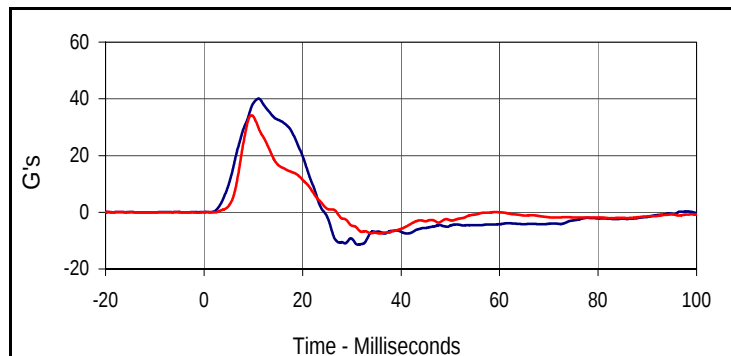
Test Date: 3/4/13
 Test I.D.: 299TWA058



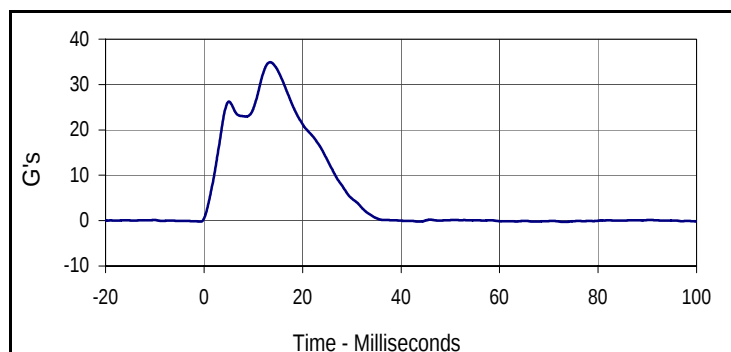
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	550	Pass
Temperature During Soak	Max	20.6 to 22.2	22.1	Pass
	Min		20.9	Pass
Humidity During Soak	Max	10.0 to 70.0	33.2	Pass
	Min		25.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.2	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.62	Pass
Peak Shoulder Deflection	mm	31 to 40	33.5	Pass
Peak Upper Thorax Rib Deflection	mm	25 to 32	26.0	Pass
Peak Middle Thorax Rib Deflection	mm	30 to 36	31.1	Pass
Peak Lower Thorax Rib Deflection	mm	32 to 38	32.9	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	40.1	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	34.2	Pass
Peak Impactor Acceleration	G's	30 to 36	34.9	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
26.0	16.0	0.0	0.3
Middle Thorax Deflection			
Max	Time	Min	Time
31.1	16.5	0.0	-3.3
Lower Thorax Deflection			
Max	Time	Min	Time
32.9	16.2	0.0	-20.0



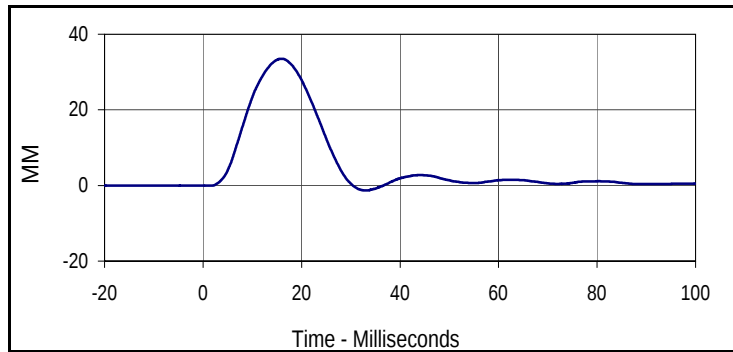
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
40.1	11.1	-11.5	31.2
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
34.2	9.6	-7.5	35.6



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
34.9	13.4	-0.3	73.1

Test Program: SID IIs Thorax with Arm Impact Test
 ATD Serial No.: 299

Test Date: 3/4/13
 Test I.D.: 299TWA058



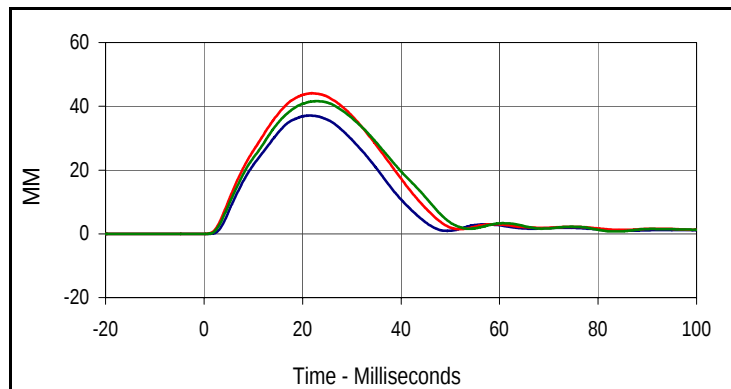
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	MM
Max	Time	Min	Time
33.5	15.9	-1.3	33.1

Test Program: SID IIs Thorax without Arm Impact Test
 ATD Serial No.: 299

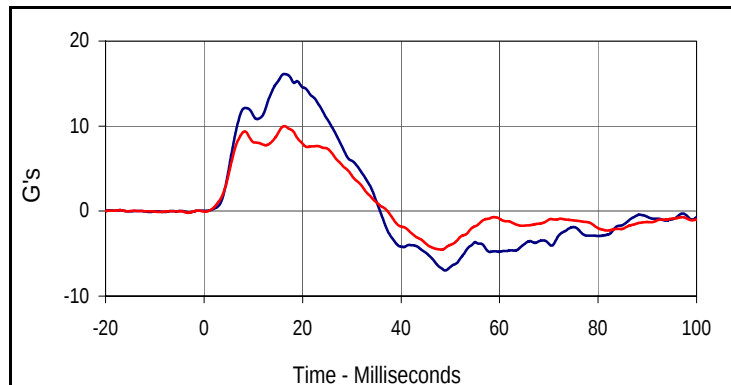
Test Date: 3/4/13
 Test I.D.: 299TWOA058



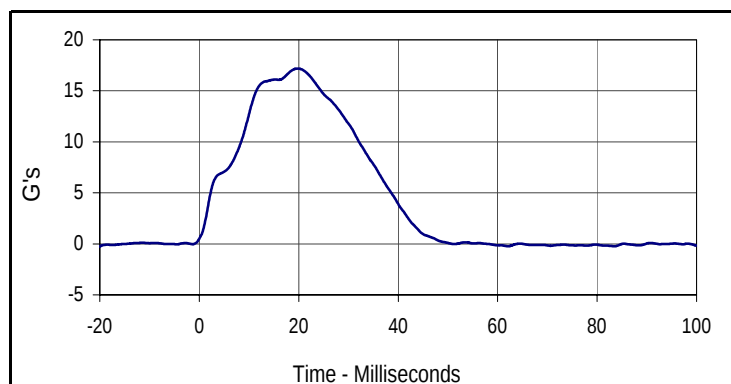
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	595	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	22.1	Pass
	Min	°C		20.9	Pass
Humidity During Soak	Max	%	10.0 to 70.0	33.2	Pass
	Min	%		25.6	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.3	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.26	Pass
Peak Upper Thorax Rib Deflection		mm	32 to 40	37.1	Pass
Peak Middle Thorax Rib Deflection		mm	39 to 45	44.1	Pass
Peak Lower Thorax Rib Deflection		mm	35 to 43	41.6	Pass
Peak Upper Spine Y Acceleration		G's	13 to 17	16.1	Pass
Peak Lower Spine Y Acceleration		G's	7 to 11	10.0	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
37.1	21.5	0.0	-20.0
Middle Thorax Deflection			
Max	Time	Min	Time
44.1	21.9	0.0	-16.2
Lower Thorax Deflection			
Max	Time	Min	Time
41.6	22.9	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
16.1	16.3	-7.0	49.0
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
10.0	16.3	-4.5	48.2



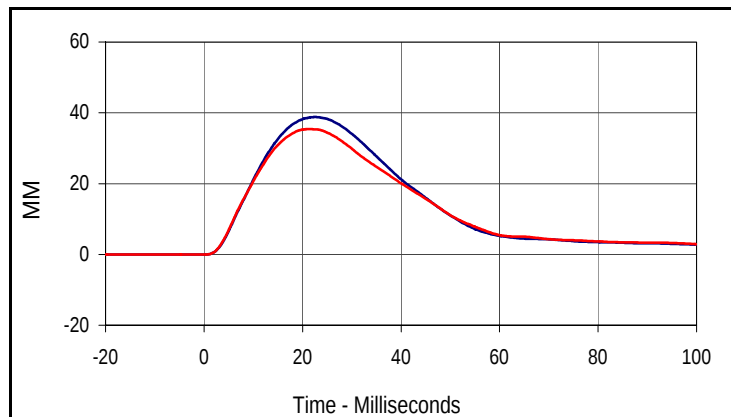
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
17.2	19.8	-0.2	-20.0

Test Program: SID IIs Abdomen Impact Test
 ATD Serial No.: 299

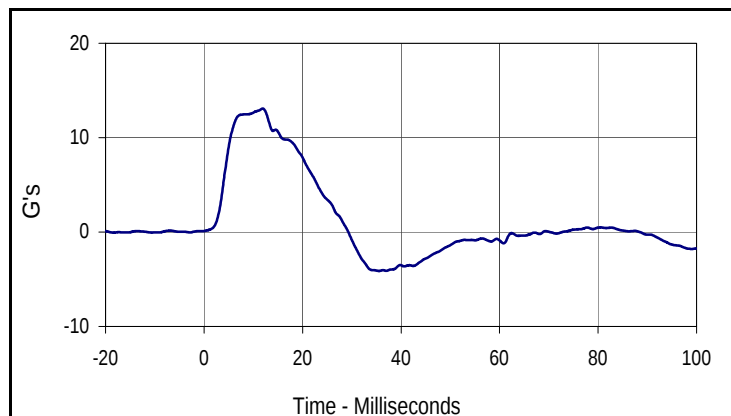
Test Date: 3/4/13
 Test I.D.: 299ABD058



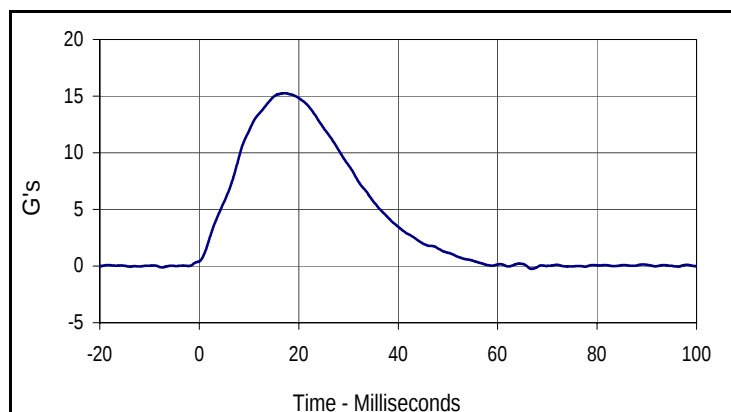
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	640	Pass
Temperature During Soak	Max °C	20.6 to 22.2	22.1	Pass
	Min °C		20.9	Pass
Humidity During Soak	Max %	10.0 to 70.0	33.2	Pass
	Min %		25.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.3	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.34	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	38.8	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	35.4	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	13.1	Pass
Peak Impactor Acceleration	G's	12 to 16	15.3	Pass
Overall Test Results			Pass	



Curve Description			
Upper Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
38.8	22.6	0.0	-3.5
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
35.4	21.1	0.0	-3.5



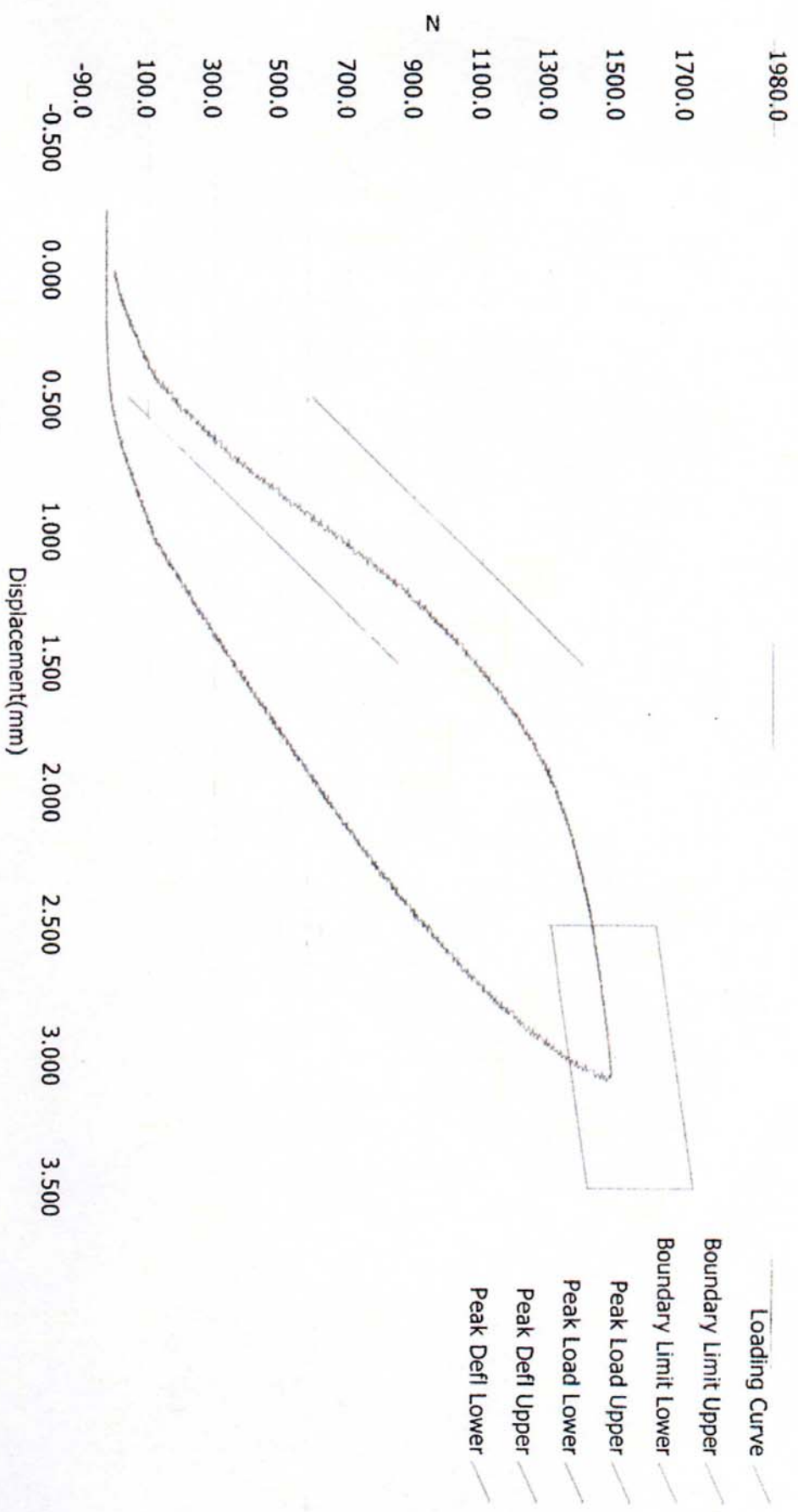
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
13.1	11.9	-4.1	35.6



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.3	17.2	-0.2	66.8

MD5310 PRE TEST

Resultant Data - SIDIIs Plug Compression



ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
47063	10/15/2011	12:30 PM	
Cert ID	ATD Serial Number	ATD Type	
N/A	SIDIIs		

Current Date : 10/15/2011

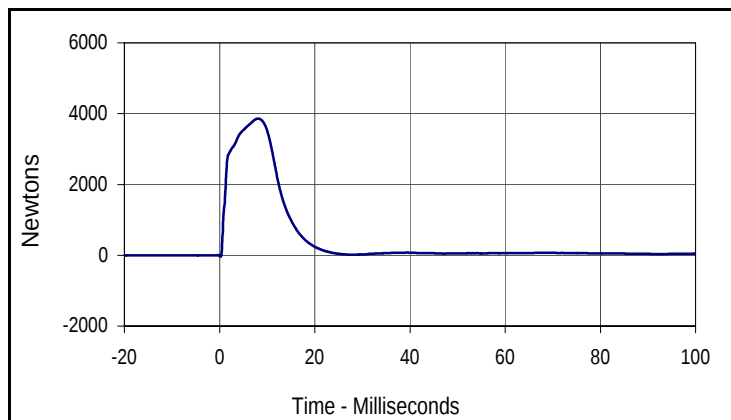
Current Time : 12:31:22

Test Program: SID IIs Pelvis Acetabulum Impact Test
 ATD Serial No.: 299

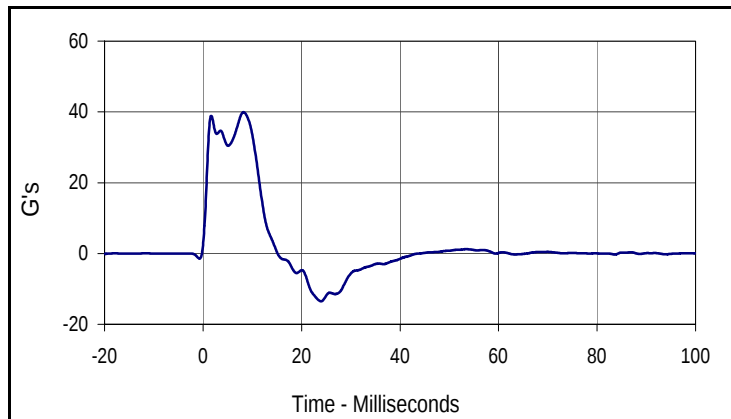
Test Date: 3/4/13
 Test I.D.: 299ACET058



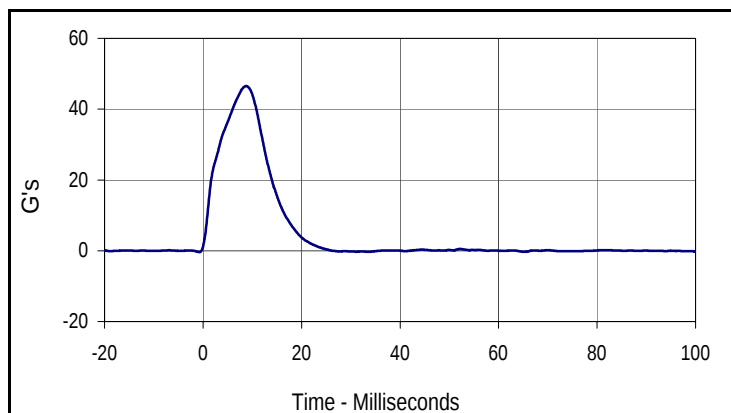
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	685	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	22.1	Pass
	Min	°C		20.9	Pass
Humidity During Soak	Max	%	10.0 to 70.0	33.2	Pass
	Min	%		25.6	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.3	Pass
Impactor Velocity		m/s	6.6 to 6.8	6.67	Pass
Peak Acetabulum Force Y		Newtons	3600 to 4300	3862.0	Pass
Peak Pelvis Y Acceleration After 6 msec.		G's	34 to 42	39.9	Pass
Peak Impactor Acceleration		G's	38 to 47	46.5	Pass
Overall Test Results				Pass	



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3862.0	8.1	-40.8	0.2



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
39.9	8.2	-13.5	23.9



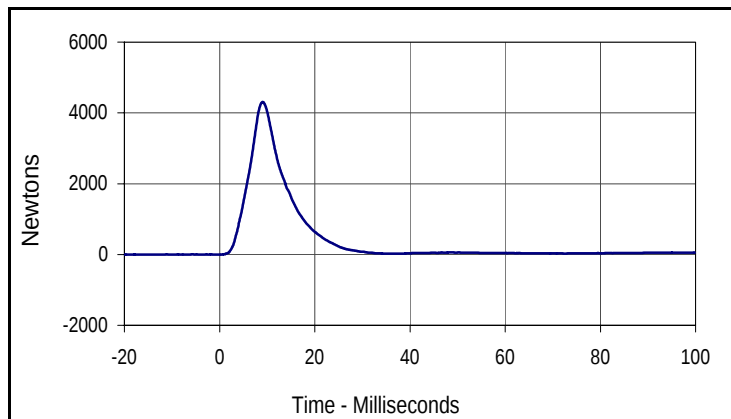
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
46.5	8.7	-0.4	-0.8

Test Program: SID IIs Pelvis Iliac Calibration
 ATD Serial No.: 299

Test Date: 3/4/13
 Test I.D.: 299PL058



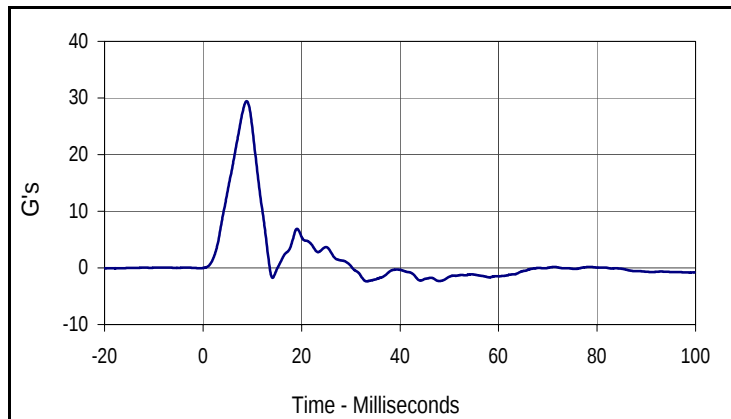
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	750	Pass
Temperature During Soak	Max	20.6 to 22.2	22.1	Pass
	Min		20.9	Pass
Humidity During Soak	Max	10.0 to 70.0	33.2	Pass
	Min		25.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.2	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.32	Pass
Peak Iliac Force	Newtons	4100 to 5100	4306.8	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	29.4	Pass
Peak Impactor Acceleration	G's	36 to 45	40.7	Pass
Overall Test Results			Pass	



Curve Description

Pelvis Iliac Force

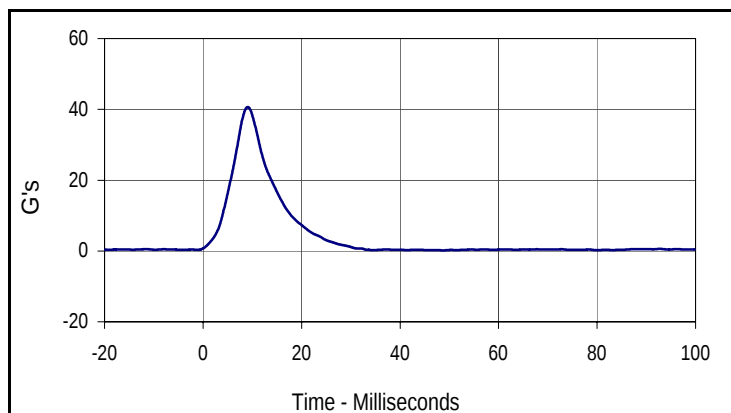
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4306.8	9.1	-2.0	-18.6



Curve Description

Pelvis Y Acceleration

Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
29.4	8.9	-2.4	33.2



Curve Description

Impactor Acceleration

Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
40.7	9.1	0.0	0.0

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

Test Program: SID IIs External Measurements
 ATD Serial No.: 299

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



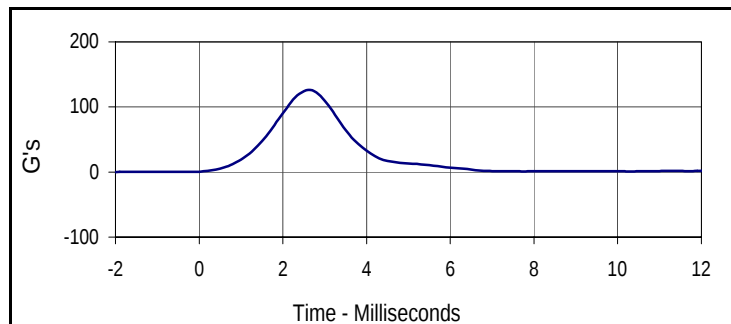
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
A	Sitting Height	mm	772 - 788	780	Pass
B	Shoulder Pivot Height	mm	437 - 453	445	Pass
C	H-Point Height	mm	79 - 89	85	Pass
D	H-Point from Seatback	mm	141 - 151	145	Pass
E	Shoulder Pivot from Backline	mm	97 - 107	102	Pass
F	Thigh Clearance	mm	119 - 135	125	Pass
G	Head Breadth	mm	140 - 148	145	Pass
H	Head Back from Backline	mm	40 - 46	44	Pass
I	Head Depth	mm	178 - 188	184	Pass
J	Head Circumference	mm	541 - 551	545	Pass
K	Buttock to Knee Length	mm	514 - 540	527	Pass
L	Popliteal Height	mm	343 - 369	352	Pass
M	Knee Pivot to Floor Height	mm	392 - 409	401	Pass
N	Buttock Popliteal Length	mm	416 - 442	432	Pass
O	Chest Depth w/o Jacket	mm	195 - 211	202	Pass
P	Foot Length	mm	216 - 232	221	Pass
Q	Hip Breadth with Pelvic Plug	mm	313 - 323	315	Pass
R	Arm Length	mm	249 - 259	252	Pass
S	Knee Joint to Seatback	mm	477 - 493	481	Pass
V	Shoulder Width	mm	341 - 357	352	Pass
W	Foot Width	mm	78 - 94	86	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.: 299

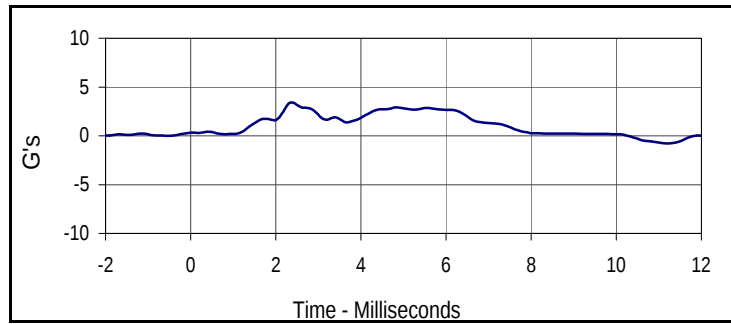
Test Date: 4/3/13
 Test I.D.: 299HD059



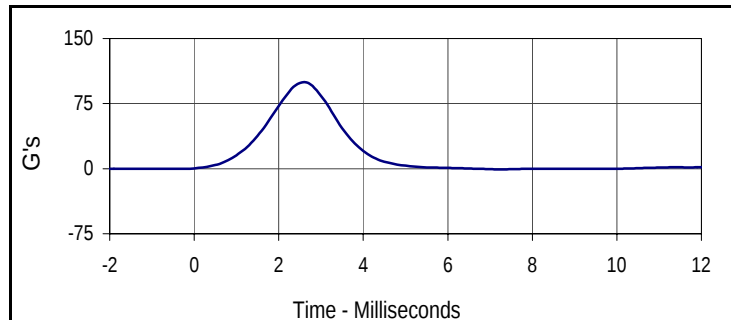
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	365	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	22.1	Pass
	Min	°C		20.9	Pass
Humidity During Soak	Max	%	10.0 to 70.0	33.2	Pass
	Min	%		25.6	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.8	Pass
Peak Head Resultant Acceleration		G's	115 to 137	126.1	Pass
Peak Head X Acceleration		G's	<15	3.4	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse		%	<15	1.6	Pass
Overall Test Results				Pass	



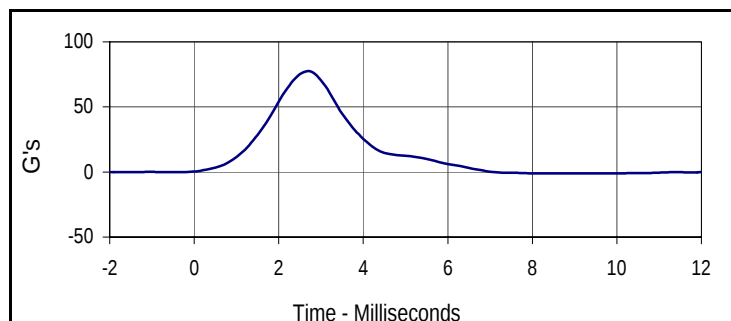
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
126.1	2.6	0.1	-2.0



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
3.4	2.4	0.0	-0.5



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
99.9	2.6	-0.7	7.2



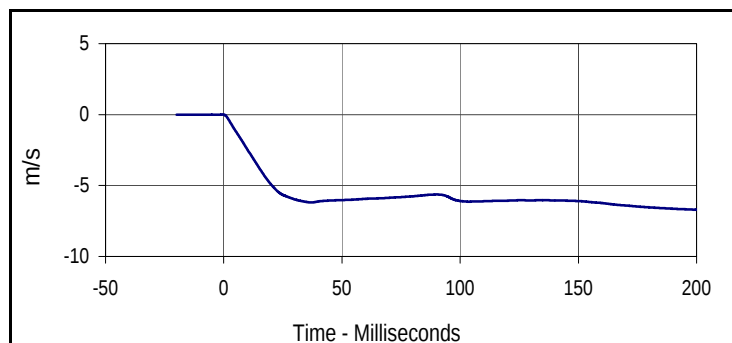
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
77.5	2.7	-1.1	10.1

Test Program: SID IIs Neck Flexion Test
 ATD Serial No.: 299

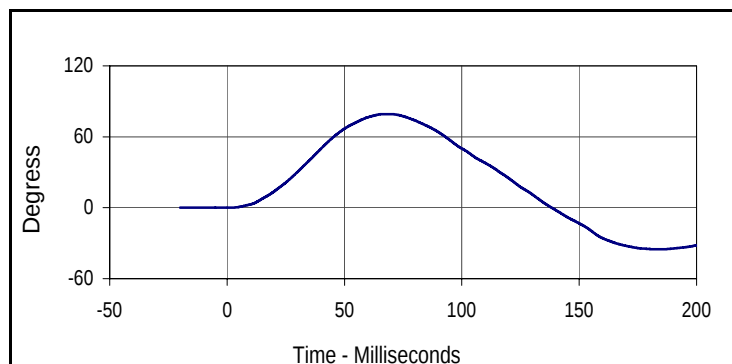
Test Date: 4/3/13
 Test I.D.: 299NB059



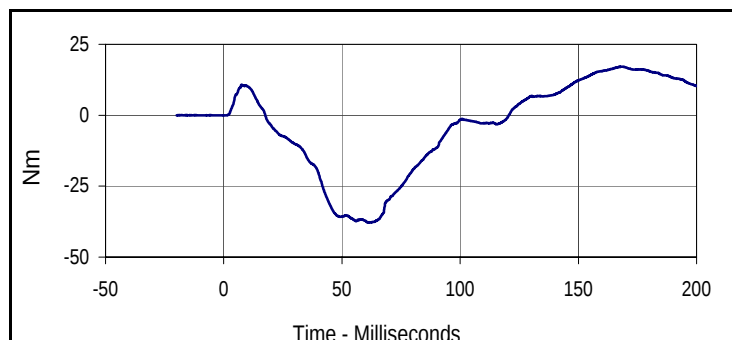
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	400	Pass
Temperature During Soak	Max	20.6 to 22.2	22.1	Pass
	Min		20.9	Pass
Humidity During Soak	Max	10.0 to 70.0	33.2	Pass
	Min		25.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.8	Pass
Pendulum Velocity	m/s	5.51 to 5.63	5.60	Pass
Pendulum Deceleration	10 msec	-2.20 to -2.80	-2.46	Pass
	15 msec	-3.30 to -4.10	-3.76	Pass
	20 msec	-4.40 to -5.40	-4.92	Pass
	25 msec	-5.40 to -6.10	-5.66	Pass
	25-100 msec	-5.50 to -6.20	-6.19	Pass
D-Plane Rotation	Max	71 to 81	79.2	Pass
	Time	50 to 70	66.6	Pass
Peak Occipital Condyle Moment	Nm	-36 to -44	-37.8	Pass
Decaying Moment Time to Cross 0 Nm	msec	102 to 126	120.6	Pass
Overall Test Results			Pass	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.6	-6.7	200.0



Curve Description			
Maximum Translation Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
79.2	66.6	-35.2	183.4



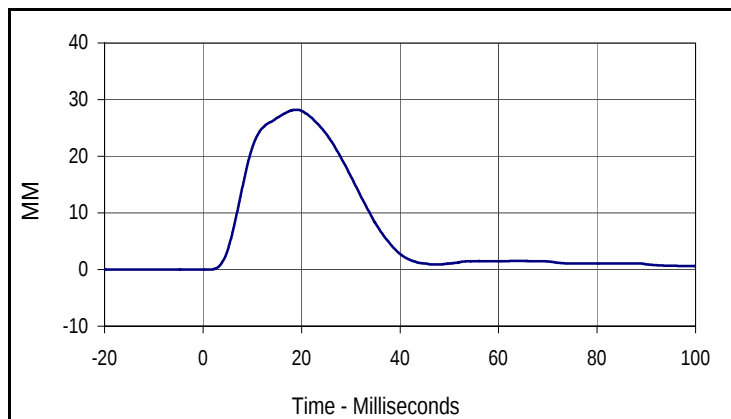
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
17.1	168.5	-37.8	62.0

Test Program: SID IIs Shoulder Impact Test
 ATD Serial No.: 299

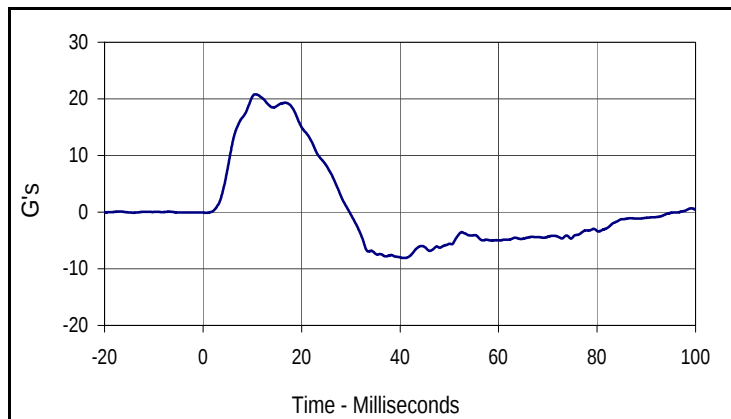
Test Date: 4/3/13
 Test I.D.: 299SH059



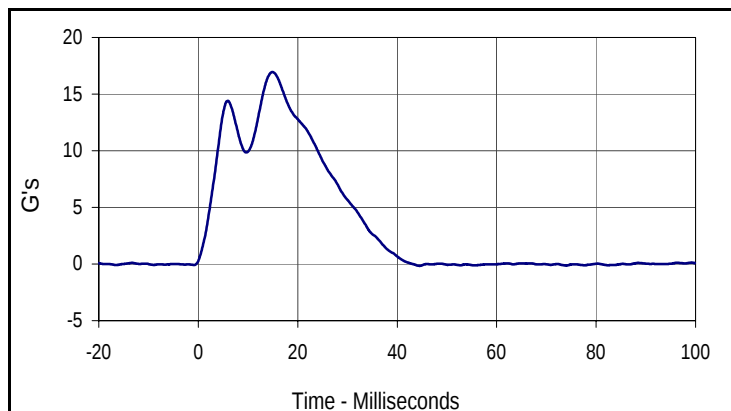
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	455	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	22.1	Pass
	Min	°C		20.9	Pass
Humidity During Soak	Max	%	10.0 to 70.0	33.2	Pass
	Min	%		25.6	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.8	Pass
Impactor Velocity		m/s	4.20 to 4.40	4.31	Pass
Peak Shoulder Deflection		mm	28 to 37	28.2	Pass
Peak Lateral Spine Acceleration Y		G's	17 to 22	20.8	Pass
Peak Impactor Acceleration		G's	13 to 18	17.0	Pass
Overall Test Results				Pass	



Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
28.2	18.7	0.0	-9.3



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
20.8	10.6	-8.1	40.8



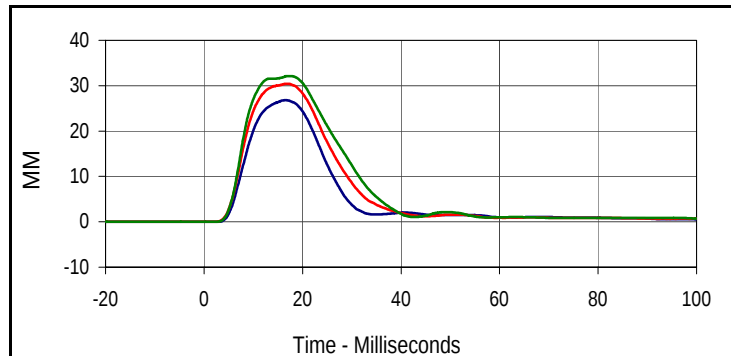
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
17.0	14.9	-0.2	44.5

Test Program: SID IIs Thorax with Arm Impact Test
 ATD Serial No.: 299

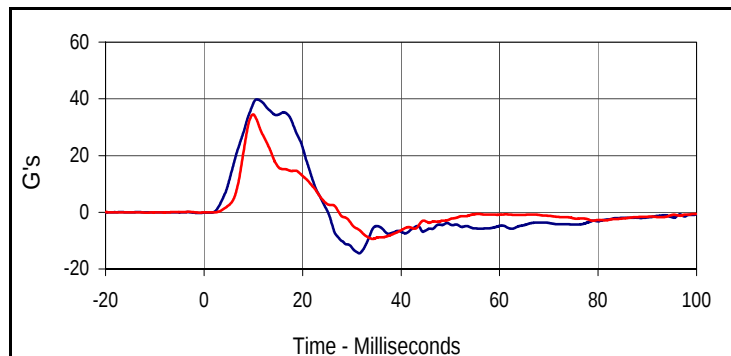
Test Date: 4/3/13
 Test I.D.: 299TWA059



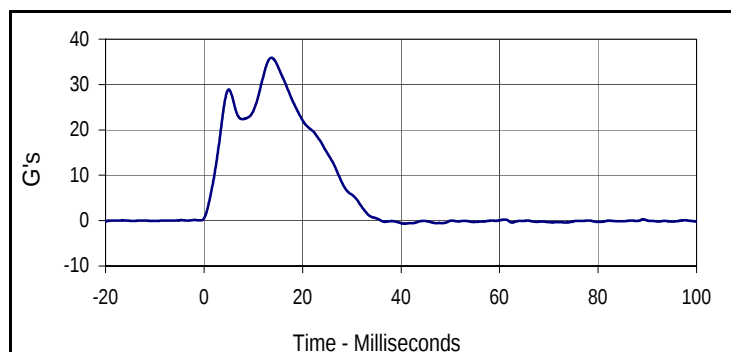
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	500	Pass
Temperature During Soak	Max	20.6 to 22.2	22.1	Pass
	Min		20.9	Pass
Humidity During Soak	Max	10.0 to 70.0	33.2	Pass
	Min		25.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.8	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.68	Pass
Peak Shoulder Deflection	mm	31 to 40	35.7	Pass
Peak Upper Thorax Rib Deflection	mm	25 to 32	26.8	Pass
Peak Middle Thorax Rib Deflection	mm	30 to 36	30.4	Pass
Peak Lower Thorax Rib Deflection	mm	32 to 38	32.1	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	39.8	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	34.5	Pass
Peak Impactor Acceleration	G's	30 to 36	35.9	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
26.8	16.5	0.0	-20.0
Middle Thorax Deflection			
Max	Time	Min	Time
30.4	16.9	0.0	-16.8
Lower Thorax Deflection			
Max	Time	Min	Time
32.1	17.1	0.0	-10.0



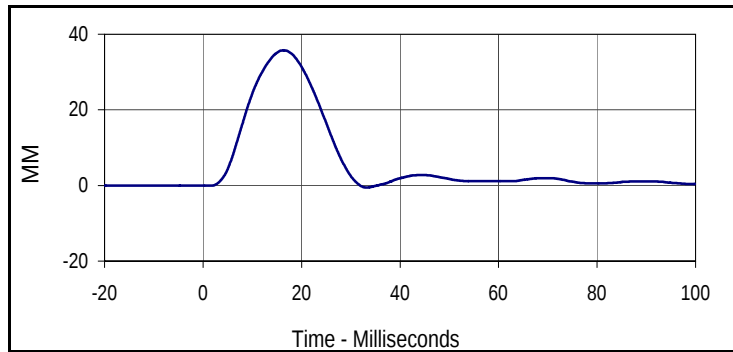
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
39.8	10.7	-14.5	31.5
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
34.5	9.9	-9.4	34.3



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
35.9	13.7	-0.7	40.7

Test Program: SID IIs Thorax with Arm Impact Test
 ATD Serial No.: 299

Test Date: 4/3/13
 Test I.D.: 299TWA059



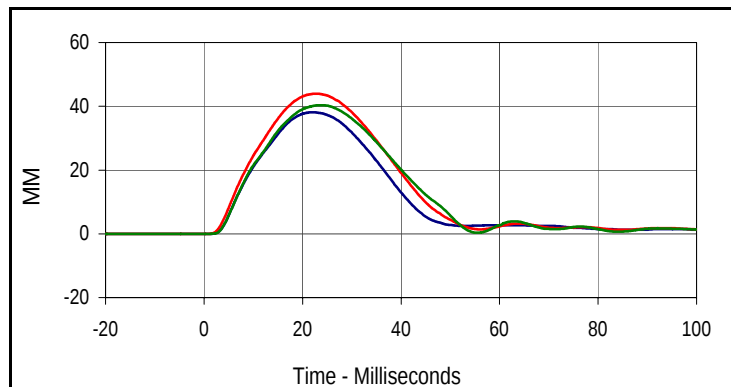
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	MM
Max	Time	Min	Time
35.7	16.5	-0.5	33.2

Test Program: SID IIs Thorax without Arm Impact Test
 ATD Serial No.: 299

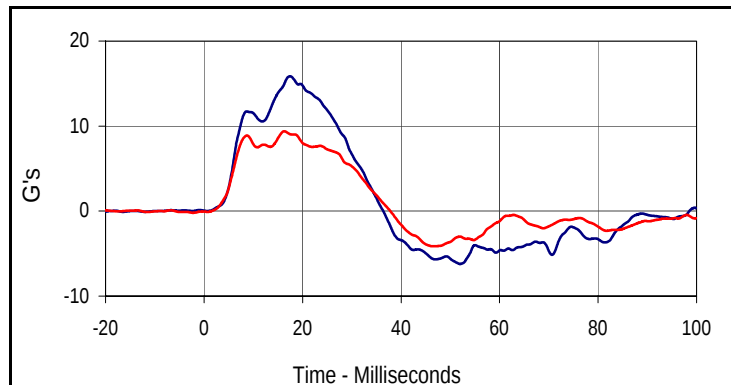
Test Date: 4/3/13
 Test I.D.: 299TWOA059



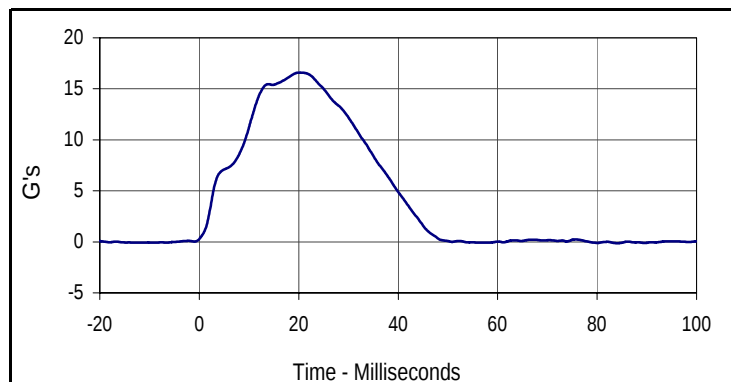
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	545	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	22.1	Pass
	Min	°C		20.9	Pass
Humidity During Soak	Max	%	10.0 to 70.0	33.2	Pass
	Min	%		25.6	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.7	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.38	Pass
Peak Upper Thorax Rib Deflection		mm	32 to 40	38.2	Pass
Peak Middle Thorax Rib Deflection		mm	39 to 45	43.9	Pass
Peak Lower Thorax Rib Deflection		mm	35 to 43	40.3	Pass
Peak Upper Spine Y Acceleration		G's	13 to 17	15.9	Pass
Peak Lower Spine Y Acceleration		G's	7 to 11	9.4	Pass
Peak Impactor Acceleration		G's	14 to 18	16.6	Pass
Overall Test Results				Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
38.2	22.0	0.0	-2.7
Middle Thorax Deflection			
Max	Time	Min	Time
43.9	22.7	0.0	-4.7
Lower Thorax Deflection			
Max	Time	Min	Time
40.3	23.5	0.0	-10.2



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.9	17.4	-6.2	52.0
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
9.4	16.3	-4.1	46.5



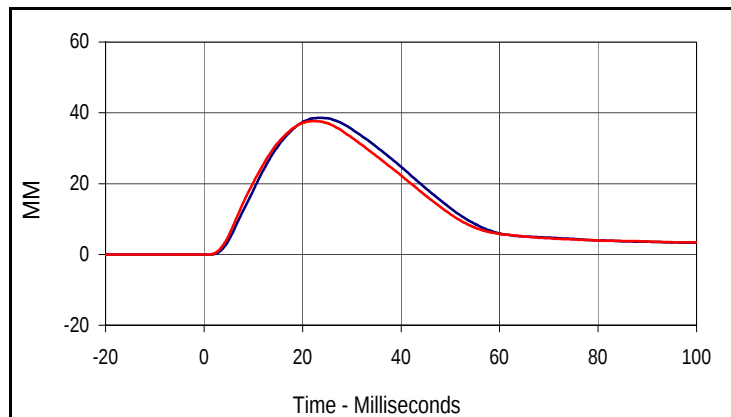
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
16.6	20.6	-0.1	84.0

Test Program: SID IIs Abdomen Impact Test
 ATD Serial No.: 299

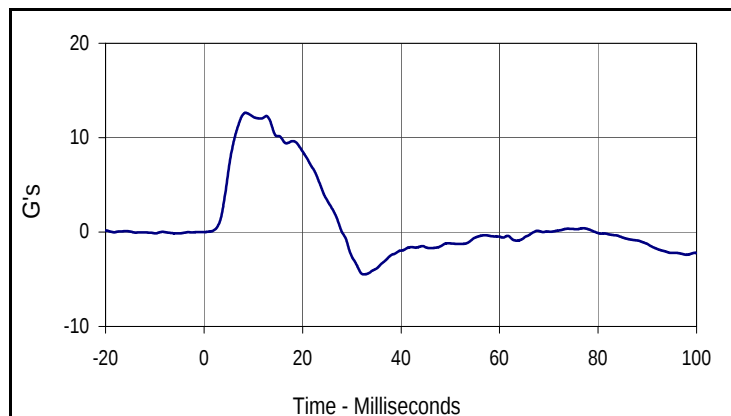
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 Test I.D.: 299ABD059



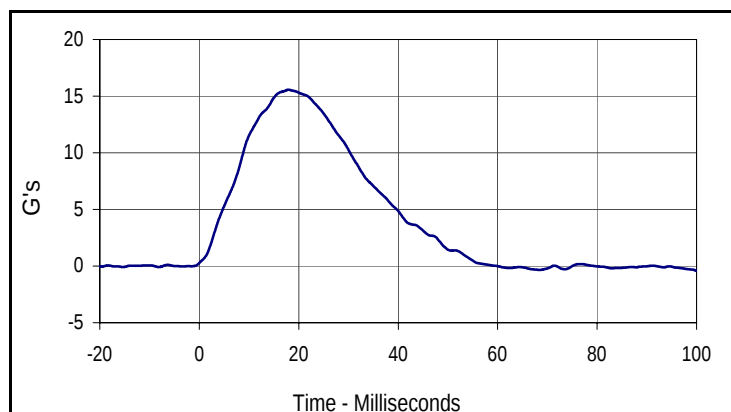
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	590	Pass
Temperature During Soak	Max °C	20.6 to 22.2	22.1	Pass
	Min °C		20.9	Pass
Humidity During Soak	Max %	10.0 to 70.0	33.2	Pass
	Min %		25.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.7	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.32	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	38.6	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	37.6	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	12.6	Pass
Peak Impactor Acceleration	G's	12 to 16	15.6	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
38.6	23.7	0.0	-16.6
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
37.6	22.0	0.0	-15.8



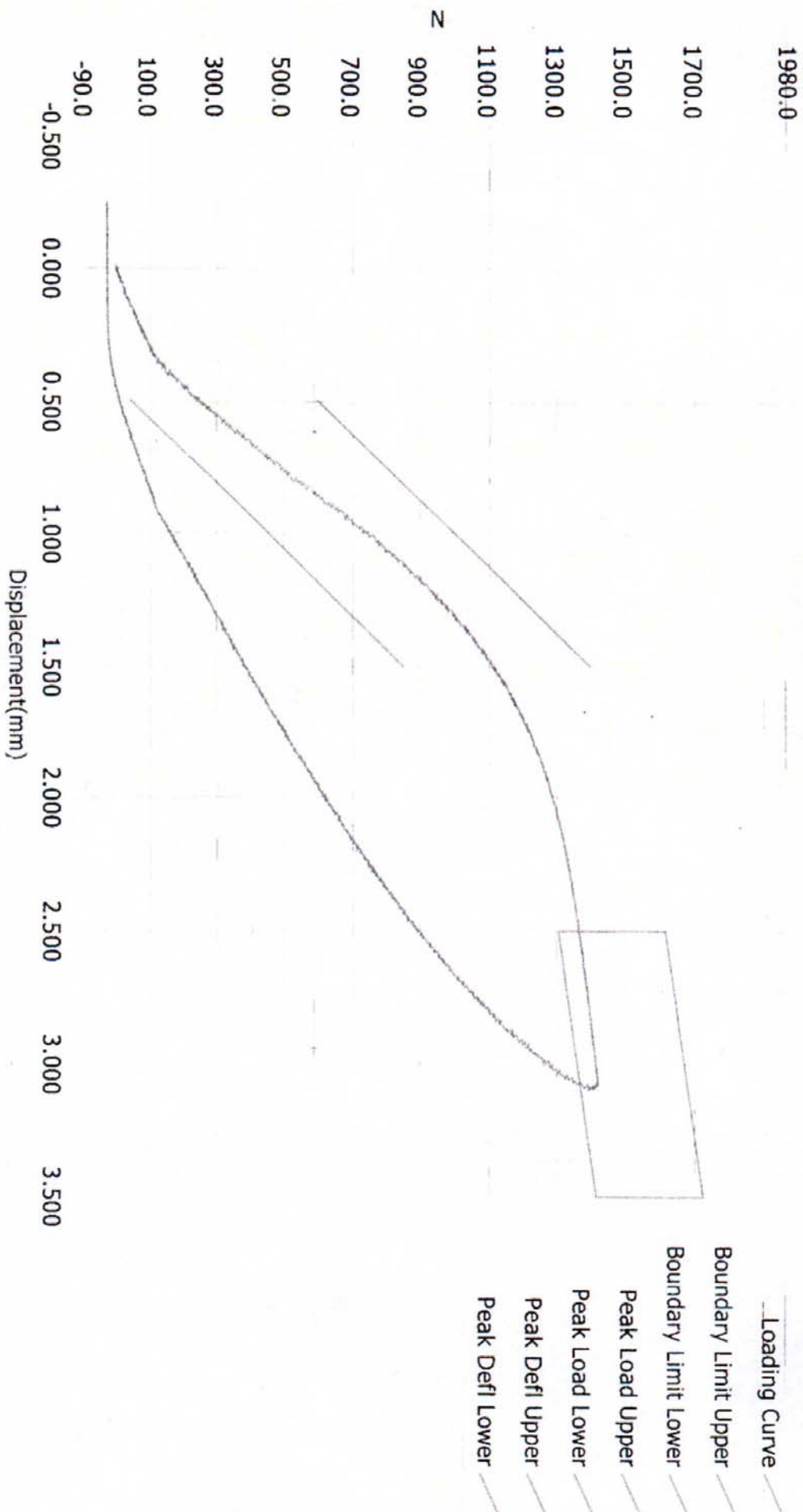
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
12.6	8.4	-4.5	32.4



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.6	17.9	-0.4	99.9

MD5310 POST 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>
	46864	10/5/2011	11:24 PM
<u>Cert ID</u>	<u>ATD Serial Number</u>	<u>ATD Type</u>	
	N/A	SIDIIs	

Current Date : 10/5/2011

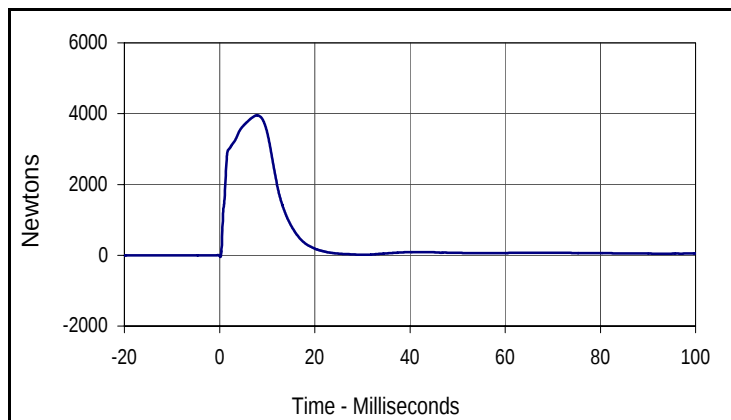
Current Time : 23:25:10

Test Program: SID IIs Pelvis Acetabulum Impact Test
 ATD Serial No.: 299

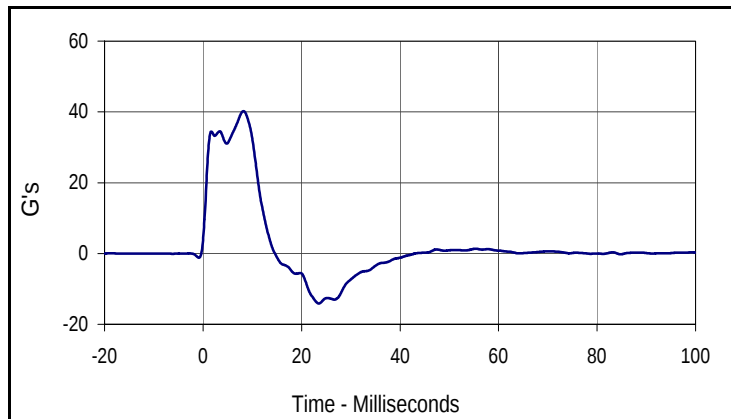
Test Date: 4/3/13
 Test I.D.: 299ACET059



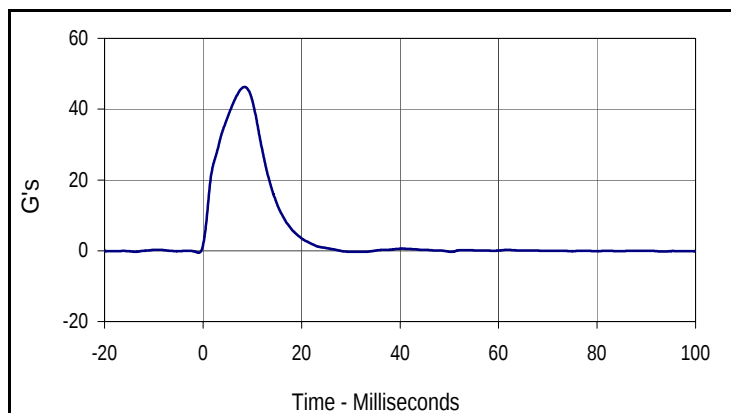
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	635	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	22.1	Pass
	Min	°C		20.9	Pass
Humidity During Soak	Max	%	10.0 to 70.0	33.2	Pass
	Min	%		25.6	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.7	Pass
Impactor Velocity		m/s	6.6 to 6.8	6.65	Pass
Peak Acetabulum Force Y		Newtons	3600 to 4300	3953.0	Pass
Peak Pelvis Y Acceleration After 6 msec.		G's	34 to 42	40.2	Pass
Peak Impactor Acceleration		G's	38 to 47	46.3	Pass
Overall Test Results				Pass	



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3953.0	7.9	-48.1	0.2



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
40.2	8.2	-14.1	23.5



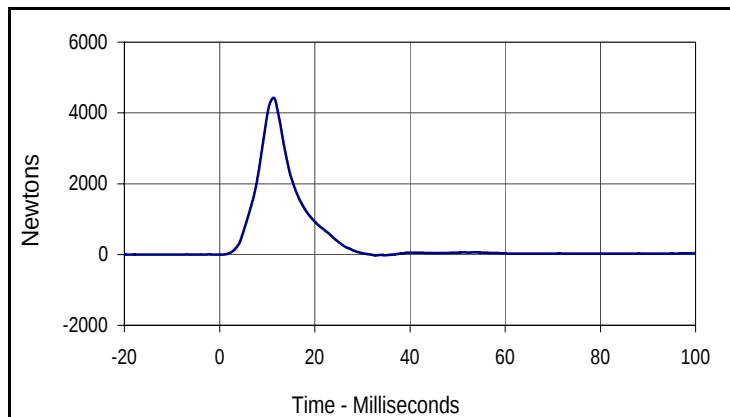
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
46.3	8.4	-0.5	-0.9

Test Program: SID IIs Pelvis Iliac Calibration
 ATD Serial No.: 299

Test Date: 4/3/13
 Test I.D.: 299PL059



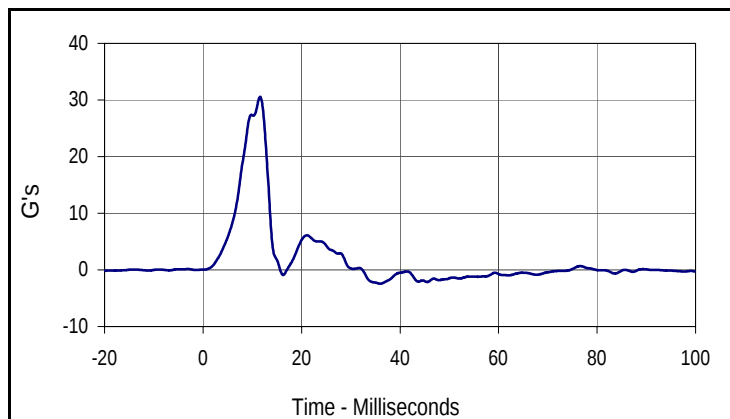
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	700	Pass
Temperature During Soak	Max	20.6 to 22.2	22.1	Pass
	Min		20.9	Pass
Humidity During Soak	Max	10.0 to 70.0	33.2	Pass
	Min		25.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.8	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.34	Pass
Peak Iliac Force	Newtons	4100 to 5100	4429.6	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	30.6	Pass
Peak Impactor Acceleration	G's	36 to 45	39.7	Pass
Overall Test Results			Pass	



Curve Description

Pelvis Iliac Force

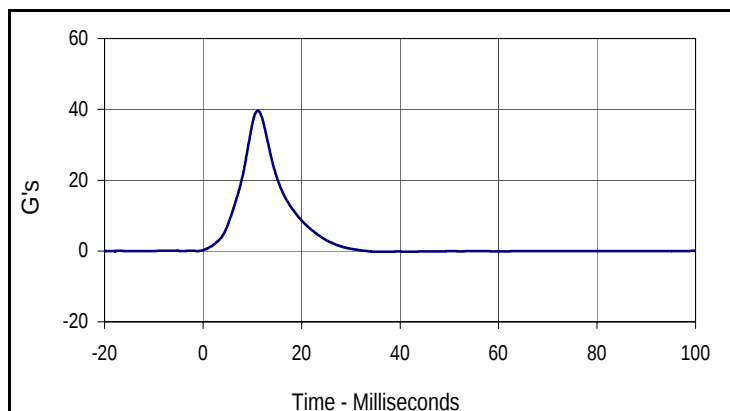
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4429.6	11.4	-24.9	32.8



Curve Description

Pelvis Y Acceleration

Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
30.6	11.6	-2.4	36.0



Curve Description

Impactor Acceleration

Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
39.7	11.1	-0.2	37.0

APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

TABLE 1 – Dummy Instrumentation (SID-IIs)

				SID-IIs S/N 299			
				Serial Number	Manufacturer	Calibration	
Head Accelerometers				X	P51926	Endevco	10/2/12
				Y	P51929	Endevco	10/2/12
				Z	P51934	Endevco	10/2/12
Displacement Potentiometers	Shoulder			Y	1074	FTSS	10/5/12
	Thoracic Rib	Upper	Y	1143	FTSS	10/5/12	
		Middle	Y	1160	FTSS	10/5/12	
		Lower	Y	1213	FTSS	10/5/12	
	Abdominal Rib	Upper	Y	1218	FTSS	10/5/12	
		Lower	Y	1234	FTSS	10/5/12	
Lower Spine Accelerometers (T12)				X	P63999	Endevco	10/3/12
				Y	P58872	Endevco	10/3/12
				Z	P58795	Endevco	10/3/12
Acetabulum Load Cell				Y	272	Denton	5/24/12
Iliac Wing Load Cell				Y	284	Denton	5/24/12
Pelvis Plug (Struck Side)					48894	FTSS	12/5/11
Pelvis Plug (Non-Struck Side)					49028	FTSS	12/7/11

TABLE 2 – Vehicle Instrumentation

Vehicle Instrumentation		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	Ketx12a	ICSensor	7/20/12
Vehicle Center of Gravity	Y	Ketx12b	ICSensor	7/20/12
Vehicle Center of Gravity	Z	Ketx12c	ICSensor	7/20/12
Left Floor Sill	Y	13503	Endevco	1/4/13
A-Pillar Sill	Y	13716	Endevco	10/22/12
A-Pillar Low	Y	13707	Endevco	10/22/12
A-Pillar Mid	Y	13719	Endevco	10/22/12
B-Pillar Sill	Y	13481	Endevco	8/17/12
B-Pillar Low	Y	13470	Endevco	8/20/12
B-Pillar Mid	Y	13651	Endevco	9/24/12
Driver Seat	Y	13708	Endevco	10/22/12
Engine Top	X	13467	Endevco	8/17/12
Engine Top	Y	13498	Endevco	1/4/13
Firewall	Y	11111	Endevco	6/18/12
Right Roof	Y	13646	Endevco	1/4/13
Right Floor Sill	Y	13652	Endevco	1/4/13
Rear Floorpan	X	13717	Endevco	10/22/12
Rear Floorpan	Y	12881	Endevco	1/11/12

TABLE 3 – Pole Instrumentation

	Serial Number	Manufacturer	Calibration Date
Load Cell 1	131822A	Interface	9/17/12
Load Cell 2	132304A	Interface	9/17/12
Load Cell 3	19477	Interface	9/18/12
Load Cell 4	19325	Interface	9/18/12
Load Cell 5	131827A	Interface	9/18/12
Load Cell 6	132302A	Interface	9/18/12
Load Cell 7	19267	Interface	9/19/12
Load Cell 8	19321	Interface	9/19/12