

REPORT NUMBER: SPNCAP-KAR-14-011

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

**TOYOTA MOTOR CORPORATION
2014 TOYOTA PRIUS 5-DOOR HATCHBACK**

NHTSA No: M20145113

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



DECEMBER 20, 2013

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
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				14. Sponsoring Agency Code NVS-111																												
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16. Abstract A 32.2 km/h (20 mph) 75 deg. oblique impact Side NCAP Test was conducted on the subject 2014 Toyota Prius 5-door hatchback 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 December 6, 2013. The impact velocity was 31.78 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 9.2 deg. C. The target vehicle's maximum post-test static crush was 360 mm located at level 4. 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 (SID-IIs)</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>380.7</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td>g</td> <td>82</td> <td>57.9</td> </tr> <tr> <td>Total Pelvic Force (Sum of Acetabular and Iliac Forces)</td> <td>N</td> <td>5525</td> <td>4127</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>38</td> <td>30</td> </tr> <tr> <td>Maximum Abdominal Rib Deflection</td> <td>mm</td> <td>45</td> <td>19</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 (SID-IIs)			Units	Threshold	Result	Head Injury Criteria (HIC ₃₆)		1000	380.7	Resultant Lower Spine Acceleration	g	82	57.9	Total Pelvic Force (Sum of Acetabular and Iliac Forces)	N	5525	4127	Maximum Thoracic Rib Deflection	mm	38	30	Maximum Abdominal Rib Deflection	mm	45	19
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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 2014 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 2014 Toyota Prius 5-door hatchback. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated September 2013.

SECTION 2

SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a 2014 Toyota Prius 5-Door Hatchback. The subject vehicle was towed into the rigid pole at an angle of 74.7° and a velocity of 31.78 km/h. The test was conducted by KARCO Engineering, LLC. in Adelanto, California on December 6, 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 2013. 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	380.7
Lower Spine (T12) Resultant Acceleration	g	82	58
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	4127
Maximum Thoracic Rib Deflection	mm	38*	30
Maximum Abdominal Rib Deflection	mm	45*	19

*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	Yes	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: 2014 Toyota Prius 5-Door Hatchback NHTSA No. M20145113
Test Program: NCAP Side Pole Impact Test Test Date: 12/06/13

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: 2014 Toyota Prius 5-Door Hatchback NHTSA No. M20145113
 Test Program: NCAP Side Pole Impact Test Test Date: 12/06/13

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	M20145113
Model Year	2014
Make	Toyota
Model	Prius
Body Style	5-Door Hatchback
VIN	JTDKN3DU8E1736808
Body Color	Classic Silver
Odometer Reading (km / mi)	5 / 3
Engine Displacement (L)	1.8
Type / No. of Cylinders	Inline 4
Engine Placement	Transverse
Transmission Type	Automatic
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	No
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	Yes
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?

N/A

DATA FROM CERTIFICATION LABEL

Manufactured By	Toyota Motor Corporation
Date of Manufacture	Oct-13
Vehicle Type	Passenger Car

GVWR (kg)	1819
GAWR Front (kg)	1029
GAWR Rear (kg)	986

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity	2	3		5	
Capacity Weight (VCW) (kg)				365.0	A
DSC x 68.04 (kg)				340.2	B
Cargo Weight (RCLW) (kg)				24.8	A-B

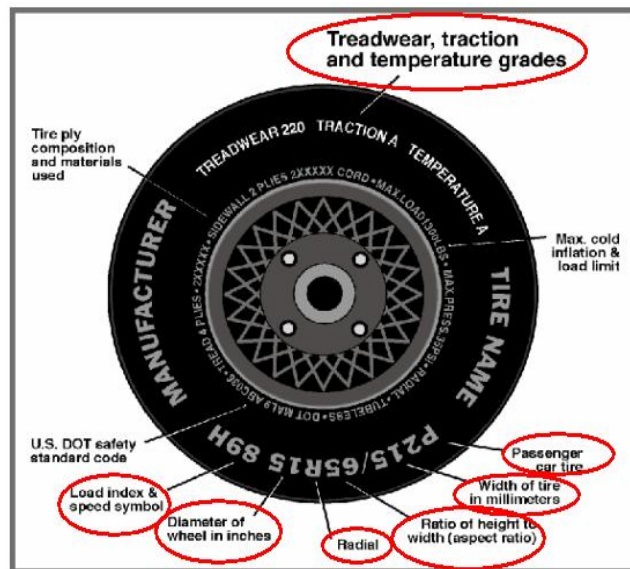
VEHICLE SEAT TYPE

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: 2014 Toyota Prius 5-Door Hatchback NHTSA No. M20145113
 Test Program: NCAP Side Pole Impact Test Test Date: 12/06/13



Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	300	300
Cold Pressure (kPa)	240	230
Recommended Tire Size	P195/65R15	P195/65R15
Tire Size on Vehicle	P195/65R15	P195/65R15
Tire Manufacturer	Goodyear	Goodyear
Tire Model	Assurance	Assurance
Treadware	540	540
Traction Grade	A	A
Temperature Grade	B	B
Tire Plies Sidewall	1 Polyester	1 Polyester
Tire Plies Body	1 Polyester, 2 Steel	1 Polyester, 2 Steel
Load Index/Speed Symbol	89S	89S
Tire Material	Polyester, Steel	Polyester, Steel
DOT Safety Code Left	EU9N 2KNR3813	EU9N 2KNR3813
DOT Safety Code Right	EU9N 2KNR3813	EU9N 2KNR3813

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2014 Toyota Prius 5-Door Hatchback NHTSA No. M20145113
 Test Program: NCAP Side Pole Impact Test Test Date: 12/06/13

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	250	250	250	250
Tire Placard	kPa	240	240	230	230
Owner's Manual	kPa	240	240	230	230
As Tested	kPa	240	240	230	230

TEST VEHICLE AXLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	439.0	295.5		454.5	323.5		459.0	324.0	
Right	kg	409.0	264.5		409.0	287.5		413.0	286.5	
Ratio	%	60.2%	39.8%	100.0%	58.6%	41.4%	100.0%	58.8%	41.2%	100.0%
Total	kg	848.0	560.0	1408.0	863.5	611.0	1474.5	872.0	610.5	1482.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1408.0	A
Actual Weight of 1 P572 O ATD Used	kg	49.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	24.8	C
Calculated Vehicle Target Wt (TVTW)	kg	1481.8	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	As Delivered	As Tested	Fully Loaded	Meets Requirement***
Driver Door Sill Angle (front-to-rear)*	°	0.1	0.3	0.3	Yes
Front Passenger Sill Angle (front-to-rear)*	°	-0.3	-0.3	-0.2	Yes
Front Bumper-Line Angle (left-to-right)**	°	-0.5	-0.7	-0.7	Yes
Rear Bumper-Line Angle (left-to-right)**	°	0.1	0.0	0.0	Yes
Vehicle CG (Aft of Front Axle)	mm	1073	1118	1111	
Vehicle CG (Left (+)/Right (-) from Longitudinal Centerline)	mm	33	42	43	

*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: 2014 Toyota Prius 5-Door Hatchback NHTSA No. M20145113
Test Program: NCAP Side Pole Impact Test Test Date: 12/06/13

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Tail Lights	4.0
Rear Bumper Cover	4.0
Head Lights	5.0
Front Bumper	8.0
Door Panels	5.0
Rear Trim	14.0
Spare Tire	12.0
Spare Tire Tools	3.5
Hub Caps	1.0
Ballast / Equipment Added	63.5

Test Height Adjustable Setting (If Applicable)	
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DATA SHEET NO. 2**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA**

Test Vehicle: 2014 Toyota Prius 5-Door Hatchback NHTSA No. M20145113
 Test Program: NCAP Side Pole Impact Test Test Date: 12/06/13

SEAT POSITIONING

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

SCRL ANGLE RANGE

Seat	SCRL (°)		
	Max	Min	Mid
Driver Seat	7.2	0.0	3.6
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	3.6	561	Max	539	550	561
			Mid	539	550	561
			Min	539	550	561
Front Passenger Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
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

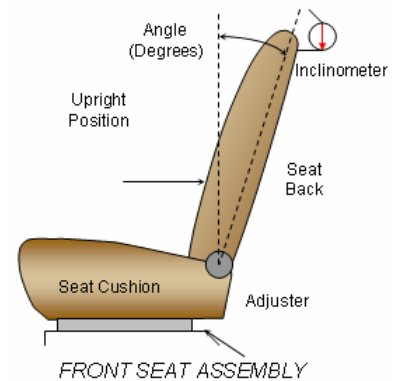
Test Vehicle: 2014 Toyota Prius 5-Door Hatchback NHTSA No. M20145113
 Test Program: NCAP Side Pole Impact Test Test Date: 12/06/13

SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position From Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	260	27	0	0
Front Passenger Seat	260	27	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 front center and front passenger's seat backs are positioned in a similar manner to the driver's seat. The struck side rear passenger seat back is positioned in accordance with the information provided by the manufacturer in Form 1 for the 5th percentile female dummy in a Side NCAP MDB Test. The rear center and non-struck side rear passenger's seat back is set to match the struck side rear seat back. Seat back angle is measured at the headrest post.



Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degree	Detent*
Driver Seat w/Seated Dummy	75.0	40	5.7	0
Front Passenger Seat	76.0	40	5.9	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: 2014 Toyota Prius 5-Door Hatchback NHTSA No. M20145113
Test Program: NCAP Side Pole Impact Test Test Date: 12/06/13

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	4	Full Down

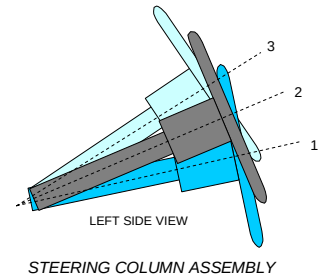
DATA SHEET NO. 2 ... (CONTINUED)

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

Test Vehicle: 2014 Toyota Prius 5-Door Hatchback NHTSA No. M20145113
Test Program: NCAP Side Pole Impact Test Test Date: 12/06/13

STEERING COLUMN ADJUSTMENT

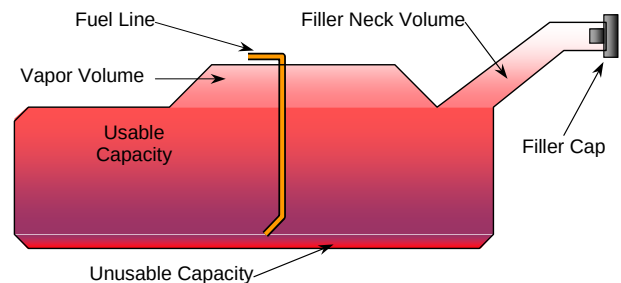
Steering wheel and column adjustments are made so that the steering wheel hub is at the center of the geometric locus it describes when it moves through its full range of motion.



	Degrees	Fore-Aft Position (mm)
Lowermost - Position 1	22.3	90
Geometric Center - Position 2	23.5	110
Uppermost - Position 3	24.8	130
Telescoping Steering Wheel Travel		40
Test Position	23.5	110

FUEL PUMP

The vehicle is equipped with an electric fuel pump. The fuel pump will pump fuel when the ignition key is in the "ON" position.



VEHICLE FUEL TANK ASSEMBLY

FUEL TANK CAPACITY

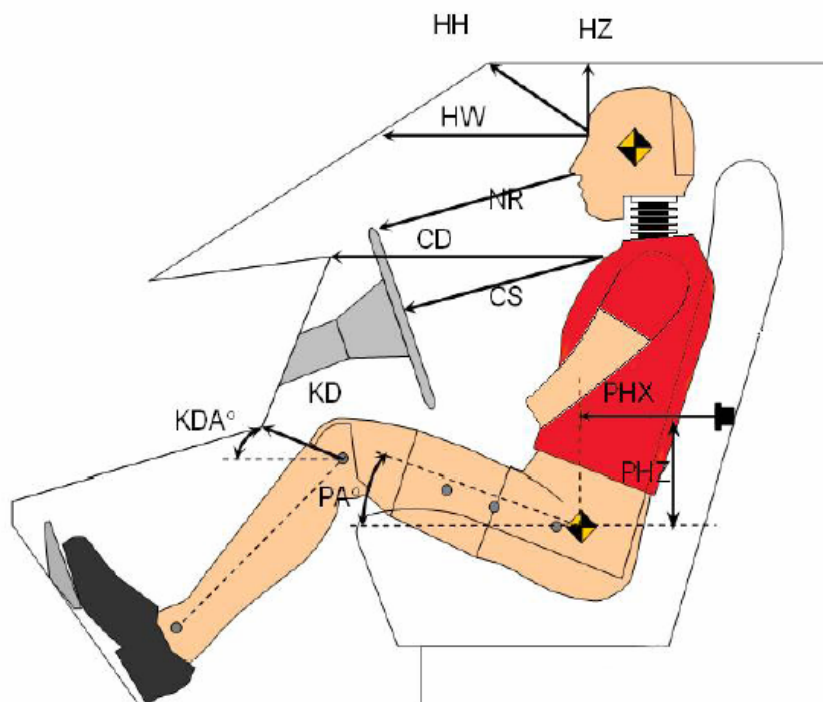
Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	45.00
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of "Standard Tank" (see Owner's Manual)	
Usable Capacity of "Optional Tank" (see Owner's Manual)	
93% of Usable Capacity	41.85
Actual amount of Solvent Used in Test	41.85
1/3 of Usable Capacity	15.00

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: 2014 Toyota Prius 5-Door Hatchback NHTSA No. M20145113
 Test Program: NCAP Side Pole Impact Test Test Date: 12/06/13

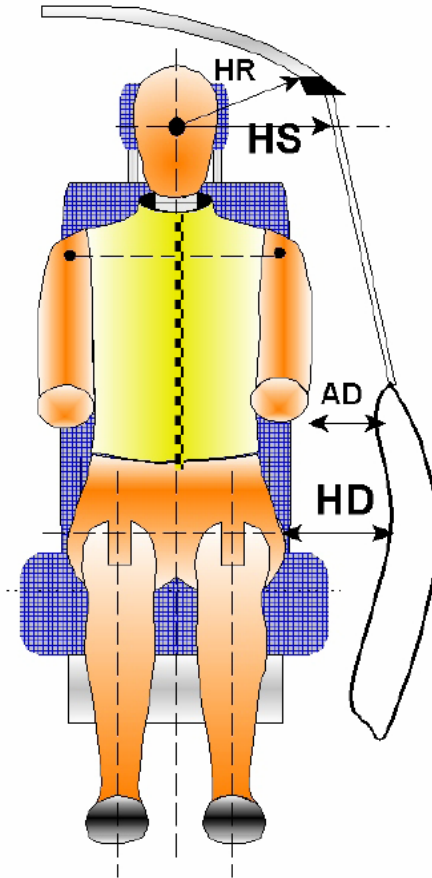


Driver Code	Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	260	
HW	Head to Windshield	685	
HZ	Head to Roof	172	
NR	Nose to Rim	240	
CD	Chest to Dash	674	
CS	Chest to Steering Wheel	171	
KD(L)/KDA(L)°	Left Knee to Dash	98	44.8
KD(R)/KDA(R)°	Right Knee to Dash	89	30.5
PAX°	Pelvic Tilt Angle (x-axis)		21.2
PAY°	Pelvic Tilt Angle (y-axis)		0.0
PHX	Hip Point to Striker (x-axis)	368	
PHZ	Hip Point to Striker (z-axis)	151	

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2014 Toyota Prius 5-Door Hatchback NHTSA No. M20145113
Test Program: NCAP Side Pole Impact Test Test Date: 12/06/13

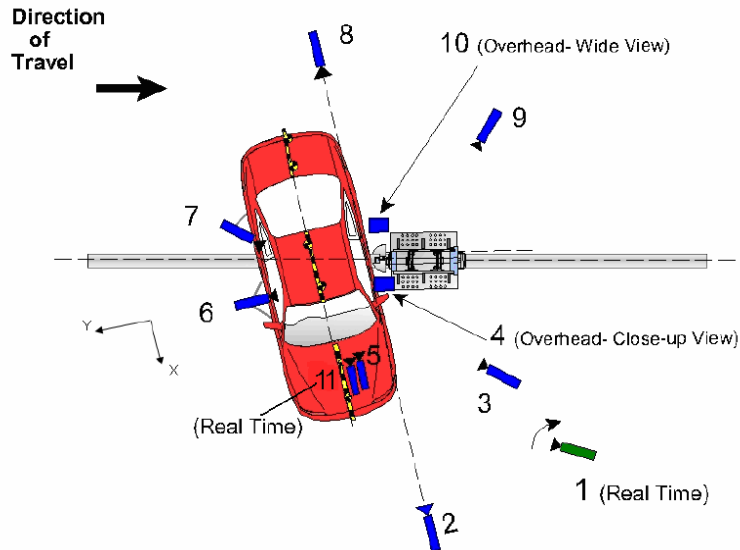


Code	Measurement Description	Units	Driver
HR	Head to Side Header	mm	246
HS	Head to Side Window	mm	387
AD	Arm to Door	mm	154
HD	Hip Point to Door	mm	161

DATA SHEET NO. 5

CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2014 Toyota Prius 5-Door Hatchback NHTSA No. M20145113
 Test Program: NCAP Side Pole Impact Test Test Date: 12/06/13



Reference from Point of Impact for X and Y; from Ground for Z):
 +X = Forward of Vehicle, +Y = Right of Vehicle, +Z = Down

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	0.50	1.27	-1.37	35	1000
6	On-Board - Dummy Side View	-0.92	2.44	-1.10	14	1000
7	On-Board - Dummy Rear Oblique View	-1.83	2.44	-1.12	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	0.50	1.39	-1.38		30

*All measurements accurate to ± 6 mm

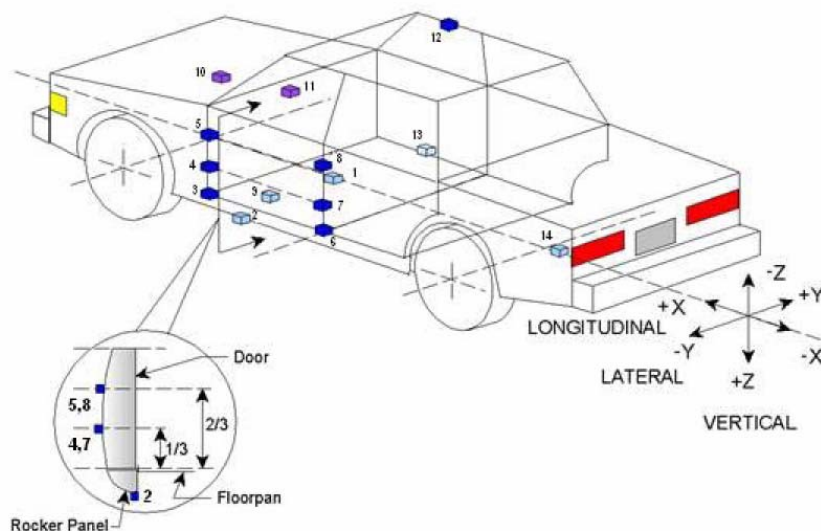
INSTRUMENTATION

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

DATA SHEET NO. 6

TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2014 Toyota Prius 5-Door Hatchback NHTSA No. M20145113
 Test Program: NCAP Side Pole Impact Test Test Date: 12/06/13

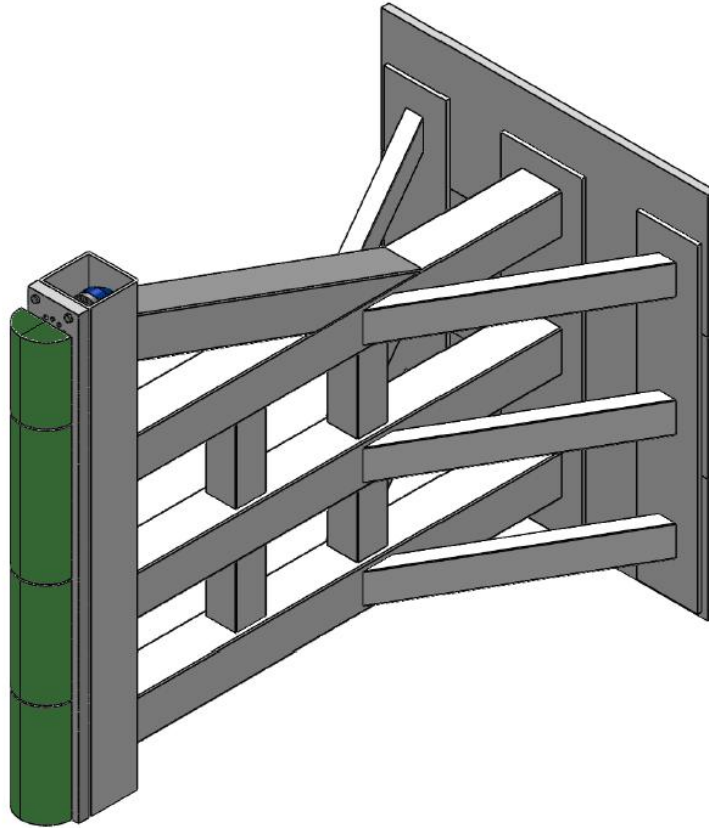


Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	1903	0	-223
2	Left Floor Sill	2888	-704	-202
3	A-Pillar Sill	3077	-806	-365
4	A-Pillar Low	3079	-813	-506
5	A-Pillar Mid	3080	-809	-709
6	B-Pillar Sill	2008	-697	-334
7	B-Pillar Low	2014	-609	-569
8	B-Pillar Mid	2010	-688	-832
9	Driver Seat Track	2487	-162	-384
10	Engine Top	3737	136	-864
11	Firewall	3406	298	-774
12	Right Roof	2142	475	-1506
13	Right Floor Sill	2003	701	-334
14	Rear Floorpan	773	-358	-514

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: 2014 Toyota Prius 5-Door Hatchback NHTSA No. M20145113
Test Program: NCAP Side Pole Impact Test Test Date: 12/06/13



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: 2014 Toyota Prius 5-Door Hatchback NHTSA No. M20145113Test Program: NCAP Side Pole Impact Test Test Date: 12/06/13**TEST DUMMY INFORMATION AND CONTACT POINTS**

Dummy Body Part	Driver SID-IIs Dummy
Face	Curtain Airbag
Top of Head	Curtain Airbag, Right Front Seat Back
Left Side of Head	Curtain Airbag
Back of Head	Curtain Airbag, Headrest, Seat Back, Right Front Seat Back
Left Shoulder	Seat, Torso Airbag
Upper Torso	Seat
Lower Torso	Seat, Torso Airbag
Left Hip	Seat, Door Panel
Left Knee	Door Panel, Steering Column, 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	None

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

Test Vehicle: 2014 Toyota Prius 5-Door Hatchback NHTSA No. M20145113
Test Program: NCAP Side Pole Impact Test Test Date: 12/06/13

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side Driver		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No	No	
Knee Airbag	Yes	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	

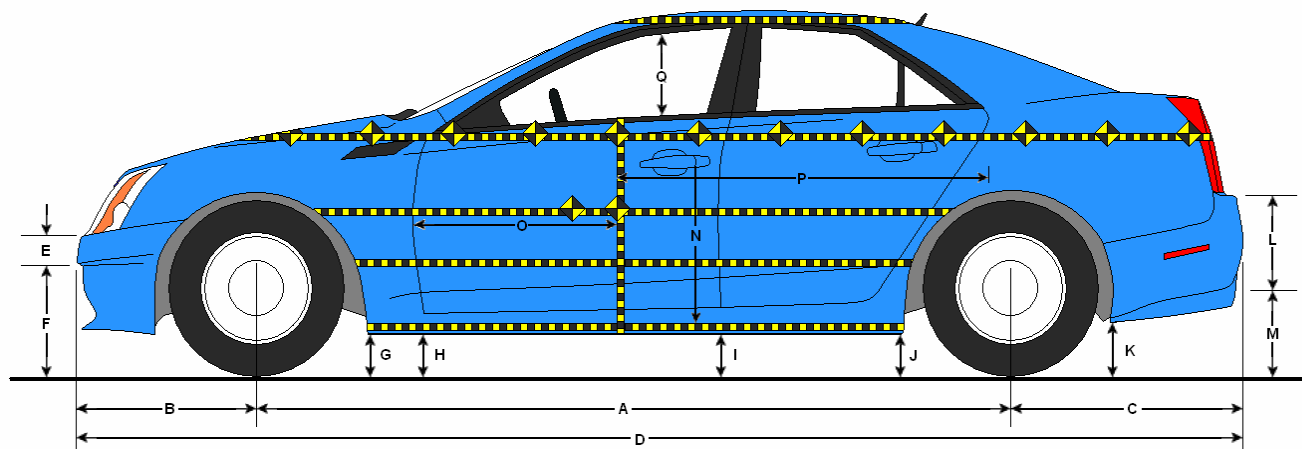
IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point)	mm		1043
Actual Impact Point (Aft of Front Axle)	mm		1048
Horizontal Offset (+ forward / - rearward)	mm	± 38 of Intended Impact Point	-5
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	31.78
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	31.83

DATA SHEET NO. 9

TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2014 Toyota Prius 5-Door Hatchback NHTSA No. M20145113
 Test Program: NCAP Side Pole Impact Test Test Date: 12/06/13



LEFT SIDE VIEW

All measurements in mm with tolerance of ± 3 mm

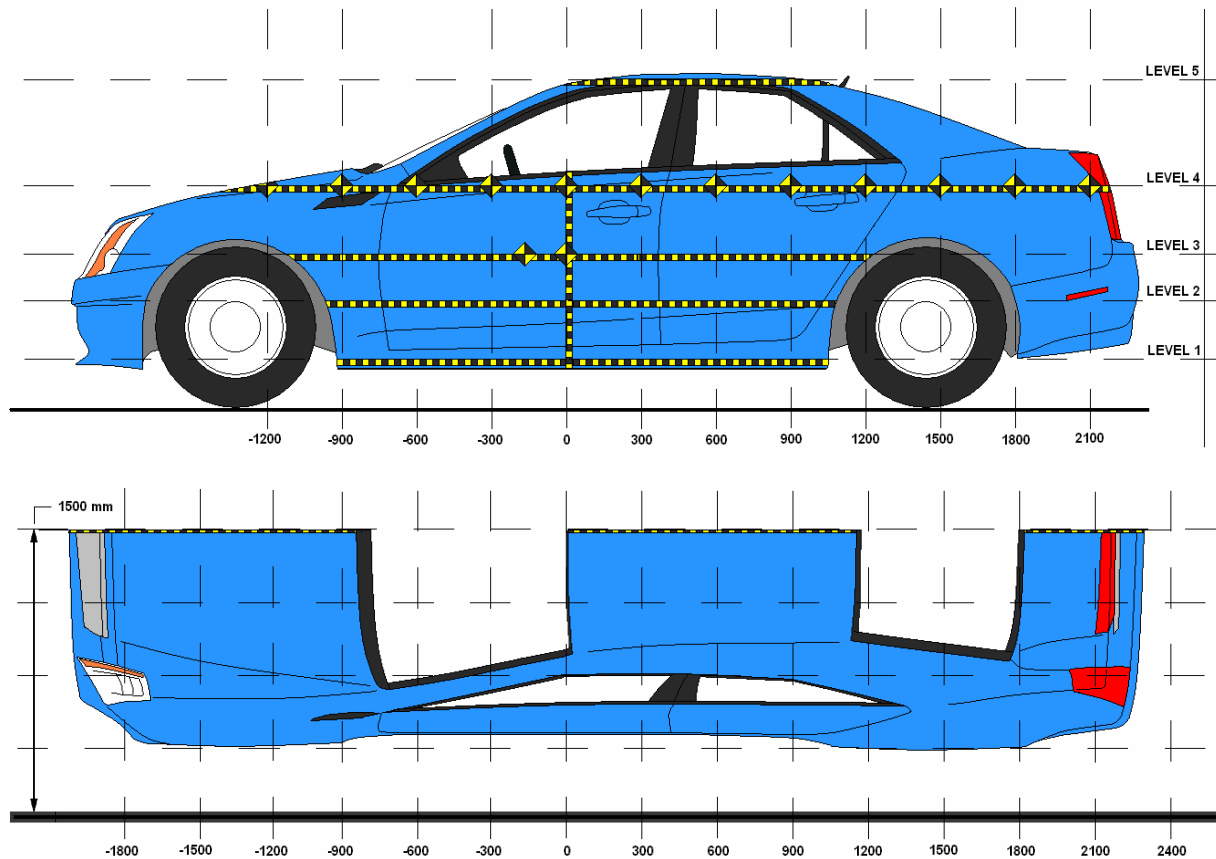
VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2697	2643	-54
B	Front Axle to FSOV	840	856	16
C	Rear Axle to RSOV	813	821	8
D	Total Length at Centerline	4351	4320	-31
E	Front Bumper Thickness	123	124	1
F	Front Bumper Bottom to Ground	422	448	26
G	Sill Height at Front Wheel Well	186	190	4
H	Sill Height at Front Door Leading Edge	180	184	4
I	Sill Height at B-Pillar	186	218	32
J1	Sill Height at Rear Wheel Well	192	249	57
J2	Pinch Weld Height at Rear Wheel Well	160	213	53
K	Sill Height Aft of Rear Wheel Well	513	577	64
L	Rear Bumper Thickness	132	133	1
M	Rear Bumper Bottom to Ground	396	442	46
N	Sill Height to Bottom of Front Window Sill	645	654	9
O	Front Door Leading Edge to Impact CL	-279	529	808
P	Rear Door Trailing Edge to Impact CL	2371	1408	-963
Q	Front Window Opening	459	492	33
R	Right Side Length	3068	3077	9
S	Left Side Length	3067	2966	-101
T	Vehicle Width at B-Pillar	1743	1668	-75

DATA SHEET NO. 10

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2014 Toyota Prius 5-Door Hatchback NHTSA No. M20145113
 Test Program: NCAP Side Pole Impact Test Test Date: 12/06/13



NOTE: All measurements in mm with tolerance of $\pm 3\text{mm}$

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	223	282	0
2	Occupant H-Point	587	356	0
3	Mid-Door	648	357	0
4	Window Sill	877	360	150
5	Window Top	1438	209	0

DATA SHEET NO. 10 ... (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2014 Toyota Prius 5-Door Hatchback NHTSA No. M20145113
 Test Program: NCAP Side Pole Impact Test Test Date: 12/06/13

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				702					750					48	
-750		629	631	689			696	699	749			67	68	60	
-600	660	632	636	676		724	692	695	749		64	60	59	73	
-450	662	633	636	666		767	761	768	779		105	128	132	113	
-300	663	633	635	657		817	827	832	838		154	194	197	181	
-150	663	632	635	652		870	912	914	914		207	280	279	262	
0	662	632	634	645	905	944	988	991	1001	1114	282	356	357	356	209
150	662	632	634	645	907	934	984	989	1005	1105	272	352	355	360	198
300	662	632	633	647	911	847	897	895	903	1057	185	265	262	256	146
450	661	632	634	651	912	791	782	783	802	1016	130	150	149	151	104
600	662	633	635	655	913	749	739	741	760	990	87	106	106	105	77
750	662	635	637	660	917	717	721	724	749	978	55	86	87	89	61
900	662	637	639	664	918	691	704	707	737	973	29	67	68	73	55
1050	659	639	641	669	923	670	688	691	725	970	11	49	50	56	47
1200	653	639	642	677	925	653	669	675	714	971	0	30	33	37	46
1350		630	635	680	934		648	648	700	975		18	13	20	41
1500				684	944				712	984				28	40
1650				688					712					24	
1800				695					713					18	
1950				708					720					12	
2100				725					734					9	
2250															
2400															
2550															
2700															
2850															

DATA SHEET NO. 10 ... (CONTINUED)

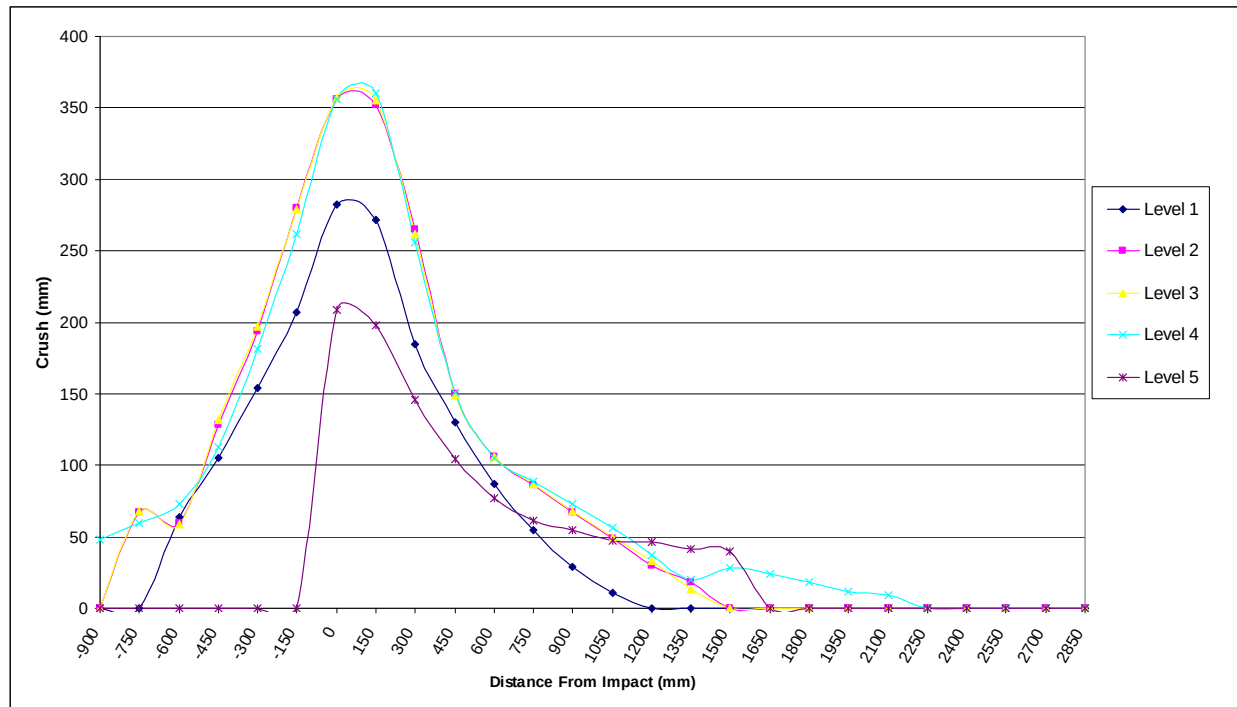
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2014 Toyota Prius 5-Door Hatchback

NHTSA No. M20145113

Test Program: NCAP Side Pole Impact Test

Test Date: 12/06/13

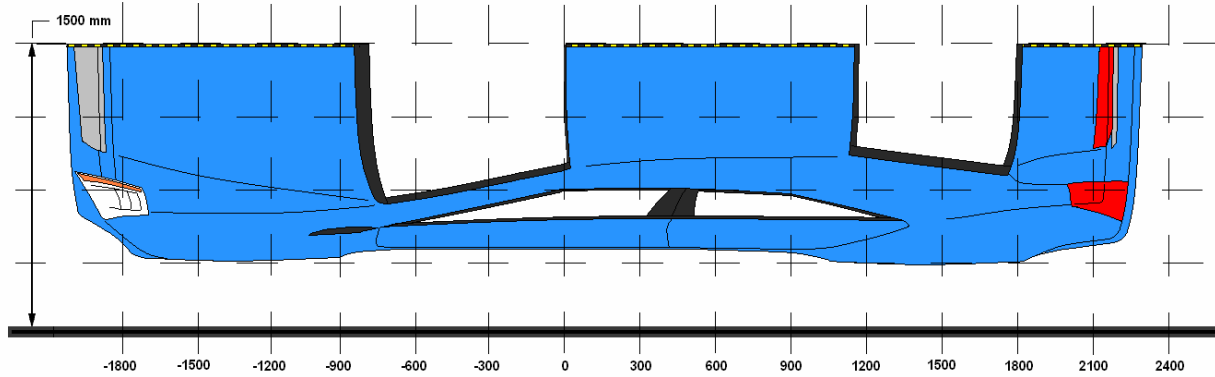


DATA SHEET NO. 11

VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2014 Toyota Prius 5-Door Hatchback NHTSA No. M20145113

Test Program: NCAP Side Pole Impact Test Test Date: 12/06/13



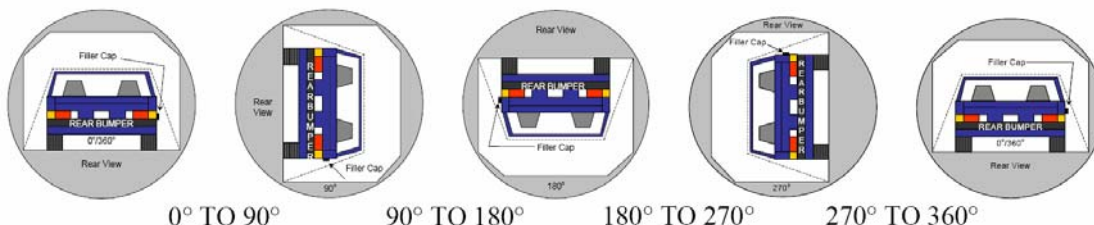
DPD	Distance From Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Crush (mm)
1	2100	4	725	734	9
2	1500	4	944	984	40
3	900	4	664	737	73
4	300	2	632	897	265
5	-300	3	635	832	197
6	-900	4	702	750	48

DATA SHEET NO. 12

FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2014 Toyota Prius 5-Door Hatchback NHTSA No. M20145113
 Test Program: NCAP Side Pole Impact Test Test Date: 12/06/13
 Temperature at Time of Impact: 9.2° C Test Time: 11:00 AM

- 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: There was no Stoddard solvent spillage.



SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	84	300	384
90° To 180°	86	300	386
180° To 270°	80	300	380
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			

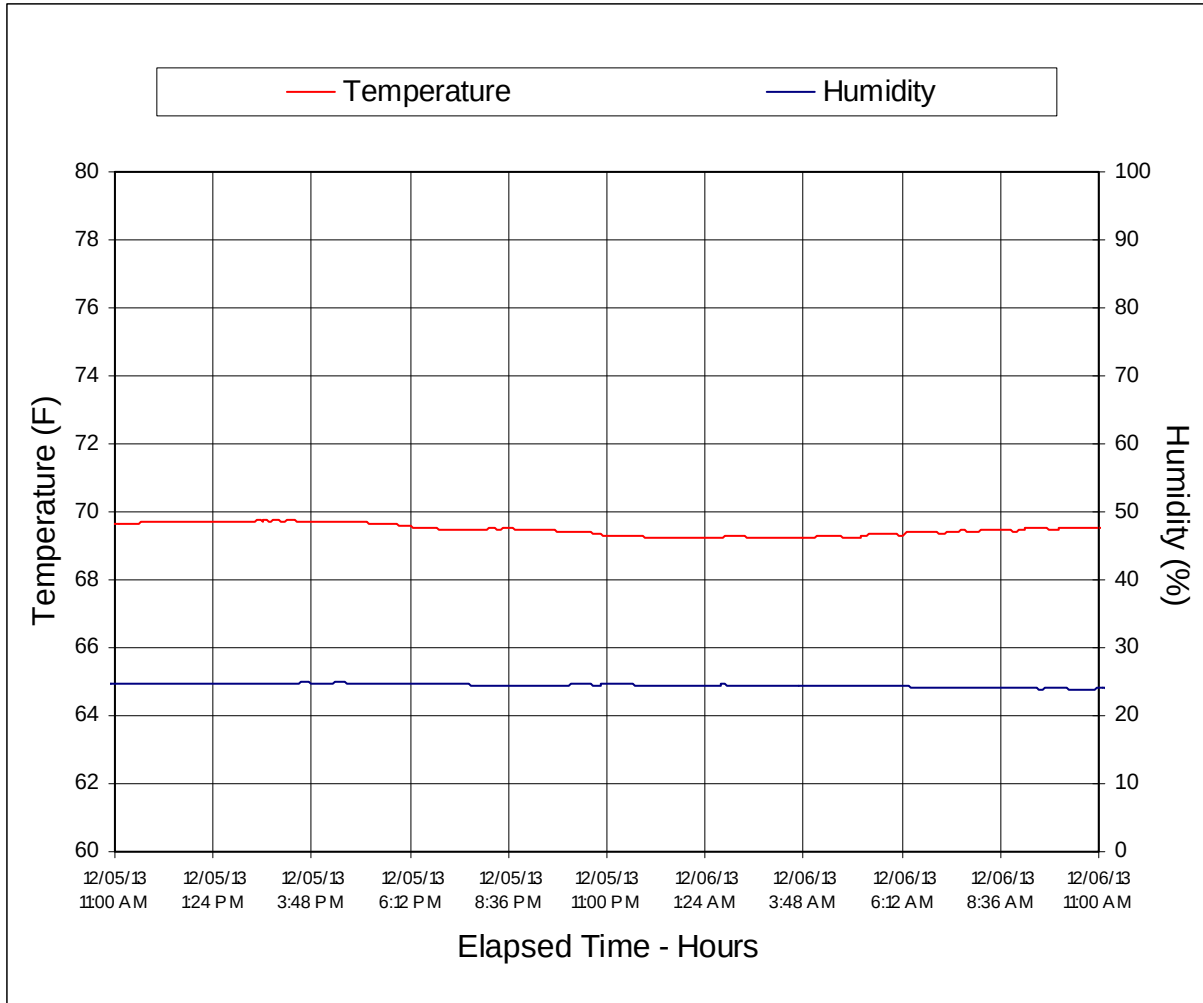
SOLVENT SPILLAGE LOCATION TABLE

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. 13

DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION

Test Vehicle: 2014 Toyota Prius 5-Door Hatchback NHTSA No. M20145113
Test Program: NCAP Side Pole Impact Test Test Date: 12/06/13



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

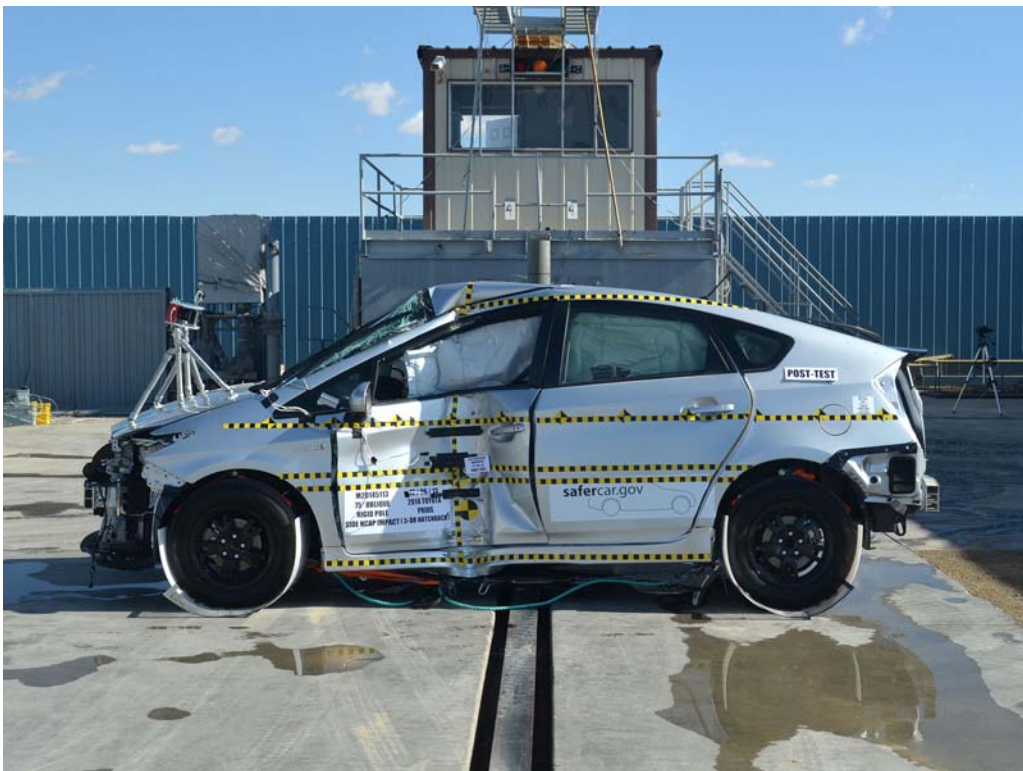


FIGURE 8. Post-Test Left Side View of Test Vehicle



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

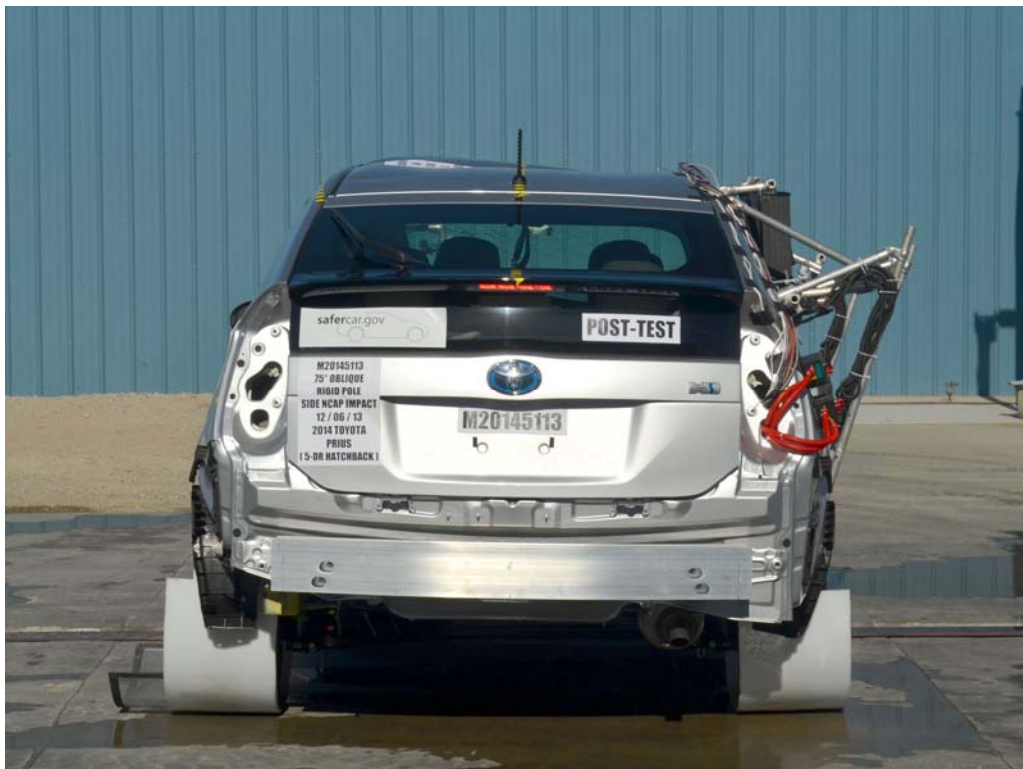


FIGURE 12. Post-Test Rear View of Test Vehicle



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

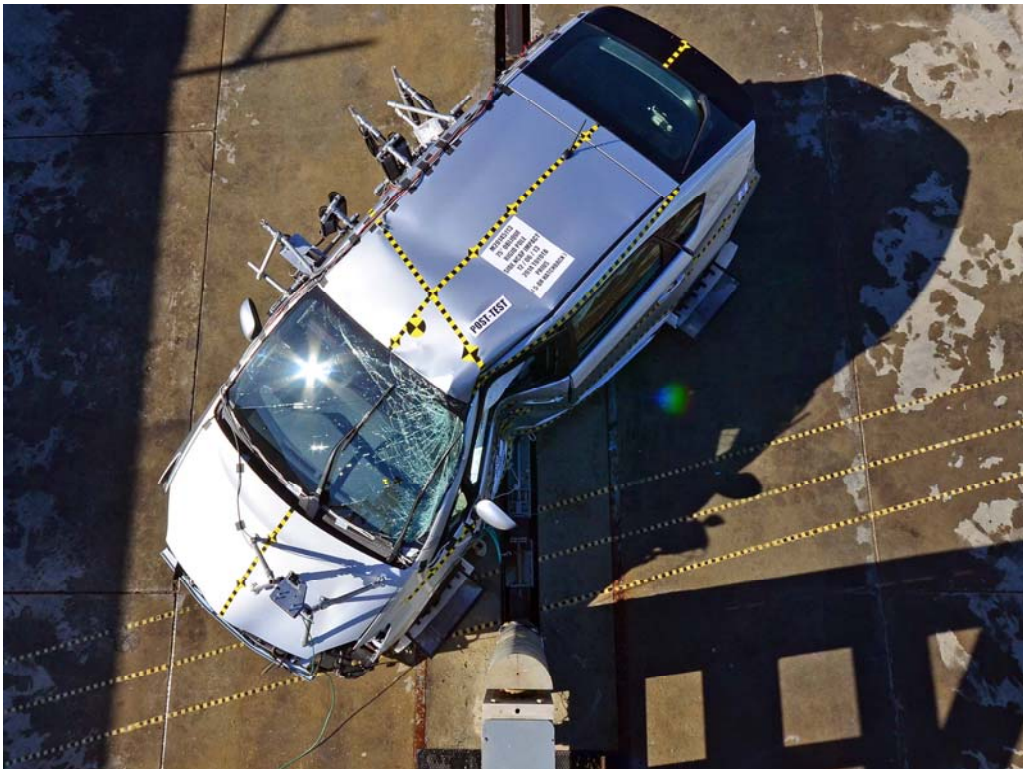


FIGURE 16. Post-Test Overhead View of Test Area



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



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



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



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



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 Left Side 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. View of Disengaged Parking Brake



FIGURE 36. Pre-Test View of Parking Brake

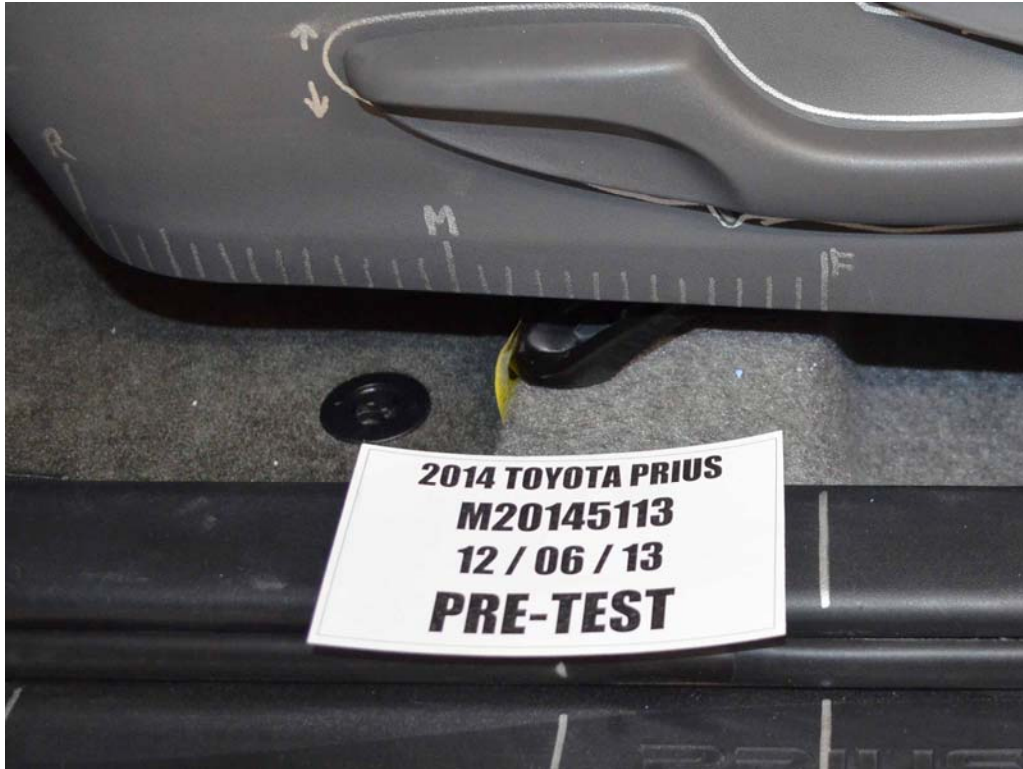


FIGURE 37. Pre-Test Close-Up Left Side View of Driver Seat Track



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 View



FIGURE 41. Post-Test Dummy and Door Clearance View



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 Locations



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

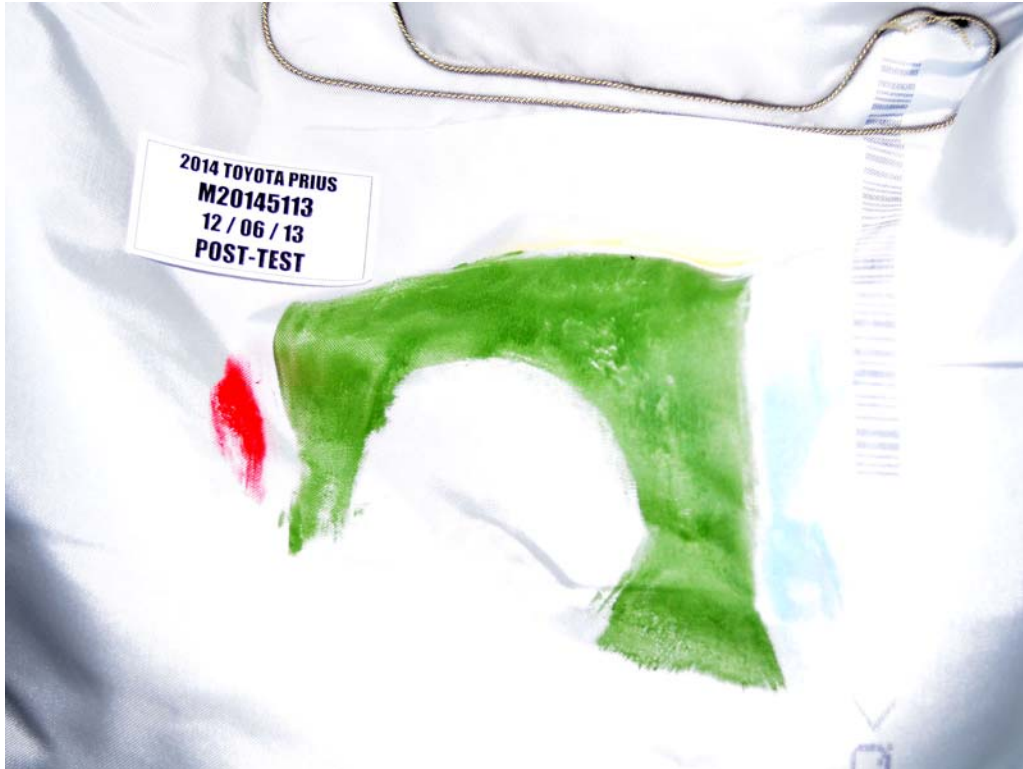


FIGURE 47. Post-Test Dummy Close-Up Head Contact With Side Airbag View



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

Photograph Not Applicable

No Dummy Pelvis Contact with Vehicle Airbag

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

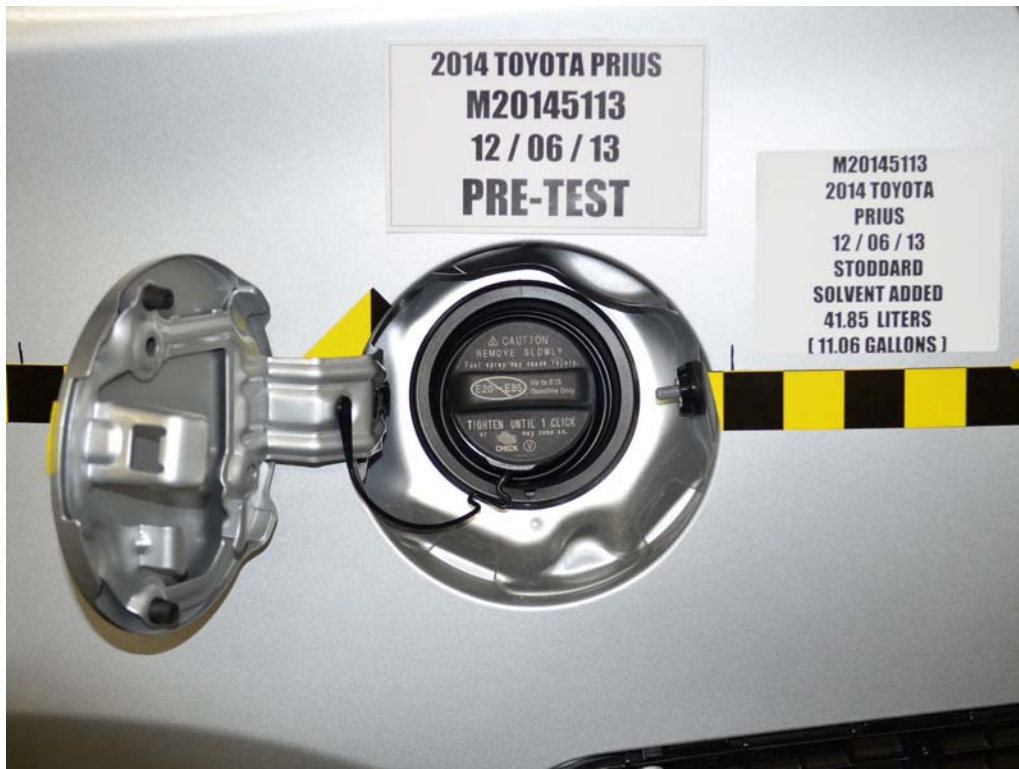


FIGURE 53. Pre-Test View of Fuel Filler Cap or Fuel Filler Neck

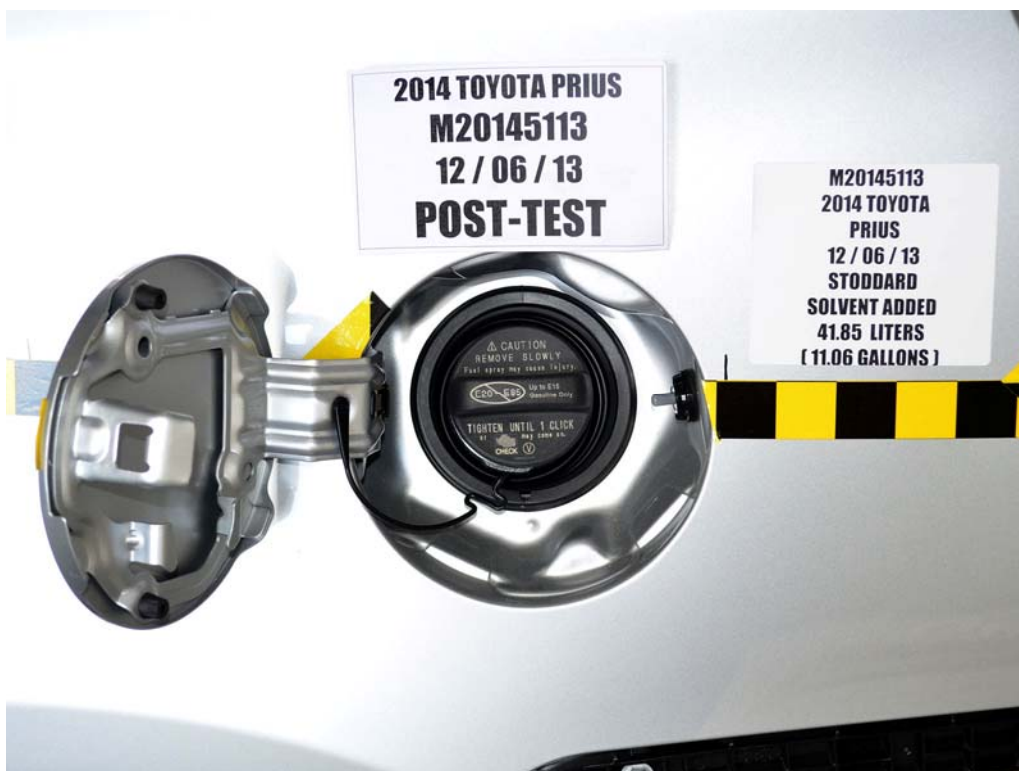


FIGURE 54. Post-Test View of Fuel Filler Cap or Fuel Filler Neck



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

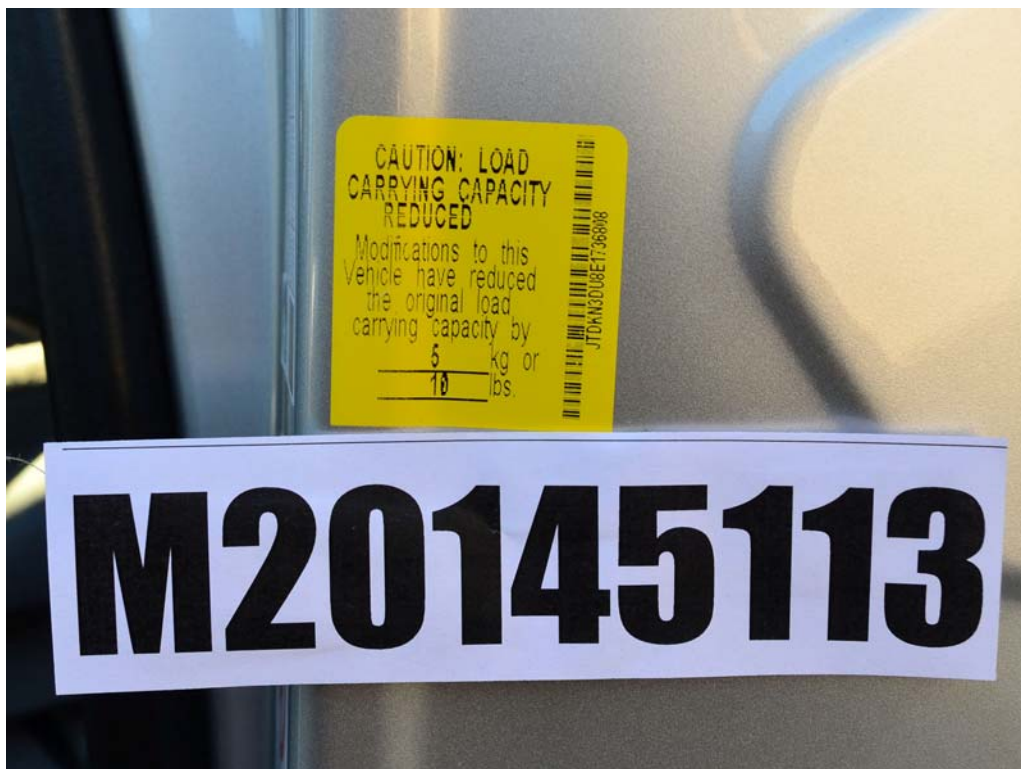


FIGURE 55a. Close-Up View of Vehicle's Reduced Load Carrying Capacity Label

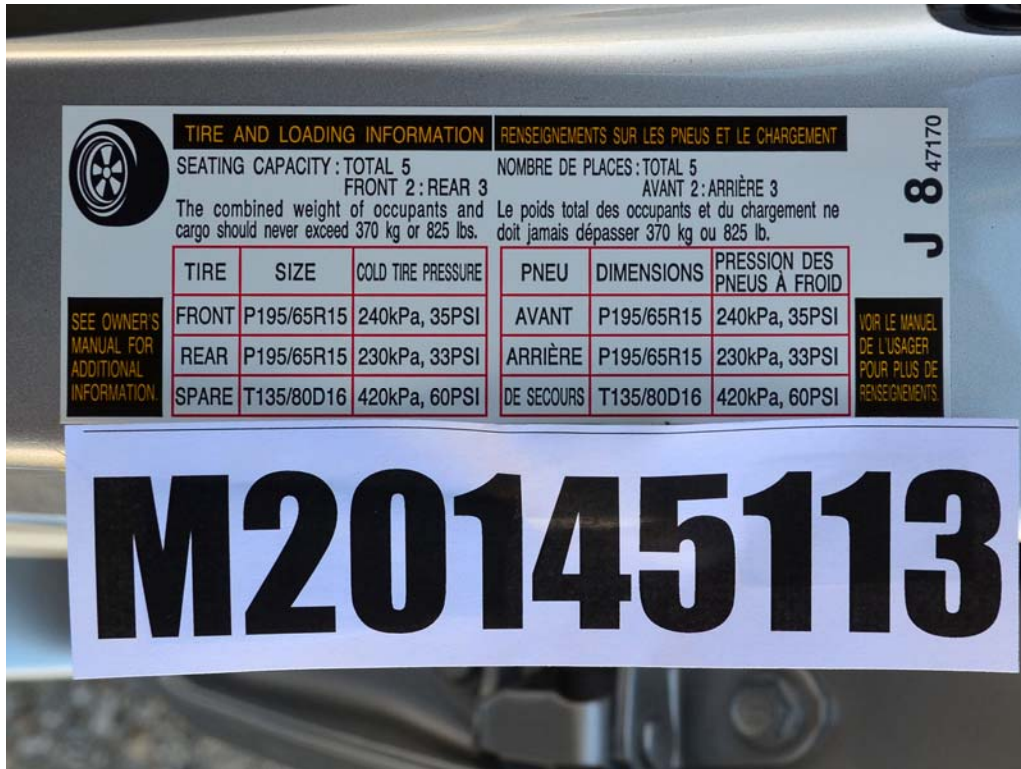


FIGURE 56. Close-Up View of Vehicle's Tire Information Placard or Label



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

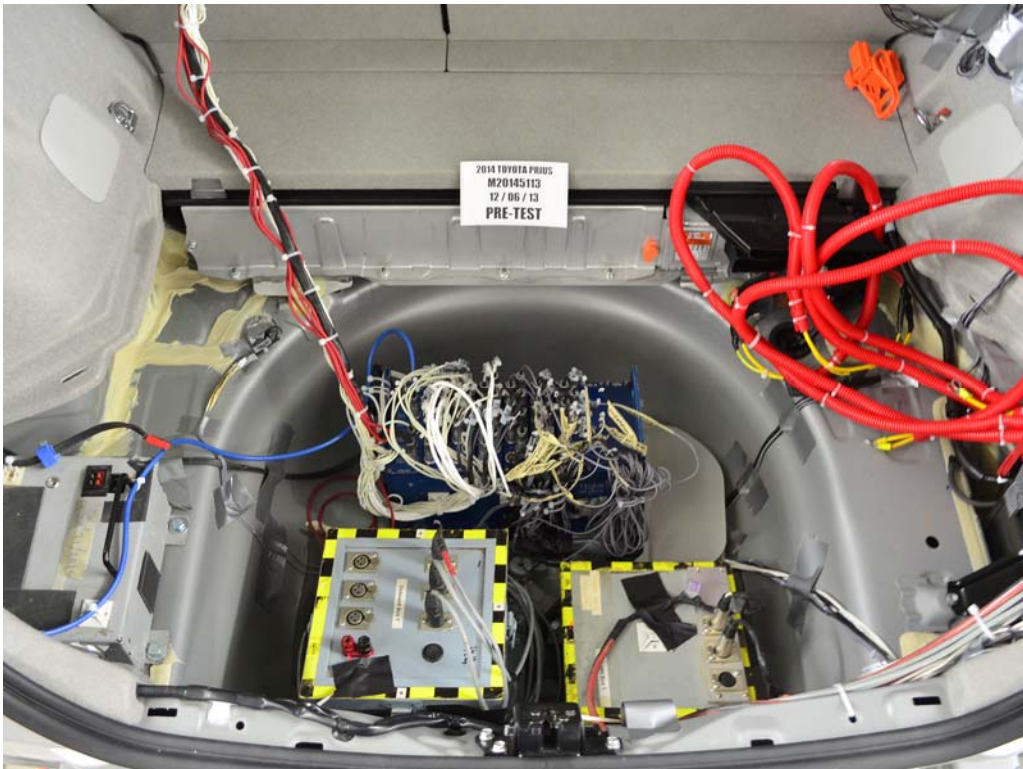


FIGURE 61. Pre-Test Ballast View



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

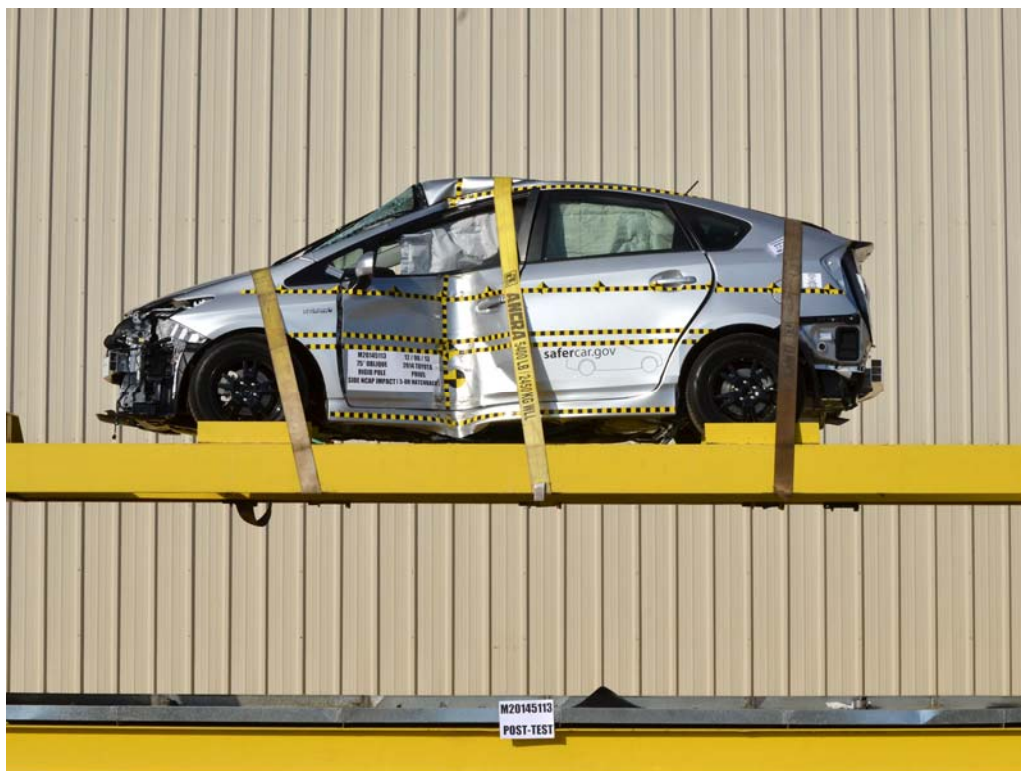


FIGURE 63. FMVSS No. 301 Static Rollover 0 Degrees



FIGURE 66. FMVSS No. 301 Static Rollover 270 Degrees

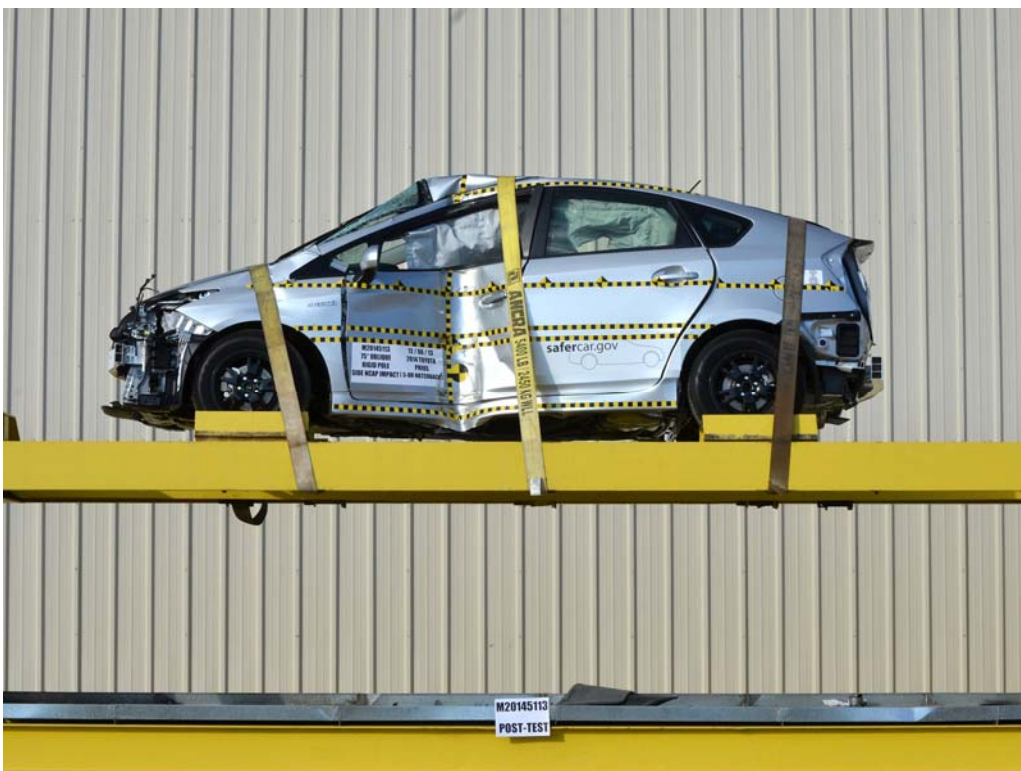


FIGURE 67. FMVSS No. 301 Static Rollover 360 Degrees

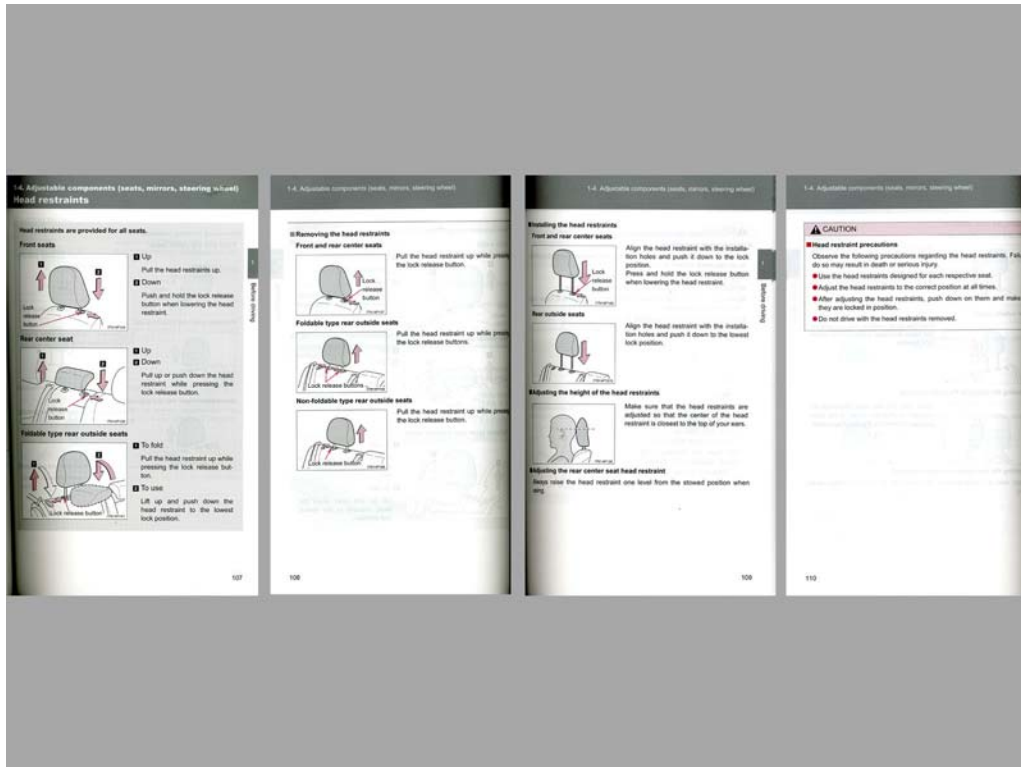


FIGURE 70. Head Restraint Use and Adjustment
Information from Vehicle Owner's Manual

APPENDIX B
DUMMY RESPONSE DATA

TABLE OF DATA PLOTS

Plot		Page
1	Driver Head Acceleration (X) Primary vs. Time	B-1
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6	Driver Lower Spine T12 Acceleration (Y) vs. Time	B-2
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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)

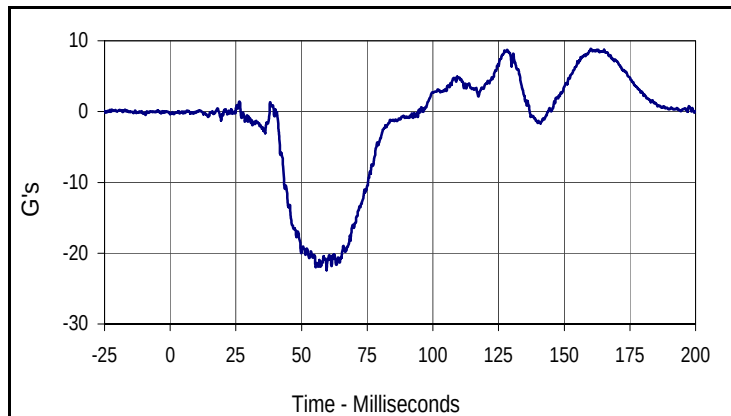
Left B-Pillar Sill Acceleration
Left Lower B-Pillar Acceleration (Y)
Left Mid B-Pillar Acceleration (Y)
Driver Seat Track at Dummy Hip Point Acceleration (Y)
Engine Top Acceleration (X)
Engine Top Acceleration (Y)
Firewall Center Acceleration (Y)
Right Roof at Vertical Impact Reference Line Acceleration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

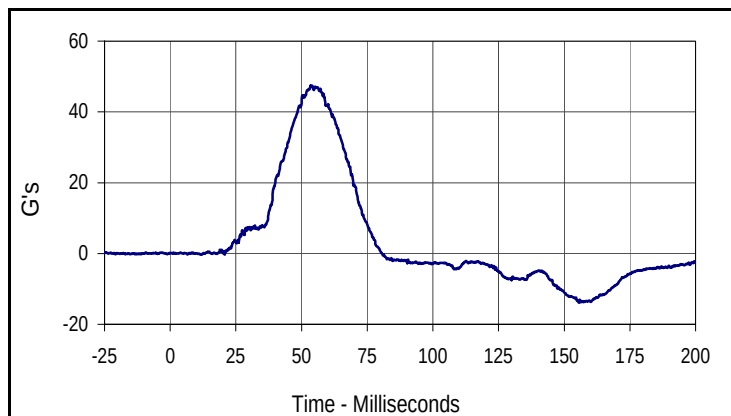
Load Cell Pole Barrier #1 Force (Y)
Load Cell Pole Barrier #2 Force (Y)
Load Cell Pole Barrier #3 Force (Y)
Load Cell Pole Barrier #4 Force (Y)
Load Cell Pole Barrier #5 Force (Y)
Load Cell Pole Barrier #6 Force (Y)
Load Cell Pole Barrier #7 Force (Y)
Load Cell Pole Barrier #8 Force (Y)

Test Vehicle: 2014 Toyota Prius 5-Door Hatchback
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test

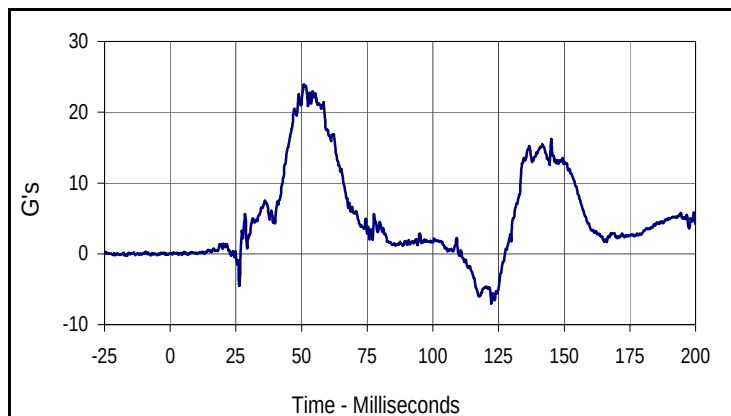
Test Date: 12/6/13
 NHTSA No.: M20145113



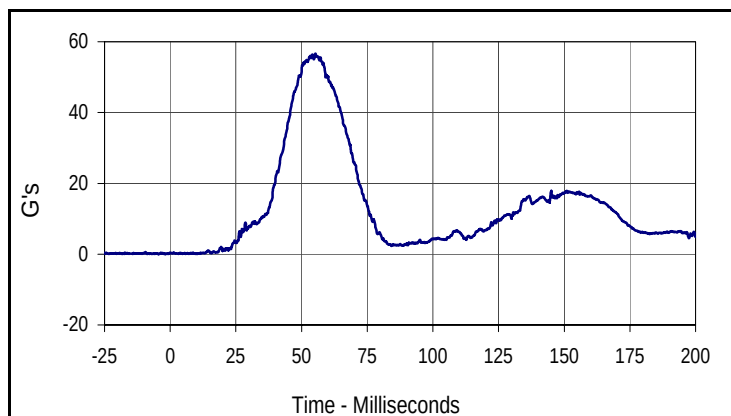
Curve Description			
Driver Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
8.9	160.1	-22.4	59.6



Curve Description			
Driver Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
47.5	54.0	-13.8	155.6



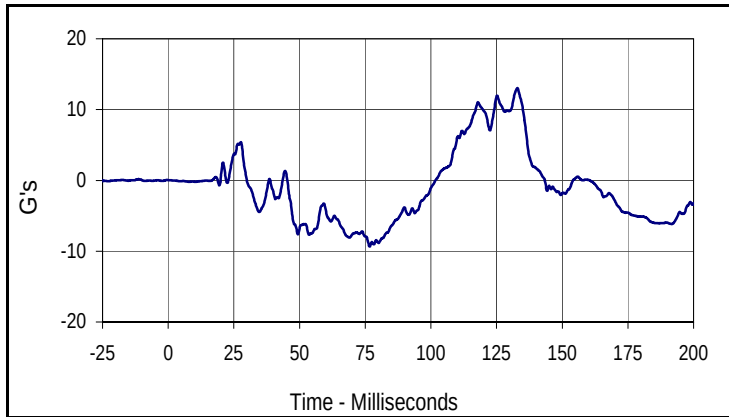
Curve Description			
Driver Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
23.9	50.9	-7.1	122.2



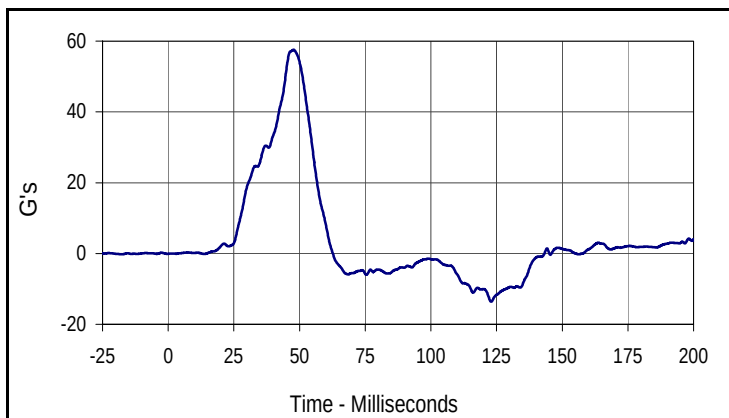
Curve Description			
Driver Head Acceleration Primary Res.			
Plot No.	Type	SAE Class	Units
004	RES	1000	G's
Max	Time	Min	Time
56.6	55.3	0.0	10.3

Test Vehicle: 2014 Toyota Prius 5-Door Hatchback
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test

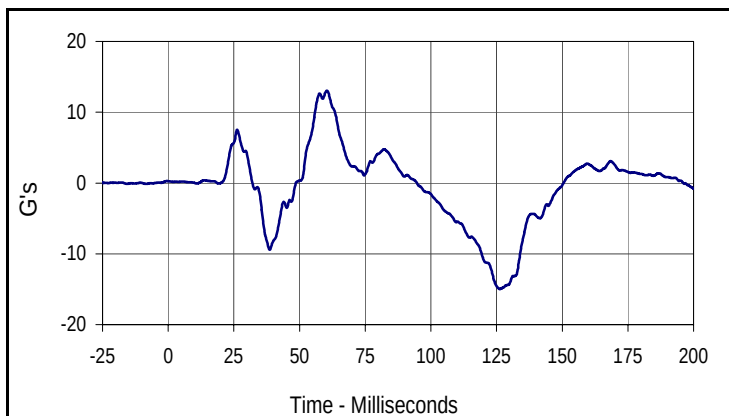
Test Date: 12/6/13
 NHTSA No.: M20145113



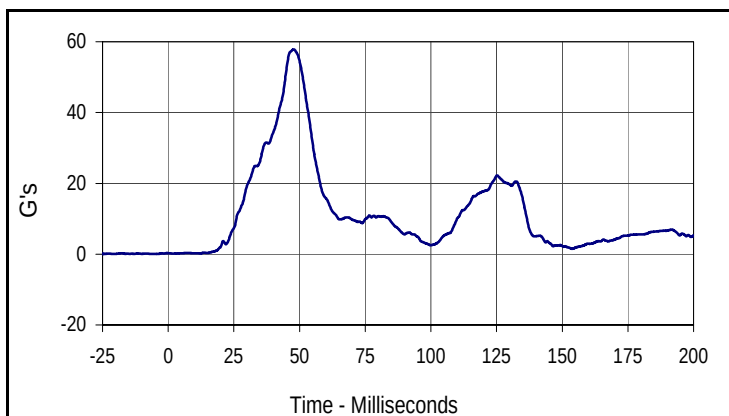
Curve Description			
Driver Lower Spine T12 Acceleration X			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
13.0	132.9	-9.3	76.7



Curve Description			
Driver Lower Spine T12 Acceleration Y			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
57.5	47.7	-13.6	122.9



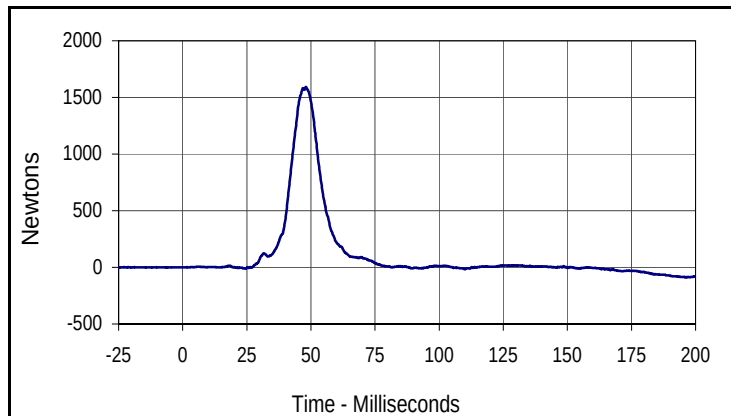
Curve Description			
Driver Lower Spine T12 Acceleration Z			
Plot No.	Type	SAE Class	Units
007	FIL	180	G's
Max	Time	Min	Time
13.0	60.4	-15.0	126.3



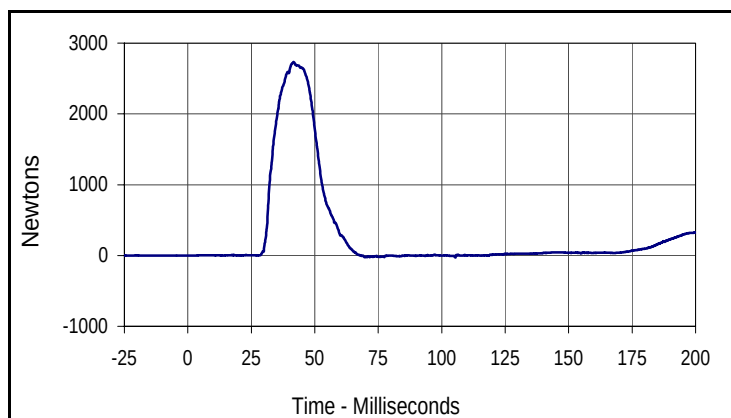
Curve Description			
Driver Lower Spine T12 Acceleration Res.			
Plot No.	Type	SAE Class	Units
008	RES	180	G's
Max	Time	Min	Time
57.9	47.8	0.2	1.9

Test Vehicle: 2014 Toyota Prius 5-Door Hatchback
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test

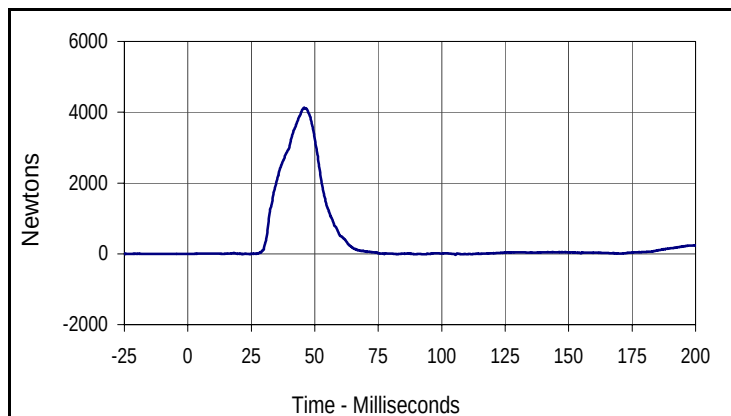
Test Date: 12/6/13
 NHTSA No.: M20145113



Curve Description			
Driver Iliac Wing Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
009	FIL	600	Newtons
Max	Time	Min	Time
1592.1	48.0	-87.8	197.7



Curve Description			
Driver Acetabulum Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
010	FIL	600	Newtons
Max	Time	Min	Time
2733.6	41.7	-27.6	105.4



Curve Description			
Driver Total Pelvic Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
011	SUM	600	Newtons
Max	Time	Min	Time
4127.3	45.8	-30.9	105.4

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: 12/3/13
 Test I.D.: N/A



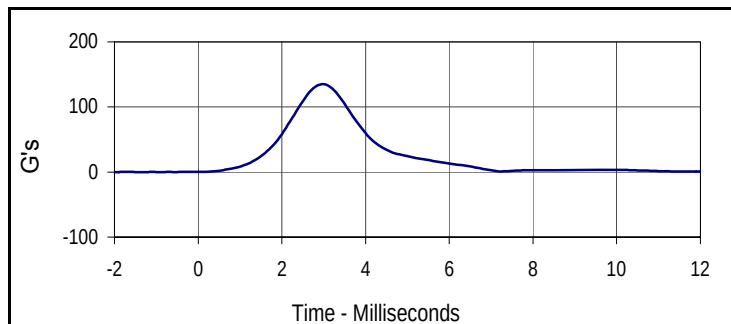
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.5	Pass
Laboratory Relative Humidity		%	10 to 70	25	Pass
A	Sitting Height	mm	772 - 788	780	Pass
B	Shoulder Pivot Height	mm	437 - 453	445	Pass
C	H-Point Height	mm	79 - 89	85	Pass
D	H-Point from Seatback	mm	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: 12/3/13
 Test I.D.: 299HD066



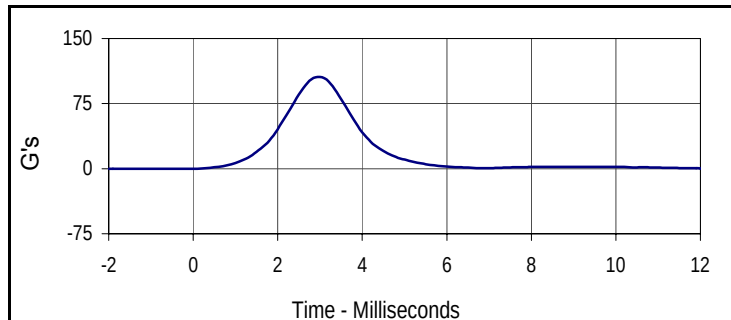
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	280	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	22.0	Pass
	Min	°C		21.0	Pass
Humidity During Soak	Max	%	10.0 to 70.0	26.2	Pass
	Min	%		24.6	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	22.0	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	26.2	Pass
Peak Head Resultant Acceleration		G's	115 to 137	134.8	Pass
Peak Head X Acceleration		G's	<15	2.3	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse		%	<15	2.3	Pass
Overall Test Results					Pass



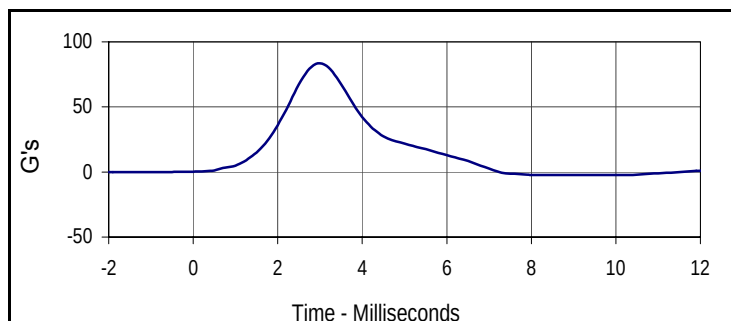
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
134.8	3.0	0.0	-2.0



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
2.3	3.0	0.0	-0.2



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
105.9	3.0	-0.1	-1.6



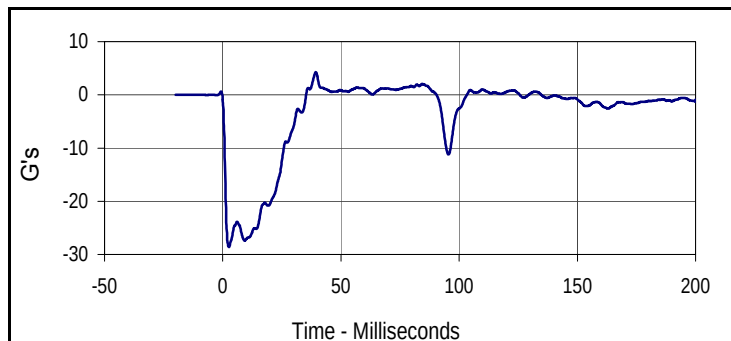
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
83.4	3.0	-2.4	10.2

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

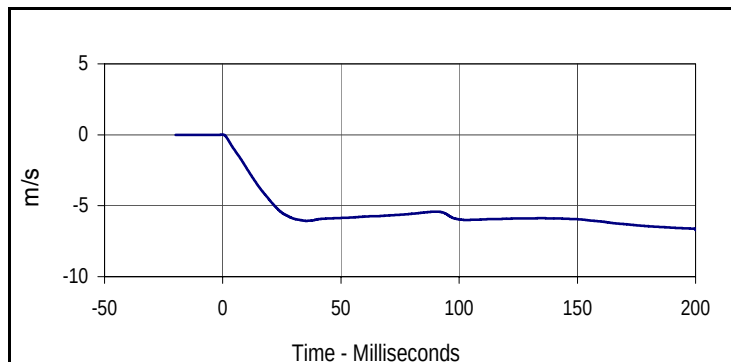
Test Date: 12/3/13
 Test I.D.: 299NB066



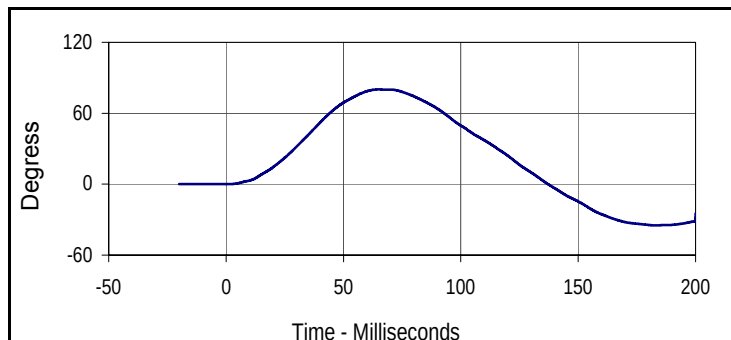
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	345	Pass
Temperature During Soak	Max	20.6 to 22.2	22.0	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	26.2	Pass
	Min		24.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.8	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	24.9	Pass
Pendulum Velocity	m/s	5.51 to 5.63	5.59	Pass
Pendulum Deceleration	10 msec	-2.20 to -2.80	-2.33	Pass
	15 msec	-3.30 to -4.10	-3.60	Pass
	20 msec	-4.40 to -5.40	-4.64	Pass
	25 msec	-5.40 to -6.10	-5.49	Pass
	25-100 msec	-5.50 to -6.20	-6.07	Pass
D-Plane Rotation	Max	71 to 81	80.1	Pass
	Time	50 to 70	64.9	Pass
Peak Occipital Condyle Moment	Nm	-36 to -44	-41.4	Pass
Decaying Moment Time to Cross 0 Nm	msec	102 to 126	117.7	Pass
Overall Test Results			Pass	



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
4.3	0.0	-28.6	0.0



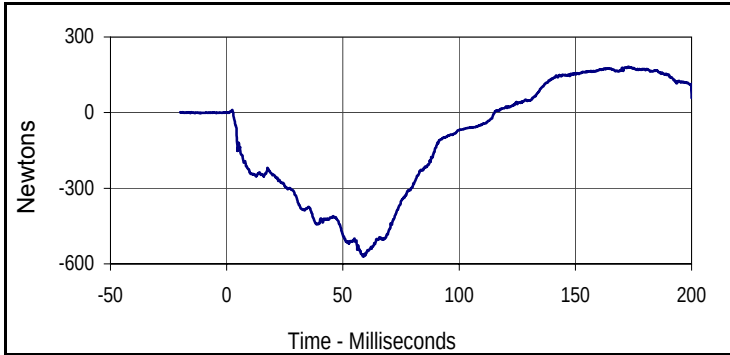
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.2	-6.7	200.0



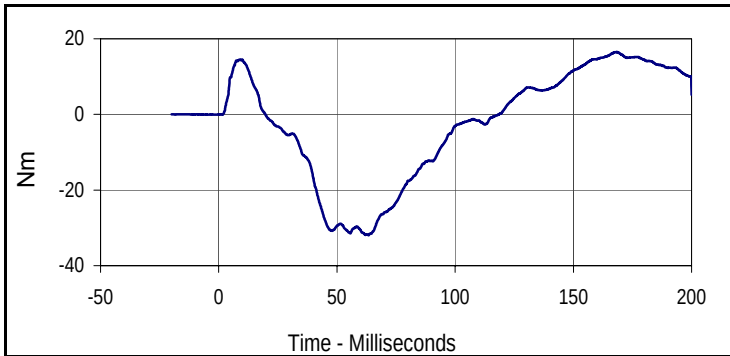
Curve Description			
D-Plane Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degress
Max	Time	Min	Time
80.1	64.9	-34.8	182.6

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

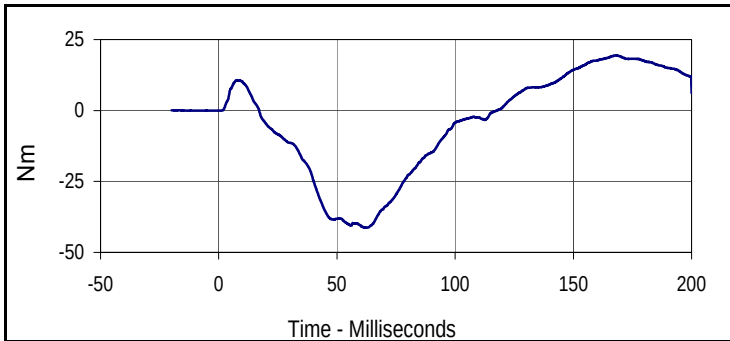
Test Date: 12/3/13
 Test I.D.: 299NB066



Curve Description			
Neck Force Y			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
182.4	173.0	-570.7	58.6



Curve Description			
Neck Moment X			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
16.5	16.4	-31.9	63.4



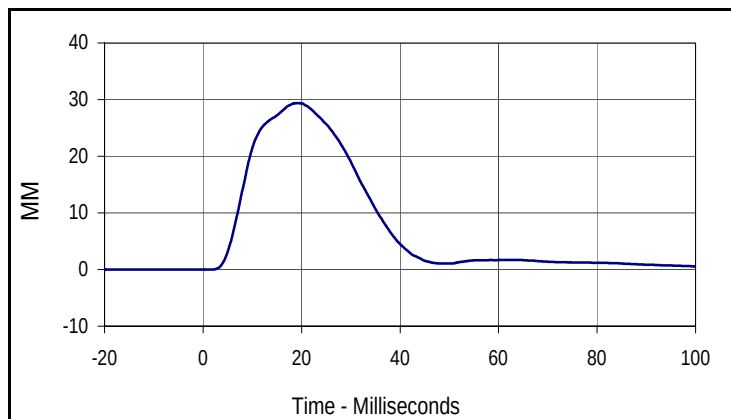
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
006	FIL	600	Nm
Max	Time	Min	Time
19.4	168.3	-41.4	61.9

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

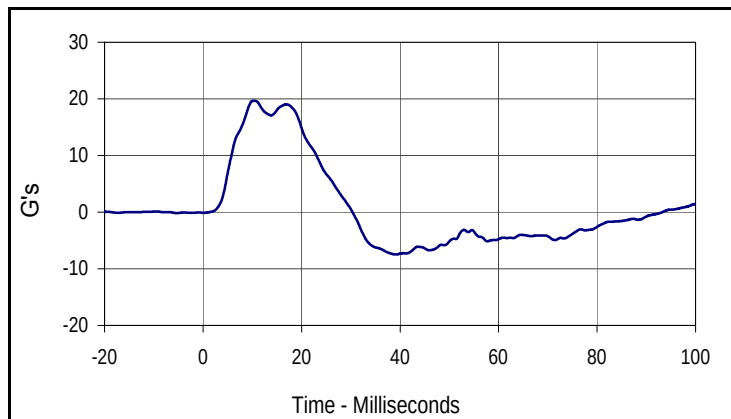
Test Date: 12/3/13
 Test I.D.: 299SH066



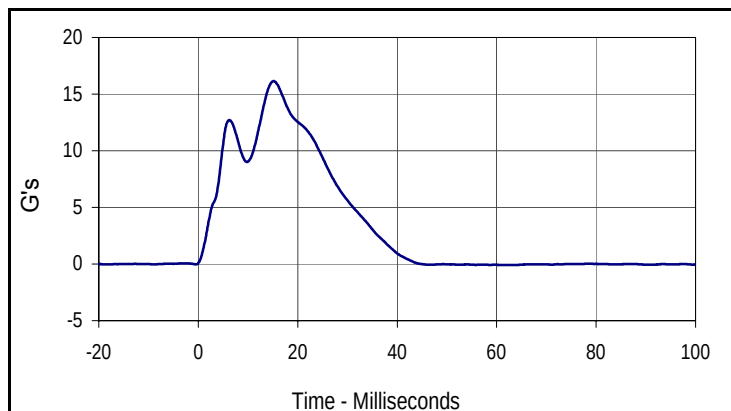
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	420	Pass
Temperature During Soak	Max °C	20.6 to 22.2	22.0	Pass
	Min °C		21.0	Pass
Humidity During Soak	Max %	10.0 to 70.0	26.2	Pass
	Min %		24.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.6	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	24.6	Pass
Impactor Velocity	m/s	4.20 to 4.40	4.29	Pass
Peak Shoulder Deflection	mm	28 to 37	29.4	Pass
Peak Lateral Spine Acceleration Y	G's	17 to 22	19.7	Pass
Peak Impactor Acceleration	G's	13 to 18	16.1	Pass
Overall Test Results			Pass	



Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
29.4	19.0	0.0	-16.6



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
19.7	10.4	-7.4	38.9



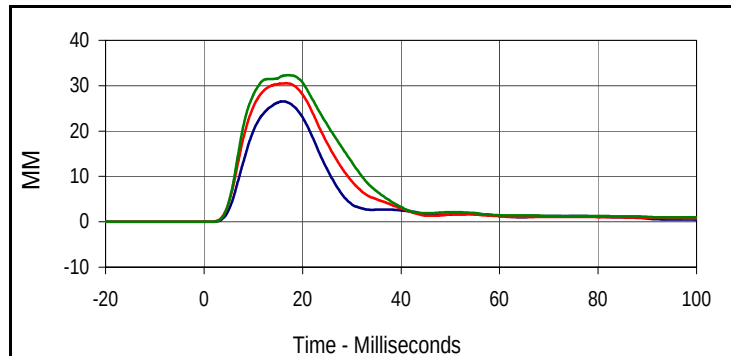
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
16.1	15.1	-0.1	63.7

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

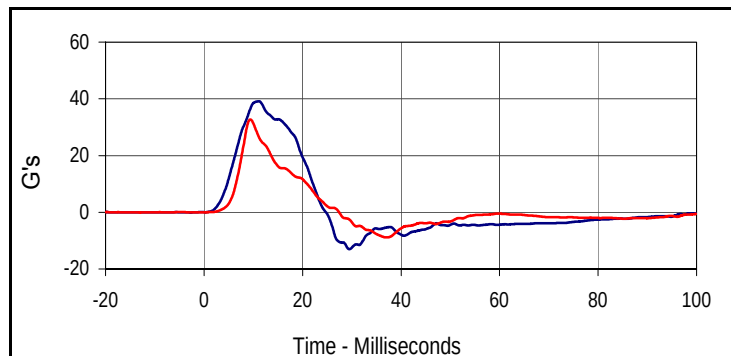
Test Date: 12/3/13
 Test I.D.: 299TWA066



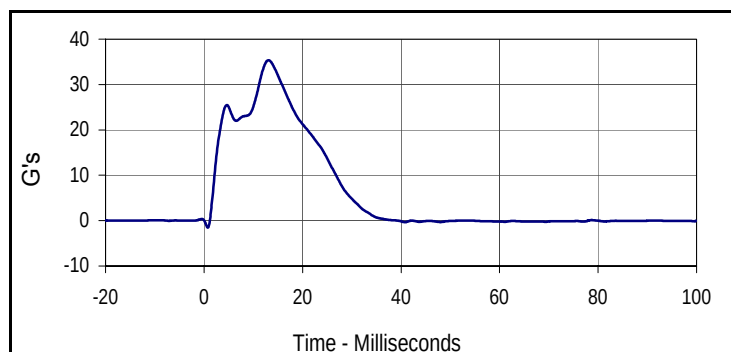
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	470	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	22.0	Pass
	Min	°C		21.0	Pass
Humidity During Soak	Max	%	10.0 to 70.0	26.2	Pass
	Min	%		24.6	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	24.6	Pass
Impactor Velocity		m/s	6.6 to 6.8	6.74	Pass
Peak Shoulder Deflection		mm	31 to 40	35.9	Pass
Peak Upper Thorax Rib Deflection		mm	25 to 32	26.5	Pass
Peak Middle Thorax Rib Deflection		mm	30 to 36	30.5	Pass
Peak Lower Thorax Rib Deflection		mm	32 to 38	32.3	Pass
Peak Upper Spine Y Acceleration		G's	34 to 43	39.1	Pass
Peak Lower Spine Y Acceleration		G's	29 to 37	32.7	Pass
Peak Impactor Acceleration		G's	30 to 36	35.3	Pass
Overall Test Results				Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
26.5	16.0	0.0	-2.0
Middle Thorax Deflection			
Max	Time	Min	Time
30.5	16.6	0.0	0.8
Lower Thorax Deflection			
Max	Time	Min	Time
32.3	17.0	0.0	1.2



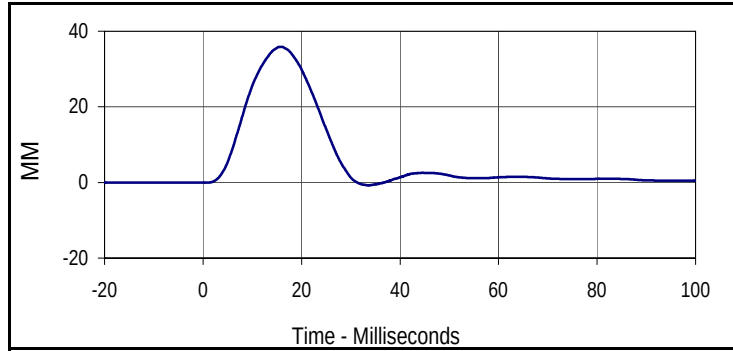
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
39.1	11.1	-13.0	29.5
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
32.7	9.4	-8.9	37.0



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
35.3	13.1	-1.5	0.8

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

Test Date: 12/3/13
 Test I.D.: 299TWA066



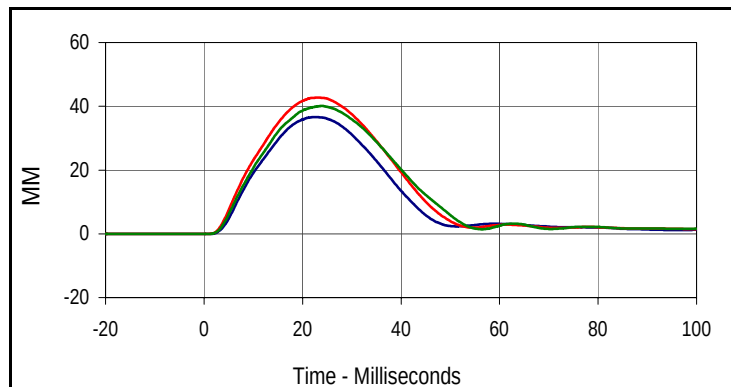
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	MM
Max	Time	Min	Time
35.9	15.8	-0.8	33.5

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

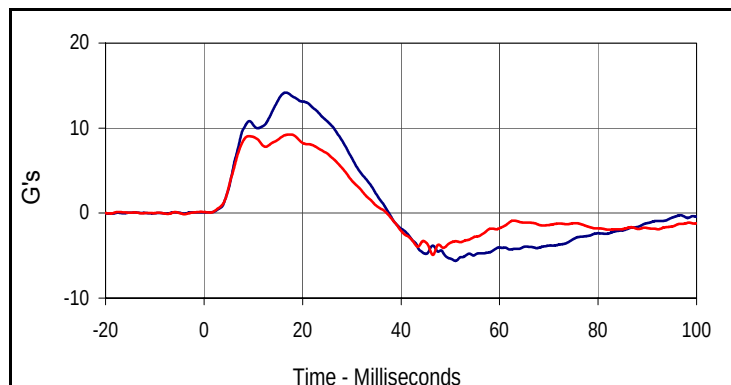
Test Date: 12/3/13
 Test I.D.: 299TWOA066



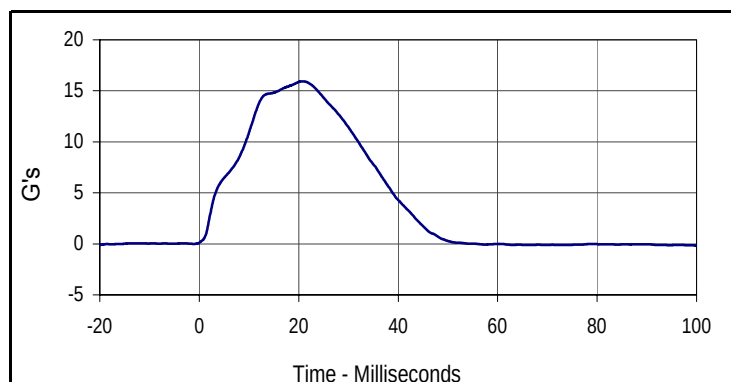
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	525	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	22.0	Pass
	Min	°C		21.0	Pass
Humidity During Soak	Max	%	10.0 to 70.0	26.2	Pass
	Min	%		24.6	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	24.7	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.29	Pass
Peak Upper Thorax Rib Deflection		mm	32 to 40	36.6	Pass
Peak Middle Thorax Rib Deflection		mm	39 to 45	42.7	Pass
Peak Lower Thorax Rib Deflection		mm	35 to 43	40.1	Pass
Peak Upper Spine Y Acceleration		G's	13 to 17	14.2	Pass
Peak Lower Spine Y Acceleration		G's	7 to 11	9.2	Pass
Peak Impactor Acceleration		G's	14 to 18	15.9	Pass
Overall Test Results				Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
36.6	22.5	0.0	-20.0
Middle Thorax Deflection			
Max	Time	Min	Time
42.7	23.1	0.0	-18.9
Lower Thorax Deflection			
Max	Time	Min	Time
40.1	24.0	0.0	-18.8



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.2	16.6	-5.6	51.1
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
9.2	17.5	-4.9	46.5



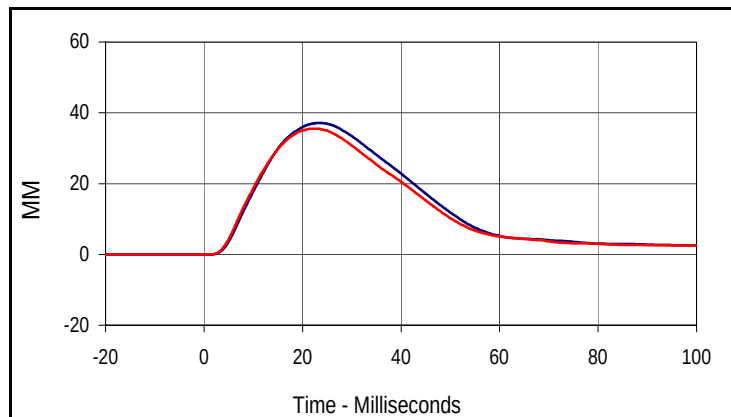
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
15.9	20.7	-0.2	99.9

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

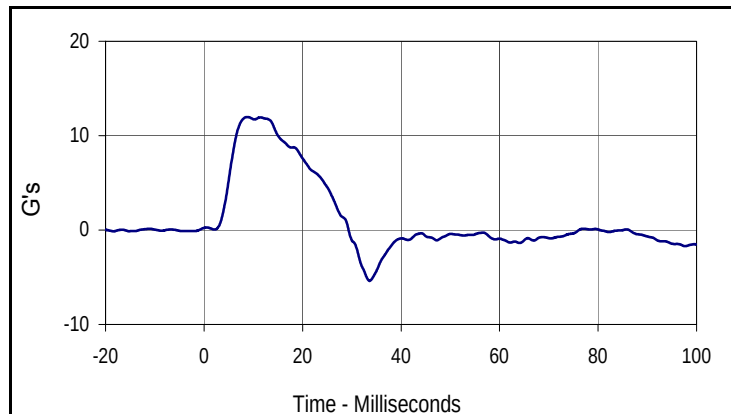
Test Date: 12/3/13
 Test I.D.: 299ABD066



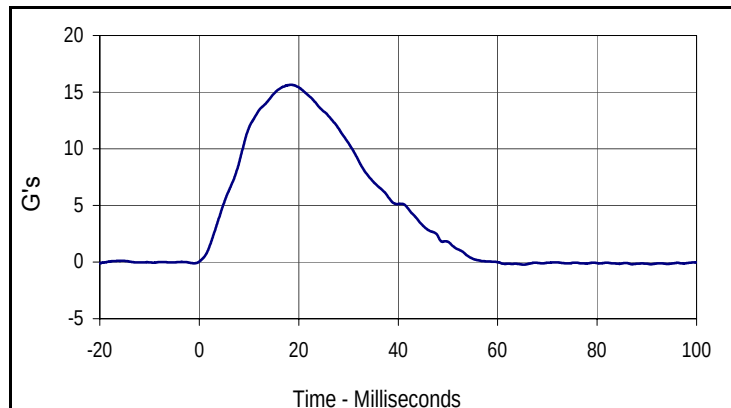
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	585	Pass
Temperature During Soak	Max	20.6 to 22.2	22.0	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	26.2	Pass
	Min		24.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	24.8	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.25	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	37.1	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	35.5	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	12.0	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
37.1	23.2	0.0	0.8
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
35.5	22.1	0.0	-6.8

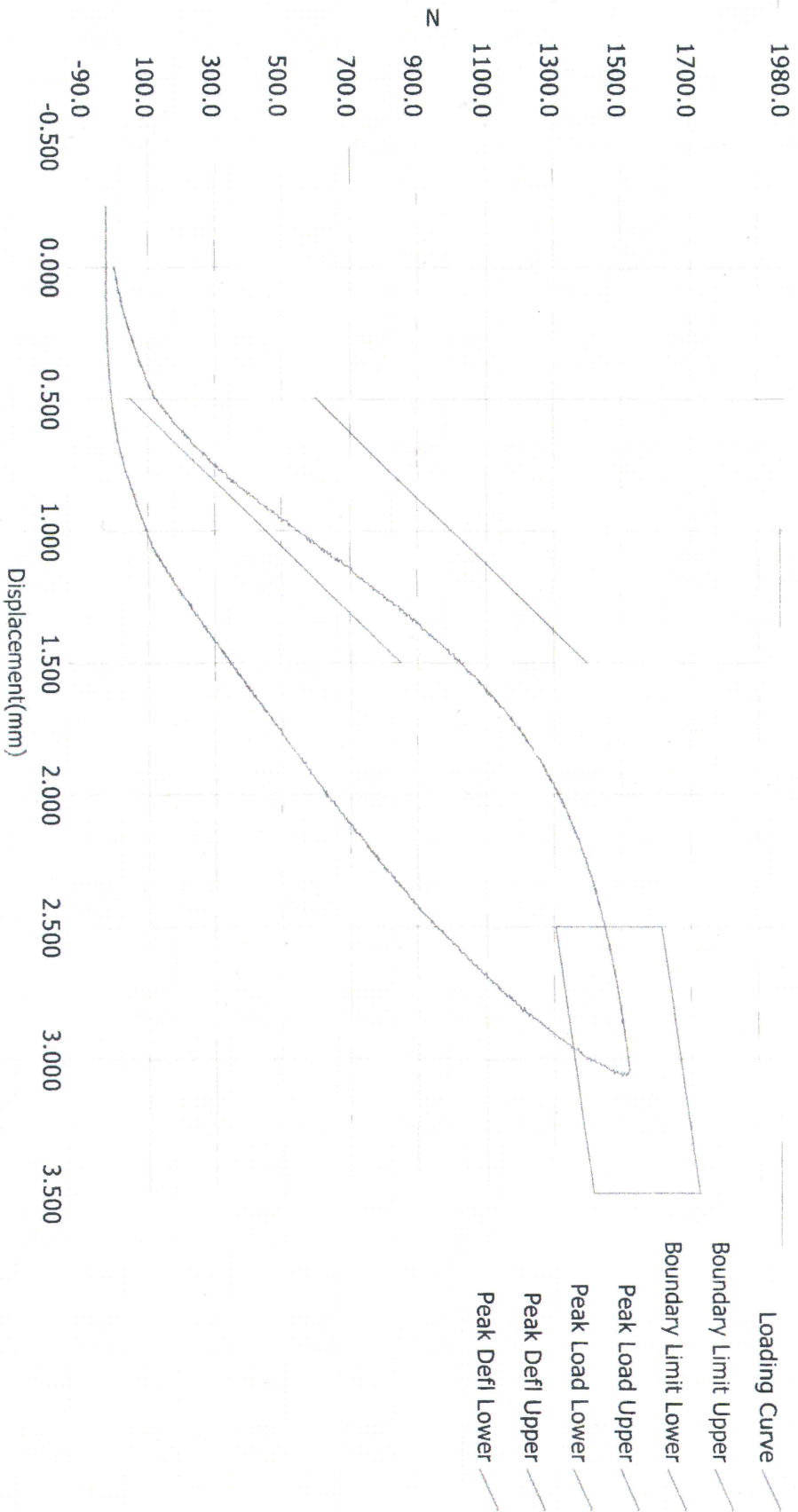


Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
12.0	8.7	-5.4	33.6



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.6	18.4	-0.2	65.3

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>
	46675	9/28/2011	10:13 PM
<u>Cert ID</u>	<u>ATD Serial Number</u>	<u>ATD Type</u>	
	N/A	SIDIIs	

M20145113 PRE TEST

Current Date : 9/28/2011

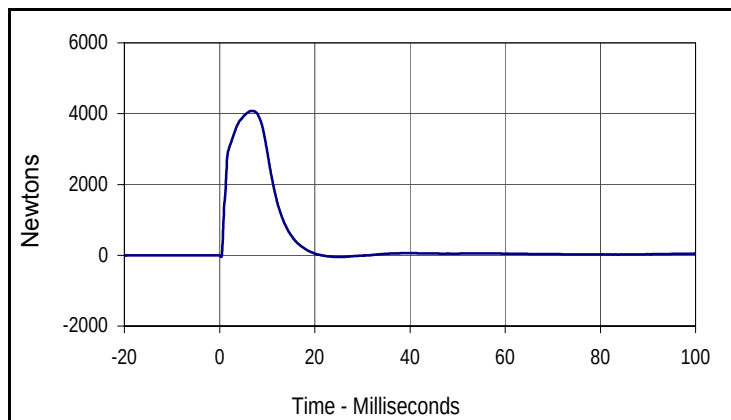
Current Time : 22:13:49

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

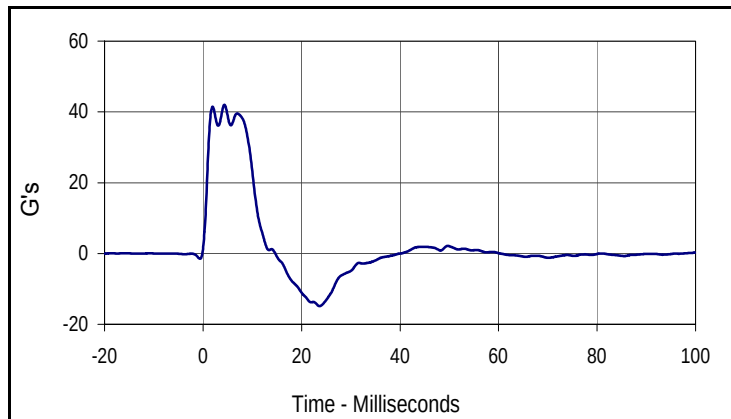
Test Date: 12/3/13
 Test I.D.: 299ACET066



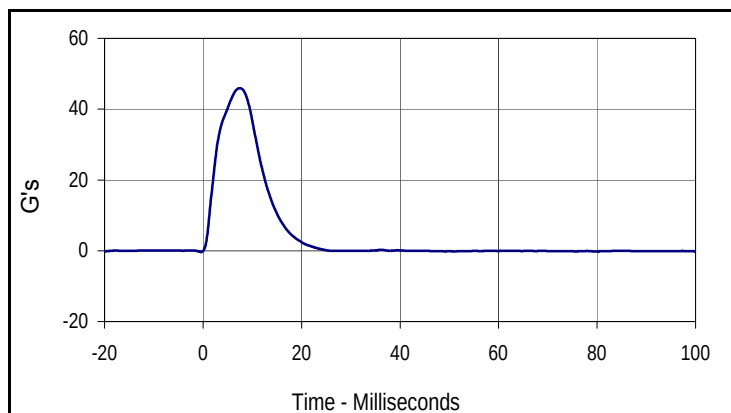
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	660	Pass
Temperature During Soak	Max	20.6 to 22.2	22.0	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	26.2	Pass
	Min		24.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	24.9	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.72	Pass
Peak Acetabulum Force Y	Newtons	3600 to 4300	4076.6	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	39.6	Pass
Peak Impactor Acceleration	G's	38 to 47	45.9	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4076.6	7.0	-49.3	25.2



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
42.0	4.3	-14.9	23.7



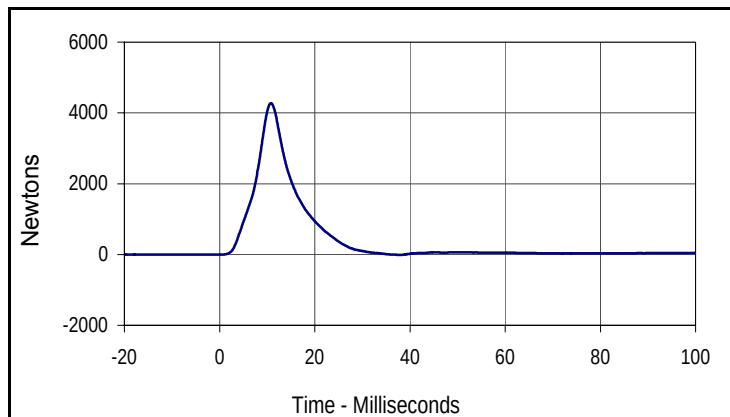
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
45.9	7.5	-0.3	-0.4

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

Test Date: 12/3/13
 Test I.D.: 299PL066



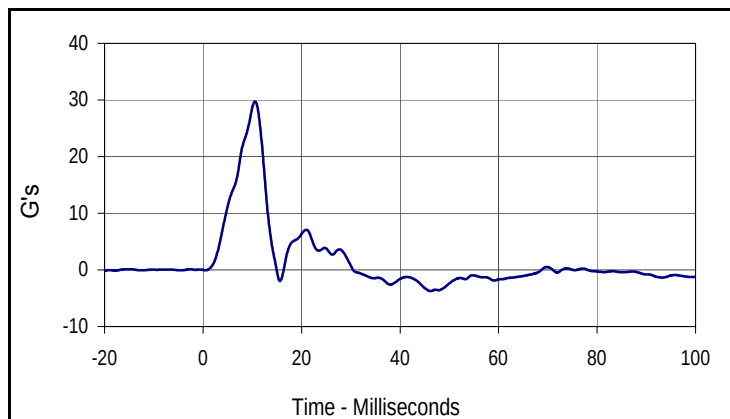
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	725	Pass
Temperature During Soak	Max	20.6 to 22.2	22.0	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	26.2	Pass
	Min		24.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	24.9	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.27	Pass
Peak Iliac Force	Newtons	4100 to 5100	4273.8	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	29.7	Pass
Peak Impactor Acceleration	G's	36 to 45	39.5	Pass
Overall Test Results				Pass



Curve Description

Pelvis Iliac Force

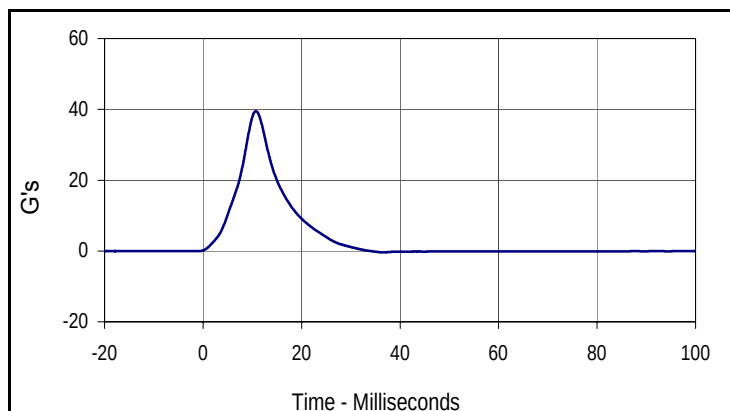
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4273.8	10.8	-12.8	37.7



Curve Description

Pelvis Y Acceleration

Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
29.7	10.6	-3.7	46.2



Curve Description

Impactor Acceleration

Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
39.5	10.7	-0.4	36.4

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

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

Test Date: 12/13/13
 Test I.D.: N/A



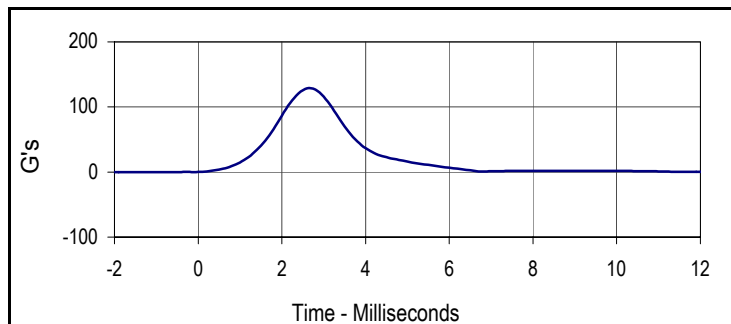
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	25	Pass
A	Sitting Height	mm	772 - 788	780	Pass
B	Shoulder Pivot Height	mm	437 - 453	445	Pass
C	H-Point Height	mm	79 - 89	85	Pass
D	H-Point from Seatback	mm	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

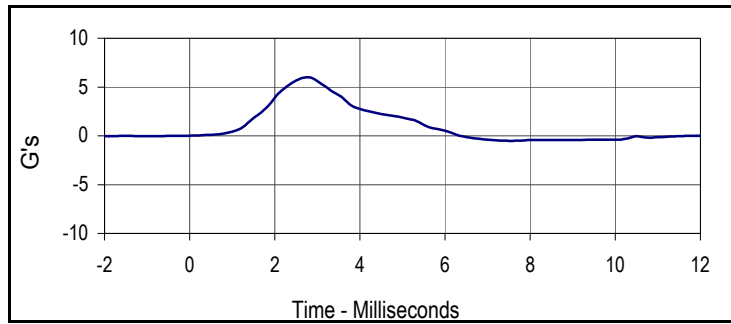
Test Date: 12/13/13
 Test I.D.: 299HD067



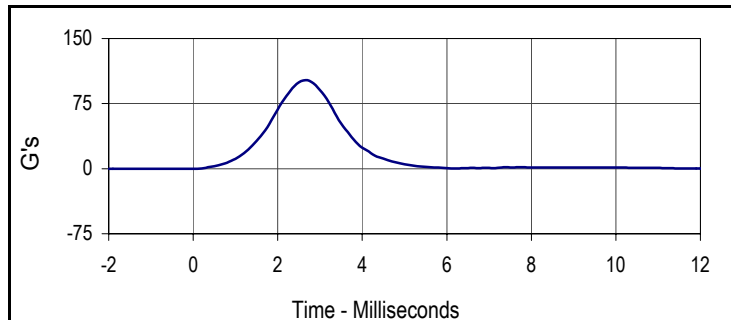
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	400	Pass
Temperature During Soak	Max	18.9 to 25.6	21.7	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	25.9	Pass
	Min		24.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.7	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	25.8	Pass
Peak Head Resultant Acceleration	G's	115 to 137	128.9	Pass
Peak Head X Acceleration	G's	<15	6.0	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	1.6	Pass
Overall Test Results				Pass



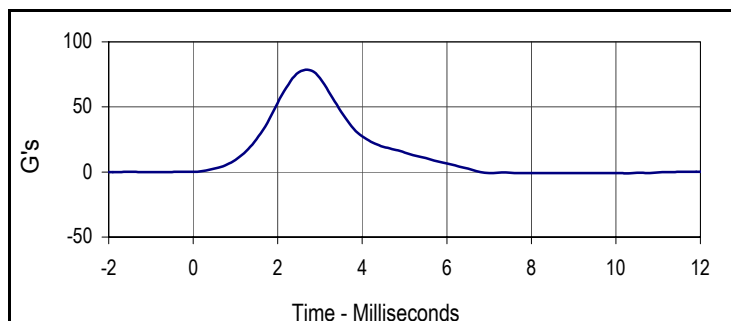
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
128.9	2.7	0.0	-0.9



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
6.0	2.8	0.0	-1.2



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
101.9	2.7	-0.1	0.0



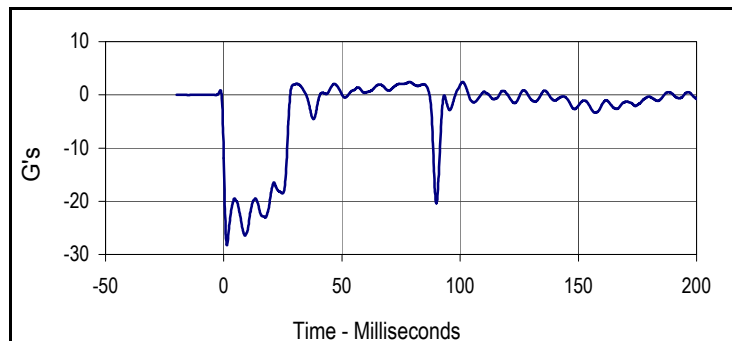
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
78.7	2.7	-1.1	10.3

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

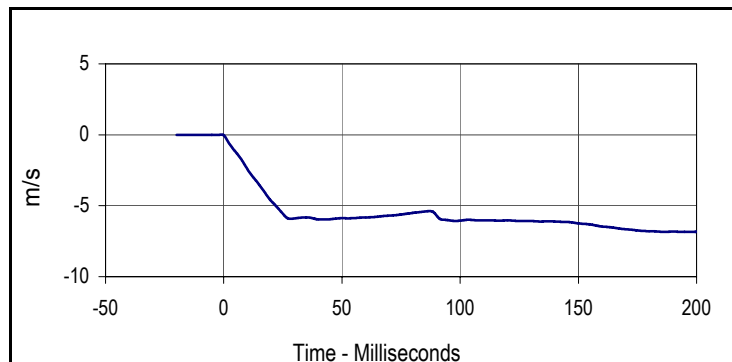
Test Date: 12/13/13
 Test I.D.: 299NB067



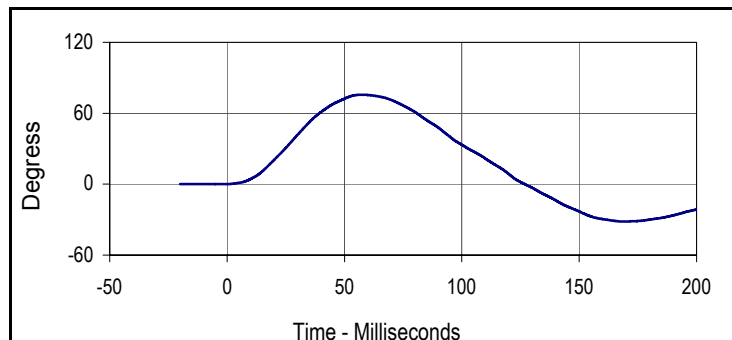
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	465	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	25.9	Pass
	Min		24.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	25.9	Pass
Pendulum Velocity	m/s	5.51 to 5.63	5.56	Pass
Pendulum Deceleration	10 msec	-2.20 to -2.80	-2.42	Pass
	15 msec	-3.30 to -4.10	-3.52	Pass
	20 msec	-4.40 to -5.40	-4.65	Pass
	25 msec	-5.40 to -6.10	-5.56	Pass
	25-100 msec	-5.50 to -6.20	-6.08	Pass
D-Plane Rotation	Max	71 to 81	75.7	Pass
	Time	50 to 70	57.6	Pass
Peak Occipital Condyle Moment	Nm	-36 to -44	-40.1	Pass
Decaying Moment Time to Cross 0 Nm	msec	102 to 126	113.5	Pass
Overall Test Results			Pass	



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
2.4	0.0	-28.3	0.0



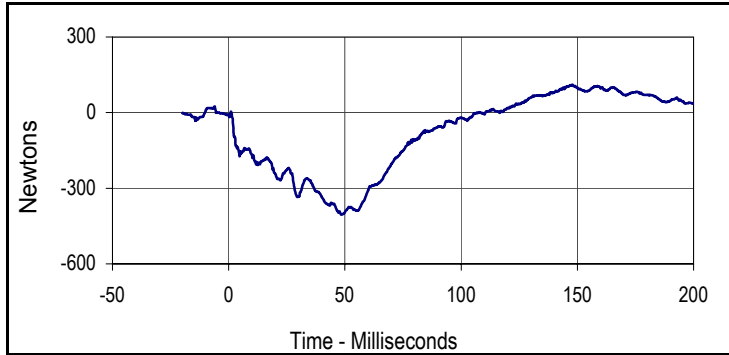
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.9	-6.8	194.6



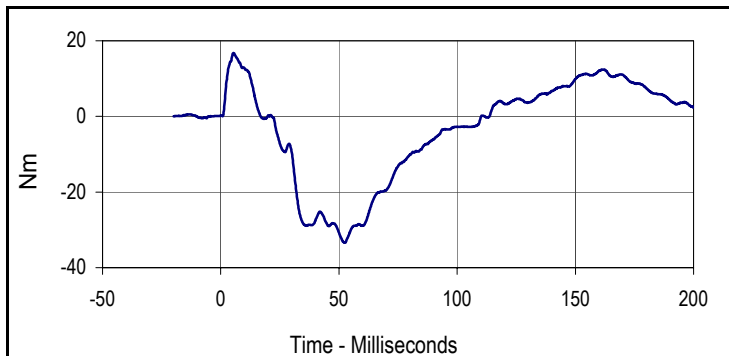
Curve Description			
D-Plane Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degress
Max	Time	Min	Time
75.7	57.6	-31.7	169.1

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

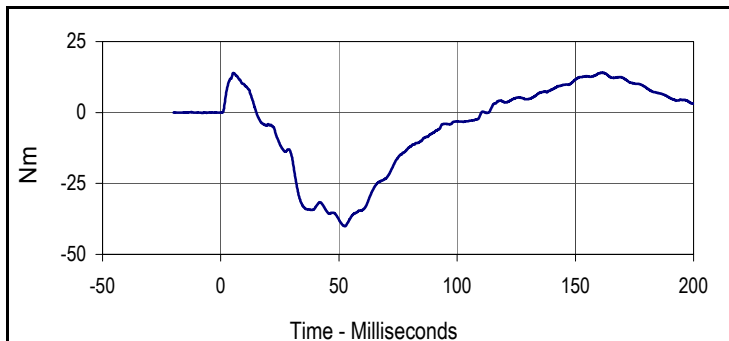
Test Date: 12/13/13
 Test I.D.: 299NB067



Curve Description			
Neck Force Y			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
110.3	147.9	-403.9	48.6



Curve Description			
Neck Moment X			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
16.8	5.3	-33.4	52.6



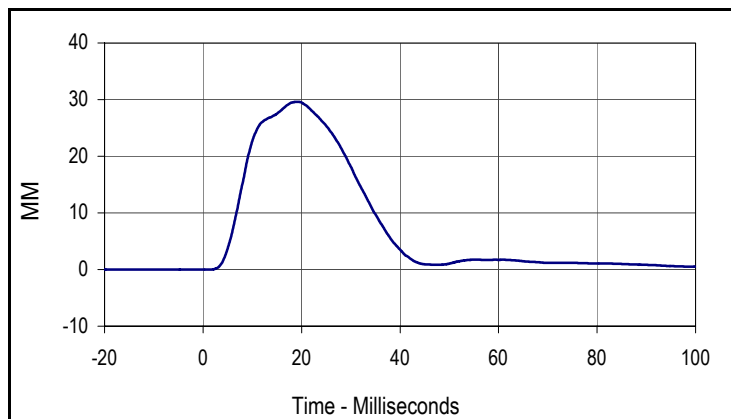
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
006	FIL	600	Nm
Max	Time	Min	Time
14.0	161.7	-40.1	52.5

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

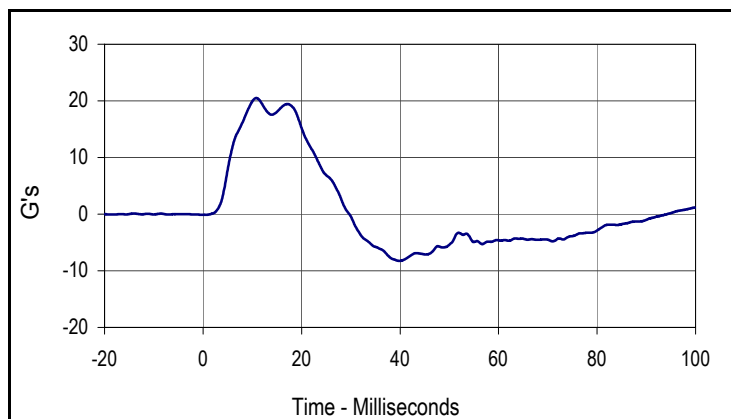
Test Date: 12/13/13
 Test I.D.: 299SH067



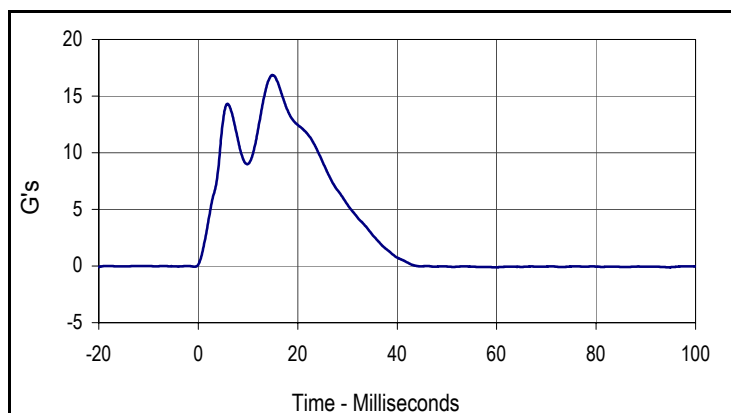
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	540	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.8	Pass
Humidity During Soak	Max	%	10.0 to 70.0	25.9	Pass
	Min	%		24.6	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	25.5	Pass
Impactor Velocity		m/s	4.20 to 4.40	4.31	Pass
Peak Shoulder Deflection		mm	28 to 37	29.6	Pass
Peak Lateral Spine Acceleration Y		G's	17 to 22	20.5	Pass
Peak Impactor Acceleration		G's	13 to 18	16.9	Pass
Overall Test Results				Pass	



Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
29.6	19.0	0.0	-11.2



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
20.5	10.8	-8.2	39.9



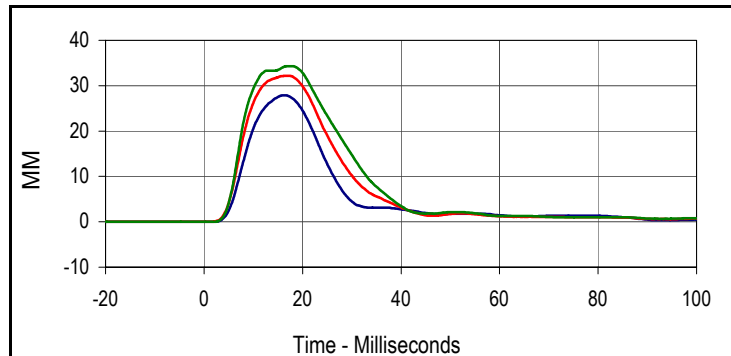
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
16.9	14.9	-0.1	59.9

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

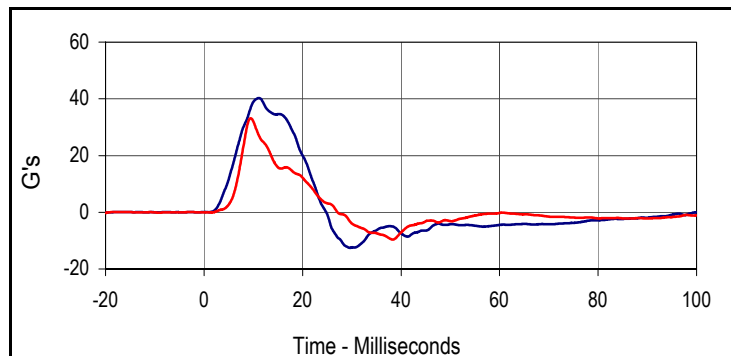
Test Date: 12/13/13
 Test I.D.: 299TWA067



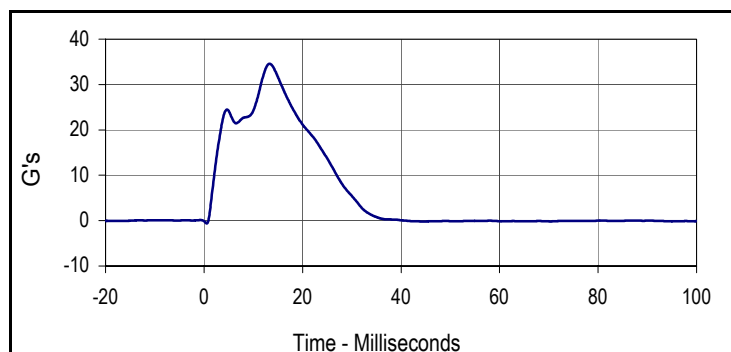
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	590	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	25.9	Pass
	Min		24.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	25.4	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.67	Pass
Peak Shoulder Deflection	mm	31 to 40	36.1	Pass
Peak Upper Thorax Rib Deflection	mm	25 to 32	27.9	Pass
Peak Middle Thorax Rib Deflection	mm	30 to 36	32.2	Pass
Peak Lower Thorax Rib Deflection	mm	32 to 38	34.3	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	40.3	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	33.2	Pass
Peak Impactor Acceleration	G's	30 to 36	34.6	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
27.9	16.3	0.0	-17.2
Middle Thorax Deflection			
Max	Time	Min	Time
32.2	16.9	0.0	-17.7
Lower Thorax Deflection			
Max	Time	Min	Time
34.3	17.0	0.0	-12.4



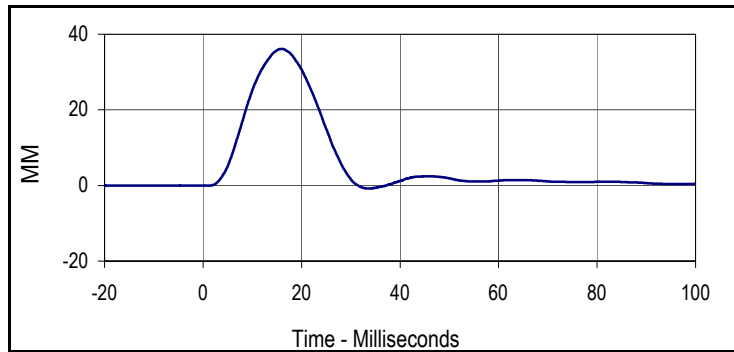
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
40.3	11.1	-12.6	29.6
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
33.2	9.5	-9.6	38.3



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
34.6	13.3	-0.6	0.6

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

Test Date: 12/13/13
 Test I.D.: 299TWA067



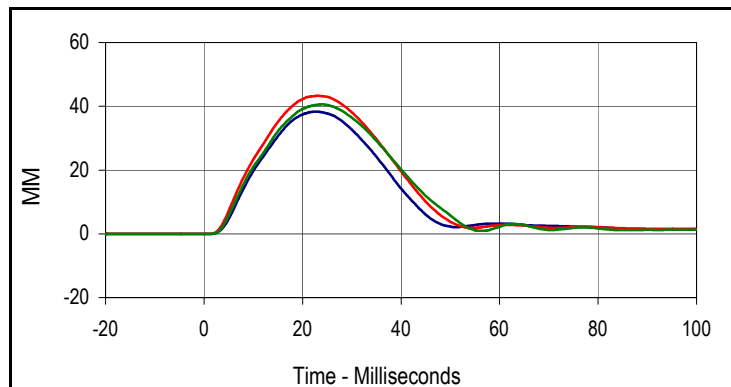
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	MM
Max	Time	Min	Time
36.1	15.9	-0.8	33.8

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

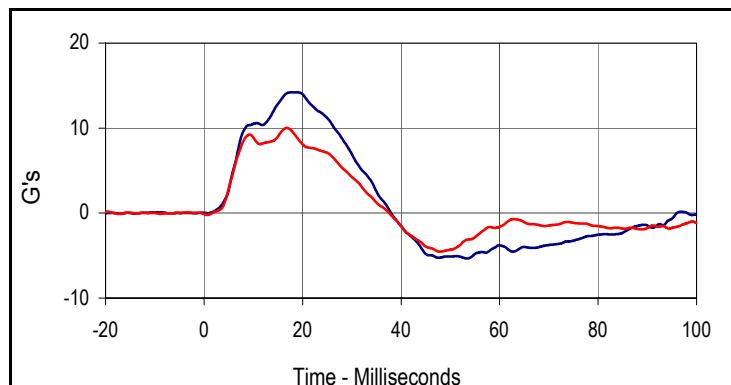
Test Date: 12/13/13
 Test I.D.: 299TWOA067



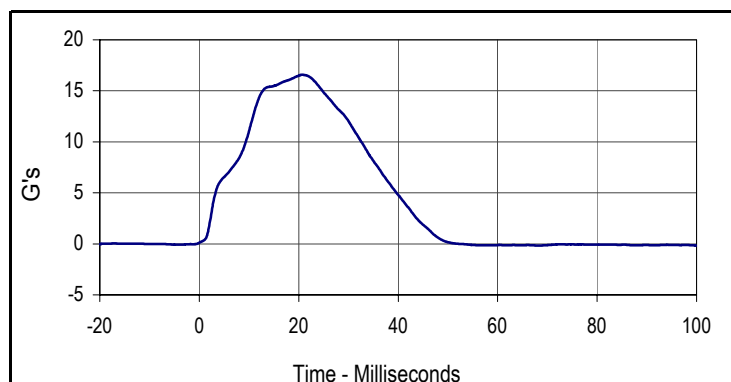
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	645	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		20.8	Pass
Humidity During Soak	Max	%	10.0 to 70.0	25.9	Pass
	Min	%		24.6	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.0	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	24.6	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.37	Pass
Peak Upper Thorax Rib Deflection		mm	32 to 40	38.3	Pass
Peak Middle Thorax Rib Deflection		mm	39 to 45	43.3	Pass
Peak Lower Thorax Rib Deflection		mm	35 to 43	40.6	Pass
Peak Upper Spine Y Acceleration		G's	13 to 17	14.2	Pass
Peak Lower Spine Y Acceleration		G's	7 to 11	10.0	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
38.3	22.6	0.0	-3.8
Middle Thorax Deflection			
Max	Time	Min	Time
43.3	23.1	0.0	-5.0
Lower Thorax Deflection			
Max	Time	Min	Time
40.6	24.0	0.0	-1.3



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.2	18.0	-5.4	53.3
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
10.0	16.8	-4.5	47.9



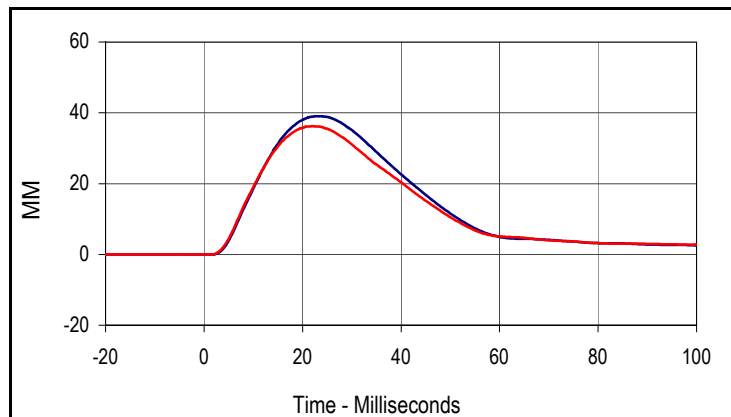
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
16.6	20.8	-0.2	99.9

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

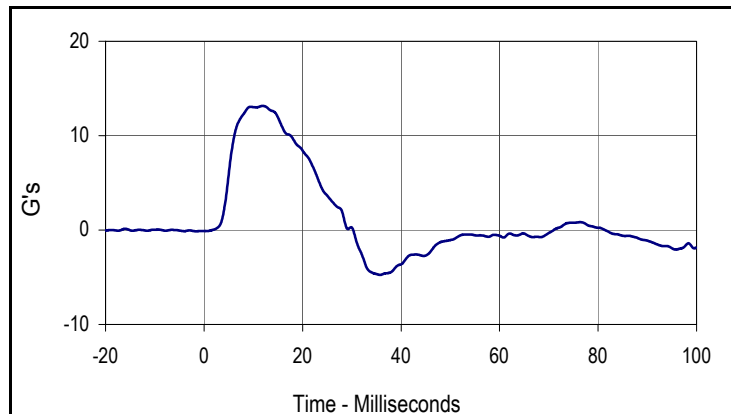
Test Date: 12/13/13
 Test I.D.: 299ABD067



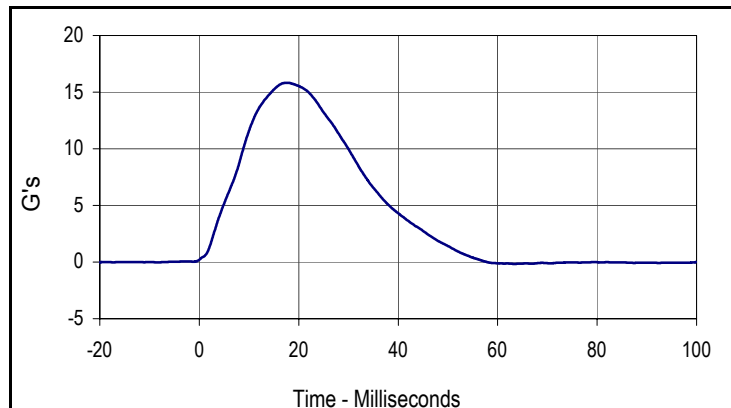
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	705	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	25.9	Pass
	Min		24.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	20.9	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	24.6	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.29	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	39.0	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	36.2	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	13.1	Pass
Peak Impactor Acceleration	G's	12 to 16	15.8	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
39.0	23.3	0.0	-7.3
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
36.2	21.9	0.0	-20.0

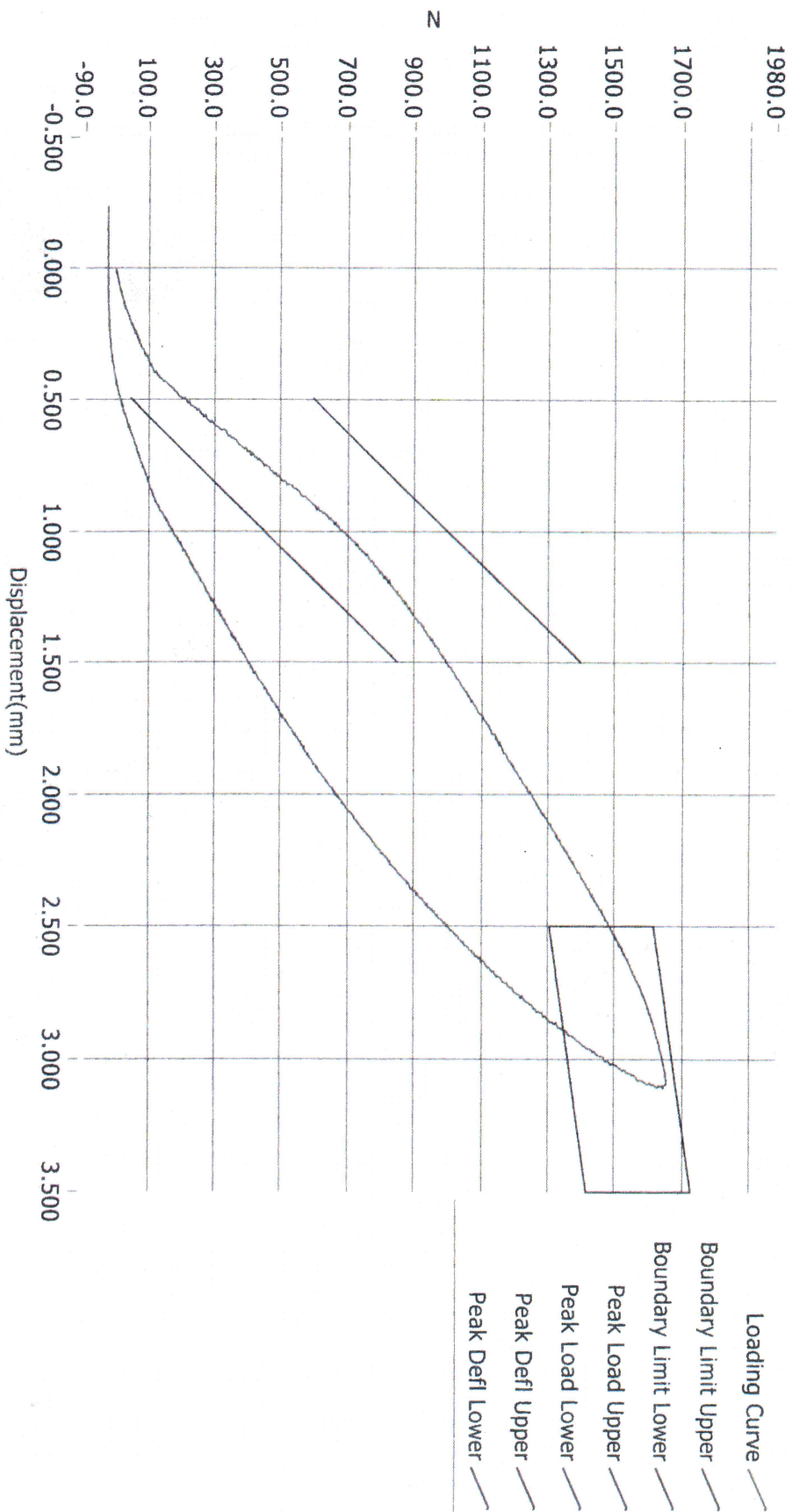


Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
13.1	11.9	-4.8	35.7



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.8	17.5	-0.2	63.4

Resultant Data - SIDIIs Plug Compression



ATD Calibration Lab

Test ID

Part Serial Number

Test Date

Test Time

48939

12/6/2011

8:07 PM

Cert ID

ATD Serial Number

ATD Type

N/A

SIDIIs

M20145113 POST TEST

Current Date : 12/6/2011

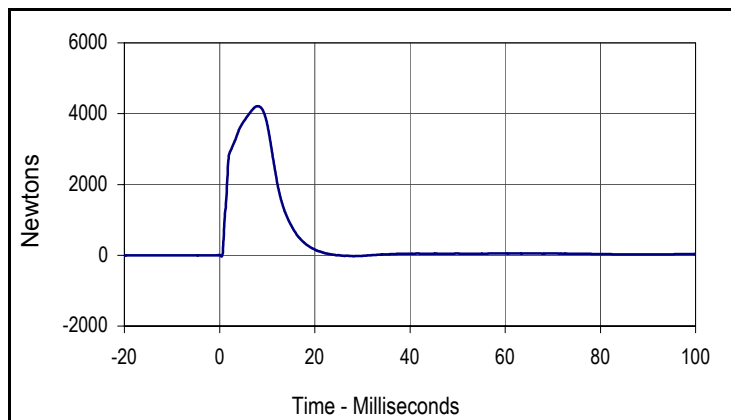
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Test Program: SID IIs Pelvis Acetabulum Impact Test
 ATD Serial No.: 299

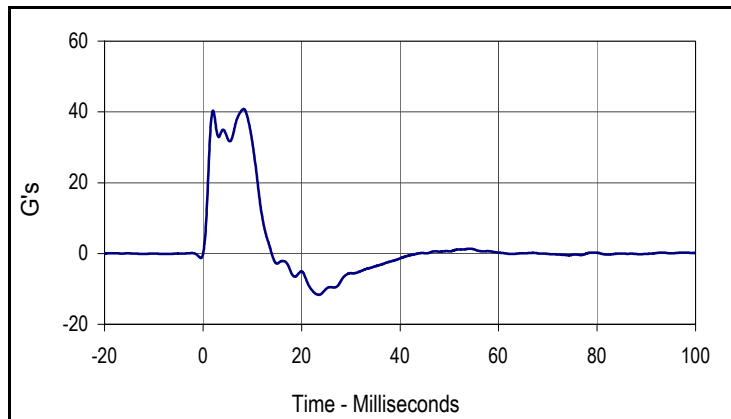
Test Date: 12/13/13
 Test I.D.: 299ACET067



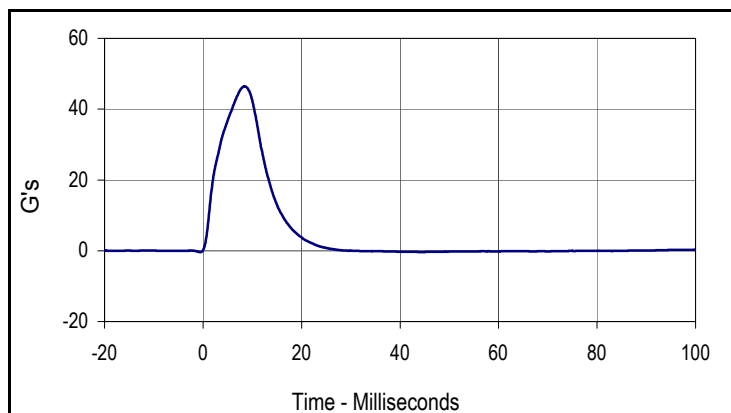
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	780	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	25.9	Pass
	Min		24.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	20.8	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	25.2	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.73	Pass
Peak Acetabulum Force Y	Newtons	3600 to 4300	4213.6	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	40.8	Pass
Peak Impactor Acceleration	G's	38 to 47	46.4	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4213.6	8.0	-33.1	0.5



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
40.8	8.2	-11.6	23.5



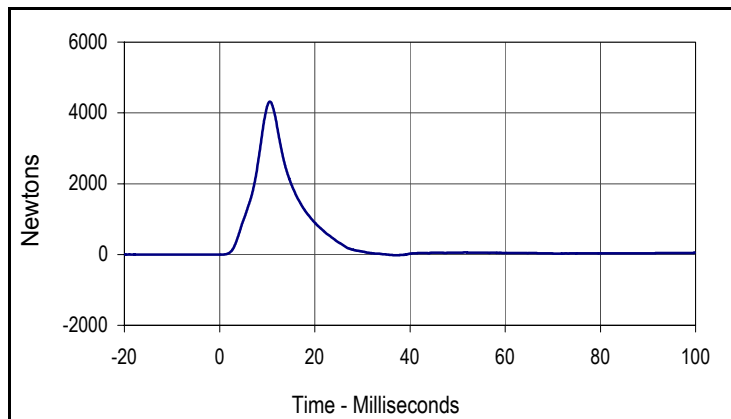
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
46.4	8.4	-0.4	-0.5

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

Test Date: 12/13/13
 Test I.D.: 299PL067



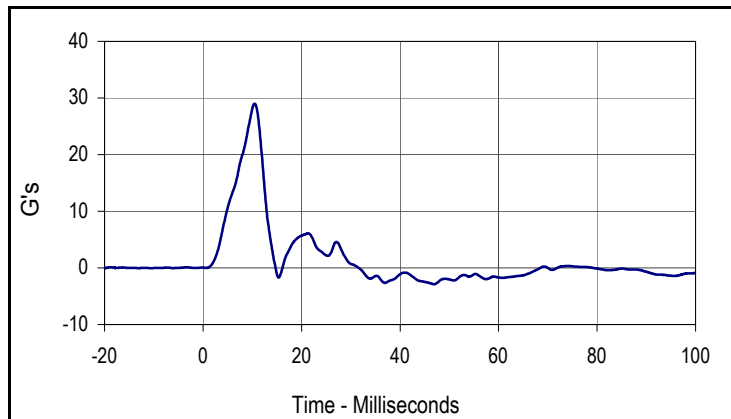
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	845	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.8	Pass
Humidity During Soak	Max	10.0 to 70.0	25.9	Pass
	Min		24.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	25.7	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.23	Pass
Peak Iliac Force	Newtons	4100 to 5100	4322.1	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	29.0	Pass
Peak Impactor Acceleration	G's	36 to 45	39.9	Pass
Overall Test Results				Pass



Curve Description

Pelvis Iliac Force

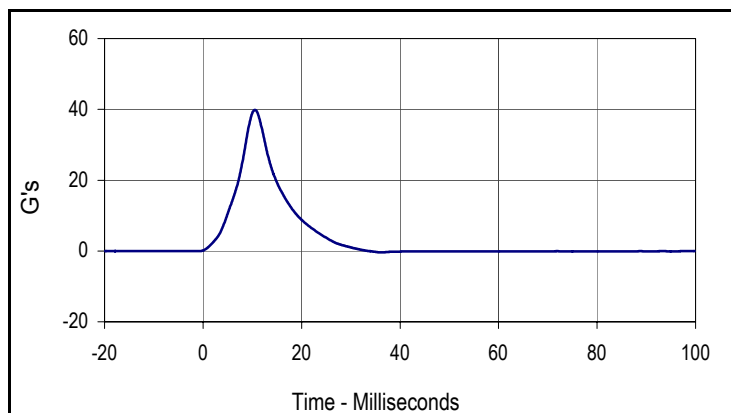
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4322.1	10.6	-21.7	37.3



Curve Description

Pelvis Y Acceleration

Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
29.0	10.5	-2.9	46.9



Curve Description

Impactor Acceleration

Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
39.9	10.5	-0.4	36.2

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	Primary		X	P51926	Endevco	10/14/2013
			Y	P51929	Endevco	10/14/2013
			Z	P51934	Endevco	10/14/2013
	Redundant		X	P68604	Endevco	10/14/2013
			Y	P51931	Endevco	10/14/2013
			Z	P51939	Endevco	10/14/2013
Displacement Potentiometers	Shoulder		Y	1293	FTSS	6/21/2013
	Thoracic Rib	Upper	Y	1143	FTSS	5/2/2013
		Middle	Y	1160	FTSS	5/2/2013
		Lower	Y	1213	FTSS	5/2/2013
	Abdominal Rib	Upper	Y	1218	FTSS	5/2/2013
		Lower	Y	1234	FTSS	5/2/2013
Lower Spine Accelerometers (T12)			X	P63999	Endevco	10/15/2013
			Y	P58872	Endevco	10/15/2013
			Z	P58795	Endevco	10/15/2013
Acetabulum Load Cell			Y	272	Denton	4/19/2013
Iliac Wing Load Cell			Y	284	Denton	4/19/2013
Pelvis Plug (Struck Side)				47618	FTSS	10/27/2011
Pelvis Plug (Non-Struck Side)				63446	FTSS	1/28/2013

TABLE 2 – Vehicle Instrumentation

Vehicle Instrumentation		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	Ketx5x	ICSensor	6/28/2013
Vehicle Center of Gravity	Y	Ketx5y	ICSensor	6/28/2013
Vehicle Center of Gravity	Z	Ketx5z	ICSensor	6/28/2013
Left Floor Sill	Y	13745	Endevco	10/22/2013
A-Pillar Sill	Y	13746	Endevco	10/22/2013
A-Pillar Low	Y	13729	Endevco	10/22/2013
A-Pillar Mid	Y	13486	Endevco	6/26/2013
B-Pillar Sill	Y	13337	Endevco	10/29/2013
B-Pillar Low	Y	13740	Endevco	10/22/2013
B-Pillar Mid	Y	13734	Endevco	10/22/2013
Driver Seat	Y	13375	Endevco	6/25/2013
Engine Top	X	13316	Endevco	6/25/2013
Engine Top	Y	13331	Endevco	6/26/2013
Firewall	Y	13730	Endevco	10/22/2013
Right Roof	Y	13700	Endevco	10/22/2013
Right Floor Sill	Y	13727	Endevco	10/22/2013
Rear Floorpan	X	13717	Endevco	6/17/2013
Rear Floorpan	Y	12906	Endevco	10/2/2013

TABLE 3 – Pole Instrumentation

	Serial Number	Manufacturer	Calibration Date
Load Cell 1	131822A	Interface	10/21/13
Load Cell 2	132304A	Interface	10/21/13
Load Cell 3	19477	Interface	10/21/13
Load Cell 4	19325	Interface	10/22/13
Load Cell 5	131827A	Interface	10/22/13
Load Cell 6	132302A	Interface	10/22/13
Load Cell 7	19267	Interface	10/22/13
Load Cell 8	19321	Interface	10/22/13