

REPORT NUMBER: SPNCAP-KAR-13-005

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

**TOYOTA MOTOR MANUFACTURING CANADA INC.
2013 LEXUS RX350 5-DOOR MPV**

NHTSA No: MD5102

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



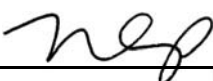
JUNE 28, 2012

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
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1200 NEW JERSEY AVE, SE, ROOM W43-410
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Approval Date: June 28, 2012

FINAL REPORT ACCEPTANCE BY OCWS:


Division Chief, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: 


COTR, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: 

TECHNICAL REPORT DOCUMENTATION PAGE

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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 2013 Lexus RX350 5-Door MPV in accordance with the specifications of the Office of Crash Worthiness 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 June 14, 2012. The impact velocity was 32.63 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 32.2 deg. C. The target vehicle's maximum post-test static crush was 499 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>485.9</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td>g</td> <td>82</td> <td>38.5</td> </tr> <tr> <td>Total Pelvic Force (Sum of Acetabular and Iliac Forces)</td> <td>N</td> <td>5525</td> <td>2099</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>38</td> <td>13</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 (ES-2re)			Units	Threshold	Result	Head Injury Criteria (HIC ₃₆)		1000	485.9	Resultant Lower Spine Acceleration	g	82	38.5	Total Pelvic Force (Sum of Acetabular and Iliac Forces)	N	5525	2099	Maximum Thoracic Rib Deflection	mm	38	13	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 Reference Division 1200 New Jersey Ave., SE Room W43-410 Washington, DC 20590																												
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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 Lexus RX350 5-door MPV. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated May 2012.

SECTION 2

SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a 2013 Lexus RX350 5-Door MPV. The subject vehicle was towed into the rigid pole at an angle of 74.3° and a velocity of 32.6 km/h. The test was conducted by KARCO Engineering, LLC. in Adelanto, California on June 14, 2012. 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 May 2012. Camera locations and other pertinent camera information are included in this report.

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

- 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.

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	485.9
Lower Spine (T12) Resultant Acceleration	g	82	38.5
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2099
Maximum Thoracic Rib Deflection	mm	38*	13
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/Pelvis)	Yes	Yes	No	
Side Airbag 3 (Torso)	No		Yes	Yes
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes	Yes	No	

GENERAL COMMENTS

Both the front and rear doors on the struck side 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 Lexus RX350 5-Door MPV NHTSA No. MD5102
Test Program: NCAP Side Pole Impact Test Test Date: 06/14/12

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 Lexus RX350 5-Door MPV NHTSA No. MD5102
 Test Program: NCAP Side Pole Impact Test Test Date: 06/14/12

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	MD5102
Model Year	2013
Make	Lexus
Model	RX350
Body Style	5-Door MPV
VIN	2T2ZK1BA3DC087297
Body Color	Fire Agate Pearl
Odometer Reading (km / mi)	13 / 8
Engine Displacement (L)	3.5
Type / No. of Cylinders	V6
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	6
Overdrive	Yes
Final Drive	Front
Roof Rack	Yes
Sunroof / T-Top	Yes
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	Yes
Anti-Lock Brakes (ABS)	Yes
All Wheel Drive (AWD)	No

Traction Control System (TCS)	Yes
Auto-Leveling System	No
Automatic Door Locks	Yes
Power Window Auto-Reverse	Yes
Other Optional Feature	None
Driver Front Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	No
Driver Torso/Pelvis Airbag	Yes
Driver Pelvis Airbag	No
Driver Knee Airbag	Yes
Rear Pass. Curtain Airbag	Yes
Rear Pass. Head/Torso Airbag	No
Rear Pass. Torso Airbag	Yes
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	Front Active Headrest

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

Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Toyota Motor Manufacturing Canada Inc.
Date of Manufacture	Apr-12
Vehicle Type	MPV

GVWR (kg)	2520
GAWR Front (kg)	1360
GAWR Rear (kg)	1385

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity	2	3		5	
Capacity Weight (VCW) (kg)				395.0	A
DSC x 68.04 (kg)				340.2	B
Cargo Weight (RCLW) (kg)				54.8	A-B

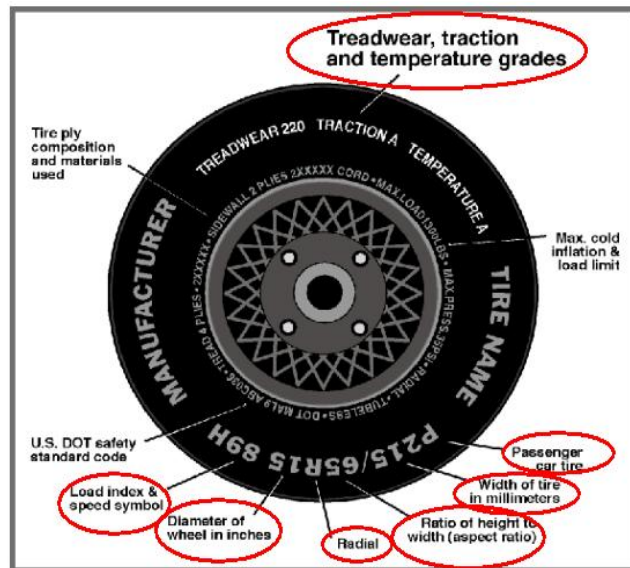
VEHICLE SEAT TYPE

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 Lexus RX350 5-Door MPV NHTSA No. MD5102
 Test Program: NCAP Side Pole Impact Test Test Date: 06/14/12



TIRE PLACARD INFORMATION

Measured Parameter	Front	Rear
Recommended Cold Tire Pressure (kPa)	220	220
Recommended Tire Size	P235/60R18	P255/60R18

VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	350	350
Tire Size on Vehicle	P235/60R18	P235/60R18
Tire Manufacturer	Bridgestone	Bridgestone
Tire Name	Dueler H/L 400	Dueler H/L 400
Tire Type	Passenger	Passenger
Tire Width	235	235
Aspect Ratio	60	60
Radial	Yes	Yes
Wheel Diameter	18	18
Load Index/Speed Symbol	102V	102V
Treadware	260	260
Traction Grade	A	A
Temperature Grade	A	A
Tire Material	Polyester, Steel, Nylon	Polyester, Steel, Nylon

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2013 Lexus RX350 5-Door MPV NHTSA No. MD5102
 Test Program: NCAP Side Pole Impact Test Test Date: 06/14/12

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	240	240	250	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	556.5	420.0		572.5	425.5		570.5	467.0	
Right	kg	543.0	393.5		561.5	448.5		547.0	431.5	
Ratio	%	57.5%	42.5%	100.0%	56.5%	43.5%	100.0%	55.4%	44.6%	100.0%
Total	kg	1099.5	813.5	1913.0	1134.0	874.0	2008.0	1117.5	898.5	2016.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1913.0	A
Actual Weight of 1 P572 O ATD Used	kg	49.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	54.8	C
Calculated Vehicle Target Wt (TVTW)	kg	2016.8	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

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Non-Struck Side Door Panels	8.0
Spare Tire	19.0
Spare Tire Tools	6.0
Non-Struck Side Windows	6.0
Trunk Trim	10.0
Ballast / Equipment Added	83.3

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2013 Lexus RX350 5-Door MPV NHTSA No. MD5102
 Test Program: NCAP Side Pole Impact Test Test Date: 06/14/12

TEST VEHICLE ATTITUDE AND CG

Measurement Description	Units	As Delivered	As Tested	Fully Loaded	Meets Requirement***
Driver Door Sill Angle (front-to-rear)*	°	0.0	-0.3	-0.3	Yes
Front Passenger Sill Angle (front-to-rear)*	°	0.1	-0.3	-0.4	Yes
Front Bumper-Line Angle (left-to-right)**	°	-0.3	0.0	0.2	Yes
Rear Bumper-Line Angle (left-to-right)**	°	-0.1	-0.1	0.0	Yes
Vehicle CG (Aft of Front Axle)	mm	1166	1193	1222	
Vehicle CG (Left (+)/Right (-) from Longitudinal Centerline)	mm	17	-5	24	

*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. 2**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA**

Test Vehicle: 2013 Lexus RX350 5-Door MPV NHTSA No. MD5102
 Test Program: NCAP Side Pole Impact Test Test Date: 06/14/12

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	6.8	0.0	3.4
Front Passenger Seat	4.3	0	2.5
Front Center Seat			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat	Fixed to RR	Fixed to RR	Fixed to RR

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle	As Tested SCRP Height	SCRP Height Position	SCRP Height (mm)		
				Rearmost	Mid Fore/Aft	Forwardmost
Driver Seat	3.4	693	Max	707	709	711
			Mid	689	691	693
			Min	669	672	676
Front Passenger Seat	2.5	718	Max	728	730	732
			Mid	714	716	718
			Min	701	703	705
Front Center Seat			Max			
			Mid			
			Min			
Struck Side Rear Seat	Fixed	Fixed	Max	709	709	709
			Mid	709	709	709
			Min	709	709	709
Non-Struck Side Rear Seat	Fixed	Fixed	Max	696	696	696
			Mid	696	696	696
			Min	696	696	696
Rear Center Seat	Fixed	Fixed	Max	Fixed to RR	Fixed to RR	Fixed to RR
			Mid	Fixed to RR	Fixed to RR	Fixed to RR
			Min	Fixed to RR	Fixed to RR	Fixed to RR

DATA SHEET NO. 2 ... (CONTINUED)

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

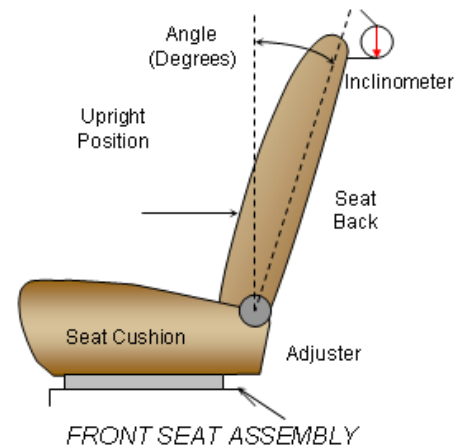
Test Vehicle: 2013 Lexus RX350 5-Door MPV NHTSA No. MD5102
 Test Program: NCAP Side Pole Impact Test Test Date: 06/14/12

SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position From Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	259		130	
Front Passenger Seat	259		130	
Front Center Seat				
Struck Side Rear Seat	118	9	118	8
Non-Struck Side Rear Seat	118	9	59	4
Rear Center Seat	Fixed to RR	Fixed to RR	Fixed to RR	Fixed to RR

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	27.9		10.8	
Front Passenger Seat	29.9		10.8	
Front Center Seat				
Struck Side Rear Seat w/Seated Dummy	15.4	9	3.6	0
Non-Struck Side Rear Seat	14.3	9	3.6	0
Rear Center Seat	Fixed to RR	Fixed to RR	Fixed to RR	Fixed to RR

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

DATA SHEET NO. 2 ... (CONTINUED)

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

Test Vehicle: 2013 Lexus RX350 5-Door MPV NHTSA No. MD5102
Test Program: NCAP Side Pole Impact Test Test Date: 06/14/12

HEAD RESTRAINT ADJUSTMENT

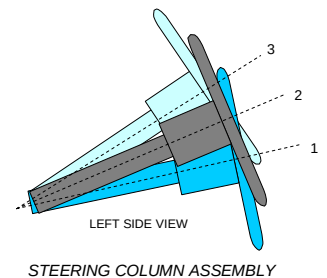
The driver's head restraint is adjusted to the lowest and most full forward in-use position.

	Total No. of Positions	Placed in Position
Driver Seat	4	Full Down

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	24.3	85
Geometric Center - Position 2	26.3	104
Uppermost - Position 3	28.4	123
Telescoping Steering Wheel Travel		38
Test Position	26.3	104



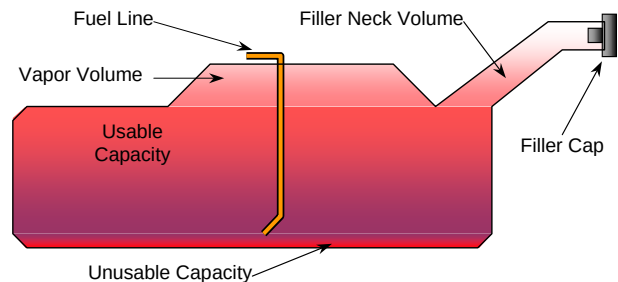
DATA SHEET NO. 2 ... (CONTINUED)**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA**Test Vehicle: 2013 Lexus RX350 5-Door MPV NHTSA No. MD5102Test Program: NCAP Side Pole Impact Test Test Date: 06/14/12**FUEL TANK CAPACITY**

Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	72.67
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	67.58
Actual amount of Solvent Used in Test	67.58
1/3 of Usable Capacity	24.22

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

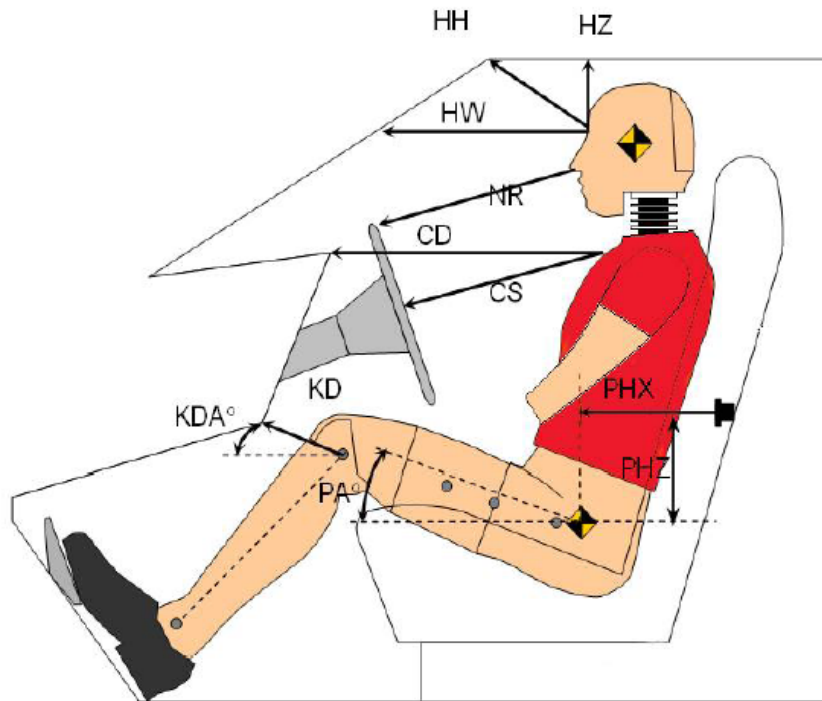
FUEL PUMP

The vehicle is equipped with an electric fuel pump.
The fuel pump is activated when the ignition is turned on.

**VEHICLE FUEL TANK ASSEMBLY**

DATA SHEET NO. 3**DUMMY LONGITUDINAL CLEARANCE DIMENSIONS**

Test Vehicle: 2013 Lexus RX350 5-Door MPV NHTSA No. MD5102
Test Program: NCAP Side Pole Impact Test Test Date: 06/14/12

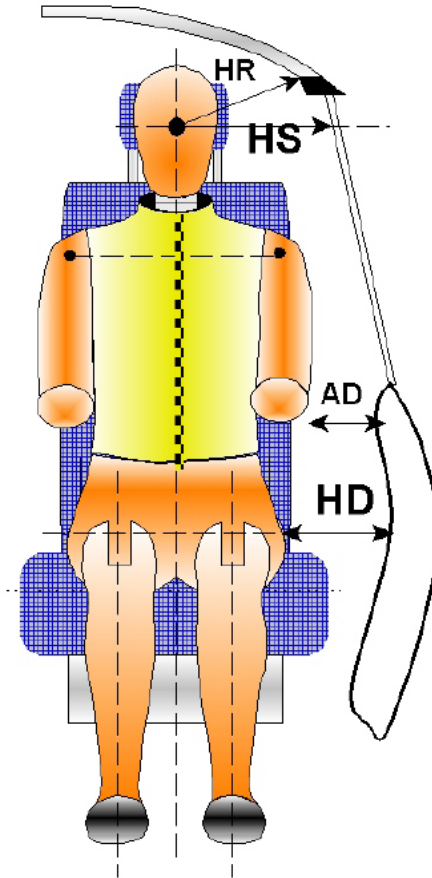
**DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION**

Driver Code	Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	265	
HW	Head to Windshield	684	
HZ	Head to Roof	198	
NR	Nose to Rim	200	
CD	Chest to Dash	353	
CS	Chest to Steering Wheel	122	
KD(L)/KDA(L)°	Left Knee to Dash	105	36.8
KD(R)/KDA(R)°	Right Knee to Dash	99	39.0
PAX°	Pelvic Tilt Angle (x-axis)		17.8
PAY°	Pelvic Tilt Angle (y-axis)		0.2
PHX	Hip Point to Striker (x-axis)	404	
PHZ	Hip Point to Striker (z-axis)	157	

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2013 Lexus RX350 5-Door MPV NHTSA No. MD5102
Test Program: NCAP Side Pole Impact Test Test Date: 06/14/12



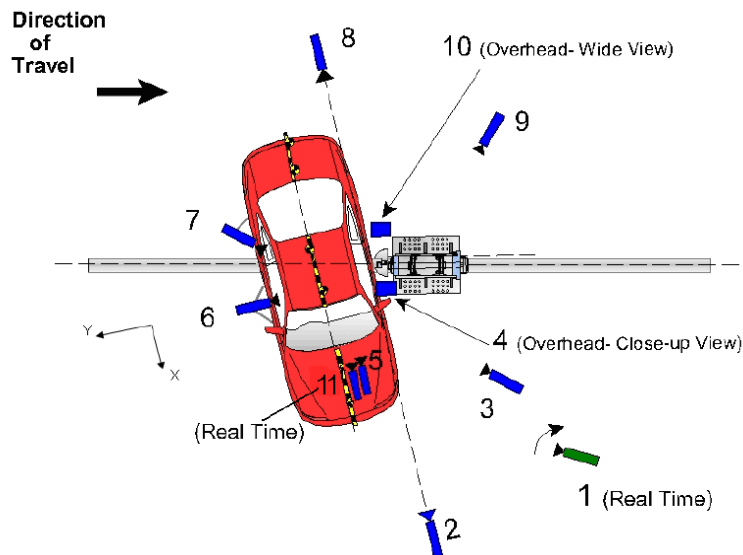
DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver
HR	Head to Side Header	mm	238
HS	Head to Side Window	mm	367
AD	Arm to Door	mm	178
HD	H-Point to Door	mm	176

DATA SHEET NO. 5

CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2013 Lexus RX350 5-Door MPV NHTSA No. MD5102
 Test Program: NCAP Side Pole Impact Test Test Date: 06/14/12



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	1.91	0.82	-1.53	24	1000
6	On-Board - Dummy Side View	0.46	1.97	-1.30	14	1000
7	On-Board - Dummy Rear Oblique View	-0.52	1.95	-1.32	14	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	1.92	0.85	-1.52		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

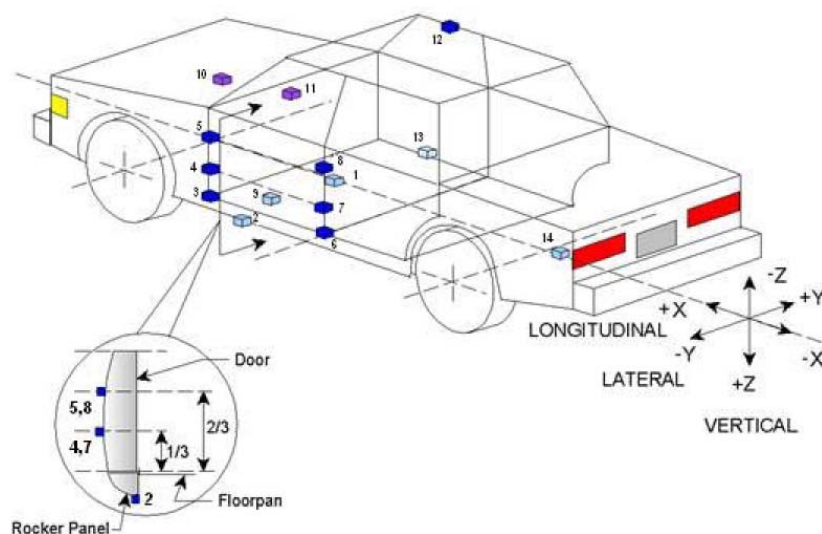
Driver Dummy Channels	16
Vehicle Structure Accelerometers	18
Pole Load Cells	8
Total	42

DATA SHEET NO. 6

TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2013 Lexus RX350 5-Door MPV NHTSA No. MD5102

Test Program: NCAP Side Pole Impact Test Test Date: 06/14/12



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

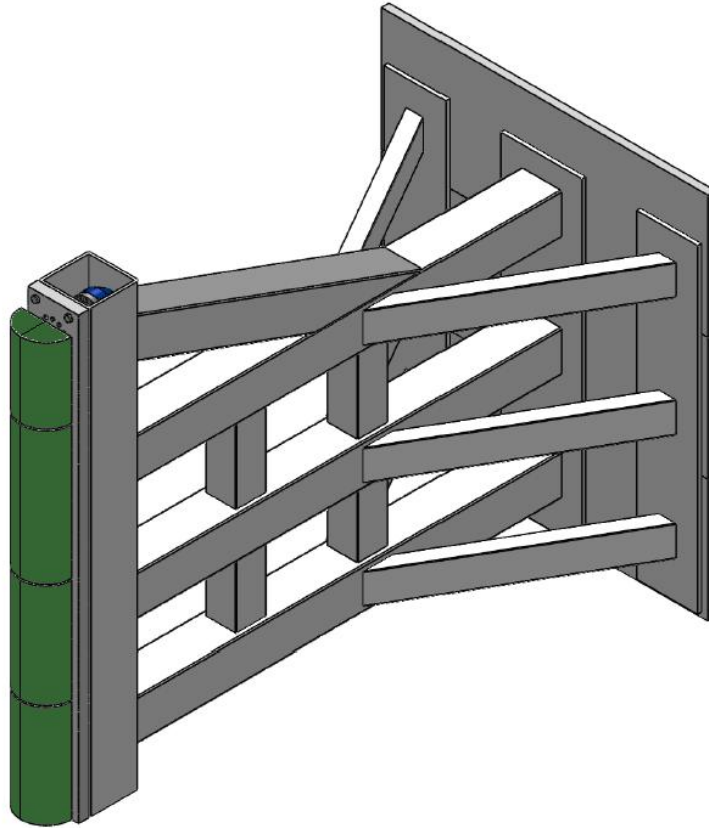
Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	1974	0	-415
2	Left Floor Sill	2919	-705	-278
3	A-Pillar Sill	3227	-815	-585
4	A-Pillar Low	3227	-815	-710
5	A-Pillar Mid	3227	-815	-895
6	B-Pillar Sill	2149	-782	-590
7	B-Pillar Low	2149	-782	-805
8	B-Pillar Mid	2149	-782	-1009
9	Driver Seat Track	2495	-585	-450
10	Engine Top	3993	53	-810
11	Firewall	3785	245	-976
12	Right Roof	2302	494	-1636
13	Right Floor Sill	2126	775	-440
14	Rear Floorpan	1005	45	-545

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 Lexus RX350 5-Door MPV NHTSA No. MD5102
Test Program: NCAP Side Pole Impact Test Test Date: 06/14/12



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 Lexus RX350 5-Door MPV NHTSA No. MD5102
 Test Program: NCAP Side Pole Impact Test Test Date: 06/14/12

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Driver SID-IIs Dummy
Face	Curtain Airbag
Top of Head	Curtain Airbag
Left Side of Head	Curtain Airbag
Back of Head	Curtain Airbag, Headrest
Left Shoulder	Torso/Pelvis Airbag
Upper Torso	Torso/Pelvis Airbag, Left Arm
Lower Torso	Torso/Pelvis Airbag
Left Hip	Torso/Pelvis Airbag
Left Knee	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	Broken
Other Notable Effects	None

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

Test Vehicle: 2013 Lexus RX350 5-Door MPV NHTSA No. MD5102
 Test Program: NCAP Side Pole Impact Test Test Date: 06/14/12

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/Pelvis)	Yes	Yes	No	
Side Airbag 3 (Torso)	No		Yes	Yes
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes	Yes	No	

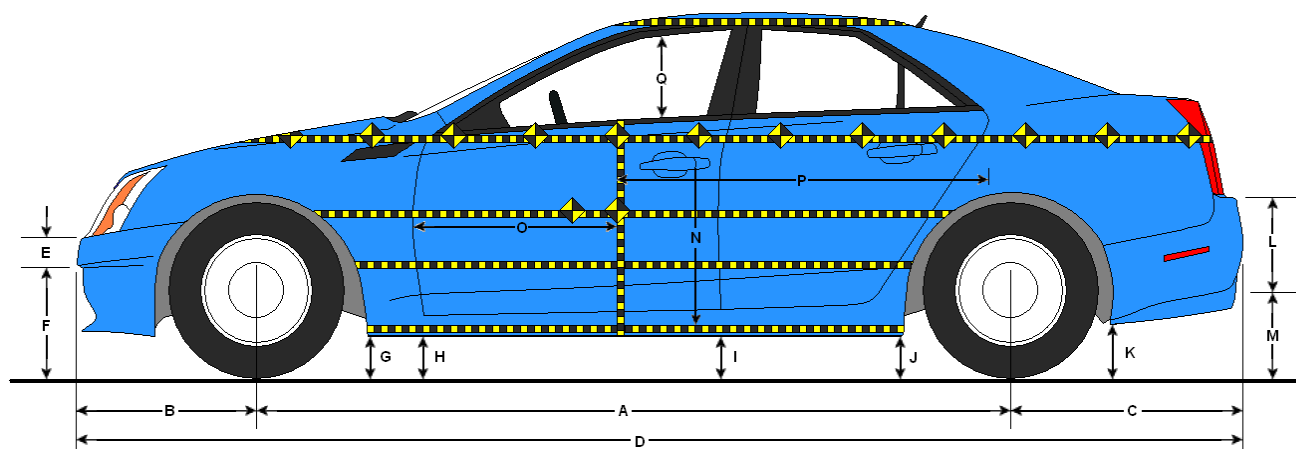
IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point)	mm		1071
Actual Impact Point (Aft of Front Axle)	mm		1064
Horizontal Offset (+ forward / - rearward)	mm	± 38 of Intended Impact Point	7
Angle Between Vehicle's Longitudinal Centerline and Line of Forward Motion	°	75 ± 3	74.3
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	32.6
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.6

DATA SHEET NO. 9

TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2013 Lexus RX350 5-Door MPV NHTSA No. MD5102
 Test Program: NCAP Side Pole Impact Test Test Date: 06/14/12



LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

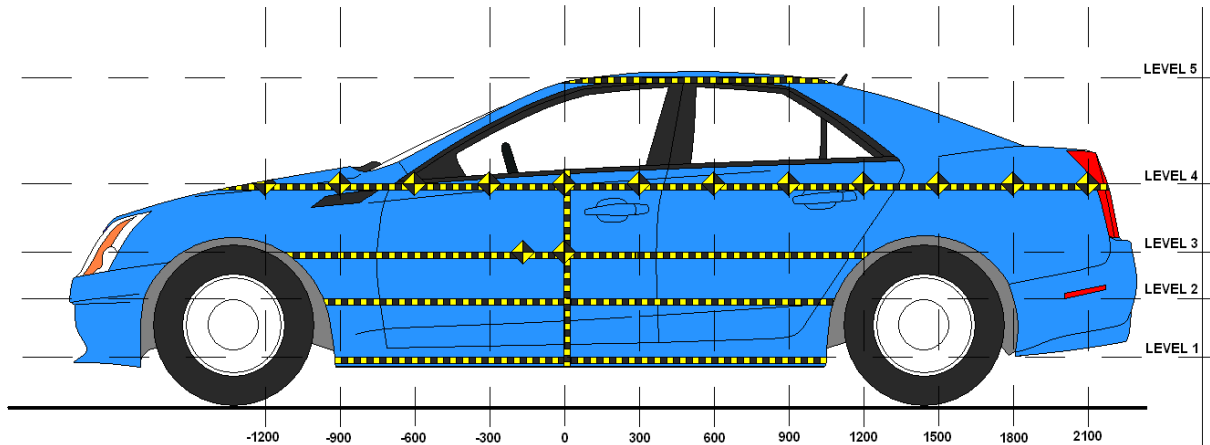
Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2741	2650	-91
B	Front Axle to FSOV	974	985	11
C	Rear Axle to RSOV	1014	1041	27
D	Total Length at Centerline	4696	4676	-20
E	Front Bumper Thickness	234	235	1
F	Front Bumper Bottom to Ground	464	506	42
G	Sill Height at Front Wheel Well	266	272	6
H	Sill Height at Front Door Leading Edge	285	317	32
I	Sill Height at B-Pillar	292	337	45
J1	Sill Height at Rear Wheel Well	270	312	42
J2	Pinch Weld Height at Rear Wheel Well	280	317	37
K	Sill Height Aft of Rear Wheel Well	312	321	9
L	Rear Bumper Thickness	293	293	0
M	Rear Bumper Bottom to Ground	431	417	-14
N	Sill Height to Bottom of Front Window Sill	702	767	65
O	Front Door Leading Edge to Impact CL	1111	438	-673
P	Rear Door Trailing Edge to Impact CL	1061	1479	418
Q	Front Window Opening	424	456	32
R	Right Side Length	3276	3299	23
S	Left Side Length	3278	3159	-119
T	Vehicle Width at B-Pillar	1882	1799	-83

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

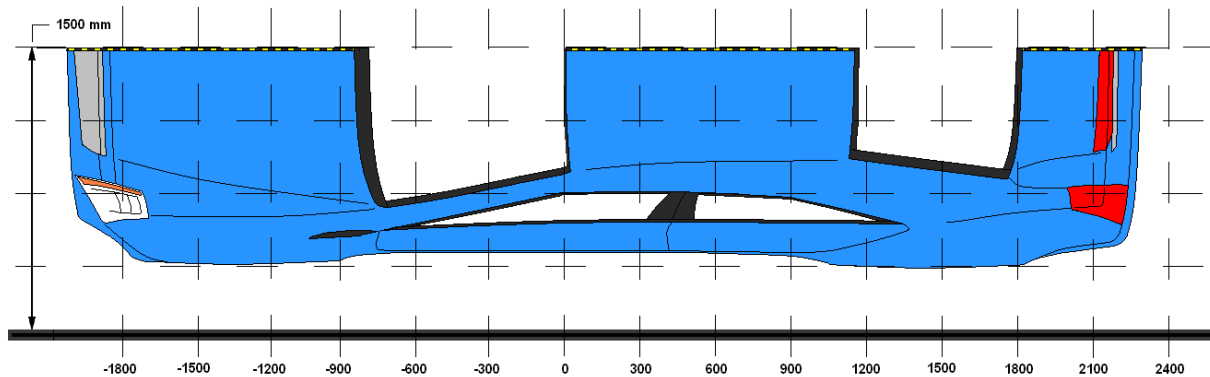
DATA SHEET NO. 10

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2013 Lexus RX350 5-Door MPV NHTSA No. MD5102
 Test Program: NCAP Side Pole Impact Test Test Date: 06/14/12



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	392	463	0
2	Occupant H-Point	705	498	0
3	Mid-Door	767	499	0
4	Window Sill	1069	423	0
5	Window Top	1619	231	0

DATA SHEET NO. 10 ... (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2013 Lexus RX350 5-Door MPV NHTSA No. MD5102
 Test Program: NCAP Side Pole Impact Test Test Date: 06/14/12

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				656					724					68	
-750		555	554	647			652	652	734			97	98	87	
-600	575	556	558	642		686	667	668	748		111	111	110	106	
-450	578	557	558	611		766	755	752	761		188	198	194	150	
-300	582	558	557	635		855	863	859	867		273	305	302	232	
-150	579	557	556	631		956	966	962	952		377	409	406	321	
0	581	557	555	625	910	1044	1055	1054	1048	1141	463	498	499	423	231
150	581	557	555	620	896	994	1027	1029	1043	1100	413	470	474	423	204
300	583	558	555	615	890	854	909	910	926	1069	271	351	355	311	179
450	584	559	556	610	888	709	775	776	815	1037	125	216	220	205	149
600	585	561	558	608	885	721	704	701	759	1004	136	143	143	151	119
750	584	563	560	608	884	696	684	679	740	975	112	121	119	132	91
900	584	564	561	606	885	669	664	656	721	961	85	100	95	115	76
1050	585	560	559	604	888	648	642	634	701	958	63	82	75	97	70
1200	574	554	555	599	894	615	622	612	678	959	41	68	57	79	65
1350		553	551	601	901		594	588	660	962		41	37	59	61
1500				589	910				631	966				42	56
1650				588	920				640	972				52	52
1800				591	930				637	977				46	47
1950				598					638					40	
2100				617					651					34	
2250															
2400															
2550															
2700															
2850															

DATA SHEET NO. 10 ... (CONTINUED)

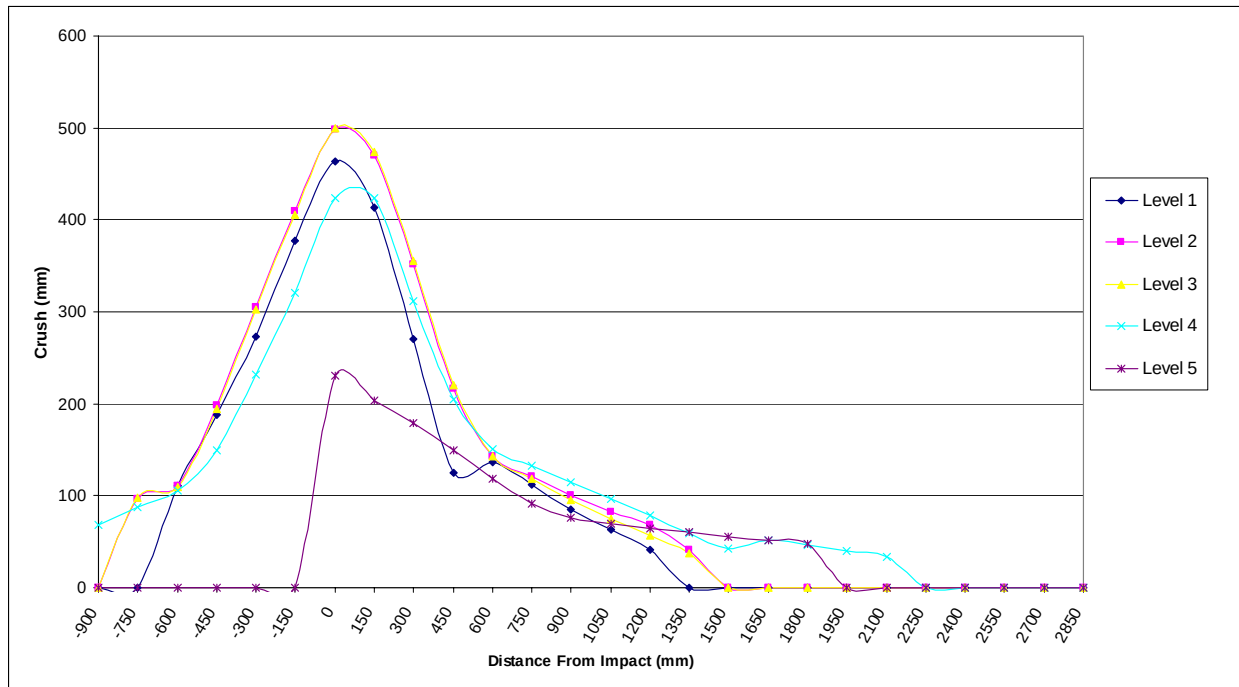
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2013 Lexus RX350 5-Door MPV

NHTSA No. MD5102

Test Program: NCAP Side Pole Impact Test

Test Date: 06/14/12

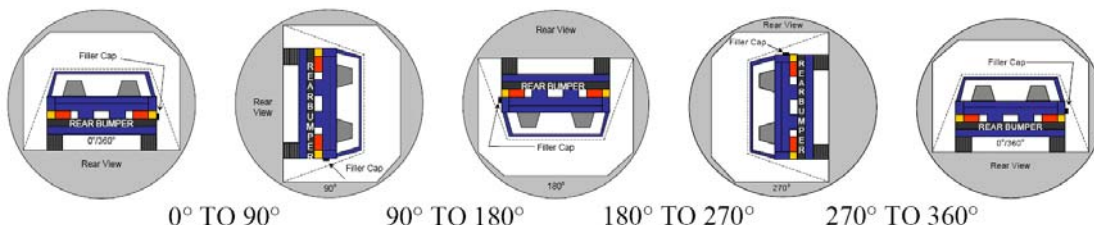


DATA SHEET NO. 11

FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2013 Lexus RX350 5-Door MPV NHTSA No. MD5102
 Test Program: NCAP Side Pole Impact Test Test Date: 06/14/12
 Temperature at Time of Impact: 32.2° C Test Time: 1:00 PM

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



SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	82	300	382
90° To 180°	80	300	380
180° To 270°	77	300	377
270° To 360°	80	300	380

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			

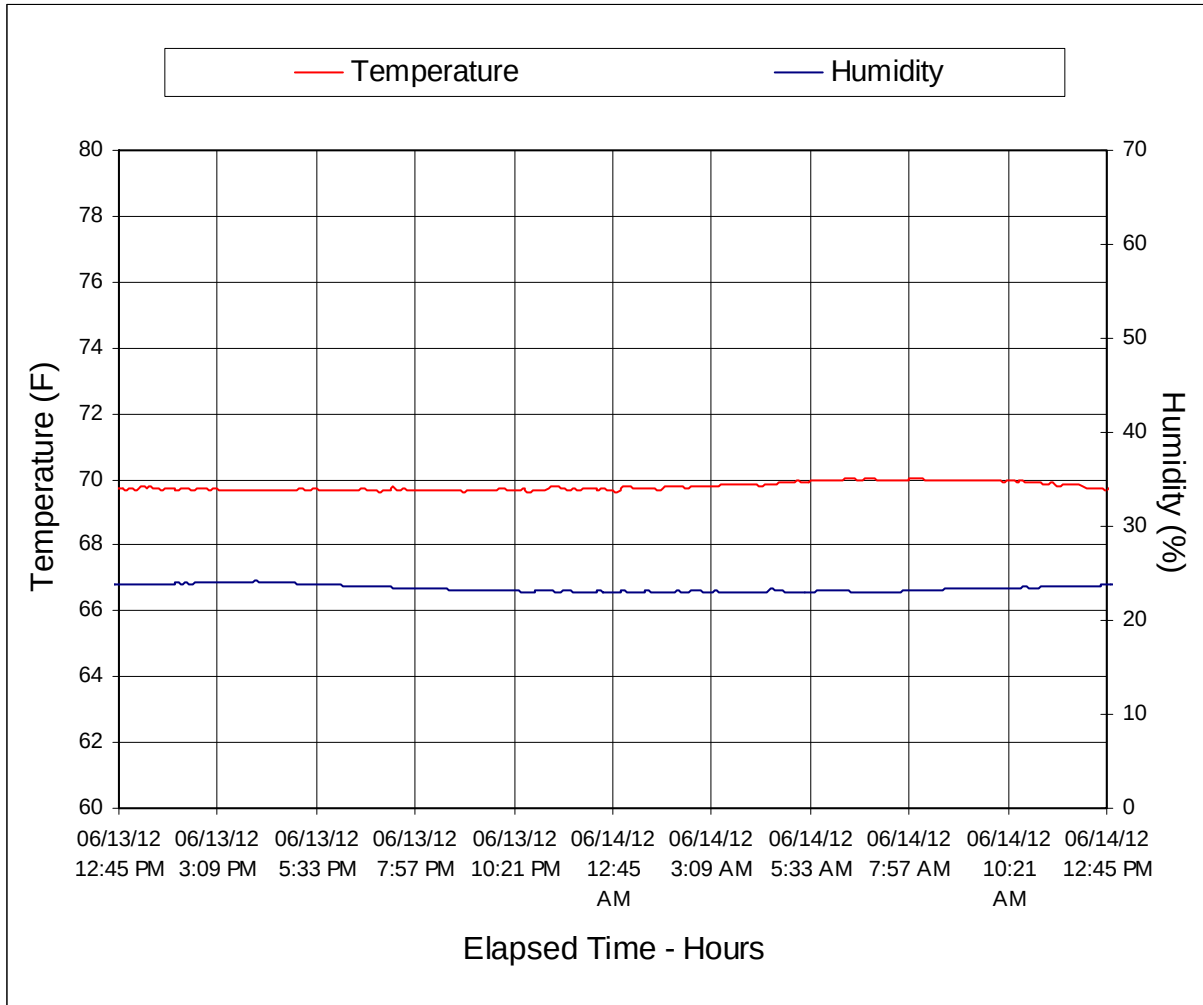
SOLVENT SPILLAGE LOCATION TABLE

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 Lexus RX350 5-Door MPV NHTSA No. MD5102
Test Program: NCAP Side Pole Impact Test Test Date: 06/14/12



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 Vehicle and Pole

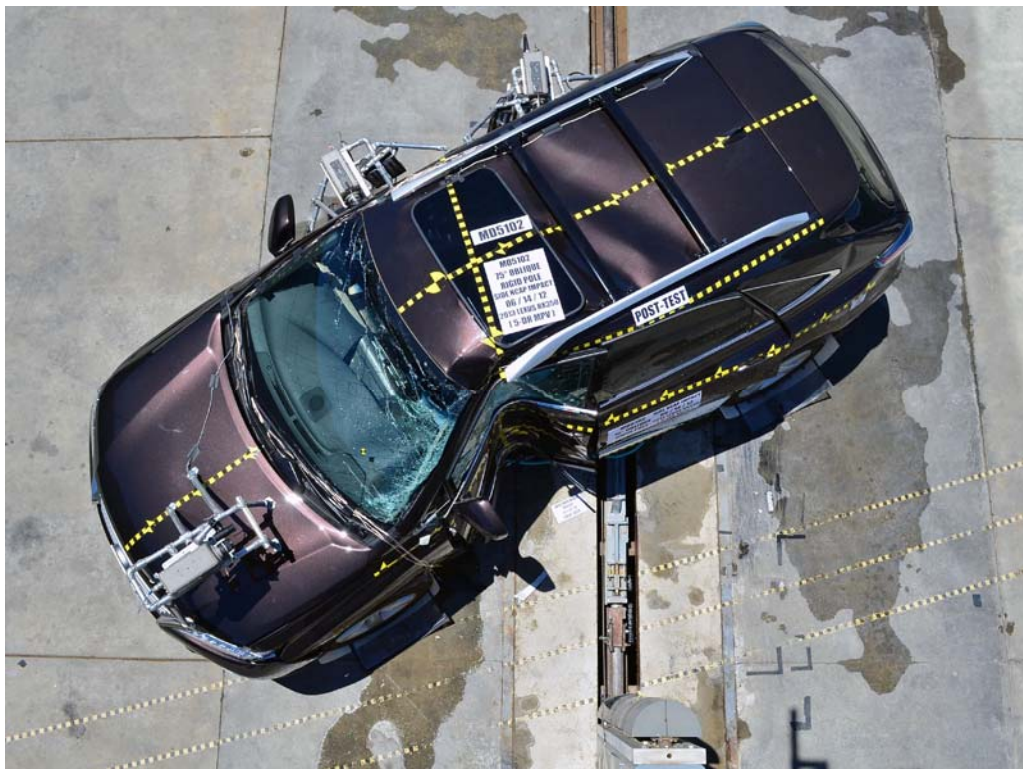


FIGURE 16. Post-Test Overhead View of Test Vehicle and Pole

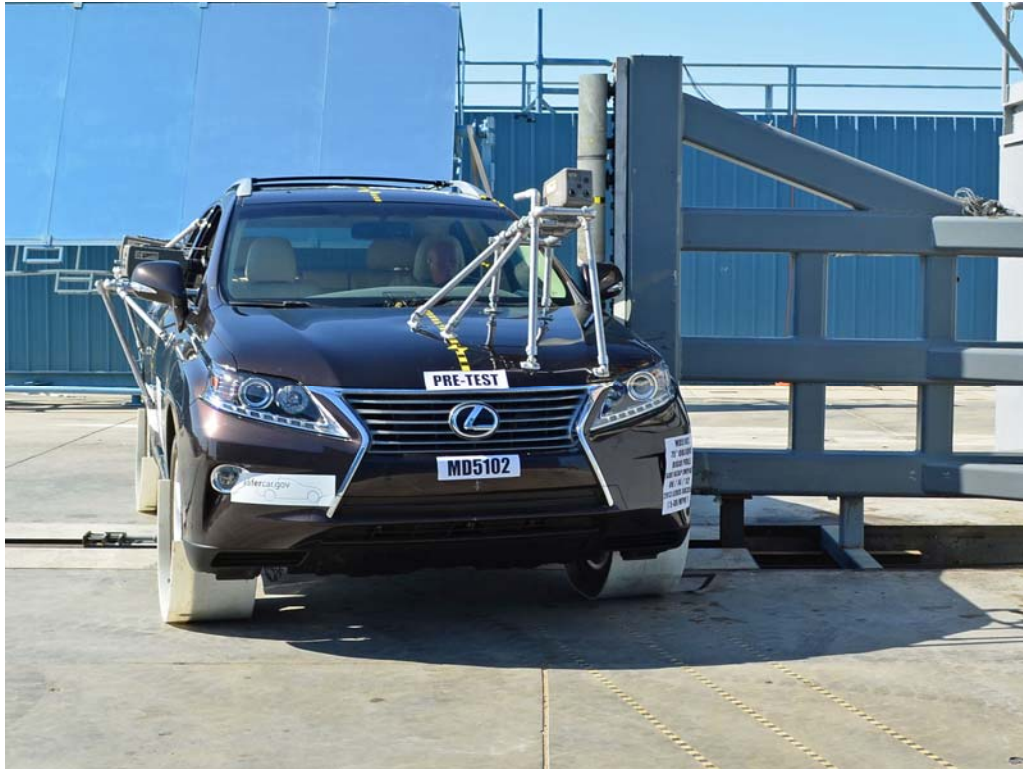


FIGURE 17. Pre-Test Left Side View of Pole
Positioned Against Side of Vehicle at Impact Point



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

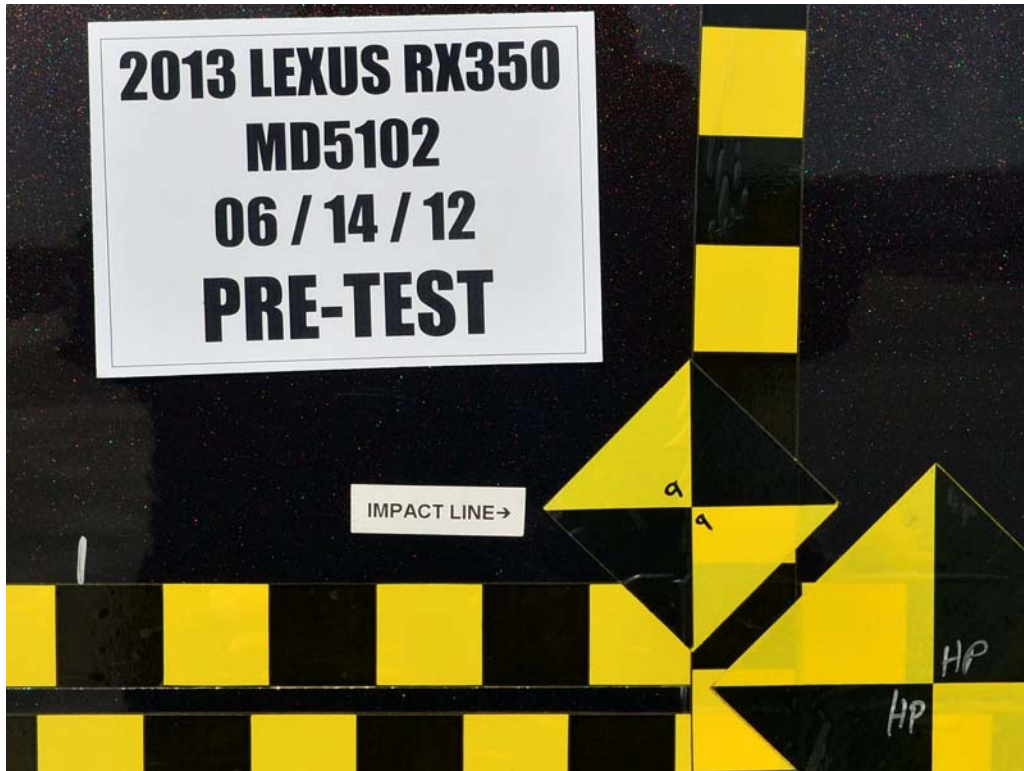


FIGURE 19. Pre-Test Close-Up View of Impact Point Target



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



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



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



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



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 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

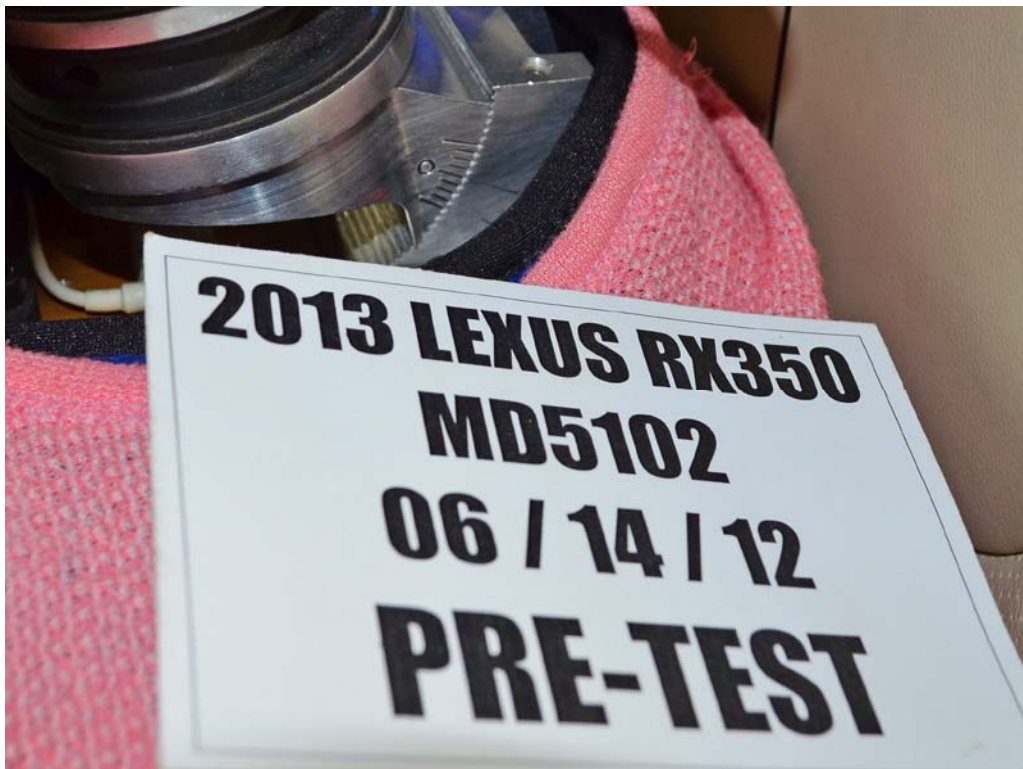


FIGURE 30. Pre-Test View of Dummy's Neck Showing Position of Adjustable Neck Bracket



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



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

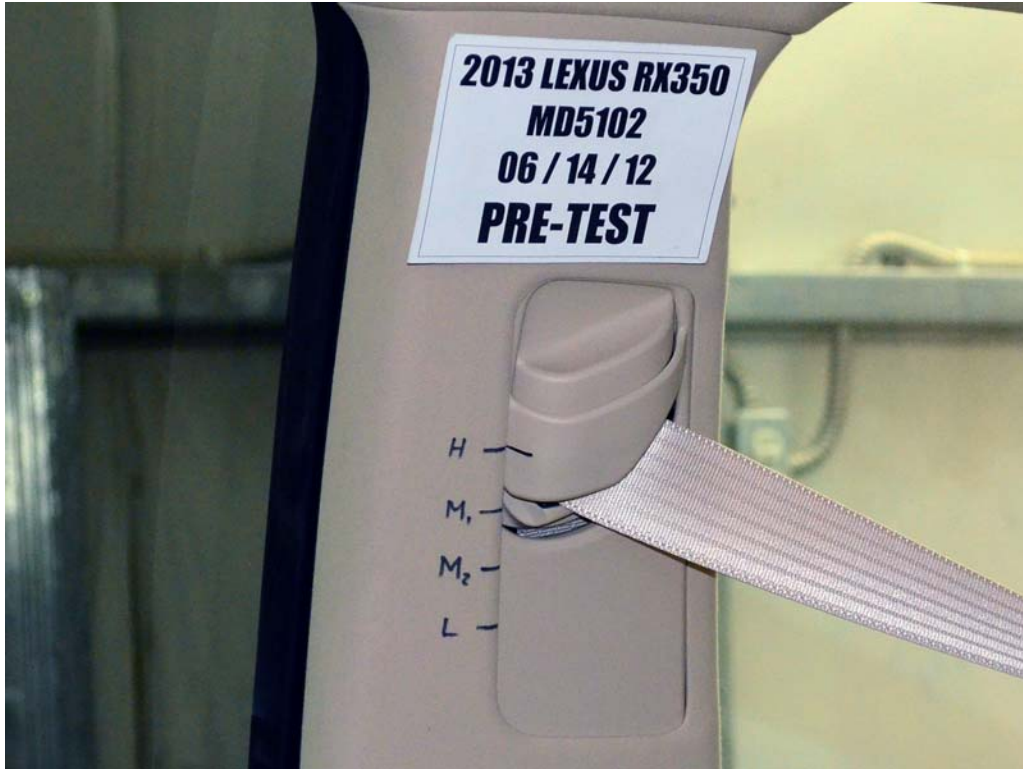


FIGURE 33. Pre-Test View of Belt Anchorage for Dummy



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



FIGURE 35. View of Disengaged Parking Brake

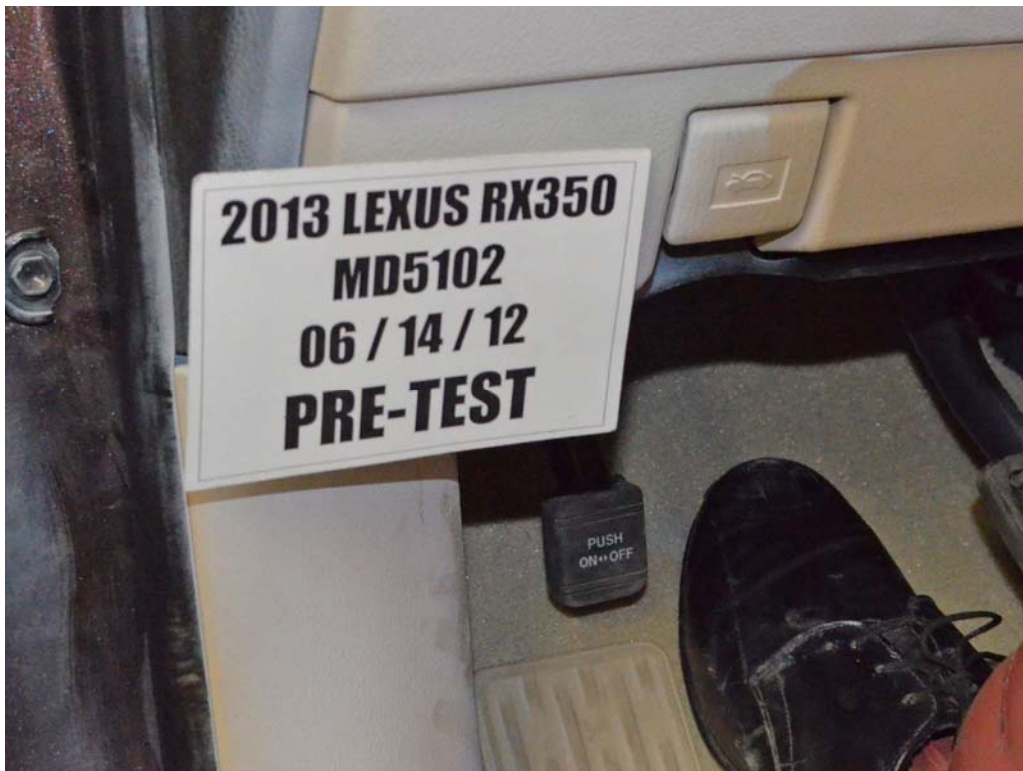


FIGURE 36. Pre-Test View of Parking Brake



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 Driver Dummy and Door Clearance



FIGURE 41. Post-Test Driver Dummy and Door Clearance



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



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



FIGURE 44. Pre-Test Inner Driver Door Panel View

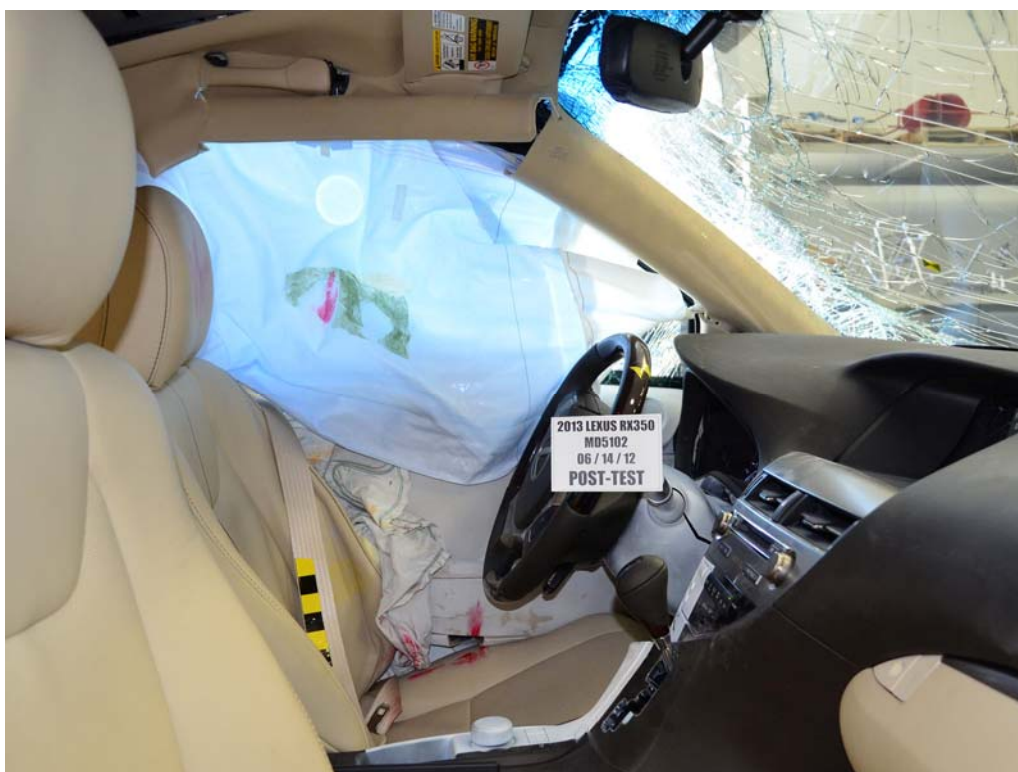


FIGURE 45. Post-Test Inner Driver Door Panel View
Showing Dummy Contact Locations



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

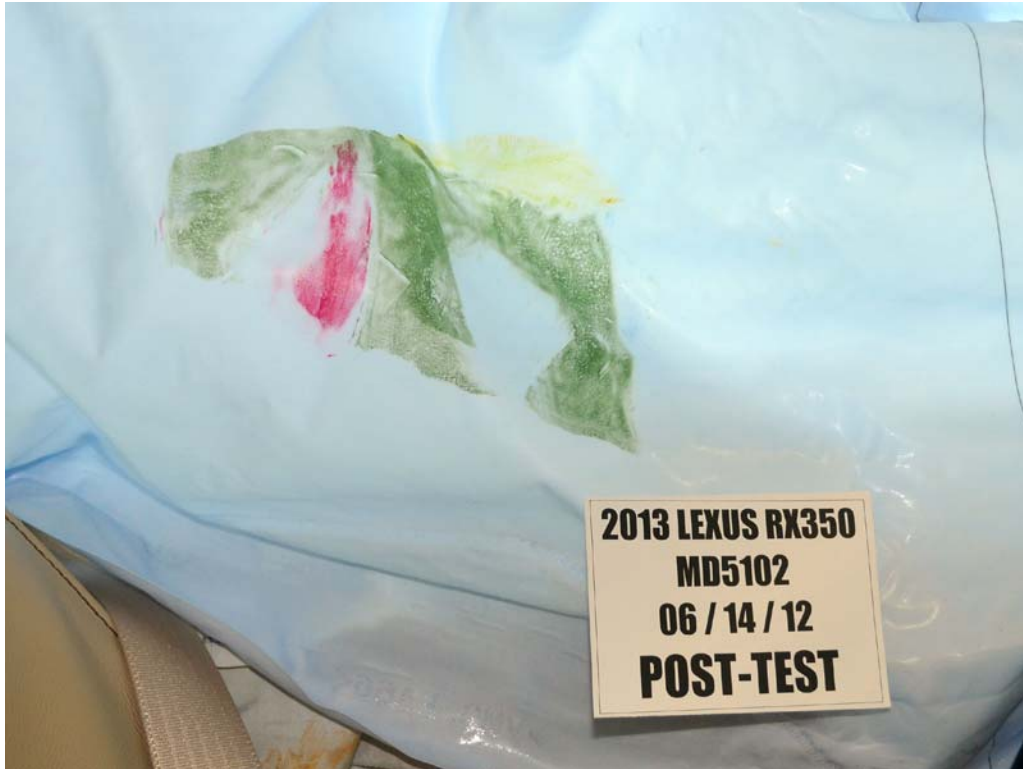


FIGURE 47. Post-Test Dummy Close-Up Head Contact with Side Airbag View



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

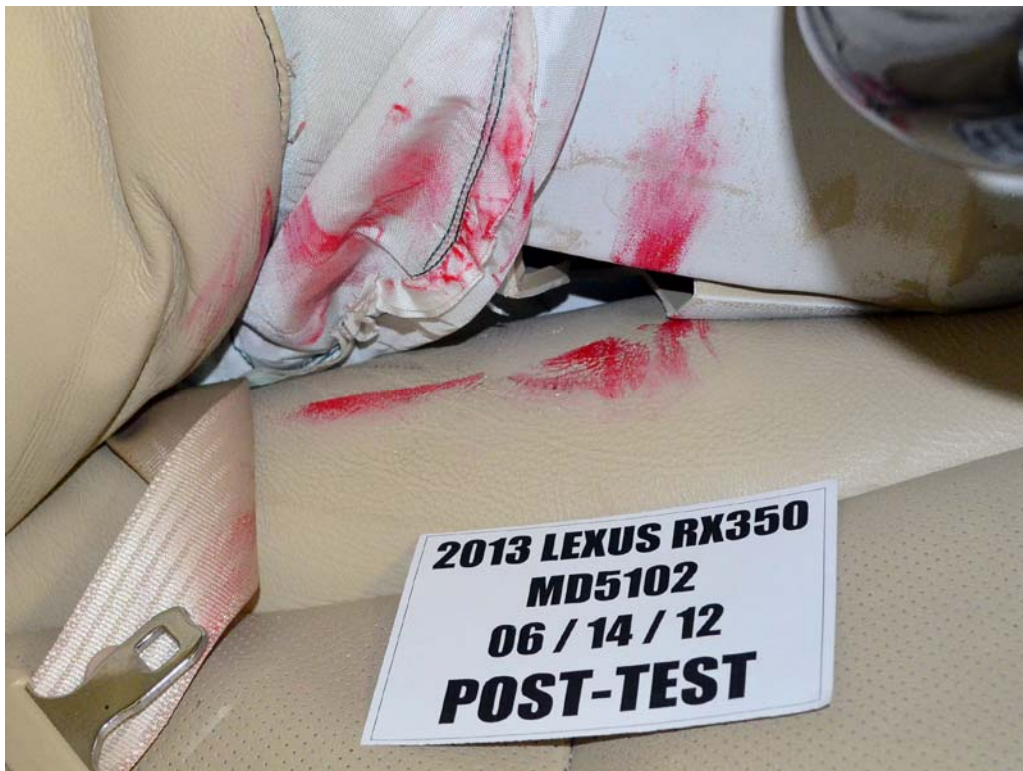


FIGURE 50. Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View

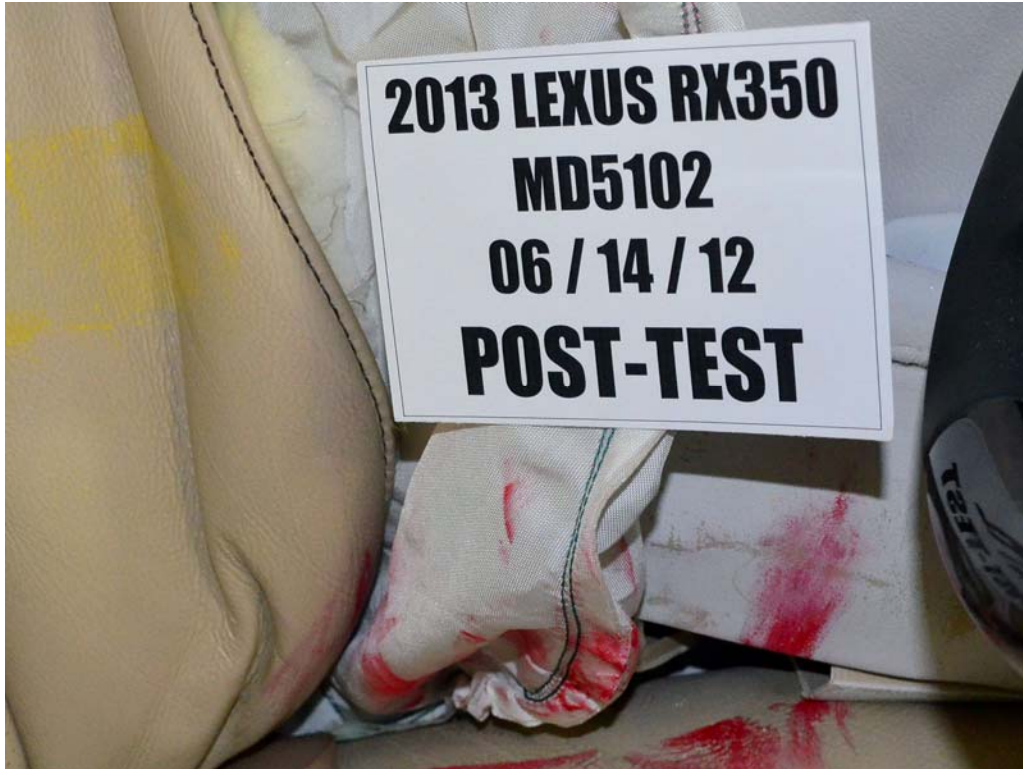


FIGURE 51. Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View



FIGURE 52. Pre-Test View of Fuel Filler Cap or Fuel Filler Neck

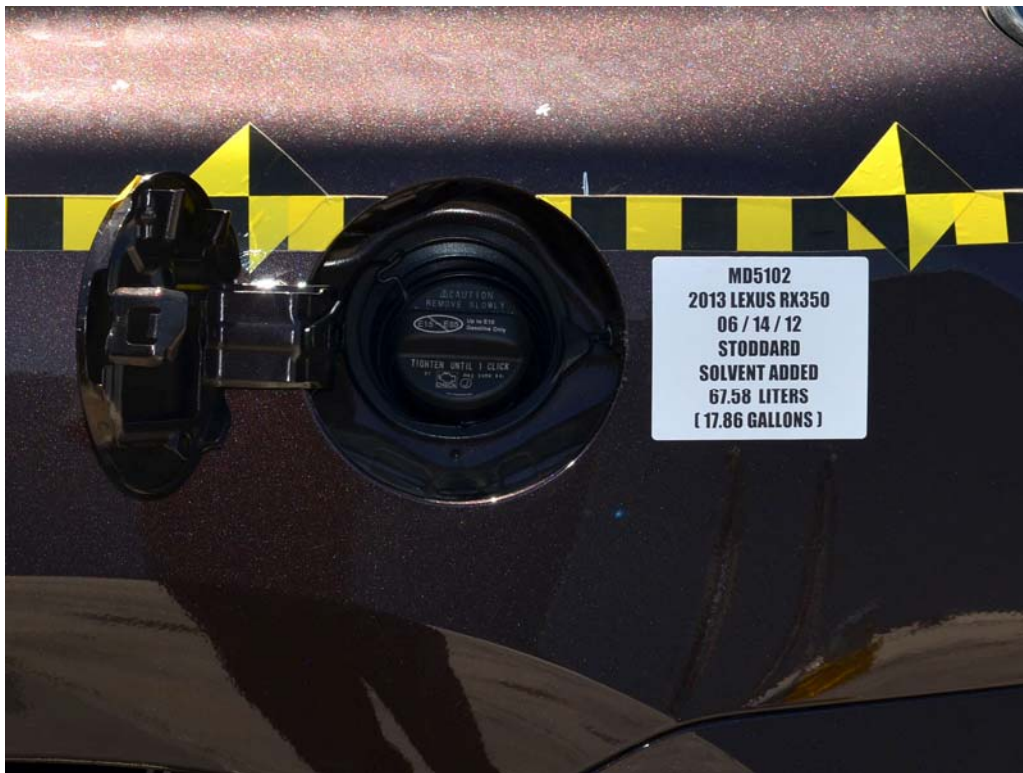


FIGURE 53. Post-Test View of Fuel Filler Cap or Fuel Filler Neck



FIGURE 54. Close-Up View of Vehicle's Certification Label

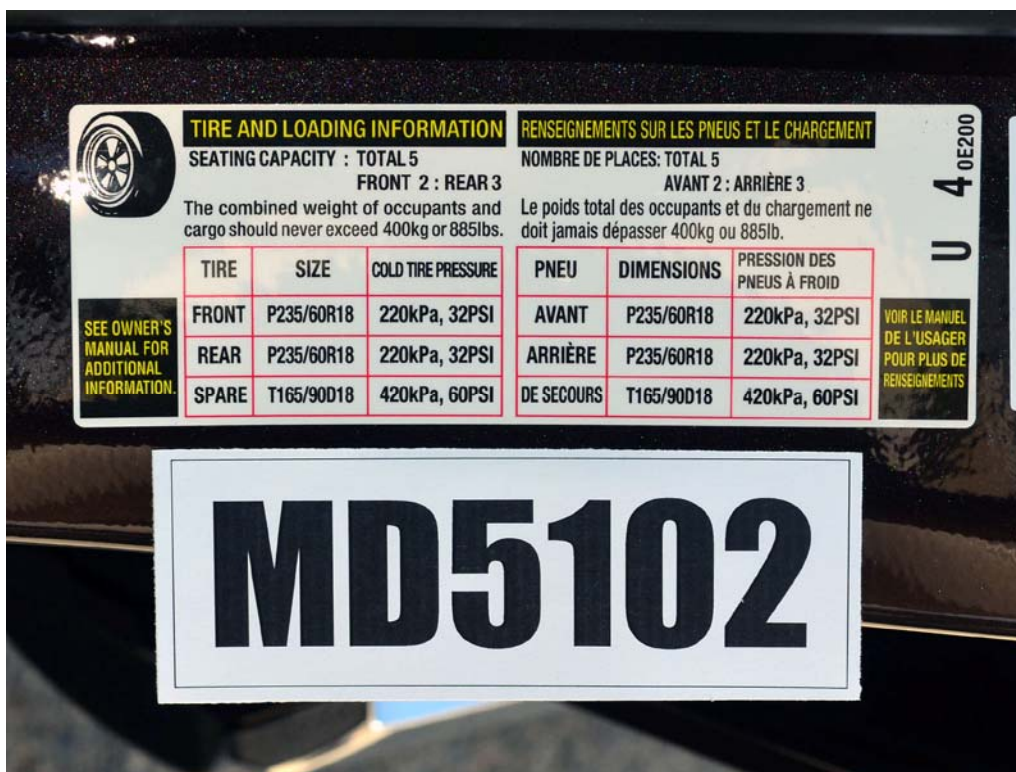


FIGURE 55. Close-Up View of Vehicle's Tire Information Placard



FIGURE 55a. Close-Up View of Reduced Load Capacity Label



FIGURE 56. Pre-Test Pole Barrier Front View



FIGURE 57. Post-Test Pole Barrier Front View



FIGURE 58. Pre-Test Pole Barrier Side View



FIGURE59. Post-Test Pole Barrier Side View



FIGURE 60. Pre-Test Ballast View



FIGURE 61. Post-Test Primary and Redundant Speed Trap Read-Out

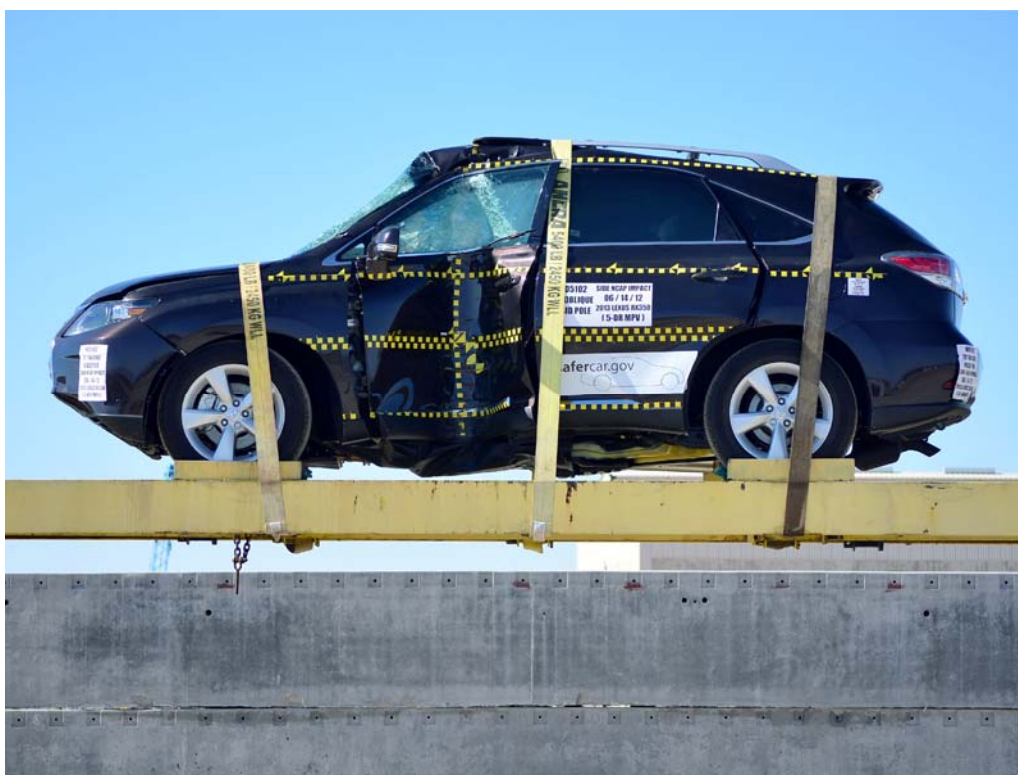


FIGURE 62. FMVSS No. 301-305 Rollover 0 Degrees

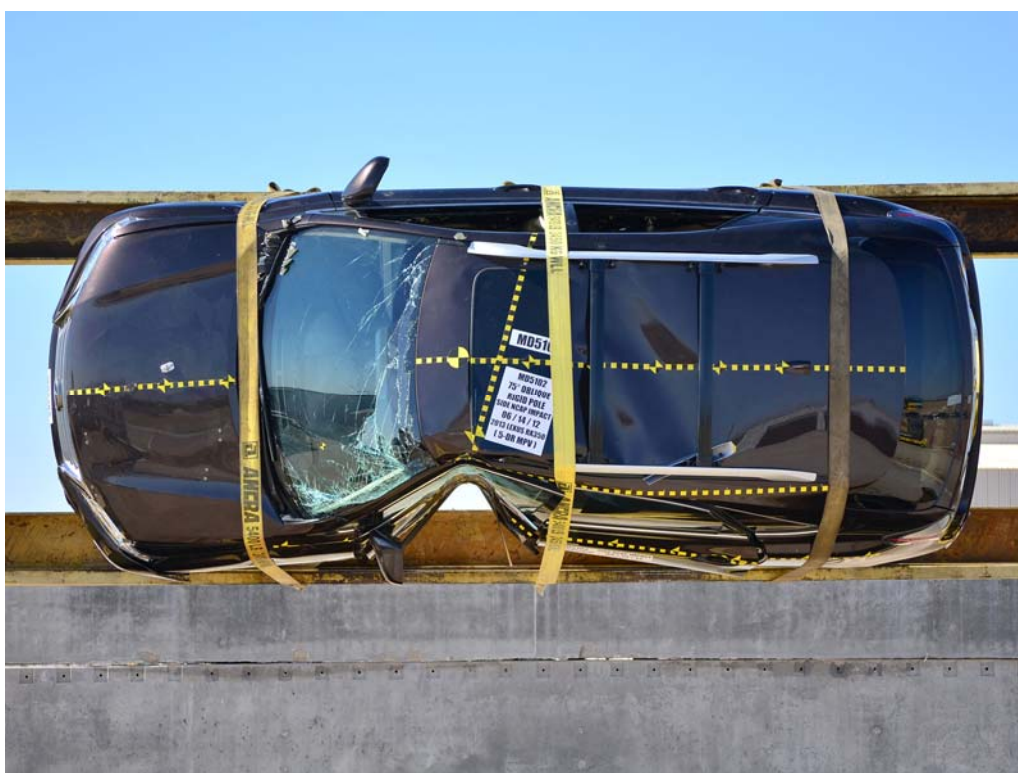


FIGURE 63. FMVSS No. 301-305 Rollover 90 Degrees



FIGURE 66. FMVSS No. 301-305 Rollover 360 Degrees



FIGURE 67. Impact Event

LEXUS
The Pursuit of Perfection

DESCRIPTION 2013 / 9420A RX 350 5-DR SUV
COLOR FIRE AGATE PEARL
VIN 2T2ZK1BA3DC087297
PORT/PLANT Detroit, MI/TMMC

Dealer Name / Address:
 LONGO LEXUS
 3530 N. PECK ROAD
 EL MONTE CA91731

Ship to (Dealer, unless otherwise indicated)

STANDARD EQUIPMENT & INSTALLED OPTIONS

PERFORMANCE FEATURES

- 3.5 Liter 270HP Four Cam 24-Valve V8 Engine with Variable Valve Timing (VVT-i)
- 6-Speed Automatic Transmission w/ "Snow Mode"
- Electric Power Rack-and-Pinion Steering
- 4-Wheel Power Assisted Ventilated Front & Solid Rear Disc Brakes
- 18" Aluminum Alloy Wheels

SAFETY FEATURES

- Dual Advanced Front Airbags, Driver & Passenger Knee Airbag, Front & Rear Side Curtain Airbags
- Front & Rear Seat Mounted Side Airbags
- 3-Point Safety Belts for All Seating Positions
- Front and Rear Outboard Seat Belt Pretensioners w/ Force Limiters, Fr Manual Height Adj. Anchors
- Front Active Headrests
- 4-Wheel Anti-Lock Braking System (ABS) with Electronic Brakeforce Distribution (EBD), Brake Assist (BA) & Vehicle Stability Control (VSC)
- Smart Stop Technology
- Energy Managing Crumple Zones, Side Door Beams
- Vehicle Theft-Deterrent Sys w/ Engine Immobilizer
- Automatic On/Off Headlamps / Integrated Fog Lamps
- LED Daytime Running Lamps (DRL)
- Safety Connect: Automatic Collision Notification, Stolen Vehicle Location, Emergency Assist Button (SOS), and Enhanced Roadside Assistance (1-year trial subscription included)

LUXURY AND CONVENIENCE FEATURES

- Variable Intermittent Front Wipers
- Tire Pressure Monitoring System
- Tool Kit and First Aid Kit
- Lexus Premium Audio System, Automatic Sound Levelizer (ASL), and In-Dash Single Feed 6-Disc CD Auto-Changer, In-Glass Antenna w/ FM Diversity System, USB (iPod/iMP3) Control, Bluetooth Technology, SiriusXM Satellite Radio (90-day trial subscription included)
- Auto Dual Zone Climate Control Sys w/ Rear Vents
- 10-Way Power Driver's & Front Passenger's Seats
- Power Tilt-and-Telescope Steering Column
- Height Adjustable Headrests for All Seats
- Reclining/Sliding 40/20/40 Split Rear Seat
- 5-Spoke Steering Wheel with Audio Controls
- Cruise Control
- Power Windows w/ One-Touch Auto Open/Close Feature
- Power Back Door
- Lexus HomeLink Universal Transceiver
- SmartAccess Passive Entry System
- Rear Black Privacy Glass-Integrated Rear Spoiler
- Genuine Wood Interior Trim
- LCD Screen for Ventilation, Audio Settings
- Multi-Information Display with Lexus Personalized Settings, Trip Computer & Outside Temp Display
- Tonneau Cover
- Carpeted Floor Mats

MANUFACTURER'S SUGGESTED RETAIL PRICE

\$ 39,310.00

MAINTENANCE

- Lexus Display Audio Package Includes: 7-inch Display Screen, HD Radio with iTunes tagging, Advanced Bluetooth technology, Backup Camera, Single CD player, 12-speaker Premium Audio System
- Heated and Ventilated Front Seats
- Intuitive Parking Assist
- Premium Package Includes: Leather Trim Interior, One-Touch Open/Close Moonroof, Power-Folding Electrochromic Heated Outside Mirrors, Driver's Seat/Steering Mirror Memory-3 settings
- Wood & Leather Trimmed Steering Wheel & Shift Knob
- Cross Bars
- Cargo Mat, Cargo Net, Wheel Locks & Key Gloves

660.00
500.00
2,260.00
130.00
259.00
255.00

EPA DOT Fuel Economy and Environment

Fuel Economy

21 **18** **25** **MPG**

combined city/hwy city highway

4.8 gallons per 100 miles

You spend \$1,150 more in fuel costs over 5 years

Annual fuel Cost \$2,550

GOVERNMENT 5-STAR SAFETY RATINGS

Overall Vehicle Score Not Rated

Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight.

Frontal Crash Driver Passenger **Not Rated**

Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.

Side Crash Front seat **Not Rated**

Based on the risk of injury in a side impact.

Rollover **★★★★**

Based on the risk of rollover in a single-vehicle crash.

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

APPLICABLE FEDERAL TAXES NOT INCLUDED

Manufacturer's suggested retail price includes manufacturer's recommended pre-delivery options. License and title fees, state, local and applicable federal taxes, and dealer-installed options and accessories are not included in the manufacturer's suggested retail price.

LEXUS NEW VEHICLE LIMITED WARRANTY

Unlimited warranty coverage highlights include:

- 4 yrs / 50,000 miles basic coverage
- 10 yrs / 100,000 miles powertrain coverage
- 10 yrs / 100,000 miles corrosion/perforation warranty

See your Warranty and Services Guide for details.

LEXUS IS PLEASED TO OFFER THE FOLLOWING OWNER SUPPORT PACKAGE WITH EACH NEW LEXUS

- 24-hour toll-free roadside assistance plan
- Complimentary 24-hour toll-free maintenance services
- Loaner for emergency breakdowns 100 miles from home

An extended service contract may be available for this vehicle. Ask dealer for details.

120426 717 ML1

FIGURE 68. Monroney Label

1-4. Adjustable components (seats, mirrors, steering wheel)

Head restraints

Head restraints are provided for all seats.

Up
Pull the head restraints up.

Down
Push the head restraint down while pressing the lock release button.

Lock release button

Removing the head restraints
Pull the head restraint up while pressing the lock release button.

Installing the head restraints
Align the head restraint with the installation holes and push it down to the lock position. Press and hold the lock release button when lowering the head restraint.

1-4. Adjustable components (seats, mirrors, steering wheel)

Adjusting the height of the head restraints (front seats)

Make sure that the head restraints are adjusted so that the center of the head restraint is closest to the top of your ears.

Adjusting the rear seat head restraints
Always raise the head restraints to the uppermost lock position during use.

CAUTION

Head restraint precautions

Observe the following precautions regarding the head restraints. Failure to do so may result in death or serious injury.

- Use the head restraints designed for each respective seat.
- Adjust the head restraints to the correct position at all times.
- After adjusting the head restraints, push down on them and make sure they are locked in position.
- Do not drive with the head restraints removed.

FIGURE 69. Head Restraint Use and Adjustment Information from Vehicle Manual

APPENDIX B
DUMMY RESPONSE DATA

TABLE OF DATA PLOTS

Plot		Page
1	Driver Head Acceleration (X) Primary vs. Time	B-1
2	Driver Head Acceleration (Y) Primary vs. Time	B-1
3	Driver Head Acceleration (Z) Primary vs. Time	B-1
4	Driver Head Resultant Acceleration Primary vs. Time	B-1
5	Driver 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)

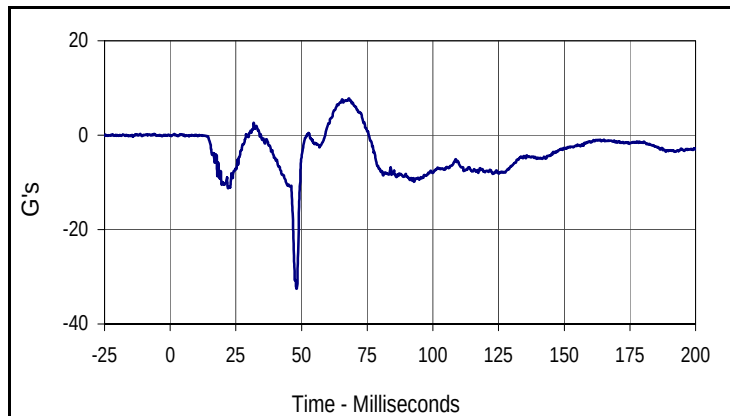
Left B-Pillar Sill Acceleration
Left Lower B-Pillar Acceleration (Y)
Left Mid B-Pillar Acceleration (Y)
Driver Seat Track at Dummy Hip Point Acceleration (Y)
Engine Top Acceleration (X)
Engine Top Acceleration (Y)
Firewall Center Acceleration (Y)
Right Roof at Vertical Impact Reference Line Acceleration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

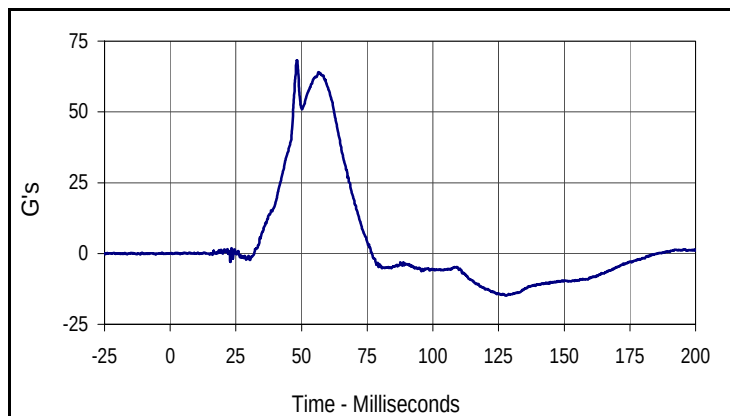
Load Cell Pole Barrier #1 Force (Y)
Load Cell Pole Barrier #2 Force (Y)
Load Cell Pole Barrier #3 Force (Y)
Load Cell Pole Barrier #4 Force (Y)
Load Cell Pole Barrier #5 Force (Y)
Load Cell Pole Barrier #6 Force (Y)
Load Cell Pole Barrier #7 Force (Y)
Load Cell Pole Barrier #8 Force (Y)

Test Vehicle: 2013 Lexus RX350 5-Door MPV
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test

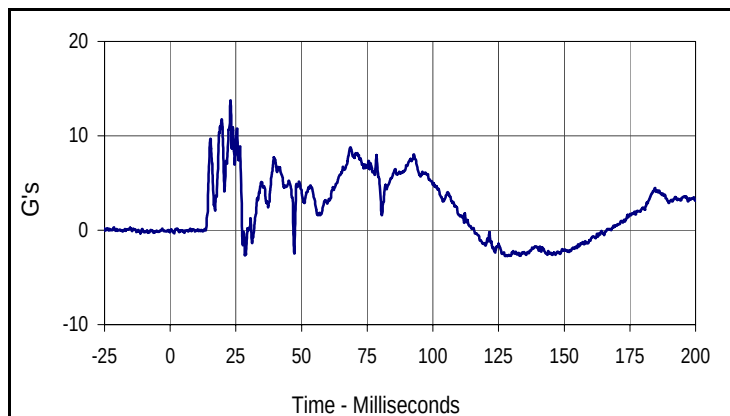
Test Date: 6/14/12
 NHTSA No.: MD5102



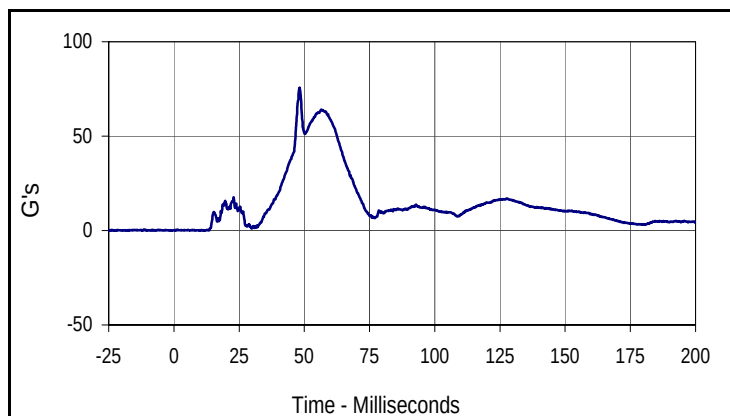
Curve Description			
Driver Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
7.8	68.1	-32.5	48.1



Curve Description			
Driver Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
68.2	48.3	-14.9	127.8



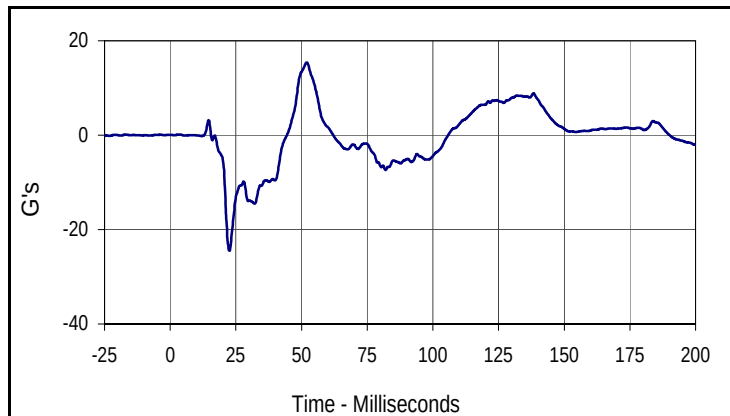
Curve Description			
Driver Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
13.8	23.0	-2.7	127.5



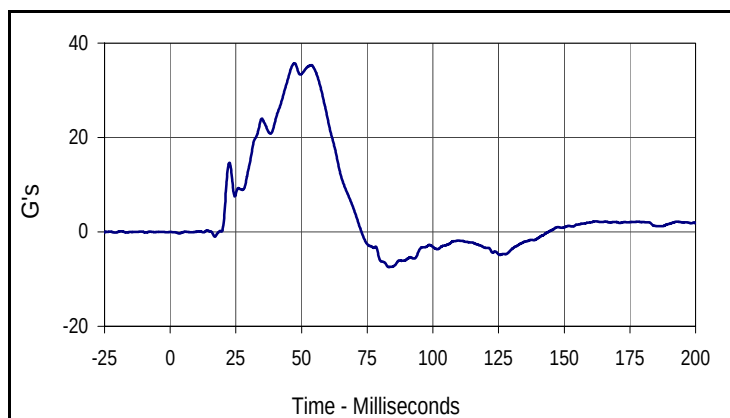
Curve Description			
Driver Head Acceleration Primary Res.			
Plot No.	Type	SAE Class	Units
004	RES	1000	G's
Max	Time	Min	Time
75.7	48.2	0.1	9.9

Test Vehicle: 2013 Lexus RX350 5-Door MPV
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test

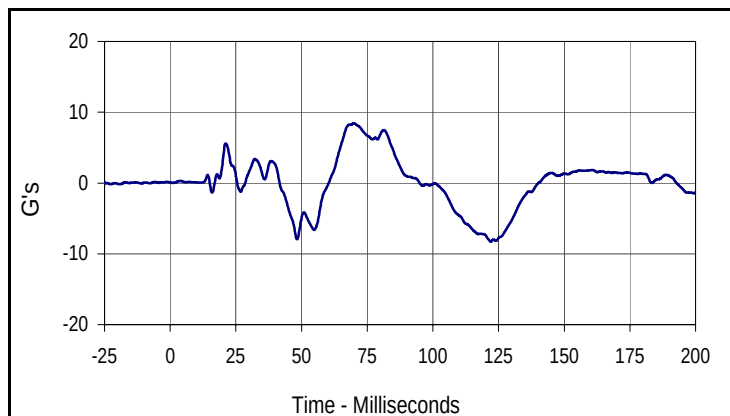
Test Date: 6/14/12
 NHTSA No.: MD5102



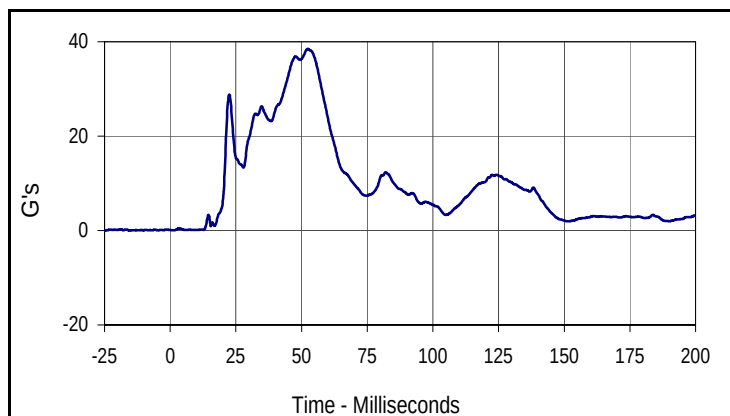
Curve Description			
Driver Lower Spine T12 Acceleration X			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
15.4	52.0	-24.5	22.5



Curve Description			
Driver Lower Spine T12 Acceleration Y			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
35.7	47.3	-7.4	83.3



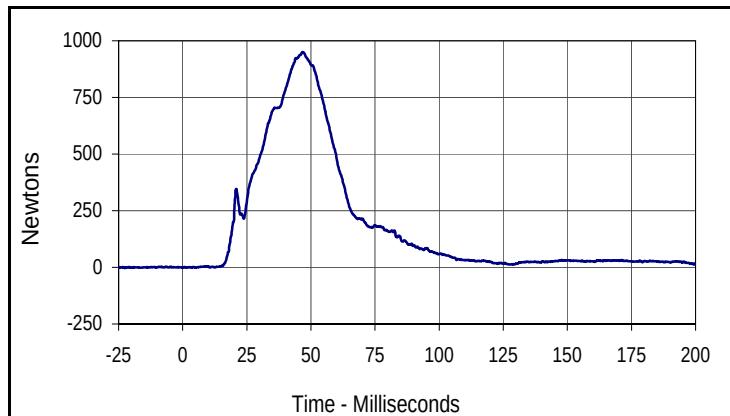
Curve Description			
Driver Lower Spine T12 Acceleration Z			
Plot No.	Type	SAE Class	Units
007	FIL	180	G's
Max	Time	Min	Time
8.4	70.0	-8.3	122.0



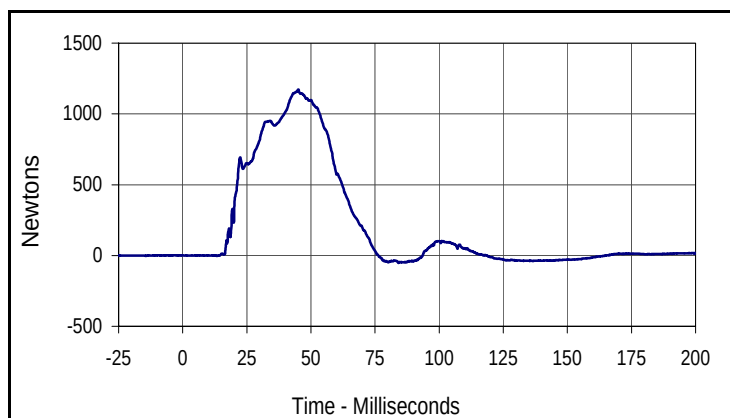
Curve Description			
Driver Lower Spine T12 Acceleration Res.			
Plot No.	Type	SAE Class	Units
008	RES	180	G's
Max	Time	Min	Time
38.5	52.3	0.1	1.2

Test Vehicle: 2013 Lexus RX350 5-Door MPV
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test

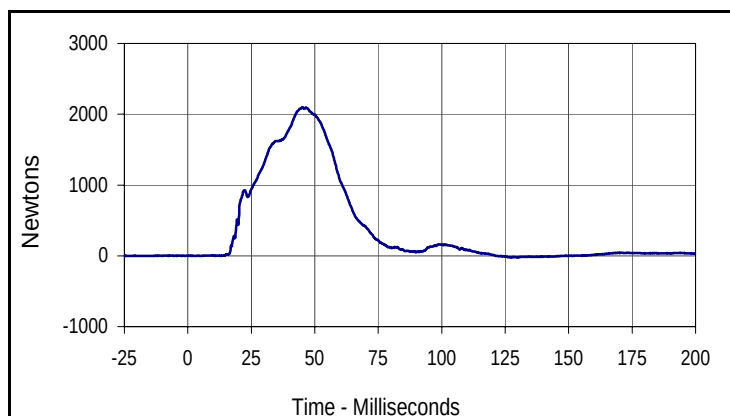
Test Date: 6/14/12
 NHTSA No.: MD5102



Curve Description			
Driver Iliac Wing Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
009	FIL	600	Newtons
Max	Time	Min	Time
950.4	46.7	-1.8	1.3



Curve Description			
Driver Acetabulum Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
010	FIL	600	Newtons
Max	Time	Min	Time
1172.2	45.0	-51.9	84.2



Curve Description			
Driver Total Pelvic Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
011	SUM	600	Newtons
Max	Time	Min	Time
2099.3	45.1	-21.9	127.3

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: 6/6/12
 Test I.D.: N/A



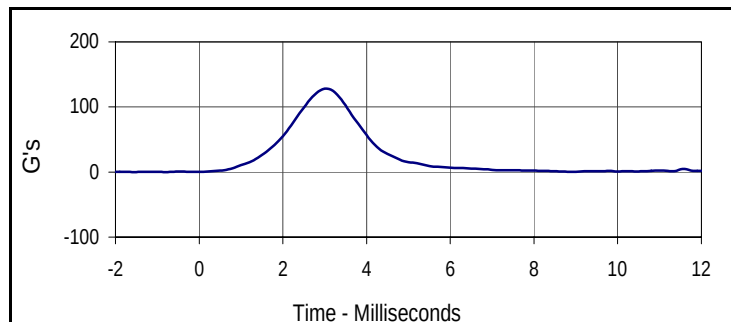
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
A	Sitting Height	mm	772 - 788	782	Pass
B	Shoulder Pivot Height	mm	437 - 453	445	Pass
C	H-Point Height	mm	79 - 89	84	Pass
D	H-Point from Seatback	mm	141 - 151	148	Pass
E	Shoulder Pivot from Backline	mm	97 - 107	102	Pass
F	Thigh Clearance	mm	119 - 135	126	Pass
G	Head Breadth	mm	140 - 148	145	Pass
H	Head Back from Backline	mm	40 - 46	43	Pass
I	Head Depth	mm	178 - 188	182	Pass
J	Head Circumference	mm	541 - 551	546	Pass
K	Buttock to Knee Length	mm	514 - 540	528	Pass
L	Popliteal Height	mm	343 - 369	354	Pass
M	Knee Pivot to Floor Height	mm	392 - 409	399	Pass
N	Buttock Popliteal Length	mm	416 - 442	429	Pass
O	Chest Depth w/o Jacket	mm	195 - 211	202	Pass
P	Foot Length	mm	216 - 232	219	Pass
Q	Hip Breadth with Pelvic Plug	mm	313 - 323	318	Pass
R	Arm Length	mm	249 - 259	256	Pass
S	Knee Joint to Seatback	mm	477 - 493	484	Pass
V	Shoulder Width	mm	341 - 357	350	Pass
W	Foot Width	mm	78 - 94	92	Pass
Y	Chest Circumference with Jacket	mm	851 - 881	875	Pass
Z	Waist Circumference	mm	760 - 791	773	Pass
Overall Test Results					Pass

Test Program: SID IIs Head Drop Test
 ATD Serial No.: 299

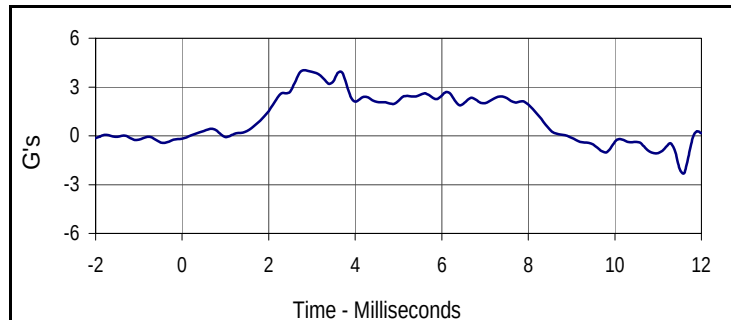
Test Date: 6/6/12
 Test I.D.: 299HD041



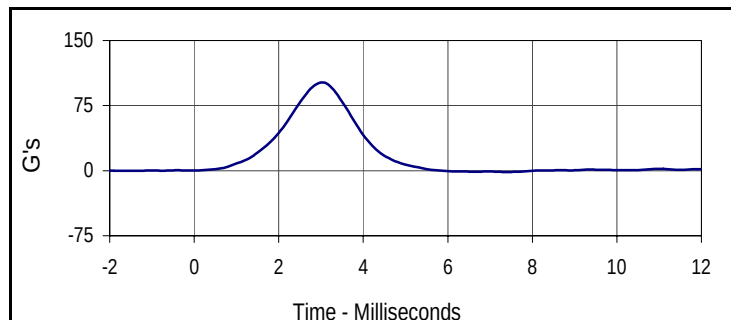
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	240	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	31.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	20.9	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.2	Pass
Peak Head Resultant Acceleration		G's	115 to 137	128.3	Pass
Peak Head X Acceleration		G's	<15	4.0	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse		%	<15	3.8	Pass
Overall Test Results				Pass	



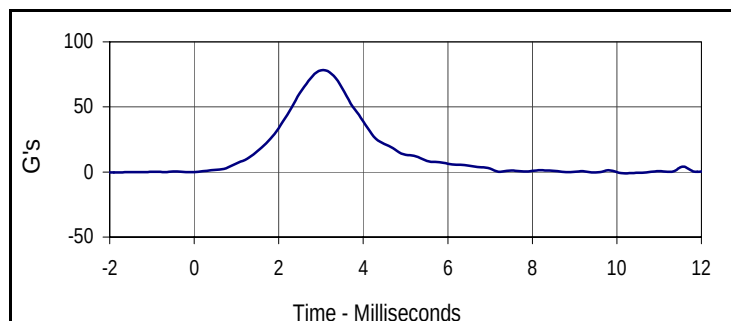
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
128.3	3.0	0.1	-1.5



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
4.0	2.8	-0.4	-0.4



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
101.6	3.0	-1.5	7.4



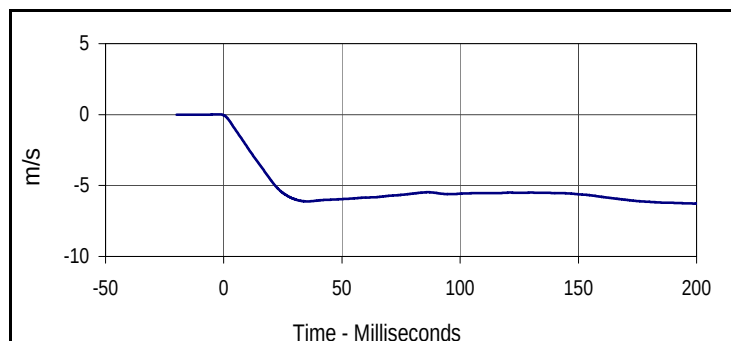
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
78.2	3.0	-0.3	9.5

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

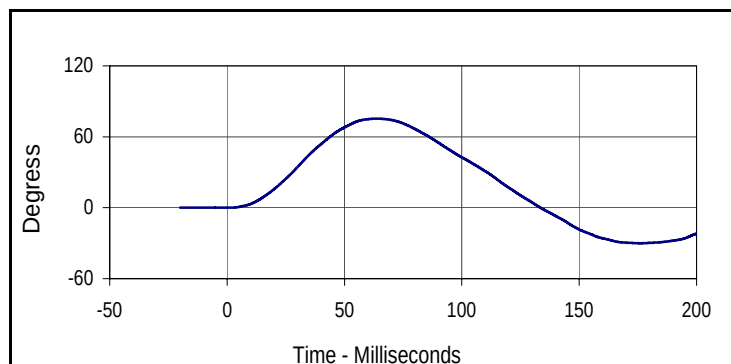
Test Date: 6/6/12
 Test I.D.: 299NB041



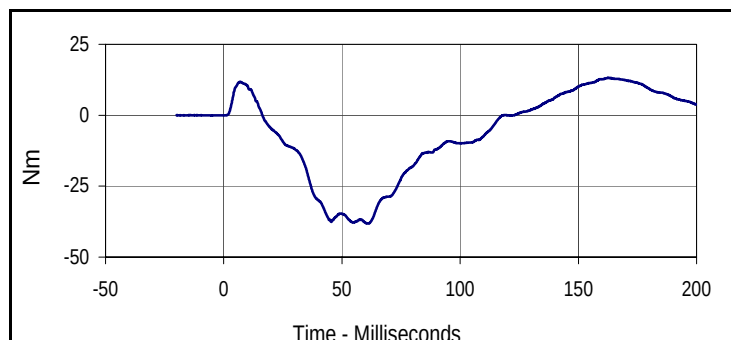
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	260	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		29.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.0	Pass
Pendulum Velocity	m/s	5.51 to 5.63	5.59	Pass
Pendulum Deceleration	10 msec	-2.20 to -2.80	-2.30	Pass
	15 msec	-3.30 to -4.10	-3.48	Pass
	20 msec	-4.40 to -5.40	-4.64	Pass
	25 msec	-5.40 to -6.10	-5.52	Pass
	25-100 msec	-5.50 to -6.20	-6.12	Pass
D-Plane Rotation	Max	71 to 81	75.3	Pass
	Time	50 to 70	63.8	Pass
Peak Occipital Condyle Moment	Nm	-36 to -44	-38.2	Pass
Decaying Moment Time to Cross 0 Nm	msec	102 to 126	122.8	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	-2.2	-6.3	200.0



Curve Description			
Maximum Translation Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
75.3	63.8	-30.1	176.1



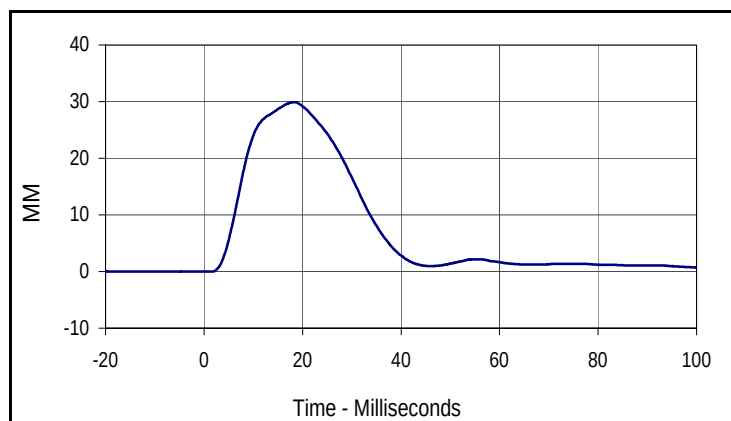
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
13.2	162.7	-38.2	60.8

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

Test Date: 6/6/12
 Test I.D.: 299SH041



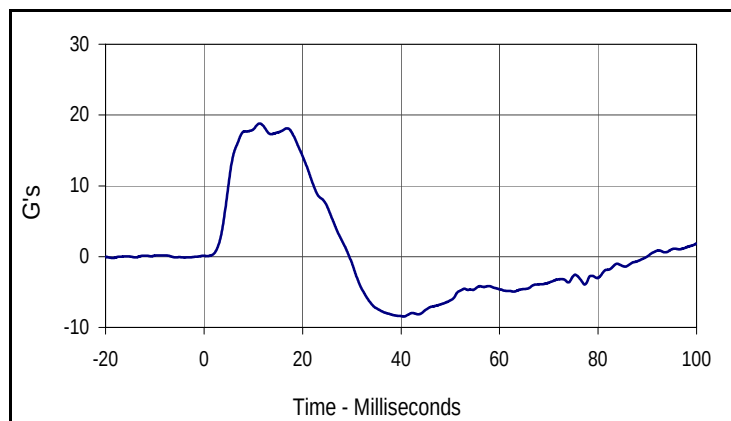
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	290	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	31.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.3	Pass
Impactor Velocity		m/s	4.20 to 4.40	4.28	Pass
Peak Shoulder Deflection		mm	28 to 37	29.9	Pass
Peak Lateral Spine Acceleration Y		G's	17 to 22	18.8	Pass
Peak Impactor Acceleration		G's	13 to 18	16.4	Pass
Overall Test Results				Pass	



Curve Description

Shoulder Acceleration

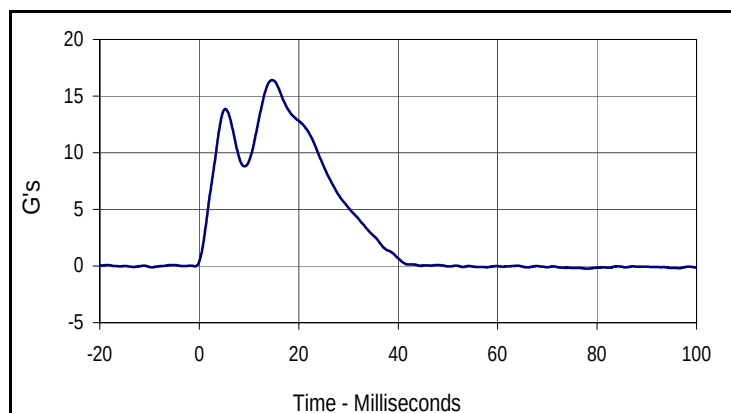
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
29.9	18.1	0.0	-7.7



Curve Description

Upper Spine Y Acceleration

Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
18.8	11.3	-8.4	40.6



Curve Description

Impactor Acceleration

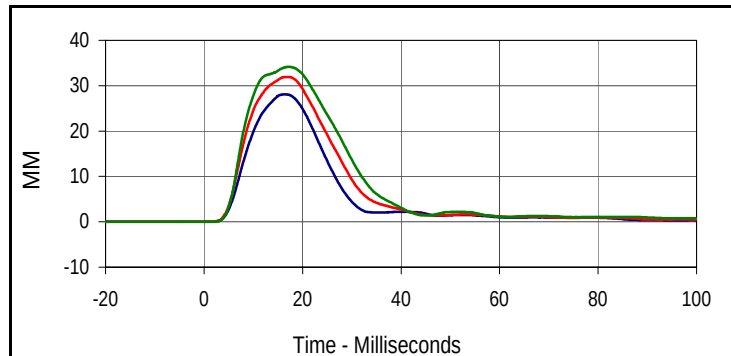
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
16.4	14.6	-0.2	77.7

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

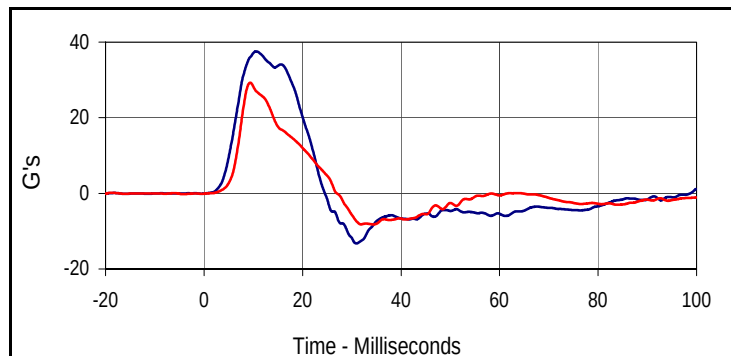
Test Date: 6/6/12
 Test I.D.: 299TWA041



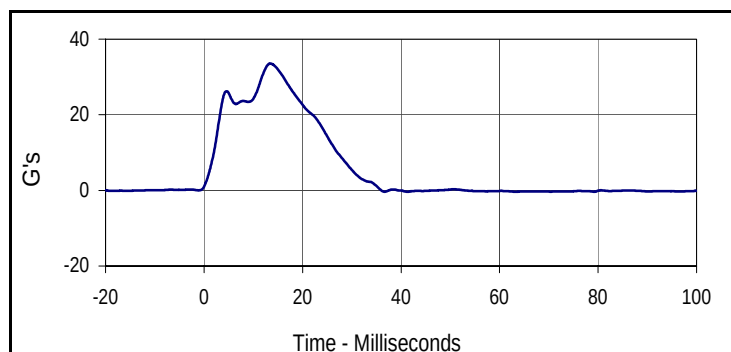
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	310	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		29.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	20.8	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.9	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.7	Pass
Peak Shoulder Deflection	mm	31 to 40	35.0	Pass
Peak Upper Thorax Rib Deflection	mm	25 to 32	28.1	Pass
Peak Middle Thorax Rib Deflection	mm	30 to 36	31.9	Pass
Peak Lower Thorax Rib Deflection	mm	32 to 38	34.1	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	37.5	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	29.3	Pass
Peak Impactor Acceleration	G's	30 to 36	33.5	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
28.1	16.3	0.0	-20.0
Middle Thorax Deflection			
Max	Time	Min	Time
31.9	16.9	0.0	-10.9
Lower Thorax Deflection			
Max	Time	Min	Time
34.1	17.1	0.0	-19.7



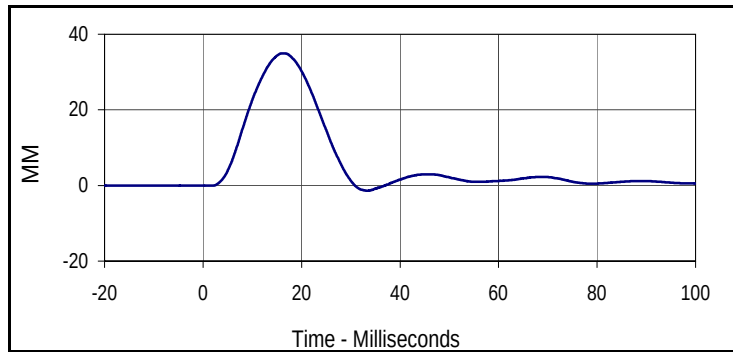
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
37.5	10.6	-13.3	30.9
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
29.3	9.4	-8.2	34.4



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
33.5	13.5	-0.4	0.0

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

Test Date: 6/6/12
 Test I.D.: 299TWA041



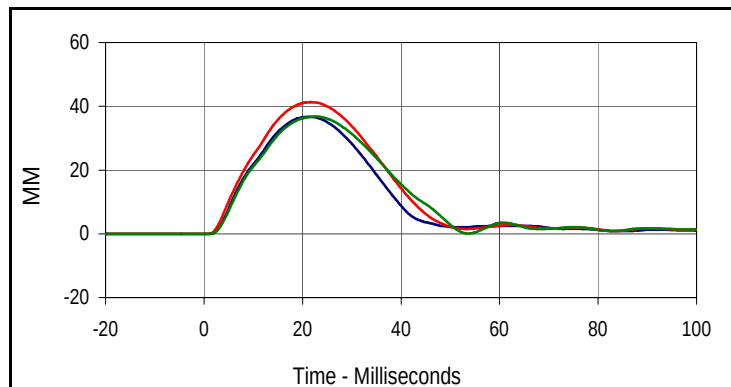
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	MM
Max	Time	Min	Time
35.0	16.2	-1.4	33.4

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

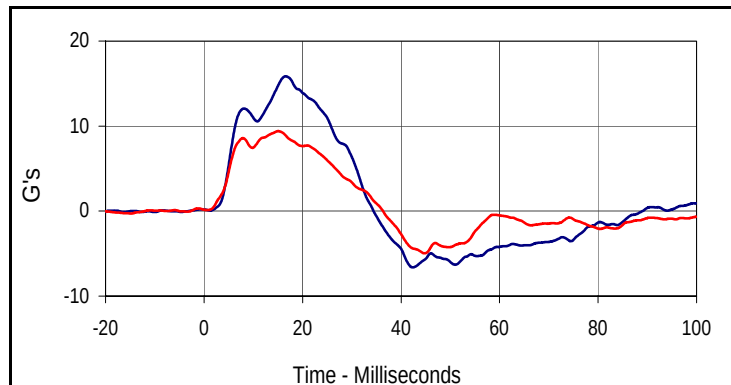
Test Date: 6/6/12
 Test I.D.: 299TWOA041



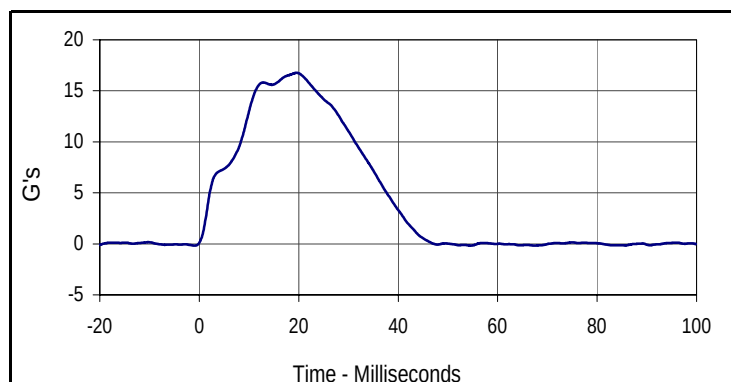
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	330	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	31.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.7	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.31	Pass
Peak Upper Thorax Rib Deflection		mm	32 to 40	36.7	Pass
Peak Middle Thorax Rib Deflection		mm	39 to 45	41.3	Pass
Peak Lower Thorax Rib Deflection		mm	35 to 43	36.8	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	16.8	Pass
Overall Test Results				Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
36.7	21.2	0.0	1.0
Middle Thorax Deflection			
Max	Time	Min	Time
41.3	21.6	0.0	-0.1
Lower Thorax Deflection			
Max	Time	Min	Time
36.8	23.0	0.0	1.1



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.9	16.6	-6.6	42.4
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
9.4	15.0	-5.0	44.8



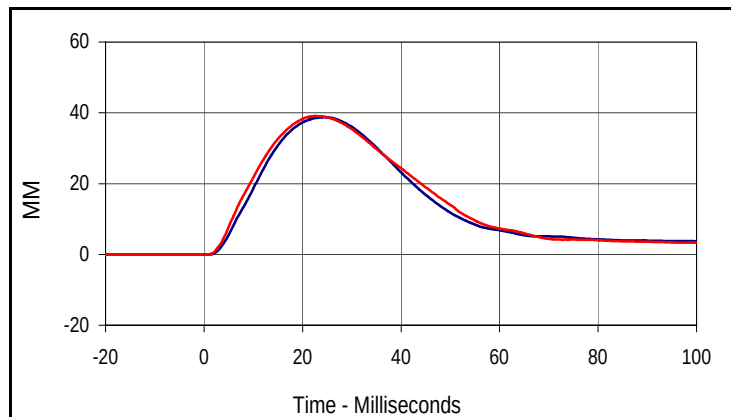
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
16.8	19.6	-0.2	0.0

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

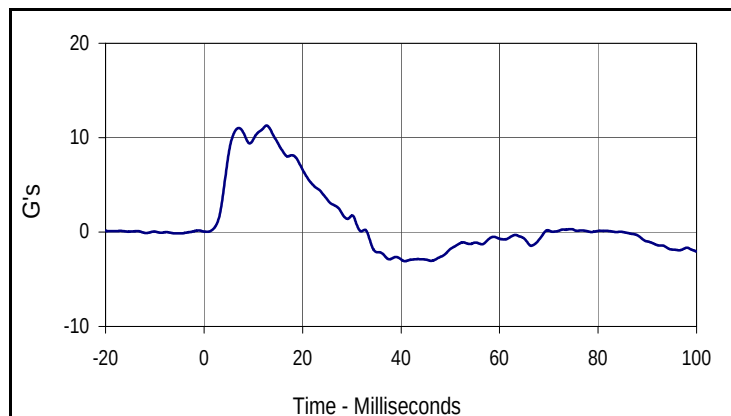
Test Date: 6/6/12
 Test I.D.: 299ABD041



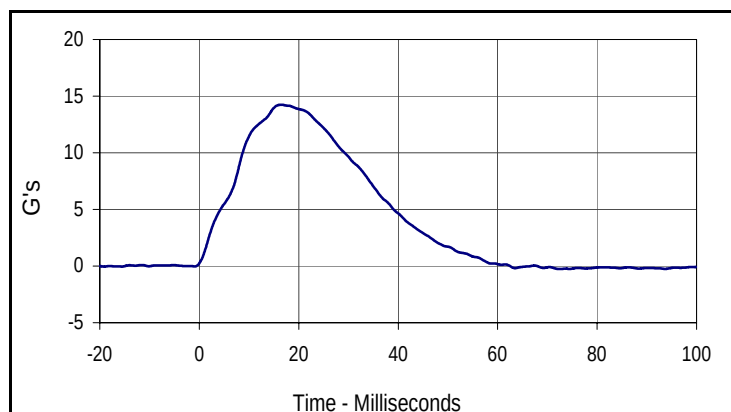
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	350	Pass
Temperature During Soak	Max °C	20.6 to 22.2	21.7	Pass
	Min °C		20.7	Pass
Humidity During Soak	Max %	10.0 to 70.0	31.0	Pass
	Min %		29.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.6	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.3	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	38.7	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	39.1	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	11.3	Pass
Peak Impactor Acceleration	G's	12 to 16	14.2	Pass
Overall Test Results				Pass



Curve Description			
Upper Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
38.7	24.4	0.0	-17.3
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
39.1	22.7	0.0	-1.1



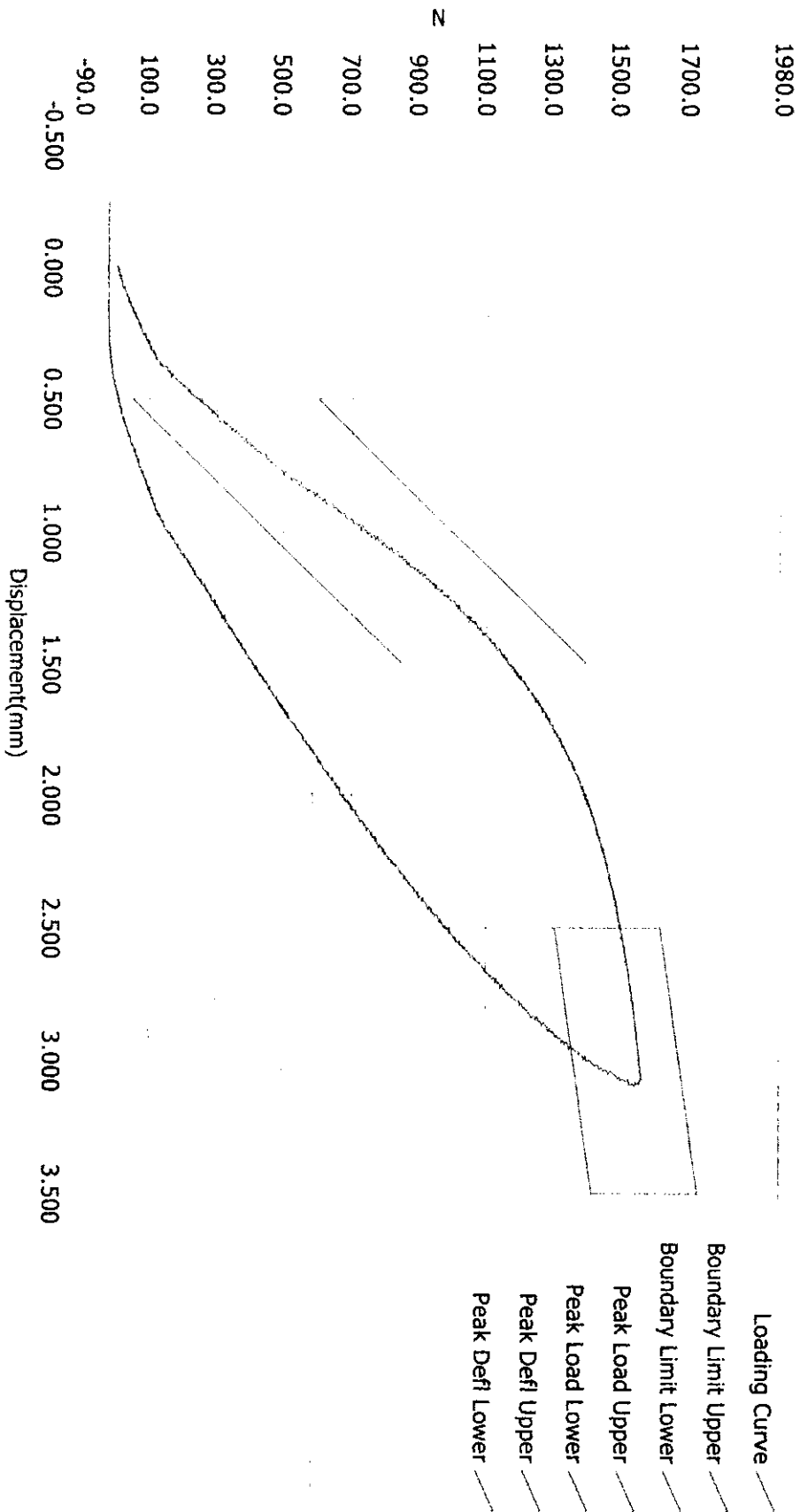
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
11.3	12.7	-3.1	40.8



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.2	16.5	-0.3	72.4

MD5102 PRE TEST

Resultant Data - SIDIIs Plug Compression



ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
	46906	10/6/2011	12:56 AM
Cert ID	ATD Serial Number	ATD Type	
	N/A	SIDIIs	

Current Date : 10/6/2011

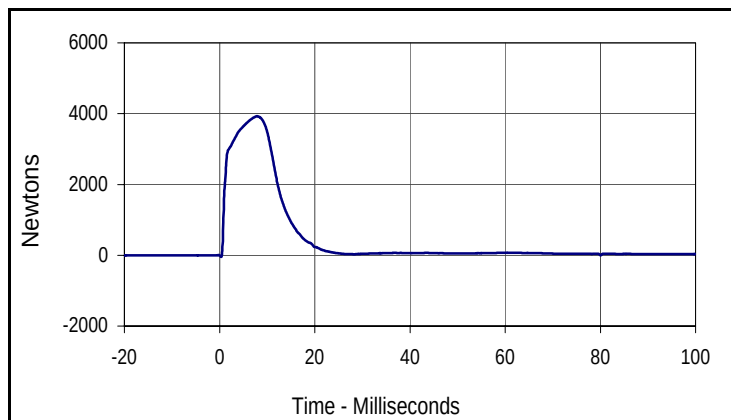
Current Time : 00:57:07

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

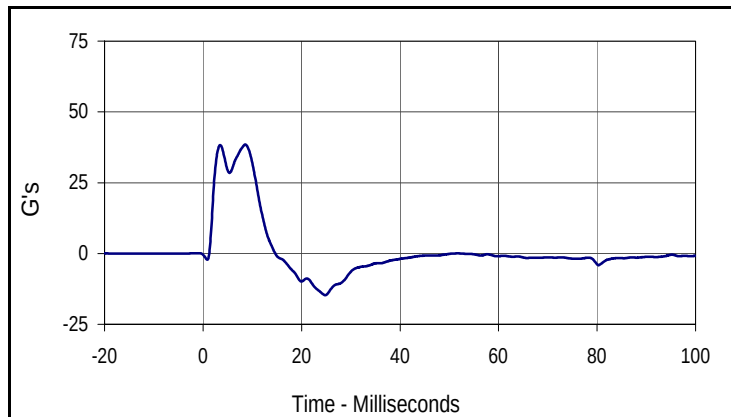
Test Date: 6/6/12
 Test I.D.: 299ACET041



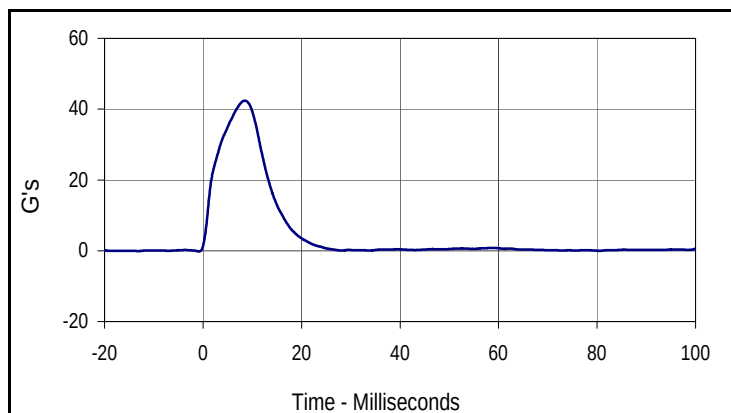
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	385	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		29.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.4	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.7	Pass
Peak Acetabulum Force Y	Newtons	3600 to 4300	3925.6	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	38.5	Pass
Peak Impactor Acceleration	G's	38 to 47	42.4	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3925.6	7.8	-44.0	0.3



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
38.5	8.6	-14.7	24.8



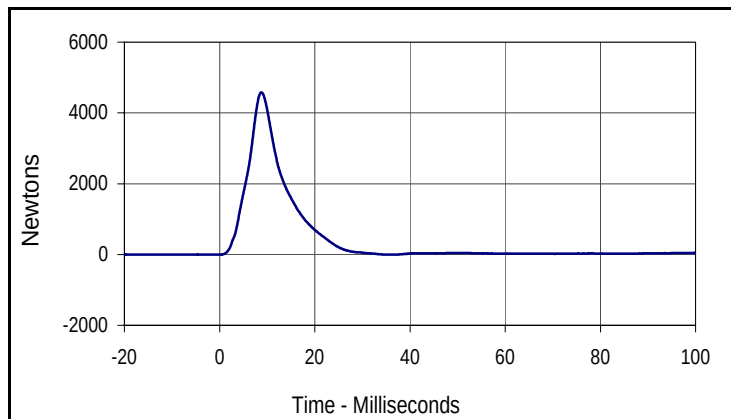
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
42.4	8.5	-0.2	-0.8

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

Test Date: 6/6/12
 Test I.D.: 299PL041



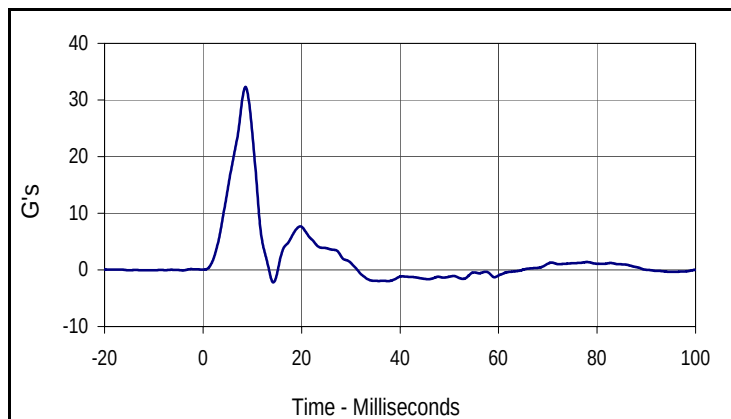
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	410	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		29.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.7	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.3	Pass
Peak Iliac Force	Newtons	4100 to 5100	4580.5	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	32.3	Pass
Peak Impactor Acceleration	G's	36 to 45	39.7	Pass
Overall Test Results			Pass	



Curve Description

Pelvis Iliac Force

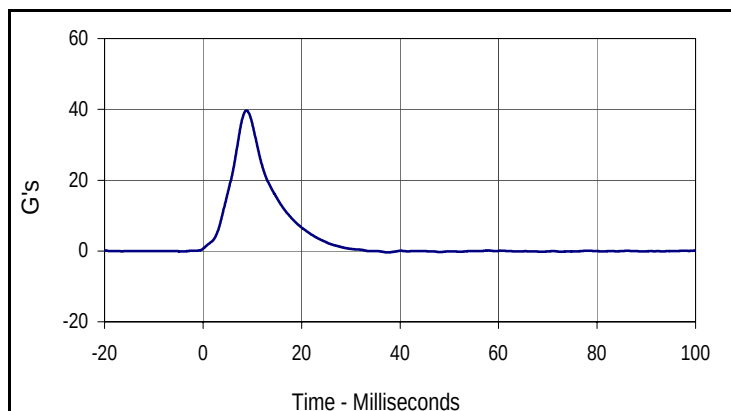
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4580.5	8.8	-3.4	36.1



Curve Description

Pelvis Y Acceleration

Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
32.3	8.6	-2.2	14.3



Curve Description

Impactor Acceleration

Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
39.7	8.8	-0.4	37.4

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

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

Test Date: 6/19/12
 Test I.D.: N/A



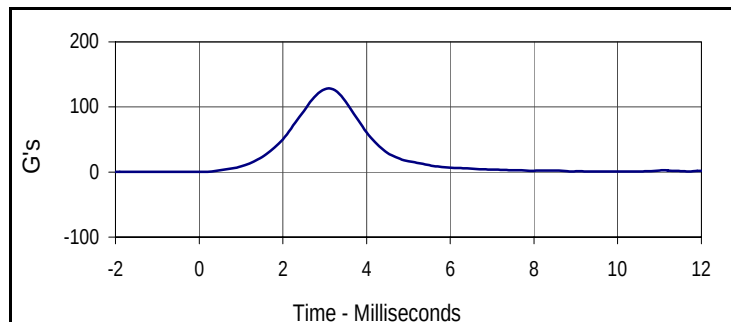
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
A	Sitting Height	mm	772 - 788	781	Pass
B	Shoulder Pivot Height	mm	437 - 453	444	Pass
C	H-Point Height	mm	79 - 89	84	Pass
D	H-Point from Seatback	mm	141 - 151	148	Pass
E	Shoulder Pivot from Backline	mm	97 - 107	102	Pass
F	Thigh Clearance	mm	119 - 135	127	Pass
G	Head Breadth	mm	140 - 148	145	Pass
H	Head Back from Backline	mm	40 - 46	43	Pass
I	Head Depth	mm	178 - 188	182	Pass
J	Head Circumference	mm	541 - 551	546	Pass
K	Buttock to Knee Length	mm	514 - 540	528	Pass
L	Popliteal Height	mm	343 - 369	354	Pass
M	Knee Pivot to Floor Height	mm	392 - 409	400	Pass
N	Buttock Popliteal Length	mm	416 - 442	429	Pass
O	Chest Depth w/o Jacket	mm	195 - 211	202	Pass
P	Foot Length	mm	216 - 232	219	Pass
Q	Hip Breadth with Pelvic Plug	mm	313 - 323	318	Pass
R	Arm Length	mm	249 - 259	256	Pass
S	Knee Joint to Seatback	mm	477 - 493	484	Pass
V	Shoulder Width	mm	341 - 357	350	Pass
W	Foot Width	mm	78 - 94	92	Pass
Y	Chest Circumference with Jacket	mm	851 - 881	875	Pass
Z	Waist Circumference	mm	760 - 791	773	Pass
Overall Test Results					Pass

Test Program: SID IIs Head Drop Test
 ATD Serial No.: 299

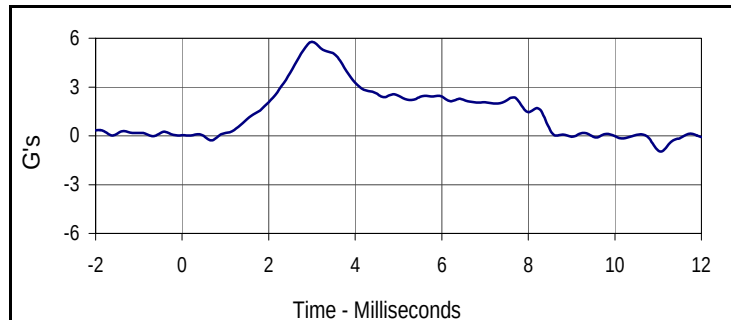
Test Date: 6/19/12
 Test I.D.: 299HD042



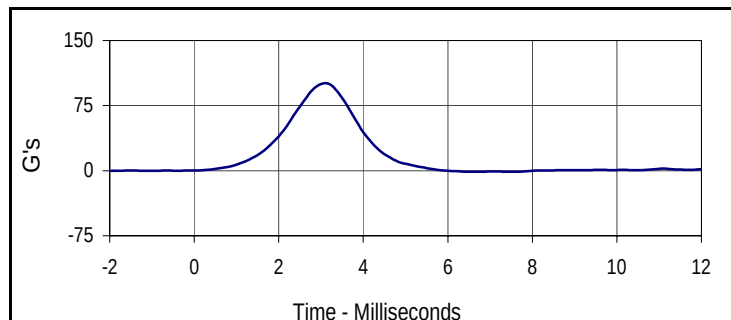
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	245	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	31.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.1	Pass
Peak Head Resultant Acceleration		G's	115 to 137	128.7	Pass
Peak Head X Acceleration		G's	<15	5.8	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse		%	<15	3.0	Pass
Overall Test Results				Pass	



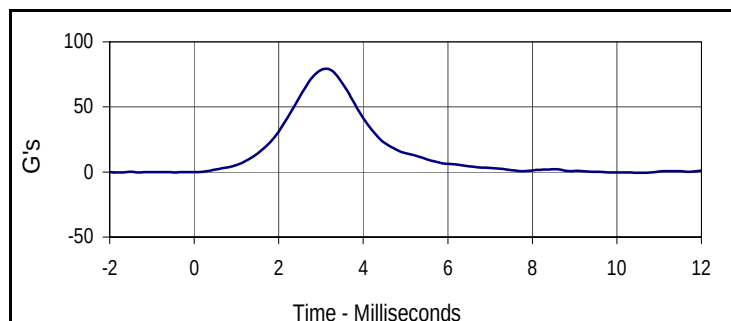
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
128.7	3.1	0.1	-0.8



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
5.8	3.0	-0.3	0.7



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
101.1	3.1	-1.4	6.5



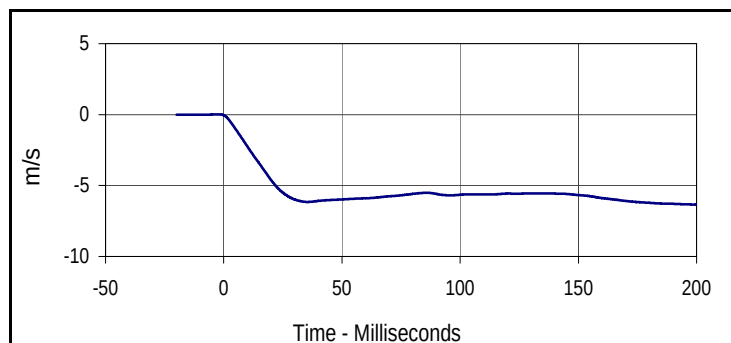
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
79.4	3.1	-0.4	-1.8

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

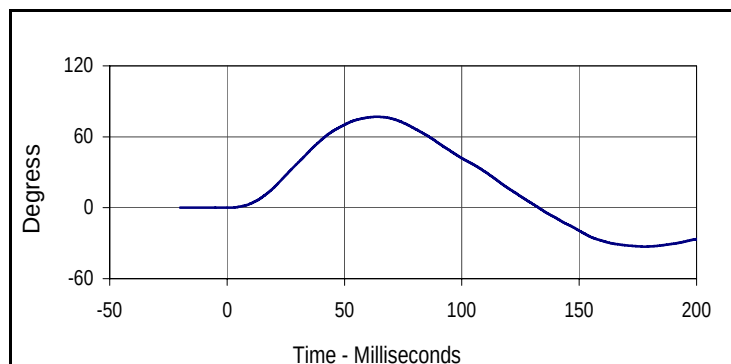
Test Date: 6/19/12
 Test I.D.: 299NB042



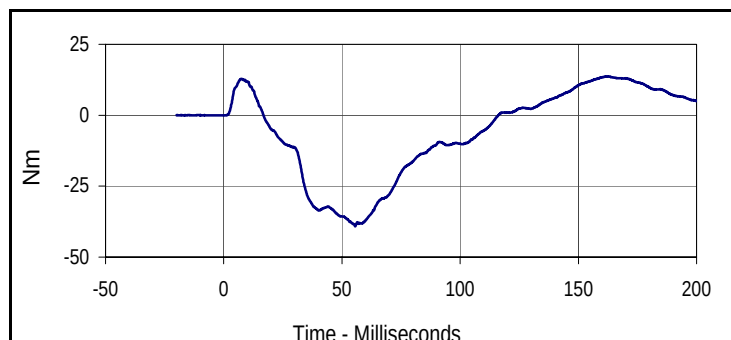
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	260	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		29.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.8	Pass
Pendulum Velocity	m/s	5.51 to 5.63	5.61	Pass
Pendulum Deceleration	10 msec	-2.20 to -2.80	-2.25	Pass
	15 msec	-3.30 to -4.10	-3.44	Pass
	20 msec	-4.40 to -5.40	-4.61	Pass
	25 msec	-5.40 to -6.10	-5.50	Pass
	25-100 msec	-5.50 to -6.20	-6.16	Pass
D-Plane Rotation	Max	71 to 81	76.9	Pass
	Time	50 to 70	63.7	Pass
Peak Occipital Condyle Moment	Nm	-36 to -44	-39.1	Pass
Decaying Moment Time to Cross 0 Nm	msec	102 to 126	116.2	Pass
Overall Test Results			Pass	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
0.0	-2.2	-6.4	200.0



Curve Description			
Maximum Translation Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
76.9	63.7	-32.8	177.7



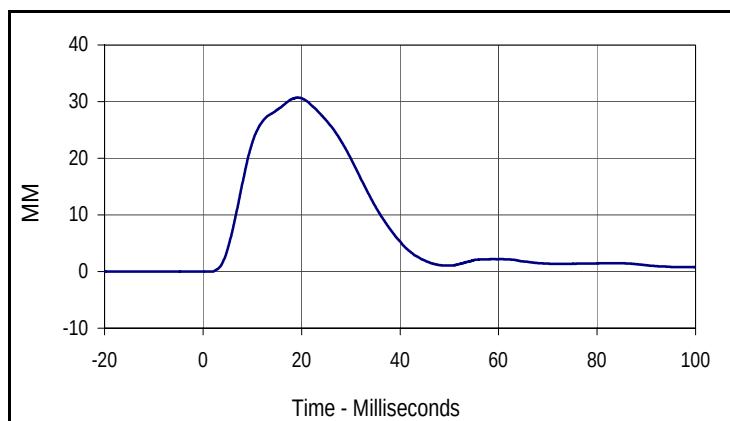
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
13.7	162.3	-39.1	55.6

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

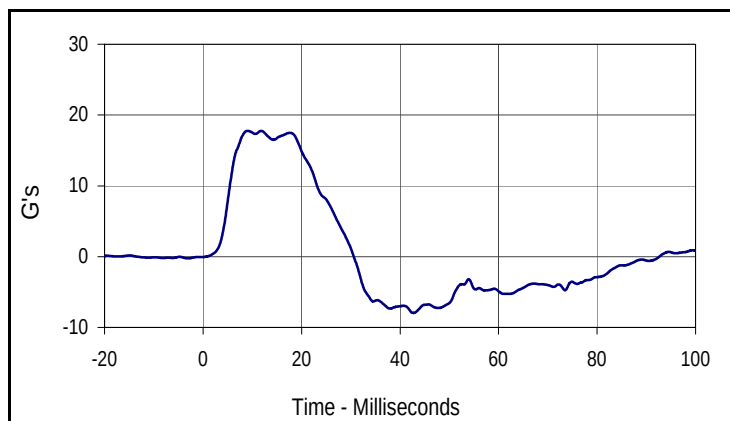
Test Date: 6/19/12
 Test I.D.: 299SH042



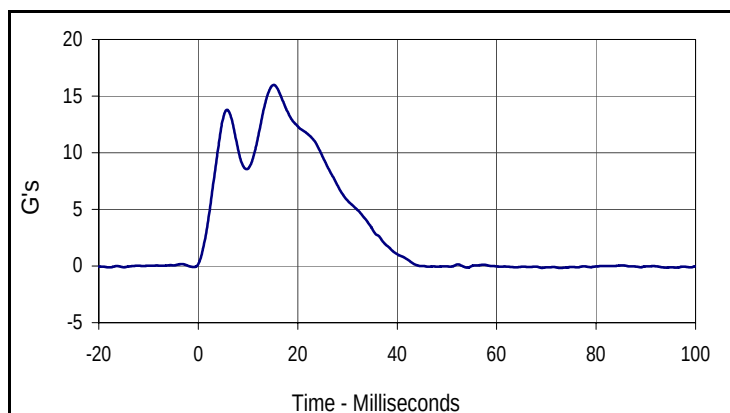
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	285	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	31.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.6	Pass
Impactor Velocity		m/s	4.20 to 4.40	4.30	Pass
Peak Shoulder Deflection		mm	28 to 37	30.7	Pass
Peak Lateral Spine Acceleration Y		G's	17 to 22	17.8	Pass
Peak Impactor Acceleration		G's	13 to 18	16.0	Pass
Overall Test Results				Pass	



Curve Description			
Shoulder Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
30.7	19.2	0.0	-0.5



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
17.8	9.0	-8.0	42.7



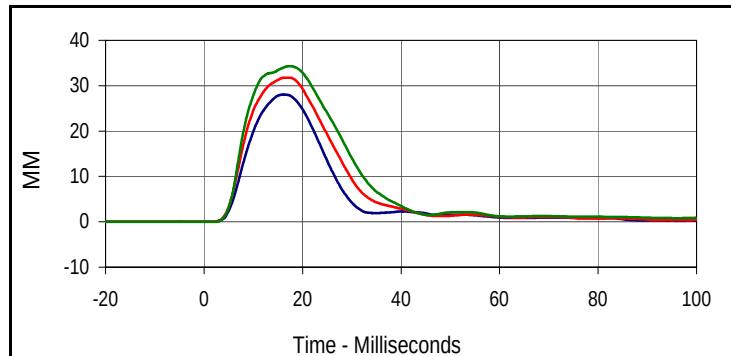
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
16.0	15.2	-0.2	0.0

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

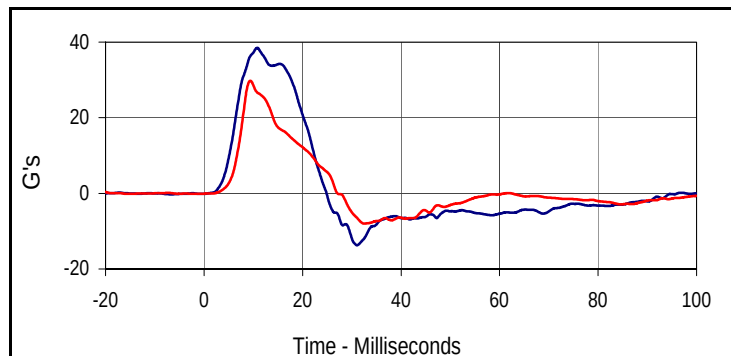
Test Date: 6/19/12
 Test I.D.: 299TWA042



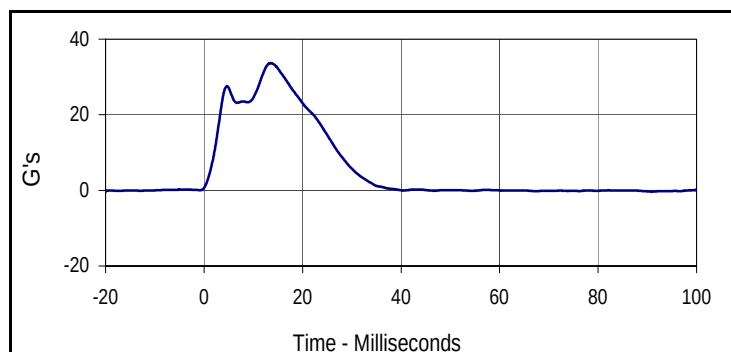
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	300	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		29.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	20.8	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.0	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.7	Pass
Peak Shoulder Deflection	mm	31 to 40	35.2	Pass
Peak Upper Thorax Rib Deflection	mm	25 to 32	28.0	Pass
Peak Middle Thorax Rib Deflection	mm	30 to 36	31.8	Pass
Peak Lower Thorax Rib Deflection	mm	32 to 38	34.3	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	38.5	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	29.8	Pass
Peak Impactor Acceleration	G's	30 to 36	33.7	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
28.0	16.2	0.0	-18.2
Middle Thorax Deflection			
Max	Time	Min	Time
31.8	16.8	0.0	-17.7
Lower Thorax Deflection			
Max	Time	Min	Time
34.3	17.4	0.0	-19.0



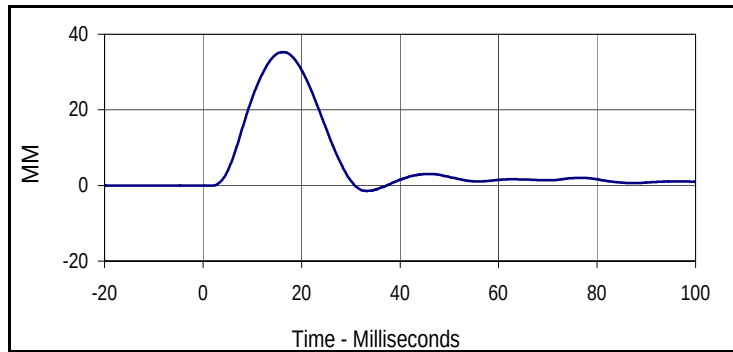
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
38.5	10.8	-13.7	31.1
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
29.8	9.4	-8.0	32.5



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
33.7	13.5	-0.4	0.0

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

Test Date: 6/19/12
 Test I.D.: 299TWA042



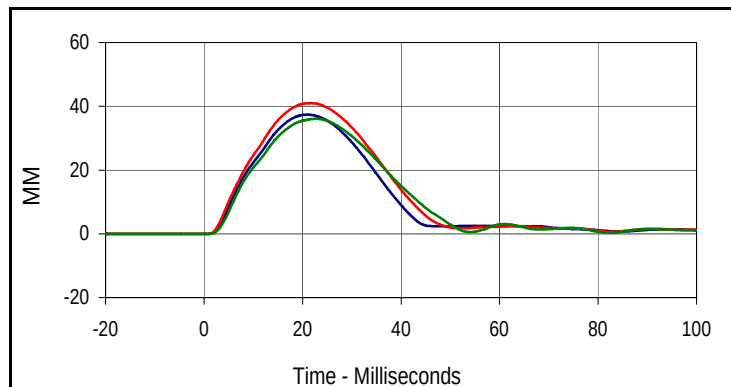
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	MM
Max	Time	Min	Time
35.2	16.2	-1.4	33.3

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

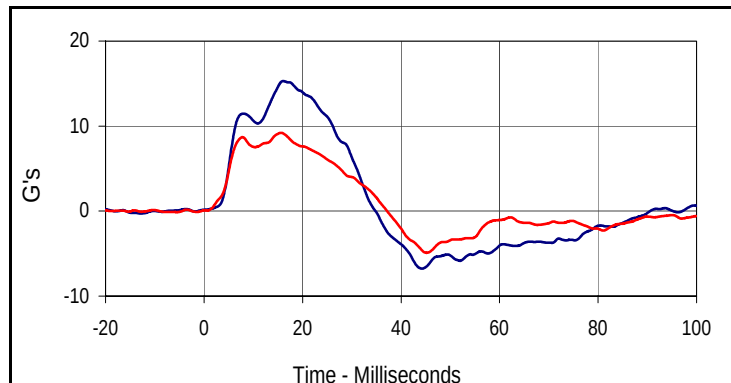
Test Date: 6/19/12
 Test I.D.: 299TWOA042



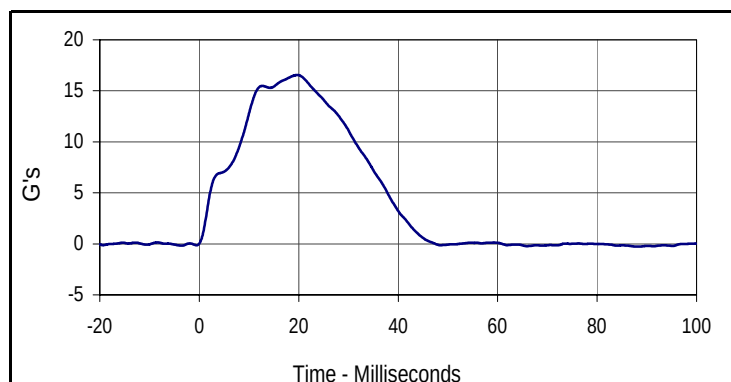
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	320	Pass
Temperature During Soak	Max	18.9 to 25.6	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		29.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.2	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.33	Pass
Peak Upper Thorax Rib Deflection	mm	32 to 40	37.4	Pass
Peak Middle Thorax Rib Deflection	mm	39 to 45	41.0	Pass
Peak Lower Thorax Rib Deflection	mm	35 to 43	36.1	Pass
Peak Upper Spine Y Acceleration	G's	13 to 17	15.3	Pass
Peak Lower Spine Y Acceleration	G's	7 to 11	9.2	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
37.4	21.0	0.0	-18.9
Middle Thorax Deflection			
Max	Time	Min	Time
41.0	21.6	0.0	-0.3
Lower Thorax Deflection			
Max	Time	Min	Time
36.1	22.7	0.0	0.8



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.3	16.1	-6.8	44.2
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
9.2	15.7	-4.9	45.2



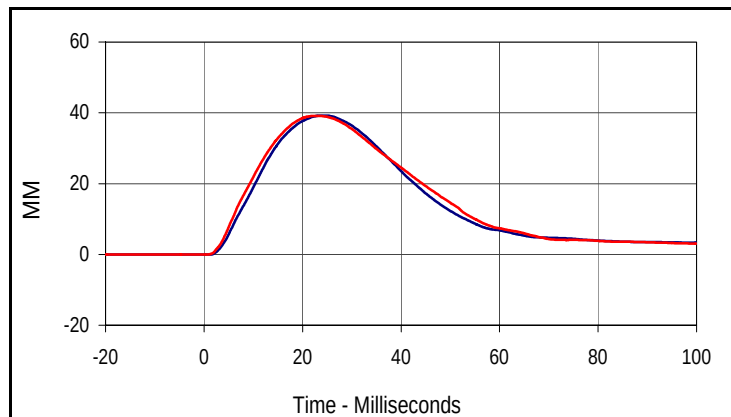
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
16.6	19.7	-0.3	88.4

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

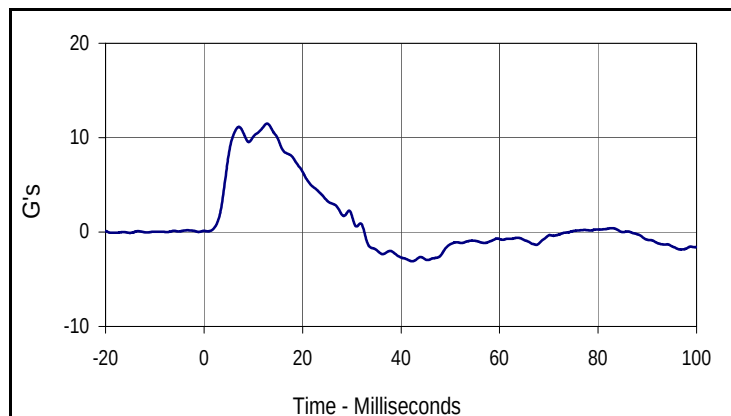
Test Date: 6/19/12
 Test I.D.: 299ABD042



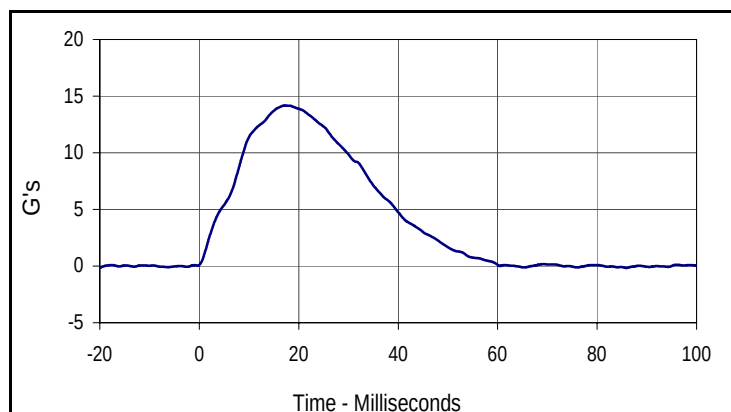
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	315	Pass
Temperature During Soak	Max °C	20.6 to 22.2	21.7	Pass
	Min °C		20.7	Pass
Humidity During Soak	Max %	10.0 to 70.0	31.0	Pass
	Min %		29.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.0	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.3	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	39.2	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	39.2	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	11.5	Pass
Peak Impactor Acceleration	G's	12 to 16	14.2	Pass
Overall Test Results			Pass	



Curve Description			
Upper Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
39.2	24.6	0.0	-0.3
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
39.2	22.9	0.0	-3.6



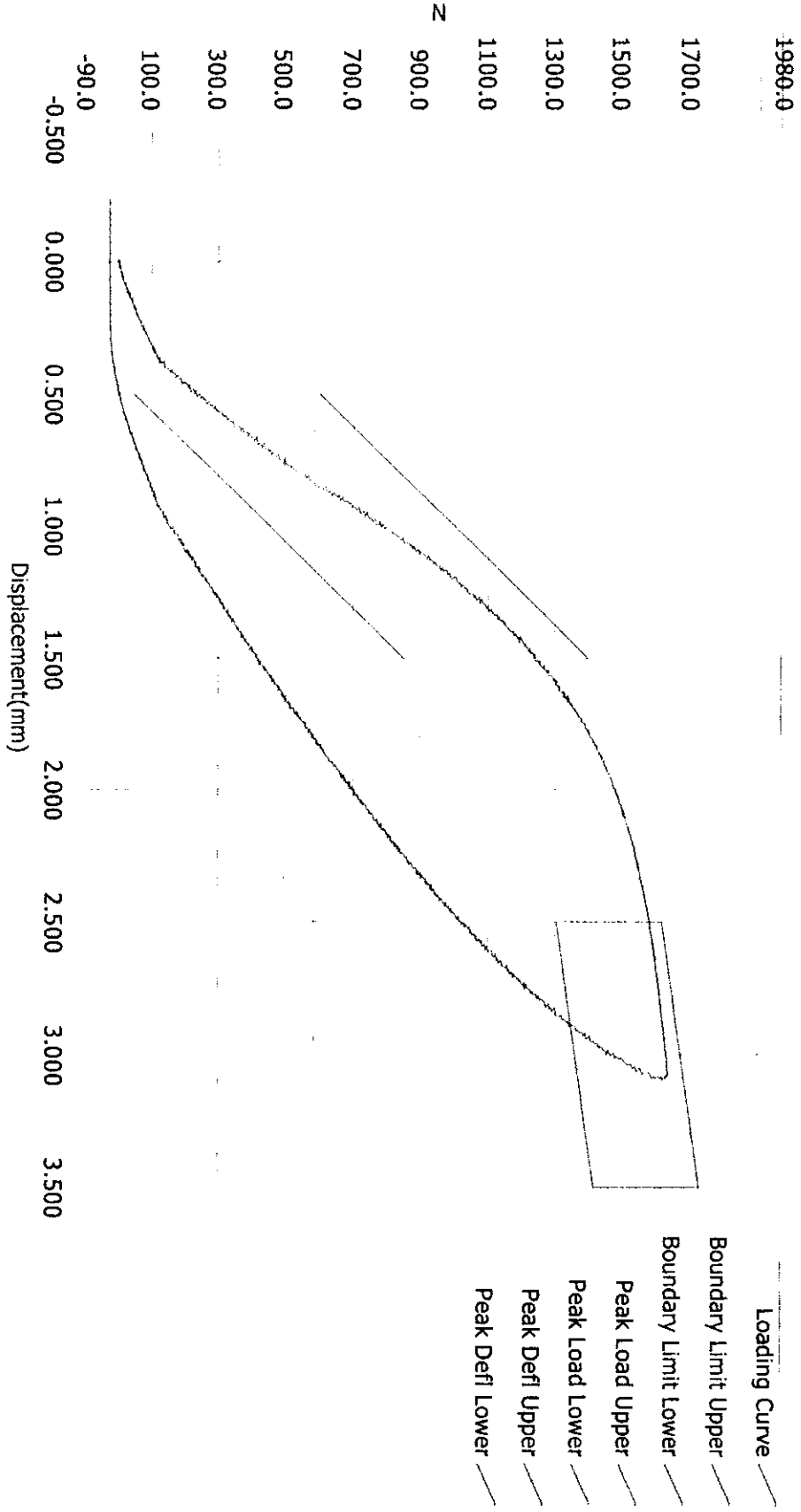
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
11.5	12.8	-3.1	42.3



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.2	17.4	-0.2	85.9

MD5102 POST TEST

Resultant Data - SIDIIs Plug Compression



ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
46877	10/5/2011	11:46 PM	
Cert ID	ATD Serial Number	ATD Type	
N/A	SIDIIs		

Current Date : 10/5/2011

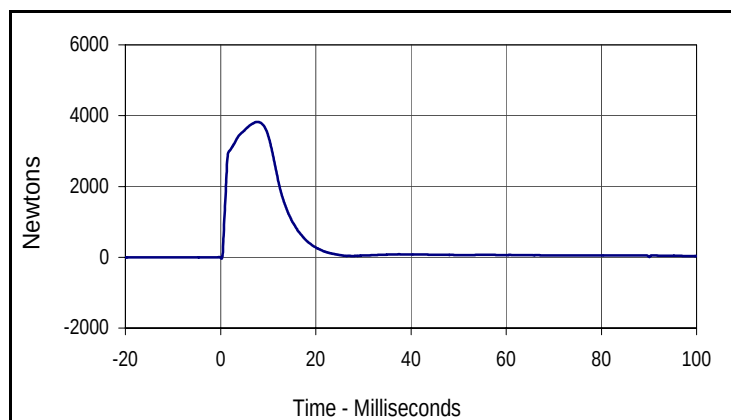
Current Time : 23:47:14

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

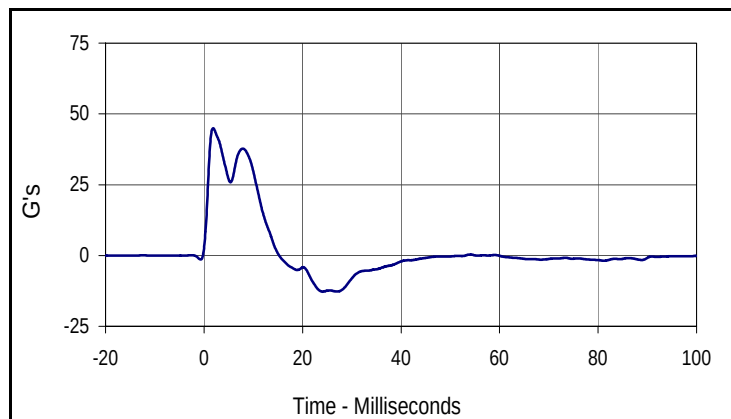
Test Date: 6/19/12
 Test I.D.: 299ACET042



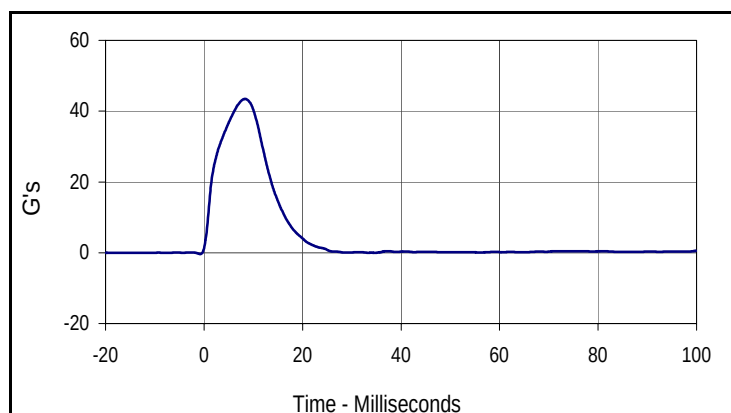
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	340	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		29.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.6	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.7	Pass
Peak Acetabulum Force Y	Newtons	3600 to 4300	3825.9	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	37.7	Pass
Peak Impactor Acceleration	G's	38 to 47	43.5	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3825.9	7.8	-38.4	0.2



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
45.0	1.8	-12.8	24.1



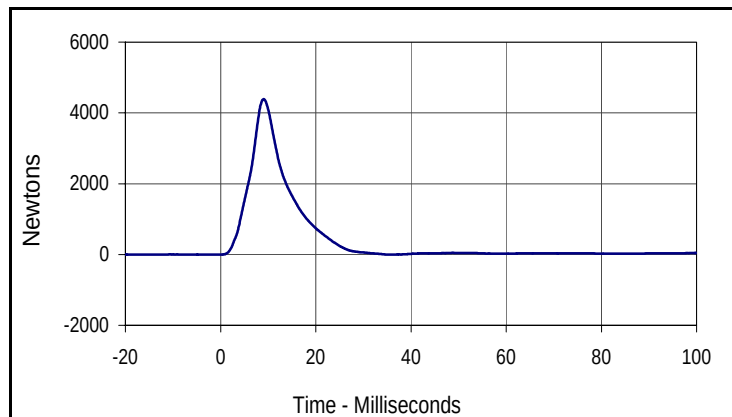
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
43.5	8.3	-0.4	-0.8

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

Test Date: 6/19/12
 Test I.D.: 299PL042



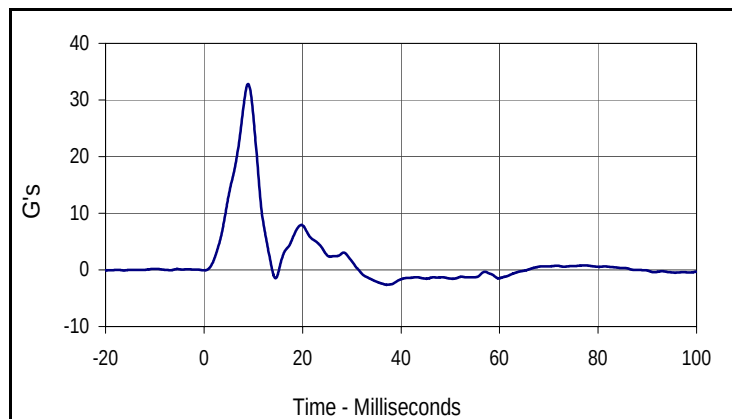
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	360	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	31.0	Pass
	Min		29.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.6	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.3	Pass
Peak Iliac Force	Newtons	4100 to 5100	4386.7	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	32.8	Pass
Peak Impactor Acceleration	G's	36 to 45	39.7	Pass
Overall Test Results			Pass	



Curve Description

Pelvis Iliac Force

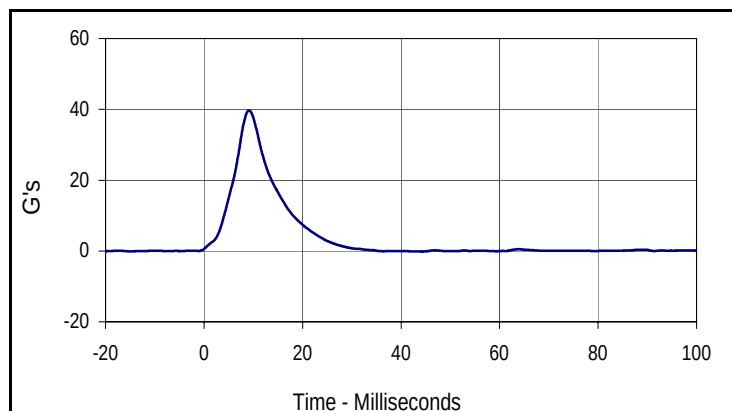
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4386.7	9.1	-3.0	-19.6



Curve Description

Pelvis Y Acceleration

Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
32.8	8.9	-2.6	37.1



Curve Description

Impactor Acceleration

Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
39.7	9.1	-0.2	44.2

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			X	P51926	Endevco	8/8/11
			Y	P51929	Endevco	8/8/11
			Z	P51934	Endevco	8/8/11
Displacement Potentiometers	Shoulder		Y	1074	FTSS	8/8/11
	Thoracic Rib	Upper	Y	1143	FTSS	8/8/11
		Middle	Y	1160	FTSS	8/8/11
		Lower	Y	1213	FTSS	8/8/11
	Abdominal Rib	Upper	Y	1218	FTSS	8/8/11
		Lower	Y	1234	FTSS	8/8/11
Lower Spine Accelerometers (T12)			X	P63999	Endevco	8/5/11
			Y	P58872	Endevco	8/4/11
			Z	P58795	Endevco	8/4/11
Acetabulum Load Cell			Y	272	Denton	7/22/11
Iliac Wing Load Cell			Y	284	Denton	7/22/11
Pelvis Plug (Struck Side)				46790	FTSS	10/4/11
Pelvis Plug (Non-Struck Side)				46763	FTSS	10/4/11

TABLE 2 – Vehicle Instrumentation

Vehicle Instrumentation		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	12913	Endevco	2/29/12
Vehicle Center of Gravity	Y	12862	Endevco	1/11/12
Vehicle Center of Gravity	Z	12906	Endevco	1/11/12
Left Floor Sill	Y	13000	Endevco	12/17/11
A-Pillar Sill	Y	12911	Endevco	1/11/12
A-Pillar Low	Y	12865	Endevco	1/11/12
A-Pillar Mid	Y	12884	Endevco	1/11/12
B-Pillar Sill	Y	12876	Endevco	1/11/12
B-Pillar Low	Y	12887	Endevco	12/17/11
B-Pillar Mid	Y	12892	Endevco	1/11/12
Driver Seat	Y	J21730	Endevco	4/13/12
Engine Top	X	12883	Endevco	1/11/12
Engine Top	Y	12901	Endevco	1/11/12
Firewall	Y	BF56J	Endevco	4/11/12
Right Roof	Y	BY98H	Endevco	4/16/12
Right Floor Sill	Y	J23944	Endevco	4/16/12
Rear Floorpan	X	BJ15H	Endevco	4/18/12
Rear Floorpan	Y	12997	Endevco	12/17/11

TABLE 3 – Pole Instrumentation

	Serial Number	Manufacturer	Calibration Date
Load Cell 1	131822A	Interface	8/8/11
Load Cell 2	132304A	Interface	8/8/11
Load Cell 3	19477	Interface	8/8/11
Load Cell 4	19325	Interface	8/8/11
Load Cell 5	131827A	Interface	8/8/11
Load Cell 6	132302A	Interface	8/8/11
Load Cell 7	19267	Interface	8/8/11
Load Cell 8	19321	Interface	8/8/11