

REPORT NUMBER: SPNCAP-KAR-12-029

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

**TOYOTA MOTOR MANUFACTURING, TEXAS, INC.
2012 TOYOTA TUNDRA CREWMAX 4-DOOR TRUCK**

NHTSA No: MC5111

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



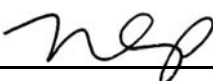
JANUARY 5, 2012

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
MAIL CODE: NVS-111
1200 NEW JERSEY AVE, SE, ROOM W43-410
WASHINGTON, D.C. 20590**

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Approval Date: January 5, 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

1. Report No. SPNCAP-KAR-12-029	2. Government Accession No.	3. Recipient's Catalog No.																												
4. Title and Subtitle Final Report of New Car Assessment Program Side Impact Pole Testing of 2012 Toyota Tundra Crewmax 4-Door Truck NHTSA No. MC5111		5. Report Date January 5, 2012																												
		6. Performing Organization Code KAR																												
7. Authors Mr. Kelsey A. Chiu, Engineering Department Supervisor, KARCO Mr. Frank Richardson, Program Manager, KARCO		8. Performing Organization Report No. TR-P31007-11-NC																												
9. Performing Organization Name and Address KARCO Engineering, LLC. 9270 Holly Rd. Adelanto, CA 92301		10. Work Unit No.																												
		11. Contract or Grant No. DTNH22-09-D-00122																												
12. Sponsoring Agency Name and Address U. S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards (NVS-111) 1200 New Jersey Ave., SE, Room W43-410 Washington, D.C. 20590		13. Type of Report and Period Covered Final Test Report, Dec. 22, 2011 - Jan. 5, 2012																												
		14. Sponsoring Agency Code NVS-111																												
15. Supplementary Notes																														
16. Abstract A 32.2 km/h (20 mph) 75 deg. oblique impact Side NCAP Test was conducted on the subject 2012 Toyota Tundra Crewmax 4-door truck 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 December 22, 2011. The impact velocity was 31.5 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 8.3 deg. C. The target vehicle's maximum post-test static crush was 454 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>313.9</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td>g</td> <td>82</td> <td>56.5</td> </tr> <tr> <td>Total Pelvic Force (Sum of Acetabular and Iliac Forces)</td> <td>N</td> <td>5525</td> <td>3238</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>38</td> <td>26</td> </tr> <tr> <td>Maximum Abdominal Rib Deflection</td> <td>mm</td> <td>45</td> <td>27</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	313.9	Resultant Lower Spine Acceleration	g	82	56.5	Total Pelvic Force (Sum of Acetabular and Iliac Forces)	N	5525	3238	Maximum Thoracic Rib Deflection	mm	38	26	Maximum Abdominal Rib Deflection	mm	45	27
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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																												
19. Security Classification of this report UNCLASSIFIED	20. Security Classification of this page UNCLASSIFIED	21. No. of Pages 101	22. Price																											

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SECTION 1

TEST PURPOSE AND PROCEDURE

This side impact test is part of the MY 2012 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract number DTNH22-09-D-00122. The purpose of this test is to generate comparative side impact performance in a 2012 Toyota Tundra Crewmax 4-door truck. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated August 2011.

SECTION 2

SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a 2012 Toyota Tundra Crewmax 4-door truck. The subject vehicle was towed into the rigid pole at an angle of 75.5° and a velocity of 31.5 km/h. The test was conducted by KARCO Engineering, LLC. in Adelanto, California on December 22, 2011. 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 OCW S Side NCAP Pole Laboratory Test Procedure, dated August 2011. 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	313.9
Lower Spine (T12) Resultant Acceleration	g	82	57
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3238
Maximum Thoracic Rib Deflection	mm	38*	26
Maximum Abdominal Rib Deflection	mm	45*	27

*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	Yes	No	
Knee Airbag	Yes	Yes	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				

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: 2012 Toyota Tundra Crewmax 4-Door Truck NHTSA No. MC5111
Test Program: NCAP Side Pole Impact Test Test Date: 12/22/11

CONVERSION FACTORS

Quantity	Typical Application	Std Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	miles/hr	km/hr	1.609344
Length or Distance	Measurements	in	mm	25.4
Volume	Fuel Systems	gal	liter	3.785
Volume	Small Fluids	oz	mL	29.574
Pressure	Tire Pressures	lbf/in ²	kPa	6.895
Temperature	General Use	°F	°C	$=(T_f - 32)/1.8$
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf-ft	N•m	1.355

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2012 Toyota Tundra Crewmax 4-Door Truck NHTSA No. MC5111
 Test Program: NCAP Side Pole Impact Test Test Date: 12/22/11

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	MC5111
Model Year	2012
Make	Toyota
Model	Tundra Crewmax
Body Style	4-Door Truck
VIN	5TFEM5F17CX036383
Body Color	Silver Sky Metallic
Odometer Reading (km / mi)	201 / 125
Engine Displacement (L)	4.6
Type / No. of Cylinders	V8
Engine Placement	Longitudinal
Transmission Type	Automatic
Transmission Speeds	6
Overdrive	Yes
Final Drive	Rear
Roof Rack	No
Sunroof / T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
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	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	None

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

No

DATA FROM CERTIFICATION LABEL

Manufactured By	Toyota Motor Manufacturing, Texas, Inc.
Date of Manufacture	Sep-11
Vehicle Type	Truck

GVWR (kg)	3080
GAWR Front (kg)	1765
GAWR Rear (kg)	1835

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Designated Seating Capacity	3	3		6
Capacity Weight (VCW) (kg)				580.0
DSC x 68.04 (kg)				408.2
Cargo Weight (RCLW) (kg)				136.0

A

B

A-B

VEHICLE SEAT TYPE

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

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Date: 12/22/11



VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	300	300
Tire Size on Vehicle	P255/70R18	P255/70R18
Tire Manufacturer	Bridgestone	Bridgestone
Tire Name	Dueler	Dueler
Tire Type	Passenger	Passenger
Tire Width	255	255
Aspect Ratio	70	70
Radial	Yes	Yes
Wheel Diameter	18	18
Load Index/Speed Symbol	112T	112T
Treadware	360	360
Traction Grade	B	B
Temperature Grade	B	B
Tire Material	Polyester, Steel, Nylon	Polyester, Steel, Nylon

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2012 Toyota Tundra Crewmax 4-Door Truck NHTSA No. MC5111
 Test Program: NCAP Side Pole Impact Test Test Date: 12/22/11

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	210	210	230	230
Tire Placard	kPa	210	210	230	230
Owner's Manual	kPa	210	210	230	230
As Tested	kPa	210	210	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	719.0	555.5		743.5	636.0		731.5	656.0	
Right	kg	655.0	540.0		660.0	607.0		641.5	624.0	
Ratio	%	55.6%	44.4%	100.0%	53.0%	47.0%	100.0%	51.8%	48.2%	100.0%
Total	kg	1374.0	1095.5	2469.5	1403.5	1243.0	2646.5	1373.0	1280.0	2653.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	2469.5	A
Actual Weight of 1 P572 O ATD Used	kg	49.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	136.0	C
Calculated Vehicle Target Wt (TVTW)	kg	2654.5	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	9.0
Spare Tire Tools	4.0
Ballast / Equipment Added	130.8

DATA SHEET NO. 1 ... (CONTINUED)**GENERAL TEST AND VEHICLE PARAMETER DATA**Test Vehicle: 2012 Toyota Tundra Crewmax 4-Door Truck NHTSA No. MC5111Test Program: NCAP Side Pole Impact Test Test Date: 12/22/11**TEST VEHICLE ATTITUDE AND CG**

Measurement Description	Units	As Delivered	As Tested	Fully Loaded	Meets Requirement***
Driver Door Sill Angle (front-to-rear)*	°	-0.8	-0.6	-0.6	Yes
Front Passenger Sill Angle (front-to-rear)*	°	-0.8	-0.4	-0.3	Yes
Front Bumper-Line Angle (left-to-right)**	°	-0.2	-0.3	-0.4	Yes
Rear Bumper-Line Angle (left-to-right)**	°	-0.3	0.0	0.0	Yes
Vehicle CG (Aft of Front Axle)	mm	1644	1741	1788	
Vehicle CG (Left (+)/Right (-) from Longitudinal Centerline)	mm	28	37	40	

*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: 2012 Toyota Tundra Crewmax 4-Door Truck NHTSA No. MC5111
 Test Program: NCAP Side Pole Impact Test Test Date: 12/22/11

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	8.0	0.0	4.0
Front Passenger Seat	Fixed	Fixed	Fixed
Front Center Seat	Fixed	Fixed	Fixed
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	8.2	902	Max	910	911	912
			Mid	900	901	902
			Min	891	892	893
Front Passenger Seat	Fixed	910	Max	908	909	910
			Mid	908	909	910
			Min	908	909	910
Front Center Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Struck Side Rear Seat	Fixed	Fixed	Max	904	905	906
			Mid	904	905	906
			Min	904	905	906
Non-Struck Side Rear Seat	Fixed	Fixed	Max	904	905	906
			Mid	904	905	906
			Min	904	905	906
Rear Center Seat	Fixed to LR	Fixed to LR	Max	Fixed to LR	Fixed to LR	Fixed to LR
			Mid	Fixed to LR	Fixed to LR	Fixed to LR
			Min	Fixed to LR	Fixed to LR	Fixed to LR

DATA SHEET NO. 2 ... (CONTINUED)

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

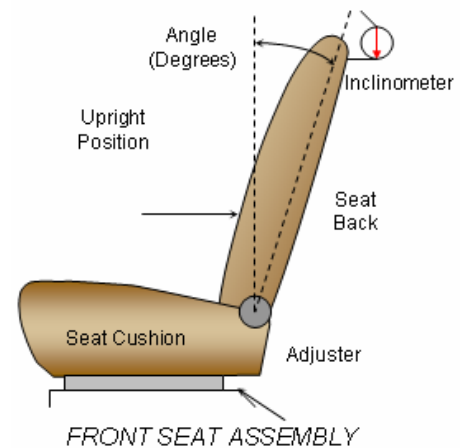
Test Vehicle: 2012 Toyota Tundra Crewmax 4-Door Truck NHTSA No. MC5111
 Test Program: NCAP Side Pole Impact Test Test Date: 12/22/11

SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position From Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	210	15	0	0
Front Passenger Seat	210	15	0	0
Front Center Seat	Fixed	Fixed	Fixed	Fixed
Struck Side Rear Seat	240	17	240	17
Non-Struck Side Rear Seat	Fixed to LR	Fixed to LR	Fixed to LR	Fixed to LR
Rear Center Seat	240	17	240	17

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	50.3	27	6.0	2
Front Passenger Seat	50.9	27	6.0	2
Front Center Seat	Fixed	Fixed	Fixed	Fixed
Struck Side Rear Seat w/Seated Dummy	30.3	16	0.5	4
Non-Struck Side Rear Seat	30.3	16	0.5	4
Rear Center Seat	Fixed to LR	Fixed to LR	Fixed to LR	Fixed to LR

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	M1

DATA SHEET NO. 2 ... (CONTINUED)

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

Test Vehicle: 2012 Toyota Tundra Crewmax 4-Door Truck NHTSA No. MC5111

Test Program: NCAP Side Pole Impact Test Test Date: 12/22/11

HEAD RESTRAINT ADJUSTMENT

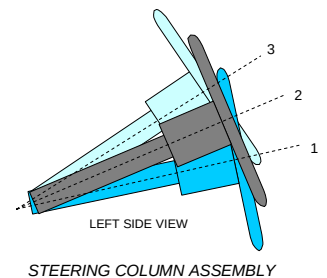
The driver's head restraint is adjusted to the lowest and most full forward in-use position.

	Total No. of Positions	Placed in Position
Driver Seat	7	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	24.4	
Geometric Center - Position 2	27.4	
Uppermost - Position 3	30.3	
Telescoping Steering Wheel Travel		
Test Position	27.4	



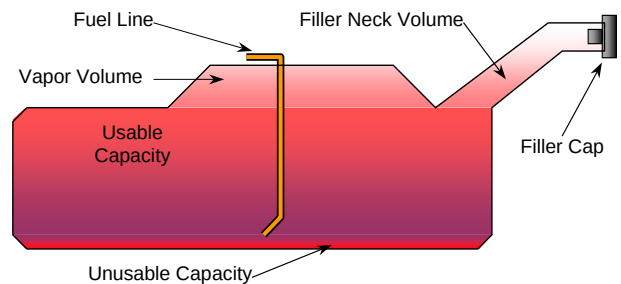
DATA SHEET NO. 2 ... (CONTINUED)**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA**Test Vehicle: 2012 Toyota Tundra Crewmax 4-Door Truck NHTSA No. MC5111Test Program: NCAP Side Pole Impact Test Test Date: 12/22/11**FUEL TANK CAPACITY**

Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	99.92
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	92.93
Actual amount of Solvent Used in Test	92.93
1/3 of Usable Capacity	33.31

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

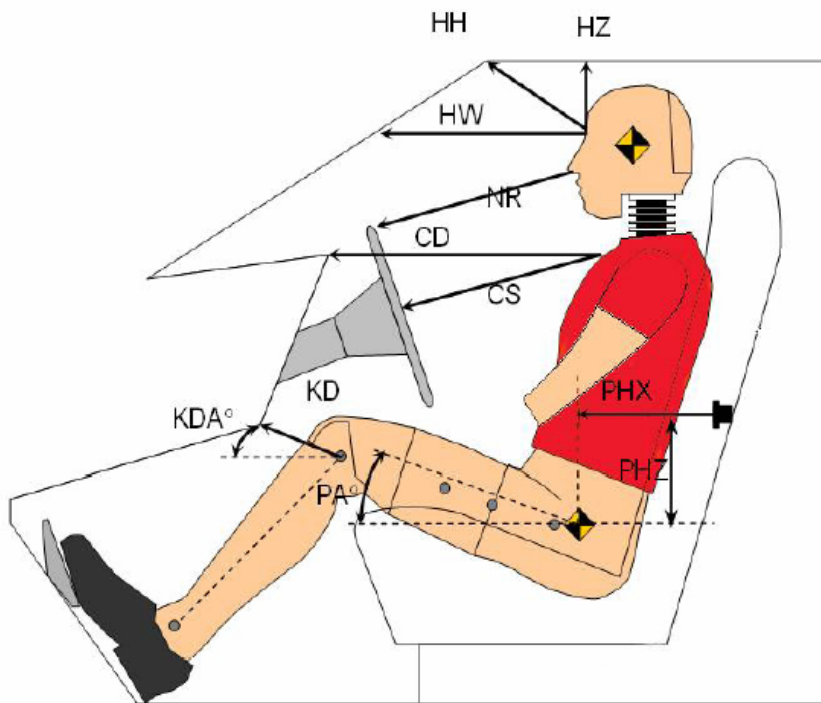
The vehicle is equipped with an electric fuel pump.
The fuel pump is activated when the ignition is turned on.

**VEHICLE FUEL TANK ASSEMBLY**

DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2012 Toyota Tundra Crewmax 4-Door Truck NHTSA No. MC5111
 Test Program: NCAP Side Pole Impact Test Test Date: 12/22/11



DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	320	
HW	Head to Windshield	688	
HZ	Head to Roof	261	
NR	Nose to Rim	294	
CD	Chest to Dash	466	
CS	Chest to Steering Wheel	200	
KD(L)/KDA(L)°	Left Knee to Dash	129	27.2
KD(R)/KDA(R)°	Right Knee to Dash	98	36.8
PAX°	Pelvic Tilt Angle (x-axis)		20.7
PAY°	Pelvic Tilt Angle (y-axis)		0.4
PHX	Hip Point to Striker (x-axis)	388	
PHZ	Hip Point to Striker (z-axis)	136	

DATA SHEET NO. 4

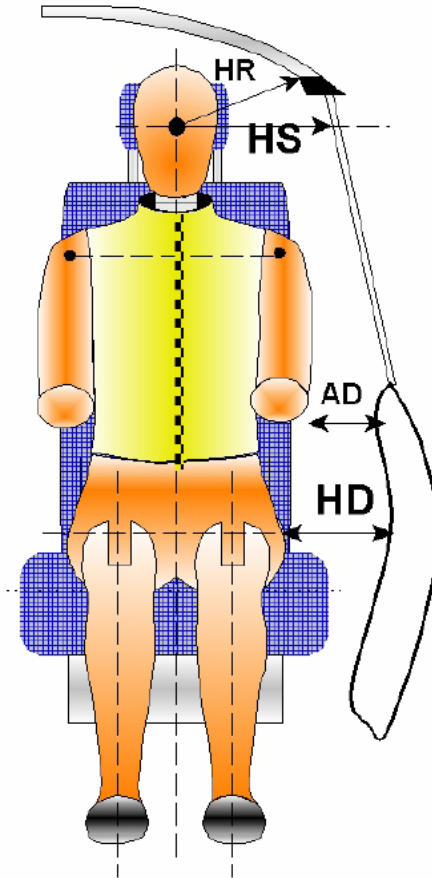
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2012 Toyota Tundra Crewmax 4-Door Truck

NHTSA No. MC5111

Test Program: NCAP Side Pole Impact Test

Test Date: 12/22/11



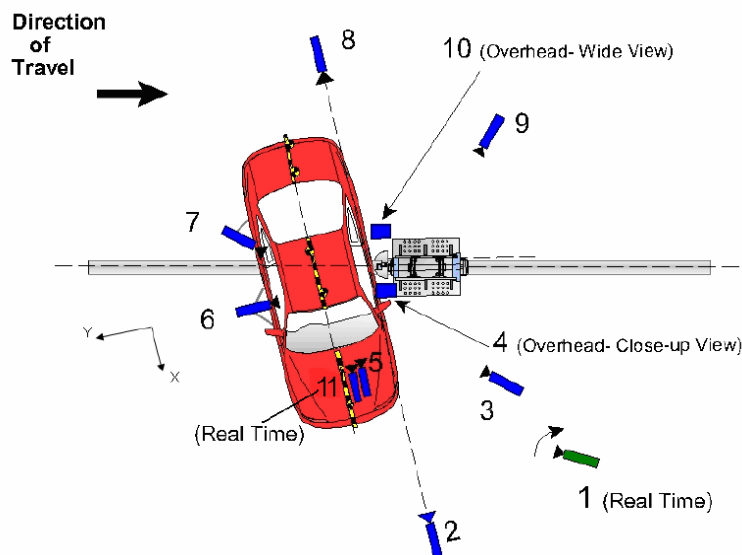
DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver
HR	Head to Side Header	mm	285
HS	Head to Side Window	mm	386
AD	Arm to Door	mm	181
HD	H-Point to Door	mm	201

DATA SHEET NO. 5

CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2012 Toyota Tundra Crewmax 4-Door Truck NHTSA No. MC5111
 Test Program: NCAP Side Pole Impact Test Test Date: 12/22/11



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	1.32	0.43	-1.66	35	1000
6	On-Board - Dummy Side View	-0.04	1.78	-1.42	14	1000
7	On-Board - Dummy Rear Oblique View	-0.98	1.86	-1.46	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	1.39	0.51	-1.69		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

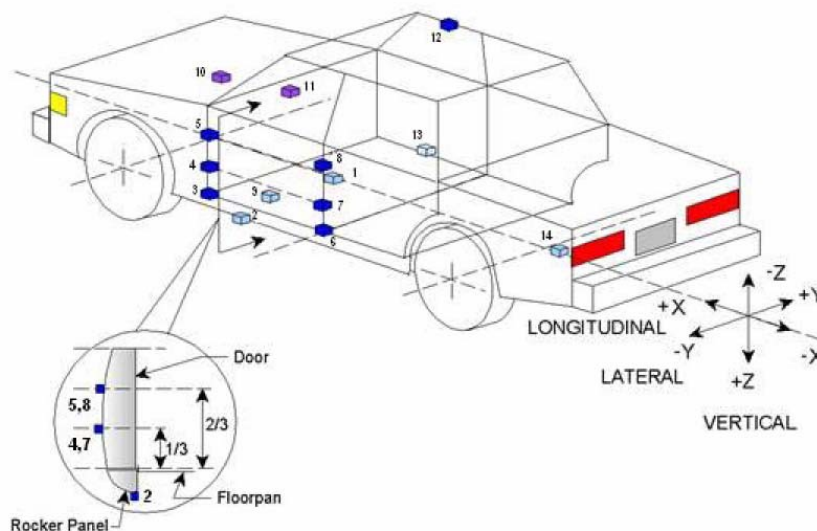
INSTRUMENTATION

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

DATA SHEET NO. 6

TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2012 Toyota Tundra Crewmax 4-Door Truck NHTSA No. MC5111
 Test Program: NCAP Side Pole Impact Test Test Date: 12/22/11



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

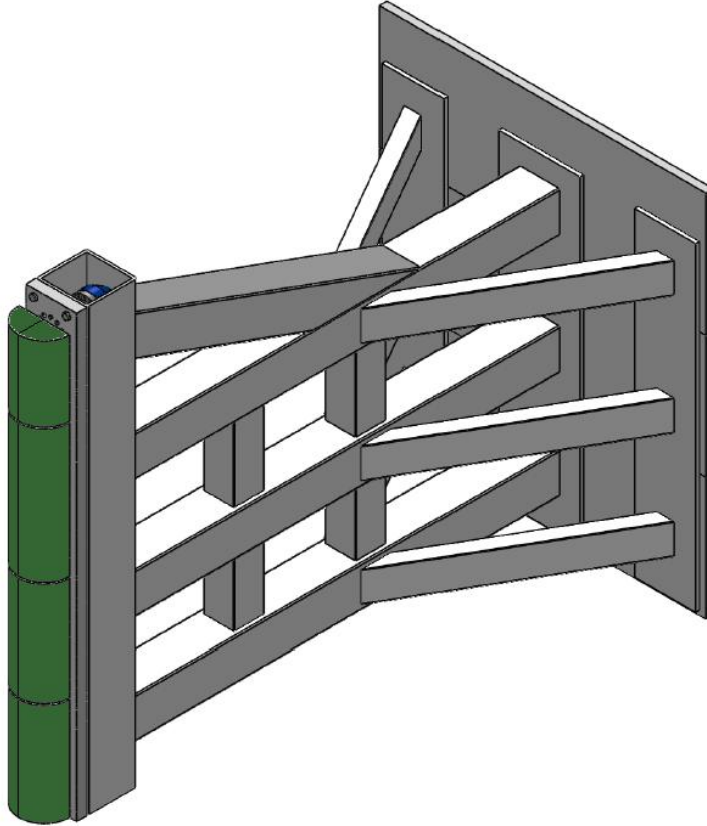
Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2855	0	-640
2	Left Floor Sill	3758	-590	-300
3	A-Pillar Sill	4325	-915	-610
4	A-Pillar Low	4325	-915	-835
5	A-Pillar Mid	4325	-915	-1170
6	B-Pillar Sill	3166	-790	-570
7	B-Pillar Low	3166	-790	-1035
8	B-Pillar Mid	3166	-790	-1240
9	Driver Seat Track	3560	-680	-675
10	Engine Top	5065	0	-1150
11	Firewall	4540	360	-1045
12	Right Roof	3302	552	-1870
13	Right Floor Sill	3015	810	-505
14	Rear Floorpan	1125	400	-825

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: 2012 Toyota Tundra Crewmax 4-Door Truck NHTSA No. MC5111
Test Program: NCAP Side Pole Impact Test Test Date: 12/22/11



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: 2012 Toyota Tundra Crewmax 4-Door Truck NHTSA No. MC5111
 Test Program: NCAP Side Pole Impact Test Test Date: 12/22/11

TEST DUMMY INFORMATION AND CONTACT POINTS

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

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	Left Front Door Skin Separation

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

Test Vehicle: 2012 Toyota Tundra Crewmax 4-Door Truck NHTSA No. MC5111
 Test Program: NCAP Side Pole Impact Test Test Date: 12/22/11

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

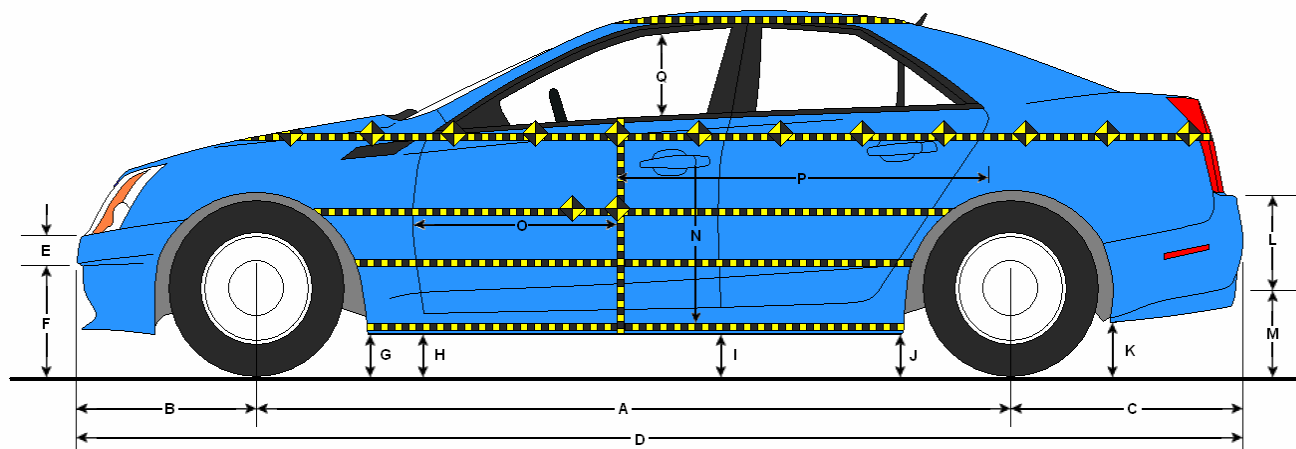
IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point)	mm		1196
Actual Impact Point (Aft of Front Axle)	mm		1210
Horizontal Offset (+ forward / - rearward)	mm	± 38 of Intended Impact Point	-14
Angle Between Vehicle's Longitudinal Centerline and Line of Forward Motion	°	75 ± 3	75.5
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	31.5
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	31.6

DATA SHEET NO. 9

TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2012 Toyota Tundra Crewmax 4-Door Truck NHTSA No. MC5111
 Test Program: NCAP Side Pole Impact Test Test Date: 12/22/11



LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

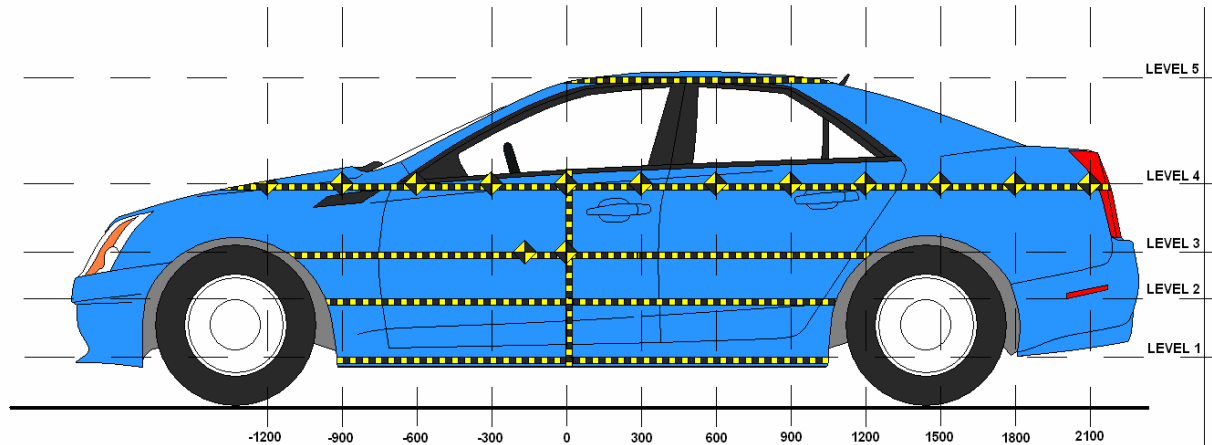
Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	3706	3664	-42
B	Front Axle to FSOV	903	961	58
C	Rear Axle to RSOV	1233	1199	-34
D	Total Length at Centerline	5816	5824	8
E	Front Bumper Thickness	279	280	1
F	Front Bumper Bottom to Ground	385	378	-7
G	Sill Height at Front Wheel Well	374	382	8
H	Sill Height at Front Door Leading Edge	381	386	5
I	Sill Height at B-Pillar	419	439	20
J1	Sill Height at Rear Wheel Well	397	419	22
J2	Pinch Weld Height at Rear Wheel Well	394	423	29
K	Sill Height Aft of Rear Wheel Well	430	469	39
L	Rear Bumper Thickness	226	232	6
M	Rear Bumper Bottom to Ground	499	482	-17
N	Sill Height to Bottom of Front Window Sill	801	814	13
O	Front Door Leading Edge to Impact CL	657	538	-119
P	Rear Door Trailing Edge to Impact CL	1684	1566	-118
Q	Front Window Opening	523	523	0
R	Right Side Length	4945	4936	-9
S	Left Side Length	5107	4877	-230
T	Vehicle Width at B-Pillar	2037	1979	-58

All measurements in mm with tolerance of ± 3 mm

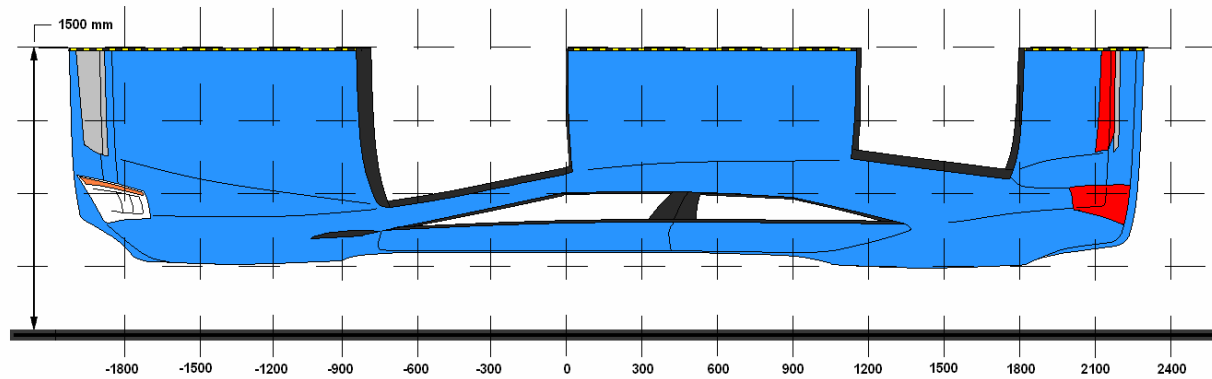
DATA SHEET NO. 10

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2012 Toyota Tundra Crewmax 4-Door Truck NHTSA No. MC5111
 Test Program: NCAP Side Pole Impact Test Test Date: 12/22/11



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	470	359	0
2	Occupant H-Point	865	444	0
3	Mid-Door	933	454	0
4	Window Sill	1252	409	0
5	Window Top	1816	268	150

DATA SHEET NO. 10 ... (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2012 Toyota Tundra Crewmax 4-Door Truck NHTSA No. MC5111

Test Program: NCAP Side Pole Impact Test Test Date: 12/22/11

EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

	Pre-Test (mm)					Post-Test (mm)					Difference (mm)				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900		489	486	607			550	551	670			61	65	63	
-750		486	489	591			563	568	666			77	79	75	
-600	523	491	494	578		610	592	602	657		87	101	108	79	
-450	549	500	496	570		662	646	656	707		113	146	160	137	
-300	552	500	494	563		737	737	743	782		185	237	249	219	
-150	551	499	492	558		815	848	850	871		264	349	358	313	
0	550	498	491	553	783	909	942	945	962	1029	359	444	454	409	246
150	549	497	490	549	779	875	905	913	930	1047	326	408	423	381	268
300	549	496	489	545	777	755	780	783	806	972	206	284	294	261	195
450	549	496	488	542	778	656	656	654	687	918	107	160	166	145	140
600	549	495	487	539	778	650	602	596	651	888	101	107	109	112	110
750	550	495	488	537	778	636	588	582	636	876	86	93	94	99	98
900	552	496	488	535	778	622	574	568	620	869	70	78	80	85	91
1050	553	497	489	534	778	607	560	554	605	863	54	63	65	71	85
1200	554	498	490	533	778	594	547	540	591	856	40	49	50	58	78
1350	557	500	491	534	778	582	533	527	577	849	25	33	36	43	71
1500	560	501	493	534	778	570	520	513	562	843	10	19	20	28	65
1650	564	503	494	535	786	567	507	500	549	844	3	4	6	14	58
1800	564	512	505	545		539	500	495	545		-25	-12	-10	0	
1950	534	493	493	545		510	482	486	548		-24	-11	-7	3	
2100		489	487	543			480	481	549			-9	-6	6	
2250															
2400															
2550															
2700															
2850															

DATA SHEET NO. 10 ... (CONTINUED)

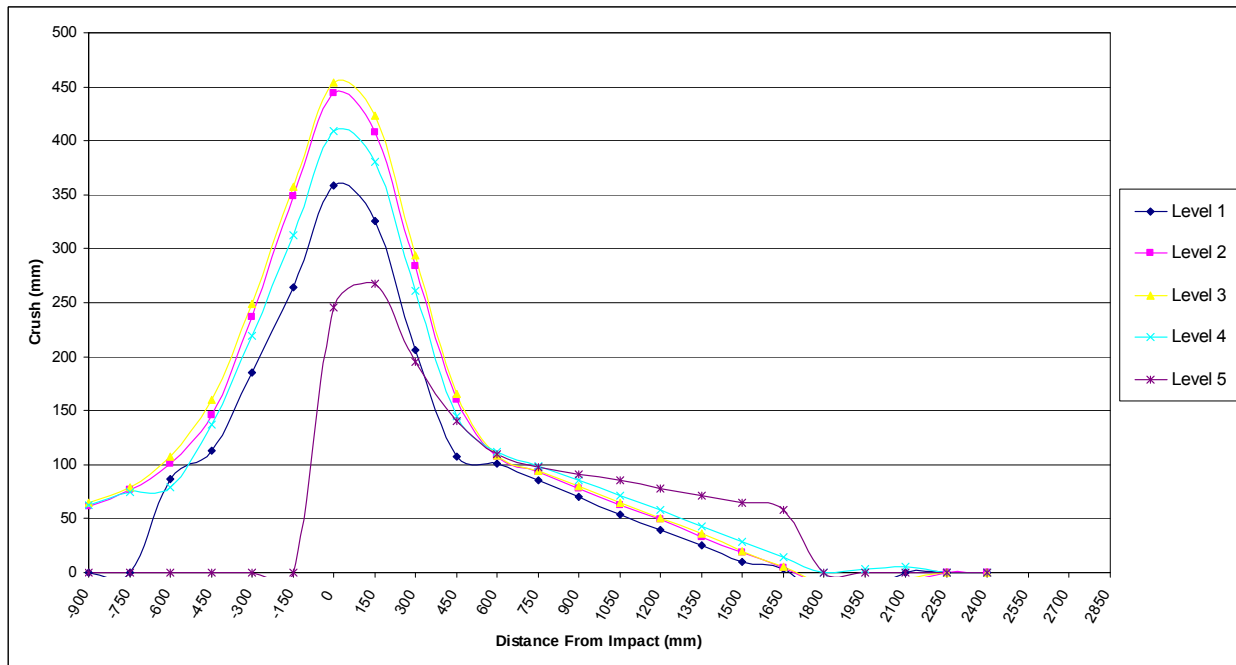
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2012 Toyota Tundra Crewmax 4-Door Truck

NHTSA No. MC5111

Test Program: NCAP Side Pole Impact Test

Test Date: 12/22/11



DATA SHEET NO. 11

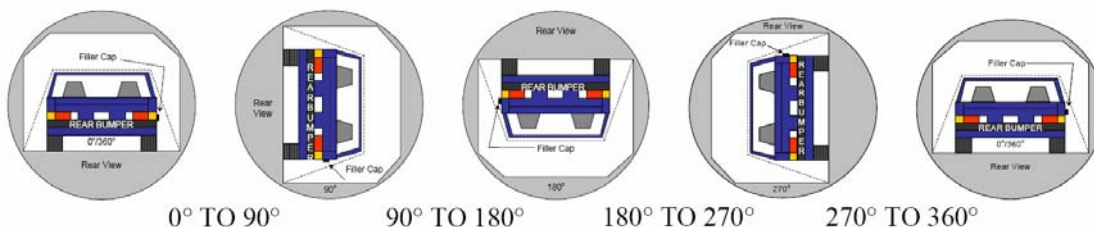
FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2012 Toyota Tundra Crewmax 4-Door Truck NHTSA No. MC5111

Test Program: NCAP Side Pole Impact Test Test Date: 12/22/11

Temperature at Time of Impact: 8.3° C Test Time: 11:45 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: 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°	82	300	382
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

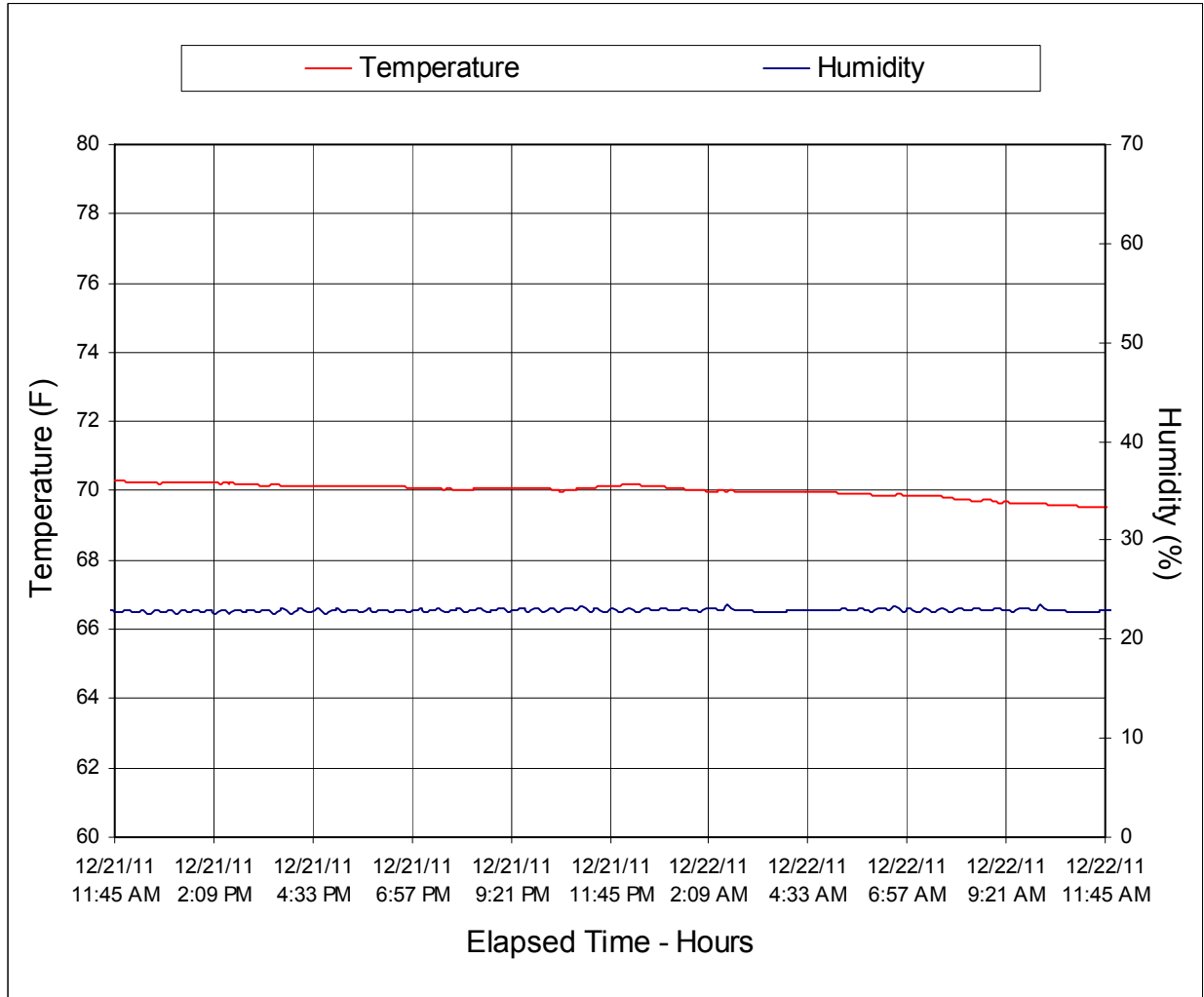
DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION

Test Vehicle: 2012 Toyota Tundra Crewmax 4-Door Truck

NHTSA No. MC5111

Test Program: NCAP Side Pole Impact Test

Test Date: 12/22/11



APPENDIX A
PHOTOGRAPHS

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FIGURE 1. As-Delivered Right Front Three-Quarter View of Test Vehicle



FIGURE 2. As-Delivered Left Rear Three-Quarter View of Test Vehicle



FIGURE 3. Pre-Test Frontal View of Test Vehicle

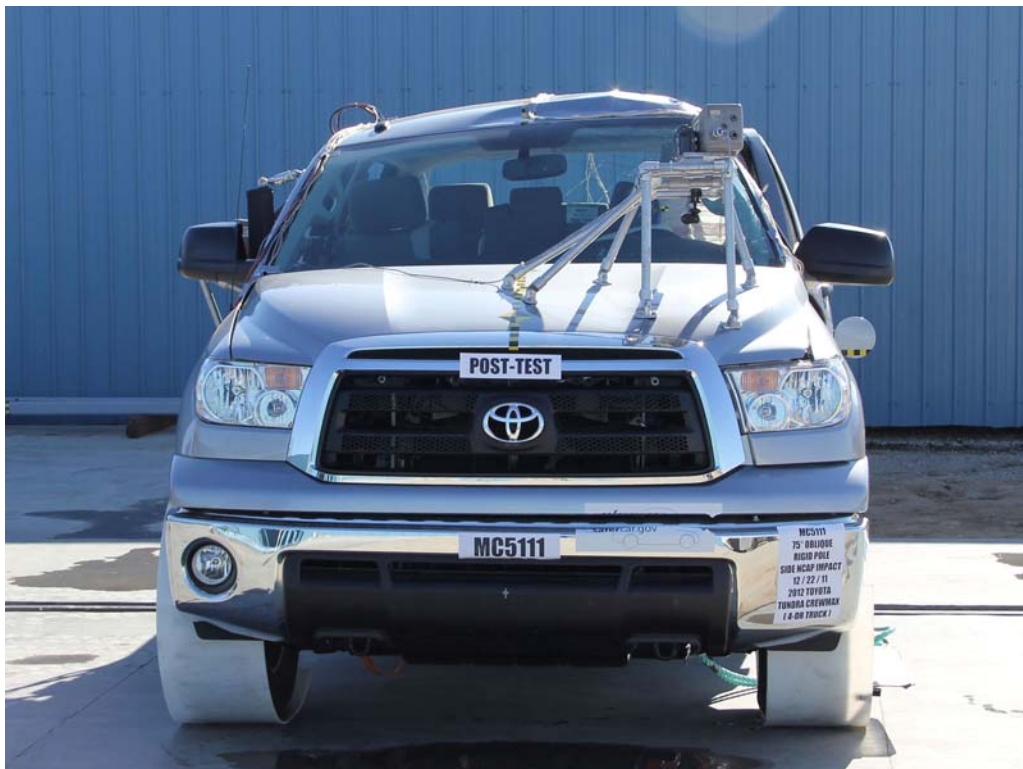


FIGURE 4. Post-Test Frontal View of Test Vehicle



FIGURE 5. Pre-Test Left Front Three-Quarter View of Test Vehicle

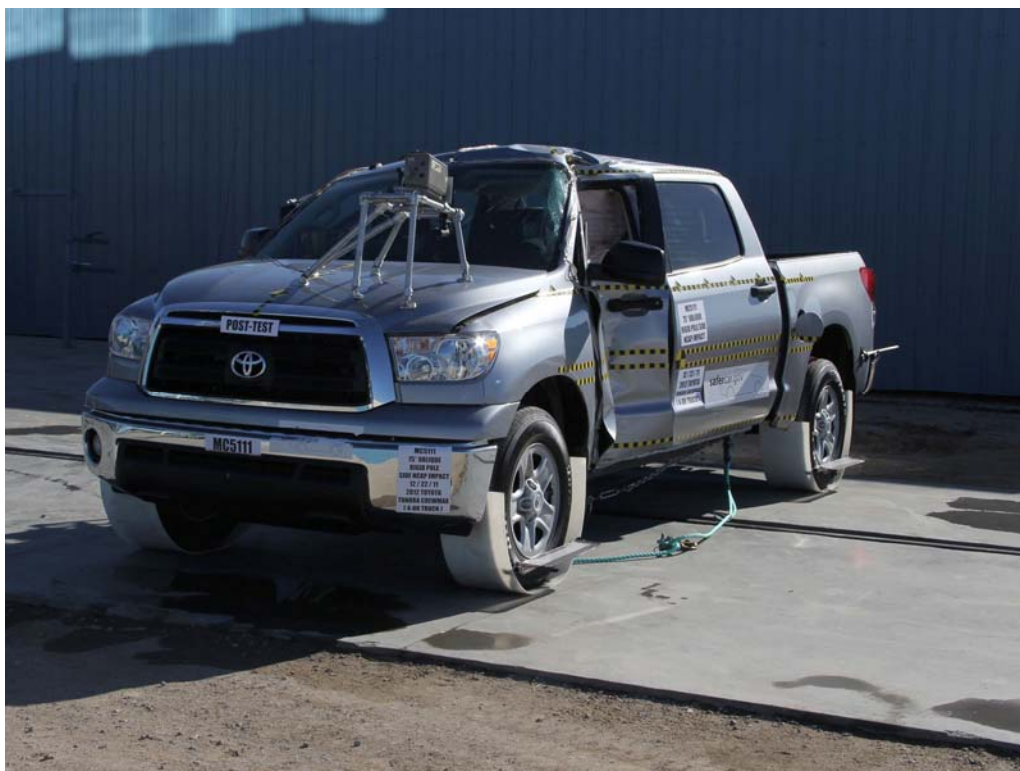


FIGURE 6. Post-Test Left Front Three-Quarter View of Test Vehicle



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 Three-Quarter View of Test Vehicle



FIGURE 10. Post-Test Left Rear Three-Quarter 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

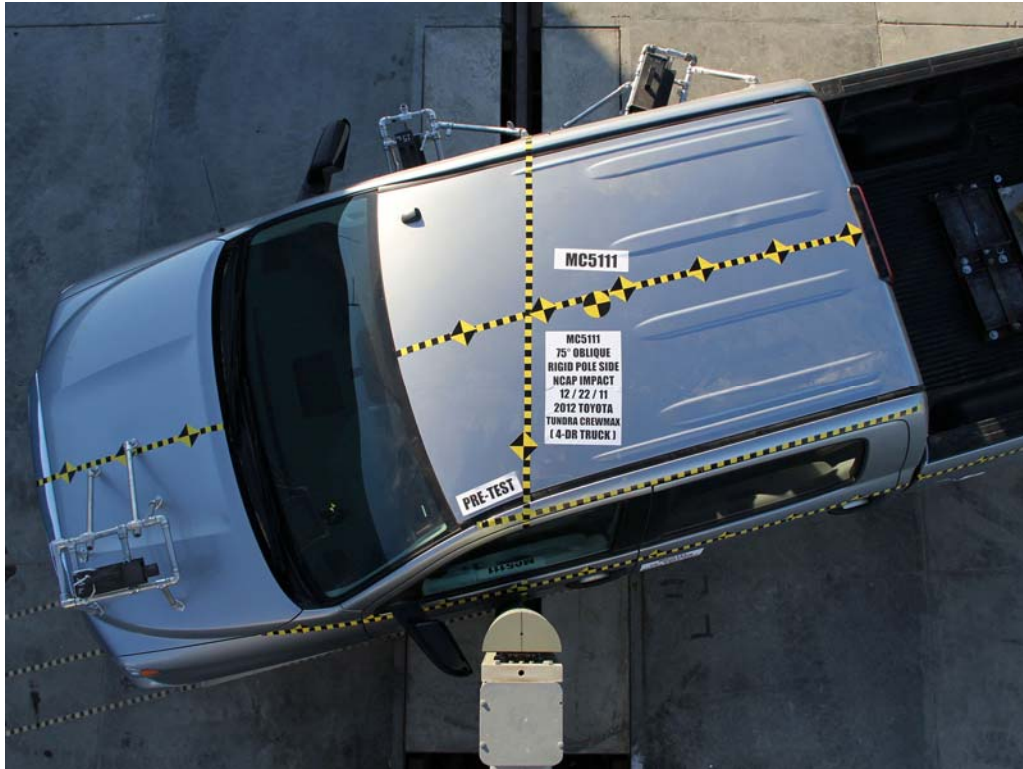


FIGURE 15. Pre-Test Overhead View of Test Vehicle and Pole



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

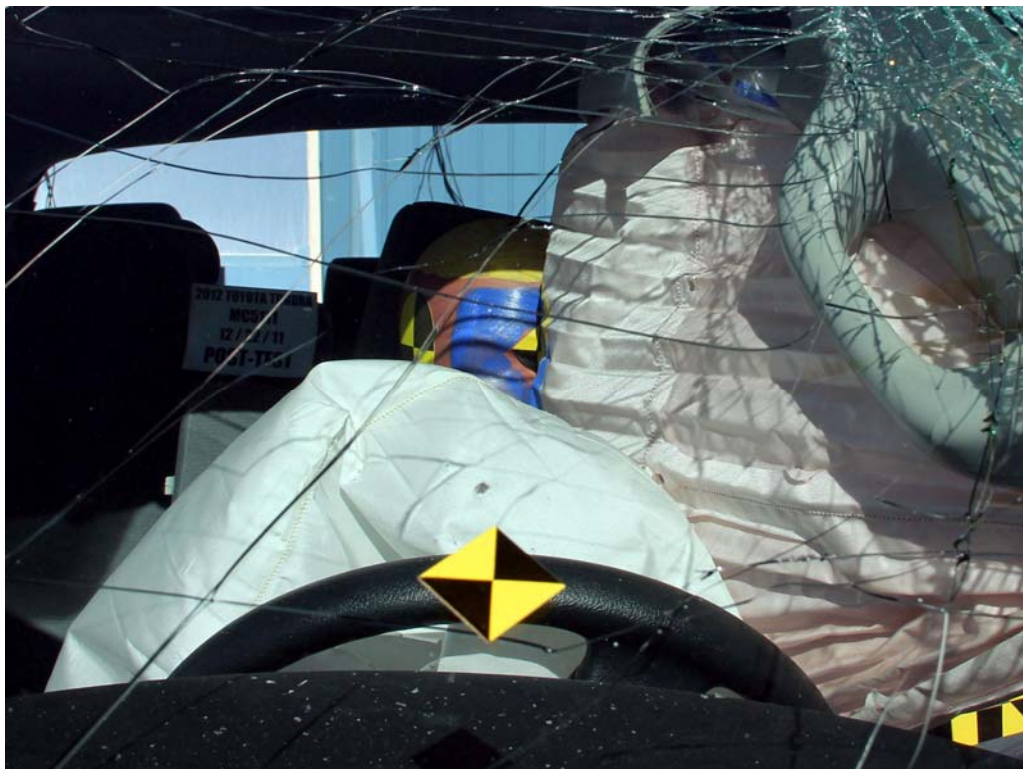


FIGURE 22. Post-Test Front Close-Up View of Dummy



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 47a. Post-Test Dummy Close-Up Head Contact with Frontal 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 Driver Dummy Contact
with Side Airbag

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 56. Pre-Test Pole Barrier Front View



FIGURE 57. Post-Test Pole Barrier Front View



FIGURE 58. Pre-Test Pole Barrier Side View



FIGURE 59. Post-Test Pole Barrier Side View

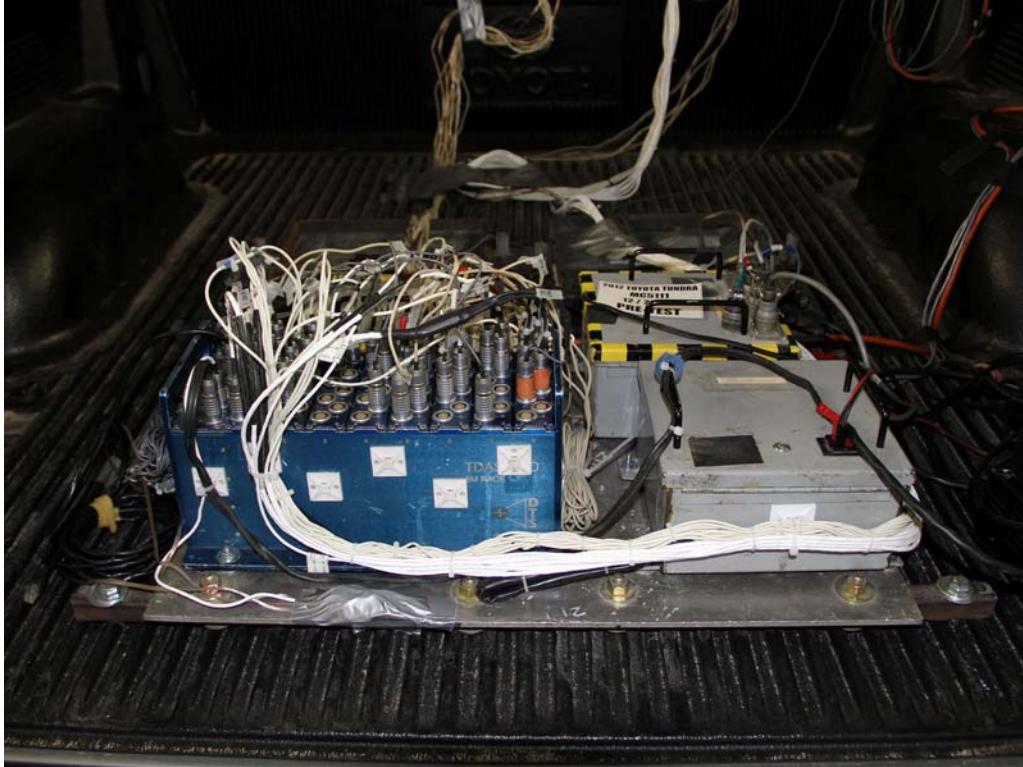


FIGURE 60. Pre-Test Ballast View



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 64. FMVSS No. 301-305 Rollover 180 Degrees

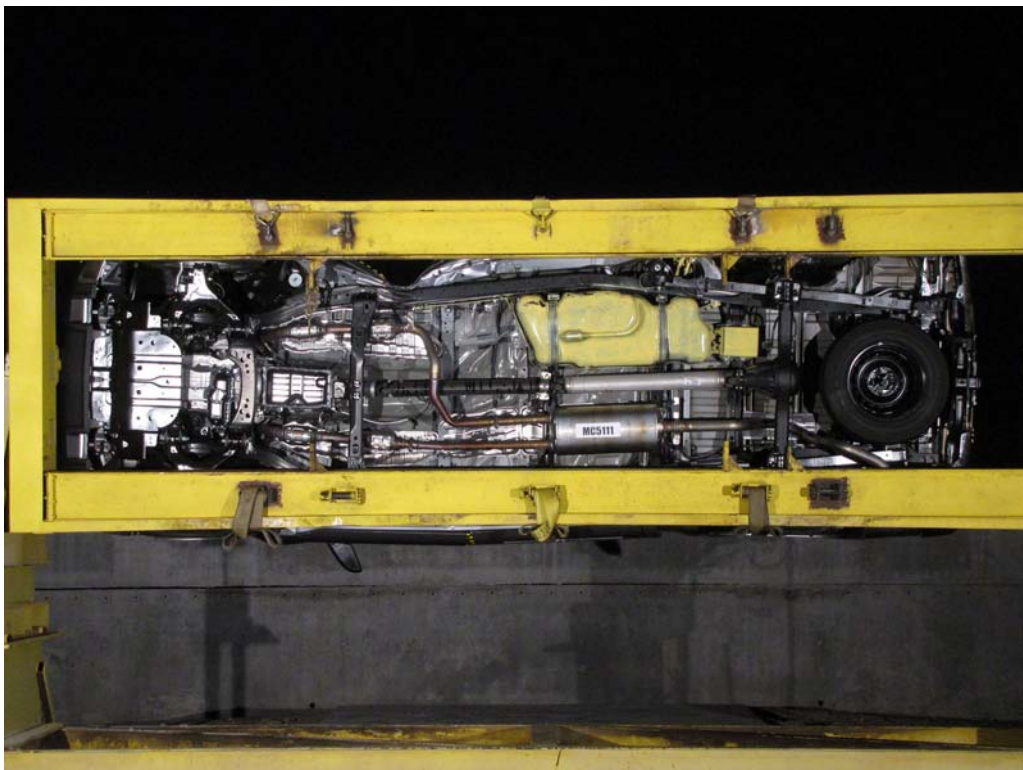


FIGURE 65. FMVSS No. 301-305 Rollover 270 Degrees

TOYOTA
moving forward

DESC: **TUNDRA 4X2** CREWMAX 4.6L V8
VIN: **STEM5F17CX036383**
YR/MO: 2012/02
CUR: SILVER SKY METALLIC/PL13 (S106/13)
PORT/PLANT: San Antonio, TX/TMXTX BRL/HEAD

GOVERNMENT SAFETY RATINGS

Frontal	Driver	Not Rated
Crash	Passenger	Not Rated

Star ratings based on the risk of injury in a frontal impact.
Frontal ratings should ONLY be compared to other vehicles of similar size and weight.

Side	Front seat	Not Rated
Crash	Rear seat	Not Rated

Star ratings based on the risk of injury in a side impact.

Rollover ★★
Star ratings based on the risk of rollover in a single vehicle crash.

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

www.safercar.gov or 1-888-327-4236

EPA Fuel Economy Estimates

CITY MPG
15
Expected range for most drivers
12 to 18 MPG

Estimated Annual Fuel Cost
\$3,263
based on 15,000 miles at \$3.70 per gallon

Combined Fuel Economy
This Vehicle
17

HIGHWAY MPG
20
Expected range for most drivers
16 to 24 MPG

Your actual mileage will vary depending on how you drive and maintain your vehicle.

STANDARD EQUIPMENT

- 4.6L I-4000 32V with Dual Independent VVT-i 202 hp, 227 lb-ft
- 5-Speed Automatic Transmission
- Triforce Frame, Fully-Boxed V-Box
- Reinforced C-Under Cab, Type C Under Bed
- 5.50R Rear Differential w/2.7-Ring Gear
- Automatic Limited-Slip Differential
- Hot Coil-Spring High-Rise Double
- Automatic Front Coil w/ Stabilizer Bar
- Trapezoidal Multi-Link Rear Suspension
- 4-Wheel Disc Brakes
- Power-Assisted 4-Wheel Disc Brakes
- 12" x 16" 50-Wheel w/ P255/70R16 Tires

SAFETY & CONVENIENCE

- Star Safety System, Vehicle Stability Control (VSC), Traction Control (TRAC), Anti-Lock Brake System (ABS) with Electronic Brake Force Distribution (EBD), Brake Assist (BA), 4 Smart Brakes Technology (SBS)
- Trailer-Sway Control
- Dr & Fr Pass Advanced Airbag System
- Dr & Fr Pass Seat Side & Knee Airbags
- Side-Impact Curtain Airbags (SICAs)
- 3-Point Seatbelts for All Passengers with Driver LSA & ALSELS for All Passengers

EXTERIOR

- 1.5" Double-Walled Bed w/ Rail Caps
- 1.5" Double-Walled Bed w/ Rail Caps
- 1.5" Double-Walled Bed w/ Rail Caps
- 1.5" Double-Walled Bed w/ Rail Caps
- 1.5" Double-Walled Bed w/ Rail Caps

INTERIOR

- RECLINABLE Split-Fold-Down 3-Way Driver & 4-Way Passenger Adj. Front Bench Seat
- 60/40 Split, Sliding, Reclining
- Fold-Flat Rear Seats
- Dual-Zone Air Conditioning
- AM/FM CD w/ MP3/MP4 Playback Capability
- 6 Speakers, Surround Sound, Auto Lock
- Power Windows, Lock, Unlocked Mirrors
- Remote Keyless Entry System
- Cruise Control, Engine Immobilizer
- Full Tank of Gas

MANUFACTURER'S SUGGESTED RETAIL PRICE \$30,085.00

OPTIONAL EQUIPMENT

- FE 50 State Emissions
- EV 50 State Emissions
- MP3/MP4 Playback Capability, 6x Speakers, Surround Sound, Auto Lock, USB
- Includes 90-Day Trial Subscription to XM
- Bluetooth® Hands-Free Phone Capability and Music Streaming via Bluetooth® Wireless Technology
- CP Convenience Package
- Includes Fog Lamps and Auto Dimming Rearview Mirror with Compass, and Homelink Universal Transceiver
- TO Tow Package
- Includes Towing Hitch Receiver, Trailer Brake Controller, Pre-wired, 4,100 Rear Axle Ratio, TOW/Haul, Mode Select, Transmission Fluid Temperature Gauge, Supplemental Transmission Cooler, Heavy-Duty Battery, 170-Amp Alternator, and 1-Pin Connector
- ZO All Weather Mats
- LU Bedliner w/bed Deck Rail System

DELIVERY PROCESSING AND HANDLING FEE 985.00

TOYOTA \$33,080.00

Dealer Name / Address: QUALITY TOYOTA, 1700 WEST 4TH STREET, CONROIA, CA 95008

FIGURE 68. Monroney Label

1-3. Adjustable components (seats, mirrors, steering wheel)

Adjusting the height of the head restraints

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 front center seat (bench type seat) and rear center seat head restraints (Double Cab and CrewMax models)

Always raise the head restraint one level from the lowermost position when using.

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.

1-3. Adjustable components (seats, mirrors, steering wheel)

CrewMax models

Pull the head restraint up while pushing the lock release button.

Installing the front 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.

Installing the rear head restraints

Double Cab models

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.

CrewMax models

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.

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)

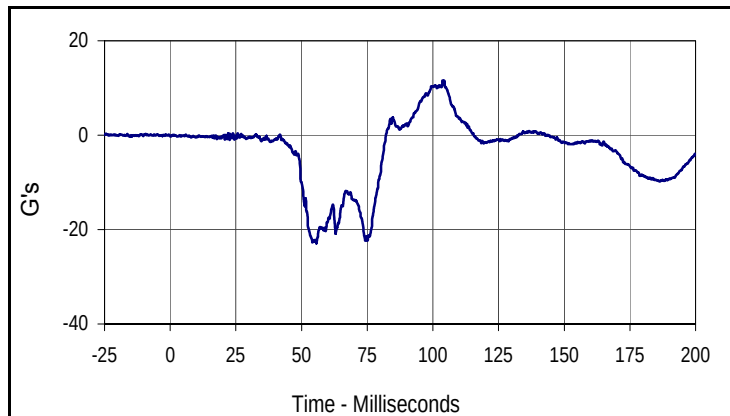
Left B-Pillar Sill Acceleration
Left Lower B-Pillar Acceleration (Y)
Left Mid B-Pillar Acceleration (Y)
Driver Seat Track at Dummy Hip Point Acceleration (Y)
Engine Top Acceleration (X)
Engine Top Acceleration (Y)
Firewall Center Acceleration (Y)
Right Roof at Vertical Impact Reference Line Acceleration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

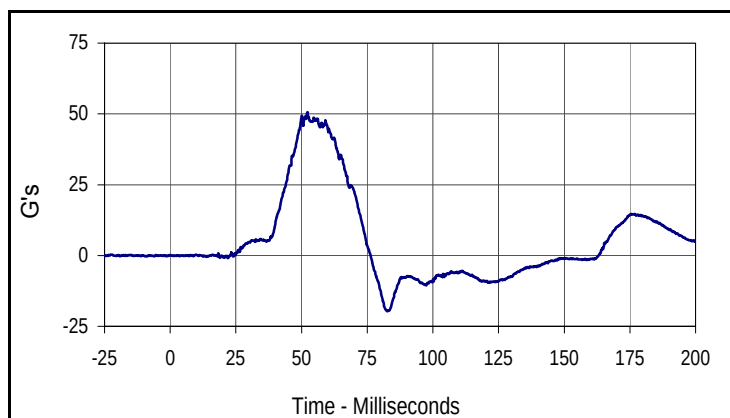
Load Cell Pole Barrier #1 Force (Y)
Load Cell Pole Barrier #2 Force (Y)
Load Cell Pole Barrier #3 Force (Y)
Load Cell Pole Barrier #4 Force (Y)
Load Cell Pole Barrier #5 Force (Y)
Load Cell Pole Barrier #6 Force (Y)
Load Cell Pole Barrier #7 Force (Y)
Load Cell Pole Barrier #8 Force (Y)

Test Vehicle: 2012 Toyota Tundra Crewmax 4-Door Truck
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test

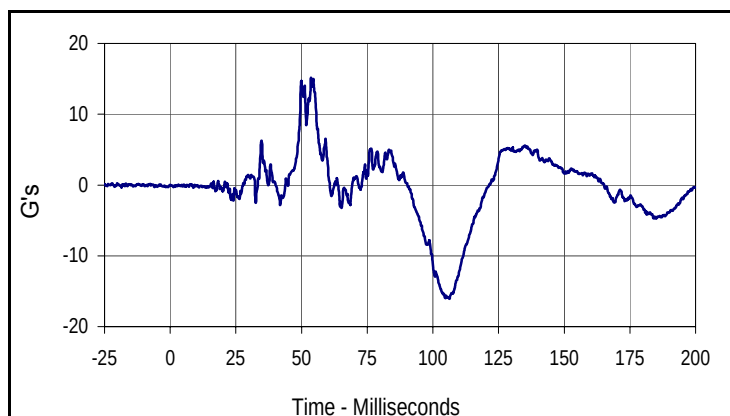
Test Date: 12/22/11
 NHTSA No.: MC5111



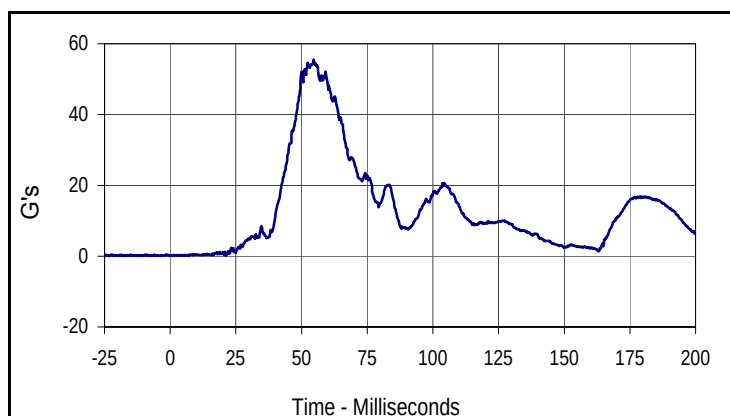
Curve Description			
Driver Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
11.6	103.7	-22.9	55.7



Curve Description			
Driver Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
50.6	52.2	-19.7	82.7



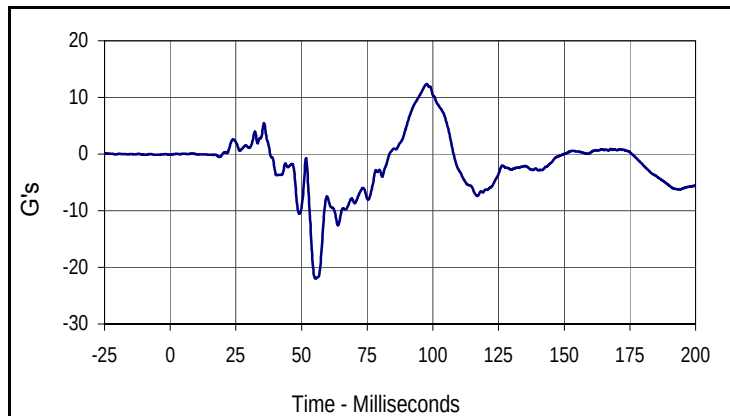
Curve Description			
Driver Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
15.2	53.6	-16.1	106.3



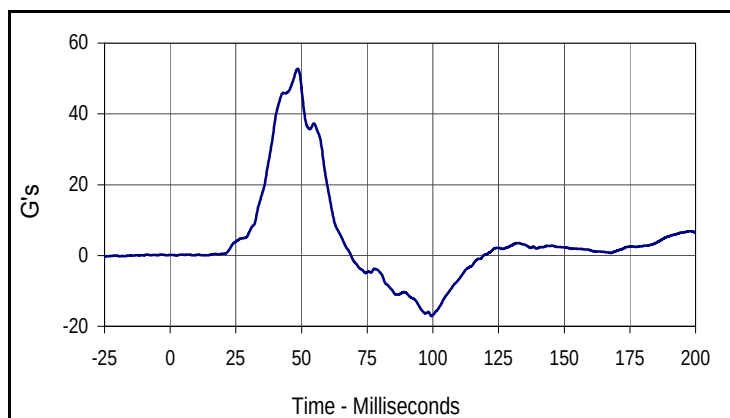
Curve Description			
Driver Head Acceleration Primary Res.			
Plot No.	Type	SAE Class	Units
004	RES	1000	G's
Max	Time	Min	Time
55.5	54.7	0.1	0.8

Test Vehicle: 2012 Toyota Tundra Crewmax 4-Door Truck
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test

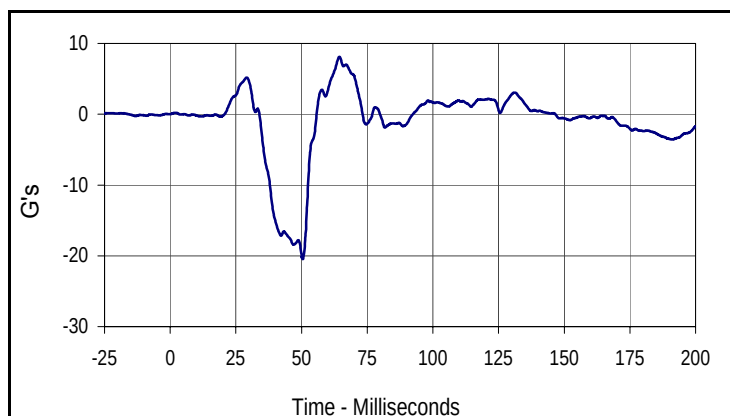
Test Date: 12/22/11
 NHTSA No.: MC5111



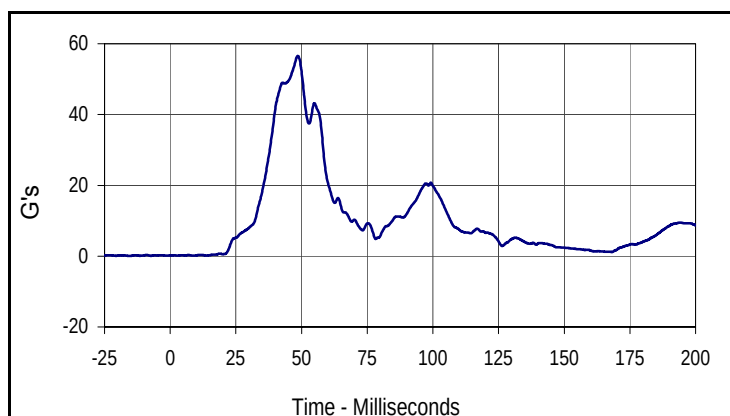
Curve Description			
Driver Lower Spine T12 Acceleration X			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
12.4	97.6	-22.0	55.3



Curve Description			
Driver Lower Spine T12 Acceleration Y			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
52.8	48.5	-17.1	99.4



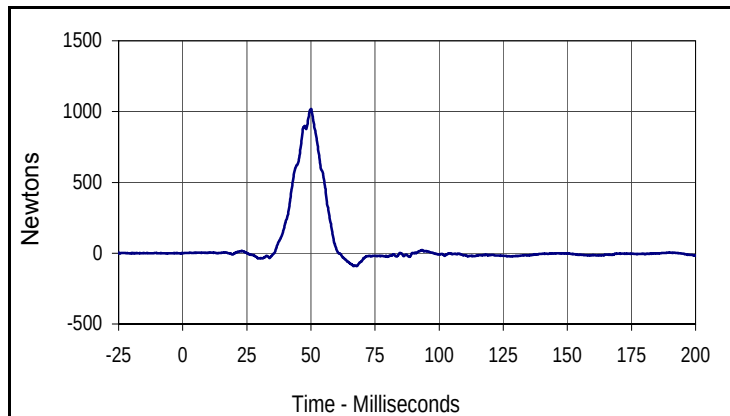
Curve Description			
Driver Lower Spine T12 Acceleration Z			
Plot No.	Type	SAE Class	Units
007	FIL	180	G's
Max	Time	Min	Time
8.1	64.4	-20.5	50.4



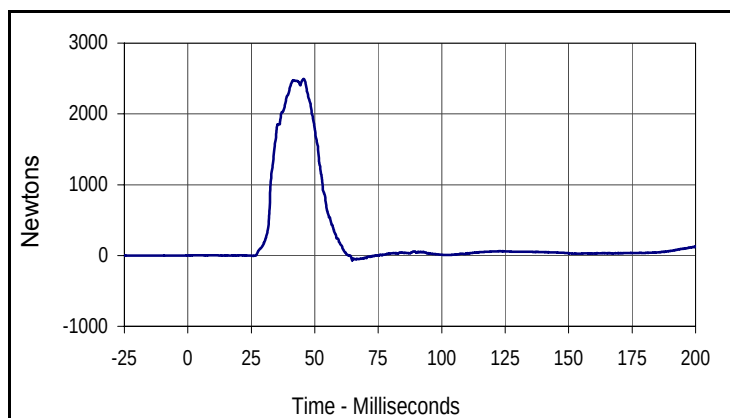
Curve Description			
Driver Lower Spine T12 Acceleration Res.			
Plot No.	Type	SAE Class	Units
008	RES	180	G's
Max	Time	Min	Time
56.5	48.6	0.1	9.0

Test Vehicle: 2012 Toyota Tundra Crewmax 4-Door Truck
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test

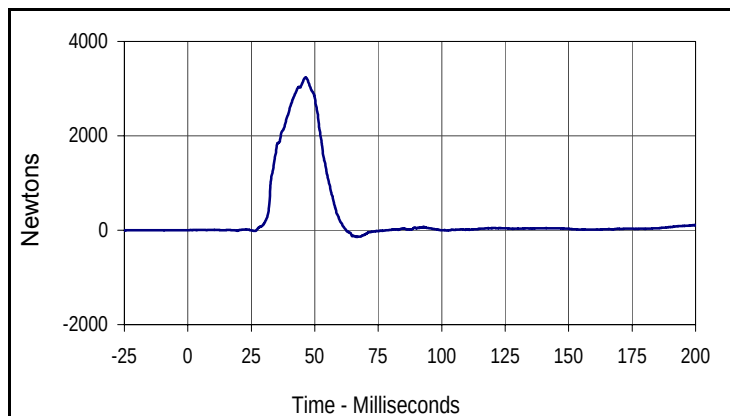
Test Date: 12/22/11
 NHTSA No.: MC5111



Curve Description			
Driver Iliac Wing Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
009	FIL	600	Newtons
Max	Time	Min	Time
1018.8	50.1	-91.2	67.8



Curve Description			
Driver Acetabulum Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
010	FIL	600	Newtons
Max	Time	Min	Time
2495.0	45.6	-67.9	64.7



Curve Description			
Driver Total Pelvic Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
011	SUM	600	Newtons
Max	Time	Min	Time
3237.6	46.3	-139.3	66.3

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: 12/17/11
 Test I.D.: N/A



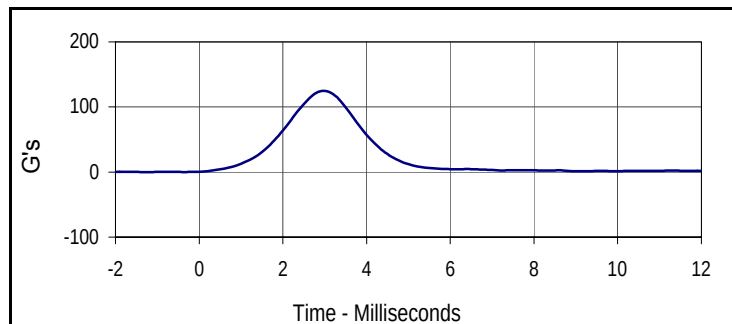
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	37	Pass
A	Sitting Height	mm	772 - 788	778	Pass
B	Shoulder Pivot Height	mm	437 - 453	443	Pass
C	H-Point Height	mm	79 - 89	83	Pass
D	H-Point from Seatback	mm	141 - 151	147	Pass
E	Shoulder Pivot from Backline	mm	97 - 107	101	Pass
F	Thigh Clearance	mm	119 - 135	125	Pass
G	Head Breadth	mm	140 - 148	146	Pass
H	Head Back from Backline	mm	40 - 46	44	Pass
I	Head Depth	mm	178 - 188	185	Pass
J	Head Circumference	mm	541 - 551	547	Pass
K	Buttock to Knee Length	mm	514 - 540	527	Pass
L	Popliteal Height	mm	343 - 369	353	Pass
M	Knee Pivot to Floor Height	mm	392 - 409	401	Pass
N	Buttock Popliteal Length	mm	416 - 442	429	Pass
O	Chest Depth w/o Jacket	mm	195 - 211	200	Pass
P	Foot Length	mm	216 - 232	220	Pass
Q	Hip Breadth with Pelvic Plug	mm	313 - 323	317	Pass
R	Arm Length	mm	249 - 259	256	Pass
S	Knee Joint to Seatback	mm	477 - 493	485	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	877	Pass
Z	Waist Circumference	mm	760 - 791	772	Pass
Overall Test Results					Pass

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

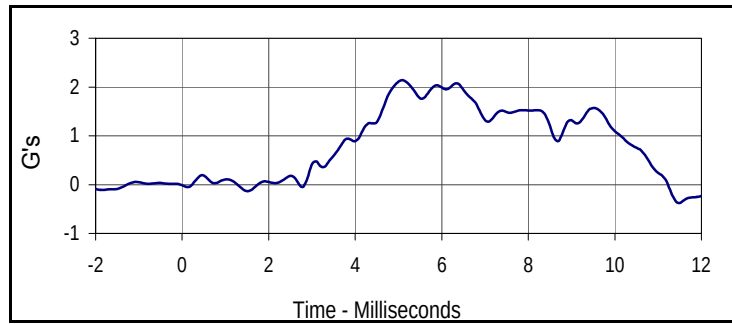
Test Date: 12/17/11
 Test I.D.: 299HD027



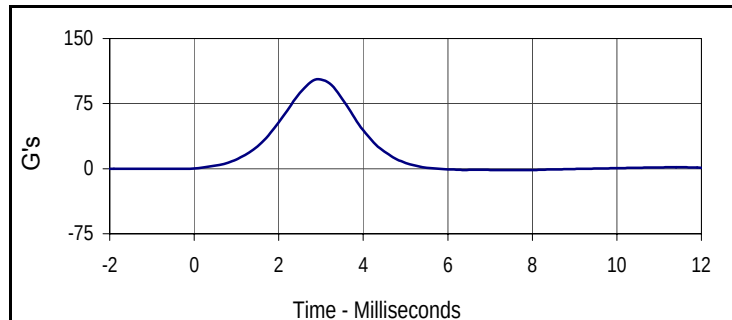
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	265	Pass
Temperature During Soak	Max	18.9 to 25.6	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	37.4	Pass
Peak Head Resultant Acceleration	G's	115 to 137	124.6	Pass
Peak Head X Acceleration	G's	<15	2.1	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	9.7	Pass
Overall Test Results				Pass



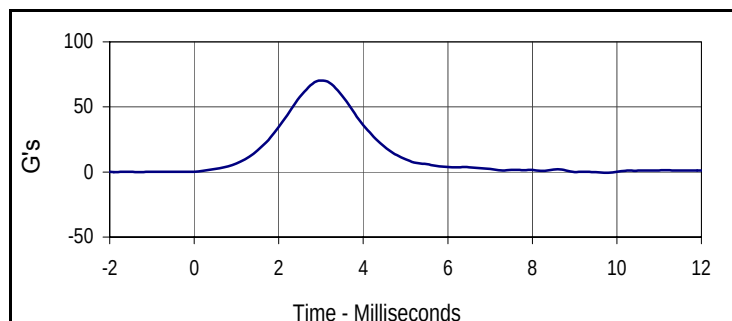
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
124.6	3.0	0.0	-1.3



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
2.1	5.1	-0.1	1.5



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
103.0	2.9	-1.7	7.5



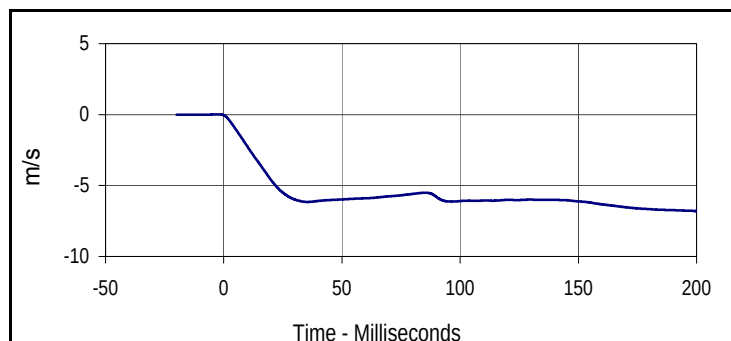
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
70.3	3.0	-0.6	9.8

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

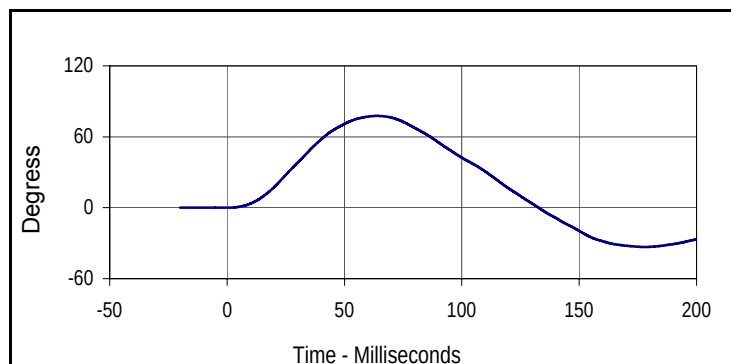
Test Date: 12/17/11
 Test I.D.: 299NB027



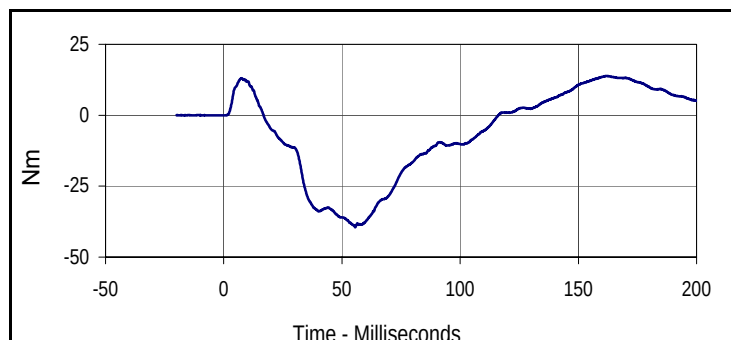
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	525	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	30.0	Pass
	Min		29.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	35.8	Pass
Pendulum Velocity	m/s	5.51 to 5.63	5.55	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	77.7	Pass
	Time	50 to 70	63.7	Pass
Peak Occipital Condyle Moment	Nm	-36 to -44	-39.5	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	-6.8	200.0



Curve Description			
Maximum Translation Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
77.7	63.7	-33.2	177.7



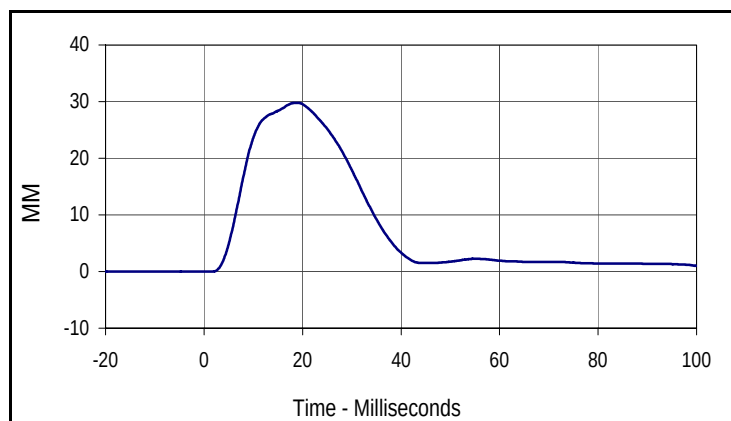
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
13.8	162.3	-39.5	55.6

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

Test Date: 12/17/11
 Test I.D.: 299SH027



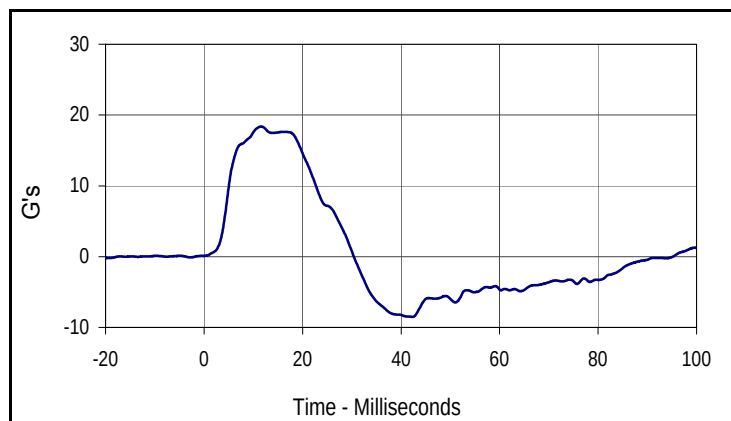
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	295	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	40.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	37.4	Pass
Impactor Velocity		m/s	4.20 to 4.40	4.28	Pass
Peak Shoulder Deflection		mm	28 to 37	29.8	Pass
Peak Lateral Spine Acceleration Y		G's	17 to 22	18.4	Pass
Peak Impactor Acceleration		G's	13 to 18	16.1	Pass
Overall Test Results				Pass	



Curve Description

Shoulder Deflection

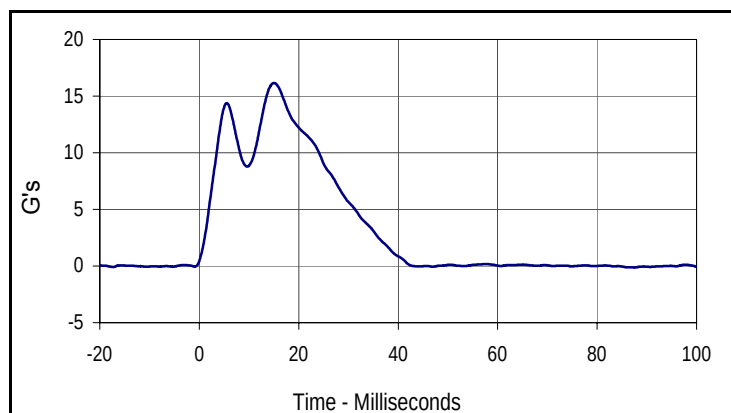
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
29.8	18.6	0.0	-11.5



Curve Description

Upper Spine Y Acceleration

Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
18.4	11.6	-8.5	42.3



Curve Description

Impactor Acceleration

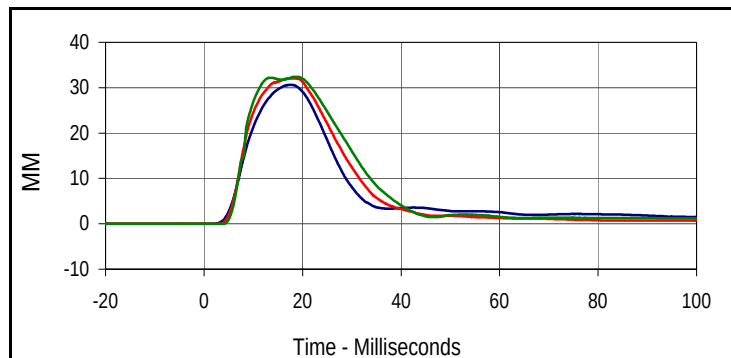
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
16.1	15.1	-0.1	87.5

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

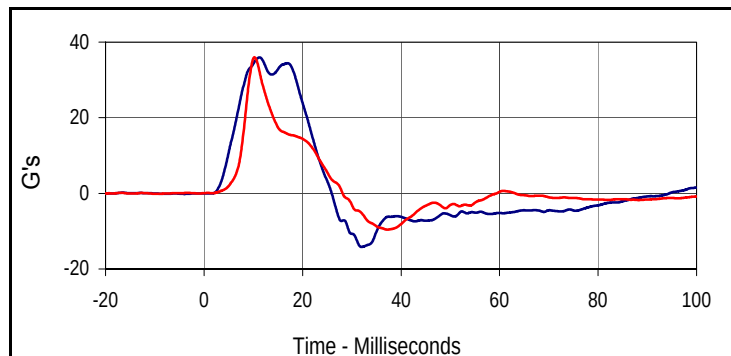
Test Date: 12/17/11
 Test I.D.: 299TWA027



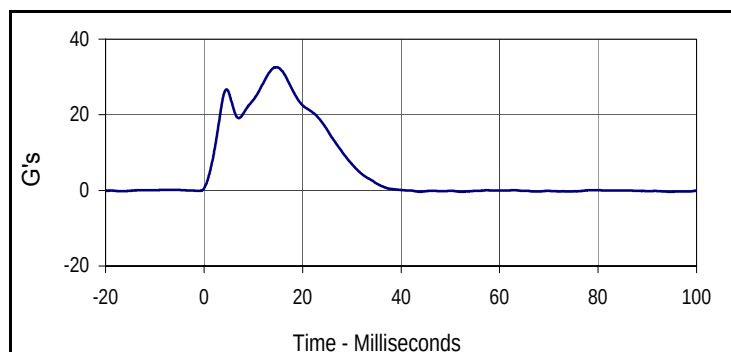
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	330	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	37.5	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.7	Pass
Peak Shoulder Deflection	mm	31 to 40	38.5	Pass
Peak Upper Thorax Rib Deflection	mm	25 to 32	30.6	Pass
Peak Middle Thorax Rib Deflection	mm	30 to 36	32.0	Pass
Peak Lower Thorax Rib Deflection	mm	32 to 38	32.4	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	36.0	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	36.0	Pass
Peak Impactor Acceleration	G's	30 to 36	32.6	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
30.6	17.6	0.0	-2.7
Middle Thorax Deflection			
Max	Time	Min	Time
32.0	17.5	0.0	-16.8
Lower Thorax Deflection			
Max	Time	Min	Time
32.4	18.8	0.0	-17.5



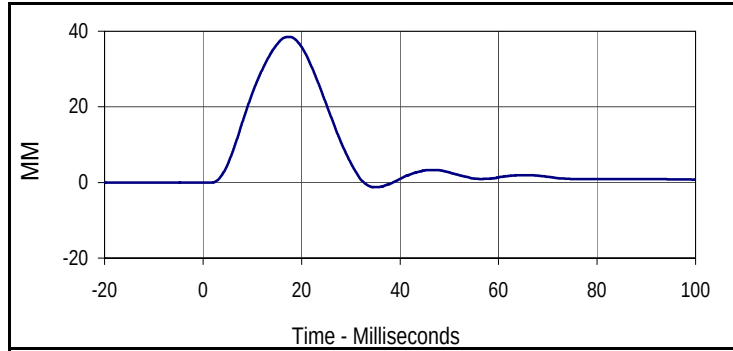
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
36.0	11.2	-14.2	32.0
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
36.0	10.2	-9.6	37.2



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
32.6	14.7	-0.4	94.9

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

Test Date: 12/17/11
 Test I.D.: 299TWA027



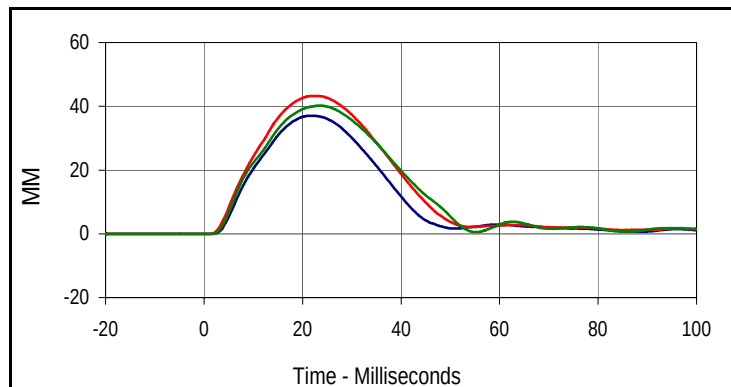
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	MM
Max	Time	Min	Time
38.5	17.7	-1.2	34.7

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

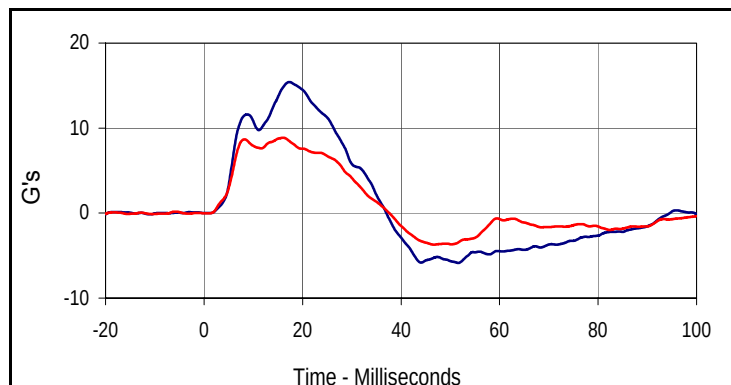
Test Date: 12/17/11
 Test I.D.: 299TWOA027



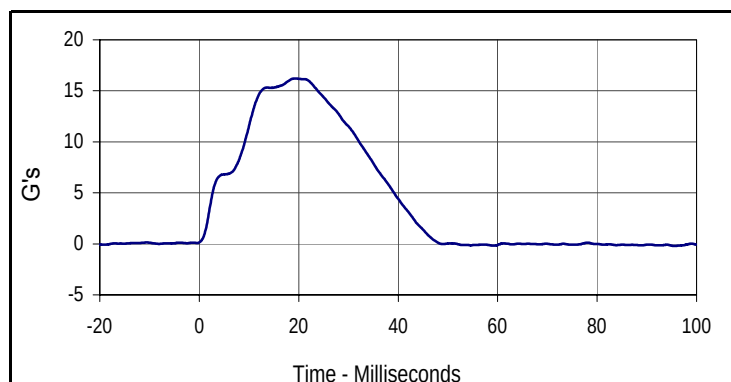
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	355	Pass
Temperature During Soak	Max °C	18.9 to 25.6	21.7	Pass
	Min °C		20.7	Pass
Humidity During Soak	Max %	10.0 to 70.0	40.0	Pass
	Min %		28.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	37.3	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.3	Pass
Peak Upper Thorax Rib Deflection	mm	32 to 40	37.0	Pass
Peak Middle Thorax Rib Deflection	mm	39 to 45	43.3	Pass
Peak Lower Thorax Rib Deflection	mm	35 to 43	40.2	Pass
Peak Upper Spine Y Acceleration	G's	13 to 17	15.4	Pass
Peak Lower Spine Y Acceleration	G's	7 to 11	8.9	Pass
Peak Impactor Acceleration	G's	14 to 18	16.2	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
37.0	22.1	0.0	0.5
Middle Thorax Deflection			
Max	Time	Min	Time
43.3	22.6	0.0	-18.3
Lower Thorax Deflection			
Max	Time	Min	Time
40.2	23.6	0.0	-8.2



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.4	17.3	-5.9	51.6
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
8.9	16.1	-3.7	46.7



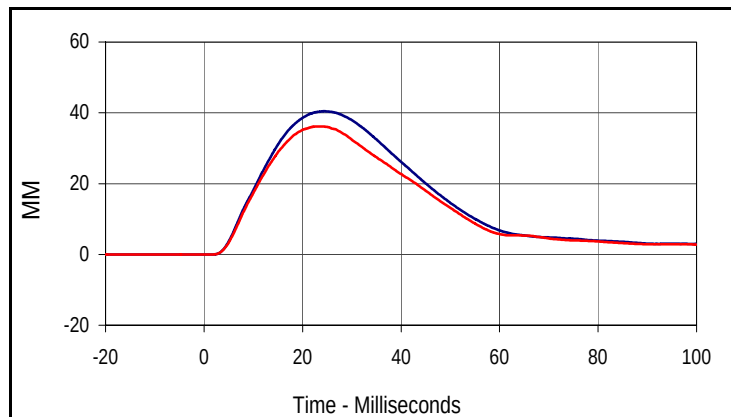
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
16.2	19.2	-0.2	95.6

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

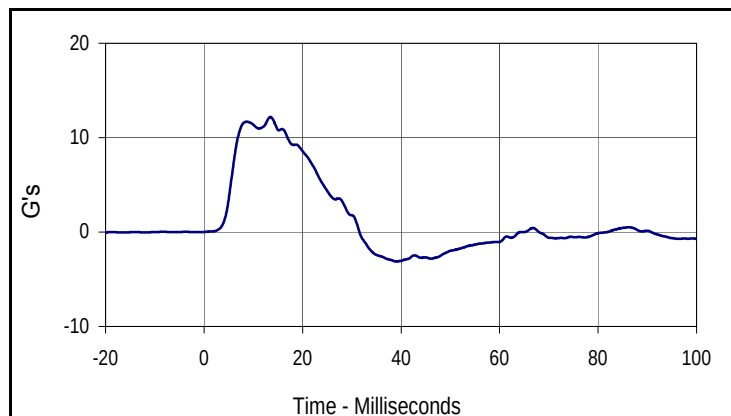
Test Date: 12/17/11
 Test I.D.: 299ABD027



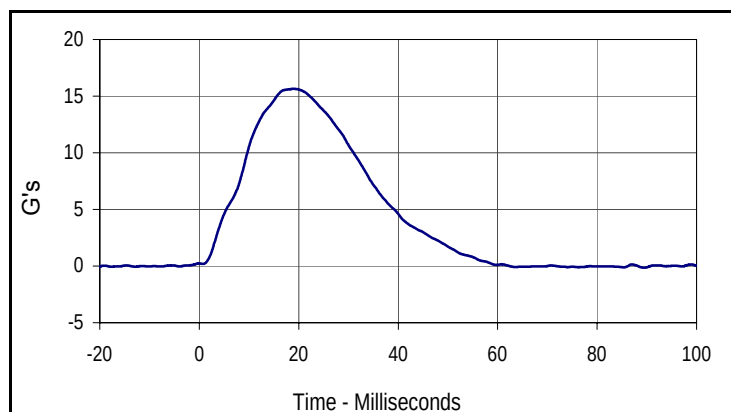
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	390	Pass
Temperature During Soak	Max °C	20.6 to 22.2	21.7	Pass
	Min °C		20.7	Pass
Humidity During Soak	Max %	10.0 to 70.0	40.0	Pass
	Min %		28.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	36.6	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.3	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	40.4	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	36.1	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	12.2	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
40.4	24.4	0.0	-2.9



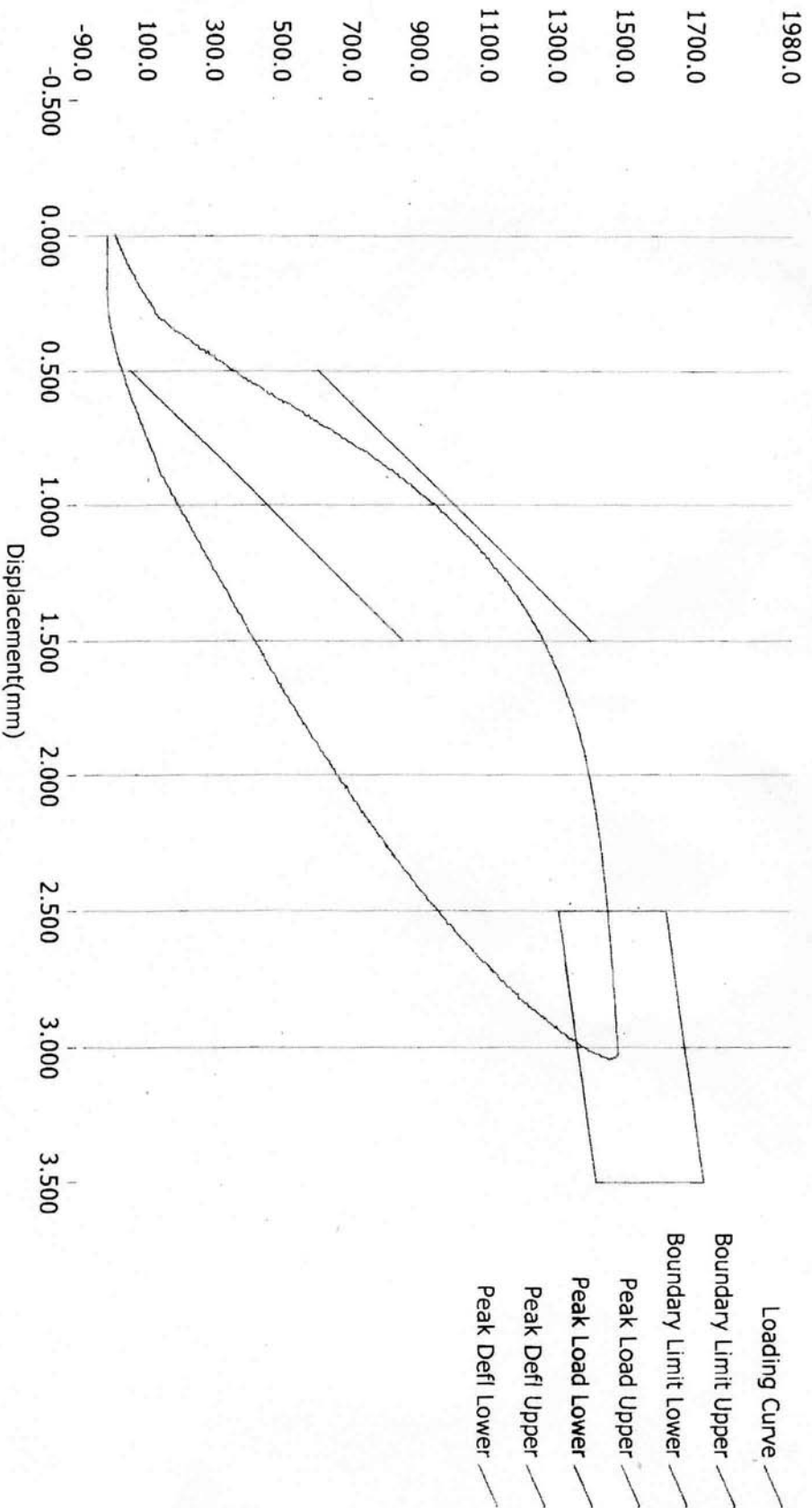
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
36.1	23.1	0.0	0.1



Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
12.2	13.5	-3.1	39.0

Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.6	19.0	-0.1	89.4

Resultant Data - SIDIIs Plug Compression



ATD Calibration Lab

Test ID

Part Serial Number

Test Date

Test Time

Cert ID

ATD Serial Number

ATD Type

9/24/2010

1:40 AM

36489

SIDIIs

Current Date : 9/24/2010

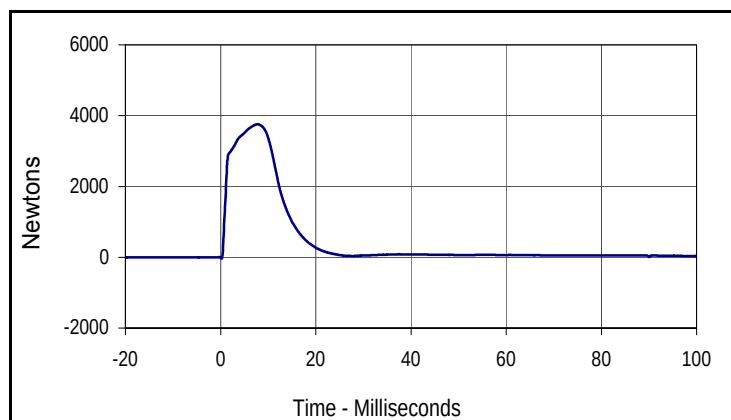
Current Time : 01:41:09

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

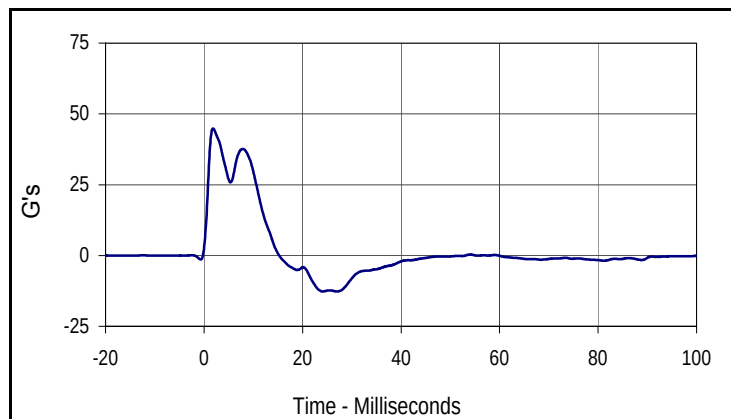
Test Date: 12/17/11
 Test I.D.: 299ACET027



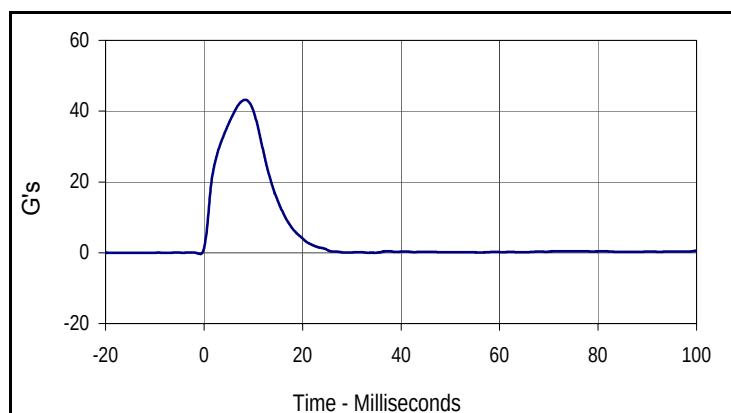
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	425	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	36.7	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.8	Pass
Peak Acetabulum Force Y	Newtons	3600 to 4300	3755.5	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	37.6	Pass
Peak Impactor Acceleration	G's	38 to 47	43.2	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3755.5	7.8	-37.7	0.2



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
44.9	1.8	-12.7	24.1



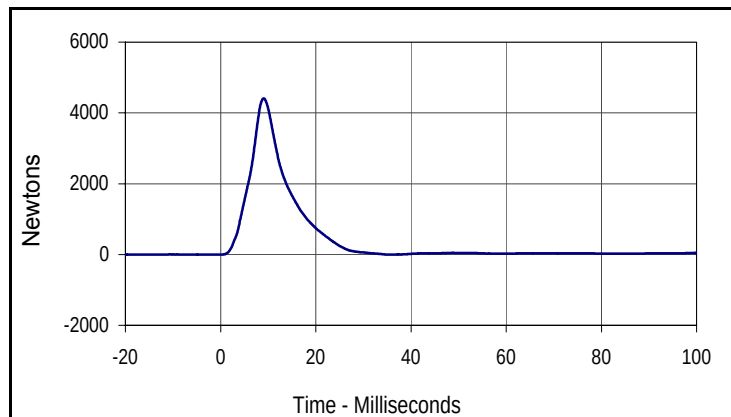
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
43.2	8.3	-0.4	-0.8

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

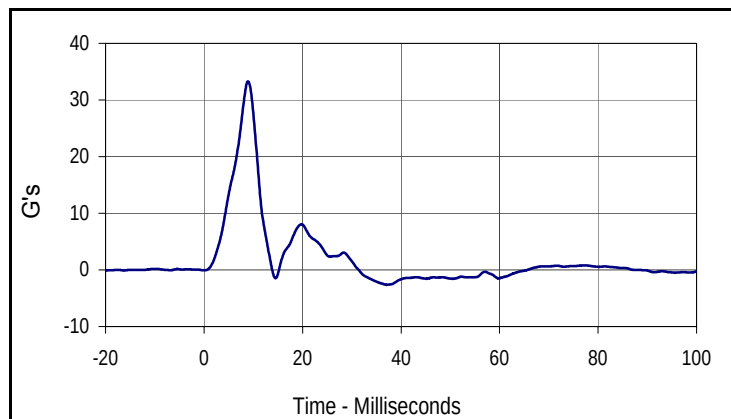
Test Date: 12/17/11
 Test I.D.: 299PL027



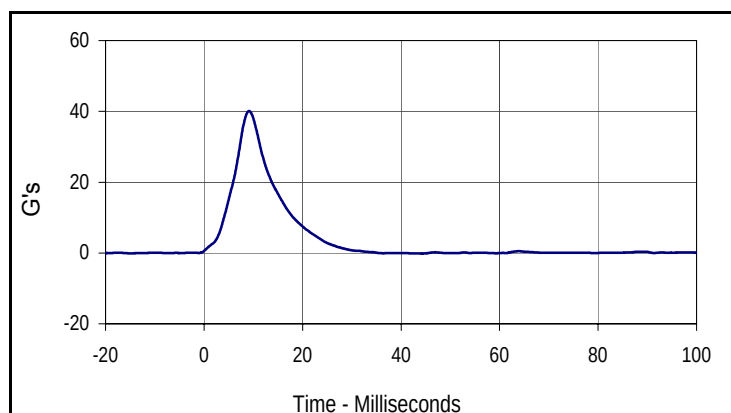
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	470	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	40.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	36.0	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.3	Pass
Peak Iliac Force		Newtons	4100 to 5100	4408.6	Pass
Peak Pelvis Y Acceleration		G's	28 to 39	33.3	Pass
Peak Impactor Acceleration		G's	36 to 45	40.1	Pass
Overall Test Results				Pass	



Curve Description			
Pelvis Iliac Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4408.6	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
33.3	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
40.1	9.1	-0.2	44.2

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

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

Test Date: 12/26/11
 Test I.D.: N/A



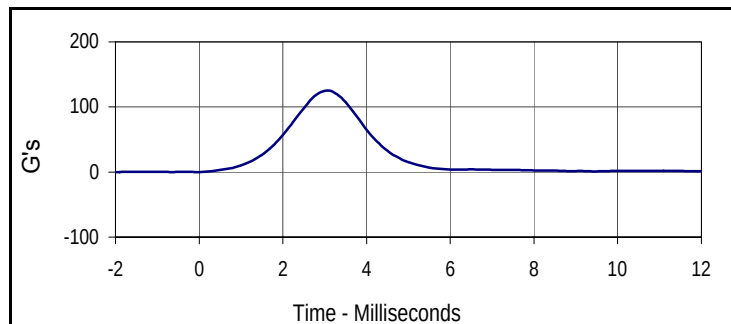
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
A	Sitting Height	mm	772 - 788	775	Pass
B	Shoulder Pivot Height	mm	437 - 453	442	Pass
C	H-Point Height	mm	79 - 89	85	Pass
D	H-Point from Seatback	mm	141 - 151	147	Pass
E	Shoulder Pivot from Backline	mm	97 - 107	101	Pass
F	Thigh Clearance	mm	119 - 135	125	Pass
G	Head Breadth	mm	140 - 148	146	Pass
H	Head Back from Backline	mm	40 - 46	44	Pass
I	Head Depth	mm	178 - 188	185	Pass
J	Head Circumference	mm	541 - 551	546	Pass
K	Buttock to Knee Length	mm	514 - 540	528	Pass
L	Popliteal Height	mm	343 - 369	354	Pass
M	Knee Pivot to Floor Height	mm	392 - 409	401	Pass
N	Buttock Popliteal Length	mm	416 - 442	429	Pass
O	Chest Depth w/o Jacket	mm	195 - 211	200	Pass
P	Foot Length	mm	216 - 232	220	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	485	Pass
V	Shoulder Width	mm	341 - 357	351	Pass
W	Foot Width	mm	78 - 94	92	Pass
Y	Chest Circumference with Jacket	mm	851 - 881	877	Pass
Z	Waist Circumference	mm	760 - 791	773	Pass
Overall Test Results					Pass

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

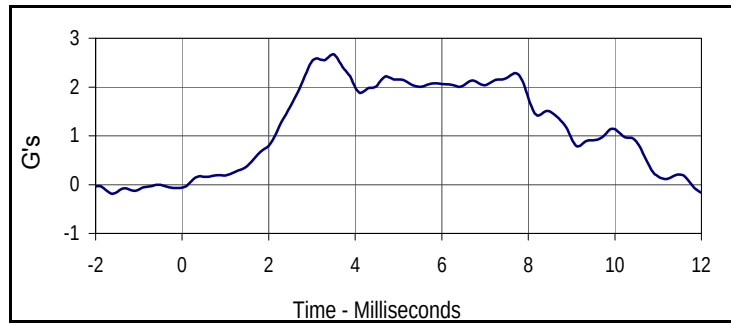
Test Date: 12/26/11
 Test I.D.: 299HD028



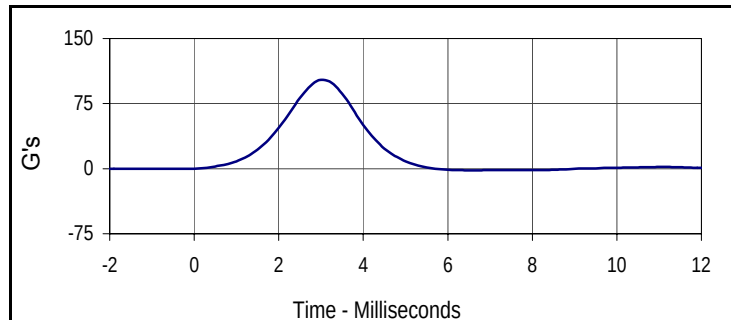
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	270	Pass
Temperature During Soak	Max	18.9 to 25.6	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.7	Pass
Peak Head Resultant Acceleration	G's	115 to 137	125.0	Pass
Peak Head X Acceleration	G's	<15	2.7	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	12.1	Pass
Overall Test Results				Pass



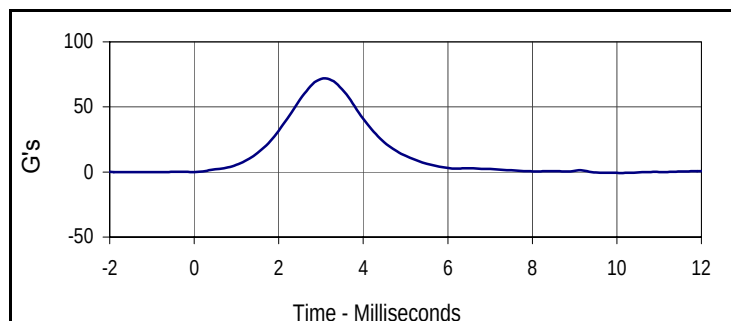
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
125.0	3.1	0.0	-1.9



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
2.7	3.5	-0.2	-1.6



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
102.3	3.0	-2.0	6.6



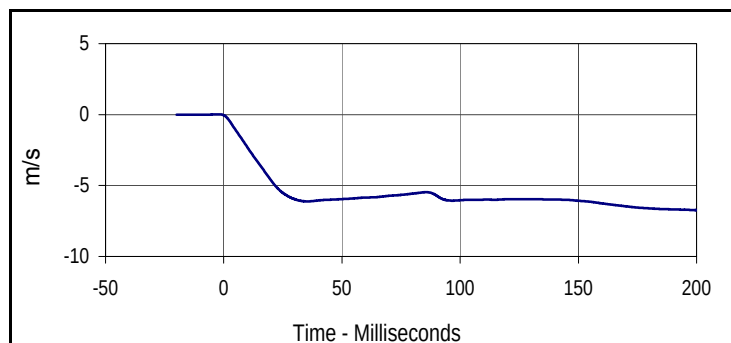
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
72.0	3.1	-0.7	10.0

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

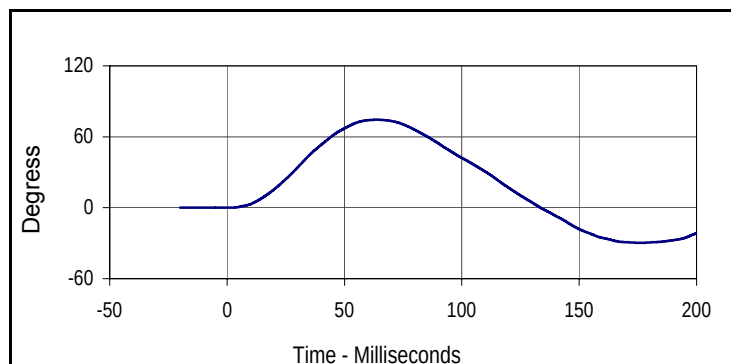
Test Date: 12/26/11
 Test I.D.: 299NB028



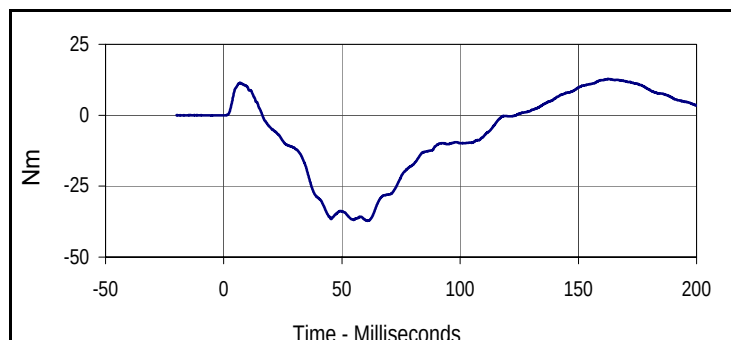
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	300	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	30.0	Pass
	Min		29.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.9	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	74.5	Pass
	Time	50 to 70	63.8	Pass
Peak Occipital Condyle Moment	Nm	-36 to -44	-37.2	Pass
Decaying Moment Time to Cross 0 Nm	msec	102 to 126	123.6	Pass
Overall Test Results			Pass	



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
0.0	-2.2	-6.7	200.0



Curve Description			
Maximum Translation Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
74.5	63.8	-29.7	176.1



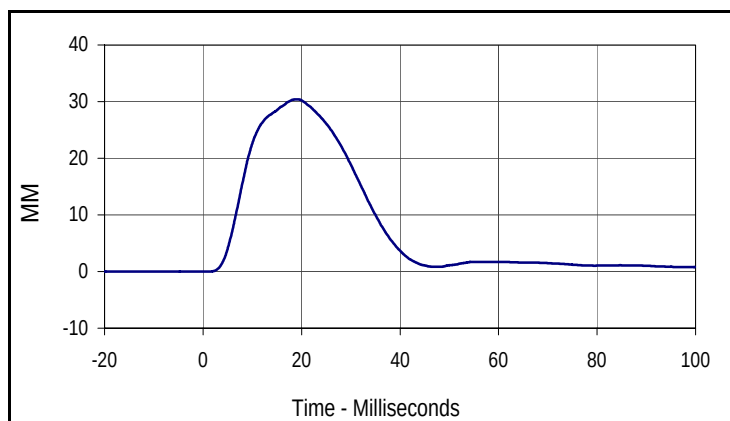
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
12.8	162.7	-37.2	60.8

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

Test Date: 12/26/11
 Test I.D.: 299SH028



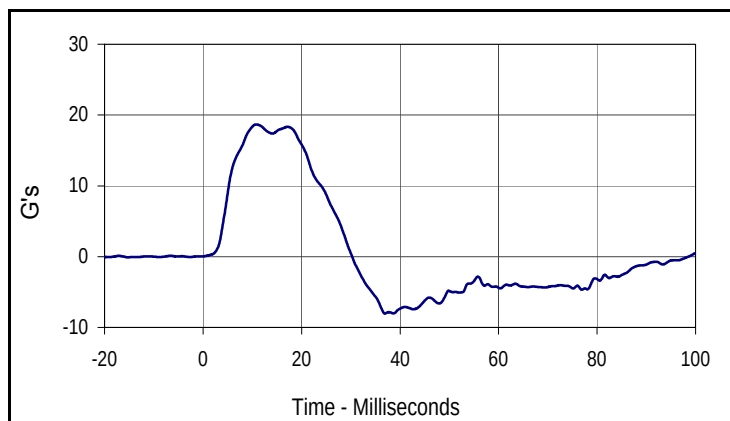
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	350	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	40.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.1	Pass
Impactor Velocity		m/s	4.20 to 4.40	4.29	Pass
Peak Shoulder Deflection		mm	28 to 37	30.4	Pass
Peak Lateral Spine Acceleration Y		G's	17 to 22	18.7	Pass
Peak Impactor Acceleration		G's	13 to 18	15.8	Pass
Overall Test Results				Pass	



Curve Description

Shoulder Deflection

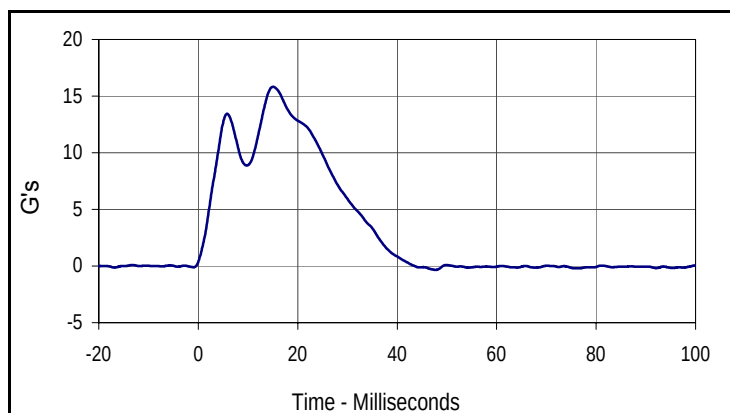
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
30.4	19.0	0.0	-1.8



Curve Description

Upper Spine Y Acceleration

Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
18.7	10.8	-8.0	36.9



Curve Description

Impactor Acceleration

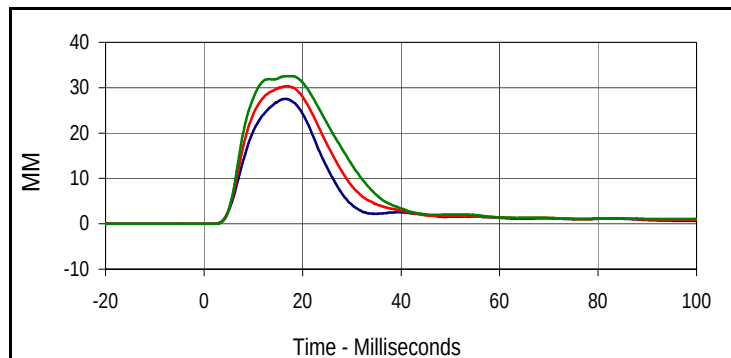
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
15.8	15.0	-0.3	47.8

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

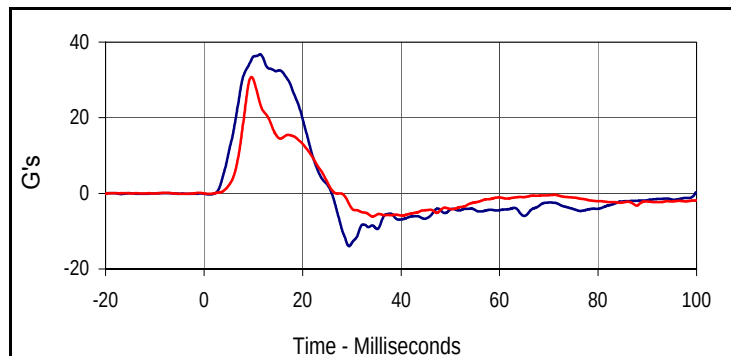
Test Date: 12/26/11
 Test I.D.: 299TWA028



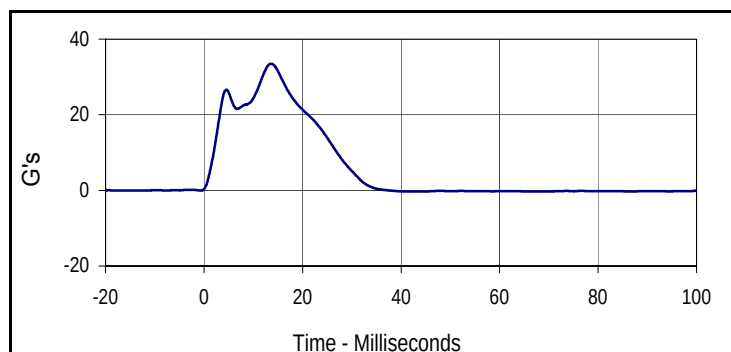
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	375	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	28.9	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.7	Pass
Peak Shoulder Deflection	mm	31 to 40	35.8	Pass
Peak Upper Thorax Rib Deflection	mm	25 to 32	27.5	Pass
Peak Middle Thorax Rib Deflection	mm	30 to 36	30.4	Pass
Peak Lower Thorax Rib Deflection	mm	32 to 38	32.6	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	36.8	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	30.8	Pass
Peak Impactor Acceleration	G's	30 to 36	33.5	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
27.5	16.5	0.0	-8.8
Middle Thorax Deflection			
Max	Time	Min	Time
30.4	16.9	0.0	-15.7
Lower Thorax Deflection			
Max	Time	Min	Time
32.6	17.2	0.0	-10.7



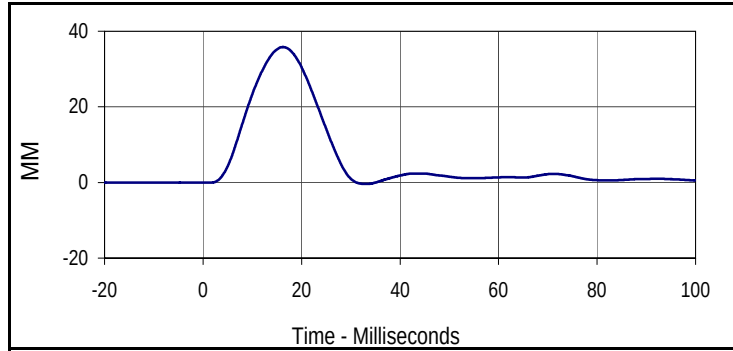
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
36.8	11.4	-14.0	29.5
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
30.8	9.6	-6.1	34.2



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
33.5	13.6	-0.3	40.8

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

Test Date: 12/26/11
 Test I.D.: 299TWA028



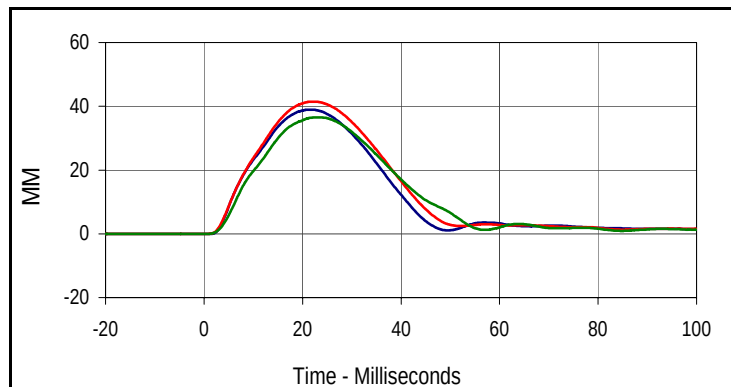
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	180	MM
Max	Time	Min	Time
35.8	16.3	-0.4	33.1

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

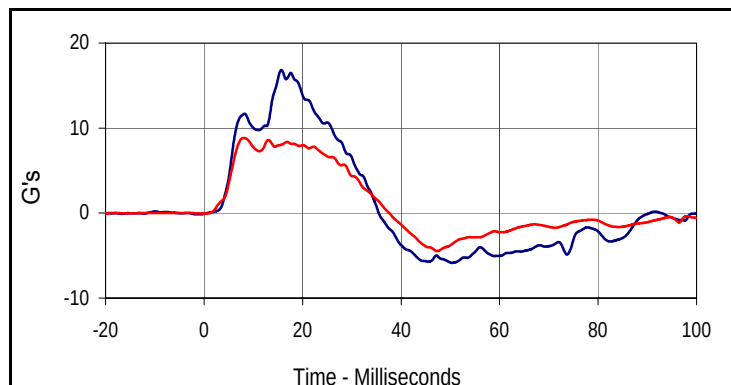
Test Date: 12/26/11
 Test I.D.: 299TWOA028



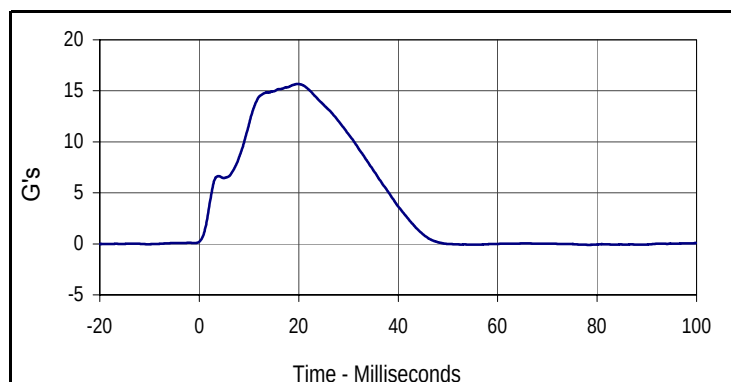
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	398	Pass
Temperature During Soak	Max °C	18.9 to 25.6	21.7	Pass
	Min °C		20.7	Pass
Humidity During Soak	Max %	10.0 to 70.0	40.0	Pass
	Min %		28.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	28.7	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.3	Pass
Peak Upper Thorax Rib Deflection	mm	32 to 40	39.0	Pass
Peak Middle Thorax Rib Deflection	mm	39 to 45	41.5	Pass
Peak Lower Thorax Rib Deflection	mm	35 to 43	36.5	Pass
Peak Upper Spine Y Acceleration	G's	13 to 17	16.8	Pass
Peak Lower Spine Y Acceleration	G's	7 to 11	8.8	Pass
Peak Impactor Acceleration	G's	14 to 18	15.7	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
39.0	21.5	0.0	-19.5
Middle Thorax Deflection			
Max	Time	Min	Time
41.5	22.1	0.0	-10.0
Lower Thorax Deflection			
Max	Time	Min	Time
36.5	22.6	0.0	-9.3



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
16.8	15.7	-5.9	50.3
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
8.8	8.0	-4.5	47.3



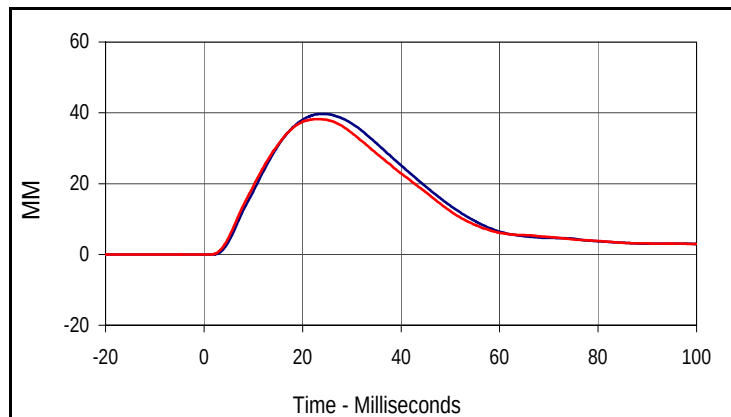
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
15.7	19.8	-0.1	78.3

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

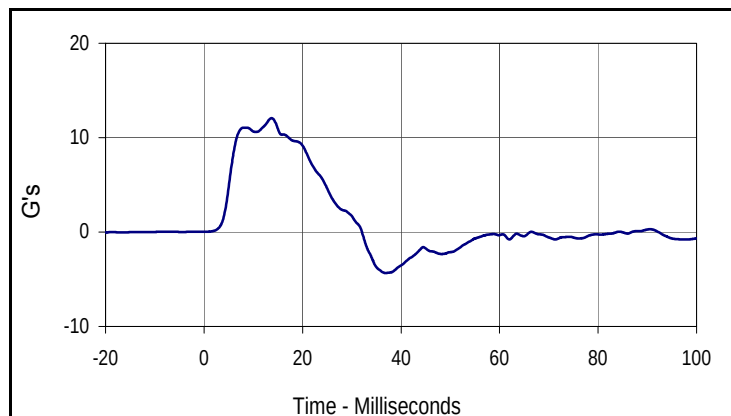
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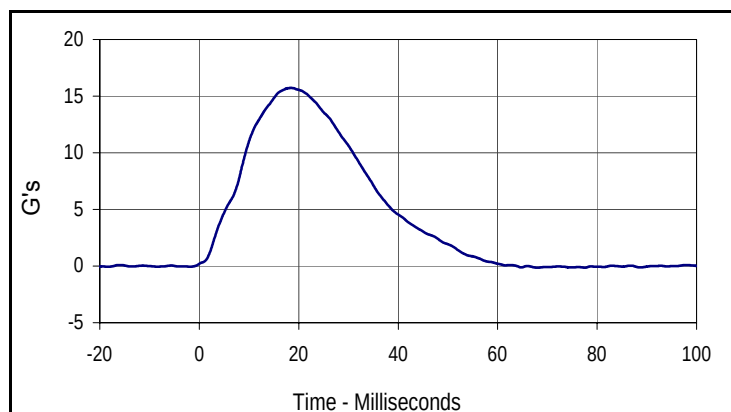
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	420	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.1	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.3	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	39.7	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	38.2	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	12.1	Pass
Peak Impactor Acceleration	G's	12 to 16	15.7	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
39.7	23.9	0.0	0.6
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
38.2	22.8	0.0	-3.5



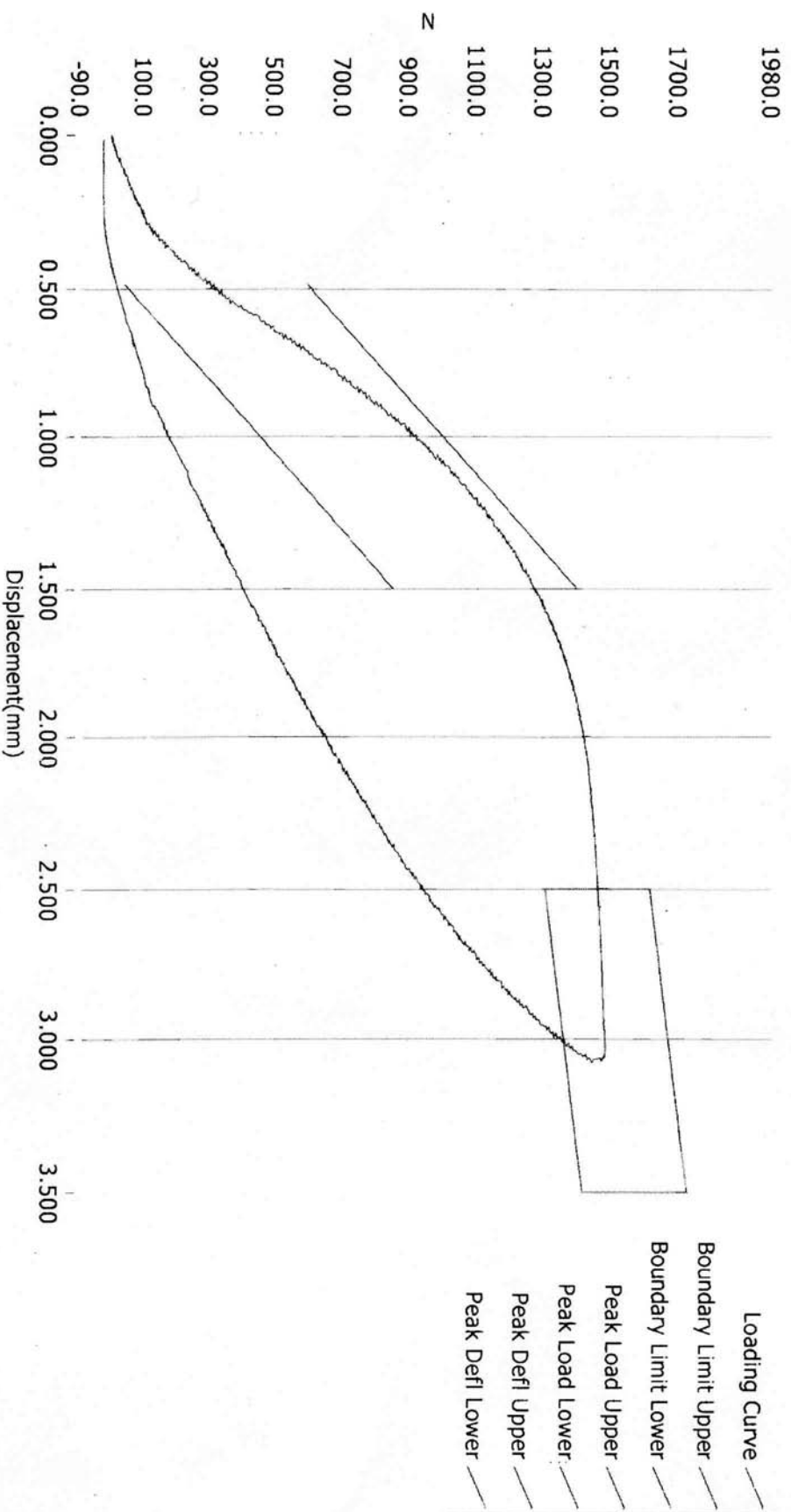
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
12.1	13.7	-4.3	36.8



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.7	18.5	-0.1	68.0

MC5111 POST TEST

Resultant Data - SIDIIs Plug Compression



ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
Cert ID	ATD Serial Number	ATD Type	
	36308	SIDIIs	

Current Date : 9/22/2010

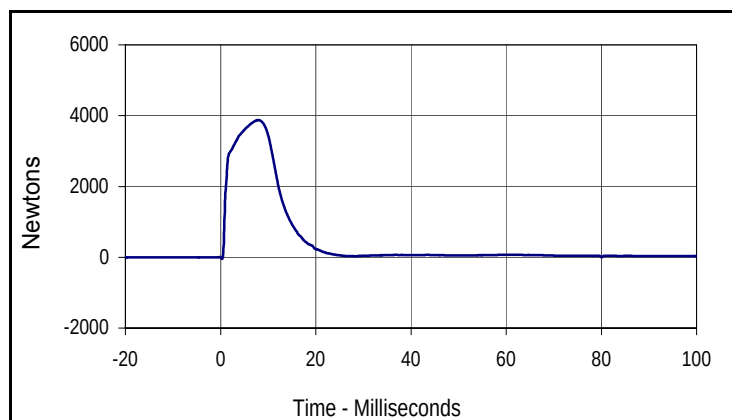
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Test Program: SID IIs Pelvis Acetabulum Impact Test
 ATD Serial No.: 299

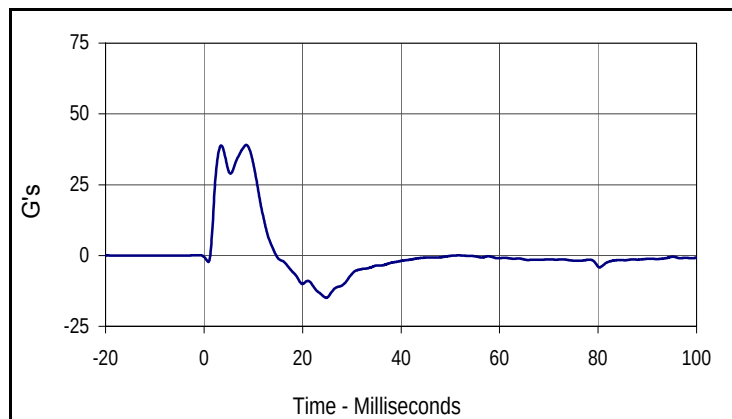
Test Date: 12/26/11
 Test I.D.: 299ACET028



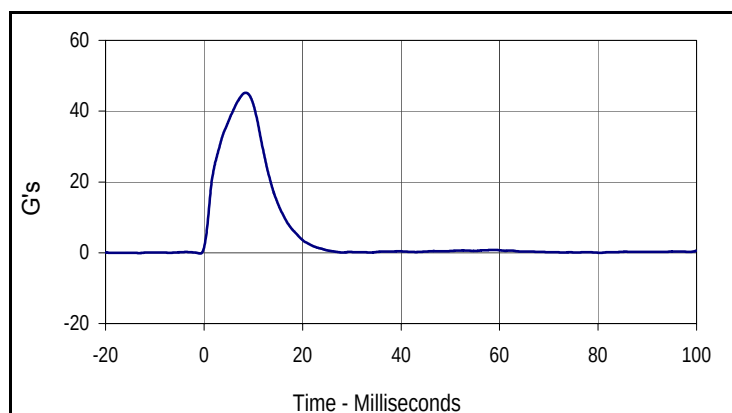
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	435	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.9	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.7	Pass
Peak Acetabulum Force Y	Newtons	3600 to 4300	3877.6	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	39.1	Pass
Peak Impactor Acceleration	G's	38 to 47	45.2	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3877.6	7.8	-43.3	0.3



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
39.1	8.6	-14.9	24.8



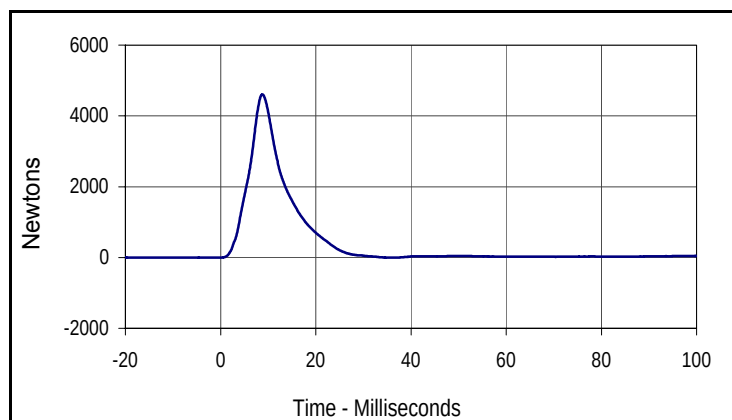
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
45.2	8.5	-0.2	-0.8

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

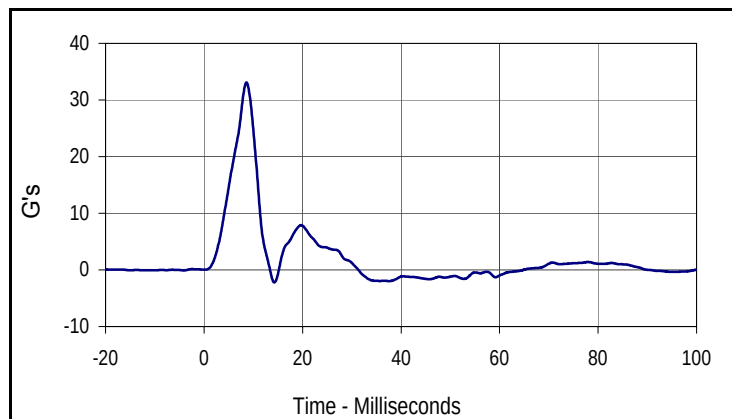
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 Test I.D.: 299PL028



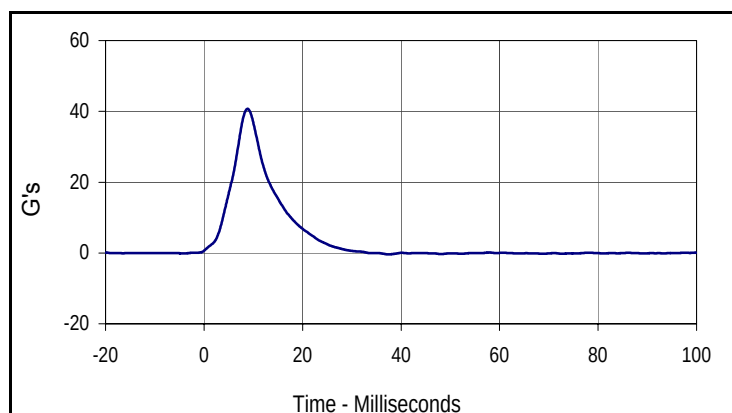
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	454	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		20.7	Pass
Humidity During Soak	Max	10.0 to 70.0	40.0	Pass
	Min		28.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	28.5	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.3	Pass
Peak Iliac Force	Newtons	4100 to 5100	4603.5	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	33.1	Pass
Peak Impactor Acceleration	G's	36 to 45	40.7	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Iliac Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4603.5	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
33.1	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
40.7	8.8	-0.4	37.4

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)					36399	FTSS	9/23/10
Pelvis Plug (Non-Struck Side)					36321	FTSS	9/22/10

TABLE 2 – Vehicle Instrumentation

Vehicle Instrumentation		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	Ketx5a	ICSensor	6/20/11
Vehicle Center of Gravity	Y	Ketx5b	ICSensor	6/20/11
Vehicle Center of Gravity	Z	Ketx5c	ICSensor	6/20/11
Left Floor Sill	Y	Keva508	Endevco	8/2/11
A-Pillar Sill	Y	J36724	Endevco	3/30/11
A-Pillar Low	Y	J24533	Endevco	4/1/11
A-Pillar Mid	Y	BY98H	Endevco	3/15/11
B-Pillar Sill	Y	J21907	Endevco	3/30/11
B-Pillar Low	Y	J36641	Endevco	4/4/11
B-Pillar Mid	Y	BF59J	Endevco	4/29/11
Driver Seat	Y	AJ7Y4	Endevco	3/30/11
Engine Top	X	BI60H	Endevco	7/22/11
Engine Top	Y	AR17	Endevco	7/22/11
Firewall	Y	BJ54H	Endevco	3/31/11
Right Roof	Y	EK16J	Endevco	2/3/11
Right Floor Sill	Y	BF83H	Endevco	3/31/11
Rear Floorpan	X	Keva201X	Endevco	11/28/11
Rear Floorpan	Y	Keva201Y	Endevco	11/28/11

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