

REPORT NUMBER: SPNCAP-KAR-11-001

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

**TOYOTA MOTOR MANUFACTURING, KENTUCKY, INC.
2011 TOYOTA CAMRY LE 4-DOOR SEDAN**

NHTSA No: MB5102

**PREPARED BY:
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ADELANTO, CA 92301**



JUNE 29, 2010

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
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Approval Date: June 29, 2010

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NHTSA, Office of Crashworthiness Standards

Date: _____

COTR, New Car Assessment Program
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16. Abstract A 32.2 km/h (20 mph) 75° oblique impact Side NCAP test was conducted on the subject 2011 Toyota Camry LE 4-Door Sedan in accordance with the specifications of the Office of Crashworthiness Standards Side NCAP Pole Laboratory Test Procedure for the generation of consumer information on vehicle side pole crash protection. The test was conducted at the KARCO Engineering, LLC. facility in Adelanto, California on June 22, 2010. The impact velocity was 31.8 km/h and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 29° C. The test vehicle's post-test maximum crush was 480 mm at level 3. The test vehicle's performance was as follows: <table border="1"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th colspan="3">Passenger ATD</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>460.6</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td>G</td> <td>82</td> <td>69</td> </tr> <tr> <td>Combined Acetabular and Iliac Pelvic Force</td> <td>N</td> <td>5525</td> <td>5067</td> </tr> </tbody> </table> The two doors on the struck side of the vehicle did not separate from the vehicle at the hinges or latches. The opposite side doors did not open during the impact event.				Measurement Description	Passenger ATD			Units	Threshold	Result	Head Injury Criteria (HIC ₃₆)		1000	460.6	Resultant Lower Spine Acceleration	G	82	69	Combined Acetabular and Iliac Pelvic Force	N	5525	5067
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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 Washington, DC 20590																				
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SECTION 1

TEST PURPOSE AND PROCEDURE

This side impact test is part of the FY 2010 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract No. DTNH22-09-D-00122. The purpose of this test is to generate comparative side impact performance in a 2011 Toyota Camry LE 4-door sedan. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Side NCAP Pole Laboratory Test Procedure, dated January 25, 2010.

SECTION 2

SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a 2011 Toyota Camry 4-door sedan. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 31.8 km/h. the test was conducted by KARCO Engineering, LLC. in Adelanto, California, on June 22, 2010. Pre-test 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 January 25, 2010. Camera location and other pertinent camera information are included in this report.

The Part 572V (SID-IIs) dummy was instrumented as follows:

- Head CG Triaxial Accelerometers
- Thorax Upper, Middle, and Lower Rib Displacement Potentiometers
- Abdomen Upper and Lower Rib Displacement Potentiometers
- Lower Spine Triaxial Accelerometers
- Illiatic 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.

The following table summarizes the results of the test:

Dummy	HIC (36ms)	Resultant Lower Spine Acceleration	Pelvic Force (N)	
SID-IIs 5th Percentile Adult Female	461	69	Iliac Wing	2785
			Acetabulur	2290
			Sum	5067

SUPPLEMENTAL RESTRAINT INFORMATION

Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear (Passenger) Occupant Location 4	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No	No	
Knee Airbag	Yes	No	No	
Side Airbag 1 (Torso)	Yes	Yes	No	
Side Airbag 2 (Curtain)	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes	No	No	
Seat Belt Load Limiter	Yes	No	No	
Other				

GENERAL COMMENTS

Both of the struck side doors of the test vehicle remained closed and latched and were jammed shut after the impact. There was no separation at the hinges or the latches. The non-struck side doors remained closed and latched. There were no driver injury values that exceeded their limits. There was no FMVSS 301 Stoddard solvent spillage as a result of the impact.

SECTION 3

OCCUPANT AND VEHICLE INFORMATION

Test Vehicle: 2011 Toyota Camry LE 4-Door Sedan NHTSA No. MB5102
Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole Test Date: 06/22/10

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	29.573
Pressure	Tire Pressures	lbf/in ²	kPa	7.0
Volume	Liquid	gal	liter	3.785
Temperature	General Use	°F	°C	$=(t_f - 32)/1.8$
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf/ft	Nm	1.355

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMATER DATA

Test Vehicle: 2011 Toyota Camry LE 4-Door Sedan NHTSA No. MB5102
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole Test Date: 06/22/10

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	MB5102
Model Year	2011
Make	Toyota
Model	Camry LE
Body Style	4-Door Sedan
VIN	4T1BF3EK2BU582998
Body Color	Blue Ribbon Metallic
Delivery Date	5/26/2010
Odometer Reading (km / mi)	101 / 63
Dealer	Crown Toyota
Transmission	6-Speed Automatic
Final Drive	Front
Type / No. of Cylinders	Inline 4
Engine Displacement (L)	2.5
Engine Placement	Transverse
Roof Rack	No
Sunroof / T-Top	No
Tinted Glass	No
Traction Control	Yes
Power Brakes	Yes
Front Disc	Yes
Rear Disc	Yes

Anti-Lock Brakes	Yes
All Wheel Drive	No
Power Steering	Yes
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. Toso/Pelvis Airbag	No
Rear Pass. Pelvis Airbag	No
Pretensioners	Yes
Load Limiters	Yes
Automatic Door Locks	Yes
Bucket Seats	Yes
Tilt Steering	Yes
Other	TPMS
Other	

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

Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Toyota Motor Manufacturing, Kentucky, Inc.
Date of Manufacture	Feb-10

GVWR (kg)	1970
GAWR Front (kg)	1210
GAWR Rear (kg)	1070

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Designated Seating Capacity	2	3		5
Capacity Weight (VCW) (kg)				406.0
DSC x 68.04 (kg)				340.2
Cargo Weight (RCLW) (kg)				65.8

A

B

A-B

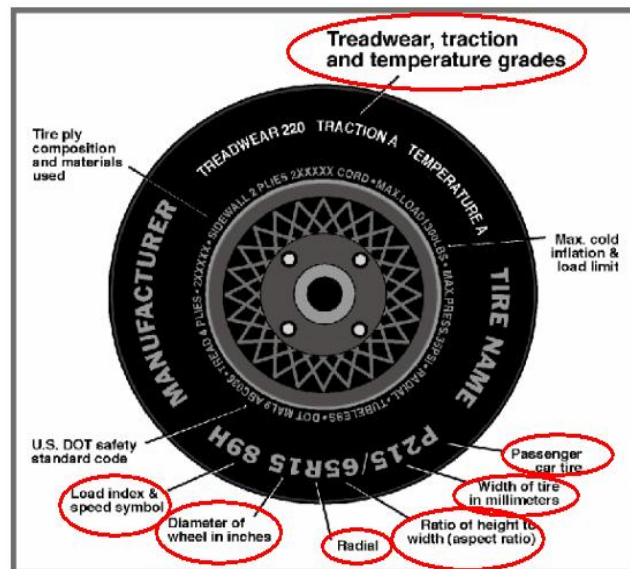
VEHICLE SEAT TYPE

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

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMATER DATA

Test Vehicle: 2011 Toyota Camry LE 4-Door Sedan NHTSA No. MB5102
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole Test Date: 06/22/10



Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	300	300
Cold Pressure (kpa)	230	230
Recommended Tire Size	P215/60R16	P215/60R16
Tire Size on Vehicle	P215/60R16	P215/60R16
Tire Model	Energy MXV4	Energy MXV4
Tire Manufacturer	Michelin	Michelin
Treadwear	440	440
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	1	1
Tire Plies Body	4	4
Load Index/Speed Symbol	94V	94V
Tire Material	Polyester, Polyamide, Steel	Polyester, Polyamide, Steel
DOT Safety Code Right	HN49 JUAX 0110	HN49 JUAX 0110
DOT Safety Code Left	HN49 JUAX 0110	HN49 JUAX 0110

DATA SHEET NO. 1 ... (CONTINUED)**GENERAL TEST AND VEHICLE PARAMATER DATA**Test Vehicle: 2011 Toyota Camry LE 4-Door Sedan NHTSA No. MB5102Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole Test Date: 06/22/10**TEST VEHICLE WEIGHTS**

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	457.5	302.5		473.5	353.5		471.0	355.5	
Right	kg	449.0	283.5		451.0	322.0		448.5	330.0	
Ratio	%	60.7%	39.3%	100.0%	57.8%	42.2%	100.0%	57.3%	42.7%	100.0%
Total	kg	906.5	586.0	1492.5	924.5	675.5	1600.0	919.5	685.5	1605.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1492.5	A
Actual Weight of 1 P572V ATD Used	kg	49.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	65.8	C
Calculated Vehicle Target Wt (TVTWT)	kg	1607.3	A+B+C

TEST VEHICLE ATTITUDES

Condition	Units	As Delivered	As Tested	Fully Loaded
Driver Door Sill Angle (front-to-rear)	Deg	0.6	0.0	0.3
Front Passenger Sill Angle (front-to-rear)	Deg	0.4	-0.2	-0.1
Front Bumper Angle (left-to-right)	Deg	0.4	-0.5	0.2
Rear Bumper Angle (left-to-right)	Deg	-0.3	-0.4	0.4
Vehicle CG (Aft of Front Axle)	mm	1090	1172	1185
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	14	27	24

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Weight of Ballast in Cargo Area	kg	0
Weight of Vehicle Components Removed	kg	37.5

Vehicle components removed to make Target Vehicle Test Weight:

Spare Tire (10.0 kg), Jack and Tools (3.0 kg), Floor Mats (3.0 kg), Left Rear Passenger Window
(4.0 kg), Trunk Liner (2.0 kg)

TEST VEHICLE IMPACT POINT DATA

Measurement Description	Units	Value
Vertical Impact Reference Line (Aft of Front Axle)	mm	1115
Actual Impact Point (Aft of Front Axle)	mm	1110
Impact Point Difference (- forward/+ rearward)	mm	-5

DATA SHEET NO. 2

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

Test Vehicle: 2011 Toyota Camry LE 4-Door Sedan

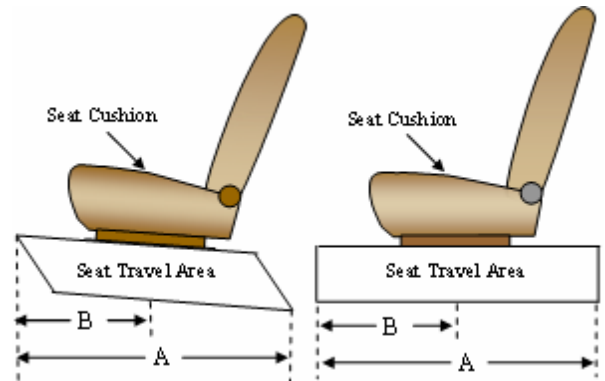
NHTSA No. MB5102

Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole

Test Date: 06/22/10

SEAT FORE / AFT POSITIONS

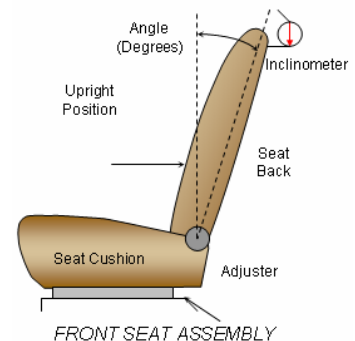
The total seat travel is measured from the forward most possible position to the rearmost possible position with the seat set at mid angle and lowest height. The driver's seat is set to the forward most position where the ATD will not contact any interior panels at the mid angle and mid height positions.



Seating Position	Total Fore-Aft Travel	Placed in Position	Cushion Range	Placed in Position
Driver Seat	257 mm	0 mm	2.6° to 9.3°	6.0°
Front Passenger Seat	253 mm	0 mm	Fixed	Fixed
Rear Seat - Struck Side	Fixed	Fixed	Fixed	Fixed
Rear Seat - Non-Struck Side	Fixed	Fixed	Fixed	Fixed

SEAT BACK ANGLE POSITION

The procedure for the driver is as follows: the seat back is set to level the driver ATD's (SID-IIs) head transverse instrumentation platform; seat back angle is measured at the headrest post using a digital inclinometer.



Seating Position	Degrees	Detent
Driver Seat Back Angle w/Seated Dummy	7.6	
Front Passenger Seat Back Angle	7.6	1
Struck Side Rear Seat Back Angle	Fixed	Fixed
Non-Struck Side Rear Seat Back Angle	Fixed	Fixed

SEAT BELT UPPER ANCHORAGE

The seat belt upper anchorage is positioned to the manufacturer's design position for a 5ht percentile adult female ATD. Position number one (1) is the uppermost position.

Seating Position	Total No. of Positions	Placed in Position
Driver Seat	4	4

DATA SHEET NO. 2 ... (CONTINUED)

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

Test Vehicle: 2011 Toyota Camry LE 4-Door Sedan

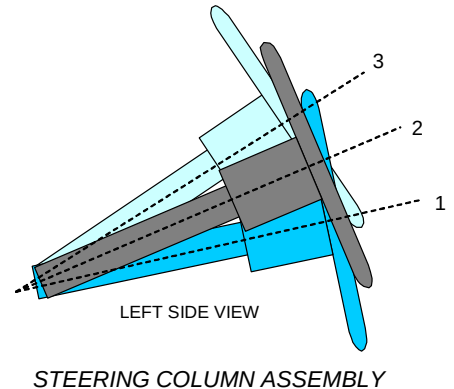
NHTSA No. MB5102

Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole

Test Date: 06/22/10

STEERING COLUMN ADJUSTMENT

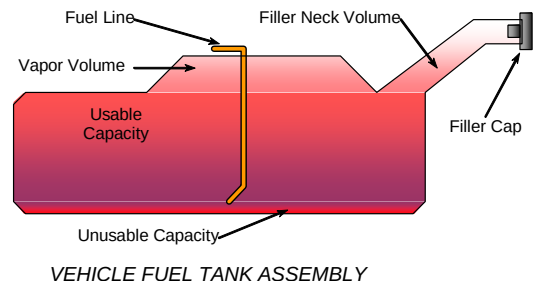
Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. A digital inclinometer is used to measure a plate placed across the rim of the steering wheel for angle. A tape measure is used to measure a reference point's travel and set the mid distance.



	Angle (°)	Fore-Aft Position (mm)
Lowermost Position, No. 1	22.9	87
Geometric Center Position, No. 2	24.7	107
Uppermost Position, No. 3	26.5	127
Steering Wheel Travel	3.6	40
Test Position	24.7	107

FUEL PUMP

The test vehicle is equipped with an electric fuel pump. The fuel pump is activated when the ignition is turned on. The fuel filler door is located on the left rear fender. The standard fuel tank occupies the area under the rear seat.



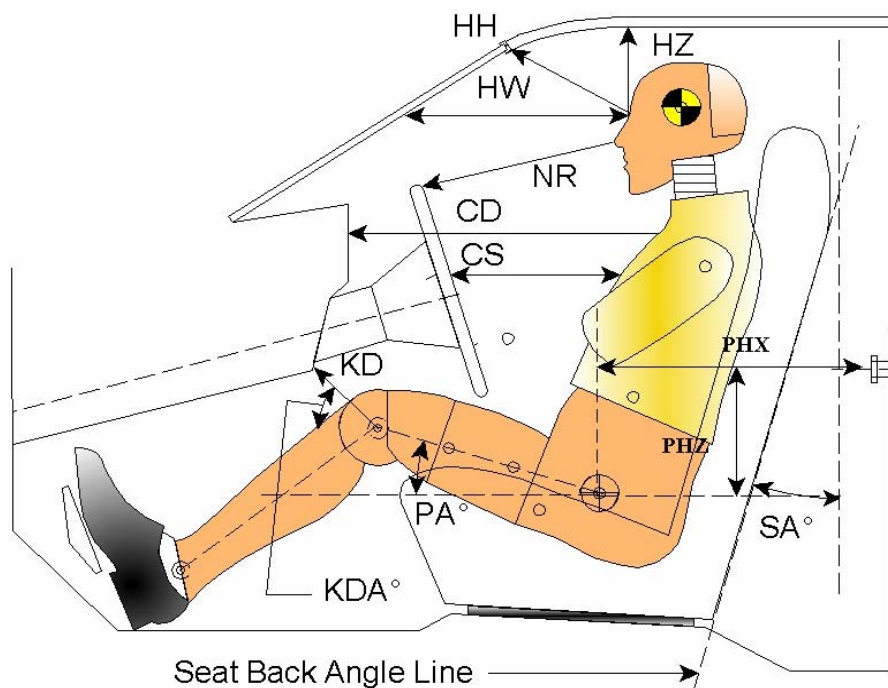
FUEL CAPACITY DATA

Description	Liters
Usable Capacity of "Standard Tank"	70.02
Usable Capacity of "Optional Tank"	
Usable Capacity of Standard Tank as Specified In Owner's Manual	
Usable Capacity of Optional Tank as Specified in Owner's Manual	
92 - 94% of Usable Capacity	64.42 to 65.82
Actual Amount of Stoddard Solvent Used	65.12
1/3 of Usable Capacity	23.34

DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Toyota Camry LE 4-Door Sedan NHTSA No. MB5102
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test Date: 06/22/10



DUMMY LONGITUDINAL CLEARANCE DIMENSIONS (S/N: 307)

Driver Code	Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	245	123.9
HW	Head to Windshield	567	0.0
HZ	Head to Roof	165	90.0
NR	Nose to Rim	232	13.2
CD	Chest to Dash	398	17.4
CS	Chest to Steering Wheel	170	12.5
KDL / KDAL°	Left Knee to Dash	114	31.4
KDR / KDAR°	Right Knee to Dash	102	44.6
PA°	Pelvic Angle		18.6
PHX	H-Point to Striker (x-direction)	379	0.0
PHZ	H-Point to Striker (z-direction)	233	90.0
SA°	Seat Back Angle		7.6

DATA SHEET NO. 4

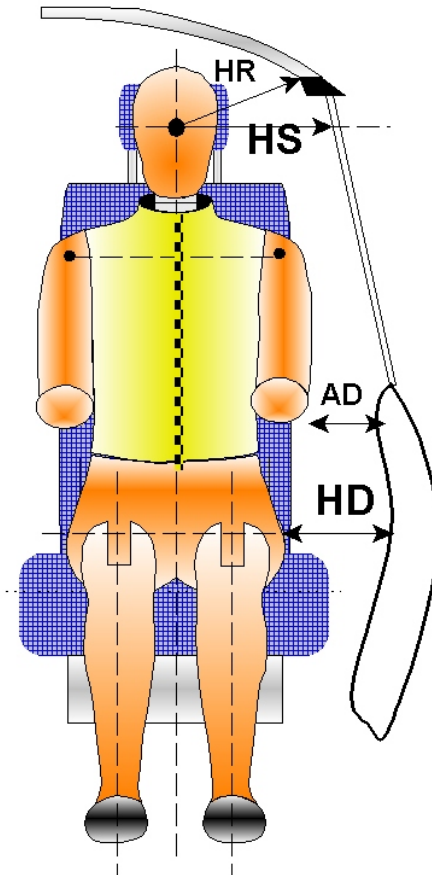
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Toyota Camry LE 4-Door Sedan

NHTSA No. MB5102

Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole

Test Date: 06/22/10



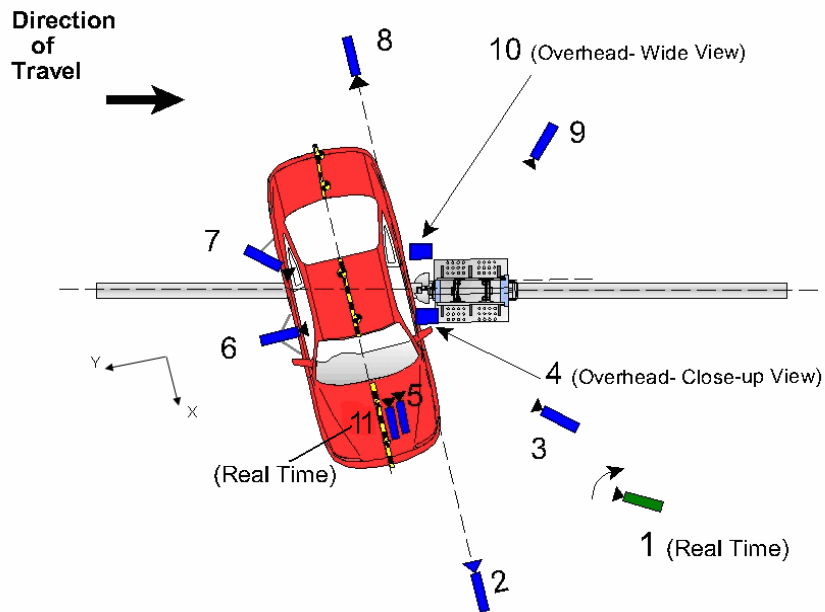
DUMMY LATERAL CLEARANCE DIMENSIONS (S/N: 307)

Code	Measurement Description	Units	Driver
HR	Head to Side Header	mm	255
HS	Head to Side Window	mm	288
AD	Arm to Door	mm	91
HD	H-Point to Door	mm	215

DATA SHEET NO. 5

CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2011 Toyota Camry LE 4-Door Sedan NHTSA No. MB5102
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test Date: 06/22/10



Camera No.	View	Coordinates (mm)			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	1.39	5.29	-1.15		400
6	On-Board - Dummy Side View	-0.14	1.58	-1.08	20	1000
7	On-Board - Dummy Rear Oblique View	-1.04	1.63	-1.11	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	1.32	0.55	-1.09		30

* All Measurements accurate to ± 6 mm

NOTE: Vehicle was at a 15° angle to the rigid pole

INSTRUMENTATION

	Number of Channels
Driver Dummy	16
Vehicle Structure	21
Pole Load Cells	8
Contact Switches	3
Airbag Timing Sensor	2
Total No. of Data Channels	50

DATA SHEET NO. 6

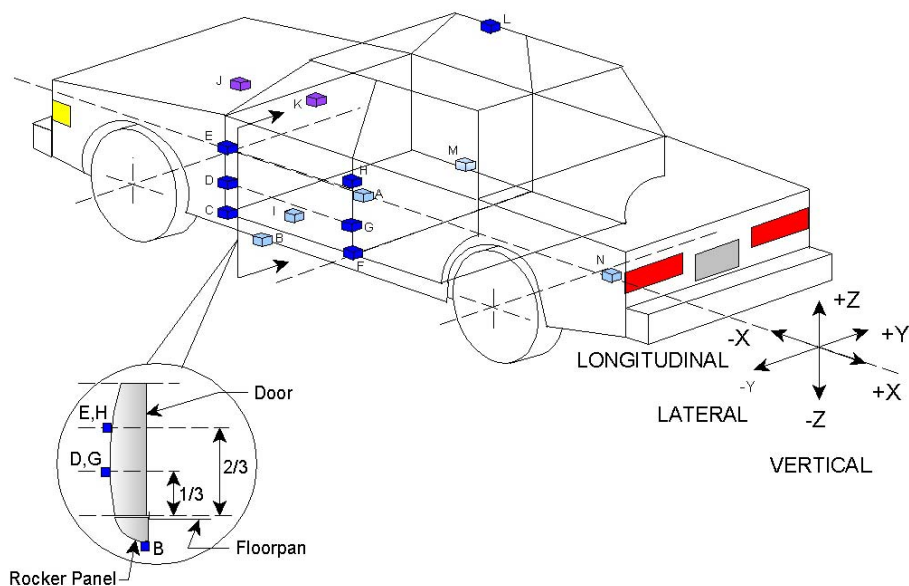
VEHICLE ACCELEROMETER DATA

Test Vehicle: 2011 Toyota Camry LE 4-Door Sedan

NHTSA No. MB5102

Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole

Test Date: 06/22/10



	Sensor Description	Coordinates (mm)		
		X	Y	Z
A	Vehicle CG Accelerometer	-2110	0	320
	Vehicle CG ARS	-2110	0	320
B	Left Floor Sill	-3010	-770	230
C	A-Pillar Sill	-3300	-785	370
D	A-Pillar Lower	-3300	-785	540
E	A-Pillar Mid	-3300	-785	740
F	B-Pillar Sill	-2210	-745	530
G	B-Pillar Lower	-2210	-745	620
H	B-Pillar Mid	-2210	-745	840
I	Driver Seat	-2590	-560	390
J	Engine Top	-3905	0	900
K	Firewall	-3565	0	910
L	Right Roof Sill	-2310	500	1150
M	Right Floor Sill	-2185	735	530
N	Rear Floorpan	-940	0	520

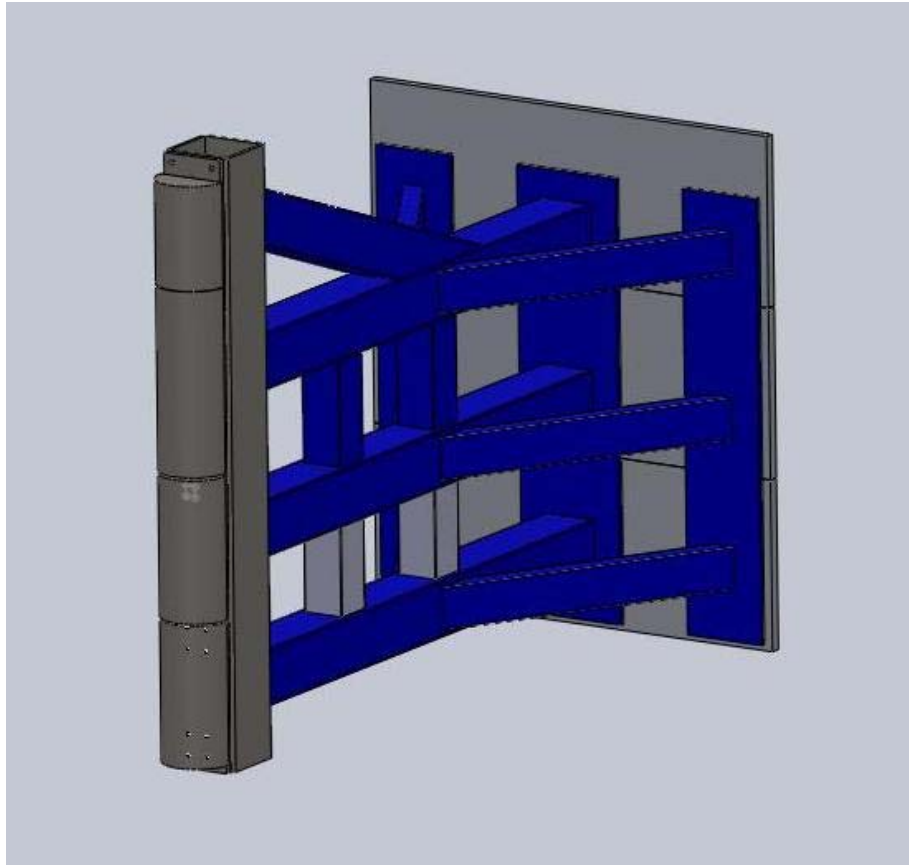
DATA SHEET NO. 7
RIGID POLE LOAD CELL DATA

Test Vehicle: 2011 Toyota Camry LE 4-Door Sedan

NHTSA No. MB5102

Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole

Test Date: 06/22/10



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: 2011 Toyota Camry LE 4-Door Sedan NHTSA No. MB5102
Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole Test Date: 06/22/10

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Driver Dummy
Dummy Type/Serial No.	P572V (SID-IIs) / Serial No. 307
Head Contact	Curtain airbag, headrest
Upper Torso Contact	Side torso airbag
Lower Torso Contact	Side torso airbag
Left Knee Contact	None
Right Knee Contact	Knee bolster

POST-TEST DOOR OPENING AND SEAT TRACK INFORMATION

Description	Front	Rear
Left Side Door Opening	Jammed shut	Jammed shut
Right Side Door Opening	Remained closed and operational	Remained closed and operational
Seat Movement	None	None
Seatback Failure	No	No

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No separation occurred
Sill Separation	No separation occurred
Windshield Damage	Broken / cracked
Window Damage	Left front window broken
Other Notable Effects	None

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear (Passenger) Occupant Location 4	
	Installed	Deployed	Installed	Deployed
Frontal Airbag	Yes	No	No	
Knee Airbag	Yes	No	No	
Side Airbag 1 (Torso)	Yes	Yes	No	
Side Airbag 2 (Curtain)	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes	No	No	
Seat Belt Load Limiter	Yes	No	No	
Other				

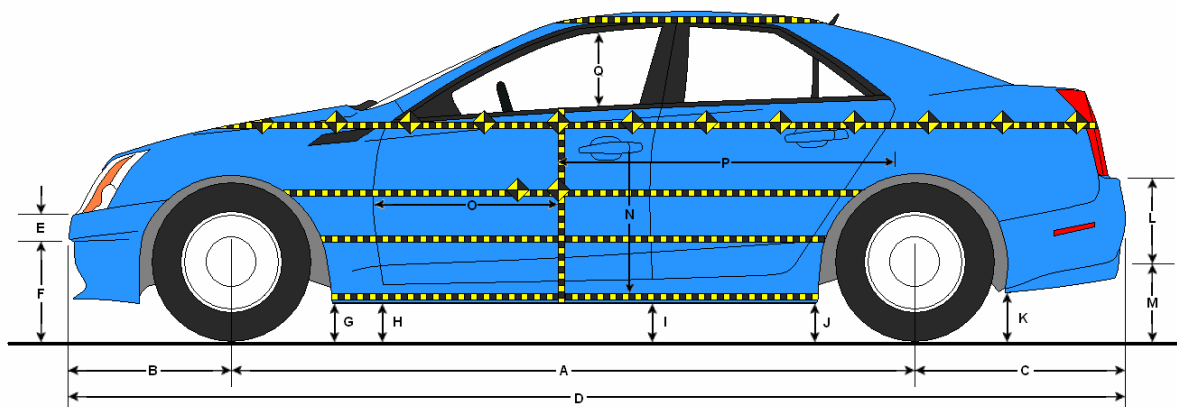
VEHICLE SPEED AND IMPACT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset From Vertical Reference Line	mm	+/- 38	-5 (Left)
Trap No. 1 Velocity (Primary)	km/h	30.4 to 32.0	31.8
Trap No. 2 Velocity (Redundant)	km/h	30.4 to 32.0	31.8

DATA SHEET NO. 9

VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2011 Toyota Camry LE 4-Door Sedan NHTSA No. MB5102
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole Test Date: 06/22/10



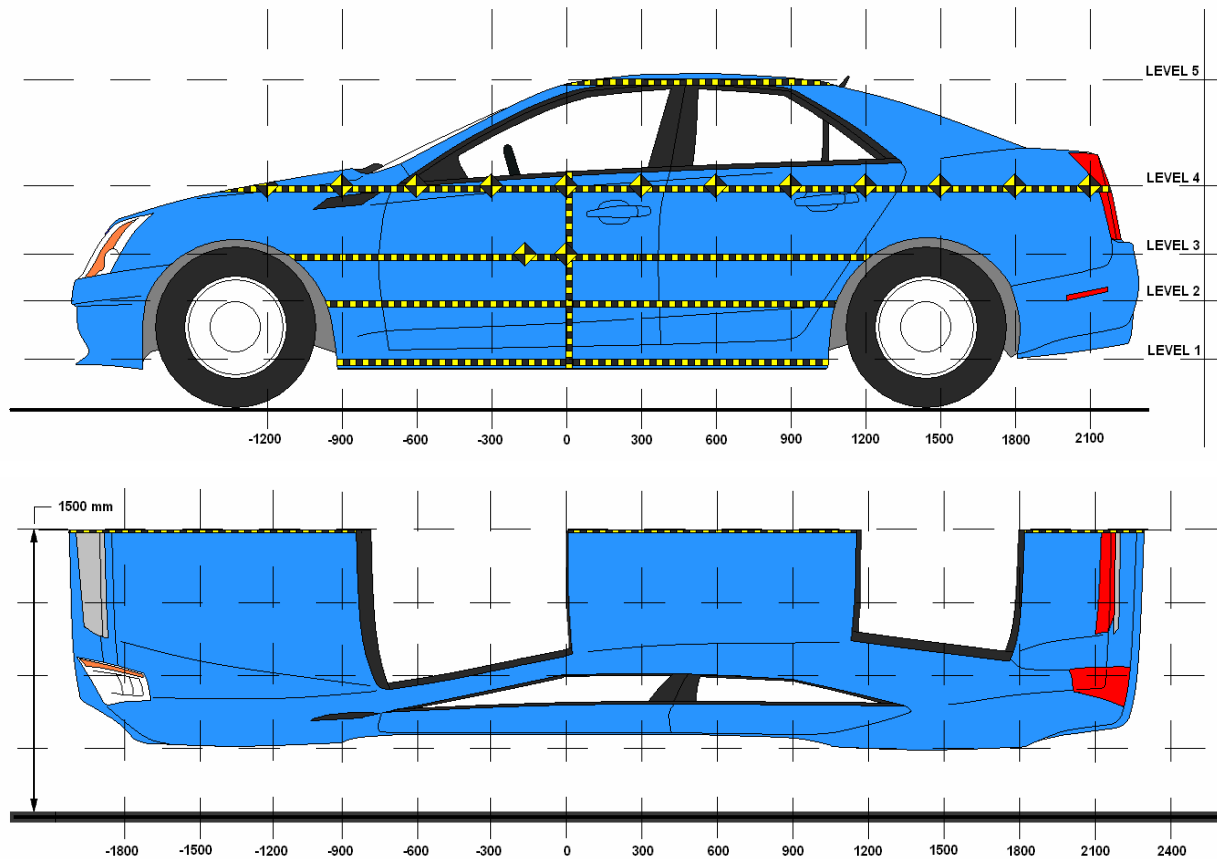
Code	Description	Pre-Test	Post-Test	Difference
A	Vehicle Wheelbase	2775	2657	-118
B	Front Axle to FSOV	947	984	37
C	Rear Axle to RSOV	1057	1105	48
D1	Total Vehicle Length at Left Side	4367	4254	-113
D2	Total Vehicle Length at Centerline	4778	4747	-31
D3	Total Vehicle Length at Right Side	4390	4384	-6
E	Front Bumper Thickness	150	149	-1
F	Front Bumper Bottom to Ground	389	435	46
G	Sill Height at Front Wheel Well	260	259	-1
H	Sill Height at Front Door Leading Edge	263	258	-5
I	Sill Height at B-Pillar	282	312	30
J1	Sill Height at Rear Wheel Well	217	250	33
J2	Pinch Weld Height at Rear Wheel Well	189	222	33
K	Sill Aft of Rear Wheel Well	266	300	34
L	Rear Bumper Thickness	237	237	0
M	Rear Bumper Bottom to Ground	433	428	-5
N	Sill Height to Window Bottom Sill	663	671	8
O	Front Door Leading Edge to Impact CL	679	556	-123
P	Rear Door Trailing Edge to Impact CL	1638	1516	-122
Q	Front Window Opening	412	447	35
R	Right Side Length	3152	3199	47
S	Left Side Length	3181	3044	-137
T	Vehicle Width at B-Pillar	1820	1729	-91

DATA SHEET NO. 10

VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Toyota Camry LE 4-Door Sedan NHTSA No. MB5102

Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test Date: 06/22/10



NOTE: All measurements are in millimeters (mm)

Level	Description	Height Above Ground (mm)
1	Sill Top Height	249
2	Occupant H-Point Height	541
3	Mid-Door Height	648
4	Window Sill Height	942
5	Window Top Height	1415

DATA SHEET NO. 10 ... (CONTINUED)

VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Toyota Camry LE 4-Door Sedan

NHTSA No. MB5102

Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole

Test Date: 06/22/10

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900															
-750		595	597	703			661	669	767			66	72	64	
-600	627	601	602	691		742	725	717	769		115	124	115	78	
-450	634	600	599	681		813	823	805	834		179	223	206	153	
-300	634	598	596	671		882	915	897	911		248	317	301	240	
-150	633	598	594	658		958	1000	991	992		325	402	397	334	
0	635	597	593	651		1049	1069	1073	1077		414	472	480	426	
150	636	597	593	648		965	1007	1019	1040		329	410	426	392	
300	637	598	593	646	930	863	883	890	925	1095	226	285	297	279	165
450	640	600	594	643	910	784	781	776	815	1036	144	181	182	172	126
600	644	604	597	643	908	740	742	735	776	1009	96	138	138	133	101
750	649	608	600	642	910	712	721	716	758	989	63	113	116	116	79
900	654	613	603	643	917	694	702	697	740	987	40	89	94	97	70
1050	654	618	607	643	939	678	685	679	723	999	24	67	72	80	60
1200	644	616	610	647		656	661	661	706		12	45	51	59	
1350		602	599	649			627	629	693			25	30	44	
1500				656					681					25	
1650				662					695					33	
1800				673					701					28	
1950				687					709					22	
2100				703					718					15	
2250															
2400															
2550															
2700															
2850															

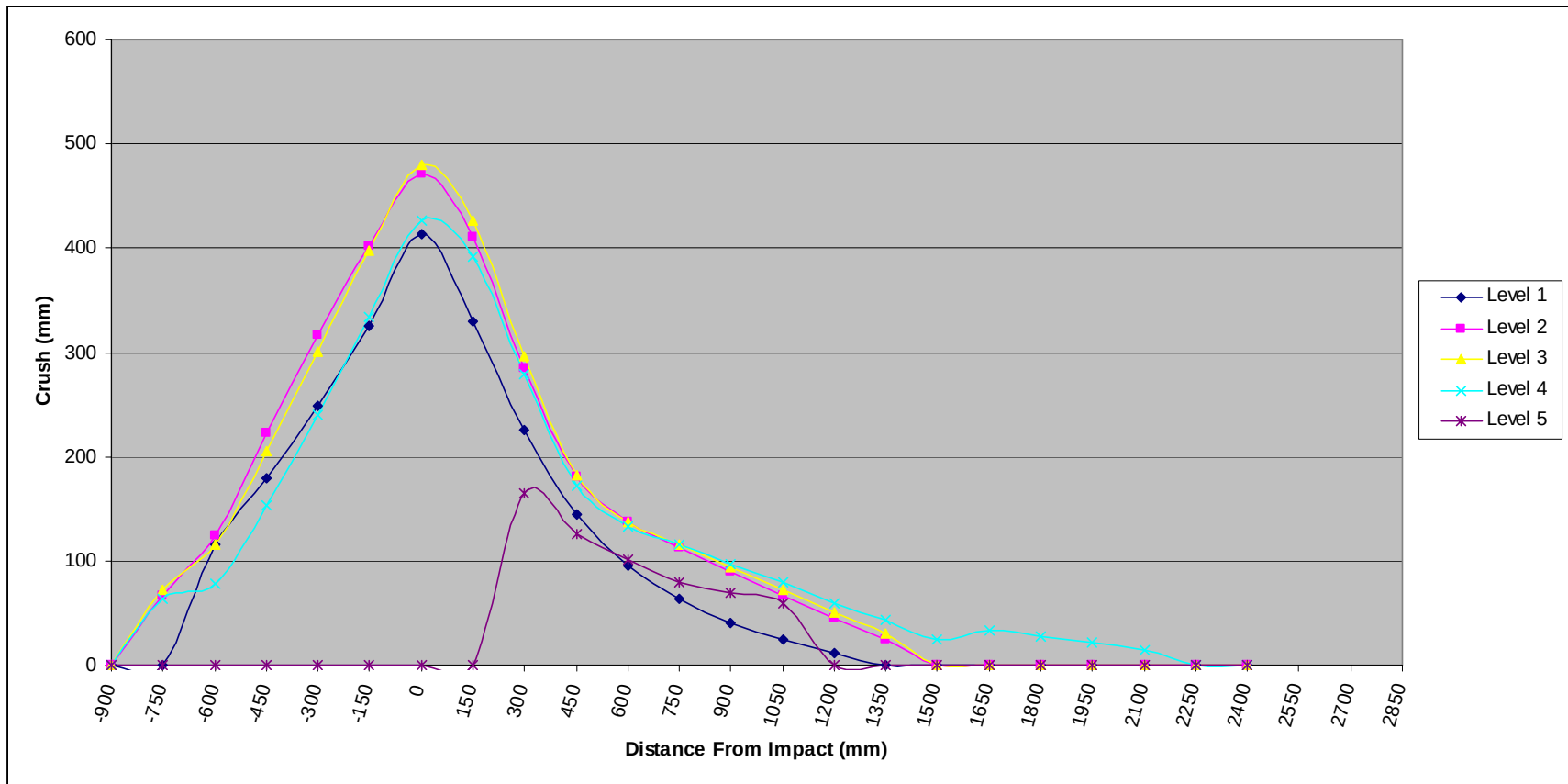
MAXIMUM CRUSH DATA

	Units	Level 1	Level 2	Level 3	Level 4	Level 5
Maximum Crush	mm	414	472	480	426	165
Distance From Impact	mm	0	0	0	0	300

DATA SHEET NO. 10 ... (CONTINUED)
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Toyota Camry LE 4-Door Sedan
Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole

NHTSA No. MB5102
Test Date: 06/22/10



DATA SHEET NO. 11

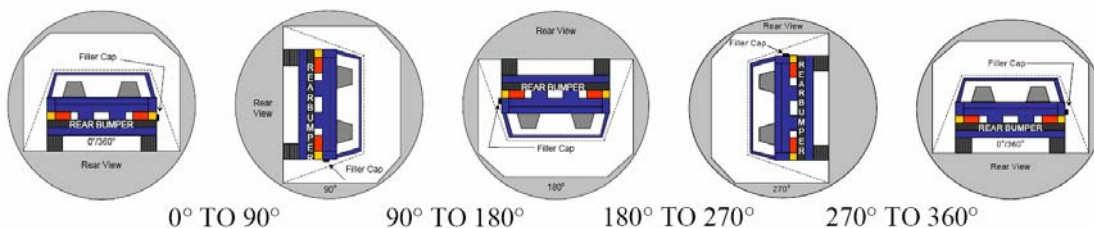
FMVSS NO. 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2011 Toyota Camry LE 4-Door Sedan NHTSA No. MB5102
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test Date: 06/22/10

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 28.9° Test Time: 3:20 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°	84	300	384
90° To 180°	80	305	385
180° To 270°	80	300	380
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	0		
180° To 270°	0			
270° To 360°	0	0		

SOLVENT SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0° To 90°	None
90° To 180°	None
180° To 270°	None
270° To 360°	None

DATA SHEET NO. 12

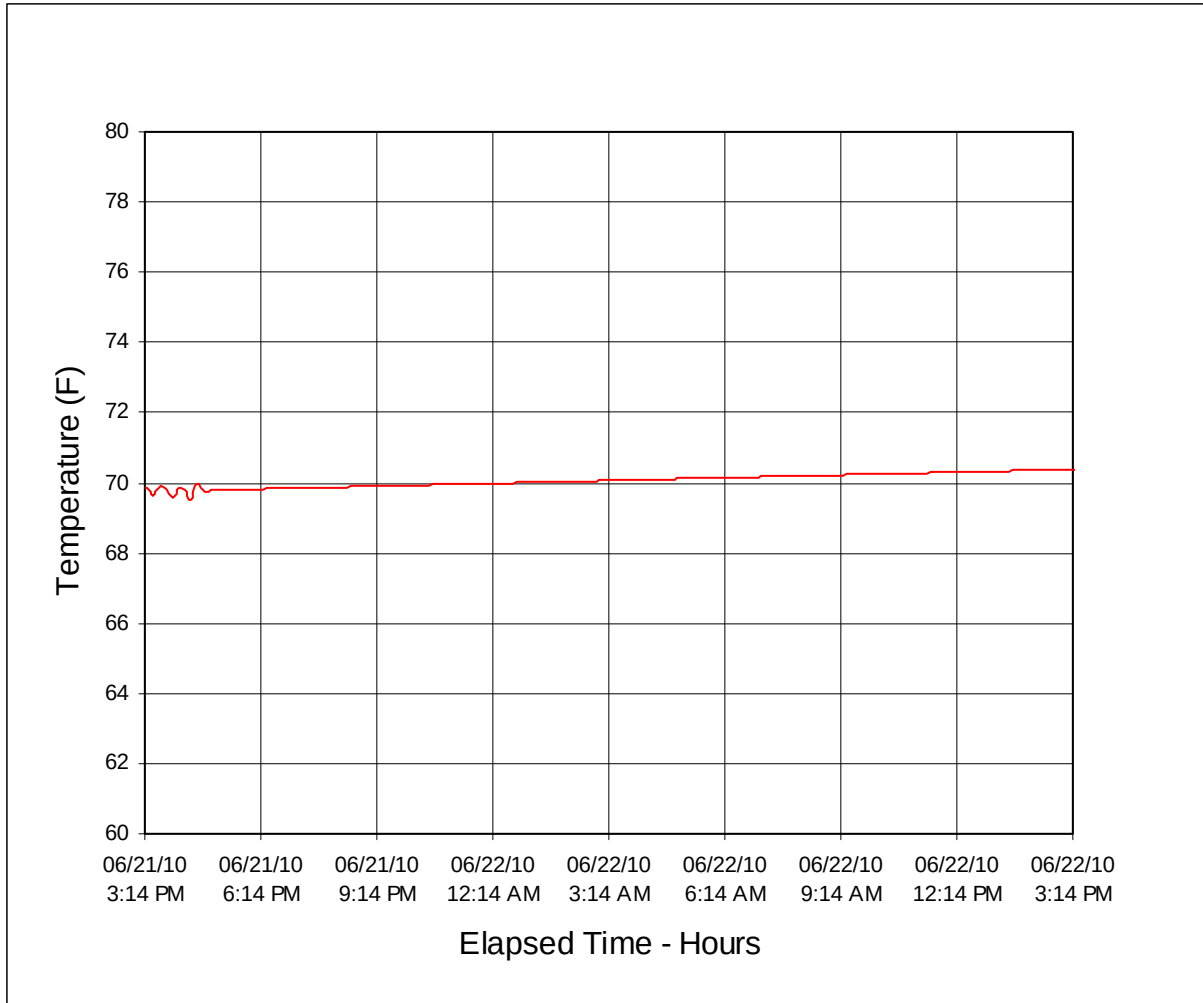
DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2011 Toyota Camry LE 4-Door Sedan

NHTSA No. MB5102

Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole

Test Date: 06/22/10



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

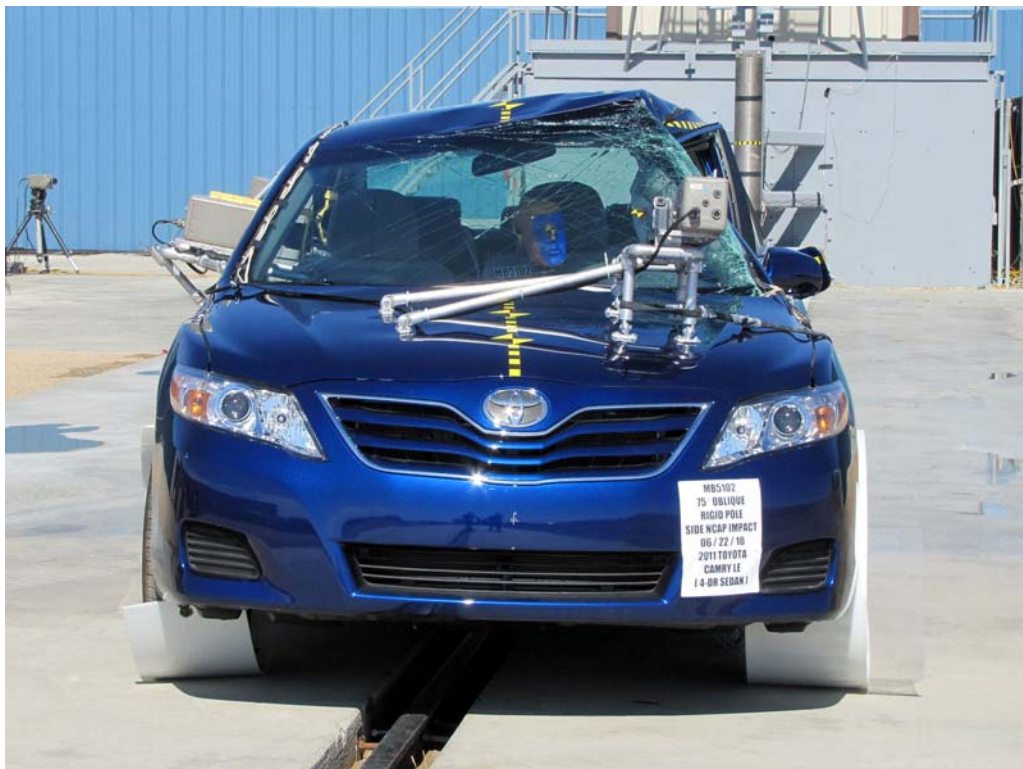


FIGURE 4. Post-Test Frontal View of Test Vehicle



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



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



FIGURE 7. Pre-Test Left Side View of Vehicle



FIGURE 8. Pre-Test Left Side View of Vehicle



FIGURE 9. Pre-Test Left Rear $\frac{3}{4}$ View of Test Vehicle



FIGURE 10. Pre-Test Left Rear $\frac{3}{4}$ View of Test Vehicle



FIGURE 11. Pre-Test Rear View of Test Vehicle

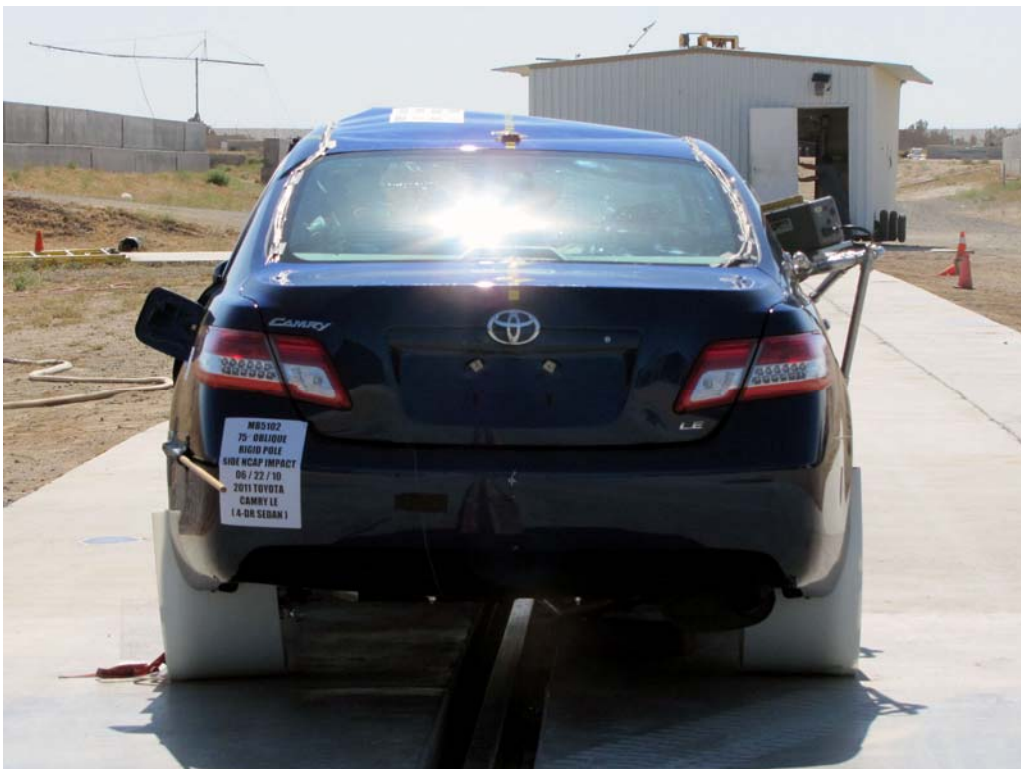


FIGURE 12. Post-Test Rear View of Test Vehicle



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



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



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



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



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

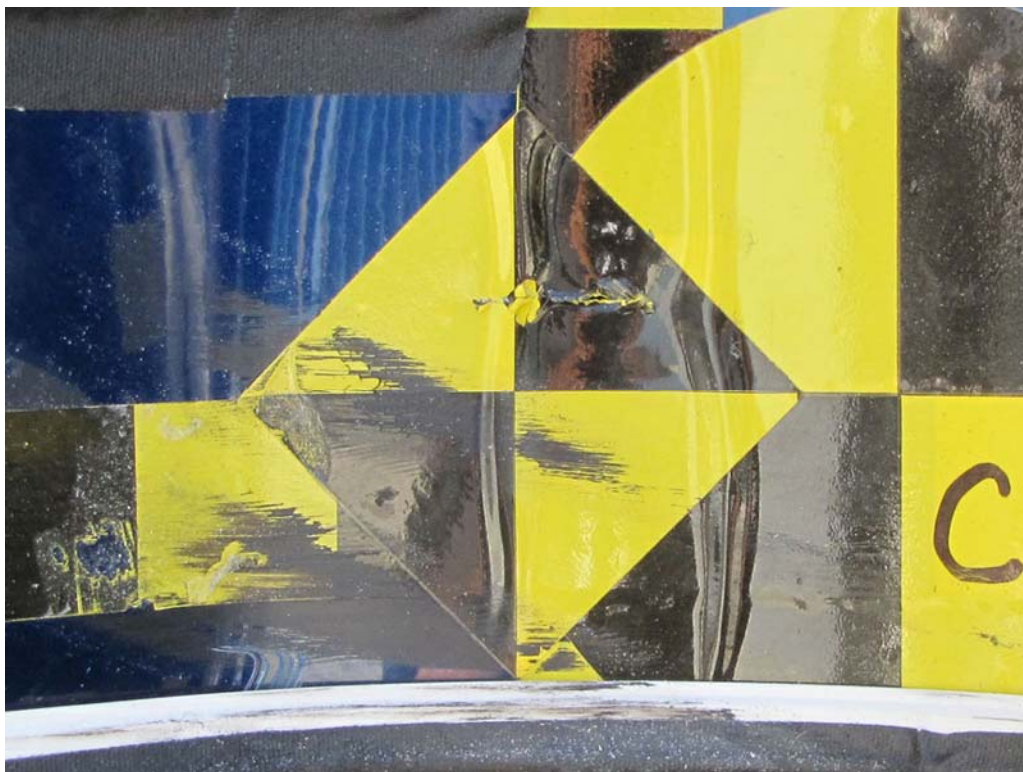


FIGURE 20. Post-Test Close-Up View of Impact Point Target Showing Impact Location



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 to Show Position



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



FIGURE 35. Pre-Test View of Parking Brake



FIGURE 36. Pre-Test Close-Up Left Side View of Driver Seat Track Showing Test Position



FIGURE 37. Pre-Test Close-Up Left Side View of Driver Seat Back Showing Test Position



FIGURE 38. Pre-Test Close-Up View of Driver Seat Back or Head Restraint Showing Seat Back Test Position



FIGURE 39. Pre-Test Driver Dummy and Door Clearance



FIGURE 40. Post-Test Driver Dummy and Door Clearance



FIGURE 41. Pre-Test Right Side View of Dummy and Front Seat Occupant Compartment



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



FIGURE 43. Pre-Test Inner Door Panel View



FIGURE 44. Post-Test Inner Door Panel View Showing Dummy Contact Locations



FIGURE 45. Post-Test Dummy Close-Up Head Contact with Vehicle View



FIGURE 46. Post-Test Dummy Close-Up Head Contact with Side Airbag View



FIGURE 47. Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View



FIGURE 48. Post-Test Dummy Close-Up Torso Contact with Side Airbag View



FIGURE 49. Post-Test Dummy Close-Up Pelvis Contact with Vehicle View

**Photograph Not
Applicable**

FIGURE 50. Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View

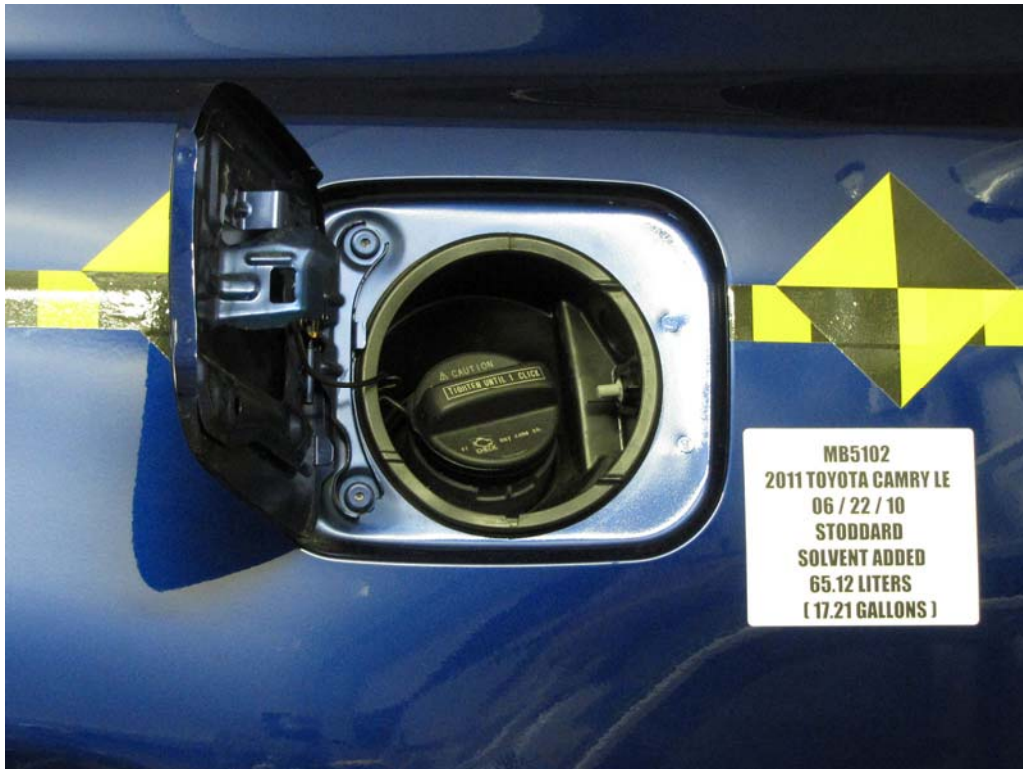


FIGURE 51. Pre-Test View of Fuel Filler Cap



FIGURE 52. Post-Test View of Fuel Filler Cap

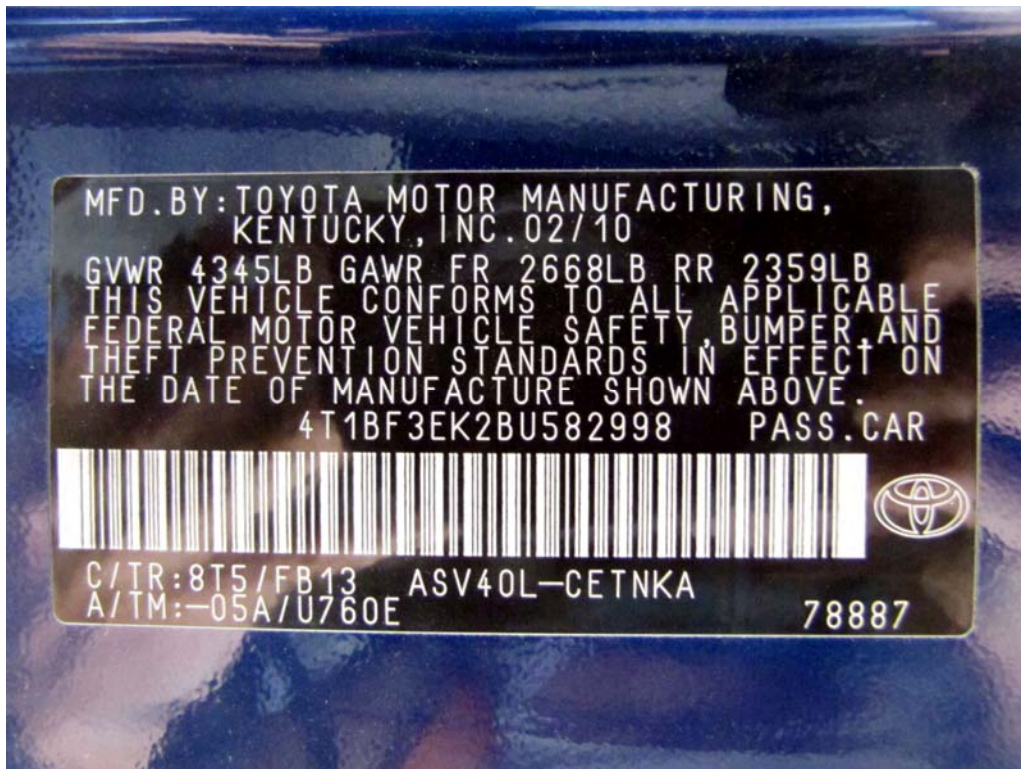


FIGURE 53. Close-Up View of Vehicle's Certification Label



FIGURE 54. Close-Up View of Vehicle's Tire Information Placard

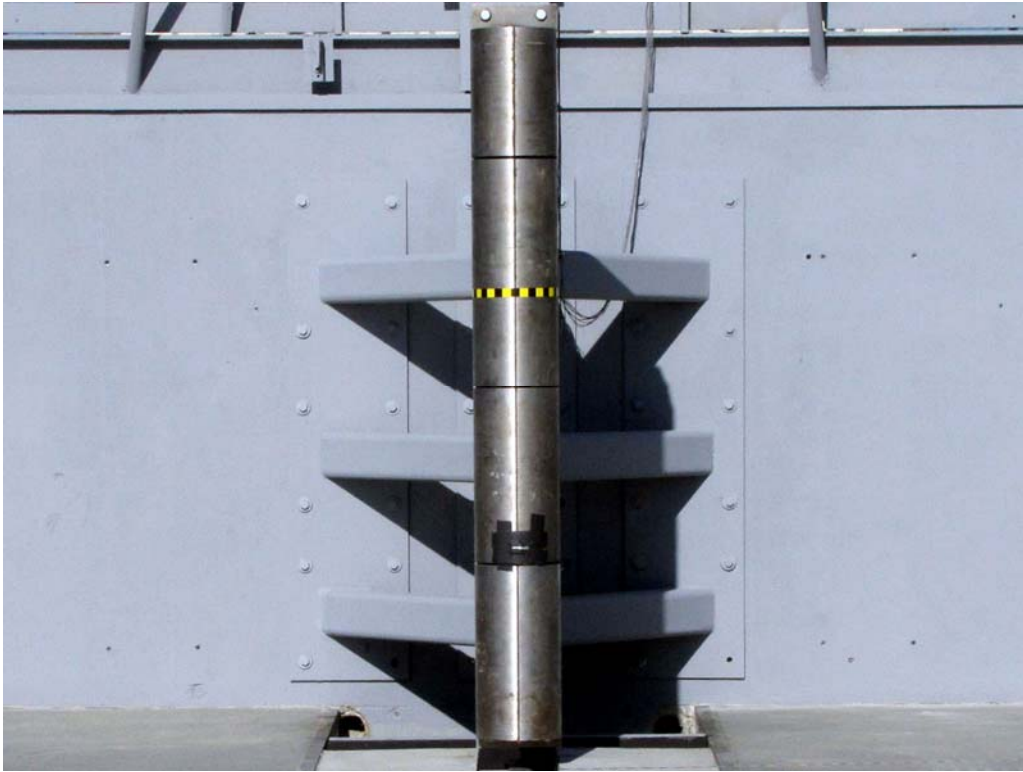


FIGURE 55. Pre-Test Pole Barrier Front View

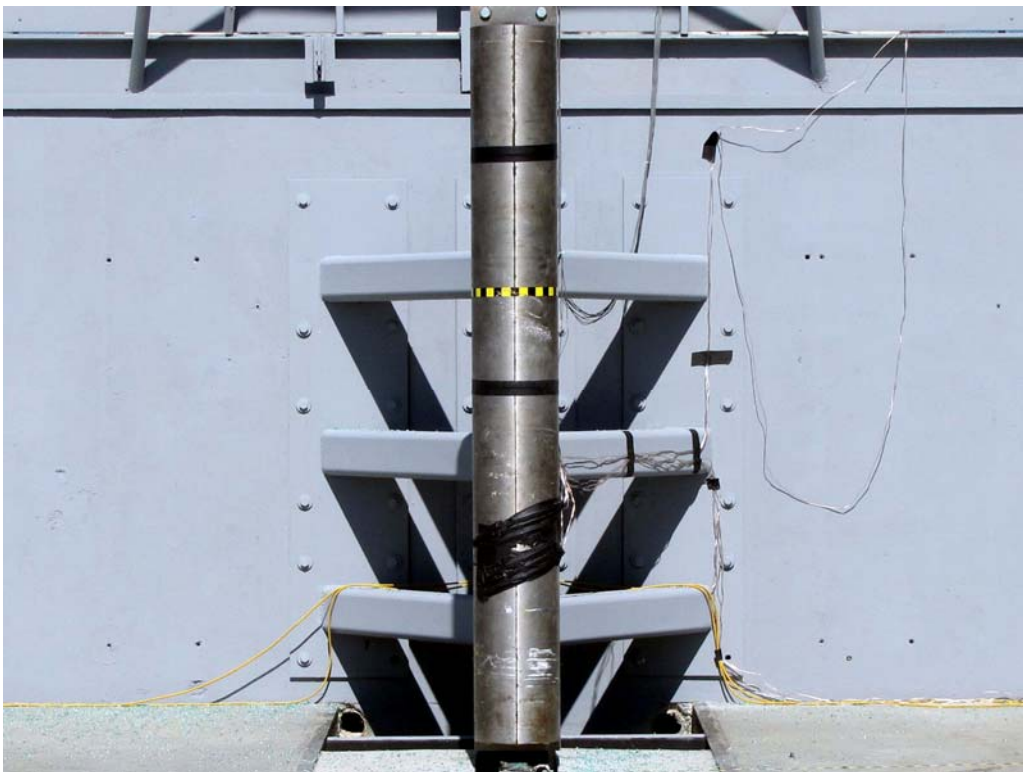


FIGURE 56. Post-Test Pole Barrier Front View



FIGURE 57. Pre-Test Pole Barrier Side View



FIGURE 58. Post-Test Pole Barrier Side View



FIGURE 59. Pre-Test Ballast View

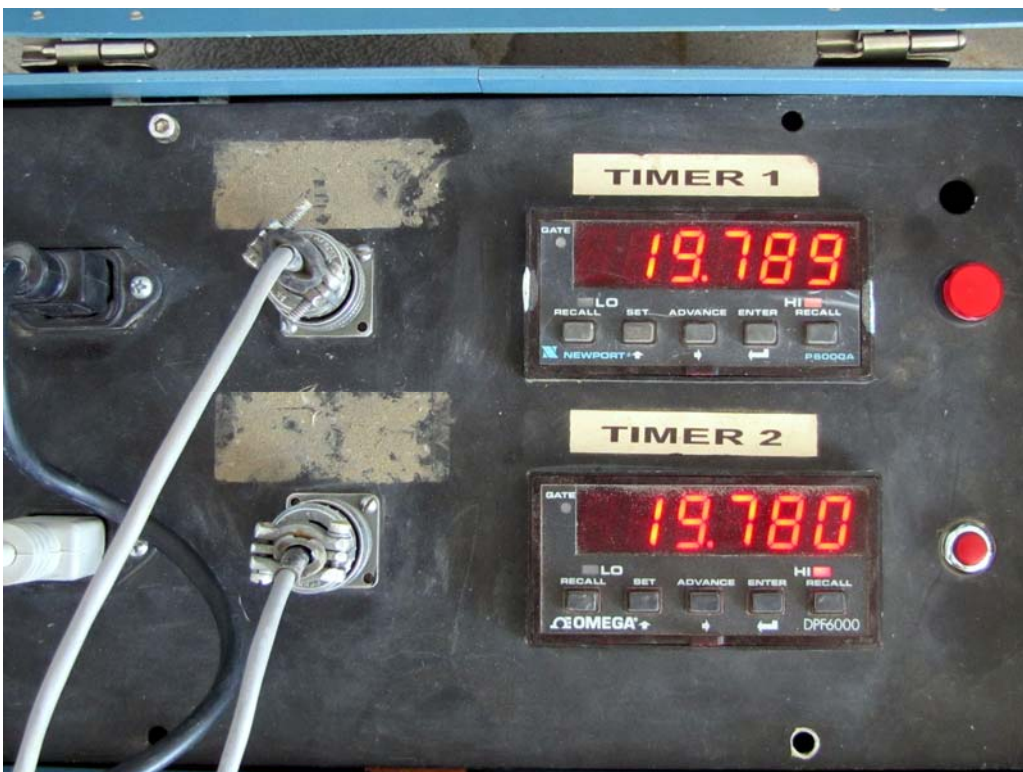


FIGURE 60. Post-Test Primary and Redundant Speed Trap Read-Out



FIGURE 61. FMVSS No. 301-305 Rollover 0



FIGURE 62. FMVSS No. 301-305 Rollover 90

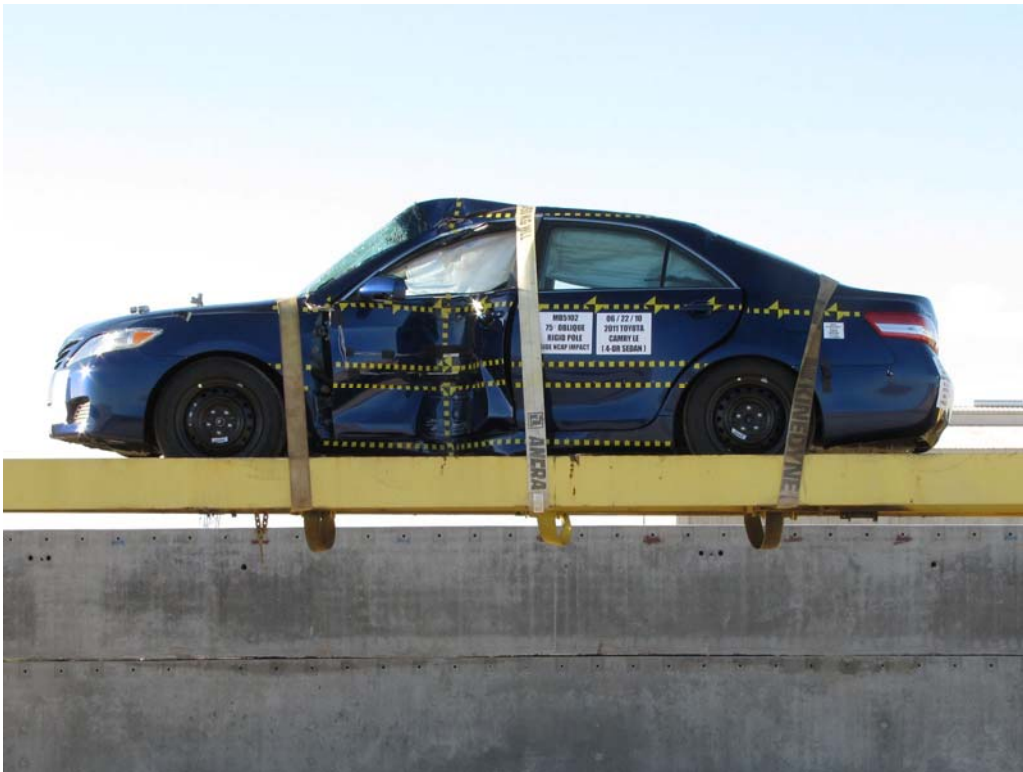


FIGURE 65. FMVSS No. 301-305 Rollover 360



FIGURE 66. Impact Event

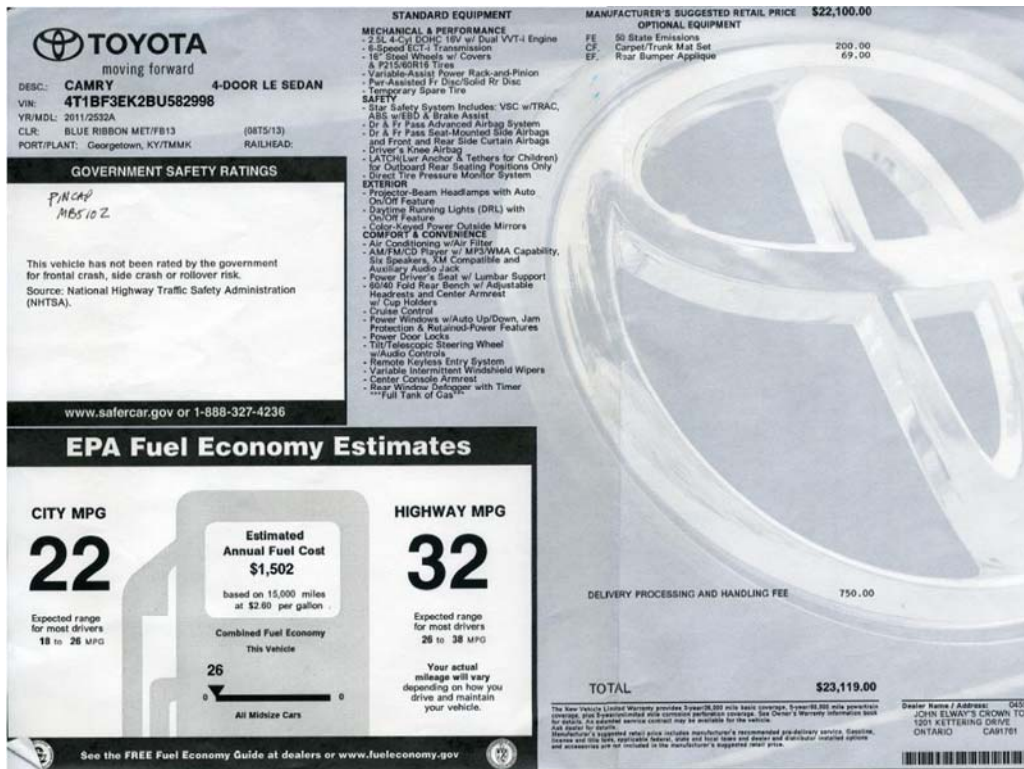


FIGURE 67. Monroney Label

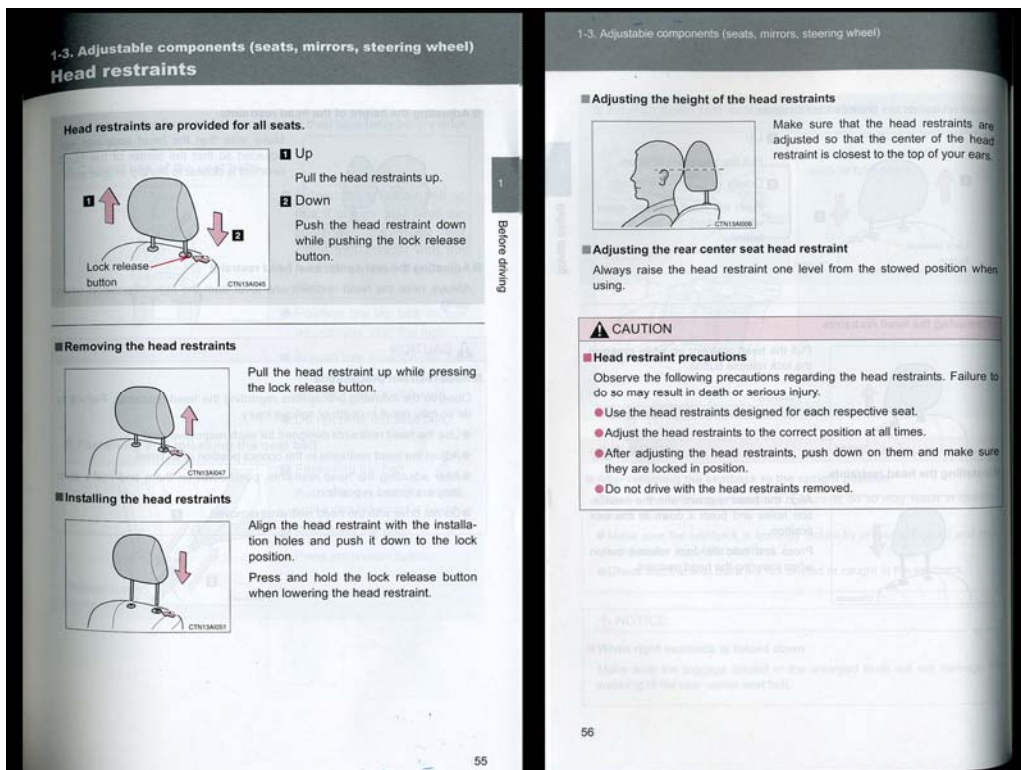


FIGURE 68. Driver Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

APPENDIX B
VEHICLE AND DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS

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1	Driver Head Acceleration (X) Primary	B-1
2	Driver Head Acceleration (Y) Primary	B-1
3	Driver Head Acceleration(Z) Primary	B-1
4	Driver Head Resultant Primary	B-1
5	Driver Lower Spine T12 Acceleration (X)	B-2
6	Driver Lower Spine T12 Acceleration (Y)	B-2
7	Driver Lower Spine T12 Acceleration (Z)	B-2
8	Driver Lower Spine Y12 Resultant Acceleration	B-2
9	Driver Iliac Wing Force on Impact Side (Y)	B-3
10	Driver Acetabulum Force on Impact Side (Y)	B-3
11	Driver Total Pelvis Force on Impact Side (Y)	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 (X) Redundant
 Driver Head Acceleration (Y) Redundant
 Driver Head Acceleration (Z) Redundant
 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)
 Driver Shoulder Contact Switch
 Driver Torso Contact Switch
 Driver Pelvis Contact Switch
 Center of Gravity Acceleration (X)
 Vehicle Center of Gravity Acceleration (Y)
 Vehicle Center of Gravity Acceleration (Z)
 Vehicle Center of Gravity Angular Rate About X (Roll)
 Vehicle Center of Gravity Angular Rate About Y (Pitch)
 Vehicle Center of Gravity Angular Rate About Z (Yaw)

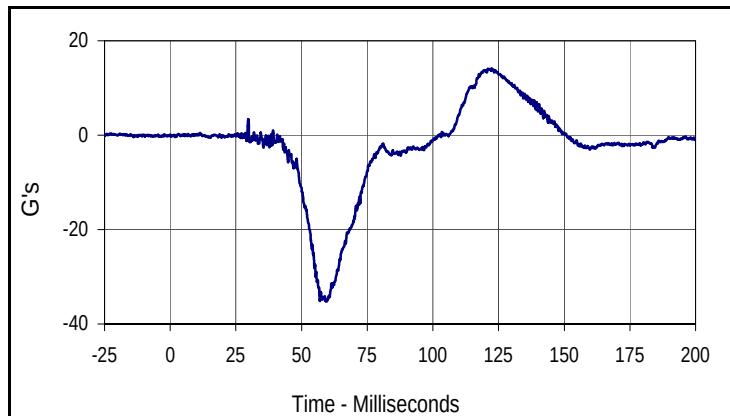
Left Floor Sill Acceleration (Y)
Left A-Pillar Sill Acceleration (Y)
Left Lower A-Pillar Acceleration (Y)
Left Mid A-Pillar Acceleration (Y)
Left B-Pillar Sill Acceleration (Y)
Left Lower B-Pillar Acceleration (Y)
Left Mid B-Pillar Acceleration (Y)
Driver Seat Track at Dummy H-Point Acceleration (Y)
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)
Driver Side Airbag Timing
Driver Side Curtain Airbag Timing

Pole Instrumentation Data

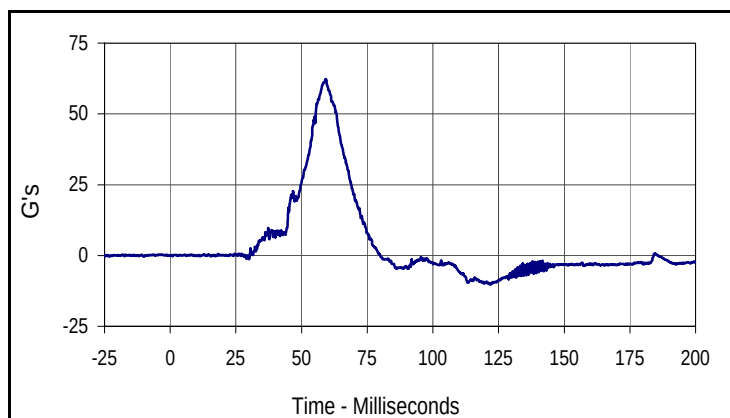
Load Cell Pole Barrier #1 Force (Y)
Load Cell Pole Barrier #2 Force (Y)
Load Cell Pole Barrier #3 Force (Y)
Load Cell Pole Barrier #4 Force (Y)
Load Cell Pole Barrier #5 Force (Y)
Load Cell Pole Barrier #6 Force (Y)
Load Cell Pole Barrier #7 Force (Y)
Load Cell Pole Barrier #8 Force (Y)

Test Vehicle: 2011 Toyota Camry LE 4-Door Sedan
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test

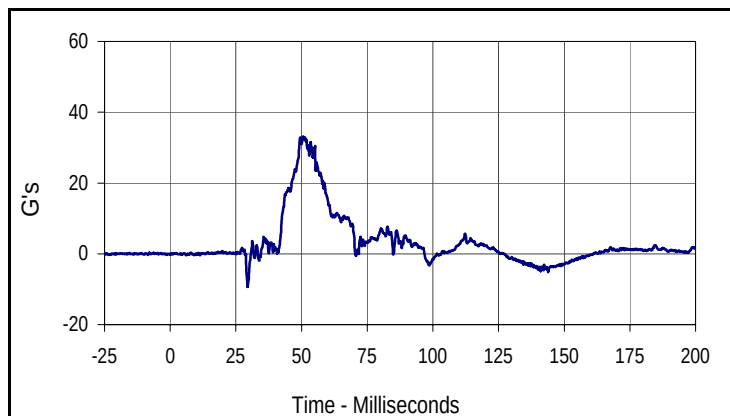
Test Date: 6/22/10
 NHTSA No.: MB5102



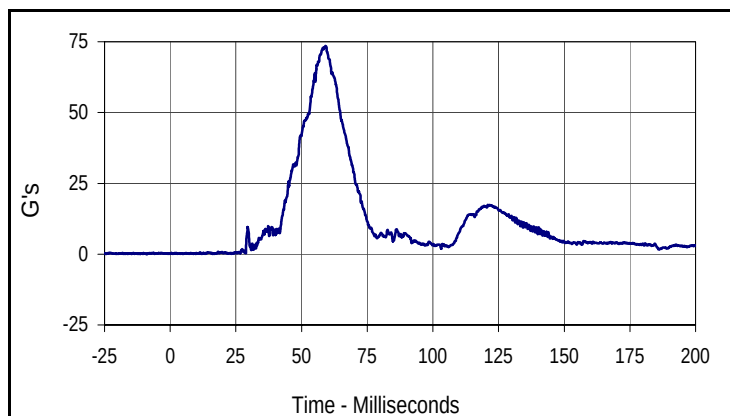
Curve Description			
Driver Head Acceleration X Primary			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
14.1	122.4	-35.2	59.5



Curve Description			
Driver Head Acceleration Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
62.3	59.2	-10.2	122.1



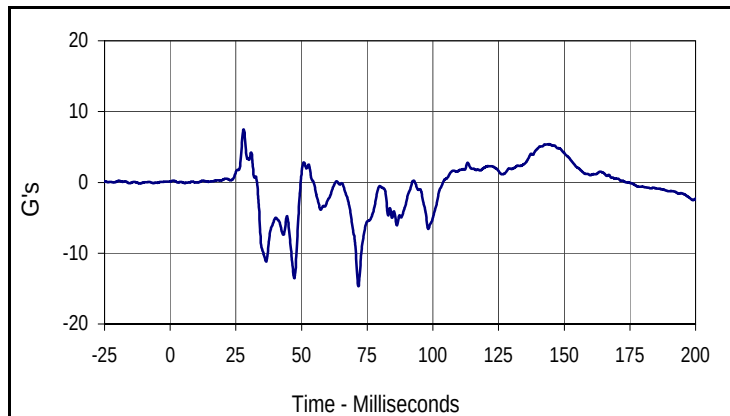
Curve Description			
Driver Head Acceleration Z Primary			
CURNO	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
33.1	50.5	-9.4	29.5



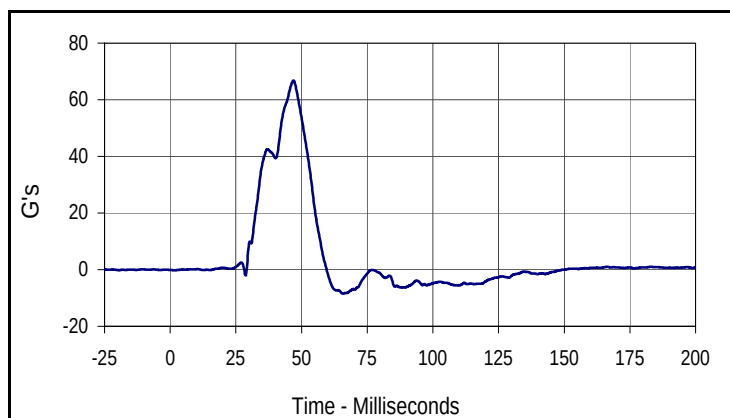
Curve Description			
Driver Head Acceleration Primary Res.			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
73.5	59.1	0.0	12.0

Test Vehicle: 2011 Toyota Camry LE 4-Door Sedan
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test

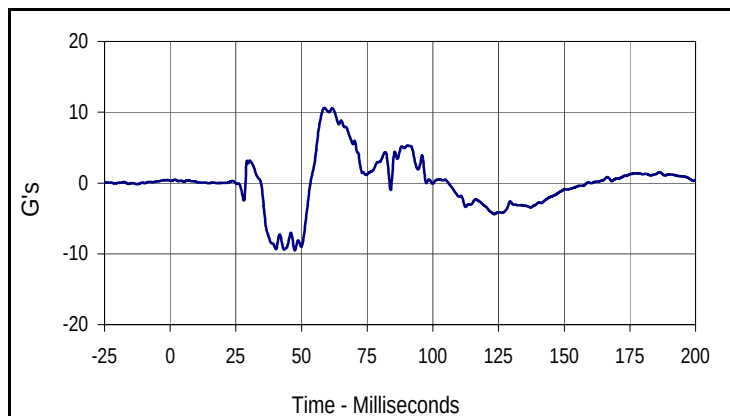
Test Date: 6/22/10
 NHTSA No.: MB5102



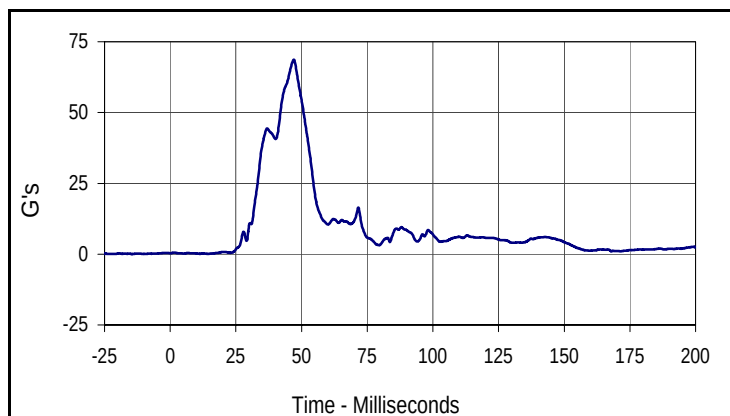
Curve Description			
Driver Lower Spine T12 Acceleration X			
CURNO	Type	SAE Class	Units
012	FIL	180	G's
Max	Time	Min	Time
7.5	27.9	-14.7	71.6



Curve Description			
Driver Lower Spine T12 Acceleration Y			
CURNO	Type	SAE Class	Units
013	FIL	180	G's
Max	Time	Min	Time
66.8	46.9	-8.4	65.7



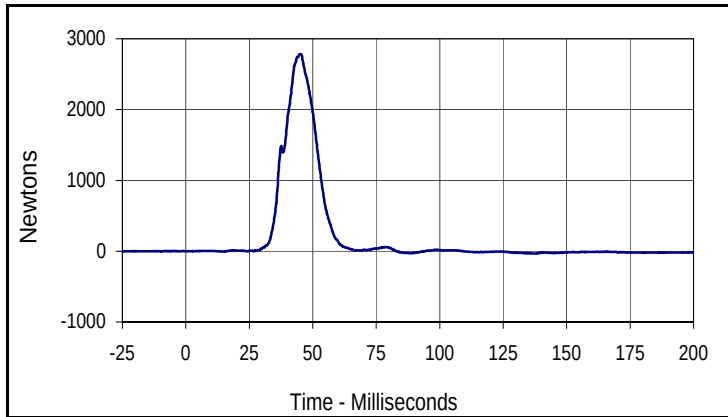
Curve Description			
Driver Lower Spine T12 Acceleration Z			
CURNO	Type	SAE Class	Units
014	FIL	180	G's
Max	Time	Min	Time
10.6	58.7	-9.5	47.4



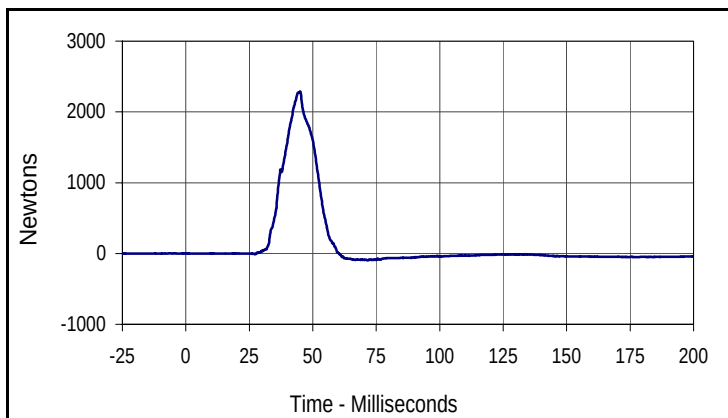
Curve Description			
Driver Lower Spine T12 Acceleration Res.			
CURNO	Type	SAE Class	Units
012	RES	180	G's
Max	Time	Min	Time
68.7	47.0	0.1	14.3

Test Vehicle: 2011 Toyota Camry LE 4-Door Sedan
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test

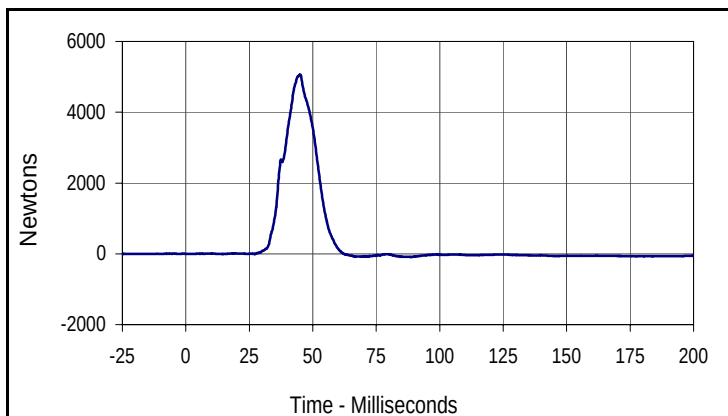
Test Date: 6/22/10
 NHTSA No.: MB5102



Curve Description			
Driver Iliac Wing Force on Impact Side Y			
CURNO	Type	SAE Class	Units
015	FIL	600	Newtons
Max	Time	Min	Time
2784.7	45.3	-31.9	137.3



Curve Description			
Driver Acetabulum Force on Impact Side Y			
CURNO	Type	SAE Class	Units
016	FIL	600	Newtons
Max	Time	Min	Time
2289.5	45.0	-98.0	71.7



Curve Description			
Driver Total Pelvic Force on Impact Side Y			
CURNO	Type	SAE Class	Units
015	SUM	600	Newtons
Max	Time	Min	Time
5066.7	45.0	-90.6	88.7

APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

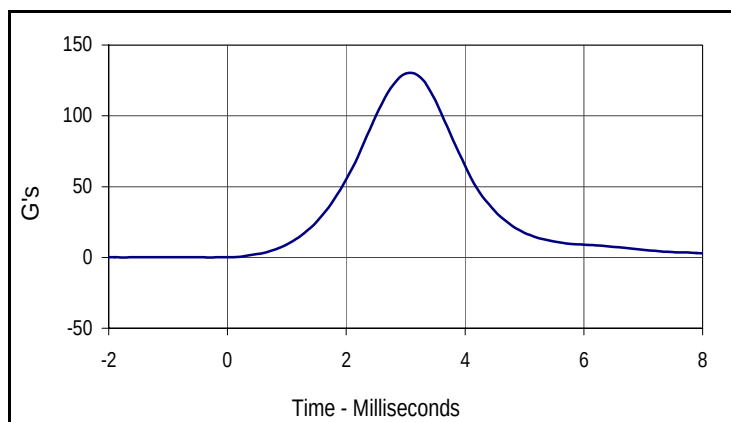
APPENDIX C
PRE-TEST SID-IIs / HIII CONFIGURATION AND PERFORMANCE VERIFICATION DATA

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

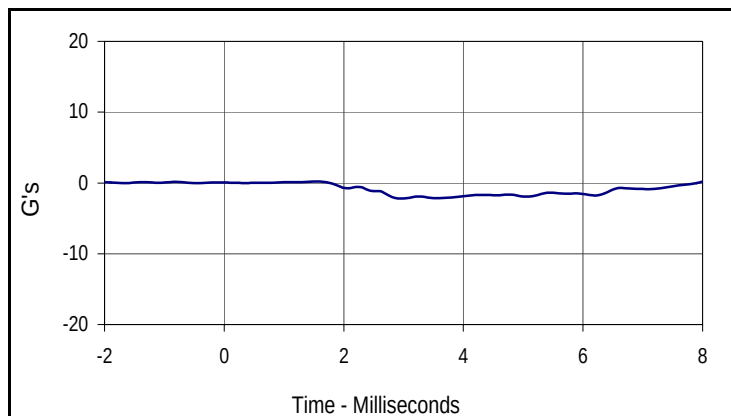
Test Date: 6/10/10
 Test I.D.: HD06A



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
Peak Resultant Acceleration	G's	115 to 137	130.4	Pass
Peak Longitudinal Acceleration	G's	≤15	2.2	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	13.4	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
130.4	3.1	0.0	-1.8



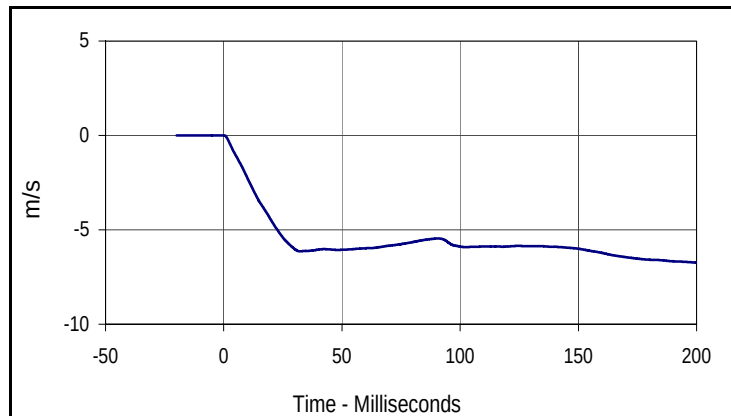
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.2	1.5	-2.2	3.0

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

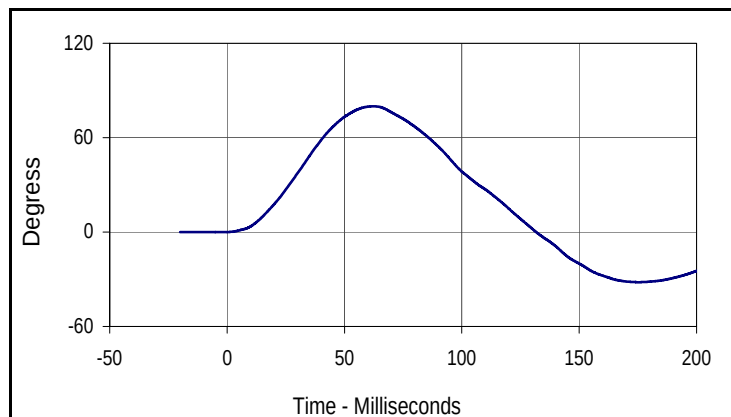
Test Date: 6/10/10
 Test I.D.: NB06A



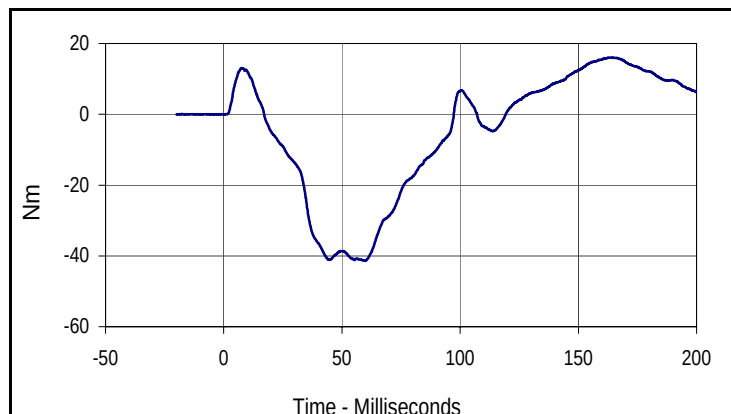
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.58	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.3	Pass
	15 msec	m/s	-3.30 to -4.10	-3.5	Pass
	20 msec	m/s	-4.40 to -5.40	-4.5	Pass
	25 msec	m/s	-5.40 to -6.10	-5.4	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.1	Pass
Translation-Rotation	Max	Degrees	71.0 to 81.0	79.9	Pass
	Time	msec	50.0 to 70.0	62.4	Pass
Peak Occipital Condyle Moment		Nm	-36.0 to -44.0	-41.3	Pass
Decaying Moment Time to Cross 0 Nm		msec	102.0 to 126.0	119.3	Pass
Overall Test Results					Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.3	-6.7	200.0



Curve Description			
Maximum Translation Rotation			
CURNO	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
79.9	62.4	-31.9	175.1



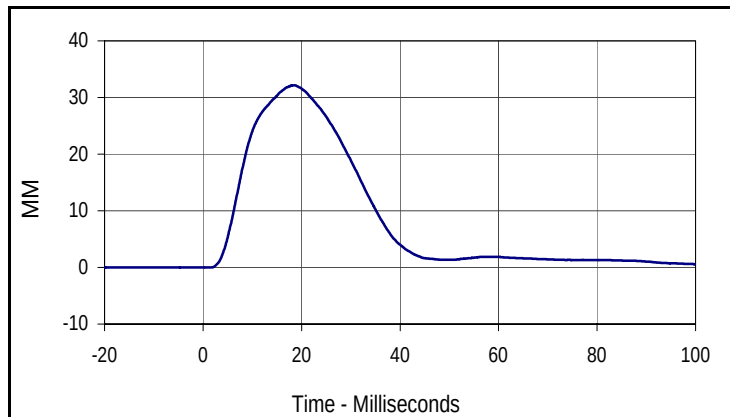
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
16.0	163.0	-41.3	59.3

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

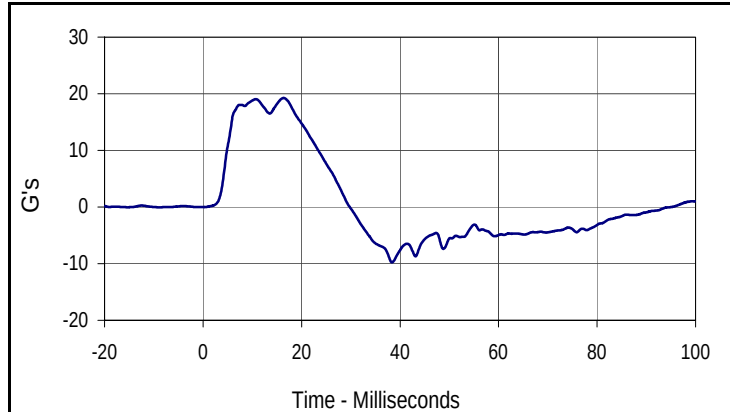
Test Date: 6/10/10
 Test I.D.: SH06A



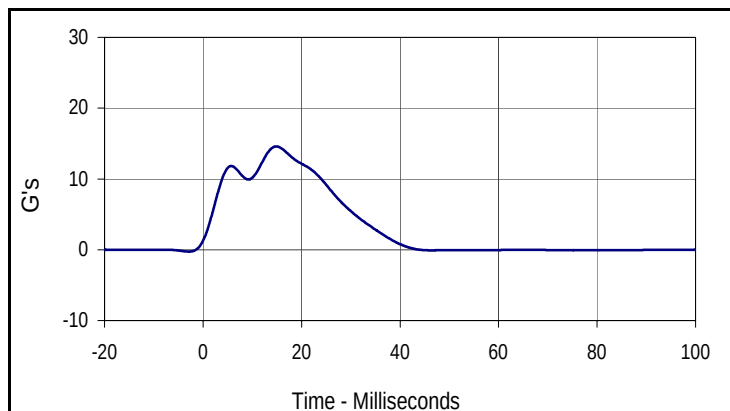
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.30	Pass
Shoulder Deflection	MM	28 to 37	32.2	Pass
Peak Upper Spine Y Acceleration	G's	17 to 22	19.2	Pass
Peak Impactor Acceleration	G's	13 to 18	14.6	Pass
Overall Test Results			Pass	



Curve Description			
Shoulder Acceleration			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
32.2	18.5	0.0	-14.3



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
19.2	16.3	-9.8	38.4



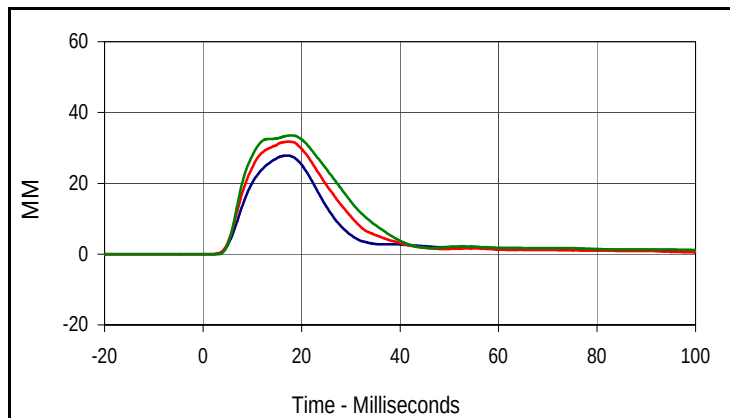
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FI	180	G's
Max	Time	Min	Time
14.6	14.9	-0.3	-2.9

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

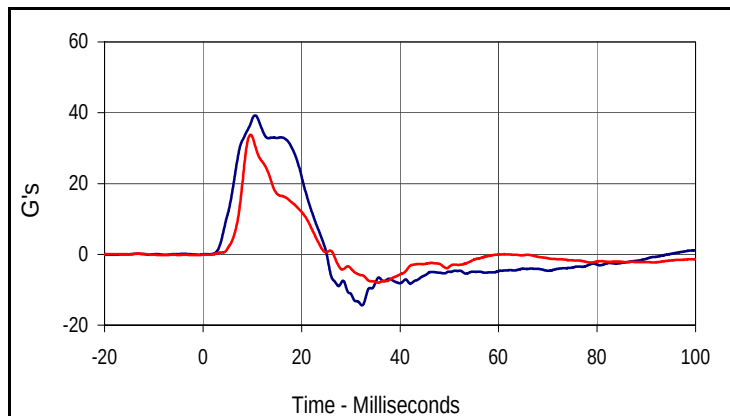
Test Date: 6/10/10
 Test I.D.: TH06A



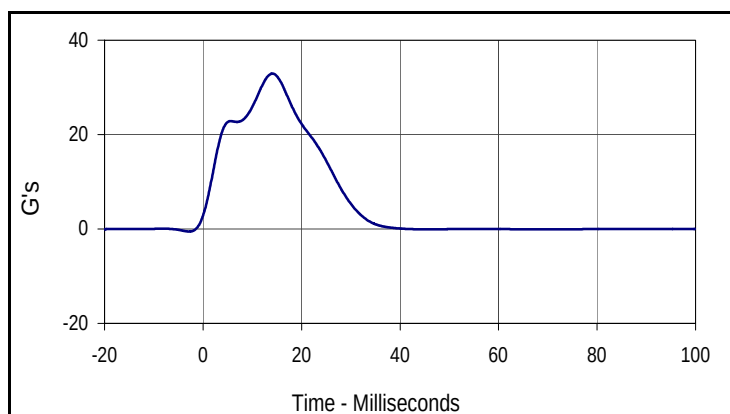
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.74	Pass
Shoulder Deflection	MM	31 to 40	35.9	Pass
Upper Thorax Rib Deflection	MM	25 to 32	27.9	Pass
Middle Thorax Rib Deflection	MM	30 to 36	31.8	Pass
Lower Thorax Rib Deflection	MM	32 to 38	33.5	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	39.2	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	33.8	Pass
Peak Impactor Acceleration After 5 msec.	G's	30 to 36	32.9	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
27.9	17.0	0.0	-15.7
Middle Thorax Deflection			
Max	Time	Min	Time
31.8	17.2	0.0	-18.9
Lower Thorax Deflection			
Max	Time	Min	Time
33.5	18.0	0.0	-0.9



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
39.2	10.5	-14.4	32.3
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
33.8	9.6	-8.0	35.5



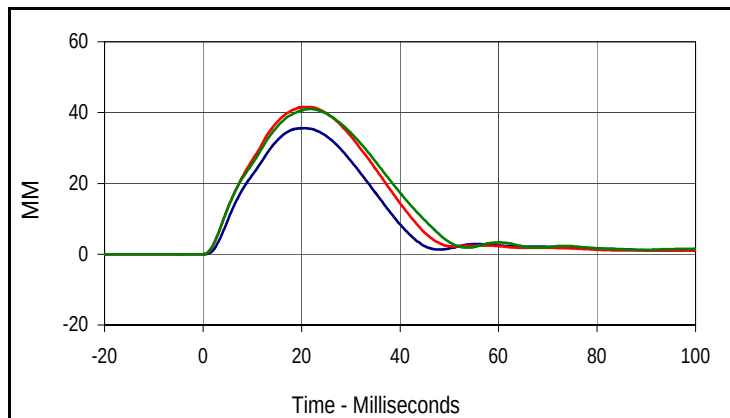
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
32.9	14.1	-0.5	-2.8

Test Program: SID IIs Thorax w/o Arm Calibration
 ATD Serial No.: 307

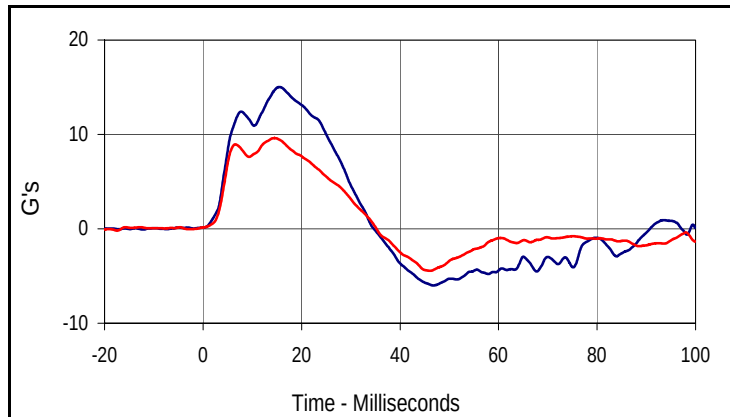
Test Date: 6/10/10
 Test I.D.: TOA6A



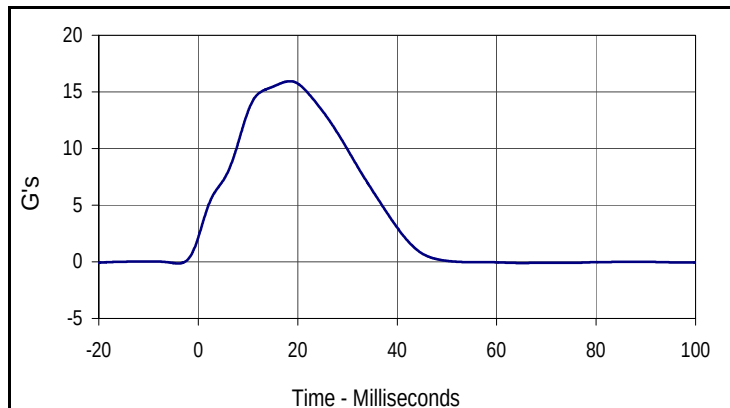
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.30	Pass
Upper Thorax Rib Deflection	MM	32 to 40	35.6	Pass
Middle Thorax Rib Deflection	MM	39 to 45	41.6	Pass
Lower Thorax Rib Deflection	MM	35 to 43	41.0	Pass
Peak Upper Spine Y Acceleration	G's	13 to 17	15.0	Pass
Peak Lower Spine Y Acceleration	G's	7 to 11	9.6	Pass
Peak Impactor Acceleration	G's	14 to 18	15.9	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
35.6	20.4	0.0	-6.1
Middle Thorax Deflection			
Max	Time	Min	Time
41.6	21.1	0.0	-20.0
Lower Thorax Deflection			
Max	Time	Min	Time
41.0	22.0	0.0	-0.8



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.0	15.5	-6.0	46.8
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
9.6	14.5	-4.4	46.1



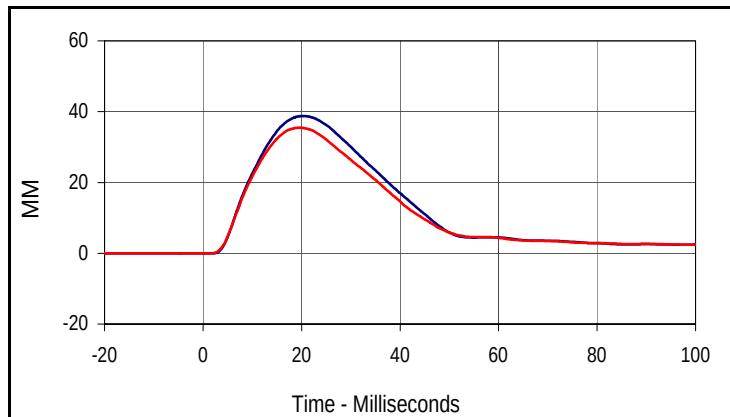
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
15.9	18.4	-0.1	-4.0

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

Test Date: 6/11/10
 Test I.D.: SH06A

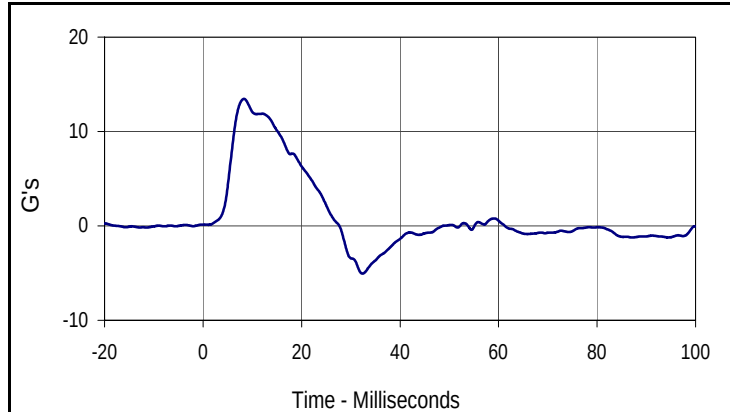


Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.40	Pass
Upper Abdominal Rib Deflection	MM	36 to 47	38.8	Pass
Lower Abdominal Rib Deflection	MM	33 to 44	35.5	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	13.5	Pass
Peak Impactor Acceleration	G's	12 to 16	14.7	Pass
Overall Test Results			Pass	

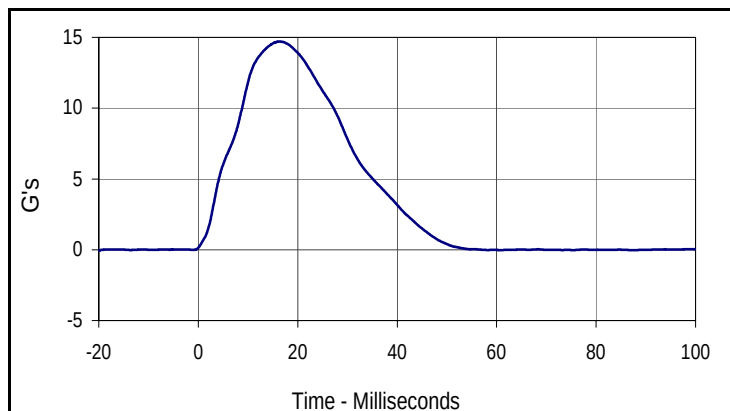


Curve Description			
Upper Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
38.8	20.2	0.0	-2.7

Curve Description			
Lower Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
35.5	19.5	0.0	-2.3



Curve Description			
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
13.5	8.3	-5.0	32.4



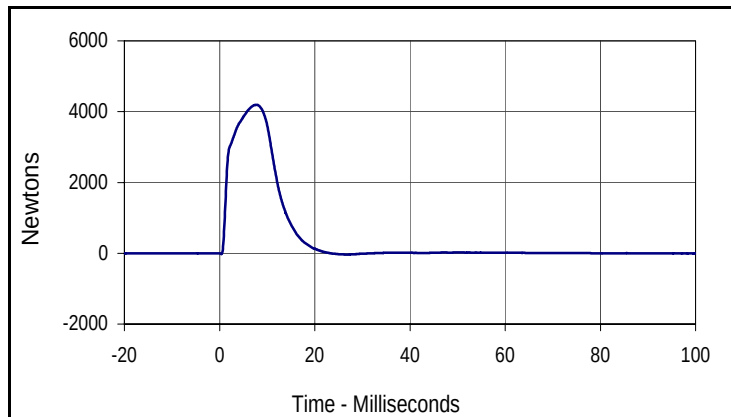
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.7	16.3	0.0	-20.0

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

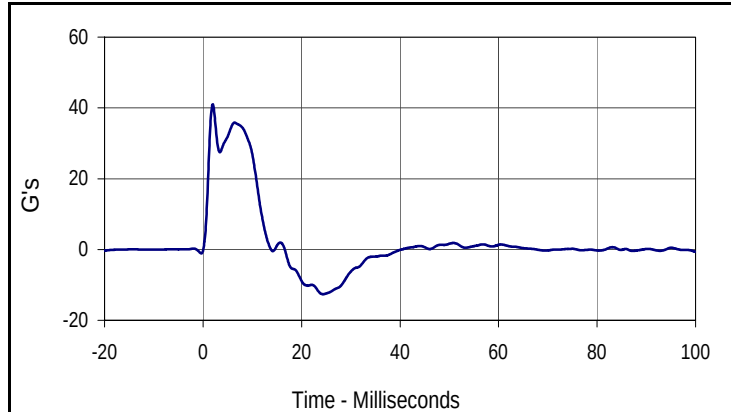
Test Date: 6/11/10
 Test I.D.: PA06A



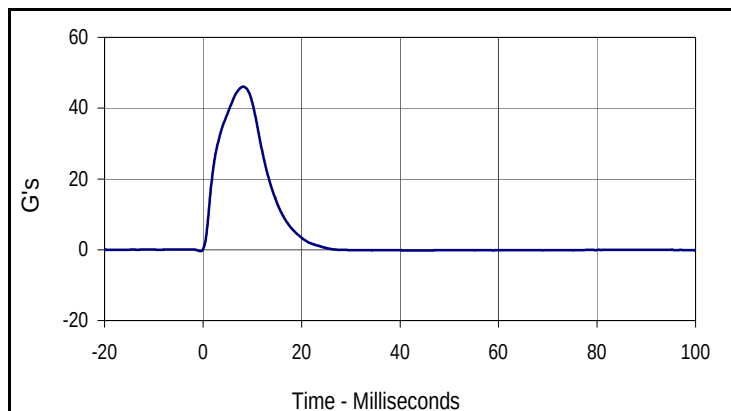
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.71	Pass
Peak Acetabulum Force	Newtons	3600 to 4300	4194.6	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	35.8	Pass
Peak Impactor Acceleration	G's	38 to 47	46.0	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4194.6	7.7	-37.5	27.0



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
41.0	2.0	-12.6	24.3



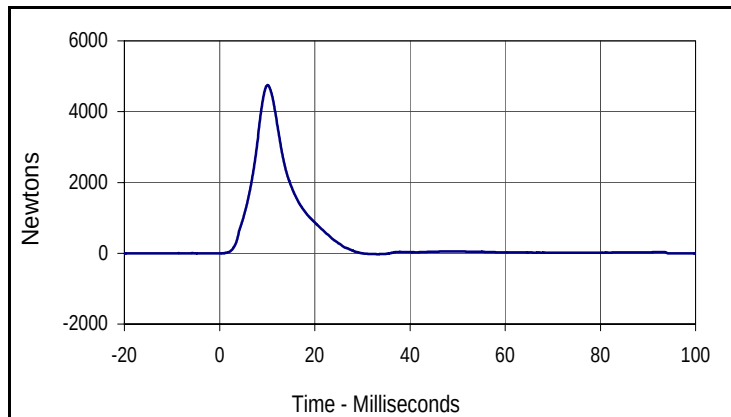
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
46.0	8.2	-0.4	-0.5

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

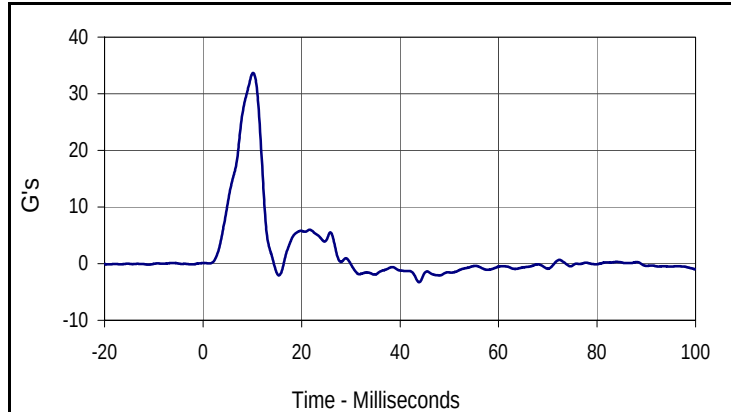
Test Date: 6/11/10
 Test I.D.: PL06A



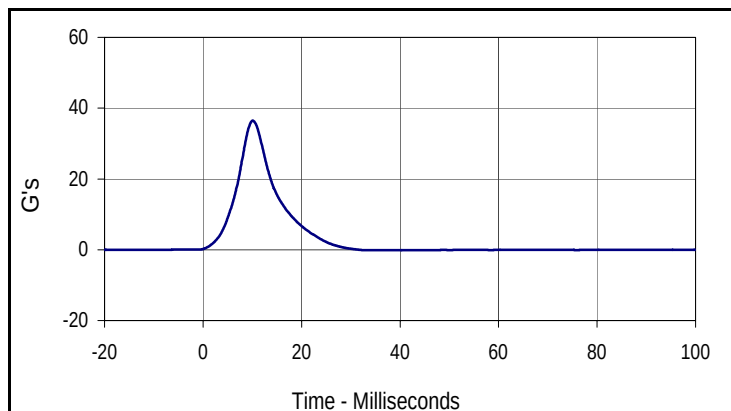
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.33	Pass
Peak Iliac Force	Newtons	4100 to 5100	4750.4	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	33.7	Pass
Peak Impactor Acceleration	G's	36 to 45	36.5	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Iliac Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4750.4	10.1	-27.5	33.3



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
33.7	10.2	-3.3	43.9



Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
36.5	10.1	-0.2	36.8

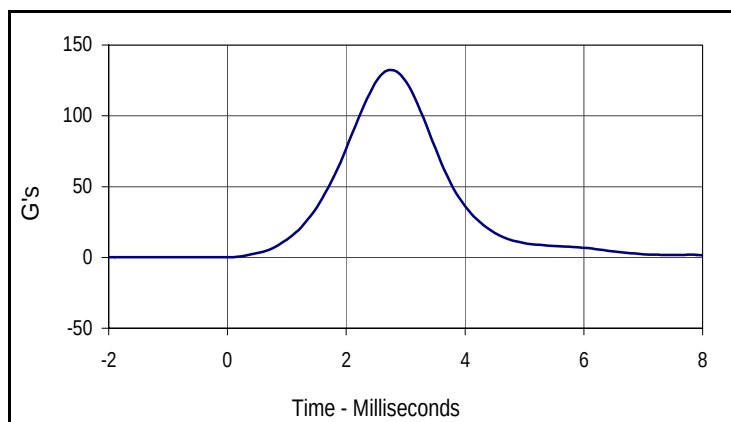
APPENDIX C
POST-TEST SID-IIs / HIII CONFIGURATION AND PERFORMANCE VERIFICATION DATA

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

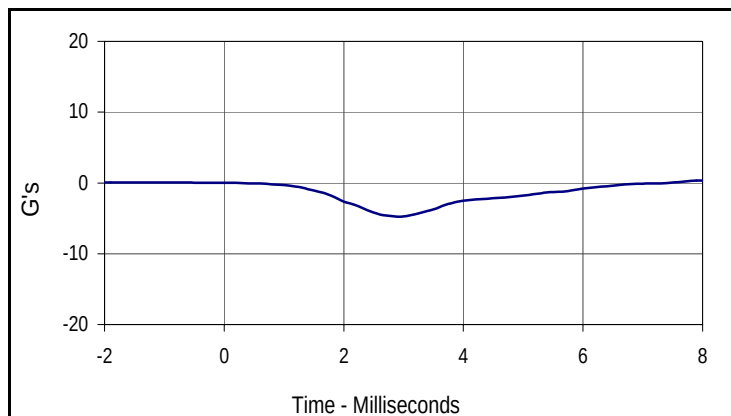
Test Date: 6/22/10
 Test I.D.: HD06B



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
Peak Resultant Acceleration	G's	115 to 137	132.2	Pass
Peak Longitudinal Acceleration	G's	≤15	4.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	7.6	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
132.2	2.8	0.1	-0.7



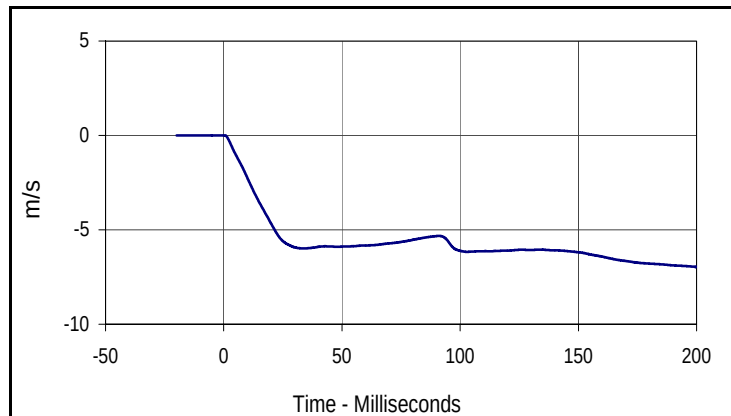
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.1	-0.8	-4.8	2.9

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

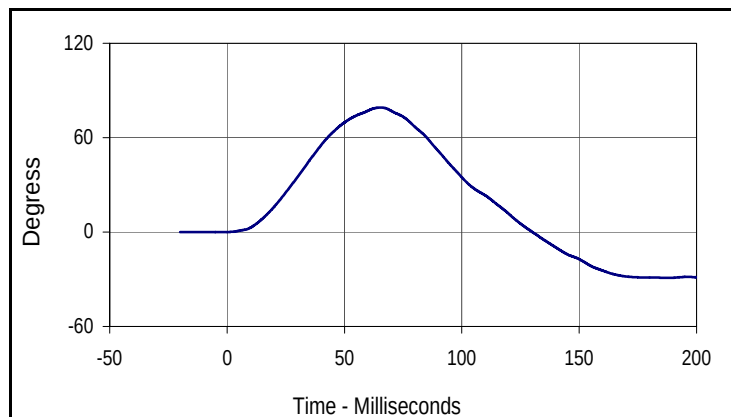
Test Date: 6/22/10
 Test I.D.: NB06B



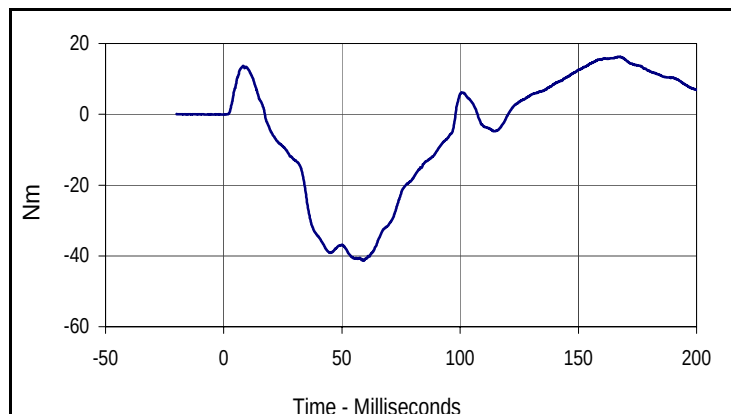
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.61	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.3	Pass
	15 msec	m/s	-3.30 to -4.10	-3.5	Pass
	20 msec	m/s	-4.40 to -5.40	-4.7	Pass
	25 msec	m/s	-5.40 to -6.10	-5.6	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.1	Pass
Translation-Rotation	Max	Degrees	71.0 to 81.0	79.1	Pass
	Time	msec	50.0 to 70.0	65.4	Pass
Peak Occipital Condyle Moment		Nm	-36.0 to -44.0	-41.3	Pass
Decaying Moment Time to Cross 0 Nm		msec	102.0 to 126.0	120.3	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.1	-7.0	200.0



Curve Description			
Maximum Translation Rotation			
CURNO	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
79.1	65.4	-29.1	187.5



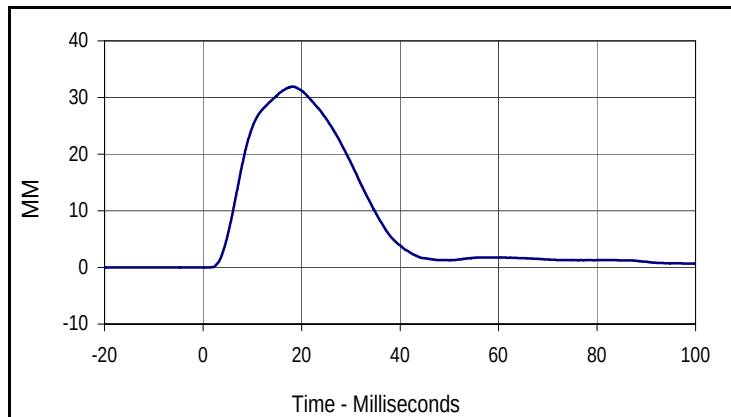
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
16.3	166.8	-41.3	59.0

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

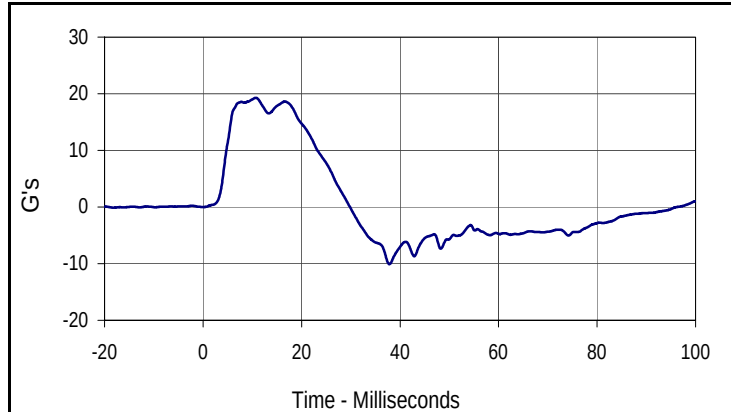
Test Date: 6/22/10
 Test I.D.: SH06B



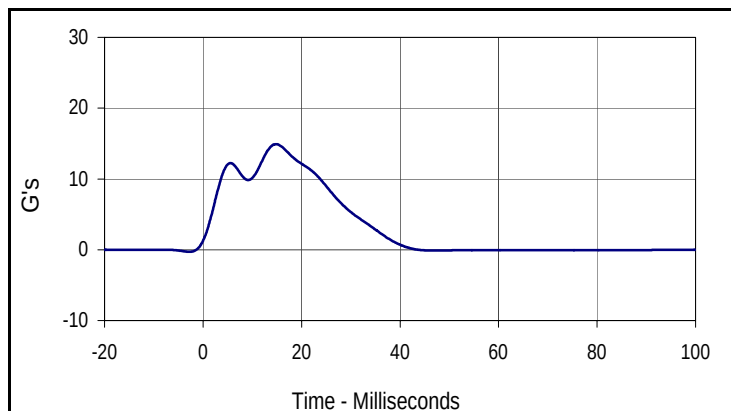
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.33	Pass
Shoulder Deflection	MM	28 to 37	31.9	Pass
Peak Upper Spine Y Acceleration	G's	17 to 22	19.3	Pass
Peak Impactor Acceleration	G's	13 to 18	14.9	Pass
Overall Test Results			Pass	



Curve Description			
Shoulder Acceleration			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
31.9	18.3	0.0	0.4



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
19.3	10.7	-10.1	37.8



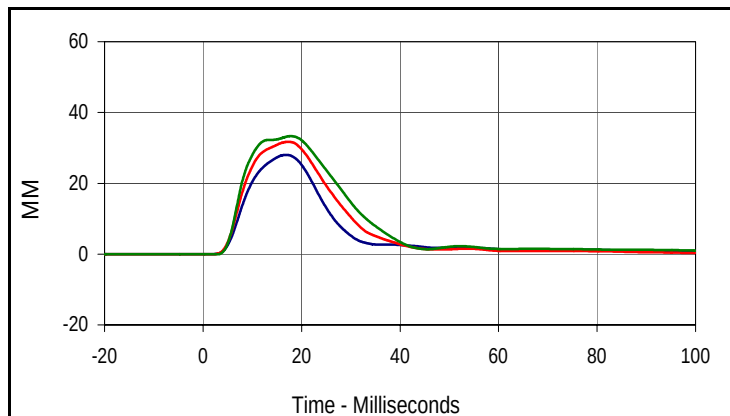
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
14.9	14.8	-0.3	-2.8

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

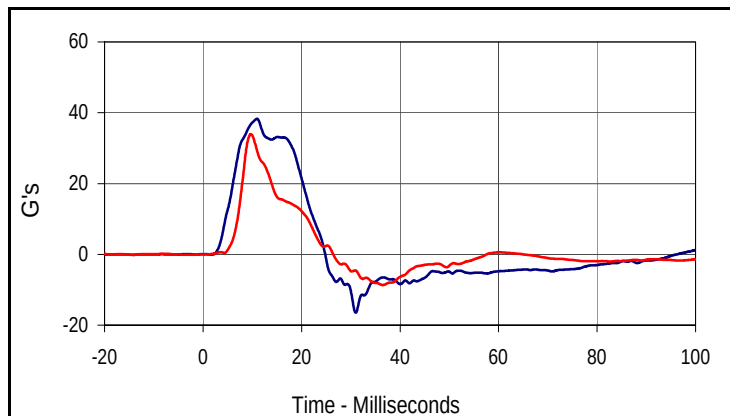
Test Date: 6/22/10
 Test I.D.: TH06B



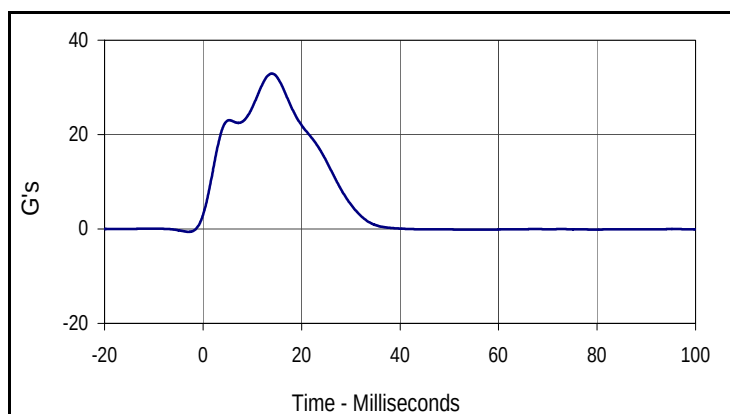
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.74	Pass
Shoulder Deflection	MM	31 to 40	36.8	Pass
Upper Thorax Rib Deflection	MM	25 to 32	28.0	Pass
Middle Thorax Rib Deflection	MM	30 to 36	31.7	Pass
Lower Thorax Rib Deflection	MM	32 to 38	33.3	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	38.3	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	33.9	Pass
Peak Impactor Acceleration After 5 msec.	G's	30 to 36	32.9	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
28.0	16.9	0.0	1.6
Middle Thorax Deflection			
Max	Time	Min	Time
31.7	17.4	0.0	2.0
Lower Thorax Deflection			
Max	Time	Min	Time
33.3	17.8	-0.1	2.7



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
38.3	11.0	-16.5	31.0
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
33.9	9.7	-8.7	36.5



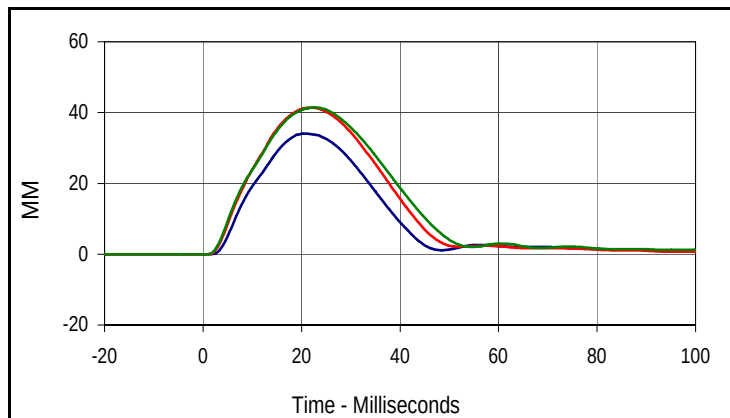
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
32.9	14.0	-0.6	-2.9

Test Program: SID IIs Thorax w/o Arm Calibration
 ATD Serial No.: 307

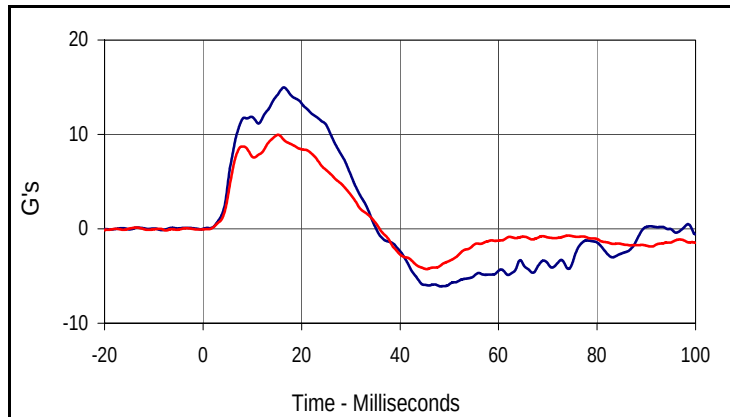
Test Date: 6/22/10
 Test I.D.: TOA6B



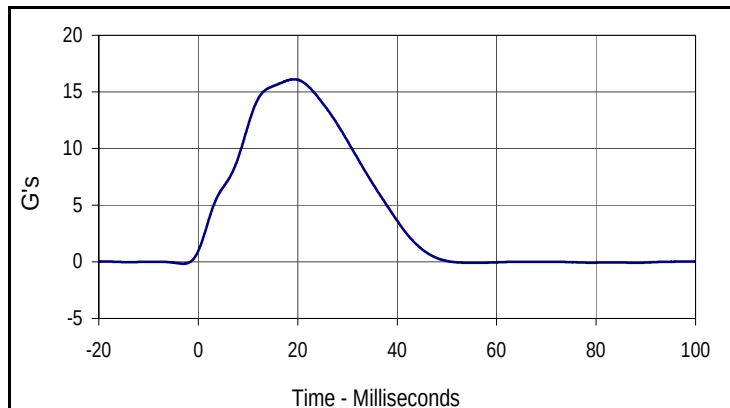
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.28	Pass
Upper Thorax Rib Deflection	MM	32 to 40	34.1	Pass
Middle Thorax Rib Deflection	MM	39 to 45	41.4	Pass
Lower Thorax Rib Deflection	MM	35 to 43	41.5	Pass
Peak Upper Spine Y Acceleration	G's	13 to 17	15.0	Pass
Peak Lower Spine Y Acceleration	G's	7 to 11	10.0	Pass
Peak Impactor Acceleration	G's	14 to 18	16.1	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
34.1	20.7	0.0	-4.1
Middle Thorax Deflection			
Max	Time	Min	Time
41.4	22.0	0.0	-13.4
Lower Thorax Deflection			
Max	Time	Min	Time
41.5	22.6	0.0	-3.3



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.0	16.4	-6.1	48.2
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
10.0	15.2	-4.3	45.4



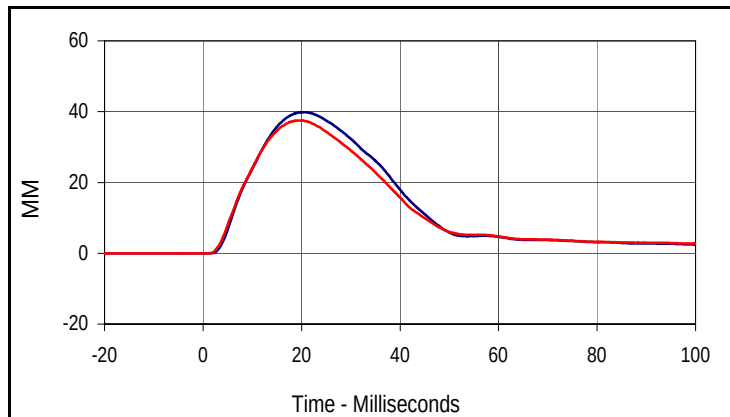
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
16.1	19.3	-0.2	-3.0

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

Test Date: 6/22/10
 Test I.D.: AB06B

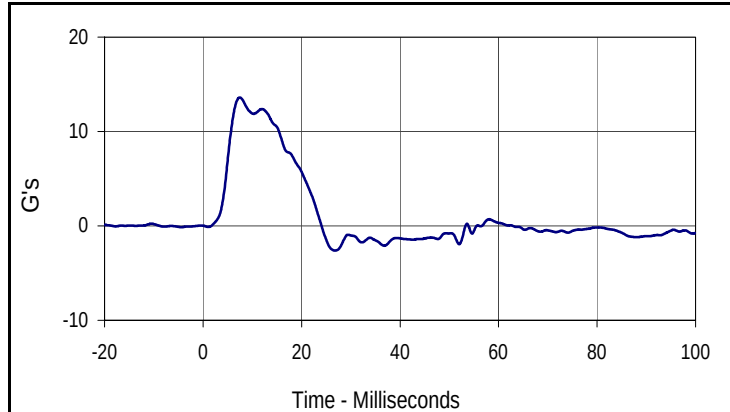


Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.31	Pass
Upper Abdominal Rib Deflection	MM	36 to 47	39.8	Pass
Lower Abdominal Rib Deflection	MM	33 to 44	37.5	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	13.6	Pass
Peak Impactor Acceleration	G's	12 to 16	15.4	Pass
Overall Test Results			Pass	

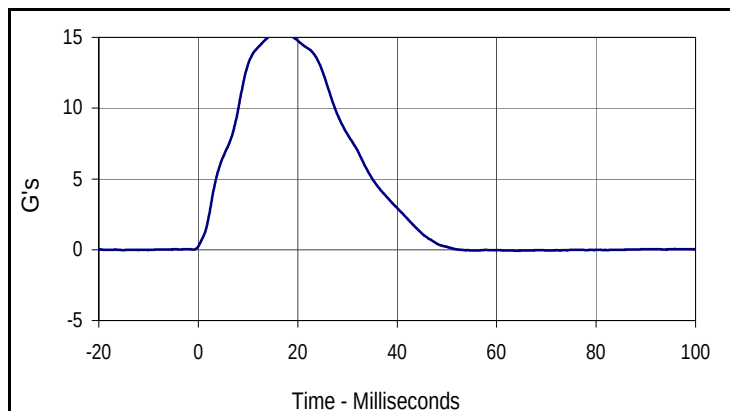


Curve Description			
Upper Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
39.8	20.2	0.0	-8.9

Curve Description			
Lower Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
37.5	19.7	0.0	-9.8



Curve Description			
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
13.6	7.5	-2.6	26.8



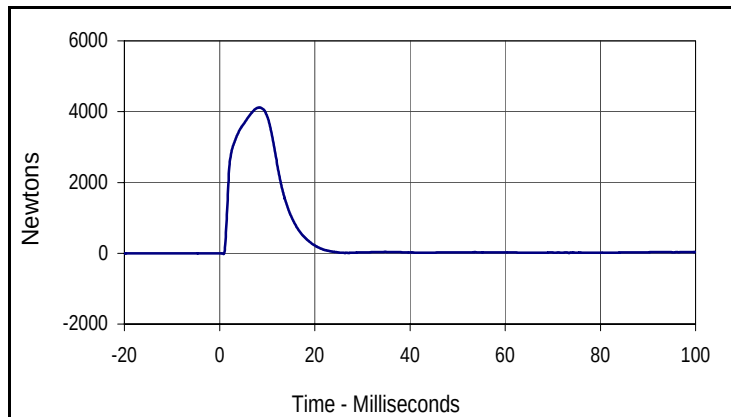
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.4	16.1	-0.1	64.2

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

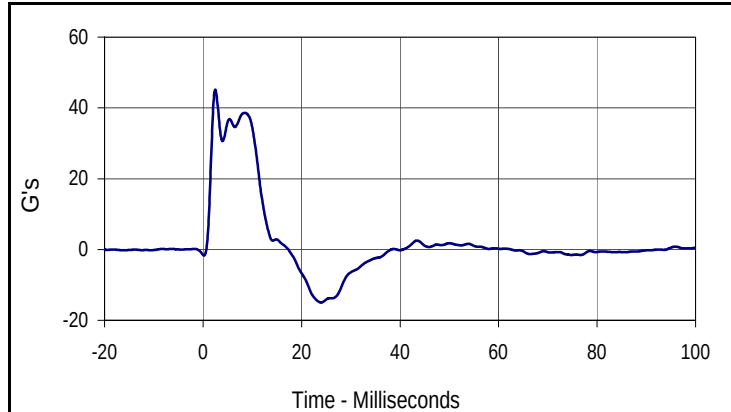
Test Date: 6/22/10
 Test I.D.: PA06B



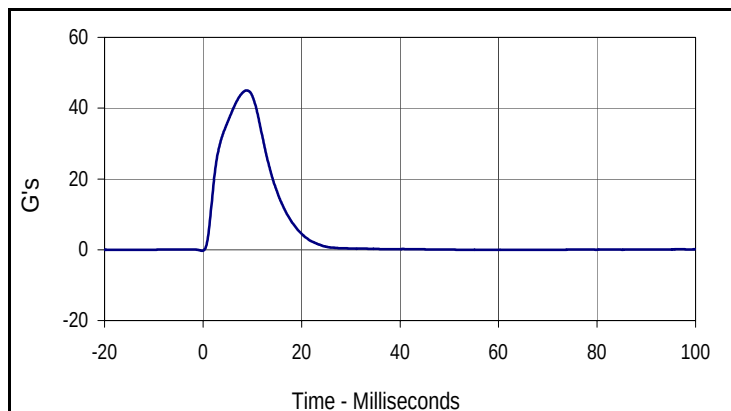
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.75	Pass
Peak Acetabulum Force	Newtons	3600 to 4300	4116.7	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	38.6	Pass
Peak Impactor Acceleration	G's	38 to 47	45.0	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4116.7	8.4	-22.0	0.8



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
45.2	2.5	-15.0	24.0



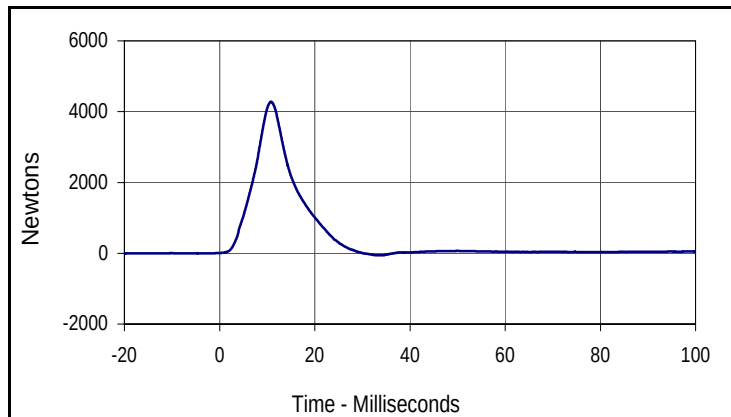
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
45.0	8.8	-0.3	-0.2

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

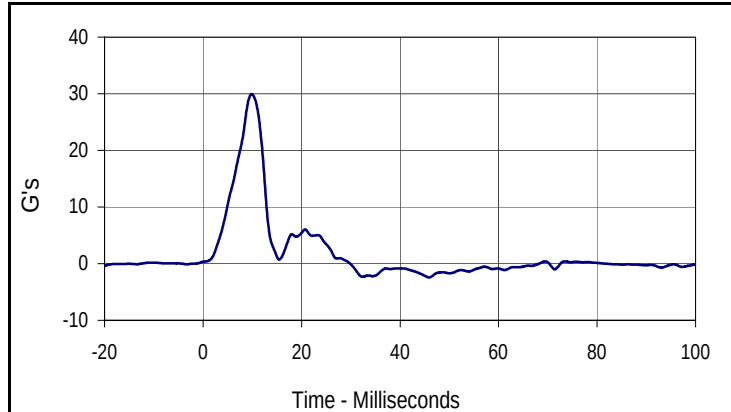
Test Date: 6/22/10
 Test I.D.: PL06B



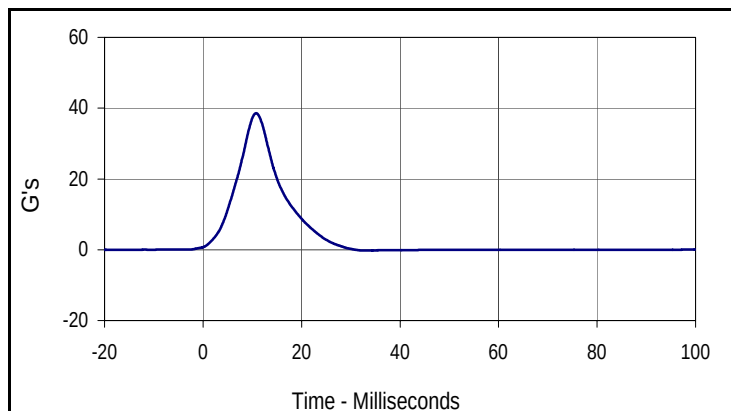
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.28	Pass
Peak Iliac Force	Newtons	4100 to 5100	4280.1	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	29.9	Pass
Peak Impactor Acceleration	G's	36 to 45	38.6	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Iliac Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4280.1	10.8	-61.0	34.1



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
29.9	9.9	-2.4	45.9



Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
38.6	10.8	-0.2	32.6