

REPORT NUMBER: NCAP-KAR-11-052

**NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST**

**TOYOTA MOTOR MANUFACTURING, TEXAS, INC.
2011 TOYOTA TUNDRA DOUBLE CAB 4X4 4-DOOR TRUCK**

NHTSA NUMBER: MB5126

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



JANUARY 31, 2011

FINAL REPORT

**U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
SAFETY PERFORMANCE STANDARDS
OFFICE OF CRASHWORTHINESS STANDARDS
1200 NEW JERSEY AVE, SE
ROOM W43-410
WASHINGTON, DC 20590**

Prepared By: 

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Approval Date: February 11, 2011

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

Date: _____

Date: _____

TECHNICAL REPORT DOCUMENTATION PAGE

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15. Supplementary Notes																																																							
16. Abstract A 56.3 km/h NCAP Frontal Impact Test was conducted on a 2011 Toyota Tundra Double Cab 4x4 4-Door Truck in accordance with the specifications of the Office of Crashworthiness Standards Frontal NCAP Laboratory Test Procedure. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301 and footwell intrusion performance. The test was conducted at the KARCO Engineering, LLC. facility in Adelanto, California on January 31, 2011. The impact velocity of the vehicle was 56.86 km/h and the ambient temperature at the barrier face at the time of impact was 12.8 deg. C. The target vehicle's post-test maximum crush was 480 mm at DPD 3, to the left of the centerline. The test vehicle's performance is as follows: <table border="1"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th rowspan="2">Units</th> <th colspan="2">Driver ATD</th> <th colspan="2">Passenger ATD</th> </tr> <tr> <th>Threshold</th> <th>Result</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₁₅)</td> <td>N/A</td> <td>700.0</td> <td>188.4</td> <td>700.0</td> <td>313.2</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>-24</td> <td>52</td> <td>-14</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td>1</td> <td>0.37</td> <td>1</td> <td>0.75</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td>1293.7</td> <td>2620</td> <td>954.4</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td>-611.9</td> <td>2520</td> <td>-710.3</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10008</td> <td>-2426.8</td> <td>6805</td> <td>-2733.7</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10008</td> <td>-1647.4</td> <td>6805</td> <td>-1888.9</td> </tr> </tbody> </table>				Measurement Description	Units	Driver ATD		Passenger ATD		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC ₁₅)	N/A	700.0	188.4	700.0	313.2	Maximum Chest Compression	mm	63	-24	52	-14	Nij	N/A	1	0.37	1	0.75	Neck Tension	N	4170	1293.7	2620	954.4	Neck Compression	N	4000	-611.9	2520	-710.3	Left Femur Force	N	10008	-2426.8	6805	-2733.7	Right Femur Force	N	10008	-1647.4	6805	-1888.9
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SECTION 1

PURPOSE AND SUMMARY OF TEST

PURPOSE

This 56.3 km/h frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program, sponsored by the National Highway Traffic Safety Administration (NHTSA) under contract number DTNH22-06-D-00027. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for consumer information purposes.

The 56.3 km/h frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Frontal NCAP Laboratory Test Procedure, dated January, 2010.

SUMMARY

A load cell barrier consisting of 36 load cells was impacted by a 2011 Toyota Tundra Double Cab 4x4 4-Door Truck at a velocity of 56.86 km/h. The test was performed at KARCO Engineering, LLC. on January 31, 2011. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A of this report.

Three (3) real-time cameras and sixteen (16) high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in Data Sheet 6 of this report.

One Part 572E 50th percentile male anthropomorphic test device (ATD) was placed in the driver seating position and one Part 572O 5th percentile female ATD was placed in the right-front passenger seating position according to dummy placement instructions specified in the Frontal NCAP Laboratory Test Procedure.

Both ATDs were fully instrumented with head, chest and pelvis tri-axial accelerometers, chest displacement potentiometers, upper neck force transducers, right / left femur load cells, and lower leg instrumentation. Seat belt load cells were also on the driver's and passenger's lap belts to measure the dummy pelvic section loading. The driver (position 1) ATD (Serial No. 035) and the right-front passenger (position 2) ATD (Serial No. 141) were calibrated prior to this test. Certification details, along with instrumentation calibration data, are found in Appendix C of this report.

The 136 channels of data were recorded on an on-board data acquisition system. Appendix B contains the dummy response data traces.

There was 100.0% windshield retention and no intrusion into the protected zone of the windshield during the event. There was no Stoddard solvent leakage after the event or during any phase of the static rollover.

The maximum static crush of the test vehicle was 480 mm located at DPD3 to the left of the centerline. Both the driver and passenger side doors remained closed during the impact event and were operable after the impact.

The driver's visible contact points were as follows: The driver ATD's head contacted the airbag and headrest. The upper torso contacted the airbag. The left knee contacted the knee airbag and steering column. The right knee contacted the knee airbag.

The passenger's visible contact points were as follows: The passenger ATD's head contacted the airbag and headrest. The upper torso contacted the airbag. Both the left and right knees contacted the knee airbag.

The occupant data is summarized below:

ATD Position	HIC ₁₅	T ¹	T ²	Chest Disp. (mm)	Nij	Neck Tension (N)	Neck Comp. (N)	Left Femur (N)	Right Femur (N)
Driver (50th)	188.4	78.1	93.1	-24	0.37	1293.7	-611.9	-2426.8	-1647.4
Passenger (5th)	313.2	70.2	85.2	-14	0.75	954.4	-710.3	-2733.7	-1888.9

SECTION 2
DATA SHEETS

Test Vehicle: 2011 Toyota Tundra Double Cab 4x4 4-Door Truck

NHTSA No.: MB5126

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 01/31/11

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	29.573
Pressure	Tire Pressures	lbf/in ²	kPa	7.0
Volume	Liquid	gal	liter	3.785
Temperature	General Use	°F	°C	=(tf -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:	2011 Toyota Tundra Double Cab 4x4 4-Door Truck	NHTSA No.:	MB5126
Test Program:	56 km/h Frontal Impact NCAP Test	Test Date:	01/31/11

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	MB5126
Make	Toyota
Model	Tundra Double Cab 4x4
Body Style	4-Door Truck
VIN	5TFUY5F15BX177001
Body Color	Silver Sky Metallic
Delivery Date	1/14/2011
Odometer Reading (mi)	97
Odometer Reading (km)	156
Dealer	Crown Toyota
Transmission	6-Speed Automatic
Final Drive	4x4
Type / No. of Cylinders	V8
Engine Displacement (L)	5.7
Engine Placement	Longitudinal
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	Yes
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
Pass. Front Airbag	Yes
Pass. Curtain Airbag	Yes
Pass. Head/Torso Airbag	No
Pass. Torso Airbag	Yes
Pass. Torso/Pelvis Airbag	No
Pass. Pelvis Airbag	No
Pass. Knee Airbag	Yes
Pre-Tensioners	Yes
Load Limiters	Yes
Automatic Door Locks	Yes
Tilt Steering	Yes
Other	

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	Nov-10

GVWR (kg)	3220
GAWR Front (kg)	1810
GAWR Rear (kg)	1880

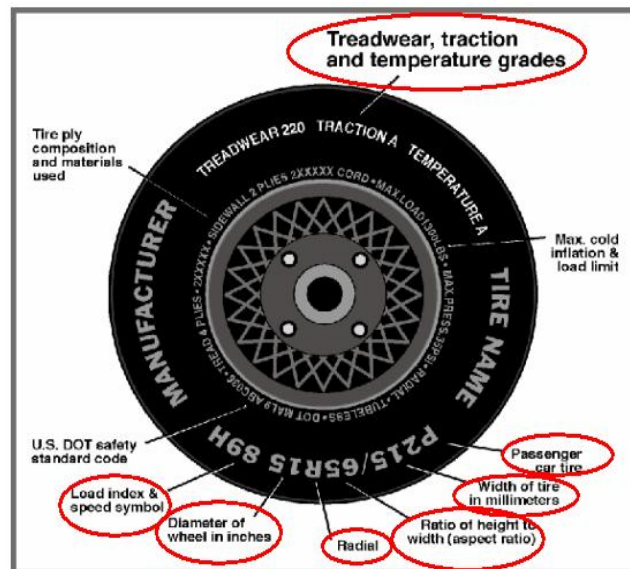
VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Split Bench	Bench		
Number of Occupants	3	3		6
Capacity Weight (VCW) (kg)				606.0
Cargo Weight (RCLW) (kg)				136.0

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle:	2011 Toyota Tundra Double Cab 4x4 4-Door Truck	NHTSA No.:	MB5126
Test Program:	56 km/h Frontal Impact NCAP Test	Test Date:	01/31/11



VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	210	230
Recommended Tire Size	P255/70R18	P255/70R18
Tire Size on Vehicle	P255/70R18	P255/70R18
Tire Manufacturer	Bridgestone	Bridgestone
Tire Model	Dueler	Dueler
Treadwear	360	360
Traction	B	B
Temperature Grades	B	B
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 2 Steel, 1 Nylon	2 Polyester, 2 Steel, 1 Nylon
Load Index / Speed Symbol	112T	112T
Tire Material	Polyester, Steel, Nylon	Polyester, Steel, Nylon
DOT Safety Code Left	7X0P 650 4110	7X0P 650 4110
DOT Safety Code Right	7X0P 650 4110	7X0P 650 4110

DATA SHEET NO. 1 ... (CONTINUED)**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2011 Toyota Tundra Double Cab 4x4 4-Door Truck NHTSA No.: MB5126
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 01/31/11

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	778.0	537.0		816.5	644.5	
Right	kg	703.5	518.0		730.5	615.5	
Ratio	%	58.4%	41.6%	100.0%	55.1%	44.9%	100.0%
Total	kg	1481.5	1055.0	2536.5	1547.0	1260.0	2807.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	2536.5	A
Weight of 1 P572E ATD & 1 P572O ATD	kg	141.0	B
Rated Cargo/Luggage Weight (RCLW)	kg	136.0	C
Calculated Vehicle Target Weightt (TVTW)	kg	2813.5	A+B+C

TEST VEHICLE ATTITUDES

Condition	Units	LF	RF	LR	RR	CG Aft of Front Axle
As Delivered	mm	940	946	1019	1011	1543
As Tested	mm	925	930	989	995	1665
Post-Test	mm	980	895	1020	934	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	3710
Total Vehicle Length at Left Side	mm	5265
Total Vehicle Length at Centerline	mm	5845
Total Vehicle Length at Right Side	mm	5262
Weight of Ballast in Cargo Area	kg	133.5
Weight of Vehicle Components Removed	kg	4.0
Amount of Stoddard Solvent in Fuel Tank	L	92.92

VEHICLE COMPONENTS REMOVED TO MEET TEST WEIGHT:

Bottle jack and tools (4.0 kg)

DATA SHEET NO. 1 ... (CONTINUED)**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2011 Toyota Tundra Double Cab 4x4 4-Door Truck NHTSA No.: MB5126
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 01/31/11

TARGET VEHICLE STRUCTURAL MEASUREMENTS

No.	Description	Pre-Test	Post-Test	Difference
1	Total Length	5845	5430	-415
2	Total Width	2030	2217	187
3	Bumper Top Height	775	808	33
4	Bumper Bottom Height	358	325	-33
5	Longitudinal Member Top Height	530	660	130
6	Distance Between Longitudinal Members	800	1120	320
7	Longitudinal Member Width	70	87	17
8	Engine Top Height	1100	1100	0
9	Engine Bottom Height	288	345	57
10	Engine and Gearbox Width	710	710	0
11	Front Bumper to Engine Distance	630	395	-235
12	Front Shock Absorber Fixing Height	785	792	7
13	Bonnet Leading Edge Height	1140	1180	40
14	Front Shock Absorber Fixing Width	1300	1510	210
15	Front Bumper to Front Axle Distance	897	575	-322
16	Front Axle to A-Pillar Distance	615	520	-95
17	A-Pillar to B-Pillar Distance	1075	1075	0
18	B-Pillar to Rear Axle Distance	1982	2180	198
19	B-Pillar to C-Pillar Distance	767	771	4
20	Roof Sill Bottom Height	1757	1772	15
21	Roof Sill Top Height	1875	1887	12
22	Floor Sill Bottom Height	424	433	9
23	Floor Sill Top Height	577	580	3

All measurements in millimeters.

DATA SHEET NO. 2

SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2011 Toyota Tundra Double Cab 4x4 4-Door Truck

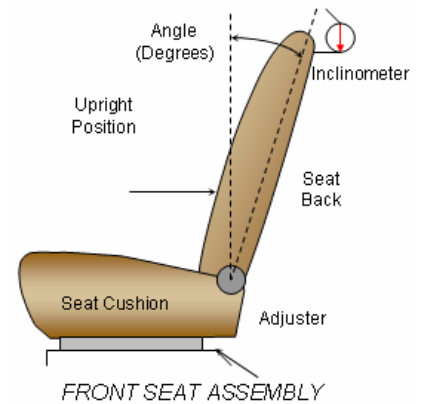
NHTSA No.: MB5126

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 01/31/11

NOMINAL DESIGN RIDING POSITION

The procedure for the driver is as follows: the seat back is set to the manufacturer's designated angle. The procedure for the passenger is as follows: the seat back is set to position the transverse instrumentation platform of the dummy's head at $0^\circ \pm 0.5^\circ$. Seat back angle is measured at the headrest post using a digital inclinometer.

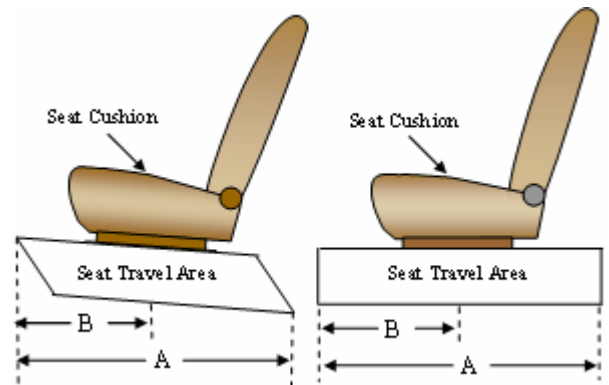


SEAT BACK ANGLE

Seating Position	Degrees
Driver Seat Back Angle	0.9
Passenger Seat Back Angle	2.7

SEAT FORE / AFT POSITIONING

The total seat travel is measured from the forward most possible position to the rear most possible position. The driver's seat is set to the middle of the fore-aft travel. The passenger's seat is set to the forward most position where the ATD will not contact any interior panels; full forward for this test.



SEAT FORE/AFT POSITIONS

Seating Position	Total Fore-Aft Travel	Placed in Position
Driver Seat	254 mm	127 mm
Passenger Seat	210 mm	0 mm

SEAT BELT UPPER ANCHORAGE

The seat belt upper anchorage is positioned to the manufacturer's design position for a 50th percentile adult male ATD for the driver, and a 5th percentile adult female ATD for the passenger. Position zero (0) is the uppermost position.

SEAT BELT UPPER ANCHORAGES

Seating Position	Total No. of Positions	Placed in Position
Driver Seat	4	1
Passenger Seat	4	1

DATA SHEET NO. 2 ... (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2011 Toyota Tundra Double Cab 4x4 4-Door Truck

NHTSA No.: MB5126

Test Program: 56 km/h Frontal Impact NCAP Test

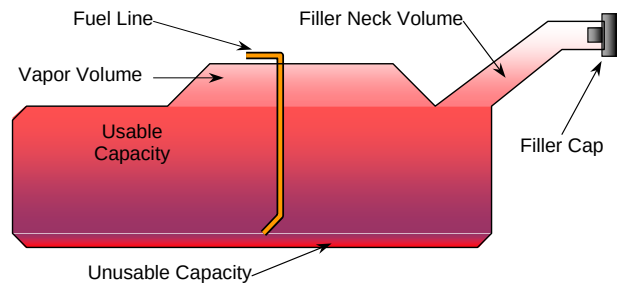
Test Date: 01/31/11

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank"	99.92
Usable Capacity of "Optional Tank"	
92 - 94% of Usable Capacity	91.93 to 93.92
Actual Amount of Stoddard Solvent Used	92.92
1/3 of Usable Capacity	33.31

FUEL PUMP

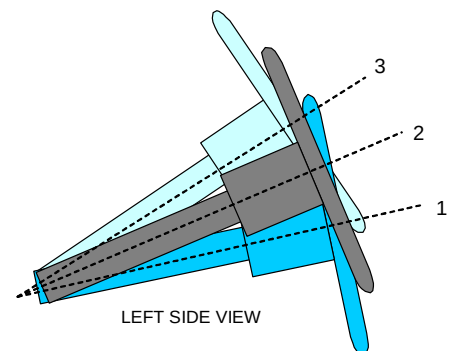
The test vehicle is equipped with an electric fuel pump. The fuel pump is activated when the ignition is turned to the 'ON' position. The fuel filler door is located on the left rear fender. The standard fuel tank occupies the area under the rear seat on the left side of the vehicle.



VEHICLE FUEL TANK ASSEMBLY

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 which is placed across the rim of the steering wheel for angular measurements.



STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONING

	Degrees	Fore-Aft Position (mm)
Lowermost Position, No. 1	25.8	
Geometric Center Position, No. 2	28.7	
Uppermost Position, No. 3	31.6	
Telescoping Steering Wheel Travel		
Test Position	28.7	

DATA SHEET NO. 3

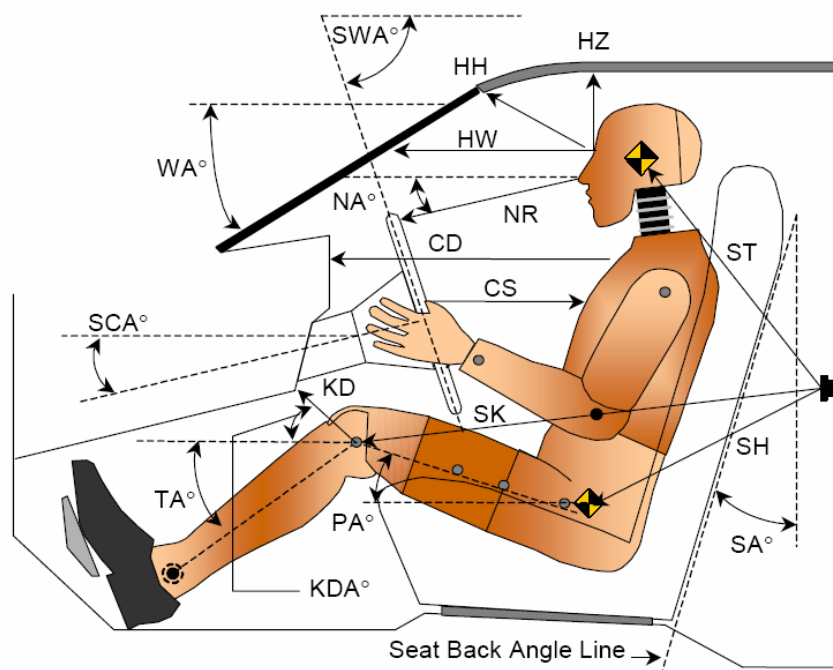
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Toyota Tundra Double Cab 4x4 4-Door Truck

NHTSA No.: MB5126

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 01/31/11



Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		34.0		
SWA°	Steering Wheel Angle		62.0		
SCA°	Steering Column Angle		28.0		
SA°	Seat Back Angle (On Headrest Post)		0.9		2.7
HZ	Head to Roof	230	90.0	277	90.0
HH	Head to Header	420	23.3	391	36.9
HW	Head to Windshield	715	0.0	690	0.0
HR	Head to Side Header	275	36.6	319	41.8
NR	Nose to Rim	401	12.6	498	24.2
CD	Chest to Dash	541	13.9	451	11.0
CS	Chest to Steering Hub	318	5.3		
RA	Rim to Abdomen	182	0.0		
KDL	Left Knee to Dash	152	30.4	106	34.6
KDR	Right Knee to Dash	149	26.8	121	40.6
PA°	Pelvic Angle		24.9		21.4
TA°	Tibia Angle		55.5		68.1
SK	Striker to Knee	653	8.6	730	9.1
ST	Striker to Head	525	73.3	508	50.2
SH	Striker to H-Point	313	33.3	415	23.8

DATA SHEET NO. 4

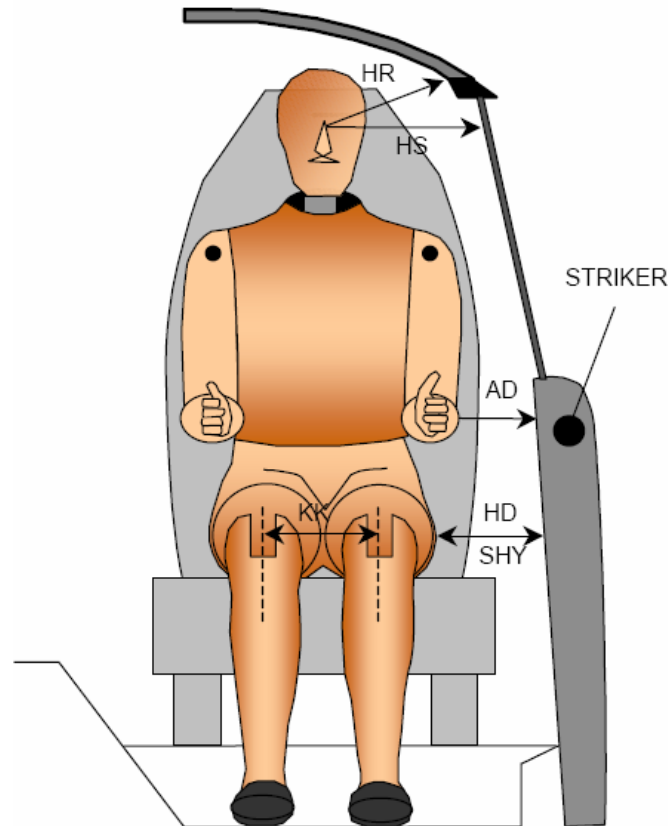
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Toyota Tundra Double Cab 4x4 4-Door Truck

NHTSA No.: MB5126

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 01/31/11



Code	Description	Driver (mm)	Passenger (mm)
AD	Arm to Door	151	93
HD	H-Point to Door	169	197
HR	Head to Side Header	275	319
HS	Head to Side Window	329	350
KK	Knee to Knee	329	229
SHY	Striker to H-Point (Y-Direction)	240	290
AA	Ankle to Ankle	305	160

DATA SHEET NO. 5

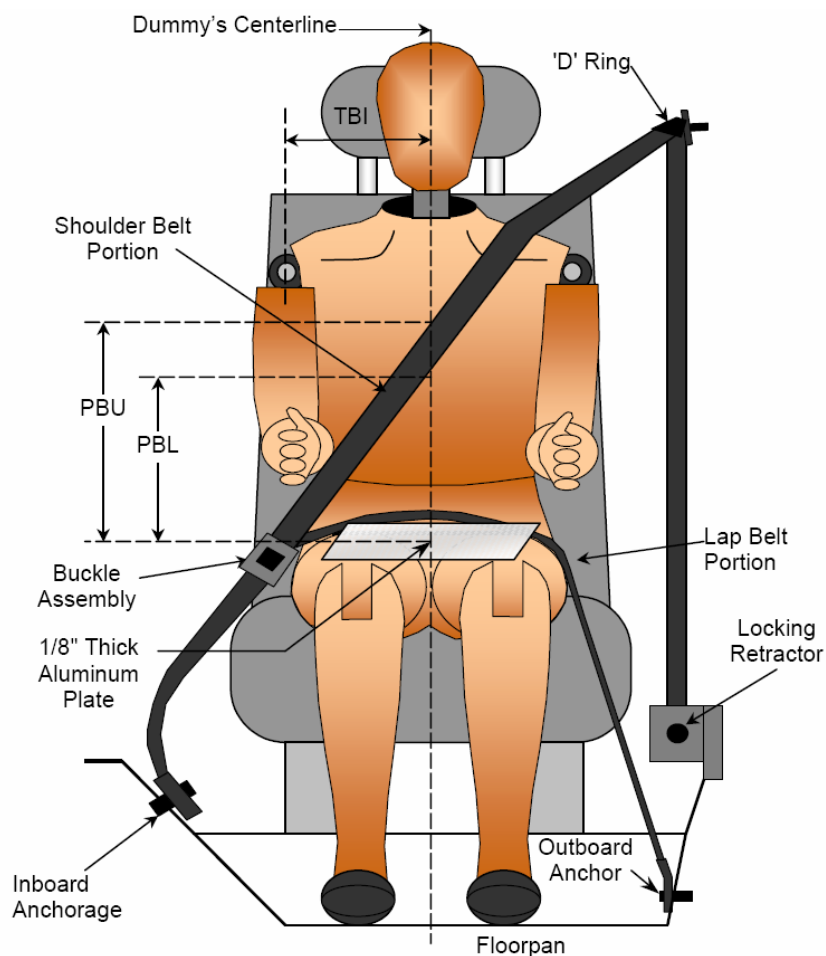
SEAT BELT POSITIONING DATA

Test Vehicle: 2011 Toyota Tundra Double Cab 4x4 4-Door Truck

NHTSA No.: MB5126

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 01/31/11



FRONT VIEW OF DUMMY

SEAT BELT POSITIONING MEASUREMENTS

Code	Measurement Description	Units	Driver	Passenger
PBU	Top Surface of Aluminum Plate to Belt Upper Edge	mm	350	290
PBL	Top Surface of Aluminum Plate to Belt Lower Edge	mm	282	215

BELT LENGTH DATA

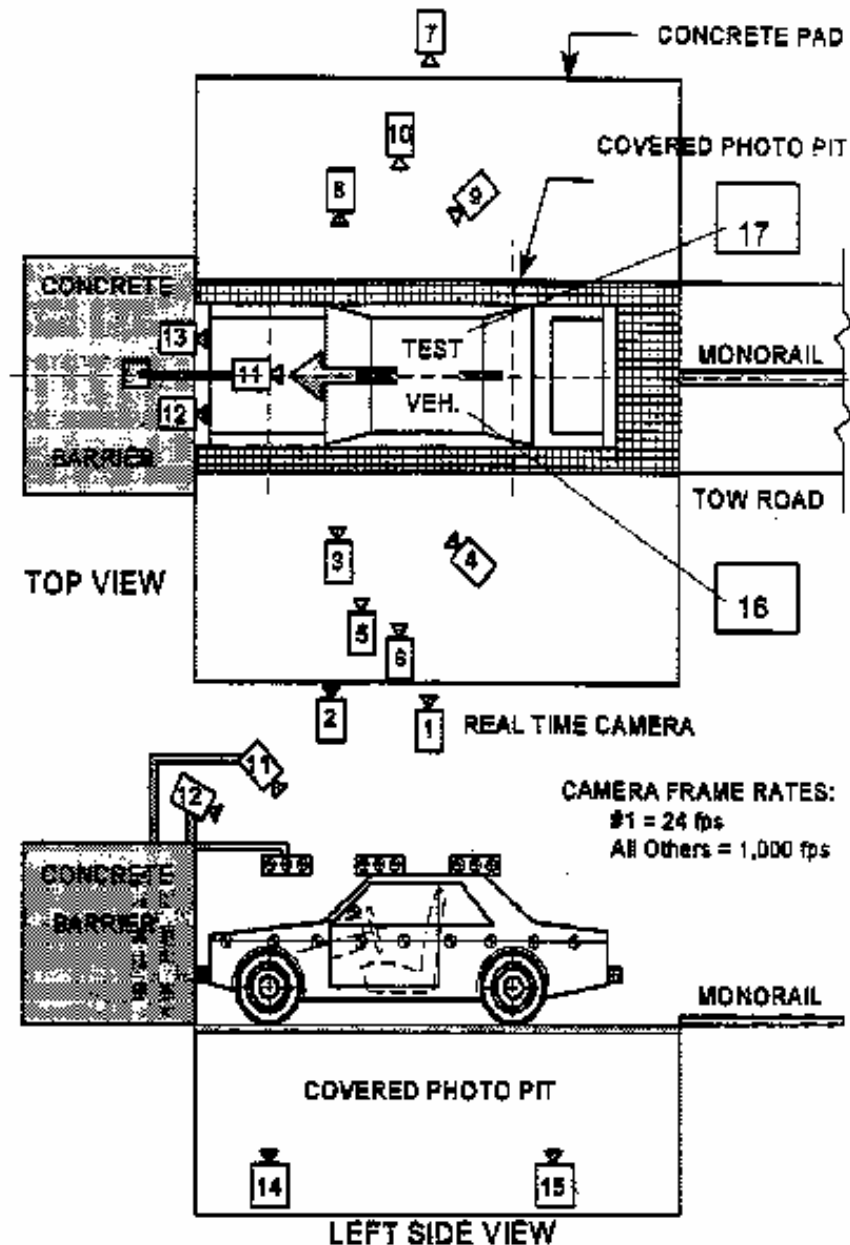
Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as Measured on ATD	mm	947	979
Lap Belt Length as Measured on ATD	mm	846	896
Remainder of Belt on Reel	mm	795	728
Total Belt Length for Continuous Webbing Systems	mm	2588	2603

DATA SHEET NO. 6

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle:	<u>2011 Toyota Tundra Double Cab 4x4 4-Door Truck</u>	NHTSA No.:	<u>MB5126</u>
Test Program:	<u>56 km/h Frontal Impact NCAP Test</u>	Test Date:	<u>01/31/11</u>

CAMERA POSITIONS FOR FRONTAL IMPACTS



DATA SHEET NO. 6 ... (CONTINUED)

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2011 Toyota Tundra Double Cab 4x4 4-Door Truck NHTSA No.: MB5126
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 01/31/11

CAMERA LOCATIONS

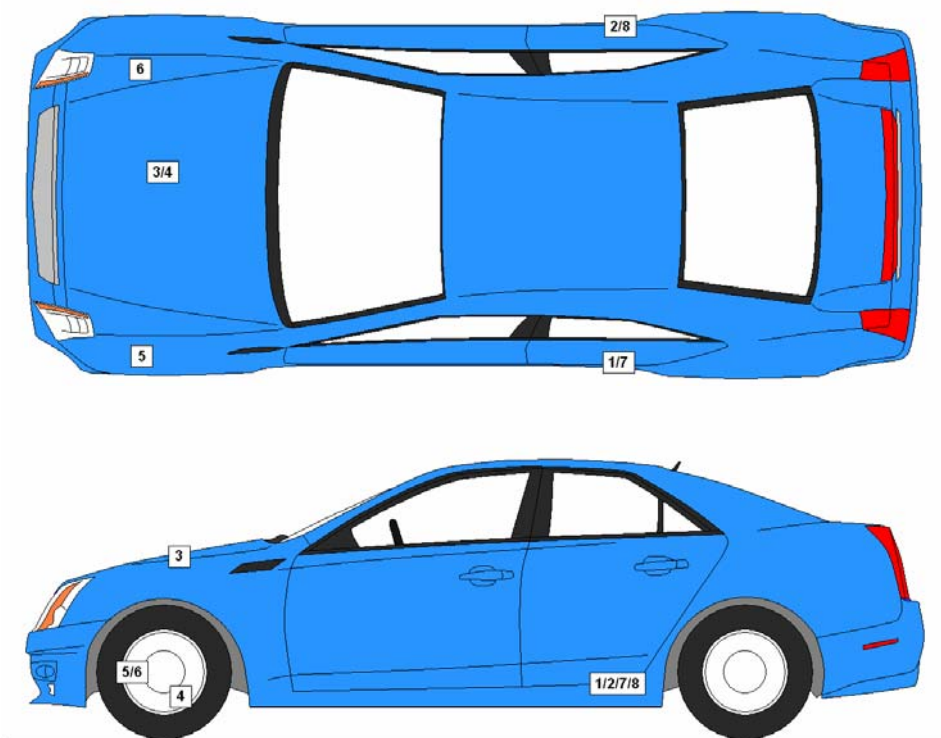
No.	Description	Location			Angle (°)	Film Plane to Head Target	Lens (mm)	Speed (fps)
		X	Y	Z				
1	Real-Time Left Overall	-11412	-8150	-1484				30
2	Overall Left Side	-2590	-7950	-1371	0	9881	24	1000
3	Left Side A-Pillar	-1701	-6197	-1701	0	7921	50	1000
4	Left Side B-Pillar	-6696	-10308	-3211	-17	11281	ZOOM	1000
5	Steering Column Upper	-1966	-10412	-3688	-13	9887	50	1000
6	Steering Column Lower	-1972	-10412	-3379	-13	9870	50	1000
7	Overall Right Side	-2336	7569	-1012	0	9417	24	1000
8	Right Side A-Pillar	-1733	7581	-1408	0	7789	50	1000
9	Passenger IP View	-1600	8214	-1811	0	7795	ZOOM	1000
10	Right Side B-Pillar	-6217	9516	-4830	-10	12626	ZOOM	1000
11	Overhead Windshield View	-354	0	-5749	-90		12	1000
12	Overhead Driver View	297	-366	-2460	-34		12	1000
13	Overhead Passenger View	297	366	-2460	-34		24	1000
14	Pit View of Engine Compartment	-756	0	1495	90		12	1000
15	Pit View of Fuel Tank	-3398	0	1495	90		8	1000
16	Driver's On Board View	-2600	400	-1820	-22		12	1000
17	Passenger's On Board View	-2600	-400	-1820	-22		12	1000
18	Real-Time Left View of Impact							
19	Real-Time Right View of Impact							

Coordinates: +X = forward impact plane
 +Y = right of monorail center
 +Z = into ground

DATA SHEET NO. 7

VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2011 Toyota Tundra Double Cab 4x4 4-Door Truck NHTSA No.: MB5126
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 01/31/11



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Description	Location		
		X	Y	Z
1	Left Rear Cross Member X	2900	-830	-590
2	Right Rear Cross Member X	2900	830	-590
3	Engine Top X	830	40	-1100
4	Engine Bottom X	847	210	-288
5	Left Brake Caliper X	1040	-680	-390
6	Right Brake Caliper X	1040	680	-390
7	Left Rear Cross Member Z	2900	-830	-590
8	Right Rear Cross Member Z	2900	830	-590

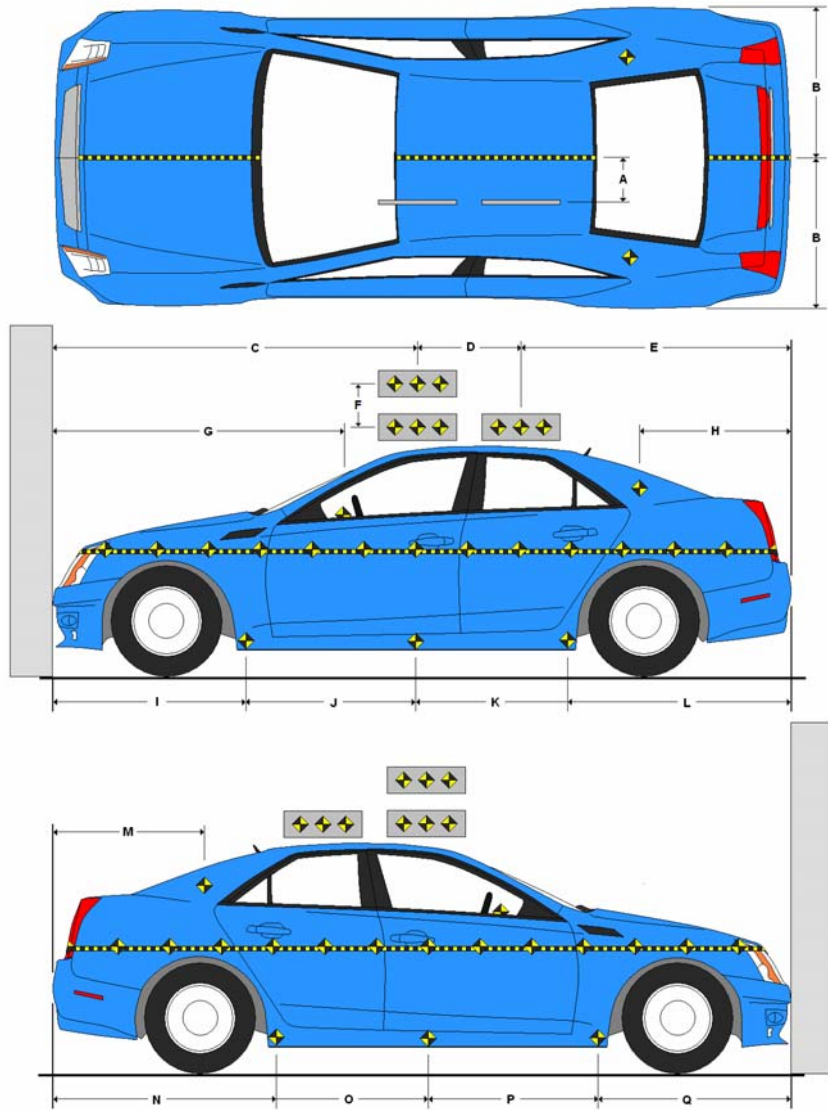
Reference Points: X – Rear Surface of Vehicle (+ forward)
Y – Vehicle Centerline (+ to right)
Z – Ground Plane (+ down)

DATA SHEET NO. 8

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2011 Toyota Tundra Double Cab 4x4 4-Door Truck NHTSA No.: MB5126
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 01/31/11

Item	Value
A	527
B	1022
C	2145
D	611
E	3115
F	305
G	1790
H	2323
I	1467
J	991
K	991
L	2387
M	2321
N	2382
O	992
P	992
Q	1480



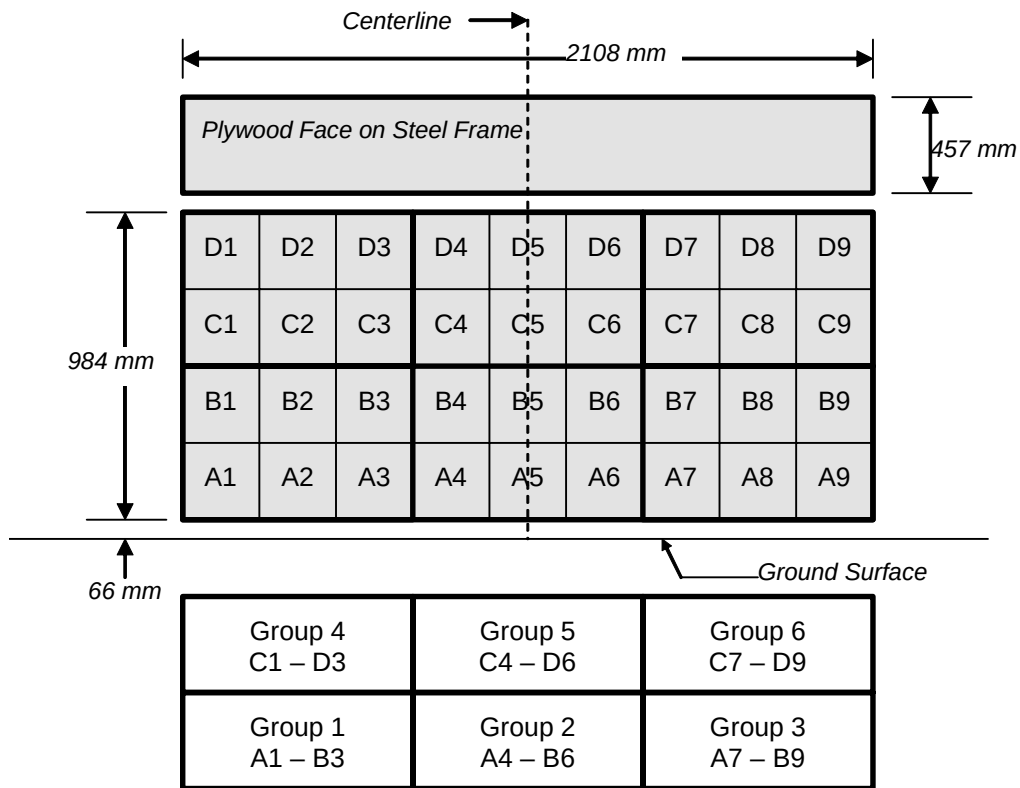
All measurements in millimeters.

DATA SHEET NO. 9

LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2011 Toyota Tundra Double Cab 4x4 4-Door Truck NHTSA No.: MB5126
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 01/31/11

36 Load Cell Rigid Barrier (NHTSA Standard) Load Cell Locations on Fixed Barrier



6 Groups of 6 Load Cells Each

DATA SHEET NO. 10

TEST VEHICLE CAMERA AND INSTRUMENTATION SUMMARY

Test Vehicle: 2011 Toyota Tundra Double Cab 4x4 4-Door Truck NHTSA No.: MB5126
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 01/31/11

INSTRUMENTATION

Driver Dummy Accelerometers	46
Passenger Dummy Accelerometers	46
Vehicle Structure Accelerometers	8
Load Cell Barrier	36
Total	136

CAMERA COVERAGE

High-Speed Vehicle On Board	2
High-Speed Offboard	14
Real Time	3
Total	19

DATA SHEET NO. 11**POST-TEST OBSERVATIONS**Test Vehicle: 2011 Toyota Tundra Double Cab 4x4 4-Door TruckNHTSA No.: MB5126Test Program: 56 km/h Frontal Impact NCAP TestTest Date: 01/31/11**TEST DUMMY INFORMATION AND CONTACT**

Description	Driver	Passenger
Dummy Type/Serial No.	P572E 50th Percentile Male ATD / 035	P572O 5th Percentile Female ATD / 141
Head Contact	Airbag, Head Restraint	Airbag, Head Restraint
Upper Torso Contact	Airbag	Airbag
Lower Torso Contact	None	None
Left Knee Contact	Knee Airbag, Steering Column	Knee Airbag
Right Knee Contact	Knee Airbag	Knee Airbag

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Locked / Unlocked Doors	Locked	Locked
Front Door Opening	Remained closed and latched, operational	Remained closed and latched, operational
Rear Door Opening	Remained closed and latched, operational	Remained closed and latched, operational
Seat Track Shift (mm)	10	8
Seat Back Failure	None	None
Glazing Damage	None	None

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Windshield Damage	None
Window Damage	None
Other Notable Effects	None

VEHICLE REBOUND FROM BARRIER

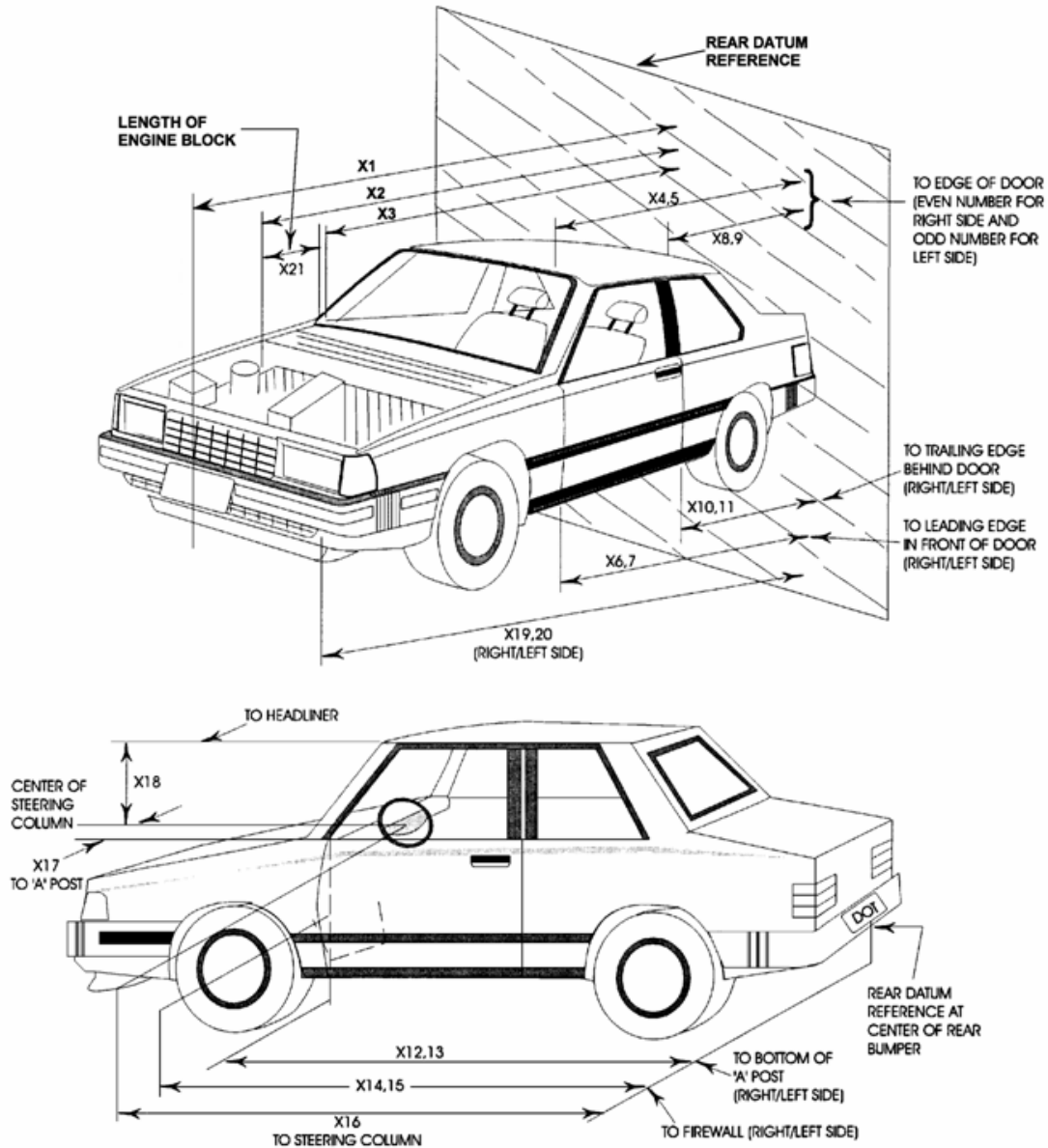
Measured Parameter	Units	Value
Left Side	mm	831
Center	mm	763
Right Side	mm	860
Average	mm	818

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Driver		Passenger	
	Installed	Operated	Installed	Operated
Front Airbag	Yes	Yes	Yes	Yes
Curtain Airbag	Yes	No	Yes	No
Torso Airbag	Yes	No	Yes	No
Knee Airbag	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	Yes
Other				

DATA SHEET NO. 12
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2011 Toyota Tundra Double Cab 4x4 4-Door Truck NHTSA No.: MB5126
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 01/31/11

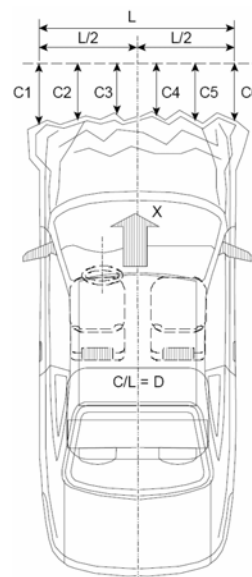


DATA SHEET NO. 12 ... (CONTINUED)**VEHICLE PROFILE MEASUREMENTS**

Test Vehicle: 2011 Toyota Tundra Double Cab 4x4 4-Door Truck NHTSA No.: MB5126
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 01/31/11

No.	Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	5845	5430	-415
2	Rear Surface of Vehicle to Front of Engine	5215	5035	-180
3	RSOV to Firewall	4603	4667	64
4	RSOV to Upper Leading Edge of Right Door	4398	4443	45
5	RSOV to Upper Leading Edge of Left Door	4400	4473	73
6	RSOV to Lower Leading Edge of Right Door	4290	4323	33
7	RSOV to Lower Leading Edge of Left Door	4291	4350	59
8	RSOV to Upper Trailing Edge of Right Door	3225	3275	50
9	RSOV to Upper Trailing Edge of Left Door	3227	3303	76
10	RSOV to Lower Trailing Edge of Right Door	3200	3233	33
11	RSOV to Lower Trailing Edge of Left Door	3200	3258	58
12	RSOV to Bottom of A-Pillar of Right Side	4363	4413	50
13	RSOV to Bottom of A-Pillar Left Side	4365	4448	83
14	RSOV to Firewall, Right Side	4603	4623	20
15	RSOV to Firewall, Left Side	4590	4660	70
16	RSOV to Steering Column	3870	3935	65
17	Center of Steering Column to A-Pillar	425	420	-5
18	Center of Steering Column to Headliner	450	485	35
19	RSOV to Right Side of Front Bumper	5262	5020	-242
20	RSOV to Left Side of Front Bumper	5265	5130	-135
21	Length of Engine Block	705	705	0
RD	RSOV to Right Side of Dash Panel	4135	4185	50
CD	RSOV to Center of Dash Panel	4073	4105	32
LD	RSOV to Left Side of Dash Panel	4060	4145	85

All measurements in millimeters.

DATA SHEET NO. 13**ACCIDENT INVESTIGATION DATA**Test Vehicle: 2011 Toyota Tundra Double Cab 4x4 4-Door TruckNHTSA No.: MB5126Test Program: 56 km/h Frontal Impact NCAP TestTest Date: 01/31/11**VEHICLE INFORMATION**VIN: 5TFUY5F15BX177001Wheelbase (mm): 3710Vehicle Size Category: 4-Door TruckTest Weight (kg): 2807.0**ACCELEROMETER DATA**Accelerometer Locations: Left Rear CrossmemberCal. Procedure/Interval: Drop Test / 6 monthsIntegration Algorithm: NHTSA StandardImpact Velocity (km/h): 56.86Velocity Change (km/h): 67.3Time of Separation (msec): 61.6Linearity: Good**CRUSH PROFILE**Collision Deformation Classification: 12FDEW2Midpoint of Damage: Vehicle CenterlineDamage Region Length (mm): 1583Impact Mode: Full Frontal

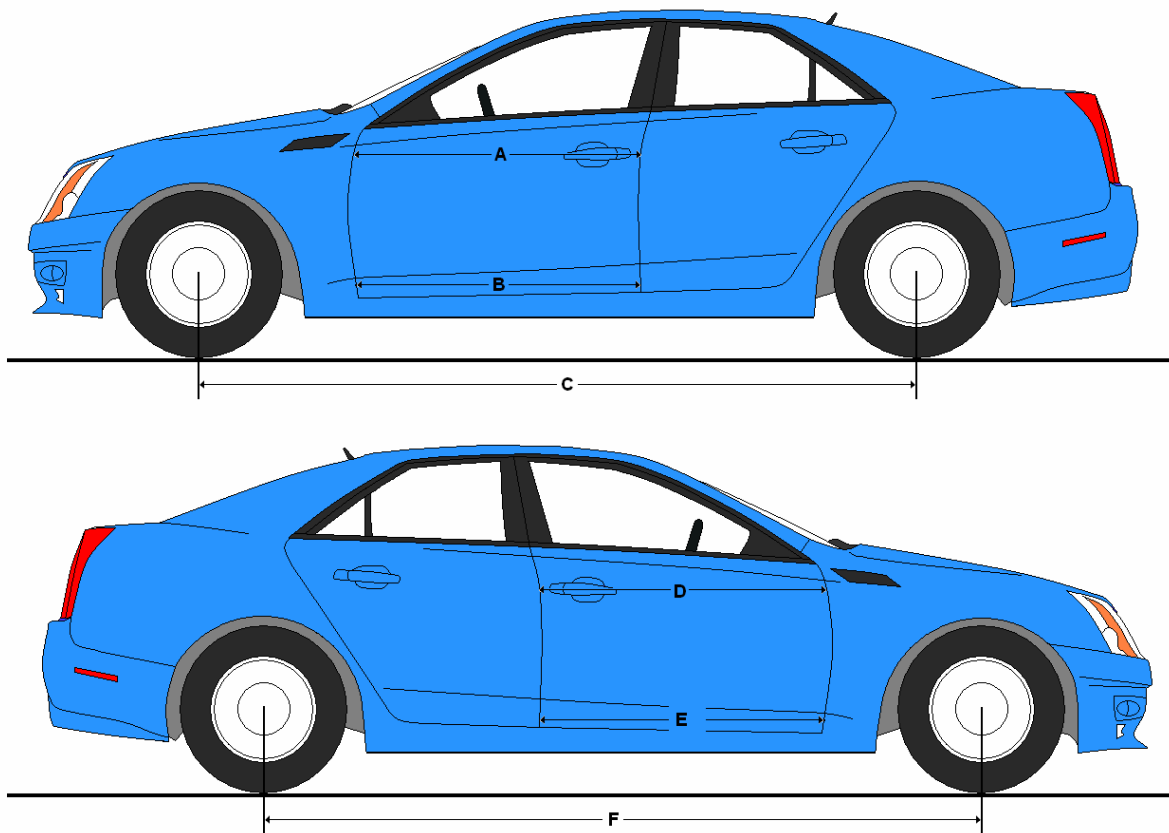
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush Zone 1 at Left Side	mm	135	485	350
C2	Crush Zone 2 at Left Side	mm	40	472	432
C3	Crush Zone 3 at Left Side	mm	20	500	480
C4	Crush Zone 4 at Right Side	mm	20	494	474
C5	Crush Zone 5 at Right Side	mm	40	495	455
C6	Crush Zone 6 at Right Side	mm	135	515	380
L	C1 to C6	mm	1583		

DATA SHEET NO. 14**VEHICLE INTRUSION MEASUREMENTS**Test Vehicle: 2011 Toyota Tundra Double Cab 4x4 4-Door TruckNHTSA No.: MB5126Test Program: 56 km/h Frontal Impact NCAP TestTest Date: 01/31/11**DOOR OPENING WIDTH**

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Left Side Upper	mm	1075	903	172
B	Left Side Lower	mm	928	929	-1
D	Right Side Upper	mm	1075	1073	2
E	Right Side Lower	mm	929	933	-4

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Difference
C	Left Side Wheelbase	mm	3710	3633	77
F	Right Side Wheelbase	mm	3710	3673	37



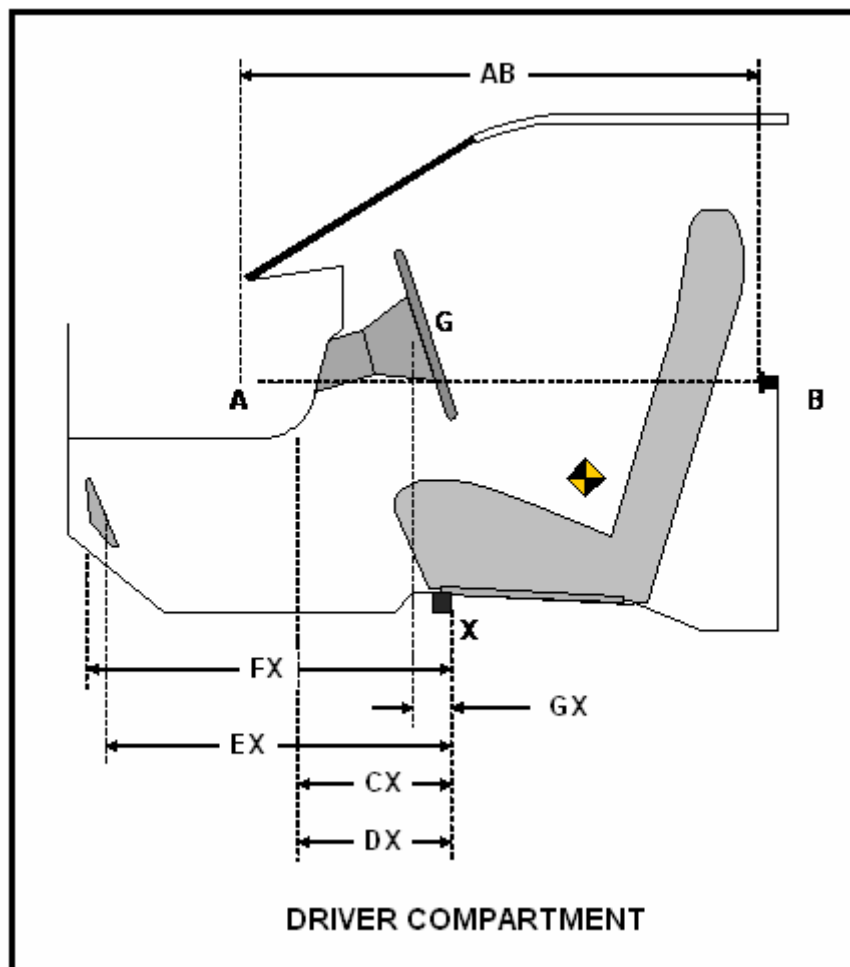
DATA SHEET NO. 14 ... (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Toyota Tundra Double Cab 4x4 4-Door Truck NHTSA No.: MB5126
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 01/31/11

DRIVER COMPARTMENT INTRUSION

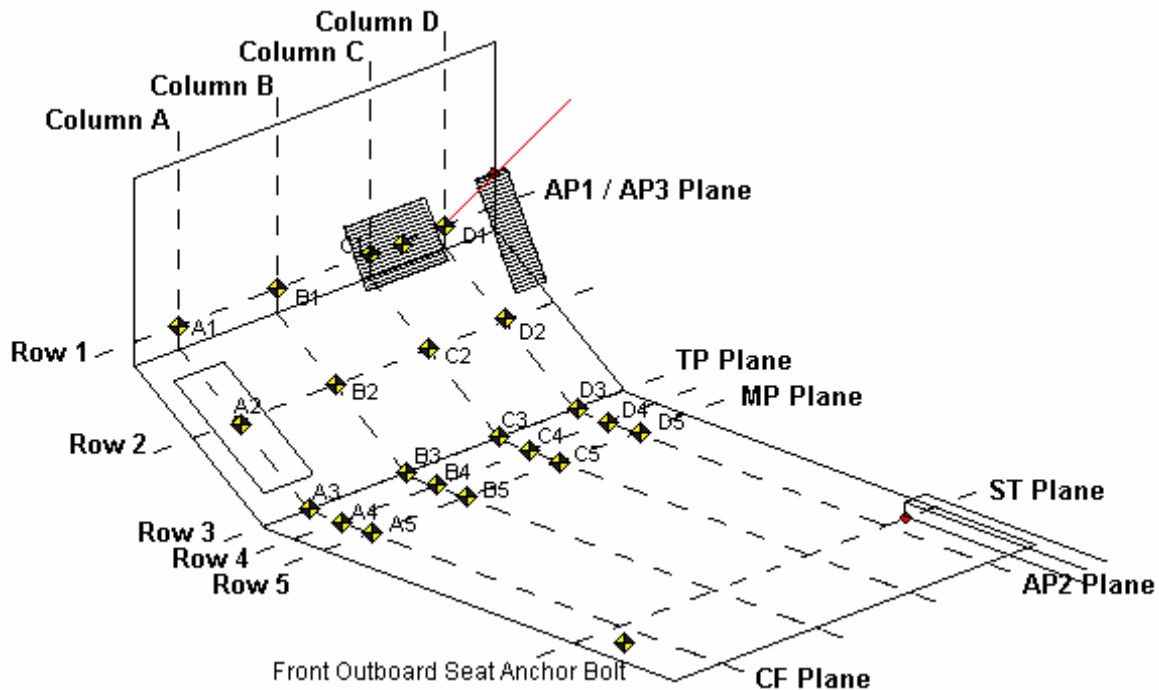
Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	896	1075	-179
CX	Left Knee Bolster to X	mm	340	323	17
DX	Right Knee Bolster to X	mm	345	325	20
EX	Brake Pedal to X	mm	550	547	3
FX	Foot Rest to X	mm	560	661	-101
GX	Center of Steering Wheel Hub to X	mm	87	62	25

X = Front of Seat Track (Stationary)



DATA SHEET NO. 14 ... (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle:	<u>2011 Toyota Tundra Double Cab 4x4 4-Door Truck</u>	NHTSA No.:	<u>MB5126</u>
Test Program:	<u>56 km/h Frontal Impact NCAP Test</u>	Test Date:	<u>01/31/11</u>



AP1: Y-Z Plane passing through D1

AP2: X-Z Plane passing through D1

AP3: X-Y plane passing through D1

MP: Y-Z plane, halfway between the ST plane and AP1 plane

CF Plane: X-Z plane passes through center of footrest.

BP Plane: X-Z plane passes through center of brake pedal

TP Plane: Y-Z plane, intersection of BP Plane and the intersection of the toe pan and floorboard

Column A: intersection of vehicle and CF plane

Column D: Intersection of vehicle and AP2 plane

Row 1: intersection of the vehicle and the AP3 Plane

Row 3: intersection of the vehicle and TP plane

Row 5: intersection of the vehicle and MP plane

Row 2: evenly spaced between row 1 and 3

Row 4: evenly spaced between row 3 and 5

DATA SHEET NO. 14 ... (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Toyota Tundra Double Cab 4x4 4-Door Truck NHTSA No.: MB5126
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 01/31/11

DRIVER FLOORPAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	656	709	732	679	660	701	704	635	4	-8	-28	-44
2	593	622	618	616	592	618	608	597	-1	-4	-10	-19
3	502	500	500	499	501	500	499	497	-1	0	-1	-2
4	412	410	412	412	411	410	412	413	-1	0	0	1
5	313	314	316	318	313	314	317	319	0	0	1	1

DRIVER FLOORPAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-27	-134	-248	-415	-29	-142	-257	-407	-2	-8	-9	8
2	-27	-135	-242	-423	-27	-135	-242	-416	0	0	0	7
3	-29	-132	-239	-422	-28	-130	-237	-417	1	2	2	5
4	-27	-133	-234	-417	-25	-131	-233	-415	2	2	1	2
5	-24	-130	-233	-414	-23	-128	-230	-412	1	2	3	2

DRIVER FLOORPAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	71	35	16	59	62	31	23	73	-9	-4	7	14
2	-34	-47	-45	-37	-41	-53	-60	-27	-7	-6	-15	10
3	-89	-80	-84	-85	-89	-84	-87	-81	0	-4	-3	4
4	-86	-93	-92	-83	-80	-88	-91	-83	6	5	1	0
5	-82	-77	-72	-76	-78	-74	-71	-75	4	3	1	1

All measurements in millimeters

DATA SHEET NO. 14 ... (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Toyota Tundra Double Cab 4x4 4-Door Truck NHTSA No.: MB5126
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 01/31/11

PASSENGER FLOORPAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	692	748	714	657	626	714	702	655	-66	-34	-12	-2
2	631	639	623	598	583	621	621	602	-48	-18	-2	4
3	516	518	523	529	510	516	520	525	-6	-2	-3	-4
4	415	418	417	417	412	416	414	414	-3	-2	-3	-3
5	325	326	327	326	322	324	325	323	-3	-2	-2	-3

PASSENGER FLOORPAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	390	224	102	3	386	242	117	10	-4	18	15	7
2	386	220	104	1	384	221	110	5	-2	1	6	4
3	392	215	103	-1	397	219	107	2	5	4	4	3
4	391	211	103	-1	394	215	106	2	3	4	3	3
5	392	211	105	1	394	214	108	5	2	3	3	4

PASSENGER FLOORPAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	66	38	60	91	97	48	58	81	31	10	-2	-10
2	-39	-40	-25	-5	-19	-44	-36	-15	20	-4	-11	-10
3	-87	-83	-79	-98	-82	-87	-82	-103	5	-4	-3	-5
4	-90	-93	-90	-84	-82	-87	-84	-81	8	6	6	3
5	-83	-79	-79	-86	-74	-74	-74	-84	9	5	5	2

All measurements in millimeters

DATA SHEET NO. 15

SUMMARY OF FMVSS 212 AND 219 (PARTIAL) DATA

Test Vehicle: 2011 Toyota Tundra Double Cab 4x4 4-Door Truck NHTSA No.: MB5126

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 01/31/11

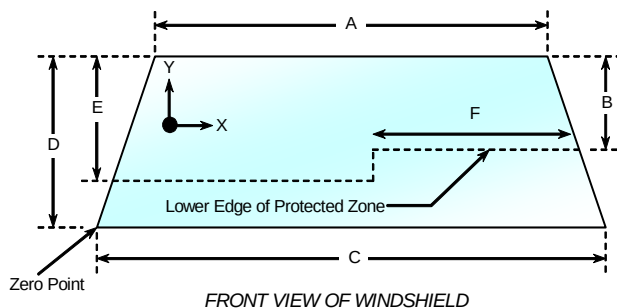
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with rubber plastic and rubber molding sealed with rubber cement.

The standard requires that the post-test retention measurement be a minimum of 75% of the pre-test total periphery measurement for vehicles not equipped with occupant passive restraints and 50% for each side of the windshield for vehicles which are equipped with occupant passive restraints.

Temperature of windshield molding during test: 21.7° C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2374	2374	100.0%
Right Side	2374	2374	100.0%
Total	4748	4748	100.0%



Item	Units	Value
A	mm	1405
B	mm	405
C	mm	1653
D	mm	845
E	mm	517
F	mm	630

AREAS OF PROTECTED ZONE FAILURES

- A. Provide Coordinates of the area that the protected zone was penetrated more than 0.25 inches by a vehicle component other than one that is normally in contact with the windshield.

X	Y

- B. Provide coordinates of the area beneath the protected zone that the inner surface of the windshield was penetrated by a vehicle component.

X	Y

DATA SHEET NO. 16

FMVSS 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2011 Toyota Tundra Double Cab 4x4 4-Door Truck NHTSA No.: MB5126
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 01/31/11

FMVSS 301 FUEL SYSTEM INTEGRITY DATA

Temperature at Time of Impact: 12.8° C Test Time: 2:35 PM

Stoddard Solvent Spillage Measurements

- 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: No spillage occurred

DATA SHEET NO. 17

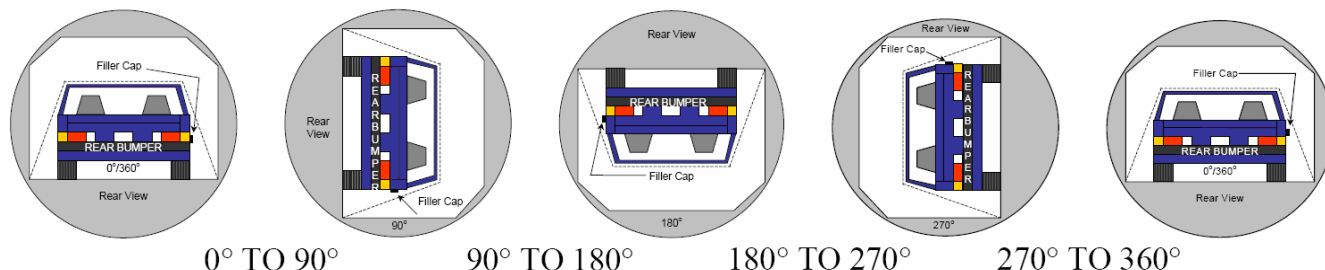
FMVSS 301 STATIC ROLLOVER

Test Vehicle: 2011 Toyota Tundra Double Cab 4x4 4-Door Truck

NHTSA No.: MB5126

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 01/31/11



1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.

2. The position hold time at each position is 300 seconds (minimum).

3. Details of Stoddard solvent spillage: No spillage occurred

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	81	300	381
90° To 180°	83	300	383
180° To 270°	79	300	379
270° To 360°	82	300	382

FMVSS 301 SPILLAGE TABLE

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

SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 18

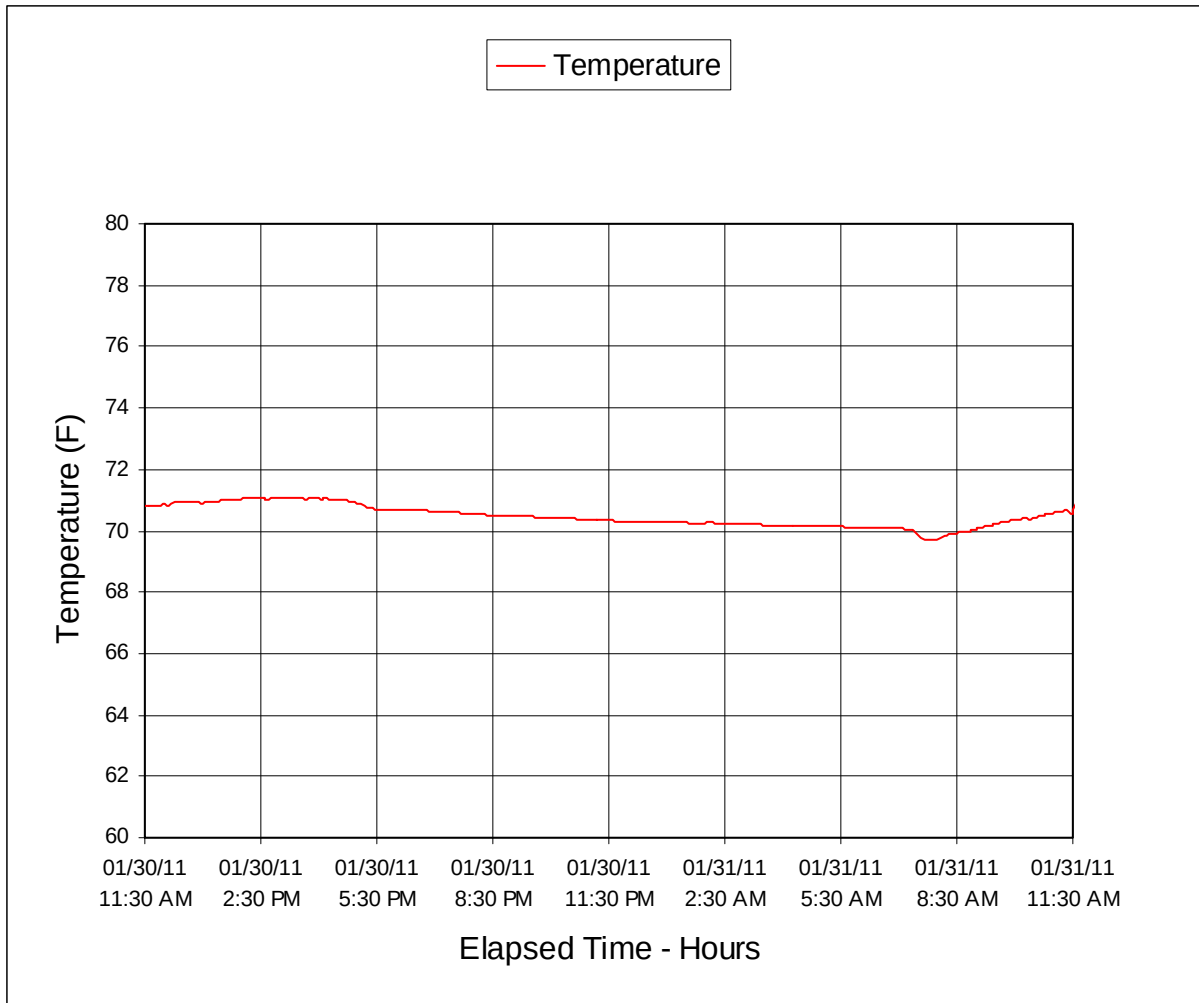
DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2011 Toyota Tundra Double Cab 4x4 4-Door Truck

NHTSA No.: MB5126

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 01/31/11



APPENDIX A
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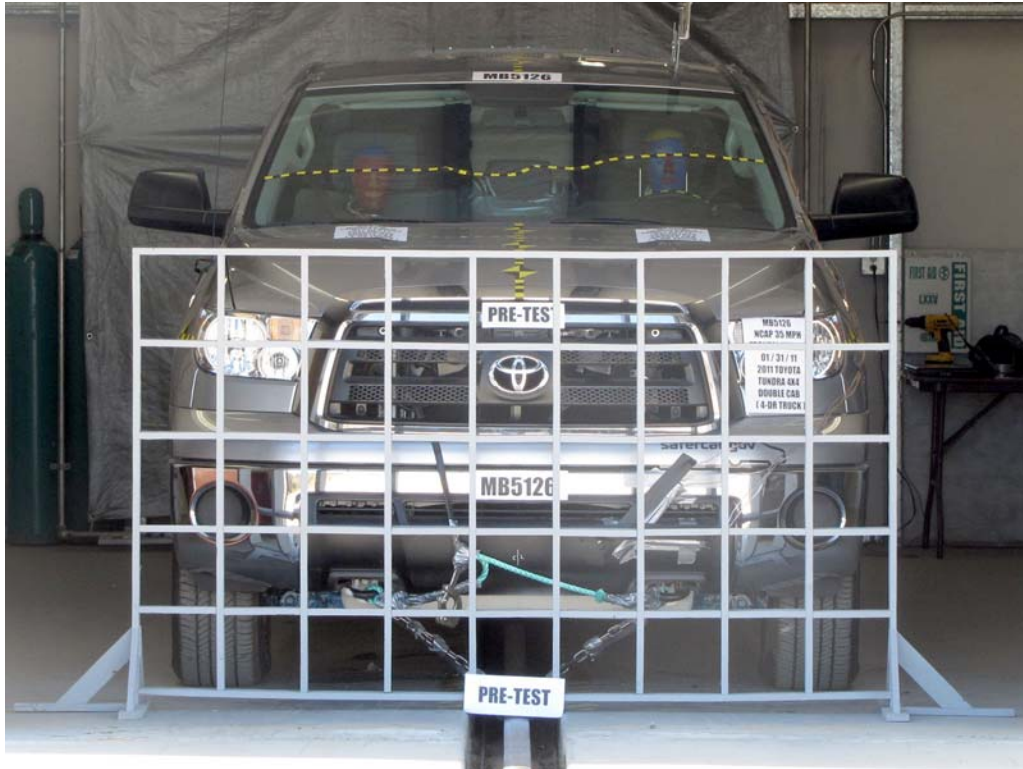


FIGURE 1. Load Cell Location



FIGURE 2. Load Cell Wall



FIGURE 3. Manufacturer's Label



FIGURE 4. Tire Placard



FIGURE 5. Right Front $\frac{3}{4}$ View, As Received



FIGURE 6. Left Rear $\frac{3}{4}$ View of Vehicle, As Received



FIGURE 7. Pre-Test Front View of Test Vehicle

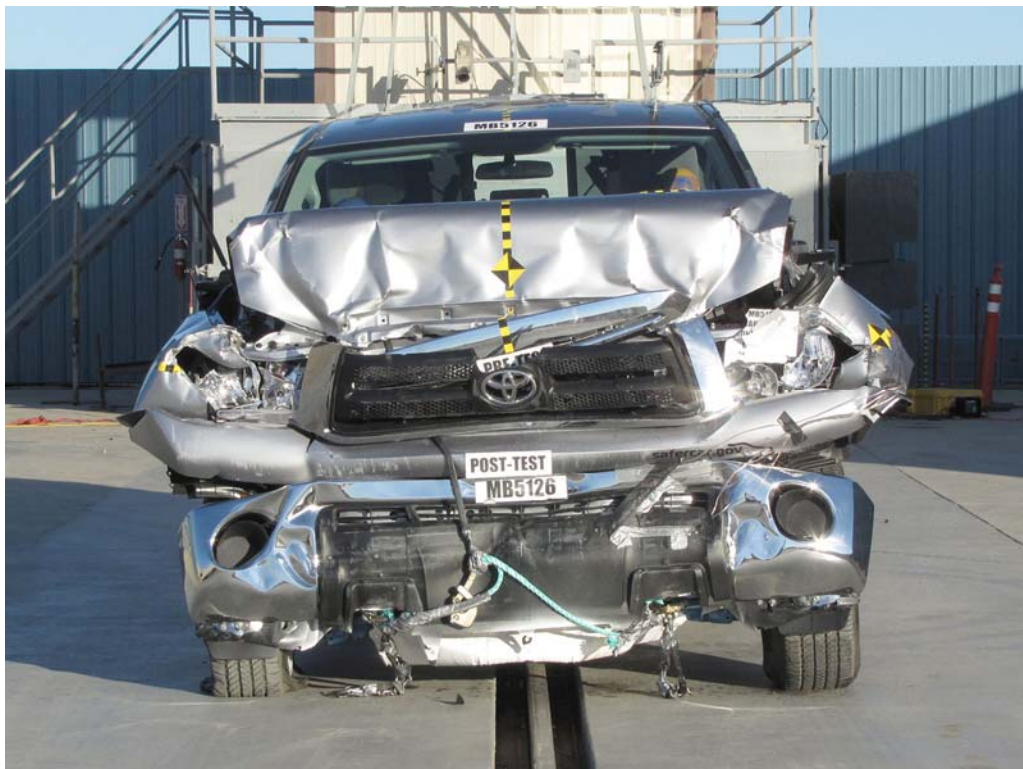


FIGURE 8. Post-Test Front View of Test Vehicle



FIGURE 9. Pre-Test Left View of Test Vehicle



FIGURE 10. Post-Test Left View of Test Vehicle



FIGURE 11. Pre-Test Right View of Test Vehicle



FIGURE 12. Post-Test Right View of Test Vehicle



FIGURE 13. Pre-Test Right Front $\frac{3}{4}$ View



FIGURE 14. Post-Test Right Front $\frac{3}{4}$ View



FIGURE 15. Pre-Test Left Rear $\frac{3}{4}$ View



FIGURE 16. Post-Test Left Rear $\frac{3}{4}$ View



FIGURE 17. Pre-Test Windshield View

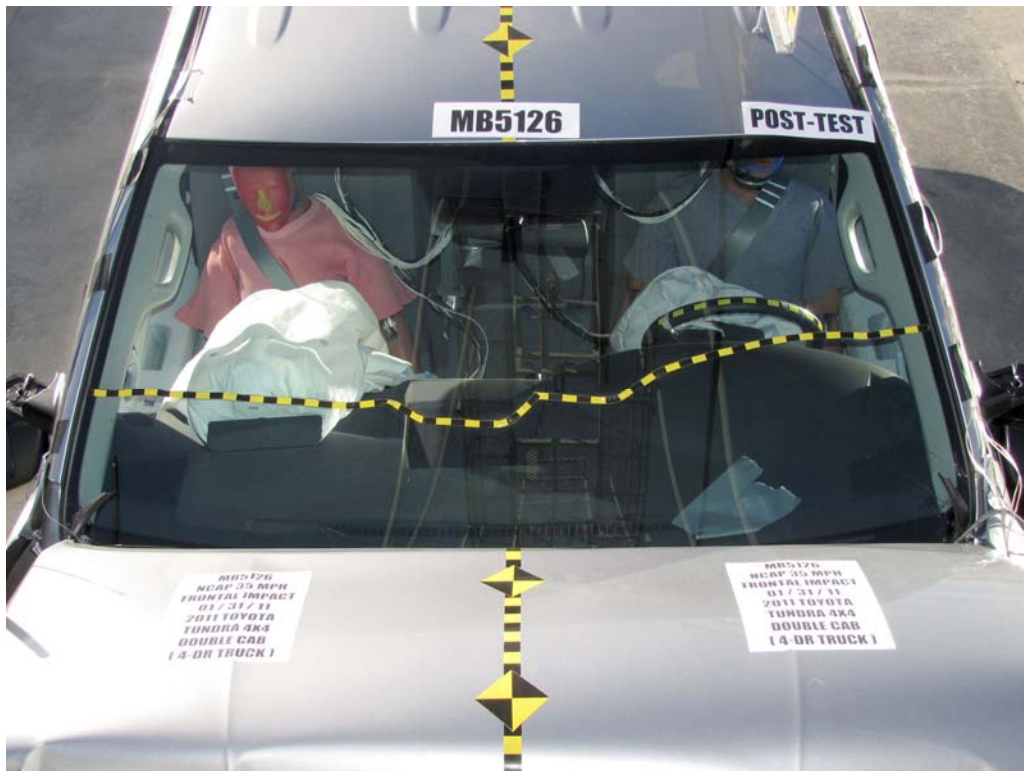


FIGURE 18. Post-Test Windshield View



FIGURE 19. Pre-Test Engine Compartment View

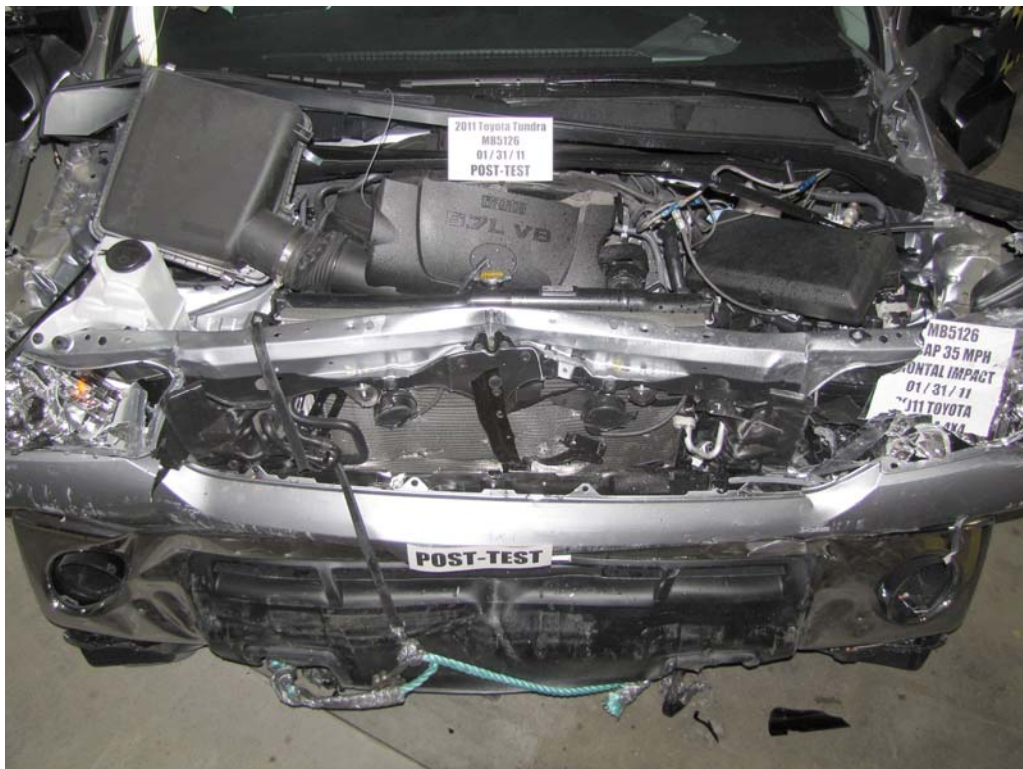


FIGURE 20. Post-Test Engine Compartment View



FIGURE 21. Pre-Test Fuel Filler Cap View



FIGURE 22. Post-Test Fuel Filler Cap View

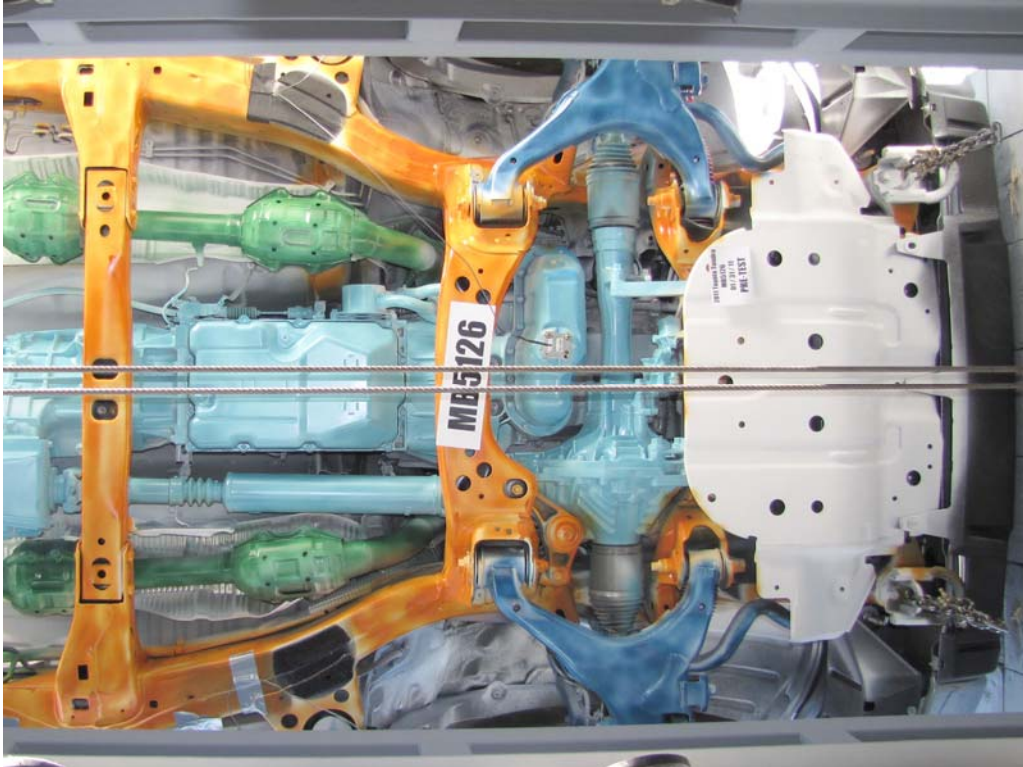


FIGURE 23. Pre-Test Front Underbody View

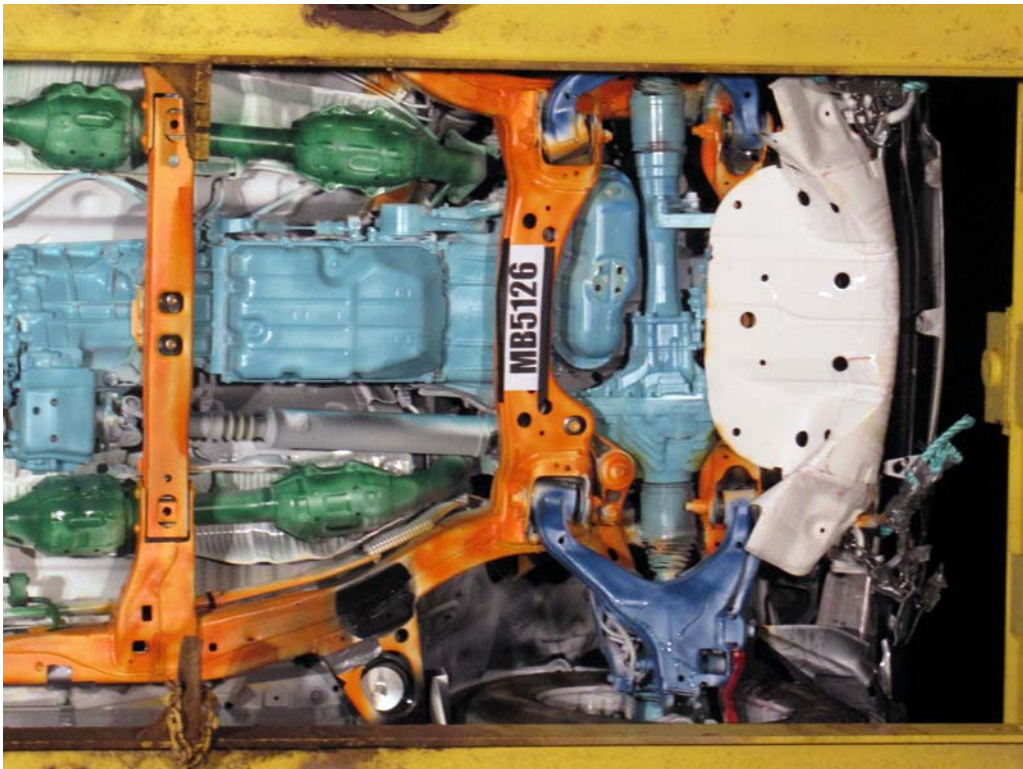


FIGURE 24. Post-Test Front Underbody View

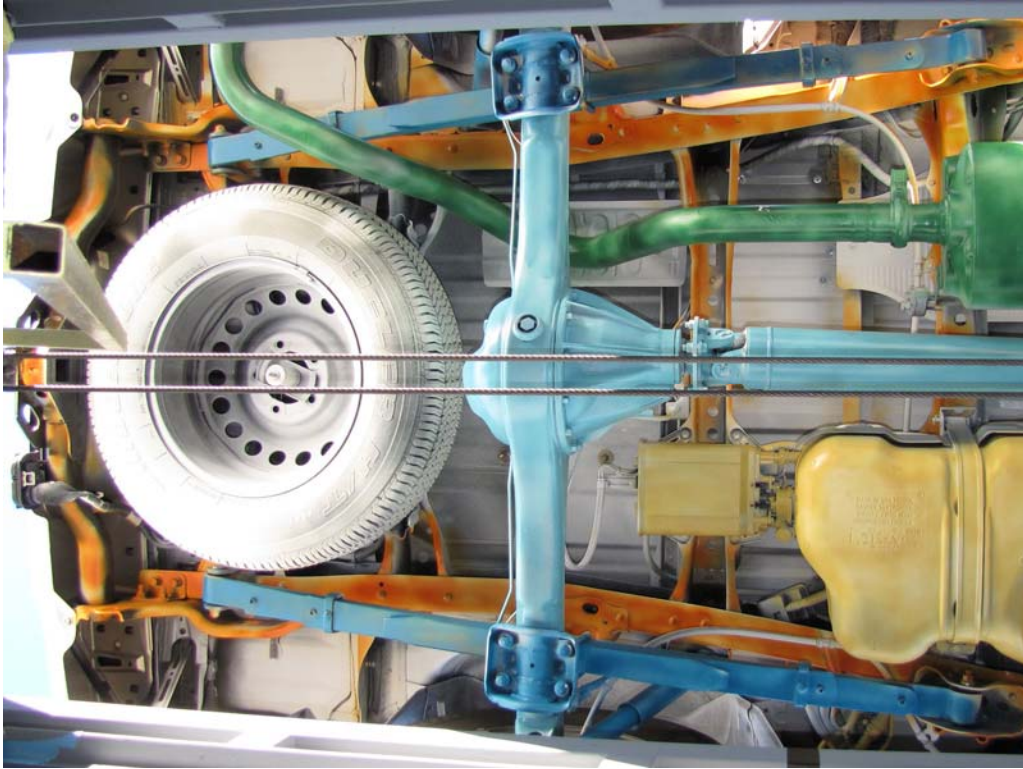


FIGURE 25. Pre-Test Rear Underbody View

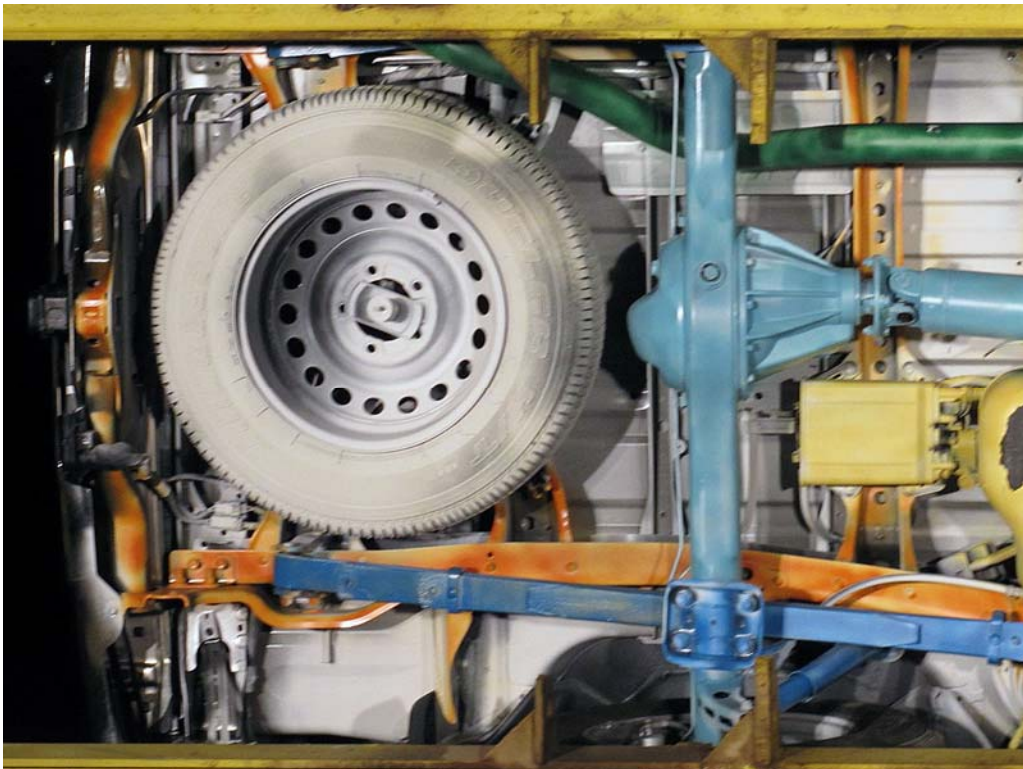


FIGURE 26. Post-Test Rear Underbody View



FIGURE 27. Pre-Test Dummy Cable Routing



FIGURE 28. Post-Test Dummy Cable Routing



FIGURE 29. Pre-Test Driver Dummy Front View



FIGURE 30. Post-Test Driver Dummy Front View



FIGURE 31. Pre-Test Driver Dummy Window View



FIGURE 32. Post-Test Driver Dummy Window View



FIGURE 33. Pre-Test Driver Dummy and Vehicle Interior View



FIGURE 34. Post-Test Driver Dummy and Vehicle Interior View



FIGURE 35. Pre-Test Driver's Seat Fore-Aft Markings



FIGURE 36. Post-Test Driver's Seat Fore-Aft Markings

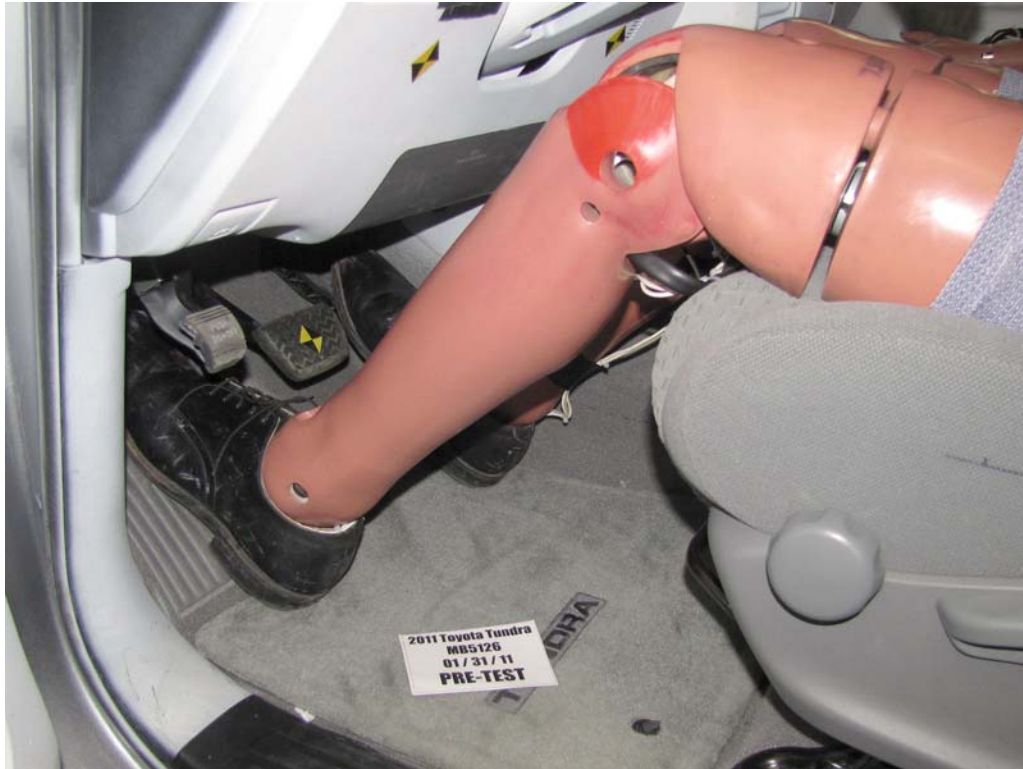


FIGURE 37. Pre-Test Driver Dummy Feet



FIGURE 38. Post-Test Driver Dummy Feet



FIGURE 39. Pre-Test Driver's Side Knee Bolster



FIGURE 40. Post-Test Driver's Side Knee Bolster



FIGURE 41. Pre-Test Driver's Side Floorpan



FIGURE 42. Post-Test Driver's Side Floorpan



FIGURE 43. Post-Test Driver Dummy Contact With Airbag



FIGURE 43a. Post-Test Driver Dummy Contact With Head Restraint



FIGURE 43b. Post-Test Driver Dummy Contact With Knee Airbag



FIGURE 43c. Post-Test Driver Dummy Contact With Steering Column



FIGURE 44. Pre-Test View of Steering Column Shear Capsule

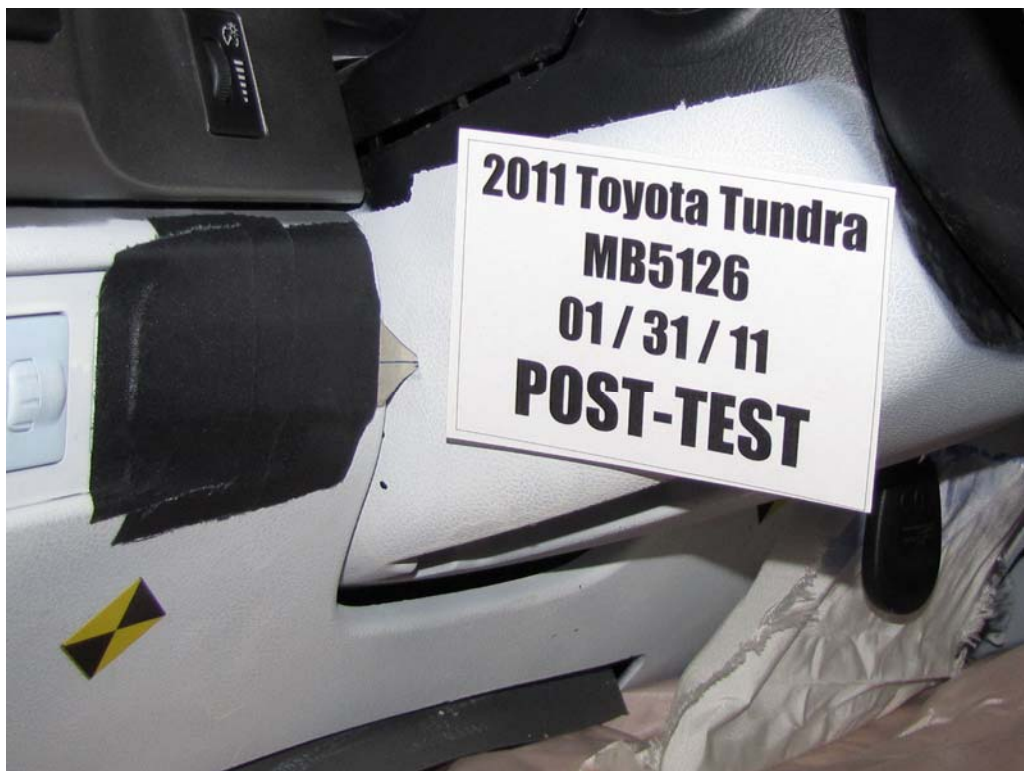


FIGURE 45. Post-Test View of Steering Column Shear Capsule



FIGURE 46. Pre-Test Passenger Dummy Front View



FIGURE 47. Post-Test Passenger Dummy Front View



FIGURE 48. Pre-Test Passenger Dummy Window View



FIGURE 49. Post-Test Passenger Dummy Window View



FIGURE 50. Pre-Test Passenger Dummy and Vehicle Interior View



FIGURE 51. Post-Test Passenger Dummy and Vehicle Interior View



FIGURE 52. Pre-Test Passenger's Seat Fore-Aft Markings



FIGURE 53. Post-Test Passenger's Seat Fore-Aft Markings



FIGURE 54. Pre-Test Passenger Dummy Feet



FIGURE 55. Post-Test Passenger Dummy Feet



FIGURE 56. Pre-Test Passenger's Side Knee Bolster



FIGURE 57. Post-Test Passenger's Side Knee Bolster



FIGURE 58. Pre-Test Passenger's Side Floorpan



FIGURE 59. Post-Test Passenger's Side Floorpan



FIGURE 60. Post-Test Passenger Dummy Contact With Airbag



FIGURE 60a. Post-Test Passenger Dummy Contact With Head Restraint



FIGURE 60b. Post-Test Passenger Dummy Contact With Knee Airbag



FIGURE 61. Pre-Test of Ballast Installed in Vehicle

Photograph Not Applicable No Stoddard Solvent Spillage

FIGURE 62. Post-Test Stoddard Solvent Spillage Location



FIGURE 63. Post-Test Speed Trap Read Out



FIGURE 64. Vehicle at 0°on Static Rollover Device

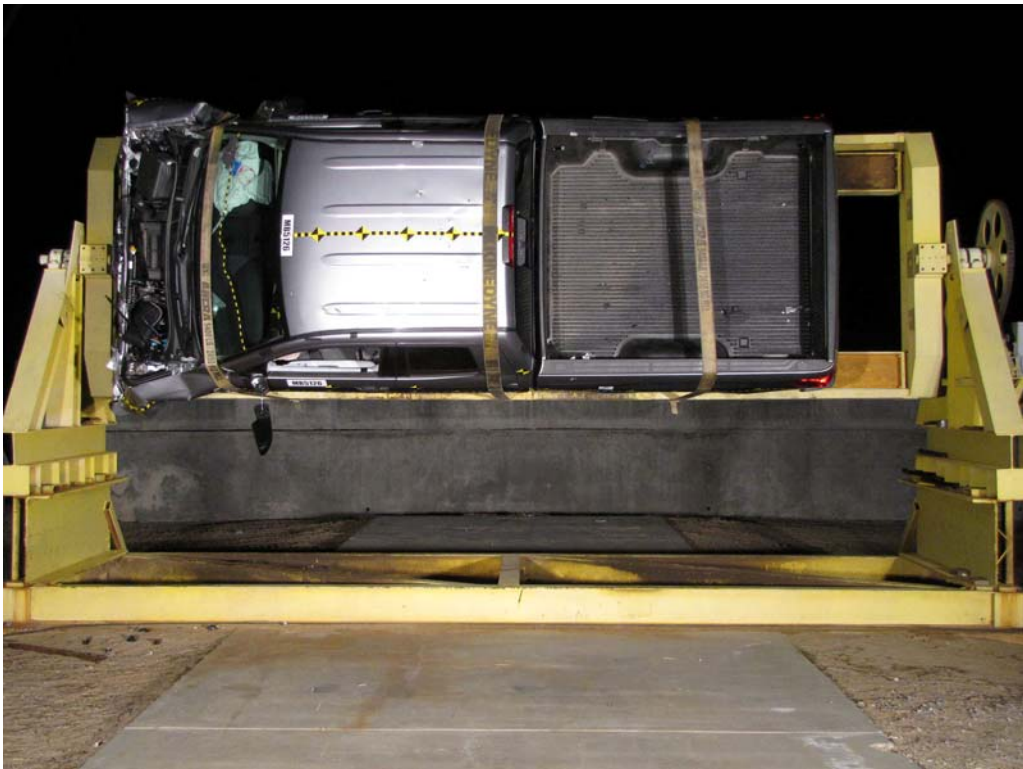


FIGURE 65. Vehicle at 90°on Static Rollover Device



FIGURE 66. Vehicle at 180°on Static Rollover Device



FIGURE 67. Vehicle at 270°on Static Rollover Device



FIGURE 68. Vehicle at 360° on Static Rollover Device



FIGURE 69. Impact Event

APPENDIX B
DUMMY RESPONSE DATA TRACES

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11	Driver Upper Neck Force Z vs. Time Primary	B-4
12	Driver Upper Neck Moment Y vs. Time Primary	B-4
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The following additional dummy and vehicle response data can be found in the R&D section of the NHTSA website at www.nhtsa.dot.gov

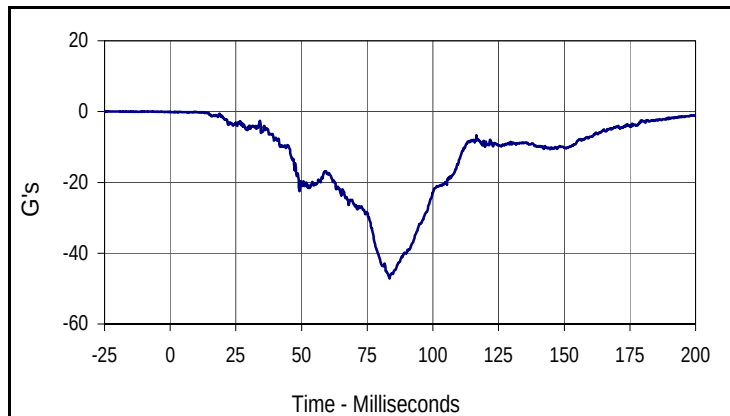
Driver Head X Acceleration Redundant
Driver Head Y Acceleration Redundant
Driver Head Z Acceleration Redundant
Driver Upper Neck Force Y
Driver Upper Neck Moment X
Driver Upper Neck Moment Z
Driver Chest X Acceleration Redundant
Driver Chest Y Acceleration Redundant
Driver Chest Z Acceleration Redundant
Driver Pelvis X
Driver Pelvis Y
Driver Pelvis Z
Driver Left Femur Force Z Redundant
Driver Right Femur Force Z Redundant
Driver Shoulder Belt Force
Driver Lap Belt Force
Driver Left Upper Tibia Moment X
Driver Left Upper Tibia Moment Y
Driver Left Upper Tibia Force Z
Driver Left Lower Tibia Moment X
Driver Left Lower Tibia Moment Y
Driver Left Lower Tibia Force Z
Driver Right Upper Tibia Moment X
Driver Right Upper Tibia Moment Y
Driver Right Upper Tibia Force Z
Driver Right Lower Tibia Moment X
Driver Right Lower Tibia Moment Y
Driver Right Lower Tibia Force Z
Driver Left Foot Fore Z
Driver Left Foot Aft X
Driver Left Foot Aft Z
Driver Right Foot Fore Z
Driver Right Foot Aft X

Driver Right Foot Aft Z
Passenger Head X Acceleration Redundant
Passenger Head Y Acceleration Redundant
Passenger Head Z Acceleration Redundant
Passenger Upper Neck Force X
Passenger Upper Neck Force Z
Passenger Upper Neck Moment Y
Passenger Chest X Acceleration Redundant
Passenger Chest Y Acceleration Redundant
Passenger Chest Z Acceleration Redundant
Passenger Pelvis X
Passenger Pelvis Y
Passenger Pelvis Z
Passenger Left Femur Force Z Redundant
Passenger Right Femur Force Z Redundant
Passenger Shoulder Belt Force
Passenger Lap Belt Force
Passenger Left Upper Tibia Moment X
Passenger Left Upper Tibia Moment Y
Passenger Left Upper Tibia Force Z
Passenger Left Lower Tibia Moment X
Passenger Left Lower Tibia Moment Y
Passenger Left Lower Tibia Force Z
Passenger Right Upper Tibia Moment X
Passenger Right Upper Tibia Moment Y
Passenger Right Upper Tibia Force Z
Passenger Right Lower Tibia Moment X
Passenger Right Lower Tibia Moment Y
Passenger Right Lower Tibia Force Z
Passenger Left Foot Fore Z
Passenger Left Foot Aft X
Passenger Left Foot Aft Z
Passenger Right Foot Fore Z
Passenger Right Foot Aft X
Passenger Right Foot Aft Z
Left Rear Seat Crossmember X

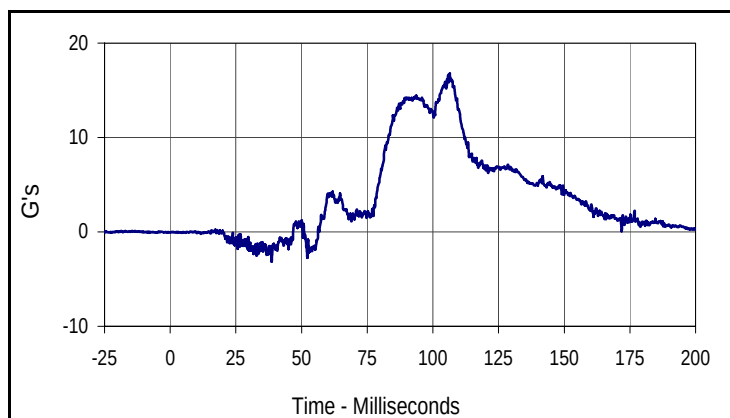
Left Rear Seat Crossmember Z
Right Rear Seat Crossmember X
Right Rear Seat Crossmember Z
Vehicle Engine Top X
Vehicle Engine Bottom X
Vehicle Left Brake Caliper X
Vehicle Right Brake Caliper X
Load Cell Barrier A1-A9
Load Cell Barrier B1-A9
Load Cell Barrier C1-A9
Load Cell Barrier D1-A9

Test Vehicle: 2011 Toyota Tundra Double Cab 4X4 4-Door Truck
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

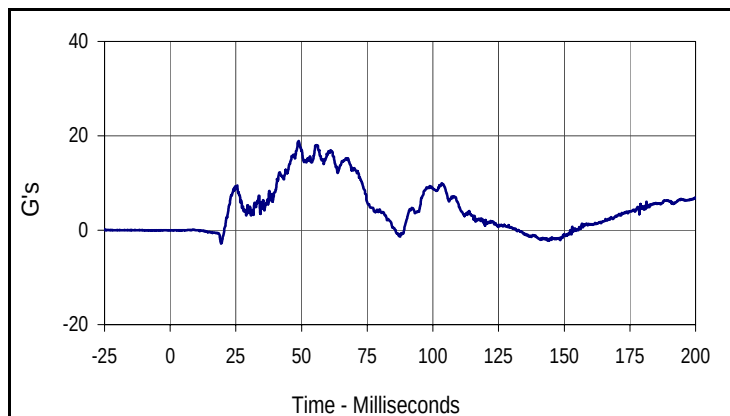
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 NHTSA No.: MB5126



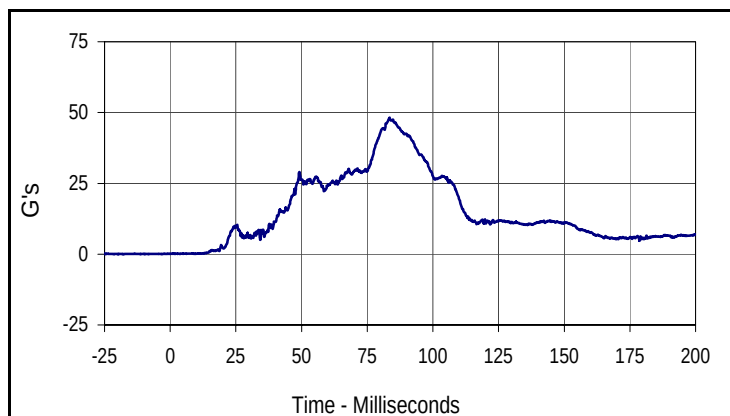
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001	FIL	1000	G's
Max	Time	Min	Time
-0.1	3.5	-47.0	83.5



Curve Description			
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CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
16.8	106.4	-3.1	38.6



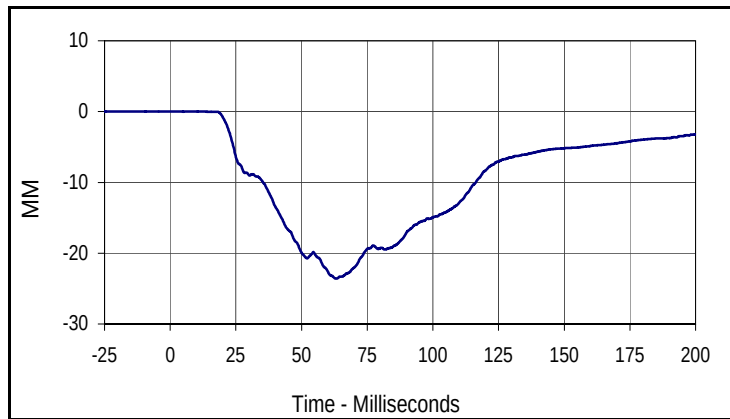
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CURNO	Type	SAE Class	Units
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Max	Time	Min	Time
18.9	48.9	-2.9	19.4



Curve Description			
Driver Head Resultant Acceleration Primary			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
48.2	83.5	0.1	9.8

Test Vehicle: 2011 Toyota Tundra Double Cab 4X4 4-Door Truck
Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

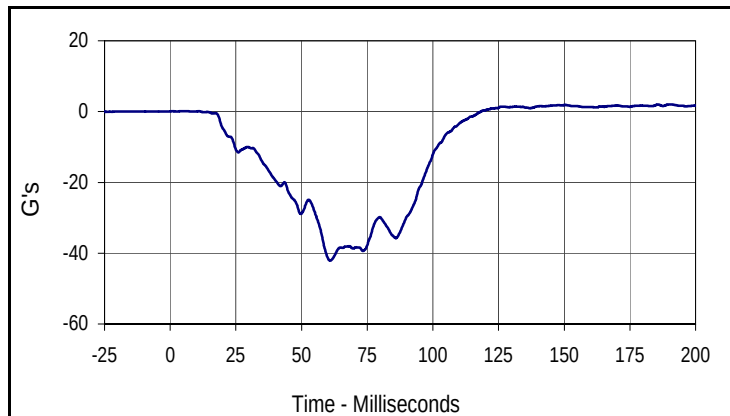
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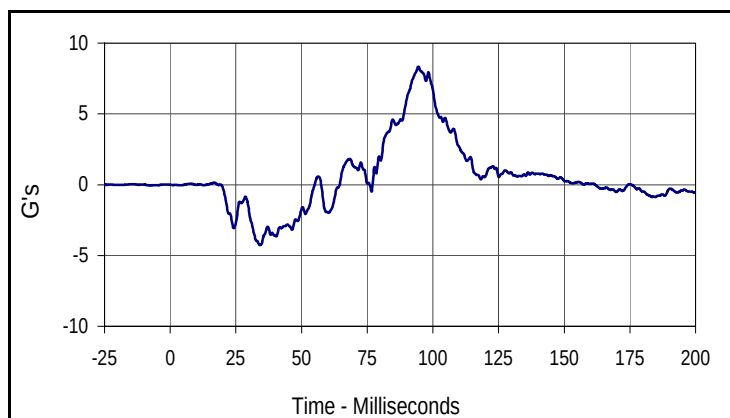
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Driver Chest Deflection			
CURNO	Type	SAE Class	Units
019	FIL	600	MM
Max	Time	Min	Time
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Test Vehicle: 2011 Toyota Tundra Double Cab 4X4 4-Door Truck
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

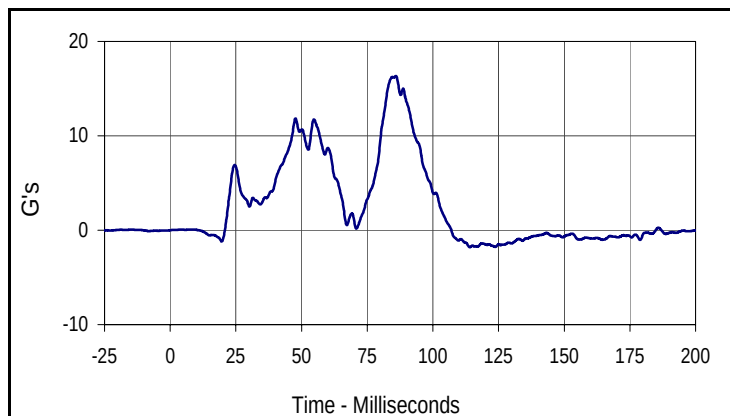
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 NHTSA No.: MB5126



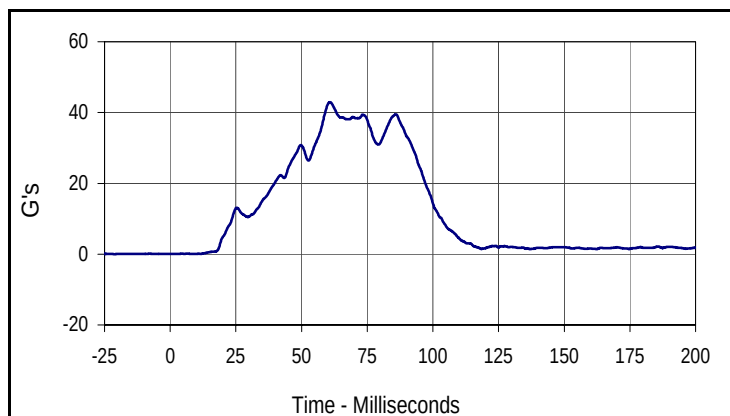
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Driver Chest Acceleration X Primary			
CURNO	Type	SAE Class	Units
013	FIL	180	G's
Max	Time	Min	Time
2.0	190.7	-42.1	60.9



Curve Description			
Driver Chest Acceleration Y Primary			
CURNO	Type	SAE Class	Units
014	FIL	180	G's
Max	Time	Min	Time
8.3	94.5	-4.3	34.1



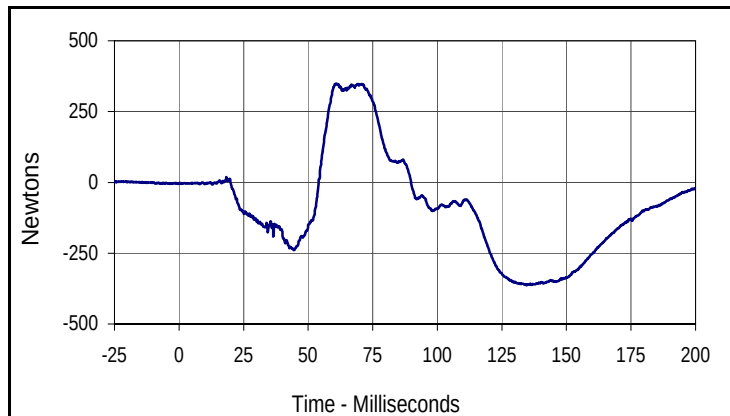
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CURNO	Type	SAE Class	Units
015	FIL	180	G's
Max	Time	Min	Time
16.3	85.9	-1.8	114.0



Curve Description			
Driver Chest Resultant Acceleration Primary			
CURNO	Type	SAE Class	Units
013	RES	180	G's
Max	Time	Min	Time
42.9	60.8	0.0	10.0

Test Vehicle: 2011 Toyota Tundra Double Cab 4X4 4-Door Truck
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

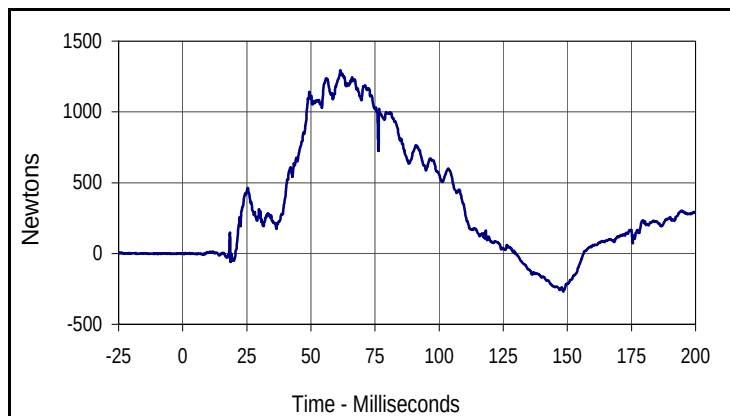
Test Date: 1/31/11
 NHTSA No.: MB5126



Curve Description

Driver Upper Neck Force X

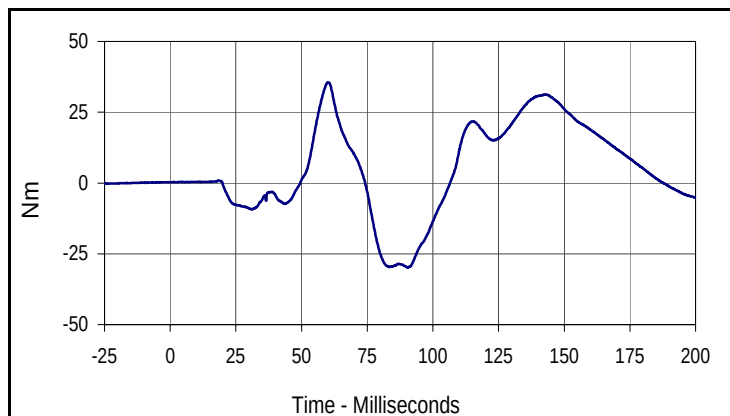
CURNO	Type	SAE Class	Units
007	FIL	1000	Newtons
Max	Time	Min	Time
348.4	61.0	-363.1	134.6



Curve Description

Driver Upper Neck Force Z

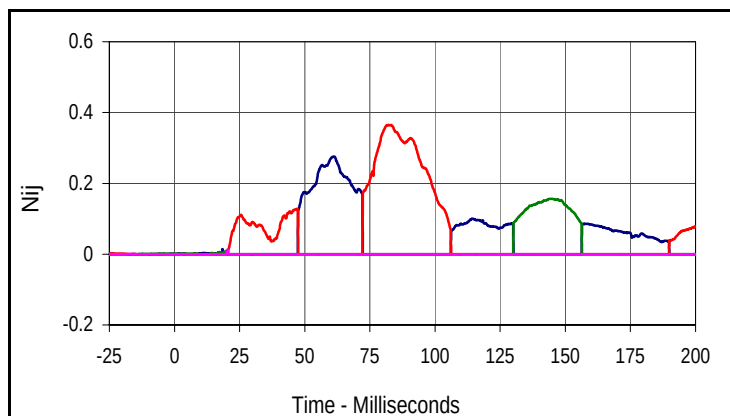
CURNO	Type	SAE Class	Units
009	FIL	1000	Newtons
Max	Time	Min	Time
1293.7	61.5	-268.8	148.4



Curve Description

Driver Upper Neck Moment Y

CURNO	Type	SAE Class	Units
011	FIL	600	Nm
Max	Time	Min	Time
35.6	60.2	-29.9	90.3



Curve Description

Driver Nij

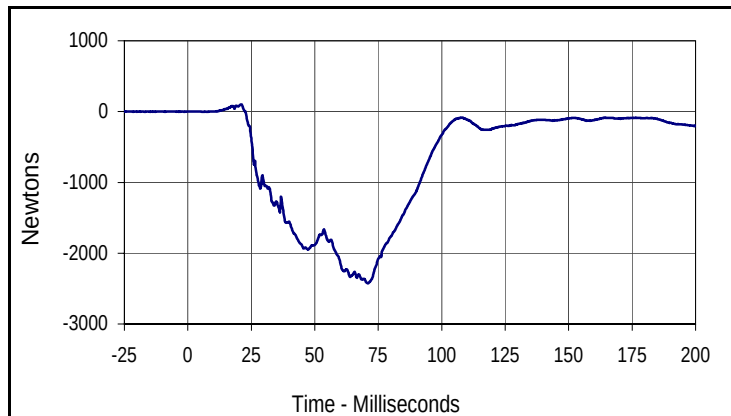
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Units	Type	Max	Time
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Units	Type	Max	Time
Ncf	FIL	0.16	144.4
Units	Type	Max	Time
Nce	FIL	0.30	288.4

Test Vehicle: 2011 Toyota Tundra Double Cab 4X4 4-Door Truck

Test Date: 1/31/11

Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

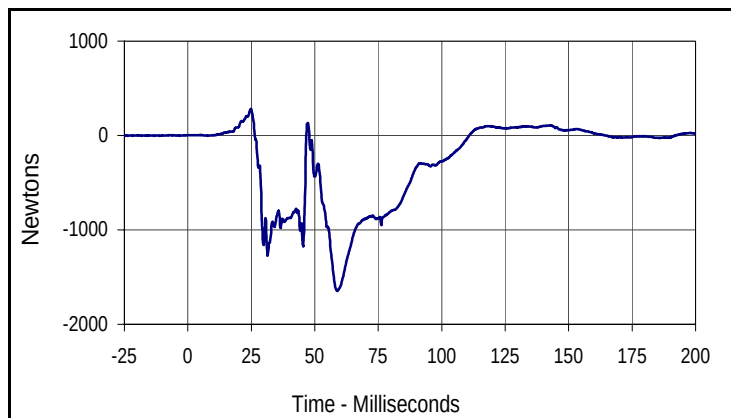
NHTSA No.: MB5126



Curve Description

Driver Left Femur Force Z

CURNO	Type	SAE Class	Units
023	FIL	600	Newtons
Max	Time	Min	Time
100.5	20.9	-2426.8	71.0



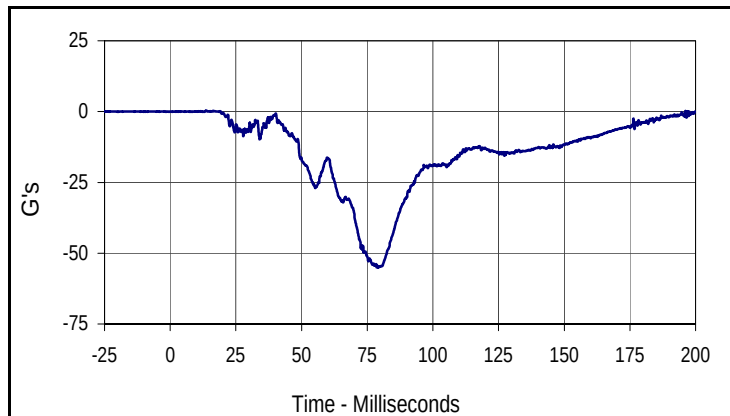
Curve Description

Driver Right Femur Force Z

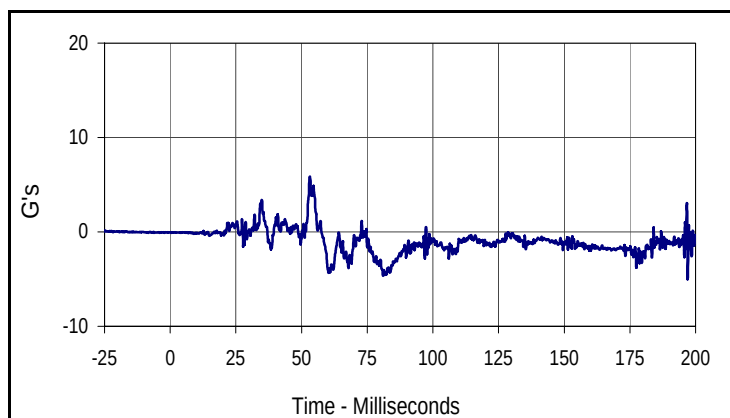
CURNO	Type	SAE Class	Units
024	FIL	600	Newtons
Max	Time	Min	Time
283.0	24.9	-1647.4	58.8

Test Vehicle: 2011 Toyota Tundra Double Cab 4X4 4-Door Truck
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

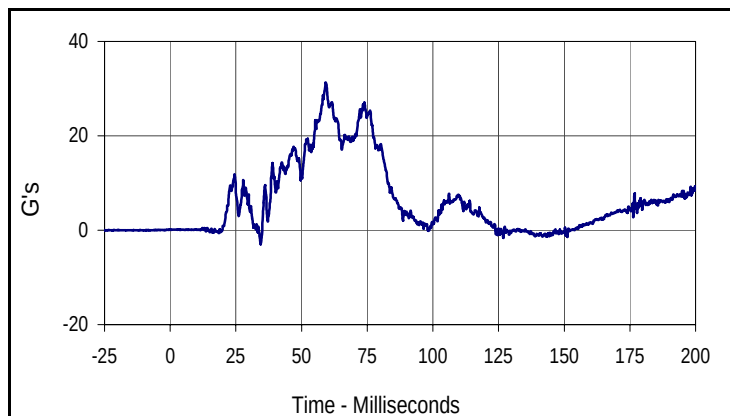
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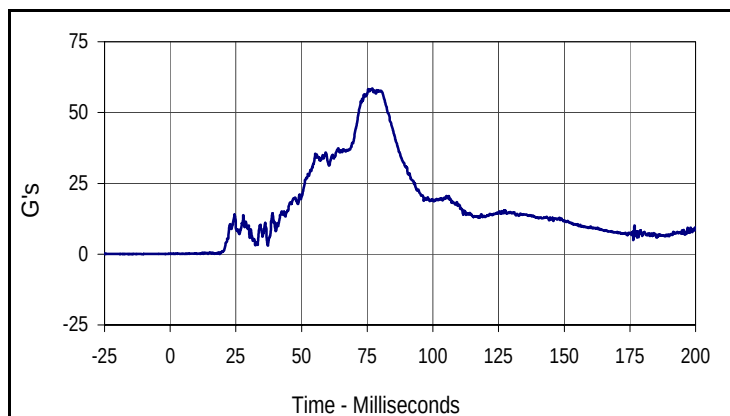
Curve Description			
Passenger Head Acceleration X Primary			
CURNO	Type	SAE Class	Units
045	FIL	1000	G's
Max	Time	Min	Time
0.3	13.7	-55.0	79.2



Curve Description			
Passenger Head Acceleration Y Primary			
CURNO	Type	SAE Class	Units
046	FIL	1000	G's
Max	Time	Min	Time
5.8	53.2	-5.0	197.0



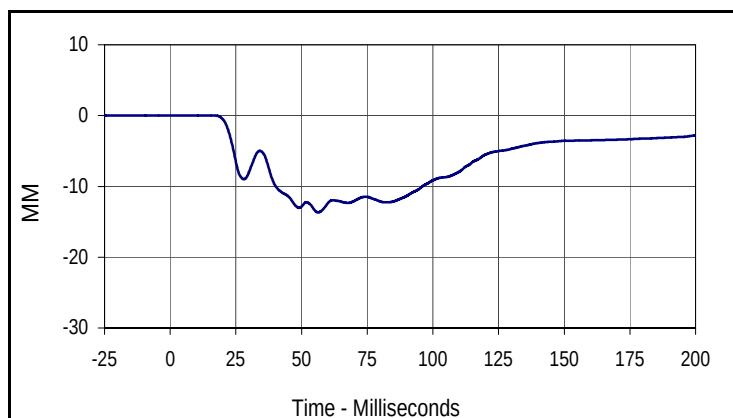
Curve Description			
Passenger Head Acceleration Z Primary			
CURNO	Type	SAE Class	Units
047	FIL	1000	G's
Max	Time	Min	Time
31.3	59.2	-3.0	34.4



Curve Description			
Passenger Head Resultant Acceleration Primary			
CURNO	Type	SAE Class	Units
045	RES	1000	G's
Max	Time	Min	Time
58.5	77.0	0.1	14.4

Test Vehicle: 2011 Toyota Tundra Double Cab 4X4 4-Door Truck
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

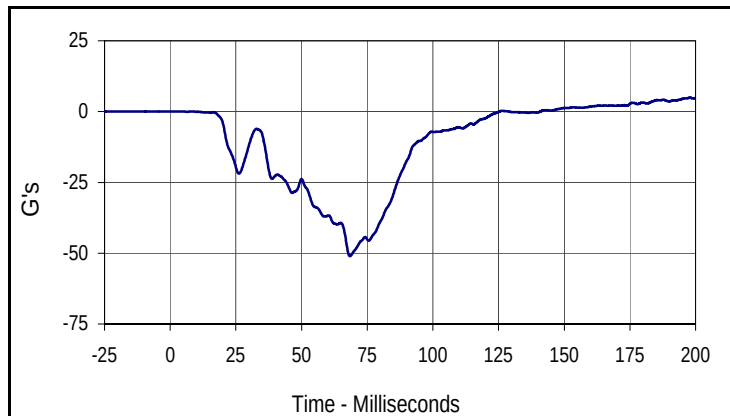
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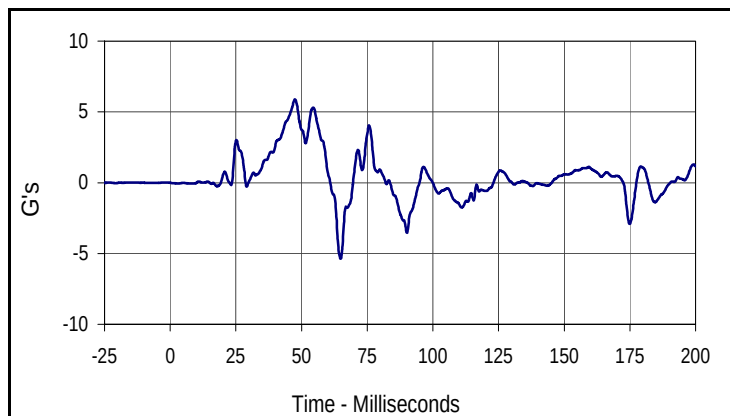
Curve Description			
Passenger Chest Deflection			
CURNO	Type	SAE Class	Units
063	FIL	180	MM
Max	Time	Min	Time
0.0	5.5	-13.7	56.3

Test Vehicle: 2011 Toyota Tundra Double Cab 4X4 4-Door Truck
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

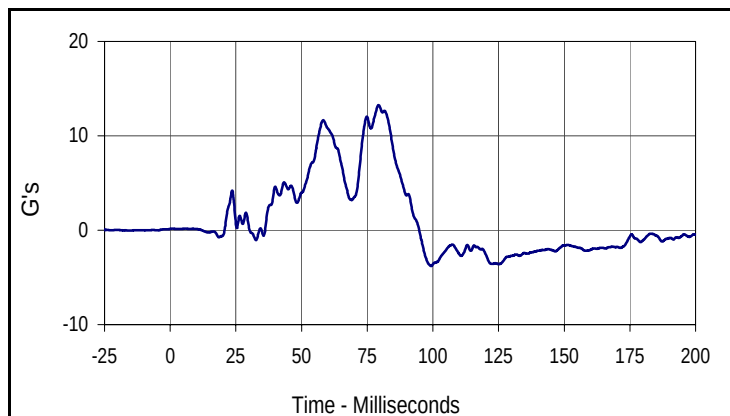
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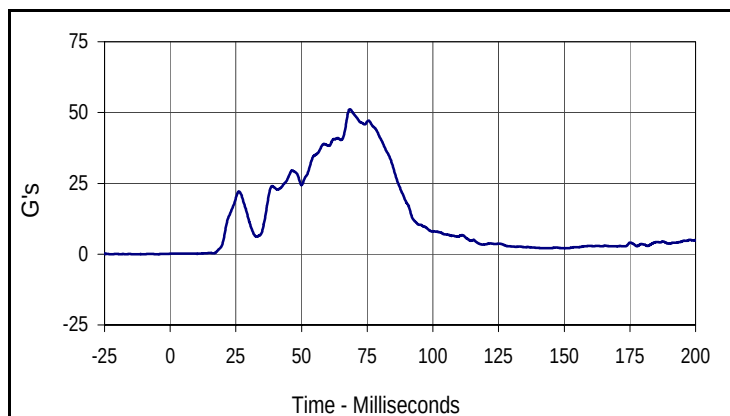
Curve Description			
Passenger Chest Acceleration X Primary			
CURNO	Type	SAE Class	Units
057	FIL	180	G's
Max	Time	Min	Time
5.0	197.8	-51.1	68.4



Curve Description			
Passenger Chest Acceleration Y Primary			
CURNO	Type	SAE Class	Units
058	FIL	180	G's
Max	Time	Min	Time
5.9	47.5	-5.4	64.9



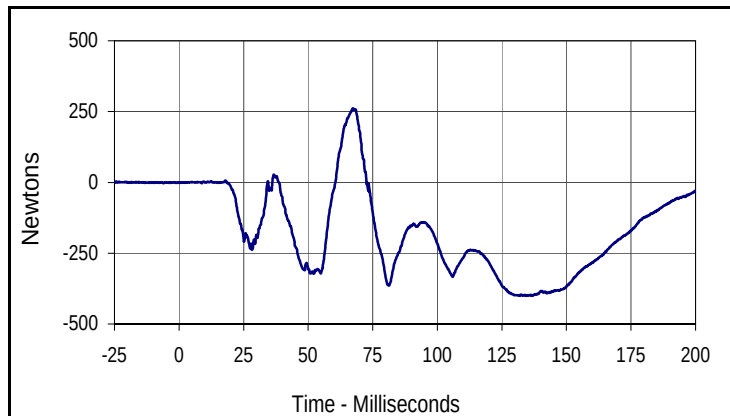
Curve Description			
Passenger Chest Acceleration Z Primary			
CURNO	Type	SAE Class	Units
059	FIL	180	G's
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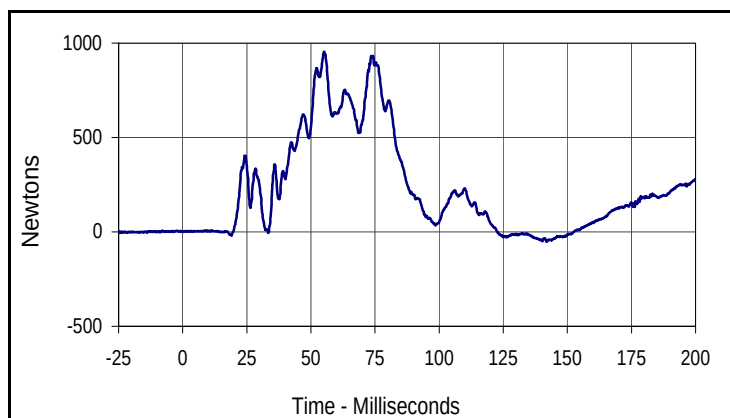
Curve Description			
Passenger Chest Resultant Acceleration Primary			
CURNO	Type	SAE Class	Units
057	RES	180	G's
Max	Time	Min	Time
51.2	68.4	0.1	10.2

Test Vehicle: 2011 Toyota Tundra Double Cab 4X4 4-Door Truck
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

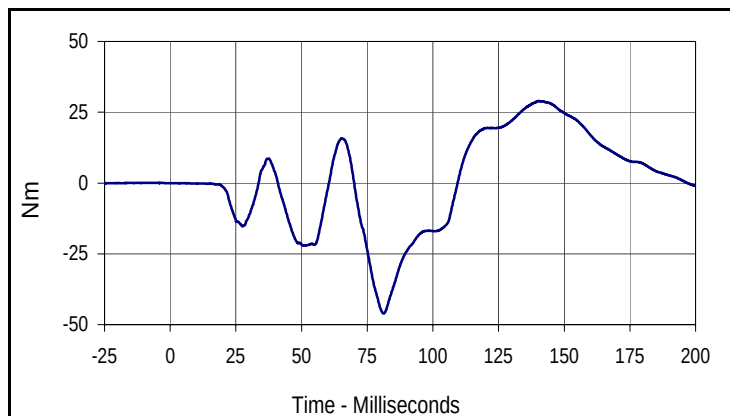
Test Date: 1/31/11
 NHTSA No.: MB5126



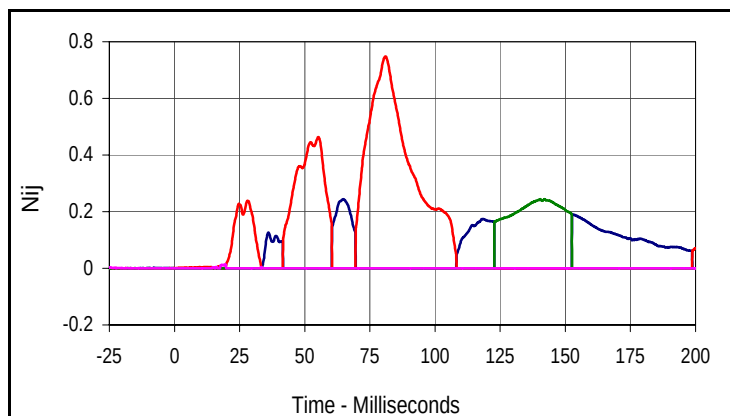
Curve Description			
Passenger Upper Neck Force X			
CURNO	Type	SAE Class	Units
051	FIL	1000	Newtons
Max	Time	Min	Time
261.4	67.3	-400.9	136.5



Curve Description			
Passenger Upper Neck Force Z			
CURNO	Type	SAE Class	Units
053	FIL	1000	Newtons
Max	Time	Min	Time
954.4	55.1	-50.7	141.9



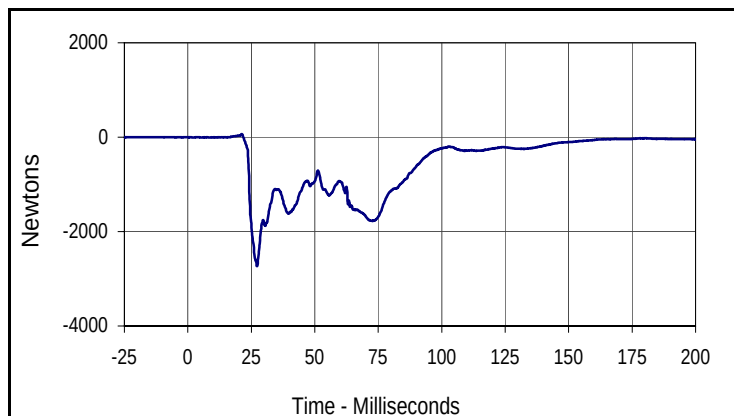
Curve Description			
Passenger Upper Neck Moment Y			
CURNO	Type	SAE Class	Units
055	FIL	600	Nm
Max	Time	Min	Time
29.0	140.3	-46.1	81.2



Curve Description			
Passenger Nij			
Units	Type	Max	Time
Ntf	FIL	0.24	64.7
Units	Type	Max	Time
Nte	FIL	0.75	81.0
Units	Type	Max	Time
Ncf	FIL	0.24	142.0
Units	Type	Max	Time
Nce	FIL	0.45	259.8

Test Vehicle: 2011 Toyota Tundra Double Cab 4X4 4-Door Truck
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

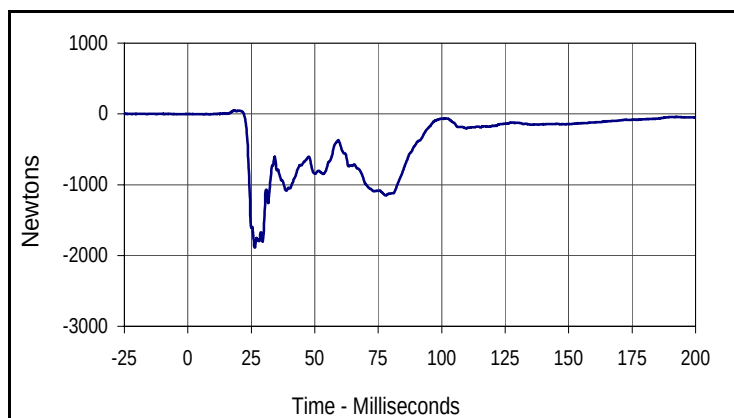
Test Date: 1/31/11
 NHTSA No.: MB5126



Curve Description

Passenger Left Femur Force Z

CURNO	Type	SAE Class	Units
067	FIL	600	Newtons
Max	Time	Min	Time
64.5	21.3	-2733.7	27.3



Curve Description

Passenger Right Femur Force Z

CURNO	Type	SAE Class	Units
068	FIL	600	Newtons
Max	Time	Min	Time
51.1	18.4	-1888.9	26.4

APPENDIX C
DUMMY CALIBRATION AND PERFORMANCE VERIFICATION DATA

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

Test Program: Hybrid III 50th Percentile Male Head Drop Test

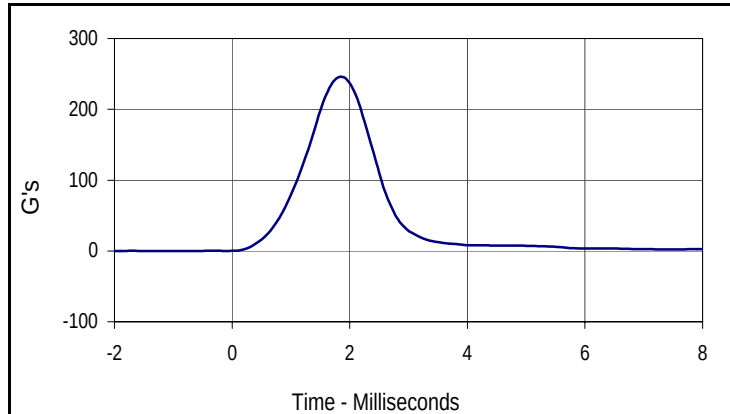
Test Date: 1/25/11

ATD Serial No.: 035

Test I.D.: HDM02A



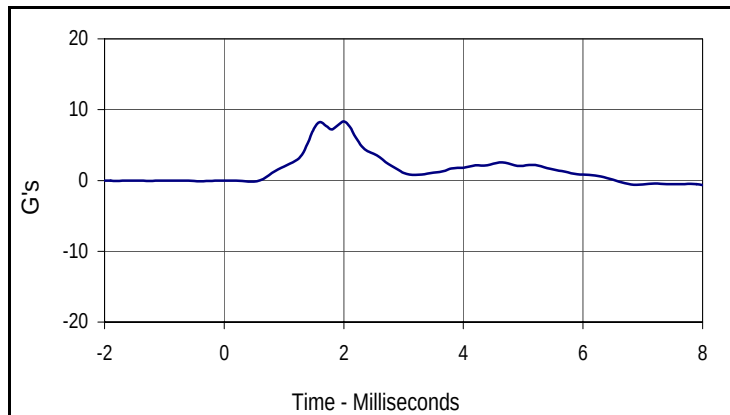
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	30.2	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	245.5	Pass
Peak Lateral Acceleration	G's	≤15.0	8.4	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



Curve Description

Head Resultant

CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
245.5	1.9	0.0	-1.0



Curve Description

Head Y

CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
8.4	2.0	-0.2	0.5

Test Program: Hybrid III 50th Percentile Male Thorax Impact Test

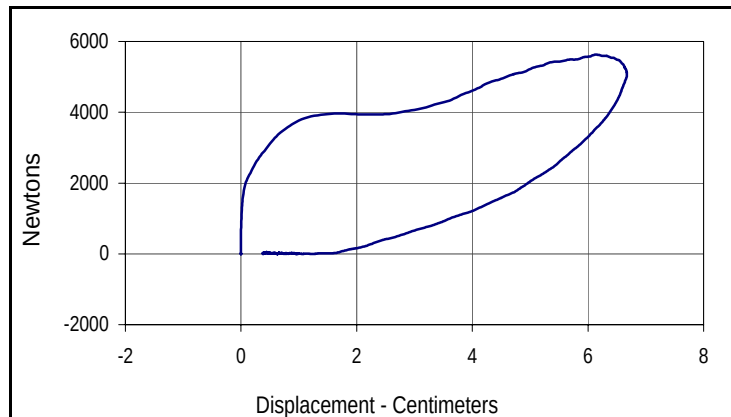
Test Date: 1/25/11

ATD Serial No.: 035

Test I.D.: CHM02A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	30.2	Pass
Probe Velocity	m/s	6.58 to 6.82	6.74	Pass
Peak Probe Force	Newtons	5159 to 5893	5627	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	6.67	Pass
Internal Hysteresis	%	69 to 85	71.7	Pass
Overall Test Results				Pass



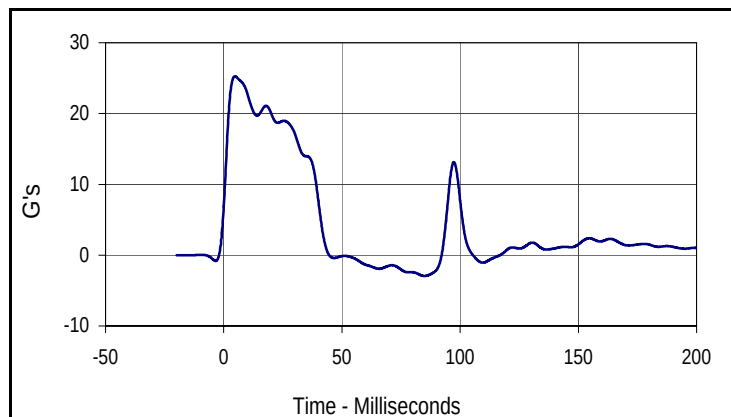
Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysteresis
001	FIL	180	71.7
Peak Probe Force		Peak Chest Deflection	
5627		6.67	

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test
 ATD Serial No.: 035

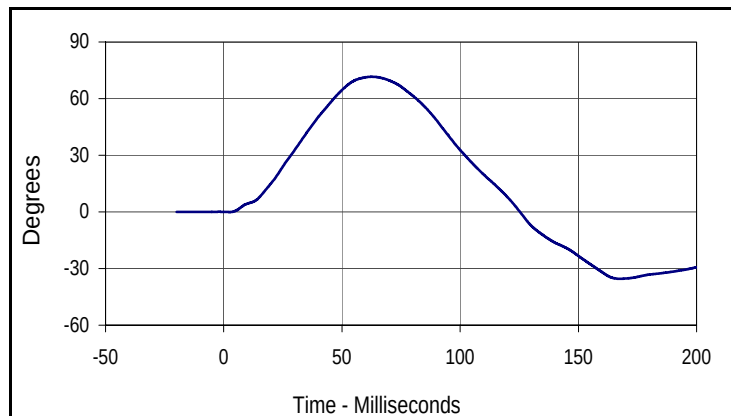
Test Date: 1/25/11
 Test I.D.: NFM02A



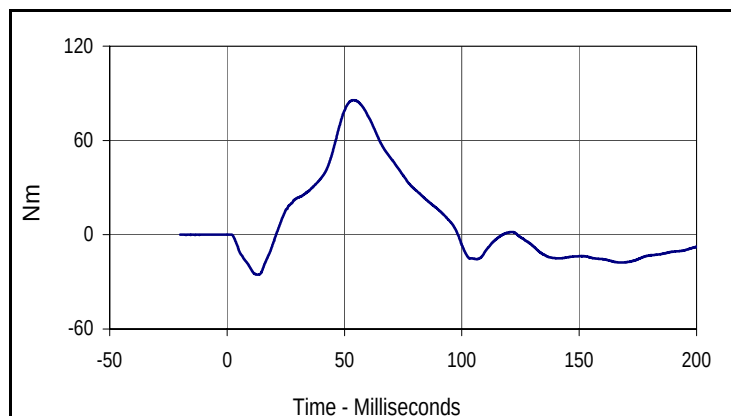
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.8	Pass
Laboratory Relative Humidity		%	10 to 70	29	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.89	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	22.8	Pass
	20 Msec.	G's	17.6 to 22.6	20.1	Pass
	30 Msec.	G's	12.5 to 18.5	17.2	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	17.2	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	41.1	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	71.6	Pass
	Time	Msec.	57.0 to 64.0	62.7	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	125.3	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	85.6	Pass
	Time	Msec.	47.0 to 58.0	53.9	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	98.4	Pass
Overall Test Results					Pass



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
25.2	4.7	-2.9	84.9



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
71.6	62.7	-35.4	167.6



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
85.6	53.9	-25.5	13.3

Test Program: Hybrid III 50th Percentile Male Neck Extension Test

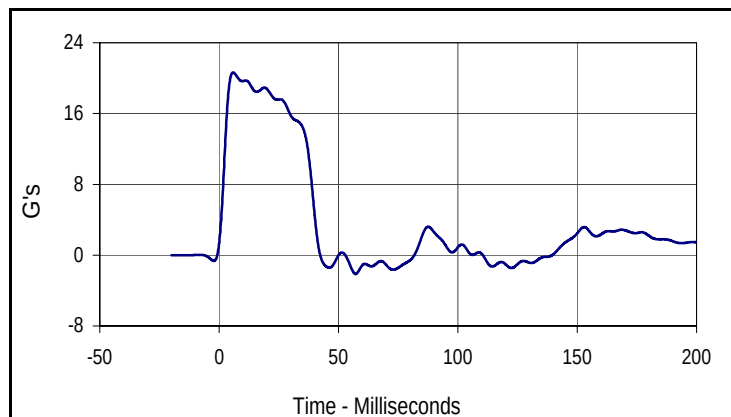
Test Date: 1/25/11

ATD Serial No.: 035

Test I.D.: NEM02A



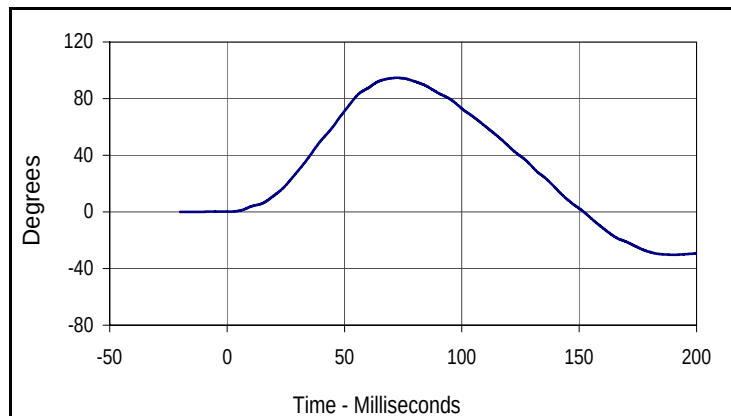
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.72	Pass
Laboratory Relative Humidity		%	10 to 70	29.15	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.05	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	19.7	Pass
	20 Msec.	G's	14.0 to 19.0	18.8	Pass
	30 Msec.	G's	11.0 to 16.0	15.8	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.8	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	39.9	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	94.6	Pass
	Time	Msec.	72.0 to 82.0	72.4	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	152	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to- 79.9	-73.5	Pass
	Time	Msec.	65.0 to 79.0	68.2	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	138.7	Pass
Overall Test Results					Pass



Curve Description

Pendulum Deceleration

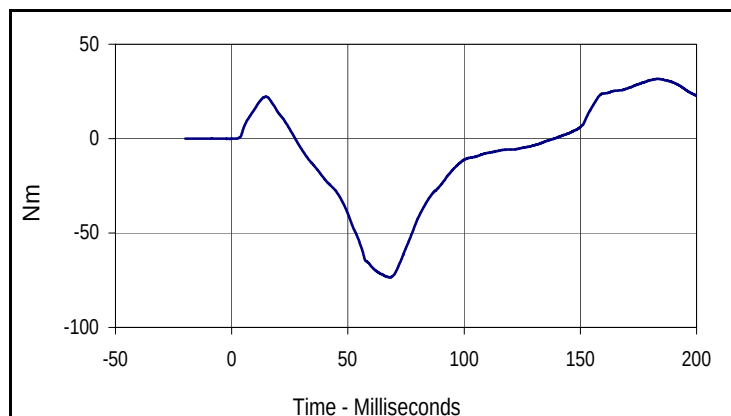
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
20.6	5.8	-2.1	57.2



Curve Description

"D" Plane Rotation

CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
94.6	72.4	-30.3	190.4



Curve Description

Moment About Occipital Condyle

CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
31.7	183.3	-73.5	68.2

Test Program: Hybrid III 50th Percentile Male Knee Impact Test
 ATD Serial No.: 035

Test Date: 1/25/11
 Test I.D.: LKM02A , RKM02A

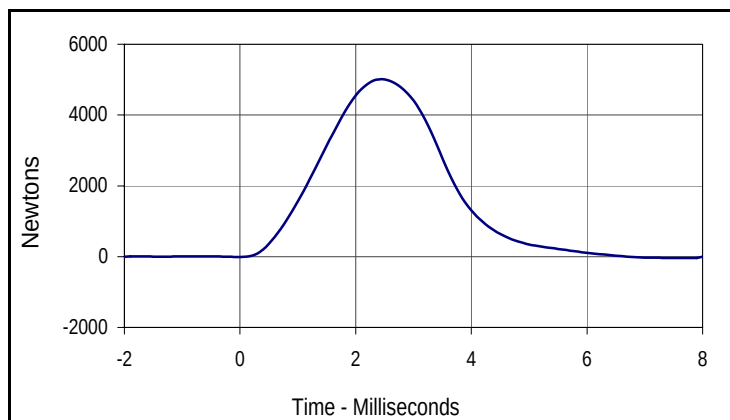


Left Knee

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.73	Pass
Laboratory Relative Humidity	%	10 to 70	29.10	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.082	Pass
Peak Probe Force	Newtons	4715 to 5782	5009	Pass
Overall Test Results				Pass

Right Knee

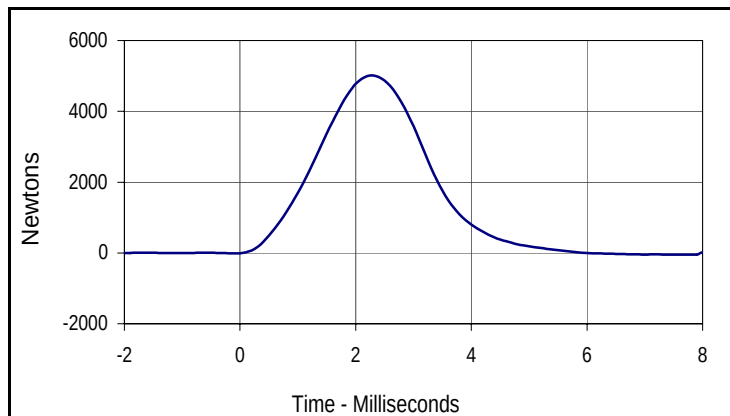
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force	Newtons	4715 to 5782	5014	Pass
Overall Test Results				Pass



Curve Description

Left Knee Probe Force

CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5008.6	2.4	-39.9	7.7



Curve Description

Right Knee Probe Force

CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
5014.5	2.3	-49.8	7.8

Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 1/25/11

ATD Serial No.: 035

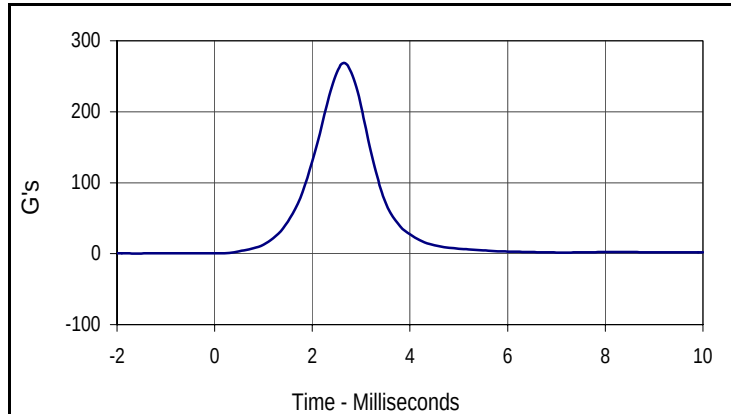
Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.73	Pass
Laboratory Relative Humidity	%	10 to 70	29.10	Pass
A - Total sitting height	mm	879 to 889	881	Pass
B - Shoulder pivot height	mm	505 to 521	515	Pass
C - "H" point height	mm	84 to 89	85	Pass
D - "H" point from seat back	mm	135 to 140	138	Pass
E - Shoulder pivot from back	mm	84 to 94	86	Pass
F - Thigh clearance	mm	140 to 155	147	Pass
G - Elbow back to wrist pivot	mm	290 to 305	296	Pass
H - Skull cap to back line	mm	41 to 46	43	Pass
I - Shoulder to elbow length	mm	330 to 345	333	Pass
J - Elbow rest height	mm	190 to 211	206	Pass
K - Buttock to knee length	mm	579 to 604	587	Pass
L - Popliteal length	mm	429 to 455	432	Pass
M - Knee pivot height	mm	485 to 500	486	Pass
N - Buttock popliteal length	mm	452 to 477	468	Pass
O - Chest depth	mm	213 to 229	215	Pass
P - Foot length	mm	251 to 267	259	Pass
V - Shoulder breadth	mm	422 to 437	431	Pass
W - Foot breadth	mm	91 to 107	99	Pass
Y - Chest circumference	mm	970 to 1001	986	Pass
Z - Waist circumference	mm	836 to 866	862	Pass
AA - Location for chest circumference	mm	429 to 434	431	Pass
BB - Location for waist circumference	mm	226 to 231	231	Pass
Overall Test Results				Pass

Test Program: Hybrid III 5th Percentile Female Head Drop TestTest Date: 1/27/11ATD Serial No.: 141Test I.D.: HDF02A

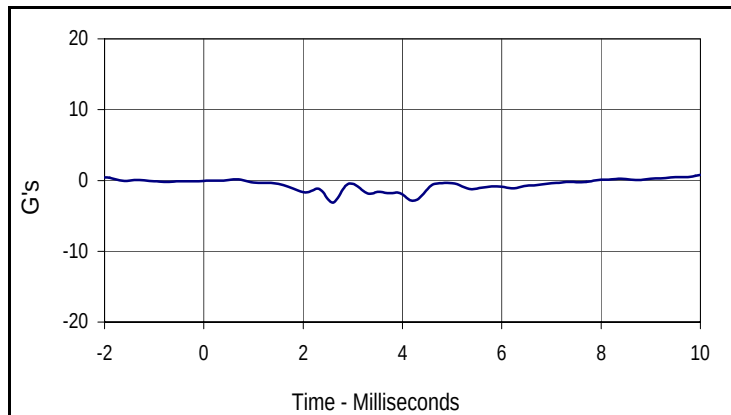
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.25	Pass
Laboratory Relative Humidity	%	10 to 70	29.82	Pass
Peak Resultant Acceleration	G's	250.0 to 300.0	267.4	Pass
Peak Lateral Acceleration	G's	≤15.0	3.2	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



Curve Description

Head Resultant

CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
267.4	2.6	0.3	-1.7



Curve Description

Head Y

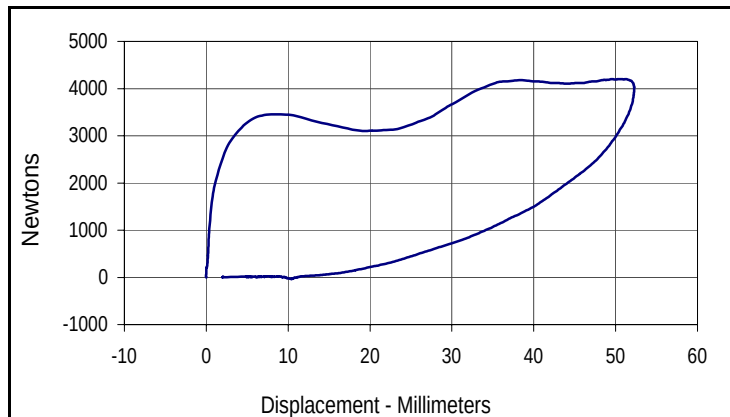
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.4	-2.0	-3.2	2.6

Test Program: Hybrid III 5th Percentile Female Thorax Impact Test
 ATD Serial No.: 141

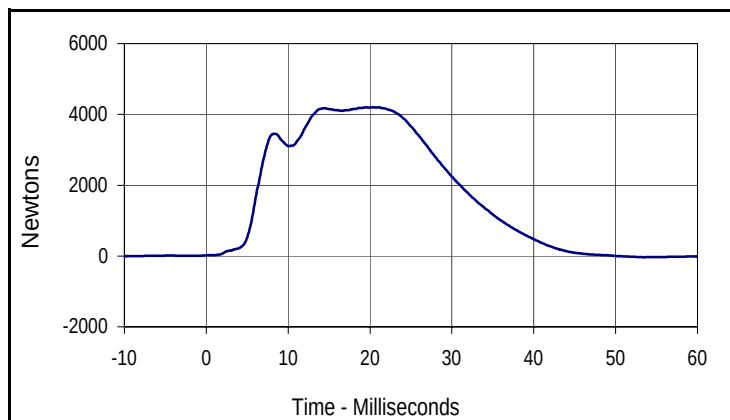
Test Date: 1/27/11
 Test I.D.: CHF02A



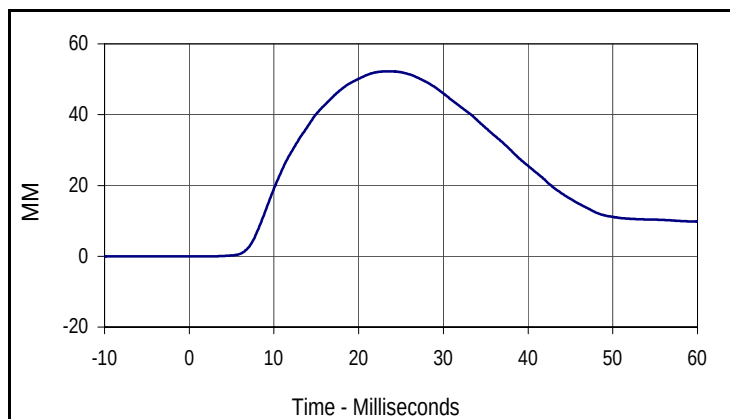
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.75	Pass
Laboratory Relative Humidity	%	10 to 70	29.05	Pass
Probe Velocity	m/s	6.59 to 6.83	6.64	Pass
Peak Chest Deflection	MM	50.0 to 58.0	52.3	Pass
Peak Force Between 50 and 58 MM	Newtons	3900 to 4400	4200	Pass
Peak Force Between 18 and 50 MM	Newtons	≤4600	4203	Pass
Internal Hysteresis	%	69 to 85	75.6	Pass
Overall Test Results			Pass	



Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysteresis
003	FIL	180	75.6
Peak Probe Force		Peak Chest Displ.	
4203.4		52.3	



Curve Description			
Probe Force			
CURNO	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
4203.4	20.3	-34.3	53.5



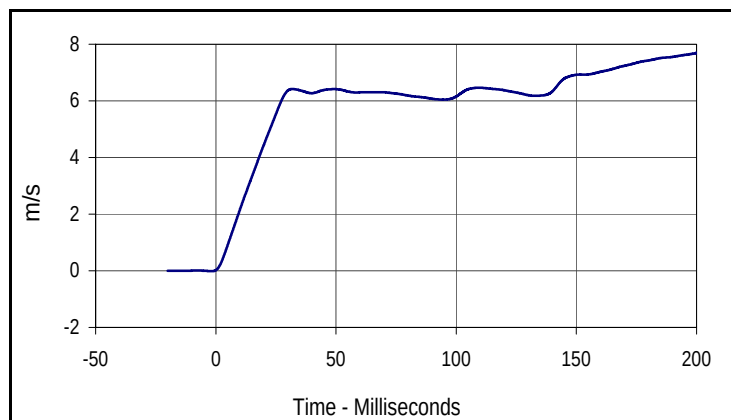
Curve Description			
Chest Deflection			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
52.3	23.5	0.0	0.9

Test Program: Hybrid III 5th Percentile Female Neck Flexion Test
 ATD Serial No.: 141

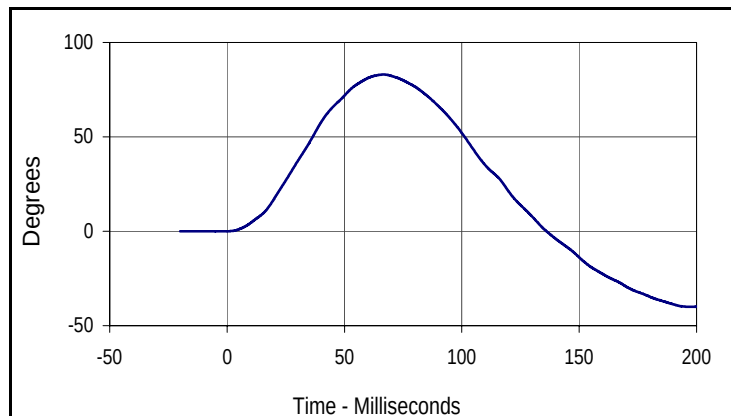
Test Date: 1/27/11
 Test I.D.: NF02A



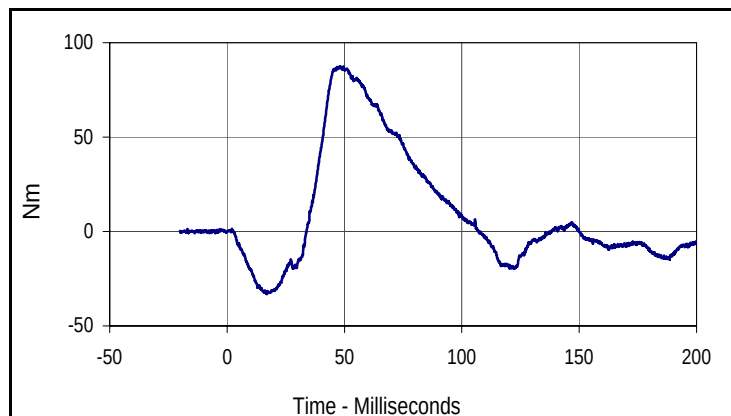
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.25	Pass
Laboratory Relative Humidity		%	10 to 70	30.15	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.00	Pass
Pendulum Deceleration	10 Msec.	m/s	2.1 to 2.5	2.2	Pass
	20 Msec.	m/s	4.0 to 5.0	4.5	Pass
	30 Msec.	m/s	5.8 to 7.0	6.4	Pass
"D" Plane Rotation	Max	Degrees	77.0 to 91.0	83.0	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	81.4	Pass
Positive Moment Decay, Time To 10 Nm		Msec.	80.0 to 100.0	97.8	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
7.7	200.0	0.0	-1.8



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
83.0	66.6	-40.1	200.0



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
87.4	48.0	-33.2	16.9

Test Program: Hybrid III 5th Percentile Female Neck Extension Test

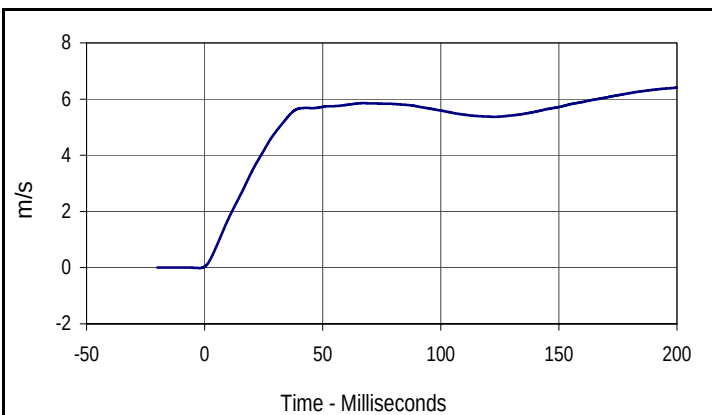
Test Date: 1/27/11

ATD Serial No.: 141

Test I.D.: NE02A



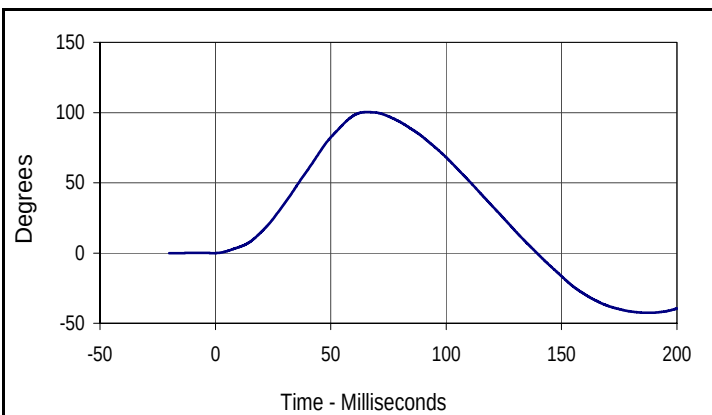
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.25	Pass
Laboratory Relative Humidity		%	10 to 70	29.87	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.03	Pass
Pendulum Deceleration	10 Msec.	m/s	1.5 to 1.9	1.7	Pass
	20 Msec.	m/s	3.1 to 3.9	3.4	Pass
	30 Msec.	m/s	4.6 to 5.6	4.8	Pass
"D" Plane Rotation	Max	Degrees	99.0 to 114.0	100.3	Pass
Peak Moment in Rotation	Max	Nm	-53.0 to -65.0	-56.4	Pass
Positive Moment Decay, Time To -10 Nm		Msec.	94.0 to 114.0	100.1	Pass
			Overall Test Results		Pass



Curve Description

Pendulum Velocity

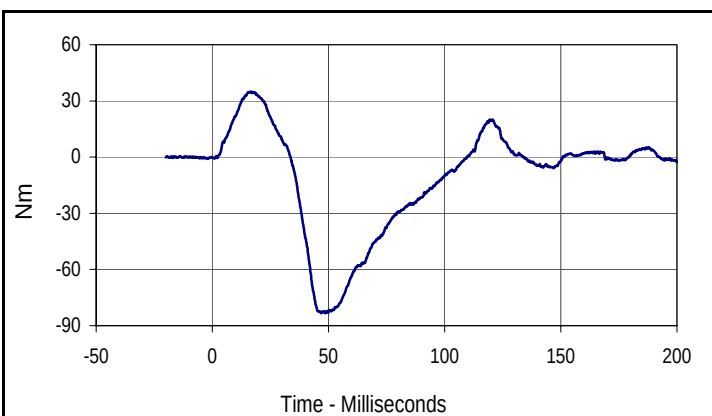
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
6.4	200.0	0.0	-2.2



Curve Description

"D" Plane Rotation

CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
100.3	65.4	-42.6	187.9



Curve Description

Moment About Occipital Condyle

CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
35.0	16.7	-83.4	46.9

Test Program: Hybrid III 5th Percentile Female Knee Impact Test
 ATD Serial No.: 141

Test Date: 1/27/11
 Test I.D.: LKF12A , RKB12A

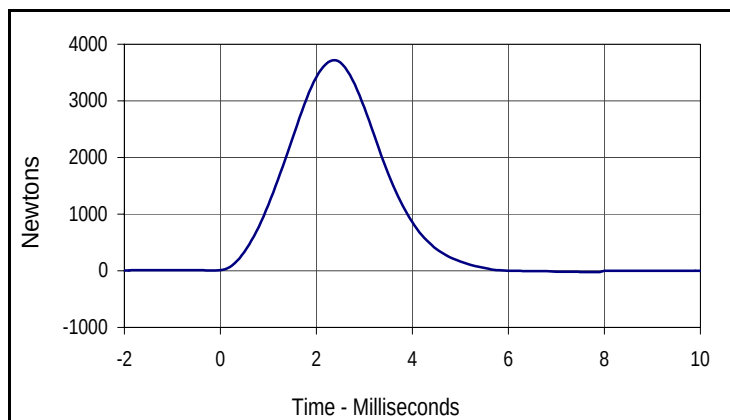


Left Knee

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.25	Pass
Laboratory Relative Humidity	%	10 to 70	29.22	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force	Newtons	3450 to 4060	3716	Pass
Overall Test Results				Pass

Right Knee

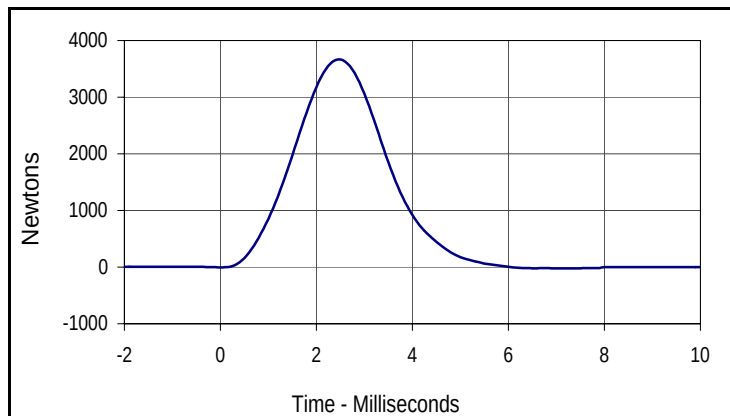
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.07	Pass
Peak Probe Force	Newtons	3450 to 4060	3665	Pass
Overall Test Results				Pass



Curve Description

Left Knee Probe Force

CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3716.1	2.4	-24.3	7.8



Curve Description

Right Knee Probe Force

CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
3665.5	2.5	-24.0	7.0

Test Program: Hybrid III 5th Percentile Female Torso Flexion Test

Test Date: 1/27/11

ATD Serial No.: 141

Test I.D.: TF02A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.20	Pass
Laboratory Relative Humidity	%	10 to 70	29.74	Pass
Initial reference plane angle	Degrees	≤20.0	0.27	Pass
Peak Force at 45 +/-0.5 degrees	Newtons	320.0 to 390.0	321.1	Pass
Torso rotation rate	deg/sec	0.5 to 1.5	0.987	Pass
Final reference plane angle	Degrees	+/-8	0.315	Pass
Overall Test Results				Pass

Test Program: Hybrid III 5th Percentile Female External Measurements

Test Date: 1/27/11

ATD Serial No.: 141

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.6 to 22.2	21.25	Pass
Laboratory relative humidity	%	10 to 70	29.89	Pass
A - Total sitting height	mm	774.7 to 800.1	784	Pass
B - Shoulder pivot height	mm	431.8 to 457.2	441	Pass
C - "H" point height (Reference)	mm	81.3 to 86.3	84	Pass
D - "H" point from seat back (Ref.)	mm	144.8 to 149.8	146	Pass
E - Shoulder pivot from backline	mm	68.6 to 83.8	78	Pass
F - Thigh clearance	mm	119.4 to 134.6	130	Pass
G - Back of elbow to wrist pivot	mm	243.9 to 259.1	254	Pass
H - Head to back line	mm	40.7 to 45.7	43	Pass
I - Shoulder to elbow length	mm	276.8 to 297.2	281	Pass
J - Elbow rest height	mm	182.8 to 203.2	200	Pass
K - Buttock to knee length	mm	520.7 to 546.1	535	Pass
L - Popliteal height	mm	355.6 to 376.0	365	Pass
M - Knee pivot height	mm	393.7 to 419.1	413	Pass
N - Buttock popliteal length	mm	414.0 to 439.4	421	Pass
O - Chest depth without jacket	mm	175.3 to 190.5	182	Pass
P - Foot length	mm	218.5 to 233.7	227	Pass
R - Buttock to knee pivot length	mm	457.2 to 482.6	464	Pass
S - Head breadth	mm	137.1 to 147.3	142	Pass
T - Head depth	mm	177.8 to 188.0	181	Pass
U - Hip breadth	mm	299.7 to 314.9	308	Pass
V - Shoulder breadth	mm	350.5 to 365.7	361	Pass
W - Foot breadth	mm	78.8 to 94.0	89	Pass
X - Head circumference	mm	528.3 to 548.7	542	Pass
Y - Chest circumference with jacket	mm	850.8 to 881.3	854	Pass
Z - Waist circumference	mm	759.5 to 789.9	778	Pass
AA - Location for chest circumference	mm	299.7 to 309.9	302	Pass
BB - Location for waist circumference	mm	160.1 to 170.2	167	Pass
Overall Test Results				Pass

Test Program: Dummy Damage Checklist
 ATD Serial No.: 035

Test Date: 1/25/11
 Test I.D.: N/A



GENERAL	DAMAGED	OK
Outer skin on entire dummy		X
Head ballast secure		X
Gashes, rips, general appearance, etc.		X
Neck-Broken or cracks in rubber		X
Check that upper neck bracket is firmly attached to lwr neck bracket		X
Three rubber bumpers in place		X
Spine- Broken or cracks in rubber		X
Check for looseness at the condyle joint		X
Nodding blocks- cracked or out of position		X
Ribs- Check all ribs and rib supports for damage (bent or broken)		X
Check damping material or separation or cracks		X
OTHER		
CHEST DISPLACEMENT ASSEMBLY		
Bent shaft		X
Slider arm riding correctly, in track		X
TRANSDUCER LEADS		
Torn cables		X
ACCELEROMETER MOUNTINGS		
Check for secure mounting		X
KNEES		
Check outer skin, insert and casting (without removing insert)		X
Knee sliders - Wires intact		X
Knee sliders- Rubber returned to "at rest position"		X
LIMBS		
Check for normal movement and adjustment		X
PELVIS		
Inspect for breakage, especially at iliac crest		X

Comments on repair or replacement parts:

Test Program: Dummy Damage Checklist
 ATD Serial No.: 141

Test Date: 1/27/11
 Test I.D.: N/A



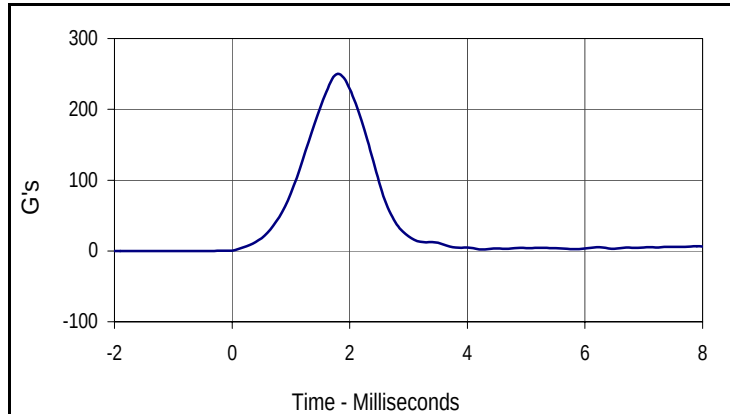
GENERAL	DAMAGED	OK
Outer skin on entire dummy		X
Head ballast secure		X
Gashes, rips, general appearance, etc.		X
Neck-Broken or cracks in rubber		X
Check that upper neck bracket is firmly attached to lwr neck bracket		X
Three rubber bumpers in place		X
Spine- Broken or cracks in rubber		X
Check for looseness at the condyle joint		X
Nodding blocks- cracked or out of position		X
Ribs- Check all ribs and rib supports for damage (bent or broken)		X
Check damping material or separation or cracks		X
OTHER		
CHEST DISPLACEMENT ASSEMBLY		
Bent shaft		X
Slider arm riding correctly, in track		X
TRANSDUCER LEADS		
Torn cables		X
ACCELEROMETER MOUNTINGS		
Check for secure mounting		X
KNEES		
Check outer skin, insert and casting (without removing insert)		X
Knee sliders - Wires intact		X
Knee sliders- Rubber returned to "at rest position"		X
LIMBS		
Check for normal movement and adjustment		X
PELVIS		
Inspect for breakage, especially at iliac crest		X

Comments on repair or replacement parts:

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

Test Program: Hybrid III 50th Percentile Male Head Drop TestTest Date: 2/3/11ATD Serial No.: 035Test I.D.: HDM02B

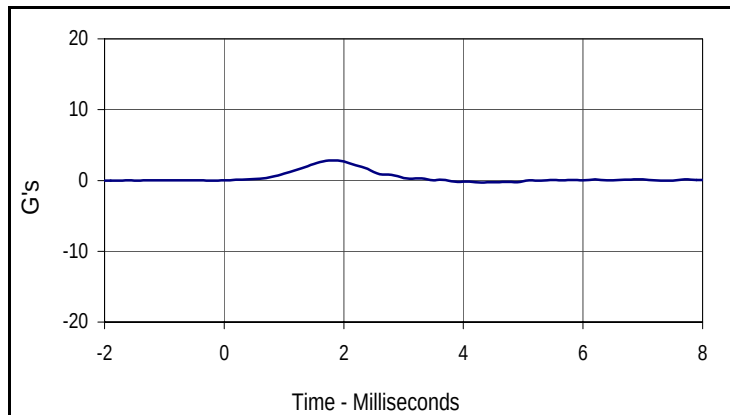
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.66	Pass
Laboratory Relative Humidity	%	10 to 70	29.27	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	250.2	Pass
Peak Lateral Acceleration	G's	≤15.0	2.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



Curve Description

Head Resultant

CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
250.2	1.8	0.0	-1.4



Curve Description

Head Y

CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
2.8	1.8	-0.3	4.3

Test Program: Hybrid III 50th Percentile Male Thorax Impact Test

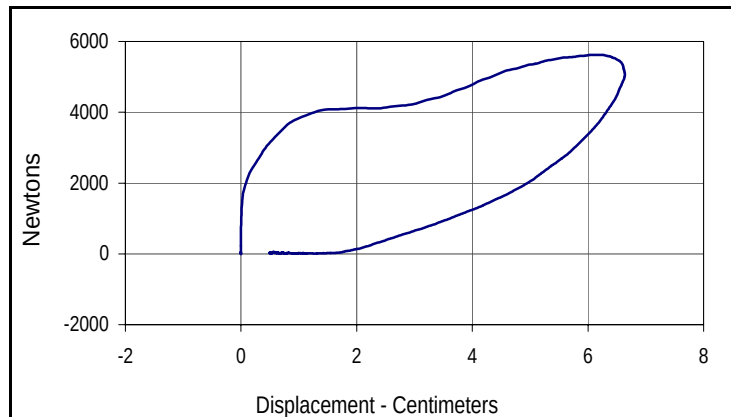
Test Date: 2/3/11

ATD Serial No.: 035

Test I.D.: CHM02B



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.58	Pass
Laboratory Relative Humidity	%	10 to 70	29.17	Pass
Probe Velocity	m/s	6.58 to 6.82	6.73	Pass
Peak Probe Force	Newtons	5159 to 5893	5624	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	6.64	Pass
Internal Hysteresis	%	69 to 85	72.4	Pass
Overall Test Results			Pass	



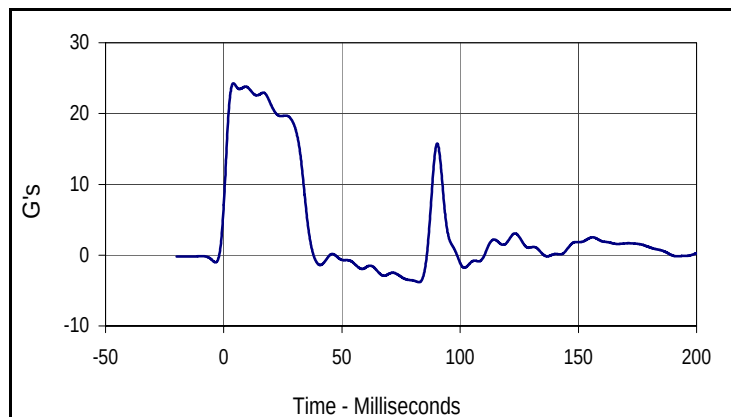
Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysteresis
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Peak Probe Force		Peak Chest Deflection	
5624		6.64	

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test
 ATD Serial No.: 035

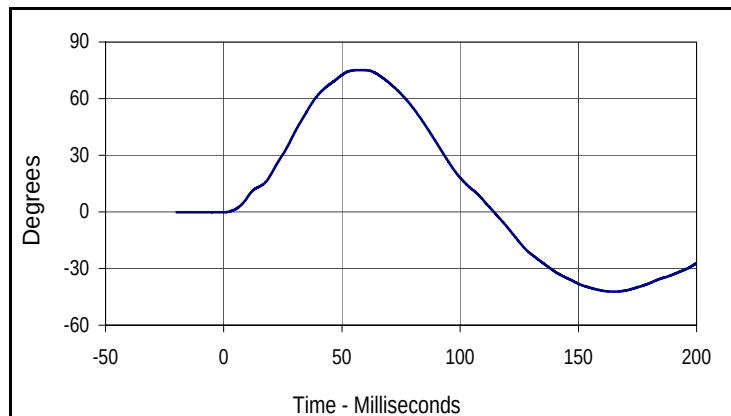
Test Date: 2/3/11
 Test I.D.: NFM02B



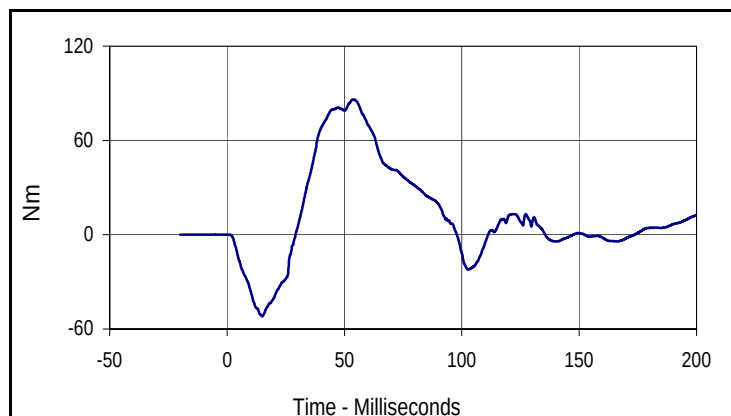
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.18	Pass
Laboratory Relative Humidity		%	10 to 70	29.58	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.90	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	23.7	Pass
	20 Msec.	G's	17.6 to 22.6	21.2	Pass
	30 Msec.	G's	12.5 to 18.5	18.2	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	18.2	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	35.4	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	75.1	Pass
	Time	Msec.	57.0 to 64.0	57.5	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	114.3	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	85.9	Pass
	Time	Msec.	47.0 to 58.0	53.8	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	97.9	Pass
Overall Test Results					Pass



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
24.3	4.1	-3.8	82.6



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
75.1	57.5	-42.3	164.8



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
85.9	53.8	-51.8	15.0

Test Program: Hybrid III 50th Percentile Male Neck Extension Test

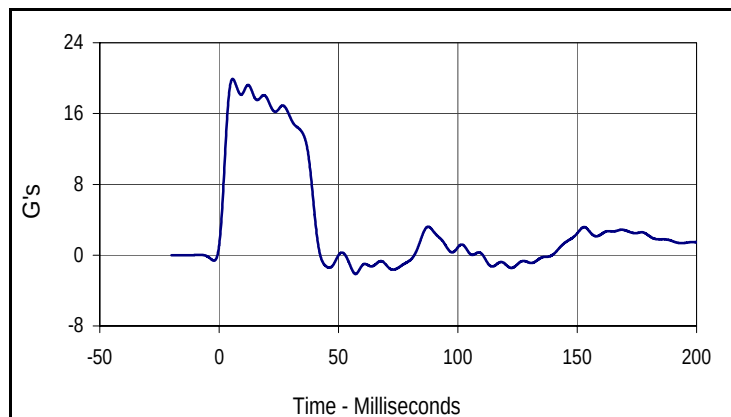
Test Date: 2/3/11

ATD Serial No.: 035

Test I.D.: NEM02B



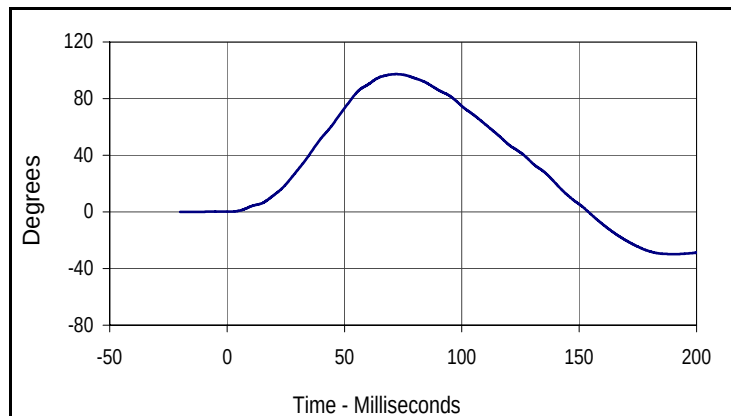
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.17	Pass
Laboratory Relative Humidity		%	10 to 70	29.68	Pass
Pendulum Velocity		m/s	5.94 to 6.19	5.99	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	18.3	Pass
	20 Msec.	G's	14.0 to 19.0	17.8	Pass
	30 Msec.	G's	11.0 to 16.0	15.4	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.4	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	39.9	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	97.3	Pass
	Time	Msec.	72.0 to 82.0	72.1	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	154	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to- 79.9	-78.9	Pass
	Time	Msec.	65.0 to 79.0	68.2	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	145.6	Pass
Overall Test Results					Pass



Curve Description

Pendulum Deceleration

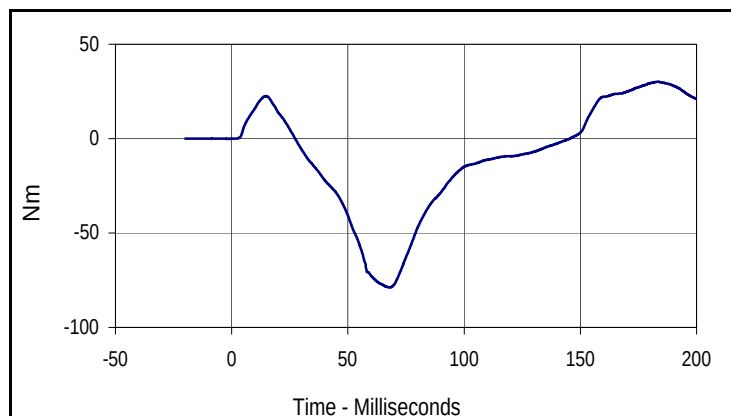
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
19.9	5.6	-2.1	57.2



Curve Description

"D" Plane Rotation

CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
97.3	72.1	-29.8	190.4



Curve Description

Moment About Occipital Condyle

CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
30.1	183.3	-78.9	68.2

Test Program: Hybrid III 50th Percentile Male Knee Impact Test
 ATD Serial No.: 035

Test Date: 2/3/11
 Test I.D.: LKM02B , RKM02B

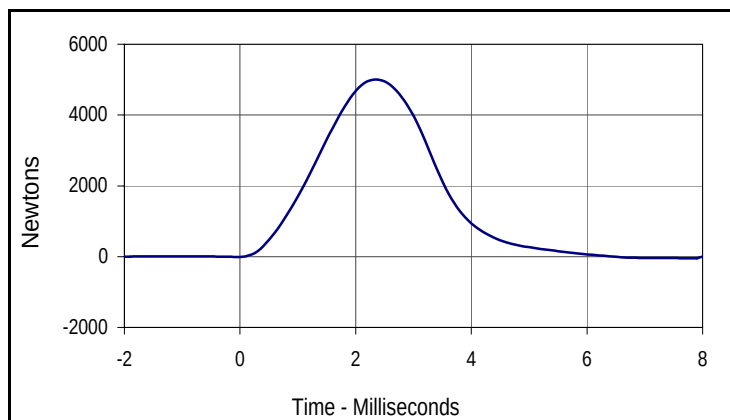


Left Knee

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.18	Pass
Laboratory Relative Humidity	%	10 to 70	29.43	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.094	Pass
Peak Probe Force	Newtons	4715 to 5782	5000	Pass
Overall Test Results				Pass

Right Knee

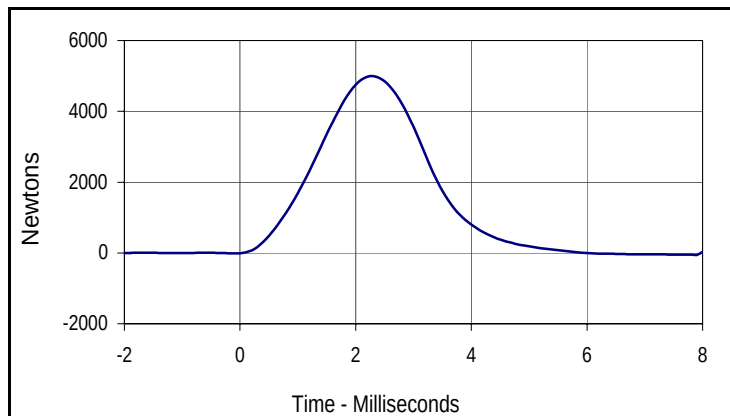
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.097	Pass
Peak Probe Force	Newtons	4715 to 5782	4994	Pass
Overall Test Results				Pass



Curve Description

Left Knee Probe Force

CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4999.8	2.3	-47.8	7.8



Curve Description

Right Knee Probe Force

CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
4993.9	2.3	-52.2	7.9

Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 2/3/11

ATD Serial No.: 035

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.17	Pass
Laboratory Relative Humidity	%	10 to 70	29.68	Pass
A - Total sitting height	mm	879 to 889	881	Pass
B - Shoulder pivot height	mm	505 to 521	515	Pass
C - "H" point height	mm	84 to 89	85	Pass
D - "H" point from seat back	mm	135 to 140	139	Pass
E - Shoulder pivot from back	mm	84 to 94	85	Pass
F - Thigh clearance	mm	140 to 155	147	Pass
G - Elbow back to wrist pivot	mm	290 to 305	297	Pass
H - Skull cap to back line	mm	41 to 46	43	Pass
I - Shoulder to elbow length	mm	330 to 345	333	Pass
J - Elbow rest height	mm	190 to 211	206	Pass
K - Buttock to knee length	mm	579 to 604	587	Pass
L - Popliteal length	mm	429 to 455	432	Pass
M - Knee pivot height	mm	485 to 500	486	Pass
N - Buttock popliteal length	mm	452 to 477	468	Pass
O - Chest depth	mm	213 to 229	215	Pass
P - Foot length	mm	251 to 267	259	Pass
V - Shoulder breadth	mm	422 to 437	431	Pass
W - Foot breadth	mm	91 to 107	99	Pass
Y - Chest circumference	mm	970 to 1001	986	Pass
Z - Waist circumference	mm	836 to 866	862	Pass
AA - Location for chest circumference	mm	429 to 434	432	Pass
BB - Location for waist circumference	mm	226 to 231	229	Pass
Overall Test Results				Pass

Test Program: Hybrid III 5th Percentile Female Head Drop Test

Test Date: 2/3/11

ATD Serial No.: 141

Test I.D.: HDF02B



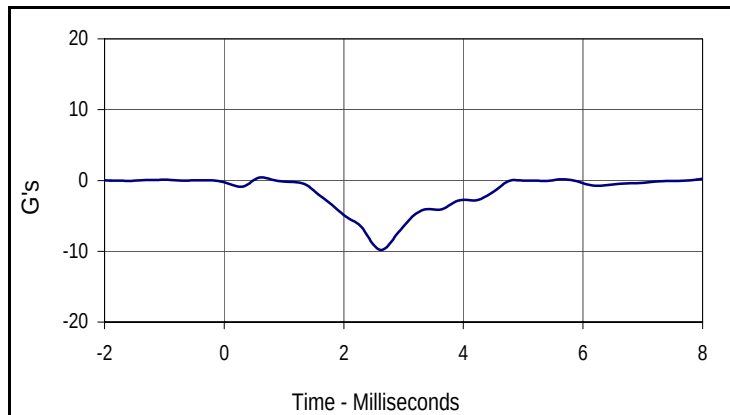
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.19	Pass
Laboratory Relative Humidity	%	10 to 70	29.17	Pass
Peak Resultant Acceleration	G's	250.0 to 300.0	263.8	Pass
Peak Lateral Acceleration	G's	≤15.0	9.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



Curve Description

Head Resultant

CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
263.8	2.6	0.0	-1.5



Curve Description

Head Y

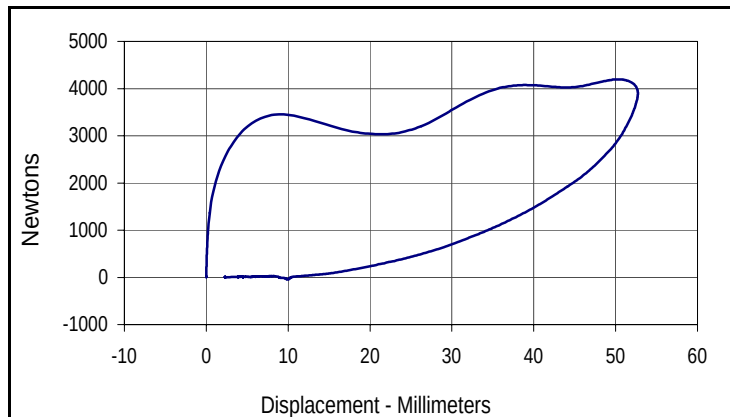
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.4	0.6	-9.8	2.6

Test Program: Hybrid III 5th Percentile Female Thorax Impact Test
 ATD Serial No.: 141

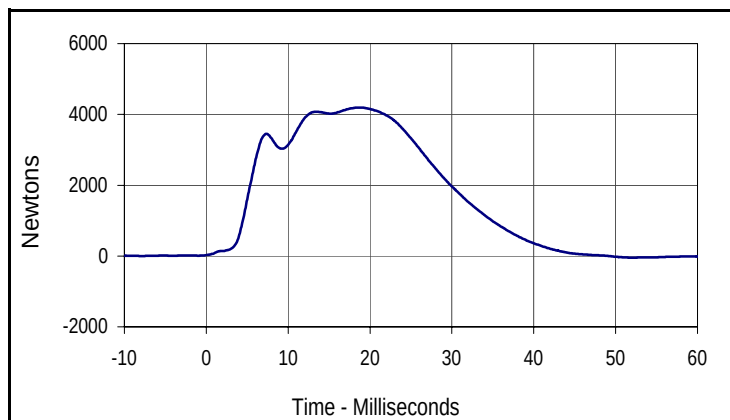
Test Date: 2/3/11
 Test I.D.: CHF02B



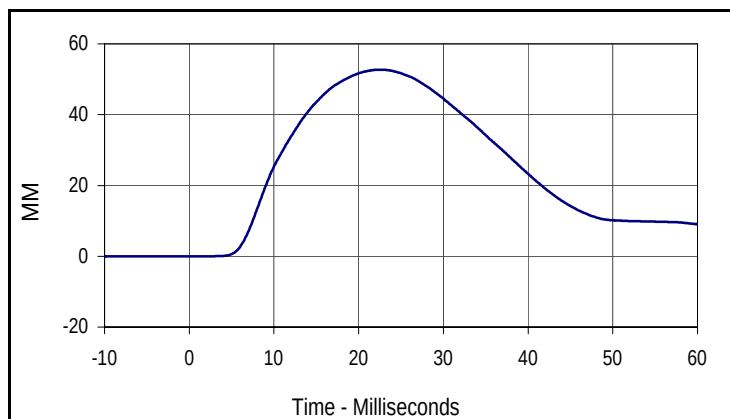
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.20	Pass
Laboratory Relative Humidity	%	10 to 70	28.79	Pass
Probe Velocity	m/s	6.59 to 6.83	6.63	Pass
Peak Chest Deflection	MM	50.0 to 58.0	52.7	Pass
Peak Force Between 50 and 58 MM	Newtons	3900 to 4400	4194	Pass
Peak Force Between 18 and 50 MM	Newtons	≤4600	4194	Pass
Internal Hysteresis	%	69 to 85	75.2	Pass
Overall Test Results			Pass	



Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysteresis
003	FIL	180	75.2
Peak Probe Force		Peak Chest Displ.	
4194.5		52.7	



Curve Description			
Probe Force			
CURNO	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
4194.5	18.6	-46.3	52.1



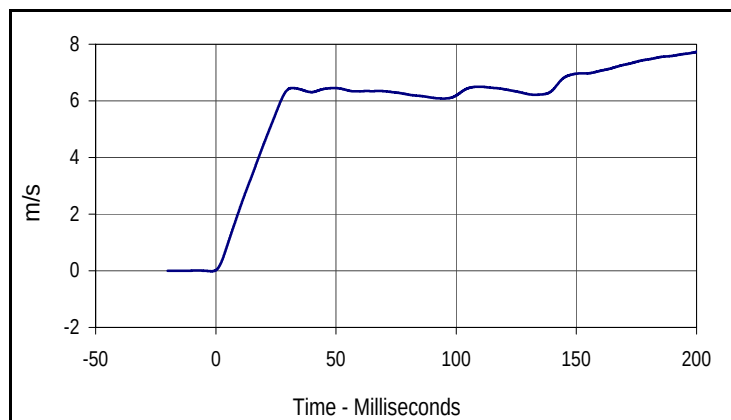
Curve Description			
Chest Deflection			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
52.7	22.6	0.0	-1.2

Test Program: Hybrid III 5th Percentile Female Neck Flexion Test
 ATD Serial No.: 141

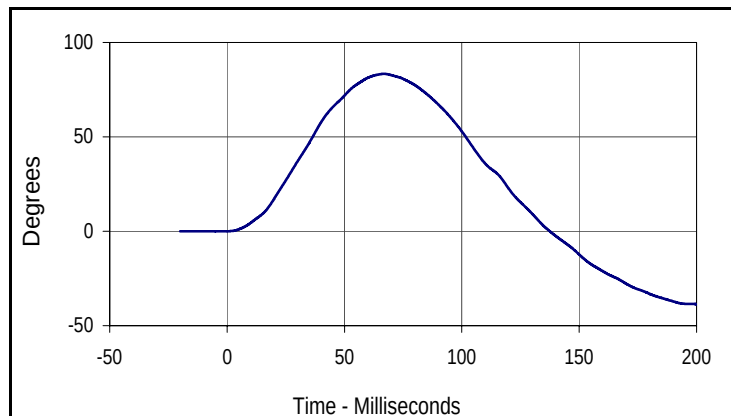
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 Test I.D.: NF02B



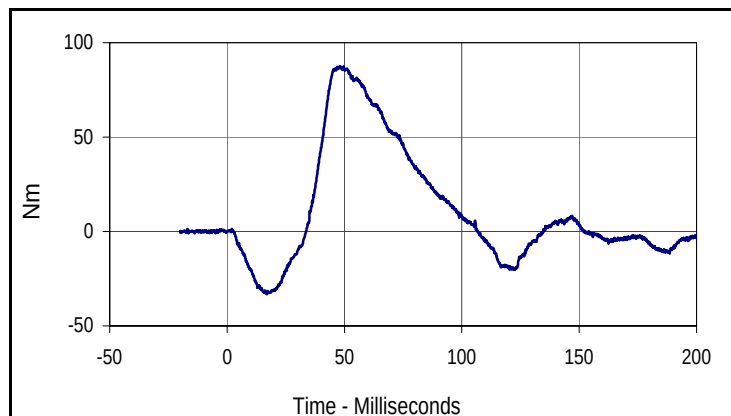
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.32	Pass
Laboratory Relative Humidity		%	10 to 70	29.16	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.00	Pass
Pendulum Deceleration	10 Msec.	m/s	2.1 to 2.5	2.2	Pass
	20 Msec.	m/s	4.0 to 5.0	4.5	Pass
	30 Msec.	m/s	5.8 to 7.0	6.4	Pass
"D" Plane Rotation	Max	Degrees	77.0 to 91.0	83.4	Pass
Peak Moment in Rotation	Max	Nm	69.0 to 83.0	81.4	Pass
Positive Moment Decay, Time To 10 Nm		Msec.	80.0 to 100.0	97.7	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
7.7	200.0	0.0	-1.7



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
83.4	66.8	-38.6	200.0



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
87.4	48.0	-33.2	16.9

Test Program: Hybrid III 5th Percentile Female Neck Extension Test

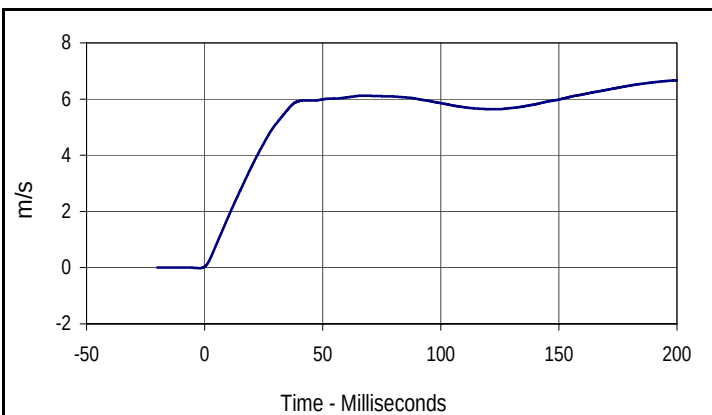
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ATD Serial No.: 141

Test I.D.: NE02B

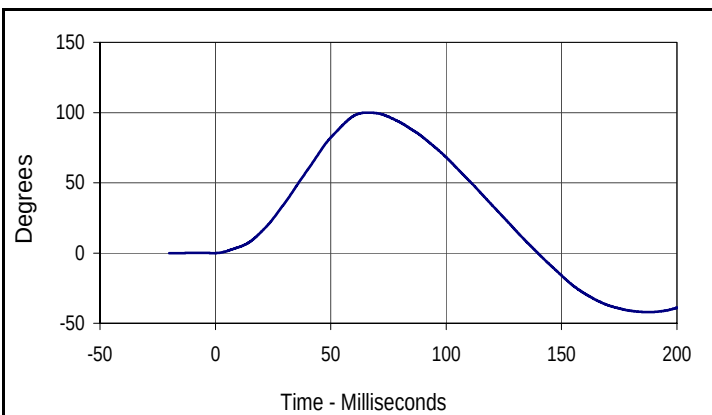
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.27	Pass
Laboratory Relative Humidity		%	10 to 70	28.95	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.05	Pass
Pendulum Deceleration	10 Msec.	m/s	1.5 to 1.9	1.8	Pass
	20 Msec.	m/s	3.1 to 3.9	3.6	Pass
	30 Msec.	m/s	4.6 to 5.6	5.1	Pass
"D" Plane Rotation	Max	Degrees	99.0 to 114.0	99.9	Pass
Peak Moment in Rotation	Max	Nm	-53.0 to -65.0	-56.4	Pass
Positive Moment Decay, Time To -10 Nm		Msec.	94.0 to 114.0	98.8	Pass
			Overall Test Results		Pass



Curve Description

Pendulum Velocity

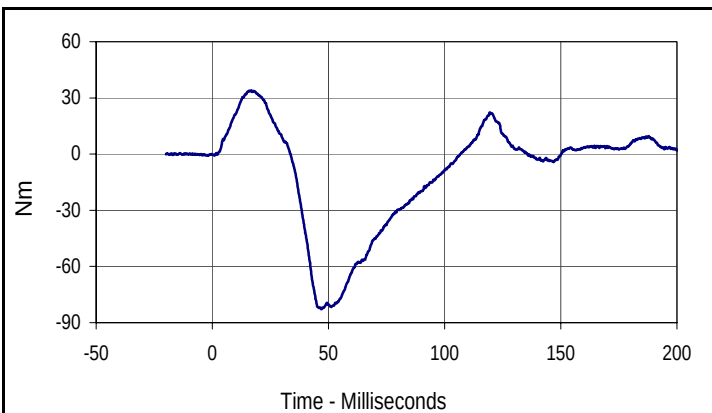
CURNO	Type	SAE Class	Units
001	FIL	60	m/s
Max	Time	Min	Time
6.7	200.0	0.0	-2.1



Curve Description

"D" Plane Rotation

CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
99.9	65.4	-42.1	187.9



Curve Description

Moment About Occipital Condyle

CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
34.1	16.7	-82.9	46.9

Test Program: Hybrid III 5th Percentile Female Knee Impact Test
 ATD Serial No.: 141

Test Date: 2/3/11
 Test I.D.: LKF12B , RKB12B

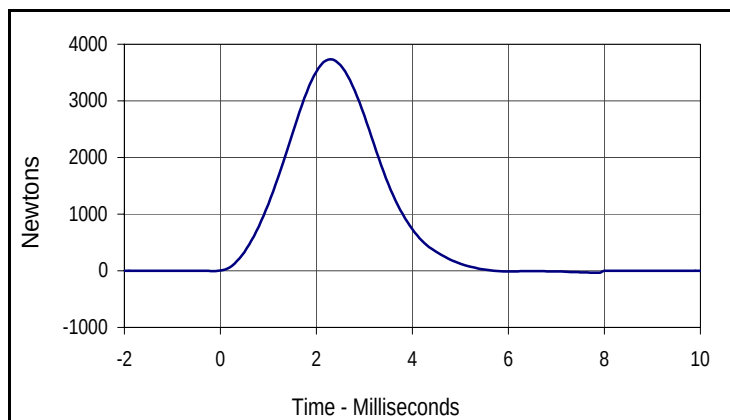


Left Knee

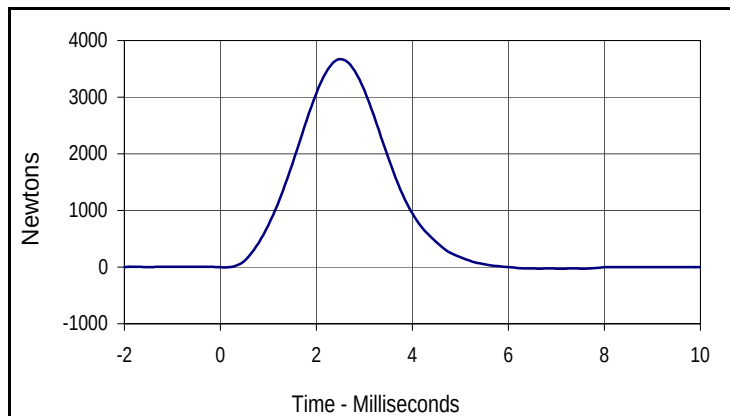
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.22	Pass
Laboratory Relative Humidity	%	10 to 70	28.43	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force	Newtons	3450 to 4060	3735	Pass
Overall Test Results				Pass

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force	Newtons	3450 to 4060	3671	Pass
Overall Test Results				Pass



Curve Description			
Left Knee Probe Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3734.8	2.3	-36.2	7.9



Curve Description			
Right Knee Probe Force			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
3671.0	2.5	-27.2	7.1

Test Program: Hybrid III 5th Percentile Female Torso Flexion Test

Test Date: 2/3/11

ATD Serial No.: 141

Test I.D.: TF02B



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.19	Pass
Laboratory Relative Humidity	%	10 to 70	28.15	Pass
Initial reference plane angle	Degrees	≤20.0	0.23	Pass
Peak Force at 45 +/-0.5 degrees	Newtons	320.0 to 390.0	322.4	Pass
Torso rotation rate	deg/sec	0.5 to 1.5	0.98	Pass
Final reference plane angle	Degrees	+/-8	0.25	Pass
Overall Test Results				Pass

Test Program: Hybrid III 5th Percentile Female External Measurements

Test Date: 2/3/11

ATD Serial No.: 141

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory temperature	°C	20.6 to 22.2	21.21	Pass
Laboratory relative humidity	%	10 to 70	29.57	Pass
A - Total sitting height	mm	774.7 to 800.1	784	Pass
B - Shoulder pivot height	mm	431.8 to 457.2	441	Pass
C - "H" point height (Reference)	mm	81.3 to 86.3	84	Pass
D - "H" point from seat back (Ref.)	mm	144.8 to 149.8	146	Pass
E - Shoulder pivot from backline	mm	68.6 to 83.8	78	Pass
F - Thigh clearance	mm	119.4 to 134.6	130	Pass
G - Back of elbow to wrist pivot	mm	243.9 to 259.1	254	Pass
H - Head to back line	mm	40.7 to 45.7	43	Pass
I - Shoulder to elbow length	mm	276.8 to 297.2	281	Pass
J - Elbow rest height	mm	182.8 to 203.2	200	Pass
K - Buttock to knee length	mm	520.7 to 546.1	535	Pass
L - Popliteal height	mm	355.6 to 376.0	365	Pass
M - Knee pivot height	mm	393.7 to 419.1	413	Pass
N - Buttock popliteal length	mm	414.0 to 439.4	421	Pass
O - Chest depth without jacket	mm	175.3 to 190.5	182	Pass
P - Foot length	mm	218.5 to 233.7	227	Pass
R - Buttock to knee pivot length	mm	457.2 to 482.6	464	Pass
S - Head breadth	mm	137.1 to 147.3	142	Pass
T - Head depth	mm	177.8 to 188.0	181	Pass
U - Hip breadth	mm	299.7 to 314.9	308	Pass
V - Shoulder breadth	mm	350.5 to 365.7	361	Pass
W - Foot breadth	mm	78.8 to 94.0	89	Pass
X - Head circumference	mm	528.3 to 548.7	542	Pass
Y - Chest circumference with jacket	mm	850.8 to 881.3	854	Pass
Z - Waist circumference	mm	759.5 to 789.9	778	Pass
AA - Location for chest circumference	mm	299.7 to 309.9	302	Pass
BB - Location for waist circumference	mm	160.1 to 170.2	167	Pass
Overall Test Results				Pass

Test Program: Dummy Damage Checklist
 ATD Serial No.: 035

Test Date: 2/3/11
 Test I.D.: N/A



GENERAL	DAMAGED	OK
Outer skin on entire dummy		X
Head ballast secure		X
Gashes, rips, general appearance, etc.		X
Neck-Broken or cracks in rubber		X
Check that upper neck bracket is firmly attached to lwr neck bracket		X
Three rubber bumpers in place		X
Spine- Broken or cracks in rubber		X
Check for looseness at the condyle joint		X
Nodding blocks- cracked or out of position		X
Ribs- Check all ribs and rib supports for damage (bent or broken)		X
Check damping material or separation or cracks		X
OTHER		
CHEST DISPLACEMENT ASSEMBLY		
Bent shaft		X
Slider arm riding correctly, in track		X
TRANSDUCER LEADS		
Torn cables		X
ACCELEROMETER MOUNTINGS		
Check for secure mounting		X
KNEES		
Check outer skin, insert and casting (without removing insert)		X
Knee sliders - Wires intact		X
Knee sliders- Rubber returned to "at rest position"		X
LIMBS		
Check for normal movement and adjustment		X
PELVIS		
Inspect for breakage, especially at iliac crest		X

Comments on repair or replacement parts:

Test Program: Dummy Damage Checklist
 ATD Serial No.: 141

Test Date: 2/3/11
 Test I.D.: N/A



GENERAL	DAMAGED	OK
Outer skin on entire dummy		X
Head ballast secure		X
Gashes, rips, general appearance, etc.		X
Neck-Broken or cracks in rubber		X
Check that upper neck bracket is firmly attached to lwr neck bracket		X
Three rubber bumpers in place		X
Spine- Broken or cracks in rubber		X
Check for looseness at the condyle joint		X
Nodding blocks- cracked or out of position		X
Ribs- Check all ribs and rib supports for damage (bent or broken)		X
Check damping material or separation or cracks		X
OTHER		
CHEST DISPLACEMENT ASSEMBLY		
Bent shaft		X
Slider arm riding correctly, in track		X
TRANSDUCER LEADS		
Torn cables		X
ACCELEROMETER MOUNTINGS		
Check for secure mounting		X
KNEES		
Check outer skin, insert and casting (without removing insert)		X
Knee sliders - Wires intact		X
Knee sliders- Rubber returned to "at rest position"		X
LIMBS		
Check for normal movement and adjustment		X
PELVIS		
Inspect for breakage, especially at iliac crest		X

Comments on repair or replacement parts:
