

**REPORT NUMBER: SINCAP-KAR-14-017**

**NEW CAR ASSESSMENT PROGRAM (NCAP)  
MOVING DEFORMABLE BARRIER SIDE IMPACT TEST**

**TOYOTA MOTOR CORPORATION  
2014 TOYOTA 4RUNNER SR5 5-DOOR MPV**

**NHTSA No: M20145105**

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



**APRIL 29, 2014**

**FINAL REPORT**

**PREPARED FOR:  
U.S. DEPARTMENT OF TRANSPORTATION  
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  
OFFICE OF CRASHWORTHINESS STANDARDS  
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WASHINGTON, D.C. 20590**



## TECHNICAL REPORT DOCUMENTATION PAGE

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	<b>15. Supplementary Notes</b>	

### 16. Abstract

A 55/28 km/h 90 deg. Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2014 Toyota 4Runner SR5 5-door MPV in accordance with the specifications of the Office of Crash Worthiness Standards Test Procedure for the generation of consumer information on vehicle side crash protection. The test was conducted at the KARCO Engineering, LLC. facility in Adelanto, California on April 15, 2014.

The impact velocity of the Moving Deformable Barrier was 61.70 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 34.4° C. The target vehicle's maximum post-test static crush was 191 mm located at level 1. The test vehicle's occupant performance data is as follows:

Measurement Description	Driver ATD (ES-2re)		
	Units	IARV	Result
Head Injury Criteria (HIC <sub>36</sub> )		1000	41.1
Maximum Thoracic Rib Deflection	mm	44	28
Total Abdominal Force	N	2500	797
Pubic Symphysis Force	N	6000	1035

Measurement Description	Passenger ATD (SID-IIs)		
	Units	IARV	Result
Head Injury Criteria (HIC <sub>36</sub> )		1000	88.7
Resultant Lower Spine Acceleration	g	82	36
Total Pelvic Force (Sum of Acetubular and Iliac Forces)	N	5525	1694
Maximum Thoracic Rib Deflection	mm	38*	9
Maximum Abdominal Rib Deflection	mm	45*	11

The two doors on the struck side of the vehicle did not separate from the body at the hinges or latches. The opposite side doors did not open during the side impact event.

\* Proposed IARV

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**SECTION 1**  
**TEST PURPOSE AND PROCEDURE**

This moving deformable barrier side impact test is part of the MY2014 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract number DTNH22-09-D-00122. The purpose of this test is to generate comparative side impact performance in a 2014 Toyota 4Runner SR5 5-door MPV. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated September 2013.

## SECTION 2

### SUMMARY OF TEST RESULTS

A 2014 Toyota 4Runner SR5 5-door MPV was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 61.70 km/h (38.34 mph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by KARCO Engineering, LLC. in Adelanto, California, on April 15, 2014. Pre- and post-test photographs of the test vehicle, the MDB and the dummies (ES-2re and SID-IIs) are included in Appendix A of this report.

Dummies were placed in the driver and left rear designated seating positions according to instructions specified in the OCWS Side Impact Laboratory Test Procedure, dated September 2013. The side impact event was documented by 11 cameras. Camera locations are included in Data Sheet No. 5 of this report.

The dummy was instrumented in the following manner:

#### DRIVER ATD (ES-2re)

Primary and redundant head CG tri-axial accelerometers

Chest upper rib, middle rib and lower rib y-axis displacement potentiometers

Abdomen forward, middle, and rear y-axis load cells

Lower spine (12) tri-axial accelerometers

Pubic symphysis y-axis load cell

#### PASSENGER ATD (SID-IIs)

Primary and redundant head CG tri-axial accelerometers

Chest upper rib, middle rib and lower rib y-axis displacement potentiometers

Abdomen upper rib and lower rib y-axis displacement potentiometers

Lower spine (12) tri-axial accelerometers

Acetabulum and iliac wing y-axis load cells

Appendix B contains the vehicle and dummy response data. Dummy configuration and performance verification data can be found in Appendix C of this report. Appendix D of this report contains the test equipment and instrumentation calibration data.

Dummy injury readings were recorded as follows:

Measurement Description	Units	Driver ATD (ES-2re)	
		Threshold	Result
Head Injury Criteria (HIC <sub>36</sub> )		1000	41.1
Maximum Thoracic Rib Deflection	mm	44	28
Combined Abdominal Force	N	2500	797
Pubic Symphysis Force	N	6000	1035

Measurement Description	Units	Passenger ATD (SID-IIs)	
		Threshold	Result
Head Injury Criteria (HIC <sub>36</sub> )		1000	88.7
Lower Spine (T12) Resultant Acceleration	g	82	36
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	1694
Maximum Thoracic Rib Deflection	mm	38*	9
Maximum Abdominal Rib Deflection	mm	45*	11

\*Proposed IARV

Supplemental restraint information is given below:

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

### GENERAL COMMENTS

The two doors on the struck side of the vehicle remained closed and latched. There was no separation at the hinges or latches. The doors on the non-struck side remained closed and latched. There were no ATD values that exceeded limits.

### SECTION 3

#### OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV NHTSA No. M20145105

Test Program: NCAP MDB Side Impact Test Test Date: 04/15/14

#### CONVERSION FACTORS

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

**DATA SHEET NO. 1**

**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV NHTSA No. M20145105  
 Test Program: NCAP MDB Side Impact Test Test Date: 04/15/14

**TEST VEHICLE INFORMATION AND OPTIONS**

NHTSA Number	M20145105
Model Year	2014
Make	Toyota
Model	4Runner SR5
Body Style	5-Door MPV
VIN	JTEZU5JR7E5074317
Body Color	Classic Silver
Odometer Reading (km / mi)	98 / 61
Engine Displacement (L)	4.0
Type / No. of Cylinders	V6
Engine Placement	Longitudinal
Transmission Type	Automatic
Transmission Speeds	5
Overdrive	Yes
Final Drive	Rear
Roof Rack	Yes
Sunroof / T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	Yes
Anti-Lock Brakes (ABS)	Yes

Traction Control System (TCS)	Yes
Auto-Leveling System	No
Automatic Door Locks	Yes
Power Window Auto-Reverse	Yes
Other Optional Feature	Yes
Driver Front Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	No
Driver Torso/Pelvis Airbag	Yes
Driver Pelvis Airbag	No
Driver Knee Airbag	Yes
Rear Pass. Curtain Airbag	Yes
Rear Pass. Head/Torso Airbag	No
Rear Pass. Torso Airbag	No
Rear Pass. Torso/Pelvis Airbag	No
Rear Pass. Pelvis Airbag	No
Driver Seat Belt Pretensioner	Yes
Rear Pass. Seat Belt Pretensioner	Yes
Driver Load Limiter	Yes
Rear Pass. Load Limiter	Yes
Other Safety Restraint	Active Headrests

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

Yes

**DATA FROM CERTIFICATION LABEL**

Manufactured By	Toyota Motor Corporation
Date of Manufacture	Feb-14
Vehicle Type	MPV

GVWR (kg)	2765
GAWR Front (kg)	1270
GAWR Rear (kg)	1515

**VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION**

Measured Parameter	Front	Rear	Third	Total
Designated Seating Capacity	2	3		5
Capacity Weight (VCW) (kg)				515.0
DSC x 68.04 (kg)				340.2
Cargo Weight (RCLW) (kg)				136.0

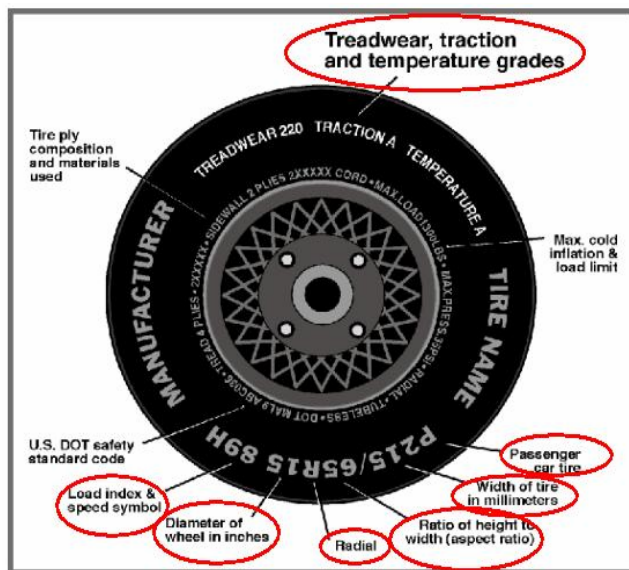
**VEHICLE SEAT TYPE**

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

## DATA SHEET NO. 1 ... (CONTINUED)

### GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV NHTSA No. M20145105  
 Test Program: NCAP MDB Side Impact Test Test Date: 04/15/14



Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	350	350
Cold Pressure (kPa)	220	220
Recommended Tire Size	P265/70R17	P265/70R17
Tire Size on Vehicle	P265/70R17	P265/70R17
Tire Manufacturer	Dunlop	Dunlop
Tire Model	Grandtrek AT20	Grandtrek AT20
Treadware	300	300
Traction Grade	B	B
Temperature Grade	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	113S	113S
Tire Material	Polyester, Steel, Nylon	Polyester, Steel, Nylon
DOT Safety Code Left	EU70 2MAR 0514	EU70 2MAR 0514
DOT Safety Code Right	EU70 2MAR 0514	EU70 2MAR 0514

**DATA SHEET NO. 1 ... (CONTINUED)**

**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV NHTSA No. M20145105  
 Test Program: NCAP MDB Side Impact Test Test Date: 04/15/14

**TIRE PRESSURES**

	Units	LF	RF	LR	RR
As Delivered	kPa	220	220	220	220
Tire Placard	kPa	220	220	220	220
Owner's Manual	kPa	220	220	220	220
As Tested	kPa	220	220	220	220

**MDB TIRE SPECIFICATIONS**

	Units	Requirement	LF	RF	LR	RR
Tire Size		P205/75R15	P205/75R15	P205/75R15	P205/75R15	P205/75R15
Tire Pressure	kPa	200 ± 21	200	200	200	200

**TEST VEHICLE AXLE WEIGHTS**

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	547.5	471.5		587.5	596.0		580.0	612.5	
Right	kg	481.5	475.0		466.5	578.0		457.0	585.5	
Ratio	%	52.1%	47.9%	100.0%	47.3%	52.7%	100.0%	46.4%	53.6%	100.0%
Total	kg	1029.0	946.5	1975.5	1054.0	1174.0	2228.0	1037.0	1198.0	2235.0

**TARGET TEST WEIGHT CALCULATION**

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1975.5	A
Actual Weight of 2 P572 ATDs Used	kg	125.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	136.0	C
Calculated Vehicle Target Wt (TVT <sub>W</sub> )	kg	2236.5	A+B+C

Does the measured As Tested Vehicle Weight lie within the required weight range (i.e. Calculated Test Vehicle Target Weight -4.5 kg to -9.0 kg)?  Yes  No

**TEST VEHICLE ATTITUDE AND CG**

Measurement Description	Units	Fully Loaded	As Tested	Meets Requirement***
LF	mm	866	864	Yes
RF	mm	882	872	Yes
LR	mm	892	894	Yes
RR	mm	907	902	Yes
Vehicle CG (Aft of Front Axle)	mm	1496	1471	
Vehicle CG (Left (+)/Right (-) from Longitudinal Centerline)	mm	54	50	

\*\*\*The "As Tested" vehicle attitude measurements must be equal to or within ±10 mm of the "Fully Loaded" vehicle attitude measurements at each wheel well. Indicate "Yes" or "No" for "Meets Requirement"

**DATA SHEET NO. 1 ... (CONTINUED)**

**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV NHTSA No. M20145105  
Test Program: NCAP MDB Side Impact Test Test Date: 04/15/14

**WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW**

Component Description	Weight (kg)
Trunk Soft Trim	10.0
Spare Tire Tools	3.5
Ballast / Equipment Added	141.0

Test Height Adjustable Setting (If Applicable)	
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**DATA SHEET NO. 2**

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

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV NHTSA No. M20145105  
 Test Program: NCAP MDB Side Impact Test Test Date: 04/15/14

**SEAT POSITIONING**

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

**SCRL ANGLE RANGE**

Seat	SCRL (°)		
	Max	Min	Mid
Driver Seat	11.0	0.0	5.5
Front Passenger Seat	Fixed	Fixed	Fixed
Front Center Seat			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed

**SEAT HEIGHT AND ANGLE**

Seat	As Tested SCRL Angle	As Tested SCR Height	SCR Height Position	SCR Height (mm)		
				Rearmost	Mid Fore/Aft	Forwardmost
Driver Seat	5.5	779	Max	809	817	825
			Mid	789	798	807
			Min	769	779	788
Front Passenger Seat	Fixed	839	Max	829	839	848
			Mid	829	839	848
			Min	829	839	848
Front Center Seat			Max			
			Mid			
			Min			
Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed

**DATA SHEET NO. 2 ... (CONTINUED)**

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

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV NHTSA No. M20145105  
 Test Program: NCAP MDB Side Impact Test Test Date: 04/15/14

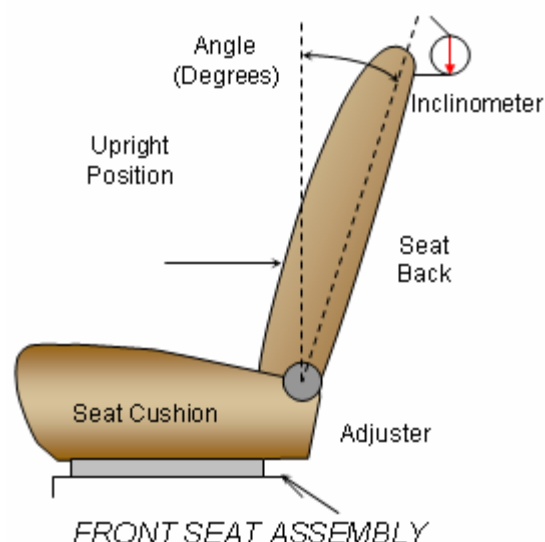
**SEAT FORE/AFT POSITION**

Seat	Total Fore/Aft Travel		Test Position From Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	220		110	
Front Passenger Seat	230	23	115	11
Front Center Seat				
Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed	Fixed

\*Detent zero (0) is the forward most detent

**SEAT BACK ADJUSTMENT**

The driver's seat back is positioned to the manufacturer's designated design angle. The right front passenger's seat back is positioned in a similar manner as the driver's seat back. The struck side rear seat back is positioned such that the dummy's head is level. The rear center and non-struck side rear outboard seat backs are positioned in a similar manner as the struck side rear seat back. Seat back angle is measured at the headrest post.



**SEAT BACK POSITION**

Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degree	Detent*
Driver Seat w/Seated Dummy	52.2		3.0	
Front Passenger Seat	52.9	27	2.8	
Front Center Seat				
Struck Side Rear Seat w/Seated Dummy	15.8	5	10.4	0
Non-Struck Side Rear Seat	15.4	5	9.0	0
Rear Center Seat	Fixed to RR	Fixed to RR	Fixed to RR	Fixed to RR

\*Detent zero (0) is the forward most detent

## DATA SHEET NO. 2 ... (CONTINUED)

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

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV NHTSA No. M20145105  
 Test Program: NCAP MDB Side Impact Test Test Date: 04/15/14

#### SEAT BELT ANCHORAGE ADJUSTMENT

Seat belt anchorages are adjusted in accordance with the information provided by the manufacturer on Form No. 1. The positions are marked H, M1, ..., L from top to bottom.

	Total No. of Positions	Placed in Position
Driver Seat	4	H
Rear Seat	Fixed	Fixed

#### HEAD RESTRAINT ADJUSTMENT

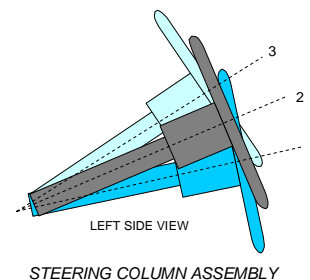
The driver's head restraint is adjusted to the highest and most full forward in-use position. The struck-side rear passenger's head restraint is adjusted to the lowest and most full forward in-use position.

	Total No. of Positions	Placed in Position
Driver Seat	3	Full Up
Rear Seat	2	Full Down

#### STEERING COLUMN ADJUSTMENT

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

	Degrees	Fore-Aft Position (mm)
Lowermost - Position 1	25.0	75
Geometric Center - Position 2	26.9	95
Uppermost - Position 3	28.8	115
Telescoping Steering Wheel Travel		40
Test Position	26.9	95



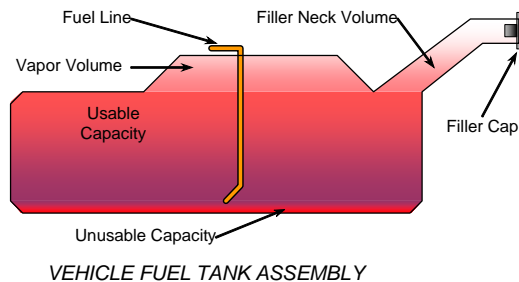
**DATA SHEET NO. 2 ... (CONTINUED)**

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

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV NHTSA No. M20145105  
 Test Program: NCAP MDB Side Impact Test Test Date: 04/15/14

**FUEL PUMP**

The vehicle is equipped with an electric fuel pump.



**FUEL TANK CAPACITY**

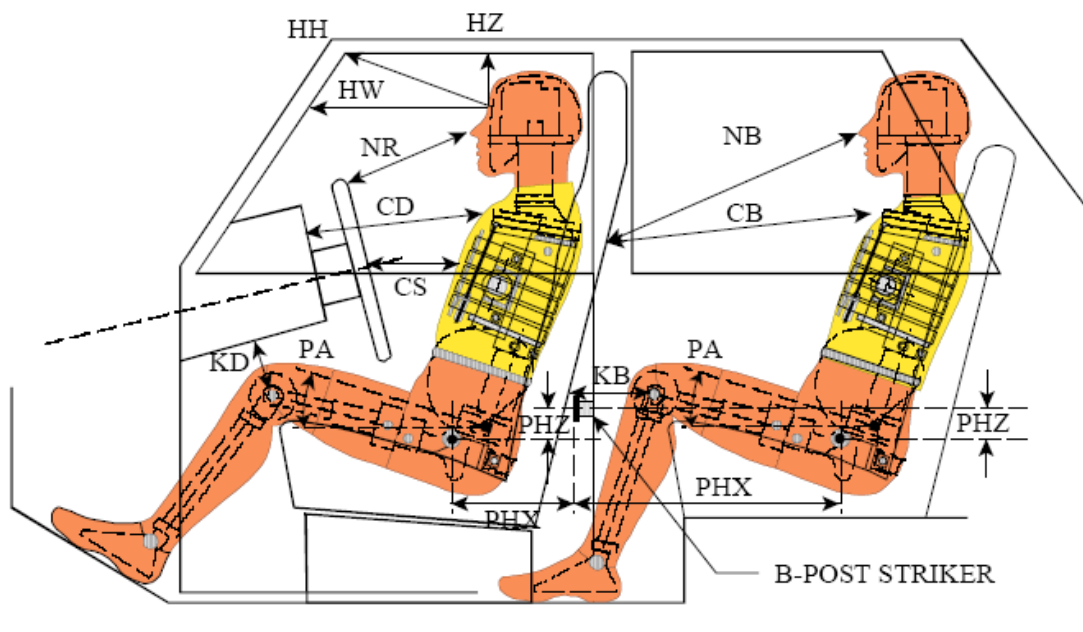
Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	87.06
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of "Standard Tank" (see Owner's Manual)	
Usable Capacity of "Optional Tank" (see Owner's Manual)	
93% of Usable Capacity	80.96
Actual amount of Solvent Used in Test	80.96
1/3 of Usable Capacity	29.02

Is the Actual Amount of Solvent Used in the test equal to 93% ± 1% of the Usable Capacity stated in the Form No. 1?       **Yes**       **No**

### DATA SHEET NO. 3

#### DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV NHTSA No. M20145105  
 Test Program: NCAP MDB Side Impact Test Test Date: 04/15/14



**LEFT SIDE VIEW**

NOTE: 2-DOOR VEHICLE SHOWN.  
 REAR DUMMY PHX & PHZ  
 MEASUREMENTS FOR A 4-DOOR  
 VEHICLE WOULD USE THE C-POST  
 STRIKER AS A REFERENCE POINT

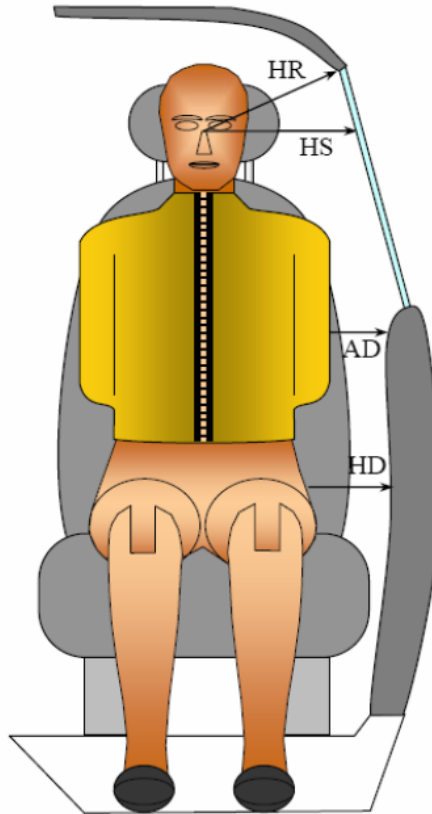
#### DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Description	Driver		Passenger	
			Length (mm)	Angle (°)	Length (mm)	Angle (°)
HH		Head to Header	544			
HW		Head to Windshield	725			
HZ	HZ	Head to Roof	200		264	
NR	NB	Nose to Rim/Seat Back	477		576	
CD	CB	Chest to Dash/Seat Back	614		556	
CS		Chest to Steering Wheel	336			
KD(L)/KDA(L)°	KB(L)/KBA(L)°	Left Knee to Dash/Seat Back	190	24.4	307	32.9
KD(R)/KDA(R)°	KB(R)/KBA(R)°	Right Knee to Dash/Seat Back	175	24.4	310	38.6
PAX°	PAX°	Pelvic Tilt Angle X		17.2		22.0
	PAY°	Pelvic Tilt Angle Y		0.2		0.2
PHX	PHX	Hip Point to Striker (x-axis)	209		237	
PHZ	PHZ	Hip Point to Striker (z-axis)	156		201	

## DATA SHEET NO. 4

### DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV NHTSA No. M20145105  
Test Program: NCAP MDB Side Impact Test Test Date: 04/15/14



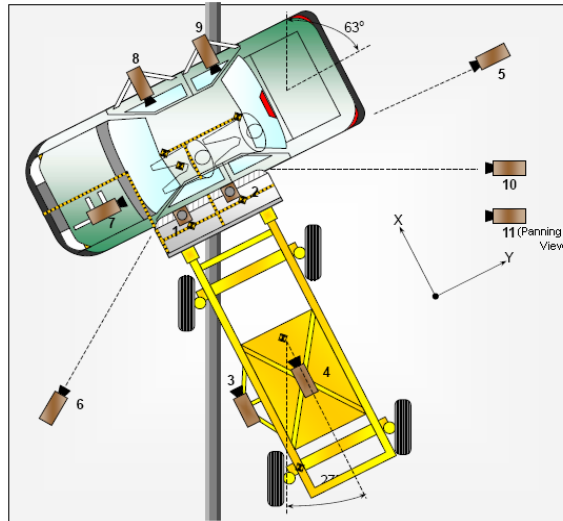
### DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	224	247
HS	Head to Side Window	mm	31	343
AD	Arm to Door	mm	100	150
HD	H-Point to Door	mm	160	170

**DATA SHEET NO. 5**

**CAMERA AND INSTRUMENTATION DATA**

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV NHTSA No. M20145105  
 Test Program: NCAP MDB Side Impact Test Test Date: 04/15/14



**CAMERA LOCATIONS AND DATA**

No.	View	Coordinates (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X	Y	Z		
1	Overhead Overall	1220	2287	-5486	14	1000
2	Overhead Close-Up	609	2287	-5102	35	1000
3	Left Impact Point (MDB)	-2134	0	-1143	25	1000
4	Side Overall (MDB)	-3912	838	-1829	12.5	1000
5	Rear	-64	2485	-1348	85	1000
6	Left Front	-2266	-3564	-1475	24	1000
7	Driver Front (On-Board)	538	-746	-814	24	1000
8	Driver Side (On-Board)	1799	-821	-485	12	1000
9	Passenger Side (On-Board)	1799	1595	-503	12	1000
10	Real Time Overall				Zoom	30
11	Real Time Inrun				Zoom	30

Reference: Impact Point Projected to Ground; +X = To Front of MDB, +Y = To Right of MDB, +Z = Down

\*All measurements accurate to ±6 mm

**INSTRUMENTATION**

Driver Dummy Channels	16
Passenger Dummy Channels	16
Vehicle Structure Accelerometers	22
MDB Accelerometers	5
<b>Total</b>	<b>59</b>

**DATA SHEET NO. 6**

**TEST VEHICLE ACCELEROMETER LOCATIONS**

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV NHTSA No. M20145105  
 Test Program: NCAP MDB Side Impact Test Test Date: 04/15/14



**VEHICLE ACCELEROMETER PRE-TEST LOCATIONS**

Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2074	0	-553
2	Right Sill at Front Seat	2662	715	-532
3	Right Sill at Rear Seat	1781	715	-530
4	Left Sill at Front Door	2590	-470	-312
5	Left Sill at Rear Door	1780	-470	-310
6	A-Pillar Lower	3267	-865	-763
7	A-Pillar Middle	3267	-865	-985
8	B-Pillar Lower	2160	-791	-801
9	B-Pillar Middle	2160	-791	-1020
10	Front Seat Track	2373	-205	-684
11	Rear Seat Structure			
12	Right Rear Occupant Compartment	2049	350	-525
13	Engine Block	4030	-138	-945
14	Rear Floorpan Above Axle	1203	63	-700

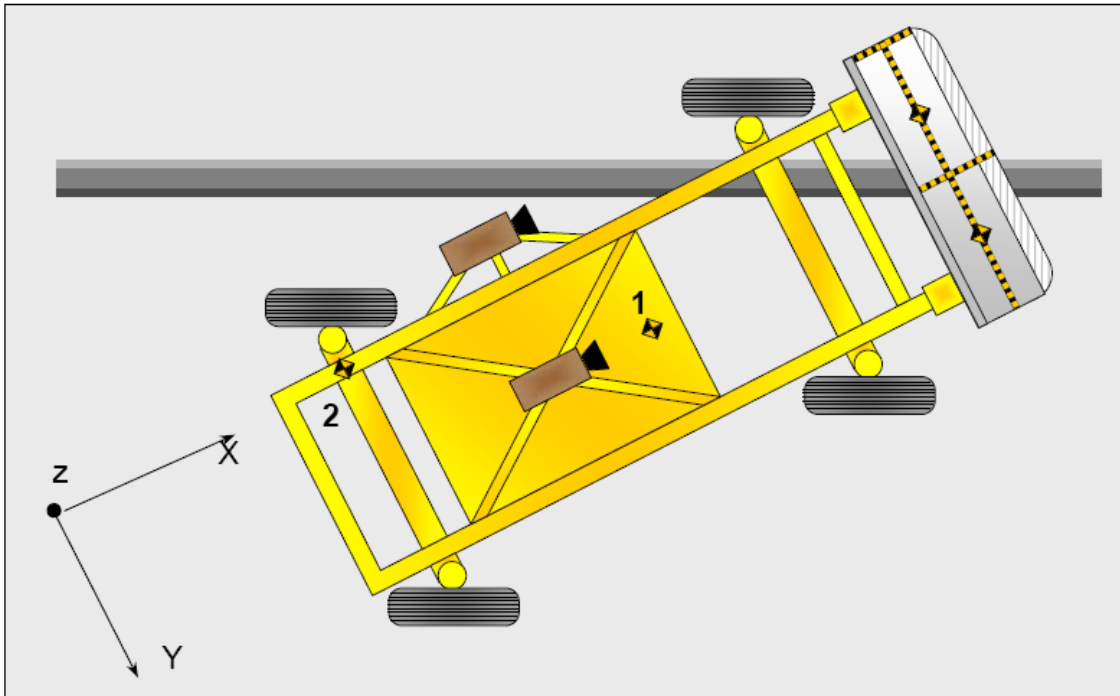
Reference: X – Rear surface of vehicle (+ forward)  
 Y – Vehicle centerline (+ to right)  
 Z – Ground plane (+ down)

**DATA SHEET NO. 7**

**MDB ACCELEROMETER LOCATIONS**

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV NHTSA No. M20145105

Test Program: NCAP MDB Side Impact Test Test Date: 04/15/14



**MDB ACCELEROMETER LOCATIONS**

Loc. No.	Accelerometer Location	Measurement		
		X	Y	Z
1	MDB CG	-1195	0	-430
2	MDB Rear	-2642	-593	-608

Reference:  
 X – Face of MDB (+ forward)  
 Y – MDB centerline (+ to right)  
 Z – Ground plane (+ down)

**DATA SHEET NO. 8**  
**POST-TEST OBSERVATIONS**

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV NHTSA No. M20145105  
 Test Program: NCAP MDB Side Impact Test Test Date: 04/15/14

**TEST DUMMY INFORMATION AND CONTACT POINTS**

Dummy Body Part	Front Seat Dummy (ES-2re)	Rear Seat Dummy (SID-IIs)
Face	Curtain Airbag	None
Top of Head	Side Header	Curtain Airbag, Center Headrest
Left Side of Head	Curtain Airbag, Side Header	Curtain Airbag
Back of Head	Curtain Airbag, Side Header, Headrest	Headrest, Seat Back
Left Shoulder	Curtain Airbag	Door Panel
Upper Torso	Seat, Torso/Pelvis Airbag	None
Lower Torso	Seat	Door Panel
Left Hip	Seat, Torso/Pelvis Airbag	Door Panel
Left Knee	Door Panel, Knee Airbag	Door Panel

**POST-TEST DOOR PERFORMANCE**

Description	Struck Side		Non-Struck Side		Rear Hatch/Other
	Front	Rear	Front	Rear	
Remained Closed and Operational	No	No	Yes	Yes	Yes
Total Separation from Vehicle at Hinges or Latches	No	No	No	No	No
Latch or Hinge System Pulled Out of Their Anchorages	No	No	No	No	No
Disengaged from Latched Position	No	No	No	No	No
Latch Separated from Striker	No	No	No	No	No
Jammed Shut	Yes	Yes	No	No	No
If Door Opened at Striker, Record Width of Opening at Striker (mm)	N/A	N/A	N/A	N/A	N/A

**DATA SHEET NO. 8 ... (CONTINUED)**

**POST-TEST OBSERVATIONS**

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV NHTSA No. M20145105  
Test Program: NCAP MDB Side Impact Test Test Date: 04/15/14

**POST-TEST SEAT PERFORMANCE**

Description	Struck Side		Non-Struck Side	
	Front	Rear	Front	Rear
Seat Movement Along Seat Track	No	No	No	No
Seat Disengagement from Floor Pan	No	No	No	No
Seat Back Movement from Initial Position	No	No	No	No
Seat Back Collapse	No	No	No	No

**POST-TEST STRUCTURAL OBSERVATIONS**

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No separation
Sill Separation	No separation
Windshield Damage	None
Side Window Damage	None
Other Notable Effects	None

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

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV NHTSA No. M20145105  
 Test Program: NCAP MDB Side Impact Test Test Date: 04/15/14

**SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION**

Restraint Type	Struck Side Driver		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	Yes	No	
Knee Airbag	Yes	Yes	No	
Side Airbag 1 (Curtain)	Yes	Yes	Yes	Yes
Side Airbag 2 (Torso/Pelvis)	Yes	Yes	No	
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes	Yes	No	
Other	No		No	

**IMPACT POINT LOCATION DATA**

Measured Parameter	Units	Tolerance	Value
Vehicle Wheel Base	mm		2791
Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point)	mm		455
Actual Impact Point (Aft of Front Axle)	mm		443
Horizontal Offset (+ forward / - rearward)	mm	± 50 of Intended Impact Point	12
Vertical Offset (+ down / - up)	mm	± 20 of Intended Impact Point	7

**DATA SHEET NO. 9**  
**MDB SUMMARY OF RESULTS**

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV NHTSA No. M20145105  
 Test Program: NCAP MDB Side Impact Test Test Date: 04/15/14

**MDB SPECIFICATIONS**

Measurement Description	Length (mm)
Overall Width of Framework Carriage	1251
Overall Length including Honeycomb Face	4023
Wheel Base of Framework Carriage	2595
CG location aft of Front Axle	1118

**MDB WEIGHTS**

	Units	Front Axle	Rear Axle	Total
Left	kg	401.8	298.0	699.8
Right	kg	376.9	291.6	668.5
Ratio	%	56.9%	43.1%	100.0%
Totals	kg	778.7	589.6	1368.3

**SPEED AND IMPACT DATA**

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	61.70
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	61.77
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	89.8
MDB Forward Line of Motion to Target Vehicle CL	degrees	62.5 to 63.5	62.8
MDB Crabbed Angle to MDB Forward Line of Motion	degrees	26.0 to 28.0	27.0

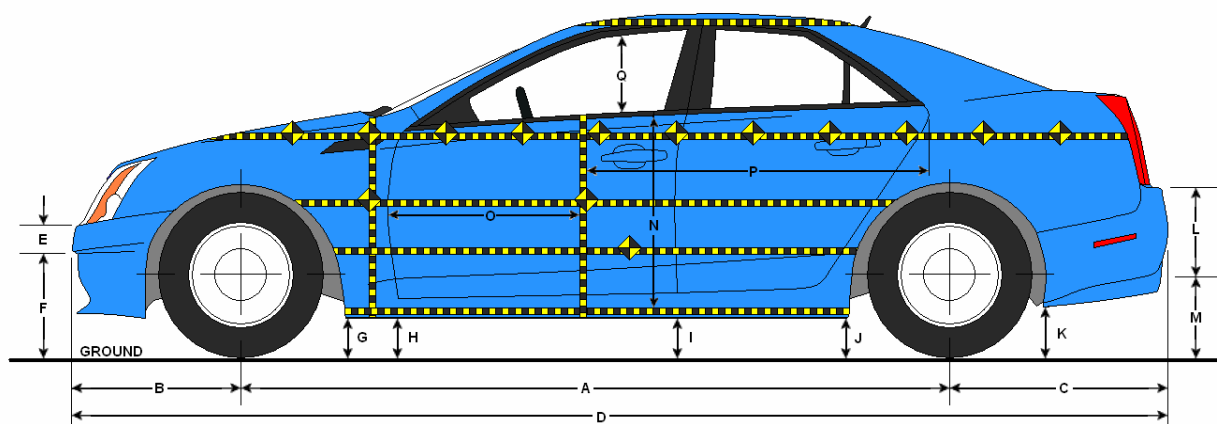
**MAXIMUM STATIC CRUSH OF HONEYCOMB FACE**

Vertical Location			From Centerline		Max. Crush (mm)
Row	Description	Height (mm)	Distance (mm)	Direction	
A	Center of Bumper	432	800	Left	209
B	Top of Bumper	533	800	Right	237
C	Mid Level	686	800	Left	232
D	Top of Stack	813	800	Left	247

## DATA SHEET NO. 10

### TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV      NHTSA No. M20145105  
 Test Program: NCAP MDB Side Impact Test      Test Date: 04/15/14



**LEFT SIDE VIEW**

#### VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

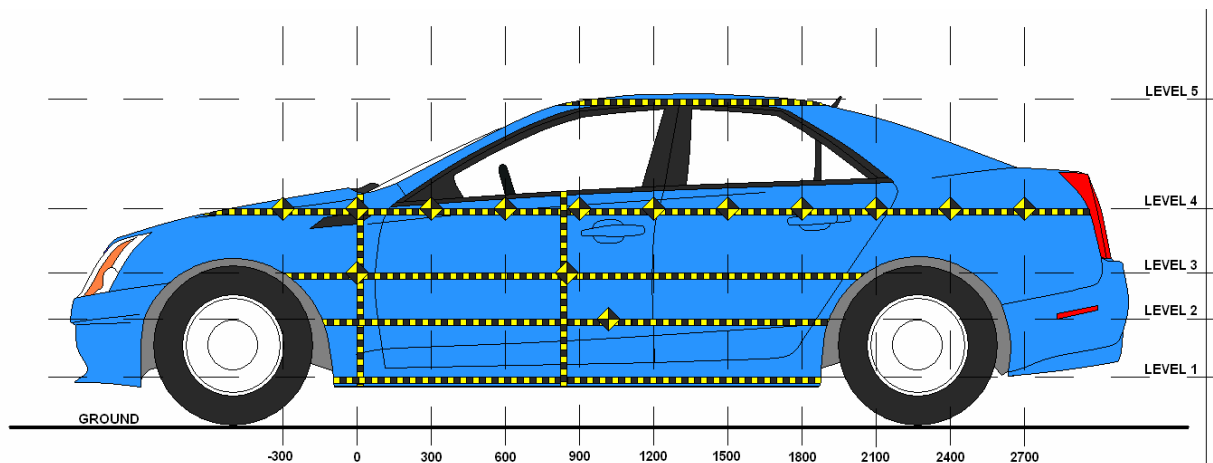
Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2791	2800	9
B	Front Axle to FSOV	917	911	-6
C	Rear Axle to RSOV	1126	1115	-11
D	Total Length at Centerline	4834	4826	-8
E	Front Bumper Thickness	185	186	1
F	Front Bumper Bottom to Ground	492	494	2
G	Sill Height at Front Wheel Well	450	461	11
H	Sill Height at Front Door Leading Edge	449	484	35
I	Sill Height at B-Pillar	456	492	36
J1	Sill Height at Rear Wheel Well	451	466	15
J2	Pinch Weld Height at Rear Wheel Well	396	400	4
K	Sill Height Aft of Rear Wheel Well	443	482	39
L	Rear Bumper Thickness	108	107	-1
M	Rear Bumper Bottom to Ground	519	550	31
N	Sill Height to Bottom of Front Window Sill	694	708	14
O	Front Door Leading Edge to Impact CL	729	727	-2
P	Rear Door Trailing Edge to Impact CL	1371	1338	-33
Q	Front Window Opening	467	505	38
R	Right Side Length	3093	3372	279
S	Left Side Length	3362	3323	-39
T	Vehicle Width at B-Pillar	1836	1739	-97

All measurements in mm with tolerance of  $\pm 3$ mm

## DATA SHEET NO. 11

### TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV      NHTSA No. M20145105  
 Test Program: NCAP MDB Side Impact Test      Test Date: 04/15/14



**LEFT SIDE VIEW**

### MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	495	191	900
2	Occupant H-Point	809	186	1200
3	Mid-Door	844	176	1500
4	Window Sill	1170	78	1800
5	Window Top	1705	23	1050

**DATA SHEET NO. 11 ... (CONTINUED)**

**TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS**

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV NHTSA No. M20145105

Test Program: NCAP MDB Side Impact Test Test Date: 04/15/14

**EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL**

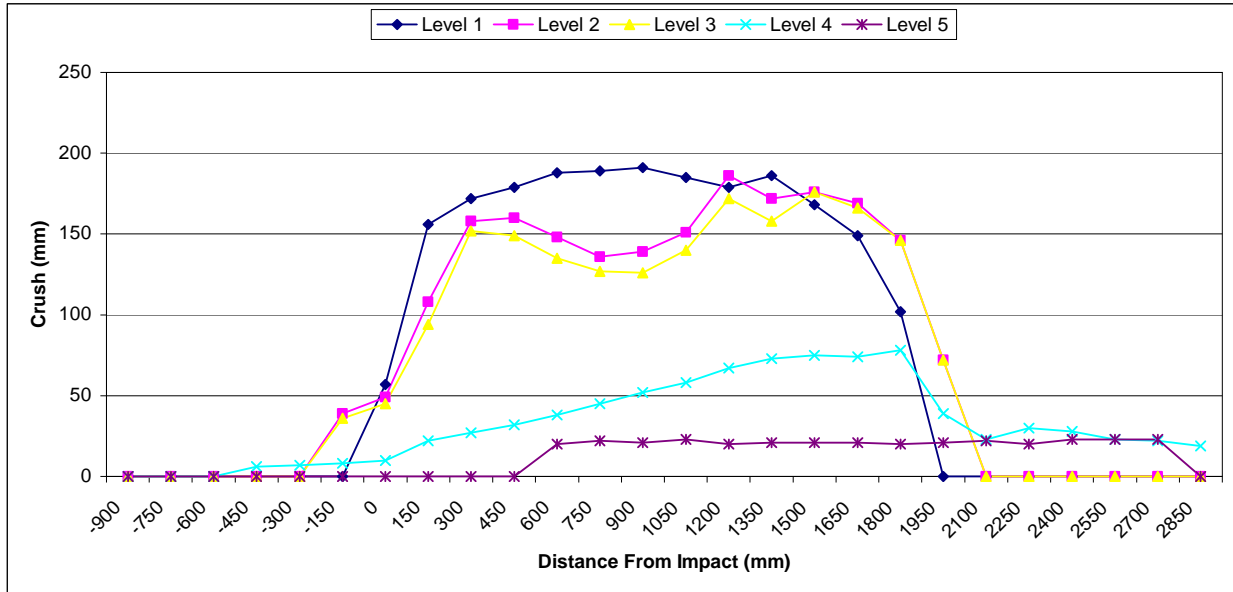
	Pre-Test (mm)					Post-Test (mm)					Difference (mm)				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900															
-750															
-600															
-450				701					707					6	
-300				686					693					7	
-150		538	540	676			577	576	684			39	36	8	
0	583	561	561	662		640	610	606	672		57	49	45	10	
150	615	580	581	654		771	688	675	676		156	108	94	22	
300	617	583	581	644		789	741	733	671		172	158	152	27	
450	620	582	580	640		799	742	729	672		179	160	149	32	
600	617	582	580	635	845	805	730	715	673	865	188	148	135	38	20
750	620	582	580	631	843	809	718	707	676	865	189	136	127	45	22
900	619	582	581	628	844	810	721	707	680	865	191	139	126	52	21
1050	624	583	581	626	843	809	734	721	684	866	185	151	140	58	23
1200	623	586	584	622	846	802	772	756	689	866	179	186	172	67	20
1350	627	588	587	625	846	813	760	745	698	867	186	172	158	73	21
1500	628	593	590	623	847	796	769	766	698	868	168	176	176	75	21
1650	631	594	593	625	848	780	763	759	699	869	149	169	166	74	21
1800	608	575	575	624	850	710	721	721	702	870	102	146	146	78	20
1950		546	543	623	849		618	615	662	870		72	72	39	21
2100				620	849				643	871				23	22
2250				620	851				650	871				30	20
2400				618	851				646	874				28	23
2550				620	853				643	876				23	23
2700				622	854				644	877				22	23
2850				630					649					19	

DATA SHEET NO. 11 ... (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV NHTSA No. M20145105

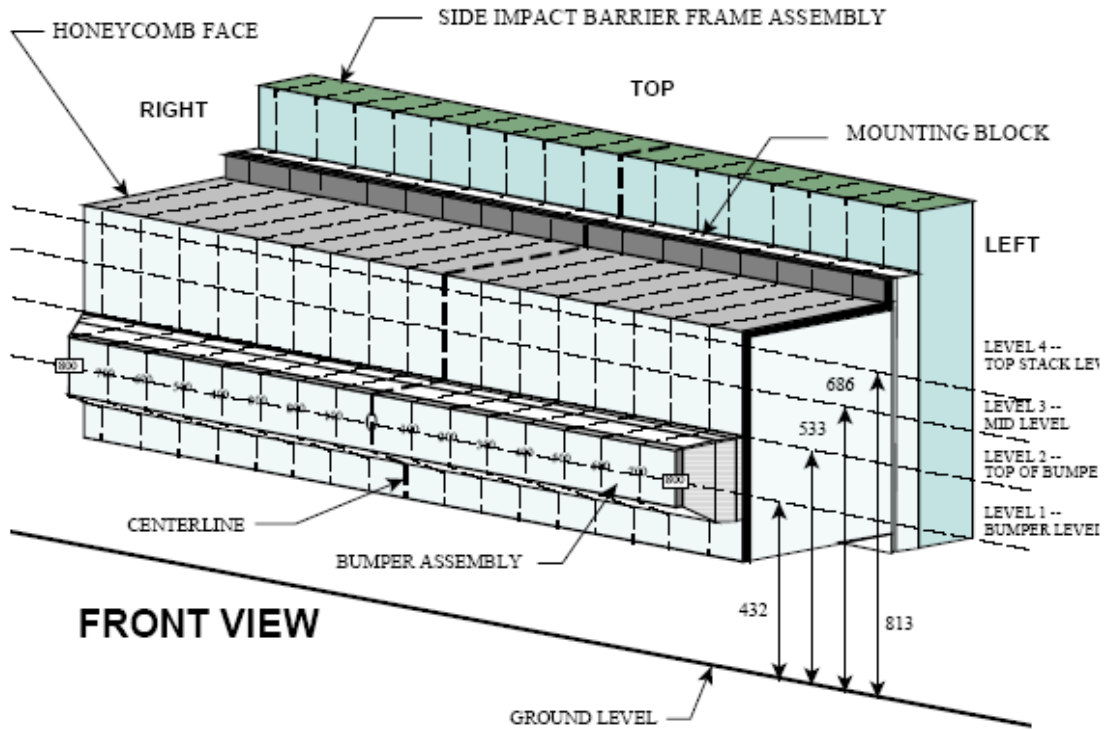
Test Program: NCAP MDB Side Impact Test Test Date: 04/15/14



**DATA SHEET NO. 12**

**MDB EXTERIOR STATIC CRUSH MEASUREMENTS**

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV NHTSA No. M20145105  
 Test Program: NCAP MDB Side Impact Test Test Date: 04/15/14



NOTE: Dimensions are shown in millimeters, mm

**DEFORMABLE BARRIER STATIC CRUSH**

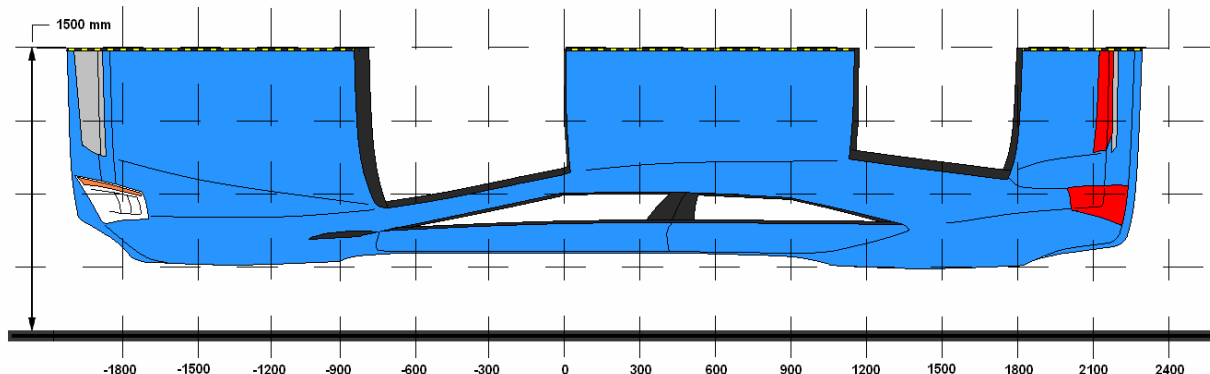
Stack Level	Distance Right of Center								C/L	Distance Left of Center							
	800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
1	209	182	160	149	140	141	138	137	139	125	124	124	123	122	119	120	129
2	237	186	157	170	160	139	129	122	107	97	93	98	107	8	117	126	127
3	232	186	155	139	127	135	135	121	107	97	91	92	92	93	97	101	126
4	247	213	188	159	142	150	181	159	140	122	107	102	109	117	124	142	157

All dimensions in millimeters.

**DATA SHEET NO. 13**

**VEHICLE AND MDB DAMAGE PROFILE DISTANCES**

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV NHTSA No. M20145105  
 Test Program: NCAP MDB Side Impact Test Test Date: 04/15/14



**VEHICLE DAMAGE PROFILE DISTANCES**

DPD	Distance From Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Crush (mm)
1	2850	4	630	649	19
2	2250	4	620	650	30
3	1500	3	590	766	176
4	900	1	619	810	191
5	150	1	615	771	156
6	-450	4	701	707	6

**MDB DAMAGE PROFILE DISTANCES**

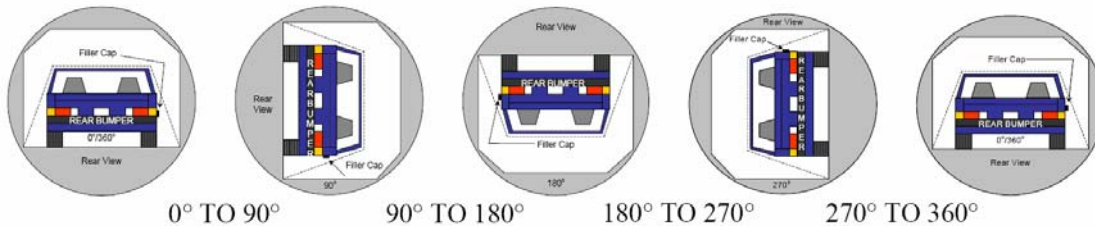
DPD	From MDB Centerline		Level	Crush (mm)
	Distance (mm)	Direction		
1	800	Left	4	157
2	500	Left	1	122
3	200	Left	1	124
4	200	Right	4	181
5	500	Right	2	170
6	800	Right	4	247

**DATA SHEET NO. 14**

**FMVSS NO. 301 STATIC ROLLOVER RESULTS**

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV NHTSA No. M20145105  
 Test Program: NCAP MDB Side Impact Test Test Date: 04/15/14  
 Temperature at Time of Impact: 34.4° C Test Time: 1:04 PM

- A. From impact until vehicle motion ceases: 0 oz.  
(Maximum allowable = 1 oz.)
- B. For the 5 minute period after motion ceases: 0 oz.  
(Maximum allowable = 5 oz.)
- C. For the following 25 minutes: 0 oz.  
(Maximum allowable = 1 oz./minute)
- D. Spillage Details: There was no Stoddard solvent spillage.  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



**SOLVENT COLLECTION TIME TABLE IN SECONDS**

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	83	300	383
90° To 180°	82	300	382
180° To 270°	77	300	377
270° To 360°	81	300	381

**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**

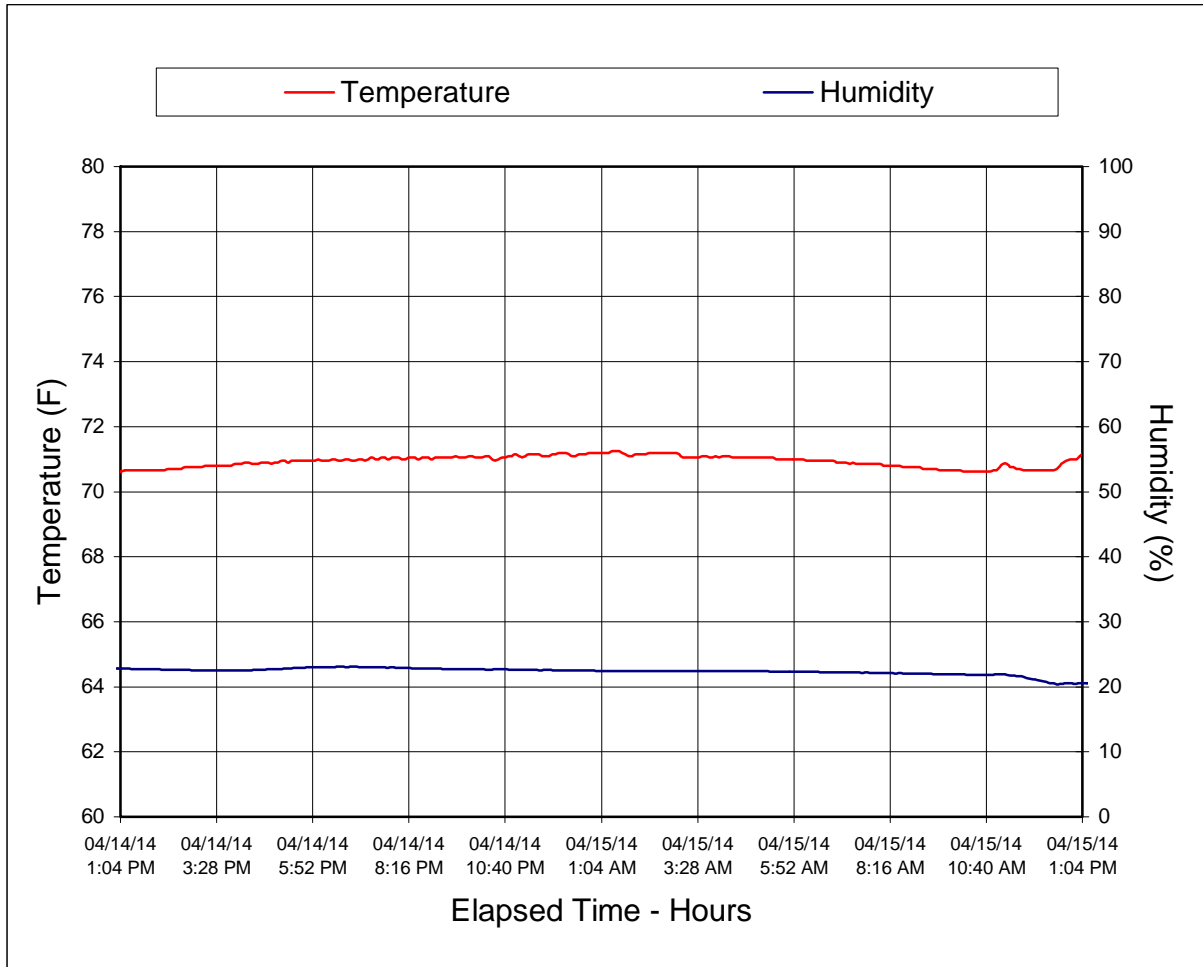
Test Phase	Spillage Location
0° To 90°	N/A
90° To 180°	N/A
180° To 270°	N/A
270° To 360°	N/A

**DATA SHEET NO. 15**

**DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION**

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV NHTSA No. M20145105

Test Program: NCAP MDB Side Impact Test Test Date: 04/15/14



**APPENDIX A  
PHOTOGRAPHS**

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FIGURE 1. As-Delivered Right Front  $\frac{3}{4}$  View of Test Vehicle



FIGURE 2. As-Delivered Left Rear  $\frac{3}{4}$  View of Test Vehicle



FIGURE 3. Pre-Test Frontal View of Test Vehicle



FIGURE 4. Post-Test Frontal View of Test Vehicle



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



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



FIGURE 7. Pre-Test Left Side View of Test Vehicle



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



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



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



FIGURE 11. Pre-Test Rear View of Test Vehicle



FIGURE 12. Post-Test Rear View of Test Vehicle



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



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



FIGURE 15. Pre-Test Overhead View of Test Area



FIGURE 16. Post-Test Overhead View of Test Area



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



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



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



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



FIGURE 21. Pre-Test Left Front Door Latch Close-Up



FIGURE 22. Post-Test Left Front Door Latch Close-Up



FIGURE 23. Pre-Test Left Rear Door Latch Close-Up



FIGURE 24. Post-Test Left Rear Door Latch Close-Up



FIGURE 25. Pre-Test Front Close-Up View of Driver Dummy



FIGURE 26. Post-Test Front Close-Up View of Driver Dummy



FIGURE 27. Pre-Test Left Side View of Driver Dummy  
Showing Belt and Chalking



FIGURE 28. Pre-Test Left Side View of Driver Dummy Shoulder and Door Top View



FIGURE 29. Post-Test Left Side View of Driver Dummy Shoulder and Door Top View



FIGURE 30. Pre-Test Frontal View of Driver Seat Back Prior to Dummy Positioning



FIGURE 31. Pre-Test Frontal View of Driver Dummy Head and Shoulders in Relation to Head Restraint



FIGURE 32. Pre-Test Overhead View of Driver Seat Pan Prior to Dummy Positioning



FIGURE 33. Pre-Test Overhead View of Driver Dummy Thighs on Seat Pan



FIGURE 34. Pre-Test Placement of Driver Dummy's Feet



FIGURE 35. Pre-Test View of Belt Anchorage for Driver Dummy

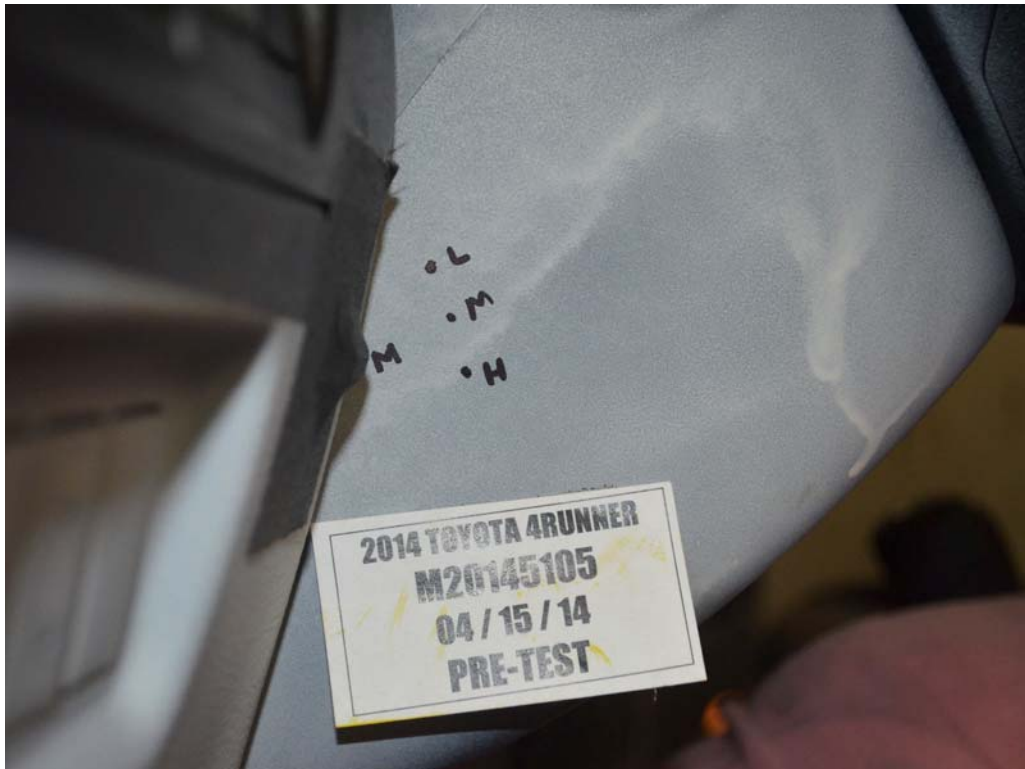


FIGURE 36. Pre-Test Left Side View of Steering Wheel



FIGURE 37. View of Disengaged Parking Brake



FIGURE 38. Pre-Test View of Parking Brake



FIGURE 39. Pre-Test Close-Up Left Side View of Driver Seat Track



FIGURE 40. Pre-Test Close-Up Left Side View of Driver Seat Back



FIGURE 41. Pre-Test Close-Up View of Driver Seat Back or Head Restraint



FIGURE 42. Pre-Test Driver Dummy and Door Clearance View



FIGURE 43. Post-Test Driver Dummy and Door Clearance View



FIGURE 44. Pre-Test Right Side View of Driver Dummy  
and Front Seat Occupant Compartment



FIGURE 45. Post-Test Right Side View of Driver Dummy and Front Seat Occupant Compartment



FIGURE 46. Pre-Test Driver Inner Door Panel View



FIGURE 47. Post-Test Driver Inner Door Panel View  
Showing Driver Dummy Contact Locations



FIGURE 48. Post-Test Driver Dummy Close-Up Head Contact  
with Vehicle Interior View



FIGURE 49. Post-Test Driver Dummy Close-Up Head Contact with Side Airbag View



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



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



FIGURE 52. Post-Test Driver Dummy Close-Up Pelvis Contact with Vehicle Interior View



FIGURE 53. Post-Test Driver Dummy Close-Up Pelvis Contact with Side Airbag View



FIGURE 54. Post-Test Driver Dummy Close-Up Knee Contact View



FIGURE 55. Pre-Test Left Side View of Rear Passenger Dummy Showing Belt and Chalking



FIGURE 56. Pre-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View



FIGURE 57. Post-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View



FIGURE 58. Pre-Test Frontal View of Rear Passenger Seat Back Prior to Dummy Positioning



FIGURE 59. Pre-Test Frontal View of Rear Passenger Dummy  
Head and Shoulders in Relation to Head Restraint



FIGURE 60. Pre-Test Overhead View of Rear Passenger  
Seat Pan Prior to Dummy Positioning



FIGURE 61. Pre-Test Overhead View of Rear Passenger Dummy Thighs on Seat Pan



FIGURE 62. Pre-Test View of Rear Passenger Dummy's Neck  
Showing Position of Adjustable Neck Bracket



FIGURE 63. Pre-Test View of Rear Passenger Dummy's Head  
Showing Dummy's Head is Level



FIGURE 64. Pre-Test Placement of Rear Passenger Dummy's Feet



FIGURE 65. Pre-Test View of Belt Anchorage for Rear Passenger Dummy



FIGURE 66. Pre-Test Close-Up Left Side View of Rear Passenger Seat Track



FIGURE 67. Pre-Test Close-Up Left Side View of Rear Passenger Seat Back



FIGURE 68. Pre-Test Close-Up View of Rear Passenger Seat Back or Head Restraint



FIGURE 69. Pre-Test Rear Passenger Dummy and Door Clearance View



FIGURE 70. Post-Test Rear Passenger Dummy and Door Clearance View



FIGURE 71. Pre-Test Right Side View of Rear Passenger Dummy and Rear Seat of Occupant Compartment



FIGURE 72. Post-Test Right Side View of Rear Passenger Dummy and Rear Seat of Occupant Compartment



FIGURE 73. Pre-Test Rear Passenger Inner Door Panel View



FIGURE 74. Post-Test Rear Passenger Inner Door Panel View  
Showing Rear Passenger Dummy Contact Locations



FIGURE 75. Post-Test Rear Passenger Dummy Close-Up  
Head Contact with Vehicle Interior View



FIGURE 76. Post-Test Rear Passenger Dummy Close-Up  
Head Contact with Side Airbag View

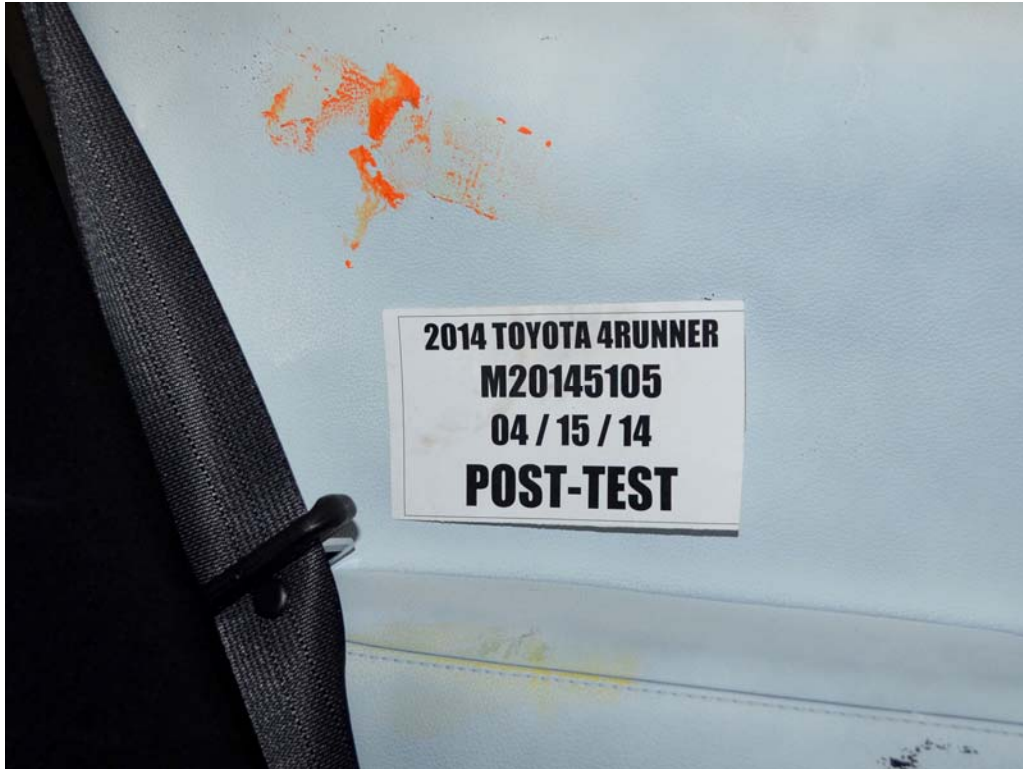


FIGURE 77. Post-Test Rear Passenger Dummy Close-Up  
Torso Contact with Vehicle Interior View

**Photograph Not Applicable**

**Vehicle Not Equipped with  
Rear Passenger Side Airbag**

FIGURE 78. Post-Test Rear Passenger Dummy Close-Up  
Torso Contact with Side Airbag View



FIGURE 79. Post-Test Rear Passenger Dummy Close-Up  
Pelvis Contact with Vehicle Interior View

Photograph Not Applicable

Vehicle Not Equipped with  
Rear Passenger Side Airbag

FIGURE 80. Post-Test Rear Passenger Dummy Close-Up  
Pelvis Contact with Side Airbag View



FIGURE 81. Post-Test Rear Passenger Dummy Close-Up Knee Contact View



FIGURE 82. Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



FIGURE 83. Post-Test View of Fuel Filler Cap or Fuel Filler Neck



FIGURE 84. Pre-Test Front View of MDB Impactor Face



FIGURE 85. Post-Test Front View of MDB Impactor Face

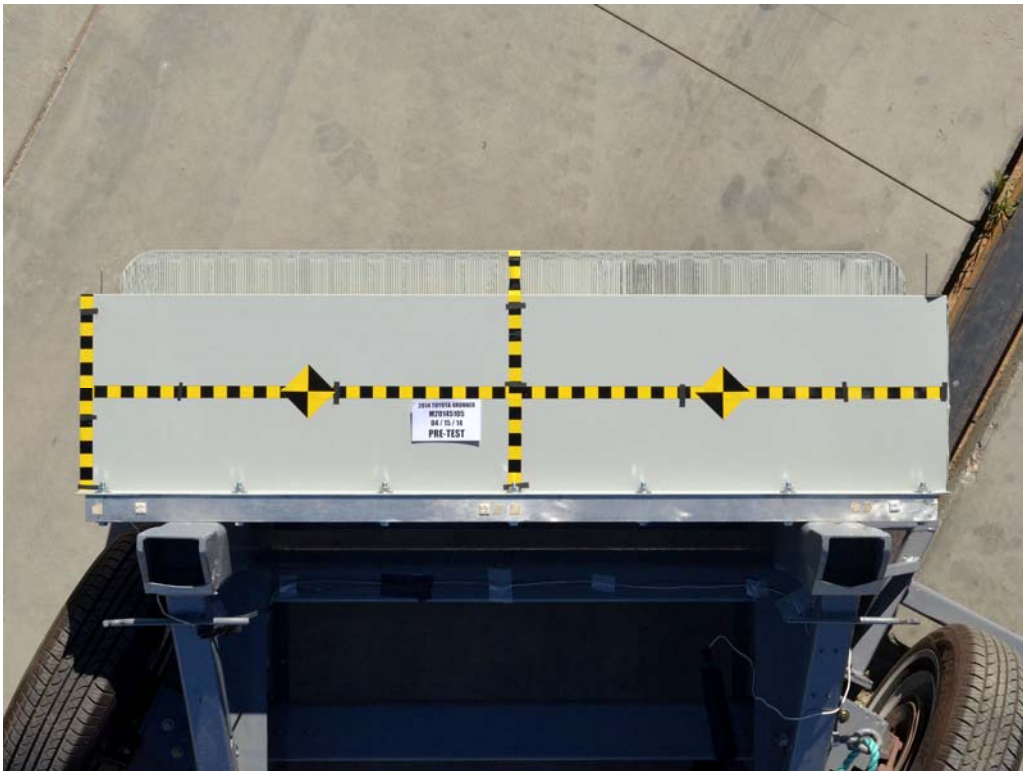


FIGURE 86. Pre-Test Top View of MDB Impactor Face



FIGURE 87. Post-Test Top View of MDB Impactor Face



FIGURE 88. Pre-Test Left Side View of MDB Impactor Face



FIGURE 89. Post-Test Left Side View of MDB Impactor Face



FIGURE 90. Pre-Test Right Side View of MDB Impactor Face



FIGURE 91. Post-Test Right Side View of MDB Impactor Face



FIGURE 92. Close-Up View of Vehicle's Certification Label

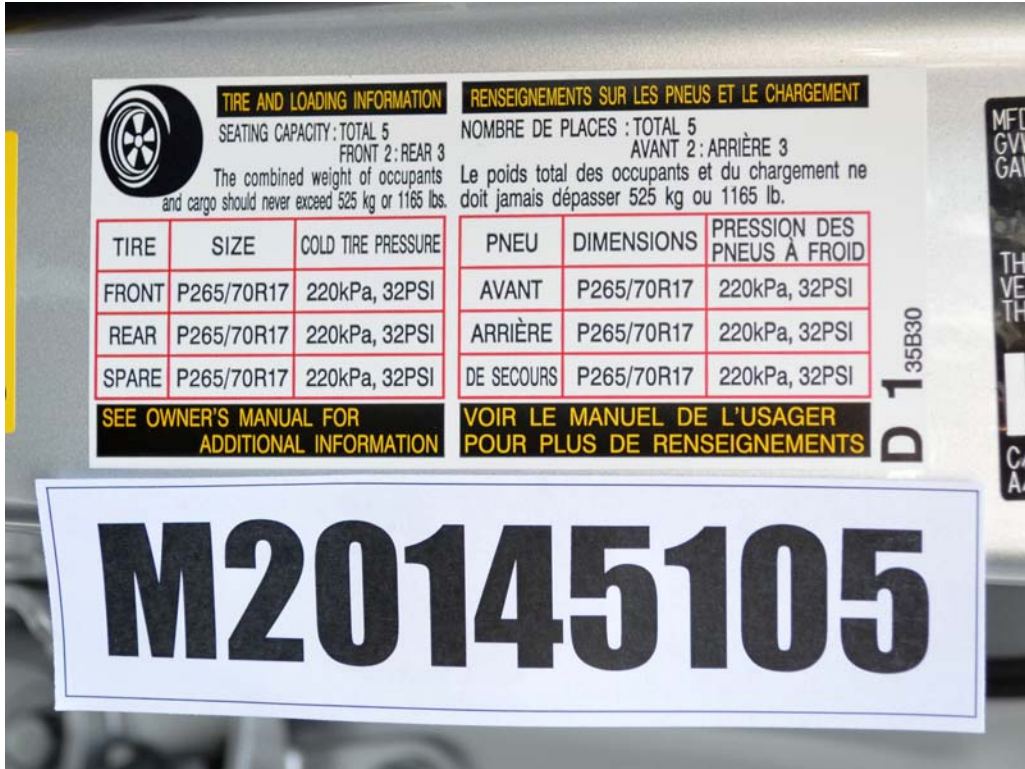


FIGURE 93. Close-Up View of Vehicle's Tire Information Placard or Label



FIGURE 93a. Close-Up View of Vehicle's Reduced Load Carrying Capacity Label



FIGURE 94. Pre-Test Ballast View



FIGURE 95. Post-Test Primary and Redundant Speed Trap Read-Out

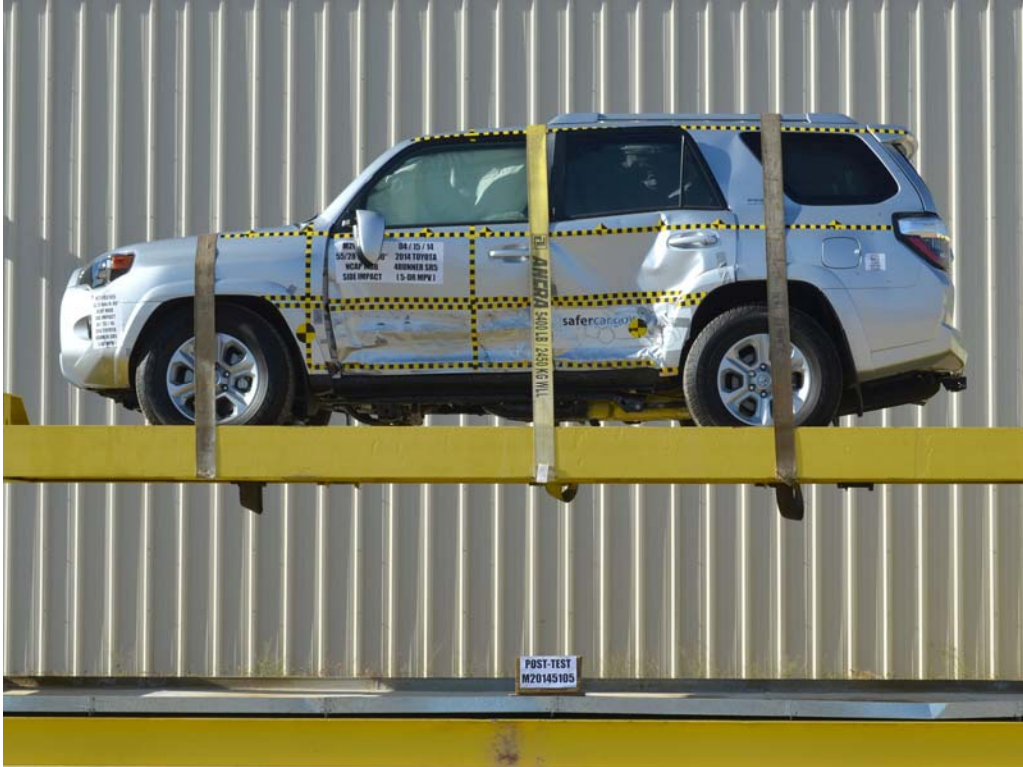


FIGURE 96. FMVSS No. 301 Static Rollover 0 Degrees



FIGURE 97. FMVSS No. 301 Static Rollover 90 Degrees

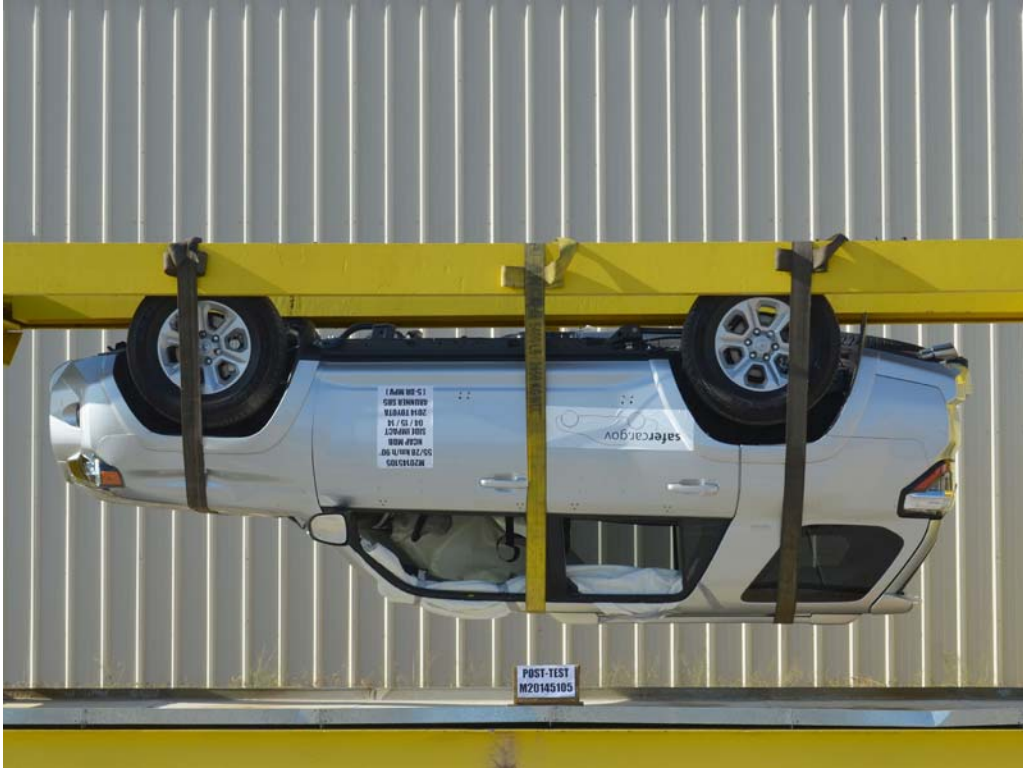


FIGURE 98. FMVSS No. 301 Static Rollover 180 Degrees



FIGURE 99. FMVSS No. 301 Static Rollover 270 Degrees



FIGURE 100. FMVSS No. 301 Static Rollover 360 Degrees



FIGURE 101. Impact Event

**TOYOTA**  
Let's Go Places

DESC: 4RUNNER SRS 4X2 V6  
VIN: JTEZUJ7E5074317  
YR/M/DL: 2014/9/24  
CL: CLASSIC SILVER MET/BLACK/FABR (8177/02)  
PORT/PLANT: Long Beach, CA TAILHEAD

**GOVERNMENT 5-STAR SAFETY RATINGS**

This vehicle has not been rated by the government for overall vehicle score, frontal crash, side crash or rollover risk.

Star ratings range from 1 to 5 stars (★ ★ ★ ★ ★) with 5 being the highest.  
Source: National Highway Traffic Safety Administration (NHTSA)  
www.safercar.gov or 1-888-327-4236

**STANDARD EQUIPMENT**

**MECHANICAL & PERFORMANCE**

- 4.0L DOHC 24-Valve V6 w/Variable Valve Timing
- 5-Speed Auto Transmission w/ECT-4
- Speed-Sensitive Power Steering
- 160-hp Sport Steering Control
- Front and Rear Ventilated Disc Brakes
- Front and Rear Suspension: MacPherson Struts
- 17" Alloy Wheels, P235/65R17 Tires

**SAFETY & CONVENIENCE**

- Star Safety System: Vehicle Stability Control, Traction Control, Anti-Lock Brake System with EBD, Brake Assist and Smart Stop Technology
- Driver and Front Passenger's Advanced Airbag System, TSP (Thorax, Abdomen, Pelvis) Seat-Back Side Airbags, Knee Airbags and Active Headrests
- All-Steel Body with Side Curtain Airbags (LATCH) Lower Anchor & Tether for Children
- Color-Key Burglars, Overriders, Outside Mirrors, Rear Cross-Traffic Alert
- Rear Wiper, Door Handles, All-Steel Lockless Clutch and Shift Rod Shafts
- 160-hp Power Windows w/2-Step Connector
- Front Fog Lamps, Rear Privacy Glass
- Intrusion Headlamps, LED Taillights

**INTERIOR**

- Air Conditioning w/Filter & 2nd-Row Vent
- AM/FM/CD 6.1" In-Rear Touch Screen/USB Bluetooth/MP3/MP4/AUX
- 160-hp Trimmed, 8-Way Power Driver Seat
- 40/20/40 Split, Recline/Auxiliary Fold 2nd-Row
- 17" Telescopic Steering Wheel w/Control
- Control Blade Up Camera w/Integrated Path
- Keyless Entry, Power Folding Rear Window
- Power Door Locks/Window w/Lock Up/Down
- 12 Quadrate Speakers (12 on base model)
- 2 170-RT Cargo Tie & 10W Per Outlets
- Navigation System with Blue Cross-Traffic
- Multi-Zone Climate w/Red, Cruise Monitor, Fuel Consumption, Temperature
- \*\*Fuel Tank of 65gal\*\*

**MANUFACTURER'S SUGGESTED RETAIL PRICE \$32,820.00**

**OPTIONAL EQUIPMENT**

FE 50 State Emissions -545.00  
EE Entune Premium Audio with Navigation and App Suite - Includes The Entune Multimedia Bundle (1.1m High Resolution Touch-Screen with Split Screen Display, AM/FM CD Player, 8 Speakers, Auxiliary Audio Jack, USB 2.0 Port with iPod/iPhone Connectivity and Control, Advanced Voice Recognition, Hands-Free Phone Capability, Phone Book Access and Music Streaming Via Bluetooth) Wireless Technology, HD Radio, HD Pre-tune 1, iPod and Apple iPad/iPhone Connectivity, AM/FM Cable Radio, Select XM Radio w/90 Day Complimentary Trial, and Cradlepoint AllStar Cover Art -500.00  
OR Cargo Cover -154.00  
SA Exhaust Tip -90.00  
Z1 Preferred Accessory Package Carpet Floor Mat/Cargo Mat, Wheel Locks, Cargo Net -359.00

DELIVERY PROCESSING AND HANDLING FEE 860.00

**TOTAL \$34,364.00**

Dealer Name / Address: 06554  
JON ELMER'S CROWN TOYOTA  
1501 KETTERING DRIVE  
ONTARIO, ONTARIO  
L4N 1W1

FIGURE 102. Monroney Label

3-3. Adjusting the seats 139

**Head restraints**

Head restraints are provided for all seats.

**Front seats**

Vertical adjustment

- Up
- Down

Push the head restraint up while pressing the lock release button.

Lock release button

**Second seats**

Vertical adjustment

- Up
- Down

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

Lock release button

Folding the head restraints (vehicle without third row seats)

- To use
- To fold

Lift up the head restraint until it locks.

Push the head restraint lock release lever to fold the head restraint.

140 3-3. Adjusting the seats

**Third seats (vehicle with third row seats)**

- To use
- To fold

Lift up the head restraint until it locks.

Push the strap to fold the head restraint.

Lock release button

**Removing the head restraints (except third row seats)**

Push the head restraint up while pressing the lock release button.

Lock release button

**Installing the head restraints (except third row seats)**

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

Lock release button

**Adjusting the height of the head restraints (except third row seats)**

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

**Adjusting the second center seat head restraint**

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

141 3-3. Adjusting the seats

**CAUTION**

**Head restraint precautions**

- Observe the following precautions regarding the head restraints. Failure to do so may result in death or serious injury.
- Use the head restraints designed for each respective seat.
- Adjust the head restraints to the correct position at all times.
- After adjusting the head restraints, push down on them and make sure they are locked in position.
- Do not drive with the head restraints removed.

FIGURE 103. Driver Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

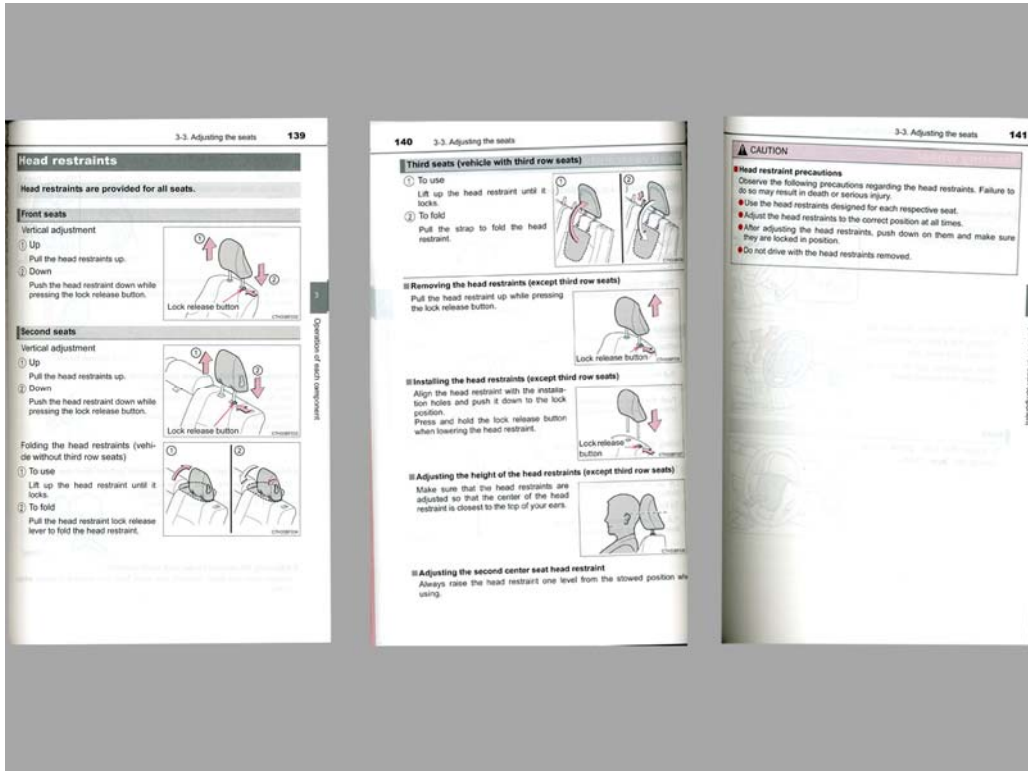


FIGURE 104. Left Rear Passenger Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

**APPENDIX B**  
**DUMMY RESPONSE DATA**

## TABLE OF DATA PLOTS

Plot		Page
1	Driver Head Acceleration (X) Primary vs. Time	B-1
2	Driver Head Acceleration (Y) Primary vs. Time	B-1
3	Driver Head Acceleration (Z) Primary vs. Time	B-1
4	Driver Head Resultant Acceleration Primary vs. Time	B-1
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7	Driver Lower Thorax Rib Deflection (Y) vs. Time	B-2
8	Driver Thorax Rib Deflection Maximum vs. Time	B-2
9	Driver Anterior Abdominal Force (Y) vs. Time	B-3
10	Driver Middle Abdominal Force (Y) vs. Time	B-3
11	Driver Posterior Abdominal Force (Y) vs. Time	B-3
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13	Driver Pubic Symphysis Force (Y) vs. Time	B-4
14	Passenger Head Acceleration (X) vs. Time Primary	B-5
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16	Passenger Head Acceleration (Z) vs. Time Primary	B-5
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19	Passenger Lower Spine T12 Acceleration (Y) vs. Time	B-6
20	Passenger Lower Spine T12 Acceleration (Z) vs. Time	B-6
21	Passenger Lower Spine T12 Resultant Acceleration vs. Time	B-6
22	Passenger Iliac Force on Impact Side (Y) vs. Time	B-7
23	Passenger Acetabulum Force on Impact Side (Y) vs. Time	B-7
24	Passenger Total Pelvic Force on Impact Side (Y) vs. Time	B-7

**The following additional data for this test can be obtained from the Research and Development section of the NHTSA website ([www.NHTSA.dot.gov](http://www.NHTSA.dot.gov))**

### Additional Driver & Passenger Dummy Instrumentation Data

Driver Lower Spine T12 Acceleration (X)  
Driver Lower Spine T12 Acceleration (Y)  
Driver Lower Spine T12 Acceleration (Z)  
Passenger Upper Thorax Rib Deflection (Y)  
Passenger Middle Thorax Rib Deflection (Y)  
Passenger Lower Thorax Rib Deflection (Y)

Passenger Upper Abdomen Rib Deflection (Y)  
Passenger Lower Abdomen Rib Deflection (Y)  
Driver Head Acceleration Redundant (X)  
Driver Head Acceleration Redundant (Y)  
Driver Head Acceleration Redundant (Z)  
Passenger Head Acceleration Redundant (X)  
Passenger Head Acceleration Redundant (Y)  
Passenger Head Acceleration Redundant (Z)

### **Vehicle Instrumentation Data**

Vehicle Center of Gravity Acceleration (X)  
Vehicle Center of Gravity Acceleration (Y)  
Vehicle Center of Gravity Acceleration (Z)  
Right Side Sill at Front Seat Acceleration (X)  
Right Side Sill at Front Seat Acceleration (Y)  
Right Side Sill at Front Seat Acceleration (Z)  
Right Side Sill at Rear Seat Acceleration (X)  
Right Side Sill at Rear Seat Acceleration (Y)  
Right Side Sill at Rear Seat Acceleration (Z)  
Left Side Sill at Front Seat Acceleration (Y)  
Left Side Sill at Rear Seat Acceleration (Y)  
Lower A-Post Acceleration (Y)  
Middle A-Post Acceleration (Y)  
Lower B-Post Acceleration (Y)  
Middle B-Post Acceleration (Y)  
Front Seat Track Acceleration (Y)  
Rear Seat Structure Acceleration (Y)  
Right Rear Occupant Compartment Acceleration (Y)  
Engine Block (X)  
Engine Block (Y)  
Rear Floorpan Above Axle Acceleration (X)  
Rear Floorpan Above Axle Acceleration (Y)  
Rear Floorpan Above Axle Acceleration (Z)

### **MDB Instrumentation Data**

MDB Center of Gravity Acceleration (X)

MDB Center of Gravity Acceleration (Y)

MDB Center of Gravity Acceleration (Z)

MDB Rear Acceleration (X)

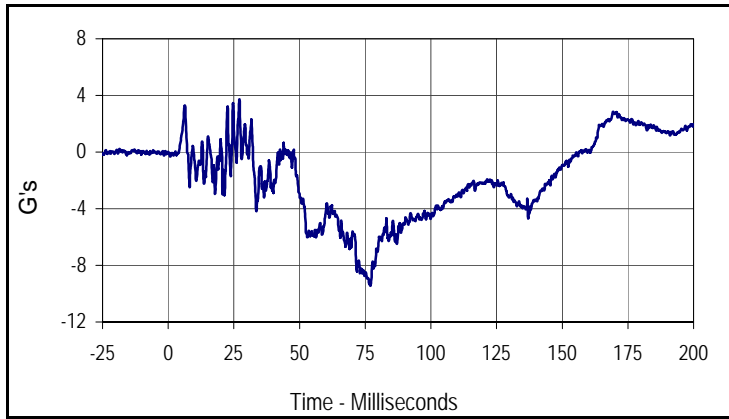
MDB Rear Acceleration (Y)

Left MDB Contact Switch

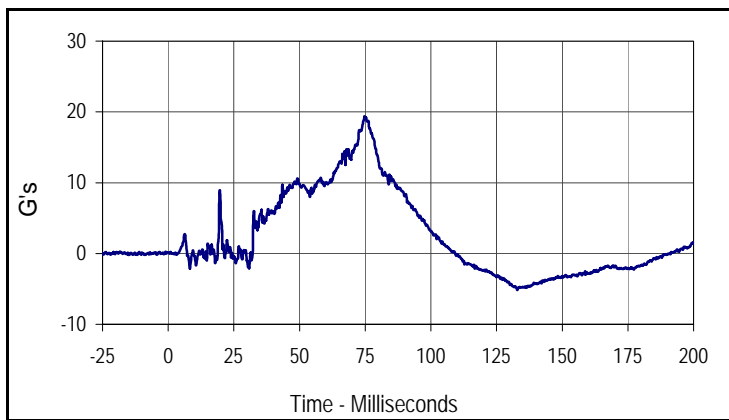
Right MDB Contact Switch

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV  
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

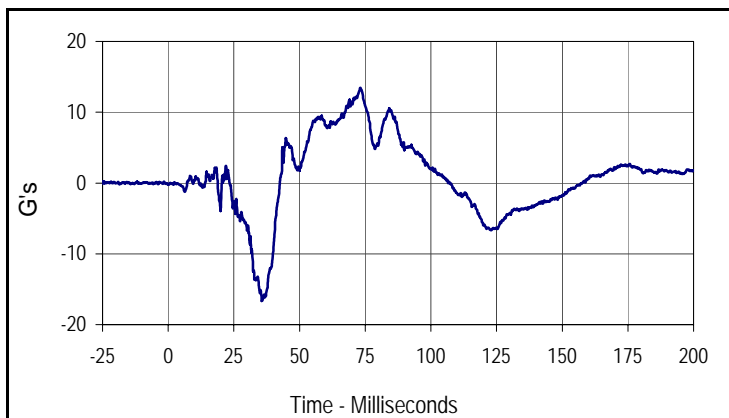
NHTSA No.: M20145105  
 Test Date: 4/15/14



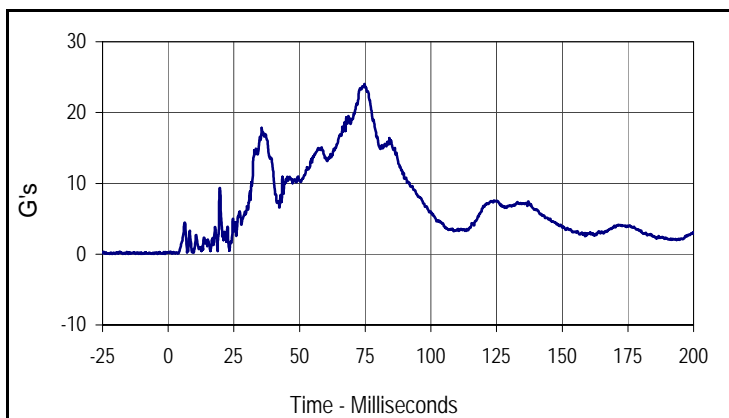
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Driver Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
3.7	27.1	-9.4	77.0



Curve Description			
Driver Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
19.4	74.8	-5.2	132.9



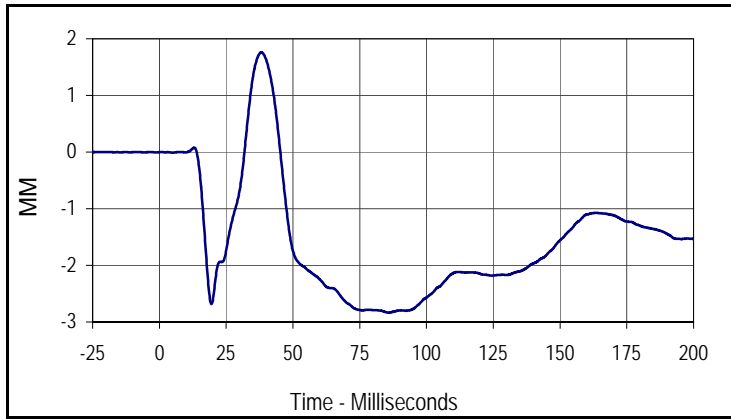
Curve Description			
Driver Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
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Max	Time	Min	Time
13.4	73.2	-16.7	35.7



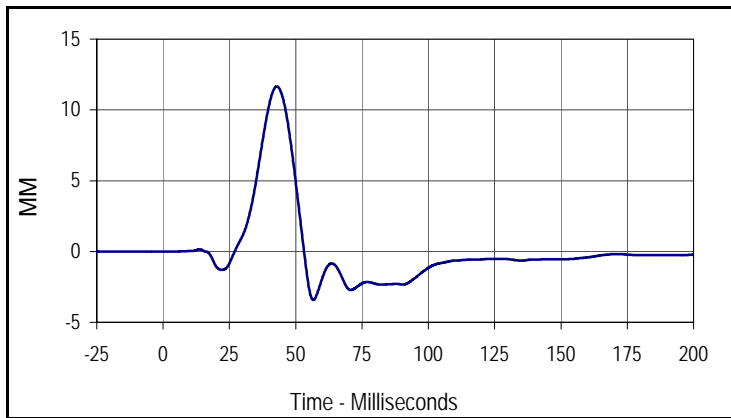
Curve Description			
Driver Head Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
004	RES	1000	G's
Max	Time	Min	Time
24.0	74.8	0.1	1.7

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV  
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

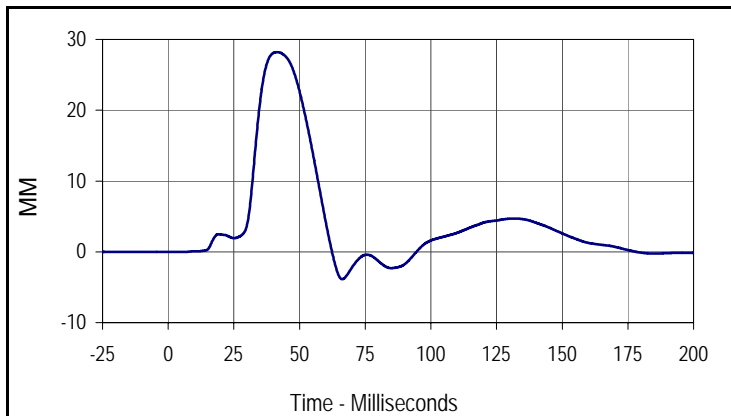
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 Test Date: 4/15/14



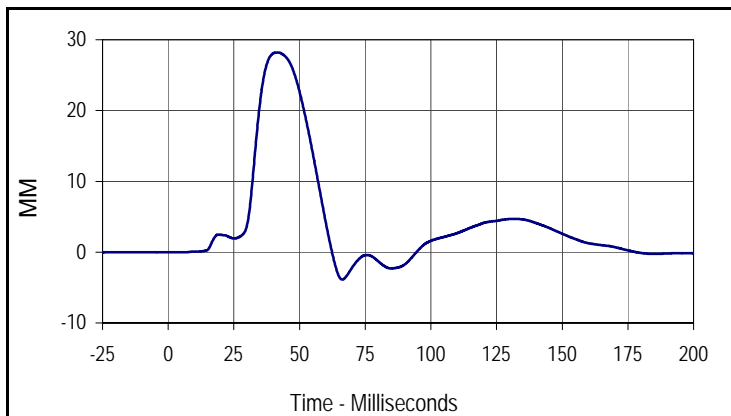
Curve Description			
Driver Upper Thorax Rib Deflection Y			
Plot No.	Type	SAE Class	Units
005	FIL	180	MM
Max	Time	Min	Time
1.8	38.2	-2.8	86.0



Curve Description			
Driver Middle Thorax Rib Deflection Y			
Plot No.	Type	SAE Class	Units
006	FIL	180	MM
Max	Time	Min	Time
11.7	42.9	-3.4	56.6



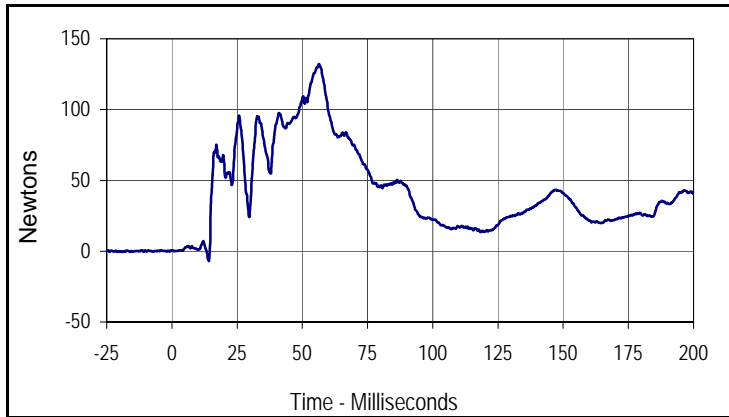
Curve Description			
Driver Lower Thorax Rib Deflection Y			
Plot No.	Type	SAE Class	Units
007	FIL	180	MM
Max	Time	Min	Time
28.2	41.5	-3.9	66.3



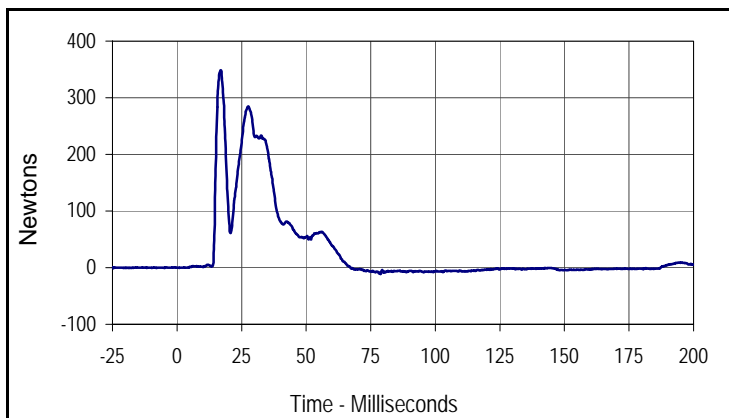
Curve Description			
Driver Thorax Rib Deflection Maximum			
Plot No.	Type	SAE Class	Units
010	FIL	180	MM
Max	Time	Min	Time
28.2	41.5	-3.9	66.3

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV  
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

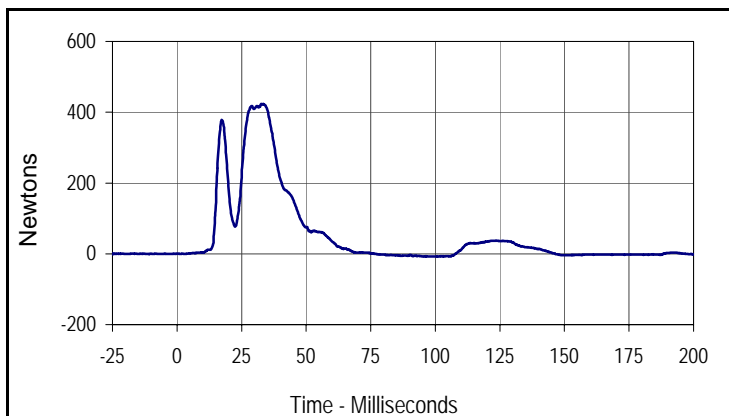
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 Test Date: 4/15/14



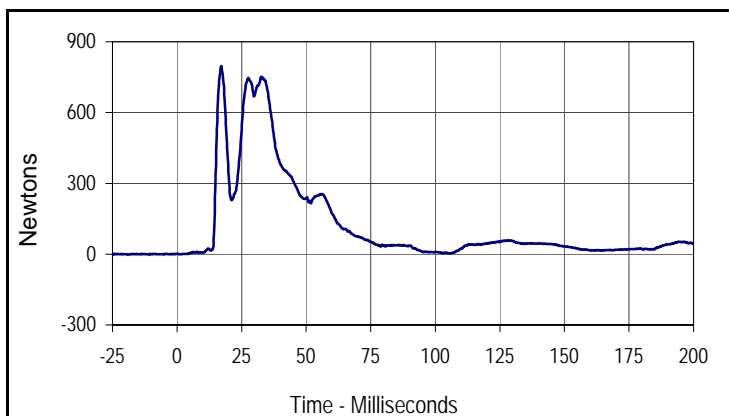
Curve Description			
Driver Anterior Abdominal Force Y			
Plot No.	Type	SAE Class	Units
008	FIL	600	Newtons
Max	Time	Min	Time
132.0	56.3	-7.0	14.2



Curve Description			
Driver Middle Abdominal Force Y			
Plot No.	Type	SAE Class	Units
009	FIL	600	Newtons
Max	Time	Min	Time
348.3	16.9	-11.2	78.7



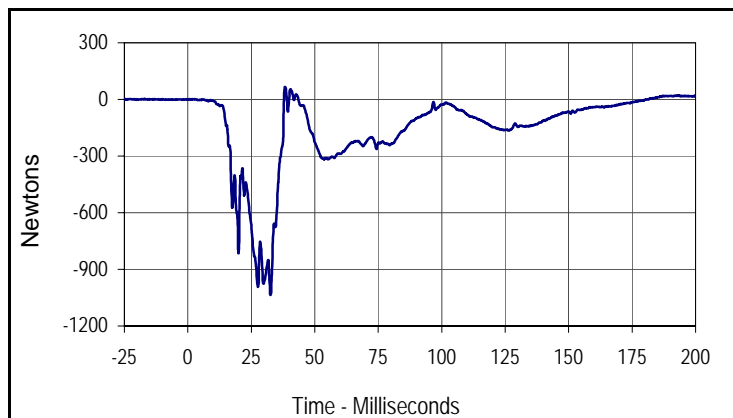
Curve Description			
Driver Posterior Abdominal Force Y			
Plot No.	Type	SAE Class	Units
011	FIL	600	Newtons
Max	Time	Min	Time
423.3	32.6	-7.9	98.7



Curve Description			
Driver Total Abdominal Force			
Plot No.	Type	SAE Class	Units
012	SUM	600	Newtons
Max	Time	Min	Time
796.9	17.1	-0.7	0.9

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV  
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

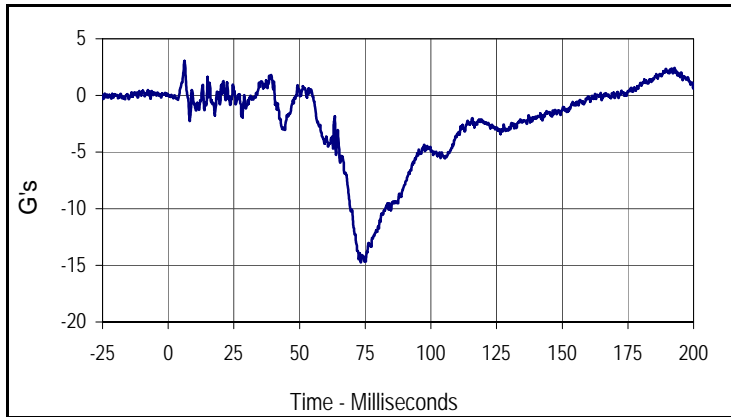
NHTSA No.: M20145105  
 Test Date: 4/15/14



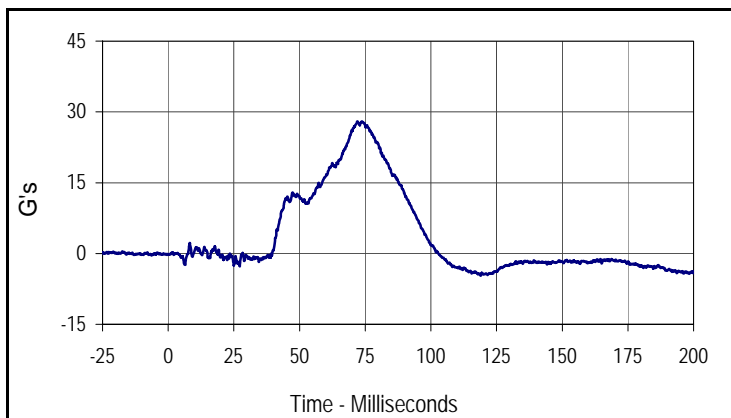
Curve Description			
Driver Pubic Symphysis Force Y			
Plot No.	Type	SAE Class	Units
013	FIL	600	Newtons
Max	Time	Min	Time
66.9	38.2	-1035.2	32.6

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV  
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

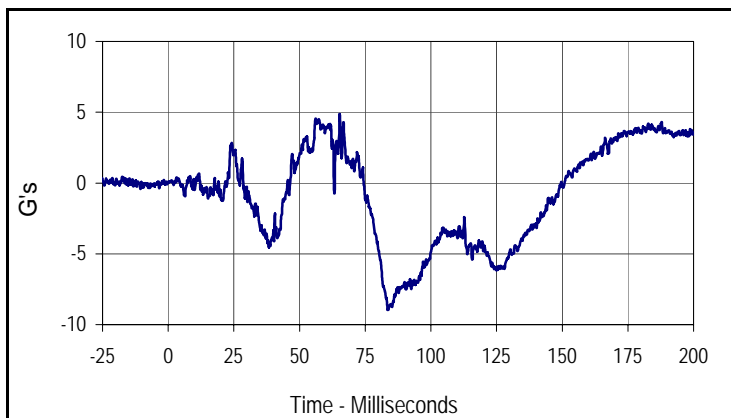
NHTSA No.: M20145105  
 Test Date: 4/15/14



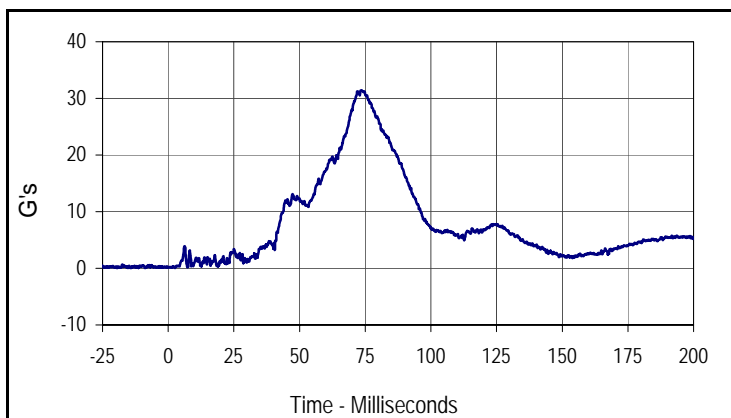
Curve Description			
Passenger Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
014	FIL	1000	G's
Max	Time	Min	Time
3.1	6.2	-14.8	73.3



Curve Description			
Passenger Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
015	FIL	1000	G's
Max	Time	Min	Time
28.0	72.0	-4.7	119.0



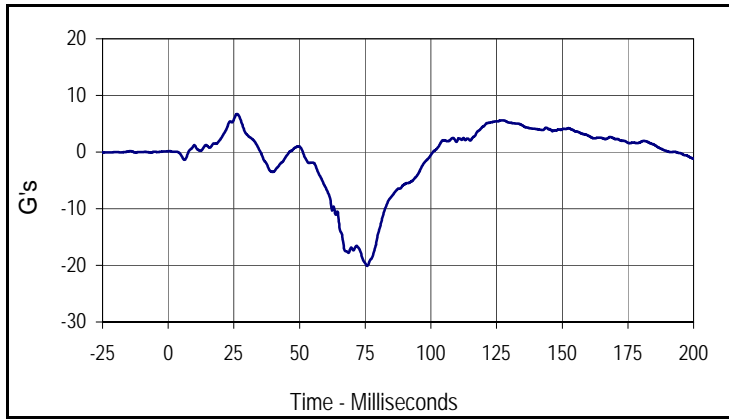
Curve Description			
Passenger Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
016	FIL	1000	G's
Max	Time	Min	Time
4.9	65.3	-9.0	83.8



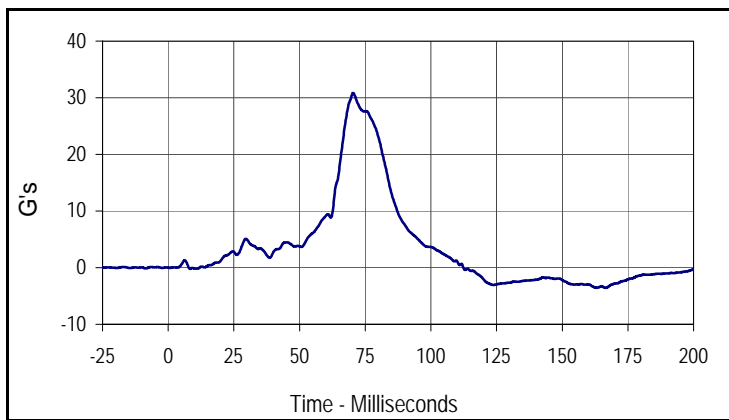
Curve Description			
Passenger Head Acceleration Resultant Primary			
Plot No.	Type	SAE Class	Units
017	RES	1000	G's
Max	Time	Min	Time
31.4	73.3	0.1	2.6

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV  
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

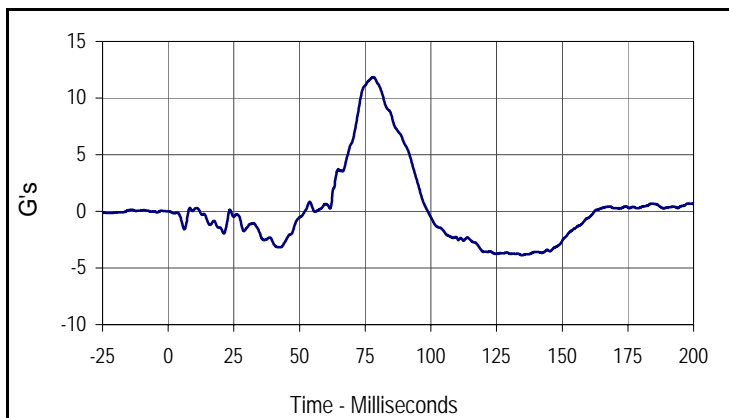
NHTSA No.: M20145105  
 Test Date: 4/15/14



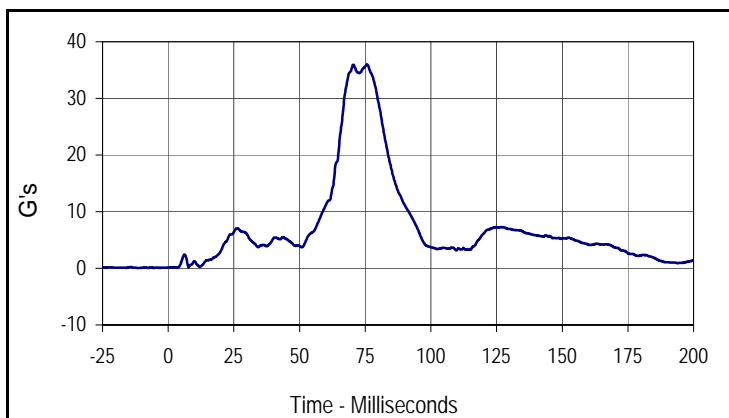
Curve Description			
Passenger Lower Spine T12 Acceleration X			
Plot No.	Type	SAE Class	Units
019	FIL	180	G's
Max	Time	Min	Time
6.7	26.2	-20.1	75.8



Curve Description			
Passenger Lower Spine T12 Acceleration Y			
Plot No.	Type	SAE Class	Units
020	FIL	180	G's
Max	Time	Min	Time
30.8	70.4	-3.6	166.5



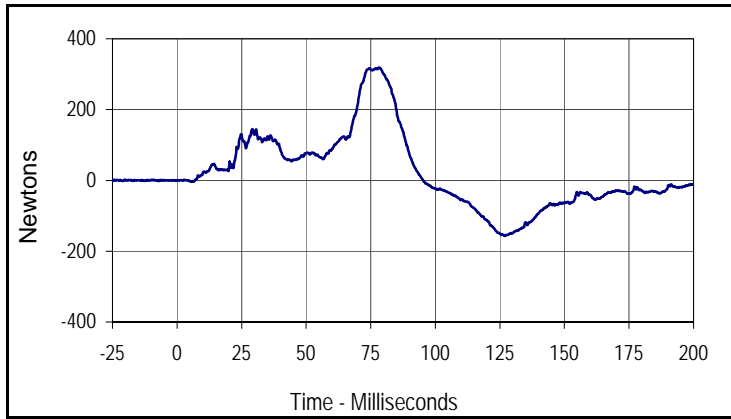
Curve Description			
Passenger Lower Spine T12 Acceleration Z			
Plot No.	Type	SAE Class	Units
021	FIL	180	G's
Max	Time	Min	Time
11.8	78.2	-3.9	134.7



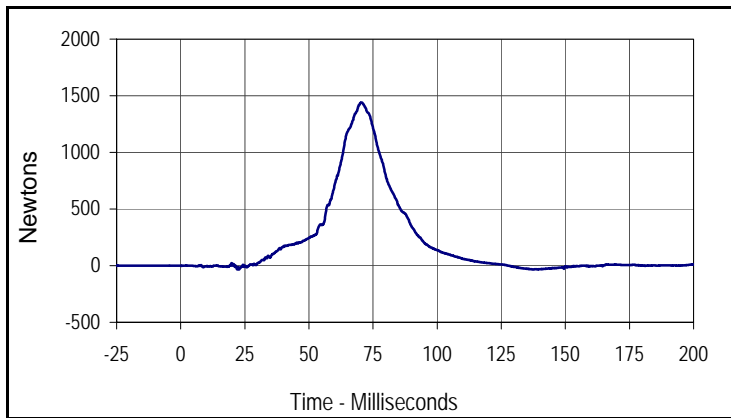
Curve Description			
Passenger Lower Spine T12 Acceleration Resultant			
Plot No.	Type	SAE Class	Units
022	RES	180	G's
Max	Time	Min	Time
36.0	75.7	0.1	1.3

Test Vehicle: 2014 Toyota 4Runner SR5 5-Door MPV  
 Test Program: 61 km/h (38 mph) Side Impact NCAP 27° Moving Deformable Barrier Test

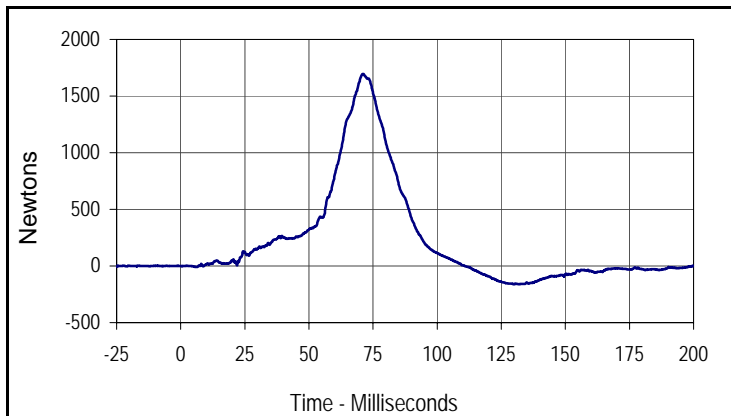
NHTSA No.: M20145105  
 Test Date: 4/15/14



Curve Description			
Passenger Iliac Wing Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
023	FIL	600	Newtons
Max	Time	Min	Time
318.6	78.2	-156.8	126.8



Curve Description			
Passenger Acetabulum Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
024	FIL	600	Newtons
Max	Time	Min	Time
1439.9	70.6	-35.1	22.0



Curve Description			
Passenger Total Pelvic Force			
Plot No.	Type	SAE Class	Units
018	SUM	600	Newtons
Max	Time	Min	Time
1694.3	71.1	-162.0	131.9

**APPENDIX C**  
**DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA**

**APPENDIX C**  
**PRE-TEST / ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA**

Test Program: ES2re External Measurements

Test Date: 4/10/14



ATD Serial No.: F037

Test I.D.: N/A

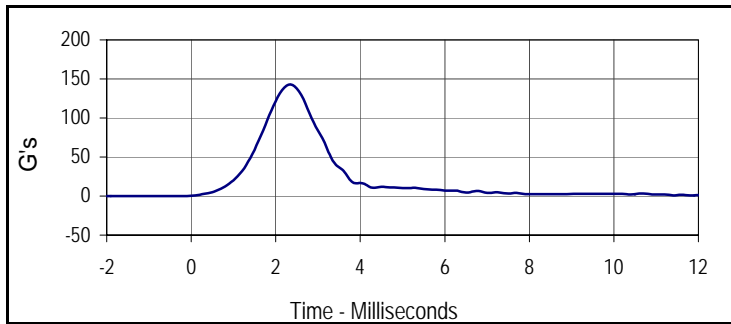
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	30.0	Pass
1 Sitting Height	mm	900 - 918	909	Pass
2 Seat to Shoulder Joint	mm	558 - 572	564	Pass
3 Seat to Lower Face of Thoracic Spine Box	mm	346 - 356	350	Pass
4 Seat to Hip Joint (Center of Bolt)	mm	97 - 103	99	Pass
5 Sole to Seat, Sitting	mm	333 - 451	395	Pass
6 Head Width	mm	152 - 158	156	Pass
7 Shoulder / Arm Width	mm	461 - 479	470	Pass
8 Thorax Width	mm	322 - 332	326	Pass
9 Abdomen Width	mm	273 - 287	280	Pass
10 Pelvis Lap Width	mm	359 - 373	363	Pass
11 Head Depth	mm	196 - 206	201	Pass
12 Thorax Depth	mm	262 - 272	270	Pass
13 Abdomen Width	mm	194 - 204	199	Pass
14 Pelvis Depth	mm	235 - 245	240	Pass
15 Back of Buttocks to Hip Joint (Center of Bolt)	mm	150 - 160	155	Pass
16 Back of Buttocks to Front Knee	mm	597 - 615	608	Pass
Overall Test Results				Pass

Test Program: ES2re Head Drop Test  
 ATD Serial No.: F037

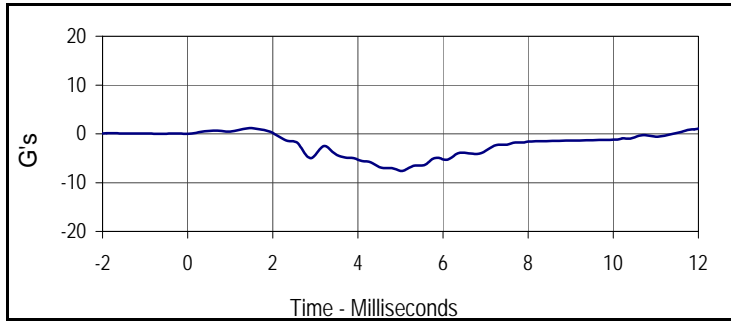
Test Date: 4/10/14  
 Test I.D.: F037HD057



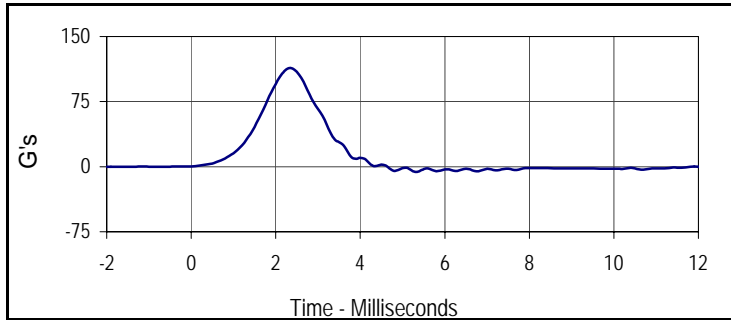
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	280	Pass
Temperature During Soak	Max	20.6 to 22.2	22.1	Pass
	Min		21.5	Pass
Humidity During Soak	Max	10.0 to 70.0	29.6	Pass
	Min		27.2	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	22.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	27.6	Pass
Peak Head Resultant Acceleration	G's	125 to 155	142.7	Pass
Peak Head X Acceleration	G's	≤15	7.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	7.4	Pass
<b>Overall Test Results</b>				<b>Pass</b>



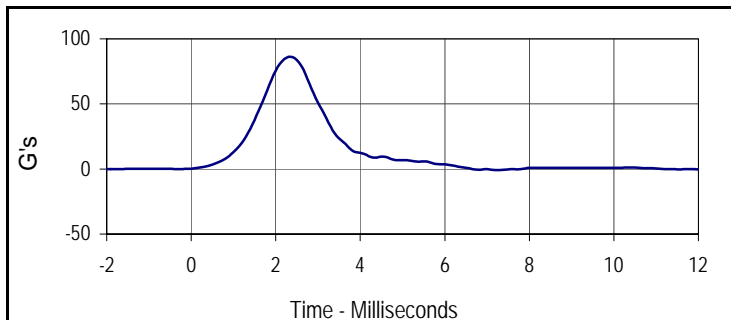
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
142.7	2.3	0.1	-2.0



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
1.2	1.5	-7.6	5.0



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
113.6	2.3	-5.9	5.3



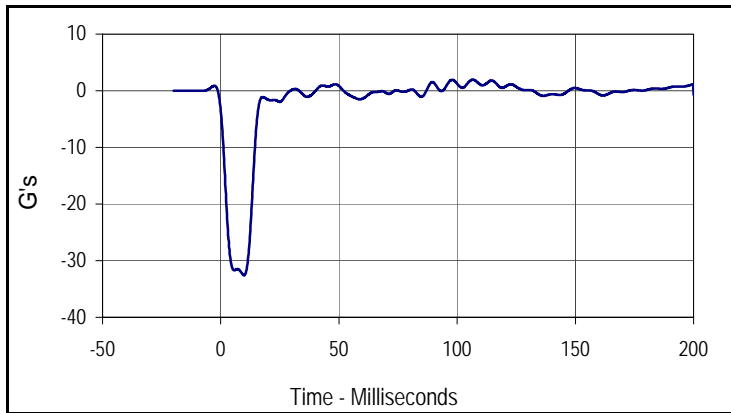
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
86.2	2.3	-0.9	7.2

Test Program: ES2re Neck Flexion Test  
 ATD Serial No.: F037

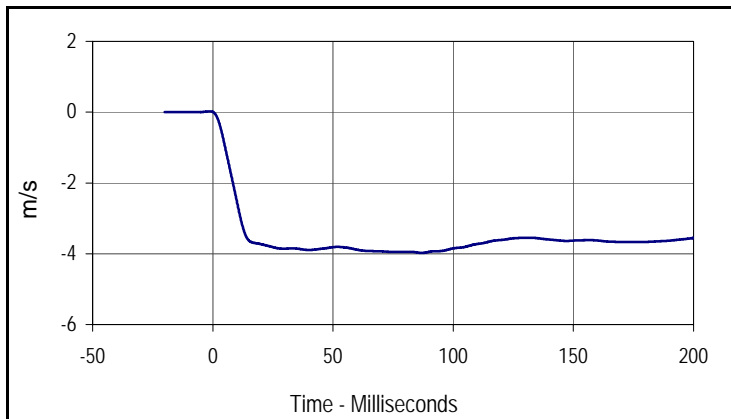
Test Date: 4/10/14  
 Test I.D.: F037NB057



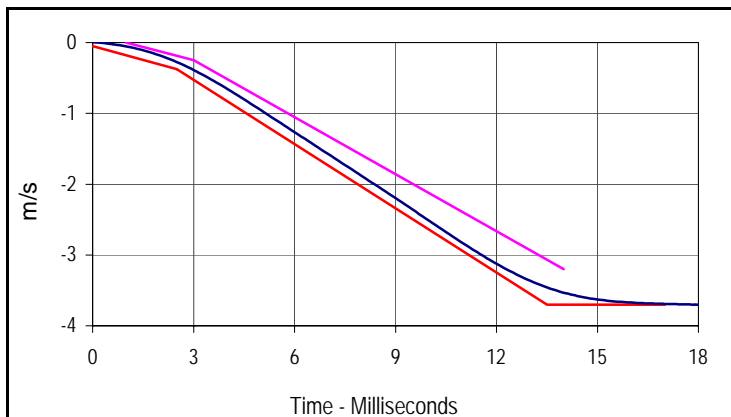
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	315	Pass
Temperature During Soak	Max	20.6 to 22.2	22.1	Pass
	Min		21.5	Pass
Humidity During Soak	Max	10.0 to 70.0	29.6	Pass
	Min		27.2	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.8	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	27.2	Pass
Pendulum Velocity	m/s	3.3 to 3.5	3.41	Pass
Headform Flexion	Max	49 to 59	54.7	Pass
	Time	54 to 66	55.3	Pass
Headform Flexion Decay (Peak to Zero)	msec	53 to 88	62.6	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
2.0	106.6	-32.6	9.8



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.3	-4.0	87.0



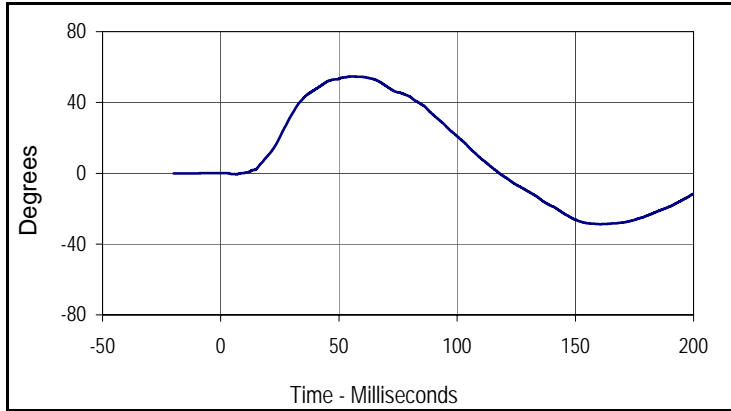
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.3	-4.0	87.0

Velocity Corridors

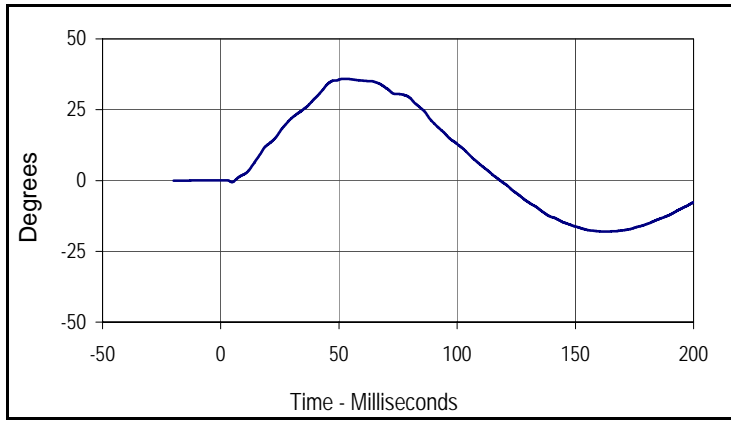
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.0	-0.03	2.5	-0.375
14.0	-3.20	13.5	-3.70
		17.0	-3.70

Test Program: ES2re Neck Flexion Test  
 ATD Serial No.: F037

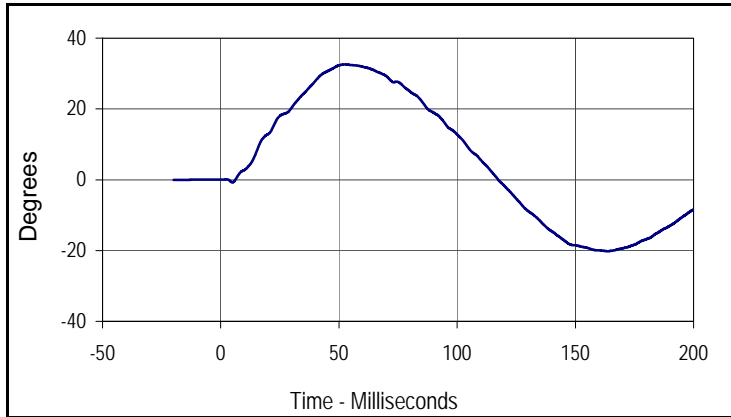
Test Date: 4/10/14  
 Test I.D.: F037NB057



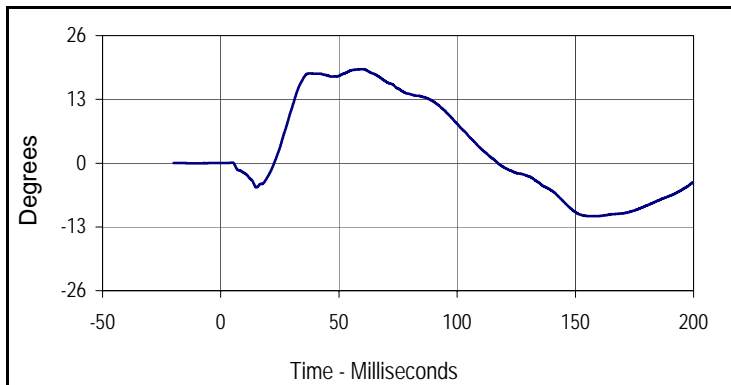
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
54.7	55.3	-28.8	160.5



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
35.9	51.5	-18.0	163.0



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
32.6	52.4	-20.2	163.6



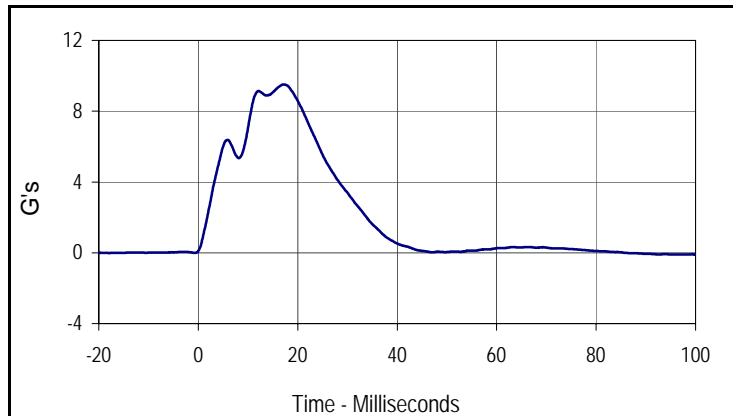
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
19.1	60.1	-10.8	159.5

Test Program: ES2re Shoulder Impact Test  
 ATD Serial No.: F037

Test Date: 4/10/14  
 Test I.D.: F037SH057



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	380	Pass
Temperature During Soak	Max	20.6 to 22.2	22.1	Pass
	Min		21.5	Pass
Humidity During Soak	Max	10.0 to 70.0	29.6	Pass
	Min		27.2	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.7	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	27.4	Pass
Pendulum Speed	m/s	4.2 to 4.4	4.29	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	9.5	Pass
Overall Test Results				Pass



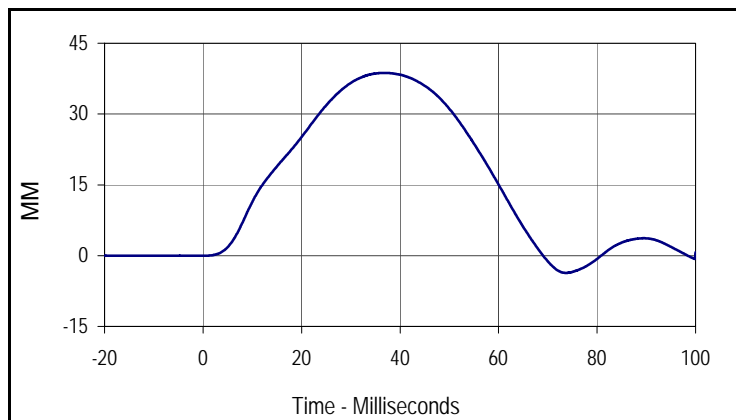
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
9.5	17.2	-0.1	92.6

Test Program: ES2re Thorax - Rib Drop Test  
 ATD Serial No.: F037 Rib # 1

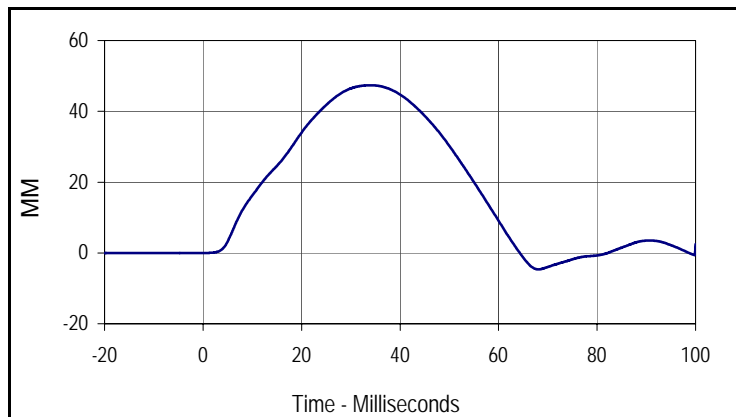
Test Date: 4/10/14  
 Test I.D.: F037RB1057



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	435	Pass
Temperature During Soak	Max	20.6 to 22.2	22.1	Pass
	Min		21.5	Pass
Humidity During Soak	Max	10.0 to 70.0	29.6	Pass
	Min		27.2	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.7	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	27.4	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	38.7	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	47.4	Pass
Overall Test Results				Pass



Curve Description			
Upper Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
38.7	36.9	-3.7	73.7



Curve Description			
Upper Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
47.4	34.0	-4.6	68.1

Test Program: ES2re Thorax - Rib Drop Test

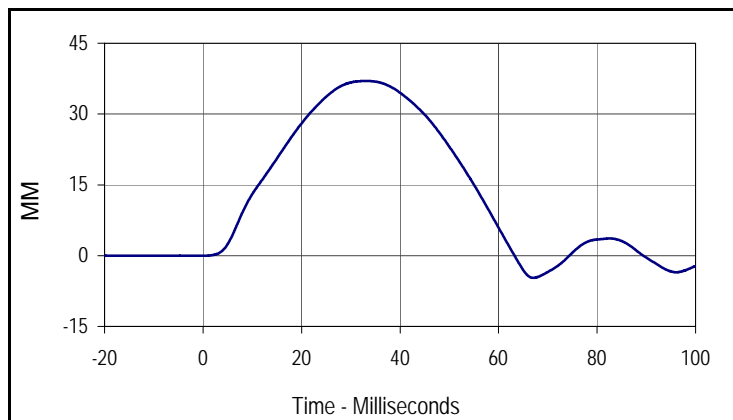
Test Date: 4/10/14



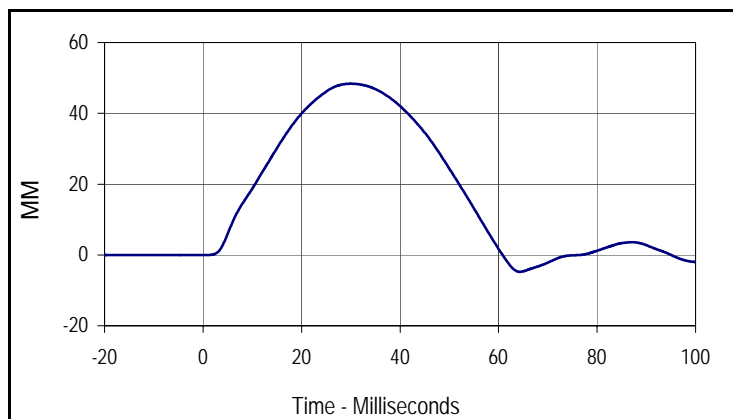
ATD Serial No.: F037 Rib # 2

Test I.D.: F037RB2057

Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	480	Pass
Temperature During Soak	Max	20.6 to 22.2	22.1	Pass
	Min		21.5	Pass
Humidity During Soak	Max	10.0 to 70.0	29.6	Pass
	Min		27.2	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.7	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	27.4	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	37.0	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	48.4	Pass
Overall Test Results				Pass



Curve Description			
Middle Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
37.0	33.0	-4.7	67.1



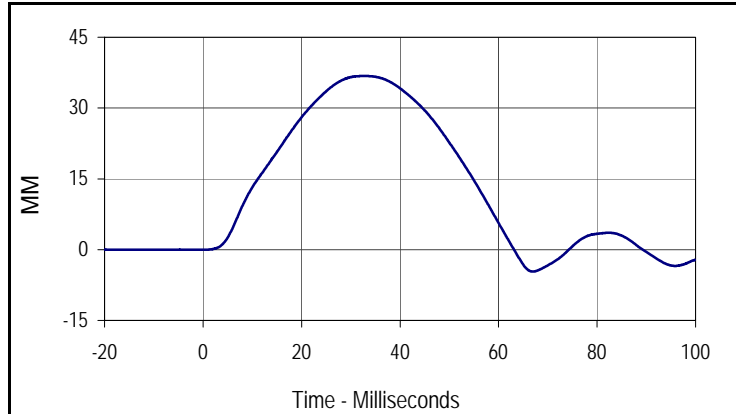
Curve Description			
Middle Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
48.4	30.1	-4.8	64.3

Test Program: ES2re Thorax - Rib Drop Test  
 ATD Serial No.: F037 Rib # 3

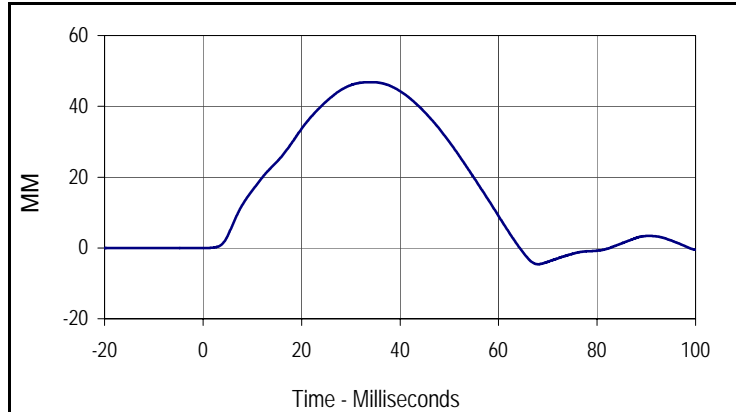
Test Date: 4/10/14  
 Test I.D.: F037RB3057



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	525	Pass
Temperature During Soak	Max	20.6 to 22.2	22.1	Pass
	Min		21.5	Pass
Humidity During Soak	Max	10.0 to 70.0	29.6	Pass
	Min		27.2	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.6	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	27.5	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	36.8	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	46.8	Pass
Overall Test Results				Pass



Curve Description			
Lower Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
36.8	32.8	-4.7	66.9



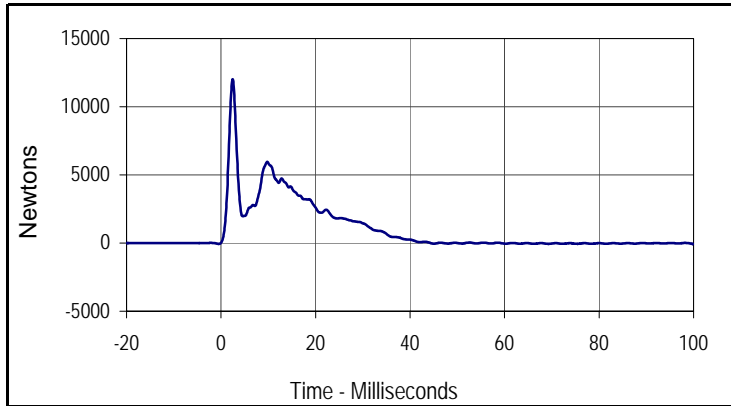
Curve Description			
Lower Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
46.8	34.1	-4.6	68.0

Test Program: ES2re Thorax - Full Body Impact Test  
 ATD Serial No.: F037

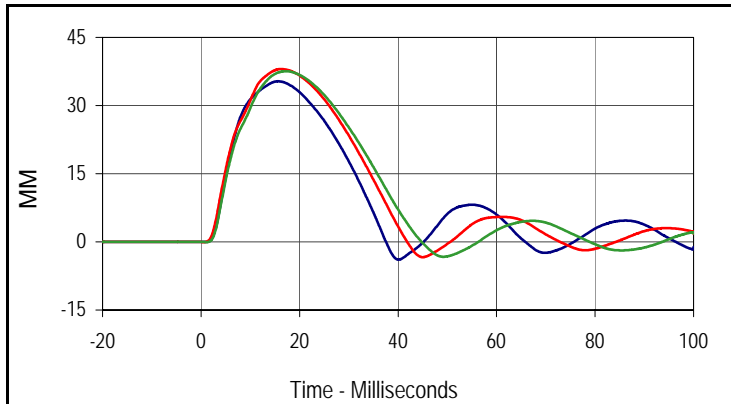
Test Date: 4/10/14  
 Test I.D.: F037TH057



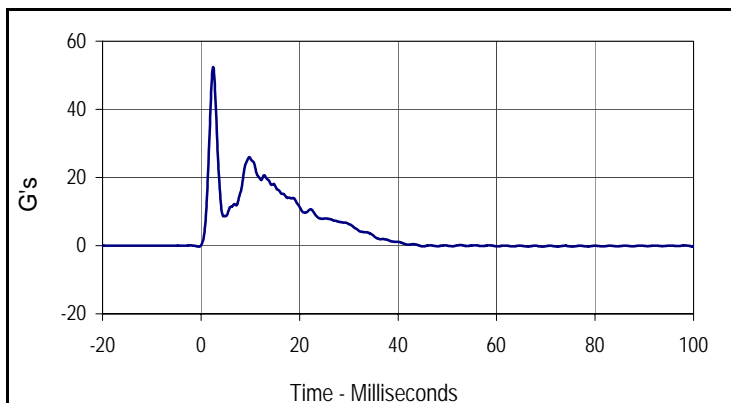
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	570	Pass
Temperature During Soak	Max	20.6 to 22.2	22.1	Pass
	Min		21.5	Pass
Humidity During Soak	Max	10.0 to 70.0	29.6	Pass
	Min		27.2	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	27.7	Pass
Peak Impactor Velocity	m/s	5.4 to 5.6	5.52	Pass
Peak Impactor Force	N	5100 to 6200	5951.8	Pass
	msec	> 6.0 msec	9.8	Pass
Peak Upper Rib Deflection	mm	34 to 41	35.3	Pass
Peak Middle Rib Deflection	mm	37 to 45	38.0	Pass
Peak Lower Rib Deflection	mm	37 to 44	37.6	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
12007.2	2.5	-73.8	99.9



Curve Description			
Upper, Middle, Lower Rib Deflections			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max (Upper)	Time	Min (Upper)	Time
35.3	15.6	-3.9	40.1
Max (Middle)	Time	Min (Middle)	Time
38.0	16.2	-3.4	45.0
Max (Lower)	Time	Min (Lower)	Time
37.6	17.3	-3.3	49.2



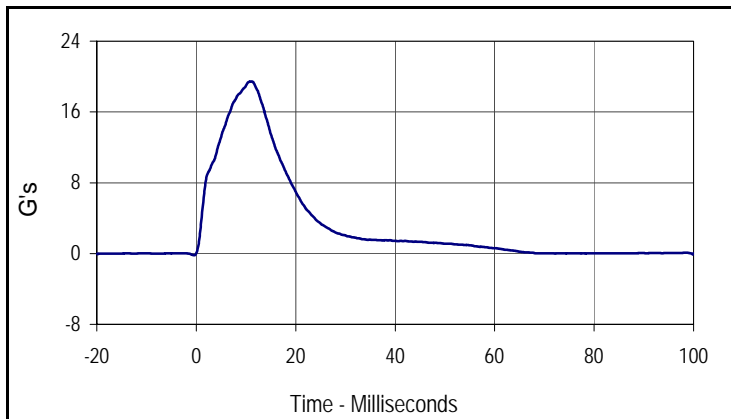
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
52.4	2.5	-0.3	99.9

Test Program: ES2re Abdomen Impact Test  
 ATD Serial No.: F037

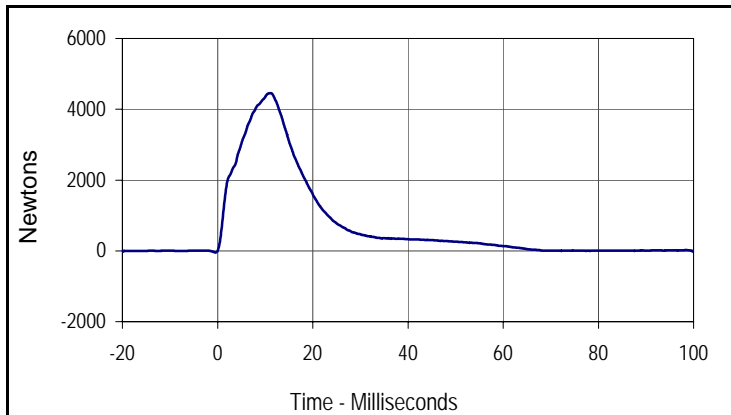
Test Date: 4/10/14  
 Test I.D.: F037ABD057



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	640	Pass
Temperature During Soak	Max	20.6 to 22.2	22.1	Pass
	Min		21.5	Pass
Humidity During Soak	Max	10.0 to 70.0	29.6	Pass
	Min		27.2	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	27.7	Pass
Probe Velocity	m/s	3.9 to 4.1	4.00	Pass
Peak Impactor Force	N	4000 to 4800	4454.6	Pass
	msec	10.6 to 13.0	11.2	Pass
Sum of Abdominal Forces	N	2200 to 2700	2435.0	Pass
	msec	10.0 to 12.3	10.8	Pass
Overall Test Results				Pass



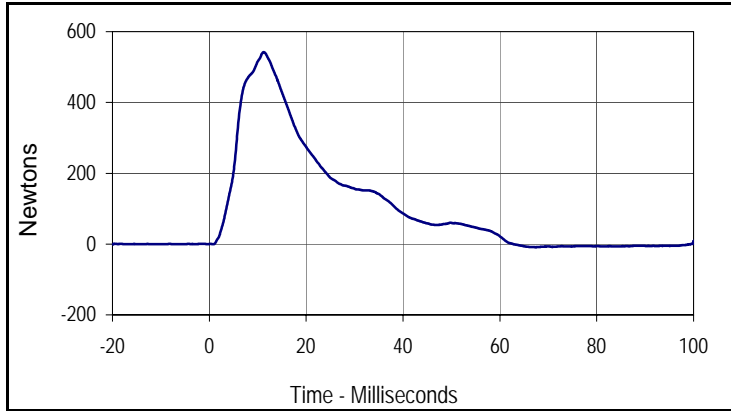
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
19.4	11.2	-0.2	-0.5



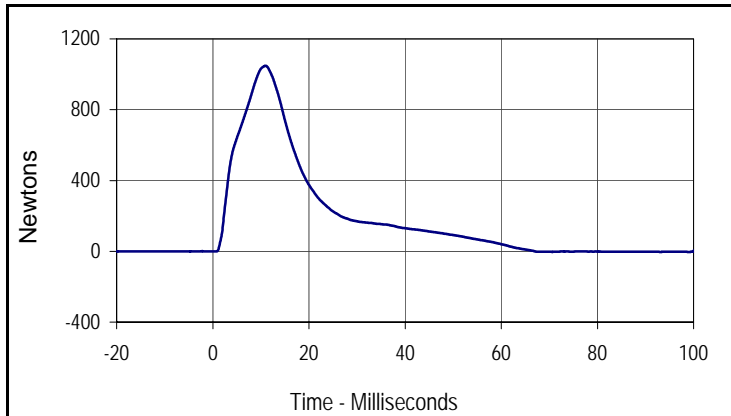
Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
4454.6	11.2	-44.7	-0.5

Test Program: ES2re Abdomen Impact Test  
 ATD Serial No.: F037

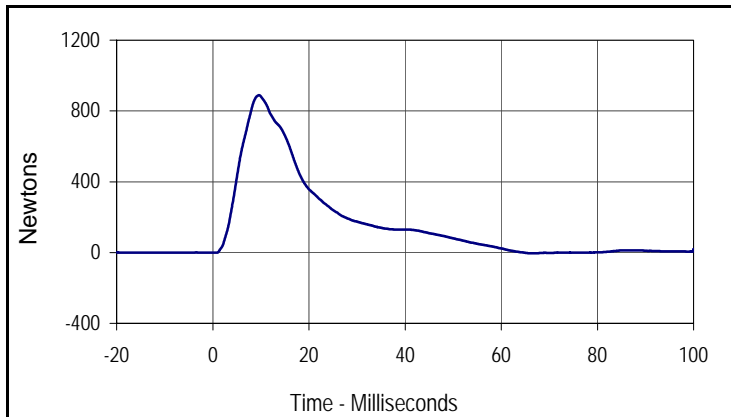
Test Date: 4/10/14  
 Test I.D.: F037ABD057



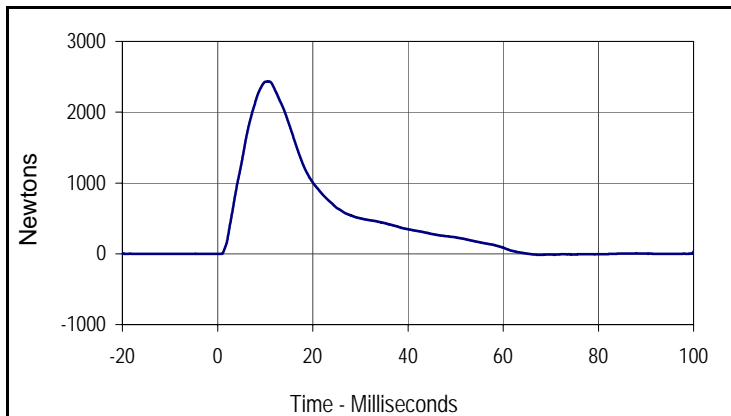
Curve Description			
Front Abdomen Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
542.4	11.2	-8.8	67.3



Curve Description			
Middle Abdomen Force			
Plot No.	Type	SAE Class	Units
004	FIL	600	Newtons
Max	Time	Min	Time
1048.4	11.0	-4.5	115.9



Curve Description			
Rear Abdomen Force			
Plot No.	Type	SAE Class	Units
005	FIL	600	Newtons
Max	Time	Min	Time
889.2	9.6	-4.4	66.7



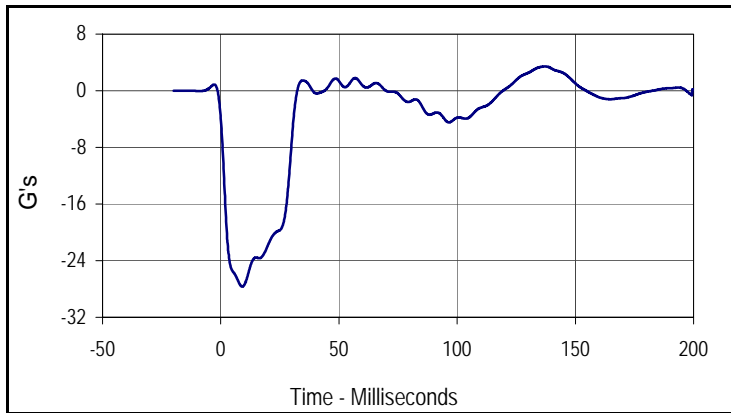
Curve Description			
Abdomen Sum Resultant			
Plot No.	Type	SAE Class	Units
006	RES	600	Newtons
Max	Time	Min	Time
2435.0	10.8	-14.6	67.6

Test Program: ES2re Lumbar Flexion Test  
 ATD Serial No.: F037

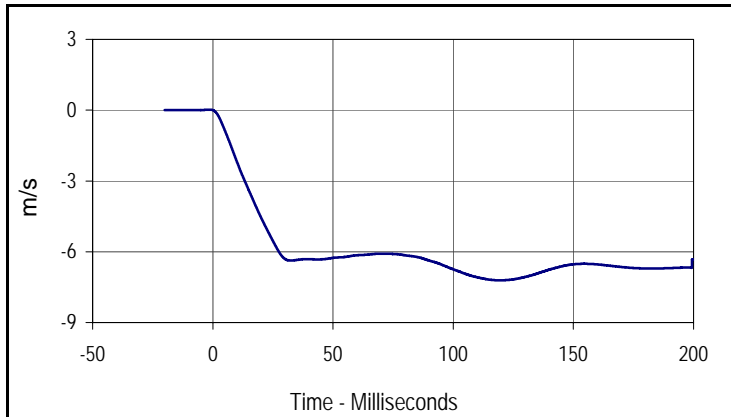
Test Date: 4/10/14  
 Test I.D.: F037LB057



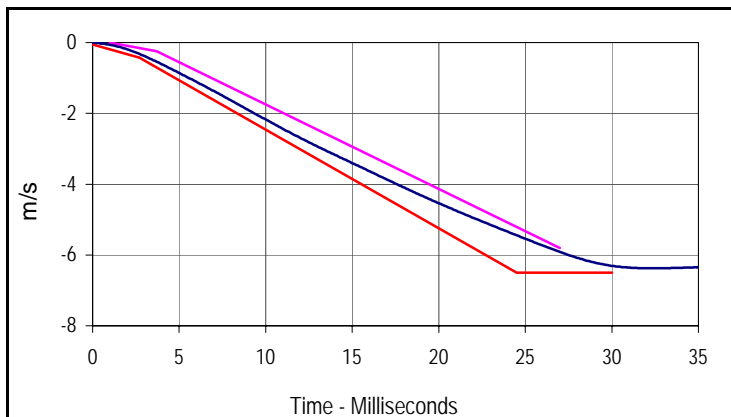
Tested Parameter	Units	Specification	Result	Pass/Fail	
Lumbar Spine Assembly Soak Time	Minutes	≥240	715	Pass	
Temperature During Soak	Max	20.6 to 22.2	22.1	Pass	
	Min		21.5	Pass	
Humidity During Soak	Max	10.0 to 70.0	29.6	Pass	
	Min		27.2	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	27.7	Pass	
Pendulum Velocity	m/s	5.95 to 6.15	6.05	Pass	
Headform Rotation	Max	Degrees	45 to 55	51.6	Pass
	Time	msec	39 to 53	40.4	Pass
Time of Decay to Zero Angle from Peak	msec	37 to 57	45.9	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
3.4	137.8	-27.7	9.7



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.8	-7.2	119.9



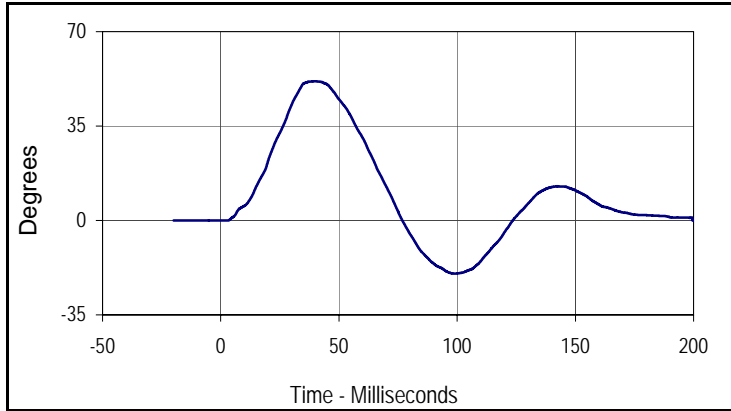
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.8	-7.2	119.9

Velocity Corridors

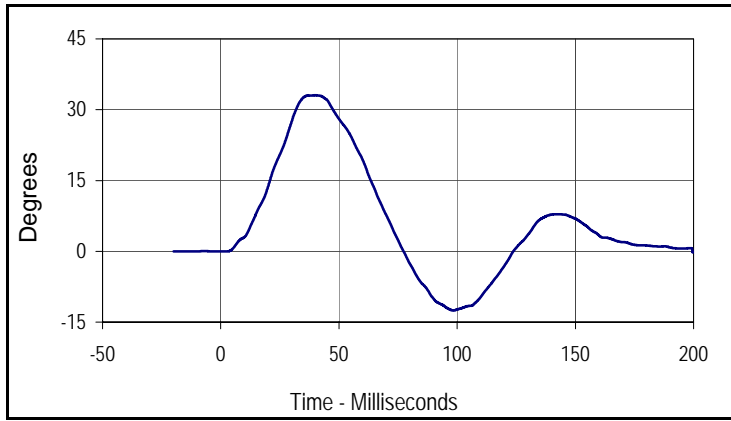
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.7	-0.24	2.7	-0.425
27.0	-5.80	24.5	-6.50
		30.0	-6.50

Test Program: ES2re Lumbar Flexion Test  
 ATD Serial No.: F037

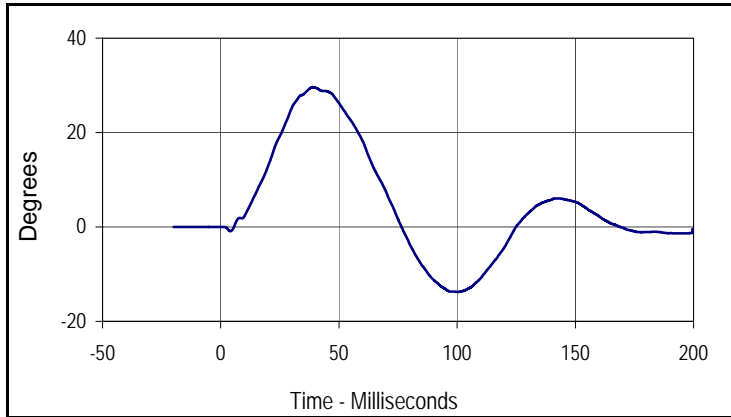
Test Date: 4/10/14  
 Test I.D.: F037LB057



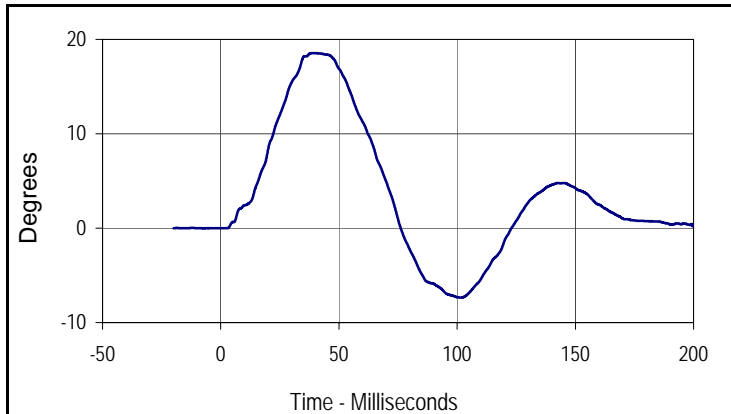
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
51.6	40.4	-19.7	99.5



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
33.0	40.5	-12.5	99.0



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
29.6	39.4	-13.8	100.8



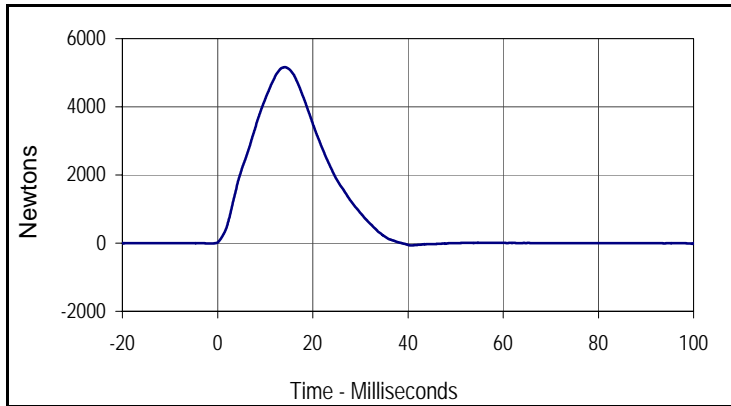
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
18.6	40.3	-7.4	102.3

Test Program: ES2re Pelvis Impact Test  
 ATD Serial No.: F037

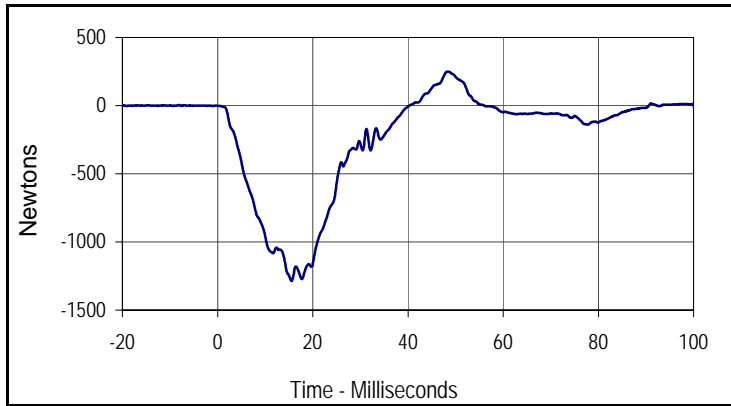
Test Date: 4/10/14  
 Test I.D.: F037PL057



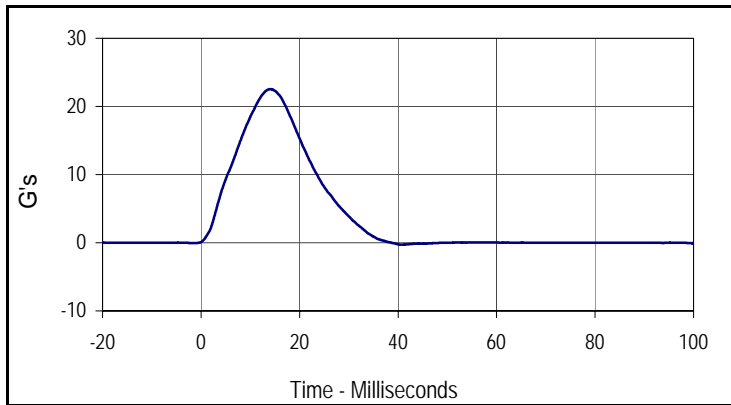
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	770	Pass
Temperature During Soak	Max	20.6 to 22.2	22.1	Pass
	Min		21.5	Pass
Humidity During Soak	Max	10.0 to 70.0	29.6	Pass
	Min		27.2	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	27.6	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.30	Pass
Peak Impactor Force	N	4700 to 5400	5163.7	Pass
	msec	11.8 to 16.1	14.2	Pass
Peak Pubic Symphysis Load	N	-1230 to -1590	-1287.5	Pass
	msec	12.2 to 17.0	15.5	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
5163.7	14.2	-67.0	40.8



Curve Description			
Pubic Symphysis Force Y			
Plot No.	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
250.0	48.2	-1287.5	15.5



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
22.5	14.2	-0.3	40.8

Test Program: SID IIs External Measurements

Test Date: 4/11/14



ATD Serial No.: 307

Test I.D.: N/A

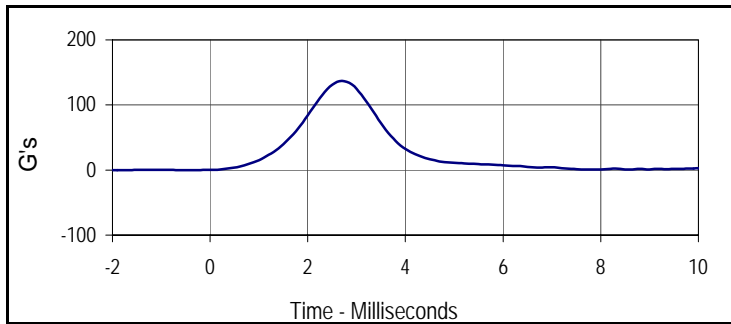
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.5	Pass
Laboratory Relative Humidity	%	10 to 70	28	Pass
A Sitting Height	mm	772 - 788	778	Pass
B Shoulder Pivot Height	mm	437 - 453	443	Pass
C H-Point Height	mm	79 - 89	85	Pass
D H-Point from Seatback	mm	141 - 151	144	Pass
E Shoulder Pivot from Backline	mm	97 - 107	102	Pass
F Thigh Clearance	mm	119 - 135	128	Pass
G Head Breadth	mm	140 - 148	145	Pass
H Head Back from Backline	mm	40 - 46	43	Pass
I Head Depth	mm	178 - 188	185	Pass
J Head Circumference	mm	541 - 551	546	Pass
K Buttock to Knee Length	mm	514 - 540	525	Pass
L Popliteal Height	mm	343 - 369	351	Pass
M Knee Pivot to Floor Height	mm	392 - 409	400	Pass
N Buttock Popliteal Length	mm	416 - 442	432	Pass
O Chest Depth w/o Jacket	mm	195 - 211	205	Pass
P Foot Length	mm	216 - 232	223	Pass
Q Hip Breadth with Pelvic Plug	mm	313 - 323	319	Pass
R Arm Length	mm	249 - 259	254	Pass
S Knee Joint to Seatback	mm	477 - 493	483	Pass
V Shoulder Width	mm	341 - 357	351	Pass
W Foot Width	mm	78 - 94	89	Pass
Y Chest Circumference with Jacket	mm	851 - 881	872	Pass
Z Waist Circumference	mm	760 - 791	774	Pass
Overall Test Results				Pass

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

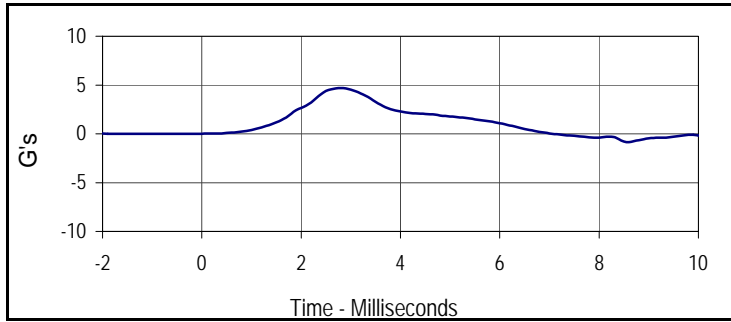
Test Date: 4/11/14  
 Test I.D.: 307HD065



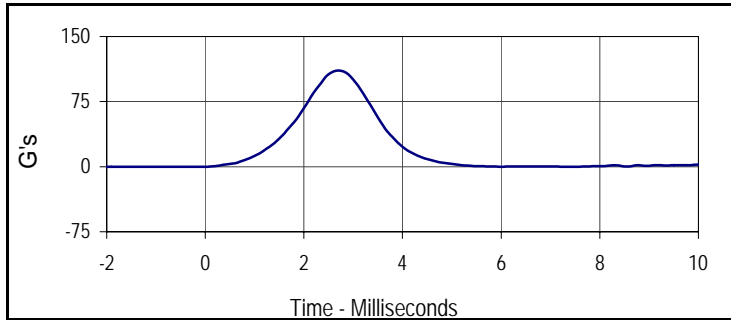
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	320	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		21.4	Pass
Humidity During Soak	Max	10.0 to 70.0	27.5	Pass
	Min		26.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	26.8	Pass
Peak Head Resultant Acceleration	G's	115 to 137	136.9	Pass
Peak Head X Acceleration	G's	<15	4.7	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	3.0	Pass
<b>Overall Test Results</b>				<b>Pass</b>



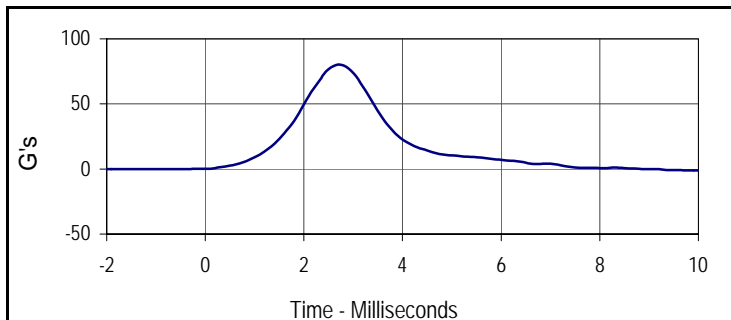
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
136.9	2.7	0.0	-1.9



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
4.7	2.8	0.0	-1.4



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
110.9	2.7	-0.1	0.0



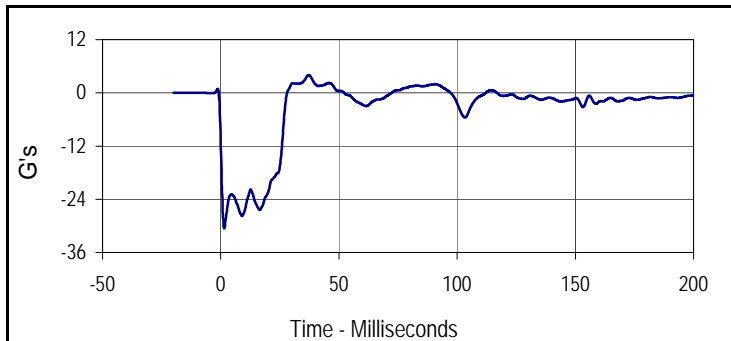
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
80.2	2.7	-1.0	9.9

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

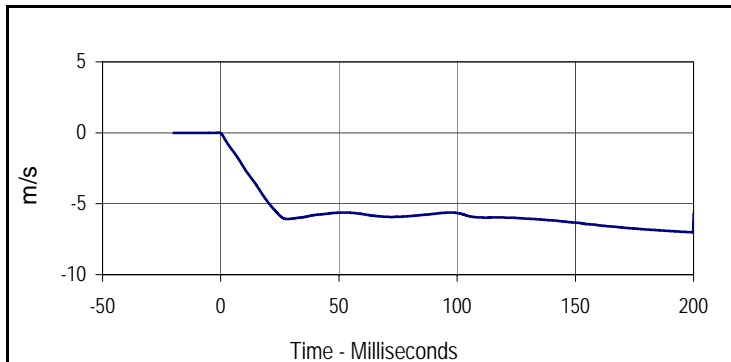
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 Test I.D.: 307NB065



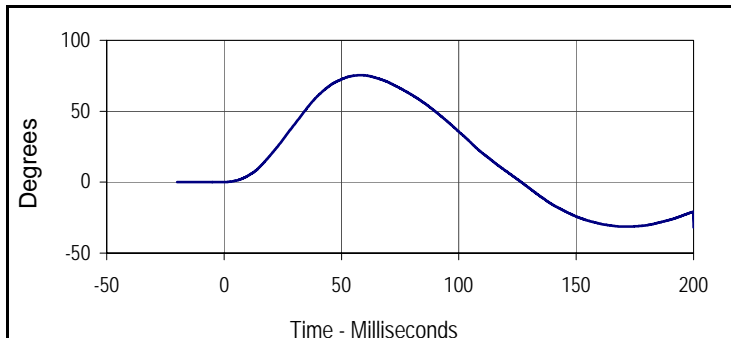
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	395	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass	
	Min		21.4	Pass	
Humidity During Soak	Max	10.0 to 70.0	27.5	Pass	
	Min		26.6	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	26.6	Pass	
Pendulum Velocity	m/s	5.51 to 5.63	5.58	Pass	
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.51	Pass
	15 msec	m/s	-3.30 to -4.10	-3.67	Pass
	20 msec	m/s	-4.40 to -5.40	-4.90	Pass
	25 msec	m/s	-5.40 to -6.10	-5.84	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.07	Pass
D-Plane Rotation	Max	Degrees	71 to 81	75.4	Pass
	Time	msec	50 to 70	58.2	Pass
Peak Occipital Condyle Moment	Nm	-36 to -44	-43.7	Pass	
Decaying Moment Time to Cross 0 Nm	msec	102 to 126	105.0	Pass	
<b>Overall Test Results</b>				<b>Pass</b>	



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
4.0	0.0	-30.5	0.0



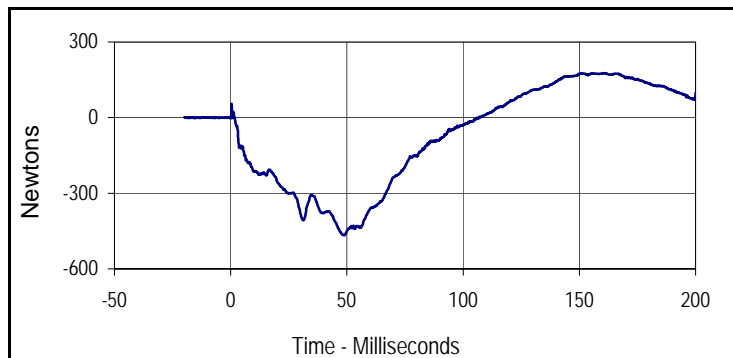
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.9	-7.0	199.9



Curve Description			
D-Plane Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
75.4	58.2	-31.9	200.0

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

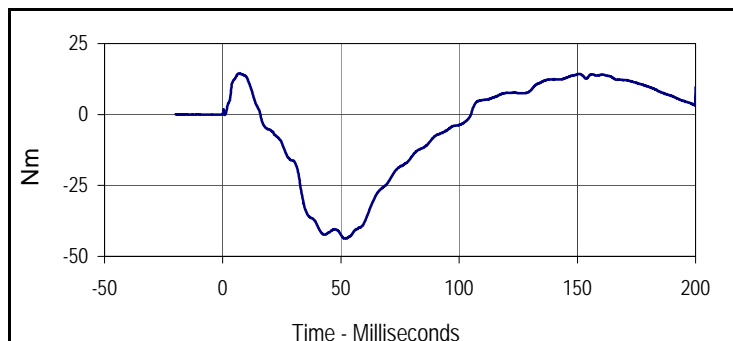
Test Date: 4/11/14  
 Test I.D.: 307NB065



Curve Description			
Neck Force Y			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
176.4	160.3	-466.5	48.9



Curve Description			
Neck Moment X			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
17.6	7.3	-36.0	51.5



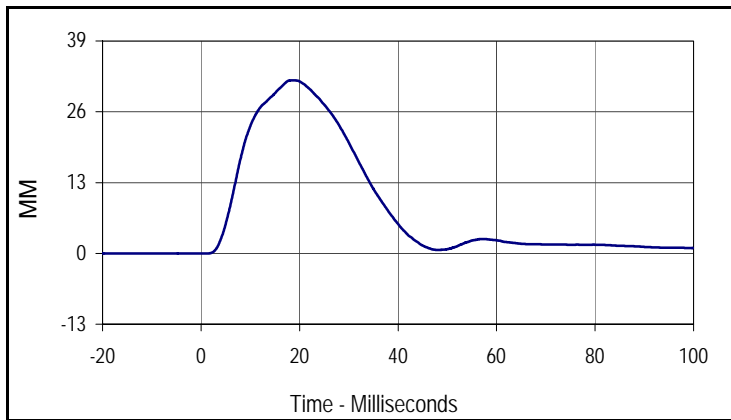
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
006	FIL	600	Nm
Max	Time	Min	Time
14.5	6.8	-43.7	51.5

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

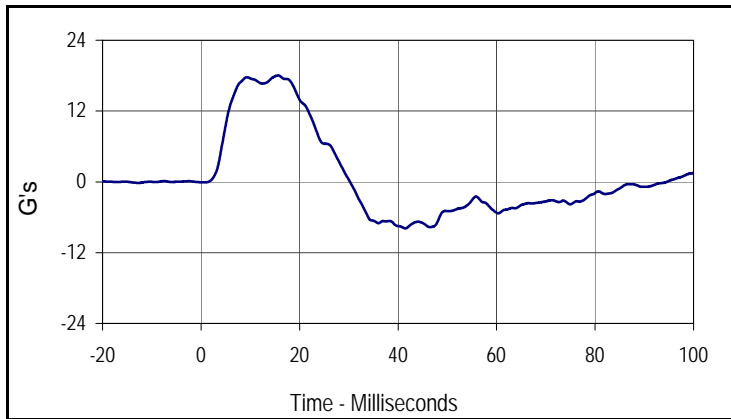
Test Date: 4/11/14  
 Test I.D.: 307SH065



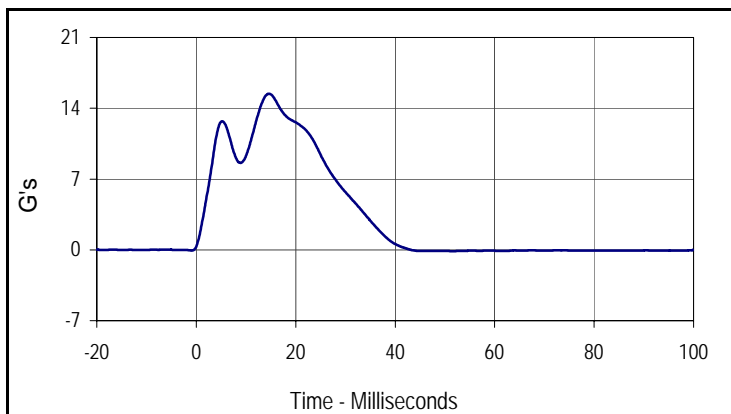
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	450	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.4	Pass
Humidity During Soak	Max	10.0 to 70.0	27.5	Pass
	Min		26.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	26.9	Pass
Impactor Velocity	m/s	4.20 to 4.40	4.31	Pass
Peak Shoulder Deflection	mm	28 to 37	31.8	Pass
Peak Lateral Spine Acceleration Y	G's	17 to 22	18.0	Pass
Peak Impactor Acceleration	G's	13 to 18	15.4	Pass
Overall Test Results			Pass	Pass



Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
31.8	18.5	0.0	-4.5



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
18.0	15.7	-7.9	41.5



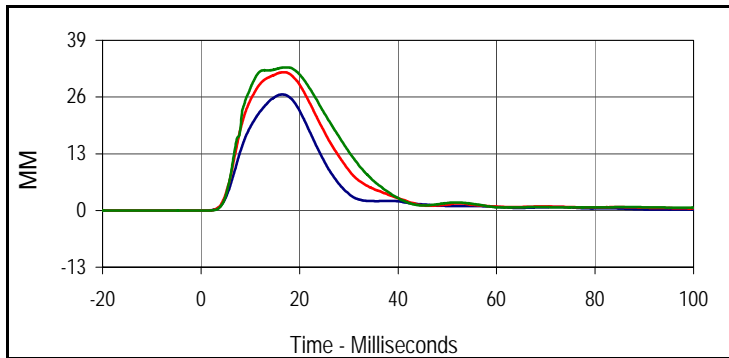
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
15.4	14.6	-0.1	51.5

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

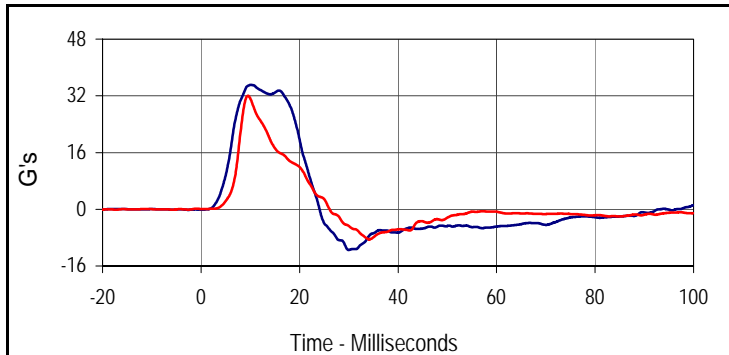
Test Date: 4/11/14  
 Test I.D.: 307TWA065



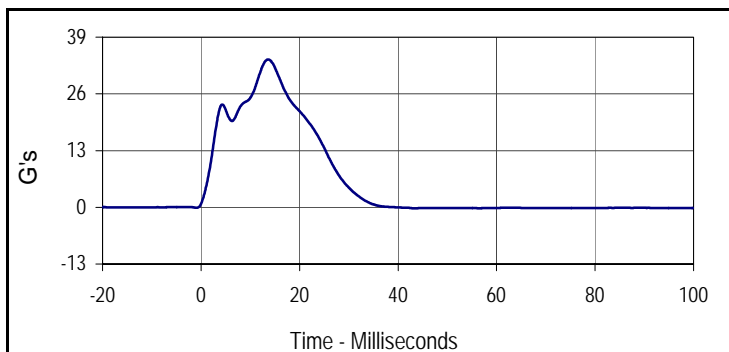
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	495	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.4	Pass
Humidity During Soak	Max	10.0 to 70.0	27.5	Pass
	Min		26.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	27.0	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.72	Pass
Peak Shoulder Deflection	mm	31 to 40	33.8	Pass
Peak Upper Thorax Rib Deflection	mm	25 to 32	26.6	Pass
Peak Middle Thorax Rib Deflection	mm	30 to 36	31.7	Pass
Peak Lower Thorax Rib Deflection	mm	32 to 38	32.8	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	35.1	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	32.0	Pass
Peak Impactor Acceleration	G's	30 to 36	33.9	Pass
<b>Overall Test Results</b>				<b>Pass</b>



Curve Description			
<b>Upper Thorax Deflection</b>			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
26.6	16.5	0.0	-13.9
<b>Middle Thorax Deflection</b>			
Max	Time	Min	Time
31.7	16.8	0.0	-10.7
<b>Lower Thorax Deflection</b>			
Max	Time	Min	Time
32.8	17.2	0.0	-10.8



Curve Description			
<b>Upper Spine Y Acceleration</b>			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
35.1	10.1	-11.5	30.0
<b>Lower Spine Y Acceleration</b>			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
32.0	9.5	-8.5	34.2



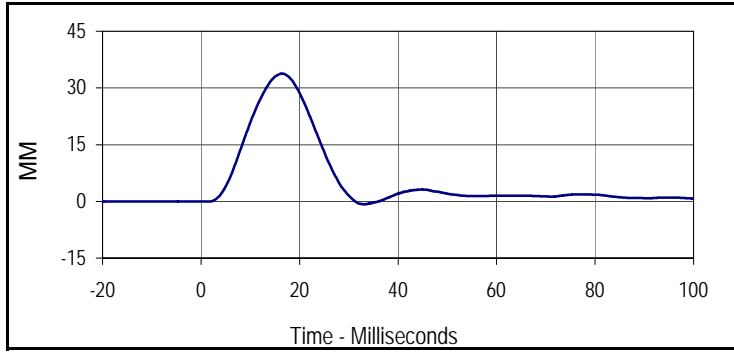
Curve Description			
<b>Impactor Acceleration</b>			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
33.9	13.6	-0.3	43.3

Test Program: SID IIs Thorax with Arm Impact Test

ATD Serial No.: 307

Test Date: 4/11/14

Test I.D.: 307TWA065



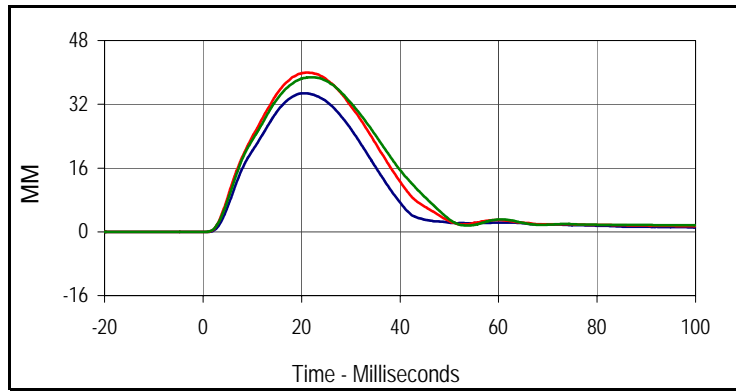
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	MM
Max	Time	Min	Time
33.8	16.4	-0.8	33.2

Test Program: SID IIs Thorax without Arm Impact Test  
 ATD Serial No.: 307

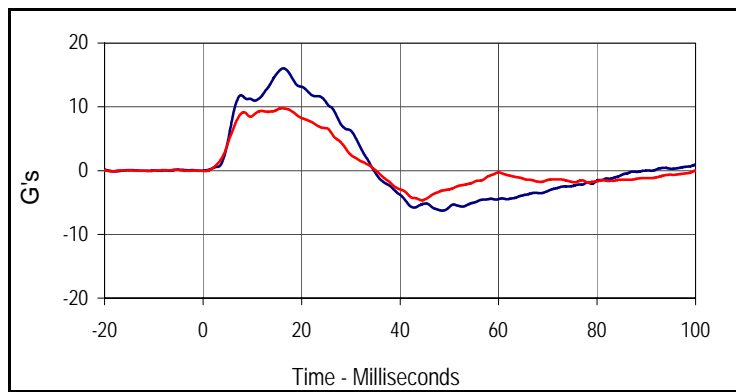
Test Date: 4/11/14  
 Test I.D.: 307TWOA065



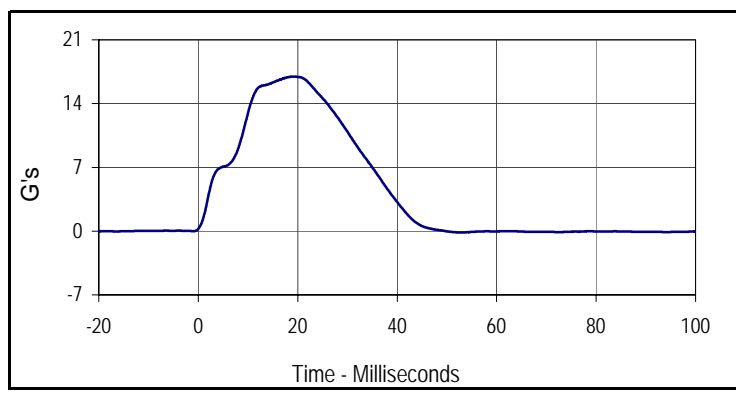
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	545	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		21.4	Pass
Humidity During Soak	Max	10.0 to 70.0	27.5	Pass
	Min		26.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	27.1	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.29	Pass
Peak Upper Thorax Rib Deflection	mm	32 to 40	34.8	Pass
Peak Middle Thorax Rib Deflection	mm	39 to 45	40.0	Pass
Peak Lower Thorax Rib Deflection	mm	35 to 43	38.8	Pass
Peak Upper Spine Y Acceleration	G's	13 to 17	16.1	Pass
Peak Lower Spine Y Acceleration	G's	7 to 11	9.8	Pass
Peak Impactor Acceleration	G's	14 to 18	17.0	Pass
Overall Test Results				Pass



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
34.8	20.7	0.0	-18.9
Middle Thorax Deflection			
Max	Time	Min	Time
40.0	21.1	0.0	-16.9
Lower Thorax Deflection			
Max	Time	Min	Time
38.8	21.8	0.0	-15.2



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
16.1	16.3	-6.3	48.6
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
9.8	16.0	-4.7	44.4



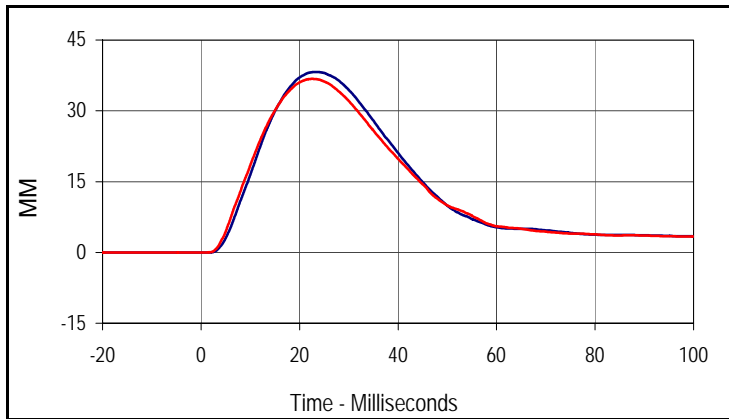
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
17.0	19.2	-0.1	52.7

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

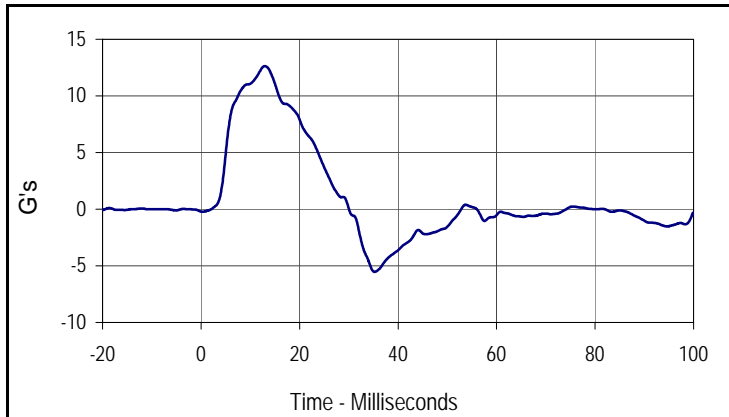
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 Test I.D.: 307ABD065



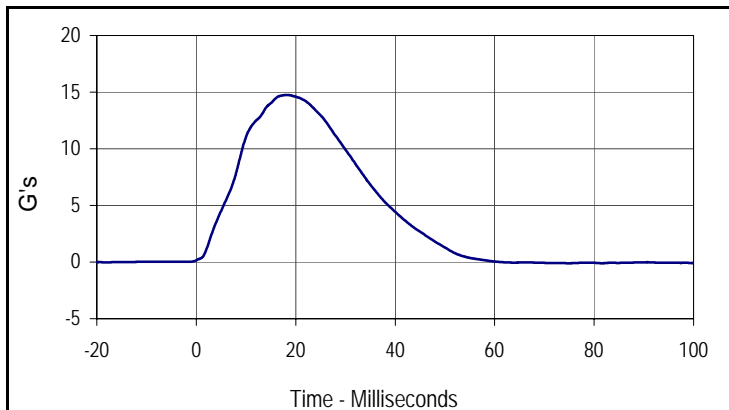
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	580	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.4	Pass
Humidity During Soak	Max	10.0 to 70.0	27.5	Pass
	Min		26.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.6	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	26.9	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.24	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	38.2	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	36.8	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	12.6	Pass
Peak Impactor Acceleration	G's	12 to 16	14.7	Pass
Overall Test Results				Pass



Curve Description			
Upper Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
38.2	23.2	0.0	-4.3
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
36.8	22.5	0.0	-5.5

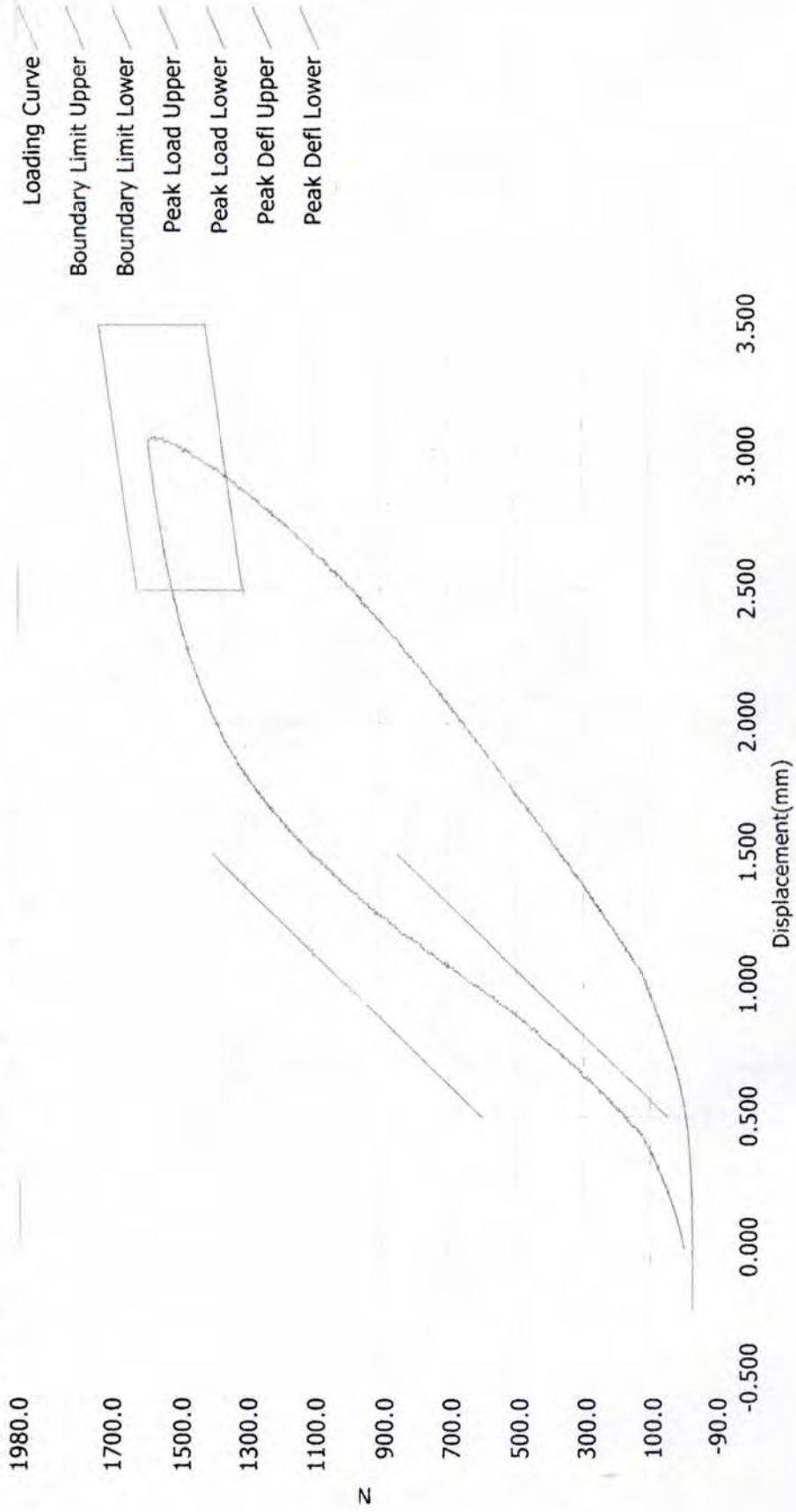


Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
12.6	12.9	-5.5	35.2



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.7	18.3	-0.1	81.6

# Resultant Data - SIDIIs Plug Compression



ATD Calibration Lab

<u>Test ID</u>	<u>Part Serial Number</u>	<u>Test Date</u>	<u>Test Time</u>
	46570	9/26/2011	7:55 PM
<u>Cert ID</u>	<u>ATD Serial Number</u>	<u>ATD Type</u>	
	N/A	SIDIIs	

Current Date : 9/26/2011      Current Time : 19:55:46

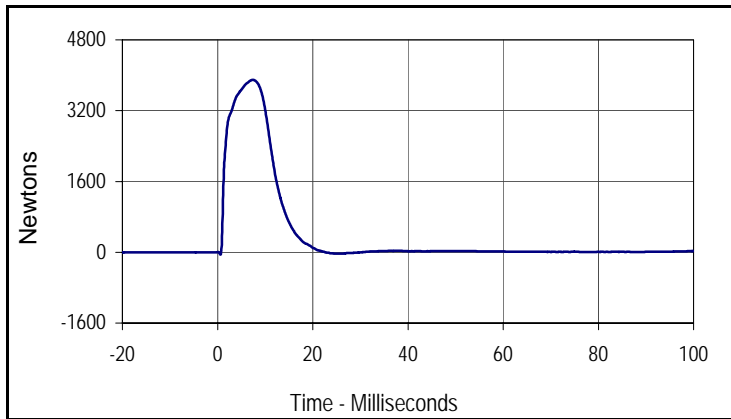
**M20145105 PRE TEST**

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

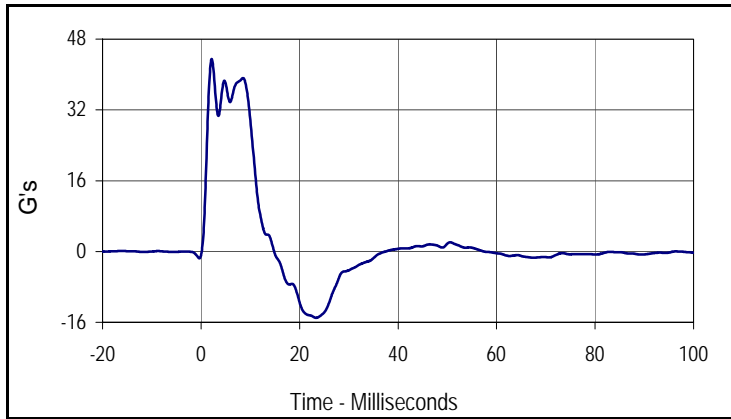
Test Date: 4/11/14  
 Test I.D.: 307ACET065



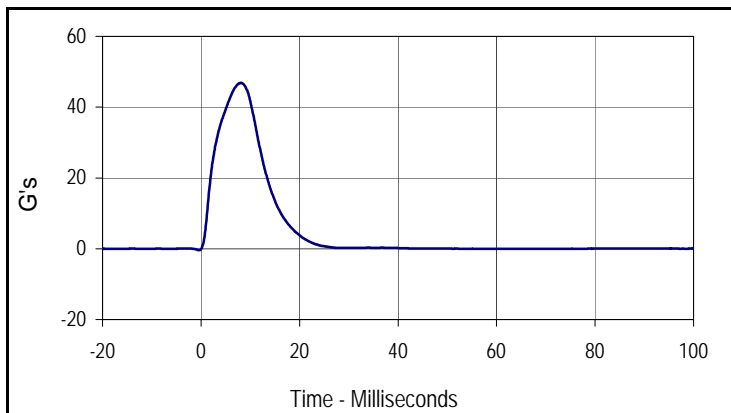
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	625	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.4	Pass
Humidity During Soak	Max	10.0 to 70.0	27.5	Pass
	Min		26.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	27.2	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.68	Pass
Peak Acetabulum Force Y	Newtons	3600 to 4300	3896.5	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	39.2	Pass
Peak Impactor Acceleration	G's	38 to 47	46.8	Pass
Overall Test Results				Pass



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3896.5	7.4	-49.7	0.6



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
43.4	2.2	-15.0	23.4



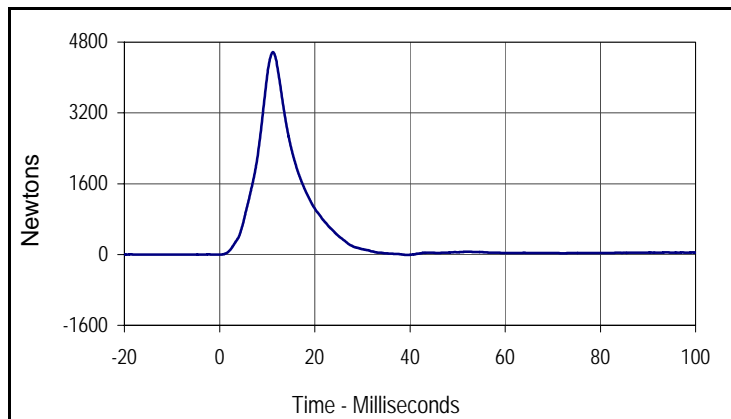
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
46.8	8.1	-0.4	-0.4

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

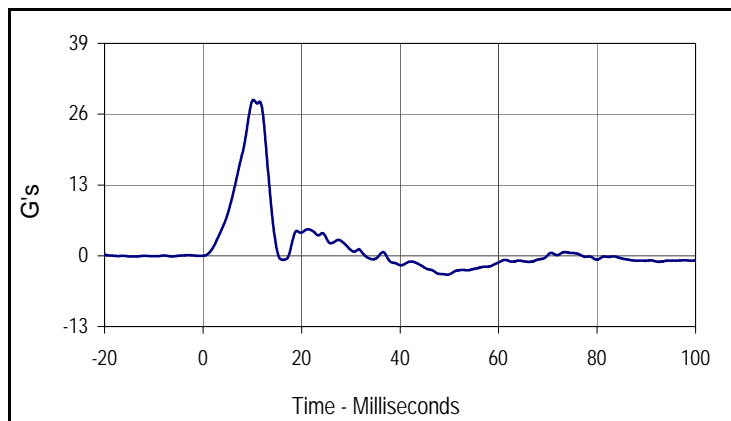
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 Test I.D.: 307PL065



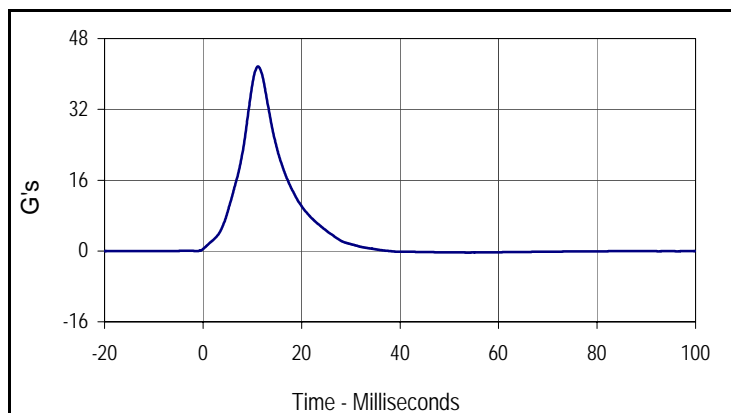
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	695	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.4	Pass
Humidity During Soak	Max	10.0 to 70.0	27.5	Pass
	Min		26.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	27.3	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.28	Pass
Peak Iliac Force	Newtons	4100 to 5100	4575.3	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	28.6	Pass
Peak Impactor Acceleration	G's	36 to 45	41.7	Pass
Overall Test Results				Pass



Curve Description			
Pelvis Iliac Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4575.3	11.2	-8.5	39.8



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
28.6	10.2	-3.5	49.6



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
41.7	11.2	-0.4	53.9

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

Test Program: ES2re External Measurements

Test Date: 4/17/14



ATD Serial No.: F037

Test I.D.: N/A

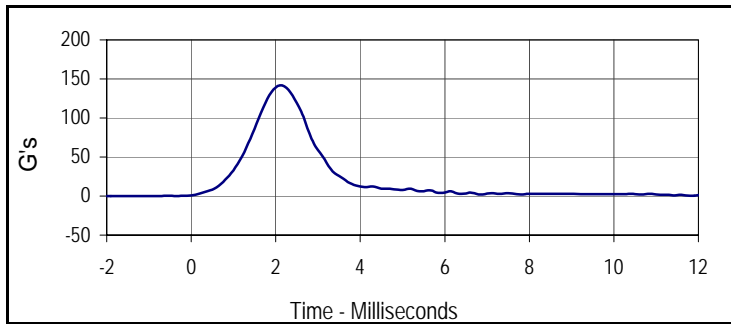
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	30.0	Pass
1 Sitting Height	mm	900 - 918	909	Pass
2 Seat to Shoulder Joint	mm	558 - 572	564	Pass
3 Seat to Lower Face of Thoracic Spine Box	mm	346 - 356	350	Pass
4 Seat to Hip Joint (Center of Bolt)	mm	97 - 103	99	Pass
5 Sole to Seat, Sitting	mm	333 - 451	395	Pass
6 Head Width	mm	152 - 158	156	Pass
7 Shoulder / Arm Width	mm	461 - 479	470	Pass
8 Thorax Width	mm	322 - 332	326	Pass
9 Abdomen Width	mm	273 - 287	280	Pass
10 Pelvis Lap Width	mm	359 - 373	363	Pass
11 Head Depth	mm	196 - 206	201	Pass
12 Thorax Depth	mm	262 - 272	270	Pass
13 Abdomen Width	mm	194 - 204	199	Pass
14 Pelvis Depth	mm	235 - 245	240	Pass
15 Back of Buttocks to Hip Joint (Center of Bolt)	mm	150 - 160	155	Pass
16 Back of Buttocks to Front Knee	mm	597 - 615	608	Pass
Overall Test Results				Pass

Test Program: ES2re Head Drop Test  
 ATD Serial No.: F037

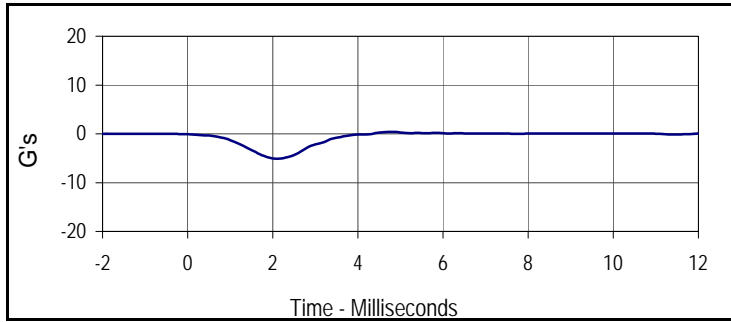
Test Date: 4/17/14  
 Test I.D.: F037HD058



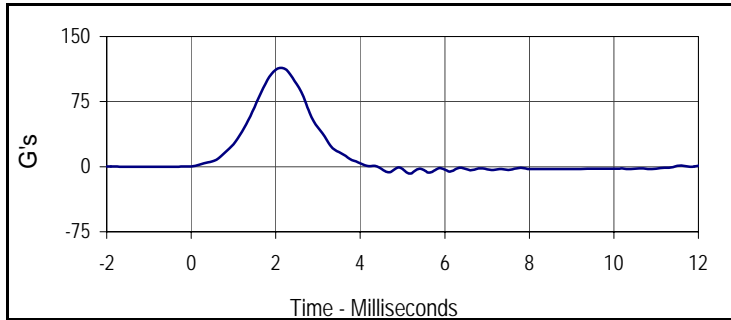
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	500	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.4	Pass
Humidity During Soak	Max	10.0 to 70.0	28.3	Pass
	Min		27.3	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	27.6	Pass
Peak Head Resultant Acceleration	G's	125 to 155	141.7	Pass
Peak Head X Acceleration	G's	≤15	5.1	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	6.8	Pass
Overall Test Results				Pass



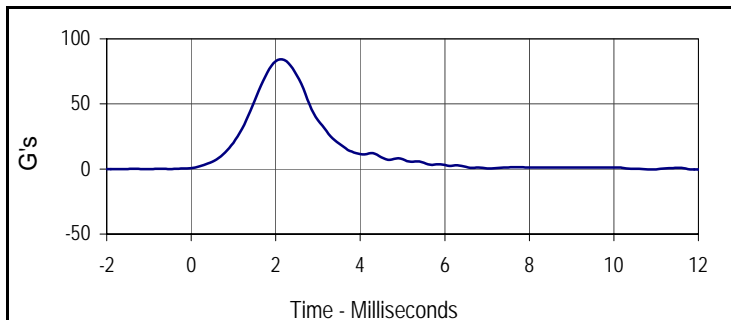
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
141.7	2.1	0.0	-1.6



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.4	4.8	-5.1	2.1



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
113.8	2.1	-7.9	5.2



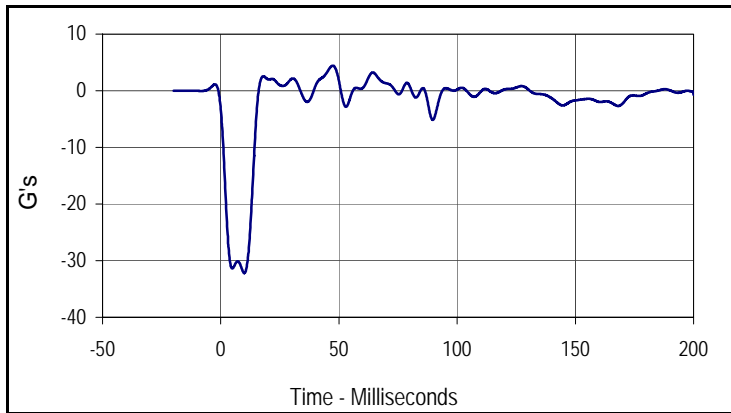
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
84.3	2.1	-0.4	10.9

Test Program: ES2re Neck Flexion Test  
 ATD Serial No.: F037

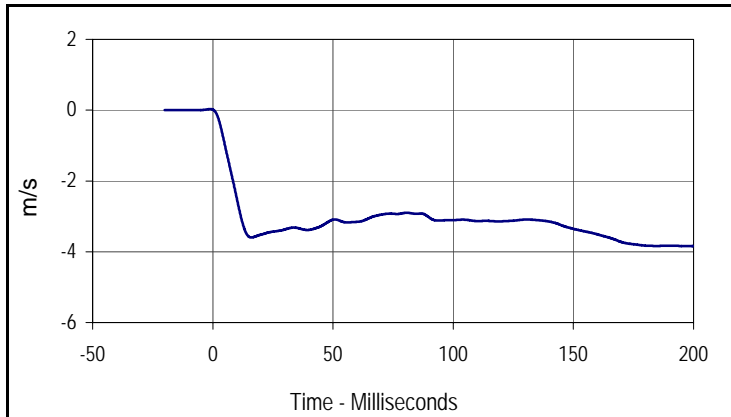
Test Date: 4/17/14  
 Test I.D.: F037NB058



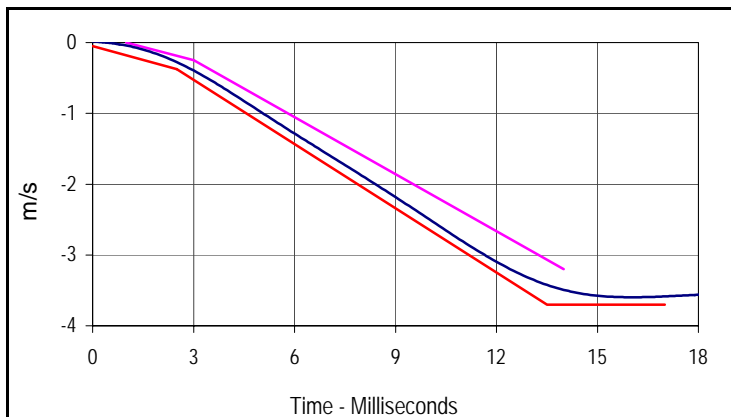
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	535	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.4	Pass
Humidity During Soak	Max	10.0 to 70.0	28.3	Pass
	Min		27.3	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	27.7	Pass
Pendulum Velocity	m/s	3.3 to 3.5	3.45	Pass
Headform Flexion	Max	49 to 59	55.4	Pass
	Time	54 to 66	60.0	Pass
Headform Flexion Decay (Peak to Zero)	msec	53 to 88	61.0	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
4.4	47.4	-32.2	10.0



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.0	-3.8	199.9



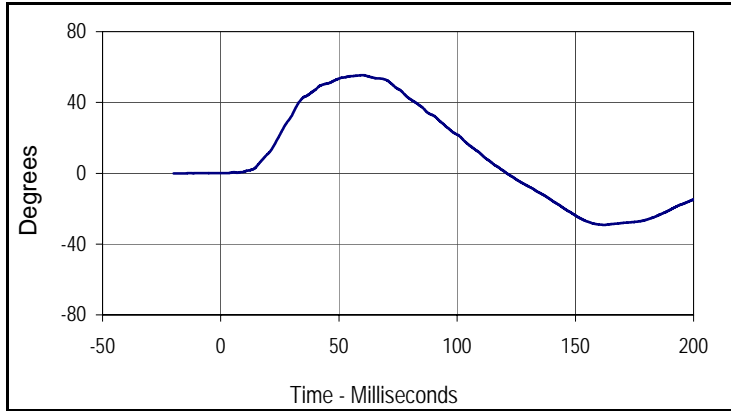
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.0	-3.8	199.9

Velocity Corridors

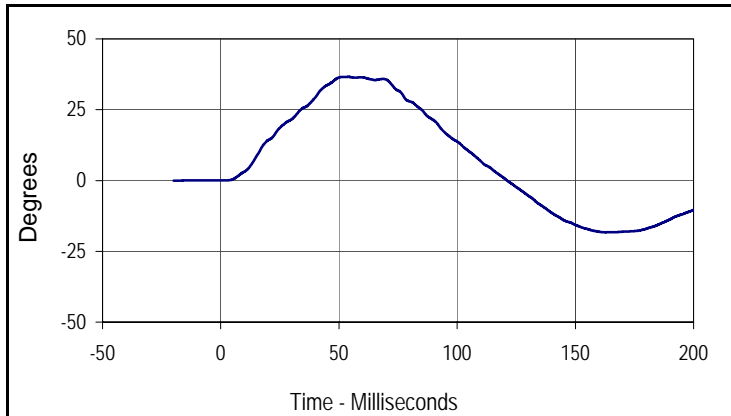
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.0	-0.03	2.5	-0.375
14.0	-3.20	13.5	-3.70
		17.0	-3.70

Test Program: ES2re Neck Flexion Test  
 ATD Serial No.: F037

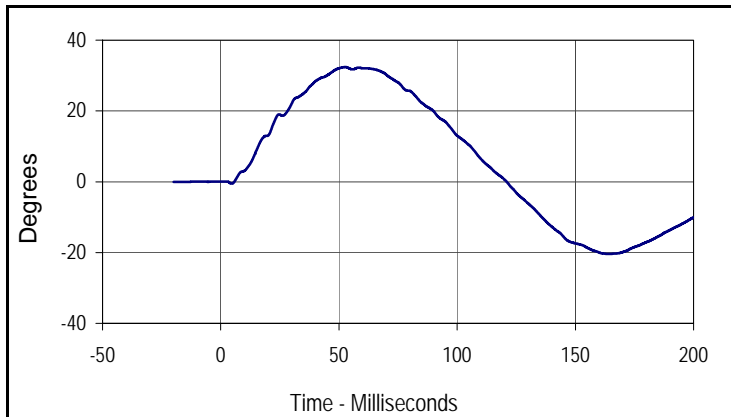
Test Date: 4/17/14  
 Test I.D.: F037NB058



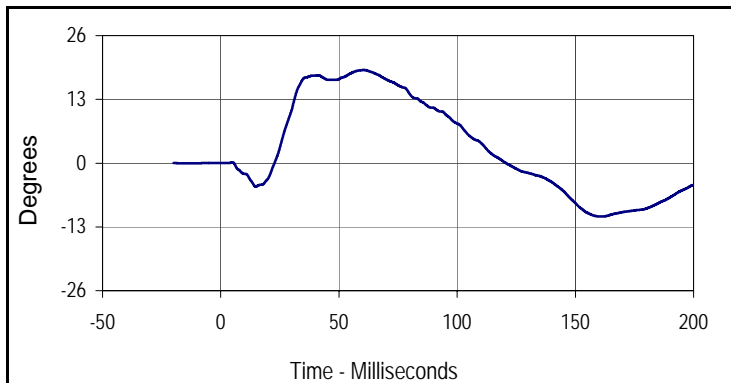
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
55.4	60.0	-29.2	162.2



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
36.6	54.0	-18.3	162.7



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
32.4	52.7	-20.4	164.1



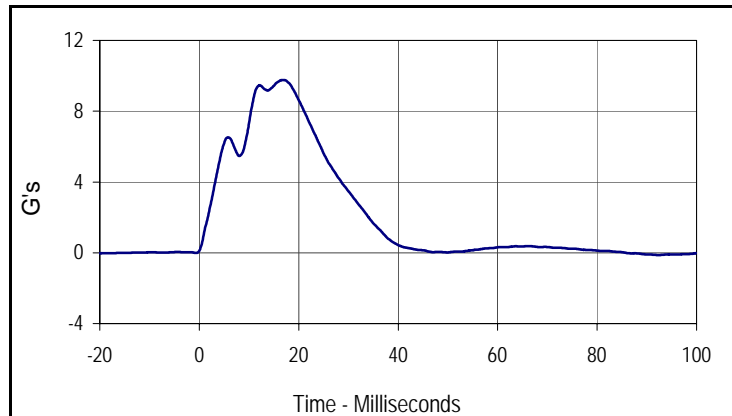
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
19.0	60.4	-10.9	160.0

Test Program: ES2re Shoulder Impact Test  
 ATD Serial No.: F037

Test Date: 4/17/14  
 Test I.D.: F037SH058



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	600	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.4	Pass
Humidity During Soak	Max	10.0 to 70.0	28.3	Pass
	Min		27.3	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	27.8	Pass
Pendulum Speed	m/s	4.2 to 4.4	4.32	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	9.8	Pass
Overall Test Results				Pass



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
9.8	17.1	-0.1	92.2

Test Program: ES2re Thorax - Rib Drop Test

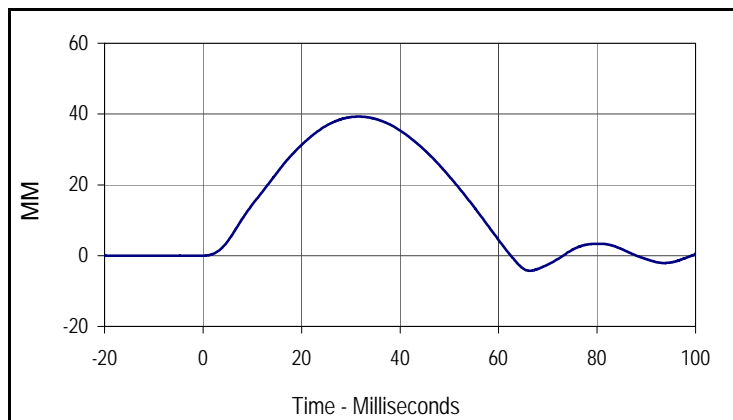
Test Date: 4/17/14



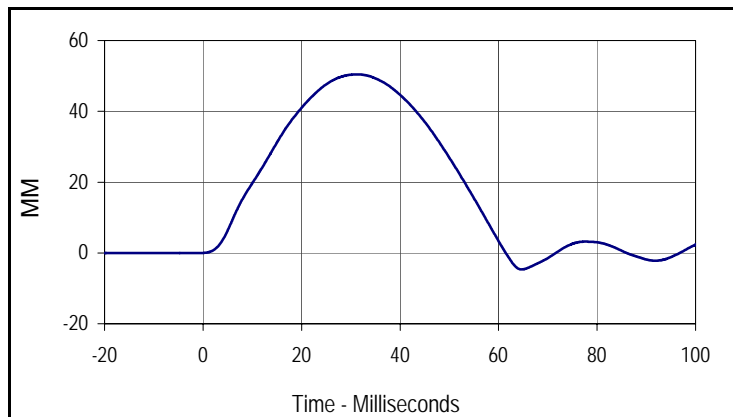
ATD Serial No.: F037 Rib # 1

Test I.D.: F037RB1058

Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	655	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.4	Pass
Humidity During Soak	Max	10.0 to 70.0	28.3	Pass
	Min		27.3	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	27.8	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	39.3	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	50.4	Pass
Overall Test Results				Pass



Curve Description			
Upper Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
39.3	31.6	-4.3	66.3



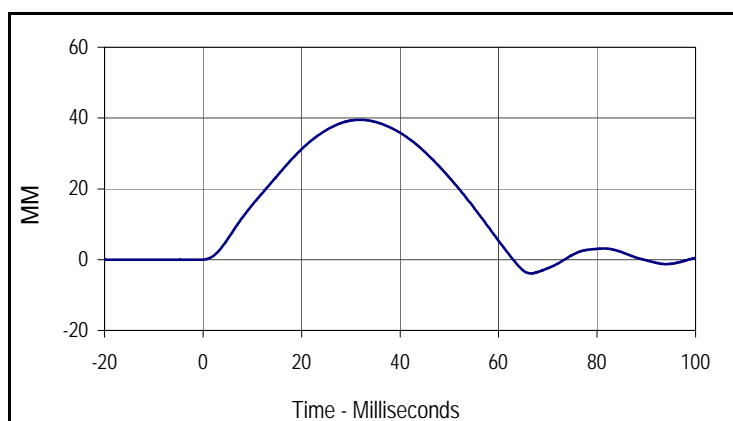
Curve Description			
Upper Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
50.4	31.3	-4.7	64.7

Test Program: ES2re Thorax - Rib Drop Test  
 ATD Serial No.: F037 Rib # 2

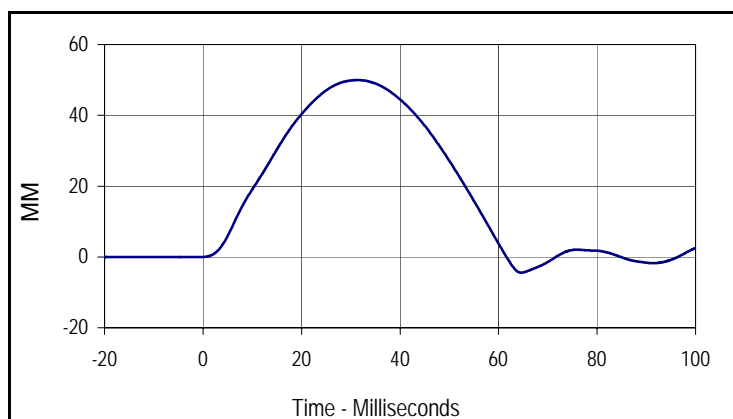
Test Date: 4/17/14  
 Test I.D.: F037RB2058



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	700	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.4	Pass
Humidity During Soak	Max	10.0 to 70.0	28.3	Pass
	Min		27.3	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	27.9	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	39.5	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	50.0	Pass
Overall Test Results				Pass



Curve Description			
Middle Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
39.5	31.9	-3.9	66.6



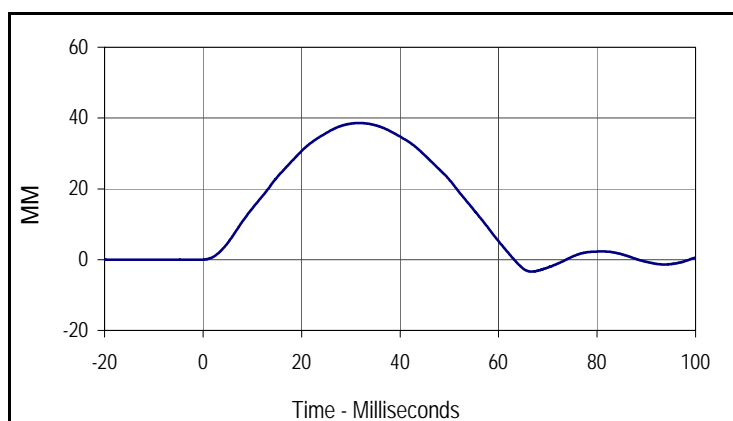
Curve Description			
Middle Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
50.0	31.4	-4.4	64.6

Test Program: ES2re Thorax - Rib Drop Test  
 ATD Serial No.: F037 Rib # 3

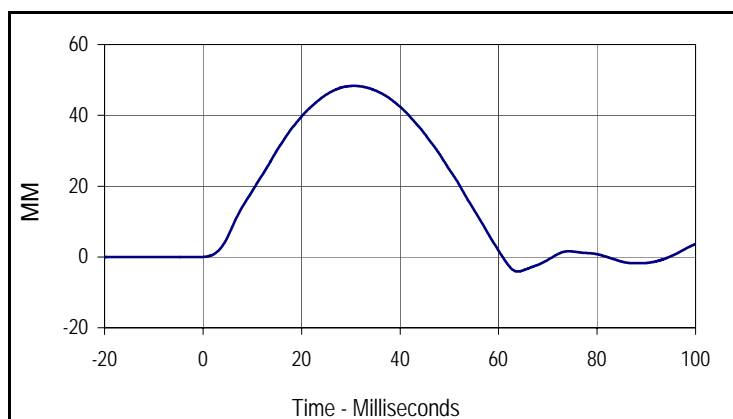
Test Date: 4/17/14  
 Test I.D.: F037RB3058



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	745	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.4	Pass
Humidity During Soak	Max	10.0 to 70.0	28.3	Pass
	Min		27.3	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	28.0	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	38.6	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	48.3	Pass
Overall Test Results				Pass



Curve Description			
Lower Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
38.6	31.7	-3.4	66.7



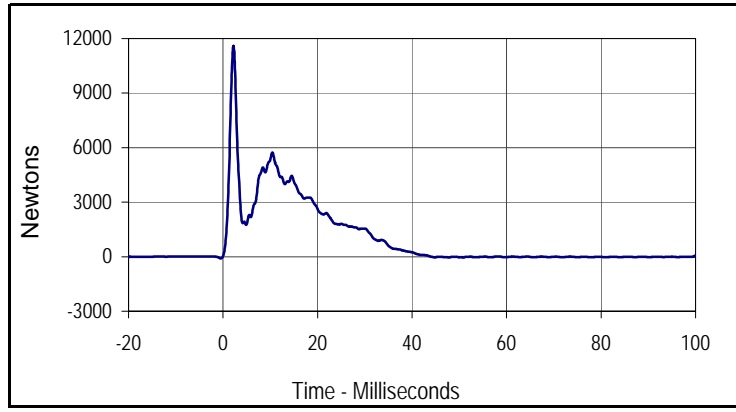
Curve Description			
Lower Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
48.3	30.6	-4.1	63.9

Test Program: ES2re Thorax - Full Body Impact Test  
 ATD Serial No.: F037

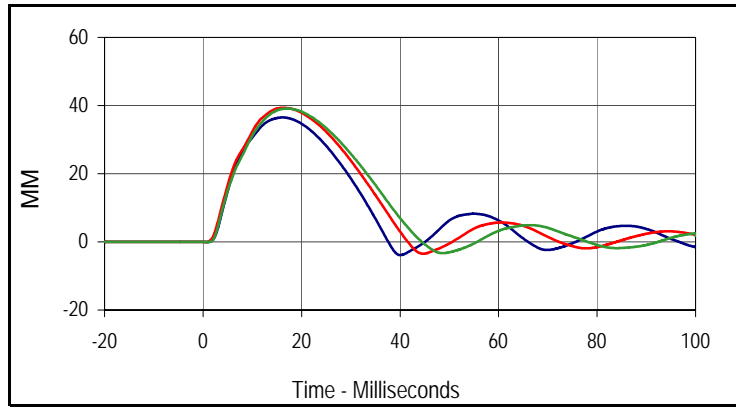
Test Date: 4/17/14  
 Test I.D.: F037TH058



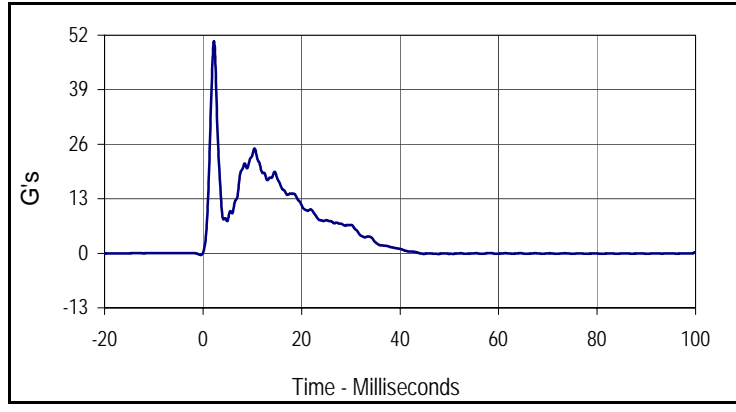
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	790	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.4	Pass
Humidity During Soak	Max	10.0 to 70.0	28.3	Pass
	Min		27.3	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	28.1	Pass
Peak Impactor Velocity	m/s	5.4 to 5.6	5.50	Pass
Peak Impactor Force	N	5100 to 6200	5724.2	Pass
	msec	> 6.0 msec	10.5	Pass
Peak Upper Rib Deflection	mm	34 to 41	36.5	Pass
Peak Middle Rib Deflection	mm	37 to 45	39.3	Pass
Peak Lower Rib Deflection	mm	37 to 44	39.1	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
11586.3	2.2	-92.8	-0.5



Curve Description			
Upper, Middle, Lower Rib Deflections			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max (Upper)	Time	Min (Upper)	Time
36.5	16.2	-3.9	40.1
Max (Middle)	Time	Min (Middle)	Time
39.3	16.3	-3.5	44.7
Max (Lower)	Time	Min (Lower)	Time
39.1	17.1	-3.3	48.7



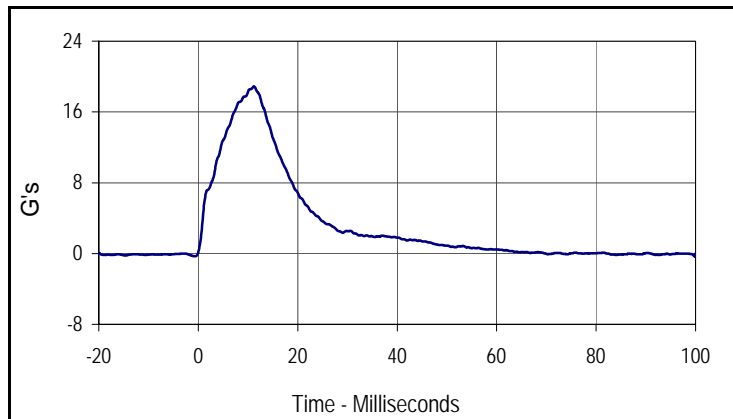
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
50.6	2.2	-0.4	-0.5

Test Program: ES2re Abdomen Impact Test  
 ATD Serial No.: F037

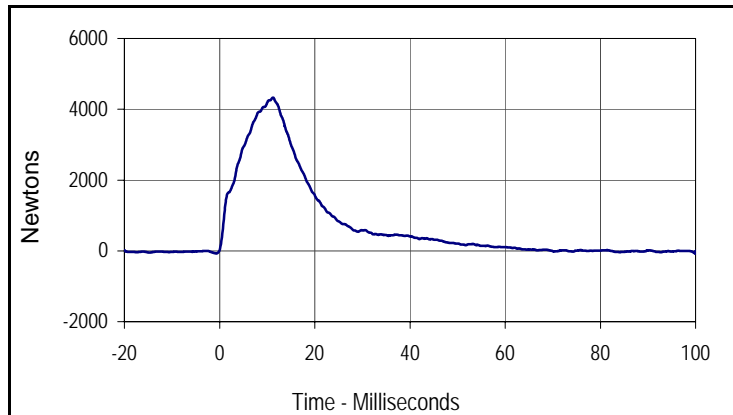
Test Date: 4/17/14  
 Test I.D.: F037ABD058



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	860	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.4	Pass
Humidity During Soak	Max	10.0 to 70.0	28.3	Pass
	Min		27.3	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.6	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	28.0	Pass
Probe Velocity	m/s	3.9 to 4.1	4.00	Pass
Peak Impactor Force	N	4000 to 4800	4329.5	Pass
	msec	10.6 to 13.0	11.2	Pass
Sum of Abdominal Forces	N	2200 to 2700	2299.8	Pass
	msec	10.0 to 12.3	10.3	Pass
Overall Test Results				Pass



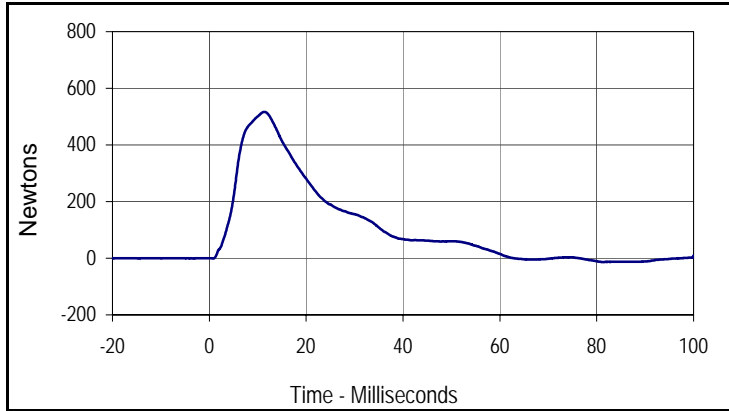
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
18.9	11.2	-0.3	99.9



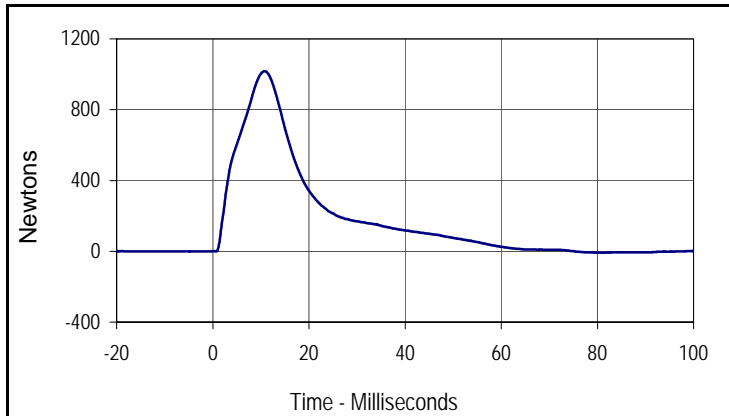
Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
4329.5	11.2	-74.6	99.9

Test Program: ES2re Abdomen Impact Test  
 ATD Serial No.: F037

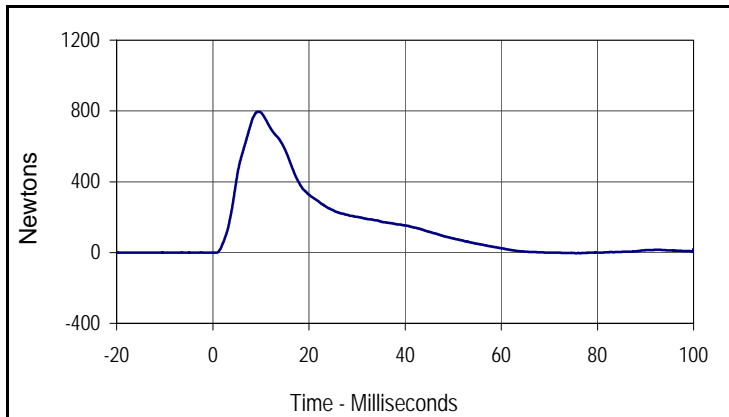
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 Test I.D.: F037ABD058



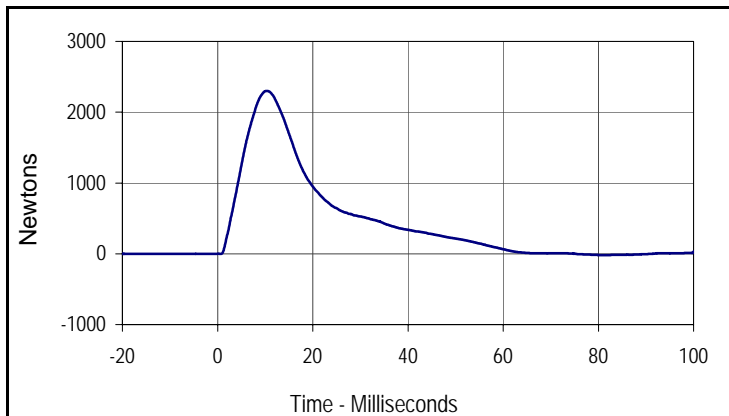
Curve Description			
Front Abdomen Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
516.7	11.4	-13.8	81.4



Curve Description			
Middle Abdomen Force			
Plot No.	Type	SAE Class	Units
004	FIL	600	Newtons
Max	Time	Min	Time
1018.0	10.8	-7.6	81.0



Curve Description			
Rear Abdomen Force			
Plot No.	Type	SAE Class	Units
005	FIL	600	Newtons
Max	Time	Min	Time
795.8	9.6	-3.7	75.6



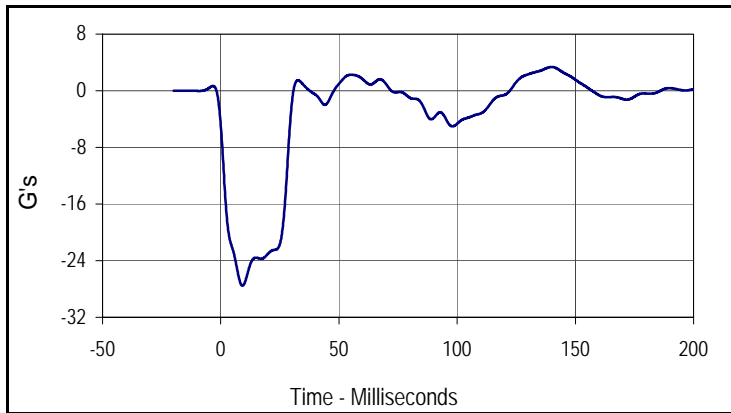
Curve Description			
Abdomen Sum Resultant			
Plot No.	Type	SAE Class	Units
006	RES	600	Newtons
Max	Time	Min	Time
2299.8	10.3	-20.8	81.1

Test Program: ES2re Lumbar Flexion Test  
 ATD Serial No.: F037

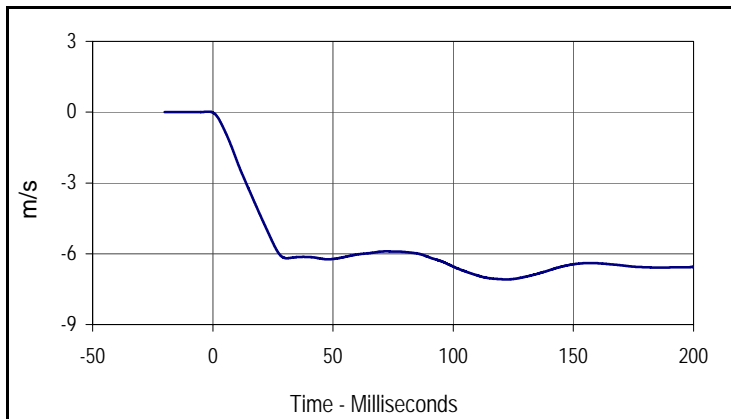
Test Date: 4/17/14  
 Test I.D.: F037LB058



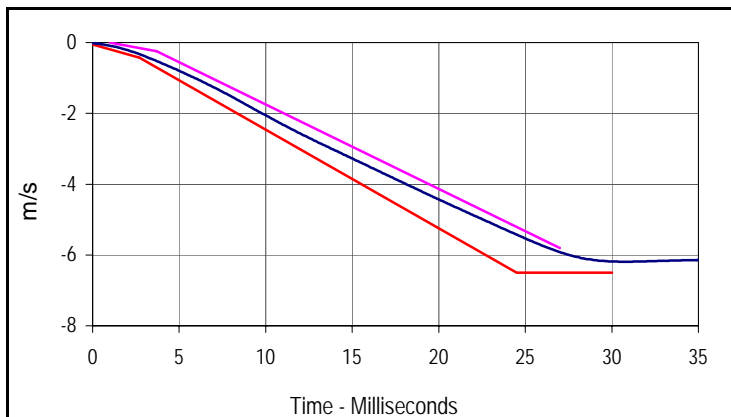
Tested Parameter	Units	Specification	Result	Pass/Fail
Lumbar Spine Assembly Soak Time	Minutes	≥240	935	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.4	Pass
Humidity During Soak	Max	10.0 to 70.0	28.3	Pass
	Min		27.3	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	28.1	Pass
Pendulum Velocity	m/s	5.95 to 6.15	6.06	Pass
Headform Rotation	Max	45 to 55	49.9	Pass
	Time	39 to 53	44.7	Pass
Time of Decay to Zero Angle from Peak	msec	37 to 57	41.6	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
3.4	140.5	-27.5	9.8



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.2	-7.1	122.9



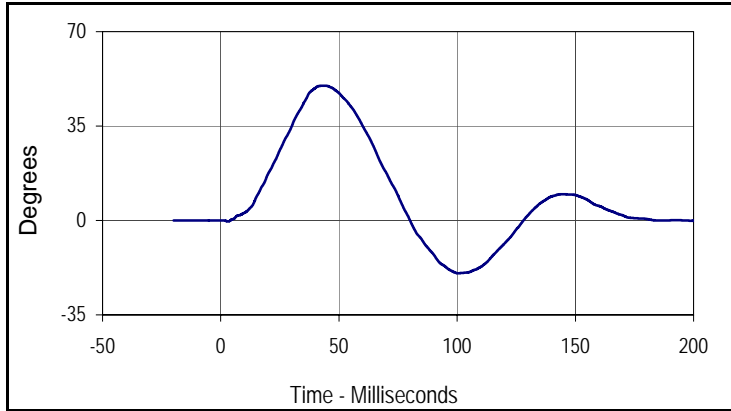
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.2	-7.1	122.9

Velocity Corridors

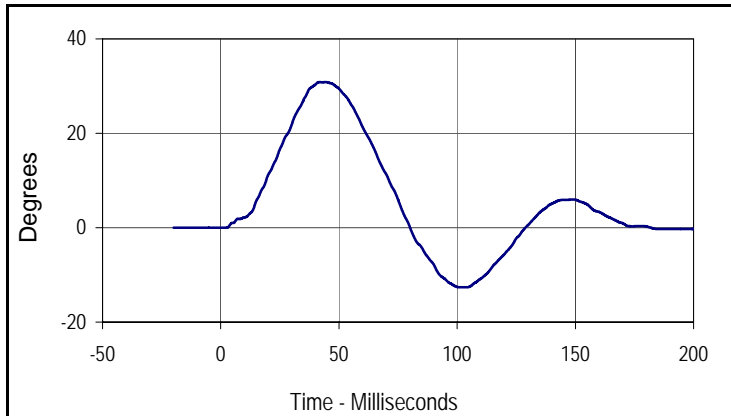
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.7	-0.24	2.7	-0.425
27.0	-5.80	24.5	-6.50
		30.0	-6.50

Test Program: ES2re Lumbar Flexion Test  
 ATD Serial No.: F037

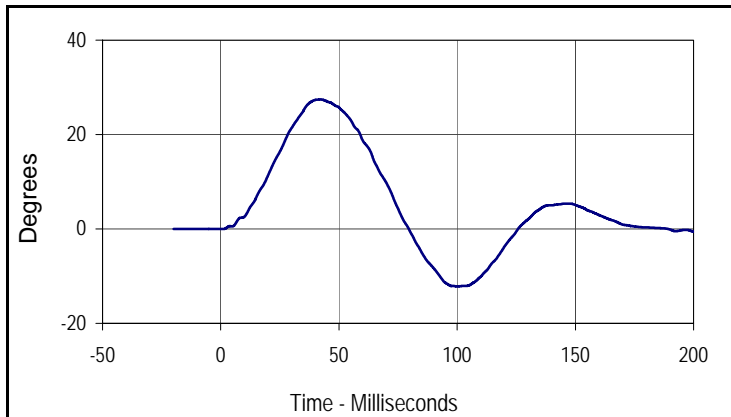
Test Date: 4/17/14  
 Test I.D.: F037LB058



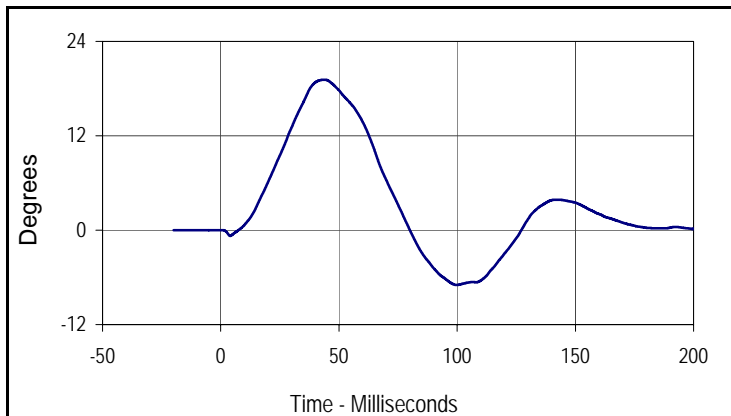
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
49.9	44.7	-19.6	101.1



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
30.8	45.0	-12.6	104.3



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
27.4	42.9	-12.2	100.6



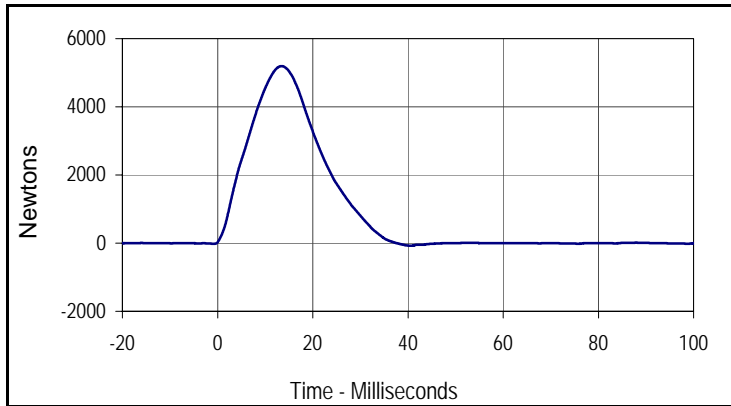
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
19.1	44.4	-7.0	100.4

Test Program: ES2re Pelvis Impact Test  
 ATD Serial No.: F037

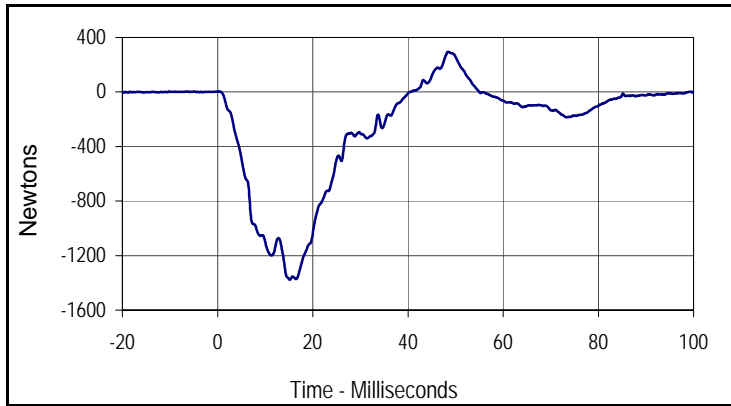
Test Date: 4/17/14  
 Test I.D.: F037PL058



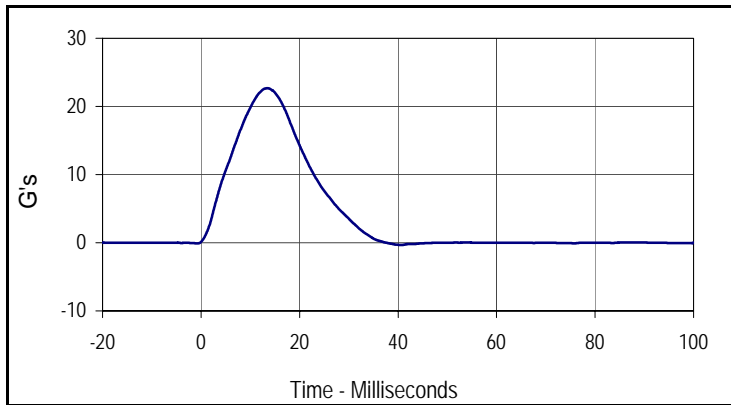
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	990	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.4	Pass
Humidity During Soak	Max	10.0 to 70.0	28.3	Pass
	Min		27.3	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	28.3	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.33	Pass
Peak Impactor Force	N	4700 to 5400	5191.8	Pass
	msec	11.8 to 16.1	13.5	Pass
Peak Pubic Symphysis Load	N	-1230 to -1590	-1377.0	Pass
	msec	12.2 to 17.0	15.2	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
5191.8	13.5	-78.6	40.6



Curve Description			
Pubic Symphysis Force Y			
Plot No.	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
294.2	48.5	-1377.0	15.2



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
22.7	13.5	-0.3	40.6

Test Program: SID IIs External Measurements

Test Date: 4/18/14



ATD Serial No.: 307

Test I.D.: N/A

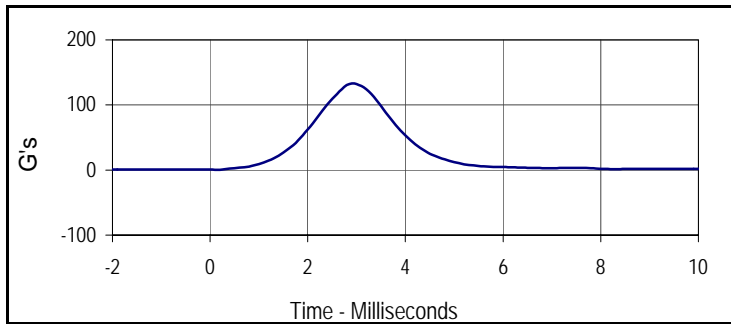
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity	%	10 to 70	28	Pass
A Sitting Height	mm	772 - 788	778	Pass
B Shoulder Pivot Height	mm	437 - 453	443	Pass
C H-Point Height	mm	79 - 89	85	Pass
D H-Point from Seatback	mm	141 - 151	144	Pass
E Shoulder Pivot from Backline	mm	97 - 107	102	Pass
F Thigh Clearance	mm	119 - 135	128	Pass
G Head Breadth	mm	140 - 148	145	Pass
H Head Back from Backline	mm	40 - 46	43	Pass
I Head Depth	mm	178 - 188	185	Pass
J Head Circumference	mm	541 - 551	546	Pass
K Buttock to Knee Length	mm	514 - 540	525	Pass
L Popliteal Height	mm	343 - 369	351	Pass
M Knee Pivot to Floor Height	mm	392 - 409	400	Pass
N Buttock Popliteal Length	mm	416 - 442	432	Pass
O Chest Depth w/o Jacket	mm	195 - 211	205	Pass
P Foot Length	mm	216 - 232	223	Pass
Q Hip Breadth with Pelvic Plug	mm	313 - 323	319	Pass
R Arm Length	mm	249 - 259	254	Pass
S Knee Joint to Seatback	mm	477 - 493	483	Pass
V Shoulder Width	mm	341 - 357	351	Pass
W Foot Width	mm	78 - 94	89	Pass
Y Chest Circumference with Jacket	mm	851 - 881	872	Pass
Z Waist Circumference	mm	760 - 791	774	Pass
Overall Test Results				Pass

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

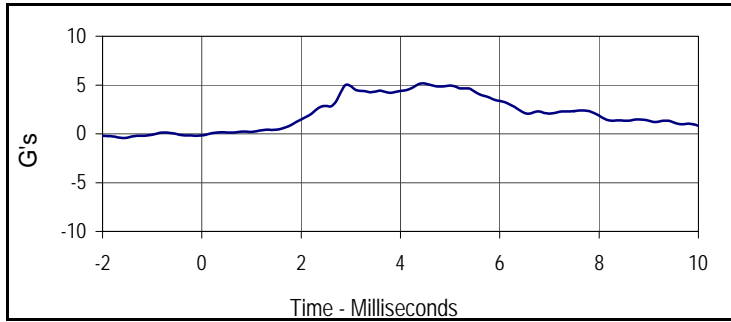
Test Date: 4/18/14  
 Test I.D.: 307HD066



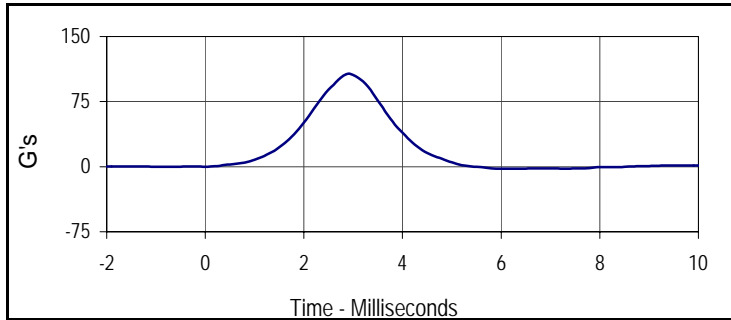
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	550	Pass
Temperature During Soak	Max	18.9 to 25.6	21.4	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	29.0	Pass
	Min		28.5	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	28.5	Pass
Peak Head Resultant Acceleration	G's	115 to 137	133.3	Pass
Peak Head X Acceleration	G's	<15	5.2	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	2.4	Pass
Overall Test Results				Pass



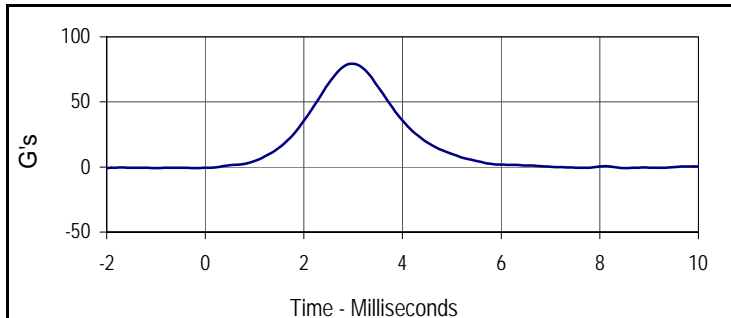
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
133.3	2.9	0.6	0.2



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
5.2	4.5	-0.4	-1.6



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
107.2	2.9	-2.5	6.0



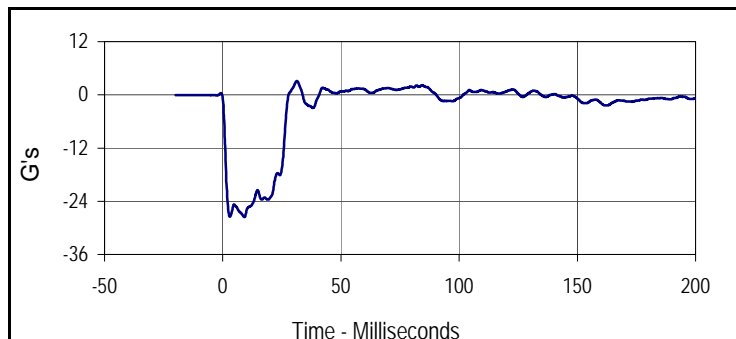
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
79.4	3.0	-0.8	8.6

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

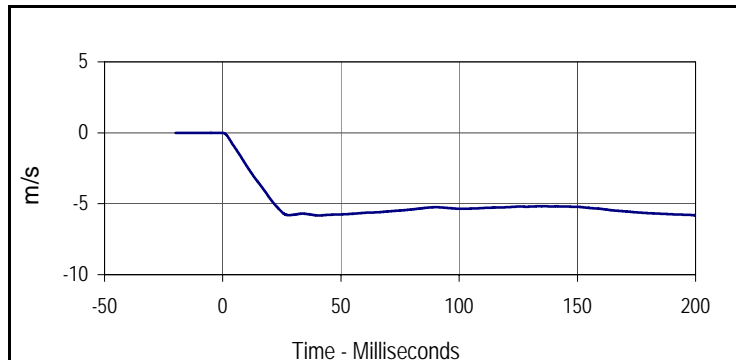
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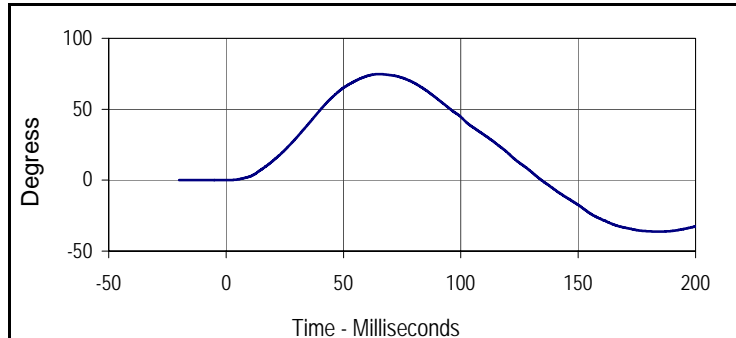
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	625	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.4	Pass	
	Min		21.2	Pass	
Humidity During Soak	Max	10.0 to 70.0	29.0	Pass	
	Min		28.5	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	28.5	Pass	
Pendulum Velocity	m/s	5.51 to 5.63	5.54	Pass	
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.31	Pass
	15 msec	m/s	-3.30 to -4.10	-3.49	Pass
	20 msec	m/s	-4.40 to -5.40	-4.63	Pass
	25 msec	m/s	-5.40 to -6.10	-5.58	Pass
	25-100 msec	m/s	-5.50 to -6.20	-5.83	Pass
D-Plane Rotation	Max	Degrees	71 to 81	74.8	Pass
	Time	msec	50 to 70	65.2	Pass
Peak Occipital Condyle Moment	Nm	-36 to -44	-43.1	Pass	
Decaying Moment Time to Cross 0 Nm	msec	102 to 126	113.4	Pass	
Overall Test Results			Pass	Pass	



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
3.1	0.0	-27.6	0.0



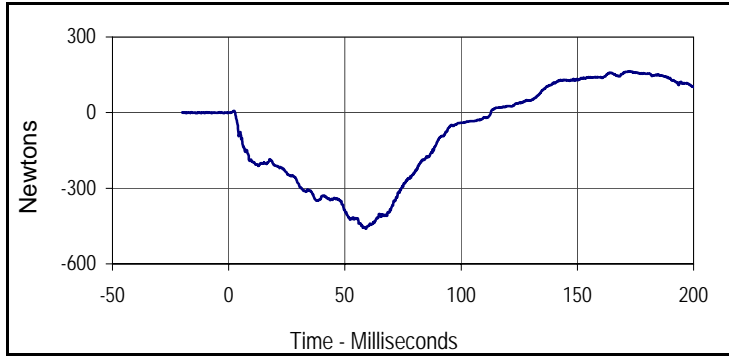
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	180	m/s
Max	Time	Min	Time
0.0	-20.0	-5.8	40.8



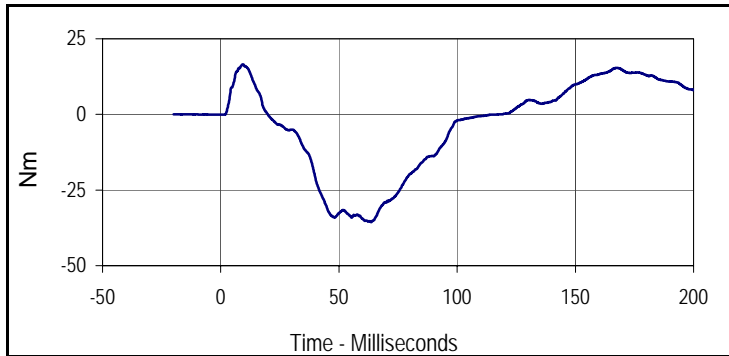
Curve Description			
D-Plane Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degress
Max	Time	Min	Time
74.8	65.2	-36.2	184.1

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

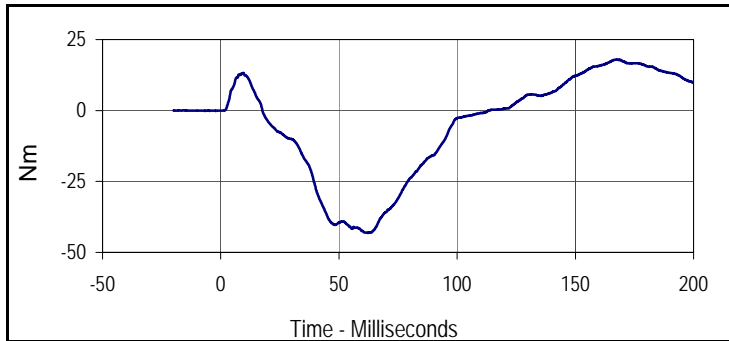
Test Date: 4/18/14  
 Test I.D.: 307NB066



Curve Description			
Neck Force Y			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
164.1	172.7	-460.3	59.1



Curve Description			
Neck Moment X			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
16.5	9.5	-35.6	63.7



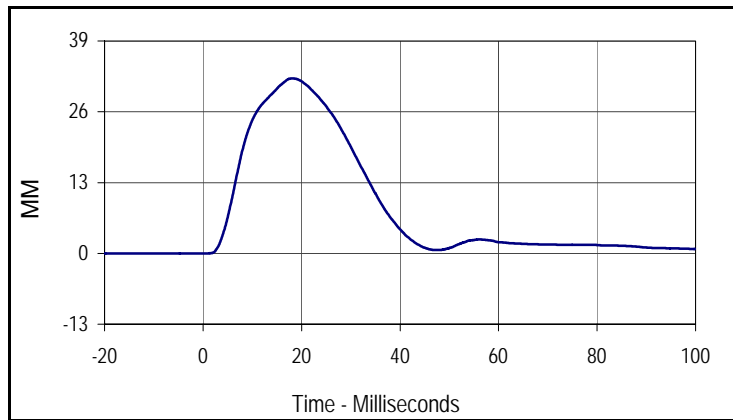
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
006	FIL	600	Nm
Max	Time	Min	Time
18.0	167.3	-43.1	62.5

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

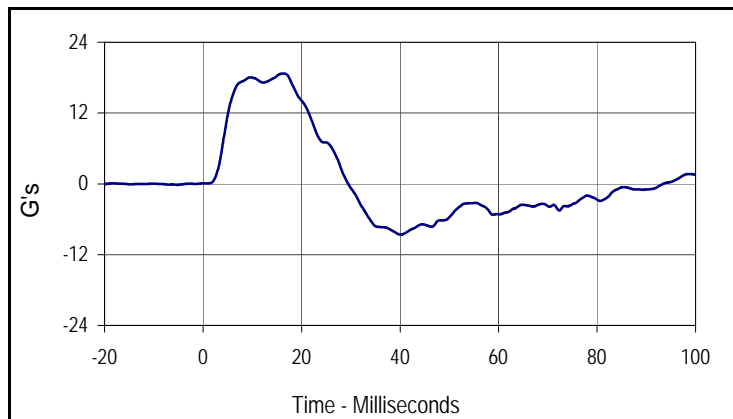
Test Date: 4/18/14  
 Test I.D.: 307SH066



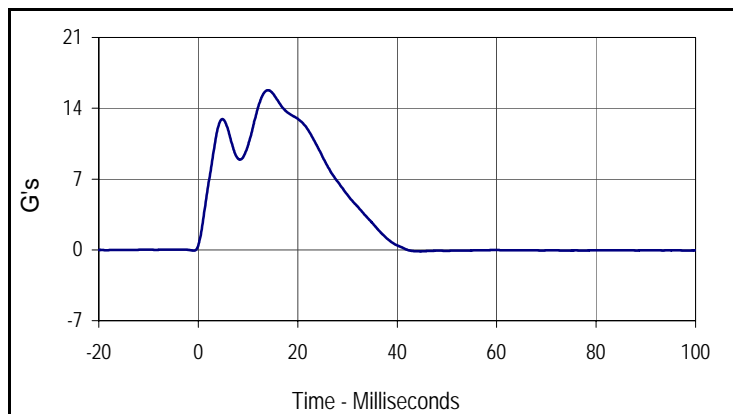
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	680	Pass
Temperature During Soak	Max	20.6 to 22.2	21.4	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	29.0	Pass
	Min		28.5	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	28.6	Pass
Impactor Velocity	m/s	4.20 to 4.40	4.31	Pass
Peak Shoulder Deflection	mm	28 to 37	32.1	Pass
Peak Lateral Spine Acceleration Y	G's	17 to 22	18.7	Pass
Peak Impactor Acceleration	G's	13 to 18	15.8	Pass
Overall Test Results				Pass



Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
32.1	18.0	0.0	-17.9



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
18.7	16.4	-8.6	40.1



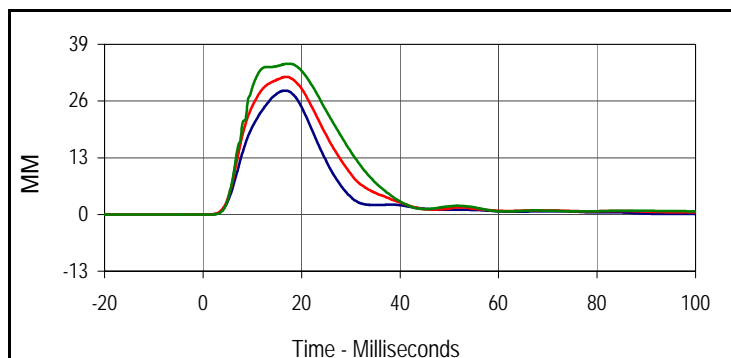
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
15.8	14.0	-0.2	44.7

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

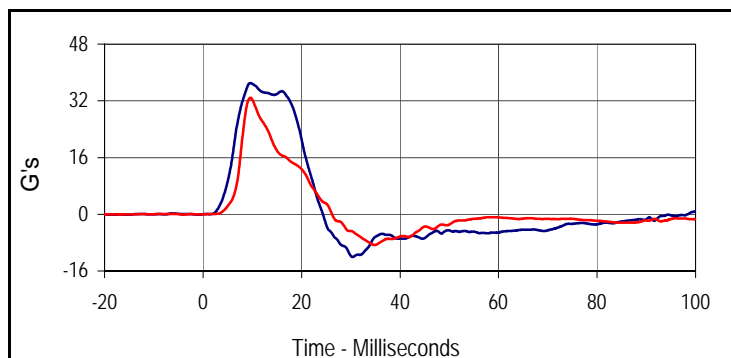
Test Date: 4/18/14  
 Test I.D.: 307TWA066



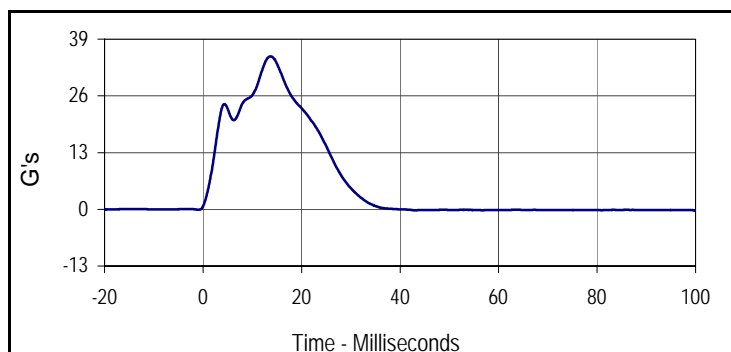
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	725	Pass
Temperature During Soak	Max	20.6 to 22.2	21.4	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	29.0	Pass
	Min		28.5	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	28.8	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.70	Pass
Peak Shoulder Deflection	mm	31 to 40	35.3	Pass
Peak Upper Thorax Rib Deflection	mm	25 to 32	28.4	Pass
Peak Middle Thorax Rib Deflection	mm	30 to 36	31.5	Pass
Peak Lower Thorax Rib Deflection	mm	32 to 38	34.6	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	37.0	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	32.9	Pass
Peak Impactor Acceleration	G's	30 to 36	35.1	Pass
<b>Overall Test Results</b>				<b>Pass</b>



Curve Description			
<b>Upper Thorax Deflection</b>			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
28.4	16.5	0.0	-4.2
<b>Middle Thorax Deflection</b>			
Max	Time	Min	Time
31.5	16.9	0.0	-6.7
<b>Lower Thorax Deflection</b>			
Max	Time	Min	Time
34.6	17.2	0.0	-7.2



Curve Description			
<b>Upper Spine Y Acceleration</b>			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
37.0	9.5	-12.0	30.3
<b>Lower Spine Y Acceleration</b>			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
32.9	9.6	-8.7	34.8



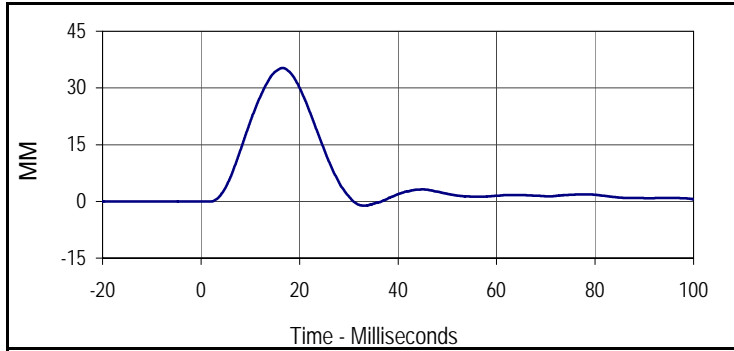
Curve Description			
<b>Impactor Acceleration</b>			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
35.1	13.7	-0.3	99.9

Test Program: SID IIs Thorax with Arm Impact Test

ATD Serial No.: 307

Test Date: 4/18/14

Test I.D.: 307TWA066



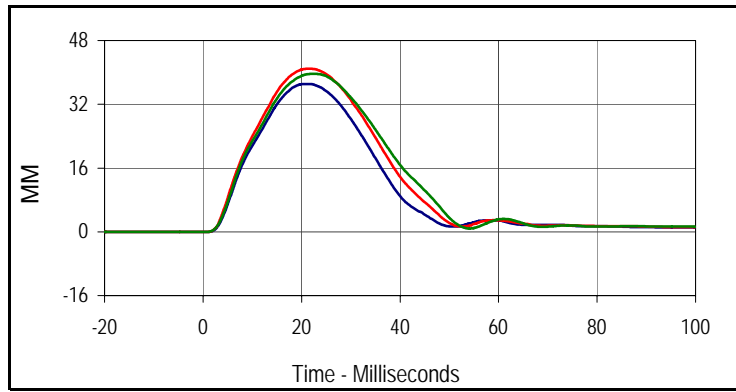
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	MM
Max	Time	Min	Time
35.3	16.5	-1.1	33.0

Test Program: SID IIs Thorax without Arm Impact Test  
 ATD Serial No.: 307

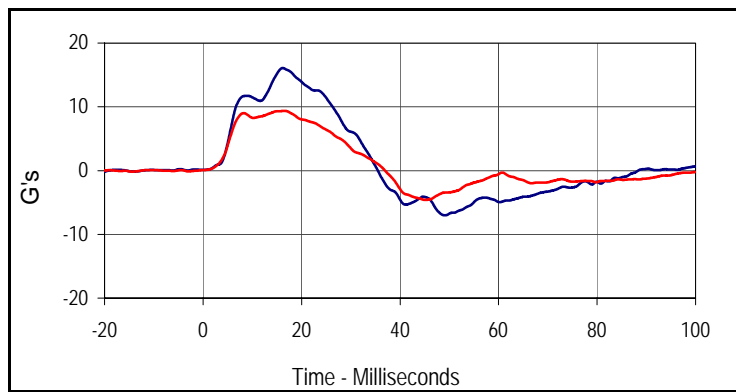
Test Date: 4/18/14  
 Test I.D.: 307TWOA066



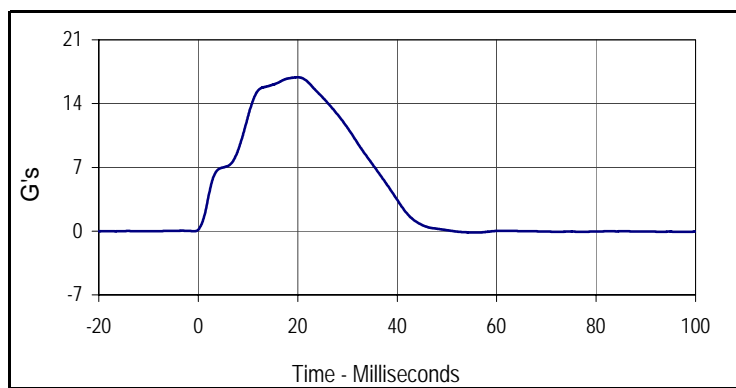
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	775	Pass
Temperature During Soak	Max	18.9 to 25.6	21.4	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	29.0	Pass
	Min		28.5	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	28.9	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.27	Pass
Peak Upper Thorax Rib Deflection	mm	32 to 40	37.1	Pass
Peak Middle Thorax Rib Deflection	mm	39 to 45	40.9	Pass
Peak Lower Thorax Rib Deflection	mm	35 to 43	39.6	Pass
Peak Upper Spine Y Acceleration	G's	13 to 17	16.1	Pass
Peak Lower Spine Y Acceleration	G's	7 to 11	9.4	Pass
Peak Impactor Acceleration	G's	14 to 18	16.9	Pass
Overall Test Results				Pass



Curve Description			
<b>Upper Thorax Deflection</b>			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
37.1	21.2	0.0	-16.3
<b>Middle Thorax Deflection</b>			
Max	Time	Min	Time
40.9	21.4	0.0	-9.6
<b>Lower Thorax Deflection</b>			
Max	Time	Min	Time
39.6	22.5	0.0	-8.6



Curve Description			
<b>Upper Spine Y Acceleration</b>			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
16.1	16.2	-7.0	49.1
<b>Lower Spine Y Acceleration</b>			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
9.4	16.6	-4.6	45.2



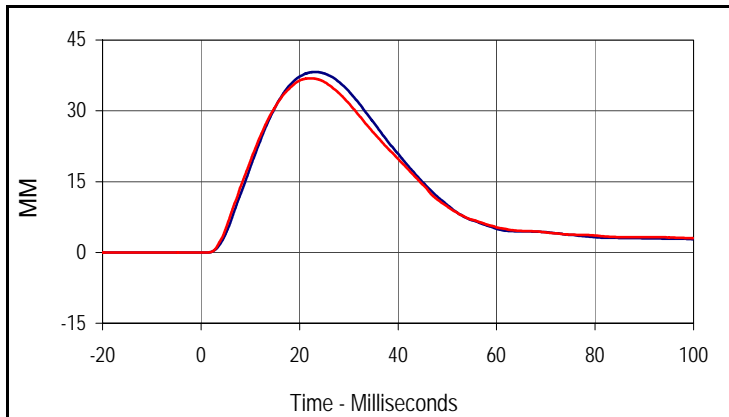
Curve Description			
<b>Impactor Acceleration</b>			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
16.9	20.0	-0.2	55.7

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

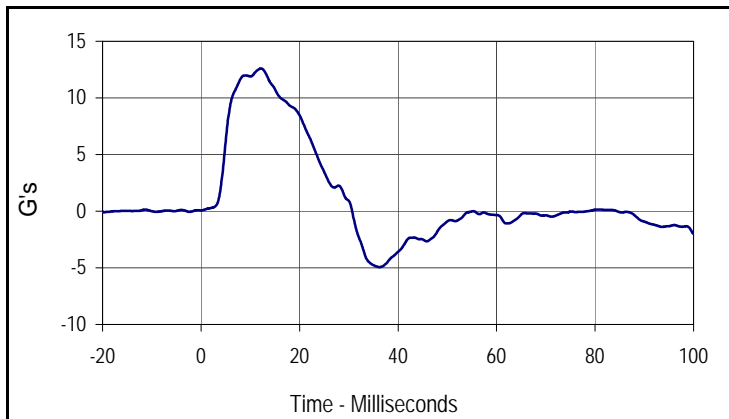
Test Date: 4/18/14  
 Test I.D.: 307ABD066



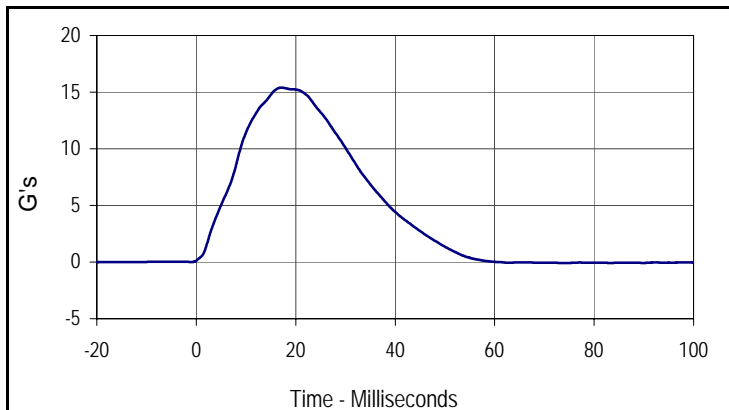
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	810	Pass
Temperature During Soak	Max	20.6 to 22.2	21.4	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	29.0	Pass
	Min		28.5	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	28.9	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.39	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	38.2	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	36.9	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	12.6	Pass
Peak Impactor Acceleration	G's	12 to 16	15.4	Pass
Overall Test Results				Pass



Curve Description			
Upper Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
38.2	23.2	0.0	-18.2
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
36.9	22.1	0.0	-13.7

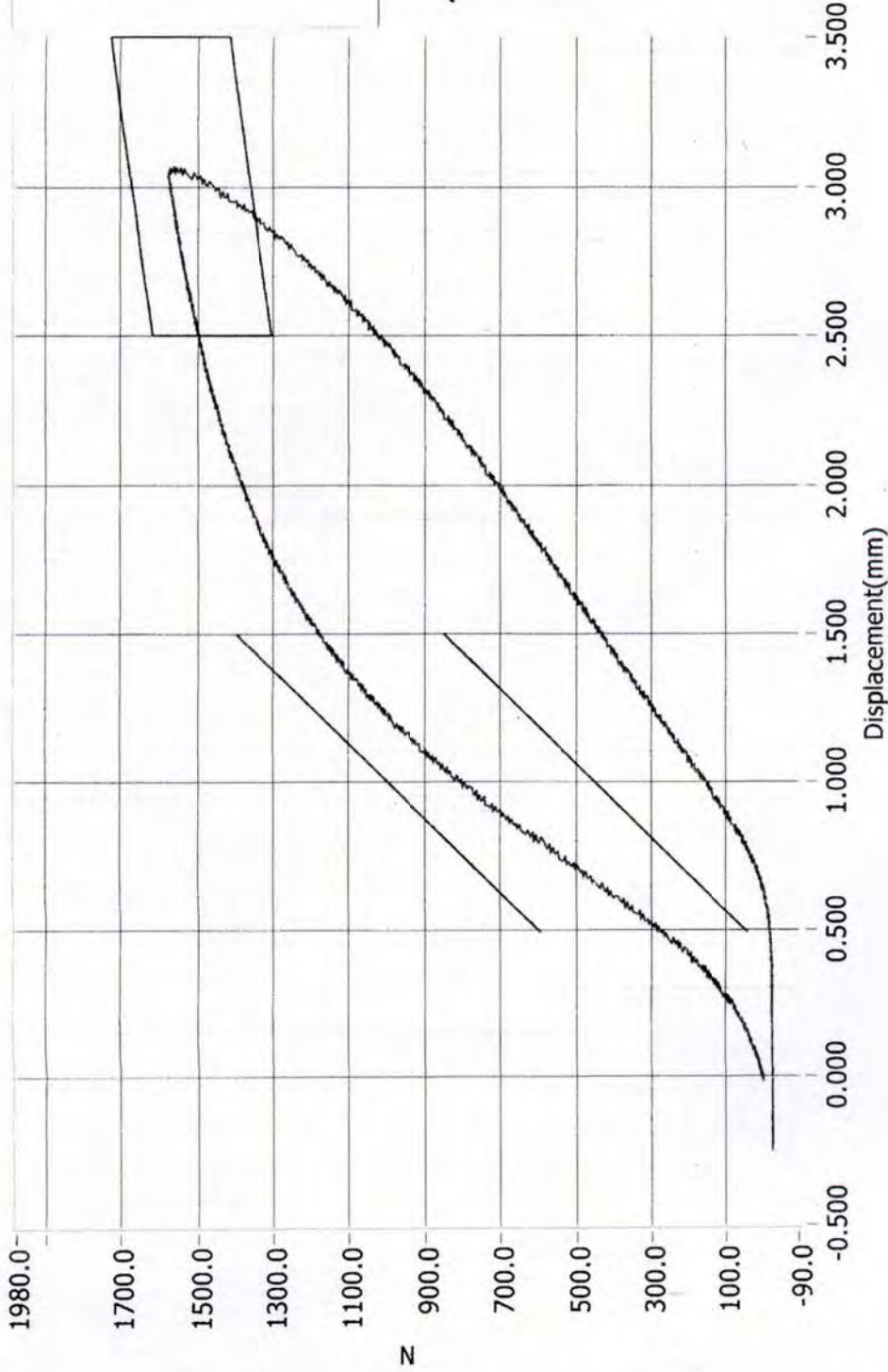


Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
12.6	12.2	-4.9	36.2



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.4	17.2	-0.1	73.7

# Resultant Data - SIDIIs Plug Compression



- Loading Curve
- Boundary Limit Upper
- Boundary Limit Lower
- Peak Load Upper
- Peak Load Lower
- Peak Defl Upper
- Peak Defl Lower

1571N

ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
	63386	1/28/2013	6:08 PM
Cert ID	ATD Serial Number	ATD Type	
	N/A	SIDIIs	

**M20145105 POST TEST**

Current Date : 1/28/2013

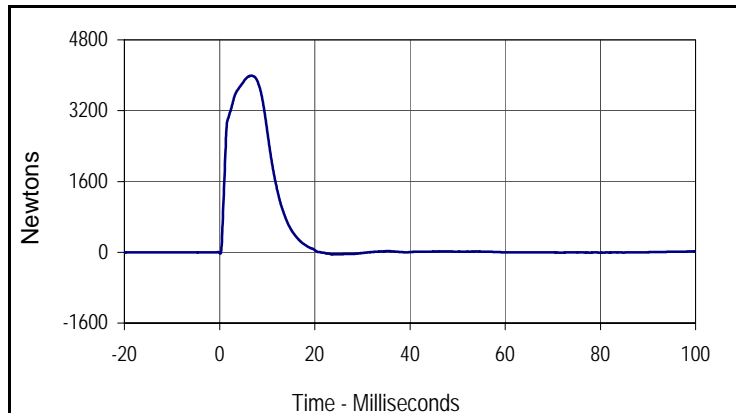
Current Time : 18:09:29

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

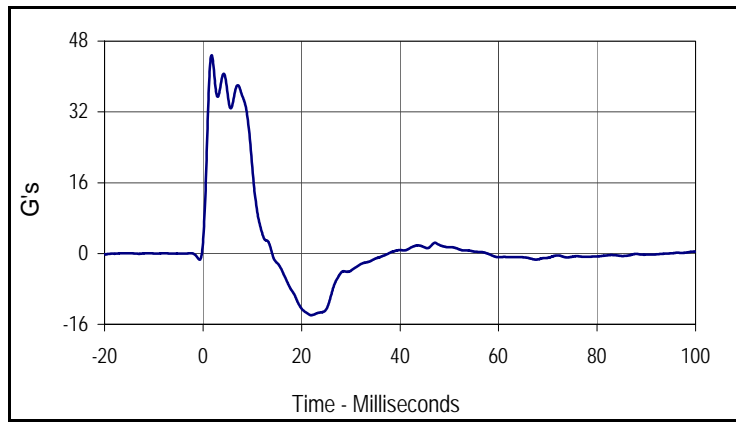
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 Test I.D.: 307ACET066



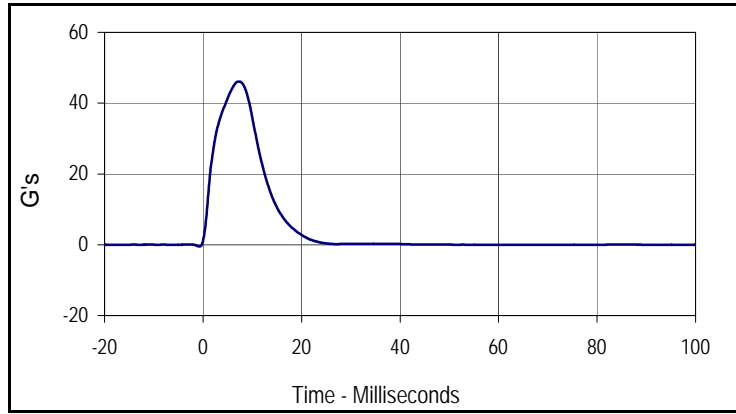
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	855	Pass
Temperature During Soak	Max	20.6 to 22.2	21.4	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	29.0	Pass
	Min		28.5	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	28.9	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.76	Pass
Peak Acetabulum Force Y	Newtons	3600 to 4300	3991.0	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	38.0	Pass
Peak Impactor Acceleration	G's	38 to 47	46.1	Pass
Overall Test Results				Pass



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3991.0	6.7	-50.9	23.7



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
44.8	1.7	-13.9	22.0



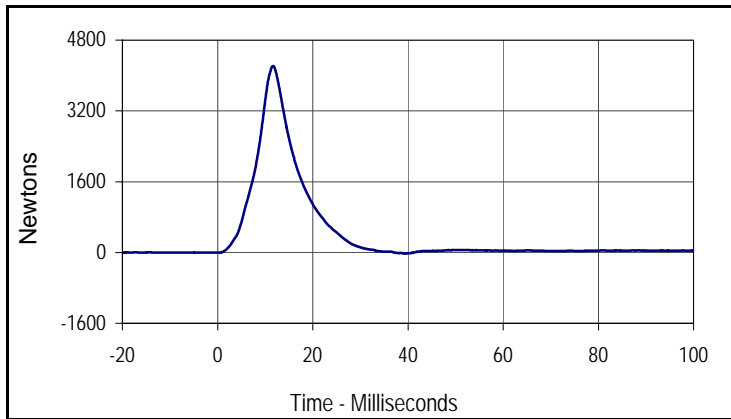
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
46.1	7.3	-0.5	-0.7

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

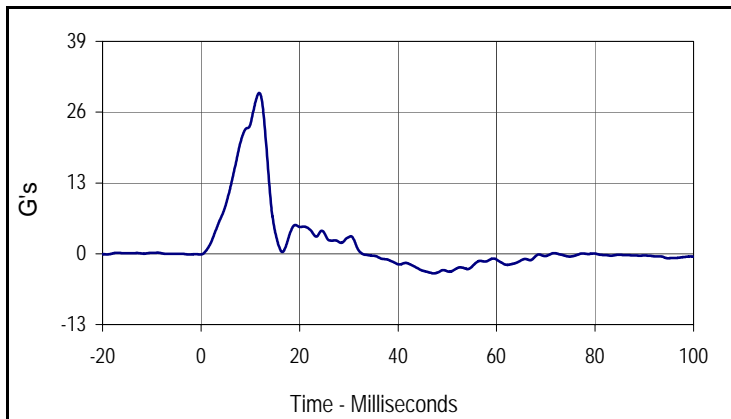
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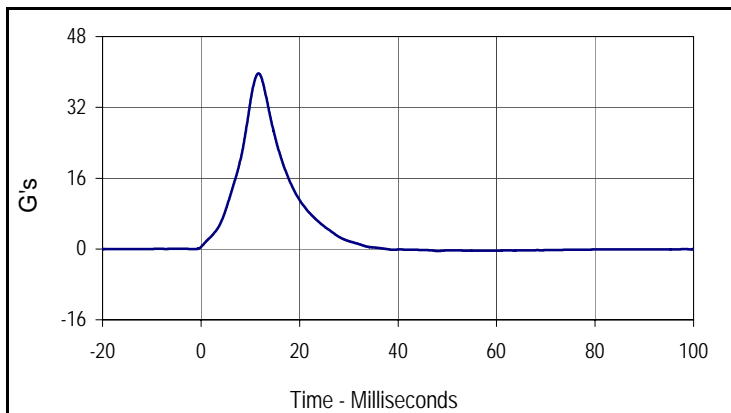
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	925	Pass
Temperature During Soak	Max	20.6 to 22.2	21.4	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	29.0	Pass
	Min		28.5	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	29.0	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.29	Pass
Peak Iliac Force	Newtons	4100 to 5100	4217.5	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	29.5	Pass
Peak Impactor Acceleration	G's	36 to 45	39.7	Pass
Overall Test Results				Pass



Curve Description			
Pelvis Iliac Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4217.5	11.6	-23.0	39.1



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
29.5	11.8	-3.6	47.3



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
39.7	11.7	-0.5	48.1

**APPENDIX D**  
**TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA**

**TABLE 1 – Dummy Instrumentation (ES-2re)**

			ES-2re S/N F037		
			Serial Number	Manufacturer	Calibration
Head Accelerometers	Primary	X	P58858	Endevco	4/9/14
		Y	P58865	Endevco	4/9/14
		Z	P58867	Endevco	4/9/14
	Redundant	X	P58859	Endevco	4/9/14
		Y	P58866	Endevco	4/9/14
		Z	P58873	Endevco	4/9/14
Thorax Rib Displacement Potentiometers	Upper	Y	209	FTSS	4/10/14
	Middle	Y	210	FTSS	4/10/14
	Lower	Y	207	FTSS	4/10/14
Abdomen Load Cells	Forward	Y	1504	Denton	5/9/13
	Middle	Y	1505	Denton	5/9/13
	Rear	Y	1506	Denton	5/9/13
Lower Spine Accelerometers (T12)		X	P16336	Endevco	4/9/14
		Y	P58876	Endevco	4/10/14
		Z	P58877	Endevco	4/10/14
Pubic Symphysis Load Cell		Y	DG6834	Denton	5/9/13

**TABLE 2 – Dummy Instrumentation (SID-IIs)**

			SID-IIs S/N 307			
			Serial Number	Manufacturer	Calibration	
Head Accelerometers	Primary	X	P58900	Endevco	2/18/14	
		Y	P58902	Endevco	2/18/14	
		Z	P58983	Endevco	2/18/14	
	Redundant	X	P58901	Endevco	2/18/14	
		Y	P58906	Endevco	2/18/14	
		Z	P58989	Endevco	2/18/14	
Displacement Potentiometers	Thoracic Rib	Upper	Y	1249	FTSS	2/19/14
		Middle	Y	1265	FTSS	2/19/14
		Lower	Y	1277	FTSS	2/19/14
	Abdominal Rib	Upper	Y	1286	FTSS	2/19/14
		Lower	Y	1290	FTSS	2/19/14
Lower Spine Accelerometers (T12)		X	P59007	Endevco	2/19/14	
		Y	P59015	Endevco	2/19/14	
		Z	P58995	Endevco	2/19/14	
Acetabulum Load Cell		Y	277	Denton	4/19/13	
Iliac Wing Load Cell		Y	289	Denton	4/19/13	
Pelvis Plug (Struck Side)			63029	FTSS	1/18/13	
Pelvis Plug (Non-Struck Side)			48934	FTSS	12/5/11	

**TABLE 3 – Vehicle Instrumentation**

Vehicle Instrumentation			Serial Number	Manufacturer	Calibration Date
1	Vehicle Center of Gravity	X	Keva202x	ICSensor	2/21/14
	Vehicle Center of Gravity	Y	Keva202y	ICSensor	2/21/14
	Vehicle Center of Gravity	Z	Keva202z	ICSensor	2/21/14
2	Right Sill at Front Seat	X	MS22914	MSI	3/19/14
	Right Sill at Front Seat	Y	MS22902	MSI	3/19/14
	Right Sill at Front Seat	Z	MS22924	MSI	3/19/14
3	Right Sill at Rear Seat	X	A124102	MSI	3/20/14
	Right Sill at Rear Seat	Y	MS22927	MSI	3/20/14
	Right Sill at Rear Seat	Z	MS22935	MSI	3/20/14
4	Left Sill at Front Door	Y	13703	Endevco	3/19/14
5	Left Sill at Rear Door	Y	A136676	MSi	2/22/14
6	Left A-Post Lower	Y	A136719	MSI	3/20/14
7	Left A-Post Middle	Y	A136669	MSI	3/20/14
8	Left B-Post Lower	Y	A136731	MSI	3/20/14
9	Left B-Post Middle	Y	A136665	MSI	3/20/14
10	Front Seat Track	Y	A136688	MSI	3/20/14
11	Rear Seat Structure	Y	N/A	N/A	N/A
12	Right Rear Occ. Compartment	Y	A135450	MSI	2/22/14
13	Engine Block	X	A136686	MSI	3/20/14
	Engine Block	Y	A136721	MSI	3/20/14
14	Rear Floorpan Above Axle	X	A135444	MSI	2/22/14
	Rear Floorpan Above Axle	Y	A135434	MSI	2/22/14
	Rear Floorpan Above Axle	Z	A135432	MSI	2/22/14

**TABLE 4 – MDB Instrumentation**

		Serial Number	Manufacturer	Calibration Date
MDB Center of Gravity	X	A128040	Endevco	3/20/14
MDB Center of Gravity	Y	A127957	Endevco	3/20/14
MDB Center of Gravity	Z	A128036	Endevco	3/20/14
Left Frame at Rear Axle Centerline	X	A124104	Endevco	3/20/14
Left Frame at Rear Axle Centerline	Y	A128039	Endevco	3/20/14