

REPORT NUMBER: SINCAP-KAR-15-009

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

**TOYOTA MOTOR MANUFACTURING, TEXAS, INC.
2015 TOYOTA TACOMA ACCESS CAB 2-DOOR TRUCK**

NHTSA No: M20155305

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



NOVEMBER 11, 2014

FINAL REPORT

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

TECHNICAL REPORT DOCUMENTATION PAGE

1. Report No. SINCAP-KAR-15-009	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle Final Report of New Car Assessment Program Side Impact MDB Testing of a 2015 Toyota Tacoma Access Cab 2-Door Truck NHTSA No. M20155305		5. Report Date November 11, 2014
		6. Performing Organization Code KAR
7. Authors Mr. Steven D. Matsusaka, Engineering Department Supervisor, KARCO Mr. Frank Richardson, Program Manager, KARCO		8. Performing Organization Report No. TR-P34003-06-NC
9. Performing Organization Name and Address KARCO Engineering, LLC. 9270 Holly Rd. Adelanto, CA 92301		10. Work Unit No.
		11. Contract or Grant No. DTNH22-09-D-00122
12. Sponsoring Agency Name and Address U. S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards (NVS-111) 1200 New Jersey Ave., SE, Room W43-410 Washington, D.C. 20590		13. Type of Report and Period Covered Final Test Report, Oct. 28 - Nov. 11, 2014
		14. Sponsoring Agency Code NVS-111
15. Supplementary Notes		

16. Abstract

A 55/28 km/h 90° Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2015 Toyota Tacoma Access Cab 2-door truck 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 October 28, 2014.

The impact velocity of the Moving Deformable Barrier was 62.04 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 25.6° C. The target vehicle's maximum post-test static crush was 305 mm located at level 2. The test vehicle's occupant performance data is as follows:

Measurement Description	Driver ATD (ES-2re)		
	Units	IARV	Result
Head Injury Criteria (HIC ₃₆)		1000	124.7
Maximum Thoracic Rib Deflection	mm	44	36
Total Abdominal Force	N	2500	1126
Pubic Symphysis Force	N	6000	2830

Measurement Description	Passenger ATD (SID-IIs)		
	Units	IARV	Result
Head Injury Criteria (HIC ₃₆)		1000	291.7
Resultant Lower Spine Acceleration	g	82	56
Total Pelvic Force (Sum of Acetubular and Iliac Forces)	N	5525	4246
Maximum Thoracic Rib Deflection	mm	38*	34
Maximum Abdominal Rib Deflection	mm	45*	19

The 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

17. Key Words New Car Assessment Program (NCAP) Side Impact Moving Deformable Barrier (MDB) ES-2re SID-IIs		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division, NPO-411 1200 New Jersey Ave., SE Washington, DC 20590 e-mail: tis@nhtsa.dot.gov FAX 202-493-2833	
19. Security Classification of this report UNCLASSIFIED	20. Security Classification of this page UNCLASSIFIED	21. No. of Pages 162	22. Price

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SECTION 1

TEST PURPOSE AND PROCEDURE

This moving deformable barrier side impact test is part of the MY2015 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 2015 Toyota Tacoma Access Cab 2-door truck. 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 2015 Toyota Tacoma Access Cab 2-door truck 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 62.04 km/h (38.55 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 October 28, 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 ₃₆)		1000	124.7
Maximum Thoracic Rib Deflection	mm	44	36
Combined Abdominal Force	N	2500	1126
Pubic Symphysis Force	N	6000	2830

Measurement Description	Units	Passenger ATD (SID-IIs)	
		Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	291.7
Lower Spine (T12) Resultant Acceleration	g	82	56
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	4246
Maximum Thoracic Rib Deflection	mm	38*	34
Maximum Abdominal Rib Deflection	mm	45*	19

*Proposed IARV

Supplemental restraint information is given below:

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

GENERAL COMMENTS

The 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: 2015 Toyota Tacoma Access Cab 2-Door Truck NHTSA No. M20155305
Test Program: NCAP MDB Side Impact Test Test Date: 10/28/14

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 ²	kPa	6.895
Temperature	General Use	°F	°C	$=(T_f - 32)/1.8$
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf-ft	N•m	1.355

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2015 Toyota Tacoma Access Cab 2-Door Truck NHTSA No. M20155305
 Test Program: NCAP MDB Side Impact Test Test Date: 10/28/14

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	M20155305
Model Year	2015
Make	Toyota
Model	Tacoma Access Cab
Body Style	2-Door Truck
VIN	5TFTX4CN4FX049841
Body Color	Silver Sky Metallic
Odometer Reading (km / mi)	235 / 146
Engine Displacement (L)	2.7
Type / No. of Cylinders	Inline 4
Engine Placement	Longitudinal
Transmission Type	Automatic
Transmission Speeds	4
Overdrive	Yes
Final Drive	Rear
Roof Rack	No
Sunroof / T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes

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

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

N/A

DATA FROM CERTIFICATION LABEL

Manufactured By	Toyota Motor Manufacturing, Texas, Inc.
Date of Manufacture	Sep-14
Vehicle Type	Truck

GVWR (kg)	2220
GAWR Front (kg)	1075
GAWR Rear (kg)	1200

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Designated Seating Capacity	2	2		4
Capacity Weight (VCW) (kg)				473.0
DSC x 68.04 (kg)				272.2
Cargo Weight (RCLW) (kg)				136.0

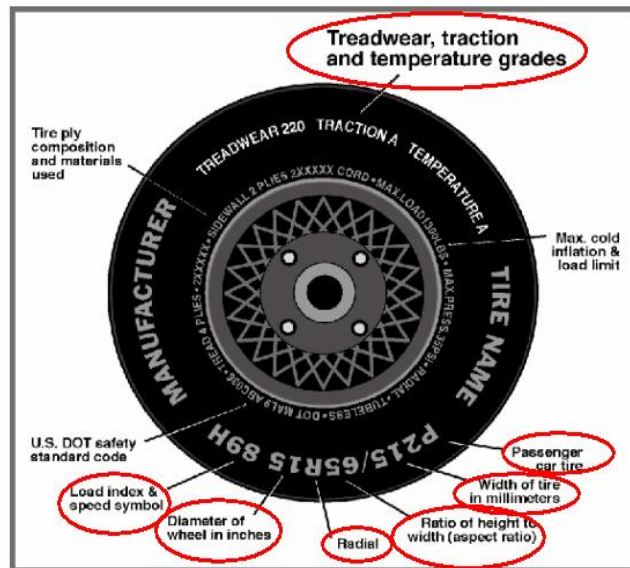
VEHICLE SEAT TYPE

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: 2015 Toyota Tacoma Access Cab 2-Door Truck NHTSA No. M20155305
 Test Program: NCAP MDB Side Impact Test Test Date: 10/28/14



Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	350	350
Cold Pressure (kPa)	210	230
Recommended Tire Size	P215/70R15	P215/70R15
Tire Size on Vehicle	P215/70R15	P215/70R15
Tire Manufacturer	Dunlop	Dunlop
Tire Model	Grandtrek AT20	Grandtrek AT20
Treadware	300	300
Traction Grade	B	B
Temperature Grade	B	B
Tire Plies Sidewall	1 Polyester	1 Polyester
Tire Plies Body	1 Polyester, 2 Steel, 1 Nylon	1 Polyester, 2 Steel, 1 Nylon
Load Index/Speed Symbol	97S	97S
Tire Material	Polyester, Steel, Nylon	Polyester, Steel, Nylon
DOT Safety Code Left	DAM3 C8ER 3414	DAM3 C8ER 3414
DOT Safety Code Right	DAM3 C8ER 3414	DAM3 C8ER 3414

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2015 Toyota Tacoma Access Cab 2-Door Truck NHTSA No. M20155305
 Test Program: NCAP MDB Side Impact Test Test Date: 10/28/14

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	210	210	230	230
Tire Placard	kPa	210	210	230	230
Owner's Manual	kPa	210	210	230	230
As Tested	kPa	210	210	230	230

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	466.5	385.0		517.5	501.0		516.5	501.0	
Right	kg	438.0	366.5		442.5	449.5		447.0	452.0	
Ratio	%	54.6%	45.4%	100.0%	50.2%	49.8%	100.0%	50.3%	49.7%	100.0%
Total	kg	904.5	751.5	1656.0	960.0	950.5	1910.5	963.5	953.0	1916.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1656.0	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 (TVTW)	kg	1917.0	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	786	791	Yes
RF	mm	805	799	Yes
LR	mm	797	795	Yes
RR	mm	808	806	Yes
Vehicle CG (Aft of Front Axle)	mm	1606	1606	
Vehicle CG (Left (+)/Right (-) from Longitudinal Centerline)	mm	48	51	

***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: 2015 Toyota Tacoma Access Cab 2-Door Truck NHTSA No. M20155305

Test Program: NCAP MDB Side Impact Test Test Date: 10/28/14

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Spare Tire Tools	3.5
Ballast / Equipment Added	144.5

Test Height Adjustable Setting (If Applicable)	
--	--

DATA SHEET NO. 2**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA**Test Vehicle: 2015 Toyota Tacoma Access Cab 2-Door Truck NHTSA No. M20155305Test Program: NCAP MDB Side Impact Test Test Date: 10/28/14**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	Fixed	Fixed	Fixed
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 SCRP Height	SCRP Height Position	SCRP Height (mm)		
				Rearmost	Mid Fore/Aft	Forwardmost
Driver Seat	Fixed	672	Max	662	672	682
			Mid	662	672	682
			Min	662	672	682
Front Passenger Seat	Fixed	578	Max	568	578	588
			Mid	568	578	588
			Min	568	578	588
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: 2015 Toyota Tacoma Access Cab 2-Door Truck NHTSA No. M20155305
 Test Program: NCAP MDB Side Impact Test Test Date: 10/28/14

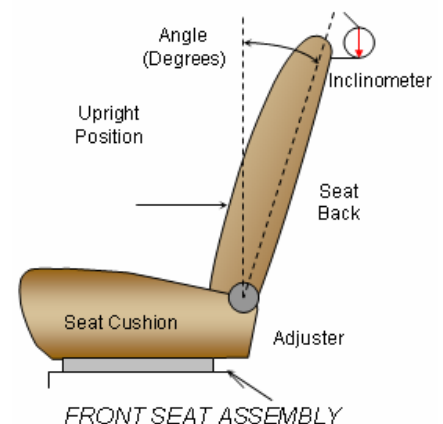
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position From Forwardmost Position	
	mm	Detents	mm	Detent*
Driver Seat	240	17	120	8
Front Passenger Seat	242	17	121	8
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	51.0	26	2.1	4
Front Passenger Seat	50.1	26	2.0	4
Front Center Seat				
Struck Side Rear Seat w/Seated Dummy	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

DATA SHEET NO. 2 ... (CONTINUED)**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA**Test Vehicle: 2015 Toyota Tacoma Access Cab 2-Door Truck NHTSA No. M20155305Test Program: NCAP MDB Side Impact Test Test Date: 10/28/14**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

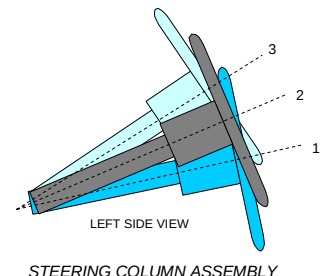
The driver's head restraint is adjusted to the highest and most full forward in-use position. The struck-side rear passenger's head restraint is adjusted to the lowest and most full forward in-use position.

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

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	23.0	53
Geometric Center - Position 2	24.6	64
Uppermost - Position 3	26.2	75
Telescoping Steering Wheel Travel		22
Test Position	24.6	64



DATA SHEET NO. 2 ... (CONTINUED)

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

Test Vehicle: 2015 Toyota Tacoma Access Cab 2-Door Truck

NHTSA No. M20155305

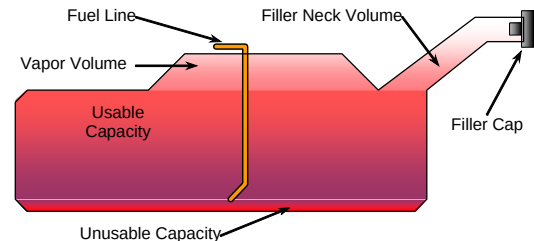
Test Program: NCAP MDB Side Impact Test

Test Date: 10/28/14

FUEL PUMP

The vehicle is equipped with an electric fuel pump.

The fuel pump is activated when the ignition is turned on.



VEHICLE FUEL TANK ASSEMBLY

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	79.86
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	74.26
Actual amount of Solvent Used in Test	74.26
1/3 of Usable Capacity	26.62

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

DATA SHEET NO. 3

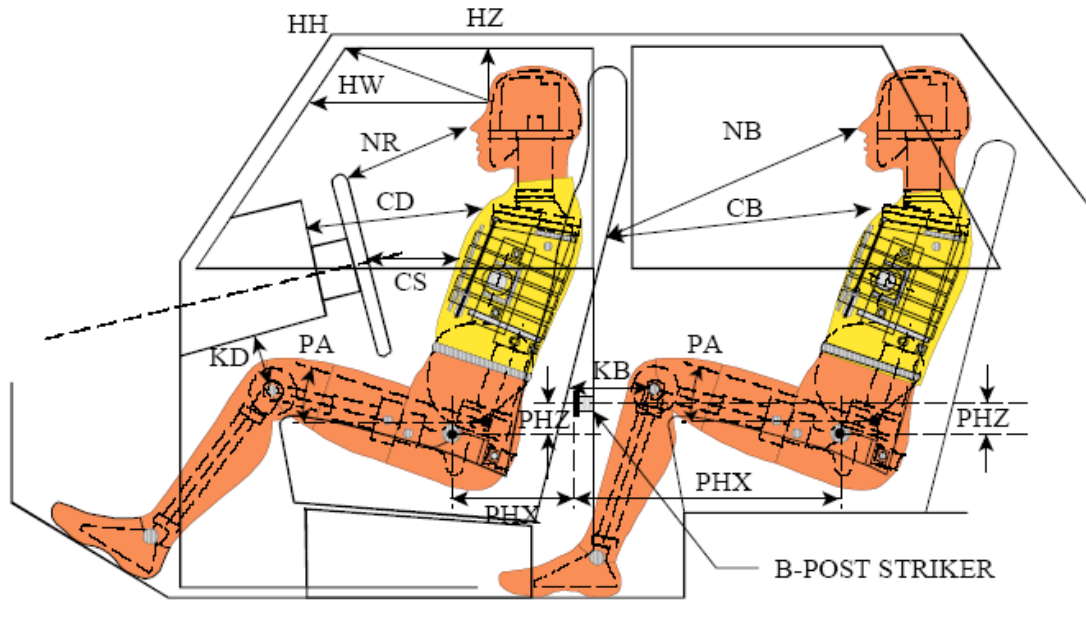
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2015 Toyota Tacoma Access Cab 2-Door Truck

NHTSA No. M20155305

Test Program: NCAP MDB Side Impact Test

Test Date: 10/28/14



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

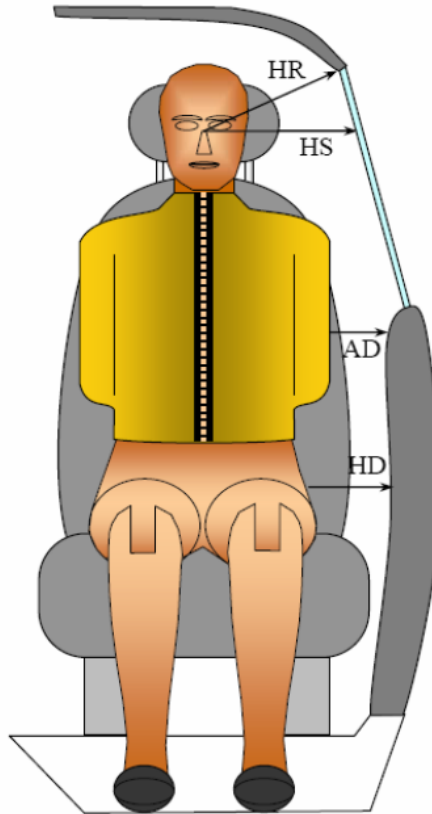
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Description	Driver		Passenger	
			Length (mm)	Angle (°)	Length (mm)	Angle (°)
HH		Head to Header	403			
HW		Head to Windshield	565			
HZ	HZ	Head to Roof	179		270	
NR	NB	Nose to Rim/Seat Back	461		287	
CD	CB	Chest to Dash/Seat Back	557		282	
CS		Chest to Steering Wheel	320			
KD(L)/KDA(L)°	KB(L)/KBA(L)°	Left Knee to Dash/Seat Back	158	40.6	97	20.4
KD(R)/KDA(R)°	KB(R)/KBA(R)°	Right Knee to Dash/Seat Back	145	18.7	86	27.4
PAX°	PAX°	Pelvic Tilt Angle X		16.1		15.7
	PAY°	Pelvic Tilt Angle Y		0.2		0.3
PHX	PHX	Hip Point to Striker (x-axis)	200		477	
PHZ	PHZ	Hip Point to Striker (z-axis)	147		273	

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2015 Toyota Tacoma Access Cab 2-Door Truck NHTSA No. M20155305
Test Program: NCAP MDB Side Impact Test Test Date: 10/28/14



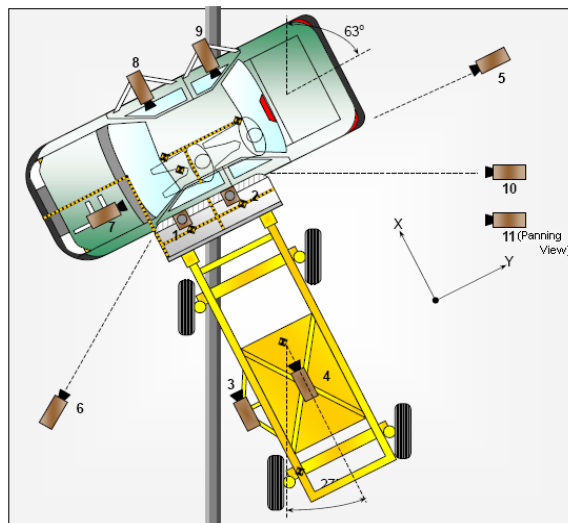
DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	212	259
HS	Head to Side Window	mm	337	381
AD	Arm to Door	mm	99	150
HD	H-Point to Door	mm	136	136

DATA SHEET NO. 5

CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2015 Toyota Tacoma Access Cab 2-Door Truck NHTSA No. M20155305
 Test Program: NCAP MDB Side Impact Test Test Date: 10/28/14



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)	527	-869	-890	24	1000
8	Driver Side (On-Board)	1798	704	-408	12	1000
9	Passenger Side (On-Board)	1728	1425	-433	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

The Driver Front (On-Board) View did not keep the dummy in frame throughout the entire

Impact event due to excessive flexing of the test vehicle's hood.

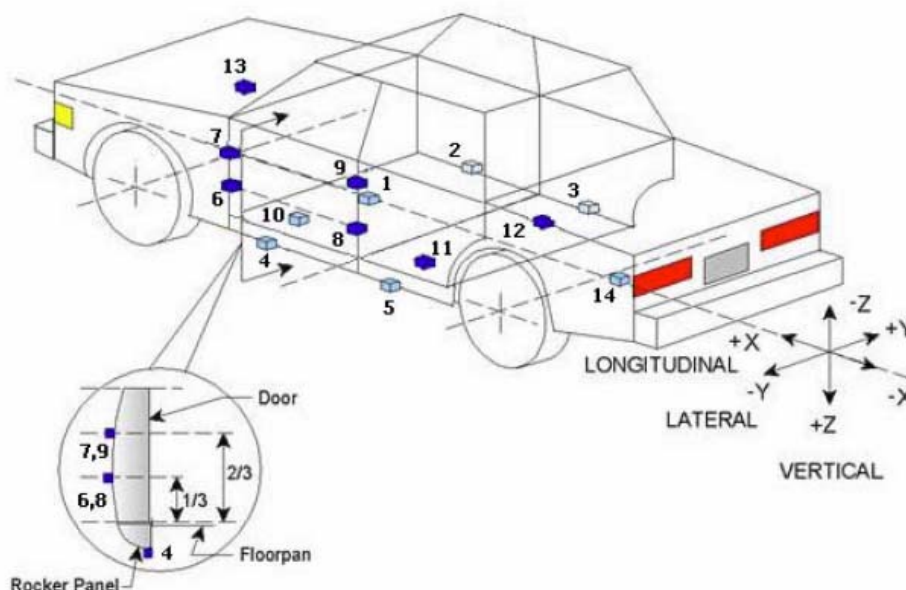
INSTRUMENTATION

Driver Dummy Channels	16
Passenger Dummy Channels	16
Vehicle Structure Accelerometers	20
MDB Accelerometers	5
Total	57

DATA SHEET NO. 6

TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2015 Toyota Tacoma Access Cab 2-Door Truck NHTSA No. M20155305
 Test Program: NCAP MDB Side Impact Test Test Date: 10/28/14



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2590	0	-520
2	Right Sill at Front Seat	2397	710	-447
3	Right Sill at Rear Seat	2519	710	447
4	Left Sill at Front Door	3238	-585	-324
5	Left Sill at Rear Door	2315	-585	-324
6	A-Pillar Lower	3804	-840	-698
7	A-Pillar Middle	3804	-840	-1038
8	B-Pillar Lower			
9	B-Pillar Middle			
10	Front Seat Track	2926	-208	-479
11	Rear Seat Structure			
12	Right Rear Occupant Compartment	2685	431	-445
13	Engine Block	4645	108	-917
14	Rear Floorpan Above Axle	1408	0	-648

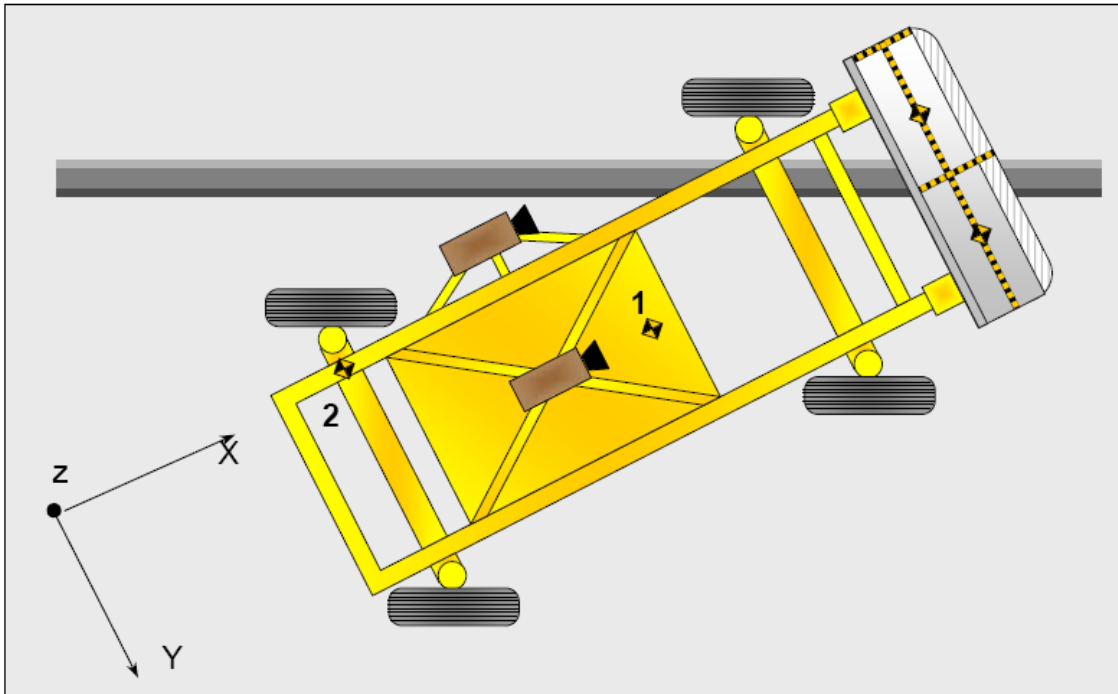
Reference: X – Rear surface of vehicle (+ forward)
 Y – Vehicle centerline (+ to right)
 Z – Ground plane (+ down)

DATA SHEET NO. 7

MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2015 Toyota Tacoma Access Cab 2-Door Truck NHTSA No. M20155305

Test Program: NCAP MDB Side Impact Test Test Date: 10/28/14



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: 2015 Toyota Tacoma Access Cab 2-Door Truck NHTSA No. M20155305
 Test Program: NCAP MDB Side Impact Test Test Date: 10/28/14

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Front Seat Dummy (ES-2re)	Rear Seat Dummy (SID-IIs)
Face	Curtain Airbag, Side Header	Curtain Airbag
Top of Head	Side Header	Curtain Airbag, Side Header
Left Side of Head	Curtain Airbag, Side Header	Curtain Airbag, Side Header
Back of Head	Side Header, Headrest	Curtain Airbag, Side Header, Headrest
Left Shoulder	Torso Airbag, Curtain Airbag	Torso Airbag, Curtain Airbag, C-Pillar Trim, Door Panel
Upper Torso	Seat, Torso Airbag	C-Pillar Trim
Lower Torso	Seat, Torso Airbag	C-Pillar Trim, Door Panel
Left Hip	Seat, Door Panel	Door Panel
Left Knee	Door Panel	Door Panel, Right Knee

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: 2015 Toyota Tacoma Access Cab 2-Door Truck NHTSA No. M20155305
Test Program: NCAP MDB Side Impact Test Test Date: 10/28/14

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: 2015 Toyota Tacoma Access Cab 2-Door Truck NHTSA No. M20155305
Test Program: NCAP MDB Side Impact Test Test Date: 10/28/14

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vehicle Wheel Base	mm		3229
Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point)	mm		507
Actual Impact Point (Aft of Front Axle)	mm		510
Horizontal Offset (+ forward / - rearward)	mm	± 50 of Intended Impact Point	-3
Vertical Offset (+ down / - up)	mm	± 20 of Intended Impact Point	11

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

Test Vehicle: 2015 Toyota Tacoma Access Cab 2-Door Truck NHTSA No. M20155305
 Test Program: NCAP MDB Side Impact Test Test Date: 10/28/14

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	62.04
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	62.09
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	62.6
MDB Crabbed Angle to MDB Forward Line of Motion	degrees	26.0 to 28.0	27.2

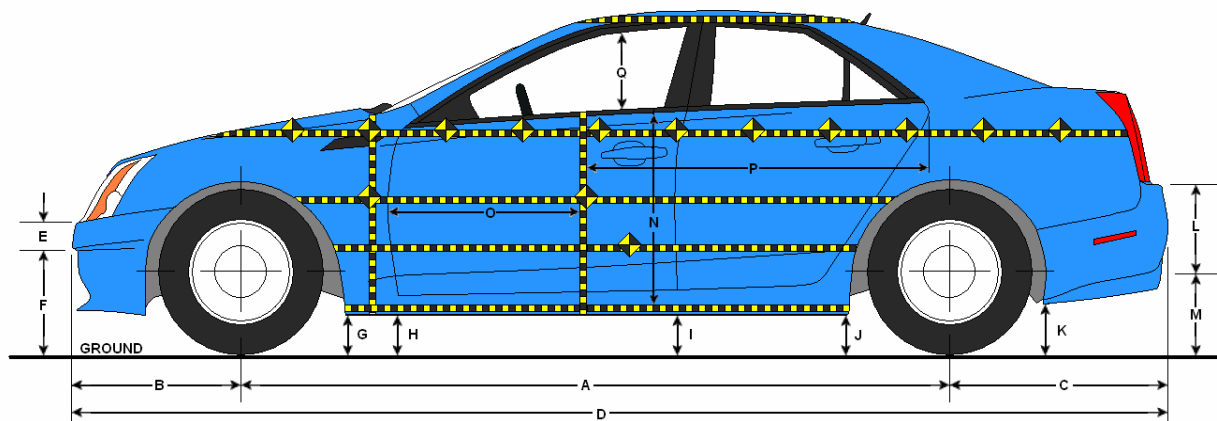
MAXIMUM STATIC CRUSH OF HONEYCOMB FACE

Vertical Location			From Centerline		Max. Crush (mm)
Row	Description	Height (mm)	Distance (mm)	Direction	
A	Center of Bumper	432	800	Right	184
B	Top of Bumper	533	800	Right	147
C	Mid Level	686	800	Right	143
D	Top of Stack	813	800	Right	173

DATA SHEET NO. 10

TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2015 Toyota Tacoma Access Cab 2-Door Truck NHTSA No. M20155305
 Test Program: NCAP MDB Side Impact Test Test Date: 10/28/14



LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	3229	3229	0
B	Front Axle to FSOV	846	874	28
C	Rear Axle to RSOV	1209	1162	-47
D	Total Length at Centerline	5284	5265	-19
E	Front Bumper Thickness	141	140	-1
F	Front Bumper Bottom to Ground	601	593	-8
G	Sill Height at Front Wheel Well	357	347	-10
H	Sill Height at Front Door Leading Edge	350	353	3
I	Sill Height at B-Pillar	358	353	-5
J1	Sill Height at Rear Wheel Well	346	329	-17
J2	Pinch Weld Height at Rear Wheel Well	312	316	4
K	Sill Height Aft of Rear Wheel Well	387	408	21
L	Rear Bumper Thickness	170	173	3
M	Rear Bumper Bottom to Ground	412	409	-3
N	Sill Height to Bottom of Front Window Sill	698	683	-15
O	Front Door Leading Edge to Impact CL	751	744	-7
P	Rear Door Trailing Edge to Impact CL	988	954	-34
Q	Front Window Opening	457	479	22
R	Right Side Length	4474	4478	4
S	Left Side Length	4465	4426	-39
T	Vehicle Width at B-Pillar	1802	1693	-109

All measurements in mm with tolerance of ± 3 mm

DATA SHEET NO. 11

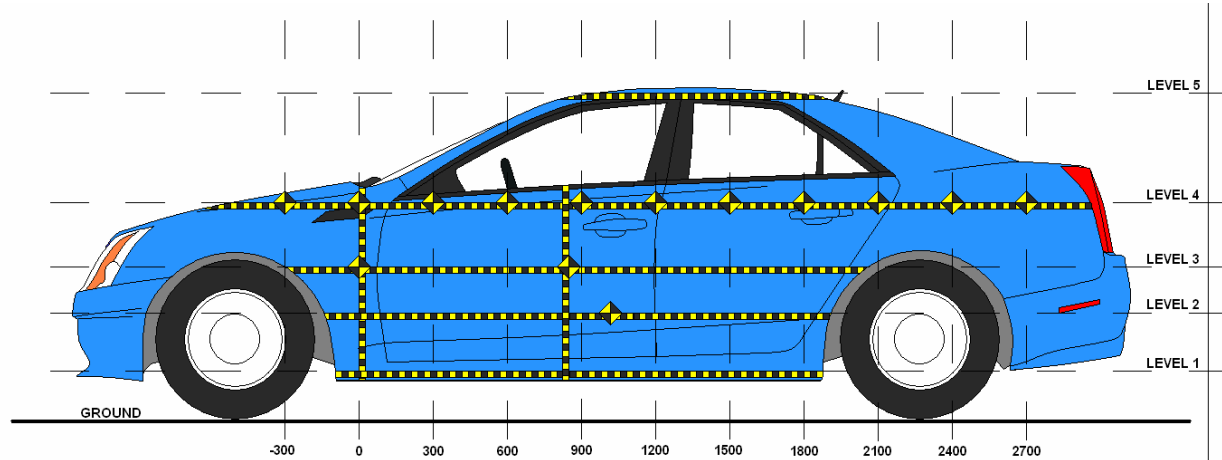
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2015 Toyota Tacoma Access Cab 2-Door Truck

NHTSA No. M20155305

Test Program: NCAP MDB Side Impact Test

Test Date: 10/28/14



LEFT SIDE VIEW

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	395	303	1500
2	Occupant H-Point	708	305	1350
3	Mid-Door	743	294	900
4	Window Sill	1048	202	1200
5	Window Top	632	143	1050

DATA SHEET NO. 11 ... (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2015 Toyota Tacoma Access Cab 2-Door Truck NHTSA No. M20155305

Test Program: NCAP MDB Side Impact Test Test Date: 10/28/14

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															
-300				671					727					56	
-150		583	582	663			666	665	729			83	83	66	
0	625	587	588	655	874	723	682	682	731	975	98	95	94	76	101
150	640	610	608	650	865	865	826	807	714	970	225	216	199	64	105
300	646	602	607	646	863	895	867	860	731	973	249	265	253	85	110
450	647	603	606	643	859	904	884	878	748	977	257	281	272	105	118
600	642	607	605	641	858	911	897	890	765	983	269	290	285	124	125
750	645	606	604	638	858	918	896	897	790	986	273	290	293	152	128
900	647	606	604	637	860	922	896	898	794	994	275	290	294	157	134
1050	642	606	604	636	861	921	888	884	798	1004	279	282	280	162	143
1200	642	606	604	634		929	894	879	836		287	288	275	202	
1350	644	606	604	633		941	911	897	815		297	305	293	182	
1500	645	606	604	633		948	908	896	802		303	302	292	169	
1650	649	609	606	635		939	882	865	800		290	273	259	165	
1800	671	627	623	645		898	850	838	814		227	223	215	169	
1950	674	631	628	654		779	723	723	652		105	92	95	-2	
2100	653	616	622	654		727	675	680	649		74	59	58	-5	
2250		592	595	656			620	618	646			28	23	-10	
2400		587	586				606	602				19	16		
2550															
2700															
2850															

DATA SHEET NO. 11 ... (CONTINUED)

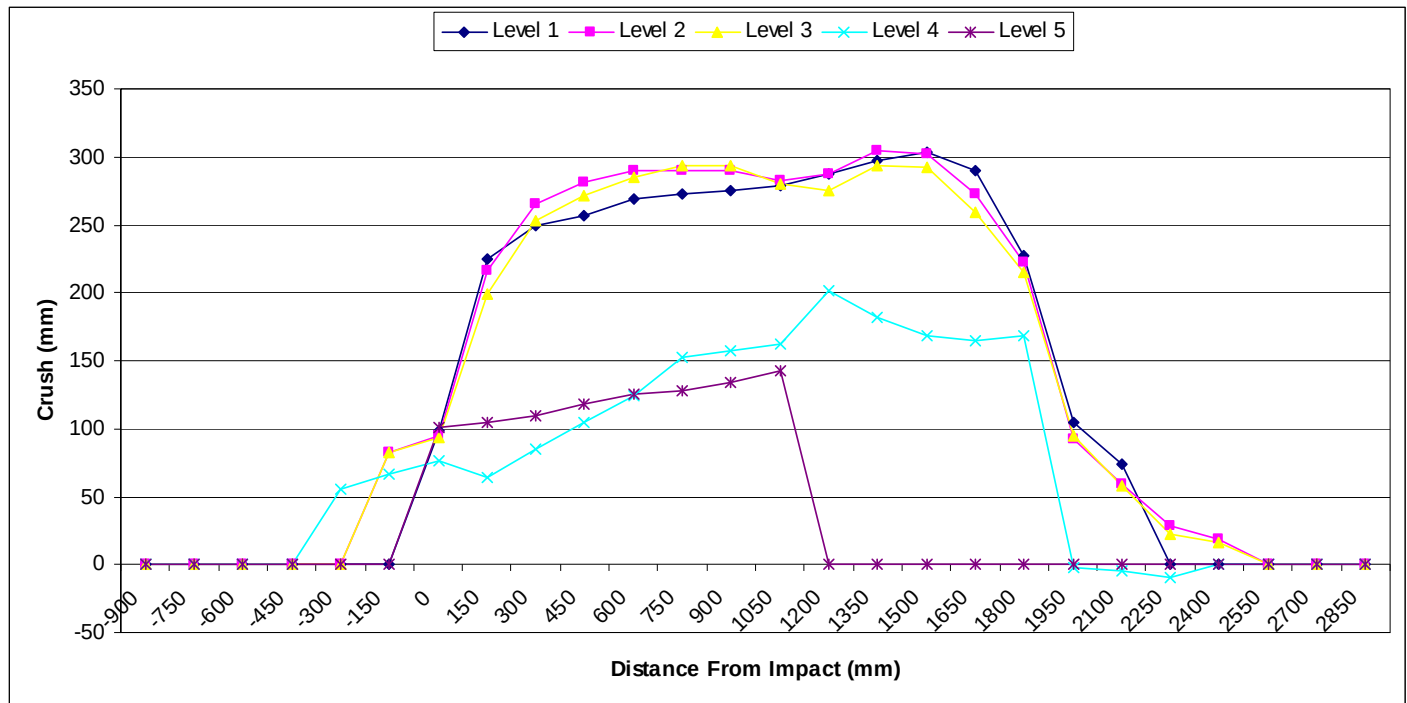
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2015 Toyota Tacoma Access Cab 2-Door Truck

NHTSA No. M20155305

Test Program: NCAP MDB Side Impact Test

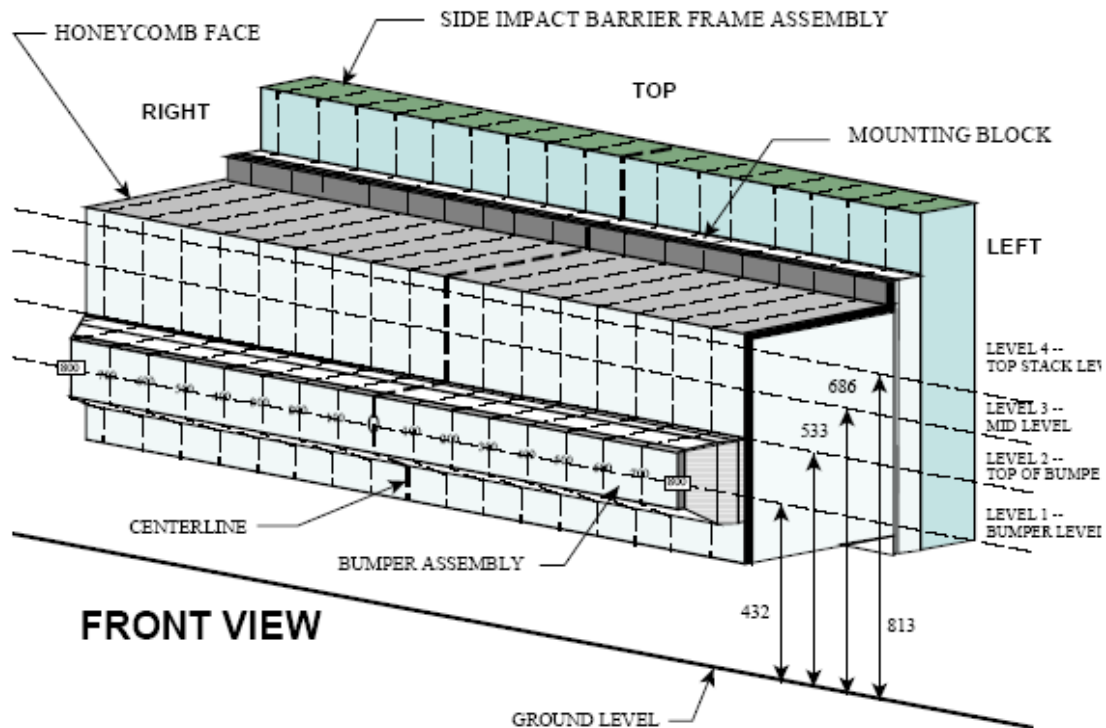
Test Date: 10/28/14



DATA SHEET NO. 12

MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2015 Toyota Tacoma Access Cab 2-Door Truck NHTSA No. M20155305
 Test Program: NCAP MDB Side Impact Test Test Date: 10/28/14



NOTE: Dimensions are shown in millimeters, mm

DEFORMABLE BARRIER STATIC CRUSH

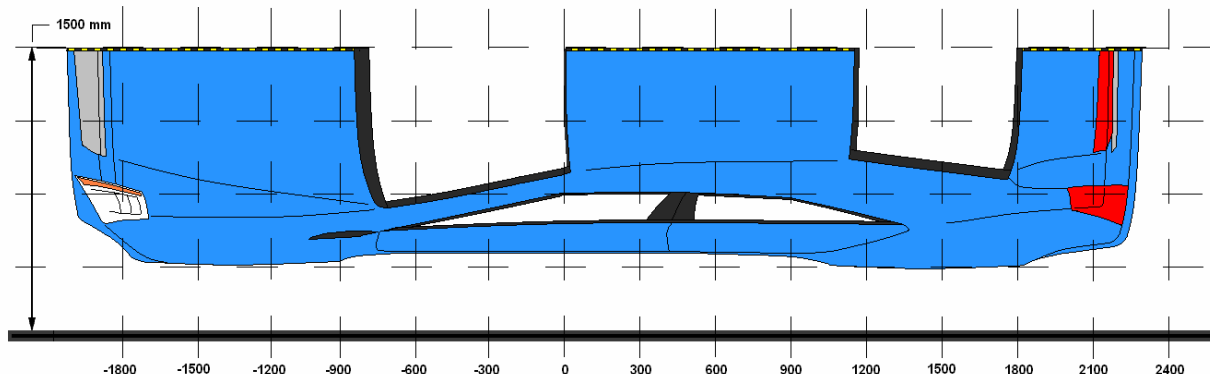
Stack Level	Distance Right of Center								C/L	Distance Left of Center							
	800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
1	184	142	122	114	116	121	125	121	114	116	118	120	127	126	127	136	161
2	147	106	105	100	98	93	82	77	77	79	84	91	97	101	104	112	121
3	143	93	63	50	48	45	52	42	37	37	33	34	37	40	50	63	88
4	173	142	105	87	85	92	97	77	54	53	50	60	79	84	92	123	159

All dimensions in millimeters.

DATA SHEET NO. 13

VEHICLE AND MDB DAMAGE PROFILE DISTANCES

Test Vehicle: 2015 Toyota Tacoma Access Cab 2-Door Truck NHTSA No. M20155305
 Test Program: NCAP MDB Side Impact Test Test Date: 10/28/14



VEHICLE DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Crush (mm)
1	2400	2	587	606	19
2	1800	1	671	898	227
3	1350	2	606	911	305
4	750	3	604	897	293
5	300	2	602	867	265
6	-300	4	671	727	56

MDB DAMAGE PROFILE DISTANCES

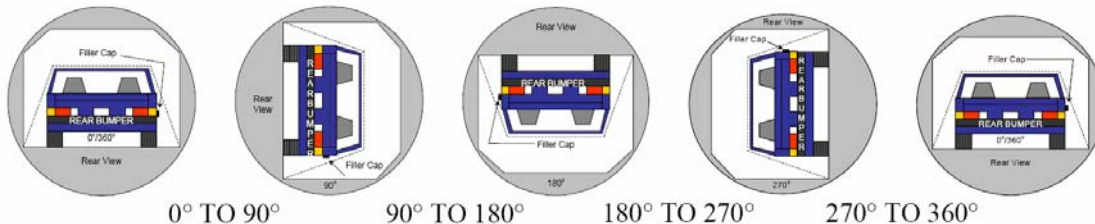
DPD	From MDB Centerline		Level	Crush (mm)
	Distance (mm)	Direction		
1	800	Left	1	161
2	500	Left	1	126
3	200	Left	1	118
4	200	Right	1	125
5	500	Right	1	114
6	800	Right	1	184

DATA SHEET NO. 14

FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2015 Toyota Tacoma Access Cab 2-Door Truck NHTSA No. M20155305
 Test Program: NCAP MDB Side Impact Test Test Date: 10/28/14
 Temperature at Time of Impact: 25.6° C Test Time: 12:00 PM

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



SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	86	300	386
90° To 180°	84	300	384
180° To 270°	73	300	373
270° To 360°	79	300	379

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

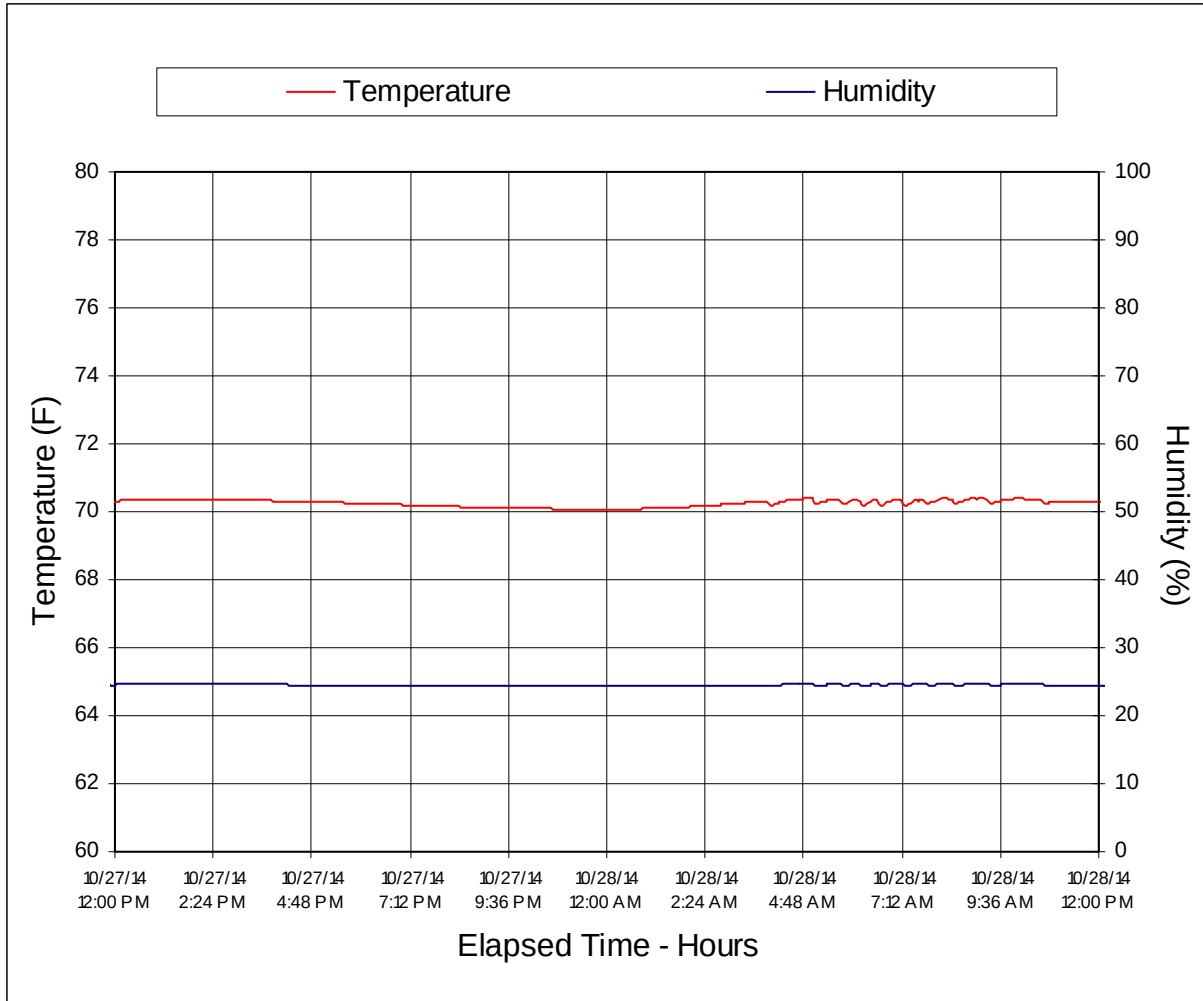
DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION

Test Vehicle: 2015 Toyota Tacoma Access Cab 2-Door Truck

NHTSA No. M20155305

Test Program: NCAP MDB Side Impact Test

Test Date: 10/28/14



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



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



FIGURE 24a. 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

Photograph Not Applicable

No Driver Dummy Pelvis Contact with Side Airbag

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

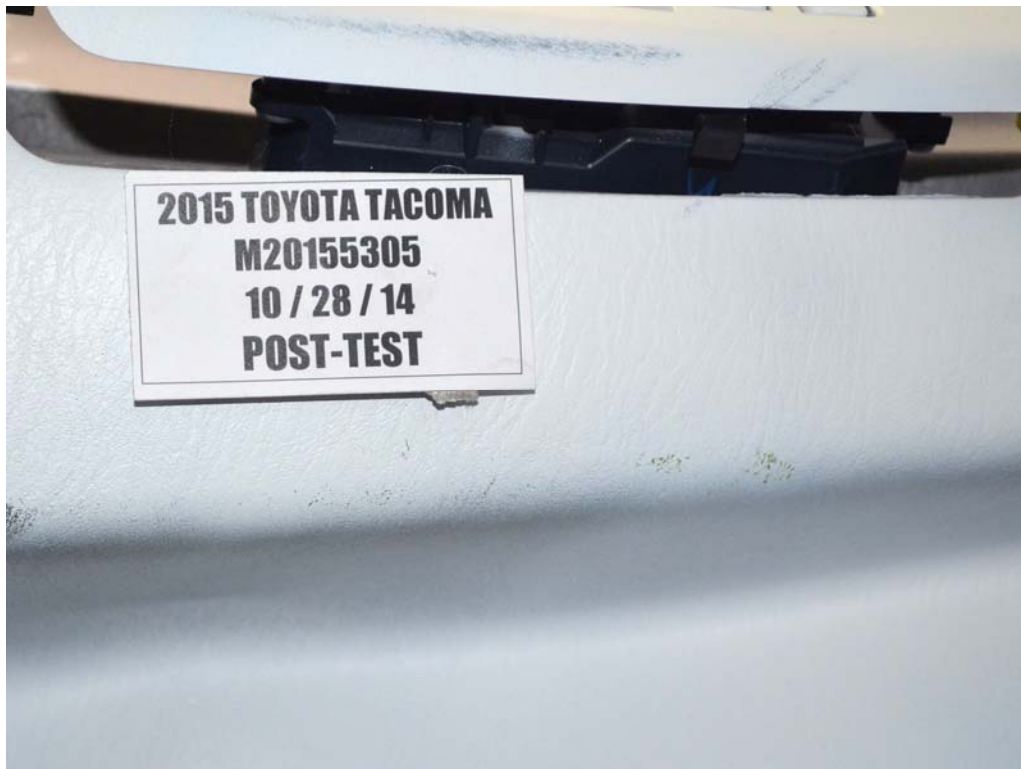


FIGURE 54. Post-Test Driver Dummy Close-Up Knee Contact View



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 Occupant Compartment



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

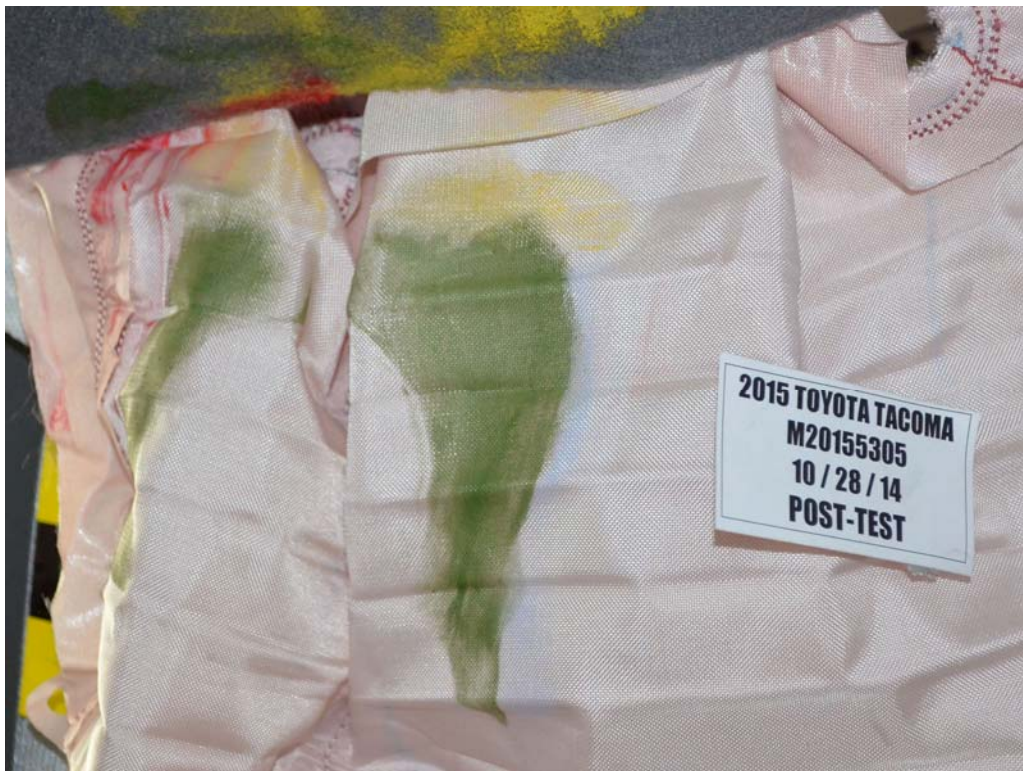


FIGURE 76. Post-Test Rear Passenger Dummy Close-Up
Head Contact with Side Airbag View



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



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

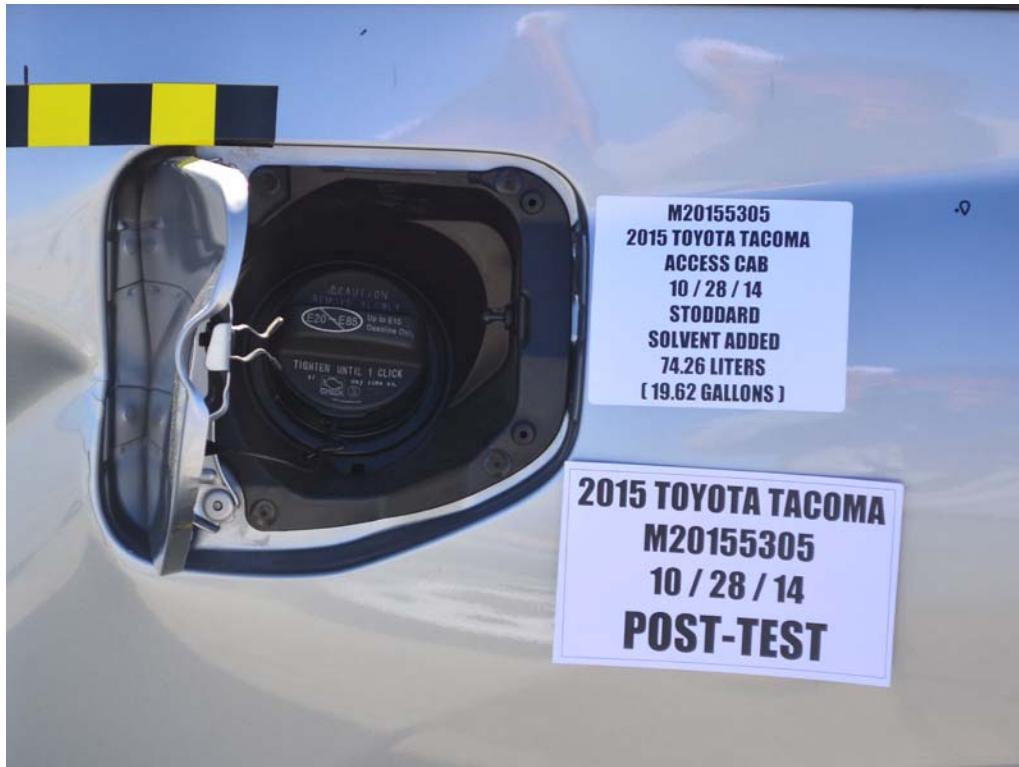


FIGURE 83. Post-Test View of Fuel Filler Cap or Fuel Filler Neck



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



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

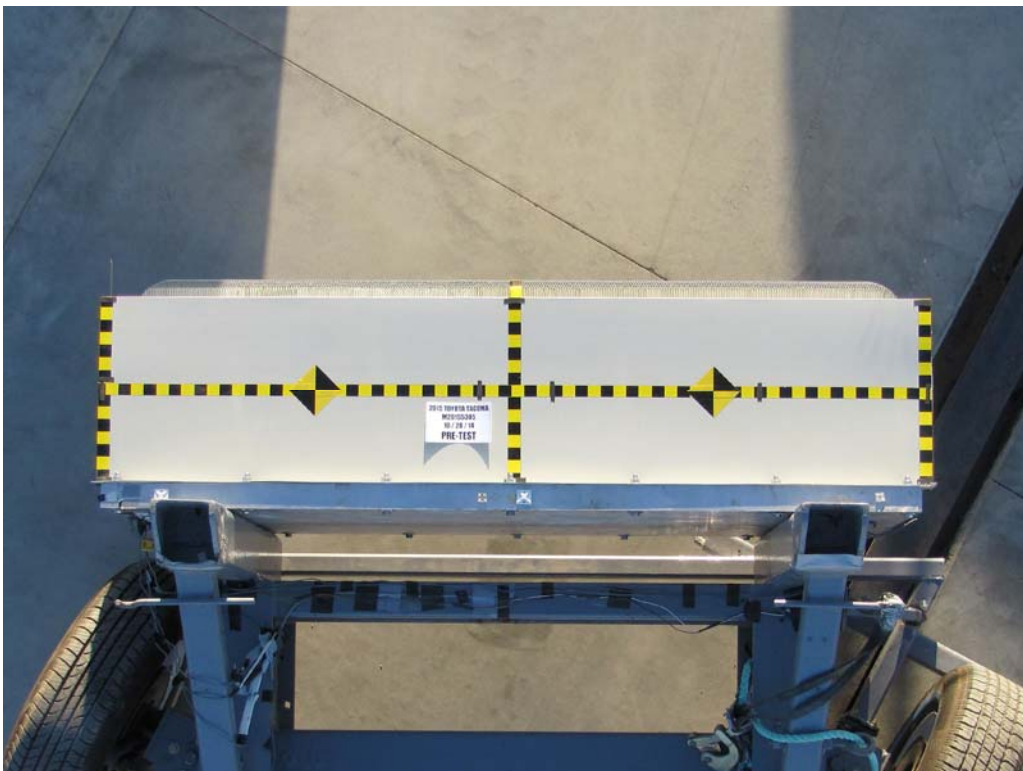


FIGURE 86. Pre-Test Top View of MDB Impactor Face

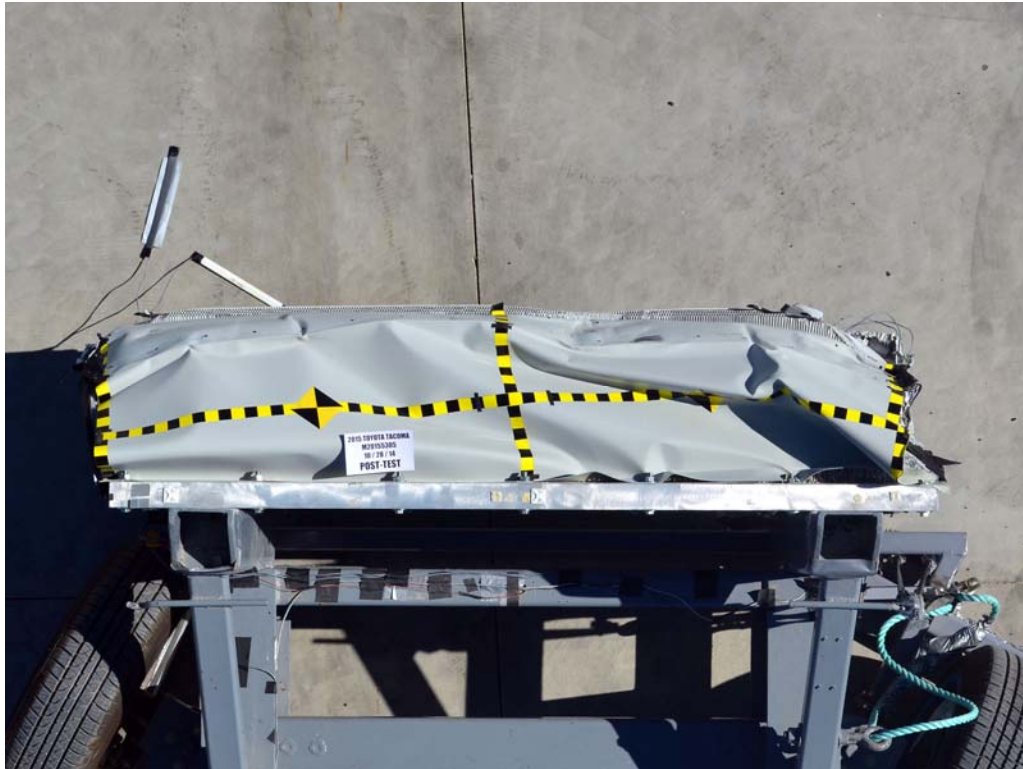


FIGURE 87. Post-Test Top View of MDB Impactor Face



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

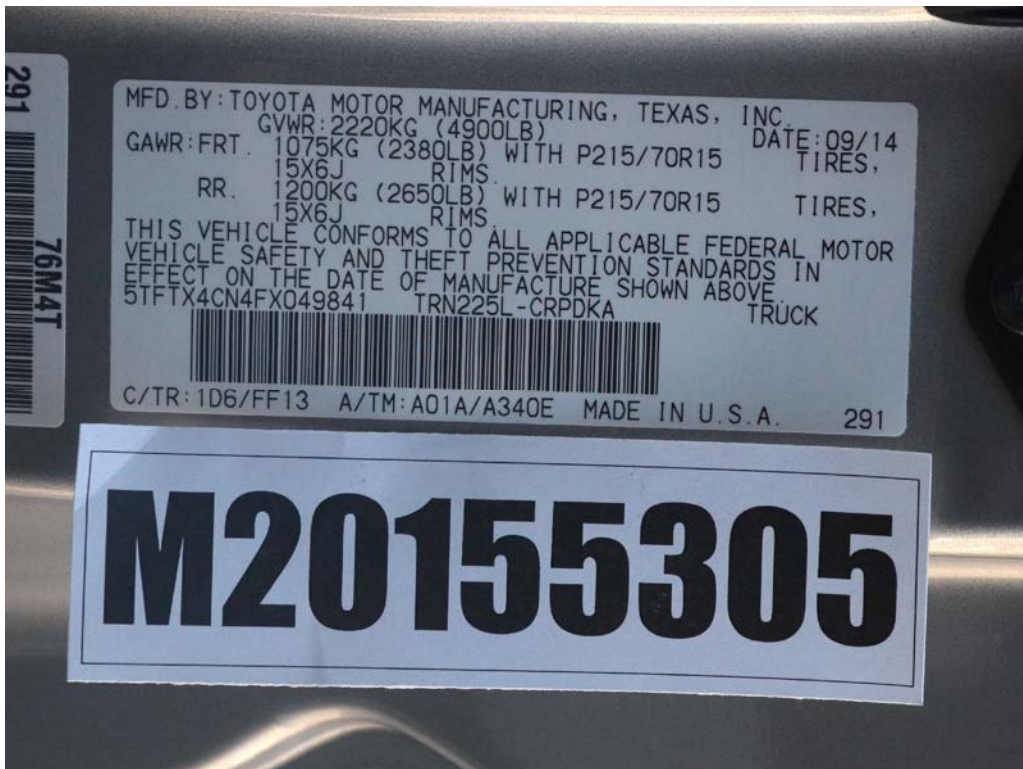


FIGURE 92. Close-Up View of Vehicle's Certification Label

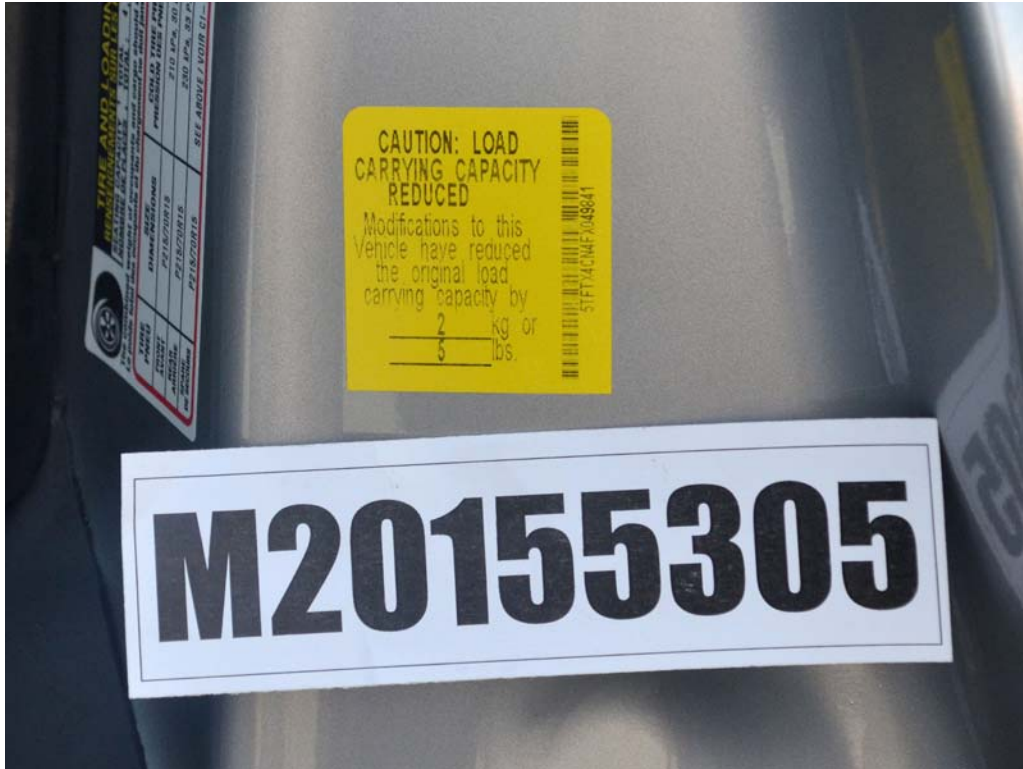


FIGURE 92a. Close-Up View of Vehicle's Reduced Load Carrying Capacity Label

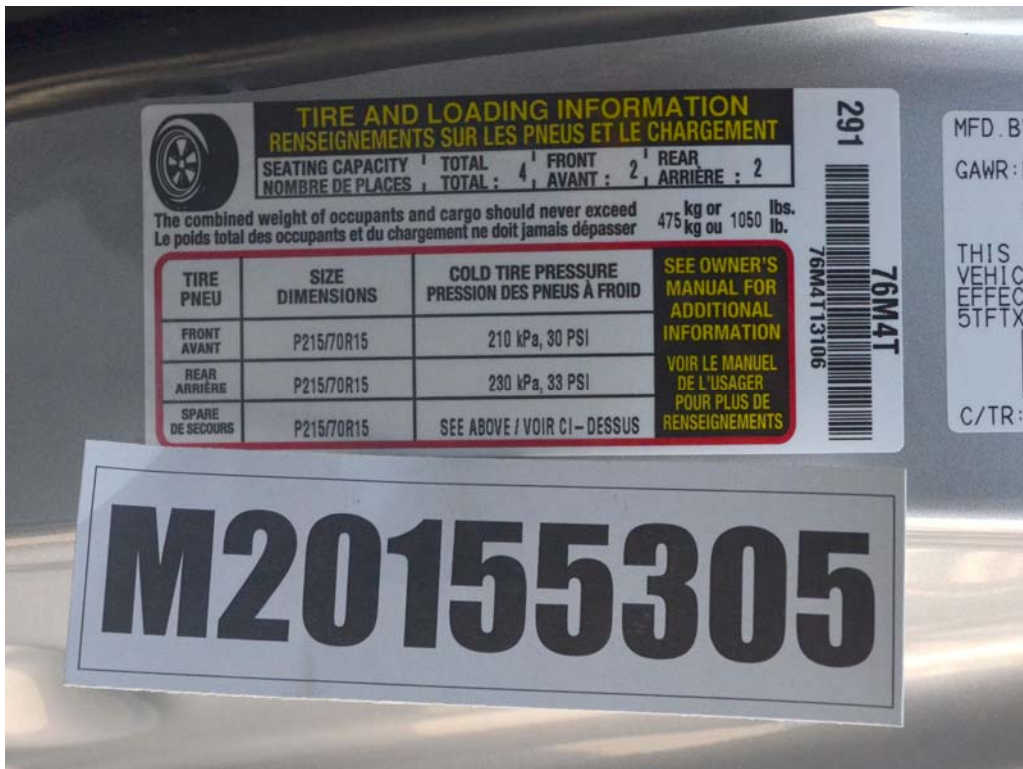


FIGURE 93. Close-Up View of Vehicle's Tire Information Placard or Label



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

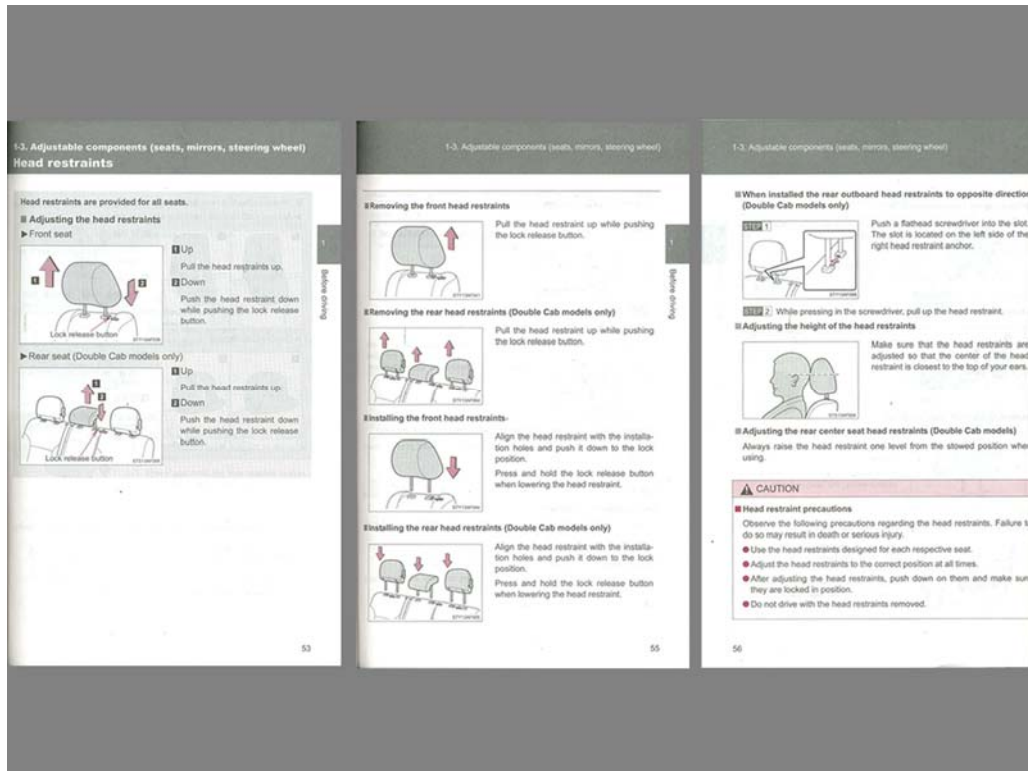


FIGURE 104. Left Rear Passenger Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

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
5	Driver Upper Thorax Rib Deflection (Y) vs. Time	B-2
6	Driver Middle Thorax Rib Deflection (Y) vs. Time	B-2
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
12	Driver Total Abdominal Force (Y) vs. Time	B-3
13	Driver Pubic Symphysis Force (Y) vs. Time	B-4
14	Passenger Head Acceleration (X) vs. Time Primary	B-5
15	Passenger Head Acceleration (Y) vs. Time Primary	B-5
16	Passenger Head Acceleration (Z) vs. Time Primary	B-5
17	Passenger Head Resultant Acceleration Primary vs. Time	B-5
18	Passenger Lower Spine T12 Acceleration (X) vs. Time	B-6
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)

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)

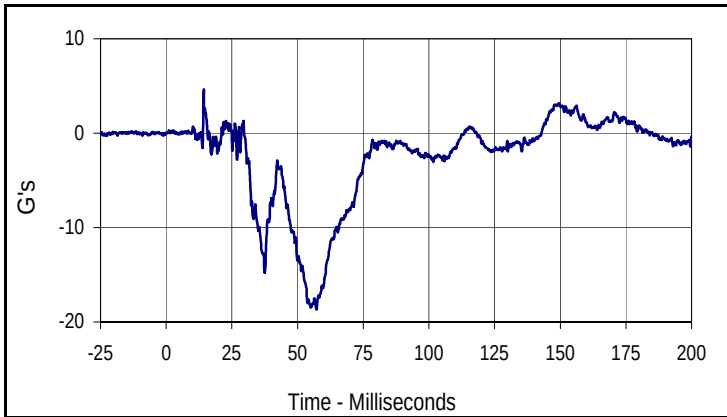
MDB Rear Acceleration (Y)

Left MDB Contact Switch

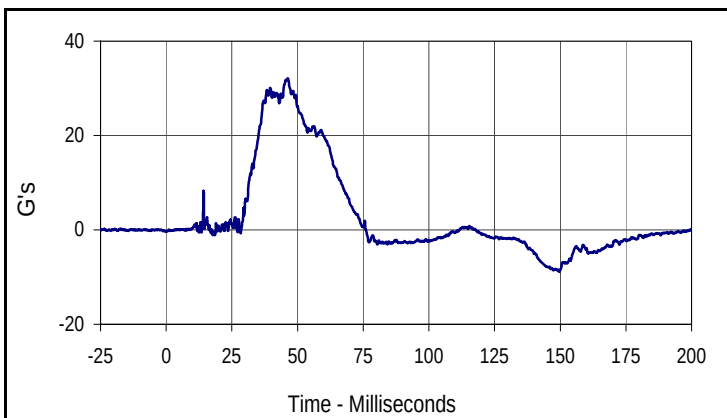
Right MDB Contact Switch

Test Vehicle: 2015 Toyota Tacoma Access Cab 2-Door Truck
 Test Program: NCAP MDB Side Impact Test

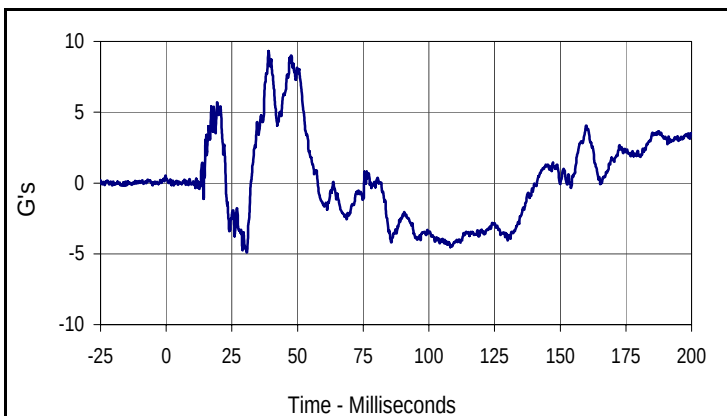
NHTSA No.: M20155305
 Test Date: 10/28/14



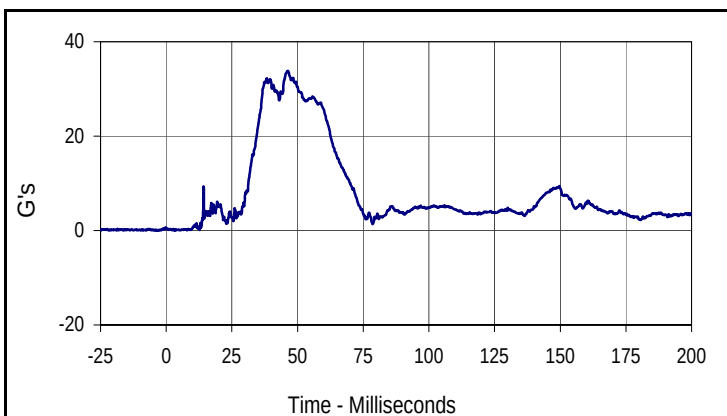
Curve Description			
Driver Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
4.6	14.3	-18.7	57.2



Curve Description			
Driver Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
32.1	46.3	-8.9	149.7



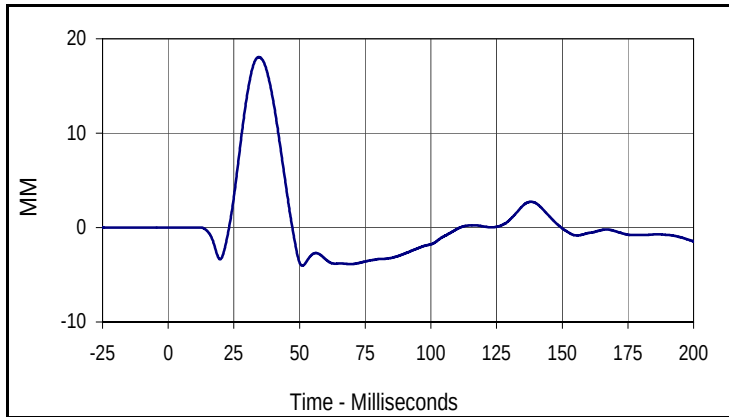
Curve Description			
Driver Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
9.3	39.0	-4.9	30.7



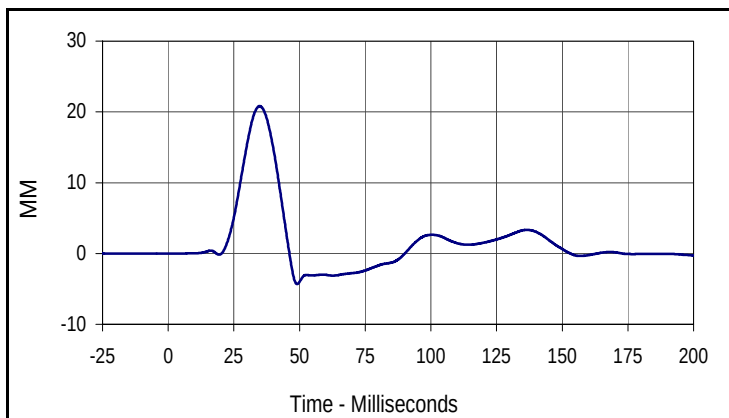
Curve Description			
Driver Head Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
004	RES	1000	G's
Max	Time	Min	Time
33.8	46.4	0.0	3.1

Test Vehicle: 2015 Toyota Tacoma Access Cab 2-Door Truck
 Test Program: NCAP MDB Side Impact Test

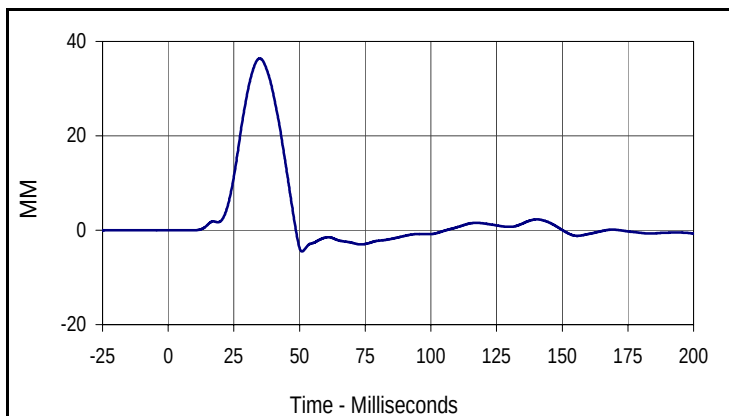
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 Test Date: 10/28/14



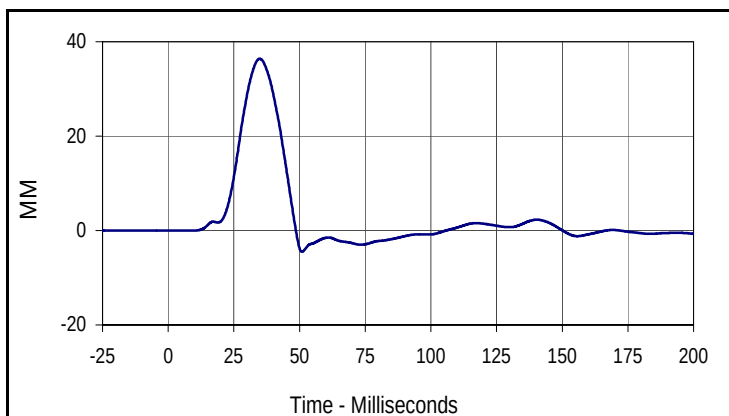
Curve Description			
Driver Upper Thorax Rib Deflection Y			
Plot No.	Type	SAE Class	Units
005	FIL	180	MM
Max	Time	Min	Time
18.1	34.5	-4.0	51.1



Curve Description			
Driver Middle Thorax Rib Deflection Y			
Plot No.	Type	SAE Class	Units
006	FIL	180	MM
Max	Time	Min	Time
20.8	34.8	-4.3	49.0



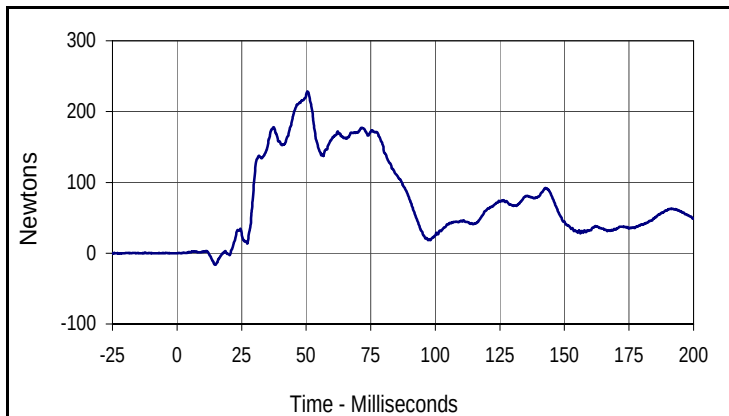
Curve Description			
Driver Lower Thorax Rib Deflection Y			
Plot No.	Type	SAE Class	Units
007	FIL	180	MM
Max	Time	Min	Time
36.4	34.8	-4.5	50.9



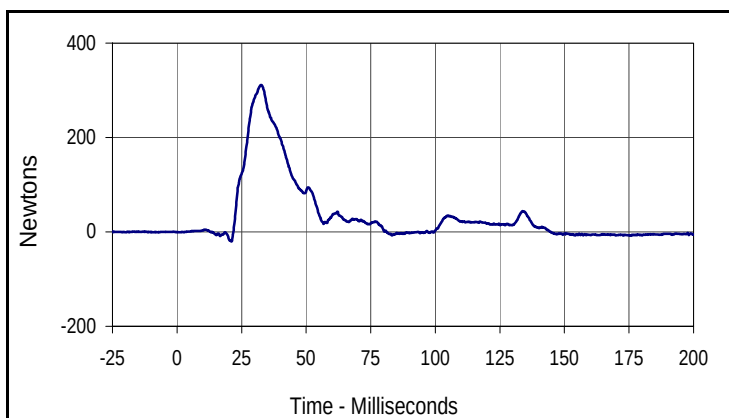
Curve Description			
Driver Thorax Rib Deflection Maximum			
Plot No.	Type	SAE Class	Units
008	FIL	180	MM
Max	Time	Min	Time
36.4	34.8	-4.5	50.9

Test Vehicle: 2015 Toyota Tacoma Access Cab 2-Door Truck
 Test Program: NCAP MDB Side Impact Test

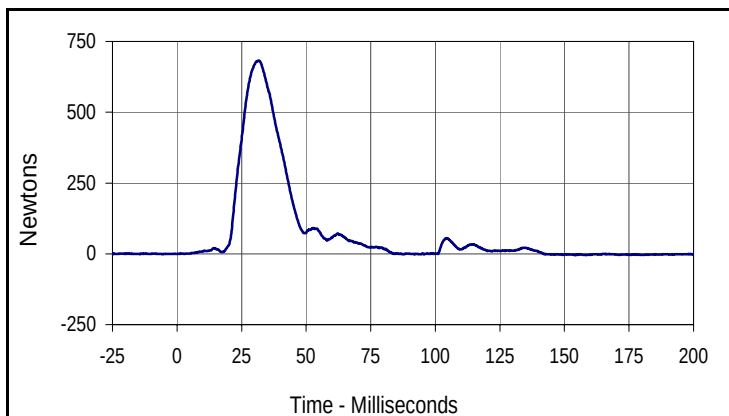
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 Test Date: 10/28/14



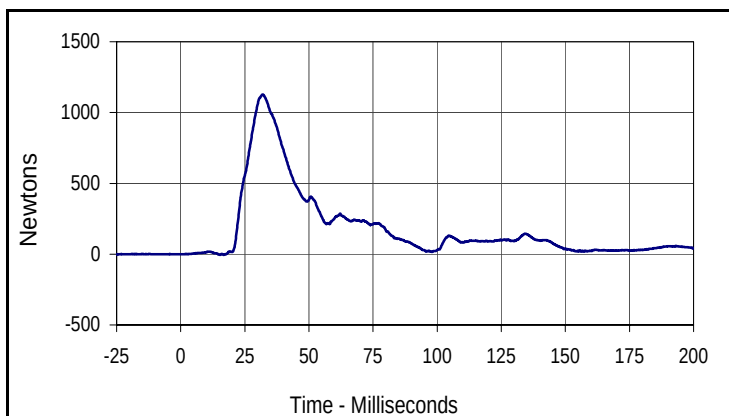
Curve Description			
Driver Anterior Abdominal Force Y			
Plot No.	Type	SAE Class	Units
009	FIL	600	Newtons
Max	Time	Min	Time
228.5	50.5	-16.3	14.6



Curve Description			
Driver Middle Abdominal Force Y			
Plot No.	Type	SAE Class	Units
010	FIL	600	Newtons
Max	Time	Min	Time
311.3	32.5	-20.1	21.1



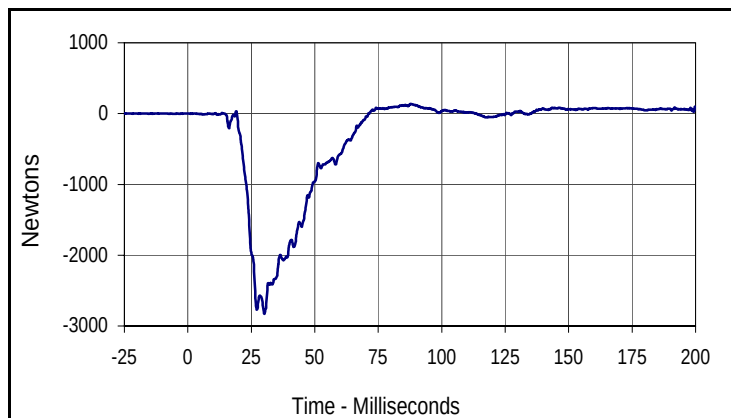
Curve Description			
Driver Posterior Abdominal Force Y			
Plot No.	Type	SAE Class	Units
011	FIL	600	Newtons
Max	Time	Min	Time
682.3	31.8	-5.0	154.3



Curve Description			
Driver Total Abdominal Force			
Plot No.	Type	SAE Class	Units
012	SUM	600	Newtons
Max	Time	Min	Time
1126.4	31.9	-5.9	16.7

Test Vehicle: 2015 Toyota Tacoma Access Cab 2-Door Truck
Test Program: NCAP MDB Side Impact Test

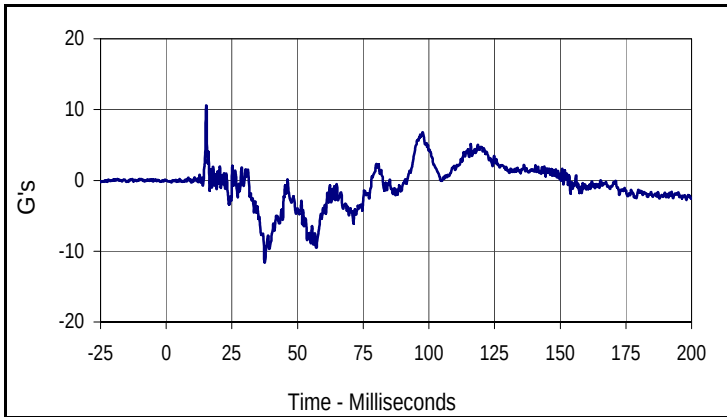
NHTSA No.: M20155305
Test Date: 10/28/14



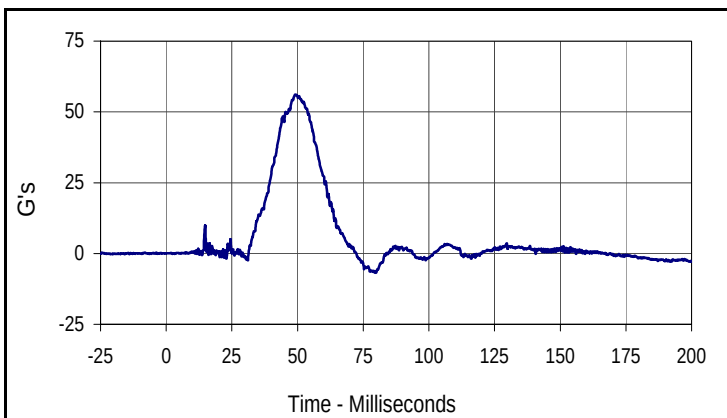
Curve Description			
Driver Pubic Symphysis Force Y			
Plot No.	Type	SAE Class	Units
013	FIL	600	Newtons
Max	Time	Min	Time
137.3	87.7	-2829.8	30.1

Test Vehicle: 2015 Toyota Tacoma Access Cab 2-Door Truck
 Test Program: NCAP MDB Side Impact Test

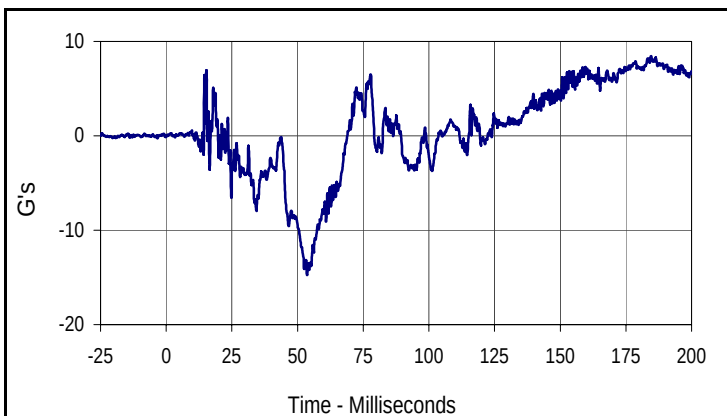
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 Test Date: 10/28/14



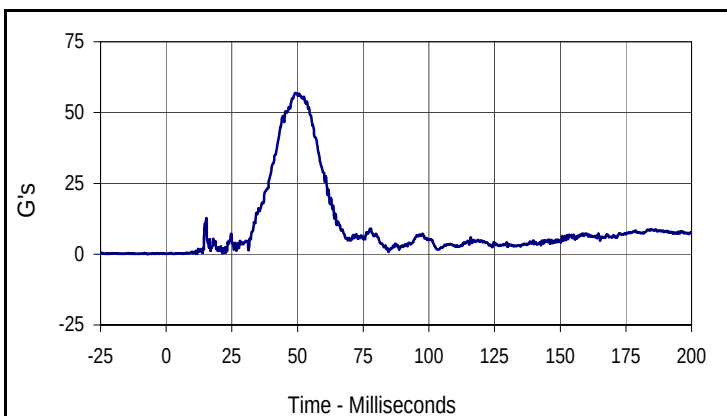
Curve Description			
Passenger Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
014	FIL	1000	G's
Max	Time	Min	Time
10.6	15.2	-11.7	37.5



Curve Description			
Passenger Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
015	FIL	1000	G's
Max	Time	Min	Time
56.1	49.1	-6.8	79.9



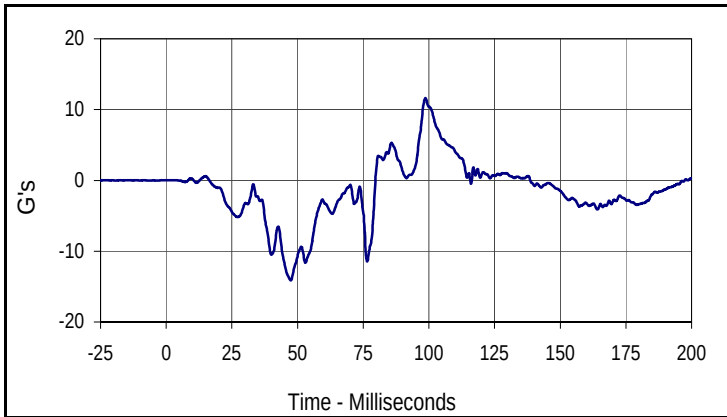
Curve Description			
Passenger Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
016	FIL	1000	G's
Max	Time	Min	Time
8.4	184.5	-14.8	53.6



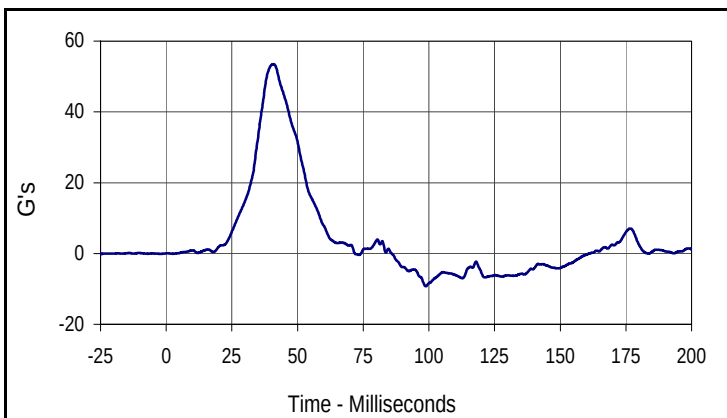
Curve Description			
Passenger Head Acceleration Resultant Primary			
Plot No.	Type	SAE Class	Units
017	RES	1000	G's
Max	Time	Min	Time
56.9	49.1	0.0	2.6

Test Vehicle: 2015 Toyota Tacoma Access Cab 2-Door Truck
 Test Program: NCAP MDB Side Impact Test

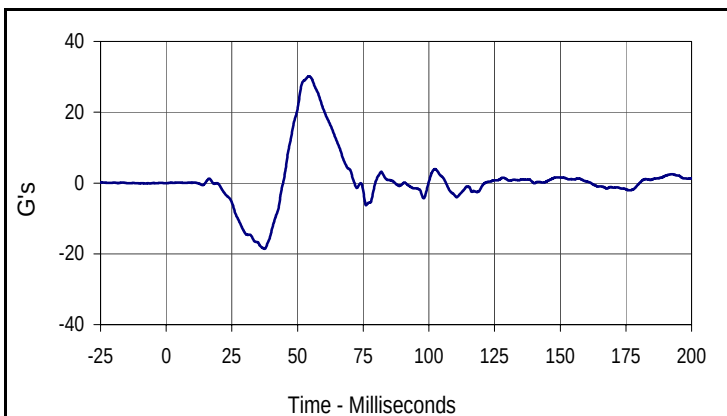
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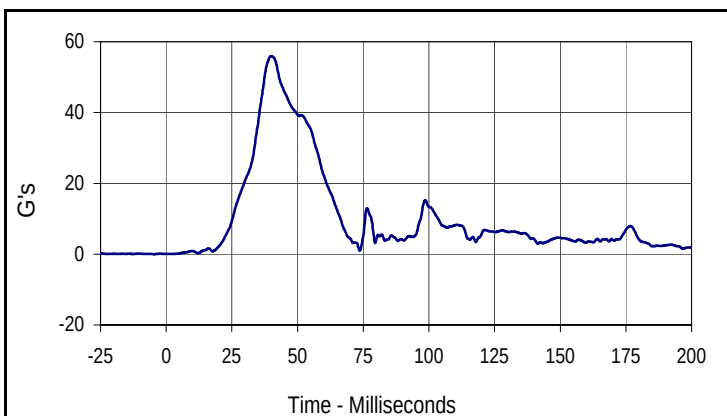
Curve Description			
Passenger Lower Spine T12 Acceleration X			
Plot No.	Type	SAE Class	Units
018	FIL	180	G's
Max	Time	Min	Time
11.6	98.7	-14.1	47.4



Curve Description			
Passenger Lower Spine T12 Acceleration Y			
Plot No.	Type	SAE Class	Units
019	FIL	180	G's
Max	Time	Min	Time
53.5	40.9	-9.3	98.8



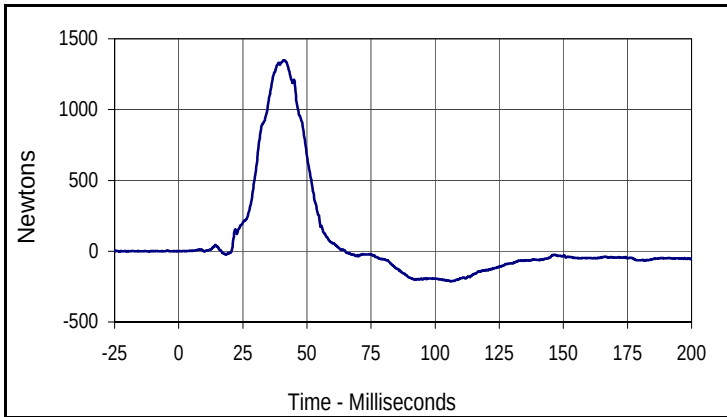
Curve Description			
Passenger Lower Spine T12 Acceleration Z			
Plot No.	Type	SAE Class	Units
020	FIL	180	G's
Max	Time	Min	Time
30.1	54.4	-18.6	37.4



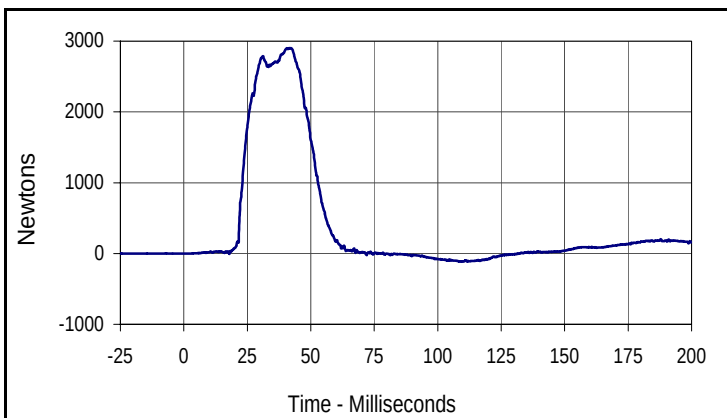
Curve Description			
Passenger Lower Spine T12 Acceleration Res.			
Plot No.	Type	SAE Class	Units
021	RES	180	G's
Max	Time	Min	Time
56.0	39.9	0.0	0.9

Test Vehicle: 2015 Toyota Tacoma Access Cab 2-Door Truck
 Test Program: NCAP MDB Side Impact Test

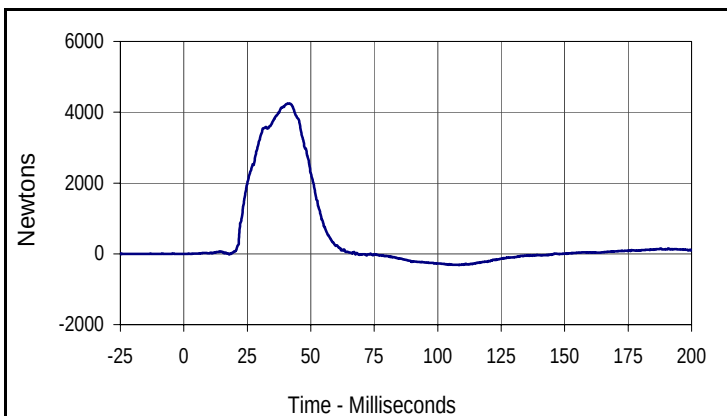
NHTSA No.: M20155305
 Test Date: 10/28/14



Curve Description			
Passenger Iliac Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
022	FIL	600	Newtons
Max	Time	Min	Time
1349.3	40.9	-212.8	105.9



Curve Description			
Passenger Acetabulum Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
023	FIL	600	Newtons
Max	Time	Min	Time
2902.7	42.0	-116.1	110.1



Curve Description			
Passenger Total Pelvic Force			
Plot No.	Type	SAE Class	Units
024	SUM	600	Newtons
Max	Time	Min	Time
4246.4	41.3	-314.6	108.5

APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

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

Test Program: ES2re External Measurements
 ATD Serial No.: F035

Test Date: 10/20/14
 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.: F035

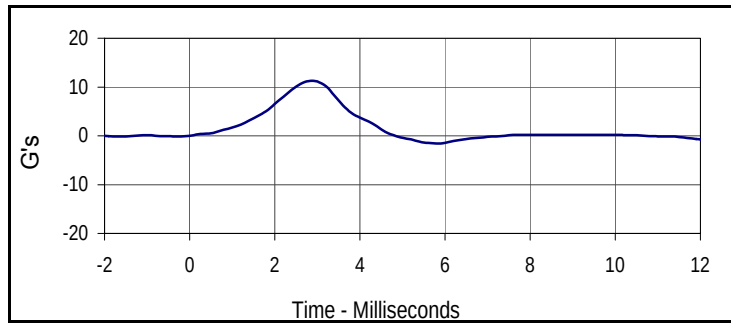
Test Date: 10/20/14
 Test I.D.: F035HD053



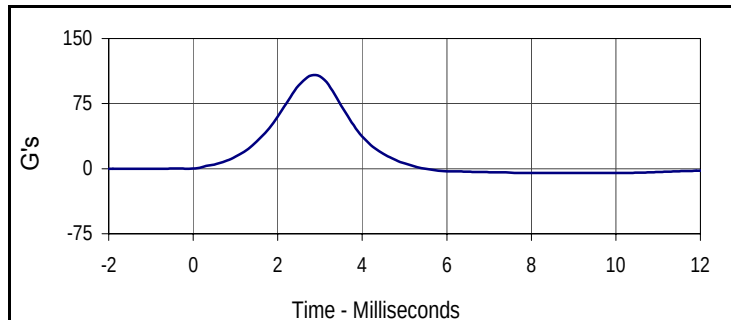
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	310	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	32.6	Pass
	Min		31.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.6	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.5	Pass
Peak Head Resultant Acceleration	G's	125 to 155	139.7	Pass
Peak Head X Acceleration	G's	≤15	11.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	6.7	Pass
Overall Test Results				Pass



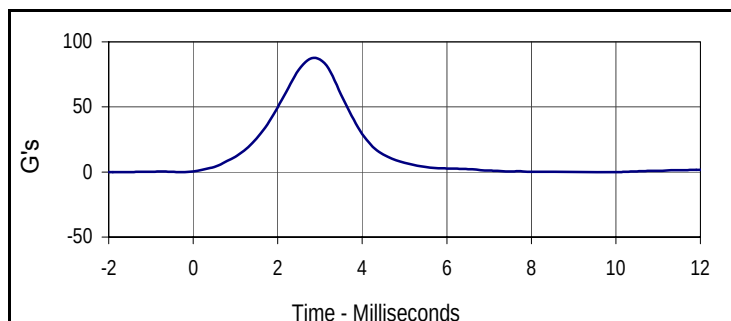
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
139.7	2.9	0.1	-2.0



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
11.3	2.9	-1.6	5.9



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
108.1	2.9	-5.1	10.1



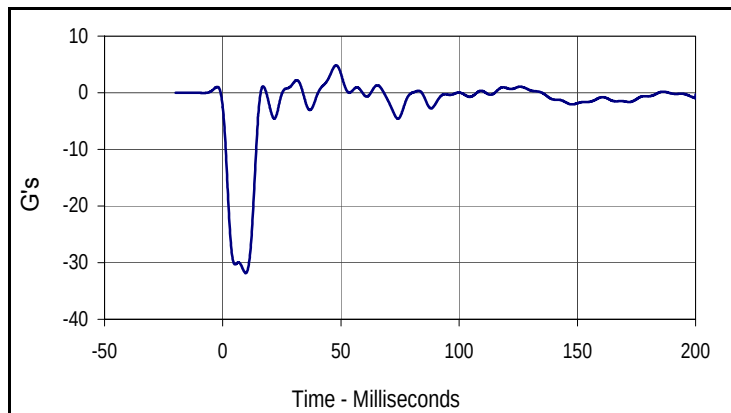
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
87.8	2.9	-0.1	-1.8

Test Program: ES2re Neck Flexion Test
 ATD Serial No.: F035

Test Date: 10/20/14
 Test I.D.: F035NB053



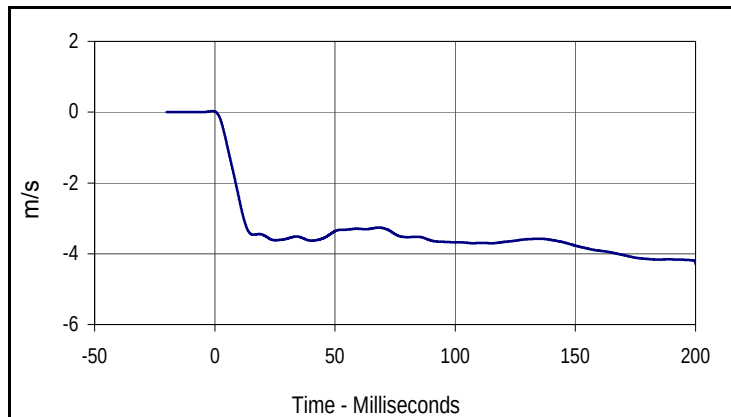
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	345	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	32.6	Pass
	Min		31.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.6	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.5	Pass
Pendulum Velocity	m/s	3.3 to 3.5	3.42	Pass
Headform Flexion	Max	49 to 59	50.6	Pass
	Time	54 to 66	59.2	Pass
Headform Flexion Decay (Peak to Zero)	msec	53 to 88	59.2	Pass
Overall Test Results				Pass



Curve Description

Pendulum Deceleration

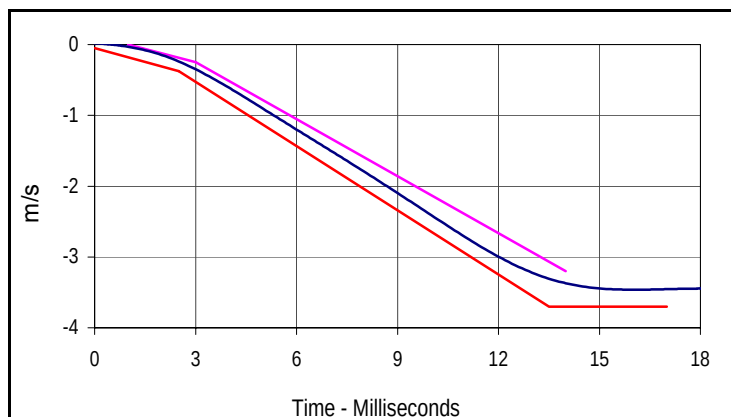
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
4.8	48.0	-31.8	9.7



Curve Description

Pendulum Velocity

Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.9	-4.3	200.0



Curve Description

Pendulum Velocity

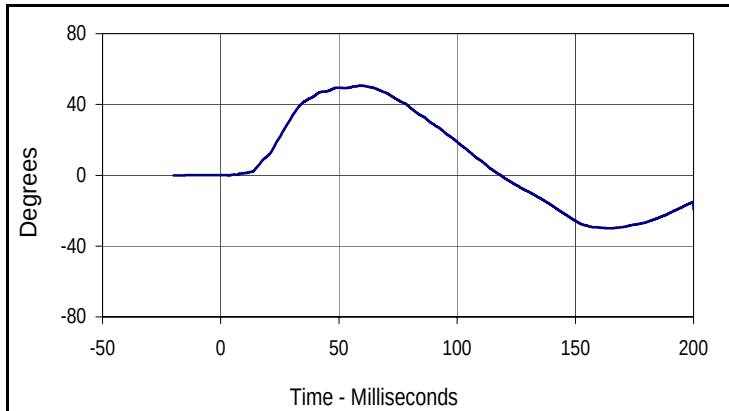
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.9	-4.3	200.0

Velocity Corridors

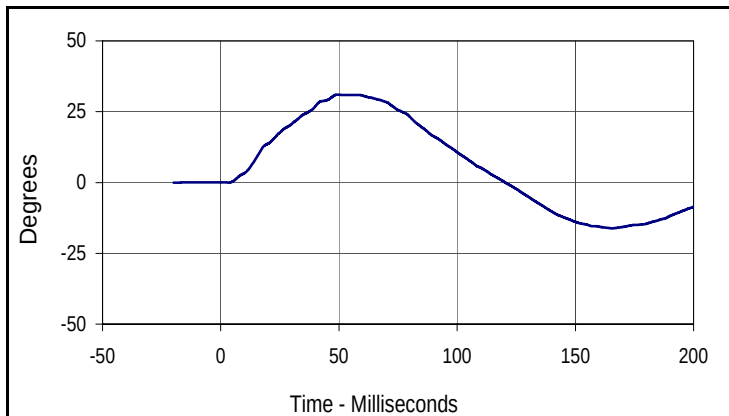
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.0	-0.03	2.5	-0.375
14.0	-3.20	13.5	-3.70
		17.0	-3.70

Test Program: ES2re Neck Flexion Test
 ATD Serial No.: F035

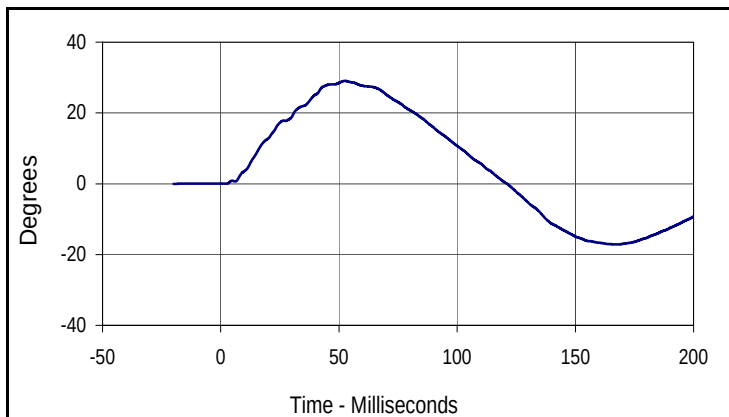
Test Date: 10/20/14
 Test I.D.: F035NB053



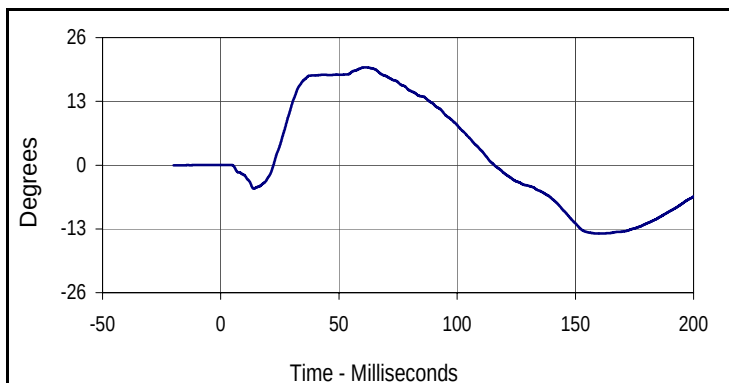
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
50.6	59.2	-30.0	165.1



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
31.1	49.5	-16.2	165.5



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
29.1	52.5	-17.1	168.0



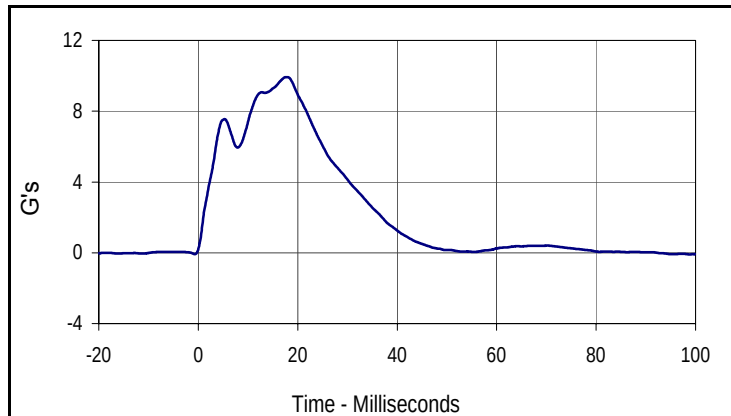
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
20.0	61.1	-13.9	161.2

Test Program: ES2re Shoulder Impact Test
 ATD Serial No.: F035

Test Date: 10/20/14
 Test I.D.: F035SH053



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	410	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	32.6	Pass
	Min		31.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.7	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.4	Pass
Pendulum Speed	m/s	4.2 to 4.4	4.35	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	9.9	Pass
Overall Test Results				Pass



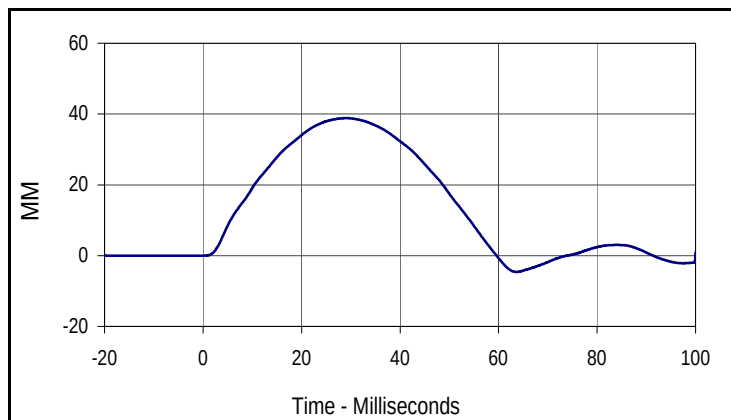
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
9.9	17.7	-0.1	98.7

Test Program: ES2re Thorax - Rib Drop Test
 ATD Serial No.: F035 Rib # 1

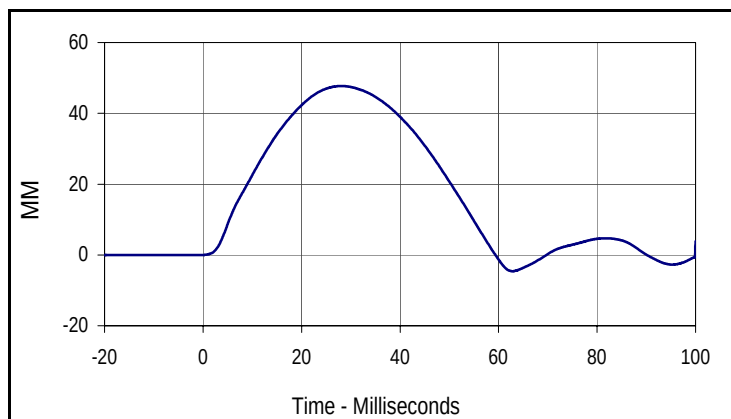
Test Date: 10/20/14
 Test I.D.: F035RB1053



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	465	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	32.6	Pass
	Min		31.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.7	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.3	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	38.8	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	47.7	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
38.8	29.1	-4.6	63.6



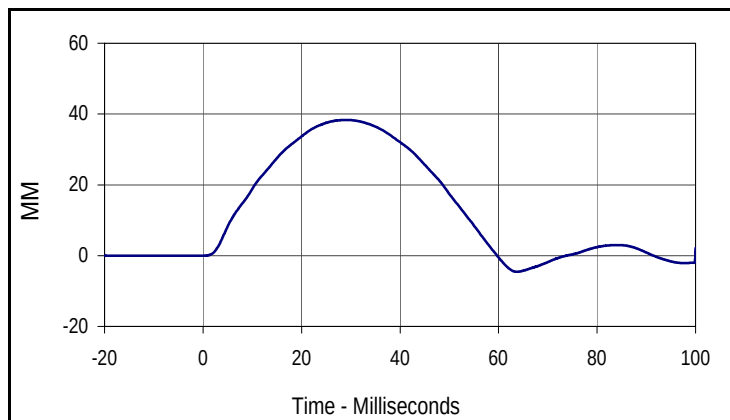
Curve Description			
Upper Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
47.7	28.1	-4.6	62.8

Test Program: ES2re Thorax - Rib Drop Test
 ATD Serial No.: F035 Rib # 2

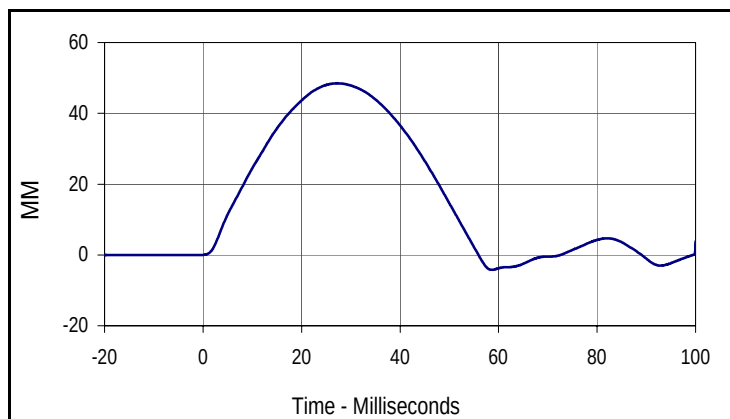
Test Date: 10/20/14
 Test I.D.: F035RB2053



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	510	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	32.6	Pass
	Min		31.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.2	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	38.3	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	48.5	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
38.3	29.1	-4.6	63.8



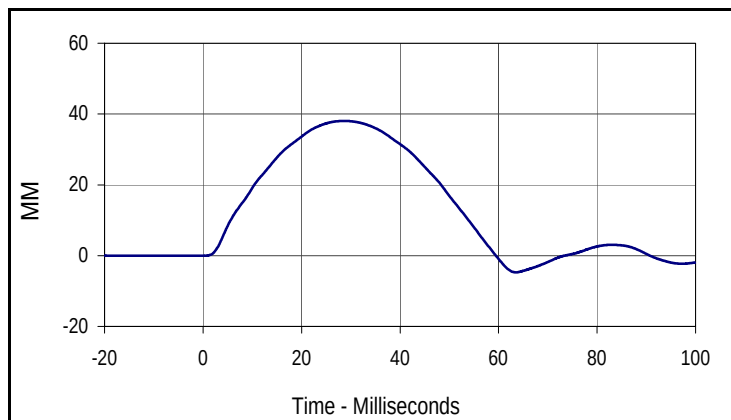
Curve Description			
Middle Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
48.5	27.3	-4.2	58.6

Test Program: ES2re Thorax - Rib Drop Test
 ATD Serial No.: F035 Rib # 3

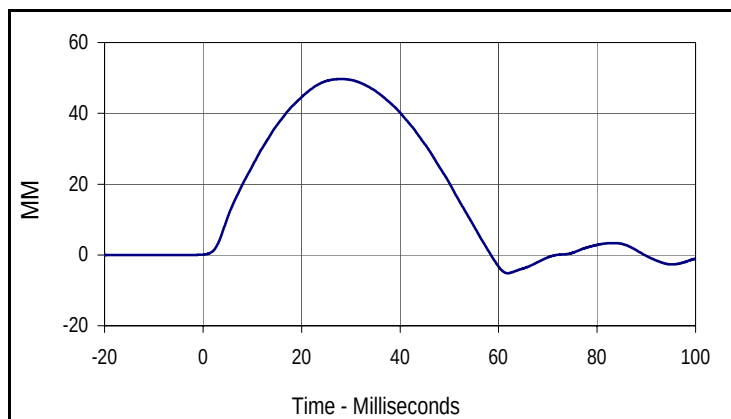
Test Date: 10/20/14
 Test I.D.: F035RB3053



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	555	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	32.6	Pass
	Min		31.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.1	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	38.1	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	49.7	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
38.1	28.7	-4.7	63.5



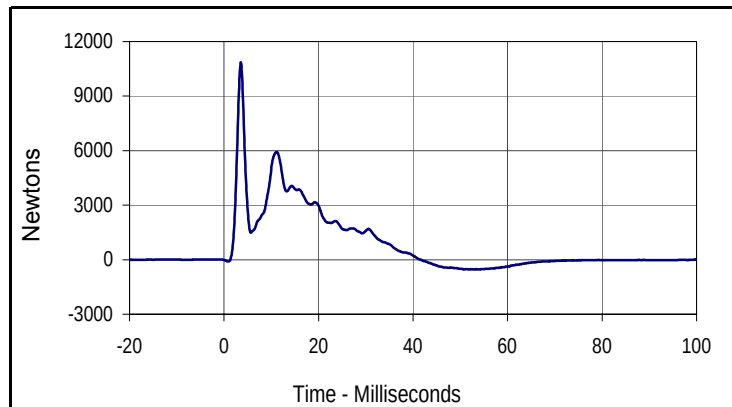
Curve Description			
Lower Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
49.7	28.0	-5.2	61.9

Test Program: ES2re Thorax - Full Body Impact Test
 ATD Serial No.: F035

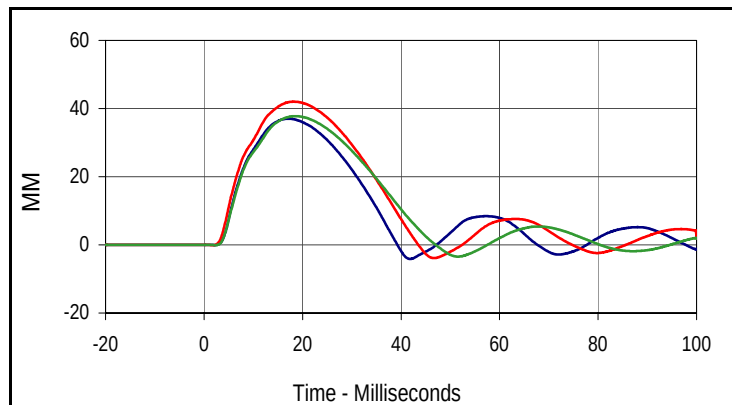
Test Date: 10/20/14
 Test I.D.: F035TH053



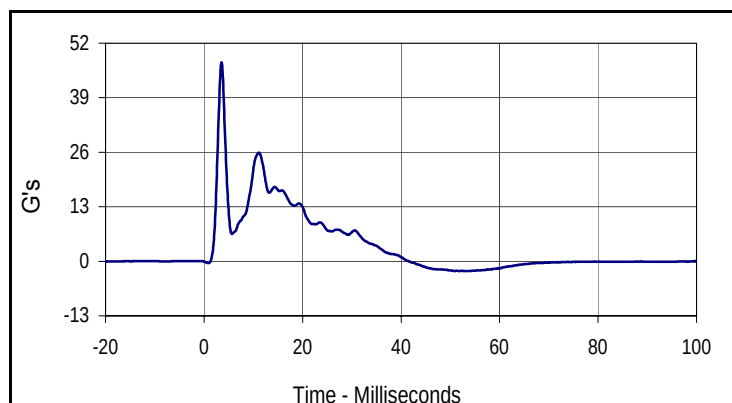
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	600	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	32.6	Pass
	Min		31.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.1	Pass
Peak Impactor Velocity	m/s	5.4 to 5.6	5.46	Pass
Peak Impactor Force	N	5100 to 6200	5932.1	Pass
	msec	> 6.0 msec	11.1	Pass
Peak Upper Rib Deflection	mm	34 to 41	37.0	Pass
Peak Middle Rib Deflection	mm	37 to 45	42.0	Pass
Peak Lower Rib Deflection	mm	37 to 44	37.8	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
10861.4	3.6	-537.1	52.9



Curve Description			
Upper, Middle, Lower Rib Deflections			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max (Upper)	Time	Min (Upper)	Time
37.0	17.1	-4.1	41.8
Max (Middle)	Time	Min (Middle)	Time
42.0	18.2	-3.9	46.7
Max (Lower)	Time	Min (Lower)	Time
37.8	18.6	-3.4	51.5



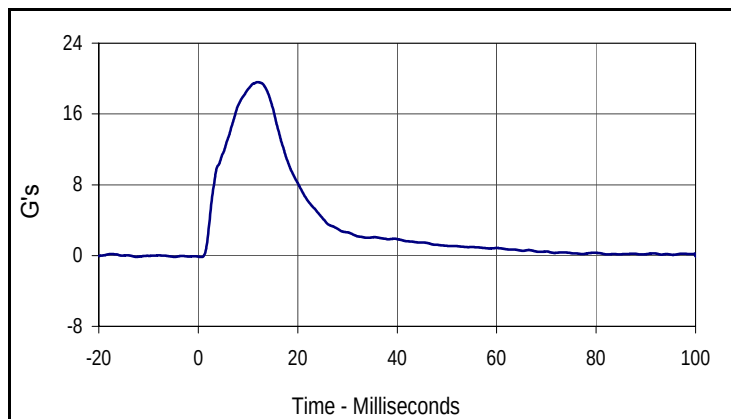
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
47.4	3.6	-2.3	52.9

Test Program: ES2re Abdomen Impact Test
 ATD Serial No.: F035

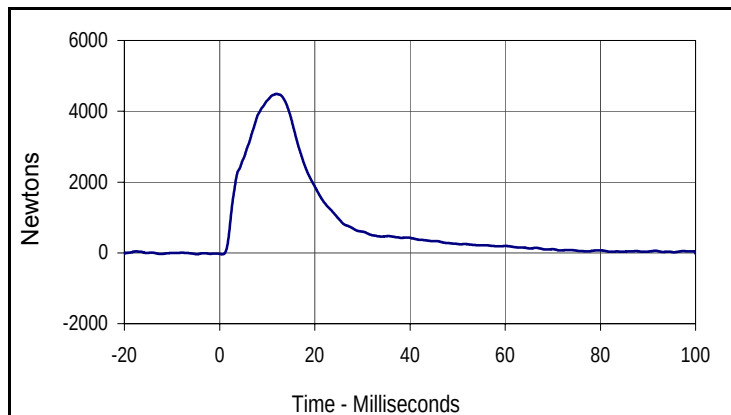
Test Date: 10/20/14
 Test I.D.: F035ABD053



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	670	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	32.6	Pass
	Min		31.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.0	Pass
Probe Velocity	m/s	3.9 to 4.1	4.09	Pass
Peak Impactor Force	N	4000 to 4800	4490.9	Pass
	msec	10.6 to 13.0	11.9	Pass
Sum of Abdominal Forces	N	2200 to 2700	2555.1	Pass
	msec	10.0 to 12.3	11.7	Pass
Overall Test Results				Pass



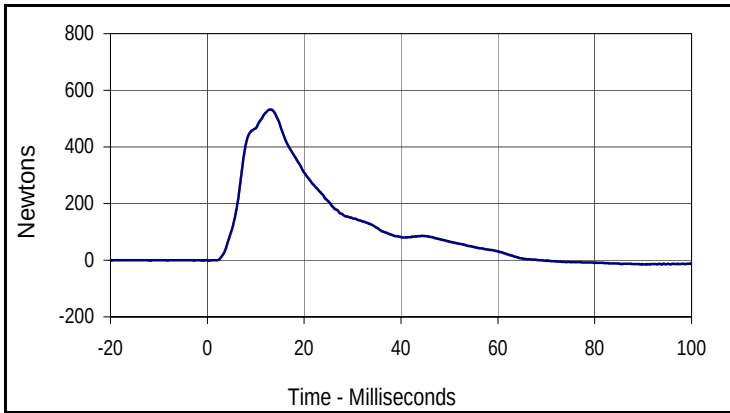
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
19.6	11.9	-0.2	0.6



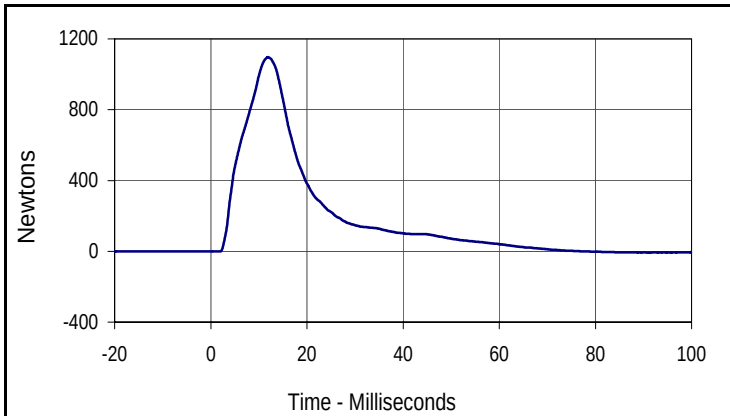
Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
4490.9	11.9	-38.2	0.6

Test Program: ES2re Abdomen Impact Test
 ATD Serial No.: F035

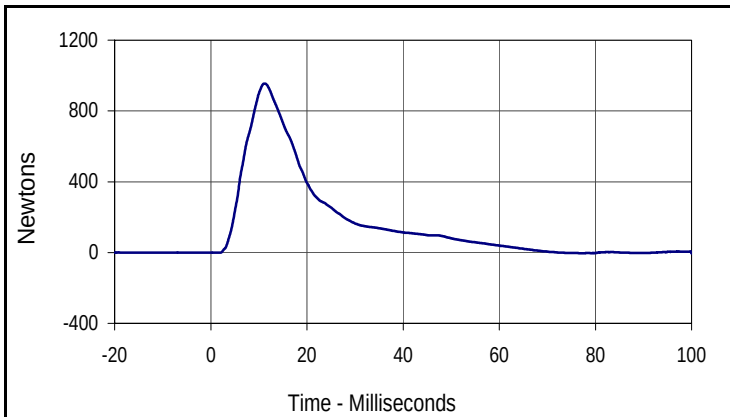
Test Date: 10/20/14
 Test I.D.: F035ABD053



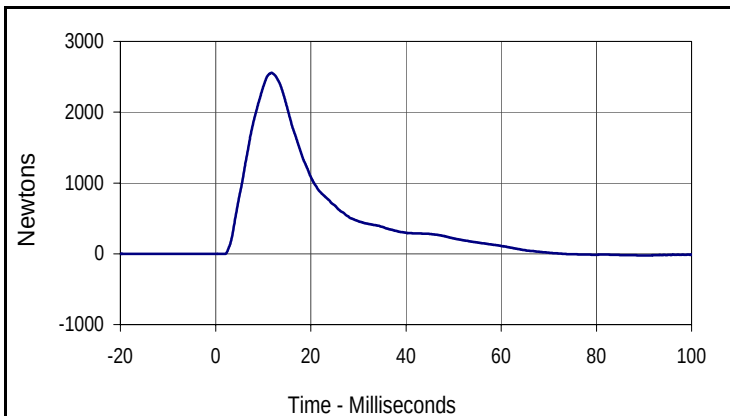
Curve Description			
Front Abdomen Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
532.1	12.9	-14.7	92.9



Curve Description			
Middle Abdomen Force			
Plot No.	Type	SAE Class	Units
004	FIL	600	Newtons
Max	Time	Min	Time
1096.5	11.9	-7.7	93.8



Curve Description			
Rear Abdomen Force			
Plot No.	Type	SAE Class	Units
005	FIL	600	Newtons
Max	Time	Min	Time
955.0	11.2	-6.3	170.0



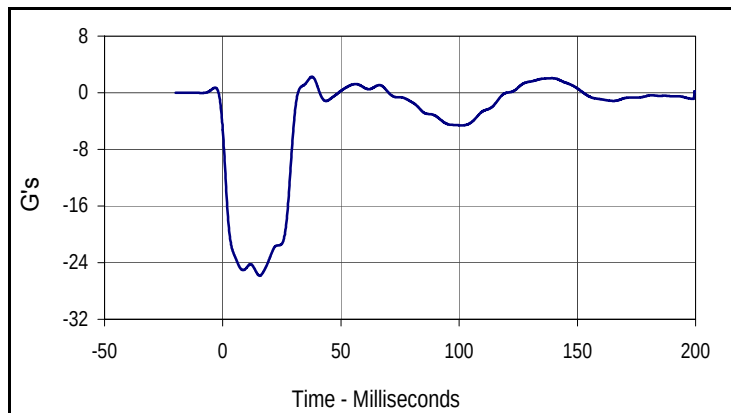
Curve Description			
Abdomen Sum Resultant			
Plot No.	Type	SAE Class	Units
006	RES	600	Newtons
Max	Time	Min	Time
2555.1	11.7	-23.7	89.5

Test Program: ES2re Lumbar Flexion Test
 ATD Serial No.: F035

Test Date: 10/20/14
 Test I.D.: F035LB053



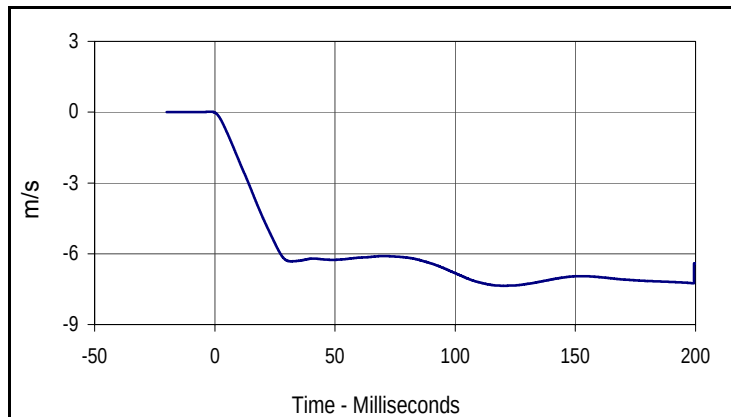
Tested Parameter	Units	Specification	Result	Pass/Fail
Lumbar Spine Assembly Soak Time	Minutes	≥240	745	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	32.6	Pass
	Min		31.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	31.8	Pass
Pendulum Velocity	m/s	5.95 to 6.15	6.02	Pass
Headform Rotation	Max	45 to 55	48.6	Pass
	Time	39 to 53	45.2	Pass
Time of Decay to Zero Angle from Peak	msec	37 to 57	41.1	Pass
Overall Test Results				Pass



Curve Description

Pendulum Deceleration

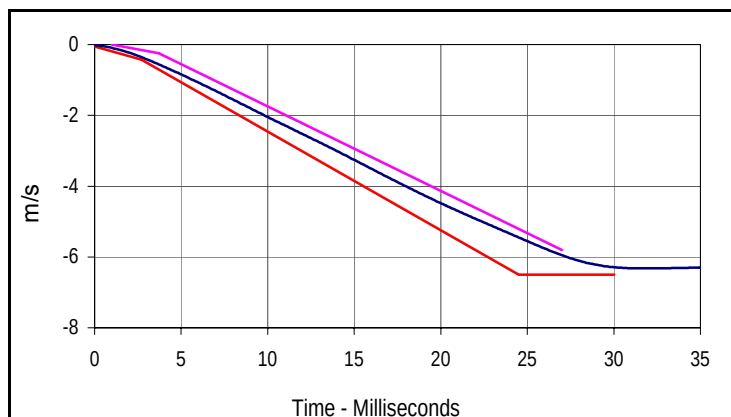
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
2.2	38.3	-25.8	16.2



Curve Description

Pendulum Velocity

Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.2	-7.4	120.6



Curve Description

Pendulum Velocity

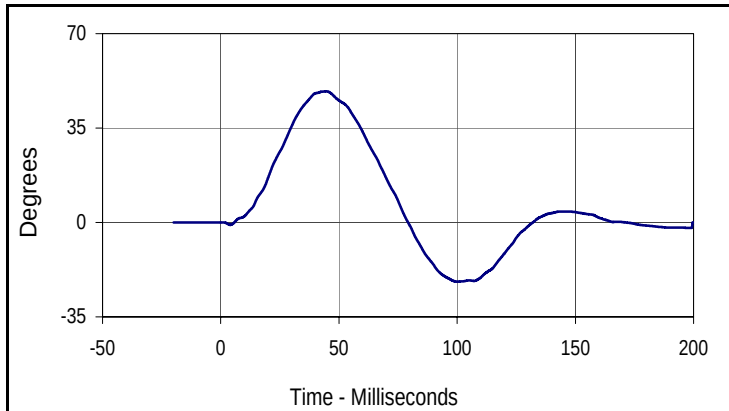
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.2	-7.4	120.6

Velocity Corridors

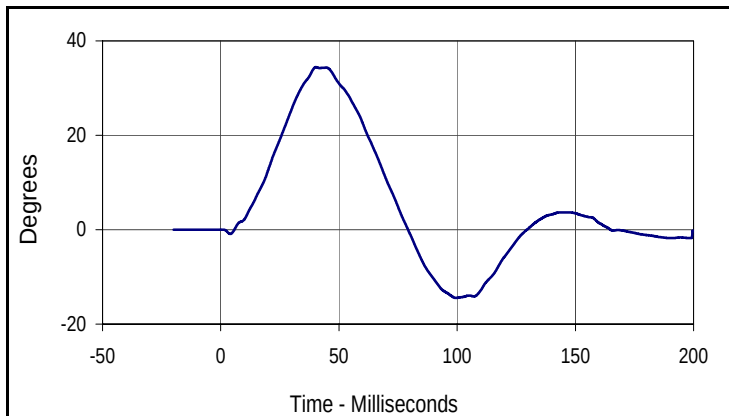
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.7	-0.24	2.7	-0.425
27.0	-5.80	24.5	-6.50
		30.0	-6.50

Test Program: ES2re Lumbar Flexion Test
 ATD Serial No.: F035

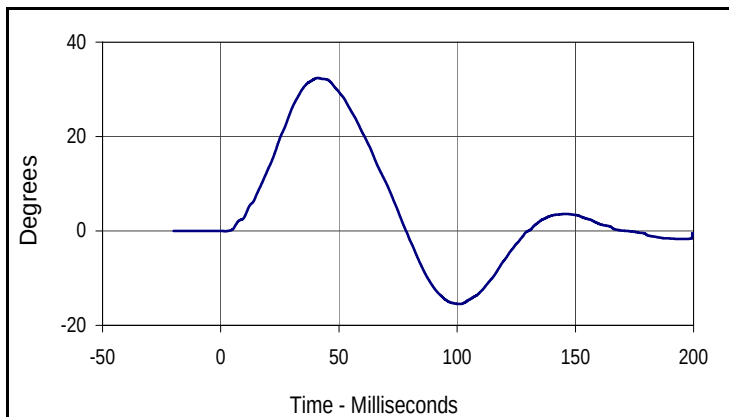
Test Date: 10/20/14
 Test I.D.: F035LB053



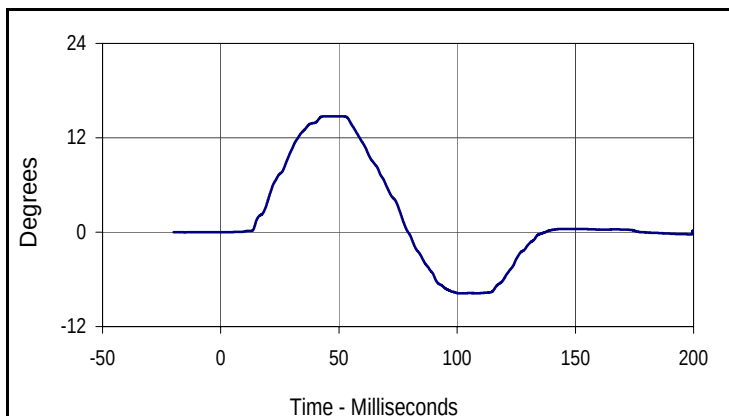
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
48.6	45.2	-22.0	100.6



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
34.4	40.8	-14.5	100.2



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
32.4	41.6	-15.5	101.5



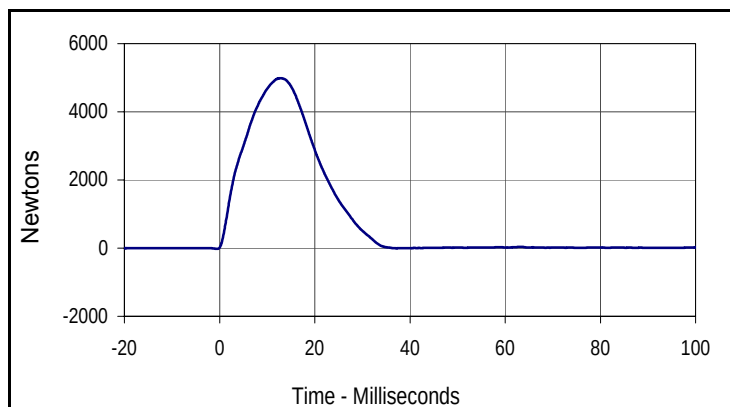
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
14.7	44.2	-7.8	108.8

Test Program: ES2re Pelvis Impact Test
 ATD Serial No.: F035

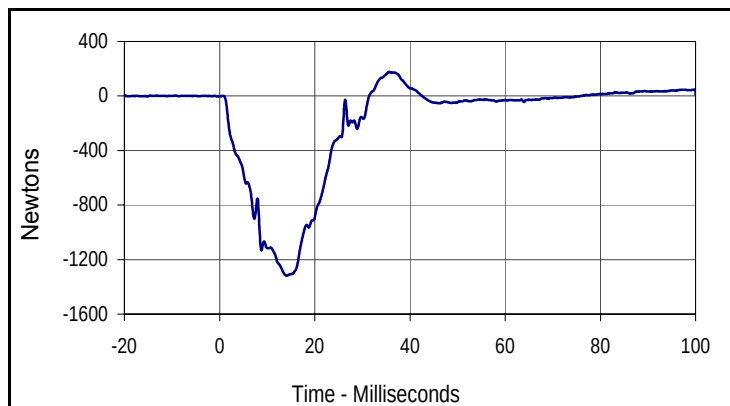
Test Date: 10/20/14
 Test I.D.: F035PL053



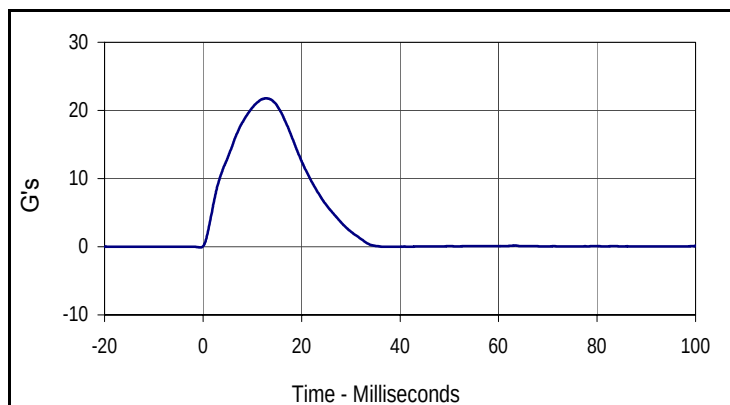
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	800	Pass
Temperature During Soak	Max	20.6 to 22.2	21.7	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	32.6	Pass
	Min		31.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	31.6	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.32	Pass
Peak Impactor Force	N	4700 to 5400	4990.5	Pass
	msec	11.8 to 16.1	12.8	Pass
Peak Pubic Symphysis Load	N	-1230 to -1590	-1317.7	Pass
	msec	12.2 to 17.0	14	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4990.5	12.8	-22.8	-0.6



Curve Description			
Pubic Symphysis Force Y			
Plot No.	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
176.1	35.6	-1317.7	14.0



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
21.8	12.8	-0.1	-0.6

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

Test Date: 10/24/14
 Test I.D.: N/A



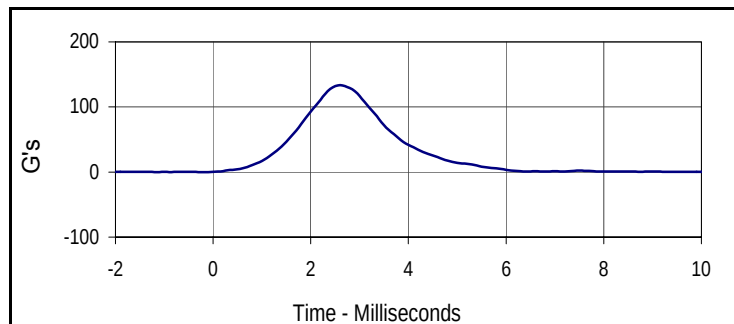
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
A	Sitting Height	mm	772 - 788	780	Pass
B	Shoulder Pivot Height	mm	437 - 453	445	Pass
C	H-Point Height	mm	79 - 89	85	Pass
D	H-Point from Seatback	mm	141 - 151	145	Pass
E	Shoulder Pivot from Backline	mm	97 - 107	102	Pass
F	Thigh Clearance	mm	119 - 135	125	Pass
G	Head Breadth	mm	140 - 148	145	Pass
H	Head Back from Backline	mm	40 - 46	44	Pass
I	Head Depth	mm	178 - 188	184	Pass
J	Head Circumference	mm	541 - 551	545	Pass
K	Buttock to Knee Length	mm	514 - 540	527	Pass
L	Popliteal Height	mm	343 - 369	352	Pass
M	Knee Pivot to Floor Height	mm	392 - 409	401	Pass
N	Buttock Popliteal Length	mm	416 - 442	432	Pass
O	Chest Depth w/o Jacket	mm	195 - 211	202	Pass
P	Foot Length	mm	216 - 232	221	Pass
Q	Hip Breadth with Pelvic Plug	mm	313 - 323	315	Pass
R	Arm Length	mm	249 - 259	252	Pass
S	Knee Joint to Seatback	mm	477 - 493	481	Pass
V	Shoulder Width	mm	341 - 357	352	Pass
W	Foot Width	mm	78 - 94	86	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.: 299

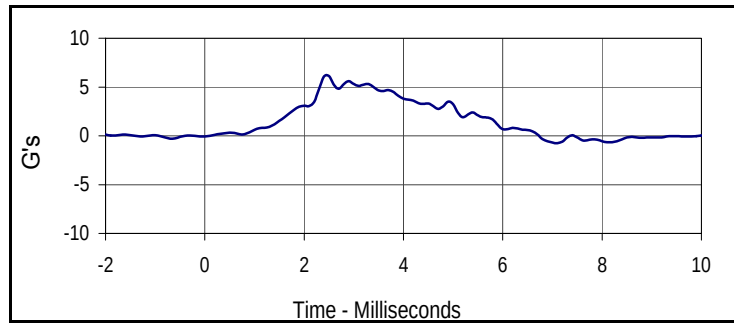
Test Date: 10/24/14
 Test I.D.: 299HD076



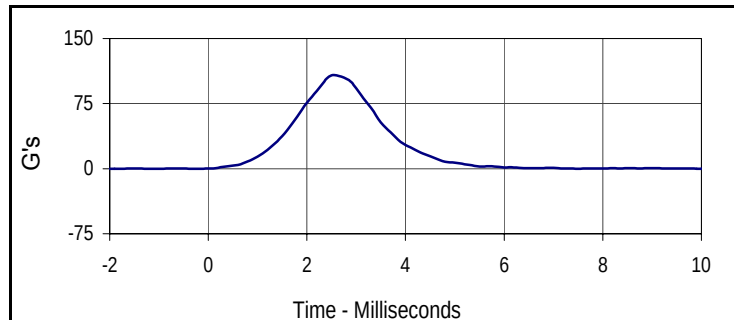
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	264	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.3	Pass
	Min	°C		20.6	Pass
Humidity During Soak	Max	%	10.0 to 70.0	31.7	Pass
	Min	%		29.8	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.9	Pass
Peak Head Resultant Acceleration		G's	115 to 137	133.4	Pass
Peak Head X Acceleration		G's	<15	6.1	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse		%	<15	1.6	Pass
Overall Test Results				Pass	



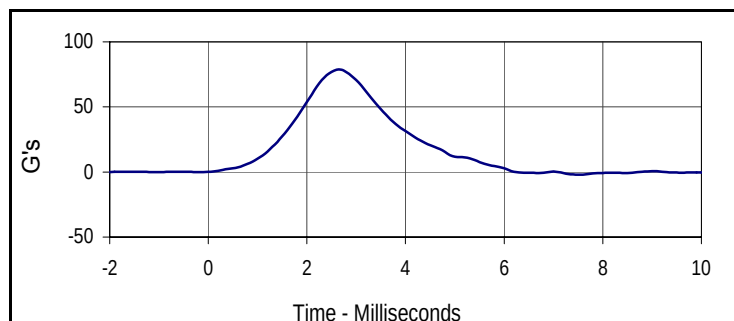
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
133.4	2.6	0.0	-0.2



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
6.1	2.5	-0.3	-0.7



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
107.6	2.6	-0.2	10.0



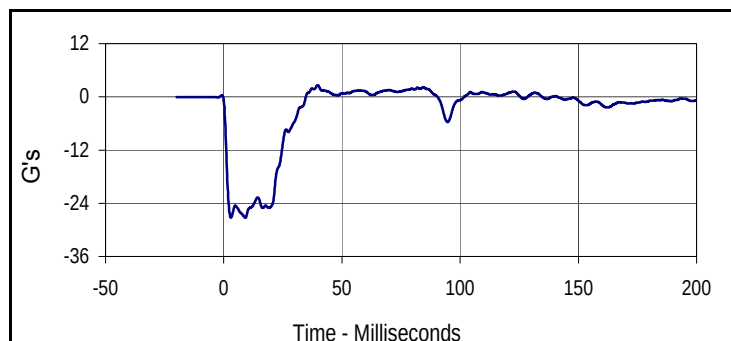
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
78.7	2.6	-2.1	7.5

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

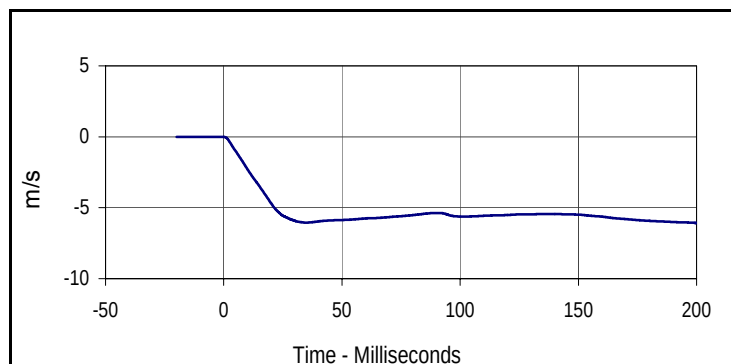
Test Date: 10/24/14
 Test I.D.: 299NB076



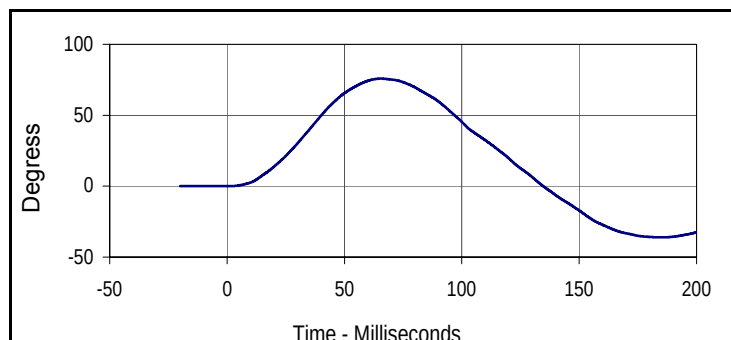
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	329	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		20.6	Pass
Humidity During Soak	Max	10.0 to 70.0	31.7	Pass
	Min		29.8	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	30.1	Pass
Pendulum Velocity	m/s	5.51 to 5.63	5.57	Pass
Pendulum Deceleration	10 msec	-2.20 to -2.80	-2.28	Pass
	15 msec	-3.30 to -4.10	-3.47	Pass
	20 msec	-4.40 to -5.40	-4.68	Pass
	25 msec	-5.40 to -6.10	-5.56	Pass
	25-100 msec	-5.50 to -6.20	-6.05	Pass
D-Plane Rotation	Max	71 to 81	75.8	Pass
	Time	50 to 70	65.3	Pass
Peak Occipital Condyle Moment	Nm	-36 to -44	-39.7	Pass
Decaying Moment Time to Cross 0 Nm	msec	102 to 126	123.4	Pass
Overall Test Results			Pass	



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
2.6	0.0	-27.3	0.0



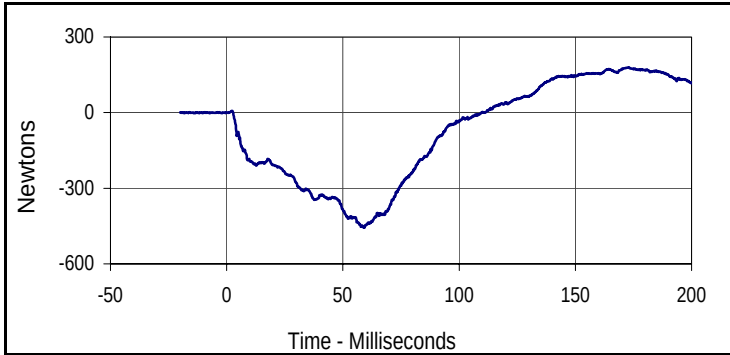
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	180	m/s
Max	Time	Min	Time
0.0	-20.0	-6.1	200.0



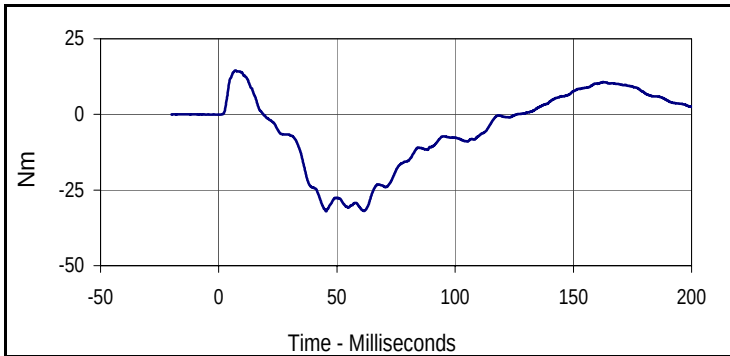
Curve Description			
D-Plane Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degress
Max	Time	Min	Time
75.8	65.3	-36.0	184.9

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

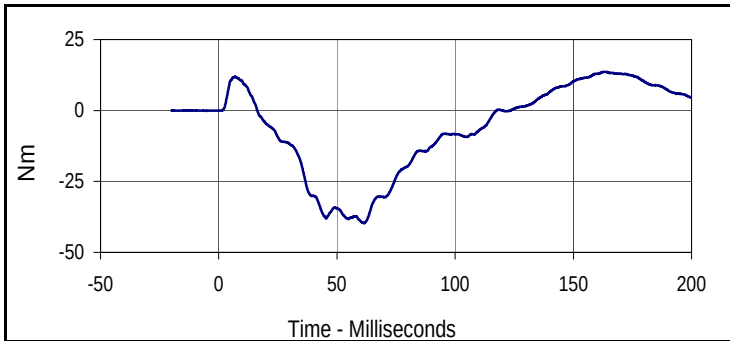
Test Date: 10/24/14
 Test I.D.: 299NB076



Curve Description			
Neck Force Y			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
179.0	172.7	-456.0	59.1



Curve Description			
Neck Moment X			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
14.6	7.0	-32.0	45.4



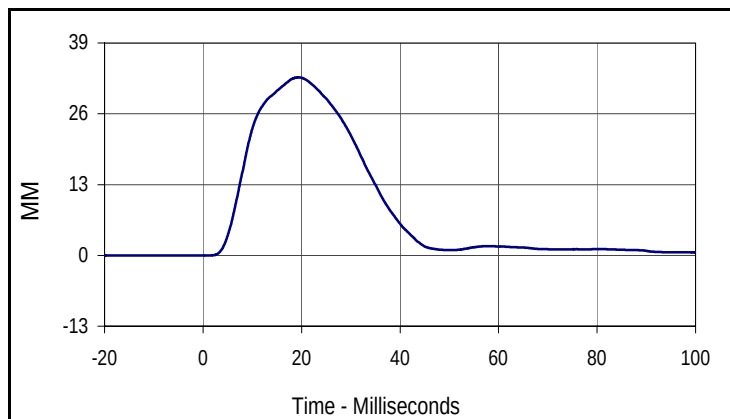
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
006	FIL	600	Nm
Max	Time	Min	Time
13.7	162.7	-39.7	61.5

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

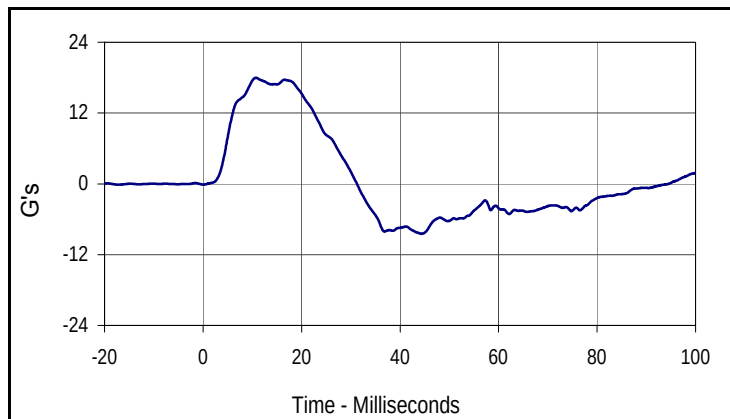
Test Date: 10/24/14
 Test I.D.: 299SH076



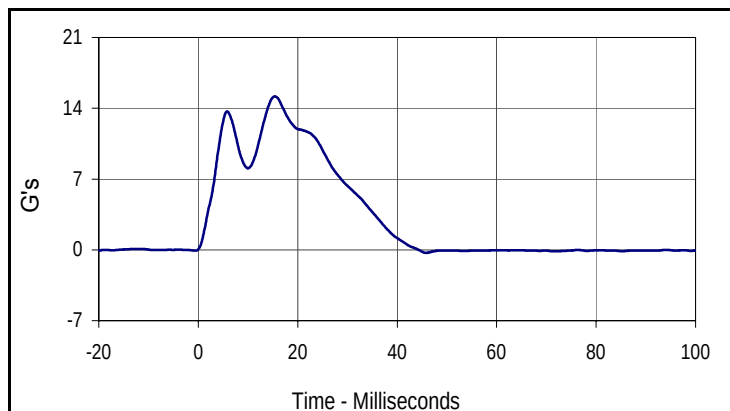
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	404	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.3	Pass
	Min	°C		20.6	Pass
Humidity During Soak	Max	%	10.0 to 70.0	31.7	Pass
	Min	%		29.8	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	20.8	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.7	Pass
Impactor Velocity		m/s	4.20 to 4.40	4.31	Pass
Peak Shoulder Deflection		mm	28 to 37	32.7	Pass
Peak Lateral Spine Acceleration Y		G's	17 to 22	18.0	Pass
Peak Impactor Acceleration		G's	13 to 18	15.2	Pass
Overall Test Results				Pass	



Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
32.7	19.3	0.0	-18.8



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
18.0	10.7	-8.5	44.4



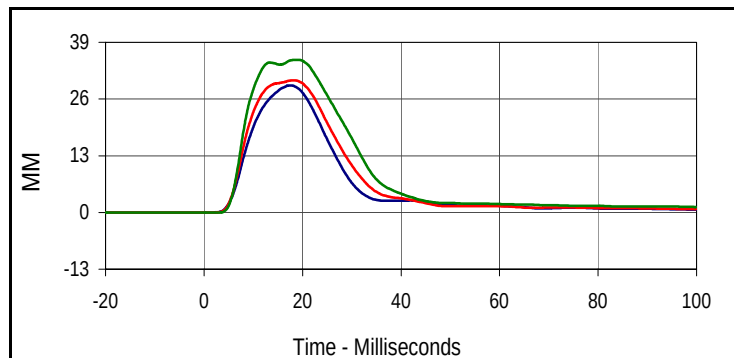
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
15.2	15.4	-0.3	45.8

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

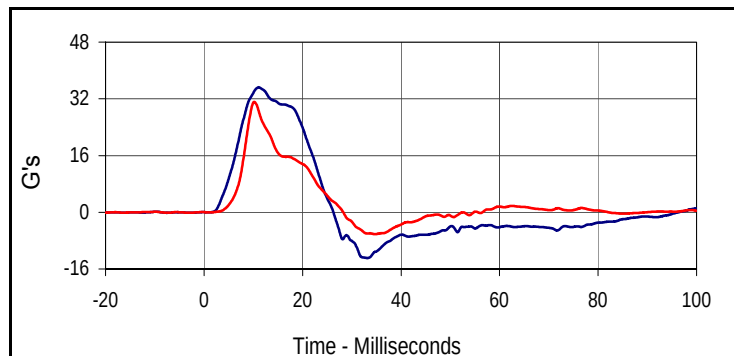
Test Date: 10/24/14
 Test I.D.: 299TWA076



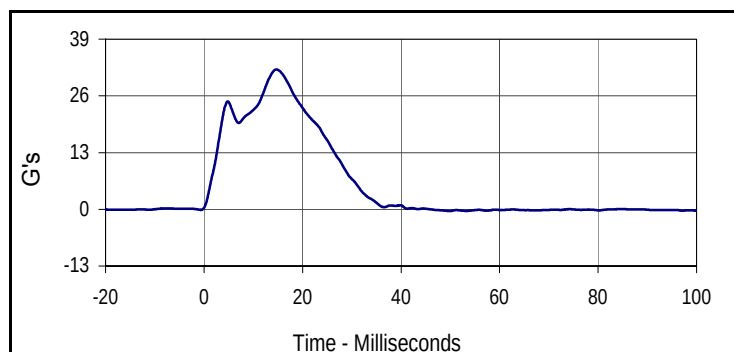
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	454	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		20.6	Pass
Humidity During Soak	Max	10.0 to 70.0	31.7	Pass
	Min		29.8	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	20.8	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	31.0	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.71	Pass
Peak Shoulder Deflection	mm	31 to 40	38.4	Pass
Peak Upper Thorax Rib Deflection	mm	25 to 32	29.1	Pass
Peak Middle Thorax Rib Deflection	mm	30 to 36	30.3	Pass
Peak Lower Thorax Rib Deflection	mm	32 to 38	34.9	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	35.2	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	31.1	Pass
Peak Impactor Acceleration	G's	30 to 36	32.1	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
29.1	17.6	0.0	-12.1
Middle Thorax Deflection			
Max	Time	Min	Time
30.3	18.1	0.0	-20.0
Lower Thorax Deflection			
Max	Time	Min	Time
34.9	19.3	0.0	-10.6



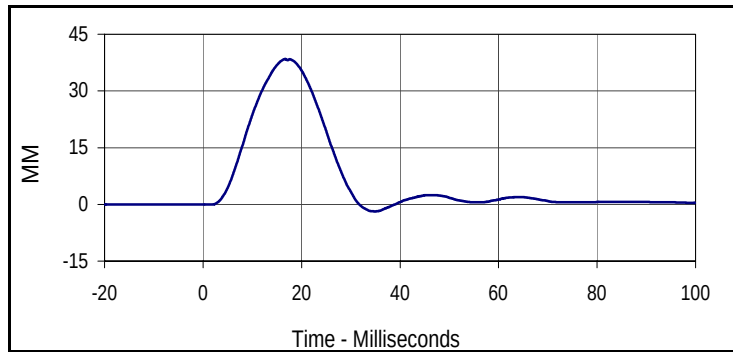
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
35.2	11.1	-12.9	33.1
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
31.1	10.2	-6.2	34.8



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
32.1	14.7	-0.4	50.0

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

Test Date: 10/24/14
Test I.D.: 299TWA076



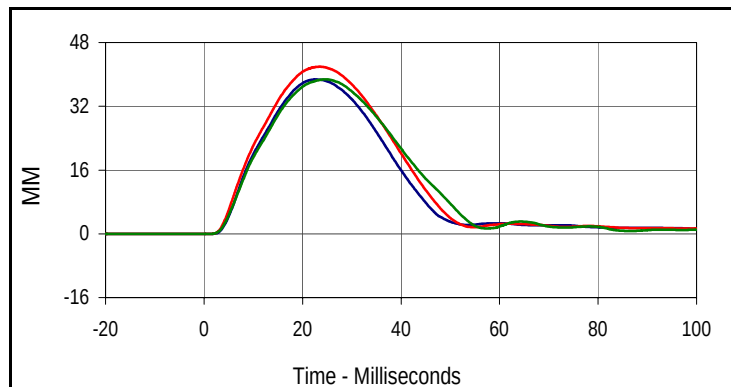
Curve Description			
Shoulder Deflection Y			
Plot No.	Type	SAE Class	Units
007	FIL	600	MM
Max	Time	Min	Time
38.4	16.7	-1.9	34.9

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

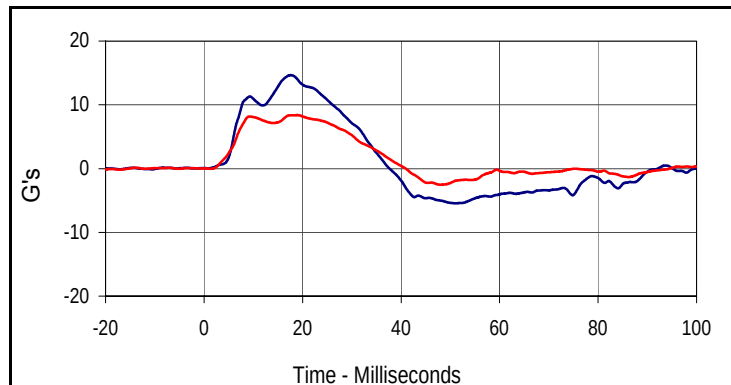
Test Date: 10/24/14
 Test I.D.: 299TWOA076



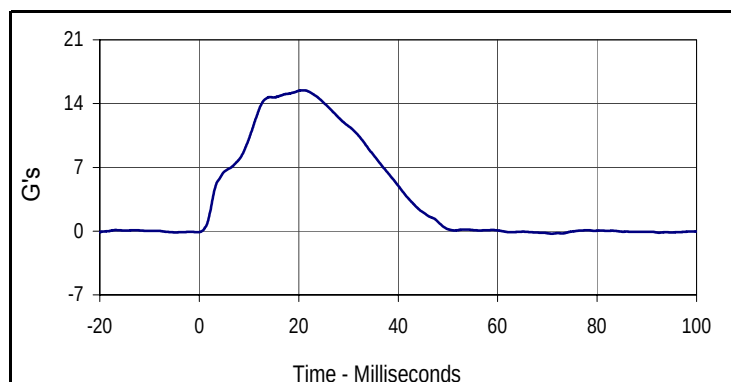
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	509	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.3	Pass
	Min	°C		20.6	Pass
Humidity During Soak	Max	%	10.0 to 70.0	31.7	Pass
	Min	%		29.8	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	20.8	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	31.2	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.31	Pass
Peak Upper Thorax Rib Deflection		mm	32 to 40	38.7	Pass
Peak Middle Thorax Rib Deflection		mm	39 to 45	41.9	Pass
Peak Lower Thorax Rib Deflection		mm	35 to 43	38.8	Pass
Peak Upper Spine Y Acceleration		G's	13 to 17	14.7	Pass
Peak Lower Spine Y Acceleration		G's	7 to 11	8.4	Pass
Peak Impactor Acceleration		G's	14 to 18	15.5	Pass
Overall Test Results				Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
38.7	22.7	0.0	-5.5
Middle Thorax Deflection			
Max	Time	Min	Time
41.9	23.5	0.0	-1.8
Lower Thorax Deflection			
Max	Time	Min	Time
38.8	24.7	0.0	0.5



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.7	17.6	-5.4	51.0
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
8.4	18.9	-2.5	48.1



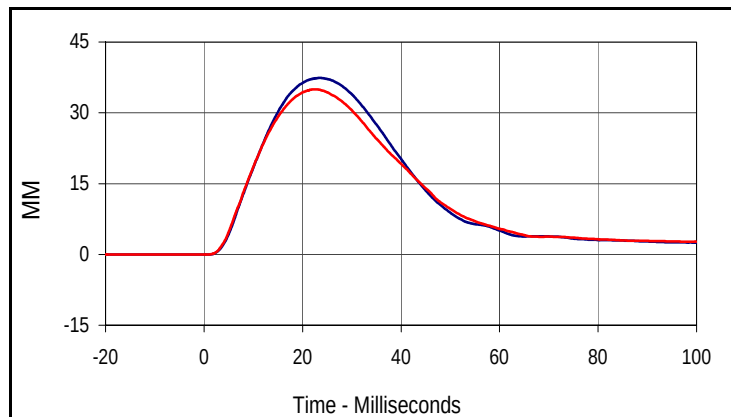
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
15.5	20.7	-0.3	70.9

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

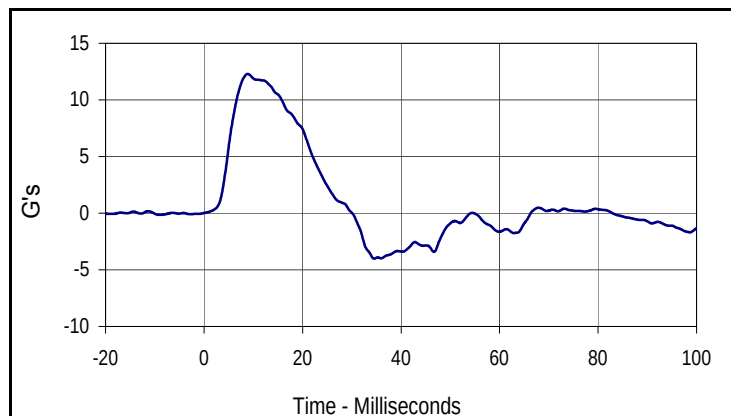
Test Date: 10/24/14
 Test I.D.: 299ABD076



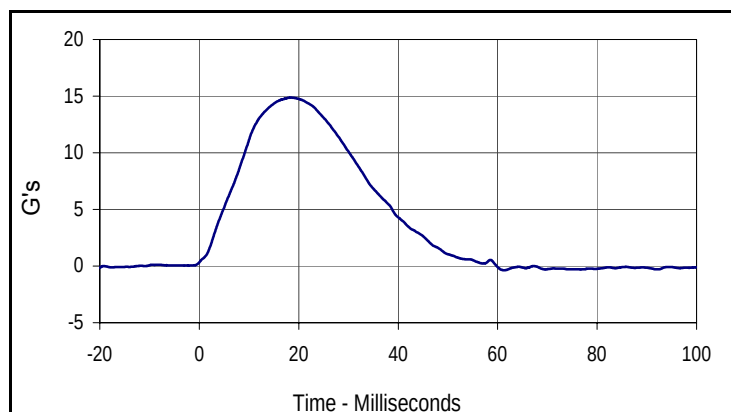
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	569	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		20.6	Pass
Humidity During Soak	Max	10.0 to 70.0	31.7	Pass
	Min		29.8	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	31.1	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.32	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	37.4	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	35.0	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	12.3	Pass
Peak Impactor Acceleration	G's	12 to 16	14.9	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
37.4	23.5	0.0	-18.9
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
35.0	22.6	0.0	-14.5

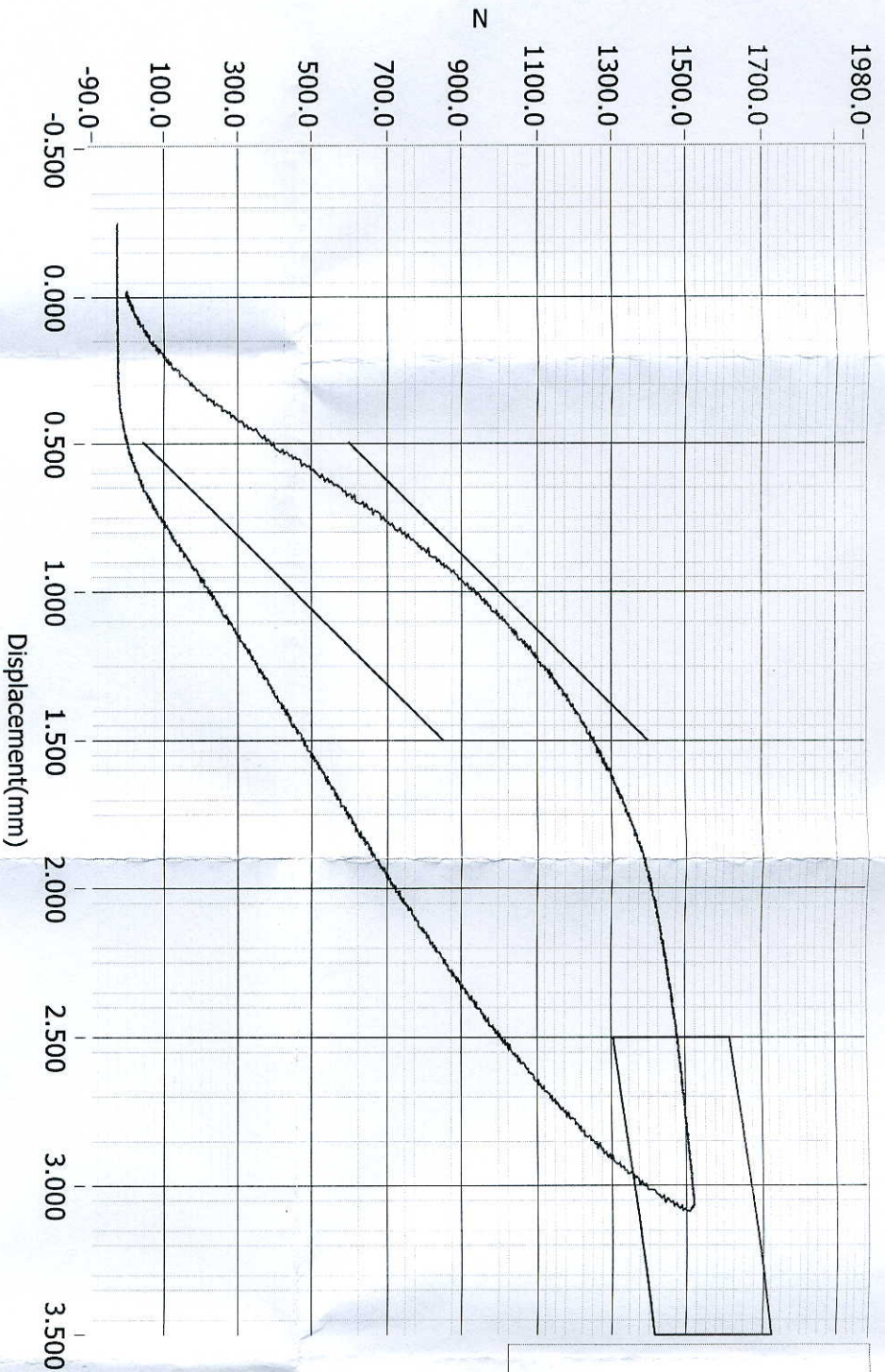


Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
12.3	8.9	-4.0	34.5



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.9	18.4	-0.4	61.3

Resultant Data - SIDI's Plug Compression



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

ATD Calibration Lab

Test ID

Part Serial Number

Test Date

Test Time

72832

2/8/2014

1:11 PM

Cert ID

ATD Serial Number

ATD Type

N/A

SIDI's

M20155305 PRE TEST

Current Date : 2/8/2014

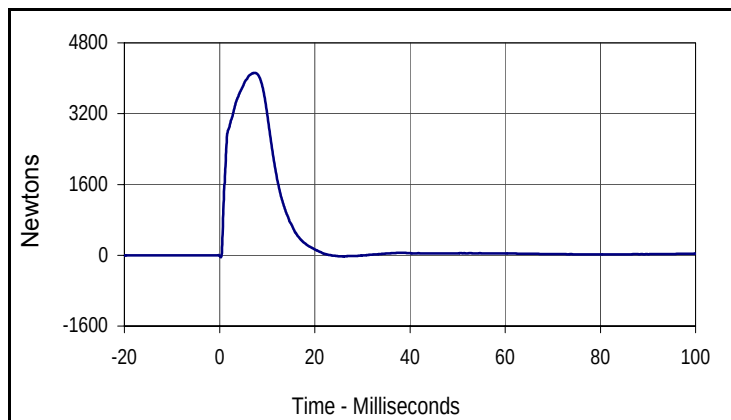
Current Time : 13:12:00

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

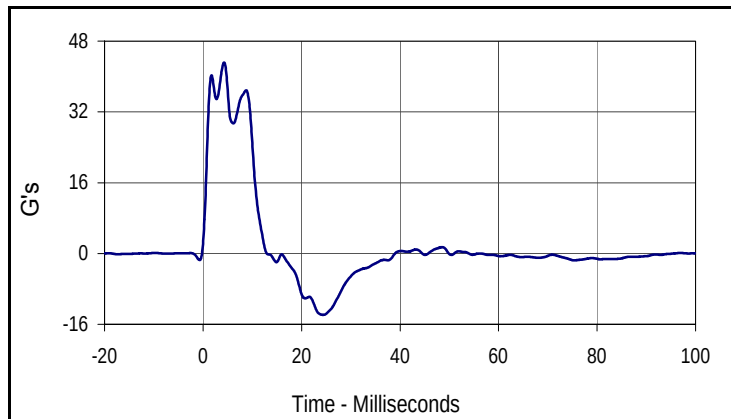
Test Date: 10/24/14
 Test I.D.: 299ACET076



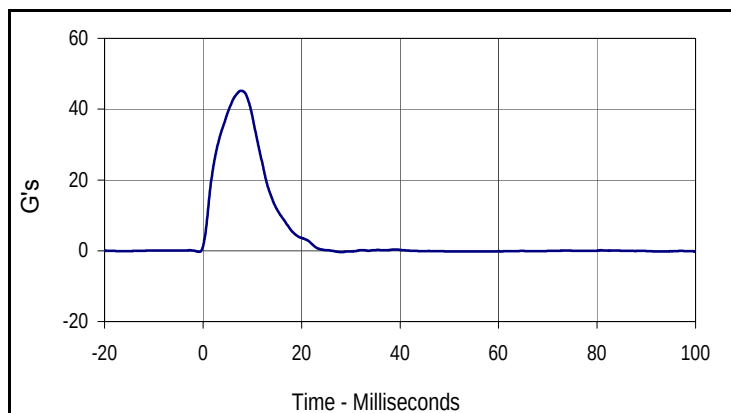
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	644	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		20.6	Pass
Humidity During Soak	Max	10.0 to 70.0	31.7	Pass
	Min		29.8	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	20.8	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	31.3	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.66	Pass
Peak Acetabulum Force Y	Newtons	3600 to 4300	4121.2	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	36.9	Pass
Peak Impactor Acceleration	G's	38 to 47	45.2	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4121.2	7.4	-47.9	0.3



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
43.2	4.3	-13.9	24.4



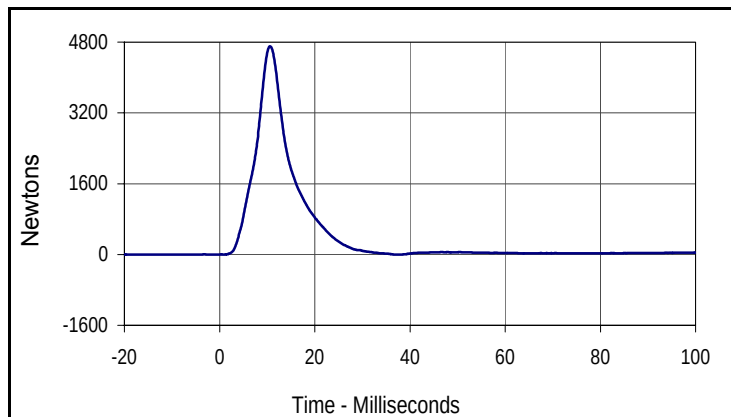
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
45.2	7.7	-0.4	28.3

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

Test Date: 10/24/14
 Test I.D.: 299PL076



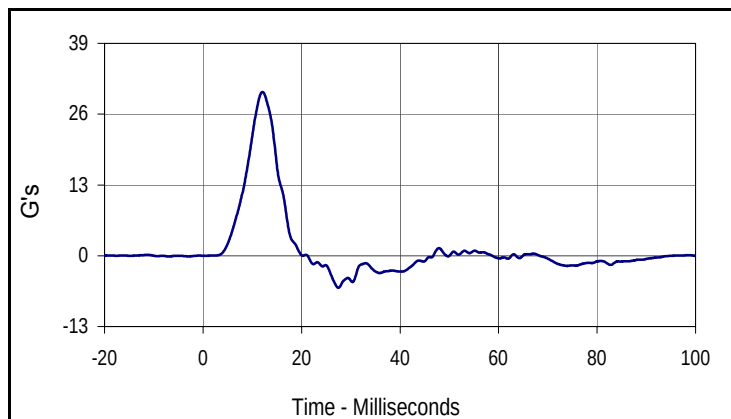
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	709	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.3	Pass
	Min	°C		20.6	Pass
Humidity During Soak	Max	%	10.0 to 70.0	31.7	Pass
	Min	%		29.8	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	20.6	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	31.7	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.34	Pass
Peak Iliac Force		Newtons	4100 to 5100	4705.6	Pass
Peak Pelvis Y Acceleration		G's	28 to 39	30.1	Pass
Peak Impactor Acceleration		G's	36 to 45	41.7	Pass
Overall Test Results				Pass	



Curve Description

Pelvis Iliac Force

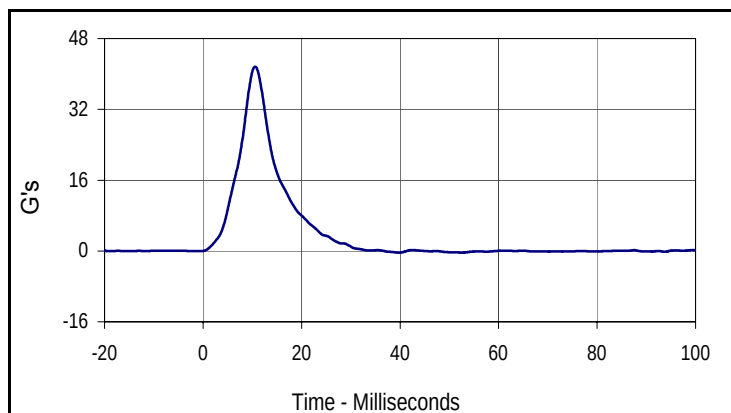
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4705.6	10.6	-2.1	-15.4



Curve Description

Pelvis Y Acceleration

Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
30.1	12.1	-5.9	27.5



Curve Description

Impactor Acceleration

Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
41.7	10.6	-0.4	39.7

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

Test Program: ES2re External Measurements
 ATD Serial No.: F035

Test Date: 10/29/14
 Test I.D.: N/A



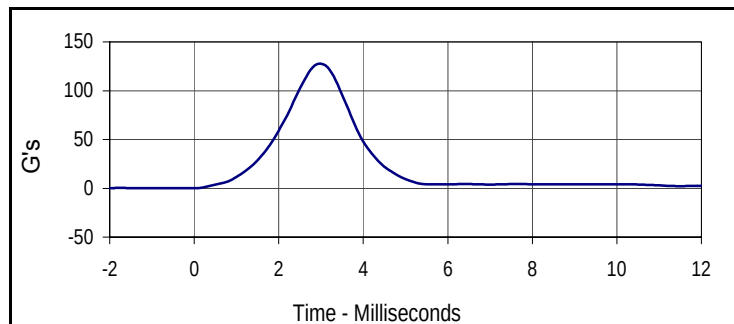
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	30.0	Pass
1	Sitting Height	mm	900 - 918	909	Pass
2	Seat to Shoulder Joint	mm	558 - 572	564	Pass
3	Seat to Lower Face of Thoracic Spine Box	mm	346 - 356	350	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.: F035

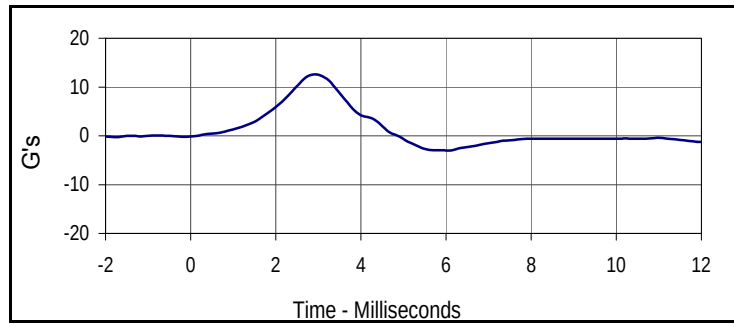
Test Date: 10/29/14
 Test I.D.: F035HD054



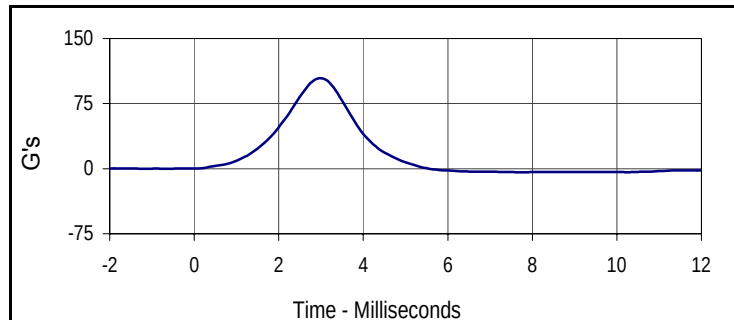
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	412	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	47.7	Pass
	Min		46.4	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	47.5	Pass
Peak Head Resultant Acceleration	G's	125 to 155	127.8	Pass
Peak Head X Acceleration	G's	≤15	12.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	7.4	Pass
Overall Test Results				Pass



Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
127.8	3.0	0.1	-0.7



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
12.6	2.9	-3.0	6.0



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
104.3	3.0	-4.1	7.7



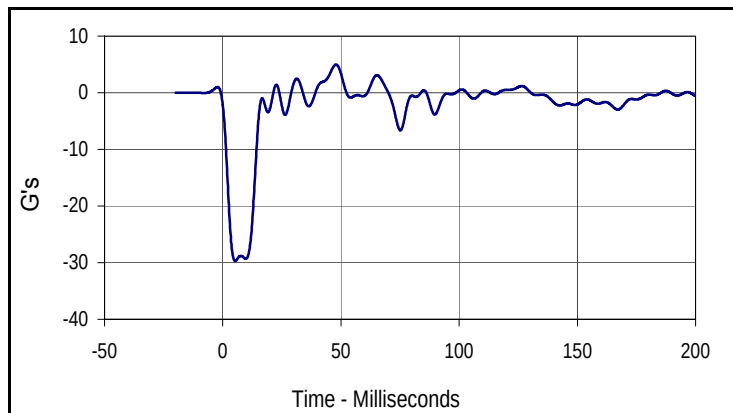
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
72.9	3.0	-0.2	-1.6

Test Program: ES2re Neck Flexion Test
 ATD Serial No.: F035

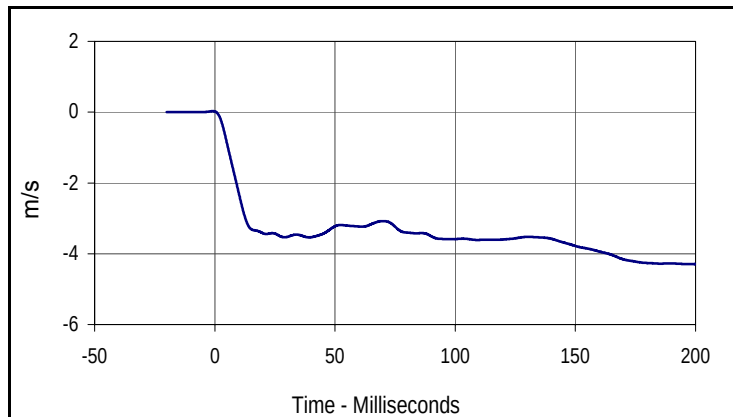
Test Date: 10/29/14
 Test I.D.: F035NB054



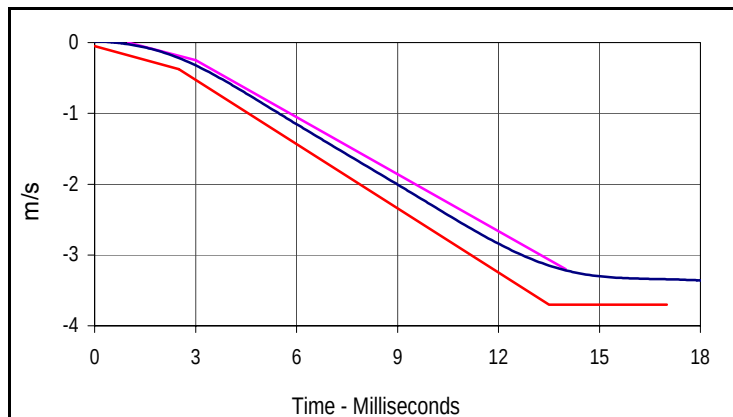
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	447	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	47.7	Pass
	Min		46.4	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	47.5	Pass
Pendulum Velocity	m/s	3.3 to 3.5	3.42	Pass
Headform Flexion	Max	49 to 59	53.5	Pass
	Time	54 to 66	58.9	Pass
Headform Flexion Decay (Peak to Zero)	msec	53 to 88	57.3	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
5.0	47.9	-29.7	5.3



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.8	-4.3	199.9



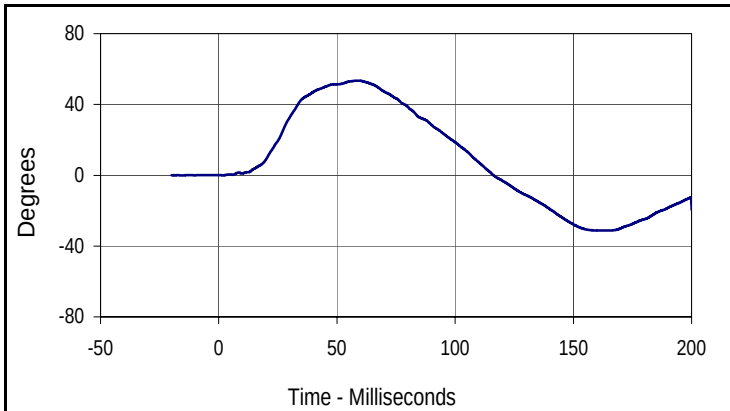
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.8	-4.3	199.9

Velocity Corridors

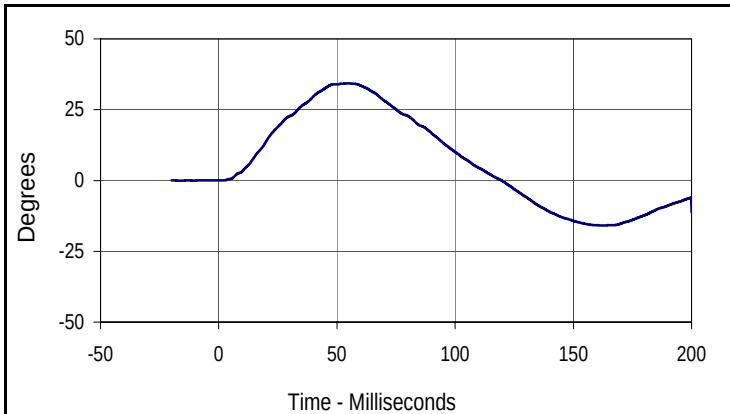
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.0	-0.03	2.5	-0.375
14.0	-3.20	13.5	-3.70
		17.0	-3.70

Test Program: ES2re Neck Flexion Test
 ATD Serial No.: F035

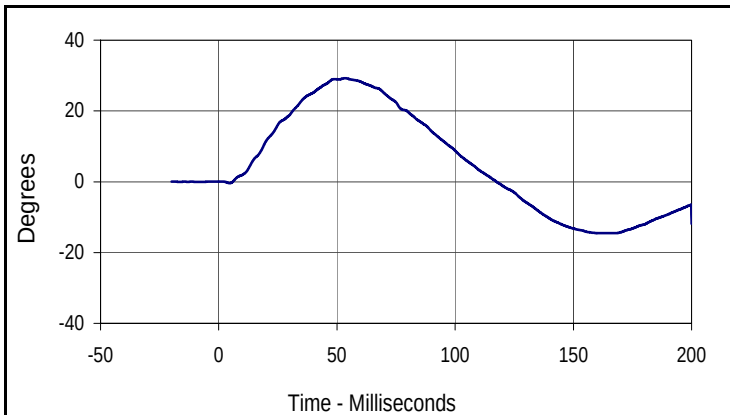
Test Date: 10/29/14
 Test I.D.: F035NB054



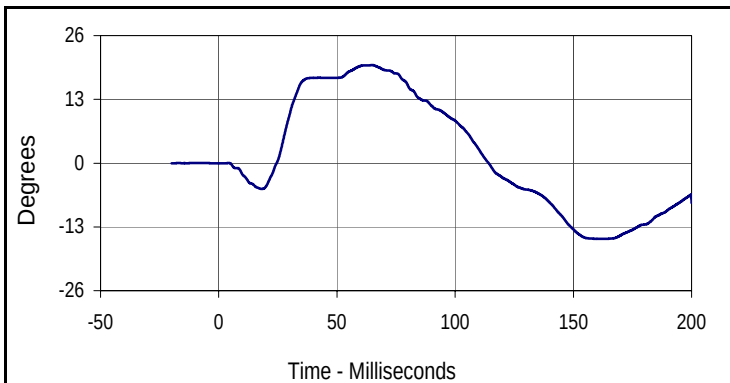
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
53.5	58.9	-31.3	162.2



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
34.3	54.5	-15.9	162.2



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
29.3	53.4	-14.6	163.6



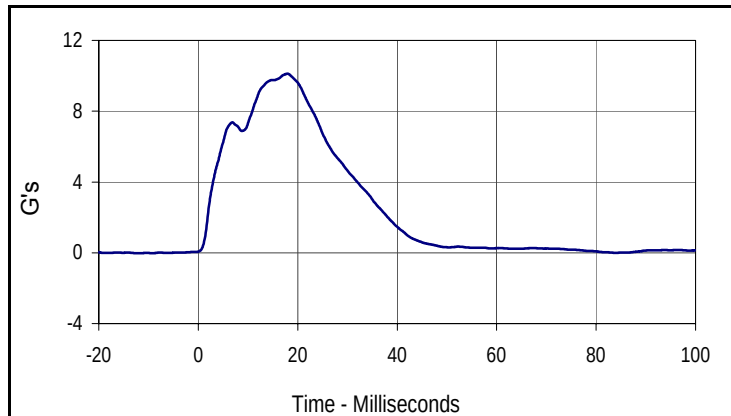
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
20.0	64.9	-15.4	159.8

Test Program: ES2re Shoulder Impact Test
 ATD Serial No.: F035

Test Date: 10/29/14
 Test I.D.: F035SH054



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	512	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	47.7	Pass
	Min		46.4	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	47.4	Pass
Pendulum Speed	m/s	4.2 to 4.4	4.37	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	10.1	Pass
Overall Test Results			Pass	



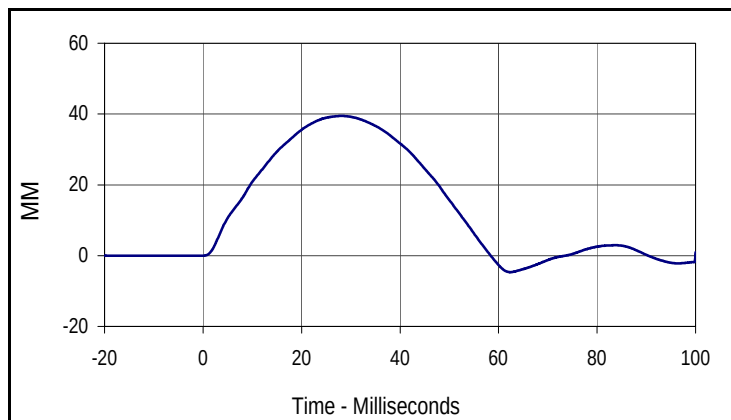
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
10.1	17.9	0.0	-12.4

Test Program: ES2re Thorax - Rib Drop Test
 ATD Serial No.: F035 Rib # 1

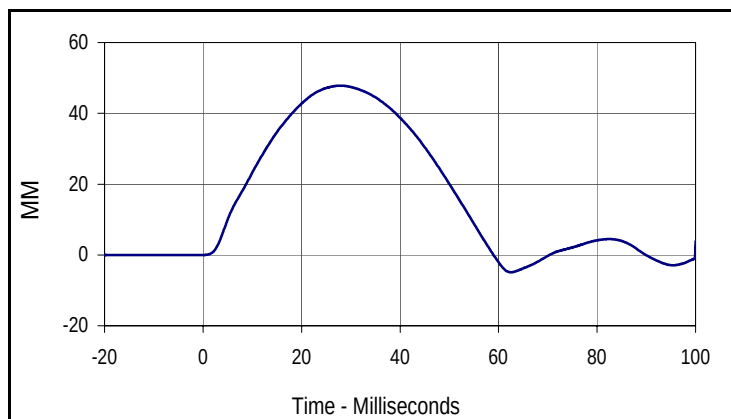
Test Date: 10/29/14
 Test I.D.: F035RB1054



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	567	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	47.7	Pass
	Min		46.4	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	47.3	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	47.8	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
39.5	28.1	-4.7	62.4



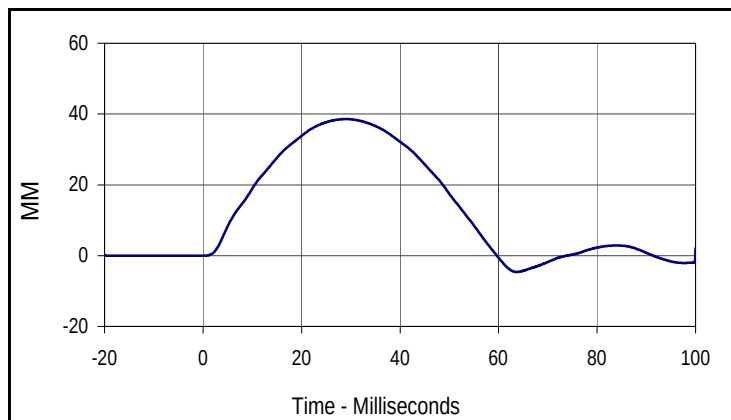
Curve Description			
Upper Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
47.8	27.9	-4.9	62.5

Test Program: ES2re Thorax - Rib Drop Test
 ATD Serial No.: F035 Rib # 2

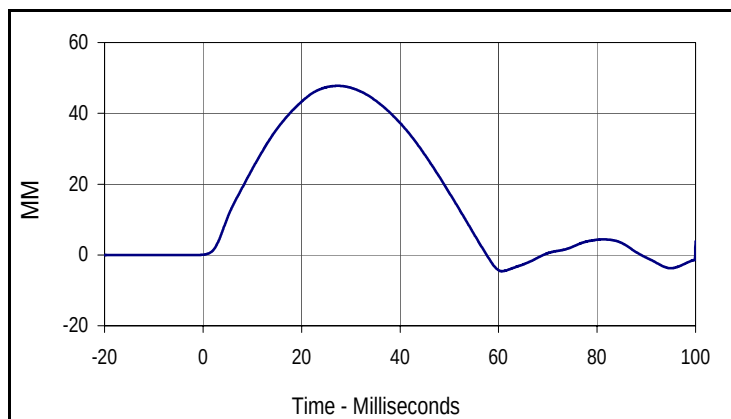
Test Date: 10/29/14
 Test I.D.: F035RB2054



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	612	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	47.7	Pass
	Min		46.4	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	47.0	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	47.8	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
38.6	29.1	-4.6	63.7



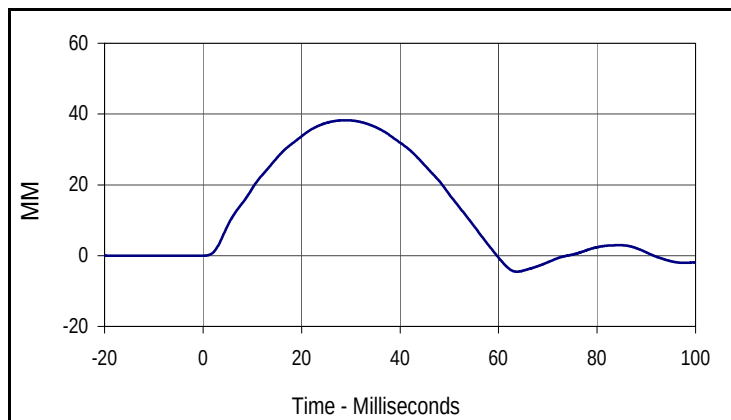
Curve Description			
Middle Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
47.8	27.4	-4.6	60.7

Test Program: ES2re Thorax - Rib Drop Test
 ATD Serial No.: F035 Rib # 3

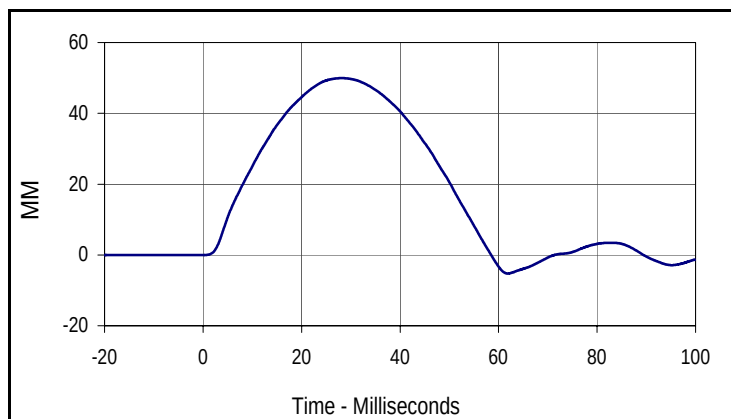
Test Date: 10/29/14
 Test I.D.: F035RB3054



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	657	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	47.7	Pass
	Min		46.4	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	46.8	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	38.3	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	49.9	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
38.3	28.9	-4.5	63.7



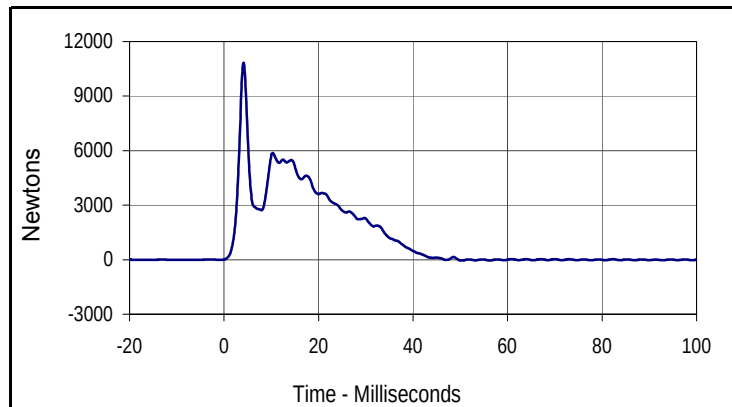
Curve Description			
Lower Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
49.9	28.2	-5.2	61.9

Test Program: ES2re Thorax - Full Body Impact Test
 ATD Serial No.: F035

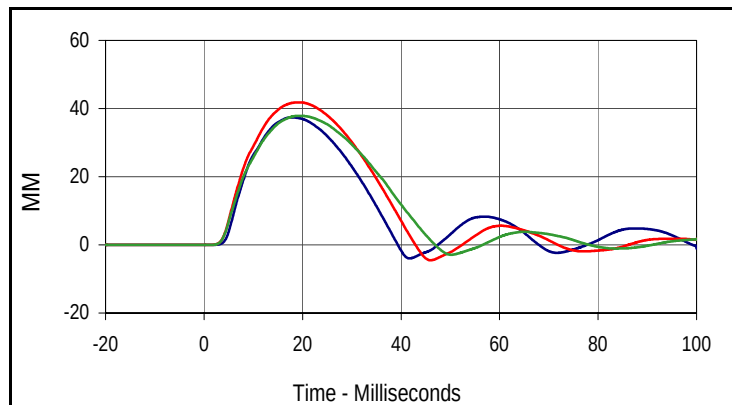
Test Date: 10/29/14
 Test I.D.: F035TH054



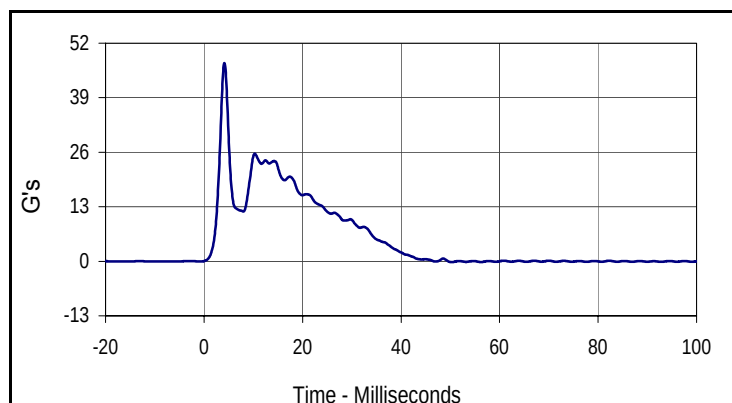
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	702	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	47.7	Pass
	Min		46.4	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	46.8	Pass
Peak Impactor Velocity	m/s	5.4 to 5.6	5.51	Pass
Peak Impactor Force	N	5100 to 6200	5877.1	Pass
	msec	> 6.0 msec	10.3	Pass
Peak Upper Rib Deflection	mm	34 to 41	37.4	Pass
Peak Middle Rib Deflection	mm	37 to 45	41.8	Pass
Peak Lower Rib Deflection	mm	37 to 44	37.9	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
10831.7	4.1	-50.0	50.2



Curve Description			
Upper, Middle, Lower Rib Deflections			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max (Upper)	Time	Min (Upper)	Time
37.4	17.8	-4.0	41.8
Max (Middle)	Time	Min (Middle)	Time
41.8	19.2	-4.5	46.0
Max (Lower)	Time	Min (Lower)	Time
37.9	19.3	-2.9	50.2



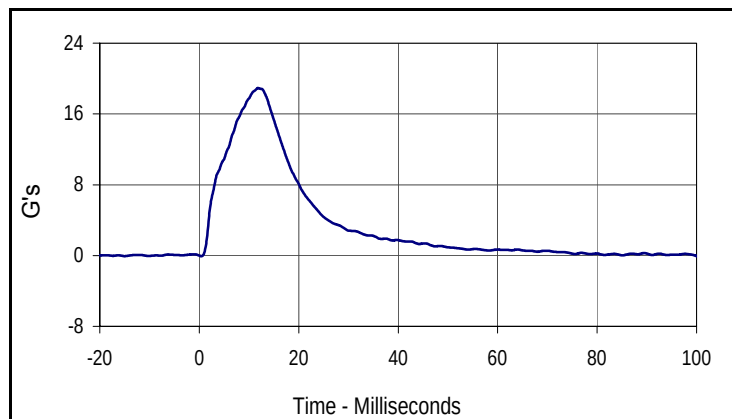
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
47.3	4.1	-0.2	50.2

Test Program: ES2re Abdomen Impact Test
 ATD Serial No.: F035

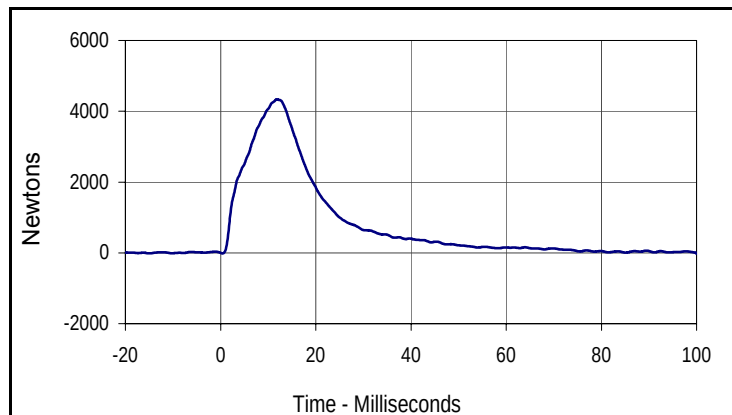
Test Date: 10/29/14
 Test I.D.: F035ABD054



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	772	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	47.7	Pass
	Min		46.4	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	46.8	Pass
Probe Velocity	m/s	3.9 to 4.1	4.06	Pass
Peak Impactor Force	N	4000 to 4800	4335.0	Pass
	msec	10.6 to 13.0	11.8	Pass
Sum of Abdominal Forces	N	2200 to 2700	2594.9	Pass
	msec	10.0 to 12.3	11.5	Pass
Overall Test Results				Pass



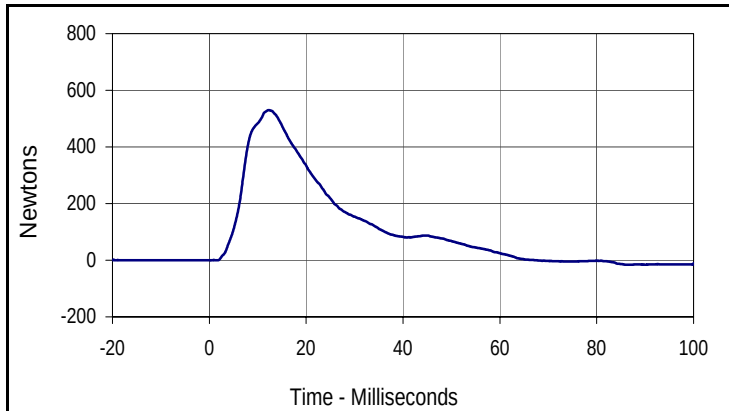
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
18.9	11.8	-0.1	100.0



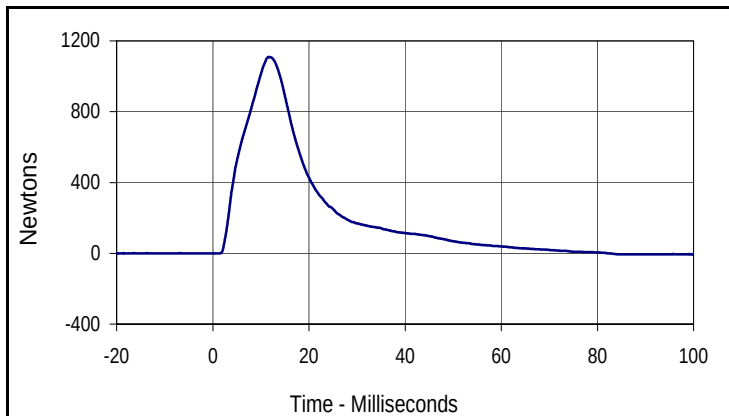
Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
4335.0	11.8	-20.3	100.0

Test Program: ES2re Abdomen Impact Test
 ATD Serial No.: F035

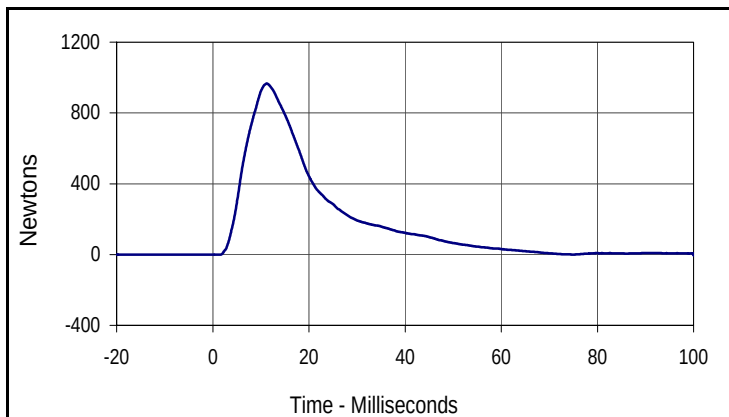
Test Date: 10/29/14
 Test I.D.: F035ABD054



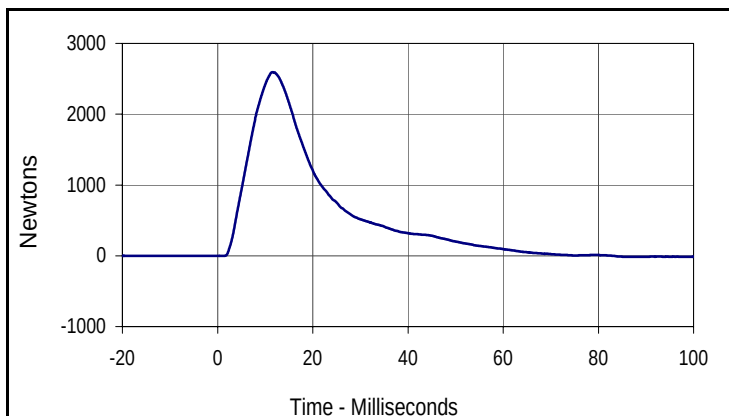
Curve Description			
Front Abdomen Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
529.8	12.2	-15.9	86.2



Curve Description			
Middle Abdomen Force			
Plot No.	Type	SAE Class	Units
004	FIL	600	Newtons
Max	Time	Min	Time
1108.8	11.7	-6.4	85.9



Curve Description			
Rear Abdomen Force			
Plot No.	Type	SAE Class	Units
005	FIL	600	Newtons
Max	Time	Min	Time
965.9	11.2	-6.3	170.0



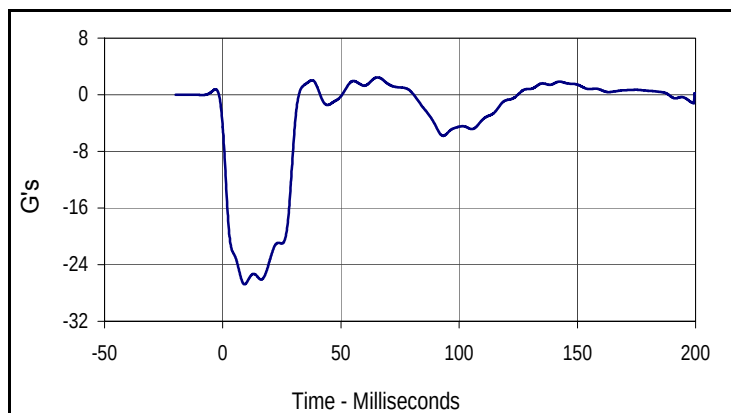
Curve Description			
Abdomen Sum Resultant			
Plot No.	Type	SAE Class	Units
006	RES	600	Newtons
Max	Time	Min	Time
2594.9	11.5	-16.5	100.0

Test Program: ES2re Lumbar Flexion Test
 ATD Serial No.: F035

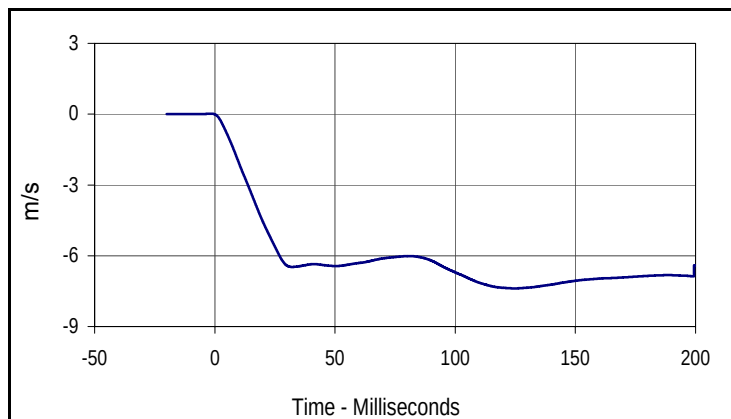
Test Date: 10/29/14
 Test I.D.: F035LB054



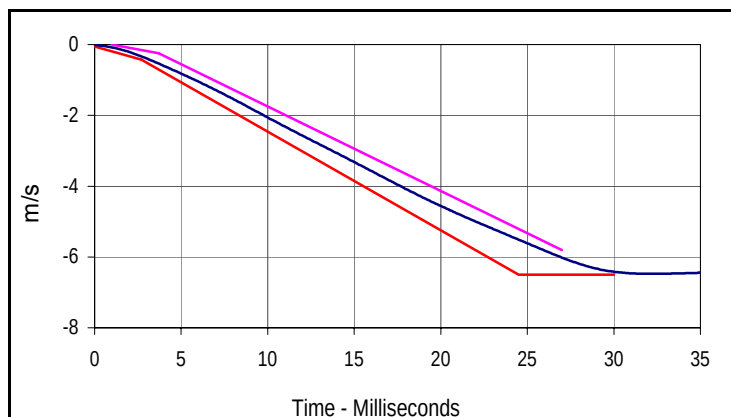
Tested Parameter	Units	Specification	Result	Pass/Fail
Lumbar Spine Assembly Soak Time	Minutes	≥240	847	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	47.7	Pass
	Min		46.4	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	46.8	Pass
Pendulum Velocity	m/s	5.95 to 6.15	5.96	Pass
Headform Rotation	Max	45 to 55	48.3	Pass
	Time	39 to 53	42.4	Pass
Time of Decay to Zero Angle from Peak	msec	37 to 57	43.9	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
2.5	66.1	-26.8	9.8



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.0	-7.4	125.4



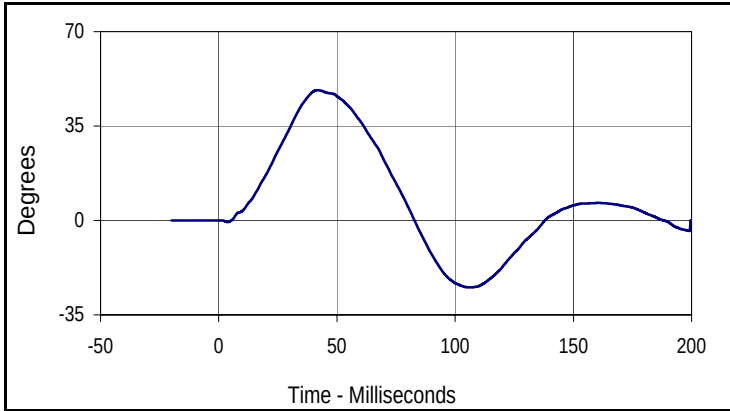
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.0	-7.4	125.4

Velocity Corridors

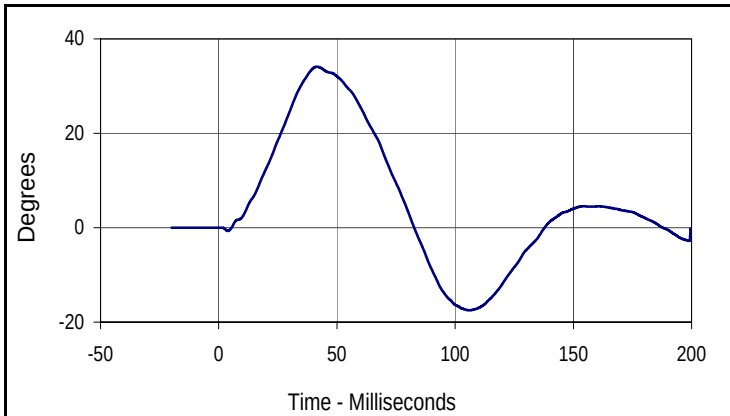
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.7	-0.24	2.7	-0.425
27.0	-5.80	24.5	-6.50
		30.0	-6.50

Test Program: ES2re Lumbar Flexion Test
 ATD Serial No.: F035

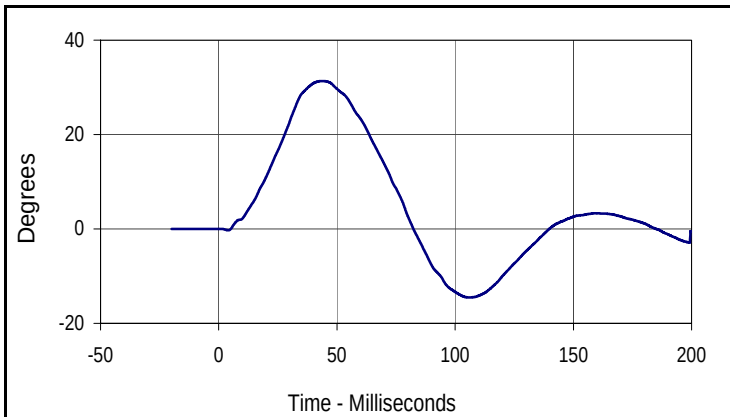
Test Date: 10/29/14
 Test I.D.: F035LB054



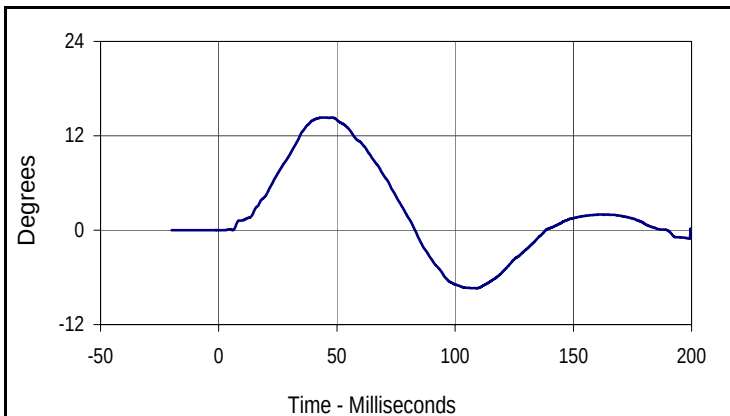
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
48.3	42.4	-24.8	106.8



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
34.1	42.0	-17.5	106.6



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
31.4	44.4	-14.5	106.4



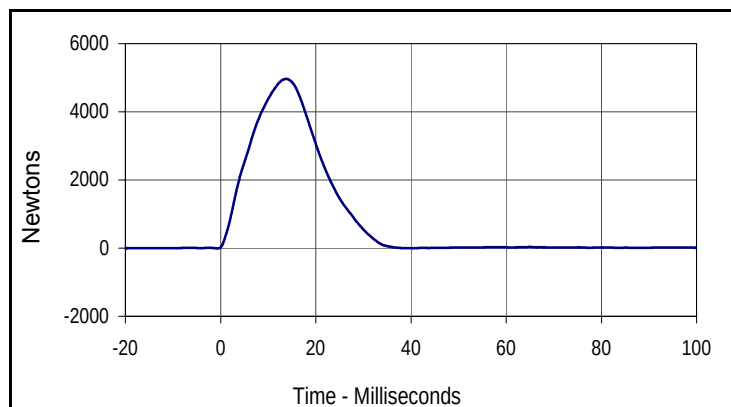
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
14.3	44.2	-7.4	109.8

Test Program: ES2re Pelvis Impact Test
 ATD Serial No.: F035

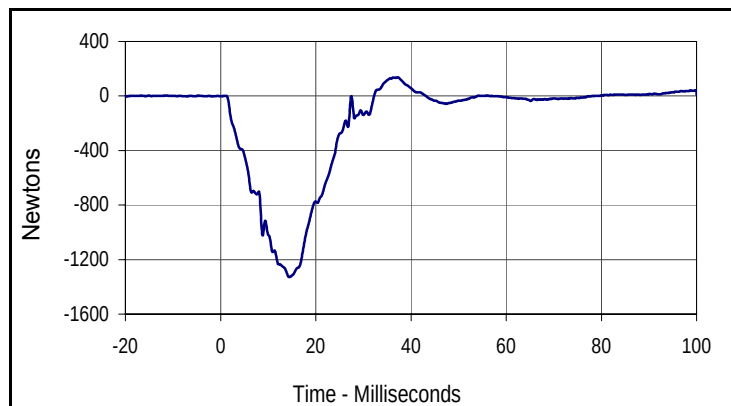
Test Date: 10/29/14
 Test I.D.: F035PL054



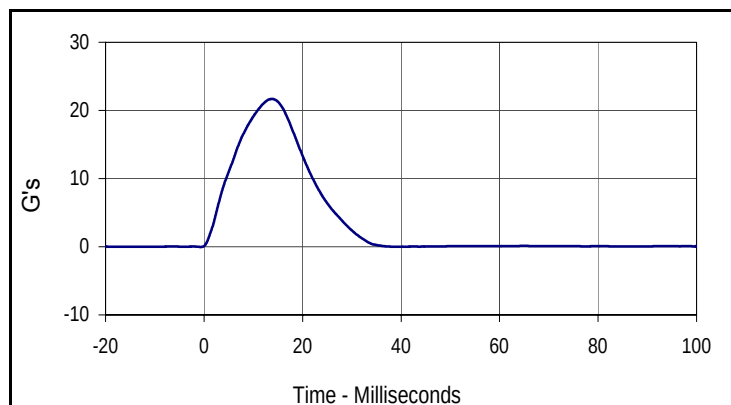
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	902	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	47.7	Pass
	Min		46.4	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	46.4	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.36	Pass
Peak Impactor Force	N	4700 to 5400	4966.9	Pass
	msec	11.8 to 16.1	13.8	Pass
Peak Pubic Symphysis Load	N	-1230 to -1590	-1328.9	Pass
	msec	12.2 to 17.0	14.5	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4966.9	13.8	-7.2	-0.6



Curve Description			
Pubic Symphysis Force Y			
Plot No.	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
136.2	37.3	-1328.9	14.5



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
21.7	13.8	0.0	-0.6

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

Test Date: 10/29/14
 Test I.D.: N/A



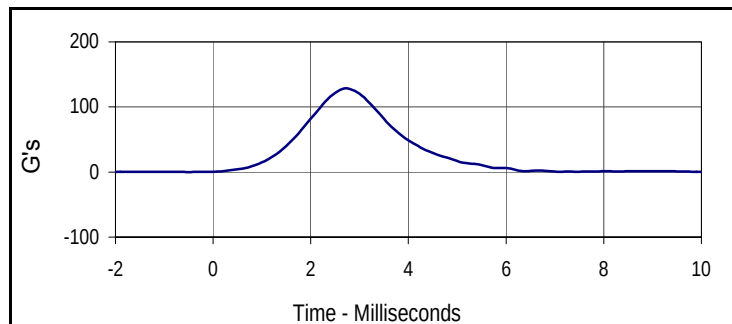
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity		%	10 to 70	45	Pass
A	Sitting Height	mm	772 - 788	780	Pass
B	Shoulder Pivot Height	mm	437 - 453	445	Pass
C	H-Point Height	mm	79 - 89	85	Pass
D	H-Point from Seatback	mm	141 - 151	145	Pass
E	Shoulder Pivot from Backline	mm	97 - 107	102	Pass
F	Thigh Clearance	mm	119 - 135	125	Pass
G	Head Breadth	mm	140 - 148	145	Pass
H	Head Back from Backline	mm	40 - 46	44	Pass
I	Head Depth	mm	178 - 188	184	Pass
J	Head Circumference	mm	541 - 551	545	Pass
K	Buttock to Knee Length	mm	514 - 540	527	Pass
L	Popliteal Height	mm	343 - 369	352	Pass
M	Knee Pivot to Floor Height	mm	392 - 409	401	Pass
N	Buttock Popliteal Length	mm	416 - 442	432	Pass
O	Chest Depth w/o Jacket	mm	195 - 211	202	Pass
P	Foot Length	mm	216 - 232	221	Pass
Q	Hip Breadth with Pelvic Plug	mm	313 - 323	315	Pass
R	Arm Length	mm	249 - 259	252	Pass
S	Knee Joint to Seatback	mm	477 - 493	481	Pass
V	Shoulder Width	mm	341 - 357	352	Pass
W	Foot Width	mm	78 - 94	86	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.: 299

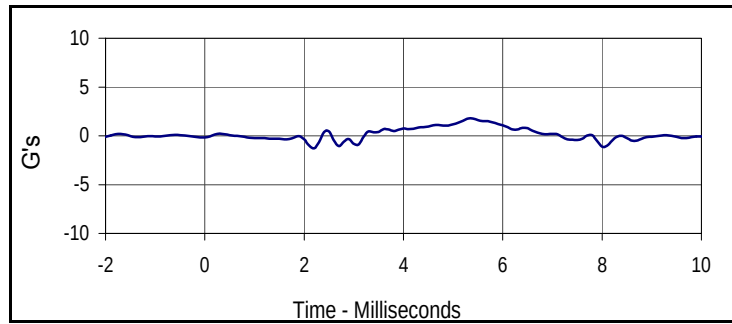
Test Date: 10/29/14
 Test I.D.: 299HD077



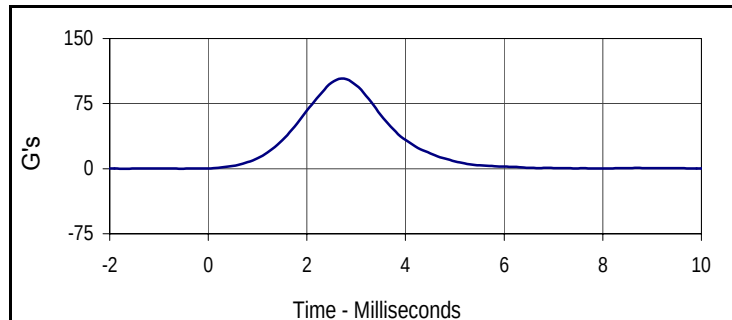
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	354	Pass
Temperature During Soak	Max	18.9 to 25.6	21.5	Pass
	Min		21.3	Pass
Humidity During Soak	Max	10.0 to 70.0	45.8	Pass
	Min		45.3	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	45.6	Pass
Peak Head Resultant Acceleration	G's	115 to 137	128.5	Pass
Peak Head X Acceleration	G's	<15	1.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	1.0	Pass
Overall Test Results				Pass



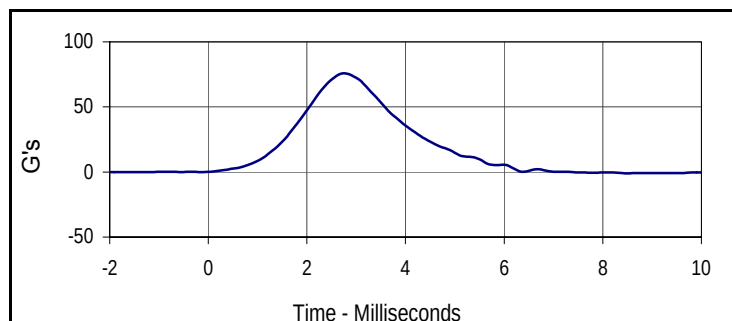
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
128.5	2.7	0.1	-0.5



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
1.8	5.4	-1.3	2.2



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
103.9	2.7	0.0	-1.7



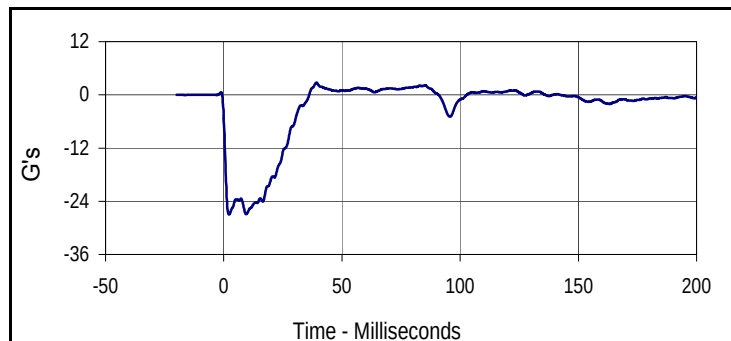
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
75.7	2.8	-1.1	8.5

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

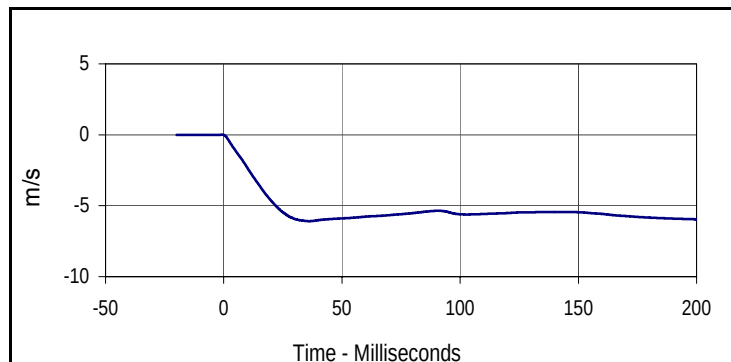
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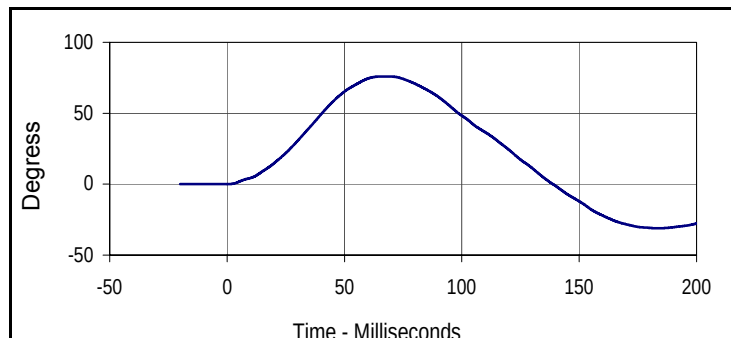
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	329	Pass
Temperature During Soak	Max	20.6 to 22.2	21.5	Pass
	Min		21.3	Pass
Humidity During Soak	Max	10.0 to 70.0	45.8	Pass
	Min		45.3	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	45.6	Pass
Pendulum Velocity	m/s	5.51 to 5.63	5.57	Pass
Pendulum Deceleration	10 msec	-2.20 to -2.80	-2.33	Pass
	15 msec	-3.30 to -4.10	-3.56	Pass
	20 msec	-4.40 to -5.40	-4.64	Pass
	25 msec	-5.40 to -6.10	-5.46	Pass
	25-100 msec	-5.50 to -6.20	-6.09	Pass
D-Plane Rotation	Max	71 to 81	76.0	Pass
	Time	50 to 70	65.6	Pass
Peak Occipital Condyle Moment	Nm	-36 to -44	-40.2	Pass
Decaying Moment Time to Cross 0 Nm	msec	102 to 126	114.9	Pass
Overall Test Results			Pass	



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
2.8	0.0	-26.9	0.0



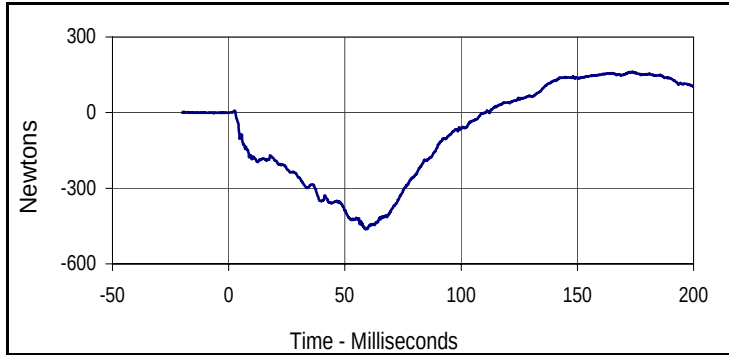
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.7	-6.1	36.1



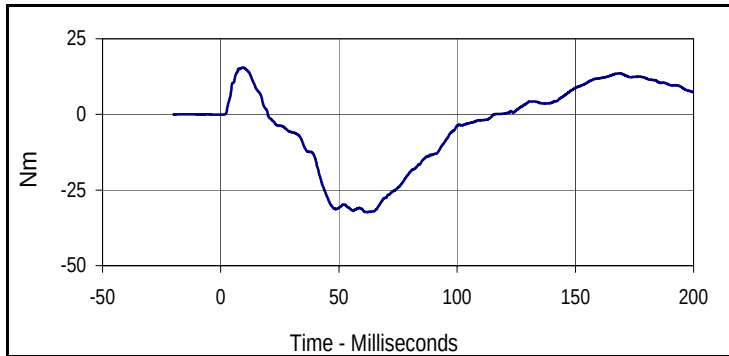
Curve Description			
D-Plane Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degress
Max	Time	Min	Time
76.0	65.6	-31.1	183.4

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

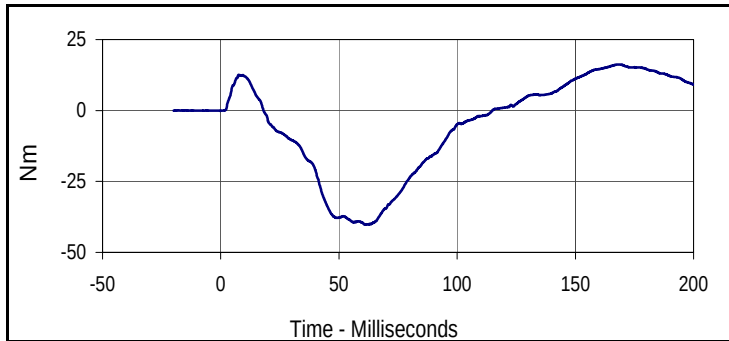
Test Date: 10/29/14
 Test I.D.: 299NB077



Curve Description			
Neck Force Y			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
162.6	173.8	-462.5	59.0



Curve Description			
Neck Moment X			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
15.5	9.5	-32.3	62.2



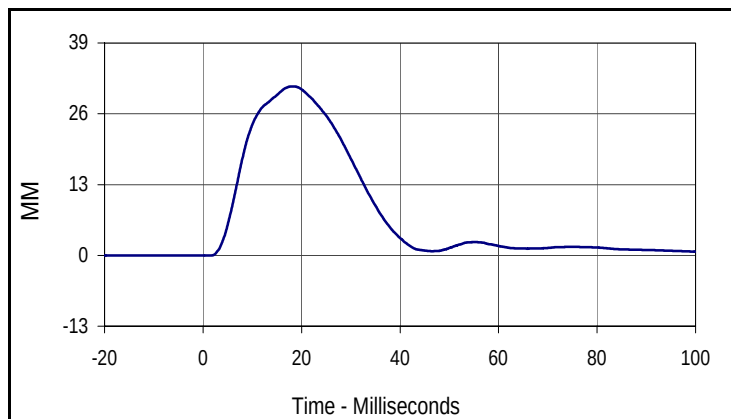
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
006	FIL	600	Nm
Max	Time	Min	Time
16.2	168.5	-40.2	62.0

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

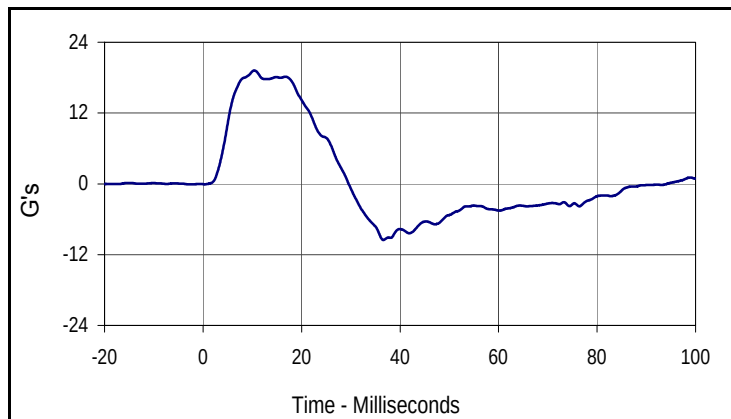
Test Date: 10/29/14
 Test I.D.: 299SH077



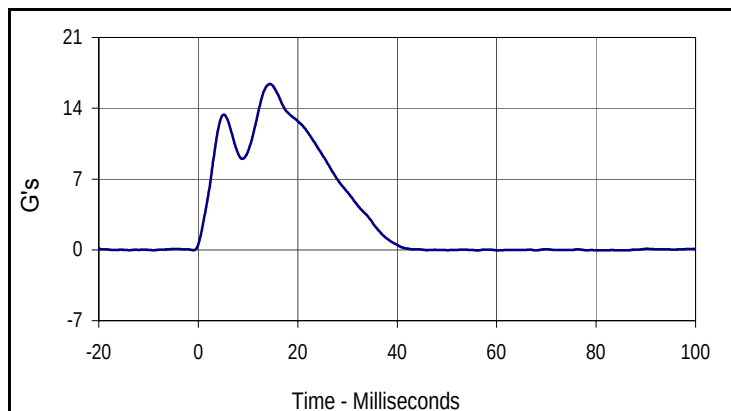
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	404	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.5	Pass
	Min	°C		21.3	Pass
Humidity During Soak	Max	%	10.0 to 70.0	45.8	Pass
	Min	%		45.3	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	45.3	Pass
Impactor Velocity		m/s	4.20 to 4.40	4.27	Pass
Peak Shoulder Deflection		mm	28 to 37	31.0	Pass
Peak Lateral Spine Acceleration Y		G's	17 to 22	19.2	Pass
Peak Impactor Acceleration		G's	13 to 18	16.4	Pass
Overall Test Results				Pass	



Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
31.0	18.3	0.0	-14.6



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
19.2	10.4	-9.5	36.6



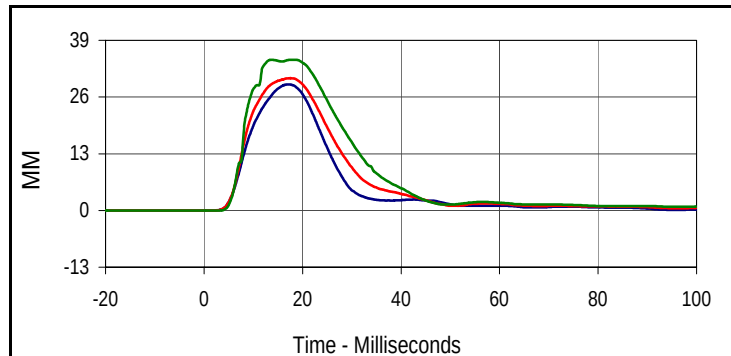
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
16.4	14.4	-0.2	0.0

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

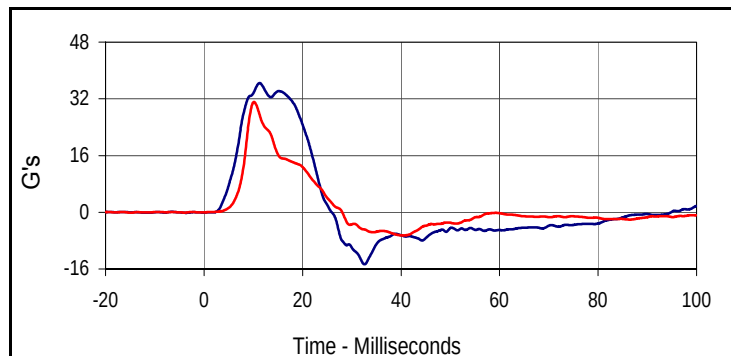
Test Date: 10/29/14
 Test I.D.: 299TWA077



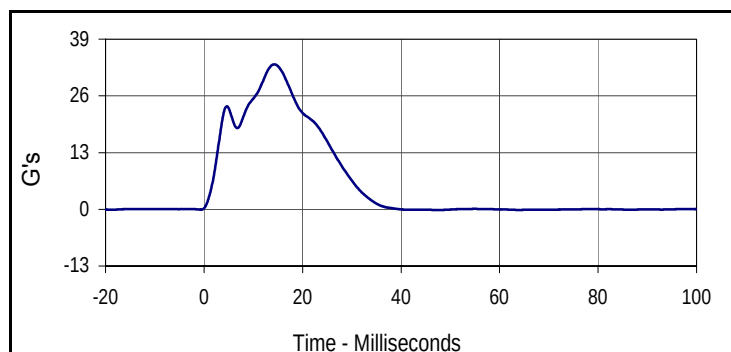
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	454	Pass
Temperature During Soak	Max	20.6 to 22.2	21.5	Pass
	Min		21.3	Pass
Humidity During Soak	Max	10.0 to 70.0	45.8	Pass
	Min		45.3	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	45.5	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.71	Pass
Peak Shoulder Deflection	mm	31 to 40	35.2	Pass
Peak Upper Thorax Rib Deflection	mm	25 to 32	28.9	Pass
Peak Middle Thorax Rib Deflection	mm	30 to 36	30.3	Pass
Peak Lower Thorax Rib Deflection	mm	32 to 38	34.5	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	36.4	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	31.1	Pass
Peak Impactor Acceleration	G's	30 to 36	33.2	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
28.9	17.0	0.0	-0.5
Middle Thorax Deflection			
Max	Time	Min	Time
30.3	17.5	0.0	-18.3
Lower Thorax Deflection			
Max	Time	Min	Time
34.5	17.8	0.0	-0.9



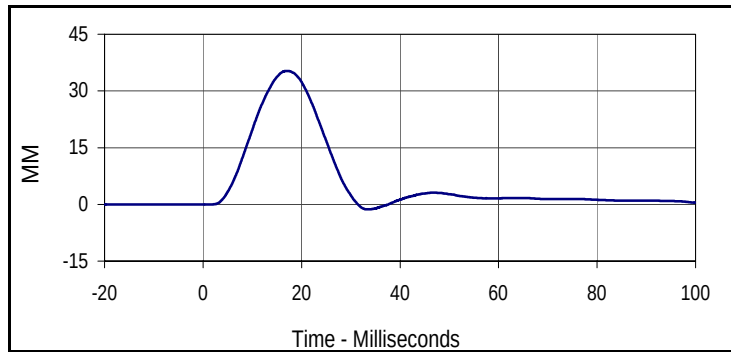
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
36.4	11.3	-14.7	32.6
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
31.1	10.1	-6.5	40.3



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
33.2	14.3	-0.2	0.0

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

Test Date: 10/29/14
 Test I.D.: 299TWA077



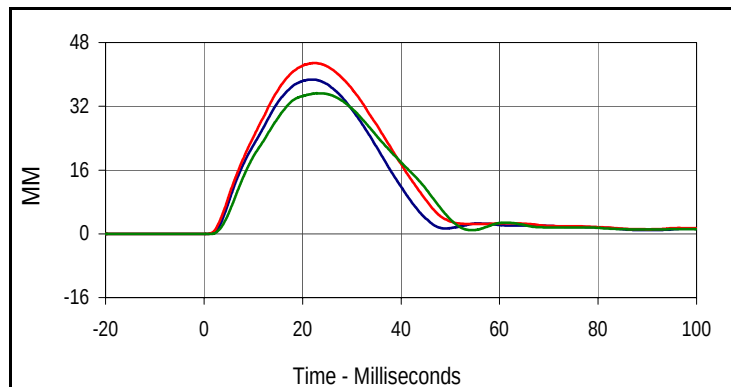
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	MM
Max	Time	Min	Time
35.2	17.4	-1.3	33.6

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

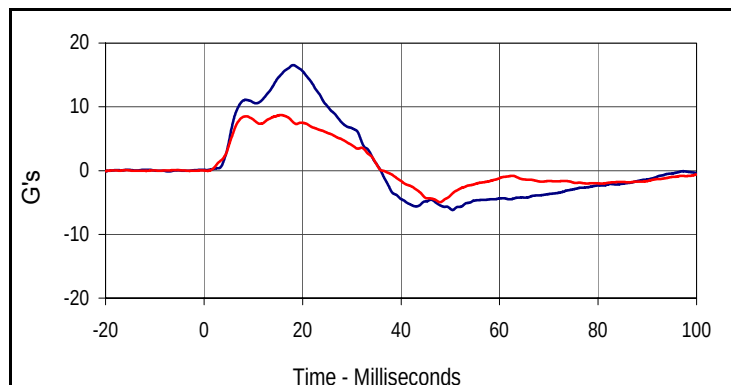
Test Date: 10/29/14
 Test I.D.: 299TWOA077



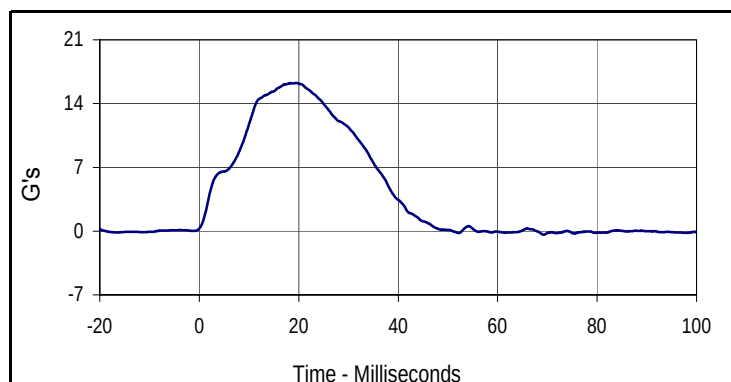
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	509	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.5	Pass
	Min	°C		21.3	Pass
Humidity During Soak	Max	%	10.0 to 70.0	45.8	Pass
	Min	%		45.3	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	45.6	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.35	Pass
Peak Upper Thorax Rib Deflection		mm	32 to 40	38.7	Pass
Peak Middle Thorax Rib Deflection		mm	39 to 45	42.9	Pass
Peak Lower Thorax Rib Deflection		mm	35 to 43	35.3	Pass
Peak Upper Spine Y Acceleration		G's	13 to 17	16.5	Pass
Peak Lower Spine Y Acceleration		G's	7 to 11	8.7	Pass
Peak Impactor Acceleration		G's	14 to 18	16.3	Pass
Overall Test Results				Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
38.7	22.0	0.0	-11.7
Middle Thorax Deflection			
Max	Time	Min	Time
42.9	22.5	0.0	-11.6
Lower Thorax Deflection			
Max	Time	Min	Time
35.3	22.9	0.0	-17.1



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
16.5	18.1	-6.2	50.5
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
8.7	15.5	-5.0	47.9



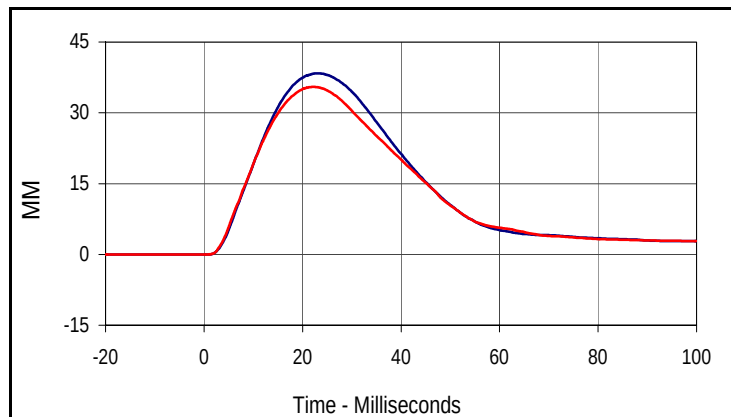
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
16.3	19.5	-0.4	69.2

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

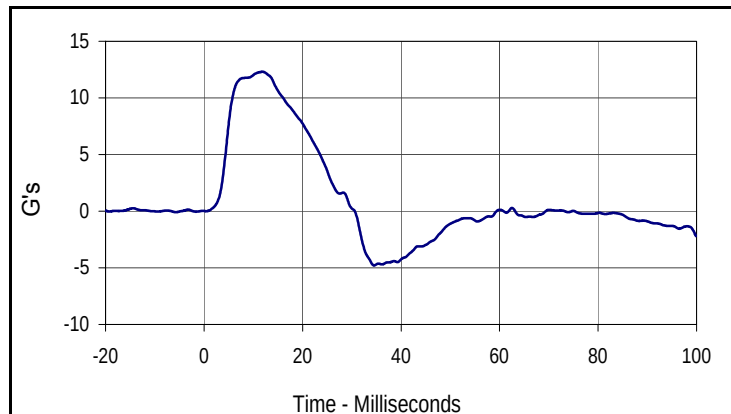
Test Date: 10/29/14
 Test I.D.: 299ABD077



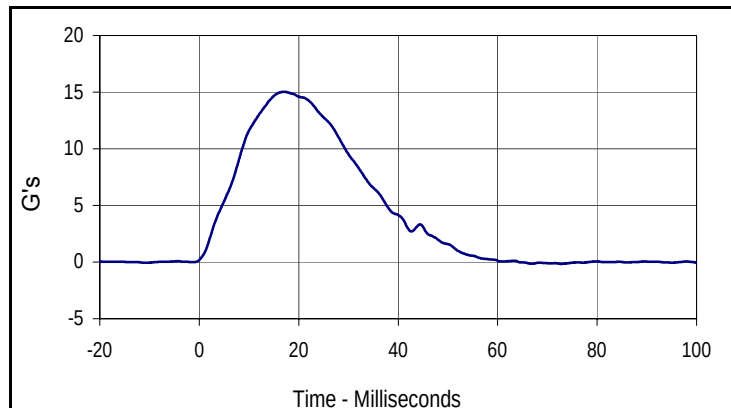
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	569	Pass
Temperature During Soak	Max	20.6 to 22.2	21.5	Pass
	Min		21.3	Pass
Humidity During Soak	Max	10.0 to 70.0	45.8	Pass
	Min		45.3	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	45.7	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.33	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	38.3	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	35.5	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	12.3	Pass
Peak Impactor Acceleration	G's	12 to 16	15.0	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
38.3	23.2	0.0	-8.9
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
35.5	22.2	0.0	-8.1

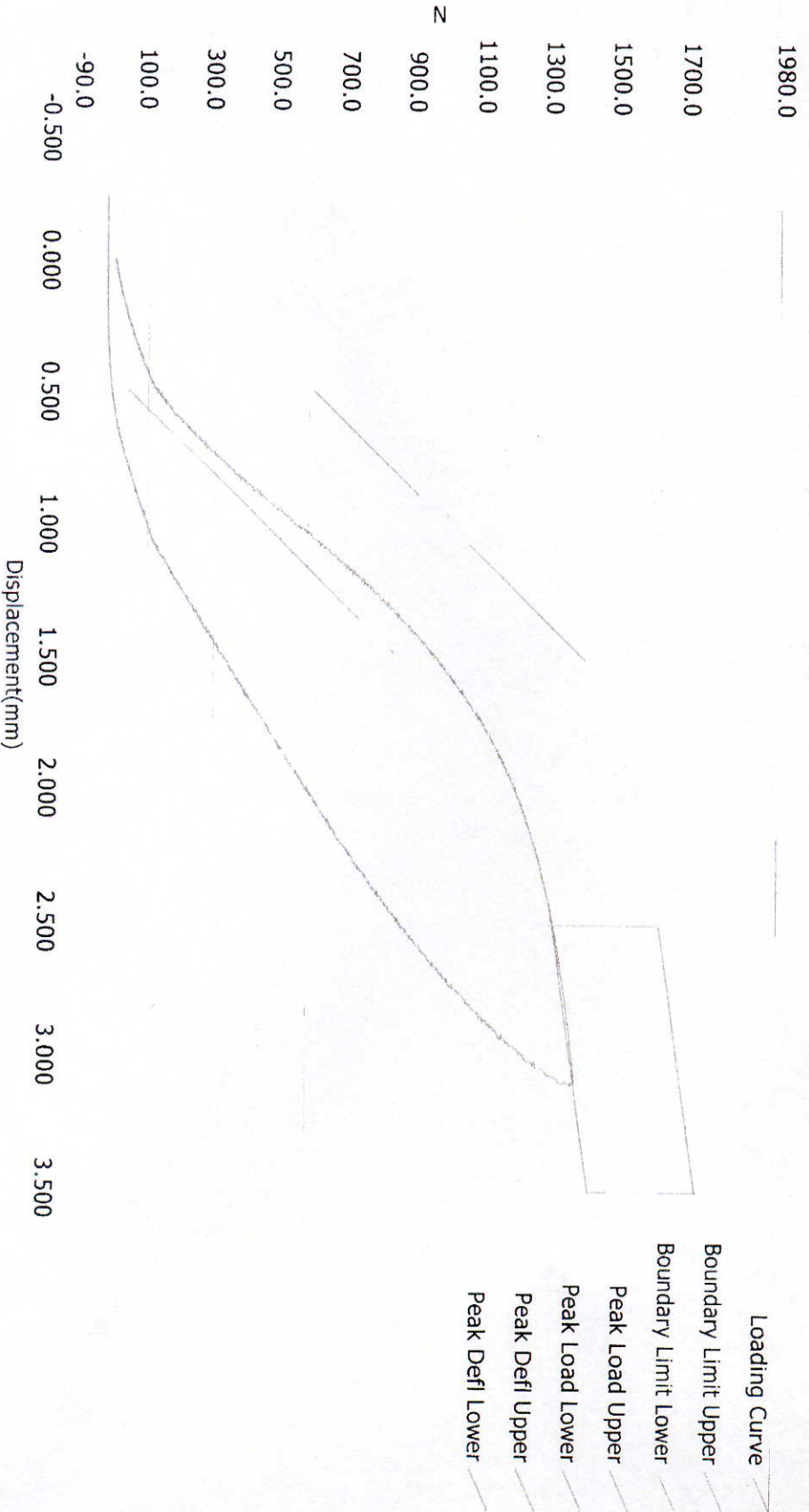


Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
12.3	11.8	-4.8	34.5



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.0	17.0	-0.2	72.8

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>
	47693	10/27/2011	11:32 PM
<u>Cert ID</u>	<u>ATD Serial Number</u>	<u>ATD Type</u>	
	N/A	SIDIIs	

Current Date : 10/27/2011

Current Time : 23:33:02

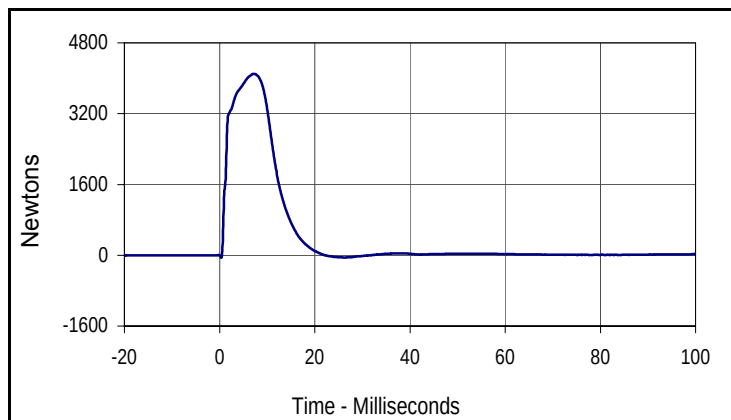
M20155305 POST TEST

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

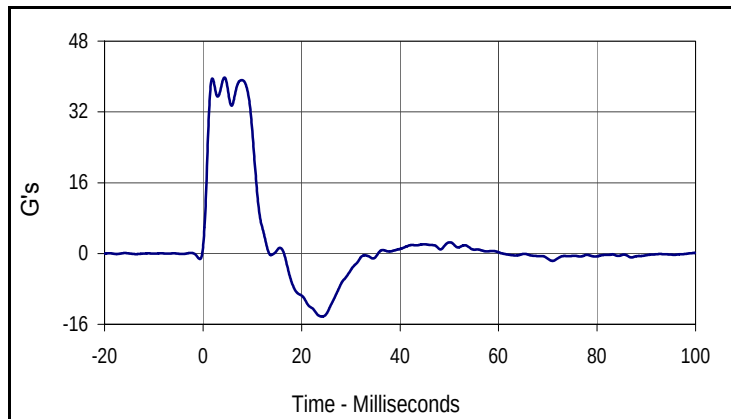
Test Date: 10/29/14
 Test I.D.: 299ACET077



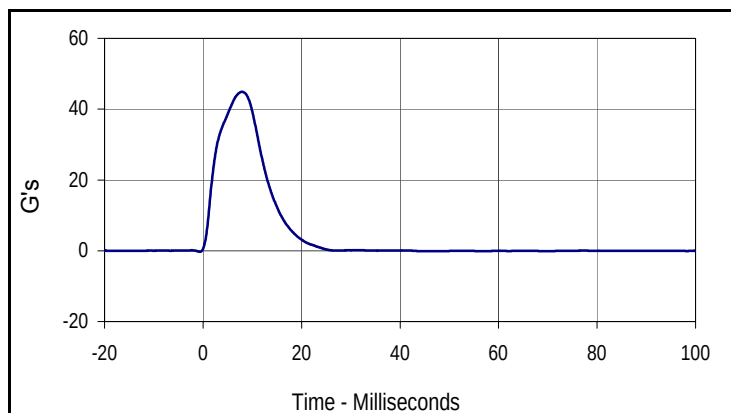
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	644	Pass
Temperature During Soak	Max	20.6 to 22.2	21.5	Pass
	Min		21.3	Pass
Humidity During Soak	Max	10.0 to 70.0	45.8	Pass
	Min		45.3	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	45.7	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.72	Pass
Peak Acetabulum Force Y	Newtons	3600 to 4300	4097.9	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	39.2	Pass
Peak Impactor Acceleration	G's	38 to 47	44.9	Pass
Overall Test Results				Pass



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4097.9	7.1	-50.2	26.3



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
39.8	4.4	-14.2	24.2



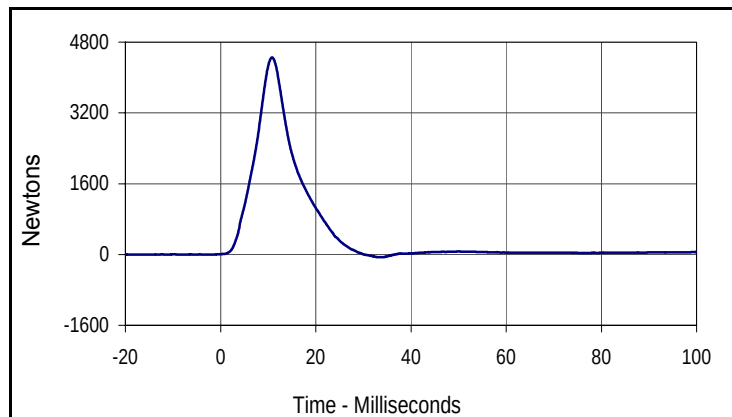
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
44.9	7.9	-0.3	-0.6

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

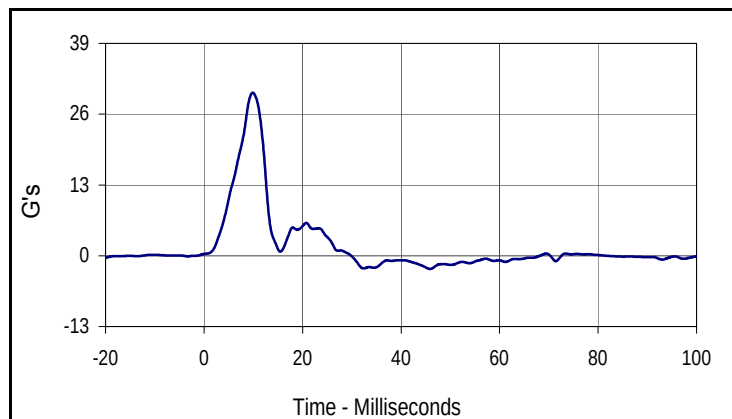
Test Date: 10/29/14
 Test I.D.: 299PL077



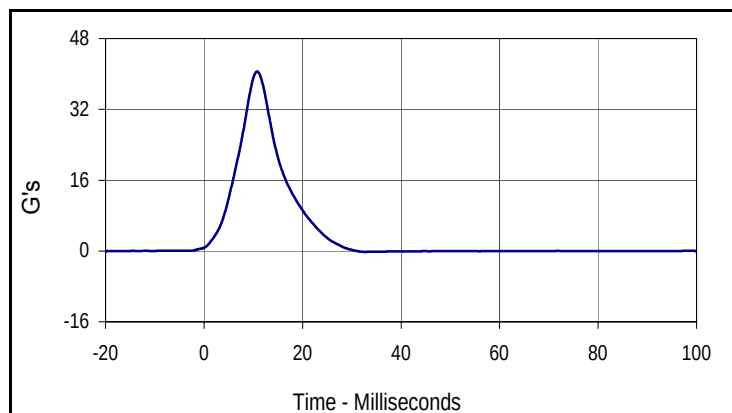
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	709	Pass
Temperature During Soak	Max	20.6 to 22.2	21.5	Pass
	Min		21.3	Pass
Humidity During Soak	Max	10.0 to 70.0	45.8	Pass
	Min		45.3	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	45.8	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.36	Pass
Peak Iliac Force	Newtons	4100 to 5100	4453.7	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	29.9	Pass
Peak Impactor Acceleration	G's	36 to 45	40.5	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Iliac Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4453.7	10.8	-63.1	34.1



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
29.9	9.9	-2.4	45.9



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
40.5	10.8	-0.2	32.6

APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

TABLE 1 – Dummy Instrumentation (ES-2re)

			ES-2re S/N F035		
			Serial Number	Manufacturer	Calibration
Head Accelerometers	Primary	X	P58760	Endevco	10/14/14
		Y	P58763	Endevco	10/14/14
		Z	P52093	Endevco	10/14/14
	Redundant	X	P52072	Endevco	10/14/14
		Y	P58768	Endevco	10/14/14
		Z	P52074	Endevco	10/14/14
Thorax Rib Displacement Potentiometers	Upper	Y	180	FTSS	10/15/14
	Middle	Y	177	FTSS	10/15/14
	Lower	Y	186	FTSS	10/15/14
Abdomen Load Cells	Forward	Y	1514	Denton	6/11/14
	Middle	Y	1510	Denton	6/11/14
	Rear	Y	1515	Denton	6/11/14
Lower Spine Accelerometers (T12)		X	P49165	Endevco	10/15/14
		Y	P49212	Endevco	10/15/14
		Z	00L20-A16	Endevco	10/15/14
Pubic Symphysis Load Cell		Y	506	Denton	6/11/14

TABLE 2 – Dummy Instrumentation (SID-IIs)

				SID-IIs S/N 299			
				Serial Number	Manufacturer	Calibration	
Head Accelerometers			Primary	X	P58736	Endevco	10/6/14
				Y	P51929	Endevco	10/6/14
				Z	P51934	Endevco	10/6/14
			Redundant	X	P68604	Endevco	10/6/14
				Y	P51931	Endevco	10/6/14
				Z	P51939	Endevco	10/6/14
Displacement Potentiometers	Thoracic Rib	Upper	Y	1143	FTSS	10/7/14	
		Middle	Y	1160	FTSS	10/7/14	
		Lower	Y	1213	FTSS	10/7/14	
	Abdominal Rib	Upper	Y	1218	FTSS	10/7/14	
		Lower	Y	1234	FTSS	10/7/14	
Lower Spine Accelerometers (T12)				X	04I20-Z04	Endevco	10/7/14
				Y	06A07-R08	Endevco	10/7/14
				Z	P58795	Endevco	10/7/14
Acetabulum Load Cell				Y	272	Denton	5/1/14
Iliac Wing Load Cell				Y	284	Denton	5/1/14
Pelvis Plug (Struck Side)					72600	FTSS	2/1/14
Pelvis Plug (Non-Struck Side)					72598	FTSS	1/31/14

TABLE 3 – Vehicle Instrumentation

Vehicle Instrumentation			Serial Number	Manufacturer	Calibration Date
1	Vehicle Center of Gravity	X	A14537	MSI	8/13/14
	Vehicle Center of Gravity	Y	A145434	MSI	8/13/14
	Vehicle Center of Gravity	Z	A145528	MSI	8/13/14
2	Right Sill at Front Seat	X	MS22911	MSI	9/23/14
	Right Sill at Front Seat	Y	MS22924	MSI	9/23/14
	Right Sill at Front Seat	Z	MS22944	MSI	9/23/14
3	Right Sill at Rear Seat	X	MS22891	MSI	8/13/14
	Right Sill at Rear Seat	Y	A135450	MSI	8/13/14
	Right Sill at Rear Seat	Z	A135440	MSI	8/13/14
4	Left Sill at Front Door	Y	A136674	MSI	9/28/14
5	Left Sill at Rear Door	Y	A136718	MSi	9/19/14
6	Left A-Post Lower	Y	A145527	MSI	8/13/14
7	Left A-Post Middle	Y	A145530	MSI	8/8/14
8	Left B-Post Lower	Y	N/A	N/A	N/A
9	Left B-Post Middle	Y	N/A	N/A	N/A
10	Front Seat Track	Y	A145490	MSI	8/13/14
11	Rear Seat Structure	Y	N/A	N/A	N/A
12	Right Rear Occ. Compartment	Y	A145505	MSI	9/28/14
13	Engine Block	X	A145521	MSI	9/23/14
	Engine Block	Y	A145477	MSI	8/13/14
14	Rear Floorpan Above Axle	X	A136697	MSI	9/26/14
	Rear Floorpan Above Axle	Y	A136731	MSI	9/28/14
	Rear Floorpan Above Axle	Z	A136717	Endevco	9/28/14

TABLE 4 – MDB Instrumentation

		Serial Number	Manufacturer	Calibration Date
MDB Center of Gravity	X	A124098	MSI	10/3/14
MDB Center of Gravity	Y	A128039	MSI	10/3/14
MDB Center of Gravity	Z	A124104	MSI	10/3/14
Left Frame at Rear Axle Centerline	X	A128036	MSI	10/3/14
Left Frame at Rear Axle Centerline	Y	A127957	MSI	10/3/14