

REPORT NUMBER: SINCAP-KAR-15-036

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

**MERCEDES-BENZ U.S. INTL., INC
2015 MERCEDES-BENZ C300 4-DOOR SEDAN**

NHTSA No: O20154300

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



AUGUST 10, 2015

FINAL REPORT

**PREPARED FOR:
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16. Abstract

A 55/28 km/h 90° Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2015 Mercedes-Benz C300 4-door sedan 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 July 27, 2015.

The impact velocity of the Moving Deformable Barrier was 61.71 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 33.3° C. The target vehicle's maximum post-test static crush was 144 mm located at level 3. 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	120.6
Maximum Thoracic Rib Deflection	mm	44	25
Total Abdominal Force	N	2500	621
Pubic Symphysis Force	N	6000	1614

Measurement Description	Passenger ATD (SID-IIs)		
	Units	IARV	Result
Head Injury Criteria (HIC ₃₆)		1000	301.1
Resultant Lower Spine Acceleration	g	82	47
Total Pelvic Force (Sum of Acetubular and Iliac Forces)	N	5525	3656
Maximum Thoracic Rib Deflection	mm	38*	22
Maximum Abdominal Rib Deflection	mm	45*	14

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

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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 Mercedes-Benz C300 4-door sedan. 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 Mercedes-Benz C300 4-door sedan was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 61.71 km/h (38.34 mph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by KARCO Engineering, LLC. in Adelanto, California, on July 27, 2015. 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	120.6
Maximum Thoracic Rib Deflection	mm	44	25
Combined Abdominal Force	N	2500	621
Pubic Symphysis Force	N	6000	1614

Measurement Description	Units	Passenger ATD (SID-IIs)	
		Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	301.1
Lower Spine (T12) Resultant Acceleration	g	82	47
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3656
Maximum Thoracic Rib Deflection	mm	38*	22
Maximum Abdominal Rib Deflection	mm	45*	14

*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	No	No	
Knee Airbag	Yes	No	No	
Side Airbag 1 (Curtain)	Yes	Yes	Yes	Yes
Side Airbag 2 (Torso/Pelvis)	Yes	Yes	No	
Side Airbag 3 (Torso)	No		Yes	Yes
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes	Yes	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 was no ATD value that exceeded its limits.

SECTION 3

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2015 Mercedes-Benz C300 4-Door Sedan NHTSA No. O20154300
Test Program: NCAP MDB Side Impact Test Test Date: 07/27/15

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 Mercedes-Benz C300 4-Door Sedan NHTSA No. O20154300
 Test Program: NCAP MDB Side Impact Test Test Date: 07/27/15

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	O20154300
Model Year	2015
Make	Mercedes-Benz
Model	C300
Body Style	4-Door Sedan
VIN	55SWF4JB7FU076114
Body Color	Iridium Silver
Odometer Reading (km / mi)	16 / 10
Engine Displacement (L)	2.0
Type / No. of Cylinders	Inline 4
Engine Placement	Longitudinal
Transmission Type	Automatic
Transmission Speeds	7
Overdrive	Yes
Final Drive	Rear
Roof Rack	No
Sunroof / T-Top	Yes
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	Yes
Anti-Lock Brakes (ABS)	Yes

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

Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Mercedes-Benz U.S. Intl., Inc
Date of Manufacture	May-15
Vehicle Type	Passenger Car

GVWR (kg)	2085
GAWR Front (kg)	990
GAWR Rear (kg)	1125

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Designated Seating Capacity	2	3		5
Capacity Weight (VCW) (kg)				360.0
DSC x 68.04 (kg)				340.2
Cargo Weight (RCLW) (kg)				19.8

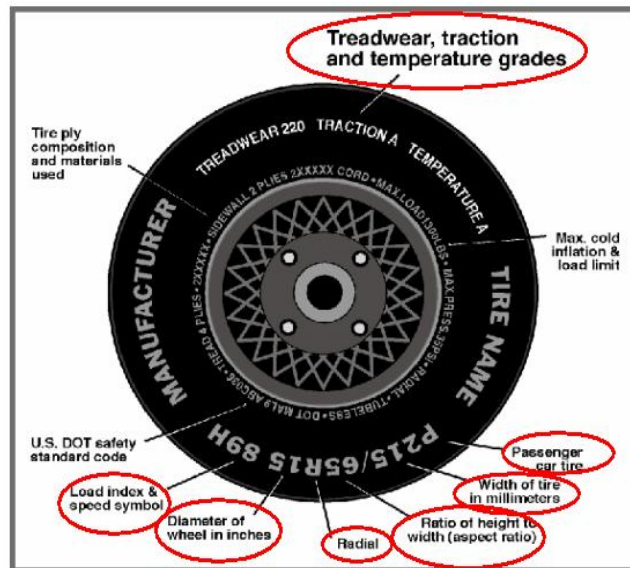
VEHICLE SEAT TYPE

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 Mercedes-Benz C300 4-Door Sedan NHTSA No. O20154300
 Test Program: NCAP MDB Side Impact Test Test Date: 07/27/15



Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	340	340
Cold Pressure (kPa)	270	310
Recommended Tire Size	225/40R19	255/35R19
Tire Size on Vehicle	225/40R19	255/35R19
Tire Manufacturer	Pirelli	Pirelli
Tire Model	P Zero	P Zero
Treadware	220	220
Traction Grade	AA	AA
Temperature Grade	A	A
Tire Plies Sidewall	2 Rayon	2 Rayon
Tire Plies Body	2 Rayon, 2 Steel, 1 Polyamide	2 Rayon, 2 Steel, 1 Polyamide
Load Index/Speed Symbol	93Y	96Y
Tire Material	Rayon, Steel, Polyamide	Rayon, Steel, Polyamide
DOT Safety Code Left	CEX2 T120 4514	CE03 T119 4514
DOT Safety Code Right	CEX2 T120 4414	CE03 T119 4514

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2015 Mercedes-Benz C300 4-Door Sedan NHTSA No. O20154300
 Test Program: NCAP MDB Side Impact Test Test Date: 07/27/15

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	255	255	255	255
Tire Placard	kPa	270	270	310	310
Owner's Manual	kPa	270	270	310	310
As Tested	kPa	270	270	310	310

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	431.5	369.5		473.5	435.5		470.5	437.0	
Right	kg	442.5	389.5		442.5	421.5		444.5	426.5	
Ratio	%	53.5%	46.5%	100.0%	51.7%	48.3%	100.0%	51.4%	48.6%	100.0%
Total	kg	874.0	759.0	1633.0	916.0	857.0	1773.0	915.0	863.5	1778.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1633.0	A
Actual Weight of 2 P572 ATDs Used	kg	125.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	19.8	C
Calculated Vehicle Target Wt (TVTW)	kg	1777.8	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	684	682	Yes
RF	mm	697	688	Yes
LR	mm	690	680	Yes
RR	mm	688	692	Yes
Vehicle CG (Aft of Front Axle)	mm	1382	1376	
Vehicle CG (Left (+)/Right (-) from Longitudinal Centerline)	mm	16	20	

***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 Mercedes-Benz C300 4-Door Sedan NHTSA No. O20154300
Test Program: NCAP MDB Side Impact Test Test Date: 07/27/15

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Tail Lights	2.0
Rear Bumper Fascia	8.5
Non-Struck Side Door Panels	6.0
Non-Struck Side Windows and Trim	11.0
Non-Struck Side Outboard Mirror	1.5
Rear Plastic Trim	3.0
Trunk Trim	7.0
Ballast / Equipment Added	52.6

Test Height Adjustable Setting (If Applicable)	
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DATA SHEET NO. 2**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA**Test Vehicle: 2015 Mercedes-Benz C300 4-Door Sedan NHTSA No. O20154300Test Program: NCAP MDB Side Impact Test Test Date: 07/27/15**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	8.7	0.0	4.3
Front Passenger Seat	8.7	0.0	4.3
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	4.3	460	Max	520	535	550
			Mid	483	498	513
			Min	445	460	475
Front Passenger Seat	4.3	472	Max	510	525	540
			Mid	484	499	514
			Min	458	472	487
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 Mercedes-Benz C300 4-Door Sedan

NHTSA No. O20154300

Test Program: NCAP MDB Side Impact Test

Test Date: 07/27/15

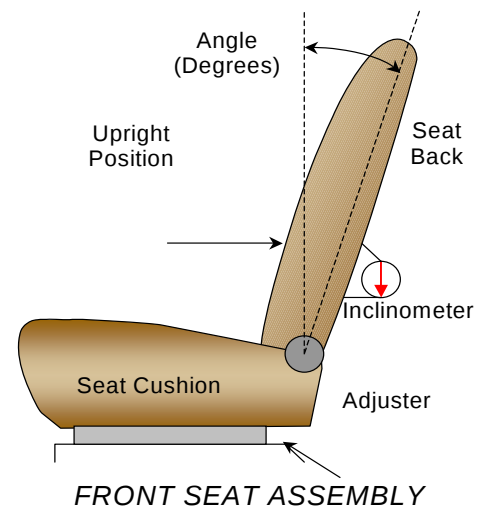
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position From Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	257		129	
Front Passenger Seat	257		129	
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 with a straight edge along the seat back.



SEAT BACK POSITION

Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degree	Detent*
Driver Seat w/Seated Dummy	60.3		21.0	
Front Passenger Seat	62.4		21.0	
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 Mercedes-Benz C300 4-Door Sedan NHTSA No. O20154300
Test Program: NCAP MDB Side Impact Test Test Date: 07/27/15

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	5	H
Rear Seat	Fixed	Fixed

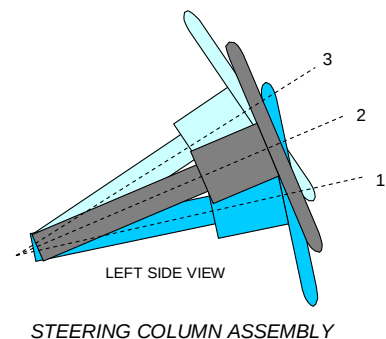
HEAD RESTRAINT ADJUSTMENT

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	56 mm Vertical Adjustment, 50 mm Horizontal Adjustment	Full Forward, Full Down
Rear Seat	3 Vertical	Full Down

STEERING COLUMN ADJUSTMENT

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



	Degrees	Fore-Aft Position (mm)
Lowermost - Position 1	18.3	86
Geometric Center - Position 2	20.3	115
Uppermost - Position 3	22.4	143
Telescoping Steering Wheel Travel		57
Test Position	20.3	115

DATA SHEET NO. 2 ... (CONTINUED)

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

Test Vehicle: 2015 Mercedes-Benz C300 4-Door Sedan

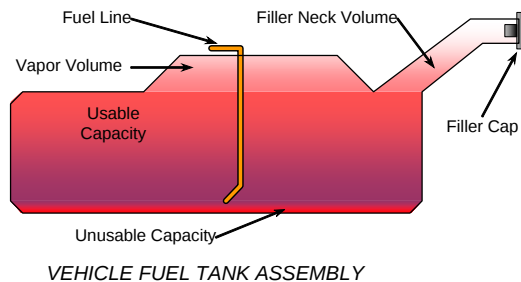
NHTSA No. O20154300

Test Program: NCAP MDB Side Impact Test

Test Date: 07/27/15

FUEL PUMP

The vehicle is equipped with an electric fuel pump. The fuel pump is in operation if the ignition is switched to the "ON" position. After about 15 seconds, the pump switches back to standby mode if the engine is not started.



FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	65.86
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	61.24
Actual amount of Solvent Used in Test	61.24
1/3 of Usable Capacity	21.95

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

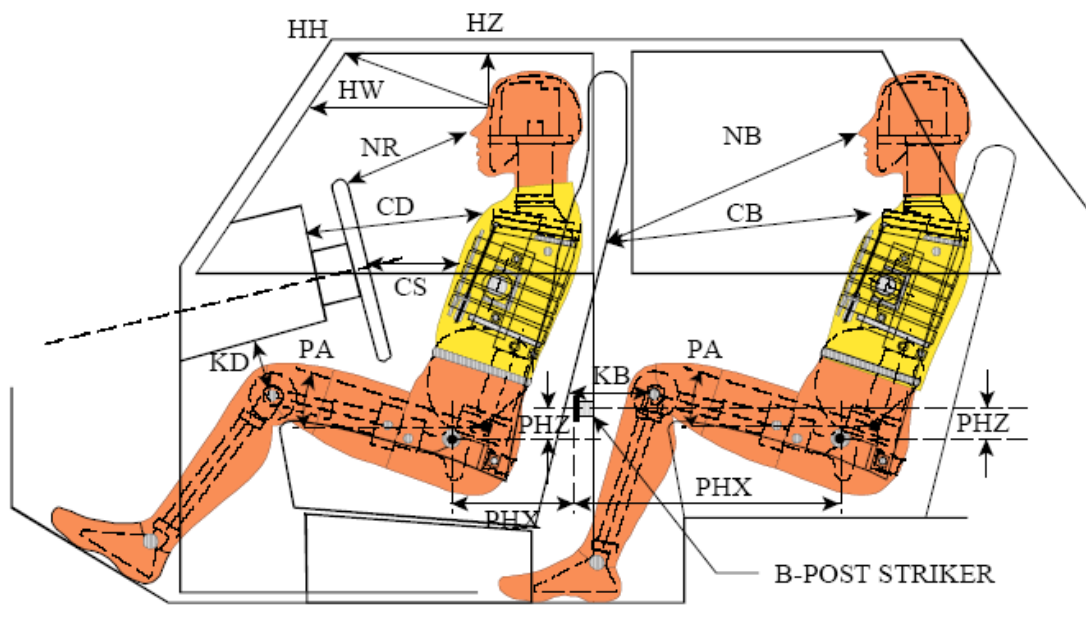
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2015 Mercedes-Benz C300 4-Door Sedan

NHTSA No. O20154300

Test Program: NCAP MDB Side Impact Test

Test Date: 07/27/15



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	414			
HW		Head to Windshield	647			
HZ	HZ	Head to Roof	158		218	
NR	NB	Nose to Rim/Seat Back	457		441	
CD	CB	Chest to Dash/Seat Back	574		423	
CS		Chest to Steering Wheel	348			
KD(L)/KDA(L)°	KB(L)/KBA(L)°	Left Knee to Dash/Seat Back	198	30.2	191	13.5
KD(R)/KDA(R)°	KB(R)/KBA(R)°	Right Knee to Dash/Seat Back	178	38.8	216	17.6
PAX°	PAX°	Pelvic Tilt Angle X		19.9		20.7
	PAY°	Pelvic Tilt Angle Y		0.5		0.2
PHX	PHX	Hip Point to Striker (x-axis)	122		130	
PHZ	PHZ	Hip Point to Striker (z-axis)	248		231	

DATA SHEET NO. 4

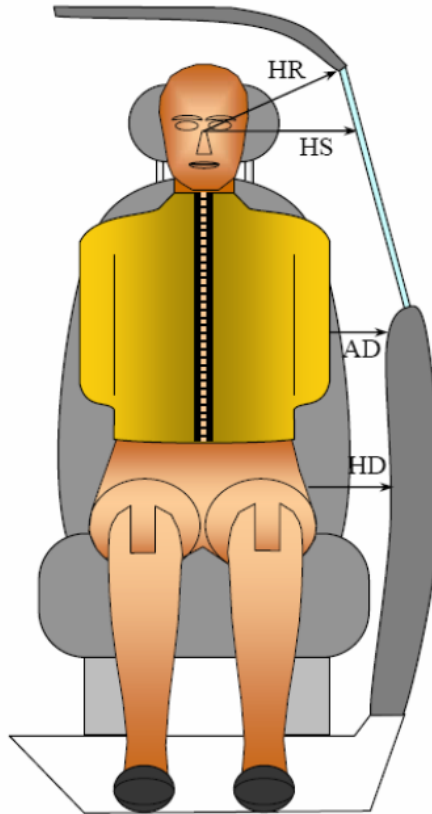
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2015 Mercedes-Benz C300 4-Door Sedan

NHTSA No. O20154300

Test Program: NCAP MDB Side Impact Test

Test Date: 07/27/15



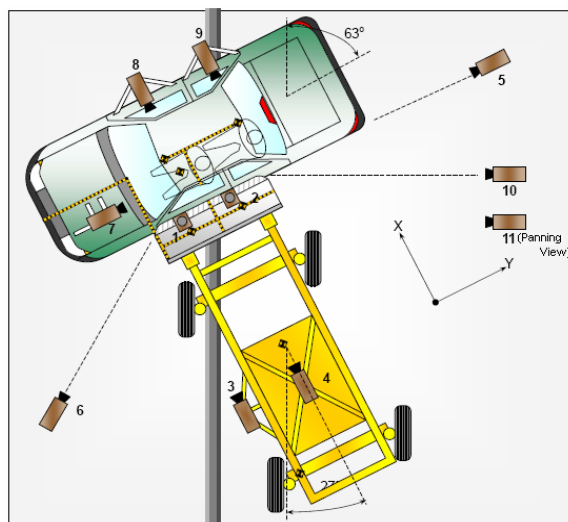
DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	192	222
HS	Head to Side Window	mm	316	350
AD	Arm to Door	mm	101	179
HD	H-Point to Door	mm	144	192

DATA SHEET NO. 5

CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2015 Mercedes-Benz C300 4-Door Sedan NHTSA No. O20154300
 Test Program: NCAP MDB Side Impact Test Test Date: 07/27/15



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)	559	-679	-761	12.5	1000
8	Driver Side (On-Board)	1741	879	-552	12	1000
9	Passenger Side (On-Board)	1702	1750	-570	12	1000
10	Real Time Overall				Zoom	30
11	Real Time Inrun				Zoom	30

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

*All measurements accurate to ± 6 mm

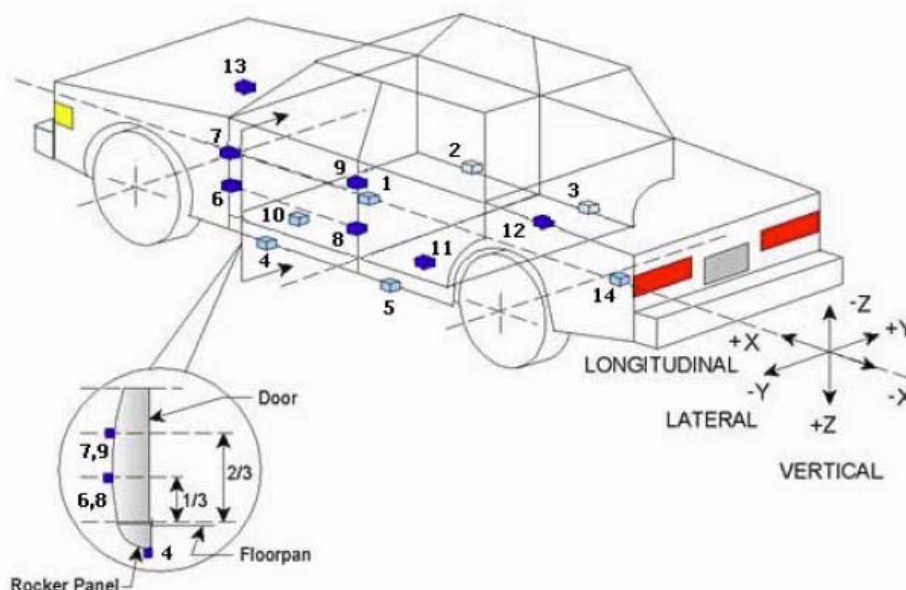
INSTRUMENTATION

Driver Dummy Channels	16
Passenger Dummy Channels	16
Vehicle Structure Accelerometers	22
MDB Accelerometers	5
Total	59

DATA SHEET NO. 6

TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2015 Mercedes-Benz C300 4-Door Sedan NHTSA No. O20154300
 Test Program: NCAP MDB Side Impact Test Test Date: 07/27/15



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	1980	0	-387
2	Right Sill at Front Seat	2617	708	-357
3	Right Sill at Rear Seat	1931	722	-336
4	Left Sill at Front Door	2611	-731	-185
5	Left Sill at Rear Door	1844	-731	-185
6	A-Pillar Lower	3205	-813	-534
7	A-Pillar Middle	3205	-813	-806
8	B-Pillar Lower	2140	-724	-702
9	B-Pillar Middle	2140	-724	-970
10	Front Seat Track	2210	-196	-207
11	Rear Seat Structure			
12	Right Rear Occupant Compartment	2011	451	-180
13	Engine Block	4054	0	-825
14	Rear Floorpan Above Axle	1116	196	-453

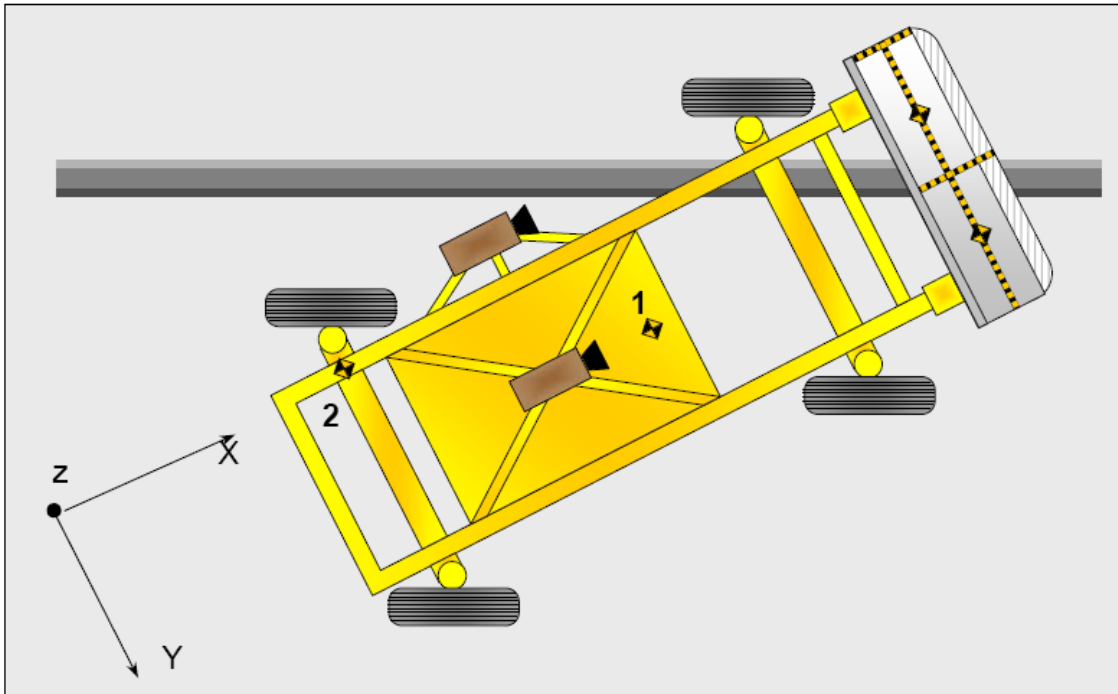
Reference: X – Rear surface of vehicle (+ forward)
 Y – Vehicle centerline (+ to right)
 Z – Ground plane (+ down)

DATA SHEET NO. 7

MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2015 Mercedes-Benz C300 4-Door Sedan NHTSA No. O20154300

Test Program: NCAP MDB Side Impact Test Test Date: 07/27/15



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 Mercedes-Benz C300 4-Door Sedan NHTSA No. O20154300
 Test Program: NCAP MDB Side Impact Test Test Date: 07/27/15

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Front Seat Dummy (ES-2re)	Rear Seat Dummy (SID-IIs)
Face	None	None
Top of Head	Curtain Airbag, Side Header	Curtain Airbag, Side Header, Center Seat Headrest
Left Side of Head	Curtain Airbag	Curtain Airbag
Back of Head	Headrest	Curtain Airbag, Side Header, Center Seat Headrest
Left Shoulder	Door Panel	Torso Airbag
Upper Torso	Seat, Torso/Pelvis Airbag	Seat
Lower Torso	Seat, Torso/Pelvis Airbag	Seat, Torso Airbag
Left Hip	Seat Door Panel	Seat, Door Panel
Left Knee	Door Panel, Right Knee	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 Mercedes-Benz C300 4-Door Sedan NHTSA No. O20154300
Test Program: NCAP MDB Side Impact Test Test Date: 07/27/15

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	Left rear window broken
Other Notable Effects	None

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

Test Vehicle: 2015 Mercedes-Benz C300 4-Door Sedan NHTSA No. O20154300
Test Program: NCAP MDB Side Impact Test Test Date: 07/27/15

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side Driver		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No	No	
Knee Airbag	Yes	No	No	
Side Airbag 1 (Curtain)	Yes	Yes	Yes	Yes
Side Airbag 2 (Torso/Pelvis)	Yes	Yes	No	
Side Airbag 3 (Torso)	No		Yes	Yes
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes	Yes	No	

IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vehicle Wheel Base	mm		2847
Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point)	mm		484
Actual Impact Point (Aft of Front Axle)	mm		495
Horizontal Offset (+ forward / - rearward)	mm	± 50 of Intended Impact Point	-11
Vertical Offset (+ down / - up)	mm	± 20 of Intended Impact Point	11

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

Test Vehicle: 2015 Mercedes-Benz C300 4-Door Sedan NHTSA No. O20154300
 Test Program: NCAP MDB Side Impact Test Test Date: 07/27/15

MDB SPECIFICATIONS

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

MDB WEIGHTS

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

SPEED AND IMPACT DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	61.71
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	61.67
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	89.9
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	27.3

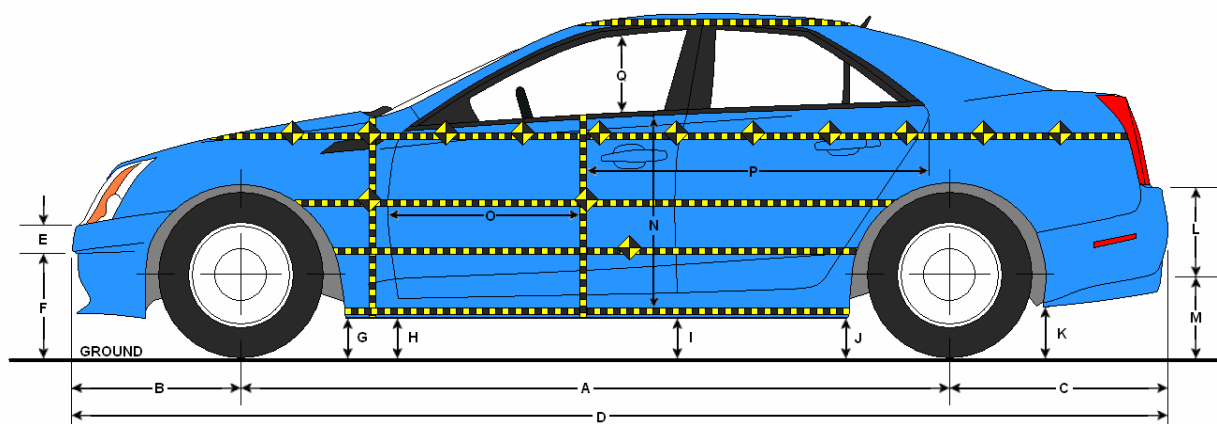
MAXIMUM STATIC CRUSH OF HONEYCOMB FACE

Vertical Location			From Centerline		Max. Crush (mm)
Row	Description	Height (mm)	Distance (mm)	Direction	
A	Center of Bumper	432	500	Right	303
B	Top of Bumper	533	800	Left	204
C	Mid Level	686	800	Left	219
D	Top of Stack	813	800	Left	219

DATA SHEET NO. 10

TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2015 Mercedes-Benz C300 4-Door Sedan NHTSA No. O20154300
 Test Program: NCAP MDB Side Impact Test Test Date: 07/27/15



LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

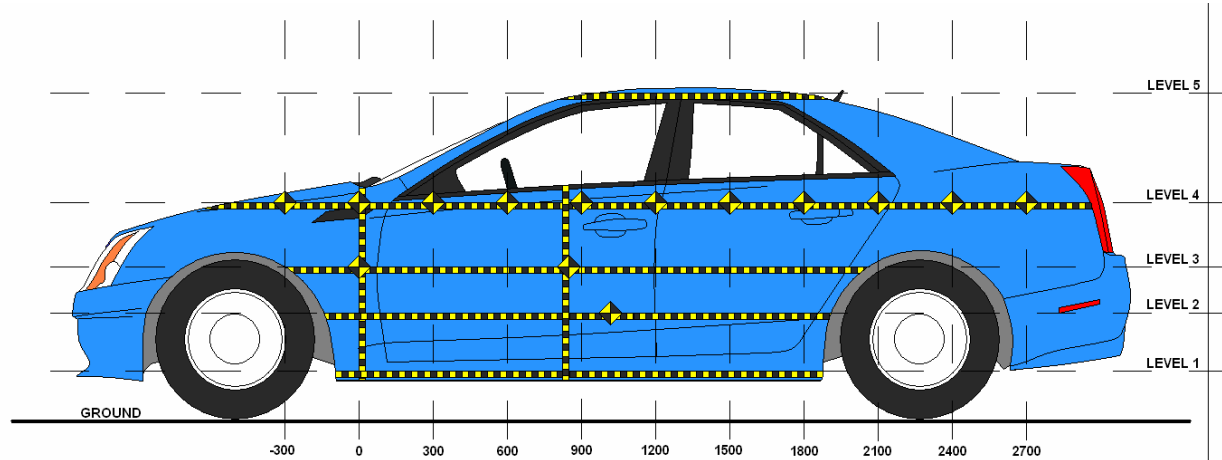
Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2847	2832	-15
B	Front Axle to FSOV	802	810	8
C	Rear Axle to RSOV	1039	1043	4
D	Total Length at Centerline	4689	4685	-4
E	Front Bumper Thickness	79	77	-2
F	Front Bumper Bottom to Ground	376	388	12
G	Sill Height at Front Wheel Well	184	195	11
H	Sill Height at Front Door Leading Edge	206	215	9
I	Sill Height at B-Pillar	195	189	-6
J1	Sill Height at Rear Wheel Well	223	208	-15
J2	Pinch Weld Height at Rear Wheel Well	161	147	-14
K	Sill Height Aft of Rear Wheel Well	493	478	-15
L	Rear Bumper Thickness	113	113	0
M	Rear Bumper Bottom to Ground	394	373	-21
N	Sill Height to Bottom of Front Window Sill	651	648	-3
O	Front Door Leading Edge to Impact CL	643	626	-17
P	Rear Door Trailing Edge to Impact CL	1500	1472	-28
Q	Front Window Opening	411	429	18
R	Right Side Length	3289	3289	0
S	Left Side Length	3287	3281	-6
T	Vehicle Width at B-Pillar	1793	1738	-55

All measurements in mm with tolerance of ± 3 mm

DATA SHEET NO. 11

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2015 Mercedes-Benz C300 4-Door Sedan NHTSA No. O20154300
 Test Program: NCAP MDB Side Impact Test Test Date: 07/27/15



LEFT SIDE VIEW

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	240	21	1200
2	Occupant H-Point	473	110	1650
3	Mid-Door	636	144	900
4	Window Sill	906	101	1650
5	Window Top	1393	11	1200

DATA SHEET NO. 11 ... (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2015 Mercedes-Benz C300 4-Door Sedan NHTSA No. O20154300

Test Program: NCAP MDB Side Impact Test Test Date: 07/27/15

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															
-150		603	607	767			596	613	770			-7	6	3	
0	645	614	608	730		650	622	618	734		5	8	10	4	
150	646	615	605	706		653	682	640	722		7	67	35	16	
300	648	613	603	695		658	683	701	697		10	70	98	2	
450	648	612	600	684		662	696	719	709		14	84	119	25	
600	648	611	599	673		664	703	731	706		16	92	132	33	
750	649	611	598	665		667	707	735	705		18	96	137	40	
900	649	611	599	659	903	669	708	743	702	911	20	97	144	43	8
1050	649	612	600	629	916	670	707	715	674	924	21	95	115	45	8
1200	648	614	602	629	921	669	694	684	673	932	21	80	82	44	11
1350	649	615	605	653	934	668	683	676	694	941	19	68	71	41	7
1500	649	617	608	652	940	666	712	714	718	948	17	95	106	66	8
1650	650	619	612	653	945	664	729	748	754	953	14	110	136	101	8
1800	651	621	616	653	952	660	705	727	724	959	9	84	111	71	7
1950	650	621	616	652	961	650	648	673	695	967	0	27	57	43	6
2100			608	622	971			621	640	978			13	18	7
2250				651	988				643	993				-8	5
2400				656					663					7	
2550				665					671					6	
2700				679					684					5	
2850				703					702					-1	

DATA SHEET NO. 11 ... (CONTINUED)

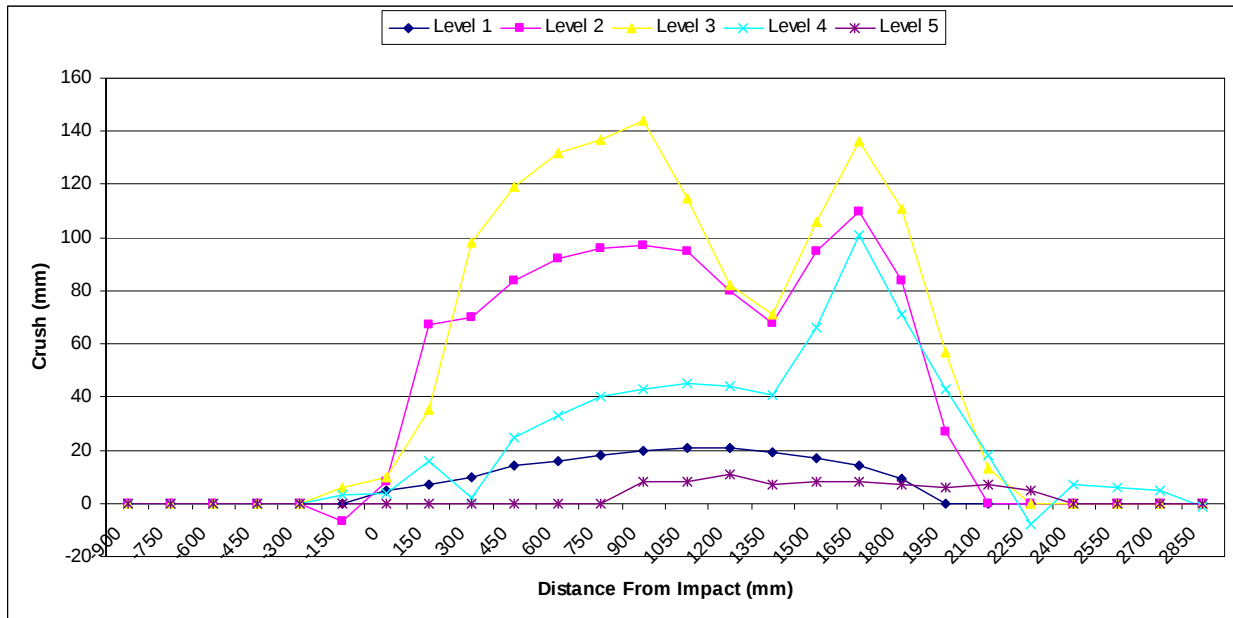
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2015 Mercedes-Benz C300 4-Door Sedan

NHTSA No. O20154300

Test Program: NCAP MDB Side Impact Test

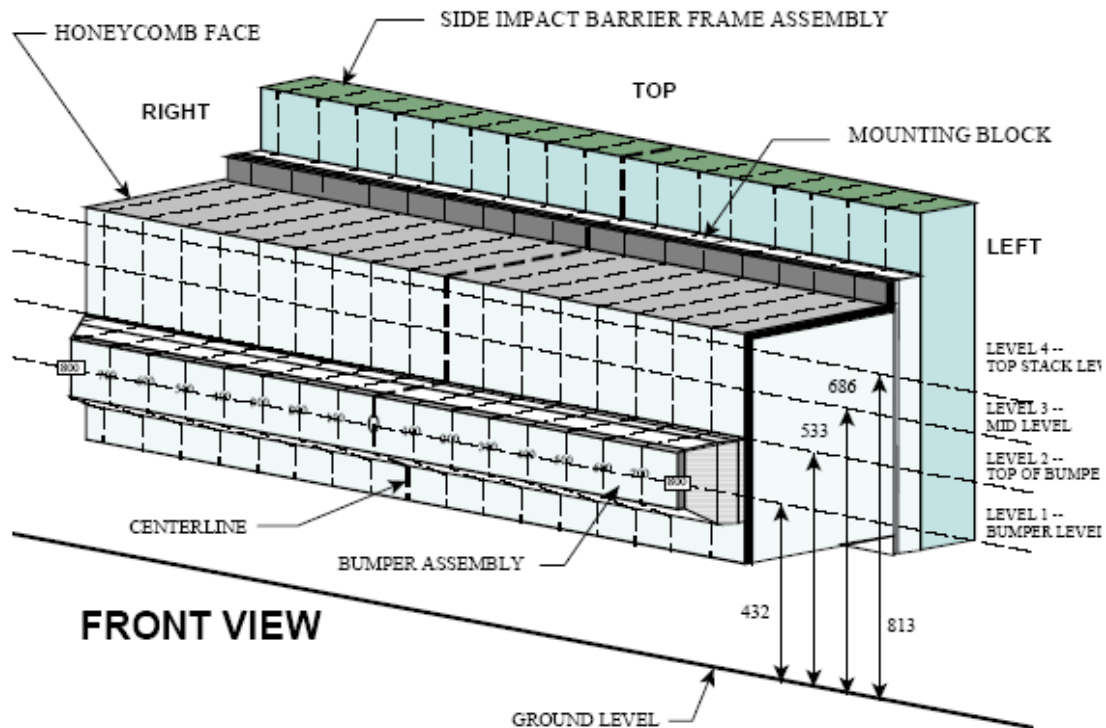
Test Date: 07/27/15



DATA SHEET NO. 12

MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2015 Mercedes-Benz C300 4-Door Sedan NHTSA No. O20154300
 Test Program: NCAP MDB Side Impact Test Test Date: 07/27/15



NOTE: Dimensions are shown in millimeters, mm

DEFORMABLE BARRIER STATIC CRUSH

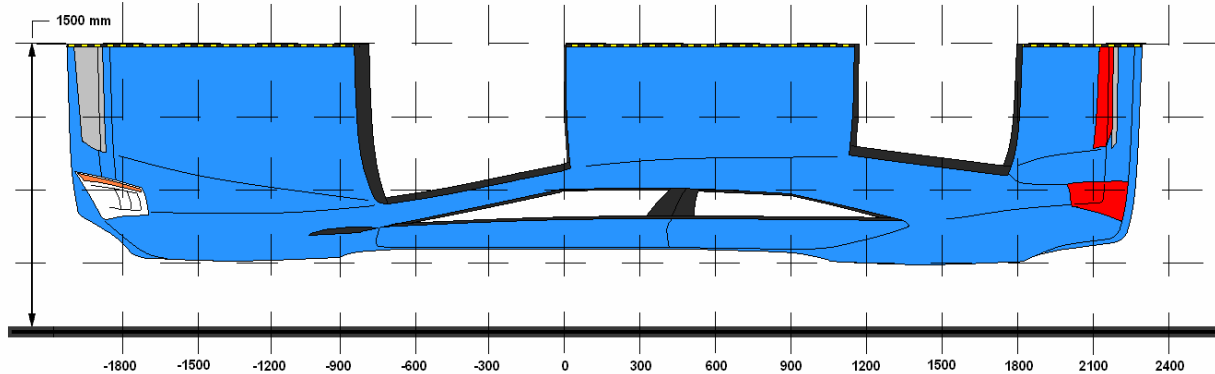
Stack Level	Distance Right of Center								C/L	Distance Left of Center							
	800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
1	281	271	278	303	290	286	273	266	263	266	266	271	276	278	286	288	296
2	194	184	179	184	179	176	164	159	159	164	174	179	184	184	184	184	204
3	124	109	128	184	184	184	149	119	101	99	104	99	104	114	144	194	219
4	104	89	106	171	159	164	129	106	94	89	89	94	104	124	149	194	219

All dimensions in millimeters.

DATA SHEET NO. 13

VEHICLE AND MDB DAMAGE PROFILE DISTANCES

Test Vehicle: 2015 Mercedes-Benz C300 4-Door Sedan NHTSA No. O20154300
 Test Program: NCAP MDB Side Impact Test Test Date: 07/27/15



VEHICLE DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Crush (mm)
1	2850	4	703	702	-1
2	2250	5	988	993	5
3	1650	3	612	748	136
4	1050	3	600	715	115
5	450	3	600	719	119
6	-150	3	607	613	6

MDB DAMAGE PROFILE DISTANCES

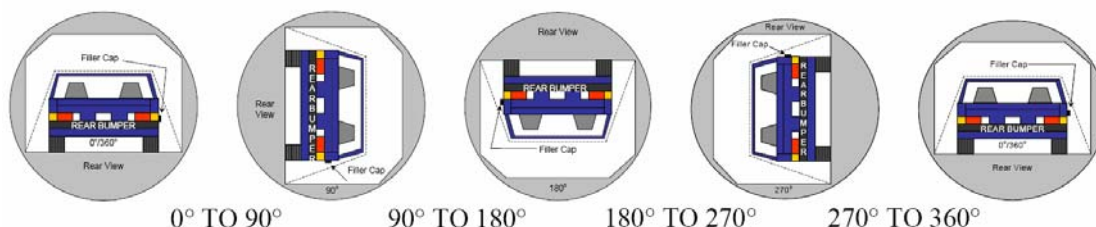
DPD	From MDB Centerline		Level	Crush (mm)
	Distance (mm)	Direction		
1	800	Left	1	296
2	500	Left	1	278
3	200	Left	1	266
4	200	Right	1	273
5	500	Right	1	303
6	800	Right	1	281

DATA SHEET NO. 14

FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2015 Mercedes-Benz C300 4-Door Sedan NHTSA No. O20154300
 Test Program: NCAP MDB Side Impact Test Test Date: 07/27/15
 Temperature at Time of Impact: 33.3° C Test Time: 1:04 PM

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



SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	80	300	380
90° To 180°	82	300	382
180° To 270°	75	300	375
270° To 360°	87	300	387

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

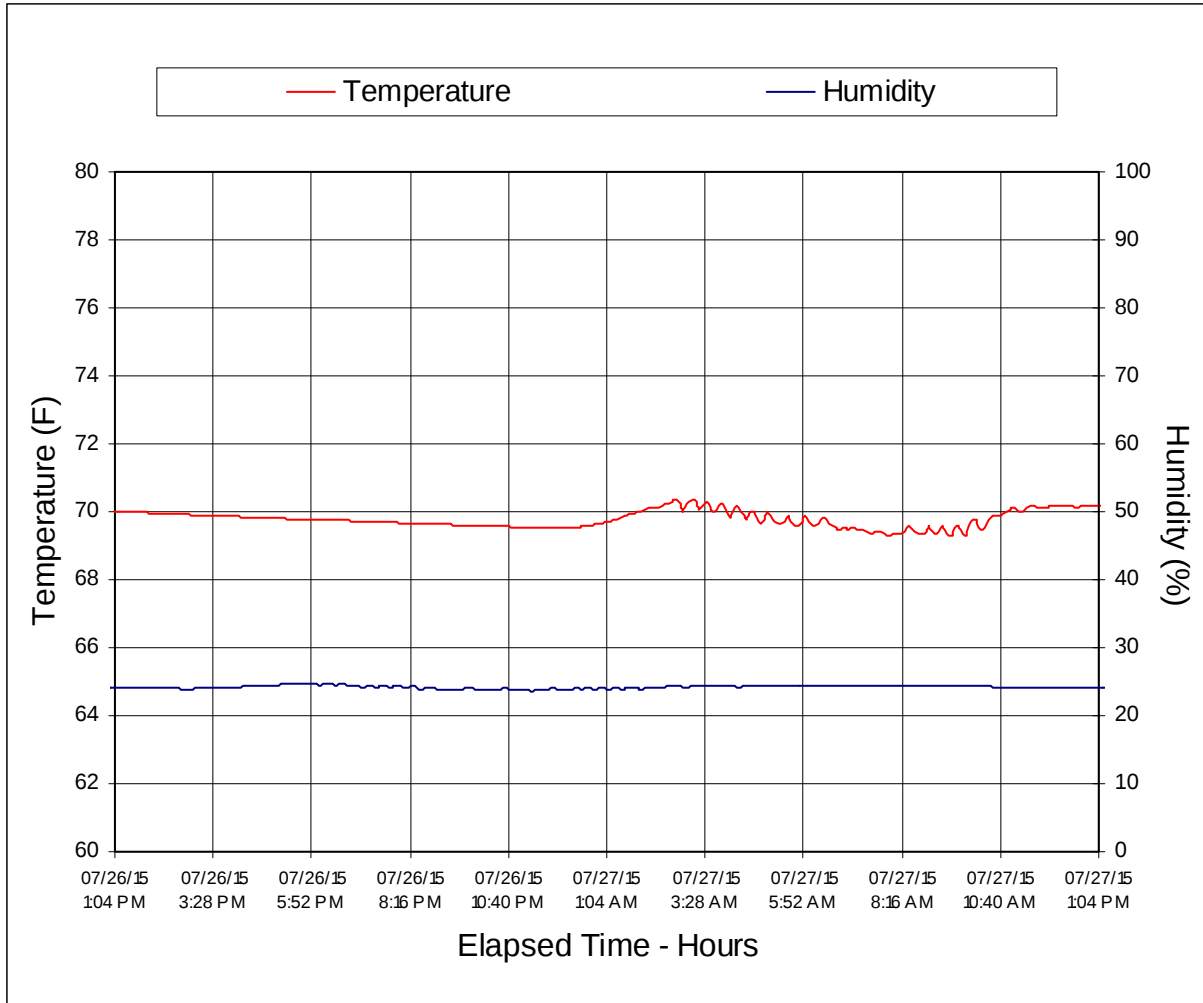
DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION

Test Vehicle: 2015 Mercedes-Benz C300 4-Door Sedan

NHTSA No. O20154300

Test Program: NCAP MDB Side Impact Test

Test Date: 07/27/15



APPENDIX A
PHOTOGRAPHS

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102	Monroney Label	A-51
103	Driver Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-52
104	Left Rear Passenger Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-52



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



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



FIGURE 3. Pre-Test Frontal View of Test Vehicle



FIGURE 4. Post-Test Frontal View of Test Vehicle



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



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



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



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



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



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



FIGURE 11. Pre-Test Rear View of Test Vehicle



FIGURE 12. Post-Test Rear View of Test Vehicle



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



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

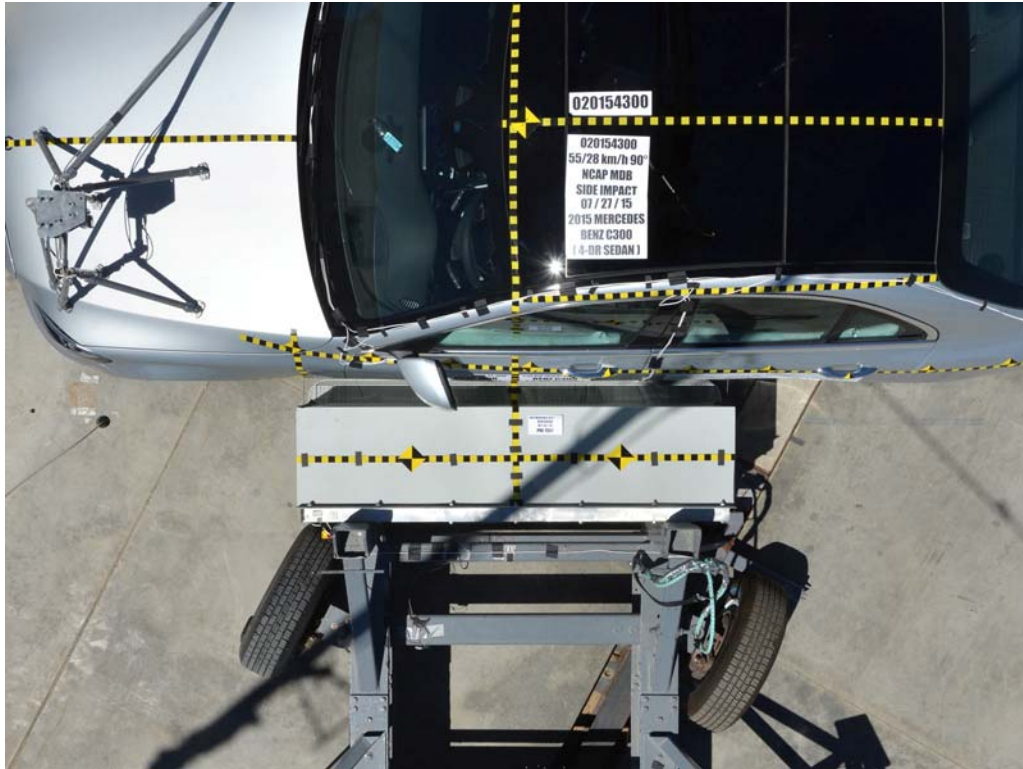


FIGURE 15. Pre-Test Overhead View of Test Area

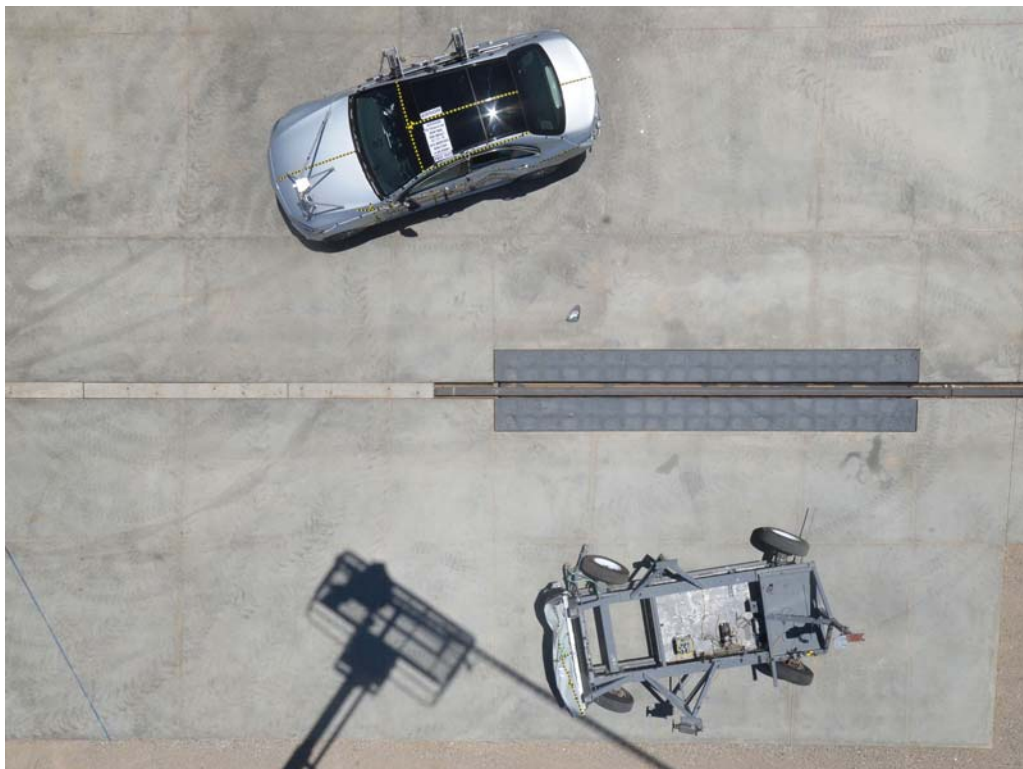


FIGURE 16. Post-Test Overhead View of Test Area



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



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



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



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

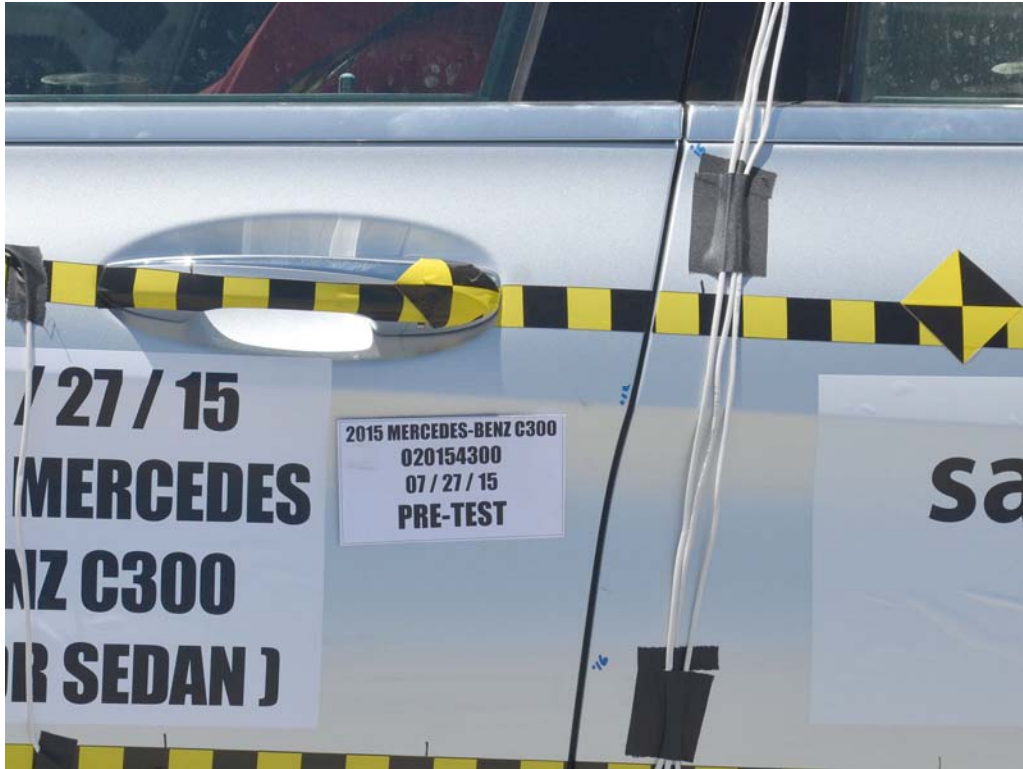


FIGURE 21. Pre-Test Left Front Door Latch Close-Up



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

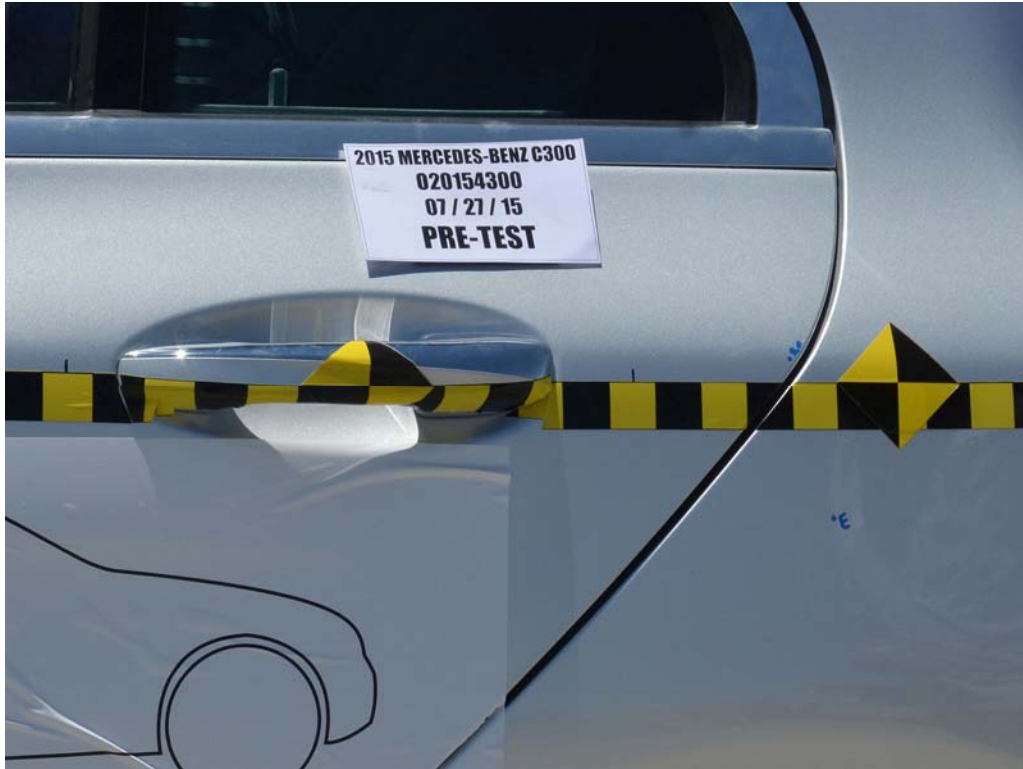


FIGURE 23. Pre-Test Left Rear Door Latch Close-Up



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



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



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



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



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



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

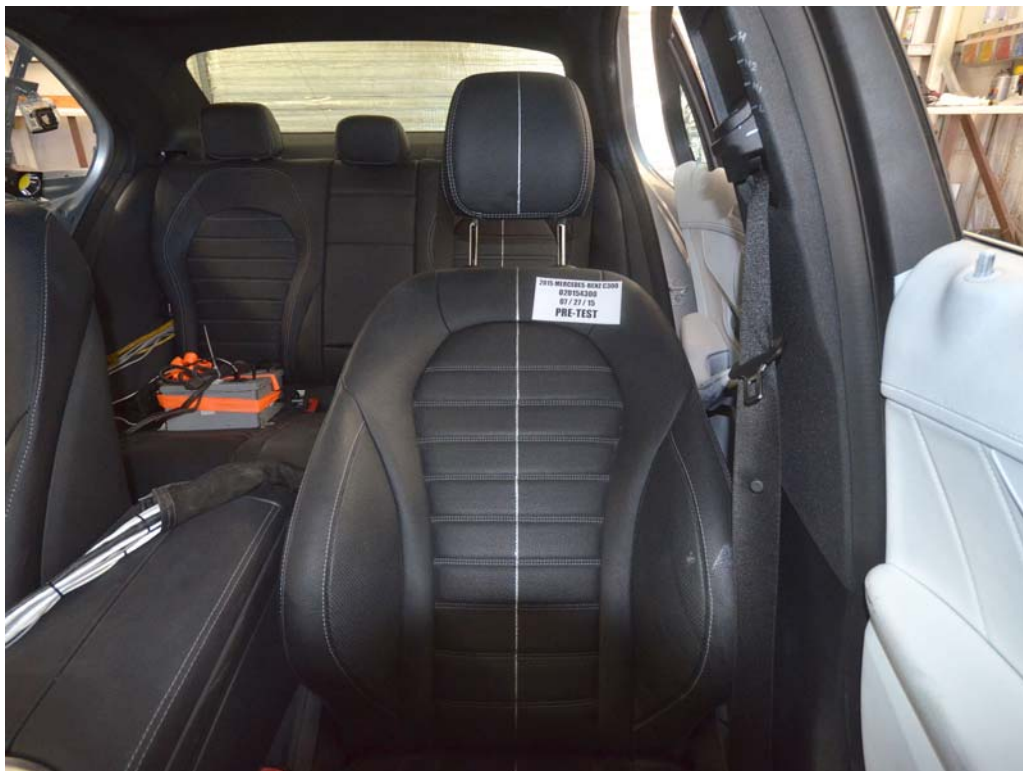


FIGURE 30. Pre-Test Frontal View of Driver Seat Back Prior to Dummy Positioning



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



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



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



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



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

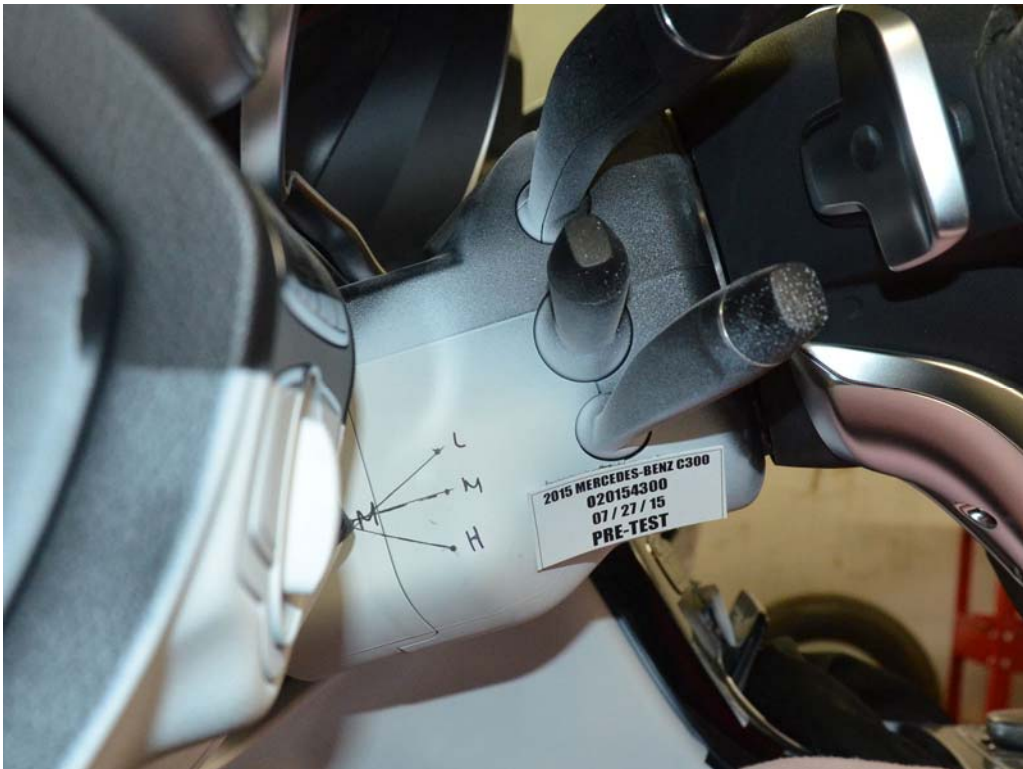


FIGURE 36. Pre-Test Left Side View of Steering Wheel



FIGURE 37. View of Disengaged Parking Brake

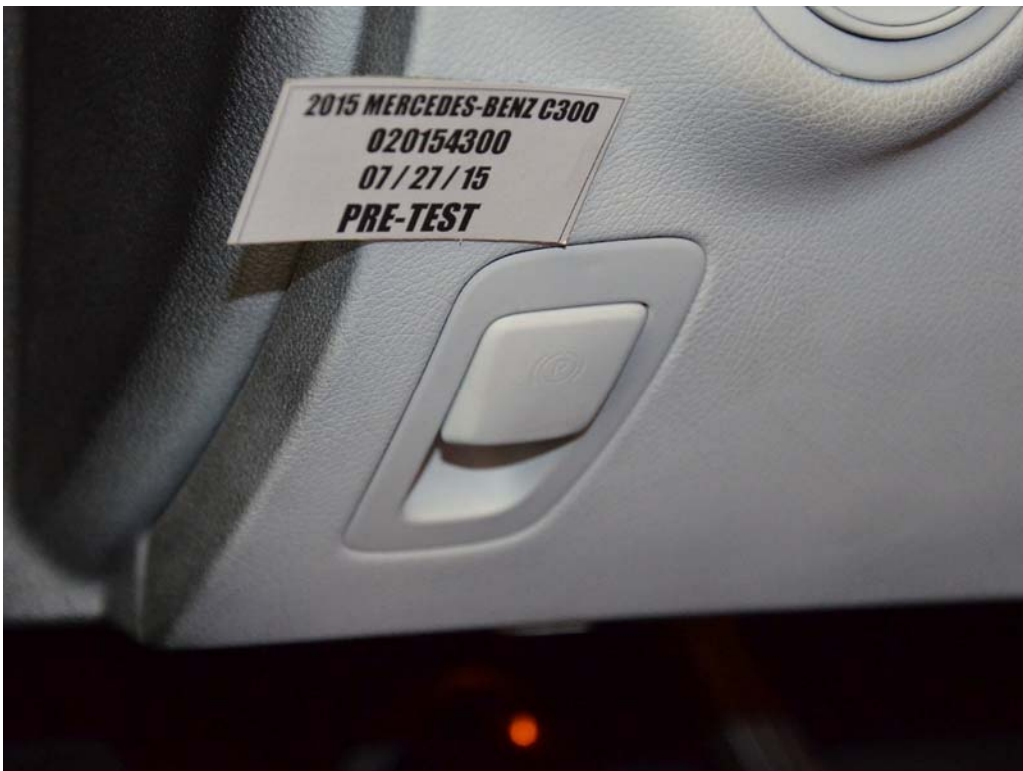


FIGURE 38. Pre-Test View of Parking Brake



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



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



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



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



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



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



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



FIGURE 46. Pre-Test Driver Inner Door Panel View



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

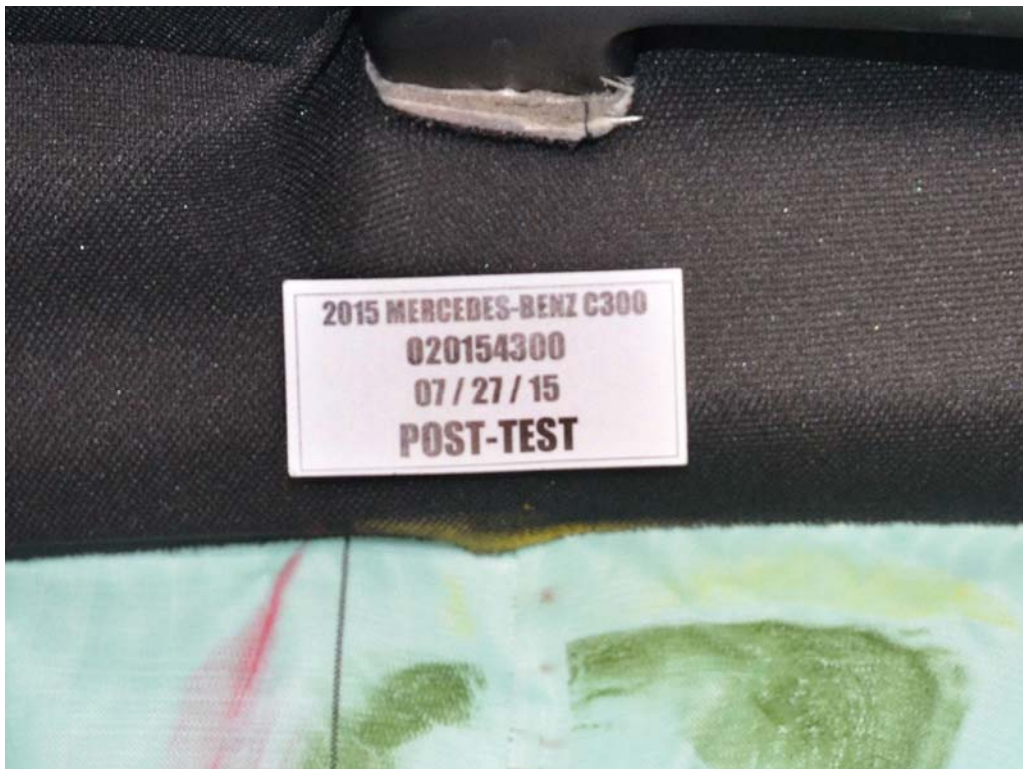


FIGURE 48. Post-Test Driver Dummy Close-Up Head Contact
with Vehicle Interior View



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



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



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



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

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

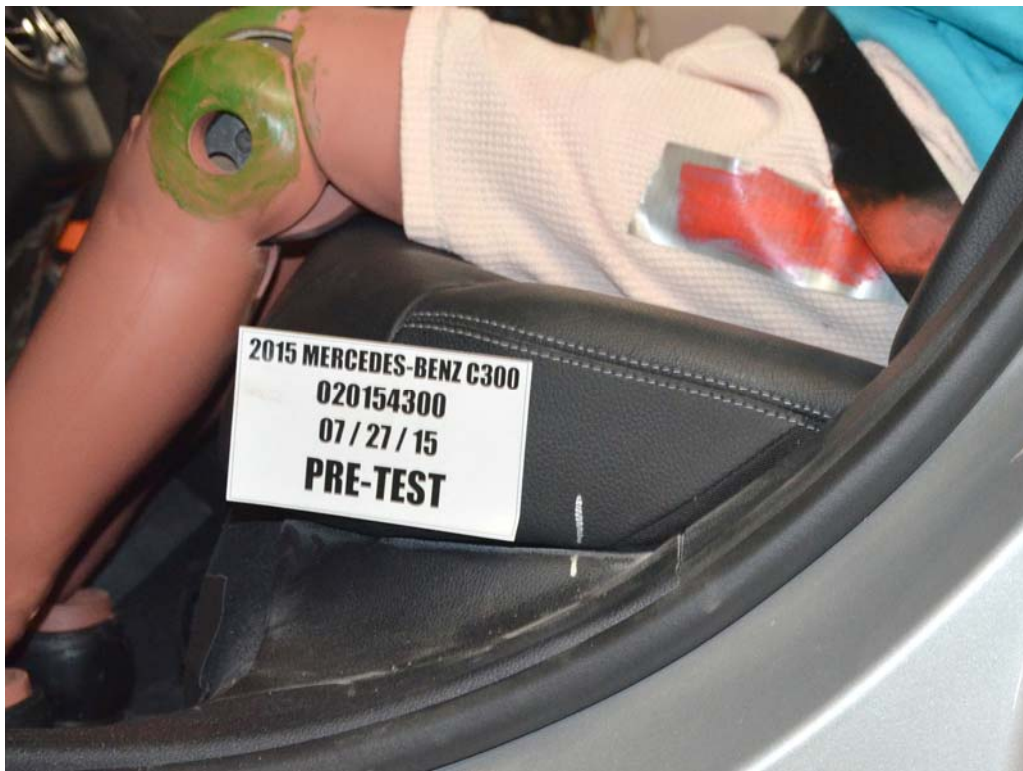


FIGURE 66. Pre-Test Close-Up Left Side View of Rear Passenger Seat Track

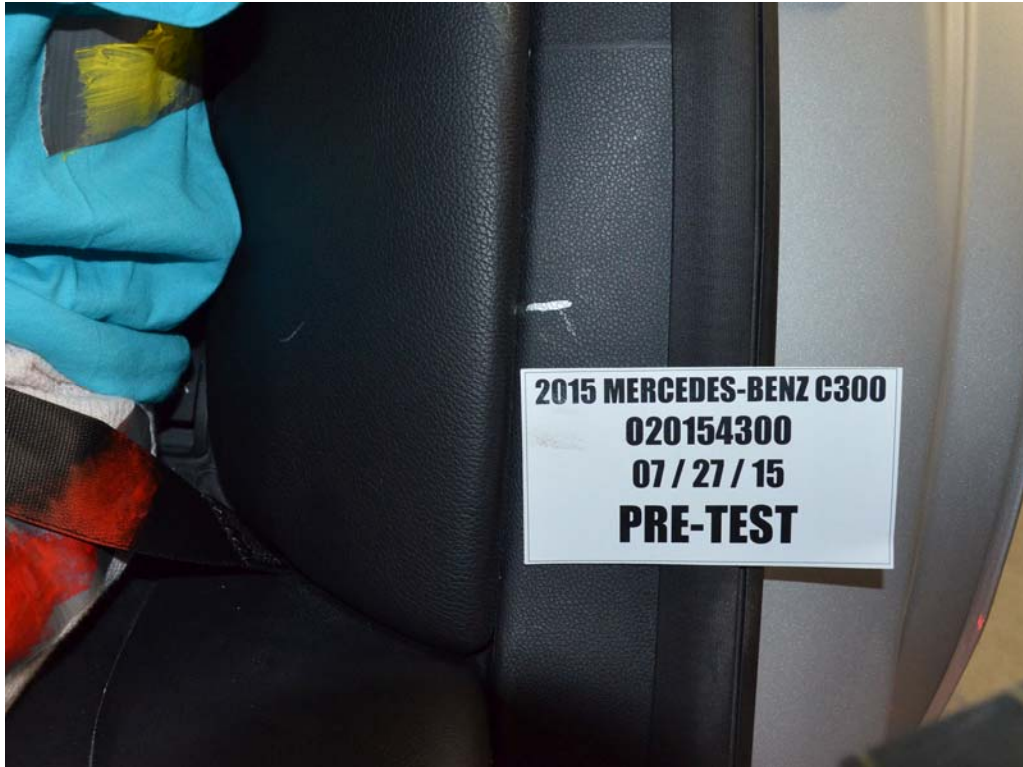


FIGURE 67. Pre-Test Close-Up Left Side View of Rear Passenger Seat Back



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

No Passenger Rear
Dummy Pelvis Contact
With Side Airbag

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



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



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



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



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



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

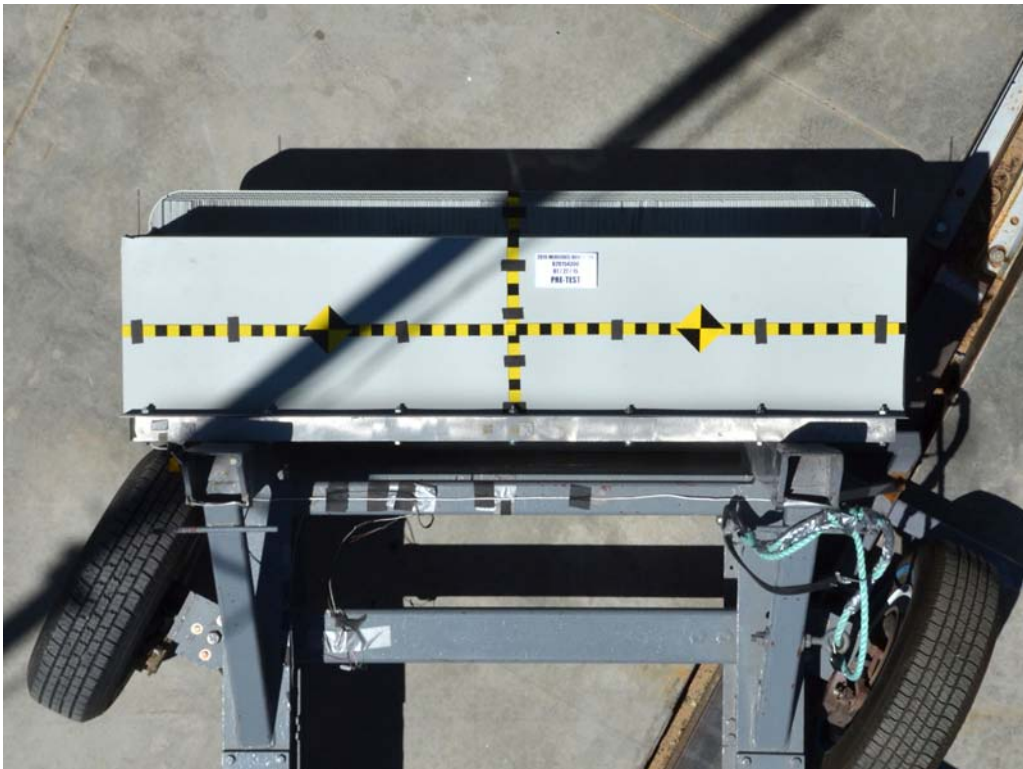


FIGURE 86. Pre-Test Top View of MDB Impactor Face



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



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



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



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



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



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



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

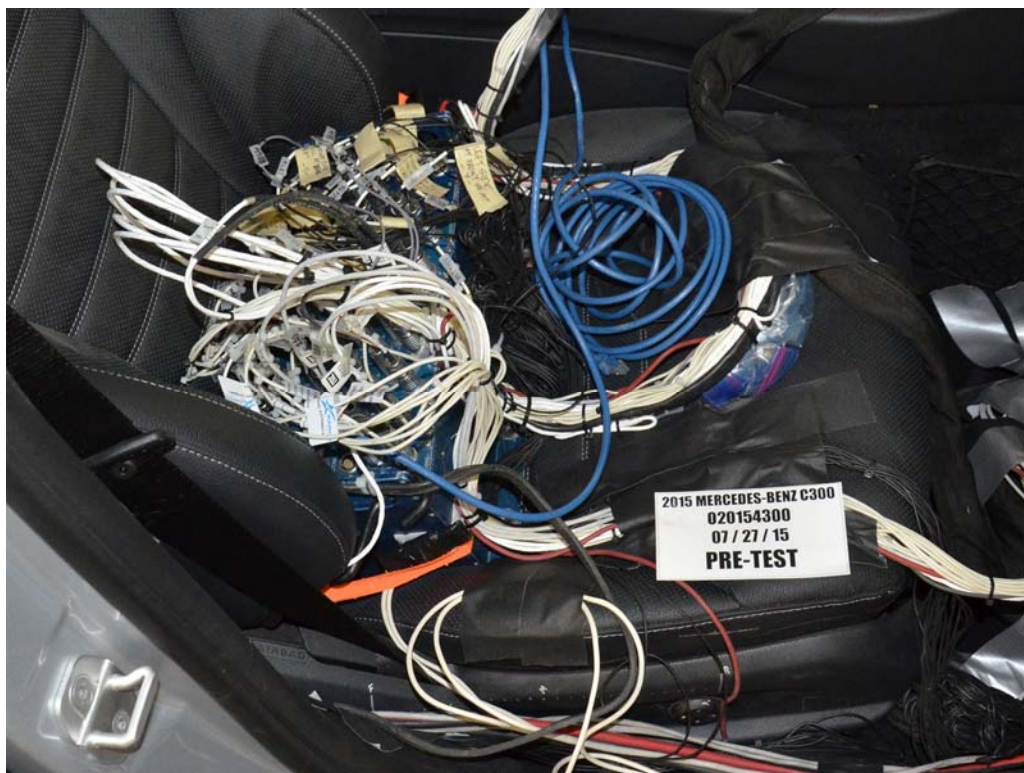


FIGURE 94. Pre-Test Ballast View

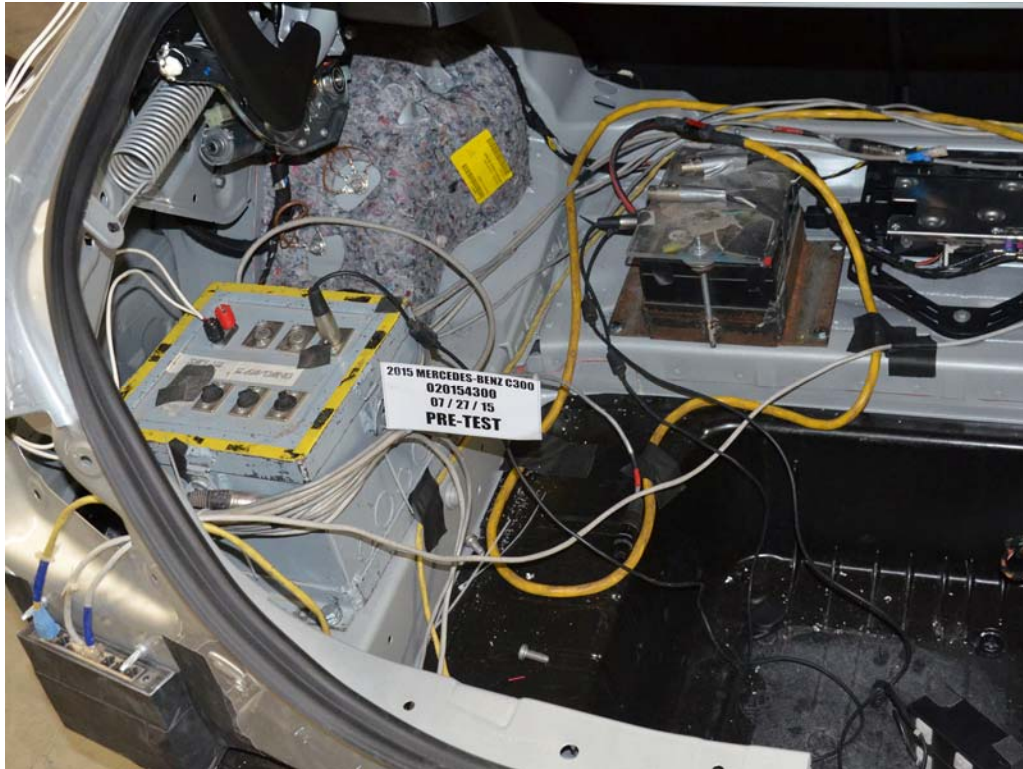


FIGURE 94a. Pre-Test Ballast View



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

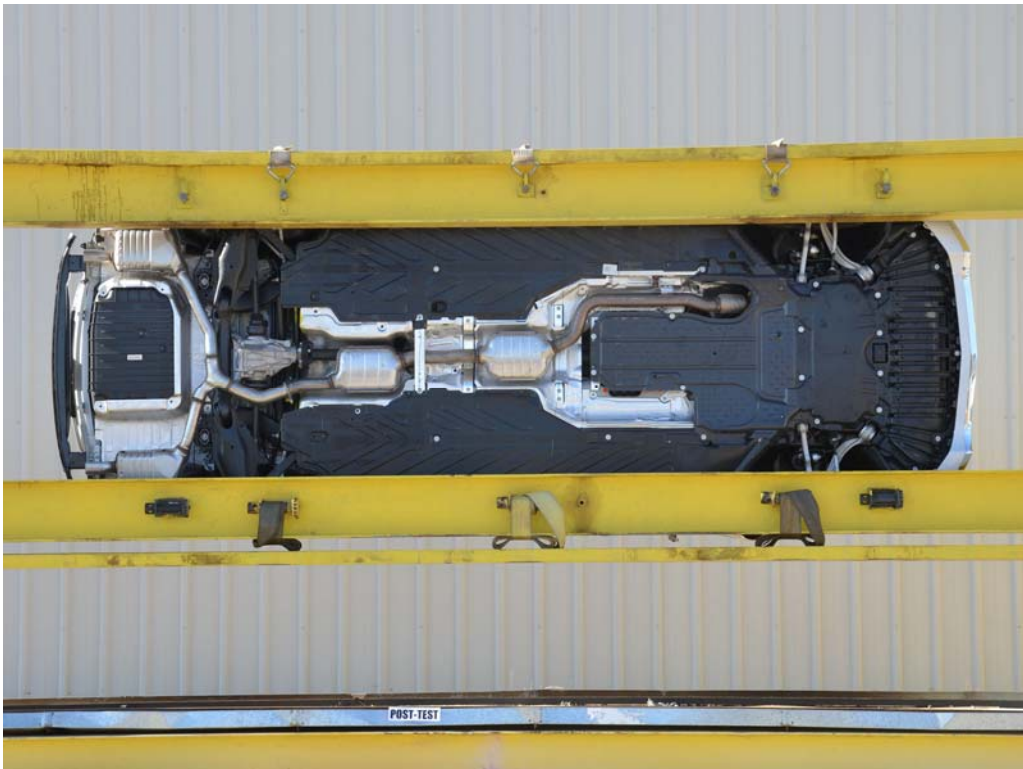


FIGURE 99. FMVSS No. 301 Static Rollover 270 Degrees



FIGURE 100. FMVSS No. 301 Static Rollover 360 Degrees



FIGURE 101. Impact Event

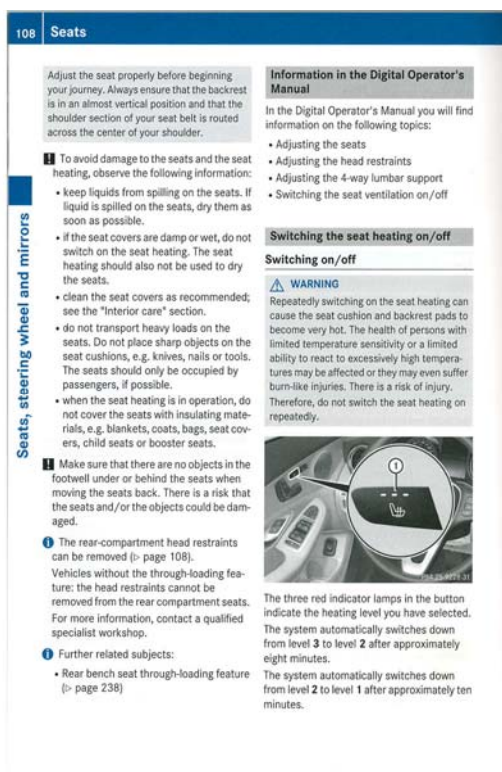


FIGURE 104. Left Rear Passenger Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

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
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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)

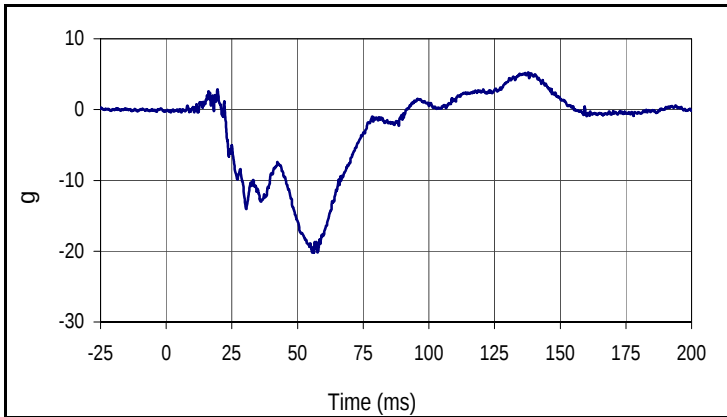
MDB Rear Acceleration (Y)

Left MDB Contact Switch

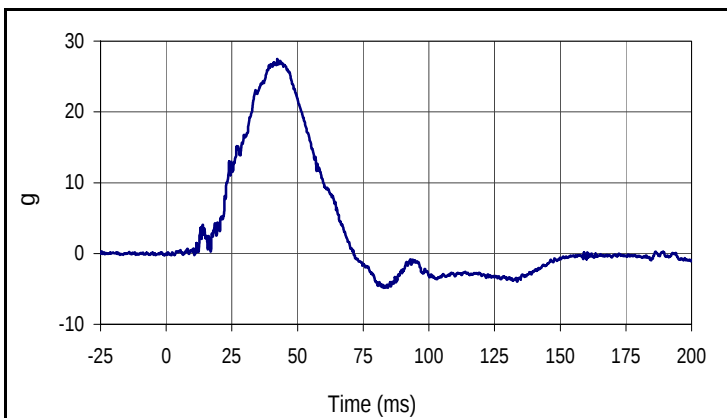
Right MDB Contact Switch

Test Vehicle: 2015 Mercedes-Benz C300 4-Door Sedan
 Test Program: NCAP MDB Side Impact Test

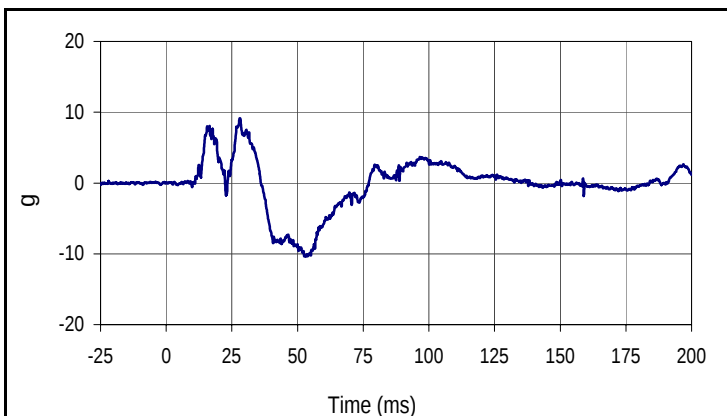
NHTSA No.: O20154300
 Test Date: 7/27/15



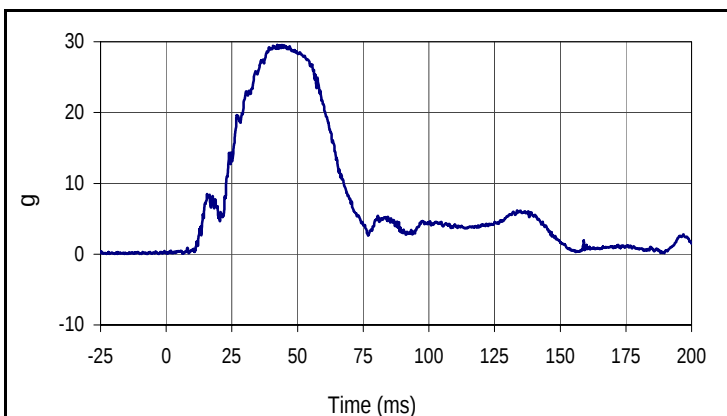
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Driver Head Acceleration X Primary			
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Max	Time	Min	Time
5.3	137.9	-20.2	55.6



Curve Description			
Driver Head Acceleration Y Primary			
Plot No.		SAE Class	Units
002		1000	g
Max	Time	Min	Time
27.4	42.3	-4.9	82.9



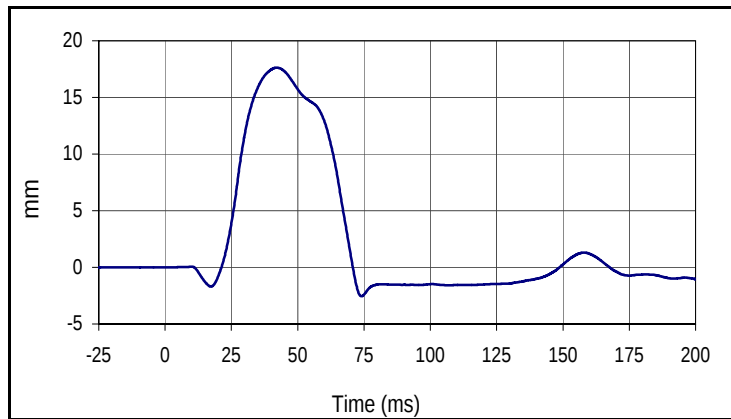
Curve Description			
Driver Head Acceleration Z Primary			
Plot No.		SAE Class	Units
003		1000	g
Max	Time	Min	Time
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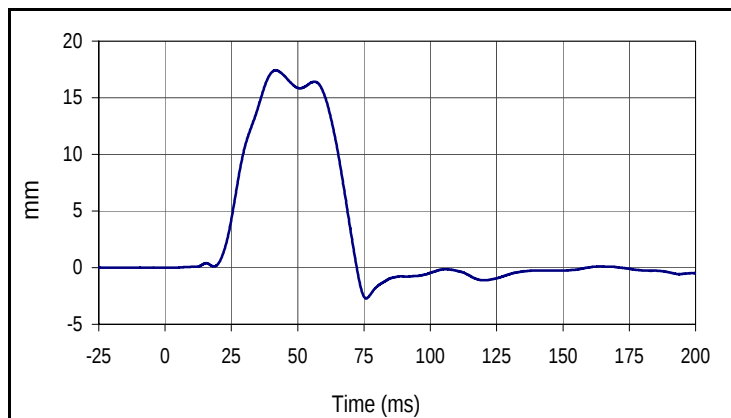
Curve Description			
Driver Head Resultant Acceleration Primary			
Plot No.		SAE Class	Units
004		1000	g
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29.6	42.3	0.1	6.2

Test Vehicle: 2015 Mercedes-Benz C300 4-Door Sedan
 Test Program: NCAP MDB Side Impact Test

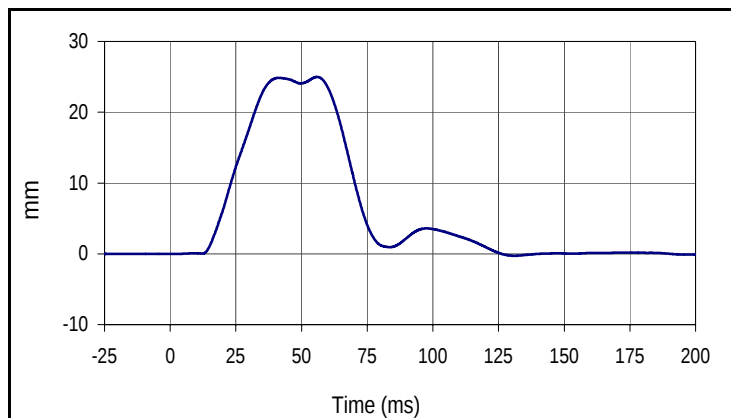
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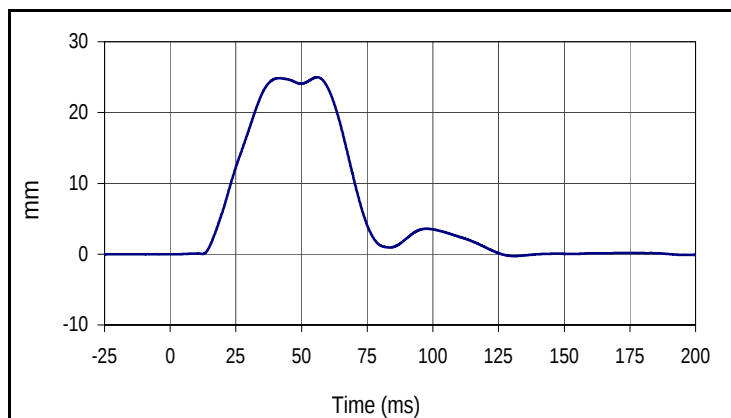
Curve Description			
Driver Upper Thorax Rib Deflection Y			
Plot No.		SAE Class	Units
005		180	mm
Max	Time	Min	Time
17.6	42.1	-2.6	74.1



Curve Description			
Driver Middle Thorax Rib Deflection Y			
Plot No.		SAE Class	Units
006		180	mm
Max	Time	Min	Time
17.4	41.7	-2.7	75.8



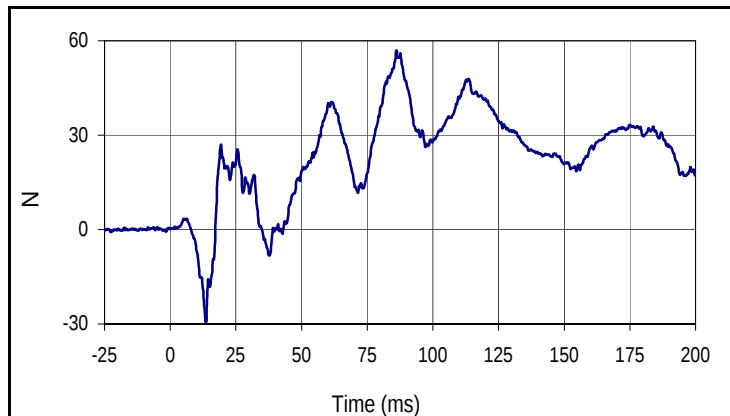
Curve Description			
Driver Lower Thorax Rib Deflection Y			
Plot No.		SAE Class	Units
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Max	Time	Min	Time
25.0	55.9	-0.3	131.1



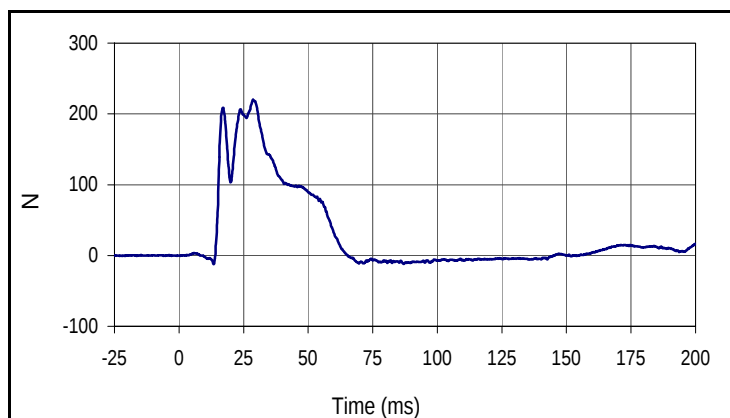
Curve Description			
Driver Thorax Rib Deflection Maximum Y			
Plot No.		SAE Class	Units
008		180	mm
Max	Time	Min	Time
25.0	55.9	-0.3	131.1

Test Vehicle: 2015 Mercedes-Benz C300 4-Door Sedan
 Test Program: NCAP MDB Side Impact Test

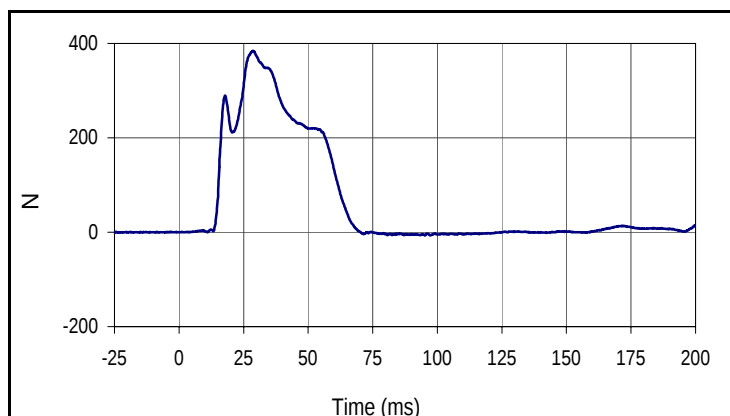
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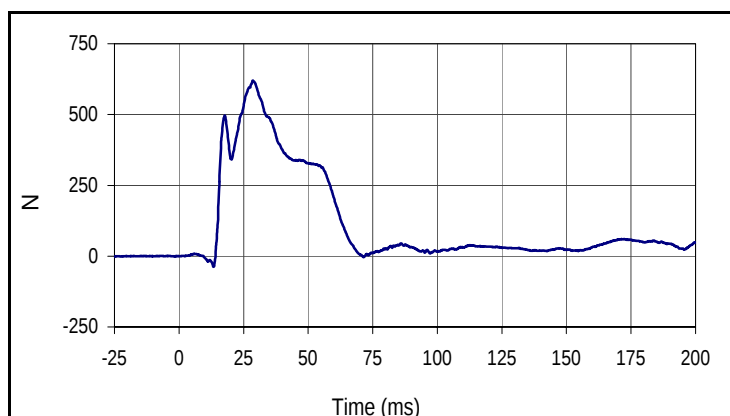
Curve Description			
Driver Anterior Abdominal Force Y			
Plot No.		SAE Class	Units
009		600	N
Max	Time	Min	Time
57.0	86.1	-29.5	13.6



Curve Description			
Driver Middle Abdominal Force Y			
Plot No.		SAE Class	Units
010		600	N
Max	Time	Min	Time
219.9	28.6	-12.2	13.4



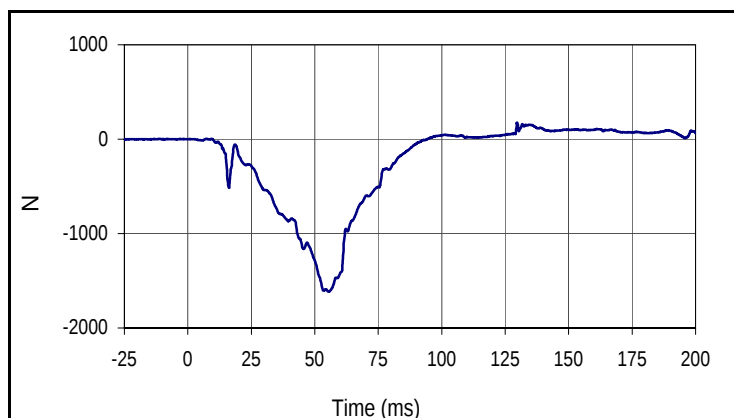
Curve Description			
Driver Posterior Abdominal Force Y			
Plot No.		SAE Class	Units
011		600	N
Max	Time	Min	Time
384.1	28.6	-6.9	95.2



Curve Description			
Driver Total Abdominal Force			
Plot No.		SAE Class	Units
012		600	N
Max	Time	Min	Time
620.6	28.6	-37.6	13.4

Test Vehicle: 2015 Mercedes-Benz C300 4-Door Sedan
 Test Program: NCAP MDB Side Impact Test

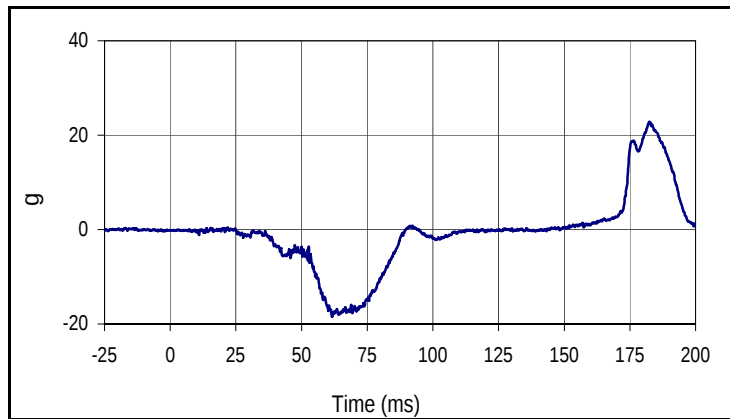
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 Test Date: 7/27/15



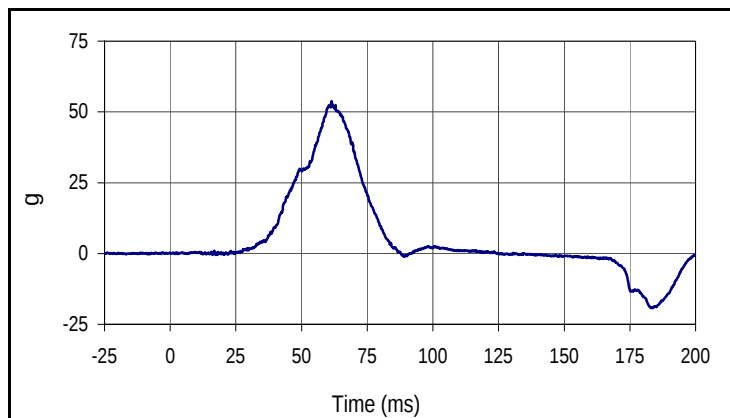
Curve Description			
Driver Pubic Symphysis Force Y			
Plot No.		SAE Class	Units
013		600	N
Max	Time	Min	Time
177.6	129.7	-1614.2	55.5

Test Vehicle: 2015 Mercedes-Benz C300 4-Door Sedan
 Test Program: NCAP MDB Side Impact Test

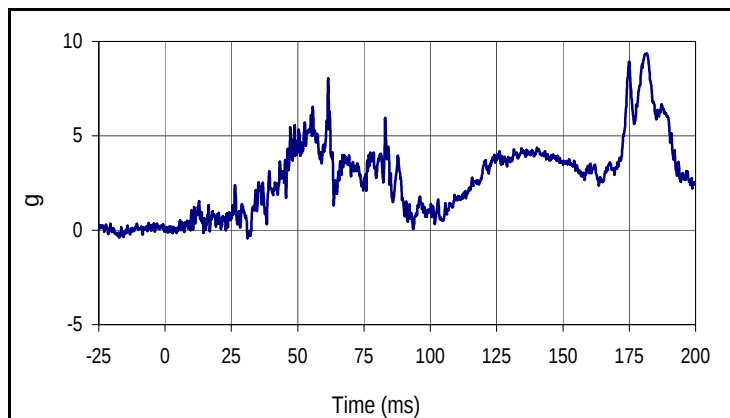
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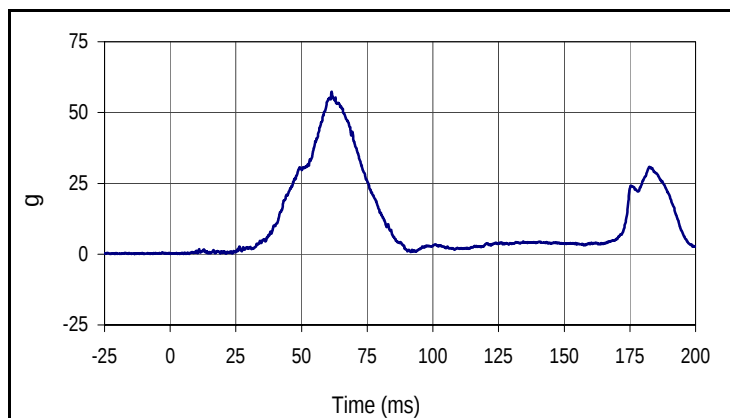
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Passenger Head Acceleration X Primary			
Plot No.		SAE Class	Units
014		1000	g
Max	Time	Min	Time
22.9	182.4	-18.5	61.6



Curve Description			
Passenger Head Acceleration Y Primary			
Plot No.		SAE Class	Units
015		1000	g
Max	Time	Min	Time
53.8	61.5	-19.3	183.0



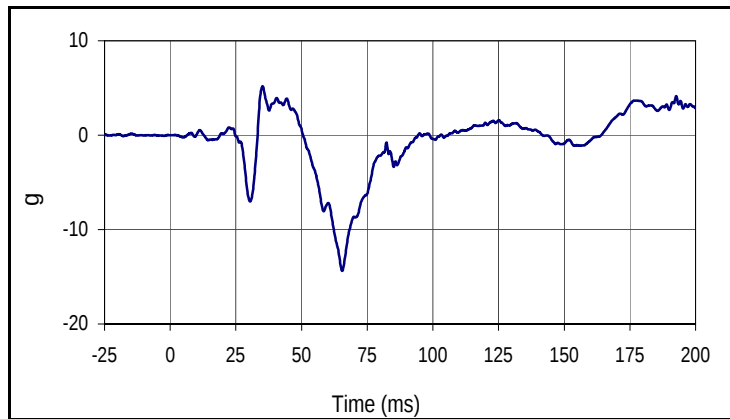
Curve Description			
Passenger Head Acceleration Z Primary			
Plot No.		SAE Class	Units
016		1000	g
Max	Time	Min	Time
9.4	181.5	-0.4	31.1



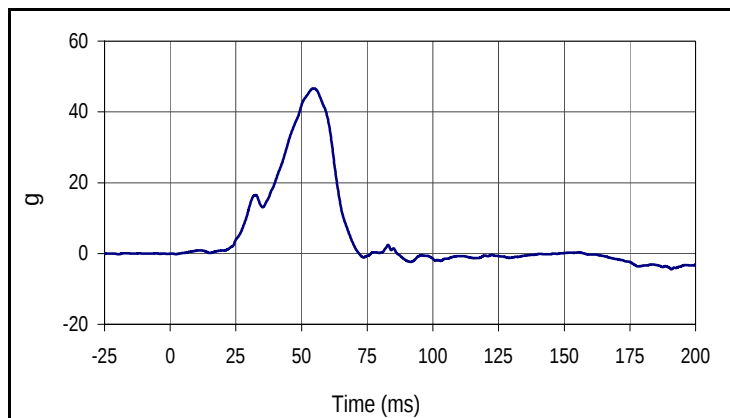
Curve Description			
Passenger Head Acceleration Resultant Primary			
Plot No.		SAE Class	Units
017		1000	g
Max	Time	Min	Time
57.4	61.5	0.1	7.1

Test Vehicle: 2015 Mercedes-Benz C300 4-Door Sedan
 Test Program: NCAP MDB Side Impact Test

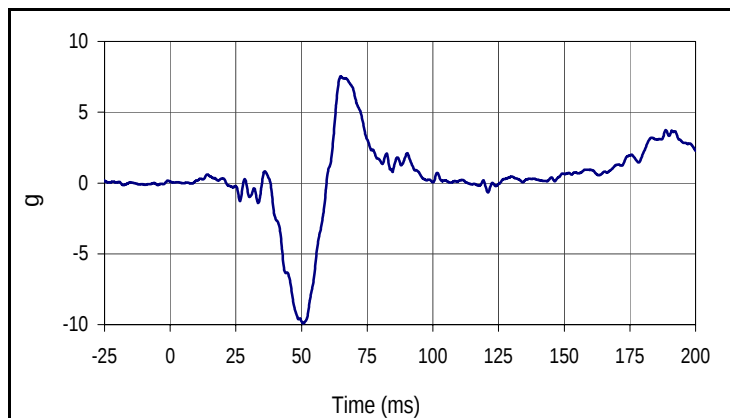
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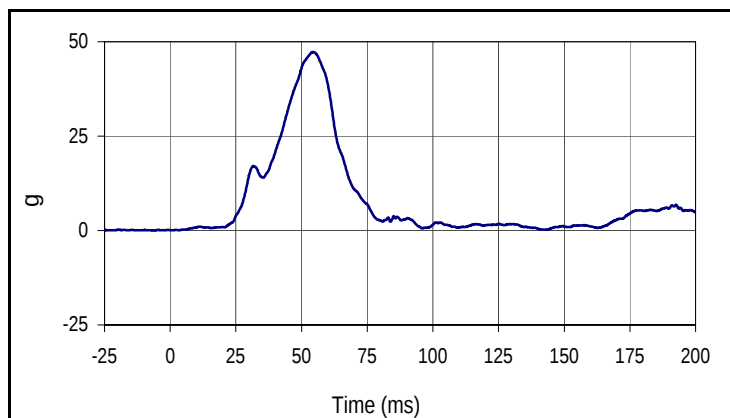
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Passenger Lower Spine T12 Acceleration X			
Plot No.		SAE Class	Units
018		180	g
Max	Time	Min	Time
5.2	35.2	-14.4	65.5



Curve Description			
Passenger Lower Spine T12 Acceleration Y			
Plot No.		SAE Class	Units
019		180	g
Max	Time	Min	Time
46.6	54.7	-4.5	190.8



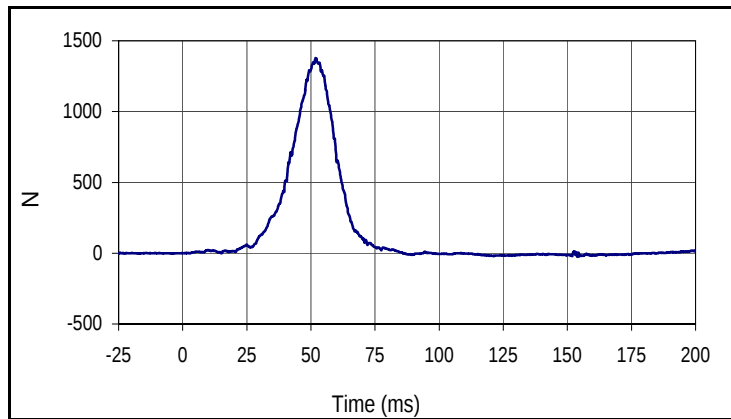
Curve Description			
Passenger Lower Spine T12 Acceleration Z			
Plot No.		SAE Class	Units
020		180	g
Max	Time	Min	Time
7.5	64.9	-9.9	50.6



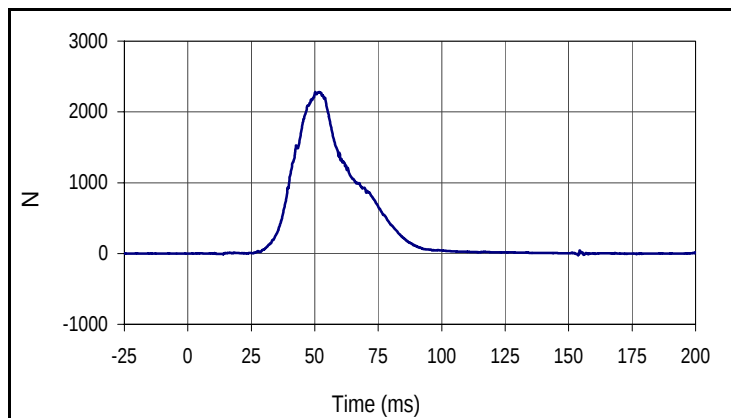
Curve Description			
Passenger Lower Spine T12 Acceleration Res.			
Plot No.		SAE Class	Units
021		180	g
Max	Time	Min	Time
47.3	54.5	0.1	0.9

Test Vehicle: 2015 Mercedes-Benz C300 4-Door Sedan
 Test Program: NCAP MDB Side Impact Test

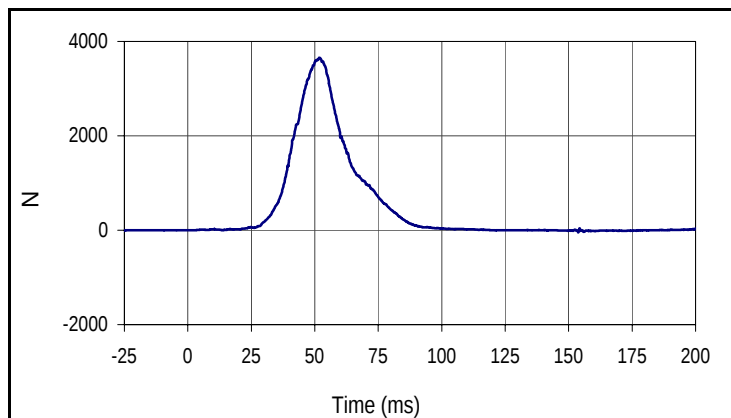
NHTSA No.: O20154300
 Test Date: 7/27/15



Curve Description			
Passenger Iliac Force on Impact Side Y			
Plot No.		SAE Class	Units
022		600	N
Max	Time	Min	Time
1377.1	51.9	-25.2	153.9



Curve Description			
Passenger Acetabulum Force on Impact Side Y			
Plot No.		SAE Class	Units
023		600	N
Max	Time	Min	Time
2280.7	50.2	-22.2	153.7



Curve Description			
Passenger Total Pelvic Force			
Plot No.		SAE Class	Units
024		600	N
Max	Time	Min	Time
3655.7	51.8	-47.2	153.8

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.: F037

Test Date: 7/23/15
 Test I.D.: N/A



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

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

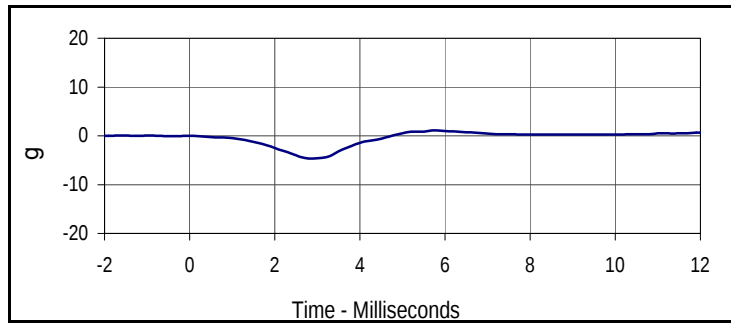
Test Date: 7/23/15
 Test I.D.: F037HD074



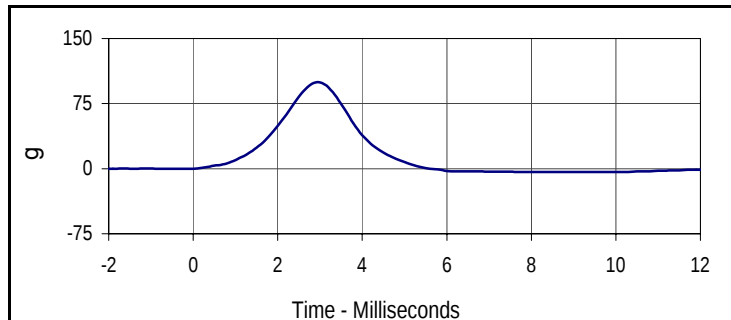
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	296	Pass
Temperature During Soak	Max	20.6 to 22.2	21.4	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	37.9	Pass
	Min		37.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	37.9	Pass
Peak Head Resultant Acceleration	G's	125 to 155	125.8	Pass
Peak Head X Acceleration	G's	≤15	4.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	0.2	Pass
Overall Test Results				Pass



Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
125.8	2.9	0.0	-0.1



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	g
Max	Time	Min	Time
1.1	5.8	-4.6	2.9



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
99.6	2.9	-3.9	10.1



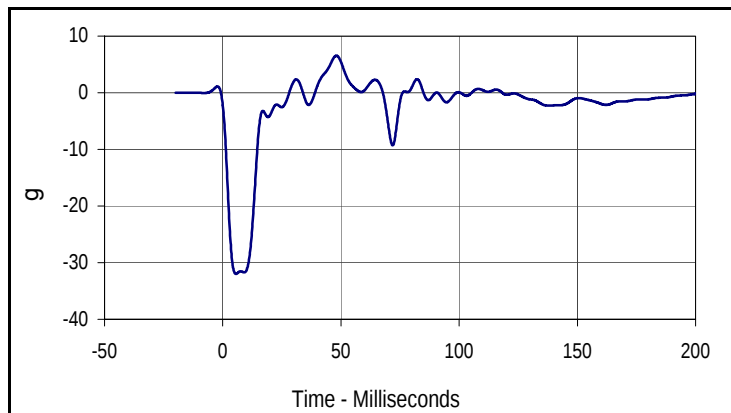
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
76.8	2.9	-0.2	-14.1

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

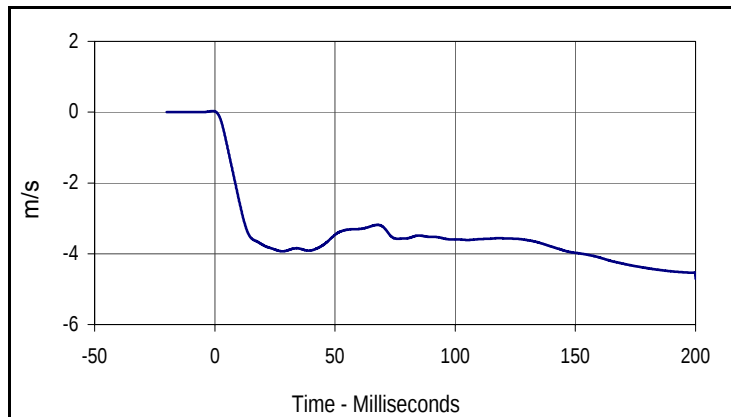
Test Date: 7/23/15
 Test I.D.: F037NB074



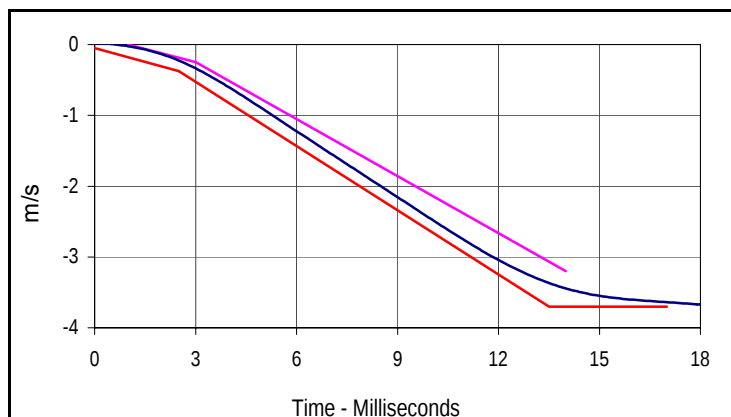
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	331	Pass
Temperature During Soak	Max	20.6 to 22.2	21.4	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	37.9	Pass
	Min		37.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	37.8	Pass
Pendulum Velocity	m/s	3.3 to 3.5	3.41	Pass
Headform Flexion	Max	49 to 59	57.0	Pass
	Time	54 to 66	57.0	Pass
Headform Flexion Decay (Peak to Zero)	msec	53 to 88	61.7	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	g
Max	Time	Min	Time
6.5	48.1	-32.0	5.6



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.8	-4.7	200.0



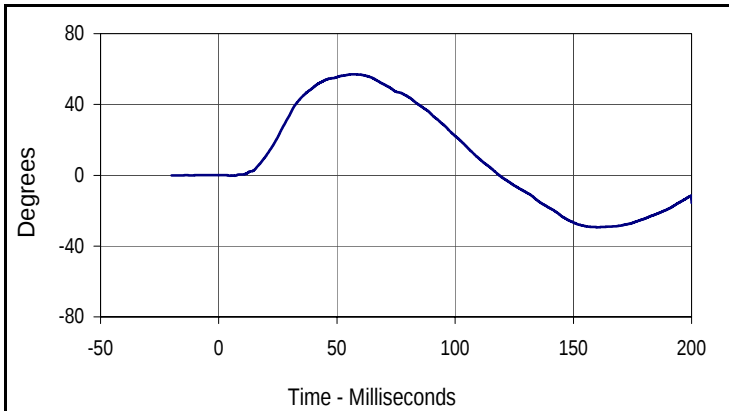
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.8	-4.7	200.0

Velocity Corridors

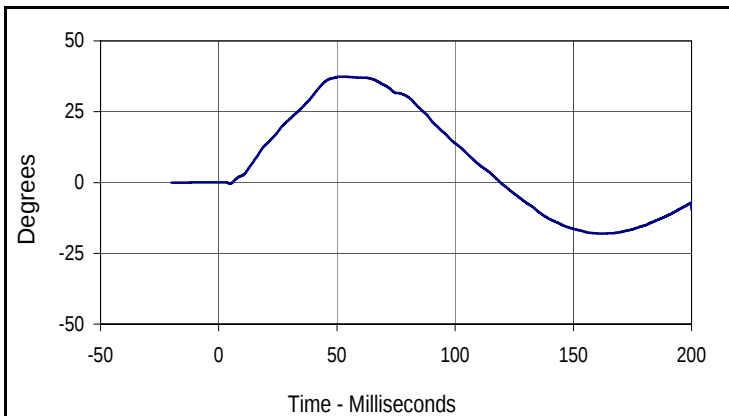
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.0	-0.03	2.5	-0.375
14.0	-3.20	13.5	-3.70
		17.0	-3.70

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

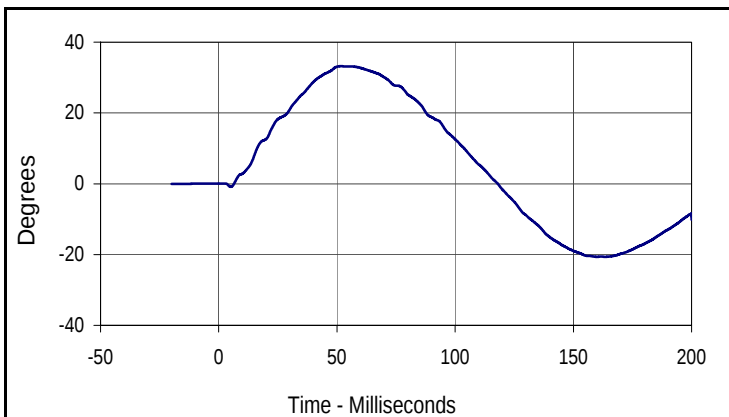
Test Date: 7/23/15
 Test I.D.: F037NB074



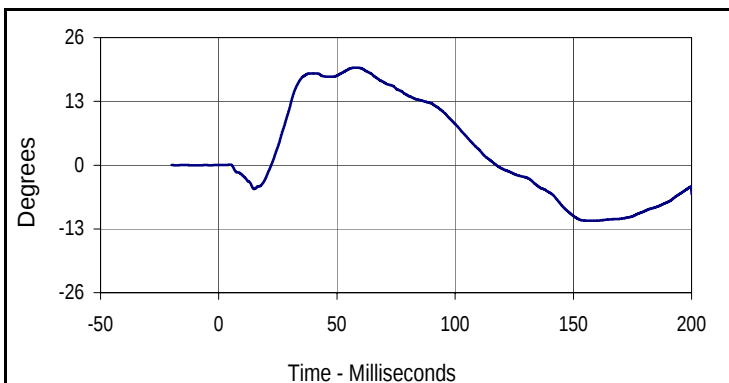
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
57.0	57.0	-29.3	160.4



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
37.4	51.6	-18.0	162.1



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
33.2	51.9	-20.6	163.6



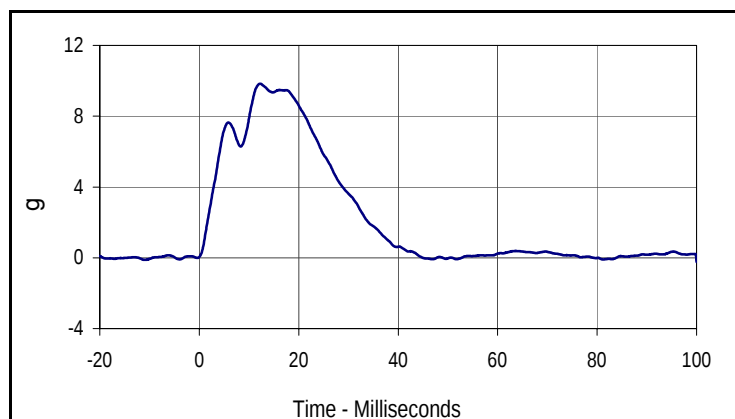
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
19.9	57.9	-11.4	158.5

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

Test Date: 7/23/15
 Test I.D.: F037SH074



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	396	Pass
Temperature During Soak	Max	20.6 to 22.2	21.4	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	37.9	Pass
	Min		37.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	37.7	Pass
Pendulum Speed	m/s	4.2 to 4.4	4.31	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	9.8	Pass
Overall Test Results			Pass	



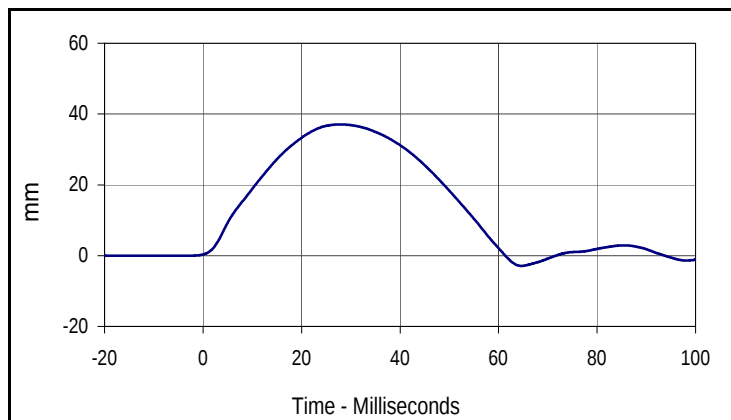
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	g
Max	Time	Min	Time
9.8	12.2	-0.1	-10.9

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

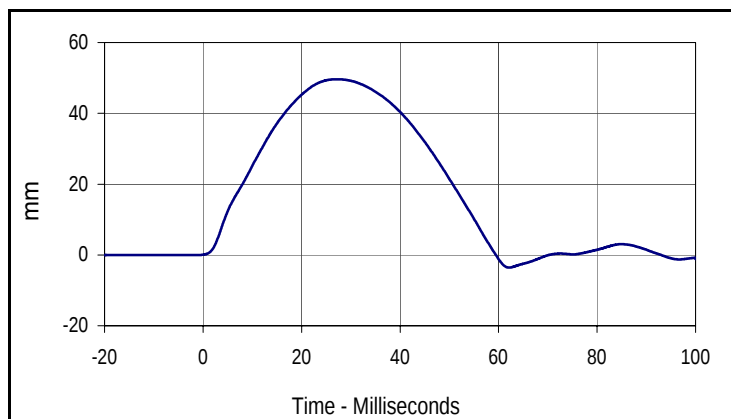
Test Date: 7/23/15
 Test I.D.: F037RB1074



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	451	Pass
Temperature During Soak	Max	20.6 to 22.2	21.4	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	37.9	Pass
	Min		37.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	37.0	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	37.1	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	49.6	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
37.1	27.8	-2.9	64.6



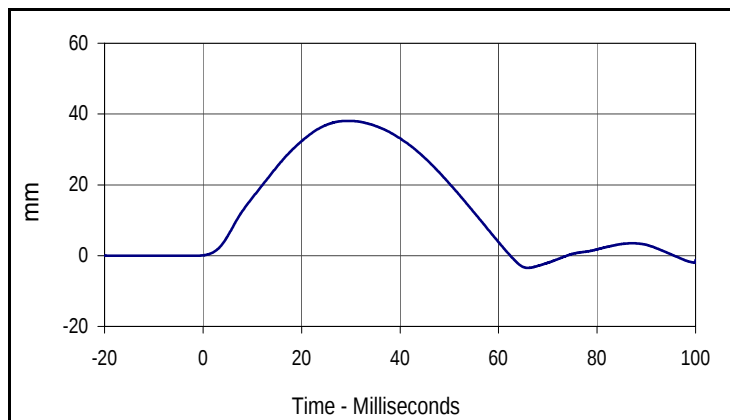
Curve Description			
Upper Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max	Time	Min	Time
49.6	27.2	-3.6	62.2

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

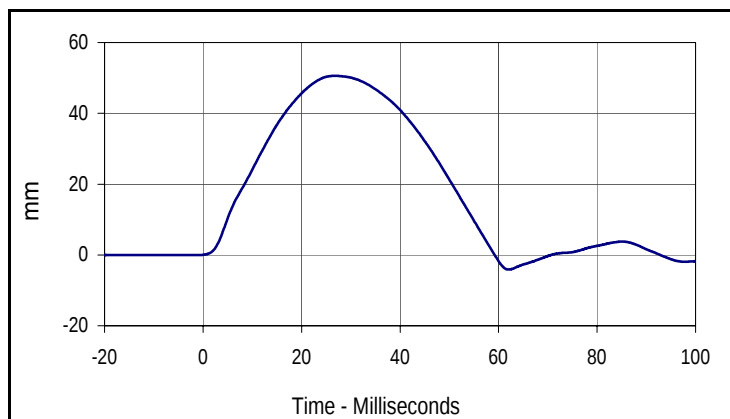
Test Date: 7/23/15
 Test I.D.: F037RB2074



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	496	Pass
Temperature During Soak	Max	20.6 to 22.2	21.4	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	37.9	Pass
	Min		37.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	37.1	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	50.6	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
38.1	29.5	-3.5	65.9



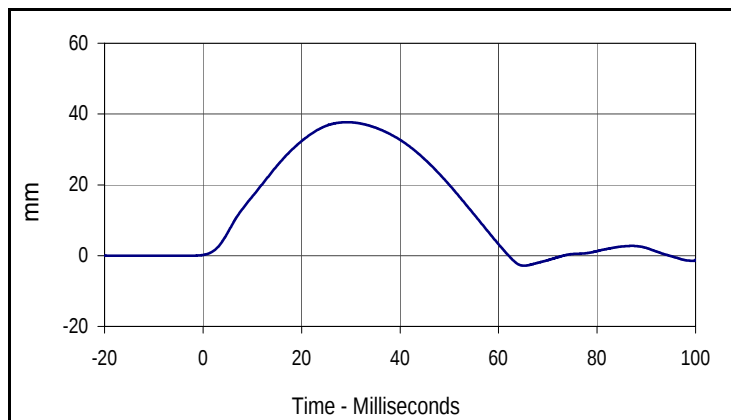
Curve Description			
Middle Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max	Time	Min	Time
50.6	26.8	-4.1	62.0

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

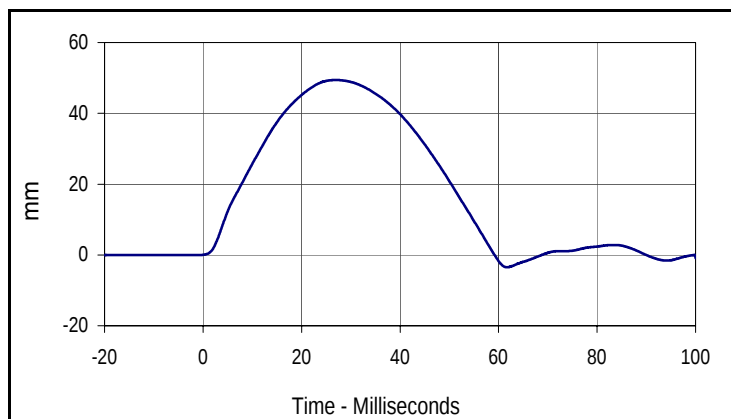
Test Date: 7/23/15
 Test I.D.: F037RB3074



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	541	Pass
Temperature During Soak	Max	20.6 to 22.2	21.4	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	37.9	Pass
	Min		37.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	37.6	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	37.7	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	49.4	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
37.7	29.2	-2.9	65.2



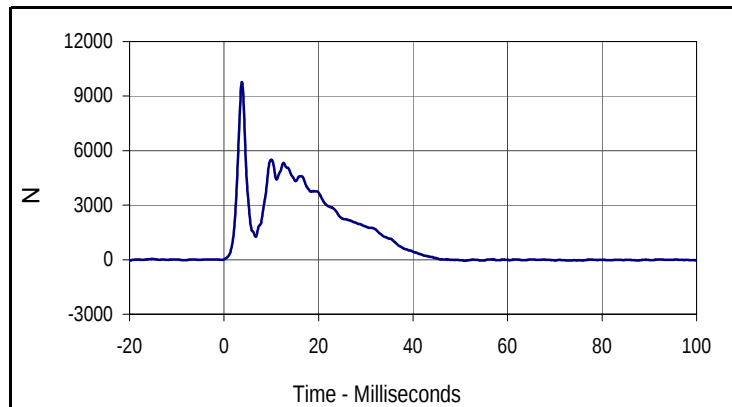
Curve Description			
Lower Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max	Time	Min	Time
49.4	26.9	-3.5	61.7

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

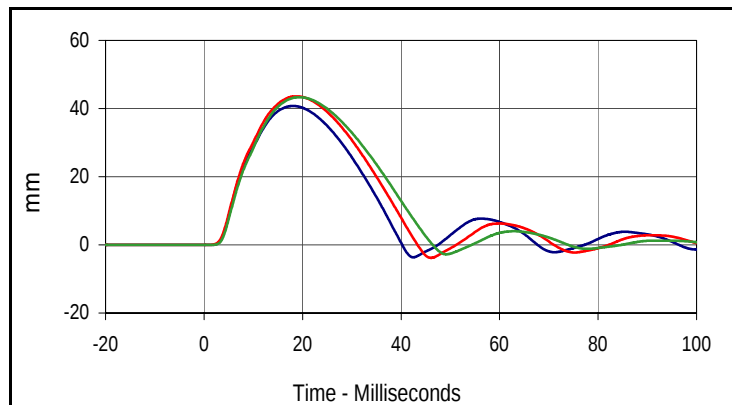
Test Date: 7/23/15
 Test I.D.: F037TH074



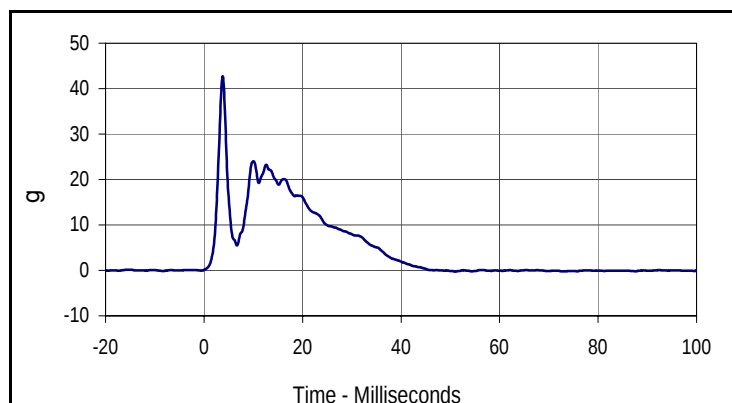
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	586	Pass
Temperature During Soak	Max °C	20.6 to 22.2	21.4	Pass
	Min °C		21.1	Pass
Humidity During Soak	Max %	10.0 to 70.0	37.9	Pass
	Min %		37.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	37.7	Pass
Peak Impactor Velocity	m/s	5.4 to 5.6	5.52	Pass
Peak Impactor Force	N	5100 to 6200	5500.7	Pass
	msec	> 6.0 msec	10	Pass
Peak Upper Rib Deflection	mm	34 to 41	40.8	Pass
Peak Middle Rib Deflection	mm	37 to 45	43.6	Pass
Peak Lower Rib Deflection	mm	37 to 44	43.3	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	N
Max	Time	Min	Time
9788.9	3.8	-62.0	51.0



Curve Description			
Upper, Middle, Lower Rib Deflections			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max (Upper)	Time	Min (Upper)	Time
40.8	18.1	-3.6	42.5
Max (Middle)	Time	Min (Middle)	Time
43.6	18.7	-3.8	46.1
Max (Lower)	Time	Min (Lower)	Time
43.3	19.3	-2.8	49.2



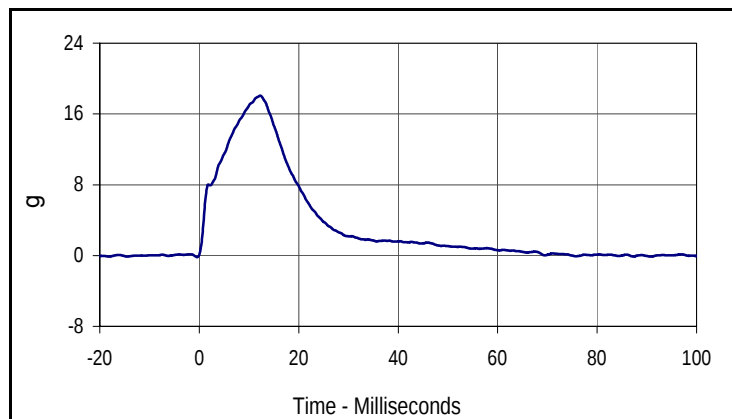
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
42.7	3.8	-0.3	51.0

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

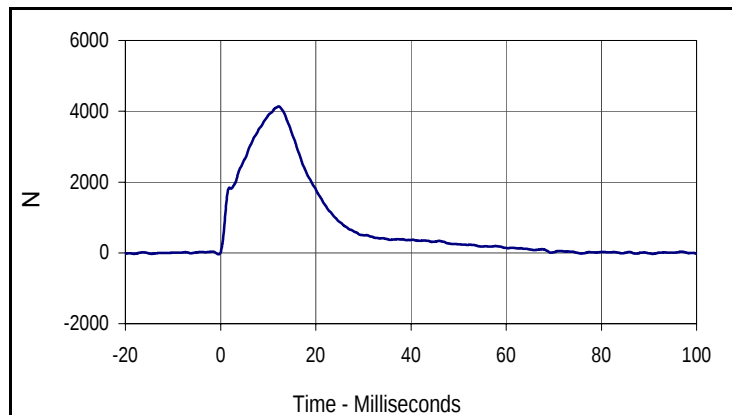
Test Date: 7/23/15
 Test I.D.: F037ABD074



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	656	Pass
Temperature During Soak	Max	20.6 to 22.2	21.4	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	37.9	Pass
	Min		37.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	37.7	Pass
Probe Velocity	m/s	3.9 to 4.1	4.01	Pass
Peak Impactor Force	N	4000 to 4800	4138.2	Pass
	msec	10.6 to 13.0	12.3	Pass
Sum of Abdominal Forces	N	2200 to 2700	2397.7	Pass
	msec	10.0 to 12.3	11.4	Pass
Overall Test Results				Pass



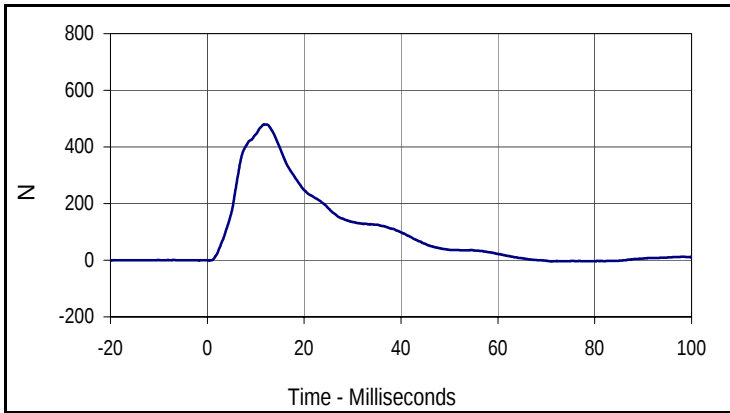
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	g
Max	Time	Min	Time
18.1	12.3	-0.2	-0.4



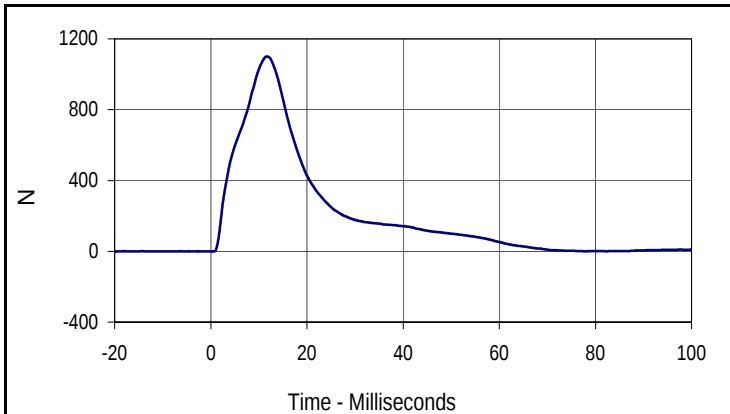
Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	N
Max	Time	Min	Time
4138.2	12.3	-41.2	-0.4

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

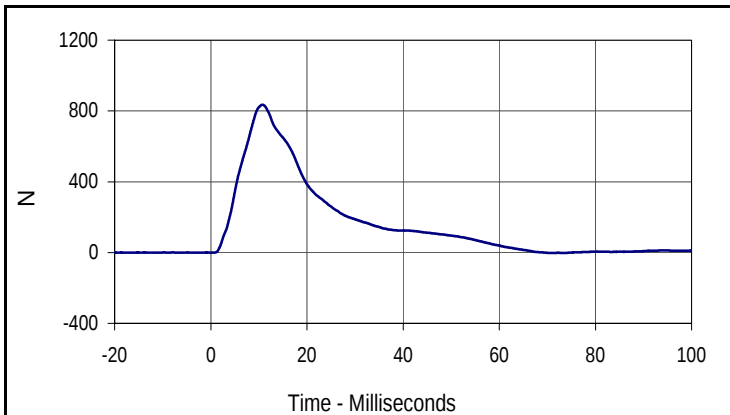
Test Date: 7/23/15
 Test I.D.: F037ABD074



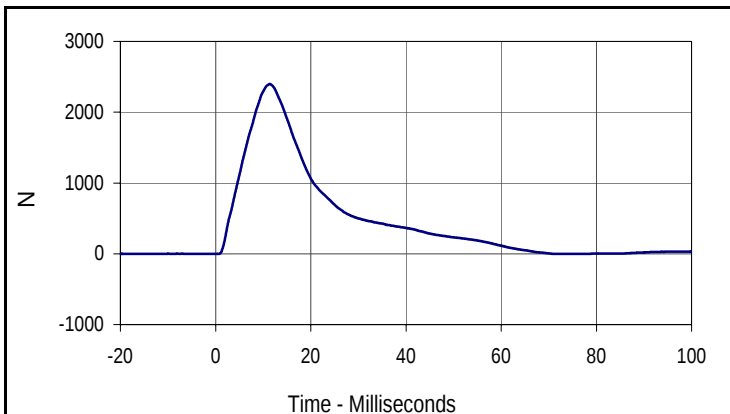
Curve Description			
Front Abdomen Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	N
Max	Time	Min	Time
479.7	11.7	-4.0	71.1



Curve Description			
Middle Abdomen Force			
Plot No.	Type	SAE Class	Units
004	FIL	600	N
Max	Time	Min	Time
1100.3	11.6	-0.6	0.3



Curve Description			
Rear Abdomen Force			
Plot No.	Type	SAE Class	Units
005	FIL	600	N
Max	Time	Min	Time
835.3	10.7	-2.9	70.8



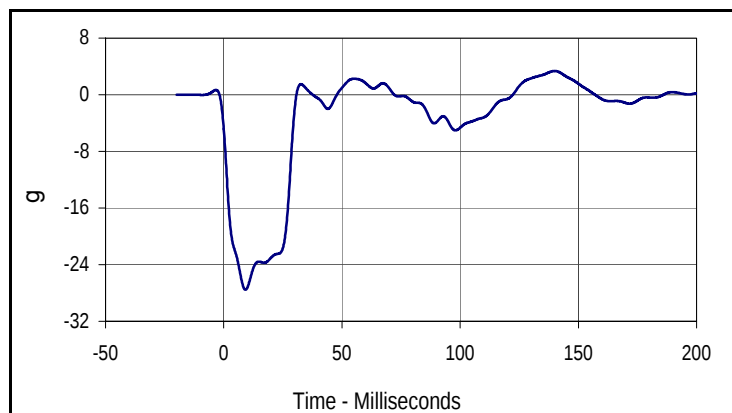
Curve Description			
Abdomen Sum Resultant			
Plot No.	Type	SAE Class	Units
006	RES	600	N
Max	Time	Min	Time
2397.7	11.4	-2.8	74.0

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

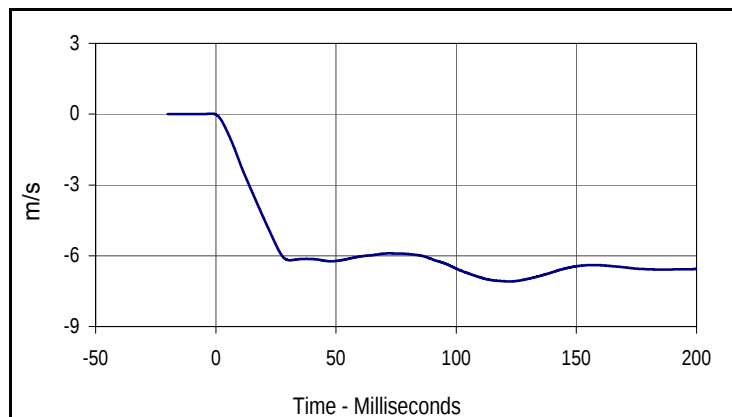
Test Date: 7/23/15
 Test I.D.: F037LB074



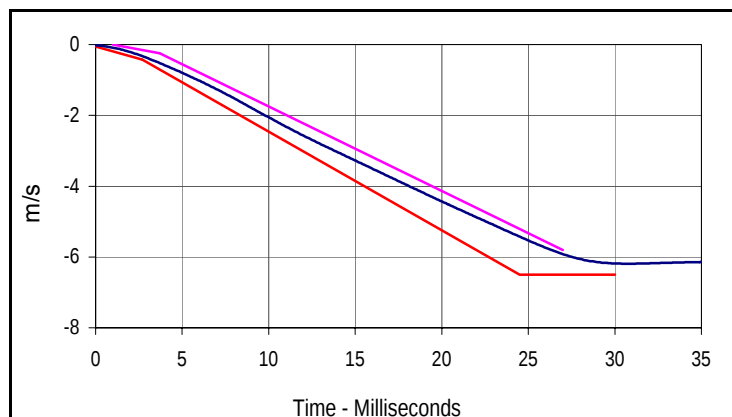
Tested Parameter	Units	Specification	Result	Pass/Fail
Lumbar Spine Assembly Soak Time	Minutes	≥240	731	Pass
Temperature During Soak	Max	20.6 to 22.2	21.4	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	37.9	Pass
	Min		37.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	37.5	Pass
Pendulum Velocity	m/s	5.95 to 6.15	6.01	Pass
Headform Rotation	Max	45 to 55	50.6	Pass
	Time	39 to 53	44.7	Pass
Time of Decay to Zero Angle from Peak	msec	37 to 57	41.6	Pass
Overall Test Results				Pass



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



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



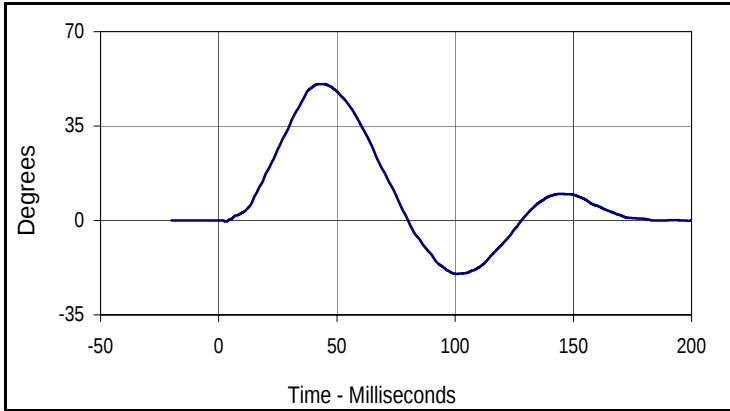
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.2	-7.1	122.9

Velocity Corridors

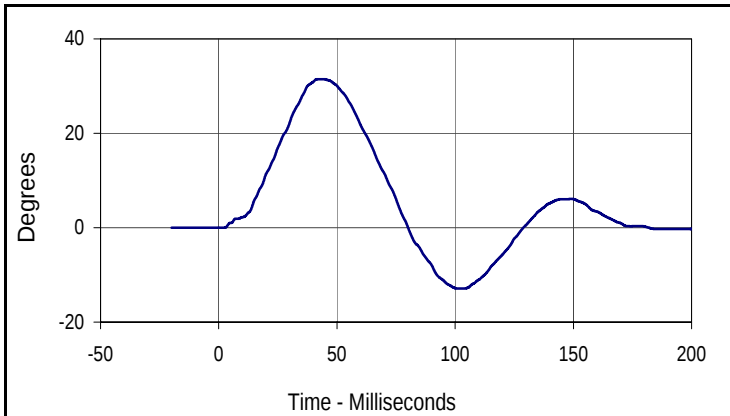
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.7	-0.24	2.7	-0.425
27.0	-5.80	24.5	-6.50
		30.0	-6.50

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

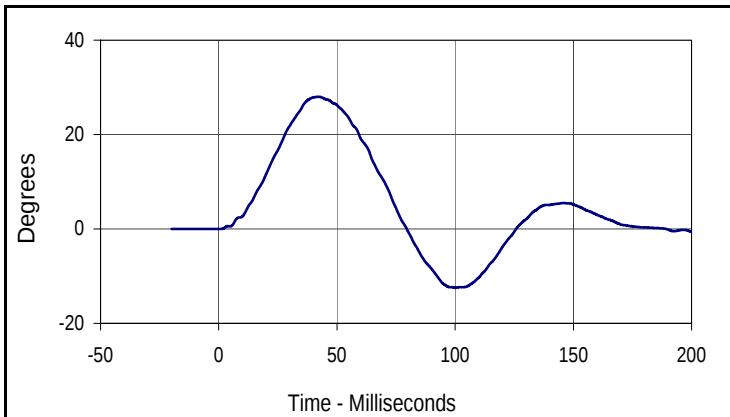
Test Date: 7/23/15
 Test I.D.: F037LB074



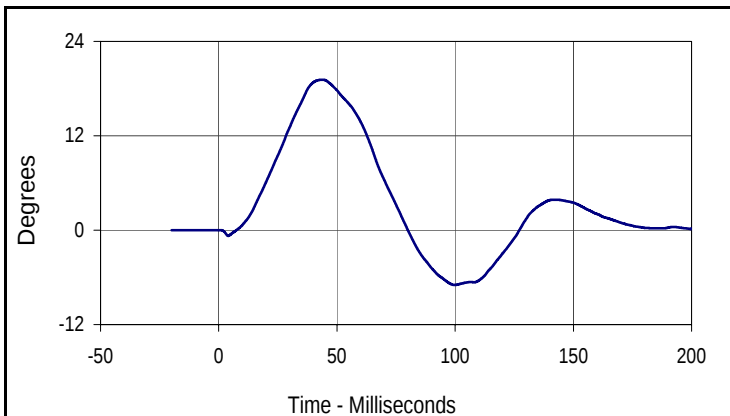
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
50.6	44.7	-19.8	101.1



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
31.4	45.0	-12.9	104.3



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
28.0	42.9	-12.4	100.6



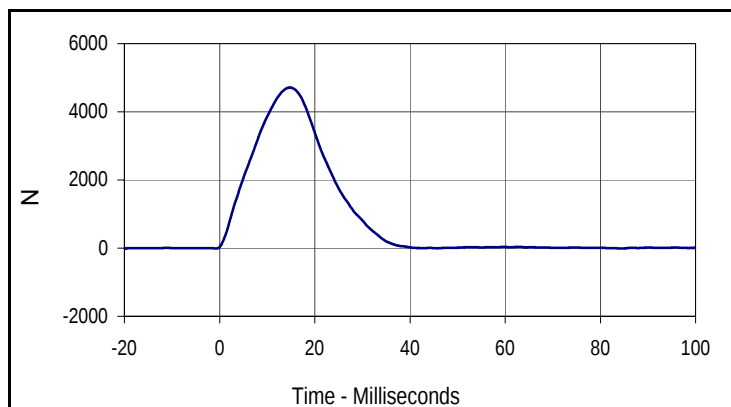
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
19.1	44.4	-7.0	100.4

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

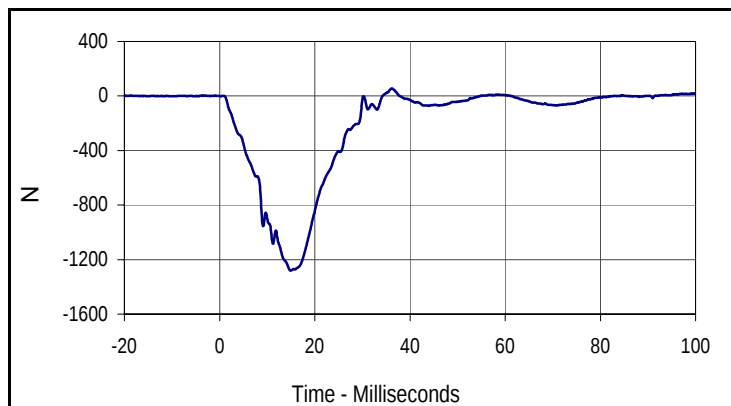
Test Date: 7/23/15
 Test I.D.: F037PL074



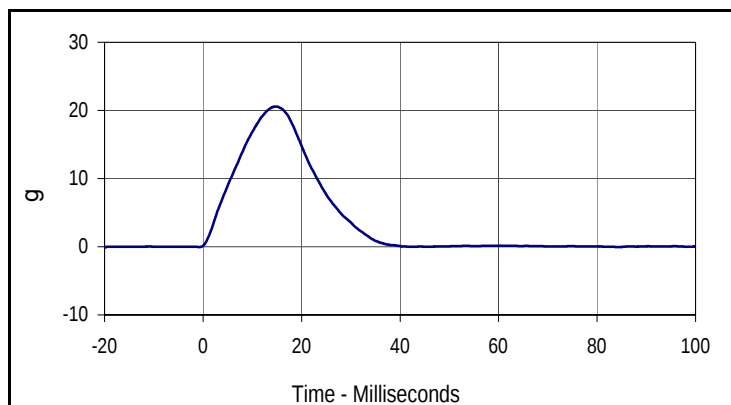
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	786	Pass
Temperature During Soak	Max	20.6 to 22.2	21.4	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	37.9	Pass
	Min		37.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	37.0	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.32	Pass
Peak Impactor Force	N	4700 to 5400	4711.9	Pass
	msec	11.8 to 16.1	14.9	Pass
Peak Pubic Symphysis Load	N	-1230 to -1590	-1281.3	Pass
	msec	12.2 to 17.0	14.9	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	N
Max	Time	Min	Time
4711.9	14.9	-14.0	84.5



Curve Description			
Pubic Symphysis Force Y			
Plot No.	Type	SAE Class	Units
002	FIL	600	N
Max	Time	Min	Time
55.9	36.2	-1281.3	14.9



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
20.6	14.9	-0.1	84.5

Test Program: SID IIs External Measurements
 ATD Serial No.: 307

Test Date: 7/24/15
 Test I.D.: N/A



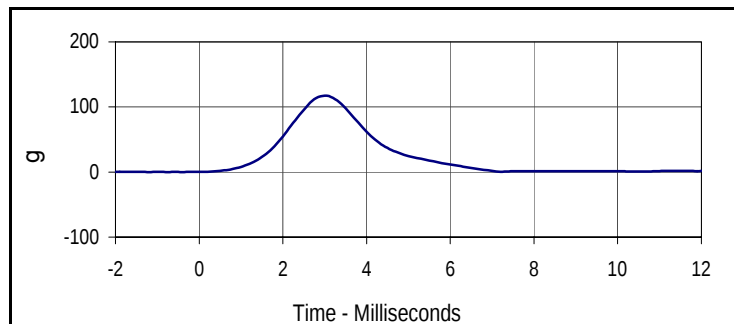
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity		%	10 to 70	36	Pass
A	Sitting Height	mm	772 - 788	778	Pass
B	Shoulder Pivot Height	mm	437 - 453	443	Pass
C	H-Point Height	mm	79 - 89	85	Pass
D	H-Point from Seatback	mm	141 - 151	144	Pass
E	Shoulder Pivot from Backline	mm	97 - 107	102	Pass
F	Thigh Clearance	mm	119 - 135	128	Pass
G	Head Breadth	mm	140 - 148	145	Pass
H	Head Back from Backline	mm	40 - 46	43	Pass
I	Head Depth	mm	178 - 188	185	Pass
J	Head Circumference	mm	541 - 551	546	Pass
K	Buttock to Knee Length	mm	514 - 540	525	Pass
L	Popliteal Height	mm	343 - 369	351	Pass
M	Knee Pivot to Floor Height	mm	392 - 409	400	Pass
N	Buttock Popliteal Length	mm	416 - 442	432	Pass
O	Chest Depth w/o Jacket	mm	195 - 211	205	Pass
P	Foot Length	mm	216 - 232	223	Pass
Q	Hip Breadth with Pelvic Plug	mm	313 - 323	319	Pass
R	Arm Length	mm	249 - 259	254	Pass
S	Knee Joint to Seatback	mm	477 - 493	483	Pass
V	Shoulder Width	mm	341 - 357	351	Pass
W	Foot Width	mm	78 - 94	89	Pass
Y	Chest Circumference with Jacket	mm	851 - 881	872	Pass
Z	Waist Circumference	mm	760 - 791	774	Pass
Overall Test Results					Pass

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

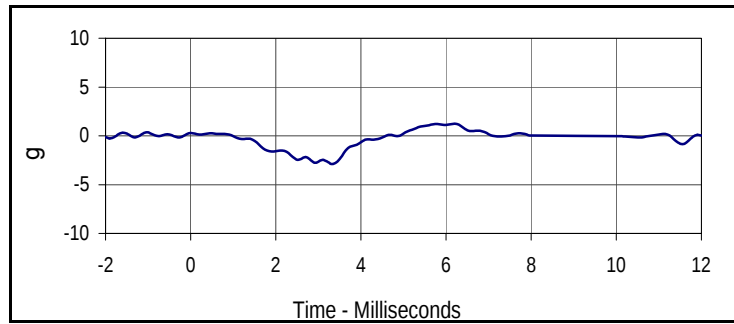
Test Date: 7/24/15
 Test I.D.: 307HD083



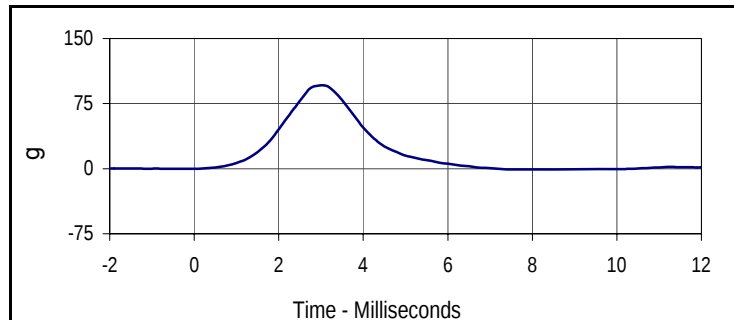
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	302	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		21.3	Pass
Humidity During Soak	Max	10.0 to 70.0	37.0	Pass
	Min		35.9	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.6	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	35.9	Pass
Peak Head Resultant Acceleration	G's	115 to 137	117.3	Pass
Peak Head X Acceleration	G's	<15	2.9	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	0.5	Pass
Overall Test Results				Pass



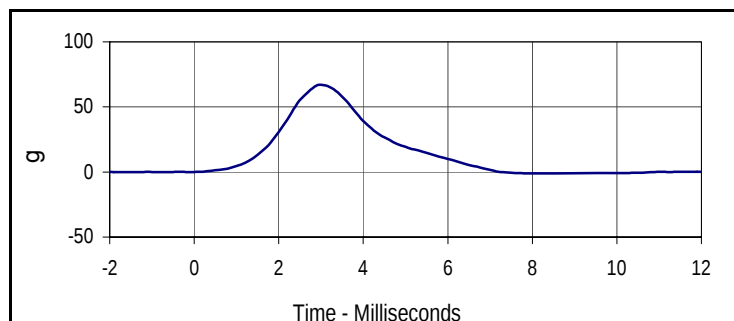
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
117.3	3.0	0.0	-0.7



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	g
Max	Time	Min	Time
1.2	6.2	-2.9	3.3



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
96.2	3.0	-1.0	7.6



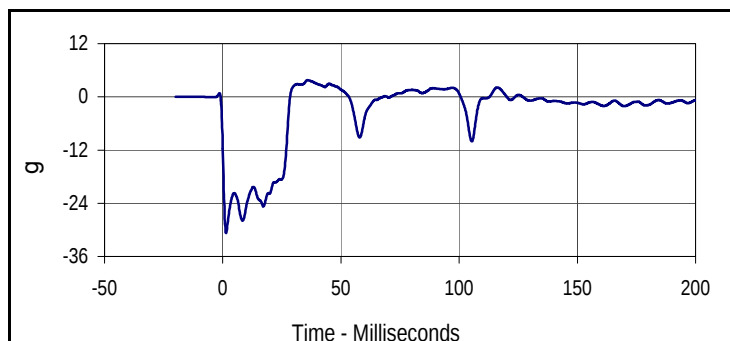
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
67.1	3.0	-1.0	7.9

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

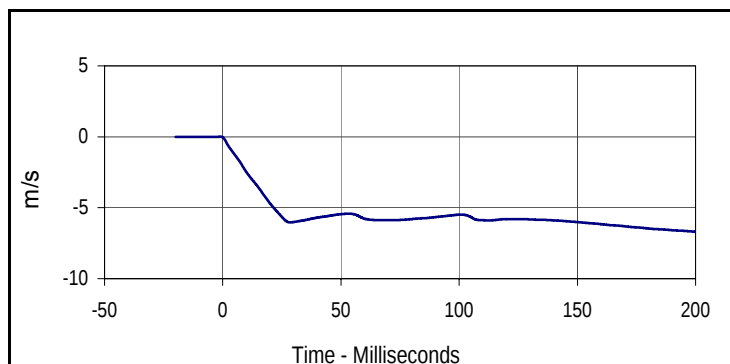
Test Date: 7/24/15
 Test I.D.: 307NB083



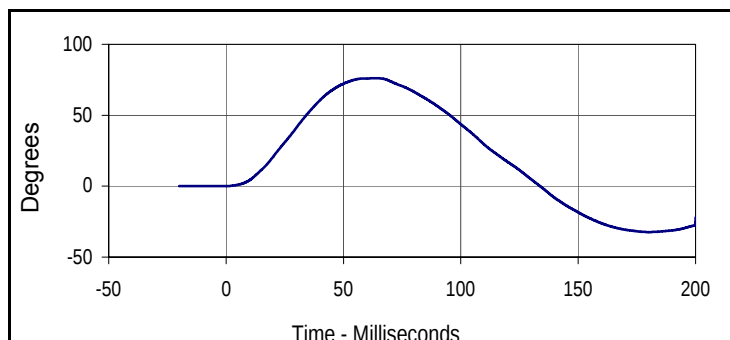
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	347	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.3	Pass
Humidity During Soak	Max	10.0 to 70.0	37.0	Pass
	Min		35.9	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	36.0	Pass
Pendulum Velocity	m/s	5.51 to 5.63	5.56	Pass
Pendulum Deceleration	10 msec	-2.20 to -2.80	-2.49	Pass
	15 msec	-3.30 to -4.10	-3.55	Pass
	20 msec	-4.40 to -5.40	-4.69	Pass
	25 msec	-5.40 to -6.10	-5.64	Pass
	25-100 msec	-5.50 to -6.20	-6.03	Pass
D-Plane Rotation	Max	71 to 81	76.0	Pass
	Time	50 to 70	63.8	Pass
Peak Occipital Condyle Moment	Nm	-36 to -44	-38.5	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
Max	Time	Min	Time
3.8	0.0	-30.8	0.0



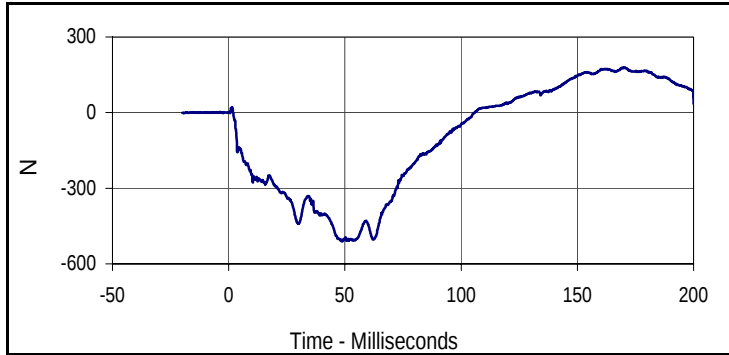
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.9	-6.7	200.0



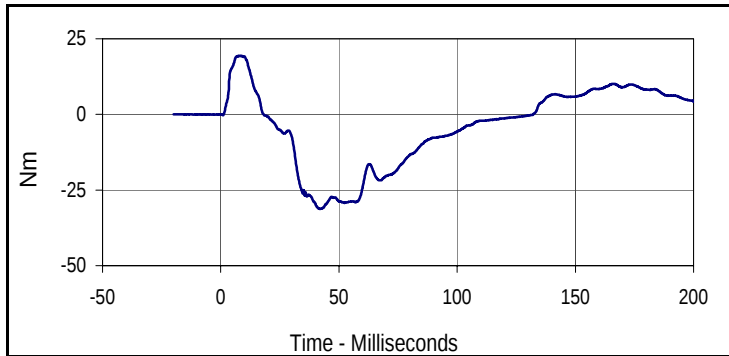
Curve Description			
D-Plane Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
76.0	63.8	-32.3	180.1

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

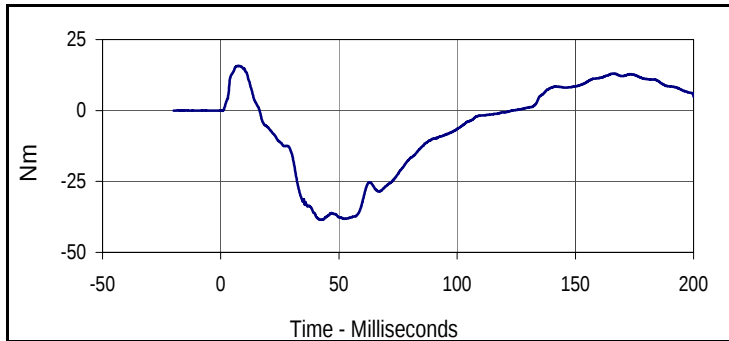
Test Date: 7/24/15
 Test I.D.: 307NB083



Curve Description			
Neck Force Y			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
179.2	170.4	-511.2	48.7



Curve Description			
Neck Moment X			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
19.4	7.5	-31.2	42.0



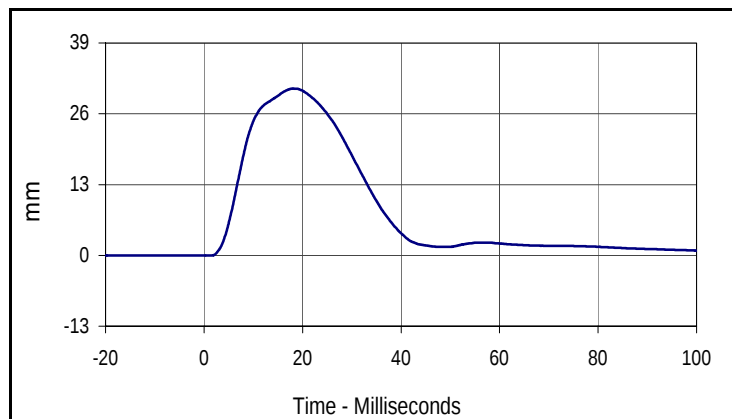
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
006	FIL	600	Nm
Max	Time	Min	Time
15.7	7.5	-38.5	42.1

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

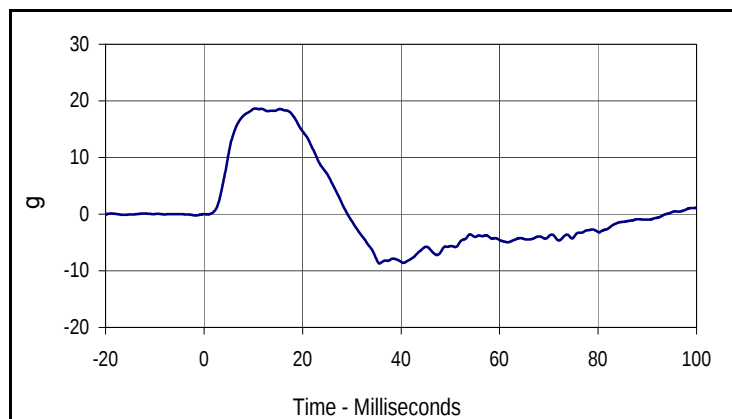
Test Date: 7/24/15
 Test I.D.: 307SH083



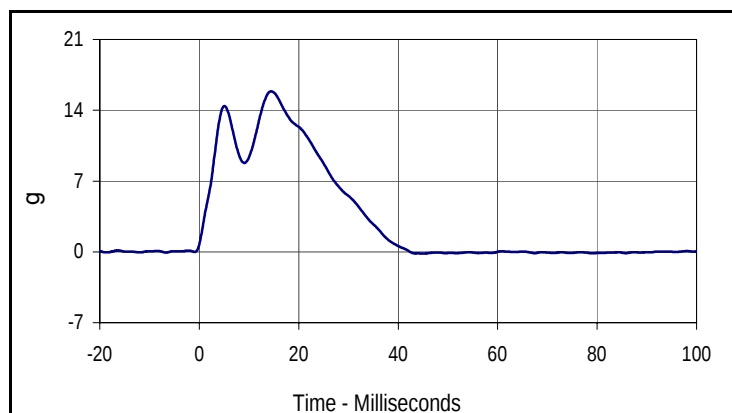
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	402	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.6	Pass
	Min	°C		21.3	Pass
Humidity During Soak	Max	%	10.0 to 70.0	37.0	Pass
	Min	%		35.9	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	36.1	Pass
Impactor Velocity		m/s	4.20 to 4.40	4.31	Pass
Peak Shoulder Deflection		mm	28 to 37	30.6	Pass
Peak Lateral Spine Acceleration Y		G's	17 to 22	18.6	Pass
Peak Impactor Acceleration		G's	13 to 18	15.9	Pass
Overall Test Results					Pass



Curve Description			
Shoulder Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
30.6	18.1	0.0	-7.1



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
18.6	10.4	-8.7	35.6



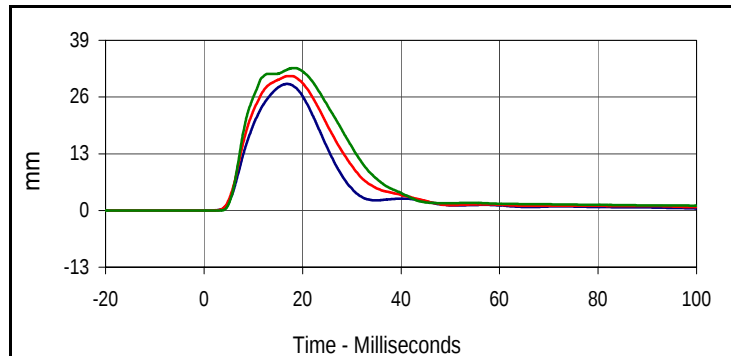
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
15.9	14.5	-0.2	45.0

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

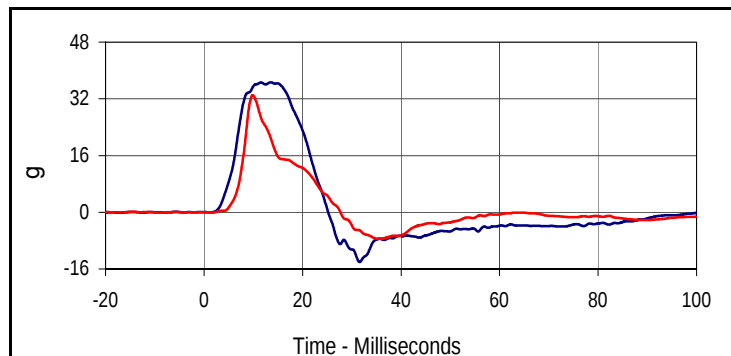
Test Date: 7/24/15
 Test I.D.: 307TWA083



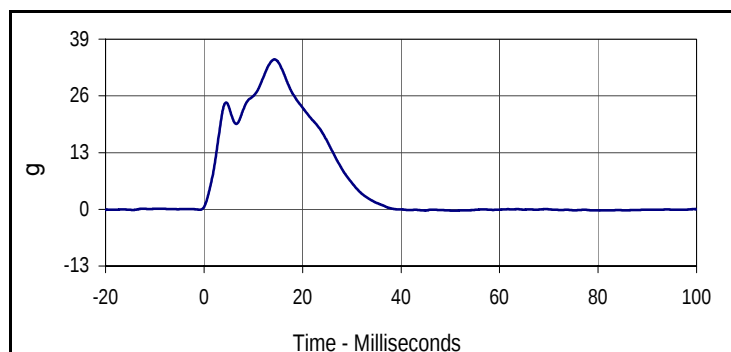
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	447	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.3	Pass
Humidity During Soak	Max	10.0 to 70.0	37.0	Pass
	Min		35.9	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	36.0	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.71	Pass
Peak Shoulder Deflection	mm	31 to 40	36.4	Pass
Peak Upper Thorax Rib Deflection	mm	25 to 32	29.0	Pass
Peak Middle Thorax Rib Deflection	mm	30 to 36	30.8	Pass
Peak Lower Thorax Rib Deflection	mm	32 to 38	32.6	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	36.7	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	33.0	Pass
Peak Impactor Acceleration	G's	30 to 36	34.4	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
29.0	16.9	0.0	-14.8
Middle Thorax Deflection			
Max	Time	Min	Time
30.8	17.4	0.0	-17.6
Lower Thorax Deflection			
Max	Time	Min	Time
32.6	18.4	0.0	-13.8



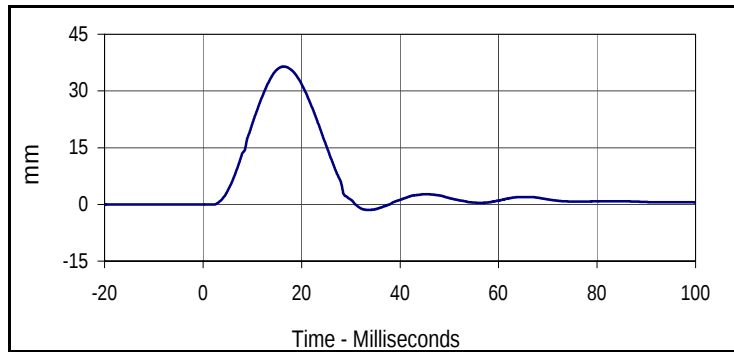
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
36.7	13.5	-14.0	31.6
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	g
Max	Time	Min	Time
33.0	9.9	-7.5	35.6



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	g
Max	Time	Min	Time
34.4	14.3	-0.3	50.7

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

Test Date: 7/24/15
 Test I.D.: 307TWA083



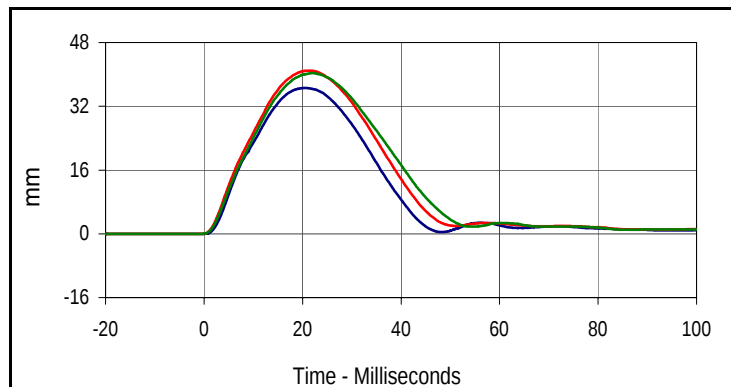
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	mm
Max	Time	Min	Time
36.4	16.4	-1.4	33.2

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

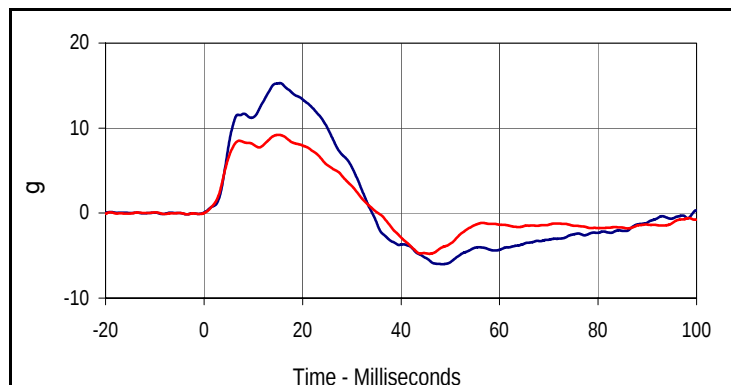
Test Date: 7/24/15
 Test I.D.: 307TWOA083



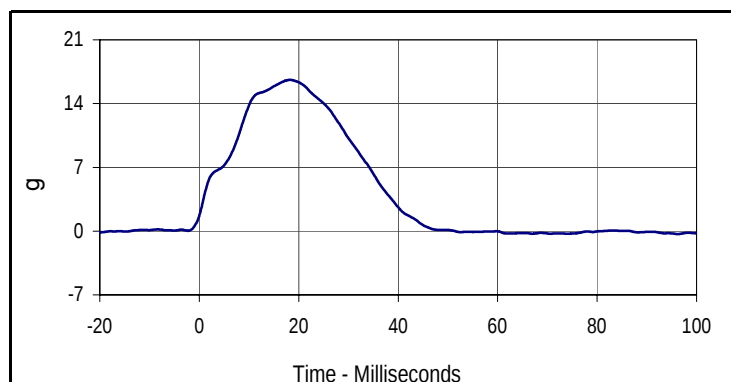
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	502	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.6	Pass
	Min	°C		21.3	Pass
Humidity During Soak	Max	%	10.0 to 70.0	37.0	Pass
	Min	%		35.9	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	36.0	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.30	Pass
Peak Upper Thorax Rib Deflection		mm	32 to 40	36.6	Pass
Peak Middle Thorax Rib Deflection		mm	39 to 45	41.0	Pass
Peak Lower Thorax Rib Deflection		mm	35 to 43	40.3	Pass
Peak Upper Spine Y Acceleration		G's	13 to 17	15.3	Pass
Peak Lower Spine Y Acceleration		G's	7 to 11	9.2	Pass
Peak Impactor Acceleration		G's	14 to 18	16.6	Pass
Overall Test Results				Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
36.6	20.4	0.0	-20.0
Middle Thorax Deflection			
Max	Time	Min	Time
41.0	21.3	0.0	-17.0
Lower Thorax Deflection			
Max	Time	Min	Time
40.3	22.0	0.0	-16.9



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
15.3	15.4	-6.0	48.4
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	g
Max	Time	Min	Time
9.2	15.1	-4.8	45.8



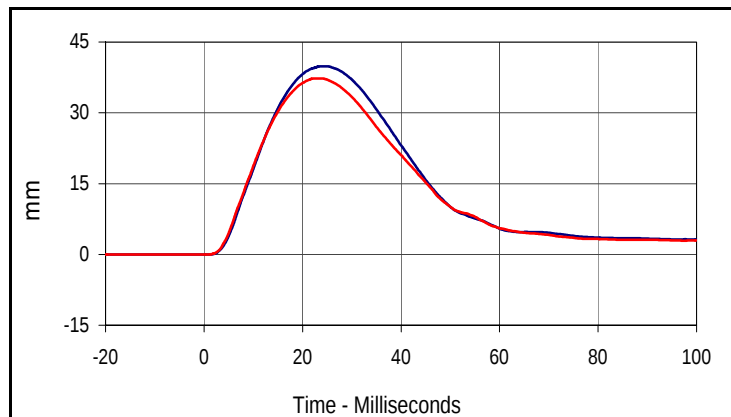
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	g
Max	Time	Min	Time
16.6	18.3	-0.3	96.2

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

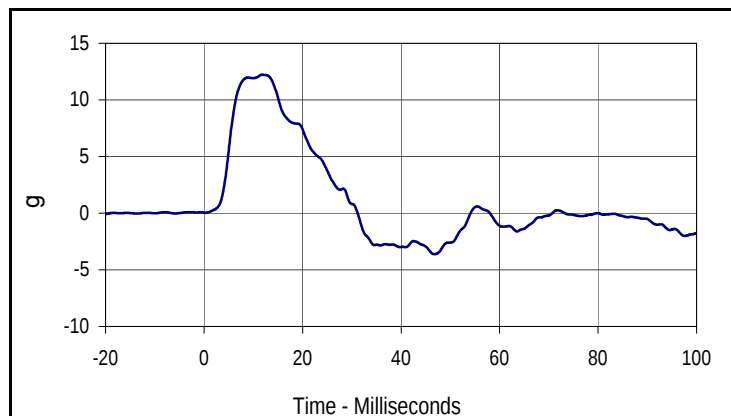
Test Date: 7/24/15
 Test I.D.: 307ABD083



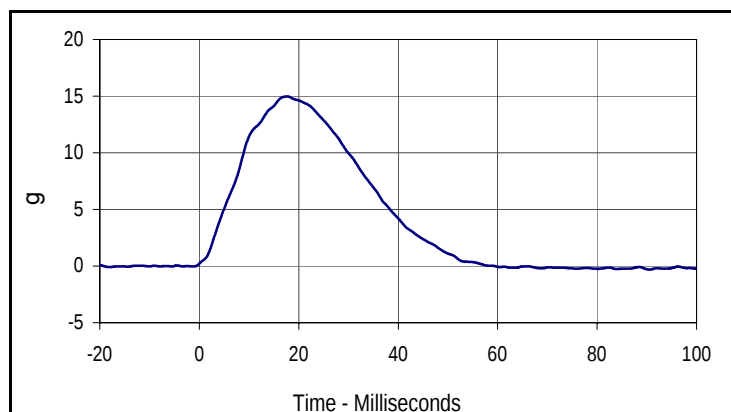
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	557	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.3	Pass
Humidity During Soak	Max	10.0 to 70.0	37.0	Pass
	Min		35.9	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	36.2	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.31	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	39.9	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	37.3	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	12.2	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
39.9	24.3	0.0	-10.5
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	mm
Max	Time	Min	Time
37.3	23.3	0.0	-2.2

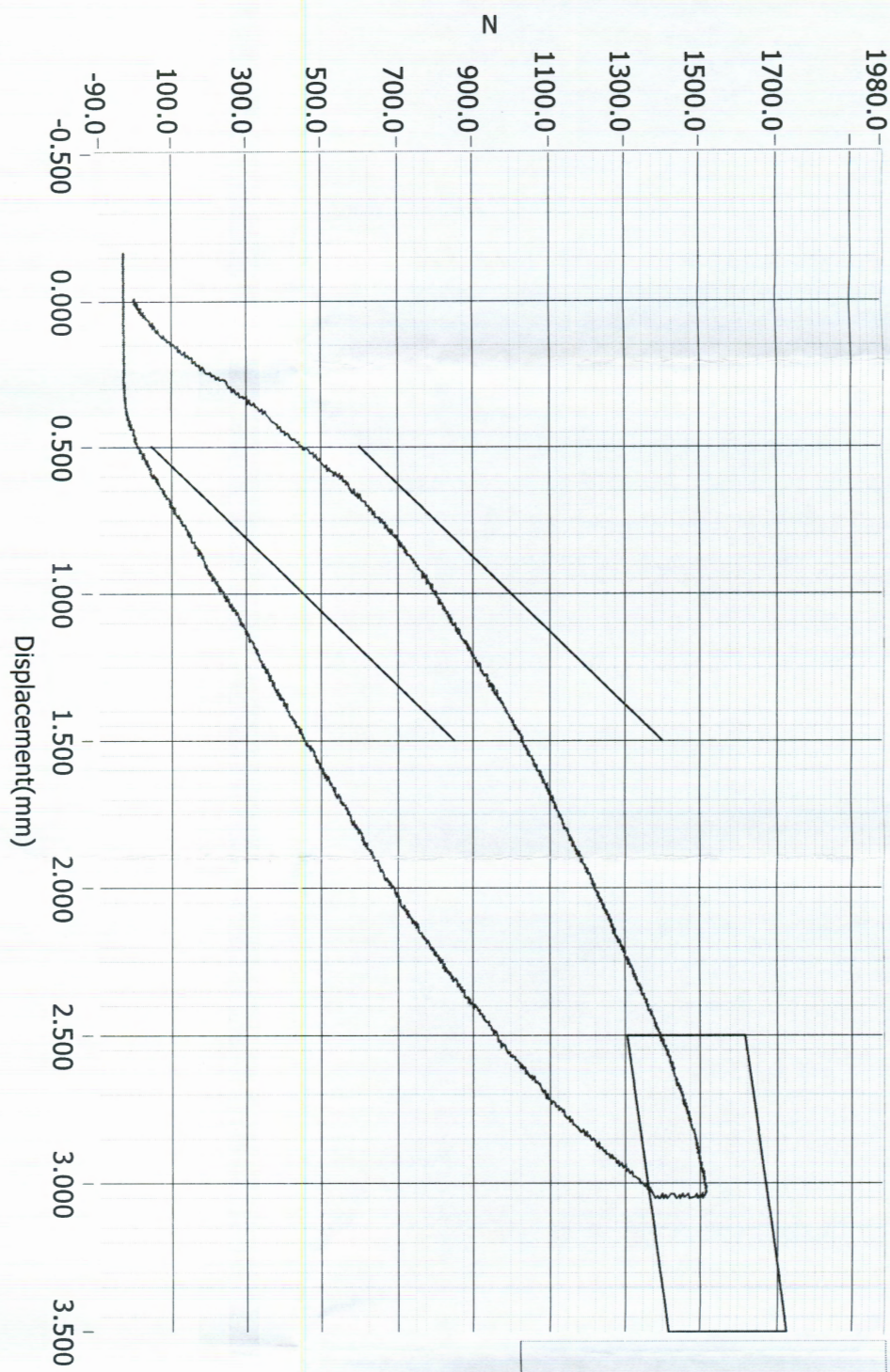


Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
12.2	11.8	-3.6	46.8



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
15.0	17.6	-0.3	90.5

Resultant Data - SIDIIs Plug Compression



1510N

ATD Calibration Lab

020154300 Pre Test

Test ID	Part Serial Number	Test Date	Test Time
	70940	12/13/2013	8:43 PM
Cert ID	ATD Serial Number	ATD Type	
	N/A	SIDIIs	

Current Date : 12/13/2013

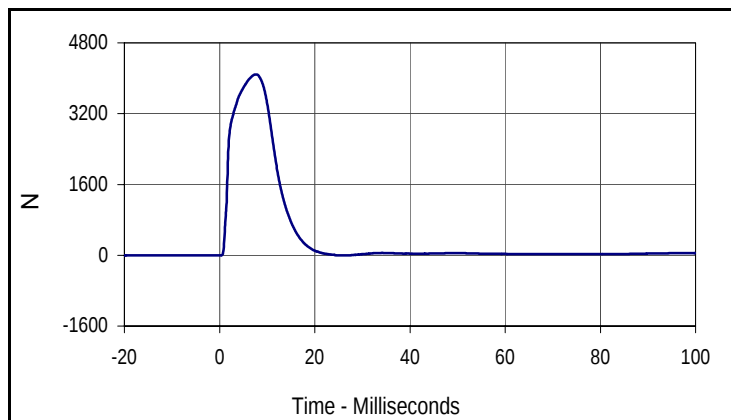
Current Time : 20:44:23

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

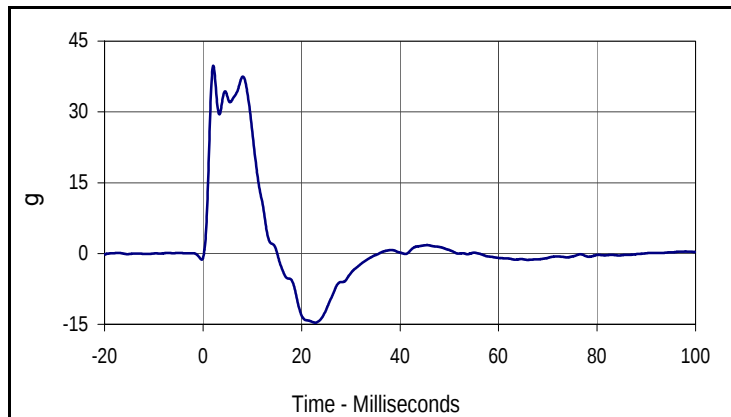
Test Date: 7/24/15
 Test I.D.: 307ACET083



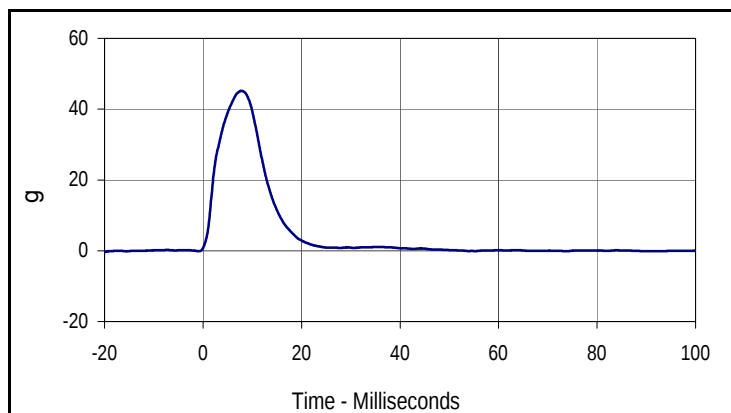
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	607	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.3	Pass
Humidity During Soak	Max	10.0 to 70.0	37.0	Pass
	Min		35.9	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	37.0	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.72	Pass
Peak Acetabulum Force Y	Newtons	3600 to 4300	4085.9	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	37.5	Pass
Peak Impactor Acceleration	G's	38 to 47	45.1	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
4085.9	7.6	-3.4	25.6



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
39.8	2.1	-14.7	22.8



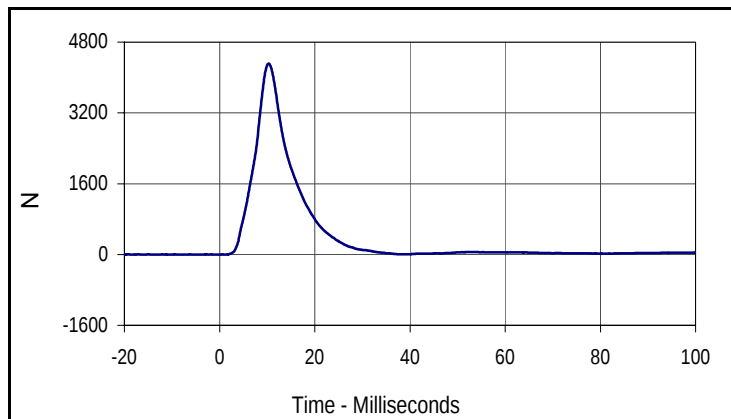
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
45.1	7.8	-0.3	-20.0

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

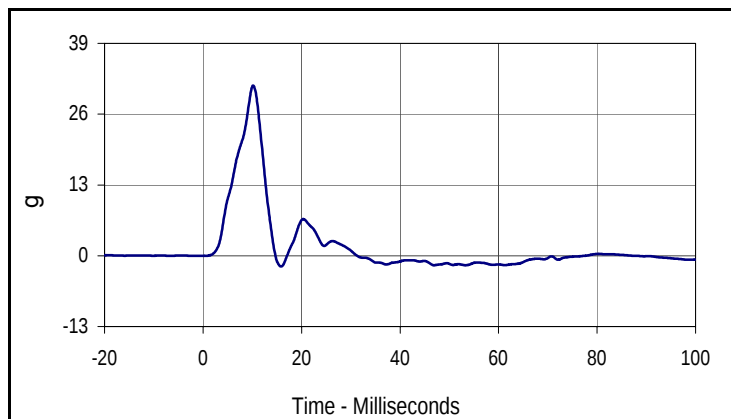
Test Date: 7/24/15
 Test I.D.: 307PL083



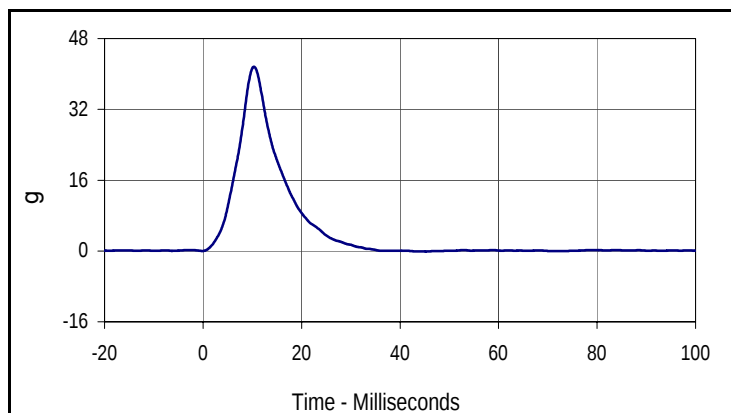
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	662	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.3	Pass
Humidity During Soak	Max	10.0 to 70.0	37.0	Pass
	Min		35.9	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	36.7	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.31	Pass
Peak Iliac Force	Newtons	4100 to 5100	4314.0	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	31.3	Pass
Peak Impactor Acceleration	G's	36 to 45	41.6	Pass
Overall Test Results				Pass



Curve Description			
Pelvis Iliac Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
4314.0	10.3	-1.4	-13.3



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
31.3	10.2	-2.0	15.8



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
41.6	10.3	-0.1	45.2

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

Test Program: ES2re External Measurements
 ATD Serial No.: F037

Test Date: 7/30/15
 Test I.D.: N/A



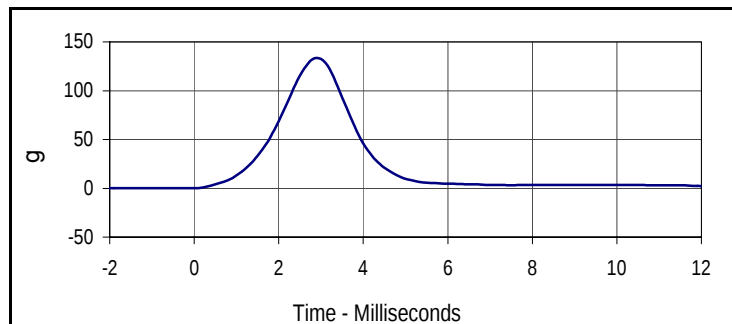
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	30.0	Pass
1	Sitting Height	mm	900 - 918	909	Pass
2	Seat to Shoulder Joint	mm	558 - 572	564	Pass
3	Seat to Lower Face of Thoracic Spine Box	mm	346 - 356	350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

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

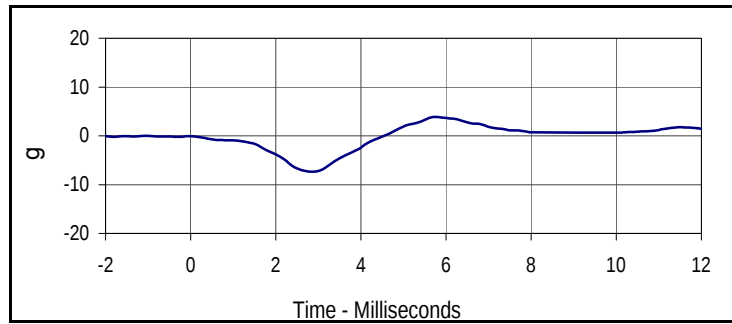
Test Date: 7/30/15
 Test I.D.: F037HD075



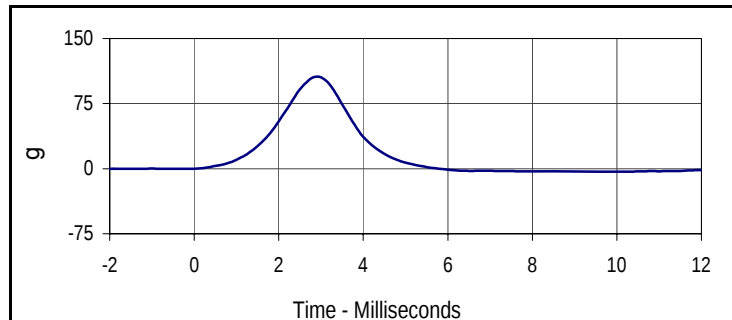
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	310	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	33.9	Pass
	Min		33.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	33.9	Pass
Peak Head Resultant Acceleration	G's	125 to 155	133.7	Pass
Peak Head X Acceleration	G's	≤15	7.4	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	0.2	Pass
Overall Test Results				Pass



Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
133.7	2.9	0.0	-4.2



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	g
Max	Time	Min	Time
3.9	5.7	-7.4	2.9



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
106.1	2.9	-3.4	10.2



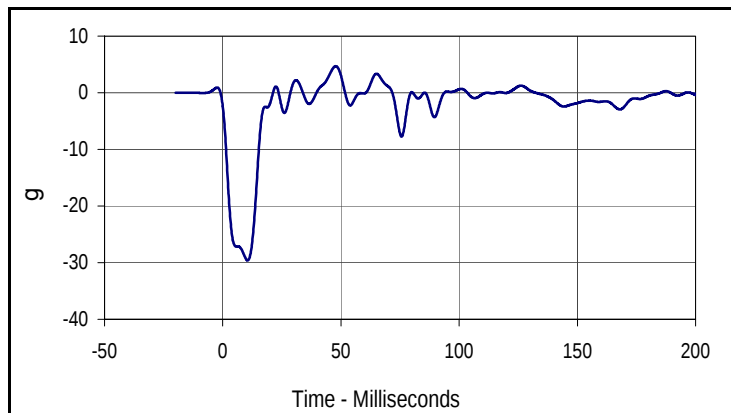
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
81.1	2.9	-0.3	-17.2

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

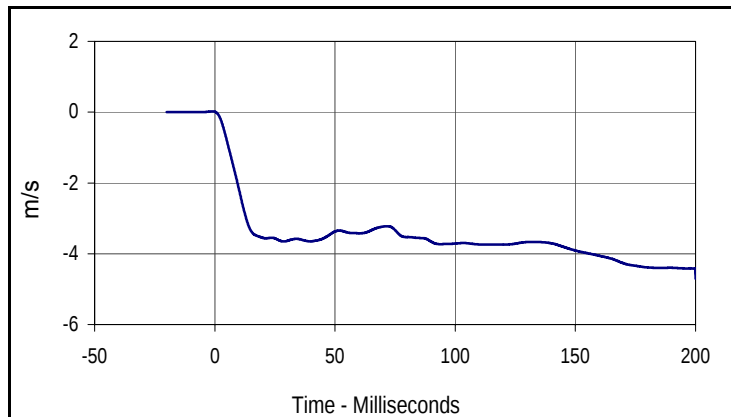
Test Date: 7/30/15
 Test I.D.: F037NB075



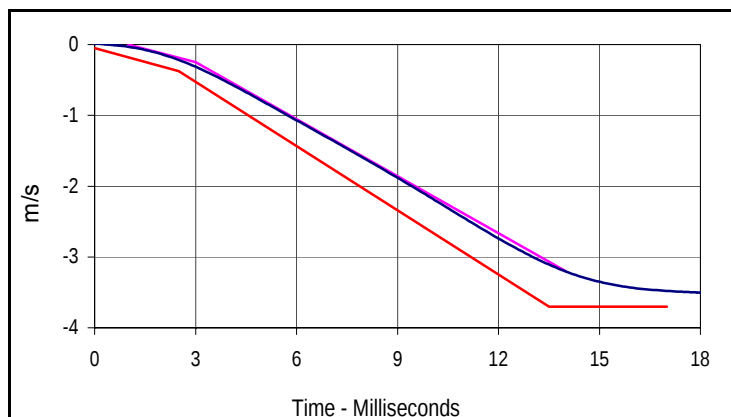
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	345	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	33.9	Pass
	Min		33.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	33.8	Pass
Pendulum Velocity	m/s	3.3 to 3.5	3.41	Pass
Headform Flexion	Max	49 to 59	53.5	Pass
	Time	54 to 66	60.4	Pass
Headform Flexion Decay (Peak to Zero)	msec	53 to 88	61.8	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	g
Max	Time	Min	Time
4.7	47.8	-29.6	10.5



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.0	-4.7	200.0



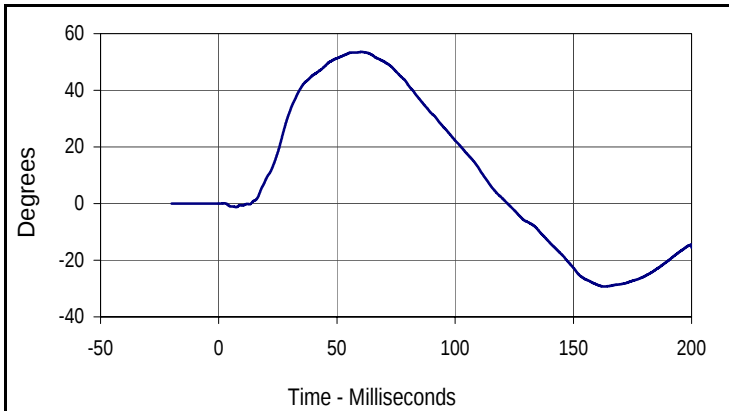
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.0	-4.7	200.0

Velocity Corridors

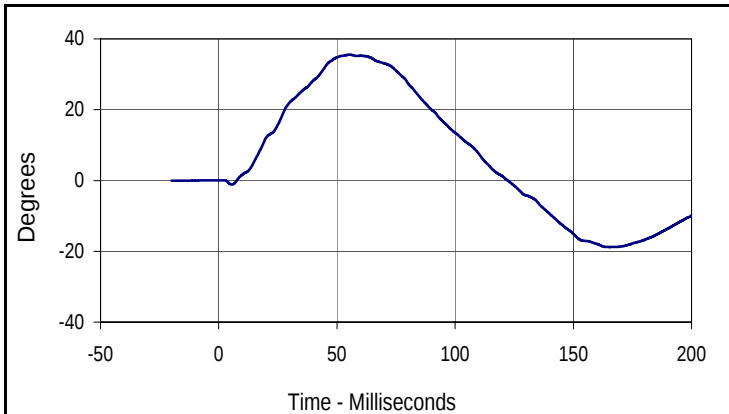
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.0	-0.03	2.5	-0.375
14.0	-3.20	13.5	-3.70
		17.0	-3.70

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

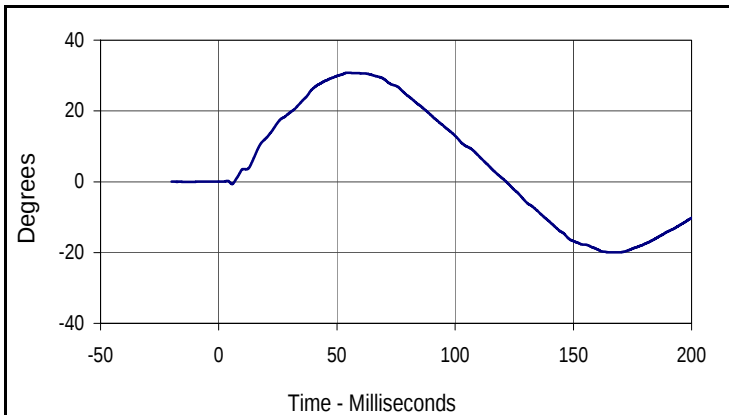
Test Date: 7/30/15
 Test I.D.: F037NB075



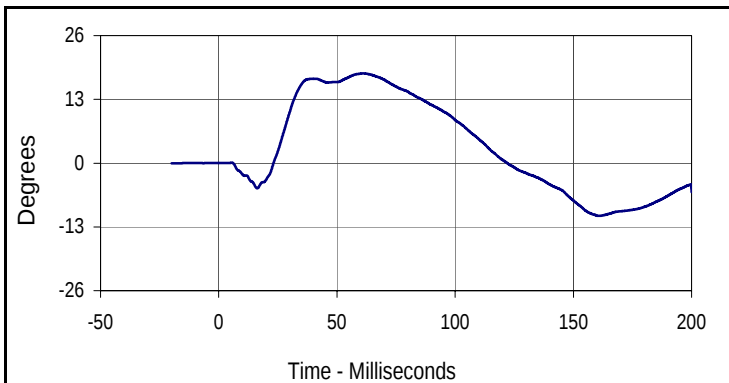
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
53.5	60.4	-29.3	163.1



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
35.6	55.4	-18.8	165.3



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
30.8	54.8	-20.0	165.0



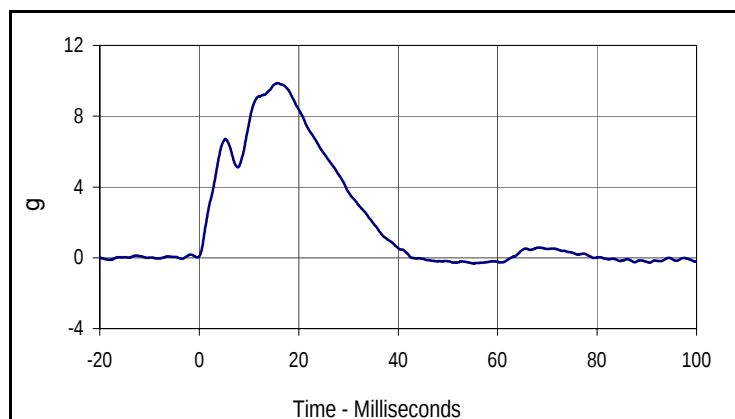
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
18.3	60.8	-10.8	160.8

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

Test Date: 7/30/15
 Test I.D.: F037SH075



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	410	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	33.9	Pass
	Min		33.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	33.7	Pass
Pendulum Speed	m/s	4.2 to 4.4	4.32	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	9.9	Pass
Overall Test Results			Pass	



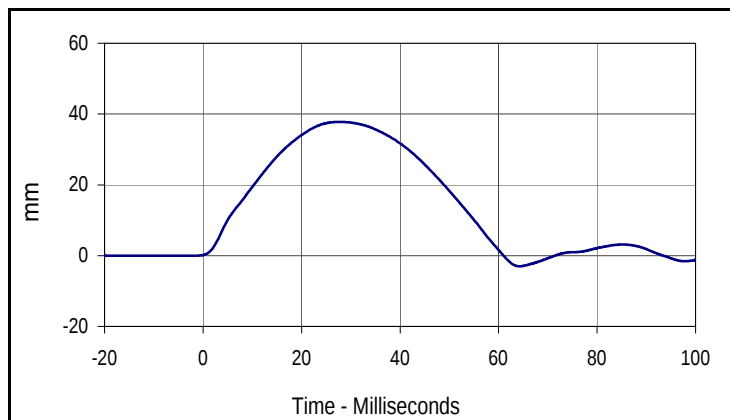
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	g
Max	Time	Min	Time
9.9	15.8	-0.3	55.1

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

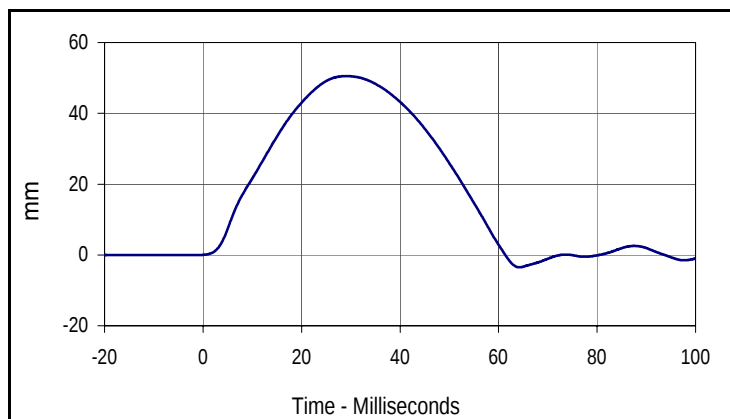
Test Date: 7/30/15
 Test I.D.: F037RB1075



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	465	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	33.9	Pass
	Min		33.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	33.0	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	37.8	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	50.5	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
37.8	27.8	-3.0	64.2



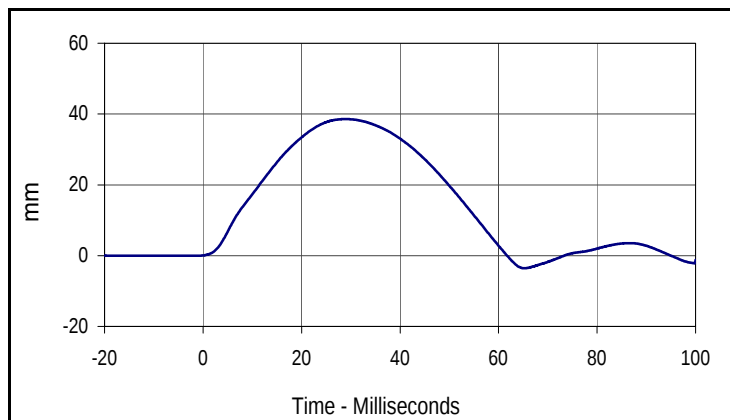
Curve Description			
Upper Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max	Time	Min	Time
50.5	29.1	-3.5	64.2

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

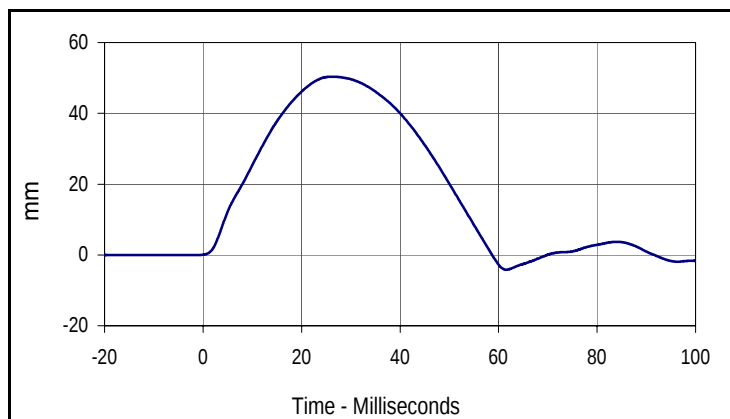
Test Date: 7/30/15
 Test I.D.: F037RB2075



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	510	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	33.9	Pass
	Min		33.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	33.1	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	50.4	Pass
Overall Test Results			Pass	



Curve Description			
Middle Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	mm
Max	Time	Min	Time
38.6	28.9	-3.6	65.3



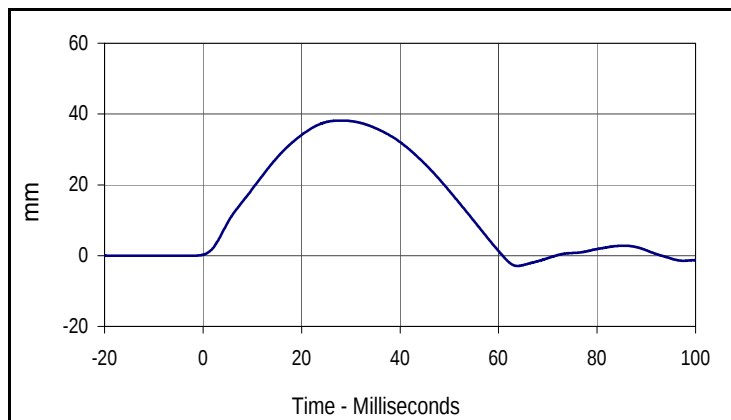
Curve Description			
Middle Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max	Time	Min	Time
50.4	26.3	-4.2	61.6

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

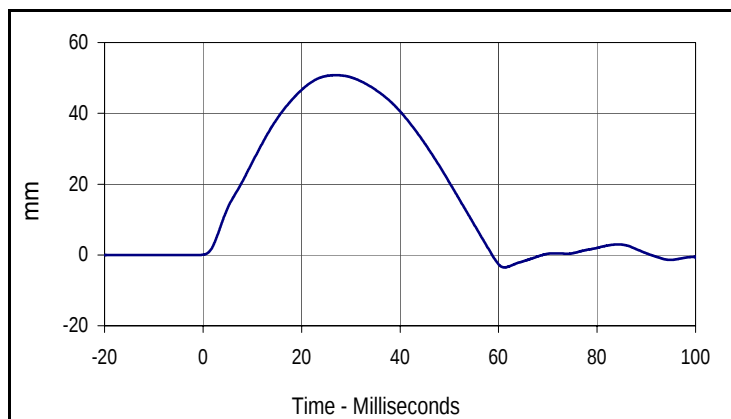
Test Date: 7/30/15
 Test I.D.: F037RB3075



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	555	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	33.9	Pass
	Min		33.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	33.5	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	38.2	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	50.8	Pass
Overall Test Results				Pass



Curve Description			
Lower Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	mm
Max	Time	Min	Time
38.2	28.0	-2.9	63.8



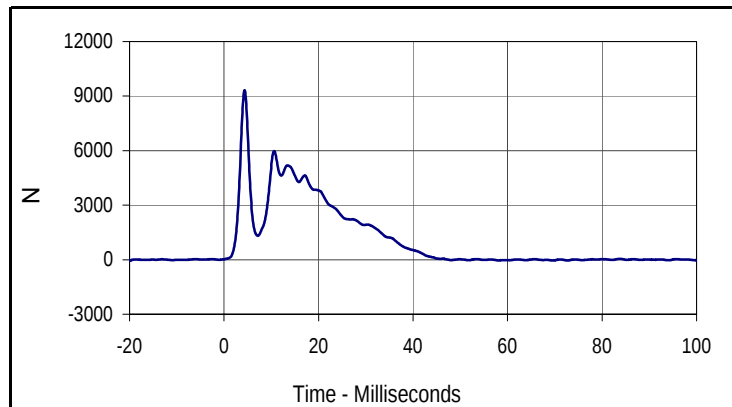
Curve Description			
Lower Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max	Time	Min	Time
50.8	27.0	-3.5	61.2

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

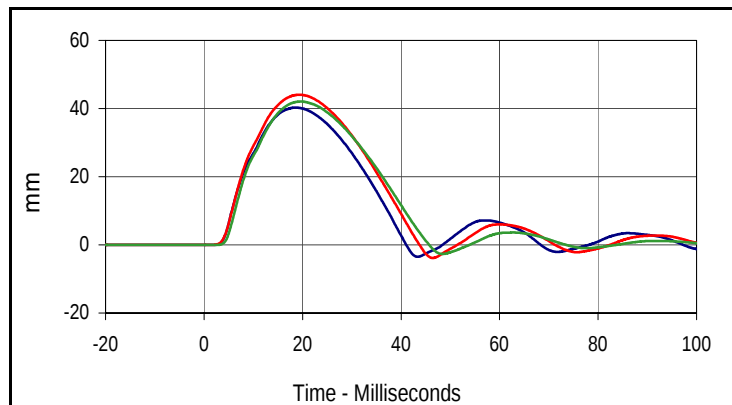
Test Date: 7/30/15
 Test I.D.: F037TH075



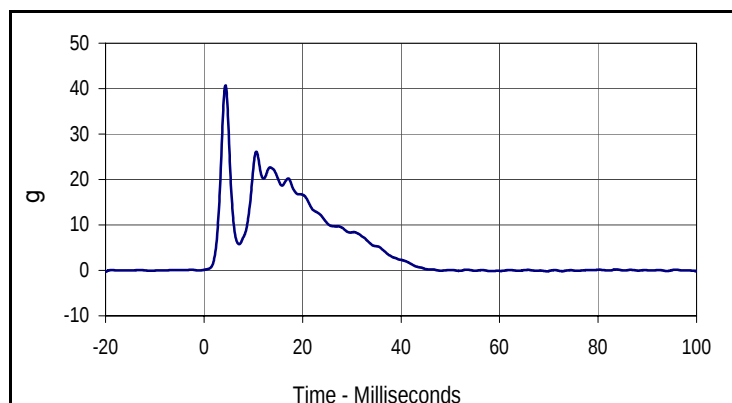
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	600	Pass
Temperature During Soak	Max °C	20.6 to 22.2	21.3	Pass
	Min °C		21.1	Pass
Humidity During Soak	Max %	10.0 to 70.0	33.9	Pass
	Min %		33.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	33.3	Pass
Peak Impactor Velocity	m/s	5.4 to 5.6	5.53	Pass
Peak Impactor Force	N	5100 to 6200	5978.0	Pass
	msec	> 6.0 msec	10.6	Pass
Peak Upper Rib Deflection	mm	34 to 41	40.3	Pass
Peak Middle Rib Deflection	mm	37 to 45	44.0	Pass
Peak Lower Rib Deflection	mm	37 to 44	42.1	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	N
Max	Time	Min	Time
9318.2	4.4	-61.8	-20.0



Curve Description			
Upper, Middle, Lower Rib Deflections			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max (Upper)	Time	Min (Upper)	Time
40.3	18.6	-3.5	43.4
Max (Middle)	Time	Min (Middle)	Time
44.0	19.3	-3.8	46.4
Max (Lower)	Time	Min (Lower)	Time
42.1	19.6	-2.7	48.4



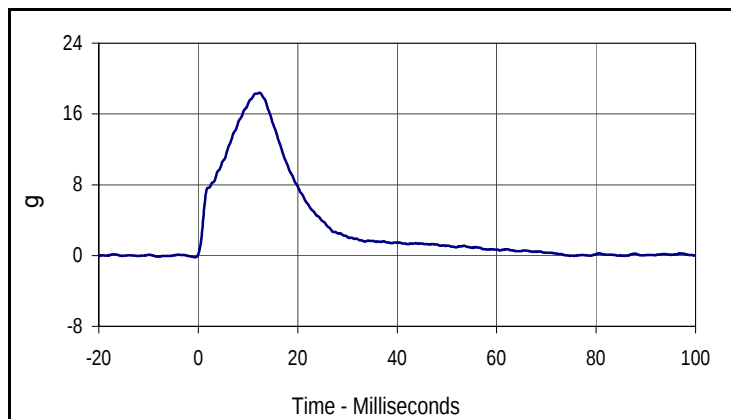
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
40.7	4.4	-0.3	-20.0

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

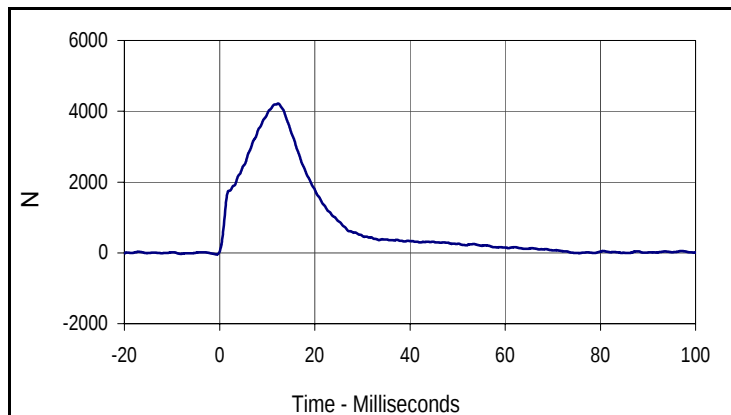
Test Date: 7/30/15
 Test I.D.: F037ABD075



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	670	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	33.9	Pass
	Min		33.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	33.7	Pass
Probe Velocity	m/s	3.9 to 4.1	4.05	Pass
Peak Impactor Force	N	4000 to 4800	4216.0	Pass
	msec	10.6 to 13.0	12.3	Pass
Sum of Abdominal Forces	N	2200 to 2700	2438.5	Pass
	msec	10.0 to 12.3	11.4	Pass
Overall Test Results				Pass



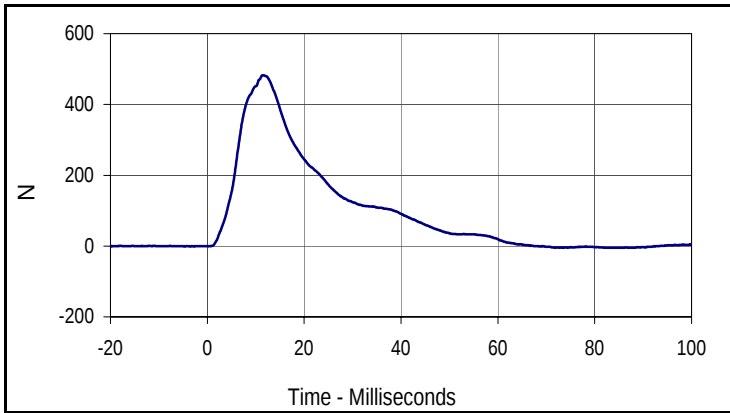
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	g
Max	Time	Min	Time
18.4	12.3	-0.2	-0.6



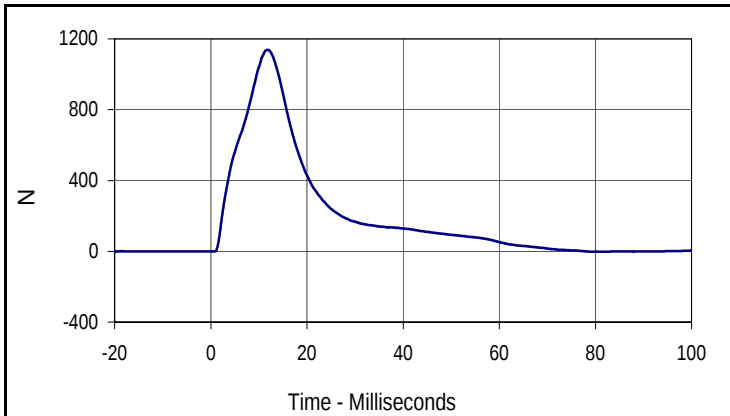
Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	N
Max	Time	Min	Time
4216.0	12.3	-43.9	-0.6

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

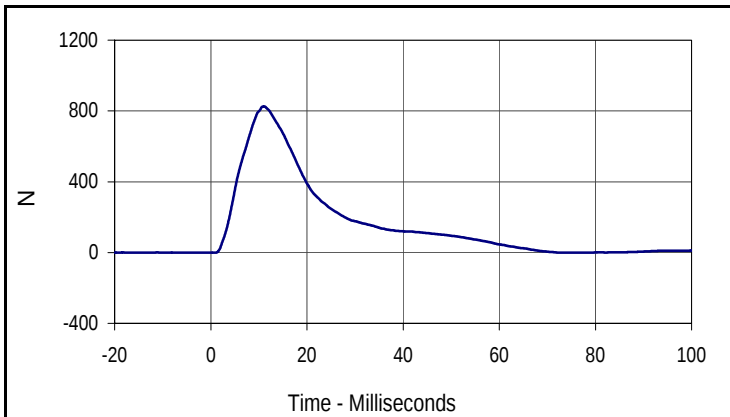
Test Date: 7/30/15
 Test I.D.: F037ABD075



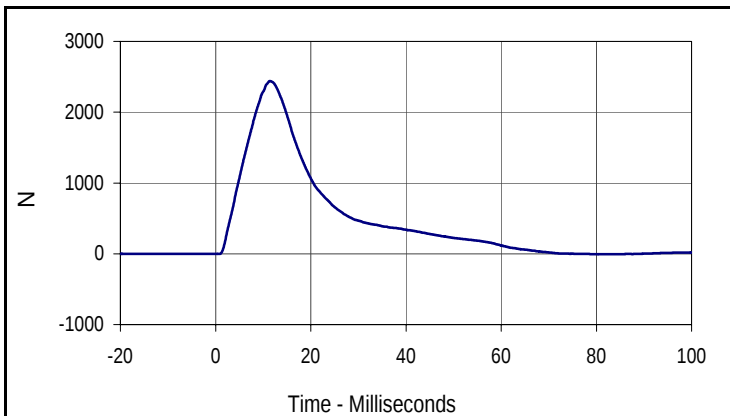
Curve Description			
Front Abdomen Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	N
Max	Time	Min	Time
482.7	11.5	-6.6	115.3



Curve Description			
Middle Abdomen Force			
Plot No.	Type	SAE Class	Units
004	FIL	600	N
Max	Time	Min	Time
1137.9	11.8	-2.8	79.6



Curve Description			
Rear Abdomen Force			
Plot No.	Type	SAE Class	Units
005	FIL	600	N
Max	Time	Min	Time
825.2	11.2	-1.1	75.1



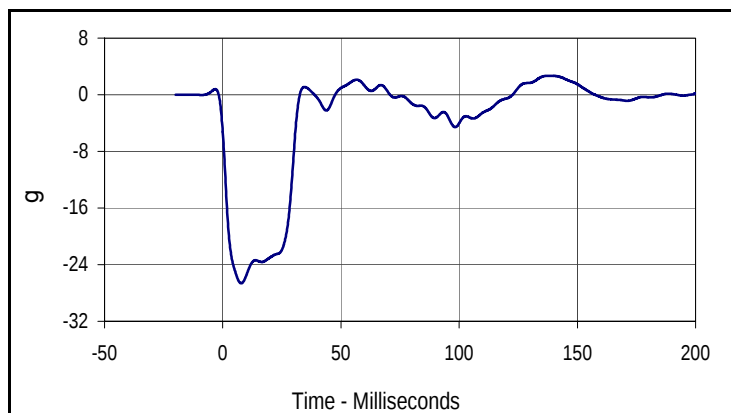
Curve Description			
Abdomen Sum Resultant			
Plot No.	Type	SAE Class	Units
006	RES	600	N
Max	Time	Min	Time
2438.5	11.4	-6.5	82.5

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

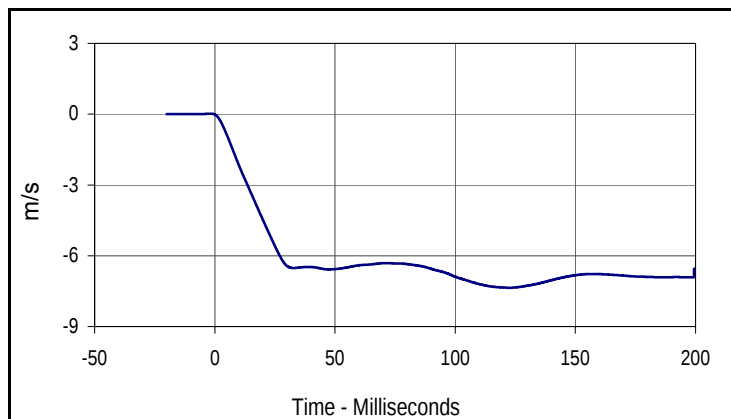
Test Date: 7/30/15
 Test I.D.: F037LB075



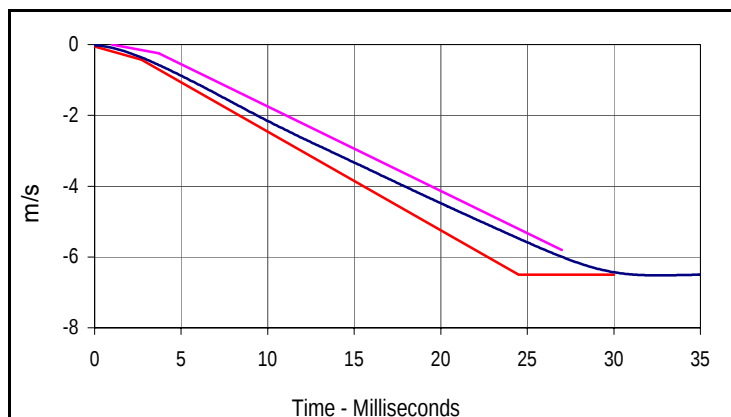
Tested Parameter	Units	Specification	Result	Pass/Fail
Lumbar Spine Assembly Soak Time	Minutes	≥240	745	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	33.9	Pass
	Min		33.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	33.4	Pass
Pendulum Velocity	m/s	5.95 to 6.15	6.04	Pass
Headform Rotation	Max	45 to 55	49.6	Pass
	Time	39 to 53	42.0	Pass
Time of Decay to Zero Angle from Peak	msec	37 to 57	44.3	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	g
Max	Time	Min	Time
2.7	139.3	-26.6	8.4



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.1	-7.4	123.2



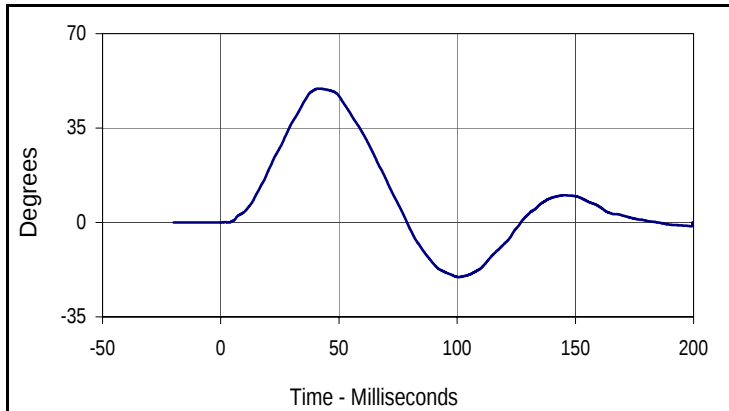
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.1	-7.4	123.2

Velocity Corridors

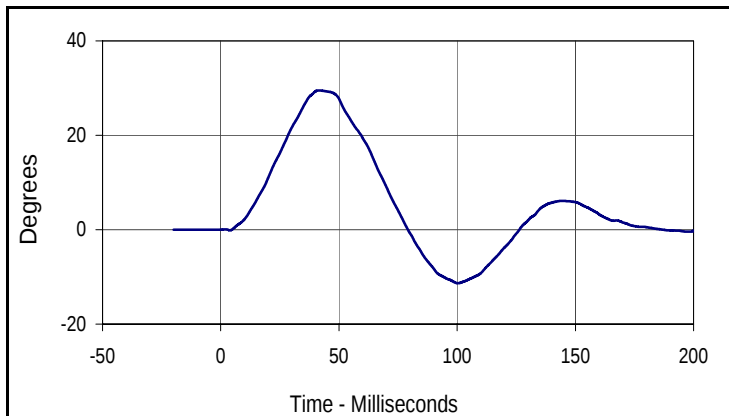
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.7	-0.24	2.7	-0.425
27.0	-5.80	24.5	-6.50
		30.0	-6.50

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

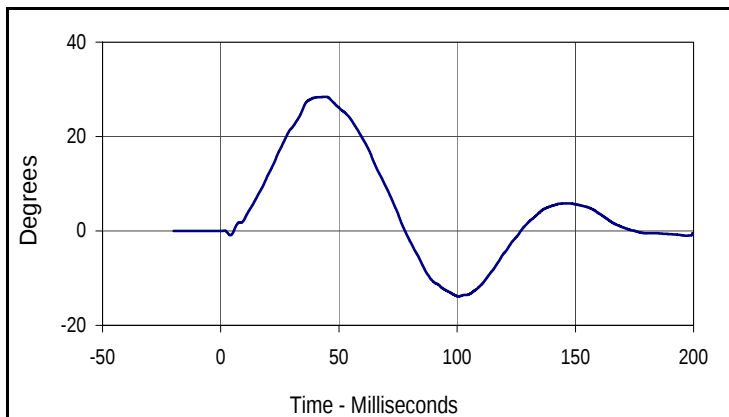
Test Date: 7/30/15
 Test I.D.: F037LB075



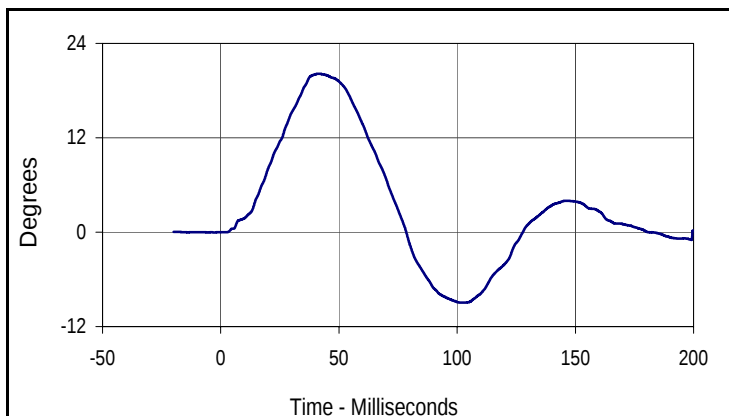
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
49.6	42.0	-20.2	101.2



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
29.5	42.0	-11.3	101.0



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
28.4	45.1	-13.9	101.1



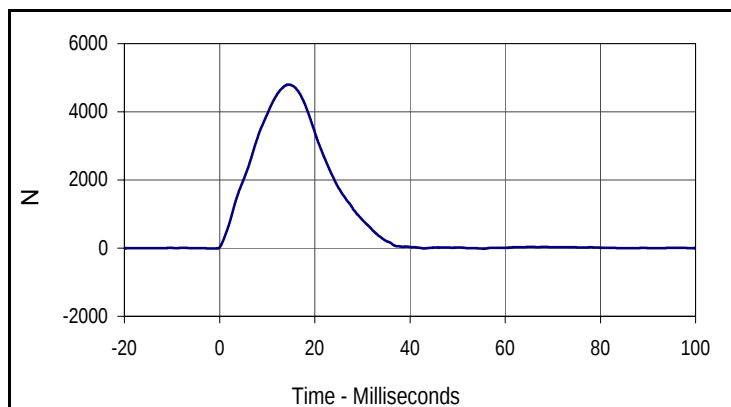
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
20.1	42.0	-8.9	104.1

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

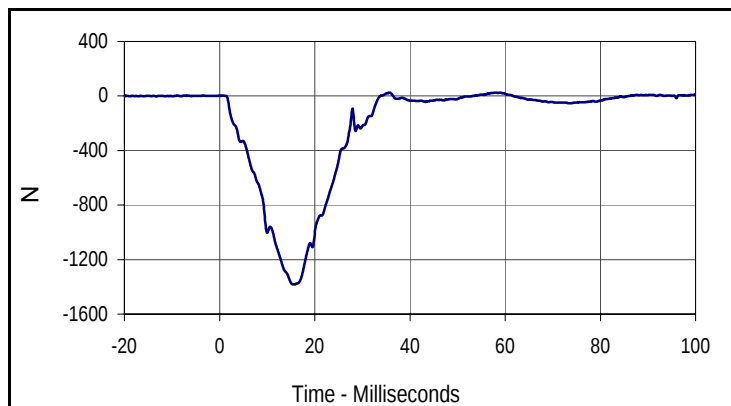
Test Date: 7/30/15
 Test I.D.: F037PL075



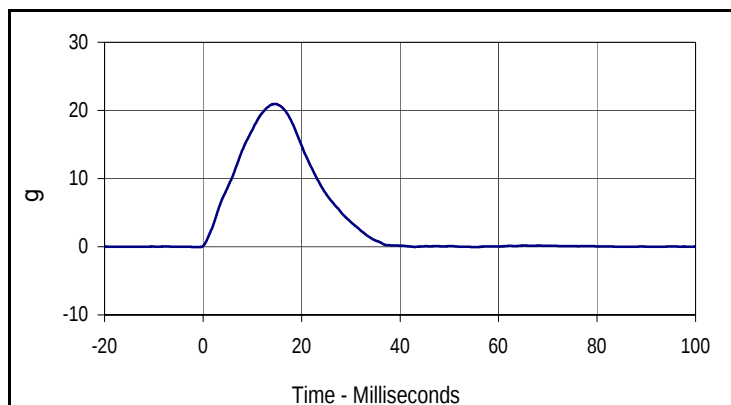
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	800	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	33.9	Pass
	Min		33.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	33.0	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.33	Pass
Peak Impactor Force	N	4700 to 5400	4799.9	Pass
	msec	11.8 to 16.1	14.6	Pass
Peak Pubic Symphysis Load	N	-1230 to -1590	-1382.1	Pass
	msec	12.2 to 17.0	15.5	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	N
Max	Time	Min	Time
4799.9	14.6	-15.8	55.4



Curve Description			
Pubic Symphysis Force Y			
Plot No.	Type	SAE Class	Units
002	FIL	600	N
Max	Time	Min	Time
24.7	57.9	-1382.1	15.5



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
21.0	14.6	-0.1	55.4

Test Program: SID IIs External Measurements
 ATD Serial No.: 307

Test Date: 7/31/15
 Test I.D.: N/A



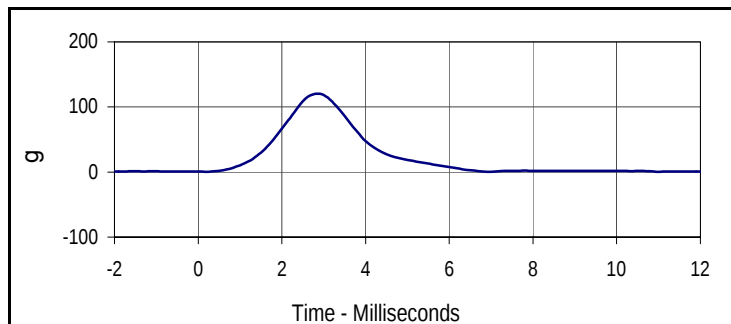
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity		%	10 to 70	32	Pass
A	Sitting Height	mm	772 - 788	778	Pass
B	Shoulder Pivot Height	mm	437 - 453	443	Pass
C	H-Point Height	mm	79 - 89	85	Pass
D	H-Point from Seatback	mm	141 - 151	144	Pass
E	Shoulder Pivot from Backline	mm	97 - 107	102	Pass
F	Thigh Clearance	mm	119 - 135	128	Pass
G	Head Breadth	mm	140 - 148	145	Pass
H	Head Back from Backline	mm	40 - 46	43	Pass
I	Head Depth	mm	178 - 188	185	Pass
J	Head Circumference	mm	541 - 551	546	Pass
K	Buttock to Knee Length	mm	514 - 540	525	Pass
L	Popliteal Height	mm	343 - 369	351	Pass
M	Knee Pivot to Floor Height	mm	392 - 409	400	Pass
N	Buttock Popliteal Length	mm	416 - 442	432	Pass
O	Chest Depth w/o Jacket	mm	195 - 211	205	Pass
P	Foot Length	mm	216 - 232	223	Pass
Q	Hip Breadth with Pelvic Plug	mm	313 - 323	319	Pass
R	Arm Length	mm	249 - 259	254	Pass
S	Knee Joint to Seatback	mm	477 - 493	483	Pass
V	Shoulder Width	mm	341 - 357	351	Pass
W	Foot Width	mm	78 - 94	89	Pass
Y	Chest Circumference with Jacket	mm	851 - 881	872	Pass
Z	Waist Circumference	mm	760 - 791	774	Pass
Overall Test Results					Pass

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

Test Date: 7/31/15
 Test I.D.: 307HD084



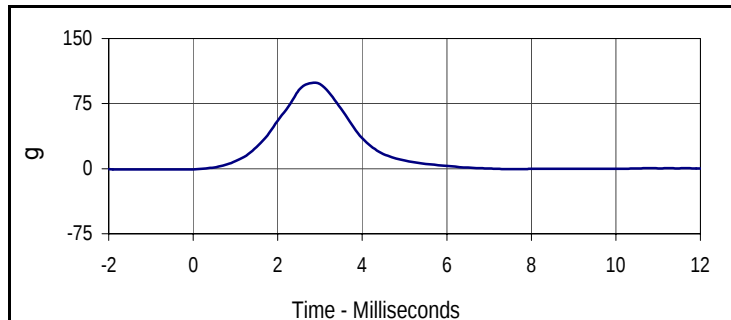
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	415	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.5	Pass
	Min	°C		21.2	Pass
Humidity During Soak	Max	%	10.0 to 70.0	32.7	Pass
	Min	%		32.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	32.4	Pass
Peak Head Resultant Acceleration		G's	115 to 137	120.4	Pass
Peak Head X Acceleration		G's	<15	2.1	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse		%	<15	1.0	Pass
Overall Test Results				Pass	



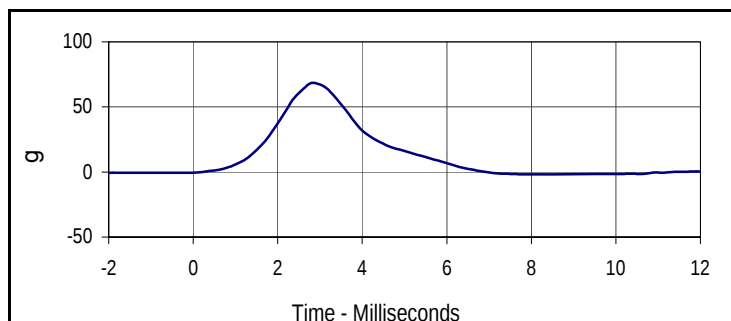
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
120.4	2.9	0.2	0.2



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	g
Max	Time	Min	Time
2.1	5.5	-1.1	2.8



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
99.2	2.9	-1.0	6.3



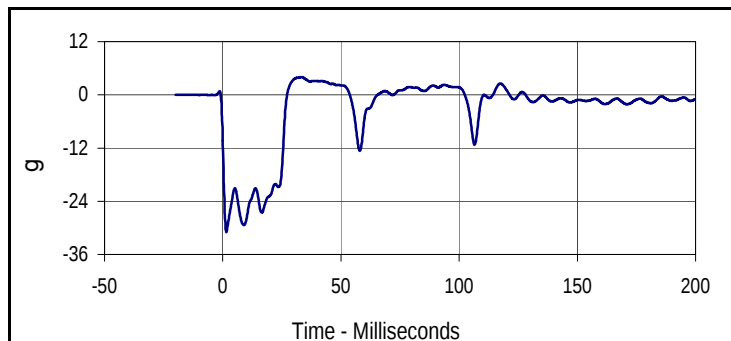
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
68.4	2.8	-1.9	7.8

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

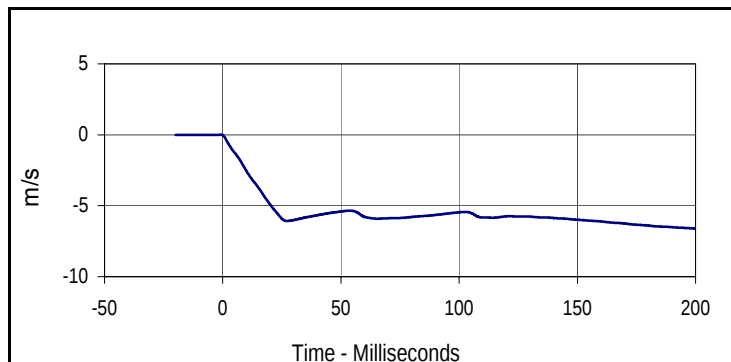
Test Date: 7/31/15
 Test I.D.: 307NB084



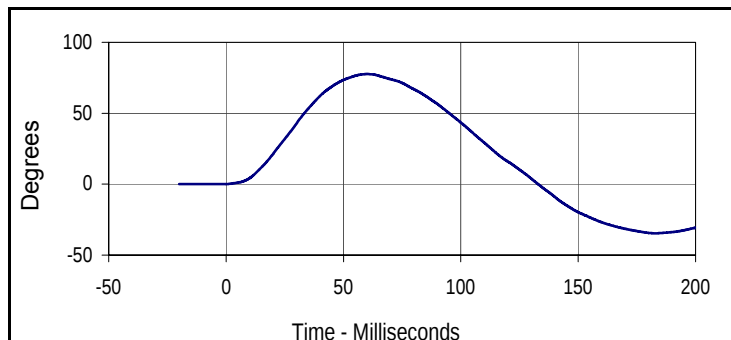
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	460	Pass
Temperature During Soak	Max	20.6 to 22.2	21.5	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	32.7	Pass
	Min		32.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.0	Pass
Pendulum Velocity	m/s	5.51 to 5.63	5.54	Pass
Pendulum Deceleration	10 msec	-2.20 to -2.80	-2.55	Pass
	15 msec	-3.30 to -4.10	-3.70	Pass
	20 msec	-4.40 to -5.40	-4.90	Pass
	25 msec	-5.40 to -6.10	-5.92	Pass
	25-100 msec	-5.50 to -6.20	-6.07	Pass
D-Plane Rotation	Max	71 to 81	77.6	Pass
	Time	50 to 70	60.0	Pass
Peak Occipital Condyle Moment	Nm	-36 to -44	-39.4	Pass
Decaying Moment Time to Cross 0 Nm	msec	102 to 126	109.0	Pass
Overall Test Results			Pass	



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	g
Max	Time	Min	Time
4.0	0.0	-31.0	0.0



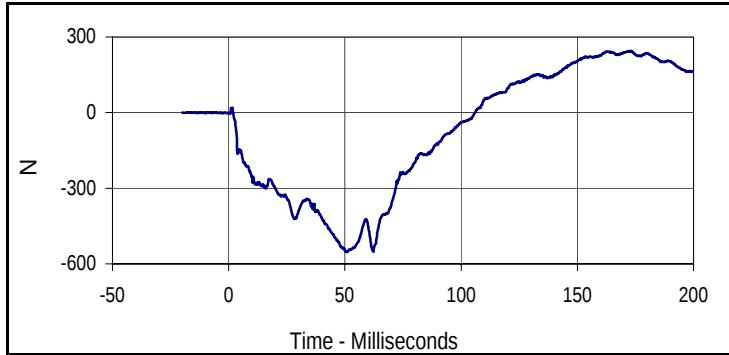
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.8	-6.6	199.9



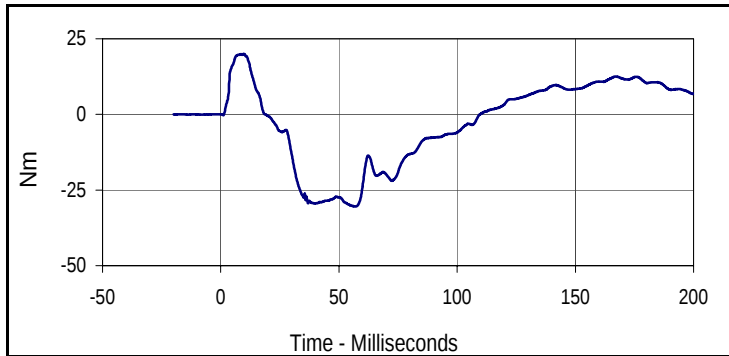
Curve Description			
D-Plane Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
77.6	60.0	-34.6	182.8

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

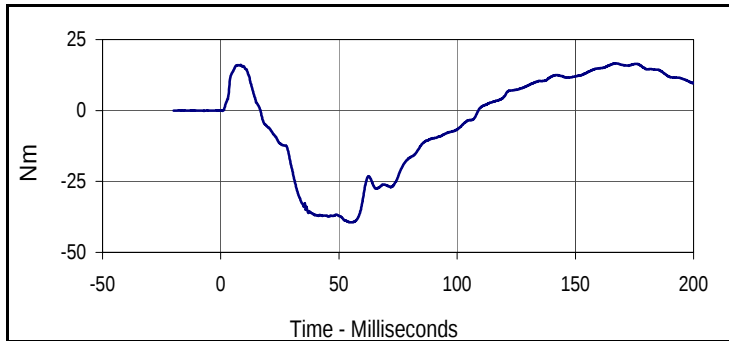
Test Date: 7/31/15
 Test I.D.: 307NB084



Curve Description			
Neck Force Y			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
245.1	172.9	-552.7	50.3



Curve Description			
Neck Moment X			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
20.1	9.7	-30.4	56.4



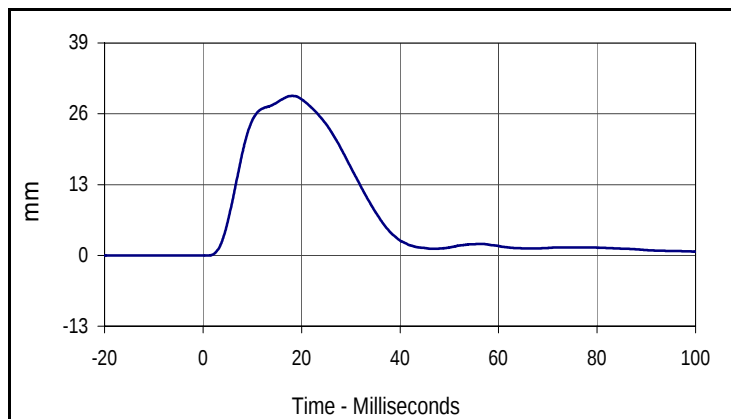
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
006	FIL	600	Nm
Max	Time	Min	Time
16.6	167.1	-39.4	54.9

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

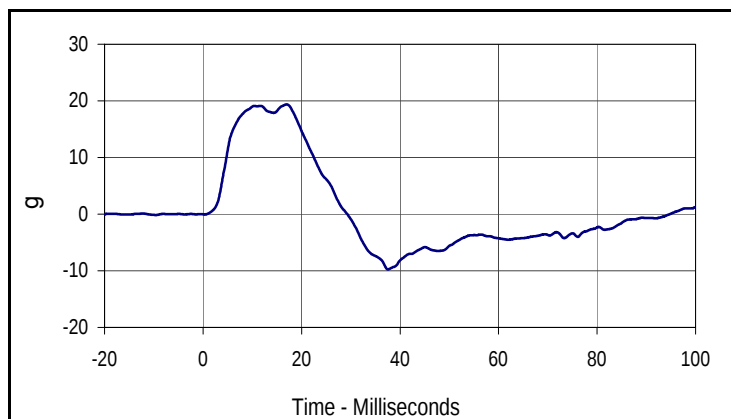
Test Date: 7/31/15
 Test I.D.: 307SH084



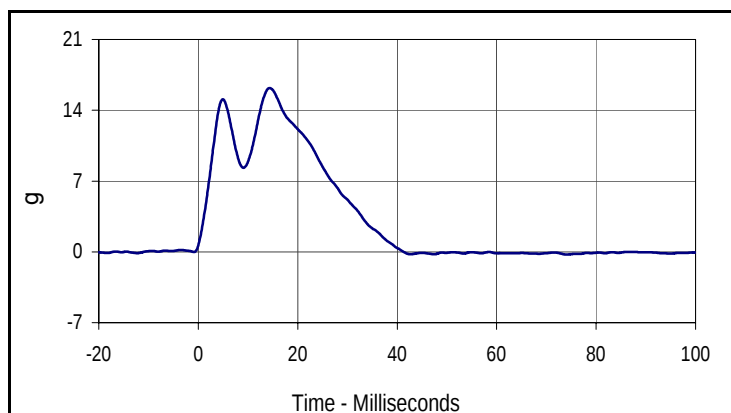
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	515	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.5	Pass
	Min	°C		21.2	Pass
Humidity During Soak	Max	%	10.0 to 70.0	32.7	Pass
	Min	%		32.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	32.1	Pass
Impactor Velocity		m/s	4.20 to 4.40	4.33	Pass
Peak Shoulder Deflection		mm	28 to 37	29.3	Pass
Peak Lateral Spine Acceleration Y		G's	17 to 22	19.4	Pass
Peak Impactor Acceleration		G's	13 to 18	16.2	Pass
Overall Test Results				Pass	



Curve Description			
Shoulder Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
29.3	18.1	0.0	-14.7



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
19.4	17.0	-9.8	37.5



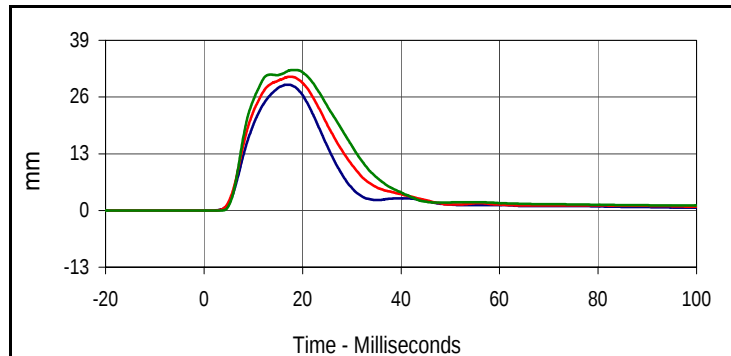
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
16.2	14.4	-0.3	74.1

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

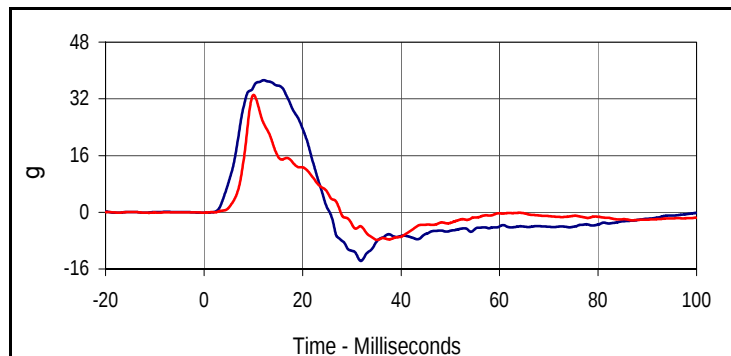
Test Date: 7/31/15
 Test I.D.: 307TWA084



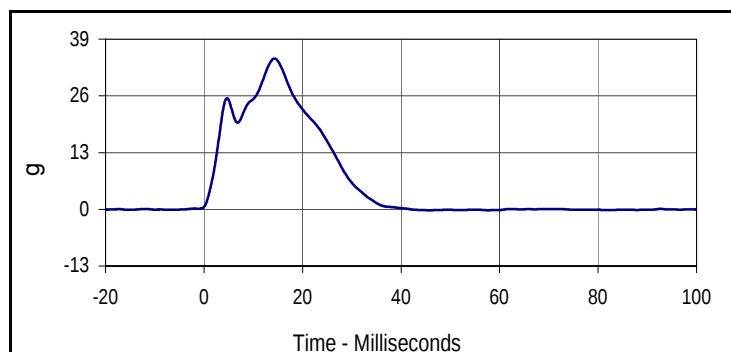
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	560	Pass
Temperature During Soak	Max	20.6 to 22.2	21.5	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	32.7	Pass
	Min		32.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.0	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.71	Pass
Peak Shoulder Deflection	mm	31 to 40	36.8	Pass
Peak Upper Thorax Rib Deflection	mm	25 to 32	28.8	Pass
Peak Middle Thorax Rib Deflection	mm	30 to 36	30.6	Pass
Peak Lower Thorax Rib Deflection	mm	32 to 38	32.2	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	37.3	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	33.1	Pass
Peak Impactor Acceleration	G's	30 to 36	34.5	Pass
Overall Test Results				Pass



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
28.8	17.1	0.0	-3.7
Middle Thorax Deflection			
Max	Time	Min	Time
30.6	17.5	0.0	-17.0
Lower Thorax Deflection			
Max	Time	Min	Time
32.2	18.3	0.0	-7.3



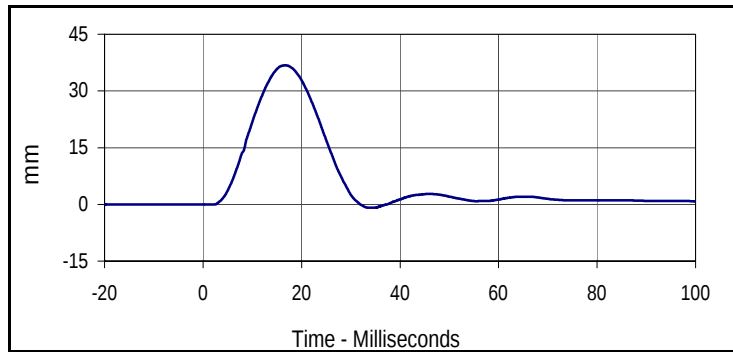
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
37.3	12.1	-13.7	31.9
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	g
Max	Time	Min	Time
33.1	10.1	-7.8	35.1



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	g
Max	Time	Min	Time
34.5	14.3	-0.2	45.9

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

Test Date: 7/31/15
 Test I.D.: 307TWA084



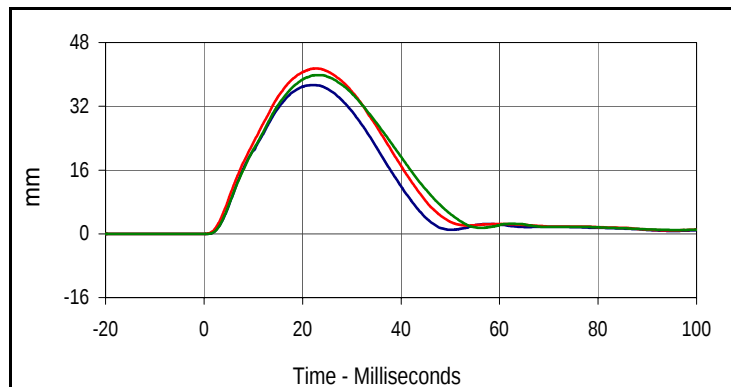
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	mm
Max	Time	Min	Time
36.8	16.7	-0.9	34.8

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

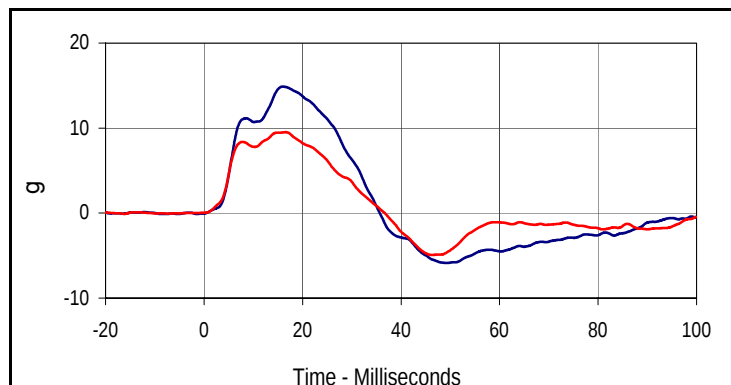
Test Date: 7/31/15
 Test I.D.: 307TWOA084



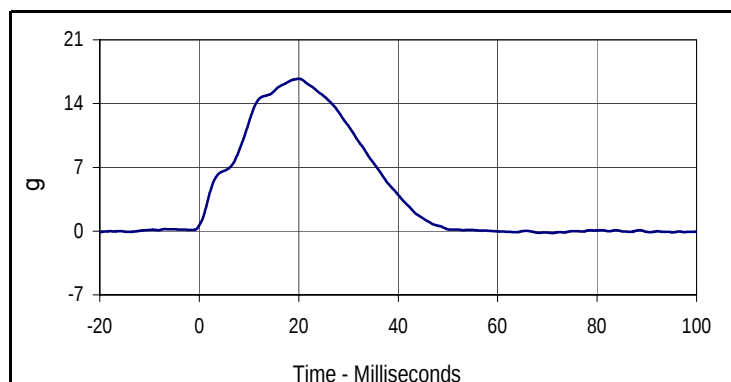
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	615	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.5	Pass
	Min	°C		21.2	Pass
Humidity During Soak	Max	%	10.0 to 70.0	32.7	Pass
	Min	%		32.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	32.0	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.31	Pass
Peak Upper Thorax Rib Deflection		mm	32 to 40	37.3	Pass
Peak Middle Thorax Rib Deflection		mm	39 to 45	41.5	Pass
Peak Lower Thorax Rib Deflection		mm	35 to 43	39.8	Pass
Peak Upper Spine Y Acceleration		G's	13 to 17	14.9	Pass
Peak Lower Spine Y Acceleration		G's	7 to 11	9.5	Pass
Peak Impactor Acceleration		G's	14 to 18	16.7	Pass
Overall Test Results				Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
37.3	22.2	0.0	-15.2
Middle Thorax Deflection			
Max	Time	Min	Time
41.5	22.8	0.0	-13.9
Lower Thorax Deflection			
Max	Time	Min	Time
39.8	23.1	0.0	-13.1



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
14.9	16.0	-5.9	49.4
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	g
Max	Time	Min	Time
9.5	16.5	-4.9	46.1



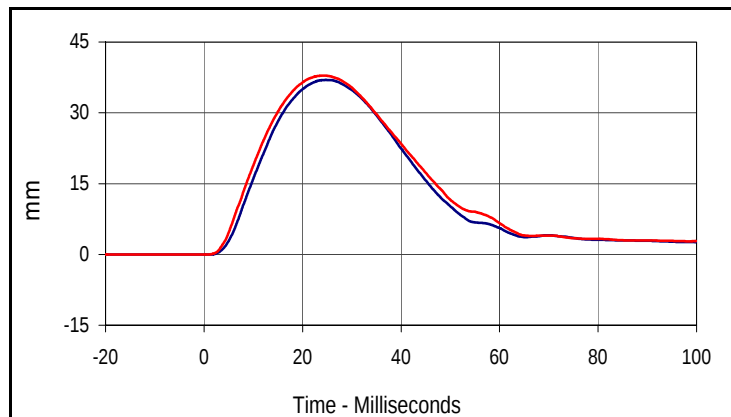
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	g
Max	Time	Min	Time
16.7	20.0	-0.2	71.0

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

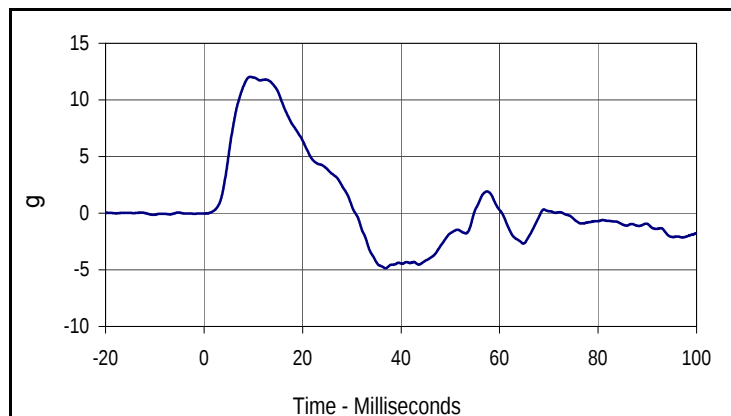
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 Test I.D.: 307ABD084



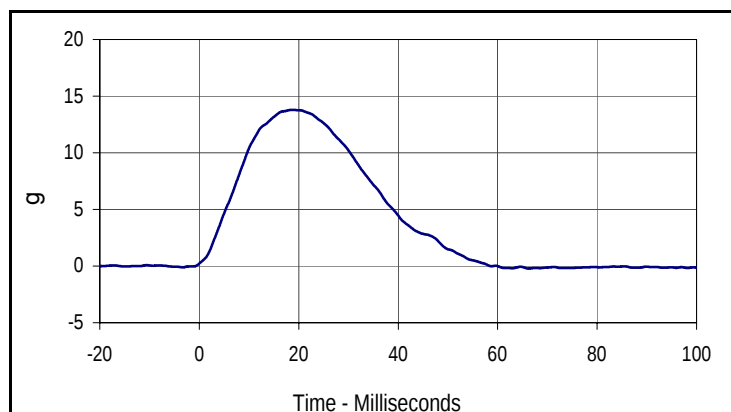
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	670	Pass
Temperature During Soak	Max °C	20.6 to 22.2	21.5	Pass
	Min °C		21.2	Pass
Humidity During Soak	Max %	10.0 to 70.0	32.7	Pass
	Min %		32.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.1	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.32	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	37.0	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	37.9	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	12.0	Pass
Peak Impactor Acceleration	G's	12 to 16	13.8	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
37.0	24.8	0.0	-18.3
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	mm
Max	Time	Min	Time
37.9	24.1	0.0	-18.5

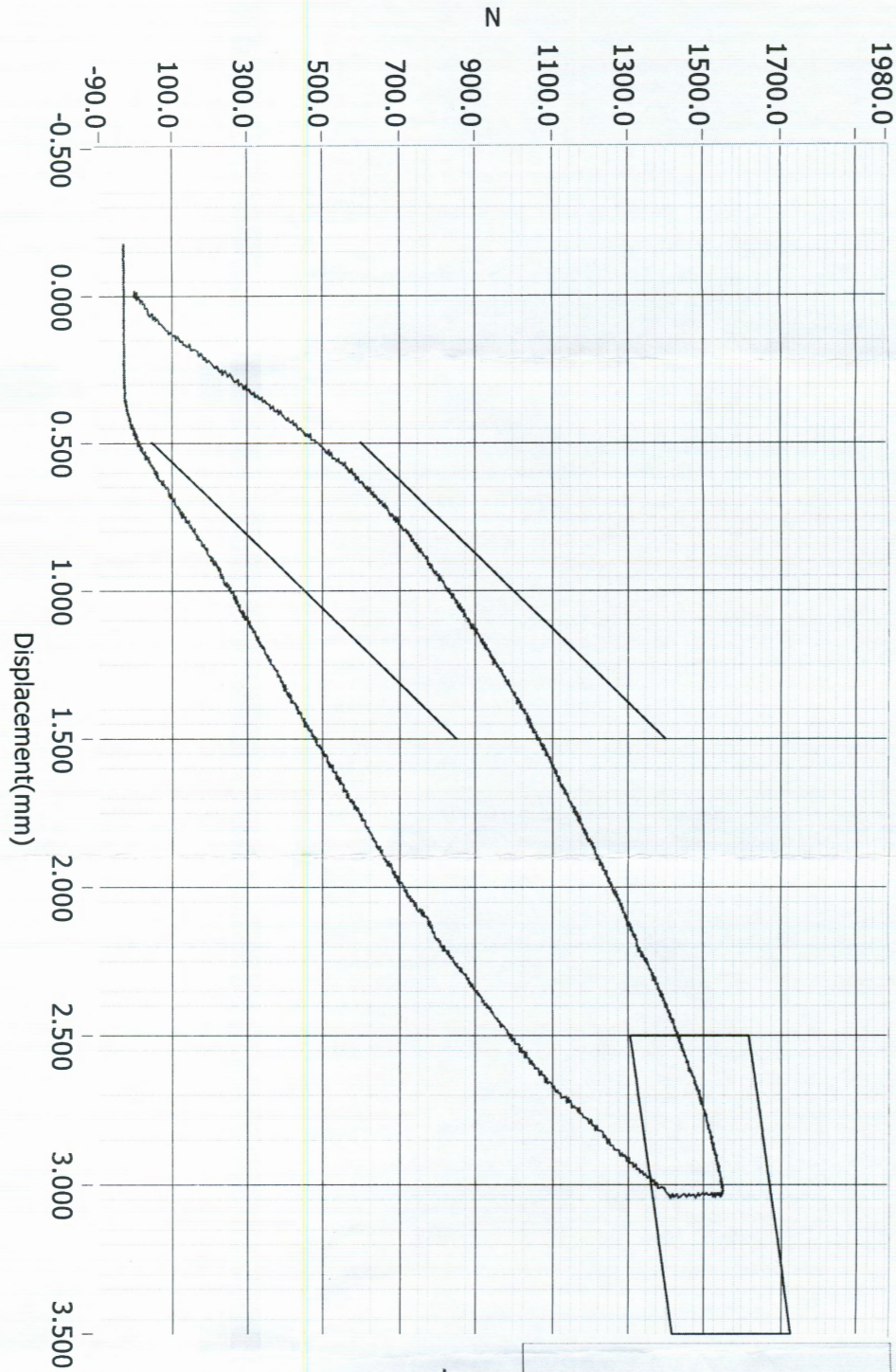


Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
12.0	9.4	-4.9	36.8



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
13.8	18.7	-0.2	66.2

Resultant Data - SIDIIs Plug Compression



1546 N

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
	70948	12/13/2013	8:51 PM
Cert ID	ATD Serial Number	ATD Type	
020154300 Post Test	N/A	SIDIIs	

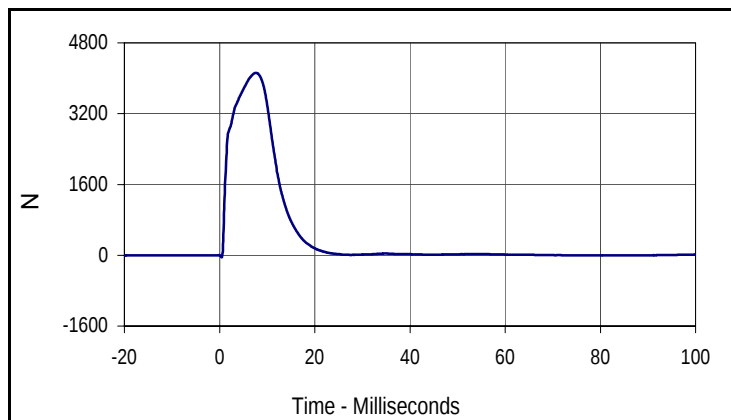
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Test Program: SID IIs Pelvis Acetabulum Impact Test
 ATD Serial No.: 307

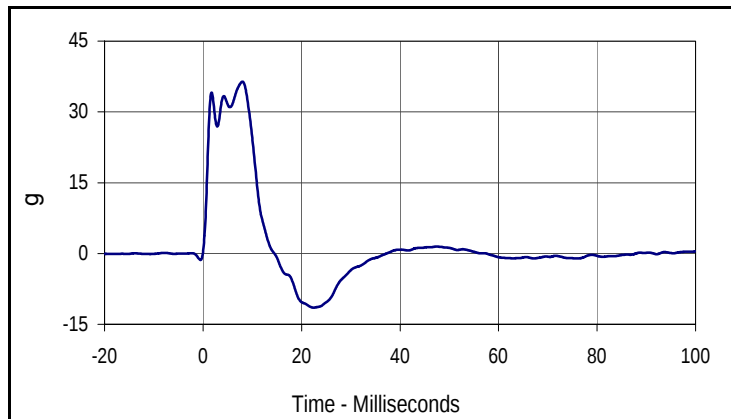
Test Date: 7/31/15
 Test I.D.: 307ACET084



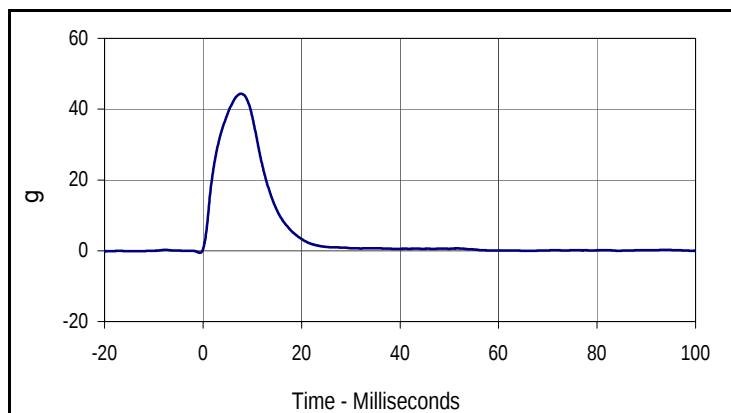
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	720	Pass
Temperature During Soak	Max	20.6 to 22.2	21.5	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	32.7	Pass
	Min		32.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.4	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.73	Pass
Peak Acetabulum Force Y	Newtons	3600 to 4300	4120.3	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	36.4	Pass
Peak Impactor Acceleration	G's	38 to 47	44.3	Pass
Overall Test Results				Pass



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
4120.3	7.6	-43.9	0.5



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
36.4	8.0	-11.5	22.4



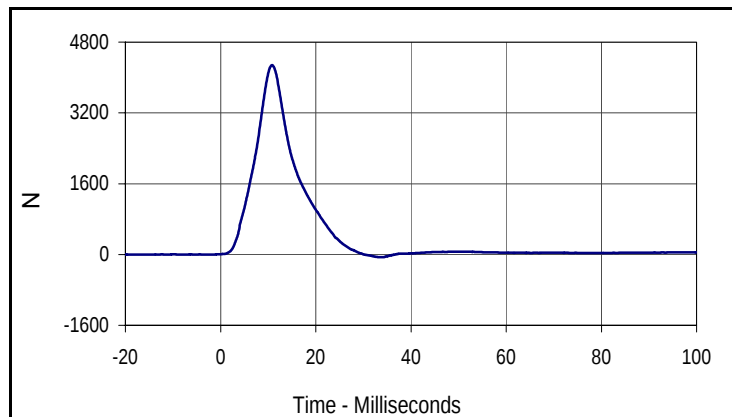
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
44.3	7.7	-0.6	-0.6

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

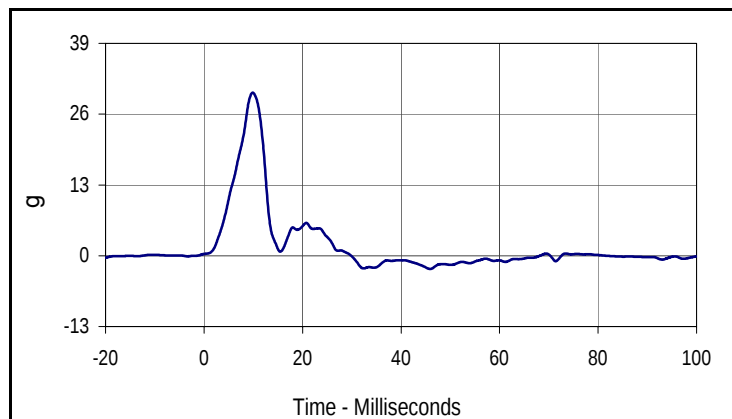
Test Date: 7/31/15
 Test I.D.: 307PL084



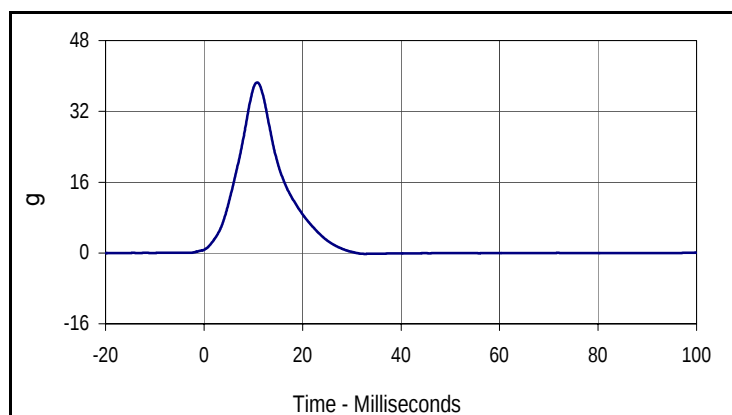
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	775	Pass
Temperature During Soak	Max	20.6 to 22.2	21.5	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	32.7	Pass
	Min		32.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	32.7	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.31	Pass
Peak Iliac Force	Newtons	4100 to 5100	4280.1	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	29.9	Pass
Peak Impactor Acceleration	G's	36 to 45	38.6	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Iliac Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
4280.1	10.8	-61.0	34.1



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
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
Max	Time	Min	Time
38.6	10.8	-0.2	32.6

APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

TABLE 1 – Dummy Instrumentation (ES-2re)

			ES-2re S/N F037		
			Serial Number	Manufacturer	Calibration
Head Accelerometers	Primary	X	P58858	Endevco	7/16/15
		Y	P58865	Endevco	7/16/15
		Z	P58867	Endevco	7/16/15
	Redundant	X	P58859	Endevco	7/16/15
		Y	P58866	Endevco	7/16/15
		Z	P58873	Endevco	7/16/15
Thorax Rib Displacement Potentiometers	Upper	Y	209	FTSS	7/18/15
	Middle	Y	210	FTSS	7/18/15
	Lower	Y	207	FTSS	7/18/15
Abdomen Load Cells	Forward	Y	1504	Denton	5/1/14
	Middle	Y	1505	Denton	5/1/14
	Rear	Y	1506	Denton	5/1/14
Lower Spine Accelerometers (T12)		X	P16336	Endevco	7/21/15
		Y	P52027	Endevco	7/21/15
		Z	P58877	Endevco	7/21/15
Pubic Symphysis Load Cell		Y	DG6784	Denton	7/21/15

TABLE 2 – Dummy Instrumentation (SID-IIs)

				SID-IIs S/N 307		
				Serial Number	Manufacturer	Calibration
Head Accelerometers		Primary	X	P58900	Endevco	7/10/15
			Y	P58902	Endevco	7/10/15
			Z	P58983	Endevco	7/10/15
		Redundant	X	P58901	Endevco	7/10/15
			Y	P58906	Endevco	7/10/15
			Z	P58989	Endevco	7/10/15
Displacement Potentiometers	Thoracic Rib	Upper	Y	1249	FTSS	7/14/15
		Middle	Y	1265	FTSS	7/14/15
		Lower	Y	1277	FTSS	7/14/15
	Abdominal Rib	Upper	Y	1286	FTSS	7/14/15
		Lower	Y	1290	FTSS	7/14/15
Lower Spine Accelerometers (T12)			X	P59007	Endevco	7/10/15
			Y	P59015	Endevco	7/10/15
			Z	P58995	Endevco	7/10/15
Acetabulum Load Cell			Y	260	Denton	7/20/15
Iliac Wing Load Cell			Y	272	Denton	7/21/15
Pelvis Plug (Struck Side)				70627	FTSS	12/12/13
Pelvis Plug (Non-Struck Side)				70948	FTSS	12/13/13

TABLE 3 – Vehicle Instrumentation

Vehicle Instrumentation			Serial Number	Manufacturer	Calibration Date
1	Vehicle Center of Gravity	X	A145907	MSI	7/8/15
	Vehicle Center of Gravity	Y	A145939	MSI	7/8/15
	Vehicle Center of Gravity	Z	A160715	MSI	7/8/15
2	Right Sill at Front Seat	X	A160696	MSI	7/8/15
	Right Sill at Front Seat	Y	A148267	MSI	7/8/15
	Right Sill at Front Seat	Z	A148331	MSI	7/8/15
3	Right Sill at Rear Seat	X	A147403	MSI	7/8/15
	Right Sill at Rear Seat	Y	A152876	MSI	7/8/15
	Right Sill at Rear Seat	Z	A152874	MSI	7/8/15
4	Left Sill at Front Door	Y	A145918	MSI	7/8/15
5	Left Sill at Rear Door	Y	A148235	MSI	7/8/15
6	Left A-Post Lower	Y	A145491	MSI	7/7/15
7	Left A-Post Middle	Y	A147399	MSI	7/7/15
8	Left B-Post Lower	Y	A152870	MSI	7/7/15
9	Left B-Post Middle	Y	A148187	MSI	7/8/15
10	Front Seat Track	Y	A147451	MSI	7/7/15
11	Rear Seat Structure	Y	N/A	N/A	N/A
12	Right Rear Occ. Compartment	Y	A148255	MSI	7/7/15
13	Engine Block	X	A147407	MSI	7/7/15
	Engine Block	Y	A145498	MSI	7/7/15
14	Rear Floorpan Above Axle	X	A147402	MSI	7/7/15
	Rear Floorpan Above Axle	Y	A160699	MSI	7/7/15
	Rear Floorpan Above Axle	Z	A148192	MSI	7/8/15

TABLE 4 – MDB Instrumentation

		Serial Number	Manufacturer	Calibration Date
MDB Center of Gravity	X	A128040	MSI	7/8/15
MDB Center of Gravity	Y	A124105	MSI	7/8/15
MDB Center of Gravity	Z	A104832	MSI	7/8/05
Left Frame at Rear Axle Centerline	X	A148320	MSI	7/8/15
Left Frame at Rear Axle Centerline	Y	A148316	MSI	7/8/15