

REPORT NUMBER: SINCAP-KAR-16-007

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

**MAZDA MOTOR CORPORATION
2016 MAZDA CX-3 TOURING SUV**

NHTSA No: M20165402

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



DECEMBER 1, 2015

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
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16. Abstract

A 55 / 28 km/h 90° Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2016 Mazda CX-3 Touring SUV 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 November 17, 2015.

The impact velocity of the Moving Deformable Barrier was 61.91 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 16.7° C. The target vehicle's maximum post-test static crush was 174 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 (HC ₃₆)		1000	182.9
Maximum Thoracic Rib Deflection	mm	44	21
Total Abdominal Force	N	2500	884
Pubic Symphysis Force	N	6000	1487

Measurement Description	Passenger ATD (SID-IIs)		
	Units	IARV	Result
Head Injury Criteria (HC ₃₆)		1000	240.5
Resultant Lower Spine Acceleration	g	82	85
Total Pelvic Force (Sum of Acetubular and Iliac Forces)	N	5525	2166
Maximum Thoracic Rib Deflection	mm	38*	21
Maximum Abdominal Rib Deflection	mm	45*	16

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 MY 2016 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract number DTNH22-14-D-00355. The purpose of this test is to generate comparative side impact performance in a 2016 Mazda CX-3 Touring SUV. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated October 2015.

SECTION 2

SUMMARY OF TEST RESULTS

A 2016 Mazda CX-3 Touring SUV 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 61.91 km/h (38.48 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 November 17, 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. Test signs in Appendix A photographs refer to the test vehicle as a 5-door hatchback; however, the test vehicle is classified as a SUV throughout 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 October 2015. 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	182.9
Maximum Thoracic Rib Deflection	mm	44	21
Combined Abdominal Force	N	2500	884
Pubic Symphysis Force	N	6000	1487

Measurement Description	Units	Passenger ATD (SID-IIs)	
		Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	240.5
Lower Spine (T12) Resultant Acceleration	g	82	85
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2166
Maximum Thoracic Rib Deflection	mm	38*	21
Maximum Abdominal Rib Deflection	mm	45*	16

*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	No		No	
Side Airbag 1 (Curtain)	Yes	Yes	Yes	Yes
Side Airbag 2 (Torso/Pelvis)	Yes	Yes	No	
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes	Yes	No	
Other	No		No	

GENERAL COMMENTS

The 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. The left rear passenger ATD's lower spine (T12) resultant acceleration exceeded its allowable limit.

SECTION 3

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2016 Mazda CX-3 Touring SUV NHTSA No. M20165402

Test Program: NCAP MDB Side Impact Test Test Date: 11/17/15

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: 2016 Mazda CX-3 Touring SUV NHTSA No. M20165402
 Test Program: NCAP MDB Side Impact Test Test Date: 11/17/15

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	M20165402
Model Year	2016
Make	Mazda
Model	CX-3 Touring
Body Style	SUV
VIN	JM1DKBC76G0110111
Body Color	Soul Red Metallic
Odometer Reading (km / mi)	230 / 143
Engine Displacement (L)	2.0
Type / No. of Cylinders	Inline 4
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	6
Overdrive	Yes
Final Drive	Front
Roof Rack	No
Sunroof / T-Top	Yes
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes

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

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

DATA FROM CERTIFICATION LABEL

Manufactured By	Mazda Motor Corporation
Date of Manufacture	Jul-15
Vehicle Type	Passenger Car

GVWR (kg)	1742
GAWR Front (kg)	933
GAWR Rear (kg)	812

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Designated Seating Capacity	2	3		5
Capacity Weight (VCW) (kg)				385.0
DSC x 68.04 (kg)				340.2
Cargo Weight (RCLW) (kg)				44.8

A
B
A-B

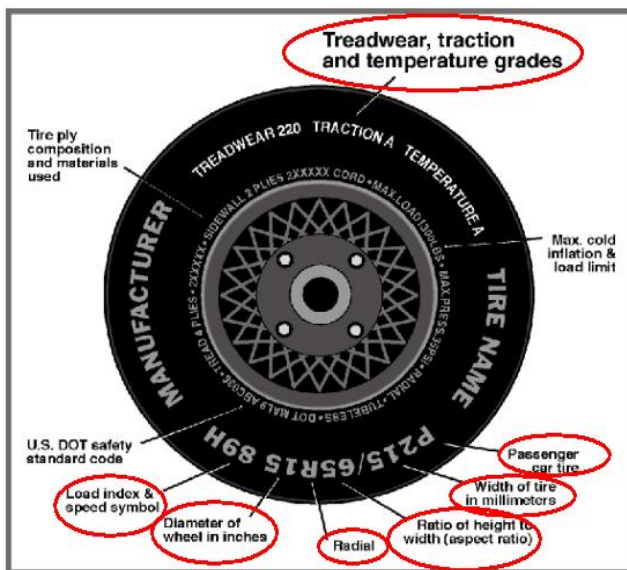
VEHICLE SEAT TYPE

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

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2016 Mazda CX-3 Touring SUV NHTSA No. M20165402
 Test Program: NCAP MDB Side Impact Test Test Date: 11/17/15



Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	350	350
Cold Pressure (kPa)	250	230
Recommended Tire Size	P215/60R16	P215/60R16
Tire Size on Vehicle	P215/60R16	P215/60R16
Tire Manufacturer	Yokohama	Yokohama
Tire Model	Avid S34	Avid S34
Treadware	320	320
Traction Grade	B	B
Temperature Grade	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 2 Steel, 1 Nylon	2 Polyester, 2 Steel, 1 Nylon
Load Index/Speed Symbol	94H	94H
Tire Material	Polyester, Steel, Nylon	Polyester, Steel, Nylon
DOT Safety Code Left	FDF1 PKD2515	FDF1 PKD2515
DOT Safety Code Right	FDF1 PKD2515	FDF1 PKD2515

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2016 Mazda CX-3 Touring SUV NHTSA No. M20165402
 Test Program: NCAP MDB Side Impact Test Test Date: 11/17/15

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	260	230	250	235
Tire Placard	kPa	250	250	230	230
Owner's Manual	kPa	250	250	230	230
As Tested	kPa	250	250	230	230

MDB TIRE SPECIFICATIONS

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

TEST VEHICLE AXLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	393.0	251.0		436.5	331.0		427.0	327.0	
Right	kg	384.5	246.0		381.5	287.0		391.5	298.5	
Ratio	%	61.0%	39.0%	100.0%	57.0%	43.0%	100.0%	56.7%	43.3%	100.0%
Total	kg	777.5	497.0	1274.5	818.0	618.0	1436.0	818.5	625.5	1444.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1274.5	A
Actual Weight of 2 P572 ATDs Used	kg	125.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	44.8	C
Calculated Vehicle Target Wt (TVTWT)	kg	1444.3	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	726	726	Yes
RF	mm	737	733	Yes
LR	mm	711	714	Yes
RR	mm	725	720	Yes
Vehicle CG (Aft of Front Axle)	mm	1110	1103	
Vehicle CG (Left (+)/Right (-) from Longitudinal Centerline)	mm	34	52	

***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: 2016 Mazda CX-3 Touring SUV NHTSA No. M20165402
Test Program: NCAP MDB Side Impact Test Test Date: 11/17/15

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Spare Tire	12.0
Rear Trunk Trim and Tools	10.0
Ballast / Equipment Added	65.0

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

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

Test Vehicle: 2016 Mazda CX-3 Touring SUV NHTSA No. M20165402
 Test Program: NCAP MDB Side Impact Test Test Date: 11/17/15

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	3.3	0.0	1.7
Front Passenger Seat	Fixed	Fixed	Fixed
Front Center Seat			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCRP Height (mm)	SCRP Height Position	SCRP Height (mm)		
				Rearmost	Mid Fore/Aft	Forwardmost
Driver Seat	1.7	567	Max			
			Mid	559	567	577
			Min			
Front Passenger Seat	Fixed	511	Max			
			Mid	500	511	519
			Min			
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: 2016 Mazda CX-3 Touring SUV NHTSA No. M20165402
 Test Program: NCAP MDB Side Impact Test Test Date: 11/17/15

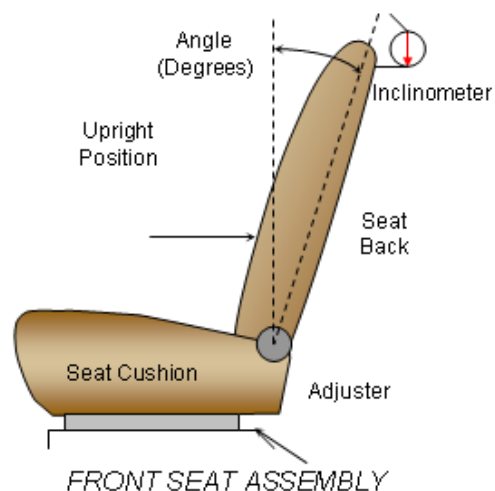
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position From Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	260	26	130	13
Front Passenger Seat	262	26	131	13
Front Center Seat				
Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed	Fixed

*Detent zero (0) is the forward most detent

SEAT BACK ADJUSTMENT

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



SEAT BACK POSITION

Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degree	Detent*
Driver Seat w/Seated Dummy	55.5	35	1.3	5
Front Passenger Seat	65.1	35	1.9	5
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: 2016 Mazda CX-3 Touring SUV NHTSA No. M20165402
 Test Program: NCAP MDB Side Impact Test Test Date: 11/17/15

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	3	H
Rear Seat	Fixed	Fixed

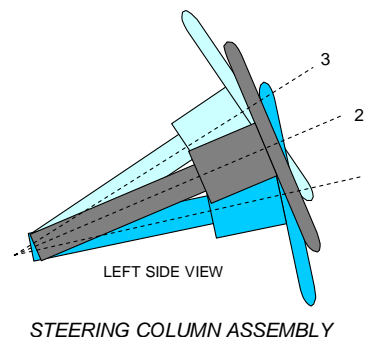
HEAD RESTRAINT ADJUSTMENT

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

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

STEERING COLUMN ADJUSTMENT

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



	Degrees	Fore-Aft Position (mm)
Lowermost - Position 1	22.0	82
Geometric Center - Position 2	24.5	107
Uppermost - Position 3	27.0	131
Telescoping Steering Wheel Travel		49
Test Position	24.5	107

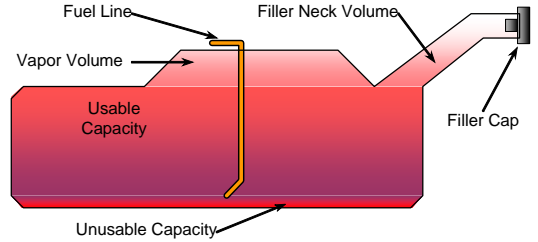
DATA SHEET NO. 2 ... (CONTINUED)

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

Test Vehicle: 2016 Mazda CX-3 Touring SUV NHTSA No. M20165402
 Test Program: NCAP MDB Side Impact Test Test Date: 11/17/15

FUEL PUMP

The vehicle is equipped with an electric fuel pump. The fuel pump only operates when the starter or engine is activated.



VEHICLE FUEL TANK ASSEMBLY

FUEL TANK CAPACITY

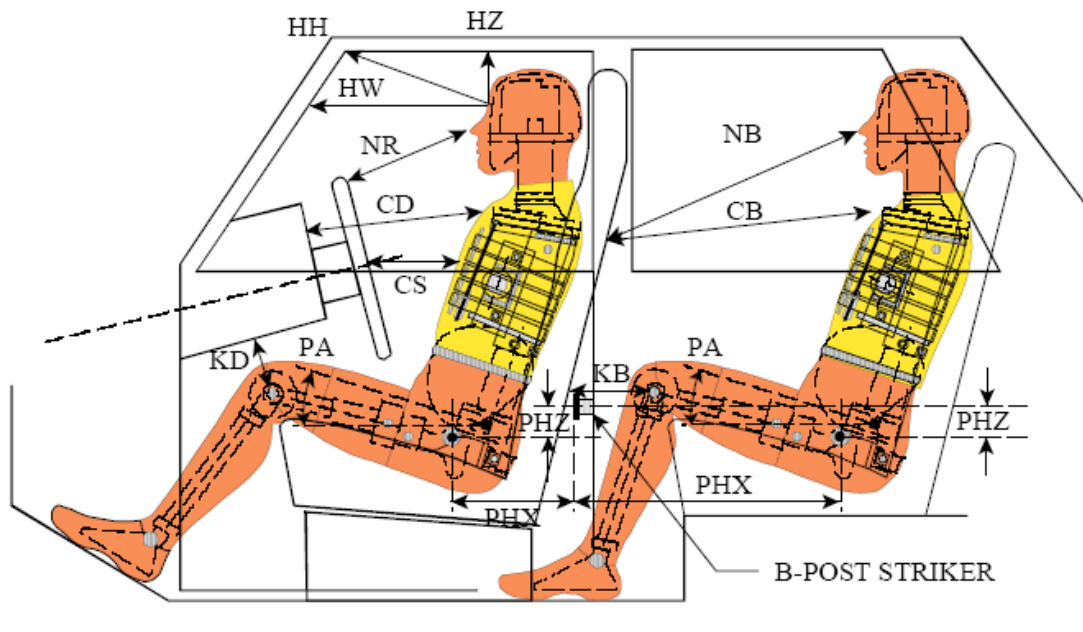
Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	48.07
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of "Standard Tank" (see Owner's Manual)	
Usable Capacity of "Optional Tank" (see Owner's Manual)	
93% of Usable Capacity	44.71
Actual amount of Solvent Used in Test	44.70
1/3 of Usable Capacity	16.02

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

DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2016 Mazda CX-3 Touring SUV NHTSA No. M20165402
 Test Program: NCAP MDB Side Impact Test Test Date: 11/17/15



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

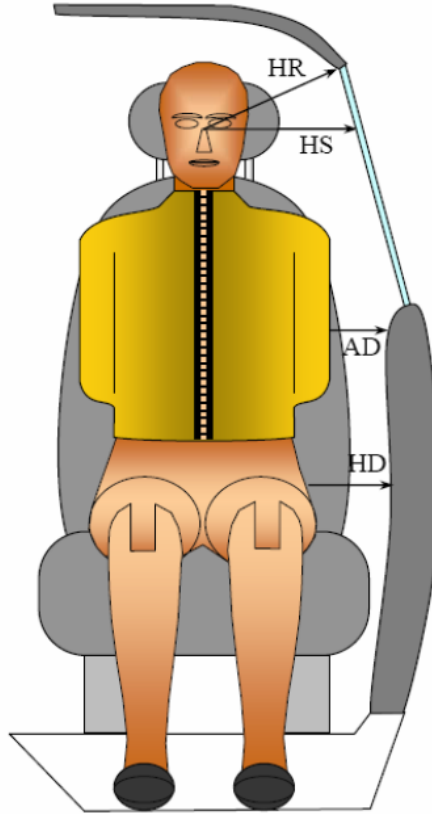
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Description	Driver		Passenger	
			Length (mm)	Angle (°)	Length (mm)	Angle (°)
HH		Head to Header	354			
HW		Head to Windshield	603			
HZ	HZ	Head to Roof	150		234	
NR	NB	Nose to Rim/Seat Back	425		472	
CD	CB	Chest to Dash/Seat Back	553		469	
CS		Chest to Steering Wheel	282			
KD(L)/KDA(L)°	KB(L)/KBA(L)°	Left Knee to Dash/Seat Back	131	28.2	156	10.2
KD(R)/KDA(R)°	KB(R)/KBA(R)°	Right Knee to Dash/Seat Back	116	38.2	154	9.5
PAX°	PAX°	Pelvic Tilt Angle X		17.4		19.9
	PAY°	Pelvic Tilt Angle Y		0.2		0.4
PHX	PHX	Hip Point to Striker (x-axis)	165		252	
PHZ	PHZ	Hip Point to Striker (z-axis)	189		321	

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2016 Mazda CX-3 Touring SUV NHTSA No. M20165402
 Test Program: NCAP MDB Side Impact Test Test Date: 11/17/15



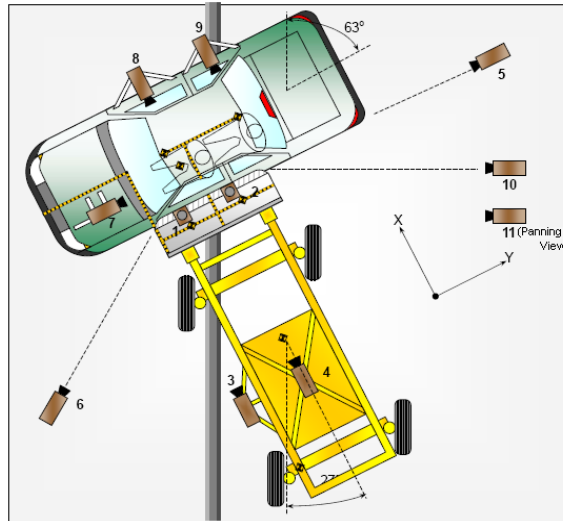
DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	177	248
HS	Head to Side Window	mm	301	344
AD	Arm to Door	mm	92	142
HD	H-Point to Door	mm	148	175

DATA SHEET NO. 5

CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2016 Mazda CX-3 Touring SUV NHTSA No. M20165402
 Test Program: NCAP MDB Side Impact Test Test Date: 11/17/15



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)	485	-719	-584	35	1000
8	Driver Side (On-Board)	1644	837	-458	14	1000
9	Passenger Side (On-Board)	1608	1669	-532	14	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: 2016 Mazda CX-3 Touring SUV NHTSA No. M20165402
 Test Program: NCAP MDB Side Impact Test Test Date: 11/17/15



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

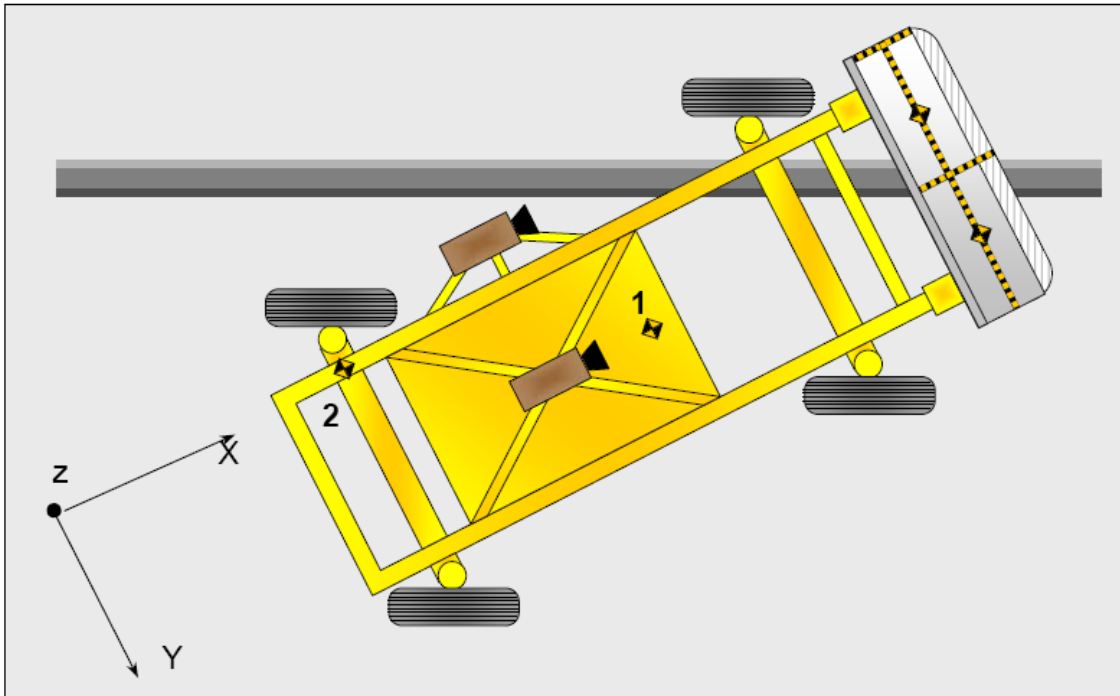
Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	1680	0	-400
2	Right Sill at Front Seat	2540	670	-350
3	Right Sill at Rear Seat	1350	730	-345
4	Left Sill at Front Door	2400	-795	-260
5	Left Sill at Rear Door	1410	-730	-360
6	A-Pillar Lower	2860	-790	-490
7	A-Pillar Middle	2870	-790	-950
8	B-Pillar Lower	1840	-710	-495
9	B-Pillar Middle	1840	-710	-940
10	Front Seat Track	1800	-130	-330
11	Rear Seat Structure			
12	Right Rear Occupant Compartment	1400	400	-345
13	Engine Block	3330	90	-810
14	Rear Floorpan Above Axle	800	40	-450

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: 2016 Mazda CX-3 Touring SUV NHTSA No. M20165402
 Test Program: NCAP MDB Side Impact Test Test Date: 11/17/15



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: 2016 Mazda CX-3 Touring SUV NHTSA No. M20165402
 Test Program: NCAP MDB Side Impact Test Test Date: 11/17/15

TEST DUMMY INFORMATION AND CONTACT POINTS

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

POST-TEST DOOR PERFORMANCE

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

DATA SHEET NO. 8 ... (CONTINUED)

POST-TEST OBSERVATIONS

Test Vehicle: 2016 Mazda CX-3 Touring SUV NHTSA No. M20165402
Test Program: NCAP MDB Side Impact Test Test Date: 11/17/15

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

Pillar Performance	No separation
Sill Separation	No separation
Windshield Damage	None
Side Window Damage	None
Other Notable Effects	None

DATA SHEET NO. 8 ... (CONTINUED)

POST-TEST OBSERVATIONS

Test Vehicle: 2016 Mazda CX-3 Touring SUV NHTSA No. M20165402
 Test Program: NCAP MDB Side Impact Test Test Date: 11/17/15

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vehicle Wheel Base	mm		2563
Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point)	mm		342
Actual Impact Point (Aft of Front Axle)	mm		366
Horizontal Offset (+ forward / - rearward)	mm	± 50 of Intended Impact Point	-24
Vertical Offset (+ down / - up)	mm	± 20 of Intended Impact Point	-5

DATA SHEET NO. 9

MDB SUMMARY OF RESULTS

Test Vehicle: 2016 Mazda CX-3 Touring SUV NHTSA No. M20165402
 Test Program: NCAP MDB Side Impact Test Test Date: 11/17/15

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	61.91
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	61.87
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	90.0
MDB Forward Line of Motion to Target Vehicle CL	degrees	62.5 to 63.5	63.4
MDB Crabbed Angle to MDB Forward Line of Motion	degrees	26.0 to 28.0	26.6

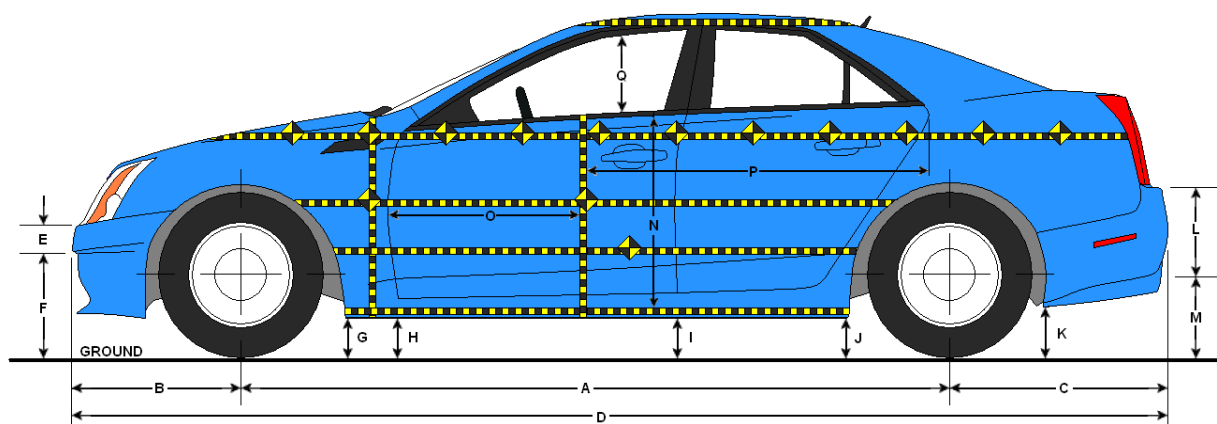
MAXIMUM STATIC CRUSH OF HONEYCOMB FACE

Vertical Location			From Centerline		Max. Crush (mm)
Row	Description	Height (mm)	Distance (mm)	Direction	
A	Center of Bumper	432	800	Left	259
B	Top of Bumper	533	800	Left	177
C	Mid Level	686	700	Left	160
D	Top of Stack	813	800	Left	217

DATA SHEET NO. 10

TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2016 Mazda CX-3 Touring SUV NHTSA No. M20165402
 Test Program: NCAP MDB Side Impact Test Test Date: 11/17/15



LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2563	2563	0
B	Front Axle to FSOV	895	897	2
C	Rear Axle to RSOV	800	797	-3
D	Total Length at Centerline	4258	4257	-1
E	Front Bumper Thickness	343	344	1
F	Front Bumper Bottom to Ground	300	311	11
G	Sill Height at Front Wheel Well	225	248	23
H	Sill Height at Front Door Leading Edge	223	257	34
I	Sill Height at B-Pillar	237	262	25
J1	Sill Height at Rear Wheel Well	204	234	30
J2	Pinch Weld Height at Rear Wheel Well	196	220	24
K	Sill Height Aft of Rear Wheel Well	283	309	26
L	Rear Bumper Thickness	142	141	-1
M	Rear Bumper Bottom to Ground	385	399	14
N	Sill Height to Bottom of Front Window Sill	752	720	-32
O	Front Door Leading Edge to Impact CL	656	645	-11
P	Rear Door Trailing Edge to Impact CL	1309	1299	-10
Q	Front Window Opening	369	383	14
R	Right Side Length	3177	3180	3
S	Left Side Length	3172	3154	-18
T	Vehicle Width at B-Pillar	1735	1637	-98

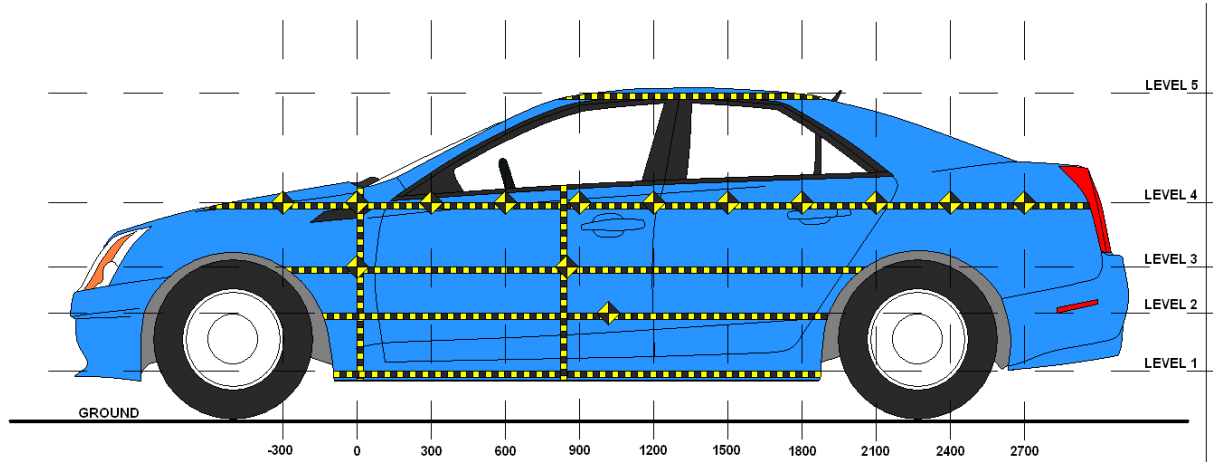
All measurements in mm with tolerance of ± 3 mm

DATA SHEET NO. 11

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2016 Mazda CX-3 Touring SUV NHTSA No. M20165402

Test Program: NCAP MDB Side Impact Test Test Date: 11/17/15



LEFT SIDE VIEW

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	291	70	1200
2	Occupant H-Point	562	142	900
3	Mid-Door	659	174	900
4	Window Sill	1001	83	1500
5	Window Top	1447	36	1200

DATA SHEET NO. 11 ... (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2016 Mazda CX-3 Touring SUV NHTSA No. M20165402

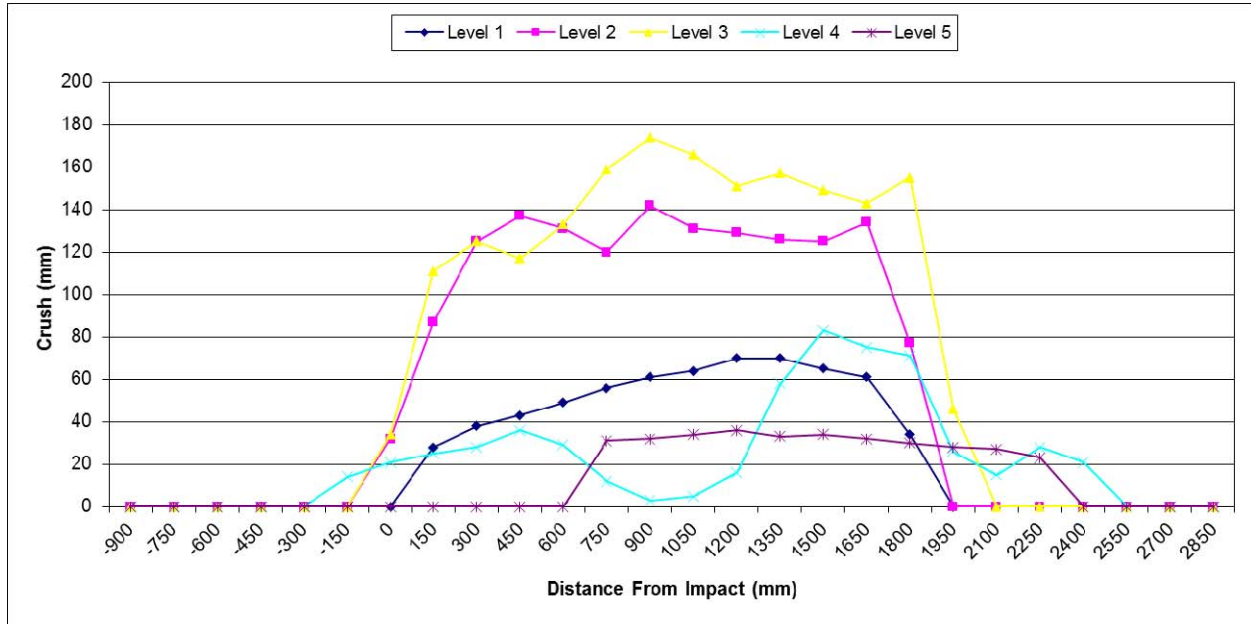
Test Program: NCAP MDB Side Impact Test Test Date: 11/17/15

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				780					794					14	
0		620	626	753			652	660	774			32	34	21	
150	664	640	637	736		692	727	748	761		28	87	111	25	
300	667	641	637	726		705	766	762	754		38	125	125	28	
450	670	640	635	724		713	777	752	760		43	137	117	36	
600	671	639	633	723		720	770	766	752		49	131	133	29	
750	671	639	632	721	905	727	759	791	733	936	56	120	159	12	31
900	671	641	633	718	908	732	783	807	721	940	61	142	174	3	32
1050	671	643	635	711	912	735	774	801	716	946	64	131	166	5	34
1200	669	646	638	708	916	739	775	789	724	952	70	129	151	16	36
1350	668	651	641	708	921	738	777	798	766	954	70	126	157	58	33
1500	667	655	645	709	926	732	780	794	792	960	65	125	149	83	34
1650	664	654	648	708	933	725	788	791	783	965	61	134	143	75	32
1800	660	643	645	707	938	694	720	800	778	968	34	77	155	71	30
1950			624	708	945			670	734	973			46	26	28
2100				709	959				724	986				15	27
2250				714	980				742	1003				28	23
2400				724					745					21	
2550															
2700															
2850															

DATA SHEET NO. 11 ... (CONTINUED)
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

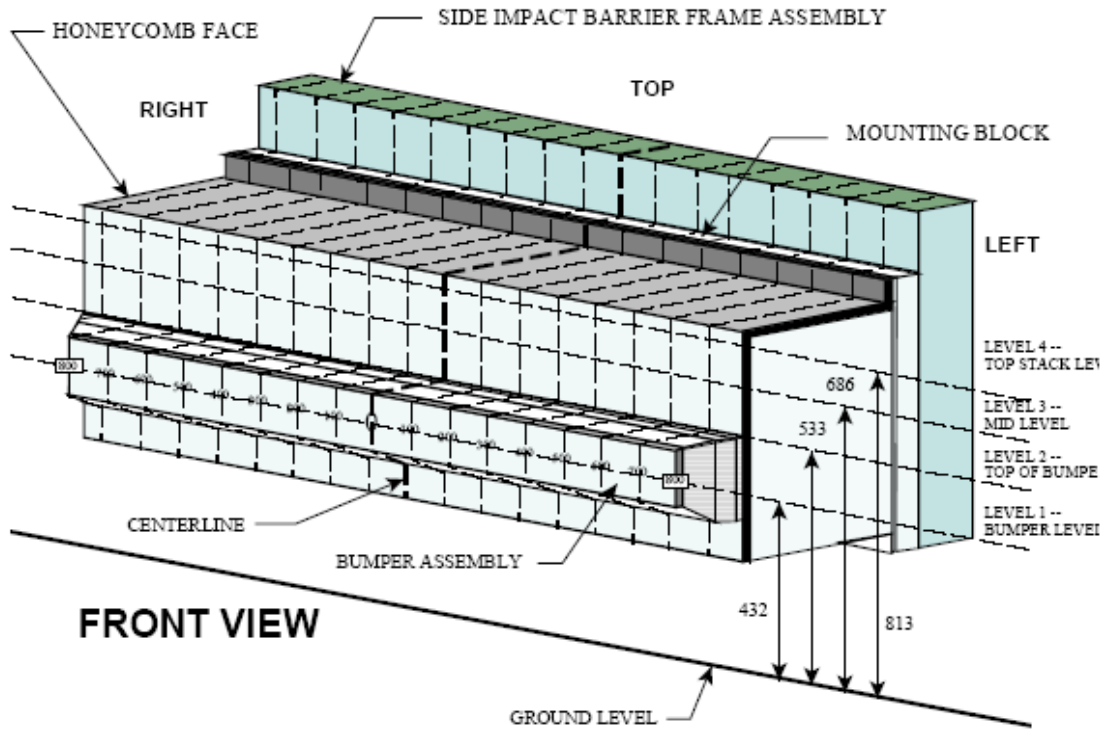
Test Vehicle: 2016 Mazda CX-3 Touring SUV NHTSA No. M20165402
 Test Program: NCAP MDB Side Impact Test Test Date: 11/17/15



DATA SHEET NO. 12

MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2016 Mazda CX-3 Touring SUV NHTSA No. M20165402
 Test Program: NCAP MDB Side Impact Test Test Date: 11/17/15



NOTE: Dimensions are shown in millimeters, mm

DEFORMABLE BARRIER STATIC CRUSH

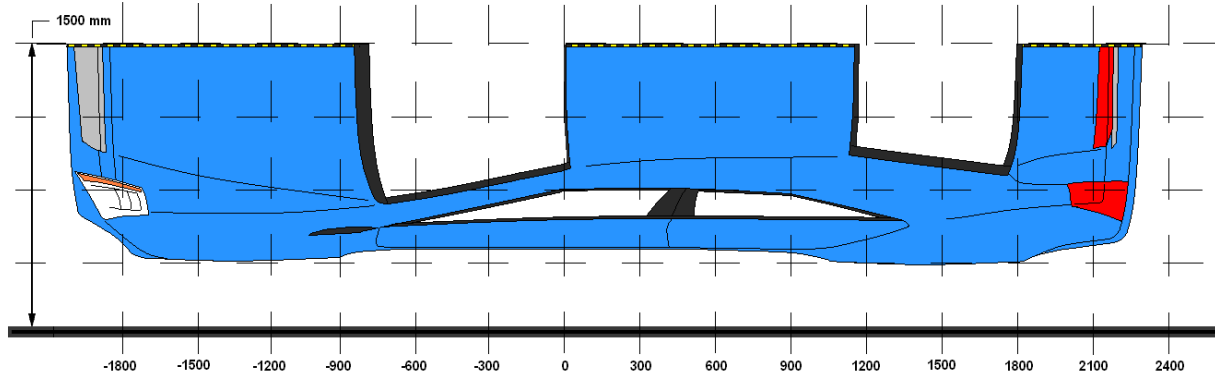
Stack Level	Distance Right of Center								C/L	Distance Left of Center							
	800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
1	234	184	184	189	189	194	199	192	199	199	201	204	205	209	219	249	259
2	117	117	117	107	102	107	117	109	122	123	125	137	142	147	157	168	177
3	58	62	61	63	62	74	97	72	63	59	62	73	91	102	109	160	158
4	57	42	42	57	88	117	117	87	72	61	72	83	94	117	143	178	217

All dimensions in millimeters.

DATA SHEET NO. 13

VEHICLE AND MDB DAMAGE PROFILE DISTANCES

Test Vehicle: 2016 Mazda CX-3 Touring SUV NHTSA No. M20165402
 Test Program: NCAP MDB Side Impact Test Test Date: 11/17/15



VEHICLE DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Crush (mm)
1	2400	4	724	745	21
2	1950	3	624	670	46
3	1350	3	641	798	157
4	750	3	632	791	159
5	300	3	637	762	125
6	-150	4	780	794	14

MDB DAMAGE PROFILE DISTANCES

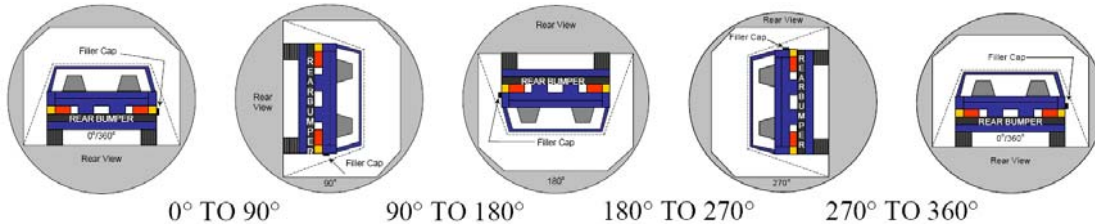
DPD	From MDB Centerline		Level	Crush (mm)
	Distance (mm)	Direction		
1	800	Left	1	259
2	500	Left	1	209
3	200	Left	1	201
4	200	Right	1	199
5	500	Right	1	189
6	800	Right	1	234

DATA SHEET NO. 14

FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2016 Mazda CX-3 Touring SUV NHTSA No. M20165402
 Test Program: NCAP MDB Side Impact Test Test Date: 11/17/15
 Temperature at Time of Impact: 16.7 °C Test Time: 1:44 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°	84	300	384
90° To 180°	81	300	381
180° To 270°	78	300	378
270° To 360°	82	300	382

FMVSS 301 SPILLAGE TABLE

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

SOLVENT SPILLAGE LOCATION TABLE

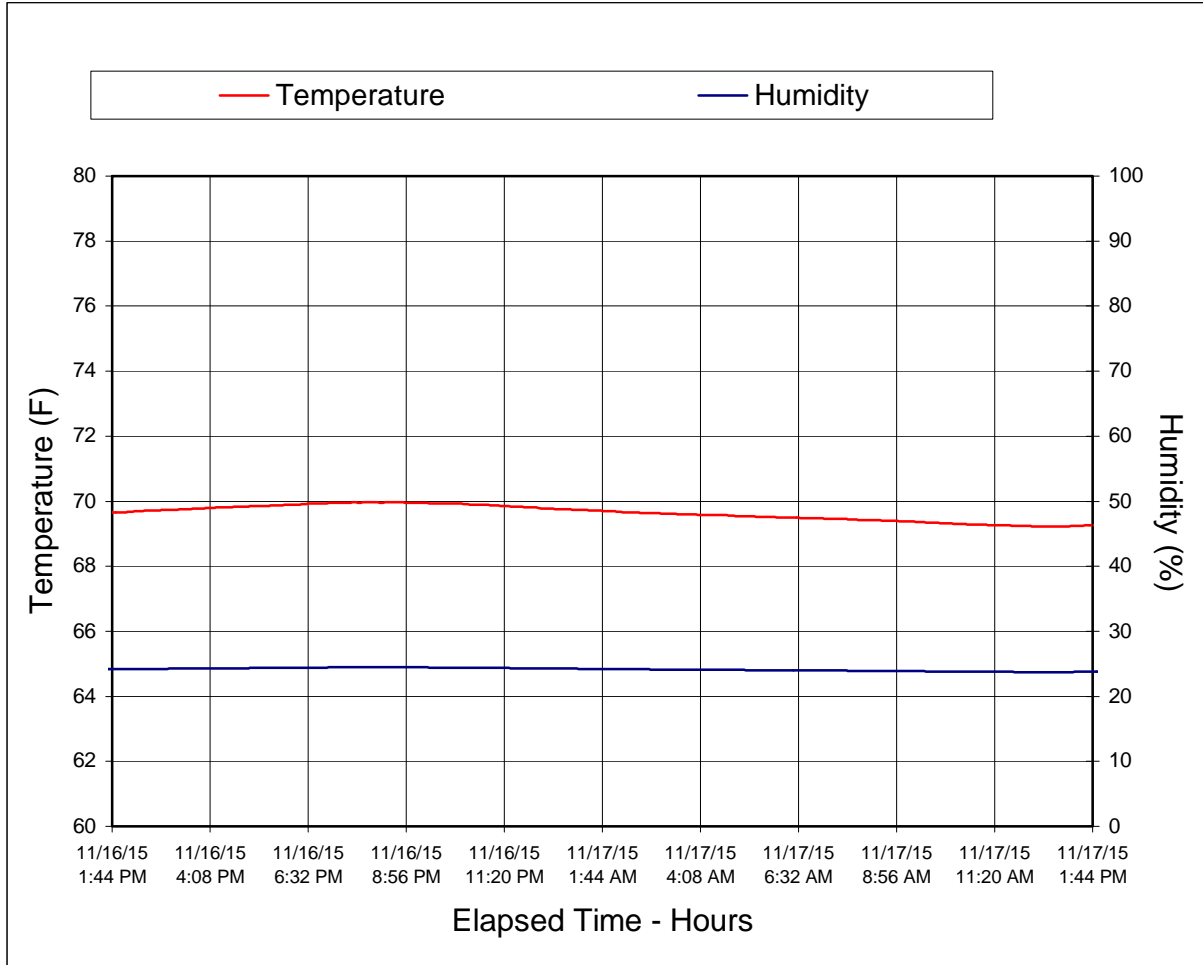
Test Phase	Spillage Location
0° To 90°	N/A
90° To 180°	N/A
180° To 270°	N/A
270° To 360°	N/A

DATA SHEET NO. 15

DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION

Test Vehicle: 2016 Mazda CX-3 Touring SUV NHTSA No. M20165402

Test Program: NCAP MDB Side Impact Test Test Date: 11/17/15



**APPENDIX A
PHOTOGRAPHS**

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



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



FIGURE 3. Pre-Test Frontal View of Test Vehicle



FIGURE 4. Post-Test Frontal View of Test Vehicle



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



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



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



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



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



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



FIGURE 11. Pre-Test Rear View of Test Vehicle



FIGURE 12. Post-Test Rear View of Test Vehicle



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



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



FIGURE 15. Pre-Test Overhead View of Test Area

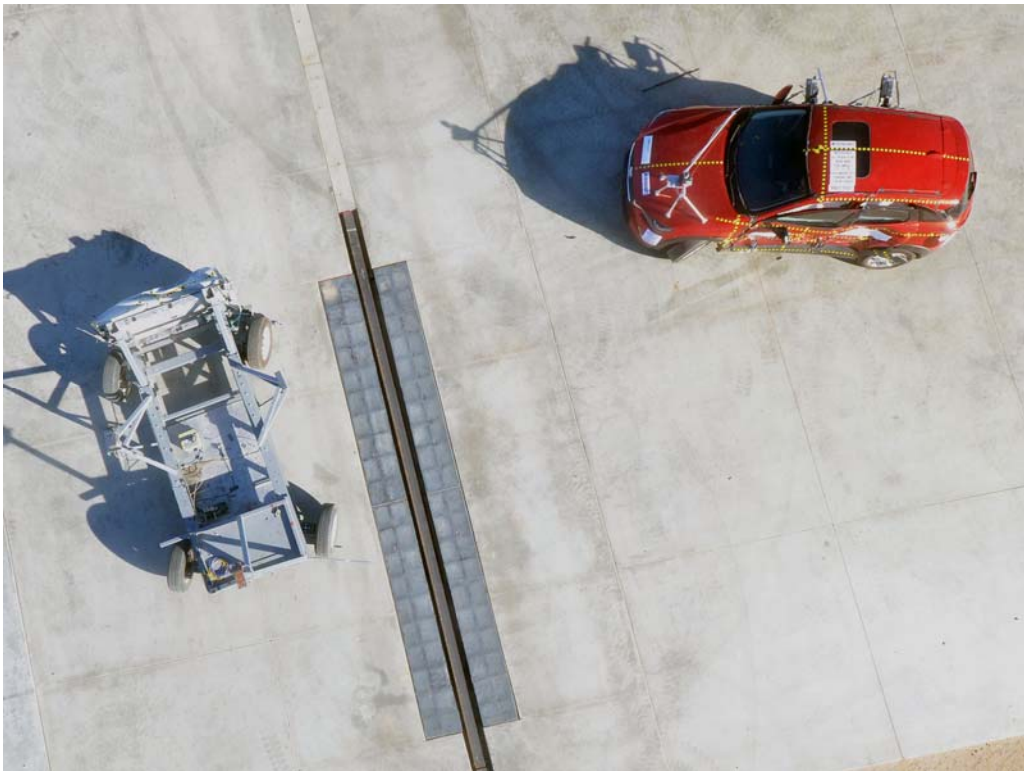


FIGURE 16. Post-Test Overhead View of Test Area



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



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



FIGURE 37. View of Disengaged Parking Brake

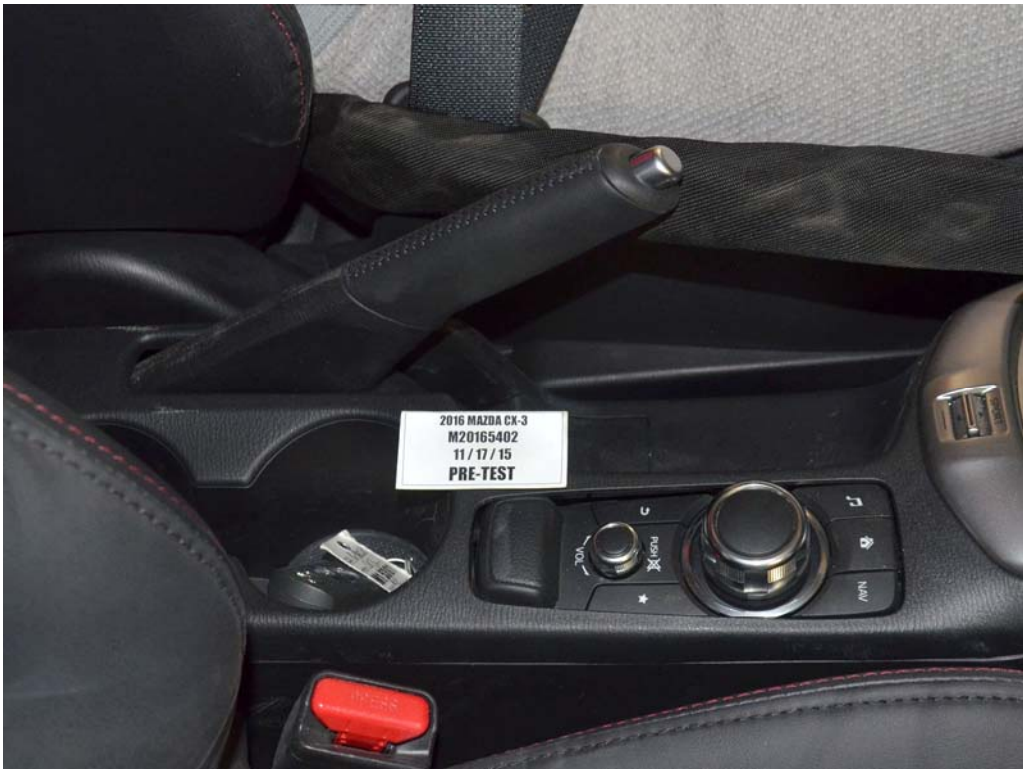


FIGURE 38. Pre-Test View of Parking Brake



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



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



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



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



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



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



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



FIGURE 46. Pre-Test Driver Inner Door Panel View



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



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

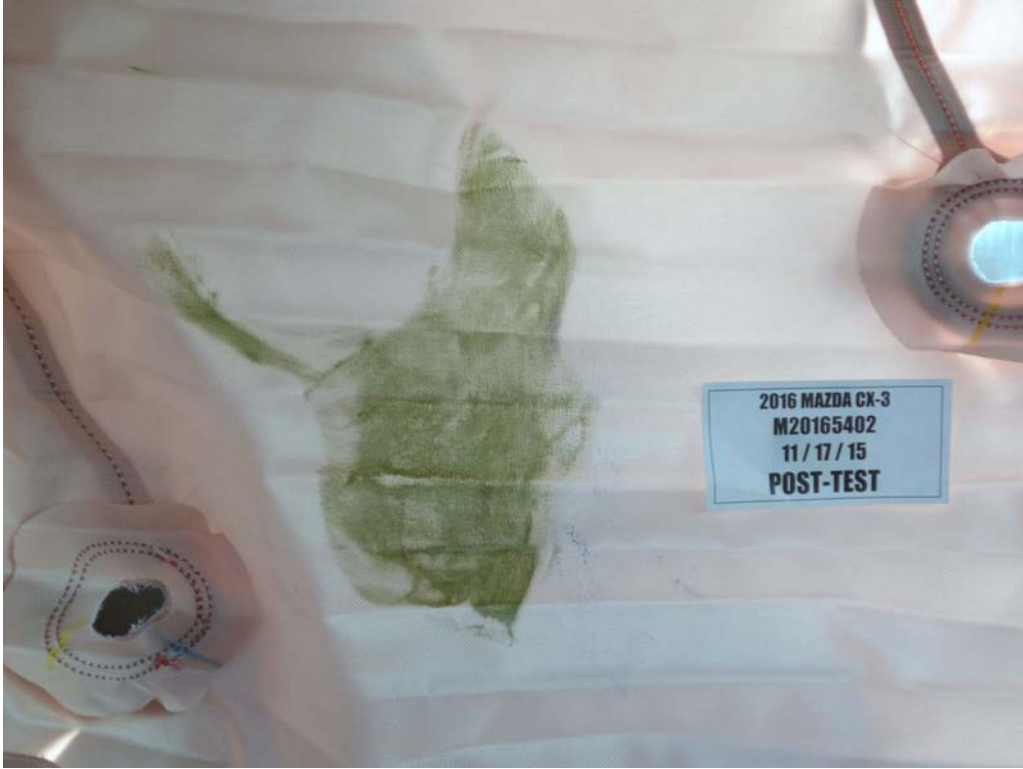


FIGURE 49. Post-Test Driver Dummy Close-Up Head Contact with Side Airbag View



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



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



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



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



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



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



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



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

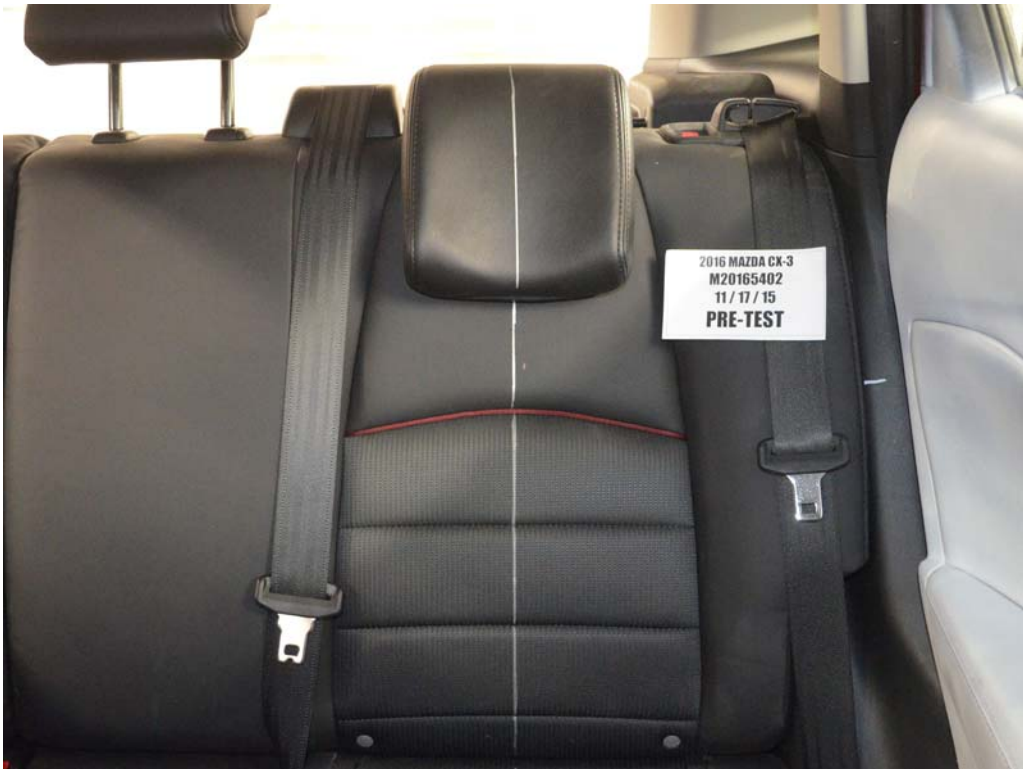


FIGURE 58. Pre-Test Frontal View of Rear Passenger Seat Back Prior to Dummy Positioning



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



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



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



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



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



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



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



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



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



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



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



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



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

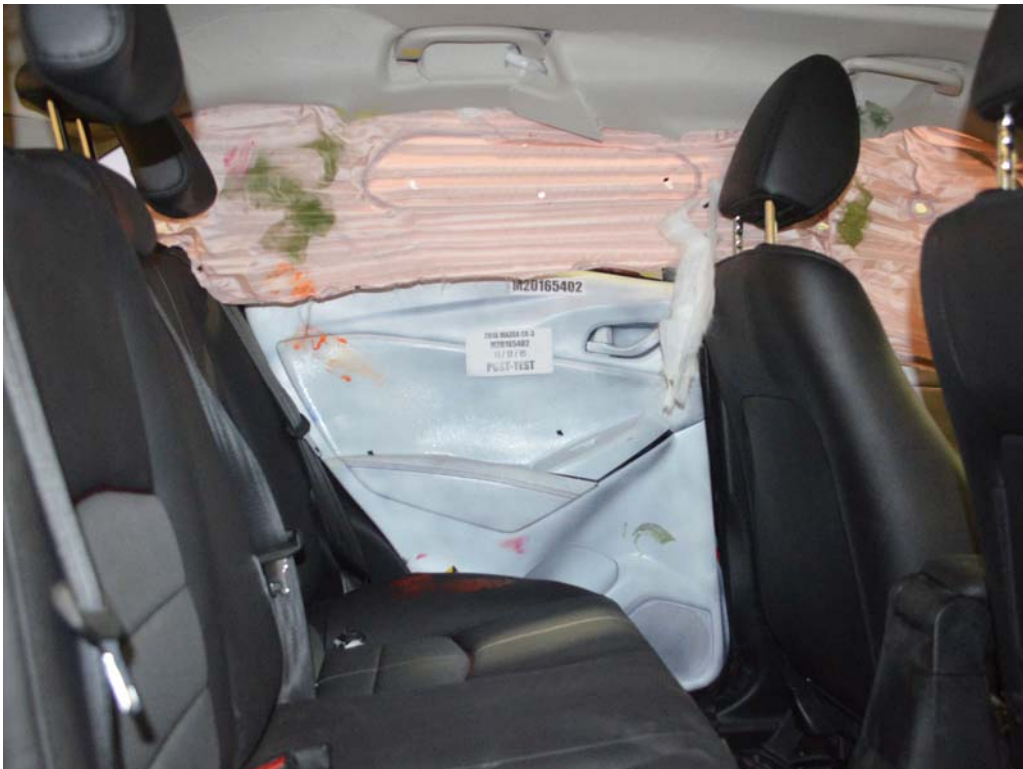


FIGURE 74. Post-Test Rear Passenger Inner Door Panel View
Showing Rear Passenger Dummy Contact Locations



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

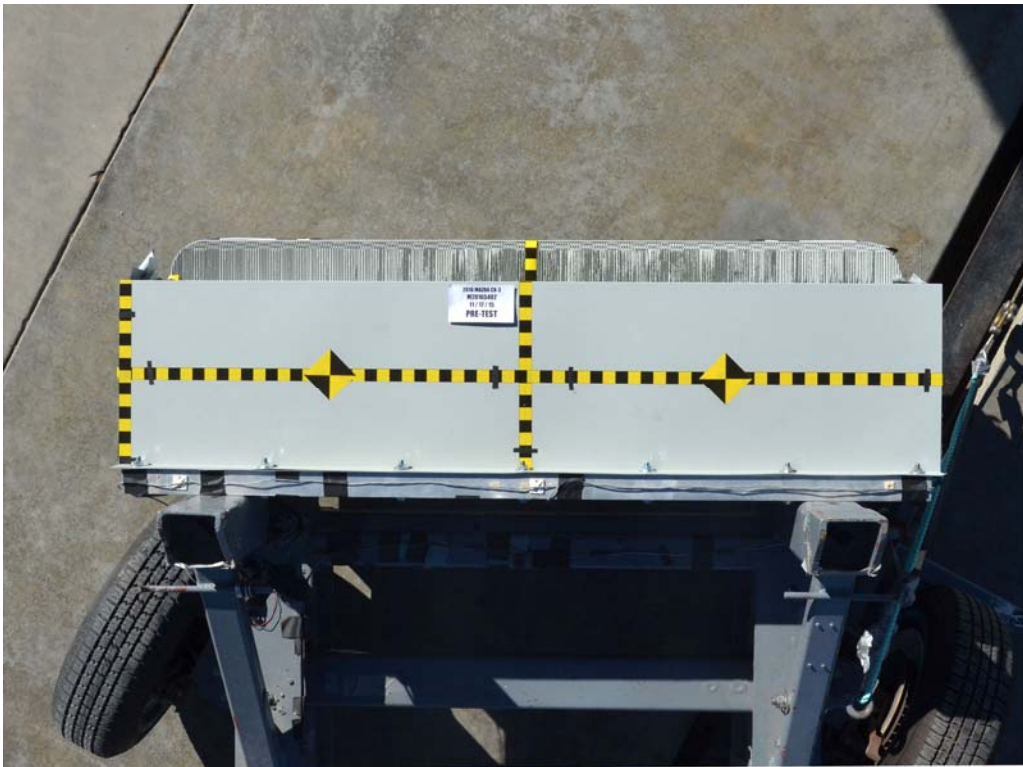


FIGURE 86. Pre-Test Top View of MDB Impactor Face



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

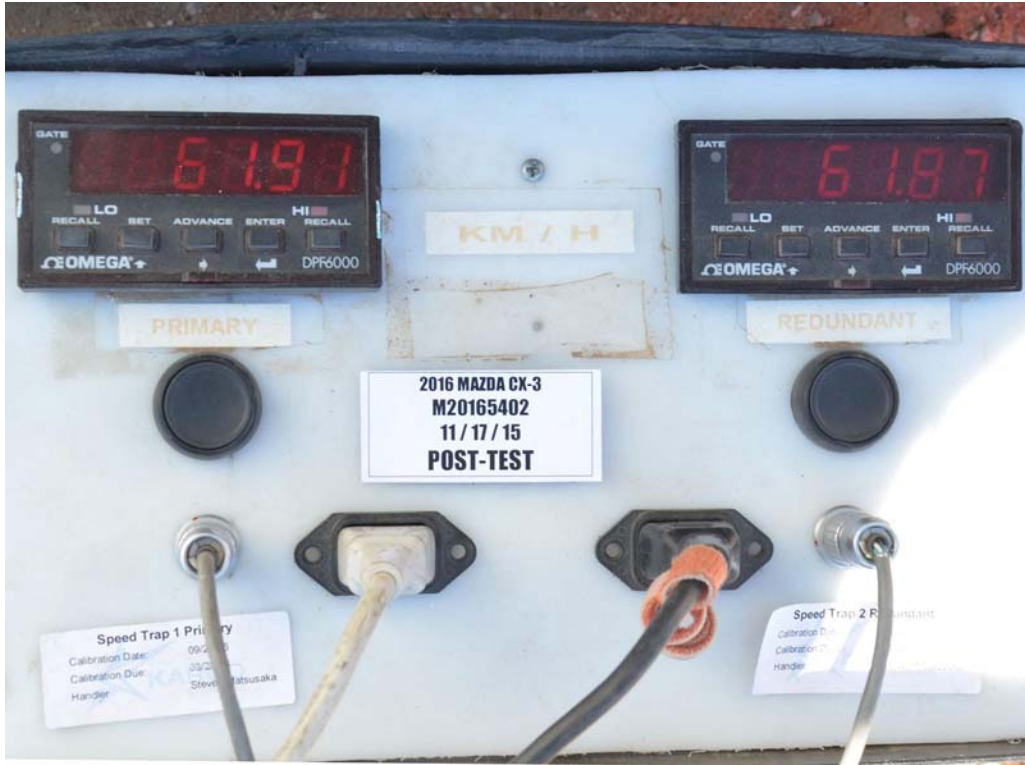


FIGURE 95. Post-Test Primary and Redundant Speed Trap Read-Out



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

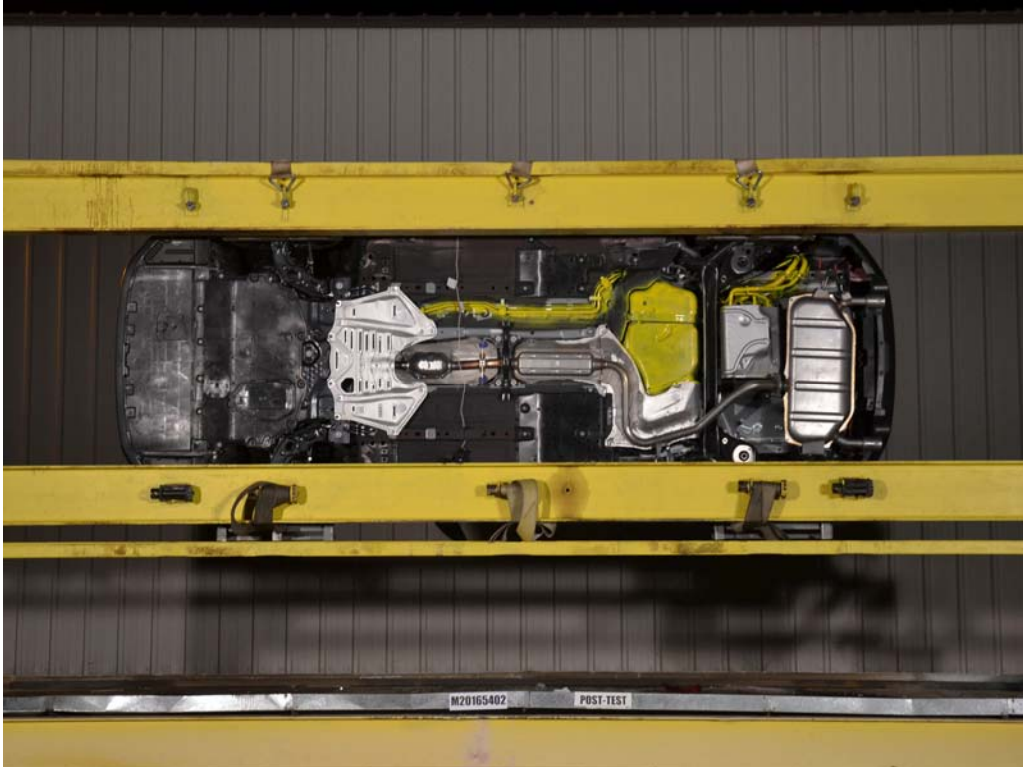



FIGURE 99. FMVSS No. 301 Static Rollover 270 Degrees



FIGURE 100. FMVSS No. 301 Static Rollover 360 Degrees



FIGURE 101. Impact Event



mazda SKYACTIV[®] technology

Scan for Vehicle Info and offers

2016 CX-3

Model: 2016 CX-3 TOURING FRONT WHEEL DRIVE
Exterior Color: SOUL RED METALLIC
Interior Color: BLACK

EPA DOT Fuel Economy and Environment Gasoline Vehicle

31 MPG (combined city/hwy) City 29 Highway 35

You Save \$1,750 in fuel costs over 5 years compared to the average new vehicle.

Annual fuel Cost \$1,450

Fuel Economy & Greenhouse Gas Rating Smog Rating

1 7 10 1 5 10

fuelconomy.gov

PARTS CONTENT INFORMATION:

FOR VEHICLES IN THIS CARLINE: U.S./CANADIAN PARTS CONTENT: 6%
MAJOR SOURCES OF FOREIGN PARTS CONTENT: JAPAN 60%

NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY DISTRIBUTION OR OTHER NON-PARTS COSTS.

FOR THIS VEHICLE:
FINAL ASSEMBLY POINT: HIROSHIMA, JAPAN
COUNTRY OF ORIGIN: JAPAN
ENGINE: JAPAN
TRANSMISSION: JAPAN

GOVERNMENT 5-STAR SAFETY RATINGS

Overall Vehicle Score	Not Rated
Frontal Crash	Not Rated
Driver Passenger	Not Rated
Side Crash	Not Rated
Front seat Rear seat	Not Rated
Rollover	Not Rated

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

STANDARD EQUIPMENT

ENGINE/MECHANICAL FEATURES

- SKYACTIV 2.5L ENGINE
- SKYACTIV DRIVE ESP SPORT MODE AT
- 148 HORSEPOWER, 148 LB-FT TORQUE
- FRONT-WHEEL DRIVE
- 4-WHEEL DISC BRAKES

EXTERIOR FEATURES

- 16-INCH ALLOY WHEELS
- 17-SPoke 191-ALUMINUM TIRES
- VARIABLE INTERMITTENT WIPERS
- FIXED INTERMITTENT REAR WIPER
- HEATED POWER MIRRORS W/TURN LAMPS

INTERIOR FEATURES

- 5-PASSENGER SEATING
- 3.1:1 TELESCOPIC STEERING COLUMN
- STEERING WHEEL W/ AUDIO/CRUISE CONTROL
- LEATHER-WRAPPED STEERING WHEEL
- GEARSHIFT KNOB & BRAKE HANDLE
- POWER AUTOMATIC DOOR LOCKS
- POWER WINDOWS W/HOVER ONE-TOUCH
- LEATHERETTE W/12-LOTH SPORT SEATS
- HEATED FRONT SEATS
- 6-WAY MANUAL DRIVER'S SEAT
- 8-WAY DRIVER'S SEAT
- FRONT ARMREST

SAFETY AND SECURITY FEATURES

- ANTI-LOCK BRAKE SYSTEM (ABS) WITH EBD & BRAKE ASSIST
- DYNAMIC STABILITY CONTROL (DSC)
- TRACTION CONTROL SYSTEM (TCS)
- HILL LAUNCH ASSIST
- ADVANCED DRIVE FRONT AIRBAGS
- FRONT SIDE-IMPACT AIR BAGS
- FRONT & REAR SIDE AIR CURTAINS
- REAR CROSS TRAFFIC ALERT

OPTIONAL EQUIPMENT

- SOUL RED PAINT CHARGE \$300
- ALL STATE EMISSIONS NO CHARGE
- PREMIUM PACKAGE \$1,419
- POWER MOORFOOT
- TORNEAU COVER
- SATELLITE RADIO
- BOSE 7-SPEAKER AUDIO
- HD RADIO

Total Vehicle and Options Delivery, Processing and Handling Fee \$23,870
Total MSRP \$24,550

FIGURE 102. Monroney Label



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

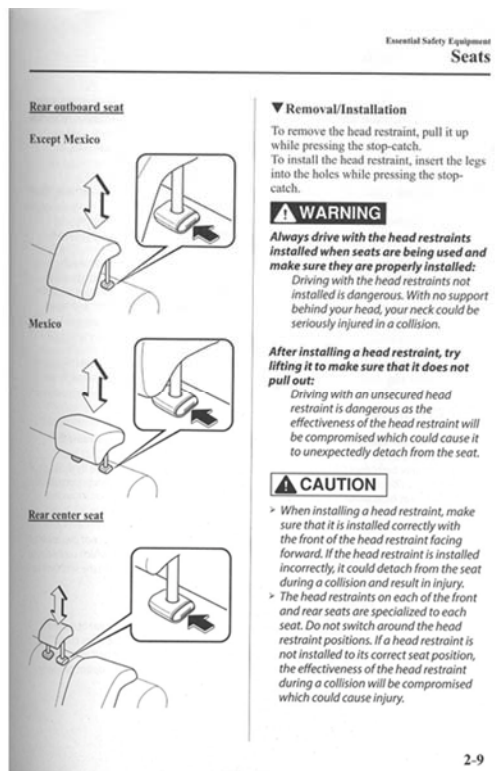


FIGURE 104. Left Rear Passenger Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

APPENDIX B
DUMMY RESPONSE DATA

TABLE OF DATA PLOTS

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

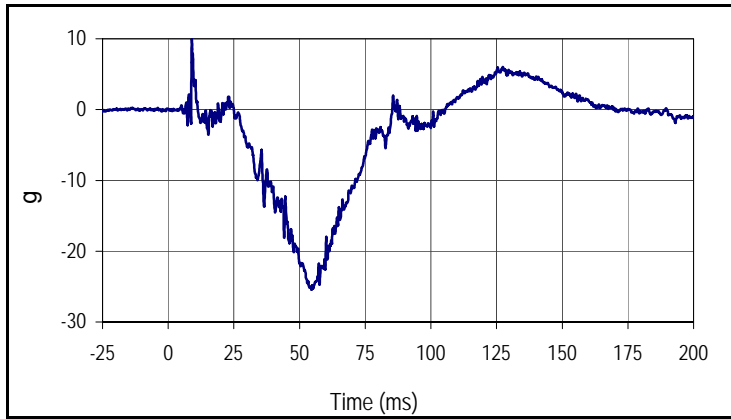
MDB Rear Acceleration (Y)

Left MDB Contact Switch

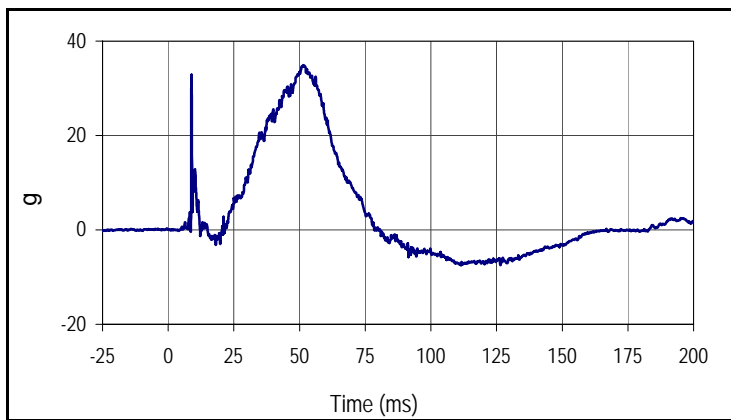
Right MDB Contact Switch

Test Vehicle: 2016 Mazda CX-3 Touring SUV
 Test Program: NCAP MDB Side Impact Test

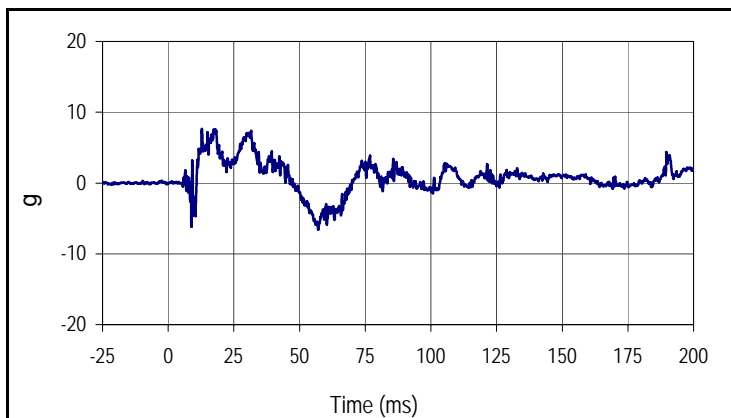
NHTSA No.: M20165402
 Test Date: 11/17/15



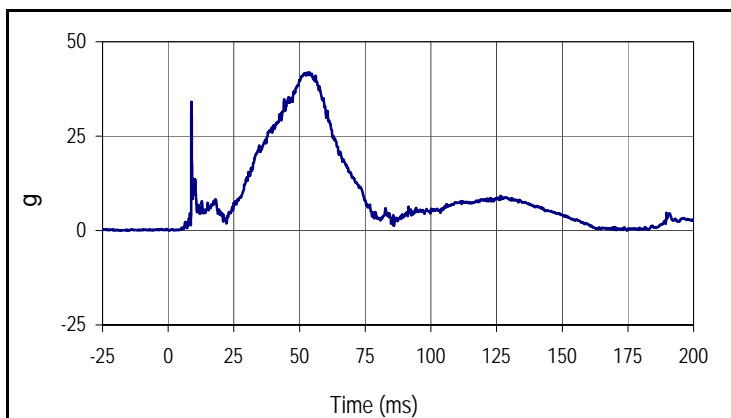
Curve Description			
Driver Head Acceleration X Primary			
Plot No.		SAE Class	Units
001		1000	g
Max	Time	Min	Time
9.9	9.0	-25.4	54.6



Curve Description			
Driver Head Acceleration Y Primary			
Plot No.		SAE Class	Units
002		1000	g
Max	Time	Min	Time
34.9	51.4	-7.5	111.4



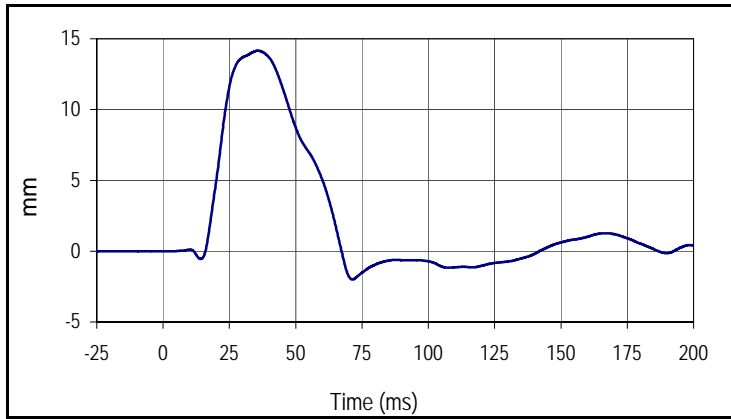
Curve Description			
Driver Head Acceleration Z Primary			
Plot No.		SAE Class	Units
003		1000	g
Max	Time	Min	Time
7.6	12.8	-6.6	57.1



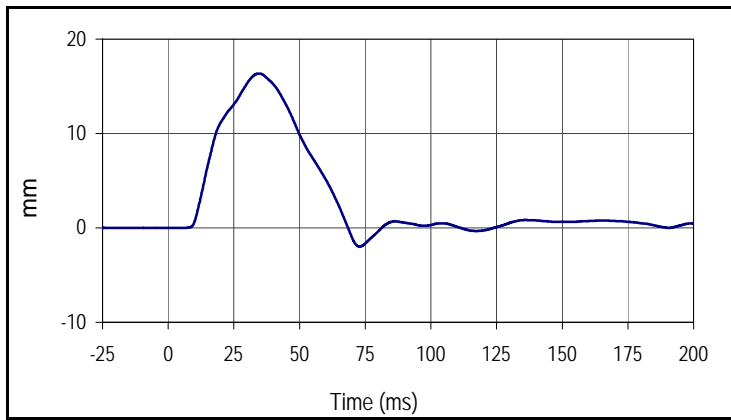
Curve Description			
Driver Head Resultant Acceleration Primary			
Plot No.		SAE Class	Units
004		1000	g
Max	Time	Min	Time
42.0	53.7	0.0	3.4

Test Vehicle: 2016 Mazda CX-3 Touring SUV
 Test Program: NCAP MDB Side Impact Test

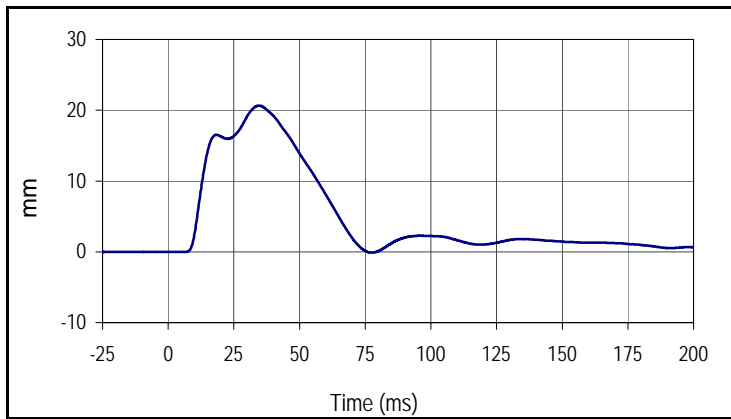
NHTSA No.: M20165402
 Test Date: 11/17/15



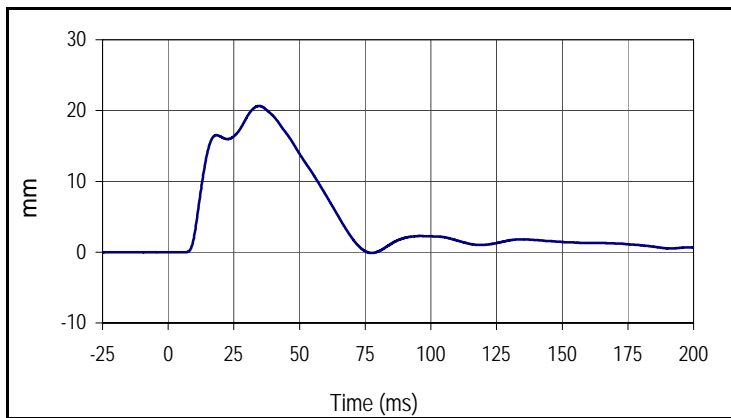
Curve Description			
Driver Upper Thorax Rib Deflection Y			
Plot No.		SAE Class	Units
005		180	mm
Max	Time	Min	Time
14.2	35.8	-2.0	71.4



Curve Description			
Driver Middle Thorax Rib Deflection Y			
Plot No.		SAE Class	Units
006		180	mm
Max	Time	Min	Time
16.3	34.6	-2.0	72.8



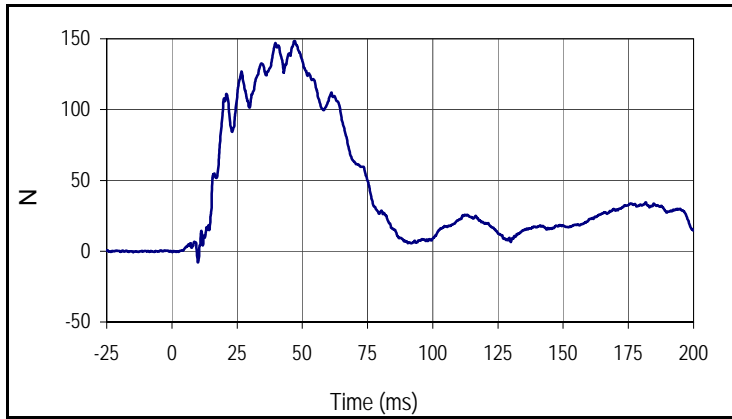
Curve Description			
Driver Lower Thorax Rib Deflection Y			
Plot No.		SAE Class	Units
007		180	mm
Max	Time	Min	Time
20.7	34.6	-0.1	77.3



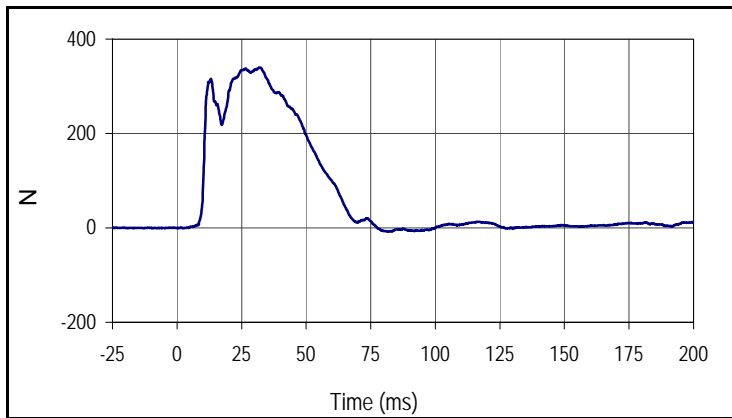
Curve Description			
Driver Thorax Rib Deflection Maximum Y			
Plot No.		SAE Class	Units
008		180	mm
Max	Time	Min	Time
20.7	34.6	-0.1	77.3

Test Vehicle: 2016 Mazda CX-3 Touring SUV
 Test Program: NCAP MDB Side Impact Test

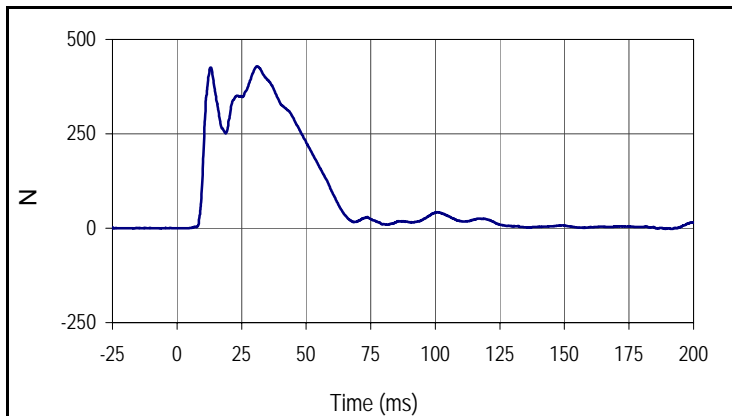
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 Test Date: 11/17/15



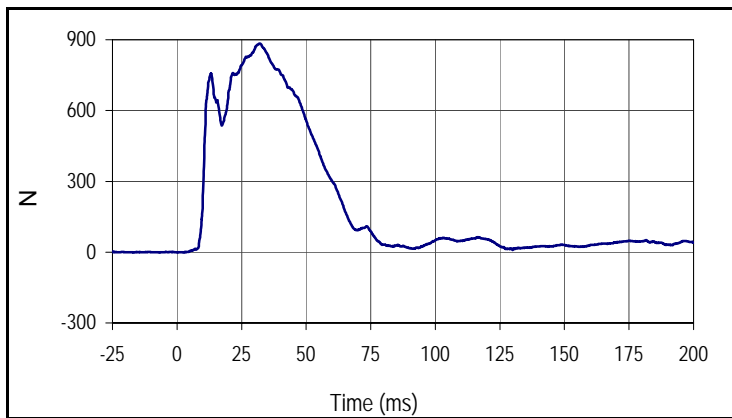
Curve Description			
Driver Anterior Abdominal Force Y			
Plot No.		SAE Class	Units
009		600	N
Max	Time	Min	Time
148.5	47.0	-8.1	10.0



Curve Description			
Driver Middle Abdominal Force Y			
Plot No.		SAE Class	Units
010		600	N
Max	Time	Min	Time
339.7	32.3	-8.1	81.6



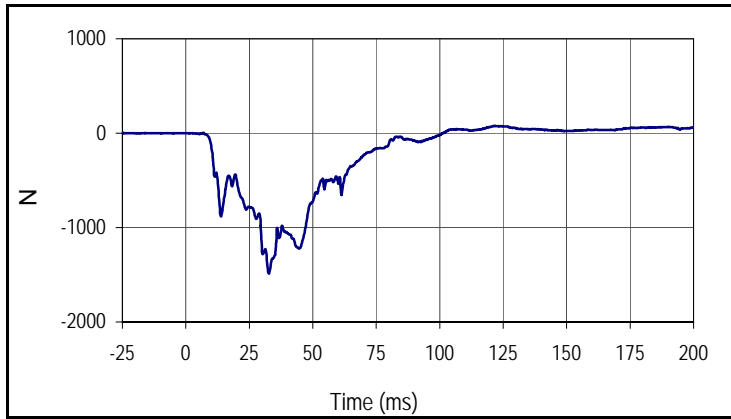
Curve Description			
Driver Posterior Abdominal Force Y			
Plot No.		SAE Class	Units
011		600	N
Max	Time	Min	Time
429.0	31.1	-2.1	191.1



Curve Description			
Driver Total Abdominal Force			
Plot No.		SAE Class	Units
012		600	N
Max	Time	Min	Time
883.9	32.1	-1.3	2.5

Test Vehicle: 2016 Mazda CX-3 Touring SUV
 Test Program: NCAP MDB Side Impact Test

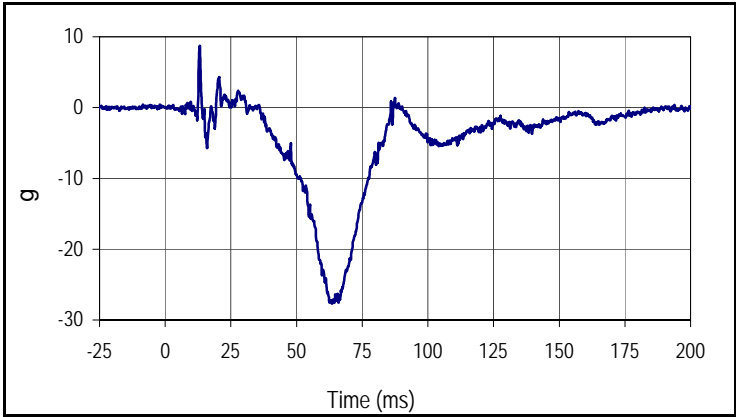
NHTSA No.: M20165402
 Test Date: 11/17/15



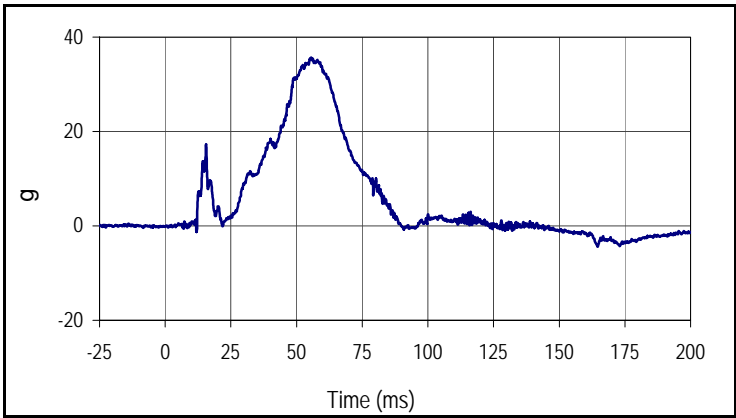
Curve Description			
Driver Pubic Symphysis Force Y			
Plot No.		SAE Class	Units
013		600	N
Max	Time	Min	Time
77.7	121.6	-1487.0	32.7

Test Vehicle: 2016 Mazda CX-3 Touring SUV
 Test Program: NCAP MDB Side Impact Test

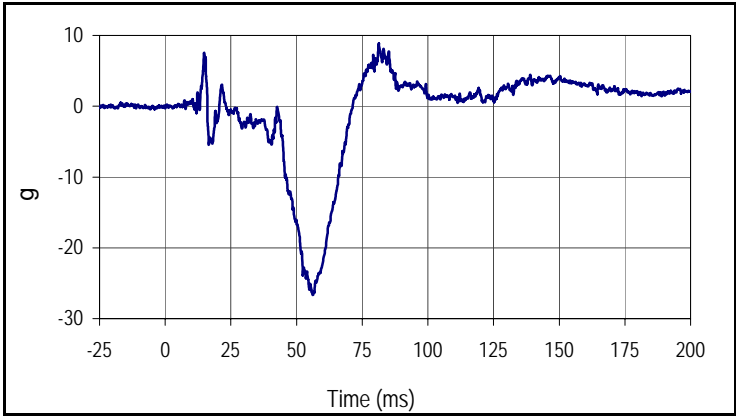
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 Test Date: 11/17/15



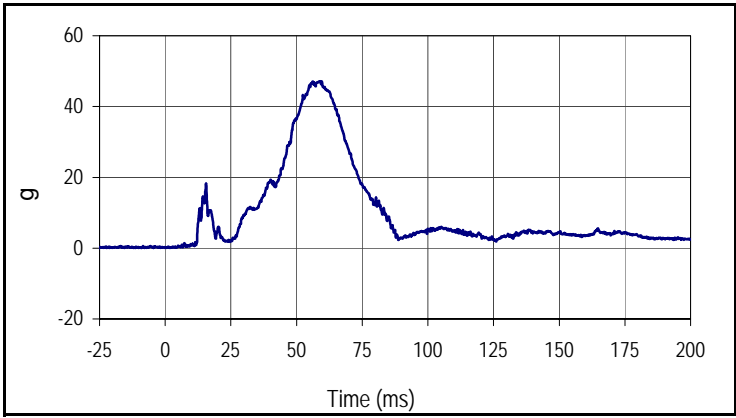
Curve Description			
Passenger Head Acceleration X Primary			
Plot No.		SAE Class	Units
014		1000	g
Max	Time	Min	Time
8.7	13.1	-27.7	63.5



Curve Description			
Passenger Head Acceleration Y Primary			
Plot No.		SAE Class	Units
015		1000	g
Max	Time	Min	Time
35.7	55.5	-4.4	164.6



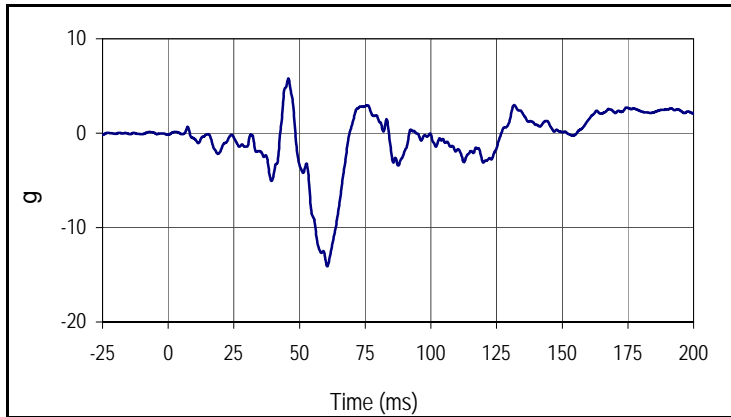
Curve Description			
Passenger Head Acceleration Z Primary			
Plot No.		SAE Class	Units
016		1000	g
Max	Time	Min	Time
8.9	81.3	-26.7	56.3



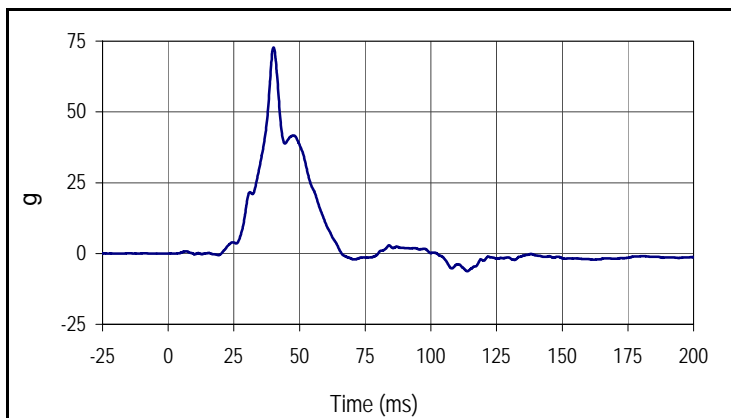
Curve Description			
Passenger Head Acceleration Resultant Primary			
Plot No.		SAE Class	Units
017		1000	g
Max	Time	Min	Time
47.2	59.0	0.0	2.1

Test Vehicle: 2016 Mazda CX-3 Touring SUV
 Test Program: NCAP MDB Side Impact Test

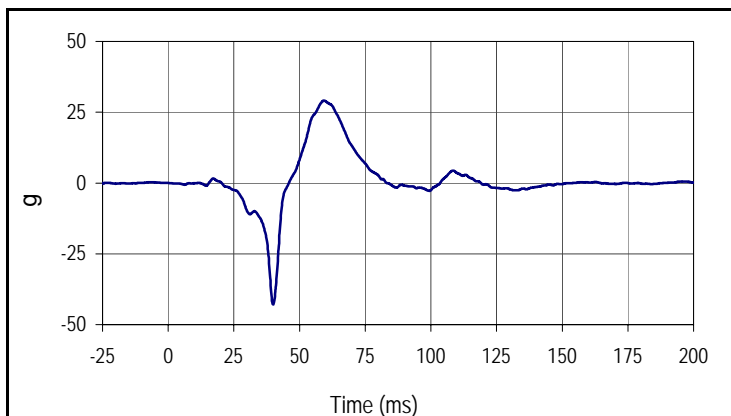
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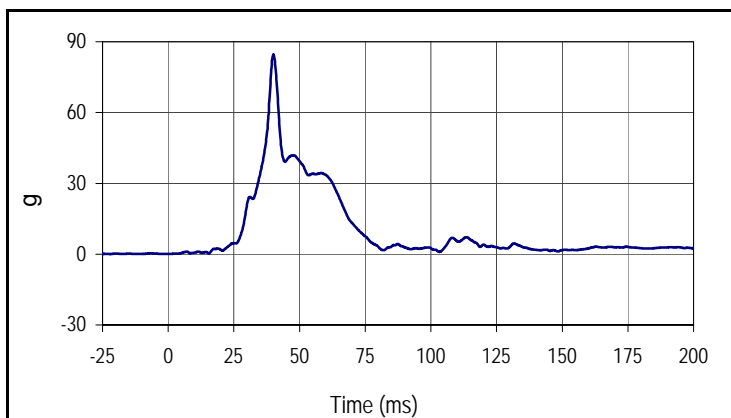
Curve Description			
Passenger Lower Spine T12 Acceleration X			
Plot No.		SAE Class	Units
018		180	g
Max	Time	Min	Time
5.8	45.8	-14.1	60.5



Curve Description			
Passenger Lower Spine T12 Acceleration Y			
Plot No.		SAE Class	Units
019		180	g
Max	Time	Min	Time
72.8	40.1	-6.3	113.8



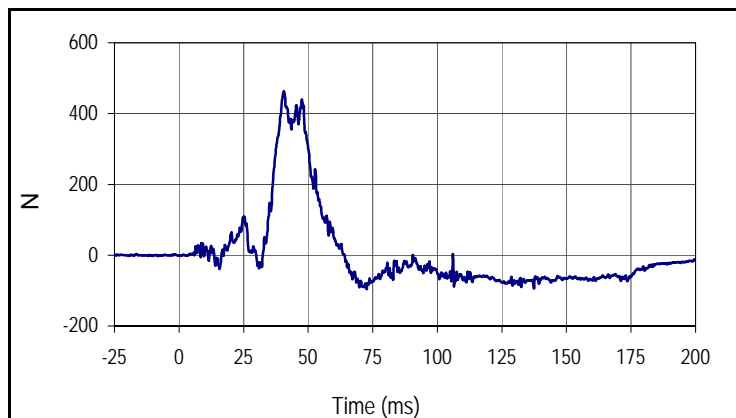
Curve Description			
Passenger Lower Spine T12 Acceleration Z			
Plot No.		SAE Class	Units
020		180	g
Max	Time	Min	Time
29.1	59.4	-42.9	40.0



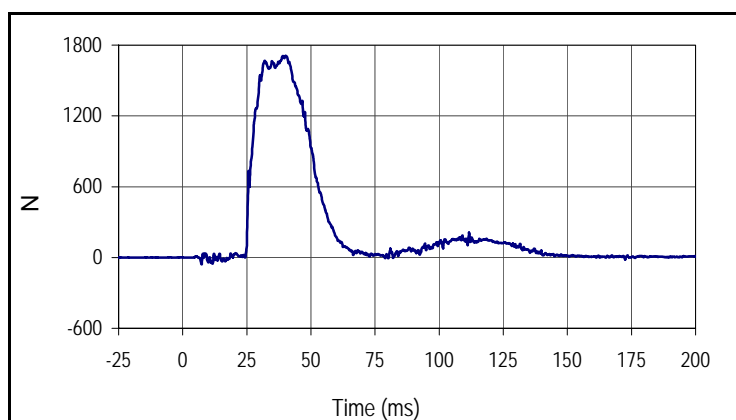
Curve Description			
Passenger Lower Spine T12 Acceleration Res.			
Plot No.		SAE Class	Units
021		180	g
Max	Time	Min	Time
84.6	40.0	0.1	1.1

Test Vehicle: 2016 Mazda CX-3 Touring SUV
 Test Program: NCAP MDB Side Impact Test

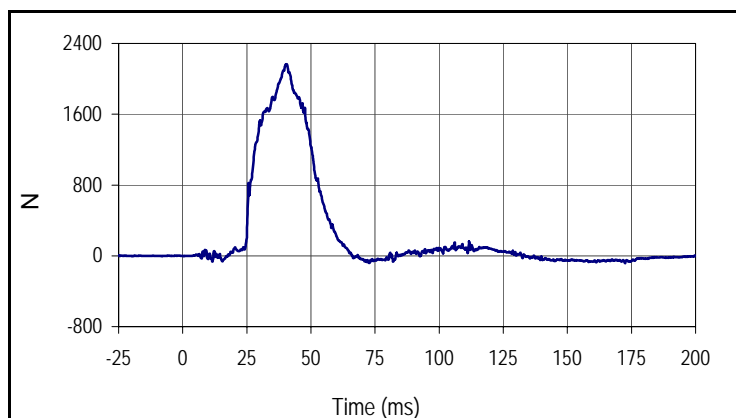
NHTSA No.: M20165402
 Test Date: 11/17/15



Curve Description			
Passenger Iliac Force on Impact Side Y			
Plot No.		SAE Class	Units
022		600	N
Max	Time	Min	Time
463.6	40.6	-95.9	72.6



Curve Description			
Passenger Acetabulum Force on Impact Side Y			
Plot No.		SAE Class	Units
023		600	N
Max	Time	Min	Time
1710.5	40.1	-58.2	7.4



Curve Description			
Passenger Total Pelvic Force			
Plot No.		SAE Class	Units
024		600	N
Max	Time	Min	Time
2166.1	40.6	-83.4	172.5

APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

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

Test Program: ES2re External Measurements

Test Date: 11/12/15

ATD Serial No.: F037

Test I.D.: N/A



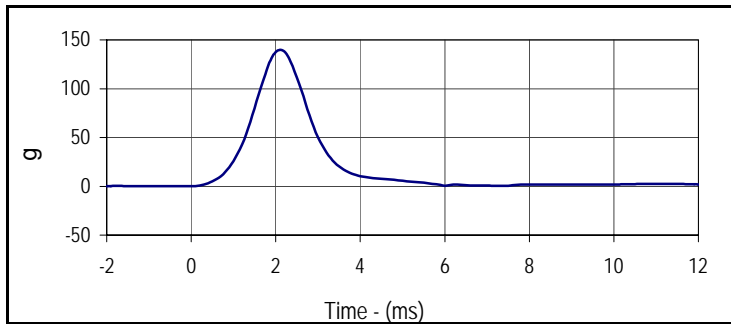
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	30.0	Pass
1 Sitting Height	mm	900 - 918	909	Pass
2 Seat to Shoulder Joint	mm	558 - 572	564	Pass
3 Seat to Lower Face of Thoracic Spine Box	mm	346 - 356	350	Pass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

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

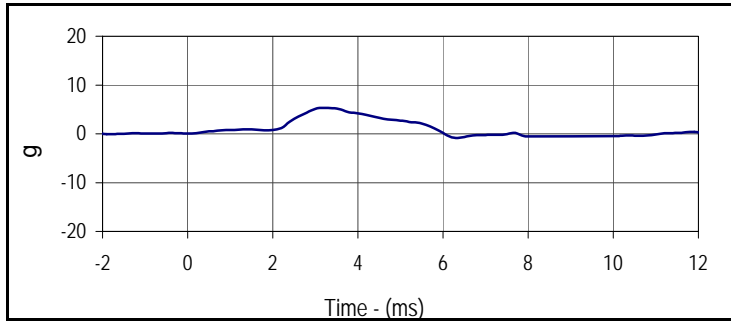
Test Date: 11/12/15
 Test I.D.: F037HD078



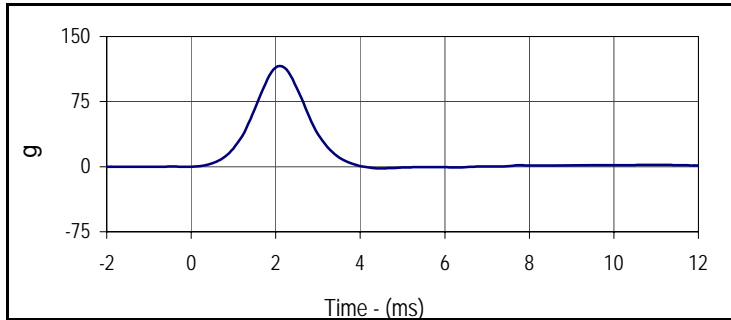
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	385	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.8	Pass
Peak Head Resultant Acceleration	g	125 to 155	140.0	Pass
Peak Head X Acceleration	g	≤15	5.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	0.3	Pass
Overall Test Results				Pass



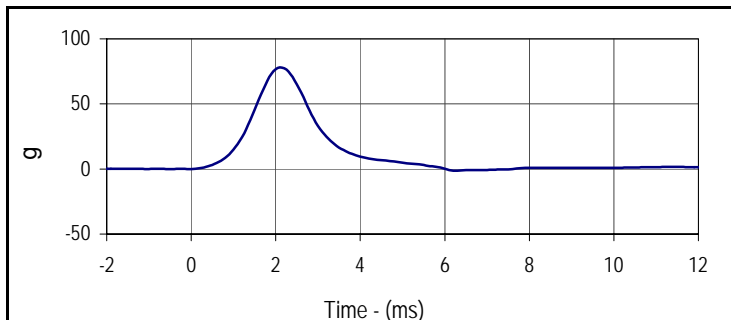
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
140.0	2.1	0.1	0.0



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	g
Max	Time	Min	Time
5.3	3.2	-0.8	6.3



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
116.1	2.1	-1.9	4.5



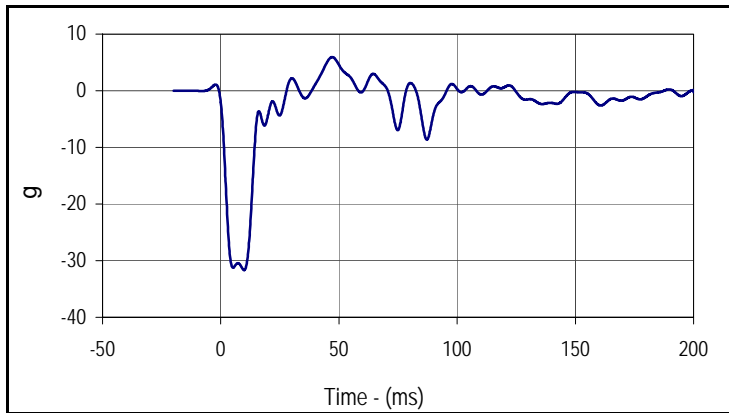
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
78.2	2.1	-1.3	6.2

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

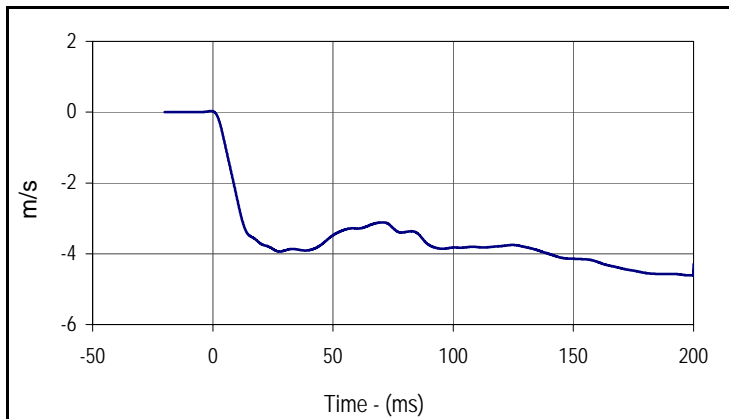
Test Date: 11/12/15
 Test I.D.: F037NB078



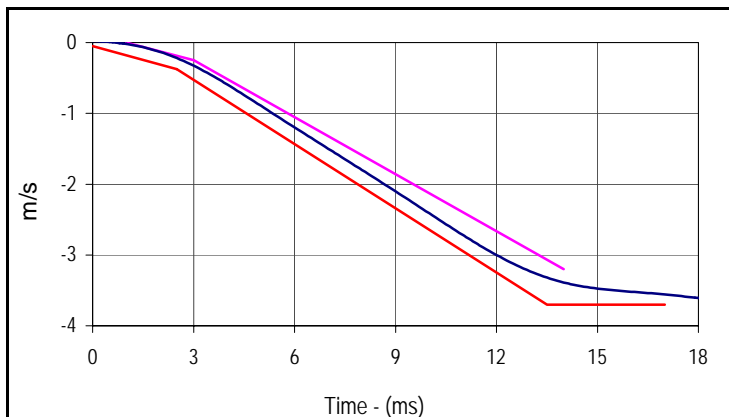
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	420	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.8	Pass
Pendulum Velocity	m/s	3.3 to 3.5	3.35	Pass
Headform Flexion	Max	49 to 59	54.3	Pass
	Time	54 to 66	54.6	Pass
Headform Flexion Decay (Peak to Zero)	msec	53 to 88	62.6	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	g
Max	Time	Min	Time
5.9	47.1	-31.7	9.9



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.7	-4.6	198.9



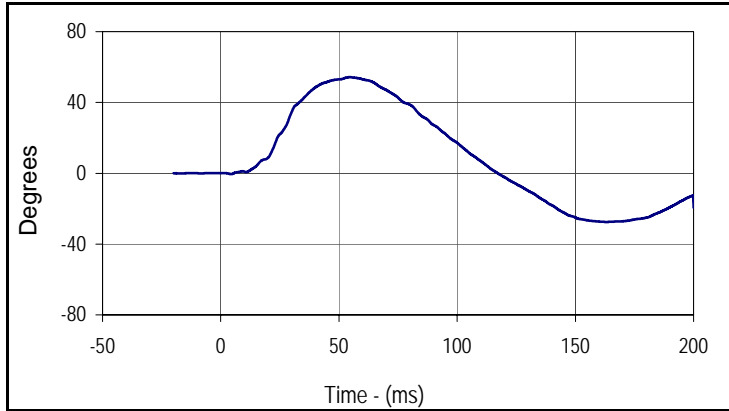
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.7	-4.6	198.9

Velocity Corridors

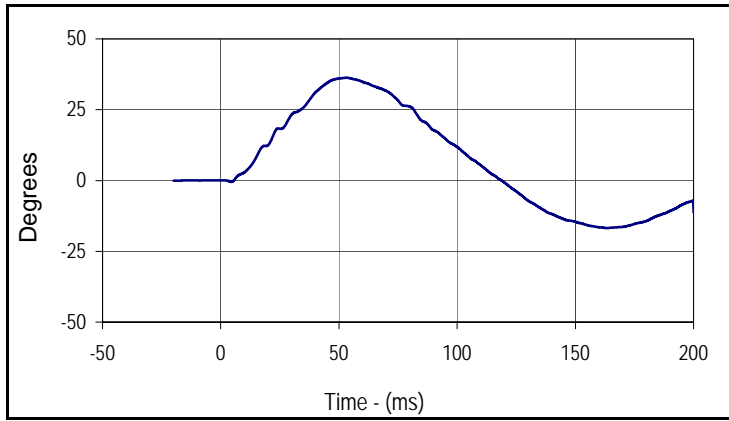
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.0	-0.03	2.5	-0.375
14.0	-3.20	13.5	-3.70
		17.0	-3.70

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

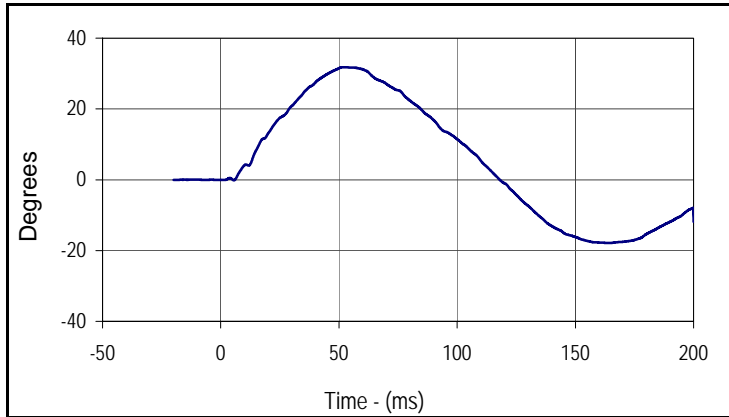
Test Date: 11/12/15
 Test I.D.: F037NB078



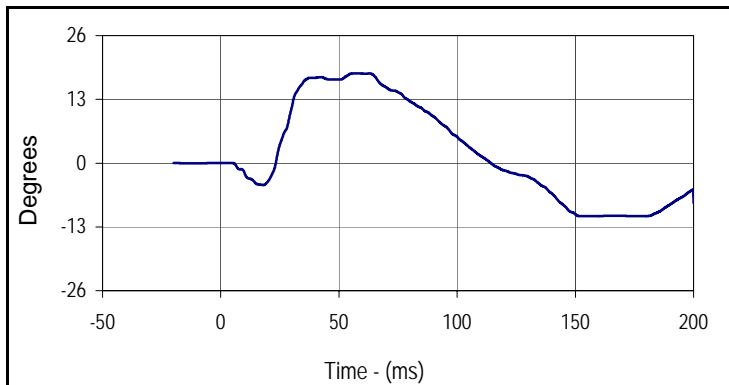
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
54.3	54.6	-27.5	163.1



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
36.3	53.2	-16.8	163.2



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
31.8	52.3	-17.9	164.8



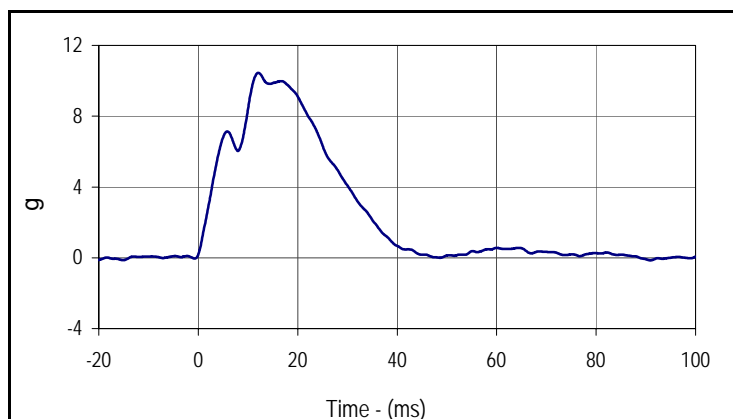
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
18.3	63.0	-10.8	152.3

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

Test Date: 11/12/15
 Test I.D.: F037SH078



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	485	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.8	Pass
Pendulum Speed	m/s	4.2 to 4.4	4.32	Pass
Peak Impactor Acceleration	g	7.5 to 10.5	10.4	Pass
Overall Test Results				Pass



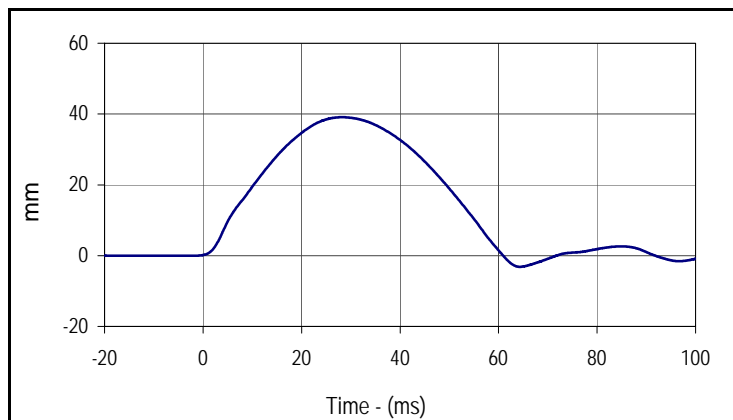
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	g
Max	Time	Min	Time
10.4	12.1	-0.1	90.9

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

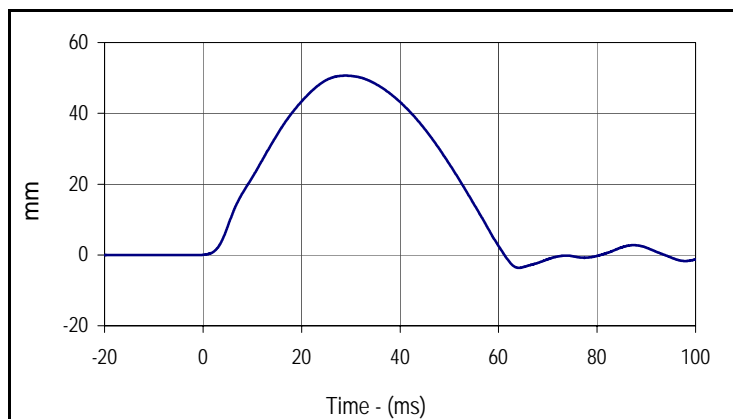
Test Date: 11/12/15
 Test I.D.: F037RB1078



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	540	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.7	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	39.1	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	50.7	Pass
Overall Test Results				Pass



Curve Description			
Upper Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	mm
Max	Time	Min	Time
39.1	28.2	-3.2	64.3



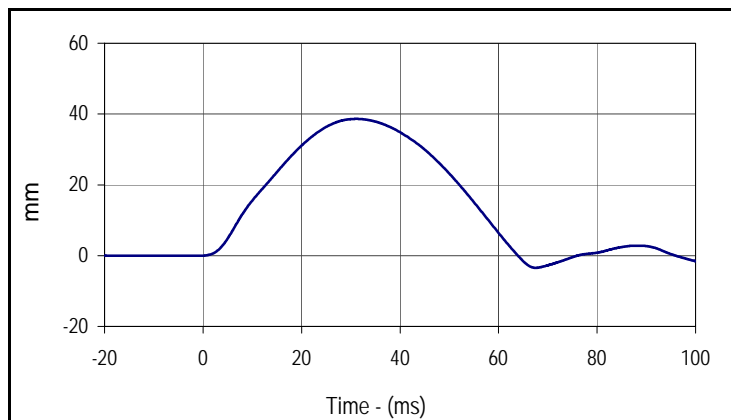
Curve Description			
Upper Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max	Time	Min	Time
50.7	29.0	-3.6	64.1

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

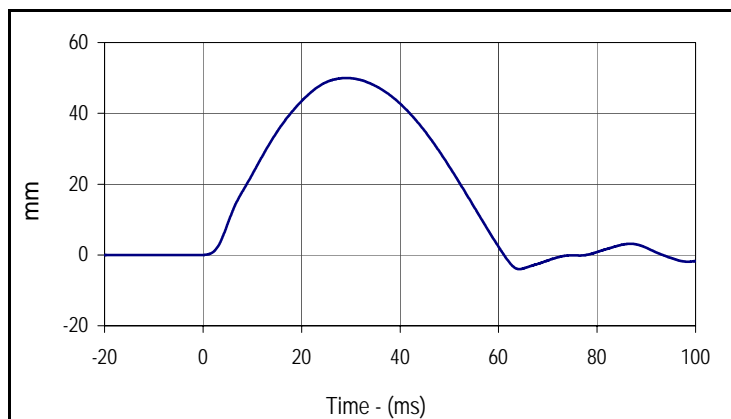
Test Date: 11/12/15
 Test I.D.: F037RB2078



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	585	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.7	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	50.0	Pass
Overall Test Results				Pass



Curve Description			
Middle Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	mm
Max	Time	Min	Time
38.6	31.2	-3.5	67.5



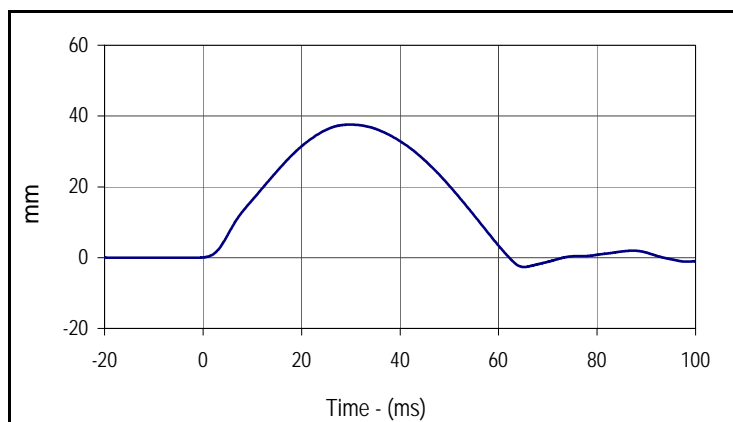
Curve Description			
Middle Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max	Time	Min	Time
50.0	29.1	-4.0	64.2

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

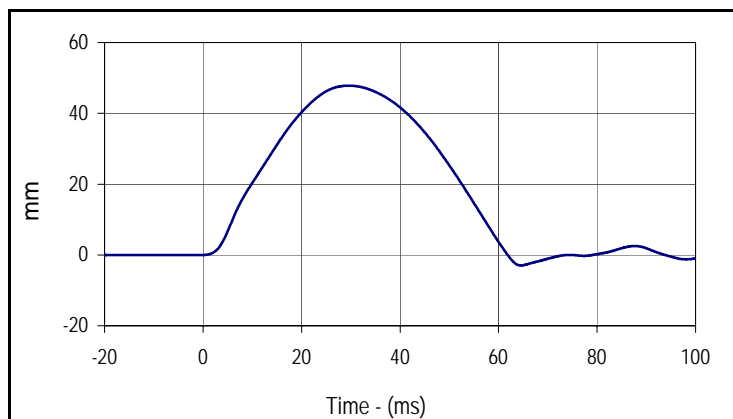
Test Date: 11/12/15
 Test I.D.: F037RB3078



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	630	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.7	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	37.6	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	47.8	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
37.6	29.8	-2.7	65.2



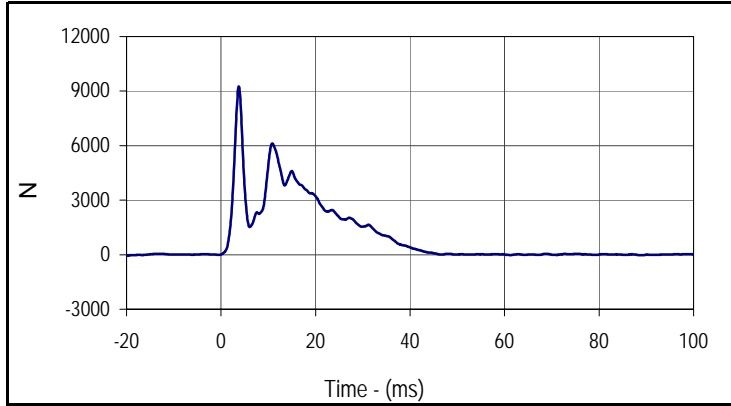
Curve Description			
Lower Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max	Time	Min	Time
47.8	29.6	-3.0	64.5

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

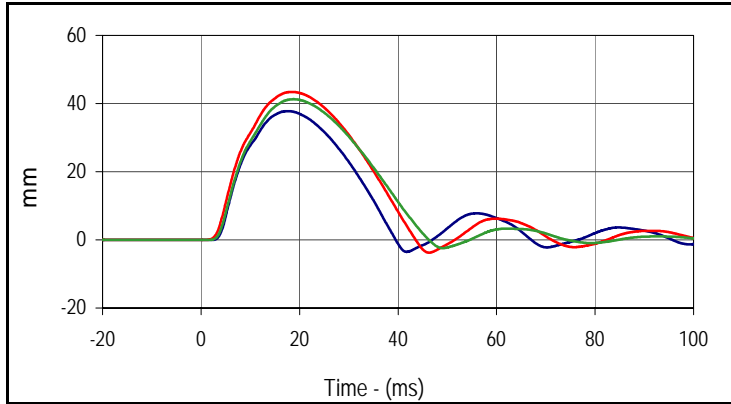
Test Date: 11/12/15
 Test I.D.: F037TH078



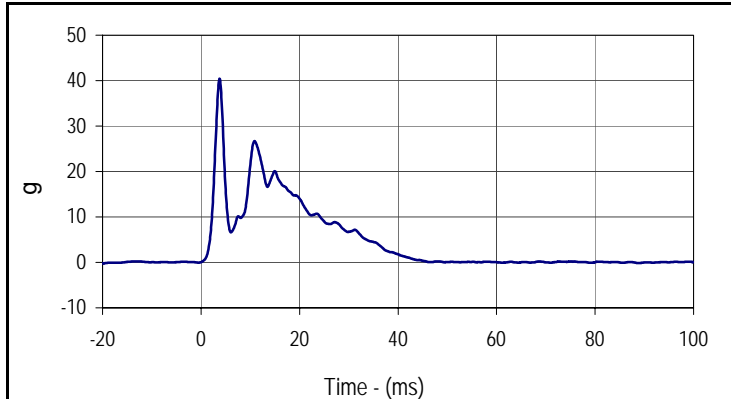
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	675	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.7	Pass
Peak Impactor Velocity	m/s	5.4 to 5.6	5.56	Pass
Peak Impactor Force	N	5100 to 6200	6113.4	Pass
	msec	> 6.0 msec	10.9	Pass
Peak Upper Rib Deflection	mm	34 to 41	37.8	Pass
Peak Middle Rib Deflection	mm	37 to 45	43.4	Pass
Peak Lower Rib Deflection	mm	37 to 44	41.3	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	N
Max	Time	Min	Time
9253.2	3.8	-52.2	-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
37.8	17.7	-3.5	41.8
Max (Middle)	Time	Min (Middle)	Time
43.4	18.4	-3.8	46.3
Max (Lower)	Time	Min (Lower)	Time
41.3	18.8	-2.4	49.1



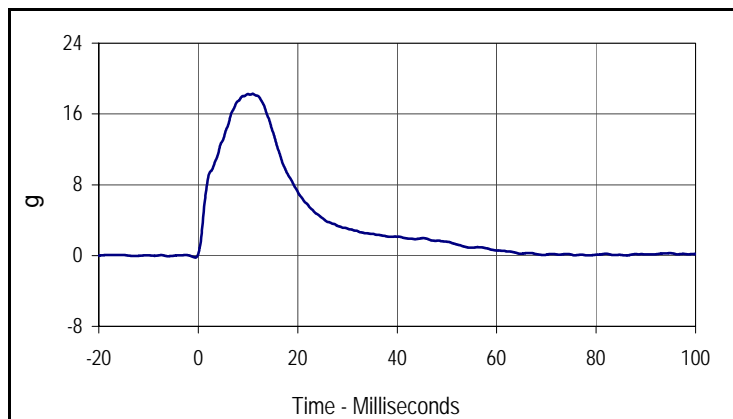
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
40.4	3.8	-0.2	-20.0

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

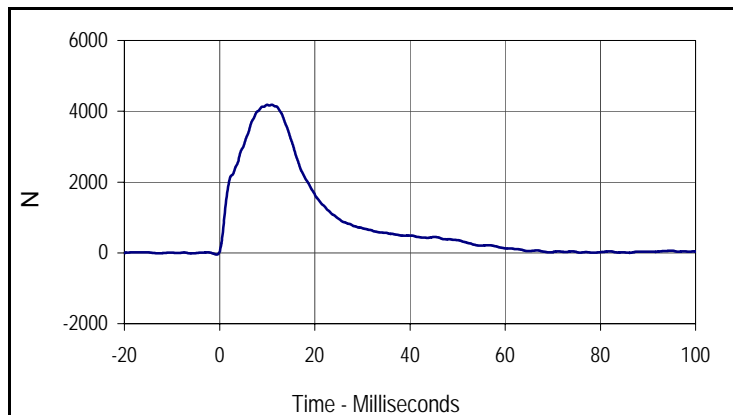
Test Date: 11/12/15
 Test I.D.: F037ABD078



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	745	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.7	Pass
Probe Velocity	m/s	3.9 to 4.1	4.01	Pass
Peak Impactor Force	N	4000 to 4800	4186.7	Pass
	msec	10.6 to 13.0	11.0	Pass
Sum of Abdominal Forces	N	2200 to 2700	2464.5	Pass
	msec	10.0 to 12.3	11.3	Pass
Overall Test Results				Pass



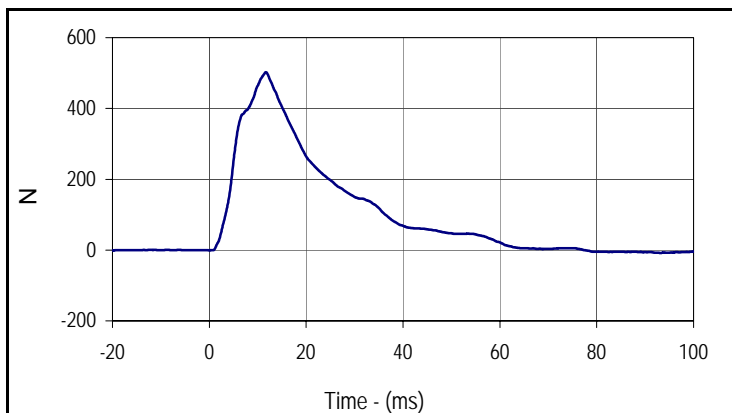
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	g
Max	Time	Min	Time
18.3	11.0	-0.2	-0.6



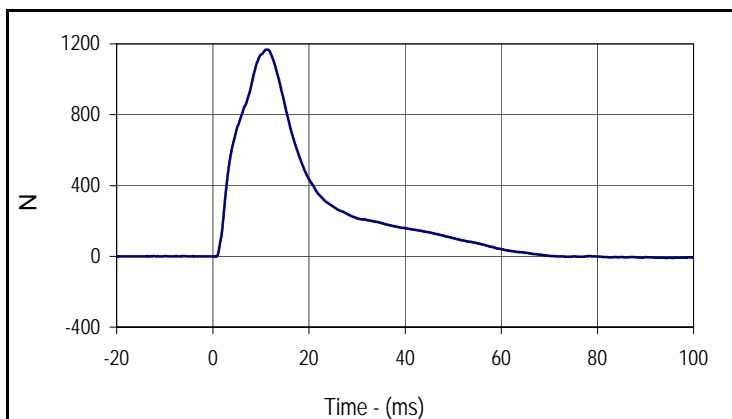
Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	N
Max	Time	Min	Time
4186.7	11.0	-48.6	-0.6

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

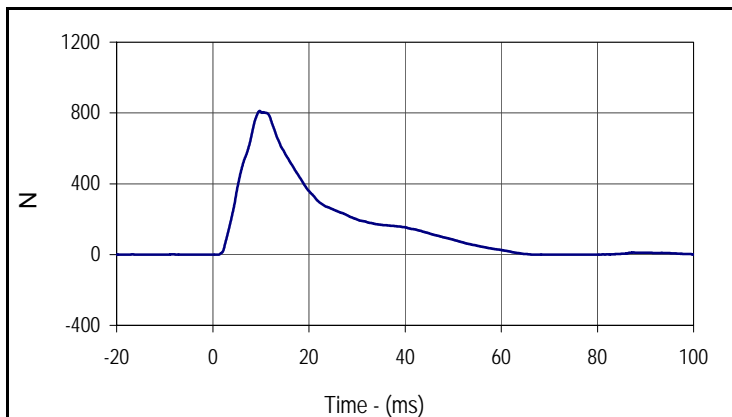
Test Date: 11/12/15
 Test I.D.: F037ABD078



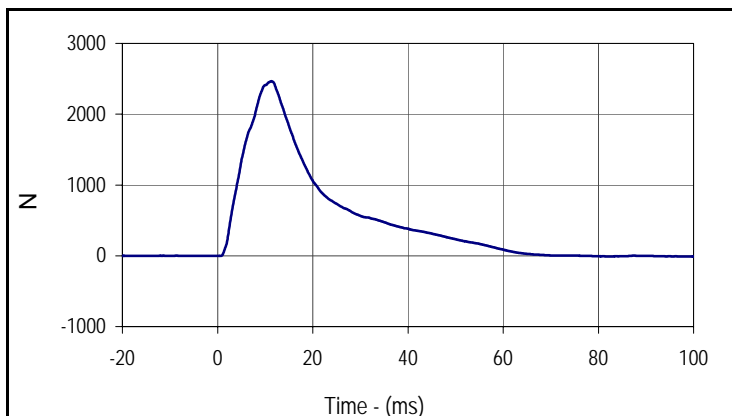
Curve Description			
Front Abdomen Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	N
Max	Time	Min	Time
502.4	11.7	-8.4	93.2



Curve Description			
Middle Abdomen Force			
Plot No.	Type	SAE Class	Units
004	FIL	600	N
Max	Time	Min	Time
1168.0	11.2	-9.3	94.3



Curve Description			
Rear Abdomen Force			
Plot No.	Type	SAE Class	Units
005	FIL	600	N
Max	Time	Min	Time
811.9	9.7	-1.4	149.7



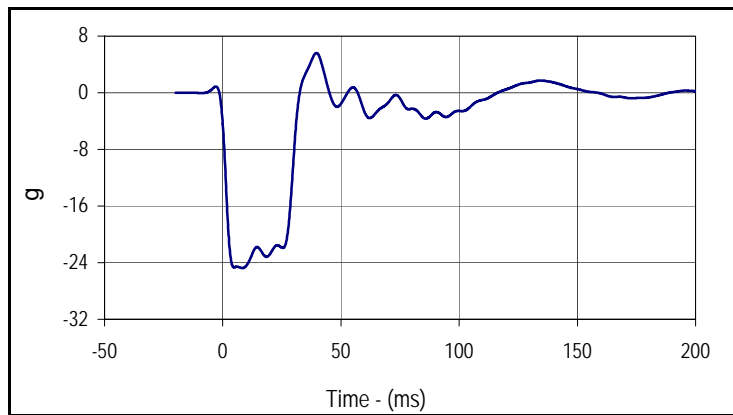
Curve Description			
Abdomen Sum Resultant			
Plot No.	Type	SAE Class	Units
006	RES	600	N
Max	Time	Min	Time
2464.5	11.3	-11.7	82.5

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

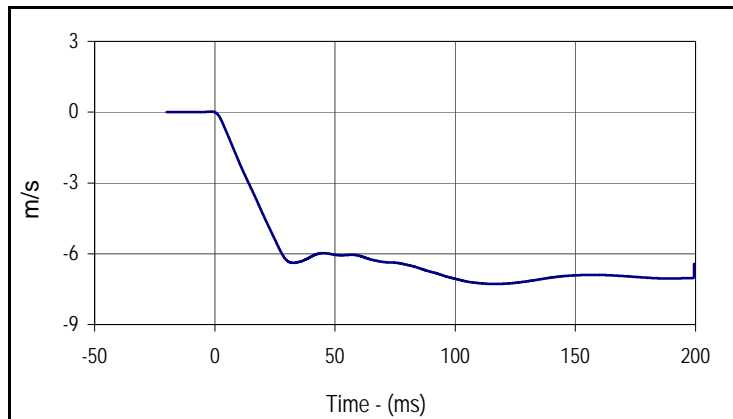
Test Date: 11/12/15
 Test I.D.: F037LB078



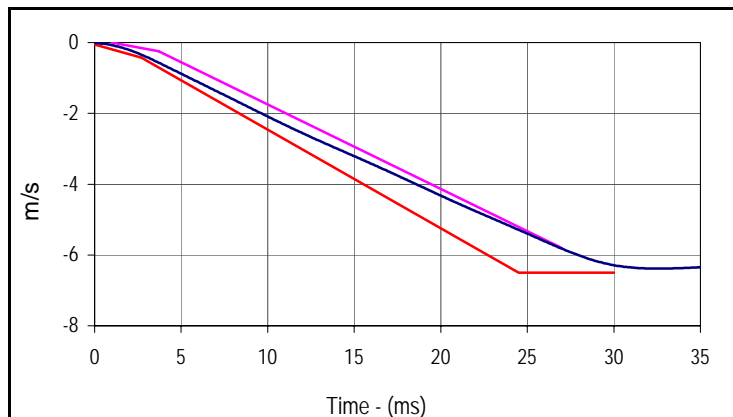
Tested Parameter	Units	Specification	Result	Pass/Fail
Lumbar Spine Assembly Soak Time	Minutes	≥240	820	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.7	Pass
Pendulum Velocity	m/s	5.95 to 6.15	5.98	Pass
Headform Rotation	Max	45 to 55	48.9	Pass
	Time	39 to 53	41.3	Pass
Time of Decay to Zero Angle from Peak	msec	37 to 57	45.0	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	g
Max	Time	Min	Time
5.6	40.2	-24.8	8.9



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.9	-7.3	116.8



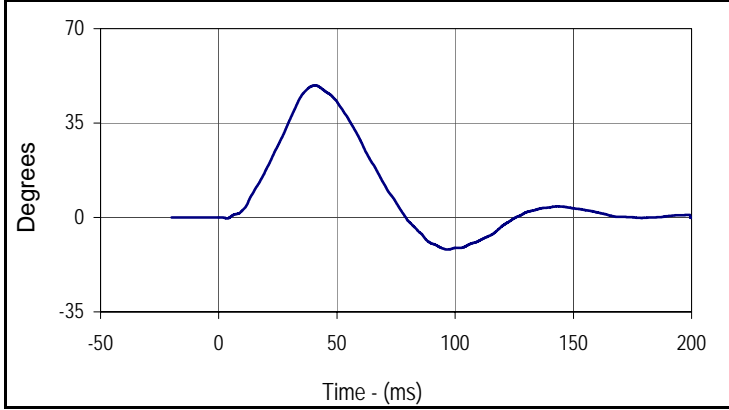
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.9	-7.3	116.8

Velocity Corridors

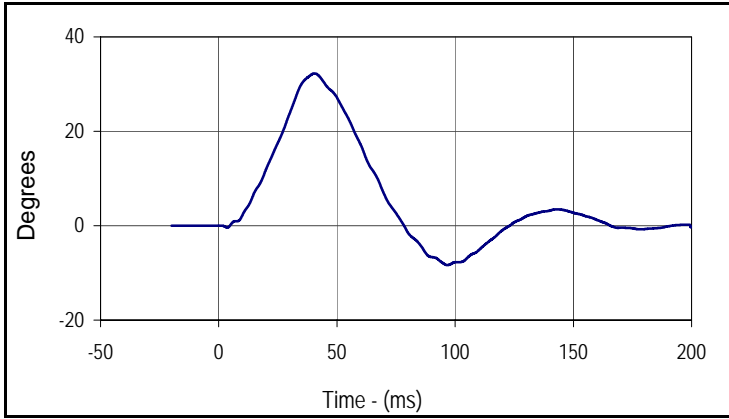
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.7	-0.24	2.7	-0.425
27.0	-5.80	24.5	-6.50
		30.0	-6.50

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

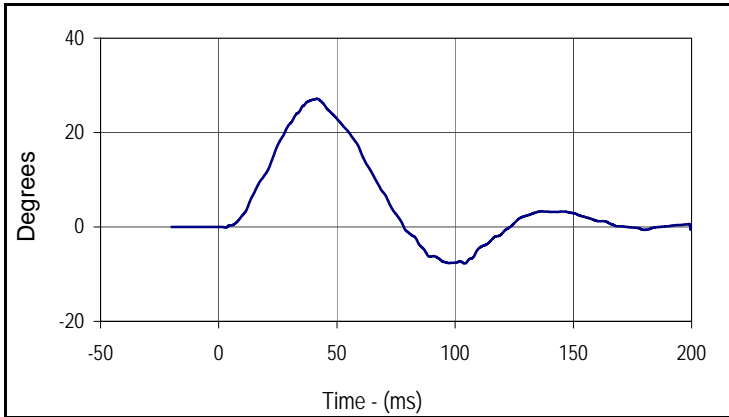
Test Date: 11/12/15
 Test I.D.: F037LB078



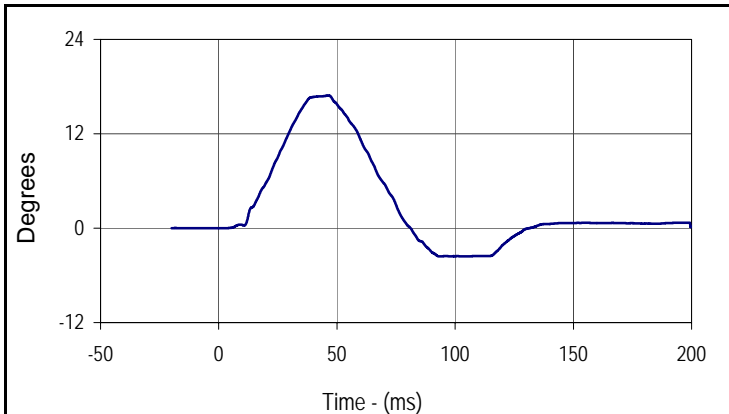
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
48.9	41.3	-11.9	97.4



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
32.2	41.1	-8.3	97.4



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
27.2	42.2	-7.7	104.6



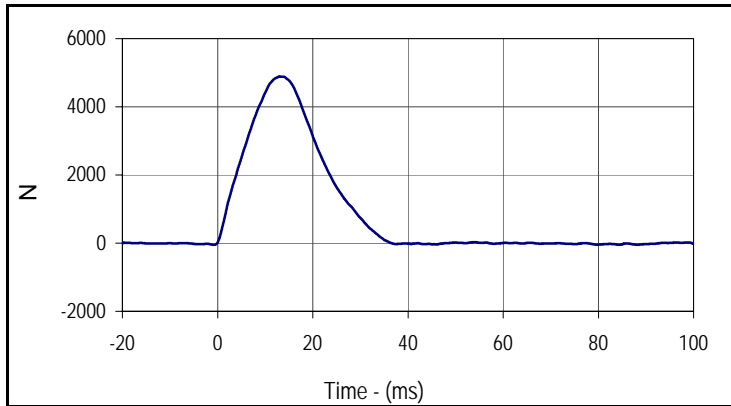
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
16.9	47.0	-3.6	94.1

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

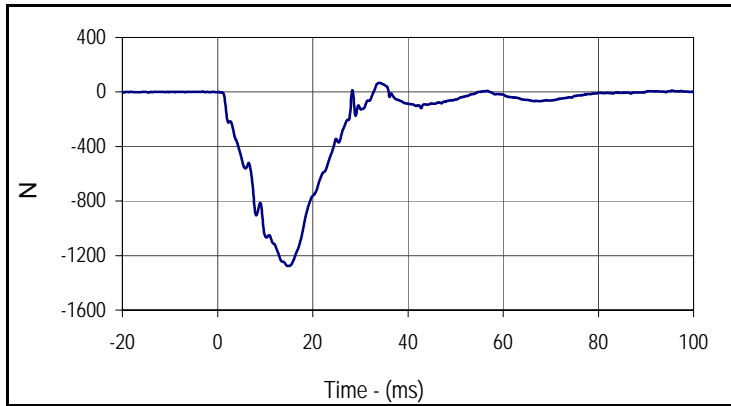
Test Date: 11/12/15
 Test I.D.: F037PL078



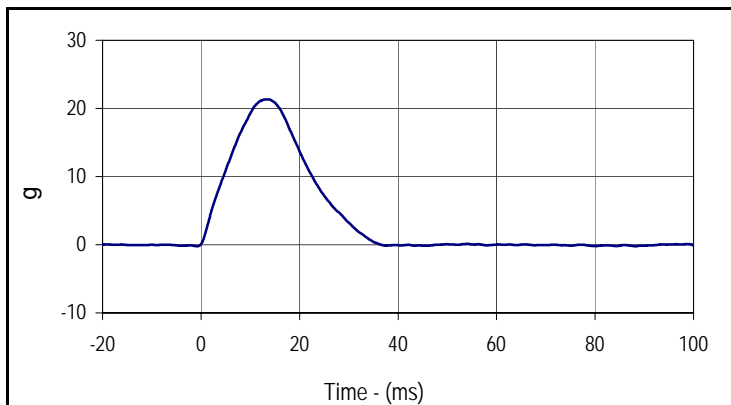
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	875	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.7	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.32	Pass
Peak Impactor Force	N	4700 to 5400	4887.4	Pass
	msec	11.8 to 16.1	13.1	Pass
Peak Pubic Symphysis Load	N	-1230 to -1590	-1277.0	Pass
	msec	12.2 to 17.0	14.8	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	N
Max	Time	Min	Time
4887.4	13.1	-49.9	88.2



Curve Description			
Pubic Symphysis Force Y			
Plot No.	Type	SAE Class	Units
002	FIL	600	N
Max	Time	Min	Time
67.7	34.0	-1277.0	14.8



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
21.3	13.1	-0.2	88.2

Test Program: SID IIs External Measurements

Test Date: 11/13/15

ATD Serial No.: 307

Test I.D.: N/A



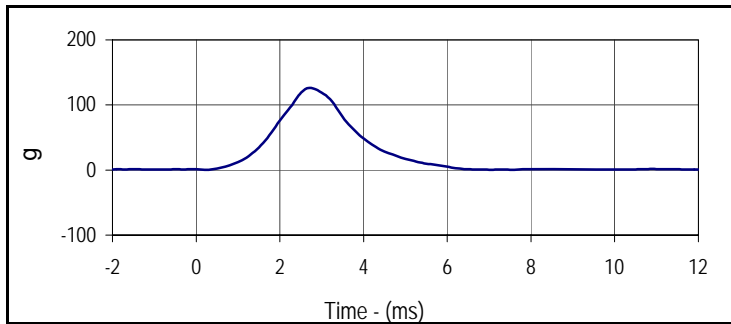
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	23	Pass
A Sitting Height	mm	772 - 788	778	Pass
B Shoulder Pivot Height	mm	437 - 453	443	Pass
C H-Point Height	mm	79 - 89	85	Pass
D H-Point from Seatback	mm	141 - 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	197	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	88	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

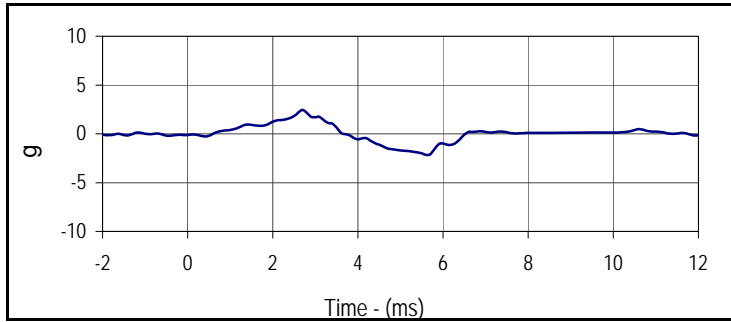
Test Date: 11/13/15
 Test I.D.: 307HD087



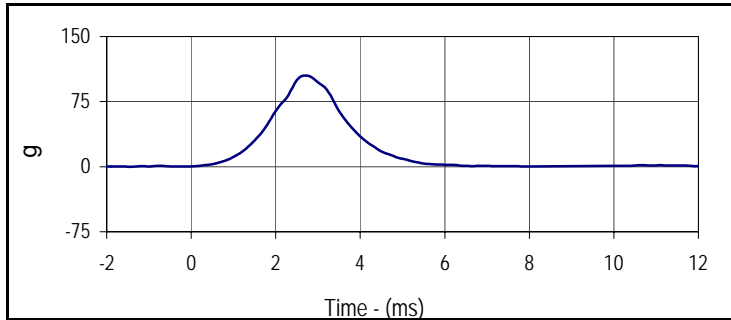
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	402	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	23.0	Pass
	Min		22.4	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.6	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	22.6	Pass
Peak Head Resultant Acceleration	g	115 to 137	126.0	Pass
Peak Head X Acceleration	g	<15	2.5	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	1.3	Pass
Overall Test Results				Pass



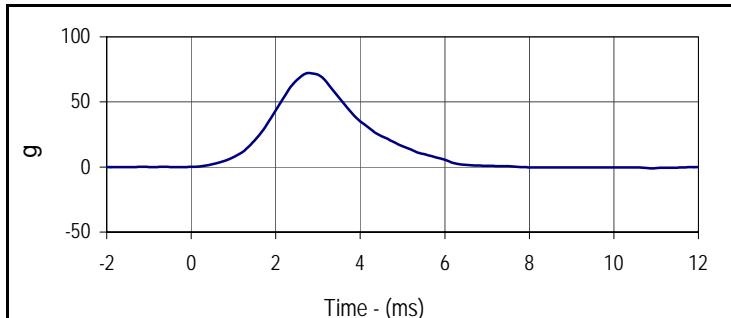
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
126.0	2.7	0.3	0.2



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	g
Max	Time	Min	Time
2.5	2.7	-2.2	5.6



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
105.2	2.7	-0.3	-3.4



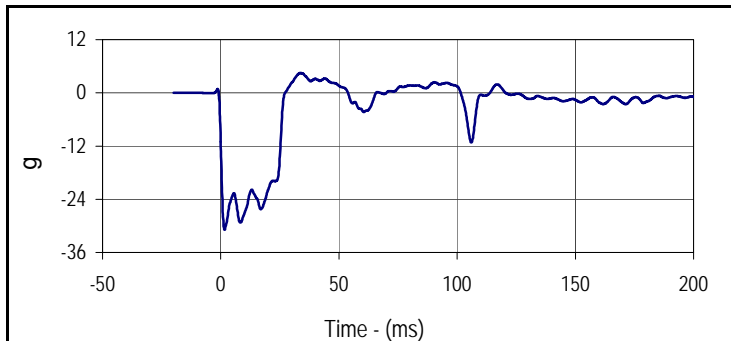
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
72.1	2.8	-1.0	10.9

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

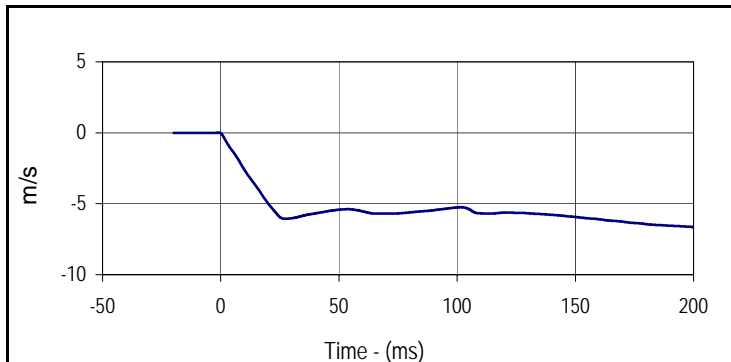
Test Date: 11/13/15
 Test I.D.: 307NB087



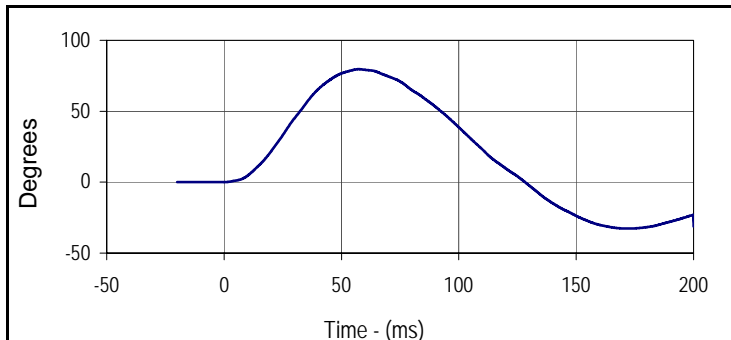
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	447	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass	
	Min		21.1	Pass	
Humidity During Soak	Max	10.0 to 70.0	23.0	Pass	
	Min		22.4	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	22.6	Pass	
Pendulum Velocity	m/s	5.51 to 5.63	5.53	Pass	
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.60	Pass
	15 msec	m/s	-3.30 to -4.10	-3.77	Pass
	20 msec	m/s	-4.40 to -5.40	-4.98	Pass
	25 msec	m/s	-5.40 to -6.10	-5.94	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.05	Pass
D-Plane Rotation	Max	Degrees	71 to 81	79.6	Pass
	Time	msec	50 to 70	57.3	Pass
Peak Occipital Condyle Moment	Nm	-36 to -44	-42.6	Pass	
Decaying Moment Time to Cross 0 Nm	msec	102 to 126	106.9	Pass	
Overall Test Results			Pass	Pass	



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	g
Max	Time	Min	Time
4.5	0.0	-30.9	0.0



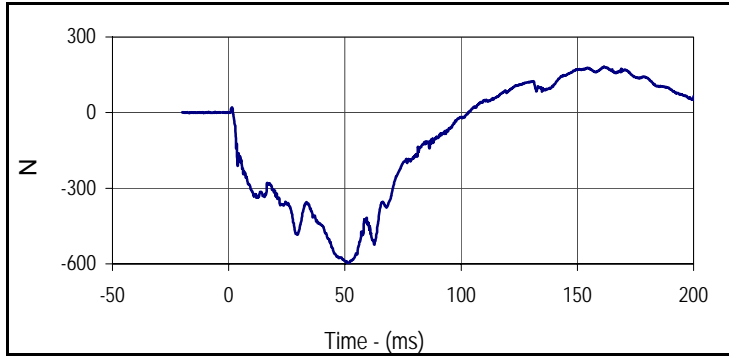
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.9	-6.6	199.9



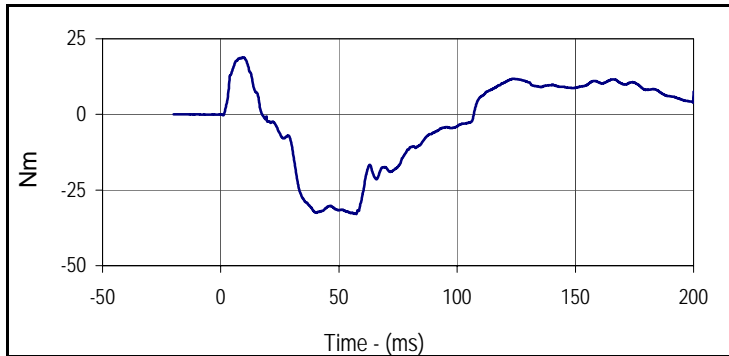
Curve Description			
D-Plane Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
79.6	57.3	-32.7	172.0

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

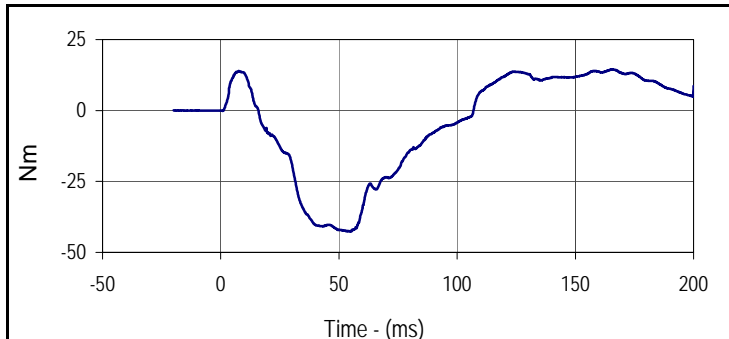
Test Date: 11/13/15
 Test I.D.: 307NB087



Curve Description			
Neck Force Y			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
183.0	161.5	-602.3	51.6



Curve Description			
Neck Moment X			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
18.9	9.6	-33.0	57.3



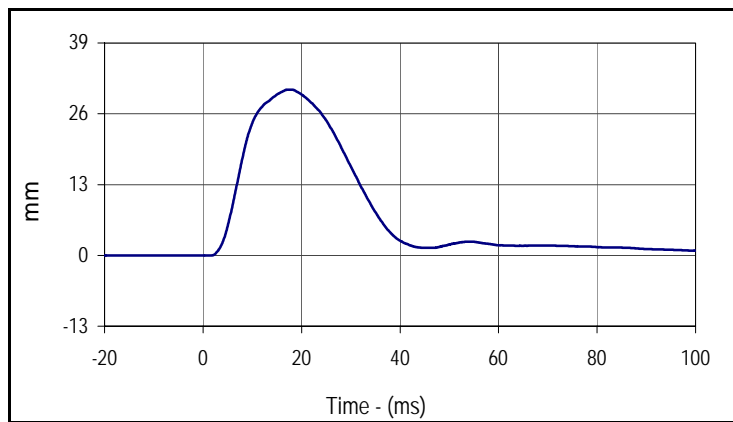
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
006	FIL	600	Nm
Max	Time	Min	Time
14.5	165.0	-42.6	55.1

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

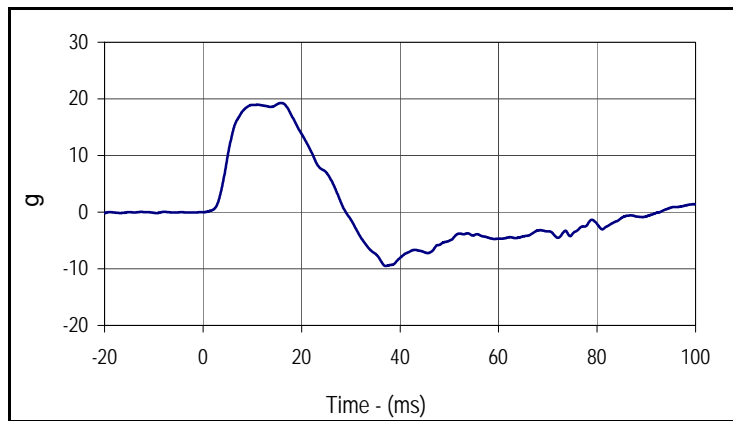
Test Date: 11/13/15
 Test I.D.: 307SH087



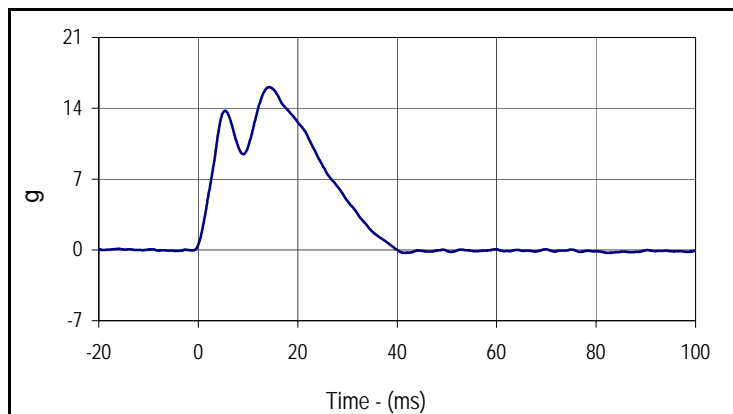
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	502	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	23.0	Pass
	Min		22.4	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	22.8	Pass
Impactor Velocity	m/s	4.20 to 4.40	4.32	Pass
Peak Shoulder Deflection	mm	28 to 37	30.4	Pass
Peak Lateral Spine Acceleration Y	g	17 to 22	19.3	Pass
Peak Impactor Acceleration	g	13 to 18	16.1	Pass
Overall Test Results			Pass	



Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
30.4	17.7	0.0	-3.4



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
19.3	15.9	-9.5	37.1



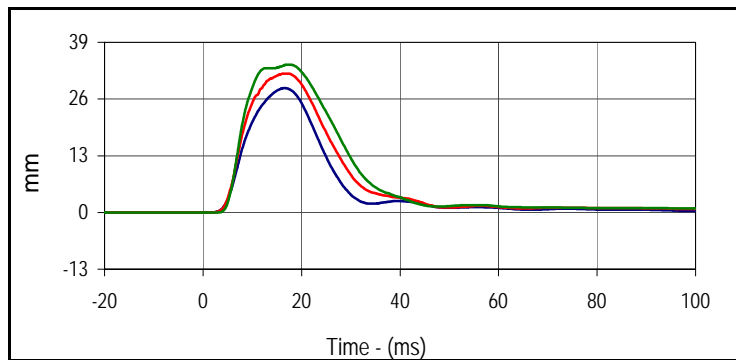
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
16.1	14.3	-0.3	82.4

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

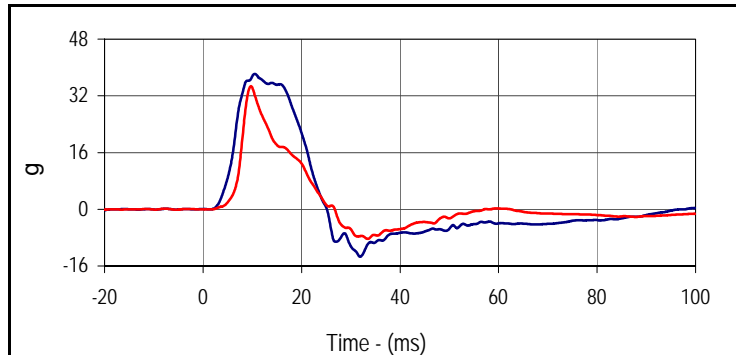
Test Date: 11/13/15
 Test I.D.: 307TWA087



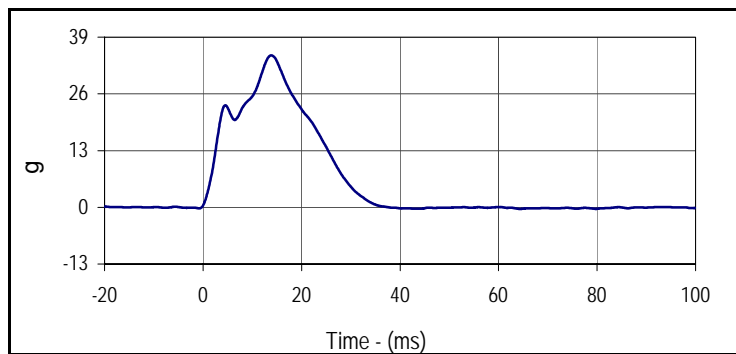
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	547	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	23.0	Pass
	Min		22.4	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	22.8	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.69	Pass
Peak Shoulder Deflection	mm	31 to 40	36.7	Pass
Peak Upper Thorax Rib Deflection	mm	25 to 32	28.5	Pass
Peak Middle Thorax Rib Deflection	mm	30 to 36	31.8	Pass
Peak Lower Thorax Rib Deflection	mm	32 to 38	33.9	Pass
Peak Upper Spine Y Acceleration	g	34 to 43	38.1	Pass
Peak Lower Spine Y Acceleration	g	29 to 37	34.7	Pass
Peak Impactor Acceleration	g	30 to 36	34.8	Pass
Overall Test Results				Pass



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
28.5	16.5	0.0	-2.6
Middle Thorax Deflection			
Max	Time	Min	Time
31.8	16.9	0.0	-1.1
Lower Thorax Deflection			
Max	Time	Min	Time
33.9	17.6	0.0	-2.2



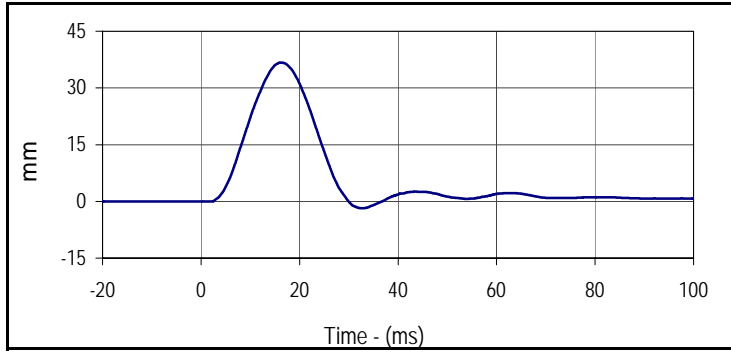
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
38.1	10.5	-13.4	31.9
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	g
Max	Time	Min	Time
34.7	9.7	-8.3	33.4



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	g
Max	Time	Min	Time
34.8	13.9	-0.4	64.4

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

Test Date: 11/13/15
 Test I.D.: 307TWA087



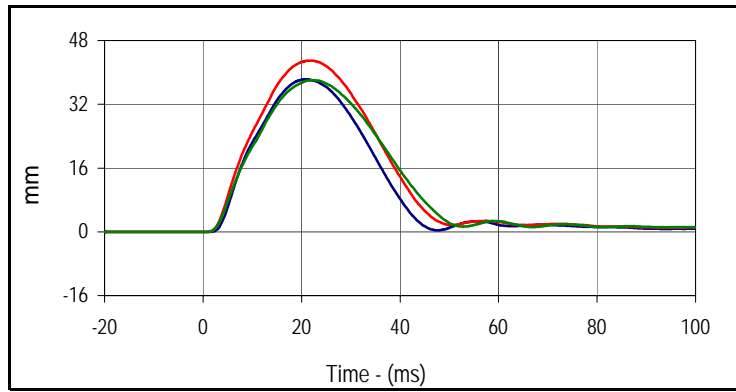
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	mm
Max	Time	Min	Time
36.7	16.2	-1.8	32.6

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

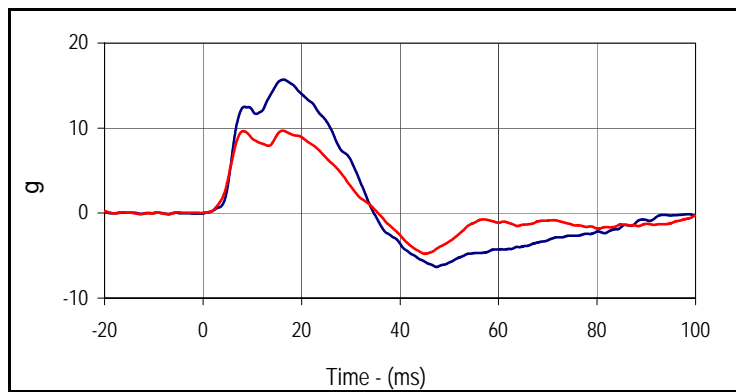
Test Date: 11/13/15
 Test I.D.: 307TWOA087



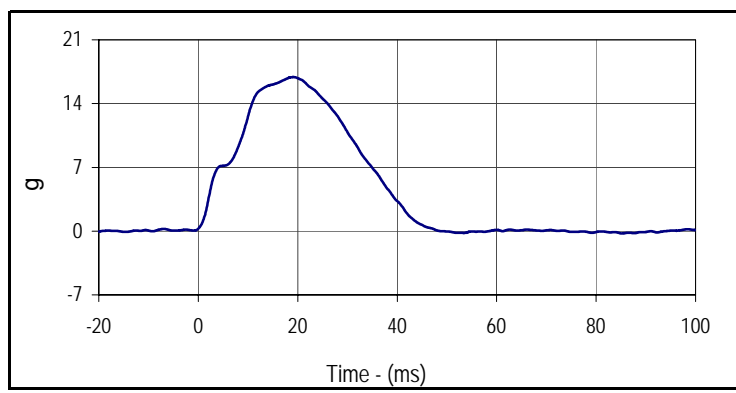
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	602	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	23.0	Pass
	Min		22.4	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	22.9	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.30	Pass
Peak Upper Thorax Rib Deflection	mm	32 to 40	38.3	Pass
Peak Middle Thorax Rib Deflection	mm	39 to 45	43.0	Pass
Peak Lower Thorax Rib Deflection	mm	35 to 43	38.0	Pass
Peak Upper Spine Y Acceleration	g	13 to 17	15.7	Pass
Peak Lower Spine Y Acceleration	g	7 to 11	9.7	Pass
Peak Impactor Acceleration	g	14 to 18	16.9	Pass
Overall Test Results				Pass



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
38.3	21.1	0.0	-18.4
Middle Thorax Deflection			
Max	Time	Min	Time
43.0	21.7	0.0	-10.4
Lower Thorax Deflection			
Max	Time	Min	Time
38.0	22.2	0.0	-18.1



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
15.7	16.4	-6.3	47.4
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	g
Max	Time	Min	Time
9.7	16.1	-4.8	45.0



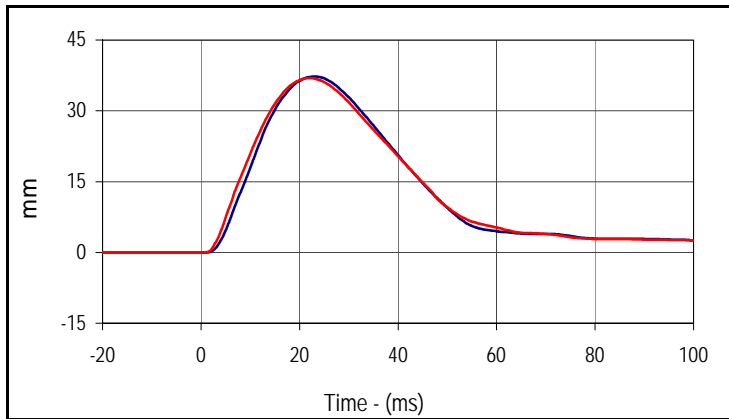
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	g
Max	Time	Min	Time
16.9	19.1	-0.3	85.2

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

Test Date: 11/13/15
 Test I.D.: 307ABD087

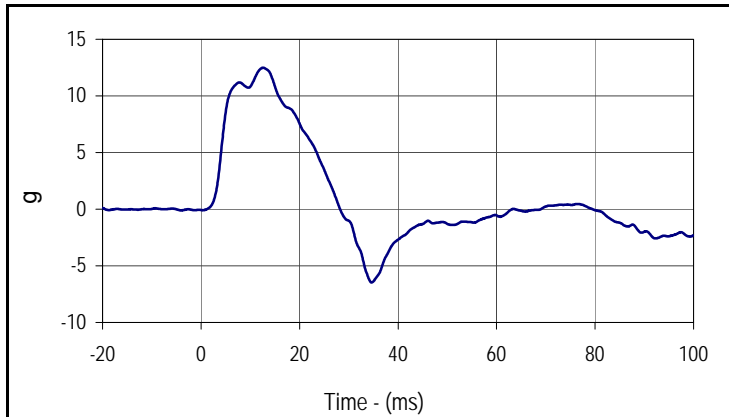


Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	657	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	23.0	Pass
	Min		22.4	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	22.9	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.31	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	37.3	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	36.9	Pass
Peak Lower Spine Y Acceleration	g	9 to 14	12.5	Pass
Peak Impactor Acceleration	g	12 to 16	15.1	Pass
Overall Test Results				Pass

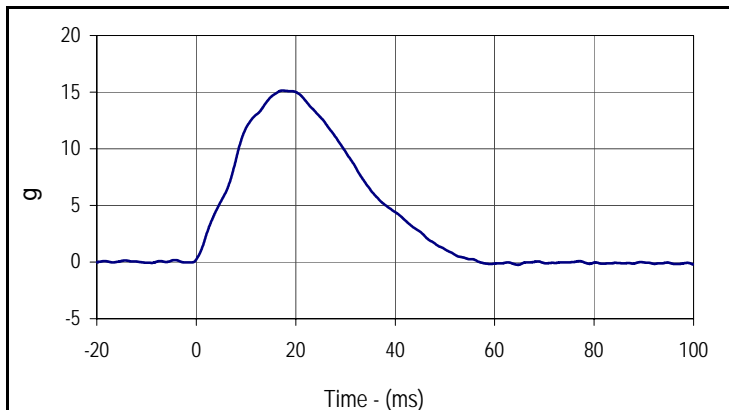


Curve Description			
Upper Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
37.3	23.1	0.0	-11.5

Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	mm
Max	Time	Min	Time
36.9	22.2	0.0	-13.4

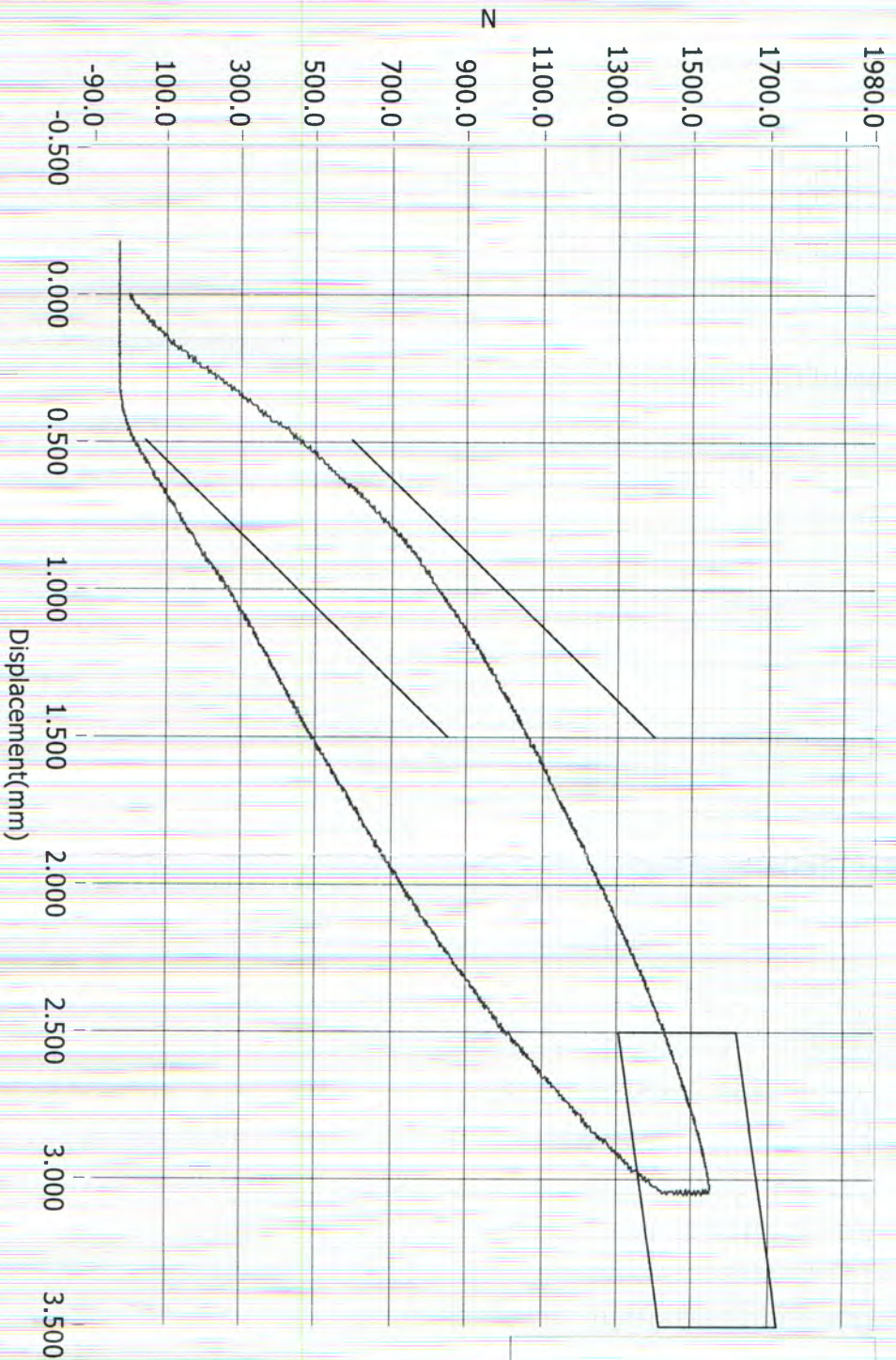


Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
12.5	12.6	-6.5	34.6



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
15.1	17.4	-0.3	0.0

Resultant Data - SIDIIs Plug Compression



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

1546N

ATD Calibration Lab

<u>Test ID</u>	<u>Part Serial Number</u>	<u>Test Date</u>	<u>Test Time</u>
	70629	12/12/2013	8:15 PM
<u>Cert ID</u>	<u>ATD Serial Number</u>	<u>ATD Type</u>	
	N/A	SIDIIs	

Current Date : 12/12/2013

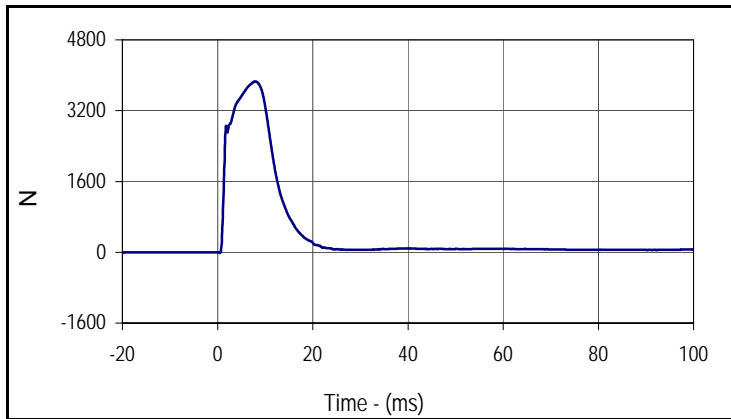
Current Time : 20:16:51

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

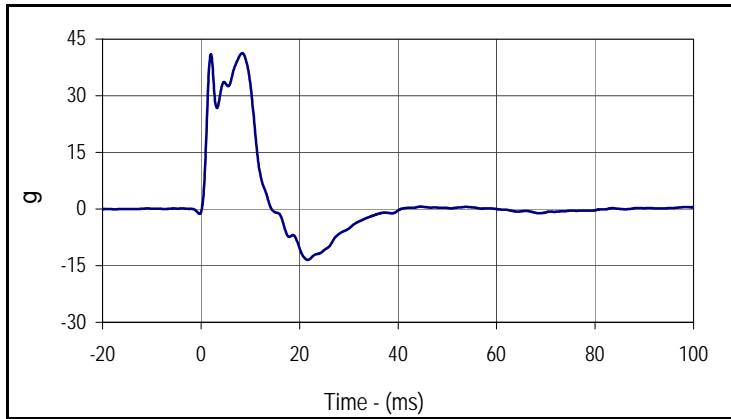
Test Date: 11/13/15
 Test I.D.: 307ACET087



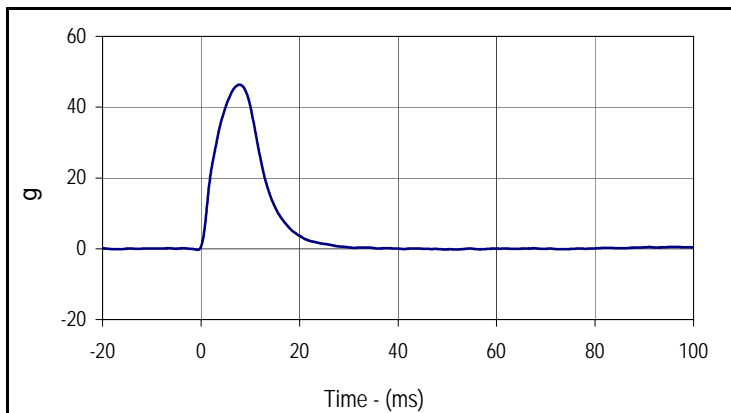
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	707	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	23.0	Pass
	Min		22.4	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.0	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.64	Pass
Peak Acetabulum Force Y	N	3600 to 4300	3859.9	Pass
Peak Pelvis Y Acceleration After 6 msec.	g	34 to 42	41.3	Pass
Peak Impactor Acceleration	g	38 to 47	46.3	Pass
Overall Test Results				Pass



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
3859.9	8.0	-16.1	0.5



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
41.3	8.4	-13.5	21.7



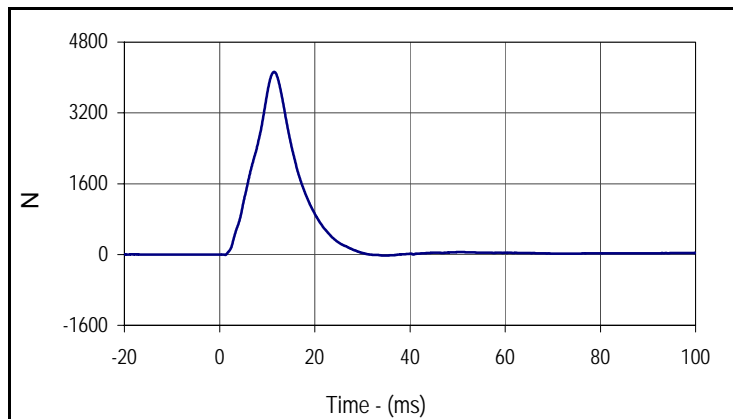
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
46.3	7.8	-0.3	-0.7

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

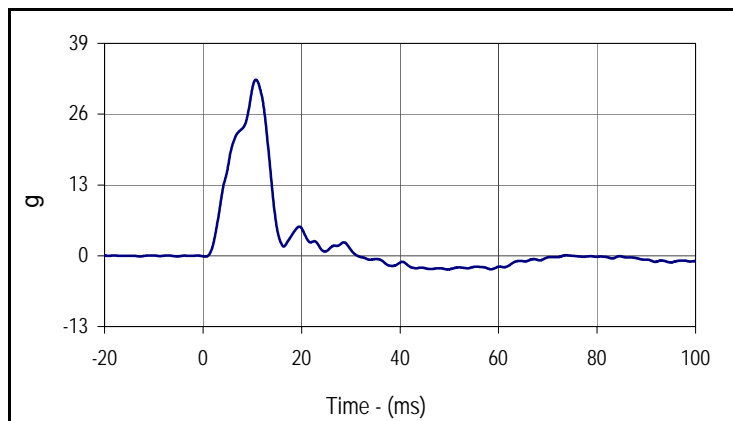
Test Date: 11/13/15
 Test I.D.: 307PL087



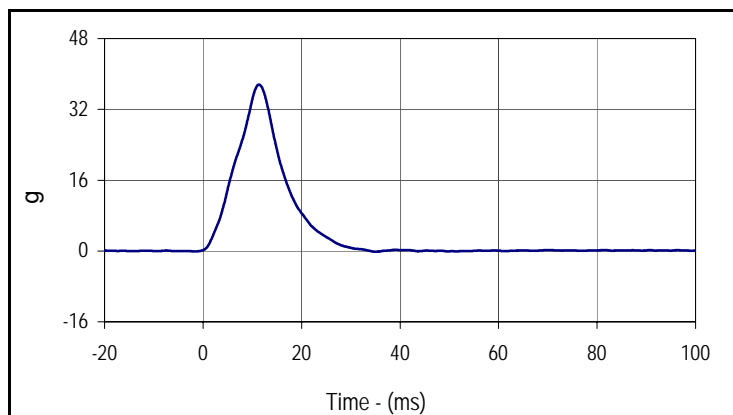
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	762	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	23.0	Pass
	Min		22.4	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	22.4	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.31	Pass
Peak Iliac Force	N	4100 to 5100	4125.8	Pass
Peak Pelvis Y Acceleration	g	28 to 39	32.3	Pass
Peak Impactor Acceleration	g	36 to 45	37.6	Pass
Overall Test Results				Pass



Curve Description			
Pelvis Iliac Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
4125.8	11.4	-22.3	35.3



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
32.3	10.7	-2.5	49.7



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
37.6	11.4	-0.2	35.2

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

Test Program: ES2re External Measurements

Test Date: 11/22/15

ATD Serial No.: F037

Test I.D.: N/A



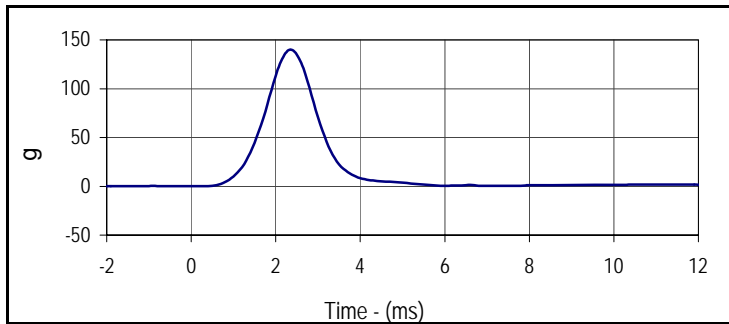
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	30.0	Pass
1 Sitting Height	mm	900 - 918	909	Pass
2 Seat to Shoulder Joint	mm	558 - 572	564	Pass
3 Seat to Lower Face of Thoracic Spine Box	mm	346 - 356	350	Pass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

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

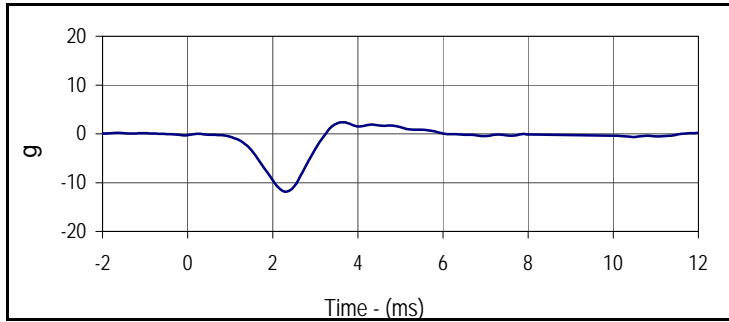
Test Date: 11/22/15
 Test I.D.: F037HD079



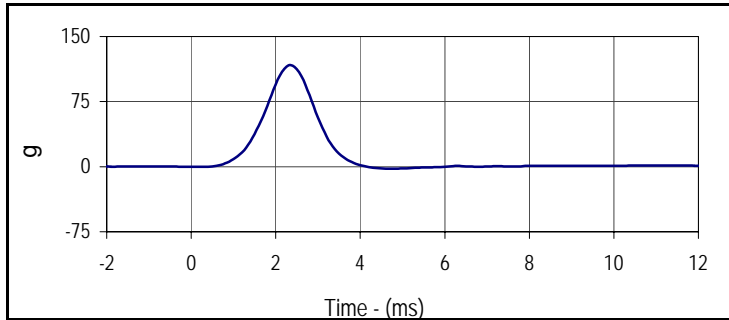
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	365	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.8	Pass
Peak Head Resultant Acceleration	g	125 to 155	139.6	Pass
Peak Head X Acceleration	g	≤15	11.9	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	0.2	Pass
Overall Test Results				Pass



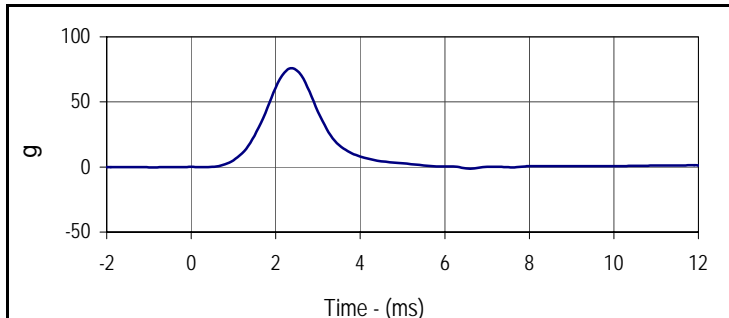
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
139.6	2.4	0.0	-4.8



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	g
Max	Time	Min	Time
2.4	3.7	-11.9	2.3



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
116.8	2.3	-2.4	4.7



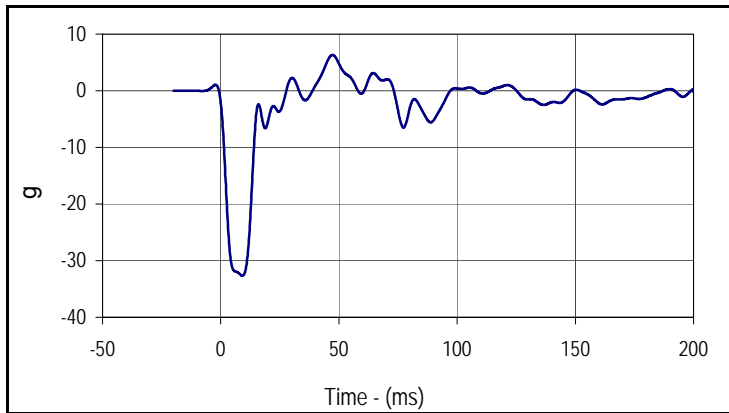
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
76.0	2.4	-1.3	6.6

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

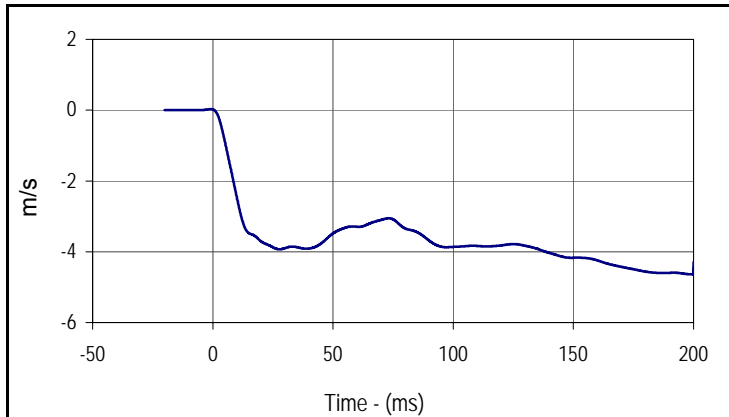
Test Date: 11/22/15
 Test I.D.: F037NB079



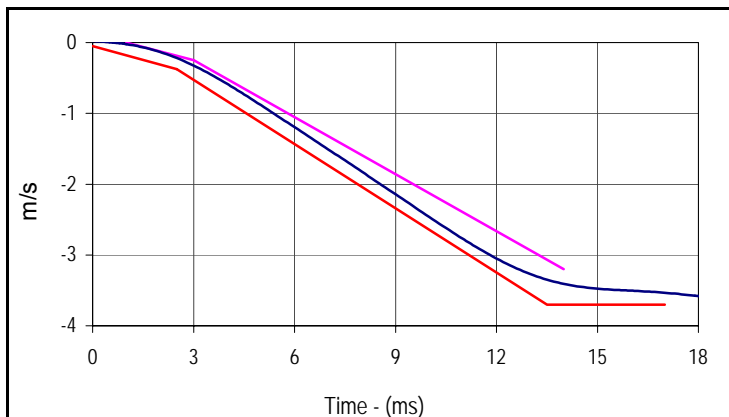
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	400	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.8	Pass
Pendulum Velocity	m/s	3.3 to 3.5	3.34	Pass
Headform Flexion	Max	49 to 59	54.5	Pass
	Time	54 to 66	54.7	Pass
Headform Flexion Decay (Peak to Zero)	msec	53 to 88	64.0	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	g
Max	Time	Min	Time
6.3	47.2	-32.7	9.2



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.8	-4.6	198.9



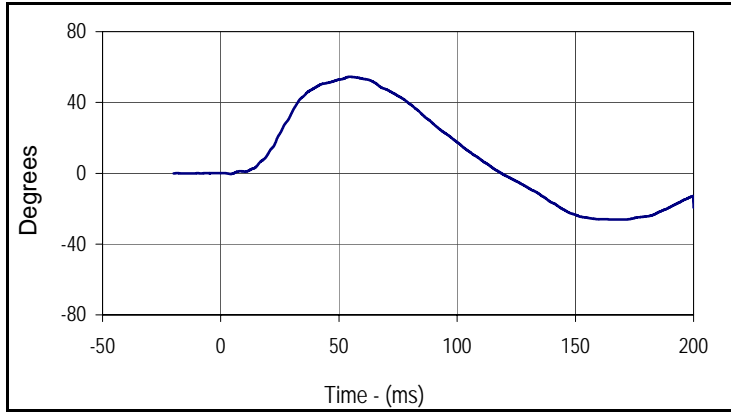
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.8	-4.6	198.9

Velocity Corridors

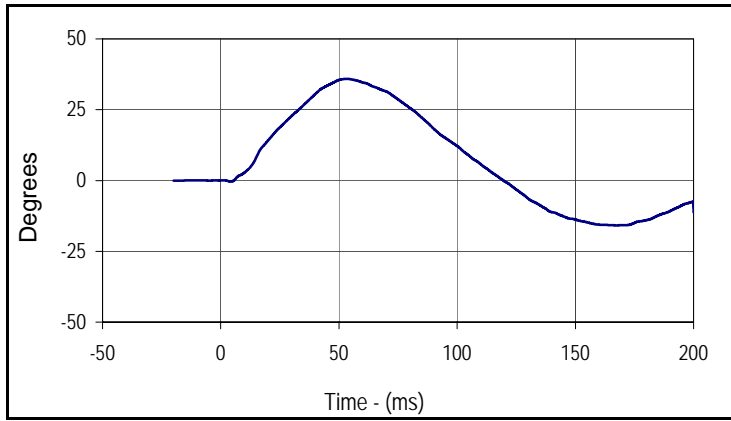
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.0	-0.03	2.5	-0.375
14.0	-3.20	13.5	-3.70
		17.0	-3.70

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

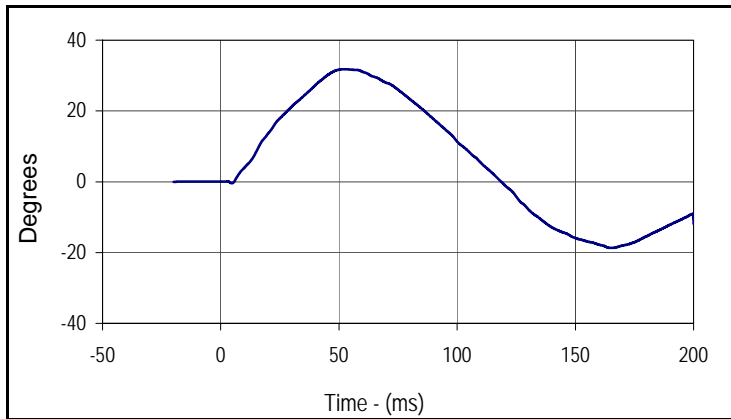
Test Date: 11/22/15
 Test I.D.: F037NB079



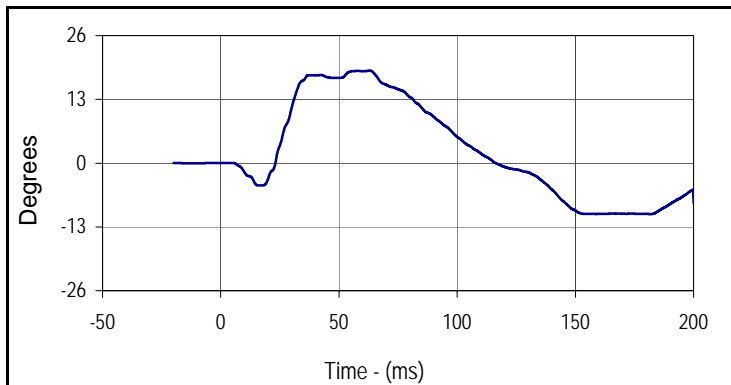
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
54.5	54.7	-26.2	167.3



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
35.9	53.5	-15.8	167.4



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
31.8	51.7	-18.7	164.7



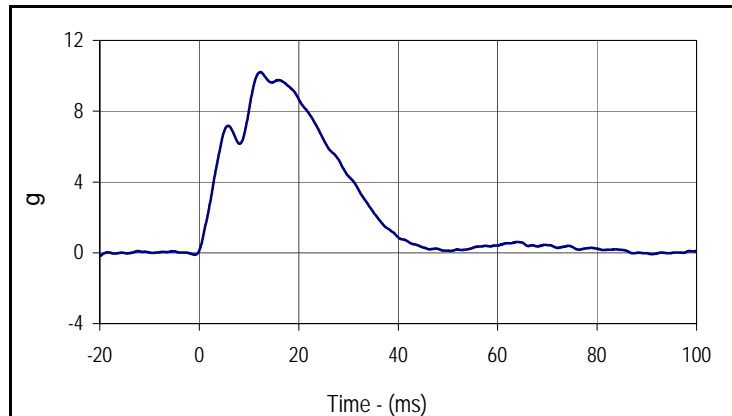
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
18.9	63.1	-10.4	182.1

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

Test Date: 11/22/15
 Test I.D.: F037SH079



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	465	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.8	Pass
Pendulum Speed	m/s	4.2 to 4.4	4.32	Pass
Peak Impactor Acceleration	g	7.5 to 10.5	10.2	Pass
Overall Test Results				Pass



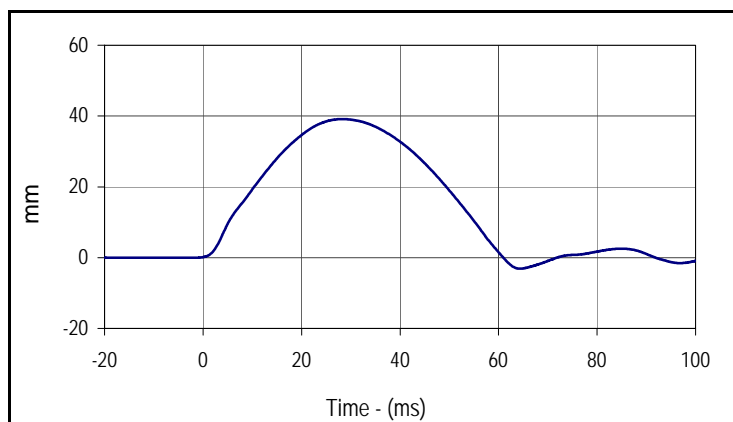
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	g
Max	Time	Min	Time
10.2	12.3	-0.2	-20.0

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

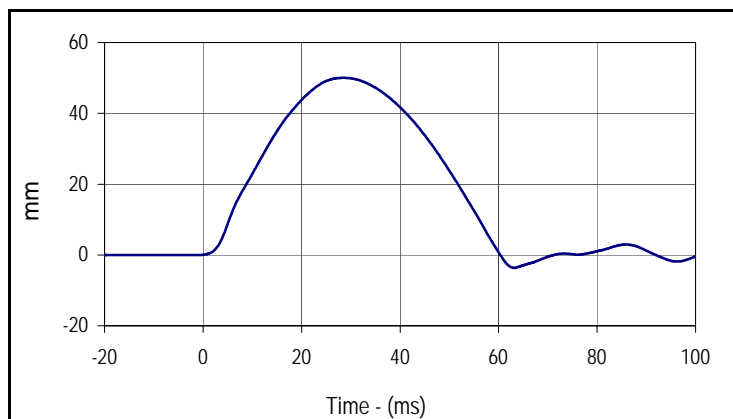
Test Date: 11/22/15
 Test I.D.: F037RB1079



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	520	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.7	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	39.2	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	50.0	Pass
Overall Test Results				Pass



Curve Description			
Upper Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	mm
Max	Time	Min	Time
39.2	28.3	-3.1	64.4



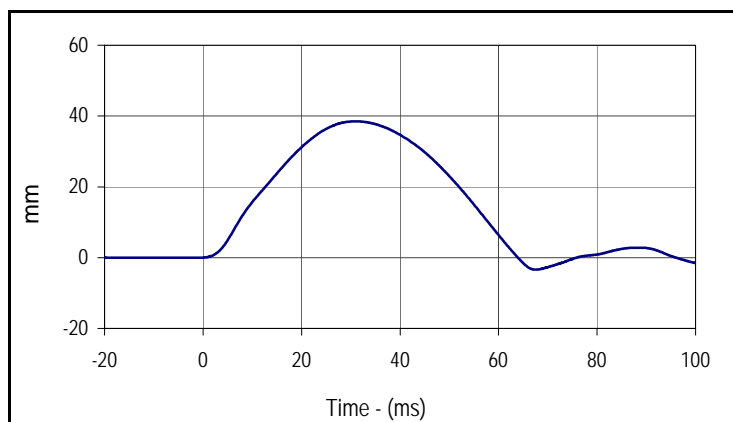
Curve Description			
Upper Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max	Time	Min	Time
50.0	28.5	-3.6	63.1

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

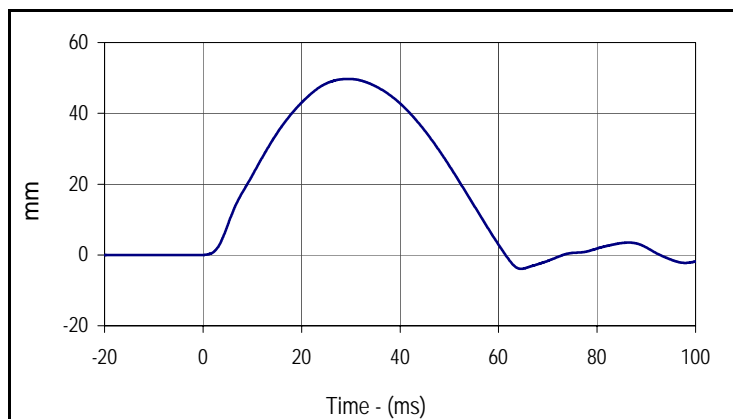
Test Date: 11/22/15
 Test I.D.: F037RB2079



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	565	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.7	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	38.5	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	49.7	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
38.5	31.0	-3.4	67.5



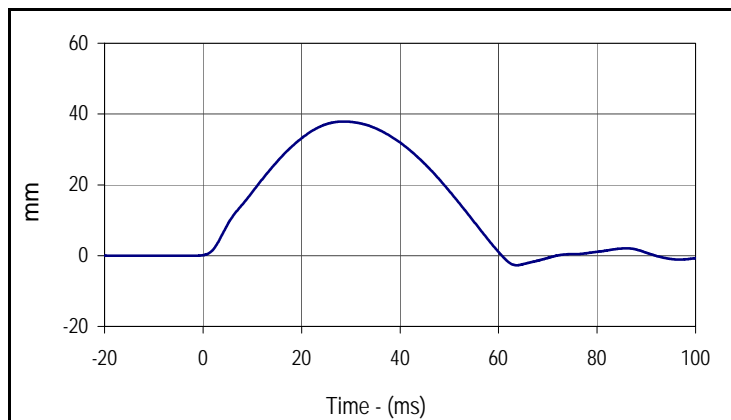
Curve Description			
Middle Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max	Time	Min	Time
49.7	29.4	-3.9	64.6

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

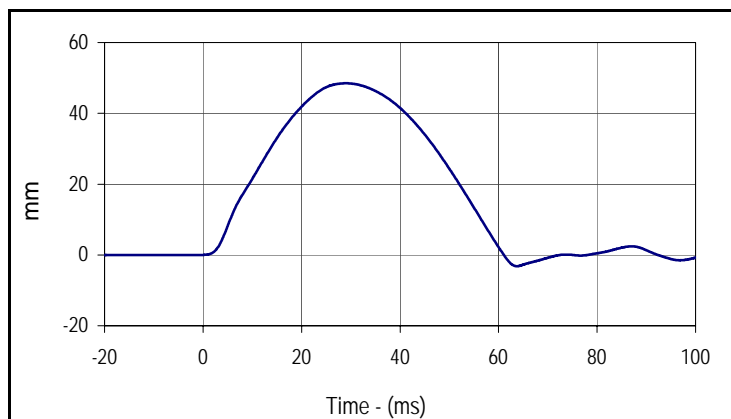
Test Date: 11/22/15
 Test I.D.: F037RB3079



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	610	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.7	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	37.9	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	48.5	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
37.9	28.5	-2.7	63.7



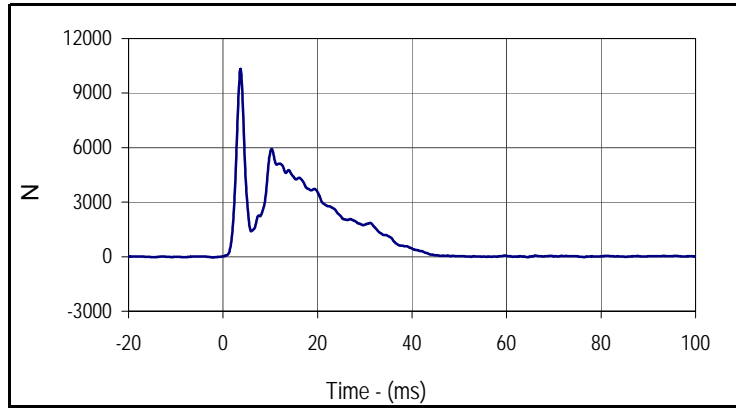
Curve Description			
Lower Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max	Time	Min	Time
48.5	29.1	-3.2	63.7

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

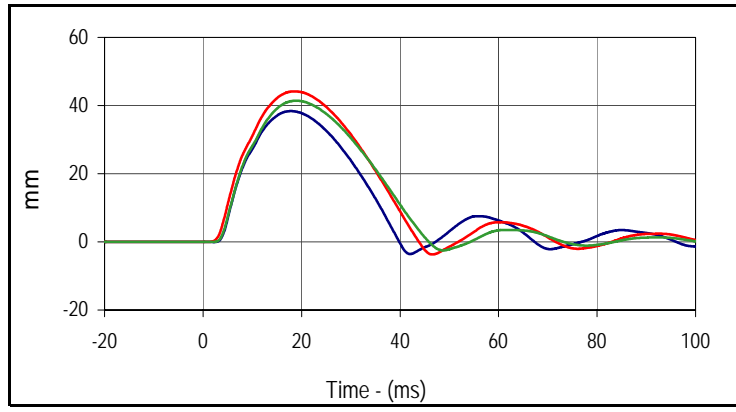
Test Date: 11/22/15
 Test I.D.: F037TH079



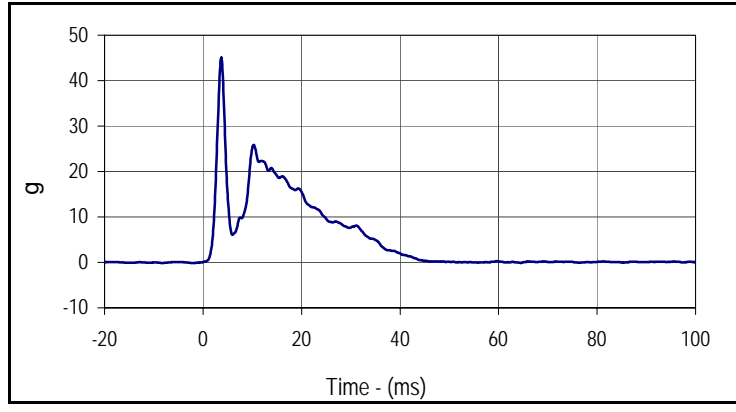
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	655	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.7	Pass
Peak Impactor Velocity	m/s	5.4 to 5.6	5.47	Pass
Peak Impactor Force	N	5100 to 6200	5927.4	Pass
	msec	> 6.0 msec	10.3	Pass
Peak Upper Rib Deflection	mm	34 to 41	38.4	Pass
Peak Middle Rib Deflection	mm	37 to 45	44.2	Pass
Peak Lower Rib Deflection	mm	37 to 44	41.4	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	N
Max	Time	Min	Time
10321.5	3.7	-35.9	-2.1



Curve Description			
Upper, Middle, Lower Rib Deflections			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max (Upper)	Time	Min (Upper)	Time
38.4	17.9	-3.6	42.0
Max (Middle)	Time	Min (Middle)	Time
44.2	18.5	-3.7	46.6
Max (Lower)	Time	Min (Lower)	Time
41.4	18.9	-2.5	48.7



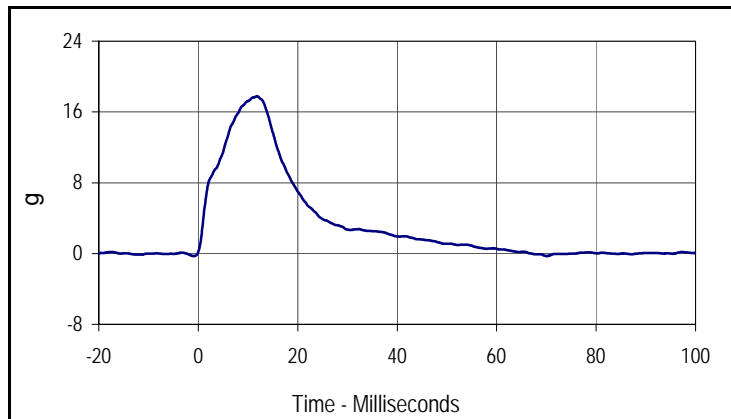
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
45.1	3.7	-0.2	-2.1

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

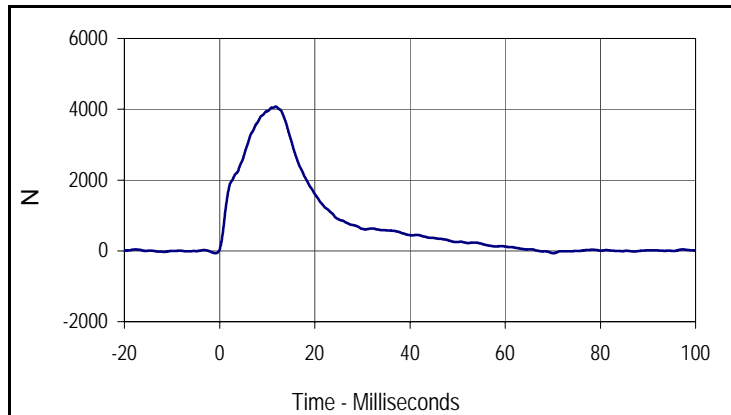
Test Date: 11/22/15
 Test I.D.: F037ABD079



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	725	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.7	Pass
Probe Velocity	m/s	3.9 to 4.1	4.02	Pass
Peak Impactor Force	N	4000 to 4800	4072.3	Pass
	msec	10.6 to 13.0	11.8	Pass
Sum of Abdominal Forces	N	2200 to 2700	2449.9	Pass
	msec	10.0 to 12.3	11.3	Pass
Overall Test Results				Pass



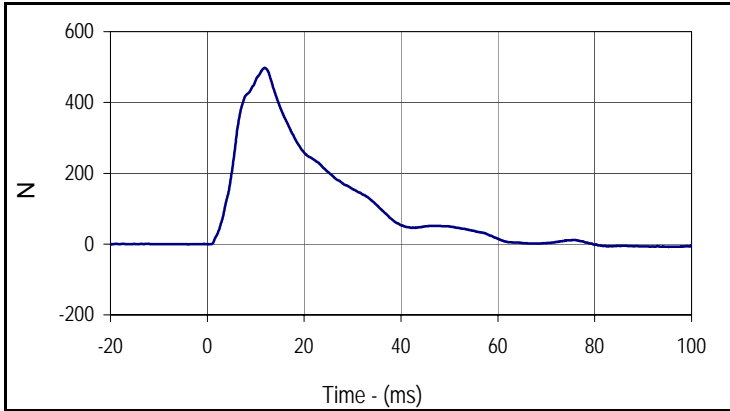
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	g
Max	Time	Min	Time
17.8	11.8	-0.3	70.1



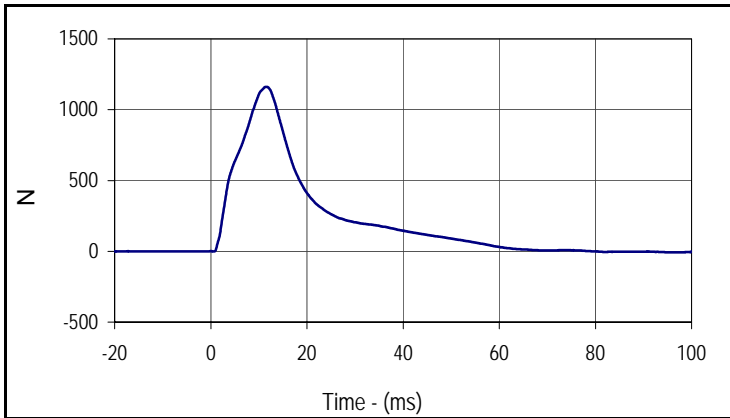
Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	N
Max	Time	Min	Time
4072.3	11.8	-65.4	70.1

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

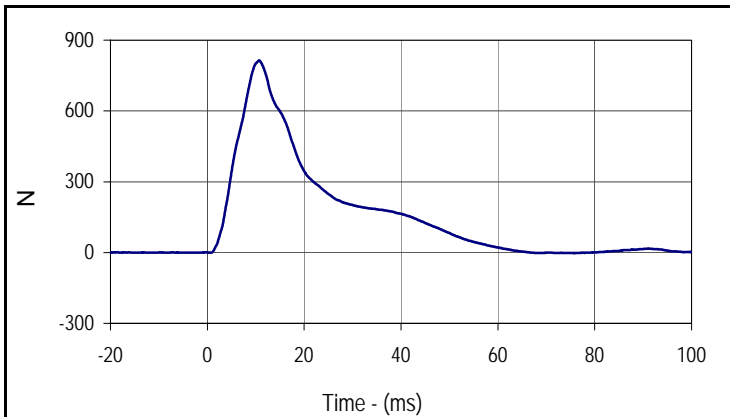
Test Date: 11/22/15
 Test I.D.: F037ABD079



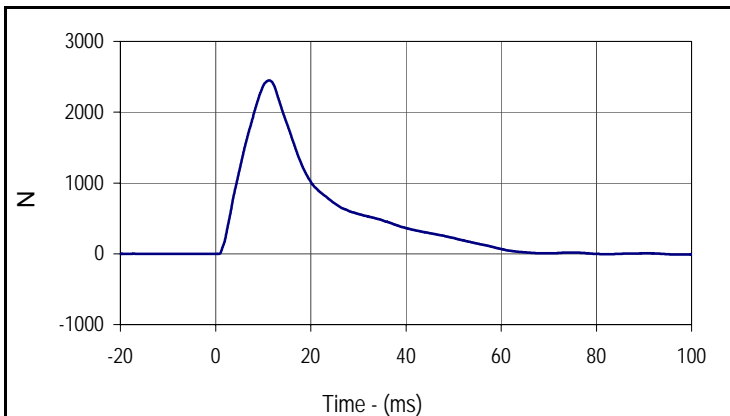
Curve Description			
Front Abdomen Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	N
Max	Time	Min	Time
497.8	11.9	-7.9	95.3



Curve Description			
Middle Abdomen Force			
Plot No.	Type	SAE Class	Units
004	FIL	600	N
Max	Time	Min	Time
1161.9	11.5	-8.0	95.5



Curve Description			
Rear Abdomen Force			
Plot No.	Type	SAE Class	Units
005	FIL	600	N
Max	Time	Min	Time
814.2	10.7	-2.5	75.8



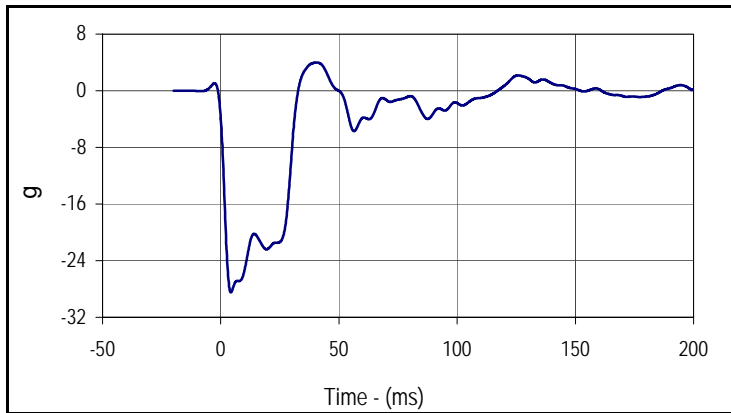
Curve Description			
Abdomen Sum Resultant			
Plot No.	Type	SAE Class	Units
006	RES	600	N
Max	Time	Min	Time
2449.9	11.3	-12.2	98.4

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

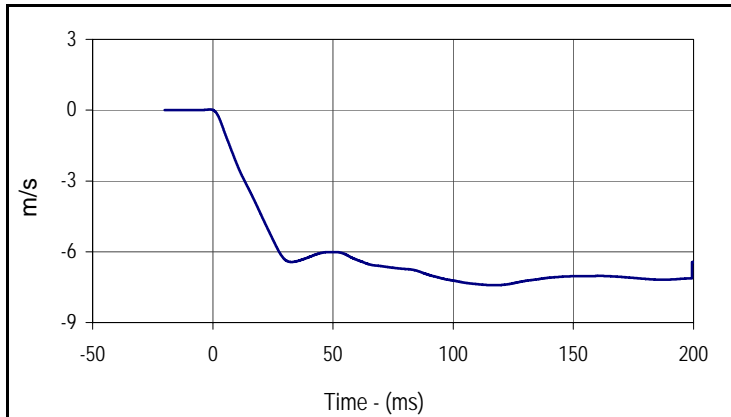
Test Date: 11/22/15
 Test I.D.: F037LB079



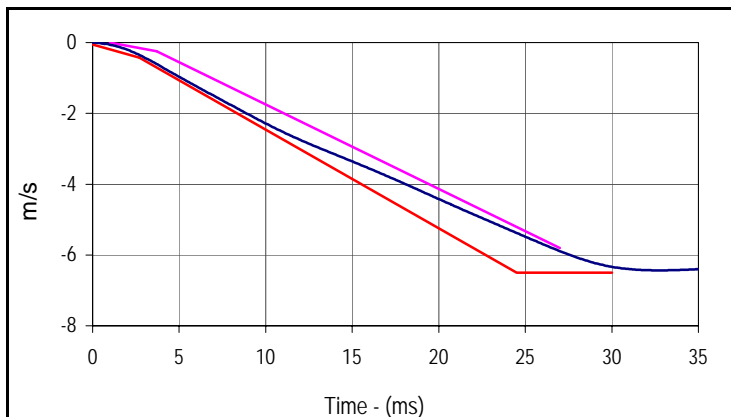
Tested Parameter	Units	Specification	Result	Pass/Fail
Lumbar Spine Assembly Soak Time	Minutes	≥240	800	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.7	Pass
Pendulum Velocity	m/s	5.95 to 6.15	5.96	Pass
Headform Rotation	Max	45 to 55	49.4	Pass
	Time	39 to 53	40.1	Pass
Time of Decay to Zero Angle from Peak	msec	37 to 57	46.2	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	g
Max	Time	Min	Time
4.0	41.2	-28.5	4.9



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.6	-7.4	117.7



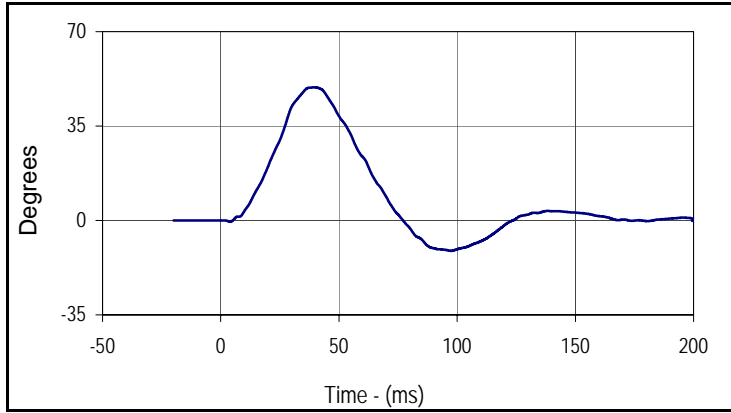
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.6	-7.4	117.7

Velocity Corridors

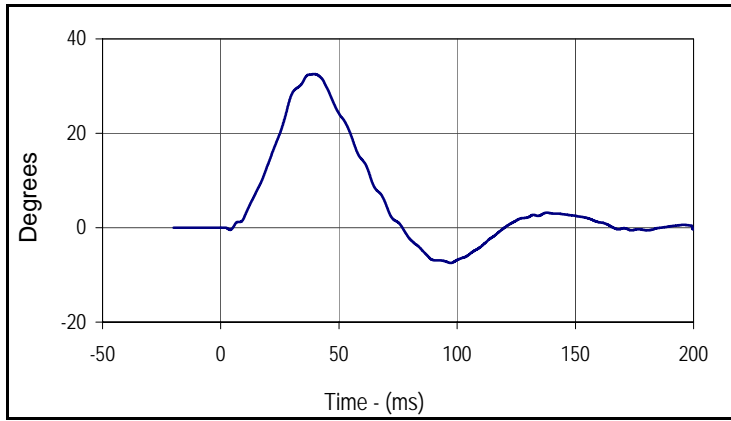
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.7	-0.24	2.7	-0.425
27.0	-5.80	24.5	-6.50
		30.0	-6.50

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

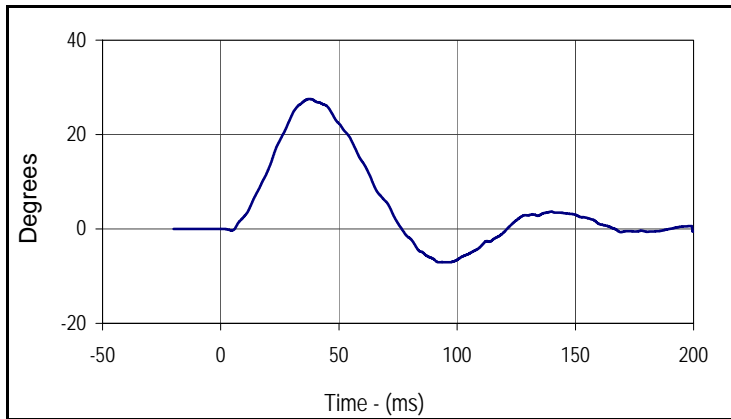
Test Date: 11/22/15
 Test I.D.: F037LB079



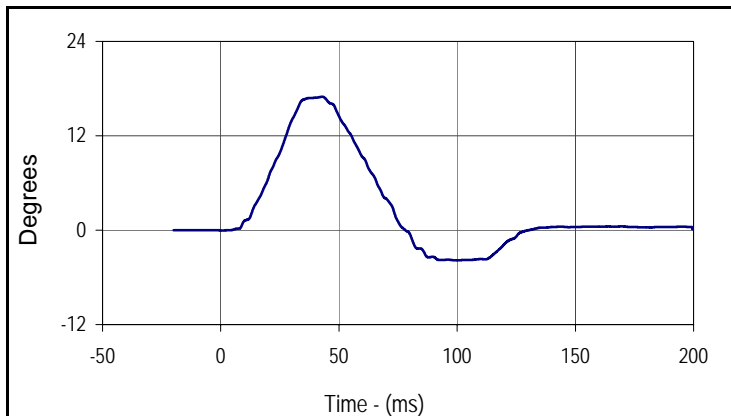
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
49.4	40.1	-11.2	98.0



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
32.6	40.0	-7.5	97.9



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
27.5	38.1	-7.1	92.9



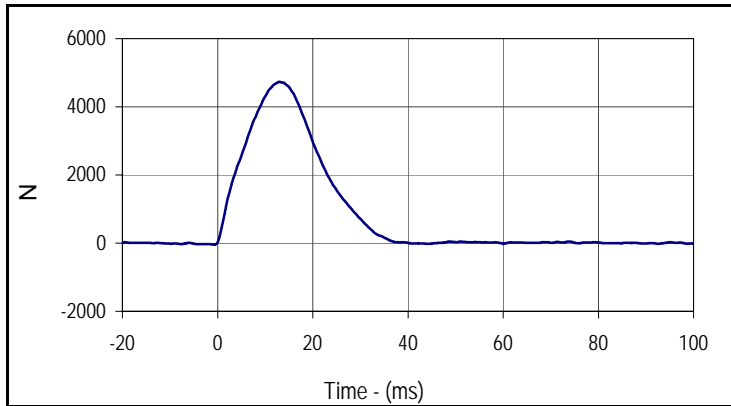
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
17.0	43.5	-3.8	100.5

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

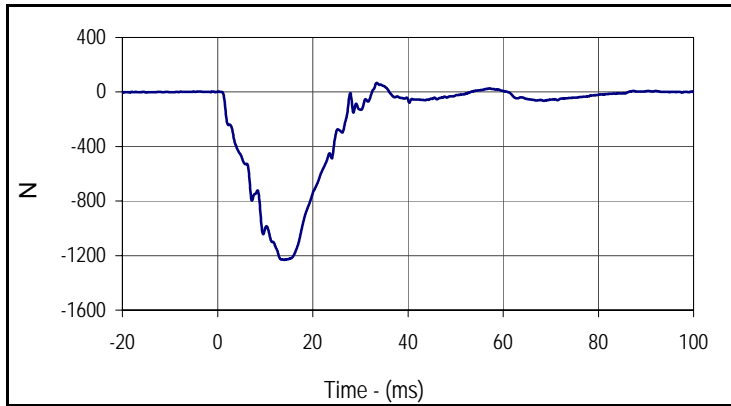
Test Date: 11/22/15
 Test I.D.: F037PL079



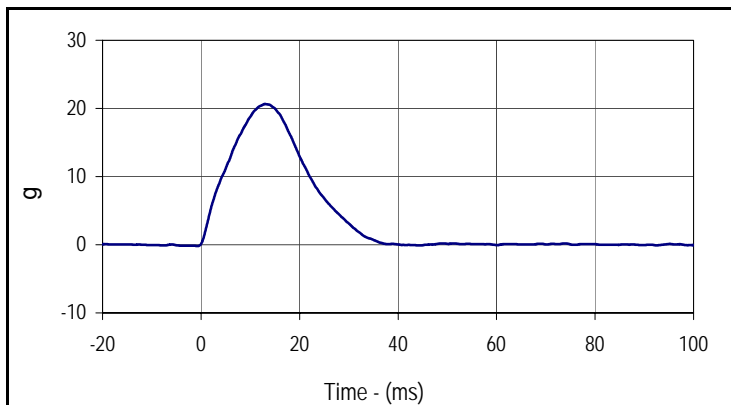
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	855	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.7	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.31	Pass
Peak Impactor Force	N	4700 to 5400	4729.8	Pass
	msec	11.8 to 16.1	13	Pass
Peak Pubic Symphysis Load	N	-1230 to -1590	-1232.6	Pass
	msec	12.2 to 17.0	14.1	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	N
Max	Time	Min	Time
4729.8	13.0	-43.8	-0.7



Curve Description			
Pubic Symphysis Force Y			
Plot No.	Type	SAE Class	Units
002	FIL	600	N
Max	Time	Min	Time
66.7	33.4	-1232.6	14.1



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
20.6	13.0	-0.2	-0.7

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

Test Date: 11/23/15
 Test I.D.: N/A



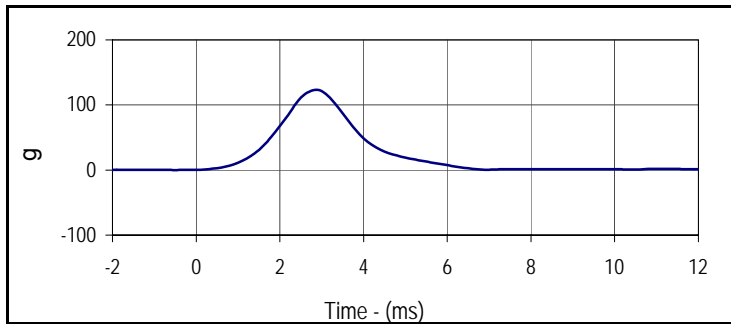
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	23	Pass
A Sitting Height	mm	772 - 788	778	Pass
B Shoulder Pivot Height	mm	437 - 453	443	Pass
C H-Point Height	mm	79 - 89	85	Pass
D H-Point from Seatback	mm	141 - 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	197	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	88	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

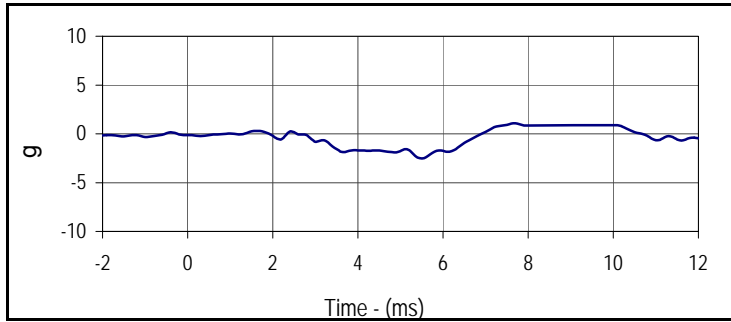
Test Date: 11/23/15
 Test I.D.: 307HD088



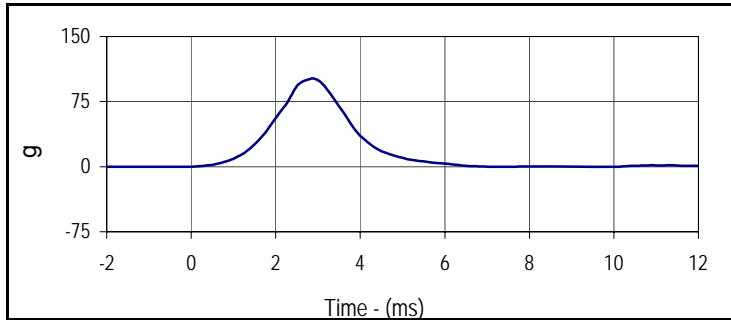
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	505	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	23.0	Pass
	Min		22.4	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.6	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	22.6	Pass
Peak Head Resultant Acceleration	g	115 to 137	123.4	Pass
Peak Head X Acceleration	g	<15	2.5	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	0.4	Pass
Overall Test Results				Pass



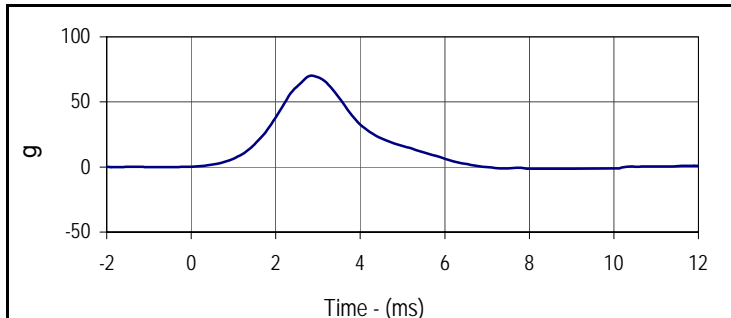
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
123.4	2.9	0.0	-13.5



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	g
Max	Time	Min	Time
1.1	7.7	-2.5	5.5



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
101.7	2.9	-0.2	-3.1



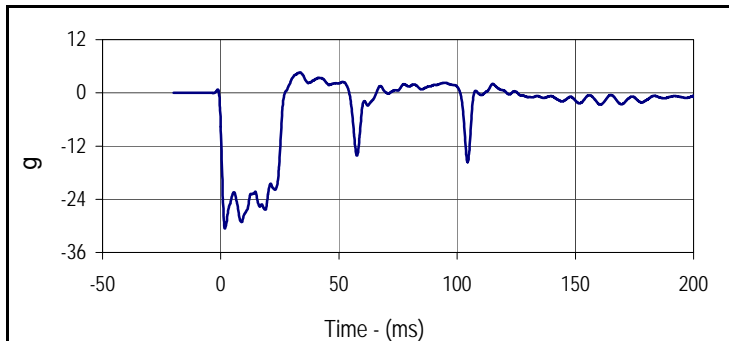
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
69.9	2.9	-1.3	8.0

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

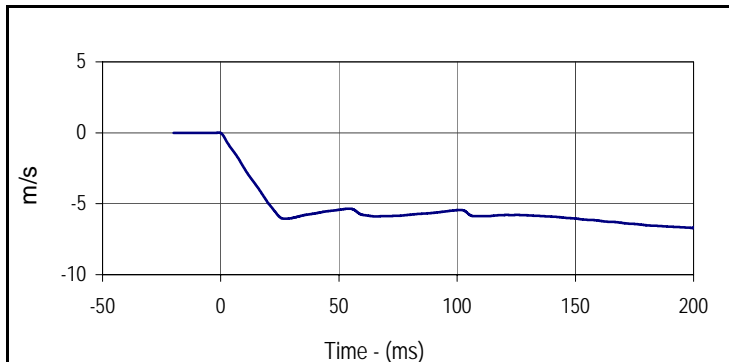
Test Date: 11/23/15
 Test I.D.: 307NB088



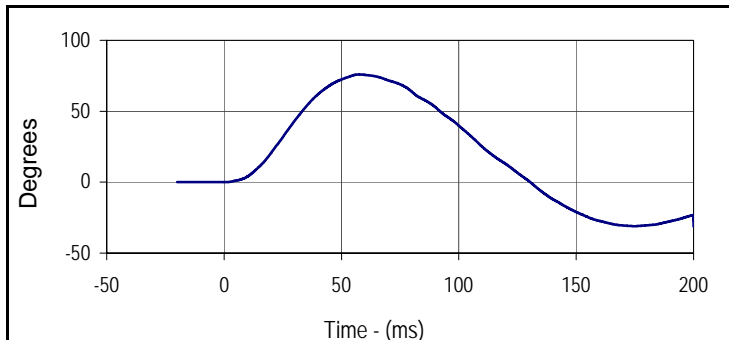
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	550	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass	
	Min		21.1	Pass	
Humidity During Soak	Max	10.0 to 70.0	23.0	Pass	
	Min		22.4	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	22.6	Pass	
Pendulum Velocity	m/s	5.51 to 5.63	5.54	Pass	
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.52	Pass
	15 msec	m/s	-3.30 to -4.10	-3.70	Pass
	20 msec	m/s	-4.40 to -5.40	-4.94	Pass
	25 msec	m/s	-5.40 to -6.10	-5.95	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.05	Pass
D-Plane Rotation	Max	Degrees	71 to 81	76.0	Pass
	Time	msec	50 to 70	57.6	Pass
Peak Occipital Condyle Moment	Nm	-36 to -44	-42.5	Pass	
Decaying Moment Time to Cross 0 Nm	msec	102 to 126	106.5	Pass	
Overall Test Results			Pass	Pass	



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	g
Max	Time	Min	Time
4.6	0.0	-30.6	0.0



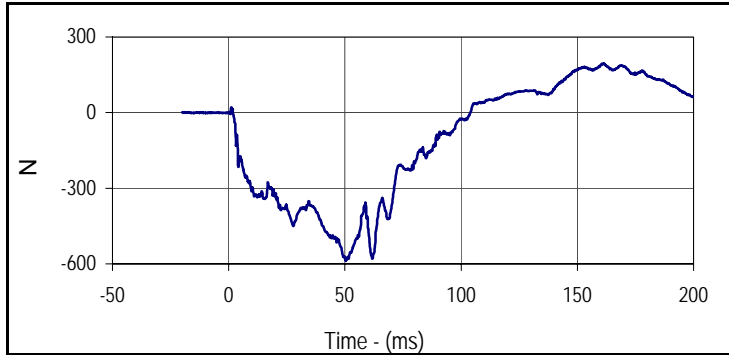
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.8	-6.7	199.9



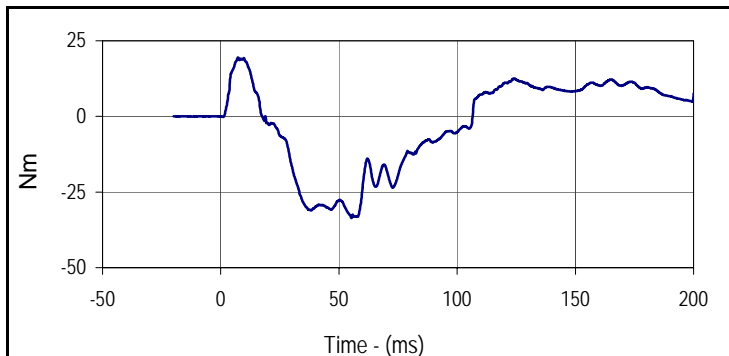
Curve Description			
D-Plane Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
76.0	57.6	-31.2	200.0

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

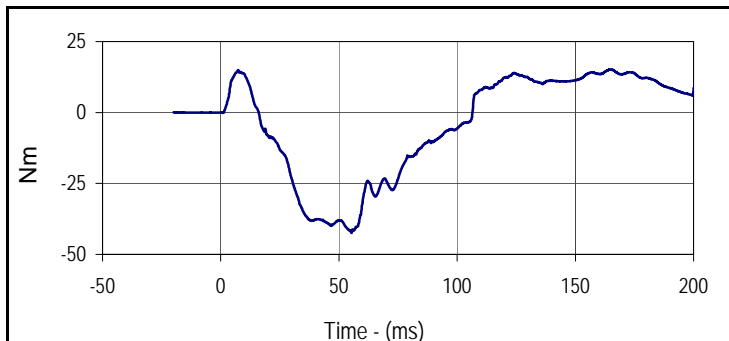
Test Date: 11/23/15
 Test I.D.: 307NB088



Curve Description			
Neck Force Y			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
195.7	161.4	-587.7	50.3



Curve Description			
Neck Moment X			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
19.5	7.3	-33.6	55.3



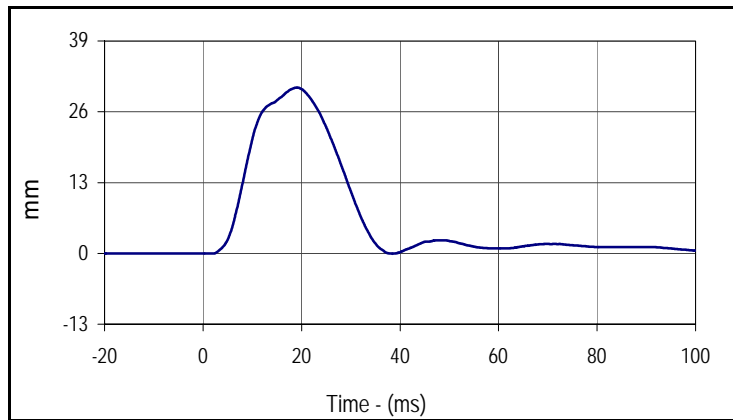
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
006	FIL	600	Nm
Max	Time	Min	Time
15.2	164.8	-42.5	55.3

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

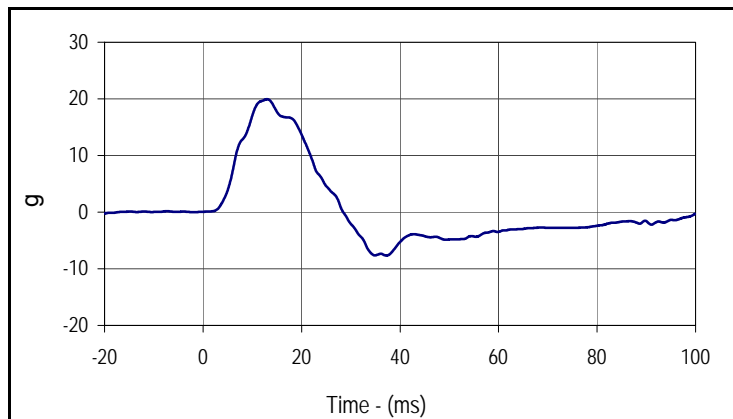
Test Date: 11/23/15
 Test I.D.: 307SH088



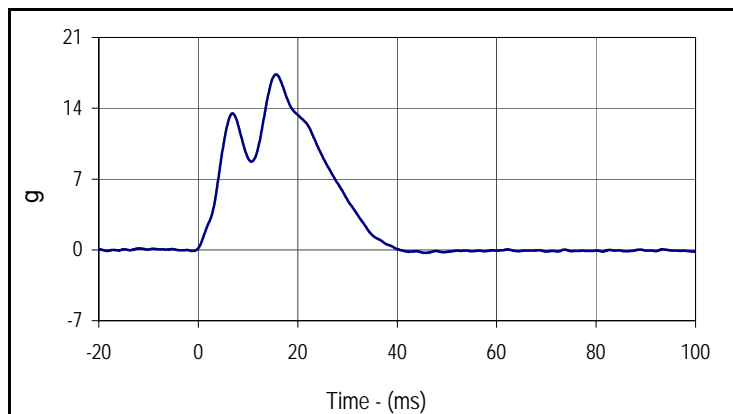
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	605	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	23.0	Pass
	Min		22.4	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	22.8	Pass
Impactor Velocity	m/s	4.20 to 4.40	4.31	Pass
Peak Shoulder Deflection	mm	28 to 37	30.5	Pass
Peak Lateral Spine Acceleration Y	g	17 to 22	19.9	Pass
Peak Impactor Acceleration	g	13 to 18	17.4	Pass
Overall Test Results			Pass	



Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
30.5	19.1	0.0	38.5



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
19.9	13.0	-7.7	37.2



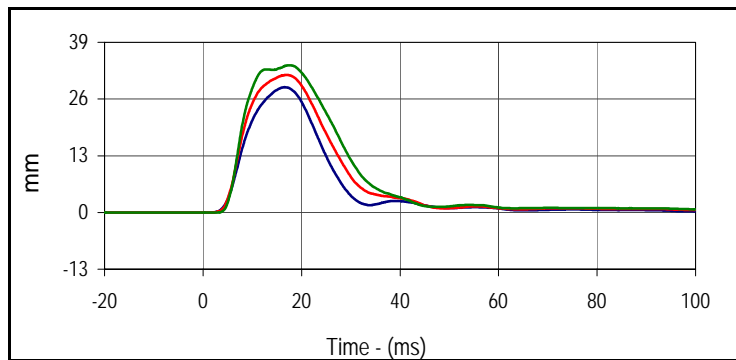
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
17.4	15.6	-0.3	45.6

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

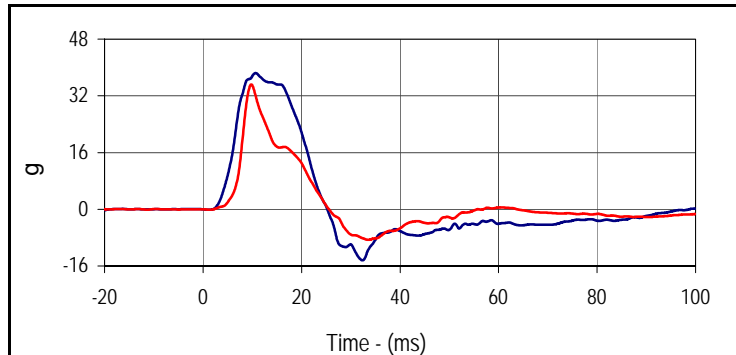
Test Date: 11/23/15
 Test I.D.: 307TWA088



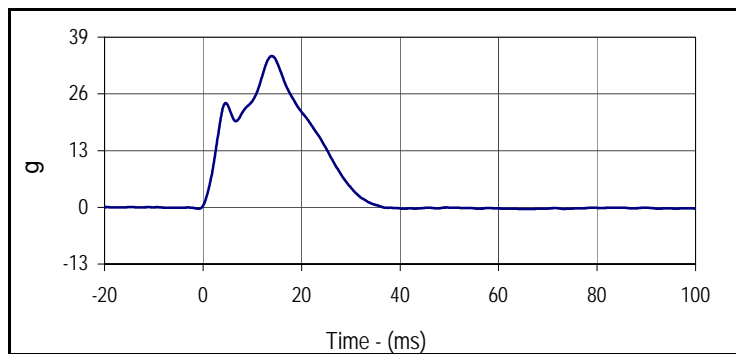
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	650	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	23.0	Pass
	Min		22.4	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	22.8	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.65	Pass
Peak Shoulder Deflection	mm	31 to 40	36.2	Pass
Peak Upper Thorax Rib Deflection	mm	25 to 32	28.7	Pass
Peak Middle Thorax Rib Deflection	mm	30 to 36	31.5	Pass
Peak Lower Thorax Rib Deflection	mm	32 to 38	33.7	Pass
Peak Upper Spine Y Acceleration	g	34 to 43	38.4	Pass
Peak Lower Spine Y Acceleration	g	29 to 37	35.2	Pass
Peak Impactor Acceleration	g	30 to 36	34.7	Pass
Overall Test Results				Pass



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
28.7	16.6	0.0	-5.6
Middle Thorax Deflection			
Max	Time	Min	Time
31.5	16.9	0.0	-5.1
Lower Thorax Deflection			
Max	Time	Min	Time
33.7	17.4	0.0	-2.7



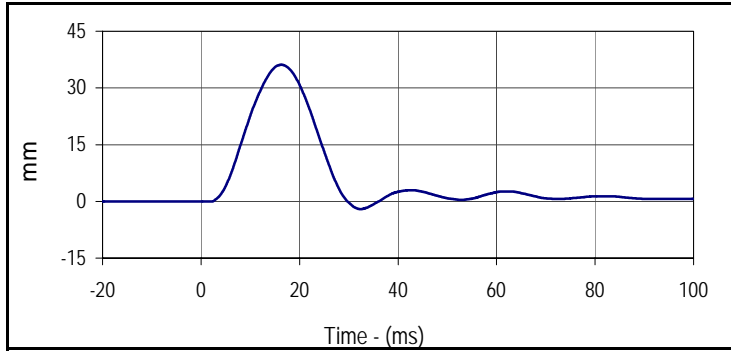
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
38.4	10.7	-14.4	32.4
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	g
Max	Time	Min	Time
35.2	9.8	-8.6	33.6



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	g
Max	Time	Min	Time
34.7	14.0	-0.4	66.8

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

Test Date: 11/23/15
 Test I.D.: 307TWA088



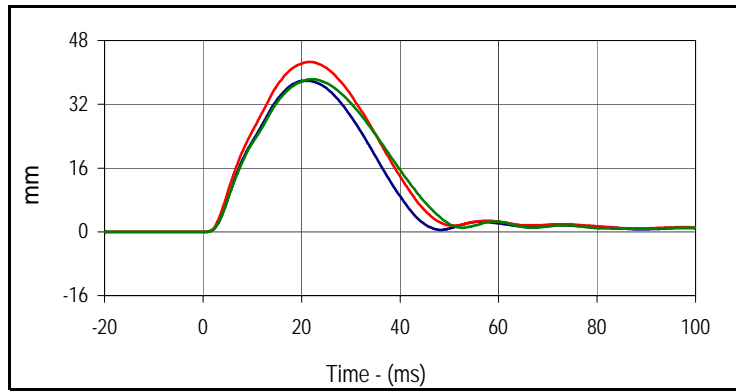
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	mm
Max	Time	Min	Time
36.2	16.3	-2.0	32.4

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

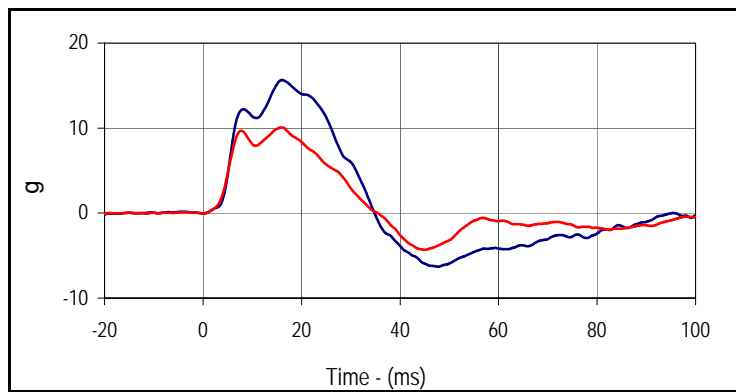
Test Date: 11/23/15
 Test I.D.: 307TWOA088



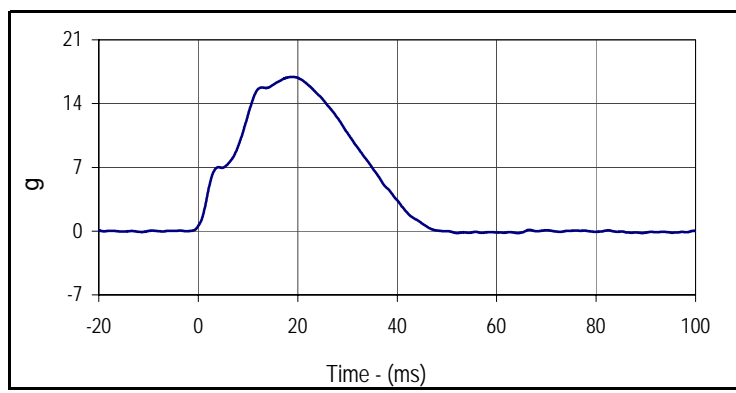
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	705	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	23.0	Pass
	Min		22.4	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	22.9	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.32	Pass
Peak Upper Thorax Rib Deflection	mm	32 to 40	37.9	Pass
Peak Middle Thorax Rib Deflection	mm	39 to 45	42.6	Pass
Peak Lower Thorax Rib Deflection	mm	35 to 43	38.3	Pass
Peak Upper Spine Y Acceleration	g	13 to 17	15.7	Pass
Peak Lower Spine Y Acceleration	g	7 to 11	10.1	Pass
Peak Impactor Acceleration	g	14 to 18	16.9	Pass
Overall Test Results				Pass



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
37.9	20.9	0.0	-8.2
Middle Thorax Deflection			
Max	Time	Min	Time
42.6	21.8	0.0	-8.5
Lower Thorax Deflection			
Max	Time	Min	Time
38.3	22.2	0.0	-8.6



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
15.7	16.0	-6.3	47.7
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	g
Max	Time	Min	Time
10.1	16.0	-4.3	45.0



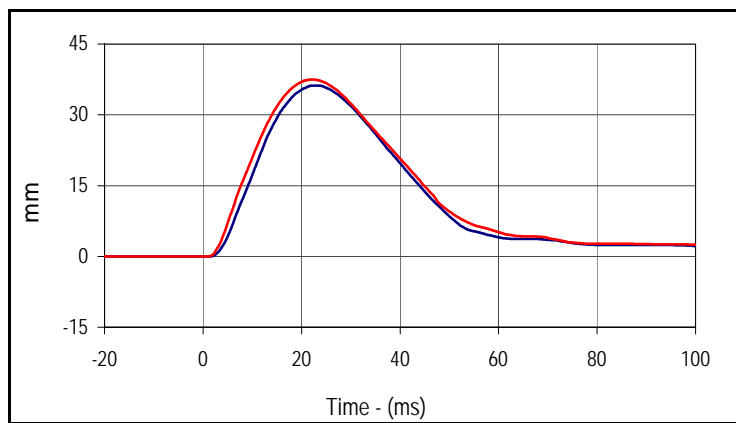
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	g
Max	Time	Min	Time
16.9	18.9	-0.2	64.2

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

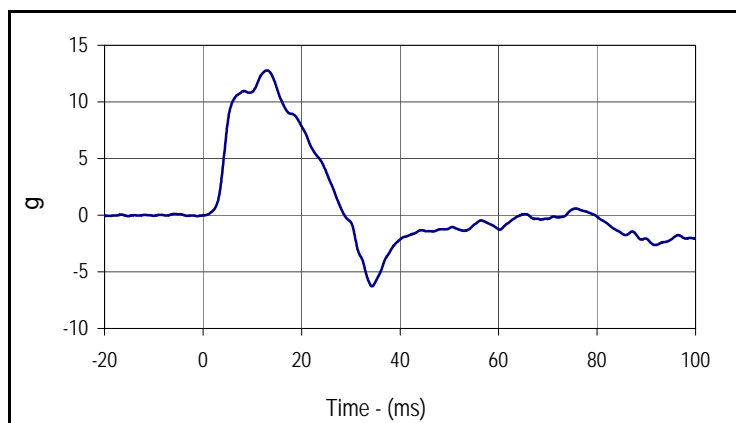
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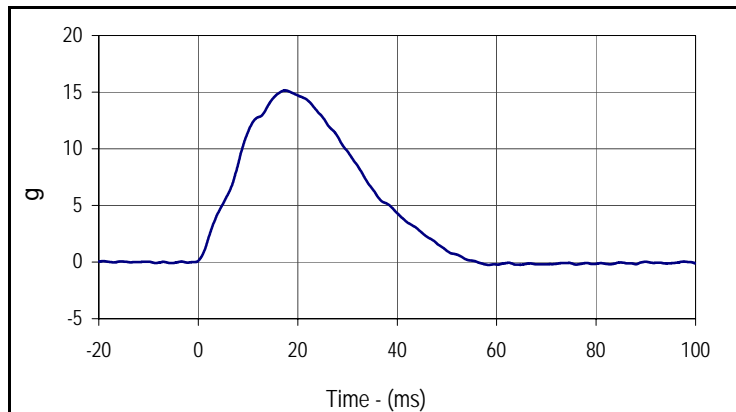
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	760	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	23.0	Pass
	Min		22.4	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	22.9	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.31	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	36.2	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	37.5	Pass
Peak Lower Spine Y Acceleration	g	9 to 14	12.8	Pass
Peak Impactor Acceleration	g	12 to 16	15.2	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
36.2	22.7	0.0	-8.8



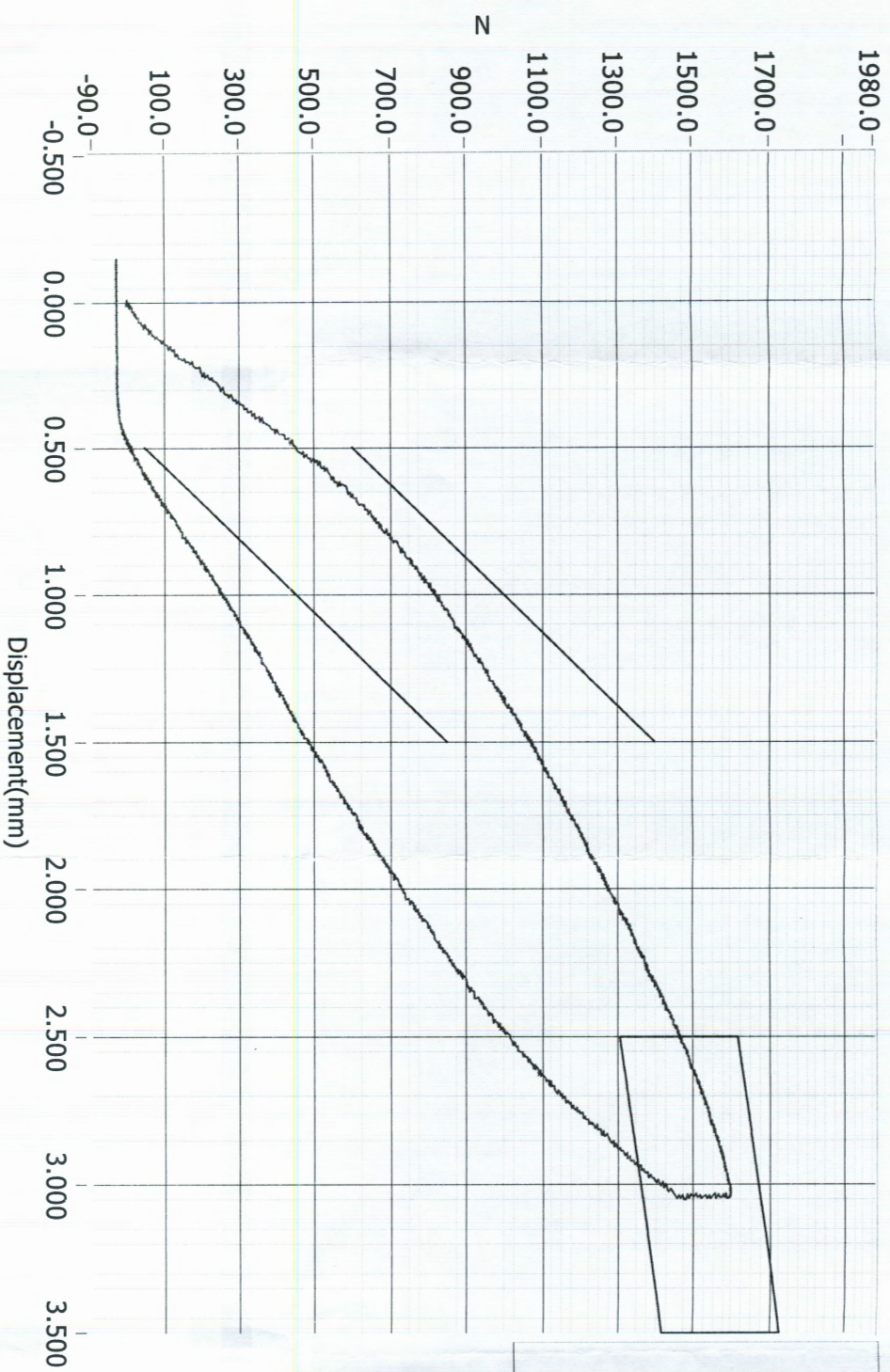
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	mm
Max	Time	Min	Time
37.5	22.2	0.0	-1.8



Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
12.8	13.0	-6.3	34.3

Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
15.2	17.5	-0.3	58.4

Resultant Data - SIDIIS Plug Compression



1595N

ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
<u>Cert ID</u>	<u>ATD Serial Number</u>	<u>ATD Type</u>	
	N/A	SIDIIS	
	70950	12/13/2013	8:52 PM

Current Date : 12/13/2013

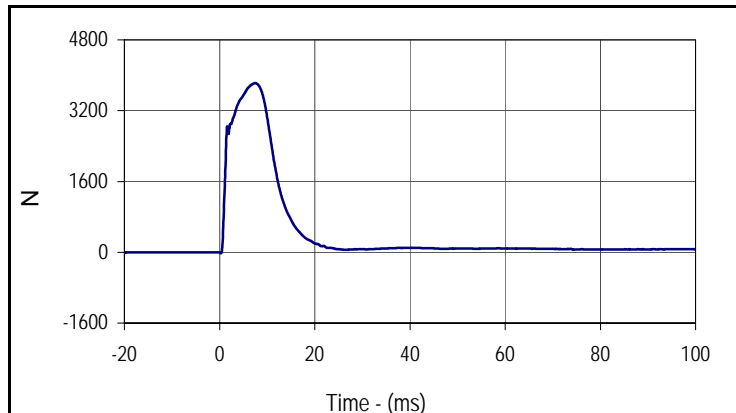
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Test Program: SID IIs Pelvis Acetabulum Impact Test
 ATD Serial No.: 307

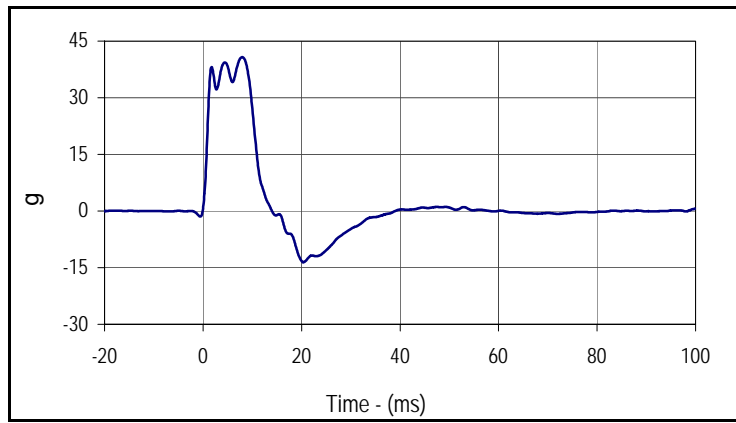
Test Date: 11/23/15
 Test I.D.: 307ACET088



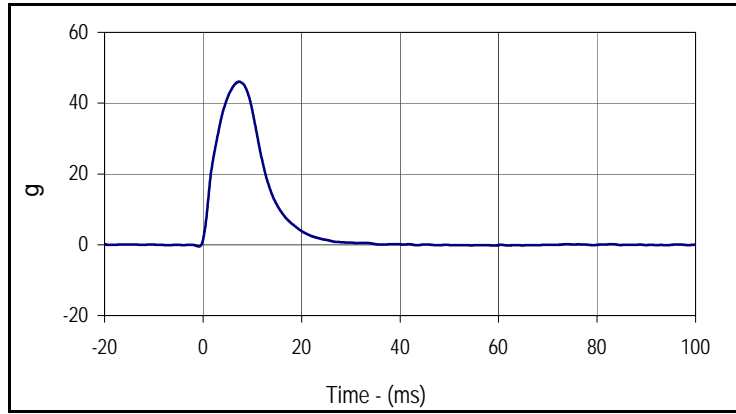
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	810	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	23.0	Pass
	Min		22.4	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.0	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.64	Pass
Peak Acetabulum Force Y	N	3600 to 4300	3822.2	Pass
Peak Pelvis Y Acceleration After 6 msec.	g	34 to 42	40.7	Pass
Peak Impactor Acceleration	g	38 to 47	46.0	Pass
Overall Test Results				Pass



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
3822.2	7.4	-22.6	0.3



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
40.7	7.9	-13.5	20.4



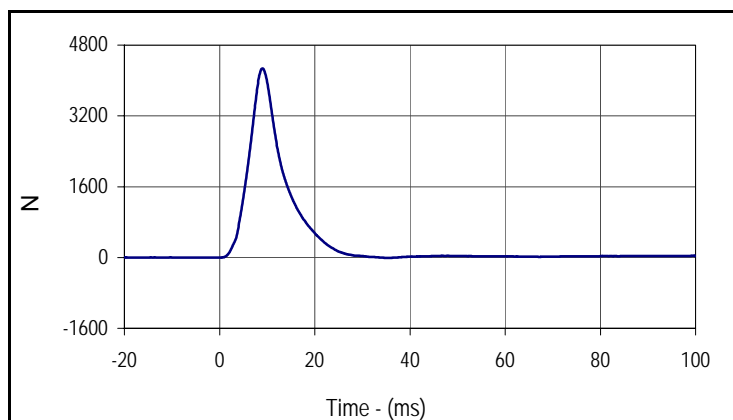
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
46.0	7.3	-0.5	-0.8

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

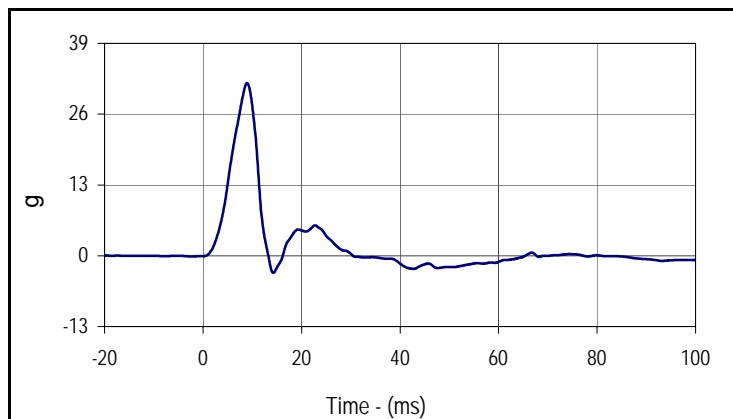
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 Test I.D.: 307PL088



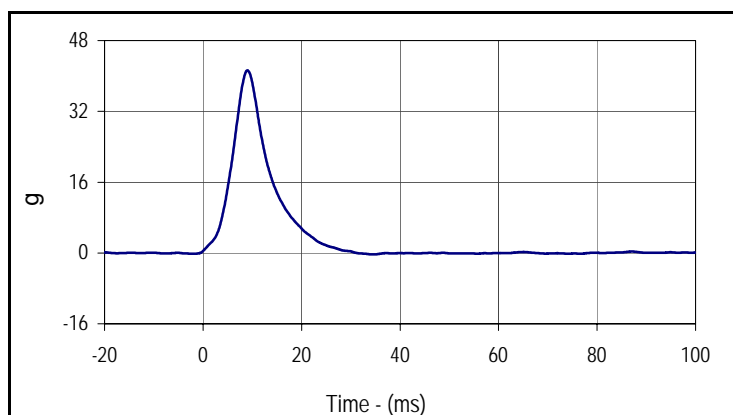
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	865	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	23.0	Pass
	Min		22.4	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	22.4	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.38	Pass
Peak Iliac Force	N	4100 to 5100	4273.9	Pass
Peak Pelvis Y Acceleration	g	28 to 39	31.7	Pass
Peak Impactor Acceleration	g	36 to 45	41.3	Pass
Overall Test Results				Pass



Curve Description			
Pelvis Iliac Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
4273.9	9.0	-10.0	35.7



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
31.7	8.9	-3.1	14.3



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
41.3	9.0	-0.3	34.4

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	7/21/15
	Middle	Y	1505	Denton	7/21/15
	Rear	Y	1506	Denton	7/21/15
Lower Spine Accelerometers (T12)		X	P63856	Endevco	7/18/15
		Y	P50063	Endevco	7/18/15
		Z	P51880	Endevco	7/18/15
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	1229	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	AHRW5	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)			70766	FTSS	12/13/13	
Pelvis Plug (Non-Struck Side)			70625	FTSS	12/12/13	

TABLE 3 – Vehicle Instrumentation

Vehicle Instrumentation			Serial Number	Manufacturer	Calibration Date
1	Vehicle Center of Gravity	X	A145986	MSI	7/8/15
	Vehicle Center of Gravity	Y	A145956	MSI	7/8/15
	Vehicle Center of Gravity	Z	A145996	MSI	7/8/15
2	Right Sill at Front Seat	X	A147392	MSI	7/8/15
	Right Sill at Front Seat	Y	A145445	MSI	7/8/15
	Right Sill at Front Seat	Z	A160687	MSI	7/8/15
3	Right Sill at Rear Seat	X	A148184	MSI	7/8/15
	Right Sill at Rear Seat	Y	A159438	MSI	7/8/15
	Right Sill at Rear Seat	Z	A160354	MSI	7/8/15
4	Left Sill at Front Door	Y	MS22926	MSI	7/8/15
5	Left Sill at Rear Door	Y	A136686	MSI	7/7/15
6	Left A-Post Lower	Y	MS22924	MSI	7/7/15
7	Left A-Post Middle	Y	A147464	MSI	7/7/15
8	Left B-Post Lower	Y	A160694	MSI	7/7/15
9	Left B-Post Middle	Y	A148280	MSI	7/8/15
10	Front Seat Track	Y	A148252	MSI	7/7/15
11	Rear Seat Structure	Y	A148281	MSI	7/7/15
12	Right Rear Occ. Compartment	Y	N/A	N/A	N/A
13	Engine Block	X	A160376	MSI	7/8/15
	Engine Block	Y	A145924	MSI	7/8/15
14	Rear Floorpan Above Axle	X	A145963	MSI	7/7/15
	Rear Floorpan Above Axle	Y	A145966	MSI	7/7/15
	Rear Floorpan Above Axle	Z	A160703	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