

REPORT NUMBER: SINCAP-KAR-16-010

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

**NISSAN MOTOR CO.
2016 NISSAN VERSA S 4-DOOR SEDAN**

NHTSA No: M20165205

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



DECEMBER 29, 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 Nissan Versa S 4-door Sedan in accordance with the specifications of the Office of Crash Worthiness Standards Test Procedure for the generation of consumer information on vehicle side crash protection. The test was conducted at the KARCO Engineering, LLC. facility in Adelanto, California on December 15, 2015.

The impact velocity of the Moving Deformable Barrier was 61.63 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 7.8° C. The target vehicle's maximum post-test static crush was 271 mm located at level 2. The test vehicle's occupant performance data is as follows:

Measurement Description	Driver ATD (ES-2re)		
	Units	IARV	Result
Head Injury Criteria (HC ₃₆)		1000	235.1
Maximum Thoracic Rib Deflection	mm	44	33
Total Abdominal Force	N	2500	1015
Pubic Symphysis Force	N	6000	2018

Measurement Description	Passenger ATD (SID-IIs)		
	Units	IARV	Result
Head Injury Criteria (HC ₃₆)		1000	566.5
Resultant Lower Spine Acceleration	g	82	59
Total Pelvic Force (Sum of Acetubular and Iliac Forces)	N	5525	3759
Maximum Thoracic Rib Deflection	mm	38*	35
Maximum Abdominal Rib Deflection	mm	45*	32

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. The trunk opened upon impact.

* 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 Nissan Versa S 4-door Sedan. 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 Nissan Versa S 4-door Sedan was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 61.63 km/h (38.30 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 December 15, 2015. Pre- and post-test photographs of the test vehicle, the MDB and the dummies (ES-2re and SID-IIs) are included in Appendix A of this report.

Dummies were placed in the driver and left rear designated seating positions according to instructions specified in the OCWS Side Impact Laboratory Test Procedure, dated 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	235.1
Maximum Thoracic Rib Deflection	mm	44	33
Combined Abdominal Force	N	2500	1015
Pubic Symphysis Force	N	6000	2018

Measurement Description	Units	Passenger ATD (SID-IIs)	
		Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	566.5
Lower Spine (T12) Resultant Acceleration	g	82	59
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3759
Maximum Thoracic Rib Deflection	mm	38*	35
Maximum Abdominal Rib Deflection	mm	45*	32

*Proposed IARV

Supplemental restraint information is given below:

Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear (Passenger) Occupant Location 4	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	Yes	No	
Knee Airbag	No		No	
Side Airbag 1 (Curtain)	Yes	Yes	Yes	Yes
Side Airbag 2 (Torso/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 trunk unlatched and opened during impact. There was no ATD value that exceeded its limits.

SECTION 3

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165205

Test Program: NCAP MDB Side Impact Test Test Date: 12/15/15

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 Nissan Versa S 4-Door Sedan NHTSA No. M20165205
 Test Program: NCAP MDB Side Impact Test Test Date: 12/15/15

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	M20165205
Model Year	2016
Make	Nissan
Model	Versa S
Body Style	4-Door Sedan
VIN	3N1CN7AP1GL816959
Body Color	Brilliant Silver
Odometer Reading (km / mi)	103 / 64
Engine Displacement (L)	1.6
Type / No. of Cylinders	Inline 4
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	4
Overdrive	Yes
Final Drive	Front
Roof Rack	No
Sunroof / T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes

Traction Control System (TCS)	Yes
Auto-Leveling System	No
Automatic Door Locks	No
Power Window Auto-Reverse	No
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? No

DATA FROM CERTIFICATION LABEL

Manufactured By	Nissan Motor Co.
Date of Manufacture	Aug-15
Vehicle Type	Passenger Car

GVWR (kg)	1528
GAWR Front (kg)	794
GAWR Rear (kg)	775

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

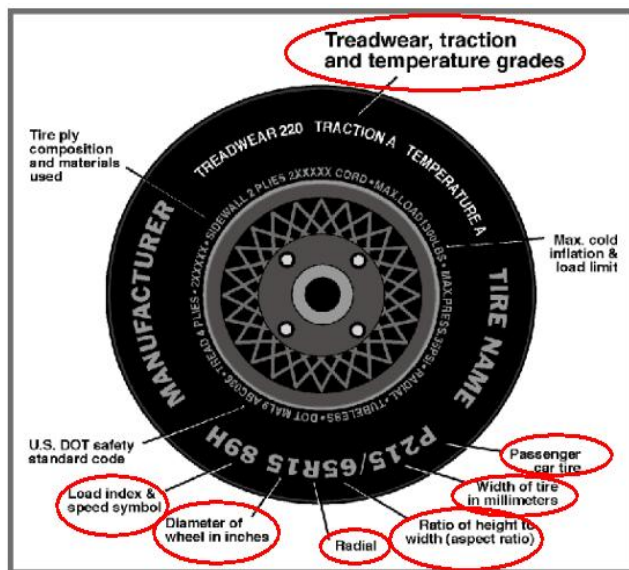
VEHICLE SEAT TYPE

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 Nissan Versa S 4-Door Sedan NHTSA No. M20165205
 Test Program: NCAP MDB Side Impact Test Test Date: 12/15/15



Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	300	300
Cold Pressure (kPa)	230	230
Recommended Tire Size	P185/65R15	P185/65R15
Tire Size on Vehicle	P185/65R15	P185/65R15
Tire Manufacturer	Continental	Continental
Tire Model	ContiProContact	ContiProContact
Treadware	500	500
Traction Grade	AA	AA
Temperature Grade	A	A
Tire Plies Sidewall	1 Polyester	1 Polyester
Tire Plies Body	1 Polyester, 1 Polyamide, 2 Steel	1 Polyester, 1 Polyamide, 2 Steel
Load Index/Speed Symbol	86 H	86 H
Tire Material	Polyester, Polyamide, Steel	Polyester, Polyamide, Steel
DOT Safety Code Left	P5FP 3YP 3115	P5FP 3YP 3115
DOT Safety Code Right	P5FP 3YP 3115	P5FP 3YP 3115

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165205
 Test Program: NCAP MDB Side Impact Test Test Date: 12/15/15

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	235	245	235	230
Tire Placard	kPa	230	230	230	230
Owner's Manual	kPa	230	230	230	230
As Tested	kPa	230	230	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	328.0	224.0		362.0	297.5		367.0	305.0	
Right	kg	313.0	226.5		320.5	274.5		315.0	279.5	
Ratio	%	58.7%	41.3%	100.0%	54.4%	45.6%	100.0%	53.8%	46.2%	100.0%
Total	kg	641.0	450.5	1091.5	682.5	572.0	1254.5	682.0	584.5	1266.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1091.5	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 (TVT W)	kg	1261.3	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	676	679	Yes
RF	mm	695	687	Yes
LR	mm	641	640	Yes
RR	mm	645	646	Yes
Vehicle CG (Aft of Front Axle)	mm	1199	1185	
Vehicle CG (Left (+)/Right (-) from Longitudinal Centerline)	mm	45	38	

***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 Nissan Versa S 4-Door Sedan NHTSA No. M20165205
Test Program: NCAP MDB Side Impact Test Test Date: 12/15/15

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Spare Tire and Tools	11.0
Rear Trunk Trim	3.5
Ballast / Equipment Added	52.9

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 Nissan Versa S 4-Door Sedan NHTSA No. M20165205
 Test Program: NCAP MDB Side Impact Test Test Date: 12/15/15

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	Fixed	Fixed	Fixed
Front Passenger Seat	Fixed	Fixed	Fixed
Front Center Seat			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle	As Tested SCRP Height	SCRP Height Position	SCRP Height (mm)		
				Rearmost	Mid Fore/Aft	Forwardmost
Driver Seat	Fixed	477	Max			
			Mid	462	477	493
			Min			
Front Passenger Seat	Fixed	502	Max			
			Mid	488	502	516
			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 Nissan Versa S 4-Door Sedan NHTSA No. M20165205
 Test Program: NCAP MDB Side Impact Test Test Date: 12/15/15

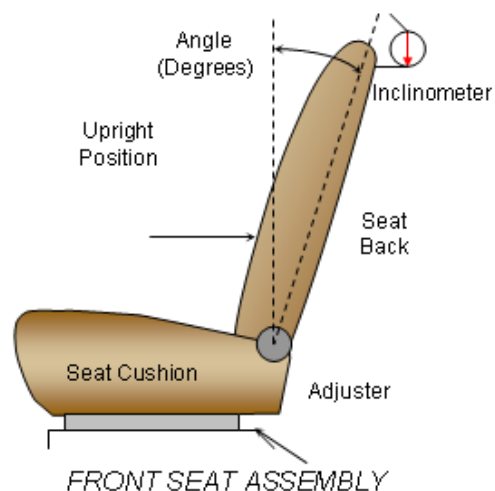
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position From Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	239	25	120	12
Front Passenger Seat	240	25	120	12
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 head rest post.



SEAT BACK POSITION

Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degree	Detent*
Driver Seat w/Seated Dummy	50.5	28	1.3	4
Front Passenger Seat	57.4	28	6.5	4
Front Center Seat				
Struck Side Rear Seat w/Seated Dummy	Fixed		Fixed	
Non-Struck Side Rear Seat	Fixed		Fixed	
Rear Center Seat	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 Nissan Versa S 4-Door Sedan NHTSA No. M20165205
 Test Program: NCAP MDB Side Impact Test Test Date: 12/15/15

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	4	H
Rear Seat	Fixed	Fixed

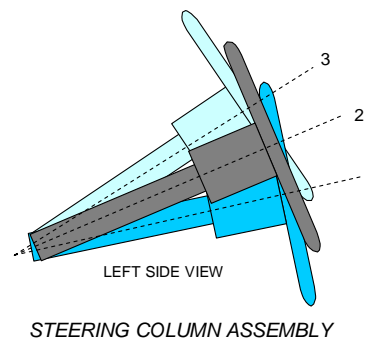
HEAD RESTRAINT ADJUSTMENT

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

	Total No. of Positions	Placed in Position
Driver Seat	Fixed	Fixed
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	25.7	
Geometric Center - Position 2	27.5	
Uppermost - Position 3	29.3	
Telescoping Steering Wheel Travel		
Test Position	27.5	Fixed

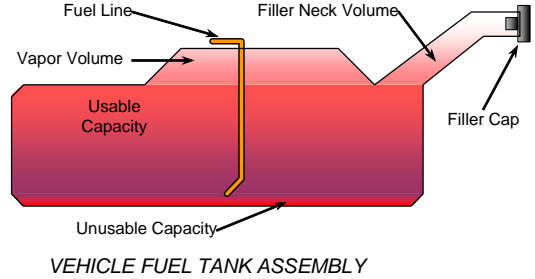
DATA SHEET NO. 2 ... (CONTINUED)

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

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165205
 Test Program: NCAP MDB Side Impact Test Test Date: 12/15/15

FUEL PUMP

The vehicle is equipped with an electric fuel pump. Fuel pump cycles for a brief period when the key is moved to the "ON" position, but does not pump fuel unless engine is running.



FUEL TANK CAPACITY

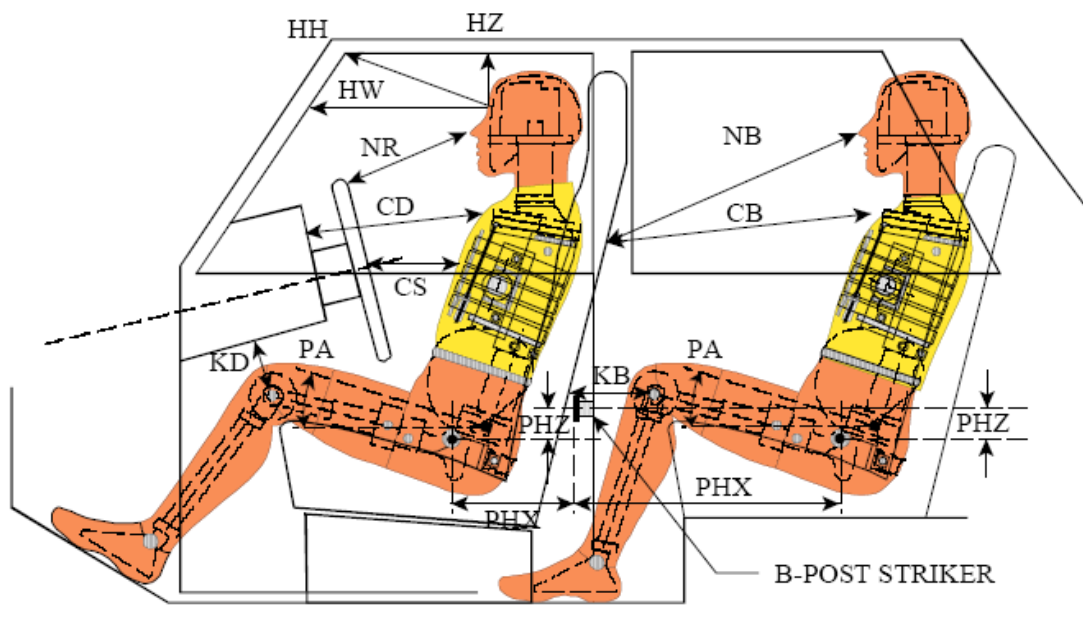
Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	40.88
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of "Standard Tank" (see Owner's Manual)	
Usable Capacity of "Optional Tank" (see Owner's Manual)	
93% of Usable Capacity	38.02
Actual amount of Solvent Used in Test	38.00
1/3 of Usable Capacity	13.63

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 Nissan Versa S 4-Door Sedan NHTSA No. M20165205
 Test Program: NCAP MDB Side Impact Test Test Date: 12/15/15



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

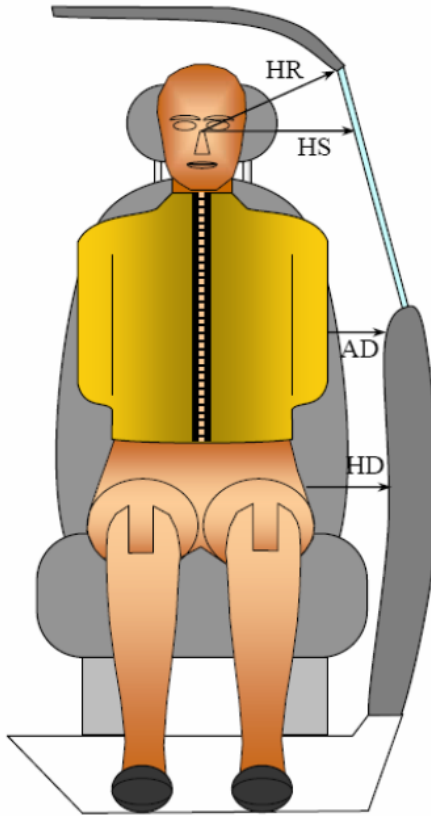
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Description	Driver		Passenger	
			Length (mm)	Angle (°)	Length (mm)	Angle (°)
HH		Head to Header	372			
HW		Head to Windshield	624			
HZ	HZ	Head to Roof	172		224	
NR	NB	Nose to Rim/Seat Back	455		665	
CD	CB	Chest to Dash/Seat Back	521		650	
CS		Chest to Steering Wheel	312			
KD(L)/KDA(L)°	KB(L)/KBA(L)°	Left Knee to Dash/Seat Back	142	23.0	347	7.9
KD(R)/KDA(R)°	KB(R)/KBA(R)°	Right Knee to Dash/Seat Back	139	28.4	350	15.0
PAX°	PAX°	Pelvic Tilt Angle X		15.7		20.9
	PAY°	Pelvic Tilt Angle Y		0.0		0.1
PHX	PHX	Hip Point to Striker (x-axis)	245		194	
PHZ	PHZ	Hip Point to Striker (z-axis)	102		207	

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165205
Test Program: NCAP MDB Side Impact Test Test Date: 12/15/15



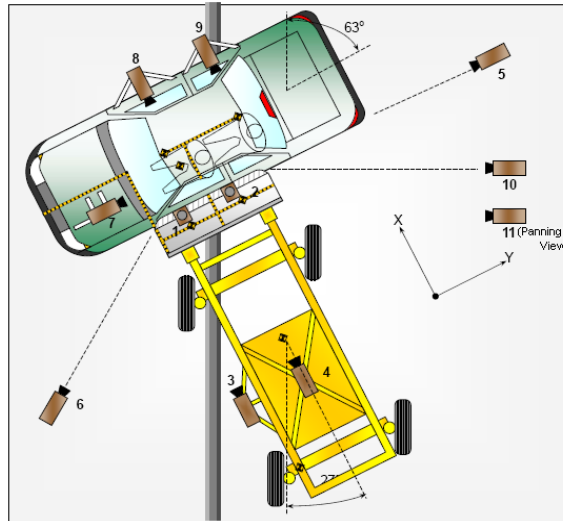
DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	174	227
HS	Head to Side Window	mm	309	351
AD	Arm to Door	mm	79	145
HD	H-Point to Door	mm	120	172

DATA SHEET NO. 5

CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165205
 Test Program: NCAP MDB Side Impact Test Test Date: 12/15/15



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)	481	-497	-639	24	1000
8	Driver Side (On-Board)	1645	703	-392	14	1000
9	Passenger Side (On-Board)	1565	1578	-410	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 Nissan Versa S 4-Door Sedan NHTSA No. M20165205
 Test Program: NCAP MDB Side Impact Test Test Date: 12/15/15



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

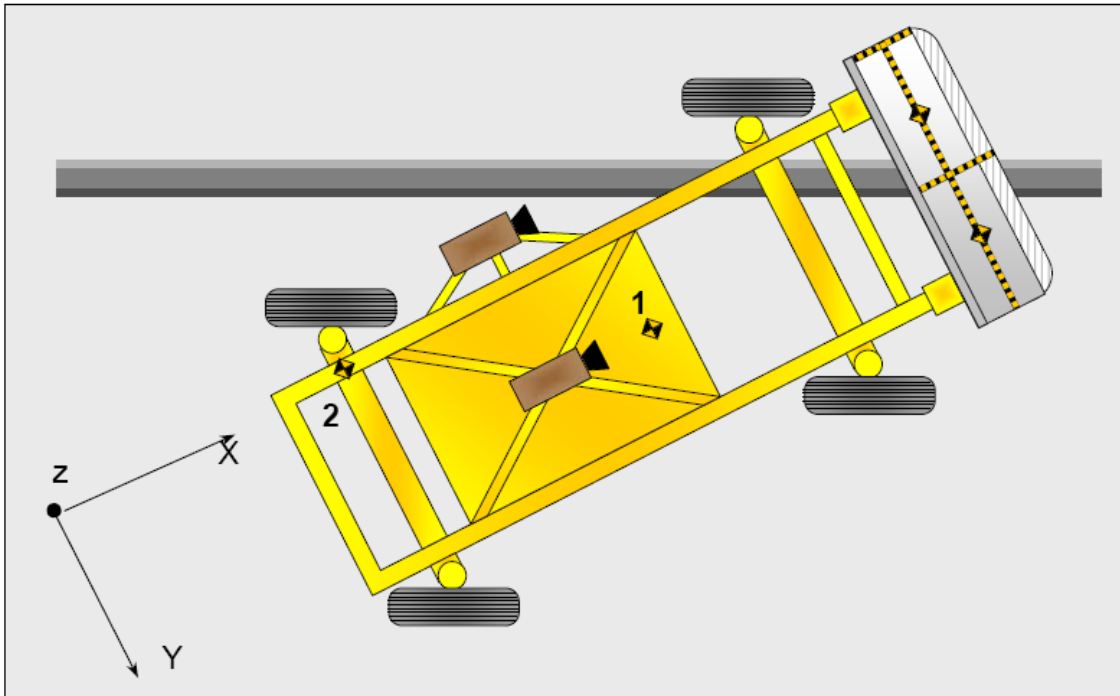
Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	1935	0	-322
2	Right Sill at Front Seat	2795	670	-332
3	Right Sill at Rear Seat	1787	673	-334
4	Left Sill at Front Door	2723	-728	-200
5	Left Sill at Rear Door	1676	-725	-203
6	A-Pillar Lower	3184	-721	-575
7	A-Pillar Middle	3184	-721	-833
8	B-Pillar Lower	2080	-677	-715
9	B-Pillar Middle	2080	-677	-1004
10	Front Seat Track	2289	-162	-356
11	Rear Seat Structure			
12	Right Rear Occupant Compartment	1972	364	-246
13	Engine Block	3754	220	-861
14	Rear Floorpan Above Axle	1005	431	-432

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 Nissan Versa S 4-Door Sedan NHTSA No. M20165205
 Test Program: NCAP MDB Side Impact Test Test Date: 12/15/15



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 Nissan Versa S 4-Door Sedan NHTSA No. M20165205
 Test Program: NCAP MDB Side Impact Test Test Date: 12/15/15

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, Side Header
Back of Head	Curtain Airbag, Side Header, Headrest	Curtain Airbag, Headrest, Side Header, Center Seat Back
Left Shoulder	Curtain Airbag	Door Panel, Curtain Airbag, Seat
Upper Torso	Seat, Torso/Pelvis Airbag	Seat
Lower Torso	Seat, Torso/Pelvis Airbag	Seat
Left Hip	Door Panel, Torso/Pelvis Airbag	Door Panel, Seat
Left Knee	Window Crank	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	No
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	Yes
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 Nissan Versa S 4-Door Sedan NHTSA No. M20165205
Test Program: NCAP MDB Side Impact Test Test Date: 12/15/15

POST-TEST SEAT PERFORMANCE

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

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No separation
Sill Separation	No separation
Windshield Damage	None
Side Window Damage	None
Other Notable Effects	Trunk opened on impact. Frontal airbag deployed. Hood of car jammed shut.

DATA SHEET NO. 8 ... (CONTINUED)

POST-TEST OBSERVATIONS

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165205
 Test Program: NCAP MDB Side Impact Test Test Date: 12/15/15

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side Driver		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	Yes	No	
Knee Airbag	No		No	
Side Airbag 1 (Curtain)	Yes	Yes	Yes	Yes
Side Airbag 2 (Torso/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		2599
Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point)	mm		356
Actual Impact Point (Aft of Front Axle)	mm		347
Horizontal Offset (+ forward / - rearward)	mm	± 50 of Intended Impact Point	9
Vertical Offset (+ down / - up)	mm	± 20 of Intended Impact Point	9

DATA SHEET NO. 9
MDB SUMMARY OF RESULTS

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165205
 Test Program: NCAP MDB Side Impact Test Test Date: 12/15/15

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	61.63
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	61.65
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	89.3
MDB Forward Line of Motion to Target Vehicle CL	degrees	62.5 to 63.5	62.9
MDB Crabbed Angle to MDB Forward Line of Motion	degrees	26.0 to 28.0	26.4

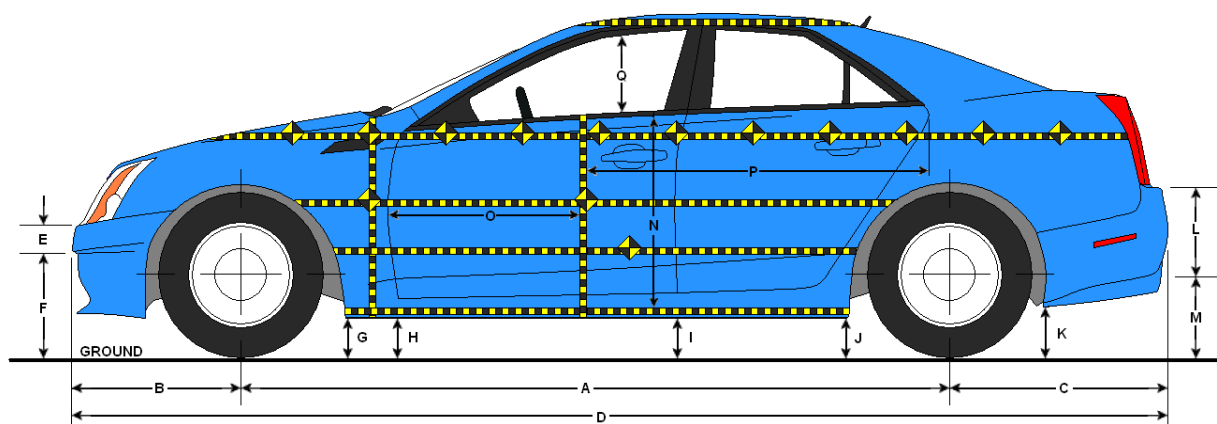
MAXIMUM STATIC CRUSH OF HONEYCOMB FACE

Vertical Location			From Centerline		Max. Crush (mm)
Row	Description	Height (mm)	Distance (mm)	Direction	
A	Center of Bumper	432	800	Right	181
B	Top of Bumper	533	800	Right	84
C	Mid Level	686	800	Right	104
D	Top of Stack	813	800	Left	104

DATA SHEET NO. 10

TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165205
 Test Program: NCAP MDB Side Impact Test Test Date: 12/15/15



LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2599	2596	-3
B	Front Axle to FSOV	873	913	40
C	Rear Axle to RSOV	1034	1005	-29
D	Total Length at Centerline	4506	4513	7
E	Front Bumper Thickness	346	342	-4
F	Front Bumper Bottom to Ground	250	248	-2
G	Sill Height at Front Wheel Well	294	283	-11
H	Sill Height at Front Door Leading Edge	280	267	-13
I	Sill Height at B-Pillar	275	334	59
J1	Sill Height at Rear Wheel Well	311	346	35
J2	Pinch Weld Height at Rear Wheel Well	186	198	12
K	Sill Height Aft of Rear Wheel Well	306	306	0
L	Rear Bumper Thickness	193	196	3
M	Rear Bumper Bottom to Ground	433	433	0
N	Sill Height to Bottom of Front Window Sill	638	577	-61
O	Front Door Leading Edge to Impact CL	780	703	-77
P	Rear Door Trailing Edge to Impact CL	1344	1301	-43
Q	Front Window Opening	453	453	0
R	Right Side Length	3009	3020	11
S	Left Side Length	3005	3099	94
T	Vehicle Width at B-Pillar	1698	1501	-197

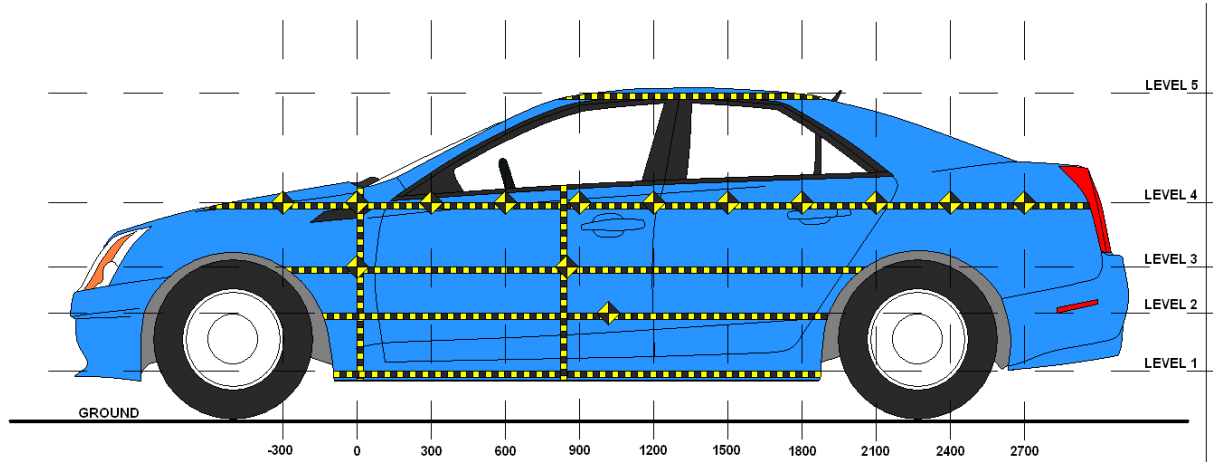
All measurements in mm with tolerance of ± 3 mm

DATA SHEET NO. 11

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165205

Test Program: NCAP MDB Side Impact Test Test Date: 12/15/15



LEFT SIDE VIEW

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	315	186	900
2	Occupant H-Point	562	271	1200
3	Mid-Door	682	263	1350
4	Window Sill	924	191	1350
5	Window Top	1453	46	1200

DATA SHEET NO. 11 ... (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165205

Test Program: NCAP MDB Side Impact Test Test Date: 12/15/15

EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

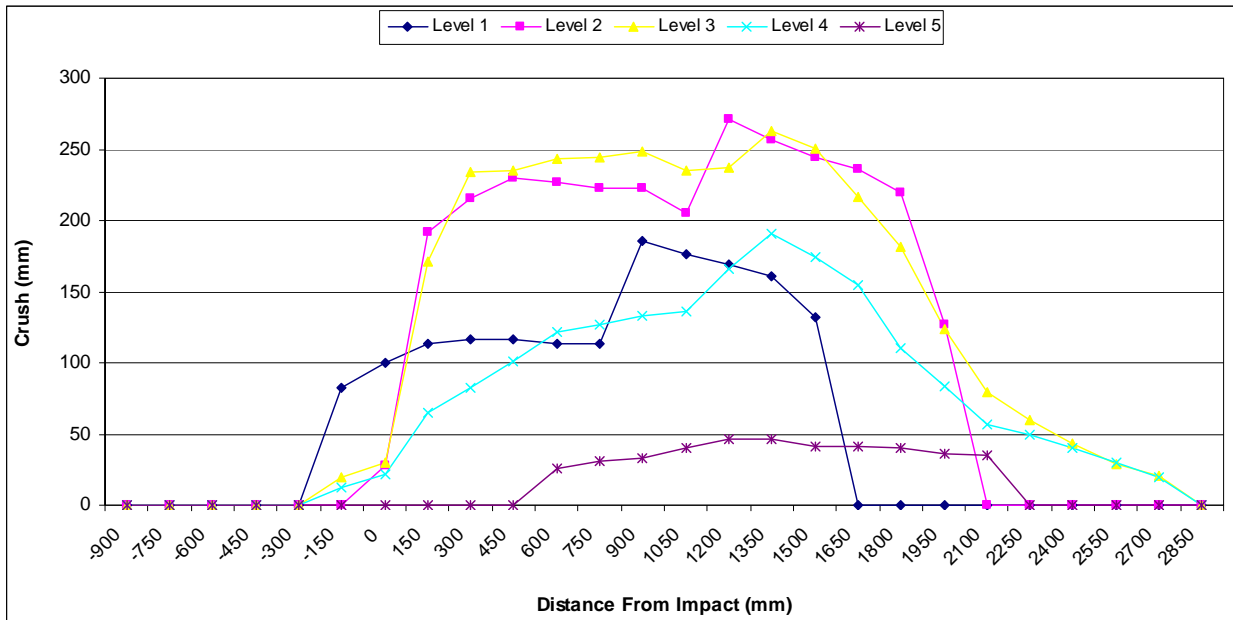
	Pre-Test (mm)					Post-Test (mm)					Difference (mm)				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900															
-750															
-600															
-450															
-300															
-150	695		649	754		777		669	766		82		20	12	
0	696	653	657	741		796	681	687	763		100	28	30	22	
150	692	659	657	730		805	851	828	795		113	192	171	65	
300	688	658	654	722		805	873	888	804		117	215	234	82	
450	689	657	652	718		805	887	887	819		116	230	235	101	
600	690	656	650	713	949	803	883	893	835	975	113	227	243	122	26
750	691	655	649	710	944	804	878	893	837	975	113	223	244	127	31
900	690	655	649	707	944	876	878	897	840	977	186	223	248	133	33
1050	695	655	649	704	946	871	860	884	840	986	176	205	235	136	40
1200	697	657	651	704	949	866	928	888	870	995	169	271	237	166	46
1350	697	658	652	705	948	858	915	915	896	994	161	257	263	191	46
1500	694	659	653	705	950	826	903	904	879	991	132	244	251	174	41
1650		662	655	704	949		898	872	859	990		236	217	155	41
1800		660	656	704	954		880	837	814	994		220	181	110	40
1950		652	655	700	961		779	779	783	997		127	124	83	36
2100			650	698	967			729	755	1002			79	57	35
2250			650	702				710	752				60	50	
2400			653	701				696	741				43	40	
2550			664	706				693	736				29	30	
2700			675	714				696	734				21	20	
2850															

DATA SHEET NO. 11 ... (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165205

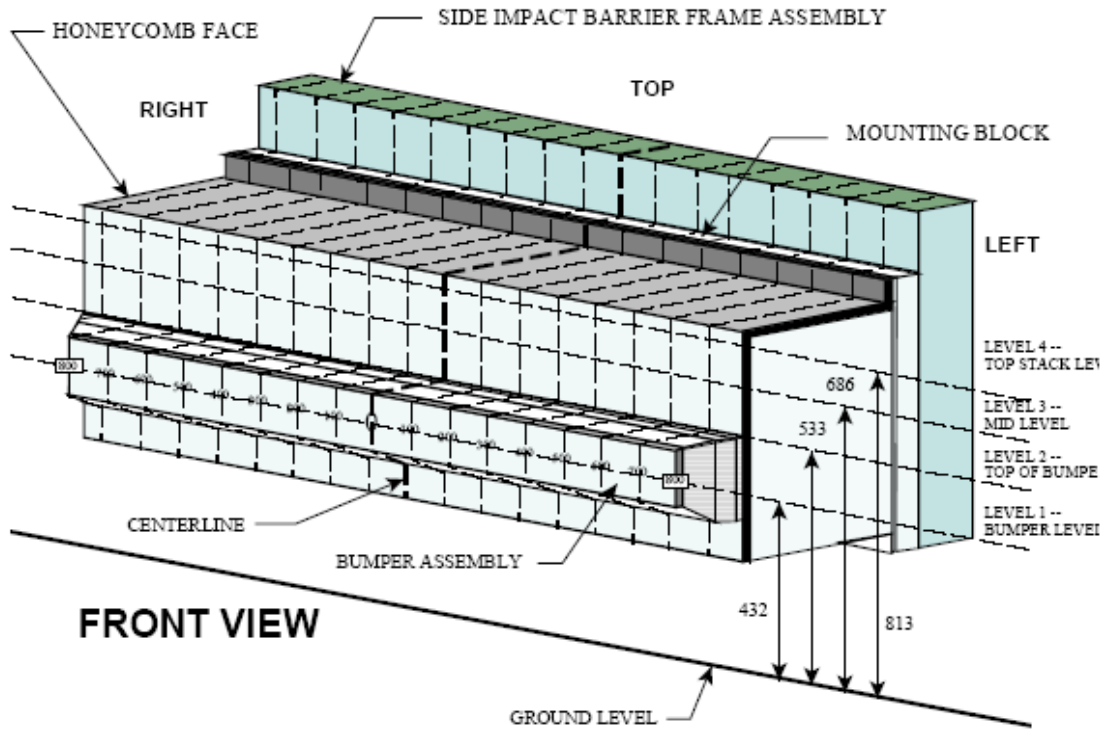
Test Program: NCAP MDB Side Impact Test Test Date: 12/15/15



DATA SHEET NO. 12

MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165205
 Test Program: NCAP MDB Side Impact Test Test Date: 12/15/15



NOTE: Dimensions are shown in millimeters, mm

DEFORMABLE BARRIER STATIC CRUSH

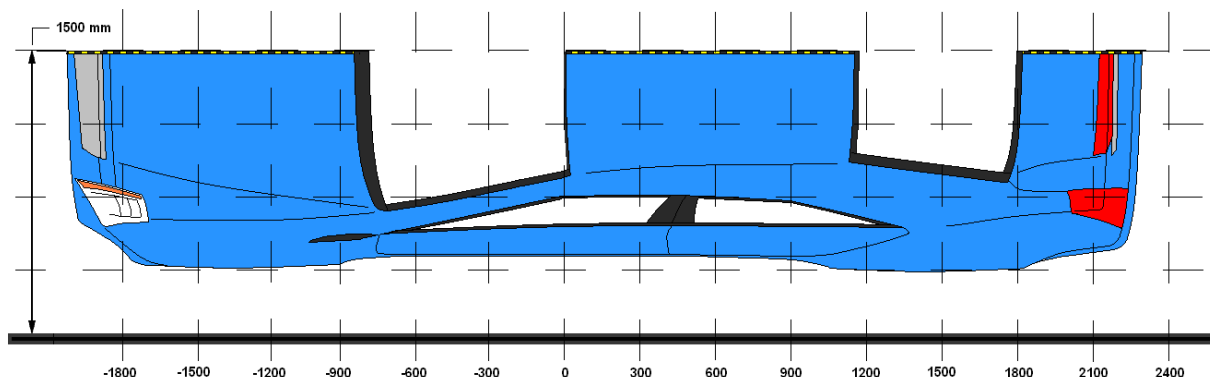
Stack Level	Distance Right of Center								C/L	Distance Left of Center							
	800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
1	181	148	136	131	131	126	118	113	106	106	101	99	91	91	86	93	169
2	84	74	67	54	44	44	44	47	47	44	39	35	36	37	39	44	59
3	104	64	34	19	19	31	59	49	27	14	14	14	14	23	26	39	74
4	89	54	24	14	18	49	79	64	54	39	29	29	29	39	49	64	104

All dimensions in millimeters.

DATA SHEET NO. 13

VEHICLE AND MDB DAMAGE PROFILE DISTANCES

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165205
 Test Program: NCAP MDB Side Impact Test Test Date: 12/15/15



VEHICLE DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Crush (mm)
1	2700	3	675	696	21
2	2100	3	650	729	79
3	1500	3	653	904	251
4	1050	3	649	884	235
5	450	3	652	882	230
6	-150	1	695	777	82

MDB DAMAGE PROFILE DISTANCES

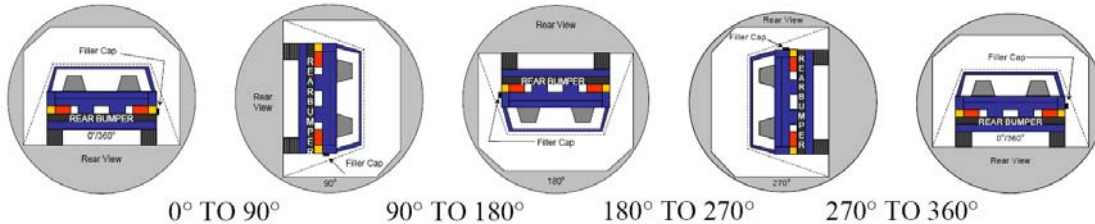
DPD	From MDB Centerline		Level	Crush (mm)
	Distance (mm)	Direction		
1	800	Left	1	169
2	500	Left	1	91
3	200	Left	1	101
4	200	Right	1	118
5	500	Right	1	131
6	800	Right	1	181

DATA SHEET NO. 14

FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165205
 Test Program: NCAP MDB Side Impact Test Test Date: 12/15/15
 Temperature at Time of Impact: 7.8 C Test Time: 2:50 PM

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



SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	83	300	383
90° To 180°	75	300	375
180° To 270°	80	300	380
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

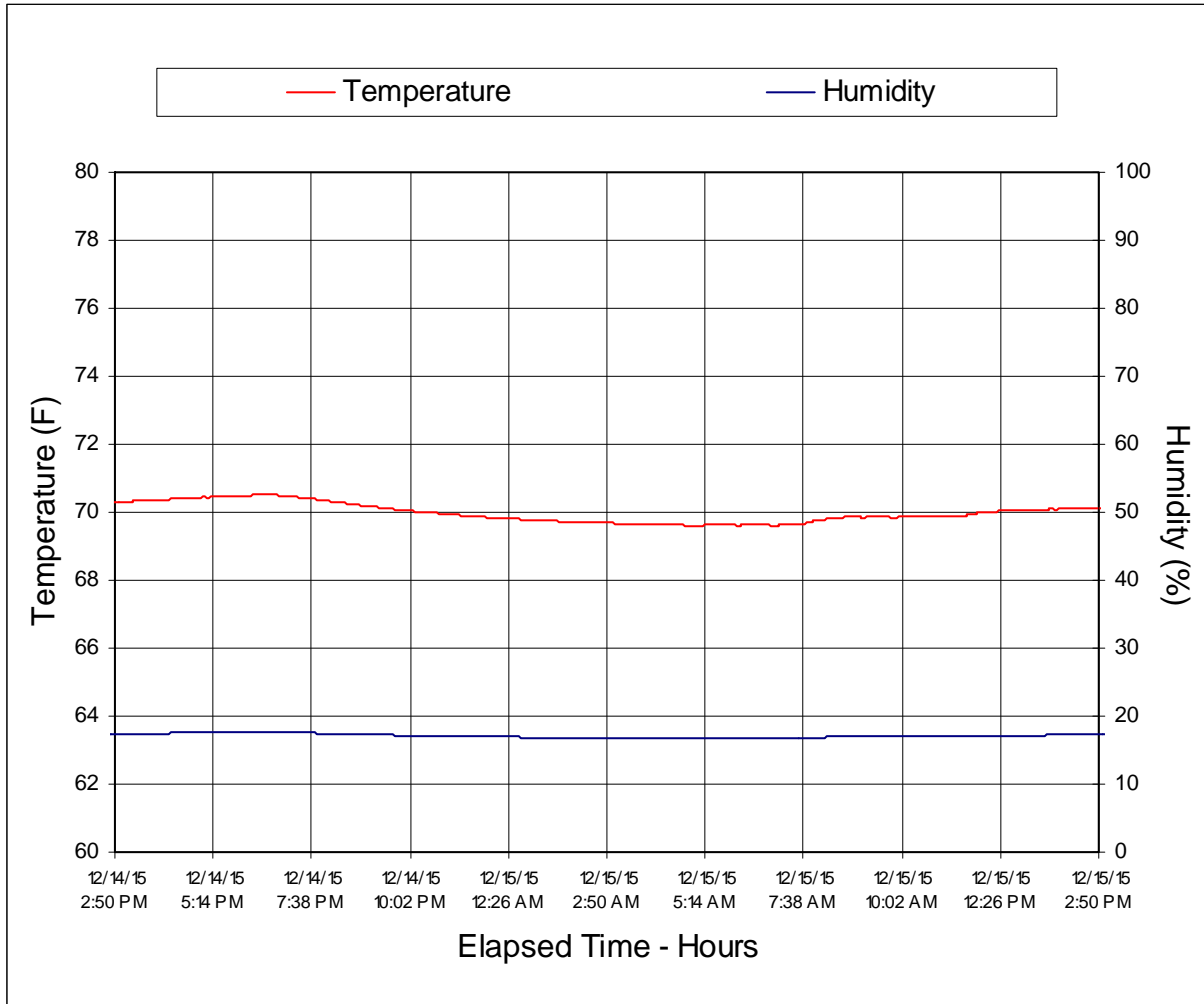
Test Phase	Spillage Location
0° To 90°	N/A
90° To 180°	N/A
180° To 270°	N/A
270° To 360°	N/A

DATA SHEET NO. 15

DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan NHTSA No. M20165205

Test Program: NCAP MDB Side Impact Test Test Date: 12/15/15



**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

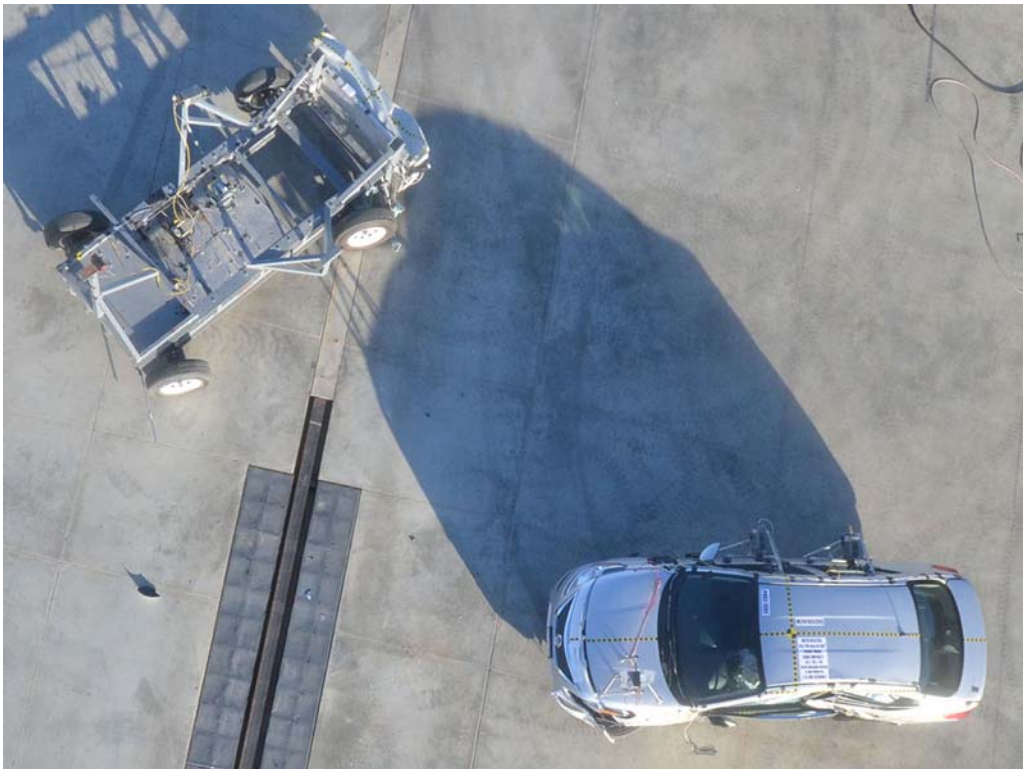


FIGURE 16. Post-Test Overhead View of Test Area



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

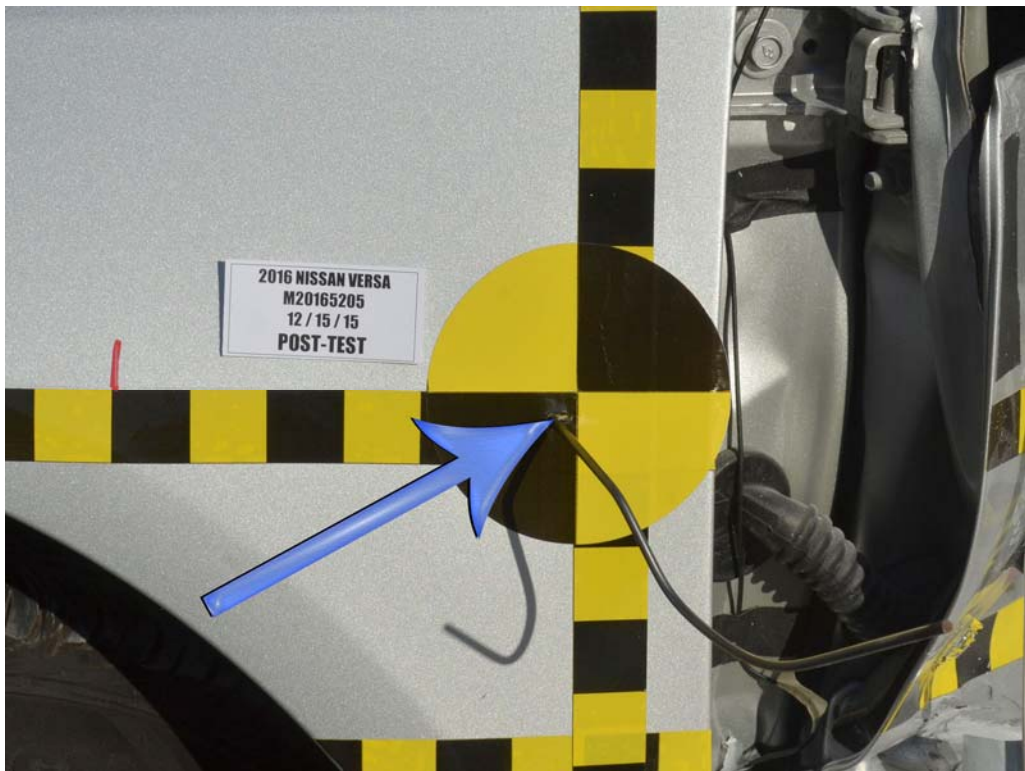


FIGURE 20. Post-Test Close-Up View of Impact Point Target



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

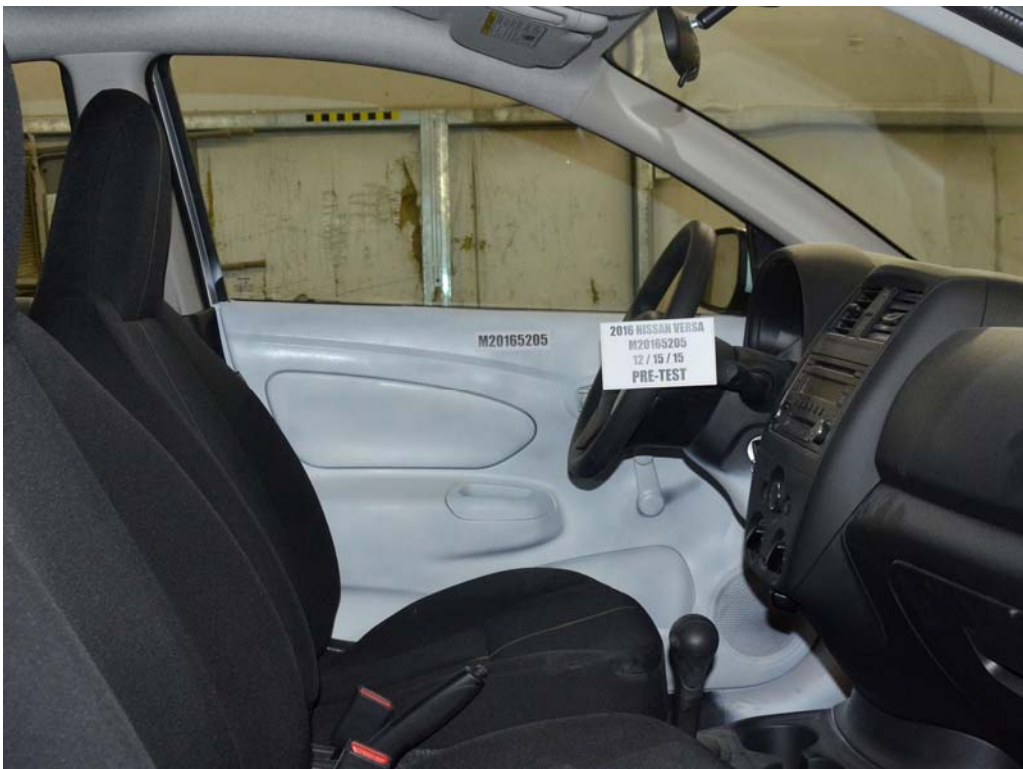


FIGURE 46. Pre-Test Driver Inner Door Panel View



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

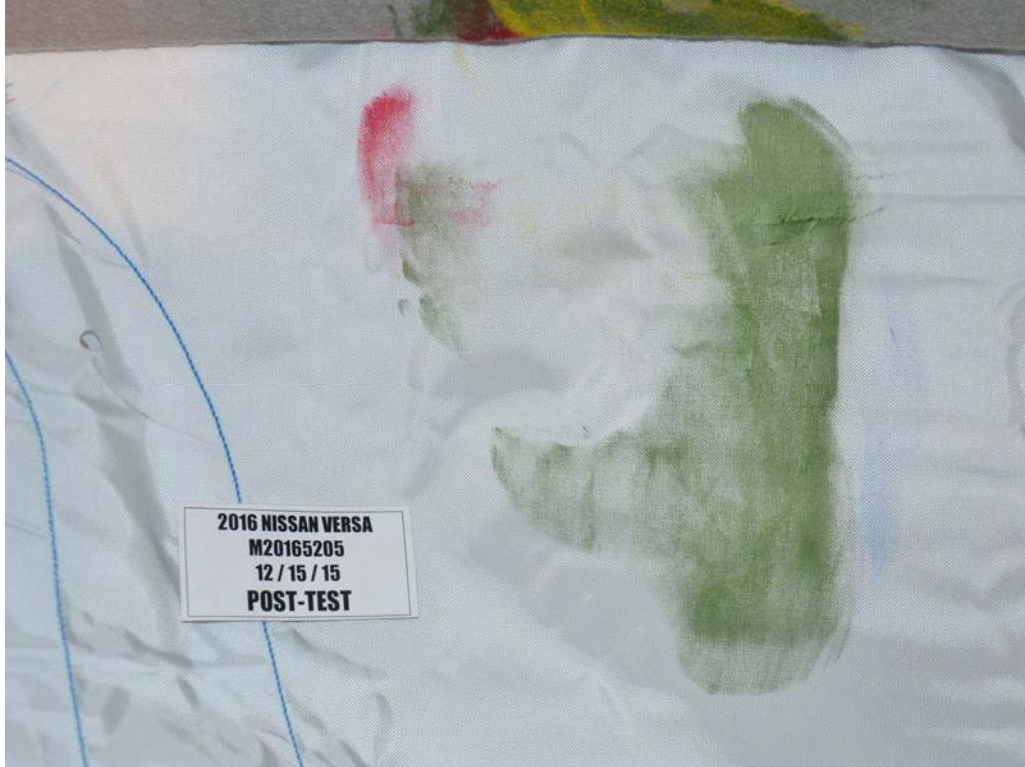


FIGURE 49. Post-Test Driver Dummy Close-Up Head Contact with Side Airbag View



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

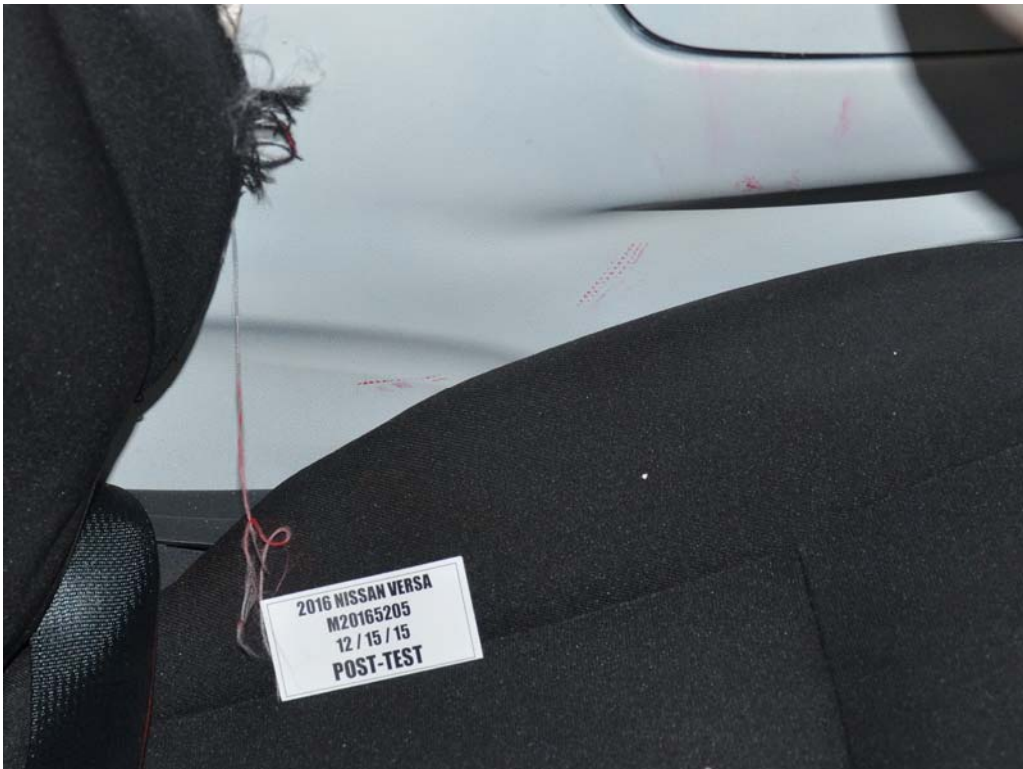


FIGURE 52. Post-Test Driver Dummy Close-Up Pelvis Contact with Vehicle Interior View



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

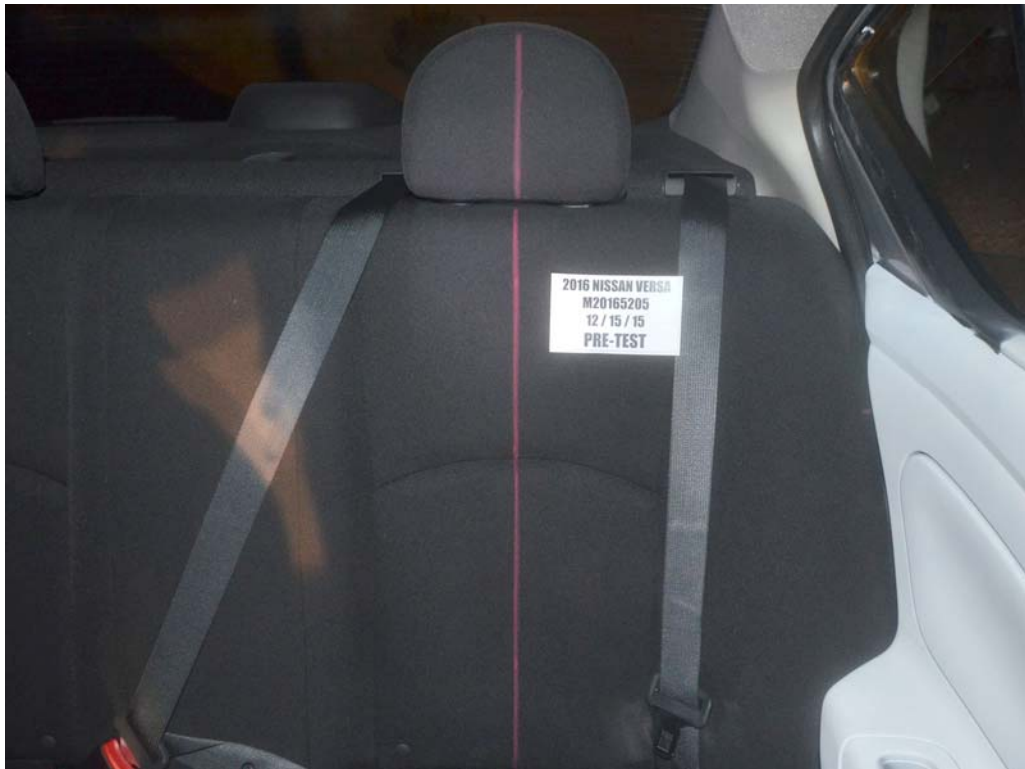


FIGURE 58. Pre-Test Frontal View of Rear Passenger Seat Back
Prior to Dummy Positioning



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

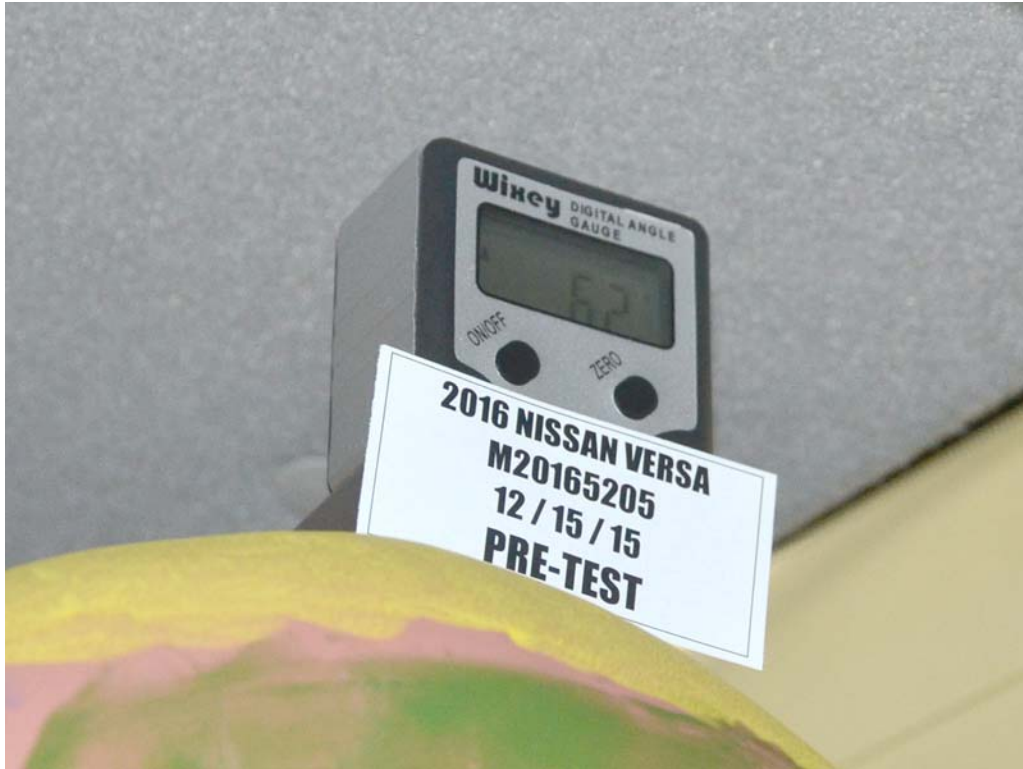


FIGURE 63. Pre-Test View of Rear Passenger Dummy's Head Showing Dummy's Head is Level



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

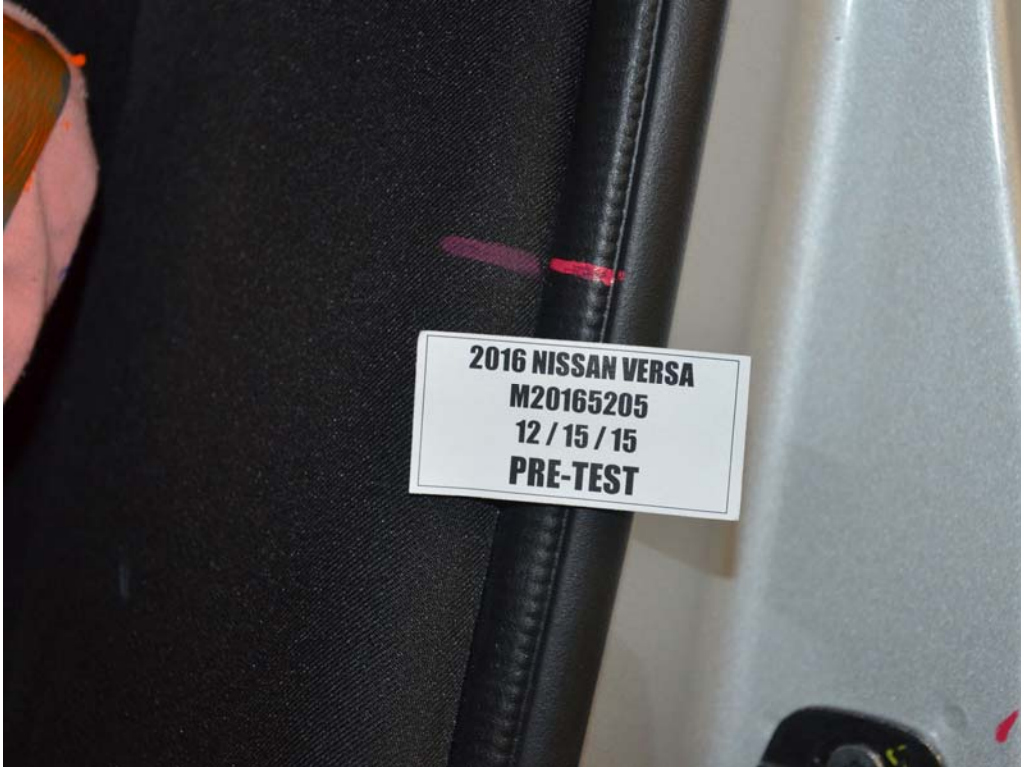


FIGURE 67. Pre-Test Close-Up Left Side View of Rear Passenger Seat Back

Photograph Not Applicable

Rear Seat Back is Fixed

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

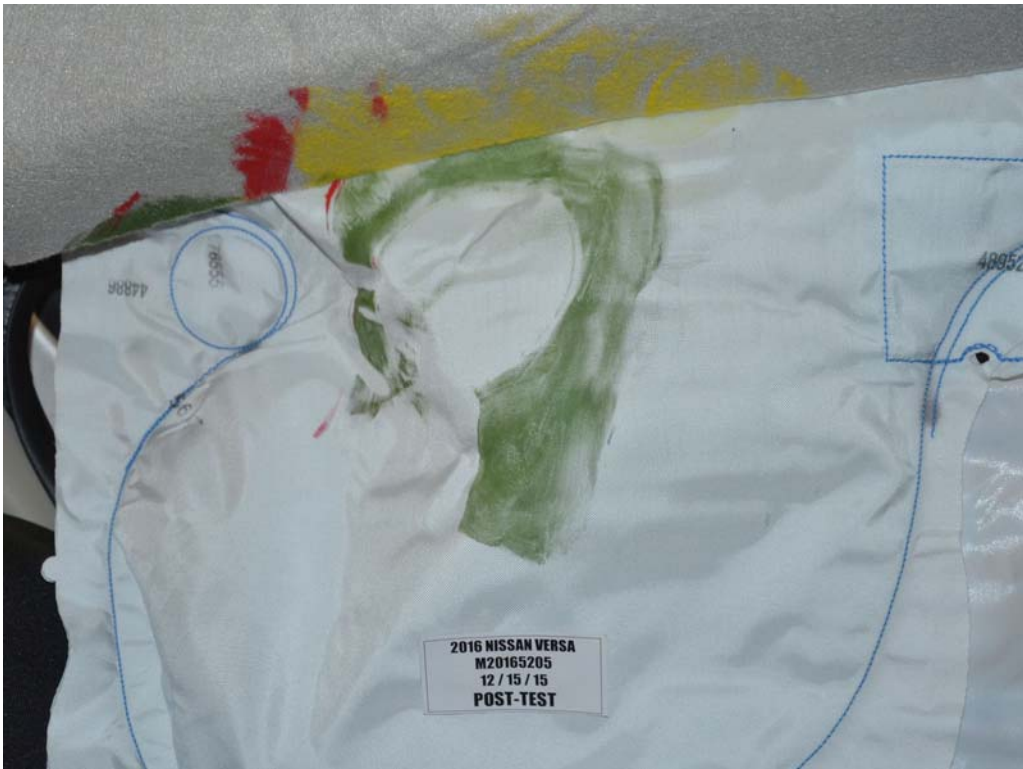


FIGURE 76. Post-Test Rear Passenger Dummy Close-Up
Head Contact with Side Airbag View



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

Photograph Not Applicable

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

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



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

Photograph Not Applicable

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

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

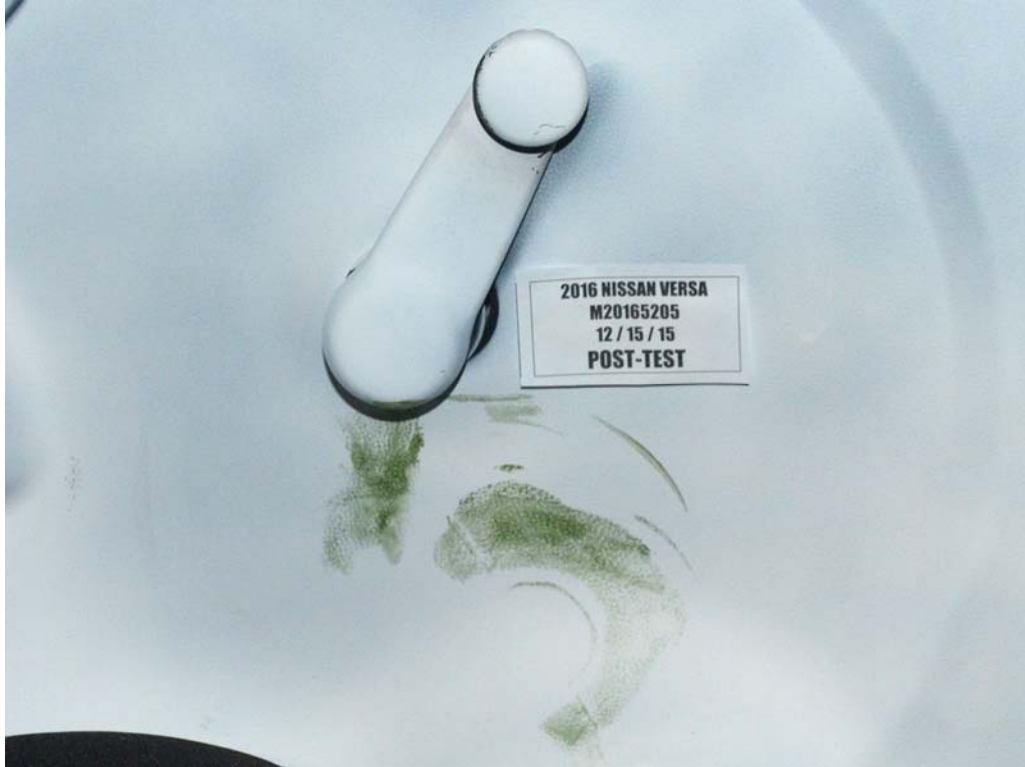


FIGURE 81. Post-Test Rear Passenger Dummy Close-Up Knee Contact View



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



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



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



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



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



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



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



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



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



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



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



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

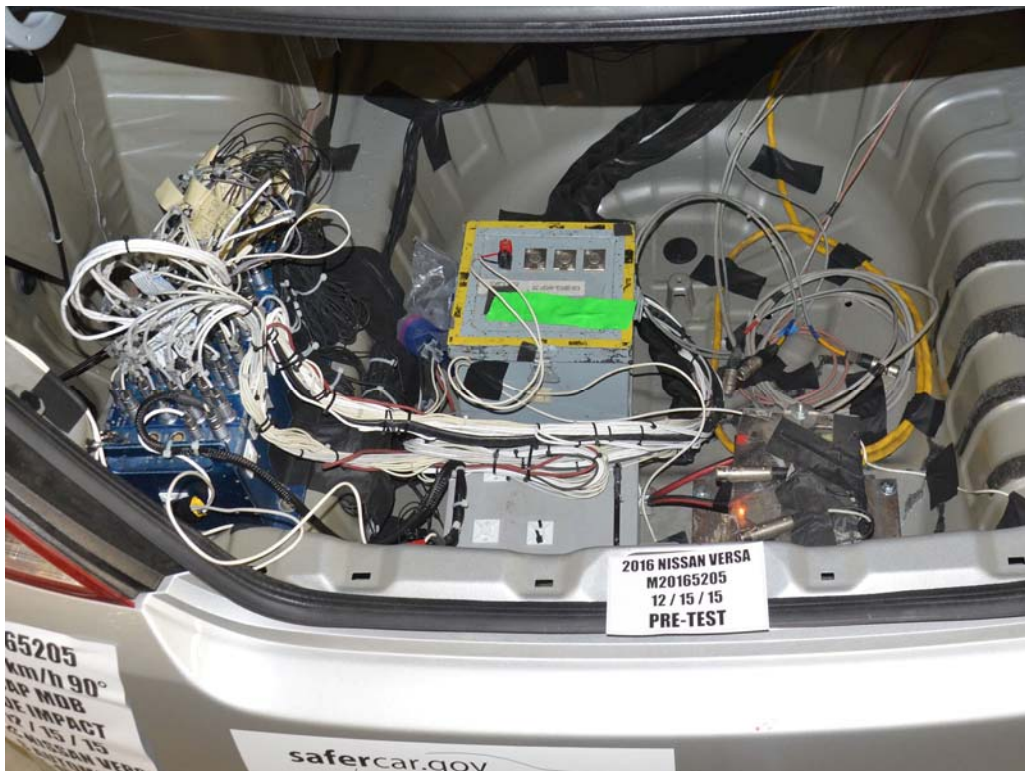


FIGURE 94. Pre-Test Ballast View



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

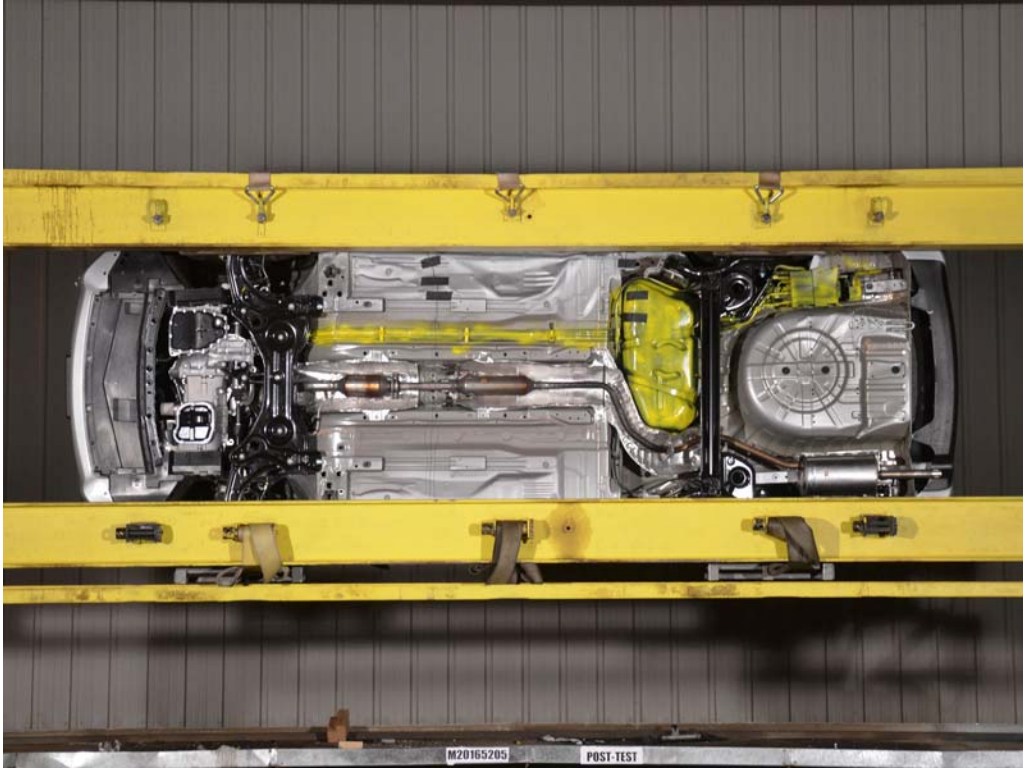


FIGURE 99. FMVSS No. 301 Static Rollover 270 Degrees

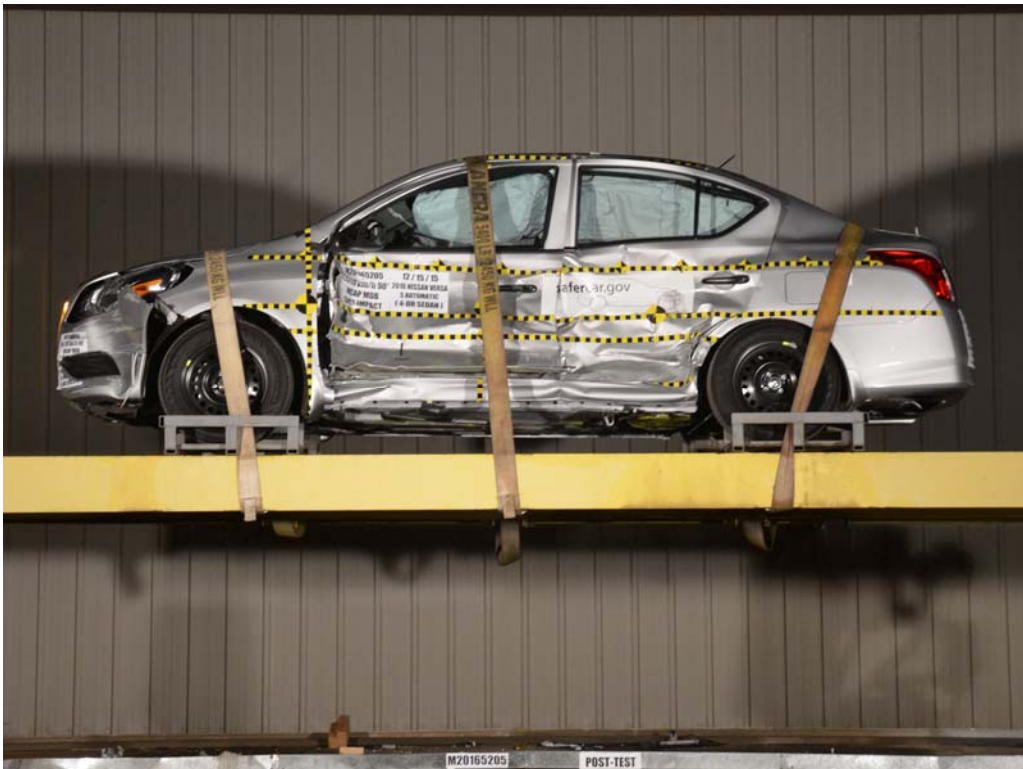


FIGURE 100. FMVSS No. 301 Static Rollover 360 Degrees



FIGURE 101. Impact Event



 <p>2016 NISSAN VERSA S AUTOMATIC</p>		 <p>Scan QR code for general model information & options</p>		<p>EPA Fuel Economy and Environment Gasoline Vehicle</p> <p>Fuel Economy 30 MPG <small>combined city/hwy</small> 26 city 35 highway 3.3 gallons per 100 miles</p> <p><small>COMPACT CARs range from 18 to 116 MPG. See www.fueleconomy.gov.</small></p> <p>You Save \$1,500 in fuel costs over 5 years compared to the average new vehicle.</p>																
<p>VERSA IS AMERICA'S BEST SELLING VEHICLE IN ITS CLASS***</p> <p>Standard Equipment Included at No Extra Charge</p> <p>MECHANICAL & PERFORMANCE 1.6L DCHC 16-Valve 4-Cylinder Engine 4-Speed Automatic Transmission Front and Rear Stabilizer Bars Power-Assisted Vented Front Disc / Rear Drum Brakes 17" Steel Wheels w/ Full Wheel Covers</p> <p>SAFETY & SECURITY Driver and Front Passenger, Side-Impact, and Curtain Air Bags Lower Anchors and Tethers for Children (LATCH) Anti-Lock Braking System (ABS) Traction Control System (TCS) Vehicle Dynamic Control (VDC) Electronic Brake Force Distribution (EBD) and Brake Assist The Pressure Monitoring System (TPMS)</p>		<p>Manufacturer's Suggested Retail Base Price: \$13,490.00</p> <p>Options Included by Manufacturer SPLASH GUARDS 190.00 CARPETED FLOOR AND TRUNK MATS 160.00</p> <p>DESTINATION CHARGES 825.00</p> <p>Total: \$14,665.00</p>		<p>Annual fuel cost \$1,500</p> <p>Fuel Economy & Greenhouse Gas Rating (In-use only) Smog Rating (In-use only)</p> <p><small>This vehicle emits 302 grams CO₂ per mile. The best emits 0 grams per mile (airplane only). Producing and distributing fuel also creates emissions. Learn more at www.fueleconomy.gov.</small></p> <p>GOVERNMENT 5-STAR SAFETY RATINGS</p> <p>Overall Vehicle Score Not Rated <small>Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight.</small></p> <table border="1"> <tr> <td>Frontal Crash <small>Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.</small></td> <td>Driver</td> <td>Not Rated</td> </tr> <tr> <td></td> <td>Passenger</td> <td>Not Rated</td> </tr> <tr> <td>Side Crash <small>Based on the risk of injury in a side impact.</small></td> <td>Front seat</td> <td>Not Rated</td> </tr> <tr> <td></td> <td>Rear seat</td> <td>Not Rated</td> </tr> <tr> <td>Rollover <small>Based on the risk of rollover in a single-vehicle crash.</small></td> <td></td> <td>★★★★</td> </tr> </table> <p><small>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</small></p>		Frontal Crash <small>Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.</small>	Driver	Not Rated		Passenger	Not Rated	Side Crash <small>Based on the risk of injury in a side impact.</small>	Front seat	Not Rated		Rear seat	Not Rated	Rollover <small>Based on the risk of rollover in a single-vehicle crash.</small>		★★★★
Frontal Crash <small>Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.</small>	Driver	Not Rated																		
	Passenger	Not Rated																		
Side Crash <small>Based on the risk of injury in a side impact.</small>	Front seat	Not Rated																		
	Rear seat	Not Rated																		
Rollover <small>Based on the risk of rollover in a single-vehicle crash.</small>		★★★★																		
<p><small>***According to J.D. Power's Automotive, Polk U.S. New Vehicle Registrations - non-luxury traditional sub compact segment, January 2010 - January 2015</small></p>		<p>DELIVERY</p> <p>VEHICLE COLORS: EXT: BRILLIANT SILVER INT: CHARCOAL</p> <p>FINAL ASSEMBLY POINT: AGUAS/ABV/MEX</p> <p>TRANSPORT METHOD: TRUCK</p> <p>DEALER: FONTANA NISSAN 1644 S. HIGHLAND AVE. FONTANA, CA 92336</p>																		
<p><small>*Does not include dealer installed options and accessories, local taxes or license fees. This label has been applied pursuant to federal law. Do not remove prior to delivery to the ultimate purchaser.</small></p>		<p>This Vehicle qualifies for Nissan's Security+Plus Extended Protection Plan</p> <p>The only service agreement backed by Nissan Extended Services North America! Ask your dealer for details, or call 1-800-NISSAN-1 for more information</p> <p><small>VIN: 3N1DN7AP1GL181099 EPA8-30 STATE EMISSIONS MDL: 11116-416959 K23-G OPT: D-692C03.02</small></p> <p><small>2015021231816A55159</small></p>																		

FIGURE 102. Monroney Label

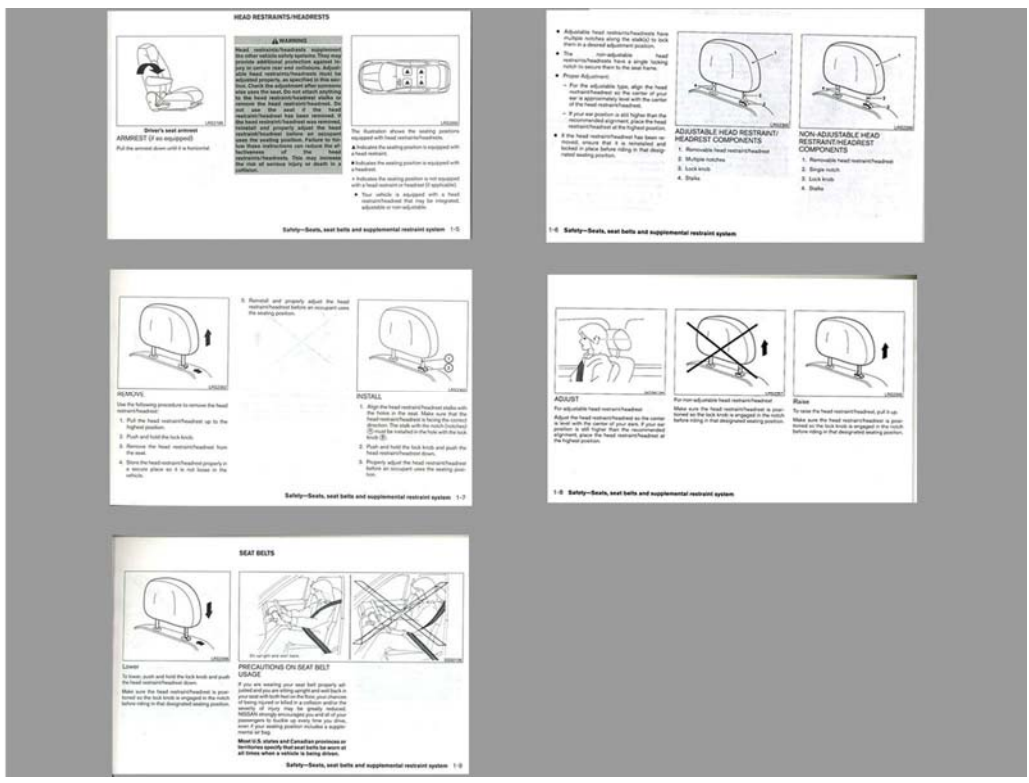


FIGURE 103. Driver Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

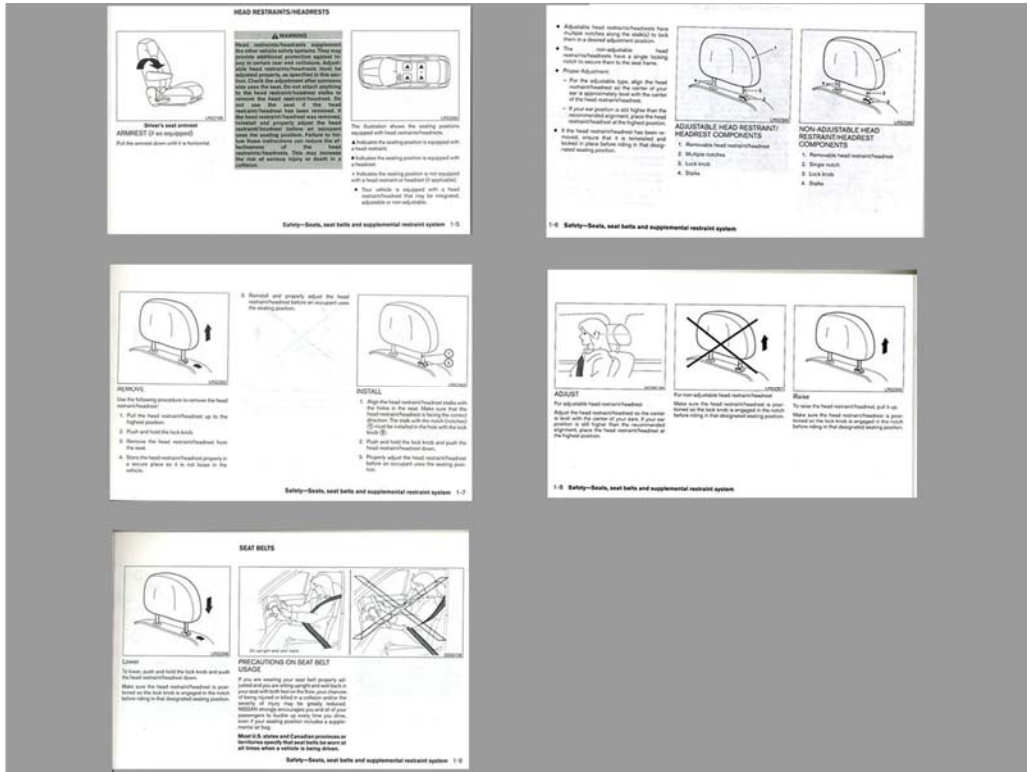


FIGURE 104. Left Rear Passenger Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

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	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	B-3
13	Driver Pubic Symphysis Force (Y)	B-4
14	Passenger Head Acceleration (X) Primary	B-5
15	Passenger Head Acceleration (Y) Primary	B-5
16	Passenger Head Acceleration (Z) Primary	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	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)

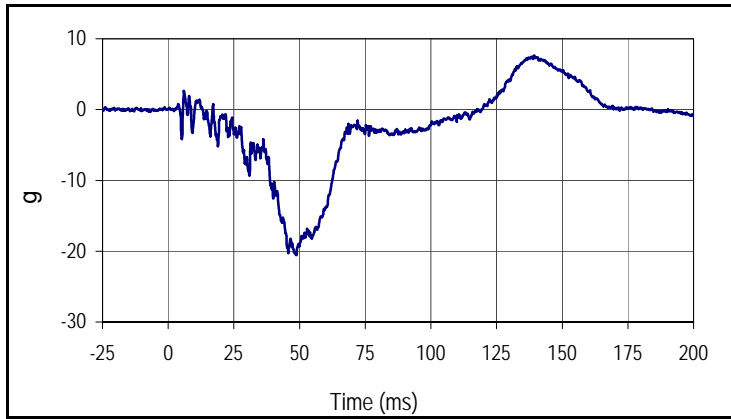
MDB Rear Acceleration (Y)

Left MDB Contact Switch

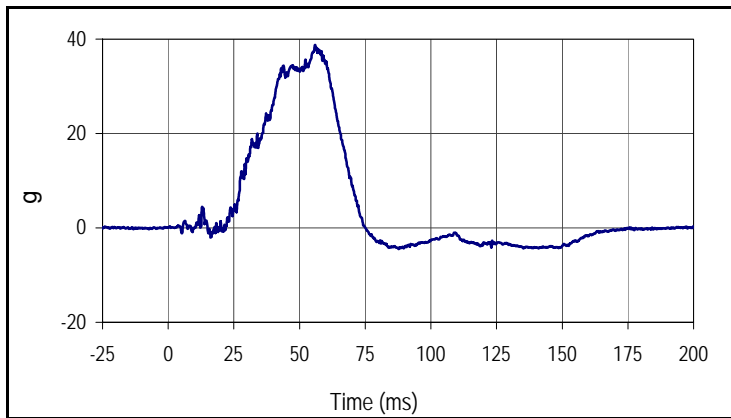
Right MDB Contact Switch

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan
 Test Program: NCAP MDB Side Impact Test

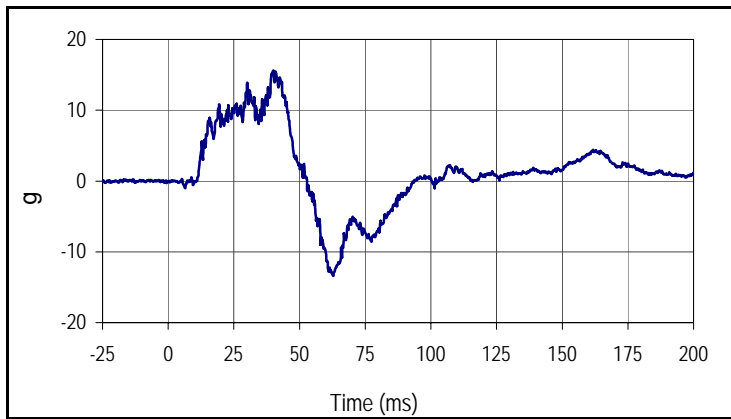
NHTSA No.: M20165205
 Test Date: 12/15/15



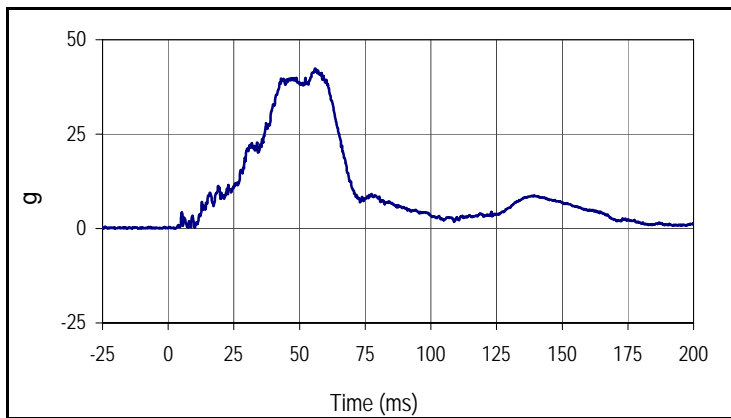
Curve Description			
Driver Head Acceleration X Primary			
Plot No.		SAE Class	Units
001		1000	g
Max	Time	Min	Time
7.7	139.3	-20.5	48.8



Curve Description			
Driver Head Acceleration Y Primary			
Plot No.		SAE Class	Units
002		1000	g
Max	Time	Min	Time
38.8	55.9	-4.5	87.7



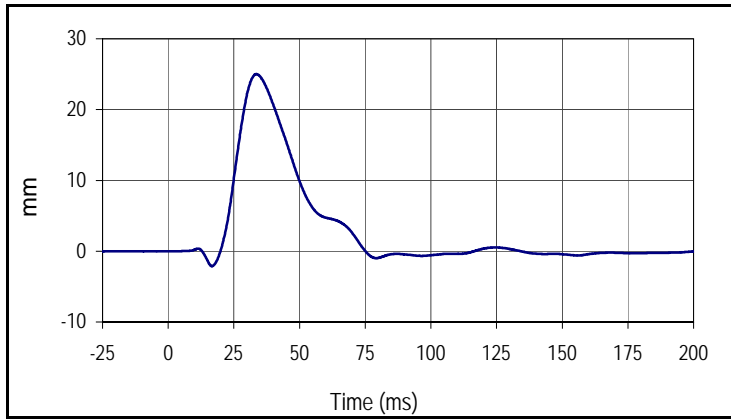
Curve Description			
Driver Head Acceleration Z Primary			
Plot No.		SAE Class	Units
003		1000	g
Max	Time	Min	Time
15.6	40.0	-13.4	62.8



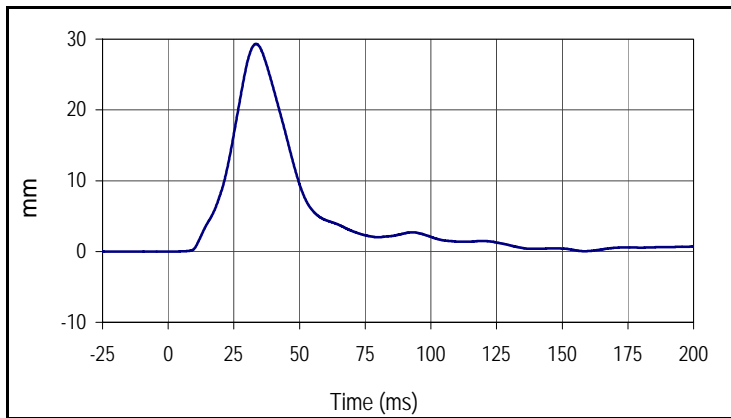
Curve Description			
Driver Head Resultant Acceleration Primary			
Plot No.		SAE Class	Units
004		1000	g
Max	Time	Min	Time
42.4	56.0	0.0	2.5

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan
 Test Program: NCAP MDB Side Impact Test

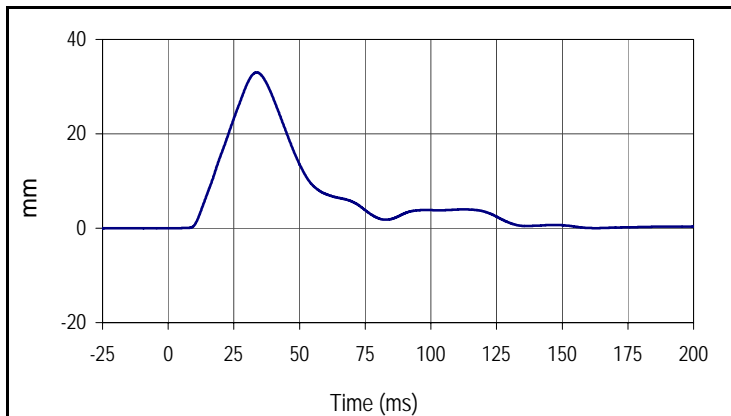
NHTSA No.: M20165205
 Test Date: 12/15/15



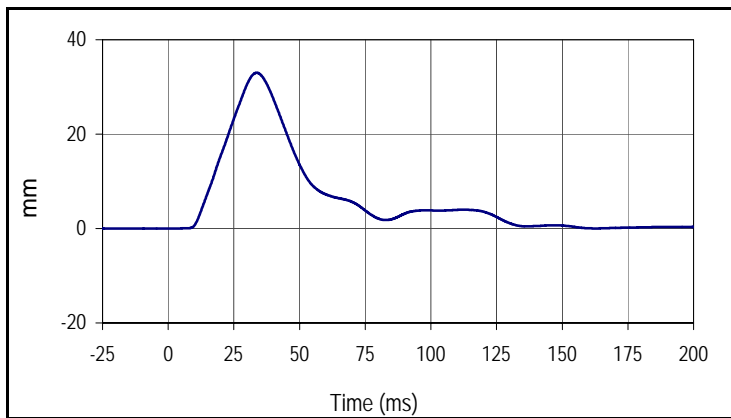
Curve Description			
Driver Upper Thorax Rib Deflection Y			
Plot No.		SAE Class	Units
005		180	mm
Max	Time	Min	Time
25.0	33.6	-2.1	16.6



Curve Description			
Driver Middle Thorax Rib Deflection Y			
Plot No.		SAE Class	Units
006		180	mm
Max	Time	Min	Time
29.3	33.4	0.0	3.7



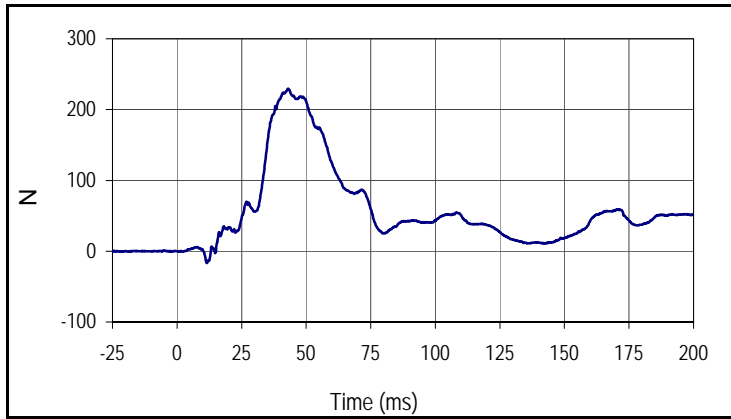
Curve Description			
Driver Lower Thorax Rib Deflection Y			
Plot No.		SAE Class	Units
007		180	mm
Max	Time	Min	Time
33.0	33.7	0.0	0.7



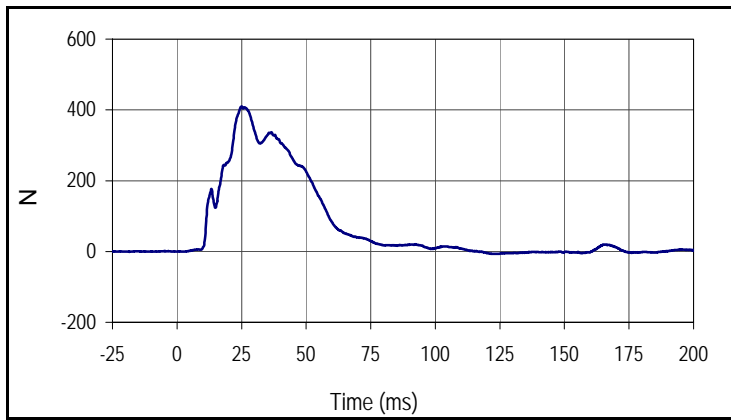
Curve Description			
Driver Thorax Rib Deflection Maximum Y			
Plot No.		SAE Class	Units
008		180	mm
Max	Time	Min	Time
33.0	33.7	0.0	0.7

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan
 Test Program: NCAP MDB Side Impact Test

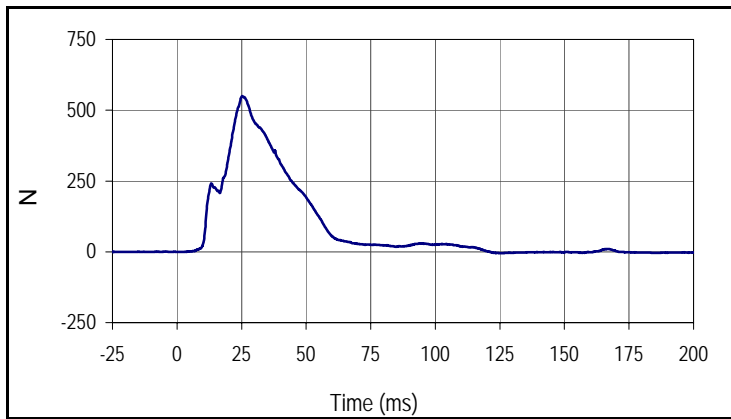
NHTSA No.: M20165205
 Test Date: 12/15/15



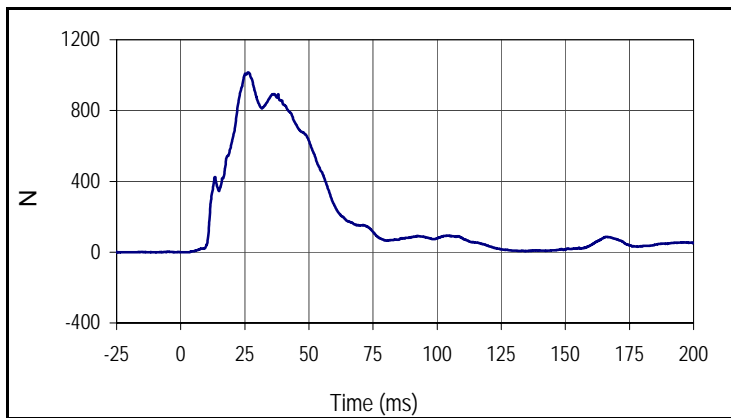
Curve Description			
Driver Anterior Abdominal Force Y			
Plot No.		SAE Class	Units
009		600	N
Max	Time	Min	Time
229.7	43.0	-17.1	11.6



Curve Description			
Driver Middle Abdominal Force Y			
Plot No.		SAE Class	Units
010		600	N
Max	Time	Min	Time
410.0	25.0	-7.0	123.4



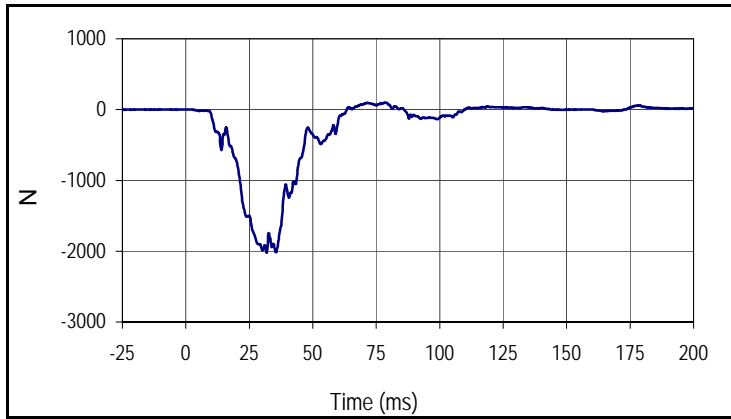
Curve Description			
Driver Posterior Abdominal Force Y			
Plot No.		SAE Class	Units
011		600	N
Max	Time	Min	Time
549.6	25.3	-4.9	125.5



Curve Description			
Driver Total Abdominal Force			
Plot No.		SAE Class	Units
012		600	N
Max	Time	Min	Time
1015.1	26.2	-1.0	2.2

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan
 Test Program: NCAP MDB Side Impact Test

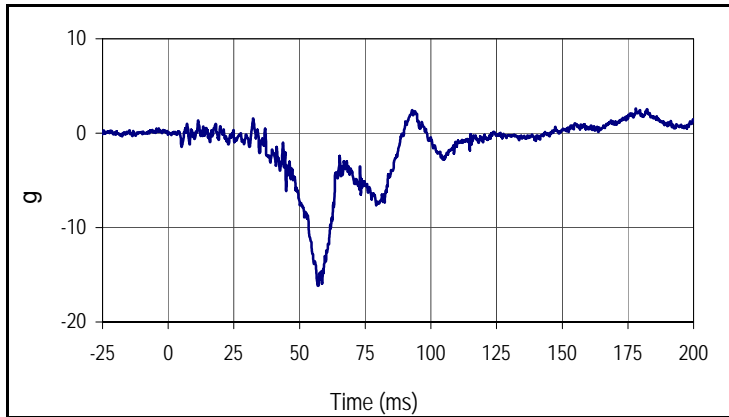
NHTSA No.: M20165205
 Test Date: 12/15/15



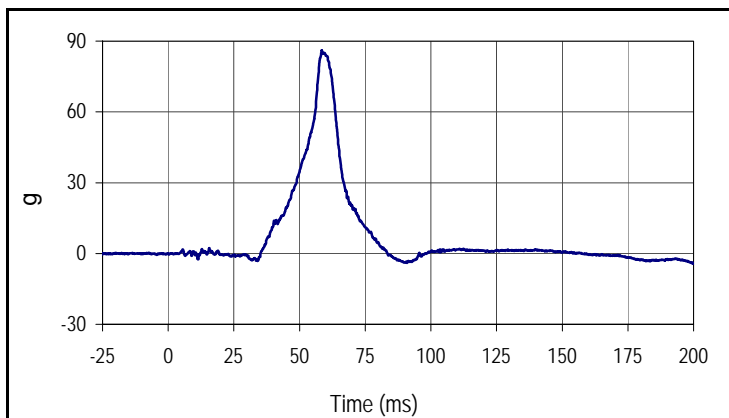
Curve Description			
Driver Pubic Symphysis Force Y			
Plot No.		SAE Class	Units
013		600	N
Max	Time	Min	Time
101.1	78.3	-2017.6	31.9

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan
 Test Program: NCAP MDB Side Impact Test

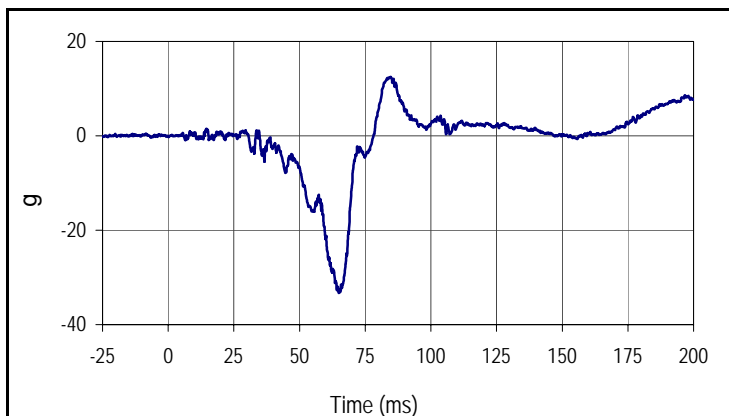
NHTSA No.: M20165205
 Test Date: 12/15/15



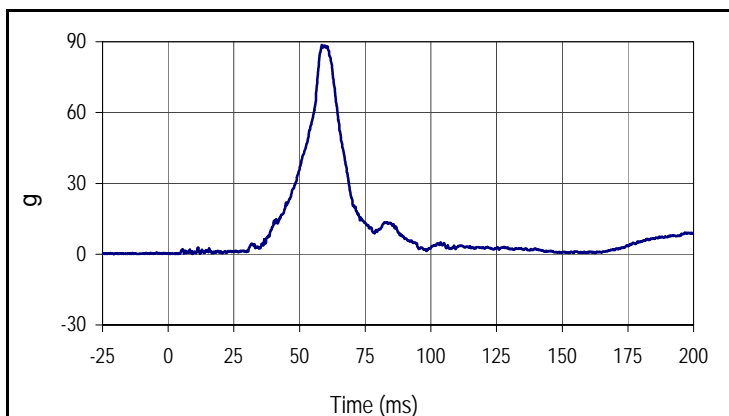
Curve Description			
Passenger Head Acceleration X Primary			
Plot No.		SAE Class	Units
014		1000	g
Max	Time	Min	Time
2.6	178.1	-16.2	57.1



Curve Description			
Passenger Head Acceleration Y Primary			
Plot No.		SAE Class	Units
015		1000	g
Max	Time	Min	Time
86.1	58.5	-4.4	199.7



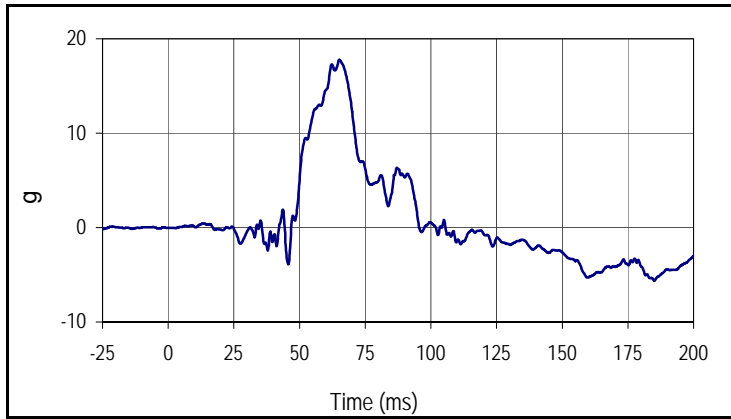
Curve Description			
Passenger Head Acceleration Z Primary			
Plot No.		SAE Class	Units
016		1000	g
Max	Time	Min	Time
12.5	84.6	-33.3	65.0



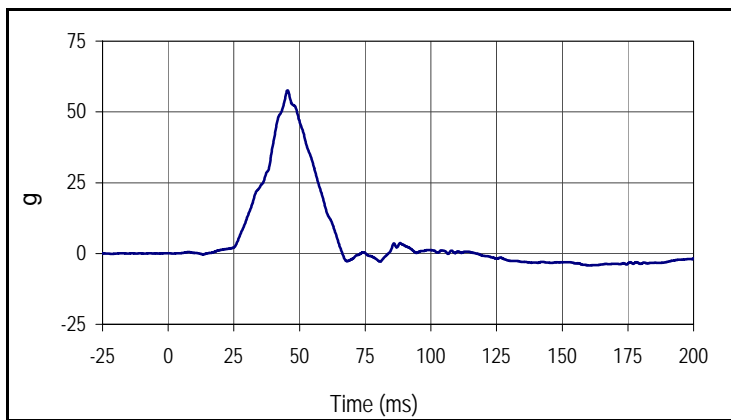
Curve Description			
Passenger Head Acceleration Resultant Primary			
Plot No.		SAE Class	Units
017		1000	g
Max	Time	Min	Time
88.7	58.5	0.0	0.7

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan
 Test Program: NCAP MDB Side Impact Test

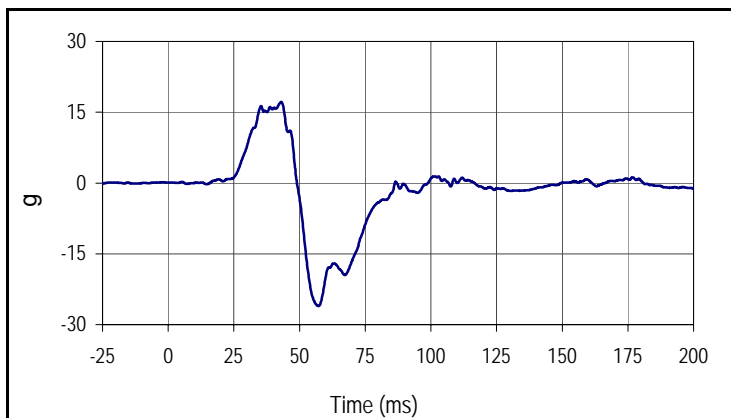
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 Test Date: 12/15/15



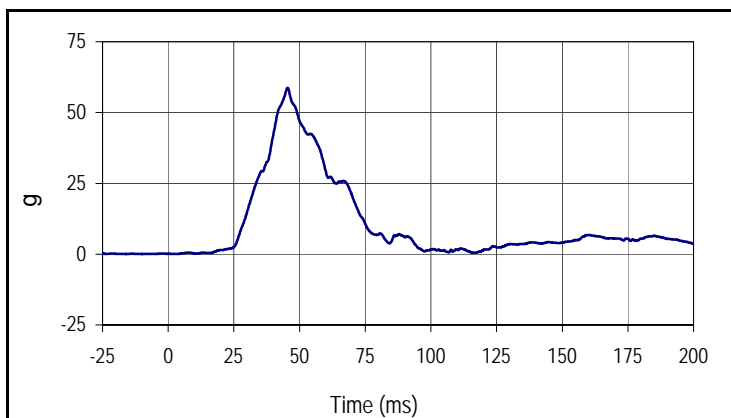
Curve Description			
Passenger Lower Spine T12 Acceleration X			
Plot No.		SAE Class	Units
018		180	g
Max	Time	Min	Time
17.8	65.2	-5.6	185.1



Curve Description			
Passenger Lower Spine T12 Acceleration Y			
Plot No.		SAE Class	Units
019		180	g
Max	Time	Min	Time
57.6	45.5	-4.2	160.1



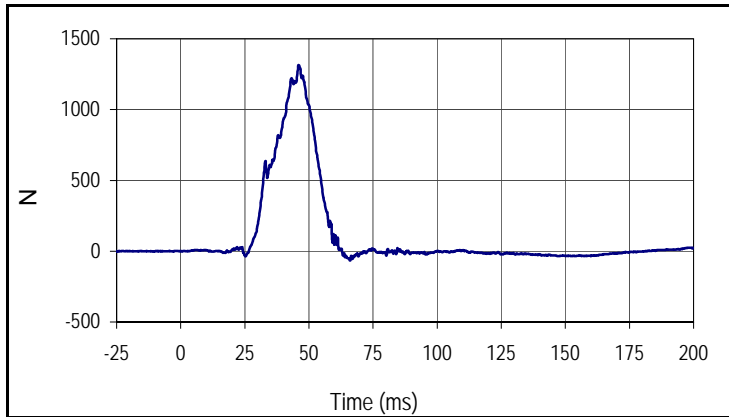
Curve Description			
Passenger Lower Spine T12 Acceleration Z			
Plot No.		SAE Class	Units
020		180	g
Max	Time	Min	Time
17.2	43.1	-26.1	57.3



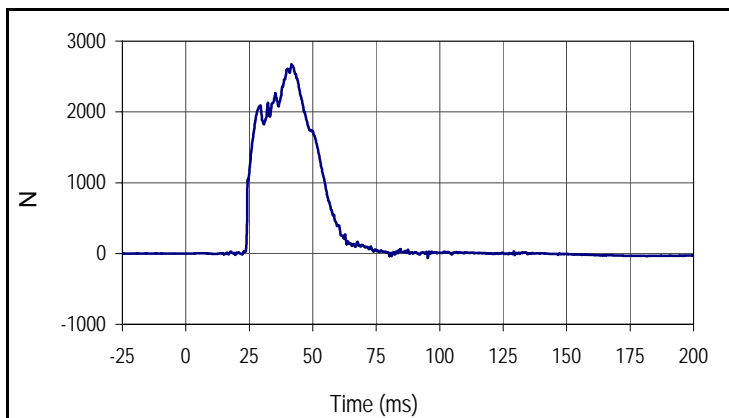
Curve Description			
Passenger Lower Spine T12 Acceleration Res.			
Plot No.		SAE Class	Units
021		180	g
Max	Time	Min	Time
58.7	45.5	0.1	2.6

Test Vehicle: 2016 Nissan Versa S 4-Door Sedan
 Test Program: NCAP MDB Side Impact Test

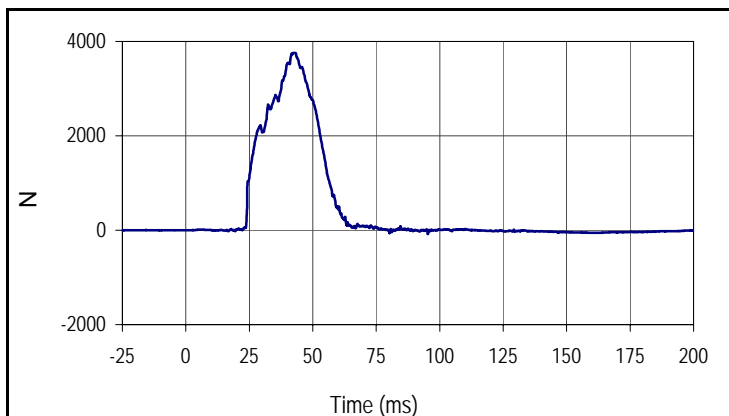
NHTSA No.: M20165205
 Test Date: 12/15/15



Curve Description			
Passenger Iliac Force on Impact Side Y			
Plot No.		SAE Class	Units
022		600	N
Max	Time	Min	Time
1315.4	46.0	-67.2	66.1



Curve Description			
Passenger Acetabulum Force on Impact Side Y			
Plot No.		SAE Class	Units
023		600	N
Max	Time	Min	Time
2675.1	41.6	-64.3	95.3



Curve Description			
Passenger Total Pelvic Force			
Plot No.		SAE Class	Units
024		600	N
Max	Time	Min	Time
3758.6	42.3	-83.4	95.3

APPENDIX C
ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

APPENDIX C
PRE-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



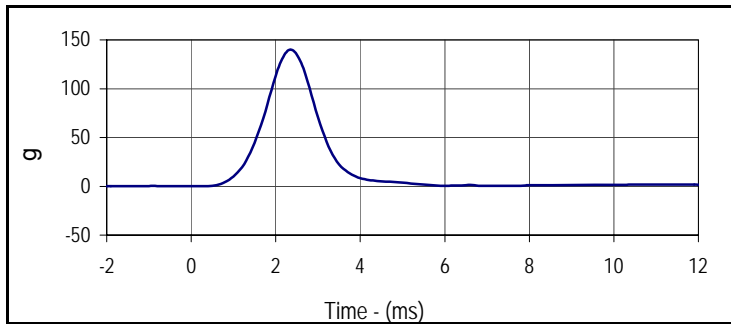
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	30.0	Pass
1	Sitting Height	mm	900 - 918	909	Pass
2	Seat to Shoulder Joint	mm	558 - 572	564	Pass
3	Seat to Lower Face of Thoracic Spine Box	mm	346 - 356	350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

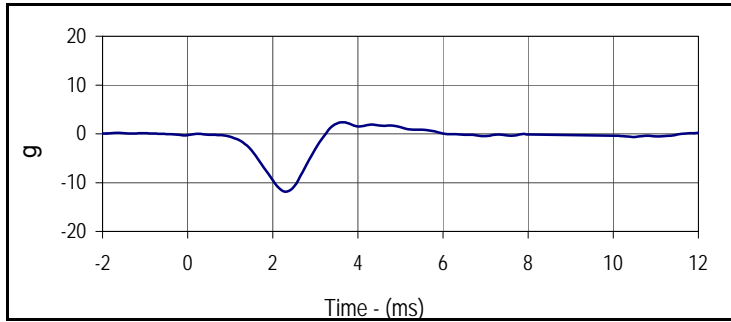
Test Date: 11/22/15
 Test I.D.: F037HD079



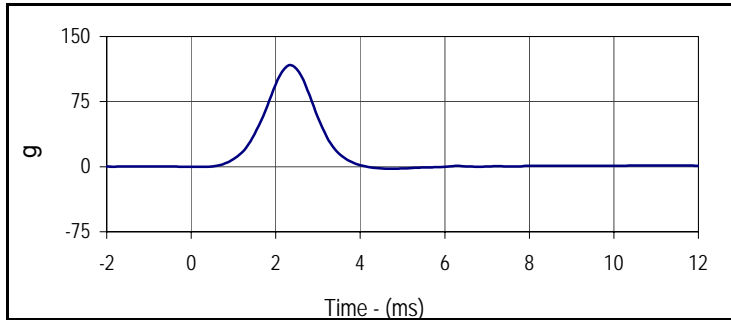
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	365	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory 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



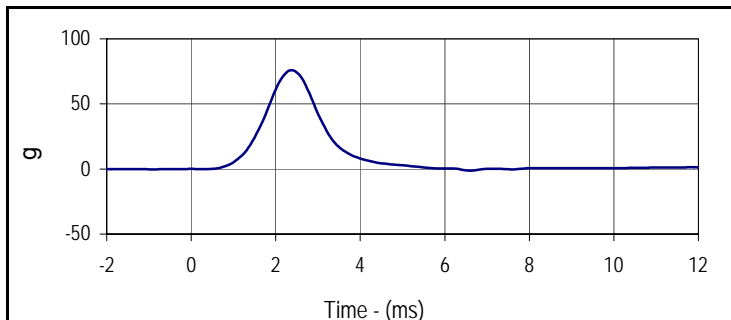
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
139.6	2.4	0.0	-4.8



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



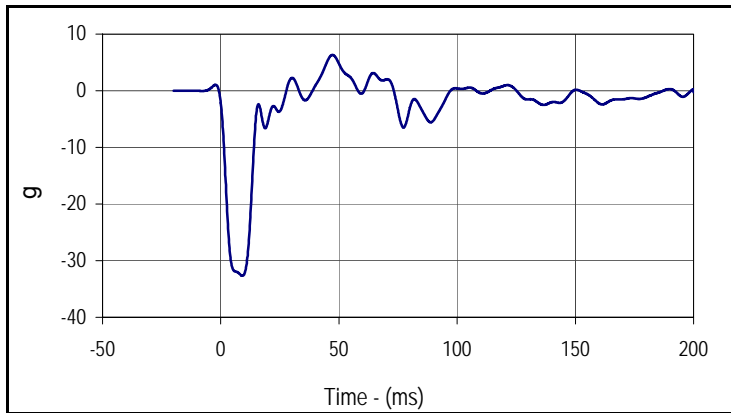
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
76.0	2.4	-1.3	6.6

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

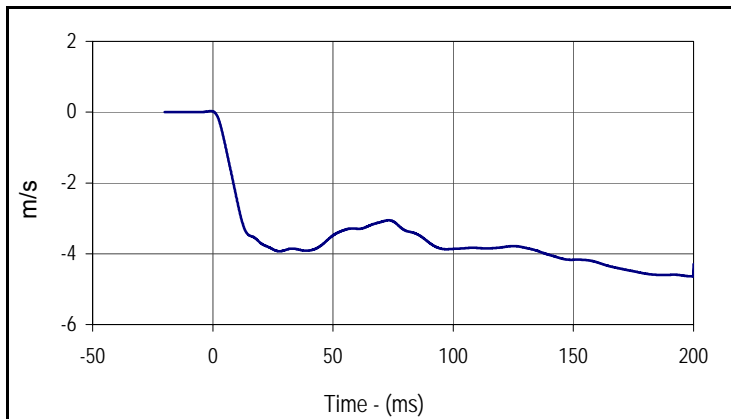
Test Date: 11/22/15
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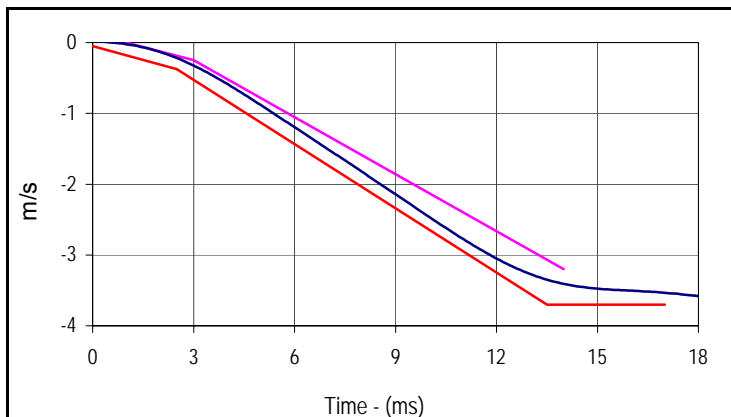
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	400	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass	
	Min		21.2	Pass	
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass	
	Min		23.7	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass	
Laboratory 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	Degrees	49 to 59	54.5	Pass
	Time	msec	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



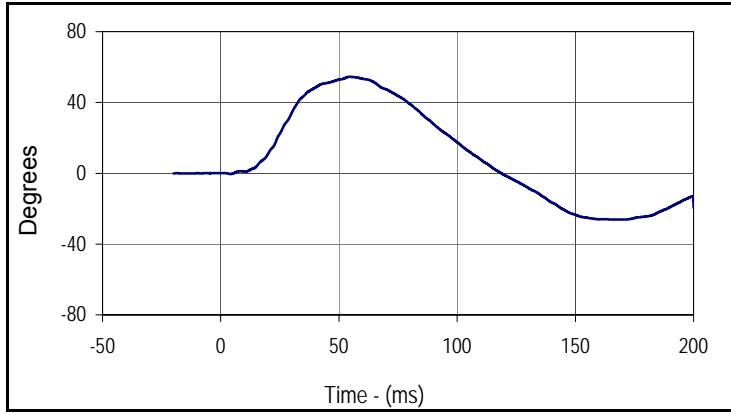
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.8	-4.6	198.9

Velocity Corridors

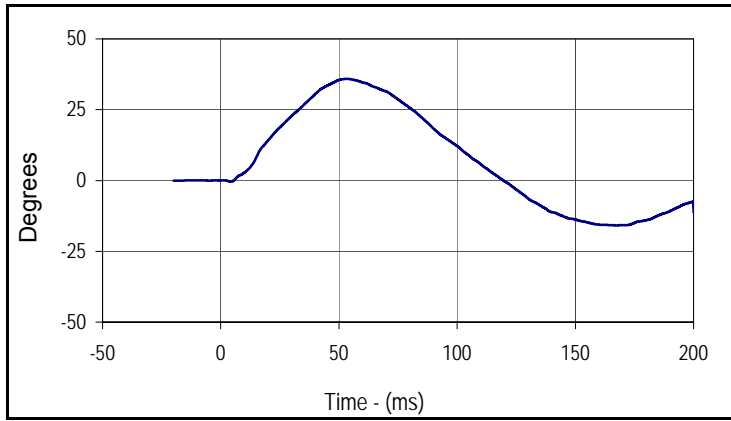
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.0	-0.03	2.5	-0.375
14.0	-3.20	13.5	-3.70
		17.0	-3.70

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

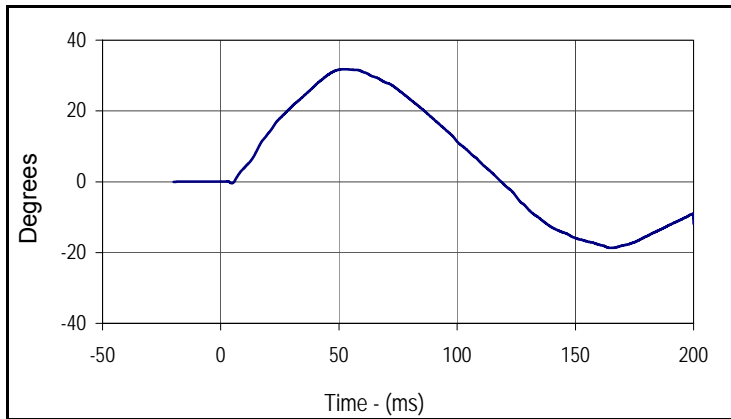
Test Date: 11/22/15
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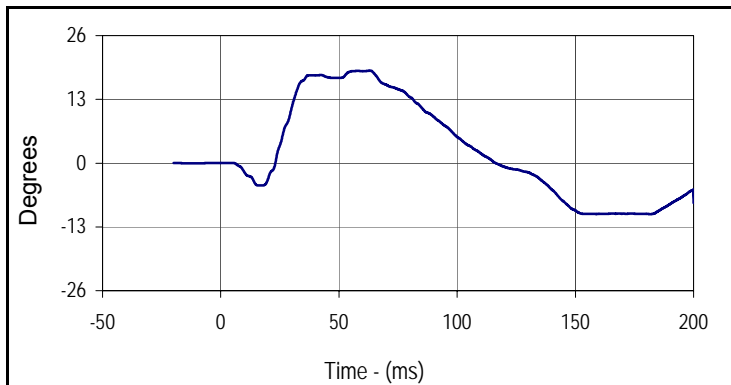
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
54.5	54.7	-26.2	167.3



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



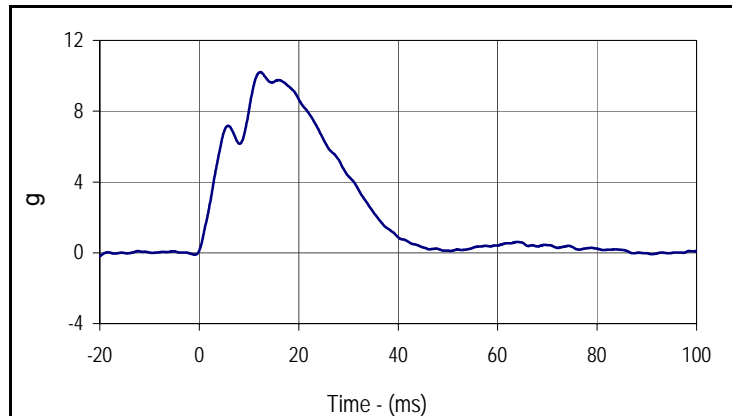
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
18.9	63.1	-10.4	182.1

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



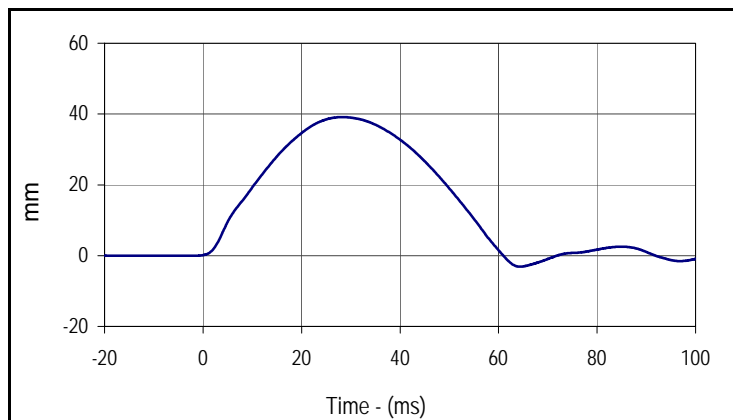
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	g
Max	Time	Min	Time
10.2	12.3	-0.2	-20.0

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

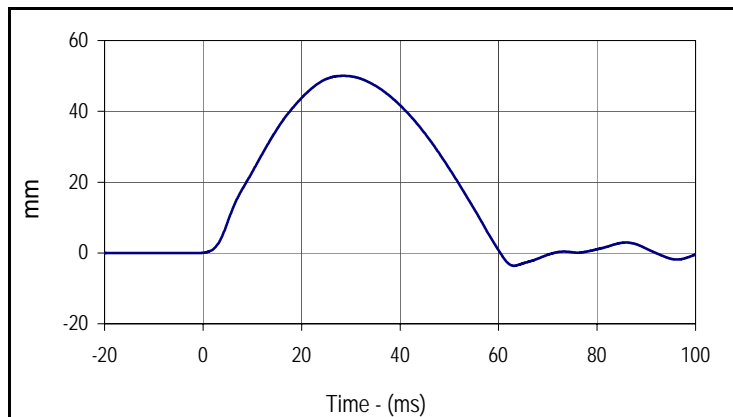
Test Date: 11/22/15
 Test I.D.: F037RB1079



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



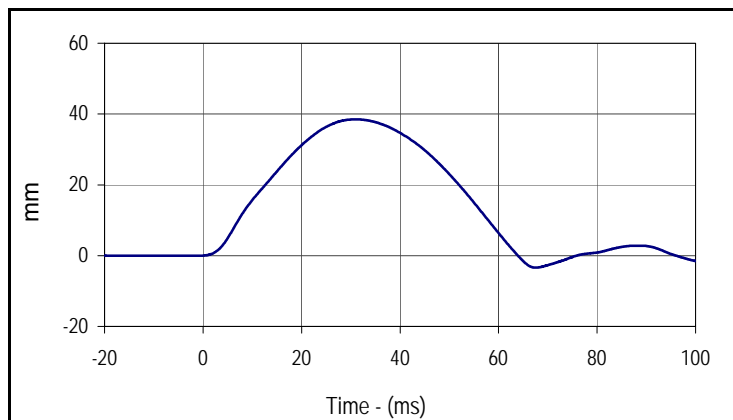
Curve Description			
Upper Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max	Time	Min	Time
50.0	28.5	-3.6	63.1

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

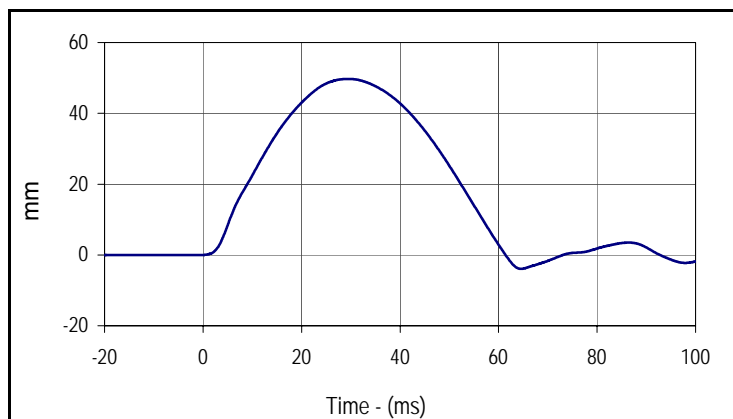
Test Date: 11/22/15
 Test I.D.: F037RB2079



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



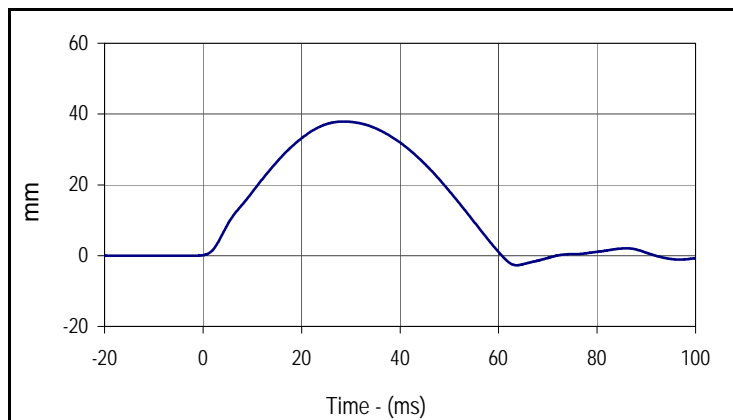
Curve Description			
Middle Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max	Time	Min	Time
49.7	29.4	-3.9	64.6

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

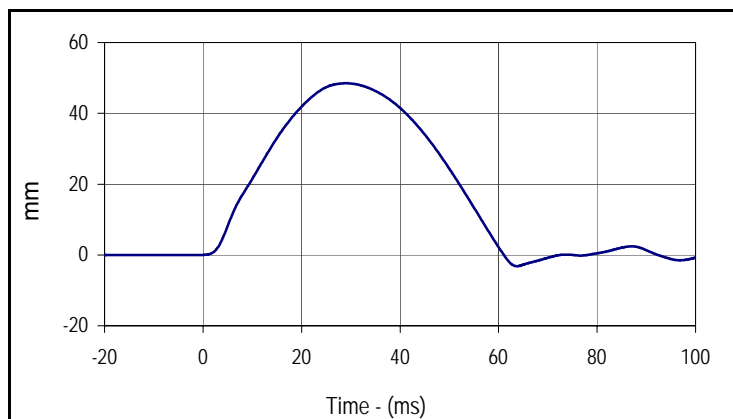
Test Date: 11/22/15
 Test I.D.: F037RB3079



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



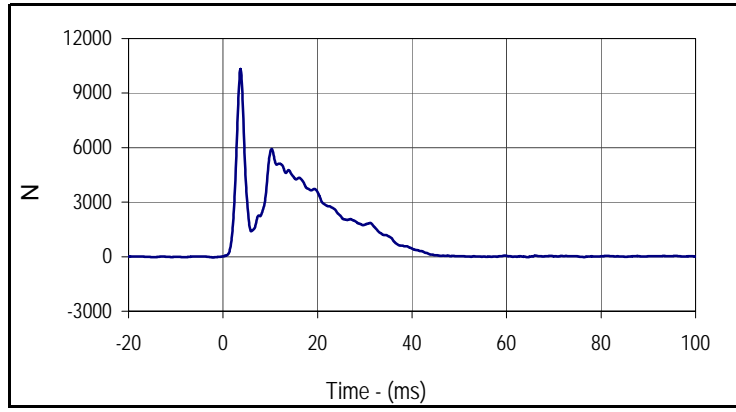
Curve Description			
Lower Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max	Time	Min	Time
48.5	29.1	-3.2	63.7

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

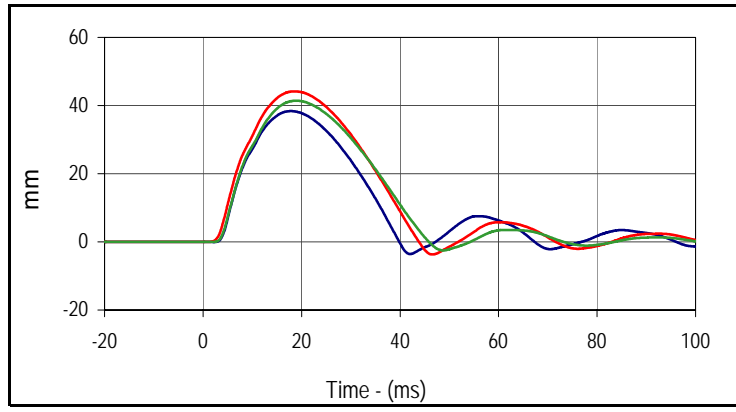
Test Date: 11/22/15
 Test I.D.: F037TH079



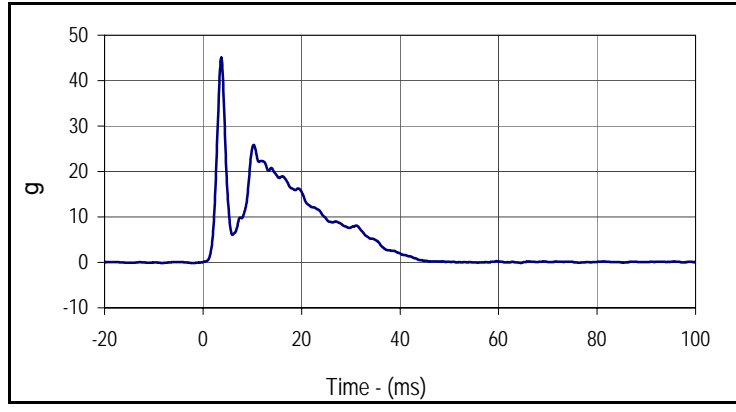
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	655	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity 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



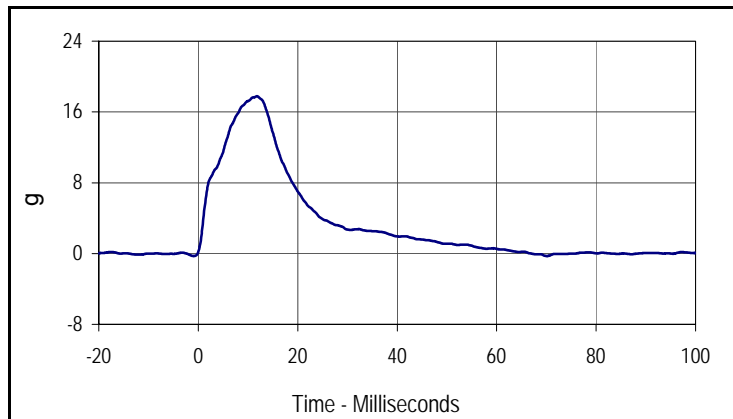
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
45.1	3.7	-0.2	-2.1

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

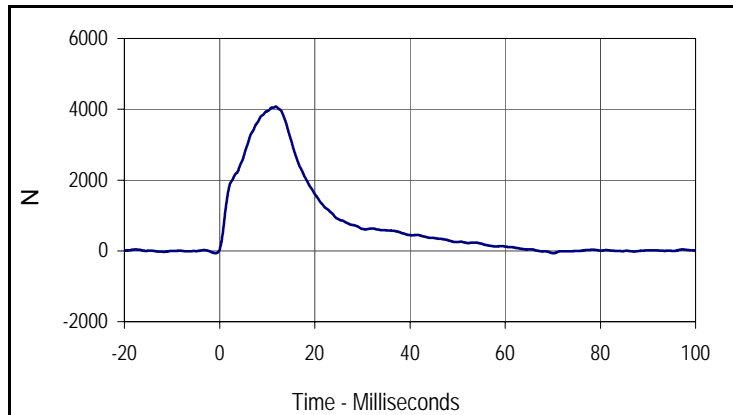
Test Date: 11/22/15
 Test I.D.: F037ABD079



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



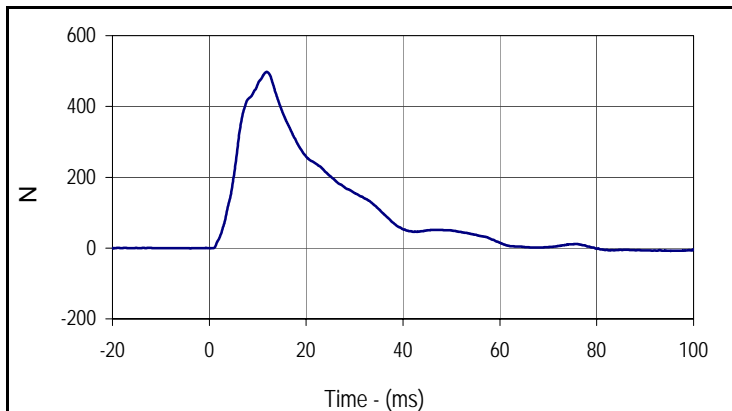
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	g
Max	Time	Min	Time
17.8	11.8	-0.3	70.1



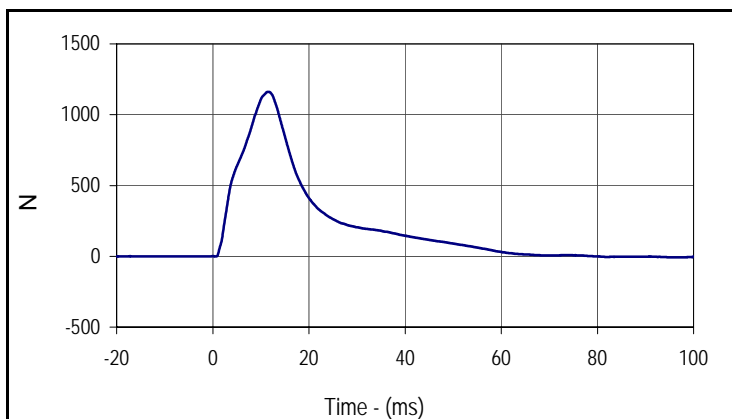
Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	N
Max	Time	Min	Time
4072.3	11.8	-65.4	70.1

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

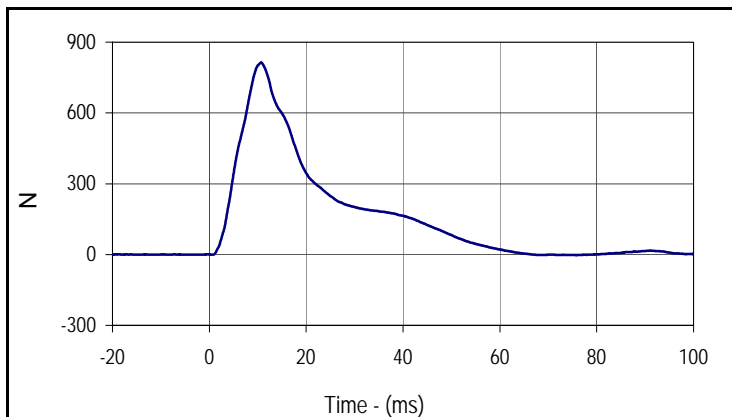
Test Date: 11/22/15
 Test I.D.: F037ABD079



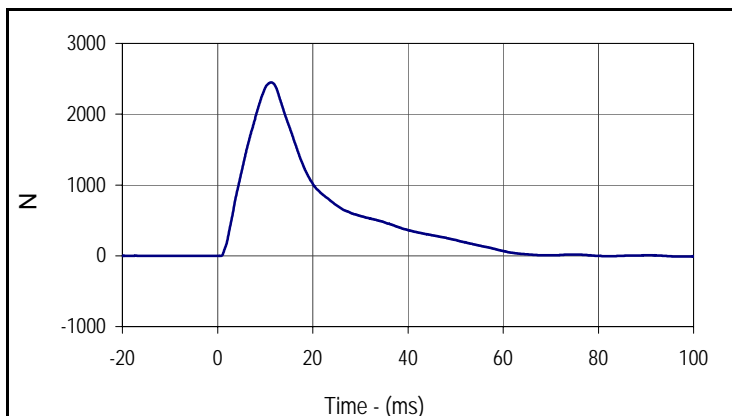
Curve Description			
Front Abdomen Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	N
Max	Time	Min	Time
497.8	11.9	-7.9	95.3



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



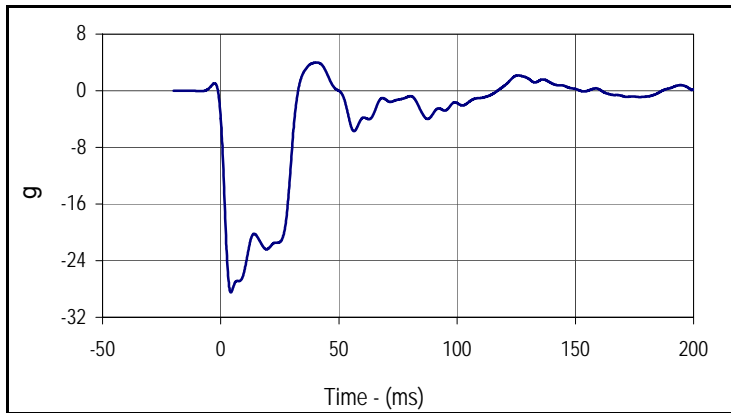
Curve Description			
Abdomen Sum Resultant			
Plot No.	Type	SAE Class	Units
006	RES	600	N
Max	Time	Min	Time
2449.9	11.3	-12.2	98.4

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

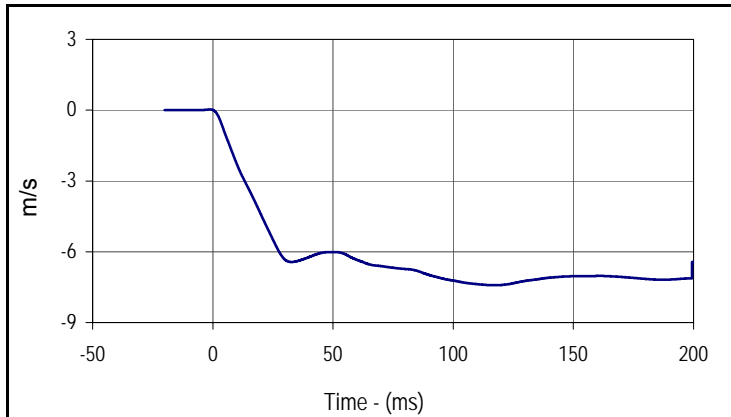
Test Date: 11/22/15
 Test I.D.: F037LB079



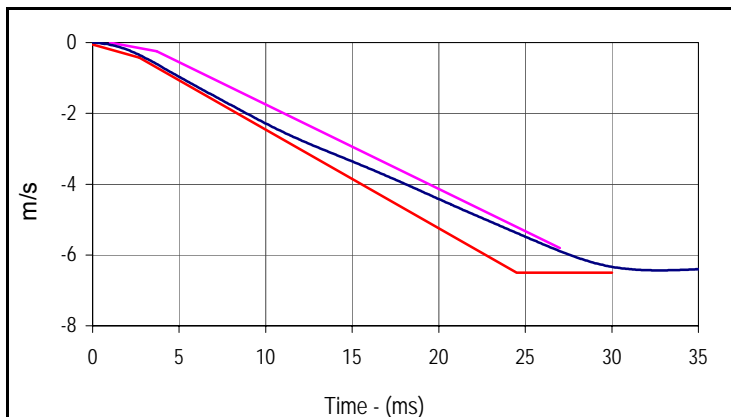
Tested Parameter	Units	Specification	Result	Pass/Fail
Lumbar Spine Assembly Soak Time	Minutes	≥240	800	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory 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



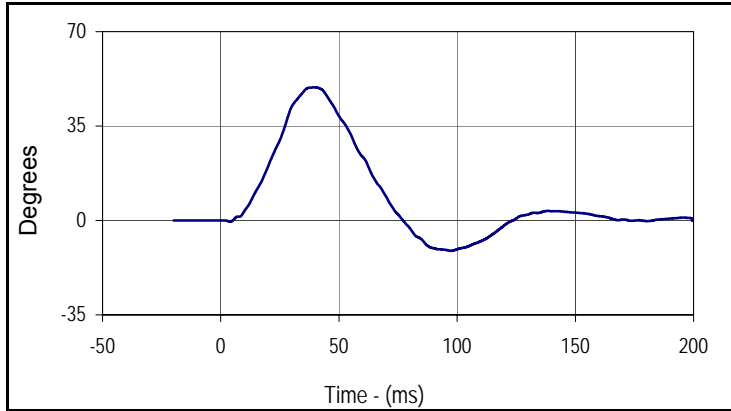
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.6	-7.4	117.7

Velocity Corridors

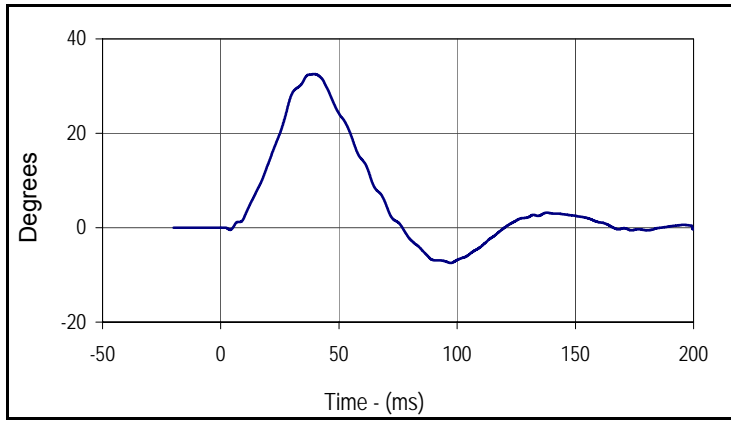
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.7	-0.24	2.7	-0.425
27.0	-5.80	24.5	-6.50
		30.0	-6.50

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

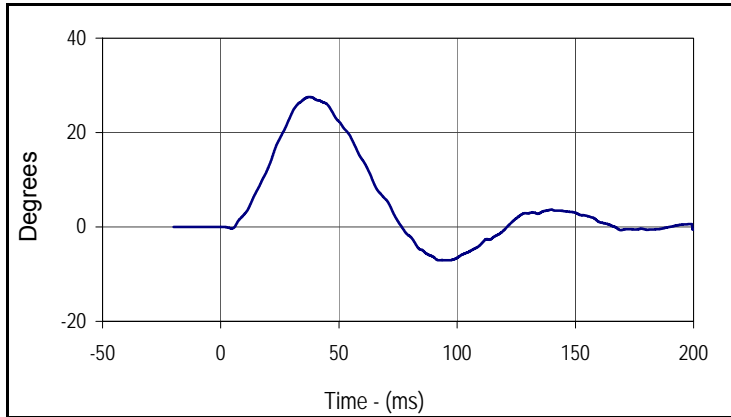
Test Date: 11/22/15
 Test I.D.: F037LB079



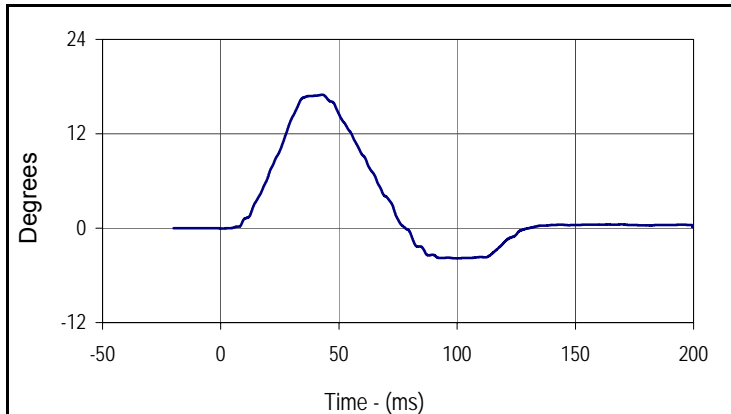
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
49.4	40.1	-11.2	98.0



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



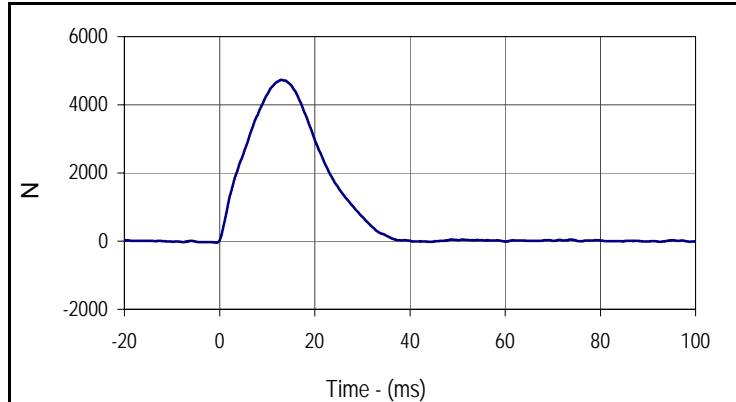
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
17.0	43.5	-3.8	100.5

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

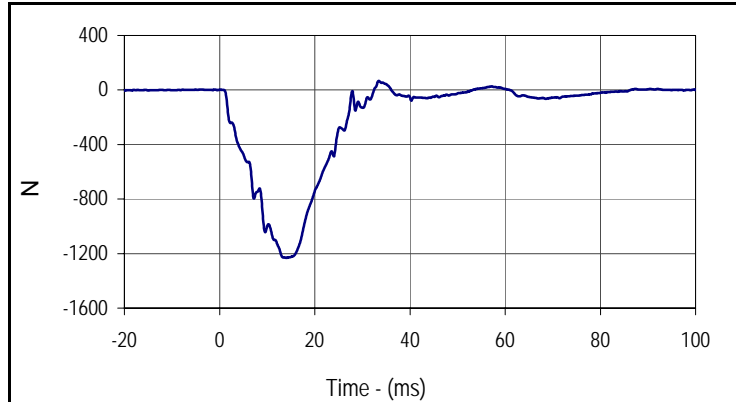
Test Date: 11/22/15
 Test I.D.: F037PL079



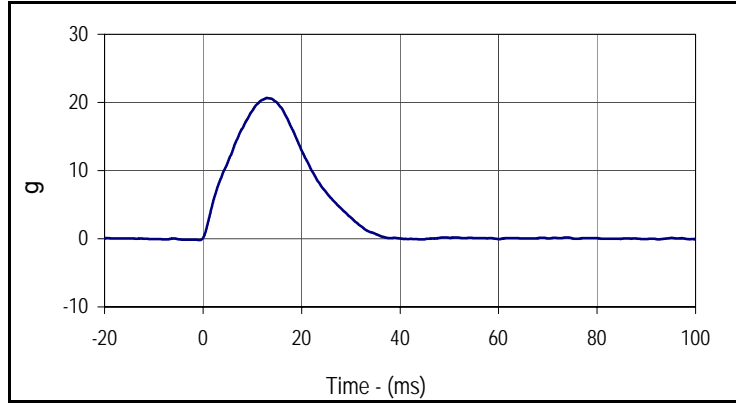
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	855	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity 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

Test Date: 11/23/15



ATD Serial No.: 307

Test I.D.: N/A

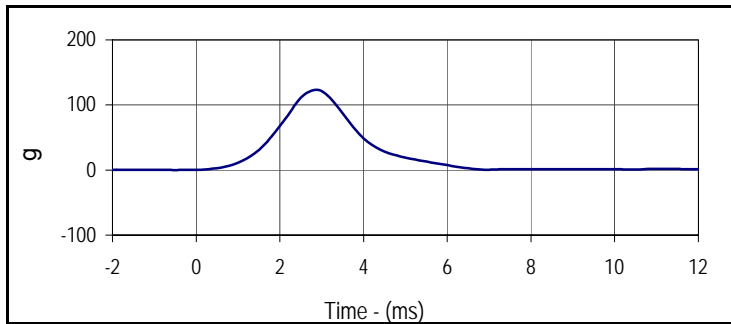
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.6	Pass
Laboratory Relative Humidity	%	10 to 70	23	Pass
A Sitting Height	mm	772 - 788	778	Pass
B Shoulder Pivot Height	mm	437 - 453	443	Pass
C H-Point Height	mm	79 - 89	85	Pass
D H-Point from Seatback	mm	141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

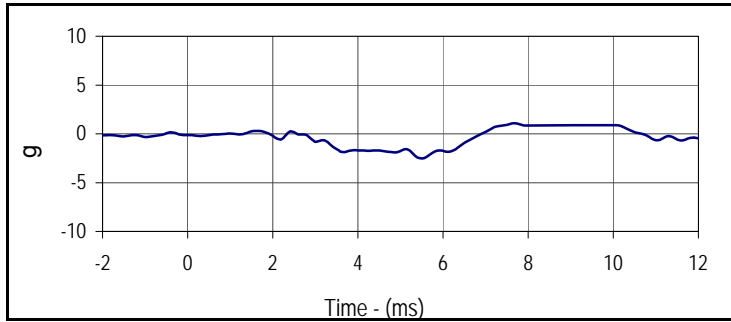
Test Date: 11/23/15
 Test I.D.: 307HD088



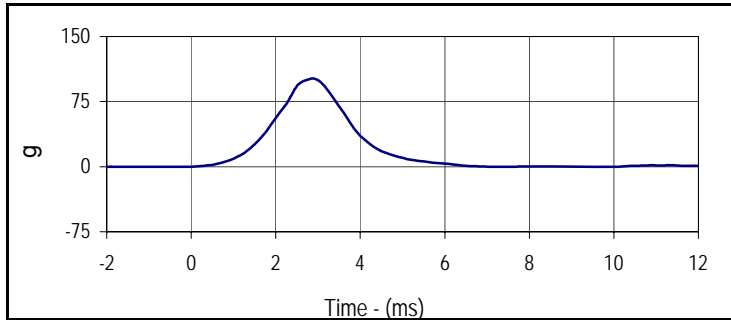
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	505	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	23.0	Pass
	Min		22.4	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.6	Pass
Laboratory 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



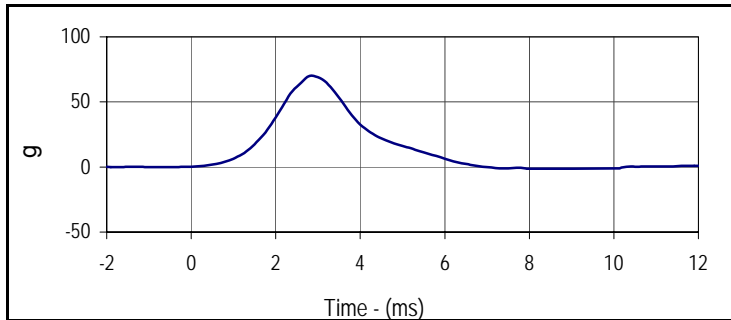
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
123.4	2.9	0.0	-13.5



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



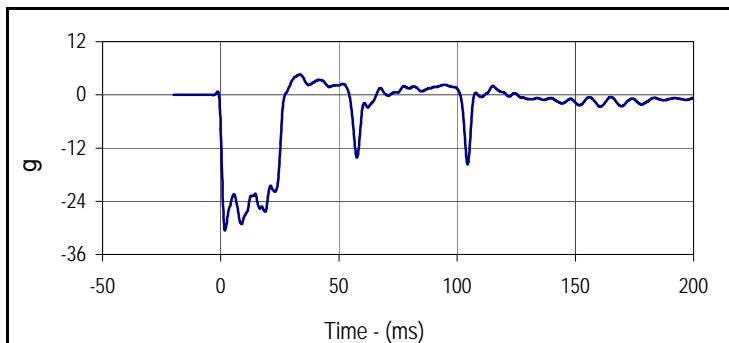
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
69.9	2.9	-1.3	8.0

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

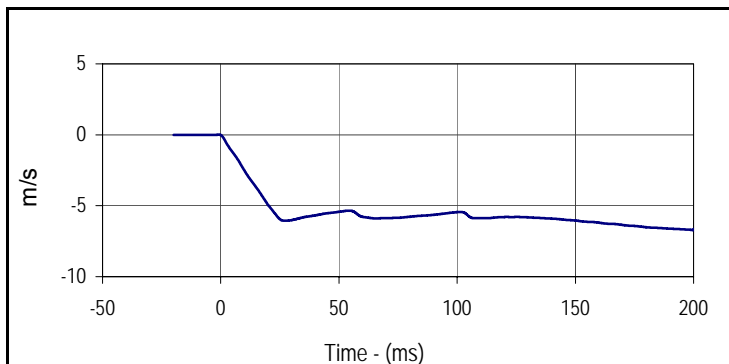
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 Test I.D.: 307NB088



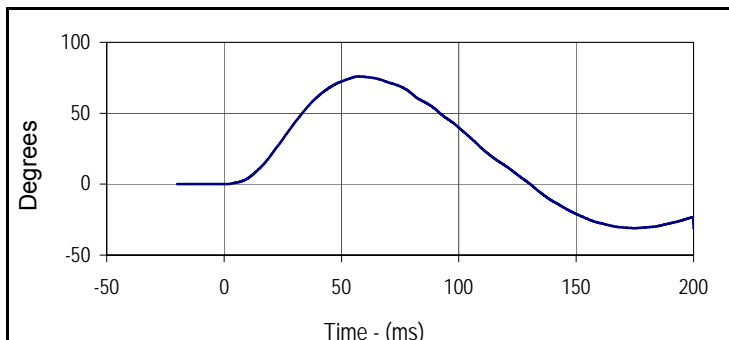
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	550	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass	
	Min		21.1	Pass	
Humidity During Soak	Max	10.0 to 70.0	23.0	Pass	
	Min		22.4	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass	
Laboratory 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



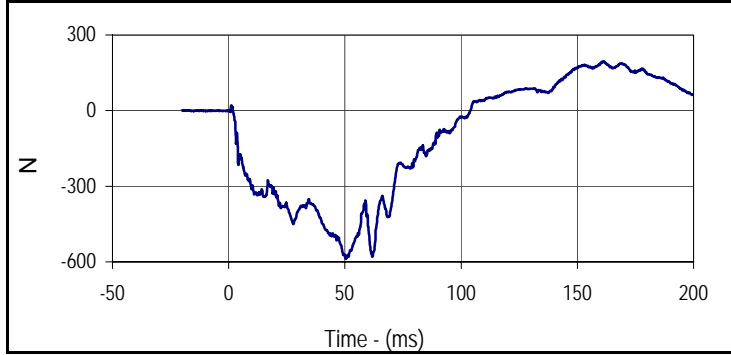
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.8	-6.7	199.9



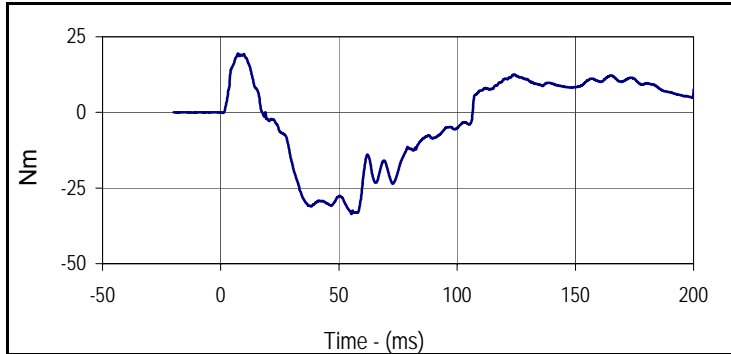
Curve Description			
D-Plane Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
76.0	57.6	-31.2	200.0

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

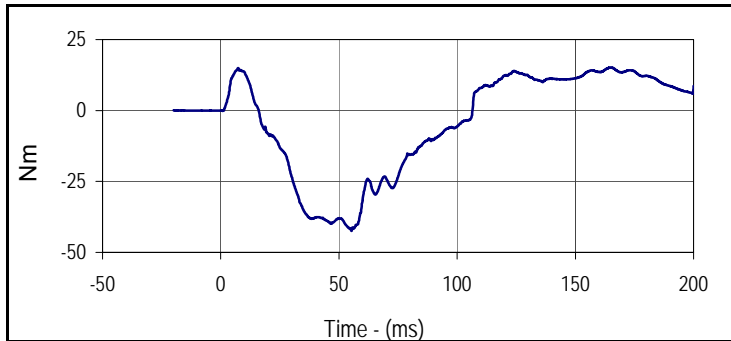
Test Date: 11/23/15
 Test I.D.: 307NB088



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



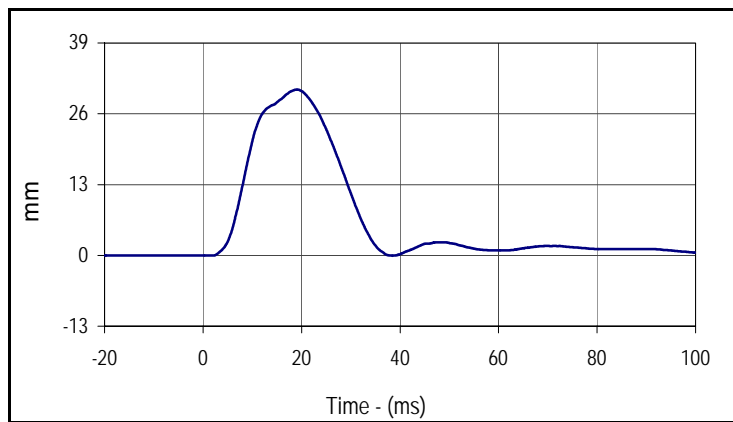
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
006	FIL	600	Nm
Max	Time	Min	Time
15.2	164.8	-42.5	55.3

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

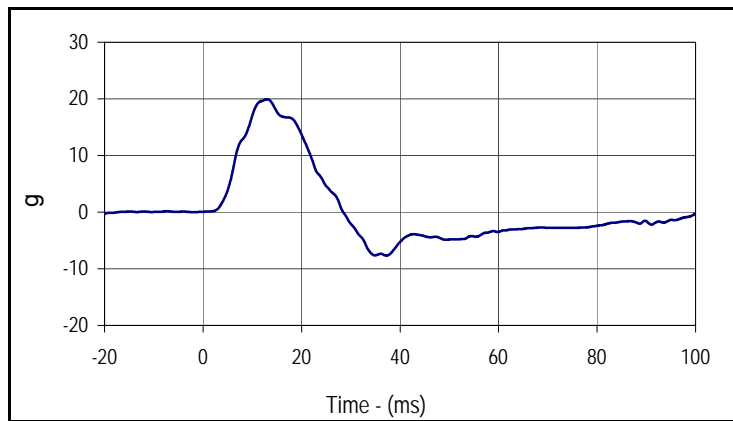
Test Date: 11/23/15
 Test I.D.: 307SH088



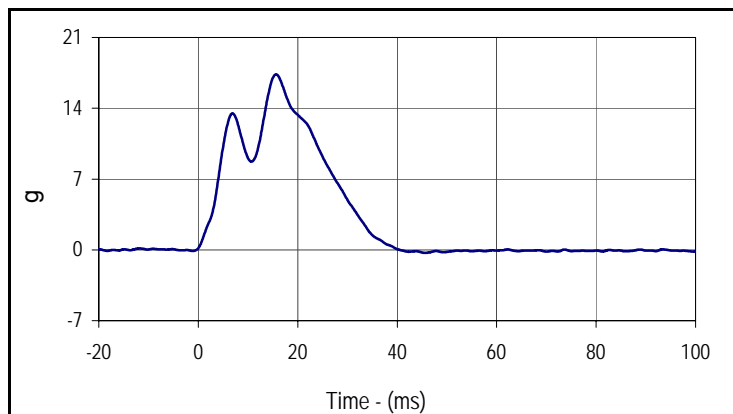
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	605	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	23.0	Pass
	Min		22.4	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity 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



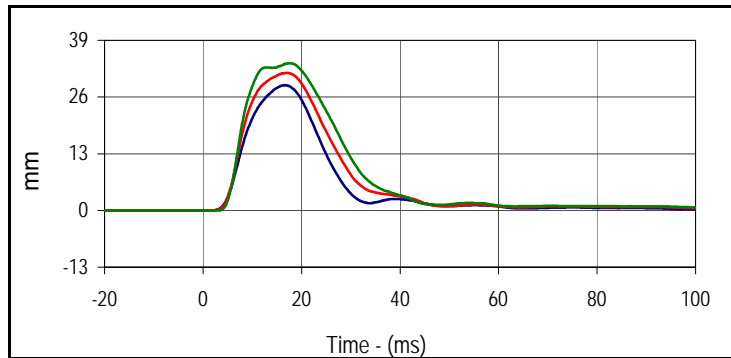
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
17.4	15.6	-0.3	45.6

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

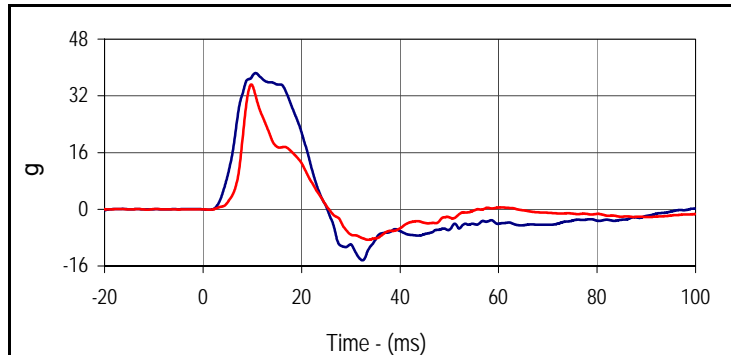
Test Date: 11/23/15
 Test I.D.: 307TWA088



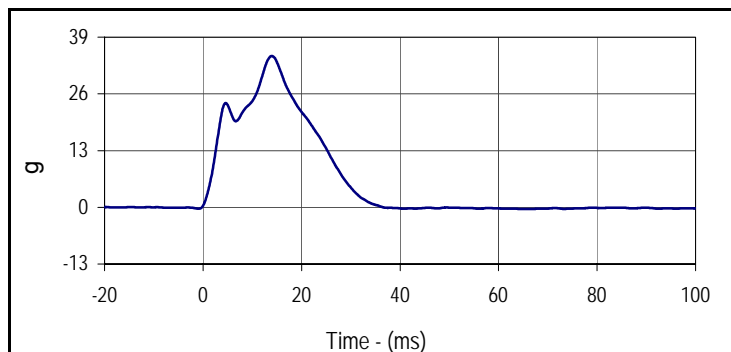
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	650	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	23.0	Pass
	Min		22.4	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity 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



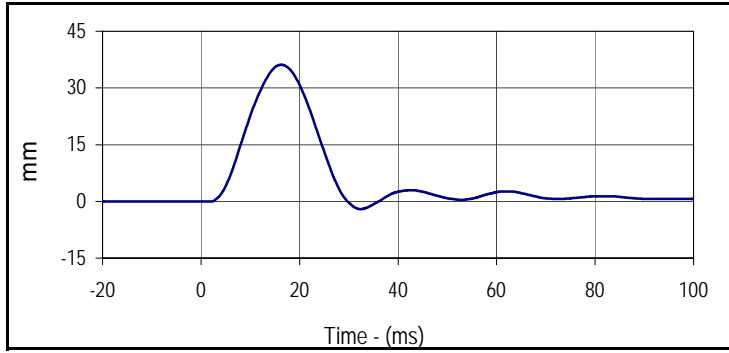
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
38.4	10.7	-14.4	32.4
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	g
Max	Time	Min	Time
35.2	9.8	-8.6	33.6



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



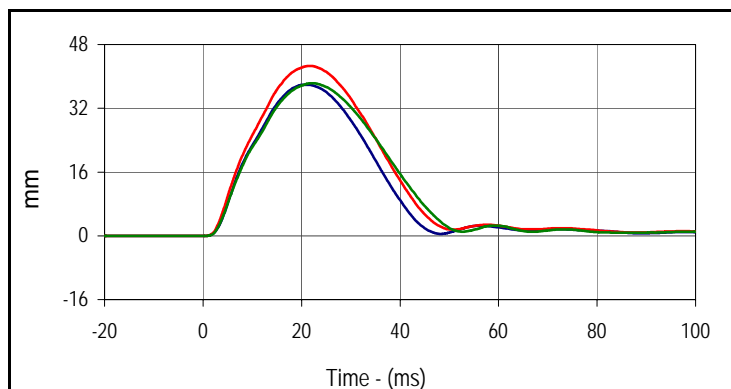
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	mm
Max	Time	Min	Time
36.2	16.3	-2.0	32.4

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

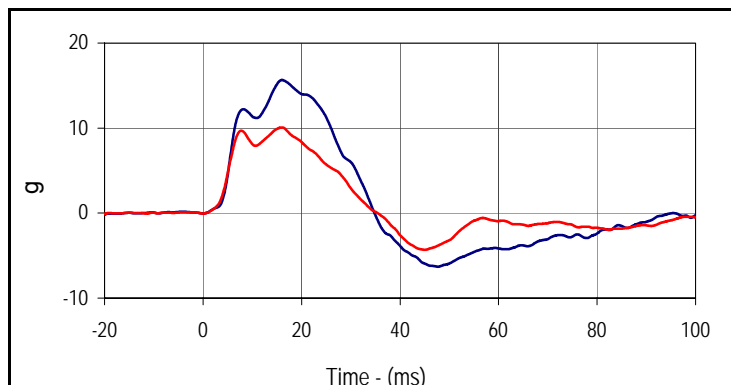
Test Date: 11/23/15
 Test I.D.: 307TWOA088



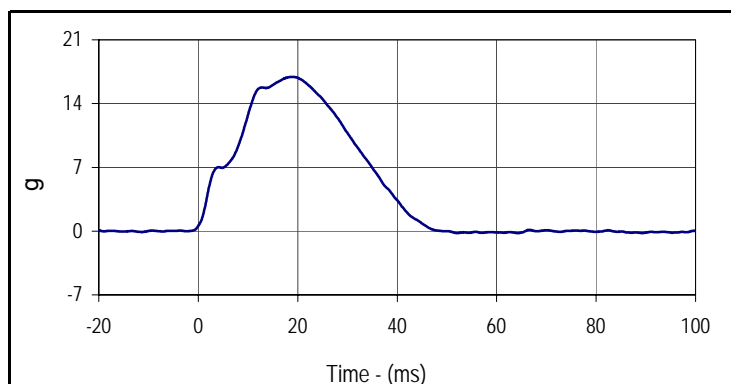
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	705	Pass
Temperature During Soak	Max	18.9 to 25.6	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	23.0	Pass
	Min		22.4	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity 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



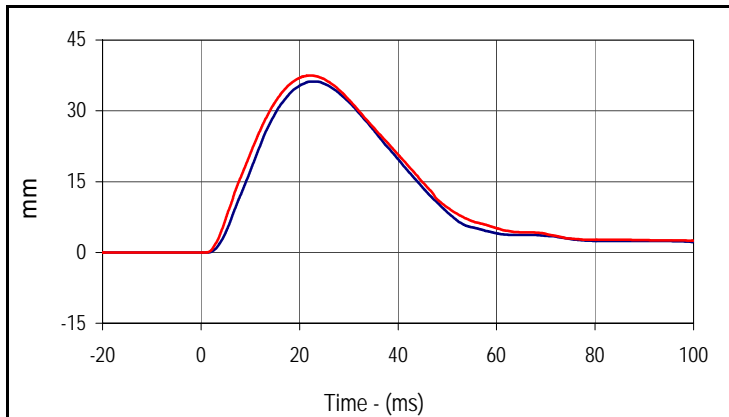
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	g
Max	Time	Min	Time
16.9	18.9	-0.2	64.2

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

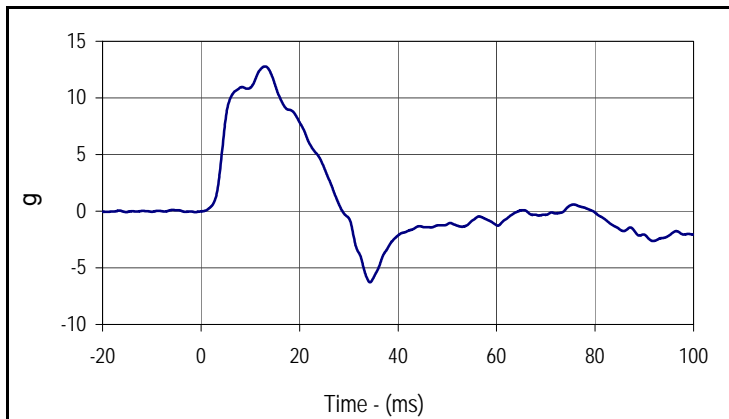
Test Date: 11/23/15
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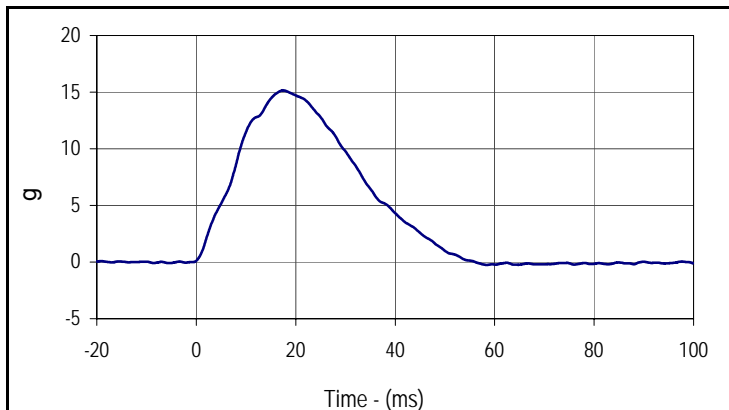
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	760	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	23.0	Pass
	Min		22.4	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity 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

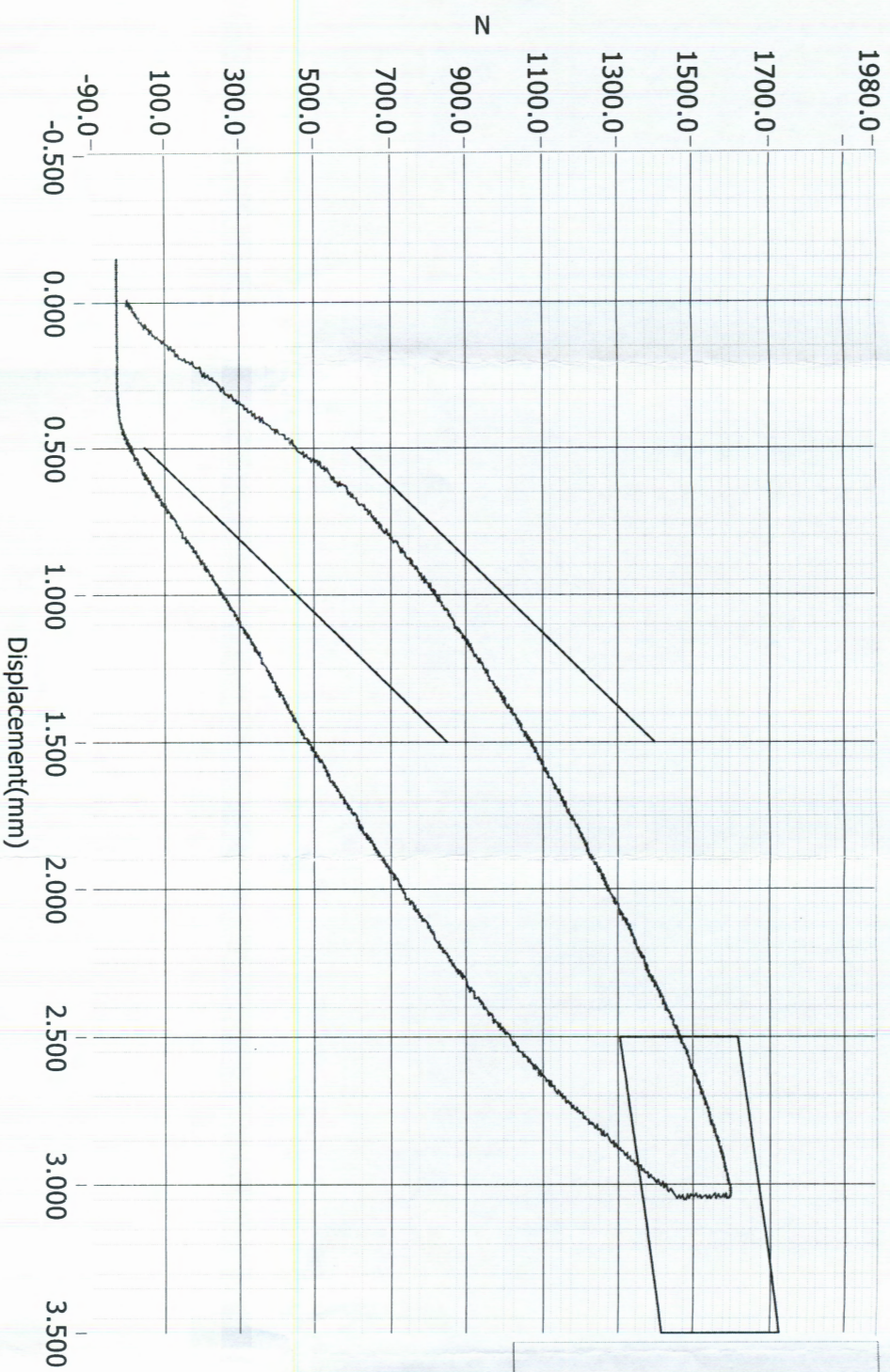


Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
12.8	13.0	-6.3	34.3



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



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

1595N

ATD Calibration Lab

<u>Test ID</u>	<u>Part Serial Number</u>	<u>Test Date</u>	<u>Test Time</u>
<u>Cert ID</u>	<u>ATD Serial Number</u>	<u>ATD Type</u>	
	N/A	SIDIIS	

Current Date : 12/13/2013

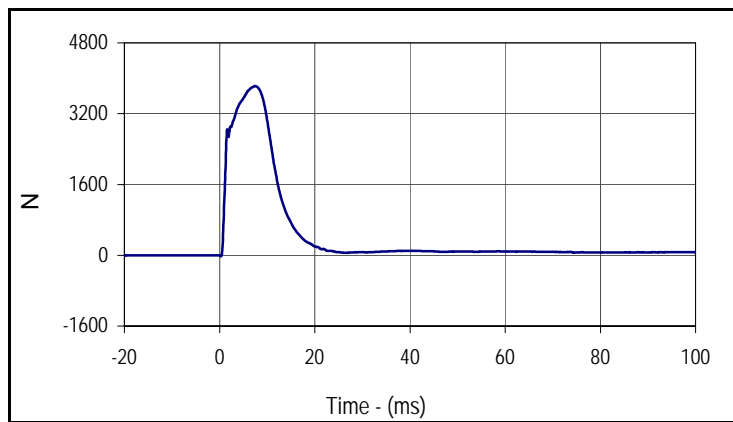
Current Time : 20:53:30

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

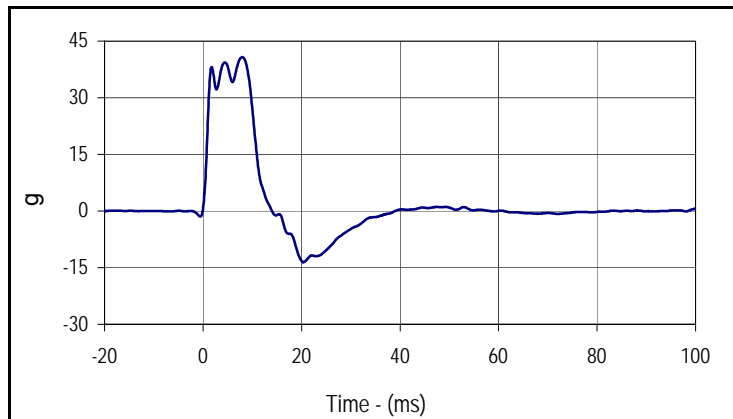
Test Date: 11/23/15
 Test I.D.: 307ACET088



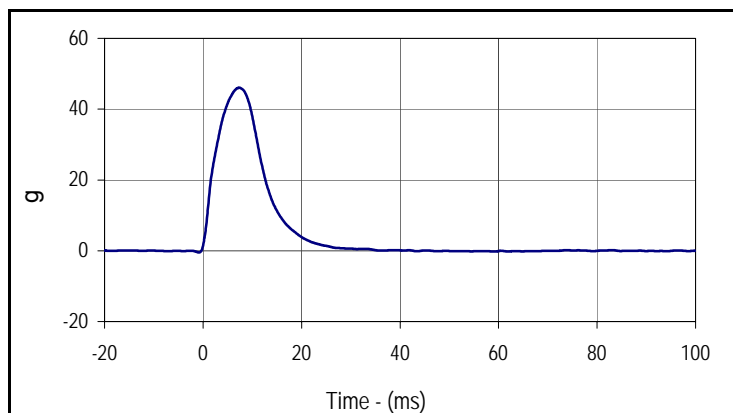
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	810	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	23.0	Pass
	Min		22.4	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity 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



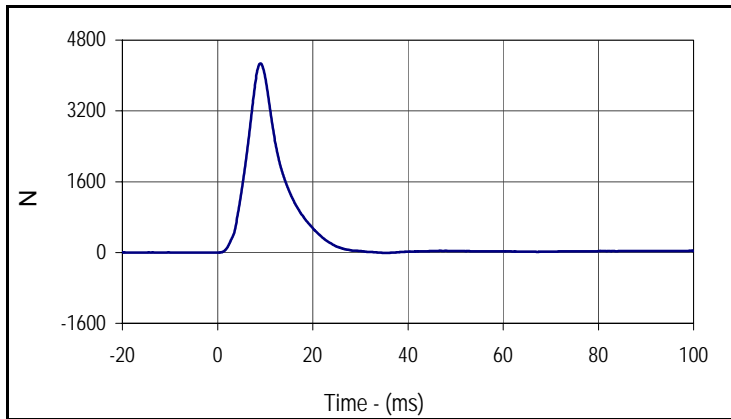
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
46.0	7.3	-0.5	-0.8

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

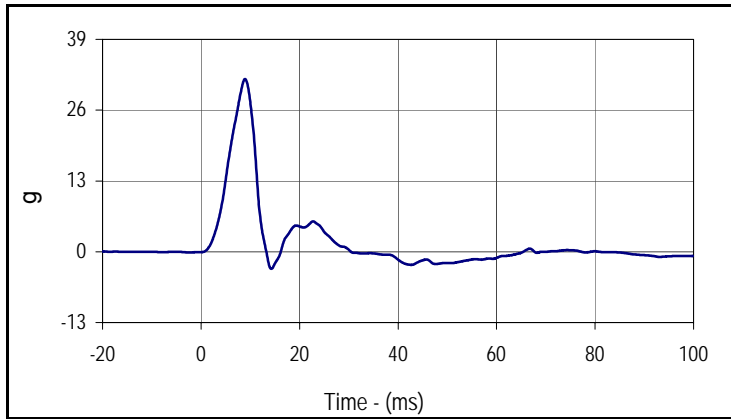
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 Test I.D.: 307PL088



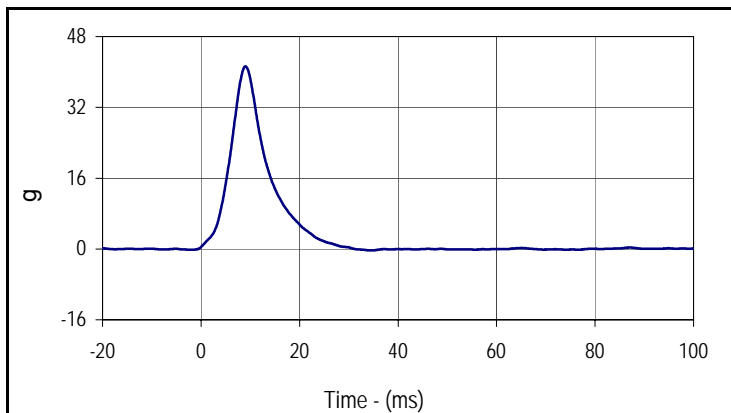
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	865	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.1	Pass
Humidity During Soak	Max	10.0 to 70.0	23.0	Pass
	Min		22.4	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity 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 C
POST-TEST / ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program: ES2re External Measurements

Test Date: 12/16/15

ATD Serial No.: F037

Test I.D.: N/A



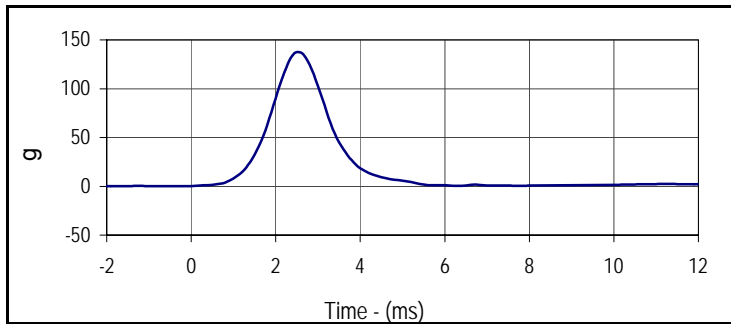
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	30.0	Pass
1 Sitting Height	mm	900 - 918	909	Pass
2 Seat to Shoulder Joint	mm	558 - 572	564	Pass
3 Seat to Lower Face of Thoracic Spine Box	mm	346 - 356	350	Pass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

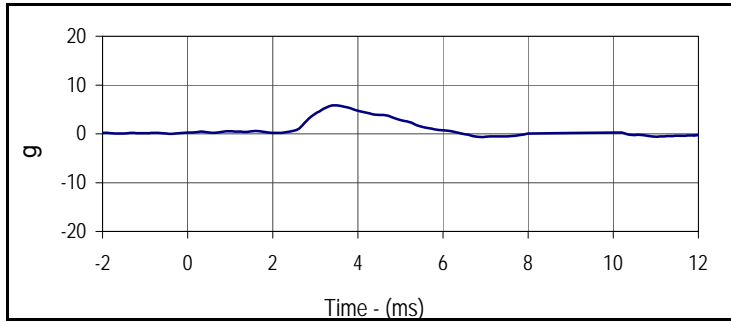
Test Date: 12/16/15
 Test I.D.: F037HD080



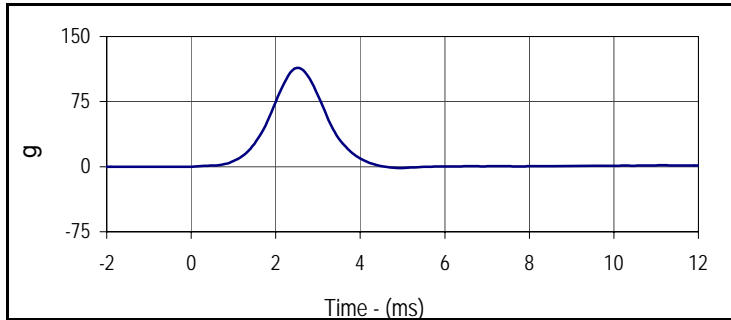
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	401	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.5	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.6	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.7	Pass
Peak Head Resultant Acceleration	g	125 to 155	137.6	Pass
Peak Head X Acceleration	g	≤15	5.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	0.3	Pass
Overall Test Results				Pass



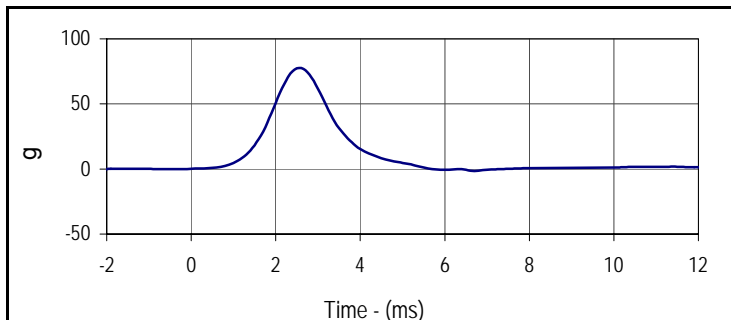
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
137.6	2.5	0.0	-15.4



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	g
Max	Time	Min	Time
5.8	3.5	-0.7	6.9



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
113.7	2.5	-1.6	5.0



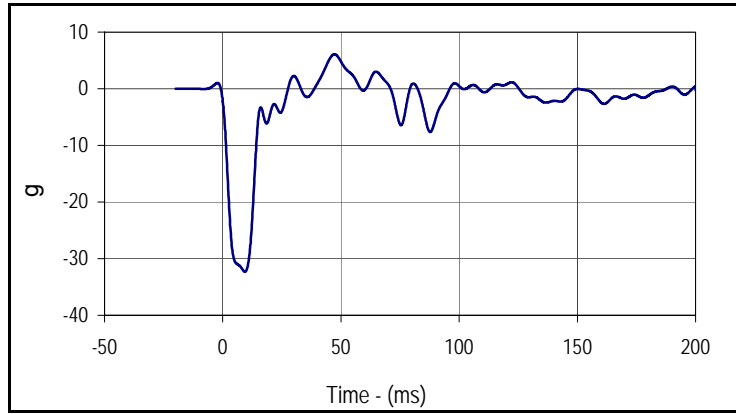
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
77.6	2.6	-1.6	6.7

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

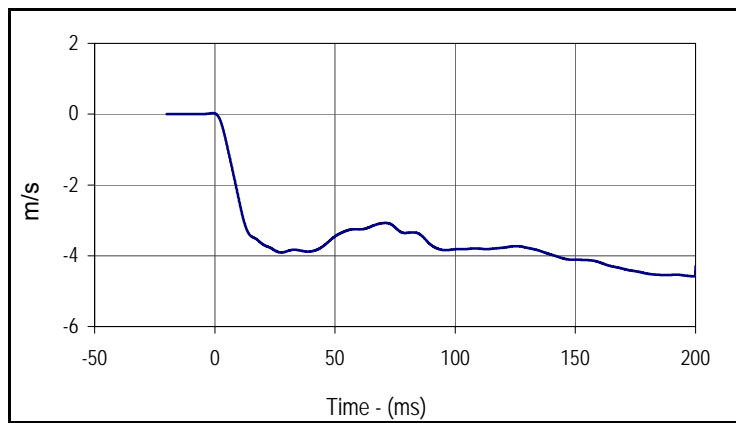
Test Date: 12/16/15
 Test I.D.: F037NB080



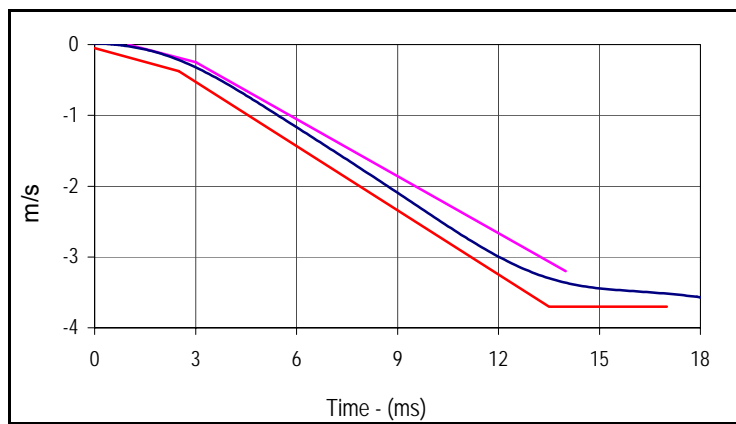
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	436	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.5	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.6	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.8	Pass
Pendulum Velocity	m/s	3.3 to 3.5	3.42	Pass
Headform Flexion	Max	49 to 59	53.5	Pass
	Time	54 to 66	56.3	Pass
Headform Flexion Decay (Peak to Zero)	msec	53 to 88	62.0	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	g
Max	Time	Min	Time
6.1	47.2	-32.3	9.4



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	198.6



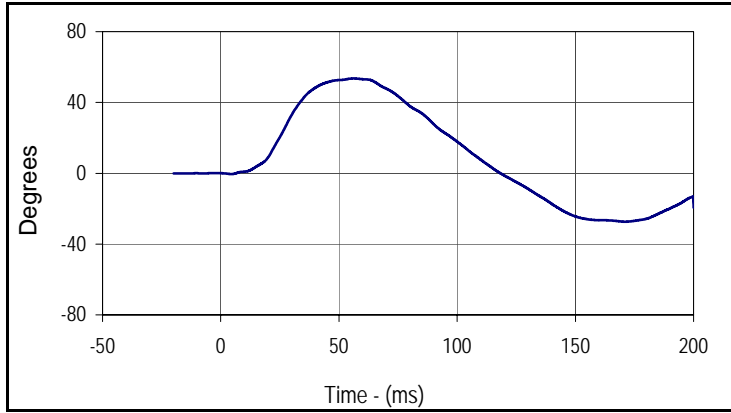
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.8	-4.6	198.6

Velocity Corridors

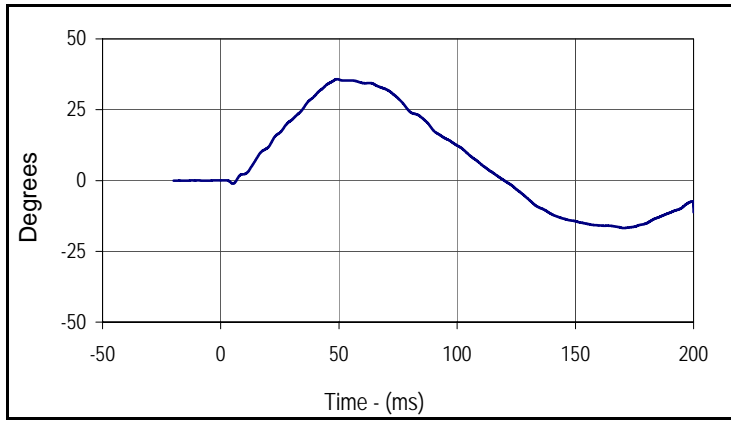
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.0	-0.03	2.5	-0.375
14.0	-3.20	13.5	-3.70
		17.0	-3.70

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

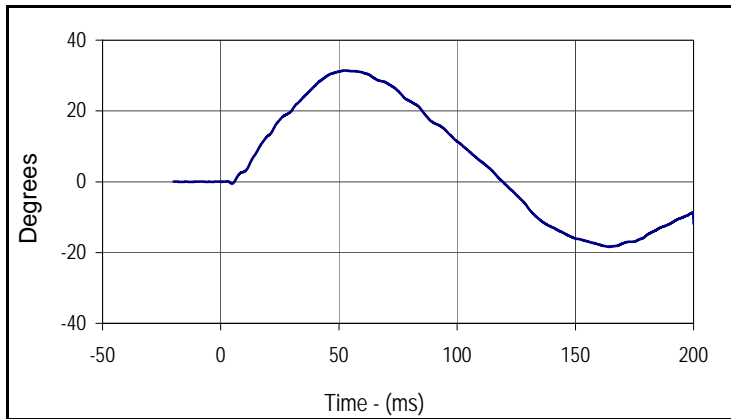
Test Date: 12/16/15
 Test I.D.: F037NB080



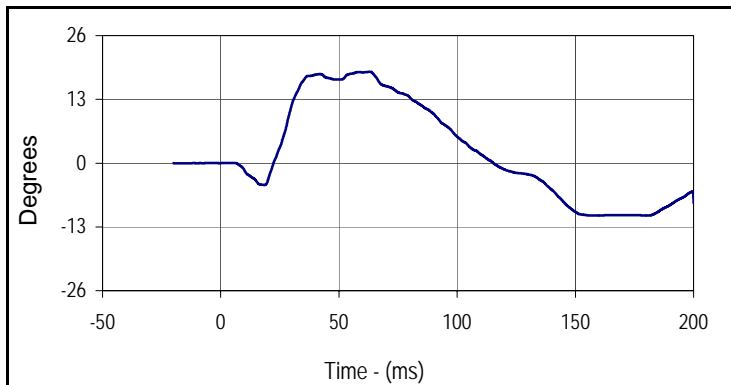
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
53.5	56.3	-27.3	171.0



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
35.8	49.2	-16.8	170.5



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
31.4	52.4	-18.4	164.2



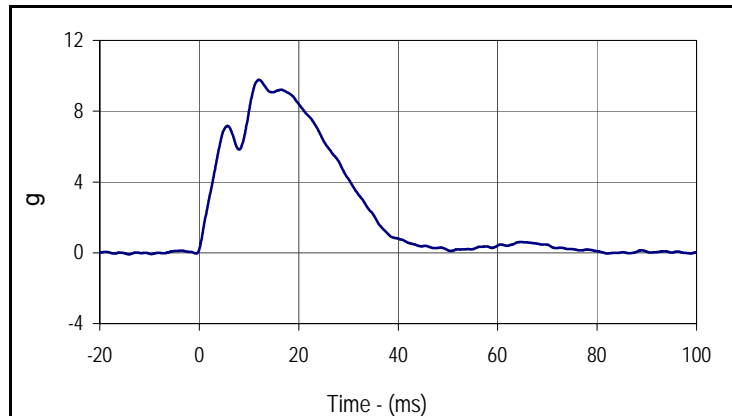
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
18.6	62.9	-10.7	159.7

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

Test Date: 12/16/15
 Test I.D.: F037SH080



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	501	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.5	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	21.5	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	9.8	Pass
Overall Test Results				Pass



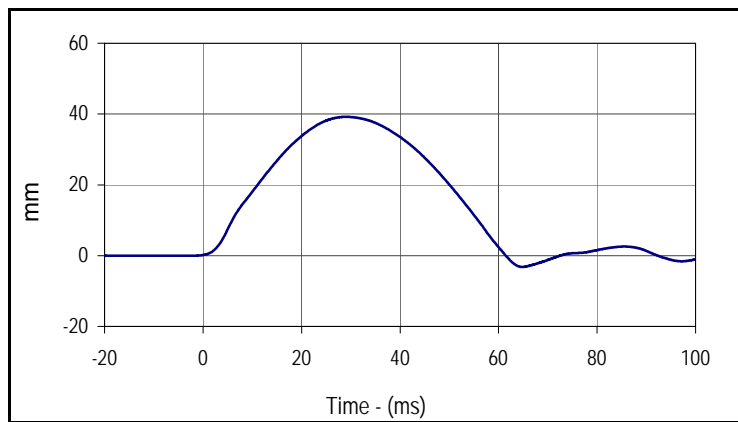
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	g
Max	Time	Min	Time
9.8	12.0	-0.1	-14.1

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

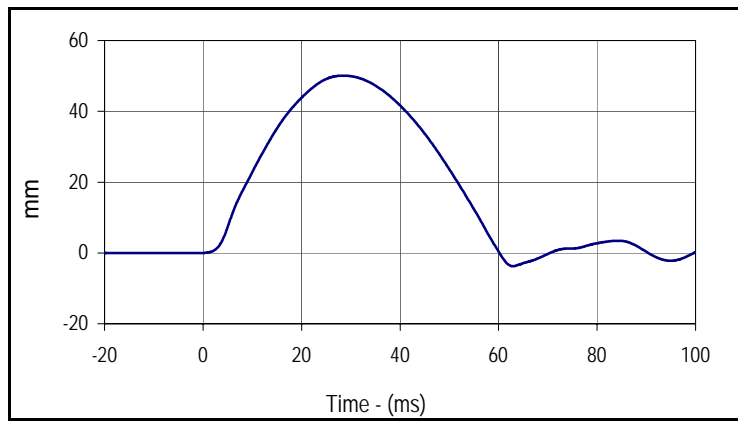
Test Date: 12/16/15
 Test I.D.: F037RB1080



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	556	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.5	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	21.5	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	50.1	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	29.0	-3.2	64.8



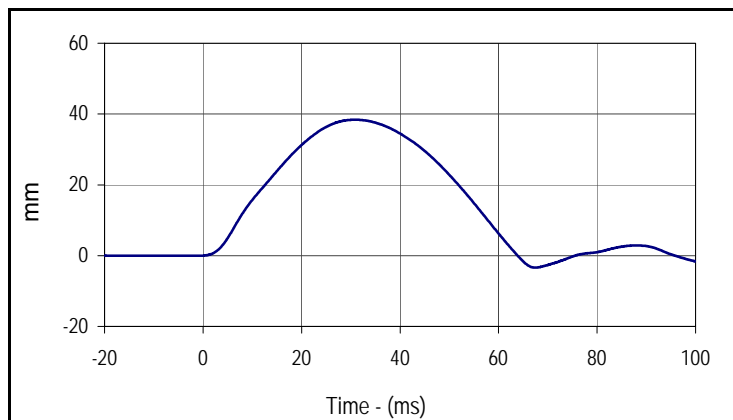
Curve Description			
Upper Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max	Time	Min	Time
50.1	28.5	-3.7	62.9

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

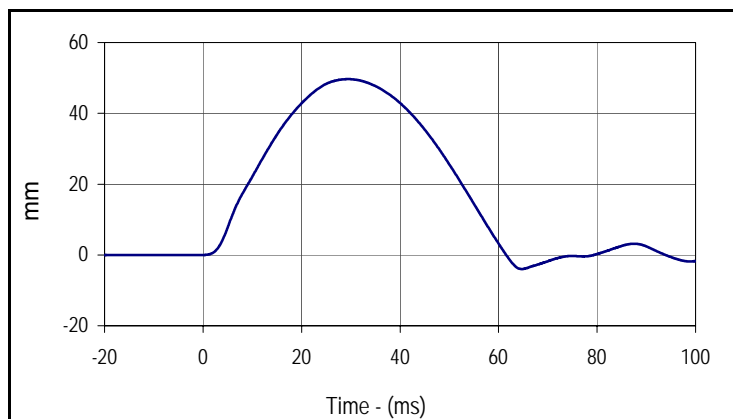
Test Date: 12/16/15
 Test I.D.: F037RB2080



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	601	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.5	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	21.5	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	38.4	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
38.4	30.9	-3.4	67.5



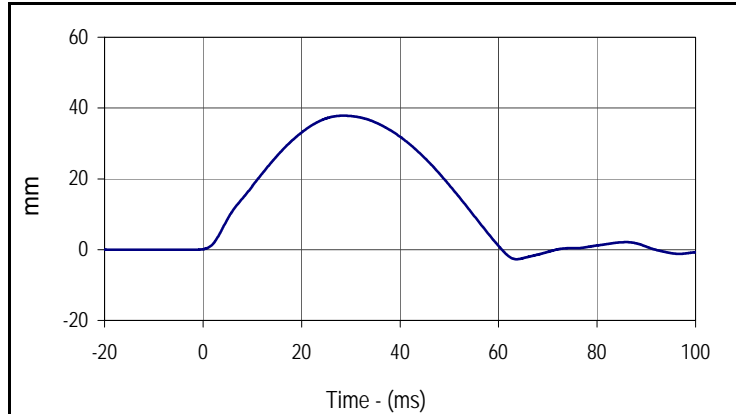
Curve Description			
Middle Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max	Time	Min	Time
49.7	29.4	-4.0	64.7

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

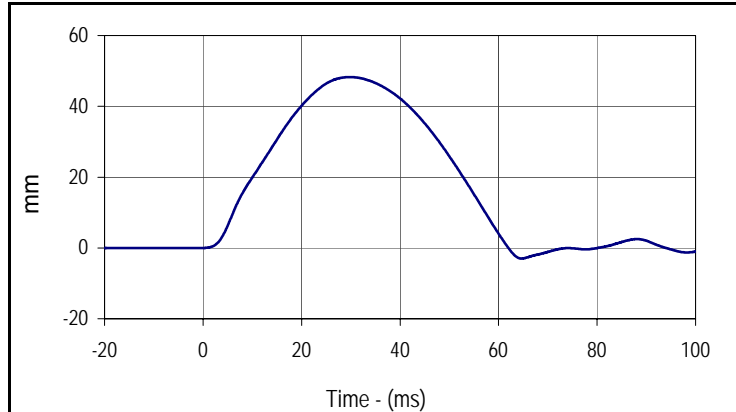
Test Date: 12/16/15
 Test I.D.: F037RB3080



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	646	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.5	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	21.5	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	37.8	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	48.3	Pass
Overall Test Results				Pass



Curve Description			
Lower Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	mm
Max	Time	Min	Time
37.8	28.5	-2.7	63.6



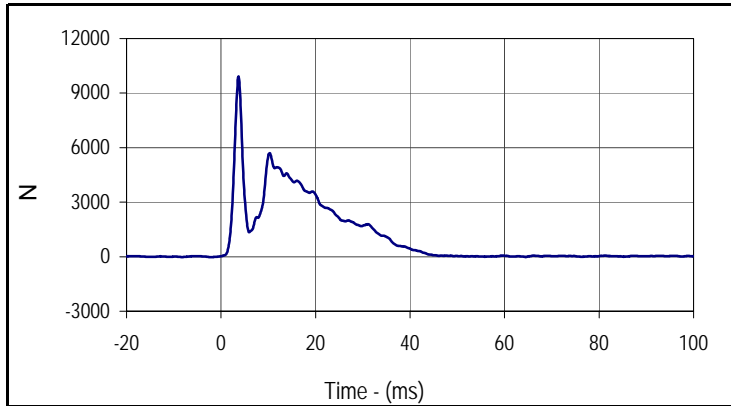
Curve Description			
Lower Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max	Time	Min	Time
48.3	29.8	-3.0	64.7

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

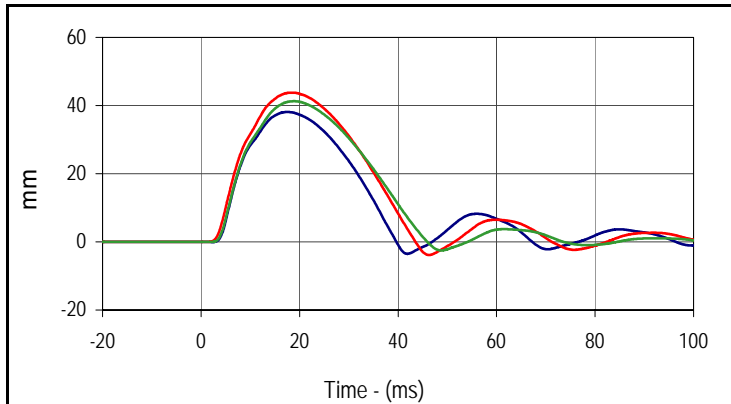
Test Date: 12/16/15
 Test I.D.: F037TH080



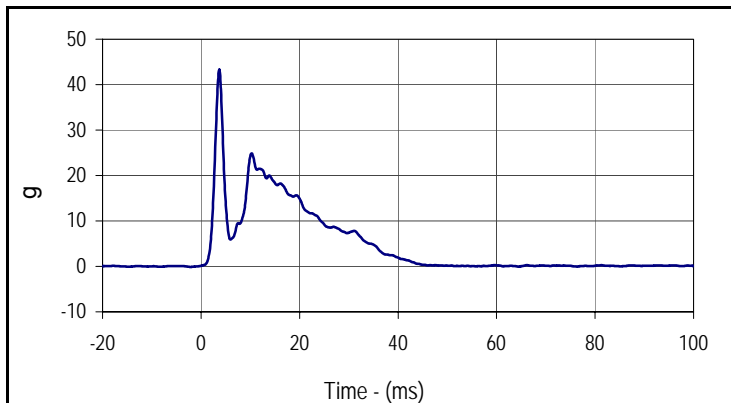
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	691	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.5	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.7	Pass
Peak Impactor Velocity	m/s	5.4 to 5.6	5.50	Pass
Peak Impactor Force	N	5100 to 6200	5700.5	Pass
	msec	> 6.0 msec	10.3	Pass
Peak Upper Rib Deflection	mm	34 to 41	38.1	Pass
Peak Middle Rib Deflection	mm	37 to 45	43.8	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
9919.2	3.7	-26.1	-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
38.1	17.5	-3.5	41.9
Max (Middle)	Time	Min (Middle)	Time
43.8	18.4	-3.9	46.3
Max (Lower)	Time	Min (Lower)	Time
41.3	18.9	-2.5	48.8



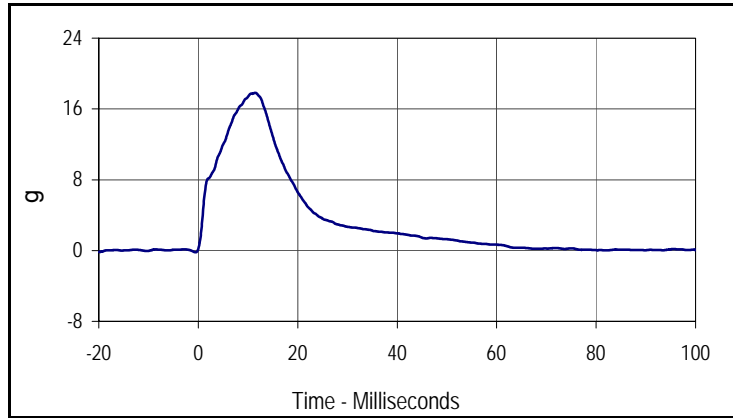
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
43.3	3.7	-0.1	-2.1

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

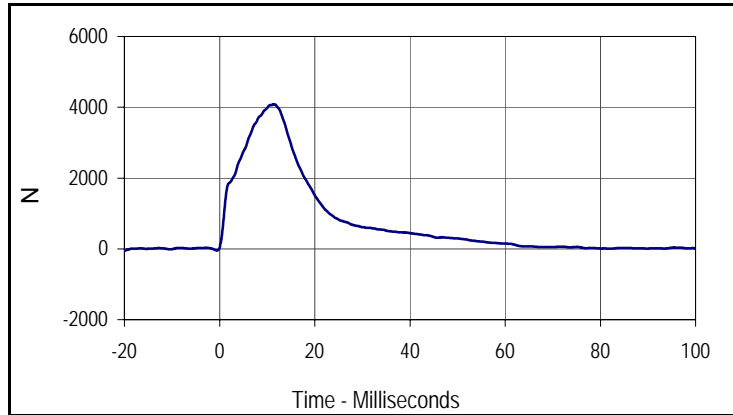
Test Date: 12/16/15
 Test I.D.: F037ABD080



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	761	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.5	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	21.5	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.7	Pass
Probe Velocity	m/s	3.9 to 4.1	4.04	Pass
Peak Impactor Force	N	4000 to 4800	4084.2	Pass
	msec	10.6 to 13.0	11.5	Pass
Sum of Abdominal Forces	N	2200 to 2700	2380.9	Pass
	msec	10.0 to 12.3	11.0	Pass
Overall Test Results				Pass



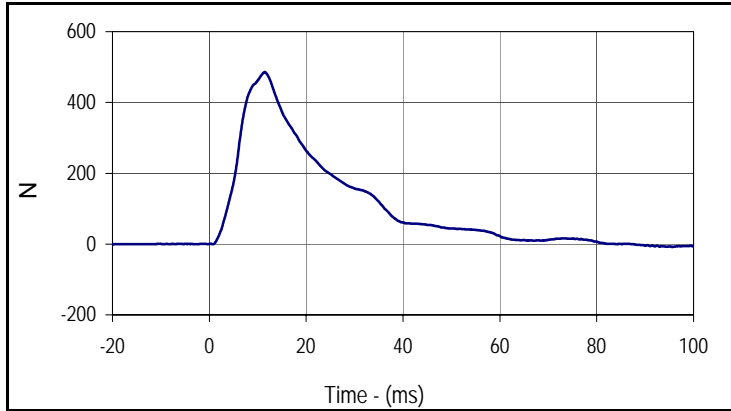
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	g
Max	Time	Min	Time
17.8	11.5	-0.2	-0.6



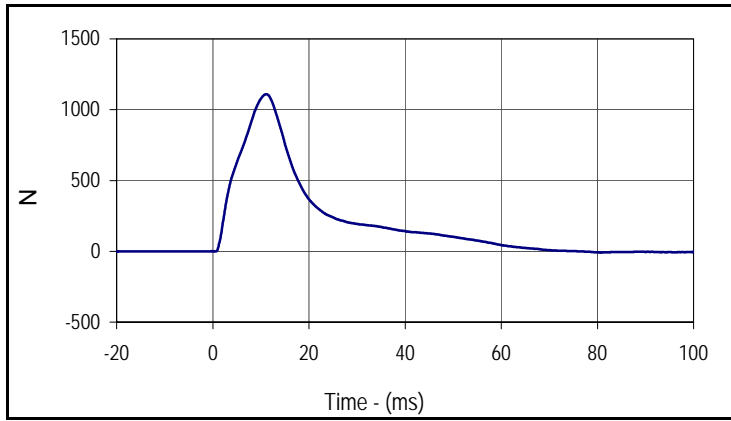
Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	N
Max	Time	Min	Time
4084.2	11.5	-46.4	-0.6

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

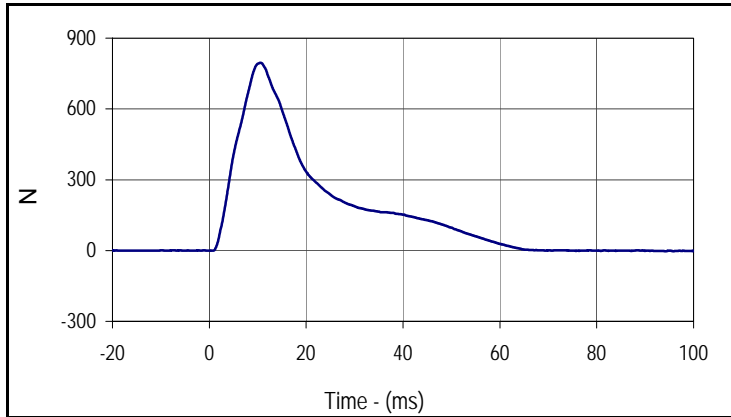
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 Test I.D.: F037ABD080



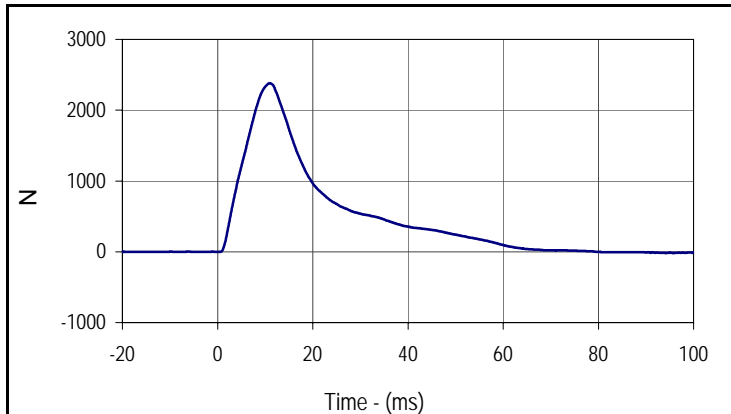
Curve Description			
Front Abdomen Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	N
Max	Time	Min	Time
486.0	11.5	-8.3	95.6



Curve Description			
Middle Abdomen Force			
Plot No.	Type	SAE Class	Units
004	FIL	600	N
Max	Time	Min	Time
1110.0	11.1	-9.0	80.8



Curve Description			
Rear Abdomen Force			
Plot No.	Type	SAE Class	Units
005	FIL	600	N
Max	Time	Min	Time
795.3	10.5	-3.5	110.3



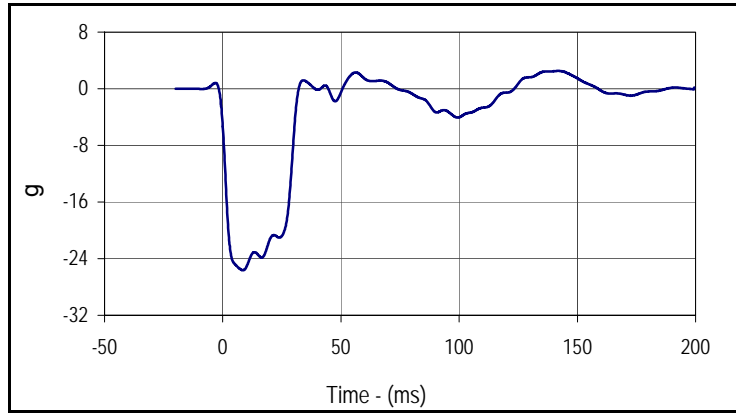
Curve Description			
Abdomen Sum Resultant			
Plot No.	Type	SAE Class	Units
006	RES	600	N
Max	Time	Min	Time
2380.9	11.0	-18.5	95.7

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

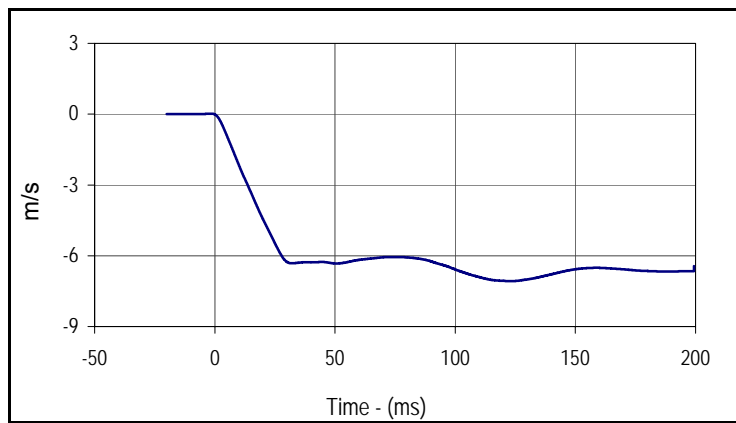
Test Date: 12/16/15
 Test I.D.: F037LB080



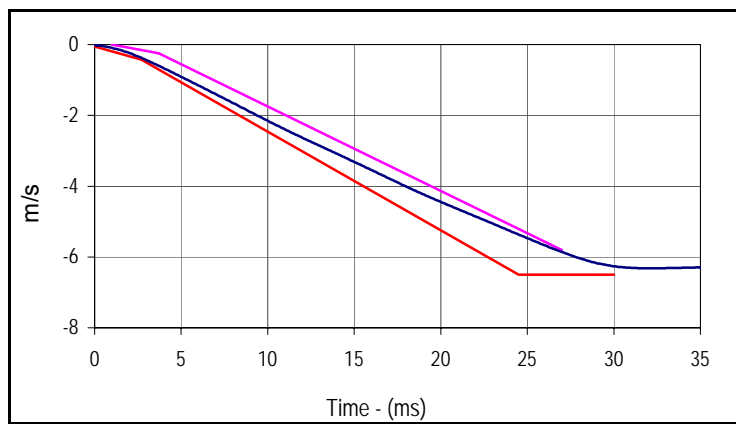
Tested Parameter	Units	Specification	Result	Pass/Fail
Lumbar Spine Assembly Soak Time	Minutes	≥240	836	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.5	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory 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	47.1	Pass
	Time	39 to 53	46.5	Pass
Time of Decay to Zero Angle from Peak	msec	37 to 57	39.8	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	g
Max	Time	Min	Time
2.5	142.5	-25.6	9.1



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.1	-7.1	123.9

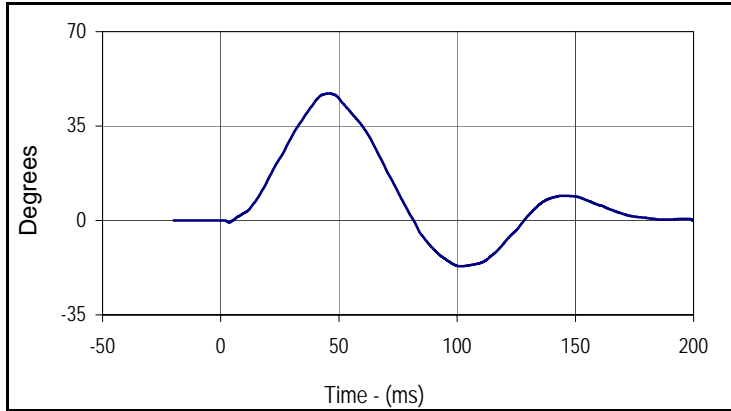


Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.1	-7.1	123.9

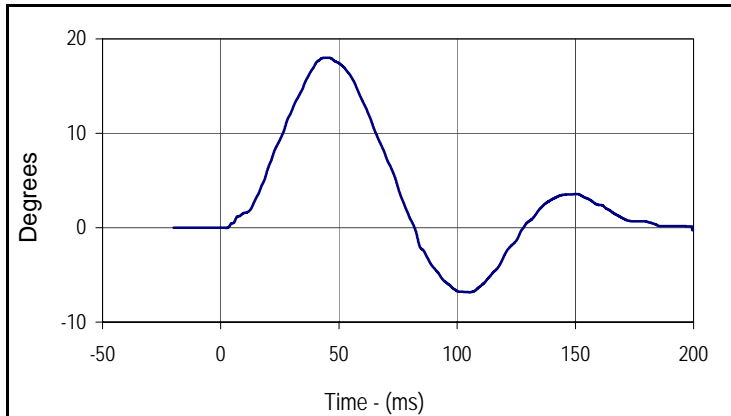
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.7	-0.24	2.7	-0.425
27.0	-5.80	24.5	-6.50
		30.0	-6.50

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

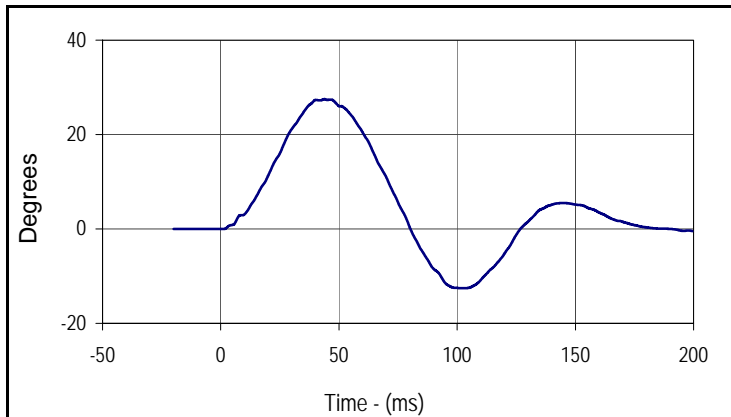
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 Test I.D.: F037LB080



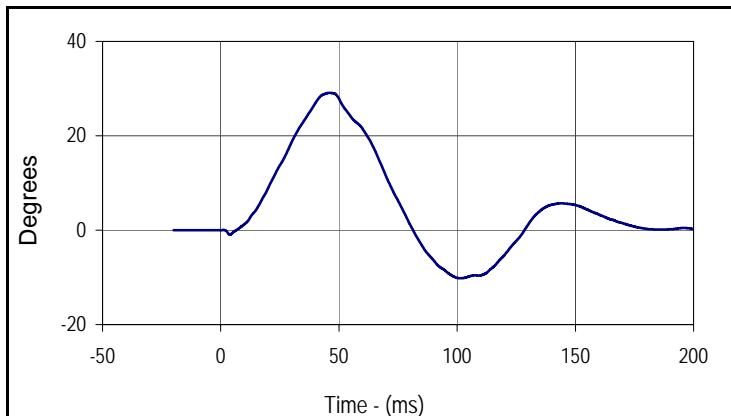
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
47.1	46.5	-17.0	102.1



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
18.0	46.2	-6.8	105.9



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
27.5	44.5	-12.6	102.5



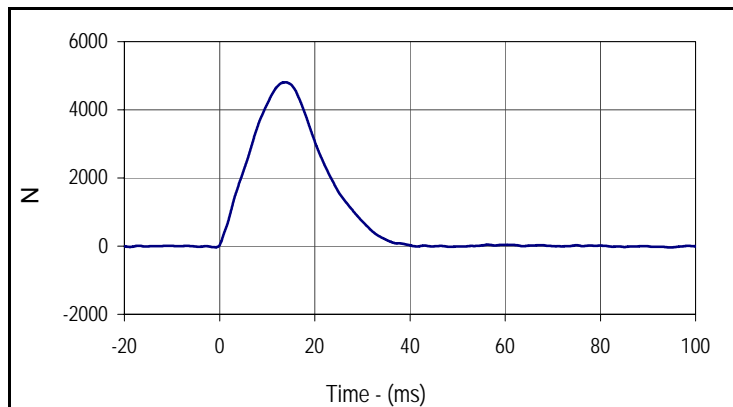
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
29.1	46.6	-10.2	102.0

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

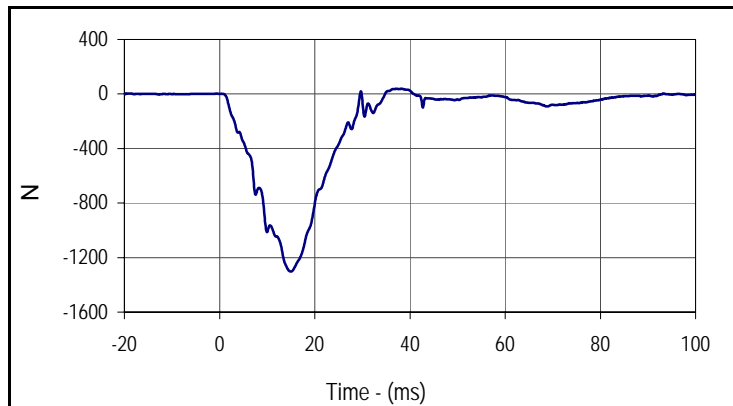
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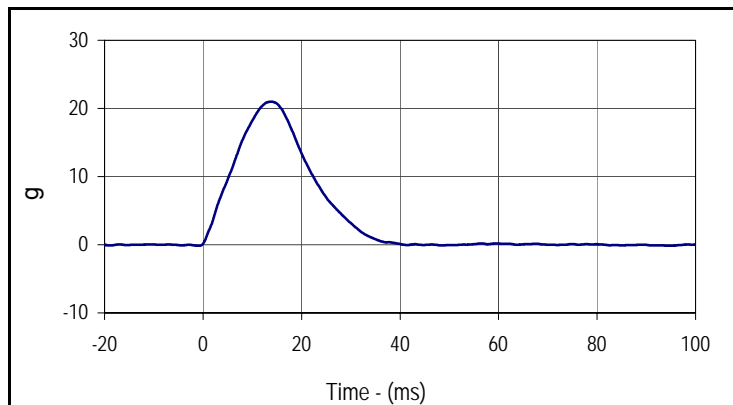
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	891	Pass
Temperature During Soak	Max	20.6 to 22.2	21.6	Pass
	Min		21.5	Pass
Humidity During Soak	Max	10.0 to 70.0	23.8	Pass
	Min		23.7	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity 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	4812.2	Pass
	msec	11.8 to 16.1	13.9	Pass
Peak Pubic Symphysis Load	N	-1230 to -1590	-1302.4	Pass
	msec	12.2 to 17.0	14.9	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	N
Max	Time	Min	Time
4812.2	13.9	-37.1	94.6



Curve Description			
Pubic Symphysis Force Y			
Plot No.	Type	SAE Class	Units
002	FIL	600	N
Max	Time	Min	Time
37.7	38.4	-1302.4	14.9



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
21.0	13.9	-0.2	94.6

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

Test Date: 12/17/15
 Test I.D.: N/A



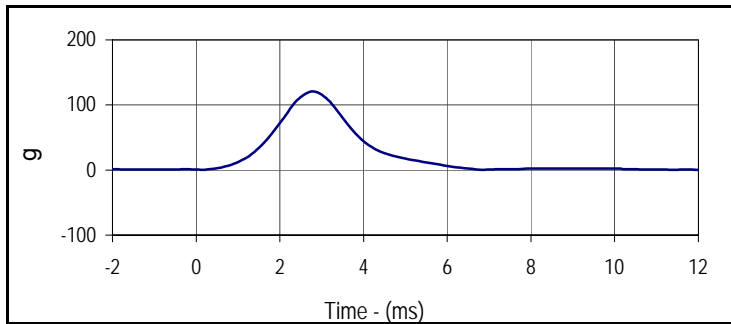
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	23	Pass
A Sitting Height	mm	772 - 788	778	Pass
B Shoulder Pivot Height	mm	437 - 453	443	Pass
C H-Point Height	mm	79 - 89	85	Pass
D H-Point from Seatback	mm	141 - 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

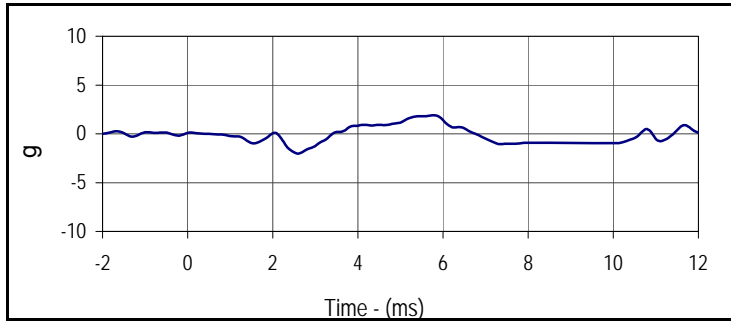
Test Date: 12/17/15
 Test I.D.: 307HD089



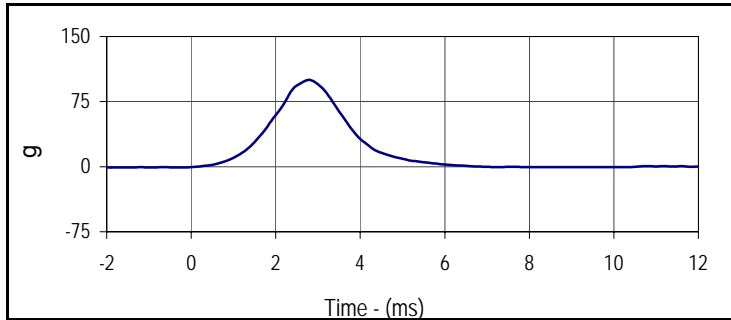
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	422	Pass
Temperature During Soak	Max	18.9 to 25.6	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.4	Pass
	Min		23.3	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.3	Pass
Peak Head Resultant Acceleration	g	115 to 137	120.9	Pass
Peak Head X Acceleration	g	<15	2.0	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	1.0	Pass
Overall Test Results				Pass



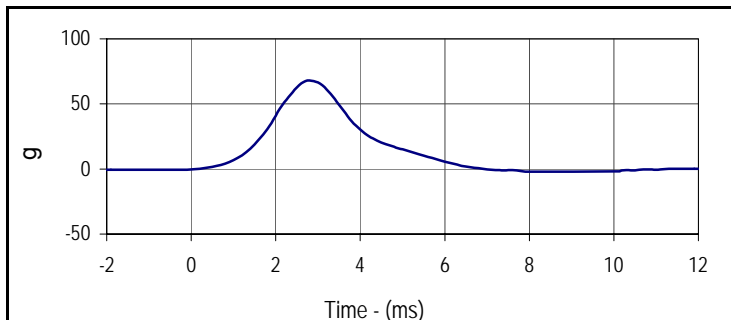
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
120.9	2.8	0.2	11.4



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	g
Max	Time	Min	Time
1.9	5.8	-2.0	2.6



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
100.1	2.8	-1.0	-5.0



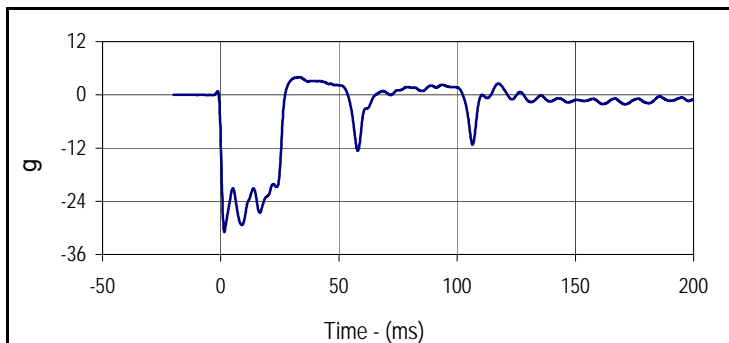
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
67.9	2.8	-2.1	8.0

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

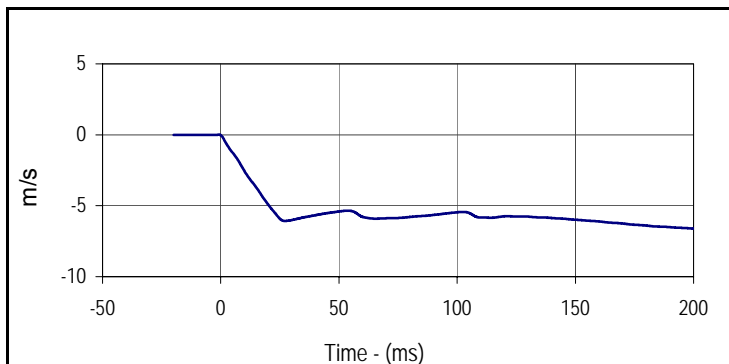
Test Date: 12/17/15
 Test I.D.: 307NB089



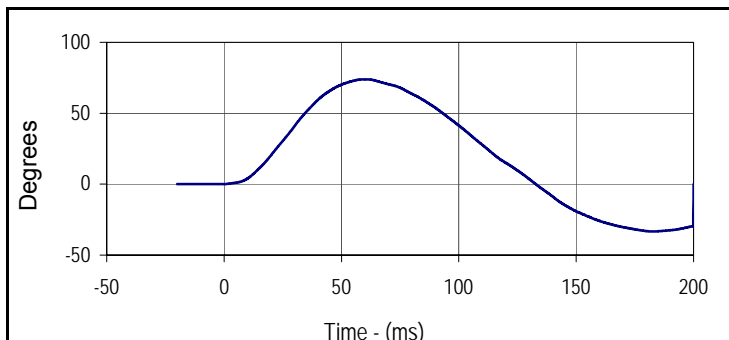
Tested Parameter	Units	Specification	Result	Pass/Fail	
Neck Assembly Soak Time	Minutes	≥240	467	Pass	
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass	
	Min		21.2	Pass	
Humidity During Soak	Max	10.0 to 70.0	23.4	Pass	
	Min		23.3	Pass	
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass	
Laboratory Humidity During Test	%	10.0 to 70.0	23.4	Pass	
Pendulum Velocity	m/s	5.51 to 5.63	5.53	Pass	
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.55	Pass
	15 msec	m/s	-3.30 to -4.10	-3.70	Pass
	20 msec	m/s	-4.40 to -5.40	-4.90	Pass
	25 msec	m/s	-5.40 to -6.10	-5.92	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.07	Pass
D-Plane Rotation	Max	Degrees	71 to 81	73.9	Pass
	Time	msec	50 to 70	59.7	Pass
Peak Occipital Condyle Moment	Nm	-36 to -44	-39.4	Pass	
Decaying Moment Time to Cross 0 Nm	msec	102 to 126	107.9	Pass	
Overall Test Results				Pass	



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



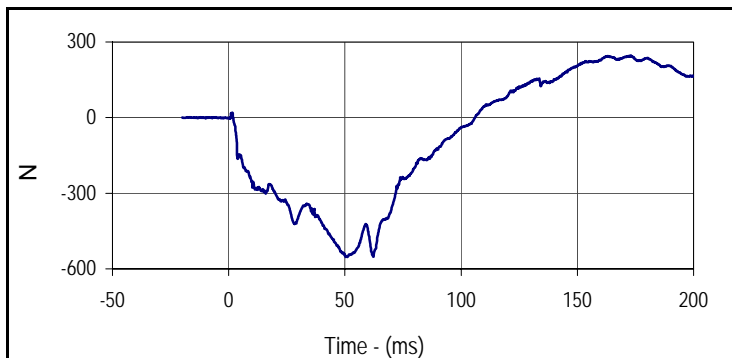
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.8	-6.6	199.9



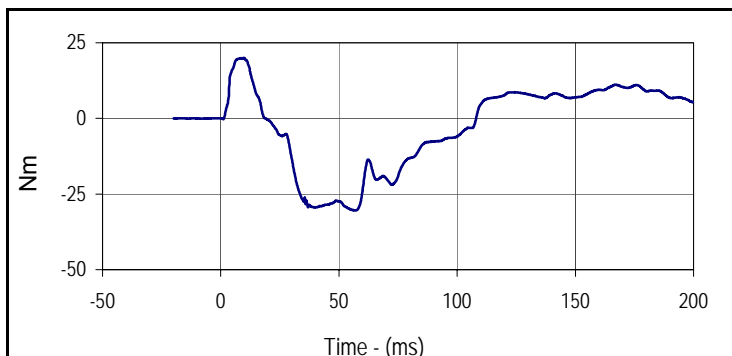
Curve Description			
D-Plane Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
73.9	59.7	-33.3	182.8

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

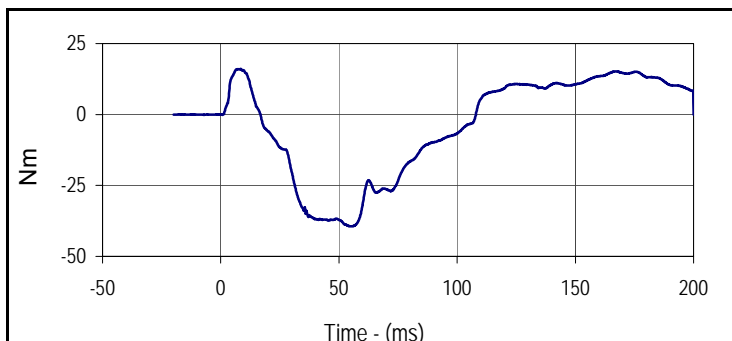
Test Date: 12/17/15
 Test I.D.: 307NB089



Curve Description			
Neck Force Y			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
246.1	172.9	-552.7	50.3



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



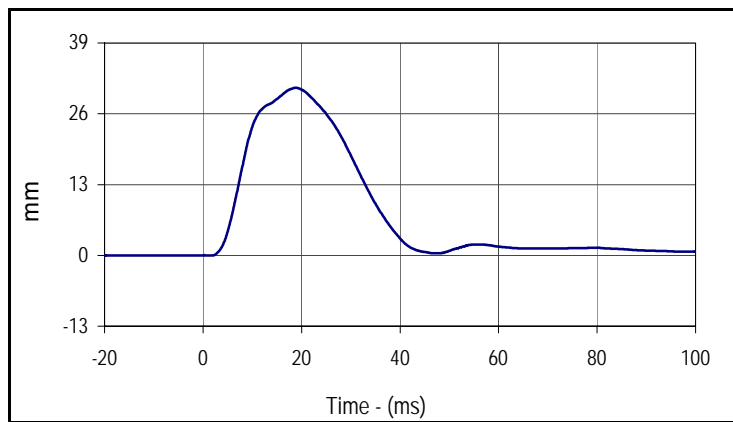
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
006	FIL	600	Nm
Max	Time	Min	Time
16.0	8.3	-39.4	54.9

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

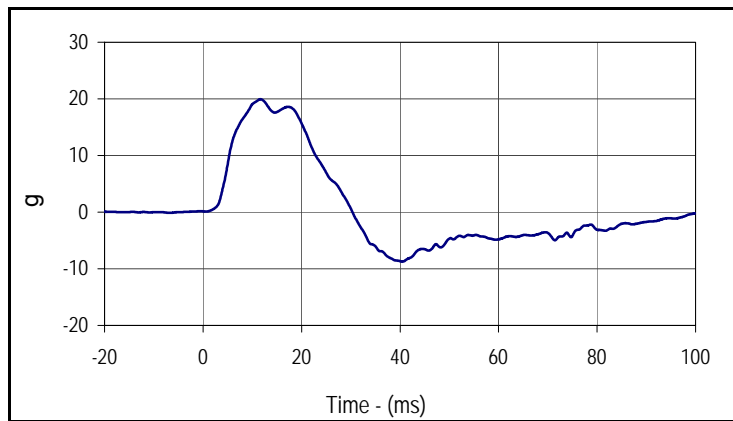
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 Test I.D.: 307SH089



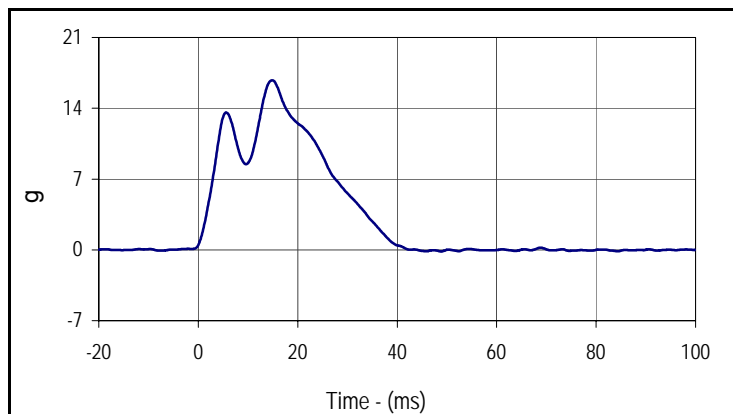
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	522	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.4	Pass
	Min		23.3	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.3	Pass
Impactor Velocity	m/s	4.20 to 4.40	4.33	Pass
Peak Shoulder Deflection	mm	28 to 37	30.8	Pass
Peak Lateral Spine Acceleration Y	g	17 to 22	19.9	Pass
Peak Impactor Acceleration	g	13 to 18	16.8	Pass
Overall Test Results			Pass	



Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
30.8	18.9	0.0	-15.1



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
19.9	11.7	-8.7	40.4



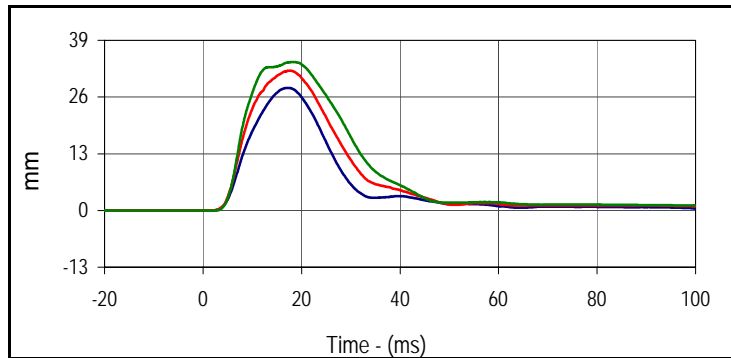
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
16.8	14.9	-0.2	48.8

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

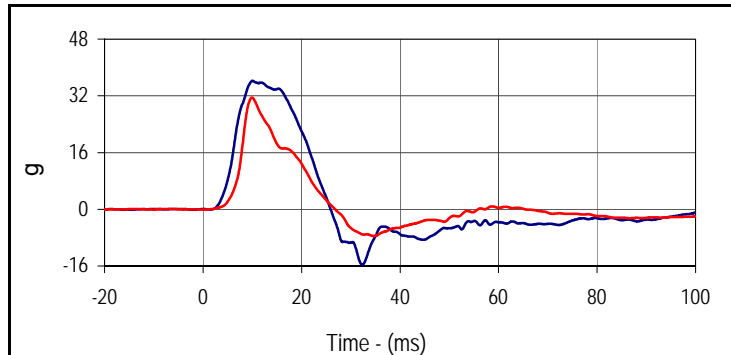
Test Date: 12/17/15
 Test I.D.: 307TWA089



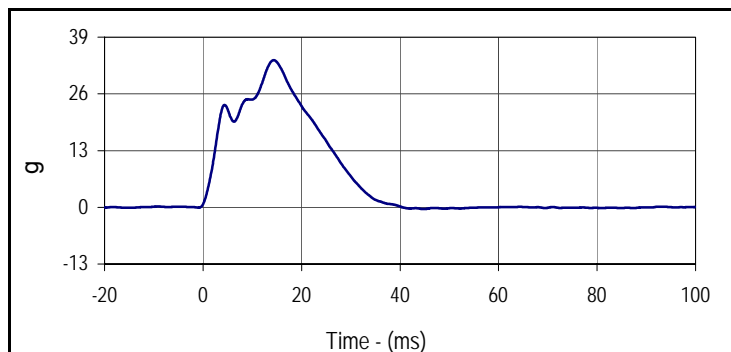
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	567	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.4	Pass
	Min		23.3	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.4	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.69	Pass
Peak Shoulder Deflection	mm	31 to 40	36.1	Pass
Peak Upper Thorax Rib Deflection	mm	25 to 32	28.1	Pass
Peak Middle Thorax Rib Deflection	mm	30 to 36	32.0	Pass
Peak Lower Thorax Rib Deflection	mm	32 to 38	34.0	Pass
Peak Upper Spine Y Acceleration	g	34 to 43	36.2	Pass
Peak Lower Spine Y Acceleration	g	29 to 37	31.5	Pass
Peak Impactor Acceleration	g	30 to 36	33.7	Pass
Overall Test Results				Pass



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
28.1	17.3	0.0	-9.6
Middle Thorax Deflection			
Max	Time	Min	Time
32.0	17.6	0.0	-14.4
Lower Thorax Deflection			
Max	Time	Min	Time
34.0	18.1	0.0	-12.6



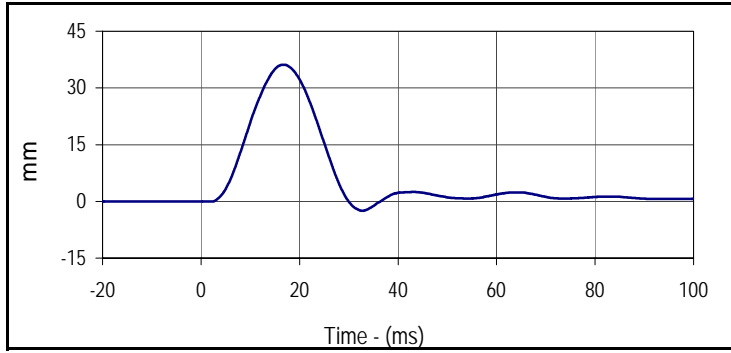
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
36.2	10.0	-15.6	32.3
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	g
Max	Time	Min	Time
31.5	9.9	-7.5	34.6



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	g
Max	Time	Min	Time
33.7	14.3	-0.4	44.7

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

Test Date: 12/17/15
 Test I.D.: 307TWA089



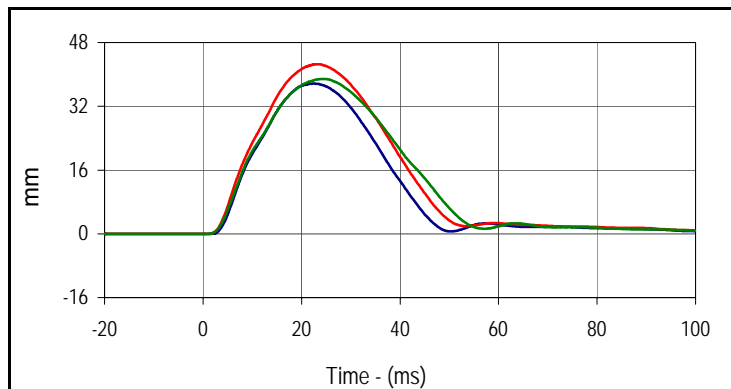
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	mm
Max	Time	Min	Time
36.1	16.9	-2.5	32.6

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

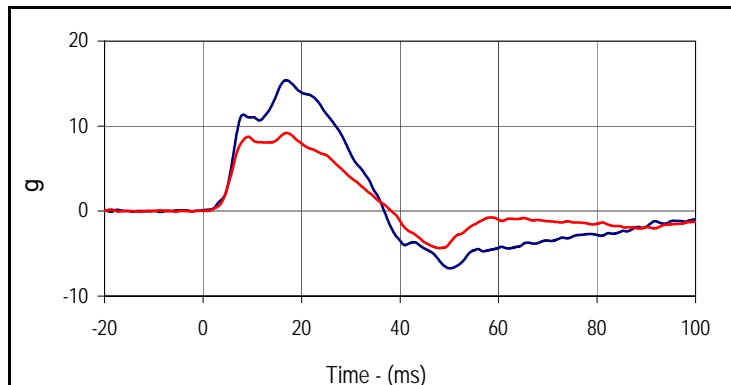
Test Date: 12/17/15
 Test I.D.: 307TWOA089



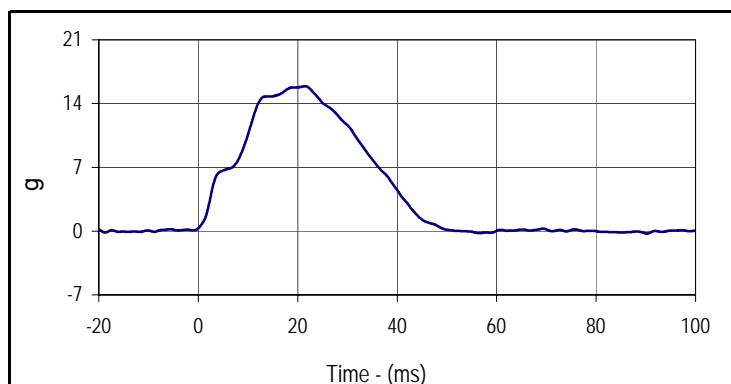
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	622	Pass
Temperature During Soak	Max	18.9 to 25.6	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.4	Pass
	Min		23.3	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.3	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.31	Pass
Peak Upper Thorax Rib Deflection	mm	32 to 40	37.7	Pass
Peak Middle Thorax Rib Deflection	mm	39 to 45	42.6	Pass
Peak Lower Thorax Rib Deflection	mm	35 to 43	38.9	Pass
Peak Upper Spine Y Acceleration	g	13 to 17	15.4	Pass
Peak Lower Spine Y Acceleration	g	7 to 11	9.2	Pass
Peak Impactor Acceleration	g	14 to 18	15.9	Pass
Overall Test Results				Pass



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
37.7	22.5	0.0	-20.0
Middle Thorax Deflection			
Max	Time	Min	Time
42.6	23.3	0.0	-10.4
Lower Thorax Deflection			
Max	Time	Min	Time
38.9	24.2	0.0	-15.5



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
15.4	16.9	-6.7	50.1
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	g
Max	Time	Min	Time
9.2	16.9	-4.3	48.0



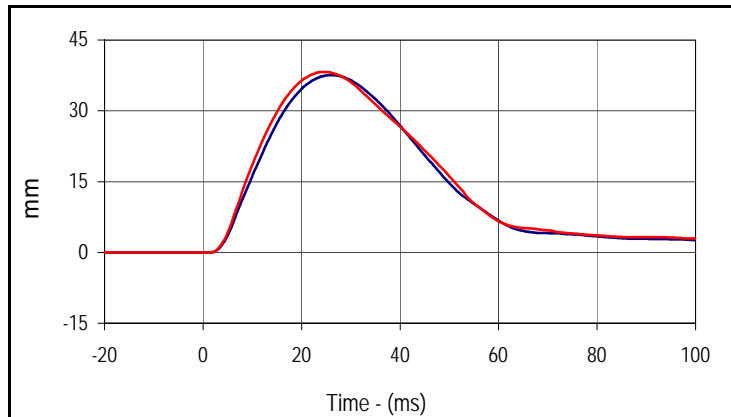
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	g
Max	Time	Min	Time
15.9	21.5	-0.3	90.2

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

Test Date: 12/17/15
 Test I.D.: 307ABD089

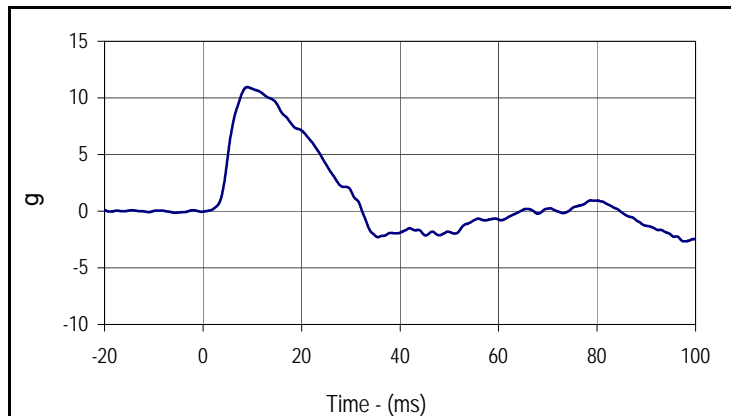


Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	677	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.4	Pass
	Min		23.3	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.4	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.32	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	37.5	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	38.2	Pass
Peak Lower Spine Y Acceleration	g	9 to 14	11.0	Pass
Peak Impactor Acceleration	g	12 to 16	14.1	Pass
Overall Test Results				Pass

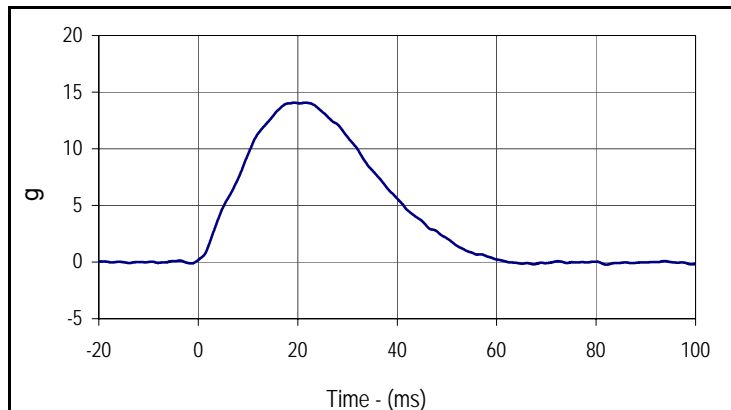


Curve Description			
Upper Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
37.5	26.2	0.0	-17.1

Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	mm
Max	Time	Min	Time
38.2	24.5	0.0	-16.2

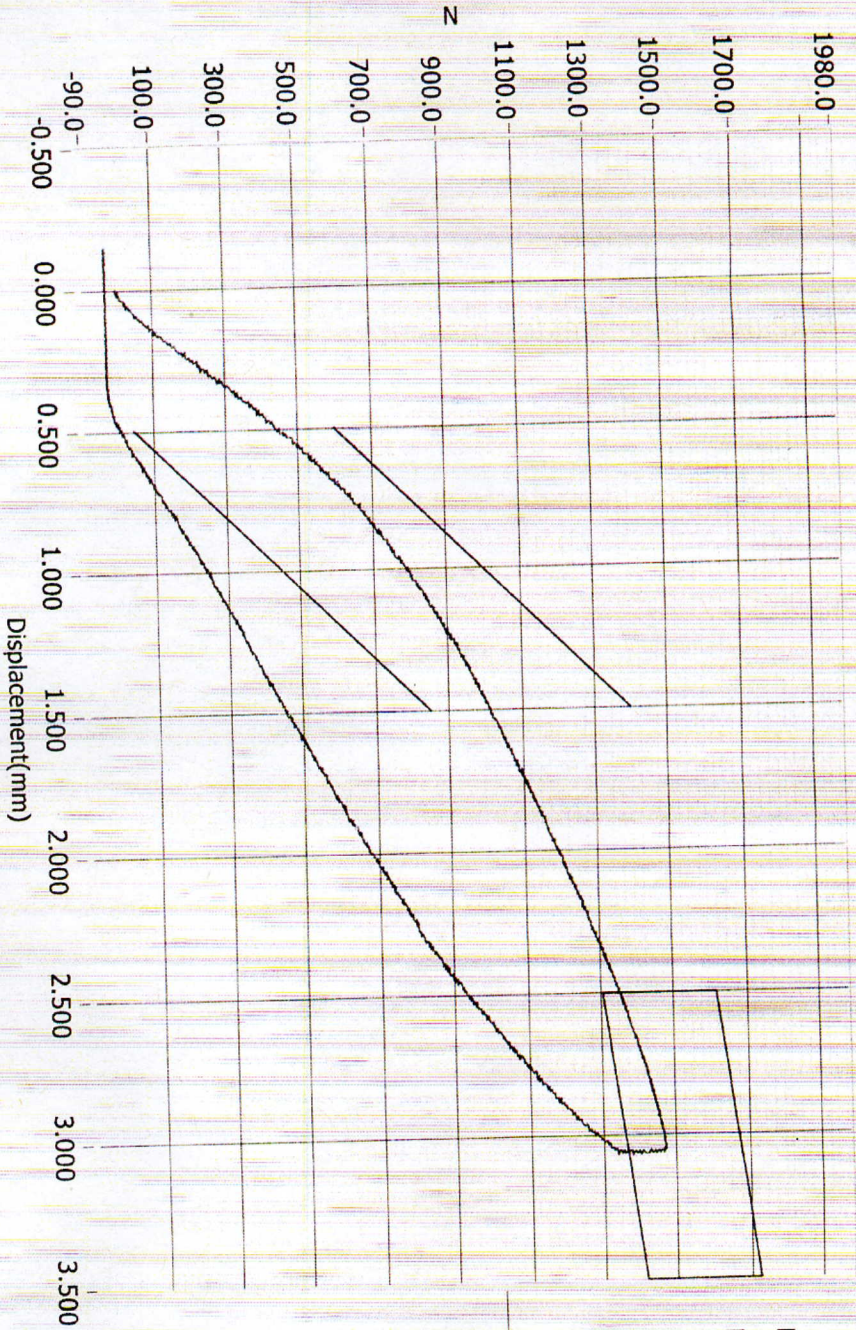


Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
11.0	8.9	-2.7	97.6



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
14.1	21.5	-0.2	82.1

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

1466N

ATD Calibration Lab

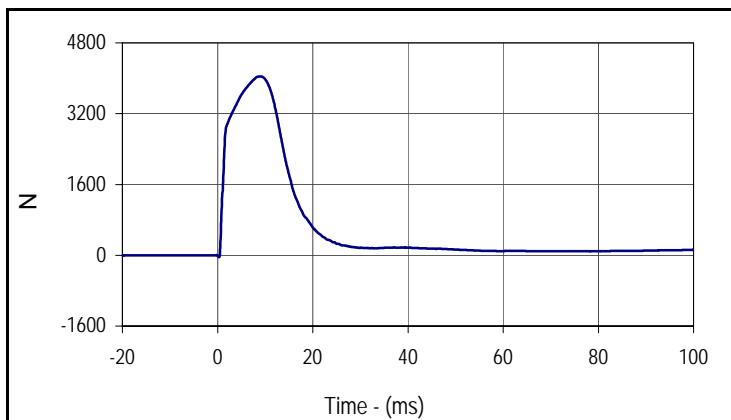
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	N/A	SIDIIs	
Current Date : 12/13/2013		Current Time : 16:58:40	

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

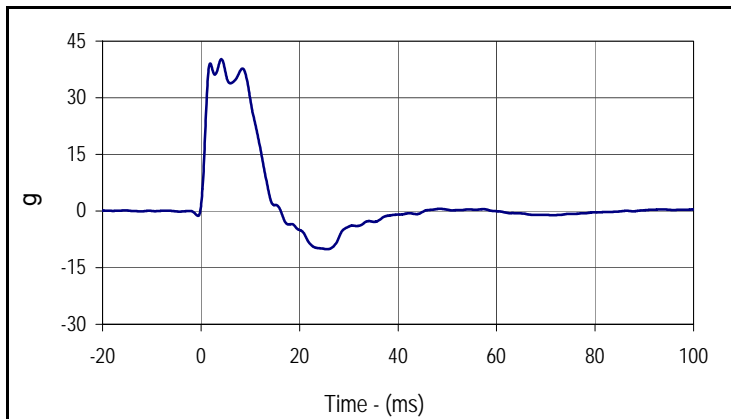
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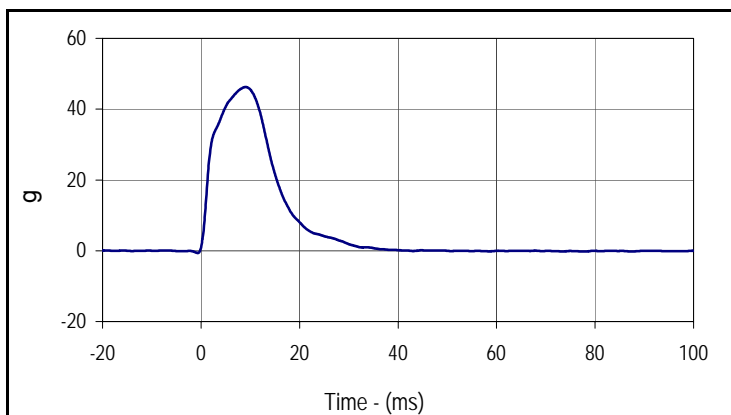
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	727	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.4	Pass
	Min		23.3	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.3	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.71	Pass
Peak Acetabulum Force Y	N	3600 to 4300	4041.0	Pass
Peak Pelvis Y Acceleration After 6 msec.	g	34 to 42	37.7	Pass
Peak Impactor Acceleration	g	38 to 47	46.2	Pass
Overall Test Results				Pass



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
4041.0	9.0	-46.0	0.3



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
40.2	4.1	-10.1	25.6



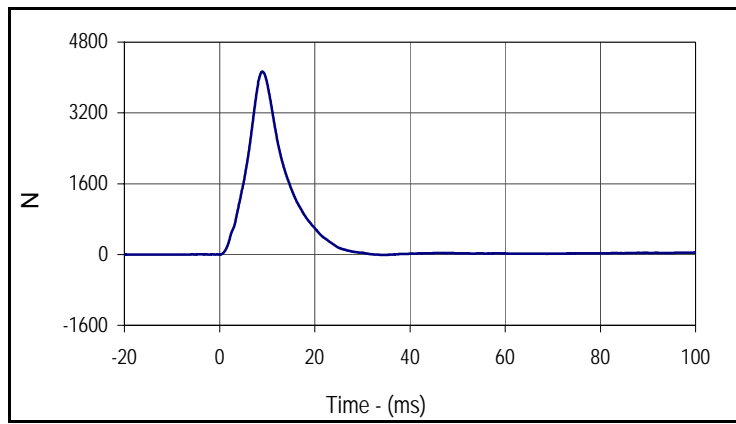
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
46.2	9.1	-0.7	-0.7

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

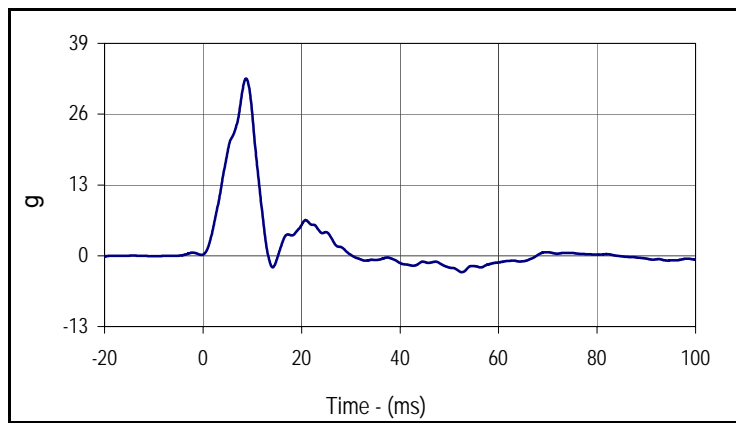
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 Test I.D.: 307PL089



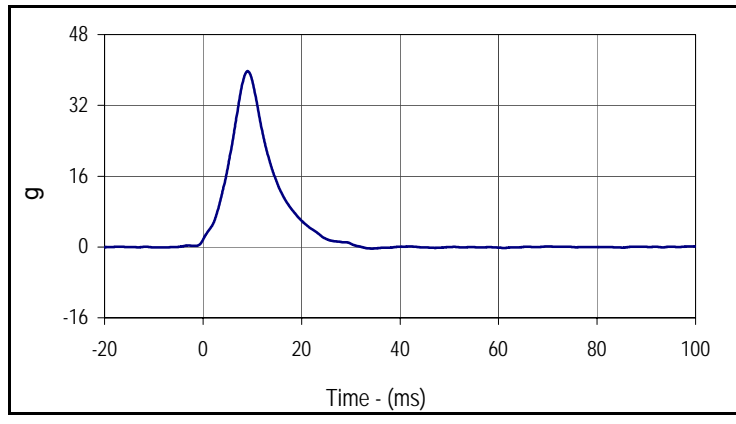
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	782	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	23.4	Pass
	Min		23.3	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	23.3	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.37	Pass
Peak Iliac Force	N	4100 to 5100	4131.7	Pass
Peak Pelvis Y Acceleration	g	28 to 39	32.5	Pass
Peak Impactor Acceleration	g	36 to 45	39.7	Pass
Overall Test Results				Pass



Curve Description			
Pelvis Iliac Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
4131.7	9.0	-7.7	34.1



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
32.5	8.7	-3.0	52.5



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
39.7	9.0	-0.4	34.3

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	6/21/15
	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)			70816	FTSS	12/13/13	
Pelvis Plug (Non-Struck Side)			70740	FTSS	12/12/13	

TABLE 3 – Vehicle Instrumentation

Vehicle Instrumentation			Serial Number	Manufacturer	Calibration Date
1	Vehicle Center of Gravity	X	A159438	MSI	7/8/15
	Vehicle Center of Gravity	Y	A148184	MSI	7/8/15
	Vehicle Center of Gravity	Z	A160354	MSI	7/8/15
2	Right Sill at Front Seat	X	A160710	MSI	7/8/15
	Right Sill at Front Seat	Y	A160697	MSI	7/8/15
	Right Sill at Front Seat	Z	A159427	MSI	7/8/15
3	Right Sill at Rear Seat	X	A145954	MSI	7/8/15
	Right Sill at Rear Seat	Y	A160725	MSI	7/8/15
	Right Sill at Rear Seat	Z	A148280	MSI	7/8/15
4	Left Sill at Front Door	Y	A148282	MSI	7/8/15
5	Left Sill at Rear Door	Y	A145481	MSI	7/7/15
6	Left A-Post Lower	Y	A145968	MSI	7/7/15
7	Left A-Post Middle	Y	A148195	MSI	7/7/15
8	Left B-Post Lower	Y	A148205	MSI	7/7/15
9	Left B-Post Middle	Y	A148331	MSI	7/8/15
10	Front Seat Track	Y	A148312	MSI	7/7/15
11	Rear Seat Structure	Y	A148280	MSI	7/7/15
12	Right Rear Occ. Compartment	Y	N/A	N/A	N/A
13	Engine Block	X	A145930	MSI	7/8/15
	Engine Block	Y	A145927	MSI	7/8/15
14	Rear Floorpan Above Axle	X	A147392	MSI	7/7/15
	Rear Floorpan Above Axle	Y	A145445	MSI	7/7/15
	Rear Floorpan Above Axle	Z	A160687	MSI	7/8/15

TABLE 4 – MDB Instrumentation

		Serial Number	Manufacturer	Calibration Date
MDB Center of Gravity	X	A159400	MSI	7/8/15
MDB Center of Gravity	Y	A145925	MSI	7/8/15
MDB Center of Gravity	Z	A145993	MSI	7/8/05
Left Frame at Rear Axle Centerline	X	A159442	MSI	7/8/15
Left Frame at Rear Axle Centerline	Y	A152837	MSI	7/8/15