REPORT NUMBER: SINCAP-KAR-16-002

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

FCA US LLC.

2016 JEEP PATRIOT SPORT 5-DOOR MPV

NHTSA No: M20160309

PREPARED BY:

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9270 HOLLY ROAD

ADELANTO, CA 92301

OCTOBER 21, 2015

FINAL REPORT

PREPARED FOR:

U.S. DEPARTMENT OF TRANSPORTATION

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

OFFICE OF CRASHWORTHINESS STANDARDS

MAIL CODE: NVS-111

1200 NEW JERSEY AVE, SE, ROOM W43-410

WASHINGTON, D.C. 20590

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Date: _____

_____

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NHTSA, Office of Crashworthiness Standards

Date: _____

TECHNICAL REPORT DOCUMENTATION PAGE

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
SINCAP-KAR-16-002		

4. Title and Subtitle	5. Report Date
Final Report of New Car Assessment Program Side Impact MDB Testing of a 2016 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309	October 21, 2015
	6. Performing Organization Code KAR
7. Authors Mr. Robert S. Ramos, Project Engineer, KARCO Mr. Frank Richardson, Program Manager, KARCO	**8. Performing Organization Report No.** TR-P35003-03-NC
9. Performing Organization Name and Address KARCO Engineering, LLC. 9270 Holly Rd. Adelanto, CA 92301	**10. Work Unit No.**
	11. Contract or Grant No. DTNH22-14-00355
12. Sponsoring Agency Name and Address U. S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards (NVS-111) 1200 New Jersey Ave., SE, Room W43-410 Washington, D.C. 20590	**13. Type of Report and Period Covered** Final Test Report, October 7 - 21, 2015
	14. Sponsoring Agency Code NVS-111

15. Supplementary Notes

16. Abstract

A 55/28 km/h 90° Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2016 Jeep Patriot Sport 5-door MPV in accordance with the specifications of the Office of Crash Worthiness Standards Test Procedure for the generation of consumer information on vehicle side crash protection. The test was conducted at the KARCO Engineering, LLC. facility in Adelanto, California on October 7, 2015.

The impact velocity of the Moving Deformable Barrier was 61.75 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 24.4° C. The target vehicle's maximum post-test static crush was 175 mm located at level 3. The test vehicle's occupant performance data is as follows:

Measurement Description	Driver ATD (ES-2re)		
	Units	IARV	Result
Head Injury Criteria (HIC_{36})		1000	98.0
Maximum Thoracic Rib Deflection	mm	44	22
Total Abdominal Force	N	2500	571
Pubic Symphysis Force	N	6000	1116

Measurement Description	Passenger ATD (SID-IIs)		
	Units	IARV	Result
Head Injury Criteria (HIC_{36})		1000	258.7
Resultant Lower Spine Acceleration	g	82	57
Total Pelvic Force (Sum of Acetubular and Iliac Forces)	N	5525	3599
Maximum Thoracic Rib Deflection	mm	38*	34
Maximum Abdominal Rib Deflection	mm	45*	25

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

** Proposed IARV*

17. Key Words		18. Distribution Statement	
New Car Assessment Program (NCAP) Side Impact Moving Deformable Barrier (MDB) ES-2re SID-IIs		Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division, NPO-411 1200 New Jersey Ave., SE Washington, DC 20590 e-mail: tis@nhtsa.dot.gov FAX 202-493-2833	
19. Security Classification of this report	**20. Security Classification of this page**	**21. No. of Pages**	**22. Price**
UNCLASSIFIED	UNCLASSIFIED	161	

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SECTION 1
TEST PURPOSE AND PROCEDURE

This moving deformable barrier side impact test is part of the MY2016 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract number DTNH22-14-00355. The purpose of this test is to generate comparative side impact performance in a 2016 Jeep Patriot Sport 5-Door MPV. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated September 2013.

SECTION 2
SUMMARY OF TEST RESULTS

A 2016 Jeep Patriot Sport 5-door MPV was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 61.75 km/h (38.37 mph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by KARCO Engineering, LLC. in Adelanto, California, on October 7, 2015. Pre- and post-test photographs of the test vehicle, the MDB and the dummies (ES-2re and SID-IIs) are included in Appendix A of this report.

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

The dummy was instrumented in the following manner:

DRIVER ATD (ES-2re)
Primary and redundant head CG tri-axial accelerometers
Chest upper rib, middle rib and lower rib y-axis displacement potentiometers
Abdomen forward, middle, and rear y-axis load cells
Lower spine (12) tri-axial accelerometers
Pubic symphysis y-axis load cell

PASSENGER ATD (SID-IIs)
Primary and redundant head CG tri-axial accelerometers
Chest upper rib, middle rib and lower rib y-axis displacement potentiometers
Abdomen upper rib and lower rib y-axis displacement potentiometers
Lower spine (12) tri-axial accelerometers
Acetabulum and iliac wing y-axis load cells

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

Dummy injury readings were recorded as follows:

Measurement Description	Units	Driver ATD (ES-2re)	
		Threshold	Result
Head Injury Criteria (HIC_{36})		1000	98.0
Maximum Thoracic Rib Deflection	mm	44	22
Combined Abdominal Force	N	2500	571
Pubic Symphysis Force	N	6000	1116

Measurement Description	Units	Passenger ATD (SID-IIs)	
		Threshold	Result
Head Injury Criteria (HIC_{36})		1000	258.7
Lower Spine (T12) Resultant Acceleration	g	82	57
Total Pelvic Force (sum of acetabular and iliac forces	N	5525	3599
Maximum Thoracic Rib Deflection	mm	38*	34
Maximum Abdominal Rib Deflection	mm	45*	25

**Proposed IARV*

Supplemental restraint information is given below:

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

GENERAL COMMENTS

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

SECTION 3

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2016 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309

Test Program: NCAP MDB Side Impact Test Test Date: 10/07/15

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	^oF	^oC	=(Tf -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 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309

Test Program: NCAP MDB Side Impact Test Test Date: 10/07/15

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	M20160309
Model Year	2016
Make	Jeep
Model	Patriot Sport
Body Style	5-Door MPV
VIN	1C4NJPBB9GD519061
Body Color	Billet Silver Metallic
Odometer Reading (km / mi)	164 / 102
Engine Displacement (L)	2.4
Type / No. of Cylinders	Inline 4
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	6
Overdrive	Yes
Final Drive	Front
Roof Rack	Yes
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 Pretensione	No
Driver Load Limiter	Yes
Rear Pass. Load Limiter	No
Other Safety Restraint	No

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

DATA FROM CERTIFICATION LABEL

Manufactured By	FCA US LLC.
Date of Manufacture	Aug-15
Vehicle Type	MPV

GVWR (kg)	2012
GAWR Front (kg)	1080
GAWR Rear (kg)	1044

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity	2	3		5	
Capacity Weight (VCW) (kg)				419.0	*A*
DSC x 68.04 (kg)				340.2	*B*
Cargo Weight (RCLW) (kg)				78.8	*A-B*

VEHICLE SEAT TYPE

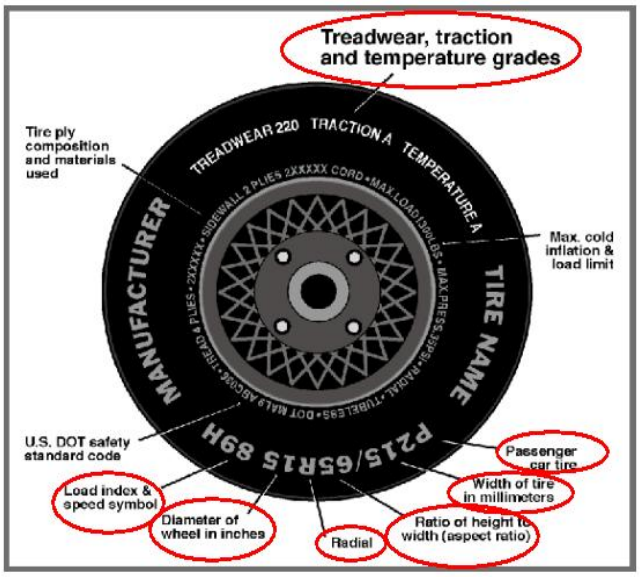
Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						w/ Lever	w/ Knob
Front Seat	Yes					Yes	
Rear or Second Row Seat			Yes		Yes		
Third Row Seat							

DATA SHEET NO. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2016 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309

Test Program: NCAP MDB Side Impact Test Test Date: 10/07/15



Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	300	300
Cold Pressure (kPa)	240	240
Recommended Tire Size	P205/70R16	P205/70R16
Tire Size on Vehicle	P205/70R16	P205/70R16
Tire Manufacturer	Goodyear	Goodyear
Tire Model	Eagle LS	Eagle LS
Treadware	400	400
Traction Grade	A	A
Temperature Grade	B	B
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 2 Steel	2 Polyester, 2 Steel
Load Index/Speed Symbol	96T	96T
Tire Material	Polyester, Steel	Polyester, Steel
DOT Safety Code Left	M60W CUER 2915	M60W CUER 2915
DOT Safety Code Right	M60W CUER 2915	M60W CUER 2915

DATA SHEET NO. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2016 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309

Test Program: NCAP MDB Side Impact Test Test Date: 10/07/15

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	240	240	240	240
Tire Placard	kPa	240	240	240	240
Owner's Manual	kPa	240	240	240	240
As Tested	kPa	240	240	240	240

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	432.5	289.0		468.5	370.5		467.5	382.5	
Right	kg	422.5	310.0		435.5	375.5		428.0	378.5	
Ratio	%	58.8%	41.2%	100.0%	54.8%	45.2%	100.0%	54.1%	45.9%	100.0%
Total	kg	855.0	599.0	1454.0	904.0	746.0	1650.0	895.5	761.0	1656.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1454.0	A
Actual Weight of 2 P572 ATDs Used	kg	125.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	78.8	C
Calculated Vehicle Target Wt (TVTW)	kg	1657.8	A+B+C

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

TEST VEHICLE ATTITUDE AND CG

Measurement Description	Units	Fully Loaded	As Tested	Meets Requirement***
LF	mm	789	790	Yes
RF	mm	791	792	Yes
LR	mm	773	774	Yes
RR	mm	781	783	Yes
Vehicle CG (Aft of Front Axle)	mm	1211	1192	
Vehicle CG (Left (+)/Right (-) from Longitudinal Centerline)	mm	20	13	

***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 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309

Test Program: NCAP MDB Side Impact Test Test Date: 10/07/15

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Spare Tire	18.0
Rear Trunk Trim	7.0
Ballast / Equipment Added	92.3

Test Height Adjustable Setting (If Applicable)	

DATA SHEET NO. 2

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

Test Vehicle: 2016 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309

Test Program: NCAP MDB Side Impact Test Test Date: 10/07/15

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	14.2
Front Passenger Seat	Fixed	Fixed	14.7
Front Center Seat			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCRP Height (mm)	SCRP Height Position	SCRP Height (mm)		
				Rearmost	Mid Fore/Aft	Forwardmost
Driver Seat	14.2	590	Max	Fixed	Fixed	Fixed
			Mid	579	590	600
			Min	Fixed	Fixed	Fixed
Front Passenger Seat	14.7	605	Max	Fixed	Fixed	Fixed
			Mid	595	605	616
			Min	Fixed	Fixed	Fixed
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 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309

Test Program: NCAP MDB Side Impact Test Test Date: 10/07/15

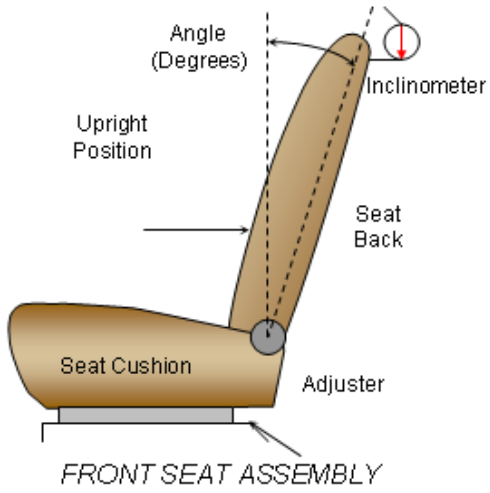
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position From Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	261	39	130	19
Front Passenger Seat	262	39	131	19
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	61.4	35	12.7	7
Front Passenger Seat	73.2	36	12.7	5
Front Center Seat				
Struck Side Rear Seat w/Seated Dummy	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed	Fixed

*Detent zero (0) is the forward most detent

DATA SHEET NO. 2 … (CONTINUED)

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

Test Vehicle: 2016 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309

Test Program: NCAP MDB Side Impact Test Test Date: 10/07/15

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

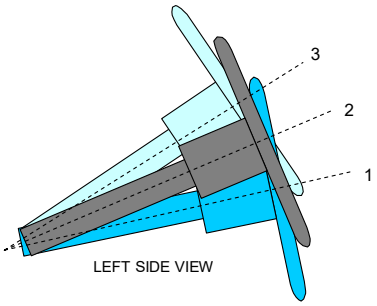
HEAD RESTRAINT ADJUSTMENT

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	4 (0-3) Vertical Adjustment	Full Up
Rear Seat	Fixed	Fixed

STEERING COLUMN ADJUSTMENT

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



STEERING COLUMN ASSEMBLY

	Degrees	Fore-Aft Position (mm)
Lowermost - Position 1	20.5	Fixed
Geometric Center - Position 2	23.8	Fixed
Uppermost - Position 3	27.1	Fixed
Telescoping Steering Wheel Travel		Fixed
Test Position	23.8	Fixed

DATA SHEET NO. 2 … (CONTINUED)

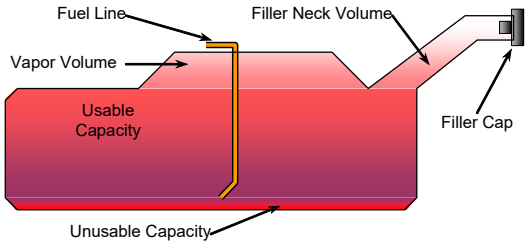
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

Test Vehicle: 2016 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309

Test Program: NCAP MDB Side Impact Test Test Date: 10/07/15

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.



VEHICLE FUEL TANK ASSEMBLY

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	51.48
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	47.87
Actual amount of Solvent Used in Test	47.84
1/3 of Usable Capacity	17.16

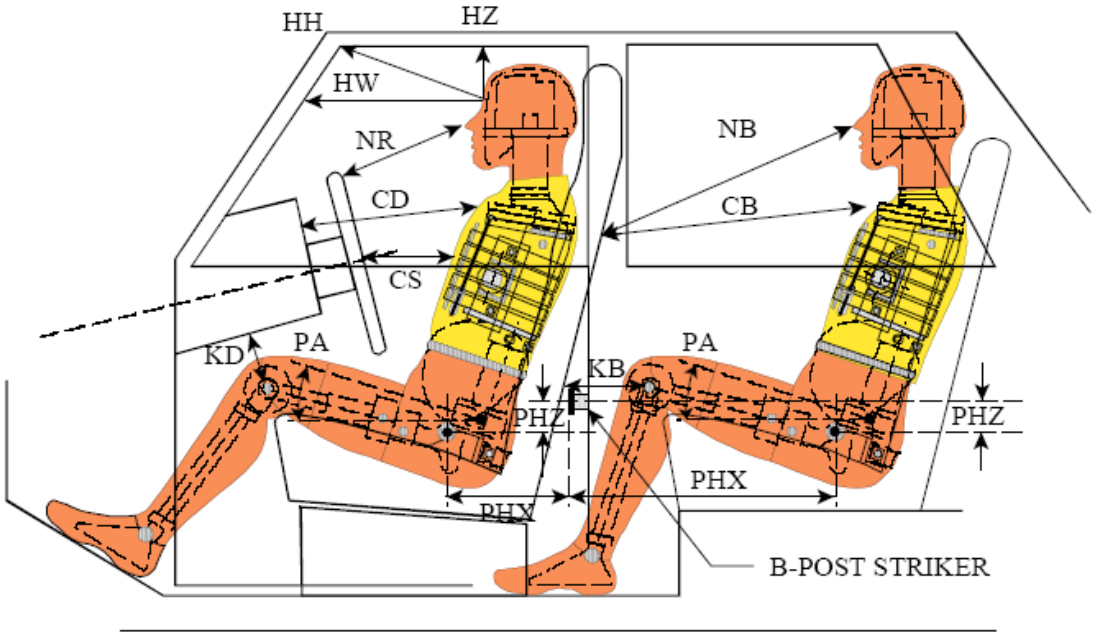
Is the Actual Amount of Solvent Used in the test equal to 93% ± 1% of the Usable Capacity stated in the Form No. 1? ☒ **Yes** ☐ **No**

DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2016 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309

Test Program: NCAP MDB Side Impact Test Test Date: 10/07/15



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

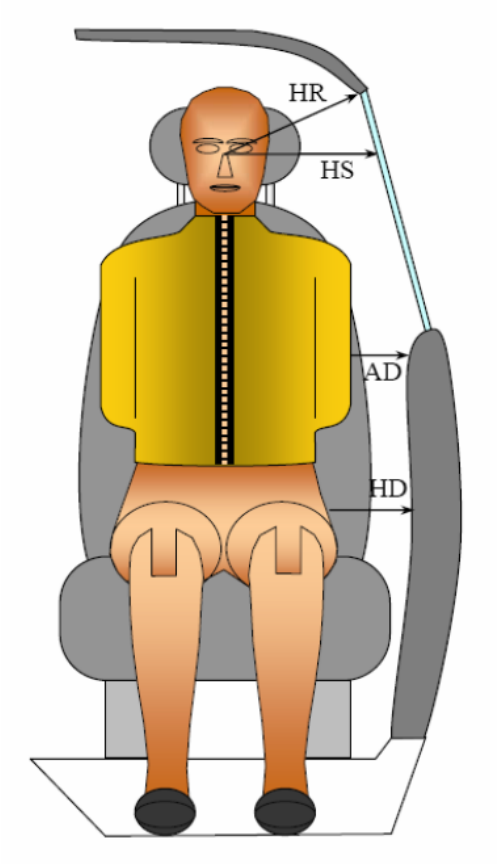
Driver Code	Pass. Code	Description	Driver		Passenger	
			Length (mm)	Angle (º)	Length (mm)	Angle (º)
HH		Head to Header	606			
HW		Head to Windshield	793			
HZ	HZ	Head to Roof	213		329	
NR	NB	Nose to Rim/Seat Back	460		504	
CD	CB	Chest to Dash/Seat Back	601		508	
CS		Chest to Steering Wheel	284			
KD(L)/KDA(L)°	KB(L)/KBA(L)°	Left Knee to Dash/Seat Back	132	36.1	290	18.2
KD(R)/KDA(R)°	KB(R)/KBA(R)°	Right Knee to Dash/Seat Back	120	38.4	288	12.3
PAX°	PAX°	Pelvic Tilt Angle X		15.9		17.5
	PAY°	Pelvic Tilt Angle Y		0.5		0.3
PHX	PHX	Hip Point to Striker (x-axis)	195		147	
PHZ	PHZ	Hip Point to Striker (z-axis)	111		272	

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2016 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309

Test Program: NCAP MDB Side Impact Test Test Date: 10/07/15



DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

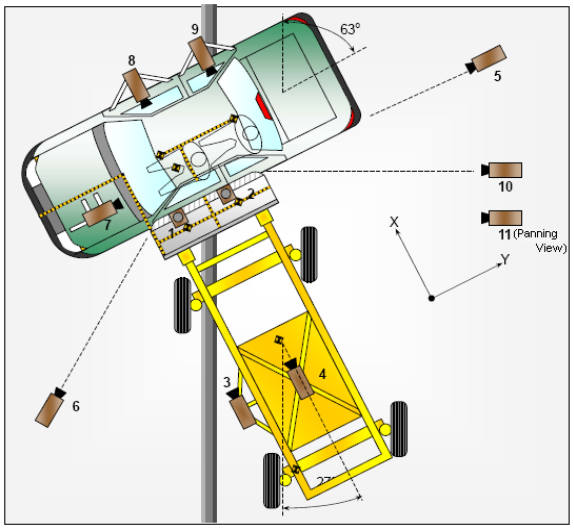
Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	209	282
HS	Head to Side Window	mm	353	404
AD	Arm to Door	mm	88	142
HD	H-Point to Door	mm	132	159

DATA SHEET NO. 5

CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2016 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309

Test Program: NCAP MDB Side Impact Test Test Date: 10/07/15



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)	613	-685	859	25	1000
8	Driver Side (On-Board)	1744	805	492	14	1000
9	Passenger Side (On-Board)	1734	1542	511	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

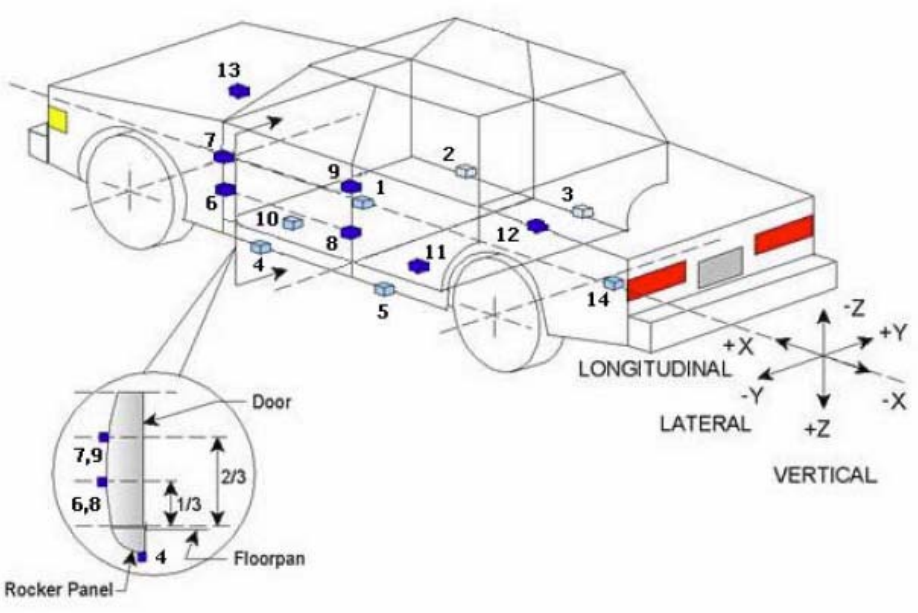
Driver Dummy Channels	16
Passenger Dummy Channels	16
Vehicle Structure Accelerometers	22
MDB Accelerometers	5
Total	59

DATA SHEET NO. 6

TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2016 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309

Test Program: NCAP MDB Side Impact Test Test Date: 10/07/15



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	1588	30	-408
2	Right Sill at Front Seat	2300	680	-426
3	Right Sill at Rear Seat	1364	685	-426
4	Left Sill at Front Door	2316	-757	-270
5	Left Sill at Rear Door	1387	-755	-272
6	A-Pillar Lower	2875	-791	-685
7	A-Pillar Middle	2875	-791	-991
8	B-Pillar Lower	1874	-723	-690
9	B-Pillar Middle	1874	-723	-1076
10	Front Seat Track	2070	-207	-457
11	Rear Seat Structure			
12	Right Rear Occupant Compartment	1677	371	-280
13	Engine Block	3661	150	-871
14	Rear Floorpan Above Axle	957	60	-465

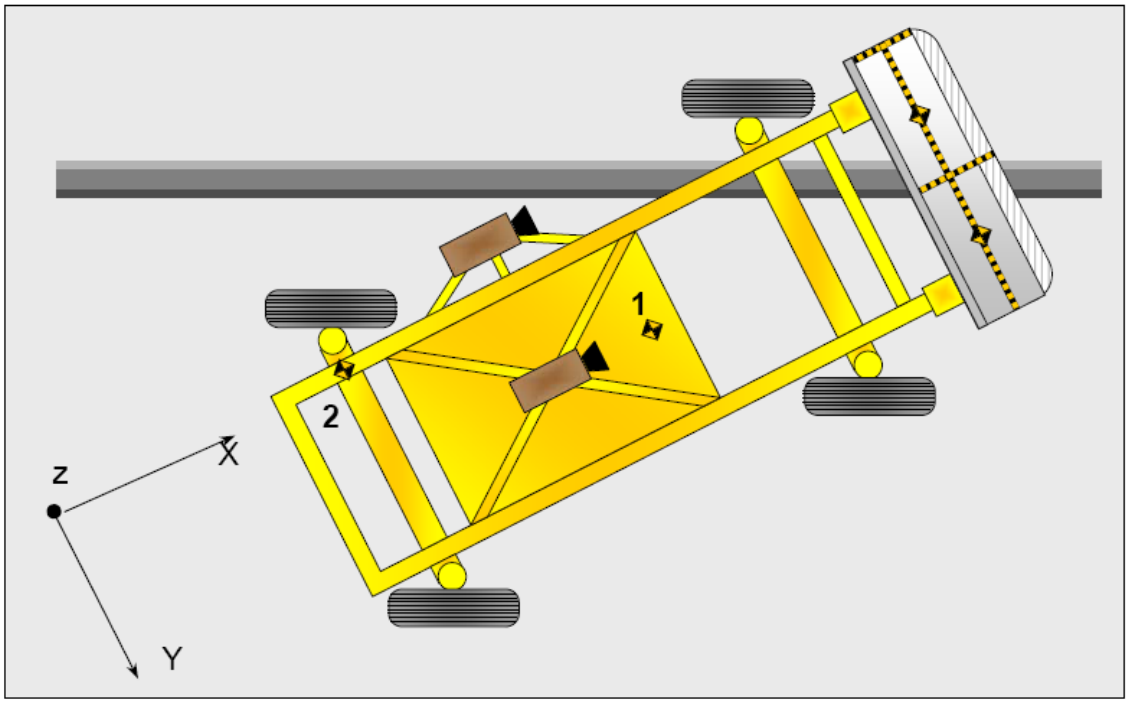
Reference: X – Rear surface of vehicle (+ forward)
Y – Vehicle centerline (+ to right)
Z – Ground plane (+ down)

DATA SHEET NO. 7

MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2016 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309

Test Program: NCAP MDB Side Impact Test Test Date: 10/07/15



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 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309

Test Program: NCAP MDB Side Impact Test Test Date: 10/07/15

TEST DUMMY INFORMATION AND CONTACT POINTS

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

POST-TEST DOOR PERFORMANCE

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

DATA SHEET NO. 8 … (CONTINUED)

POST-TEST OBSERVATIONS

Test Vehicle: 2016 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309

Test Program: NCAP MDB Side Impact Test Test Date: 10/07/15

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	Exhaust and muffler came off of hangers

DATA SHEET NO. 8 … (CONTINUED)

POST-TEST OBSERVATIONS

Test Vehicle: 2016 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309

Test Program: NCAP MDB Side Impact Test Test Date: 10/07/15

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vehicle Wheel Base	mm		2637
Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point)	mm		378
Actual Impact Point (Aft of Front Axle)	mm		377
Horizontal Offset (+ forward / - rearward)	mm	± 50 of Intended Impact Point	1
Vertical Offset (+ down / - up)	mm	± 20 of Intended Impact Point	13

DATA SHEET NO. 9

MDB SUMMARY OF RESULTS

Test Vehicle: 2016 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309

Test Program: NCAP MDB Side Impact Test Test Date: 10/07/15

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	61.75
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	61.72
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	90.7
MDB Forward Line of Motion to Target Vehicle CL	degrees	62.5 to 63.5	63.3
MDB Crabbed Angle to MDB Forward Line of Motion	degrees	26.0 to 28.0	27.3

MAXIMUM STATIC CRUSH OF HONEYCOMB FACE

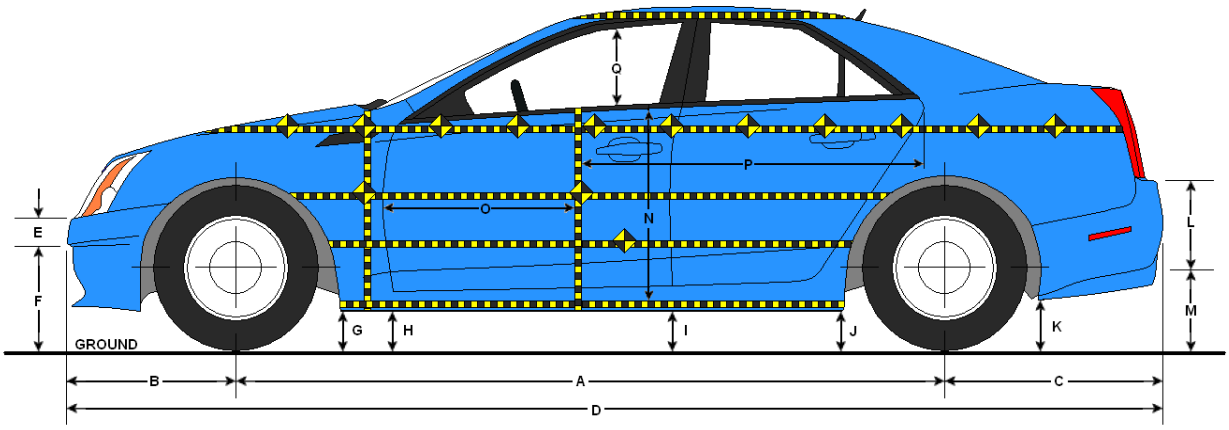
Vertical Location			From Centerline		Max. Crush
Row	Description	Height (mm)	Distance (mm)	Direction	(mm)
A	Center of Bumper	432	800	Right	271
B	Top of Bumper	533	800	Right	180
C	Mid Level	686	800	Left	170
D	Top of Stack	813	800	Left	215

DATA SHEET NO. 10

TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2016 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309

Test Program: NCAP MDB Side Impact Test Test Date: 10/07/15



LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2637	2633	-4
B	Front Axle to FSOV	907	910	3
C	Rear Axle to RSOV	893	890	-3
D	Total Length at Centerline	4436	4434	-2
E	Front Bumper Thickness	203	203	0
F	Fromt Bumper Bottom to Ground	415	420	5
G	Sill Height at Front Wheel Well	244	261	17
H	Sill Height at Front Door Leading Edge	276	297	21
I	Sill Height at B-Pillar	274	312	38
J1	Sill Height at Rear Wheel Well	241	270	29
J2	Pinch Weld Height at Rear Wheel Well	229	235	6
K	Sill Height Aft of Rear Wheel Well	331	354	23
L	Rear Bumper Thickness	177	178	1
M	Rear Bumper Bottom to Ground	477	495	18
N	Sill Height to Bottom of Front Window Sill	737	719	-18
O	Front Door Leading Edge to Impact CL	710	690	-20
P	Rear Door Trailing Edge to Impact CL	1192	1179	-13
Q	Front Window Opening	425	443	18
R	Right Side Length	3213	3221	8
S	Left Side Length	3206	3194	-12
T	Vehicle Width at B-Pillar	1768	1702	-66

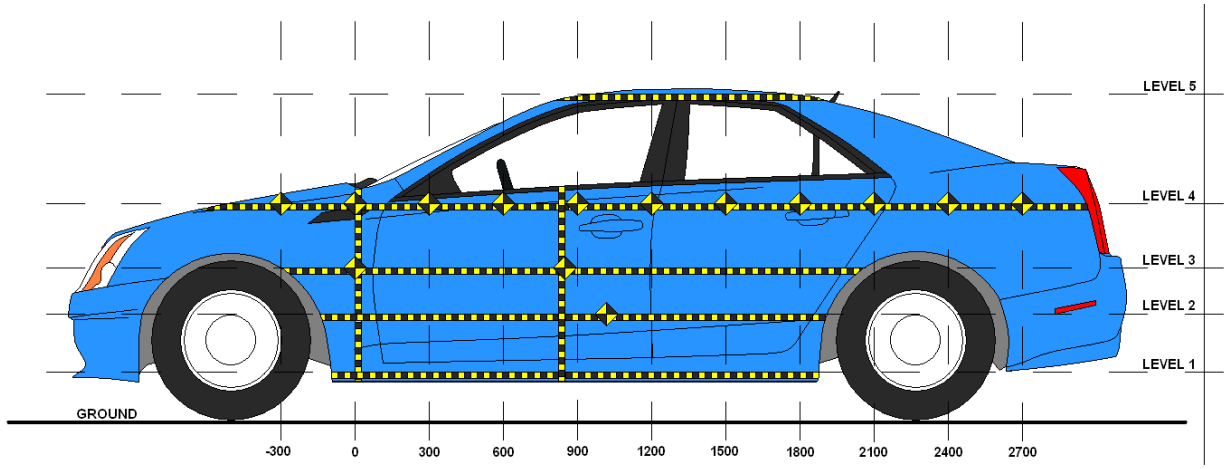
All measurements in mm with tolerance of ± 3mm

DATA SHEET NO. 11

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2016 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309

Test Program: NCAP MDB Side Impact Test Test Date: 10/07/15



LEFT SIDE VIEW

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	318	56	1200
2	Occupant H-Point	649	173	750
3	Mid-Door	680	175	750
4	Window Sill	1000	63	1200
5	Window Top	1561	17	1050

DATA SHEET NO. 11 … (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2016 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309

Test Program: NCAP MDB Side Impact Test Test Date: 10/07/15

EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

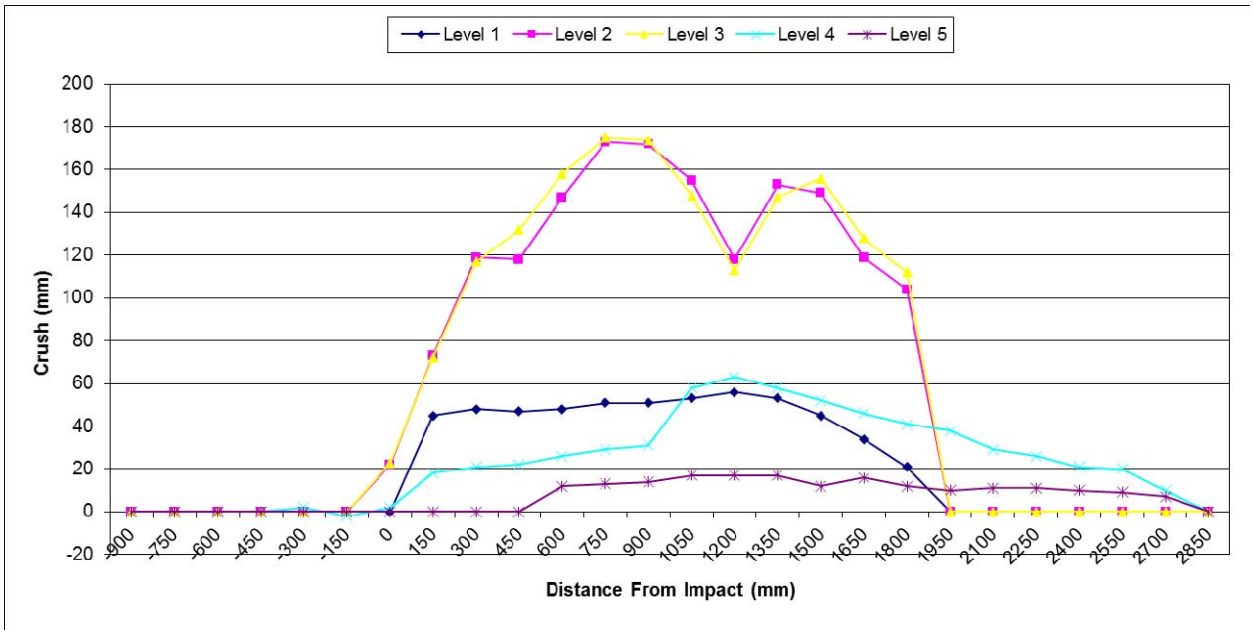
	Pre-Test (mm)					Post-Test (mm)					Difference (mm)				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900															
-750															
-600															
-450															
-300				721					723					2	
-150				715					713					-2	
0		617	615	700			639	638	702			22	23	2	
150	677	636	634	689		722	709	706	707		45	73	72	18	
300	678	634	632	677		726	753	749	698		48	119	117	21	
450	675	633	631	666		722	751	763	688		47	118	132	22	
600	672	630	628	656	865	720	777	786	682	877	48	147	158	26	12
750	671	627	626	648	861	722	800	801	677	874	51	173	175	29	13
900	670	623	624	642	861	721	795	798	673	875	51	172	174	31	14
1050	669	621	622	638	860	722	776	770	696	877	53	155	148	58	17
1200	668	620	623	636	861	724	738	736	699	878	56	118	113	63	17
1350	670	622	625	634	862	723	775	772	692	879	53	153	147	58	17
1500	672	623	626	635	864	717	772	782	687	876	45	149	156	52	12
1650	675	625	627	636	867	709	744	755	682	883	34	119	128	46	16
1800	681	614	616	638	870	702	718	728	679	882	21	104	112	41	12
1950				641	875				679	885				38	10
2100				646	880				675	891				29	11
2250				651	888				677	899				26	11
2400				659	897				680	907				21	10
2550				667	906				687	915				20	9
2700				678	918				688	925				10	7
2850															

DATA SHEET NO. 11 … (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2016 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309

Test Program: NCAP MDB Side Impact Test Test Date: 10/07/15

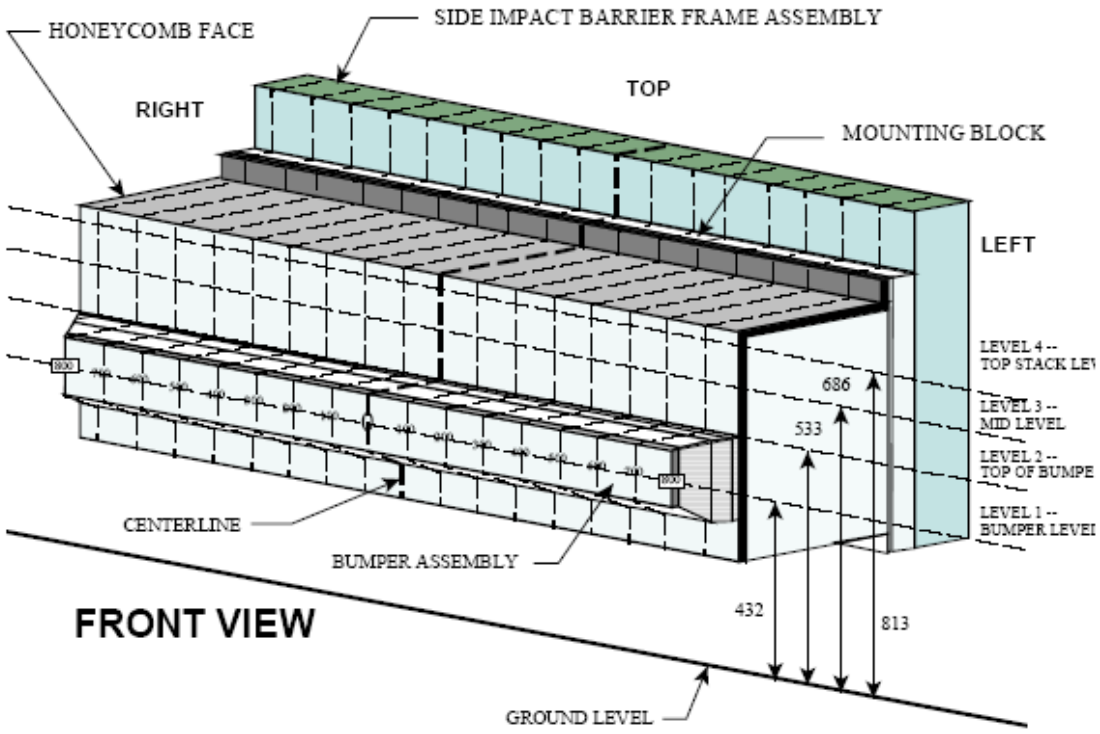


DATA SHEET NO. 12

MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2016 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309

Test Program: NCAP MDB Side Impact Test Test Date: 10/07/15



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	0	100	200	300	400	500	600	700	800
1	271	211	241	228	212	211	210	209	205	205	204	211	207	207	208	214	224
2	180	176	161	138	127	127	128	117	121	130	136	147	143	148	153	157	171
3	117	108	99	95	101	133	133	100	83	72	69	76	83	95	107	154	170
4	97	88	86	94	111	112	112	122	92	75	78	80	77	94	125	172	215

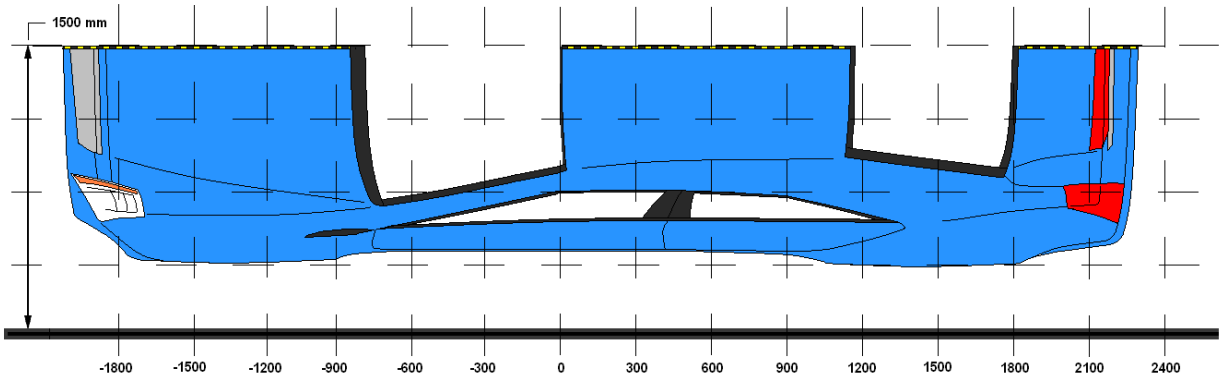
All dimensions in millimeters.

DATA SHEET NO. 13

VEHICLE AND MDB DAMAGE PROFILE DISTANCES

Test Vehicle: 2016 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309

Test Program: NCAP MDB Side Impact Test Test Date: 10/07/15



VEHICLE DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Crush (mm)
1	2700	4	678	688	10
2	2100	4	646	675	29
3	1500	3	626	782	156
4	900	3	624	798	174
5	300	2	634	753	119
6	-300	4	721	723	2

MDB DAMAGE PROFILE DISTANCES

DPD	From MDB Centerline		Level	Crush (mm)
	Distance (mm)	Direction		
1	800	Left	1	271
2	500	Left	1	228
3	200	Left	1	210
4	200	Right	1	204
5	500	Right	1	207
6	800	Right	1	224

DATA SHEET NO. 14

FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2016 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309

Test Program: NCAP MDB Side Impact Test Test Date: 10/07/15

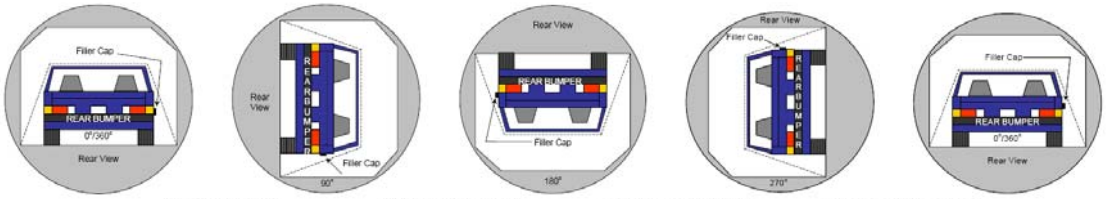
Temperature at Time of Impact: 24.4 C Test Time: 1:00 PM

A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable = 1 oz.)

B. For the 5 minute period after motion ceases: 0 oz.
(Maximum allowable = 5 oz.)

C. For the following 25 minutes: 0 oz.
(Maximum allowable = 1 oz./minute)

D. Spillage Details: There was no Stoddard solvent spillage.



0° TO 90° 90° TO 180° 180° TO 270° 270° TO 360°

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	83	300	383
90° To 180°	81	300	381
180° To 270°	79	300	379
270° To 360°	81	300	381

FMVSS 301 SPILLAGE TABLE

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

SOLVENT SPILLAGE LOCATION TABLE

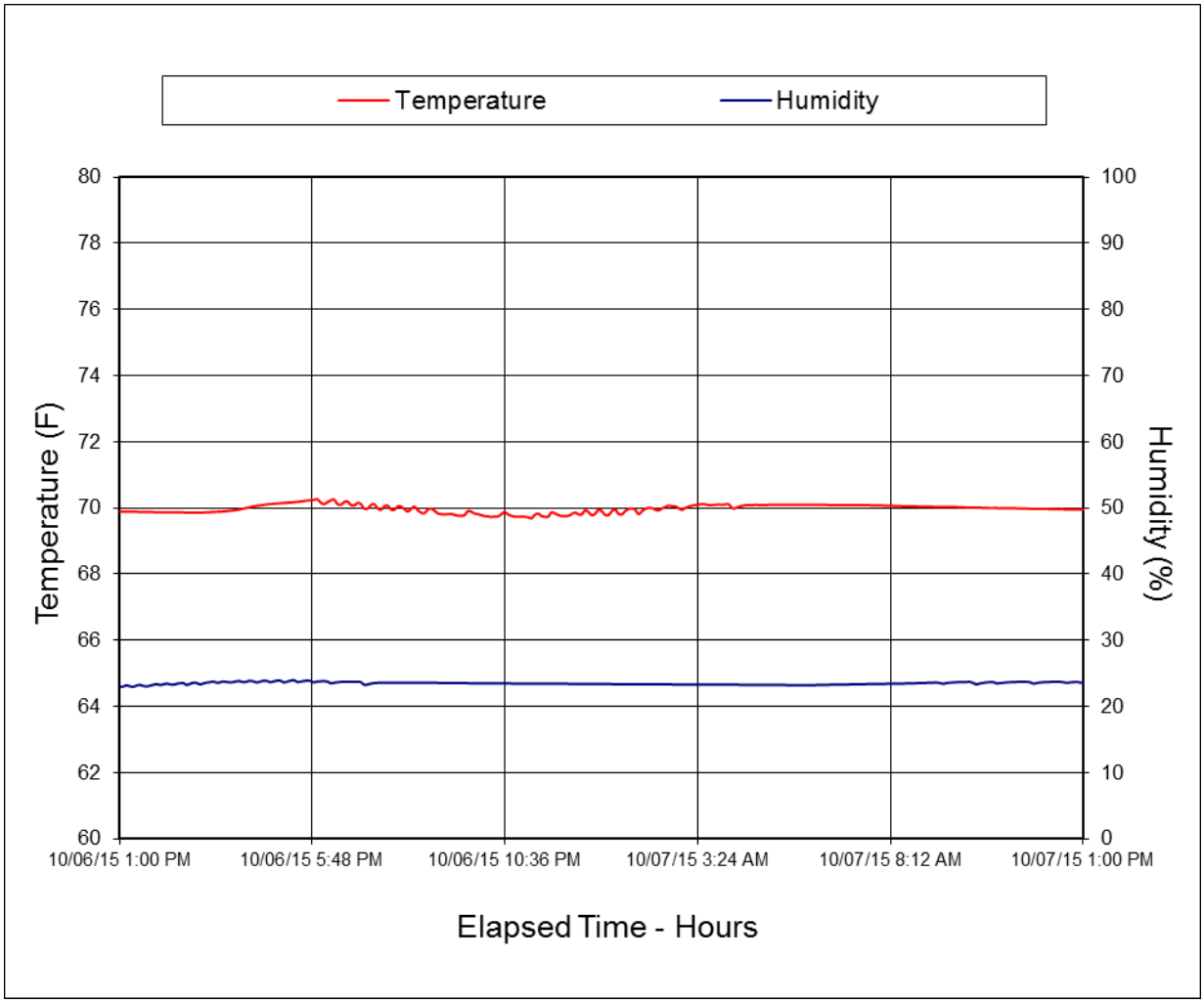
Test Phase	Spillage Location
0° To 90°	N/A
90° To 180°	N/A
180° To 270°	N/A
270° To 360°	N/A

DATA SHEET NO. 15

DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION

Test Vehicle: 2016 Jeep Patriot Sport 5-Door MPV NHTSA No. M20160309

Test Program: NCAP MDB Side Impact Test Test Date: 10/07/15



APPENDIX A

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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

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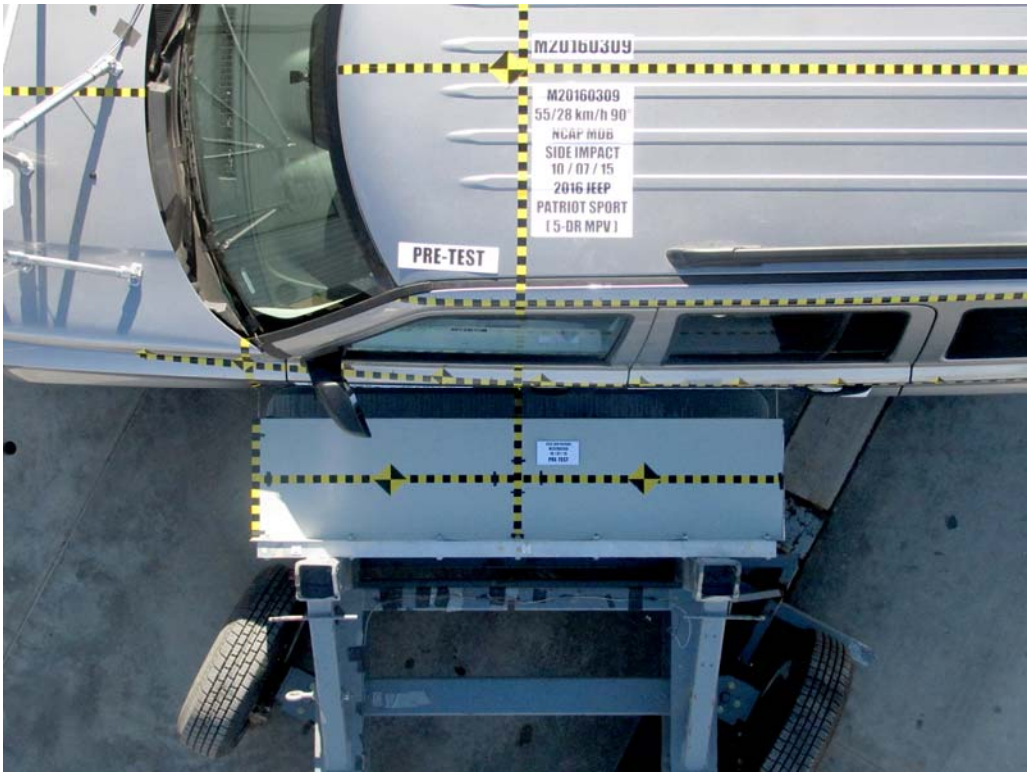

FIGURE 15. Pre-Test Overhead View of Test Area

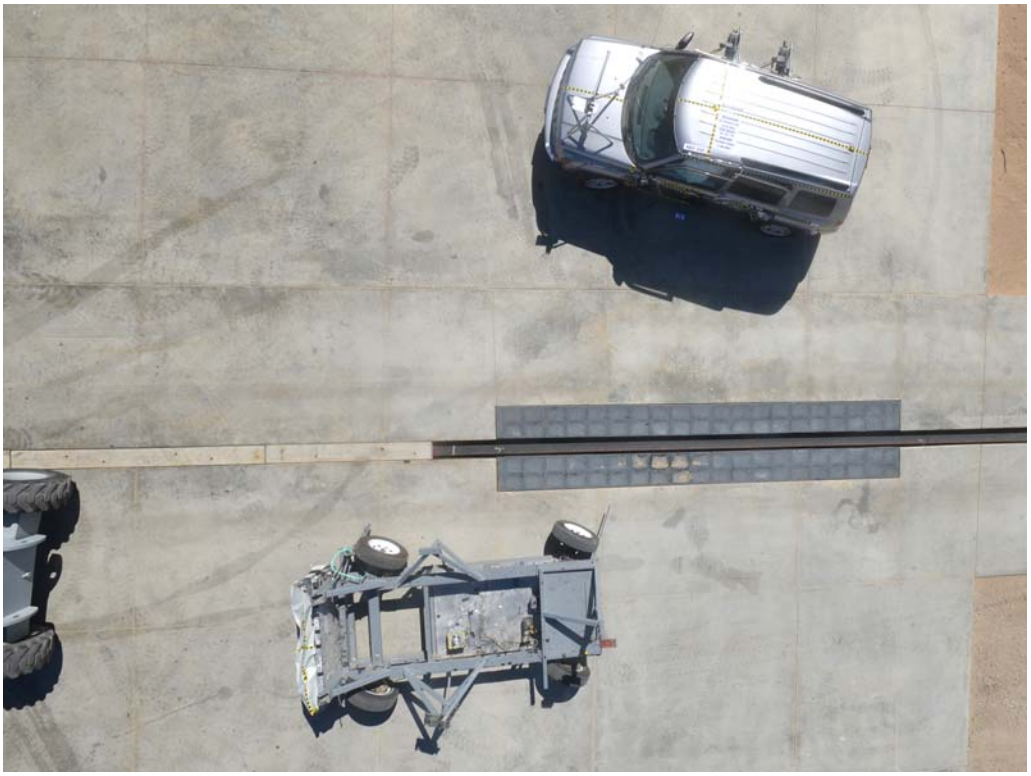

FIGURE 16. Post-Test Overhead View of Test Area

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

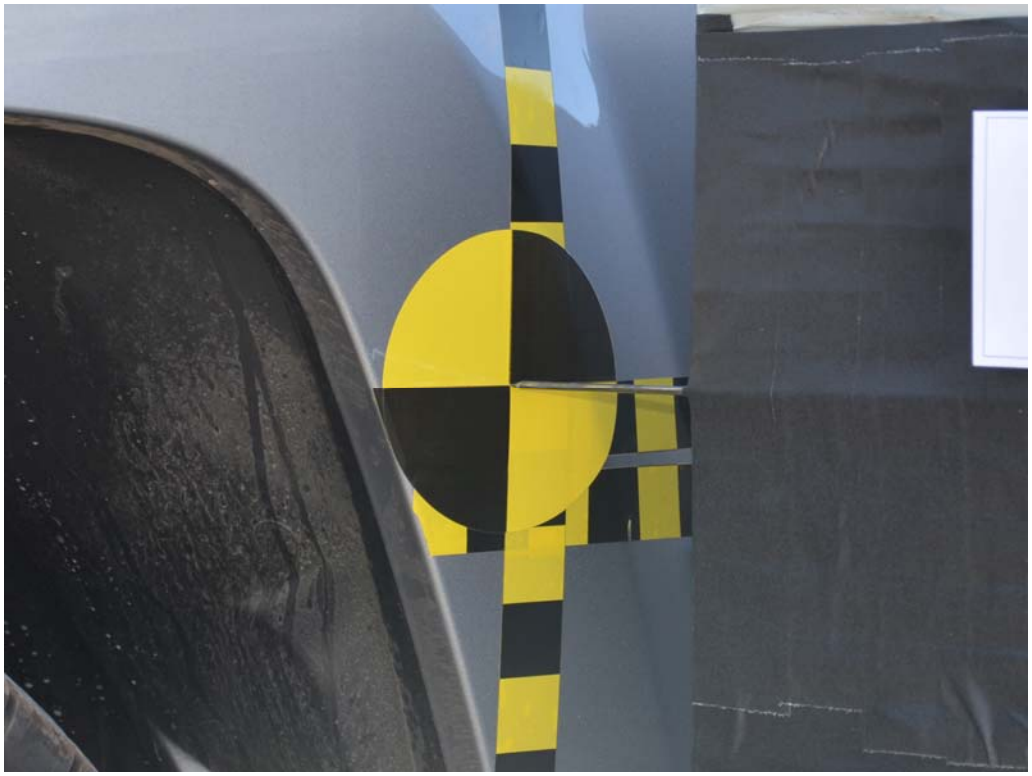

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FIGURE 41. Pre-Test Close-Up View of Driver Seat Back or Head Restraint

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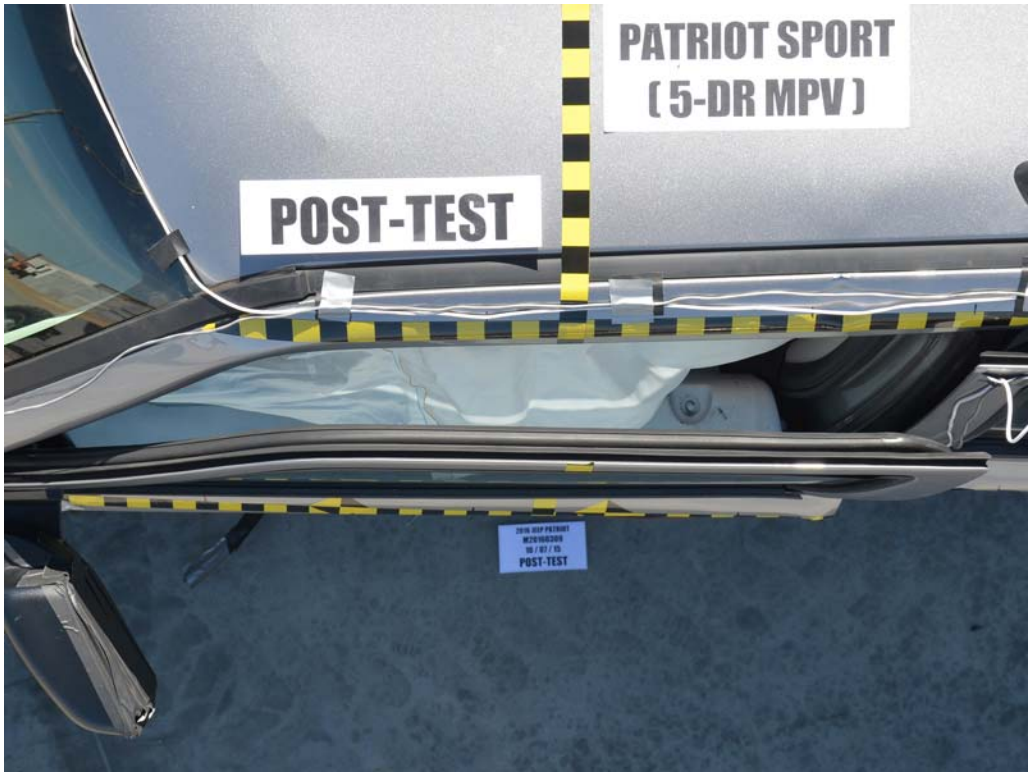

FIGURE 43. Post-Test Driver Dummy and Door Clearance View

FIGURE 44. Pre-Test Right Side View of Driver Dummy
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FIGURE 45. Post-Test Right Side View of Driver Dummy
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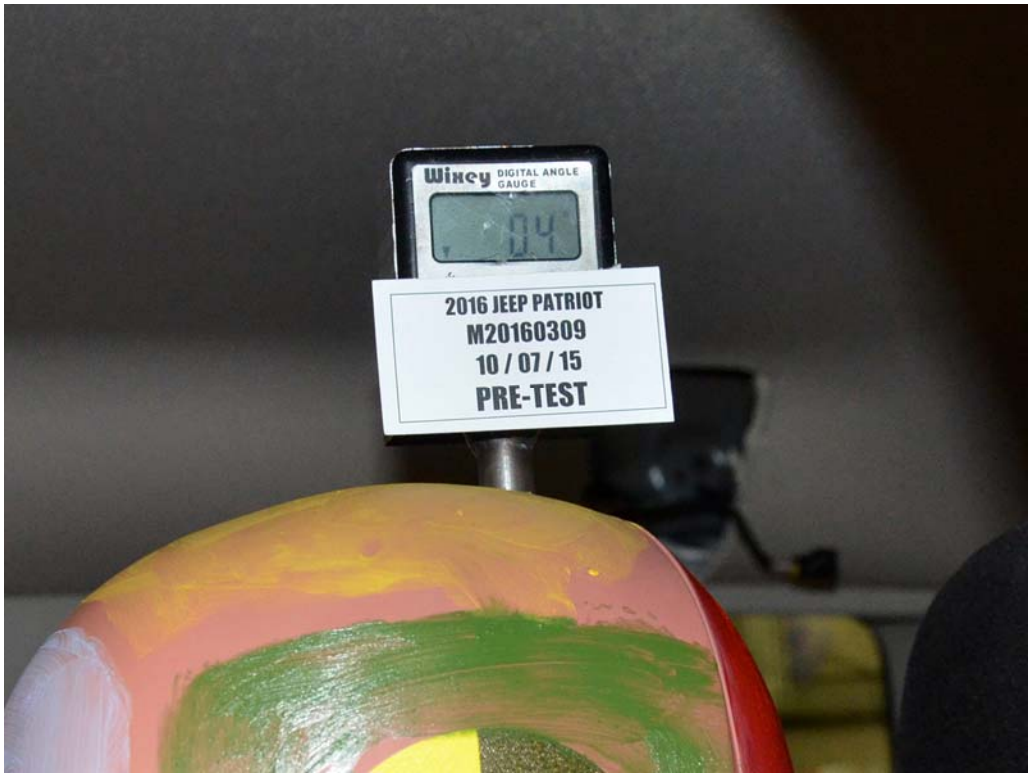

FIGURE 63. Pre-Test View of Rear Passenger Dummy's Head
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FIGURE 68. Pre-Test Close-Up View of Rear Passenger Seat Back or Head Restraint

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

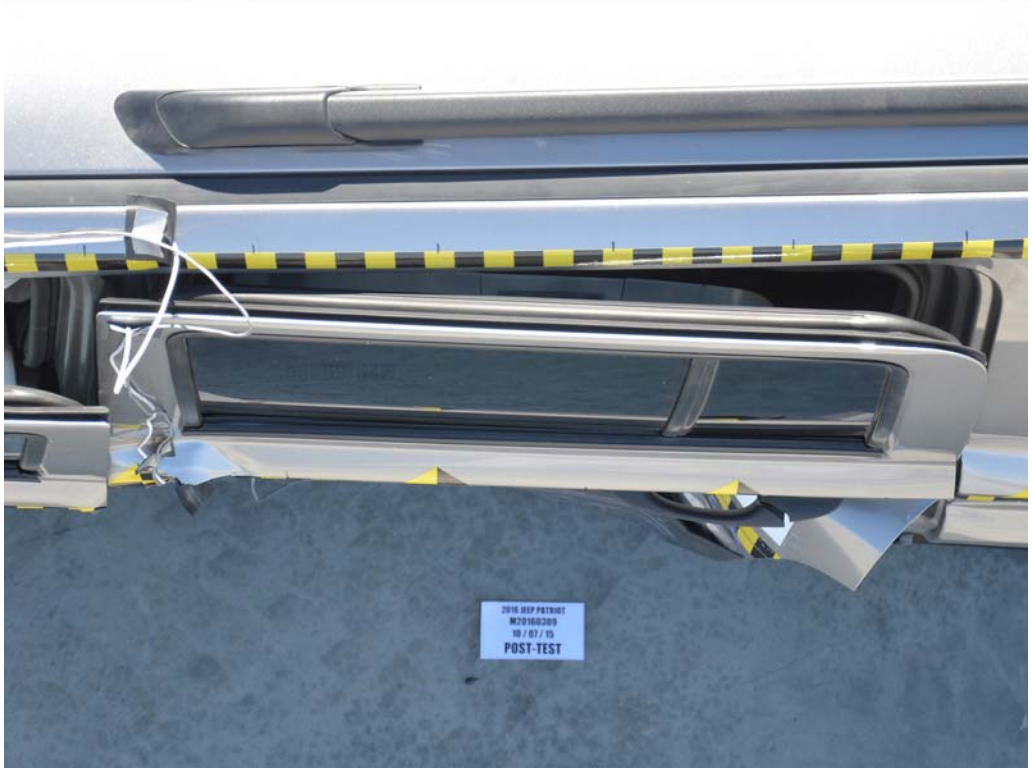

FIGURE 70. Post-Test Rear Passenger Dummy and Door Clearance View

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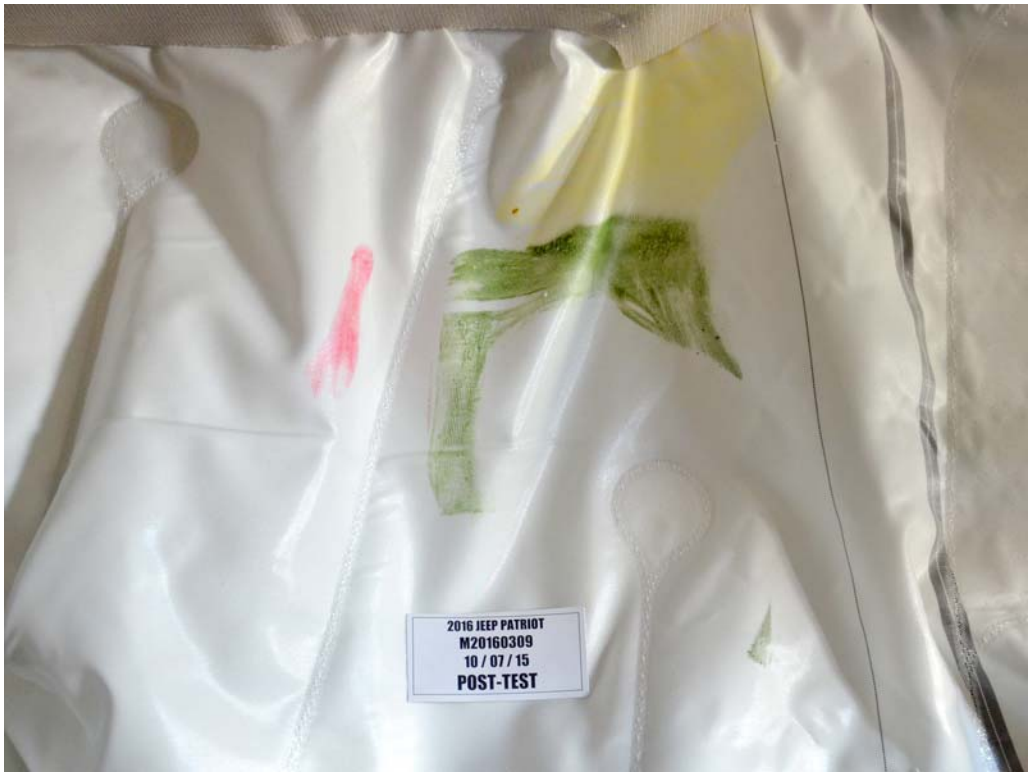

FIGURE 76. Post-Test Rear Passenger Dummy Close-Up
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FIGURE 77. Post-Test Rear Passenger Dummy Close-Up
Torso Contact with Vehicle Interior View

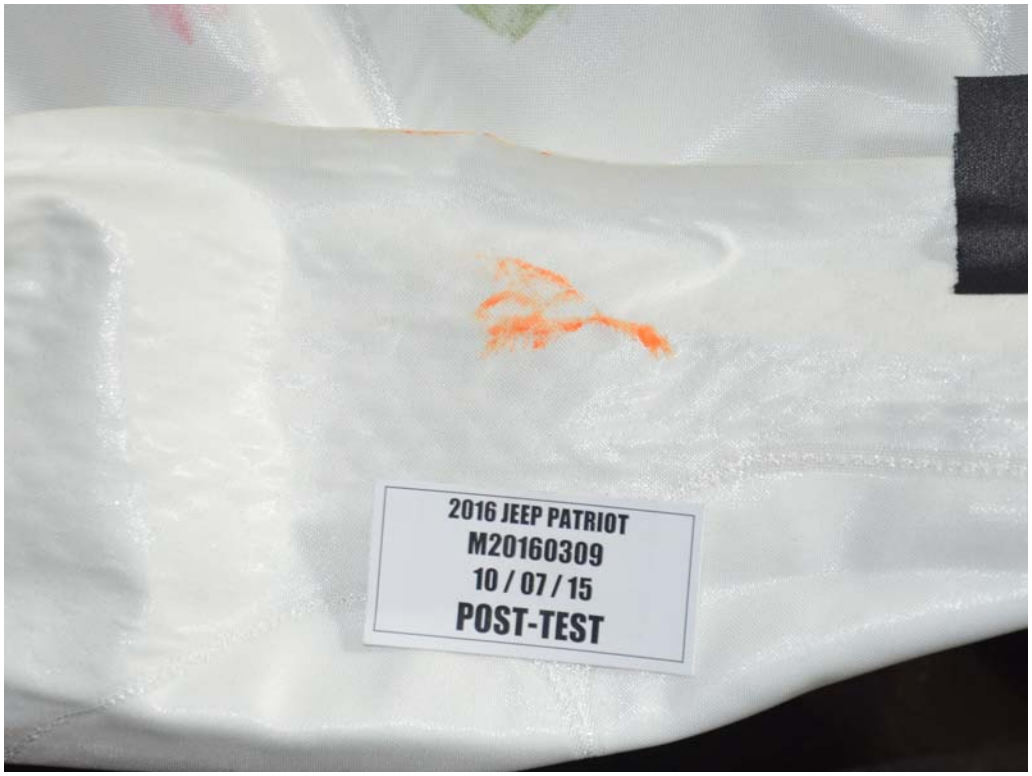

FIGURE 78. Post-Test Rear Passenger Dummy Close-Up
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FIGURE 79. Post-Test Rear Passenger Dummy Close-Up
Pelvis Contact with Vehicle Interior View

Photograph Not Applicable

Vehicle Not Equipped with Rear Passenger Side Airbags

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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

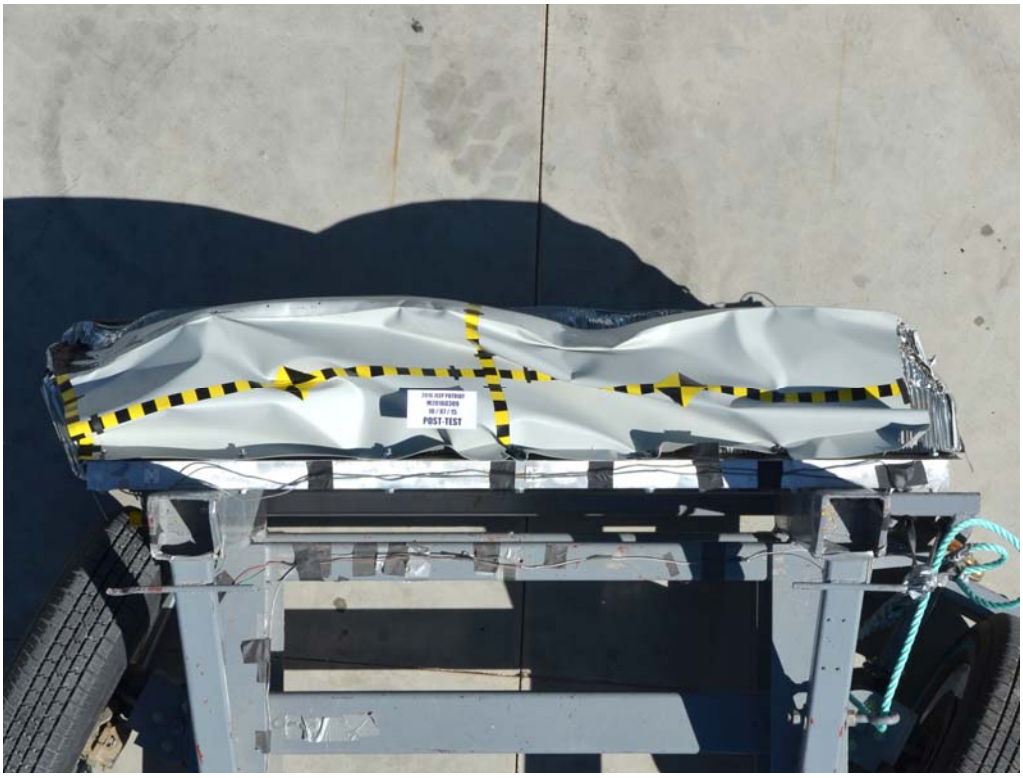

FIGURE 87. Post-Test Top View of MDB Impactor Face

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

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

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

FIGURE 94. Pre-Test Ballast View

FIGURE 94a. Pre-Test Ballast View

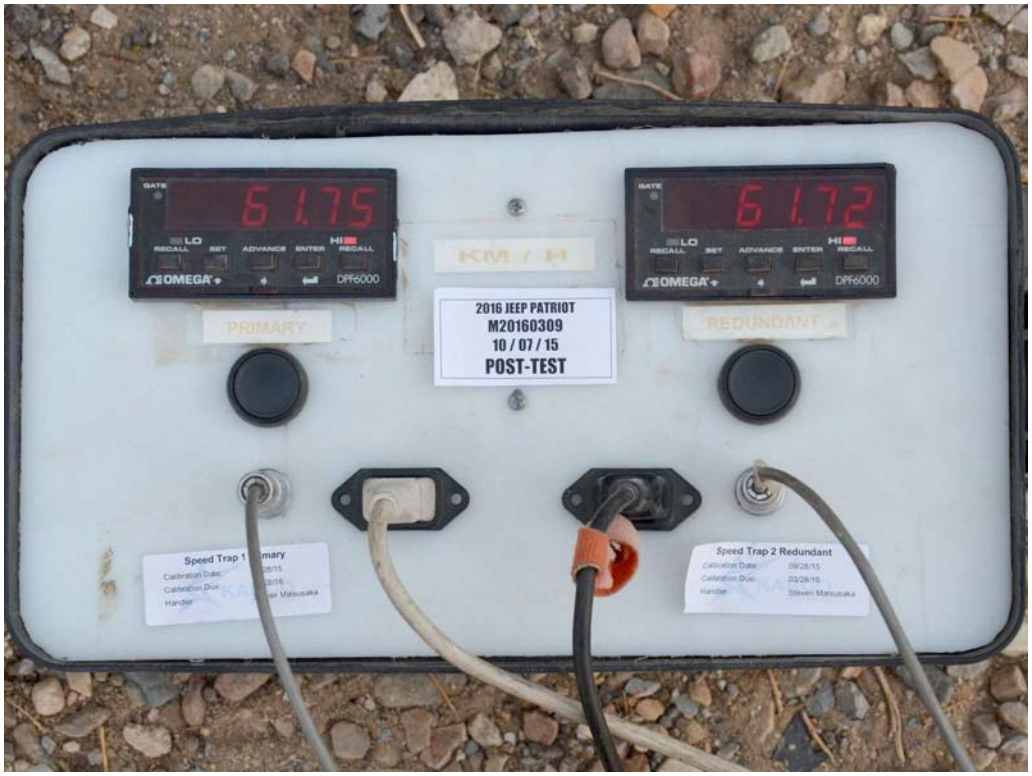


FIGURE 95. Post-Test Primary and Redundant Speed Trap Read-Out

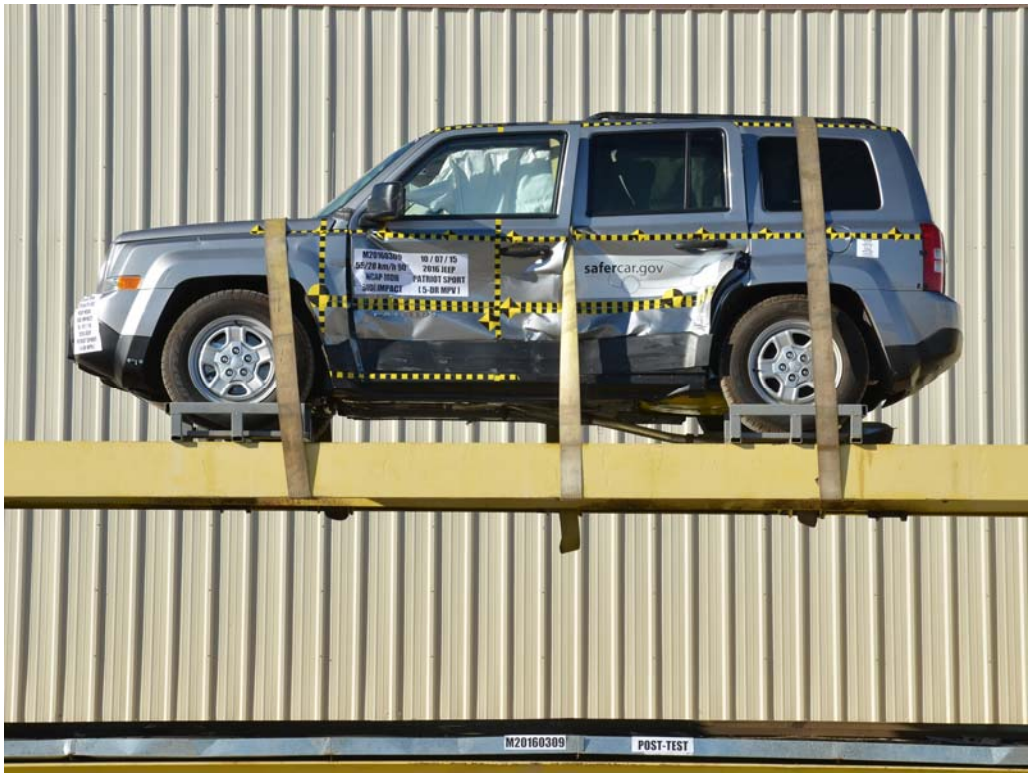


FIGURE 96. FMVSS No. 301 Static Rollover 0 Degrees

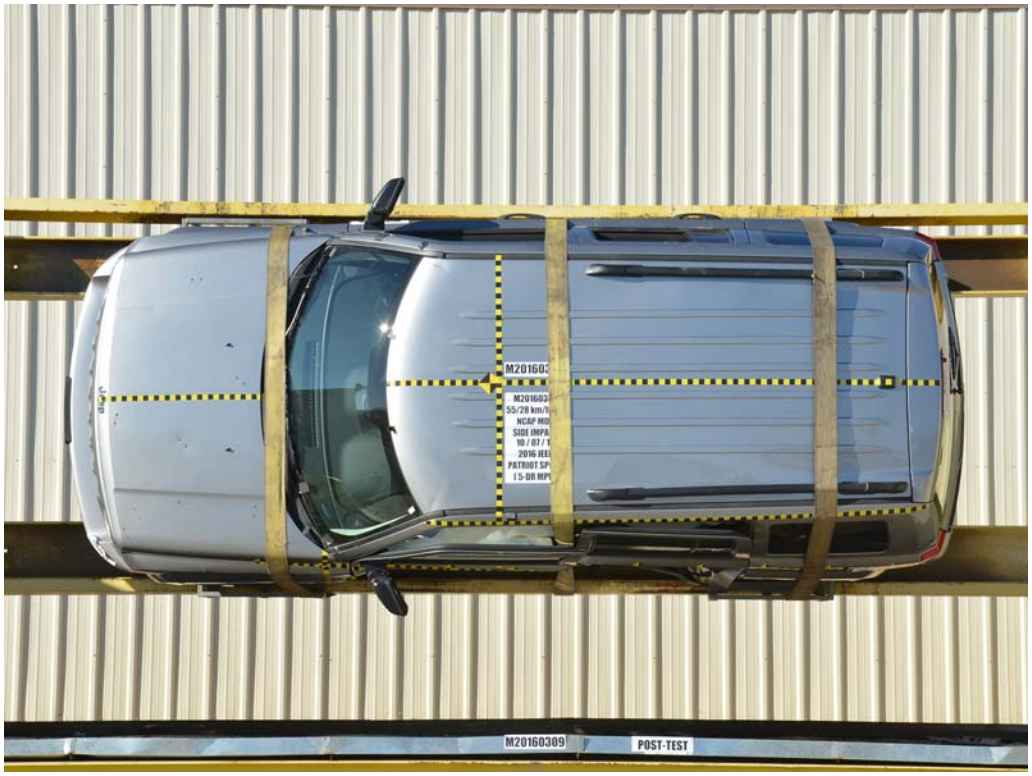


FIGURE 97. FMVSS No. 301 Static Rollover 90 Degrees

FIGURE 98. FMVSS No. 301 Static Rollover 180 Degrees

FIGURE 99. FMVSS No. 301 Static Rollover 270 Degrees

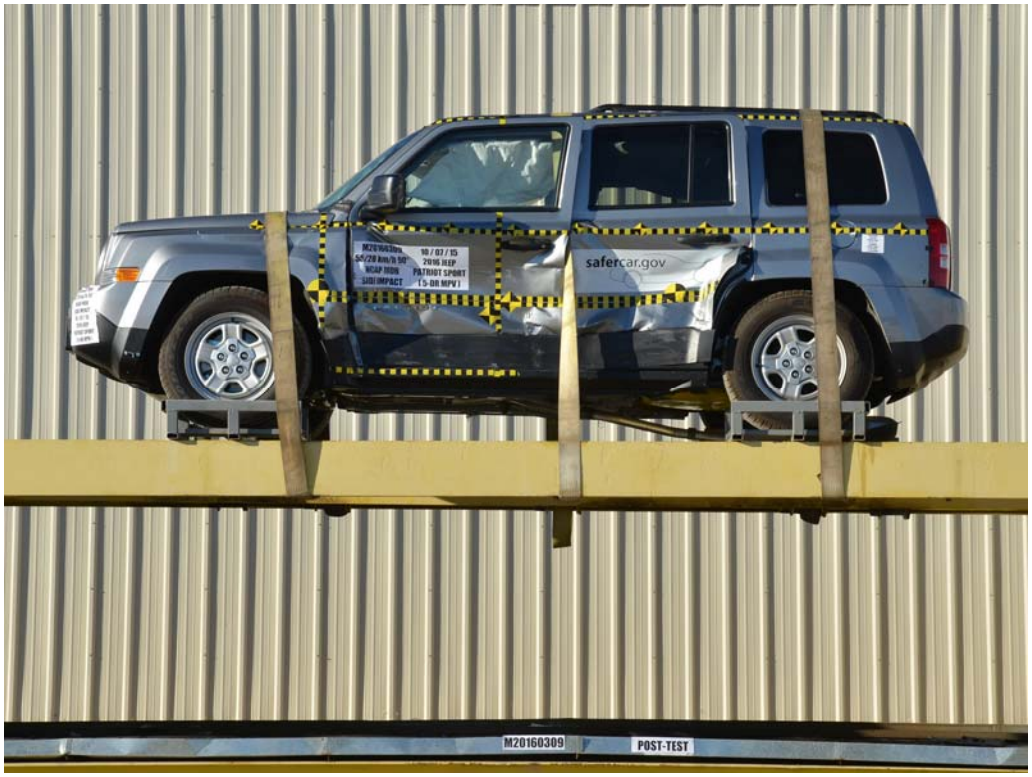


FIGURE 100. FMVSS No. 301 Static Rollover 360 Degrees

FIGURE 101. Impact Event

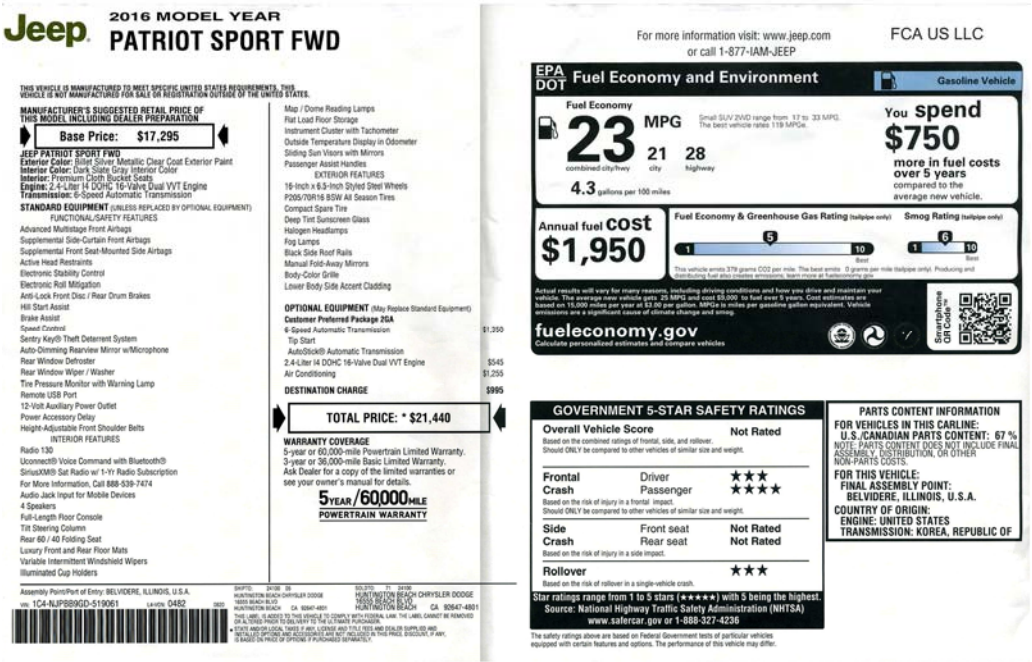
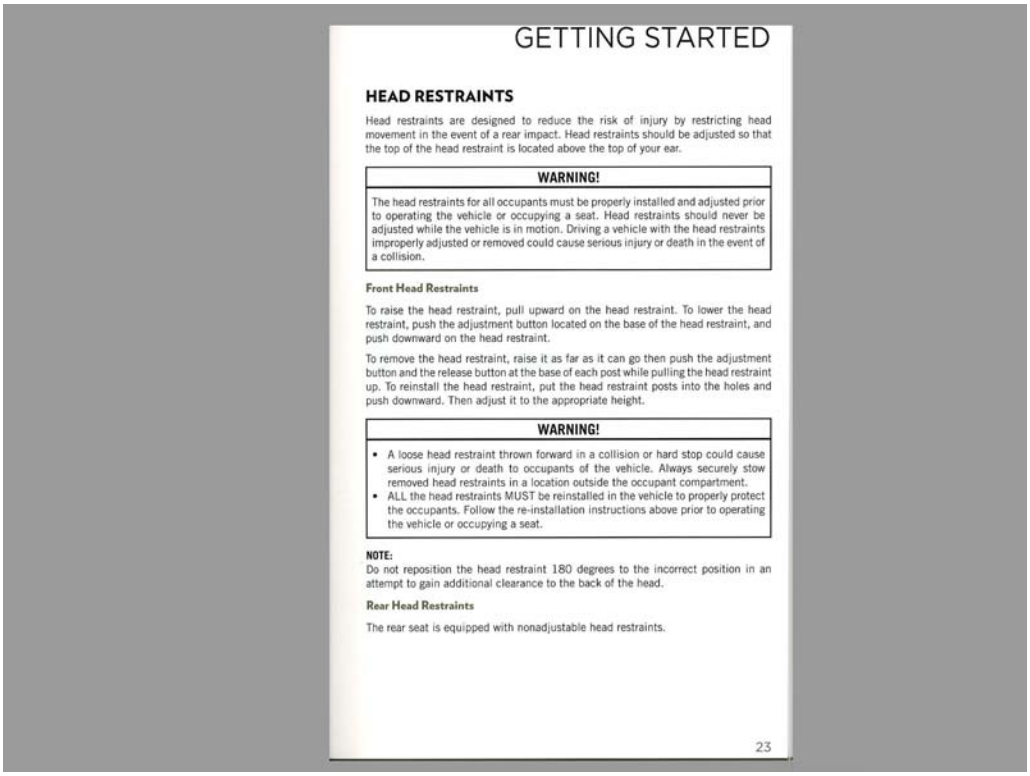


FIGURE 102. Monroney Label



GETTING STARTED

HEAD RESTRAINTS

Head restraints are designed to reduce the risk of injury by restricting head movement in the event of a rear impact. Head restraints should be adjusted so that the top of the head restraint is located above the top of your ear.

WARNING!

The head restraints for all occupants must be properly installed and adjusted prior to operating the vehicle or occupying a seat. Head restraints should never be adjusted while the vehicle is in motion. Driving a vehicle with the head restraints improperly adjusted or removed could cause serious injury or death in the event of a collision.

Front Head Restraints

To raise the head restraint, pull upward on the head restraint. To lower the head restraint, push the adjustment button located on the base of the head restraint, and push downward on the head restraint.

To remove the head restraint, raise it as far as it can go then push the adjustment button and the release button at the base of each post while pulling the head restraint up. To reinstall the head restraint, put the head restraint posts into the holes and push downward. Then adjust it to the appropriate height.

WARNING!

- A loose head restraint thrown forward in a collision or hard stop could cause serious injury or death to occupants of the vehicle. Always securely stow removed head restraints in a location outside the occupant compartment.
- ALL the head restraints MUST be reinstalled in the vehicle to properly protect the occupants. Follow the re-installation instructions above prior to operating the vehicle or occupying a seat.

NOTE:
Do not reposition the head restraint 180 degrees to the incorrect position in an attempt to gain additional clearance to the back of the head.

Rear Head Restraints

The rear seat is equipped with nonadjustable head restraints.

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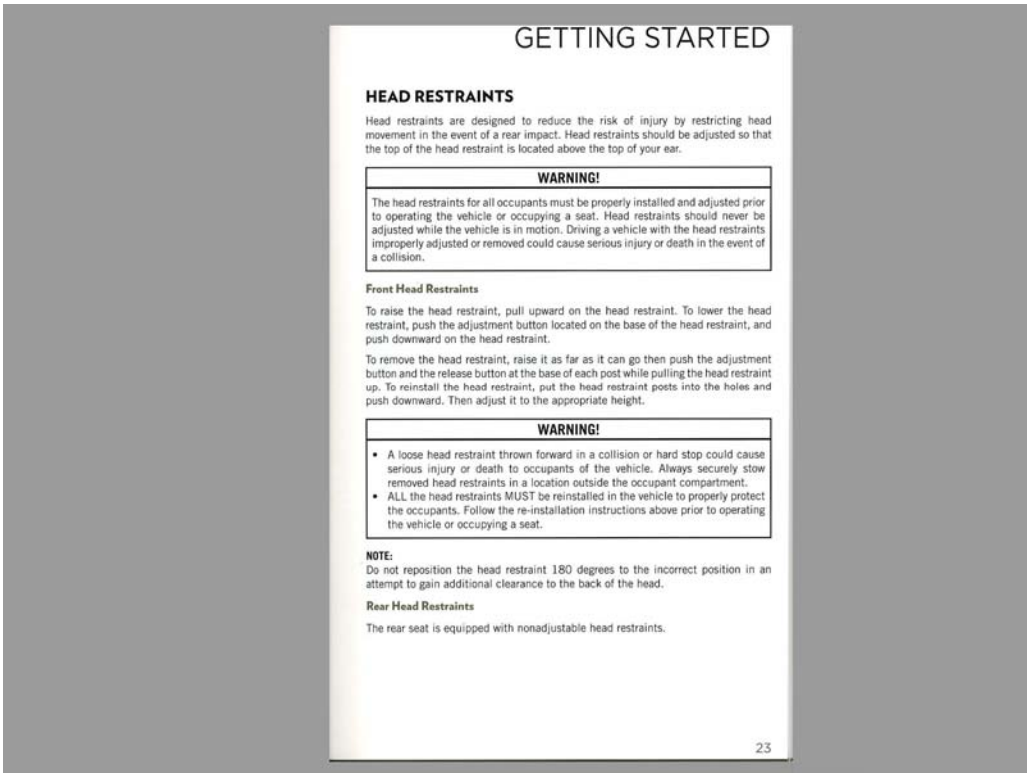
FIGURE 103. Driver Head Restraint Use and Adjustment Information from Vehicle Owner's Manual



GETTING STARTED

HEAD RESTRAINTS

Head restraints are designed to reduce the risk of injury by restricting head movement in the event of a rear impact. Head restraints should be adjusted so that the top of the head restraint is located above the top of your ear.

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WARNING!

- A loose head restraint thrown forward in a collision or hard stop could cause serious injury or death to occupants of the vehicle. Always securely stow removed head restraints in a location outside the occupant compartment.
- ALL the head restraints MUST be reinstalled in the vehicle to properly protect the occupants. Follow the re-installation instructions above prior to operating the vehicle or occupying a seat.

NOTE:
Do not reposition the head restraint 180 degrees to the incorrect position in an attempt to gain additional clearance to the back of the head.

Rear Head Restraints

The rear seat is equipped with nonadjustable head restraints.

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

APPENDIX B

DUMMY RESPONSE DATA

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24	Passenger Total Pelvic Force on Impact Side (Y) vs. Time	B-7

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

Additional Driver & Passenger Dummy Instrumentation Data

Driver Lower Spine T12 Acceleration (X)

Driver Lower Spine T12 Acceleration (Y)

Driver Lower Spine T12 Acceleration (Z)

Passenger Upper Thorax Rib Deflection (Y)

Passenger Middle Thorax Rib Deflection (Y)

Passenger Lower Thorax Rib Deflection (Y)

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

Vehicle Instrumentation Data

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

MDB Instrumentation Data

MDB Center of Gravity Acceleration (X)

MDB Center of Gravity Acceleration (Y)

MDB Center of Gravity Acceleration (Z)

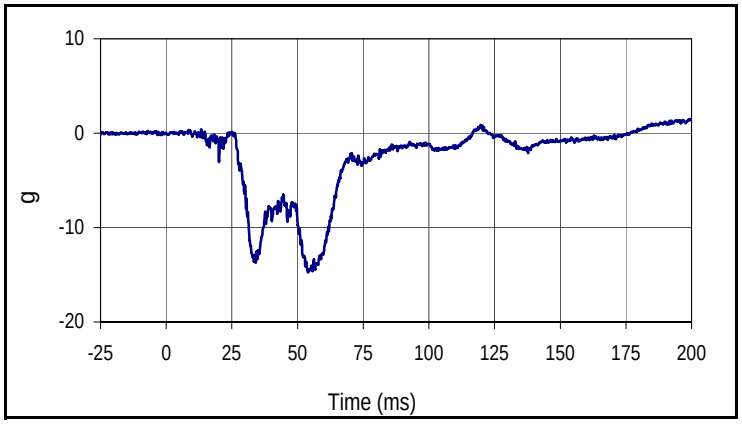
MDB Rear Acceleration (X)

MDB Rear Acceleration (Y)

Left MDB Contact Switch

Right MDB Contact Switch

Test Vehicle:	2016 Jeep Patriot Sport 5-Door MPV	NHTSA No.:	M20160309
Test Program:	NCAP MDB Side Impact Test	Test Date:	10/7/15



Curve Description			
Driver Head Acceleration X Primary			
Plot No.		SAE Class	Units
001		1000	g
Max	Time	Min	Time
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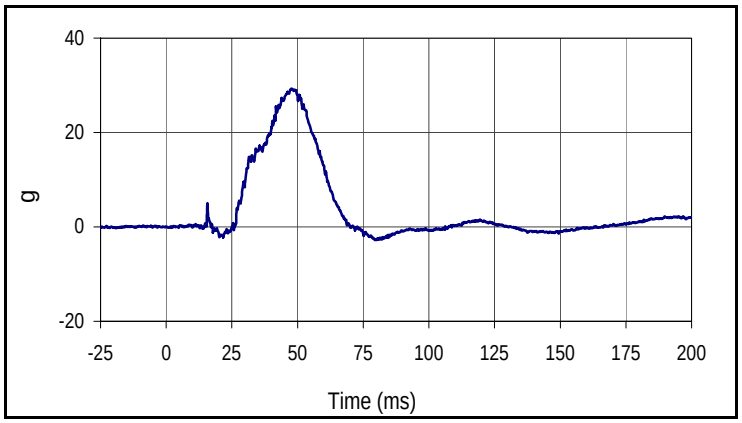
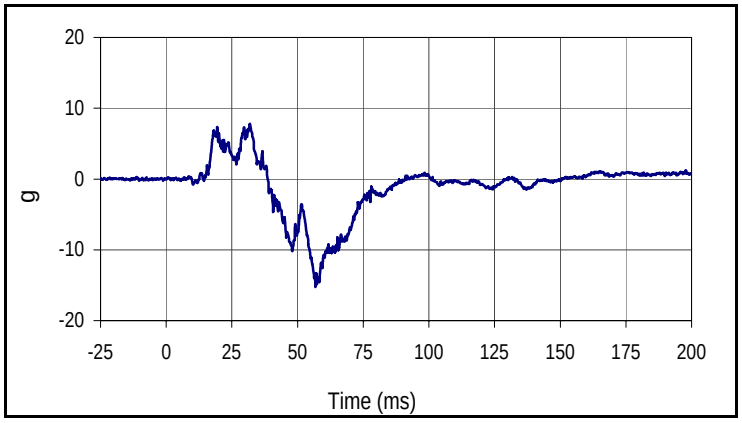
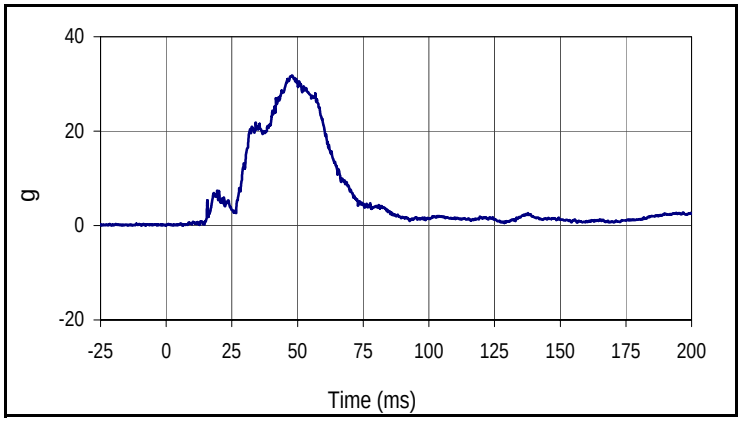


Curve Description			
Driver Head Acceleration Y Primary			
Plot No.		SAE Class	Units
002		1000	g
Max	Time	Min	Time
29.3	47.6	-2.8	80.2

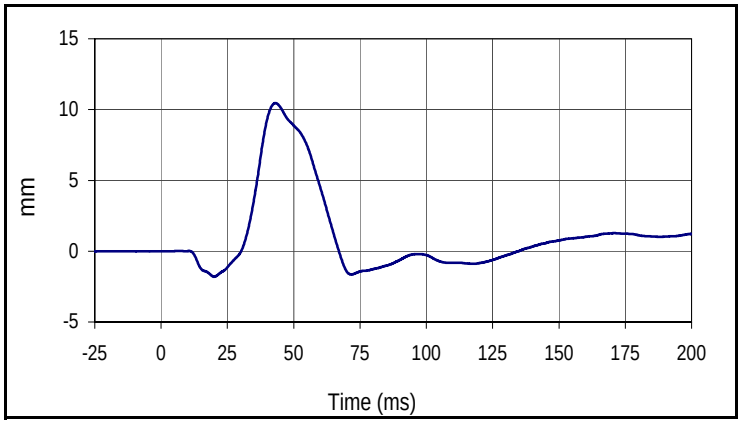


Curve Description			
Driver Head Acceleration Z Primary			
Plot No.		SAE Class	Units
003		1000	g
Max	Time	Min	Time
7.8	31.9	-15.3	56.8

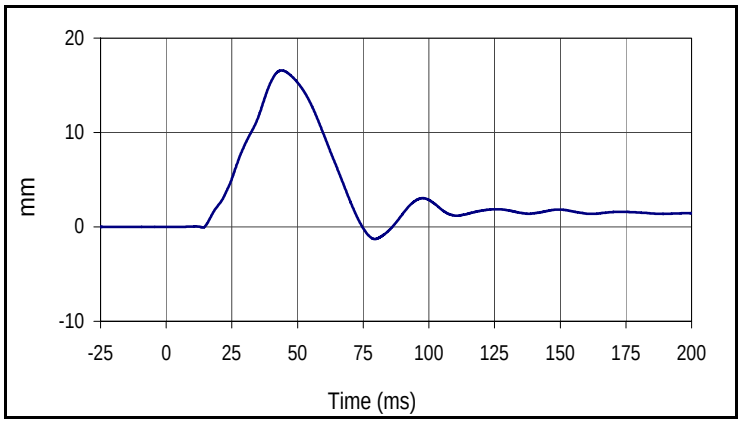


Curve Description			
Driver Head Resultant Acceleration Primary			
Plot No.		SAE Class	Units
004		1000	g
Max	Time	Min	Time
31.8	48.0	0.0	6.1

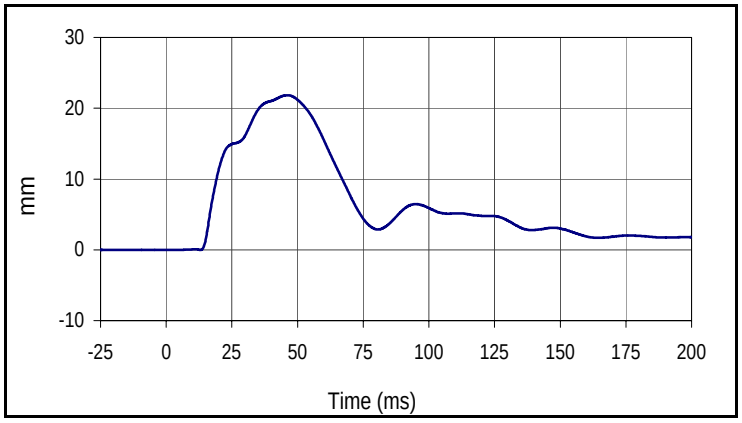
Test Vehicle:	2016 Jeep Patriot Sport 5-Door MPV	NHTSA No.:	M20160309
Test Program:	NCAP MDB Side Impact Test	Test Date:	10/7/15



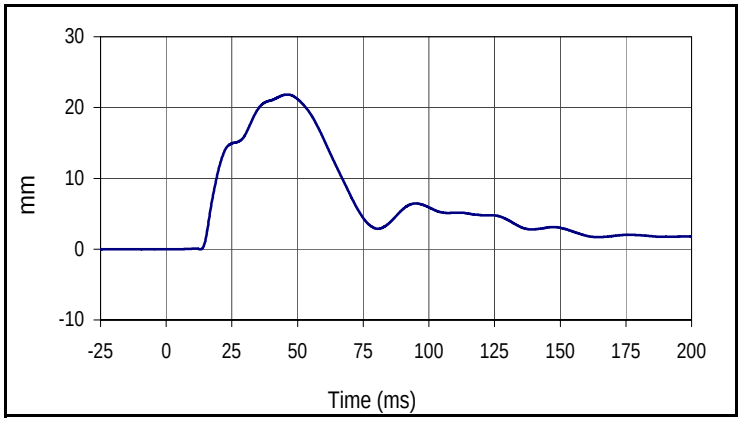
Curve Description			
Driver Upper Thorax Rib Deflection Y			
Plot No.		SAE Class	Units
005		180	mm
Max	Time	Min	Time
10.5	43.1	-1.8	20.0



Curve Description			
Driver Middle Thorax Rib Deflection Y			
Plot No.		SAE Class	Units
006		180	mm
Max	Time	Min	Time
16.6	44.0	-1.3	79.5

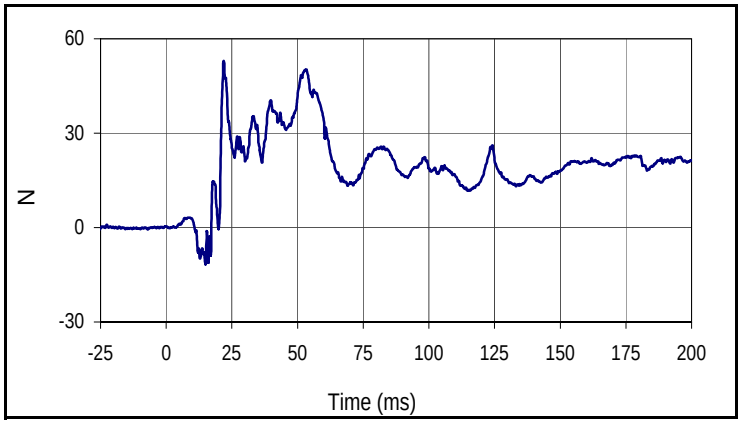


Curve Description			
Driver Lower Thorax Rib Deflection Y			
Plot No.		SAE Class	Units
007		180	mm
Max	Time	Min	Time
21.8	46.2	0.0	13.1

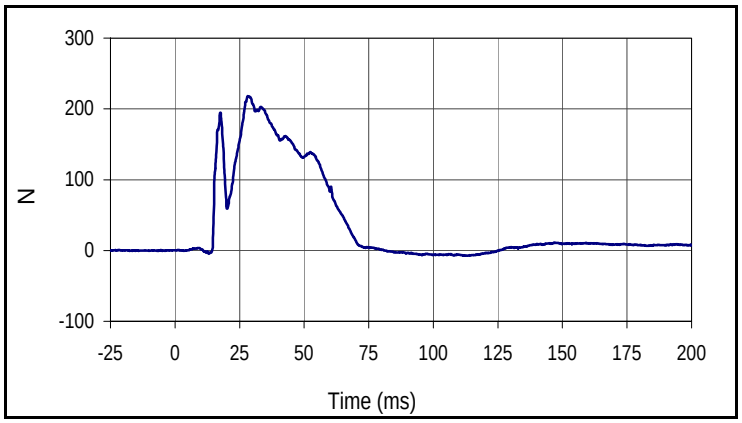


Curve Description			
Driver Thorax Rib Deflection Maximum Y			
Plot No.		SAE Class	Units
008		180	mm
Max	Time	Min	Time
21.8	46.2	0.0	13.1

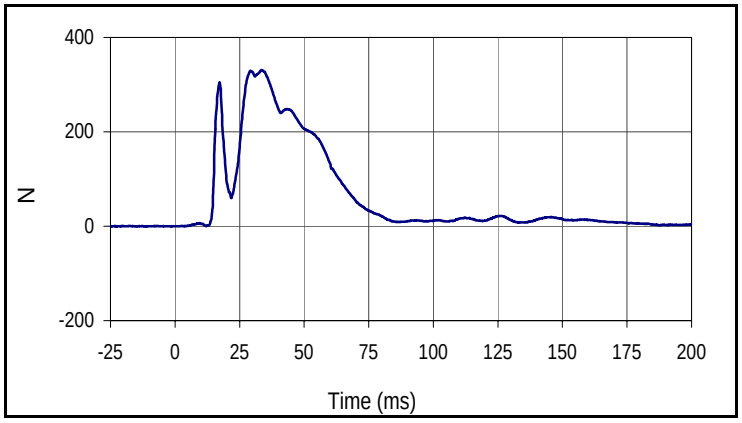
Test Vehicle:	2016 Jeep Patriot Sport 5-Door MPV	NHTSA No.:	M20160309
Test Program:	NCAP MDB Side Impact Test	Test Date:	10/7/15



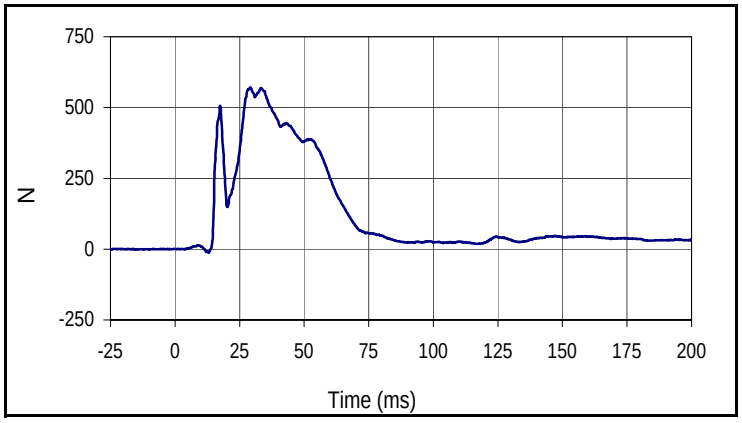
Curve Description			
Driver Anterior Abdominal Force Y			
Plot No.		SAE Class	Units
009		600	N
Max	Time	Min	Time
53.0	21.9	-11.7	14.9



Curve Description			
Driver Middle Abdominal Force Y			
Plot No.		SAE Class	Units
010		600	N
Max	Time	Min	Time
218.0	28.2	-7.5	112.0

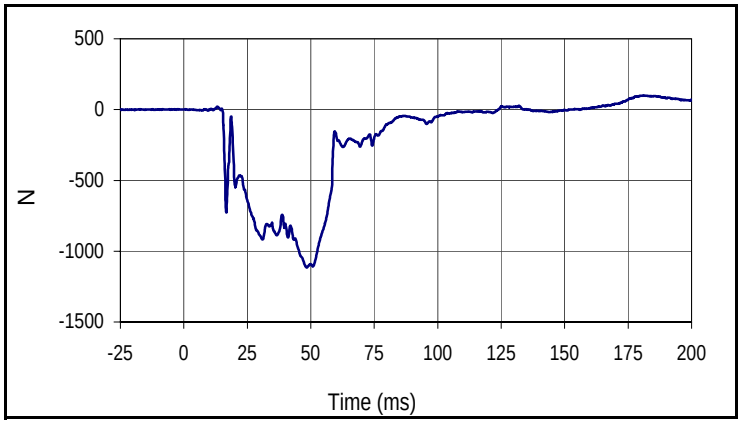


Curve Description			
Driver Posterior Abdominal Force Y			
Plot No.		SAE Class	Units
011		600	N
Max	Time	Min	Time
331.0	33.4	-0.2	3.2

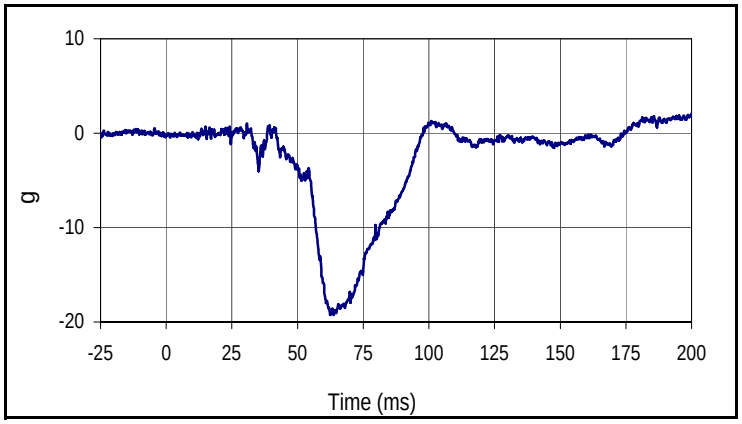


Curve Description			
Driver Total Abdominal Force			
Plot No.		SAE Class	Units
012		600	N
Max	Time	Min	Time
571.0	29.2	-12.9	13.0

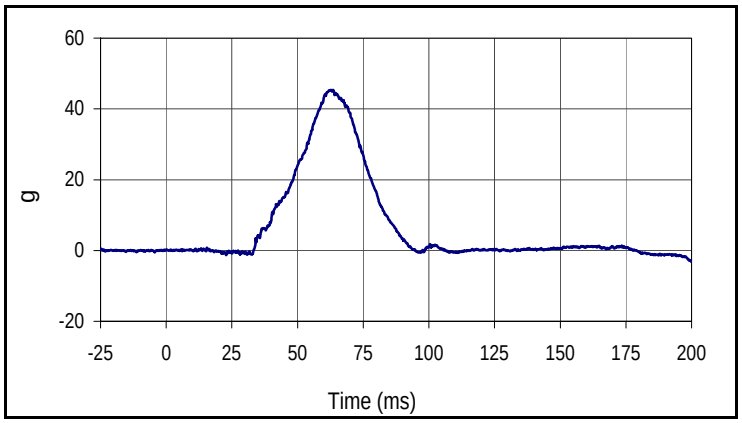
Test Vehicle:	2016 Jeep Patriot Sport 5-Door MPV	NHTSA No.:	M20160309
Test Program:	NCAP MDB Side Impact Test	Test Date:	10/7/15



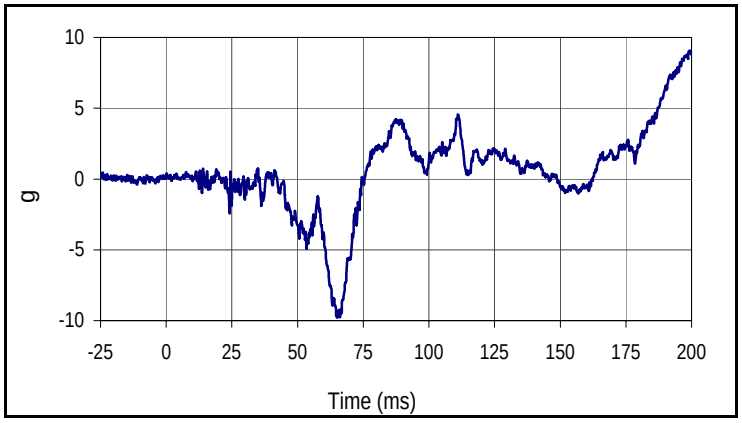
Curve Description			
Driver Pubic Symphysis Force Y			
Plot No.		SAE Class	Units
013		600	N
Max	Time	Min	Time
99.6	181.3	-1116.3	48.4



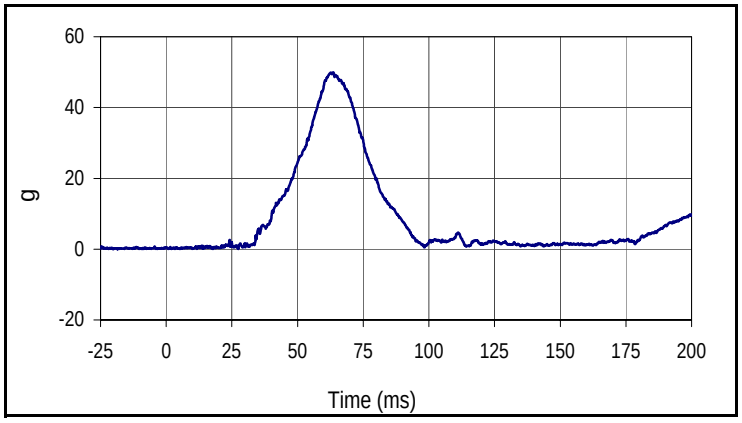
Curve Description			
Passenger Head Acceleration X Primary			
Plot No.		SAE Class	Units
014		1000	g
Max	Time	Min	Time
2.1	200.0	-19.3	63.8



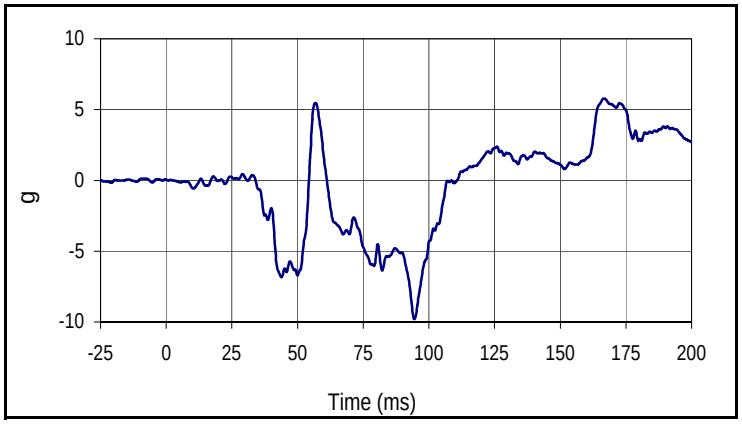
Curve Description			
Passenger Head Acceleration Y Primary			
Plot No.		SAE Class	Units
015		1000	g
Max	Time	Min	Time
45.4	62.7	-3.1	200.0



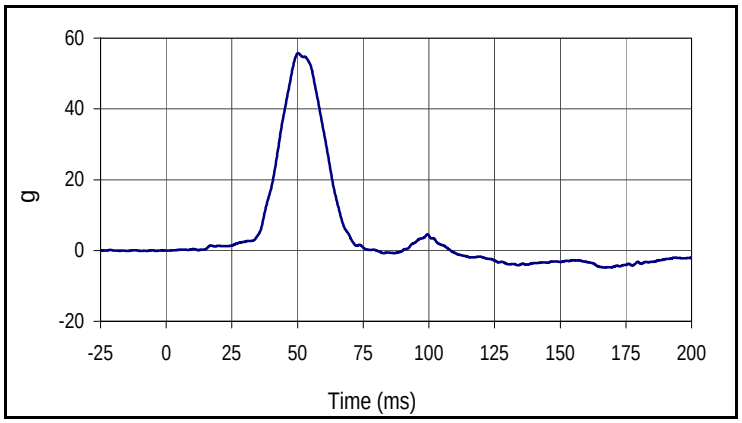
Curve Description			
Passenger Head Acceleration Z Primary			
Plot No.		SAE Class	Units
016		1000	g
Max	Time	Min	Time
9.1	200.0	-9.8	65.1



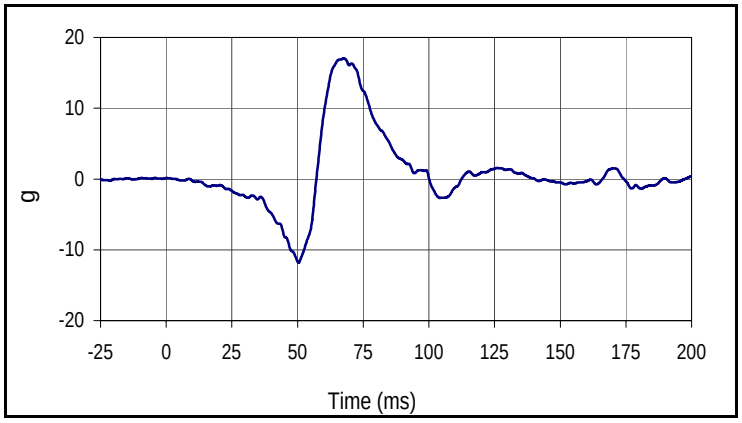
Curve Description			
Passenger Head Acceleration Resultant Primary			
Plot No.		SAE Class	Units
017		1000	g
Max	Time	Min	Time
49.9	63.6	0.0	5.3



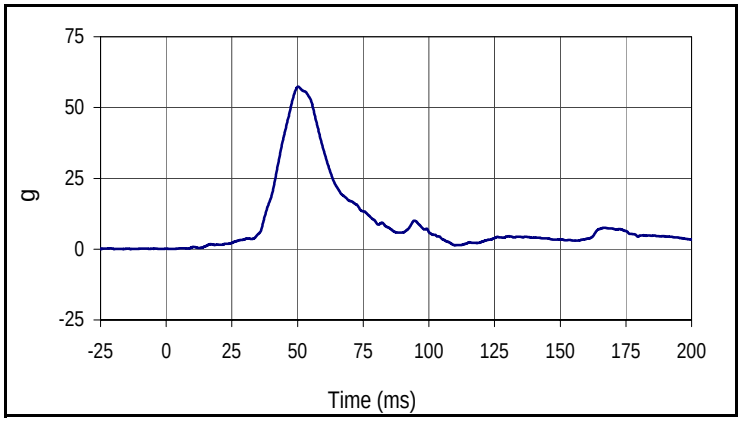
Curve Description			
Passenger Lower Spine T12 Acceleration X			
Plot No.		SAE Class	Units
018		180	g
Max	Time	Min	Time
5.8	166.7	-9.8	94.5



Curve Description			
Passenger Lower Spine T12 Acceleration Y			
Plot No.		SAE Class	Units
019		180	g
Max	Time	Min	Time
55.8	50.2	-4.8	166.9

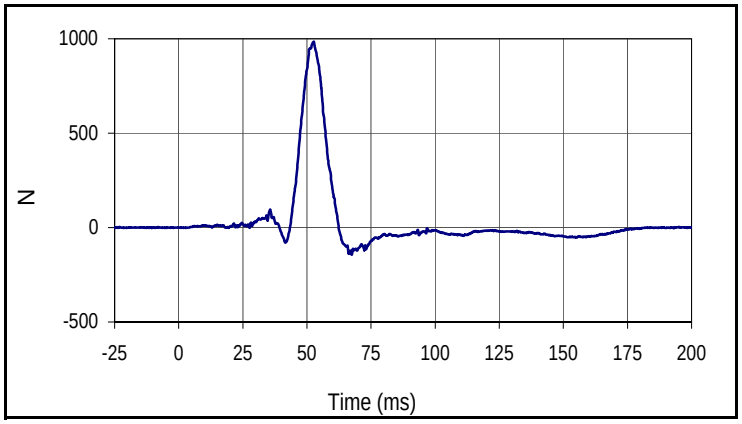


Curve Description			
Passenger Lower Spine T12 Acceleration Z			
Plot No.		SAE Class	Units
020		180	g
Max	Time	Min	Time
17.0	67.6	-11.8	50.4

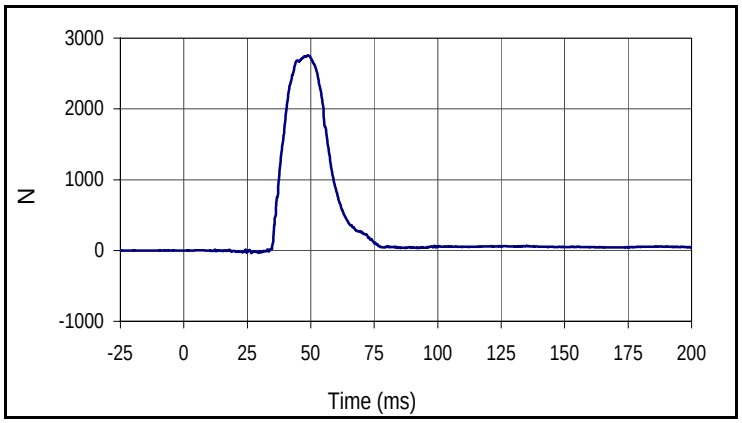


Curve Description			
Passenger Lower Spine T12 Acceleration Res.			
Plot No.		SAE Class	Units
021		180	g
Max	Time	Min	Time
57.4	50.2	0.1	2.2

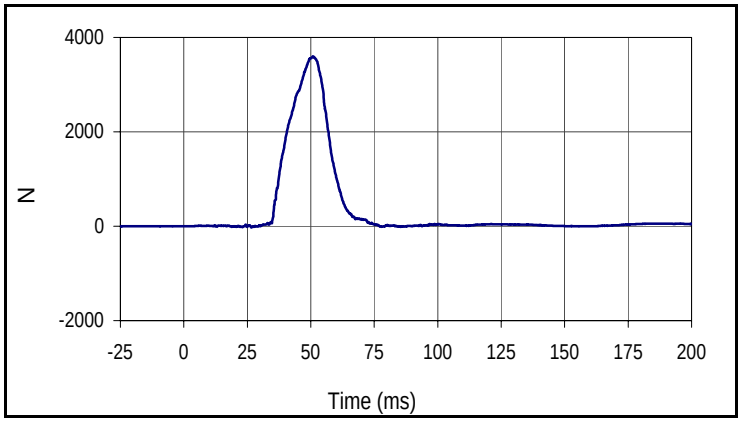
Test Vehicle:	2016 Jeep Patriot Sport 5-Door MPV	NHTSA No.:	M20160309
Test Program:	NCAP MDB Side Impact Test	Test Date:	10/7/15



Curve Description			
Passenger Iliac Force on Impact Side Y			
Plot No.		SAE Class	Units
022		600	N
Max	Time	Min	Time
985.6	52.7	-144.6	67.5



Curve Description			
Passenger Acetabulum Force on Impact Side Y			
Plot No.		SAE Class	Units
023		600	N
Max	Time	Min	Time
2750.5	48.9	-36.7	26.6



Curve Description			
Passenger Total Pelvic Force			
Plot No.		SAE Class	Units
024		600	N
Max	Time	Min	Time
3598.5	50.9	-30.4	26.6

APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

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

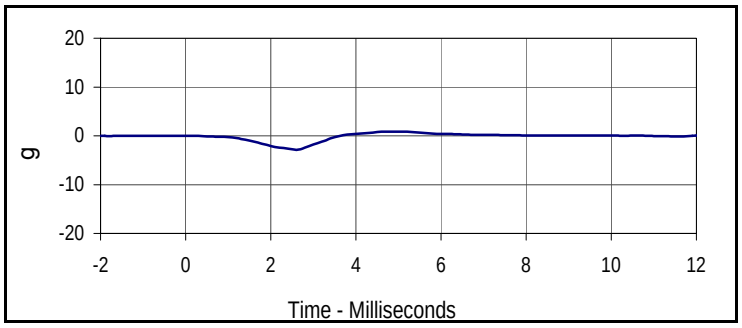
Test Program:	ES2re External Measurements	Test Date:	9/30/15
ATD Serial No.:	F037	Test I.D.:	N/A

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		^{o}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

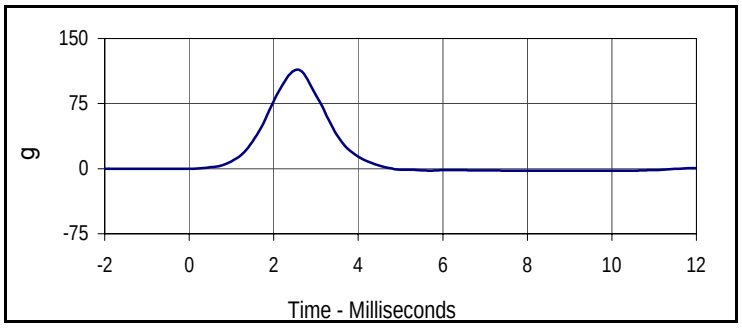
Test Program:	ES2re Head Drop Test	Test Date:	9/30/15
ATD Serial No.:	F037	Test I.D.:	F037HD076

Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	371	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.5	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.0	Pass
	Min	%		34.9	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.9	Pass
Peak Head Resultant Acceleration		G's	125 to 155	146.0	Pass
Peak Head X Acceleration		G's	≤15	5.7	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse		%	<15	6.0	Pass
			Overall Test Results		Pass

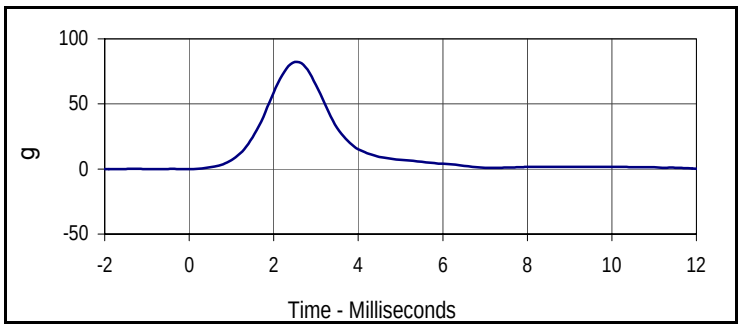
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
146.0	2.3	0.1	-1.9



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	g
Max	Time	Min	Time
4.5	4.6	-5.7	2.1



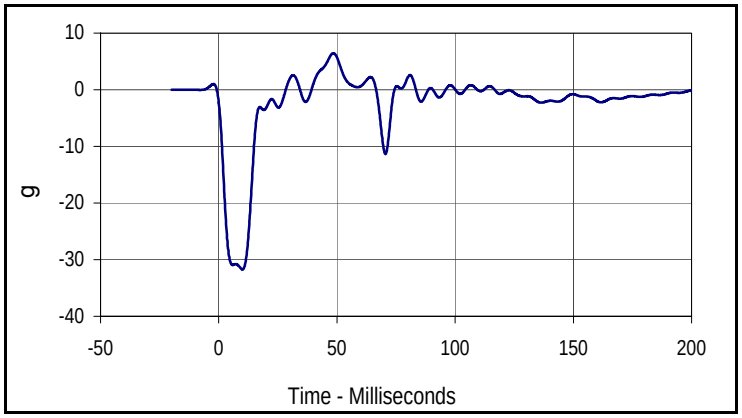
Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
116.4	2.3	-3.6	6.6



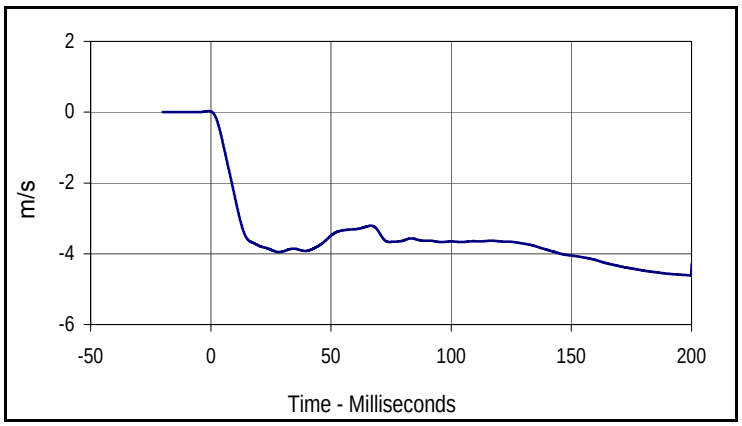
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
87.9	2.3	-0.2	-0.9

Test Program:	ES2re Neck Flexion Test	Test Date:	9/30/15
ATD Serial No.:	F037	Test I.D.:	F037NB076

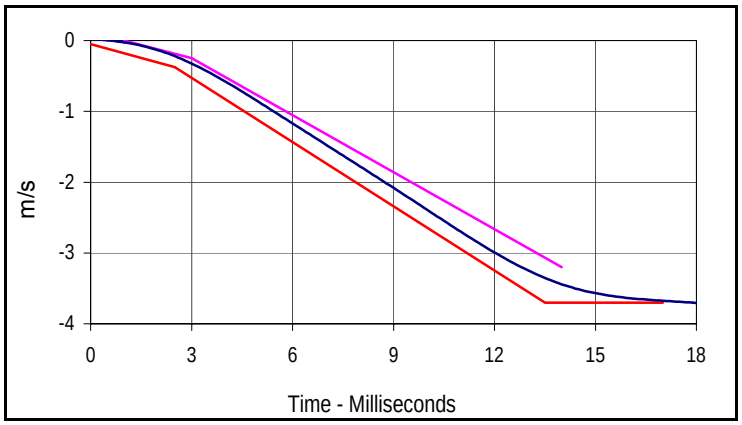
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	406	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.5	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.0	Pass
	Min	%		34.9	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.9	Pass
Pendulum Velocity		m/s	3.3 to 3.5	3.36	Pass
Headform Flexion	Max	Degrees	49 to 59	55.8	Pass
	Time	msec	54 to 66	55.2	Pass
Headform Flexion Decay (Peak to Zero)		msec	53 to 88	62.7	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	g
Max	Time	Min	Time
6.4	48.5	-31.7	10.0



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.8	-4.6	199.9

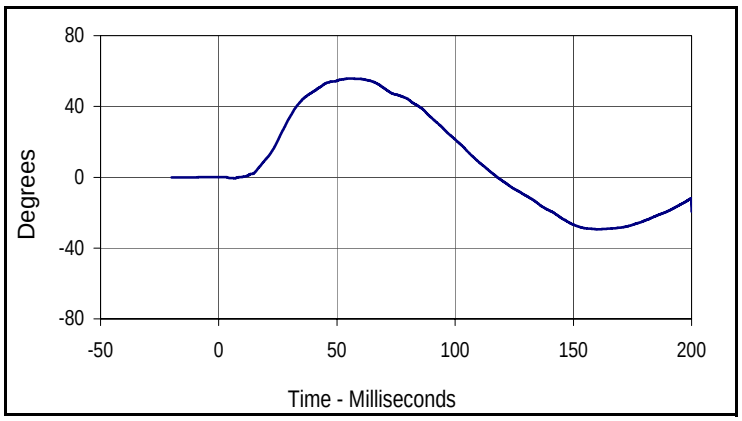


Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.8	-4.6	199.9

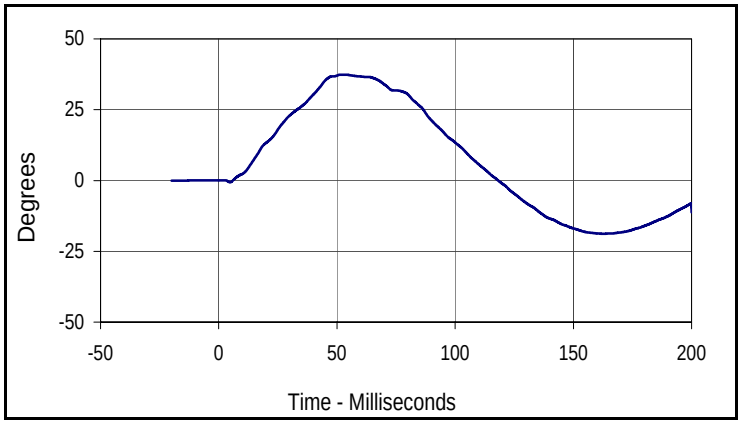
Velocity Corridors

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

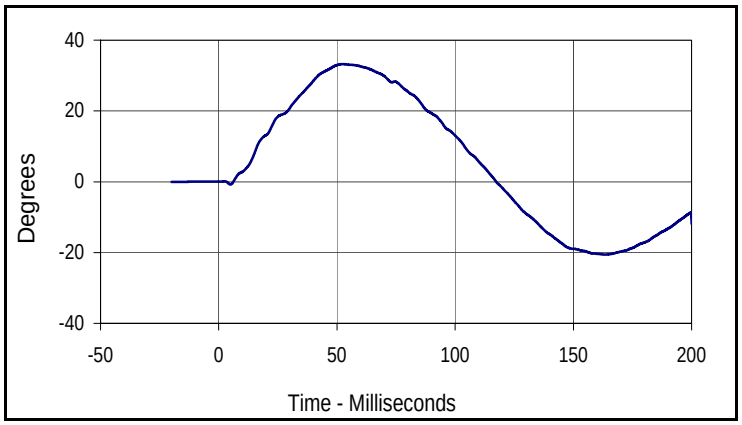
Test Program:	ES2re Neck Flexion Test	Test Date:	9/30/15
ATD Serial No.:	F037	Test I.D.:	F037NB076



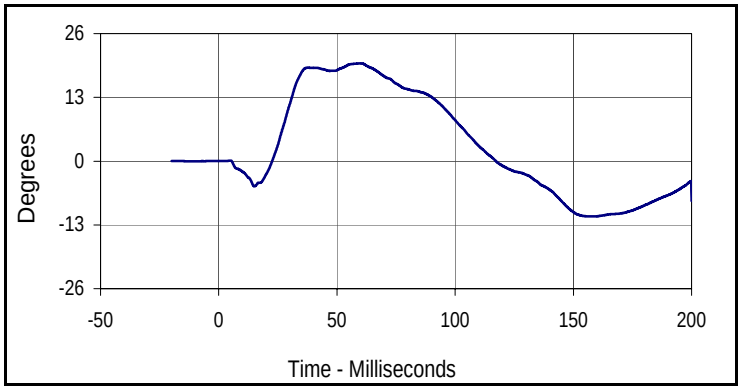
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
55.8	55.2	-29.4	160.4



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
37.4	51.6	-18.8	163.0



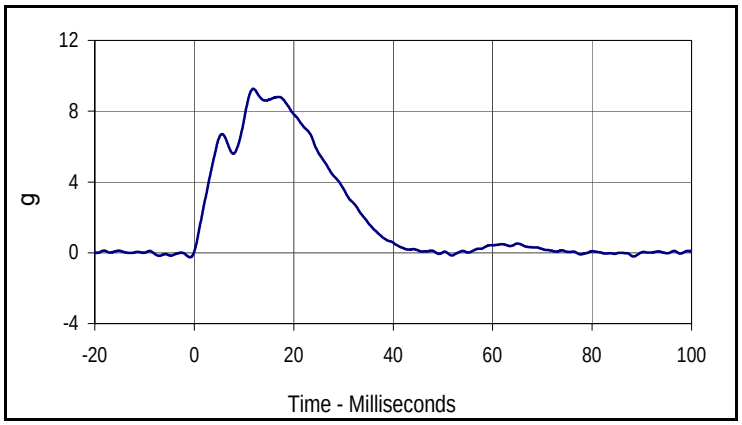
Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
33.2	52.4	-20.6	163.6



Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
19.9	60.1	-11.2	159.5

Test Program:	ES2re Shoulder Impact Test	Test Date:	9/30/15
ATD Serial No.:	F037	Test I.D.:	F037SH076

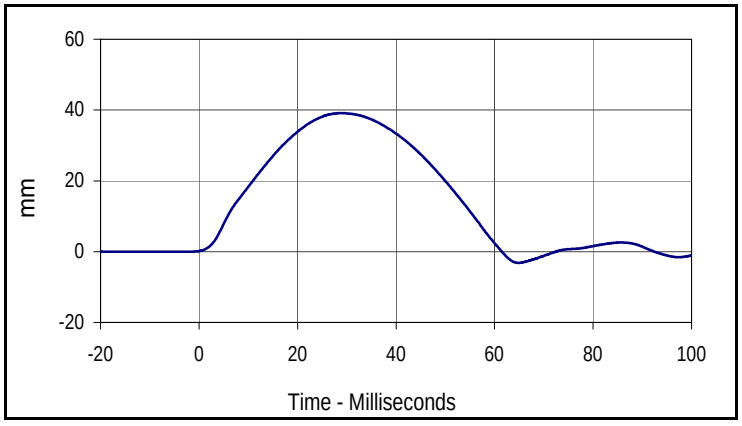
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	471	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.5	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.0	Pass
	Min	%		34.9	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	35.0	Pass
Pendulum Speed		m/s	4.2 to 4.4	4.26	Pass
Peak Impactor Acceleration		G's	7.5 to 10.5	9.3	Pass
			Overall Test Results		Pass



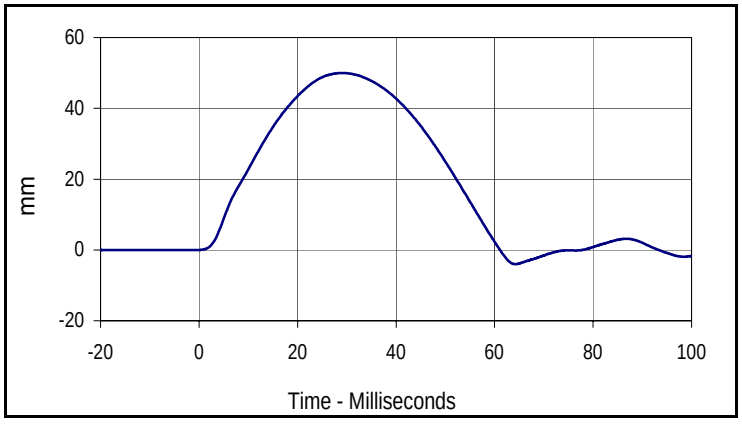
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	g
Max	Time	Min	Time
9.3	11.9	-0.3	-0.8

Test Program:	ES2re Thorax - Rib Drop Test	Test Date:	9/30/15
ATD Serial No.:	F037 Rib # 1	Test I.D.:	F037RB1076

Tested Parameter		Units	Specification	Result	Pass/Fail
Rib Module Soak Time		Minutes	≥240	526	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.5	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.0	Pass
	Min	%		34.9	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.9	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height		mm	36 to 40	39.1	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height		mm	46 to 51	50.0	Pass
			Overall Test Results		Pass



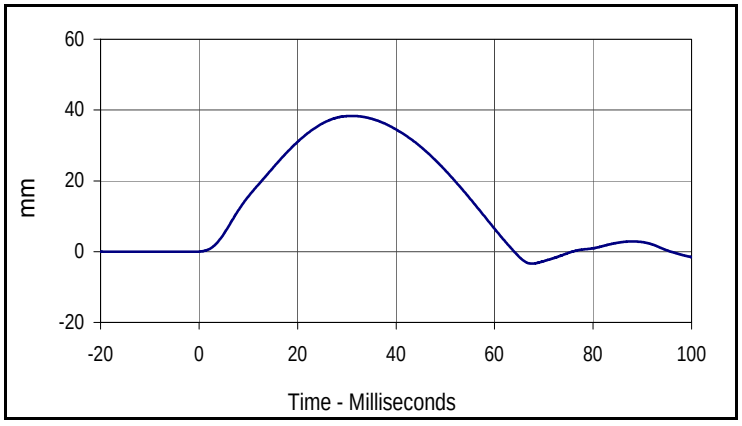
Curve Description			
Upper Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	mm
Max	Time	Min	Time
39.1	28.9	-3.2	64.9



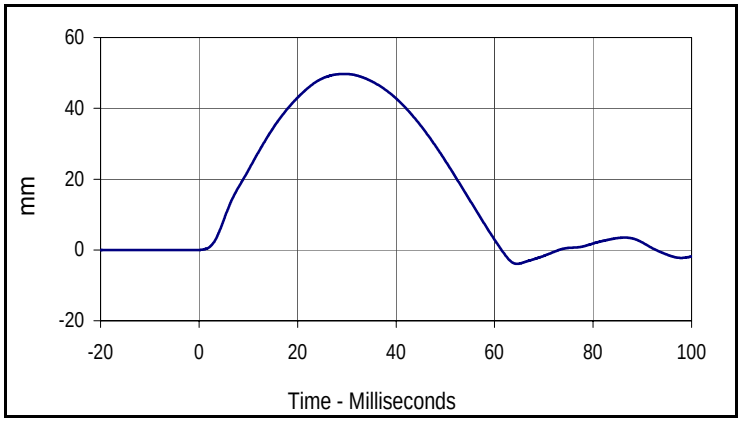
Curve Description			
Upper Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max	Time	Min	Time
50.0	29.1	-4.0	64.2

Test Program:	ES2re Thorax - Rib Drop Test	Test Date:	9/30/15
ATD Serial No.:	F037 Rib # 2	Test I.D.:	F037RB2076

Tested Parameter		Units	Specification	Result	Pass/Fail
Rib Module Soak Time		Minutes	≥240	571	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.5	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.0	Pass
	Min	%		34.9	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	35.0	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height		mm	36 to 40	38.3	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height		mm	46 to 51	49.7	Pass
			Overall Test Results		Pass



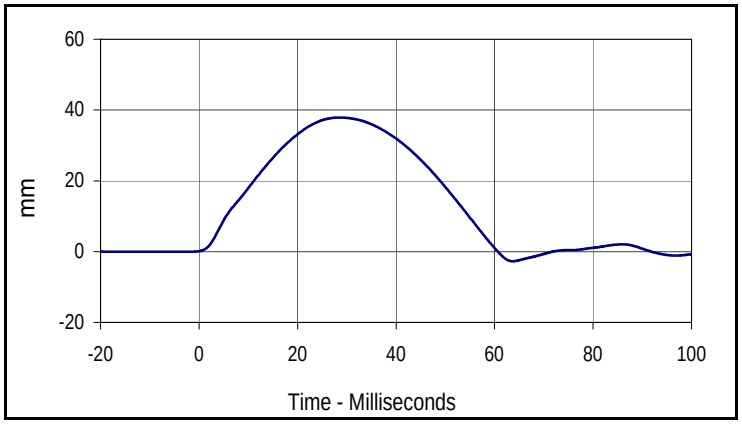
Curve Description			
Middle Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	mm
Max	Time	Min	Time
38.3	31.1	-3.4	67.6



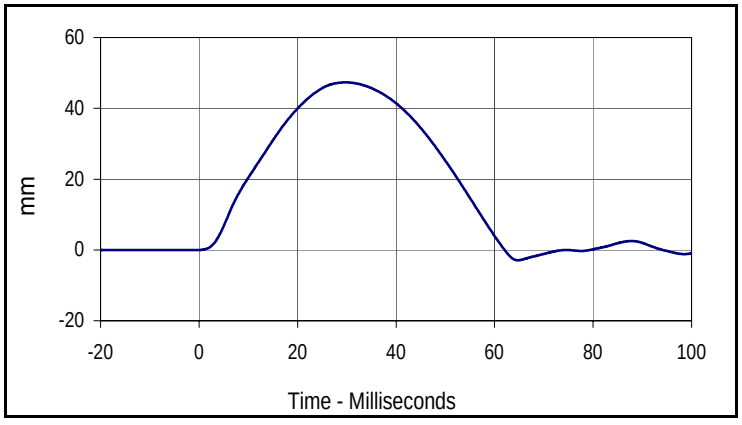
Curve Description			
Middle Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max	Time	Min	Time
49.7	29.4	-3.9	64.6

Test Program:	ES2re Thorax - Rib Drop Test	Test Date:	9/30/15
ATD Serial No.:	F037 Rib # 3	Test I.D.:	F037RB3076

Tested Parameter		Units	Specification	Result	Pass/Fail
Rib Module Soak Time		Minutes	≥240	616	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.5	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.0	Pass
	Min	%		34.9	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.9	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	47.3	Pass
			Overall Test Results		Pass



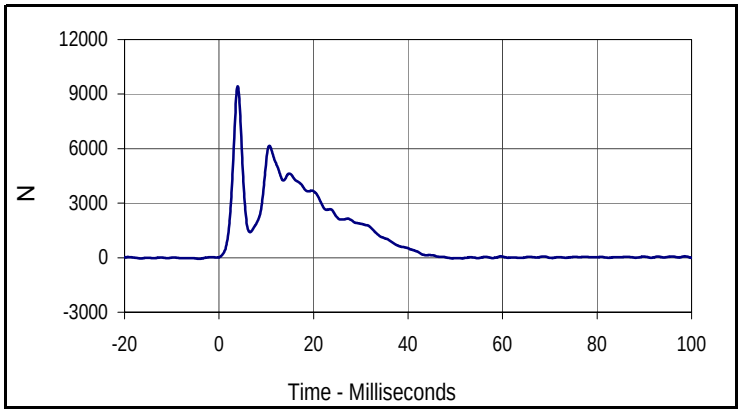
Curve Description			
Lower Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	mm
Max	Time	Min	Time
37.9	28.5	-2.7	63.7



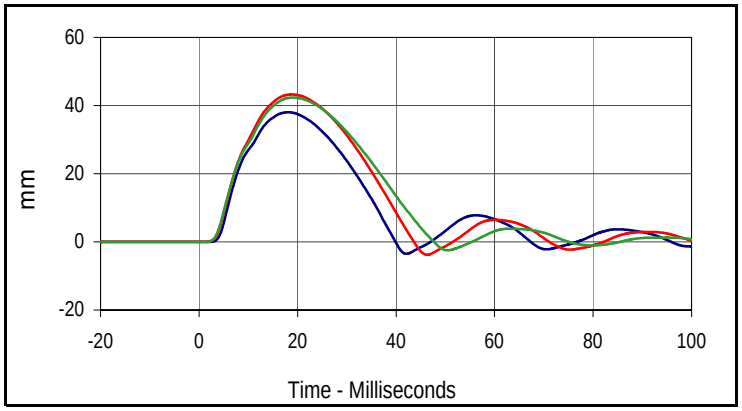
Curve Description			
Lower Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max	Time	Min	Time
47.3	29.7	-2.9	64.7

Test Program:	ES2re Thorax - Full Body Impact Test	Test Date:	9/30/15
ATD Serial No.:	F037	Test I.D.:	F037TH076

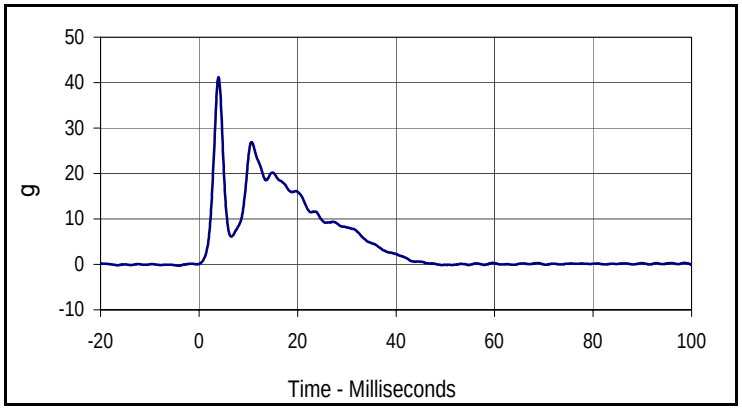
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	661	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.5	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.0	Pass
	Min	%		34.9	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.9	Pass
Peak Impactor Velocity		m/s	5.4 to 5.6	5.53	Pass
Peak Impactor Force		N	5100 to 6200	6163.3	Pass
		msec	> 6.0 msec	10.7	Pass
Peak Upper Rib Deflection		mm	34 to 41	38.0	Pass
Peak Middle Rib Deflection		mm	37 to 45	43.2	Pass
Peak Lower Rib Deflection		mm	37 to 44	42.3	Pass
			Overall Test Results		Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	N
Max	Time	Min	Time
9432.1	4.0	-61.5	-4.2



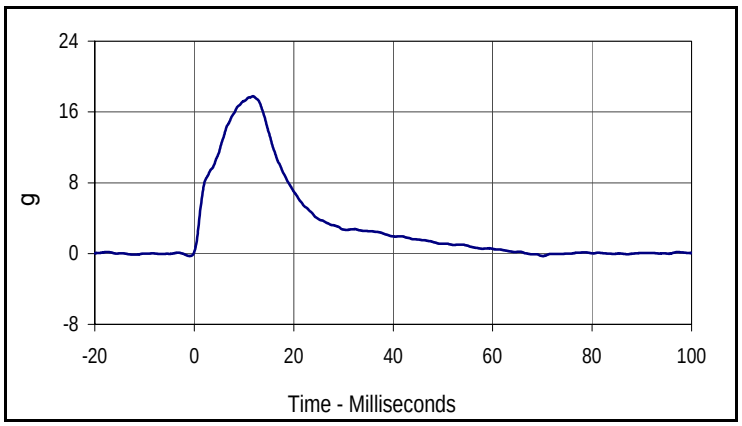
Curve Description			
Upper, Middle, Lower Rib Deflections			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max (Upper)	Time	Min (Upper)	Time
38.0	18.1	-3.5	42.1
Max (Middle)	Time	Min (Middle)	Time
43.2	18.8	-3.8	46.3
Max (Lower)	Time	Min (Lower)	Time
42.3	19.1	-2.5	50.5



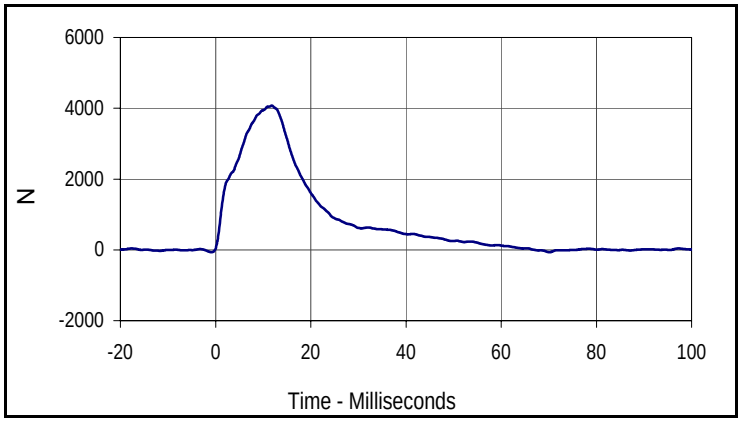
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
41.2	4.0	-0.3	-4.2

Test Program:	ES2re Abdomen Impact Test	Test Date:	9/30/15
ATD Serial No.:	F037	Test I.D.:	F037ABD076

Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	731	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.5	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.0	Pass
	Min	%		34.9	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	35.0	Pass
Probe Velocity		m/s	3.9 to 4.1	3.96	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	2497.0	Pass
		msec	10.0 to 12.3	11.3	Pass
			Overall Test Results		Pass

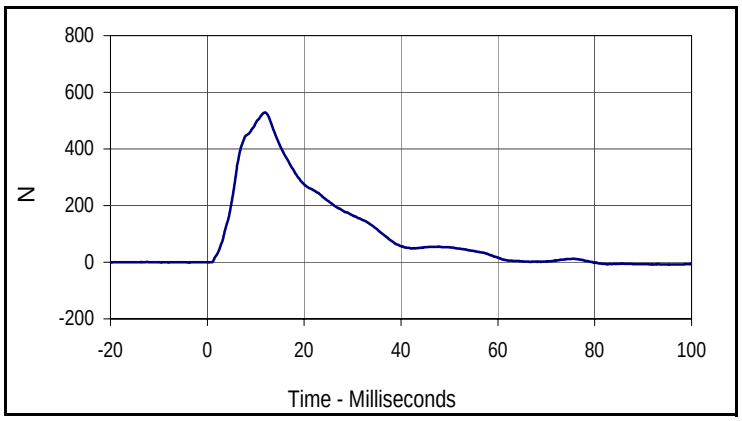


Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	g
Max	Time	Min	Time
17.8	11.8	-0.3	70.1

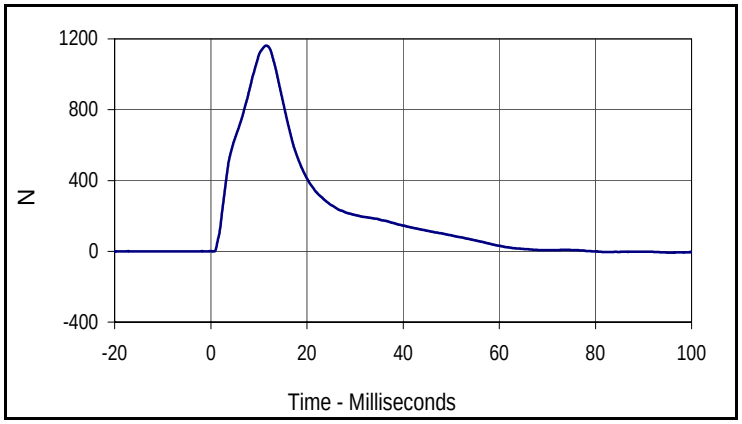


Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	N
Max	Time	Min	Time
4072.3	11.8	-65.4	70.1

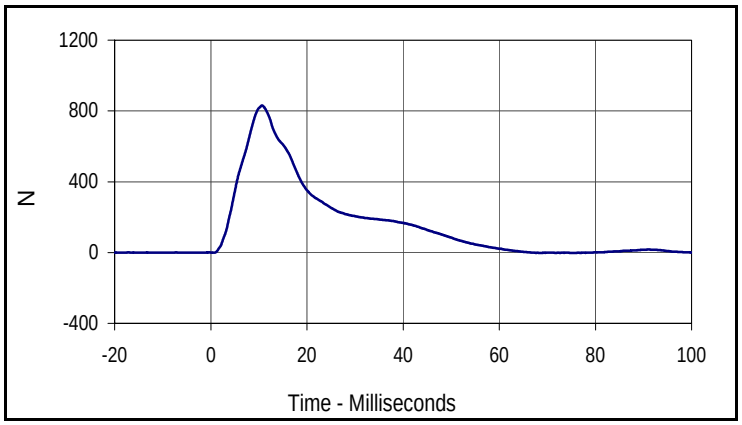
Test Program:	ES2re Abdomen Impact Test	Test Date:	9/30/15
ATD Serial No.:	F037	Test I.D.:	F037ABD076



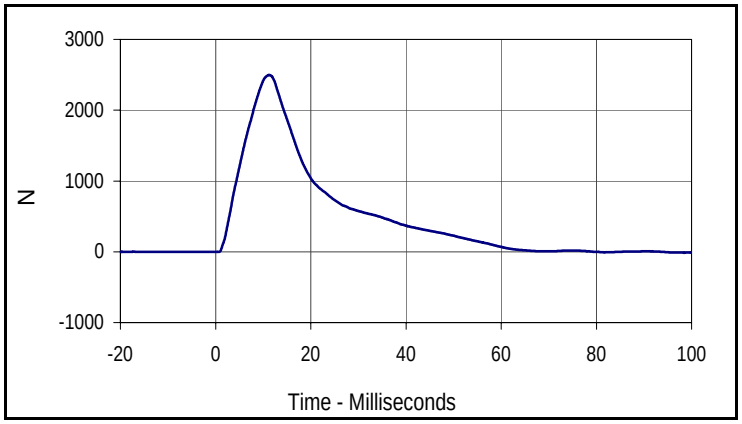
Curve Description			
Front Abdomen Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	N
Max	Time	Min	Time
528.8	11.9	-8.5	95.3



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



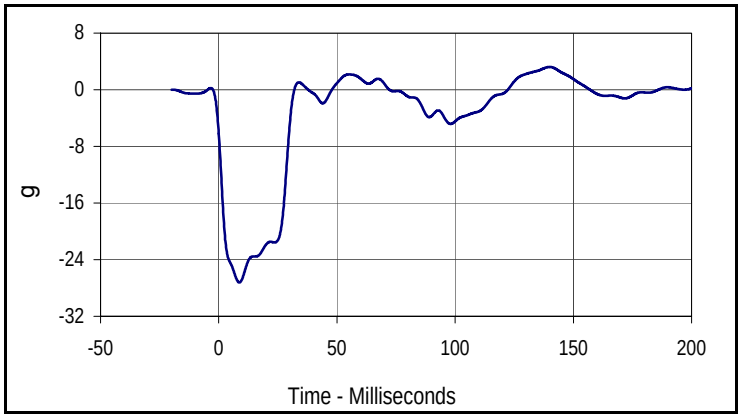
Curve Description			
Rear Abdomen Force			
Plot No.	Type	SAE Class	Units
005	FIL	600	N
Max	Time	Min	Time
830.8	10.7	-2.5	75.8



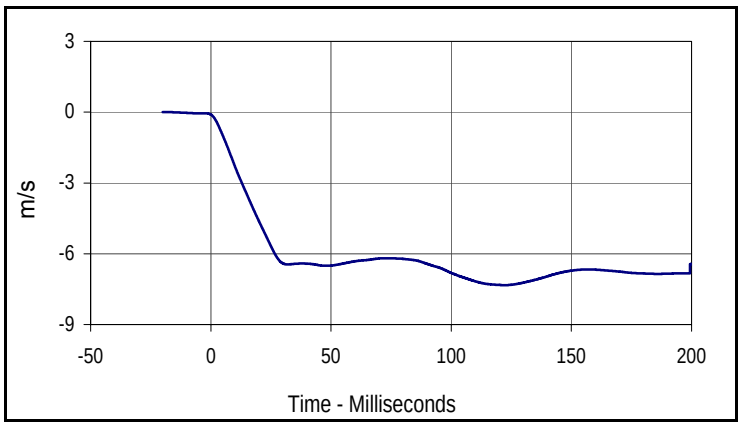
Curve Description			
Abdomen Sum Resultant			
Plot No.	Type	SAE Class	Units
006	RES	600	N
Max	Time	Min	Time
2497.0	11.3	-12.8	98.4

Test Program:	ES2re Lumbar Flexion Test	Test Date:	9/30/15
ATD Serial No.:	F037	Test I.D.:	F037LB076

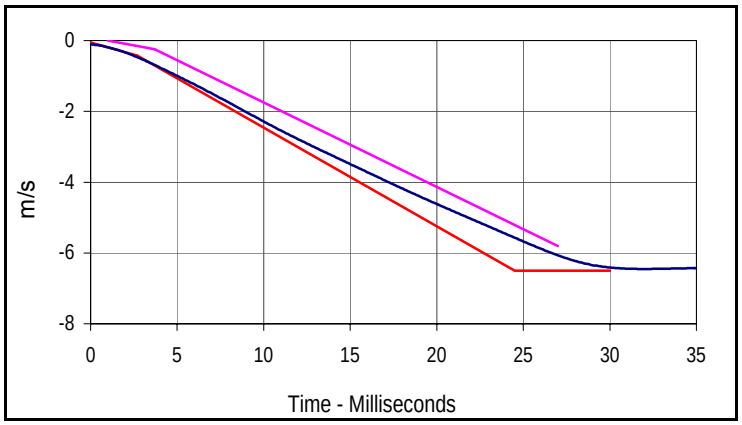
Tested Parameter		Units	Specification	Result	Pass/Fail
Lumbar Spine Assembly Soak Time		Minutes	≥240	806	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.5	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.0	Pass
	Min	%		34.9	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.9	Pass
Pendulum Velocity		m/s	5.95 to 6.15	5.99	Pass
Headform Rotation	Max	Degrees	45 to 55	48.5	Pass
	Time	msec	39 to 53	44.6	Pass
Time of Decay to Zero Angle from Peak		msec	37 to 57	41.7	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	g
Max	Time	Min	Time
3.2	140.5	-27.2	9.3



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-9.4	-7.3	122.9

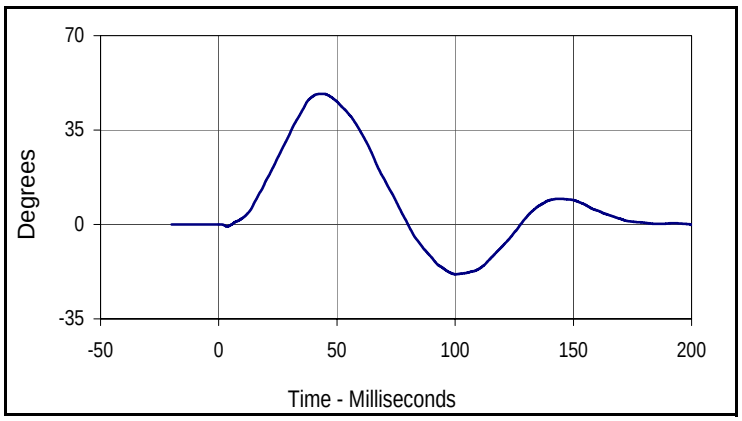


Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-9.4	-7.3	122.9

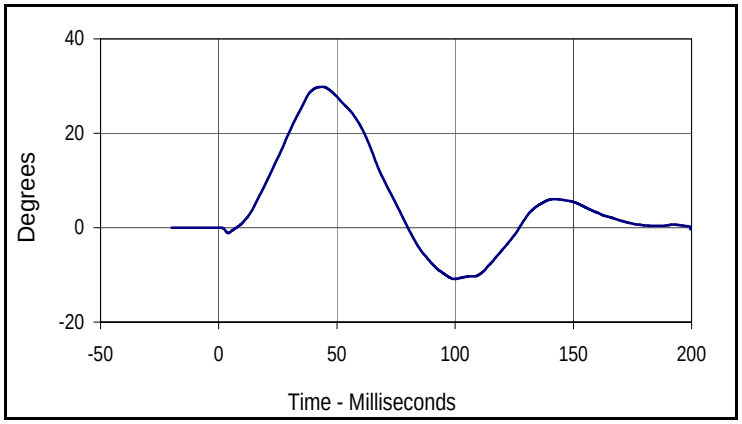
Velocity Corridors

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

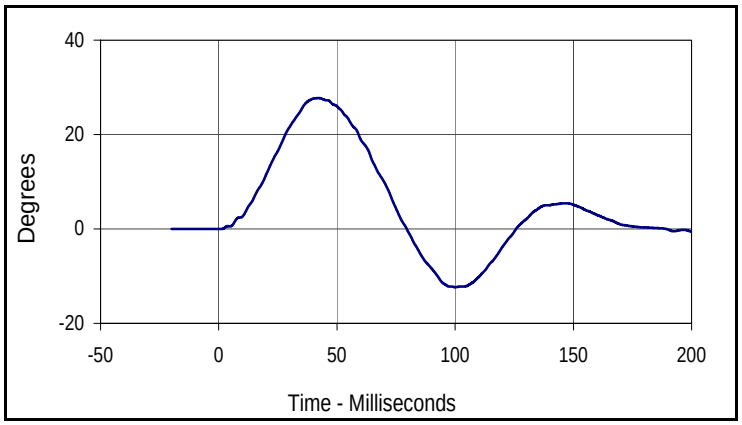
Test Program:	ES2re Lumbar Flexion Test	Test Date:	9/30/15
ATD Serial No.:	F037	Test I.D.:	F037LB076



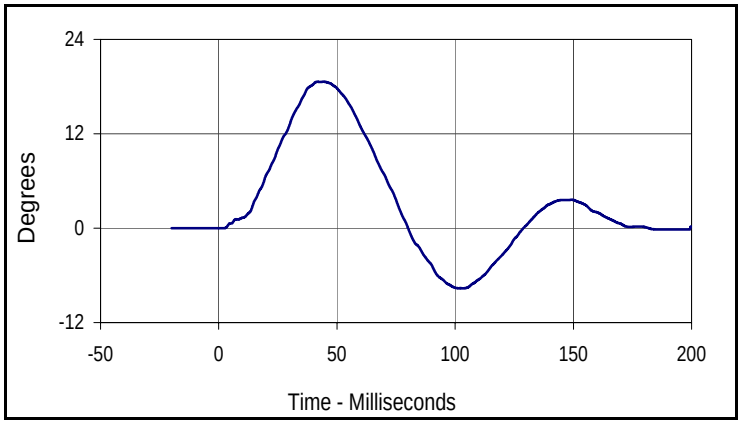
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
48.5	44.6	-18.5	100.8



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
29.8	44.4	-10.9	100.4



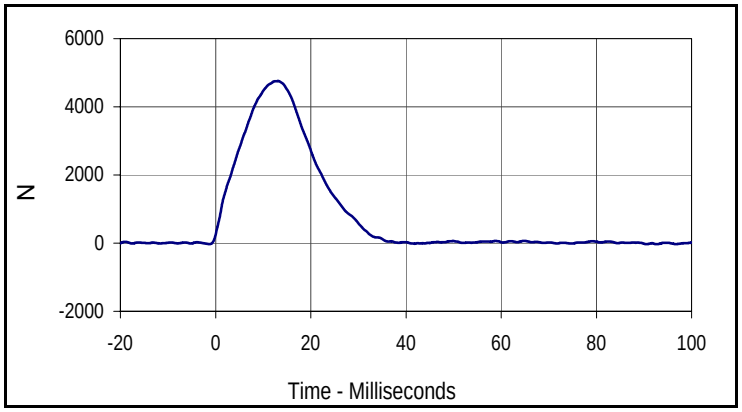
Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
27.7	42.9	-12.3	100.6



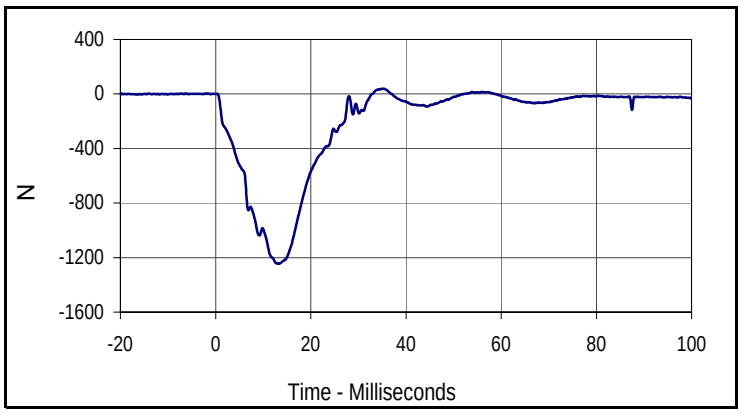
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
18.6	45.0	-7.6	104.2

Test Program:	ES2re Pelvis Impact Test	Test Date:	9/30/15
ATD Serial No.:	F037	Test I.D.:	F037PL076

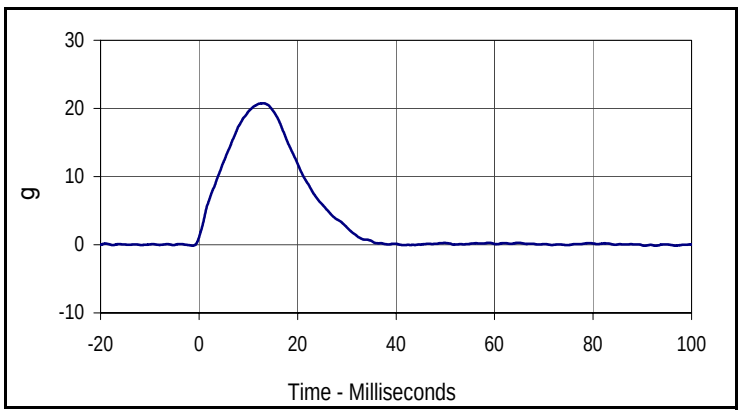
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	861	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.5	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.0	Pass
	Min	%		34.9	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.9	Pass
Pendulum Velocity		m/s	4.2 to 4.4	4.30	Pass
Peak Impactor Force		N	4700 to 5400	4757.0	Pass
		msec	11.8 to 16.1	13.1	Pass
Peak Pubic Symphysis Load		N	-1230 to -1590	-1244.4	Pass
		msec	12.2 to 17.0	13.3	Pass
			Overall Test Results		Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	N
Max	Time	Min	Time
4757.0	13.1	-32.9	92.6



Curve Description			
Pubic Symphysis Force Y			
Plot No.	Type	SAE Class	Units
002	FIL	600	N
Max	Time	Min	Time
39.4	35.2	-1244.4	13.3



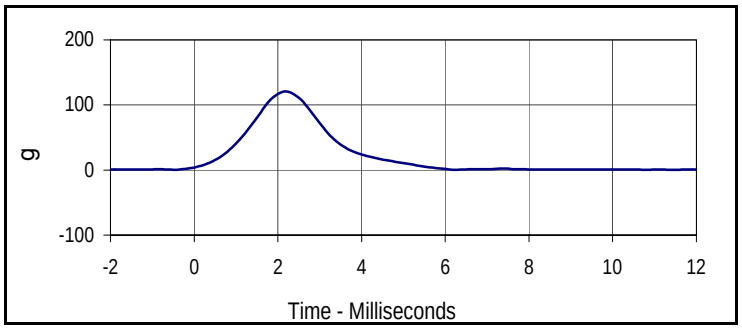
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
20.8	13.1	-0.1	92.6

Test Program:	SID IIs External Measurements	Test Date:	10/1/15
ATD Serial No.:	307	Test I.D.:	N/A

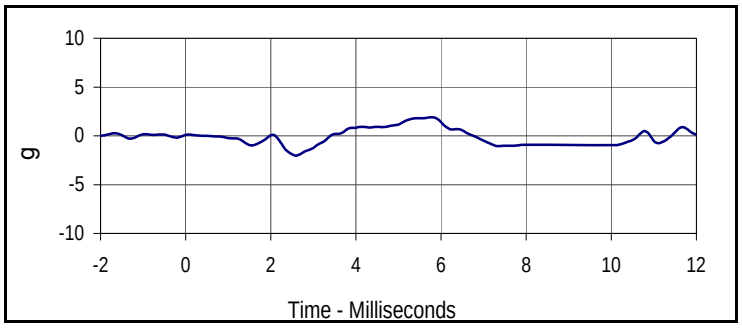
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	35	Pass
A	Sitting Height	mm	772 - 788	778	Pass
B	Shoulder Pivot Height	mm	437 - 453	443	Pass
C	H-Point Height	mm	79 - 89	85	Pass
D	H-Point from Seatback	mm	141 - 151	144	Pass
E	Shoulder Pivot from Backline	mm	97 - 107	102	Pass
F	Thigh Clearance	mm	119 - 135	128	Pass
G	Head Breadth	mm	140 - 148	145	Pass
H	Head Back from Backline	mm	40 - 46	43	Pass
I	Head Depth	mm	178 - 188	185	Pass
J	Head Circumference	mm	541 - 551	546	Pass
K	Buttock to Knee Length	mm	514 - 540	525	Pass
L	Popliteal Height	mm	343 - 369	351	Pass
M	Knee Pivot to Floor Height	mm	392 - 409	400	Pass
N	Buttock Popliteal Length	mm	416 - 442	432	Pass
O	Chest Depth w/o Jacket	mm	195 - 211	205	Pass
P	Foot Length	mm	216 - 232	223	Pass
Q	Hip Breadth with Pelvic Plug	mm	313 -323	319	Pass
R	Arm Length	mm	249 - 259	254	Pass
S	Knee Joint to Seatback	mm	477 - 493	483	Pass
V	Shoulder Width	mm	341 - 357	351	Pass
W	Foot Width	mm	78 - 94	89	Pass
Y	Chest Circumference with Jacket	mm	851 - 881	872	Pass
Z	Waist Circumference	mm	760 - 791	774	Pass
			Overall Test Results		Pass

Test Program:	SID IIs Head Drop Test	Test Date:	10/1/15
ATD Serial No.:	307	Test I.D.:	307HD085

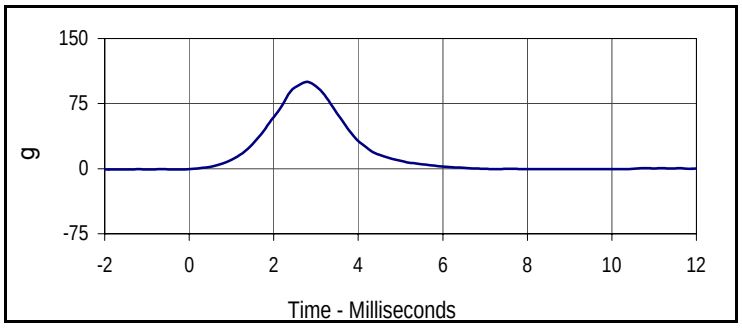
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	395	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.3	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.2	Pass
	Min	%		35.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	35.1	Pass
Peak Head Resultant Acceleration		G's	115 to 137	120.9	Pass
Peak Head X Acceleration		G's	<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			
200			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
120.9	2.2	0.2	11.5



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

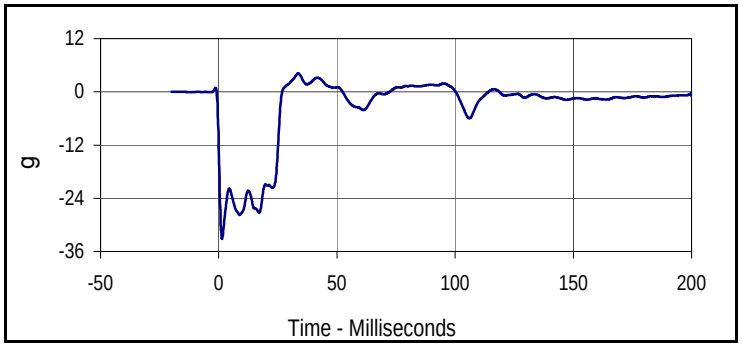


Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
100.1	2.8	-1.0	-5.0

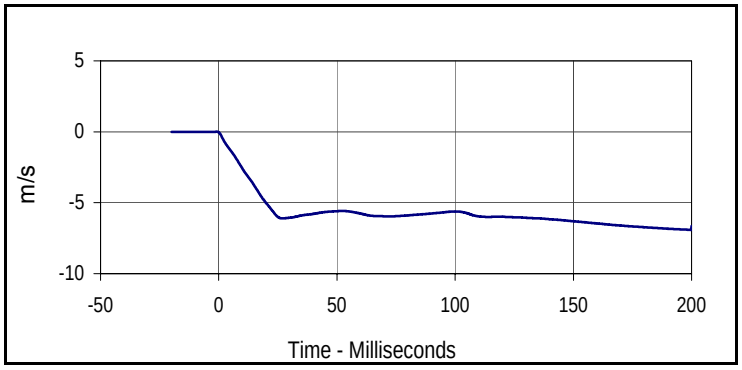
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
67.9	2.8	-2.1	8.0

Test Program:	SID IIs Neck Flexion Test	Test Date:	10/1/15
ATD Serial No.:	307	Test I.D.:	307NB085

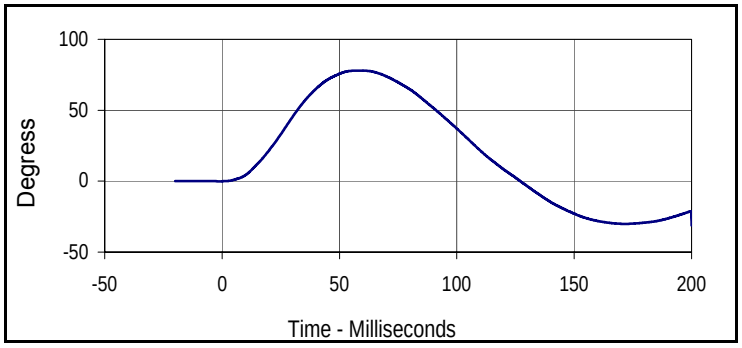
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	440	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.3	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.2	Pass
	Min	%		35.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	35.1	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.54	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.59	Pass
	15 msec	m/s	-3.30 to -4.10	-3.78	Pass
	20 msec	m/s	-4.40 to -5.40	-5.01	Pass
	25 msec	m/s	-5.40 to -6.10	-6.01	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.10	Pass
D-Plane Rotation	Max	Degrees	71 to 81	78.0	Pass
	Time	msec	50 to 70	58.7	Pass
Peak Occipital Condyle Moment		Nm	-36 to -44	-43.3	Pass
Decaying Moment Time to Cross 0 Nm		msec	102 to 126	105.5	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	g
Max	Time	Min	Time
4.2	0.0	-33.2	0.0

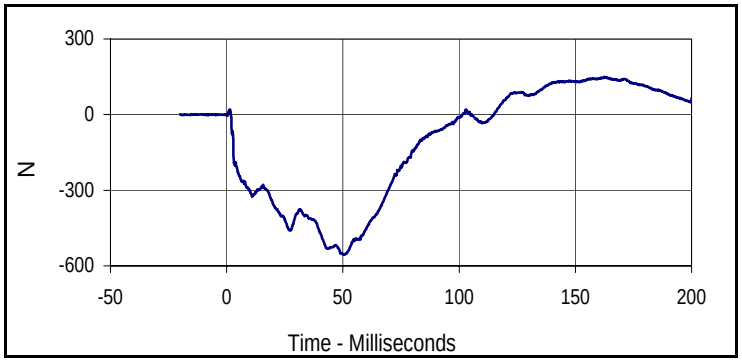


Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.9	-6.9	199.9

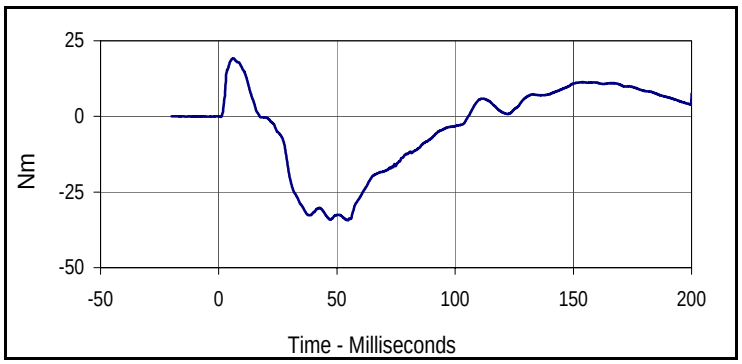


Curve Description			
D-Plane Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degress
Max	Time	Min	Time
78.0	58.7	-31.2	200.0

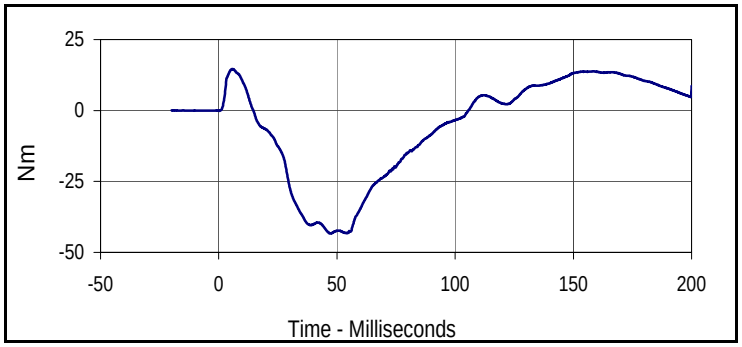
Test Program:	SID IIs Neck Flexion Test	Test Date:	10/1/15
ATD Serial No.:	307	Test I.D.:	307NB085



Curve Description			
Neck Force Y			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
149.9	162.6	-555.0	50.4



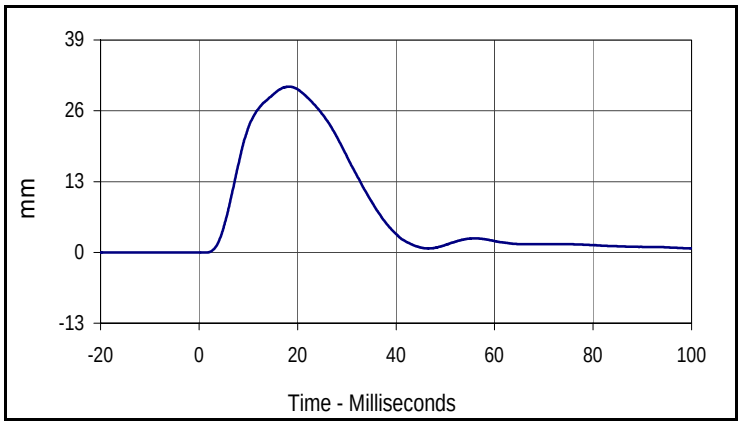
Curve Description			
Neck Moment X			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
19.1	6.3	-34.4	54.7



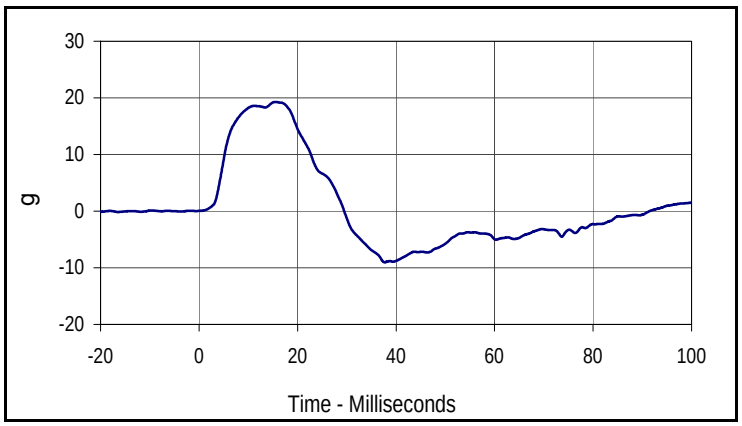
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
006	FIL	600	Nm
Max	Time	Min	Time
14.6	5.7	-43.3	47.2

Test Program:	SID IIs Shoulder Impact Test	Test Date:	10/1/15
ATD Serial No.:	307	Test I.D.:	307SH085

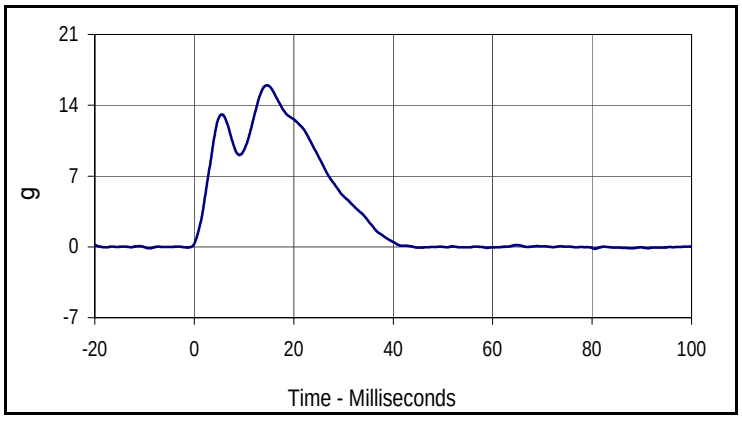
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	495	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.3	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.2	Pass
	Min	%		35.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	35.0	Pass
Impactor Velocity		m/s	4.20 to 4.40	4.30	Pass
Peak Shoulder Deflection		mm	28 to 37	30.4	Pass
Peak Lateral Spine Acceleratrion Y		G's	17 to 22	19.3	Pass
Peak Impactor Acceleration		G's	13 to 18	16.0	Pass
			Overall Test Results		Pass



Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
30.4	18.4	0.0	-6.7



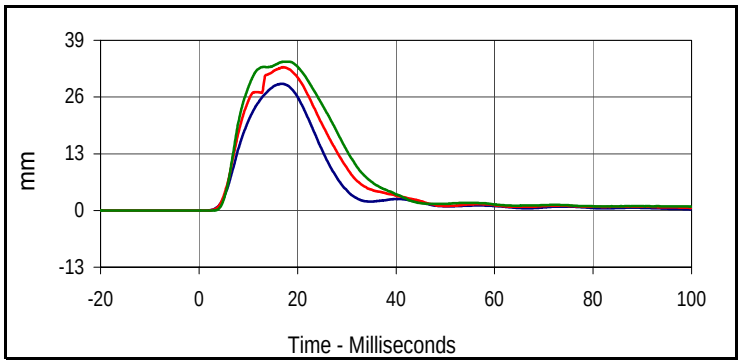
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
19.3	15.5	-9.0	37.7



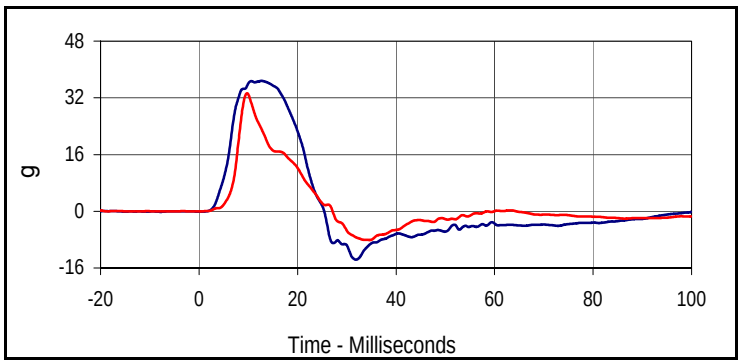
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
16.0	14.6	-0.2	80.6

Test Program:	SID IIs Thorax with Arm Impact Test	Test Date:	10/1/15
ATD Serial No.:	307	Test I.D.:	307TWA085

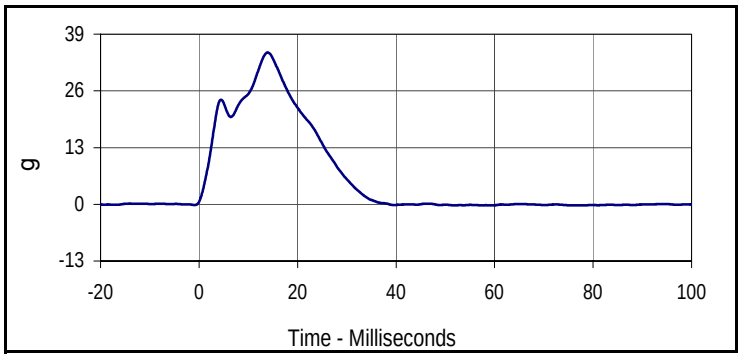
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	540	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.3	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.2	Pass
	Min	%		35.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	35.2	Pass
Impactor Velocity		m/s	6.6 to 6.8	6.71	Pass
Peak Shoulder Deflection		mm	31 to 40	35.6	Pass
Peak Upper Thorax Rib Deflection		mm	25 to 32	29.0	Pass
Peak Middle Thorax Rib Deflection		mm	30 to 36	32.8	Pass
Peak Lower Thorax Rib Deflection		mm	32 to 38	34.1	Pass
Peak Upper Spine Y Acceleration		G's	34 to 43	36.8	Pass
Peak Lower Spine Y Acceleration		G's	29 to 37	33.3	Pass
Peak Impactor Acceleration		G's	30 to 36	34.8	Pass
			Overall Test Results		Pass



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
29.0	16.9	0.0	-17.3
Middle Thorax Deflection			
Max	Time	Min	Time
32.8	17.1	0.0	-1.3
Lower Thorax Deflection			
Max	Time	Min	Time
34.1	18.0	0.0	-0.5

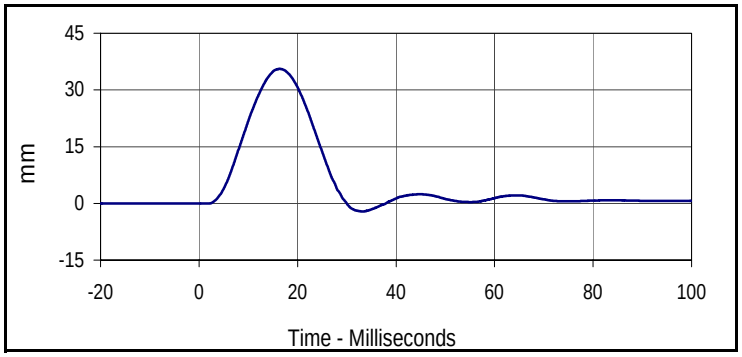


Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
36.8	12.7	-13.7	31.9
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	g
Max	Time	Min	Time
33.3	9.7	-8.1	34.6



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	g
Max	Time	Min	Time
34.8	13.9	-0.2	51.8

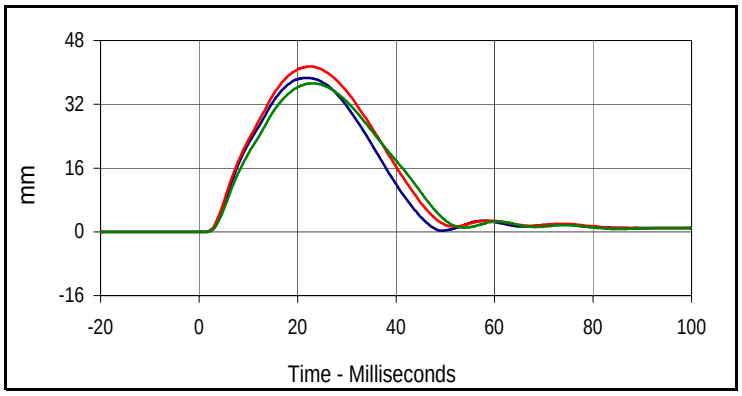
Test Program:	SID IIs Thorax with Arm Impact Test	Test Date:	10/1/15
ATD Serial No.:	307	Test I.D.:	307TWA085



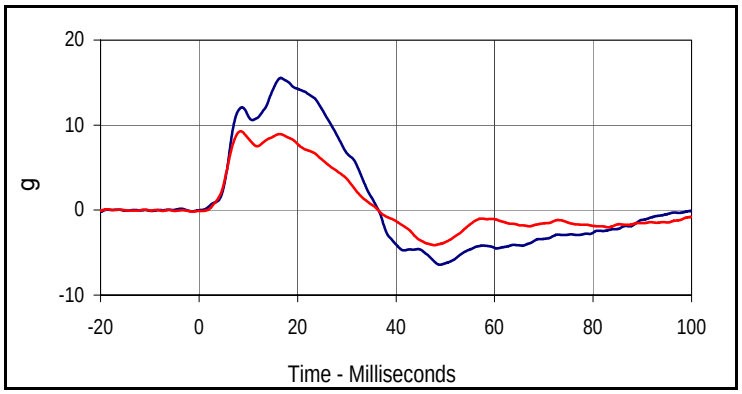
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	mm
Max	Time	Min	Time
35.6	16.4	-2.1	33.3

Test Program:	SID IIs Thorax without Arm Impact Test	Test Date:	10/1/15
ATD Serial No.:	307	Test I.D.:	307TWOA085

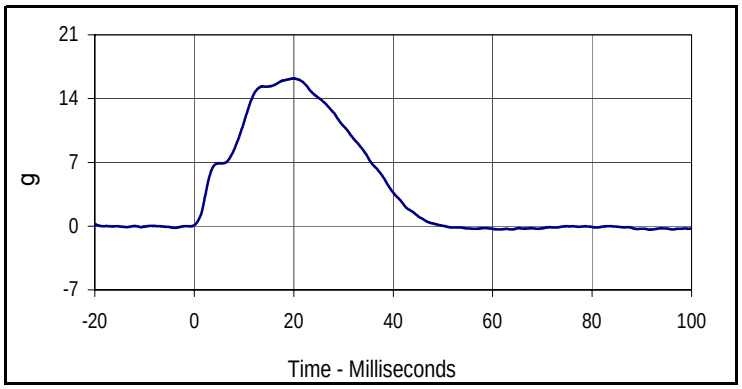
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	595	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.3	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.2	Pass
	Min	%		35.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	35.2	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.32	Pass
Peak Upper Thorax Rib Deflection		mm	32 to 40	38.6	Pass
Peak Middle Thorax Rib Deflection		mm	39 to 45	41.5	Pass
Peak Lower Thorax Rib Deflection		mm	35 to 43	37.2	Pass
Peak Upper Spine Y Acceleration		G's	13 to 17	15.5	Pass
Peak Lower Spine Y Acceleration		G's	7 to 11	9.3	Pass
Peak Impactor Acceleration		G's	14 to 18	16.2	Pass
			Overall Test Results		Pass



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
38.6	21.8	0.0	-0.5
Middle Thorax Deflection			
Max	Time	Min	Time
41.5	22.4	0.0	-2.0
Lower Thorax Deflection			
Max	Time	Min	Time
37.2	23.0	0.0	-18.4



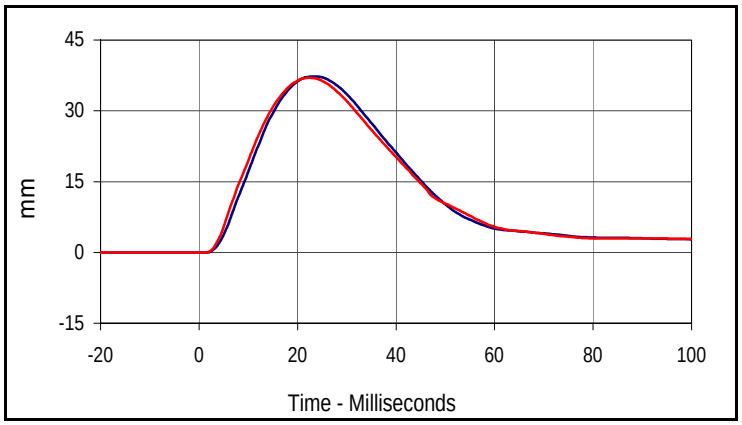
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
15.5	16.6	-6.4	48.9
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	g
Max	Time	Min	Time
9.3	8.5	-4.1	47.8



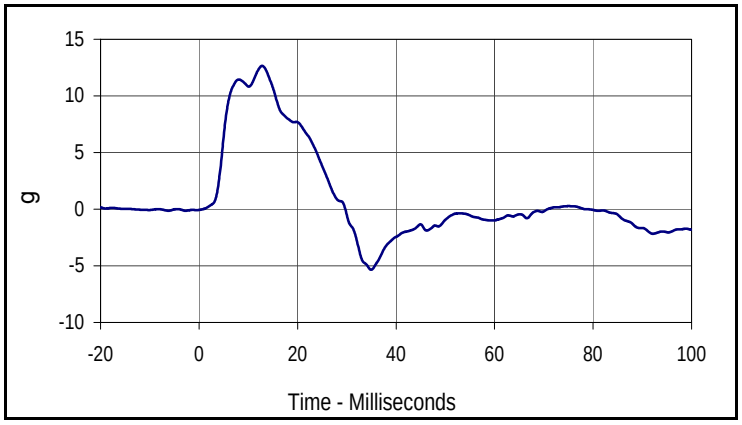
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	g
Max	Time	Min	Time
16.2	20.0	-0.4	91.6

Test Program:	SID IIs Abdomen Impact Test	Test Date:	10/1/15
ATD Serial No.:	307	Test I.D.:	307ABD085

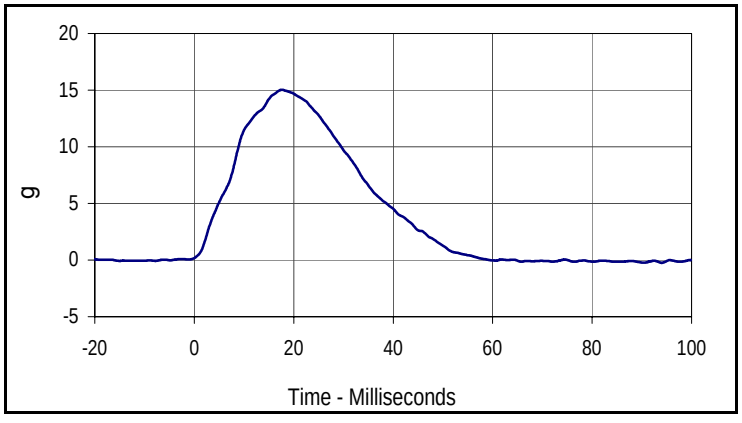
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	650	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.3	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.2	Pass
	Min	%		35.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	35.2	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.29	Pass
Peak Upper Abdominal Rib Deflection		mm	36 to 47	37.3	Pass
Peak Lower Abdominal Rib Deflection		mm	33 to 44	37.0	Pass
Peak Lower Spine Y Acceleration		G's	9 to 14	12.7	Pass
Peak Impactor Acceleration		G's	12 to 16	15.0	Pass
			Overall Test Results		Pass



Curve Description			
Upper Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
37.3	23.6	0.0	-19.7
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	mm
Max	Time	Min	Time
37.0	22.2	0.0	-19.3

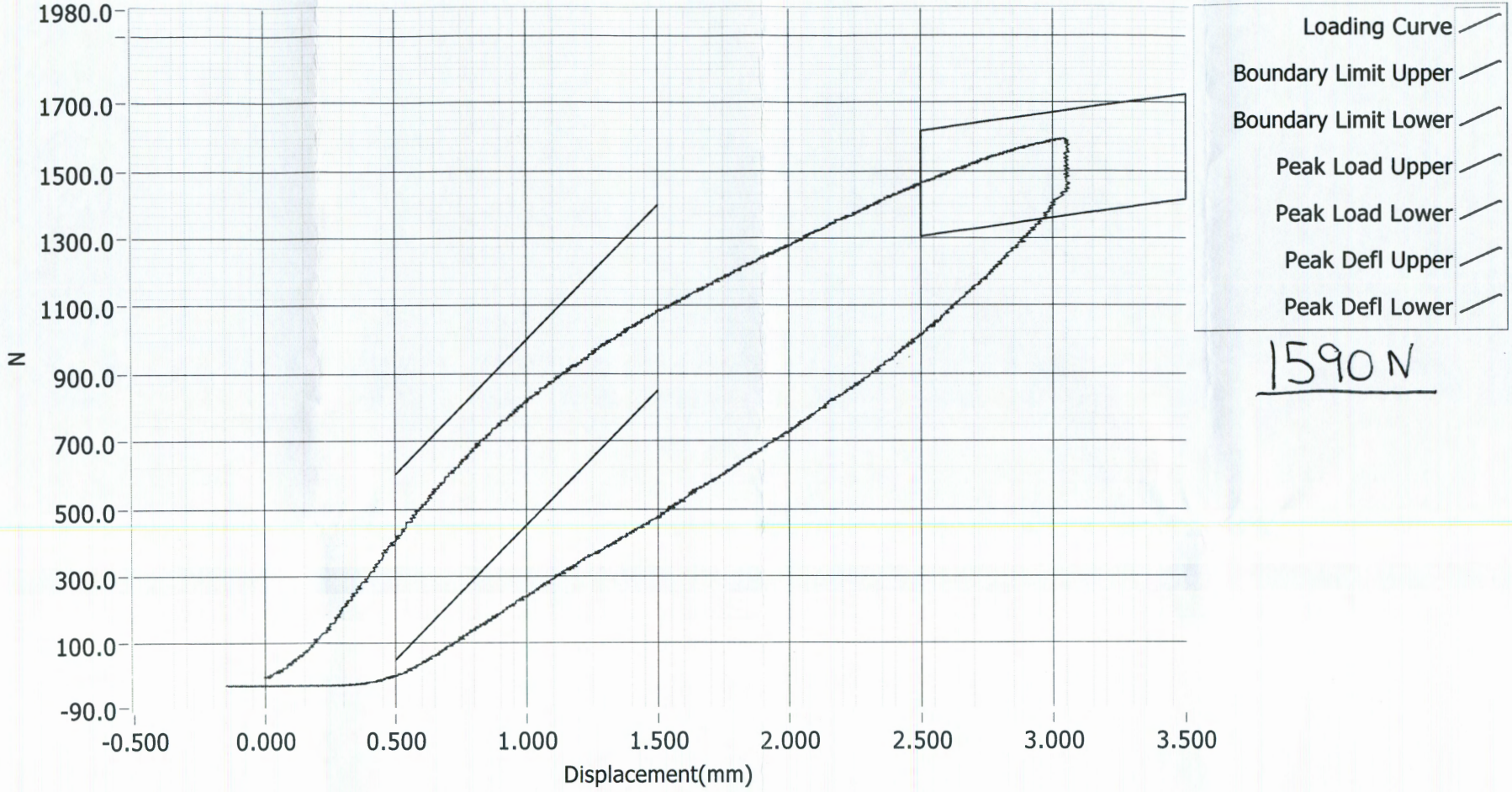


Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
12.7	12.8	-5.4	34.9



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
15.0	17.6	-0.2	94.0

Resultant Data - SIDIIs Plug Compression



1590 N

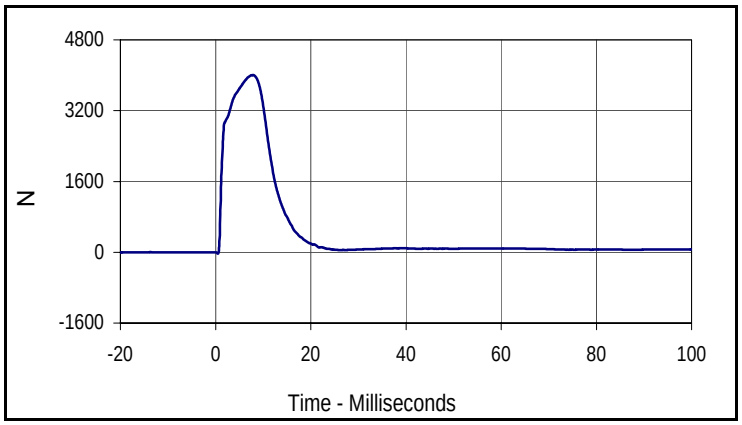
ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
	70957	12/13/2013	8:59 PM
Cert ID	ATD Serial Number	ATD Type	
	N/A	SIDIIs	

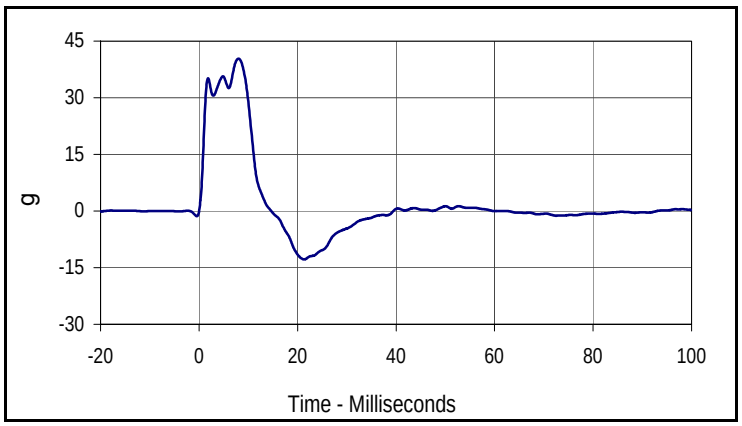
Current Date : 12/13/2013 Current Time : 21:00:18

Test Program:	SID IIs Pelvis Acetabulum Impact Test	Test Date:	10/1/15
ATD Serial No.:	307	Test I.D.:	307ACET085

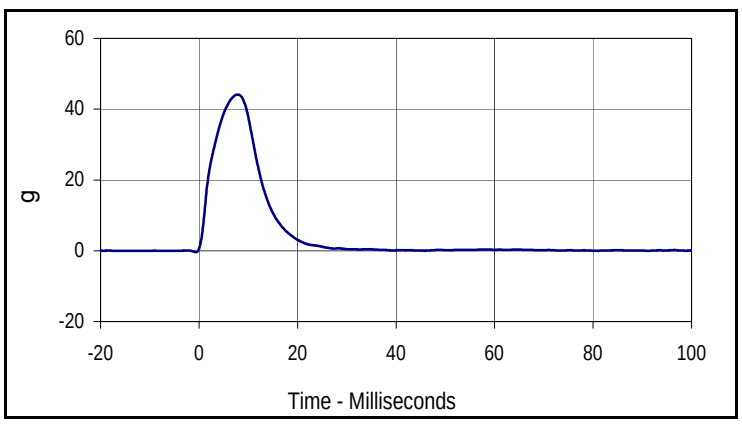
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	700	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.3	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.2	Pass
	Min	%		35.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	35.1	Pass
Impactor Velocity		m/s	6.6 to 6.8	6.64	Pass
Peak Acetabulum Force Y		Newtons	3600 to 4300	4003.2	Pass
Peak Pelvis Y Acceleration After 6 msec.		G's	34 to 42	40.3	Pass
Peak Impactor Acceleration		G's	38 to 47	44.1	Pass
			Overall Test Results		Pass



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
4003.2	7.9	-33.4	0.5



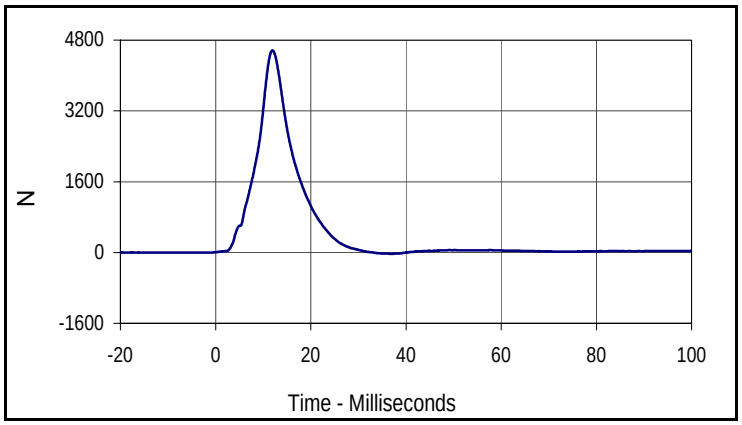
Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
40.3	8.0	-12.8	21.3



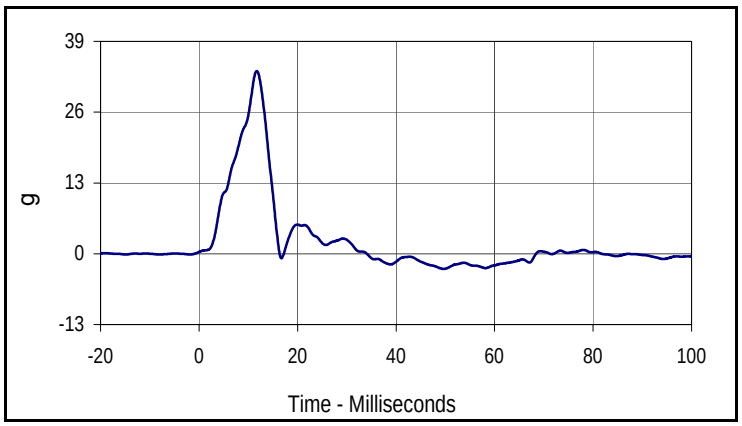
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
44.1	7.8	-0.4	-0.6

Test Program:	SID IIs Pelvis Iliac Calibration	Test Date:	10/1/15
ATD Serial No.:	307	Test I.D.:	307PL085

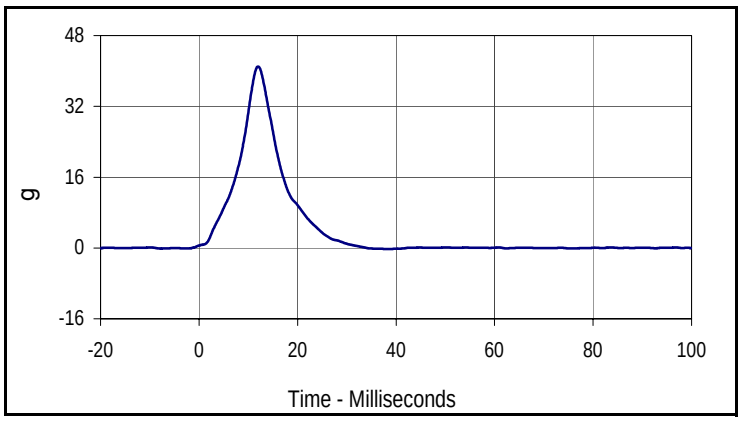
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	755	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.3	Pass
	Min	°C		21.1	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.2	Pass
	Min	%		35.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	35.1	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.32	Pass
Peak Illiac Force		Newtons	4100 to 5100	4571.8	Pass
Peak Pelvis Y Acceleration		G's	28 to 39	33.6	Pass
Peak Impactor Acceleration		G's	36 to 45	41.0	Pass
			Overall Test Results		Pass



Curve Description			
Pelvis Iliac Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
4571.8	12.0	-27.9	36.7



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
33.6	11.7	-2.8	49.7



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
41.0	12.0	-0.3	38.6

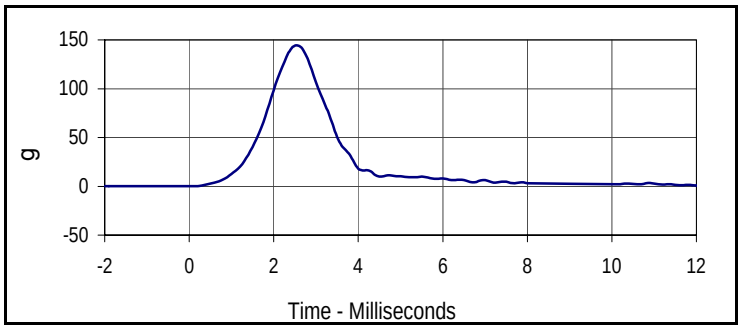
APPENDIX C
POST-TEST / ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program:	ES2re External Measurements	Test Date:	10/9/15
ATD Serial No.:	F037	Test I.D.:	N/A

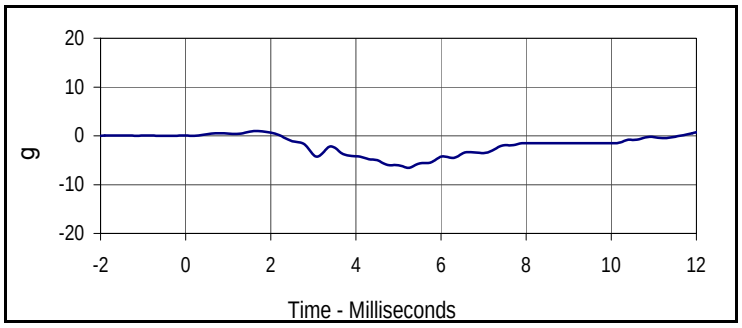
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	30.0	Pass
1	Sitting Height	mm	900 - 918	909	Pass
2	Seat to Shoulder Joint	mm	558 - 572	564	Pass
3	Seat to Lower Face of Thoracic Spine Box	mm	346 - 356	350	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	Test Date:	10/9/15
ATD Serial No.:	F037	Test I.D.:	F037HD077

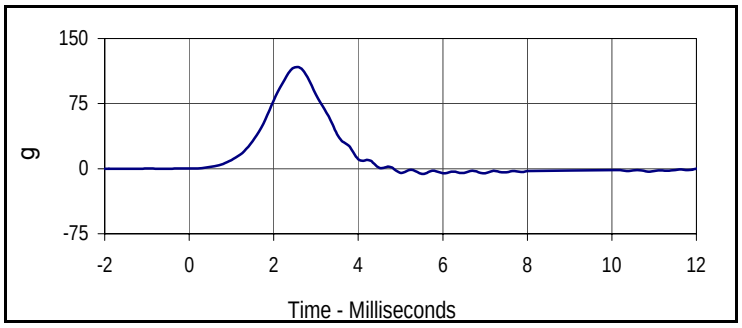
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	371	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.6	Pass
	Min	°C		21.4	Pass
Humidity During Soak	Max	%	10.0 to 70.0	34.2	Pass
	Min	%		33.9	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.6	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.2	Pass
Peak Head Resultant Acceleration		G's	125 to 155	146.0	Pass
Peak Head X Acceleration		G's	≤15	5.7	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse		%	<15	6.0	Pass
			Overall Test Results		Pass



Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
146.0	2.3	0.1	-1.9



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	g
Max	Time	Min	Time
4.5	4.6	-5.7	2.1

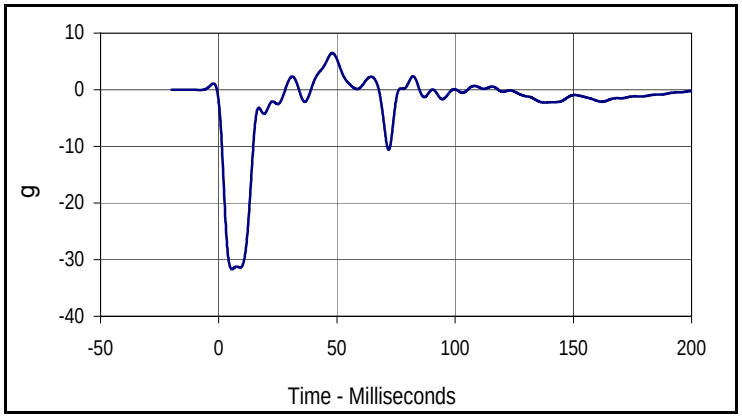


Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
116.4	2.3	-3.6	6.6

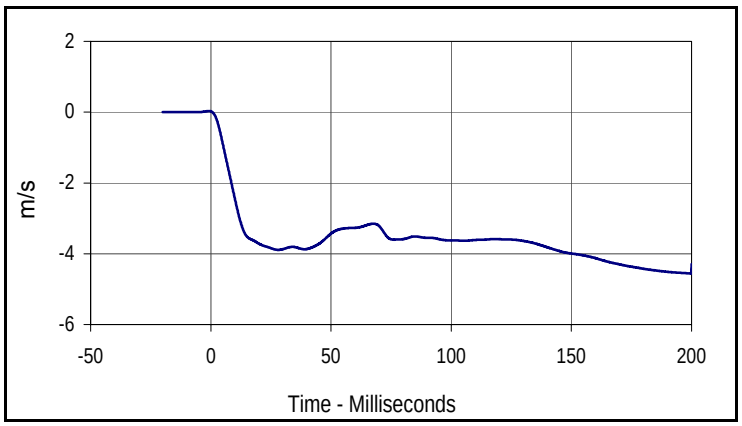
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
87.9	2.3	-0.2	-0.9

Test Program:	ES2re Neck Flexion Test	Test Date:	10/9/15
ATD Serial No.:	F037	Test I.D.:	F037NB077

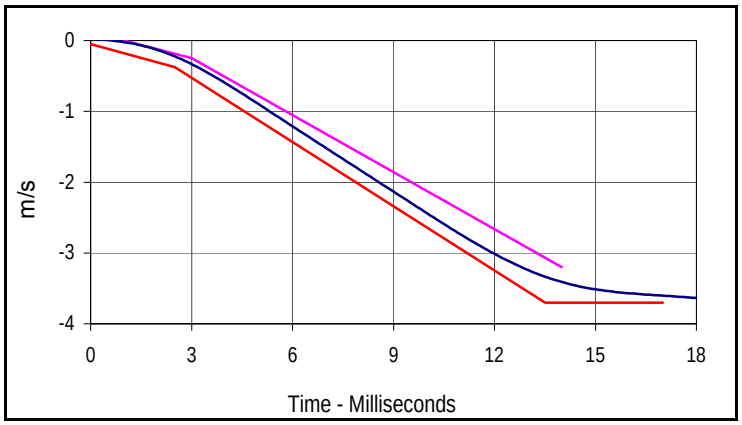
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	406	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.6	Pass
	Min	°C		21.4	Pass
Humidity During Soak	Max	%	10.0 to 70.0	34.2	Pass
	Min	%		33.9	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.6	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.2	Pass
Pendulum Velocity		m/s	3.3 to 3.5	3.36	Pass
Headform Flexion	Max	Degrees	49 to 59	57.3	Pass
	Time	msec	54 to 66	56.9	Pass
Headform Flexion Decay (Peak to Zero)		msec	53 to 88	61.9	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	g
Max	Time	Min	Time
6.5	48.1	-31.7	5.6



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.8	-4.6	199.9

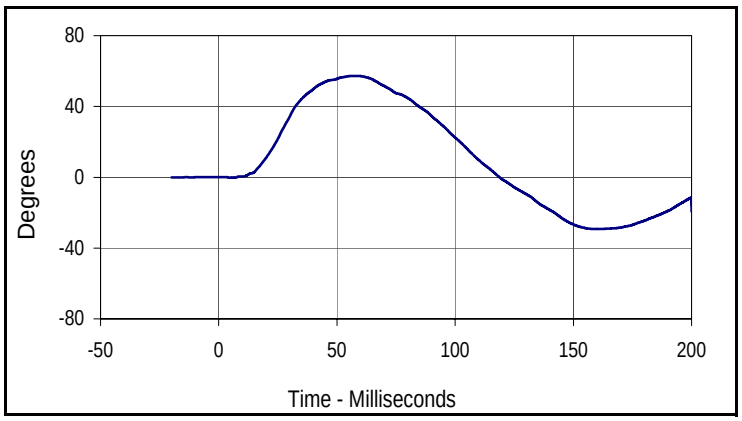


Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.8	-4.6	199.9

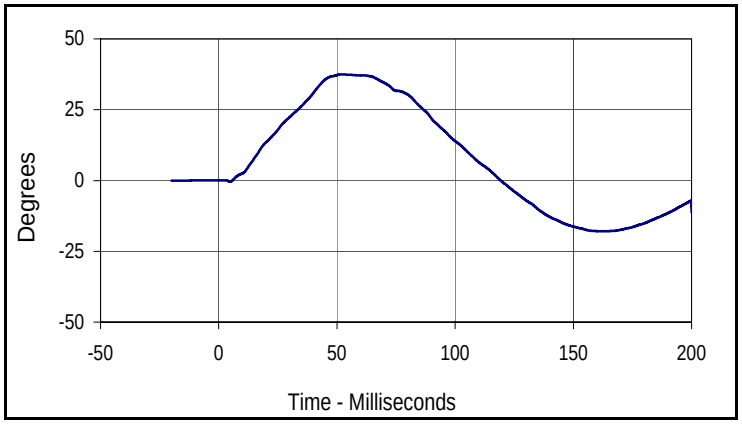
Velocity Corridors

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

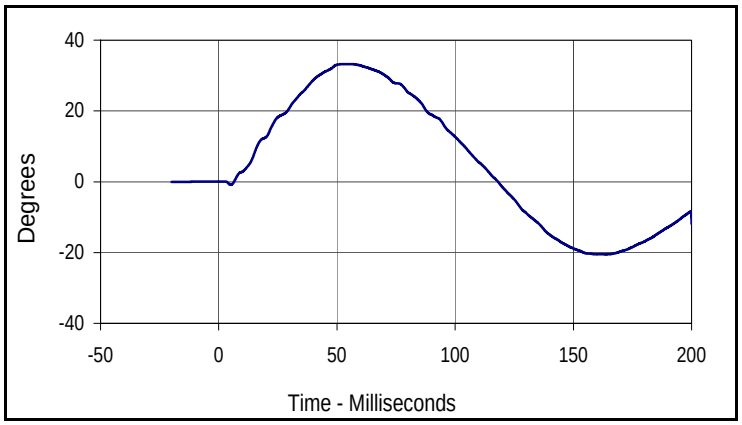
Test Program:	ES2re Neck Flexion Test	Test Date:	10/9/15
ATD Serial No.:	F037	Test I.D.:	F037NB077



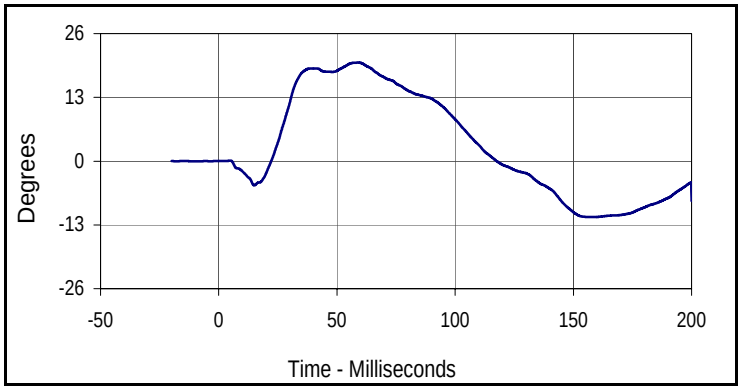
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
57.3	56.9	-29.3	160.4



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
37.5	51.9	-18.0	162.1



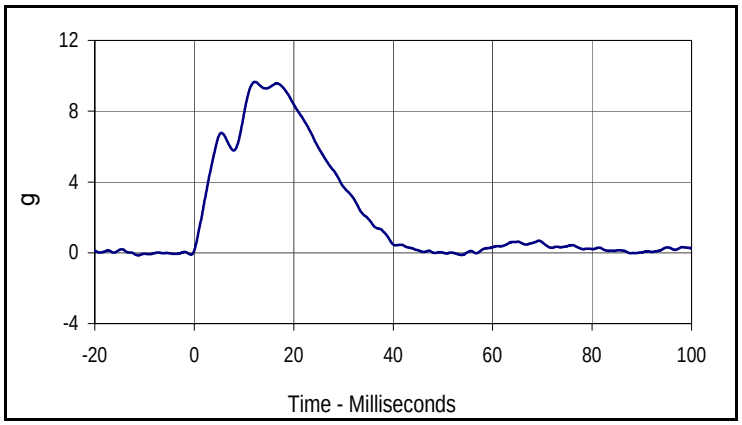
Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
33.2	54.8	-20.5	163.6



Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
20.1	59.0	-11.4	158.5

Test Program:	ES2re Shoulder Impact Test	Test Date:	10/9/15
ATD Serial No.:	F037	Test I.D.:	F037SH077

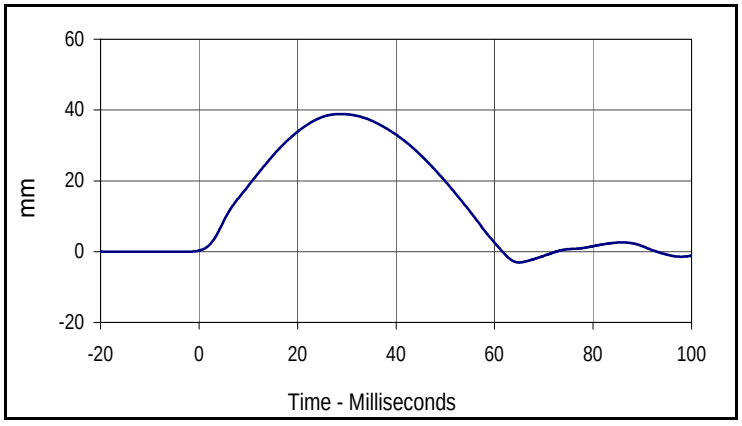
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	471	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.6	Pass
	Min	°C		21.4	Pass
Humidity During Soak	Max	%	10.0 to 70.0	34.2	Pass
	Min	%		33.9	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.6	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.1	Pass
Pendulum Speed		m/s	4.2 to 4.4	4.33	Pass
Peak Impactor Acceleration		G's	7.5 to 10.5	9.7	Pass
			Overall Test Results		Pass



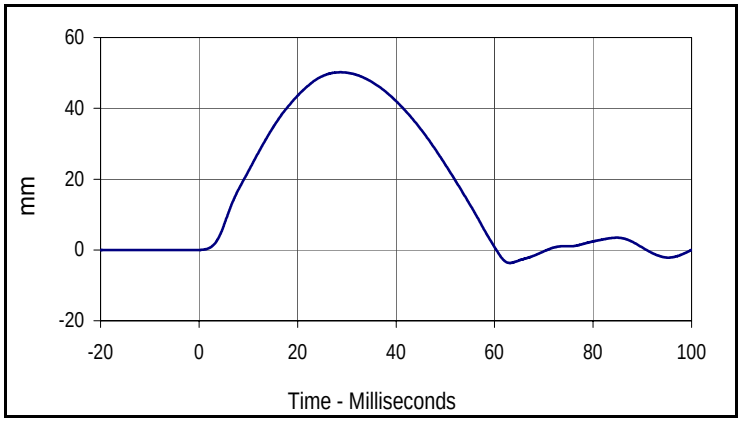
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	g
Max	Time	Min	Time
9.7	12.2	-0.1	-11.3

Test Program:	ES2re Thorax - Rib Drop Test	Test Date:	10/9/15
ATD Serial No.:	F037 Rib # 1	Test I.D.:	F037RB1077

Tested Parameter		Units	Specification	Result	Pass/Fail
Rib Module Soak Time		Minutes	≥240	526	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.6	Pass
	Min	°C		21.4	Pass
Humidity During Soak	Max	%	10.0 to 70.0	34.2	Pass
	Min	%		33.9	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.1	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height		mm	36 to 40	38.9	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height		mm	46 to 51	50.2	Pass
			Overall Test Results		Pass



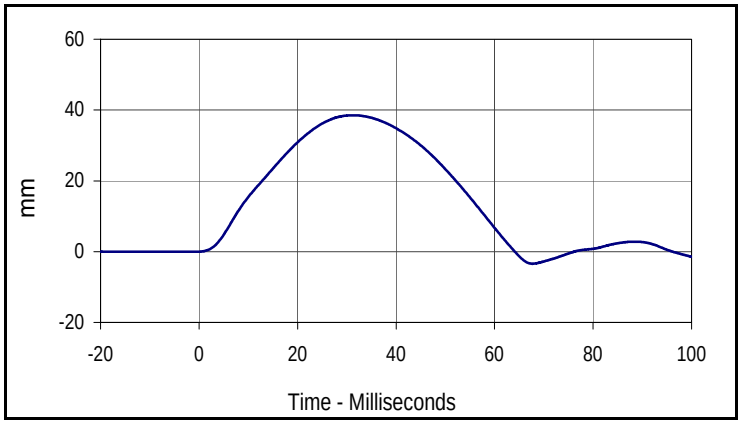
Curve Description			
Upper Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	mm
Max	Time	Min	Time
38.9	28.6	-3.1	65.0



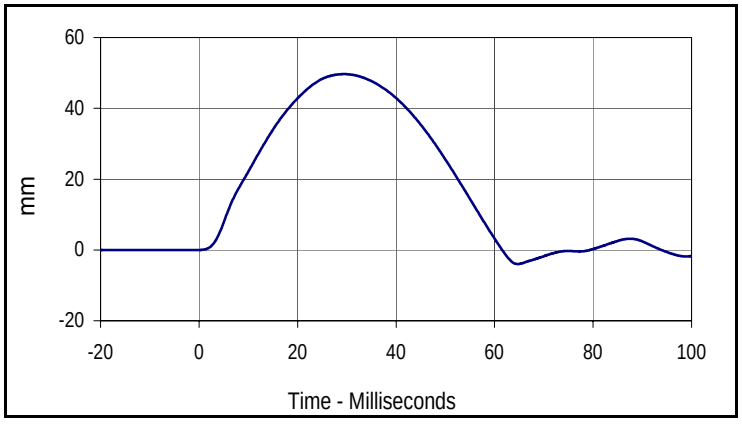
Curve Description			
Upper Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max	Time	Min	Time
50.2	28.8	-3.7	63.1

Test Program:	ES2re Thorax - Rib Drop Test	Test Date:	10/9/15
ATD Serial No.:	F037 Rib # 2	Test I.D.:	F037RB2077

Tested Parameter		Units	Specification	Result	Pass/Fail
Rib Module Soak Time		Minutes	≥240	571	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.6	Pass
	Min	°C		21.4	Pass
Humidity During Soak	Max	%	10.0 to 70.0	34.2	Pass
	Min	%		33.9	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.0	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



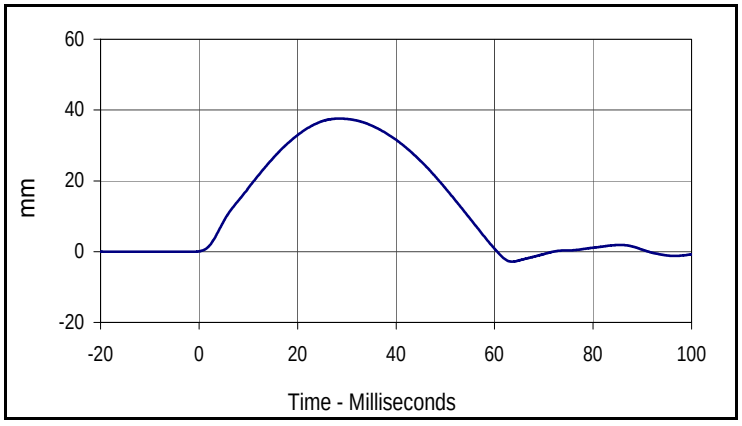
Curve Description			
Middle Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	mm
Max	Time	Min	Time
38.5	31.3	-3.4	67.7



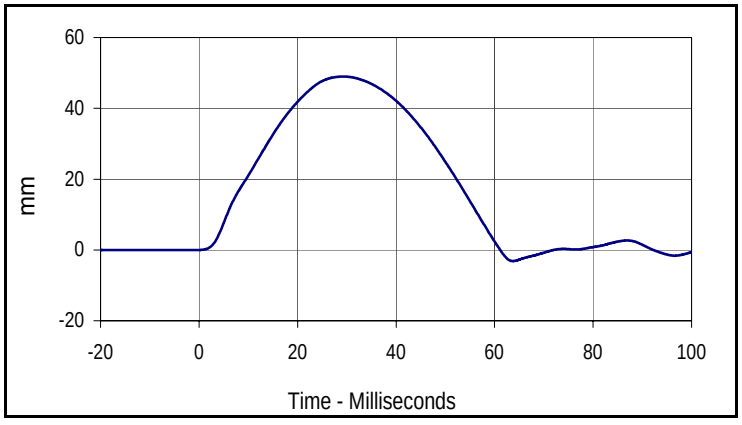
Curve Description			
Middle Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max	Time	Min	Time
49.7	29.4	-4.0	64.7

Test Program:	ES2re Thorax - Rib Drop Test	Test Date:	10/9/15
ATD Serial No.:	F037 Rib # 3	Test I.D.:	F037RB3077

Tested Parameter		Units	Specification	Result	Pass/Fail
Rib Module Soak Time		Minutes	≥240	616	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.6	Pass
	Min	°C		21.4	Pass
Humidity During Soak	Max	%	10.0 to 70.0	34.2	Pass
	Min	%		33.9	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.0	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height		mm	36 to 40	37.6	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height		mm	46 to 51	49.0	Pass
			Overall Test Results		Pass



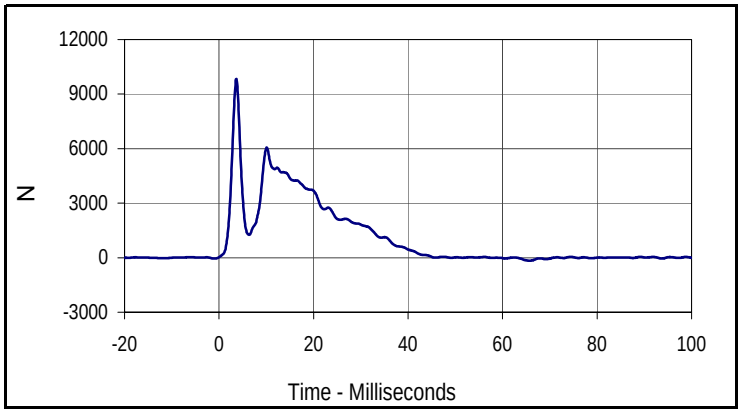
Curve Description			
Lower Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	mm
Max	Time	Min	Time
37.6	28.5	-2.8	63.6



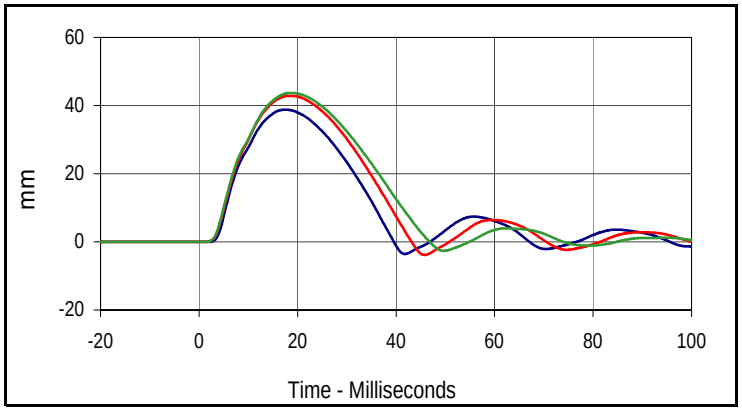
Curve Description			
Lower Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max	Time	Min	Time
49.0	29.2	-3.1	63.7

Test Program:	ES2re Thorax - Full Body Impact Test	Test Date:	10/9/15
ATD Serial No.:	F037	Test I.D.:	F037TH077

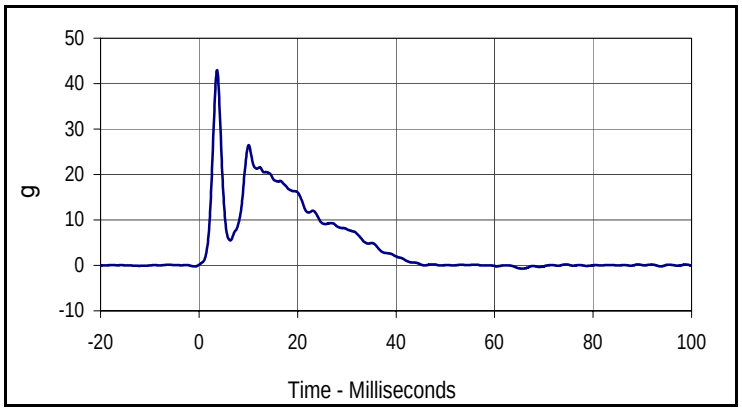
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	661	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.6	Pass
	Min	°C		21.4	Pass
Humidity During Soak	Max	%	10.0 to 70.0	34.2	Pass
	Min	%		33.9	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.0	Pass
Peak Impactor Velocity		m/s	5.4 to 5.6	5.58	Pass
Peak Impactor Force		N	5100 to 6200	6064.0	Pass
		msec	> 6.0 msec	10.1	Pass
Peak Upper Rib Deflection		mm	34 to 41	38.8	Pass
Peak Middle Rib Deflection		mm	37 to 45	42.9	Pass
Peak Lower Rib Deflection		mm	37 to 44	43.7	Pass
			Overall Test Results		Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	N
Max	Time	Min	Time
9838.9	3.7	-168.4	65.7



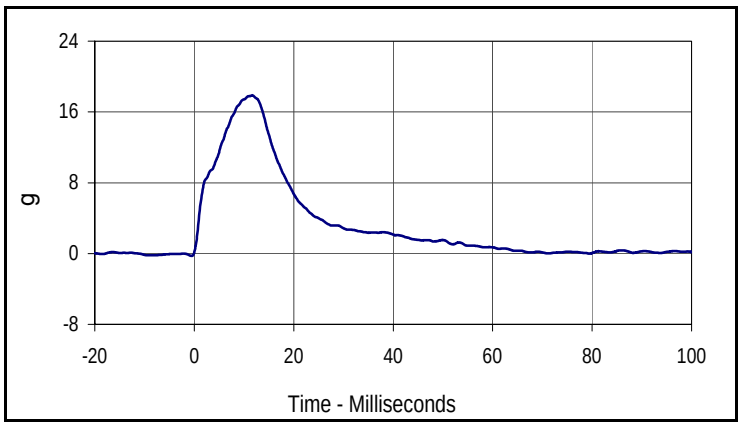
Curve Description			
Upper, Middle, Lower Rib Deflections			
Plot No.	Type	SAE Class	Units
002	FIL	180	mm
Max (Upper)	Time	Min (Upper)	Time
38.8	17.6	-3.6	41.8
Max (Middle)	Time	Min (Middle)	Time
42.9	18.6	-3.9	45.8
Max (Lower)	Time	Min (Lower)	Time
43.7	18.7	-2.6	49.7



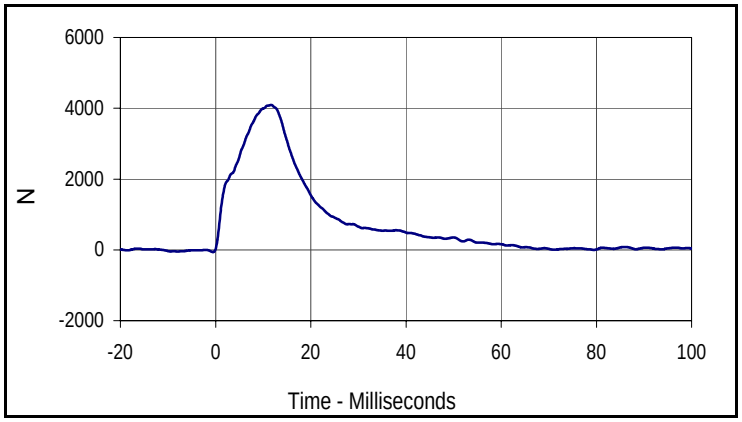
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
43.0	3.7	-0.7	65.7

Test Program:	ES2re Abdomen Impact Test	Test Date:	10/9/15
ATD Serial No.:	F037	Test I.D.:	F037ABD077

Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	731	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.6	Pass
	Min	°C		21.4	Pass
Humidity During Soak	Max	%	10.0 to 70.0	34.2	Pass
	Min	%		33.9	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.0	Pass
Probe Velocity		m/s	3.9 to 4.1	4.03	Pass
Peak Impactor Force		N	4000 to 4800	4095.0	Pass
		msec	10.6 to 13.0	11.7	Pass
Sum of Abdominal Forces		N	2200 to 2700	2483.6	Pass
		msec	10.0 to 12.3	11.0	Pass
			Overall Test Results		Pass

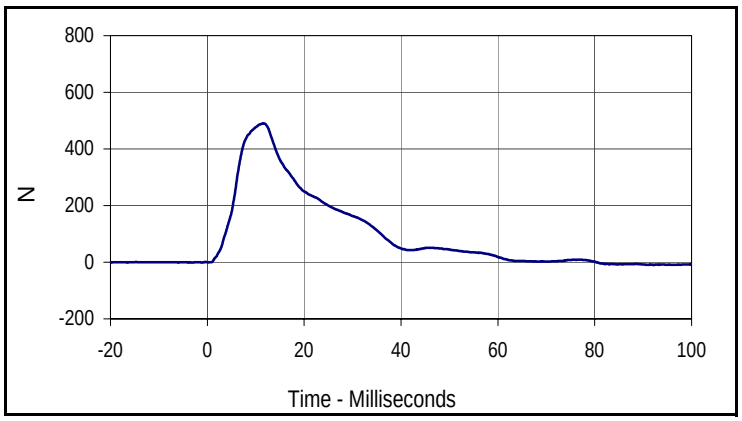


Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	g
Max	Time	Min	Time
17.9	11.7	-0.3	-0.5

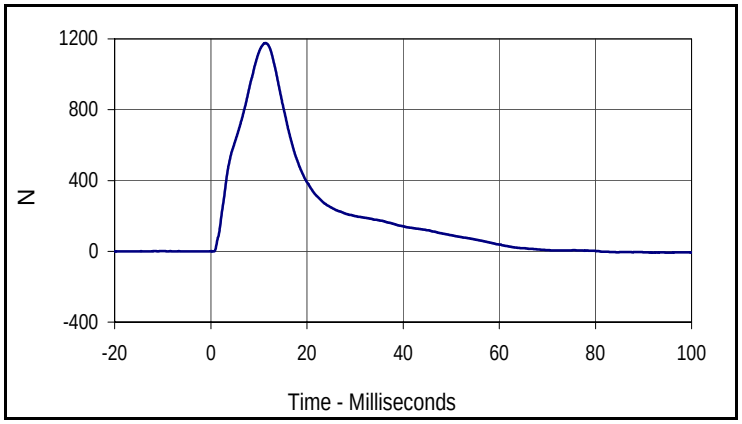


Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	N
Max	Time	Min	Time
4095.0	11.7	-62.8	-0.5

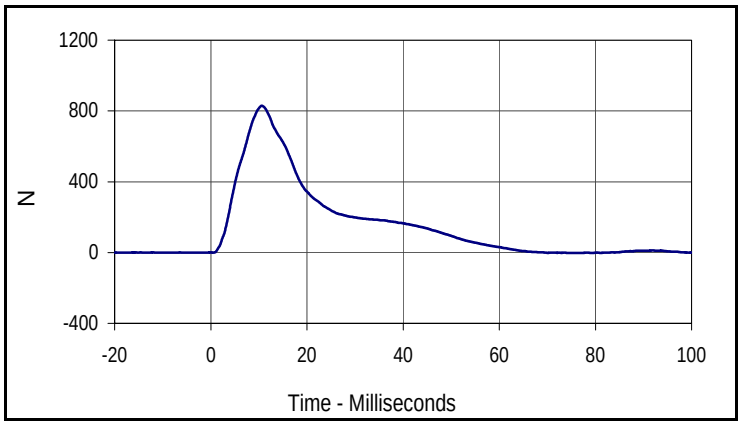
Test Program:	ES2re Abdomen Impact Test	Test Date:	10/9/15
ATD Serial No.:	F037	Test I.D.:	F037ABD077



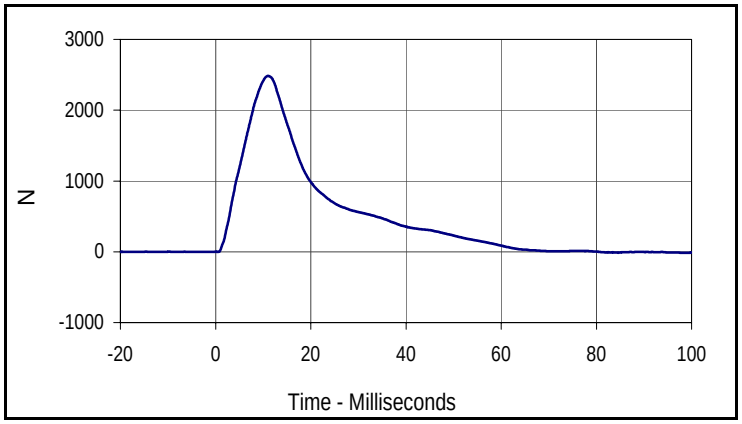
Curve Description			
Front Abdomen Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	N
Max	Time	Min	Time
490.0	11.7	-9.8	92.2



Curve Description			
Middle Abdomen Force			
Plot No.	Type	SAE Class	Units
004	FIL	600	N
Max	Time	Min	Time
1176.7	11.4	-7.8	94.8



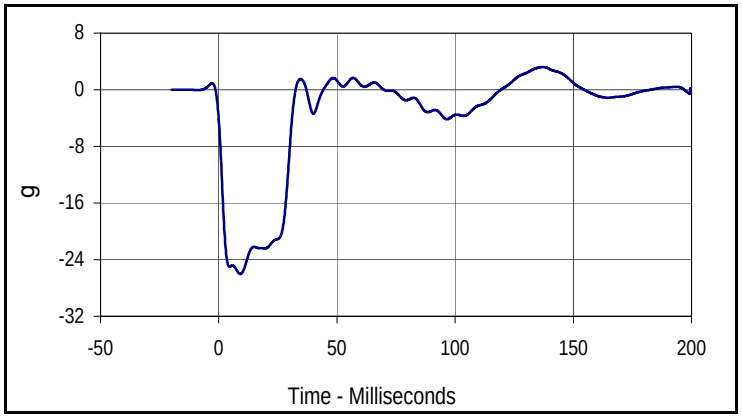
Curve Description			
Rear Abdomen Force			
Plot No.	Type	SAE Class	Units
005	FIL	600	N
Max	Time	Min	Time
829.7	10.6	-2.4	74.3



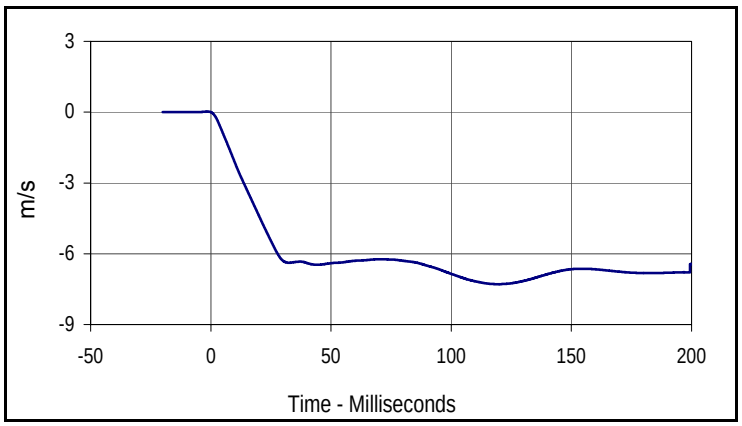
Curve Description			
Abdomen Sum Resultant			
Plot No.	Type	SAE Class	Units
006	RES	600	N
Max	Time	Min	Time
2483.6	11.0	-14.6	98.7

Test Program:	ES2re Lumbar Flexion Test	Test Date:	10/9/15
ATD Serial No.:	F037	Test I.D.:	F037LB077

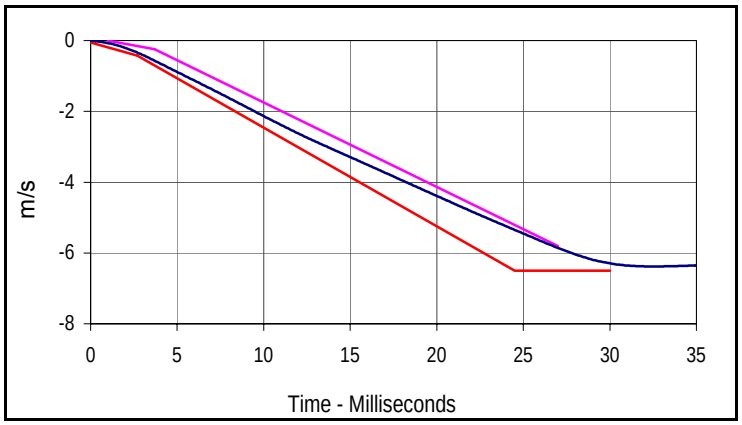
Tested Parameter		Units	Specification	Result	Pass/Fail
Lumbar Spine Assembly Soak Time		Minutes	≥240	806	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.6	Pass
	Min	°C		21.4	Pass
Humidity During Soak	Max	%	10.0 to 70.0	34.2	Pass
	Min	%		33.9	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	33.9	Pass
Pendulum Velocity		m/s	5.95 to 6.15	5.99	Pass
Headform Rotation	Max	Degrees	45 to 55	49.1	Pass
	Time	msec	39 to 53	40.4	Pass
Time of Decay to Zero Angle from Peak		msec	37 to 57	45.9	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	g
Max	Time	Min	Time
3.2	137.8	-26.0	9.7



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.8	-7.3	119.9

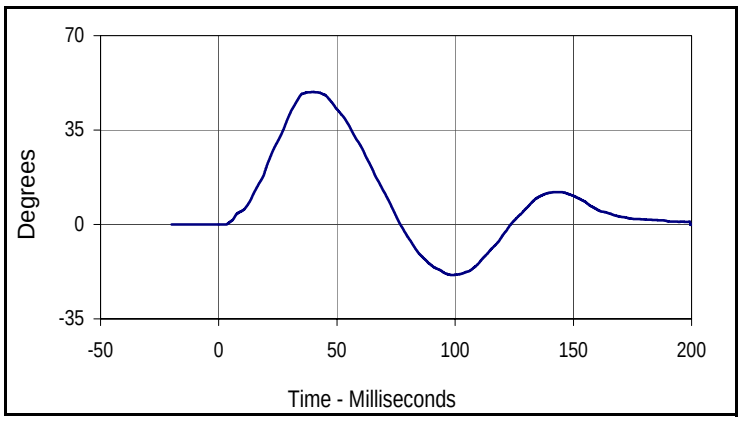


Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-0.8	-7.3	119.9

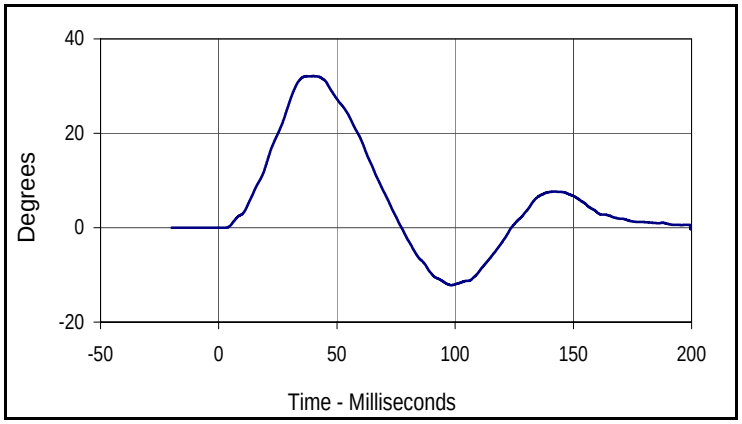
Velocity Corridors

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

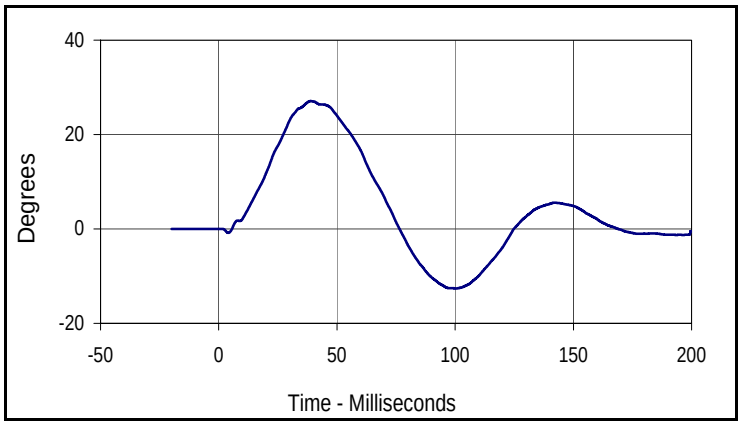
Test Program:	ES2re Lumbar Flexion Test	Test Date:	10/9/15
ATD Serial No.:	F037	Test I.D.:	F037LB077



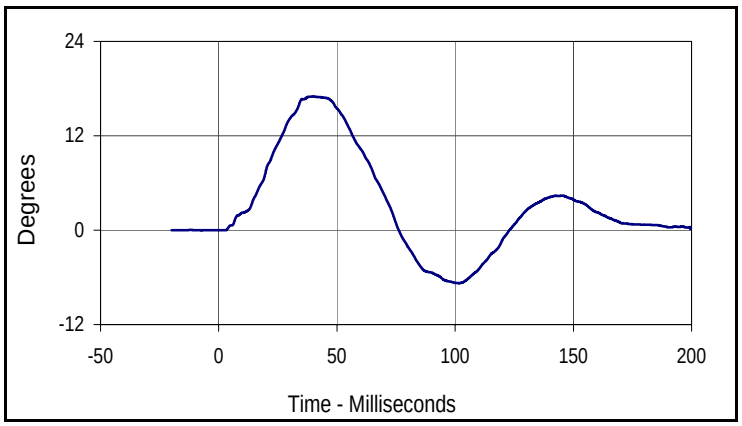
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
49.1	40.4	-18.8	99.5



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
32.1	40.5	-12.2	99.0



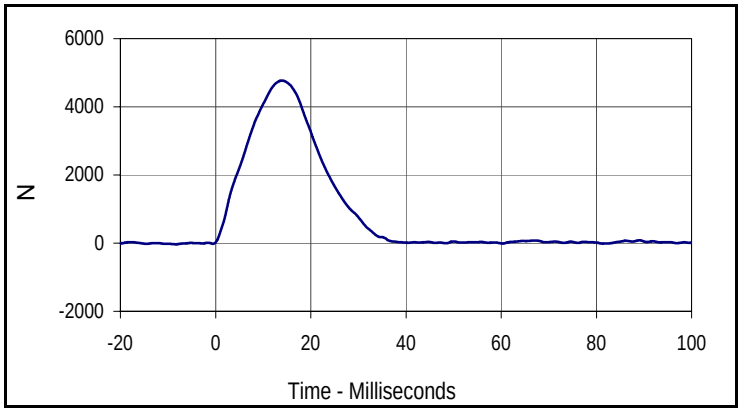
Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
27.1	39.4	-12.6	100.8



Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
17.0	40.3	-6.7	102.3

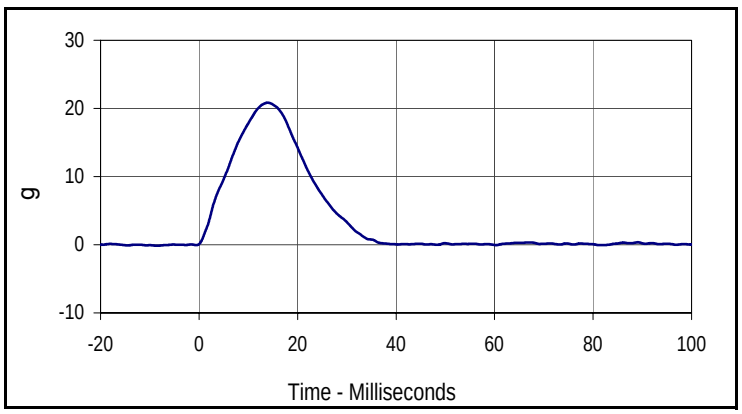
Test Program:	ES2re Pelvis Impact Test	Test Date:	10/9/15
ATD Serial No.:	F037	Test I.D.:	F037PL077

Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥240	861	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.6	Pass
	Min	°C		21.4	Pass
Humidity During Soak	Max	%	10.0 to 70.0	34.2	Pass
	Min	%		33.9	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.4	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	33.9	Pass
Pendulum Velocity		m/s	4.2 to 4.4	4.33	Pass
Peak Impactor Force		N	4700 to 5400	4772.8	Pass
		msec	11.8 to 16.1	13.9	Pass
Peak Pubic Symphysis Load		N	-1230 to -1590	-1278.2	Pass
		msec	12.2 to 17.0	14.8	Pass
			Overall Test Results		Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	N
Max	Time	Min	Time
4772.8	13.9	-33.8	-8.3

Curve Description			
Pubic Symphysis Force Y			
Plot No.	Type	SAE Class	Units
002	FIL	600	N
Max	Time	Min	Time
23.6	82.9	-1278.2	14.8



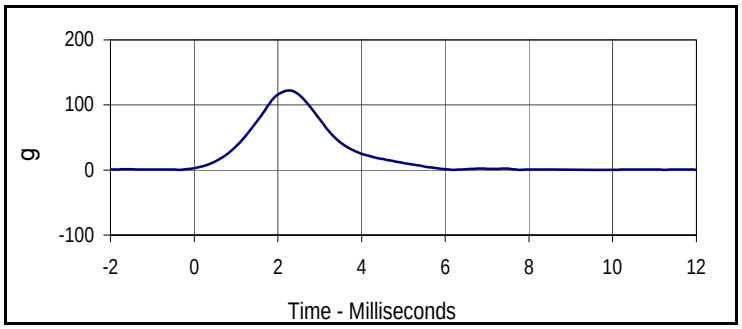
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
20.8	13.9	-0.1	-8.3

Test Program:	SID IIs External Measurements	Test Date:	10/12/15
ATD Serial No.:	307	Test I.D.:	N/A

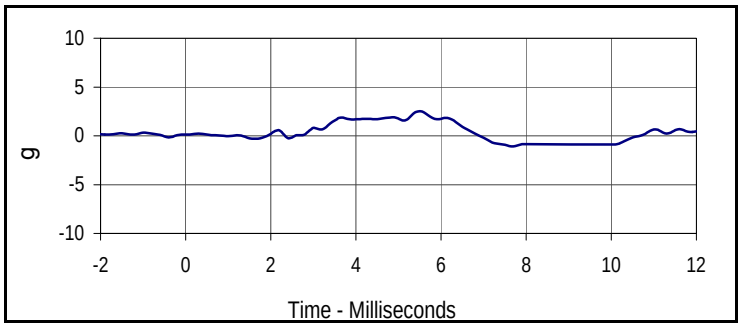
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		^{o}C	20.6 to 22.2	21.8	Pass
Laboratory Relative Humidity		%	10 to 70	35	Pass
A	Sitting Height	mm	772 - 788	778	Pass
B	Shoulder Pivot Height	mm	437 - 453	443	Pass
C	H-Point Height	mm	79 - 89	85	Pass
D	H-Point from Seatback	mm	141 - 151	144	Pass
E	Shoulder Pivot from Backline	mm	97 - 107	102	Pass
F	Thigh Clearance	mm	119 - 135	128	Pass
G	Head Breadth	mm	140 - 148	145	Pass
H	Head Back from Backline	mm	40 - 46	43	Pass
I	Head Depth	mm	178 - 188	185	Pass
J	Head Circumference	mm	541 - 551	546	Pass
K	Buttock to Knee Length	mm	514 - 540	525	Pass
L	Popliteal Height	mm	343 - 369	351	Pass
M	Knee Pivot to Floor Height	mm	392 - 409	400	Pass
N	Buttock Popliteal Length	mm	416 - 442	432	Pass
O	Chest Depth w/o Jacket	mm	195 - 211	205	Pass
P	Foot Length	mm	216 - 232	223	Pass
Q	Hip Breadth with Pelvic Plug	mm	313 -323	319	Pass
R	Arm Length	mm	249 - 259	254	Pass
S	Knee Joint to Seatback	mm	477 - 493	483	Pass
V	Shoulder Width	mm	341 - 357	351	Pass
W	Foot Width	mm	78 - 94	89	Pass
Y	Chest Circumference with Jacket	mm	851 - 881	872	Pass
Z	Waist Circumference	mm	760 - 791	774	Pass
			Overall Test Results		Pass

Test Program:	SID IIs Head Drop Test	Test Date:	10/12/15
ATD Serial No.:	307	Test I.D.:	307HD086

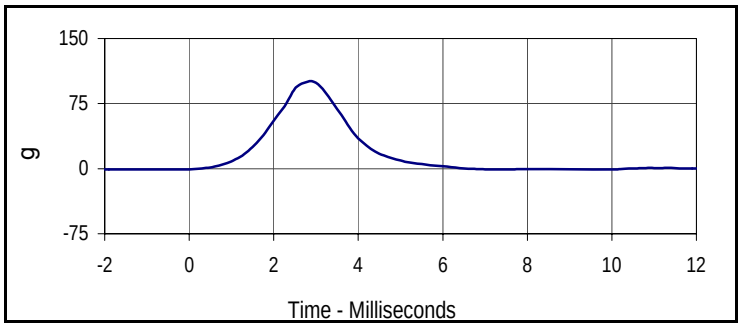
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	395	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.8	Pass
	Min	°C		21.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.0	Pass
	Min	%		34.4	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.8	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.9	Pass
Peak Head Resultant Acceleration		G's	115 to 137	122.4	Pass
Peak Head X Acceleration		G's	<15	2.5	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse		%	<15	1.0	Pass
			Overall Test Results		Pass



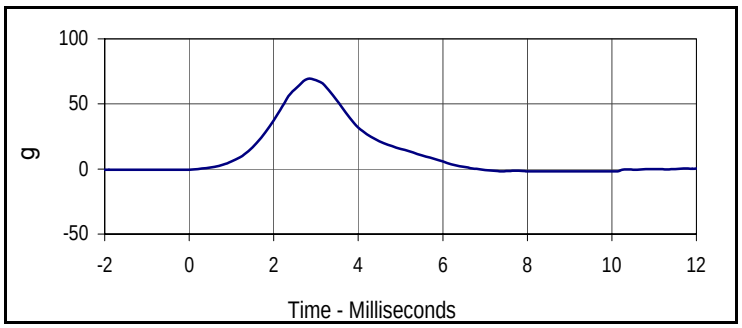
Curve Description			
200			
Plot No.	Type	SAE Class	Units
001	RES	1000	g
Max	Time	Min	Time
122.4	2.3	0.2	-0.4



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



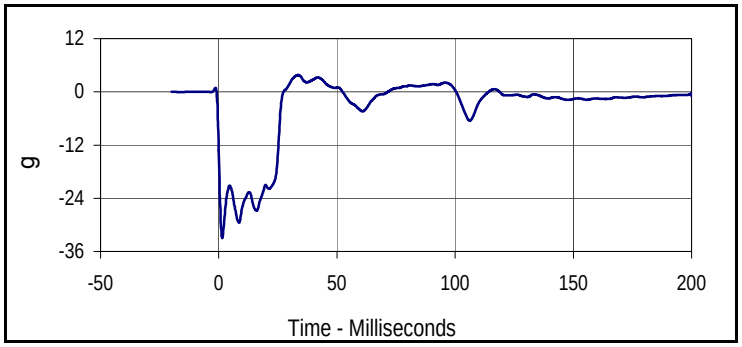
Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	g
Max	Time	Min	Time
100.9	2.9	-1.0	-3.1



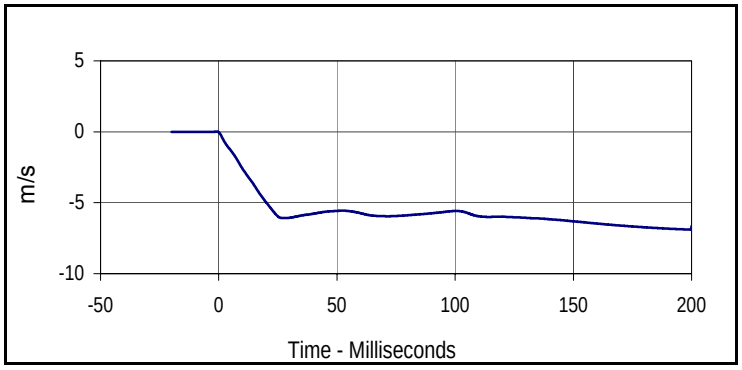
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	g
Max	Time	Min	Time
69.3	2.9	-1.9	8.0

Test Program:	SID IIs Neck Flexion Test	Test Date:	10/12/15
ATD Serial No.:	307	Test I.D.:	307NB086

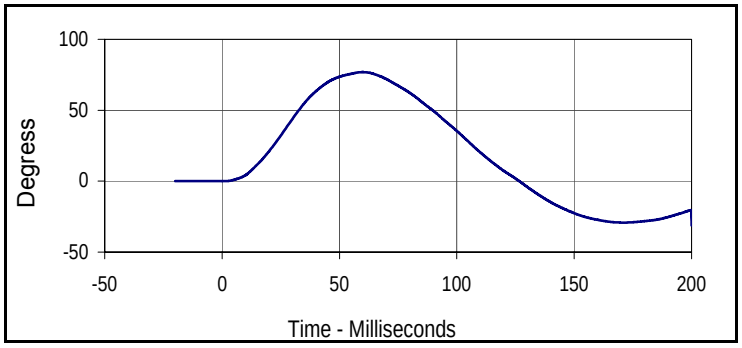
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	440	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.8	Pass
	Min	°C		21.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.0	Pass
	Min	%		34.4	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.8	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.8	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.54	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.59	Pass
	15 msec	m/s	-3.30 to -4.10	-3.77	Pass
	20 msec	m/s	-4.40 to -5.40	-4.96	Pass
	25 msec	m/s	-5.40 to -6.10	-5.96	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.08	Pass
D-Plane Rotation	Max	Degrees	71 to 81	76.9	Pass
	Time	msec	50 to 70	59.7	Pass
Peak Occipital Condyle Moment		Nm	-36 to -44	-41.5	Pass
Decaying Moment Time to Cross 0 Nm		msec	102 to 126	105.5	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	g
Max	Time	Min	Time
3.8	0.0	-32.9	0.0

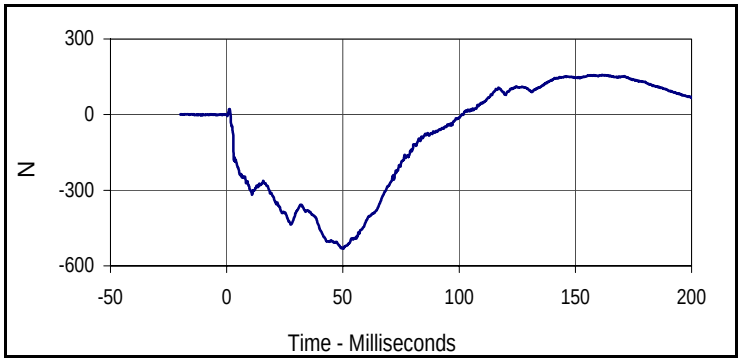


Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.9	-6.9	199.9

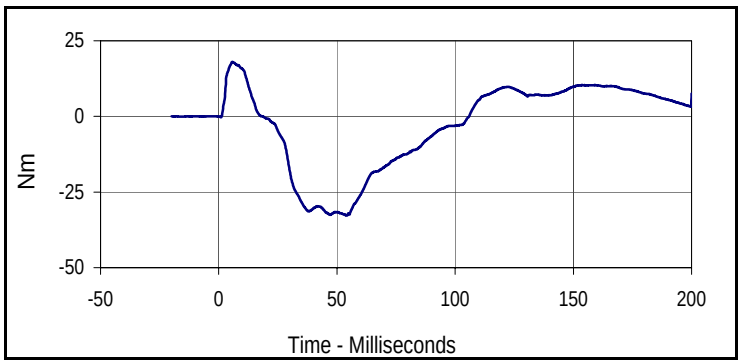


Curve Description			
D-Plane Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degress
Max	Time	Min	Time
76.9	59.7	-31.2	200.0

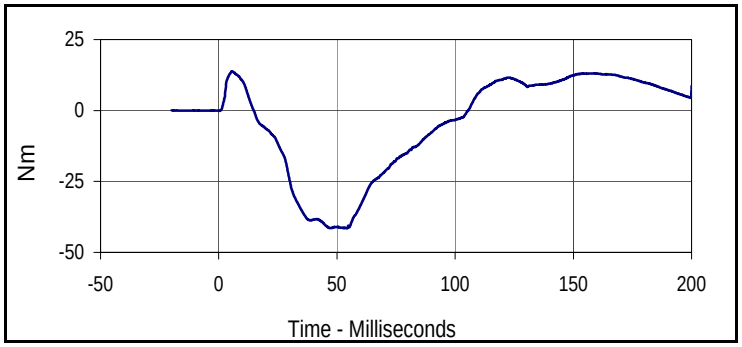
Test Program:	SID IIs Neck Flexion Test	Test Date:	10/12/15
ATD Serial No.:	307	Test I.D.:	307NB086



Curve Description			
Neck Force Y			
Plot No.	Type	SAE Class	Units
004	FIL	1000	N
Max	Time	Min	Time
157.3	161.4	-531.1	49.9



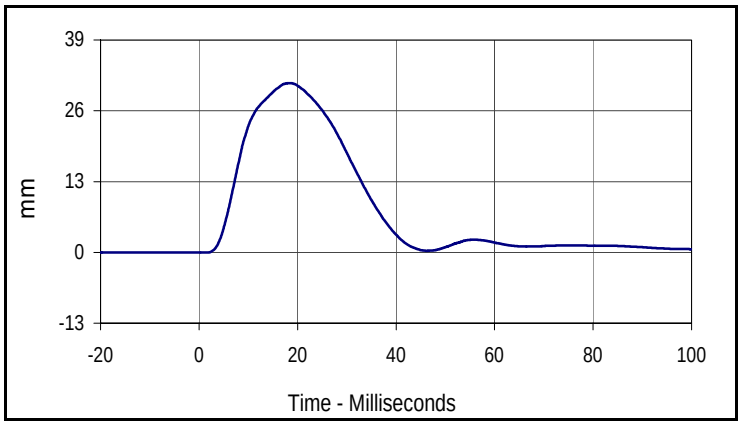
Curve Description			
Neck Moment X			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
18.0	5.8	-32.8	54.2



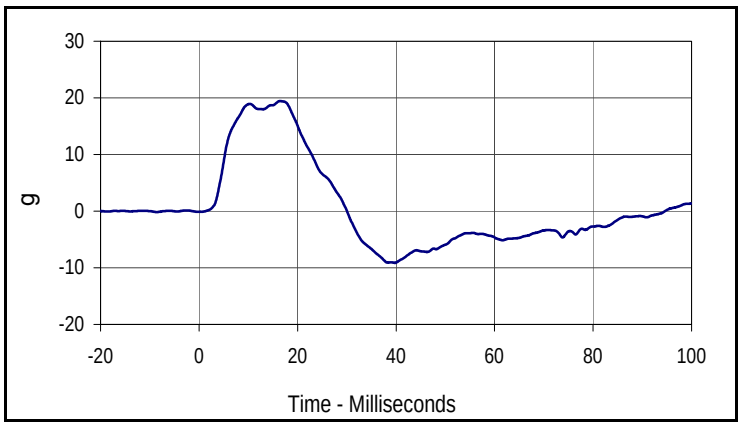
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
006	FIL	600	Nm
Max	Time	Min	Time
13.8	5.7	-41.5	54.3

Test Program:	SID IIs Shoulder Impact Test	Test Date:	10/12/15
ATD Serial No.:	307	Test I.D.:	307SH086

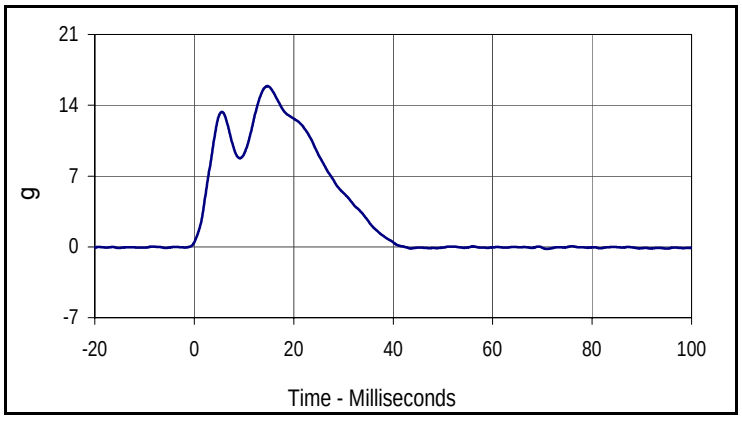
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	495	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.8	Pass
	Min	°C		21.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.0	Pass
	Min	%		34.4	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.8	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.8	Pass
Impactor Velocity		m/s	4.20 to 4.40	4.32	Pass
Peak Shoulder Deflection		mm	28 to 37	31.1	Pass
Peak Lateral Spine Acceleratrion Y		G's	17 to 22	19.4	Pass
Peak Impactor Acceleration		G's	13 to 18	15.9	Pass
			Overall Test Results		Pass



Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
31.1	18.4	0.0	-8.0



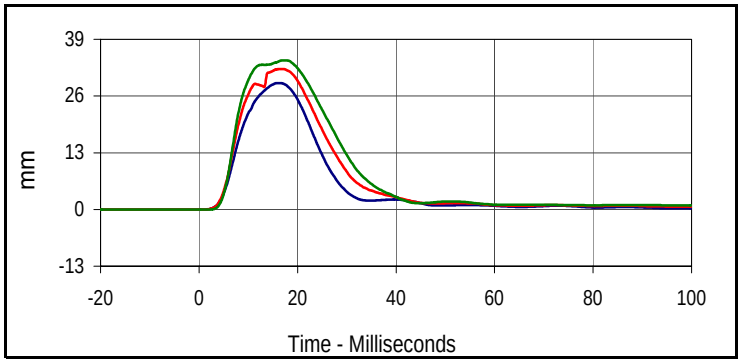
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
19.4	16.5	-9.1	39.8



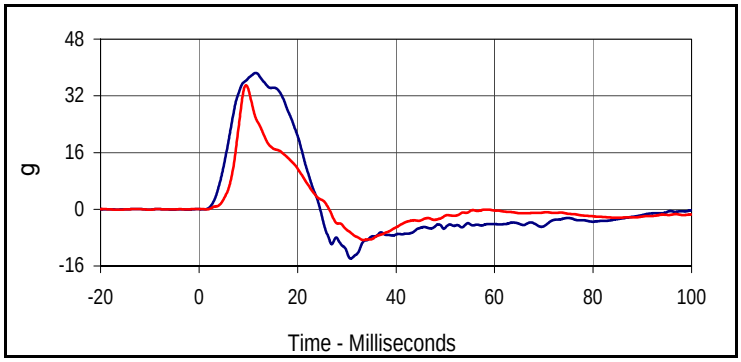
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
15.9	14.7	-0.2	70.8

Test Program:	SID IIs Thorax with Arm Impact Test	Test Date:	10/12/15
ATD Serial No.:	307	Test I.D.:	307TWA086

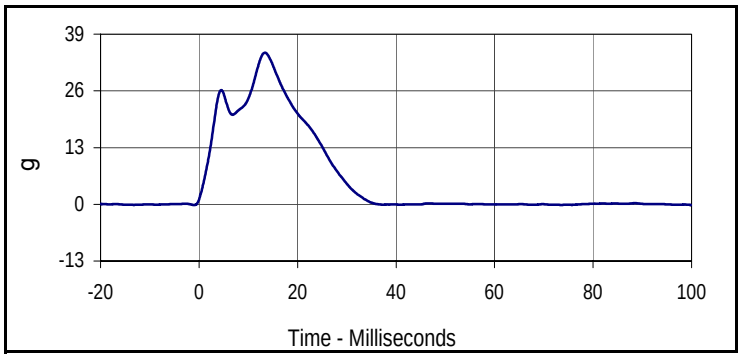
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	540	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.8	Pass
	Min	°C		21.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.0	Pass
	Min	%		34.4	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.7	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.7	Pass
Impactor Velocity		m/s	6.6 to 6.8	6.69	Pass
Peak Shoulder Deflection		mm	31 to 40	36.8	Pass
Peak Upper Thorax Rib Deflection		mm	25 to 32	29.0	Pass
Peak Middle Thorax Rib Deflection		mm	30 to 36	32.2	Pass
Peak Lower Thorax Rib Deflection		mm	32 to 38	34.2	Pass
Peak Upper Spine Y Acceleration		G's	34 to 43	38.5	Pass
Peak Lower Spine Y Acceleration		G's	29 to 37	35.0	Pass
Peak Impactor Acceleration		G's	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
29.0	16.2	0.0	-4.6
Middle Thorax Deflection			
Max	Time	Min	Time
32.2	16.4	0.0	-12.6
Lower Thorax Deflection			
Max	Time	Min	Time
34.2	17.2	0.0	-15.0

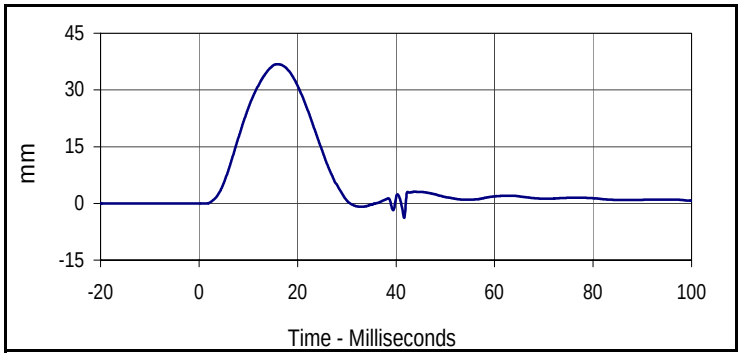


Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
38.5	11.5	-13.9	30.8
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	g
Max	Time	Min	Time
35.0	9.5	-8.7	33.4



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	g
Max	Time	Min	Time
34.7	13.4	-0.2	-1.0

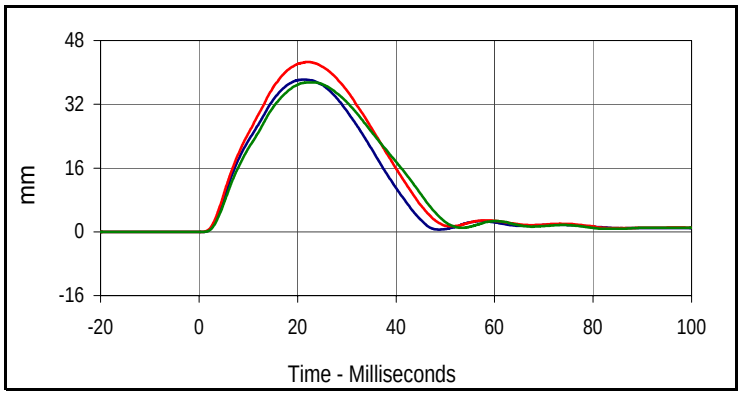
Test Program:	SID IIs Thorax with Arm Impact Test	Test Date:	10/12/15
ATD Serial No.:	307	Test I.D.:	307TWA086



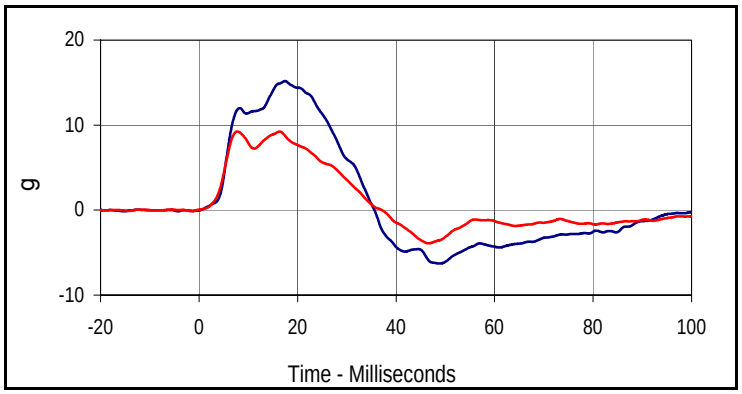
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	mm
Max	Time	Min	Time
36.8	16.0	-3.8	41.6

Test Program:	SID IIs Thorax without Arm Impact Test	Test Date:	10/12/15
ATD Serial No.:	307	Test I.D.:	307TWOA086

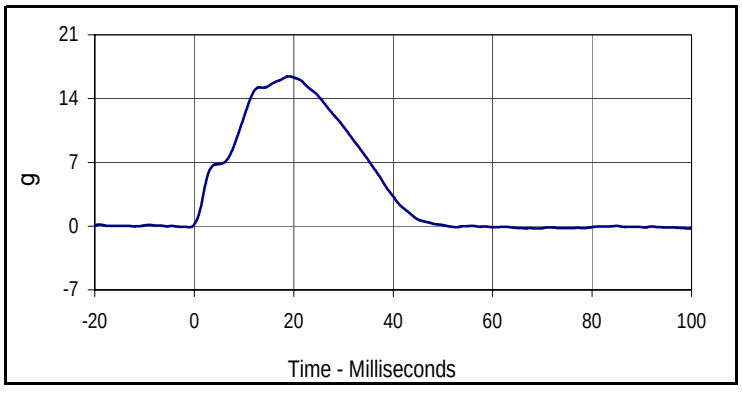
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	595	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.8	Pass
	Min	°C		21.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.0	Pass
	Min	%		34.4	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.7	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.6	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.32	Pass
Peak Upper Thorax Rib Deflection		mm	32 to 40	38.2	Pass
Peak Middle Thorax Rib Deflection		mm	39 to 45	42.6	Pass
Peak Lower Thorax Rib Deflection		mm	35 to 43	37.5	Pass
Peak Upper Spine Y Acceleration		G's	13 to 17	15.2	Pass
Peak Lower Spine Y Acceleration		G's	7 to 11	9.2	Pass
Peak Impactor Acceleration		G's	14 to 18	16.4	Pass
			Overall Test Results		Pass



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	mm
Max	Time	Min	Time
38.2	21.5	0.0	-0.4
Middle Thorax Deflection			
Max	Time	Min	Time
42.6	22.2	0.0	-2.3
Lower Thorax Deflection			
Max	Time	Min	Time
37.5	22.8	0.0	-0.4



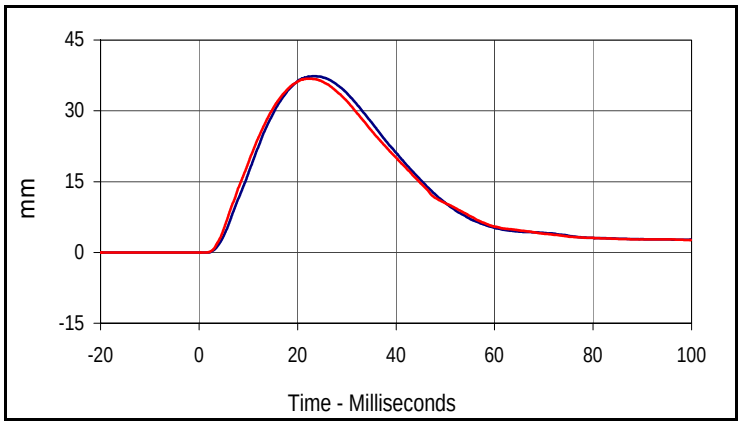
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
15.2	17.4	-6.3	48.9
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	g
Max	Time	Min	Time
9.2	7.7	-3.9	46.6



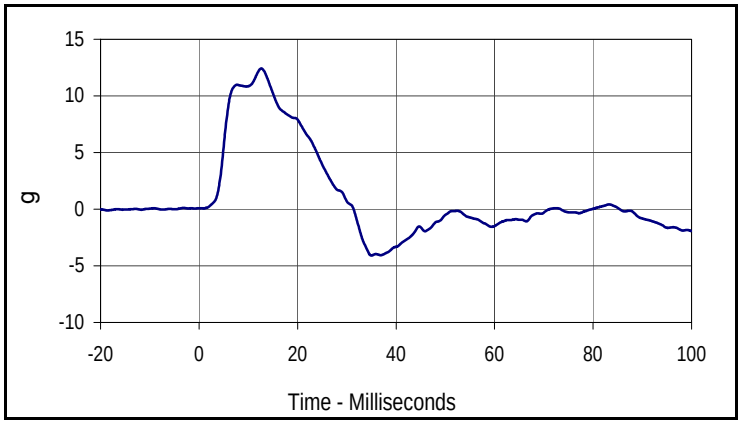
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	g
Max	Time	Min	Time
16.4	19.1	-0.3	68.6

Test Program:	SID IIs Abdomen Impact Test	Test Date:	10/12/15
ATD Serial No.:	307	Test I.D.:	307ABD086

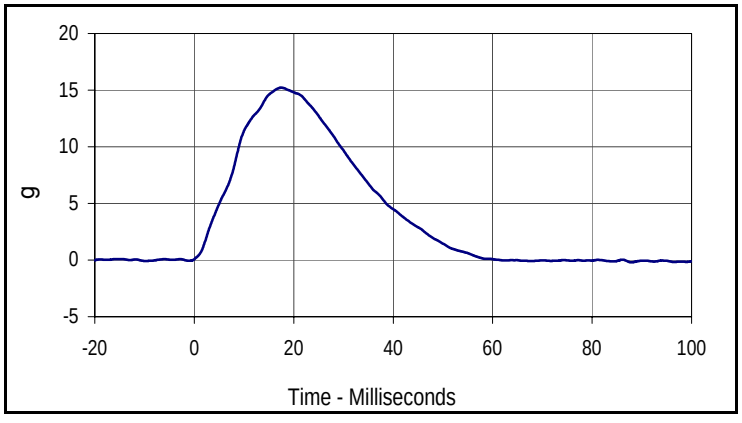
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	650	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.8	Pass
	Min	°C		21.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.0	Pass
	Min	%		34.4	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.7	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.6	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.33	Pass
Peak Upper Abdominal Rib Deflection		mm	36 to 47	37.3	Pass
Peak Lower Abdominal Rib Deflection		mm	33 to 44	36.8	Pass
Peak Lower Spine Y Acceleration		G's	9 to 14	12.4	Pass
Peak Impactor Acceleration		G's	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
37.3	23.4	0.0	-2.5
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	mm
Max	Time	Min	Time
36.8	22.3	0.0	-7.9

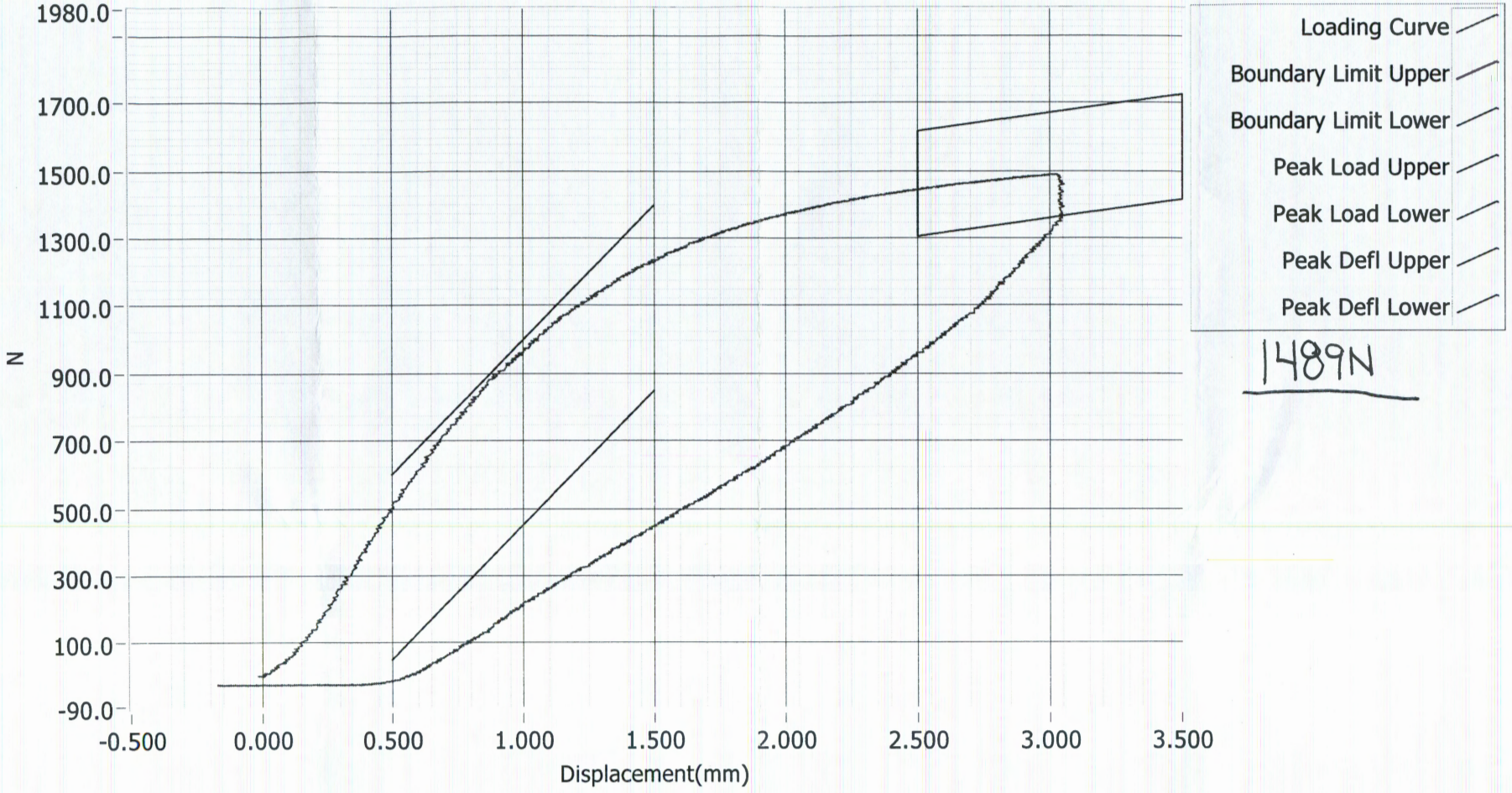


Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
12.4	12.6	-4.1	35.0



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	g
Max	Time	Min	Time
15.2	17.5	-0.2	87.9

Resultant Data - SIDIIs Plug Compression



1489N

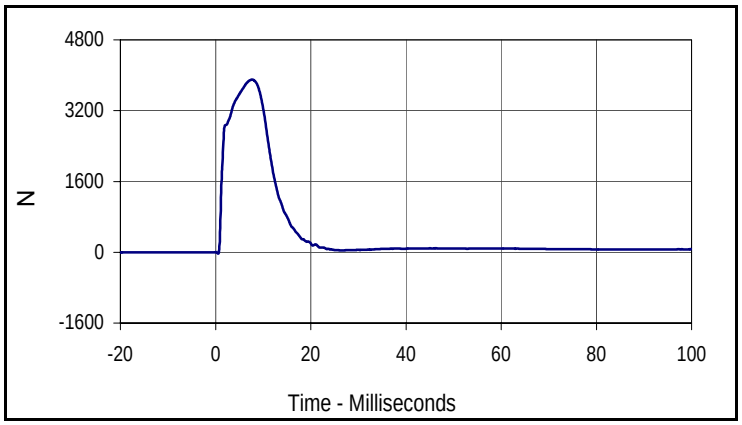
ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
	70793	12/13/2013	4:18 PM
Cert ID	ATD Serial Number	ATD Type	
	N/A	SIDIIs	

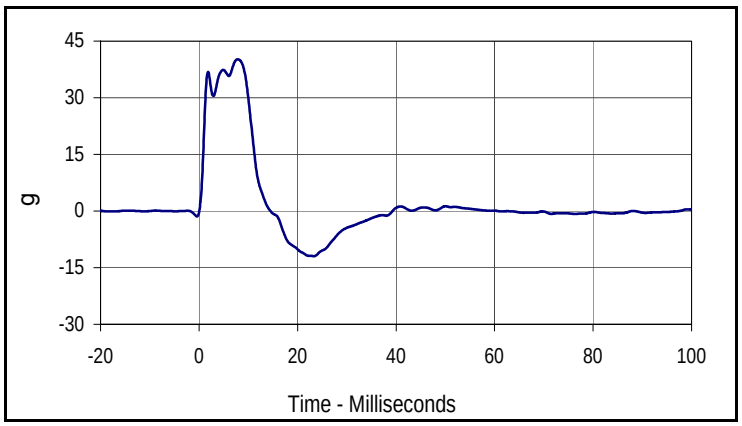
Current Date : 12/13/2013 Current Time : 16:18:44

Test Program:	SID IIs Pelvis Acetabulum Impact Test	Test Date:	10/12/15
ATD Serial No.:	307	Test I.D.:	307ACET086

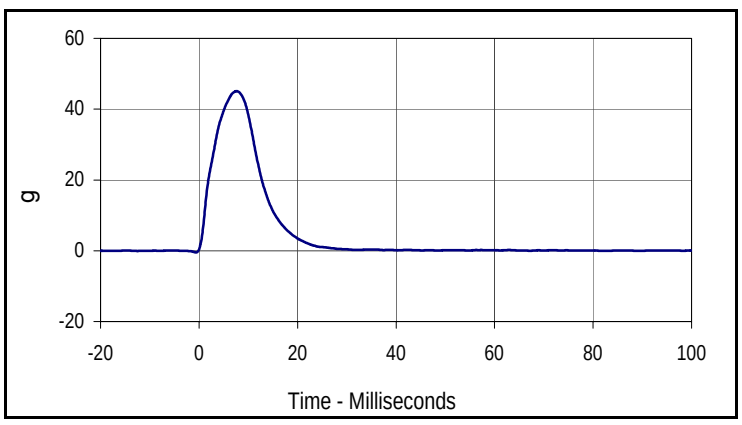
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	700	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.8	Pass
	Min	°C		21.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.0	Pass
	Min	%		34.4	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.7	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.5	Pass
Impactor Velocity		m/s	6.6 to 6.8	6.67	Pass
Peak Acetabulum Force Y		Newtons	3600 to 4300	3900.9	Pass
Peak Pelvis Y Acceleration After 6 msec.		G's	34 to 42	40.2	Pass
Peak Impactor Acceleration		G's	38 to 47	45.1	Pass
			Overall Test Results		Pass



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
3900.9	7.6	-33.0	0.6



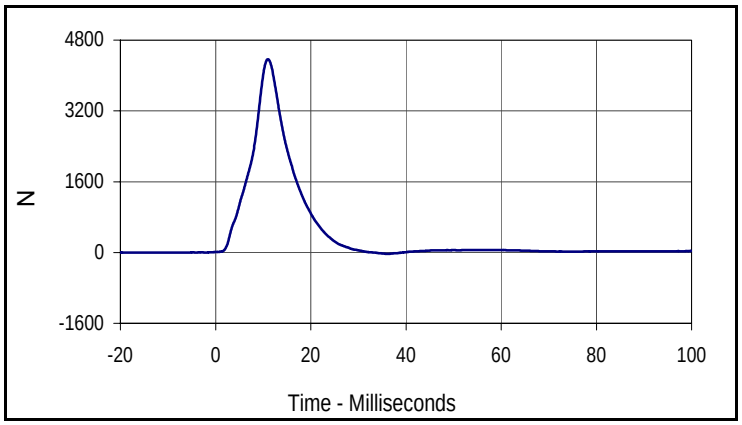
Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
40.2	7.8	-11.9	23.3



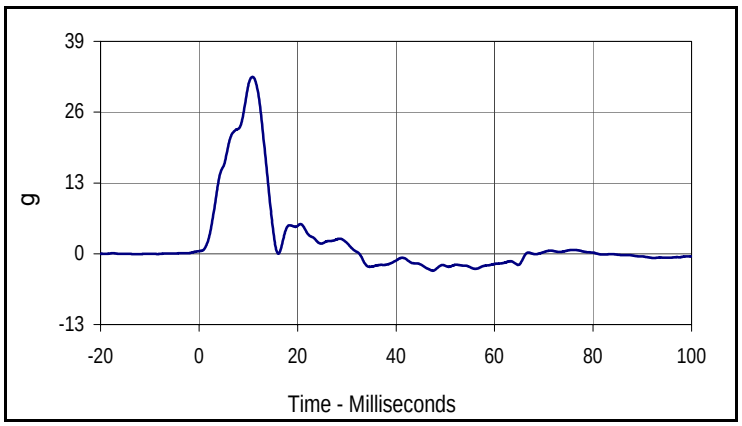
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
45.1	7.6	-0.5	-0.6

Test Program:	SID IIs Pelvis Iliac Calibration	Test Date:	10/12/15
ATD Serial No.:	307	Test I.D.:	307PL086

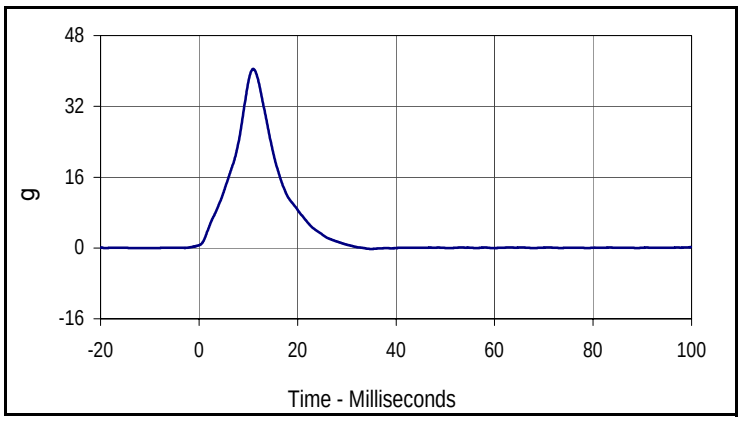
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	755	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.8	Pass
	Min	°C		21.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.0	Pass
	Min	%		34.4	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.7	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.4	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.32	Pass
Peak Illiac Force		Newtons	4100 to 5100	4367.3	Pass
Peak Pelvis Y Acceleration		G's	28 to 39	32.5	Pass
Peak Impactor Acceleration		G's	36 to 45	40.5	Pass
			Overall Test Results		Pass



Curve Description			
Pelvis Iliac Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	N
Max	Time	Min	Time
4367.3	11.0	-31.1	36.4



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	g
Max	Time	Min	Time
32.5	10.8	-3.1	47.4



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	g
Max	Time	Min	Time
40.5	11.0	-0.2	35.1

APPENDIX D

TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

TABLE 1 – Dummy Instrumentation (ES-2re)

			ES-2re S/N F037		
			Serial Number	Manufacturer	Calibration
Head Accelerometers	Primary	X	P58858	Endevco	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)				70627	FTSS	12/12/13
Pelvis Plug (Non-Struck Side)				70948	FTSS	12/13/13

TABLE 3 – Vehicle Instrumentation

Vehicle Instrumentation			Serial Number	Manufacturer	Calibration Date
1	Vehicle Center of Gravity	X	A160350	MSI	7/8/15
	Vehicle Center of Gravity	Y	A145487	MSI	7/8/15
	Vehicle Center of Gravity	Z	A148331	MSI	7/8/15
2	Right Sill at Front Seat	X	A152874	MSI	7/8/15
	Right Sill at Front Seat	Y	A148323	MSI	7/8/15
	Right Sill at Front Seat	Z	A160345	MSI	7/8/15
3	Right Sill at Rear Seat	X	A145444	MSI	7/8/15
	Right Sill at Rear Seat	Y	A152853	MSI	7/8/15
	Right Sill at Rear Seat	Z	A152866	MSI	7/8/15
4	Left Sill at Front Door	Y	A147392	MSI	7/8/15
5	Left Sill at Rear Door	Y	A147451	MSI	7/7/15
6	Left A-Post Lower	Y	A148205	MSI	7/7/15
7	Left A-Post Middle	Y	A147426	MSI	7/7/15
8	Left B-Post Lower	Y	A145914	MSI	7/7/15
9	Left B-Post Middle	Y	A160343	MSI	7/8/15
10	Front Seat Track	Y	A148184	MSI	7/7/15
11	Rear Seat Structure	Y	A148280	MSI	7/7/15
12	Right Rear Occ. Compartment	Y	A147394	MSI	7/7/15
13	Engine Block	X	A152876	MSI	7/8/15
	Engine Block	Y	A148310	MSI	7/8/15
14	Rear Floorpan Above Axle	X	A147402	MSI	7/7/15
	Rear Floorpan Above Axle	Y	A160708	MSI	7/7/15
	Rear Floorpan Above Axle	Z	A145520	MSI	7/8/15

TABLE 4 – MDB Instrumentation

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