

REPORT NUMBER: SINCAP-KAR-14-021

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

**BAYERISCHE MOTOREN WERKE AG
2014 MINI COOPER HARDTOP 3-DOOR HATCHBACK**

NHTSA No: Q20144100

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



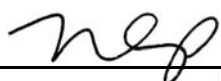
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FINAL REPORT

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Division Chief, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: 


COTR, New Car Assessment Program
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16. Abstract

A 55/28 km/h 90 deg. Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2014 Mini Cooper Hardtop 3-door hatchback 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 June 23, 2014.

The impact velocity of the Moving Deformable Barrier was 61.26 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 33.3° C. The target vehicle's maximum post-test static crush was 137 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	313.1
Maximum Thoracic Rib Deflection	mm	44	19
Total Abdominal Force	N	2500	770
Pubic Symphysis Force	N	6000	1266

Measurement Description	Passenger ATD (SID-IIs)		
	Units	IARV	Result
Head Injury Criteria (HIC ₃₆)		1000	718.4
Resultant Lower Spine Acceleration	g	82	89
Total Pelvic Force (Sum of Acetubular and Iliac Forces)	N	5525	4434
Maximum Thoracic Rib Deflection	mm	38*	37
Maximum Abdominal Rib Deflection	mm	45*	32

The door on the struck side of the vehicle did not separate from the body at the hinges or latch. The opposite side door did not open during the side impact event. The rear passenger ATD's Lower Spine (T12) Resultant Acceleration exceeded its allowable limit.

* Proposed IARV

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SECTION 1

TEST PURPOSE AND PROCEDURE

This moving deformable barrier side impact test is part of the MY2014 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract number DTNH22-09-D-00122. The purpose of this test is to generate comparative side impact performance in a 2014 Mini Cooper Hardtop 3-door hatchback. 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 2014 Mini Cooper Hardtop 3-door hatchback 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 61.26 km/h (38.07 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 June 23, 2014. Pre- and post-test photographs of the test vehicle, the MDB and the dummies (ES-2re and SID-IIs) are included in Appendix A of this report.

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

The dummy was instrumented in the following manner:

DRIVER ATD (ES-2re)

Primary and redundant head CG tri-axial accelerometers

Chest upper rib, middle rib and lower rib y-axis displacement potentiometers

Abdomen forward, middle, and rear y-axis load cells

Lower spine (12) tri-axial accelerometers

Pubic symphysis y-axis load cell

PASSENGER ATD (SID-IIs)

Primary and redundant head CG tri-axial accelerometers

Chest upper rib, middle rib and lower rib y-axis displacement potentiometers

Abdomen upper rib and lower rib y-axis displacement potentiometers

Lower spine (12) tri-axial accelerometers

Acetabulum and iliac wing y-axis load cells

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

Dummy injury readings were recorded as follows:

Measurement Description	Units	Driver ATD (ES-2re)	
		Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	313.1
Maximum Thoracic Rib Deflection	mm	44	19
Combined Abdominal Force	N	2500	770
Pubic Symphysis Force	N	6000	1266

Measurement Description	Units	Passenger ATD (SID-IIs)	
		Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	718.4
Lower Spine (T12) Resultant Acceleration	g	82	89
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	4434
Maximum Thoracic Rib Deflection	mm	38*	37
Maximum Abdominal Rib Deflection	mm	45*	32

*Proposed IARV

Supplemental restraint information is given below:

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

GENERAL COMMENTS

The door on the struck side of the vehicle remained closed and latched. There was no separation at the hinges or latch. The door on the non-struck side remained closed and latched. The rear passenger ATD's Lower Spine (T12) Resultant Acceleration exceeded its allowable limit.

SECTION 3

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. Q20144100
Test Program: NCAP MDB Side Impact Test Test Date: 06/23/14

CONVERSION FACTORS

Quantity	Typical Application	Std Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	miles/hr	km/hr	1.609344
Length or Distance	Measurements	in	mm	25.4
Volume	Fuel Systems	gal	liter	3.785
Volume	Small Fluids	oz	mL	29.574
Pressure	Tire Pressures	lbf/in ²	kPa	6.895
Temperature	General Use	°F	°C	$=(T_f - 32)/1.8$
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf-ft	N•m	1.355

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. Q20144100
 Test Program: NCAP MDB Side Impact Test Test Date: 06/23/14

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	Q20144100
Model Year	2014
Make	Mini
Model	Cooper Hardtop
Body Style	3-Door Hatchback
VIN	WMWXM5C51ET934114
Body Color	Volcanic Orange
Odometer Reading (km / mi)	87 / 54
Engine Displacement (L)	1.5
Type / No. of Cylinders	Inline 3
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	6
Overdrive	Yes
Final Drive	Front
Roof Rack	No
Sunroof / T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes

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

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

Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Bayerische Motoren Werke AG
Date of Manufacture	Apr-14
Vehicle Type	Passenger Car

GVWR (kg)	1597
GAWR Front (kg)	896
GAWR Rear (kg)	755

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Designated Seating Capacity	2	2		4
Capacity Weight (VCW) (kg)				305.0
DSC x 68.04 (kg)				272.2
Cargo Weight (RCLW) (kg)				32.8

A

B

A-B

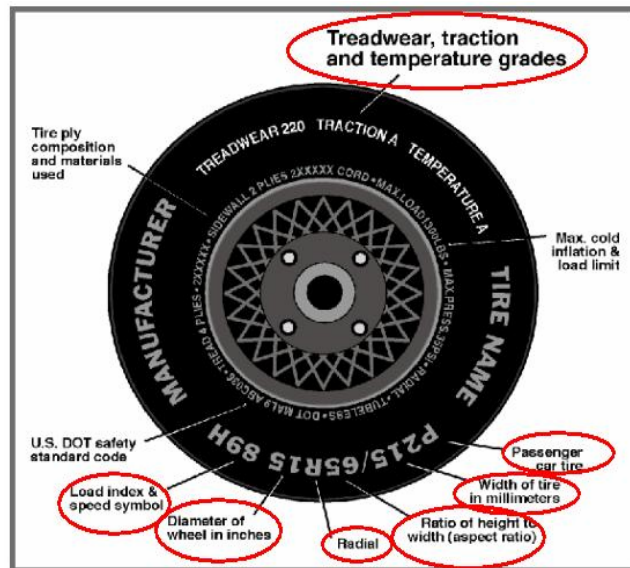
VEHICLE SEAT TYPE

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

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. Q20144100
 Test Program: NCAP MDB Side Impact Test Test Date: 06/23/14



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	240	240
Recommended Tire Size	P195/55R16	P195/55R16
Tire Size on Vehicle	P195/55R16	P195/55R16
Tire Manufacturer	Michelin	Michelin
Tire Model	Energy Saver	Energy Saver
Treadware	400	400
Traction Grade	A	A
Temperature Grade	A	A
Tire Plies Sidewall	1 Polyester	1 Polyester
Tire Plies Body	1 Polyester, 2 Steel, 1 Polyamide	1 Polyester, 2 Steel, 1 Polyamide
Load Index/Speed Symbol	87W	87W
Tire Material	Polyester, Steel, Polyamide	Polyester, Steel, Polyamide
DOT Safety Code Left	HD1K 021X 0814	HD1K 021X 0814
DOT Safety Code Right	HD1K 021X 0814	HD1K 021X 0814

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. Q20144100
 Test Program: NCAP MDB Side Impact Test Test Date: 06/23/14

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	250	250	250	250
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	390.0	232.5		428.0	298.5		420.0	296.5	
Right	kg	377.0	225.5		382.5	268.5		388.0	276.0	
Ratio	%	62.6%	37.4%	100.0%	58.8%	41.2%	100.0%	58.5%	41.5%	100.0%
Total	kg	767.0	458.0	1225.0	810.5	567.0	1377.5	808.0	572.5	1380.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1225.0	A
Actual Weight of 2 P572 ATDs Used	kg	125.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	32.8	C
Calculated Vehicle Target Wt (TVTW)	kg	1382.8	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	650	651	Yes
RF	mm	646	655	Yes
LR	mm	640	640	Yes
RR	mm	656	646	Yes
Vehicle CG (Aft of Front Axle)	mm	1036	1029	
Vehicle CG (Left (+)/Right (-) from Longitudinal Centerline)	mm	28	41	

***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: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. Q20144100
Test Program: NCAP MDB Side Impact Test Test Date: 06/23/14

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Tail Lights	2.0
Rear Bumper	3.0
Non-Struck Side Front Door Panel	3.5
Non-Struck Side Outboard Mirror	1.0
Non-Struck Side Rear Window	1.0
Spare Tire	10.5
Spare Tire Tools	2.7
Right Front Brake Rotor and Front Brake Calipers	13.5
Ballast / Equipment Added	71.0

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

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

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. Q20144100

Test Program: NCAP MDB Side Impact Test Test Date: 06/23/14

SEAT POSITIONING

The driver's seat, front center seat (if applicable), and right front passenger's seat should be set to the mid-track, lowest, mid-angle position. The struck side rear passenger's seat, rear center seat, and non-struck side rear passenger's seats should be set to the rearmost, lowest, mid-angle position.

SCRL ANGLE RANGE

Seat	SCRL (°)		
	Max	Min	Mid
Driver Seat	5.0	0.0	2.5
Front Passenger Seat	4.8	0.0	2.4
Front Center Seat			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat			
Rear Center Seat	Fixed	Fixed	Fixed

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle	As Tested SCRP Height	SCRP Height Position	SCRP Height (mm)		
				Rearmost	Mid Fore/Aft	Forwardmost
Driver Seat	2.5	494	Max	484	494	507
			Mid	484	494	507
			Min	484	494	507
Front Passenger Seat	2.4	503	Max	493	503	515
			Mid	493	503	515
			Min	493	503	515
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			Max			
			Mid			
			Min			
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: 2014 Mini Cooper Hardtop 3-Door Hatchback

NHTSA No. Q20144100

Test Program: NCAP MDB Side Impact Test

Test Date: 06/23/14

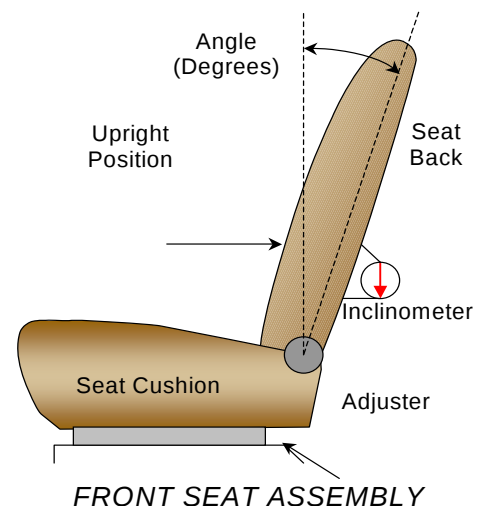
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position From Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	250	26	130	13
Front Passenger Seat	250	26	130	13
Front Center Seat				
Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat				
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 seat back.



SEAT BACK POSITION

Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degree	Detent*
Driver Seat w/Seated Dummy	53.5	27	19.5	5
Front Passenger Seat	52.9	27	19.7	5
Front Center Seat				
Struck Side Rear Seat w/Seated Dummy	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat				
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: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. Q20144100Test Program: NCAP MDB Side Impact Test Test Date: 06/23/14**SEAT BELT ANCHORAGE ADJUSTMENT**

Seat belt anchorages are adjusted in accordance with the information provided by the manufacturer on Form No. 1. The positions are marked H, M1,..., L from top to bottom.

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

HEAD RESTRAINT ADJUSTMENT

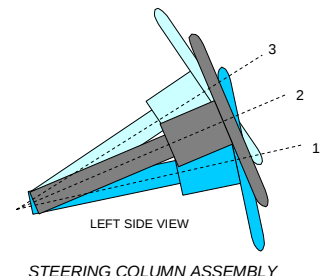
The driver's head restraint is adjusted to the highest and most full forward in-use position. The struck-side rear passenger's head restraint is adjusted to the lowest and most full forward in-use position.

	Total No. of Positions	Placed in Position
Driver Seat	5	Full Up
Rear Seat	2	Full Down

STEERING COLUMN ADJUSTMENT

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

	Degrees	Fore-Aft Position (mm)
Lowermost - Position 1	17.7	115
Geometric Center - Position 2	19.9	152
Uppermost - Position 3	22.1	188
Telescoping Steering Wheel Travel		73
Test Position	19.9	152



DATA SHEET NO. 2 ... (CONTINUED)

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

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback

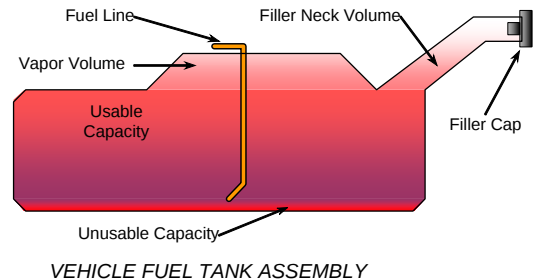
NHTSA No. Q20144100

Test Program: NCAP MDB Side Impact Test

Test Date: 06/23/14

FUEL PUMP

The vehicle is equipped with an electric fuel pump. The fuel pump starts when the ignition is turned on. The fuel pump will operate for 5 seconds until pressure is built up. The fuel pump then switches to sleep mode until the engine is started or the pressure decreases.



FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	40.12
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	37.32
Actual amount of Solvent Used in Test	37.32
1/3 of Usable Capacity	13.37

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

DATA SHEET NO. 3

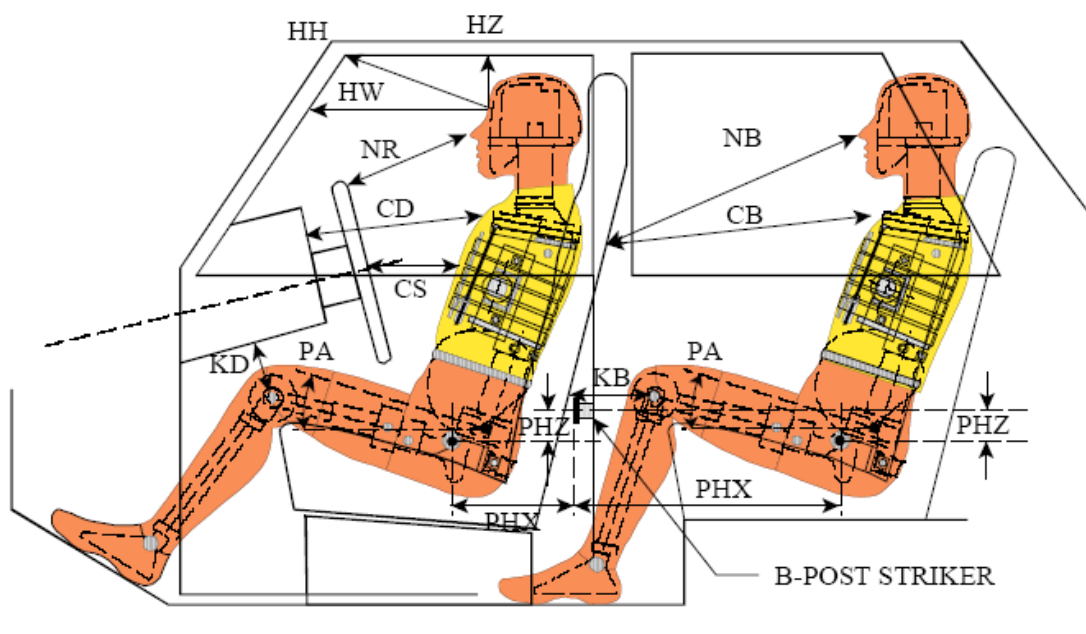
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback

NHTSA No. Q20144100

Test Program: NCAP MDB Side Impact Test

Test Date: 06/23/14



LEFT SIDE VIEW

NOTE: 2-DOOR VEHICLE SHOWN.
REAR DUMMY PHX & PHZ
MEASUREMENTS FOR A 4-DOOR
VEHICLE WOULD USE THE C-POST
STRIKER AS A REFERENCE POINT

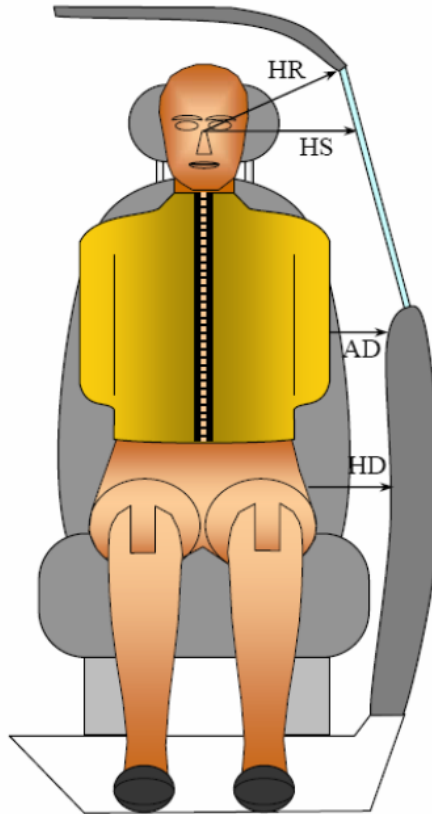
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Description	Driver		Passenger	
			Length (mm)	Angle (°)	Length (mm)	Angle (°)
HH		Head to Header	504			
HW		Head to Windshield	770			
HZ	HZ	Head to Roof	192		252	
NR	NB	Nose to Rim/Seat Back	442		422	
CD	CB	Chest to Dash/Seat Back	608		410	
CS		Chest to Steering Wheel	299			
KD(L)/KDA(L)°	KB(L)/KBA(L)°	Left Knee to Dash/Seat Back	222	36.4	123	20.7
KD(R)/KDA(R)°	KB(R)/KBA(R)°	Right Knee to Dash/Seat Back	112	26.0	133	18.7
PAX°	PAX°	Pelvic Tilt Angle X		18.3		22.2
	PAY°	Pelvic Tilt Angle Y		0.2		0.0
PHX	PHX	Hip Point to Striker (x-axis)	325		360	
PHZ	PHZ	Hip Point to Striker (z-axis)	199		197	

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. Q20144100
Test Program: NCAP MDB Side Impact Test Test Date: 06/23/14



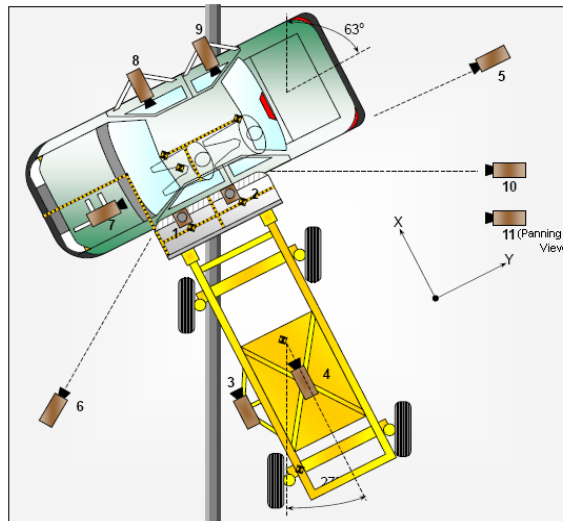
DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	280	250
HS	Head to Side Window	mm	300	380
AD	Arm to Door	mm	91	140
HD	H-Point to Door	mm	147	104

DATA SHEET NO. 5

CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. Q20144100
 Test Program: NCAP MDB Side Impact Test Test Date: 06/23/14



CAMERA LOCATIONS AND DATA

No.	View	Coordinates (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X	Y	Z		
1	Overhead Overall	1220	2287	-5486	14	1000
2	Overhead Close-Up	609	2287	-5102	35	1000
3	Left Impact Point (MDB)	-2134	0	-1143	25	1000
4	Side Overall (MDB)	-3912	838	-1829	12.5	1000
5	Rear	-64	2485	-1348	85	1000
6	Left Front	-2266	-3564	-1475	24	1000
7	Driver Front (On-Board)	575	-582	-727	24	1000
8	Driver Side (On-Board)	1547	932	-459	12	1000
9	Passenger Side (On-Board)	1530	1815	-518	12	1000
10	Real Time Overall				Zoom	30
11	Real Time Inrun				Zoom	30

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

*All measurements accurate to ± 6 mm

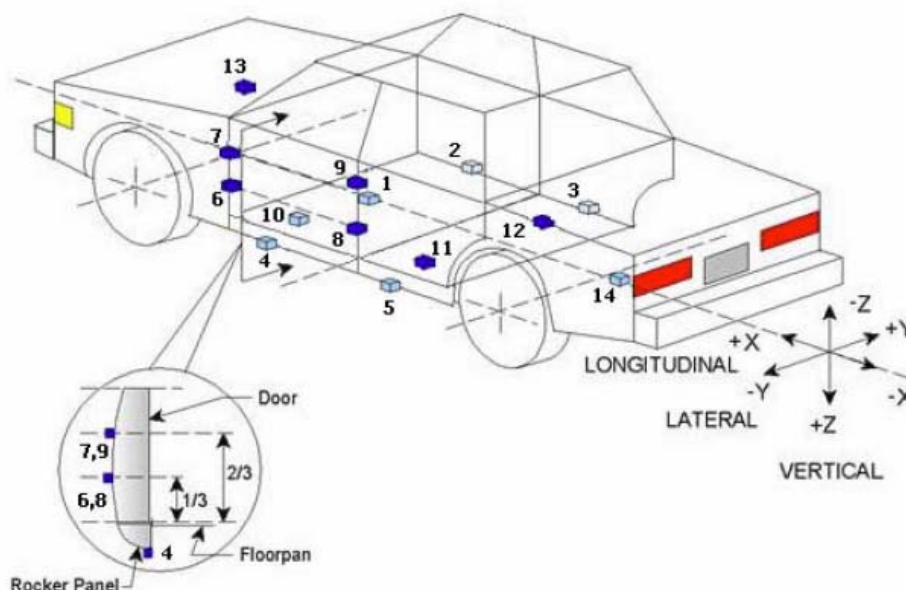
INSTRUMENTATION

Driver Dummy Channels	16
Passenger Dummy Channels	16
Vehicle Structure Accelerometers	17
MDB Accelerometers	5
Total	54

DATA SHEET NO. 6

TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. Q20144100
 Test Program: NCAP MDB Side Impact Test Test Date: 06/23/14



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	1333	0	-385
2	Right Sill at Front Seat	2085	674	-322
3	Right Sill at Rear Seat			
4	Left Sill at Front Door	2079	-692	-169
5	Left Sill at Rear Door	873	-692	-211
6	A-Pillar Lower	2486	-759	-492
7	A-Pillar Middle	2486	-759	-736
8	B-Pillar Lower			
9	B-Pillar Middle			
10	Front Seat Track	1691	-215	-242
11	Rear Seat Structure			
12	Right Rear Occupant Compartment	1502	362	-227
13	Engine Block	3335	302	-613
14	Rear Floorpan Above Axle	703	-25	-444

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

DATA SHEET NO. 7

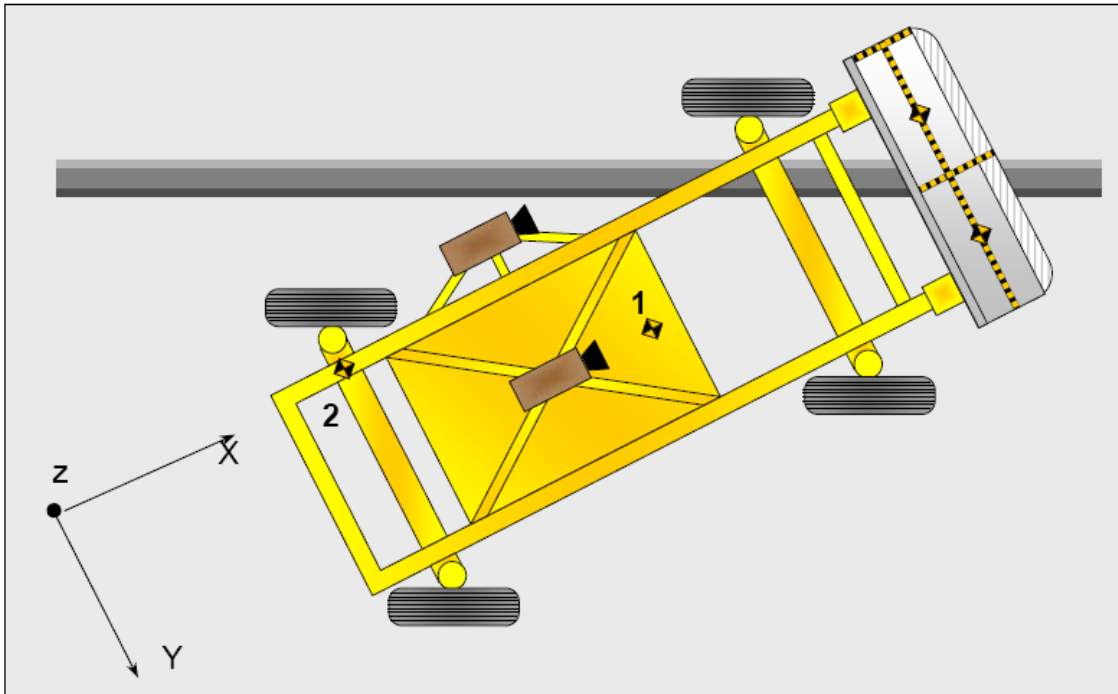
MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback

NHTSA No. Q20144100

Test Program: NCAP MDB Side Impact Test

Test Date: 06/23/14



MDB ACCELEROMETER LOCATIONS

Loc. No.	Accelerometer Location	Measurement		
		X	Y	Z
1	MDB CG	-1195	0	-430
2	MDB Rear	-2642	-593	-608

Reference: X – Face of MDB (+ forward)
Y – MDB centerline (+ to right)
Z – Ground plane (+ down)

DATA SHEET NO. 8**POST-TEST OBSERVATIONS**

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. Q20144100
 Test Program: NCAP MDB Side Impact Test Test Date: 06/23/14

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Front Seat Dummy (ES-2re)	Rear Seat Dummy (SID-IIs)
Face	Curtain Airbag, Side Header	Curtain Airbag
Top of Head	Side Header	Curtain Airbag, Side Header, Right Rear Headrest, Right Rear Seat Back
Left Side of Head	Curtain Airbag, Side Header	Curtain Airbag
Back of Head	Side Header, Headrest	Curtain Airbag, Right Rear Seat Back
Left Shoulder	Curtain Airbag, Door Panel	Curtain Airbag, Door Panel, Seat Back
Upper Torso	Seat Bolster	None
Lower Torso	Seat Bolster, Torso Airbag	Door Panel
Left Hip	Torso Airbag, Door Panel	Seat Bolster, Door Panel
Left Knee	Door Panel, Knee Airbag	Door Panel, Right Knee

POST-TEST DOOR PERFORMANCE

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

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

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. Q20144100
Test Program: NCAP MDB Side Impact Test Test Date: 06/23/14

POST-TEST SEAT PERFORMANCE

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

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No separation
Sill Separation	No separation
Windshield Damage	None
Side Window Damage	Left front window broken
Other Notable Effects	None

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

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. Q20144100
Test Program: NCAP MDB Side Impact Test Test Date: 06/23/14

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side Driver		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No	No	
Knee Airbag	Yes	No	No	
Side Airbag 1 (Curtain)	Yes	Yes	Yes	Yes
Side Airbag 2 (Torso)	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		2499
Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point)	mm		309
Actual Impact Point (Aft of Front Axle)	mm		301
Horizontal Offset (+ forward / - rearward)	mm	± 50 of Intended Impact Point	8
Vertical Offset (+ down / - up)	mm	± 20 of Intended Impact Point	10

DATA SHEET NO. 9**MDB SUMMARY OF RESULTS**Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. Q20144100Test Program: NCAP MDB Side Impact Test Test Date: 06/23/14**MDB SPECIFICATIONS**

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

MDB WEIGHTS

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

SPEED AND IMPACT DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	61.26
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	61.22
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	90.4
MDB Forward Line of Motion to Target Vehicle CL	degrees	62.5 to 63.5	62.8
MDB Crabbed Angle to MDB Forward Line of Motion	degrees	26.0 to 28.0	27.6

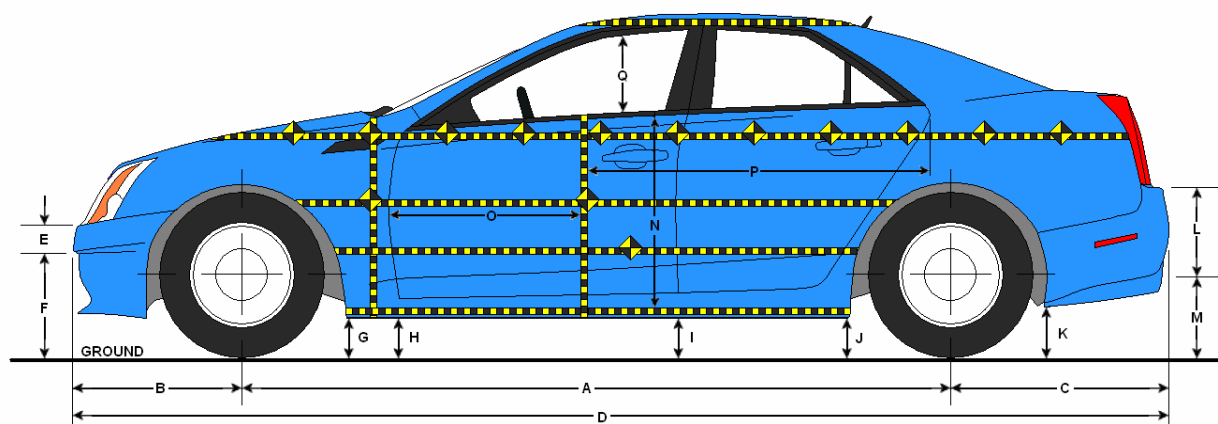
MAXIMUM STATIC CRUSH OF HONEYCOMB FACE

Vertical Location			From Centerline		Max. Crush (mm)
Row	Description	Height (mm)	Distance (mm)	Direction	
A	Center of Bumper	432	600	Right	264
B	Top of Bumper	533	800	Left	189
C	Mid Level	686	800	Left	178
D	Top of Stack	813	800	Left	201

DATA SHEET NO. 10

TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. Q20144100
 Test Program: NCAP MDB Side Impact Test Test Date: 06/23/14



LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2499	2494	-5
B	Front Axle to FSOV	748	748	0
C	Rear Axle to RSOV	570	574	4
D	Total Length at Centerline	3816	3816	0
E	Front Bumper Thickness	126	126	0
F	Front Bumper Bottom to Ground	417	421	4
G	Sill Height at Front Wheel Well	163	171	8
H	Sill Height at Front Door Leading Edge	158	165	7
I	Sill Height at B-Pillar	268	282	14
J1	Sill Height at Rear Wheel Well	189	198	9
J2	Pinch Weld Height at Rear Wheel Well	153	161	8
K	Sill Height Aft of Rear Wheel Well	408	574	166
L	Rear Bumper Thickness	96	96	0
M	Rear Bumper Bottom to Ground	408	420	12
N	Sill Height to Bottom of Front Window Sill	595	639	44
O	Front Door Leading Edge to Impact CL	611	604	-7
P	Rear Door Trailing Edge to Impact CL	1970	-151	-2121
Q	Front Window Opening	378	371	-7
R	Right Side Length	3076	3076	0
S	Left Side Length	3077	3068	-9
T	Vehicle Width at B-Pillar	1689	1646	-43

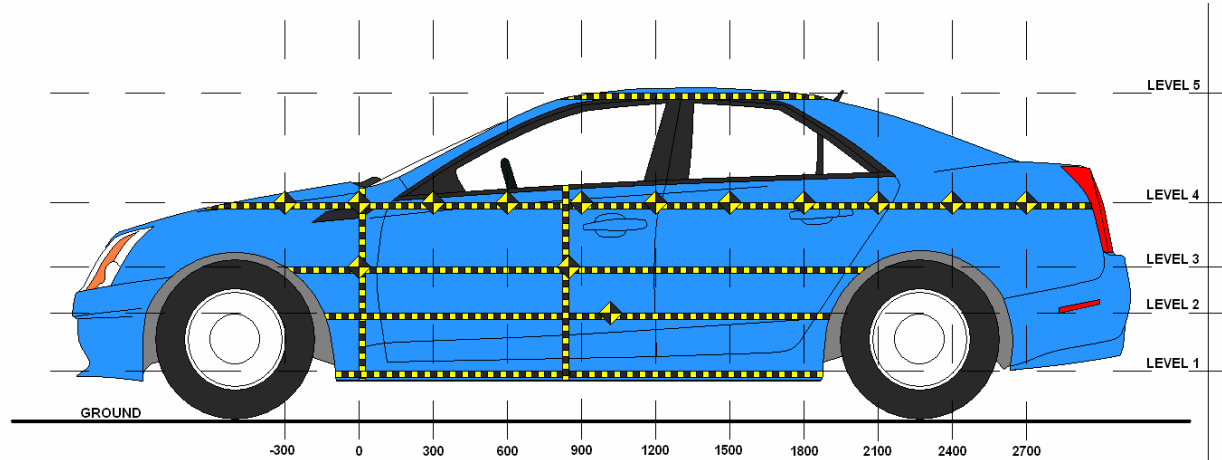
All measurements in mm with tolerance of ± 3 mm

DATA SHEET NO. 11

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. Q20144100

Test Program: NCAP MDB Side Impact Test Test Date: 06/23/14



LEFT SIDE VIEW

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	239	15	450
2	Occupant H-Point	495	129	1050
3	Mid-Door	638	137	900
4	Window Sill	910	27	1500
5	Window Top	1347	9	1650

DATA SHEET NO. 11 ... (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. Q20144100

Test Program: NCAP MDB Side Impact Test Test Date: 06/23/14

EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

	Pre-Test (mm)					Post-Test (mm)					Difference (mm)				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900															
-750															
-600															
-450															
-300															
-150			642	812				655	811				13	-1	
0		652	650	791			678	685	789			26	35	-2	
150	687	659	654	766		695	759	713	771		8	100	59	5	
300	694	663	654	750		706	761	718	763		12	98	64	13	
450	691	664	653	675		706	781	749	694		15	117	96	19	
600	689	664	651	735		703	779	763	741		14	115	112	6	
750	687	663	650	729	952	699	775	775	734	955	12	112	125	5	3
900	686	662	650	721	944	696	779	787	730	950	10	117	137	9	6
1050	685	662	650	720	941	694	791	771	723	946	9	129	121	3	5
1200	685	663	650	715	940	694	784	755	719	945	9	121	105	4	5
1350	685	663	650	714	941	696	742	718	721	945	11	79	68	7	4
1500	686	663	651	715	941	694	716	714	742	946	8	53	63	27	5
1650	685	659	651	718	941	688	735	743	734	950	3	76	92	16	9
1800		651	649	719	949		672	722	730	955		21	73	11	6
1950			643	725	961			636	733	969			-7	8	8
2100			642	732	989			586	739	998			-56	7	9
2250				746	1060				751	1059				5	-1
2400				770					773					3	
2550															
2700															
2850															

DATA SHEET NO. 11 ... (CONTINUED)

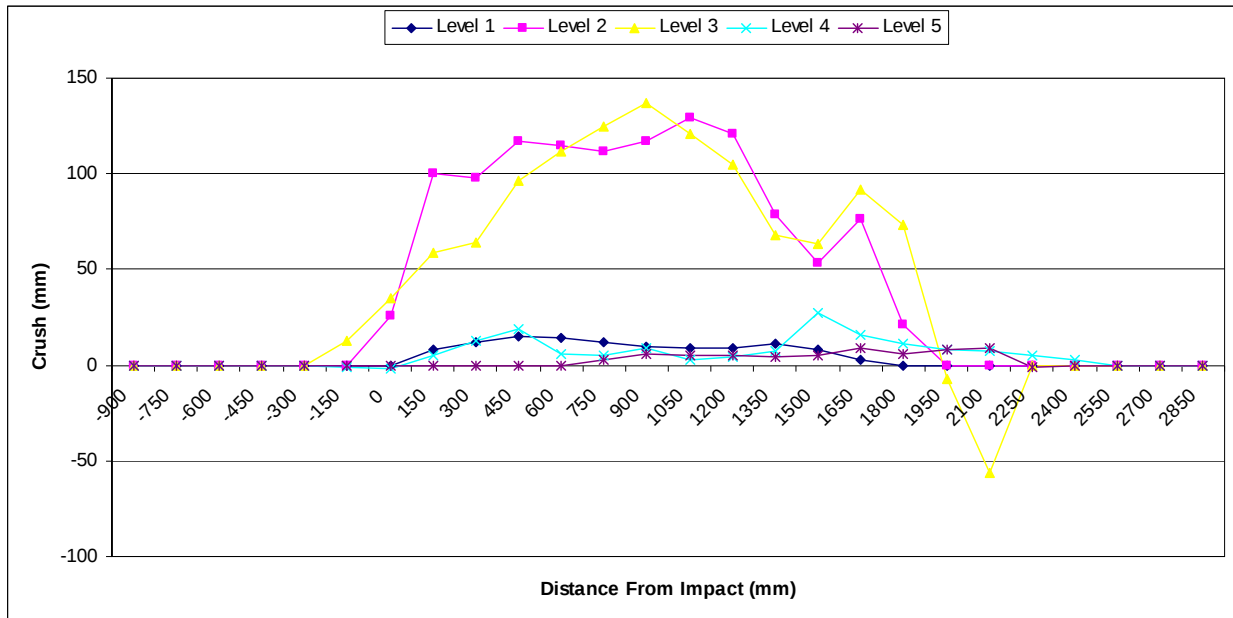
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback

NHTSA No. Q20144100

Test Program: NCAP MDB Side Impact Test

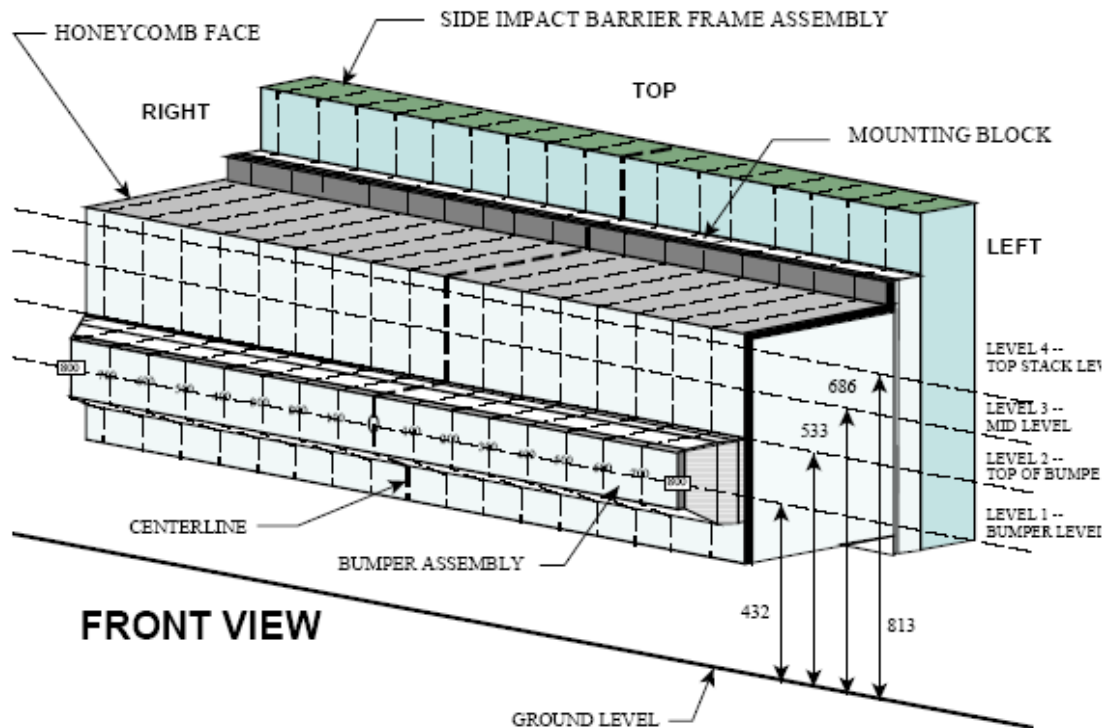
Test Date: 06/23/14



DATA SHEET NO. 12

MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. Q20144100
 Test Program: NCAP MDB Side Impact Test Test Date: 06/23/14



NOTE: Dimensions are shown in millimeters, mm

DEFORMABLE BARRIER STATIC CRUSH

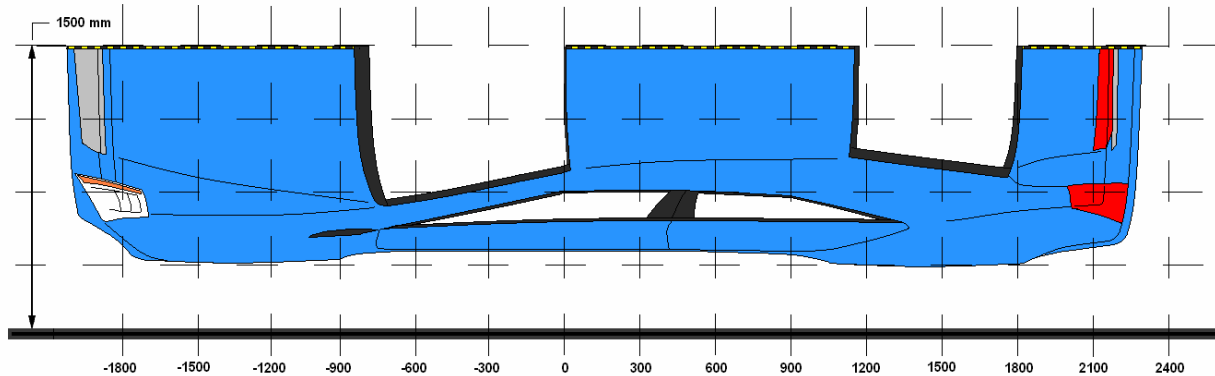
Stack Level	Distance Right of Center								C/L	Distance Left of Center							
	800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
1	261	257	264	247	209	179	172	173	176	179	182	185	189	200	226	229	241
2	180	188	97	182	135	118	118	118	123	130	133	137	137	147	163	178	189
3	121	135	153	147	117	98	77	61	57	57	68	81	101	126	162	175	178
4	116	117	140	140	122	97	67	60	55	52	75	90	117	143	172	192	201

All dimensions in millimeters.

DATA SHEET NO. 13

VEHICLE AND MDB DAMAGE PROFILE DISTANCES

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. Q20144100
 Test Program: NCAP MDB Side Impact Test Test Date: 06/23/14



VEHICLE DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Crush (mm)
1	2400	4	770	773	3
2	1950	4	725	733	8
3	1350	2	663	742	79
4	750	3	650	775	125
5	300	2	663	761	98
6	-150	3	642	655	13

MDB DAMAGE PROFILE DISTANCES

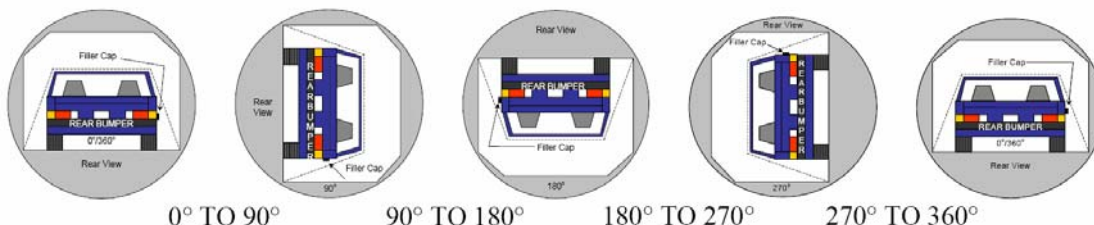
DPD	From MDB Centerline		Level	Crush (mm)
	Distance (mm)	Direction		
1	800	Left	1	241
2	500	Left	1	200
3	200	Left	1	182
4	200	Right	1	172
5	500	Right	1	247
6	800	Right	1	261

DATA SHEET NO. 14

FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. Q20144100
 Test Program: NCAP MDB Side Impact Test Test Date: 06/23/14
 Temperature at Time of Impact: 33.3° C Test Time: 2:34 PM

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



SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	89	300	389
90° To 180°	83	300	383
180° To 270°	75	300	375
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

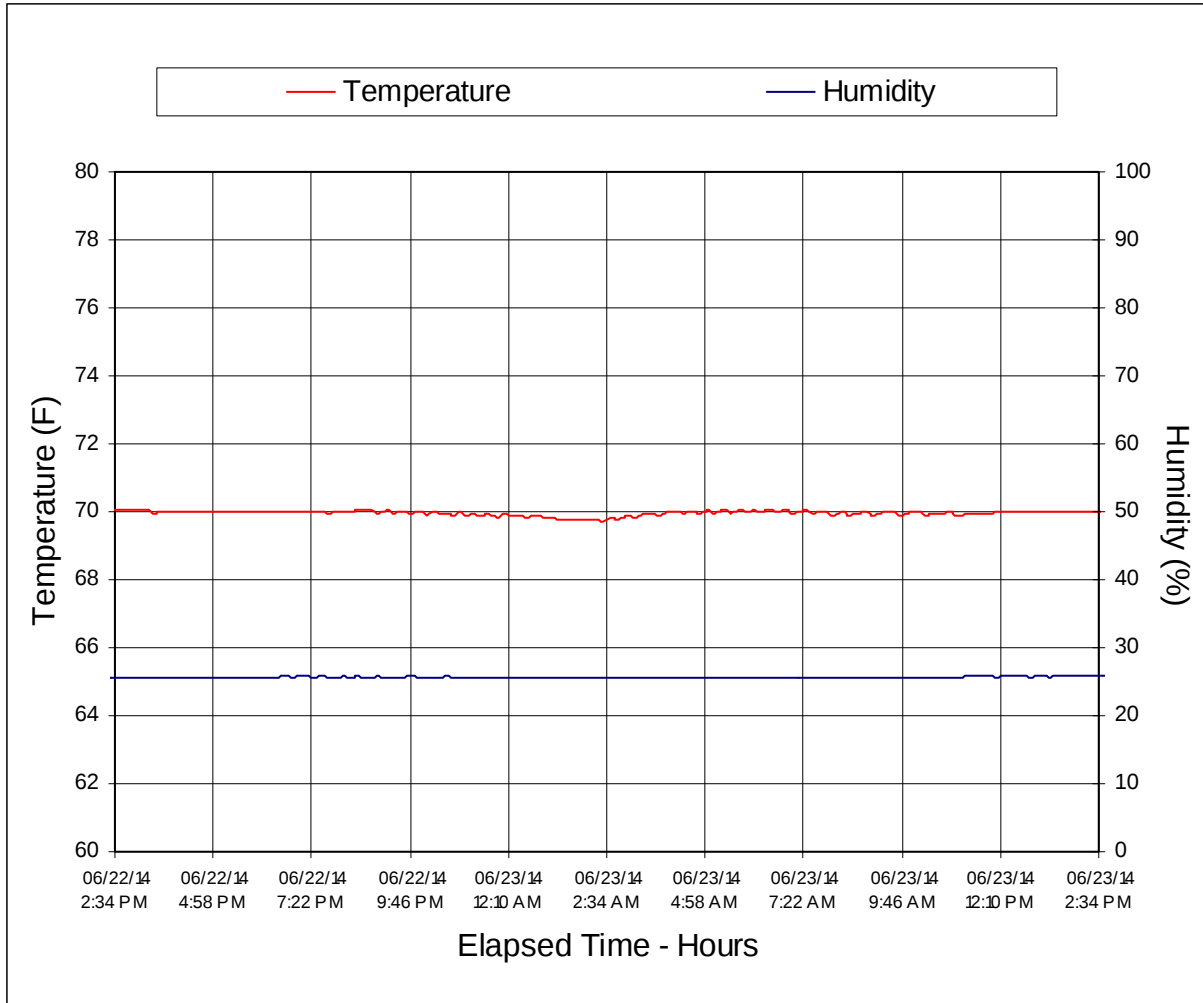
DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback

NHTSA No. Q20144100

Test Program: NCAP MDB Side Impact Test

Test Date: 06/23/14



APPENDIX A
PHOTOGRAPHS

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



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



FIGURE 3. Pre-Test Frontal View of Test Vehicle



FIGURE 4. Post-Test Frontal View of Test Vehicle



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



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



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



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



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



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



FIGURE 11. Pre-Test Rear View of Test Vehicle



FIGURE 12. Post-Test Rear View of Test Vehicle



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



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



FIGURE 15. Pre-Test Overhead View of Test Area

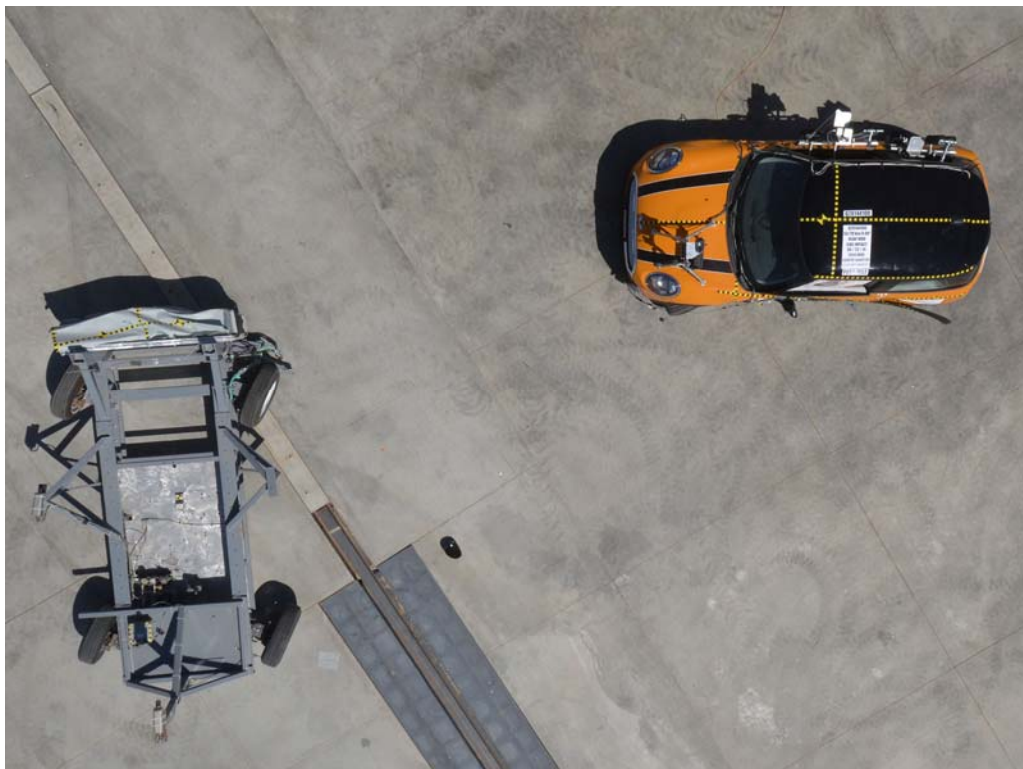


FIGURE 16. Post-Test Overhead View of Test Area



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



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



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



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



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

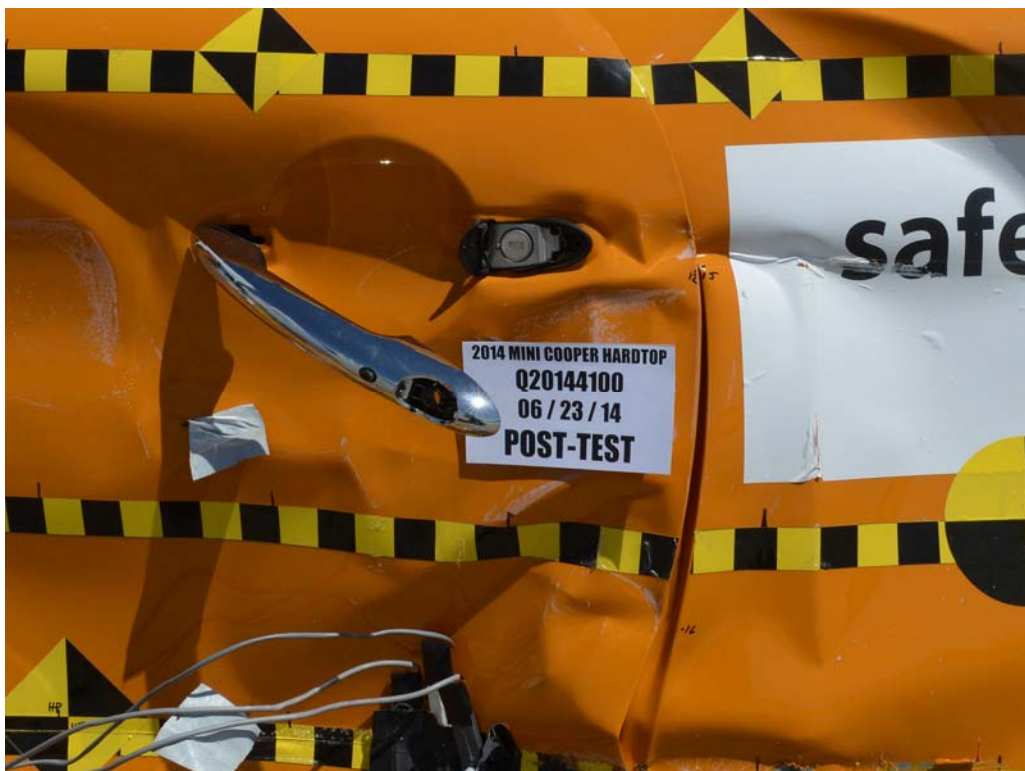


FIGURE 22. Post-Test Left Front Door Latch Close-Up

Photograph Not Applicable

Vehicle Not Equipped
with Rear Doors

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

Photograph Not Applicable

Vehicle Not Equipped
with Rear Doors

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



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



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



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



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



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



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



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



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



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



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



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

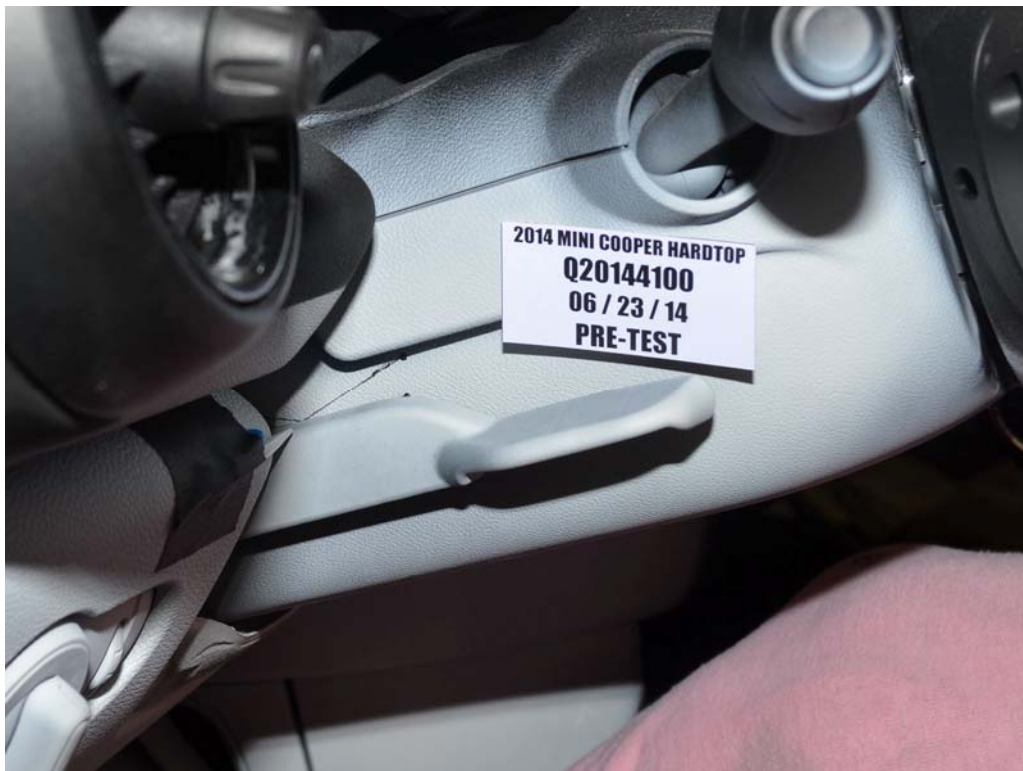


FIGURE 36. Pre-Test Left Side View of Steering Wheel



FIGURE 37. View of Disengaged Parking Brake



FIGURE 38. Pre-Test View of Parking Brake



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



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



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



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



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



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



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



FIGURE 46. Pre-Test Driver Inner Door Panel View



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

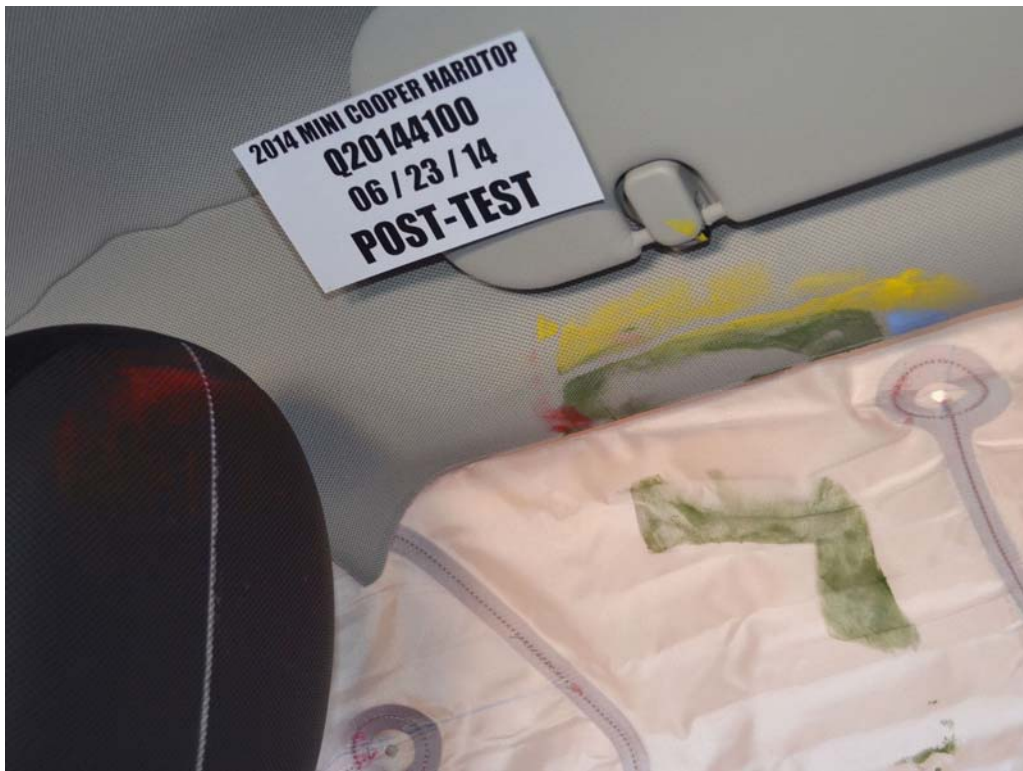


FIGURE 48. Post-Test Driver Dummy Close-Up Head Contact
with Vehicle Interior View



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



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



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



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



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



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



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



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



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



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



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



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



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

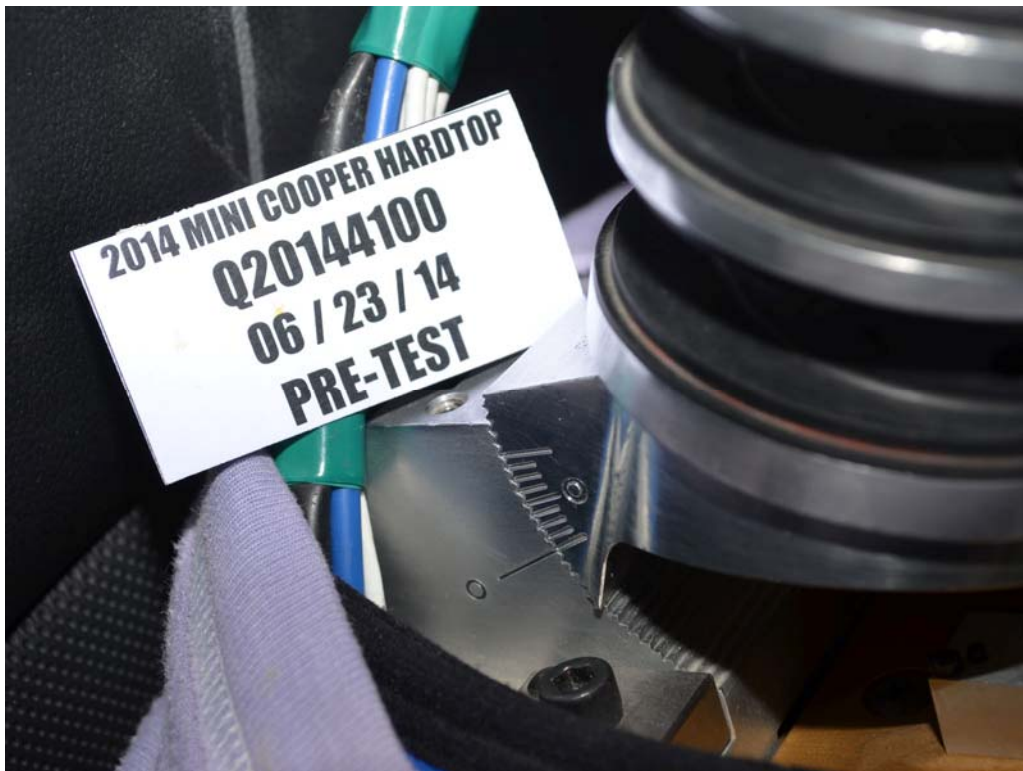


FIGURE 62. Pre-Test View of Rear Passenger Dummy's Neck
Showing Position of Adjustable Neck Bracket



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



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



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



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



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



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



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



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



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



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



FIGURE 73. Pre-Test Rear Passenger Inner Door Panel View



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



FIGURE 75. Post-Test Rear Passenger Dummy Close-Up
Head Contact with Vehicle Interior View

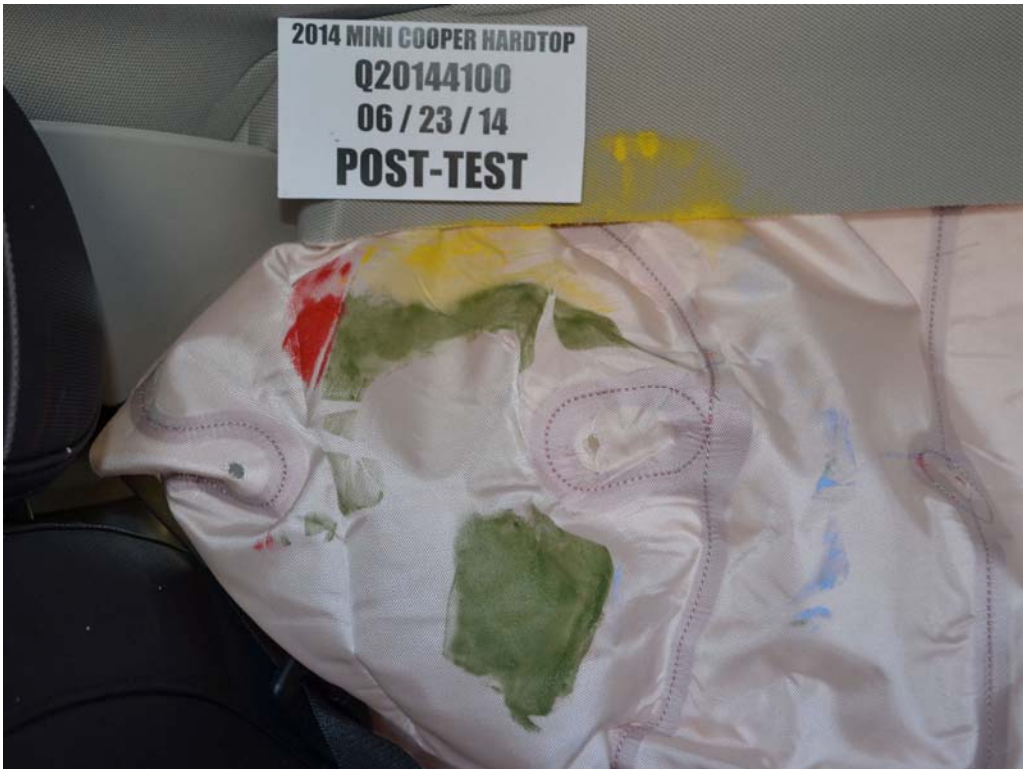


FIGURE 76. Post-Test Rear Passenger Dummy Close-Up
Head Contact with Side Airbag View



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



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



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

Photograph Not Applicable

Vehicle Not Equipped with
Rear Passenger Side Airbags

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

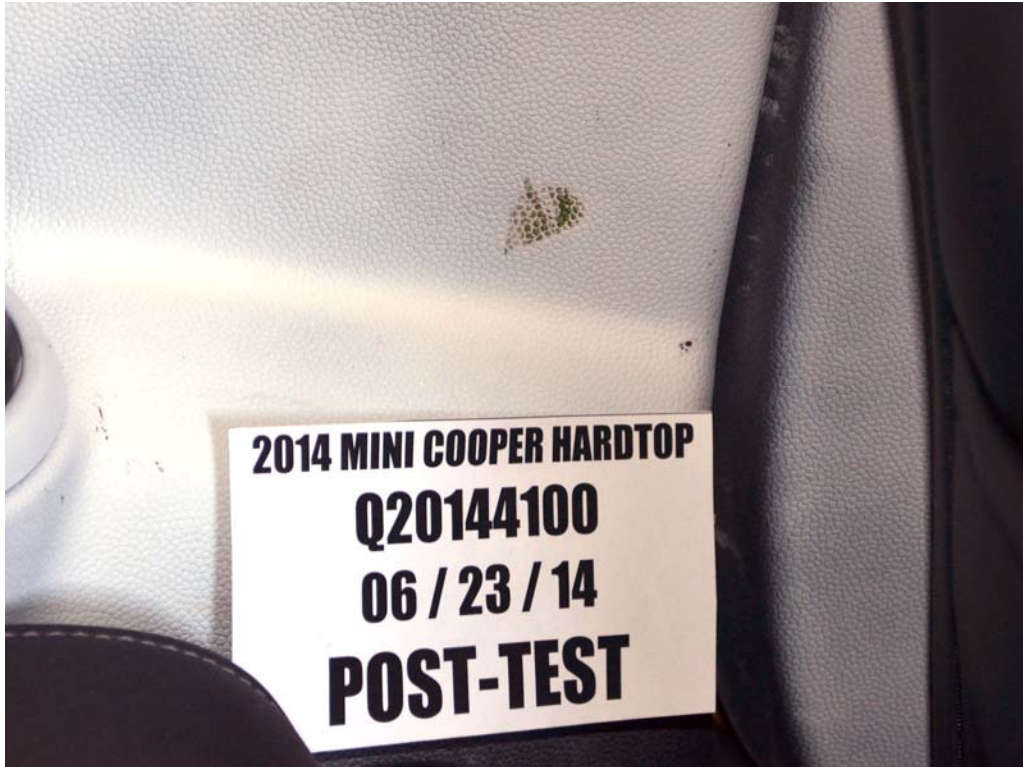


FIGURE 81. Post-Test Rear Passenger Dummy Close-Up Knee Contact View



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



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



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



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

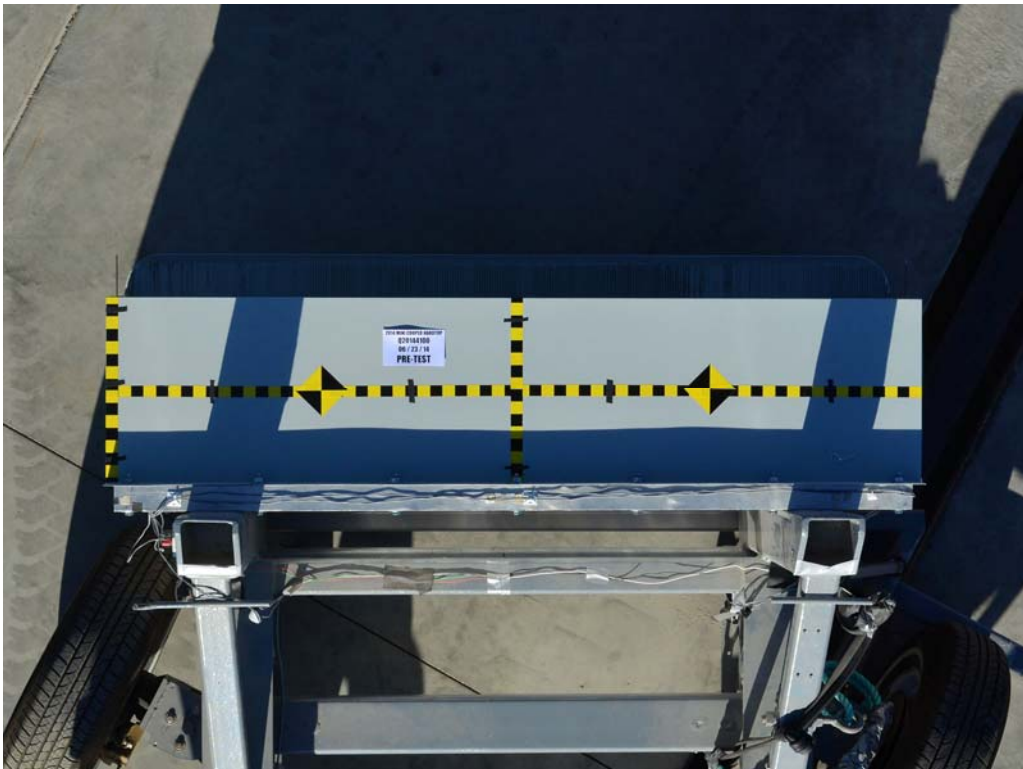


FIGURE 86. Pre-Test Top View of MDB Impactor Face



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



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



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



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



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



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



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

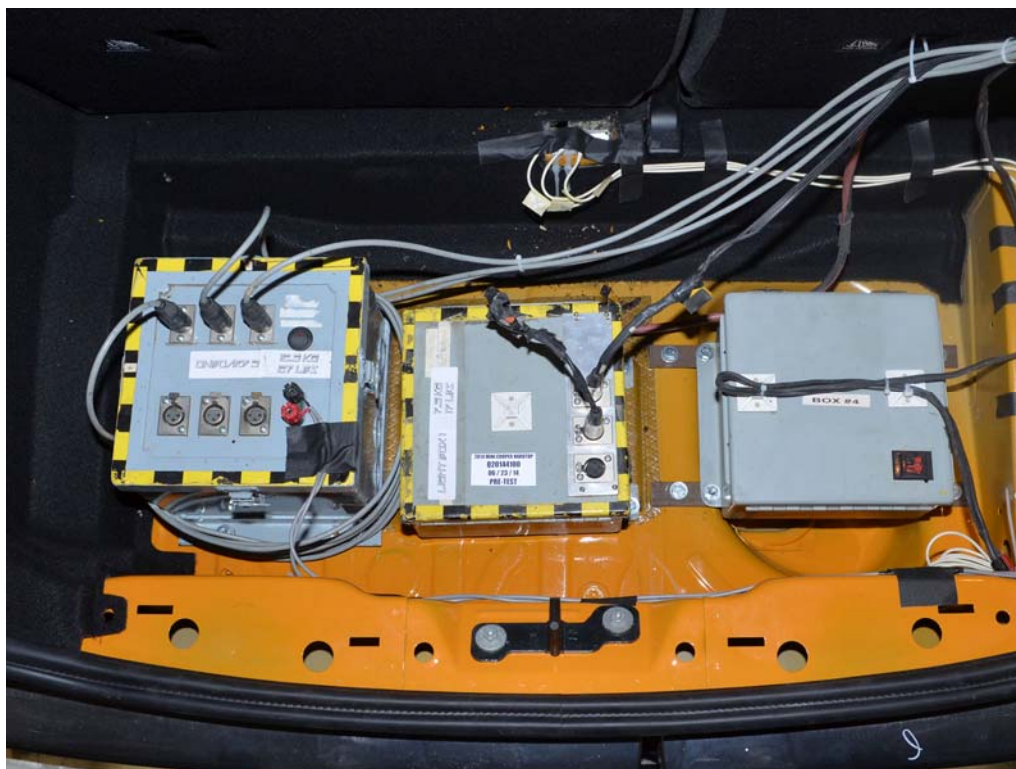


FIGURE 94. Pre-Test Ballast View



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



FIGURE 96. FMVSS No. 301 Static Rollover 0 Degrees



FIGURE 97. FMVSS No. 301 Static Rollover 90 Degrees



FIGURE 98. FMVSS No. 301 Static Rollover 180 Degrees



FIGURE 99. FMVSS No. 301 Static Rollover 270 Degrees



FIGURE 100. FMVSS No. 301 Static Rollover 360 Degrees



FIGURE 101. Impact Event

LET'S MOTOR.®

2014 MINI Cooper Hardtop

Manufacturer's Suggested Retail Price	\$ 19,950.00
Options and Additional Charges	\$ 2,000.00
Total Suggested Retail Price	\$ 21,950.00

Options and Additional Charges: *Optional equipment not available on all vehicles. Check availability at authorized MINI dealer.

STANDARD FEATURES

- 1.5-liter MINI TwinPower Turbo 3-cylinder engine
- 154 hp and 162 lb-ft torque
- 6-speed Getrag manual transmission with rev matching
- MINI Driving Modes - Sport, Mid, Green
- Dynamic Stability Control (DSC) incl. DTC + EDC
- Dynamic Cruise Control
- MacPherson strut front/multi-link rear suspension
- 15" alloy wheels
- Front 4-year disc brakes
- Electronic Brakeforce Distribution (EBD)
- Anti-lock Braking System (ABS)
- Corner Brake Control (CBC)
- Multi-function sport leather steering wheel
- Floor mats
- Hidden dash storage
- Interior LED mood lighting

OPTIONAL EQUIPMENT

- Volcanic Orange
- Leatherette Carbon Black
- Automatic transmission
- 16" Victory Spoke black
- Heated mirrors and washer jets
- Comfort Access keyless entry
- Bonnet stripes in black
- Roof and mirror caps in black
- MINI Excitement Package
- MINI Driving Modes
- Bluetooth and USB/iPod adapter
- Destination Charge

YOUR MAINTENANCE COSTS:

Engine Oil Services:	\$0	Brake Pads:	\$0
Engine Drive Belts:	\$0	Brake Discs:	\$0
Inspection Services:	\$0	Brake Fluid:	\$0
Wiper Blade Inserts:	\$0		

For the first 3 years or 50,000 miles, whichever comes first on all factory-recommended services.

GOVERNMENT 5-STAR SAFETY RATINGS

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

Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.

BOOT TO BONNET NO COST MAINTENANCE

\$0

For the first 3 years or 50,000 miles, whichever comes first on all factory-recommended services.

EPA DOT Fuel Economy and Environment

Fuel Economy	MPG
Combined city/hwy	34
City	29
Highway	41

Subcompact Cars range from 14 to 124 MPG. The best vehicle wins 121 MPG.

YOU SAVE \$3,250

more in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost \$1,650

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 24 mpg and costs \$15.98 a gallon. Cost estimates are based on 15,000 miles per year at \$3.75 per gallon. MPGs in miles per gallon (city/combined). Vehicle emissions are a significant cause of climate change and smog.

fuel economy.gov

Calculate personalized estimated fuel costs and emissions.

PARTS CONTENT INFORMATION

For Vehicles in this Car Line:

US/Canadian Parts Content:	5%
Major Source of Foreign Parts Content:	GERMANY: 35%
UNITED KINGDOM:	25%

Note: Parts content does not include final assembly, distribution, or other non-parts costs.

For this Vehicle:

Final Assembly Point:	OXFORD, UNITED KINGDOM
Country of Origin:	GERMANY
Engine:	JAPAN
Transmission:	JAPAN

MINI Division of BMW of North America, LLC

Wendell L. Lakin, NJ 07057

VPC Location: OAKLAND, CALIFORNIA

Port of Entry: HUENEME, CALIFORNIA

Center: WAGGONERS TRUCKING

Sold To: MINI of Monrovia
1451 South Mountain Avenue
Monrovia, CA 91711-2780-0090

Ship To: MINI of Monrovia
1451 South Mountain Avenue
Monrovia, CA 91711-2780-0090

FIGURE 102. Monroney Label

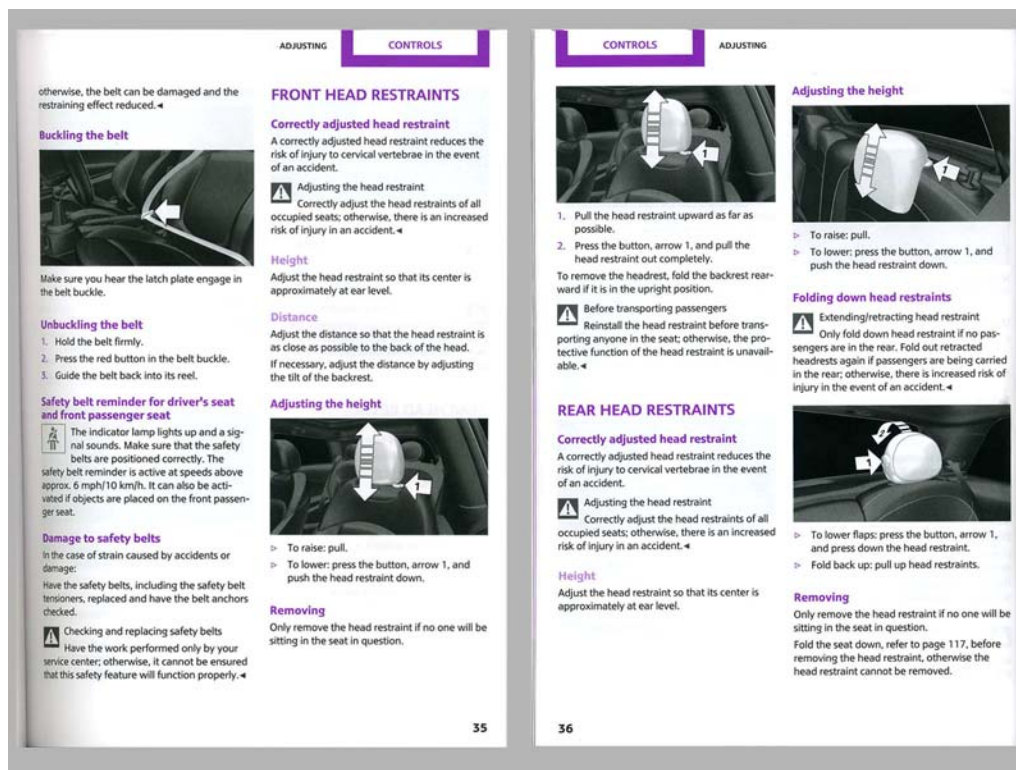


FIGURE 103. Driver Head Restraint Use and Adjustment Information
from Vehicle Owner's Manual

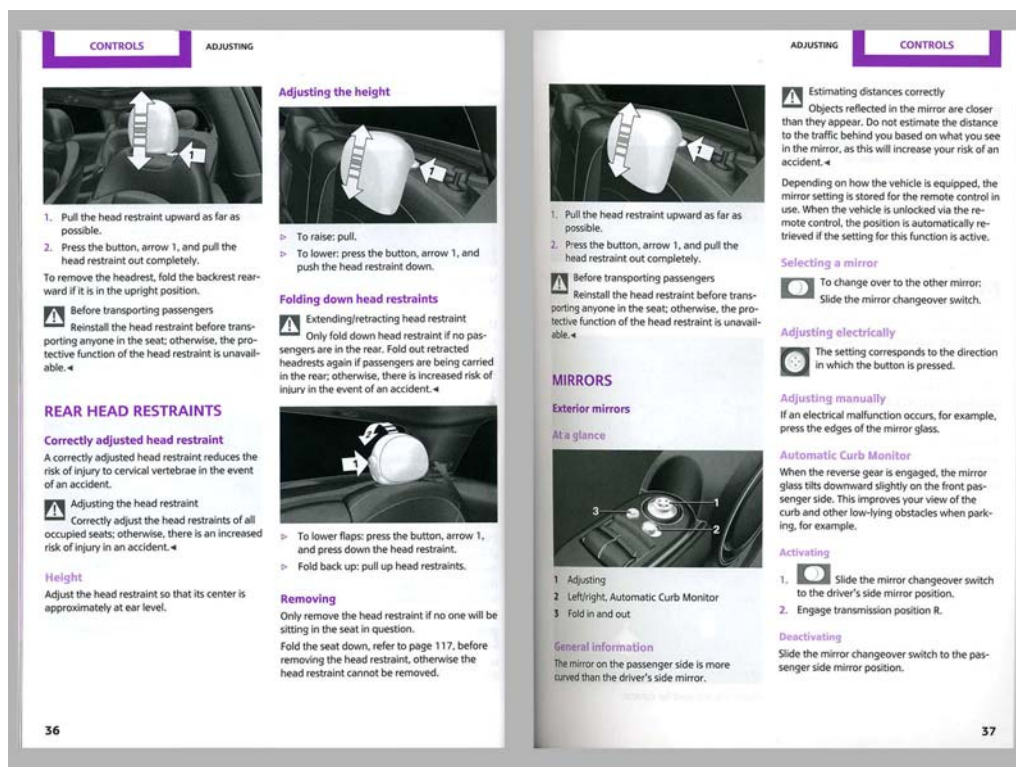


FIGURE 104. Left Rear Passenger Head Restraint Use and Adjustment Information
from Vehicle Owner's Manual

APPENDIX B
DUMMY RESPONSE DATA

TABLE OF DATA PLOTS

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

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

Additional Driver & Passenger Dummy Instrumentation Data

Driver Lower Spine T12 Acceleration (X)

Driver Lower Spine T12 Acceleration (Y)

Driver Lower Spine T12 Acceleration (Z)

Passenger Upper Thorax Rib Deflection (Y)

Passenger Middle Thorax Rib Deflection (Y)

Passenger Lower Thorax Rib Deflection (Y)

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

Vehicle Instrumentation Data

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

MDB Instrumentation Data

MDB Center of Gravity Acceleration (X)

MDB Center of Gravity Acceleration (Y)

MDB Center of Gravity Acceleration (Z)

MDB Rear Acceleration (X)

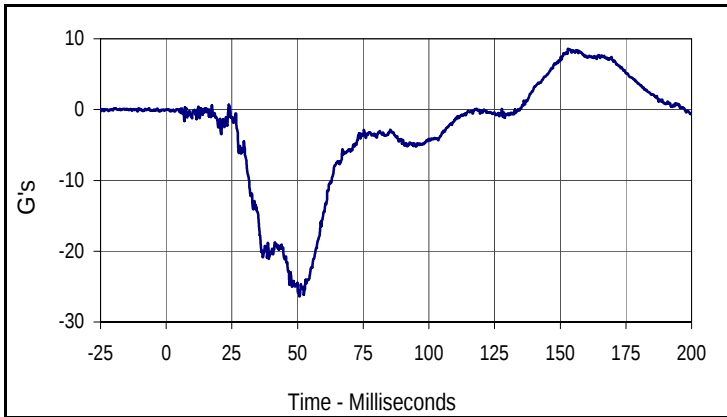
MDB Rear Acceleration (Y)

Left MDB Contact Switch

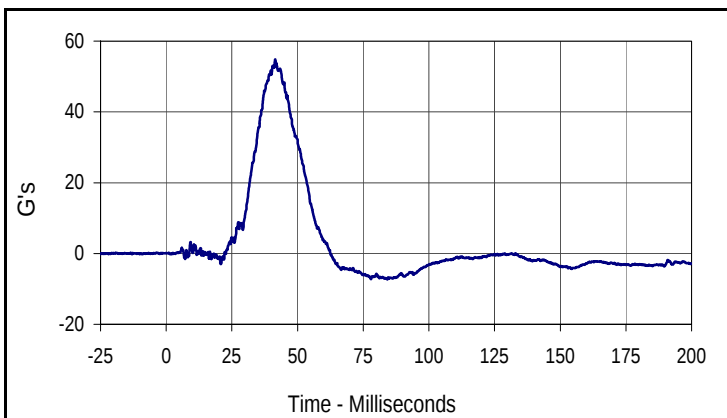
Right MDB Contact Switch

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback
 Test Program: NCAP MDB Side Impact Test

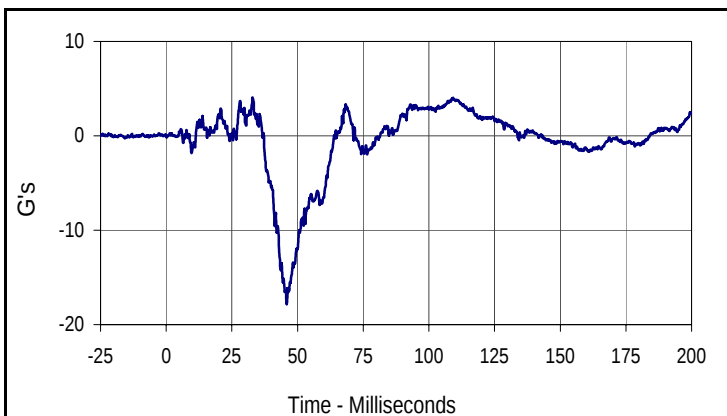
NHTSA No.: Q20144100
 Test Date: 6/23/14



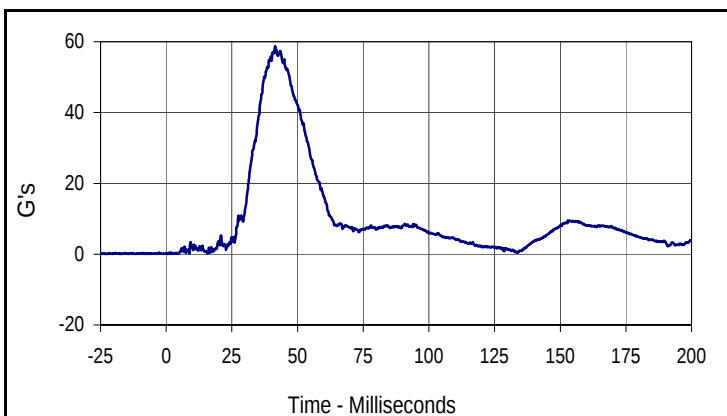
Curve Description			
Driver Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
8.6	153.0	-26.4	50.8



Curve Description			
Driver Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
54.9	41.5	-7.4	84.2



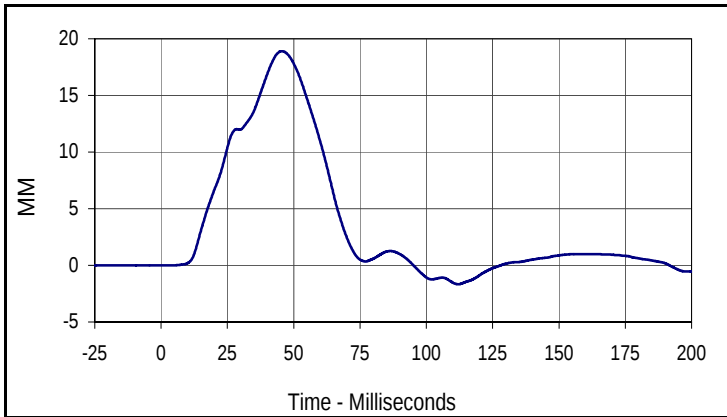
Curve Description			
Driver Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
4.1	32.9	-17.8	45.9



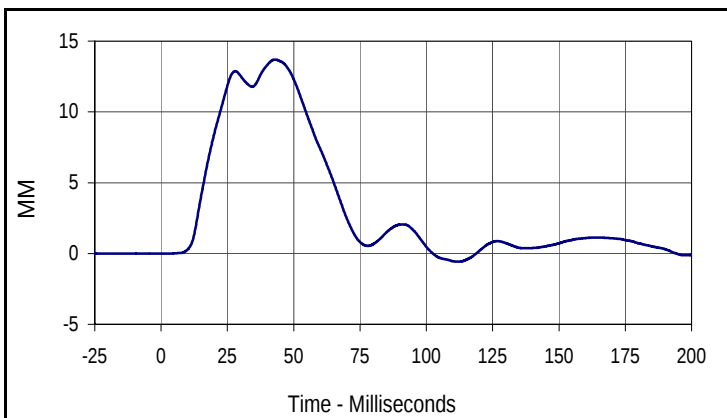
Curve Description			
Driver Head Resultant Acceleration Primary			
Plot No.	Type	SAE Class	Units
004	RES	1000	G's
Max	Time	Min	Time
58.7	41.5	0.1	0.6

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback
 Test Program: NCAP MDB Side Impact Test

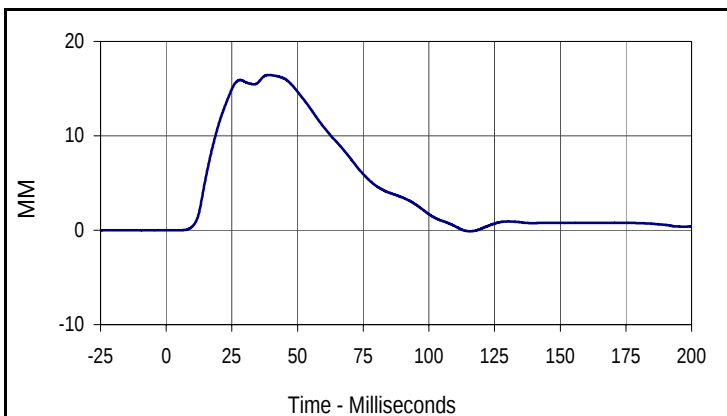
NHTSA No.: Q20144100
 Test Date: 6/23/14



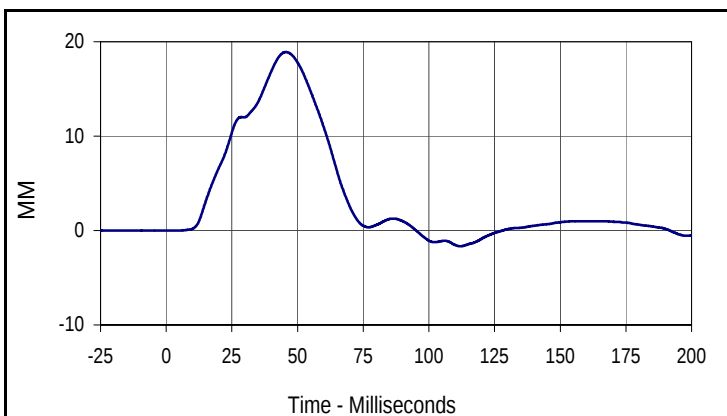
Curve Description			
Driver Upper Thorax Rib Deflection Y			
Plot No.	Type	SAE Class	Units
005	FIL	180	MM
Max	Time	Min	Time
18.9	45.6	-1.7	112.0



Curve Description			
Driver Middle Thorax Rib Deflection Y			
Plot No.	Type	SAE Class	Units
006	FIL	180	MM
Max	Time	Min	Time
13.7	42.9	-0.6	112.3



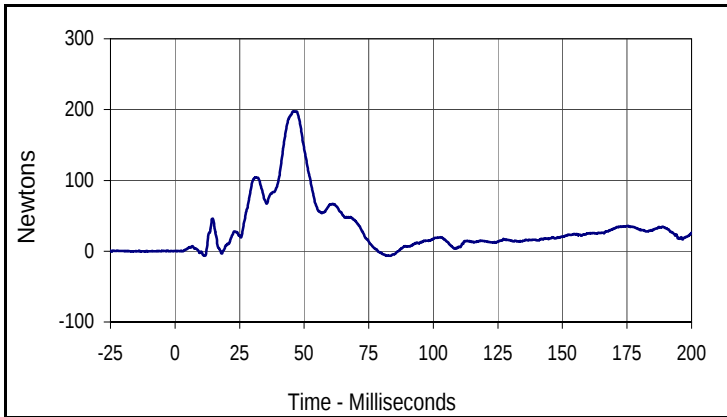
Curve Description			
Driver Lower Thorax Rib Deflection Y			
Plot No.	Type	SAE Class	Units
007	FIL	180	MM
Max	Time	Min	Time
16.5	39.1	-0.1	115.6



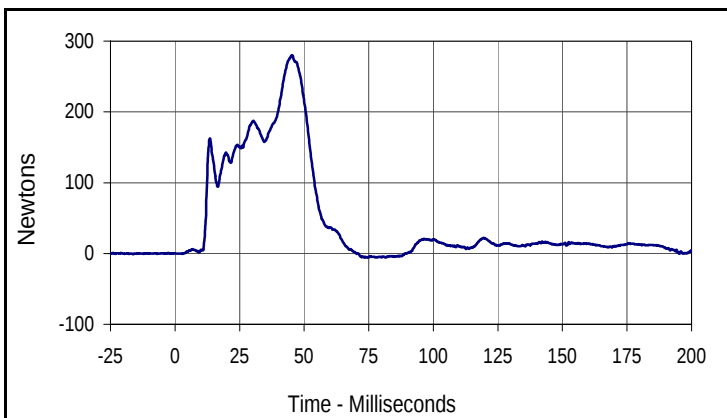
Curve Description			
Driver Thorax Rib Deflection Maximum			
Plot No.	Type	SAE Class	Units
010	FIL	180	MM
Max	Time	Min	Time
18.9	45.6	-1.7	112.0

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback
 Test Program: NCAP MDB Side Impact Test

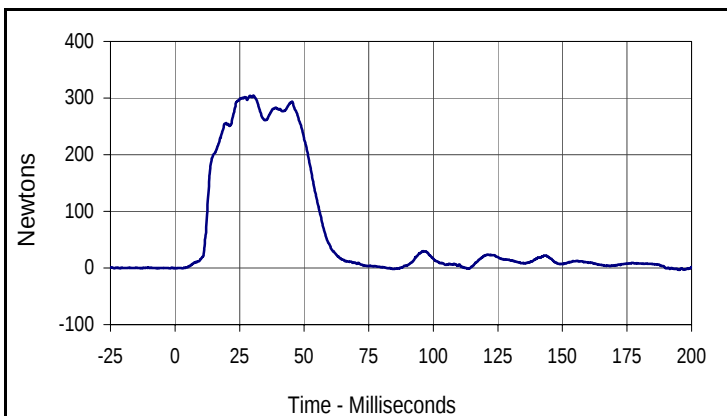
NHTSA No.: Q20144100
 Test Date: 6/23/14



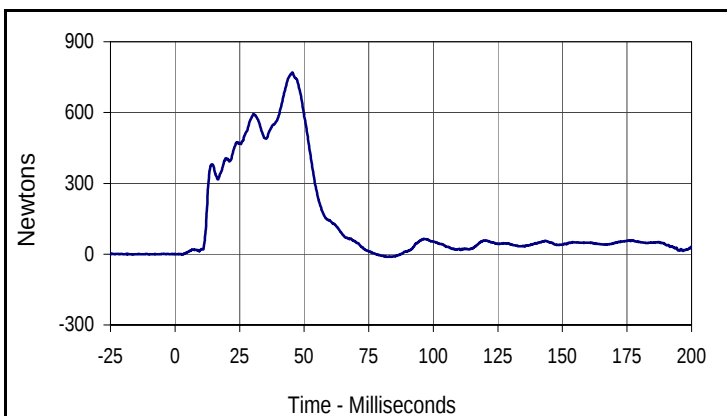
Curve Description			
Driver Anterior Abdominal Force Y			
Plot No.	Type	SAE Class	Units
008	FIL	600	Newtontons
Max	Time	Min	Time
197.6	47.0	-6.7	11.6



Curve Description			
Driver Middle Abdominal Force Y			
Plot No.	Type	SAE Class	Units
009	FIL	600	Newtontons
Max	Time	Min	Time
280.0	45.4	-5.8	77.8



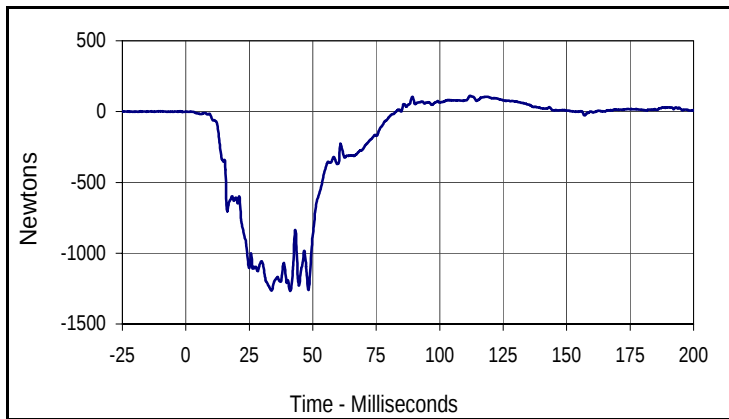
Curve Description			
Driver Posterior Abdominal Force Y			
Plot No.	Type	SAE Class	Units
011	FIL	600	Newtontons
Max	Time	Min	Time
304.2	30.4	-3.2	195.2



Curve Description			
Driver Total Abdominal Force			
Plot No.	Type	SAE Class	Units
012	SUM	600	Newtontons
Max	Time	Min	Time
769.6	45.4	-11.3	81.8

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback
Test Program: NCAP MDB Side Impact Test

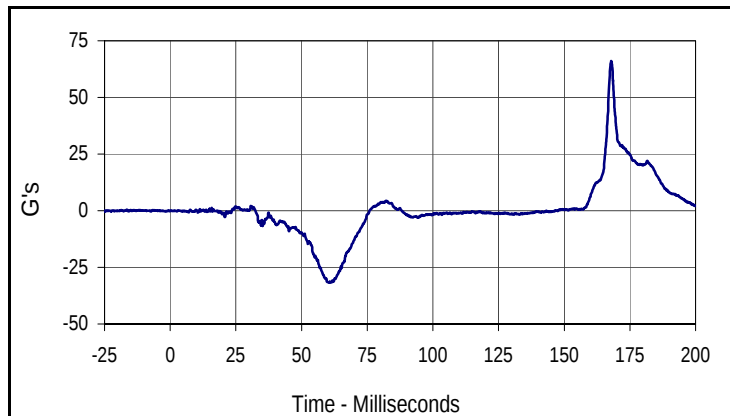
NHTSA No.: Q20144100
Test Date: 6/23/14



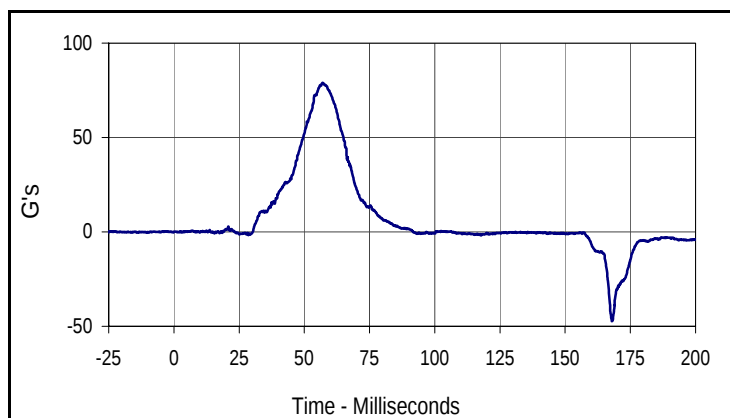
Curve Description			
Driver Pubic Symphysis Force Y			
Plot No.	Type	SAE Class	Units
013	FIL	600	Newtons
Max	Time	Min	Time
110.7	111.9	-1266.4	41.1

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback
 Test Program: NCAP MDB Side Impact Test

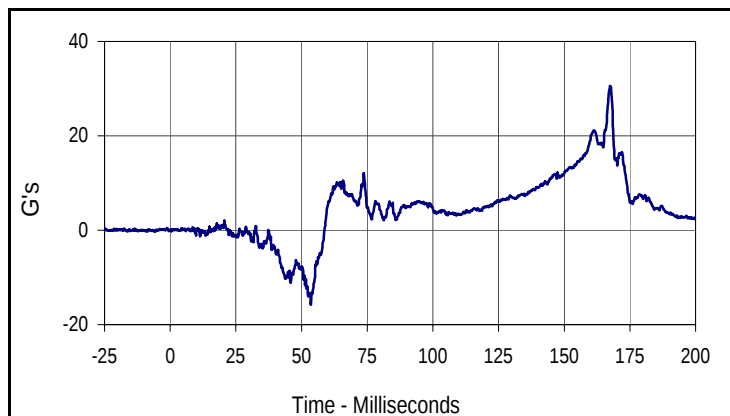
NHTSA No.: Q20144100
 Test Date: 6/23/14



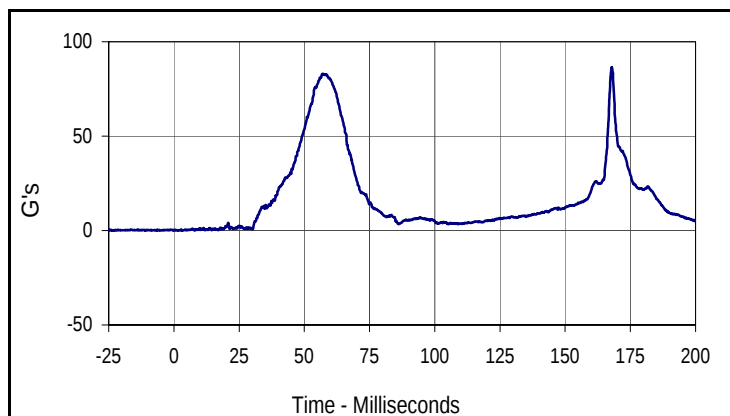
Curve Description			
Passenger Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
014	FIL	1000	G's
Max	Time	Min	Time
66.1	167.9	-31.7	60.5



Curve Description			
Passenger Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
015	FIL	1000	G's
Max	Time	Min	Time
79.0	56.9	-47.3	167.9



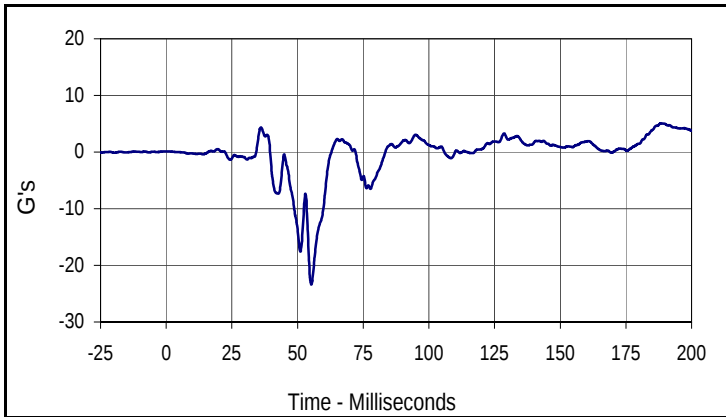
Curve Description			
Passenger Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
016	FIL	1000	G's
Max	Time	Min	Time
30.6	167.5	-15.8	53.6



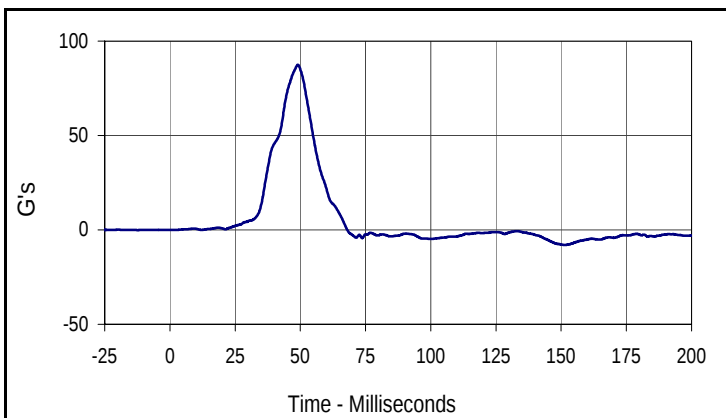
Curve Description			
Passenger Head Acceleration Resultant Primary			
Plot No.	Type	SAE Class	Units
017	RES	1000	G's
Max	Time	Min	Time
86.5	167.9	0.0	3.4

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback
 Test Program: NCAP MDB Side Impact Test

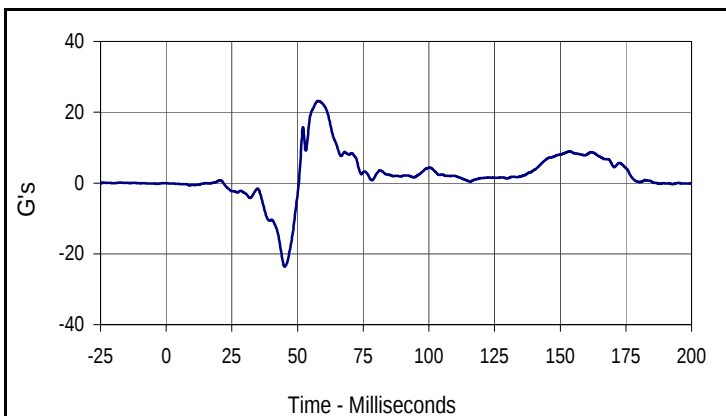
NHTSA No.: Q20144100
 Test Date: 6/23/14



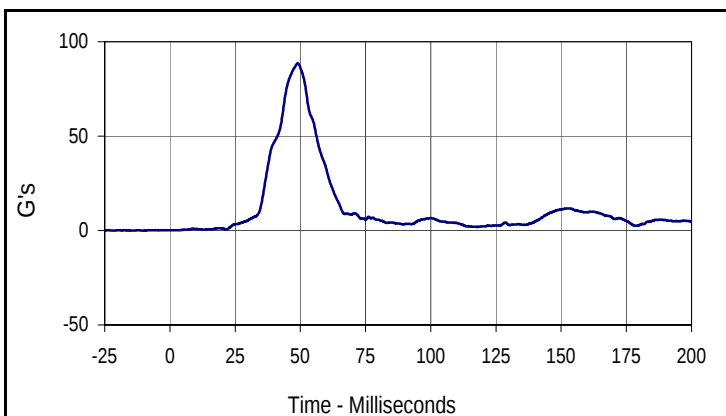
Curve Description			
Passenger Lower Spine T12 Acceleration X			
Plot No.	Type	SAE Class	Units
019	FIL	180	G's
Max	Time	Min	Time
5.1	188.3	-23.4	55.2



Curve Description			
Passenger Lower Spine T12 Acceleration Y			
Plot No.	Type	SAE Class	Units
020	FIL	180	G's
Max	Time	Min	Time
87.4	49.0	-8.0	151.4



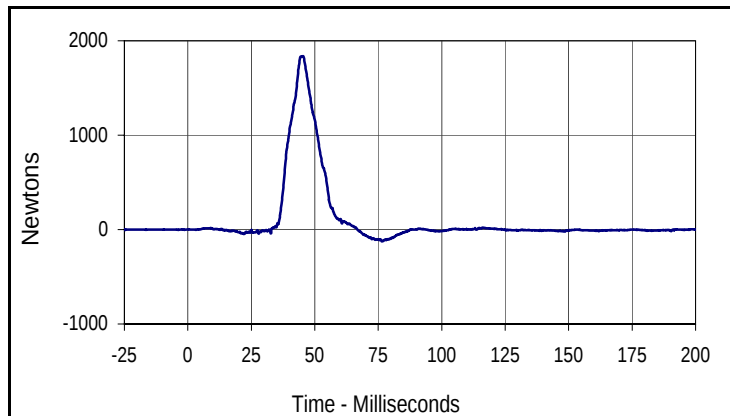
Curve Description			
Passenger Lower Spine T12 Acceleration Z			
Plot No.	Type	SAE Class	Units
021	FIL	180	G's
Max	Time	Min	Time
23.2	57.9	-23.6	45.0



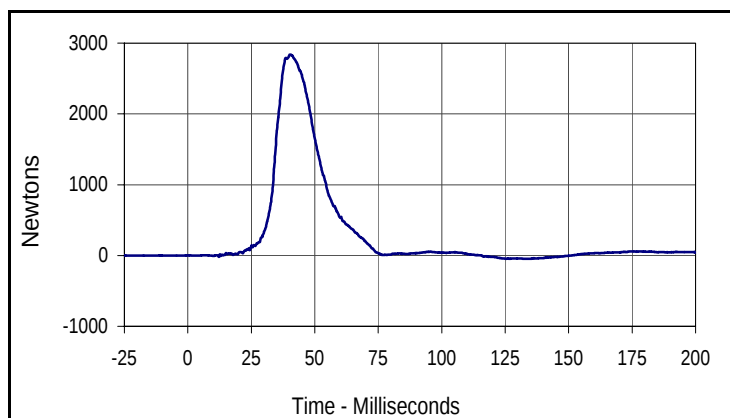
Curve Description			
Passenger Lower Spine T12 Acceleration Res.			
Plot No.	Type	SAE Class	Units
022	RES	180	G's
Max	Time	Min	Time
88.6	49.0	0.1	0.0

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback
 Test Program: NCAP MDB Side Impact Test

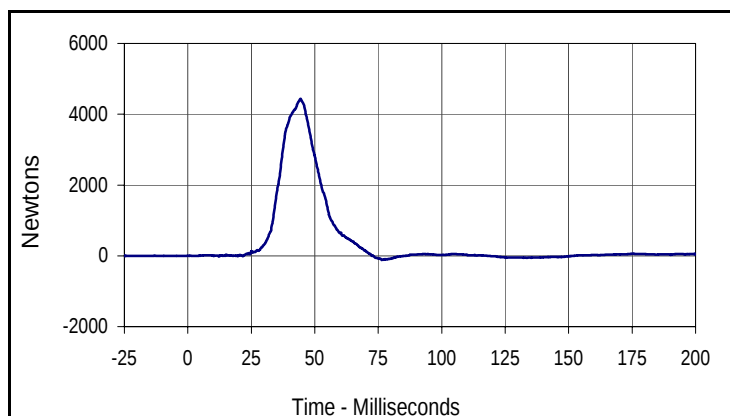
NHTSA No.: Q20144100
 Test Date: 6/23/14



Curve Description			
Passenger Iliac Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
023	FIL	600	Newtons
Max	Time	Min	Time
1836.9	45.4	-126.3	76.4



Curve Description			
Passenger Acetabulum Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
024	FIL	600	Newtons
Max	Time	Min	Time
2837.9	40.2	-47.7	132.6



Curve Description			
Passenger Total Pelvic Force			
Plot No.	Type	SAE Class	Units
018	SUM	600	Newtons
Max	Time	Min	Time
4434.0	44.4	-117.3	76.4

APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

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

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

Test Date: 6/10/14
 Test I.D.: N/A



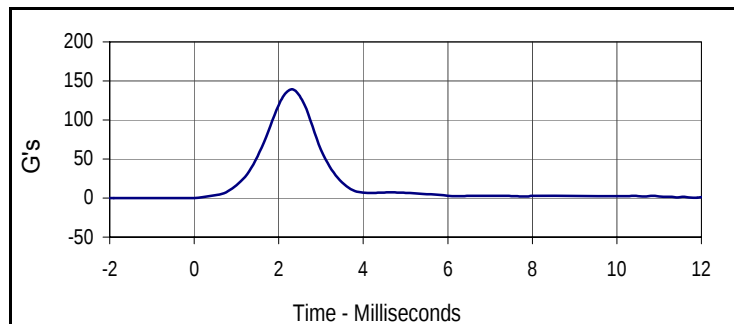
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	30.0	Pass
1	Sitting Height	mm	900 - 918	909	Pass
2	Seat to Shoulder Joint	mm	558 - 572	564	Pass
3	Seat to Lower Face of Thoracic Spine Box	mm	346 - 356	350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

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

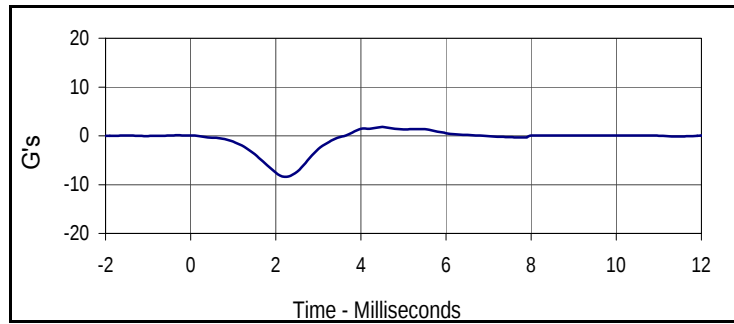
Test Date: 6/10/14
 Test I.D.: F037HD060



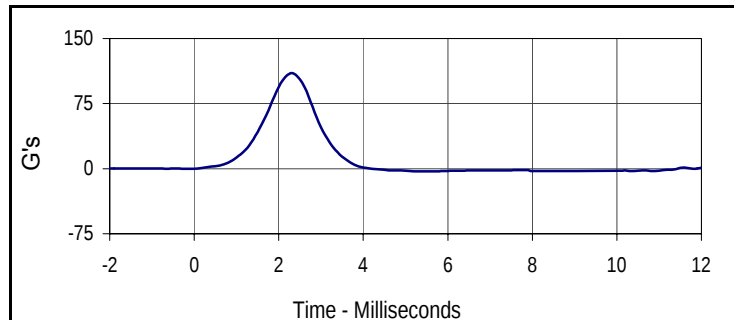
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	400	Pass
Temperature During Soak	Max	20.6 to 22.2	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	35.8	Pass
	Min		34.8	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	35.8	Pass
Peak Head Resultant Acceleration	G's	125 to 155	139.3	Pass
Peak Head X Acceleration	G's	≤15	8.4	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	4.8	Pass
Overall Test Results				Pass



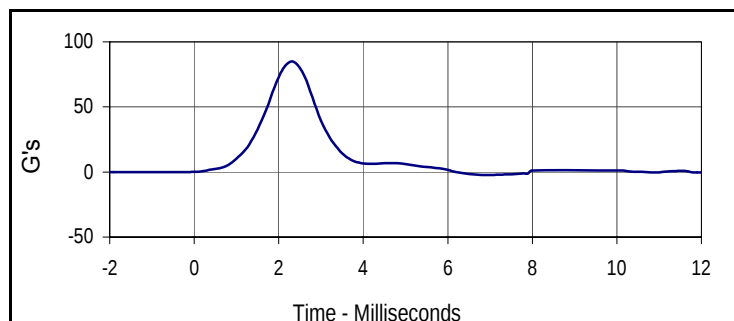
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
139.3	2.3	0.1	-0.8



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
1.8	4.5	-8.4	2.2



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
110.0	2.3	-3.1	5.7



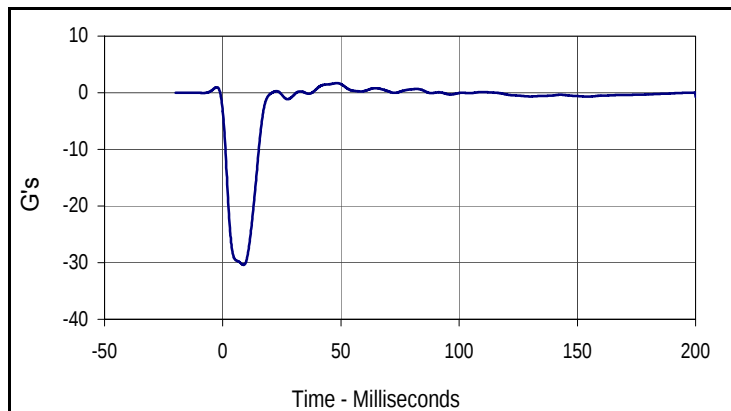
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
85.0	2.3	-2.3	6.9

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

Test Date: 6/10/14
 Test I.D.: F037NB060



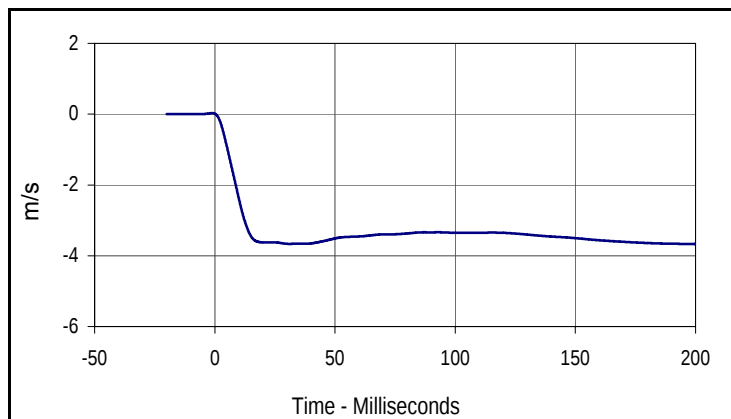
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	435	Pass
Temperature During Soak	Max	20.6 to 22.2	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	35.8	Pass
	Min		34.8	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	35.7	Pass
Pendulum Velocity	m/s	3.3 to 3.5	3.46	Pass
Headform Flexion	Max	49 to 59	56.8	Pass
	Time	54 to 66	55.7	Pass
Headform Flexion Decay (Peak to Zero)	msec	53 to 88	57.6	Pass
Overall Test Results				Pass



Curve Description

Pendulum Deceleration

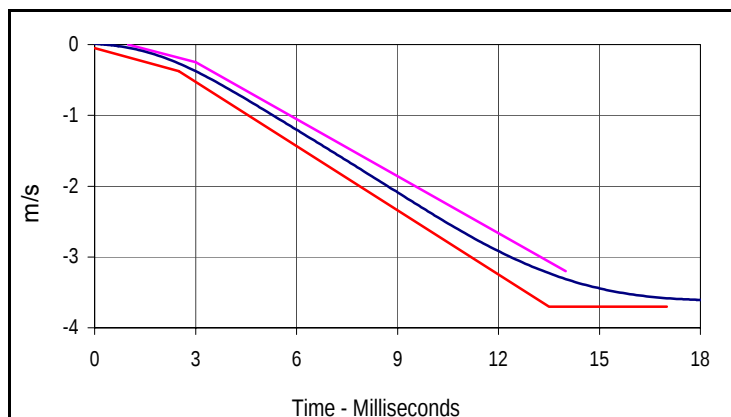
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
1.7	48.3	-30.4	8.8



Curve Description

Pendulum Velocity

Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.1	-3.7	199.9



Curve Description

Pendulum Velocity

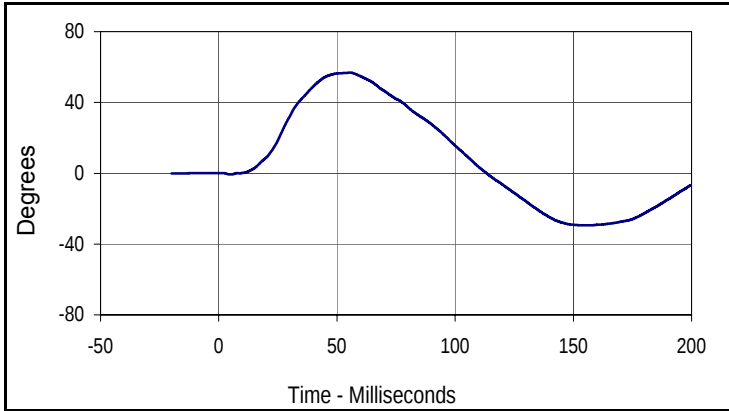
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.1	-3.7	199.9

Velocity Corridors

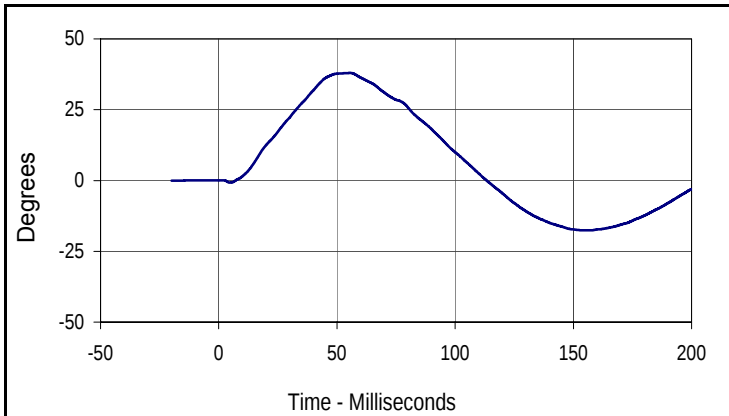
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.0	-0.03	2.5	-0.375
14.0	-3.20	13.5	-3.70
		17.0	-3.70

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

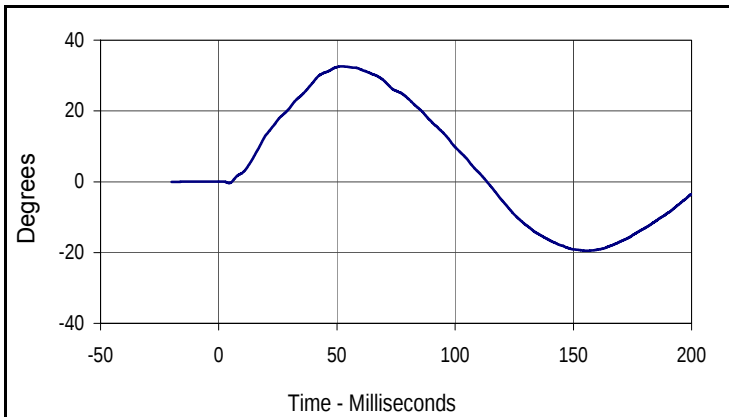
Test Date: 6/10/14
 Test I.D.: F037NB060



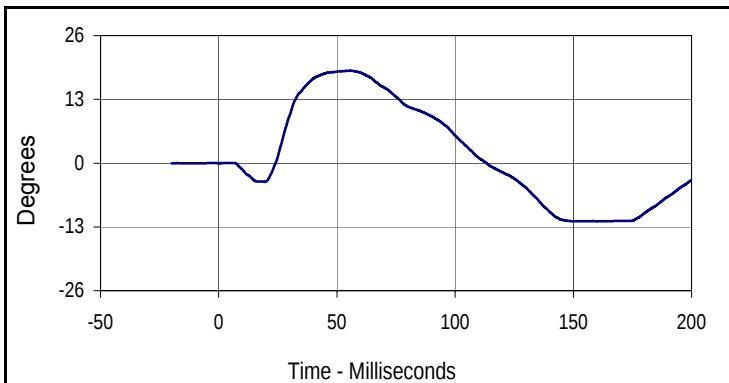
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
56.8	55.7	-29.4	154.9



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
38.0	55.6	-17.6	154.9



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
32.6	52.0	-19.5	155.6



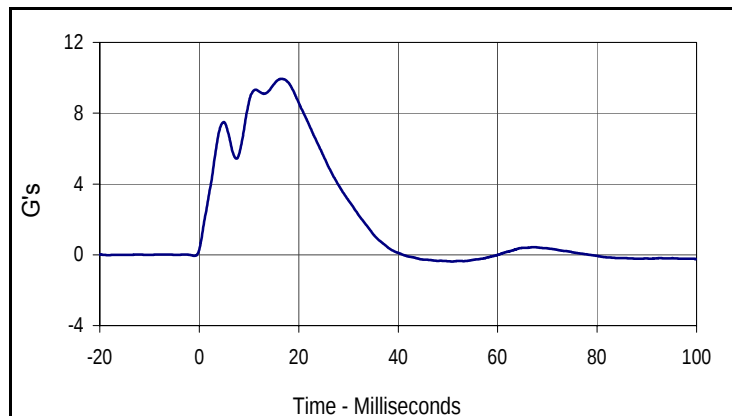
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
18.9	55.7	-11.8	163.6

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

Test Date: 6/10/14
 Test I.D.: F037SH060



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	500	Pass
Temperature During Soak	Max	20.6 to 22.2	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	35.8	Pass
	Min		34.8	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	35.6	Pass
Pendulum Speed	m/s	4.2 to 4.4	4.30	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	9.9	Pass
Overall Test Results				Pass



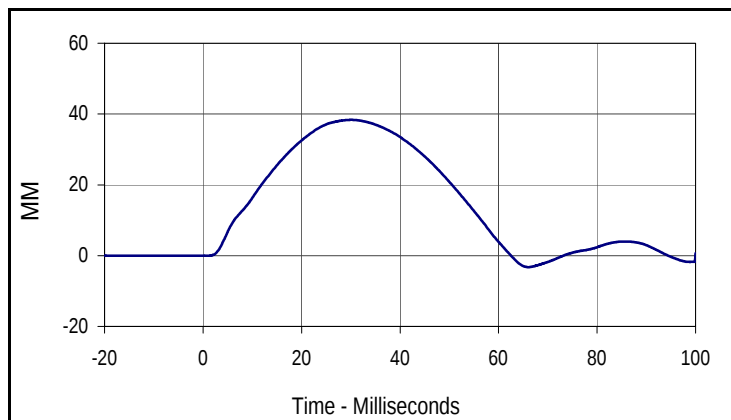
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
9.9	16.5	-0.4	50.9

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

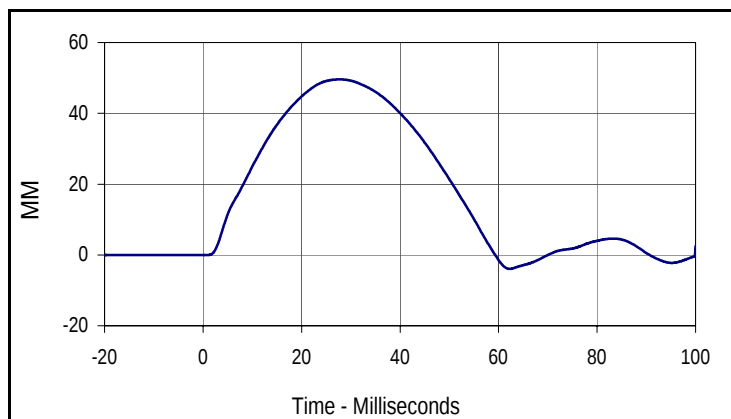
Test Date: 6/10/14
 Test I.D.: F037RB1060



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	555	Pass
Temperature During Soak	Max	20.6 to 22.2	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	35.8	Pass
	Min		34.8	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	35.6	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	38.4	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	49.6	Pass
Overall Test Results				Pass



Curve Description			
Upper Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
38.4	30.1	-3.2	66.0



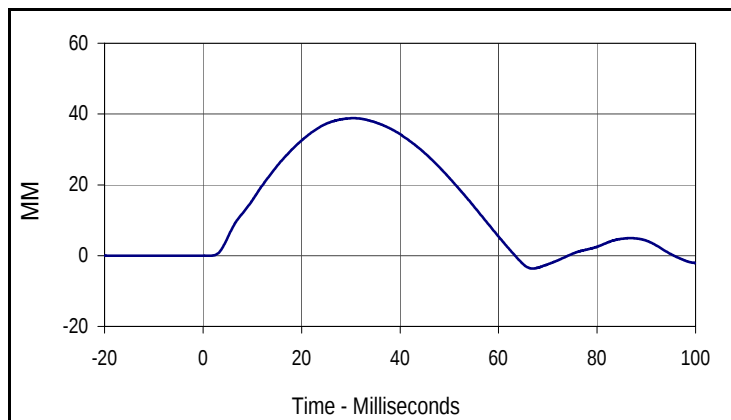
Curve Description			
Upper Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
49.6	27.7	-3.9	62.2

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

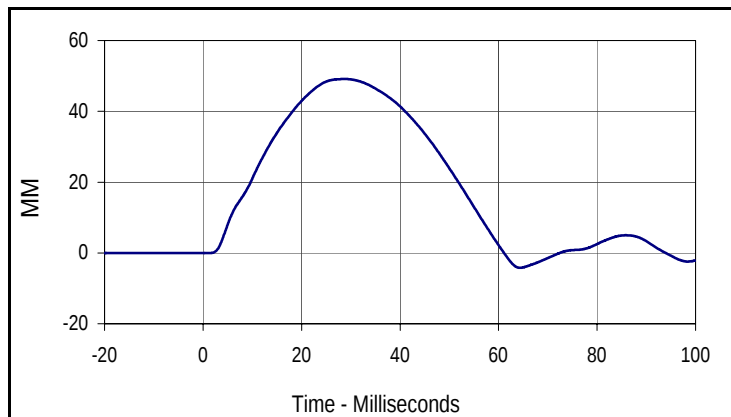
Test Date: 6/10/14
 Test I.D.: F037RB2060



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	600	Pass
Temperature During Soak	Max	20.6 to 22.2	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	35.8	Pass
	Min		34.8	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	35.5	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	38.8	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	49.1	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
38.8	30.5	-3.7	66.9



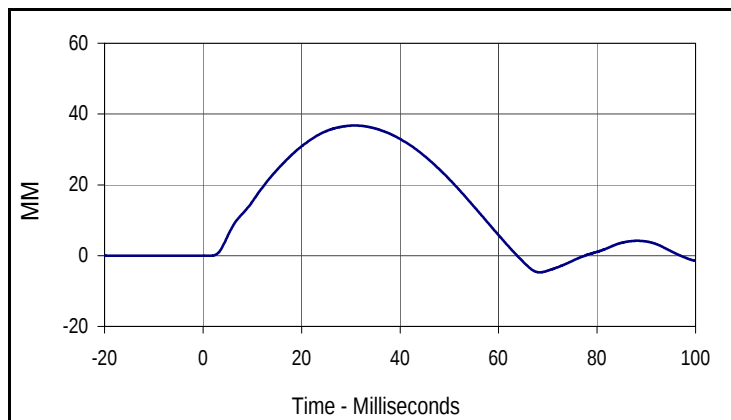
Curve Description			
Middle Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
49.1	28.7	-4.2	64.4

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

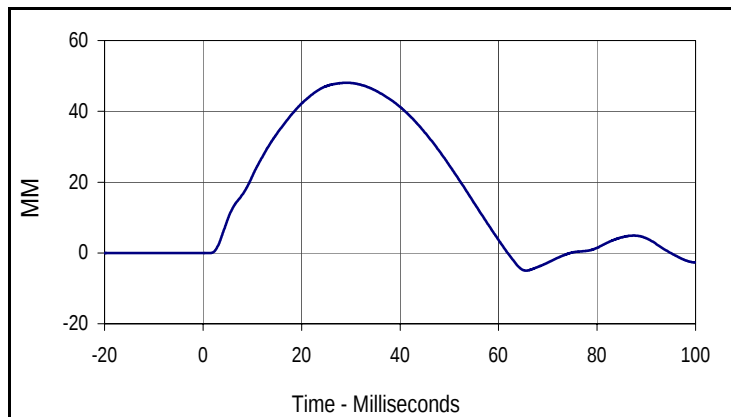
Test Date: 6/10/14
 Test I.D.: F037RB3060



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	645	Pass
Temperature During Soak	Max	20.6 to 22.2	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	35.8	Pass
	Min		34.8	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	35.4	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	36.8	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	48.1	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
36.8	30.8	-4.7	68.4



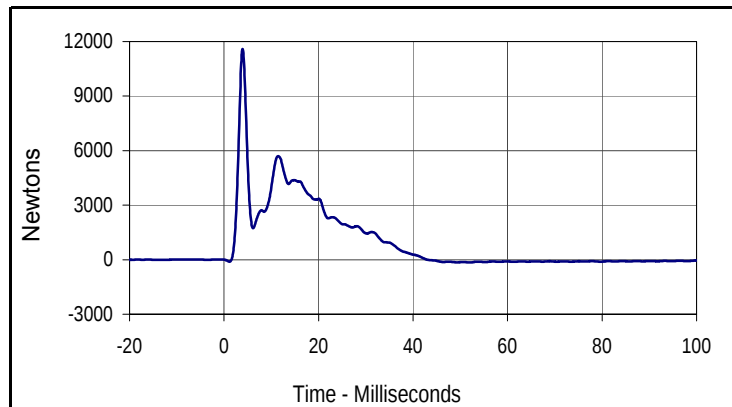
Curve Description			
Lower Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
48.1	29.1	-5.0	65.6

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

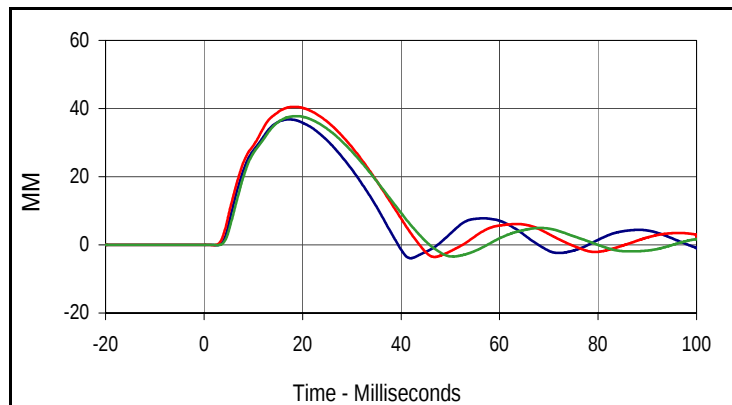
Test Date: 6/10/14
 Test I.D.: F037TH060



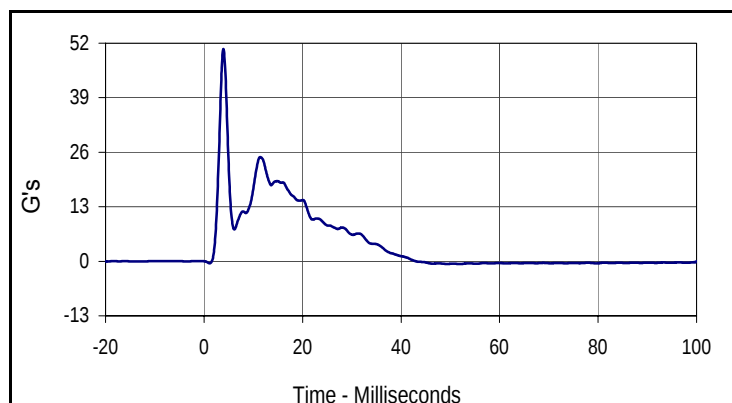
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	690	Pass
Temperature During Soak	Max	20.6 to 22.2	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	35.8	Pass
	Min		34.8	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	35.2	Pass
Peak Impactor Velocity	m/s	5.4 to 5.6	5.52	Pass
Peak Impactor Force	N	5100 to 6200	5696.3	Pass
	msec	> 6.0 msec	11.4	Pass
Peak Upper Rib Deflection	mm	34 to 41	36.8	Pass
Peak Middle Rib Deflection	mm	37 to 45	40.5	Pass
Peak Lower Rib Deflection	mm	37 to 44	37.8	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
11597.9	3.9	-150.0	51.8



Curve Description			
Upper, Middle, Lower Rib Deflections			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max (Upper)	Time	Min (Upper)	Time
36.8	17.2	-3.9	42.0
Max (Middle)	Time	Min (Middle)	Time
40.5	18.3	-3.6	46.8
Max (Lower)	Time	Min (Lower)	Time
37.8	18.8	-3.4	50.5



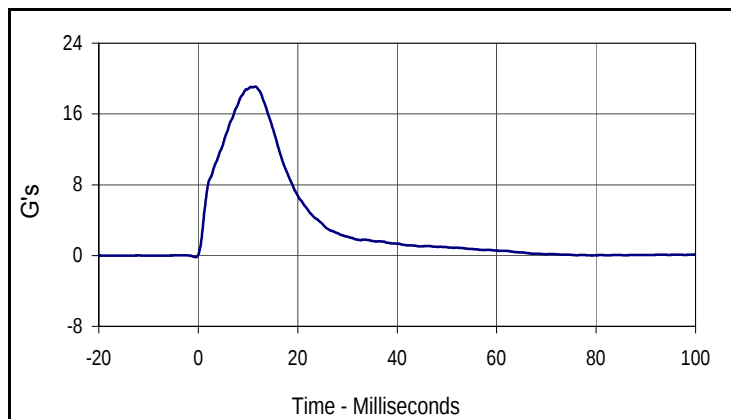
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
50.6	3.9	-0.7	51.8

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

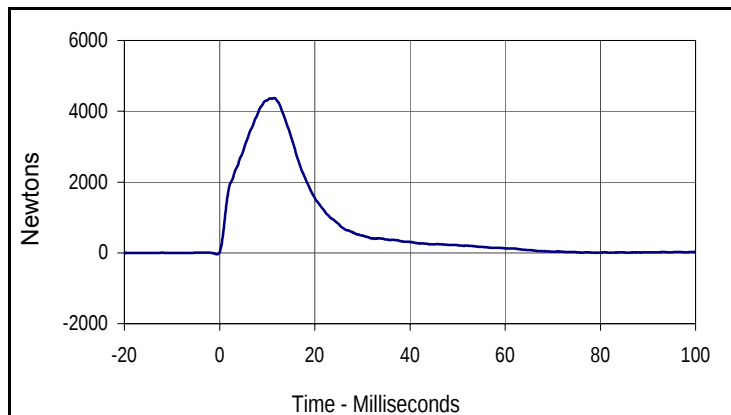
Test Date: 6/10/14
 Test I.D.: F037ABD060



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	760	Pass
Temperature During Soak	Max	20.6 to 22.2	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	35.8	Pass
	Min		34.8	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	35.1	Pass
Probe Velocity	m/s	3.9 to 4.1	4.03	Pass
Peak Impactor Force	N	4000 to 4800	4374.3	Pass
	msec	10.6 to 13.0	11.5	Pass
Sum of Abdominal Forces	N	2200 to 2700	2418.7	Pass
	msec	10.0 to 12.3	10.9	Pass
Overall Test Results				Pass



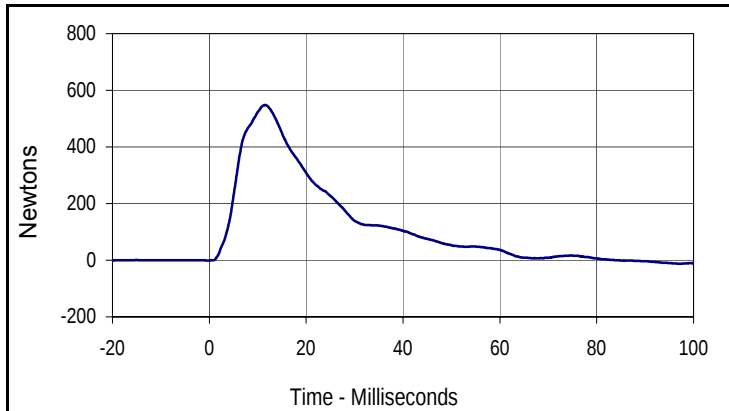
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
19.1	11.5	-0.2	-0.5



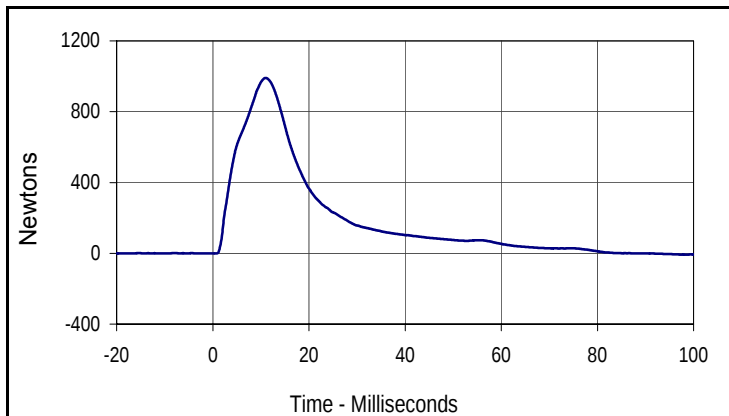
Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
4374.3	11.5	-40.5	-0.5

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

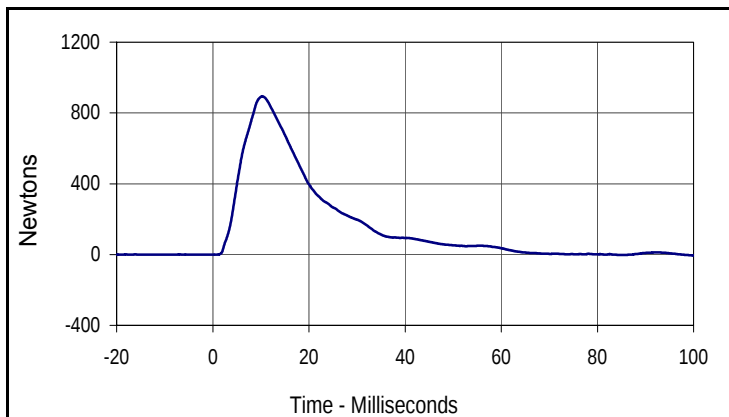
Test Date: 6/10/14
 Test I.D.: F037ABD060



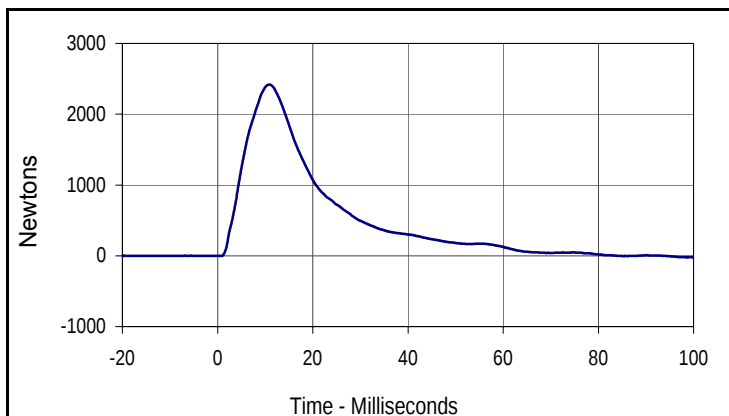
Curve Description			
Front Abdomen Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
548.2	11.6	-12.7	97.1



Curve Description			
Middle Abdomen Force			
Plot No.	Type	SAE Class	Units
004	FIL	600	Newtons
Max	Time	Min	Time
990.4	11.0	-7.9	98.5



Curve Description			
Rear Abdomen Force			
Plot No.	Type	SAE Class	Units
005	FIL	600	Newtons
Max	Time	Min	Time
893.7	10.3	-7.1	103.4



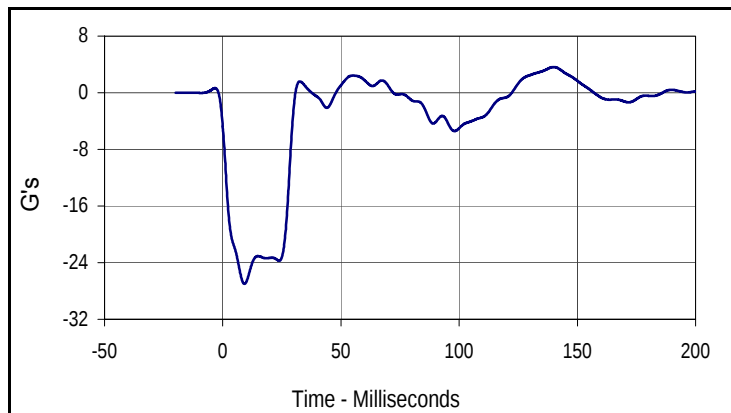
Curve Description			
Abdomen Sum Resultant			
Plot No.	Type	SAE Class	Units
006	RES	600	Newtons
Max	Time	Min	Time
2418.7	10.9	-22.3	98.5

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

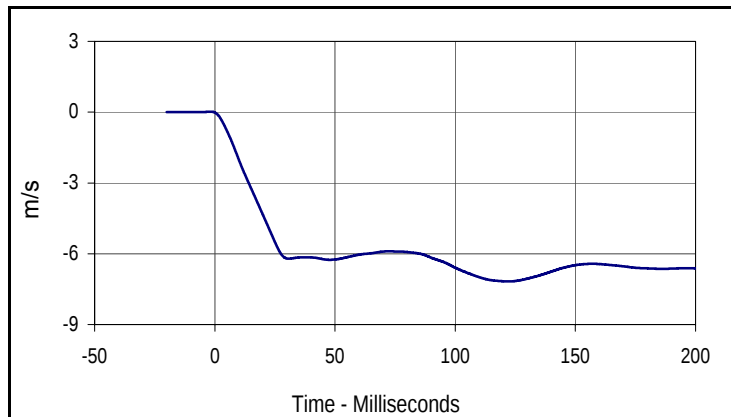
Test Date: 6/10/14
 Test I.D.: F037LB060



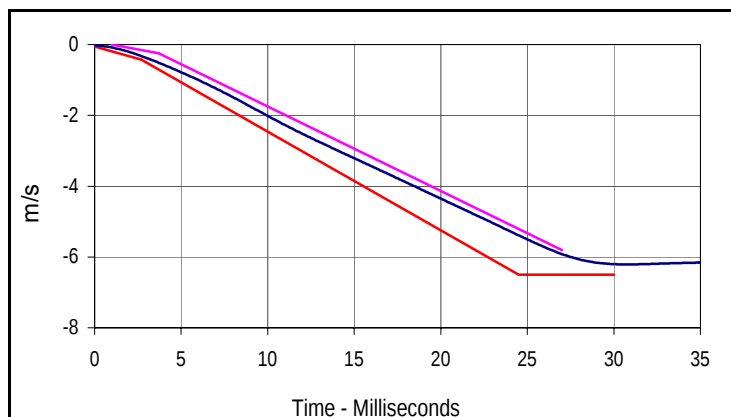
Tested Parameter	Units	Specification	Result	Pass/Fail
Lumbar Spine Assembly Soak Time	Minutes	≥240	835	Pass
Temperature During Soak	Max	20.6 to 22.2	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	35.8	Pass
	Min		34.8	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	35.1	Pass
Pendulum Velocity	m/s	5.95 to 6.15	6.01	Pass
Headform Rotation	Max	45 to 55	49.0	Pass
	Time	39 to 53	44.7	Pass
Time of Decay to Zero Angle from Peak	msec	37 to 57	41.6	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
3.6	140.5	-27.0	9.8



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.2	-7.2	122.9



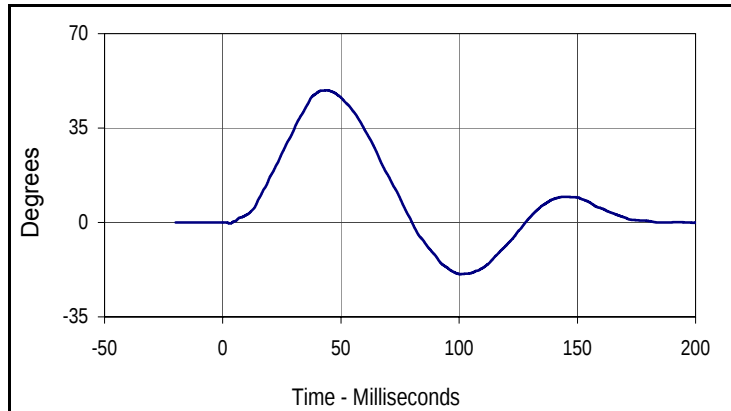
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.2	-7.2	122.9

Velocity Corridors

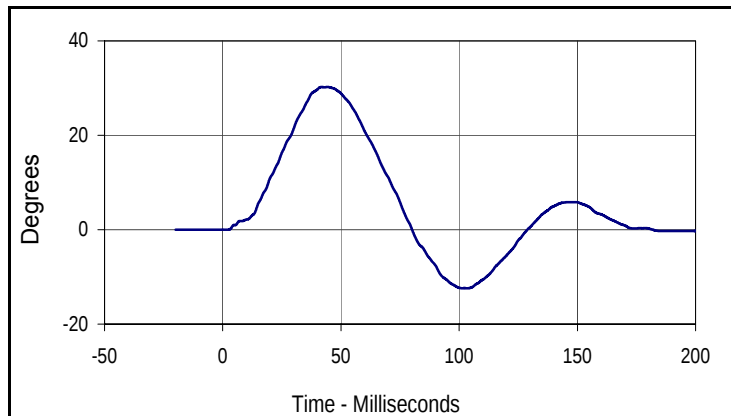
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.7	-0.24	2.7	-0.425
27.0	-5.80	24.5	-6.50
		30.0	-6.50

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

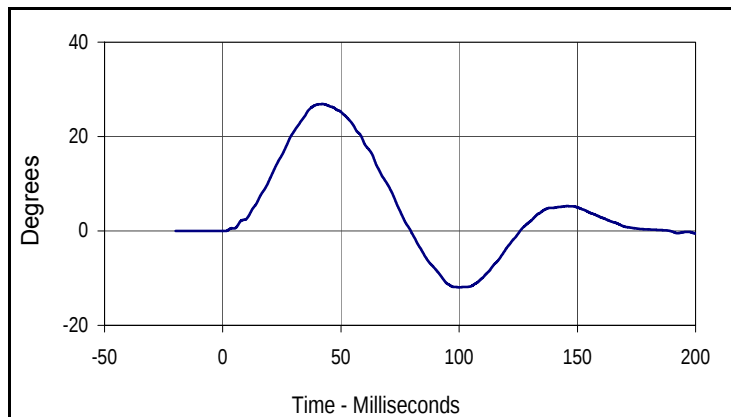
Test Date: 6/10/14
 Test I.D.: F037LB060



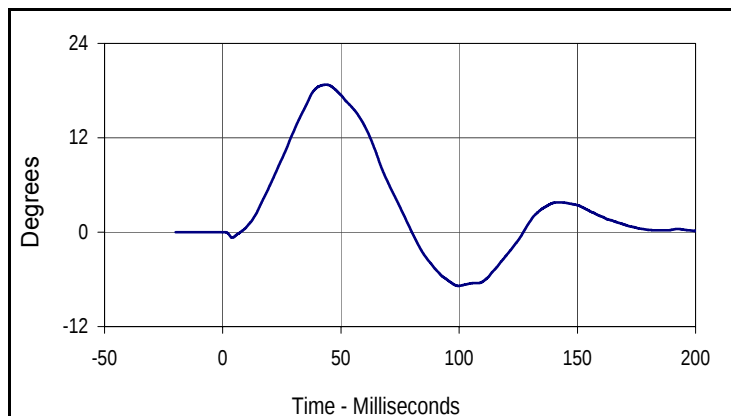
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
49.0	44.7	-19.2	101.1



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
30.2	45.0	-12.4	104.3



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
26.9	42.9	-12.0	100.6



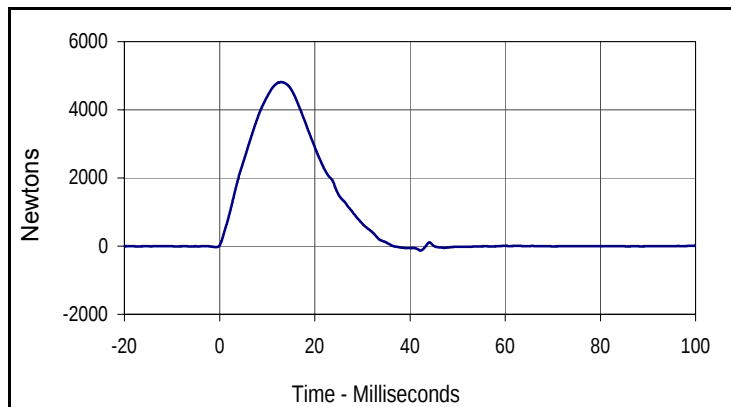
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
18.7	44.4	-6.8	100.4

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

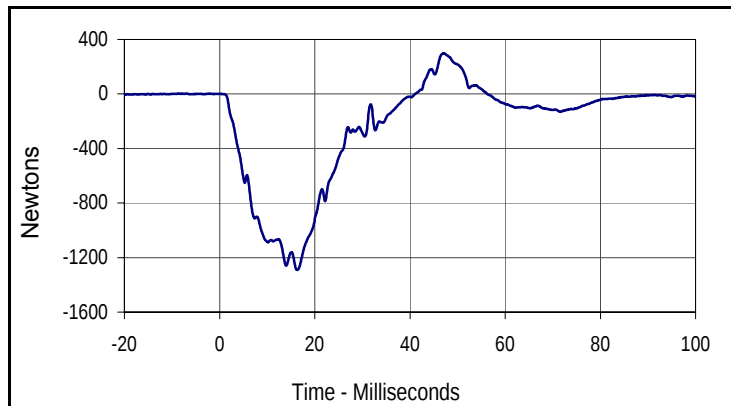
Test Date: 6/10/14
 Test I.D.: F037PL060



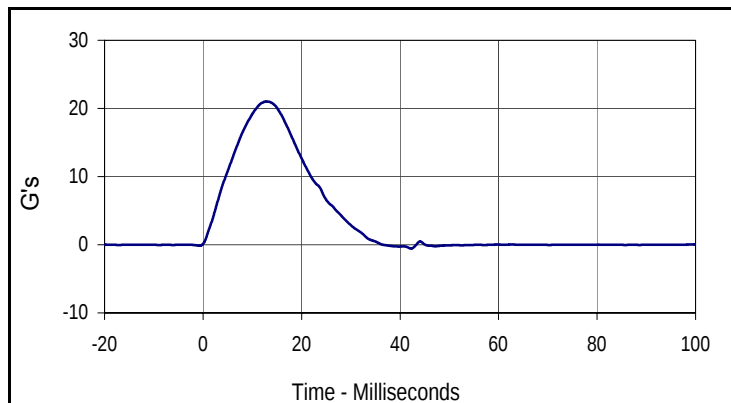
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	890	Pass
Temperature During Soak	Max	20.6 to 22.2	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	35.8	Pass
	Min		34.8	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	34.8	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.33	Pass
Peak Impactor Force	N	4700 to 5400	4813.3	Pass
	msec	11.8 to 16.1	12.9	Pass
Peak Pubic Symphysis Load	N	-1230 to -1590	-1291.1	Pass
	msec	12.2 to 17.0	16.3	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
4813.3	12.9	-130.1	42.2



Curve Description			
Pubic Symphysis Force Y			
Plot No.	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
298.2	47.1	-1291.1	16.3



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
21.0	12.9	-0.6	42.2

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

Test Date: 6/11/14
 Test I.D.: N/A



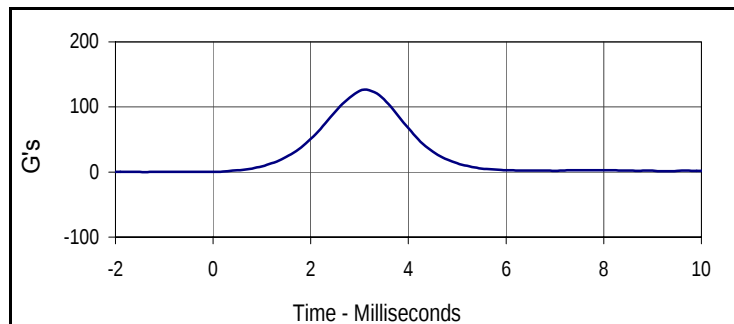
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.0	Pass
Laboratory Relative Humidity		%	10 to 70	35	Pass
A	Sitting Height	mm	772 - 788	778	Pass
B	Shoulder Pivot Height	mm	437 - 453	443	Pass
C	H-Point Height	mm	79 - 89	85	Pass
D	H-Point from Seatback	mm	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
 ATD Serial No.: 307

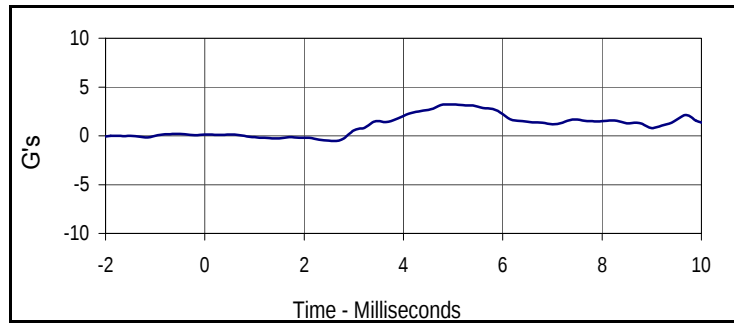
Test Date: 6/11/14
 Test I.D.: 307HD068



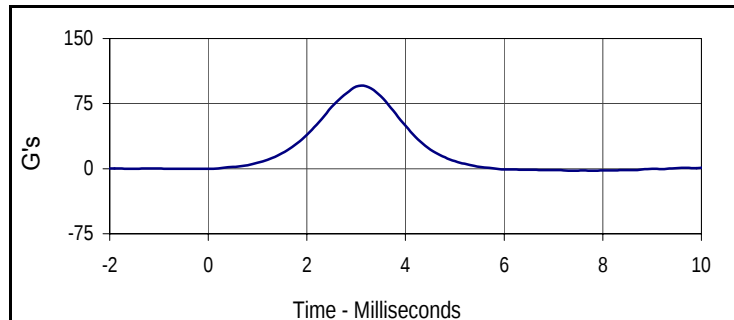
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	450	Pass
Temperature During Soak	Max	18.9 to 25.6	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	34.7	Pass
	Min		33.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	34.5	Pass
Peak Head Resultant Acceleration	G's	115 to 137	126.6	Pass
Peak Head X Acceleration	G's	<15	3.2	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	2.9	Pass
Overall Test Results				Pass



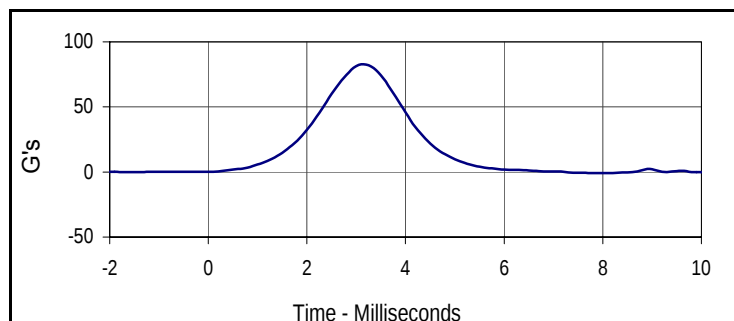
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
126.6	3.1	0.1	-1.4



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
3.2	4.9	-0.5	2.6



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
95.9	3.1	-2.2	7.4



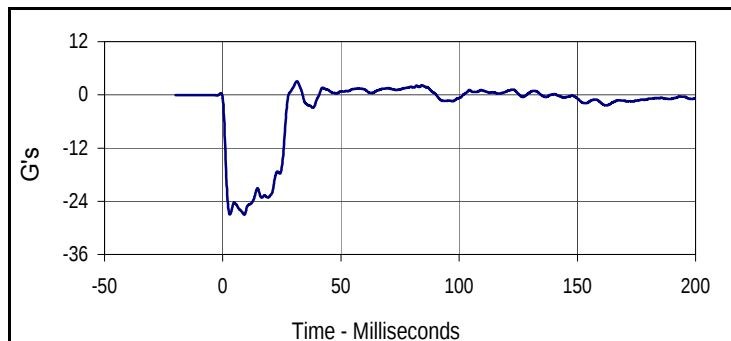
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
82.7	3.1	-0.9	7.9

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

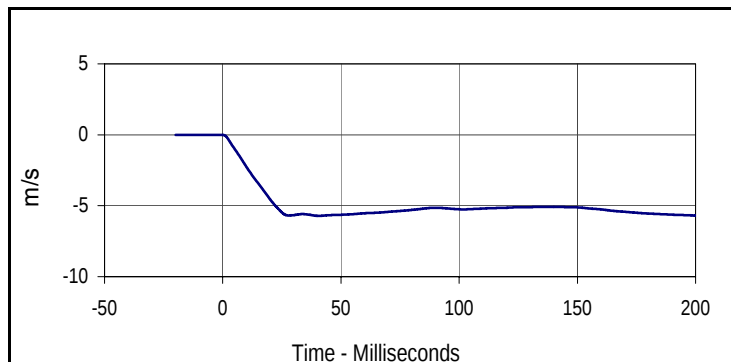
Test Date: 6/11/14
 Test I.D.: 307NB068



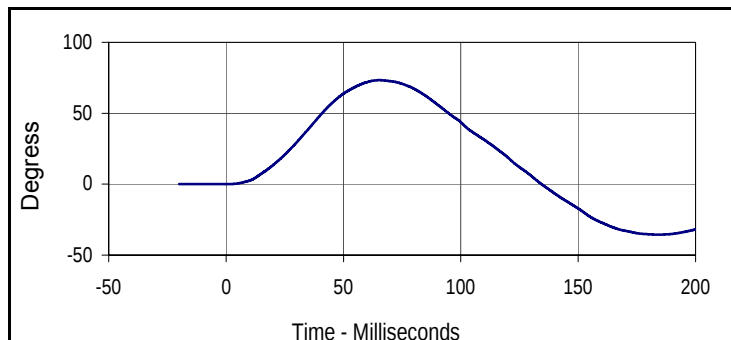
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	525	Pass
Temperature During Soak	Max	20.6 to 22.2	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	34.7	Pass
	Min		33.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	34.4	Pass
Pendulum Velocity	m/s	5.51 to 5.63	5.54	Pass
Pendulum Deceleration	10 msec	-2.20 to -2.80	-2.26	Pass
	15 msec	-3.30 to -4.10	-3.42	Pass
	20 msec	-4.40 to -5.40	-4.54	Pass
	25 msec	-5.40 to -6.10	-5.47	Pass
	25-100 msec	-5.50 to -6.20	-5.71	Pass
D-Plane Rotation	Max	71 to 81	73.3	Pass
	Time	50 to 70	65.2	Pass
Peak Occipital Condyle Moment	Nm	-36 to -44	-42.3	Pass
Decaying Moment Time to Cross 0 Nm	msec	102 to 126	113.4	Pass
Overall Test Results			Pass	



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
3.1	0.0	-27.0	0.0



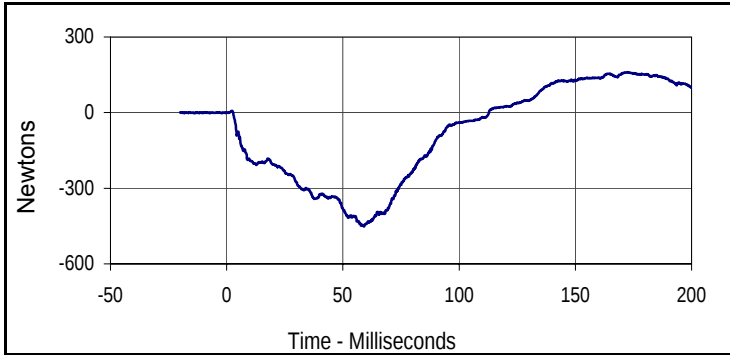
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	180	m/s
Max	Time	Min	Time
0.0	-20.0	-5.7	40.8



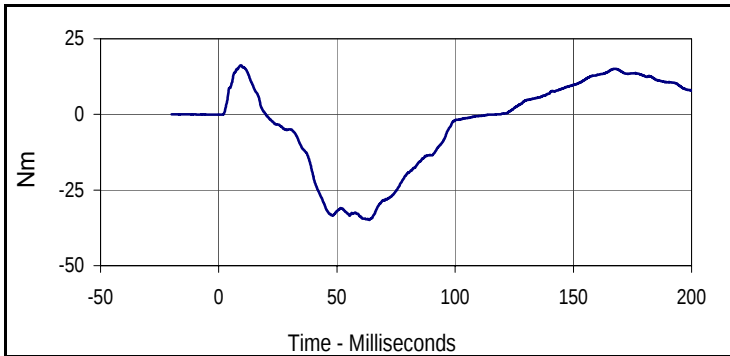
Curve Description			
D-Plane Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degress
Max	Time	Min	Time
73.3	65.2	-35.5	184.0

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

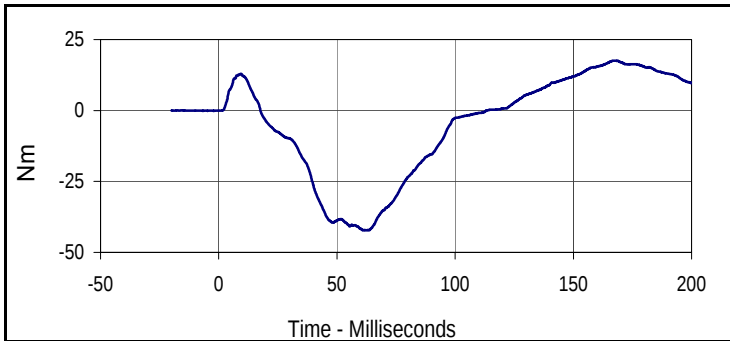
Test Date: 6/11/14
 Test I.D.: 307NB068



Curve Description			
Neck Force Y			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
160.7	172.7	-451.3	59.1



Curve Description			
Neck Moment X			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
16.2	9.5	-34.9	63.7



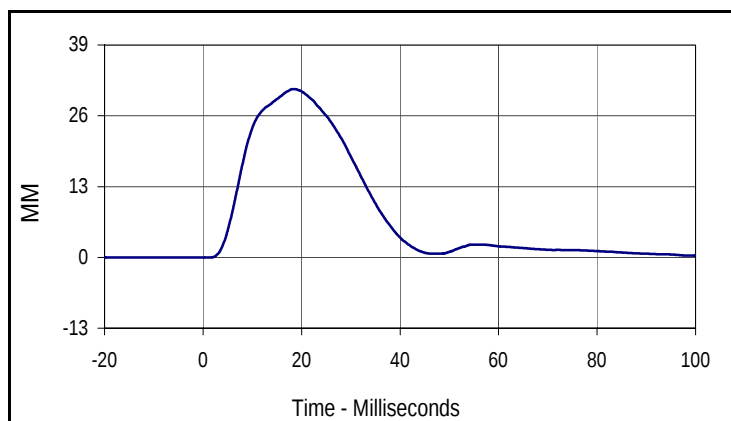
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
006	FIL	600	Nm
Max	Time	Min	Time
17.6	167.3	-42.3	62.5

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

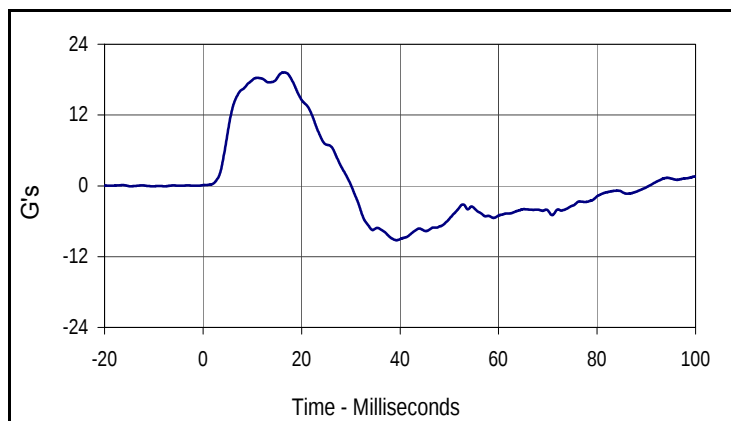
Test Date: 6/11/14
 Test I.D.: 307SH068



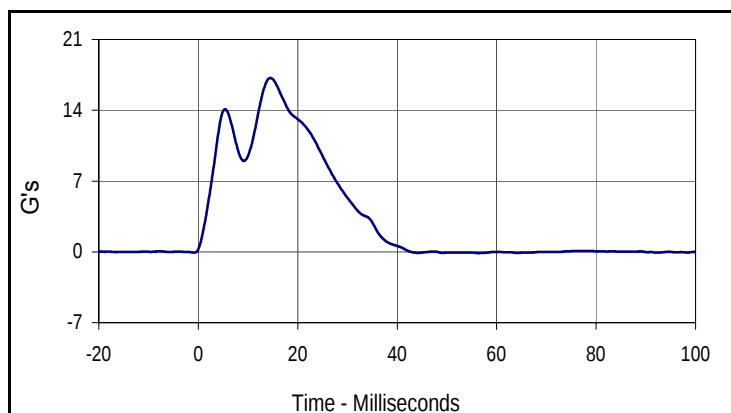
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	580	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.1	Pass
	Min	°C		21.0	Pass
Humidity During Soak	Max	%	10.0 to 70.0	34.7	Pass
	Min	%		33.6	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.3	Pass
Impactor Velocity		m/s	4.20 to 4.40	4.32	Pass
Peak Shoulder Deflection		mm	28 to 37	30.9	Pass
Peak Lateral Spine Acceleration Y		G's	17 to 22	19.2	Pass
Peak Impactor Acceleration		G's	13 to 18	17.2	Pass
Overall Test Results				Pass	



Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
30.9	18.3	0.0	-2.2



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
19.2	16.4	-9.2	39.3



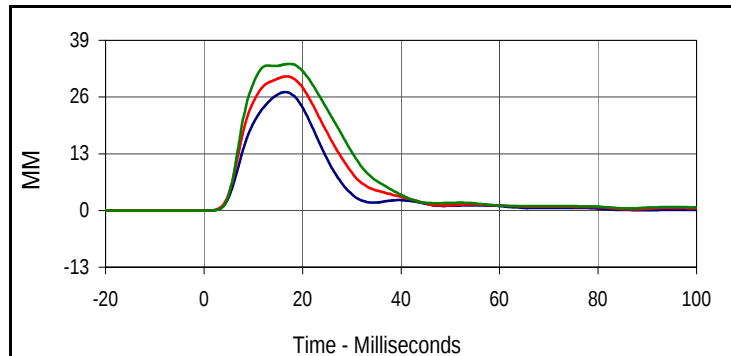
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
17.2	14.5	-0.1	56.3

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

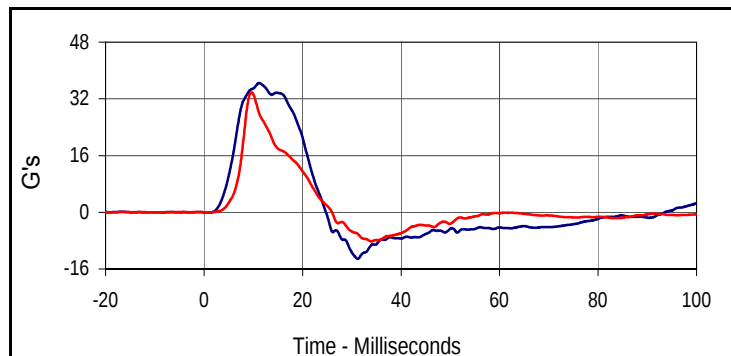
Test Date: 6/11/14
 Test I.D.: 307TWA068



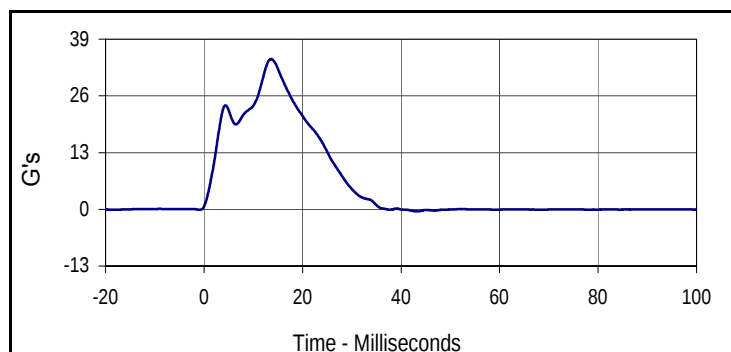
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	625	Pass
Temperature During Soak	Max	20.6 to 22.2	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	34.7	Pass
	Min		33.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	34.0	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.69	Pass
Peak Shoulder Deflection	mm	31 to 40	34.3	Pass
Peak Upper Thorax Rib Deflection	mm	25 to 32	27.1	Pass
Peak Middle Thorax Rib Deflection	mm	30 to 36	30.7	Pass
Peak Lower Thorax Rib Deflection	mm	32 to 38	33.6	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	36.5	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	33.8	Pass
Peak Impactor Acceleration	G's	30 to 36	34.4	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
27.1	16.5	0.0	-20.0
Middle Thorax Deflection			
Max	Time	Min	Time
30.7	16.9	0.0	-18.8
Lower Thorax Deflection			
Max	Time	Min	Time
33.6	17.2	0.0	-19.6



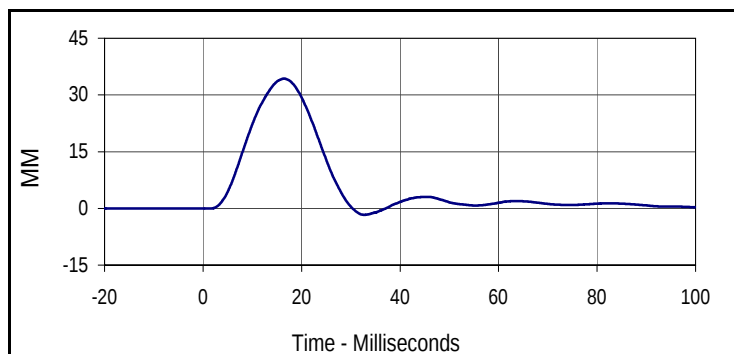
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
36.5	11.2	-13.1	31.2
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
33.8	9.7	-8.2	34.0



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
34.4	13.6	-0.5	43.3

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

Test Date: 6/11/14
 Test I.D.: 307TWA068



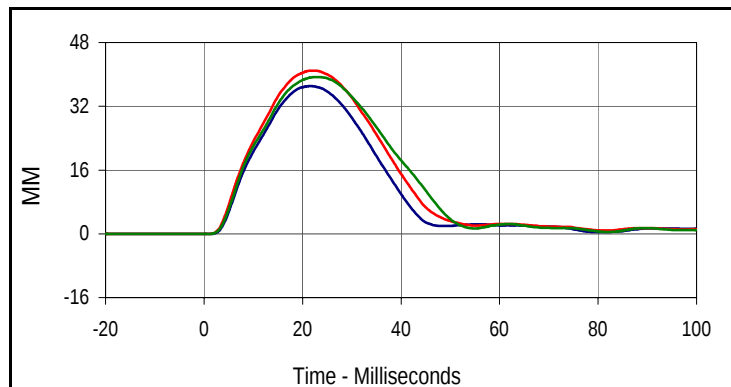
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	MM
Max	Time	Min	Time
34.3	16.4	-1.7	32.8

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

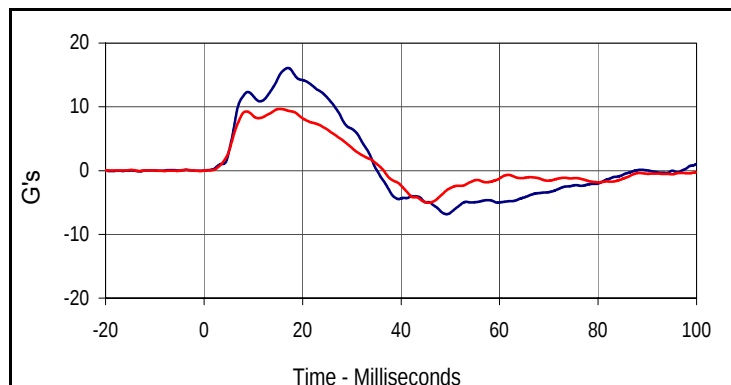
Test Date: 6/11/14
 Test I.D.: 307TWOA068



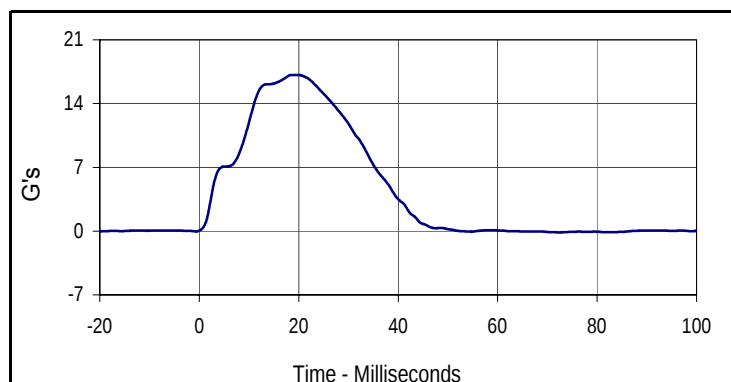
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	675	Pass
Temperature During Soak	Max	18.9 to 25.6	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	34.7	Pass
	Min		33.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	33.9	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.30	Pass
Peak Upper Thorax Rib Deflection	mm	32 to 40	37.1	Pass
Peak Middle Thorax Rib Deflection	mm	39 to 45	41.0	Pass
Peak Lower Thorax Rib Deflection	mm	35 to 43	39.3	Pass
Peak Upper Spine Y Acceleration	G's	13 to 17	16.1	Pass
Peak Lower Spine Y Acceleration	G's	7 to 11	9.7	Pass
Peak Impactor Acceleration	G's	14 to 18	17.1	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
37.1	21.7	0.0	1.3
Middle Thorax Deflection			
Max	Time	Min	Time
41.0	22.0	0.0	0.2
Lower Thorax Deflection			
Max	Time	Min	Time
39.3	22.8	0.0	1.2



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
16.1	17.1	-6.8	49.3
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
9.7	15.3	-5.1	45.6



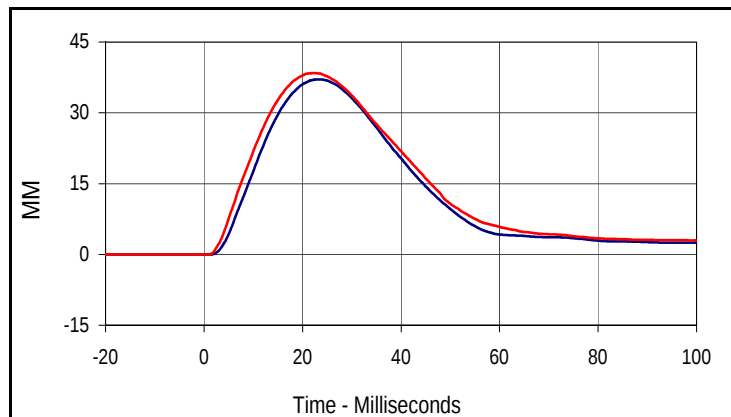
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
17.1	19.9	-0.1	72.5

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

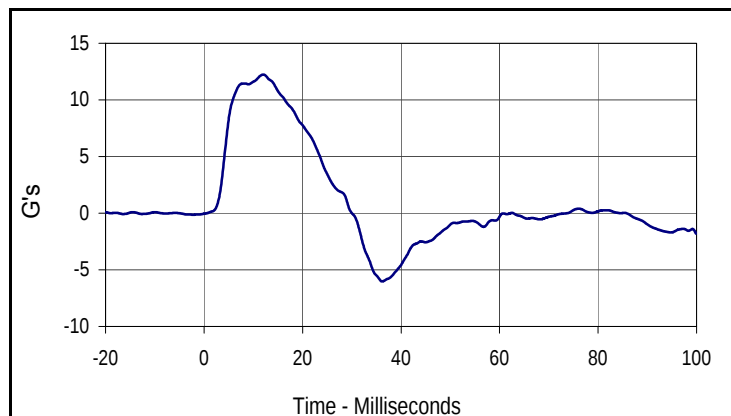
Test Date: 6/11/14
 Test I.D.: 307ABD068



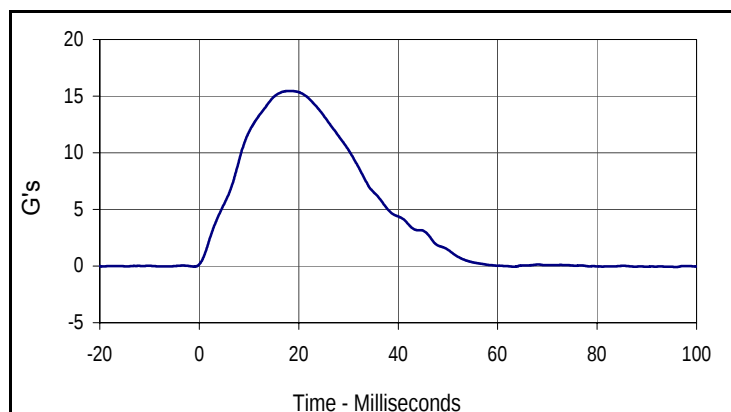
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	710	Pass
Temperature During Soak	Max °C	20.6 to 22.2	21.1	Pass
	Min °C		21.0	Pass
Humidity During Soak	Max %	10.0 to 70.0	34.7	Pass
	Min %		33.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	33.8	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.28	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	37.1	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	38.4	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	12.2	Pass
Peak Impactor Acceleration	G's	12 to 16	15.5	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
37.1	23.1	0.0	-12.5
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
38.4	22.2	0.0	-17.0

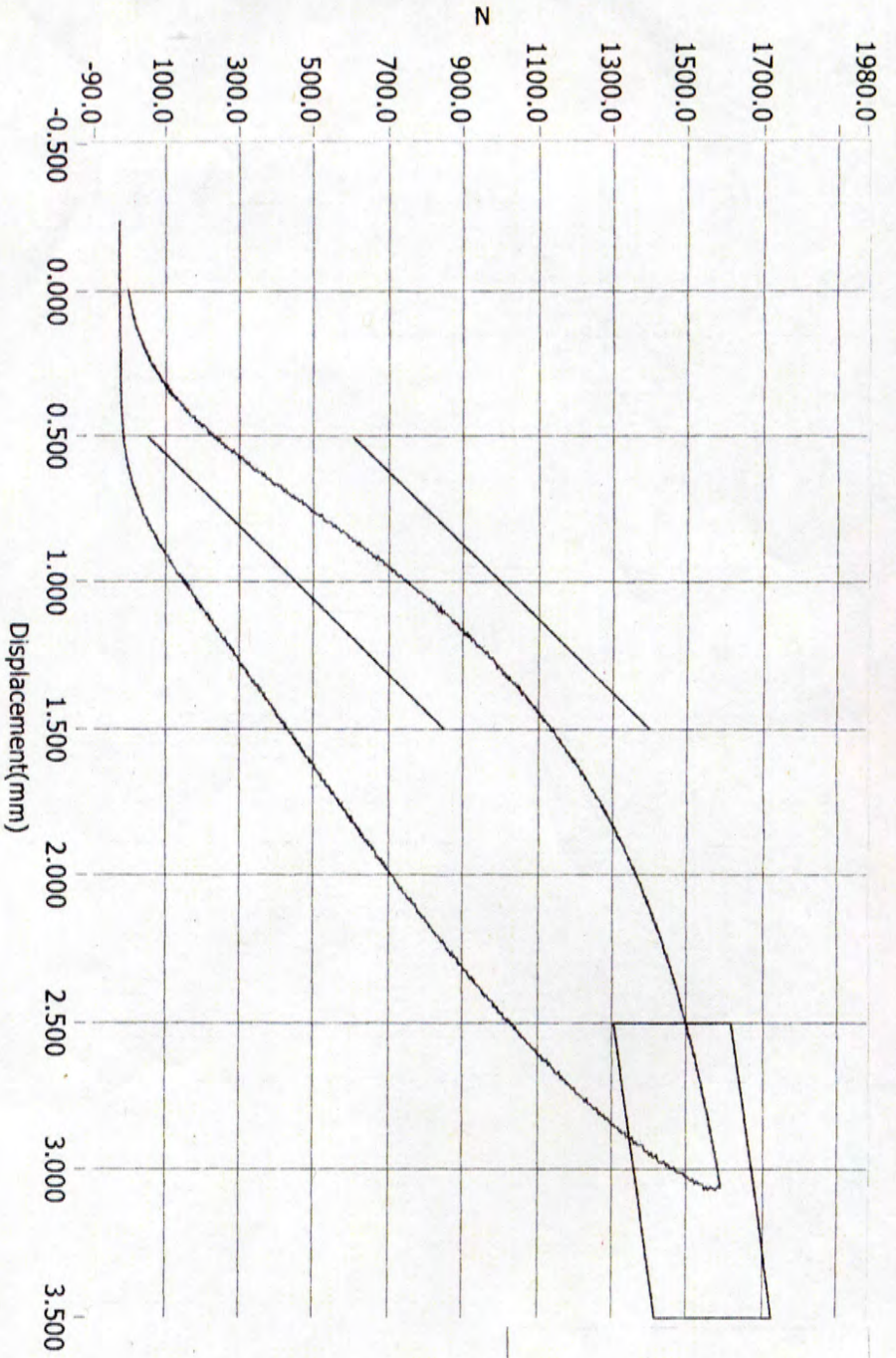


Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
12.2	12.0	-6.0	36.2



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.5	18.0	-0.1	95.9

Resultant Data - SIDIIs Plug Compression



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

1582N

ATD Calibration Lab

Test ID

Part Serial Number

Test Date

Test Time

63198

1/23/2013

8:19 PM

Cert ID

ATD Serial Number

ATD Type

N/A

SIDIIs

Q20144100 PRE TEST

Current Date : 1/23/2013

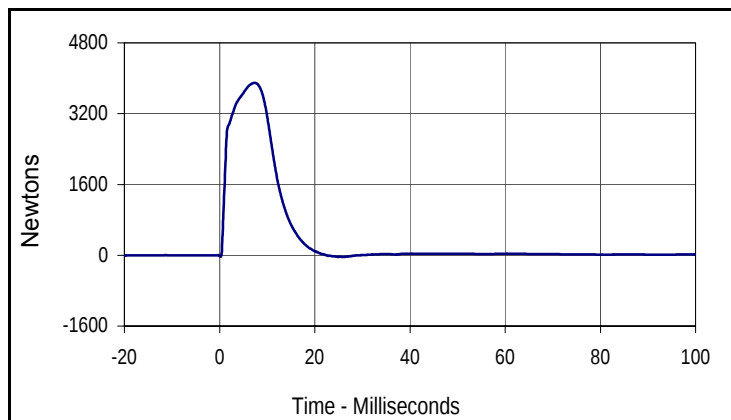
Current Time : 20:20:18

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

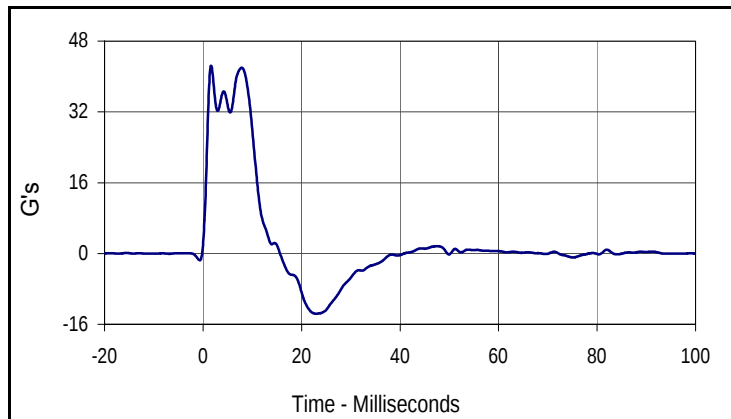
Test Date: 6/11/14
 Test I.D.: 307ACET068



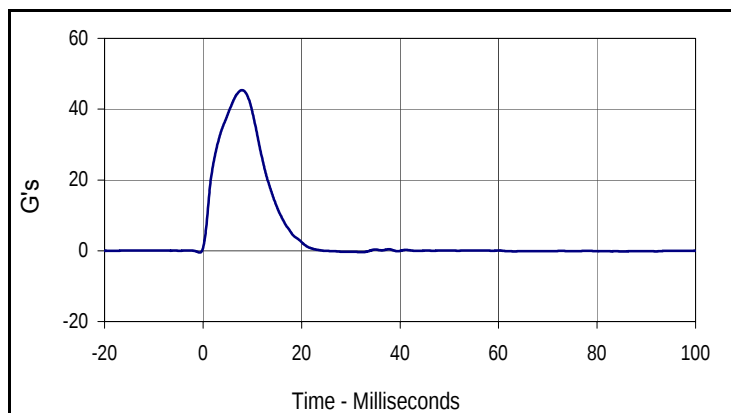
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	755	Pass
Temperature During Soak	Max	20.6 to 22.2	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	34.7	Pass
	Min		33.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	33.7	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.74	Pass
Peak Acetabulum Force Y	Newtons	3600 to 4300	3894.2	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	42.0	Pass
Peak Impactor Acceleration	G's	38 to 47	45.4	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3894.2	7.4	-39.5	26.0



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
42.4	1.6	-13.6	22.9



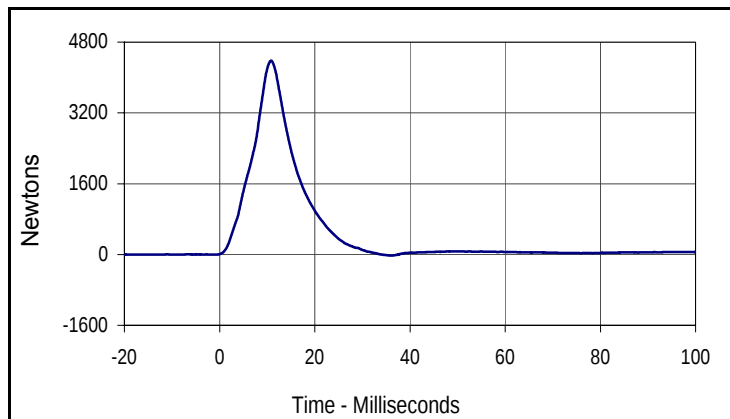
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
45.4	7.9	-0.5	-0.7

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

Test Date: 6/11/14
 Test I.D.: 307PL068



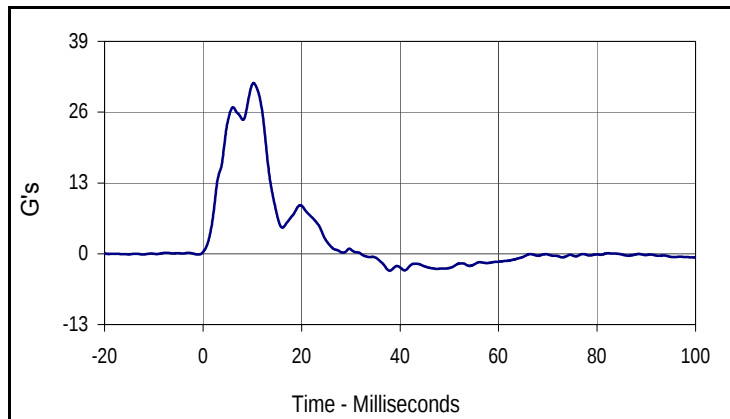
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	825	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.1	Pass
	Min	°C		21.0	Pass
Humidity During Soak	Max	%	10.0 to 70.0	34.7	Pass
	Min	%		33.6	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.0	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	33.6	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.32	Pass
Peak Iliac Force		Newtons	4100 to 5100	4381.2	Pass
Peak Pelvis Y Acceleration		G's	28 to 39	31.3	Pass
Peak Impactor Acceleration		G's	36 to 45	42.3	Pass
Overall Test Results				Pass	



Curve Description

Pelvis Iliac Force

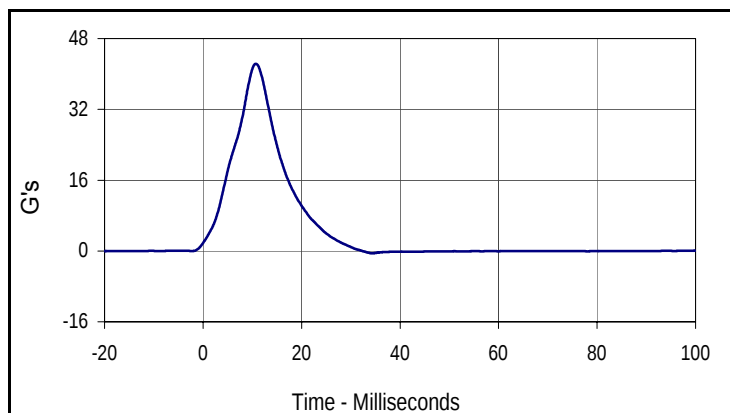
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4381.2	10.8	-25.1	36.1



Curve Description

Pelvis Y Acceleration

Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
31.3	10.3	-3.1	37.9



Curve Description

Impactor Acceleration

Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
42.3	10.7	-0.5	34.4

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

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

Test Date: 6/25/14
 Test I.D.: N/A



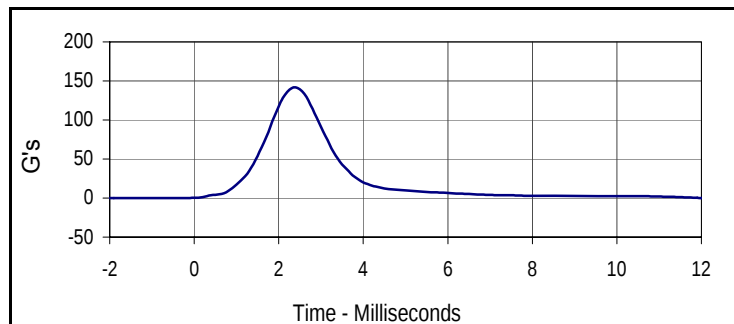
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	30.0	Pass
1	Sitting Height	mm	900 - 918	909	Pass
2	Seat to Shoulder Joint	mm	558 - 572	564	Pass
3	Seat to Lower Face of Thoracic Spine Box	mm	346 - 356	350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

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

Test Date: 6/25/14
 Test I.D.: F037HD061



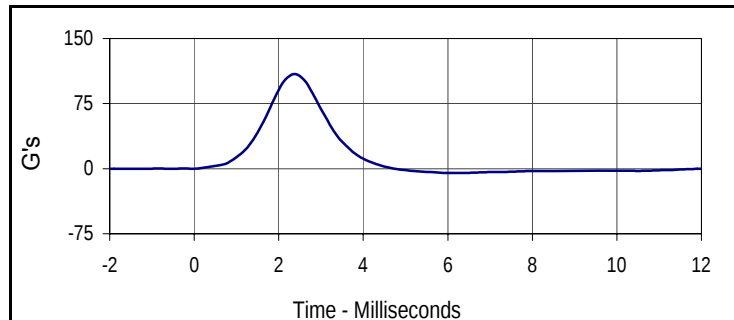
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	311	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.1	Pass
	Min	°C		21.0	Pass
Humidity During Soak	Max	%	10.0 to 70.0	35.8	Pass
	Min	%		34.8	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	35.8	Pass
Peak Head Resultant Acceleration		G's	125 to 155	141.7	Pass
Peak Head X Acceleration		G's	≤15	7.8	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse		%	<15	6.8	Pass
Overall Test Results				Pass	



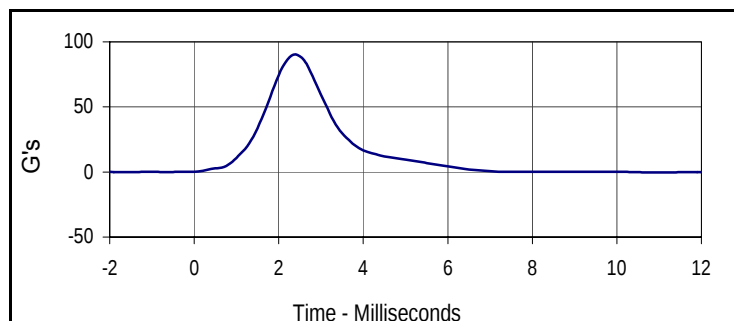
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
141.7	2.4	0.0	-0.6



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.8	5.4	-7.8	2.3



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
108.9	2.4	-4.9	6.0



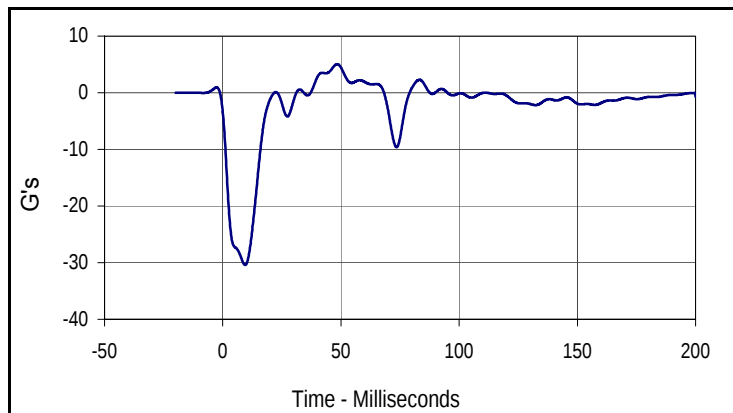
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
90.3	2.4	-0.4	10.8

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

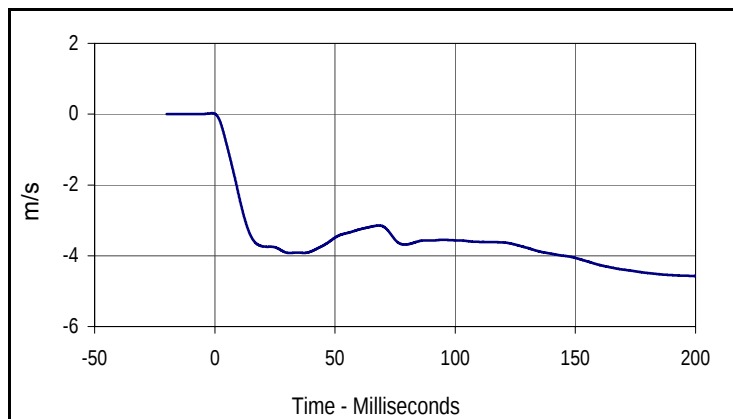
Test Date: 6/25/14
 Test I.D.: F037NB061



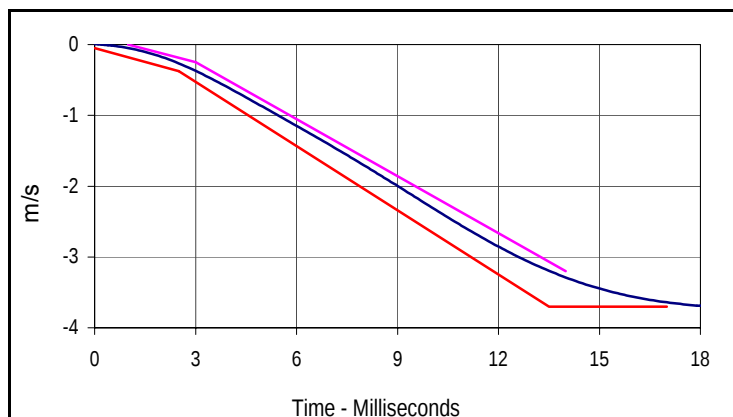
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	346	Pass
Temperature During Soak	Max	20.6 to 22.2	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	35.8	Pass
	Min		34.8	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	35.7	Pass
Pendulum Velocity	m/s	3.3 to 3.5	3.42	Pass
Headform Flexion	Max	49 to 59	53.1	Pass
	Time	54 to 66	54.6	Pass
Headform Flexion Decay (Peak to Zero)	msec	53 to 88	60.0	Pass
Overall Test Results				Pass



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
5.0	48.4	-30.4	9.5



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.2	-4.6	199.9



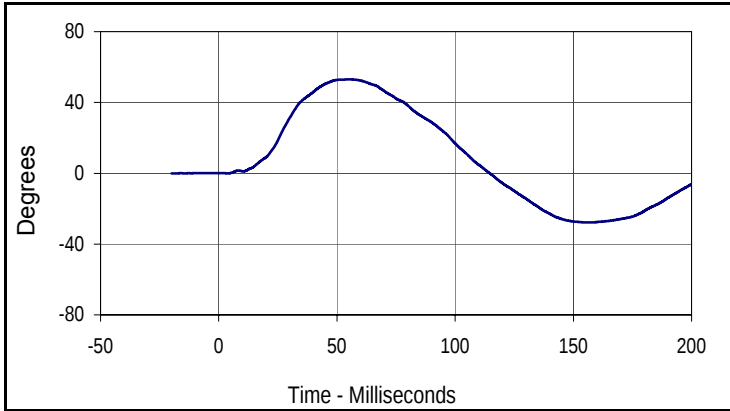
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.2	-4.6	199.9

Velocity Corridors

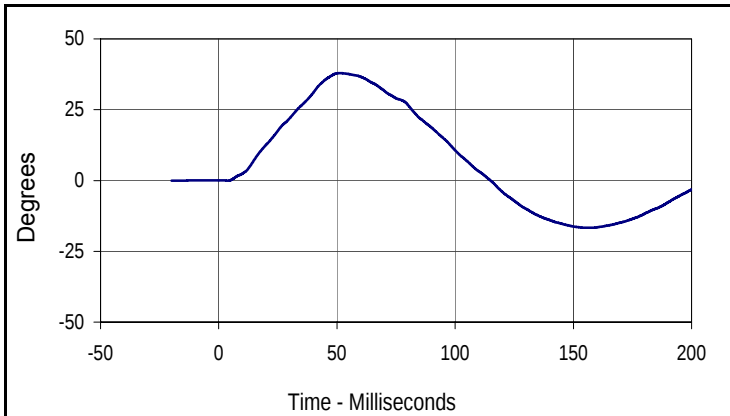
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.0	-0.03	2.5	-0.375
14.0	-3.20	13.5	-3.70
		17.0	-3.70

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

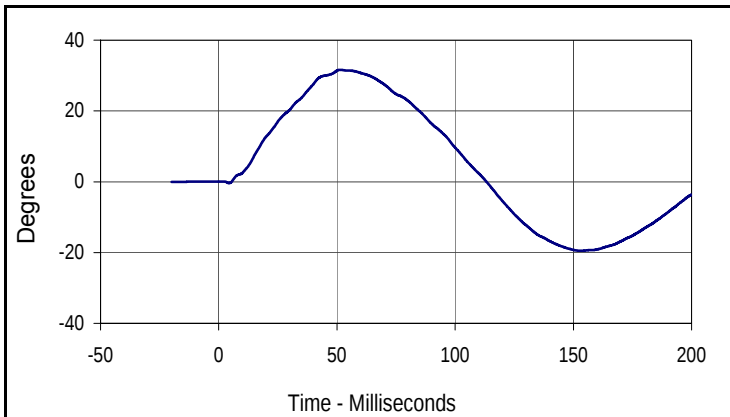
Test Date: 6/25/14
 Test I.D.: F037NB061



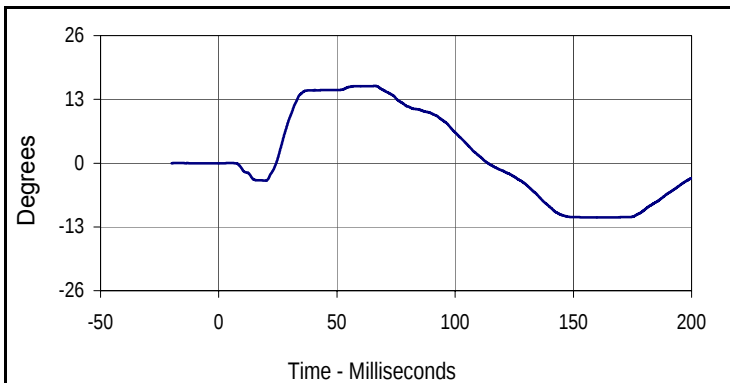
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
53.1	54.6	-27.7	156.2



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
37.9	51.1	-16.7	155.5



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
31.6	51.3	-19.5	152.6



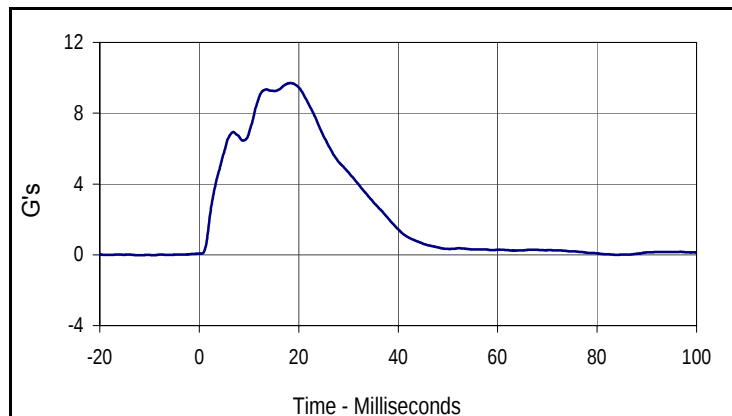
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
15.7	66.2	-11.1	165.1

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

Test Date: 6/25/14
 Test I.D.: F037SH061



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	411	Pass
Temperature During Soak	Max	20.6 to 22.2	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	35.8	Pass
	Min		34.8	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	35.6	Pass
Pendulum Speed	m/s	4.2 to 4.4	4.28	Pass
Peak Impactor Acceleration	G's	7.5 to 10.5	9.7	Pass
Overall Test Results			Pass	



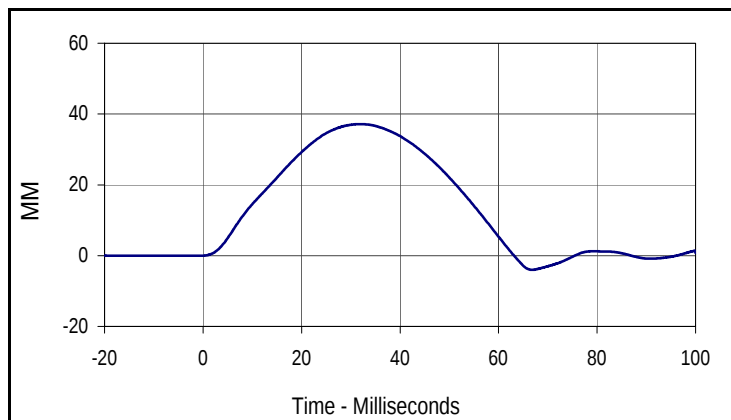
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
9.7	18.3	0.0	-12.4

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

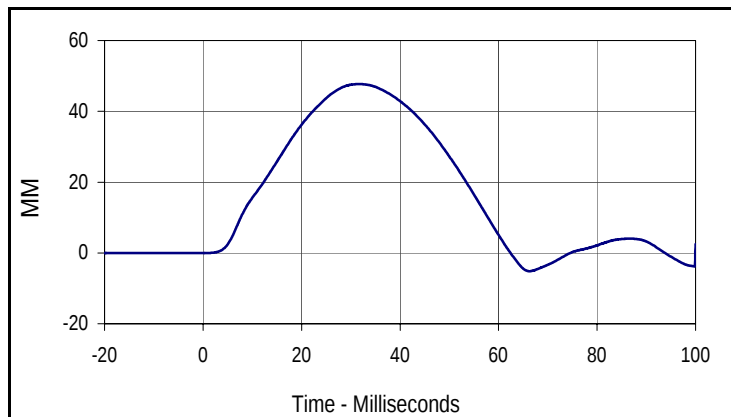
Test Date: 6/25/14
 Test I.D.: F037RB1061



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	466	Pass
Temperature During Soak	Max	20.6 to 22.2	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	35.8	Pass
	Min		34.8	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	35.6	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	37.1	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	47.7	Pass
Overall Test Results				Pass



Curve Description			
Upper Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
37.1	32.0	-4.0	66.8



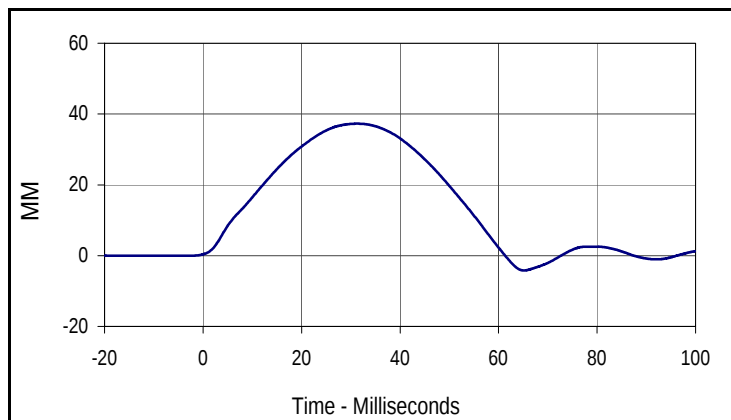
Curve Description			
Upper Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
47.7	31.7	-5.1	66.3

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

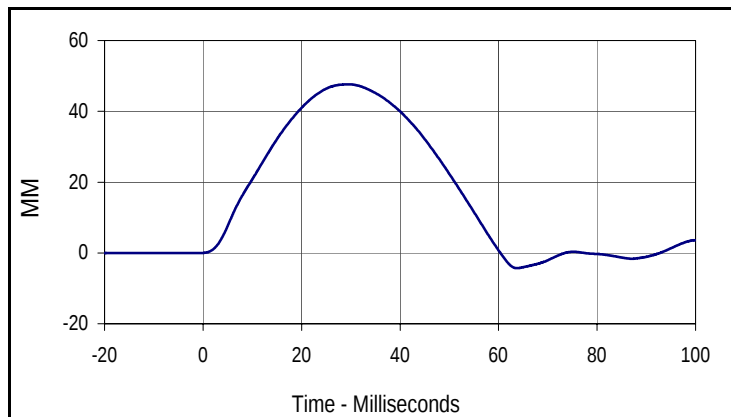
Test Date: 6/25/14
 Test I.D.: F037RB2061



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	511	Pass
Temperature During Soak	Max	20.6 to 22.2	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	35.8	Pass
	Min		34.8	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	35.5	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	37.3	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	47.6	Pass
Overall Test Results			Pass	



Curve Description			
Middle Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
37.3	31.3	-4.2	65.2



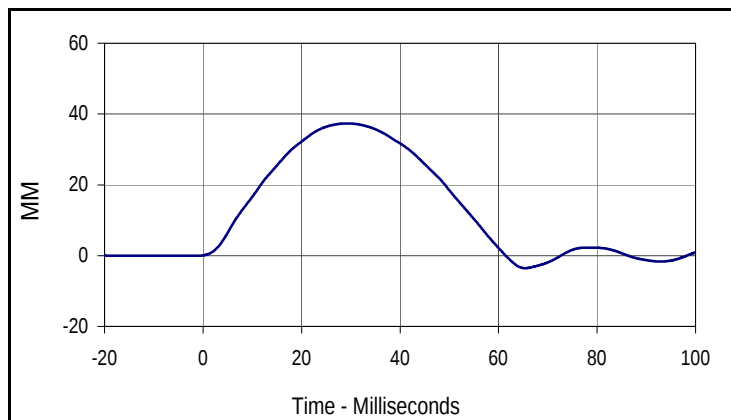
Curve Description			
Middle Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
47.6	29.7	-4.3	63.7

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

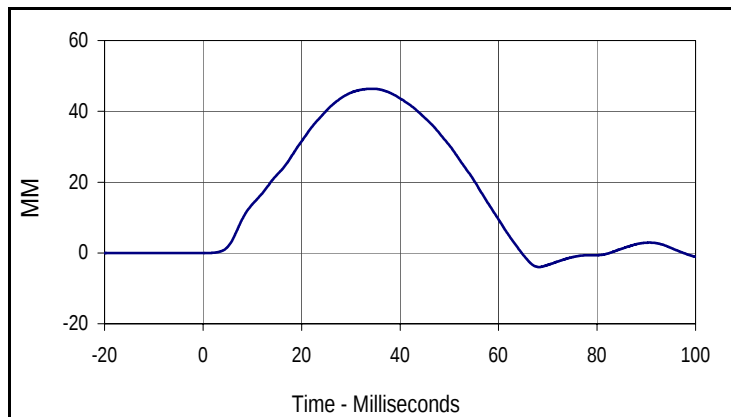
Test Date: 6/25/14
 Test I.D.: F037RB3061



Tested Parameter	Units	Specification	Result	Pass/Fail
Rib Module Soak Time	Minutes	≥240	556	Pass
Temperature During Soak	Max	20.6 to 22.2	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	35.8	Pass
	Min		34.8	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	35.4	Pass
Peak Rib Deflection at 459 +/- 5 mm Drop Height	mm	36 to 40	37.3	Pass
Peak Rib Deflection at 815 +/- 8 mm Drop Height	mm	46 to 51	46.4	Pass
Overall Test Results			Pass	



Curve Description			
Lower Rib Deflection (459 mm Drop Height)			
Plot No.	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
37.3	29.3	-3.5	65.4



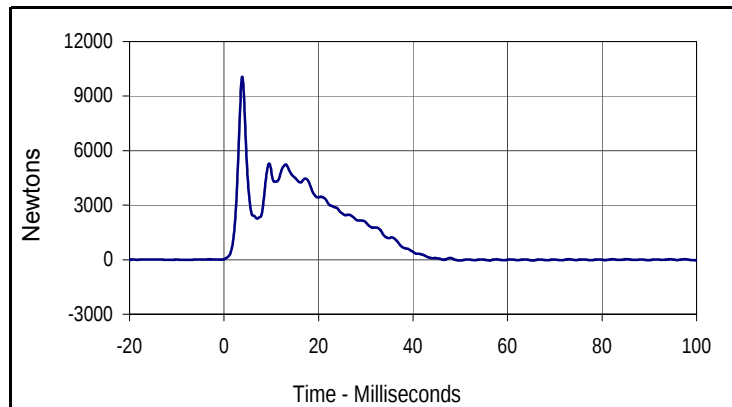
Curve Description			
Lower Rib Deflection (815 mm Drop Height)			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max	Time	Min	Time
46.4	34.3	-4.0	68.2

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

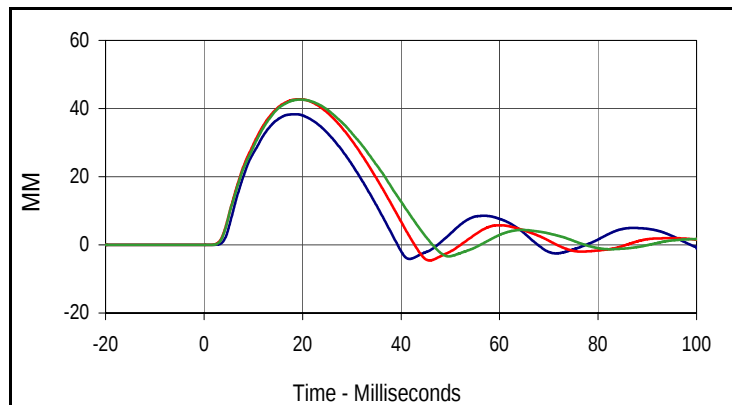
Test Date: 6/25/14
 Test I.D.: F037TH061



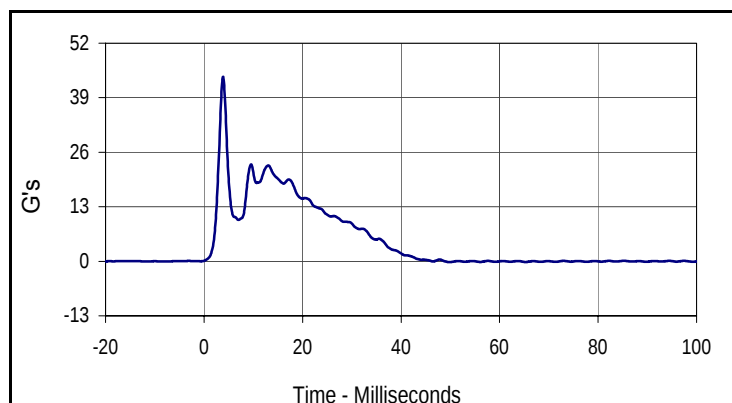
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	601	Pass
Temperature During Soak	Max °C	20.6 to 22.2	21.1	Pass
	Min °C		21.0	Pass
Humidity During Soak	Max %	10.0 to 70.0	35.8	Pass
	Min %		34.8	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	35.2	Pass
Peak Impactor Velocity	m/s	5.4 to 5.6	5.54	Pass
Peak Impactor Force	N	5100 to 6200	5296.2	Pass
	msec	> 6.0 msec	9.5	Pass
Peak Upper Rib Deflection	mm	34 to 41	38.3	Pass
Peak Middle Rib Deflection	mm	37 to 45	42.7	Pass
Peak Lower Rib Deflection	mm	37 to 44	42.6	Pass
Overall Test Results				Pass



Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
10069.9	3.9	-50.3	49.8



Curve Description			
Upper, Middle, Lower Rib Deflections			
Plot No.	Type	SAE Class	Units
002	FIL	180	MM
Max (Upper)	Time	Min (Upper)	Time
38.3	18.4	-4.1	41.7
Max (Middle)	Time	Min (Middle)	Time
42.7	19.4	-4.6	45.8
Max (Lower)	Time	Min (Lower)	Time
42.6	19.5	-3.4	49.7



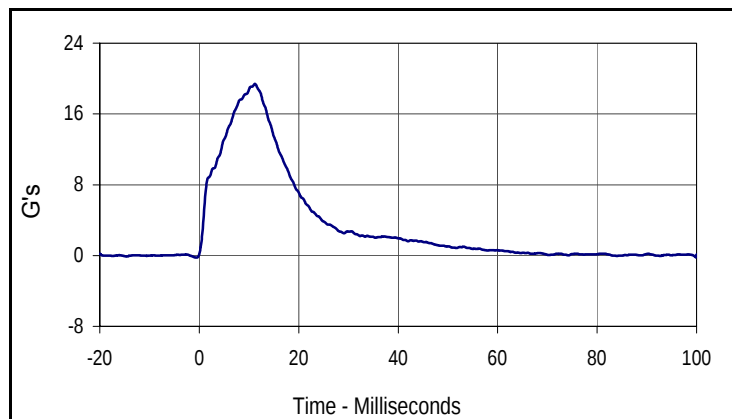
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
44.0	3.9	-0.2	49.8

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

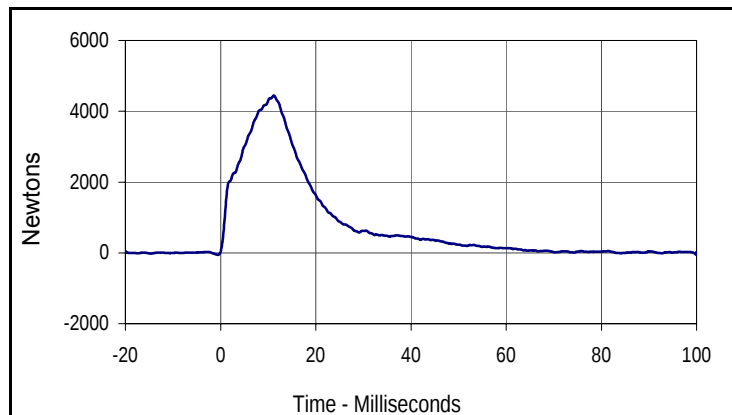
Test Date: 6/25/14
 Test I.D.: F037ABD061



Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	671	Pass
Temperature During Soak	Max	20.6 to 22.2	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	35.8	Pass
	Min		34.8	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	35.1	Pass
Probe Velocity	m/s	3.9 to 4.1	3.98	Pass
Peak Impactor Force	N	4000 to 4800	4445.8	Pass
	msec	10.6 to 13.0	11.2	Pass
Sum of Abdominal Forces	N	2200 to 2700	2346.7	Pass
	msec	10.0 to 12.3	10.3	Pass
Overall Test Results				Pass



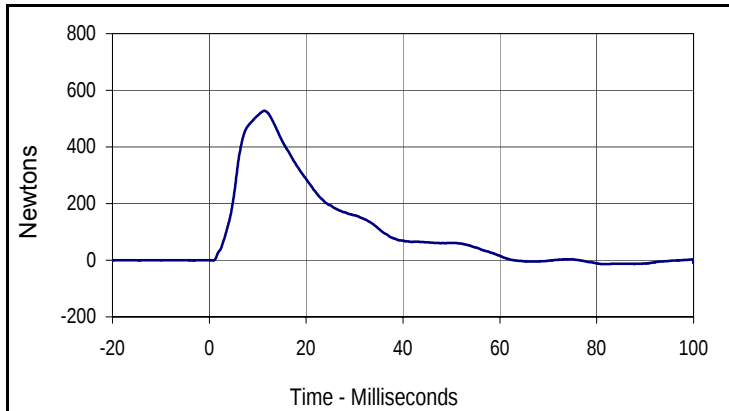
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
19.4	11.2	-0.2	-0.6



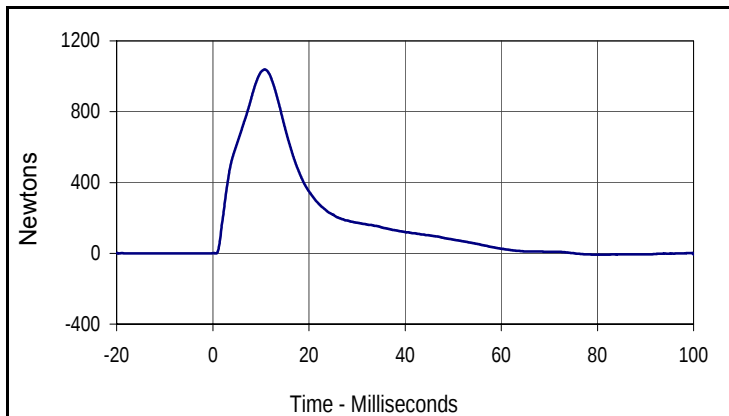
Curve Description			
Impactor Force			
Plot No.	Type	SAE Class	Units
002	FIL	180	Newtons
Max	Time	Min	Time
4445.8	11.2	-55.2	-0.6

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

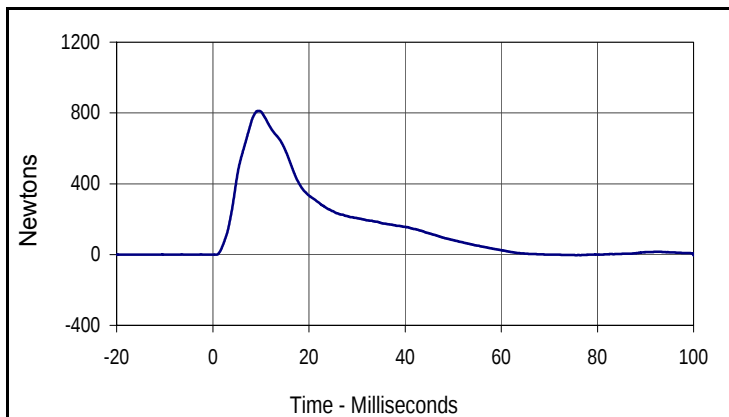
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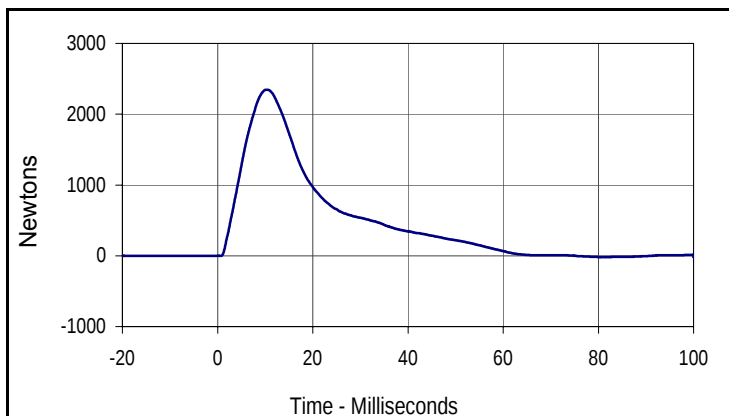
Curve Description			
Front Abdomen Force			
Plot No.	Type	SAE Class	Units
003	FIL	600	Newtons
Max	Time	Min	Time
527.3	11.4	-14.0	81.4



Curve Description			
Middle Abdomen Force			
Plot No.	Type	SAE Class	Units
004	FIL	600	Newtons
Max	Time	Min	Time
1038.7	10.8	-7.8	81.0



Curve Description			
Rear Abdomen Force			
Plot No.	Type	SAE Class	Units
005	FIL	600	Newtons
Max	Time	Min	Time
812.0	9.6	-7.1	103.4



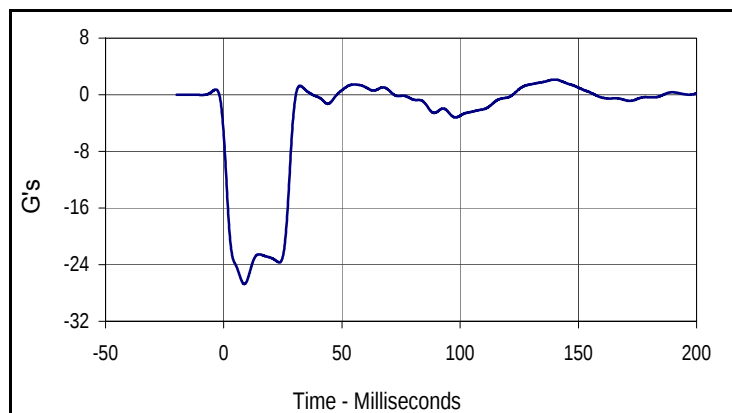
Curve Description			
Abdomen Sum Resultant			
Plot No.	Type	SAE Class	Units
006	RES	600	Newtons
Max	Time	Min	Time
2346.7	10.3	-22.0	100.6

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

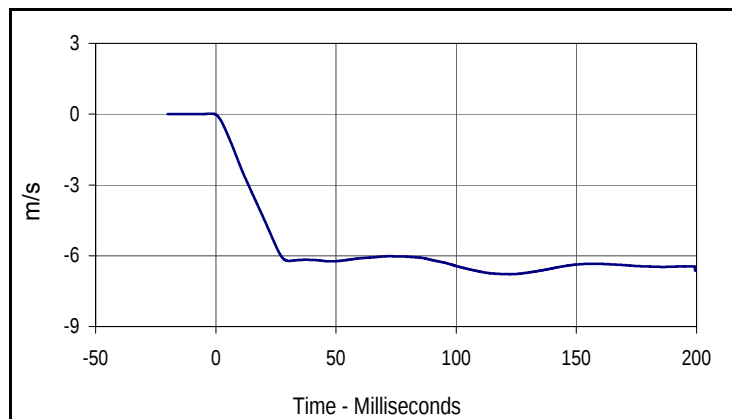
Test Date: 6/25/14
 Test I.D.: F037LB061



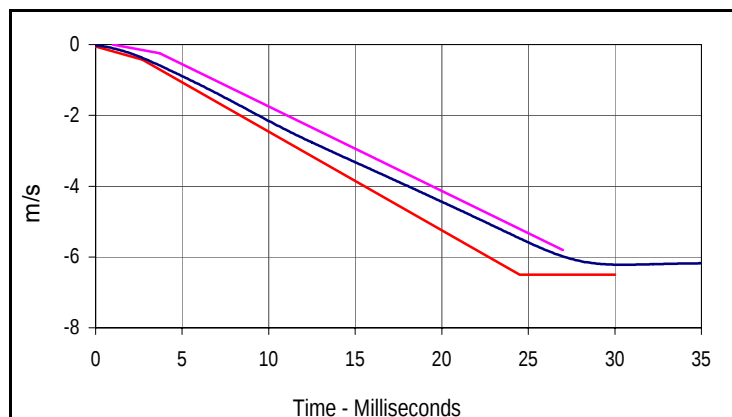
Tested Parameter	Units	Specification	Result	Pass/Fail
Lumbar Spine Assembly Soak Time	Minutes	≥240	746	Pass
Temperature During Soak	Max	20.6 to 22.2	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	35.8	Pass
	Min		34.8	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	35.1	Pass
Pendulum Velocity	m/s	5.95 to 6.15	6.06	Pass
Headform Rotation	Max	45 to 55	48.9	Pass
	Time	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's
Max	Time	Min	Time
2.1	140.5	-26.7	9.3



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.3	-6.8	122.8



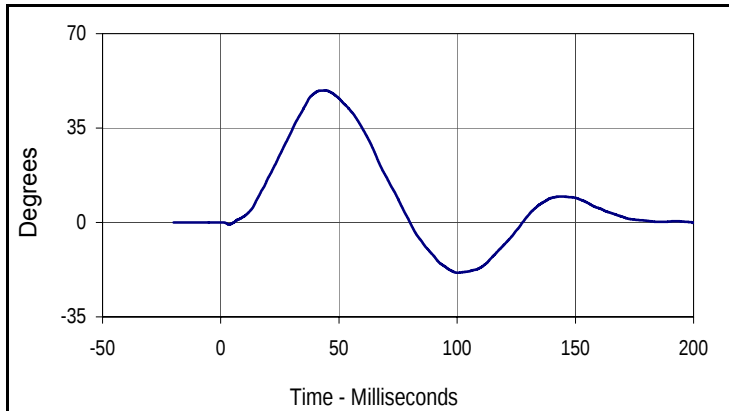
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	60	m/s
Max	Time	Min	Time
0.0	-1.3	-6.8	122.8

Velocity Corridors

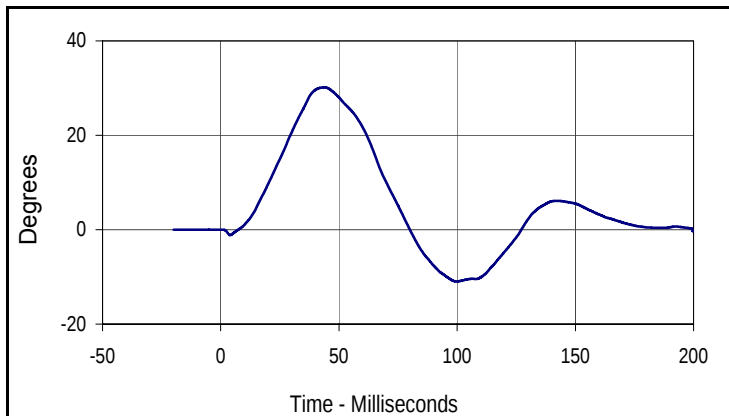
Upper Boundary		Lower Boundary	
Time (msec)	Velocity (m/s)	Time (msec)	Velocity (m/s)
1.0	0.00	0.0	-0.05
3.7	-0.24	2.7	-0.425
27.0	-5.80	24.5	-6.50
		30.0	-6.50

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

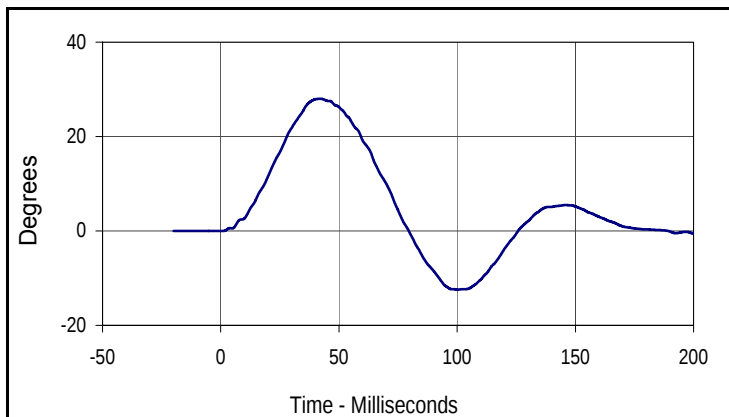
Test Date: 6/25/14
 Test I.D.: F037LB061



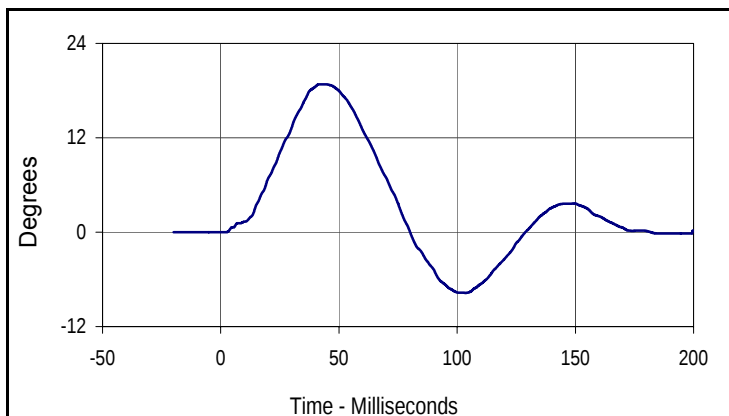
Curve Description			
Headform Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	180	Degrees
Max	Time	Min	Time
48.9	44.6	-18.6	100.8



Curve Description			
Potentiometer A			
Plot No.	Type	SAE Class	Units
004	FIL	180	Degrees
Max	Time	Min	Time
30.1	44.4	-11.0	100.4



Curve Description			
Potentiometer B			
Plot No.	Type	SAE Class	Units
005	FIL	180	Degrees
Max	Time	Min	Time
28.0	42.8	-12.4	100.6



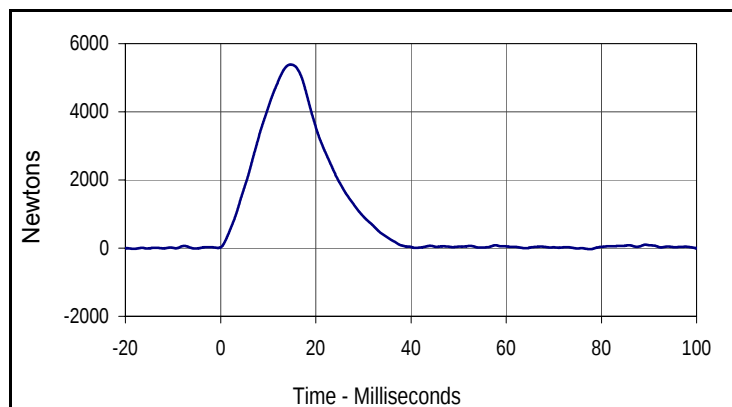
Curve Description			
Potentiometer C			
Plot No.	Type	SAE Class	Units
006	FIL	180	Degrees
Max	Time	Min	Time
18.8	45.0	-7.7	104.2

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

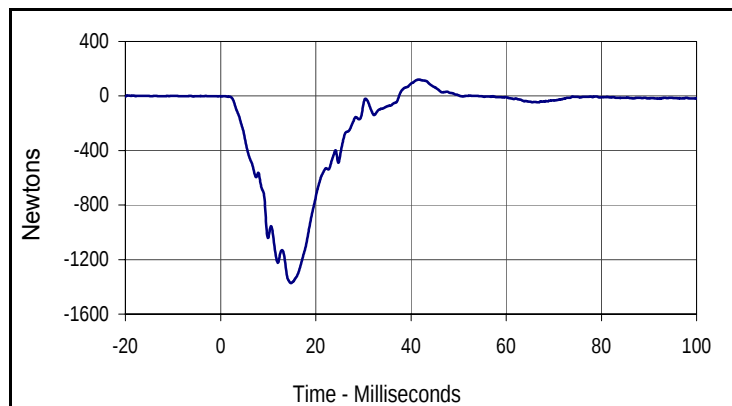
Test Date: 6/25/14
 Test I.D.: F037PL061



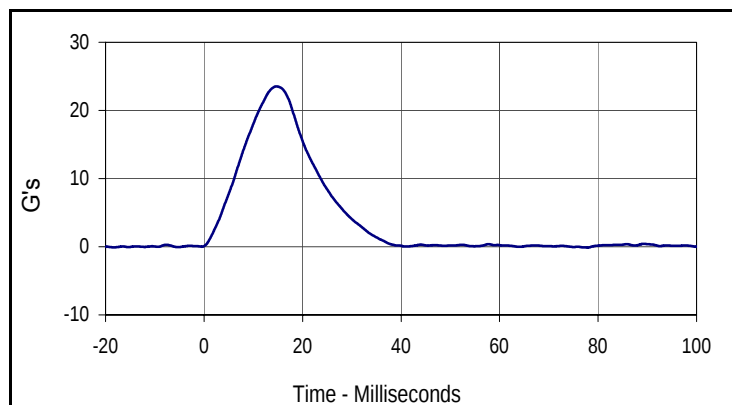
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥240	801	Pass
Temperature During Soak	Max	20.6 to 22.2	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	35.8	Pass
	Min		34.8	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	34.8	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.33	Pass
Peak Impactor Force	N	4700 to 5400	5386.2	Pass
	msec	11.8 to 16.1	14.7	Pass
Peak Pubic Symphysis Load	N	-1230 to -1590	-1372.8	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	Newtons
Max	Time	Min	Time
5386.2	14.7	-27.4	77.8



Curve Description			
Pubic Symphysis Force Y			
Plot No.	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
120.4	41.6	-1372.8	14.8



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
23.5	14.7	-0.1	77.8

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

Test Date: 6/26/14
 Test I.D.: N/A



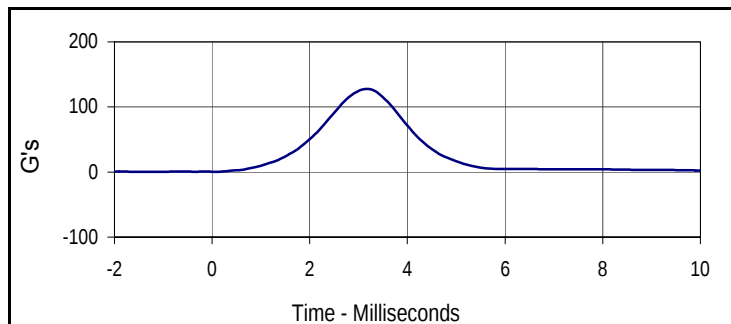
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.0	Pass
Laboratory Relative Humidity		%	10 to 70	35	Pass
A	Sitting Height	mm	772 - 788	778	Pass
B	Shoulder Pivot Height	mm	437 - 453	443	Pass
C	H-Point Height	mm	79 - 89	85	Pass
D	H-Point from Seatback	mm	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
 ATD Serial No.: 307

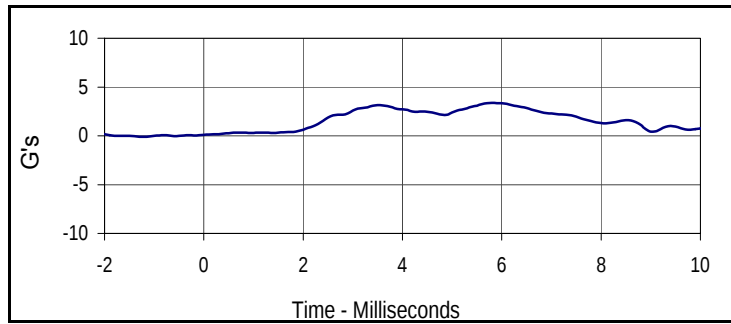
Test Date: 6/26/14
 Test I.D.: 307HD069



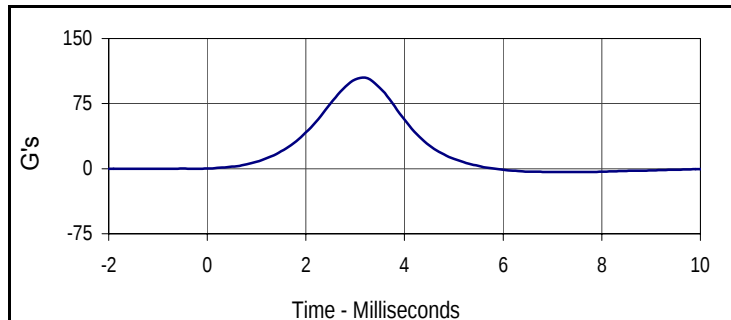
Tested Parameter	Units	Specification	Result	Pass/Fail
Head Assembly Soak Time	Minutes	≥240	296	Pass
Temperature During Soak	Max	18.9 to 25.6	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	34.7	Pass
	Min		33.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	34.5	Pass
Peak Head Resultant Acceleration	G's	115 to 137	127.9	Pass
Peak Head X Acceleration	G's	<15	3.4	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	3.5	Pass
Overall Test Results				Pass



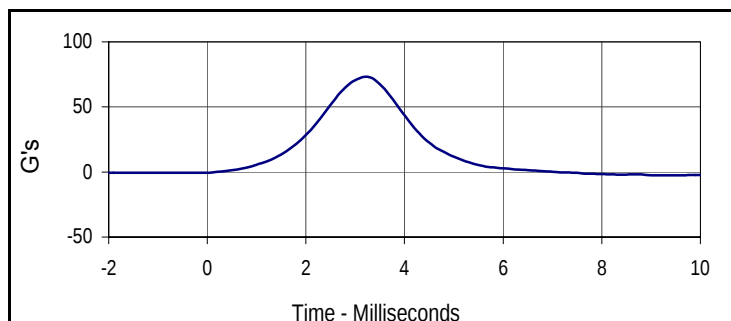
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
127.9	3.2	0.5	0.1



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
3.4	5.8	-0.1	-1.2



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
104.8	3.2	-3.9	7.1



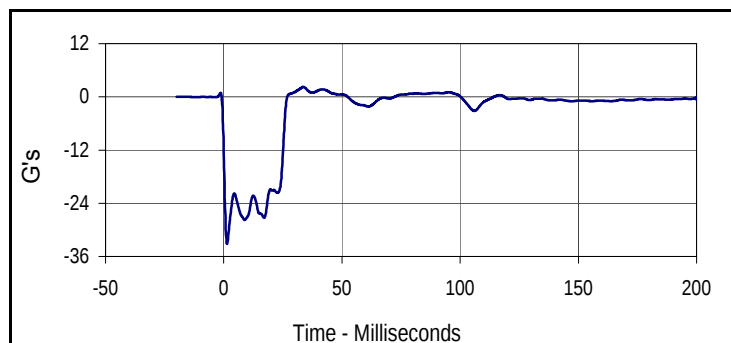
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
73.1	3.2	-2.6	9.2

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

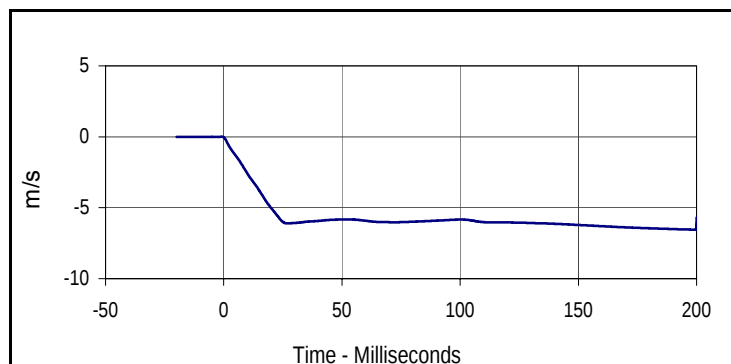
Test Date: 6/26/14
 Test I.D.: 307NB069



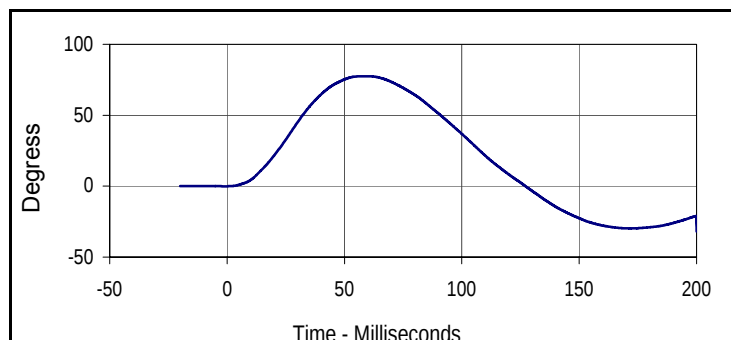
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	371	Pass
Temperature During Soak	Max	20.6 to 22.2	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	34.7	Pass
	Min		33.6	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	34.4	Pass
Pendulum Velocity	m/s	5.51 to 5.63	5.59	Pass
Pendulum Deceleration	10 msec	-2.20 to -2.80	-2.59	Pass
	15 msec	-3.30 to -4.10	-3.78	Pass
	20 msec	-4.40 to -5.40	-5.01	Pass
	25 msec	-5.40 to -6.10	-6.01	Pass
	25-100 msec	-5.50 to -6.20	-6.10	Pass
D-Plane Rotation	Max	71 to 81	77.5	Pass
	Time	50 to 70	58.8	Pass
Peak Occipital Condyle Moment	Nm	-36 to -44	-42.1	Pass
Decaying Moment Time to Cross 0 Nm	msec	102 to 126	114.3	Pass
Overall Test Results			Pass	



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
2.3	0.0	-33.2	0.0



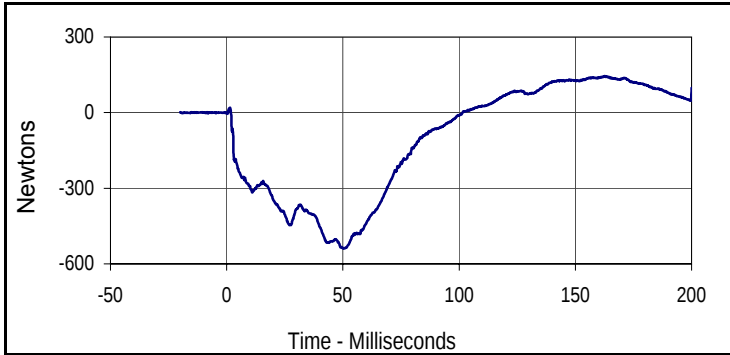
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.9	-6.5	199.9



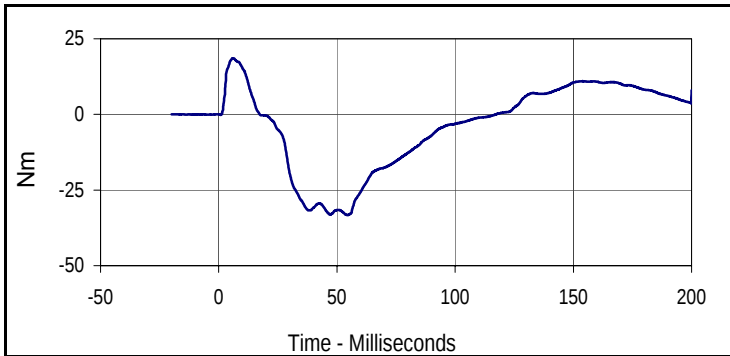
Curve Description			
D-Plane Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degress
Max	Time	Min	Time
77.5	58.8	-31.9	200.0

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

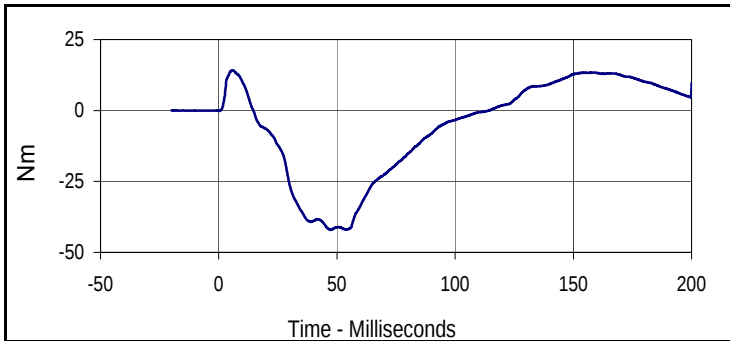
Test Date: 6/26/14
 Test I.D.: 307NB069



Curve Description			
Neck Force Y			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
145.5	162.6	-538.9	50.4



Curve Description			
Neck Moment X			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
18.6	6.3	-33.3	54.6



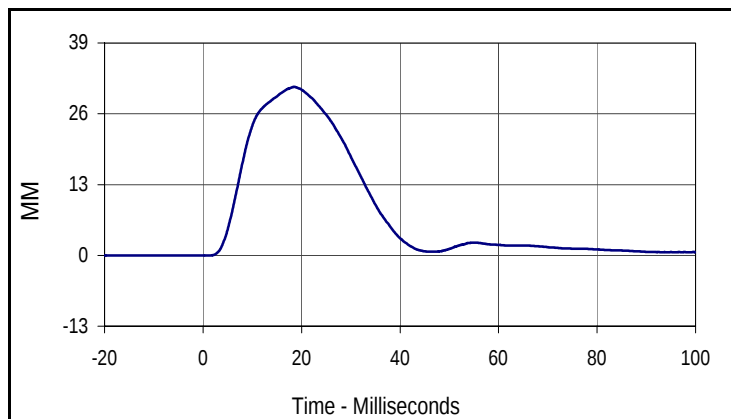
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
006	FIL	600	Nm
Max	Time	Min	Time
14.2	5.7	-42.1	47.2

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

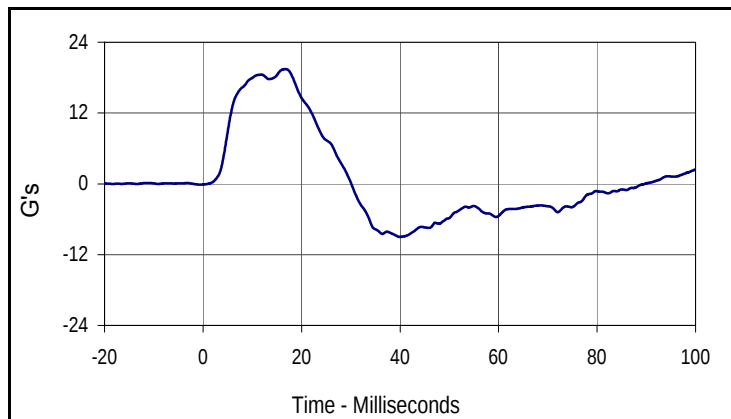
Test Date: 6/26/14
 Test I.D.: 307SH069



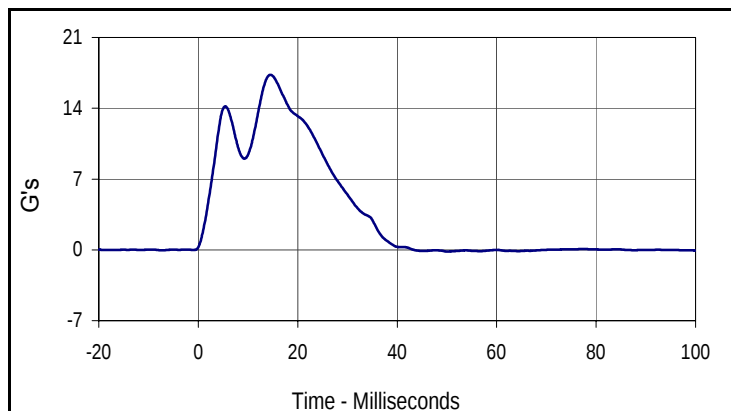
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	426	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.1	Pass
	Min	°C		21.0	Pass
Humidity During Soak	Max	%	10.0 to 70.0	34.7	Pass
	Min	%		33.6	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	34.3	Pass
Impactor Velocity		m/s	4.20 to 4.40	4.32	Pass
Peak Shoulder Deflection		mm	28 to 37	30.9	Pass
Peak Lateral Spine Acceleration Y		G's	17 to 22	19.4	Pass
Peak Impactor Acceleration		G's	13 to 18	17.3	Pass
Overall Test Results					Pass



Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
30.9	18.5	0.0	-5.8



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
19.4	16.7	-9.0	40.0



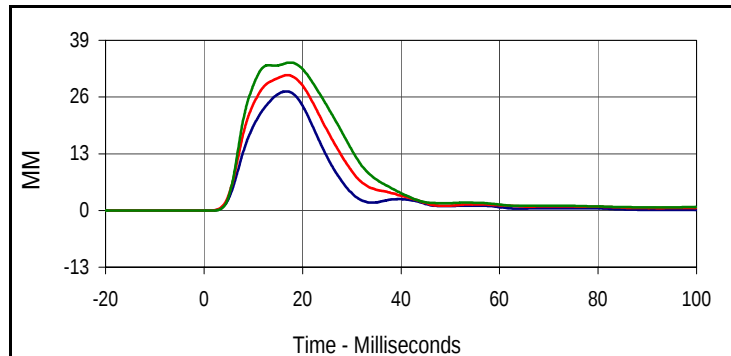
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
17.3	14.5	-0.2	50.1

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

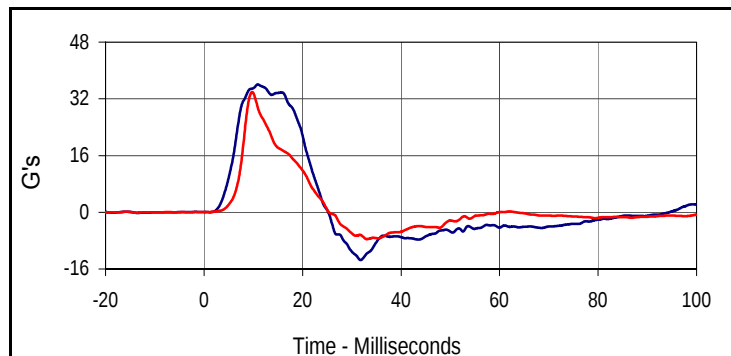
Test Date: 6/26/14
 Test I.D.: 307TWA069



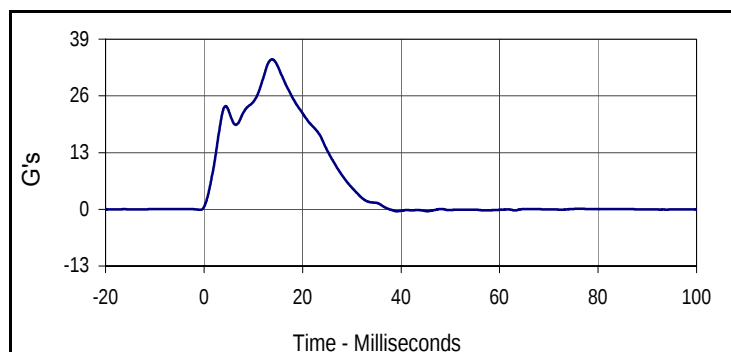
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	471	Pass
Temperature During Soak	Max	20.6 to 22.2	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	34.7	Pass
	Min		33.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	34.0	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.72	Pass
Peak Shoulder Deflection	mm	31 to 40	34.3	Pass
Peak Upper Thorax Rib Deflection	mm	25 to 32	27.3	Pass
Peak Middle Thorax Rib Deflection	mm	30 to 36	31.0	Pass
Peak Lower Thorax Rib Deflection	mm	32 to 38	33.9	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	36.1	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	33.9	Pass
Peak Impactor Acceleration	G's	30 to 36	34.4	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
27.3	16.6	0.0	-2.0
Middle Thorax Deflection			
Max	Time	Min	Time
31.0	17.0	0.0	0.1
Lower Thorax Deflection			
Max	Time	Min	Time
33.9	17.5	0.0	-5.8



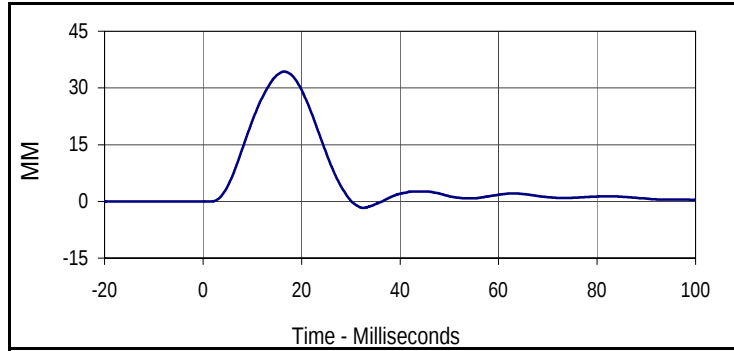
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
36.1	10.9	-13.5	31.8
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
33.9	9.7	-7.6	33.1



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
34.4	13.8	-0.5	39.1

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

Test Date: 6/26/14
 Test I.D.: 307TWA069



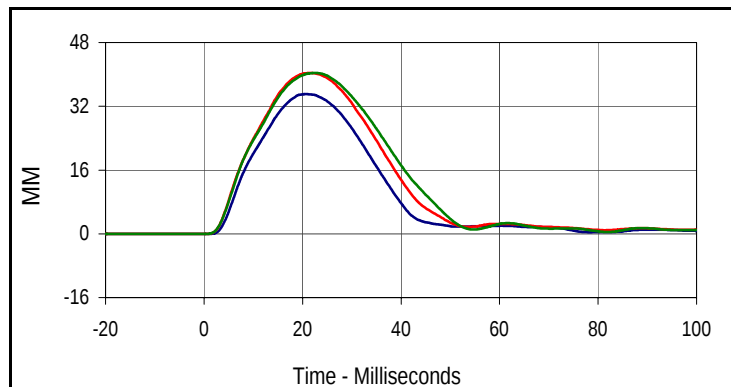
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	MM
Max	Time	Min	Time
34.3	16.5	-1.7	32.5

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

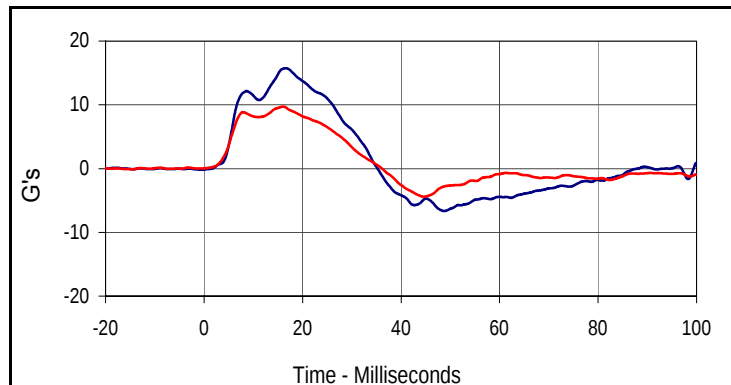
Test Date: 6/26/14
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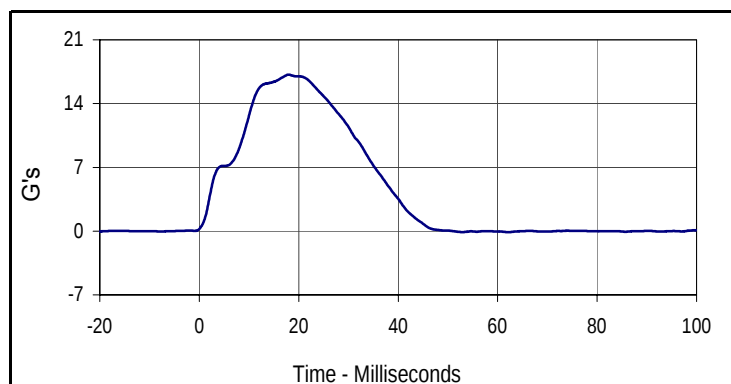
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	521	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.1	Pass
	Min	°C		21.0	Pass
Humidity During Soak	Max	%	10.0 to 70.0	34.7	Pass
	Min	%		33.6	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.0	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	33.9	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.34	Pass
Peak Upper Thorax Rib Deflection		mm	32 to 40	35.1	Pass
Peak Middle Thorax Rib Deflection		mm	39 to 45	40.4	Pass
Peak Lower Thorax Rib Deflection		mm	35 to 43	40.4	Pass
Peak Upper Spine Y Acceleration		G's	13 to 17	15.7	Pass
Peak Lower Spine Y Acceleration		G's	7 to 11	9.7	Pass
Peak Impactor Acceleration		G's	14 to 18	17.2	Pass
Overall Test Results				Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
35.1	20.7	0.0	-9.5
Middle Thorax Deflection			
Max	Time	Min	Time
40.4	21.4	0.0	-9.5
Lower Thorax Deflection			
Max	Time	Min	Time
40.4	22.4	0.0	-15.8



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.7	16.6	-6.6	48.7
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
9.7	16.0	-4.4	44.6



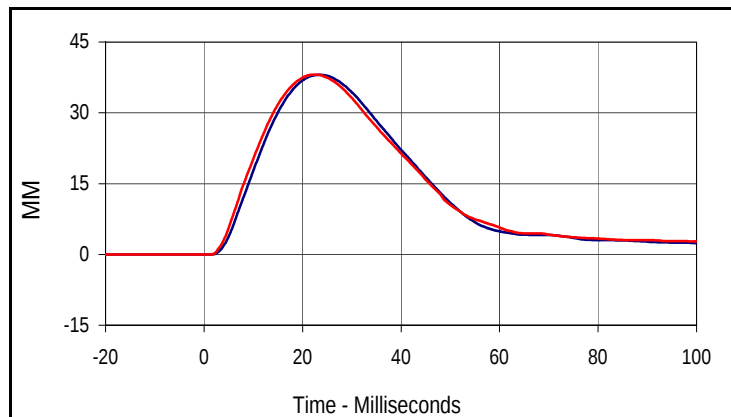
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
17.2	18.0	-0.1	62.2

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

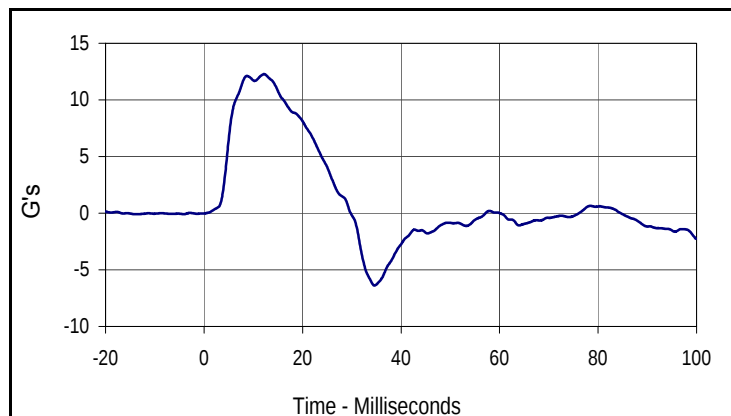
Test Date: 6/26/14
 Test I.D.: 307ABD069



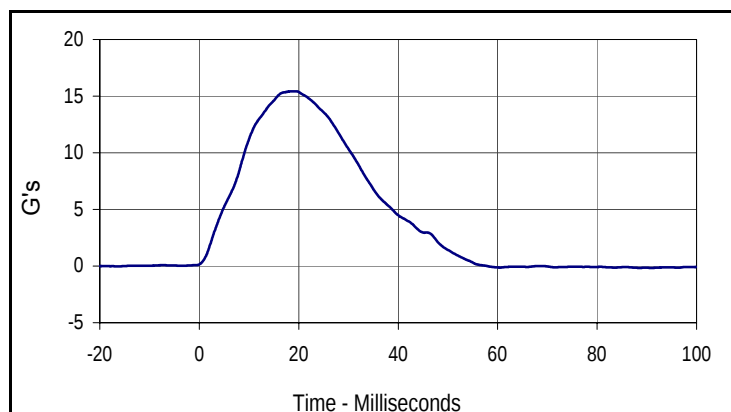
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	556	Pass
Temperature During Soak	Max	20.6 to 22.2	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	34.7	Pass
	Min		33.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	33.8	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.36	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	38.1	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	38.1	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	12.3	Pass
Peak Impactor Acceleration	G's	12 to 16	15.4	Pass
Overall Test Results			Pass	



Curve Description			
Upper Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
38.1	23.5	0.0	-16.8
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
38.1	22.3	0.0	-20.0

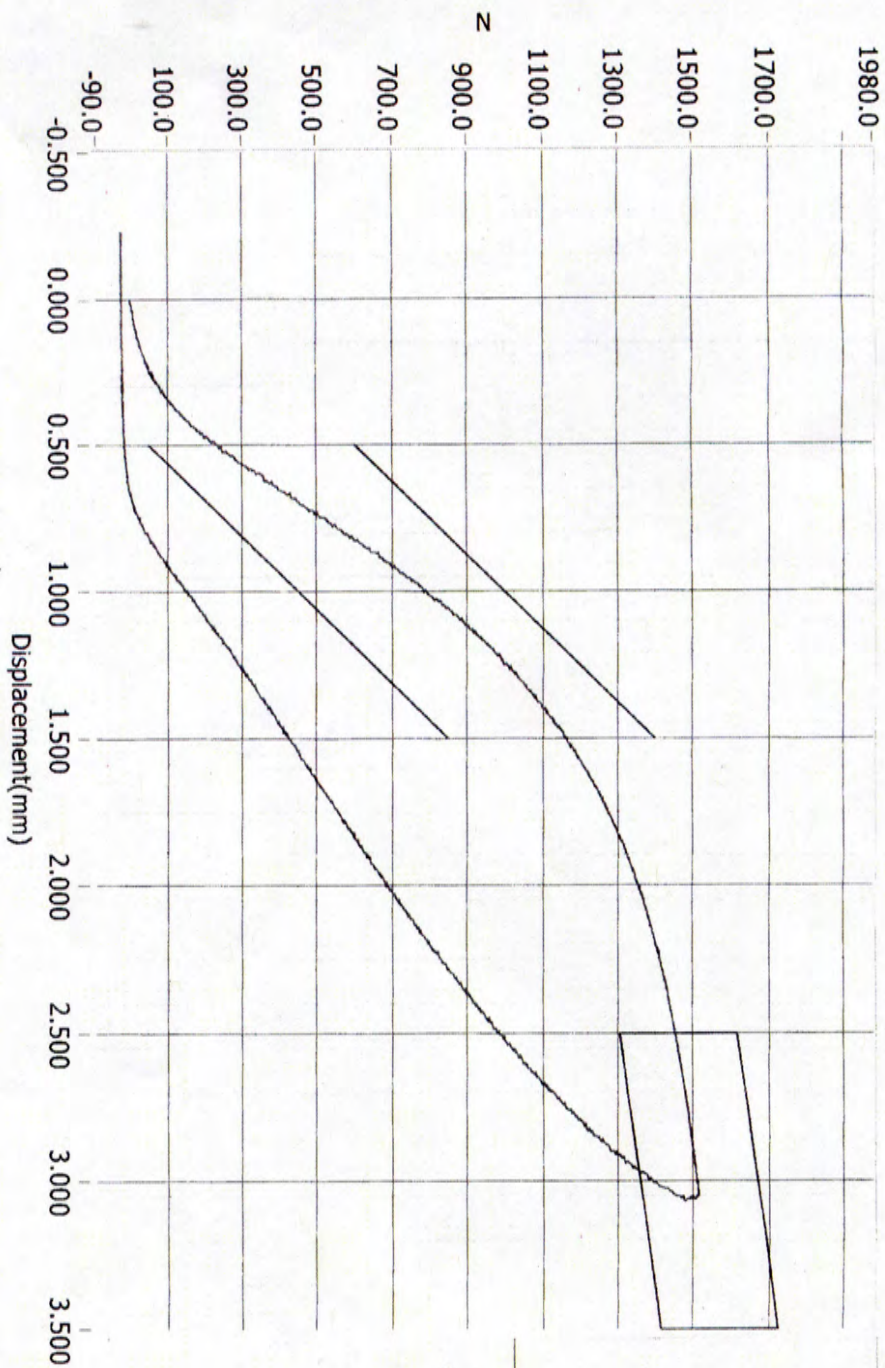


Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
12.3	12.2	-6.4	34.6



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.4	19.4	-0.2	88.5

Resultant Data - SIDIIs Plug Compression



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

1511N

ATD Calibration Lab

Test ID

Part Serial Number

Test Date

Test Time

Cert ID

ATD Serial Number

ATD Type

N/A

SIDIIs

Q20144100 POST TEST

Current Date : 1/18/2013

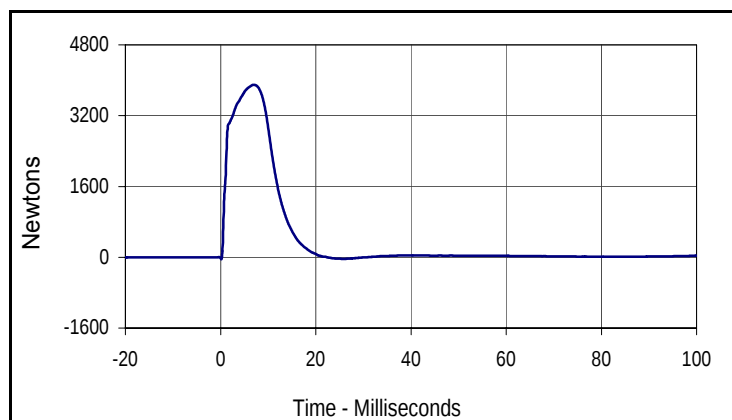
Current Time : 23:34:15

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

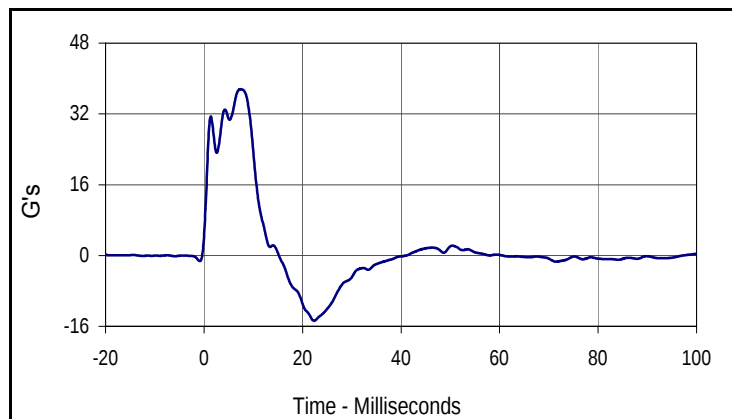
Test Date: 6/26/14
 Test I.D.: 307ACET069



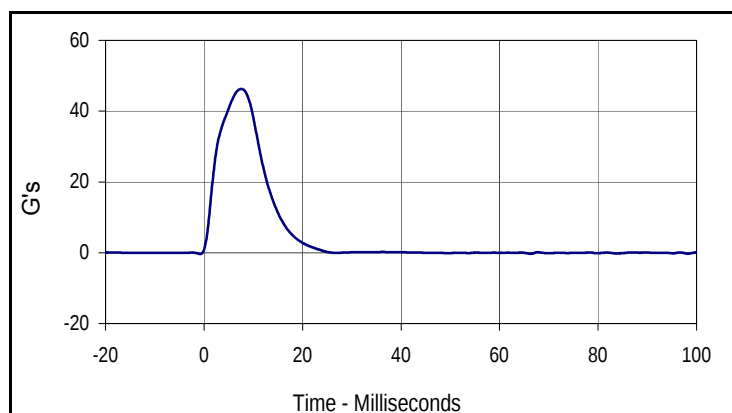
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	601	Pass
Temperature During Soak	Max	20.6 to 22.2	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	34.7	Pass
	Min		33.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	33.7	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.65	Pass
Peak Acetabulum Force Y	Newtons	3600 to 4300	3899.4	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	37.6	Pass
Peak Impactor Acceleration	G's	38 to 47	46.3	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3899.4	6.9	-45.2	0.2



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
37.6	7.4	-14.8	22.3



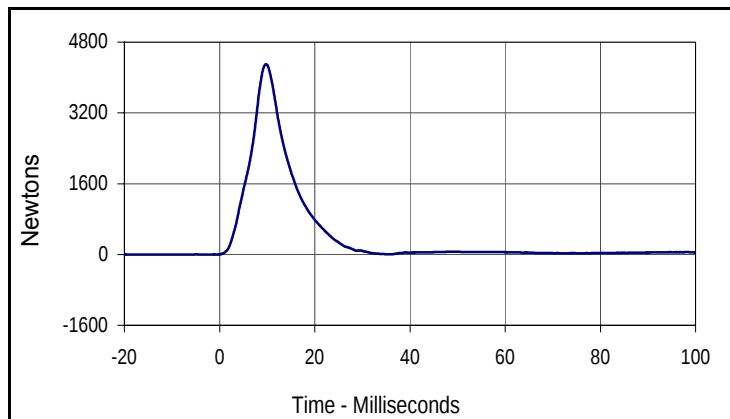
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
46.3	7.6	-0.4	-0.8

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

Test Date: 6/26/14
 Test I.D.: 307PL069



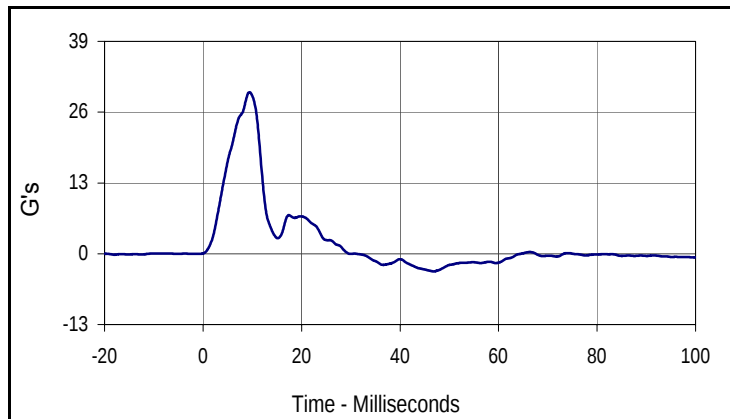
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	671	Pass
Temperature During Soak	Max	20.6 to 22.2	21.1	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	34.7	Pass
	Min		33.6	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	33.6	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.30	Pass
Peak Iliac Force	Newtons	4100 to 5100	4299.8	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	29.7	Pass
Peak Impactor Acceleration	G's	36 to 45	41.2	Pass
Overall Test Results			Pass	



Curve Description

Pelvis Iliac Force

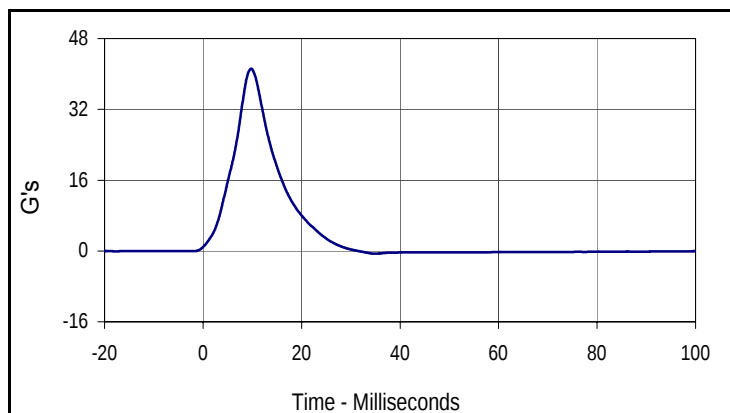
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4299.8	9.8	-2.7	-16.4



Curve Description

Pelvis Y Acceleration

Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
29.7	9.4	-3.2	46.9



Curve Description

Impactor Acceleration

Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
41.2	9.8	-0.6	35.0

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	4/9/14
		Y	P58865	Endevco	4/9/14
		Z	P58867	Endevco	4/9/14
	Redundant	X	P58859	Endevco	4/9/14
		Y	P58866	Endevco	4/9/14
		Z	P58873	Endevco	4/9/14
Thorax Rib Displacement Potentiometers	Upper	Y	209	FTSS	4/10/14
	Middle	Y	210	FTSS	4/10/14
	Lower	Y	207	FTSS	4/10/14
Abdomen Load Cells	Forward	Y	1514	Denton	6/11/14
	Middle	Y	1510	Denton	6/11/14
	Rear	Y	1515	Denton	6/11/14
Lower Spine Accelerometers (T12)		X	P16336	Endevco	4/9/14
		Y	P58876	Endevco	4/10/14
		Z	P58877	Endevco	4/10/14
Pubic Symphysis Load Cell		Y	506	Denton	6/11/14

TABLE 2 – Dummy Instrumentation (SID-IIs)

				SID-IIs S/N 307			
				Serial Number	Manufacturer	Calibration	
Head Accelerometers			Primary	X	P58900	Endevco	2/18/14
				Y	P58902	Endevco	2/18/14
				Z	P58983	Endevco	2/18/14
			Redundant	X	P58901	Endevco	2/18/14
				Y	P58906	Endevco	2/18/14
				Z	P58989	Endevco	2/18/14
Displacement Potentiometers		Thoracic Rib	Upper	Y	1249	FTSS	2/19/14
			Middle	Y	1265	FTSS	2/19/14
			Lower	Y	1277	FTSS	2/19/14
		Abdominal Rib	Upper	Y	1286	FTSS	2/19/14
			Lower	Y	1290	FTSS	2/19/14
Lower Spine Accelerometers (T12)				X	P59007	Endevco	2/19/14
				Y	P59015	Endevco	2/19/14
				Z	P58995	Endevco	2/19/14
Acetabulum Load Cell				Y	277	Denton	6/10/14
Iliac Wing Load Cell				Y	289	Denton	6/10/14
Pelvis Plug (Struck Side)					63053	FTSS	1/19/13
Pelvis Plug (Non-Struck Side)					63395	FTSS	1/28/13

TABLE 3 – Vehicle Instrumentation

Vehicle Instrumentation			Serial Number	Manufacturer	Calibration Date
1	Vehicle Center of Gravity	X	MS22944	MSI	4/19/14
	Vehicle Center of Gravity	Y	MS22886	MSI	4/19/14
	Vehicle Center of Gravity	Z	MS22905	MSI	4/19/14
2	Right Sill at Front Seat	X	A128038	MSI	3/19/14
	Right Sill at Front Seat	Y	A135430	MSI	2/22/14
	Right Sill at Front Seat	Z	A135444	MSI	2/22/14
3	Right Sill at Rear Seat	X	N/A	N/A	N/A
	Right Sill at Rear Seat	Y	N/A	N/A	N/A
	Right Sill at Rear Seat	Z	N/A	N/A	N/A
4	Left Sill at Front Door	Y	A136736	MSI	3/20/14
5	Left Sill at Rear Door	Y	A136707	MSI	3/20/14
6	Left A-Post Lower	Y	A136676	MSI	3/20/14
7	Left A-Post Middle	Y	A136729	MSI	3/20/14
8	Left B-Post Lower	Y	N/A	N/A	N/A
9	Left B-Post Middle	Y	N/A	N/A	N/A
10	Front Seat Track	Y	A136678	MSI	3/20/14
11	Rear Seat Structure	Y	N/A	N/A	N/A
12	Right Rear Occ. Compartment	Y	MS22937	MSI	4/19/14
13	Engine Block	X	A136669	MSI	3/20/14
	Engine Block	Y	A136712	MSI	3/20/14
14	Rear Floorpan Above Axle	X	A134059	MSI	2/22/14
	Rear Floorpan Above Axle	Y	A135442	MSI	2/22/14
	Rear Floorpan Above Axle	Z	A135446	MSI	2/22/14

TABLE 4 – MDB Instrumentation

		Serial Number	Manufacturer	Calibration Date
MDB Center of Gravity	X	A124098	MSI	3/19/14
MDB Center of Gravity	Y	A128039	MSI	3/19/14
MDB Center of Gravity	Z	A124104	MSI	3/20/14
Left Frame at Rear Axle Centerline	X	A128036	MSI	3/19/14
Left Frame at Rear Axle Centerline	Y	A127957	MSI	3/19/14