

REPORT NUMBER: SPNCAP-KAR-14-020

**NEW CAR ASSESSMENT PROGRAM (NCAP)
SIDE IMPACT POLE TEST**

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

NHTSA No: M20144101

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



JUNE 13, 2014

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
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15. Supplementary Notes																														
16. Abstract A 32.2 km/h (20 mph) 75° oblique impact Side NCAP Test was conducted on the subject 2014 Mini Cooper Hardtop 3-door hatchback in accordance with the specifications of the Office of Crashworthiness Standards Side NCAP Pole Laboratory Test Procedure for the generation of consumer information on vehicle side pole crash protection. The test was conducted at the KARCO Engineering, LLC. facility in Adelanto, California on May 30, 2014. The impact velocity was 31.94 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 34.3° C. The target vehicle's maximum post-test static crush was 316 mm located at level 3. The test vehicle's occupant performance data is as follows: <table border="1"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th colspan="3">Driver ATD (SID-IIs)</th> </tr> <tr> <th>Units</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td></td> <td>1000</td> <td>386.2</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td>g</td> <td>82</td> <td>37</td> </tr> <tr> <td>Total Pelvic Force (Sum of Acetabular and Iliac Forces)</td> <td>N</td> <td>5525</td> <td>3945</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>38</td> <td>21</td> </tr> <tr> <td>Maximum Abdominal Rib Deflection</td> <td>mm</td> <td>45</td> <td>19</td> </tr> </tbody> </table> The door on the struck side of the vehicle did not separate from the body at the hinges or latch. The opposite door did not open during the side impact event.				Measurement Description	Driver ATD (SID-IIs)			Units	Threshold	Result	Head Injury Criteria (HIC ₃₆)		1000	386.2	Resultant Lower Spine Acceleration	g	82	37	Total Pelvic Force (Sum of Acetabular and Iliac Forces)	N	5525	3945	Maximum Thoracic Rib Deflection	mm	38	21	Maximum Abdominal Rib Deflection	mm	45	19
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17. Key Words New Car Assessment Program (NCAP) Side Impact Pole Part 572V SID-IIs		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Admin. Technical Information Services Division, NPO-411 1200 New Jersey Ave., SE Washington, DC 20590 e-mail: tis@nhtsa.dot.gov FAX: 202-493-2833																												
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SECTION 1

TEST PURPOSE AND PROCEDURE

This side impact test is part of the MY 2014 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 rigid pole side impact test was conducted on a 2014 Mini Cooper Hardtop 3-door hatchback. The subject vehicle was towed into the rigid pole at an angle of 74.9° and a velocity of 31.94 km/h. The test was conducted by KARCO Engineering, LLC. in Adelanto, California on May 30, 2014. Pre- and post-test photographs of the test vehicle and side impact dummy (SID-IIs) are included in Appendix A of this report.

One Part 572V (SID-IIs) dummy was placed in the driver designated seating position according to instructions specified in the OCWS Side NCAP Pole Laboratory Test Procedure, dated September 2013. Camera locations and other pertinent camera information are included in this report.

The Part 572V (SID-IIs) was instrumented accordingly:

- Primary and Redundant Head CG tri-axial accelerometers
- Thorax upper, middle and lower rib displacement potentiometers
- Abdomen upper and lower rib displacement potentiometers
- Lower spine (12) tri-axial accelerometers
- Iliac load cell
- Acetabulum load cell

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 contains the test equipment and instrumentation calibration data.

Injury readings for the SID-IIs dummy were recorded as follows:

Measurement Description	Units	Passenger ATD (SID-IIs)	
		IARV	Result
Head Injury Criteria (HIC ₃₆)		1000	386.2
Lower Spine (T12) Resultant Acceleration	g	82	37
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3945
Maximum Thoracic Rib Deflection	mm	38*	21
Maximum Abdominal Rib Deflection	mm	45*	19

*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	No	No	
Seat Belt Load Limiter	Yes	No	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. There were no ATD values that exceeded limits.

SECTION 3

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. M20144101
Test Program: NCAP Side Pole Impact Test Test Date: 05/30/14

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. M20144101
 Test Program: NCAP Side Pole Impact Test Test Date: 05/30/14

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	M20144101
Model Year	2014
Make	Mini
Model	Cooper Hardtop
Body Style	3-Door Hatchback
VIN	WMWXM5C59ET932711
Body Color	Blazing Red Metallic
Odometer Reading (km / mi)	19 / 12
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	Yes
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes

Traction Control System (TCS)	Yes
Auto-Leveling System	No
Automatic Door Locks	Yes
Power Window Auto-Reverse	Yes
Other Optional Feature	None
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	No
Driver Load Limiter	Yes
Rear Pass. Load Limiter	No
Other Safety Restraint	No

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

Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Bayerische Motoren Werke AG
Date of Manufacture	Mar-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	A
DSC x 68.04 (kg)				272.2	B
Cargo Weight (RCLW) (kg)				32.8	A-B

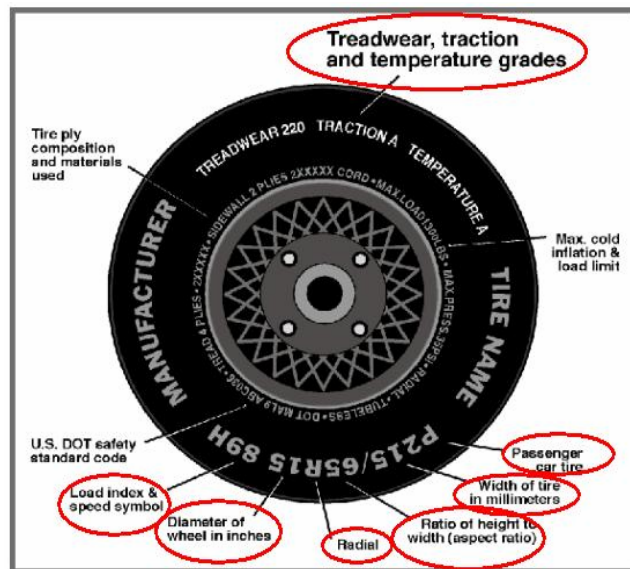
VEHICLE SEAT TYPE

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

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. M20144101
 Test Program: NCAP Side Pole Impact Test Test Date: 05/30/14



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	Hankook	Hankook
Tire Model	Ventus Prime ²	Ventus Prime ²
Treadware	280	280
Traction Grade	A	A
Temperature Grade	A	A
Tire Plies Sidewall	1 Rayon	1 Rayon
Tire Plies Body	2 Steel, 1 Rayon, 1 Nylon	2 Steel, 1 Rayon, 1 Nylon
Load Index/Speed Symbol	87W	87W
Tire Material	Steel, Rayon, Nylon	Steel, Rayon, Nylon
DOT Safety Code Left	2XNY EXH 4713	2XNY EXH 4713
DOT Safety Code Right	2XNY EXH 4713	2XNY EXH 4713

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. M20144101
 Test Program: NCAP Side Pole Impact Test Test Date: 05/30/14

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	255	255	245	255
Tire Placard	kPa	240	240	240	240
Owner's Manual	kPa	240	240	240	240
As Tested	kPa	240	240	240	240

TEST VEHICLE AXLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	401.0	245.5		403.5	267.5		416.0	280.5	
Right	kg	382.5	230.5		392.5	271.0		386.0	257.0	
Ratio	%	62.2%	37.8%	100.0%	59.6%	40.4%	100.0%	59.9%	40.1%	100.0%
Total	kg	783.5	476.0	1259.5	796.0	538.5	1334.5	802.0	537.5	1339.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1259.5	A
Actual Weight of 1 P572 O ATD Used	kg	49.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	32.8	C
Calculated Vehicle Target Wt (TVTW)	kg	1341.3	A+B+C

Does the measured As Tested Vehicle Weight lie within the required weight range (i.e.

Calculated Test Vehicle Target Weight -4.5 kg to -9.0 kg)? ☒ Yes ☐ No

TEST VEHICLE ATTITUDE AND CG

Measurement Description	Units	As Delivered	As Tested	Fully Loaded	Meets Requirement***
Driver Door Sill Angle (front-to-rear)*	°	-1.3	-1.5	-1.6	Yes
Front Passenger Sill Angle (front-to-rear)*	°	-1.4	-1.6	-1.7	Yes
Front Bumper-Line Angle (left-to-right)**	°	0.3	0.3	0.3	Yes
Rear Bumper-Line Angle (left-to-right)**	°	0.1	0.2	0.2	Yes
Vehicle CG (Aft of Front Axle)	mm	940	1004	998	
Vehicle CG (Left (+)/Right (-) from Longitudinal Centerline)	mm	20	4	29	

*ND=Nose Down (-), NU=Nose Up (+) **LD=Left Down (-), LU=Left Up (+)

***The "As Tested" vehicle attitude angle measurements must be within "As Delivered" and the "Fully Loaded" vehicle attitude measurements at each location. 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. M20144101
Test Program: NCAP Side Pole Impact Test Test Date: 05/30/14

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Front Brake Rotors and Calipers	22.0
Front Bumper Cover	8.0
Rear Bumper Cover	2.5
Tail Lights	2.0
Non-Struck Side Outboard Mirror	1.0
Non-Struck Side Rear Window	1.0
Ballast / Equipment Added	66.5

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. M20144101Test Program: NCAP Side Pole Impact Test Test Date: 05/30/14**SEAT POSITIONING**

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

SCRL ANGLE RANGE

Seat	SCRL (°)		
	Max	Min	Mid
Driver Seat	4.8	0.0	2.4
Front Passenger Seat	4.9	0.0	2.5
Front Center Seat			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat			

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	2.4	504	Max	484	494	504
			Mid	484	494	504
			Min	484	494	504
Front Passenger Seat	2.5	503	Max	482	491	503
			Mid	482	491	503
			Min	482	491	503
Front Center Seat			Max			
			Mid			
			Min			
Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Rear Center Seat			Max			
			Mid			
			Min			

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. M20144101
 Test Program: NCAP Side Pole Impact Test Test Date: 05/30/14

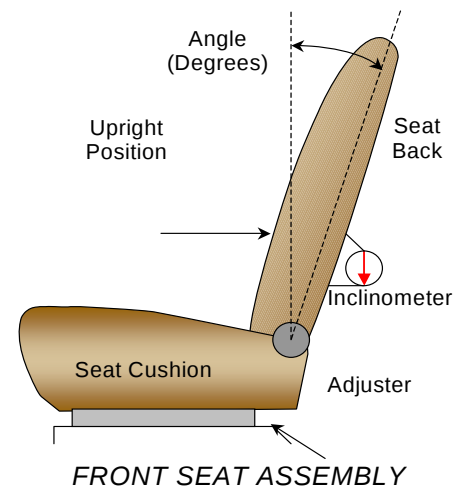
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position From Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	252	26	0	0
Front Passenger Seat	250	26	0	0
Front Center Seat				
Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat				

*Detent zero (0) is the forward most detent

SEAT BACK ADJUSTMENT

The driver's seat back is positioned such that the dummy's head is level. The front center and front passenger's seat backs are positioned in a similar manner to the driver's seat. The struck side rear passenger seat back is positioned in accordance with the information provided by the manufacturer in Form 1 for the 5th percentile female dummy in a Side NCAP MDB Test. The rear center and non-struck side rear passenger's seat back is set to match the struck side rear seat back. Seat back angle is measured at the seat back.



Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degree	Detent*
Driver Seat w/Seated Dummy	52.4	27	11.6	2
Front Passenger Seat	51.1	29	11.6	2
Front Center Seat				
Struck Side Rear Seat w/Seated Dummy	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat				

*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. M20144101

Test Program: NCAP Side Pole Impact Test Test Date: 05/30/14

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

HEAD RESTRAINT ADJUSTMENT

The driver'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 Down

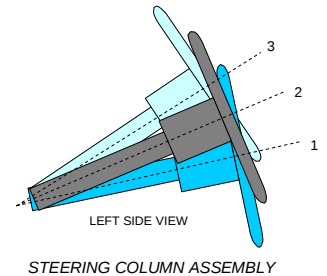
DATA SHEET NO. 2 ... (CONTINUED)

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

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. M20144101
Test Program: NCAP Side Pole Impact Test Test Date: 05/30/14

STEERING COLUMN ADJUSTMENT

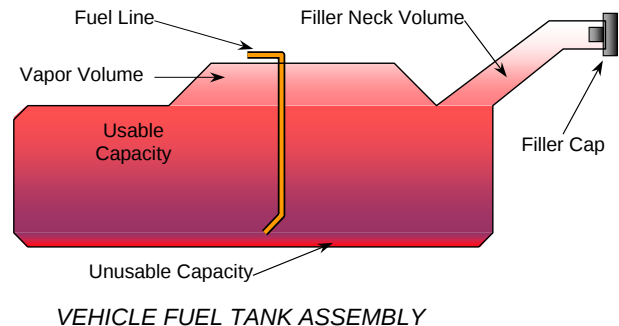
Steering wheel and column adjustments are made so that the steering wheel hub is at the center of the geometric locus it describes when it moves through its full range of motion.



	Degrees	Fore-Aft Position (mm)
Lowermost - Position 1	18.4	79
Geometric Center - Position 2	20.8	109
Uppermost - Position 3	23.2	139
Telescoping Steering Wheel Travel		60
Test Position	20.8	109

FUEL PUMP

The vehicle is equipped with an electric fuel pump. The fuel pump starts when the ignition is on and operates for 5 seconds. After pressure has been built up the fuel pump switches to sleep mode until the engine is started or the pressure decreases.



FUEL TANK CAPACITY

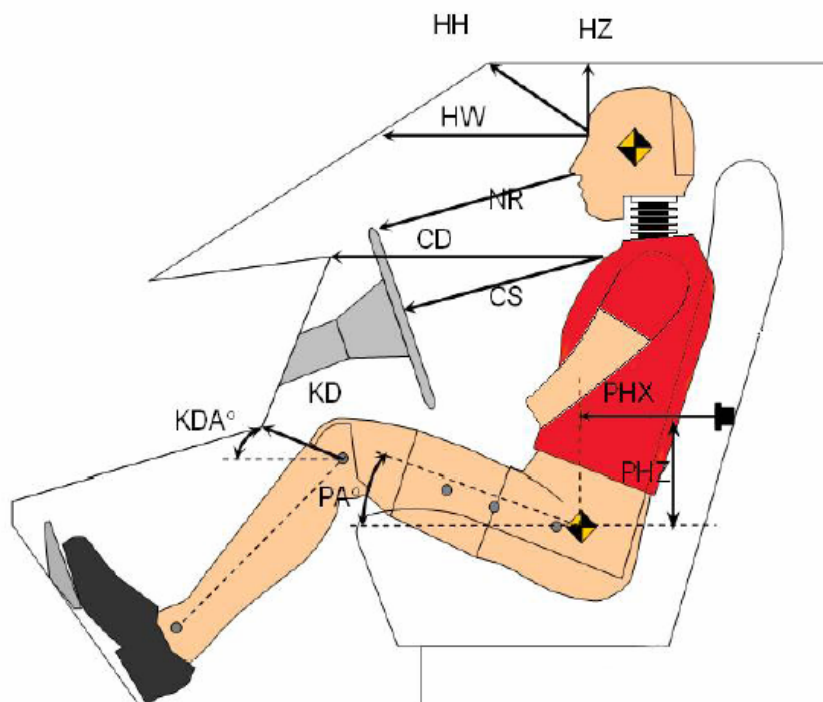
Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	40.12
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of "Standard Tank" (see Owner's Manual)	
Usable Capacity of "Optional Tank" (see Owner's Manual)	
93% of Usable Capacity	37.32
Actual amount of Solvent Used 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. M20144101
 Test Program: NCAP Side Pole Impact Test Test Date: 05/30/14



Driver Code	Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	492	
HW	Head to Windshield	725	
HZ	Head to Roof	278	
NR	Nose to Rim	247	
CD	Chest to Dash	440	
CS	Chest to Steering Wheel	177	
KD(L)/KDA(L)°	Left Knee to Dash	169	42.9
KD(R)/KDA(R)°	Right Knee to Dash	155	48.7
PAX°	Pelvic Tilt Angle (x-axis)		19.9
PAY°	Pelvic Tilt Angle (y-axis)		0.1
PHX	Hip Point to Striker (x-axis)	457	
PHZ	Hip Point to Striker (z-axis)	212	

DATA SHEET NO. 4

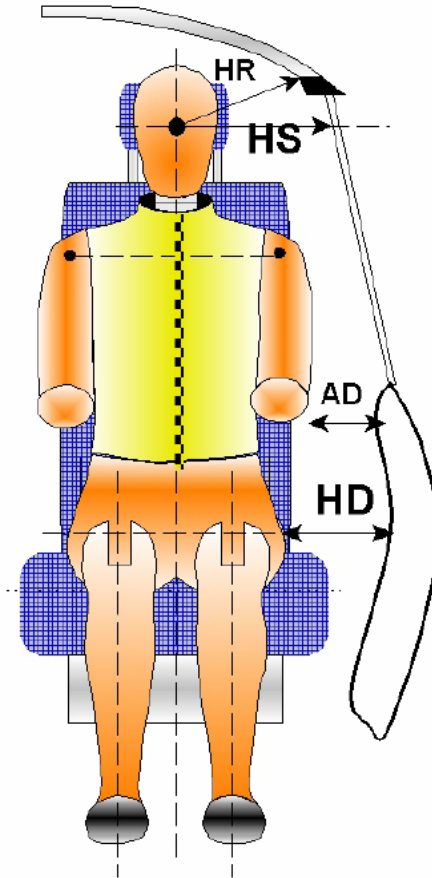
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback

NHTSA No. M20144101

Test Program: NCAP Side Pole Impact Test

Test Date: 05/30/14

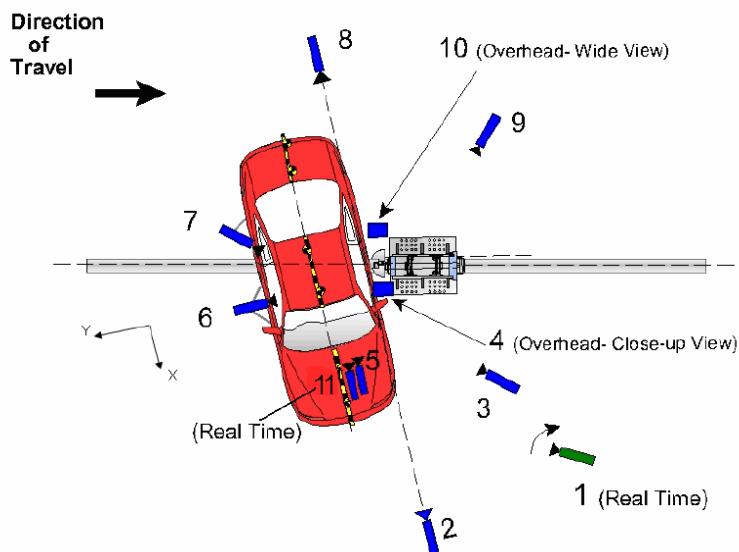


Code	Measurement Description	Units	Driver
HR	Head to Side Header	mm	288
HS	Head to Side Window	mm	275
AD	Arm to Door	mm	158
HD	Hip Point to Door	mm	182

DATA SHEET NO. 5

CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. M20144101
 Test Program: NCAP Side Pole Impact Test Test Date: 05/30/14



Reference from Point of Impact for X and Y; from Ground for Z):
 +X = Forward of Vehicle, +Y = Right of Vehicle, +Z = Down

Camera No.	View	Coordinates (m)			Lens (mm)	Film Speed (fps)
		X*	Y*	Z*		
1	Real Time Pan View of Impact	8.89	46.57	-3.04		30
2	Front Ground Level - Impact View	8.34	-0.05	-0.93	24	1000
3	Impact Side 45° - Forward Pole View	4.10	-2.15	-1.15	8.5	1000
4	Overhead Close-Up View of Impact	0.00	0.00	-5.79	12.5	1000
5	On-Board - Dummy Front View	1.60	1.81	-1.32	35	1000
6	On-Board - Dummy Side View	-0.23	2.89	-1.17	14	1000
7	On-Board - Dummy Rear Oblique View	-0.98	2.84	-1.18	20	1000
8	Rear Ground Level - Impact View	-6.12	-6.23	-0.96	24	1000
9	Impact Side 45° - Rearward Pole View	-8.02	0.04	-1.01	35	1000
10	Overhead Wide View of Impact	-0.06	0.22	-5.79	14	1000
11	Real Time Dummy Front View	1.61	1.88	-1.30		30

*All measurements accurate to ± 6 mm

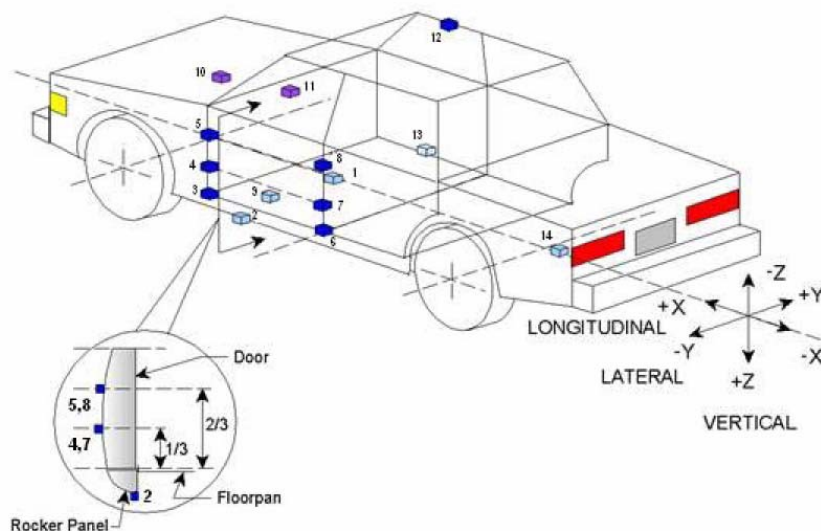
INSTRUMENTATION

Driver Dummy Channels	16
Vehicle Structure Accelerometers	15
Pole Load Cells	8
Total	39

DATA SHEET NO. 6

TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. M20144101
 Test Program: NCAP Side Pole Impact Test Test Date: 05/30/14



Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	1556	160	-229
2	Left Floor Sill	2362	-670	-175
3	A-Pillar Sill	2585	-782	-405
4	A-Pillar Low	2585	-782	-543
5	A-Pillar Mid	2585	-782	-740
6	B-Pillar Sill			
7	B-Pillar Low			
8	B-Pillar Mid			
9	Driver Seat Track	1872	-167	-265
10	Engine Top	3391	331	-631
11	Firewall	2840	289	-762
12	Right Roof	1596	427	-1420
13	Right Floor Sill	1558	-687	-376
14	Rear Floorpan	832	0	-554

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

DATA SHEET NO. 7

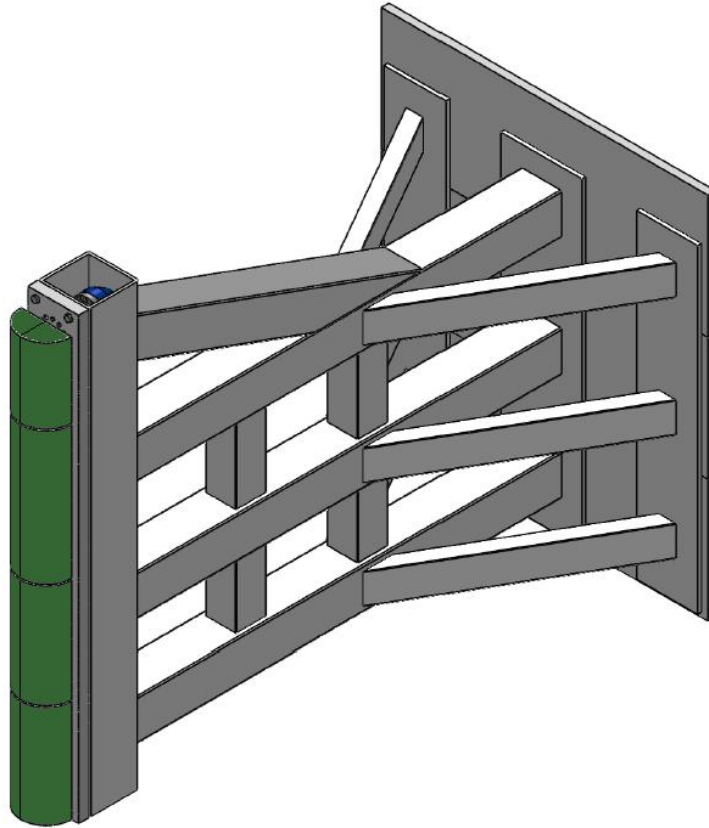
RIGID POLE LOAD CELL DATA

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback

NHTSA No. M20144101

Test Program: NCAP Side Pole Impact Test

Test Date: 05/30/14



ID	Units	Height From Ground
1	mm	87
2	mm	468
3	mm	648
4	mm	978
5	mm	1168
6	mm	1651
7	mm	1816
8	mm	2057

DATA SHEET NO. 8

POST-TEST OBSERVATIONS

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. M20144101
 Test Program: NCAP Side Pole Impact Test Test Date: 05/30/14

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Driver SID-IIs Dummy
Face	Curtain Airbag
Top of Head	Curtain Airbag, Headrest
Left Side of Head	Curtain Airbag, Headrest
Back of Head	Headrest, Seat Back
Left Shoulder	Seat, Torso Airbag, Door Panel
Upper Torso	Seat
Lower Torso	Seat
Left Hip	Seat, Torso Airbag
Left Knee	Door Panel, Right Knee

POST-TEST DOOR PERFORMANCE

Description	Struck Side		Non-Struck Side		Rear Hatch/Other Door
	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

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	Yes	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 occurred
Sill Separation	No separation occurred
Windshield Damage	None
Side Window Damage	Left front window broken
Other Notable Effects	Driver seat back lever was actuated during the impact, allowing the seat back to recline from its initial position

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

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. M20144101
Test Program: NCAP Side Pole Impact Test Test Date: 05/30/14

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	No	No	
Seat Belt Load Limiter	Yes	No	No	
Other	No		No	

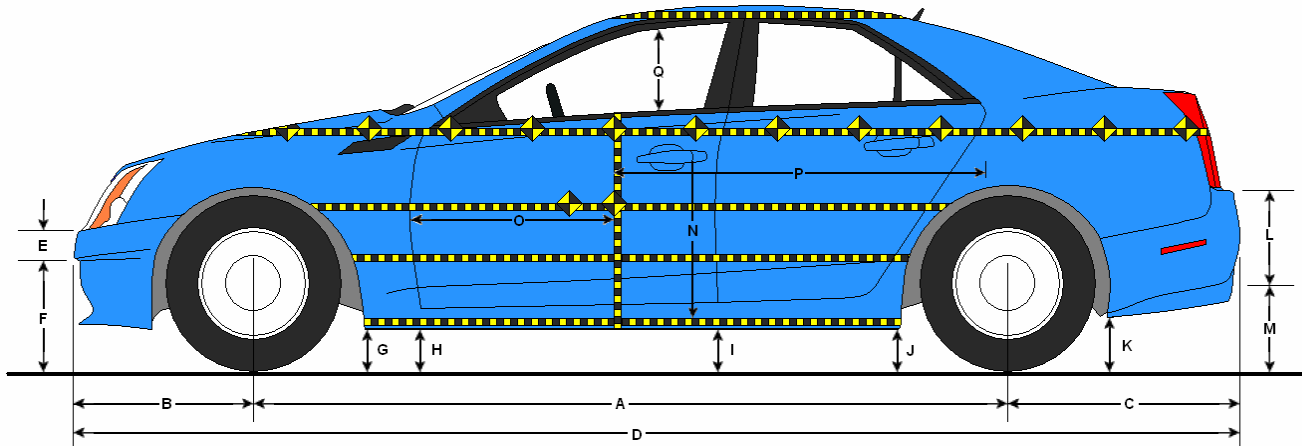
IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point)	mm		1178
Actual Impact Point (Aft of Front Axle)	mm		1181
Horizontal Offset (+ forward / - rearward)	mm	± 38 of Intended Impact Point	-3
Angle Between Vehicle's Longitudinal Centerline and Line of Forward Motion	°	75 ± 3	74.9
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	31.94
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	31.94

DATA SHEET NO. 9

TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. M20144101
 Test Program: NCAP Side Pole Impact Test Test Date: 05/30/14



LEFT SIDE VIEW

All measurements in mm with tolerance of ± 3 mm

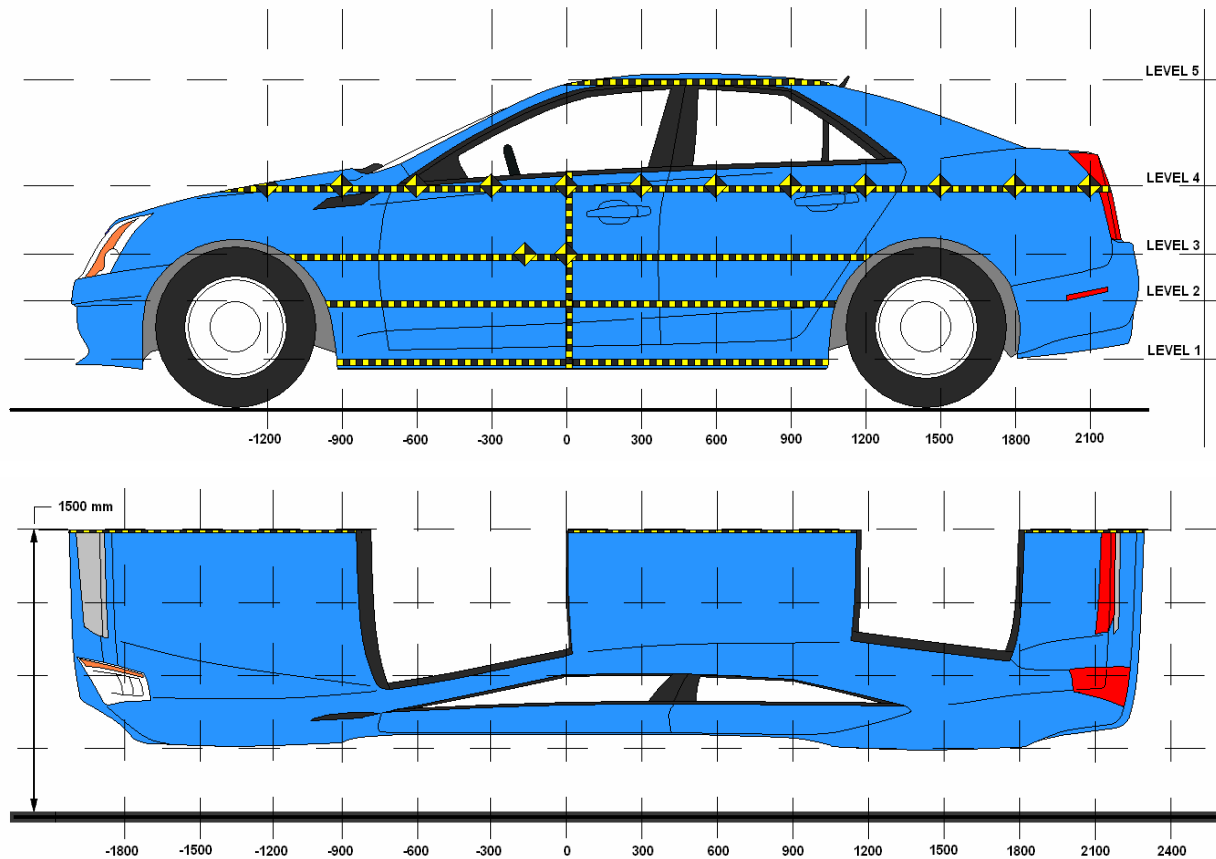
VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2487	2441	-46
B	Front Axle to FSOV	745	740	-5
C	Rear Axle to RSOV	570	598	28
D	Total Length at Centerline	3794	3780	-14
E	Front Bumper Thickness	101	101	0
F	Front Bumper Bottom to Ground	439	462	23
G	Sill Height at Front Wheel Well	175	184	9
H	Sill Height at Front Door Leading Edge	173	178	5
I	Sill Height at B-Pillar	199	209	10
J1	Sill Height at Rear Wheel Well	208	223	15
J2	Pinch Weld Height at Rear Wheel Well	181	190	9
K	Sill Height Aft of Rear Wheel Well	443	434	-9
L	Rear Bumper Thickness	91	90	-1
M	Rear Bumper Bottom to Ground	447	435	-12
N	Sill Height to Bottom of Front Window Sill	607	643	36
O	Front Door Leading Edge to Impact CL	584	600	16
P	Rear Door Trailing Edge to Impact CL	2379	-211	-2590
Q	Front Window Opening	370	354	-16
R	Right Side Length	3071	3079	8
S	Left Side Length	3069	3000	-69
T	Vehicle Width at B-Pillar	1691	1664	-27

DATA SHEET NO. 10

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. M20144101
 Test Program: NCAP Side Pole Impact Test Test Date: 05/30/14



NOTE: All measurements in mm with tolerance of ± 3 mm

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	222	264	0
2	Occupant H-Point	532	302	0
3	Mid-Door	659	316	0
4	Window Sill	892	280	0
5	Window Top	1370	95	0

DATA SHEET NO. 10 ... (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. M20144101
 Test Program: NCAP Side Pole Impact Test Test Date: 05/30/14

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		653	653	746			678	678	763			25	25	17	
-750	696	661	659	732		725	694	690	763		29	33	31	31	
-600	698	665	659	720		759	718	711	755		61	53	52	35	
-450	696	667	659	694		789	769	771	769		93	102	112	75	
-300	694	666	657	706		826	835	833	840		132	169	176	134	
-150	692	666	656	702	957	879	898	900	905	1018	187	232	244	203	61
0	690	666	656	697	950	954	968	972	977	1045	264	302	316	280	95
150	689	667	655	694	947	891	930	946	947	1042	202	263	291	253	95
300	688	668	656	692	945	800	869	852	856	1017	112	201	196	164	72
450	689	669	656	690	946	755	783	772	779	1001	66	114	116	89	55
600	691	669	658	692	947	732	725	714	743	991	41	56	56	51	44
750	691	667	657	693	950	718	703	707	739	985	27	36	50	46	35
900	690	661	655	696	956	702	689	690	735	983	12	28	35	39	27
1050			650	702	967			672	733	990			22	31	23
1200			648	707	990			667	731	1009			19	24	19
1350				719					737					18	
1500				741					751					10	
1650															
1800															
1950															
2100															
2250															
2400															
2550															
2700															
2850															

DATA SHEET NO. 10 ... (CONTINUED)

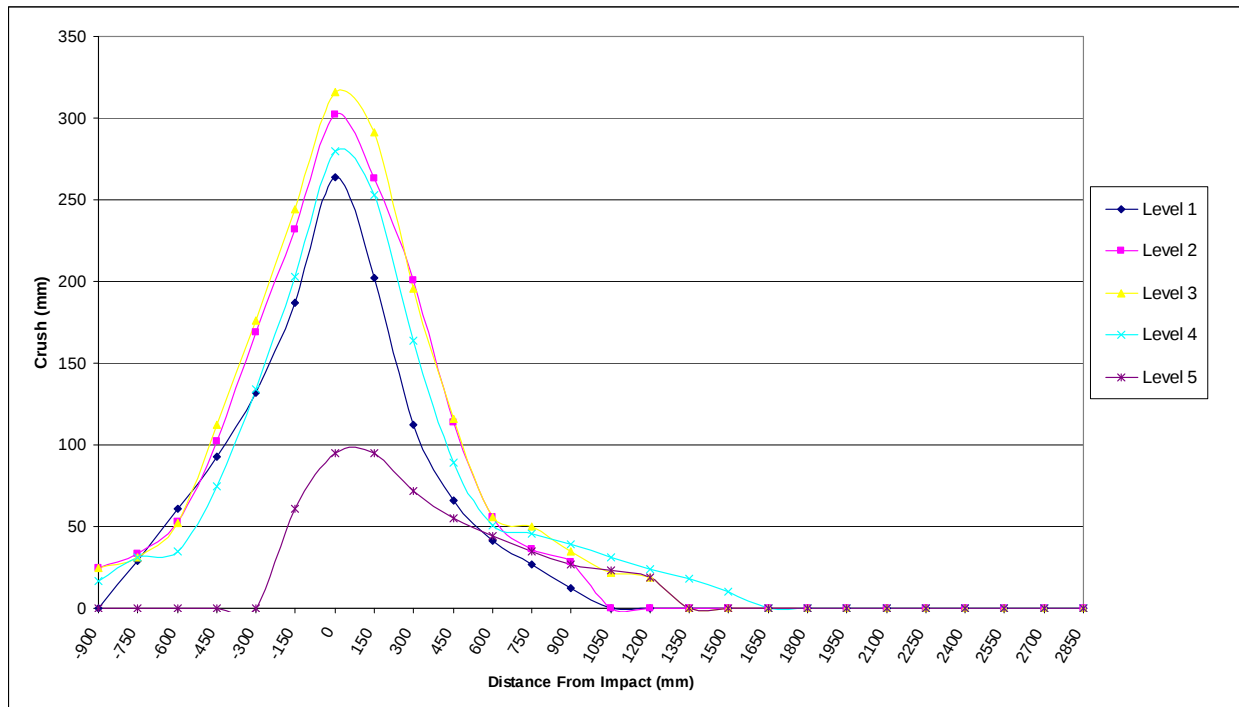
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback

NHTSA No. M20144101

Test Program: NCAP Side Pole Impact Test

Test Date: 05/30/14

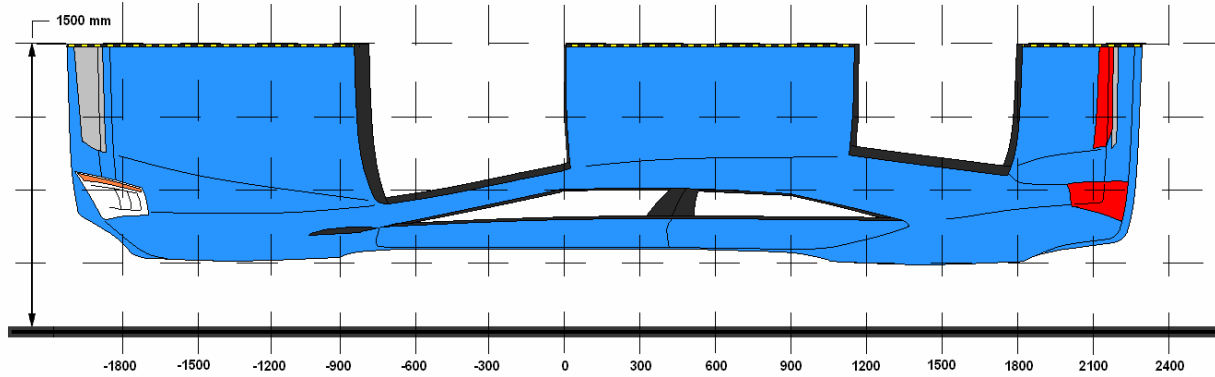


DATA SHEET NO. 11

VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. M20144101

Test Program: NCAP Side Pole Impact Test Test Date: 05/30/14



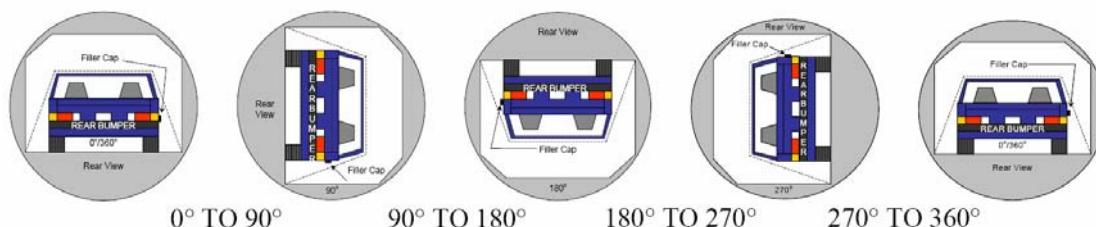
DPD	Distance From Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Crush (mm)
1	1500	4	741	751	10
2	1050	4	702	733	31
3	600	3	658	714	56
4	0	3	656	972	316
5	-450	3	659	771	112
6	-900	3	653	678	25

DATA SHEET NO. 12

FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback NHTSA No. M20144101
 Test Program: NCAP Side Pole Impact Test Test Date: 05/30/14
 Temperature at Time of Impact: 34.3° C Test Time: 11:53 AM

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



SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	84	300	384
90° To 180°	83	300	383
180° To 270°	78	300	378
270° To 360°	83	300	383

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°	No Spillage Occurred
90° To 180°	No Spillage Occurred
180° To 270°	No Spillage Occurred
270° To 360°	No Spillage Occurred

DATA SHEET NO. 13

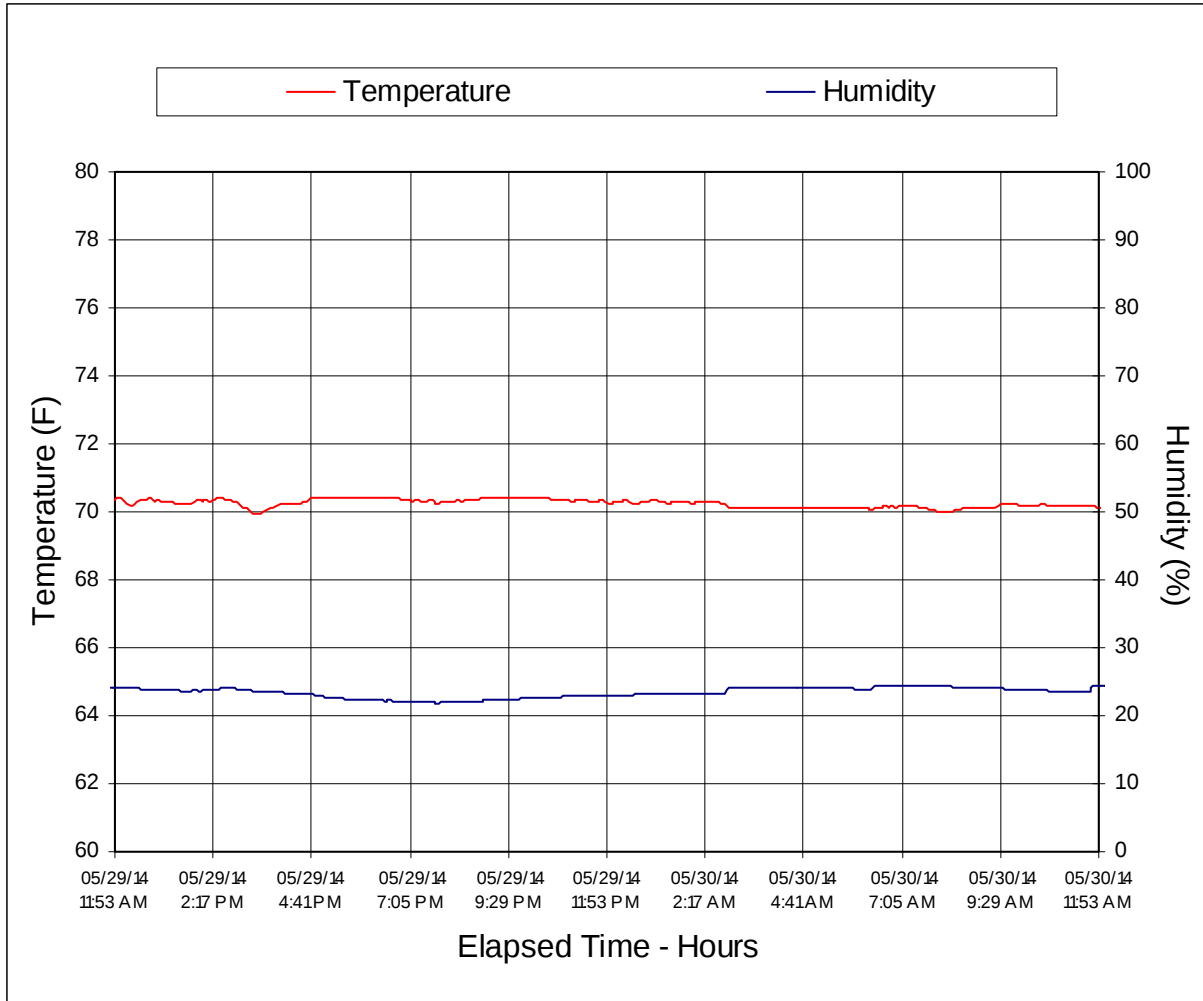
DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION

Test Vehicle: 2014 Mini Cooper Hardtop 3-Door Hatchback

NHTSA No. M20144101

Test Program: NCAP Side Pole Impact Test

Test Date: 05/30/14



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 Pole
Positioned Against Side of Vehicle



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



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



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



FIGURE 21. Pre-Test Front Close-Up View of Dummy Head and Chest



FIGURE 22. Post-Test Front Close-Up View of Dummy



FIGURE 23. Pre-Test Left Side View of Dummy
Showing Belt and Chalking



FIGURE 24. Pre-Test Left Side View of Dummy Shoulder and Door Top View



FIGURE 25. Post-Test Left Side View of Dummy Shoulder and Door Top View



FIGURE 26. Pre-Test Frontal View of Seat Back Prior to Dummy Positioning



FIGURE 27. Pre-Test Frontal Close-Up View of
Dummy Head and Shoulders in Relation to Head Restraint



FIGURE 28. Pre-Test Overhead View of Seat Pan Prior to Dummy Positioning



FIGURE 29. Pre-Test Overhead View of Dummy Thighs on Seat Pan



FIGURE 30. Pre-Test Left Side View of Dummy's Neck
Showing Position of Adjustable Neck Bracket



FIGURE 31. Pre-Test Left Side View of Dummy's Head Showing Head is Level



FIGURE 32. Pre-Test Placement of Dummy's Feet



FIGURE 33. Pre-Test View of Belt Anchorage for Dummy



FIGURE 34. Pre-Test Left Side View of Steering Wheel



FIGURE 35. View of Disengaged Parking Brake



FIGURE 36. Pre-Test View of Parking Brake



FIGURE 37. Pre-Test Close-Up Left Side View of Driver Seat Track



FIGURE 38. Pre-Test Close-Up Left Side View of Driver Seat Back



FIGURE 39. Pre-Test Close-Up View of Driver Seat Back or Head Restraint



FIGURE 40. Pre-Test Dummy and Door Clearance View



FIGURE 41. Post-Test Dummy and Door Clearance View



FIGURE 42. Pre-Test Right Side View of Dummy and Front Seat of Occupant Compartment



FIGURE 43. Post-Test Right Side View of Dummy and Front Seat of Occupant Compartment



FIGURE 44. Pre-Test Inner Door Panel View



FIGURE 45. Post-Test Inner Door Panel View
Showing Dummy Contact Locations



FIGURE 46. Post-Test Dummy Close-Up Head Contact with Vehicle Interior View



FIGURE 47. Post-Test Dummy Close-Up Head Contact With Side Airbag View



FIGURE 48. Post-Test Dummy Close-Up Torso Contact With Vehicle Interior View



FIGURE 49. Post-Test Dummy Close-Up Torso Contact With Side Airbag View



FIGURE 50. Post-Test Dummy Close-Up Pelvis Contact With Vehicle Interior View



FIGURE 51. Post-Test Dummy Close-Up Pelvis Contact With Side Airbag View



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



FIGURE 53. Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



FIGURE 54. Post-Test View of Fuel Filler Cap or Fuel Filler Neck



FIGURE 55. Close-Up View of Vehicle's Certification Label



FIGURE 56. Close-Up View of Vehicle's Tire Information Placard or Label



FIGURE 57. Pre-Test Pole Barrier Front View



FIGURE 58. Post-Test Pole Barrier Front View



FIGURE 59. Pre-Test Pole Barrier Side View



FIGURE 60. Post-Test Pole Barrier Side View



FIGURE 61. Pre-Test Ballast View



FIGURE 62. Post-Test Primary and Redundant Speed Trap Read-Out



FIGURE 63. FMVSS No. 301 Static Rollover 0 Degrees



FIGURE 64. FMVSS No. 301 Static Rollover 90 Degrees



FIGURE 65. FMVSS No. 301 Static Rollover 180 Degrees



FIGURE 66. FMVSS No. 301 Static Rollover 270 Degrees



FIGURE 67. FMVSS No. 301 Static Rollover 360 Degrees



FIGURE 68. Impact Event

LET'S MOTOR®

2014 MINI Cooper Hardtop

Manufacturer's Suggested Retail Price	\$ 19,950.00
Options and Additional Charges	\$ 5,400.00
Total Suggested Retail Price	\$ 25,350.00

STANDARD FEATURES

- 1.5-liter MINI TwinPower Turbo 3-cylinder engine
- 134 hp and 162 lb-ft torque
- 6-speed Getrag manual transmission with rev matching
- MINI Driving Modes - Sport, Mild, Green
- Dynamic Stability Control (DSC) incl. ESC + EDC
- Dynamic Cruise Control
- MacPherson strut front/multi-link rear suspension
- 15" alloy wheels
- Front + rear 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

On-board computer

- Bluetooth and USB/iPod interface
- Interactive LED Ring
- Audio system with AM/FM HD Radio, 4 speakers, pre-amp, and auxiliary input
- 8 Airbags including side curtain and knee airbags
- ISOFIX (LATCH) Child Seat Restraint System
- Tire-Pressure Monitor
- Spare wheel
- Daytime lights
- 4 Year/50,000 mile Limited Warranty
- 12 Year/Rust Perforation Limited Warranty
- 4 Year/Unlimited Mileage Roadside Assistance Program

PARTS CONTENT INFORMATION

For Vehicles in this Car Line:

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

GOVERNMENT 5-STAR SAFETY RATINGS

Overall Vehicle Score Not Rated

Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight.

Crash	Driver	Passenger
Frontal	Not Rated	Not Rated
Side	Not Rated	Not Rated
Rollover	Not Rated	Not Rated

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

This vehicle is equipped with bumpers that can withstand an impact of 2.5 miles per hour with no damage to the vehicle's body and safety system, without the bumper and related components being subject to damage. The bumper system on this vehicle conforms to the current federal bumper standard of 2.5 miles per hour.

BOOT TO BONNET NO COST MAINTENANCE

\$0 Maintenance Program:

For the first 3 years or 36,000 miles, whichever comes first on all factory-recommended services

Your Maintenance Costs:

Engine Oil Services:	\$0
Brake Pads:	\$0
Brake Disks:	\$0
Brake Fluid:	\$0
Wiper Blade Inserts:	\$0

EPA DOT Fuel Economy and Environment

Gasoline Vehicle

Fuel Economy

Subcompact Car range from 14 to 112 MPG

The best vehicle rates 31 MPG.

You Save \$3,250 more in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost \$1,650

Fuel Economy & Greenhouse Gas Rating (EPA only): Producing and distributing this vehicle emits 208 grams CO₂ per mile. The best emits 10 grams per mile (EPA only). Producing and distributing this vehicle emits 208 grams CO₂ per mile. The best emits 10 grams per mile (EPA only). Producing and distributing this vehicle emits 208 grams CO₂ per mile. The best emits 10 grams per mile (EPA only).

Smog Rating (EPA only): Producing and distributing this vehicle emits 208 grams CO₂ per mile. The best emits 10 grams per mile (EPA only). Producing and distributing this vehicle emits 208 grams CO₂ per mile. The best emits 10 grams per mile (EPA only).

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average driver gets 23 MPG and cost \$1,588 to fuel over 5 years. CO₂ emissions are based on 15,000 miles per year at 55 mph. EPA's is miles per gallon (mpg) converted. Vehicle emissions are a significant cause of climate change and smog.

fuelconomy.gov

Calculate personalized estimates and compare vehicles

MINI Division of BMW of North America, LLC

Woodcliff Lake, NJ 07677

VPC Location: OXNARD, CALIFORNIA

Port of Entry: HUNTERVILLE, CALIFORNIA

Carrier: WAGGONERS TRUCKING

Sold To: Cremer MINI

1455 Auto Mall Drive

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(714) 560-9525

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Ship To: Cremer MINI

1455 Auto Mall Drive

Santa Ana, CA

(714) 560-9525

92705-4733

FIGURE 69. Monroney Label

ADJUSTING CONTROLS

FRONT HEAD RESTRAINTS

Correctly adjusted head restraint reduces the risk of injury to cervical vertebrae in the event of an accident.

Adjusting the head restraint

Correctly adjust the head restraints of all occupied seats; otherwise, there is an increased risk of injury in an accident.

Height

Adjust the head restraint so that its center is approximately at ear level.

Distance

Adjust the distance so that the head restraint is as close as possible to the back of the head. If necessary, adjust the distance by adjusting the tilt of the backrest.

Adjusting the height

Correctly adjusted head restraint

A correctly adjusted head restraint 1. indicates the correct height and distance to the head of an occupant.

Removing

Only remove the head restraint if no one will be sitting in the seat in question.

ADJUSTING CONTROLS

REAR HEAD RESTRAINTS

Correctly adjusted head restraint

A correctly adjusted head restraint 1. indicates the correct height and distance to the head of an occupant.

Removing

Only remove the head restraint if no one will be sitting in the seat in question.

ADJUSTING CONTROLS

MIRRORS

Adjusting the height

Adjust the head restraint so that its center is approximately at ear level.

Distance

Adjust the distance so that the head restraint is as close as possible to the back of the head. If necessary, adjust the distance by adjusting the tilt of the backrest.

Adjusting the height

Correctly adjusted head restraint

A correctly adjusted head restraint 1. indicates the correct height and distance to the head of an occupant.

Removing

Only remove the head restraint if no one will be sitting in the seat in question.

ADJUSTING CONTROLS

SAFETY BELTS

Intensive, the belt can be damaged and the restraining effect reduced.

Wearing the belt

Make sure you hear the latch plate engage in the belt buckle.

Unbuckling the belt

Hold the belt firmly.

Press the red button in the belt buckle.

Slide the belt back into its rest.

Safety belt reminder for driver's seat and front passenger seat

The indicator lamp lights up and a signal sounds. Make sure that the safety belts are positioned correctly. The signal bell reminder is active at speeds above approx. 10 mph/16 km/h. It can also be active if objects are placed on the front passenger seat.

Damage to safety belts

In the case of strain caused by accidents or overage.

Replace the safety belts, including the safety belt retractors, replaced and have the belt anchors checked.

Replacing and replacing safety belts

Have the work performed only by your service center; otherwise, it cannot be ensured that the safety feature will function properly.

ADJUSTING CONTROLS

SAFETY BELTS

Intensive, the belt can be damaged and the restraining effect reduced.

Wearing the belt

Make sure you hear the latch plate engage in the belt buckle.

Unbuckling the belt

Hold the belt firmly.

Press the red button in the belt buckle.

Slide the belt back into its rest.

Safety belt reminder for driver's seat and front passenger seat

The indicator lamp lights up and a signal sounds. Make sure that the safety belts are positioned correctly. The signal bell reminder is active at speeds above approx. 10 mph/16 km/h. It can also be active if objects are placed on the front passenger seat.

Damage to safety belts

In the case of strain caused by accidents or overage.

Replace the safety belts, including the safety belt retractors, replaced and have the belt anchors checked.

Replacing and replacing safety belts

Have the work performed only by your service center; otherwise, it cannot be ensured that the safety feature will function properly.

ADJUSTING CONTROLS

SAFETY BELTS

Intensive, the belt can be damaged and the restraining effect reduced.

Wearing the belt

Make sure you hear the latch plate engage in the belt buckle.

Unbuckling the belt

Hold the belt firmly.

Press the red button in the belt buckle.

Slide the belt back into its rest.

Safety belt reminder for driver's seat and front passenger seat

The indicator lamp lights up and a signal sounds. Make sure that the safety belts are positioned correctly. The signal bell reminder is active at speeds above approx. 10 mph/16 km/h. It can also be active if objects are placed on the front passenger seat.

Damage to safety belts

In the case of strain caused by accidents or overage.

Replace the safety belts, including the safety belt retractors, replaced and have the belt anchors checked.

Replacing and replacing safety belts

Have the work performed only by your service center; otherwise, it cannot be ensured that the safety feature will function properly.

FIGURE 70. Front Restraint Use and Adjustment Information from Vehicle Owner's Manual

APPENDIX B
DUMMY RESPONSE DATA

TABLE OF DATA PLOTS

Plot		Page
1	Driver Head Acceleration (X) Primary vs. Time	B-1
2	Driver Head Acceleration (Y) Primary vs. Time	B-1
3	Driver Head Acceleration (Z) Primary vs. Time	B-1
4	Driver Head Resultant Acceleration Primary vs. Time	B-1
5	Driver Lower Spine T12 Acceleration (X) vs. Time	B-2
6	Driver Lower Spine T12 Acceleration (Y) vs. Time	B-2
7	Driver Lower Spine T12 Acceleration (Z) vs. Time	B-2
8	Driver Lower Spine T12 Resultant Acceleration vs. Time	B-2
9	Driver Iliac Wing Force on Impact Side (Y) vs. Time	B-3
10	Driver Acetabulum Force on Impact Side (Y) vs. Time	B-3
11	Driver Total Pelvis Force on Impact Side (Y) vs. Time	B-3

The following additional data for this test can be obtained from the Research and Development section of the NHTSA website. The website can be found at

www.NHTSA.dot.gov

Additional Driver Dummy Instrumentation Data

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

Vehicle Instrumentation Data

Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
Left Floor Sill Acceleration (Y)
Left A-Pillar Sill Acceleration (Y)
Left Lower A-Pillar Acceleration (Y)
Left Mid A-Pillar Acceleration (Y)

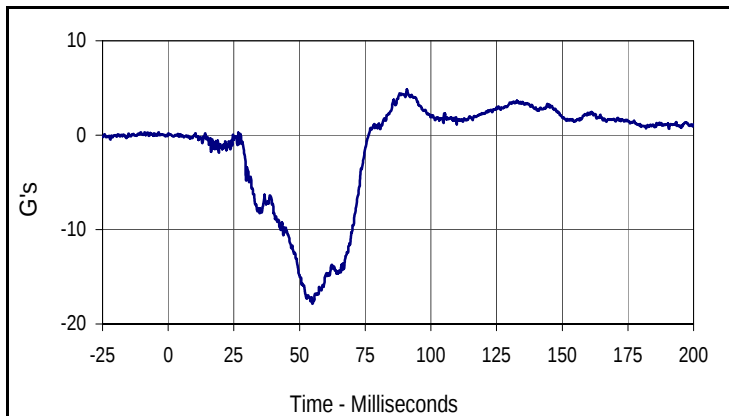
Left B-Pillar Sill Acceleration
Left Lower B-Pillar Acceleration (Y)
Left Mid B-Pillar Acceleration (Y)
Driver Seat Track at Dummy Hip Point Acceleration (Y)
Engine Top Acceleration (X)
Engine Top Acceleration (Y)
Firewall Center Acceleration (Y)
Right Roof at Vertical Impact Reference Line Acceleration (Y)
Right Sill at Vertical Impact Reference Line Acceleration (Y)
Rear Floorpan Behind Rear Axle at Centerline Acceleration (X)
Rear Floorpan Behind Rear Axle at Centerline Acceleration (Y)

Pole Instrumentation Data

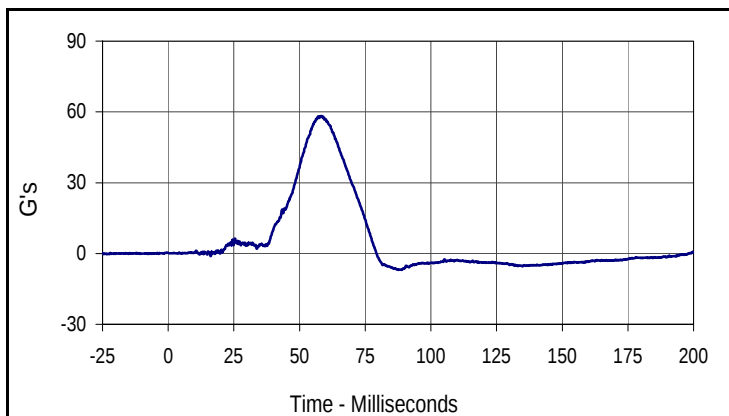
Load Cell Pole Barrier #1 Force (Y)
Load Cell Pole Barrier #2 Force (Y)
Load Cell Pole Barrier #3 Force (Y)
Load Cell Pole Barrier #4 Force (Y)
Load Cell Pole Barrier #5 Force (Y)
Load Cell Pole Barrier #6 Force (Y)
Load Cell Pole Barrier #7 Force (Y)
Load Cell Pole Barrier #8 Force (Y)

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

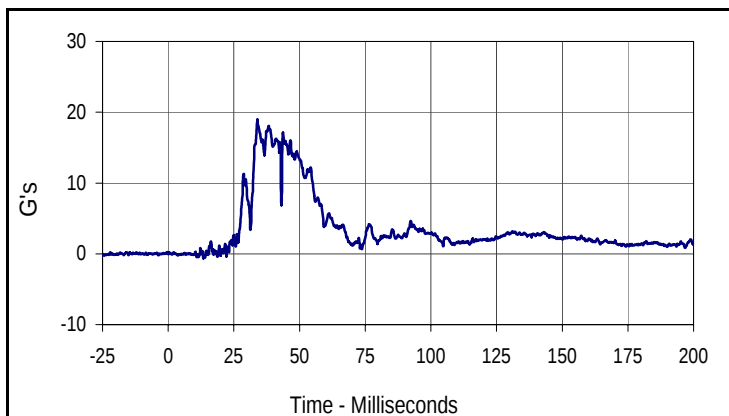
Test Date: 5/30/14
 NHTSA No.: M20144101



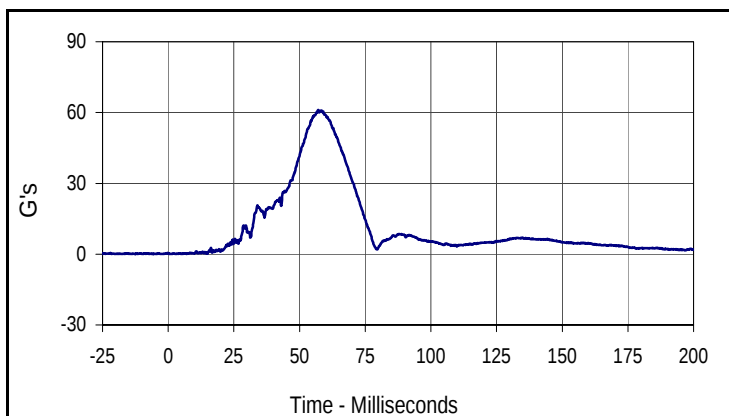
Curve Description			
Driver Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
4.8	90.9	-17.9	54.9



Curve Description			
Driver Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
58.2	58.3	-6.9	88.8



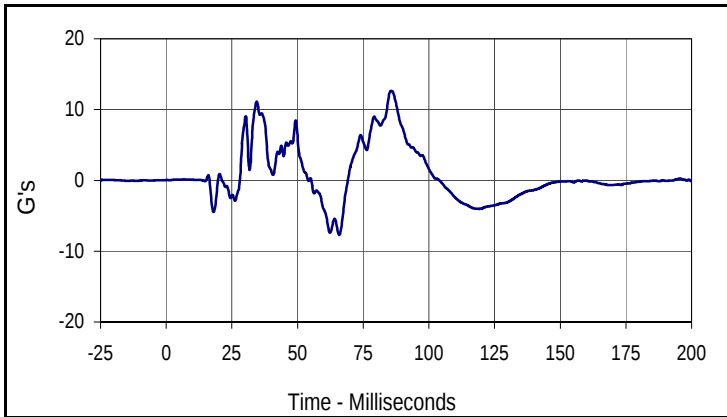
Curve Description			
Driver Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
19.0	33.9	-0.6	13.4



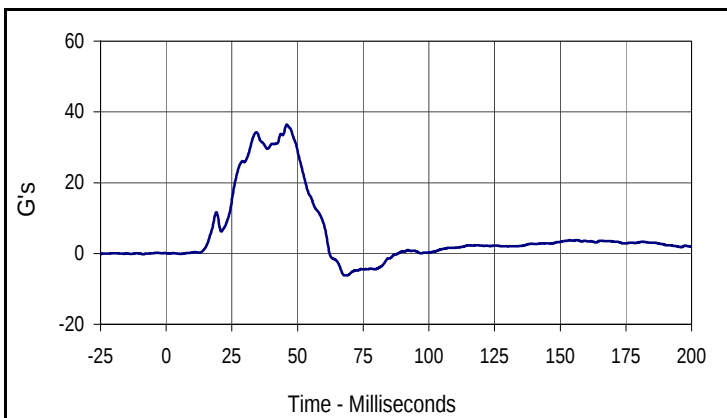
Curve Description			
Driver Head Acceleration Primary Res.			
Plot No.	Type	SAE Class	Units
004	RES	1000	G's
Max	Time	Min	Time
61.1	57.1	0.1	3.2

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

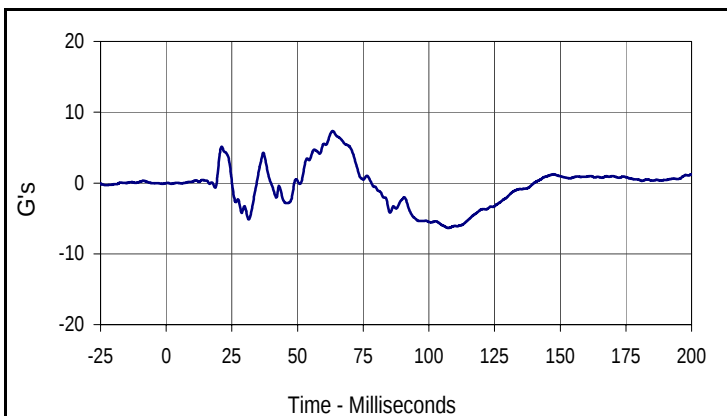
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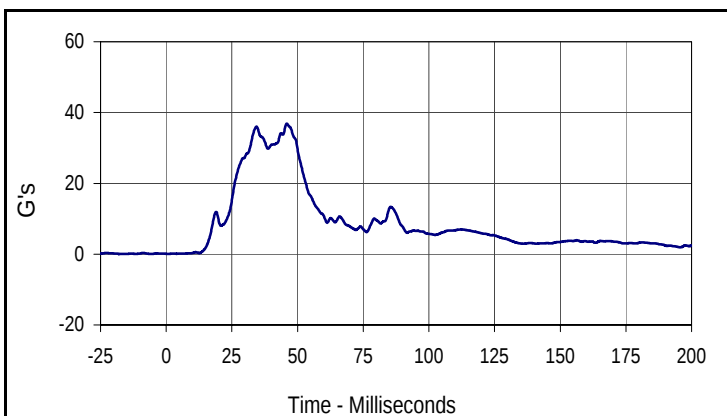
Curve Description			
Driver Lower Spine T12 Acceleration X			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
12.6	85.6	-7.7	65.9



Curve Description			
Driver Lower Spine T12 Acceleration Y			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
36.4	45.9	-6.2	67.9



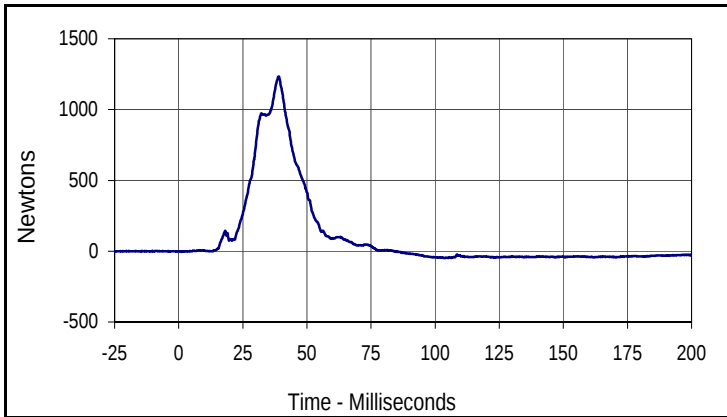
Curve Description			
Driver Lower Spine T12 Acceleration Z			
Plot No.	Type	SAE Class	Units
007	FIL	180	G's
Max	Time	Min	Time
7.3	63.4	-6.3	107.4



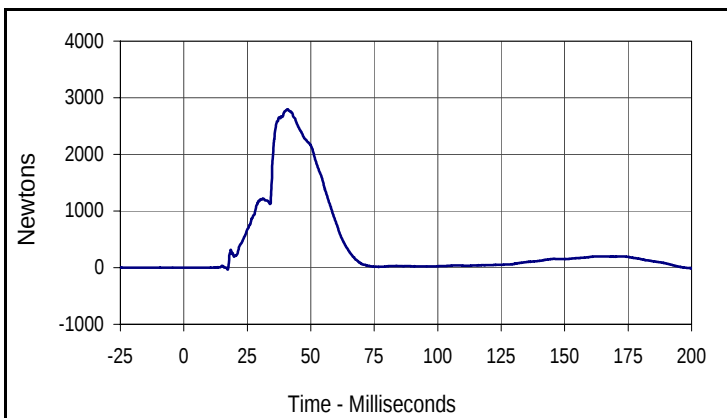
Curve Description			
Driver Lower Spine T12 Acceleration Res.			
Plot No.	Type	SAE Class	Units
008	RES	180	G's
Max	Time	Min	Time
36.9	45.9	0.0	0.5

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

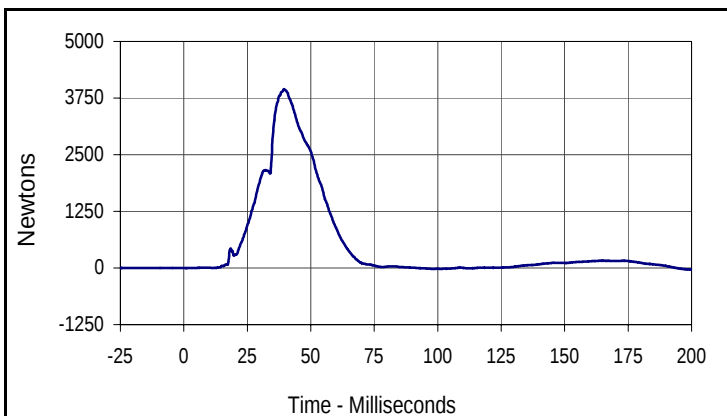
Test Date: 5/30/14
 NHTSA No.: M20144101



Curve Description			
Driver Iliac Wing Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
009	FIL	600	Newtons
Max	Time	Min	Time
1234.4	39.0	-48.3	105.1



Curve Description			
Driver Acetabulum Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
010	FIL	600	Newtons
Max	Time	Min	Time
2799.1	40.9	-34.3	17.3



Curve Description			
Driver Total Pelvic Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
011	SUM	600	Newtons
Max	Time	Min	Time
3945.3	39.4	-36.5	199.9

APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

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

Test Program: SID IIs External Measurements
 ATD Serial No.: 299

Test Date: 5/26/14
 Test I.D.: N/A



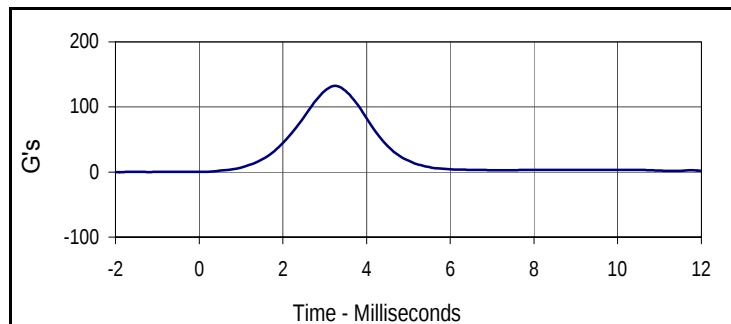
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	19	Pass
A	Sitting Height	mm	772 - 788	780	Pass
B	Shoulder Pivot Height	mm	437 - 453	445	Pass
C	H-Point Height	mm	79 - 89	85	Pass
D	H-Point from Seatback	mm	141 - 151	145	Pass
E	Shoulder Pivot from Backline	mm	97 - 107	102	Pass
F	Thigh Clearance	mm	119 - 135	125	Pass
G	Head Breadth	mm	140 - 148	145	Pass
H	Head Back from Backline	mm	40 - 46	44	Pass
I	Head Depth	mm	178 - 188	184	Pass
J	Head Circumference	mm	541 - 551	545	Pass
K	Buttock to Knee Length	mm	514 - 540	527	Pass
L	Popliteal Height	mm	343 - 369	352	Pass
M	Knee Pivot to Floor Height	mm	392 - 409	401	Pass
N	Buttock Popliteal Length	mm	416 - 442	432	Pass
O	Chest Depth w/o Jacket	mm	195 - 211	202	Pass
P	Foot Length	mm	216 - 232	221	Pass
Q	Hip Breadth with Pelvic Plug	mm	313 - 323	315	Pass
R	Arm Length	mm	249 - 259	252	Pass
S	Knee Joint to Seatback	mm	477 - 493	481	Pass
V	Shoulder Width	mm	341 - 357	352	Pass
W	Foot Width	mm	78 - 94	86	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.: 299

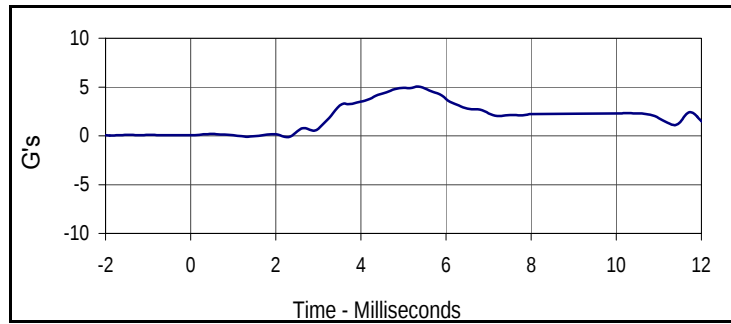
Test Date: 5/26/14
 Test I.D.: 299HD071



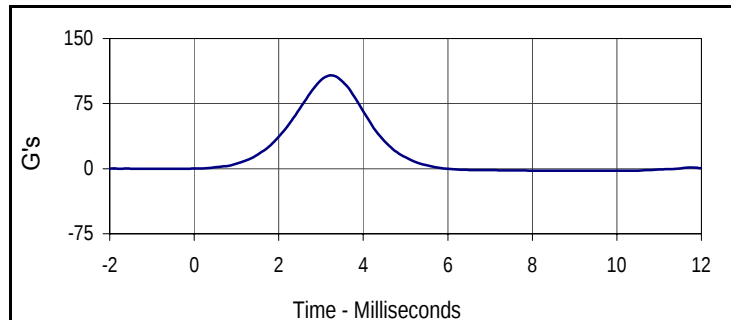
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	411	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.3	Pass
	Min	°C		21.2	Pass
Humidity During Soak	Max	%	10.0 to 70.0	19.2	Pass
	Min	%		19.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	19.0	Pass
Peak Head Resultant Acceleration		G's	115 to 137	132.0	Pass
Peak Head X Acceleration		G's	<15	5.0	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse		%	<15	2.9	Pass
Overall Test Results					Pass



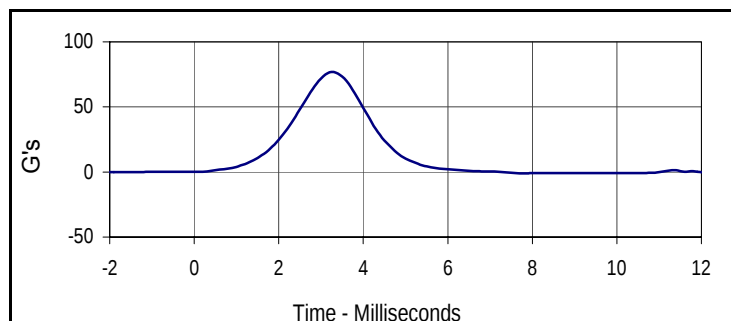
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
132.0	3.2	0.1	-2.0



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
5.0	5.3	-0.1	2.3



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
107.4	3.2	-2.3	10.1



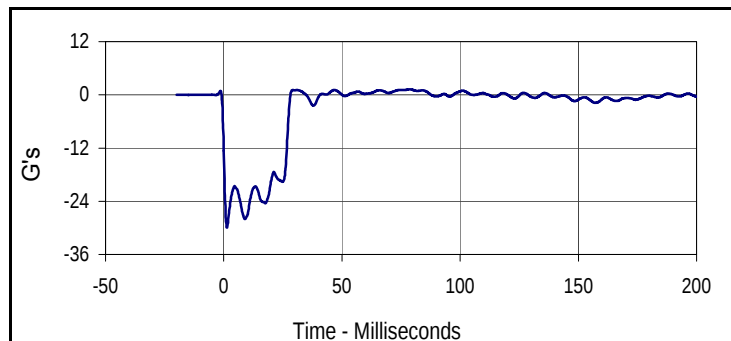
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
76.9	3.3	-1.1	7.8

Test Program: SID IIs Neck Flexion Test
 ATD Serial No.: 299

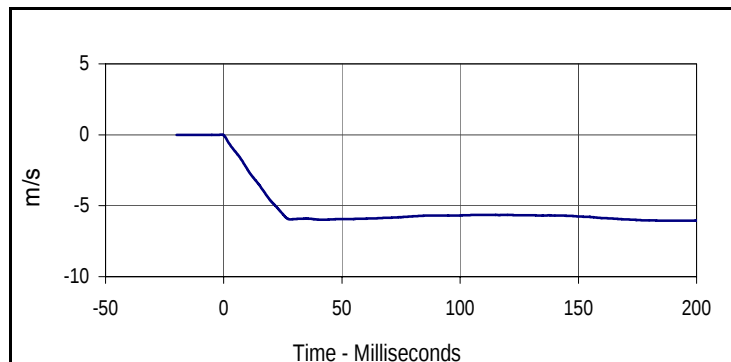
Test Date: 5/26/14
 Test I.D.: 299NB071



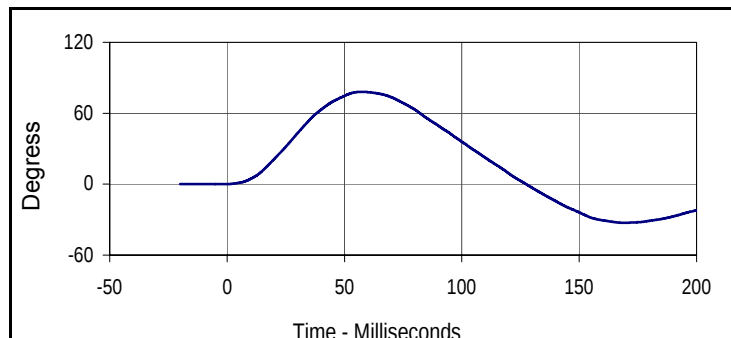
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	476	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	19.2	Pass
	Min		19.0	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	19.1	Pass
Pendulum Velocity	m/s	5.51 to 5.63	5.57	Pass
Pendulum Deceleration	10 msec	-2.20 to -2.80	-2.43	Pass
	15 msec	-3.30 to -4.10	-3.54	Pass
	20 msec	-4.40 to -5.40	-4.68	Pass
	25 msec	-5.40 to -6.10	-5.60	Pass
	25-100 msec	-5.50 to -6.20	-5.98	Pass
D-Plane Rotation	Max	71 to 81	78.1	Pass
	Time	50 to 70	57.6	Pass
Peak Occipital Condyle Moment	Nm	-36 to -44	-41.3	Pass
Decaying Moment Time to Cross 0 Nm	msec	102 to 126	113.5	Pass
Overall Test Results			Pass	



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
1.3	0.0	-29.9	0.0



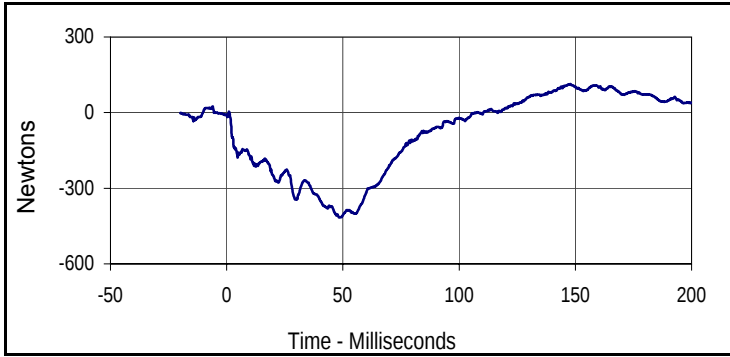
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.9	-6.1	194.7



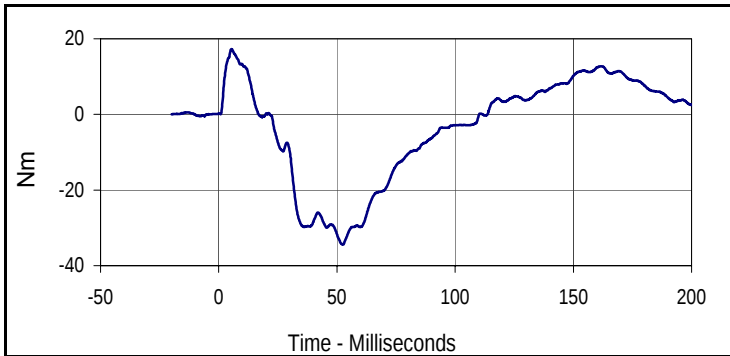
Curve Description			
D-Plane Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degress
Max	Time	Min	Time
78.1	57.6	-32.8	169.2

Test Program: SID IIs Neck Flexion Test
 ATD Serial No.: 299

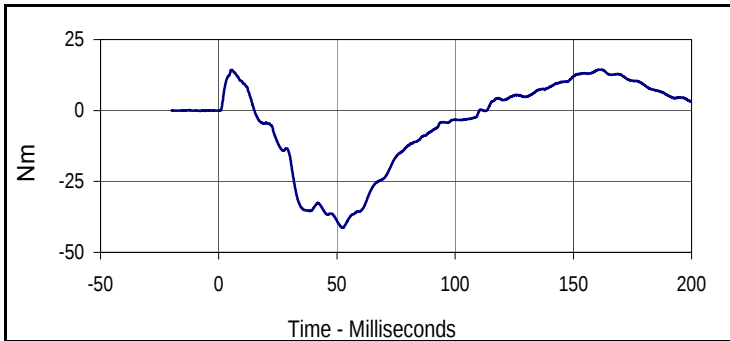
Test Date: 5/26/14
 Test I.D.: 299NB071



Curve Description			
Neck Force Y			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
113.5	147.9	-416.3	48.6



Curve Description			
Neck Moment X			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
17.3	5.3	-34.4	52.6



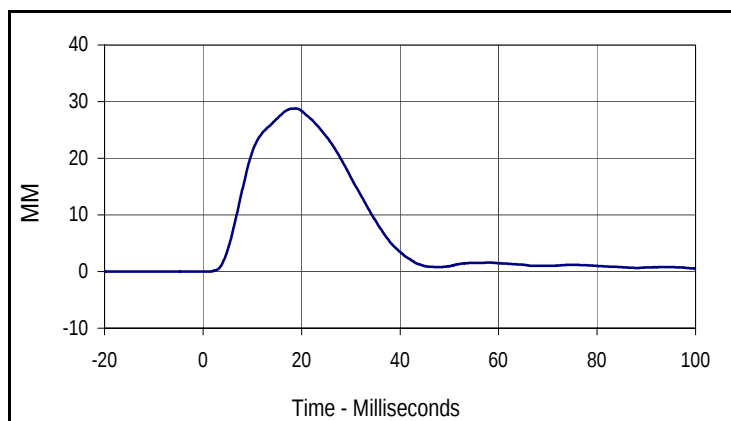
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
006	FIL	600	Nm
Max	Time	Min	Time
14.4	161.7	-41.3	52.5

Test Program: SID IIs Shoulder Impact Test
 ATD Serial No.: 299

Test Date: 5/26/14
 Test I.D.: 299SH071



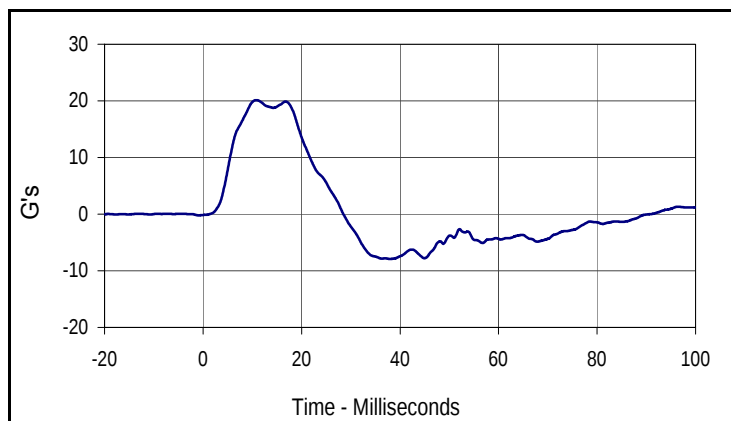
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	551	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.3	Pass
	Min	°C		21.2	Pass
Humidity During Soak	Max	%	10.0 to 70.0	19.2	Pass
	Min	%		19.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	19.0	Pass
Impactor Velocity		m/s	4.20 to 4.40	4.32	Pass
Peak Shoulder Deflection		mm	28 to 37	28.8	Pass
Peak Lateral Spine Acceleration Y		G's	17 to 22	20.1	Pass
Peak Impactor Acceleration		G's	13 to 18	16.8	Pass
Overall Test Results					Pass



Curve Description

Shoulder Deflection

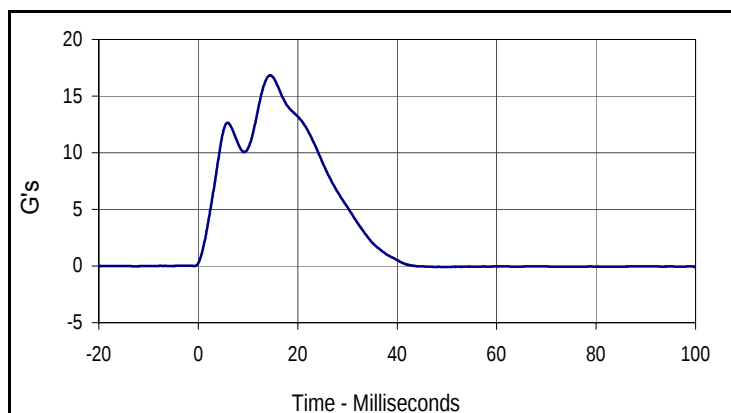
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
28.8	18.7	0.0	-11.7



Curve Description

Upper Spine Y Acceleration

Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
20.1	10.7	-7.9	37.8



Curve Description

Impactor Acceleration

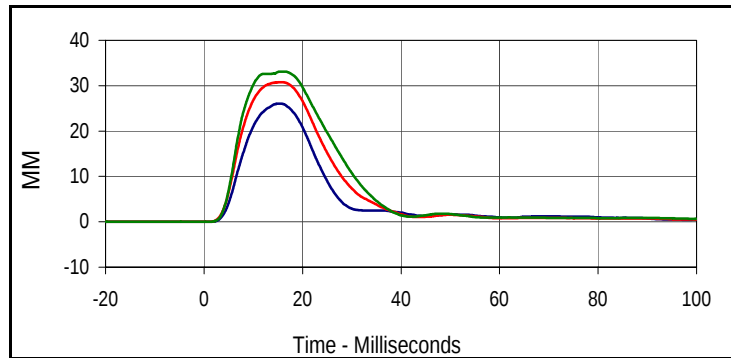
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
16.8	14.5	-0.1	99.9

Test Program: SID IIs Thorax with Arm Impact Test
 ATD Serial No.: 299

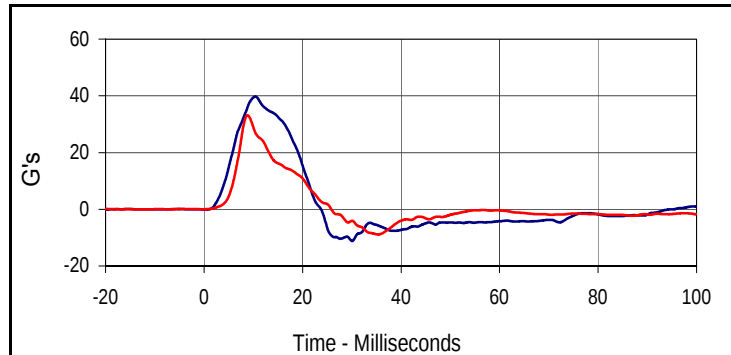
Test Date: 5/26/14
 Test I.D.: 299TWA071



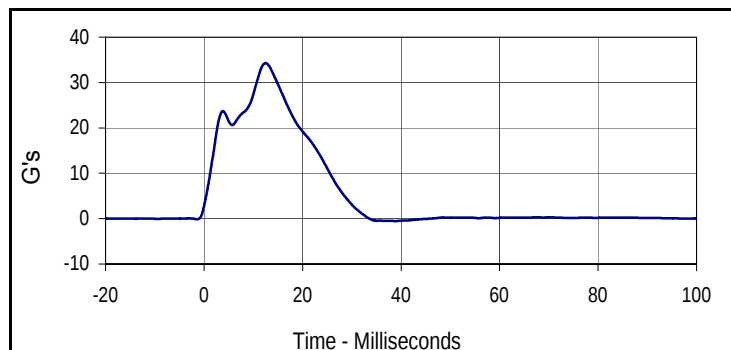
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	601	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	19.2	Pass
	Min		19.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	19.0	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.71	Pass
Peak Shoulder Deflection	mm	31 to 40	33.3	Pass
Peak Upper Thorax Rib Deflection	mm	25 to 32	26.1	Pass
Peak Middle Thorax Rib Deflection	mm	30 to 36	30.8	Pass
Peak Lower Thorax Rib Deflection	mm	32 to 38	33.1	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	39.7	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	33.1	Pass
Peak Impactor Acceleration	G's	30 to 36	34.3	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
26.1	15.3	0.0	-13.4
Middle Thorax Deflection			
Max	Time	Min	Time
30.8	15.4	0.0	-7.1
Lower Thorax Deflection			
Max	Time	Min	Time
33.1	15.6	0.0	-13.1



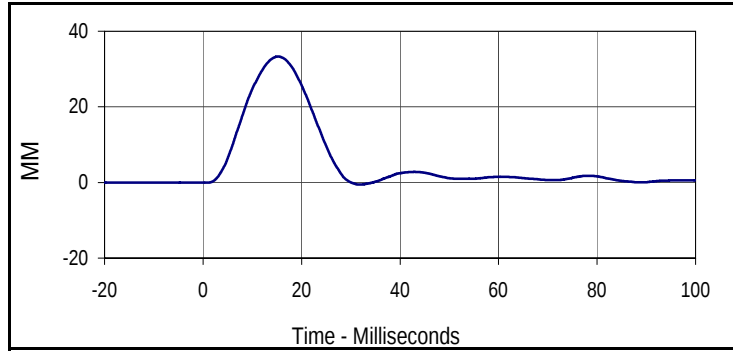
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
39.7	10.4	-11.2	30.1
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
33.1	8.8	-8.9	35.4



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
34.3	12.5	-0.5	39.0

Test Program: SID IIs Thorax with Arm Impact Test
 ATD Serial No.: 299

Test Date: 5/26/14
 Test I.D.: 299TWA071



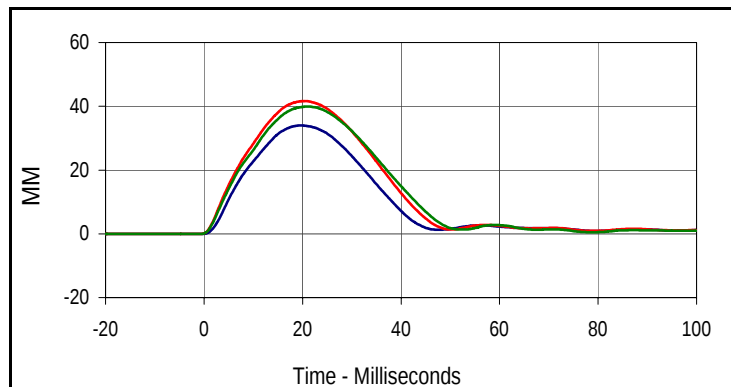
Curve Description			
Shoulder Deflection Y			
Plot No.	Type	SAE Class	Units
007	FIL	600	MM
Max	Time	Min	Time
33.3	15.2	-0.5	31.7

Test Program: SID IIs Thorax without Arm Impact Test
 ATD Serial No.: 299

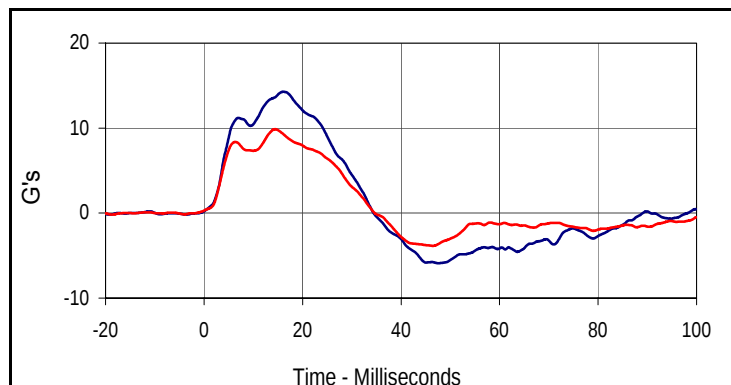
Test Date: 5/26/14
 Test I.D.: 299TWOA071



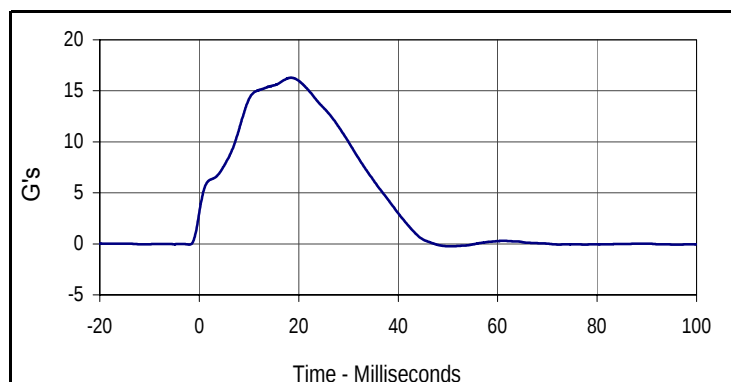
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	656	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.3	Pass
	Min	°C		21.2	Pass
Humidity During Soak	Max	%	10.0 to 70.0	19.2	Pass
	Min	%		19.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	19.1	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.32	Pass
Peak Upper Thorax Rib Deflection		mm	32 to 40	34.0	Pass
Peak Middle Thorax Rib Deflection		mm	39 to 45	41.7	Pass
Peak Lower Thorax Rib Deflection		mm	35 to 43	39.9	Pass
Peak Upper Spine Y Acceleration		G's	13 to 17	14.3	Pass
Peak Lower Spine Y Acceleration		G's	7 to 11	9.9	Pass
Peak Impactor Acceleration		G's	14 to 18	16.3	Pass
Overall Test Results				Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
34.0	19.6	0.0	-11.4
Middle Thorax Deflection			
Max	Time	Min	Time
41.7	20.3	0.0	-10.6
Lower Thorax Deflection			
Max	Time	Min	Time
39.9	21.0	0.0	-3.6



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.3	16.1	-5.9	47.5
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
9.9	14.4	-3.9	46.5



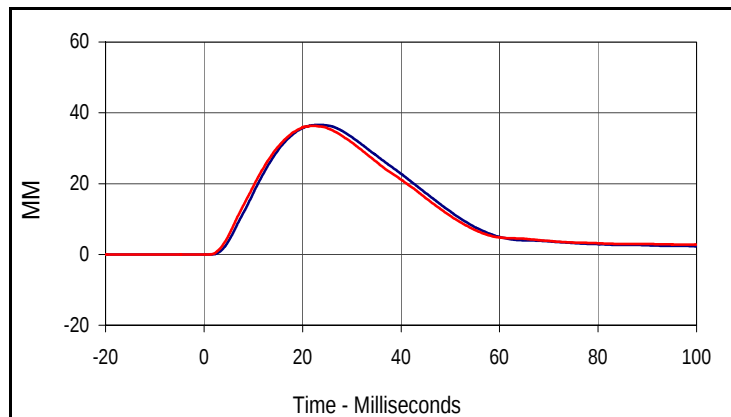
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
16.3	18.4	-0.2	50.5

Test Program: SID IIs Abdomen Impact Test
 ATD Serial No.: 299

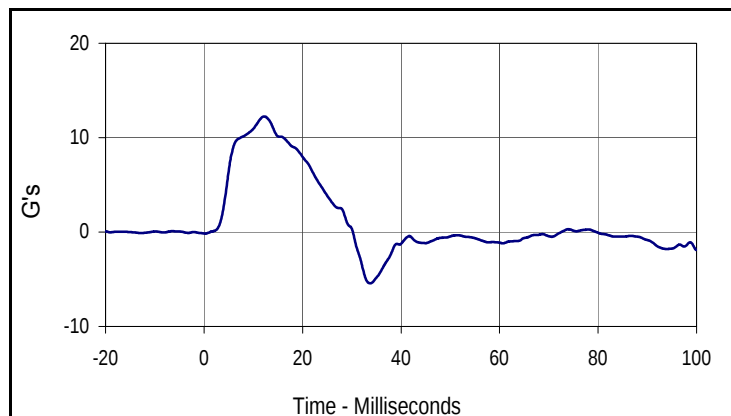
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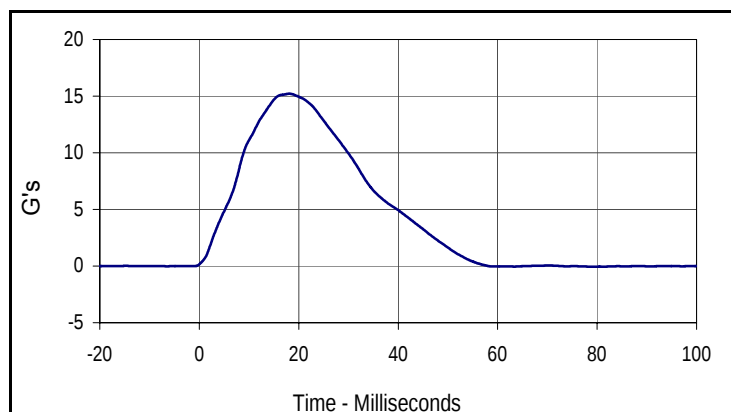
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	716	Pass
Temperature During Soak	Max °C	20.6 to 22.2	21.3	Pass
	Min °C		21.2	Pass
Humidity During Soak	Max %	10.0 to 70.0	19.2	Pass
	Min %		19.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	19.0	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.39	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	36.6	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	36.3	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	12.3	Pass
Peak Impactor Acceleration	G's	12 to 16	15.2	Pass
Overall Test Results			Pass	



Curve Description			
Upper Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
36.6	23.4	0.0	-11.9
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
36.3	22.1	0.0	-3.7

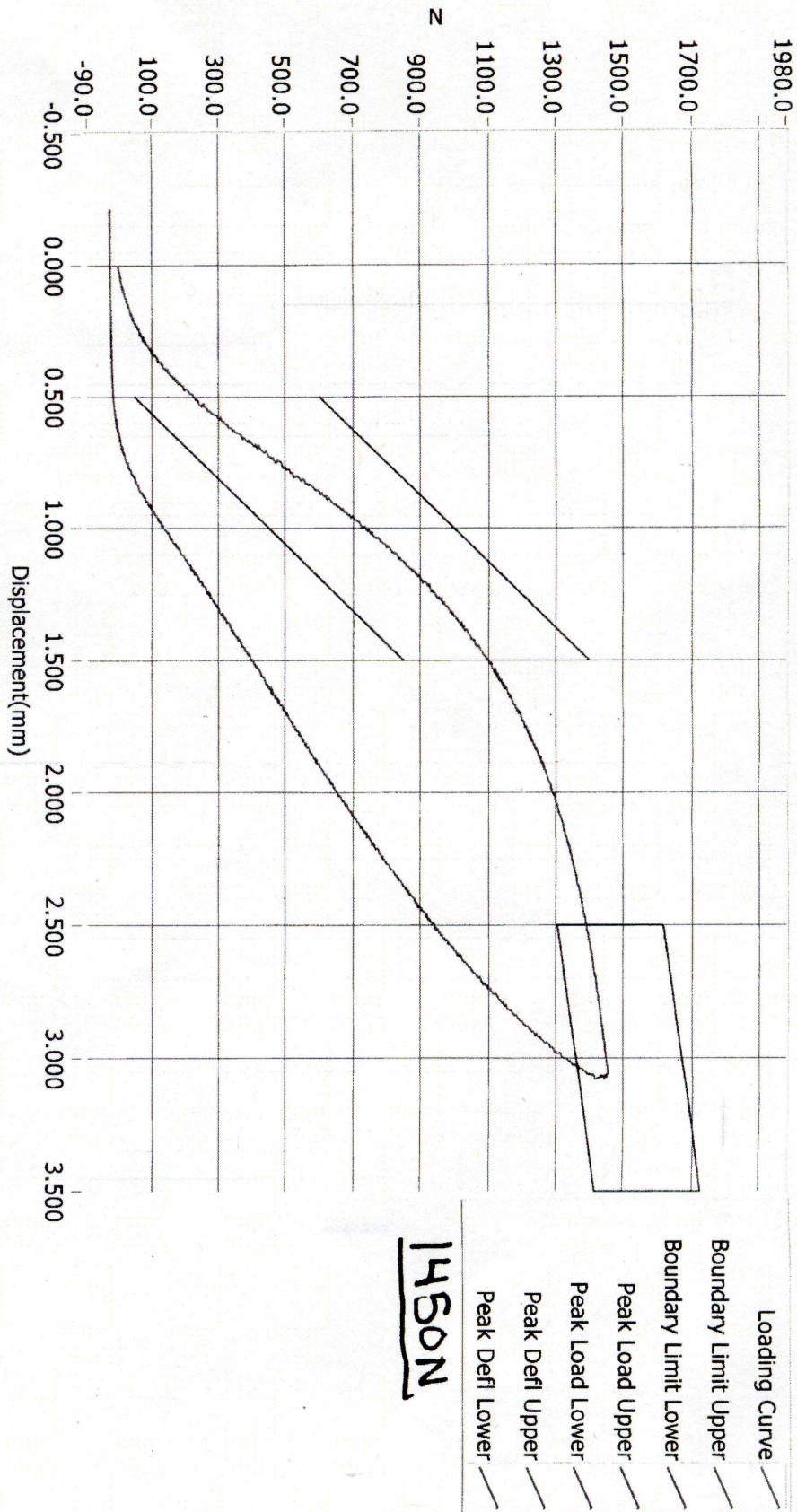


Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
12.3	12.2	-5.4	33.7



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.2	18.1	-0.1	79.0

Resultant Data - SIDIIs Plug Compression



1450N

ATD Calibration Lab

Test ID

Part Serial Number

Test Date

Test Time

63037

1/18/2013

11:58 PM

Cert ID

ATD Serial Number

ATD Type

N/A

SIDIIs

M20144101 PRE-TEST I

Current Date : 1/18/2013

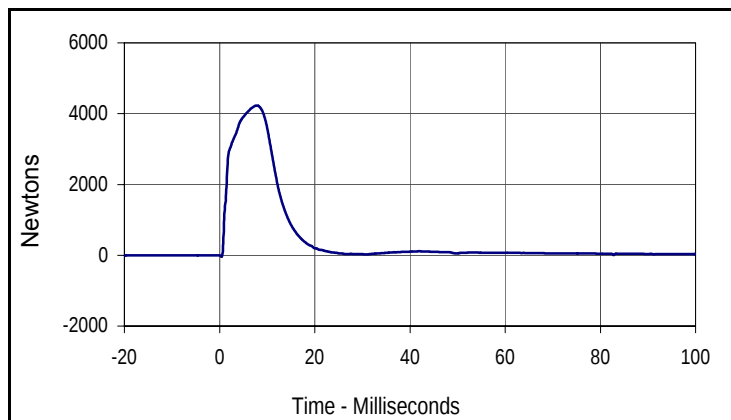
Current Time : 23:58:58

Test Program: SID IIs Pelvis Acetabulum Impact Test
 ATD Serial No.: 299

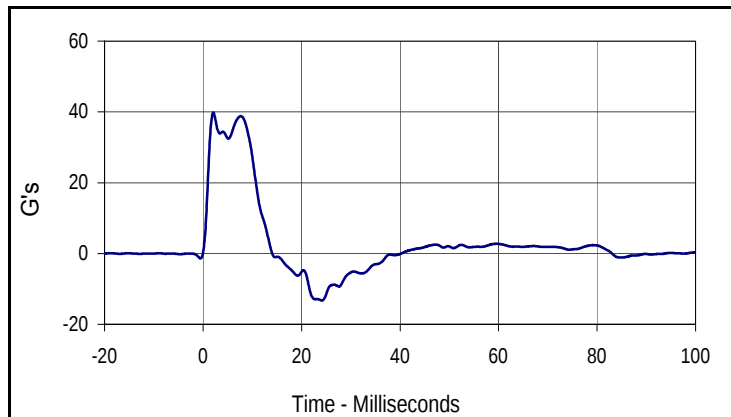
Test Date: 5/26/14
 Test I.D.: 299ACET071



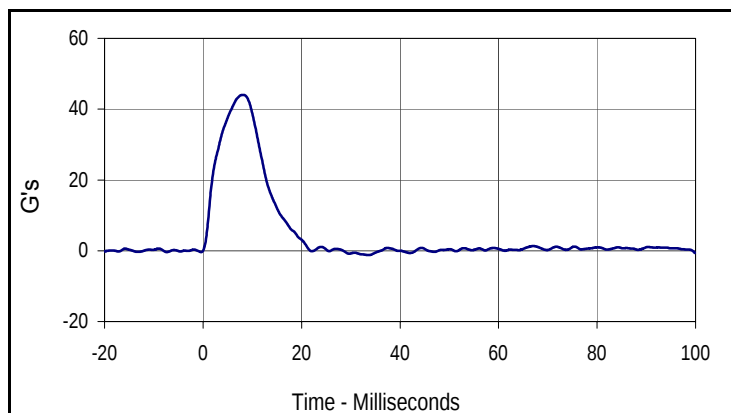
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	791	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	19.2	Pass
	Min		19.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	19.0	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.64	Pass
Peak Acetabulum Force Y	Newtons	3600 to 4300	4231.7	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	38.8	Pass
Peak Impactor Acceleration	G's	38 to 47	44.0	Pass
Overall Test Results				Pass



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4231.7	7.8	-40.0	0.4



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
39.8	2.1	-13.3	24.1



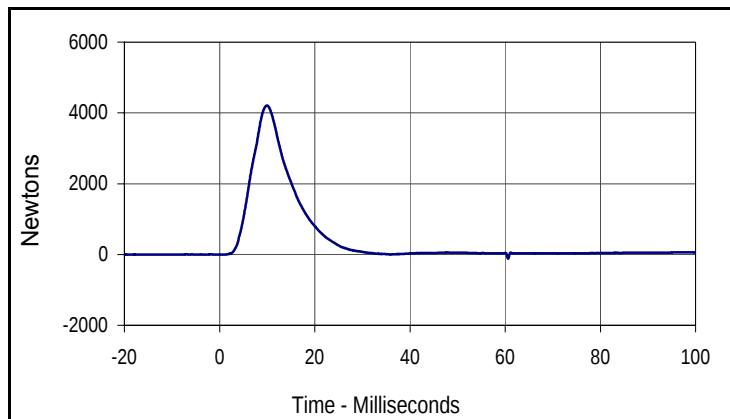
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
44.0	8.1	-1.2	33.6

Test Program: SID IIs Pelvis Iliac Calibration
 ATD Serial No.: 299

Test Date: 5/26/14
 Test I.D.: 299PL071



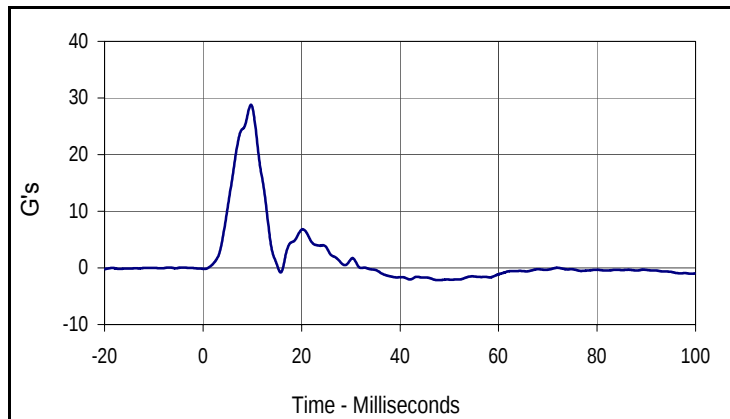
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	856	Pass
Temperature During Soak	Max	20.6 to 22.2	21.3	Pass
	Min		21.2	Pass
Humidity During Soak	Max	10.0 to 70.0	19.2	Pass
	Min		19.0	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	19.0	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.31	Pass
Peak Iliac Force	Newtons	4100 to 5100	4209.9	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	28.8	Pass
Peak Impactor Acceleration	G's	36 to 45	38.4	Pass
Overall Test Results			Pass	



Curve Description

Pelvis Iliac Force

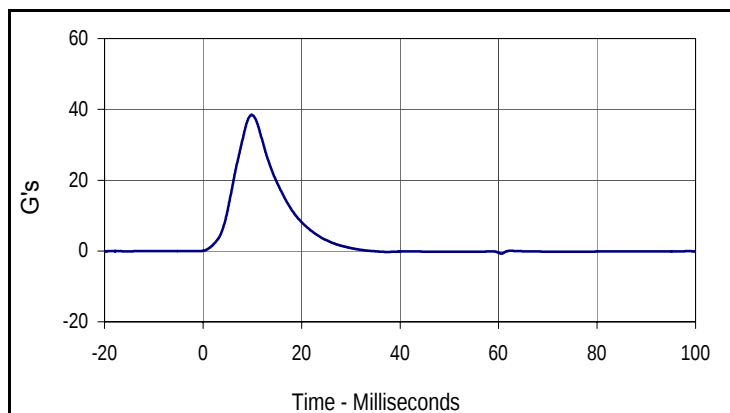
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4209.9	10.0	-120.2	60.6



Curve Description

Pelvis Y Acceleration

Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
28.8	9.7	-2.2	47.7



Curve Description

Impactor Acceleration

Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
38.4	9.9	-0.8	60.6

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

Test Program: SID IIs External Measurements
 ATD Serial No.: 299

Test Date: 6/2/14
 Test I.D.: N/A



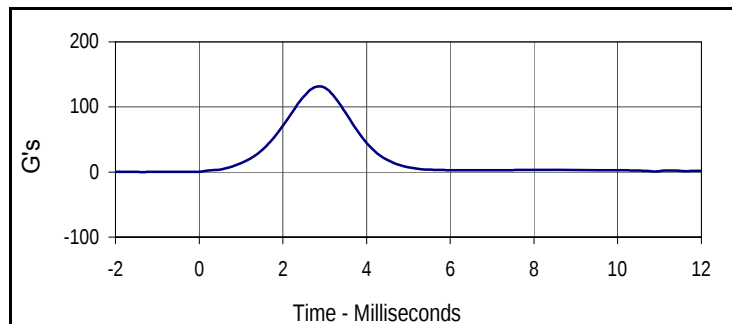
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.0	Pass
Laboratory Relative Humidity		%	10 to 70	21	Pass
A	Sitting Height	mm	772 - 788	780	Pass
B	Shoulder Pivot Height	mm	437 - 453	445	Pass
C	H-Point Height	mm	79 - 89	85	Pass
D	H-Point from Seatback	mm	141 - 151	145	Pass
E	Shoulder Pivot from Backline	mm	97 - 107	102	Pass
F	Thigh Clearance	mm	119 - 135	125	Pass
G	Head Breadth	mm	140 - 148	145	Pass
H	Head Back from Backline	mm	40 - 46	44	Pass
I	Head Depth	mm	178 - 188	184	Pass
J	Head Circumference	mm	541 - 551	545	Pass
K	Buttock to Knee Length	mm	514 - 540	527	Pass
L	Popliteal Height	mm	343 - 369	352	Pass
M	Knee Pivot to Floor Height	mm	392 - 409	401	Pass
N	Buttock Popliteal Length	mm	416 - 442	432	Pass
O	Chest Depth w/o Jacket	mm	195 - 211	202	Pass
P	Foot Length	mm	216 - 232	221	Pass
Q	Hip Breadth with Pelvic Plug	mm	313 - 323	315	Pass
R	Arm Length	mm	249 - 259	252	Pass
S	Knee Joint to Seatback	mm	477 - 493	481	Pass
V	Shoulder Width	mm	341 - 357	352	Pass
W	Foot Width	mm	78 - 94	86	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.: 299

Test Date: 6/2/14
 Test I.D.: 299HD072



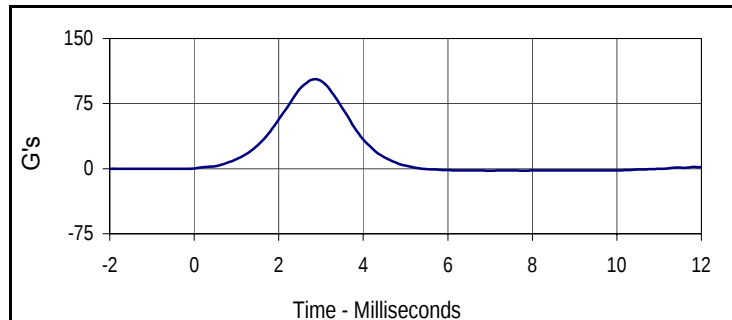
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	313	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.2	Pass
	Min	°C		21.0	Pass
Humidity During Soak	Max	%	10.0 to 70.0	21.8	Pass
	Min	%		21.2	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.0	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	21.2	Pass
Peak Head Resultant Acceleration		G's	115 to 137	131.9	Pass
Peak Head X Acceleration		G's	<15	7.0	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse		%	<15	2.9	Pass
Overall Test Results					Pass



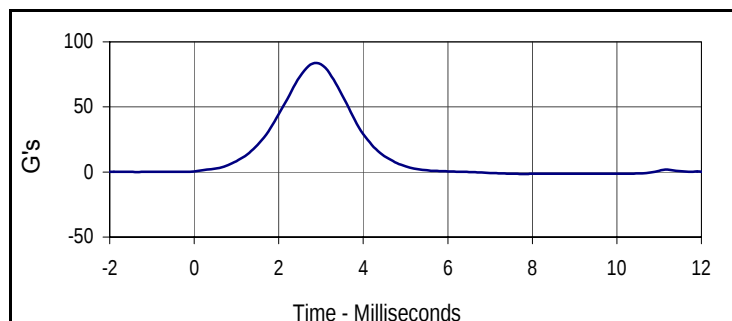
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
131.9	2.9	0.1	-1.3



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
7.0	3.2	-0.1	-1.6



Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
103.3	2.9	-2.3	7.8



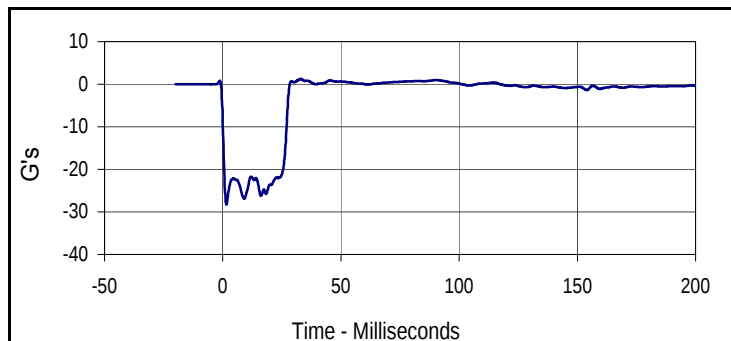
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
83.8	2.9	-1.5	7.9

Test Program: SID IIs Neck Flexion Test
 ATD Serial No.: 299

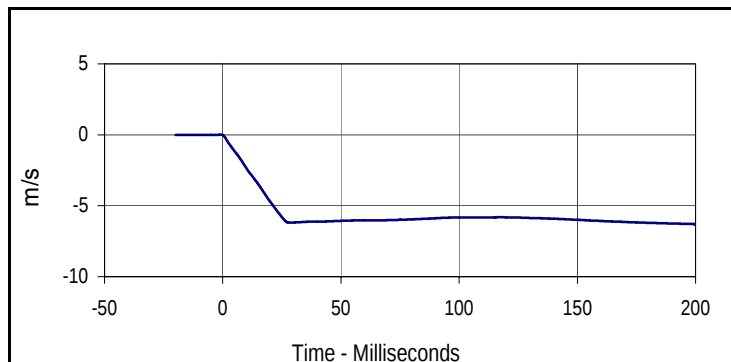
Test Date: 6/2/14
 Test I.D.: 299NB072



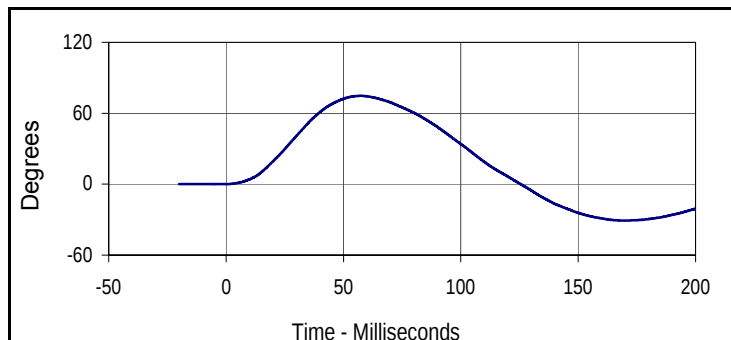
Tested Parameter	Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time	Minutes	≥240	378	Pass
Temperature During Soak	Max	20.6 to 22.2	21.2	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	21.8	Pass
	Min		21.2	Pass
Laboratory Temperature During Test	°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	21.2	Pass
Pendulum Velocity	m/s	5.51 to 5.63	5.59	Pass
Pendulum Deceleration	10 msec	-2.20 to -2.80	-2.36	Pass
	15 msec	-3.30 to -4.10	-3.47	Pass
	20 msec	-4.40 to -5.40	-4.70	Pass
	25 msec	-5.40 to -6.10	-5.80	Pass
	25-100 msec	-5.50 to -6.20	-6.19	Pass
D-Plane Rotation	Max	71 to 81	74.7	Pass
	Time	50 to 70	57.5	Pass
Peak Occipital Condyle Moment	Nm	-36 to -44	-38.9	Pass
Decaying Moment Time to Cross 0 Nm	msec	102 to 126	105.3	Pass
Overall Test Results			Pass	



Curve Description			
Pendulum Deceleration			
Plot No.	Type	SAE Class	Units
001	FIL	180	G's
Max	Time	Min	Time
1.3	0.0	-28.2	0.0



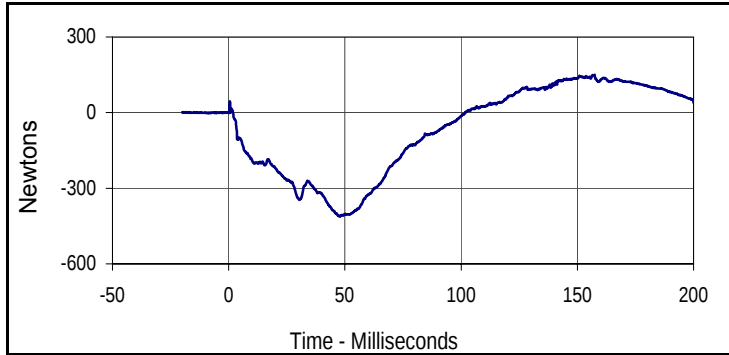
Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
002	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.8	-6.4	200.0



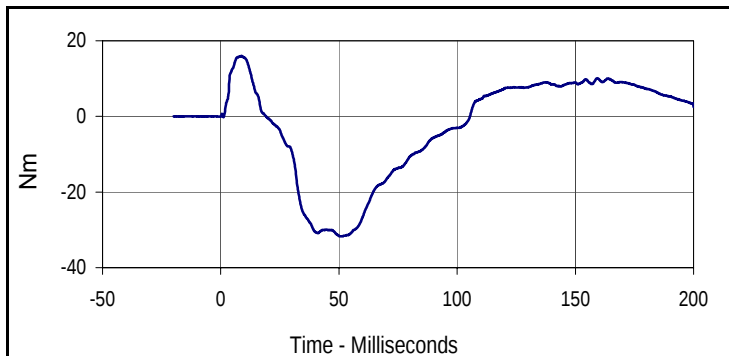
Curve Description			
D-Plane Rotation			
Plot No.	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
74.7	57.5	-30.7	169.3

Test Program: SID IIs Neck Flexion Test
 ATD Serial No.: 299

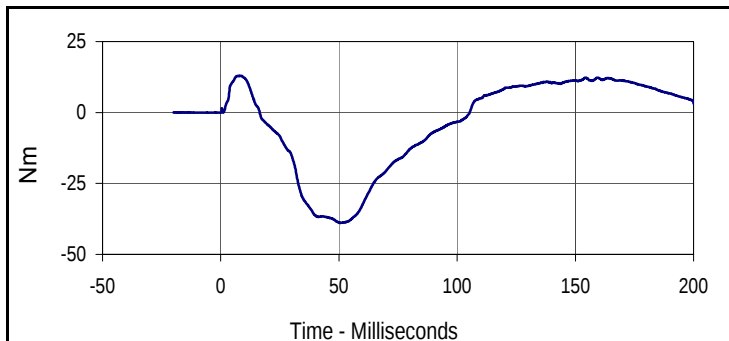
Test Date: 6/2/14
 Test I.D.: 299NB072



Curve Description			
Neck Force Y			
Plot No.	Type	SAE Class	Units
004	FIL	1000	Newtons
Max	Time	Min	Time
149.8	157.4	-411.7	47.6



Curve Description			
Neck Moment X			
Plot No.	Type	SAE Class	Units
005	FIL	600	Nm
Max	Time	Min	Time
16.0	8.8	-31.7	50.5



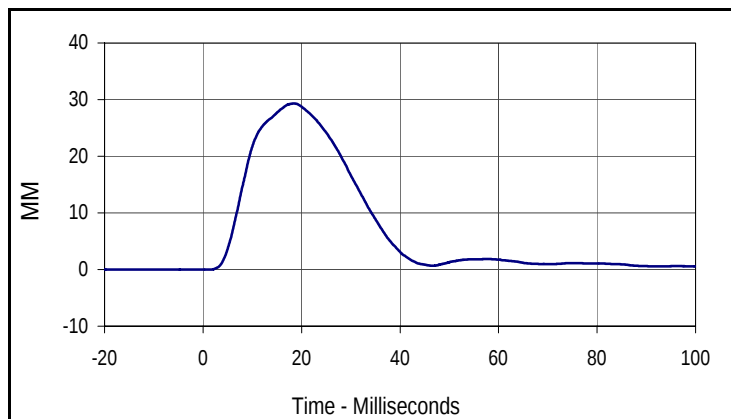
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
006	FIL	600	Nm
Max	Time	Min	Time
13.0	8.3	-38.9	50.6

Test Program: SID IIs Shoulder Impact Test
 ATD Serial No.: 299

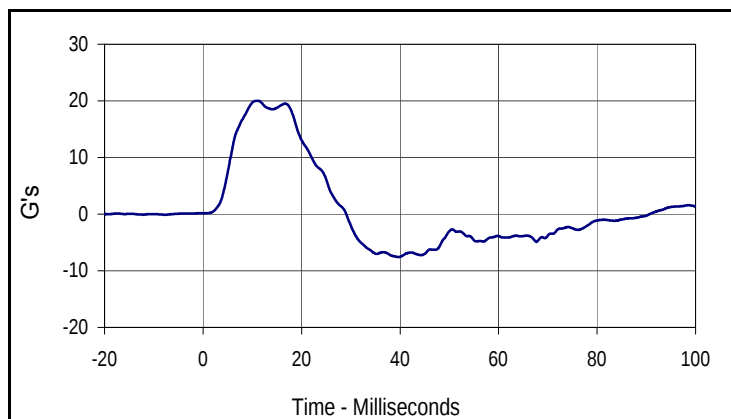
Test Date: 6/2/14
 Test I.D.: 299SH072



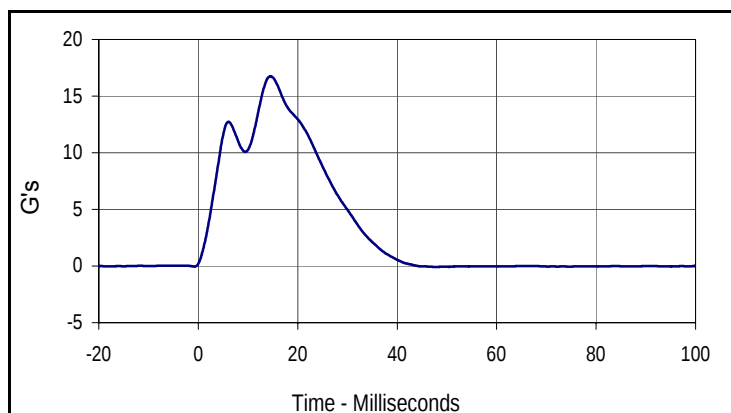
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	453	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.2	Pass
	Min	°C		21.0	Pass
Humidity During Soak	Max	%	10.0 to 70.0	21.8	Pass
	Min	%		21.2	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	21.3	Pass
Impactor Velocity		m/s	4.20 to 4.40	4.33	Pass
Peak Shoulder Deflection		mm	28 to 37	29.3	Pass
Peak Lateral Spine Acceleration Y		G's	17 to 22	20.0	Pass
Peak Impactor Acceleration		G's	13 to 18	16.7	Pass
Overall Test Results				Pass	



Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
29.3	18.5	0.0	-17.0



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
20.0	11.1	-7.6	39.6



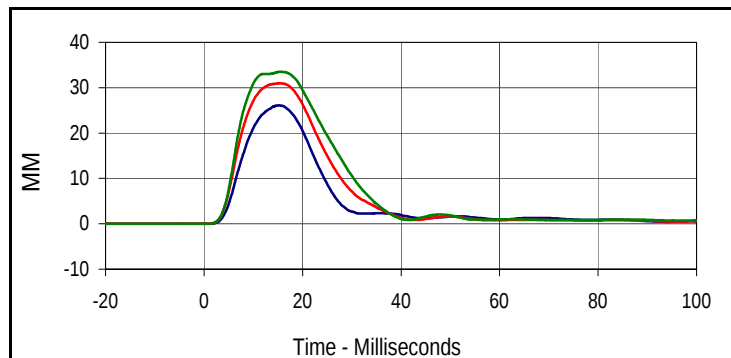
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
16.7	14.5	-0.1	47.7

Test Program: SID IIs Thorax with Arm Impact Test
 ATD Serial No.: 299

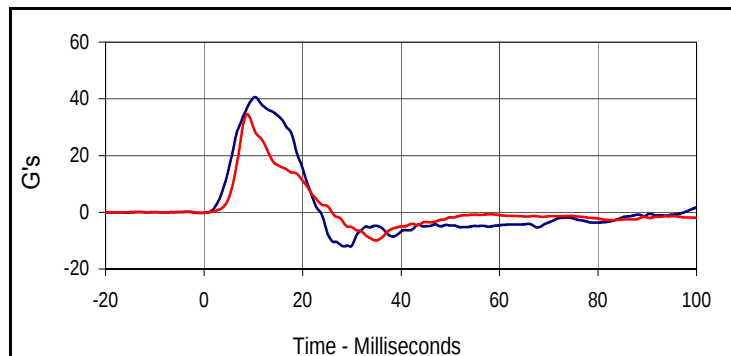
Test Date: 6/2/14
 Test I.D.: 299TWA072



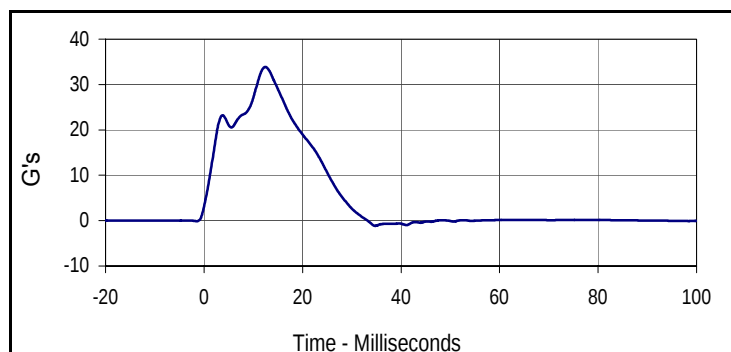
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	503	Pass
Temperature During Soak	Max	20.6 to 22.2	21.2	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	21.8	Pass
	Min		21.2	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	21.4	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.73	Pass
Peak Shoulder Deflection	mm	31 to 40	32.6	Pass
Peak Upper Thorax Rib Deflection	mm	25 to 32	26.1	Pass
Peak Middle Thorax Rib Deflection	mm	30 to 36	31.0	Pass
Peak Lower Thorax Rib Deflection	mm	32 to 38	33.5	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	40.6	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	34.6	Pass
Peak Impactor Acceleration	G's	30 to 36	33.9	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
26.1	15.2	0.0	-13.2
Middle Thorax Deflection			
Max	Time	Min	Time
31.0	15.4	0.0	-12.6
Lower Thorax Deflection			
Max	Time	Min	Time
33.5	15.4	0.0	-11.5



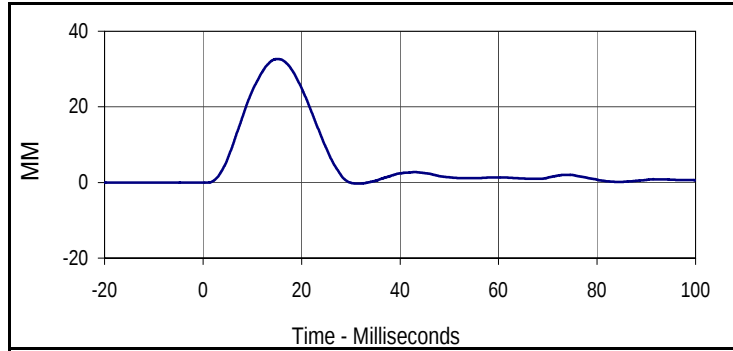
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
40.6	10.3	-12.1	29.7
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
34.6	8.8	-9.9	34.8



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
33.9	12.4	-1.2	34.7

Test Program: SID IIs Thorax with Arm Impact Test
 ATD Serial No.: 299

Test Date: 6/2/14
 Test I.D.: 299TWA072



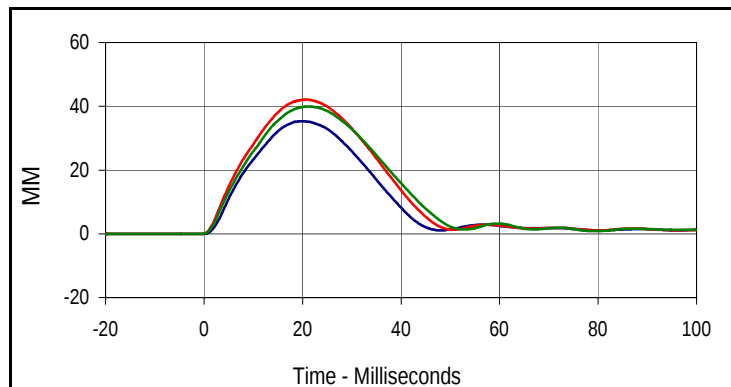
Curve Description			
Shoulder Deflection Y			
Plot No.	Type	SAE Class	Units
007	FIL	600	MM
Max	Time	Min	Time
32.6	15.1	-0.3	31.7

Test Program: SID IIs Thorax without Arm Impact Test
 ATD Serial No.: 299

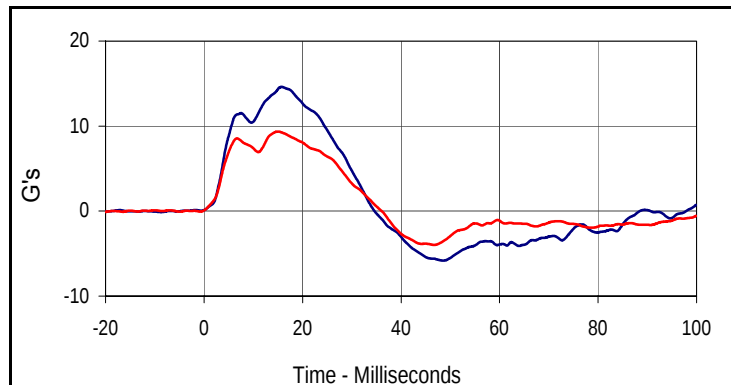
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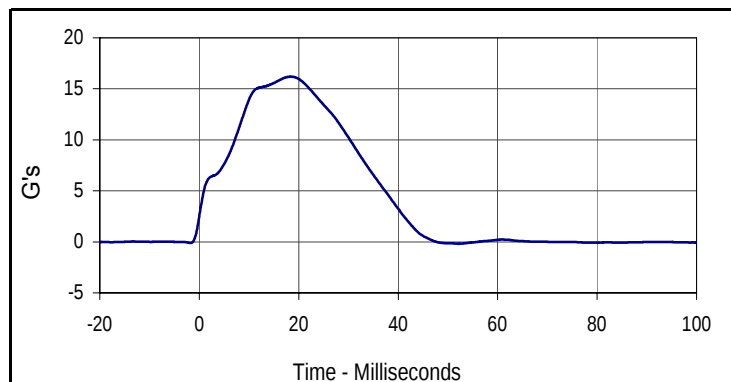
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	558	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.2	Pass
	Min	°C		21.0	Pass
Humidity During Soak	Max	%	10.0 to 70.0	21.8	Pass
	Min	%		21.2	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	21.6	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.37	Pass
Peak Upper Thorax Rib Deflection		mm	32 to 40	35.3	Pass
Peak Middle Thorax Rib Deflection		mm	39 to 45	42.1	Pass
Peak Lower Thorax Rib Deflection		mm	35 to 43	40.0	Pass
Peak Upper Spine Y Acceleration		G's	13 to 17	14.6	Pass
Peak Lower Spine Y Acceleration		G's	7 to 11	9.4	Pass
Peak Impactor Acceleration		G's	14 to 18	16.2	Pass
Overall Test Results				Pass	



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
35.3	19.9	0.0	-3.7
Middle Thorax Deflection			
Max	Time	Min	Time
42.1	20.9	0.0	-3.7
Lower Thorax Deflection			
Max	Time	Min	Time
40.0	21.2	0.0	-15.3



Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.6	15.7	-5.8	48.6
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
9.4	15.0	-4.0	46.7



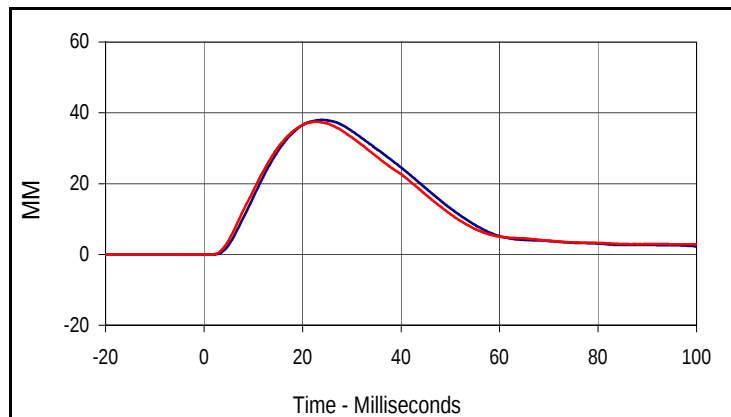
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
16.2	18.4	-0.2	52.2

Test Program: SID IIs Abdomen Impact Test
 ATD Serial No.: 299

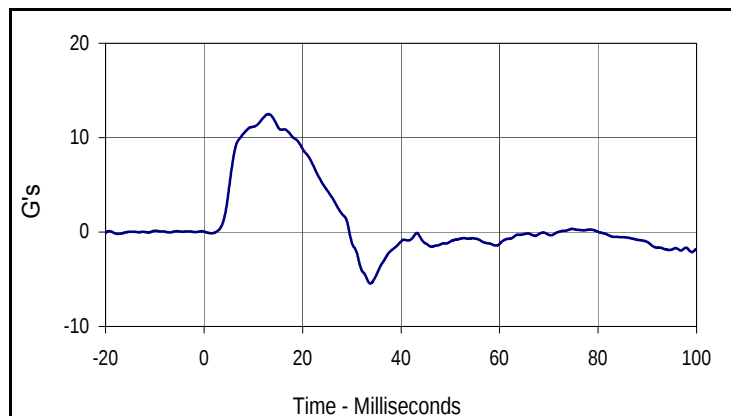
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 Test I.D.: 299ABD072



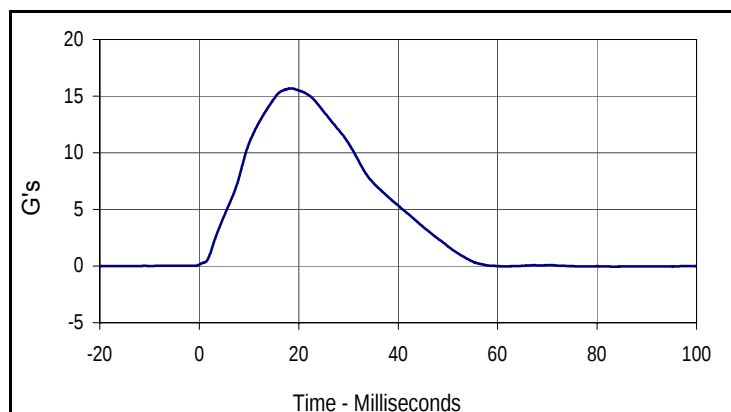
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	618	Pass
Temperature During Soak	Max	20.6 to 22.2	21.2	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	21.8	Pass
	Min		21.2	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	21.5	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.32	Pass
Peak Upper Abdominal Rib Deflection	mm	36 to 47	38.0	Pass
Peak Lower Abdominal Rib Deflection	mm	33 to 44	37.5	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	12.5	Pass
Peak Impactor Acceleration	G's	12 to 16	15.7	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
38.0	23.9	0.0	-4.1
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
37.5	22.8	0.0	-3.8

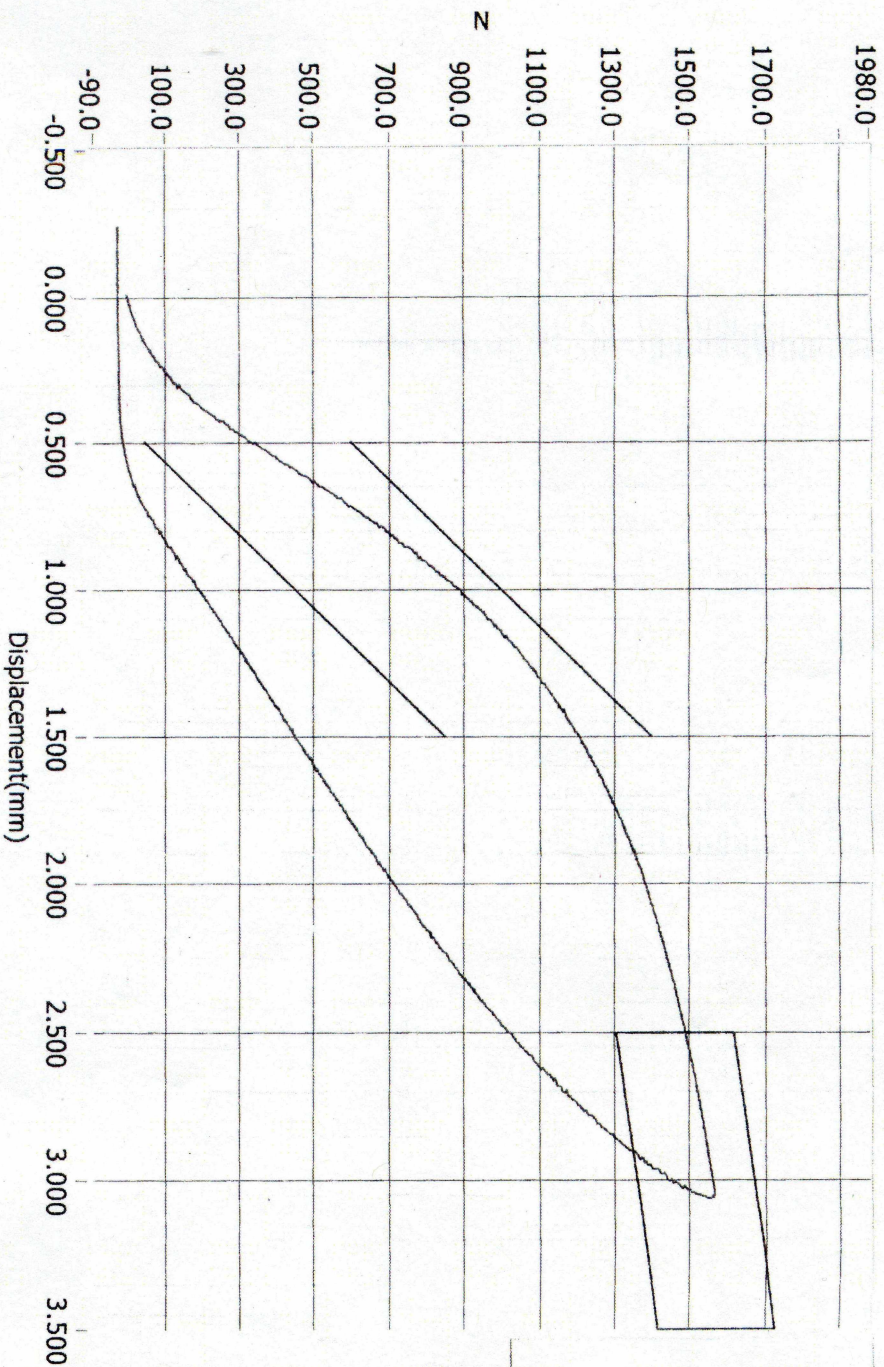


Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
12.5	13.1	-5.4	33.8



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.7	18.5	-0.1	83.7

Resultant Data - SIDIIs Plug Compression



1561N

ATD Calibration Lab

Test ID

Part Serial Number

Test Date

Test Time

62901

1/17/2013

4:40 PM

Cert ID

ATD Serial Number

ATD Type

N/A

SIDIIs

M20144101 POST-TEST

Current Date : 1/17/2013

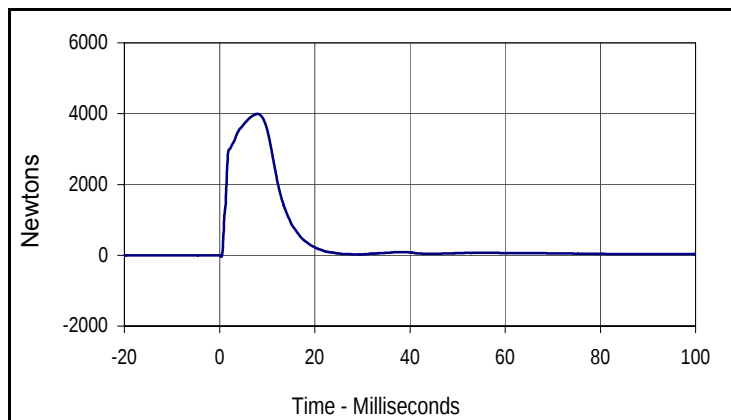
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Test Program: SID IIs Pelvis Acetabulum Impact Test
 ATD Serial No.: 299

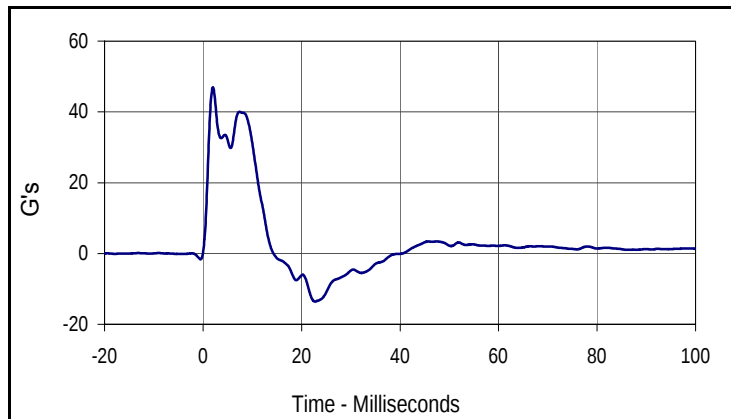
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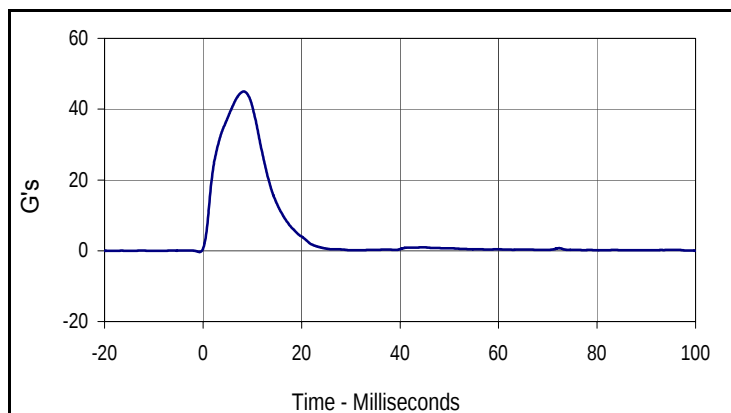
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	693	Pass
Temperature During Soak	Max	20.6 to 22.2	21.2	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	21.8	Pass
	Min		21.2	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	21.6	Pass
Impactor Velocity	m/s	6.6 to 6.8	6.66	Pass
Peak Acetabulum Force Y	Newtons	3600 to 4300	3995.8	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	40.0	Pass
Peak Impactor Acceleration	G's	38 to 47	45.0	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3995.8	7.9	-37.0	0.4



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
46.9	2.0	-13.6	22.8



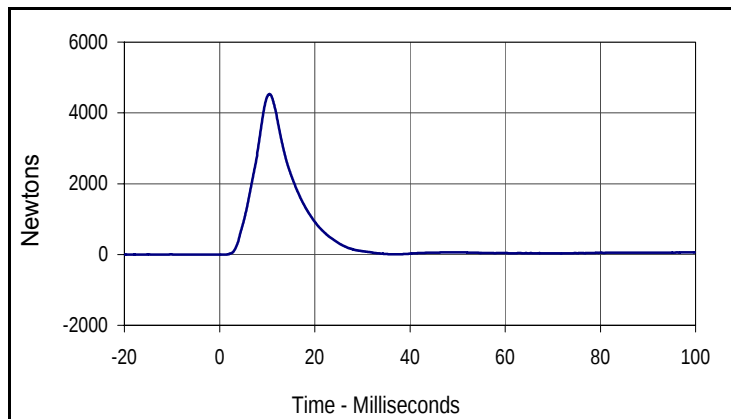
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
45.0	8.3	-0.3	-0.7

Test Program: SID IIs Pelvis Iliac Calibration Test
 ATD Serial No.: 299

Test Date: 6/2/14
 Test I.D.: 299PL072



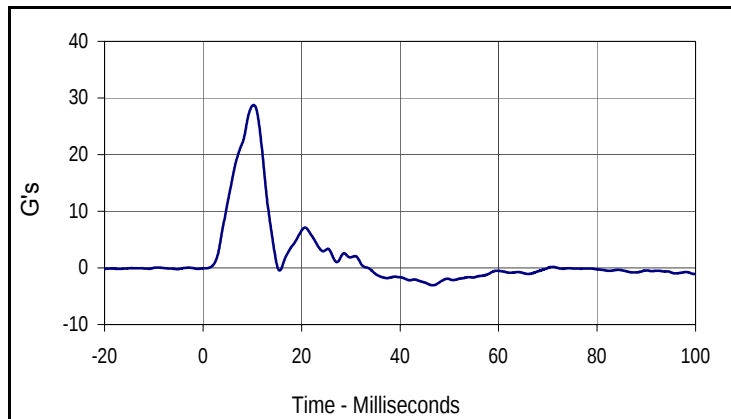
Tested Parameter	Units	Specification	Result	Pass/Fail
Dummy Soak Time	Minutes	≥180	758	Pass
Temperature During Soak	Max	20.6 to 22.2	21.2	Pass
	Min		21.0	Pass
Humidity During Soak	Max	10.0 to 70.0	21.8	Pass
	Min		21.2	Pass
Laboratory Temperature During Test	°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test	%	10.0 to 70.0	21.8	Pass
Impactor Velocity	m/s	4.2 to 4.4	4.31	Pass
Peak Iliac Force	Newtons	4100 to 5100	4533.5	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	28.8	Pass
Peak Impactor Acceleration	G's	36 to 45	42.2	Pass
Overall Test Results			Pass	



Curve Description

Pelvis Iliac Force

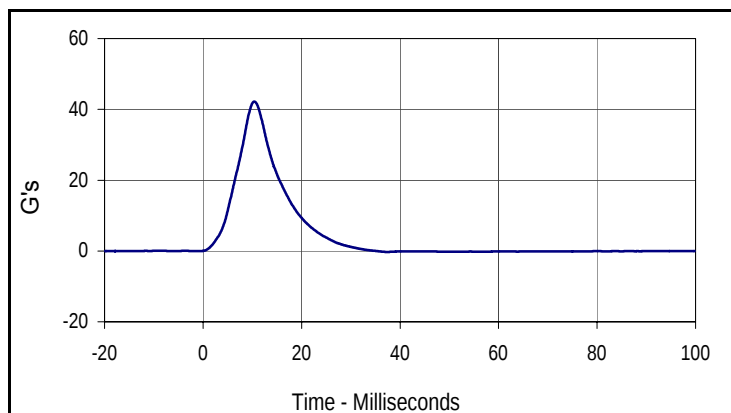
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4533.5	10.5	-2.7	-16.5



Curve Description

Pelvis Y Acceleration

Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
28.8	10.3	-3.1	46.7



Curve Description

Impactor Acceleration

Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
42.2	10.4	-0.3	37.4

APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

TABLE 1 – Dummy Instrumentation (SID-IIs)

				SID-IIs S/N 299		
				Serial Number	Manufacturer	Calibration
Head Accelerometers	Primary		X	P58736	Endevco	5/9/14
			Y	P51929	Endevco	5/13/14
			Z	P51934	Endevco	5/13/14
	Redundant		X	P68604	Endevco	5/13/14
			Y	P51931	Endevco	5/13/14
			Z	P51939	Endevco	5/13/14
Displacement Potentiometers	Shoulder		Y	1074	FTSS	5/14/14
	Thoracic Rib	Upper	Y	1143	FTSS	5/14/14
		Middle	Y	1160	FTSS	5/14/14
		Lower	Y	1213	FTSS	5/14/14
	Abdominal Rib	Upper	Y	1218	FTSS	5/14/14
		Lower	Y	1234	FTSS	5/14/14
Lower Spine Accelerometers (T12)			X	04I20-Z04	Endevco	5/14/14
			Y	06A07-R08	Endevco	5/14/14
			Z	P58795	Endevco	5/14/14
Acetabulum Load Cell			Y	272	Denton	5/1/14
Iliac Wing Load Cell			Y	284	Denton	5/1/14
Pelvis Plug (Struck Side)				62902	FTSS	1/17/13
Pelvis Plug (Non-Struck Side)				63082	FTSS	1/21/13

TABLE 2 – Vehicle Instrumentation

Vehicle Instrumentation		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	MS22944	MSI	5/26/14
Vehicle Center of Gravity	Y	MS22901	MSI	5/26/14
Vehicle Center of Gravity	Z	A135445	MSI	5/26/14
Left Floor Sill	Y	A136663	MSI	3/20/14
A-Pillar Sill	Y	A136678	MSI	3/20/14
A-Pillar Low	Y	A136698	MSI	3/20/14
A-Pillar Mid	Y	A136677	MSI	3/20/14
B-Pillar Sill	Y	N/A	N/A	N/A
B-Pillar Low	Y	N/A	N/A	N/A
B-Pillar Mid	Y	N/A	N/A	N/A
Driver Seat	Y	A136717	MSI	3/20/14
Engine Top	X	A136710	MSI	3/20/14
Engine Top	Y	A136733	MSI	3/20/14
Firewall	Y	A136723	MSI	3/20/14
Right Roof	Y	A136692	MSI	3/20/14
Right Floor Sill	Y	A136729	MSI	3/20/14
Rear Floorpan	X	A136728	MSI	3/20/14
Rear Floorpan	Y	A136681	MSI	3/20/14

TABLE 3 – Pole Instrumentation

	Serial Number	Manufacturer	Calibration Date
Load Cell 1	131822A	Interface	5/20/14
Load Cell 2	132304A	Interface	5/20/14
Load Cell 3	19477	Interface	5/20/14
Load Cell 4	19325	Interface	5/20/14
Load Cell 5	131827A	Interface	5/20/14
Load Cell 6	132302A	Interface	5/21/14
Load Cell 7	19267	Interface	5/21/14
Load Cell 8	19321	Interface	5/21/14