

REPORT NUMBER: SPNCAP-KAR-11-006

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

**FUJI HEAVY INDUSTRIES LTD.
2011 SUBARU OUTBACK 2.5I AWD 5-DOOR MPV**

NHTSA No: MB5502

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



AUGUST 10, 2010

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
MAIL CODE: NVS-111
1200 NEW JERSEY AVE, SE, ROOM W43-410
WASHINGTON, D.C. 20590**

TECHNICAL REPORT DOCUMENTATION PAGE

1. Report No. SPNCAP-KAR-11-006		2. Government Accession No.		3. Recipient's Catalog No.																				
4. Title and Subtitle Final Report of New Car Assessment Program Side Impact Pole Testing of a 2011 Subaru Outback 2.5i AWD 5-Door MPV NHTSA No. MB5502				5. Report Date August 19, 2010																				
				6. Performing Organization Code KAR																				
7. Authors Mr. Kelsey A. Chiu, Engineering Department Supervisor, KARCO Mr. Frank D. Richardson, Program Manager, KARCO				8. Performing Organization Report No. TR-P30032-03-NC																				
9. Performing Organization Name and Address KARCO Engineering, LLC. 9270 Holly Rd. Adelanto, CA, 92301				10. Work Unit No.																				
				11. Contract or Grant No. DTNH22-09-D-00122																				
12. Sponsoring Agency Name and Address U. S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards (NVS-111) 1200 New Jersey Ave., SE, Room W43-410 Washington, D.C 20590				13. Type of Report and Period Covered Final Test Report, August 2010																				
				14. Sponsoring Agency Code NVS-111																				
15. Supplementary Notes																								
16. Abstract A 32.2 km/h (20 mph) 75° oblique impact Side NCAP test was conducted on the subject 2011 Subaru Outback 2.5i AWD 5-Door MPV 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 August 10, 2010. The impact velocity was 31.8 km/h and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 29.4° C. The test vehicle's post-test maximum crush was 481 mm at level 3. The test vehicle's performance was as follows: <table border="1"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th colspan="3">Passenger ATD</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>310.6</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td>G</td> <td>82</td> <td>42</td> </tr> <tr> <td>Combined Acetabular and Iliac Pelvic Force</td> <td>N</td> <td>5525</td> <td>4855</td> </tr> </tbody> </table> The two doors on the struck side of the vehicle did not separate from the vehicle at the hinges or latches. The opposite side doors did not open during the impact event.						Measurement Description	Passenger ATD			Units	Threshold	Result	Head Injury Criteria (HIC ₃₆)		1000	310.6	Resultant Lower Spine Acceleration	G	82	42	Combined Acetabular and Iliac Pelvic Force	N	5525	4855
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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 Reference Division 1200 New Jersey Ave., SE Washington, DC 20590																				
19. Security Classification of this report UNCLASSIFIED		20. Security Classification of this page UNCLASSIFIED		21. No. of Pages 87																				
22. Price																								

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SECTION 1

TEST PURPOSE AND PROCEDURE

This side impact test is part of the MY 2011 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract No. DTNH22-09-D-00122. The purpose of this test is to generate comparative side impact performance in a 2011 Subaru Outback 2.5i AWD 5-door MPV. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Side NCAP Pole Laboratory Test Procedure, dated January 25, 2010.

SECTION 2

SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a 2011 Subaru Outback 2.5i AWD 5-door MPV. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 31.8 km/h. The test was conducted by KARCO Engineering, LLC. in Adelanto, California, on August 10, 2010. Pre-test 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 January 25, 2010. Camera location and other pertinent camera information are included in this report.

The Part 572V (SID-IIs) dummy was instrumented as follows:

- Head CG Triaxial Accelerometers
- Thorax Upper, Middle, and Lower Rib Displacement Potentiometers
- Abdomen Upper and Lower Rib Displacement Potentiometers
- Lower Spine Triaxial 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.

The following table summarizes the results of the test:

Dummy	HIC (36ms)	Resultant Lower Spine Acceleration	Pelvic Force (N)	
SID-IIs 5th Percentile Adult Female	311	42	Iliac Wing	1673
			Acetabulur	3187
			Sum	4855

SUPPLEMENTAL RESTRAINT INFORMATION

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

GENERAL COMMENTS

Both of the struck side doors of the test vehicle remained closed and latched and were jammed shut after the impact. There was no separation at the hinges or the latches. The non-struck side doors remained closed and latched. There were no driver injury values that exceeded their limits. There was no FMVSS 301 Stoddard solvent spillage as a result of the impact.

SECTION 3

OCCUPANT AND VEHICLE INFORMATION

Test Vehicle: 2011 Subaru Outback 2.5i AWD 5-Door MPV NHTSA No. MB5502
Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole Test Date: 08/10/10

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	29.573
Pressure	Tire Pressures	lbf/in ²	kPa	7.0
Volume	Liquid	gal	liter	3.785
Temperature	General Use	°F	°C	$=(t_f - 32)/1.8$
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf/ft	Nm	1.355

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMATER DATA

Test Vehicle: 2011 Subaru Outback 2.5i AWD 5-Door MPV NHTSA No. MB5502
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole Test Date: 08/10/10

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	MB5502
Model Year	2011
Make	Subaru
Model	Outback 2.5i AWD
Body Style	5-Door MPV
VIN	4S4BRBAC8B1323045
Body Color	Graphite Gray Metalic
Delivery Date	7/26/2010
Odometer Reading (km / mi)	10/6
Dealer	Irvine Subaru
Transmission	6-Speed Manual
Final Drive	AWD
Type / No. of Cylinders	Horizontal / 4
Engine Displacement (L)	2.5
Engine Placement	Longitudinal
Roof Rack	Yes
Sunroof / T-Top	No
Tinted Glass	No
Traction Control	Yes
Power Brakes	Yes
Front Disc	Yes
Rear Disc	Yes

Anti-Lock Brakes	Yes
All Wheel Drive	Yes
Power Steering	Yes
Driver Front Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	No
Driver Torso/Pelvis Airbag	Yes
Driver Pelvis Airbag	No
Driver Knee Airbag	No
Rear Pass. Curtain Airbag	Yes
Rear Pass. Head/Torso Airbag	No
Rear Pass. Torso Airbag	No
Rear Pass. Toso/Pelvis Airbag	No
Rear Pass. Pelvis Airbag	No
Pretensioners	Yes
Load Limiters	Yes
Automatic Door Locks	No
Bucket Seats	Yes
Tilt Steering	Yes
Other	TPMS
Other	

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

N/A

DATA FROM CERTIFICATION LABEL

Manufactured By	Fuji Heavy Industries LTD.
Date of Manufacture	Jun-10

GVWR (kg)	2080
GAWR Front (kg)	1070
GAWR Rear (kg)	1060

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity	2	3		5	A
Capacity Weight (VCW) (kg)				408.0	B
DSC x 68.04 (kg)				340.2	A-B
Cargo Weight (RCLW) (kg)				67.8	

VEHICLE SEAT TYPE

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

DATA SHEET NO. 1 ... (CONTINUED)

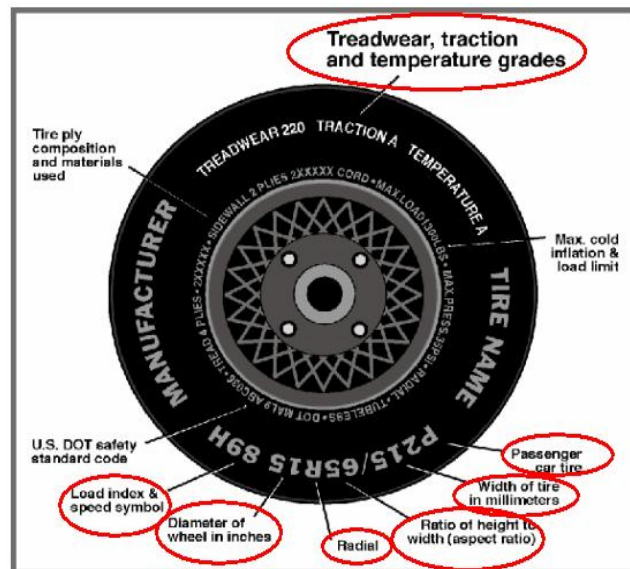
GENERAL TEST AND VEHICLE PARAMATER DATA

Test Vehicle: 2011 Subaru Outback 2.5i AWD 5-Door MPV

NHTSA No. MB5502

Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole

Test Date: 08/10/10



VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	300	300
Cold Pressure (kpa)	220	210
Recommended Tire Size	P215/70R16	P215/70R16
Tire Size on Vehicle	P215/70R16	P215/70R16
Tire Model	Conti Pro Contact	Conti Pro Contact
Tire Manufacturer	Continental	Continental
Treadwear	540	540
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	1	1
Tire Plies Body	4	4
Load Index/Speed Symbol	99S	99S
Tire Material	Polyester, Polyamide, Steel	Polyester, Polyamide, Steel
DOT Safety Code Right	A309 3PK 2110	A309 3PK 2110
DOT Safety Code Left	A309 3PK 2110	A309 3PK 2110

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMATER DATA

Test Vehicle: 2011 Subaru Outback 2.5i AWD 5-Door MPV NHTSA No. MB5502
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TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	433.0	354.0		441.0	402.0		444.5	411.0	
Right	kg	407.0	330.0		418.5	372.5		409.0	373.5	
Ratio	%	55.1%	44.9%	100.0%	52.6%	47.4%	100.0%	52.1%	47.9%	100.0%
Total	kg	840.0	684.0	1524.0	859.5	774.5	1634.0	853.5	784.5	1638.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1524.0	A
Actual Weight of 1 P572V ATD Used	kg	49.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	67.8	C
Calculated Vehicle Target Wt (TVTW)	kg	1640.8	A+B+C

TEST VEHICLE ATTITUDES

Condition	Units	As Delivered	As Tested	Fully Loaded
Driver Door Sill Angle (front-to-rear)	Deg	-0.4	-0.1	-0.1
Front Passenger Sill Angle (front-to-rear)	Deg	-0.4	-0.2	-0.2
Front Bumper Angle (left-to-right)	Deg	0.0	-0.3	-0.3
Rear Bumper Angle (left-to-right)	Deg	-0.1	-0.1	-0.1
Vehicle CG (Aft of Front Axle)	mm	1232	1301	1314
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	26	25	35

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Weight of Ballast in Cargo Area	kg	42.0
Weight of Vehicle Components Removed	kg	34.5

Vehicle components removed to make Target Vehicle Test Weight:

Right Side Door Panels (6.5 kg), Jack and Tools (16.5 kg), Trunk Lining and Foam (7.0 kg),
Trunk Liner (2.5 kg), Hub Caps (2.0 kg)

TEST VEHICLE IMPACT POINT DATA

Measurement Description	Units	Value
Vertical Impact Reference Line (Aft of Front Axle)	mm	1128
Actual Impact Point (Aft of Front Axle)	mm	1123
Impact Point Difference (- forward/+ rearward)	mm	-5

DATA SHEET NO. 2

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

Test Vehicle: 2011 Subaru Outback 2.5i AWD 5-Door MPV

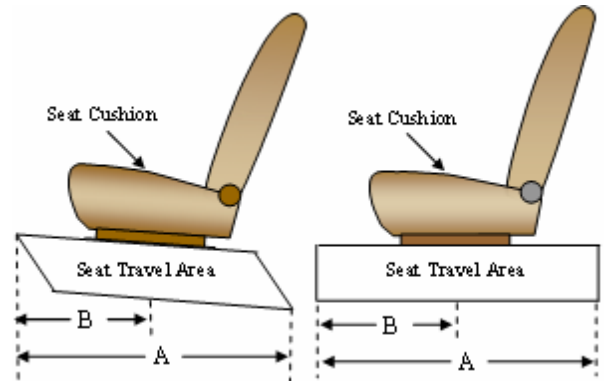
NHTSA No. MB5502

Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole

Test Date: 08/10/10

SEAT FORE / AFT POSITIONS

The total seat travel is measured from the forward most possible position to the rearmost possible position with the seat set at mid angle and lowest height. The driver's seat is set to the forward most position where the ATD will not contact any interior panels at the mid angle and mid height positions.

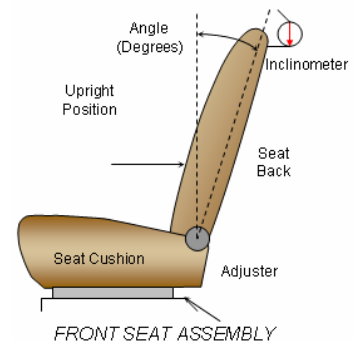


SEAT FORE/AFT POSITIONING

Seating Position	Total Fore-Aft Travel	Placed in Position	Cushion Range	Placed in Position
Driver Seat	249 mm	0 mm	-1.5° to 2.4°	0.5°
Front Passenger Seat	249 mm	0 mm	0.4° to 1.1°	0.7°
Rear Seat - Struck Side	Fixed	Fixed	Fixed	Fixed
Rear Seat - Non-Struck Side	Fixed	Fixed	Fixed	Fixed

SEAT BACK ANGLE POSITION

The procedure for the driver is as follows: the seat back is set to level the driver ATD's (SID-IIs) head transverse instrumentation platform; seat back angle is measured at the headrest post using a digital inclinometer.



SEAT BACK ANGLE

Seating Position	Degrees	Detent
Driver Seat Back Angle w/Seated Dummy	5.5	8
Front Passenger Seat Back Angle	5.5	8
Struck Side Rear Seat Back Angle	0.5	1
Non-Struck Side Rear Seat Back Angle	0.5	1

SEAT BELT UPPER ANCHORAGE

The seat belt upper anchorage is positioned to the manufacturer's design position for a 5th percentile adult female ATD. Position number one (1) is the uppermost position.

SEAT BELT UPPER ANCHORAGE POSITIONING

Seating Position	Total No. of Positions	Placed in Position
Driver Seat	5	3

DATA SHEET NO. 2 ... (CONTINUED)

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

Test Vehicle: 2011 Subaru Outback 2.5i AWD 5-Door MPV

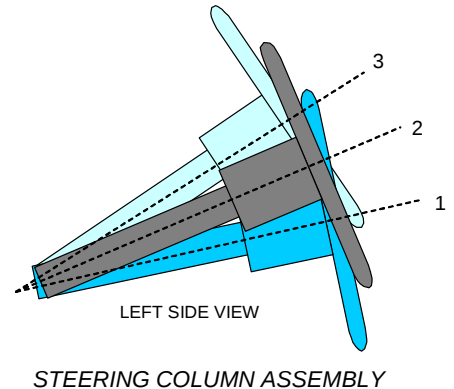
NHTSA No. MB5502

Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole

Test Date: 08/10/10

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. A digital inclinometer is used to measure a plate placed across the rim of the steering wheel for angle. A tape measure is used to measure a reference point's travel and set the mid distance.

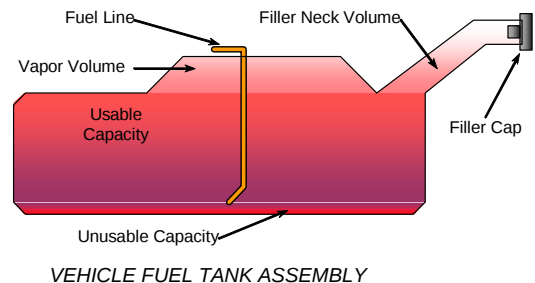


STEERING COLUMN POSITIONING

	Angle (°)	Fore-Aft Position (mm)
Lowermost Position, No. 1	21.0	73
Geometric Center Position, No. 2	22.4	9.25
Uppermost Position, No. 3	23.7	112
Steering Wheel Travel	2.7	39
Test Position	22.3	92

FUEL PUMP

The test vehicle is equipped with an electric fuel pump. The fuel pump is activated for a few seconds when the ignition is turned on. After that the pump operates only when the engine is running. The fuel filler door is located on the left rear fender. The standard fuel tank occupies the area under the rear seat.



FUEL CAPACITY DATA

Description	Liters
Usable Capacity of "Standard Tank"	70.02
Usable Capacity of "Optional Tank"	
Usable Capacity of Standard Tank as Specified In Owner's Manual	
Usable Capacity of Optional Tank as Specified in Owner's Manual	
92 - 94% of Usable Capacity	64.42 to 65.82
Actual Amount of Stoddard Solvent Used	65.15
1/3 of Usable Capacity	23.34

DATA SHEET NO. 3

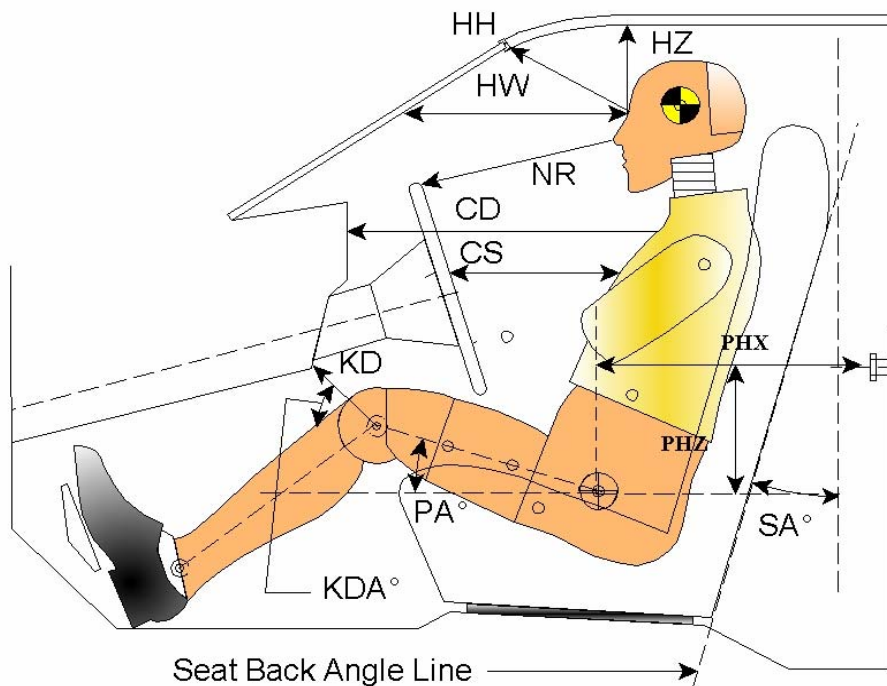
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Subaru Outback 2.5i AWD 5-Door MPV

NHTSA No. MB5502

Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole

Test Date: 08/10/10



DUMMY LONGITUDINAL CLEARANCE DIMENSIONS (S/N: 307)

Driver Code	Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	246	58.6
HW	Head to Windshield	530	0.0
HZ	Head to Roof	201	90.0
NR	Nose to Rim	232	12.3
CD	Chest to Dash	382	14.5
CS	Chest to Steering Wheel	166	0.0
KDL / KDAL°	Left Knee to Dash	111	38.5
KDR / KDAR°	Right Knee to Dash	99	39.1
PA°	Pelvic Angle		18.3
PHX	H-Point to Striker (x-direction)	373	0.0
PHZ	H-Point to Striker (z-direction)	146	90.0
SA°	Seat Back Angle		2.5

DATA SHEET NO. 4

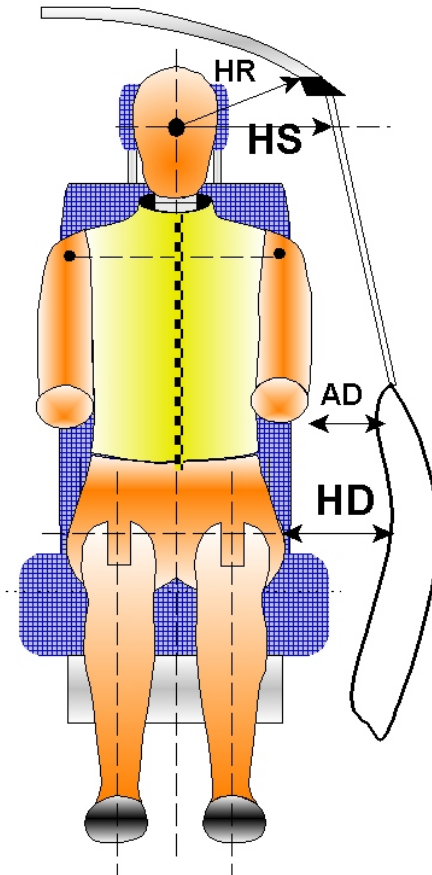
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Subaru Outback 2.5i AWD 5-Door MPV

NHTSA No. MB5502

Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole

Test Date: 08/10/10



DUMMY LATERAL CLEARANCE DIMENSIONS (S/N: 307)

Code	Measurement Description	Units	Driver
HR	Head to Side Header	mm	261
HS	Head to Side Window	mm	382
AD	Arm to Door	mm	132
HD	H-Point to Door	mm	182

DATA SHEET NO. 5

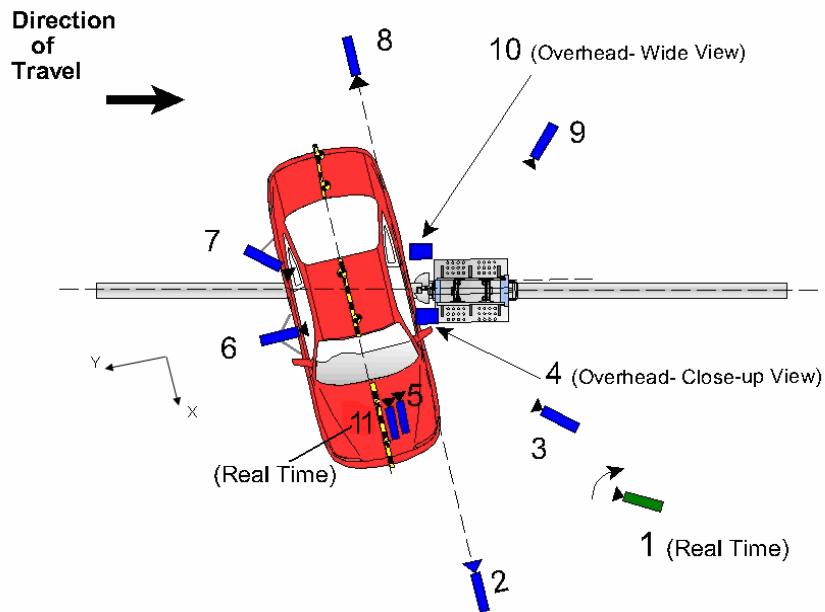
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2011 Subaru Outback 2.5i AWD 5-Door MPV

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CAMERA LOCATIONS

Camera No.	View	Coordinates (mm)			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	1.14	-0.53	-1.22	35	400
6	On-Board - Dummy Side View	0.02	1.45	-1.16	14	1000
7	On-Board - Dummy Rear Oblique View	-0.94	1.50	-1.22	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	1.36	-0.62	-1.25		30

* All Measurements accurate to ± 6 mm

NOTE: Vehicle was at a 15° angle to the rigid pole

INSTRUMENTATION

	Number of Channels
Driver Dummy	16
Vehicle Structure	21
Pole Load Cells	8
Contact Switches	3
Airbag Timing Sensor	2
Total No. of Data Channels	50

DATA SHEET NO. 6

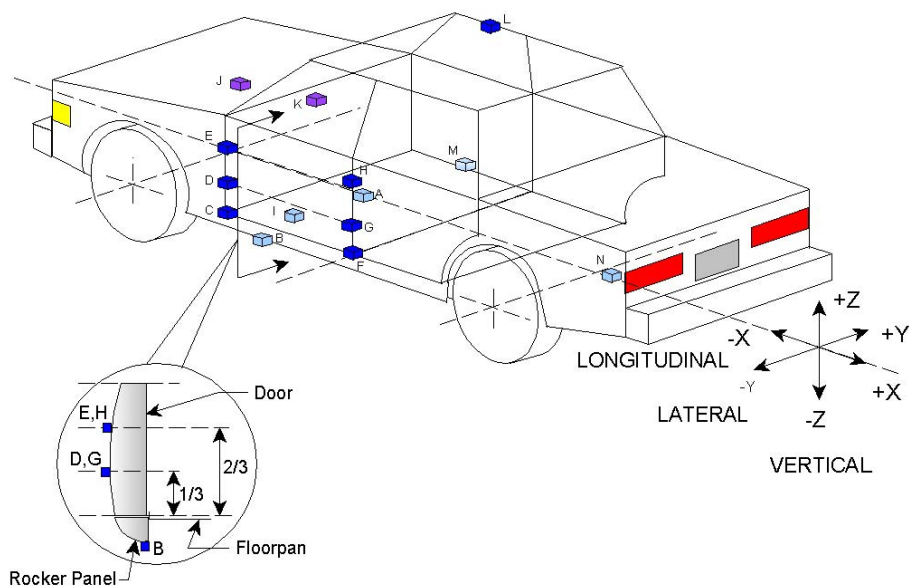
VEHICLE ACCELEROMETER DATA

Test Vehicle: 2011 Subaru Outback 2.5i AWD 5-Door MPV

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VEHICLE ACCELEROMETER LOCATIONS

	Sensor Description	Coordinates (mm)		
		X	Y	Z
A	Vehicle CG Accelerometer	-2045	0	525
	Vehicle CG ARS	-2045	0	525
B	Left Floor Sill	-3040	-390	285
C	A-Pillar Sill	-3290	-810	440
D	A-Pillar Lower	-3290	-810	560
E	A-Pillar Mid	-3290	-810	835
F	B-Pillar Sill	-2195	-720	498
G	B-Pillar Lower	-2195	-720	660
H	B-Pillar Mid	-2195	-720	350
I	Driver Seat	-2780	-530	425
J	Engine Top	-4110	0	903
K	Firewall	-3600	20	835
L	Right Roof Sill	-2290	495	1580
M	Right Floor Sill	-2205	728	402
N	Rear Floorpan	-1045	105	705

DATA SHEET NO. 7

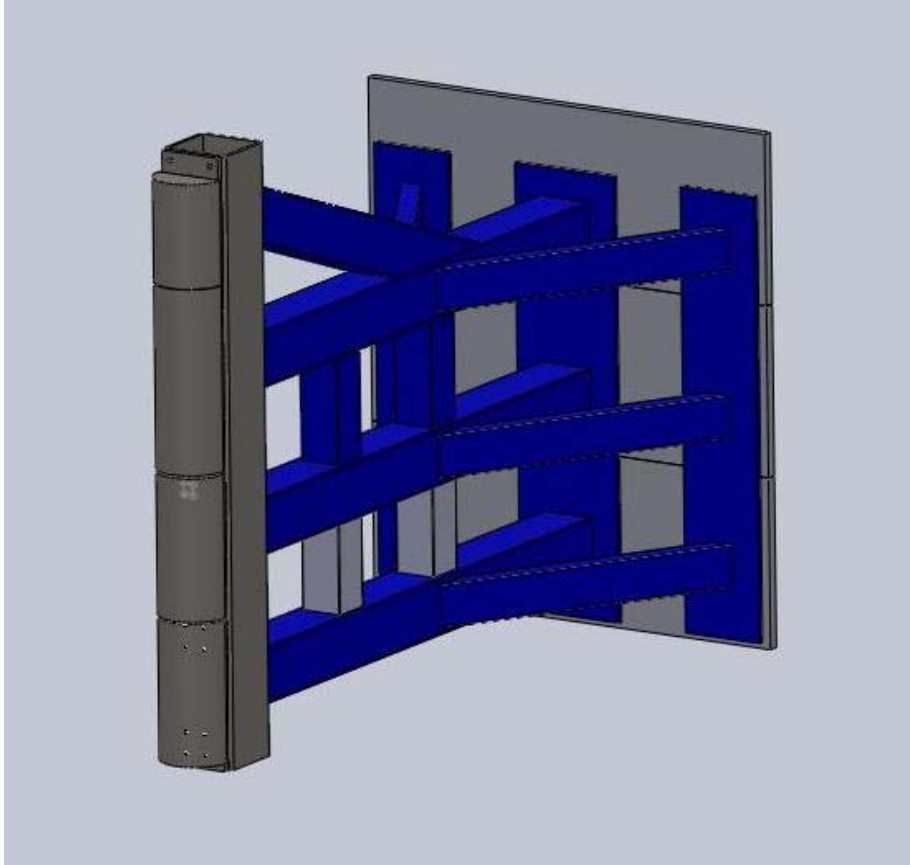
RIGID POLE LOAD CELL DATA

Test Vehicle: 2011 Subaru Outback 2.5i AWD 5-Door MPV

NHTSA No. MB5502

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RIGID POLE LOAD CELL LOCATIONS

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: 2011 Subaru Outback 2.5i AWD 5-Door MPV NHTSA No. MB5502
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole Test Date: 08/10/10

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Driver Dummy
Dummy Type/Serial No.	P572V (SID-IIs) / Serial No. 299
Head Contact	Curtain airbag, headrest
Upper Torso Contact	Side Torso/Pelvis airbag, Door panel
Lower Torso Contact	Side Torso/Pelvis airbag, Door panel
Left Knee Contact	Door panel
Right Knee Contact	Knee bolster

POST-TEST DOOR OPENING AND SEAT TRACK INFORMATION

Description	Front	Rear
Left Side Door Opening	Jammed shut	Jammed shut
Right Side Door Opening	Remained closed and operational	Remained closed and operational
Seat Movement	None	None
Seatback Failure	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	Broken / cracked
Window Damage	Left front window broken
Other Notable Effects	None

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

VEHICLE SPEED AND IMPACT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset From Vertical Reference Line	mm	+/- 38	-5 (Left)
Trap No. 1 Velocity (Primary)	km/h	30.4 to 32.0	31.8
Trap No. 2 Velocity (Redundant)	km/h	30.4 to 32.0	Failed

DATA SHEET NO. 9

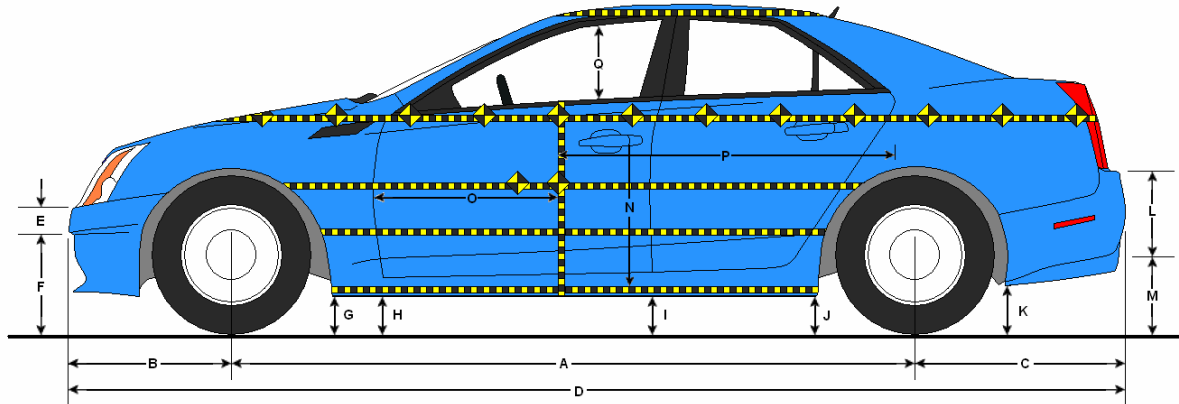
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2011 Subaru Outback 2.5i AWD 5-Door MPV

NHTSA No. MB5502

Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole

Test Date: 08/10/10



VEHICLE PROFILE MEASUREMENTS

Code	Description	Pre-Test	Post-Test	Difference
A	Vehicle Wheelbase	2744	2643	-101
B	Front Axle to FSOV	962	1006	44
C	Rear Axle to RSOV	1071	1090	19
D1	Total Vehicle Length at Left Side	3147	3026	-121
D2	Total Vehicle Length at Centerline	4776	4739	-37
D3	Total Vehicle Length at Right Side	3153	3177	24
E	Front Bumper Thickness	145	145	0
F	Front Bumper Bottom to Ground	467	535	68
G	Sill Height at Front Wheel Well	262	253	-9
H	Sill Height at Front Door Leading Edge	272	266	-6
I	Sill Height at B-Pillar	282	299	17
J1	Sill Height at Rear Wheel Well	273	304	31
J2	Pinch Weld Height at Rear Wheel Well	265	314	49
K	Sill Aft of Rear Wheel Well	314	370	56
L	Rear Bumper Thickness	105	105	0
M	Rear Bumper Bottom to Ground	532	557	25
N	Sill Height to Window Bottom Sill	626	680	54
O	Front Door Leading Edge to Impact CL	652	527	-125
P	Rear Door Trailing Edge to Impact CL	1532	1412	-120
Q	Front Window Opening	457	490	33
R	Right Side Length	3153	3177	24
S	Left Side Length	3147	3026	-121
T	Vehicle Width at B-Pillar	1771	1702	-69

S

DATA SHEET NO. 10

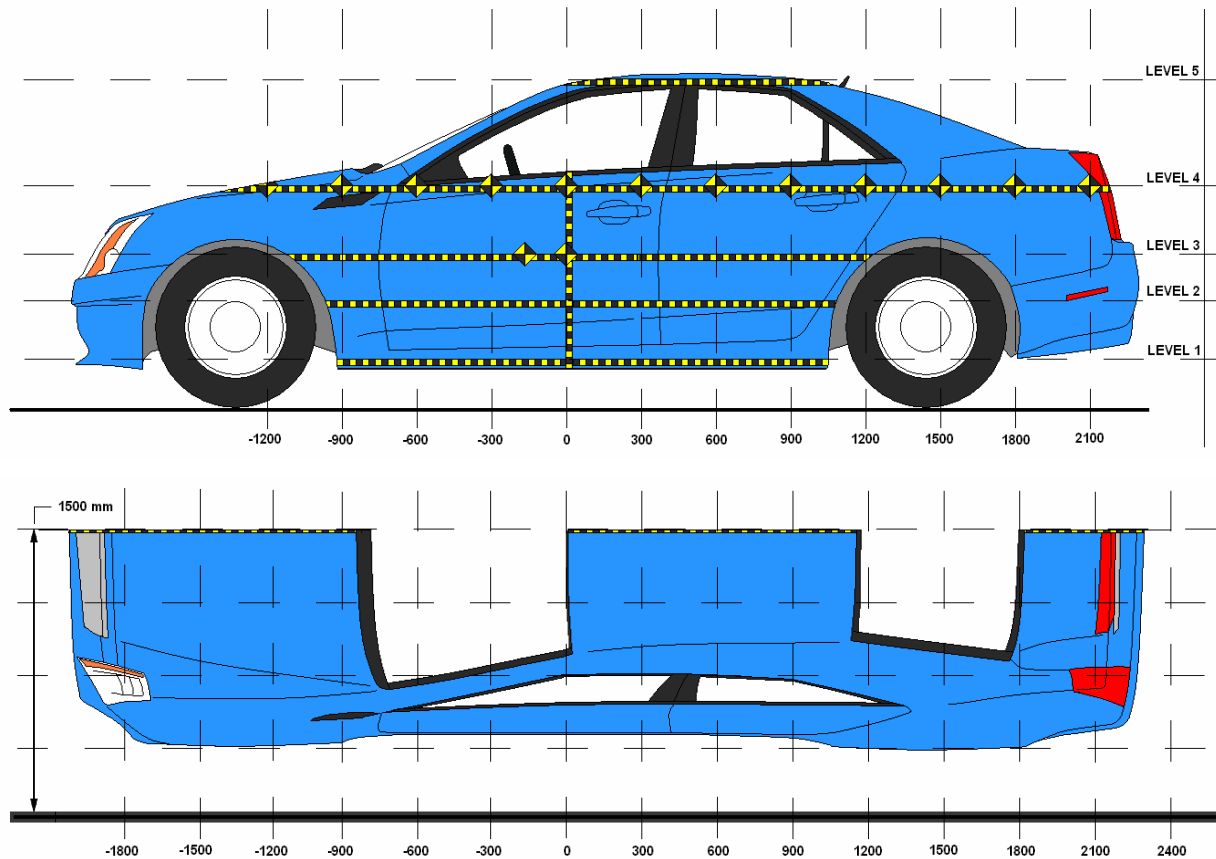
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Subaru Outback 2.5i AWD 5-Door MPV

NHTSA No. MB5502

Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole

Test Date: 08/10/10



NOTE: All measurements are in millimeters (mm)

LEVEL HEIGHTS

Level	Description	Height Above Ground (mm)
1	Sill Top Height	315
2	Occupant H-Point Height	649
3	Mid-Door Height	718
4	Window Sill Height	993
5	Window Top Height	1523

DATA SHEET NO. 10 ... (CONTINUED)

VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Subaru Outback 2.5i AWD 5-Door MPV

NHTSA No. MB5502

Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole

Test Date: 08/10/10

VEHICLE EXTERIOR CRUSH MEASUREMENTS

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900			588	693				693	770				105	77	
-750		595	603	685			706	713	775			111	110	90	
-600	640	616	615	677		774	780	764	775		134	164	149	98	
-450	649	616	613	668		841	827	811	832		192	211	198	164	
-300	646	614	610	659		903	936	921	910		257	322	311	251	
-150	646	611	608	648		982	1012	1016	998		336	401	408	350	
0	655	610	607	636		1074	1088	1088	1087		419	478	481	451	
150	645	609	606	631	890	996	1022	1034	1040	1140	351	413	428	409	250
300	644	608	605	629	874	902	922	923	920	1076	258	314	318	291	202
450	655	610	607	627	865	839	805	804	823	1024	184	195	197	196	159
600	643	610	606	626	863	766	756	755	778	985	123	146	149	152	122
750	643	611	607	625	861	703	734	731	754	964	60	123	124	129	103
900	653	612	608	624	862	647	713	711	729	957	-6	101	103	105	95
1050	639	614	610	624	862	575	677	683	706	951	-64	63	73	82	89
1200	613	596	600	628	864	488	634	643	687	947	-125	38	43	59	83
1350			583	614	869			622	651	945			39	37	76
1500				632	877				640	948				8	71
1650				635	889				682	955				47	66
1800				640	904				682	966				42	62
1950				645	916				684	975				39	59
2100				654					687					33	
2250															
2400															
2550															
2700															
2850															

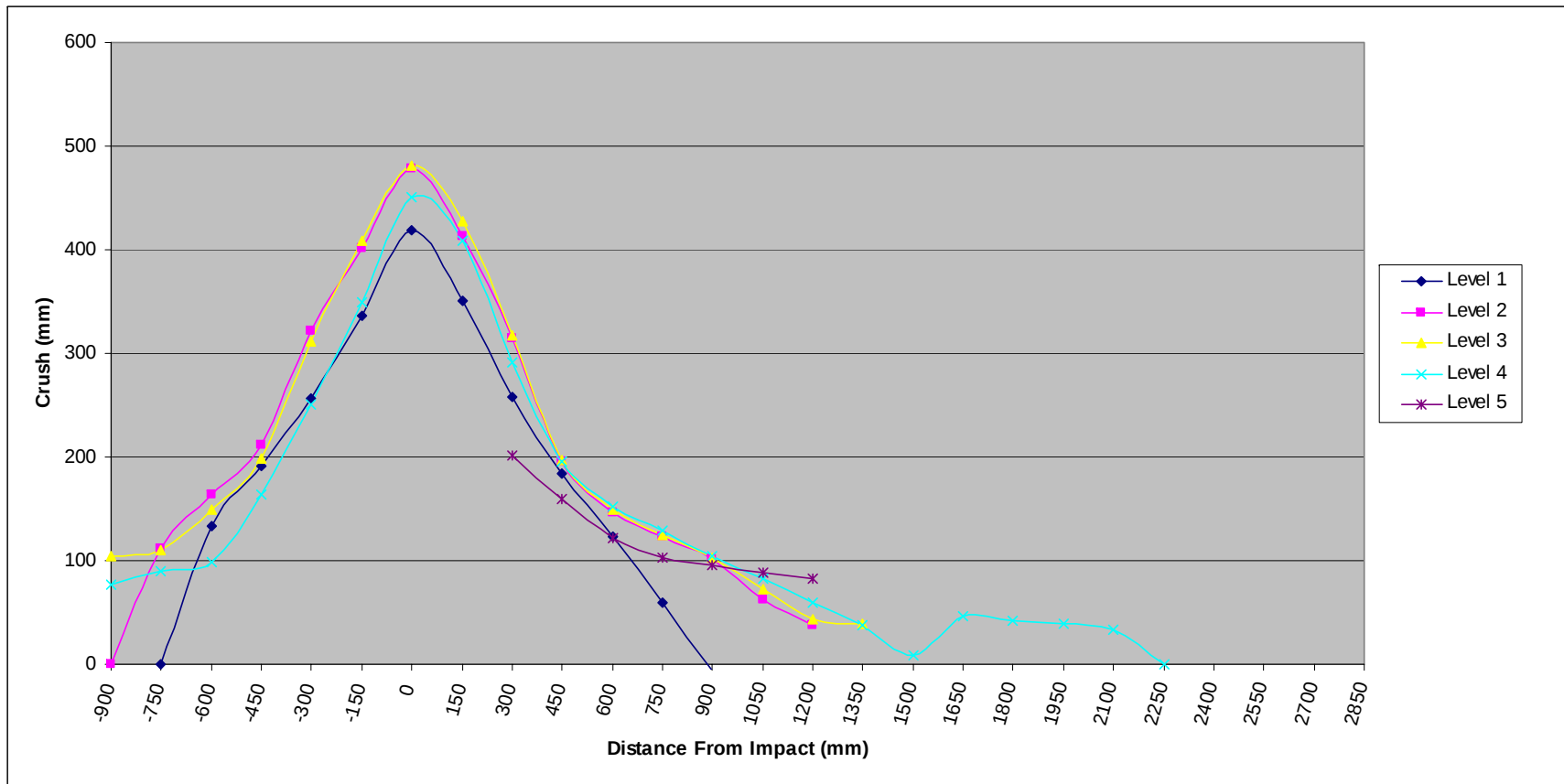
MAXIMUM CRUSH DATA

	Units	Level 1	Level 2	Level 3	Level 4	Level 5
Maximum Crush	mm	419	478	481	451	250
Distance From Impact	mm	0	0	0	0	150

DATA SHEET NO. 10 ... (CONTINUED)
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Subaru Outback 2.5i AWD 5-Door MPV
Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole

NHTSA No. MB5502
Test Date: 08/10/10



DATA SHEET NO. 11

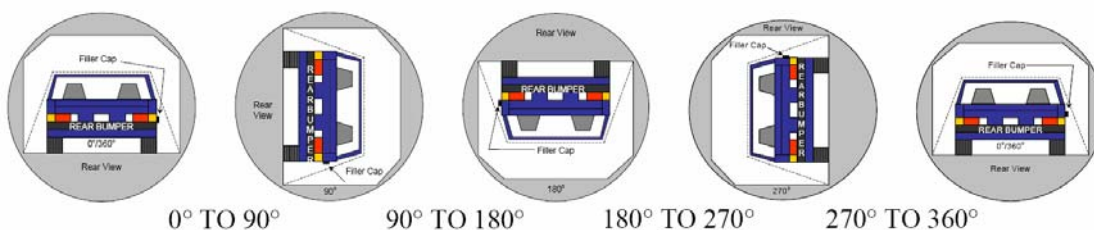
FMVSS NO. 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2011 Subaru Outback 2.5i AWD 5-Door MPV NHTSA No. MB5502
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test Date: 08/10/10

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 29.4° C Test Time: 10:47 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: No spillage occurred



SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	84	300	384
90° To 180°	82	300	382
180° To 270°	89	300	389
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°	None
90° To 180°	None
180° To 270°	None
270° To 360°	None

DATA SHEET NO. 12

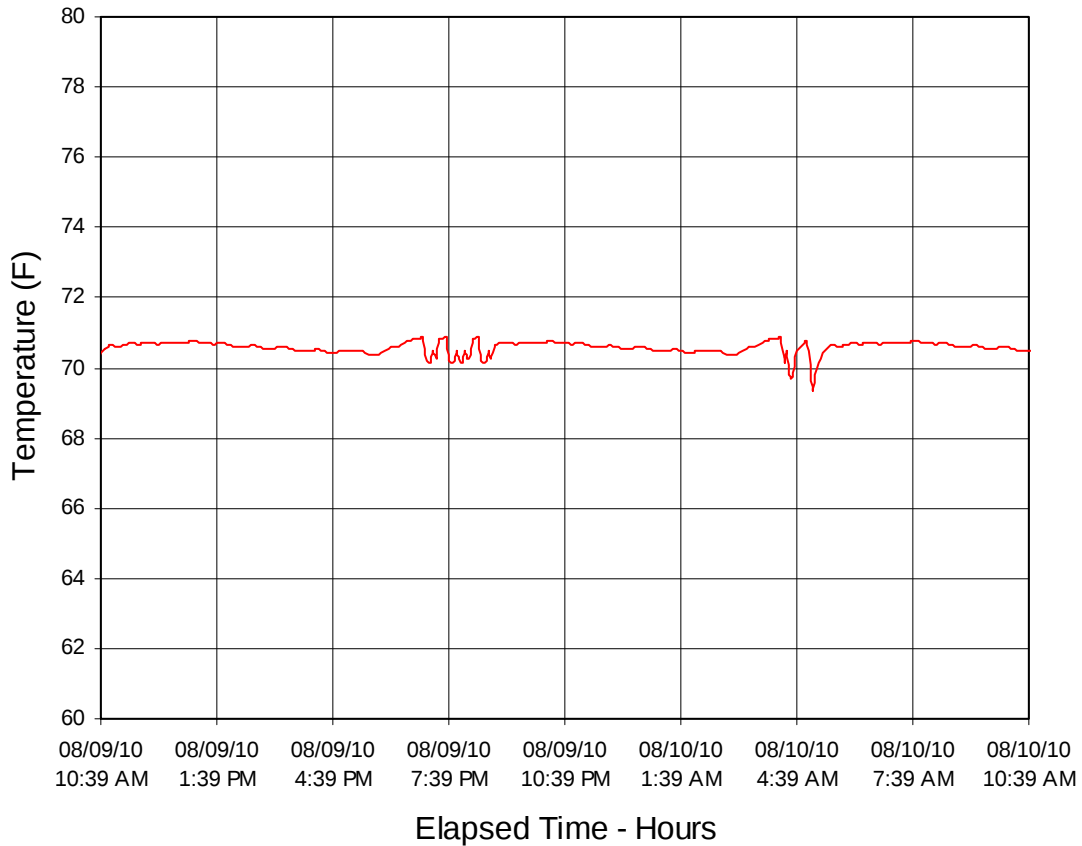
DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2011 Subaru Outback 2.5i AWD 5-Door MPV

NHTSA No. MB5502

Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole

Test Date: 08/10/10



APPENDIX A
PHOTOGRAPHS

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FIGURE 1. 2011 Subaru Outback 2.5i AWD Side Pole As Delivered



FIGURE 2. 2011 Subaru Outback 2.5i AWD Side Pole As Delivered



FIGURE 3. Pre-Test Frontal View of Test Vehicle

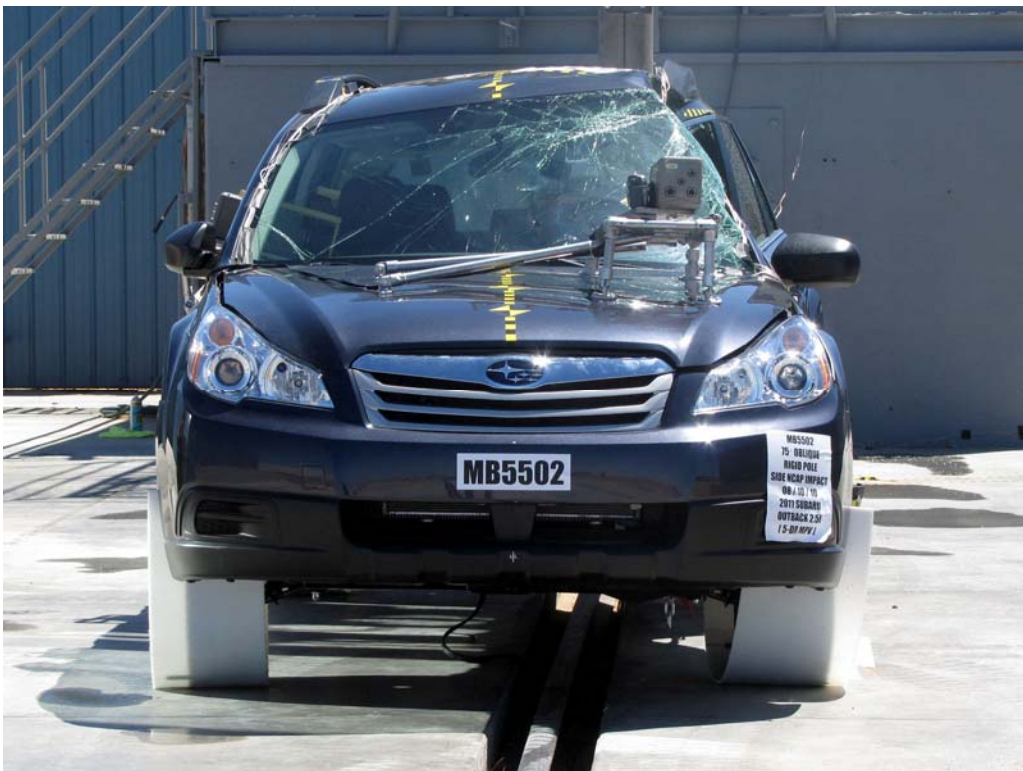


FIGURE 4. Post-Test Frontal View of Test Vehicle



FIGURE 5. Pre-Test Left Front Three-Quarter View of Test Vehicle



FIGURE 6. Post-Test Left Front Three-Quarter 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 Three-Quarter View of Test Vehicle



FIGURE 10. Post-Test Left Rear Three-Quarter 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

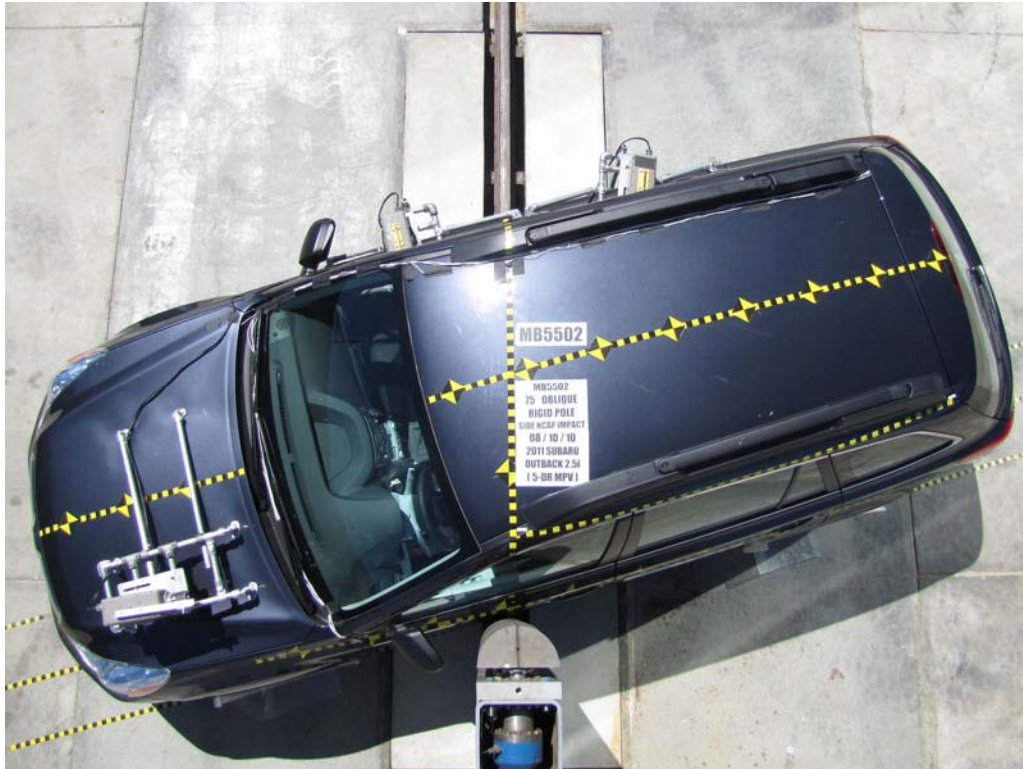


FIGURE 15. Pre-Test Overhead View of Test Vehicle and Pole



FIGURE 16. Post-Test Overhead View of Test Vehicle and Pole



FIGURE 17. Pre-Test Left Side View of Pole
Positioned Against Side of Vehicle at Impact Point



FIGURE 18. Pre-Test Right Side View of Pole
Positioned Against Side of Vehicle at Ideal Impact Point



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

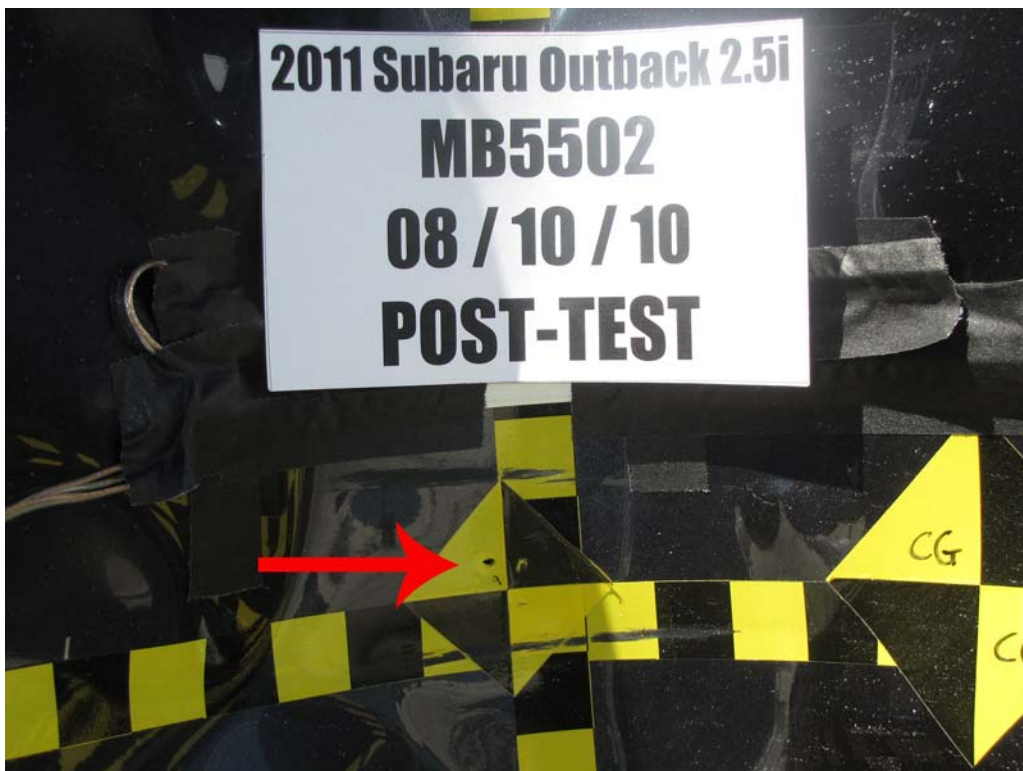


FIGURE 20. Post-Test Close-Up View of Impact Point Target Showing Impact Location



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



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



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



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



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



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

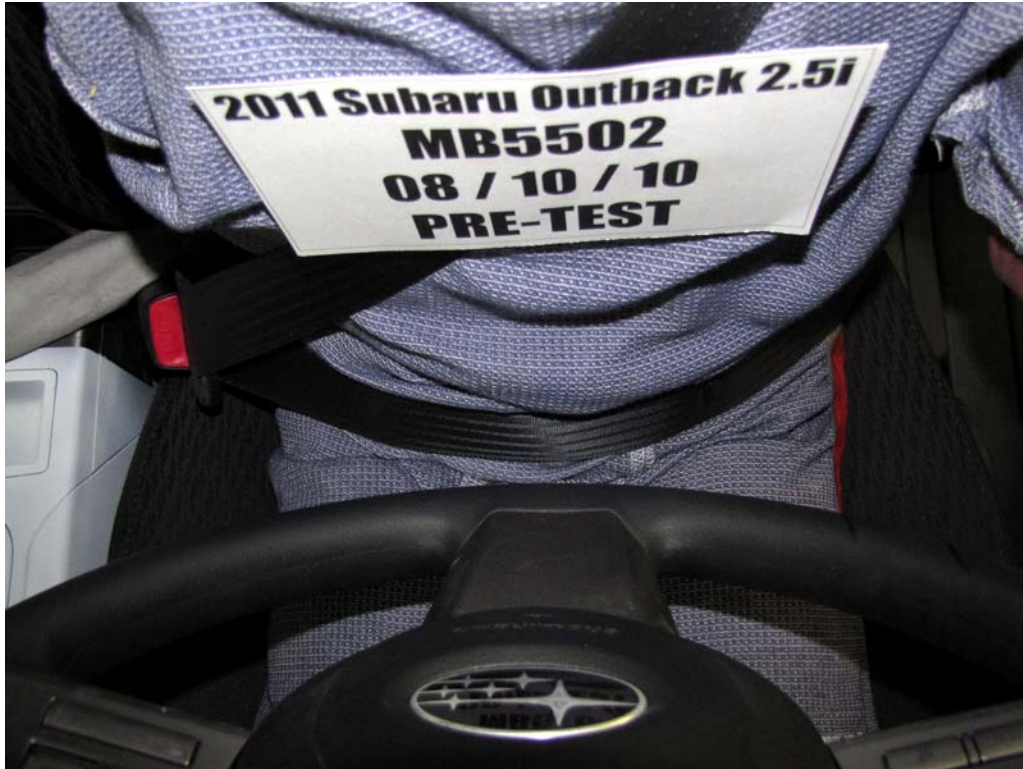


FIGURE 29. Pre-Test Overhead View of Dummy Thighs on Seat Pan



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



FIGURE 31. Pre-Test View of Dummy's Head Showing Dummy's Head Is Level

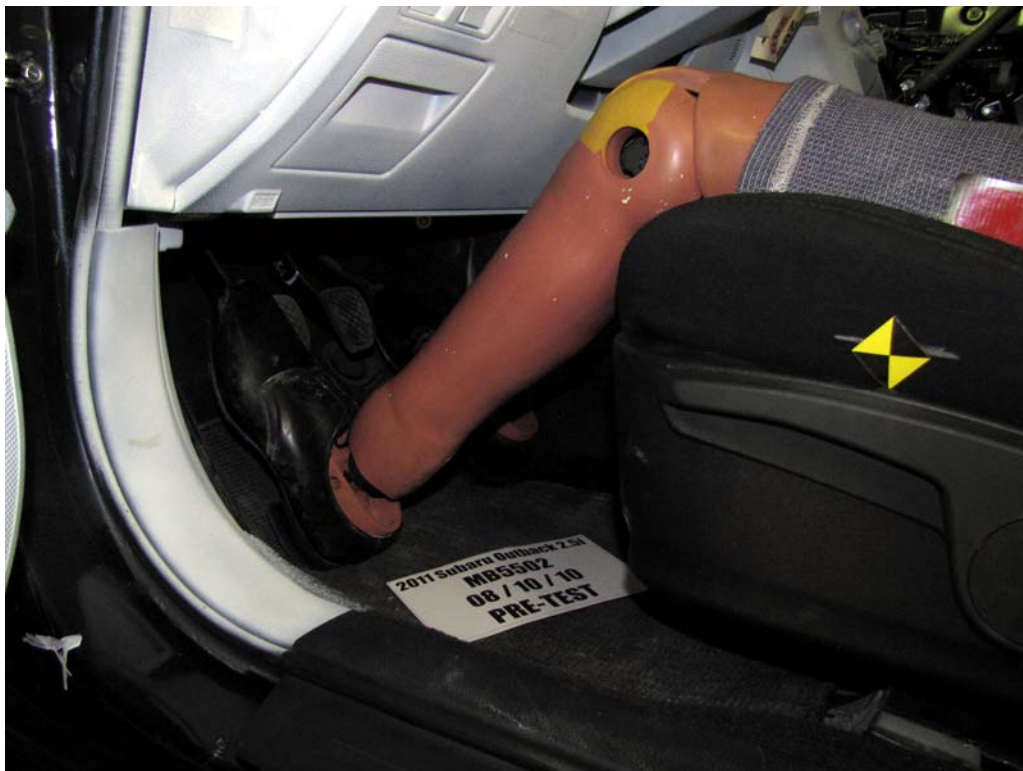


FIGURE 32. Pre-Test Placement of Dummy's Feet



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



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



FIGURE 35. Pre-Test View of Parking Brake



FIGURE 36. Pre-Test Close-Up Left Side View of Driver Seat Track

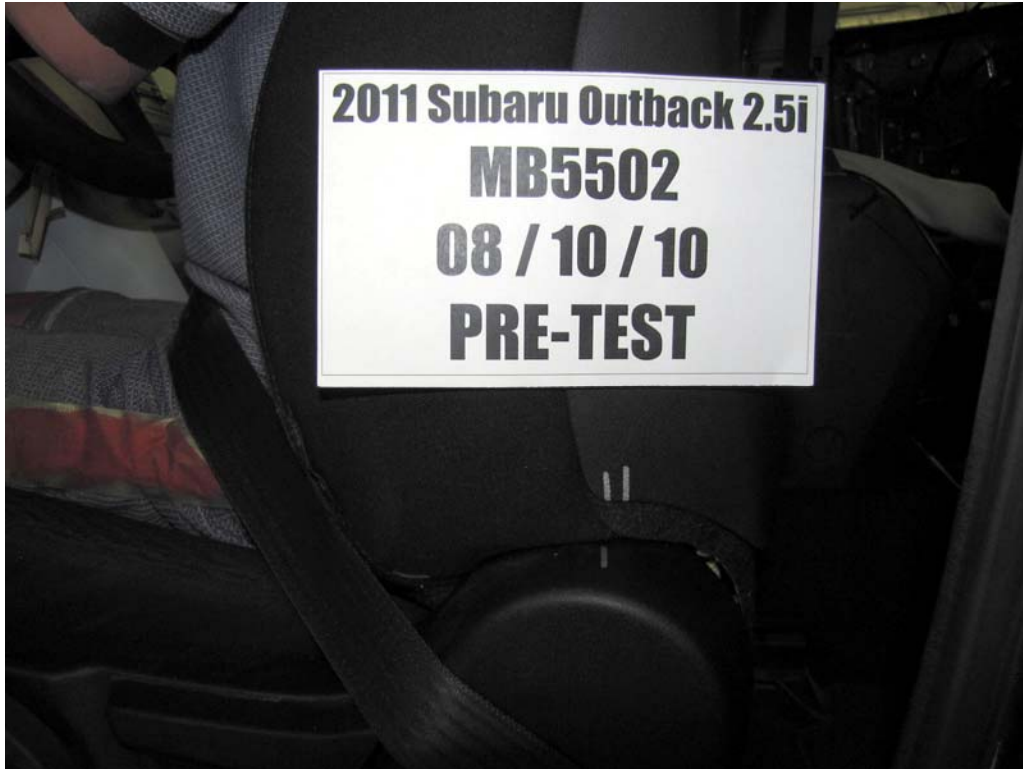


FIGURE 37. Pre-Test Close-Up Left Side View of Driver Seat Back



FIGURE 38. Pre-Test Close-Up View of Driver Seat Back or Head Restraint



FIGURE 39. Pre-Test Driver Dummy and Door Clearance



FIGURE 40. Post-Test Driver Dummy and Door Clearance



FIGURE 41. Pre-Test Right Side View of Dummy and Front Seat Occupant Compartment



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



FIGURE 43. Pre-Test Inner Driver Door Panel View



FIGURE 44. Post-Test Inner Driver Door Panel View
Showing Dummy Contact Locations



FIGURE 45. Post-Test Dummy Close-Up Head Contact with Vehicle Interior View

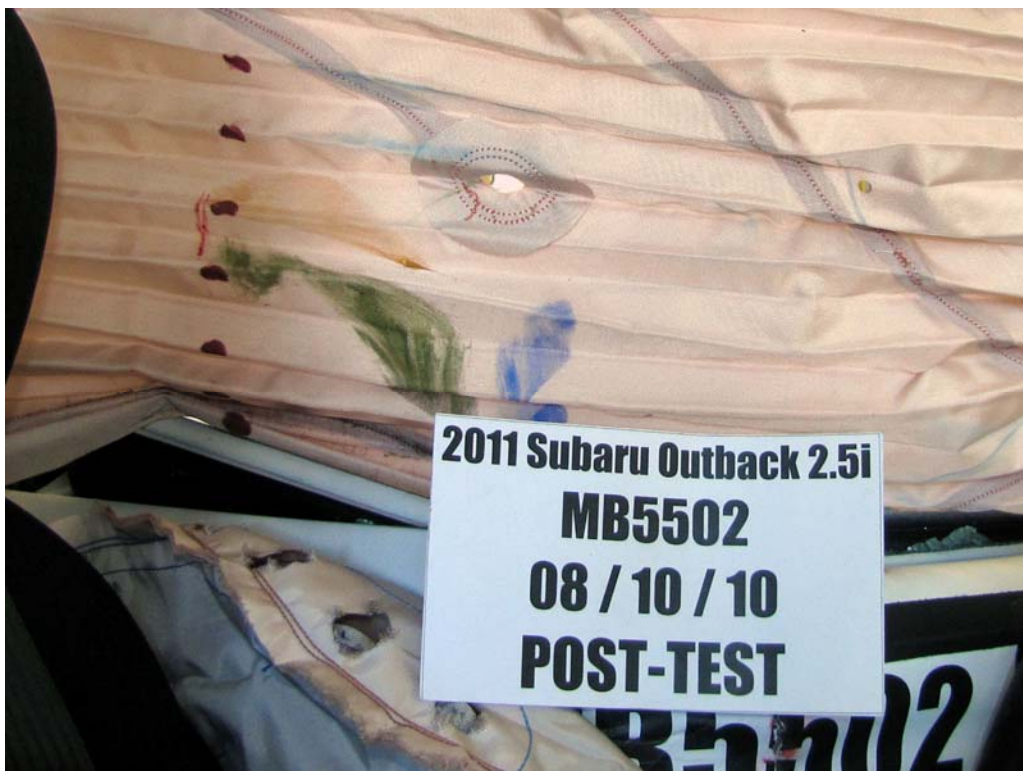


FIGURE 46. Post-Test Dummy Close-Up Head Contact with Side Airbag View

No Contact With Vehicle Photo Not Applicable

FIGURE 47. Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View



FIGURE 48. Post-Test Dummy Close-Up Torso Contact with Side Airbag View

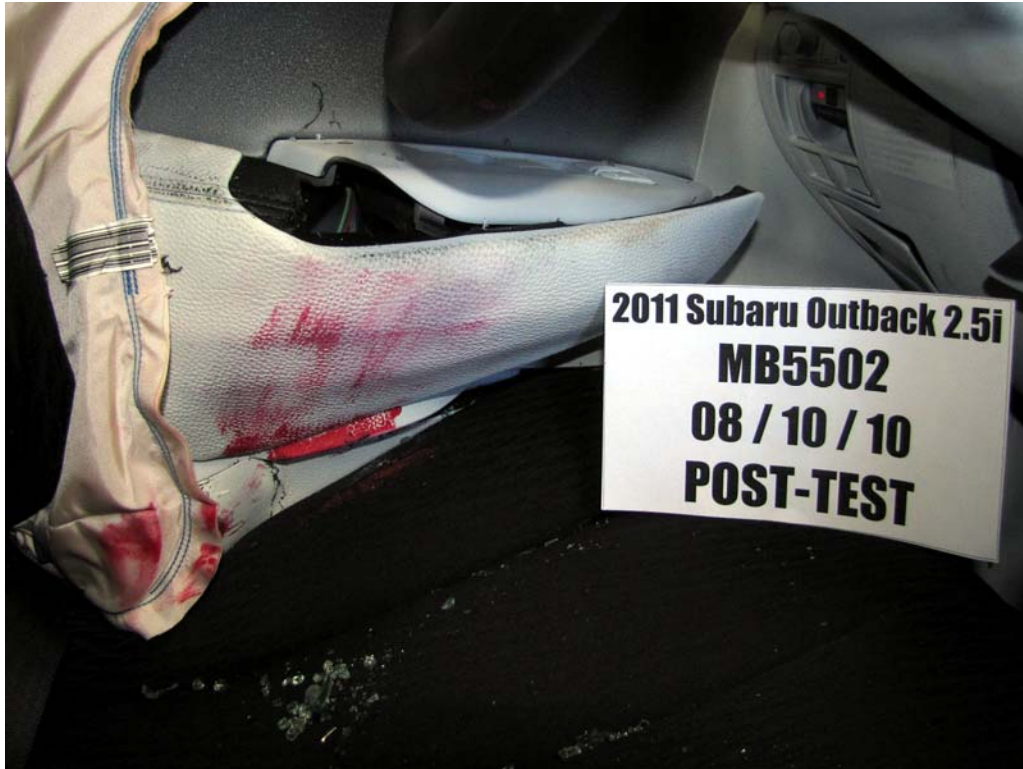


FIGURE 49. Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View

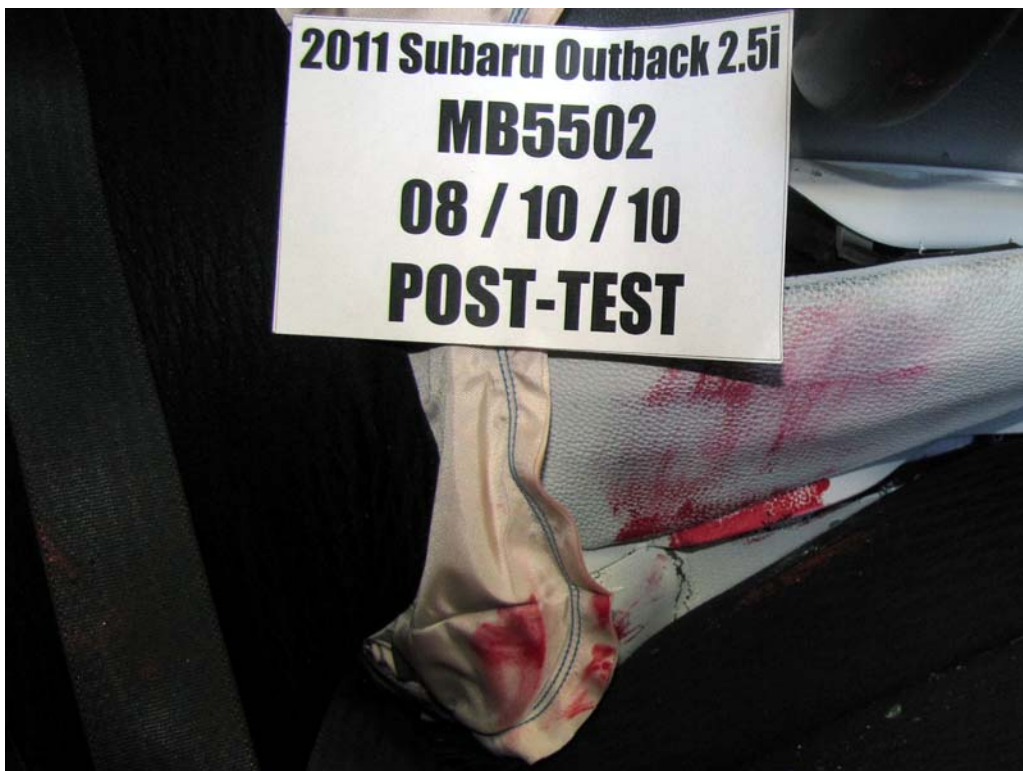


FIGURE 50. Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View



FIGURE 51. Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



FIGURE 52. Post-Test View of Fuel Filler Cap or Fuel Filler Neck



FIGURE 53. Close-Up View of Vehicle's Certification Label



FIGURE 54. Close-Up View of Vehicle's Tire Information Placard



FIGURE 55. Pre-Test Pole Barrier Front View



FIGURE 56. Post-Test Pole Barrier Front View

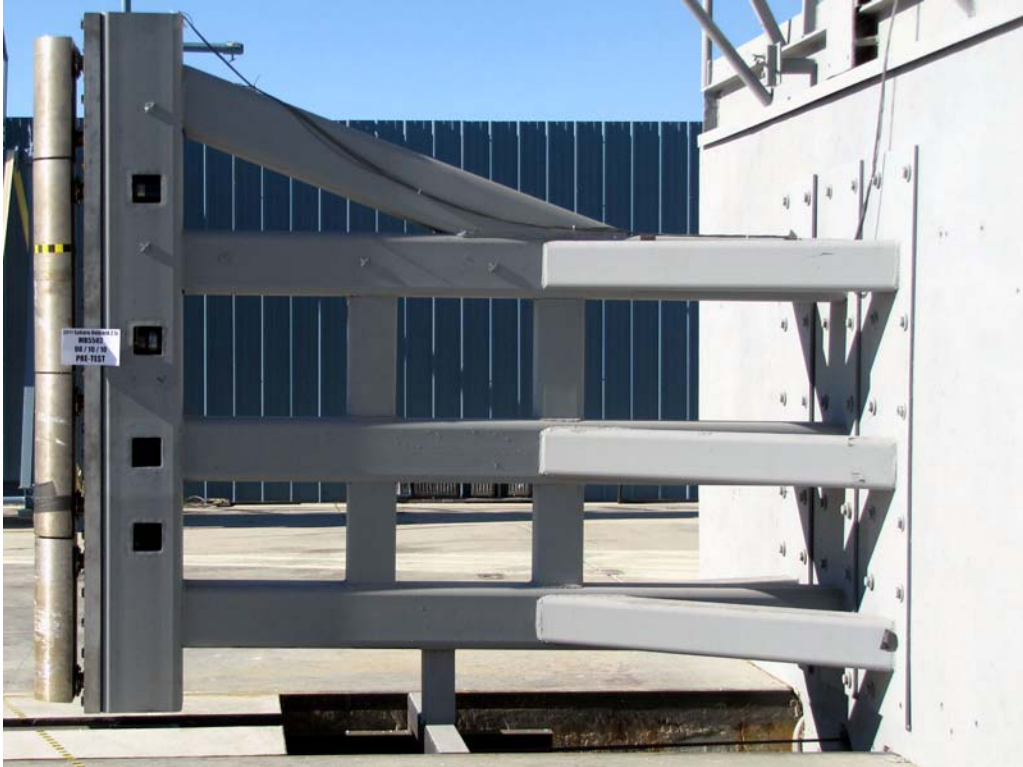


FIGURE 57. Pre-Test Pole Barrier Side View

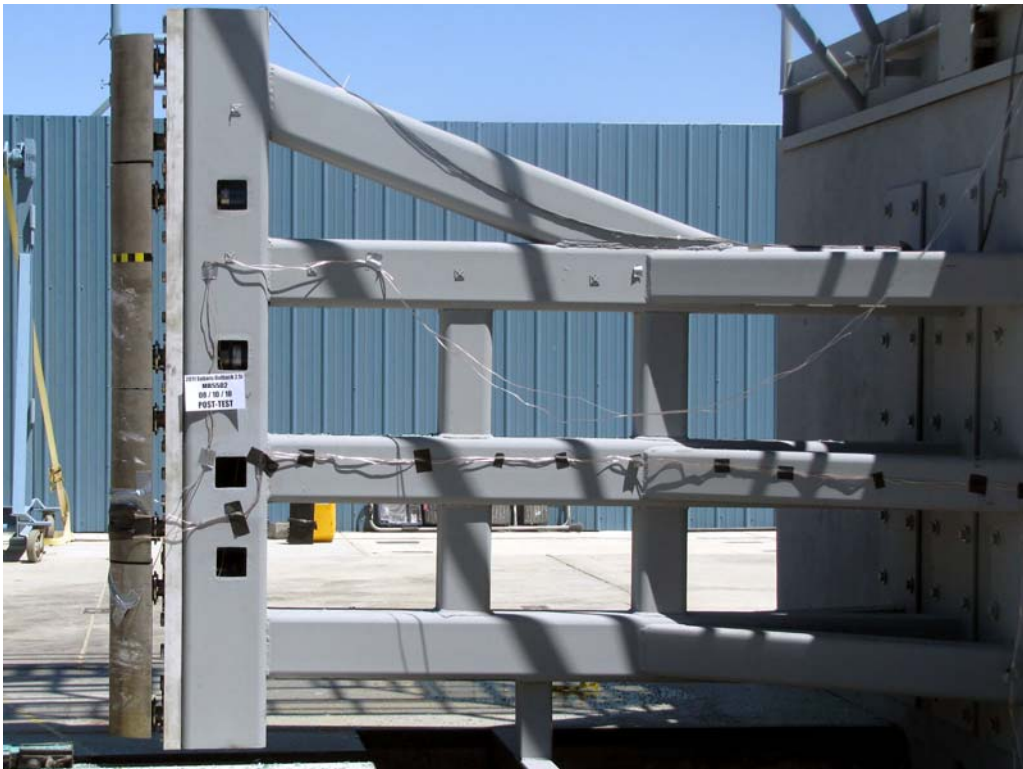


FIGURE 58. Post-Test Pole Barrier Side View



FIGURE 59. Pre-Test Ballast View

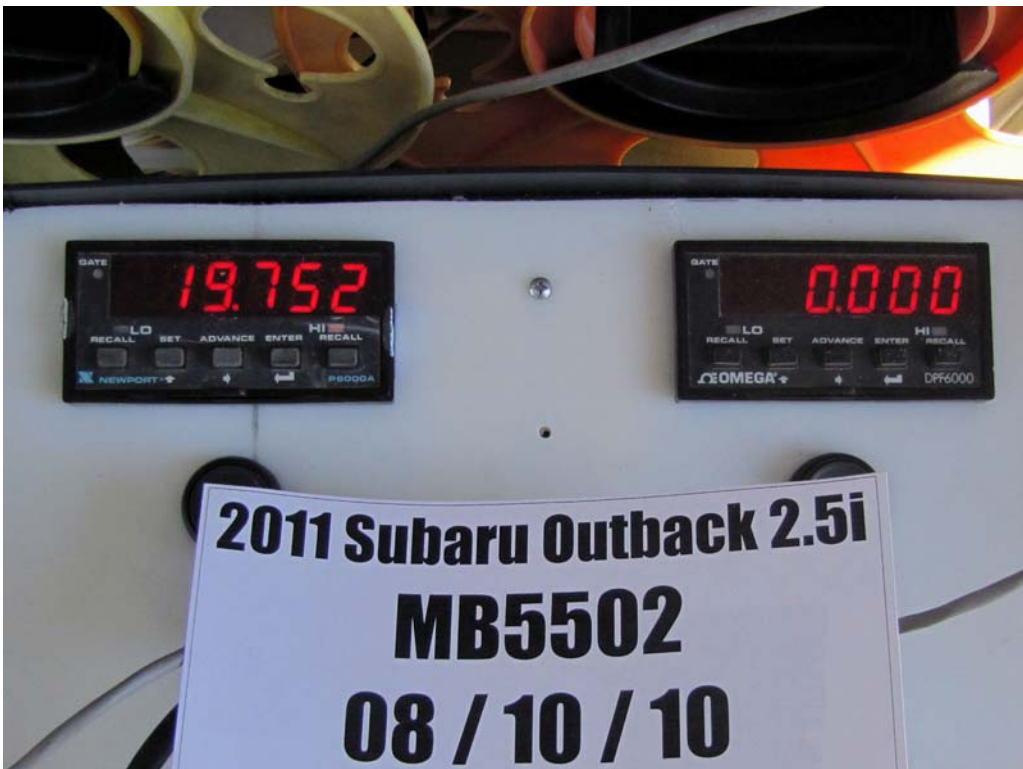


FIGURE 60. Post-Test Primary and Redundant Speed Trap Read-Out



FIGURE 61. FMVSS No. 301-305 Rollover 0 Degrees



FIGURE 62. FMVSS No. 301-305 Rollover 90 Degrees



FIGURE 63. FMVSS No. 301-305 Rollover 180 Degrees



FIGURE 64. FMVSS No. 301-305 Rollover 270 Degrees



FIGURE 65. FMVSS No. 301-305 Rollover 360 Degrees



FIGURE 66. 2011 Subaru Outback 2.5i AWD Side Pole Impact Event

SUBARU		VIN: 4S4BRBAC81323045 Model/Code: 2011 Subaru Outback 2.5i / BDA Exterior Color: Graphite Gray Metallic Lufayette, IN Delivered by / Carrier: Truck / 685-601126	OUTBACK	
STANDARD FEATURES		GOVERNMENT SAFETY RATINGS		OPTIONAL EQUIPMENT AND OTHER ITEMS
SAFETY Symmetrical All-Wheel Drive (AWD) Vehicle Dynamics Control (VDC) Anti-Lock Brakes: 4-Wheel Disc Subaru Advanced Frontal Air Bag System Side-Curtain Airbags Front Seat Side-Impact Air Bags 3-Point Seatbelts, All Seating Positions LATCH System for Child Safety Seats Anti-Theft Alarm & Immobilizer System Tire Pressure Monitoring System (TPMS) Roll-over Sensor Brake Assist	COMFORT, CONVENIENCE AND INTERIOR 8 Cupholders AM/FM Stereo with CD Player Auxiliary Audio Jack Air Conditioning with Filtration System Carpeted Floor Mats, Cargo Area Mat Cruise Control Electronic Parking Brake Multi-Function Trip Computer Outside Temperature Gauge Power Windows, Door Locks and Mirrors Remote Keyless Entry System Steering Wheel Audio & Cruise Controls 60/40 Fold-Down/Recline Rear Seatback Tilt / Telescopic Steering Wheel	Frontal Driver Not Rated Passenger Not Rated Crash Side Front Seat Not Rated Rear Seat Not Rated Rollover Not Rated	Manufacturer's Suggested Retail Price \$23,495.00 Full Tank of Gas INCLD Bluetooth Connect Kit \$460.00 Partial Zero Emission (Pzev) Super-Ultra Low Emission Veh Power Certified Where Required Power Warranty State Specific	
PERFORMANCE AND EXTERIOR 2.5i, Horizontally-Opposed 4-Cyl Engine Auto Lights w/ Daytime Running Lights Intermittent Front/Rear Wipers Fully Independent Raised Suspension Roof Rails w/ Integrated Cross Bars Traction Control		Star ratings based on the risk of injury in a frontal impact. Frontal ratings should ONLY be compared to other vehicles of similar size and weight. Star ratings based on the risk of injury in a side impact. Star ratings based on the risk of rollover in a single vehicle crash. Star ratings range from 1 to 5 stars (★★★★★), with 5 being the highest. Source: National Highway Traffic Safety Administration (NHTSA) VISIT www.safercar.gov or 1-800-327-4236		Destination and Delivery \$725.00 Total Suggested Retail Price \$24,680.00
EPA Fuel Economy Estimates CITY MPG 19 Expected range for most drivers 15 to 23 MPG Estimated Annual Fuel Cost \$1,774 based on 15,000 miles at \$2.60 per gallon Combined Fuel Economy This Vehicle 22 Your actual mileage will vary depending on how you drive and maintain your vehicle. At SUV - AWD Calif. Emission Control Syst.		PARTS CONTENT INFORMATION FOR VEHICLES IN THIS CARLINE: U.S./CANADIAN PARTS CONTENT: 50% MAJOR SOURCES OF FOREIGN PARTS CONTENT: JAPAN: 30% Note: Parts content does not include final assembly, distribution, or other non-parts costs. FOR THIS VEHICLE: FINAL ASSEMBLY POINT: Lufayette, IN COUNTRY OF ORIGIN: ENGINE: JAPAN TRANSMISSION: JAPAN		ASK ABOUT ADDED SECURITY® It could be the most important option you choose. After-assembly mechanical repair protection up to 100,000 miles. Nobody protects your Subaru like Subaru! THE ONLY EXTENDED SERVICE CONTRACT BACKED BY SUBARU
LIMITED WARRANTY/ROADSIDE ASSISTANCE 3 Year / 36,000 Miles Basic 5 Year / 60,000 Miles Powertrain 5 Year/Unlimited Mileage Rust Perforation 3 Yrs / 36,000 Miles 24/7 Roadside Assistance See Owner Info Kit/Warranty For Details		SHIP TO: 090694 SOLD TO: 090694 IRVINE SUBARU 23663 ROCKFIELD BLVD LAKE FOREST, CA 92630 4S4BRBAC81323045 *This is a registered trademark of Subaru. Subarutoyota is a registered trademark of Japanese International Industries, Inc. (Subaru is a registered trademark of Subaru Inc.)		
THIS LABEL HAS BEEN APPLIED PURSUANT TO FEDERAL LAW. DO NOT REMOVE OR ALTER PRIOR TO THE DELIVERY TO THE ULTIMATE PURCHASER.				

FIGURE 67. Monroney Label

5-6 Head restraint and SRS airbags

Head restraint adjustment

To remove the head restraint, pull the release button. To install, push the head restraint into the hole that is located on the top of the seatback until the head restraint locks.

Seating position

Never drive the vehicle with the head restraints removed because they are designed to reduce the risk of serious neck injury in the event that the vehicle is struck from the rear. Therefore, when you remove the head restraints, you must reinstall all head restraints.

All occupants, including the driver, should not operate a vehicle or sit in a vehicle's seat until the head restraints are placed in their proper position in order to reduce the risk of neck injury in the event of a collision.

5-7 Head restraint and SRS airbags

Head restraint adjustment

Both the rear window side seats and the rear center seat are equipped with head restraints.

5-8 Head restraint and SRS airbags

Head restraint adjustment

Both the rear window side seats and the rear center seat are equipped with head restraints.

5-9 Head restraint and SRS airbags

Head restraint adjustment

Both the rear window side seats and the rear center seat are equipped with head restraints.

5-10 Head restraint and SRS airbags

Head restraint adjustment

Both the rear window side seats and the rear center seat are equipped with head restraints.

5-11 Head restraint and SRS airbags

Head restraint adjustment

Both the rear window side seats and the rear center seat are equipped with head restraints.

5-12 Head restraint and SRS airbags

Head restraint adjustment

Both the rear window side seats and the rear center seat are equipped with head restraints.

5-13 Head restraint and SRS airbags

Head restraint adjustment

Both the rear window side seats and the rear center seat are equipped with head restraints.

5-14 Head restraint and SRS airbags

Emergency Locking Retractor (ELR)

This seat is fitted with an Emergency Locking Retractor (ELR). The emergency locking retractor allows the seat to lock automatically when a sudden stop occurs or when the seat is pulled out of its stowed position.

Automatic Locking Retractor (ALR)

For children's use, the ALR is used. The ALR is used to secure a child in the seat. The ALR is used to secure a child in the seat. The ALR is used to secure a child in the seat.

Seat belt warning light and chime

A seat belt warning device that is located in the rear of the seat. The device is used to warn the driver and passengers when the seat belt is not buckled.

Front passenger's warning light

A warning light that is located in the front of the seat. The light is used to warn the driver when the front passenger's seat belt is not buckled.

FIGURE 68. Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

APPENDIX B
VEHICLE AND DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS

Plot		Page
1	Driver Head Acceleration (X) Primary	B-1
2	Driver Head Acceleration (Y) Primary	B-1
3	Driver Head Acceleration(Z) Primary	B-1
4	Driver Head Resultant Primary	B-1
5	Driver Lower Spine T12 Acceleration (X)	B-2
6	Driver Lower Spine T12 Acceleration (Y)	B-2
7	Driver Lower Spine T12 Acceleration (Z)	B-2
8	Driver Lower Spine Y12 Resultant Acceleration	B-2
9	Driver Iliac Wing Force on Impact Side (Y)	B-3
10	Driver Acetabulum Force on Impact Side (Y)	B-3
11	Driver Total Pelvis Force on Impact Side (Y)	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 (X) Redundant
 Driver Head Acceleration (Y) Redundant
 Driver Head Acceleration (Z) Redundant
 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)
 Driver Shoulder Contact Switch
 Driver Torso Contact Switch
 Driver Pelvis Contact Switch
 Center of Gravity Acceleration (X)
 Vehicle Center of Gravity Acceleration (Y)
 Vehicle Center of Gravity Acceleration (Z)
 Vehicle Center of Gravity Angular Rate About X (Roll)
 Vehicle Center of Gravity Angular Rate About Y (Pitch)
 Vehicle Center of Gravity Angular Rate About Z (Yaw)

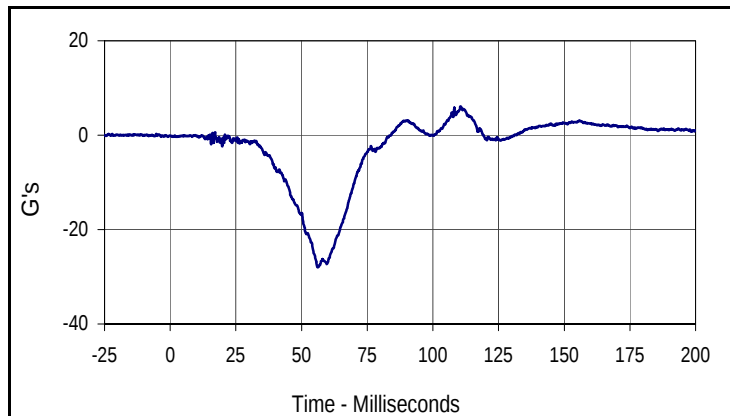
Left Floor Sill Acceleration (Y)
Left A-Pillar Sill Acceleration (Y)
Left Lower A-Pillar Acceleration (Y)
Left Mid A-Pillar Acceleration (Y)
Left B-Pillar Sill Acceleration (Y)
Left Lower B-Pillar Acceleration (Y)
Left Mid B-Pillar Acceleration (Y)
Driver Seat Track at Dummy H-Point Acceleration (Y)
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)
Driver Side Airbag Timing
Driver Side Curtain Airbag Timing

Pole Instrumentation Data

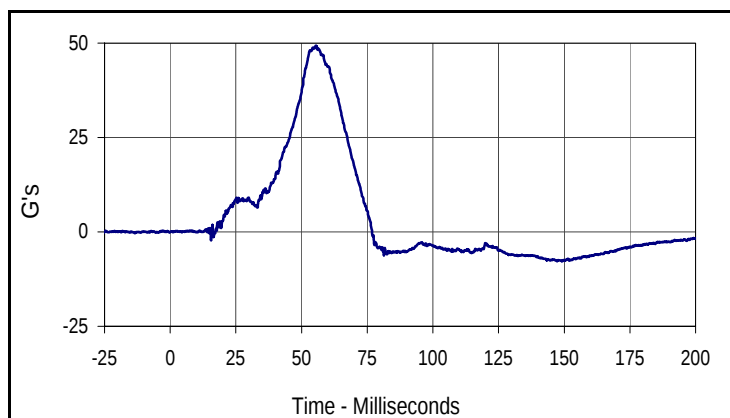
Load Cell Pole Barrier #1 Force (Y)
Load Cell Pole Barrier #2 Force (Y)
Load Cell Pole Barrier #3 Force (Y)
Load Cell Pole Barrier #4 Force (Y)
Load Cell Pole Barrier #5 Force (Y)
Load Cell Pole Barrier #6 Force (Y)
Load Cell Pole Barrier #7 Force (Y)
Load Cell Pole Barrier #8 Force (Y)

Test Vehicle: 2011 Subaru Outback 2.5i AWD 5-Door MPV
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test

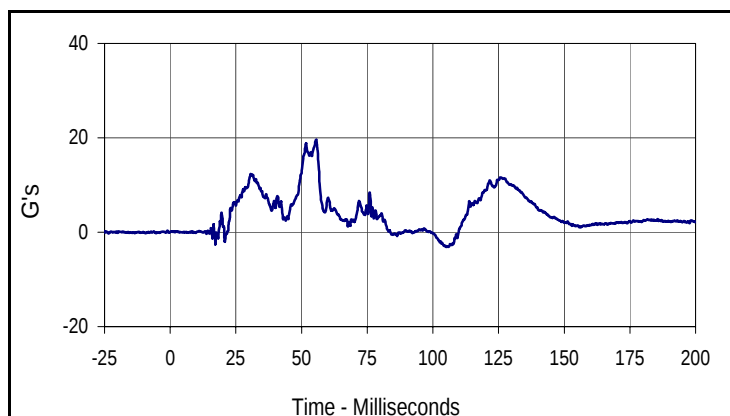
Test Date: 8/10/10
 NHTSA No.: MB5502



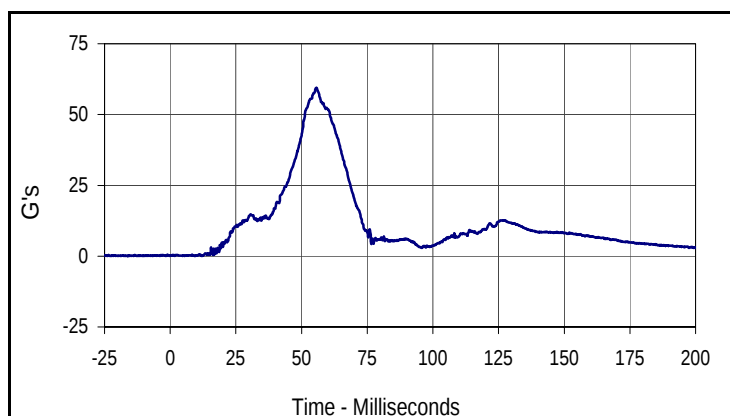
Curve Description			
Driver Head Acceleration X Primary			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
6.1	110.6	-28.0	56.1



Curve Description			
Driver Head Acceleration Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
49.3	55.5	-7.8	147.3



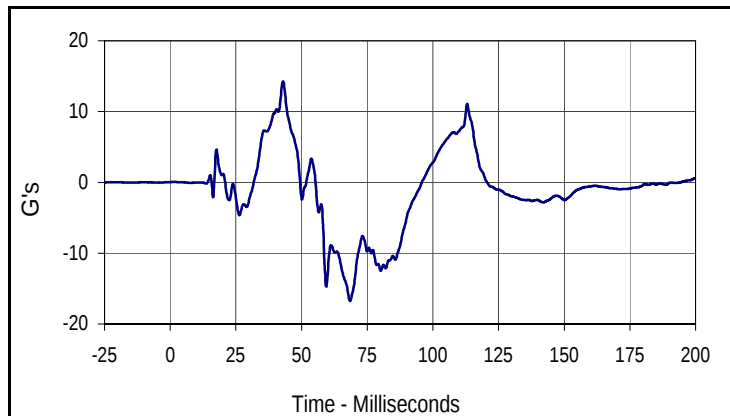
Curve Description			
Driver Head Acceleration Z Primary			
CURNO	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
19.6	55.6	-3.1	105.0



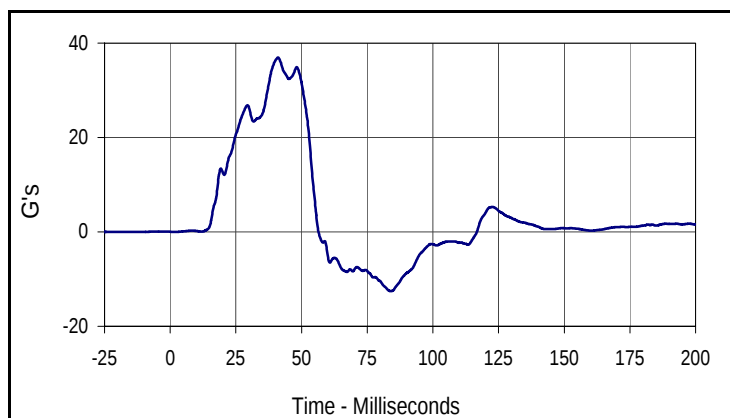
Curve Description			
Driver Head Acceleration Primary Res.			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
59.4	55.7	0.1	5.5

Test Vehicle: 2011 Subaru Outback 2.5i AWD 5-Door MPV
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test

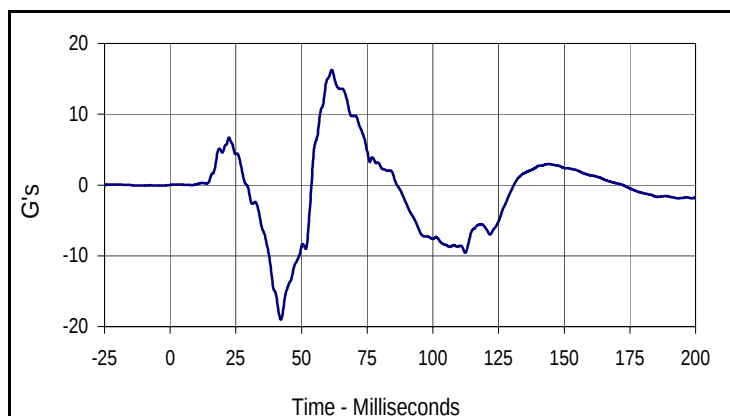
Test Date: 8/10/10
 NHTSA No.: MB5502



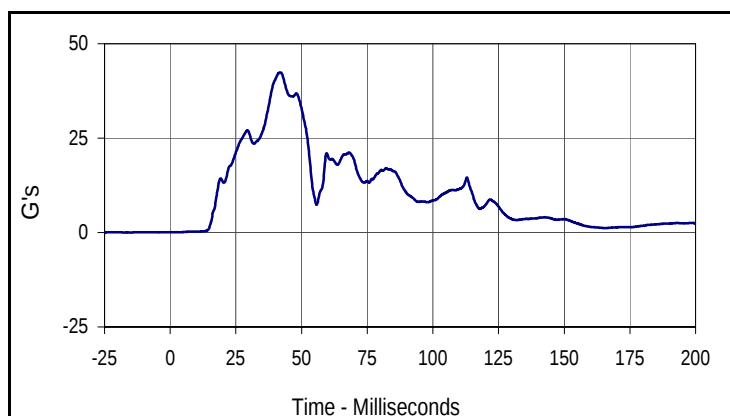
Curve Description			
Driver Lower Spine T12 Acceleration X			
CURNO	Type	SAE Class	Units
012	FIL	180	G's
Max	Time	Min	Time
14.3	42.9	-16.7	68.5



Curve Description			
Driver Lower Spine T12 Acceleration Y			
CURNO	Type	SAE Class	Units
013	FIL	180	G's
Max	Time	Min	Time
36.9	41.0	-12.5	84.0



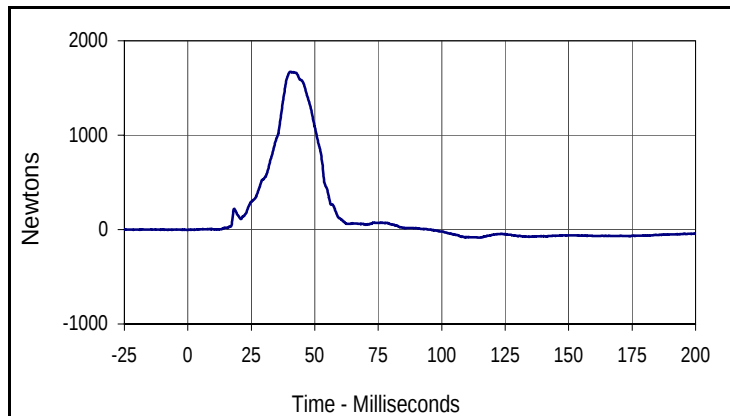
Curve Description			
Driver Lower Spine T12 Acceleration Z			
CURNO	Type	SAE Class	Units
014	FIL	180	G's
Max	Time	Min	Time
16.3	61.5	-19.0	42.1



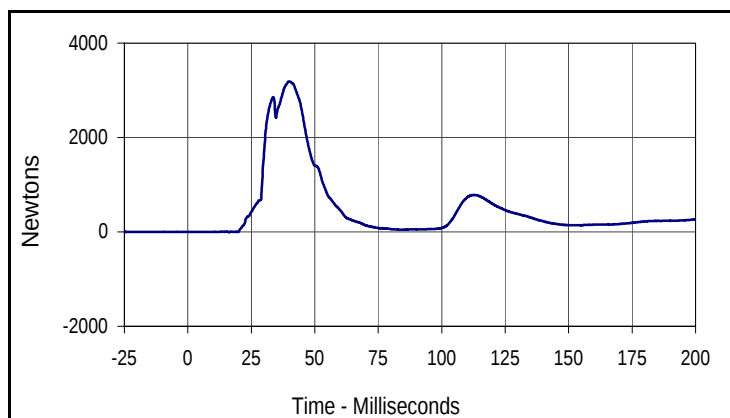
Curve Description			
Driver Lower Spine T12 Acceleration Res.			
CURNO	Type	SAE Class	Units
012	RES	180	G's
Max	Time	Min	Time
42.4	42.0	0.0	0.0

Test Vehicle: 2011 Subaru Outback 2.5i AWD 5-Door MPV
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test

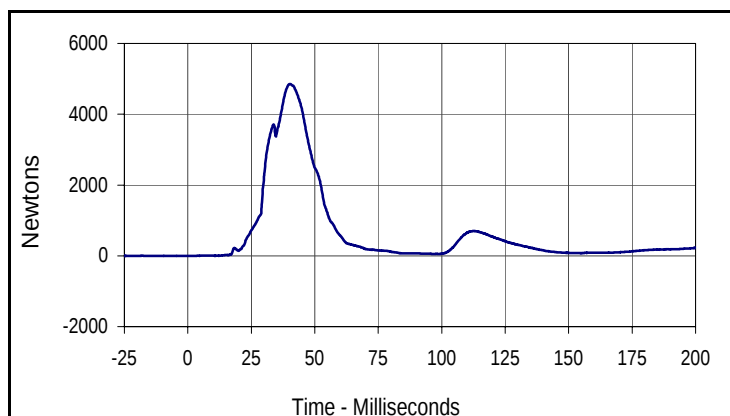
Test Date: 8/10/10
 NHTSA No.: MB5502



Curve Description			
Driver Iliac Wing Force on Impact Side Y			
CURNO	Type	SAE Class	Units
015	FIL	600	Newtons
Max	Time	Min	Time
1672.8	40.4	-85.7	115.1



Curve Description			
Driver Acetabulum Force on Impact Side Y			
CURNO	Type	SAE Class	Units
016	FIL	600	Newtons
Max	Time	Min	Time
3186.7	39.9	-5.6	16.3



Curve Description			
Driver Total Pelvic Force on Impact Side Y			
CURNO	Type	SAE Class	Units
015	SUM	600	Newtons
Max	Time	Min	Time
4854.9	40.3	-2.7	1.2

APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

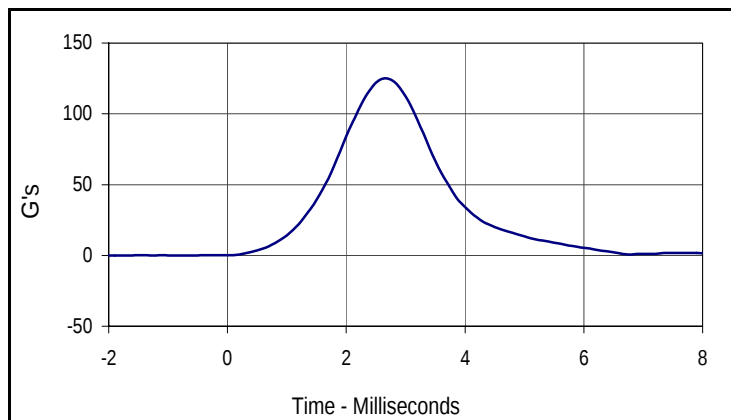
APPENDIX C
PRE-TEST / HIII CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program: SID IIs Lateral Head Drop Calibration
 ATD Serial No.: 299

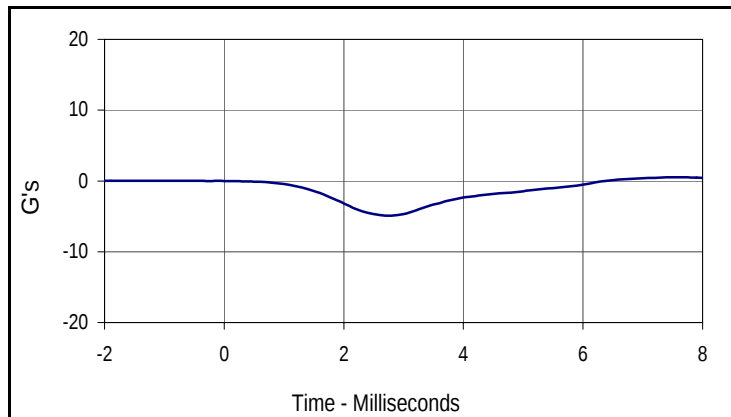
Test Date: 8/9/10
 Test I.D.: HD08A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	115 to 137	125.0	Pass
Peak Longitudinal Acceleration	G's	≤15	4.9	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	10.8	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
125.0	2.7	0.0	-0.9



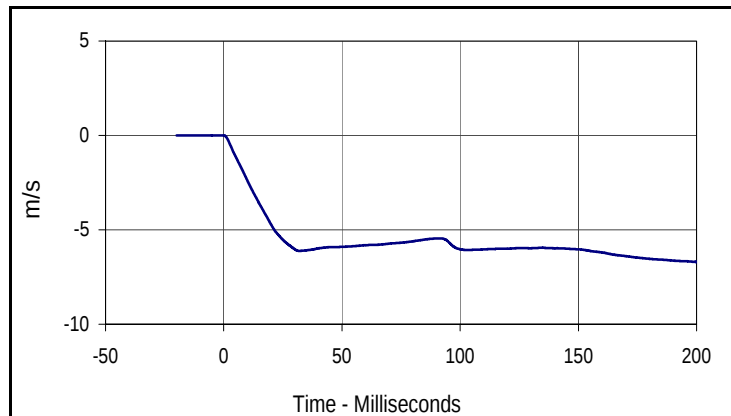
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.0	-1.2	-4.9	2.8

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

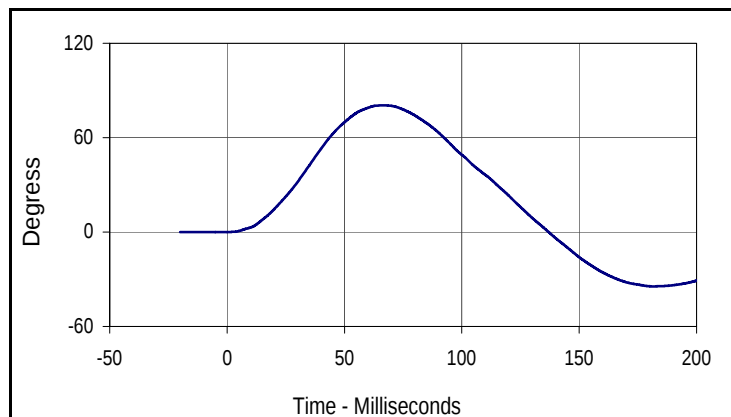
Test Date: 8/9/10
 Test I.D.: NB08A



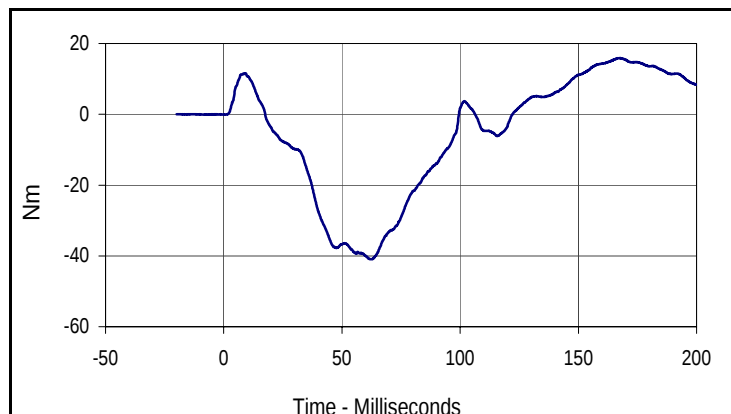
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.60	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.4	Pass
	15 msec	m/s	-3.30 to -4.10	-3.6	Pass
	20 msec	m/s	-4.40 to -5.40	-4.7	Pass
	25 msec	m/s	-5.40 to -6.10	-5.5	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.1	Pass
Translation-Rotation	Max	Degrees	71.0 to 81.0	80.5	Pass
	Time	msec	50.0 to 70.0	67.6	Pass
Peak Occipital Condyle Moment		Nm	-36.0 to -44.0	-41.0	Pass
Decaying Moment Time to Cross 0 Nm		msec	102.0 to 126.0	122.2	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.4	-6.7	200.0



Curve Description			
Maximum Translation Rotation			
CURNO	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
80.5	67.6	-34.5	181.4



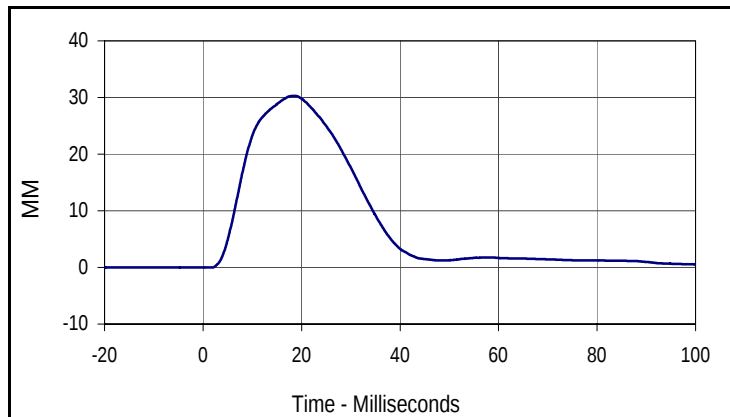
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
15.9	167.6	-41.0	62.0

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

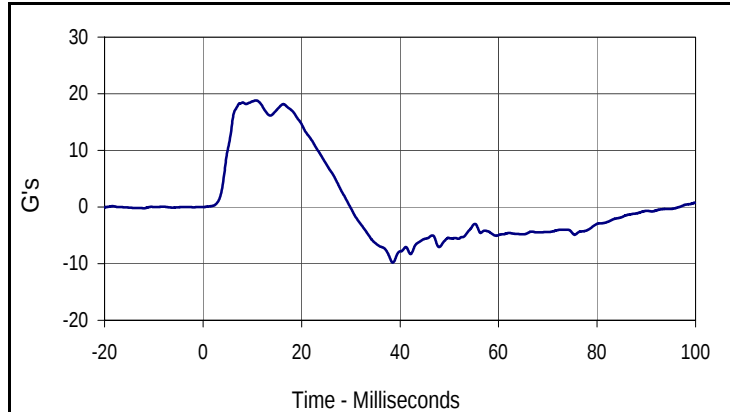
Test Date: 8/9/10
 Test I.D.: SH08A



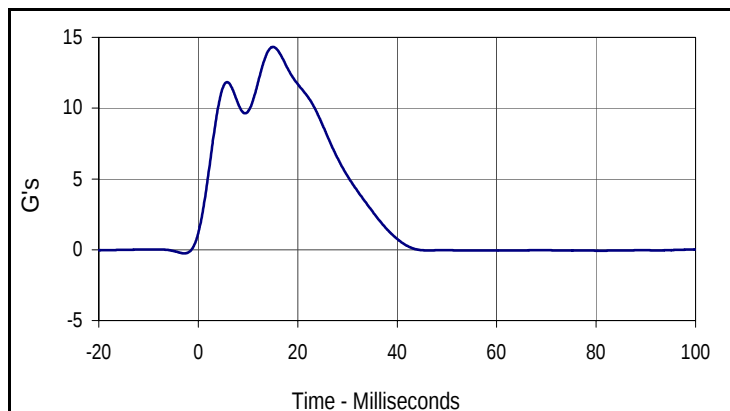
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.28	Pass
Shoulder Deflection	MM	28 to 37	30.3	Pass
Peak Upper Spine Y Acceleration	G's	17 to 22	18.8	Pass
Peak Impactor Acceleration	G's	13 to 18	14.3	Pass
Overall Test Results			Pass	



Curve Description			
Shoulder Acceleration			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
30.3	18.6	0.0	0.3



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
18.8	10.8	-9.8	38.5



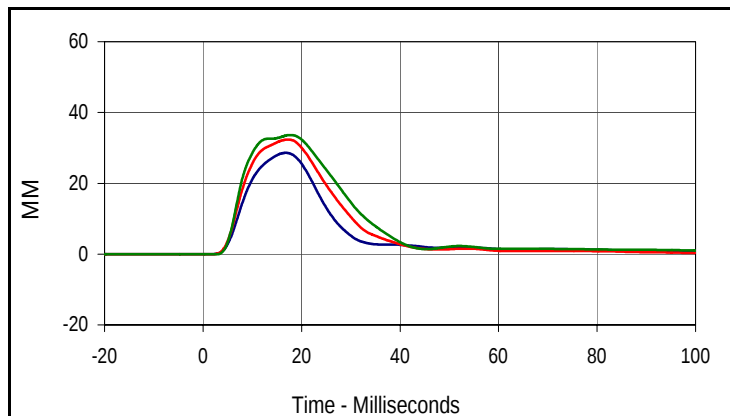
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
14.3	15.0	-0.3	-2.8

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

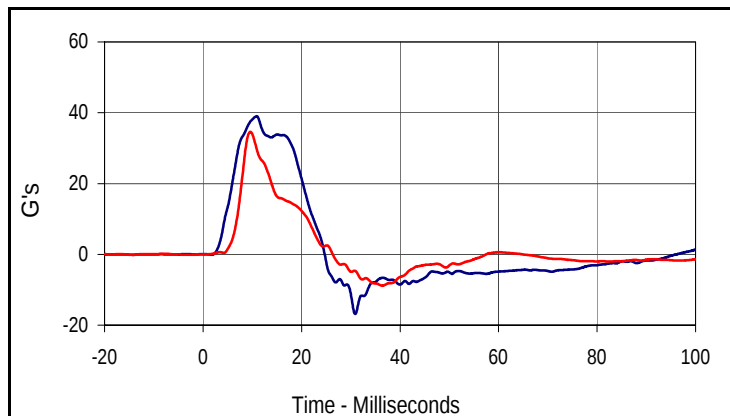
Test Date: 8/9/10
 Test I.D.: TH08A



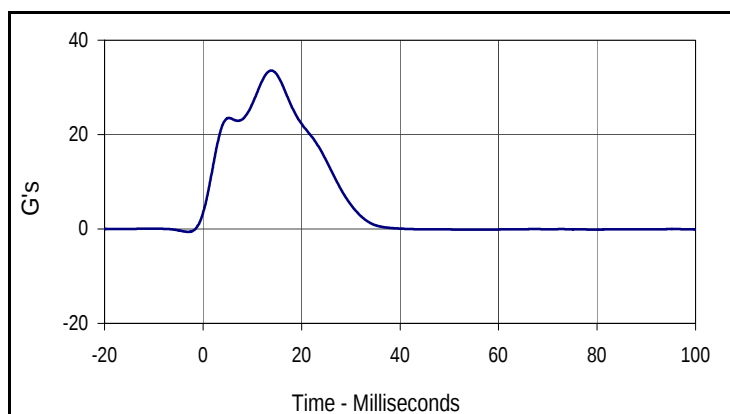
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.69	Pass
Shoulder Deflection	MM	31 to 40	37.6	Pass
Upper Thorax Rib Deflection	MM	25 to 32	28.6	Pass
Middle Thorax Rib Deflection	MM	30 to 36	32.4	Pass
Lower Thorax Rib Deflection	MM	32 to 38	33.6	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	39.0	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	34.6	Pass
Peak Impactor Acceleration After 5 msec.	G's	30 to 36	33.6	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
28.6	16.8	0.0	1.5
Middle Thorax Deflection			
Max	Time	Min	Time
32.4	17.3	0.0	1.9
Lower Thorax Deflection			
Max	Time	Min	Time
33.6	17.7	-0.1	2.6



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
39.0	10.9	-16.8	30.9
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
34.6	9.6	-8.9	36.4



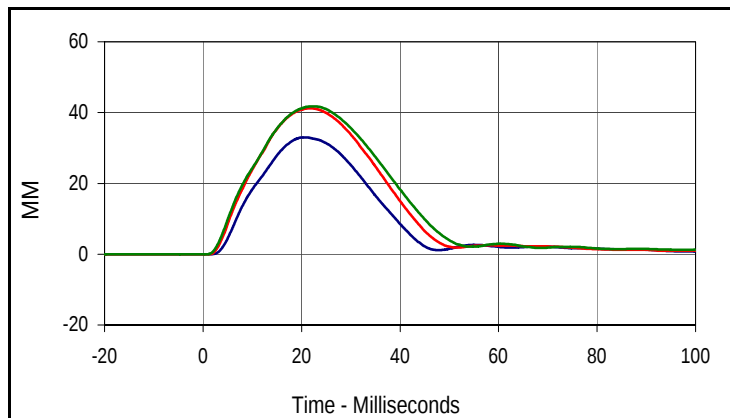
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
33.6	13.9	-0.6	-3.0

Test Program: SID IIs Thorax w/o Arm Calibration
 ATD Serial No.: 299

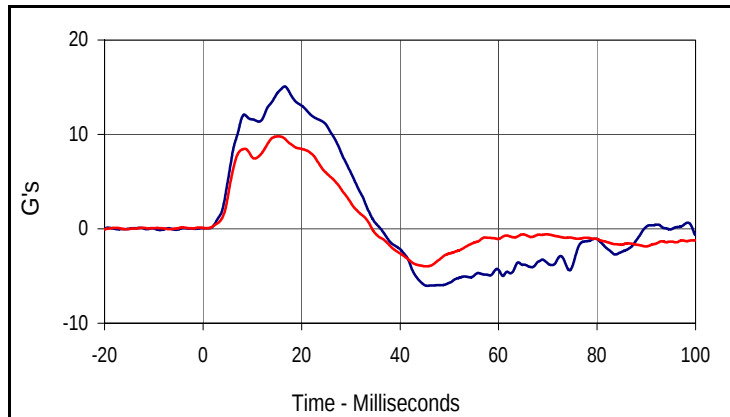
Test Date: 8/9/10
 Test I.D.: TOA8A



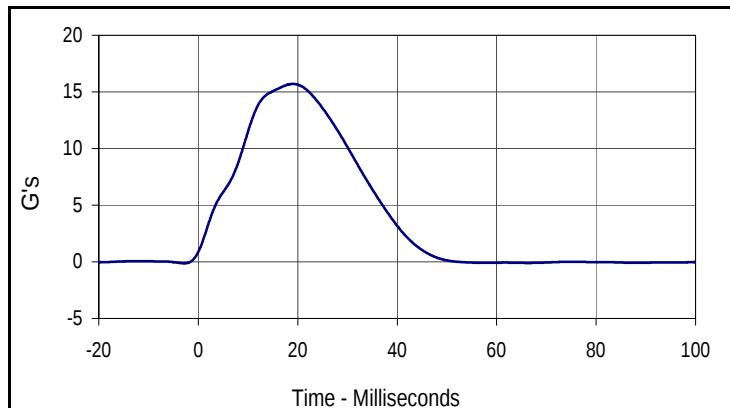
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.27	Pass
Upper Thorax Rib Deflection	MM	32 to 40	33.0	Pass
Middle Thorax Rib Deflection	MM	39 to 45	41.2	Pass
Lower Thorax Rib Deflection	MM	35 to 43	41.8	Pass
Peak Upper Spine Y Acceleration	G's	13 to 17	15.1	Pass
Peak Lower Spine Y Acceleration	G's	7 to 11	9.8	Pass
Peak Impactor Acceleration	G's	14 to 18	15.7	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
33.0	20.5	0.0	0.5
Middle Thorax Deflection			
Max	Time	Min	Time
41.2	21.8	0.0	-17.7
Lower Thorax Deflection			
Max	Time	Min	Time
41.8	22.3	0.0	-20.0



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.1	16.6	-6.0	45.5
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
9.8	15.3	-4.0	45.3



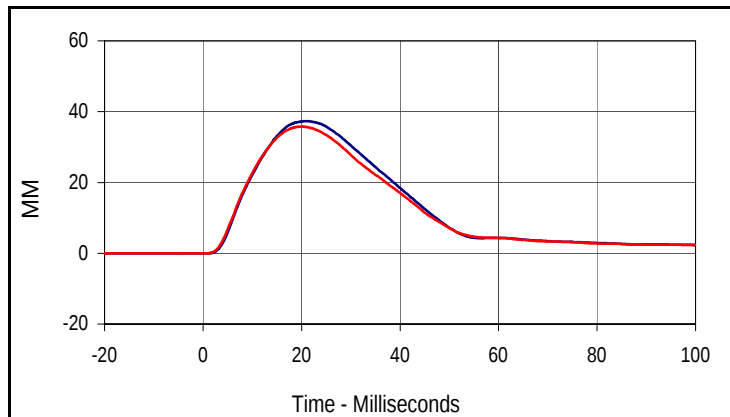
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
15.7	19.1	-0.1	-2.9

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

Test Date: 8/9/10
 Test I.D.: AB08A

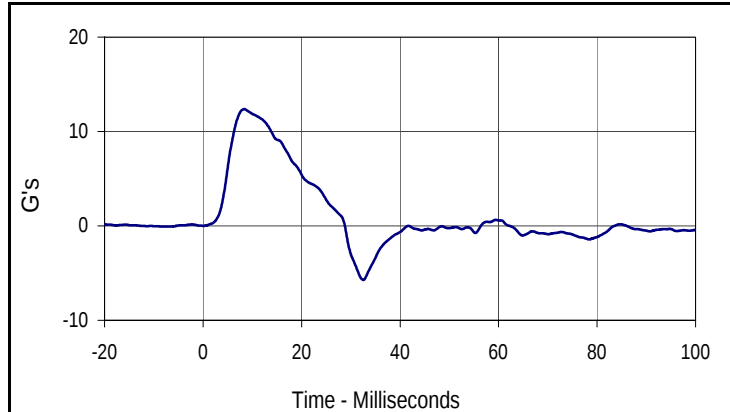


Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.30	Pass
Upper Abdominal Rib Deflection	MM	36 to 47	37.3	Pass
Lower Abdominal Rib Deflection	MM	33 to 44	35.8	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	12.4	Pass
Peak Impactor Acceleration	G's	12 to 16	14.0	Pass
Overall Test Results			Pass	

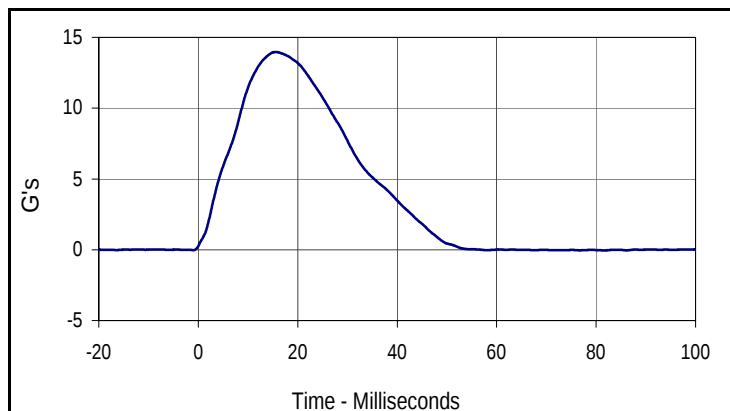


Curve Description			
Upper Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
37.3	21.0	0.0	-3.0

Curve Description			
Lower Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
35.8	20.1	0.0	-2.6



Curve Description			
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
12.4	8.3	-5.7	32.5



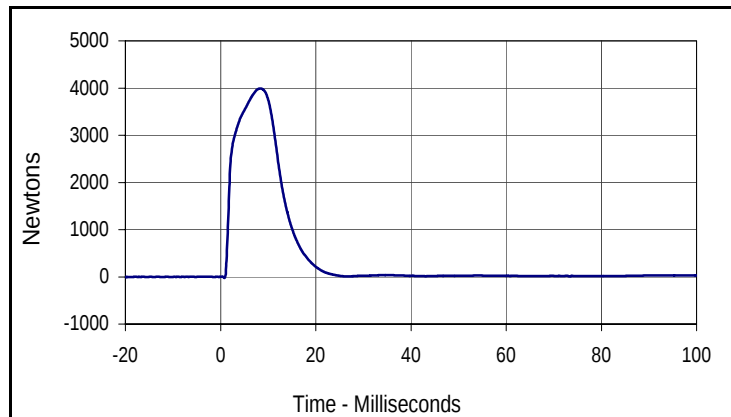
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.0	15.6	0.0	81.7

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

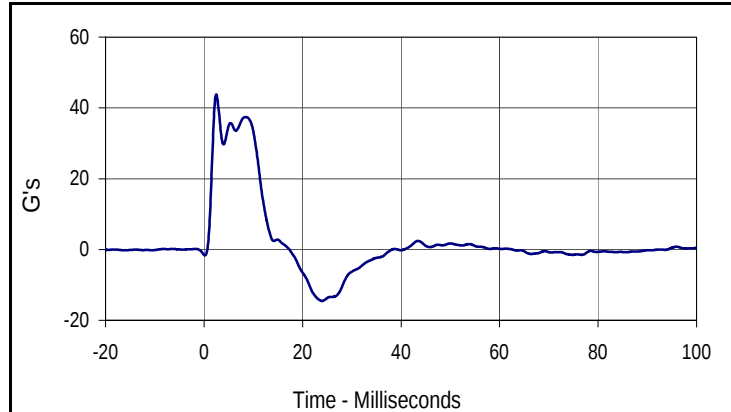
Test Date: 8/9/10
 Test I.D.: PA08A



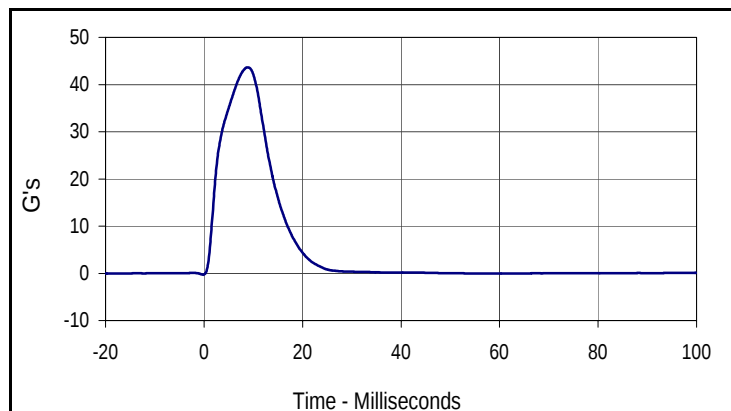
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.66	Pass
Peak Acetabulum Force	Newtons	3600 to 4300	3993.2	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	37.4	Pass
Peak Impactor Acceleration	G's	38 to 47	43.7	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3993.2	8.4	-21.4	0.8



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
43.8	2.5	-14.5	24.0



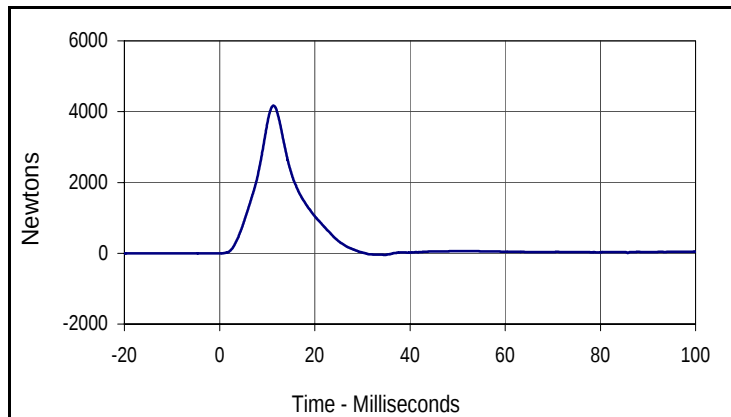
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
43.7	8.8	-0.3	-0.2

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

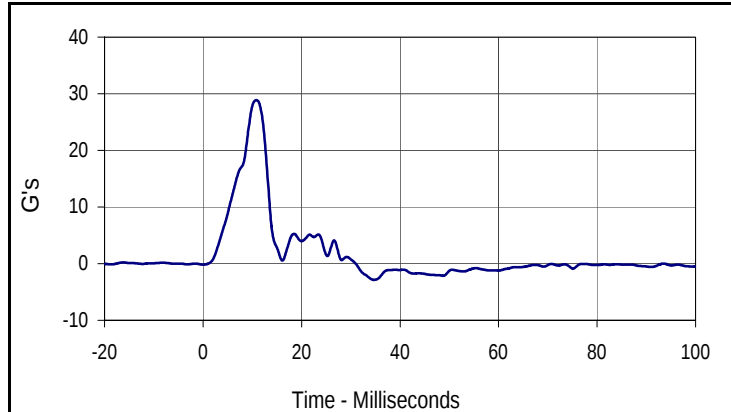
Test Date: 8/9/10
 Test I.D.: PL08A



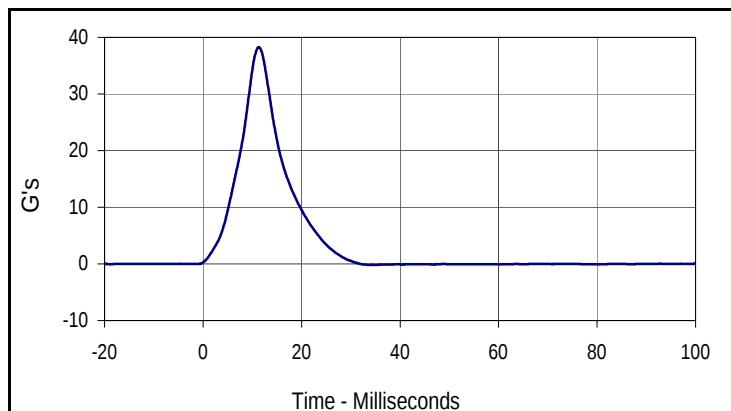
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.27	Pass
Peak Iliac Force	Newtons	4100 to 5100	4172.3	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	28.9	Pass
Peak Impactor Acceleration	G's	36 to 45	38.3	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Iliac Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4172.3	11.3	-47.9	34.7



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
28.9	10.8	-2.9	34.7



Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
38.3	11.3	-0.2	34.4

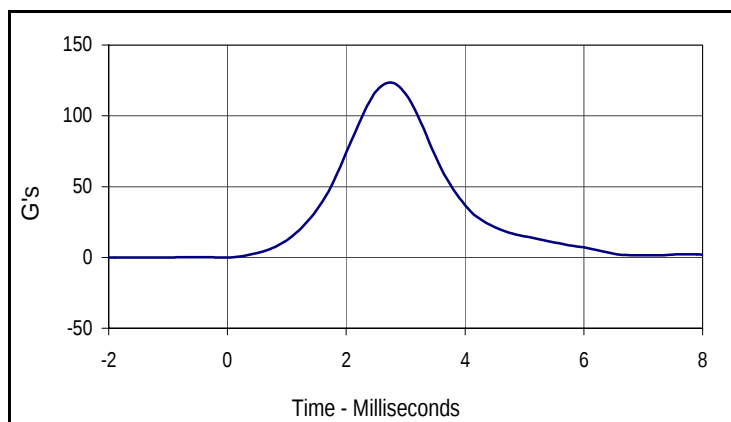
APPENDIX C
POST-TEST / HIII CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program: SID IIs Lateral Head Drop Calibration
 ATD Serial No.: 299

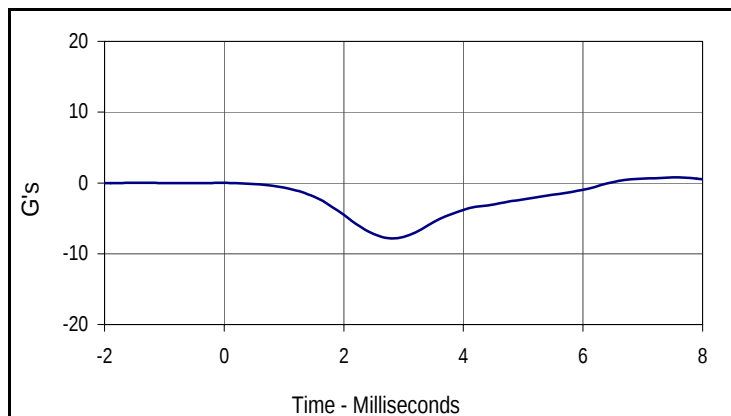
Test Date: 8/11/10
 Test I.D.: HD08B



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	115 to 137	123.4	Pass
Peak Longitudinal Acceleration	G's	≤15	7.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	12.1	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
123.4	2.7	0.0	-1.3



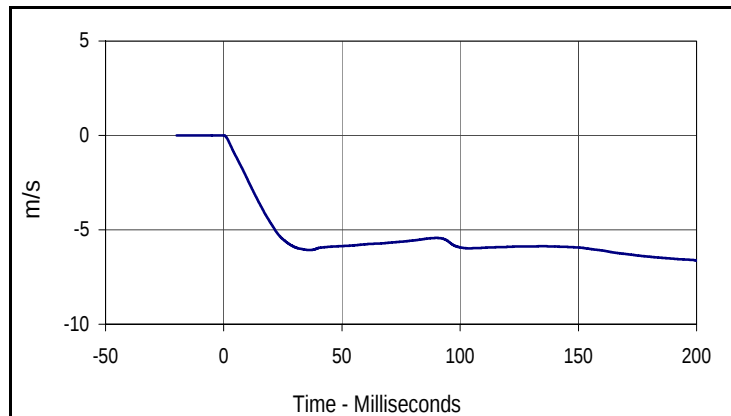
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.0	-1.5	-7.8	2.8

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

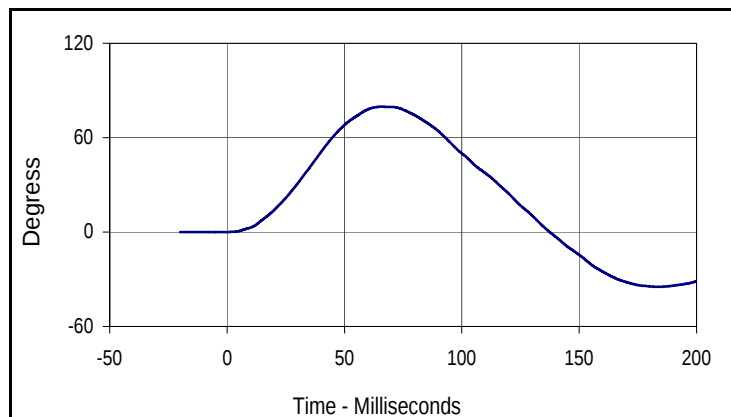
Test Date: 8/11/10
 Test I.D.: NB08b



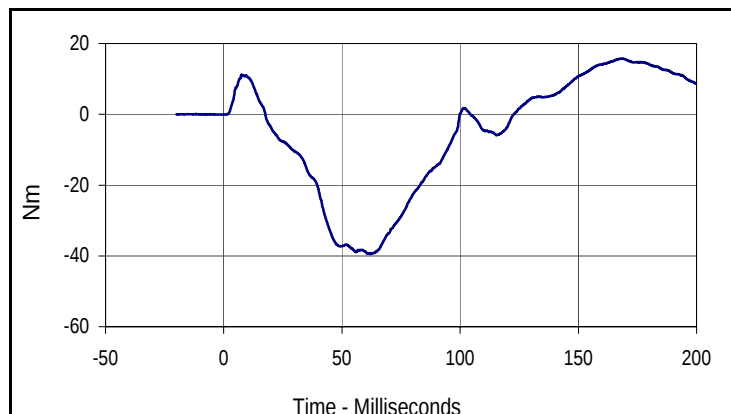
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.54	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.3	Pass
	15 msec	m/s	-3.30 to -4.10	-3.6	Pass
	20 msec	m/s	-4.40 to -5.40	-4.7	Pass
	25 msec	m/s	-5.40 to -6.10	-5.5	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.1	Pass
Translation-Rotation	Max	Degrees	71.0 to 81.0	79.7	Pass
	Time	msec	50.0 to 70.0	65.7	Pass
Peak Occipital Condyle Moment		Nm	-36.0 to -44.0	-39.5	Pass
Decaying Moment Time to Cross 0 Nm		msec	102.0 to 126.0	122.7	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.5	-6.6	200.0



Curve Description			
Maximum Translation Rotation			
CURNO	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
79.7	65.7	-34.8	183.4



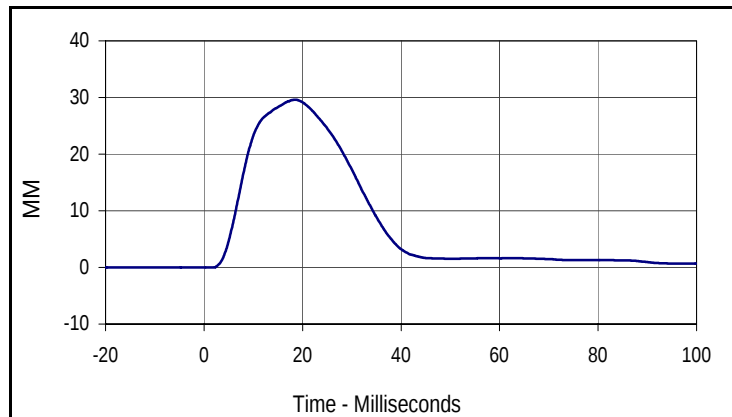
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
15.7	168.5	-39.5	62.0

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

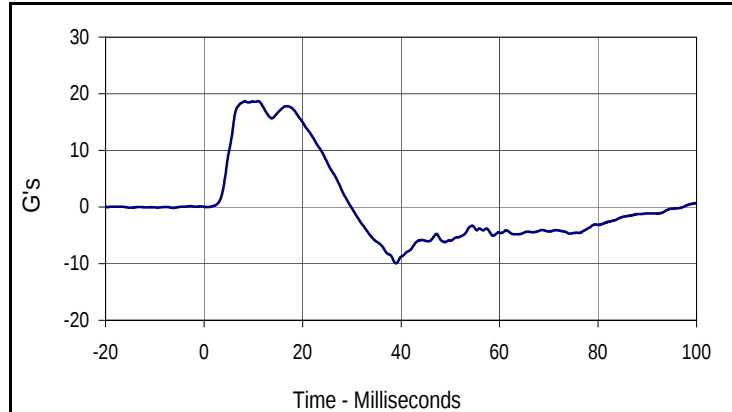
Test Date: 8/11/10
 Test I.D.: SH08B



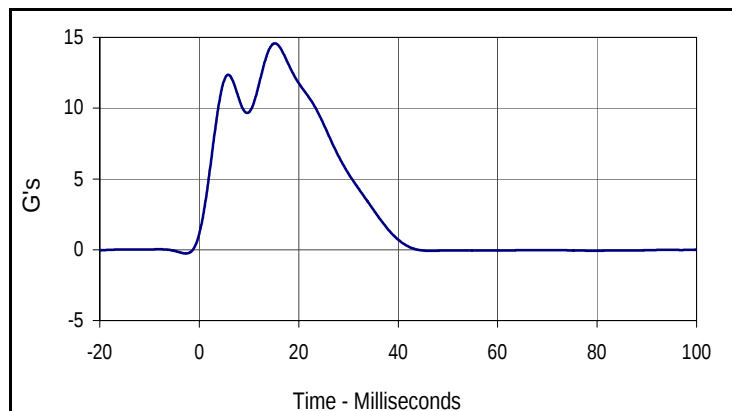
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.21	Pass
Shoulder Deflection	MM	28 to 37	29.6	Pass
Peak Upper Spine Y Acceleration	G's	17 to 22	18.7	Pass
Peak Impactor Acceleration	G's	13 to 18	14.6	Pass
Overall Test Results			Pass	



Curve Description			
Shoulder Acceleration			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
29.6	18.6	0.0	1.0



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
18.7	11.0	-9.9	39.0



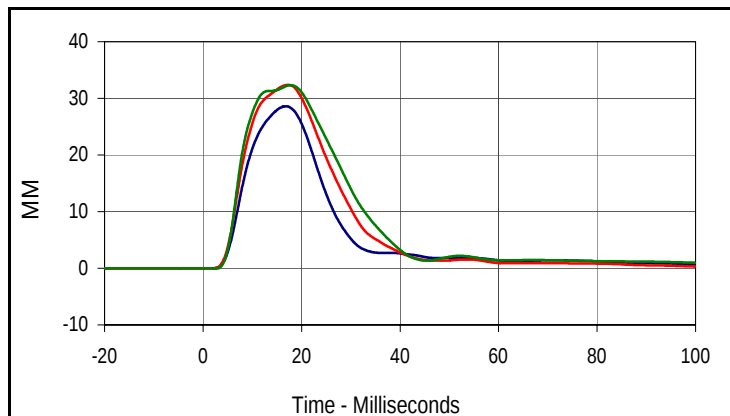
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
14.6	15.2	-0.3	-2.7

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

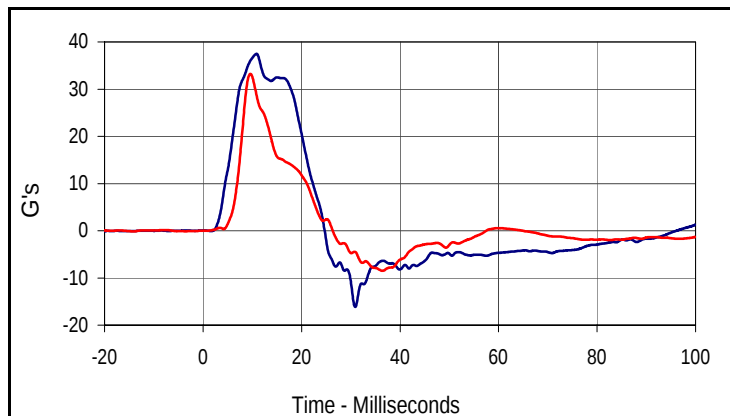
Test Date: 8/11/10
 Test I.D.: TH08B



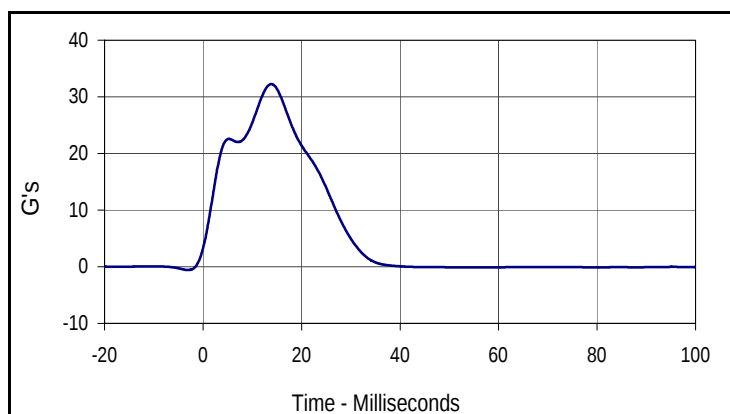
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.62	Pass
Shoulder Deflection	MM	31 to 40	36.1	Pass
Upper Thorax Rib Deflection	MM	25 to 32	28.6	Pass
Middle Thorax Rib Deflection	MM	30 to 36	32.4	Pass
Lower Thorax Rib Deflection	MM	32 to 38	32.3	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	37.5	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	33.3	Pass
Peak Impactor Acceleration After 5 msec.	G's	30 to 36	32.3	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	180	MM
Max	Time	Min	Time
28.6	16.8	0.0	1.5
Middle Thorax Deflection			
Max	Time	Min	Time
32.4	17.3	0.0	1.9
Lower Thorax Deflection			
Max	Time	Min	Time
32.3	17.7	-0.1	2.6



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
37.5	10.9	-16.2	30.9
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
33.3	9.6	-8.5	36.4



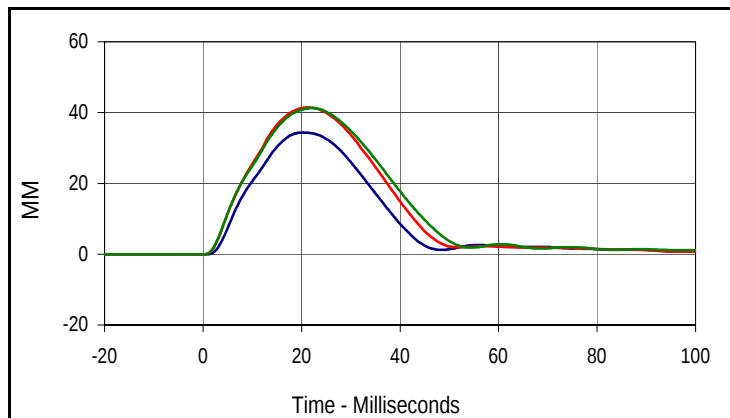
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
32.3	13.9	-0.6	-3.0

Test Program: SID IIs Thorax w/o Arm Calibration
 ATD Serial No.: 299

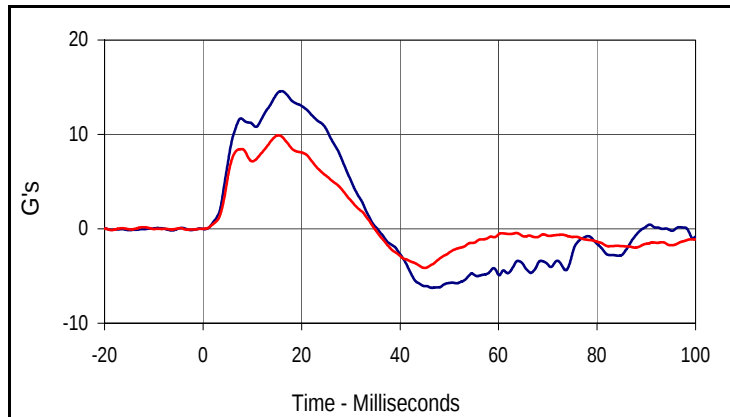
Test Date: 8/11/10
 Test I.D.: TOA8B



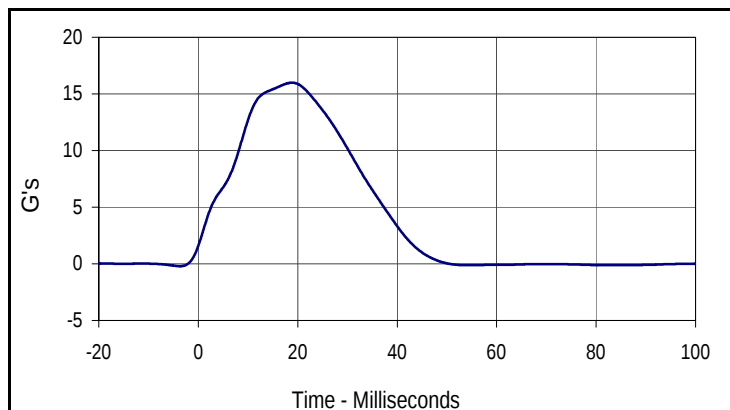
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.26	Pass
Upper Thorax Rib Deflection	MM	32 to 40	34.3	Pass
Middle Thorax Rib Deflection	MM	39 to 45	41.4	Pass
Lower Thorax Rib Deflection	MM	35 to 43	41.3	Pass
Peak Upper Spine Y Acceleration	G's	13 to 17	14.6	Pass
Peak Lower Spine Y Acceleration	G's	7 to 11	9.9	Pass
Peak Impactor Acceleration	G's	14 to 18	16.0	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
34.3	20.5	0.0	-0.1
Middle Thorax Deflection			
Max	Time	Min	Time
41.4	21.4	0.0	-4.1
Lower Thorax Deflection			
Max	Time	Min	Time
41.3	22.0	0.0	0.2



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.6	15.9	-6.3	46.5
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
9.9	15.3	-4.2	45.0



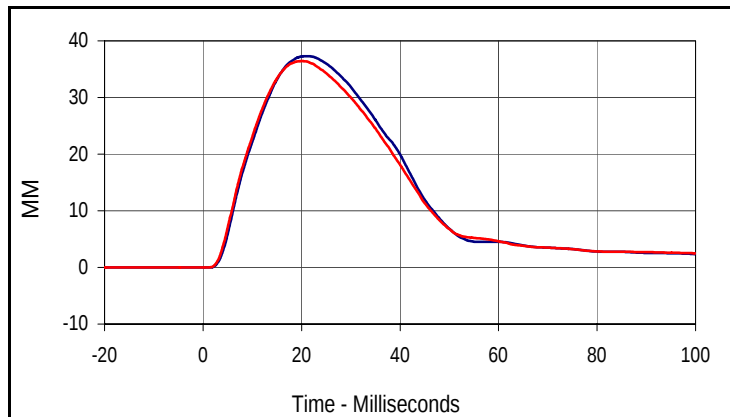
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
16.0	18.8	-0.2	-3.7

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

Test Date: 8/11/10
 Test I.D.: ABD08B

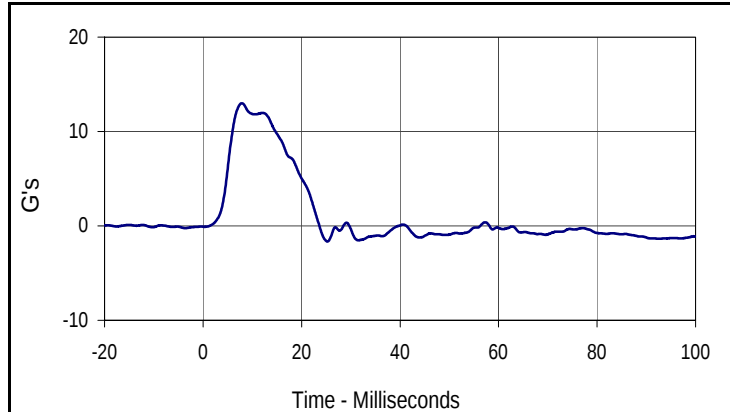


Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.21	Pass
Upper Abdominal Rib Deflection	MM	36 to 47	37.3	Pass
Lower Abdominal Rib Deflection	MM	33 to 44	36.4	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	13.0	Pass
Peak Impactor Acceleration	G's	12 to 16	12.6	Pass
Overall Test Results			Pass	

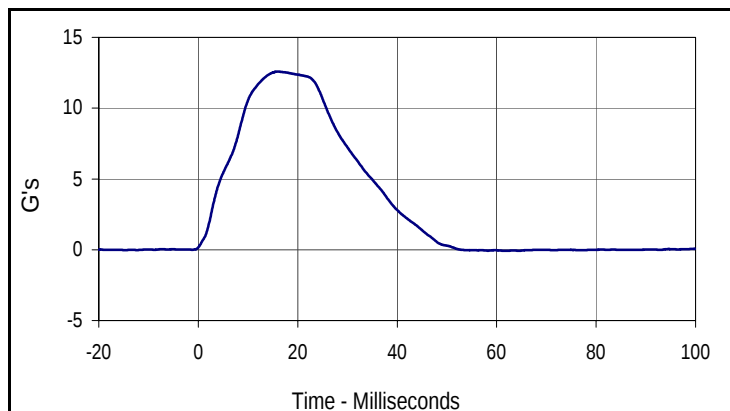


Curve Description			
Upper Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
37.3	21.3	0.0	-11.8

Curve Description			
Lower Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
36.4	20.1	0.0	-17.5



Curve Description			
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
13.0	7.9	-1.6	25.2



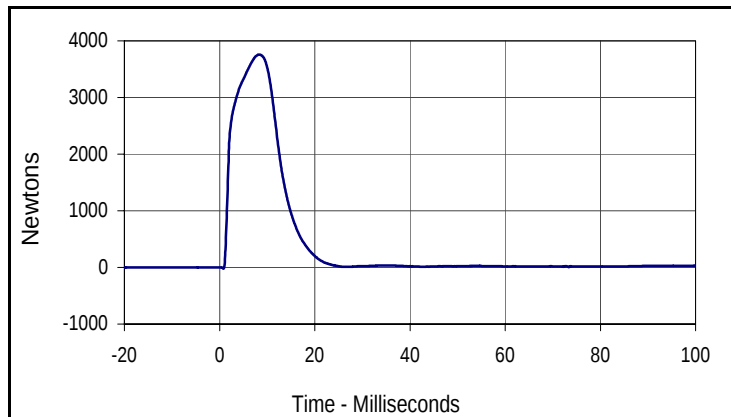
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
12.6	16.0	-0.1	62.0

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

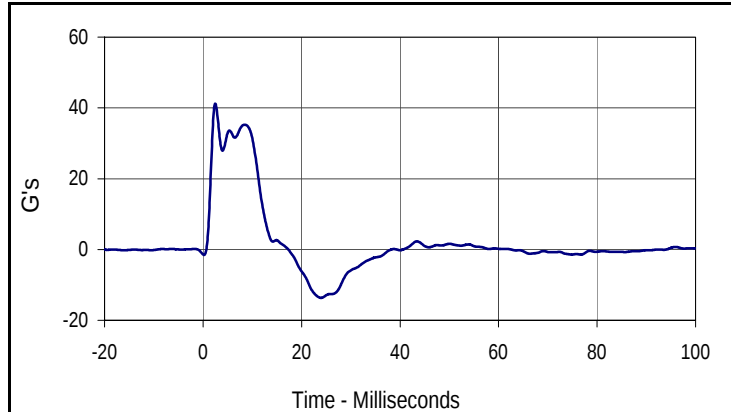
Test Date: 8/11/10
 Test I.D.: PA08B



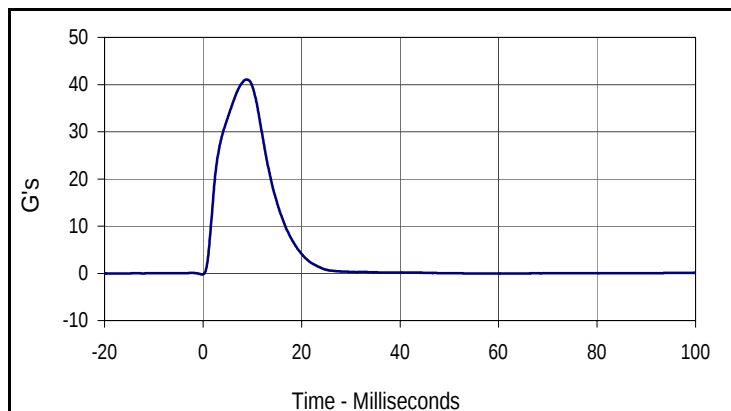
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.64	Pass
Peak Acetabulum Force	Newtons	3600 to 4300	3757.2	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	35.2	Pass
Peak Impactor Acceleration	G's	38 to 47	41.1	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3757.2	8.4	-20.1	0.8



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
41.2	2.5	-13.7	24.0



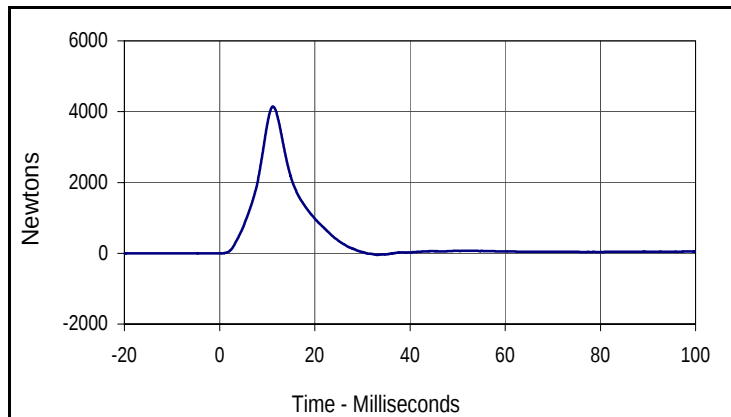
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
41.1	8.8	-0.3	-0.2

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

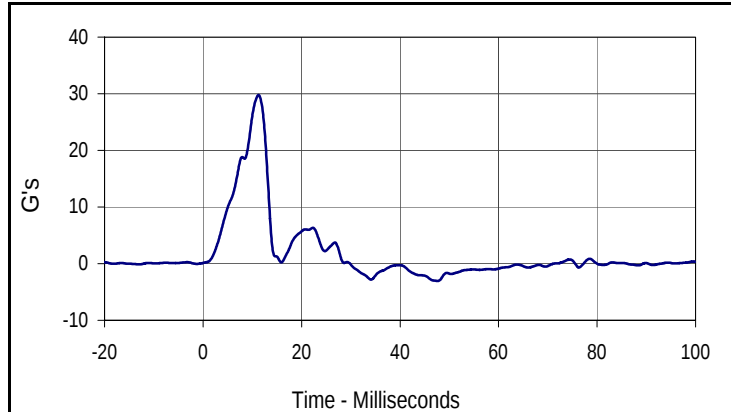
Test Date: 8/11/10
 Test I.D.: PL08B



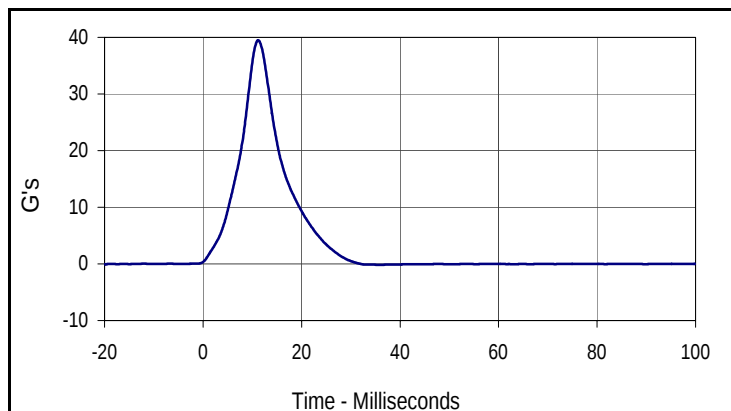
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.26	Pass
Peak Iliac Force	Newtons	4100 to 5100	4143.8	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	29.8	Pass
Peak Impactor Acceleration	G's	36 to 45	39.5	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Iliac Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4143.8	11.2	-47.5	33.2



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
29.8	11.3	-3.1	47.6



Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
39.5	11.2	-0.2	35.9