

**REPORT NUMBER: SPNCAP-TRC-11-002**

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

**Chrysler Group LLC  
2011 Ram 1500 ST Crew Cab 4X2  
NHTSA NUMBER: MB0300**

**PREPARED BY:  
TRANSPORTATION RESEARCH CENTER INC.  
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**Report Date:  
September 27, 2010**


**FINAL REPORT**

**PREPARED FOR:  
U.S. DEPARTMENT OF TRANSPORTATION  
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  
OFFICE OF CRASHWORTHINESS STANDARDS  
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Approval Date: October 7, 2010

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: \_\_\_\_\_

FINAL REPORT ACCEPTANCE BY OCWS:

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COTR, New Car Assessment Program  
NHTSA, Office of Crashworthiness Standards

Date: \_\_\_\_\_

Technical Report Documentation Page

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7. Author(s) Diana K. Spurgeon, Project Manager Transportation Research Center Inc.		8. Performing Organization Report No.  100927													
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15. Supplemental Notes															
16. Abstract <p>A 32.2 km/h (20 mph), 75° oblique impact Side NCAP Test was conducted on the subject vehicle, a 2011 Ram 1500 ST Crew Cab 4X2 Pickup, 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. This test was conducted by Transportation Research Center Inc. in East Liberty, Ohio, on September 27, 2010.</p> <p>The impact velocity was 32.0 km/h and the ambient temperature at the struck (Driver's side) side of the target vehicle at the time of impact was 21° C. The test vehicle's post-test maximum crush was 507 mm at Level 2.</p> <p>The test or target vehicle's performance is given below:</p> <table border="0" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th style="text-align: center;"><u>Threshold</u></th> <th style="text-align: center;"><u>Front SID-IIs</u></th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC):</td> <td style="text-align: center;">1000</td> <td style="text-align: center;">606</td> </tr> <tr> <td>Resultant Lower Spine Acceleration:</td> <td style="text-align: center;">82</td> <td style="text-align: center;">85.0 g</td> </tr> <tr> <td>Combined Acetabular and Iliac Pelvic Force:</td> <td style="text-align: center;">5525</td> <td style="text-align: center;">7234.0 N</td> </tr> </tbody> </table> <p>The door struck by the pole did not totally separate from the vehicle. All other doors including the tailgate not struck by the pole did not disengage from the latched position. The latch did not separate from the striker and the hinge components did not separate from each other or the vehicle. The latch or hinge systems on the door did not pull out of their anchorages.</p>					<u>Threshold</u>	<u>Front SID-IIs</u>	Head Injury Criteria (HIC):	1000	606	Resultant Lower Spine Acceleration:	82	85.0 g	Combined Acetabular and Iliac Pelvic Force:	5525	7234.0 N
	<u>Threshold</u>	<u>Front SID-IIs</u>													
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17. Key Words New Car Assessment Program (NCAP) Side Impact Pole Part 572V SID-IIs		18. Distribution Statement <u>Copies of this report are available from:</u> National Highway Traffic Safety Administration Technical Reference Division 1200 New Jersey Ave, SE Washington, DC 20590													
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**SECTION 1**  
**PURPOSE AND TEST PROCEDURE**

**PURPOSE**

This side impact test was conducted as part of the MY11 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-09-D-00125. The purpose of this test was to generate comparative side impact performance in a 2011 Ram 1500 ST Crew Cab 4X2 manufactured by Chrysler Group LLC. 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.

**TEST PROCEDURE**

The side impact test was conducted in accordance with the Laboratory Test Procedure for the New Car Assessment Program Side Impact Rigid Pole Test dated January 25, 2010 and the corresponding Transportation Research Center Inc. (TRC Inc.) procedures. The procedures for receiving, inspection, testing, and reporting of test results are described in the test procedures and are not repeated in this report.

TRC Inc. does not endorse or certify products. The manufacturer's name appears solely for identification purposes.

## SECTION 2

### SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a model year 2011 Ram 1500 ST Crew Cab. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.0 km/h. The weight of the vehicle as tested was 2498.6 kg. The side impact test was conducted by Transportation Research Center Inc. in East Liberty, OH, on September 27, 2010. Pre-test and post-test photographs of the test vehicle and the side impact dummy (SID IIs) are included in Appendix A of this report.

Two (2) real-time motion picture camera and nine (9) high-speed digital motion picture cameras were used to document the impact event. The pre-test and post-test conditions were recorded by one (1) real-time motion picture camera. Camera locations and pertinent camera information are documented in the data sheets. Pre-test and post-test photographs of the vehicle and Side Impact Dummy (SID IIs) can be found in Appendix A. 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.

The Part 572V (SID IIs) dummy was instrumented in the following locations:

- 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

The test vehicle was instrumented with twenty-one (21) structural accelerometers. All data channels were recorded with a fully self-contained onboard Kayser Threde Data Acquisition System. The data was digitally sampled at 12,500 samples per second and processed per Section 13.2 “Data Processing” of the Test Procedure.

The driver SID II's, Serial No. 305 was calibrated prior to this test.

Appendix A contains the still photograph prints. Appendix B contains the vehicle and dummy response data traces. Appendix C contains the SID II's configuration and performance verification data.

The following table summarizes the results of the test:

ATD	HIC (36 ms)	Resultant Lower Spine Acceleration	Pelvic Force (N)
SID IIs 5 <sup>th</sup> percentile female	606	85.0	Iliac Wing = 4369.9 Acetabular = 3412.0 Sum = 7234.0

#### Supplemental Restraint Information

Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear Passenger Occupant Location 4	
	Installed	Deployed	Installed	Deployed
Frontal Airbag	Yes	Yes		
Knee Airbag	No	N/A		
Side Torso Airbag	No	N/A	N/A	N/A
Combination Head/Torso Side Airbag	No	N/A	N/A	N/A
Side Curtain/Tube Head Airbag	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes	Yes	N/A	N/A
Seat Belt Load Limiter	Yes	Unknown	N/A	N/A
Other	N/A	N/A	N/A	N/A

**NOTE:** Right front airbag deployed.

The test data can be found on the NHTSA website at [www.nhtsa.dot.gov](http://www.nhtsa.dot.gov).

#### TEST NOTES

The following channels did not collect valid data:

The vehicle's center of gravity roll angular rate measuring about the X axis, 11VEHCCG0000AVXA, exceeded the full scale at 38 milliseconds and recorded questionable data thereafter.

The vehicle's center of gravity pitch angular rate measuring about the Y axis, 11VEHCCG0000AVYA, exceeded the full scale at 68 milliseconds and recorded questionable data thereafter.

The vehicle's center of gravity yaw angular rate measuring about the Z axis, 11VEHCCG0000AVZA, exceeded the full scale at 26 milliseconds and recorded questionable data thereafter.

The vehicle's left floor sill Y-axis acceleration data channel, 11VEHC00LO00ACYA, recorded questionable data after approximately 50 milliseconds.

The vehicle's left B-pillar sill acceleration data channel, 11BPIL000000ACYA, recorded a data spike at 84 milliseconds and questionable data thereafter.

**SECTION 3**  
**OCCUPANT AND VEHICLE INFORMATION**

**DATA SHEET NO. 1**

**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2011 Ram 1500 ST Crew Cab 4X2

NHTSA No.: MB0300

Test Program: SPNCAP Side Impact

Test Date: 09/27/10

**TEST VEHICLE INFORMATION AND OPTIONS**

NHTSA No.	MB0300	Anti-Lock Brakes	Yes
Model Year	2011	All-Wheel Drive	No
Make	Ram	Power Steering	Yes
Model	1500 ST Crew Cab	Driver Front Airbag	Yes
Body Style	4-door pickup	Driver Curtain Airbag	Yes
VIN	1D7RB1CP3BS506743	Driver Head/Torso Airbag	No
Color	Dark Grey	Driver Torso Airbag	No
Delivery Date	September 17, 2010	Driver Torso/Pelvis Airbag	No
Odometer Reading (miles)	11	Driver Pelvis Airbag	No
Dealer	Prince Frederick Chrysler Jeep	Driver Knee Airbag	No
Transmission	Automatic	Rear Pass. Curtain Airbag	Yes
Final Drive	Rear	Rear Pass. Head/Torso Airbag	No
Number of Cylinders	8	Rear Pass. Torso Airbag	No
Engine Displacement (L)	4.7	Rear Pass. Torso/Pelvis Airbag	No
Engine Placement	Inline	Rear Pass. Pelvis Airbag	No
Roof Rack	No	Pretensioners	Yes
Sunroof / T-Top	No	Load Limiters	Yes
Tinted Glass	Yes	Automatic Door Locks	Yes
Traction Control	Yes	Bucket Seats	No
Power Brakes	Yes	Tilt Steering	Yes
Front Disc	Yes	Other – AM/FM/CD	Yes
Rear Disc	Yes	Other	None
Does owner's manual detail instructions on disabling ADLs?			Yes

**DATA FROM CERTIFICATION LABEL**

Manufactured by	Chrysler Group LLC	GVWR (kg)	3085
Date of Manufacture	8-10	GAWR Front (kg)	1679
		GAWR Rear (kg)	1770

**VEHICLE SEATING AND WEIGHT CAPACITY DATA**

	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	3	3	N/A	6	(A)
Vehicle Capacity Weight (VCW) (kg)				774	(A)
DSC X 68.04 kg				408	(B)
Rated Cargo and Luggage Weight (RCLW) (kg)				366	(A-B)

**VEHICLE SEAT TYPE**

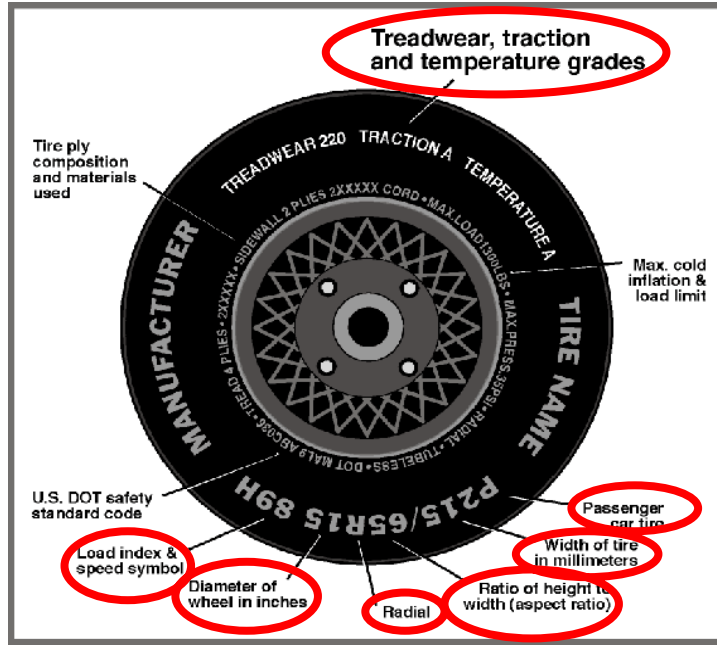
Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable w/ Lever	Adjustable w/ Knob
Front Seat			Yes			Yes	
Rear or Second Row			Yes		Yes		
Third Row							

## DATA SHEET NO. 1 (CONTINUED)

### GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Ram 1500 ST Crew Cab 4X2  
 Test Program: SPNCAP Side Impact

NHTSA No.: MB0300  
 Test Date: 09/27/10



### DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Cold / Test Pressure (kPa)	276	276
Recommended Tire Size	P265/70R17	P265/70R17
Tire Size on Vehicle	P265/70R17	P265/70R17
Tire Manufacturer	Goodyear	Goodyear
Tire Model	Wrangler SR-A	Wrangler SR-A
Load Index & Speed Symbol	113R	113R
Treadwear	500	500
Traction Grade	A	A
Temperature Grade	B	B
Tire Plies Sidewall	2 Ply Polyester	2 Ply Polyester
Tire Plies Tread	2 Ply Polyester, 2 Ply Steel Polyester/Steel	2 Ply Polyester, 2 Ply Steel Polyester/Steel
Tire Material	Polyester/Steel	Polyester/Steel
DOT Safety Code Left	4BT6 EXWR 3010	4BT6 EXWR 3010
DOT Safety Code Right	4BT6 EXWR 3010	4BT6 EXWR 3010

**DATA SHEET NO. 1 (CONTINUED)**

**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2011 Ram 1500 ST Crew Cab 4X2  
 Test Program: SPNCAP Side Impact

NHTSA No.: MB0300  
 Test Date: 09/27/10

**TEST VEHICLE AXLES WEIGHTS**

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	666.6	510.6		707.4	550.6		699.2	600.0	
Right	kg	639.8	499.8		683.6	557.0		640.0	578.8	
Ratio	%	56.4	43.6		55.7	44.3		53.2	46.8	
Totals	kg	1306.4	1010.4	2316.8	1391.0	1107.6	2498.6	1339.2	1178.8	2518.0

**TARGET TEST WEIGHT CALCULATION**

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	2316.8	(A)
Weight of 1 P572V ATD (SIDIIs)	kg	50.0	(B)
Rated Cargo/Luggage Weight (RCLW) <sup>1</sup>	kg	136.0	(C)
Vehicle Target Weight (TVT <sub>W</sub> )	kg	2502.8	(A+B+C)

**TEST VEHICLE ATTITUDES AND CG**

	Units	As Delivered	As Tested	Fully Loaded
Driver Door Sill Angle (front-to-rear)*	Deg.	-1.6	-8.0	-1.2
Front Passenger Sill Angle (front-to-rear)*	Deg.	-0.7	-1.4	-0.5
Front Bumper Angle (left-to-right)**	Deg.	0.0	-0.6	-0.1
Rear Bumper Angle (left-to-right)**	Deg.	0.0	-0.4	-0.8
Vehicle CG (aft of front axle)	mm	1550	1576	1664
Vehicle CG (Left (+) / Right (-) from longitudinal Centerline)	mm	14	6	27.7

\*Front up is positive \*\*Left up is positive

**GENERAL VEHICLE TEST DATA**

Measurement Description	Units	Value
Weight of Ballast in Cargo Area	kg	51.0
Weight of Vehicle Components Removed	kg	0.0

Vehicle parts removed to make Target Vehicle Test Weight: None

**TEST VEHICLE VERTICAL IMPACT POINT DATA**

Measured Parameter	Units	Value
Vertical Impact Reference Line (Aft of Front Axles)	mm	1245
Actual Impact Point (Aft of Front Axle)	mm	1248
Impact Point Difference (- forward / + rearward)	mm	+3

<sup>1</sup> Rated cargo and luggage weight calculated was 366.0 kg. 136.0 kg was used to determine target test weight.

**DATA SHEET NO. 2**

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

Test Vehicle: 2011 Ram 1500 ST Crew Cab 4X2  
 Test Program: SPNCAP Side Impact

NHTSA No.: MB0300  
 Test Date: 09/27/10

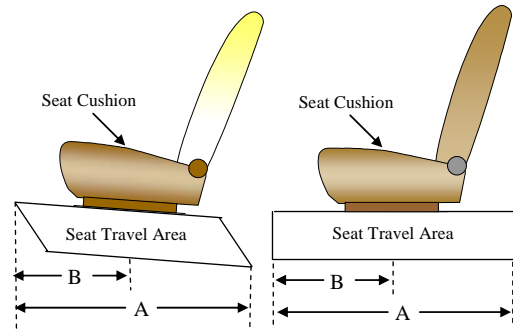
**SEAT FORE/AFT POSITIONS**

The total seat travel was measured from forward most position to rearmost position, irrespective of vertical seat height in those positions. The seat was set at the longitudinal mid position with vertical adjustment at the lowest position obtainable for the driver.

**SEAT FORE/AFT POSITIONING**

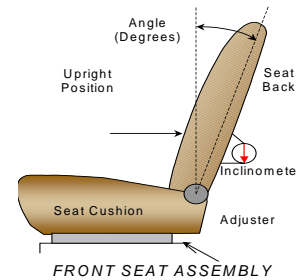
	Total Fore/Aft Travel	Placed in Position No.
<b>Driver Seat</b>	24	1
<b>Passenger</b>	24	12

Position zero is full forward



**NORMAL DESIGN RIDING POSITION  
SEAT BACK ANGLE POSITION**

The driver/passenger seat back is positioned to the manufacturer's designated angle. The procedure is as follows: The inclinometer was placed at head restraint post after the dummy was positioned.



Vertical Impact Reference Line (Aft of Front Axles)
Actual Impact Point (Aft of Front Axle)
Impact Point Difference (- forward / + rearward)

**SEAT BACK ANGLE**

	Degrees	Detent
<b>Driver Seat Back Angle with Seated Dummy</b>	3.6	N/A
<b>Front Passenger Seat Back Angle</b>	Full rearward	N/A
<b>Struck Side Rear Seat Back Angle</b>	Fixed	Fixed
<b>Non-Struck Side Rear Passenger Seat Back Angle</b>	Fixed	Fixed

**SEAT BELT UPPER ANCHORAGE**

	Total No. of Positions	Placed in Position No.
<b>Driver Seat</b>	5	5

Position number one is the uppermost adjustment position.

**DATA SHEET NO. 2 (CONTINUED)**

**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND**

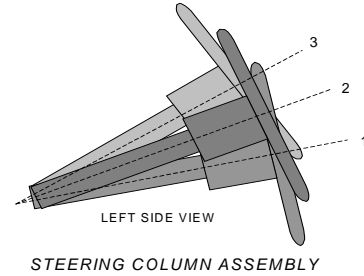
**FUEL SYSTEMS DATA**

Test Vehicle: 2011 Ram 1500 ST Crew Cab 4X2  
 Test Program: SPNCAP Side Impact

NHTSA No.: MB0300  
 Test Date: 09/27/10

**STEERING COLUMN ADJUSTMENT**

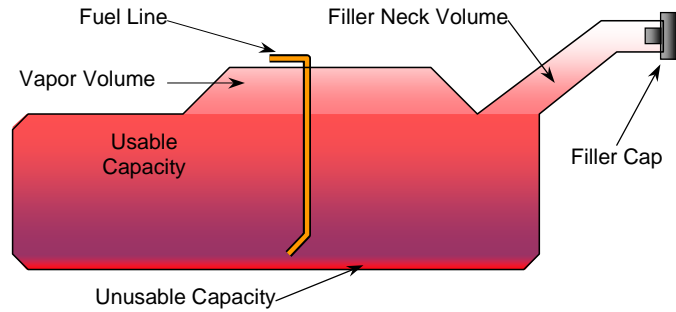
Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. An aluminum plate is placed across the rim of the steering wheel, an inclinometer is placed on the plate and the angle is measured.



**STEERING COLUMN POSITIONS**

	Degrees	Fore/Aft Position, mm
<b>Lowermost Position No. 1</b>	74.6	
<b>Geometric Center Position No. 2</b>	66.1	
<b>Uppermost Position No. 3</b>	57.6	
<b>Test Position</b>	66.1	
<b>Telescoping Steering Wheel Travel</b>		No feature

The test vehicle is equipped with an electric fuel pump located inside the tank. The fuel pump operates with the ignition key in and turned to the “run” position. The fuel filler door is located on the left side of bed. The standard fuel tank occupies the area in front of the rear axle along the left frame rail.



VEHICLE FUEL TANK ASSEMBLY

**FUEL TANK CAPACITY**

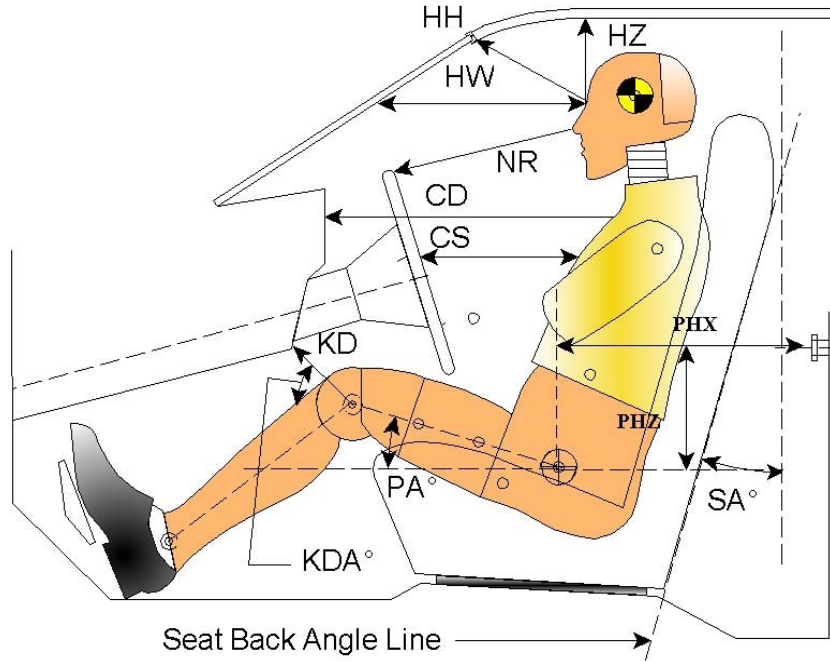
	Liters
Usable Capacity of “Standard Tank”	98.0
Usable Capacity of “Optional” Tank	121.0
Usable Capacity of Standard Tank from owners manual	98.0
Usable Capacity of Optional Tank from owner’s manual	121.0
Usable Capacity used for FMVSS 301 92-94%	90.2-92.1
Actual Amount of Solvent used	91.6
1/3 of Usable Capacity	32.7

### DATA SHEET NO. 3

#### DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Ram 1500 ST Crew Cab 4X2  
 Test Program: SPNCAP Side Impact

NHTSA No.: MB0300  
 Test Date: 09/27/10



Code	Measurement Description	Driver S/N 305	
		Length (mm)	Angle (°)
HH	Head to Header	377	
HW	Head to Windshield	662	
HZ	Head to Roof	248	
NR	Nose to Rim	270	
CD	Chest to Dash	460	
CS	Chest to Steering Wheel	199	
KDL	Left Knee to Dash	74	26.2
KDR	Right Knee to Dash	71	26.1
PA	Pelvic Angle		20.4
PHX	H-Point to Striker (X-Axis)	354	
PHZ	H-Point to Striker (Z-Axis)	-24	
SA	Seat Back Angle		3.6 forward

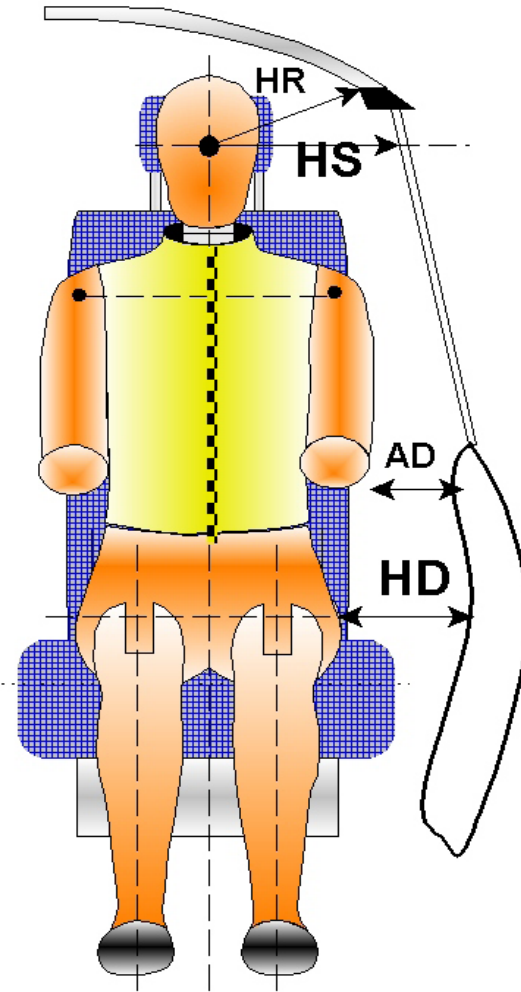
**NOTE:** Dummy measurements were achieved using a tape measure.

## DATA SHEET NO. 4

### DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Ram 1500 ST Crew Cab 4X2  
Test Program: SPNCAP Side Impact

NHTSA No.: MB0300  
Test Date: 09/27/10



Code	Measurement Description	Driver S/N 305 Length (mm)
HR	Head to Side Header	260
HS	Head to Side Window	352
AD	Arm to Door	173
HD	H-Point to Door	121

**NOTE:** Dummy measurements were achieved using a tape measure.

## DATA SHEET NO. 5

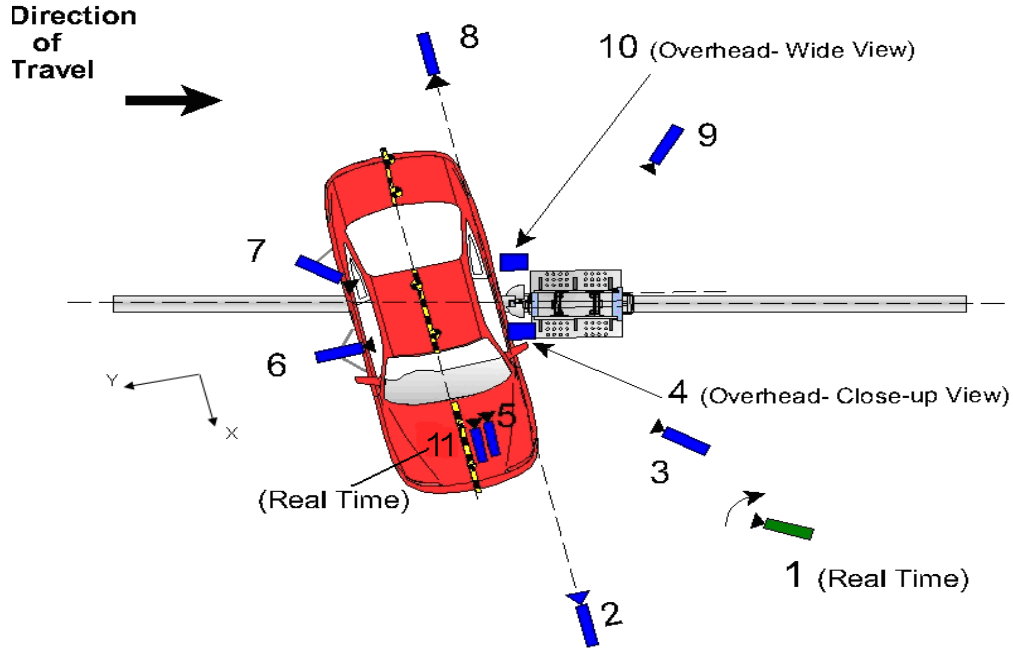
### CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2011 Ram 1500 ST Crew Cab 4X2

NHTSA No.: MB0300

Test Program: SPNCAP Side Impact

Test Date: 09/27/10



No.	Camera View	Location (mm)			Lens (mm)	Frame Speed (fps)
		X	Y	Z		
1	Real time pan view of impact	---	---	---	Zoom	30
2	Front ground level – impact view	1420	0	-1300	25	1000
3	Impact side 45° – forward pole view	1470	2900	-1550	25	1000
4	Overhead close-up view of impact	0	0	-5650	16	1000
5	Onboard – dummy front view				8.5	1000
6	Onboard – dummy side view				8.5	1000
7	Onboard – dummy rear oblique view				12.5	1000
8	Rear ground level – impact view	-1360	0	-1170	12.5	1000
9	Impact side 45° – rearward pole view	-17.5	2900	-1360	25	1000
10	Overhead wide view of impact	-400	0	-5650	8.5	1000
11	Real Time dummy front view	500	-1270	-1800	Zoom	30

REFERENCE: + X = Forward of Vehicle, + Y = Right of Vehicle, + Z = Down  
(from point of impact for X and Y; from ground for Z)

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	4
Total No. of Data Channels	49

<sup>1</sup> Camera location was not recorded.

## DATA SHEET NO. 6

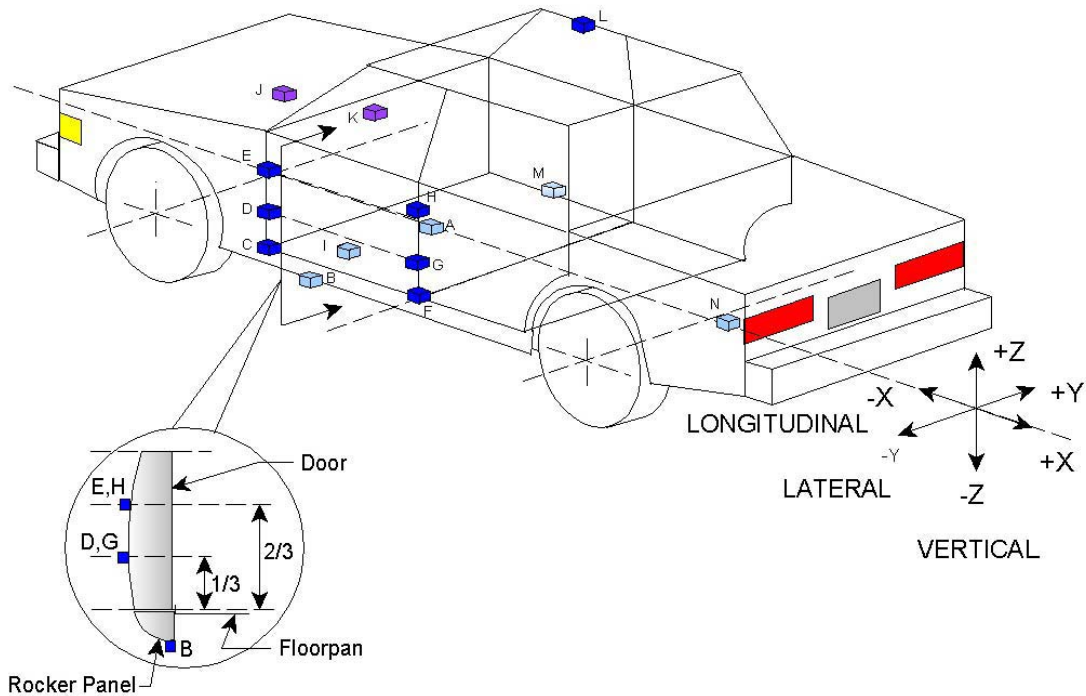
### VEHICLE ACCELEROMETER DATA

Test Vehicle: 2011 Ram 1500 ST Crew Cab 4X2

NHTSA No.: MB0300

Test Program: SPNCAP Side Impact

Test Date: 09/27/10



Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
A	Vehicle CG Acceleration	4285	45	720
	Vehicle CG Rotation	4285	0	720
B	Left Floor Sill	4280	-774	540
C	A-Pillar Sill	4588	-863	580
D	A-Pillar Low	4650	-938	820
E	A-Pillar Mid	4665	-938	1160
F	B-Pillar Sill	3490	-762	600
G	B-Pillar Low	3570	-887	840
H	B-Pillar Mid	3552	-887	1175
I	Driver Seat	3760	-636	700
J	Engine Top	5357	-219	950
K	Firewall	5080	0	1210
L	Right Roof	3950	648	1740
M	Right Floor Sill	3960	741	545
N	Rear Floorpan	738	0	830

**NOTE:** Accelerometer measurements were achieved by using a tape measure.

Reference Points: X = + Forward

Y = + To right

Z = + Down

**DATA SHEET NO. 7**  
**RIGID POLE LOAD CELL DATA**

Test Vehicle: 2011 Ram 1500 ST Crew Cab 4X2  
Test Program: SPNCAP Side Impact

NHTSA No.: MB0300  
Test Date: 09/27/10



Load Cell Locations	Height From Top of Carrier (mm)
1	87
2	468
3	648
4	978
5	1168
6	1651
7	1816
8	2057

## DATA SHEET NO. 8

### POST TEST OBSERVATIONS

Test Vehicle: 2011 Ram 1500 ST Crew Cab 4X2  
 Test Program: SPNCAP Side Impact

NHTSA No.: MB0300  
 Test Date: 09/27/10

#### TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Driver Dummy
Dummy Type / Serial No.	SID IIs SBLD / 305
Head Contact	Side curtain airbag, front airbag, head restraint
Upper/Lower Torso Contact	Door liner/Door liner
Left /Right Knee Contact	Door liner/None

#### POST TEST DOOR OPENING AND SEAT TRACK INFORMATION

Description	Front	Rear
Left Side Doors	Unlocked/Jammed Shut	Unlocked/Closed and operational
Right Side Doors	Unlocked/Closed and operational	Unlocked/Closed and operational
Hatch and Other		Unlocked/Closed and operational
Seat Movement	None	None
Seat Back Failure	None	None

#### POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Impact Door	No separation from the vehicle
Non-Impact Doors	None unlatched, no separation from latch & hinges, or vehicle. Did not pull out of anchorages.
Windshield Damage	Broken
Window Damage	Left front shattered
Other Notable Effects	None

#### SUPPLEMENTAL RESTRAINT INFORMATION

Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear Passenger Occupant Location 4	
	Installed	Deployed	Installed	Deployed
Frontal Airbag	Yes	Yes		
Knee Airbag	No	N/A		
Side Torso Airbag	No	N/A	N/A	N/A
Combination Head/Torso Side Airbag	No	N/A	N/A	N/A
Side Curtain/Tube Head Airbag	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes	Yes	N/A	N/A
Seat Belt Load Limiter	Yes	Unknown	N/A	N/A
Other	N/A	N/A	N/A	N/A

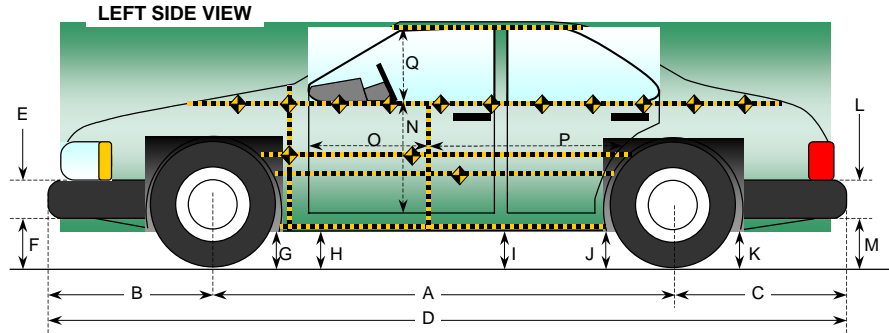
#### VEHICLE SPEED AND IMPACT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset from Vertical Impact Reference Line	mm	+/- 38	3 rearward
Light Trap No. 1 Velocity Primary	km/h	30.4 to 32.0	32.0
Light Trap No. 2 Velocity Redundant	km/h	30.4 to 32.0	32.0

**DATA SHEET NO. 9**  
**VEHICLE PROFILE MEASUREMENTS**

Test Vehicle: 2011 Ram 1500 ST Crew Cab 4X2  
Test Program: SPNCAP Side Impact

NHTSA No.: MB0300  
Test Date: 09/27/10



Left Side View

All Measurements in mm with a tolerance of  $\pm 3$ mm

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	3555	3490	65
B	Front Axle to Front Surface of Vehicle	1038	1082	-44
C	Rear Axle to Rear Surface of Vehicle	1227	1227	0
D	Total Length at Centerline	5820	5787	33
E	Front Bumper Thickness	248	248	0
F	Front Bumper Bottom to Ground	345	390	-45
G	Sill Height at Front Wheel Well	410	435	-25
H	Sill Height at Front Door Leading Edge	405	425	-20
I	Sill Height at "B" Pillar	417	439	-22
J1	Sill Height at Rear Wheel Well	440	500	-60
J2	Pinch Weld Height at Rear Wheel Well	342	395	-53
K	Sill Height Aft of Rear Wheel Well	506	595	-89
L	Rear Bumper Thickness	198	198	0
M	Rear Bumper Bottom to Ground	515	600	-85
N	Sill Height to Window Bottom Sill	885	890	-5
O	Front Door Leading Edge to Impact CL	690	470	220
P	Rear Door Trailing Edge to Impact CL	1468	1405	63
Q	Front Window Opening	505	480	25
R	Right Side Length	5700	5682	18
S	Left Side Length	5700	5632	68
T	Vehicle Width at "B" Post	1528	1392	136

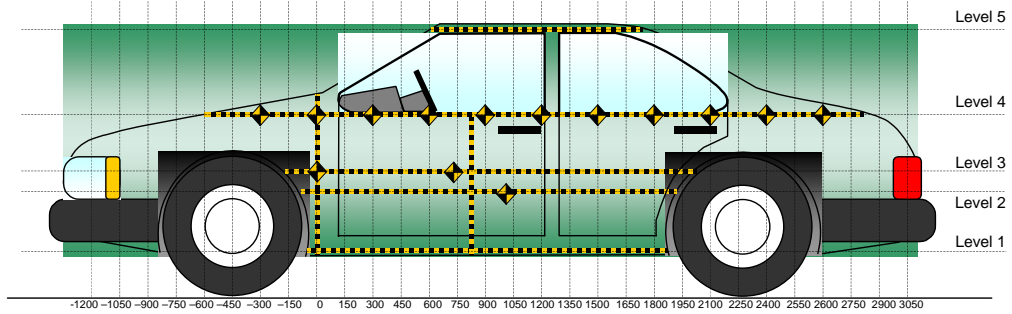
**NOTE:** Measurements were achieved by using a tape measure.

**DATA SHEET NO. 10**

**VEHICLE EXTERIOR CRUSH MEASUREMENTS**

Test Vehicle: 2011 Ram 1500 ST Crew Cab 4X2  
 Test Program: SPNCAP Side Impact

NHTSA No.: MB0300  
 Test Date: 09/27/10



All Measurements Shown in mm

**LEFT SIDE VIEW**

**MAXIMUM EXTERIOR STATIC CRUSH**

Level	Measurement Description	Height Above Ground (mm)
5	Window Top	1810
4	Window Sill	1240
3	Mid Door	880
2	Occupant H-Point	920
1	Sill Top	430

**NOTE:** Measurements were taken with the vehicle in the “As Tested” condition using a tape measure and were taken along the estimated crush grid vertical impact reference line.

**DATA SHEET NO. 10 (CONTINUED)**

**VEHICLE EXTERIOR CRUSH MEASUREMENTS**

Test Vehicle: 2011 Ram 1500 ST Crew Cab 4X2  
 Test Program: SPNCAP Side Impact

NHTSA No.: MB0300  
 Test Date: 09/27/10

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900		999	997	900			963	955	876			37	41	24	
-750		999	997	912	874		947	941	867	838		52	56	45	36
-600	921	996	994	919	838	775	869	865	823	770	146	127	130	96	68
-450	924	994	993	923	800	703	775	772	764	688	221	219	221	160	111
-300	926	993	992	927	760	625	683	679	686	605	302	310	313	241	155
-150	928	992	992	930	728	545	584	585	589	534	382	408	407	341	194
0	930	992	992	933	704	472	485	485	485	451	458	507	507	448	253
150	932	993	994	936	698	505	506	507	499	448	427	487	486	436	250
300	933	996	996	938	700	631	643	644	626	522	302	354	352	313	177
450	933	997	997	939	700	690	798	794	760	571	243	199	203	180	130
600	934	998	998	940	702	727	824	820	786	607	206	174	178	154	95
750	935	998	998	941	703	762	849	845	812	625	173	149	153	129	78
900	935	999	998	941	706	789	874	869	837	637	147	125	129	104	69
1050	935	998	998	941	709	813	898	894	862	644	122	100	104	79	65
1200	934	997	996	940	711	835	922	918	887	650	99	75	78	53	62
1350	934	996	995	938	713	857	946	941	909	657	77	50	54	29	56
1500	919	990	988	927		860	937	935	875		59	53	53	52	
1650															

Reference plane is parallel to test vehicle longitudinal centerline.

Pre-test measurements are "As Tested" condition.

Measurements forward of impact reference line are negative

The target impact point was 4 mm rearward of the estimated crush grid impact reference line.

Measurements were achieved using the Coordinate Measurement Machine (FARO)

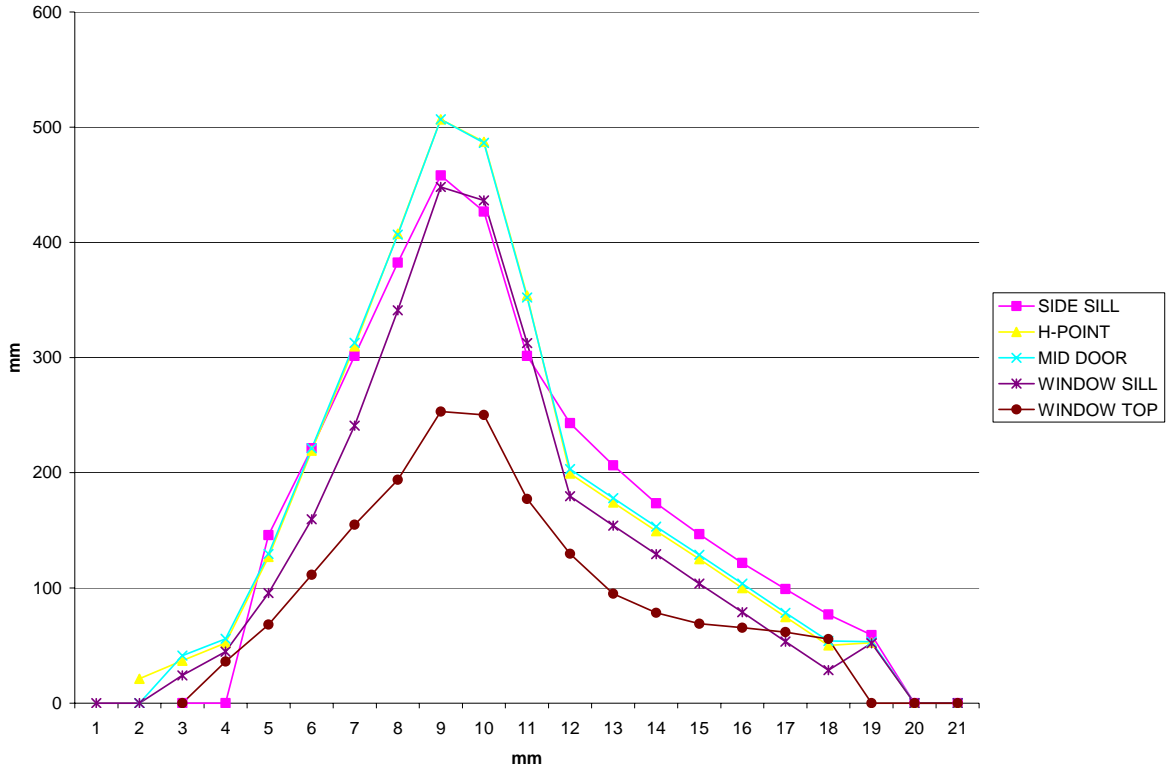
	Units	Level 1	Level 2	Level 3	Level 4	Level 5
Maximum Crush	mm	458	507	507	448	253
Distance from Actual Impact Point	mm	7	7	7	7	7

**DATA SHEET NO. 10 (CONTINUED)**

**VEHICLE EXTERIOR CRUSH MEASUREMENTS**

Test Vehicle: 2011 Ram 1500 ST Crew Cab 4X2  
Test Program: SPNCAP Side Impact

NHTSA No.: MB0300  
Test Date: 09/27/10



**DATA SHEET NO. 11A**

**FMVSS NO. 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA**

Test Vehicle: 2011 Ram 1500 ST Crew Cab 4X2  
 Test Program: SPNCAP Side Impact

NHTSA No.: MB0300  
 Test Date: 09/27/10

**FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA**

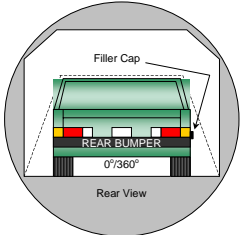
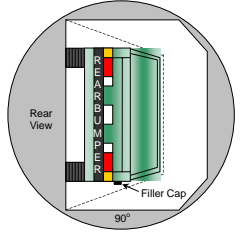
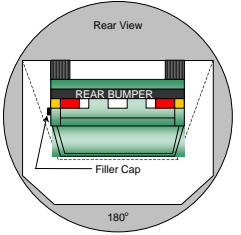
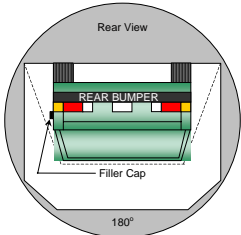
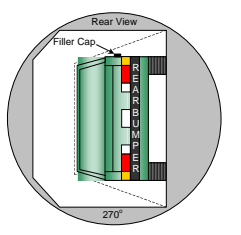
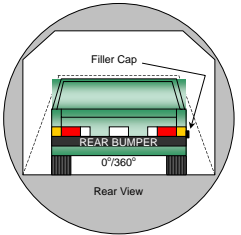
Temperature : 21 Test Time: 13:50

Stoddard Solvent Spillage Measurements

- A. From impact until vehicle motion ceases: 0 oz.  
 (Maximum allowable = 1 ounce)
- B. For the 5 minute period after motion ceases: 0 oz.  
 (Maximum allowable = 5 ounces)
- C. For the following 25 minutes: 0 oz.  
 (Maximum allowable = 1 oz./minute)

D. Spillage Details: None

**FMVSS 301 STATIC ROLLOVER DATA**

			<p>1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.</p> <p>2. The position hold time at each position is 300 seconds (minimum).</p> <p>3. Details of Stoddard Solvent spillage locations: None</p>
0° to 90°		90° to 180°	
			
180° to 270°		270° to 360°	

Test Phase	Rotation Time (sec.)	Hold Time (sec.)	Spillage Collection Time (min)	Spillage (oz.)	Spillage Collection Time (min)	Spillage (oz.)	Spillage Collection Time (min)	Spillage (oz.)
0° to 90°	120	300	First 5	0	Sixth	0	Seventh	0
90° to 180°	120	300	First 5	0	Sixth	0	Seventh	0
180° to 270°	120	300	First 5	0	Sixth	0	Seventh	0
270° to 360°	120	300	First 5	0	Sixth	0	Seventh	0

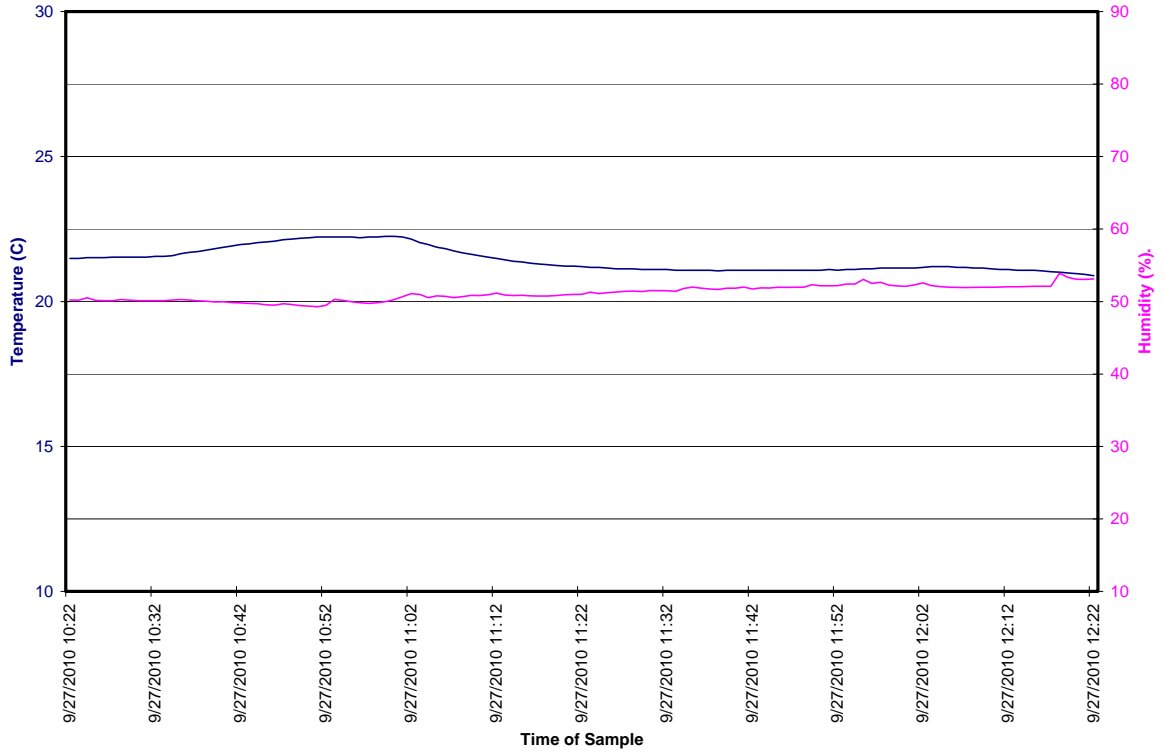
# DATA SHEET NO. 12

## DUMMY/VEHICLE TEMPERATURE STABILIZATION DATA

Test Vehicle: 2011 Ram 1500 ST Crew Cab 4X2  
Test Program: SPNCAP Side Impact

NHTSA No.: MB0300  
Test Date: 09/27/10

MB0300 75 Degree Oblique Rigid Pole Side NCAP Impact 100927; Test Time 12:22



**APPENDIX A**  
**PHOTOGRAPHS**

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**No. 001 – As Delivered Right Front Three-Quarter View of Test Vehicle**



**No. 002 – As Delivered Left Rear Three-Quarter View of Test Vehicle**



**No. 003 – Pre-Test Frontal View of Test Vehicle**



**No. 004 – Post-Test Frontal View of Test Vehicle**



**No. 005 – Pre-Test Left Front Three-Quarter View of Test Vehicle**

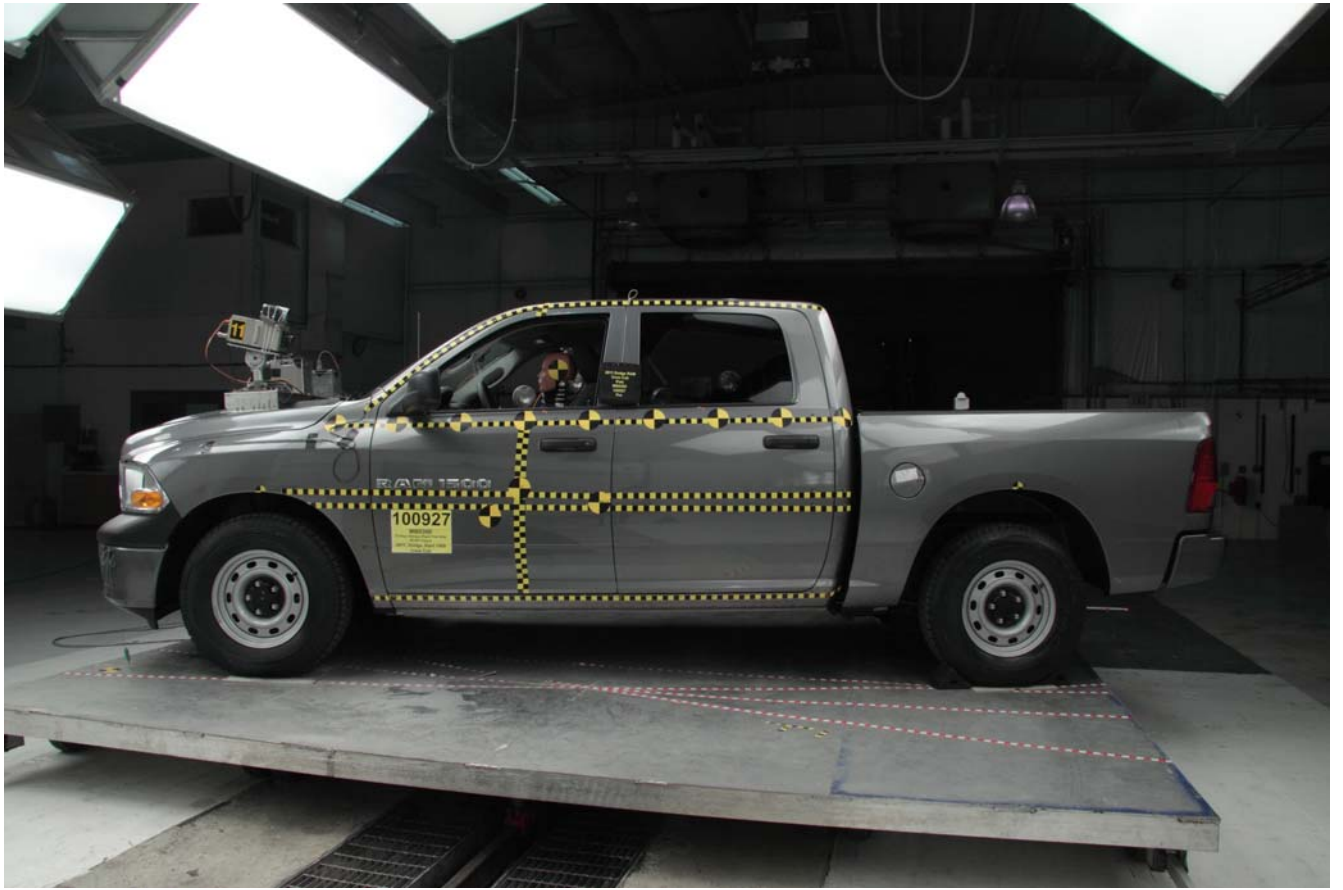


**No. 006 – Post-Test Left Front Three-Quarter View of Test Vehicle**

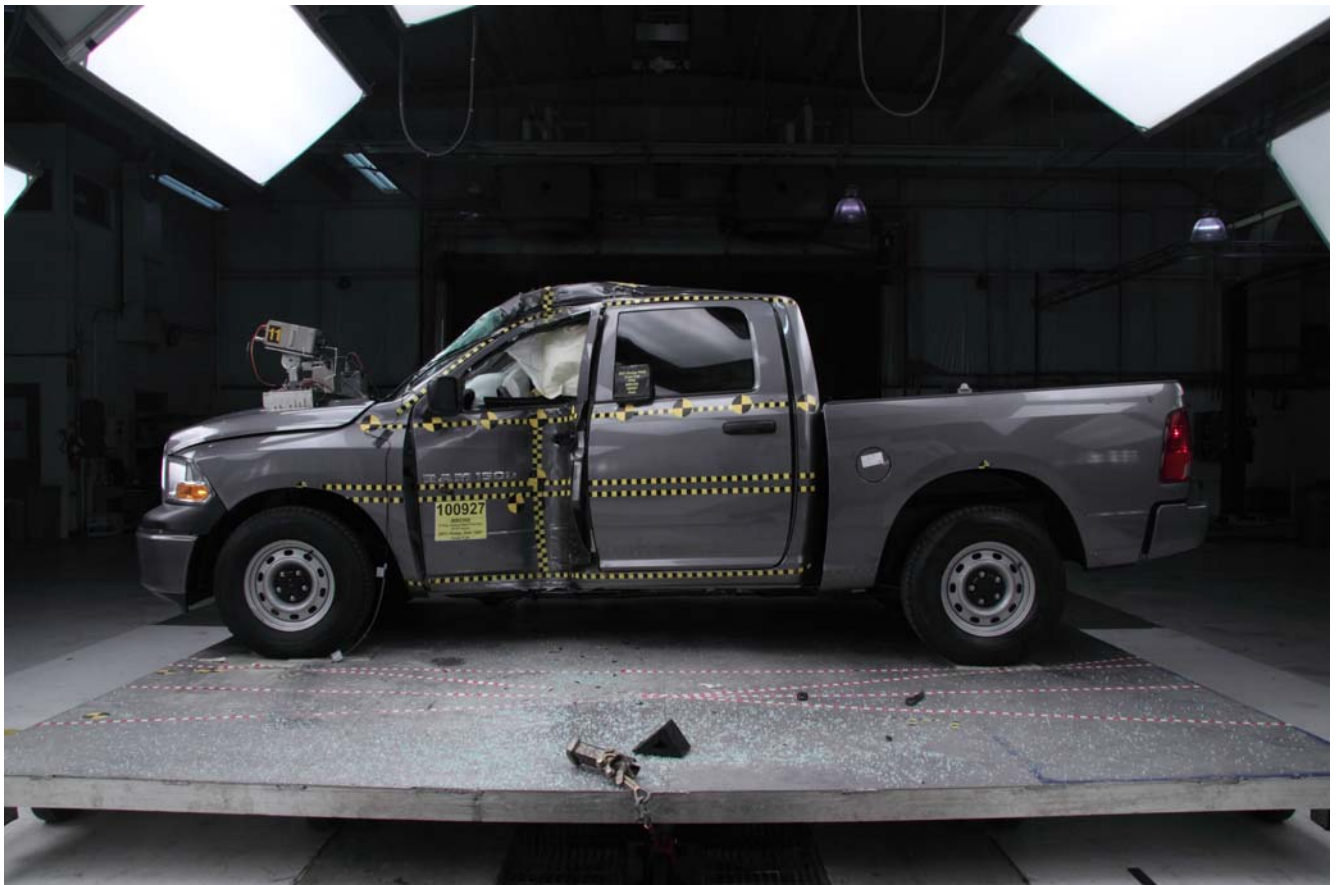


**No. 006a – Post-Test Left Front Three-Quarter View of Test Vehicle**

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**No. 007 – Pre-Test Left Side View of Test Vehicle**



**No. 008 – Post-Test Left Side View of Test Vehicle**



**No. 009 – Pre-Test Left Rear Three-Quarter View of Test Vehicle**



**No. 010 – Post-Test Left Rear Three-Quarter View of Test Vehicle**



**No. 010a – Post-Test Left Rear Three-Quarter View of Test Vehicle**

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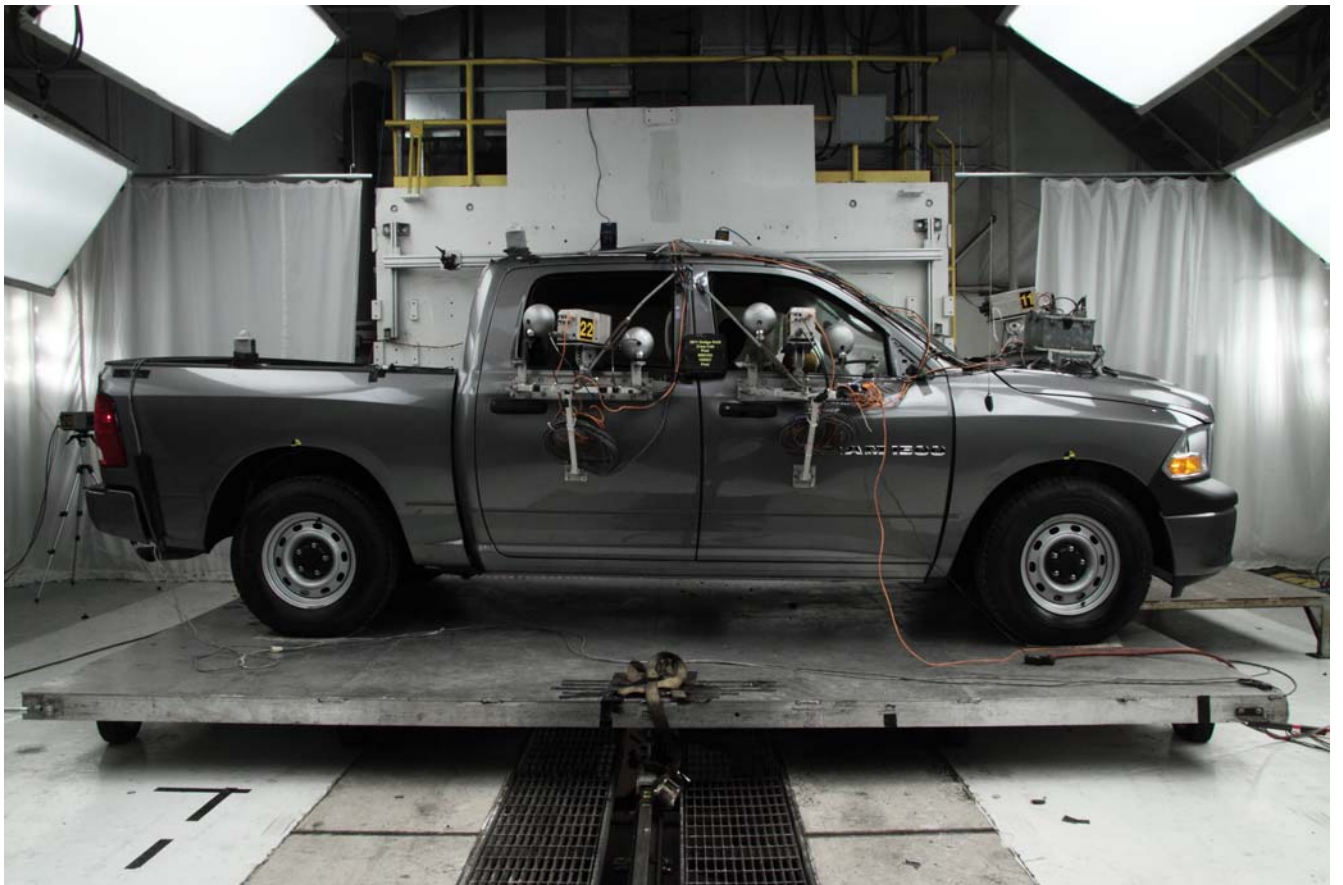
**No. 011 – Pre-Test Rear View of Test Vehicle**



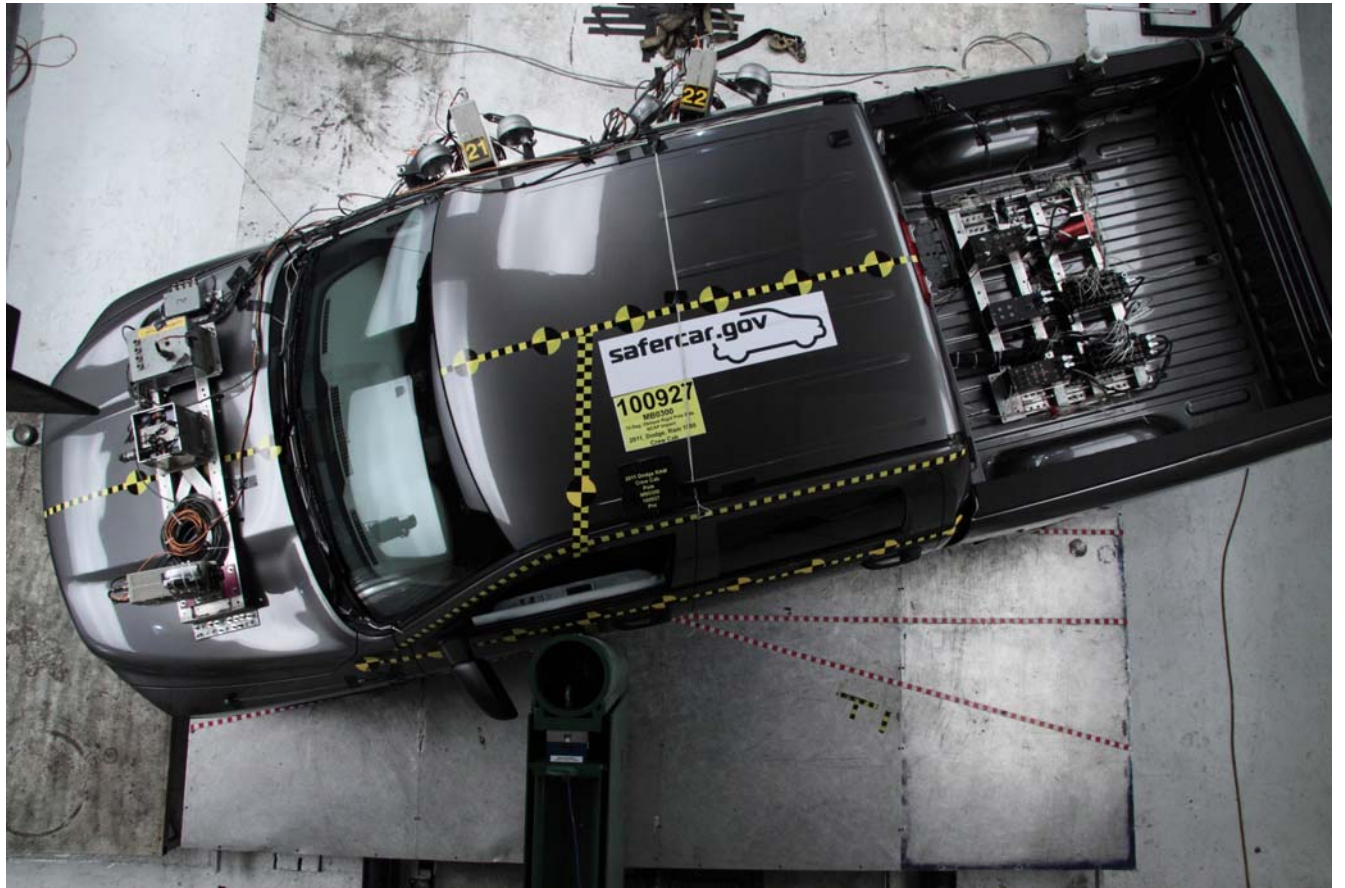
**No. 012 – Post-Test Rear View of Test Vehicle**



**No. 013 – Pre-Test Right Side View of Test Vehicle**



**No. 014 – Post-Test Right Side View of Test Vehicle**



**No. 015 – Pre-Test Overhead View of Test Vehicle and Pole**



**No. 016 – Post-Test Overhead View of Test Vehicle and Pole**



**No. 017 – Pre-Test Left Side View of Pole Positioned Against Side of Vehicle at Impact Point**



**No. 018 – Pre-Test Right Side View of Pole Positioned Against Side of Vehicle at Impact Point**



**No. 019 – Pre-Test Close-Up View of Impact Point Target**

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**No. 019a – Pre-Test Close-Up View of Impact Point Target**



**No. 020 – Post-Test Close-Up View of Impact Point Target Showing Impact Location**



**No. 021 – Pre-Test Front Close-Up View of Dummy**



**No. 022 – Post-Test Front Close-Up View of Dummy**

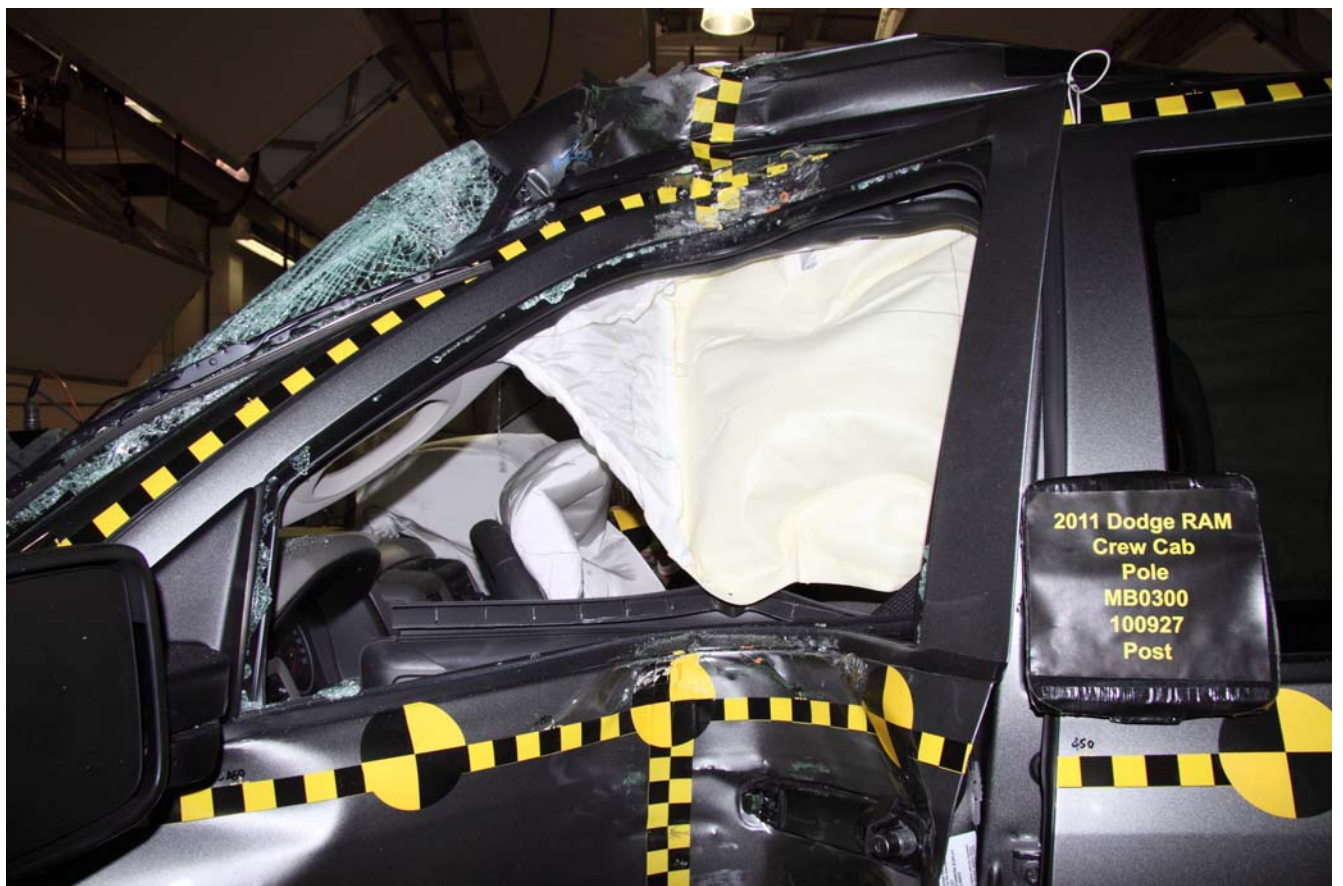


**No. 023 – Pre-Test Left Side View of Dummy Showing Belt, Chalking, and Contact Switches**

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**No. 024 – Pre-Test Left Side View of Dummy Shoulder and Driver Door Top View**



**No. 025 – Post-Test Left Side View of Dummy Shoulder and Driver Door Top View**



**No. 026 – Pre-Test Frontal View of Seat Back Prior to Dummy Positioning**



**No. 027 – Pre-Test Frontal View of Dummy Head and Shoulders in Relation to Head Restraint**



**No. 028 – Pre-Test Frontal View of Seat Pan Prior to Dummy Positioning**



**No. 029 – Pre-Test Overhead View of Dummy Thighs on Seat Pan**



**No. 030 – Pre-Test View of Dummy’s Neck Showing Position of Adjustable Neck Bracket**



**No. 031 – Pre-Test View of Dummy’s Head Showing Dummy’s Head is Level**



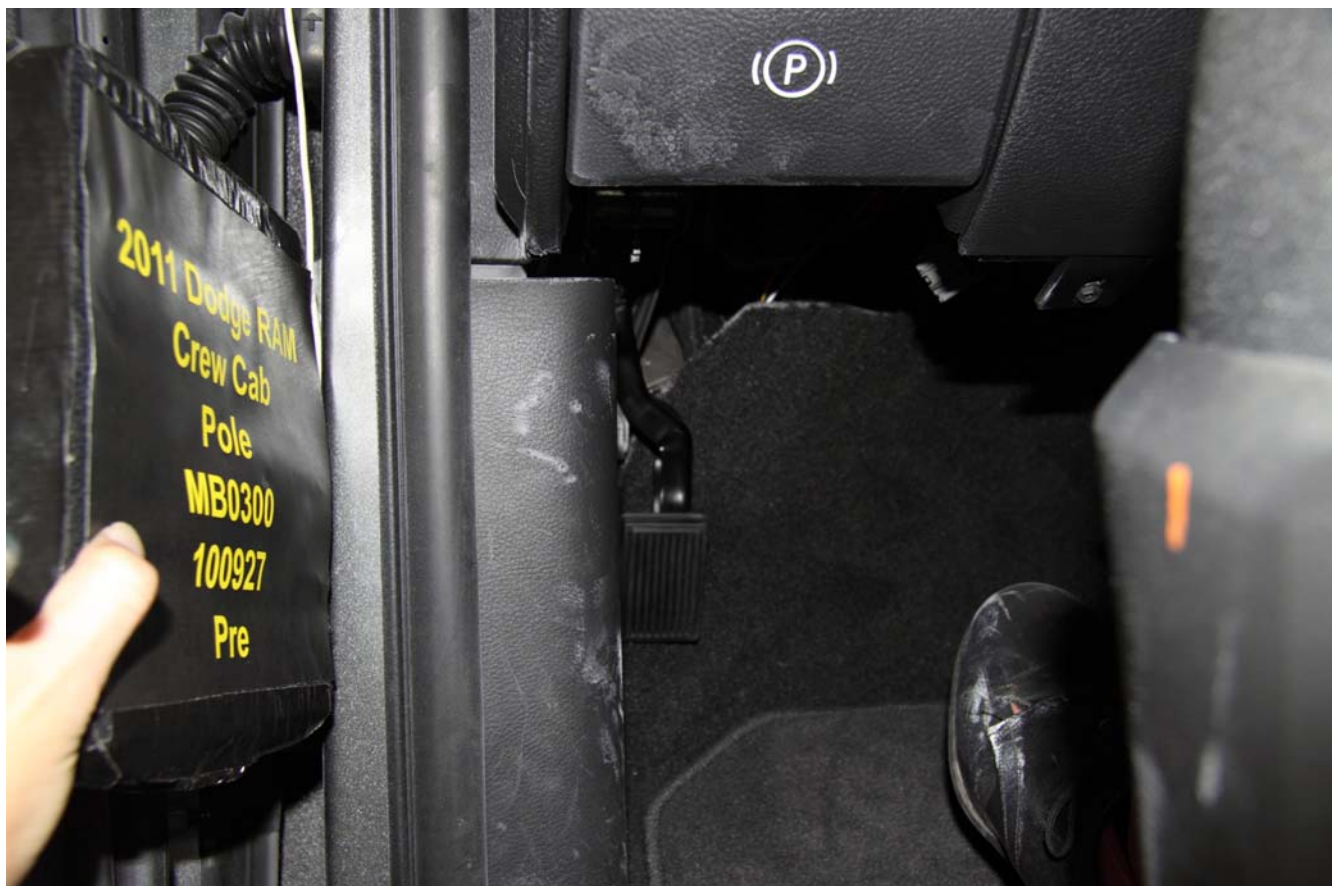
**No. 032 – Pre-Test Placement of Dummy's Feet**



**No. 033 – Pre-Test View of Belt Anchorage for Dummy**



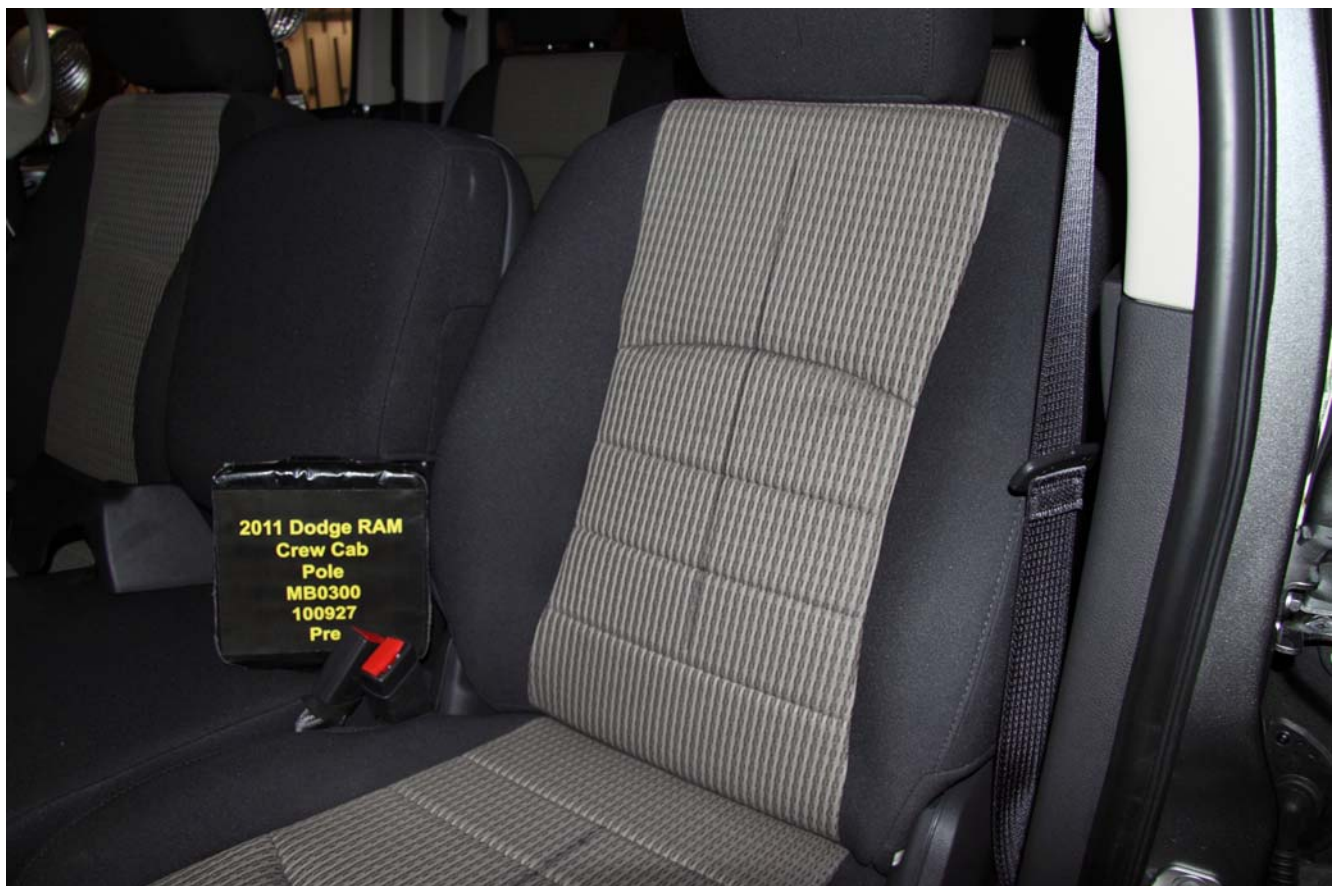
**No. 034 – Pre-Test Left Side View of Steering Wheel**



**No. 035 – Pre-Test View of Parking Brake**



**No. 036 – Pre-Test Close-Up Left Side View of Driver Seat Track**



**No. 037 – Post-Test Close-Up Left Side View of Driver Seat Back**



**No. 038 – Pre-Test Close-Up View of Driver Seat Back or Head Restraint**

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**No. 039 – Pre-Test Dummy and Driver Door Clearance View**



**No. 040 – Post-Test Dummy and Driver Door Clearance View**



**No. 041 – Pre-Test Right Side View of Dummy and Front Seat Occupant Compartment**



**No. 042 – Post-Test Right Side View of Dummy and Front Seat Occupant Compartment**



**No. 043 – Pre-Test Inner Driver Door Panel View**



**No. 044 – Post-Test Inner Driver Door Panel View Showing Dummy Contact Locations**



**No. 045 – Post-Test Dummy Close-Up Head Contact with Vehicle Interior View**



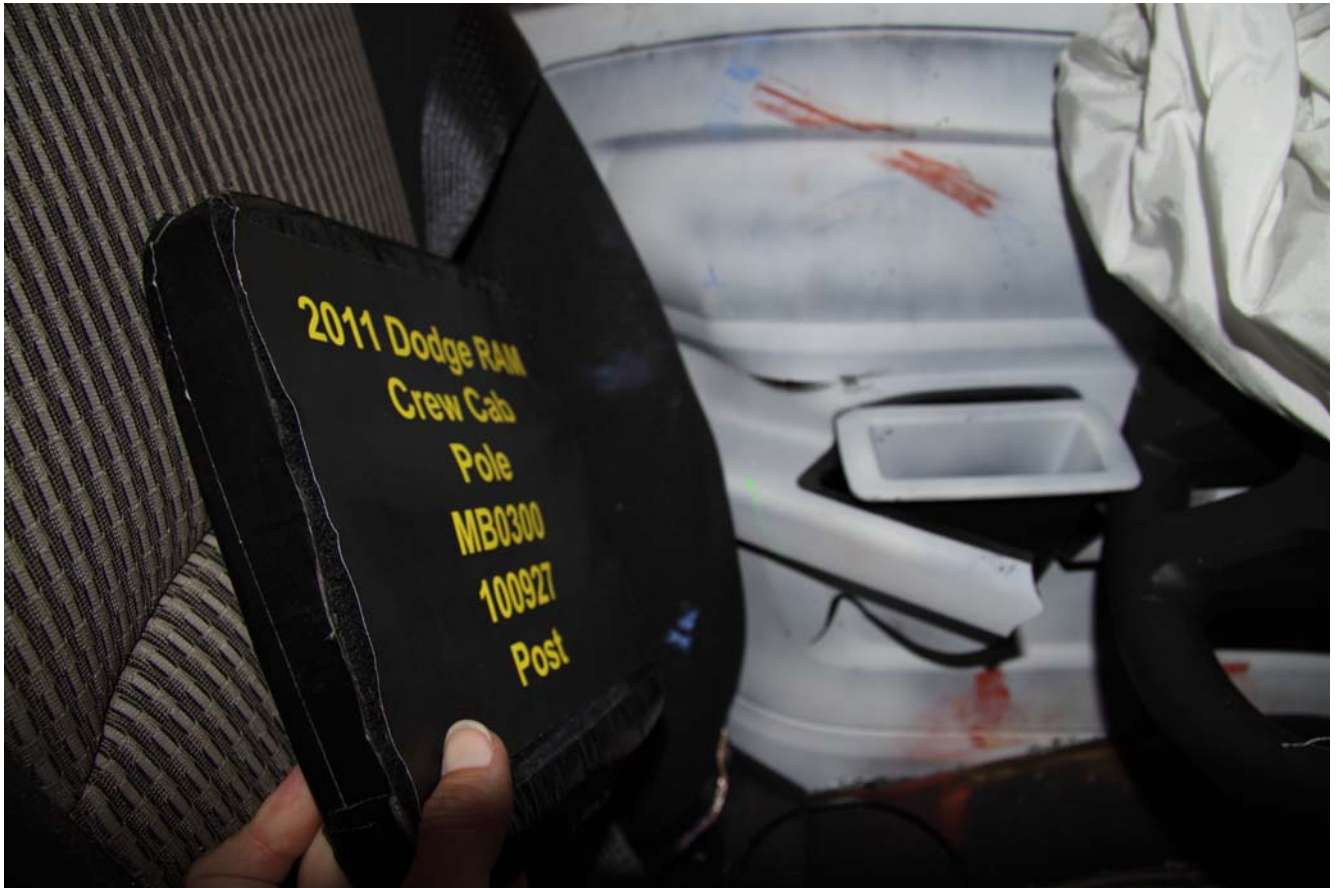
**No. 046 – Post-Test Dummy Close-Up Head Contact with Side Airbag View**



**No. 047 – Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View**



**No. 048 – Post-Test Dummy Close-Up Torso Contact with Side Airbag View**



**No. 049 – Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View**

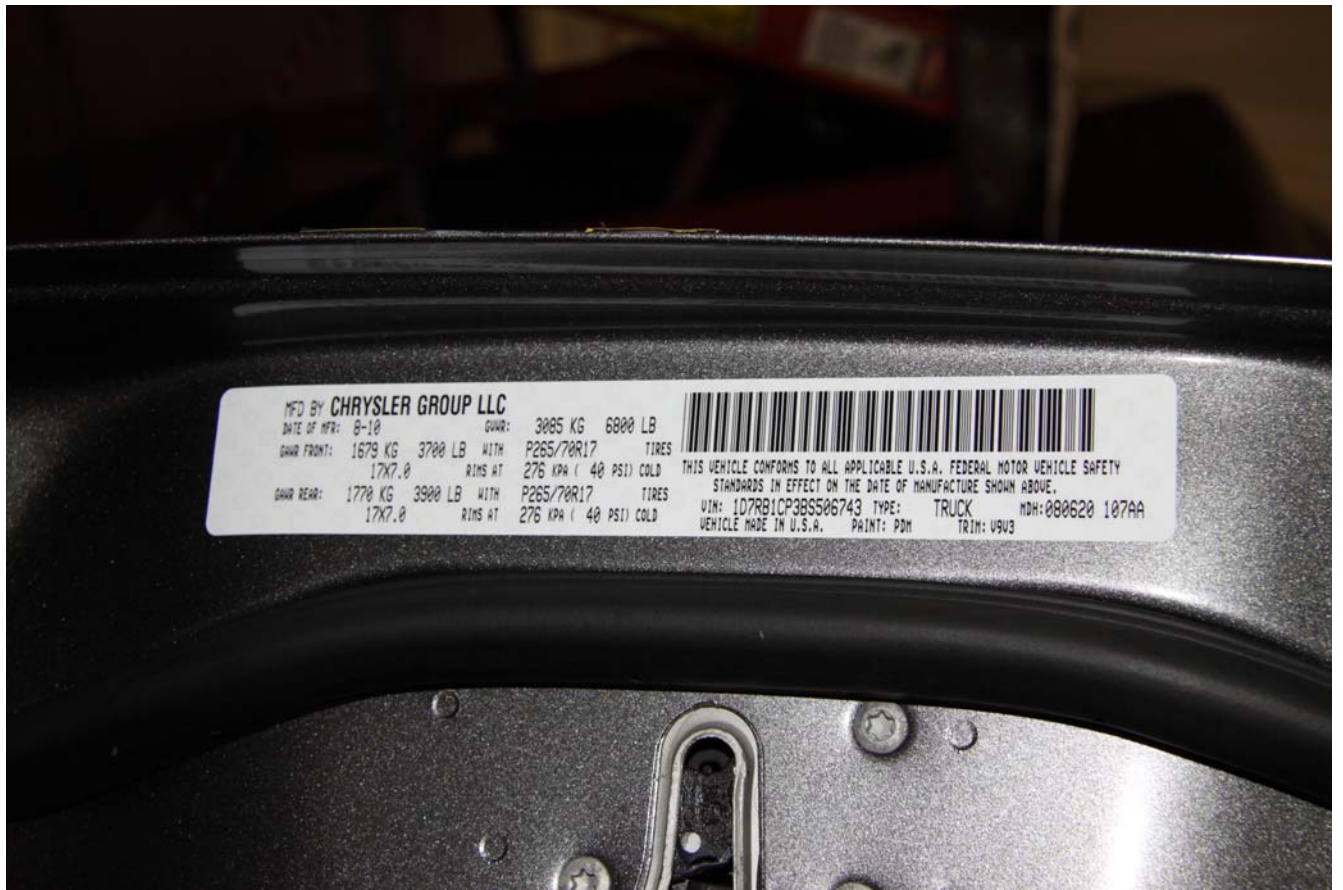
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**No. 051 – Pre-Test View of Fuel Filler Cap or Fuel Filler Neck**



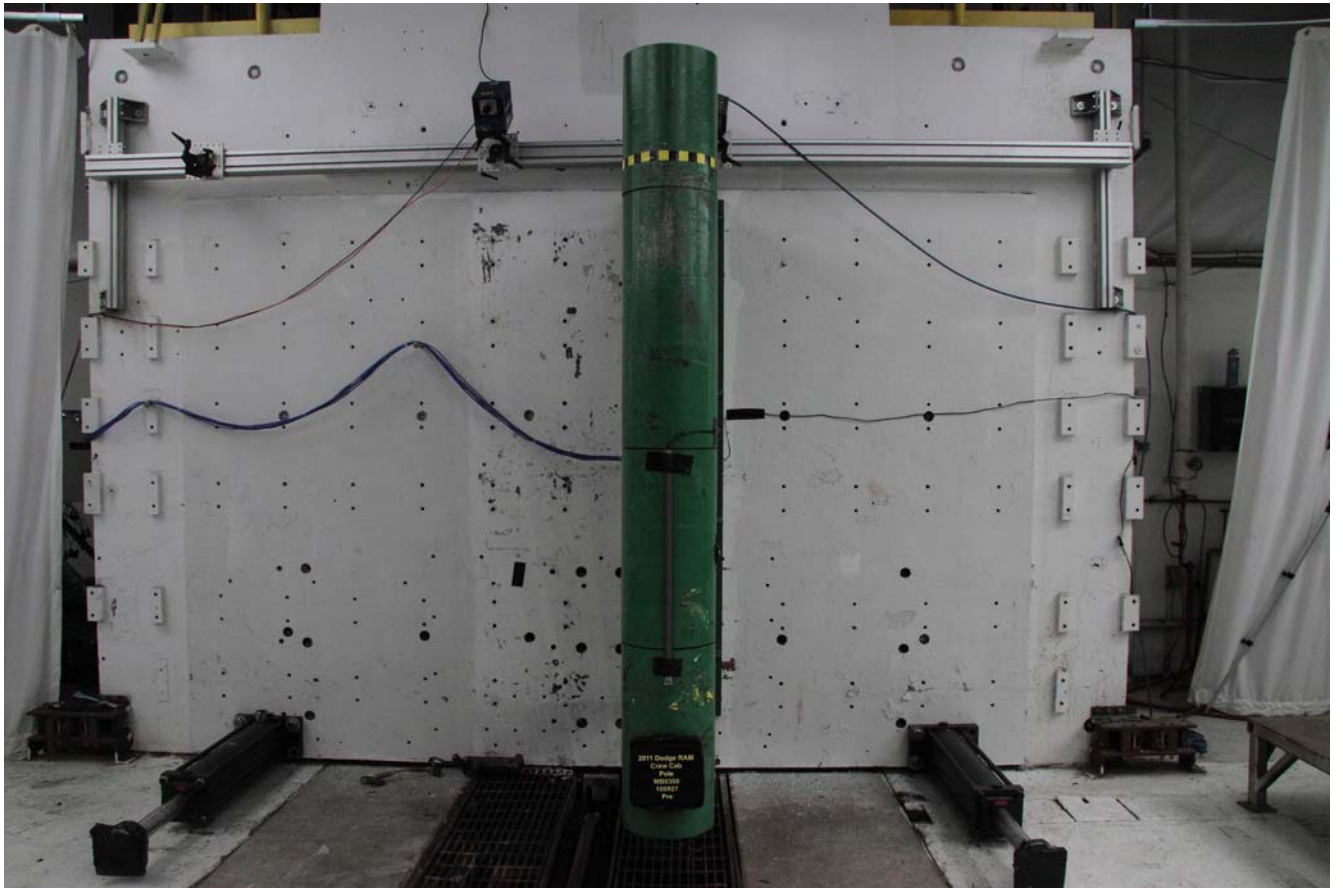
**No. 052 – Post-Test View of Fuel Filler Cap or Fuel Filler Neck**



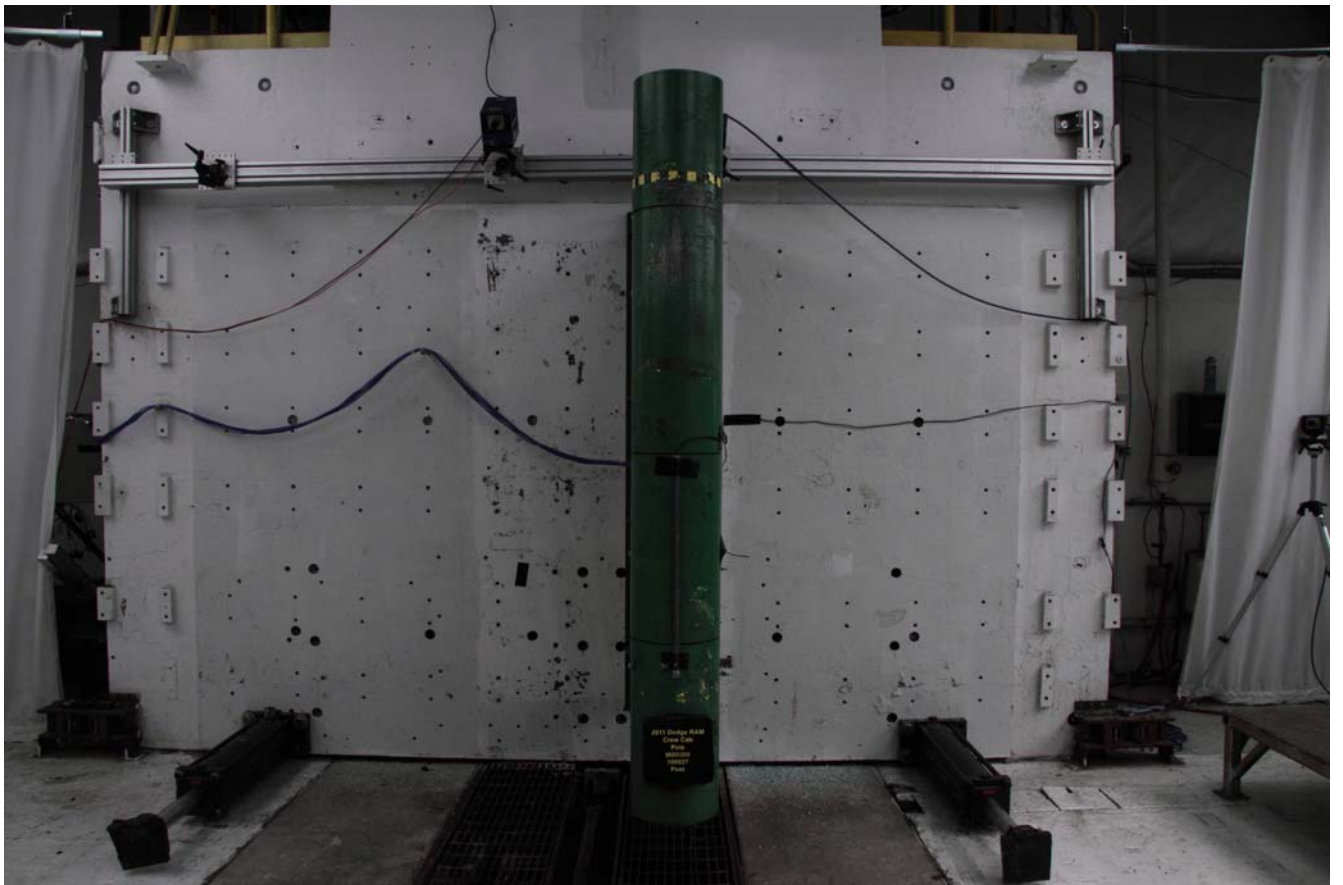
No. 053 – Close-Up View of Vehicle’s Certification Label



No. 054 – Close-Up View of Vehicle’s Tire Information Placard or Label



**No. 055 – Pre-Test Pole Barrier Front View**



**No. 056 – Post-Test Pole Barrier Front View**



**No. 057 – Pre-Test Pole Barrier Side View**



**No. 058 – Post-Test Pole Barrier Side View**



No. 060 – Post-Test Primary Speed Trap Read-Out



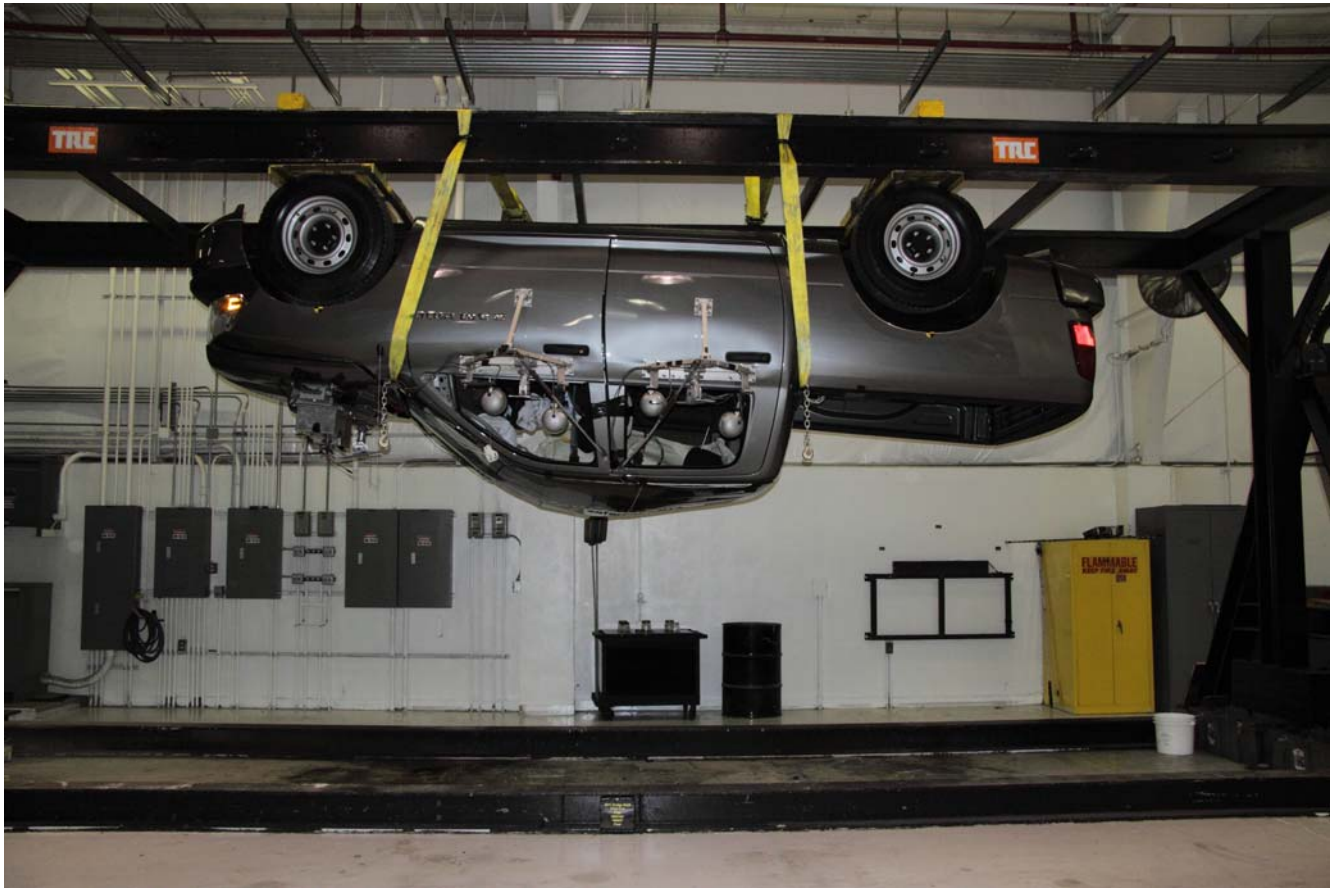
No. 060a – Post-Test Redundant Speed Trap Read-Out



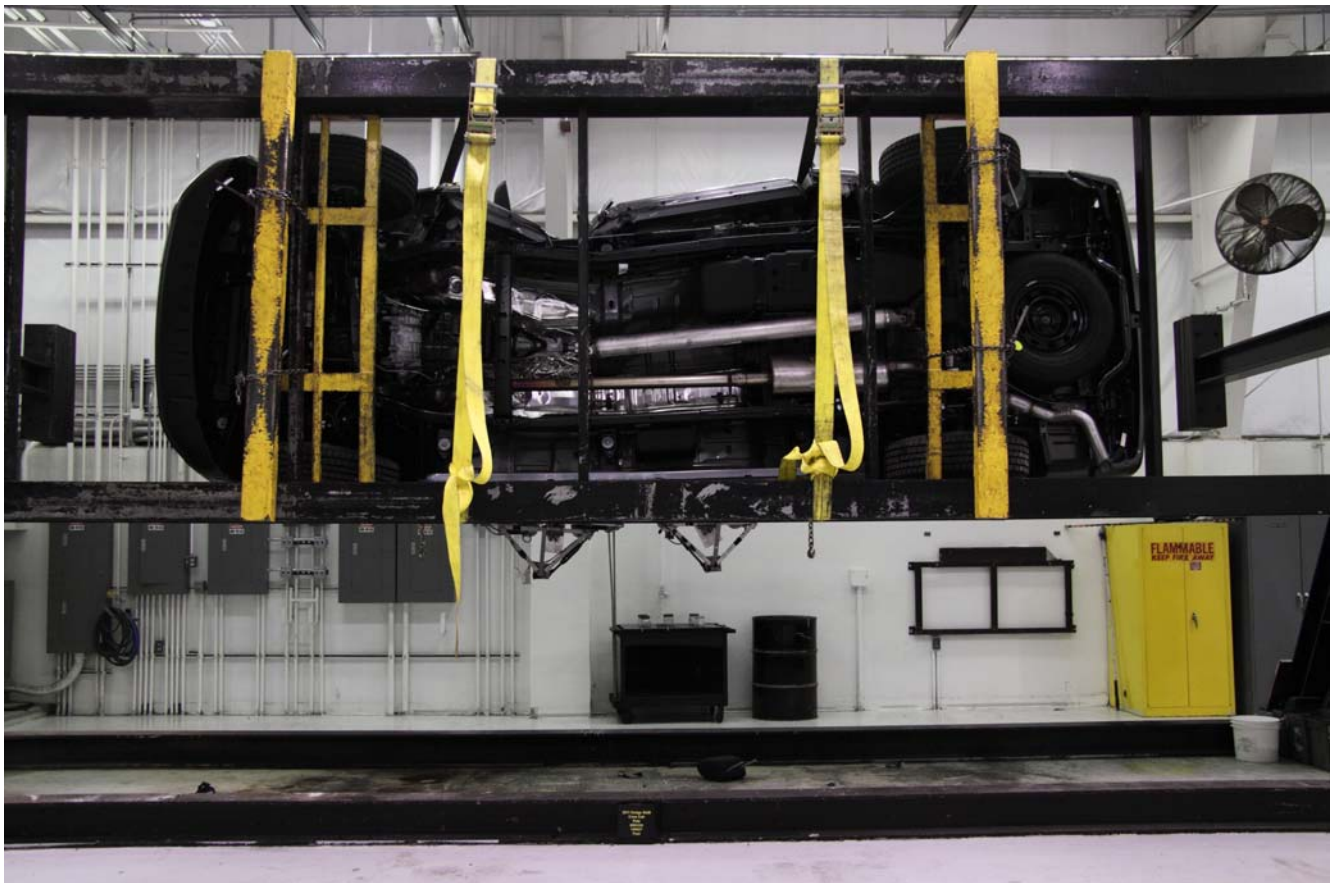
**No. 061 – FMVSS No. 301 Rollover 0°**



**No. 062 – FMVSS No. 301 Rollover 90°**



**No. 063 – FMVSS No. 301 Rollover 180°**



**No. 064 – FMVSS No. 301 Rollover 270°**



**No. 065 – FMVSS No. 301 Rollover 360°**



**No. 066 – Impact Event**



2011 MODEL YEAR  
**RAM 1500 ST CREW CAB 4X2**

For more information visit: [www.ramtrucks.com](http://www.ramtrucks.com)  
or call 1-866-RAMINFO

Chrysler Group LLC

THIS VEHICLE IS MANUFACTURED TO MEET SPECIFIC UNITED STATES REQUIREMENTS. THIS VEHICLE IS NOT MANUFACTURED FOR SALE OR REGISTRATION OUTSIDE OF THE UNITED STATES.

MANUFACTURER'S SUGGESTED RETAIL PRICE OF THIS MODEL INCLUDING DEALER PREPARATION

Base Price: **\$29,010**

**DODGE RAM 1500 ST CREW CAB 4X2**  
Exterior Color: Mineral Gray Met. Clear Coat Exterior Paint  
Interior Color: Dark Slate / Medium Graystone Interior Colors  
Interior: Cloth 40 / 20 / 40 Bench Seat  
Engine: 4.7-Liter V8 Engine  
Transmission: 5-Speed Automatic 545RFE Transmission

STANDARD EQUIPMENT (UNLESS REPLACED BY OPTIONAL EQUIPMENT)

FUNCTIONAL/SAFETY FEATURES

26-Gallon Fuel Tank  
Advanced MultiStage Front Airbags  
Supplemental Side-Curtain Front and Rear Airbags  
Electronic Stability Control  
AntiLock 4-Wheel-Disc Brakes  
Sentry Key Theft Deterrent System  
Power Rack-and-Pinion Steering  
Heavy Duty Engine Cooling  
Heavy Duty Transmission Oil Cooler  
160-Amp Alternator  
Power Locks  
Power Accessory Delay  
120-MPH Primary Speedometer  
Tire Pressure Monitoring Warning Lamp  
Variable Intermittent Windshield Wipers  
Locking Tailgate

INTERIOR FEATURES

Air Conditioning  
Media Center 130 CD/MP3  
6 Speakers  
Audio Jack Input for Mobile Devices  
Rear Folding Seat  
Second-Row In-Floor Storage Bins  
Rear Underseat Storage Compartment  
Power Windows w/ Front One-Touch Up & Down Feature  
Tilt Steering Column  
Black Vinyl Floor Covering

EXTERIOR FEATURES

17-Inch x 7.0-Inch Steel Argent Wheels  
P285/70R17 BSW All Season Tires

Full-Size Spare Tire  
Trailer Tow Wiring with 4-Pin Connector  
7-Pin Wiring Harness  
Automatic Headlamps  
HaloGen Headlamps  
Fold-Away Power Heated Mirrors  
Black Exterior Mirrors  
Tinted Glass Windows

OPTIONAL EQUIPMENT

Customer Preferred Package 24A

ST Popular Equipment Group  
Cloth 40 / 20 / 40 Bench Seat  
Speed Control  
SIRIUS Satellite Radio w/ 1-Yr Radio Subscription  
1-Year SIRIUS Radio Service  
For More Information, Call 888-539-7474  
Front and Rear Floor Mats  
Flexible Fuel Vehicle

DESTINATION CHARGE

\$900

TOTAL PRICE: \* \$30,680

WARRANTY COVERAGE

5-year or 100,000-mile Powertrain Limited Warranty.  
3-year or 36,000-mile Basic Limited Warranty.  
24-hour towing assistance; certain restrictions apply.  
Ask Dealer for a copy of the limited warranties or see your owner's manual for details.

**5 YEAR/100,000 MILE  
POWERTRAIN WARRANTY**

Assembly Plant/Part of Entry: WARREN, MICHIGAN, U.S.A.

vin: 1D7RB1CP38S-506743

14VIN: 9370

SHIP TO: 60302 21

PRICE FREEDOM: CHRYSLER, JEEP

280 SOLONAKES ISLAND ROAD

PRICE FREEDOM: MD 20618-8802

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### EPA Fuel Economy Estimates

These estimates reflect new EPA methods beginning with 2008 models.

<b>GASOLINE CITY MPG</b> <b>14</b> Expected range for most drivers 11 to 17 MPG	<b>Dual Fuel Vehicle* Gasoline-Ethanol (E85)</b> <b>Estimated Annual Fuel Cost \$2,600</b> based on 15,000 miles at \$2.60 per gallon of gasoline	<b>GASOLINE HIGHWAY MPG</b> <b>19</b> Expected range for most drivers 15 to 23 MPG
--	---	---

**Combined Gasoline Fuel Economy**  
This vehicle **15**  
10 22  
All STANDARD PICKUPS

\*Fuel economy when operating on E85 will yield different values than gasoline. See Fuel Economy Guide for more information.

Your actual mileage will vary depending on how you drive and maintain your vehicle.

See the FREE Fuel Economy Guide at dealers or [www.fueleconomy.gov](http://www.fueleconomy.gov)

### GOVERNMENT SAFETY RATINGS

<b>Frontal Crash</b>	<b>Driver Passenger</b>	<b>Not Rated</b>
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.	<b>Not Rated</b>	<b>Not Rated</b>

<b>Side Crash</b>	<b>Front seat Rear seat</b>	<b>Not Rated</b>
Star ratings based on the risk of injury in a side impact.	<b>Not Rated</b>	<b>Not Rated</b>

<b>Rollover</b>	<b>★★★★</b>
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).

[www.safercar.gov](http://www.safercar.gov) or 1-888-327-4236

### PARTS CONTENT INFORMATION

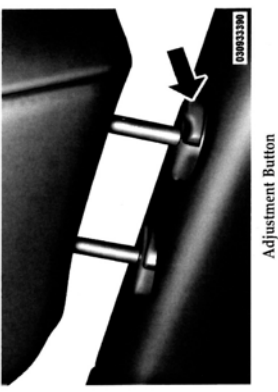
FOR VEHICLES IN THIS CARLINE:  
U.S./CANADIAN PARTS CONTENT: 70 %  
MAJOR SOURCES OF FOREIGN PARTS CONTENT:  
MEXICO: 15 %  
NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION, OR OTHER NON-PARTS COSTS.

FOR THIS VEHICLE:  
FINAL ASSEMBLY POINT:  
WARREN, MICHIGAN, U.S.A.  
COUNTRY OF ORIGIN:  
ENGINE: UNITED STATES  
TRANSMISSION: UNITED STATES

No. 067 – Monroney Label

15

**Rear Head Restraints**  
The two outboard seat are equipped with adjustable head restraints. To raise the head restraint, pull upward on the head restraint. To lower the head restraint, press the adjustment button, located on the base of the head restraint, and push downward on the head restraint.



Adjustment Button

**Front Head Restraints**  
To raise the head restraint, pull upward on the head restraint. To lower the head restraint, press the adjustment button, located on the base of the head restraint, and push downward on the head restraint.



Adjustment Button

16

NOTE:

- The rear center head restraint (Crew Cab only) has only one adjustment position that is used to aid in the routing of a tether. Refer to "Occupant Restraints" in "Things to Know Before Starting Your Vehicle" for further information.
- The head restraints should only be removed by qualified technicians, for service purposes only. If either of the head restraints require removal, see your authorized dealer.

No. 068 – Head Restraint Use and Adjustment Information from Vehicle Manual

**APPENDIX B**  
**VEHICLE AND DUMMY RESPONSE DATA PLOTS**

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

The following dummy and vehicle response data can be found in the Research and Development section of the NHTSA website at: [www.nhtsa.dot.gov](http://www.nhtsa.dot.gov).

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#### Additional Driver Dummy Instrumentation Data

Driver Head Redundant X-Axis Acceleration  
 Driver Head Redundant Y-Axis Acceleration  
 Driver Head Redundant Z-Axis Acceleration  
 Driver Upper Thorax Rib Y-Axis Deflection  
 Driver Middle Thorax Rib Y-Axis Deflection  
 Driver Lower Thorax Rib Y-Axis Deflection  
 Driver Upper Abdomen Rib Y-Axis Deflection  
 Driver Lower Abdomen Rib Y-Axis Deflection  
 Driver Shoulder Contact Switch  
 Driver Torso Contact Switch  
 Driver Pelvis Contact Switch

---

### Vehicle Instrumentation Data

Vehicle Center of Gravity X-Axis Acceleration  
Vehicle Center of Gravity Y-Axis Acceleration  
Vehicle Center of Gravity Z-Axis Acceleration  
Vehicle Center of Gravity Angular Rate About X axis  
Vehicle Center of Gravity Angular Rate About Y axis  
Vehicle Center of Gravity Angular Rate About Z axis  
Left Floor Sill Y-Axis Acceleration  
Left A-Pillar Sill Y-Axis Acceleration  
Left Lower A-Pillar Y-Axis Acceleration  
Left Mid A-Pillar Y-Axis Acceleration  
Left B-Pillar Sill Y-Axis Acceleration  
Left Lower B-Pillar Y-Axis Acceleration  
Left Mid B-Pillar Y-Axis Acceleration  
Driver Seat Track at Dummy H-Point Y-Axis Acceleration  
Engine Top X-Axis Acceleration  
Engine Top Y-Axis Acceleration  
Firewall Center Y-Axis Acceleration  
Right Roof at Vertical Impact Reference Line Y-Axis Acceleration  
Right Sill at Vertical Impact Reference Line Y-Axis Accelerations  
Rear Floorpan Behind Rear Axle at Centerline X-Axis Acceleration  
Rear Floorpan Behind Rear Axle at Centerline Y-Axis Acceleration  
Driver Side Curtain Airbag Timing

---

### Pole Instrumentation Data

Load Cell Pole Barrier #1 Y-Axis Force  
Load Cell Pole Barrier #2 Y-Axis Force  
Load Cell Pole Barrier #3 Y-Axis Force  
Load Cell Pole Barrier #4 Y-Axis Force  
Load Cell Pole Barrier #5 Y-Axis Force  
Load Cell Pole Barrier #6 Y-Axis Force  
Load Cell Pole Barrier #7 Y-Axis Force  
Load Cell Pole Barrier #8 Y-Axis Force

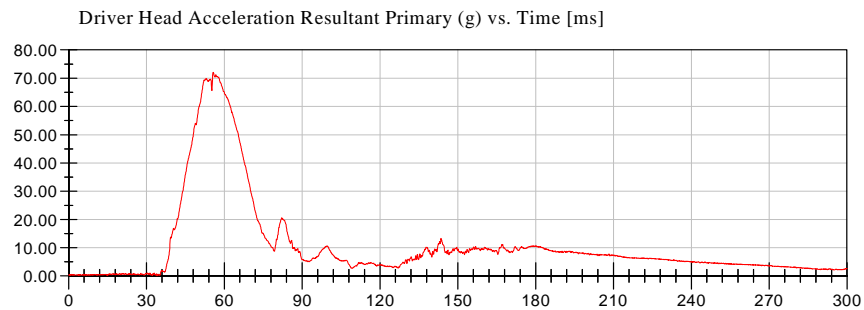
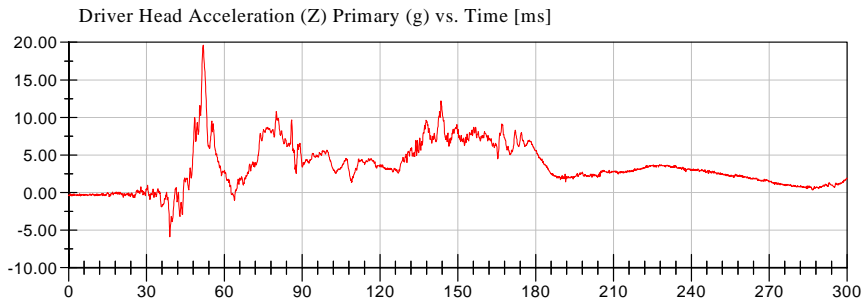
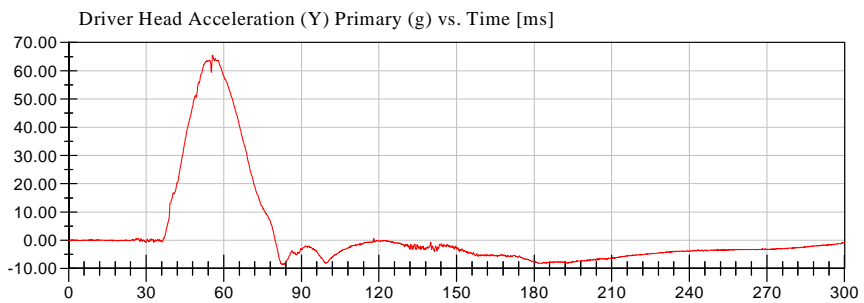
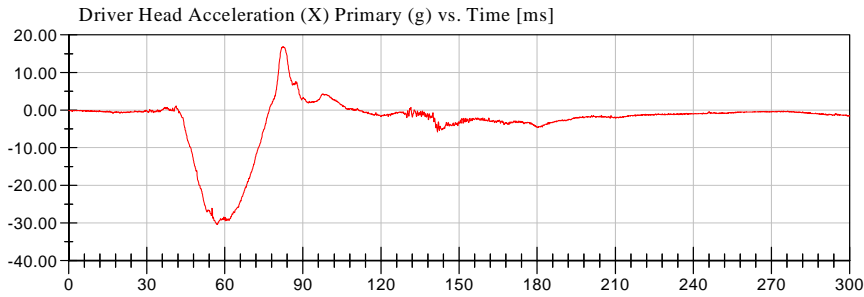
**NHTSA**

Position #1 SID IIs Dummy (305)

Test Date: 09/27/2010

Test Lab: CTF

Test Number: 100927 (MB0300)



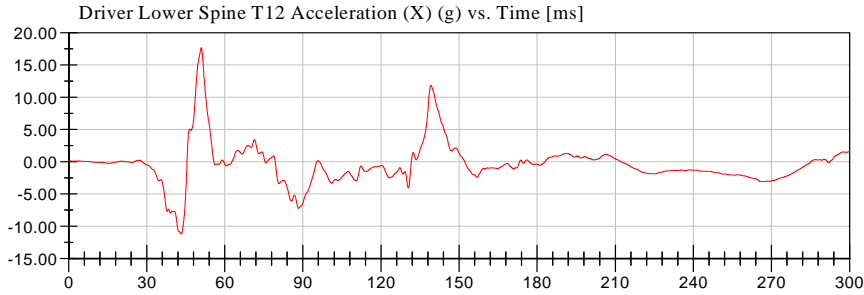
**NHTSA**

Position #1 SID IIs Dummy (305)

Test Date: 09/27/2010

Test Lab: CTF

Test Number: 100927 (MB0300)



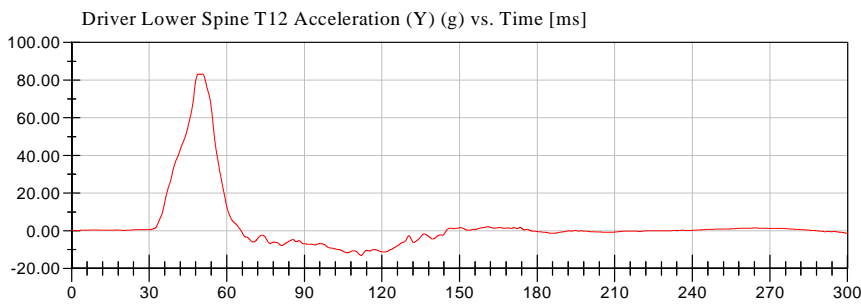
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17.70 g at 50.96 ms

<Min>

-11.16 g at 43.28 ms

CFC\_180



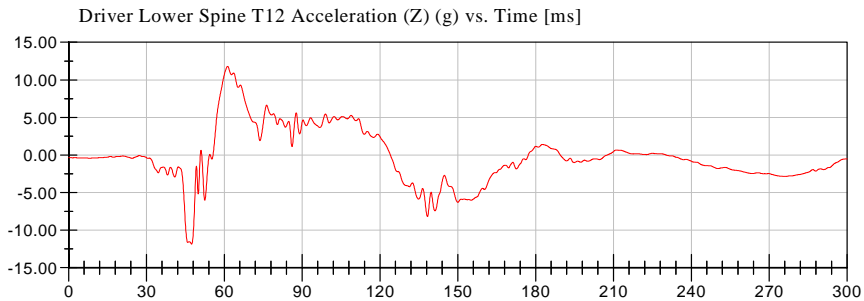
<Max>

83.27 g at 50.56 ms

<Min>

-13.21 g at 111.92 ms

CFC\_180



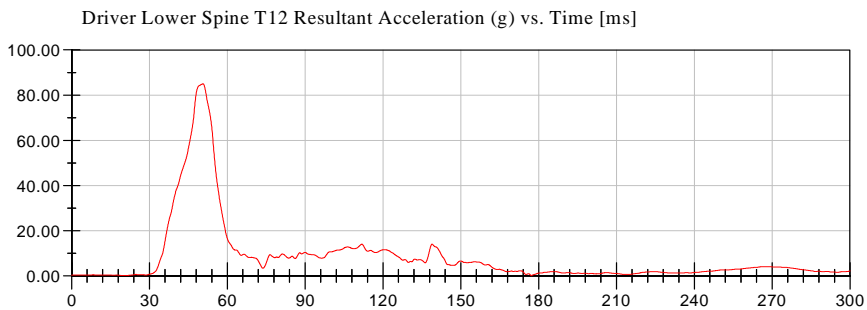
<Max>

11.79 g at 61.28 ms

<Min>

-11.85 g at 47.44 ms

CFC\_180



<Max>

85.02 g at 50.64 ms

<Min>

0.12 g at 177.20 ms

CFC\_180



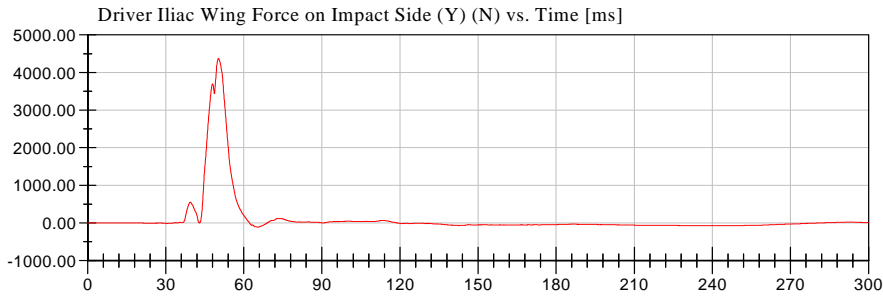
**NHTSA**

Position #1 SID IIs Dummy (305)

Test Date: 09/27/2010

Test Lab: CTF

Test Number: 100927 (MB0300)



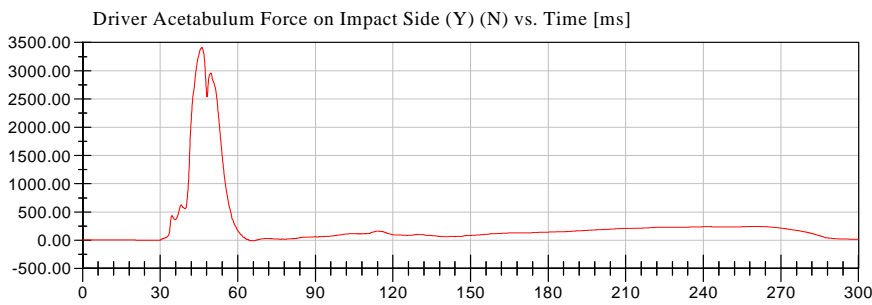
<Max>

4,369.87 N at 50.32 ms

<Min>

-110.76 N at 65.44 ms

CFC\_600



<Max>

3,411.98 N at 46.08 ms

<Min>

-15.09 N at 64.96 ms

CFC\_600





# 75 Degree Oblique Rigid Pole Side NCAP Impact

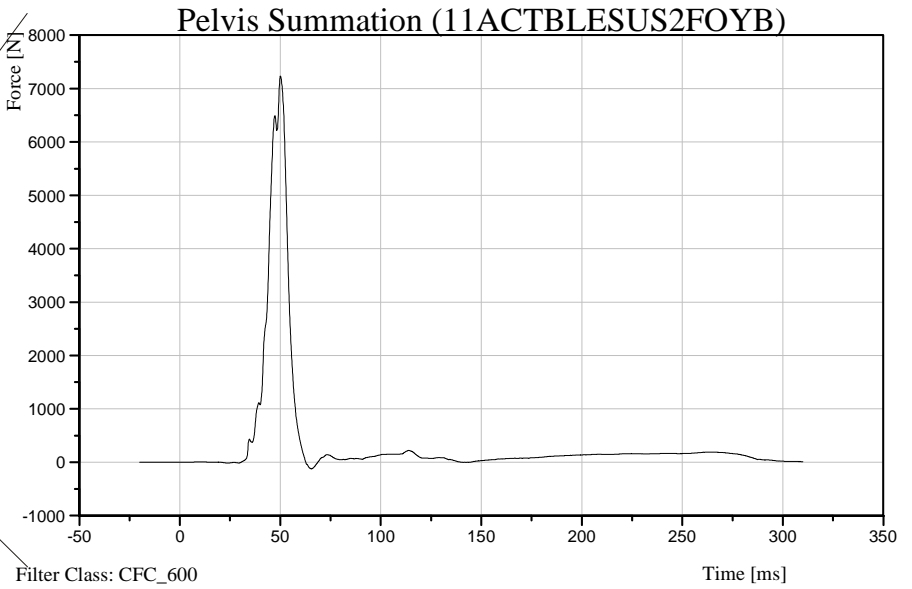
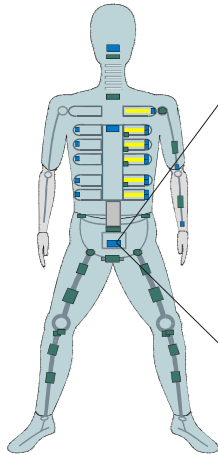
Date: 09/27/2010  
Time: 12:26

## Pelvis(LE) Summation

Customer: NHTSA  
Test Number: MB0300

TRC Inc. Test Lab: CTF  
Test Number: 100927

Test Orientation = Side



Dummy:SID IIs  
Seating Position:  
Driver

[Max.] 7,234.02 N at 50.00 ms  
[Min.] -123.57 N at 65.52 ms

Pelvis Summation Source Code : Summation of Channels 11HLACLE00S2FOYB,11ACTBLE00S2FOYB

**APPENDIX C**  
**DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA**

Dummy S/N 305

Pre-Test Calibration

## Transportation Research Center Inc.

Left Lateral Head Drop  
SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 3-1  
Test Date: 9/22/2010

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	61 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	117.2 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-2.4 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	Yes	Yes	Yes

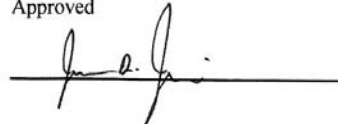
**Test meets specifications.**

**Comments:**

Technician



Approved



Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.22.2010 09:00:25 233

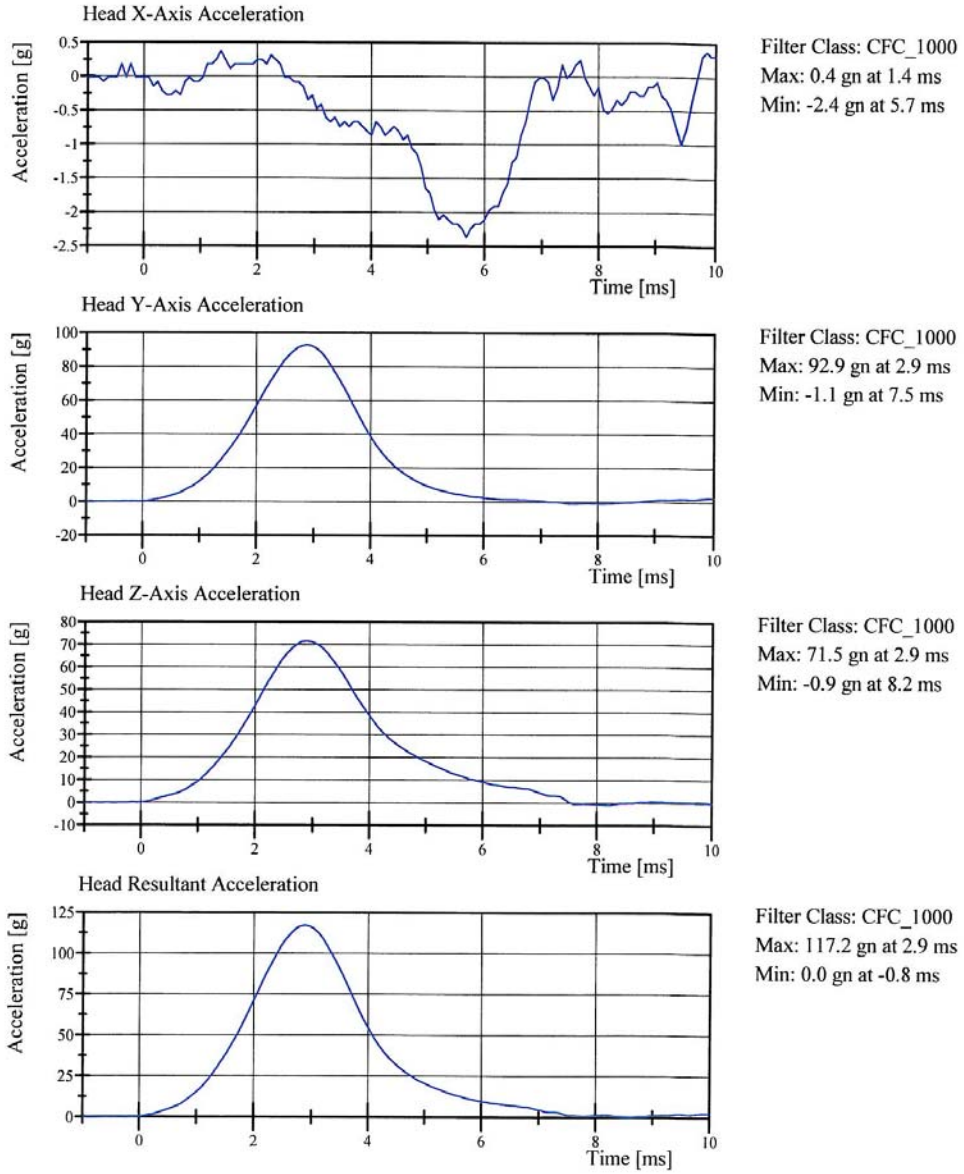


# Transportation Research Center Inc.

Left Lateral Head Drop

SID II SBLD Final Rule 6-09 Serial No. 305 Certification No. 3-1

Test Date: 9/22/2010



Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.22.2010 09:00:32 233



# Transportation Research Center Inc.

Left Lateral Neck

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 3-1

Test Date: 9/22/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	62 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.579 m/s	Yes
Pendulum Integrated Velocity			
Change at 10 ms	2.20 - 2.80 m/s	2.538 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.649 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	4.794 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.773 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.932 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-72.6 deg	Yes
Time of Peak	50 - 70 ms	57.7 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	41.3 N·m	Yes
Total Neck Occipital Condyles Moment Decay Time to 0 N·m	102 - 126 ms	109.1 ms	Yes

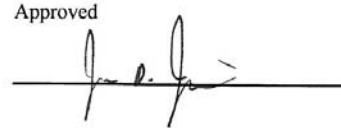
**Test meets specifications.**

**Comments:**

Technician



Approved



Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.22.2010 10:33:11 668

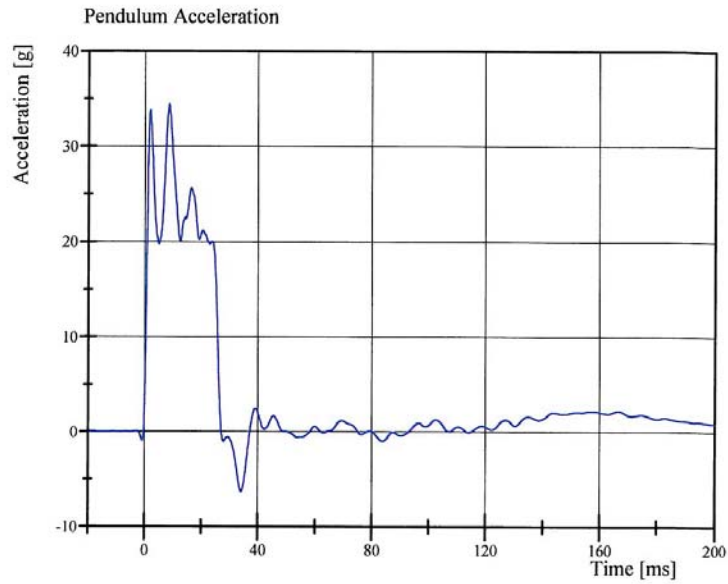


# Transportation Research Center Inc.

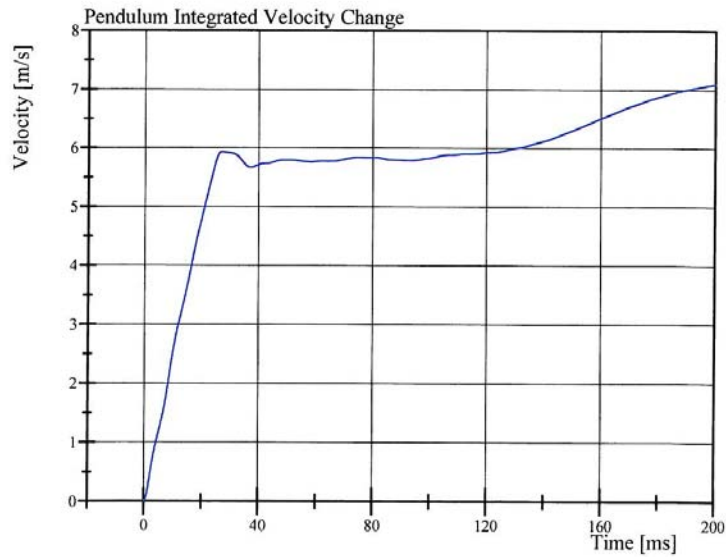
Left Lateral Neck

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 3-1

Test Date: 9/22/2010



Filter Class: CFC\_180  
Max: 34.4 gn at 8.6 ms  
Min: -6.3 gn at 34.1 ms



Filter Class: CFC\_180  
Max: 7.1 m/s at 200.0 ms  
Min: 0.0 m/s at 0.0 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.22.2010 10:33:20 668



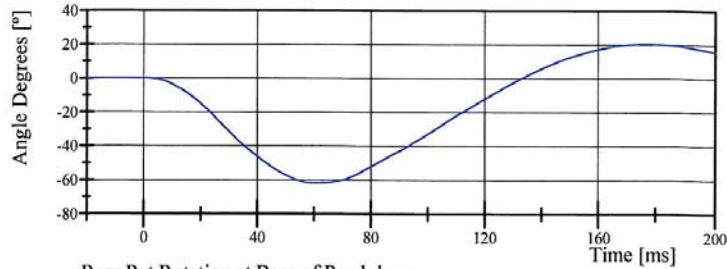
# Transportation Research Center Inc.

Left Lateral Neck

SID II SBLD Final Rule 6-09 Serial No. 305 Certification No. 3-1

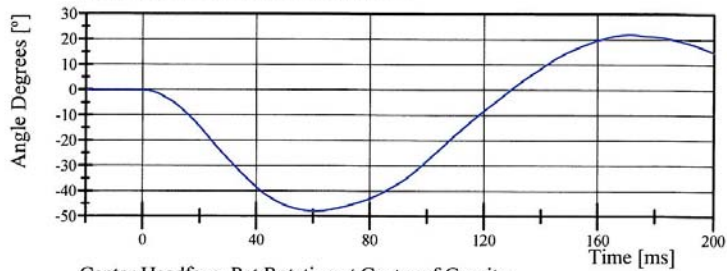
Test Date: 9/22/2010

Forward Pot Rotation at Base of Pendulum



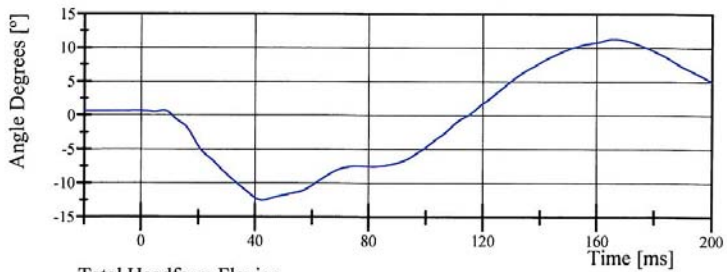
Filter Class: CFC\_60  
Max: 20.6 ° at 176.4 ms  
Min: -61.9 ° at 61.2 ms

Rear Pot Rotation at Base of Pendulum



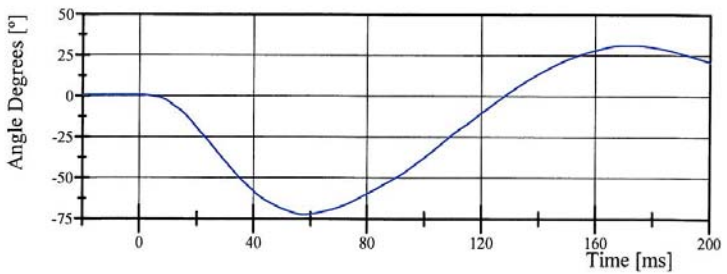
Filter Class: CFC\_60  
Max: 21.9 ° at 171.6 ms  
Min: -48.0 ° at 61.3 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC\_60  
Max: 11.3 ° at 166.1 ms  
Min: -12.6 ° at 42.6 ms

Total Headform Flexion



Filter Class: CFC\_60  
Max: 31.0 ° at 172.6 ms  
Min: -72.6 ° at 57.7 ms

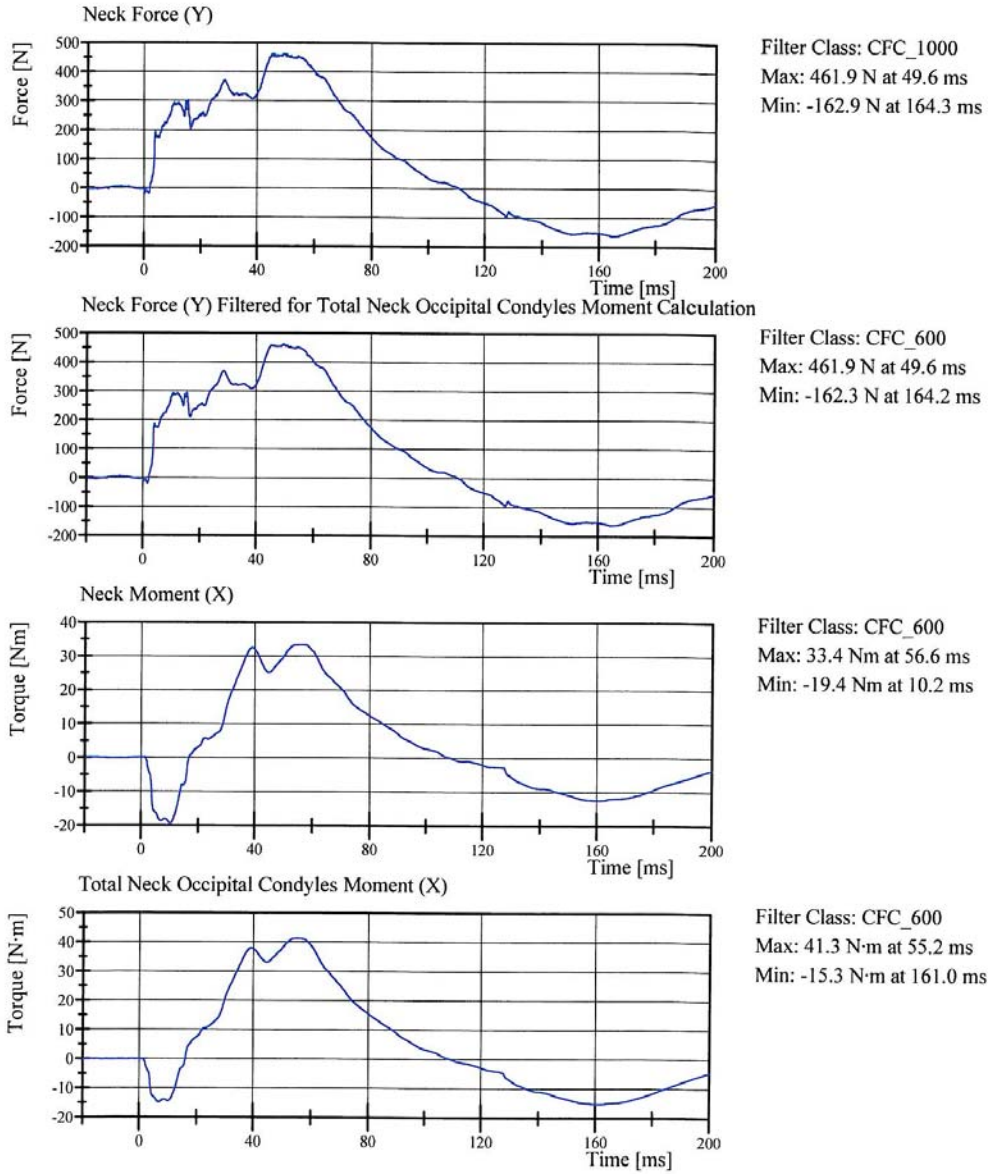
Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.22.2010 10:33:20 668



# Transportation Research Center Inc.

Left Lateral Neck  
SID II SBLD Final Rule 6-09 Serial No. 305 Certification No. 3-1  
Test Date: 9/22/2010



Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.22.2010 10:33:21 668



## Transportation Research Center Inc.

Left Lateral Shoulder  
SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 3-2  
Test Date: 9/22/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	61 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.34 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-16.4 g	Yes
Shoulder Displacement	28 - 37 mm	31.9 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	19.8 g	Yes

**Test meets specifications.**

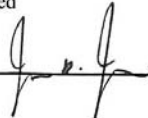
**Comments:**

Technician



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Approved



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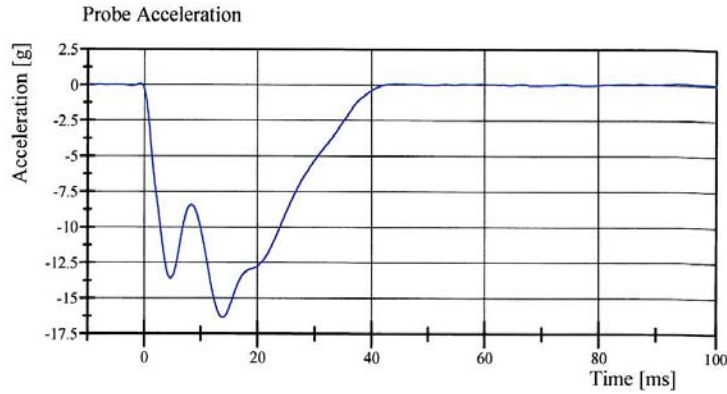
Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.22.2010 07:24:35 814

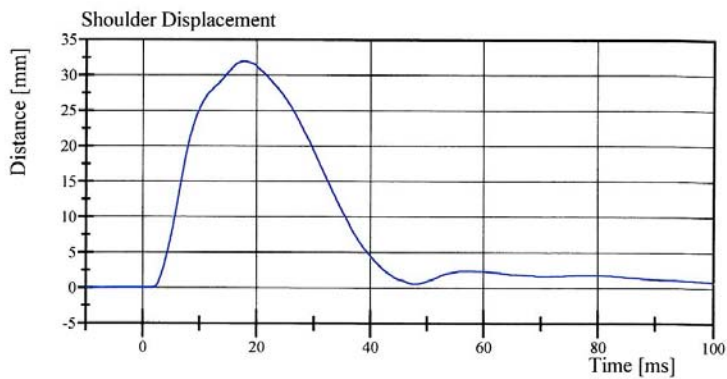


# Transportation Research Center Inc.

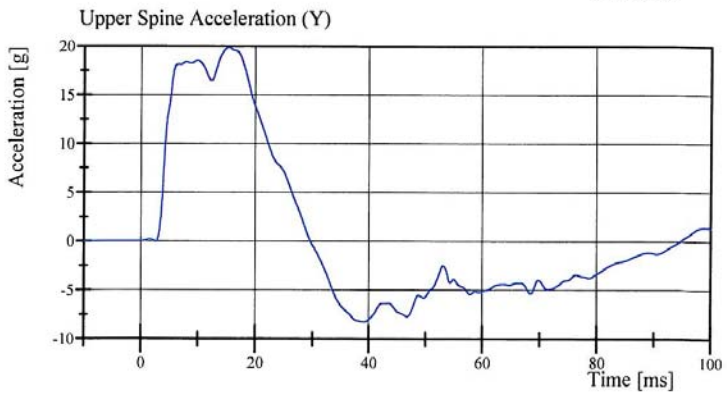
Left Lateral Shoulder  
SID II SBLD Final Rule 6-09 Serial No. 305 Certification No. 3-2  
Test Date: 9/22/2010



Filter Class: CFC\_180  
Max: 0.1 gn at 94.1 ms  
Min: -16.4 gn at 13.9 ms



Filter Class: CFC\_600  
Max: 31.9 mm at 17.8 ms  
Min: -0.0 mm at -9.4 ms



Filter Class: CFC\_180  
Max: 19.8 gn at 15.4 ms  
Min: -8.3 gn at 39.0 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.22.2010 07:24:46 814



## Transportation Research Center Inc.

Left Lateral Abdomen  
SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 3-1  
Test Date: 9/22/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	61 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.34 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-14.8 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	39.3 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	39.0 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	11.34 g	Yes

**Test meets specifications.**

**Comments:**

Technician



Approved



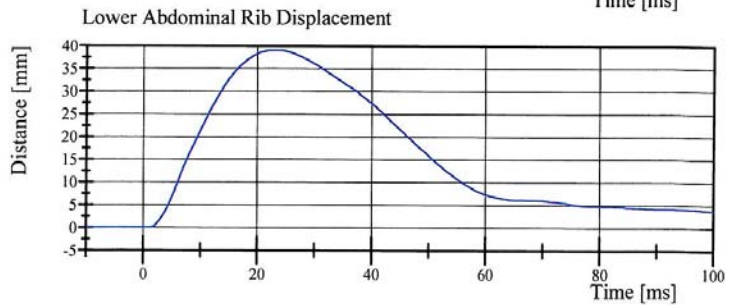
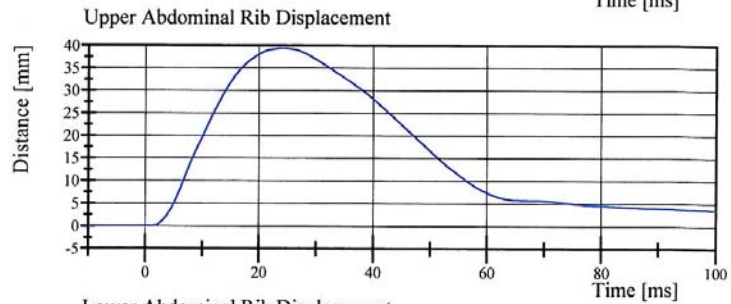
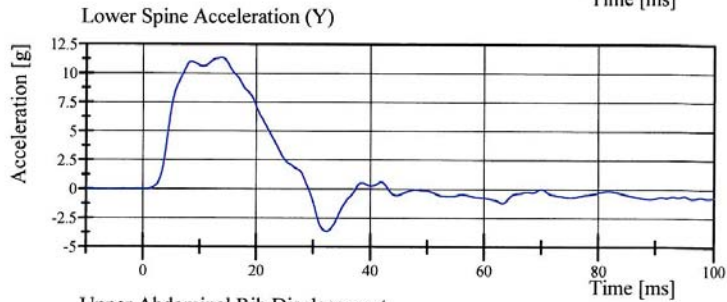
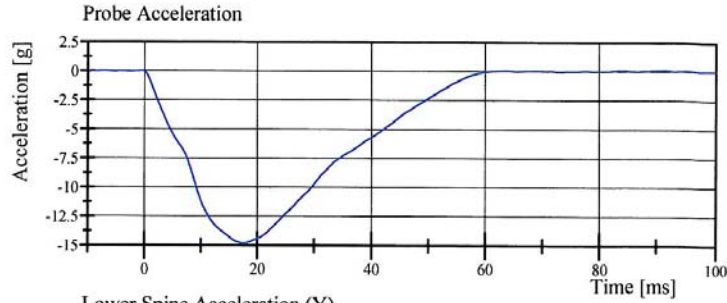
Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.22.2010 07:35:52 636



# Transportation Research Center Inc.

Left Lateral Abdomen  
SID II SBLD Final Rule 6-09 Serial No. 305 Certification No. 3-1  
Test Date: 9/22/2010



Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.22.2010 07:36:02 636



## Transportation Research Center Inc.

Left Lateral Thorax with Arm

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 3-2

Test Date: 9/21/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	59 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.693 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-33.9 g	Yes
Shoulder Displacement	31 - 40 mm	35.5 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	27.0 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	30.7 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	33.1 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	38.4 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	35.8 g	Yes

Test meets specifications.

Comments:

Technician



Approved



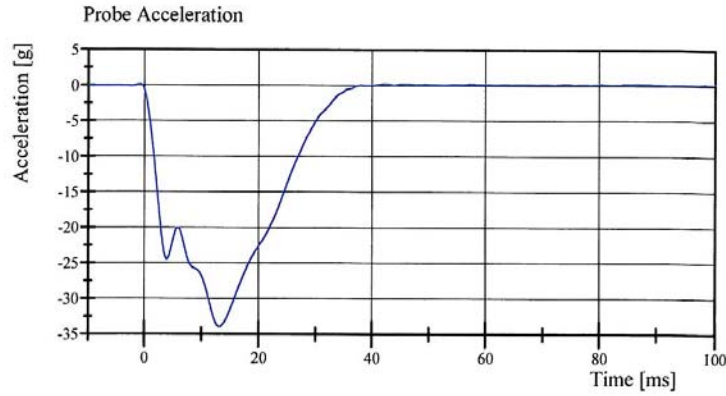
Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.21.2010 14:50:15 611

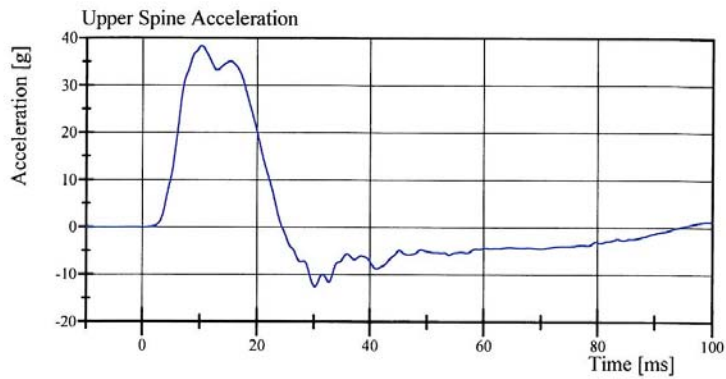


# Transportation Research Center Inc.

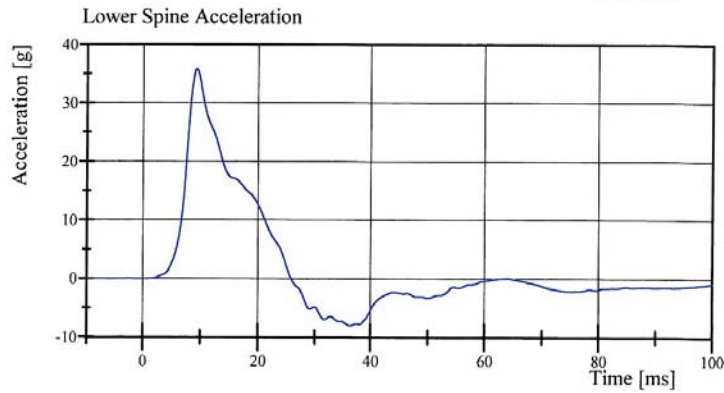
Left Lateral Thorax with Arm  
SID II SBLD Final Rule 6-09 Serial No. 305 Certification No. 3-2  
Test Date: 9/21/2010



Filter Class: CFC\_180  
Max: 0.2 gn at 86.8 ms  
Min: -33.9 gn at 13.2 ms



Filter Class: CFC\_180  
Max: 38.4 gn at 10.2 ms  
Min: -12.6 gn at 30.2 ms



Filter Class: CFC\_180  
Max: 35.8 gn at 9.3 ms  
Min: -8.0 gn at 36.2 ms

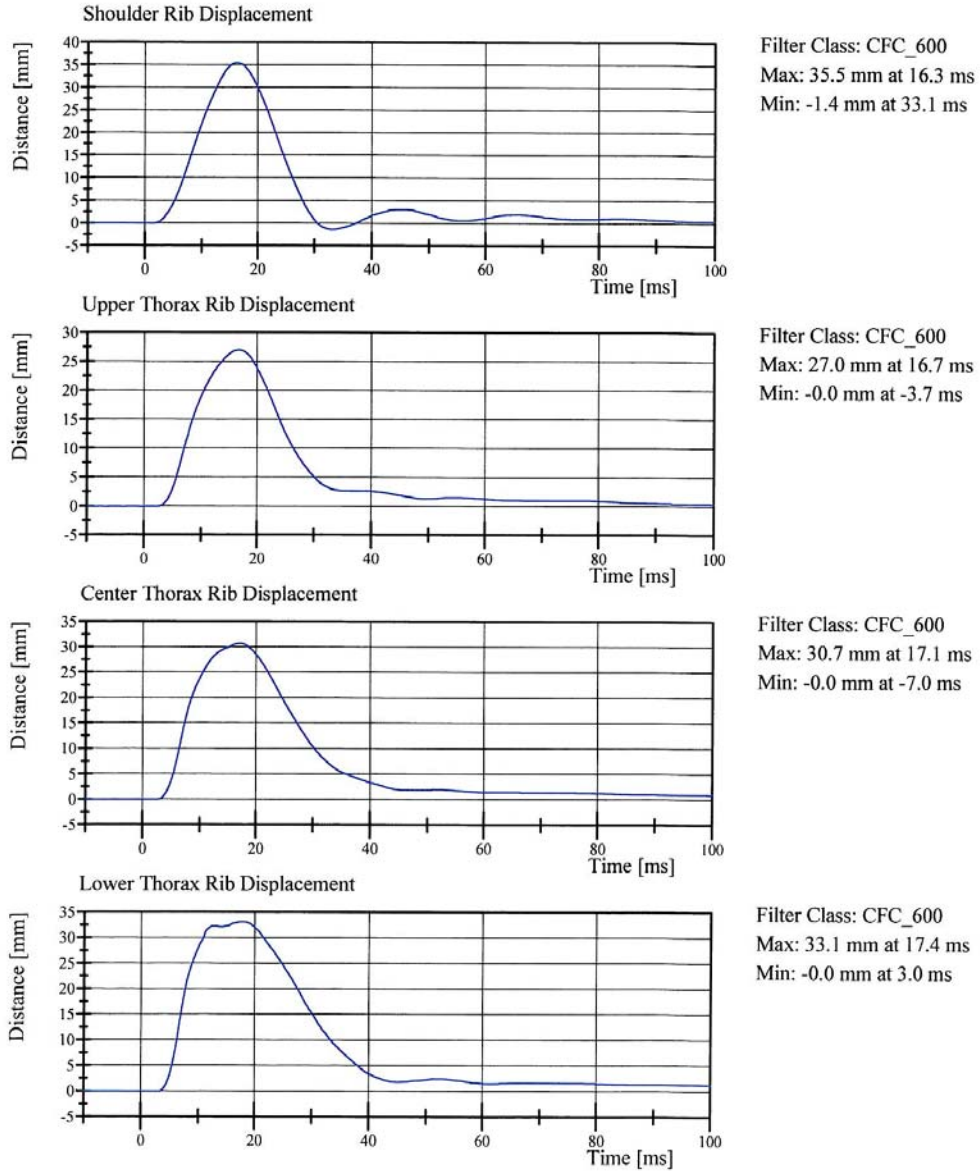
Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.21.2010 14:50:25 611



# Transportation Research Center Inc.

Left Lateral Thorax with Arm  
SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 3-2  
Test Date: 9/21/2010



Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.21.2010 14:50:26 611



## Transportation Research Center Inc.

Left Lateral Thorax without Arm

SID II SBLD Final Rule 6-09 Serial No. 305 Certification No. 3-1

Test Date: 9/21/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	57 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.377 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-16.3 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	36.8 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	41.0 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	38.0 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	15.7 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	9.8 g	Yes

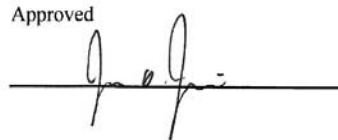
**Test meets specifications.**

**Comments:**

Technician



Approved



Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.21.2010 15:31:17 817

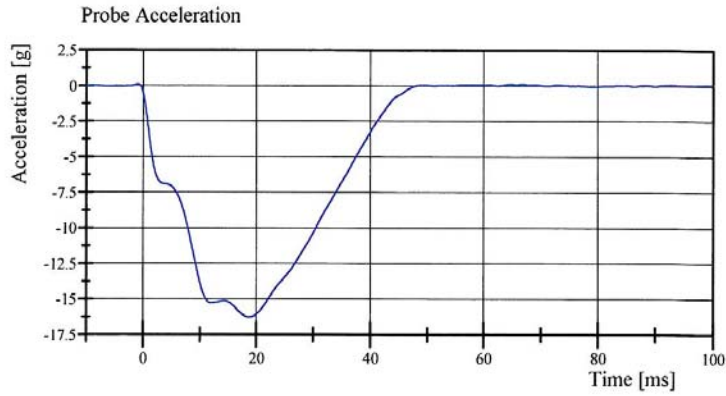


# Transportation Research Center Inc.

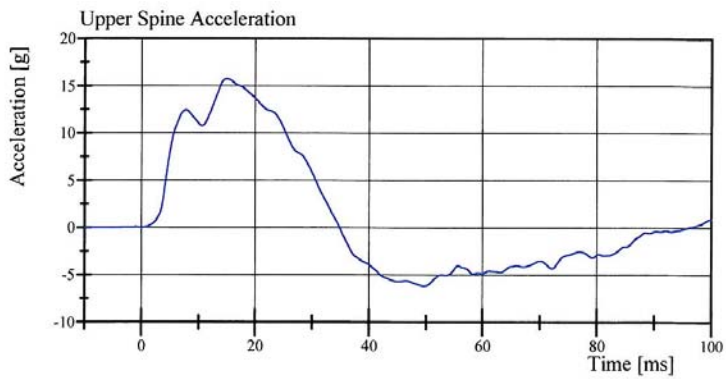
Left Lateral Thorax without Arm

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 3-1

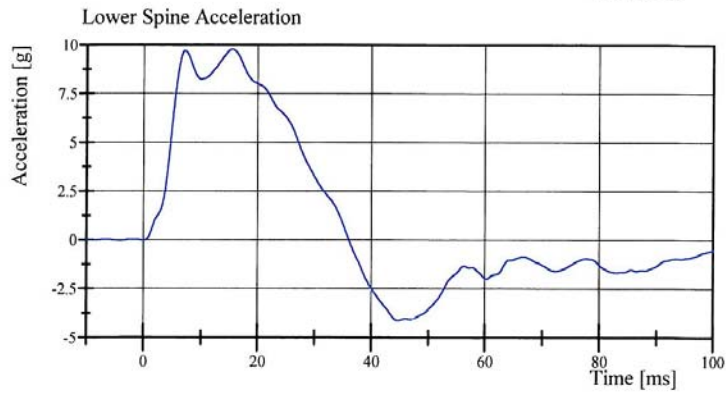
Test Date: 9/21/2010



Filter Class: CFC\_180  
Max: 0.1 gn at 66.9 ms  
Min: -16.3 gn at 18.6 ms



Filter Class: CFC\_180  
Max: 15.7 gn at 15.0 ms  
Min: -6.2 gn at 49.6 ms



Filter Class: CFC\_180  
Max: 9.8 gn at 15.4 ms  
Min: -4.1 gn at 44.6 ms

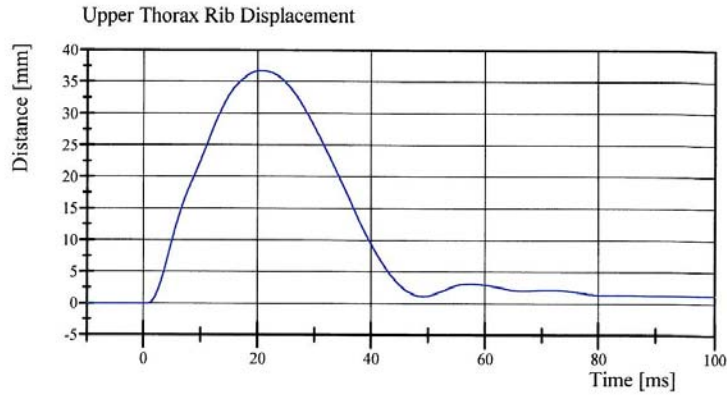
Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.21.2010 15:31:26 817

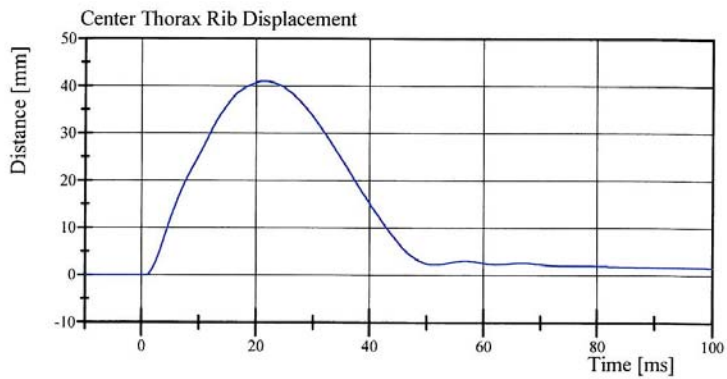


# Transportation Research Center Inc.

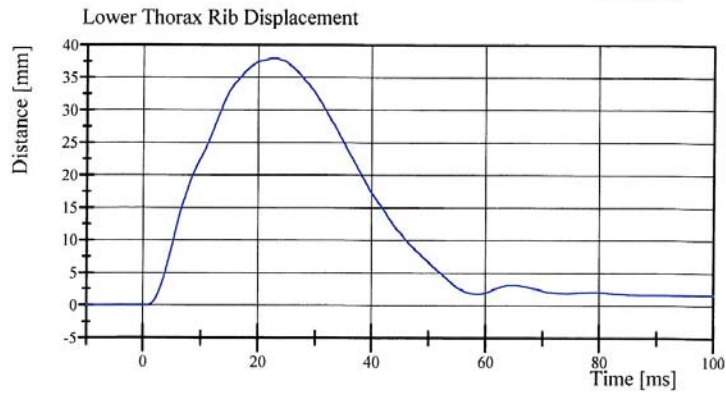
Left Lateral Thorax without Arm  
SID II SBLD Final Rule 6-09 Serial No. 305 Certification No. 3-1  
Test Date: 9/21/2010



Filter Class: CFC\_600  
Max: 36.8 mm at 20.6 ms  
Min: -0.0 mm at 0.6 ms



Filter Class: CFC\_600  
Max: 41.0 mm at 21.4 ms  
Min: -0.0 mm at -4.4 ms



Filter Class: CFC\_600  
Max: 38.0 mm at 22.6 ms  
Min: -0.0 mm at 0.8 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.21.2010 15:31:26 817



## Transportation Research Center Inc.

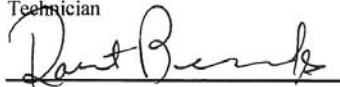
Left Lateral Abdomen  
SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 3-1  
Test Date: 9/22/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	61 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.34 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-14.8 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	39.3 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	39.0 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	11.34 g	Yes

**Test meets specifications.**

**Comments:**

Technician



Approved



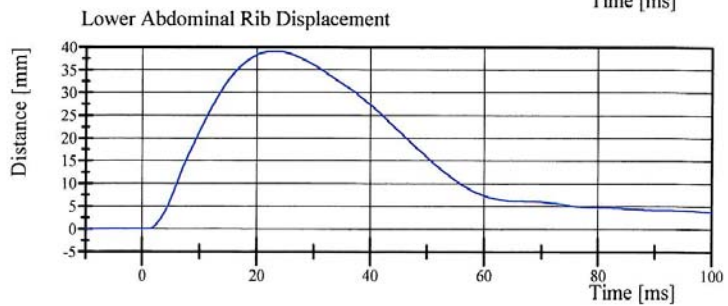
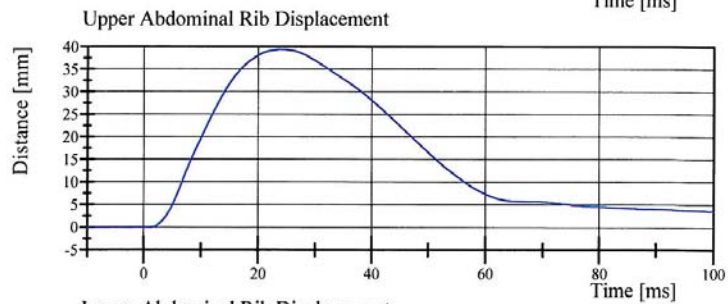
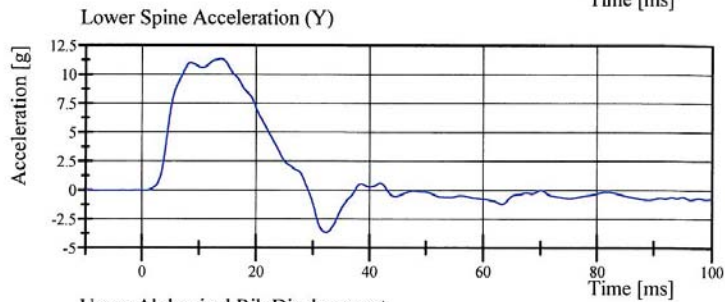
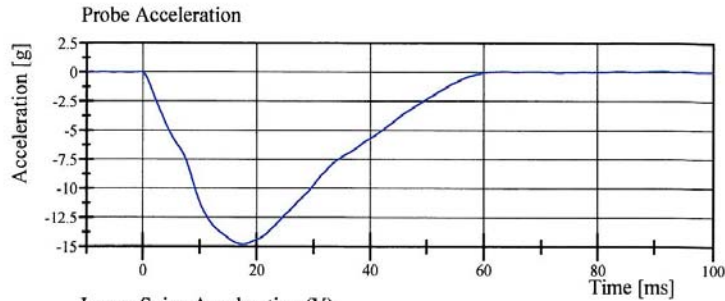
Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.22.2010 07:35:52 636



# Transportation Research Center Inc.

Left Lateral Abdomen  
SID II SBLD Final Rule 6-09 Serial No. 305 Certification No. 3-1  
Test Date: 9/22/2010



Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.22.2010 07:36:02 636



## Transportation Research Center Inc.

Left Lateral Pelvis

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 3-1

Test Date: 9/22/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	61 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.64 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-41.75 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	36.2 g	Yes
Acetabulum Force	3,600 - 4,300 N	4,218.6 N	Yes

**Test meets specifications.**

**Comments:**

Technician



Approved



Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.22.2010 07:55:24 434

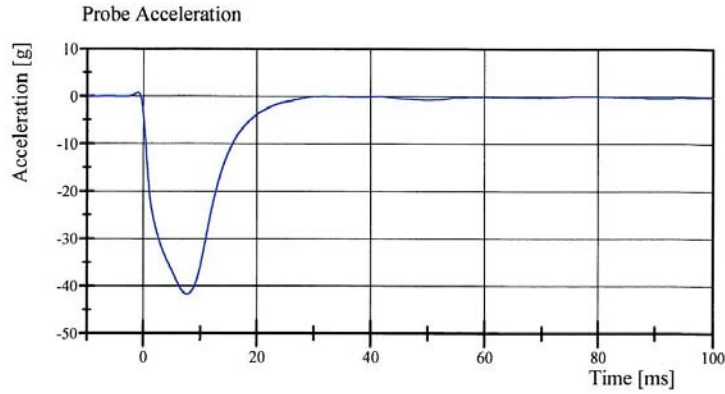


# Transportation Research Center Inc.

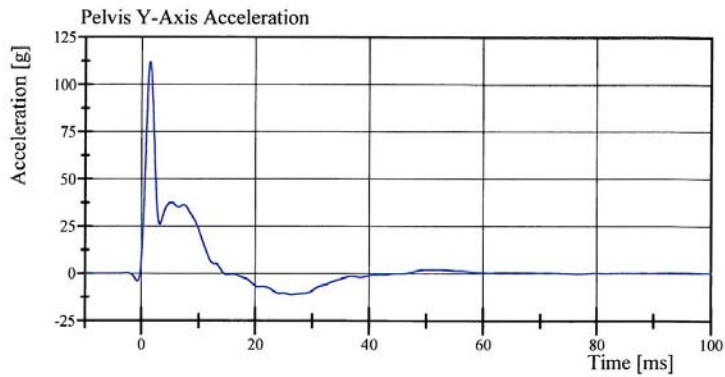
Left Lateral Pelvis

SID II SBLD Final Rule 6-09 Serial No. 305 Certification No. 3-1

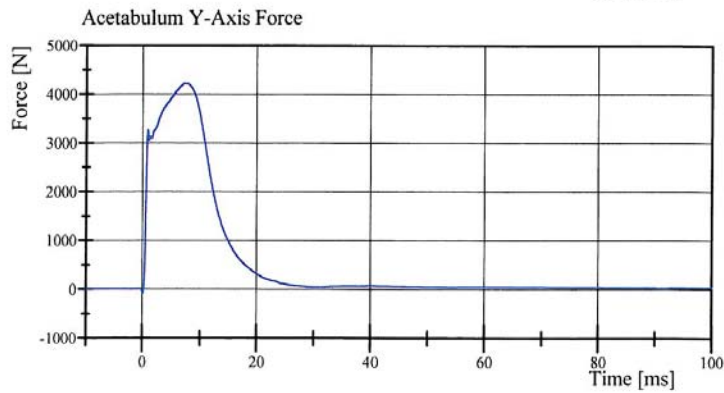
Test Date: 9/22/2010



Filter Class: CFC\_180  
Max: 0.7 gn at -1.0 ms  
Min: -41.8 gn at 7.7 ms



Filter Class: CFC\_180  
Max: 111.9 gn at 1.4 ms  
Min: -11.3 gn at 26.4 ms



Filter Class: CFC\_600  
Max: 4,218.6 N at 7.3 ms  
Min: -77.7 N at 0.1 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.22.2010 07:55:32 434



# Transportation Research Center Inc.

Left Lateral Iliac

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 3-1

Test Date: 9/22/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	63 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.39 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-41.9 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	33.8 g	Yes
Iliac Force	4,100 - 5,100 N	4,997.8 N	Yes

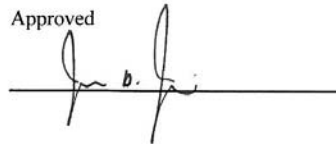
Test meets specifications.

Comments:

Technician



Approved



Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.22.2010 11:02:14 634

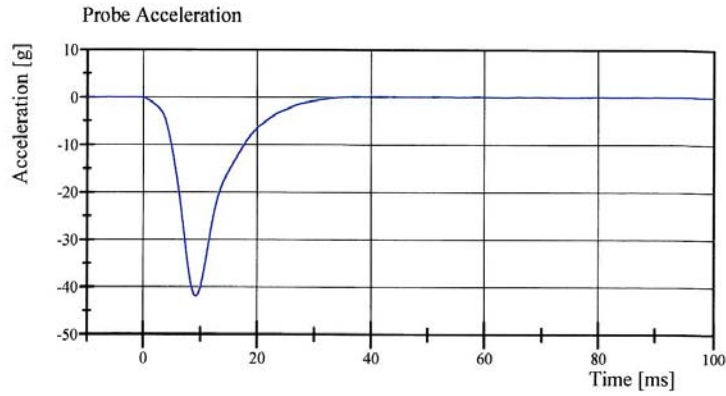


# Transportation Research Center Inc.

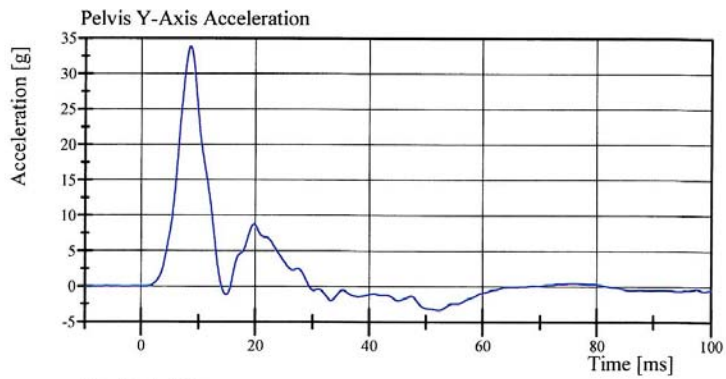
Left Lateral Iliac

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 3-1

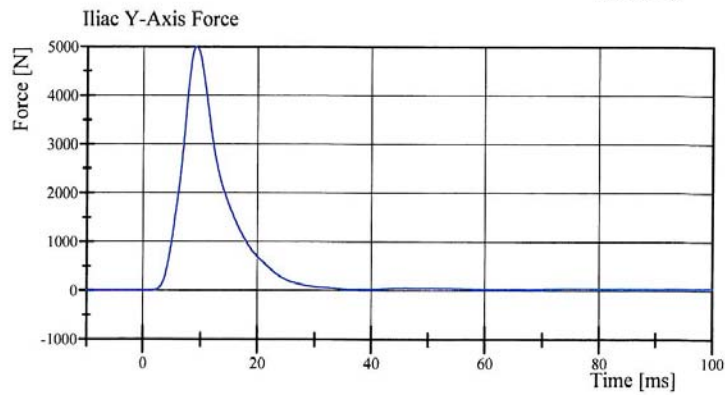
Test Date: 9/22/2010



Filter Class: CFC\_180  
Max: 0.2 gn at 41.6 ms  
Min: -41.9 gn at 9.2 ms



Filter Class: CFC\_180  
Max: 33.8 gn at 8.6 ms  
Min: -3.3 gn at 52.2 ms



Filter Class: CFC\_600  
Max: 4,997.8 N at 9.1 ms  
Min: -1.0 N at -8.9 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.22.2010 11:02:25 634



**Transportation Research Center Inc.**  
**SIDIIs Dummy - Level D**  
**External Dimensions**  
**Serial No. 305 Calibration No.03**  
**Date: 9/22/10**

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	775	Yes
B	Shoulder Pivot Height	437.0 - 453.0	439	Yes
C	H-Point Height	79.0 - 89.0	83	Yes
D	H-Point from Seat Back	141.0 - 151.0	145	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	105	Yes
F	Thigh Clearance	119.0 - 135.0	130	Yes
G	Head Breadth	140.0 - 148.0	145	Yes
H	Head Back from Backline	40.0 - 46.0	45	Yes
I	Head Depth	178.0 - 188.0	183	Yes
J	Head Circumference	541.0 - 551.0	543	Yes
K	Buttock to Knee Length	514.0 - 540.0	535	Yes
L	Popliteal Height	343.0 - 369.0	354	Yes
M	Knee Pivot to Floor Height	393.0 - 409.0	402	Yes
N	Buttock Popliteal Length	416.0 - 442.0	430	Yes
O	Chest Depth without Jacket	195.0 - 211.0	206	Yes
P	Foot Length (right)	216.0 - 232.0	220	Yes
P	Foot Length (left)	216.0 - 232.0	220	Yes
Q	Hip Breadth	313.0 - 323.0	313	Yes
R	Arm Length	249.0 - 259.0	253	Yes
S	Knee Joint to seat Back	478.0 - 493.0	480	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	351	Yes
W	Foot Width (right)	78.0 - 94.0	84	Yes
W	Foot Width (left)	78.0 - 94.0	84	Yes
Y	Chest Circumference with Jacket	851.0 - 881.0	865	Yes
Z	Waist Circumference	761.0 - 791.0	780	Yes

Technician



Approved



Revised 9/29/2005



Dummy S/N 305  
Post-Test Calibration

# Transportation Research Center Inc.

Left Lateral Head Drop  
SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 4-1  
Test Date: 9/29/2010

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	45 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	119.3 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-3.5 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	Yes	Yes	Yes

Test meets specifications.

Comments:

Technician  


Approved  


Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.29.2010 07:57:53 230

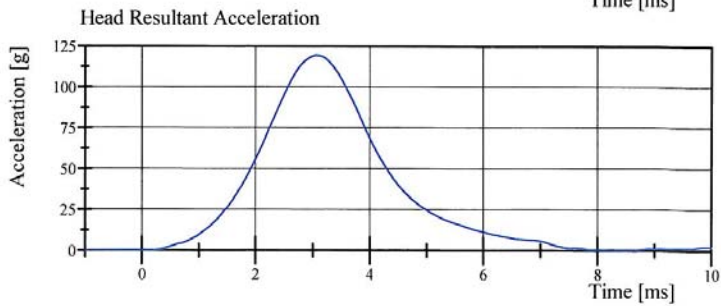
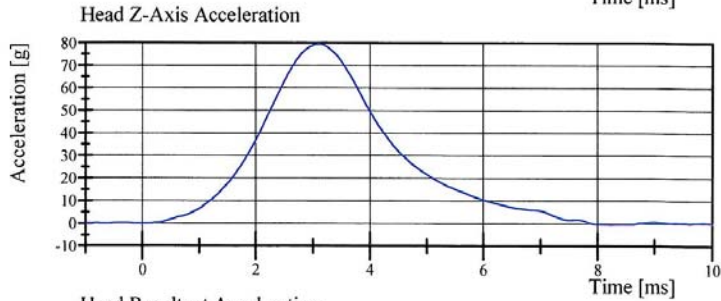
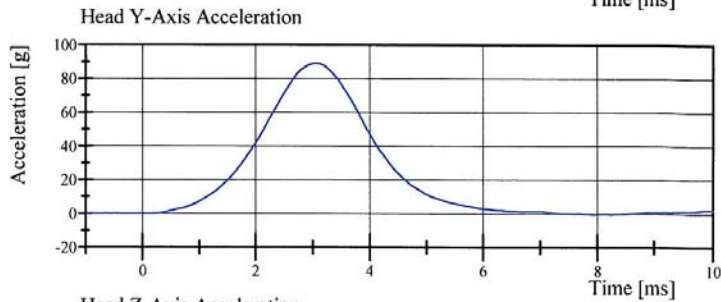
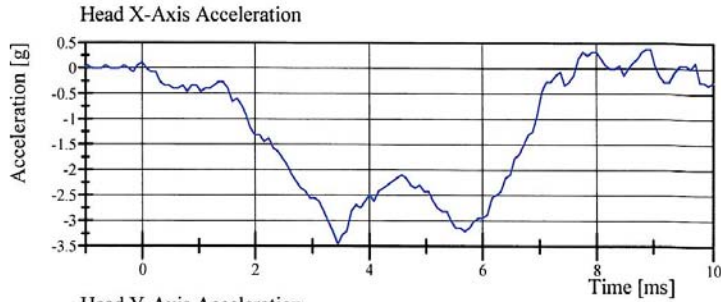


# Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 4-1

Test Date: 9/29/2010



Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.29.2010 07:58:04 230



## Transportation Research Center Inc.

Left Lateral Neck

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 4-2

Test Date: 9/29/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	44 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.582 m/s	Yes
Pendulum Integrated Velocity			
Change at 10 ms	2.20 - 2.80 m/s	2.412 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.735 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	5.073 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.963 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.981 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-73.0 deg	Yes
Time of Peak	50 - 70 ms	58.2 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	43.6 N·m	Yes
Total Neck Occipital Condyles Moment Decay Time to 0 N·m	102 - 126 ms	106.0 ms	Yes

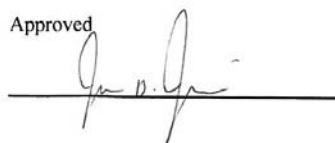
**Test meets specifications.**

**Comments:**

Technician



Approved



Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.29.2010 09:02:00 657

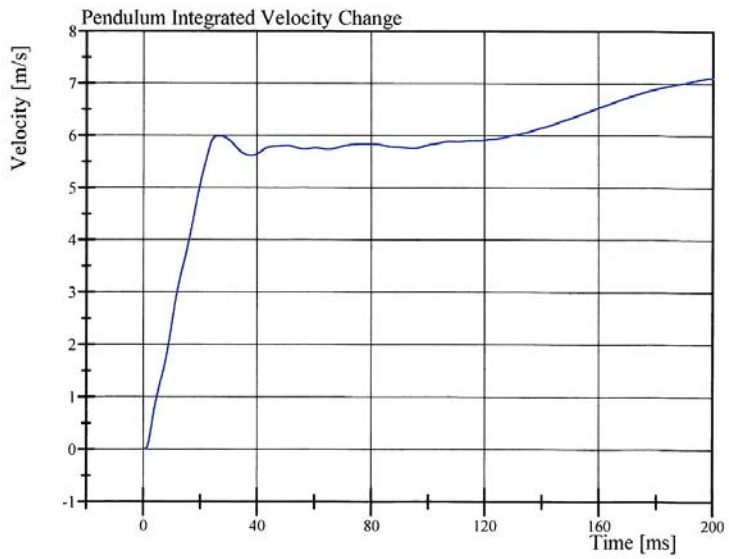
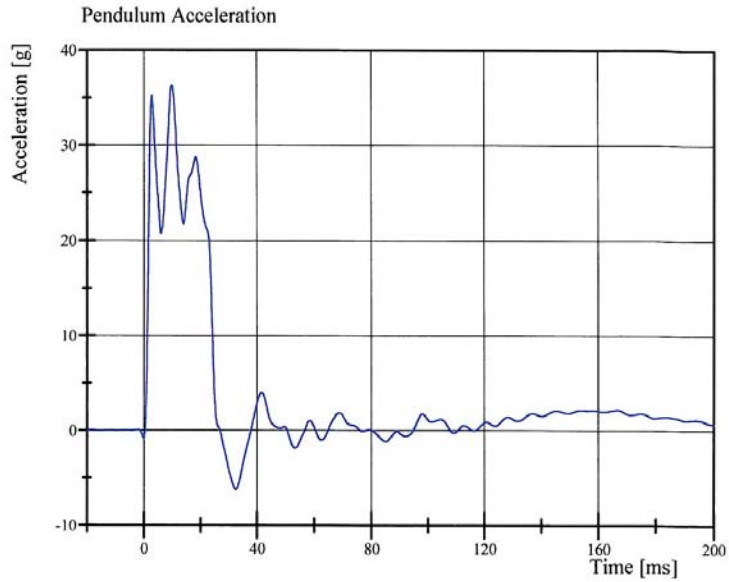


# Transportation Research Center Inc.

Left Lateral Neck

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 4-2

Test Date: 9/29/2010



Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.29.2010 09:02:08 657



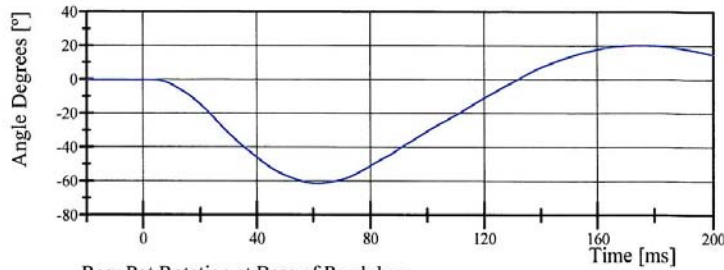
# Transportation Research Center Inc.

Left Lateral Neck

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 4-2

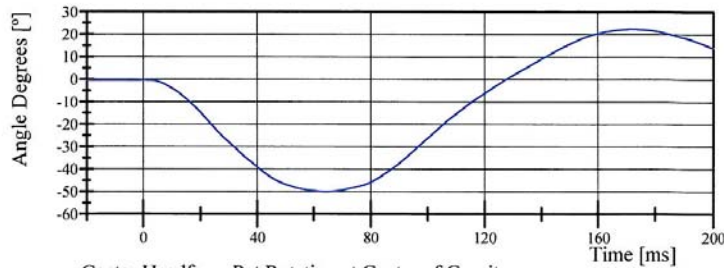
Test Date: 9/29/2010

Forward Pot Rotation at Base of Pendulum



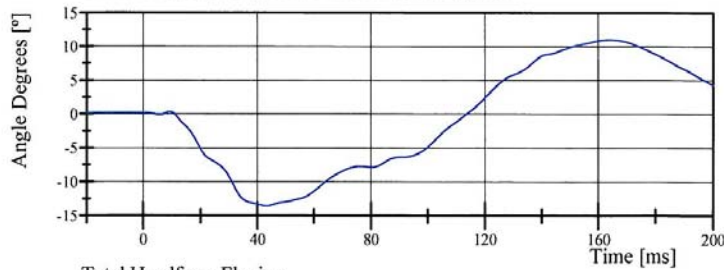
Filter Class: CFC\_60  
Max: 20.2 ° at 175.0 ms  
Min: -61.4 ° at 61.5 ms

Rear Pot Rotation at Base of Pendulum



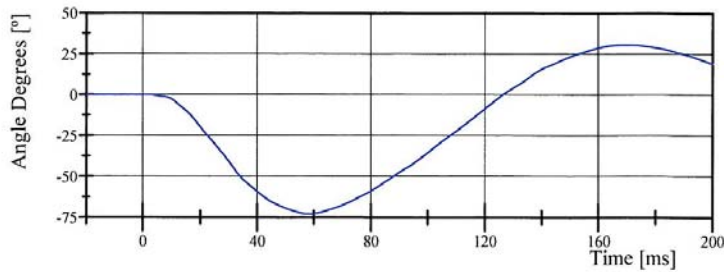
Filter Class: CFC\_60  
Max: 22.3 ° at 172.2 ms  
Min: -50.1 ° at 64.6 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC\_60  
Max: 11.0 ° at 163.8 ms  
Min: -13.6 ° at 43.3 ms

Total Headform Flexion



Filter Class: CFC\_60  
Max: 30.5 ° at 170.1 ms  
Min: -73.0 ° at 58.2 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.29.2010 09:02:09 657

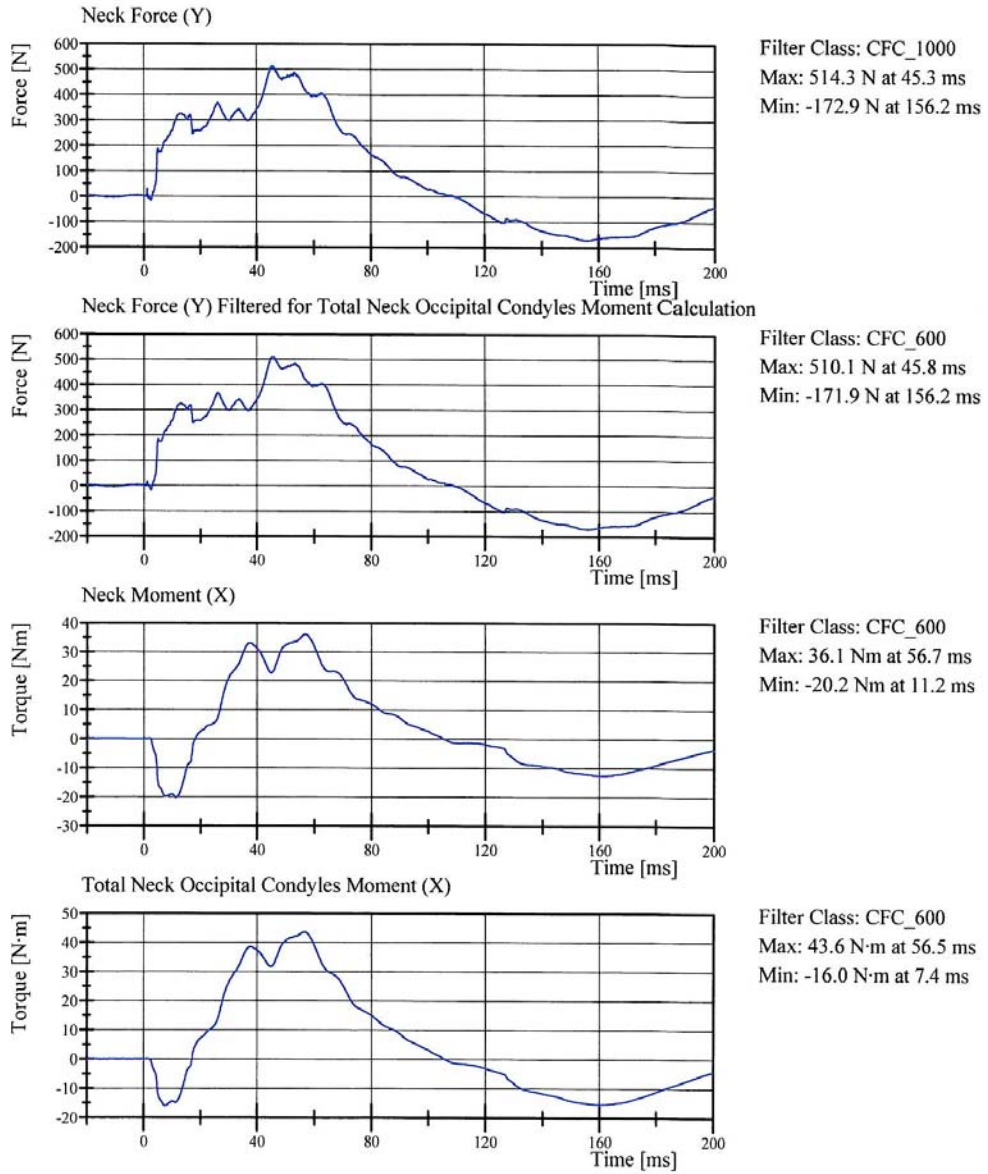


# Transportation Research Center Inc.

Left Lateral Neck

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 4-2

Test Date: 9/29/2010



Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.29.2010 09:02:09 657

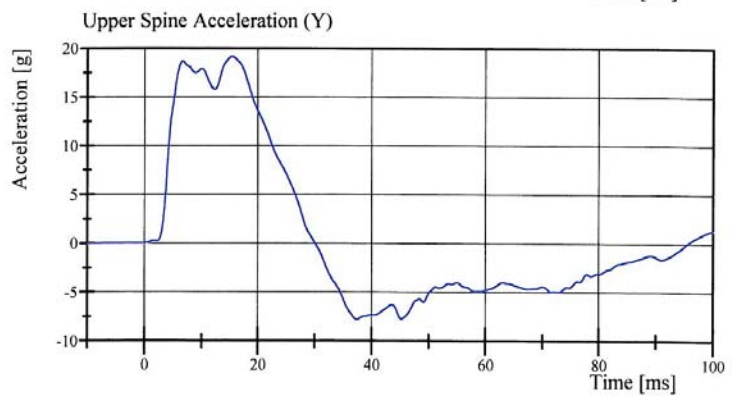
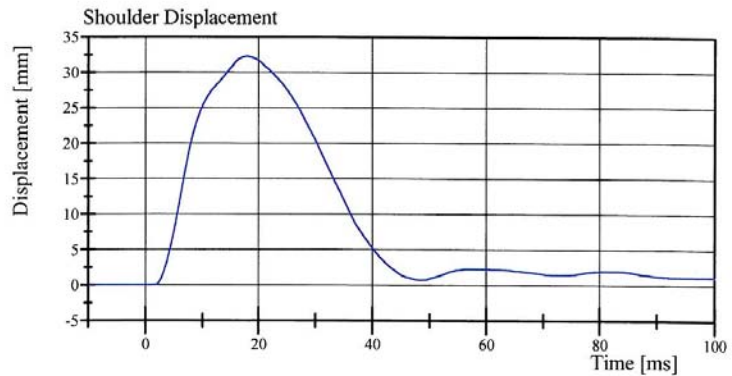
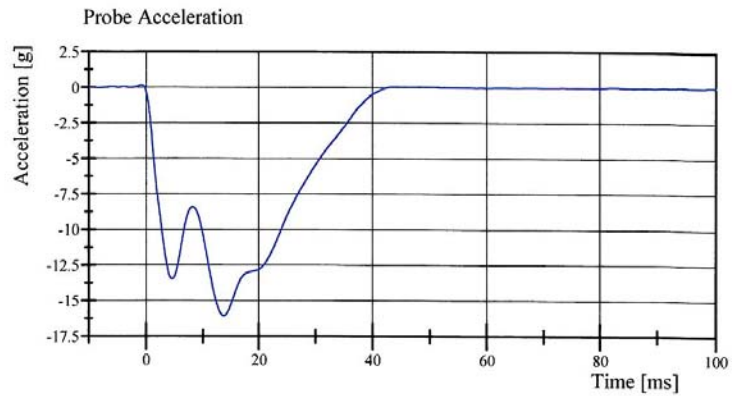


# Transportation Research Center Inc.

Left Lateral Shoulder

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 4-1

Test Date: 9/29/2010



Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.29.2010 10:06:06 810



## Transportation Research Center Inc.

Left Lateral Thorax with Arm

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 4-1

Test Date: 9/29/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	47 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.670 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-33.8 g	Yes
Shoulder Displacement	31 - 40 mm	36.4 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	26.9 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	30.1 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	32.2 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	37.9 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	35.5 g	Yes

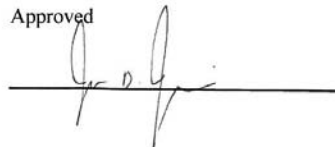
**Test meets specifications.**

**Comments:**

Technician



Approved



Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.29.2010 10:17:44 605

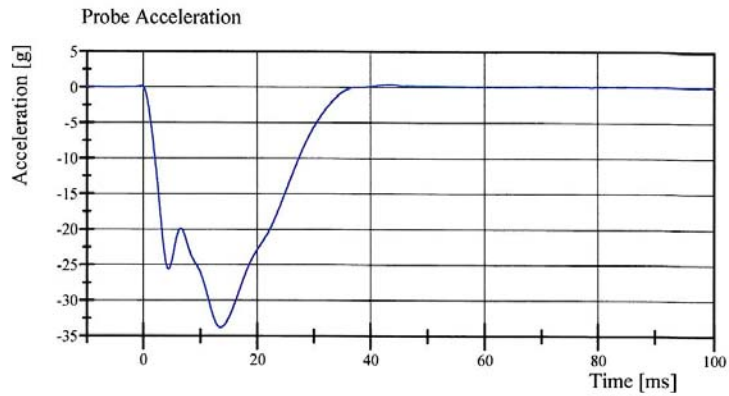


# Transportation Research Center Inc.

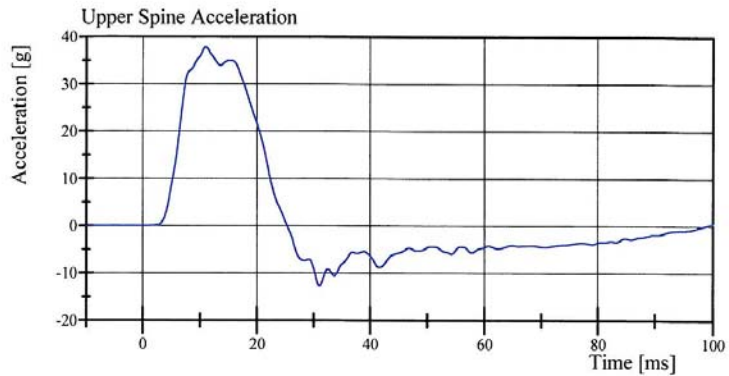
Left Lateral Thorax with Arm

SID II SBLD Final Rule 6-09 Serial No. 305 Certification No. 4-1

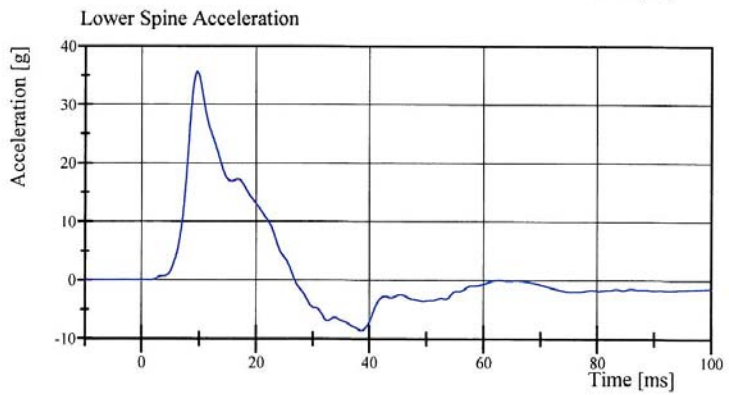
Test Date: 9/29/2010



Filter Class: CFC\_180  
Max: 0.4 gn at 43.5 ms  
Min: -33.8 gn at 13.5 ms



Filter Class: CFC\_180  
Max: 37.9 gn at 11.0 ms  
Min: -12.7 gn at 31.0 ms



Filter Class: CFC\_180  
Max: 35.5 gn at 9.7 ms  
Min: -8.6 gn at 38.6 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.29.2010 10:17:54 605

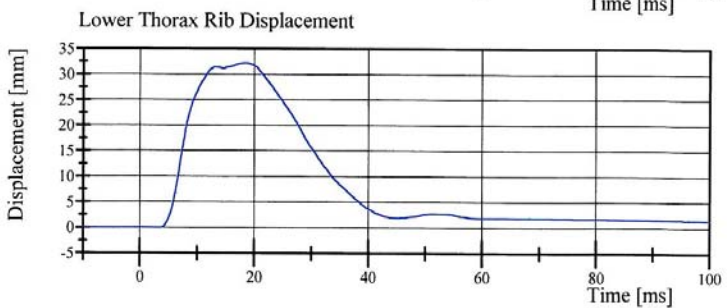
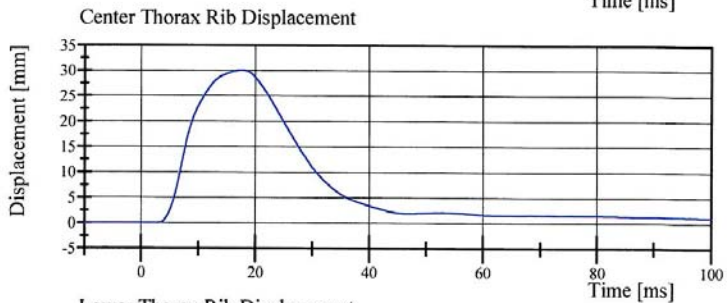
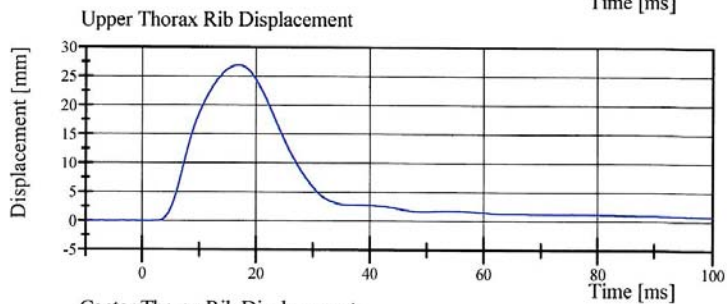
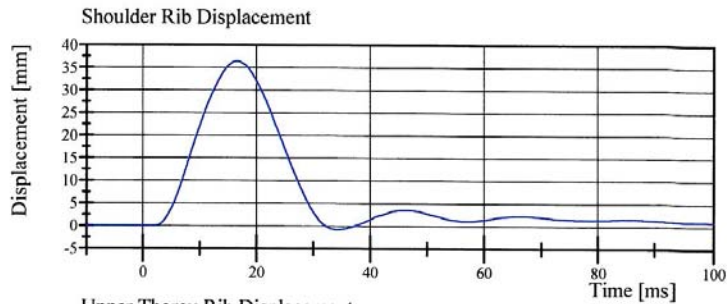


# Transportation Research Center Inc.

Left Lateral Thorax with Arm

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 4-1

Test Date: 9/29/2010



Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.29.2010 10:17:54 605



## Transportation Research Center Inc.

Left Lateral Thorax without Arm

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 4-1

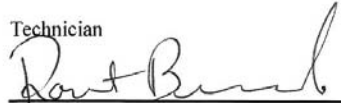
Test Date: 9/29/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	48 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.365 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-16.4 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	36.1 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	41.0 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	38.2 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	15.5 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	10.2 g	Yes

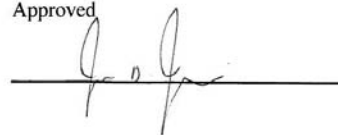
**Test meets specifications.**

**Comments:**

Technician



Approved



Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.29.2010 10:50:27 805

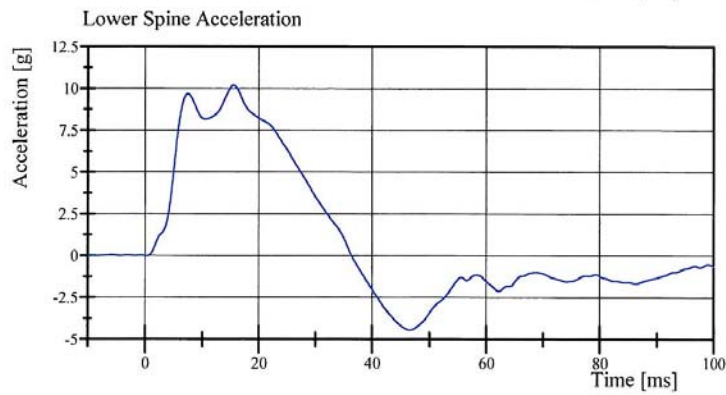
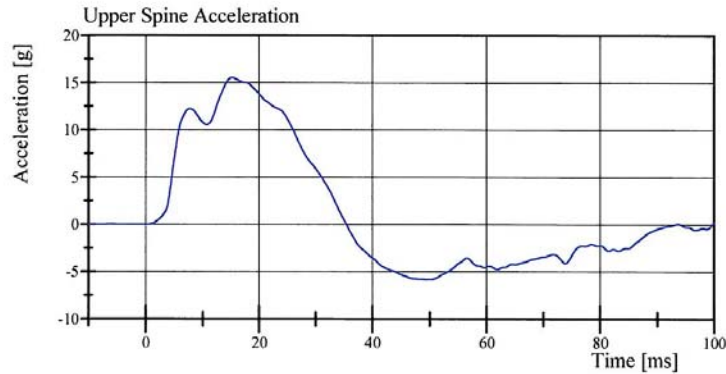
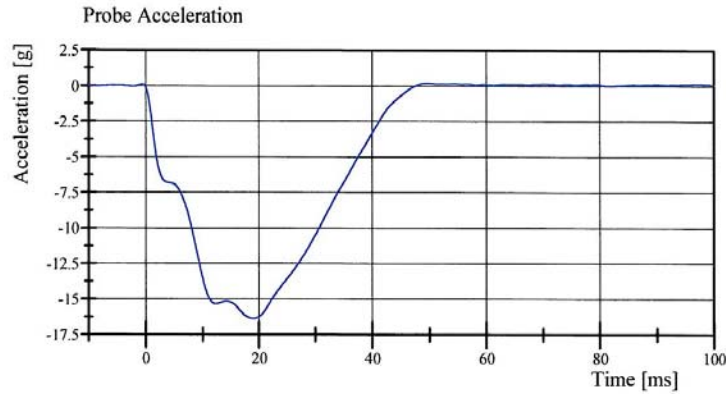


# Transportation Research Center Inc.

Left Lateral Thorax without Arm

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 4-1

Test Date: 9/29/2010



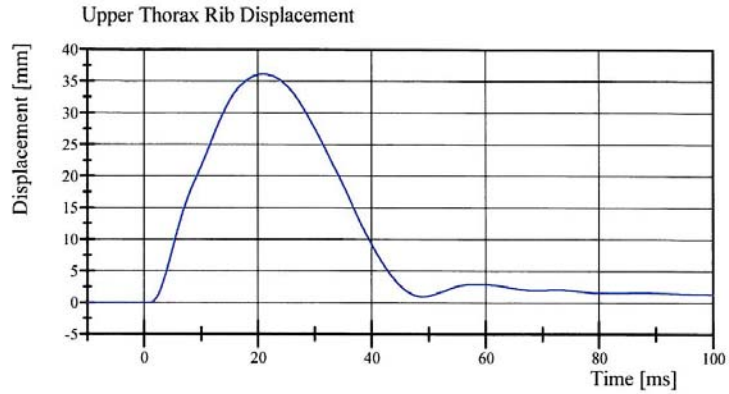
Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.29.2010 10:50:36 805

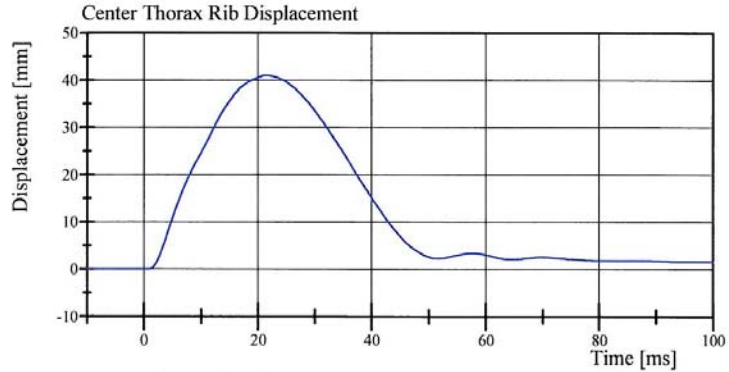


# Transportation Research Center Inc.

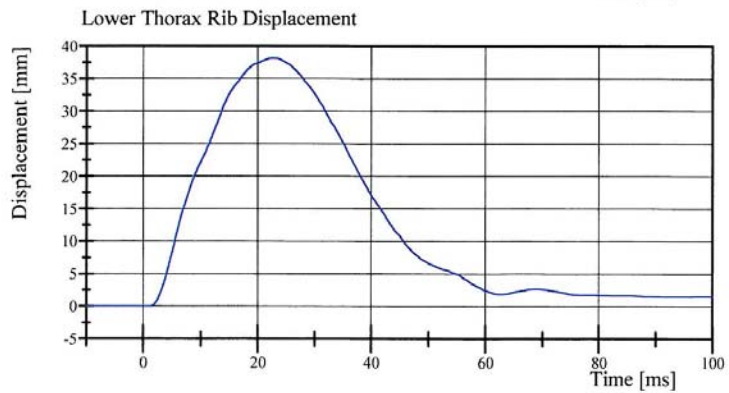
Left Lateral Thorax without Arm  
SID II SBLD Final Rule 6-09 Serial No. 305 Certification No. 4-1  
Test Date: 9/29/2010



Filter Class: CFC\_600  
Max: 36.1 mm at 20.9 ms  
Min: -0.0 mm at 1.0 ms



Filter Class: CFC\_600  
Max: 41.0 mm at 21.4 ms  
Min: -0.0 mm at -7.4 ms



Filter Class: CFC\_600  
Max: 38.2 mm at 22.6 ms  
Min: -0.0 mm at 1.1 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.29.2010 10:50:36 805



# Transportation Research Center Inc.

Left Lateral Abdomen

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 4-1

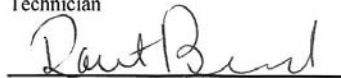
Test Date: 9/29/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	47 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.33 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-14.9 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	40.6 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	36.6 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	11.72 g	Yes

**Test meets specifications.**

**Comments:**

Technician



Approved



Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.29.2010 11:04:45 639

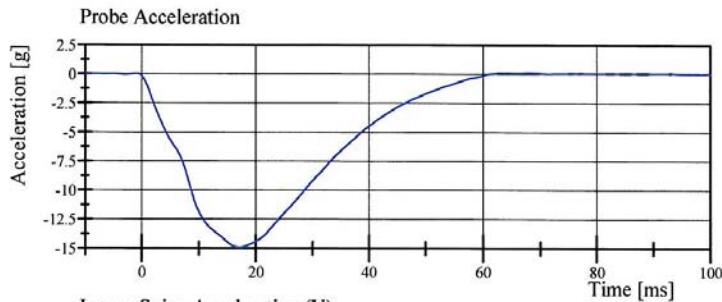


# Transportation Research Center Inc.

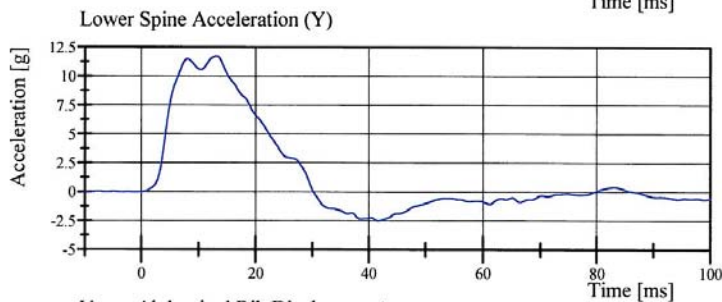
Left Lateral Abdomen

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 4-1

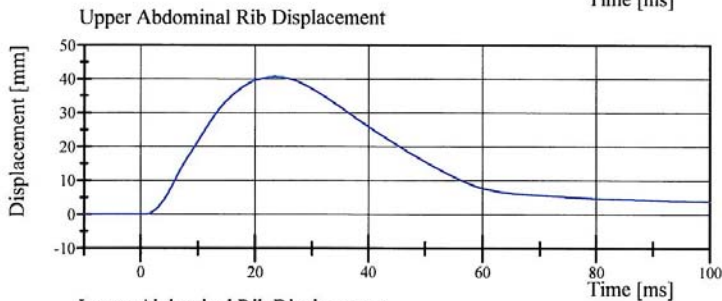
Test Date: 9/29/2010



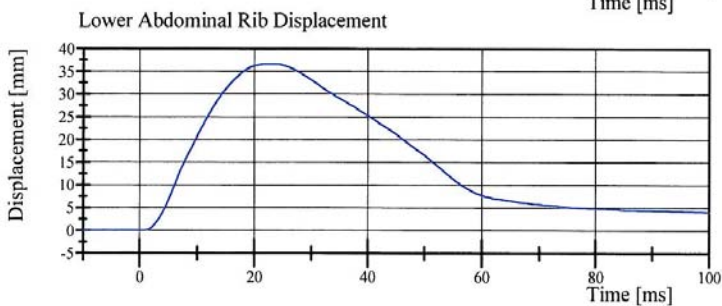
Filter Class: CFC\_180  
Max: 0.1 gn at 67.8 ms  
Min: -14.9 gn at 17.0 ms



Filter Class: CFC\_180  
Max: 11.7 gn at 13.1 ms  
Min: -2.5 gn at 41.6 ms



Filter Class: CFC\_600  
Max: 40.6 mm at 23.4 ms  
Min: -0.0 mm at 0.6 ms



Filter Class: CFC\_600  
Max: 36.6 mm at 23.1 ms  
Min: -0.0 mm at 0.6 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.29.2010 11:04:53 639



# Transportation Research Center Inc.

Left Lateral Pelvis

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 4-1

Test Date: 9/29/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	48 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.68 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-41.15 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	38.5 g	Yes
Acetabulum Force	3,600 - 4,300 N	4,115.9 N	Yes

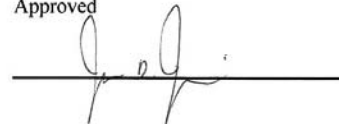
**Test meets specifications.**

**Comments:**

Technician



Approved



Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.29.2010 11:16:47 427

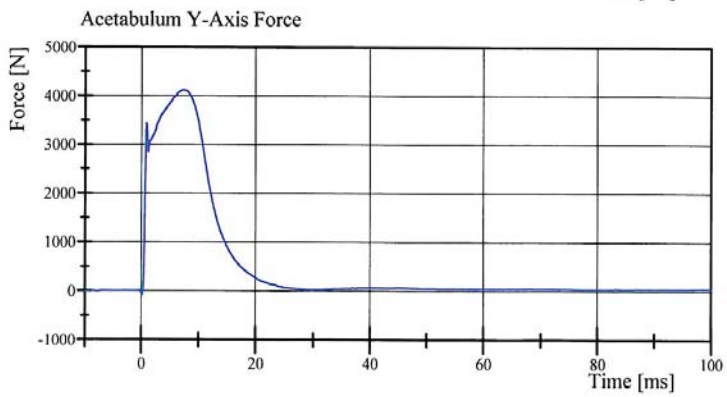
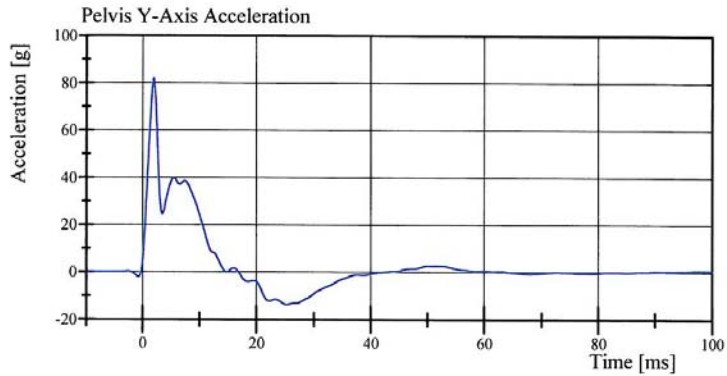
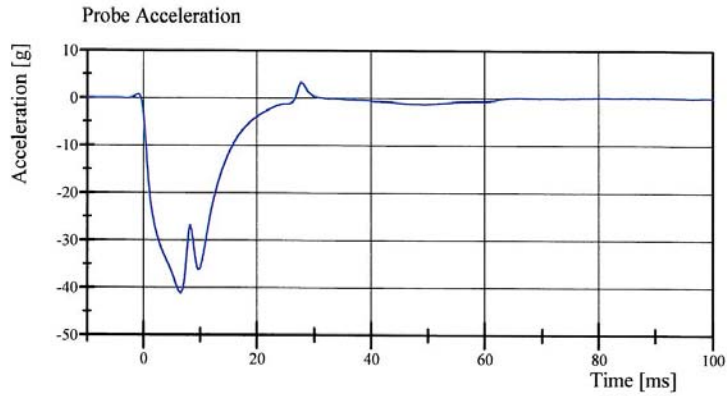


# Transportation Research Center Inc.

Left Lateral Pelvis

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 4-1

Test Date: 9/29/2010



Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.29.2010 11:16:57 427



# Transportation Research Center Inc.

Left Lateral Iliac

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 4-1

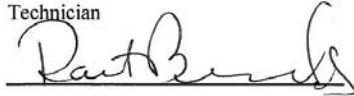
Test Date: 9/29/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	48 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.32 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-42.0 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	35.4 g	Yes
Iliac Force	4,100 - 5,100 N	4,968.7 N	Yes

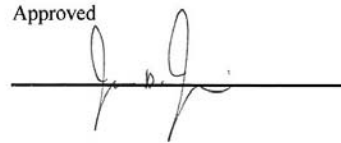
Test meets specifications.

Comments:

Technician



Approved



Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

09.29.2010 13:34:41 637

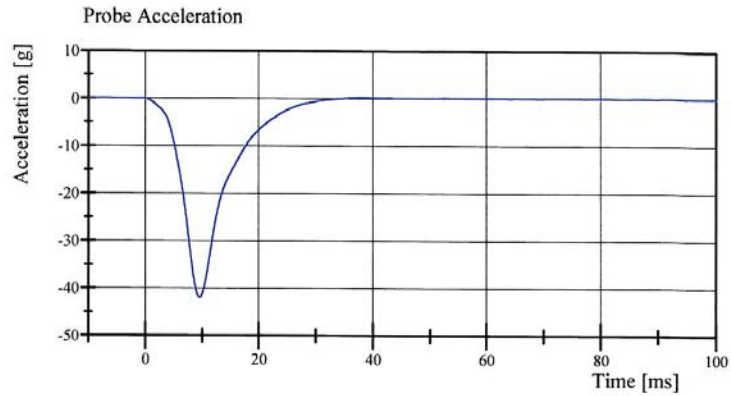


# Transportation Research Center Inc.

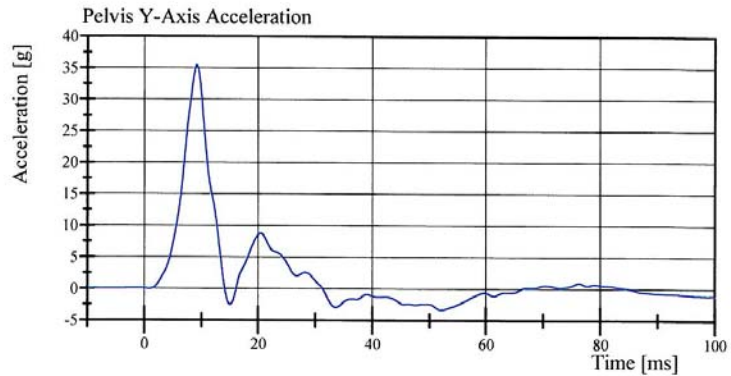
Left Lateral Iliac

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 4-1

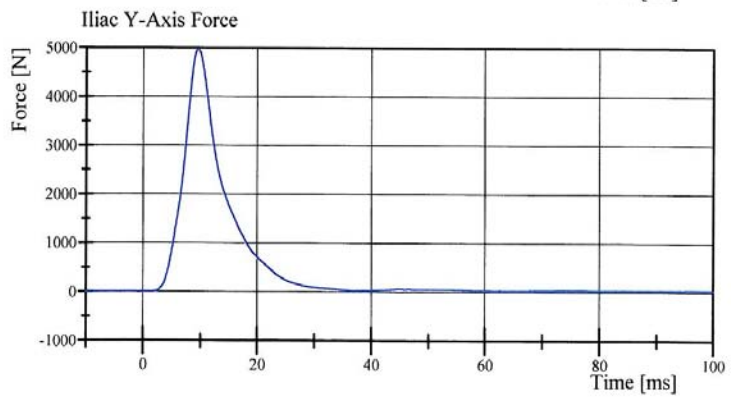
Test Date: 9/29/2010



Filter Class: CFC\_180  
Max: 0.2 gn at 38.2 ms  
Min: -42.0 gn at 9.5 ms



Filter Class: CFC\_180  
Max: 35.4 gn at 9.1 ms  
Min: -3.4 gn at 52.0 ms



Filter Class: CFC\_600  
Max: 4,968.7 N at 9.5 ms  
Min: -1.4 N at -0.8 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009  
Polarity in accordance with SAE J211.

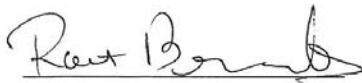
09.29.2010 13:34:50 637



**Transportation Research Center Inc.**  
**SIDI's Dummy - Level D**  
**External Dimensions**  
**Serial No. 305 Calibration No.04**  
**Date: 9/29/10**

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	775	Yes
B	Shoulder Pivot Height	437.0 - 453.0	440	Yes
C	H-Point Height	79.0 - 89.0	83	Yes
D	H-Point from Seat Back	141.0 - 151.0	145	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	105	Yes
F	Thigh Clearance	119.0 - 135.0	132	Yes
G	Head Breadth	140.0 - 148.0	145	Yes
H	Head Back from Backline	40.0 - 46.0	45	Yes
I	Head Depth	178.0 - 188.0	183	Yes
J	Head Circumference	541.0 - 551.0	543	Yes
K	Buttock to Knee Length	514.0 - 540.0	534	Yes
L	Popliteal Height	343.0 - 369.0	354	Yes
M	Knee Pivot to Floor Height	393.0 - 409.0	402	Yes
N	Buttock Popliteal Length	416.0 - 442.0	430	Yes
O	Chest Depth without Jacket	195.0 - 211.0	202	Yes
P	Foot Length (right)	216.0 - 232.0	220	Yes
P	Foot Length (left)	216.0 - 232.0	220	Yes
Q	Hip Breadth	313.0 - 323.0	313	Yes
R	Arm Length	249.0 - 259.0	253	Yes
S	Knee Joint to seat Back	478.0 - 493.0	480	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	351	Yes
W	Foot Width (right)	78.0 - 94.0	84	Yes
W	Foot Width (left)	78.0 - 94.0	84	Yes
Y	Chest Circumference with Jacket	851.0 - 881.0	865	Yes
Z	Waist Circumference	761.0 - 791.0	780	Yes

Technician



Approved




Revised 9/29/2005