

REPORT NUMBER: SPNCAP-TRC-10-003

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

**General Motors De Mexico
2011 Chevrolet Silverado 1500 Crew Cab
NHTSA NUMBER: MB0112**

**PREPARED BY:
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**Report Date:
October 4, 2010**

FINAL REPORT

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

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Approval Date: October 15, 2010

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

1. Report No. SPNCAP-TRC-10-003	2. Government Accession No.	3. Recipient's Catalog No.												
4. Title and Subtitle Final Report New Car Assessment Program Side Impact Pole Testing of a 2011 Chevrolet Silverado 1500 Crew Cab Pickup, NHTSA No.: MB0112		5. Report Date October 4, 2010												
		6. Performing Organization Code TRC Inc.												
7. Author(s) Michael Tonneman, Project Manager Transportation Research Center Inc.		8. Performing Organization Report No. 101004												
9. Performing Organization Name and Address Transportation Research Center Inc. 10820 State Route 347 East Liberty, OH 43319		10. Work Unit No. (TRAIS)												
		11. Contract or Grant No. DTNH22-09-D-00125												
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards (NVS-111) 1200 New Jersey Ave, SE, Room W43-410 Washington, DC 20590		13. Type of Report and Period Covered Final Report October 4, 2010												
		14. Sponsoring Agency Code NVS-111												
15. Supplemental Notes														
16. Abstract A 32.2 km/h (20 mph), 75° oblique impact Side NCAP Test was conducted on the subject vehicle, a 2011 Chevrolet Silverado 1500 Crew Cab 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 October 4, 2010. The impact velocity was 32.3 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 588 mm at Level 3. The test or target vehicle's performance is given below: <table border="0"> <thead> <tr> <th></th><th><u>Threshold</u></th><th><u>Front SID-IIs</u></th></tr> </thead> <tbody> <tr> <td>Head Injury Criteria HIC):</td><td>1000</td><td>381</td></tr> <tr> <td>Resultant Lower Spine Acceleration:</td><td>82</td><td>52.6 g</td></tr> <tr> <td>Combined Acetabular and Iliac Pelvic Force:</td><td>5525</td><td>3406 N</td></tr> </tbody> </table> 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 from the vehicle. The latch or hinge systems on the door did not pull out of the anchorages.				<u>Threshold</u>	<u>Front SID-IIs</u>	Head Injury Criteria HIC):	1000	381	Resultant Lower Spine Acceleration:	82	52.6 g	Combined Acetabular and Iliac Pelvic Force:	5525	3406 N
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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												
19. Security Classification (of this report) Unclassified	20. Security Classification (of this page) Unclassified	21. Number of Pages 117	22. Price											

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SECTION 1

PURPOSE AND TEST PROCEDURE

PURPOSE

This side impact test was conducted as part of the FY10 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 Chevrolet Silverado 1500 Crew Cab manufactured by General Motors De Mexico. 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 Chevrolet Silverado 1500 Crew Cab. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.3 km/h. The weight of the vehicle as tested was 2499.6 kg. The side impact test was conducted by Transportation Research Center Inc. in East Liberty, OH, on October 4, 2010. Pre-test and post-test photographs of the test vehicle, rigid pole, and the side impact dummy (SID IIs) are included in Appendix A of this report.

Two (2) real-time motion picture cameras 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 transducers. 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 IIs, Serial No. 033 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 th percentile female	381	52.6	Iliac Wing = 1061.9 Acetabular = 2487.1 Sum = 3406.0

Supplemental Restraint Information

Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear Passenger Occupant Location 4	
	Installed	Deployed	Installed	Deployed
Front Airbag	Yes	Yes		
Knee Airbag	No	N/A		
Side Airbag 1 (Curtain)	Yes	Yes	Yes	Yes
Side Airbag 2 (Torso/Pelvis)	Yes	Yes	N/A	N/A
Side Airbag 3	No	N/A	N/A	N/A
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

The test data can be found on the NHTSA website at www.nhtsa.dot.gov.

TEST NOTES

The following channels did not collect valid data:

The vehicle's center of gravity X-, Y-, and Z-axis acceleration data channels, 11VEHCCG0000ACXA, 11VEHCCG0000ACYA, and 11VEHCCG0000ACZA, recorded questionable data after approximately 58 milliseconds. The mounting block for the three accelerometers was found dislodged post-test.

The vehicle center of gravity angular roll rate sensor, 11VEHCCG0000AVXA, measuring about the X axis rotation, exceeded the full scale value and recorded questionable data after approximately 40 milliseconds.

The vehicle's center of gravity angular pitch rate sensor, 11VEHCCG0000AVYA, measuring about the X axis rotation data channel exceeded the full scale value various times throughout the event. The data appears valid.

The vehicle center of gravity angular yaw rate sensor, 11VEHCCG0000AVZA, measuring about the Z axis rotation, exceeded the full scale value at 38 milliseconds and recorded questionable data after approximately 60 milliseconds.

The vehicle's left floor sill Y-axis acceleration data channel, 11VEHC00LO00ACYA, recorded a spike in data at approximately 48 milliseconds and questionable data thereafter.

The vehicle's left A-pillar sill Y-axis acceleration data channel, 11APIL0000000ACYA, recorded a spike in data at approximately 30 milliseconds and questionable data thereafter.

The vehicle's left B-pillar sill Y-axis acceleration data channel, 11BPIL0000000ACYA, appears to have recorded questionable data throughout the event.

The vehicle's firewall center Y-axis acceleration data channel, 112FIRCX00000ACYA, recorded a questionable data spike at approximately 107 milliseconds.

SECTION 3
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Chevrolet Silverado 1500 Crew Cab NHTSA No.: MB0112
 Test Program: SPNCAP Side Impact Test Date: 10/04/10

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	MB0112	Anti-Lock Brakes	Yes
Model Year	2011	All-Wheel Drive	No
Make	Chevrolet	Power Steering	Yes
Model	Silverado 1500 Crew Cab	Driver Front Airbag	Yes
Body Style	Pickup	Driver Curtain Airbag	Yes
VIN	3GCPCREA8BG100504	Driver Head/Torso Airbag	No
Color	Blue Granite Metallic	Driver Torso Airbag	No
Delivery Date	09/03/2010	Driver Torso/Pelvis Airbag	Yes
Odometer Reading (miles)	16	Driver Pelvis Airbag	No
Dealer	Paddock Chevrolet	Driver Knee Airbag	No
Transmission	Automatic	Rear Pass. Curtain Airbag	Yes
Final Drive	Rear Wheel Drive	Rear Pass. Head/Torso Airbag	No
Number of Cylinders	8	Rear Pass. Torso Airbag	No
Engine Displacement (L)	4.8	Rear Pass. Torso/Pelvis Airbag	Yes
Engine Placement	Longitudinal	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	Yes
Power Brakes	Yes	Tilt Steering	Yes
Front Disc	Yes	Other – Trailer equipment package	Yes
Rear Disc	No	Other – AM/FM/CD	Yes
Does owner's manual detail instructions on disabling ADLs?			Yes

DATA FROM CERTIFICATION LABEL

Manufactured by	General Motors De Mexico	GVWR (kg)	3085
Date of Manufacture	07-10	GAWR Front (kg)	1656
		GAWR Rear (kg)	1792

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)				730	(B)
DSC X 68.04 kg				408	(B)
Rated Cargo and Luggage Weight (RCLW)				322	(A-B)

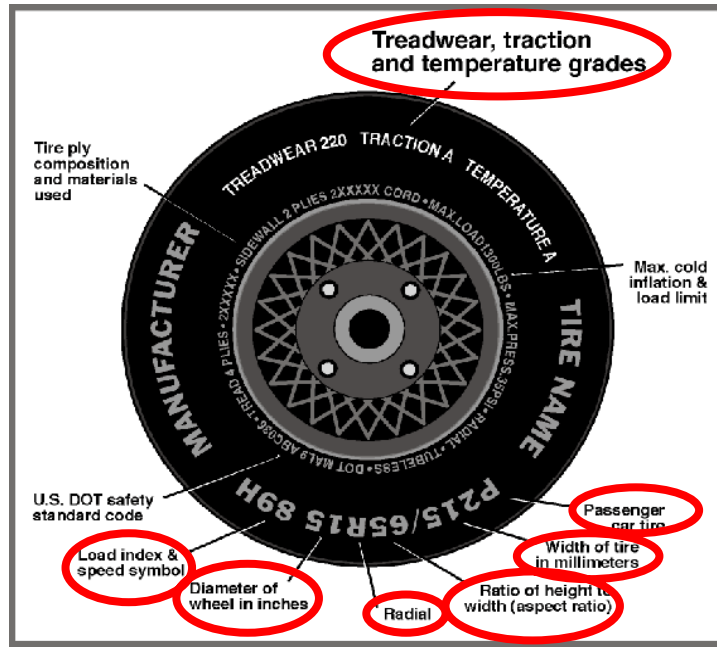
VEHICLE SEAT TYPE

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 Chevrolet Silverado 1500 Crew Cab NHTSA No.: MB0112
 Test Program: SPNCAP Side Impact Test Date: 10/04/10



Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Cold / Test Pressure (kPa)	240	240
Recommended Tire Size	P245/70R17	P245/70R17
Tire Size on Vehicle	P245/70R17	P245/70R17
Tire Manufacturer	General	General
Tire Model	Grabber	Grabber
Load Index & Speed Symbol	108T	108T
Treadwear	640	640
Traction Grade	A	A
Temperature Grade	B	B
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Tread	2 Polyester, 2 Steel, 1 Polyamide	2 Polyester, 2 Steel, 1 Polyamide
Tire Material	2 Polyester, 2 Steel, 1 Polyamide	2 Polyester, 2 Steel, 1 Polyamide
DOT Safety Code Left	A383 RN1 2310	A383 RN1 2310
DOT Safety Code Right	A383 RN1 2310	A383 RN1 2310

DATA SHEET NO. 1 (CONTINUED)**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2011 Chevrolet Silverado 1500 Crew Cab NHTSA No.: MB0112
 Test Program: SPNCAP Side Impact Test Date: 10/04/10

TEST VEHICLE AXLES WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	685.6	486.8		722.8	525.8		718.6	569.2	
Right	kg	660.4	493.0		705.8	545.2		664.6	567.8	
Ratio	%	57.9	42.1		57.2	42.8		54.9	45.1	
Totals	kg	1346.0	979.8	2325.8	1428.6	1071.0	2499.6	1383.2	1137.0	2520.2

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
(A) Total Delivered Weight (UVW)	kg	2325.8	(A)
(B) Weight of 1 P572V ATD (SIDIIIs)	kg	44.0	(B)
(C) Rated Cargo/Luggage Weight (RCLW) ¹	kg	136.0	(C)
(A+B+C) Vehicle Target Weight (TVTW)	kg	2505.8	(A+B+C+)

TEST VEHICLE ATTITUDES AND CG

	Units	As Delivered	As Tested	Fully Loaded
Driver Door Sill Angle (front-to-rear)*	Deg.	-1.3	-1.2	-1.0
Front Passenger Sill Angle (front-to-rear)*	Deg.	-0.8	-1.0	-0.3
Front Bumper Angle (left-to-right)**	Deg.	0.3	0.0	0.0
Rear Bumper Angle (left-to-right)**	Deg.	0.0	0.6	-0.2
Vehicle CG (aft of front axle)	mm	1542	1568	1651
Vehicle CG (Left (+) / Right (-) from longitudinal Centerline)	mm	-7.1	0.8	-19.1

*Front up is positive **Left up is positive

GENERAL VEHICLE TEST DATA

Measurement Description	Units	Value
Weight of Ballast in Cargo Area	kg	11.3
Weight of Vehicle Components Removed	kg	0.0

Vehicle Parts removed to make Target Vehicle Test Weight: None

TEST VEHICLE IMPACT POINT DATA

Measured Parameter	Units	Value
Vertical Impact Reference Line (Aft of Front Axles)	kg	1189
Actual Impact Point (Aft of Front Axle)	kg	1194
Impact Point Difference (- forward / + rearward)	kg	+5

¹Rated cargo and luggage weight was calculated at 332 kg. 136.0 kg was used to determine the target test weight.

DATA SHEET NO. 2

SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND

FUEL SYSTEMS DATA

Test Vehicle: 2011 Chevrolet Silverado 1500 Crew Cab NHTSA No.: MB0112
 Test Program: SPNCAP Side Impact Test Date: 10/04/10

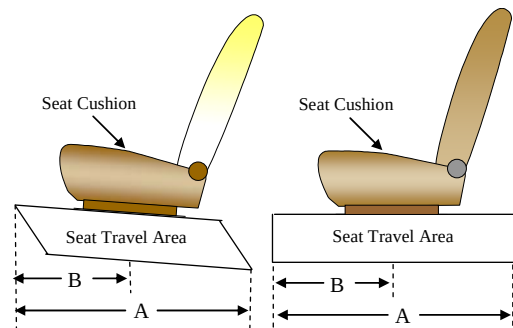
SEAT FORE/AFT POSITIONS

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.
Driver Seat	25	1
Passenger	25	12

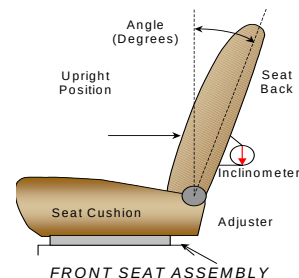
Position zero is full forward



SEAT BACK ANGLE POSITION

The driver and 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.



SEAT BACK ANGLE

	Degrees	Detent
Driver Seat Back Angle with Seated Dummy	0.9	N/A
Front Passenger Seat Back Angle	Full rearward	N/A
Struck Side Rear Seat Back Angle	Fixed	Fixed
Non-Struck Side Rear Passenger Seat Back Angle	Fixed	Fixed

SEAT BELT UPPER ANCHORAGE

	Total No. of Positions	Placed in Position No.
Driver Seat	5	1

Position number one is the uppermost adjustment position.

DATA SHEET NO. 2 (CONTINUED)

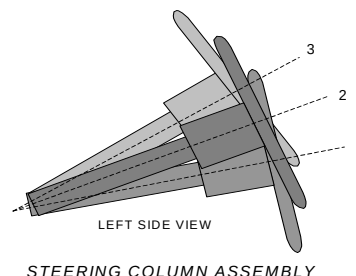
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEMS DATA

Test Vehicle: 2011 Chevrolet Silverado 1500 Crew Cab
Test Program: SPNCAP Side Impact

NHTSA No.: MB0112
Test Date: 10/04/10

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.

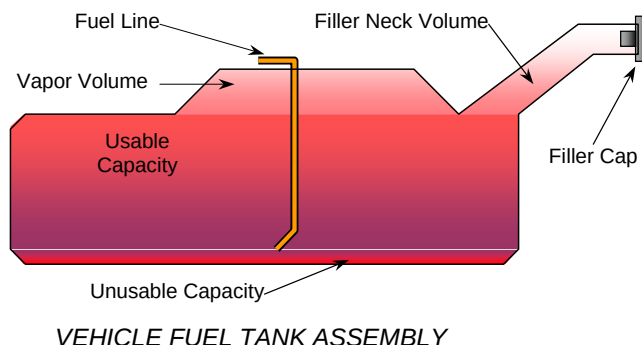


STEERING COLUMN POSITIONS

	Degrees	Fore/Aft Position, mm
Lowermost Position No. 1	78.1	
Geometric Center Position No. 2	68.3	
Uppermost Position No. 3	58.4	
Test Position	68.4 (3 of 5 notches)	
Telescoping Steering Wheel Travel		Fixed

FUEL PUMP

The test vehicle is equipped with an electric fuel pump. The fuel pump operates for approximately for a few seconds after the ignition is placed in the "ON" position, after which the fuel pump automatically shuts off. The fuel filler door is located on the left side of the bed. The standard fuel tank occupies the area in front of the rear axle.



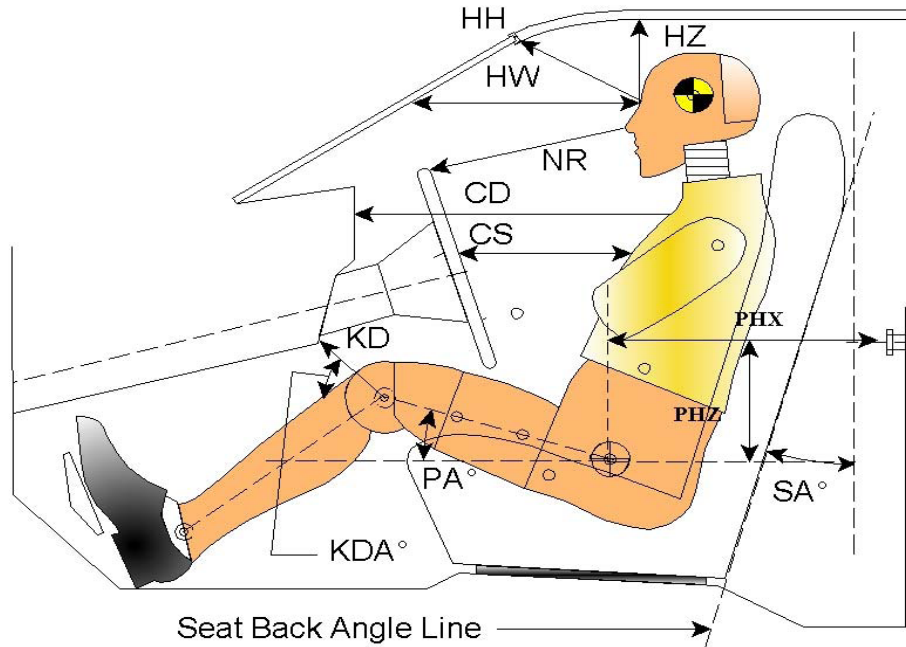
FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	98
Usable Capacity of "Optional" Tank	0
Usable Capacity of Standard Tank from owners manual	98
Usable Capacity of Optional Tank from owner's manual	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 Chevrolet Silverado 1500 Crew Cab NHTSA No.: MB0112
 Test Program: SPNCAP Side Impact Test Date: 10/04/10



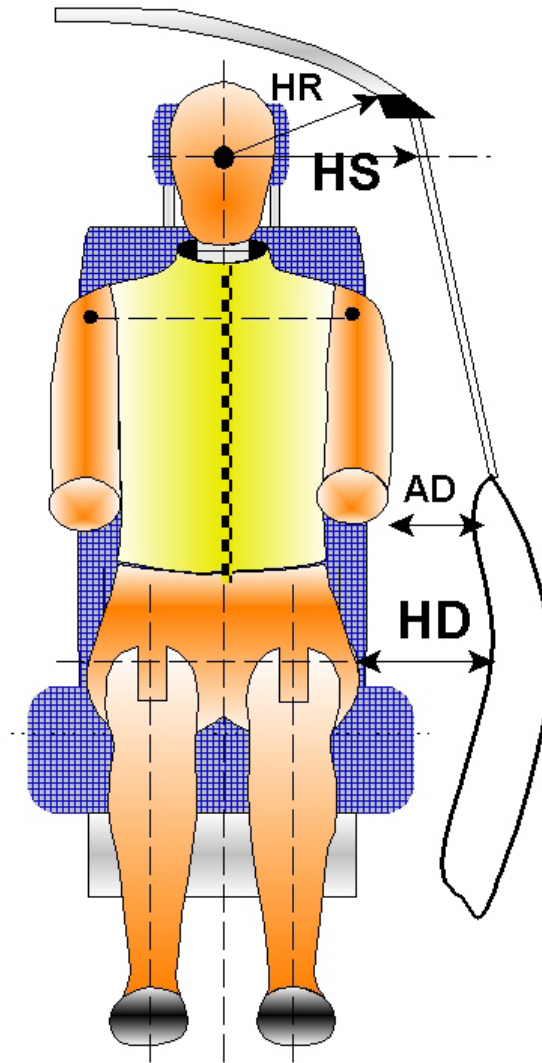
Code	Measurement Description	Driver S/N 033	
		Length (mm)	Angle (°)
HH	Head to Header	372	
HW	Head to Windshield	630	
HZ	Head to Roof	265	
NR	Nose to Rim	231	
CD	Chest to Dash	394	
CS	Chest to Steering Wheel	178	
KDL	Left Knee to Dash	99	23.6
KDR	Right Knee to Dash	100	23.8
PA	Pelvic Angle		21.9
PHX	H-Point to Striker (X-Axis)	471	
PHZ	H-Point to Striker (Z-Axis)	2	
SA	Seat Back Angle		0.9

NOTE: Dummy measurements were achieved using a tape measure.

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Chevrolet Silverado 1500 Crew Cab NHTSA No.: MB0112
Test Program: SPNCAP Side Impact Test Date: 10/04/10



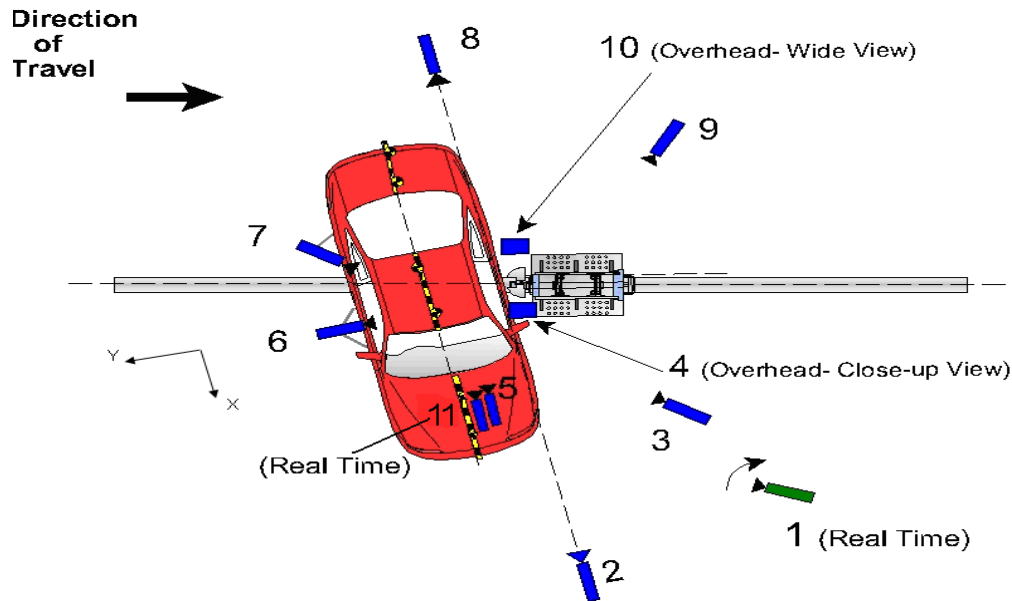
Code	Measurement Description	Units	Driver S/N 033
HR	Head to Side Header	mm	260
HS	Head to Side Window	mm	368
AD	Arm to Door	mm	168
HD	H-Point to Door	mm	177

NOTE: Dummy measurements were achieved using a tape measure.

DATA SHEET NO. 5

CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2011 Chevrolet Silverado 1500 Crew Cab NHTSA No.: MB0112
 Test Program: SPNCAP Side Impact Test Date: 10/04/10



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	12.5	1000
3	Impact side 45° – forward pole view	1470	-2900	-1550	12.5	1000
4	Overhead close-up view of impact	0	0	-5650	25	1000
5	Onboard – dummy front view				12.5	1000
6	Onboard – dummy side view				8.5	1000
7	Onboard – dummy rear oblique view				8.5	1000
8	Rear ground level – impact view	-1360	0	-1170	25	1000
9	Impact side 45° – rearward pole view	-1750	-2900	-1360	25	1000
10	Overhead wide view of impact	-400	0	-5650	8.5	1000
11	Onboard Real Time dummy front view				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

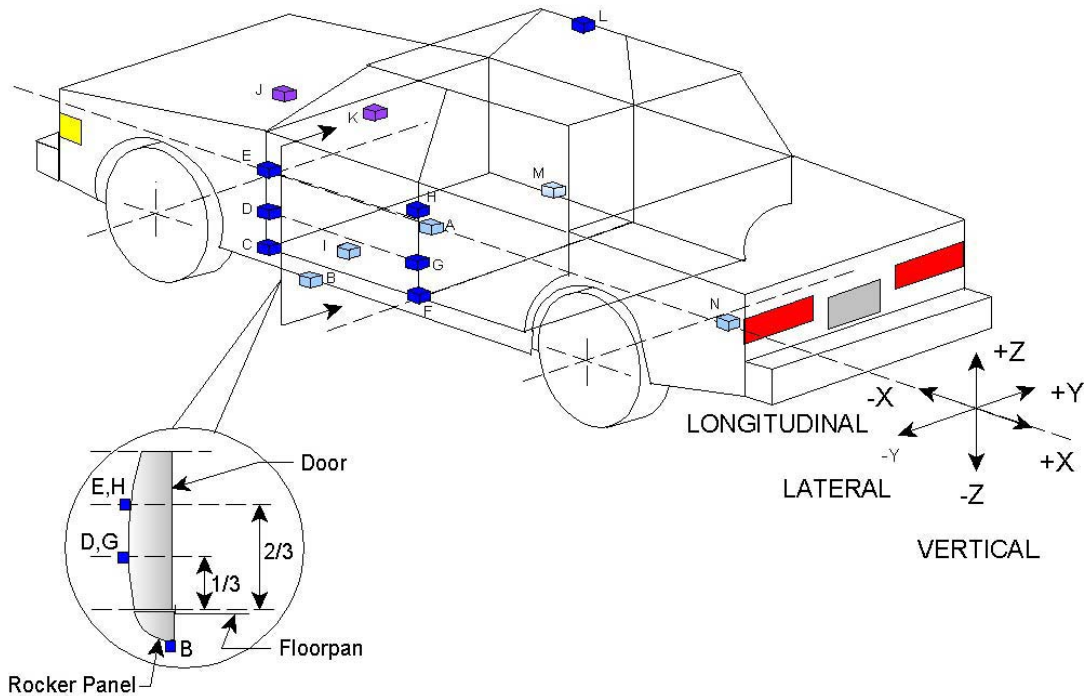
	Number of Channels
Driver Dummy	16
Vehicle Structure	21
Pole Load Cells	8
Switches	2
Total No. of Data Channels	47

¹ The location information was not recorded.

DATA SHEET NO. 6

VEHICLE ACCELEROMETER DATA

Test Vehicle: 2011 Chevrolet Silverado 1500 Crew Cab NHTSA No.: MB0112
 Test Program: SPNCAP Side Impact Test Date: 10/04/10



Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
A	Vehicle CG Acceleration	-4265	10	690
	Vehicle CG Rotation	-4290	-10	690
B	Left Floor Sill	-4210	-715	555
C	A-Pillar Sill	-4590	-850	577
D	A-Pillar Low	-4670	-905	770
E	A-Pillar Mid	-4675	-870	115
F	B-Pillar Sill	-3380	-850	587
G	B-Pillar Low	-3442	-910	800
H	B-Pillar Mid	-3450	-905	1115
I	Driver Seat	-3825	-660	665
J	Engine Top	-5285	0	1137
K	Firewall	-5015	-20	1128
L	Right Roof	-3920	675	1735
M	Right Floor Sill	-3990	700	570
N	Rear Floorpan	-665	0	810

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 Chevrolet Silverado 1500 Crew Cab NHTSA No.: MB0112
Test Program: SPNCAP Side Impact Test Date: 10/04/10



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 Chevrolet Silverado 1500 Crew Cab NHTSA No.: MB0112
 Test Program: SPNCAP Side Impact Test Date: 10/04/10

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat
Dummy Type / Serial No.	SID II's SBLD / 033
Head Contact	Side curtain airbag, head restraint
Upper Torso Contact	Side airbag
Lower Torso Contact	Side airbag
Left Knee Contact	Door liner
Right Knee Contact	None

POST TEST DOOR OPENING AND SEAT TRACK INFORMATION

Description	Front	Rear
Left Side Doors	Unlocked/Jammed shut	Unlocked/Jammed shut
Right Side Doors	Locked/Closed and operational	Locked/Closed and operational
Hatch and Other Doors		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 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 SYSTEM INFORMATION

Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear Passenger Occupant Location 4	
	Installed	Deployed	Installed	Deployed
Front Airbag	Yes	Yes		
Knee Airbag	No	N/A		
Side Airbag 1 (Curtain)	Yes	Yes	Yes	Yes
Side Airbag 2 (Torso/Pelvis)	Yes	Yes	N/A	N/A
Side Airbag 3	No	N/A	N/A	N/A
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

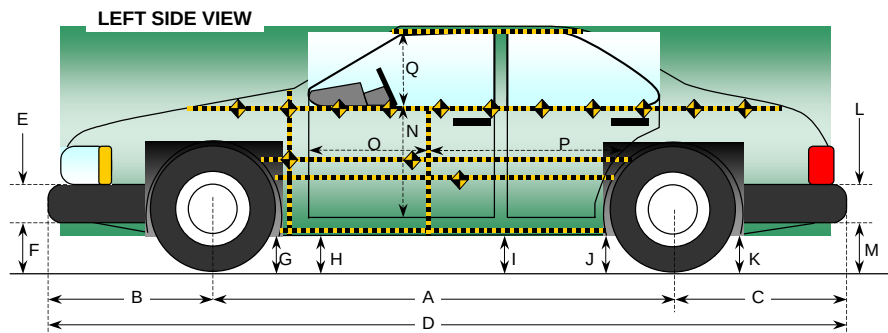
VEHICLE SPEED AND IMPACT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset from Vertical Impact Reference Line	mm	+/- 38	5 rearward
Light Trap No. 1 Velocity Primary	km/h	30.4 to 32.0	32.3
Light Trap No. 2 Velocity Redundant	km/h	30.4 to 32.0	32.3

DATA SHEET NO. 9

VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2011 Chevrolet Silverado 1500 Crew Cab NHTSA No.: MB0112
 Test Program: SPNCAP Side Impact Test Date: 10/04/10



LEFT SIDE VIEW

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

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	3660	3543	117
B	Front Axle to Front Surface of Vehicle	940	1082	-142
C	Rear Axle to Rear Surface of Vehicle	1225	1160	65
D	Total Length at Centerline	5825	5785	40
E	Front Bumper Thickness	123	123	0
F	Front Bumper Bottom to Ground	565	595	-30
G	Sill Height at Front Wheel Well	400	410	-10
H	Sill Height at Front Door Leading Edge	403	415	-12
I	Sill Height at "B" Pillar	423	490	-67
J1	Sill Height at Rear Wheel Well	445	518	-73
J2	Pinch Weld Height at Rear Wheel Well	395	445	-50
K	Sill Height Aft of Rear Wheel Well	477	555	-78
L	Rear Bumper Thickness	175	175	0
M	Rear Bumper Bottom to Ground	514	610	-96
N	Sill Height to Window Bottom Sill	890	890	0
O	Front Door Leading Edge to Impact CL	653	480	173
P	Rear Door Trailing Edge to Impact CL	1487	1317	170
Q	Front Window Opening	490	450	40
R	Right Side Length	5712	5700	12
S	Left Side Length	5712	5635	77
T	Vehicle Width at "B" Post	1575	1445	130

NOTE: Measurements were achieved by using a tape measure.

DATA SHEET NO. 10

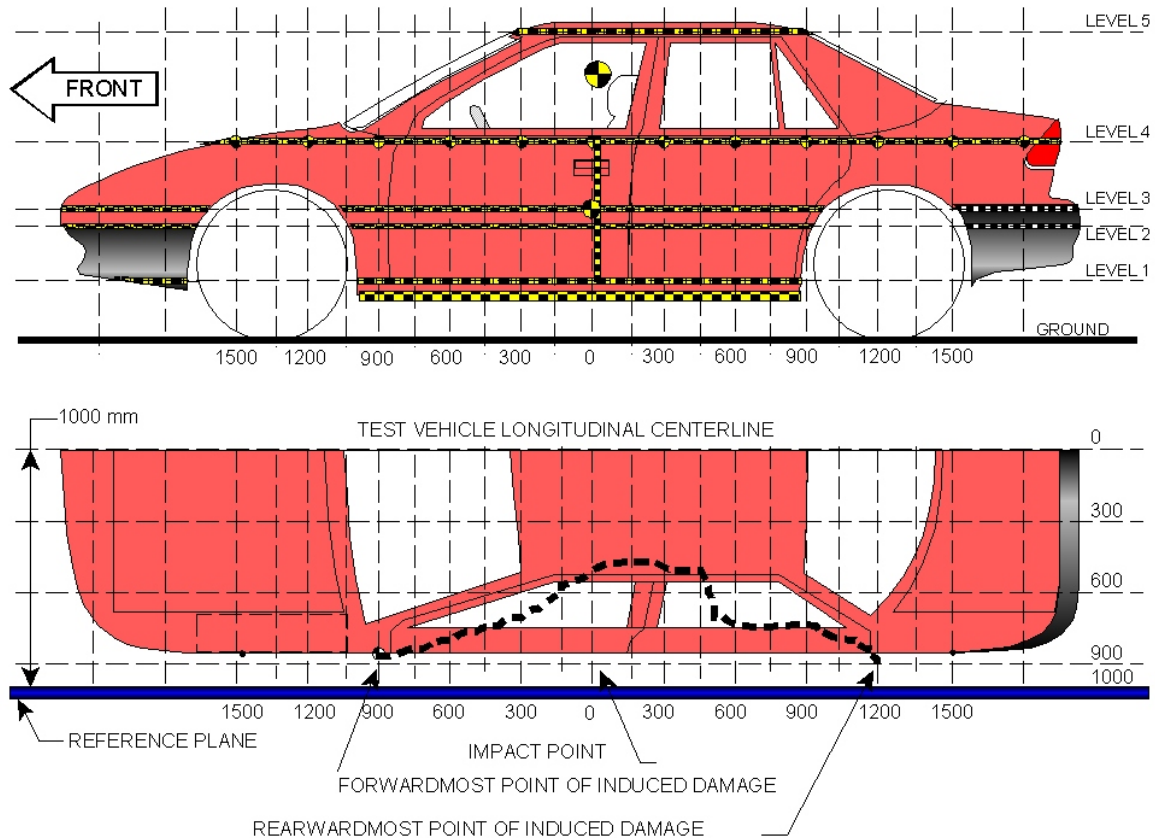
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Chevrolet Silverado 1500 Crew Cab

NHTSA No.: MB0112

Test Program: SPNCAP Side Impact

Test Date: 10/04/10



MAXIMUM EXTERIOR STATIC CRUSH

Level	Measurement Description	Height Above Ground
5	Window Top	1750
4	Window Sill	1180
3	Mid Door	840
2	Occupant H-Point	910
1	Sill Top	455

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 Chevrolet Silverado 1500 Crew Cab NHTSA No.: MB0112
 Test Program: SPNCAP Side Impact Test Date: 10/04/10

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900		1006		926			965		914			41		12	
-750	925	974	987	923		817	912	918	886		108	63	69	37	
-600	910	973	977	927	872	732	819	812	836	812	178	154	165	90	60
-450	910	976	980	931	823	645	710	702	739	710	265	265	278	192	113
-300	912	978	982	934	774	556	603	592	627	610	356	375	390	307	164
-150	913	979	983	938	735	466	489	485	507	514	447	490	498	431	221
0	914	981	984	941	717	387	398	396	411	420	527	583	588	530	297
150	916	982	985	944	710	459	464	459	467	455	456	518	526	477	255
300	917	982	985	946	709	595	598	601	595	541	322	384	383	351	168
450	917	983	985	948	709	717	730	725	729	618	201	252	260	219	91
600	918	982	985	949	706	711	801	799	783	602	207	182	185	165	104
750	917	982	984	949	704	733	823	821	805	618	183	160	163	143	87
900	916	982	984	950	702	756	845	843	827	633	160	137	141	123	69
1050	914	980	982	950	699	777	866	864	849	647	137	114	118	101	51
1200	913	979	981	950	697	799	887	885	870	664	114	92	96	79	33
1350	913	977	979	950	695	821	908	905	894	651	92	70	74	56	44
1500	894	967	966	938		830	910	907	886		64	57	59	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 52 mm forward of the estimated crush grid impact reference line.

Measurements were achieved using the Coordinate Measurement Machine (FARO)

MAXIMUM CRUSH DATA

	Units	Level 1	Level 2	Level 3	Level 4	Level 5
Maximum Crush	mm	527	583	588	530	297
Distance from Actual Impact Point	mm	47	47	47	47	47

DATA SHEET NO. 10 (CONTINUED)

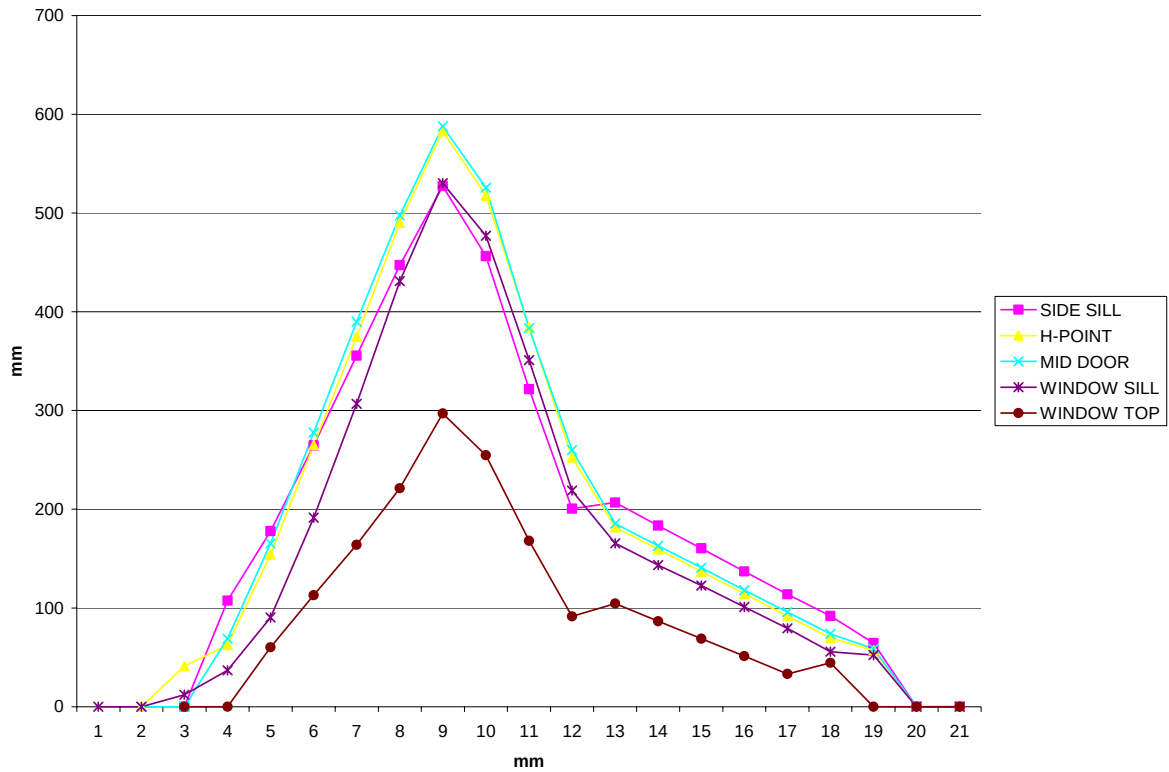
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Chevrolet Silverado 1500 Crew Cab

NHTSA No.: MB0112

Test Program: SPNCAP Side Impact

Test Date: 10/04/10



DATA SHEET NO. 11A

FMVSS NO. 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2011 Chevrolet Silverado 1500 Crew Cab NHTSA No.: MB0112
 Test Program: SPNCAP Side Impact Test Date: 10/04/10

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21 Test Time: 15:37

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.

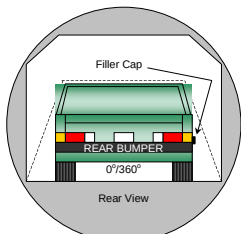
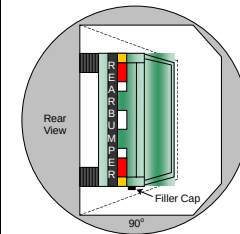
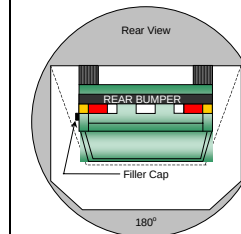
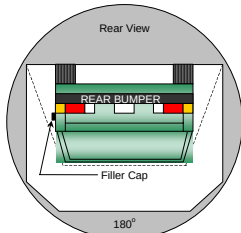
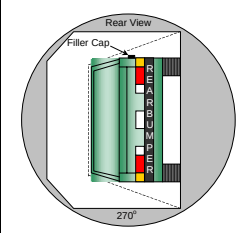
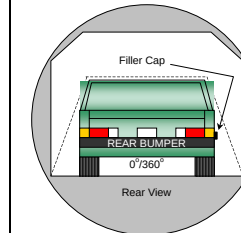
(Maximum allowable = 5 ounces)

C. For the following 25 minutes: 0 oz.

(Maximum allowable = 1 oz./minute)

D. Spillage Details: None

FMVSS 301 STATIC ROLLOVER DATA

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

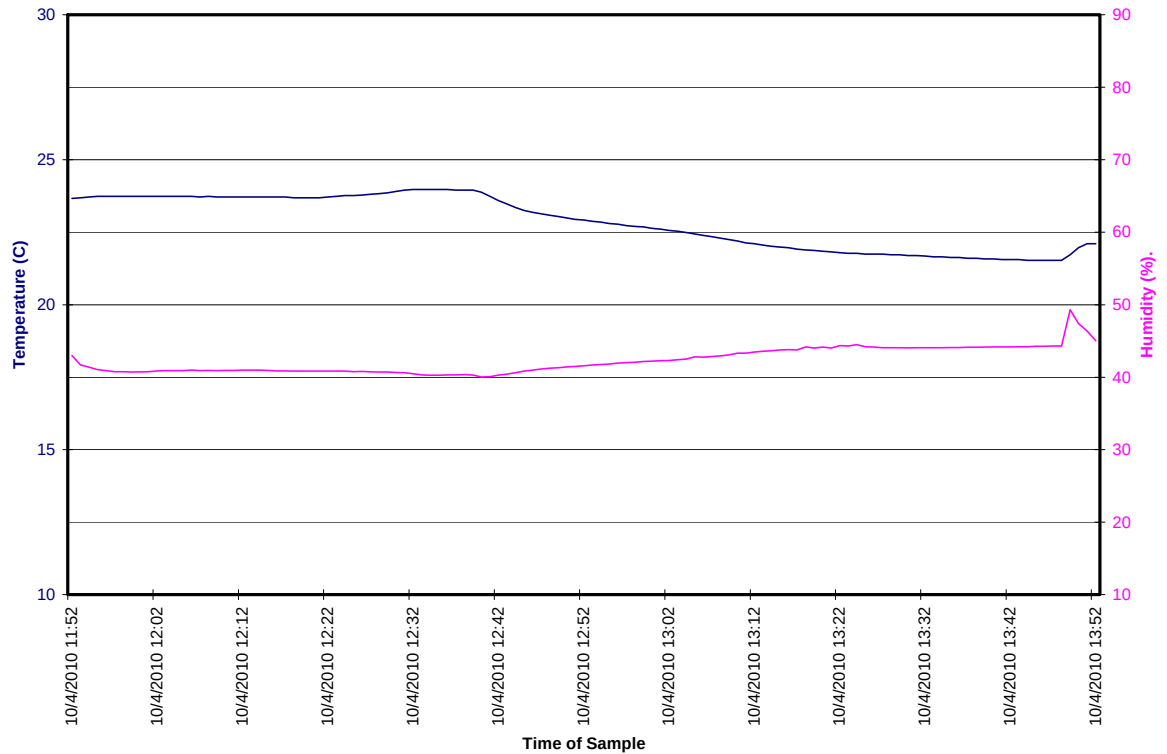
Test Phase	Rotation Time (sec.)	Hold Time (sec.)	Spillage Collection Time (min)	Spillage (oz.)	Spillage Collection Time (min)	Spillage (oz.)	Spillage Collection Time (min)	Spillage (oz.)
0° to 90°	120	300	First 5	0	Sixth	0	Seventh	0
90° to 180°	120	300	First 5	0	Sixth	0	Seventh	0
180° to 270°	120	300	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 Chevrolet Silverado 1500 Crew Cab NHTSA No.: MB0112
Test Program: SPNCAP Side Impact Test Date: 10/04/10

MB0112 75 Degree Oblique Rigid Pole Side NCAP Impact 101004; Test Time 13:52



APPENDIX A
PHOTOGRAPHS

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No. 046	Post-Test Dummy Close-Up Head Contact with Side Airbag View	A-23
No. 047	Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View	A-24
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No. 049	Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View	A-25
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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



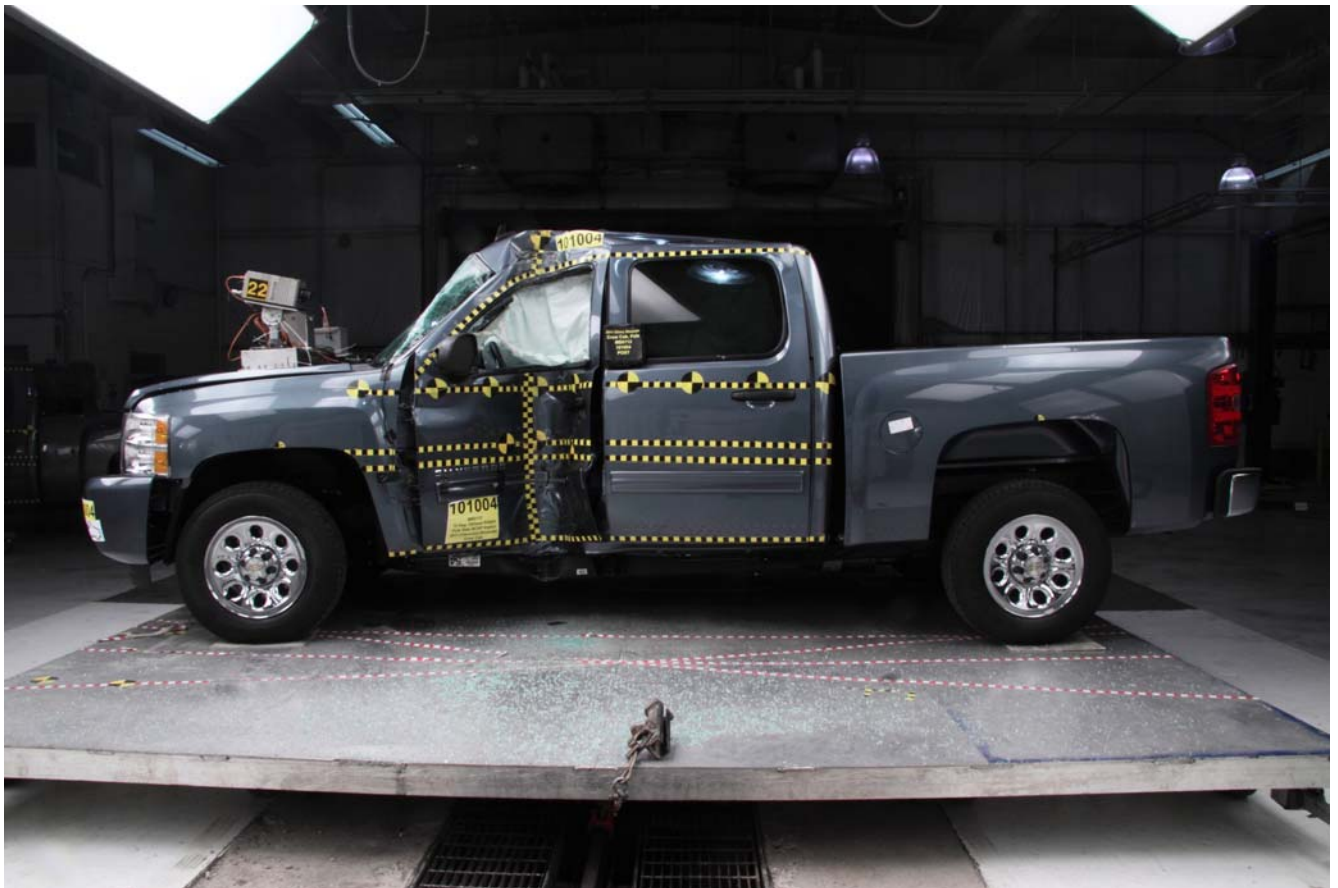
No. 005 – Pre-Test Left Front Three-Quarter View of Test Vehicle



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



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



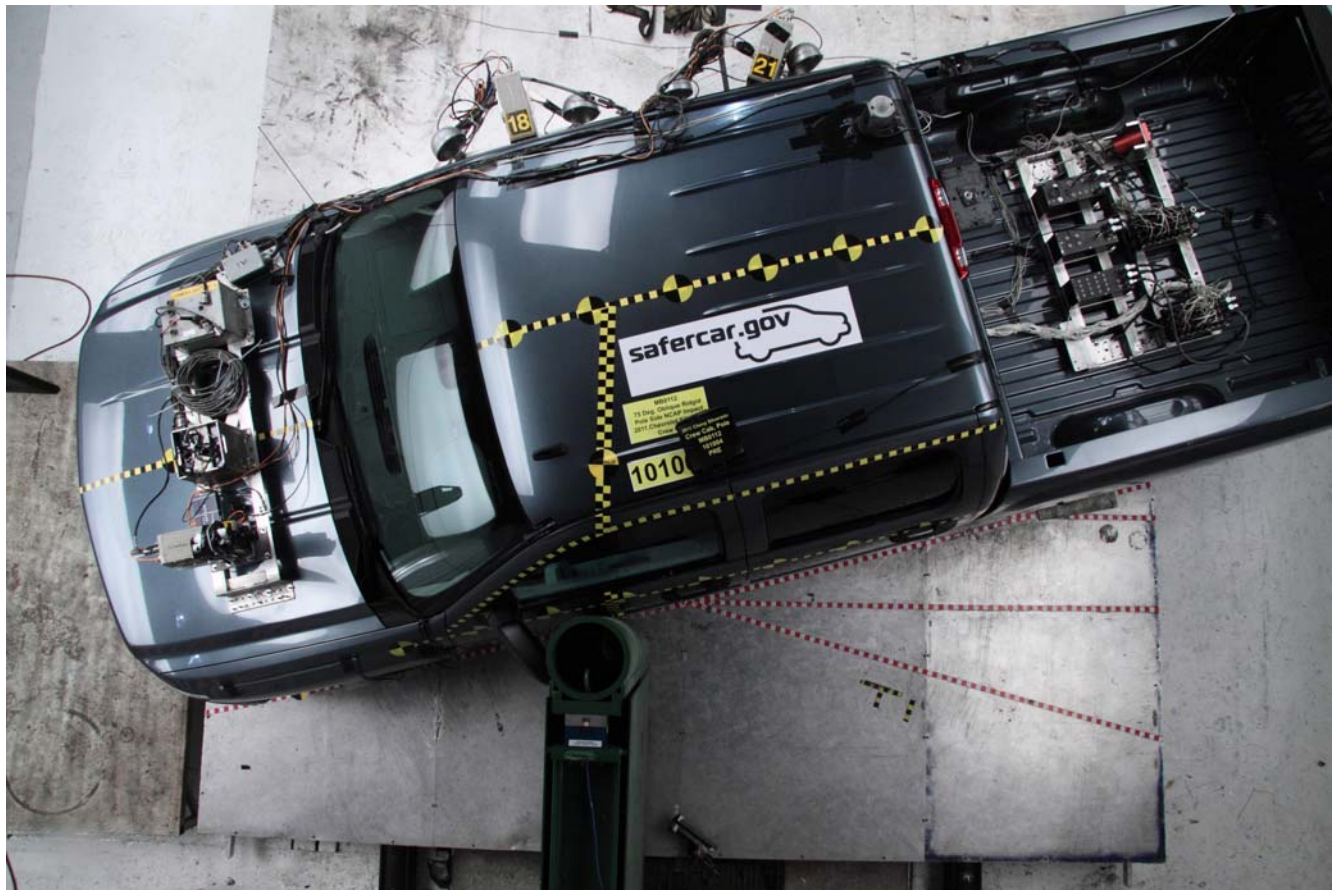
No. 012 – Post-Test Rear View of Test Vehicle



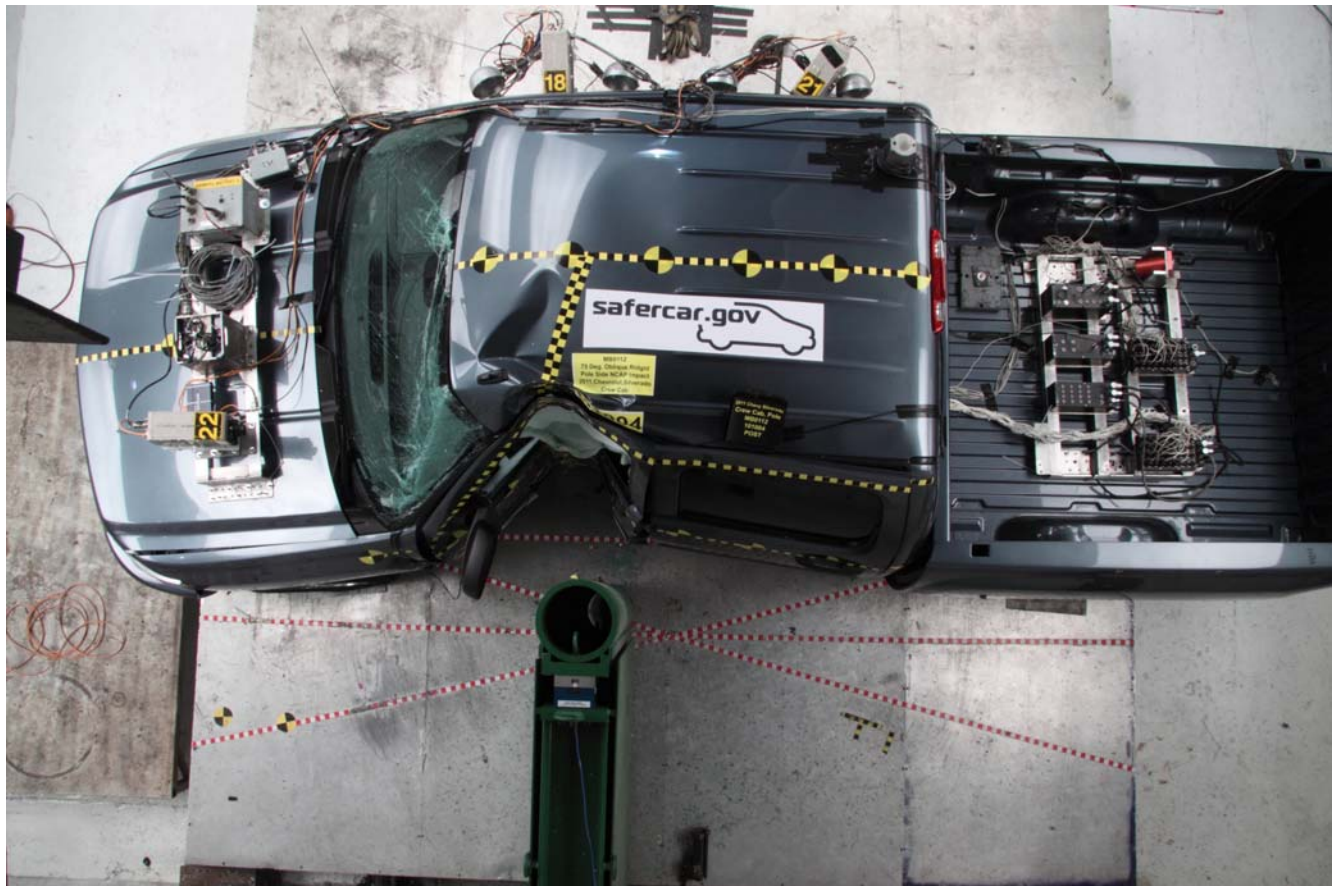
No. 013 – Pre-Test Right Side View of Test Vehicle



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



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



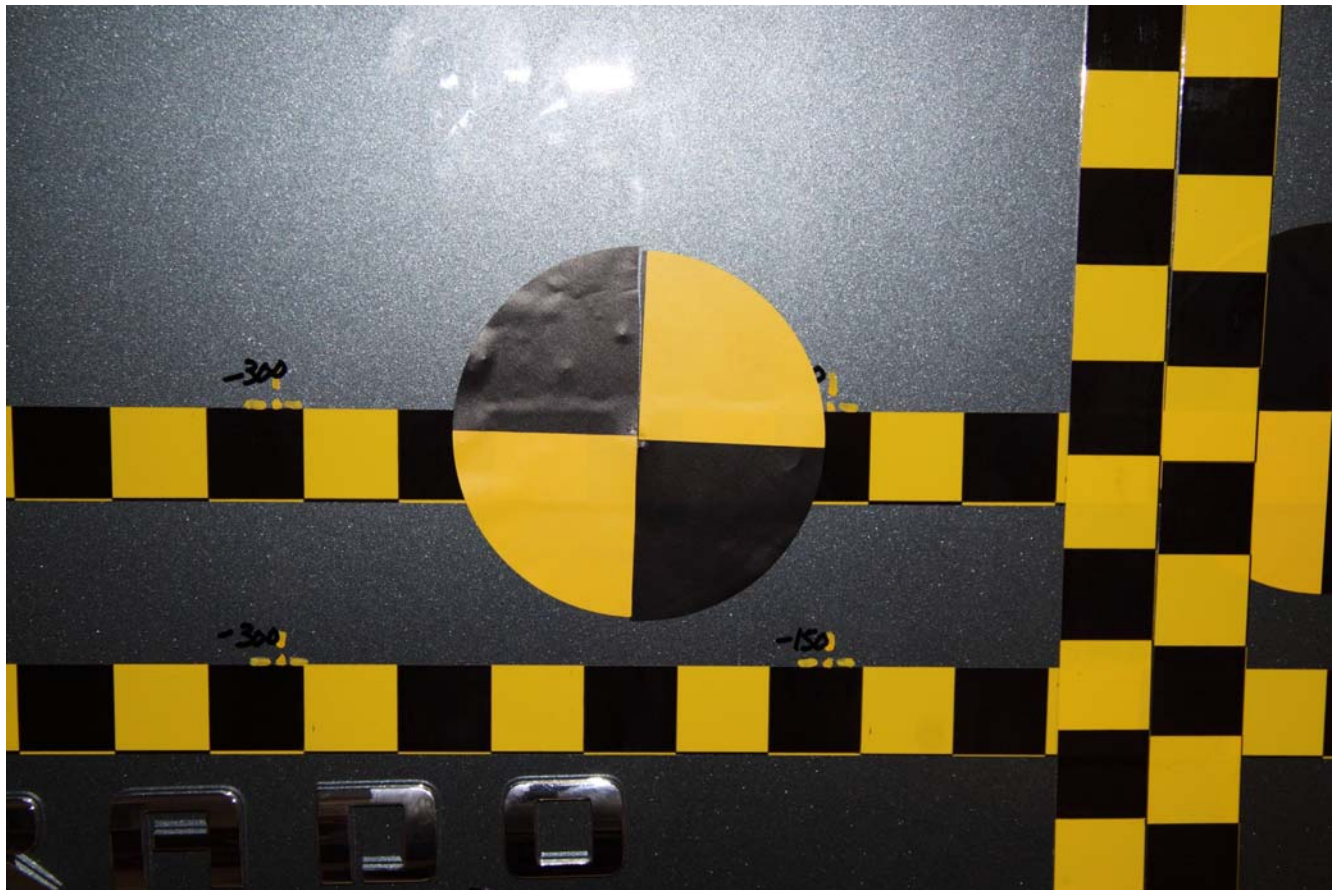
No. 016 – Post-Test Overhead View of Test Vehicle and Pole



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



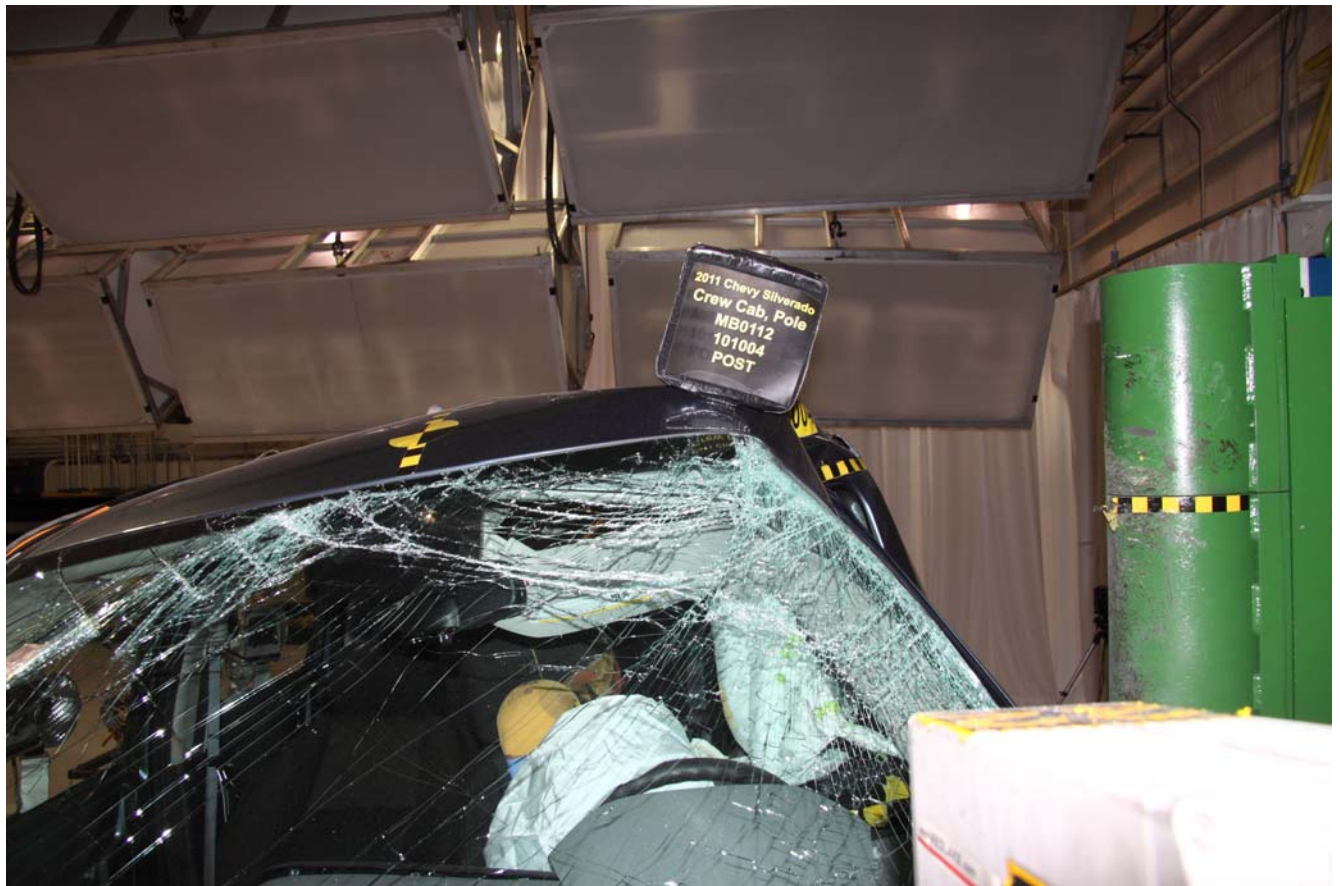
No. 019 – Pre-Test Close-Up View of Impact Point Target



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



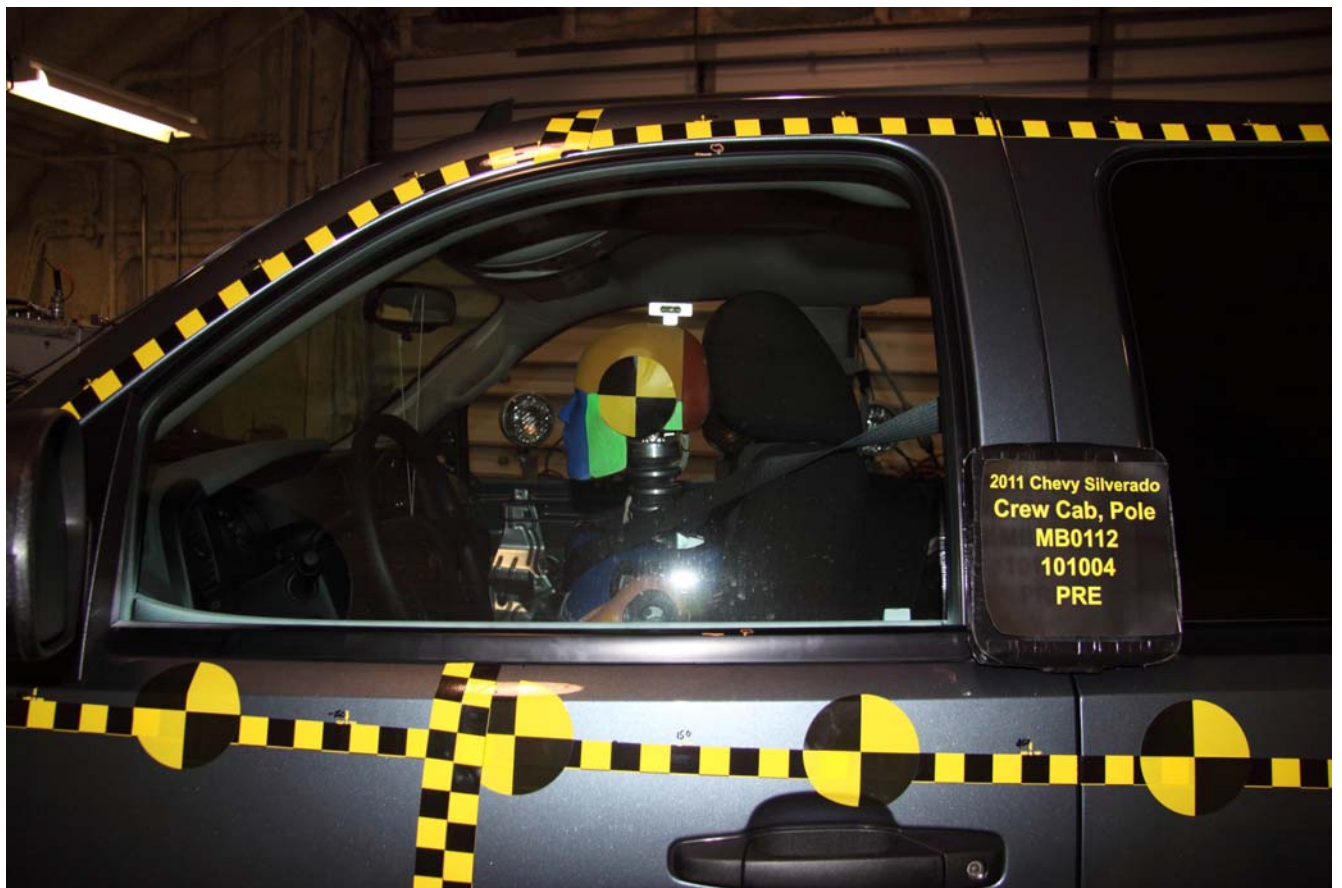
No. 021 – Pre-Test Front Close-Up View of Dummy



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



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



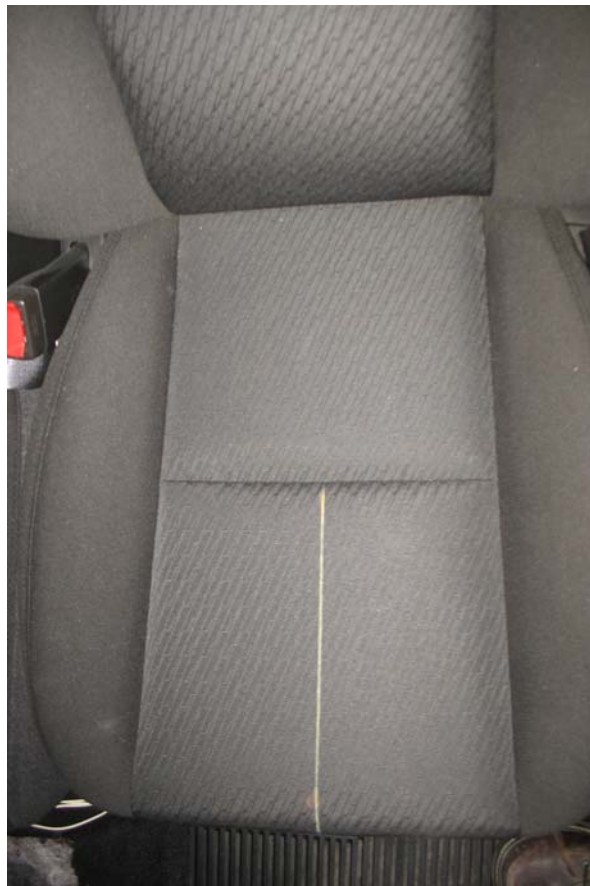
No. 025 – Post-Test Left Side View of Dummy Shoulder and Driver Door Top View



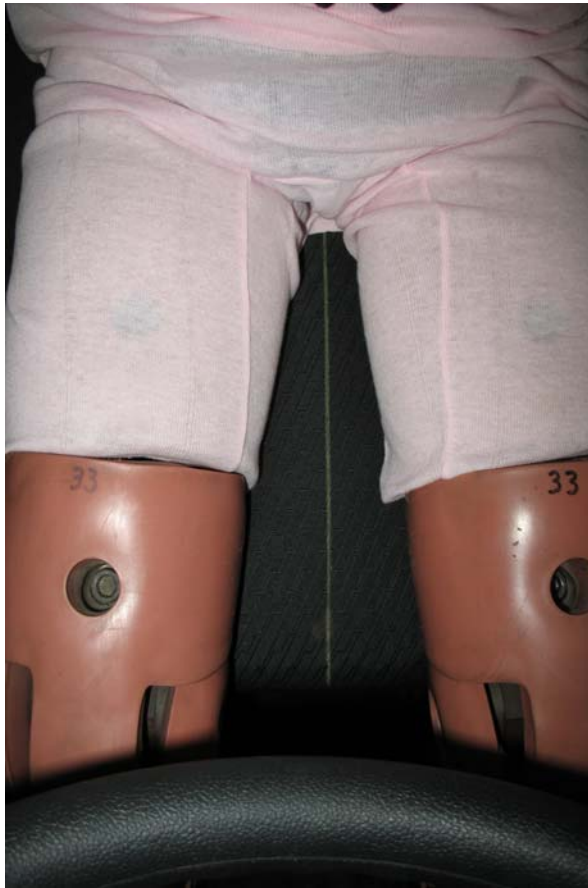
No. 026 – Pre-Test Frontal View of Seat Back Prior to Dummy Positioning



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



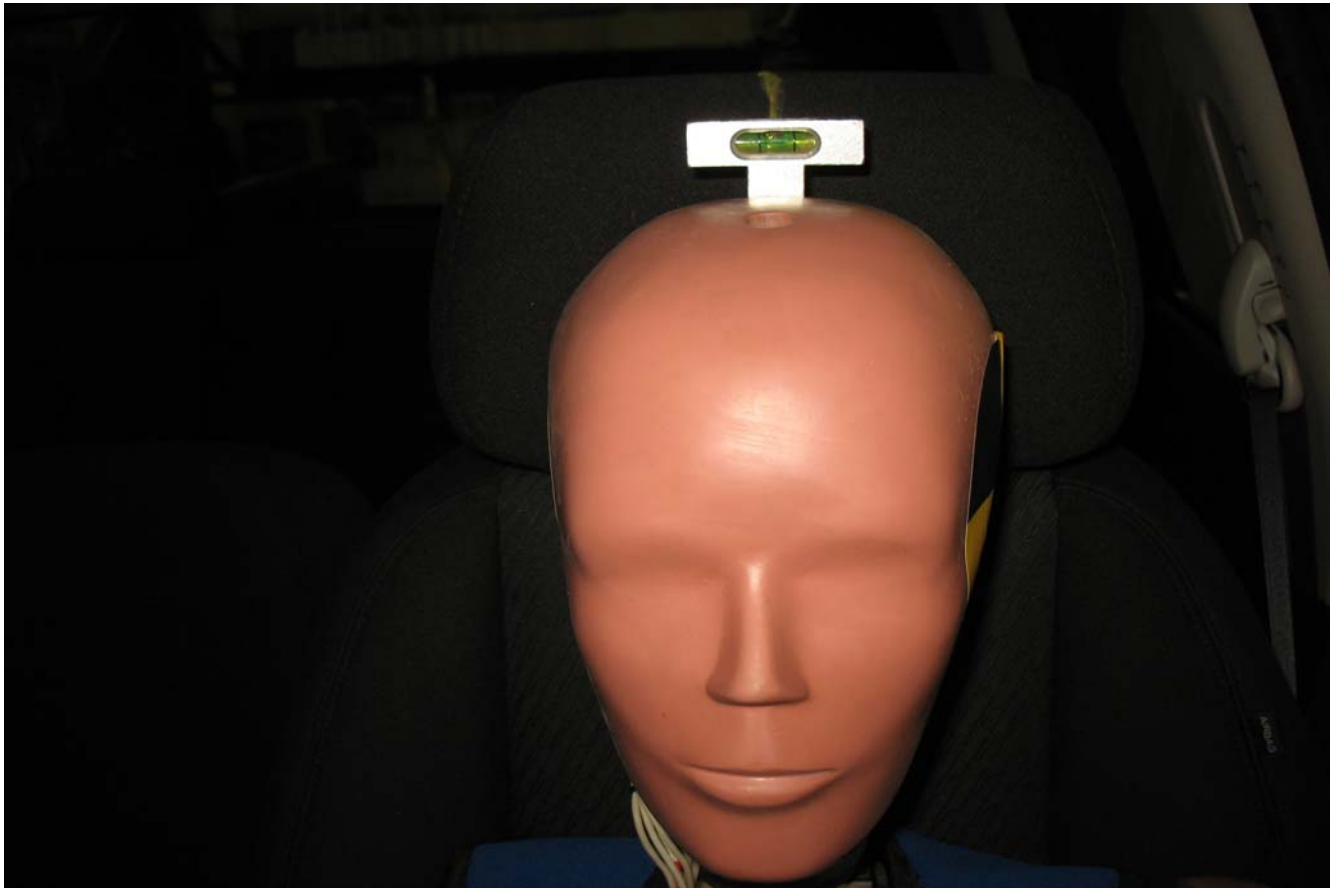
No. 028 – Pre-Test Frontal View of Seat Pan Prior to Dummy Positioning



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



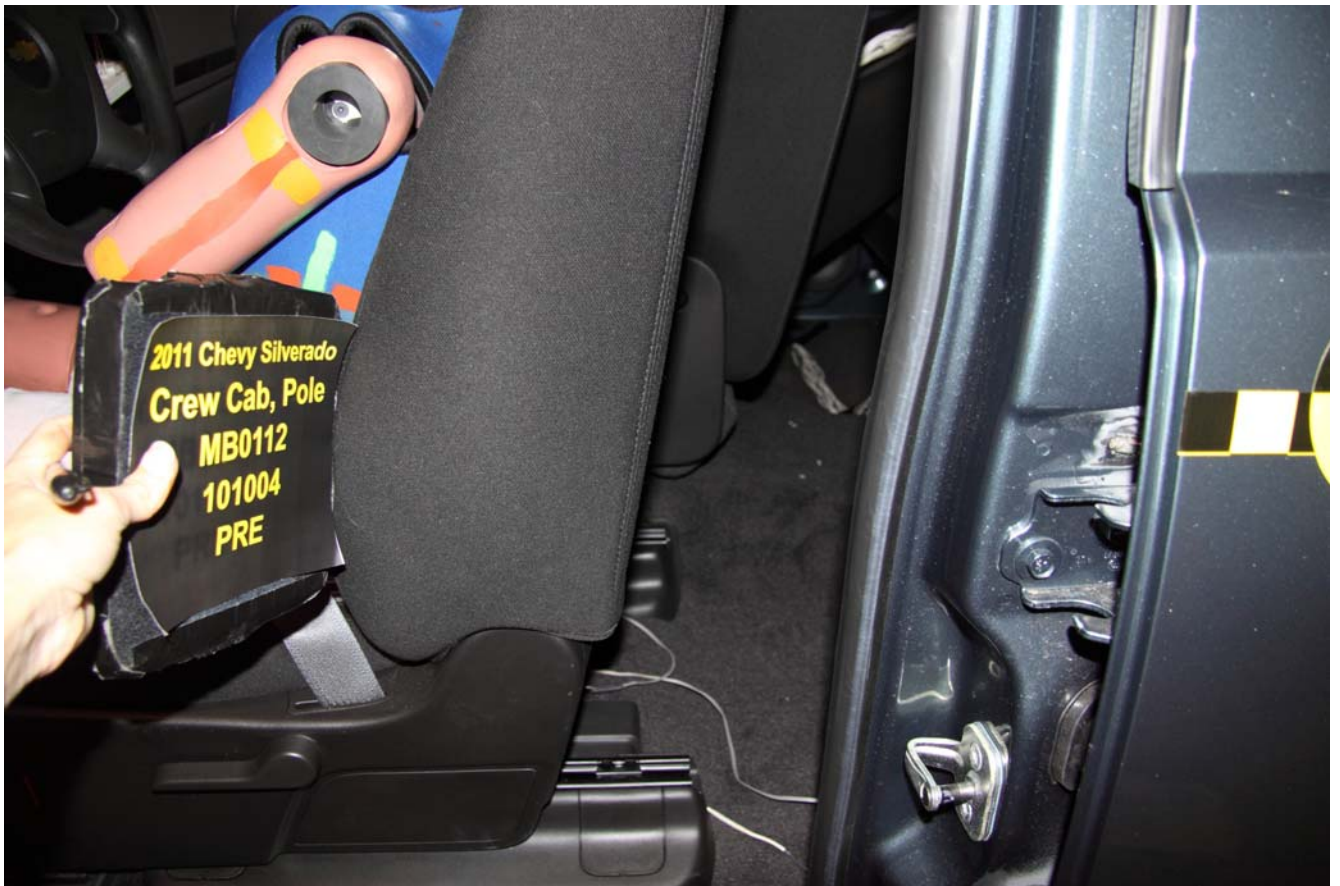
No. 035 – Pre-Test View of Parking Brake



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

Photo Not Available

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



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



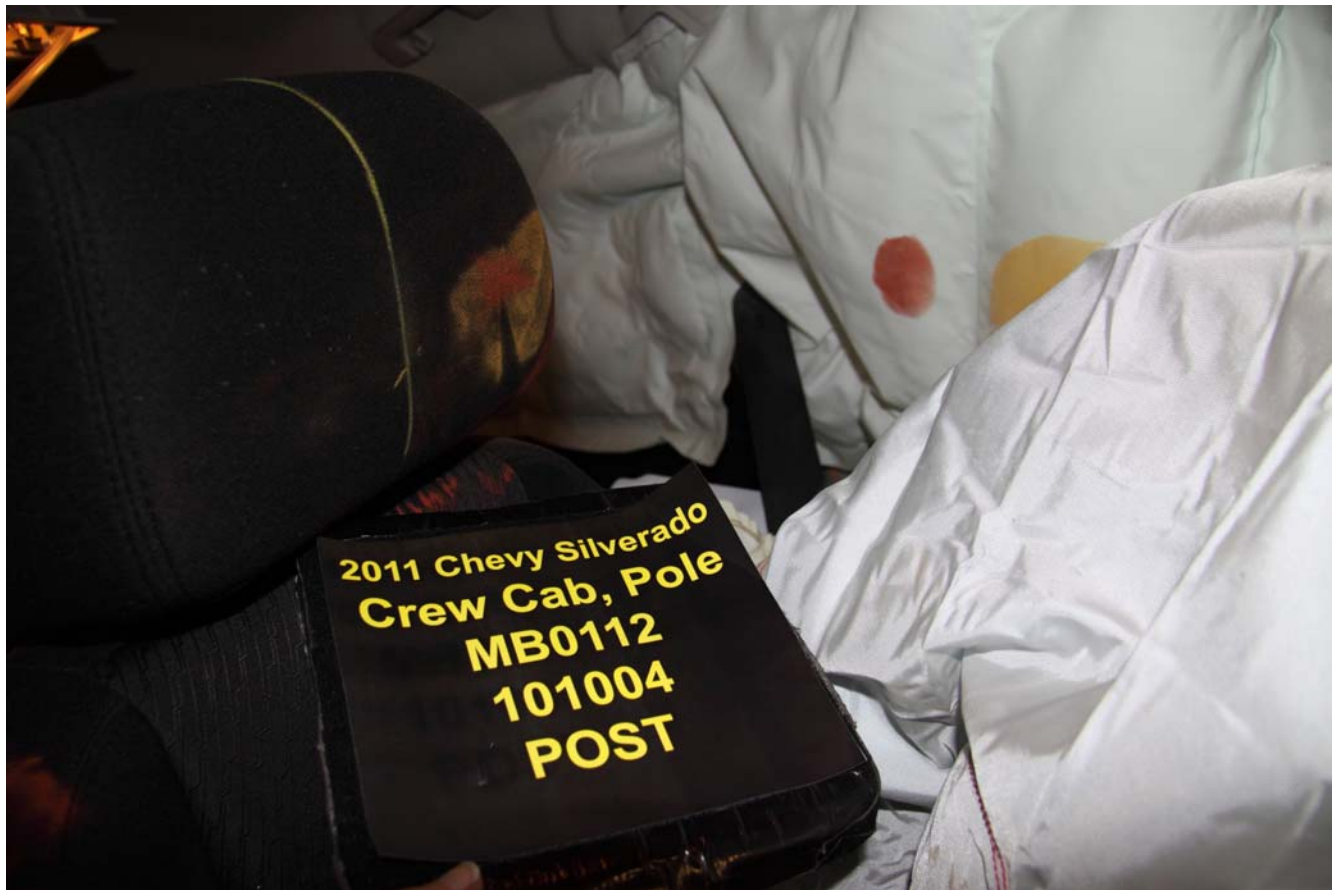
No. 042 – Post-Test Right Side View of Dummy and Front Seat Occupant Compartment



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



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



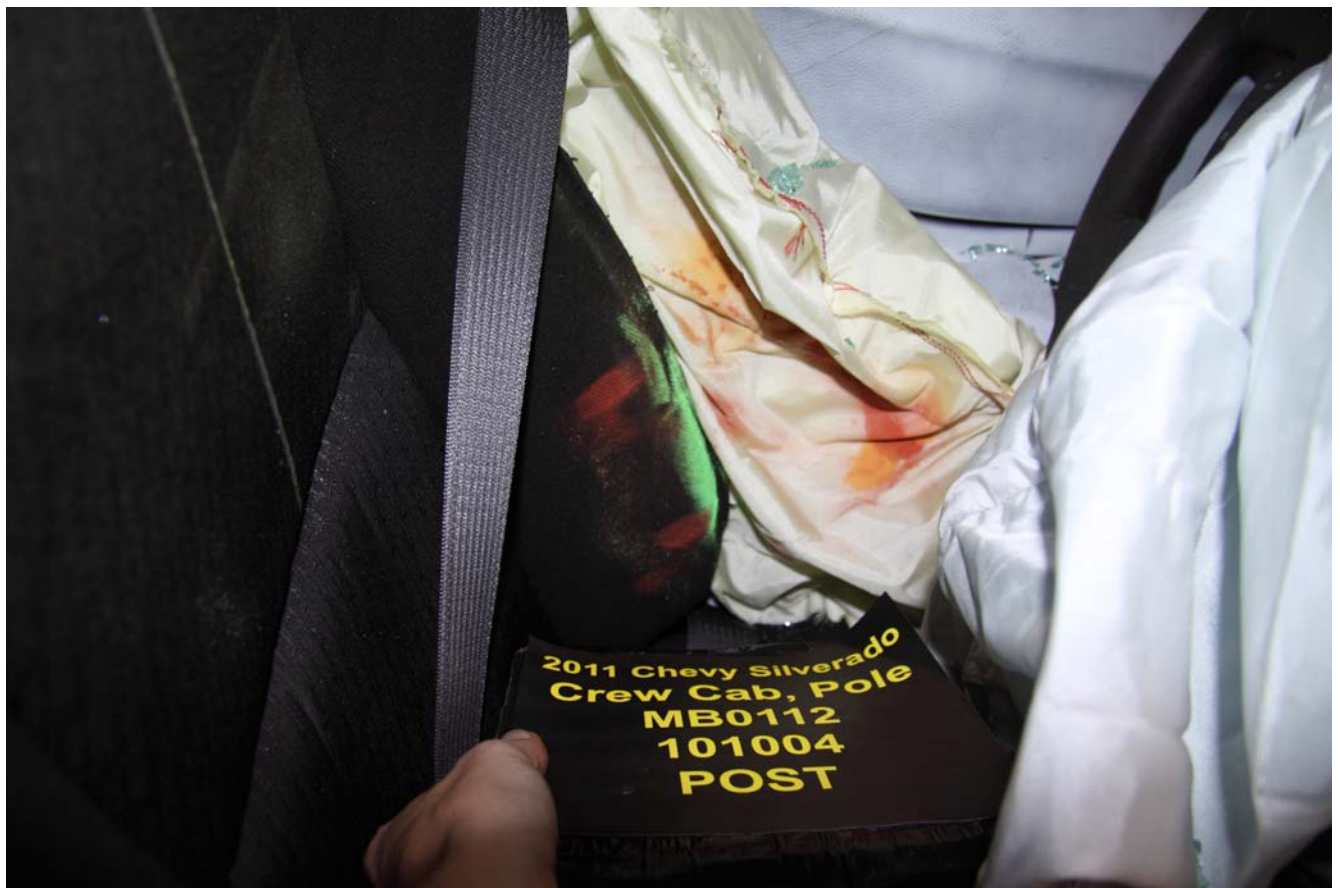
No. 045 – Post-Test Dummy Close-Up Head Contact with Vehicle Interior View



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



No. 050 – Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View



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



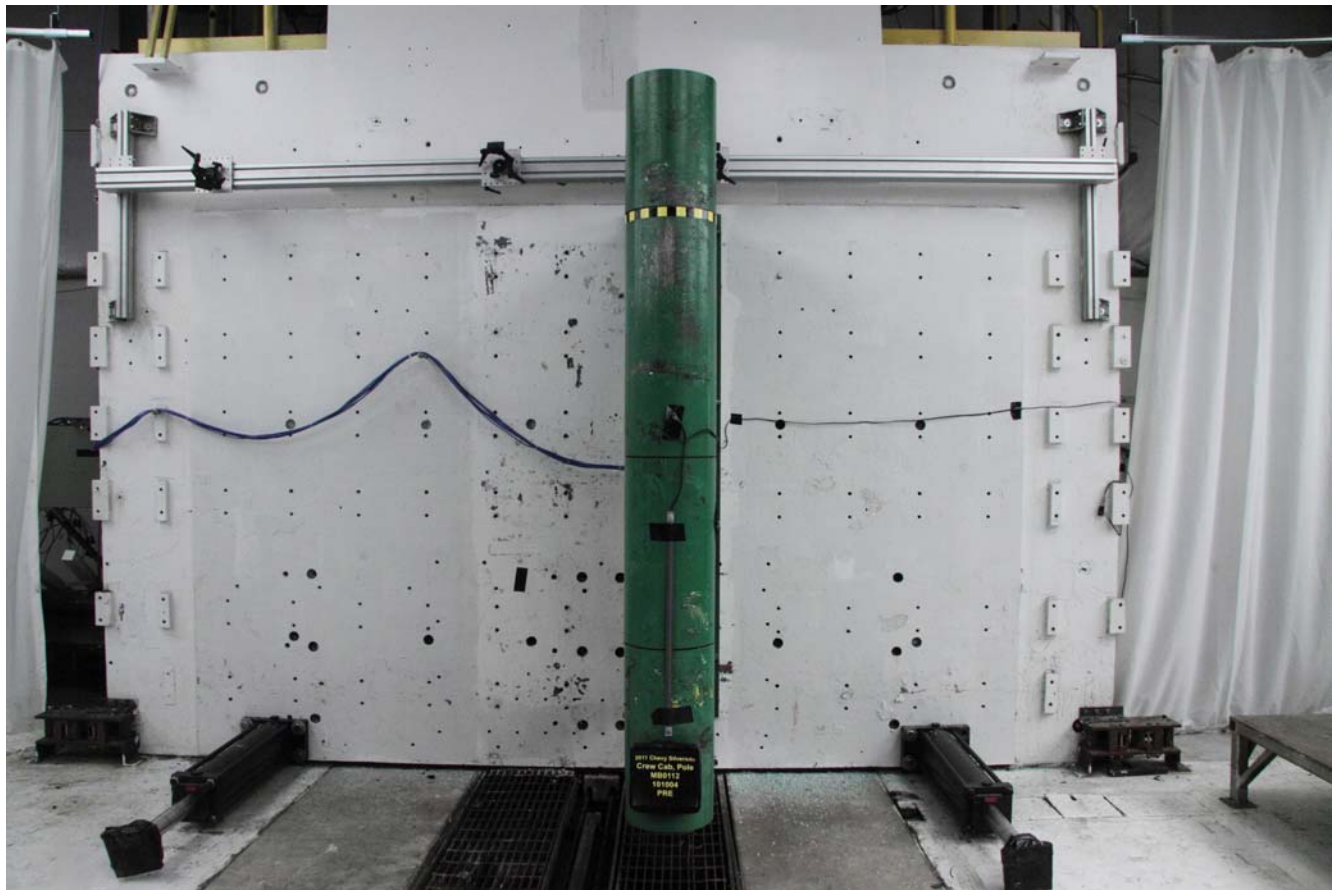
No. 052 – Post-Test View of Fuel Filler Cap or Fuel Filler Neck



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. 059 – Pre-Test Ballast View

Intentionally Left Blank



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



CHEVROLET

**2011 SILVERADO 1500 2WD CREW
CAB LS**

**EXTERIOR: BLUE GRANITE METALLIC
INTERIOR: DARK TITANIUM**

**VORTEC 4.8L V8 SFI ENGINE
4-SPD AUTOMATIC TRANSMISSION**

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STANDARD EQUIPMENT

THESE FEATURES ARE INCLUDED AT NO EXTRA CHARGE IN THE STANDARD VEHICLE PRICE. SHOW.

5 YEAR / 100,000 MILE
POWERTRAIN LIMITED WARRANTY
SEE DEALER FOR DETAILS

MECHANICAL

- VORTEC 4.8L V8
- 4-SPEED AUTO TRANSMISSION
- COIL-OVER-SHOCK FRONT SUSP
- MULTI-LEAF REAR SPRING SUSP
- 283 SMOOTH RIDE SUSPENSION
- BOXED FRAME DESIGN W/ HYDROFORMED TECHNOLOGY
- 145 AMP ALTERNATOR
- PWR RACK AND PINION STEERING

SAFETY & SECURITY

- 4-WHEEL ABS W/ DYNAMIC RAR PROPORTIONING
- DUAL STAGE DRIVER/RT FRT PASS AIR BAGS W/PASS SENSING SYSTEM
- HEAD CURTAIN SIDE AIRBAGS W/

ROLLER PROTECTION

- SEAT-MOUNTED SIDE-IMPACT AIRBAGS DRIVER & RIGHT-FRONT PASS
- THEFT DETERRENT SYSTEM
- REMOTE KEYLESS ENTRY
- DAYTIME RUNNING LAMPS
- AUTO HEADLAMPS W/FLASH-TO-PASS
- STABILITRAK-STABILITY CONTROL
- 6 MTHS ONSTAR DIRECTIONS & CONNECTIONS WITH AUTOMATIC CRASH RESPONSE AND TURN-BY-TURN NAVIGATION (ASK DEALER ABOUT GEOGRAPHIC COVERAGE)
- TIRE PRESSURE MONITOR SYSTEM (DOES NOT APPLY TO SPARE TIRE)

EXTERIOR

- CHROME REAR BUMPERS
- 17" CHROME-Styled STEEL WHEELS
- 17" FULL-Size SPARE
- ALL-SEASON TIRES
- DUAL PWR HEATED OSRV MIRRORS
- BODYSIDE MOLDINGS

- CHROME SURROUND GRILLE
- CARGO BOX ILLUMINATION
- SUN-AR-RAY DEEP TINTED GLASS

INTERIOR

- AIR CONDITIONING
- POWER LOCKS AND WINDOWS
- 40/20/40 SPLIT BENCH FRNT SEAT
- 60/40 SPLIT REAR SEATING
- DUAL GLOVE BOX STORAGE
- AM/FM STEREO WITH CD PLAYER
- XM RADIO - SERVICE SUBSCRIPTION SOLD SEPARATELY BY SIRIUS / XM AFTER 3 MONTHS
- DRIVER INFO CENTER DISPLAY
- INTERMITTENT WIPERS
- 4-GAUGE CLUSTER W/TACHOMETER
- 12-VOLT AUX PWR OUTLET
- TILT STEERING WHEEL
- CRUISE CONTROL
- CARPETED FLOOR COVERING WITH VINYL MATS

OTHER

- BATTERY RUN DOWN PROTECTION
- OIL LIFE MONITORING SYSTEM
- 24 HOUR ROADSIDE ASSISTANCE

OPTIONS & PRICING

MANUFACTURER'S SUGGESTED RETAIL PRICE
STANDARD VEHICLE PRICE \$30,360.00

OPTIONE INSTALLED BY THE MANUFACTURER (MAY REPLACE STANDARD EQUIPMENT SHOWN)

HD TRAILERING EQUIPMENT PKG: 770.00
•LOCKING REAR DIFFERENTIAL
•HANDLING/TRAILERING SUSPENSION

GVW RATING - 6,800 LBS INC.
REAR AXLE 3.23 RATIO INC.

TOTAL OPTIONS \$770.00
TOTAL VEHICLE & OPTIONS \$31,130.00
DESTINATION CHARGE 995.00

TOTAL VEHICLE PRICE* \$32,125.00

EPA Fuel Economy Estimates

GASOLINE
CITY MPG

14

Expected range
for most drivers
11 to 17 MPG

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

**FLEXIBLE FUEL VEHICLE*
GASOLINE - ETHANOL(E85)**

Estimated
Annual Fuel Cost
\$2,438

based on 15,000 miles at
\$2.60 per gallon of GASOLINE

Combined GASOLINE
Fuel Economy
This Vehicle
16

10 22
All STANDARD PICKUP TRUCKS

GASOLINE
HIGHWAY MPG

19

Expected range
for most drivers
15 to 23 MPG

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

ACN

See the FREE Fuel Economy Guide at dealers or www.fueleconomy.gov

GOVERNMENT SAFETY RATINGS

Frontal Crash	Driver Passenger	Not Rated Not Rated
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.		
Side Crash	Front seat Rear seat	Not Rated Not Rated
Star ratings based on the risk of injury in a side impact.		
Rollover	★★★★	
Star ratings based on the risk of rollover in a single vehicle crash.		
Star rating range from 1 to 5 stars (★★★★★), with 5 being the highest. Source: National Highway Traffic Safety Administration (NHTSA).		

www.safercar.gov or 1-888-327-4236

PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS CARLINE:
U.S./CANADIAN PARTS CONTENT: 61%
MAJOR SOURCES OF FOREIGN PARTS
CONTENT: MEXICO 34%

NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL
ASSEMBLY, DISTRIBUTION, OR OTHER NON-PARTS COSTS.

FOR THIS VEHICLE:
FINAL ASSEMBLY POINT:
SILAO, GJ MEXICO
COUNTRY OF ORIGIN:
ENGINE: UNITED STATES
TRANSMISSION: MEXICO

This label has been applied
pursuant to Federal law. Do not
remove prior to delivery to the
ultimate purchaser. *Including
Manufacturer's Recommended
Tire Pressure. Does not
include dealer-installed options
and accessories not listed above.
Local taxes or license fees.

© 2009 General Motors LLC
SALES PRICE: 2011-120110008

ORDER NO: 20110008 SALES CODE: E

SALES MODEL CODE: DC10043

DEALER NO: 10001

FINAL ASSEMBLY:

PLANT: GJ - MEXICO

VIN: 3GCP0REAB8G100504

DEALER TO WHOM DELIVERED:

PADDOCK CHEVROLET, INC.

3232 DELAWARE AVE

RENNORE, NY 14217-1798



UL
2GA2885699

No. 067 – Monroney Label

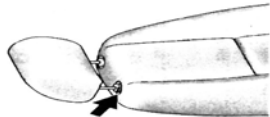
3-2 Seats and Restraints

Head Restraints

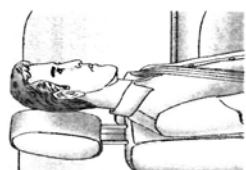
The front seats have adjustable
head restraints in the outboard
seating positions.



WARNING
With head restraints that are not
installed and adjusted properly,
there is a greater chance that
occupants will suffer a neck/
spinal injury in a crash. Do not
drive until the head restraints for
all occupants are installed and
adjusted properly.



Pull the head restraint up to
raise it. To lower the head restraint,
press the button, located on the
top of the seatback, and push the
restraint down.
Push down on the head restraint
after the button is released to make
sure that it is locked in place.
The head restraints are not
designed to be removed.
The rear seat has headrests that
can be adjusted up and down.



Adjust the head restraint so that the
top of the restraint is at the same
height as the top of the occupant's
head. This position reduces the
chance of a neck injury in a crash.

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 Primary X-Axis Acceleration	B-4
B-1	Driver Head Primary Y-Axis Acceleration	B-4
B-1	Driver Head Primary Z-Axis Acceleration	B-4
B-1	Driver Head Primary Resultant Acceleration	B-4
B-2	Driver Lower Spine X-Axis Acceleration	B-5
B-2	Driver Lower Spine Y-Axis Acceleration	B-5
B-2	Driver Lower Spine Z-Axis Acceleration	B-5
B-2	Driver Lower Spine Resultant Acceleration	B-5
B-3	Driver Iliac Wing Y-Axis Force	B-6
B-3	Driver Acetabulum Y-Axis Force	B-6
B-3	Driver Total Pelvis Y-Axis Force	B-6

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.

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

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 Airbag Timing
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

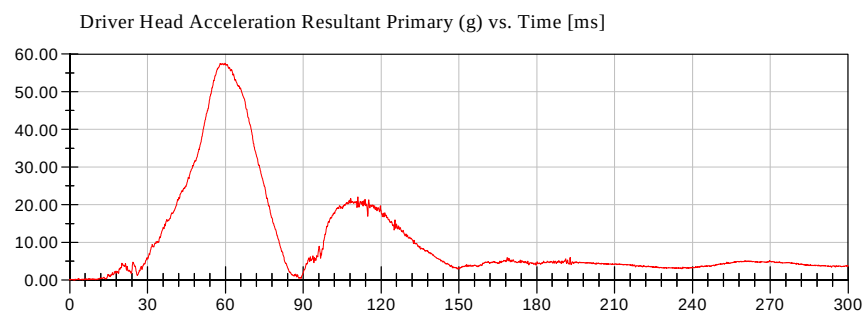
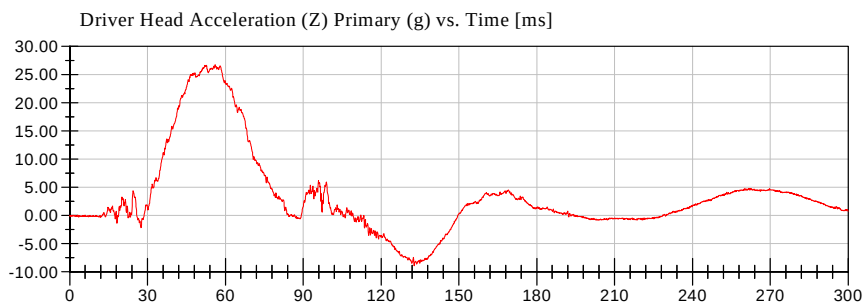
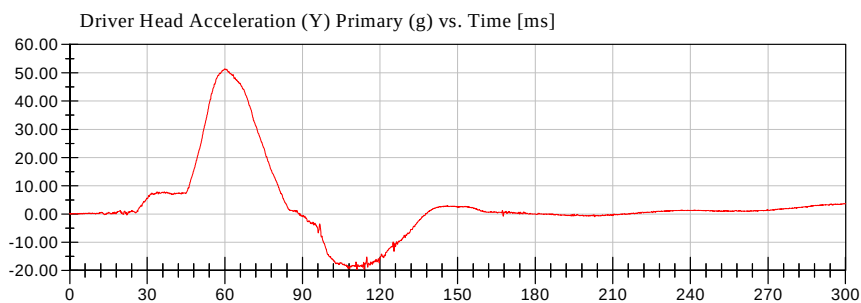
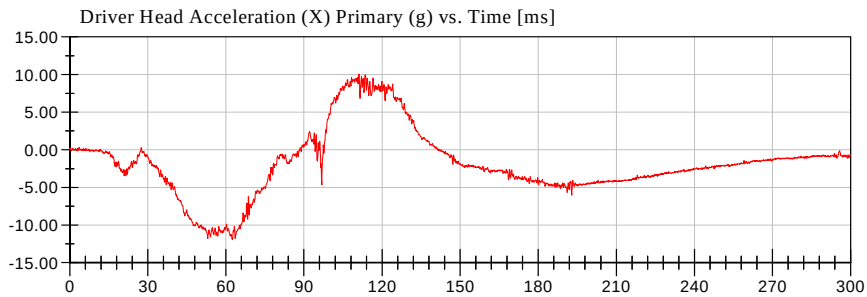
NHTSA

Test Lab: CTF

Test Number: 101004 (MB0112)

Position #1 SID II's Dummy (33)

Test Date: 10/04/2010



NHTSA

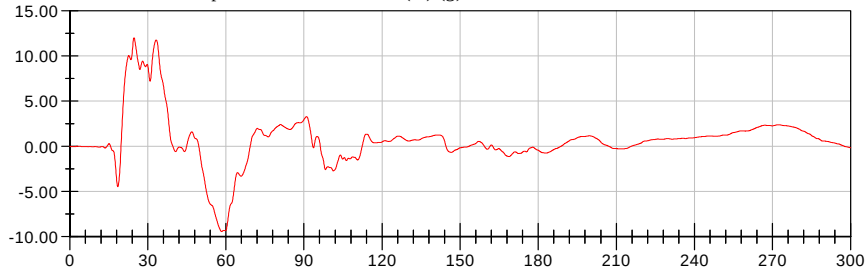
Test Lab: CTF

Test Number: 101004 (MB0112)

Position #1 SID II's Dummy (33)

Test Date: 10/04/2010

Driver Lower Spine T12 Acceleration (X) (g) vs. Time [ms]



<Max>

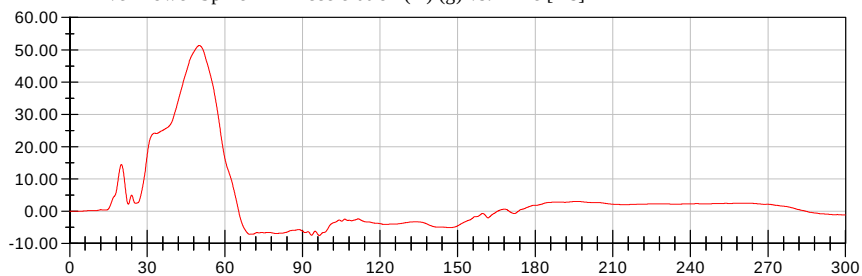
12.04 g at 24.72 ms

<Min>

-9.42 g at 58.40 ms

CFC_180

Driver Lower Spine T12 Acceleration (Y) (g) vs. Time [ms]



<Max>

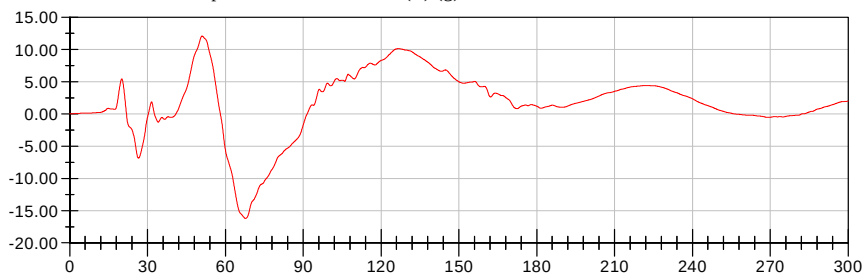
51.33 g at 50.08 ms

<Min>

-7.58 g at 96.56 ms

CFC_180

Driver Lower Spine T12 Acceleration (Z) (g) vs. Time [ms]



<Max>

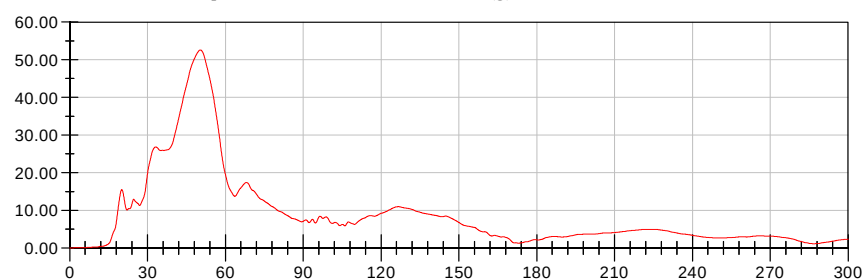
12.11 g at 50.96 ms

<Min>

-16.21 g at 67.76 ms

CFC_180

Driver Lower Spine T12 Resultant Acceleration (g) vs. Time [ms]



<Max>

52.60 g at 50.32 ms

<Min>

0.04 g at 0.64 ms

CFC_180



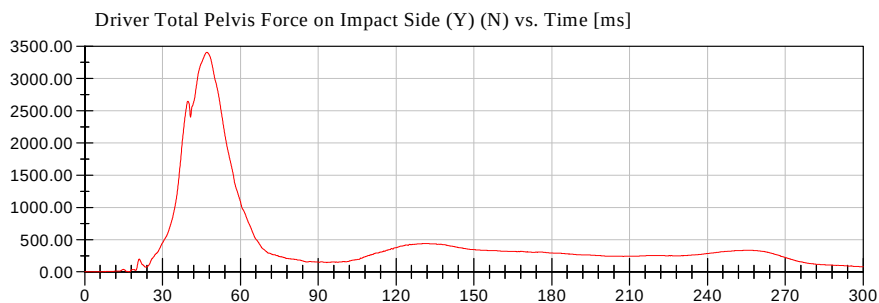
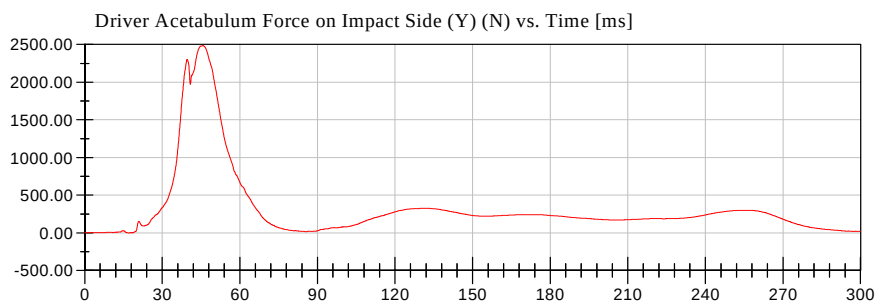
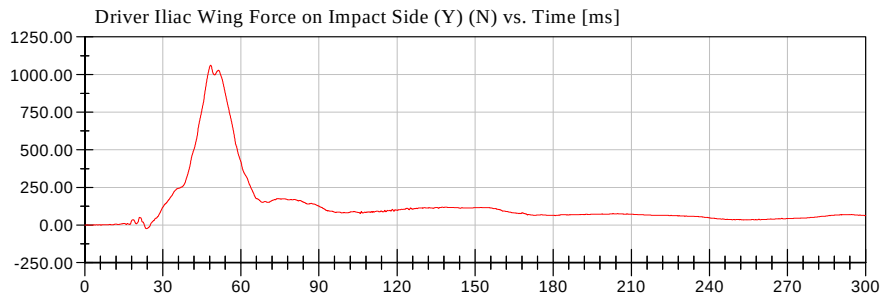
NHTSA

Test Lab: CTF

Test Number: 101004 (MB0112)

Position #1 SID IIs Dummy (33)

Test Date: 10/04/2010



APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Pre-Test Dummy Calibration

S/N: 033

Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 4-1

Test Date: 9/27/2010

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	56 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	136.1 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-3.9 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	Yes	Yes	Yes

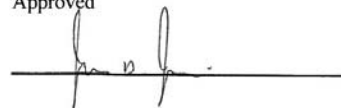
Test meets specifications.

Comments:

Technician



Approved



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

09.27.2010 13:40:53 233

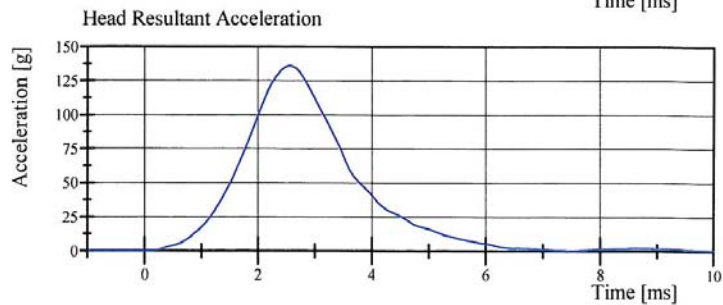
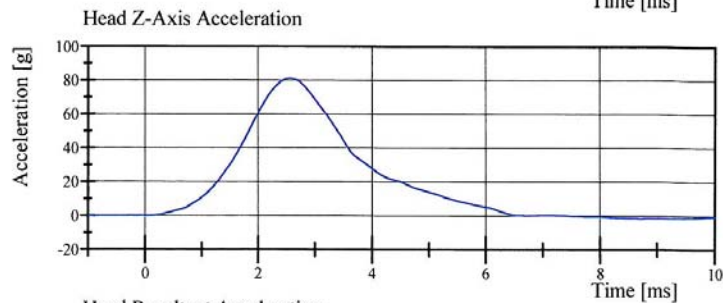
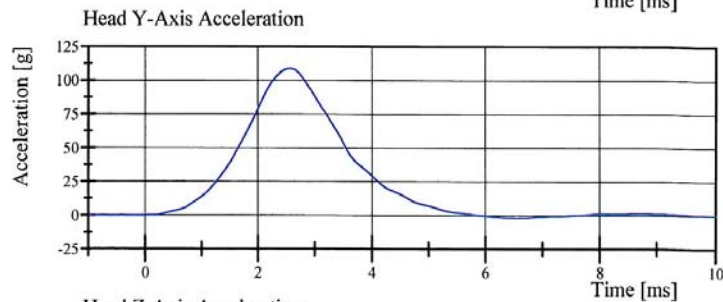
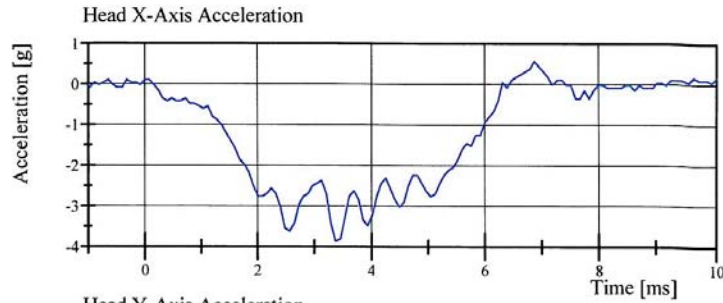


Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 4-1

Test Date: 9/27/2010



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

09.27.2010 13:41:08.233



Transportation Research Center Inc.

Left Lateral Neck

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 4-2

Test Date: 9/27/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	57 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.574 m/s	Yes
Pendulum Integrated Velocity			
Change at 10 ms	2.20 - 2.80 m/s	2.343 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.661 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	4.939 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.912 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.948 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-73.2 deg	Yes
Time of Peak	50 - 70 ms	58.3 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	43.8 N·m	Yes
Total Neck Occipital Condyles Moment			
Decay Time to 0 N·m	102 - 126 ms	107.2 ms	Yes

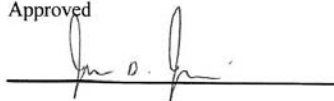
Test meets specifications.

Comments:

Technician



Approved



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

09.27.2010 15:55:12 653

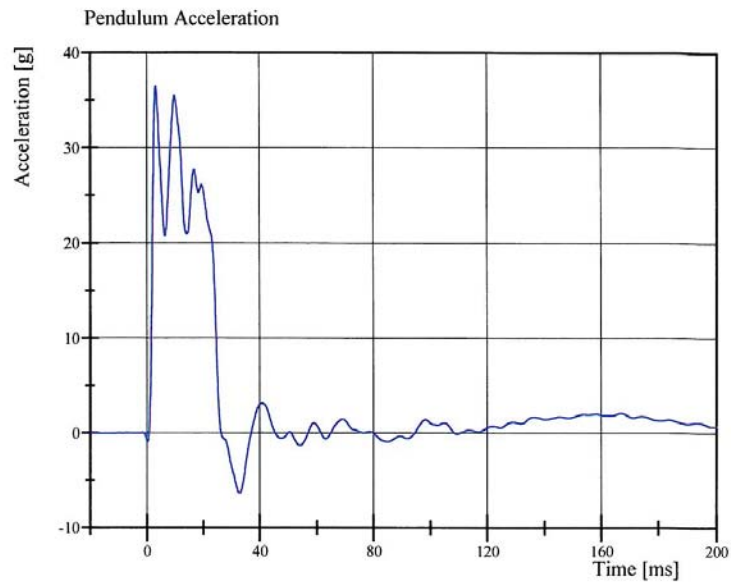


Transportation Research Center Inc.

Left Lateral Neck

SID II SBLD Final Rule 6-09 Serial No. 033 Certification No. 4-2

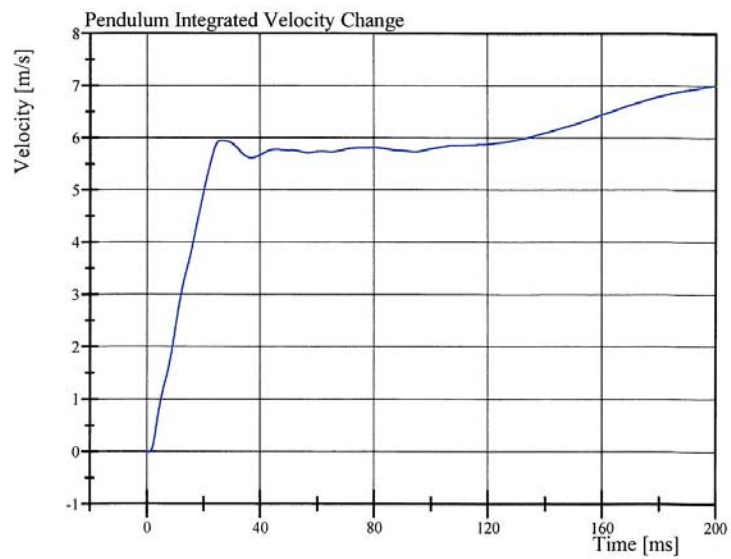
Test Date: 9/27/2010



Filter Class: CFC_180

Max: 36.5 gn at 3.2 ms

Min: -6.3 gn at 33.0 ms



Filter Class: CFC_180

Max: 7.0 m/s at 200.0 ms

Min: -0.0 m/s at 0.8 ms

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

09.27.2010 15:55:38 653

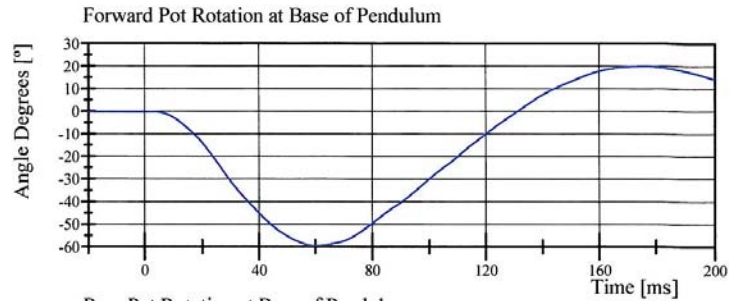


Transportation Research Center Inc.

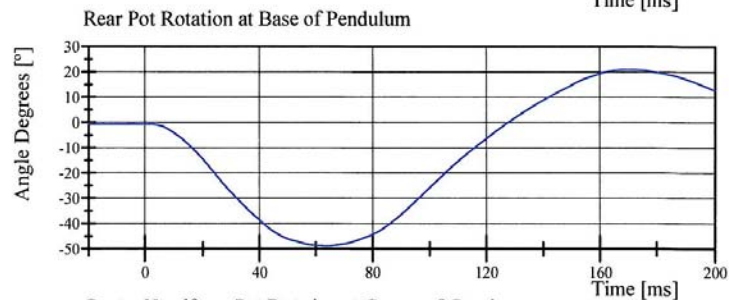
Left Lateral Neck

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 4-2

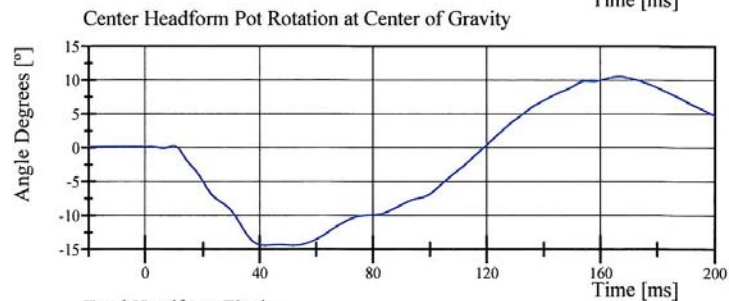
Test Date: 9/27/2010



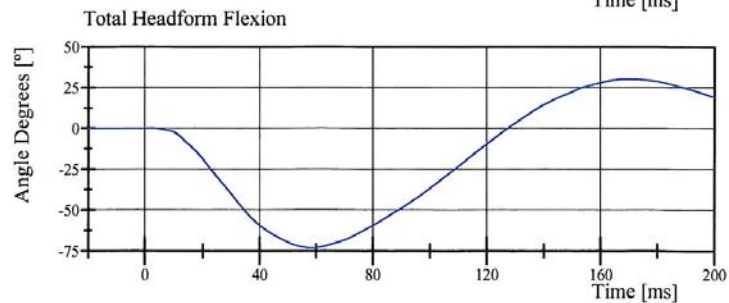
Filter Class: CFC_60
Max: 20.0 ° at 176.0 ms
Min: -59.5 ° at 60.2 ms



Filter Class: CFC_60
Max: 21.1 ° at 169.7 ms
Min: -48.8 ° at 64.2 ms



Filter Class: CFC_60
Max: 10.5 ° at 166.4 ms
Min: -14.4 ° at 41.8 ms



Filter Class: CFC_60
Max: 30.2 ° at 169.1 ms
Min: -73.2 ° at 58.3 ms

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

09.27.2010 15:55:39 653

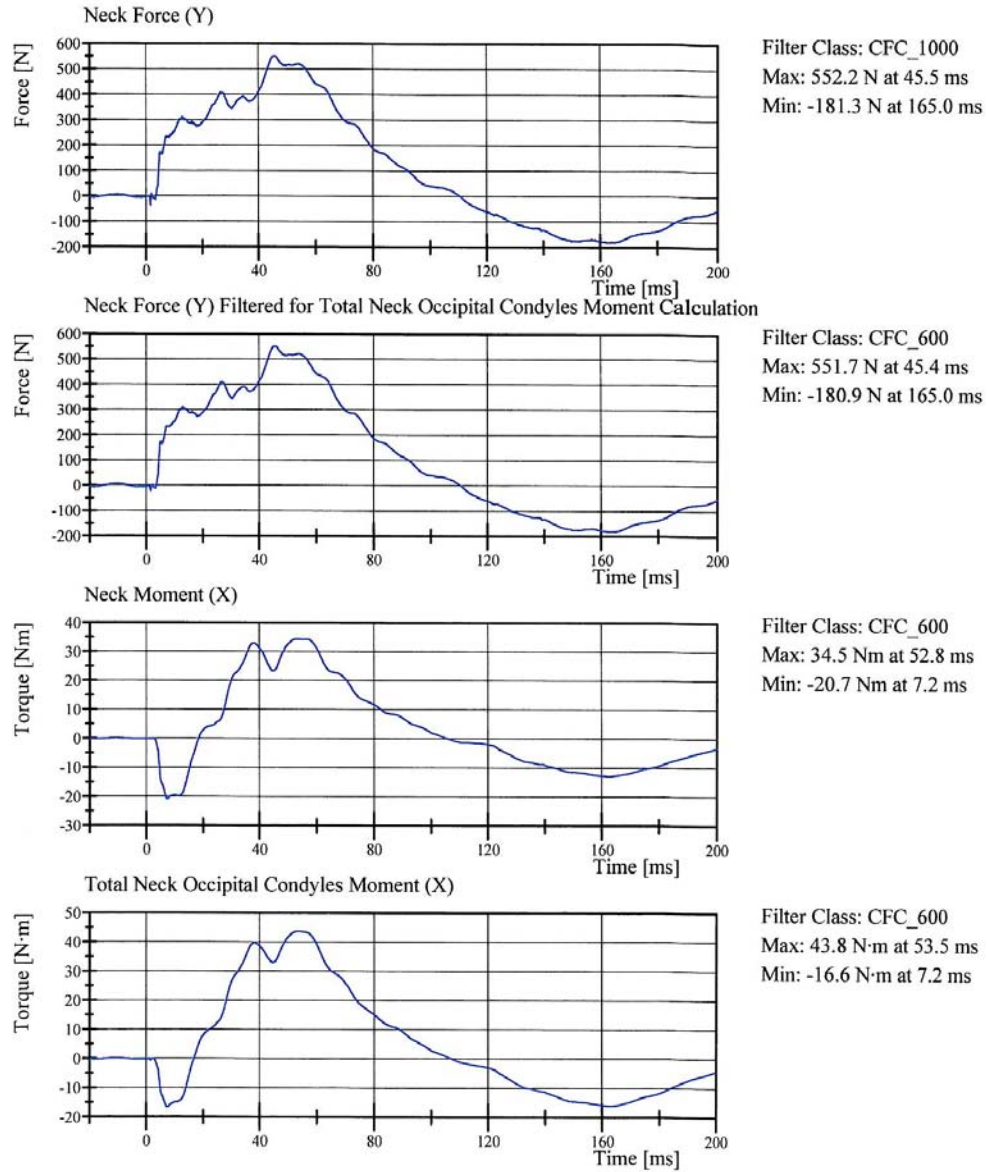


Transportation Research Center Inc.

Left Lateral Neck

SID II SBLD Final Rule 6-09 Serial No. 033 Certification No. 4-2

Test Date: 9/27/2010



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

09.27.2010 15:55:39 653



Transportation Research Center Inc.

Left Lateral Shoulder

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 4-1

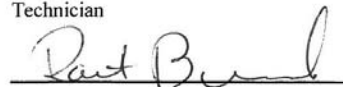
Test Date: 9/28/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	48 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.33 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-17.0 g	Yes
Shoulder Displacement	28 - 37 mm	30.7 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	21.5 g	Yes

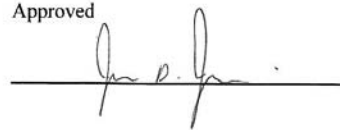
Test meets specifications.

Comments:

Technician



Approved



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

09.28.2010 08:02:25 826

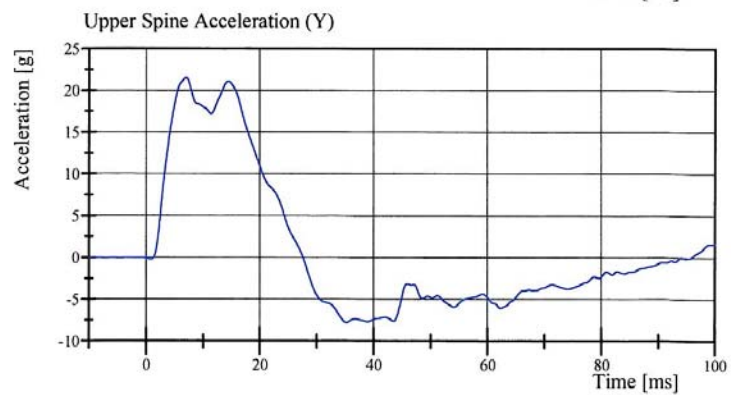
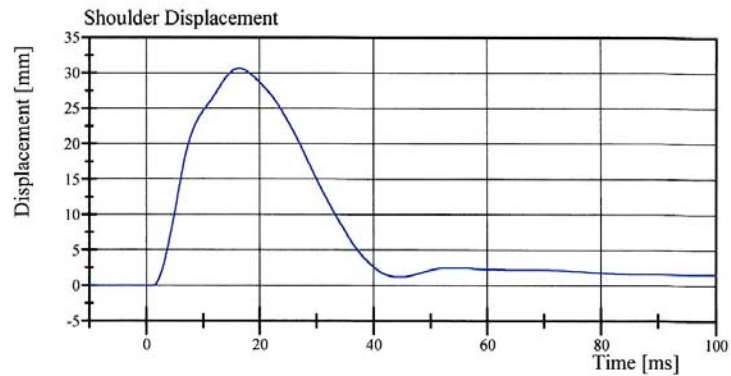
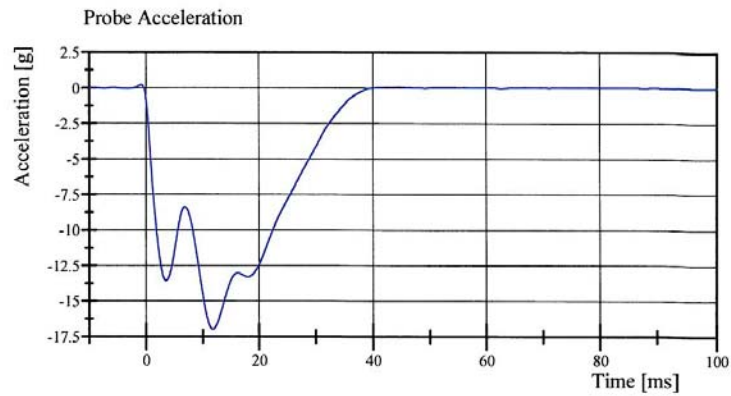


Transportation Research Center Inc.

Left Lateral Shoulder

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 4-1

Test Date: 9/28/2010



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

09.28.2010 08:02:42 826



Transportation Research Center Inc.

Left Lateral Thorax with Arm

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 4-1

Test Date: 9/28/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	22.0 °C	Yes
Relative Humidity	10 - 70 %	49 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.681 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-33.3 g	Yes
Shoulder Displacement	31 - 40 mm	34.8 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	25.7 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	30.4 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	33.0 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	40.1 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	35.7 g	Yes

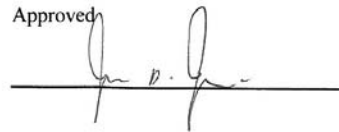
Test meets specifications.

Comments:

Technician



Approved



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

09.28.2010 08:54:01 614

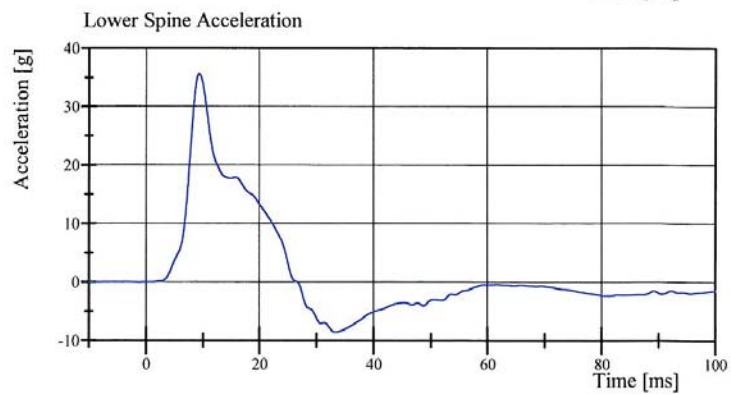
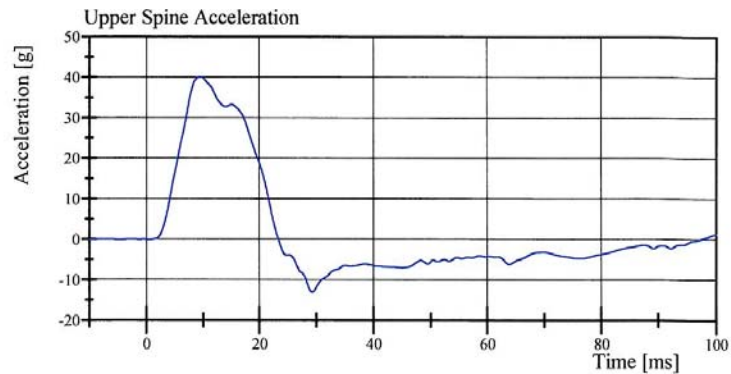
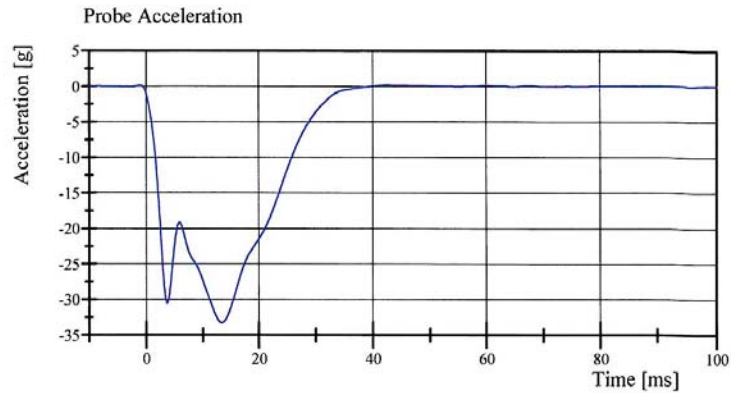


Transportation Research Center Inc.

Left Lateral Thorax with Arm

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 4-1

Test Date: 9/28/2010



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

09.28.2010 08:54:18 614

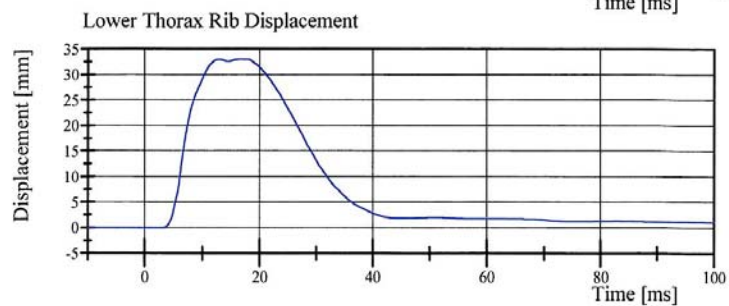
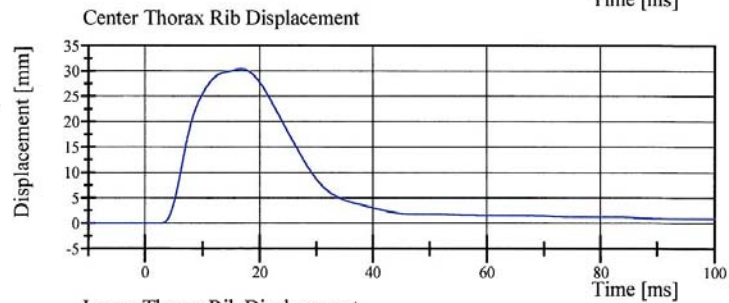
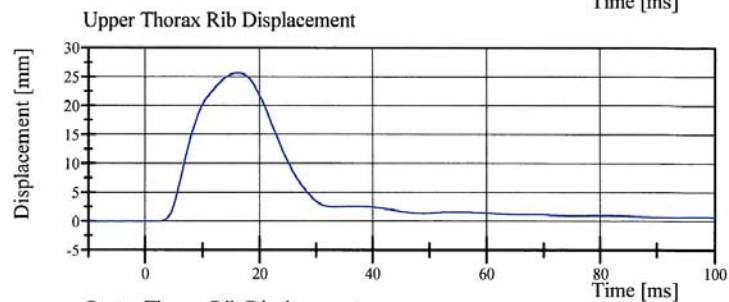
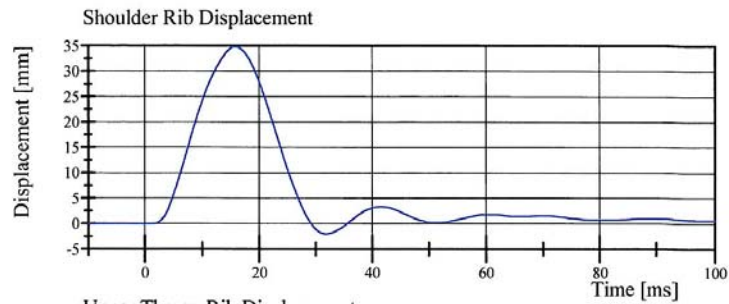


Transportation Research Center Inc.

Left Lateral Thorax with Arm

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 4-1

Test Date: 9/28/2010



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

09.28.2010 08:54:18 614



Transportation Research Center Inc.

Left Lateral Thorax without Arm

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 4-1

Test Date: 9/28/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	49 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.334 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-15.9 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	36.1 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	41.5 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	38.4 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	15.9 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	9.7 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.

09.28.2010 09:27:18 822

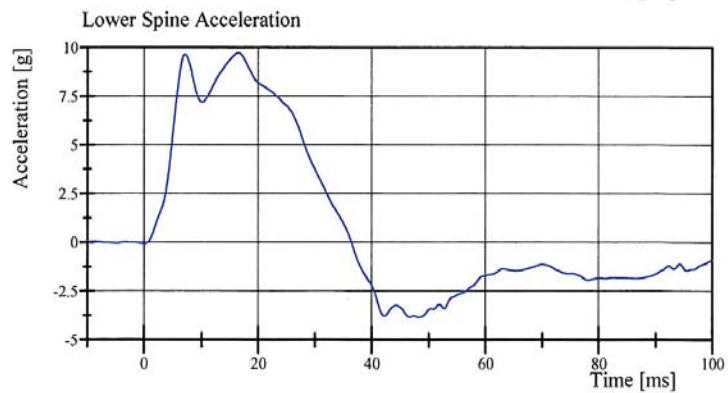
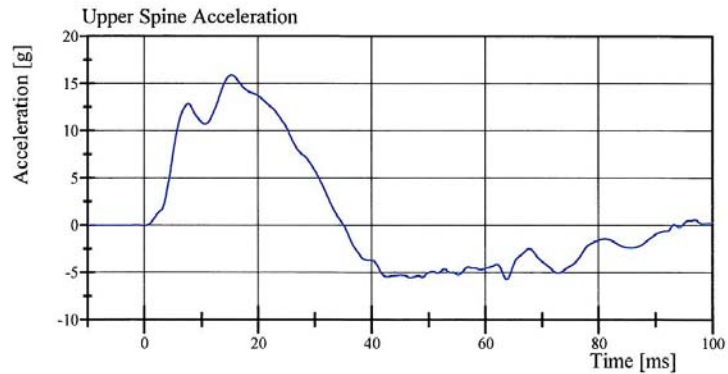
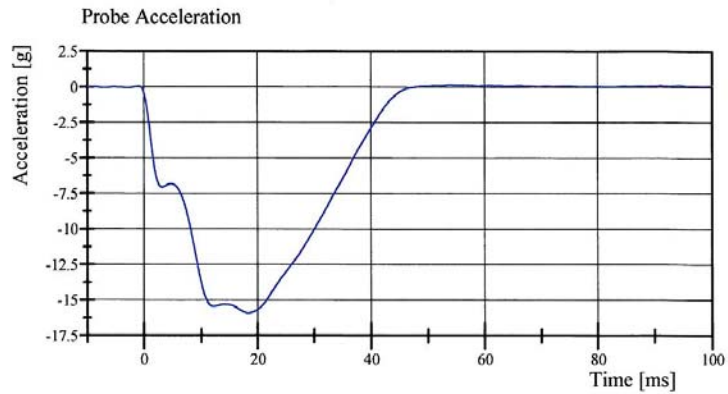


Transportation Research Center Inc.

Left Lateral Thorax without Arm

SID II SBLD Final Rule 6-09 Serial No. 033 Certification No. 4-1

Test Date: 9/28/2010



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

09.28.2010 09:27:27 822



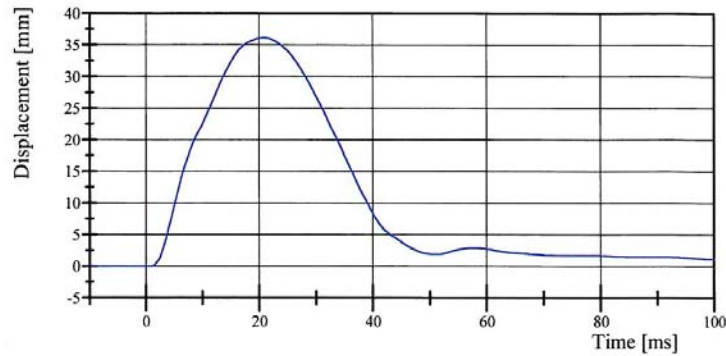
Transportation Research Center Inc.

Left Lateral Thorax without Arm

SID II SBLD Final Rule 6-09 Serial No. 033 Certification No. 4-1

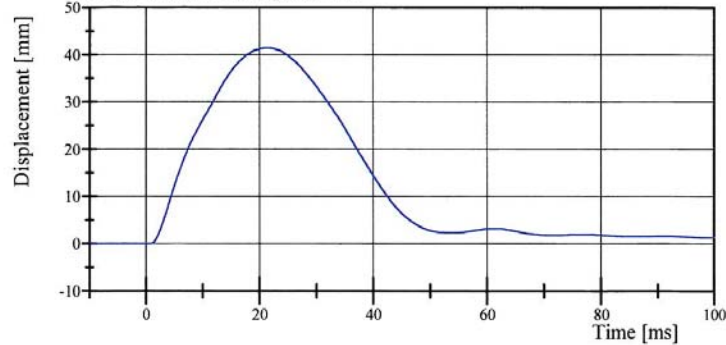
Test Date: 9/28/2010

Upper Thorax Rib Displacement



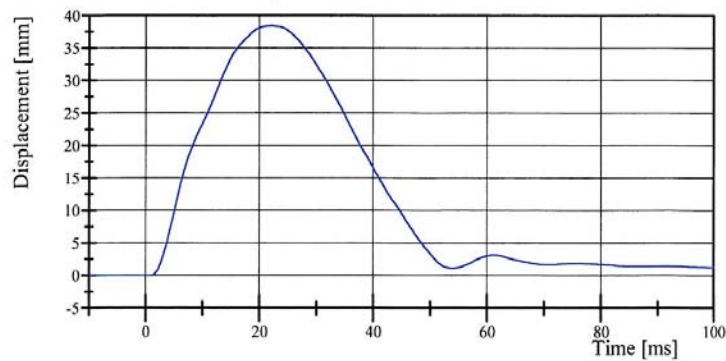
Filter Class: CFC_600
Max: 36.1 mm at 20.8 ms
Min: -0.0 mm at 0.8 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 41.5 mm at 21.3 ms
Min: -0.0 mm at 0.7 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 38.4 mm at 22.2 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.

09.28.2010 09:27:28 822



Transportation Research Center Inc.

Left Lateral Abdomen

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 4-1

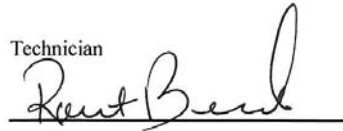
Test Date: 9/28/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	49 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.36 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-13.9 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	41.7 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	40.5 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	10.81 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.

09.28.2010 10:10:53 621

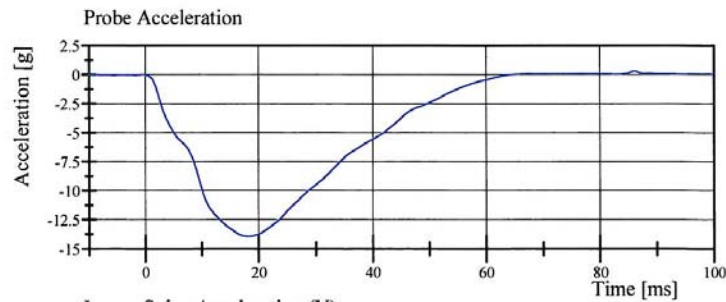


Transportation Research Center Inc.

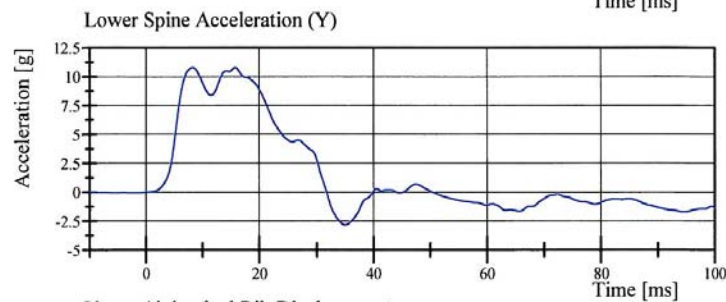
Left Lateral Abdomen

SID II SBLD Final Rule 6-09 Serial No. 033 Certification No. 4-1

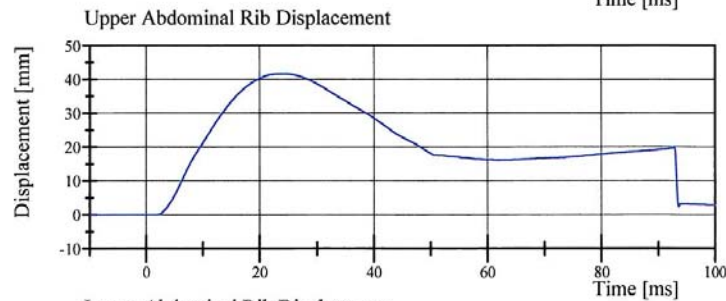
Test Date: 9/28/2010



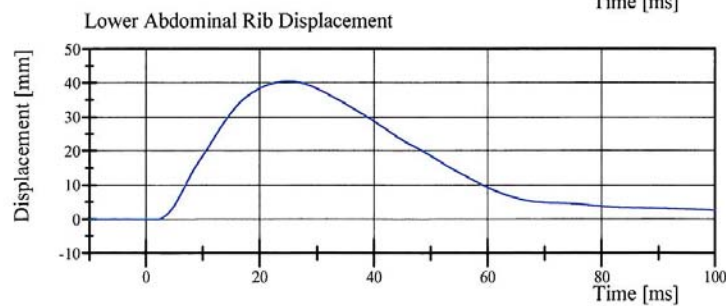
Filter Class: CFC_180
Max: 0.3 gn at 86.0 ms
Min: -13.9 gn at 18.2 ms



Filter Class: CFC_180
Max: 10.8 gn at 15.8 ms
Min: -2.8 gn at 34.8 ms



Filter Class: CFC_600
Max: 41.7 mm at 23.5 ms
Min: -0.0 mm at -2.6 ms



Filter Class: CFC_600
Max: 40.5 mm at 25.0 ms
Min: -0.0 mm at 1.8 ms

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

09.28.2010 10:11:06 621



Transportation Research Center Inc.

Left Lateral Pelvis

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 4-1

Test Date: 9/28/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	50 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.63 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-43.62 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	40.4 g	Yes
Acetabulum Force	3,600 - 4,300 N	4,070.5 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.

09.28.2010 10:26:04 439

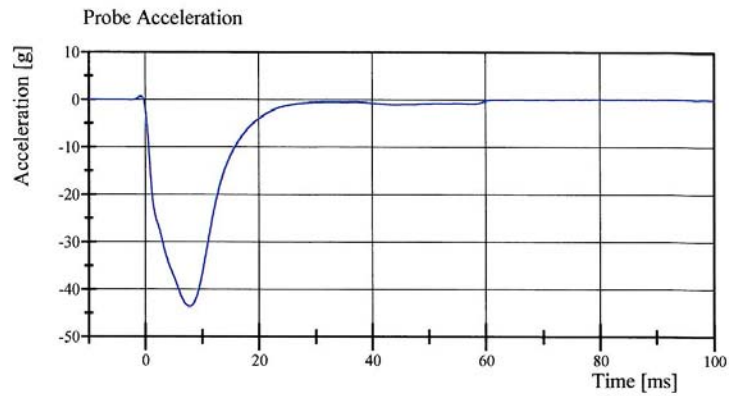


Transportation Research Center Inc.

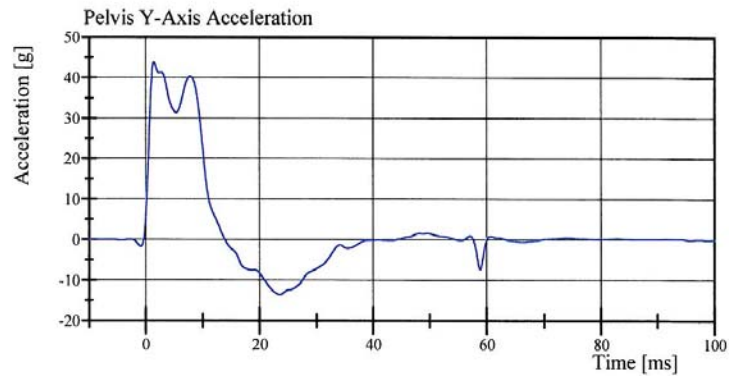
Left Lateral Pelvis

SID II SBLD Final Rule 6-09 Serial No. 033 Certification No. 4-1

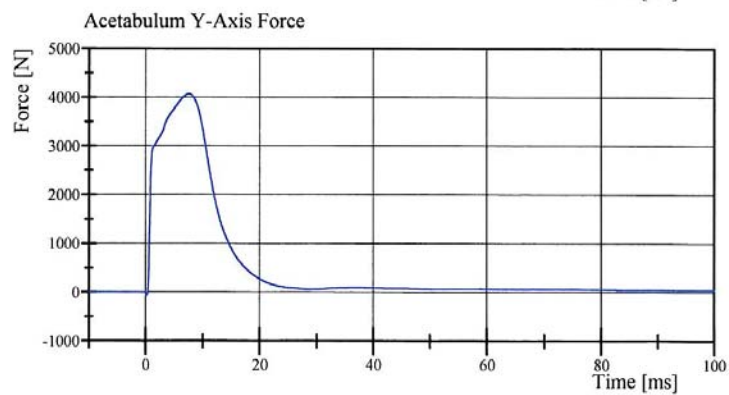
Test Date: 9/28/2010



Filter Class: CFC_180
Max: 0.7 gn at -0.9 ms
Min: -43.6 gn at 7.7 ms



Filter Class: CFC_180
Max: 43.9 gn at 1.4 ms
Min: -13.6 gn at 23.4 ms



Filter Class: CFC_600
Max: 4,070.5 N at 7.5 ms
Min: -68.8 N at 0.2 ms

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

09.28.2010 10:26:35 439



Transportation Research Center Inc.

Left Lateral Iliac

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 4-2

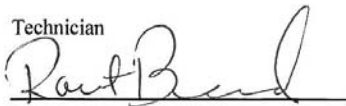
Test Date: 9/28/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	49 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.38 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-37.3 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	29.0 g	Yes
Iliac Force	4,100 - 5,100 N	4,261.3 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.

09.28.2010 14:48:35 619

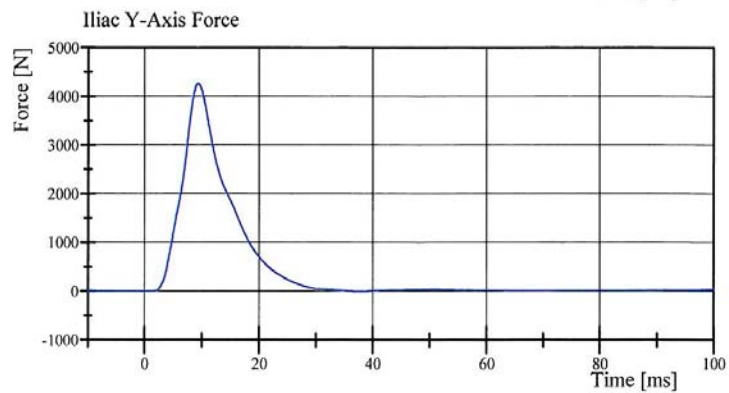
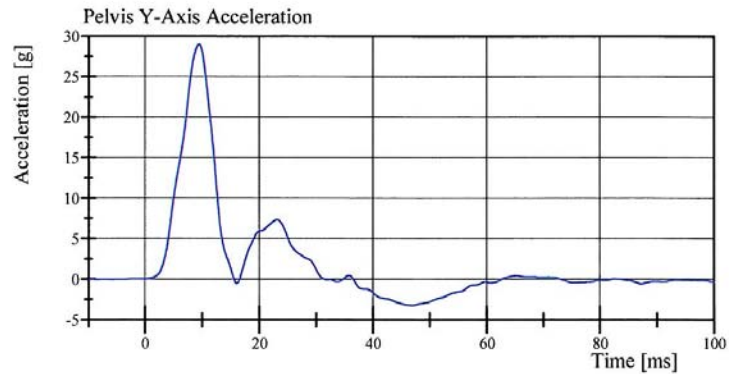
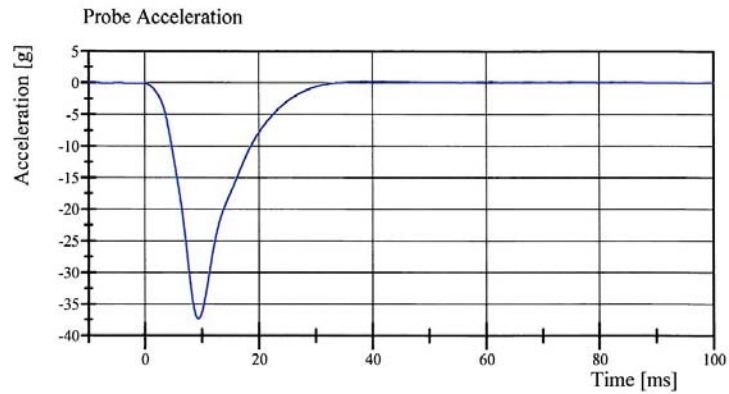


Transportation Research Center Inc.

Left Lateral Iliac

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 4-2

Test Date: 9/28/2010



Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J2111.

09.28.2010 14:48:43 619



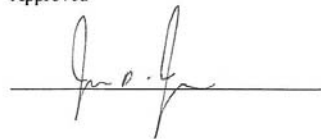
Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 033 Calibration No.04
Date: 9/28/10

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	778	Yes
B	Shoulder Pivot Height	437.0 - 453.0	439	Yes
C	H-Point Height	79.0 - 89.0	85	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	133	Yes
G	Head Breadth	140.0 - 148.0	144	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	352	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	482	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	352	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	870	Yes
Z	Waist Circumference	761.0 - 791.0	780	Yes

Technician



Approved




Revised 9/29/2005

Post-Test Dummy Calibration

S/N: 033

Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 5-1

Test Date: 10/5/2010

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	34 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	132.3 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	2.0 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	Yes	Yes	Yes

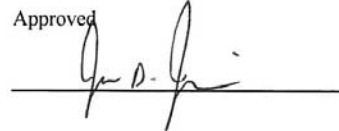
Test meets specifications.

Comments:

Technician



Approved



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

10.05.2010 08:55:22 233

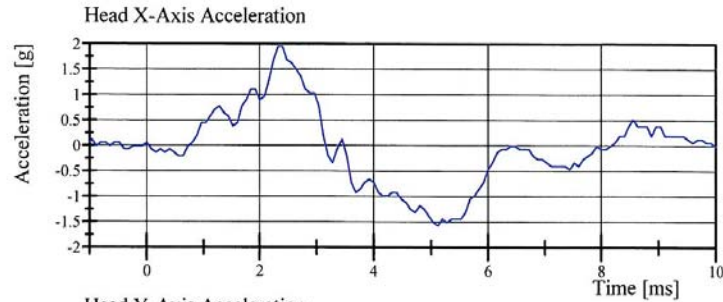


Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 5-1

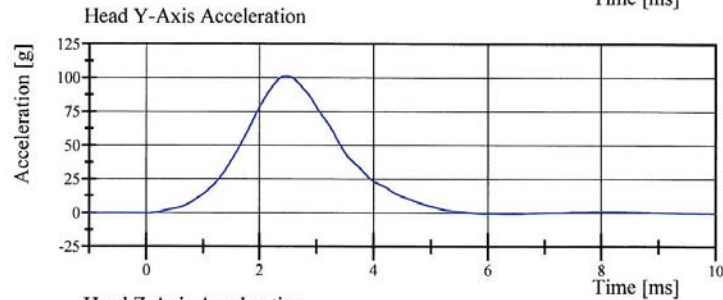
Test Date: 10/5/2010



Filter Class: CFC_1000

Max: 2.0 gn at 2.3 ms

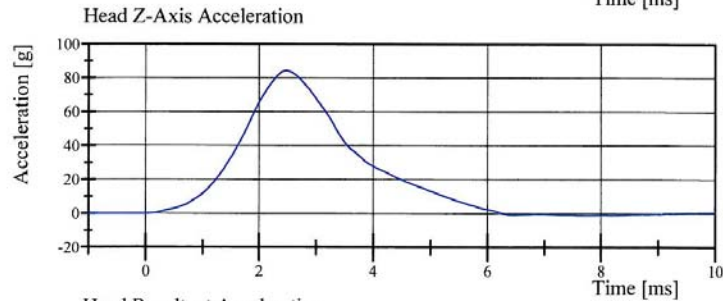
Min: -1.6 gn at 5.1 ms



Filter Class: CFC_1000

Max: 101.8 gn at 2.5 ms

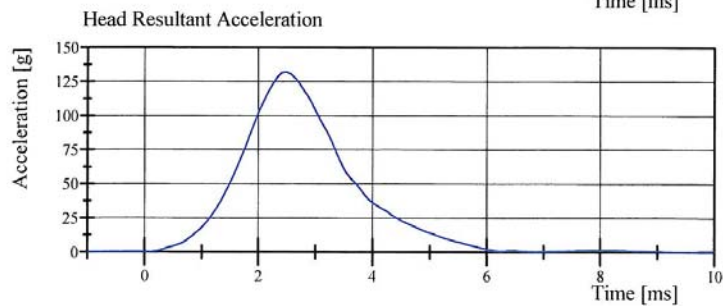
Min: -1.0 gn at 6.4 ms



Filter Class: CFC_1000

Max: 84.4 gn at 2.5 ms

Min: -1.3 gn at 7.8 ms



Filter Class: CFC_1000

Max: 132.3 gn at 2.5 ms

Min: 0.0 gn at -0.6 ms

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

10.05.2010 08:55:30 233



Transportation Research Center Inc.

Left Lateral Neck

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 5-1

Test Date: 10/5/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	34 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.578 m/s	Yes
Pendulum Integrated Velocity			
Change at 10 ms	2.20 - 2.80 m/s	2.589 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.685 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	4.881 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.842 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.951 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-72.9 deg	Yes
Time of Peak	50 - 70 ms	58.6 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	41.8 N·m	Yes
Total Neck Occipital Condyles Moment			
Decay Time to 0 N·m	102 - 126 ms	108.1 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.

10.05.2010 09:25:39 668

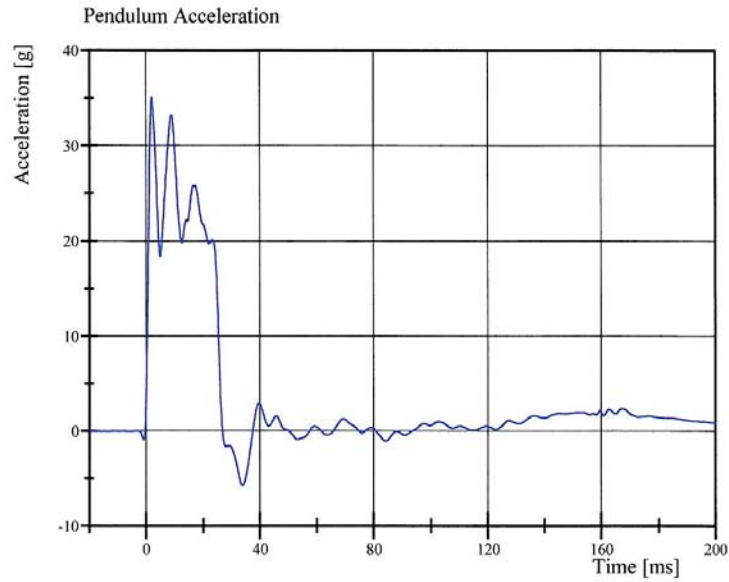


Transportation Research Center Inc.

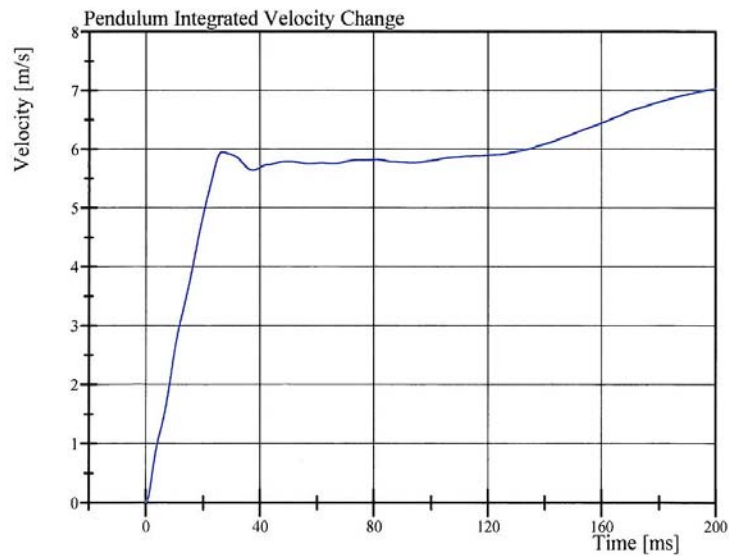
Left Lateral Neck

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 5-1

Test Date: 10/5/2010



Filter Class: CFC_180
Max: 35.1 gn at 1.8 ms
Min: -5.8 gn at 33.9 ms



Filter Class: CFC_180
Max: 7.0 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.

10.05.2010 09:25:47 668



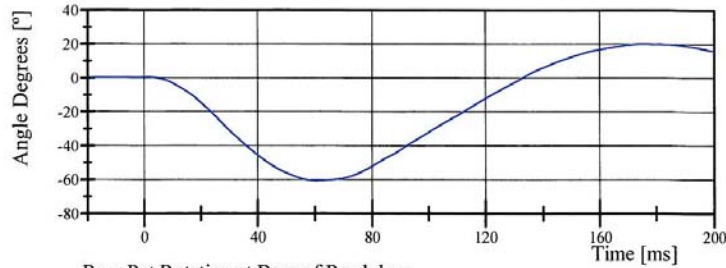
Transportation Research Center Inc.

Left Lateral Neck

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 5-1

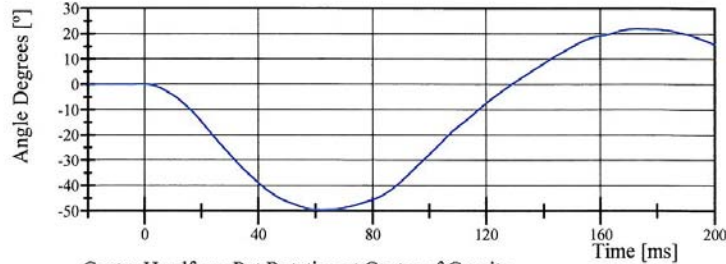
Test Date: 10/5/2010

Forward Pot Rotation at Base of Pendulum



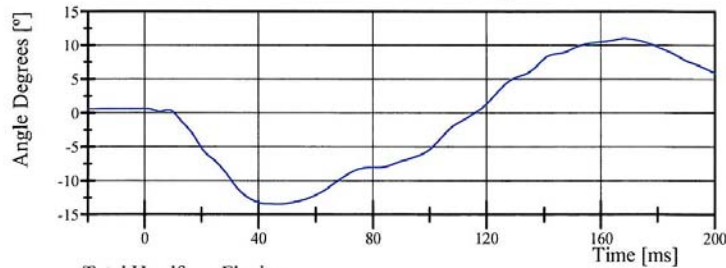
Filter Class: CFC_60
Max: 20.2 ° at 175.2 ms
Min: -60.6 ° at 60.5 ms

Rear Pot Rotation at Base of Pendulum



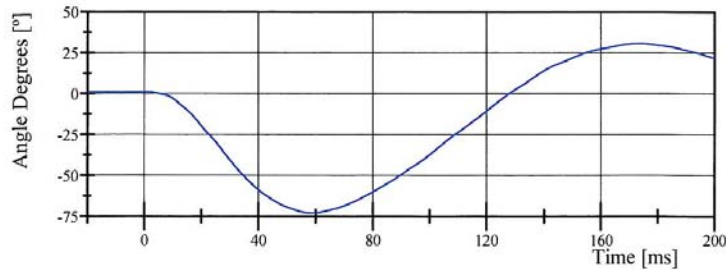
Filter Class: CFC_60
Max: 22.0 ° at 173.1 ms
Min: -49.6 ° at 62.6 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC_60
Max: 11.0 ° at 168.4 ms
Min: -13.4 ° at 47.0 ms

Total Headform Flexion



Filter Class: CFC_60
Max: 30.9 ° at 173.8 ms
Min: -72.9 ° at 58.6 ms

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

10.05.2010 09:25:48 668

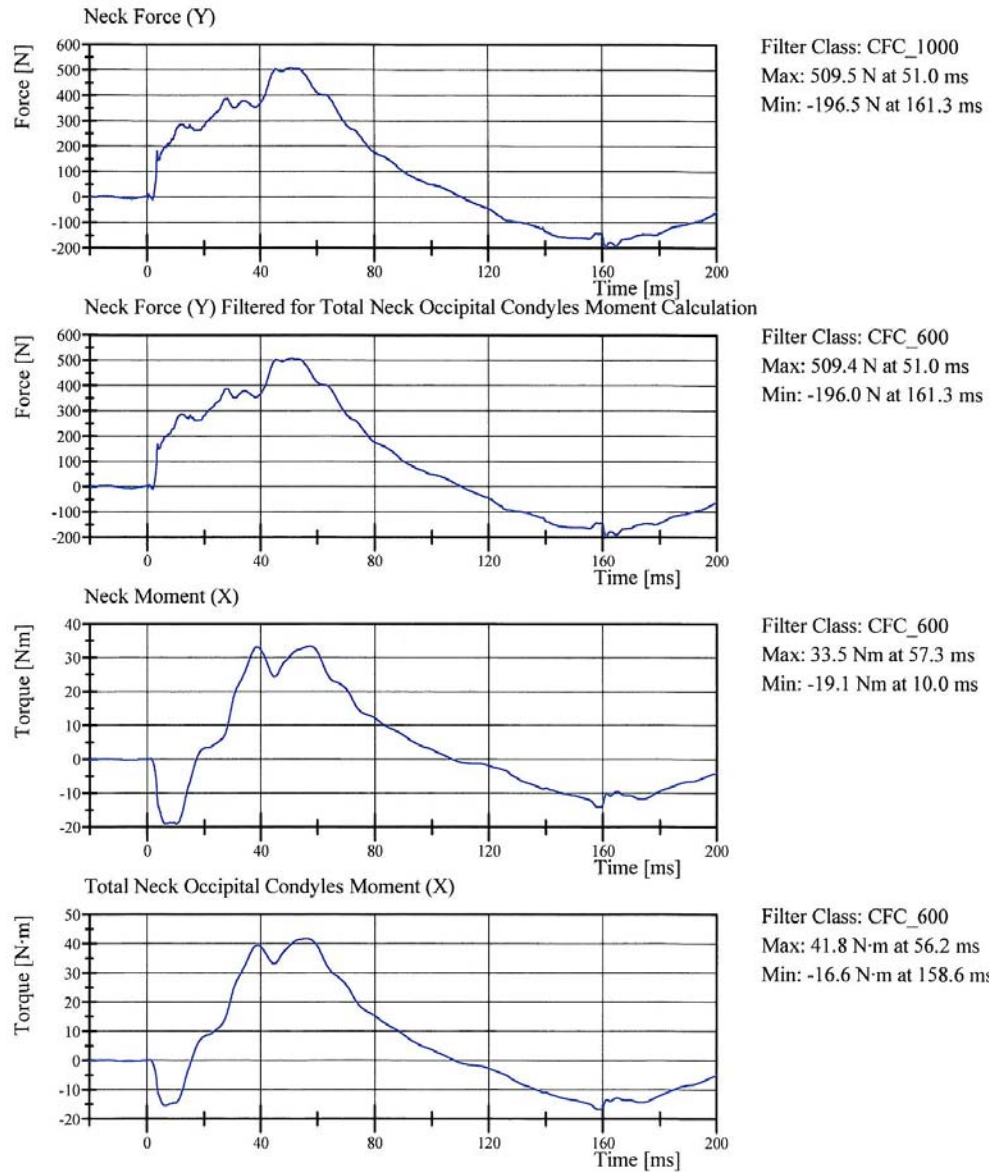


Transportation Research Center Inc.

Left Lateral Neck

SID IIIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 5-1

Test Date: 10/5/2010



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

10.05.2010 09:25:48 668



Transportation Research Center Inc.

Left Lateral Shoulder

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 5-1

Test Date: 10/5/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	35 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.33 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-16.5 g	Yes
Shoulder Displacement	28 - 37 mm	30.4 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	20.8 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.

10.05.2010 11:23:30 819

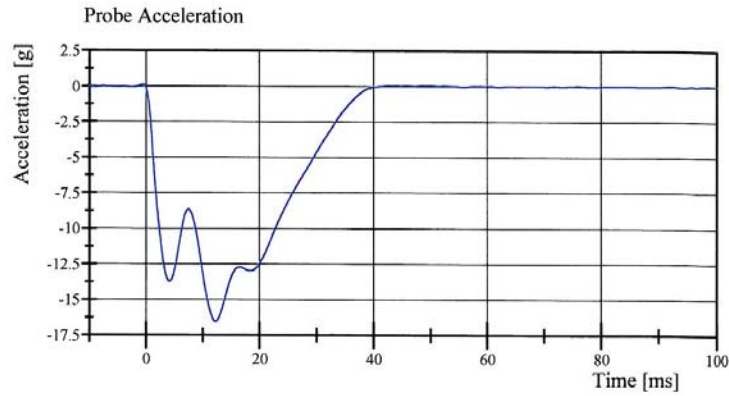


Transportation Research Center Inc.

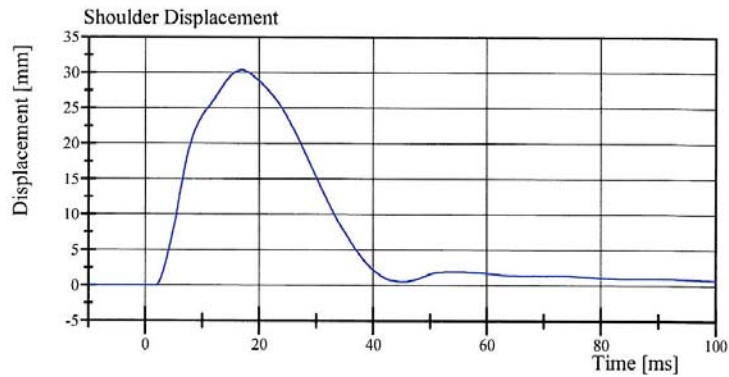
Left Lateral Shoulder

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 5-1

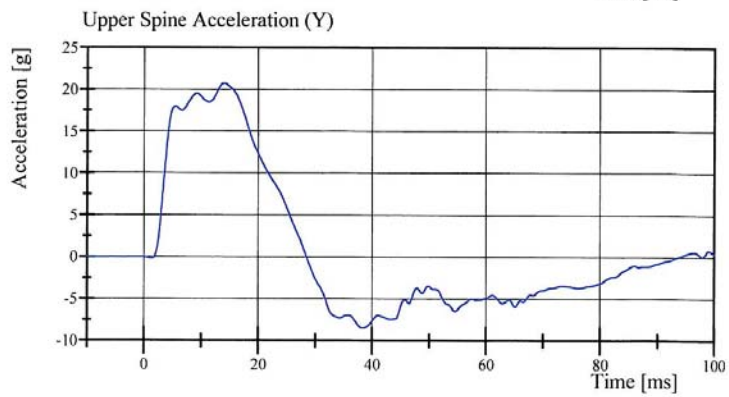
Test Date: 10/5/2010



Filter Class: CFC_180
Max: 0.1 gn at -0.6 ms
Min: -16.5 gn at 12.2 ms



Filter Class: CFC_600
Max: 30.4 mm at 16.9 ms
Min: -0.0 mm at 1.8 ms



Filter Class: CFC_180
Max: 20.8 gn at 14.0 ms
Min: -8.5 gn at 38.3 ms

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

10.05.2010 11:23:41 819



Transportation Research Center Inc.

Left Lateral Thorax with Arm

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 5-5

Test Date: 10/6/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	33 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.664 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-32.8 g	Yes
Shoulder Displacement	31 - 40 mm	35.1 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	26.1 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	30.8 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	33.7 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	40.6 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	36.8 g	Yes

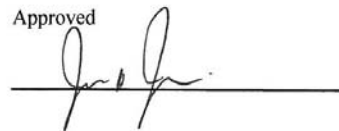
Test meets specifications.

Comments:

Technician



Approved



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

10.06.2010 08:40:14 603

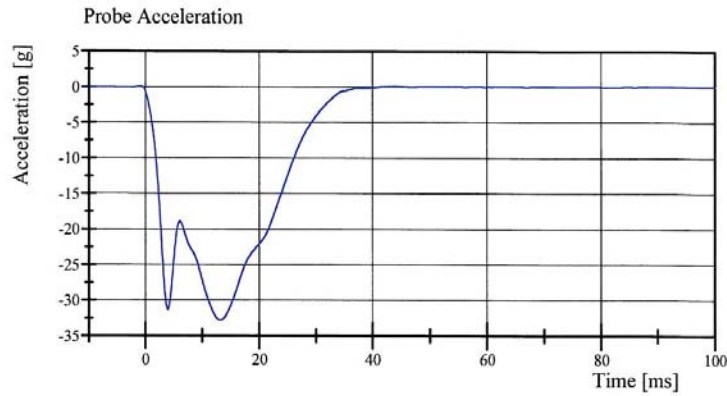


Transportation Research Center Inc.

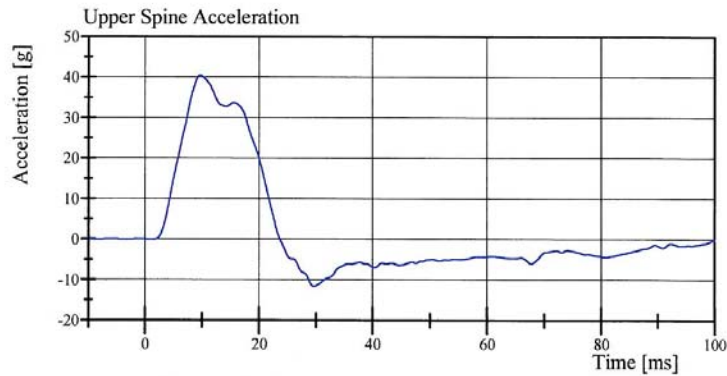
Left Lateral Thorax with Arm

SID II S SBLD Final Rule 6-09 Serial No. 033 Certification No. 5-5

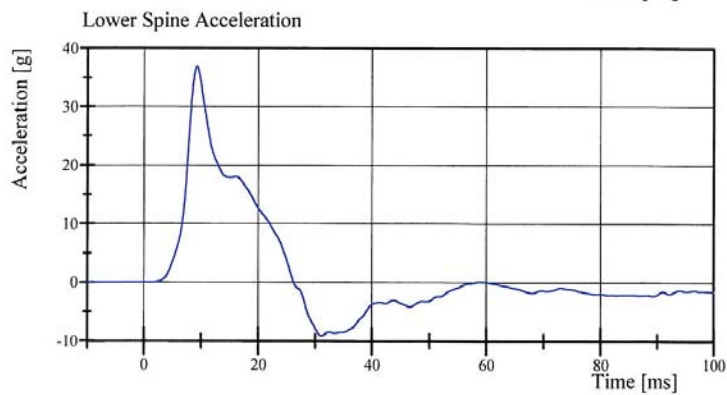
Test Date: 10/6/2010



Filter Class: CFC_180
Max: 0.1 gn at -0.9 ms
Min: -32.8 gn at 13.1 ms



Filter Class: CFC_180
Max: 40.6 gn at 9.7 ms
Min: -11.6 gn at 29.6 ms



Filter Class: CFC_180
Max: 36.8 gn at 9.3 ms
Min: -9.2 gn at 31.1 ms

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

10.06.2010 08:40:27 603

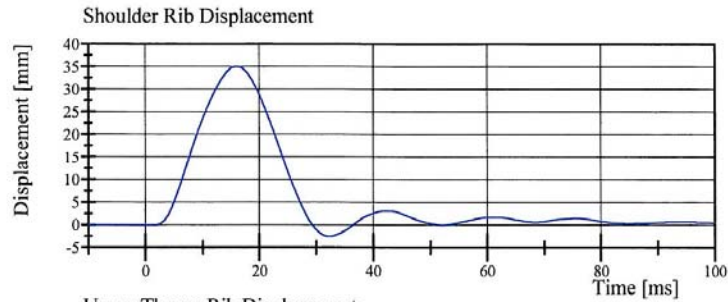


Transportation Research Center Inc.

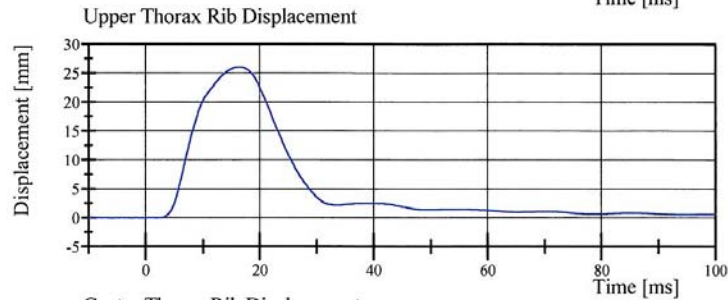
Left Lateral Thorax with Arm

SID II SBLD Final Rule 6-09 Serial No. 033 Certification No. 5-5

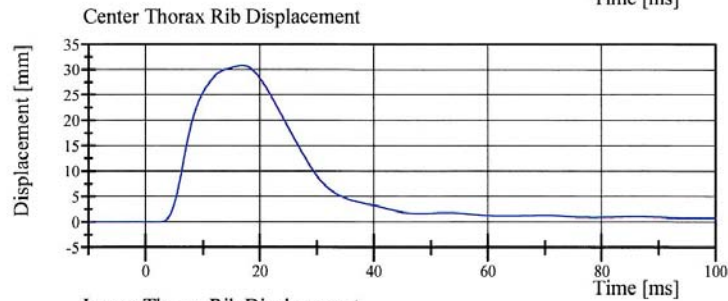
Test Date: 10/6/2010



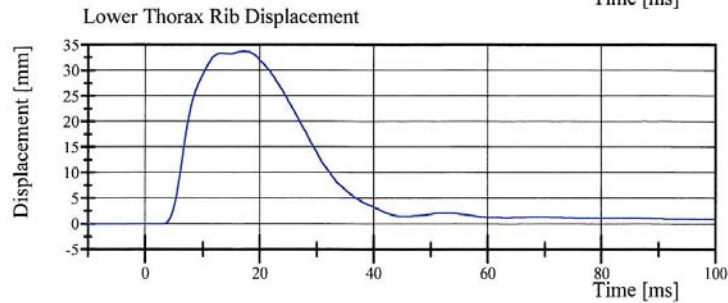
Filter Class: CFC_600
Max: 35.1 mm at 16.0 ms
Min: -2.6 mm at 32.2 ms



Filter Class: CFC_600
Max: 26.1 mm at 16.3 ms
Min: -0.0 mm at -10.0 ms



Filter Class: CFC_600
Max: 30.8 mm at 17.0 ms
Min: -0.0 mm at 2.6 ms



Filter Class: CFC_600
Max: 33.7 mm at 17.2 ms
Min: -0.0 mm at 3.0 ms

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

10.06.2010 08:40:28 603



Transportation Research Center Inc.

Left Lateral Thorax without Arm

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 5-2

Test Date: 10/6/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	33 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.329 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-16.0 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	35.9 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	41.4 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	39.0 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	16.0 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	9.7 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.

10.06.2010 07:35:41 786

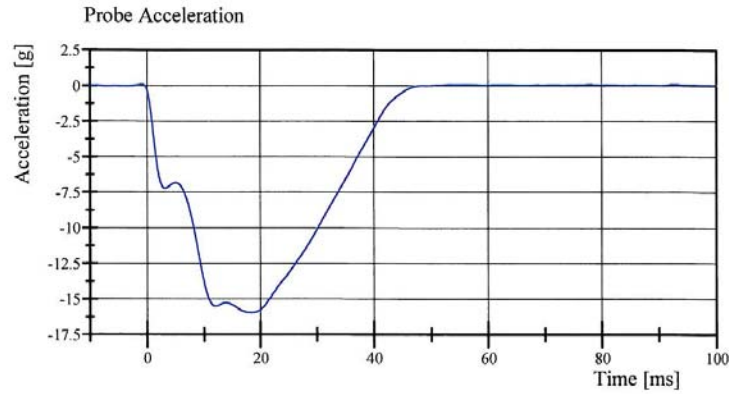


Transportation Research Center Inc.

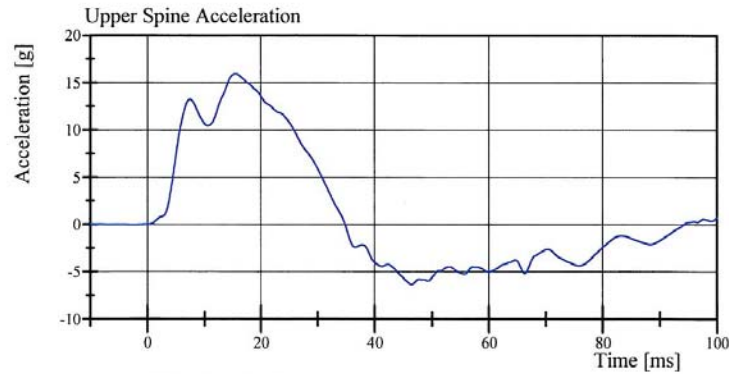
Left Lateral Thorax without Arm

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 5-2

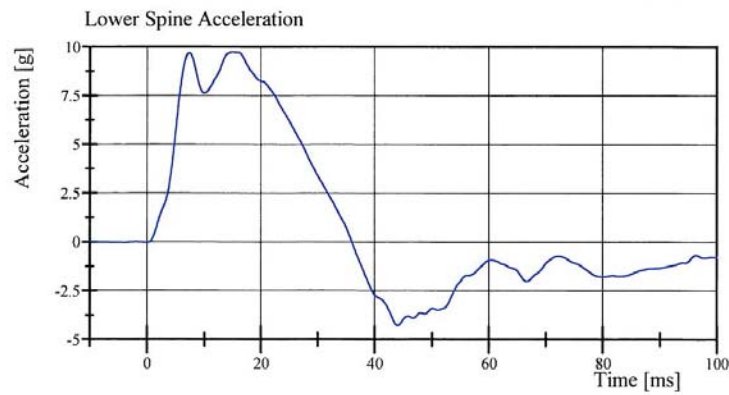
Test Date: 10/6/2010



Filter Class: CFC_180
Max: 0.1 gn at 92.9 ms
Min: -16.0 gn at 18.3 ms



Filter Class: CFC_180
Max: 16.0 gn at 15.5 ms
Min: -6.3 gn at 46.4 ms



Filter Class: CFC_180
Max: 9.7 gn at 15.0 ms
Min: -4.3 gn at 43.9 ms

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

10.06.2010 07:35:56 786



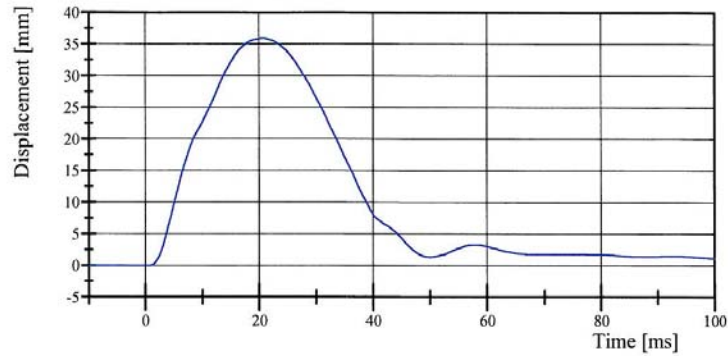
Transportation Research Center Inc.

Left Lateral Thorax without Arm

SID II SBLD Final Rule 6-09 Serial No. 033 Certification No. 5-2

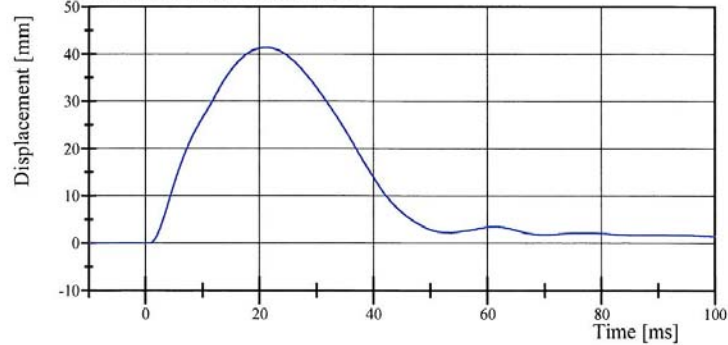
Test Date: 10/6/2010

Upper Thorax Rib Displacement



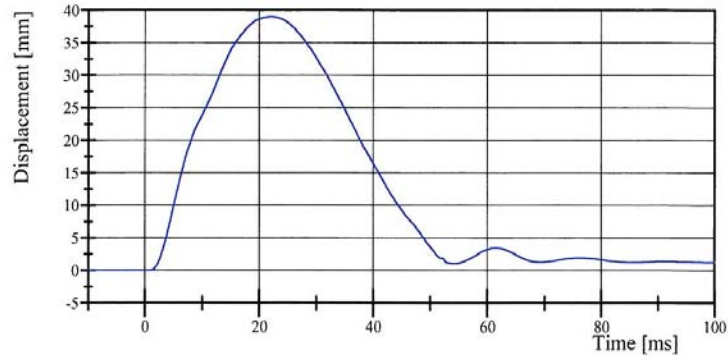
Filter Class: CFC_600
Max: 35.9 mm at 20.6 ms
Min: -0.0 mm at -4.0 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 41.4 mm at 21.3 ms
Min: -0.0 mm at 0.6 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 39.0 mm at 22.0 ms
Min: -0.0 mm at -4.1 ms

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

10.06.2010 07:35:57 786



Transportation Research Center Inc.

Left Lateral Abdomen

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 5-1

Test Date: 10/5/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	33 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.33 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-14.1 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	40.6 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	41.5 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	11.13 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.

10.05.2010 14:48:25 622

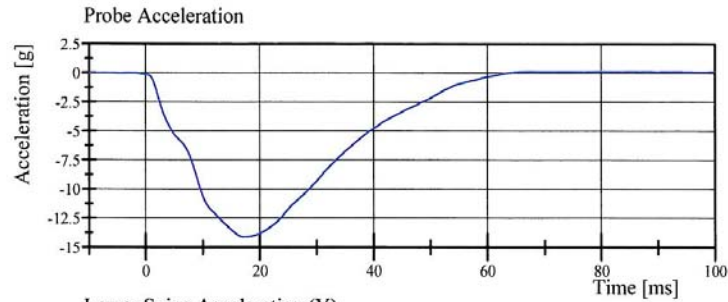


Transportation Research Center Inc.

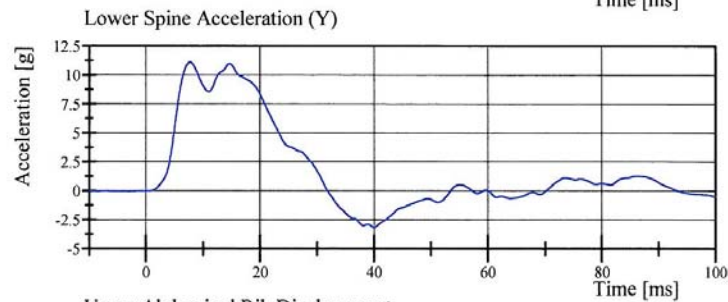
Left Lateral Abdomen

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 5-1

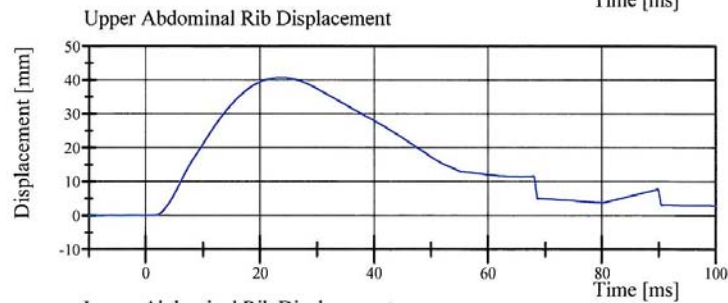
Test Date: 10/5/2010



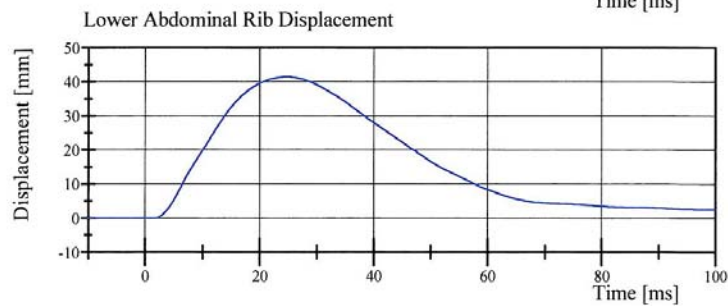
Filter Class: CFC_180
Max: 0.2 gn at 67.9 ms
Min: -14.1 gn at 17.3 ms



Filter Class: CFC_180
Max: 11.1 gn at 7.7 ms
Min: -3.2 gn at 40.0 ms



Filter Class: CFC_600
Max: 40.6 mm at 23.5 ms
Min: -0.0 mm at 1.4 ms



Filter Class: CFC_600
Max: 41.5 mm at 24.9 ms
Min: -0.0 mm at 1.6 ms

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

10.05.2010 14:48:38 622



Transportation Research Center Inc.

Left Lateral Pelvis

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 5-1

Test Date: 10/5/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	22.0 °C	Yes
Relative Humidity	10 - 70 %	33 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.66 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-44.12 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	41.5 g	Yes
Acetabulum Force	3,600 - 4,300 N	4,113.5 N	Yes

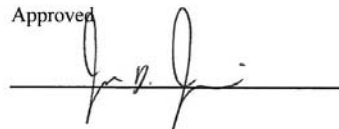
Test meets specifications.

Comments:

Technician



Approved



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

10.05.2010 15:04:44 426

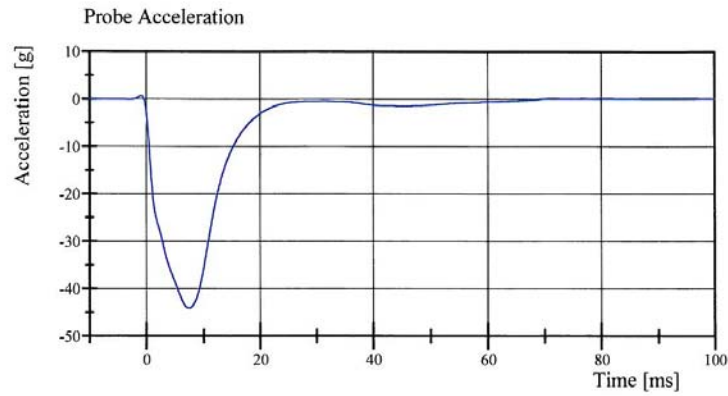


Transportation Research Center Inc.

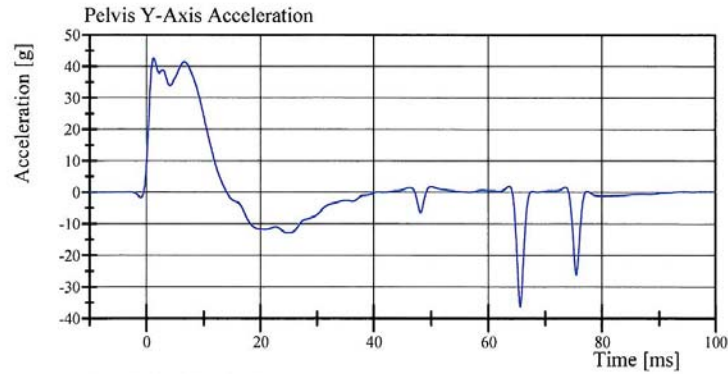
Left Lateral Pelvis

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 5-1

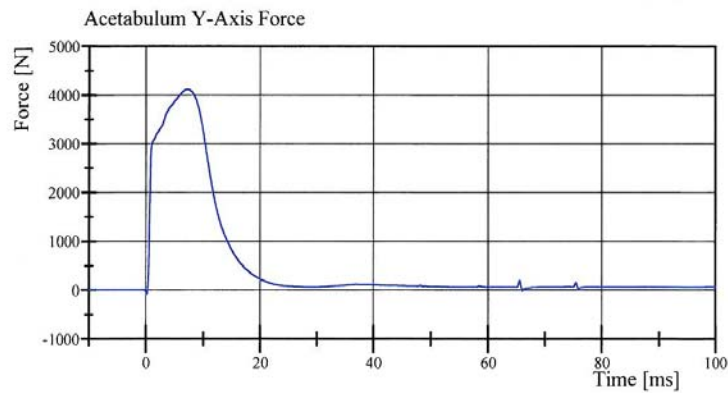
Test Date: 10/5/2010



Filter Class: CFC_180
Max: 0.7 gn at -1.0 ms
Min: -44.1 gn at 7.4 ms



Filter Class: CFC_180
Max: 42.6 gn at 1.2 ms
Min: -36.2 gn at 65.5 ms



Filter Class: CFC_600
Max: 4,113.5 N at 7.1 ms
Min: -75.5 N at 0.2 ms

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

10.05.2010 15:04:55 426



Transportation Research Center Inc.

Left Lateral Iliac

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 5-6

Test Date: 10/7/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.38 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-39.9 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	29.2 g	Yes
Iliac Force	4,100 - 5,100 N	4,665.8 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.

10.07.2010 11:00:37 655

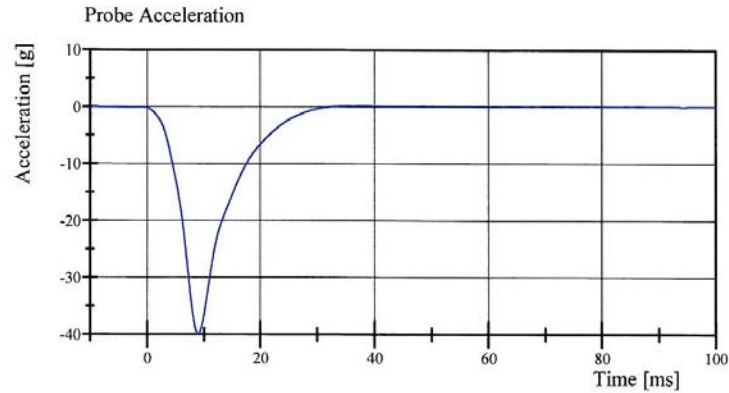


Transportation Research Center Inc.

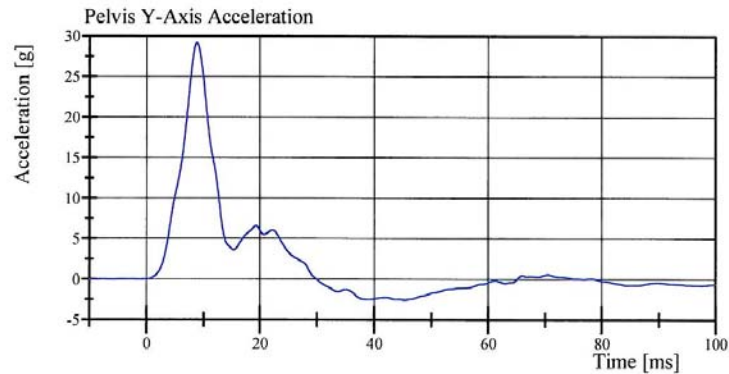
Left Lateral Iliac

SID IIs SBLD Final Rule 6-09 Serial No. 033 Certification No. 5-6

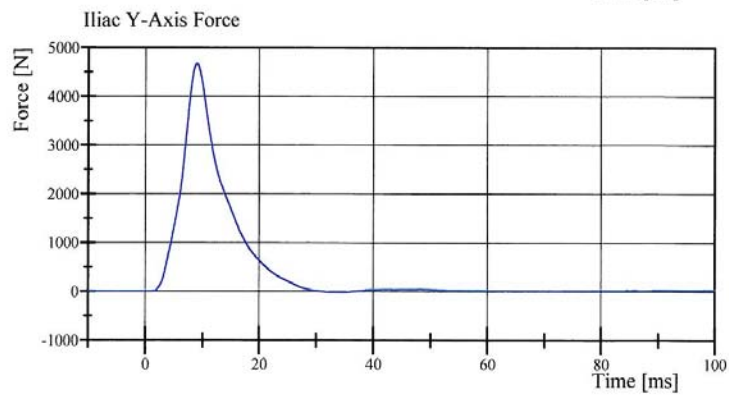
Test Date: 10/7/2010



Filter Class: CFC_180
Max: 0.2 gn at 38.4 ms
Min: -39.9 gn at 8.9 ms



Filter Class: CFC_180
Max: 29.2 gn at 8.7 ms
Min: -2.5 gn at 45.3 ms



Filter Class: CFC_600
Max: 4,665.8 N at 9.0 ms
Min: -10.6 N at 34.2 ms

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

10.07.2010 11:01:05 655



Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 033 Calibration No.05
Date: 10/07/10

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	779	Yes
B	Shoulder Pivot Height	437.0 - 453.0	439	Yes
C	H-Point Height	79.0 - 89.0	85	Yes
D	H-Point from Seat Back	141.0 - 151.0	145	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	102	Yes
F	Thigh Clearance	119.0 - 135.0	134	Yes
G	Head Breadth	140.0 - 148.0	144	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	352	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	208	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	482	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	352	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	870	Yes
Z	Waist Circumference	761.0 - 791.0	780	Yes

Technician



Approved




Revised 9/29/2005