

REPORT NUMBER: SPNCAP-TRC-11-004

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

**General Motors LLC
2011 Chevrolet Silverado 1500 Extended Cab
NHTSA NUMBER: MB0115**

**PREPARED BY:
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**Report Date:
October 18, 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: December 22, 2010

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

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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 Extended 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 5, 2010. The impact velocity was 31.9 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 586 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>337</td> </tr> <tr> <td>Resultant Lower Spine Acceleration:</td> <td>82</td> <td>51.8 g</td> </tr> <tr> <td>Combined Acetabular and Iliac Pelvic Force:</td> <td>5525</td> <td>4003.4 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	337	Resultant Lower Spine Acceleration:	82	51.8 g	Combined Acetabular and Iliac Pelvic Force:	5525	4003.4 N
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SECTION 1

PURPOSE AND TEST PROCEDURE

PURPOSE

This side impact test was conducted as part of the MY1a 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 Extended Cab manufactured by General Motors 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 Chevrolet Silverado 1500 Extended Cab. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 31.9 km/h. The weight of the vehicle as tested was 2375.6 kg. The side impact test was conducted by Transportation Research Center Inc. in East Liberty, OH, on October 5, 2010. Pre-test and post-test photographs of the test vehicle, the 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. 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 IIs 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	337	51.8	Iliac Wing = 1347.5 Acetabular = 2779.5 Sum = 4003.4

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	Yes	Yes	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

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 driver side airbag timing inductive pickup did not measure the airbag current. The side airbag deployed during the event.

The vehicle's left A-pillar Sill Y-axis acceleration data channel, 11APIL000000ACYA, recorded a data spike at approximately 30 milliseconds. The data should be considered questionable thereafter.

The vehicle's left lower B-pillar Y-axis acceleration data channel, 11BPILLO000000ACYA, recorded a 50 g data offset from approximately 150 to 175 milliseconds and questionable data thereafter.

The vehicle's center of gravity angular pitch rate, 11VEHCCG000000AVYA, measuring rotation about the Y axis exceeded the full scale value. The data appears valid.

The vehicle's center of gravity angular yaw rate, 11VEHCCG000000AVZA, measuring rotation about the Z axis exceeded the full scale value. The data appears valid.

SECTION 3
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Chevrolet Silverado 1500 Extended Cab NHTSA No.: MB0115
 Test Program: SPNCAP Side Impact Test Date: 10/05/10

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	MB0115	Anti-Lock Brakes	Yes
Model Year	2011	All-Wheel Drive	Yes
Make	Chevrolet	Power Steering	No
Model	Silverado 1500 Extended Cab	Driver Front Airbag	Yes
Body Style	Pickup	Driver Curtain Airbag	Yes
VIN	1GCRCPEX2BZ106218	Driver Head/Torso Airbag	No
Color	Steel Green Metallic	Driver Torso Airbag	Yes
Delivery Date	09/03/2010	Driver Torso/Pelvis Airbag	Yes
Odometer Reading (miles)	151	Driver Pelvis Airbag	No
Dealer	Depaula Chevrolet-Hummer Inc.	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	6	Rear Pass. Torso Airbag	No
Engine Displacement (L)	4.3	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	No
Power Brakes	Yes	Tilt Steering	Yes
Front Disc	Yes	Other – AM/FM/CD	Yes
Rear Disc	No	Other – Heavy Duty Suspension, Locking Rear Differential	Yes
Does owner's manual detail instructions on disabling ADLs?			Yes

DATA FROM CERTIFICATION LABEL

Manufactured by	General Motors LLC	GVWR (kg)	2903
Date of Manufacture	7-10	GAWR Front (kg)	1633
		GAWR Rear (kg)	1701

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)				672	(B)
DSC X 68.04 kg				6	(A-B)
Rated Cargo and Luggage Weight (RCLW) (kg)				264	

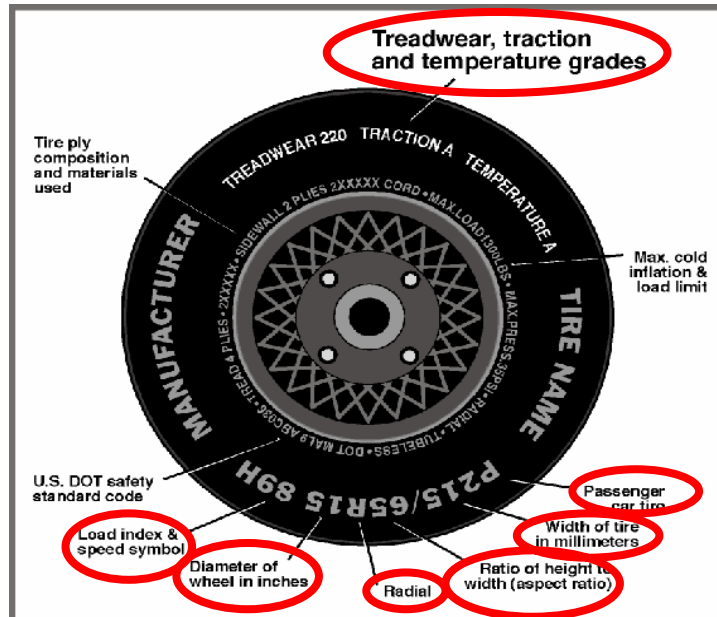
VEHICLE SEAT TYPE

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 Extended Cab	NHTSA No.:	MB0115
Test Program:	SPNCAP Side Impact	Test Date:	10/05/10



DATA FROM TIRE PLACARD

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 Ply Polyester	2 Ply Polyester
Tire Plies Tread	2 Ply Polyester, 2 Ply Steel, 1 Ply Polyamide	2 Ply Polyester, 2 Ply Steel, 1 Ply Polyamide
Tire Material	Polyester, Steel, Polyamide	Polyester, Steel, Polyamide
DOT Safety Code Left	DOT A383 BN1 2210	DOT A383 BN1 2210
DOT Safety Code Right	DOT A383 BN1 2210	DOT A383 BN1 2210

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

Test Vehicle: 2011 Chevrolet Silverado 1500 Extended Cab NHTSA No.: MB0115
 Test Program: SPNCAP Side Impact Test Date: 10/05/10

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	647.6	467		689.2	498		678.4	552.4	
Right	kg	630.2	458.4		677.0	511.4		633.8	534.0	
Ratio	%	58.0	42.0		57.5	42.5		54.7	45.3	
Totals	kg	1277.8	925.4	2203.2	1366.2	1009.4	2375.6	1312.2	1086.4	2398.6

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
(A) Total Delivered Weight (UVW)	kg	2203.2
(B) Weight of 1 P572V ATD (SIDIIIs)	kg	44.0
(C) Rated Cargo/Luggage Weight (RCLW) ¹	kg	136.0
(A+B+C) Vehicle Target Weight (TVTW)	kg	2383.2

TEST VEHICLE ATTITUDES AND CG

	Units	As Delivered	As Tested	Fully Loaded
Driver Door Sill Angle (front-to-rear)*	Deg.	-0.5	-0.6	-0.3
Front Passenger Sill Angle (front-to-rear)*	Deg.	-0.6	-1.0	-0.3
Front Bumper Angle (left-to-right)**	Deg.	-0.5	-1.3	-0.6
Rear Bumper Angle (left-to-right)**	Deg.	-0.5	-0.1	0.0
Vehicle CG (aft of front axle)	mm	1535	1553	1655
Vehicle CG (Left (+) / Right (-) from longitudinal Centerline)	mm	-10.2	0.4	-22.8

*Front up is positive **Left up is positive

GENERAL VEHICLE TEST DATA

Measurement Description	Units	Value
Weight of Ballast in Cargo Area	kg	12.7
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	1207
Actual Impact Point (Aft of Front Axle)	mm	1209
Impact Point Difference (- forward / + rearward)	mm	+2

¹ 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 Chevrolet Silverado 1500 Extended Cab
 Test Program: SPNCAP Side Impact

NHTSA No.: MB0115
 Test Date: 10/05/10

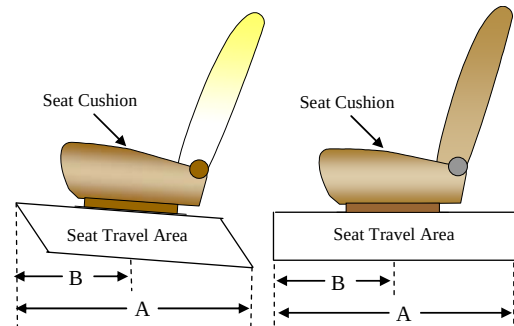
SEAT FORE/AFT POSITIONS

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 both the driver and passenger.

SEAT FORE/AFT POSITIONING

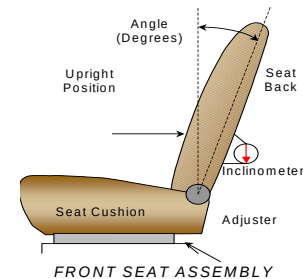
	Total Fore/Aft Travel	Placed in Position No.
Driver Seat	25	1
Passenger	25	12

Position zero is full forward



NORMAL DESIGN RIDING POSITION
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.



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
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	3	Mid

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 Extended Cab

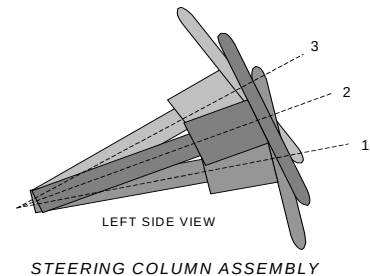
NHTSA No.: MB0115

Test Program: SPNCAP Side Impact

Test Date: 10/05/10

STEERING COLUMN ADJUSTMENT

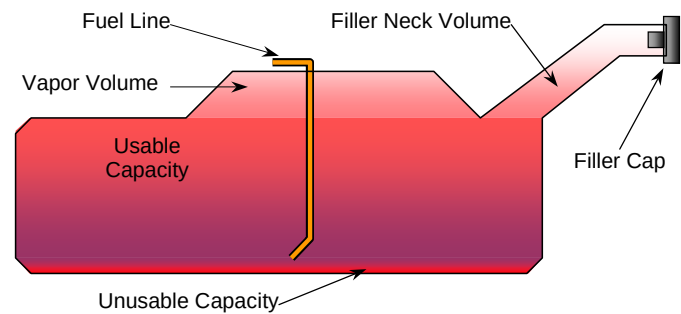
Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. An aluminum plate is placed across the rim of the steering wheel, an inclinometer is placed on the plate and the angle is measured.



STEERING COLUMN POSITIONS

	Degrees	Fore/Aft Position, mm
Lowermost Position No. 1	77.9	
Geometric Center Position No. 2	67.9	
Uppermost Position No. 3	57.9	
Test Position	67.9 (notch 3 of 5)	
Telescoping Steering Wheel Travel		Fixed

The test vehicle is equipped with an electric fuel pump located inside the tank. The fuel pump operates 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 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
Usable Capacity of "Optional" Tank	N/A
Usable Capacity of Standard Tank from owners manual	98
Usable Capacity of Optional Tank from owner's manual	N/A
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

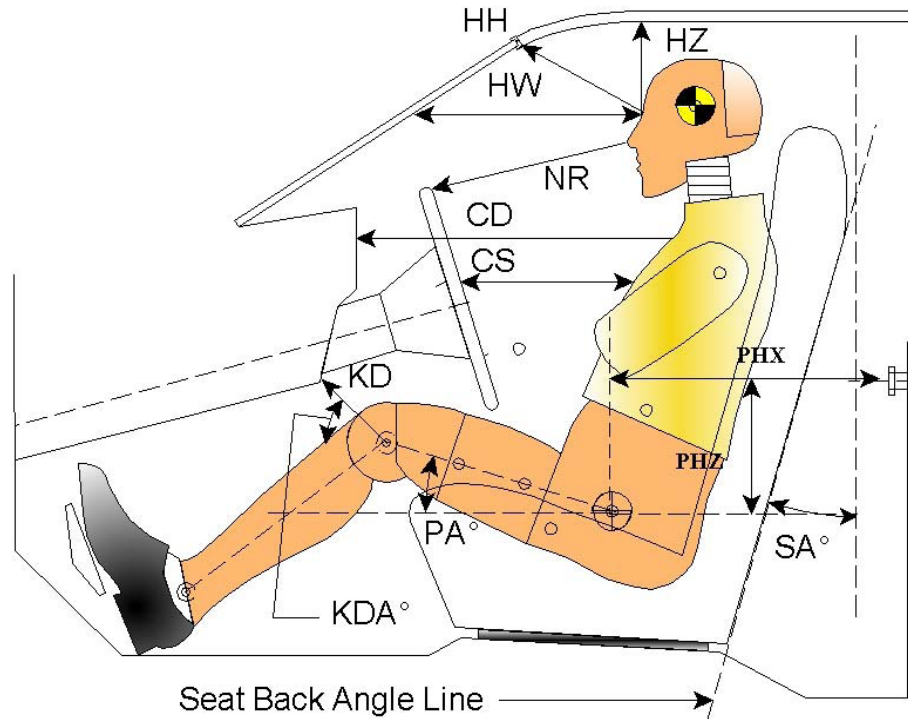
DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Chevrolet Silverado 1500 Extended Cab NHTSA No.: MB0115

Test Program: SPNCAP Side Impact

Test Date: 10/05/10



Code	Measurement Description	Driver S/N 305	
		Length (mm)	Angle (°)
HH	Head to Header	385	
HW	Head to Windshield	647	
HZ	Head to Roof	265	
NR	Nose to Rim	248	
CD	Chest to Dash	413	
CS	Chest to Steering Wheel	191	
KDL	Left Knee to Dash	98	25.3
KDR	Right Knee to Dash	100	25.8
PA	Pelvic Angle		18.3
PHX	H-Point to Striker (X-Axis)	474	
PHZ	H-Point to Striker (Z-Axis)	1	
SA	Seat Back Angle		0.8

NOTE: Dummy measurements were achieved using a tape measure.

DATA SHEET NO. 4

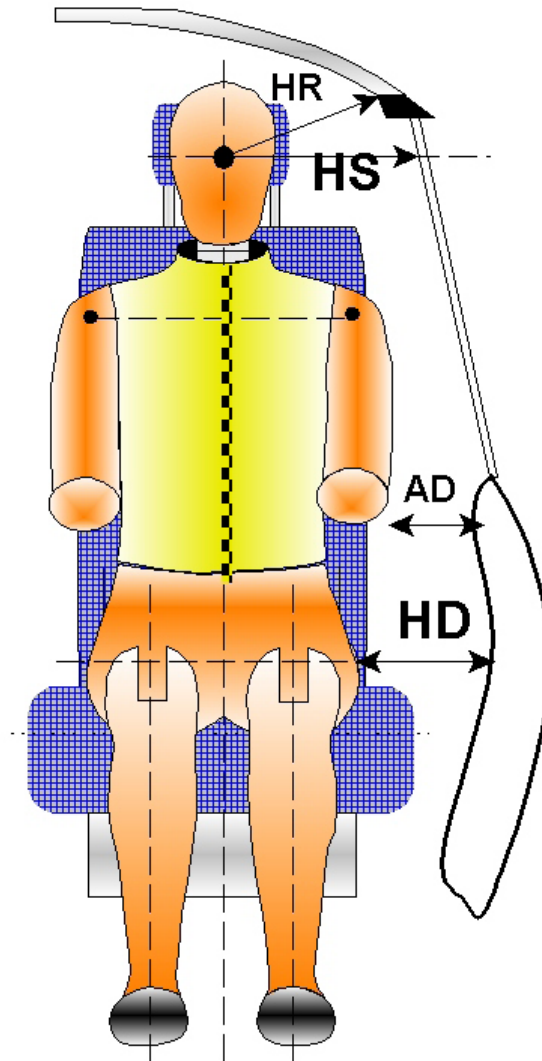
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Chevrolet Silverado 1500 Extended Cab

NHTSA No.: MB0115

Test Program: SPNCAP Side Impact

Test Date: 10/05/10



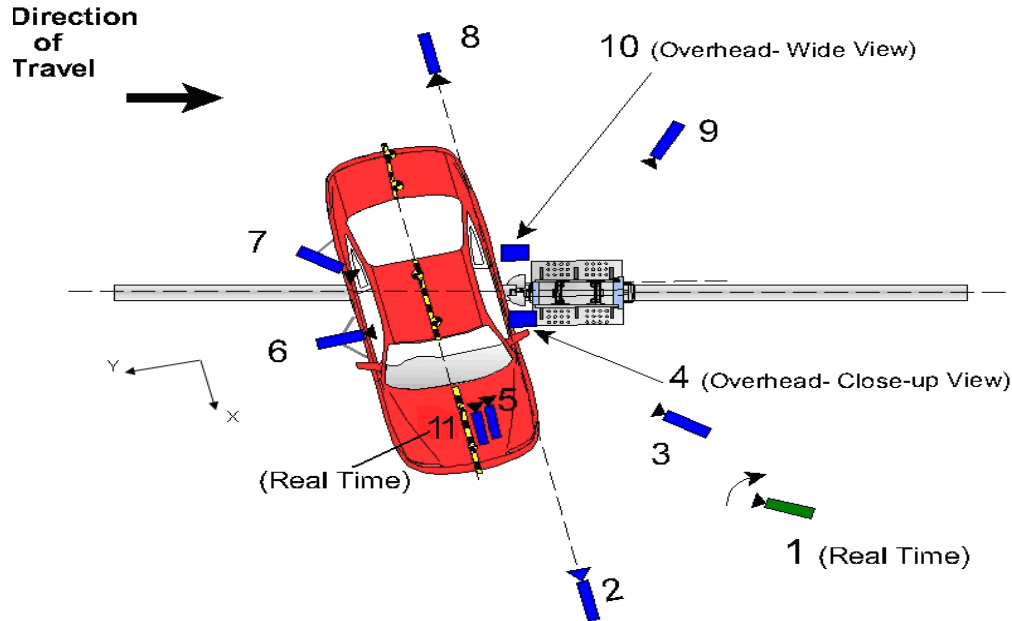
Code	Measurement Description	Driver S/N 305 Length (mm)
HR	Head to Side Header	263
HS	Head to Side Window	372
AD	Arm to Door	186
HD	H-Point to Door	183

NOTE: Dummy measurements were achieved using a tape measure.

DATA SHEET NO. 5

CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2011 Chevrolet Silverado 1500 Extended Cab NHTSA No.: MB0115
 Test Program: SPNCAP Side Impact Test Date: 10/05/10



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	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
Contact Switches	5
Total No. of Data Channels	50

¹ Camera measurements not recorded.

DATA SHEET NO. 6

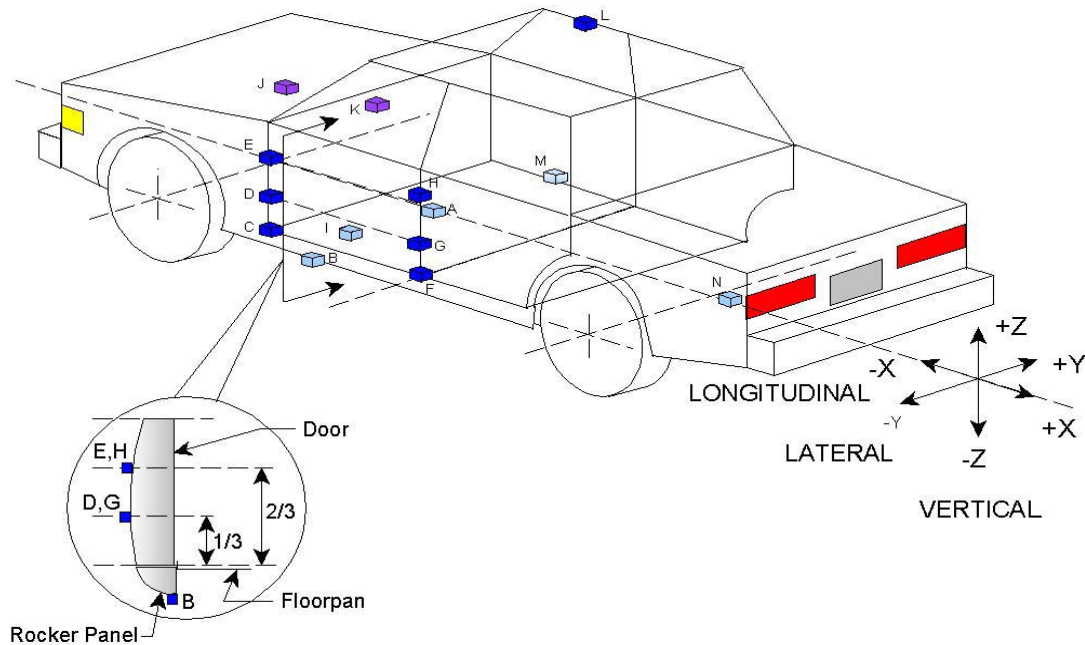
VEHICLE ACCELEROMETER DATA

Test Vehicle: 2011 Chevrolet Silverado 1500 Extended Cab

NHTSA No.: MB0115

Test Program: SPNCAP Side Impact

Test Date: 10/05/10



Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
A	Vehicle CG acceleration	-4270	20	690
	Vehicle CG rotation	-4270	-20	690
B	Left Floor Sill	-4205	-15	525
C	A-Pillar Sill	-4560	-840	544
D	A-Pillar Low	-4650	-880	725
E	A-Pillar Mid	-4670	-880	1090
F	B-Pillar Sill	-3520	-750	544
G	B-Pillar Low	-3500	-860	780
H	B-Pillar Mid	-3505	-855	1105
I	Driver Seat	-3735	-630	674
J	Engine Top	-5300	0	900
K	Firewall	-4985	20	1173
L	Right Roof	-3930	670	1718
M	Right Floor Sill	-3990	700	574
N	Rear Floorpan	-665	0	826

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

Reference Points: X - Test Vehicle Rear Bumper (+ rearward)

Y - Test Vehicle Centerline (+ to right)

Z - Ground Plane (+ up)

DATA SHEET NO. 7

RIGID POLE LOAD CELL DATA

Test Vehicle: 2011 Chevrolet Silverado 1500 Extended Cab

NHTSA No.: MB0115

Test Program: SPNCAP Side Impact

Test Date: 10/05/10



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 Extended Cab NHTSA No.: MB0115
 Test Program: SPNCAP Side Impact Test Date: 10/05/10

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat
Dummy Type / Serial No.	SID IIs SBLD/ 305
Head Contact	Side Curtain airbag, and 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	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	Observations and Conclusions
Impact Door	No separation from vehicle
Non-Impact Doors	None unlatched, no separation from latch & hinges or vehicle
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	Yes	Yes	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

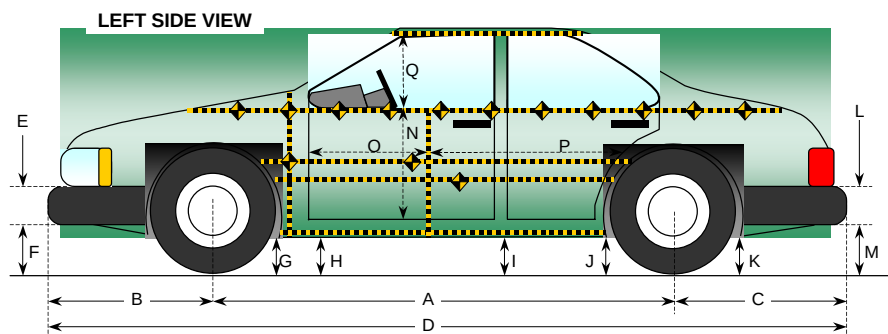
Measured Parameter	Units	Requirement	Value
Horizontal Offset from Vertical Impact Reference Line	mm	+/- 38	2 rearward
Light Trap No. 1 Velocity Primary	km/h	30.4 to 32.0	31.9
Light Trap No. 2 Velocity Redundant	km/h	30.4 to 32.0	32.0

DATA SHEET NO. 9

VEHICLE PROFILE MEASUREMENTS

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

NHTSA No.: MB0115
 Test Date: 10/05/10



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	3655	3570	85
B	Front Axle to Front Surface of Vehicle	997	1060	-63
C	Rear Axle to Rear Surface of Vehicle	1168	1170	-2
D	Total Length at Centerline	5820	5800	20
E	Front Bumper Thickness	125	125	0
F	Front Bumper Bottom to Ground	550	585	-35
G	Sill Height at Front Wheel Well	397	400	-3
H	Sill Height at Front Door Leading Edge	405	415	-10
I	Sill Height at "B" Pillar	430	468	-38
J1	Sill Height at Rear Wheel Well	455	480	-25
J2	Pinch Weld Height at Rear Wheel Well	400	420	-20
K	Sill Height Aft of Rear Wheel Well	500	568	-68
L	Rear Bumper Thickness	180	180	0
M	Rear Bumper Bottom to Ground	550	625	-75
N	Sill Height to Window Bottom Sill	875	880	-5
O	Front Door Leading Edge to Impact CL	674	520	154
P	Rear Door Trailing Edge to Impact CL	1241	1165	76
Q	Front Window Opening	510	482	28
R	Right Side Length	5710	5700	10
S	Left Side Length	5710	5650	60
T	Vehicle Width at "B" Post	1518	1480	38

NOTE: Measurements were achieved by using a tape measure.

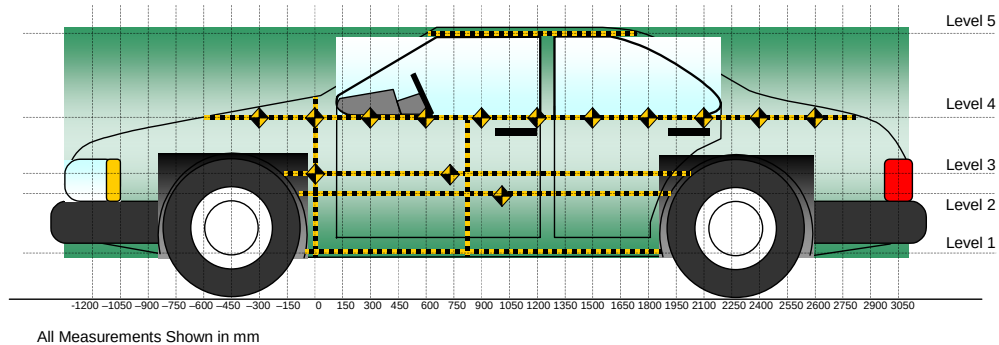
DATA SHEET NO. 10

VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Chevrolet Silverado 1500 Extended Cab NHTSA No.: MB0115

Test Program: SPNCAP Side Impact

Test Date: 10/05/10



LEFT SIDE VIEW

MAXIMUM EXTERIOR STATIC CRUSH

Level	Measurement Description	Height Above Ground
5	Window Top	1740
4	Window Sill	1170
3	Mid Door	840
2	Occupant H-Point	910
1	Sill Top	440

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 Extended Cab NHTSA No.: MB0115
 Test Program: SPNCAP Side Impact Test Date: 10/05/10

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900		1018		944			955		905			62		38	
-750	935	987	996	939		807	905	908	881		127	81	88	58	
-600	920	985	989	941	886	720	827	817	833	807	200	159	172	109	79
-450	922	988	991	944	832	635	727	720	739	705	287	260	271	206	127
-300	925	989	993	947	780	556	616	611	635	612	369	374	381	313	168
-150	926	991	994	951	748	469	498	494	518	529	458	493	501	433	219
0	928	992	995	954	729	390	412	409	426	447	537	580	586	527	282
150	928	993	996	956	720	469	477	475	485	499	459	516	521	471	221
300	929	993	995	958	719	600	612	611	610	572	329	382	383	348	147
450	928	994	995	959	720	696	738	735	732	560	232	255	260	227	160
600	927	991	993	959	719	713	799	797	781	585	214	192	195	178	134
750	926	991	992	959	719	737	823	822	805	607	190	168	171	154	112
900	925	990	992	959	720	762	847	845	830	630	164	143	146	129	89
1050	924	989	990	960	721	786	870	869	855	654	138	119	122	105	67
1200	922	987	988	960	714	812	891	889	874	650	110	96	99	86	64
1350															
1500															
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 34 mm forward of the estimated crush grid impact reference line.

Measurements were achieved using the Coordinate Measurement Machine (FARO)

MAXIMUM CRUSH DATA

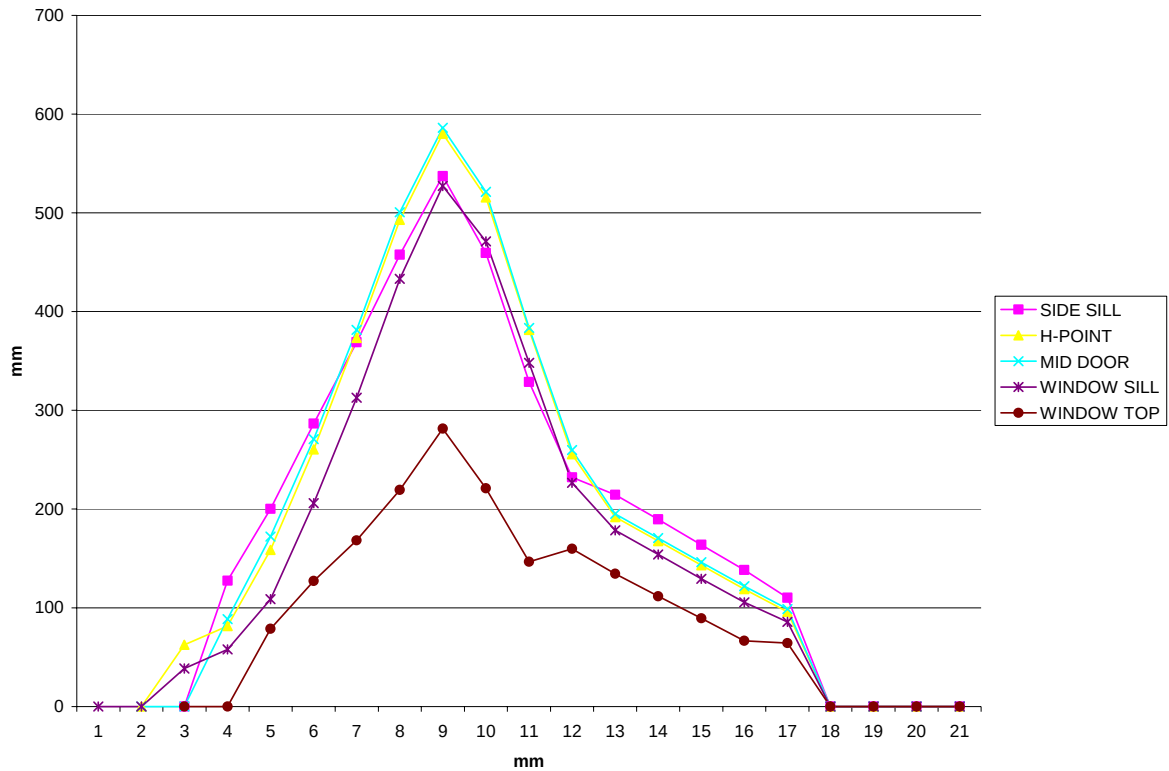
	Units	Level 1	Level 2	Level 3	Level 4	Level 5
Maximum Crush	mm	537	580	586	527	282
Distance from Actual Impact Point	mm	32	32	32	32	32

DATA SHEET NO. 10 (CONTINUED)

VEHICLE EXTERIOR CRUSH MEASUREMENTS

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

NHTSA No.: MB0115
Test Date: 10/05/10



DATA SHEET NO. 11A

FMVSS NO. 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2011 Chevrolet Silverado 1500 Extended Cab NHTSA No.: MB0115
 Test Program: SPNCAP Side Impact Test Date: 10/05/10

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21 Test Time: 14:15

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

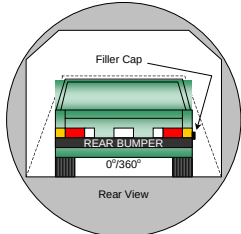
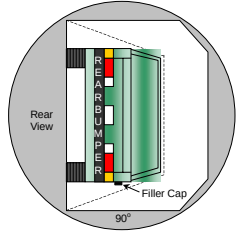
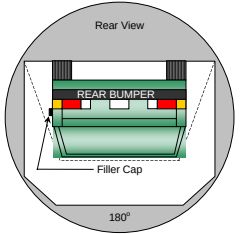
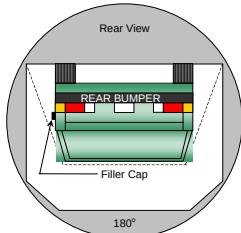
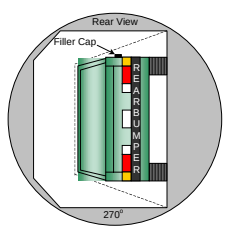
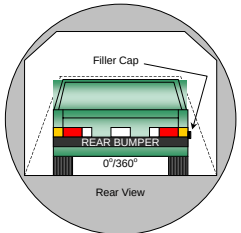
(Maximum allowable = 5 ounces)

C. For the following 25 minutes: 0

(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°			

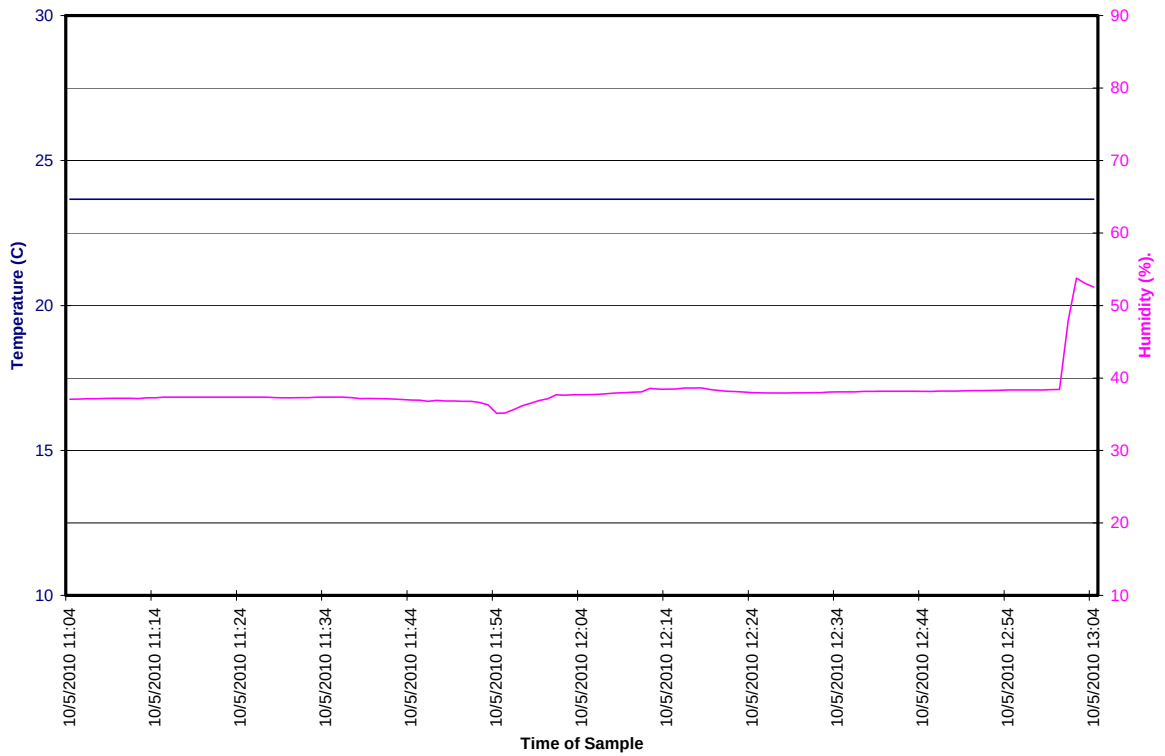
Test Phase	Rotation Time (sec.)	Hold Time (sec.)	Spillage Collection Time (min)	Spillage (oz.)	Spillage Collection Time (min)	Spillage (oz.)	Spillage Collection Time (min)	Spillage (oz.)
0° to 90°	120	300	First 5	0	Sixth	0	Seventh	0
90° to 180°	120	300	First 5	0	Sixth	0	Seventh	0
180° to 270°	120	300	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 Extended Cab NHTSA No.: MB0115
Test Program: SPNCAP Side Impact Test Date: 10/05/10

MB0115 75 Degree Oblique Rigid Pole Side NCAP Impact 101005; Test Time 13:04



APPENDIX A
PHOTOGRAPHS

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No. 004	Post-Test Frontal View of Test Vehicle	A-2
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No. 047	Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View	A-24
No. 048	Post-Test Dummy Close-Up Torso Contact with Side Airbag View	A-24
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



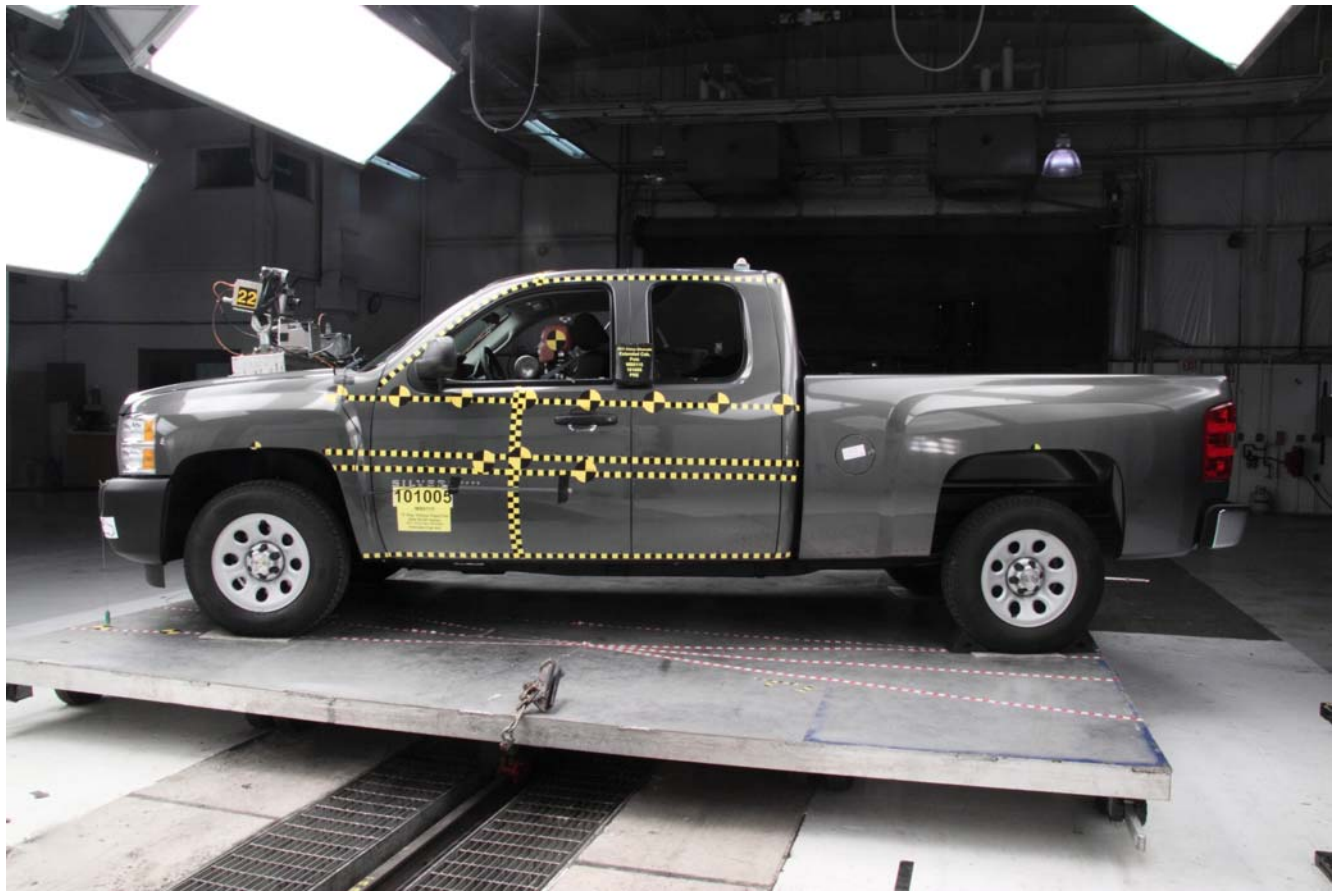
No. 004 – Post-Test Frontal View of Test Vehicle



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



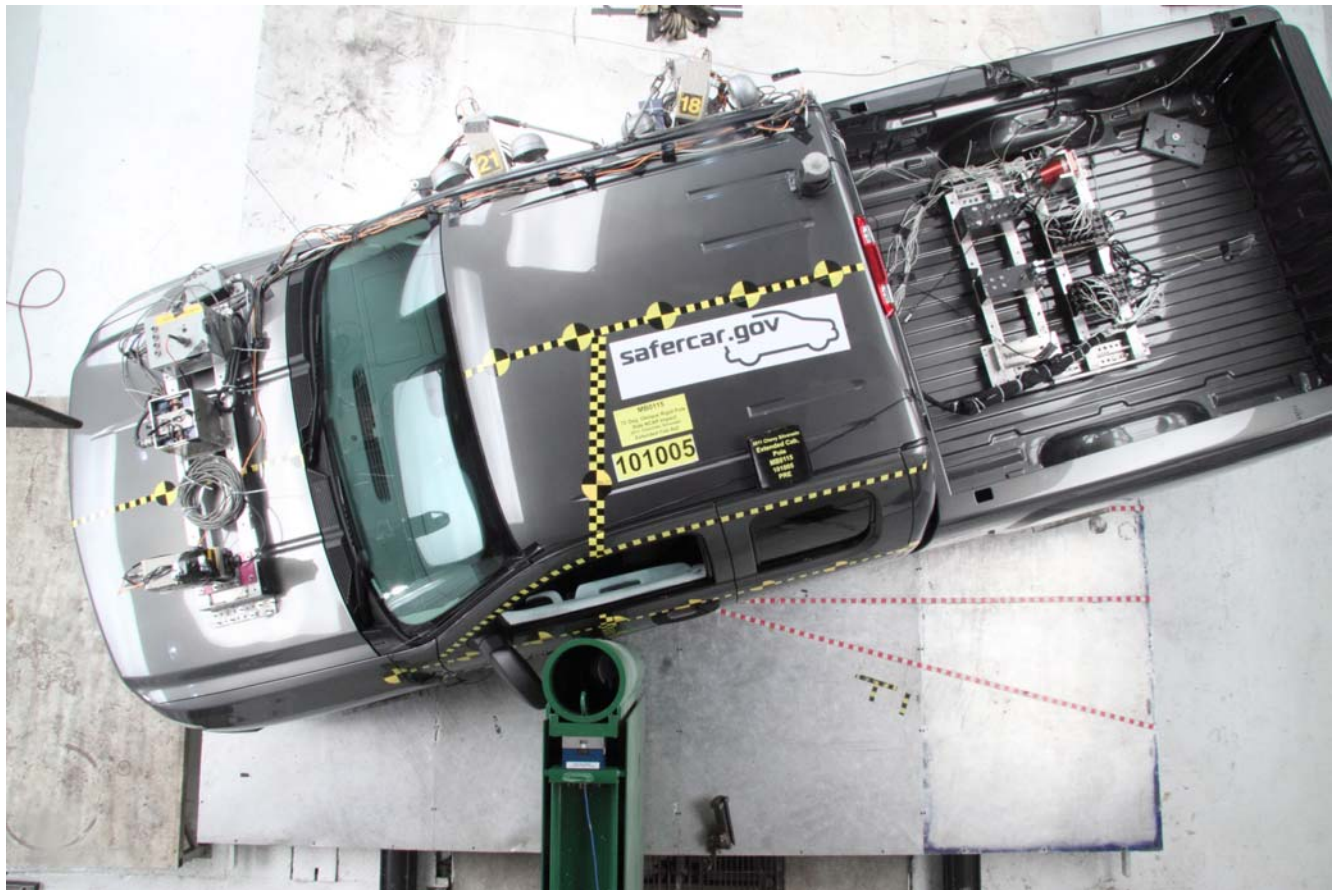
No. 012 – Post-Test Rear View of Test Vehicle



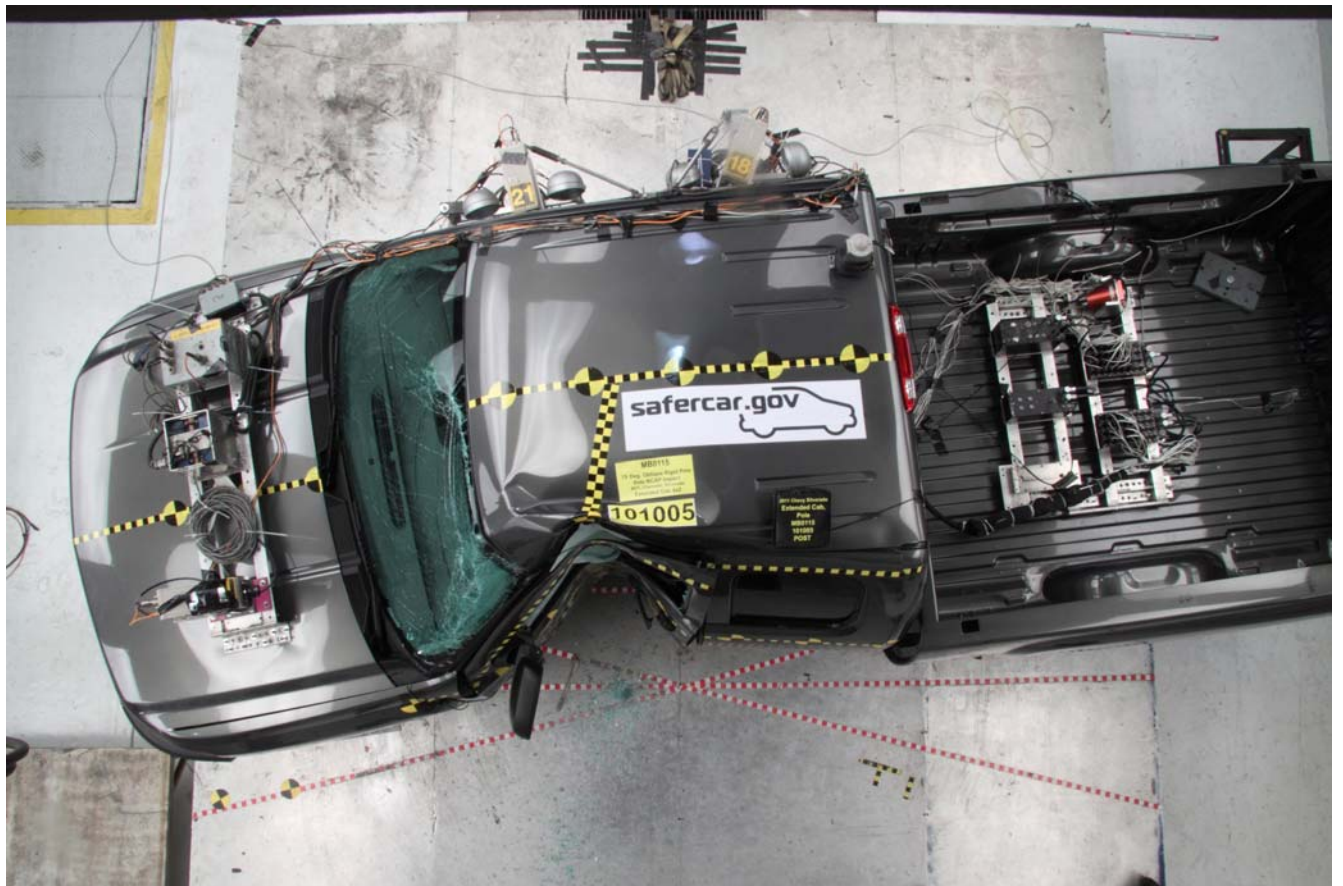
No. 013 – Pre-Test Right Side View of Test Vehicle



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



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



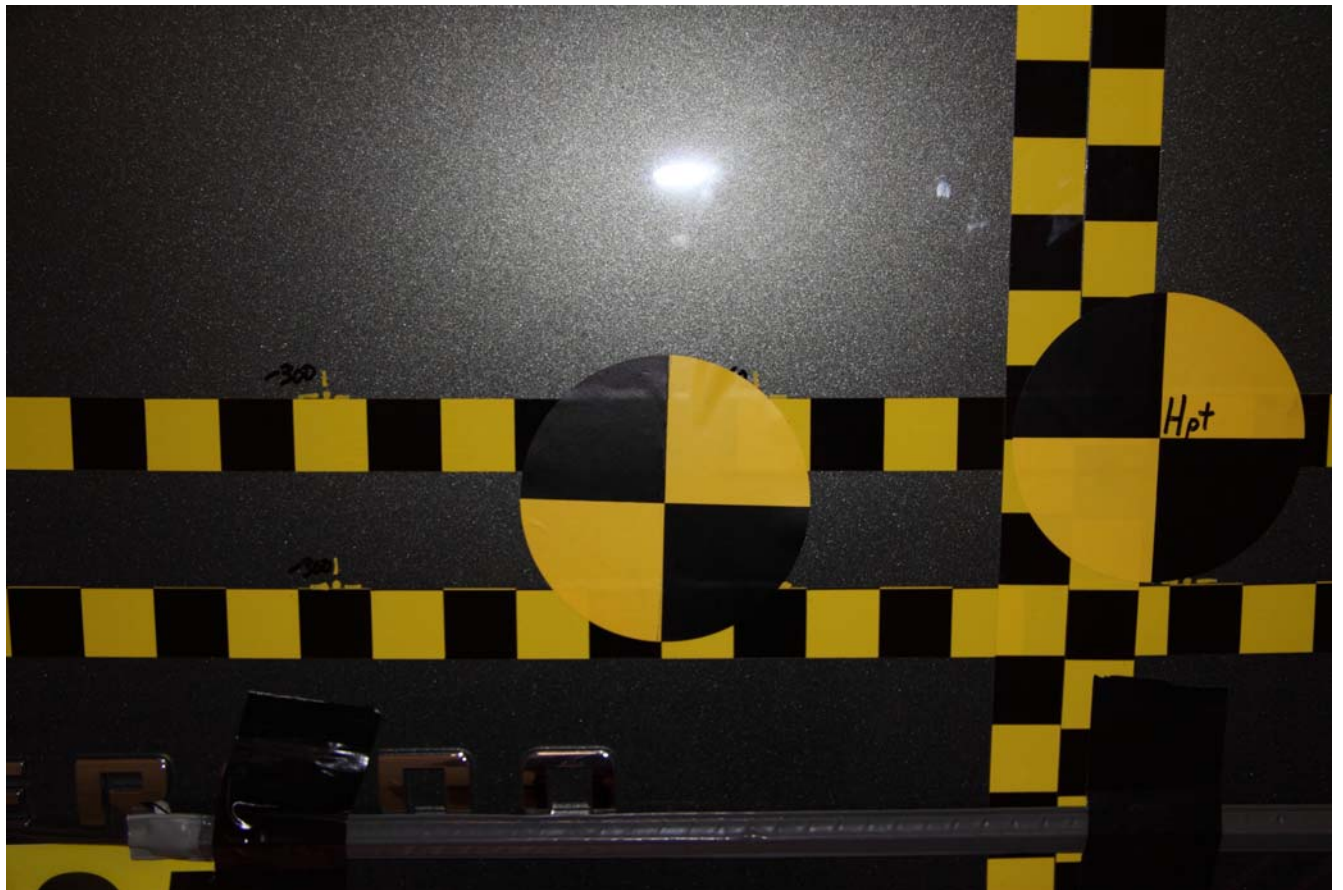
No. 016 – Post-Test Overhead View of Test Vehicle and Pole



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



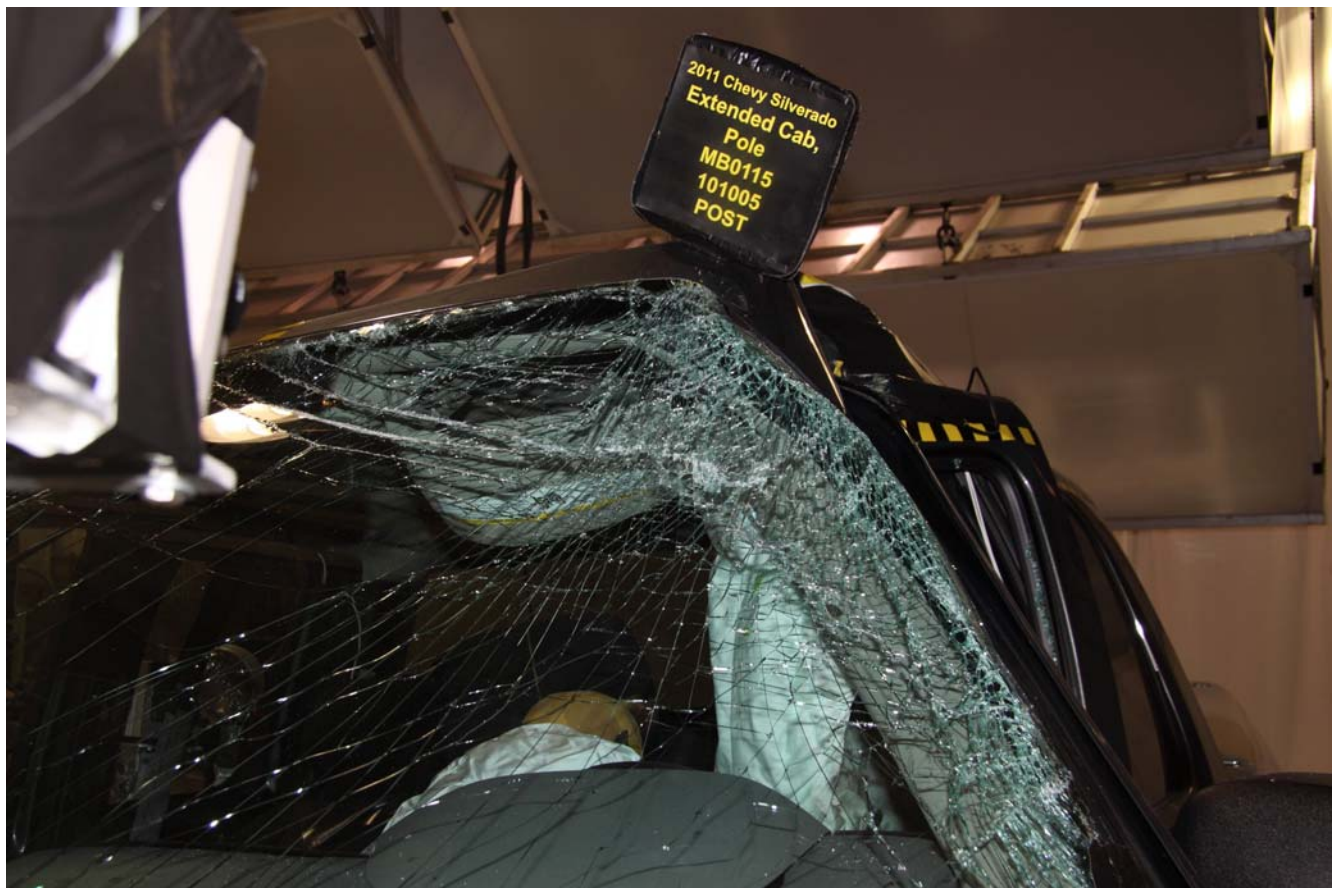
No. 019 – Pre-Test Close-Up View of Impact Point Target



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



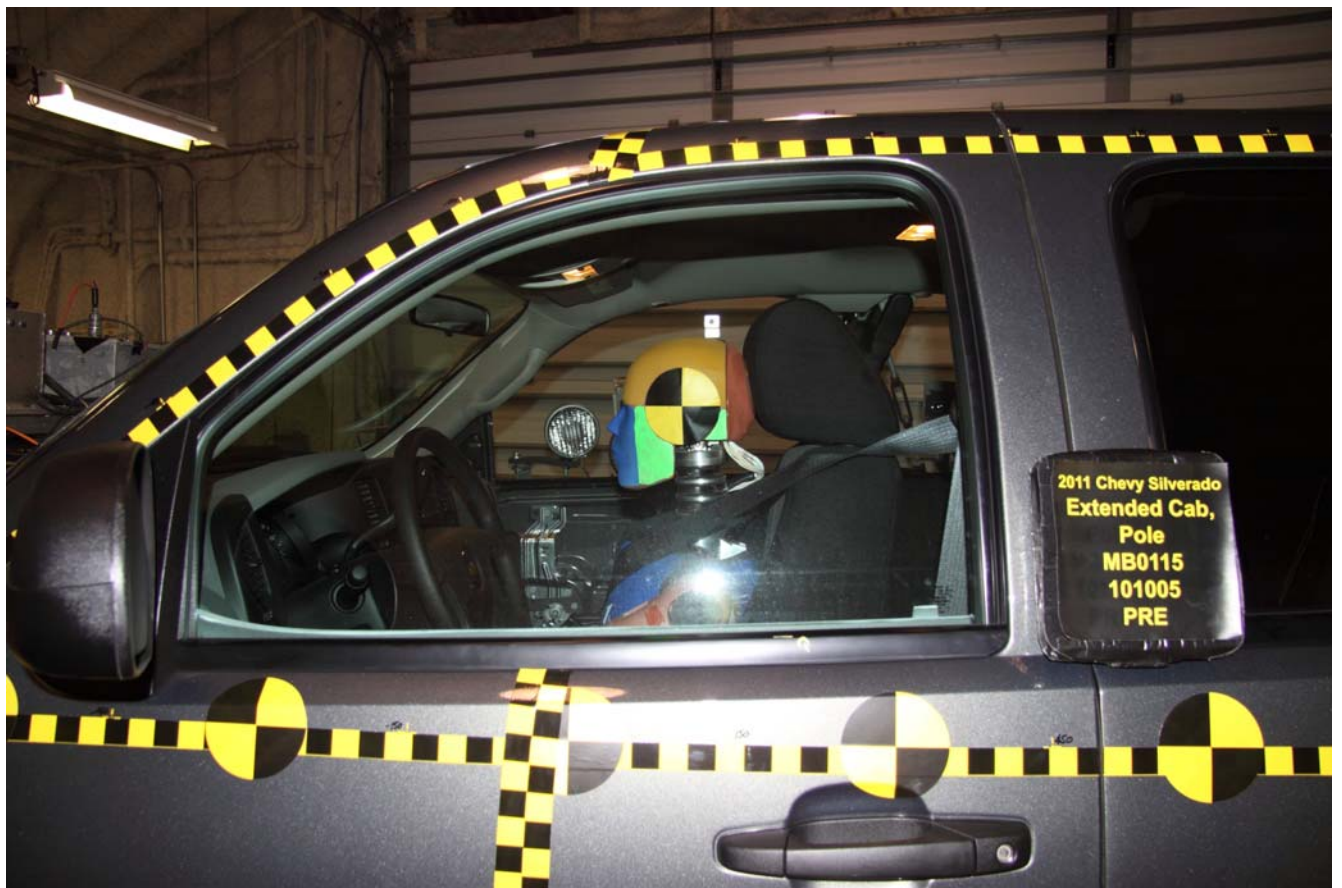
No. 021 – Pre-Test Front Close-Up View of Dummy



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



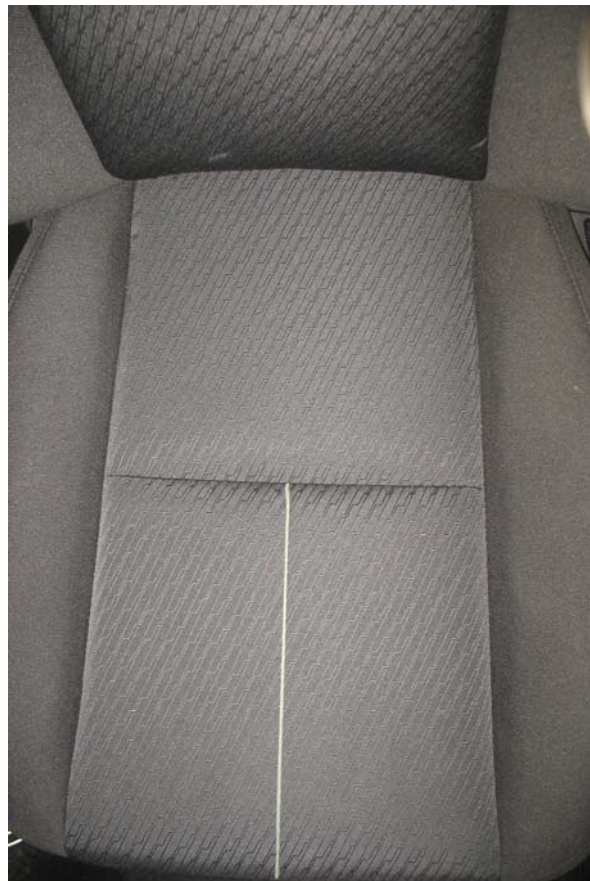
No. 025 – Post-Test Left Side View of Dummy Shoulder and Driver Door Top View



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



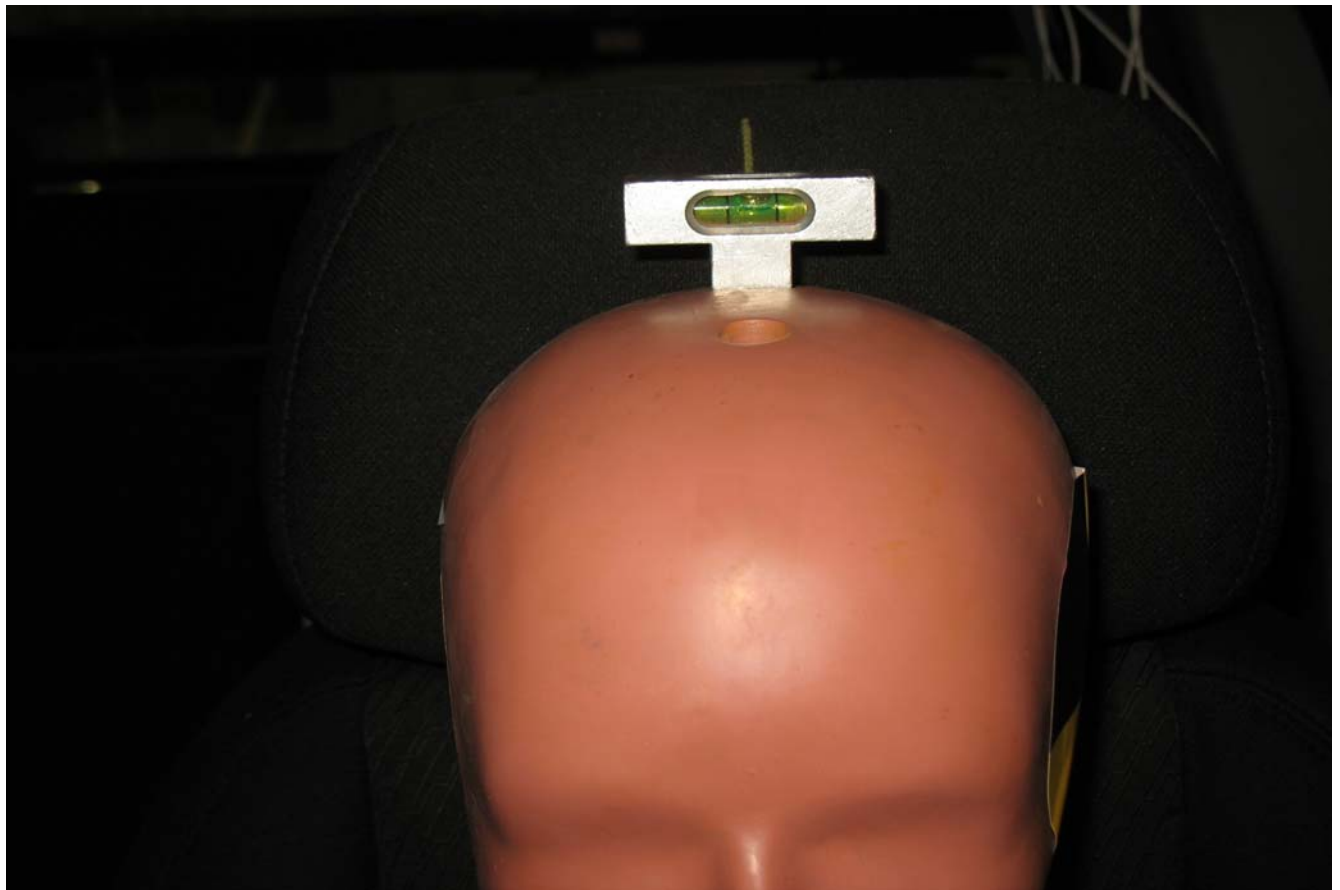
No. 028 – Pre-Test Frontal View of Seat Pan Prior to Dummy Positioning



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

Photograph Not Taken

No. 037 – Pre-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



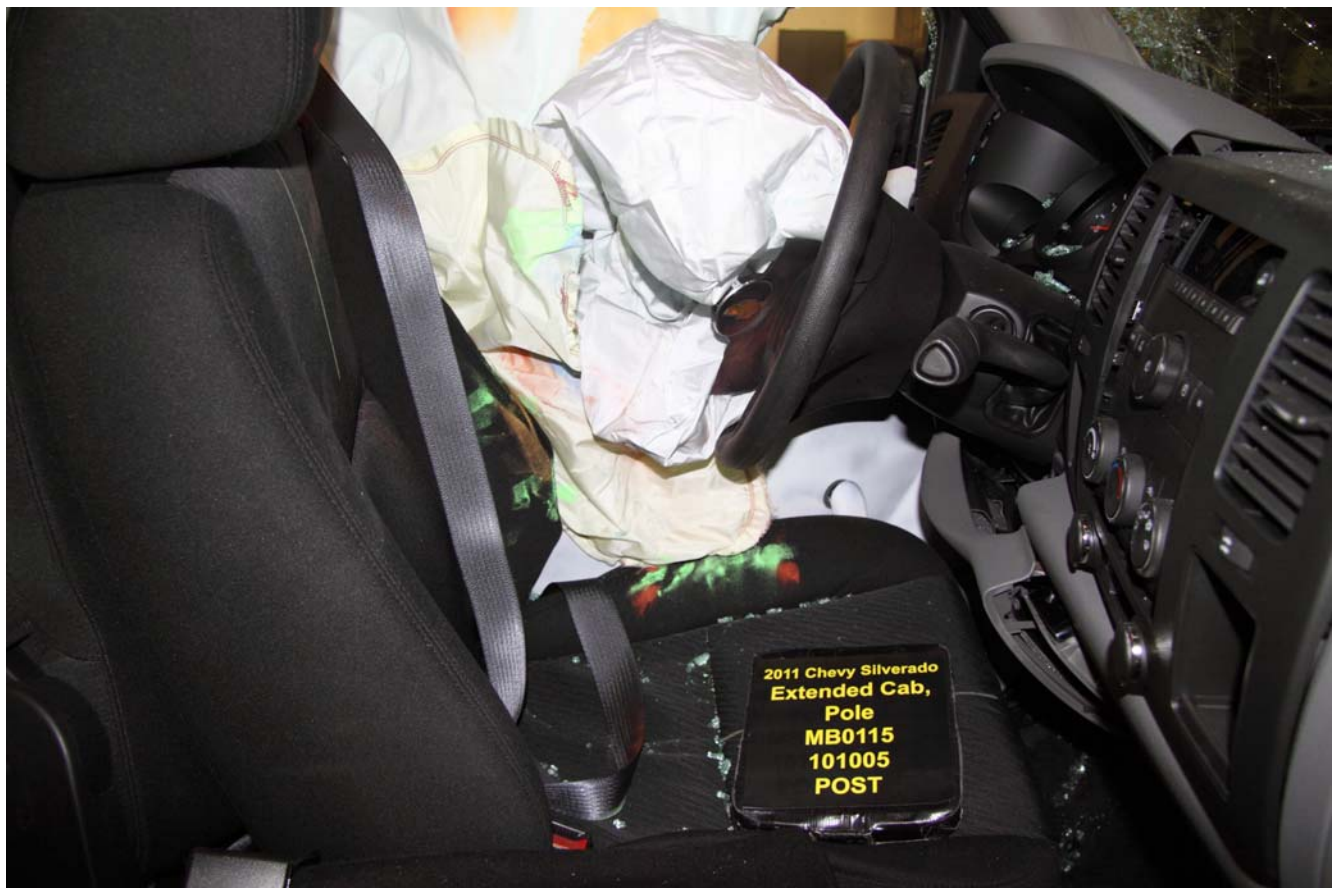
No. 041 – Pre-Test Right Side View of Dummy and Front Seat Occupant Compartment



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



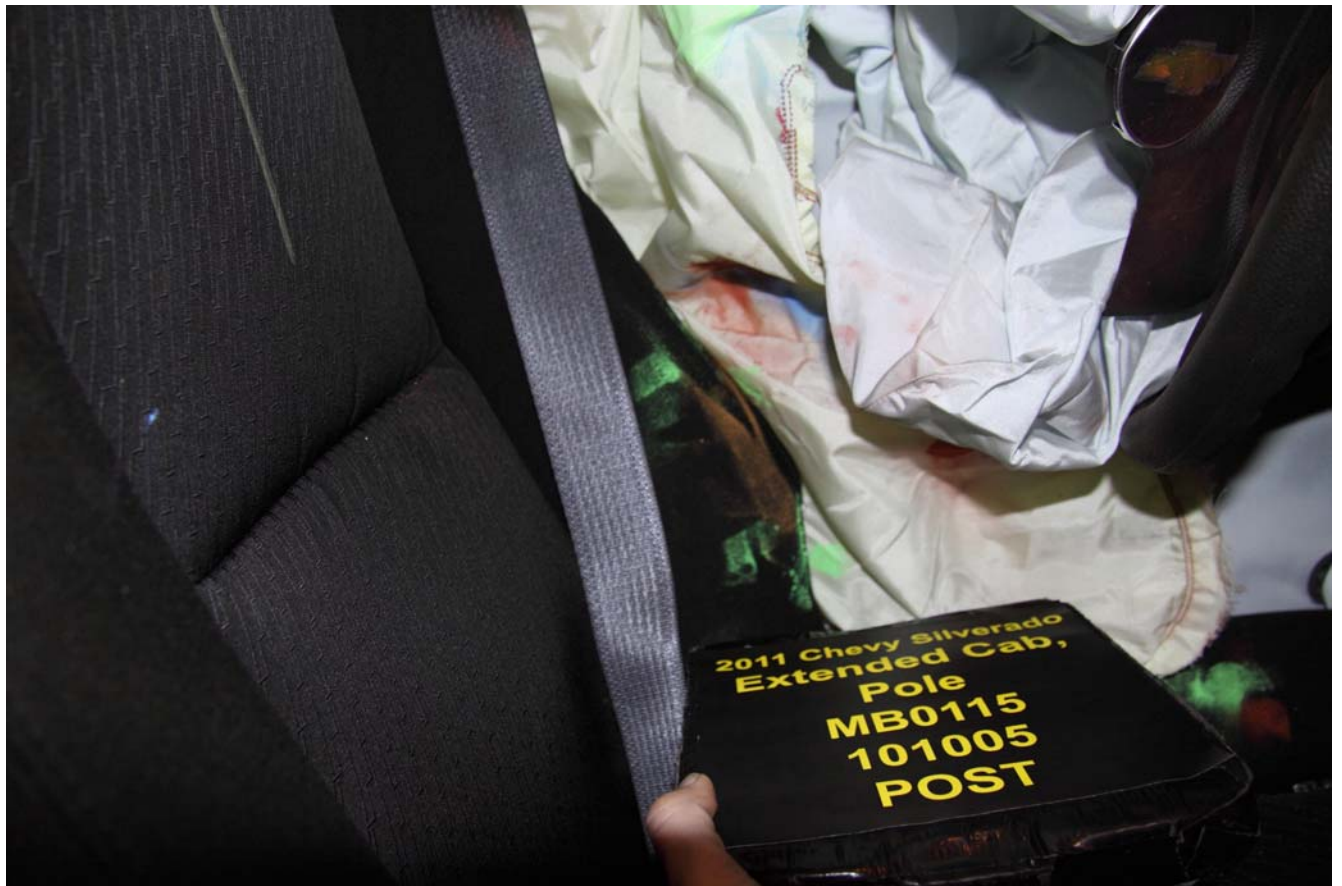
No. 045 – Post-Test Dummy Close-Up Head Contact with Vehicle View



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



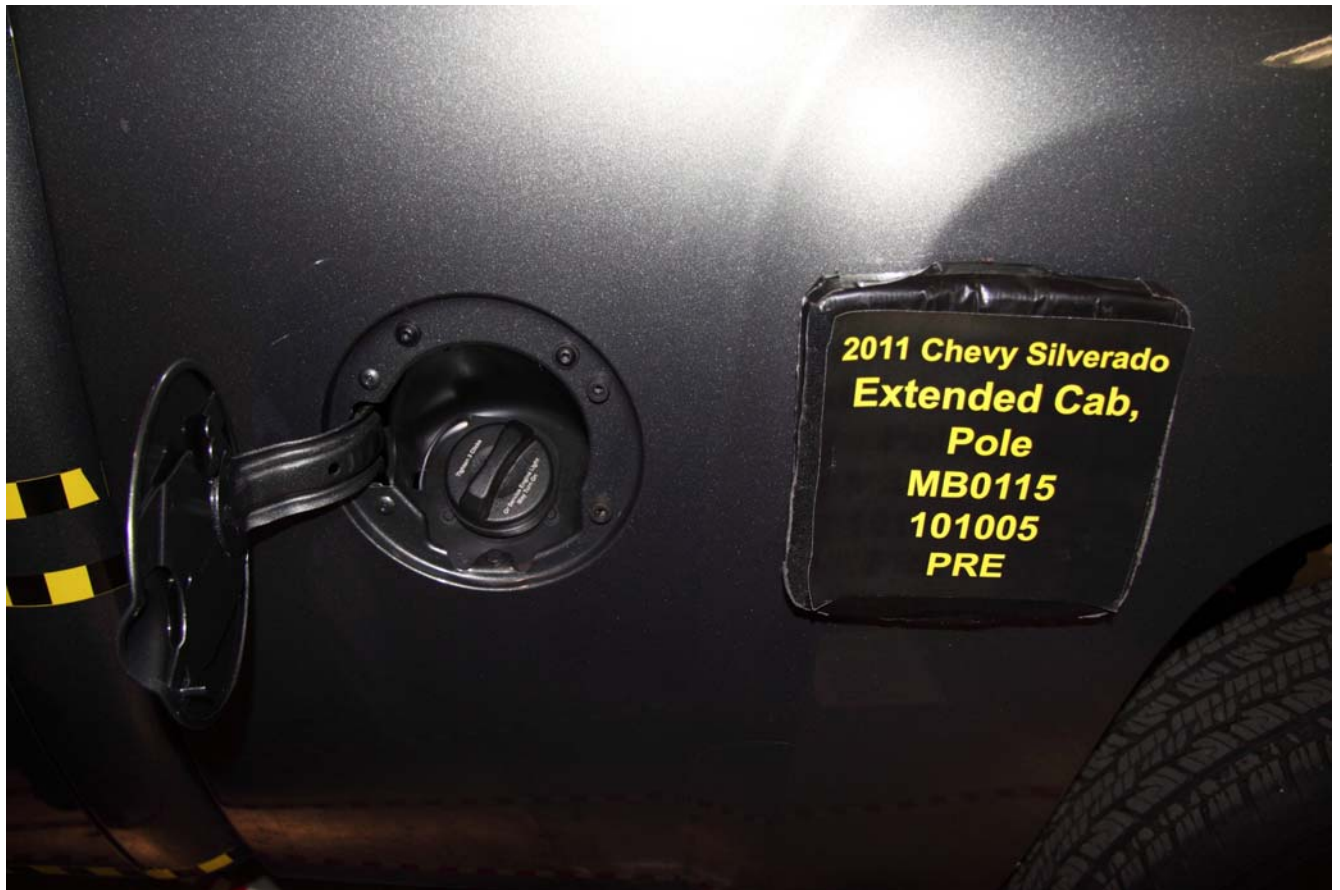
No. 048 – Post-Test Dummy Close-Up Torso Contact with Side Airbag View



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



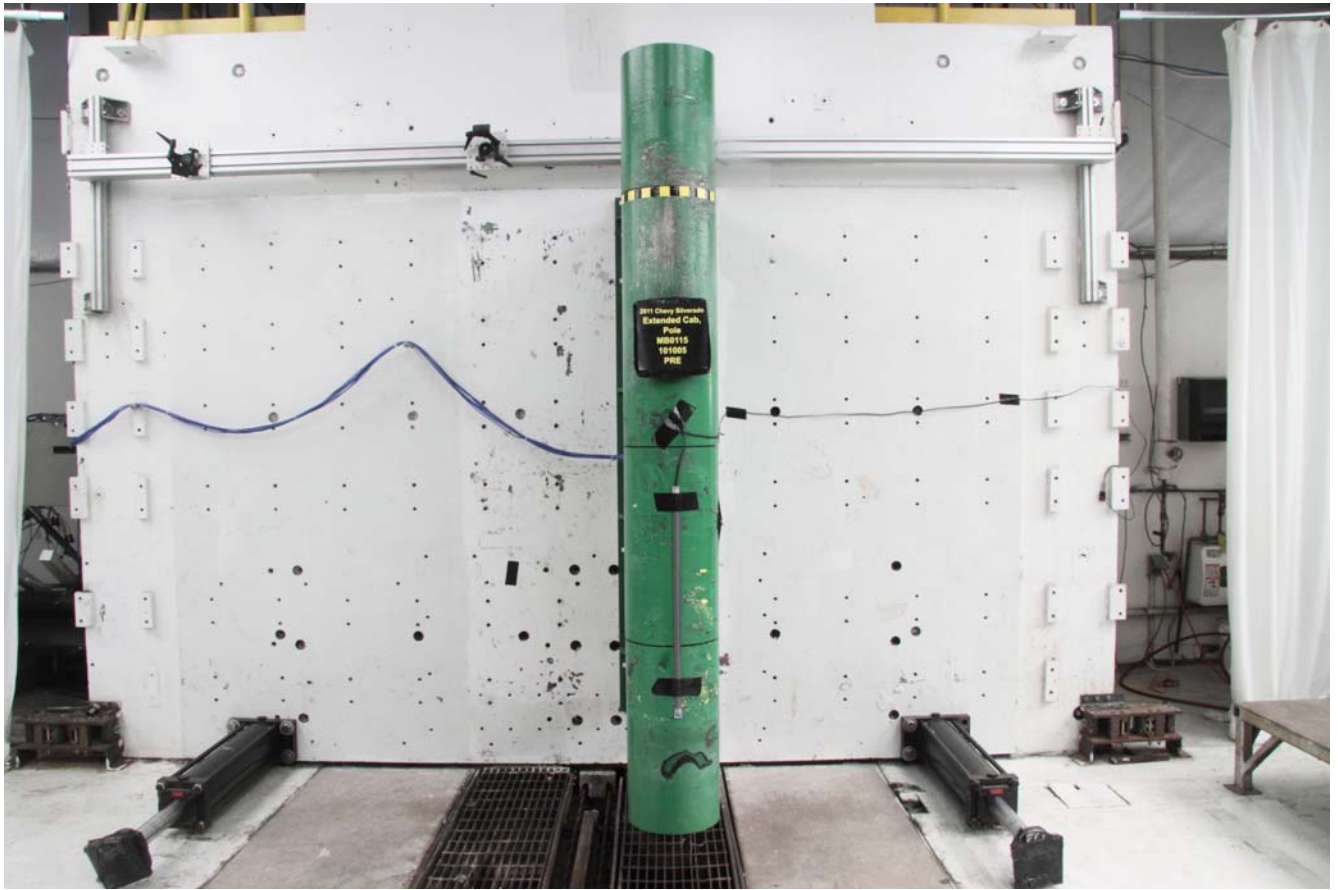
No. 052 – Post-Test View of Fuel Filler Cap or Fuel Filler Neck



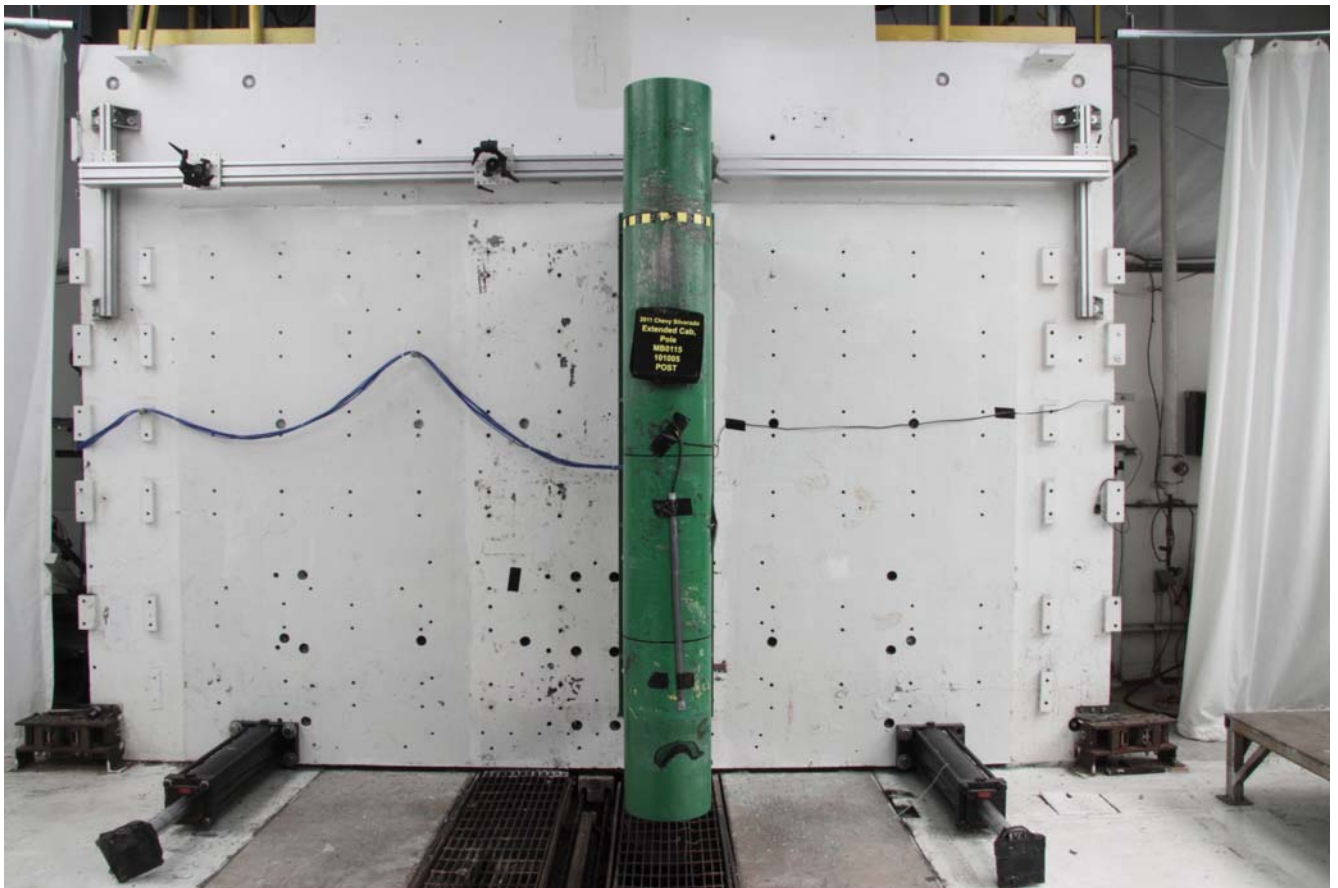
No. 053 – Close-Up View of Vehicle's Certification Label



No. 054 – Close-Up View of Vehicle's Tire Information 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 EXT
CAB WT**

**EXTERIOR: STEEL GREEN METALLIC
INTERIOR: DARK TITANIUM**

**VORTEC 4.3L V6 MFI ENGINE
4-SPD AUTOMATIC TRANSMISSION**

Visit us at www.chevy.com

STANDARD EQUIPMENT

ITEMS LISTED BELOW ARE INCLUDED AT NO EXTRA CHARGE IN THE STANDARD VEHICLE PRICE EXCEPT:

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

MECHANICAL

- VORTEC 4.3L V6
- 4-SPEED AUTO TRANSMISSION
- COIL-OVER-SHOCK FRONT SUSP
- MULT-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 REAR PROPORTIONING
- DUAL STAGE DRIVER/RT FRNT PASS AIR BAGS W/PASS SENSING SYSTEM
- HEAD CURTAIN SIDE AIRBAGS W/

ROLLOVER PROTECTION

- SEAT-MOUNTED SIDE-IMPACT AIRBAGS DRVR & RIGHT-FRNT PASS
- DAYTIME RUNNING LAMPS
- AUTO HEADLAMPS W/FLASH-TO-PASS
- STABILITRAK-STABILITY CONTROL
- TIRE PRESSURE MONITOR SYSTEM (DOES NOT APPLY TO SPARE TIRE)

EXTERIOR

- CHROME REAR BUMPERS
- 170 DEGREE OPENING REAR DOORS
- 17" FULLSIZE SPARE
- ALL-SEASON TIRES
- FOLDING OUTSIDE MIRRORS
- CARGO BOX ILLUMINATION
- SOLAR-RAY TINTED GLASS

INTERIOR

- AIR CONDITIONING
- 40/20/40 SPLIT BENCH FRNT SEAT
- UPLEVEL SPLIT BENCH SEATS W/ DR LUMBAR & LOCKING STORAGE
- 60/40 SPLIT REAR SEATING

- DUAL GLOVE BOX STORAGE
- AM/FM STEREO WITH SEEK & SCAN
- DRIVER INFO.CENTER DISPLAY
- INTERMITTENT WIPERS
- 4-GAUGE CLUSTER W/TACHOMETER
- 12-VOLT AUX PWR OUTLET
- TILT STEERING WHEEL
- RUBBERIZED VINYL FLR COVERING

OTHER

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

OPTIONS & PRICING

MANUFACTURER'S SUGGESTED RETAIL PRICE

STANDARD VEHICLE PRICE \$25,395.00

OPTIONS INSTALLED BY THE MANUFACTURER MAY REPLACE STANDARD EQUIPMENT SHOWN

LOCKING REAR DIFFERENTIAL	325.00
DEEP TINTED GLASS	150.00
HEAVY DUTY SUSPENSION	95.00

GVW RATING - 6,400 LBS INC.
REAR AXLE 3.23 RATIO INC.

TOTAL OPTIONS \$570.00
TOTAL VEHICLE & OPTIONS \$25,965.00
DESTINATION CHARGE 995.00

TOTAL VEHICLE PRICE* \$26,960.00

EPA Fuel Economy Estimates

CITY MPG

15

Expected range
for most drivers
12 to 18 MPG

**Estimated
Annual Fuel Cost
\$2,293**

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

Combined Fuel Economy

This Vehicle

17

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

HIGHWAY MPG

20

Expected range
for most drivers
16 to 24 MPG

ACL



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



GOVERNMENT SAFETY RATINGS

Frontal Crash	Driver Passenger	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.	Not Rated	Not Rated

Side Crash	Front seat	Not Rated
Star ratings based on the risk of injury in a side impact.	Not Rated	Not Rated

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:
ROANOKE, IN U.S.A.
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 consumer. *Excludes manufacturer's recommended price. Dealer installed options and accessories not listed above. Local taxes or license fees.

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GM, the GM logo, and the "Chevrolet" name are trademarks of General Motors.



ORDER NO. 1020000 SALES CODE & SALES MODEL CODE CD10753
DEALER NO. 30118
FINAL ASSEMBLY: ROANOKE, IN U.S.A.
VIN 1GCRPEX2B2106218
DEALER TO WHOM ORDERED:
DEPAULA CHEVROLET-HUMMER, INC.
785 CENTRAL AVE
ALBANY, NY 12206-1501

GZ
1FA9993623

No. 067 – Monroney Label

3-2 Seats and Restraints

Head Restraints

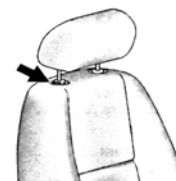
The front seats have adjustable head restraints in the outboard seating positions.

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.



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.



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.

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-4	Driver Total Pelvis Y-Axis Force	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.

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

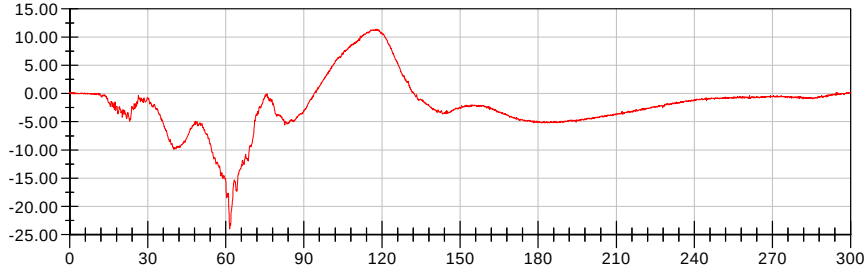
Test Lab: CTF

Test Number: 101005 (MB0115)

Position #1 SID II's Dummy (305)

Test Date: 10/05/2010

Driver Head Acceleration (X) Primary (g) vs. Time [ms]



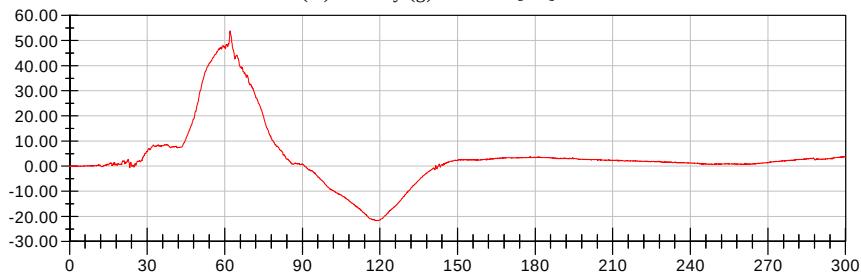
<Max>

11.36 g at 117.52 ms

<Min>

-23.96 g at 61.52 ms

Driver Head Acceleration (Y) Primary (g) vs. Time [ms]



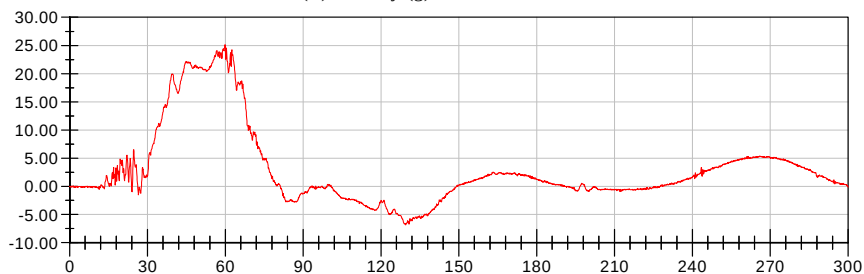
<Max>

53.89 g at 62.08 ms

<Min>

-21.76 g at 118.48 ms

Driver Head Acceleration (Z) Primary (g) vs. Time [ms]



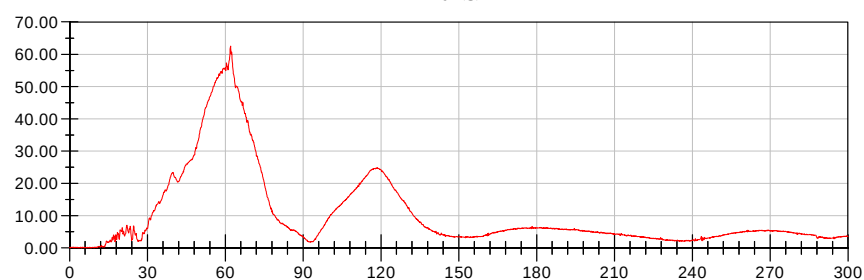
<Max>

25.12 g at 59.92 ms

<Min>

-6.84 g at 129.52 ms

Driver Head Acceleration Resultant Primary (g) vs. Time [ms]



<Max>

62.56 g at 62.08 ms

<Min>

0.03 g at 0.24 ms



NHTSA

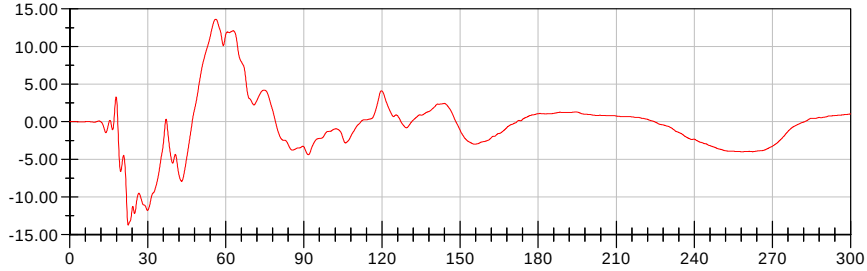
Test Lab: CTF

Test Number: 101005 (MB0115)

Position #1 SID II's Dummy (305)

Test Date: 10/05/2010

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



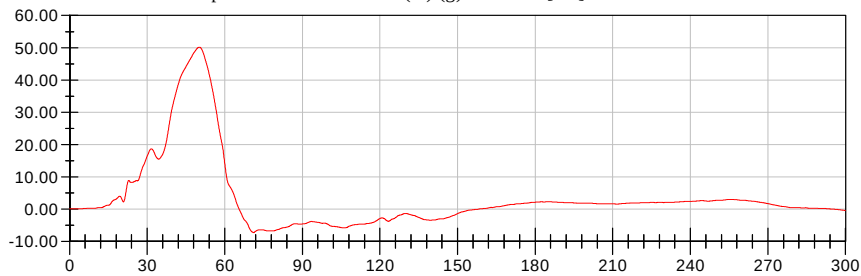
<Max>

13.63 g at 56.16 ms

<Min>

-13.75 g at 22.48 ms

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



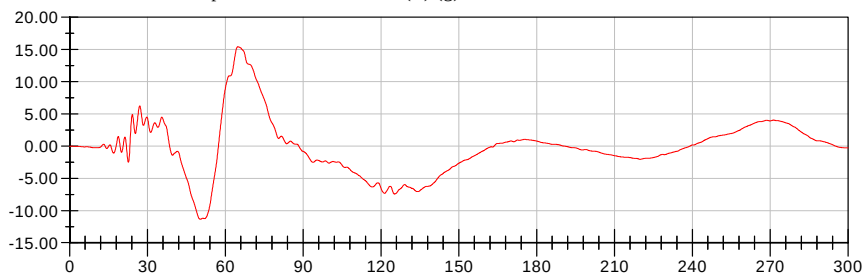
<Max>

50.17 g at 50.16 ms

<Min>

-7.29 g at 71.04 ms

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



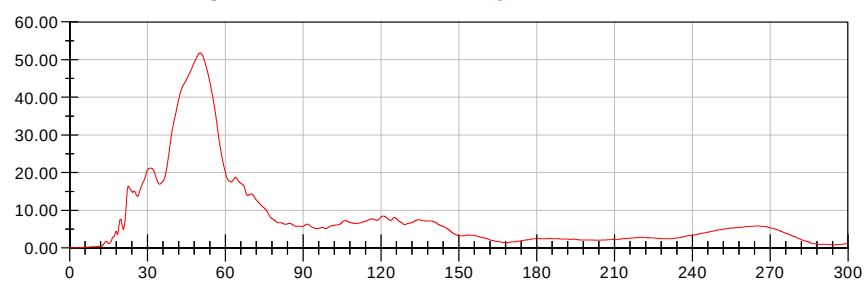
<Max>

15.41 g at 64.88 ms

<Min>

-11.34 g at 50.32 ms

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



<Max>

51.79 g at 50.32 ms

<Min>

0.05 g at 0.08 ms



NHTSA

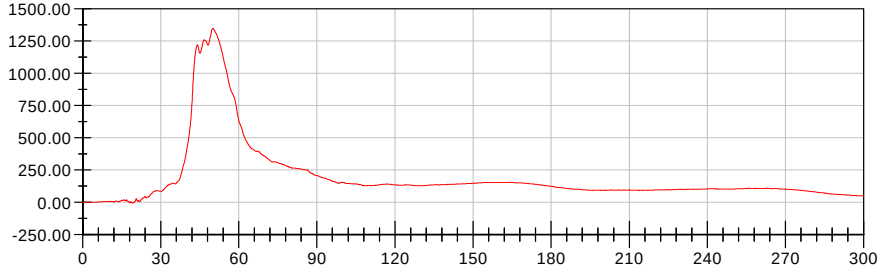
Test Lab: CTF

Test Number: 101005 (MB0115)

Position #1 SID IIs Dummy (305)

Test Date: 10/05/2010

Driver Iliac Wing Force on Impact Side (Y) (N) vs. Time [ms]



<Max>

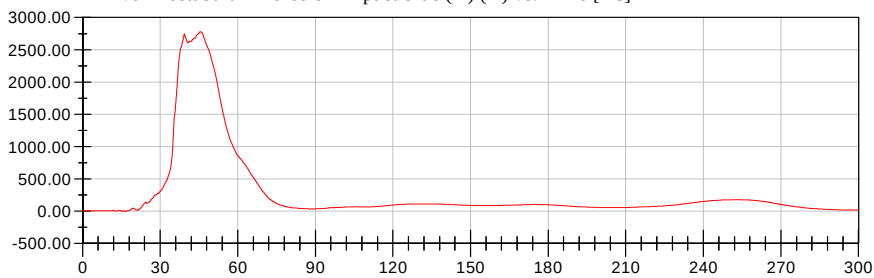
1,347.50 N at 50.08 ms

<Min>

-5.84 N at 19.36 ms

CFC_600

Driver Acetabulum Force on Impact Side (Y) (N) vs. Time [ms]



<Max>

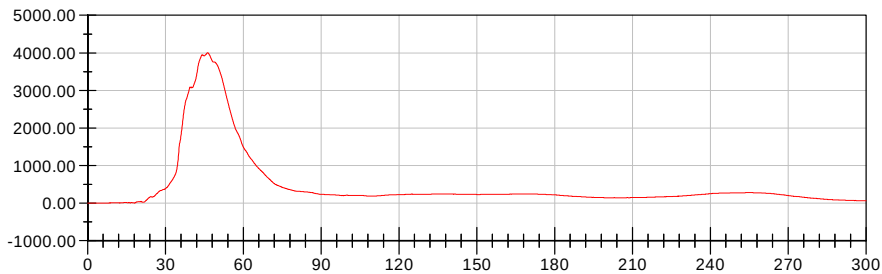
2,779.53 N at 45.44 ms

<Min>

-4.78 N at 16.72 ms

CFC_600

Driver Total Pelvis Force on Impact Side (Y) (N) vs. Time [ms]



<Max>

4,003.38 N at 46.32 ms

<Min>

-0.23 N at 0.48 ms

CFC_600



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. 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

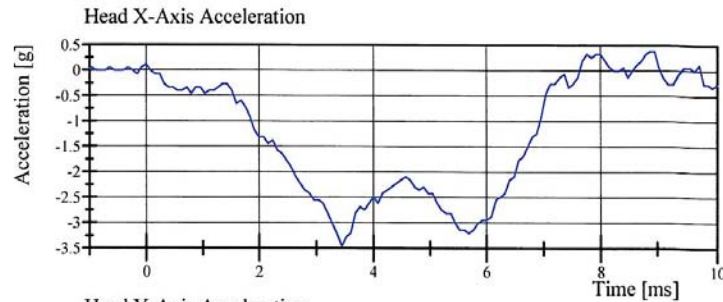


Transportation Research Center Inc.

Left Lateral Head Drop

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

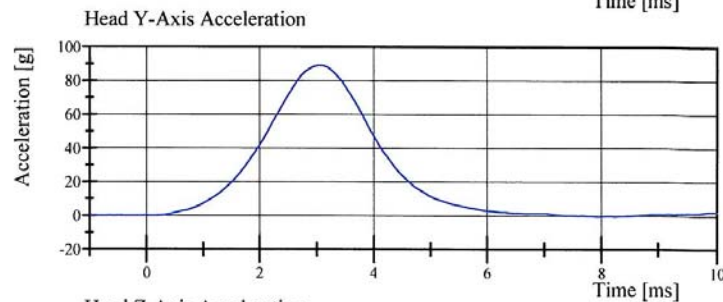
Test Date: 9/29/2010



Filter Class: CFC_1000

Max: 0.4 gn at 8.9 ms

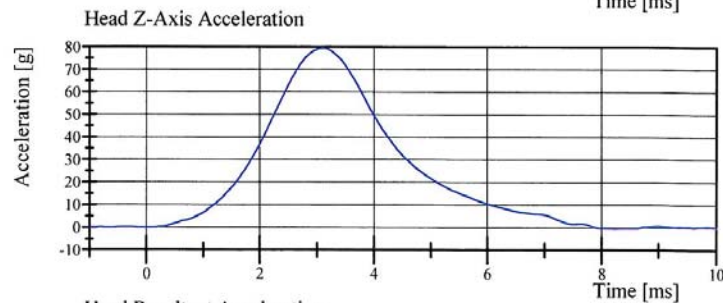
Min: -3.5 gn at 3.4 ms



Filter Class: CFC_1000

Max: 89.2 gn at 3.0 ms

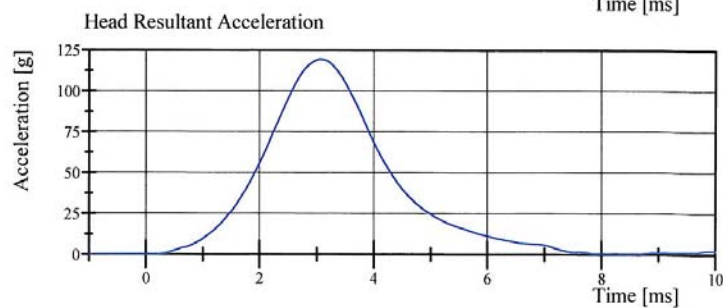
Min: -0.3 gn at 7.9 ms



Filter Class: CFC_1000

Max: 79.4 gn at 3.1 ms

Min: -0.5 gn at 8.2 ms



Filter Class: CFC_1000

Max: 119.3 gn at 3.0 ms

Min: 0.0 gn at -0.9 ms

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

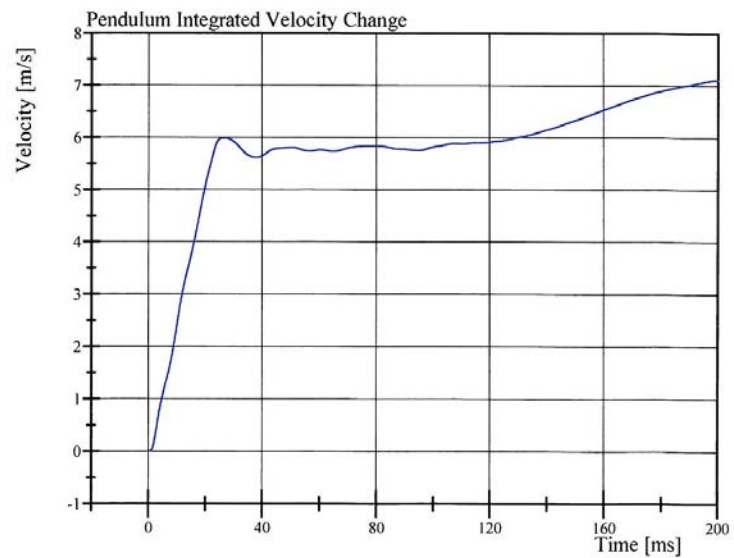
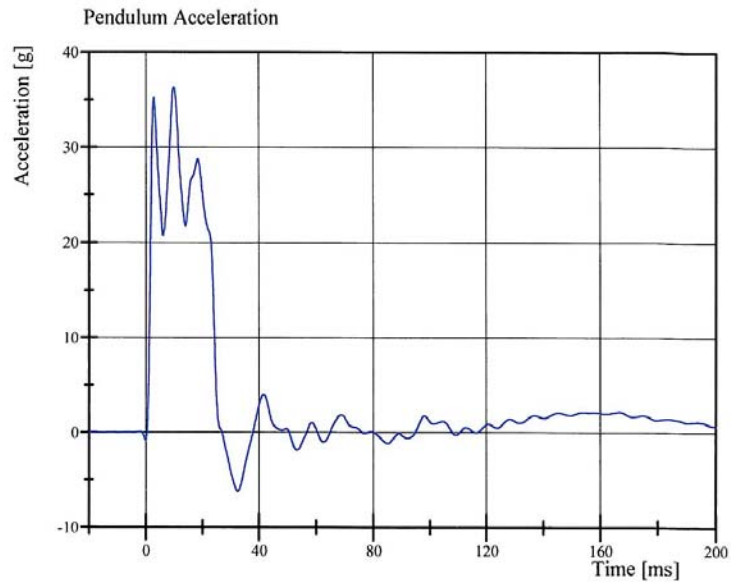


Transportation Research Center Inc.

Left Lateral Neck

SID II 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

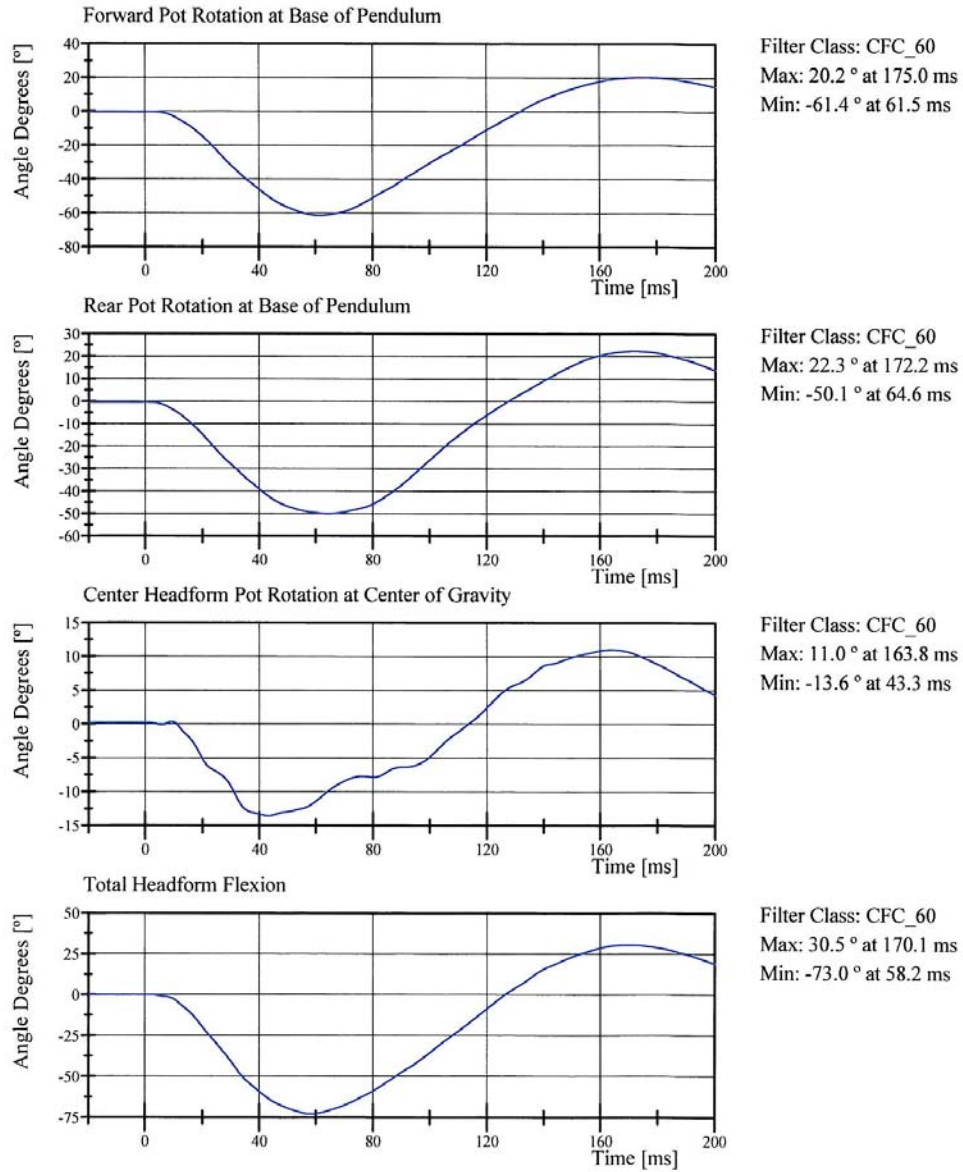


Transportation Research Center Inc.

Left Lateral Neck

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

Test Date: 9/29/2010



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

09.29.2010 09:02:09 657

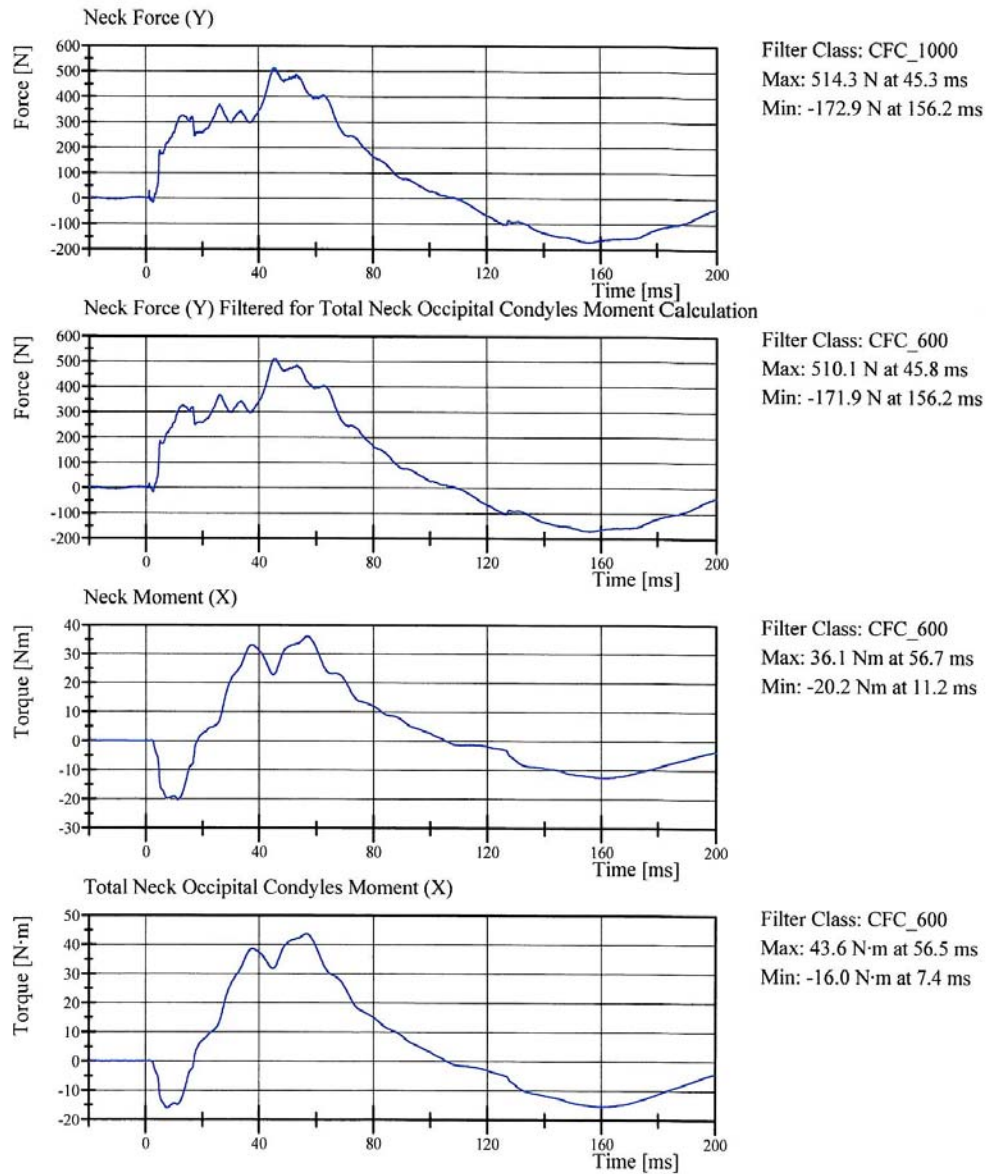


Transportation Research Center Inc.

Left Lateral Neck

SID II 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

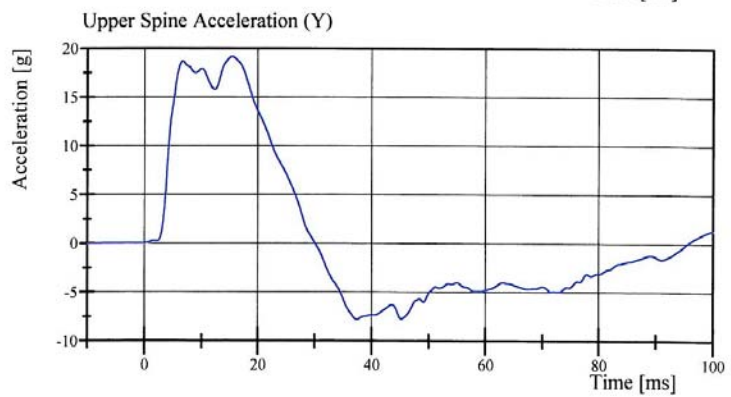
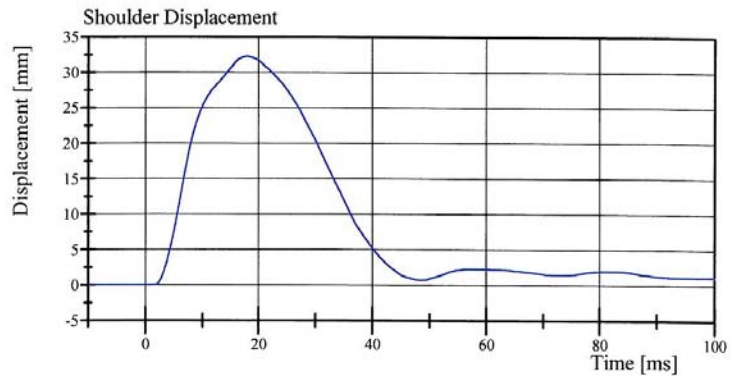
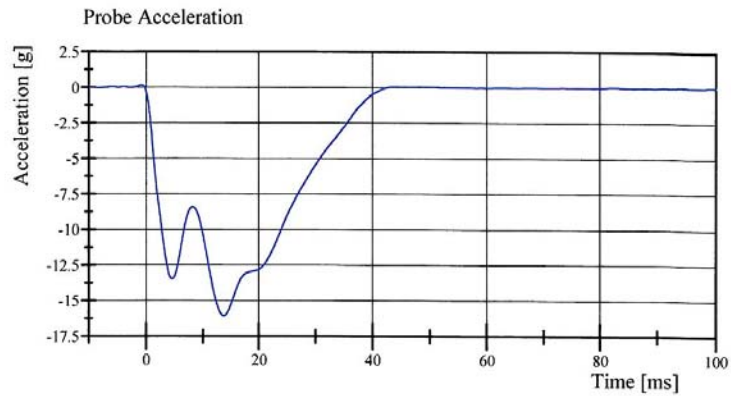


Transportation Research Center Inc.

Left Lateral Shoulder

SID II 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

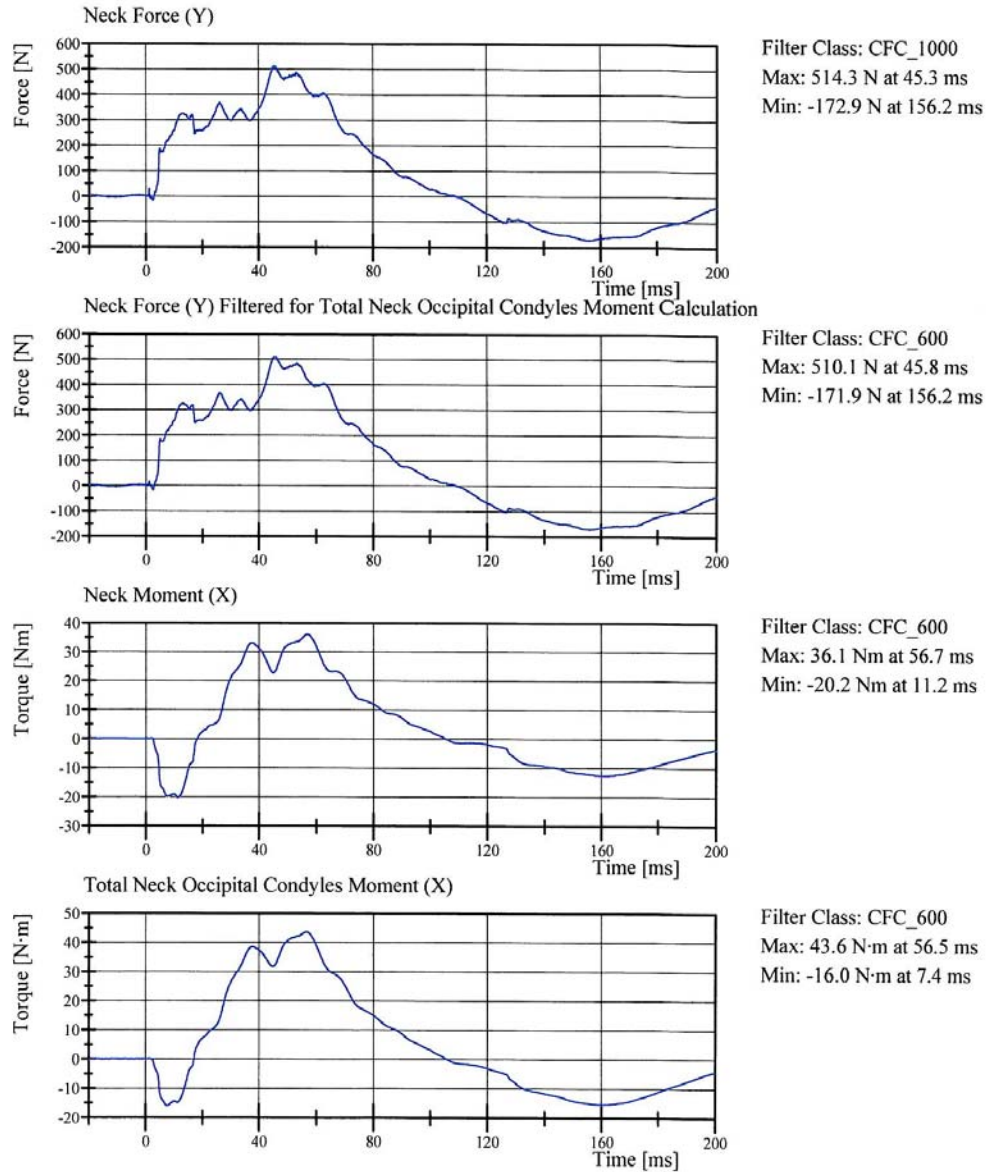


Transportation Research Center Inc.

Left Lateral Neck

SID II 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

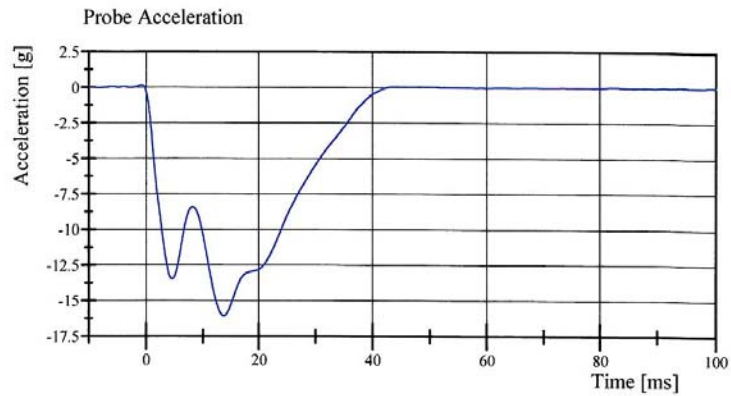


Transportation Research Center Inc.

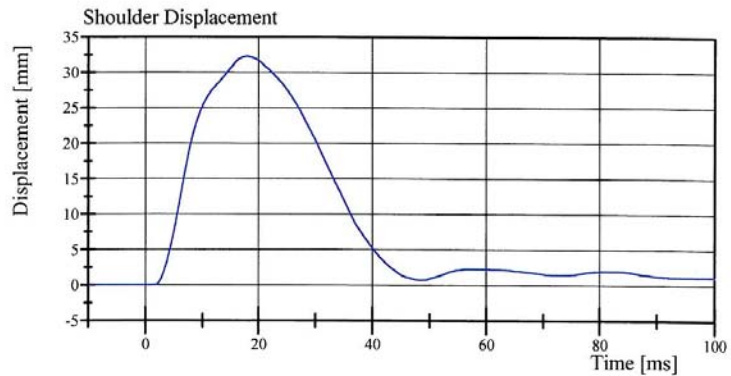
Left Lateral Shoulder

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

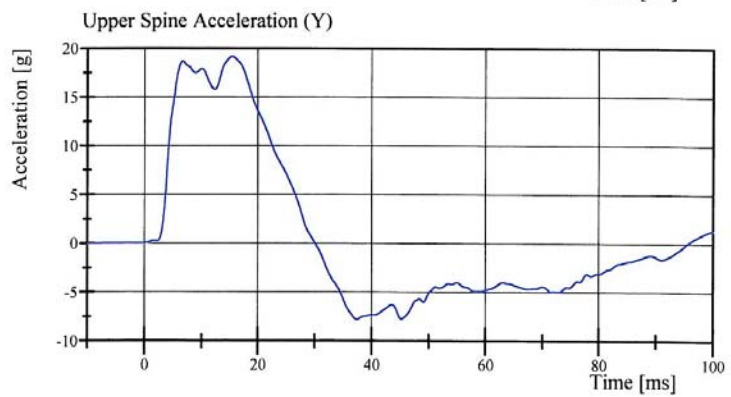
Test Date: 9/29/2010



Filter Class: CFC_180
Max: 0.2 gn at -0.8 ms
Min: -16.1 gn at 13.8 ms



Filter Class: CFC_600
Max: 32.3 mm at 17.9 ms
Min: -0.0 mm at -0.1 ms



Filter Class: CFC_180
Max: 19.1 gn at 15.4 ms
Min: -7.8 gn at 37.4 ms

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 II 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

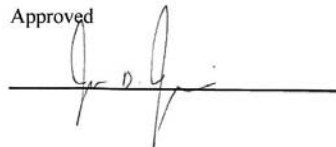
Test meets specifications.

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

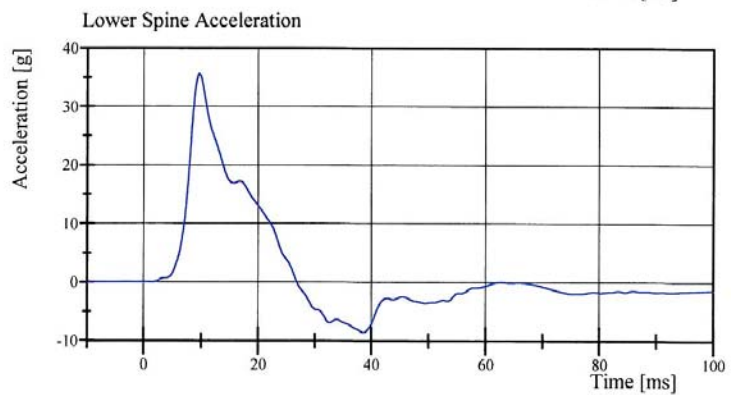
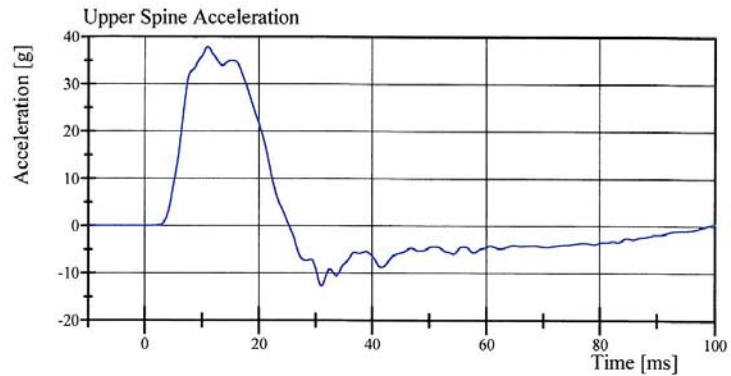
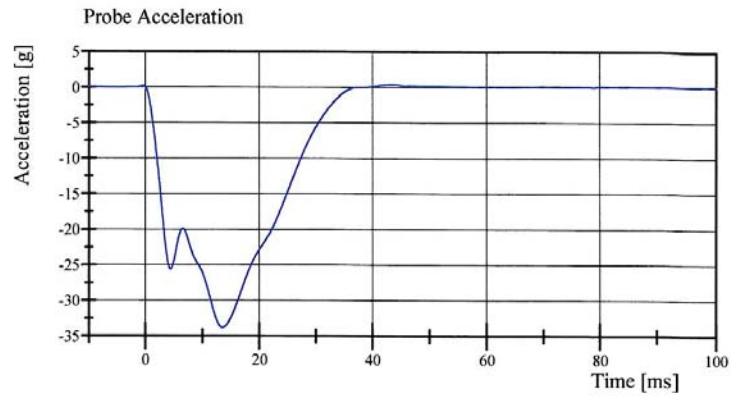


Transportation Research Center Inc.

Left Lateral Thorax with Arm

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

Test Date: 9/29/2010



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

09.29.2010 10:17:54 605

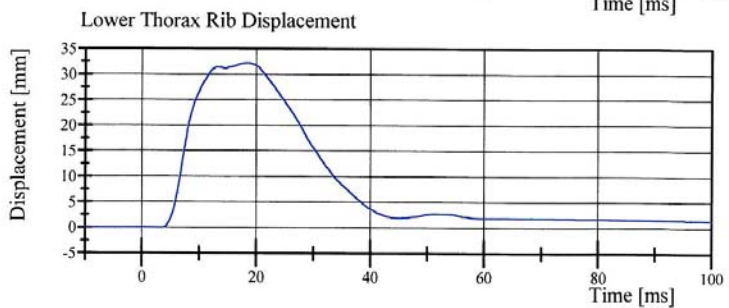
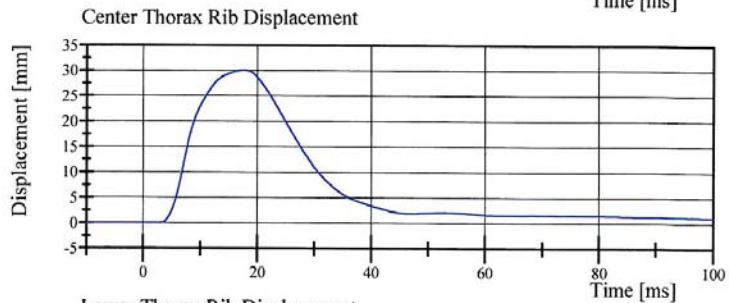
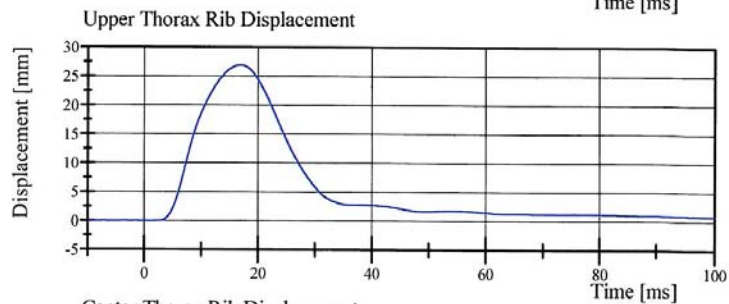
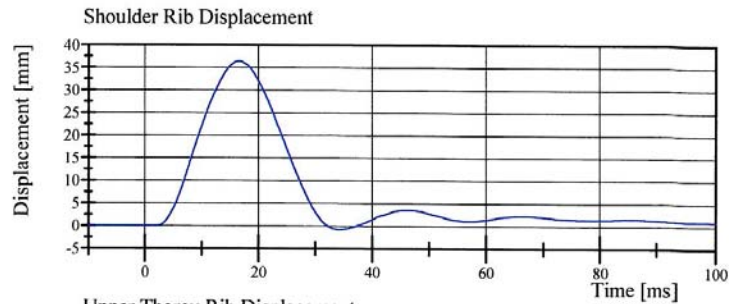


Transportation Research Center Inc.

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

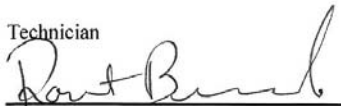
Test Date: 9/29/2010

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

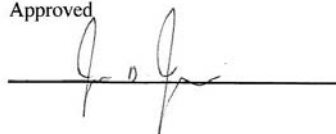
Test meets specifications.

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

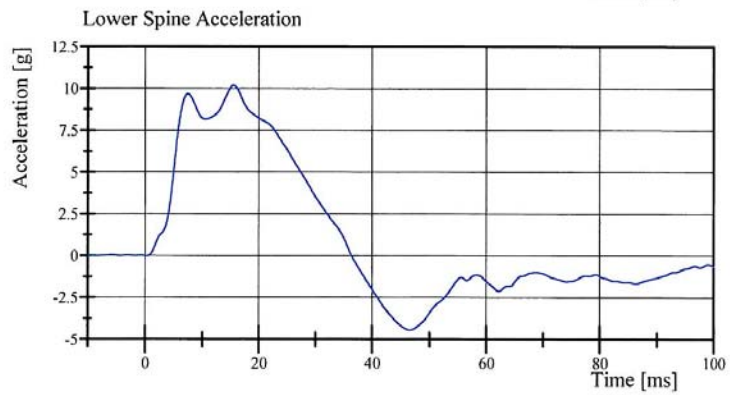
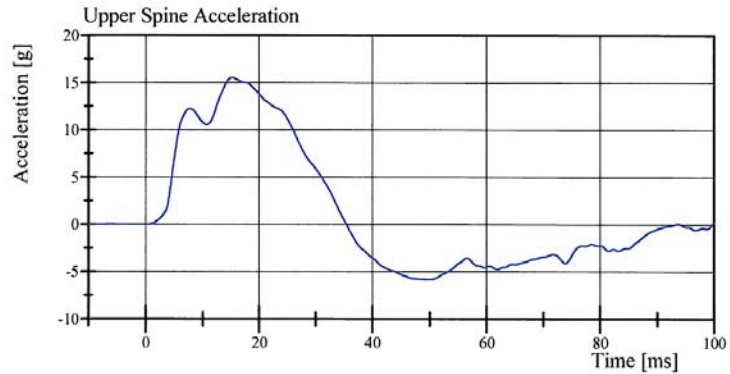
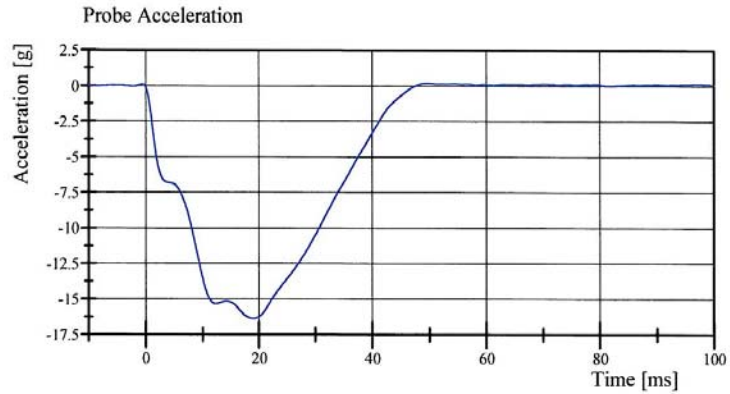


Transportation Research Center Inc.

Left Lateral Thorax without Arm

SID II S 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



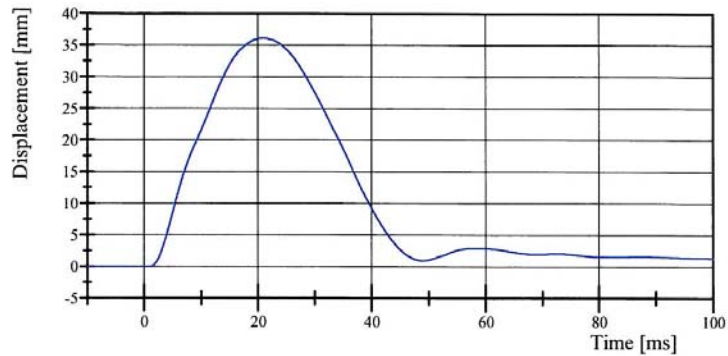
Transportation Research Center Inc.

Left Lateral Thorax without Arm

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

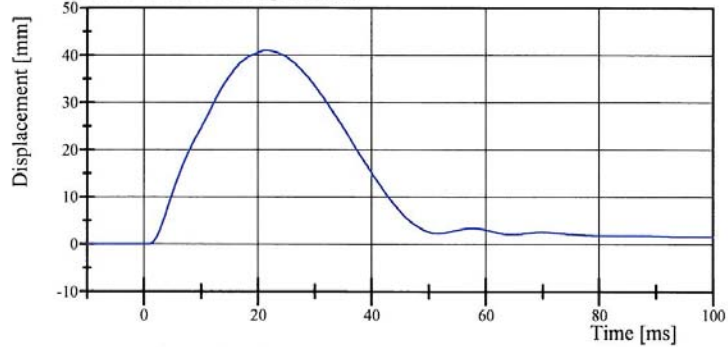
Test Date: 9/29/2010

Upper Thorax Rib Displacement



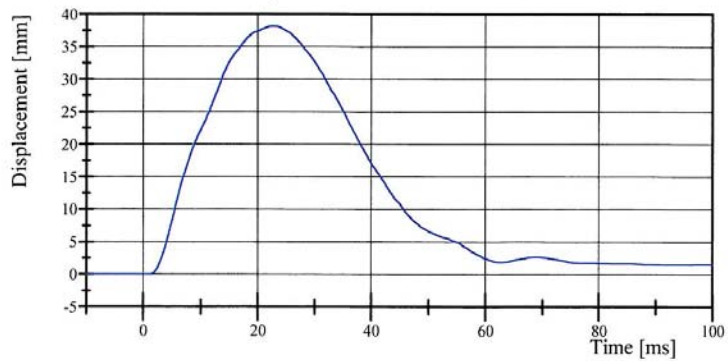
Filter Class: CFC_600
Max: 36.1 mm at 20.9 ms
Min: -0.0 mm at 1.0 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 41.0 mm at 21.4 ms
Min: -0.0 mm at -7.4 ms

Lower Thorax Rib Displacement



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

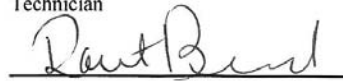
Test Date: 9/29/2010

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

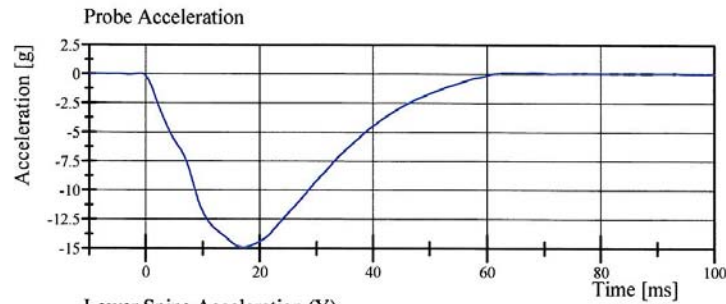


Transportation Research Center Inc.

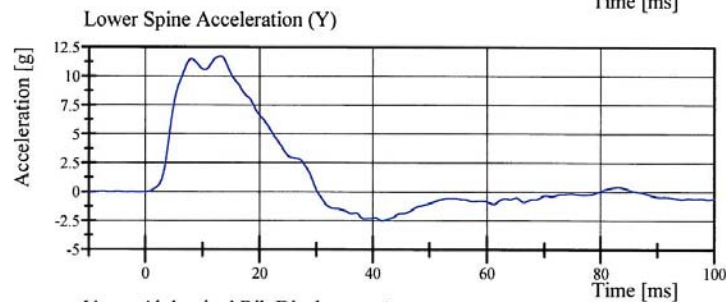
Left Lateral Abdomen

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

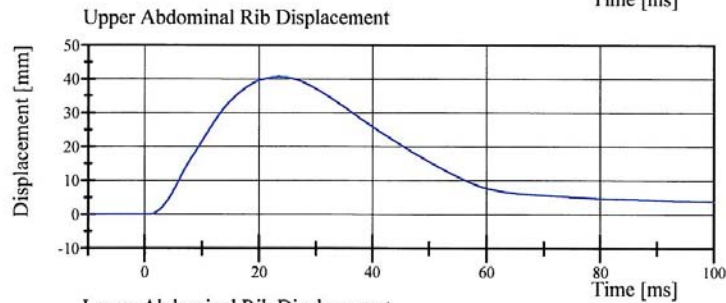
Test Date: 9/29/2010



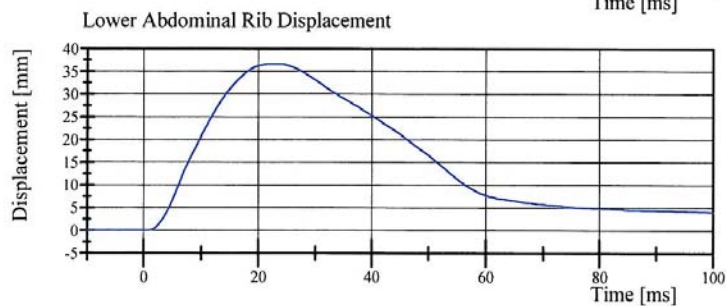
Filter Class: CFC_180
Max: 0.1 gn at 67.8 ms
Min: -14.9 gn at 17.0 ms



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

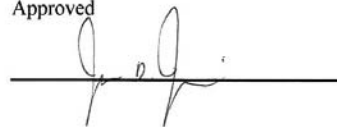
Test meets specifications.

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

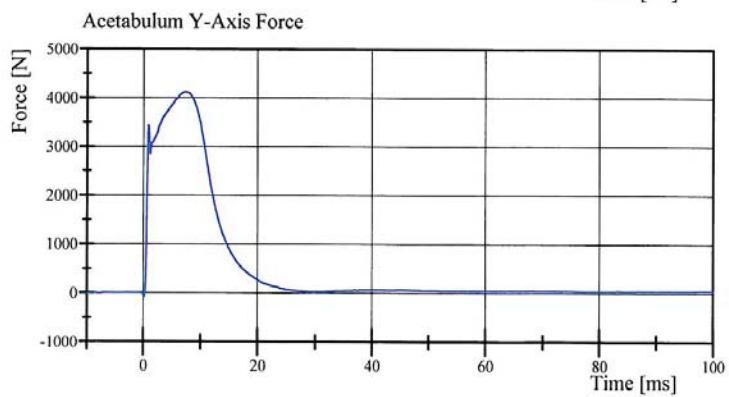
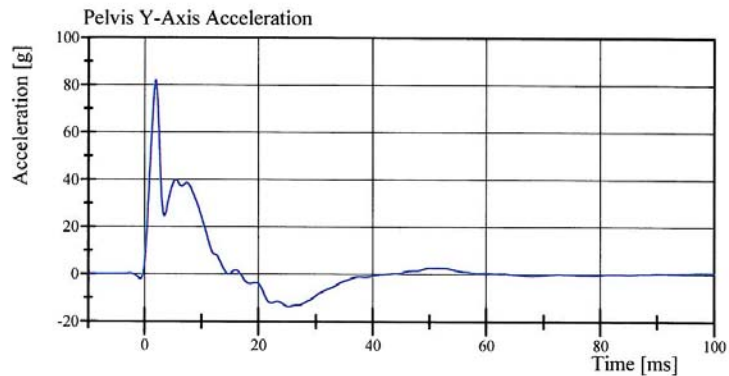
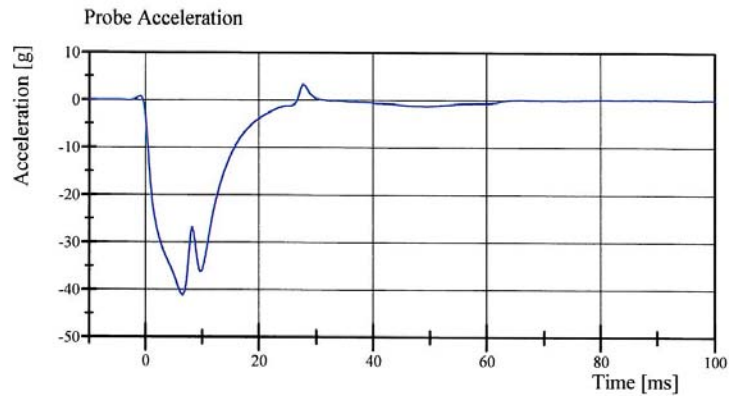


Transportation Research Center Inc.

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

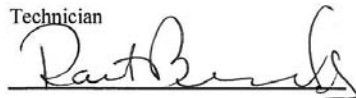
Test Date: 9/29/2010

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

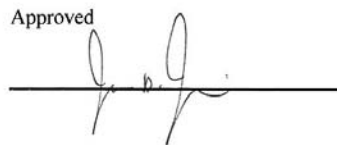
Test meets specifications.

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

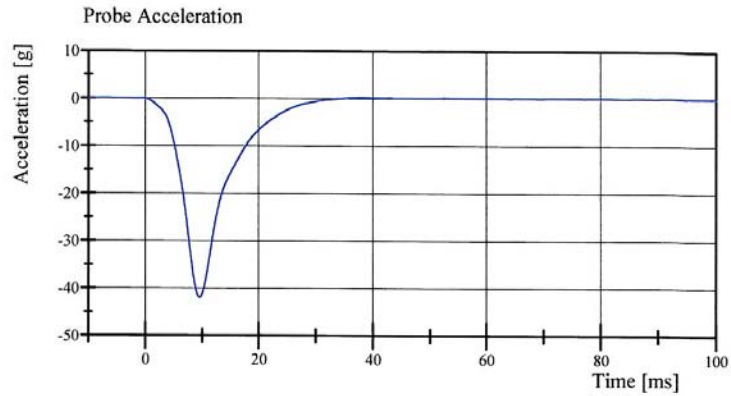


Transportation Research Center Inc.

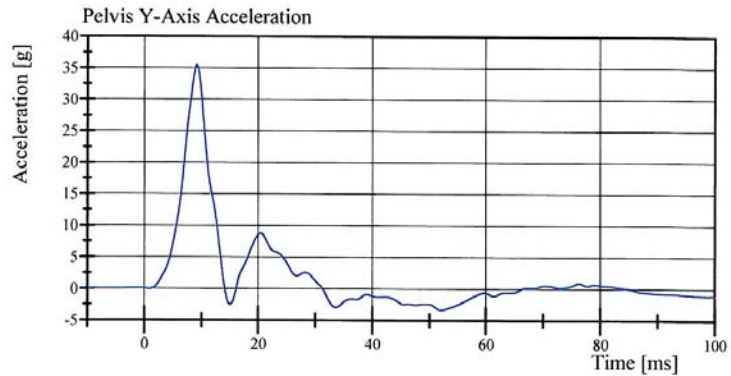
Left Lateral Iliac

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

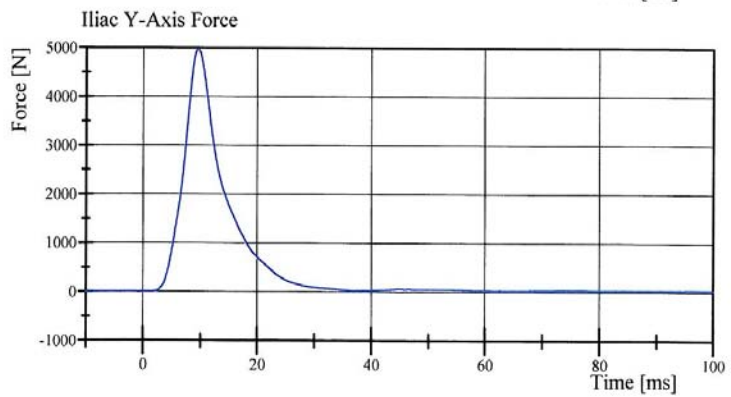
Test Date: 9/29/2010



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.
SIDIIs 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

Dummy S/N 305
Post-Test Calibration

Transportation Research Center Inc.

Left Lateral Head Drop

SID II SBLD Final Rule 6-09 Serial No. 305 Certification No. 5-1

Test Date: 10/7/2010

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	35 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	115.7 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-3.1 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	Yes	Yes	Yes

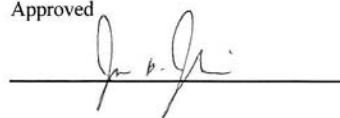
Test meets specifications.

Comments:

Technician



Approved



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

10.07.2010 13:40:19 231

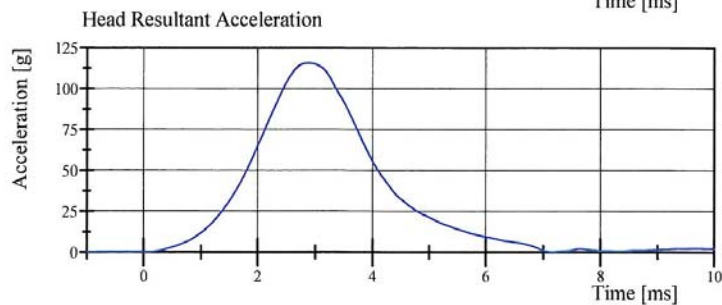
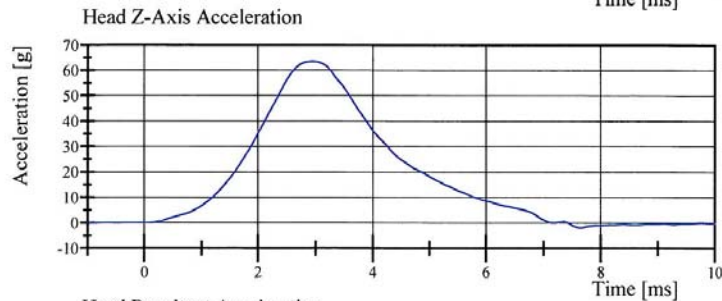
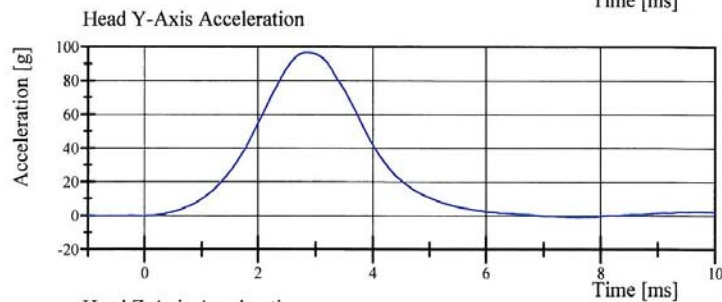
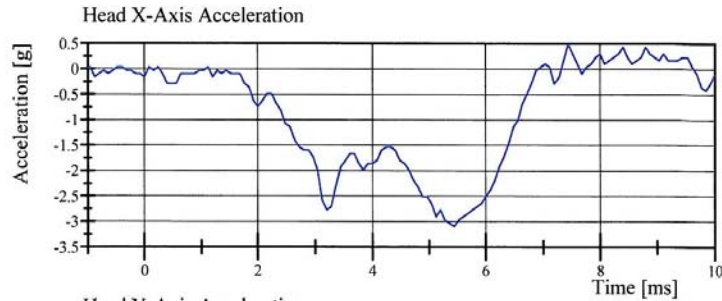


Transportation Research Center Inc.

Left Lateral Head Drop

SID II SBLD Final Rule 6-09 Serial No. 305 Certification No. 5-1

Test Date: 10/7/2010



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

10.07.2010 13:40:27 231



Transportation Research Center Inc.

Left Lateral Neck

SID II SBLD Final Rule 6-09 Serial No. 305 Certification No. 5-3

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 %	34 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.570 m/s	Yes
Pendulum Integrated Velocity			
Change at 10 ms	2.20 - 2.80 m/s	2.645 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.897 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	5.270 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.977 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.980 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-73.4 deg	Yes
Time of Peak	50 - 70 ms	58.4 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	42.7 N·m	Yes
Total Neck Occipital Condyles Moment			
Decay Time to 0 N·m	102 - 126 ms	106.8 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.

10.07.2010 15:17:29 665

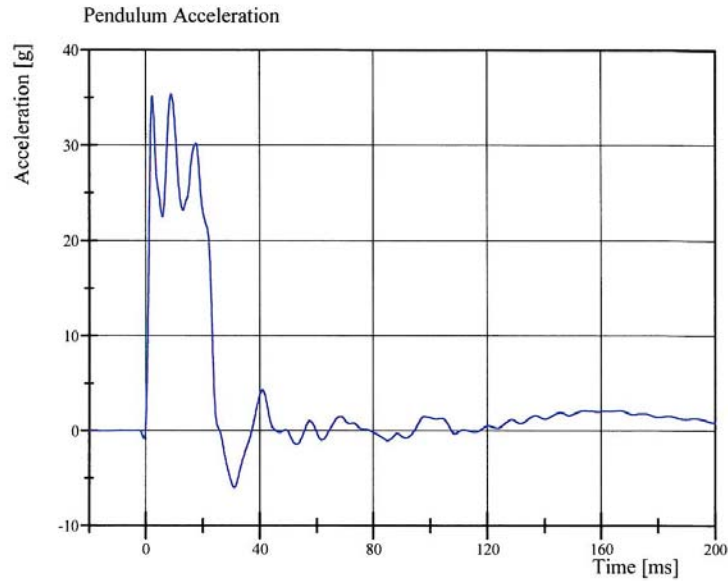


Transportation Research Center Inc.

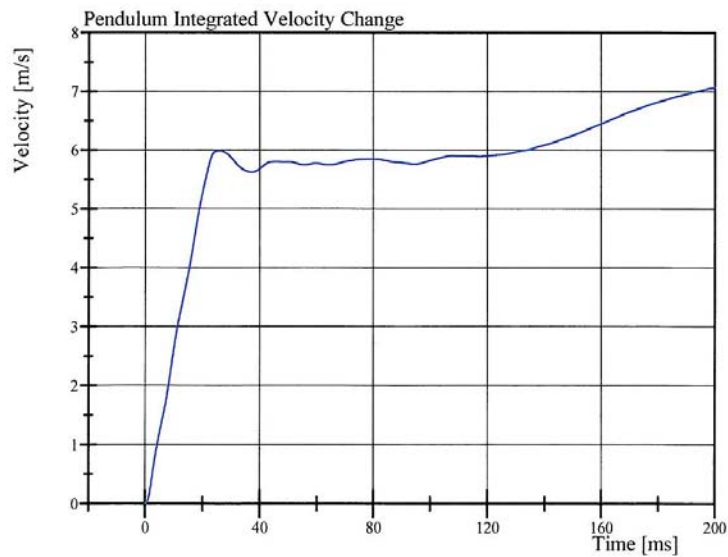
Left Lateral Neck

SID II SBLD Final Rule 6-09 Serial No. 305 Certification No. 5-3

Test Date: 10/7/2010



Filter Class: CFC_180
Max: 35.4 gn at 8.9 ms
Min: -6.0 gn at 31.0 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.

10.07.2010 15:17:42 665

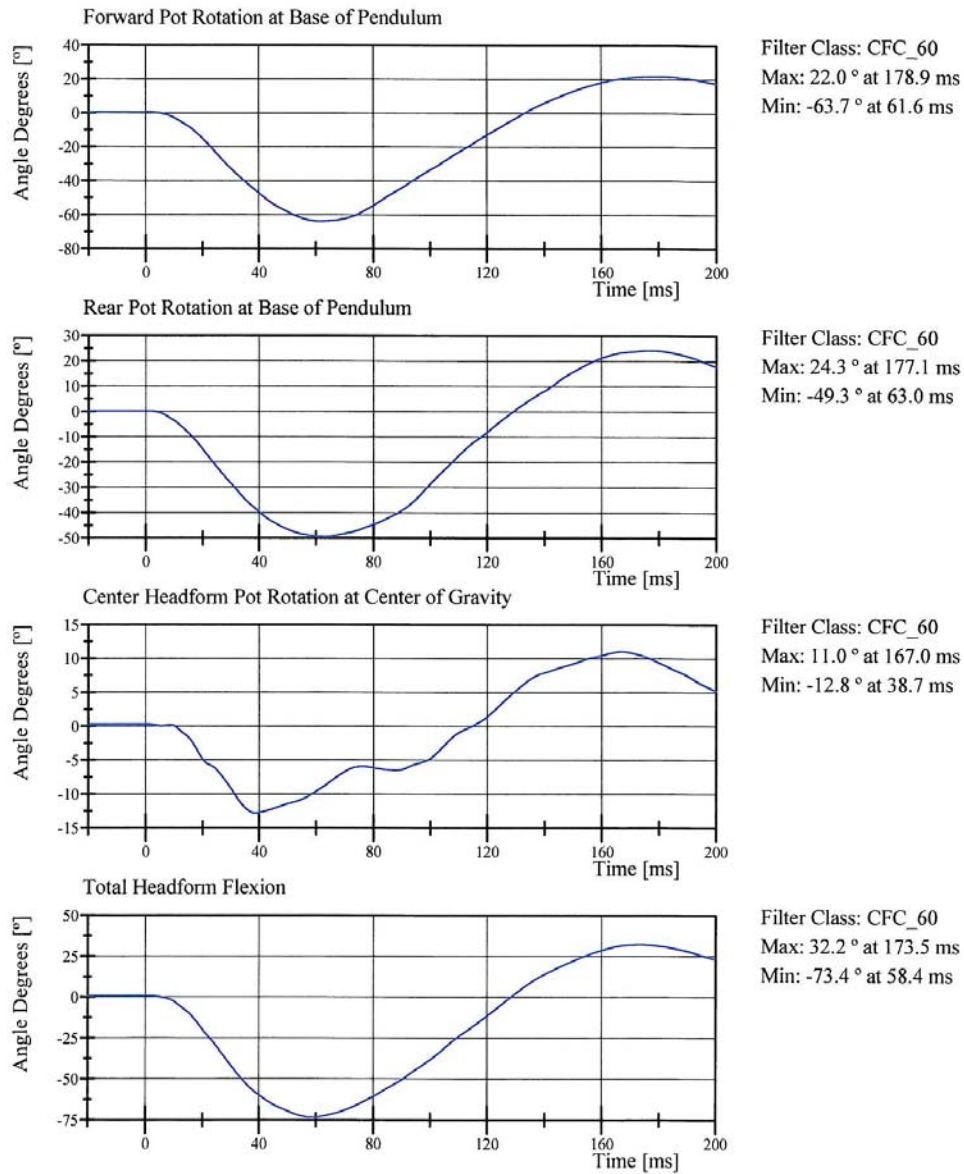


Transportation Research Center Inc.

Left Lateral Neck

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 5-3

Test Date: 10/7/2010



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

10.07.2010 15:17:42 665

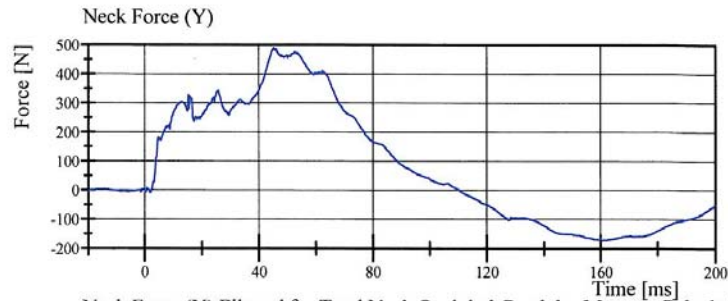


Transportation Research Center Inc.

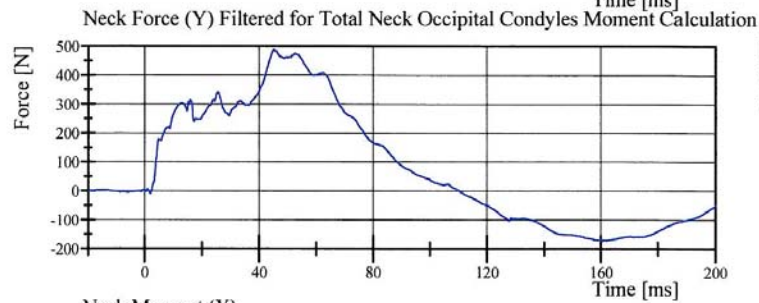
Left Lateral Neck

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 5-3

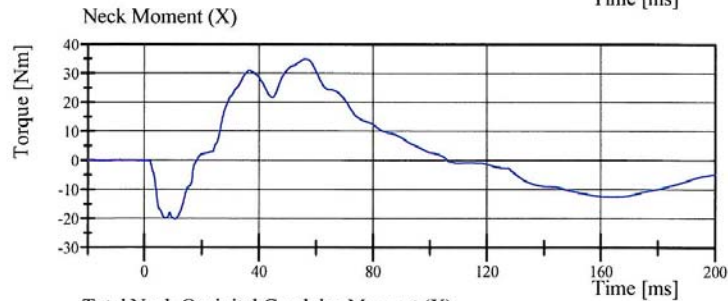
Test Date: 10/7/2010



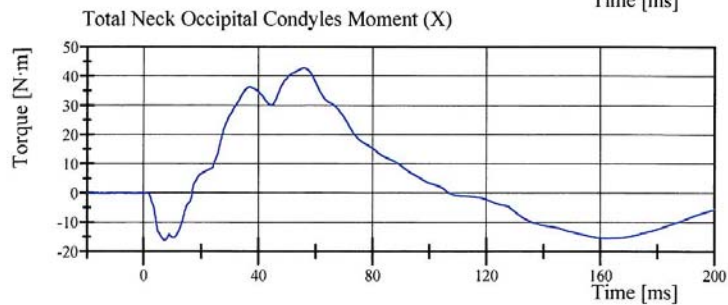
Filter Class: CFC_1000
Max: 490.4 N at 45.0 ms
Min: -171.6 N at 160.6 ms



Filter Class: CFC_600
Max: 487.8 N at 45.0 ms
Min: -171.2 N at 162.0 ms



Filter Class: CFC_600
Max: 35.0 Nm at 56.3 ms
Min: -20.2 Nm at 10.6 ms



Filter Class: CFC_600
Max: 42.7 N·m at 55.8 ms
Min: -16.1 N·m at 7.1 ms

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

10.07.2010 15:17:43 665



Transportation Research Center Inc.

Left Lateral Shoulder

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 5-1

Test Date: 10/8/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.33 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-15.7 g	Yes
Shoulder Displacement	28 - 37 mm	31.7 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	19.1 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.

10.08.2010 14:42:32 818

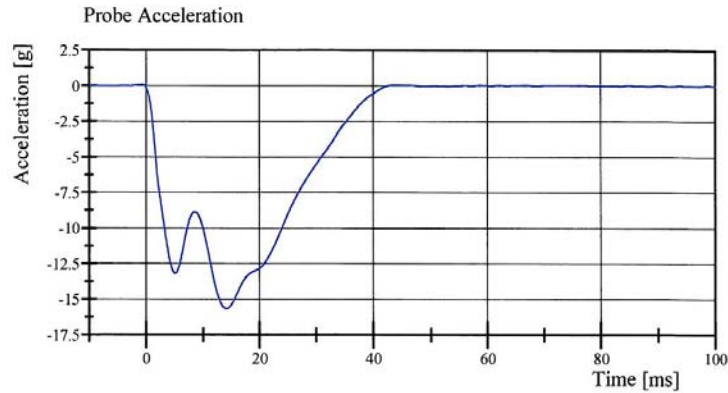


Transportation Research Center Inc.

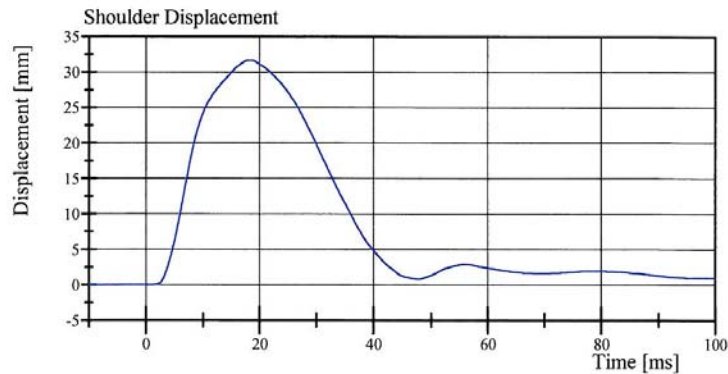
Left Lateral Shoulder

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 5-1

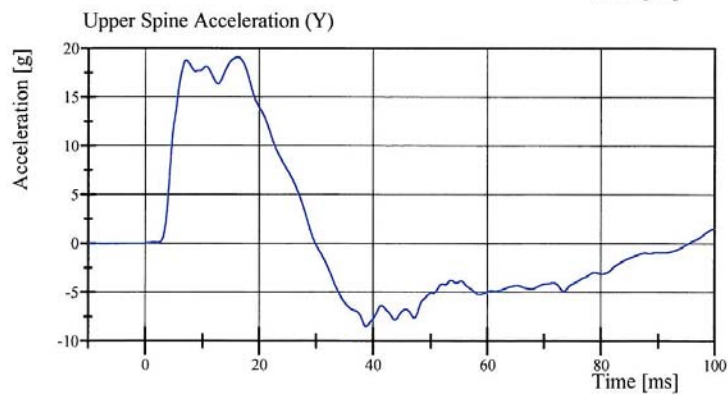
Test Date: 10/8/2010



Filter Class: CFC_180
Max: 0.1 gn at -0.8 ms
Min: -15.7 gn at 14.1 ms



Filter Class: CFC_600
Max: 31.7 mm at 18.2 ms
Min: -0.0 mm at -7.8 ms



Filter Class: CFC_180
Max: 19.1 gn at 16.2 ms
Min: -8.5 gn at 38.7 ms

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

10.08.2010 14:42:43 818

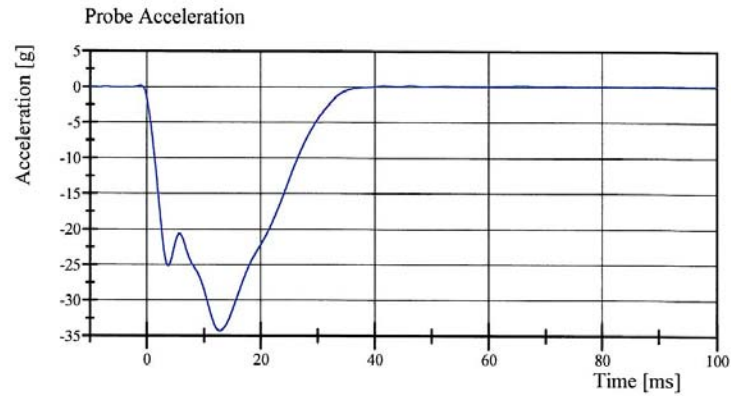


Transportation Research Center Inc.

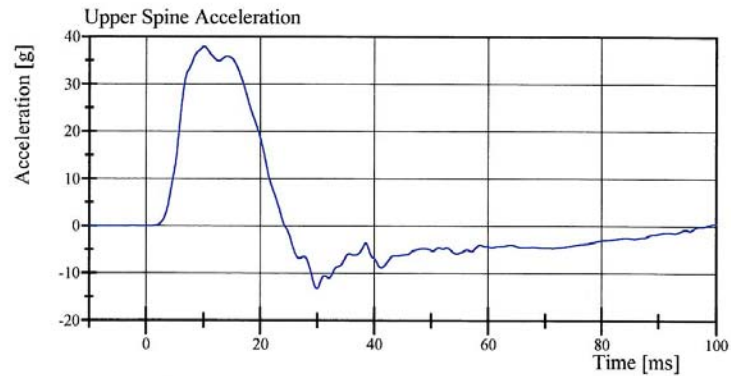
Left Lateral Thorax with Arm

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 5-1

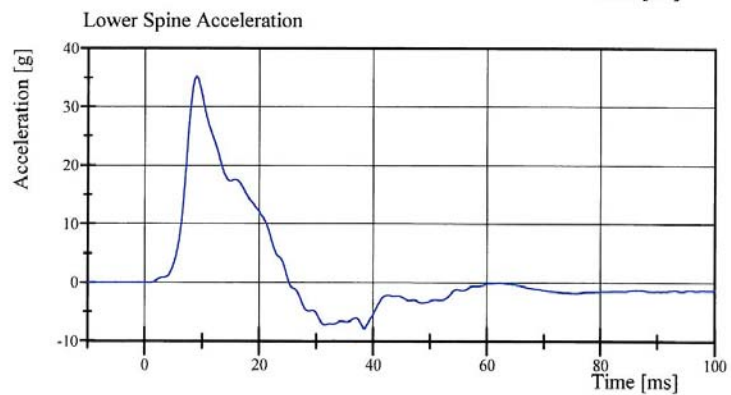
Test Date: 10/8/2010



Filter Class: CFC_180
Max: 0.2 gn at 46.2 ms
Min: -34.3 gn at 12.7 ms



Filter Class: CFC_180
Max: 37.9 gn at 10.1 ms
Min: -13.3 gn at 29.9 ms



Filter Class: CFC_180
Max: 35.1 gn at 9.0 ms
Min: -7.9 gn at 38.4 ms

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

10.08.2010 14:55:28 614

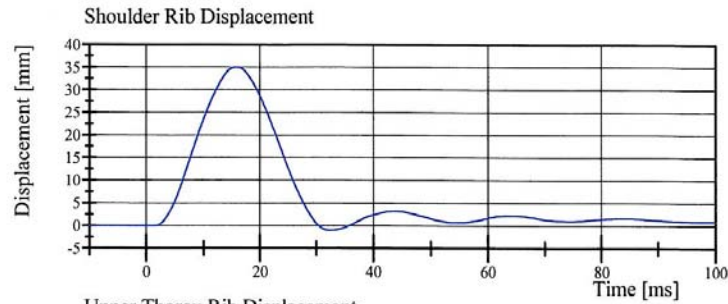


Transportation Research Center Inc.

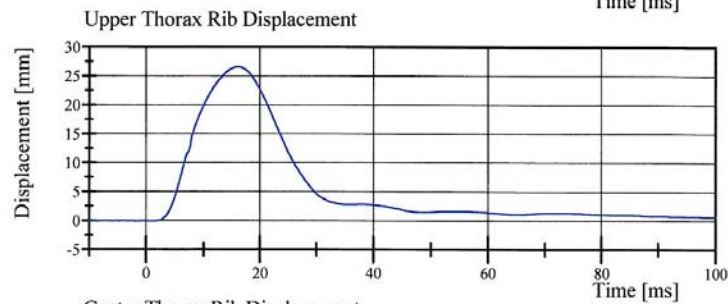
Left Lateral Thorax with Arm

SID II SBLD Final Rule 6-09 Serial No. 305 Certification No. 5-1

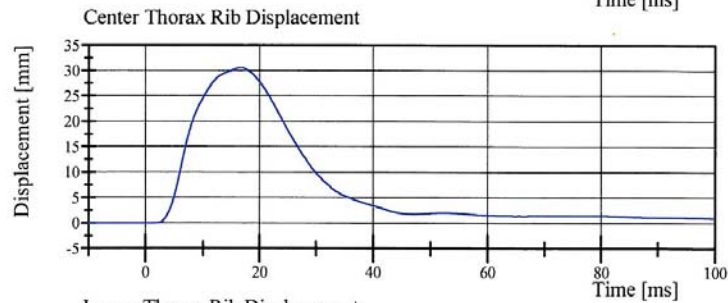
Test Date: 10/8/2010



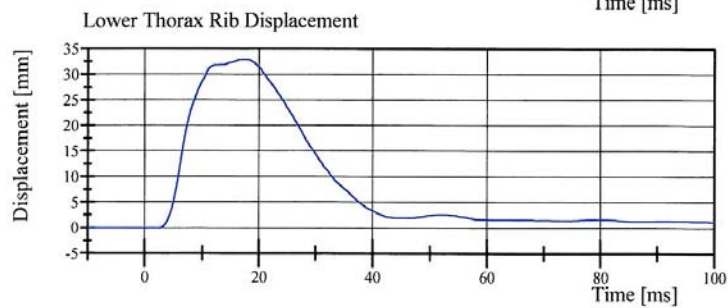
Filter Class: CFC_600
Max: 35.0 mm at 15.8 ms
Min: -1.0 mm at 32.7 ms



Filter Class: CFC_600
Max: 26.6 mm at 16.2 ms
Min: -0.0 mm at -9.6 ms



Filter Class: CFC_600
Max: 30.5 mm at 16.6 ms
Min: -0.0 mm at -5.8 ms



Filter Class: CFC_600
Max: 32.9 mm at 17.5 ms
Min: -0.0 mm at 1.5 ms

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

10.08.2010 14:55:29 614



Transportation Research Center Inc.

Left Lateral Thorax without Arm

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 5-1

Test Date: 10/8/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.359 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-16.6 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	35.2 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	41.0 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	38.7 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	15.8 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	10.7 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.

10.08.2010 15:57:47 775

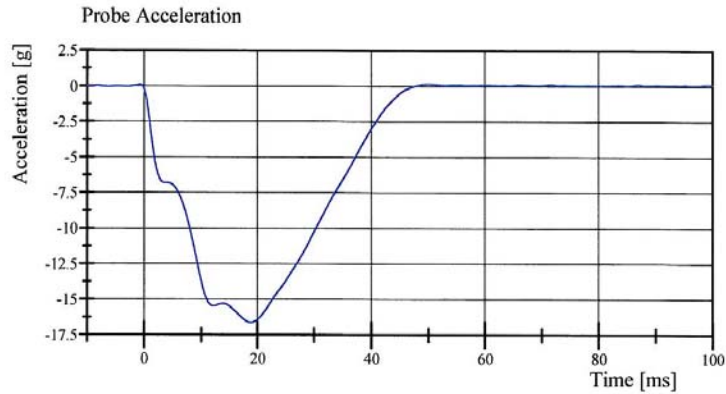


Transportation Research Center Inc.

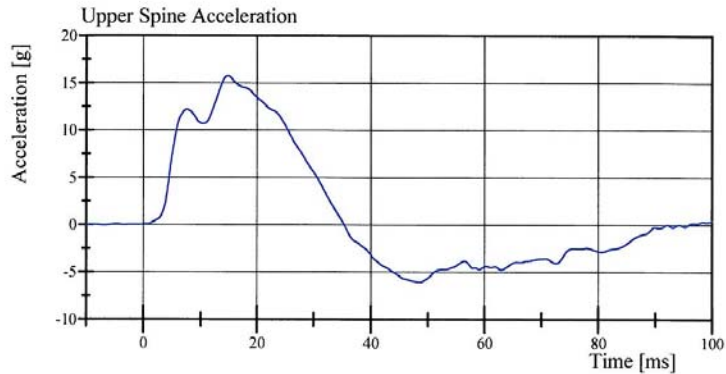
Left Lateral Thorax without Arm

SID II's SBLD Final Rule 6-09 Serial No. 305 Certification No. 5-1

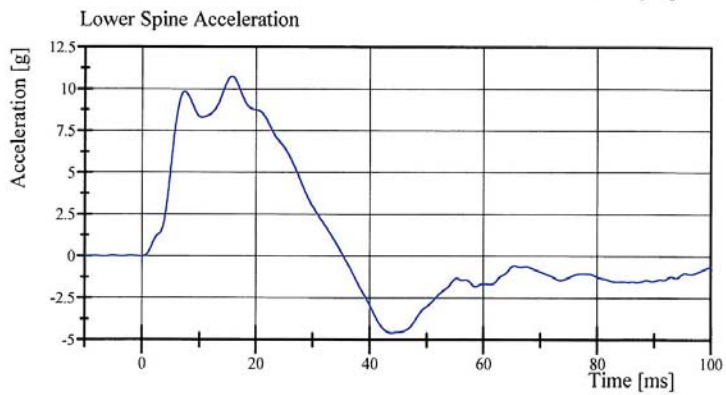
Test Date: 10/8/2010



Filter Class: CFC_180
Max: 0.1 gn at 50.0 ms
Min: -16.6 gn at 18.8 ms



Filter Class: CFC_180
Max: 15.8 gn at 14.8 ms
Min: -6.1 gn at 48.6 ms



Filter Class: CFC_180
Max: 10.7 gn at 15.7 ms
Min: -4.6 gn at 43.8 ms

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

10.08.2010 15:58:00 775



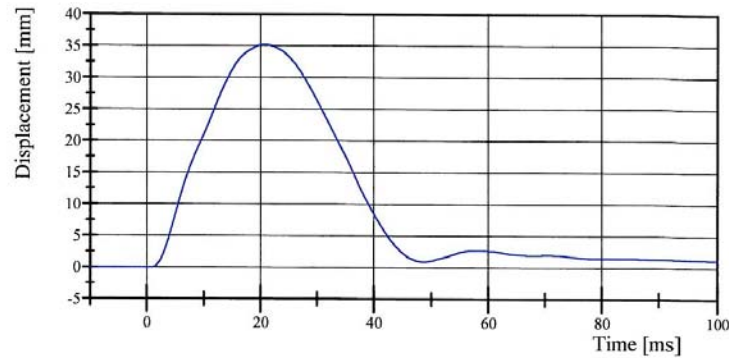
Transportation Research Center Inc.

Left Lateral Thorax without Arm

SID II SBLD Final Rule 6-09 Serial No. 305 Certification No. 5-1

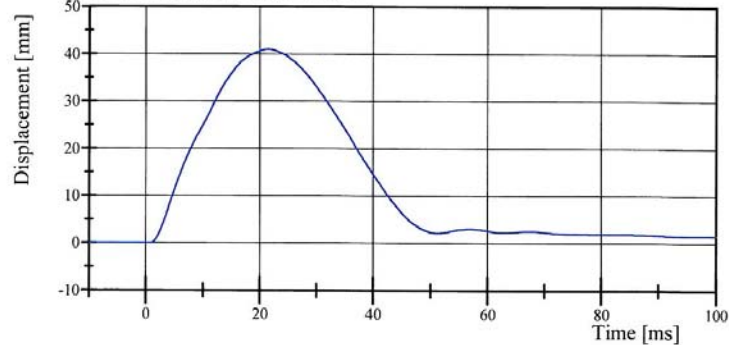
Test Date: 10/8/2010

Upper Thorax Rib Displacement



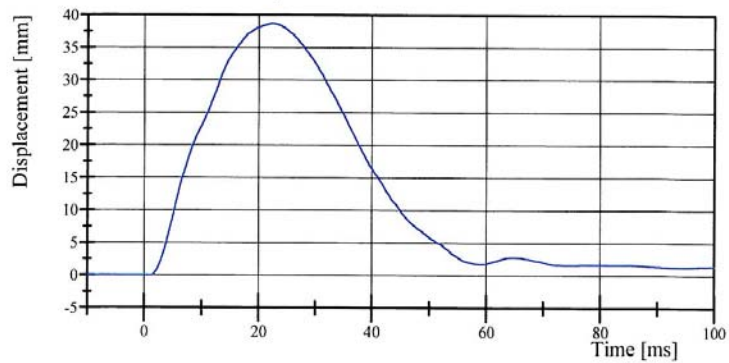
Filter Class: CFC_600
Max: 35.2 mm at 20.8 ms
Min: -0.0 mm at 1.0 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 41.0 mm at 21.4 ms
Min: -0.0 mm at -7.4 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 38.7 mm at 22.3 ms
Min: -0.0 mm at 1.0 ms

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

10.08.2010 15:58:01 775



Transportation Research Center Inc.

Left Lateral Abdomen

SID II SBLD Final Rule 6-09 Serial No. 305 Certification No. 5-1

Test Date: 10/11/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	46 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.33 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-15.0 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	40.3 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	37.9 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	11.76 g	Yes

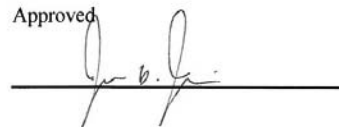
Test meets specifications.

Comments:

Technician



Approved



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

10.11.2010 07:54:18 619

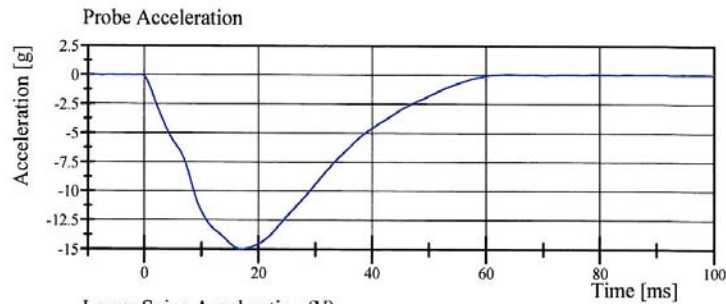


Transportation Research Center Inc.

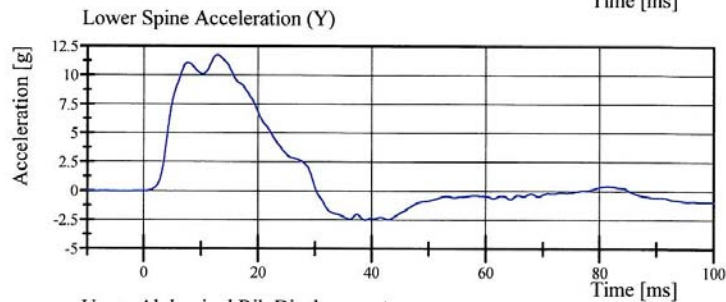
Left Lateral Abdomen

SID II SBLD Final Rule 6-09 Serial No. 305 Certification No. 5-1

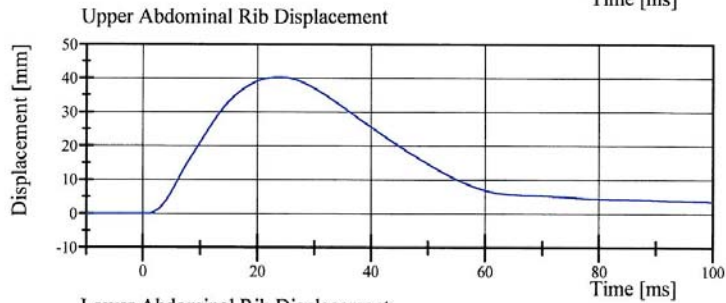
Test Date: 10/11/2010



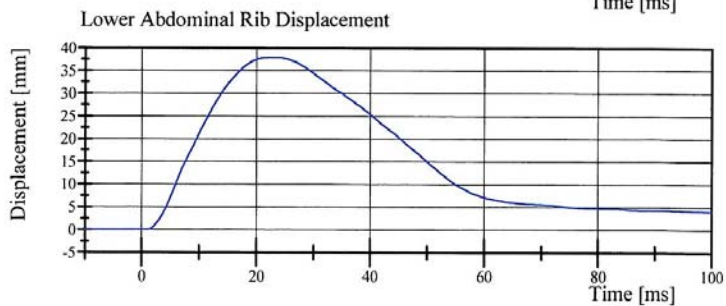
Filter Class: CFC_180
Max: 0.1 gn at 79.2 ms
Min: -15.0 gn at 17.0 ms



Filter Class: CFC_180
Max: 11.8 gn at 12.9 ms
Min: -2.5 gn at 38.8 ms



Filter Class: CFC_600
Max: 40.3 mm at 23.8 ms
Min: -0.0 mm at -8.1 ms



Filter Class: CFC_600
Max: 37.9 mm at 23.0 ms
Min: -0.0 mm at 0.9 ms

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

10.11.2010 07:54:27 619



Transportation Research Center Inc.

Left Lateral Pelvis

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 5-1

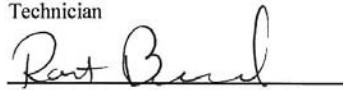
Test Date: 10/11/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	45 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.66 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-41.78 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	40.1 g	Yes
Acetabulum Force	3,600 - 4,300 N	4,102.7 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.

10.11.2010 08:09:39 420

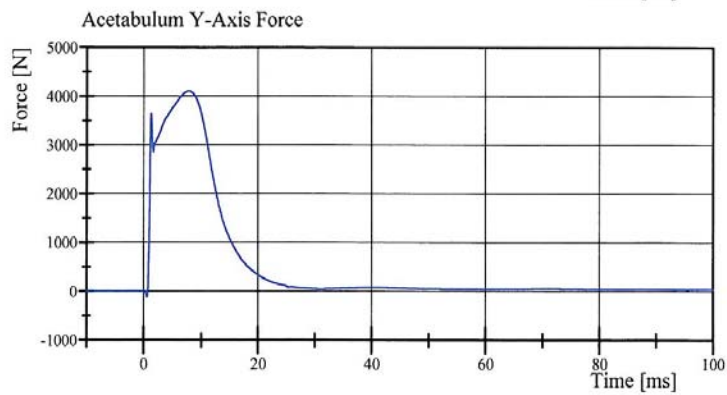
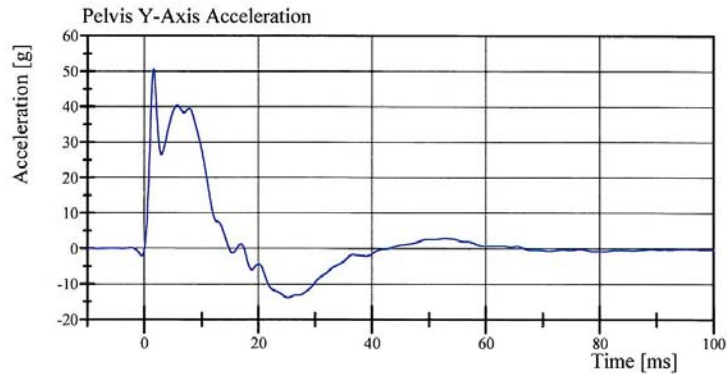
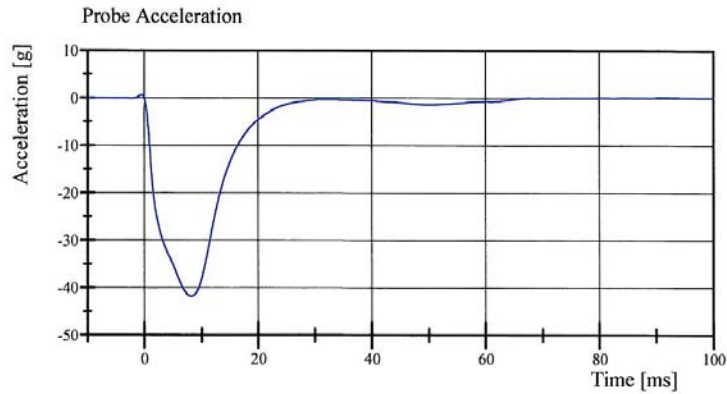


Transportation Research Center Inc.

Left Lateral Pelvis

SID II SBLD Final Rule 6-09 Serial No. 305 Certification No. 5-1

Test Date: 10/11/2010



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

10.11.2010 08:09:47 420



Transportation Research Center Inc.

Left Lateral Iliac

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 5-2

Test Date: 10/8/2010

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.24 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-38.9 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	30.9 g	Yes
Iliac Force	4,100 - 5,100 N	4,585.9 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.

10.08.2010 13:42:54 656

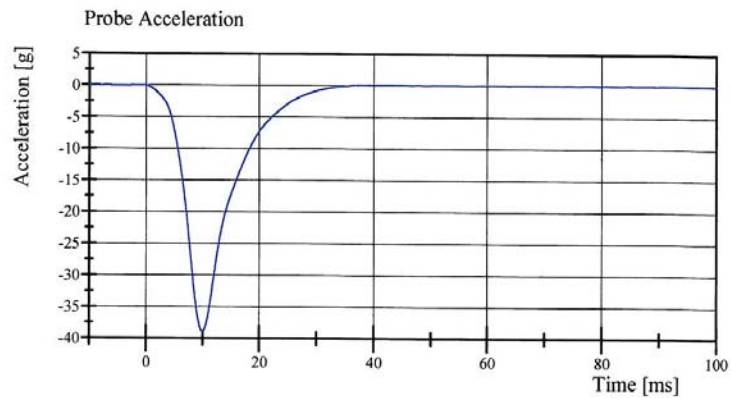


Transportation Research Center Inc.

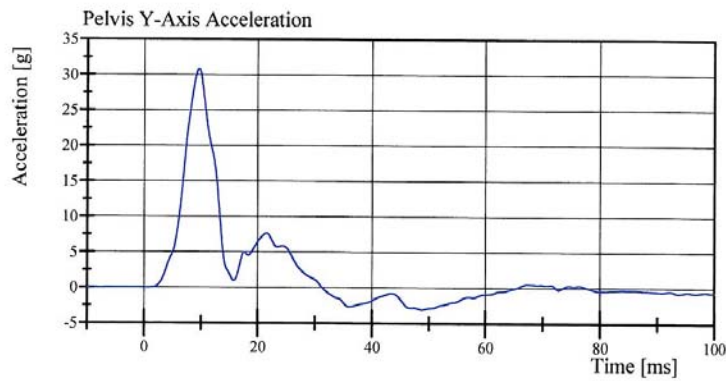
Left Lateral Iliac

SID IIs SBLD Final Rule 6-09 Serial No. 305 Certification No. 5-2

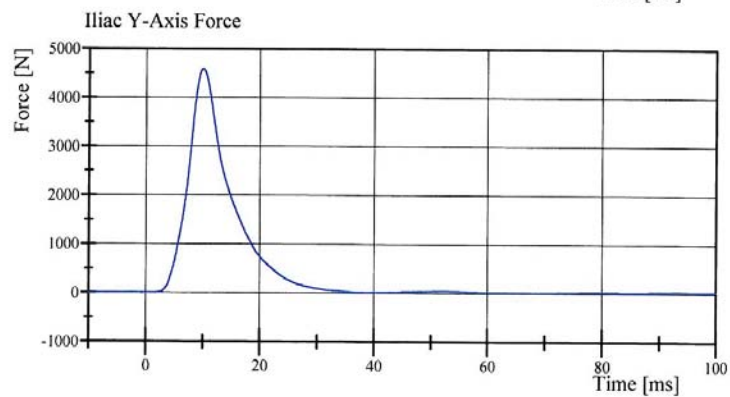
Test Date: 10/8/2010



Filter Class: CFC_180
Max: 0.2 gn at 42.0 ms
Min: -38.9 gn at 9.9 ms



Filter Class: CFC_180
Max: 30.9 gn at 9.6 ms
Min: -3.0 gn at 48.8 ms



Filter Class: CFC_600
Max: 4,585.9 N at 10.0 ms
Min: -1.1 N at -0.8 ms

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

10.08.2010 13:43:05 656



Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 305 Calibration No.05
Date: 10/11/10

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	776	Yes
B	Shoulder Pivot Height	437.0 - 453.0	440	Yes
C	H-Point Height	79.0 - 89.0	84	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	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	204	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	481	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