

FINAL REPORT NUMBER: SPNCAP-TRC-13-002

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

**General Motors LLC
2013 Buick Verano
NHTSA NUMBER: MD0106**

**PREPARED BY:
Transportation Research Center Inc.
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P. O. Box B-67
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Report Date: December 19, 2012

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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Report Approved By: 
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Approval Date: December 19, 2012

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: _____

Technical Report Documentation Page

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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 2013 Buick Verano 4-door Sedan, 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, 2012. The impact velocity was 32.1 km/h, and the ambient temperature at the struck side of the target vehicle at the time of impact was 21° C. The test vehicle's post-test maximum crush was 337 mm at Level 3. The test or target vehicle's performance is given below: <table border="1"> <thead> <tr> <th></th><th>Unit</th><th>Threshold</th><th>Front SID-IIs</th></tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆):</td><td>N/A</td><td>1000</td><td>257</td></tr> <tr> <td>Resultant Lower Spine Acceleration:</td><td>g's</td><td>82</td><td>44.9</td></tr> <tr> <td>Total Pelvic Force: (sum of acetabular and iliac forces)</td><td>N</td><td>5525</td><td>3262.5</td></tr> <tr> <td>Maximum Thoracic Rib Deflection</td><td>mm</td><td>38</td><td>18.6</td></tr> <tr> <td>Maximum Abdomen Rib Deflection</td><td>mm</td><td>45</td><td>14.0</td></tr> </tbody> </table> The door struck by the pole did not totally separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.					Unit	Threshold	Front SID-IIs	Head Injury Criteria (HIC ₃₆):	N/A	1000	257	Resultant Lower Spine Acceleration:	g's	82	44.9	Total Pelvic Force: (sum of acetabular and iliac forces)	N	5525	3262.5	Maximum Thoracic Rib Deflection	mm	38	18.6	Maximum Abdomen Rib Deflection	mm	45	14.0
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17. Key Words New Car Assessment Program (NCAP) Side Impact Pole Part 572V SID-IIs		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division, NPO-411 1200 New Jersey Ave, SE Washington, DC 20590 e-mail: tis@nhtsa.dot.gov FAX: 202-493-2833																									
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SECTION 1

TEST PURPOSE AND PROCEDURE

TEST PURPOSE AND PROCEDURE

This side impact test was conducted as part of the MY13 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 is to generate comparative side impact performance in a 2013 Buick Verano 4-door Sedan 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 September, 2012.

SECTION 2

SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a model year 2013 Buick Verano. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.1 km/h. The side impact test was conducted by Transportation Research Center Inc. in East Liberty, OH, on October 5, 2012. Pre-test and post-test photographs of the test vehicle and the side impact dummy (SID-IIs) are included in Appendix A of this report.

One Part 572V (SID-IIs) dummy was placed in the driver designated seating position according to instructions specified in the OCWS Side NCAP Pole Laboratory Test Procedure, dated September, 2012. Camera locations and other pertinent camera information are included in this report.

The Part 572V (SID-IIs) dummy was instrumented accordingly: OCWS Side NCAP Pole Laboratory Test Procedure

- Head CG Triaxial Accelerometers
- Thorax Upper, Middle, and Lower Rib Displacement Potentiometers
- Abdomen Upper and Lower Rib Displacement Potentiometers
- Lower Spine (T12) Triaxial Accelerometers
- Iliac Load Cell
- Acetabulum Load Cell

Appendix B contains the vehicle and dummy response data. Dummy configuration and performance verification data can be found in Appendix C of this report.

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

Measurement Description	Driver ATD (SID-IIs)		
	Units	IARV	Result
Head Injury Criteria (HIC ₃₆)	NA	1000	257
Resultant Lower Spine Acceleration	G	82	44.9
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3262.5
Maximum Thoracic Rib Deflection	mm	38*	18.6
Maximum Abdominal Rib Deflection	mm	45*	14.0

* Proposed IARV

Supplemental restraint information is given below:

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

GENERAL COMMENTS

All doors remained closed throughout the test. No fuel spillage occurred during the impact or the static rollover test which followed. Injury values for both ATDs were within the established performance thresholds.

Please note that photo No.'s 026, 027, 029, 030, 031, 033, 034, 036, 038, 039, 055, and 056 state the incorrect NHTSA Test number. The correct number should be MD0106; however the photo placards read as MD0116.

SECTION 3
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2013 Buick Verano
 Test Program: SPNCAP Side Impact

NHTSA No.: MD0106
 Test Date: 10/05/12

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	MD0106	Traction Control System (TCS)	Yes
Model Year	2013	Power Steering	Yes
Make	Buick	Power Window Auto-Reverse	No
Model	Verano	Driver Frontal Airbag	Yes
Body Style	4-door Sedan	Driver Curtain Airbag	Yes
VIN	1G4PP5SK6D4112575	Driver Head/Torso Airbag	No
Body Color	Gray Metallic	Driver Torso Airbag	No
Odometer Reading (miles)	11	Driver Torso/Pelvis Airbag	No
Engine Displacement (L)	2.4	Driver Pelvis Airbag	No
Number of Cylinders	4	Driver Knee Airbag	Yes
Engine Placement	Longitudinally	Rear Passenger Frontal Airbag	No
Transmission Type	Automatic	Rear Passenger Curtain Airbag	Yes
Transmission Speeds	6	Rear Pass. Head/Torso Airbag	No
Overdrive	Yes	Rear Passenger Torso Airbag	No
Final Drive	Front	Rear Pass. Torso/Pelvis Airbag	No
Roof Rack	No	Rear Passenger Pelvis Airbag	No
Sunroof / T-Top	No	Rear Pass. Knee Airbag	No
Running Boards	No	Driver Pretensioner	Yes
Tilt Steering Wheel	Yes	Driver Load Limiter	Yes
Power Seats	No	Rr. Pass. Pretensioner	Yes
Anti-Lock Brakes (ABS)	Yes	Rear Passenger Load Limiter	Yes
Automatic Door Locks (ADL)	Yes	Other	No

Does owner's manual provide instructions to turn off automatic door locks?

No

DATA FROM CERTIFICATION LABEL

Manufactured By	General Motors LLC	GVWR (kg)	1977
Date of Manufacture	8/12	GAWR Front (kg)	1060
Vehicle Type	MPV	GAWR Rear (kg)	917

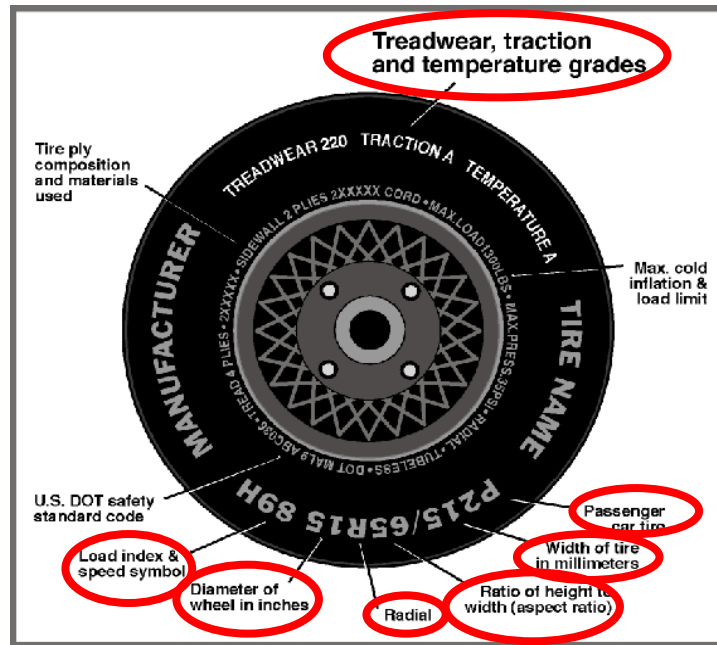
VEHICLE SEATING AND WEIGHT CAPACITY

	Front	Rear	Third	Total
Type of Seats	Bucket	Split bench		
Number of Occupants	2	3		5
Vehicle Capacity Weight (VCW) (kg)				400
Cargo Weight (RCLW) (kg)				59.80

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

Test Vehicle: 2013 Buick Verano
 Test Program: SPNCAP Side Impact

NHTSA No.: MD0106
 Test Date: 10/05/12



Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	220	220
Recommended Tire Size	P235/45R18	P235/45R18
Tire Size on Vehicle	P235/45R18	P235/45R18
Tire Manufacturer	Continental	Continental
Tire Model	ContiPro Contact	ContiPro Contact
Treadwear	500	500
Traction	AA	AA
Temperature Grades	A	A
Tire Plies Sidewall	1	1
Tire Plies Body	4	4
Load Index/Speed Symbol	94H	94H
Tire Material	Polyester, steel, polyamide	Polyester, steel, polyamide
DOT Safety Code Left	A3X6 BNH 3412	A3X6 BNH 3412
DOT Safety Code Right	A3X6 BNH 3412	A3X6 BNH 3412

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

Test Vehicle: 2013 Buick Verano
 Test Program: SPNCAP Side Impact

NHTSA No.: MD0106
 Test Date: 10/05/12

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	220	220	220	220
Tire Placard	kPa	220	220	220	220
Owner's Manual	kPa	220	220	220	220
As Tested	kPa	221	221	221	221

TEST VEHICLE AXLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	481.2	309.0		510.2	321.4		502.4	368.4	
Right	kg	459.4	299.2		490.8	330.4		460.2	350.2	
Ratio	%	60.7	39.3		60.6	39.4		57.3	42.7	
Totals	kg	940.6	608.2	1548.8	1001.0	651.8	1652.8	962.6	718.6	1681.2

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total As Delivered Weight (UVW)	kg	1548.8
Actual Weight of 1 P572V ATD (SID-ILs) Dummy Used	kg	42.2
Rated Cargo/Luggage Weight (RCLW)	kg	59.8
Calculated Vehicle Target Weight (TVTW)	kg	1657.6

(A)
 (B)
 (C)
 (A+B+C)

Does the measured As Tested Vehicle Weight lie within the required weight range (i.e. Calculated Test Vehicle Target Weight – 4.5 kg to 9 kg)? ☒ YES ☐ NO

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Ballast	0.0
Removed rear deck lid and tail lights.	12.6

TEST VEHICLE ATTITUDES AND CG

	Units	As Delivered	As Tested	Fully Loaded	Meets Requirement***
Driver Door Sill Angle (front-to-rear)*	Deg.	0.1	0.8	0.2	No
Front Passenger Sill Angle (front-to-rear)*	Deg.	0.0	0.5	0.2	No
Front Bumper-Line Angle (left-to-right)**	Deg.	0.0	0.2	0.2	Yes
Rear Bumper-Line Angle (left-to-right)**	Deg.	0.4	0.0	0.5	No
Vehicle CG (Aft of Front Axle)	mm	1056	1061	1150	
Vehicle CG (Left (+) / Right (-) from longitudinal Centerline)	mm	13	5	23	

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

*** The "As Tested" vehicle attitude measurements must be equal to or between the "As Delivered" and "Fully Loaded" vehicle attitude measurements. Indicate "Yes" or "No" for "Meets Requirements".

DATA SHEET NO. 2

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

Test Vehicle: 2013 Buick Verano
 Test Program: SPNCAP Side Impact

NHTSA No.: MD0106
 Test Date: 10/05/12

SEAT POSITIONING

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

SCRL ANGLE RANGE

Seat	SCRL(°)		
	Max.	Min.	Mid
Driver Seat	11.0	0	5.5
Front Passenger Seat	11.0	0	5.5
Front Center Seat*	NA	NA	NA
Struck Side Rear Seat	Fixed	NA	NA
Non-Struck Side Rear Seat	Fixed	NA	NA
Rear Center Seat*	Fixed	NA	NA

* If applicable.

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCRP Height (mm)	SCRP Height Position	SCRP Height (mm)		
				Rearmost	Mid-Fore/Aft	Forward-Most
Driver Seat	5.4	127	Max.	219	229	240
			Mid	183	194	207
			Min.	147	160	174
Front Passenger Seat	NA	NA	Max.	NA	NA	NA
			Mid	NA	NA	NA
			Min.	NA	NA	NA
Front Center Seat*	NA	NA	Max.	NA	NA	NA
			Mid	NA	NA	NA
			Min.	NA	NA	NA
Struck Side Rear Seat	Fixed	Fixed	Max.	NA	NA	NA
			Mid	NA	NA	NA
			Min.	NA	NA	NA
Non-Struck Side Rear Seat	Fixed	Fixed	Max.	NA	NA	NA
			Mid	NA	NA	NA
			Min.	NA	NA	NA
Rear Center Seat*	Fixed	Fixed	Max.	NA	NA	NA
			Mid	NA	NA	NA
			Min.	NA	NA	NA

* If applicable.

DATA SHEET NO. 2 (CONTINUED)**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEMS DATA**

Test Vehicle: 2013 Buick Verano
 Test Program: SPNCAP Side Impact

NHTSA No.: MD0106
 Test Date: 10/05/12

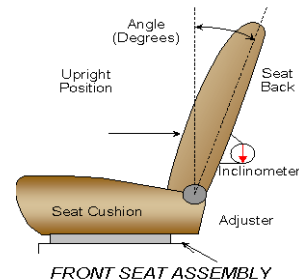
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position from Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	265	54	135	28
Front Passenger Seat	NA	NA	NA	NA
Front Center Seat*	NA	NA	NA	NA
Struck Side Rear Seat	Fixed	NA	Fixed	N/A
Non-Struck Side Rear Seat	Fixed	NA	Fixed	NA
Rear Center Seat*	Fixed	NA	Fixed	NA

* If applicable.

SEAT BACK ANGLE ADJUSTMENT

The driver's seat back is positioned such that the dummy's head is level. The front center and front passenger's seat backs are positioned in a similar manner as the driver's seat back. The struck-side rear passenger seat back is positioned in accordance with the information provided by the manufacturer on Form No. 1. For the 5th percentile female dummy in a Side NCAP MDB test. The rear center and non-struck side rear passenger's seat back is set to match the struck-side rear seat back.



Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degrees	Detent*
Driver Seat w/ Seated Dummy	92	44	8.0	20
Front Passenger Seat	NA	NA	NA	NA
Front Center Seat*	NA	NA	NA	NA
Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat*	Fixed	Fixed	Fixed	Fixed

* If applicable.

SEAT BELT ANCHORAGE ADJUSTMENT

Seat belt anchorages are adjusted with the information provided by the manufacturer on Form No. 1

	Total # of Positions	Placed in Position #
Driver Seat	5	1

HEAD RESTRAINT ADJUSTMENT

Head restraints are adjusted to the lowest and most full forward in-use position.

	Total # of Positions	Placed in Position #
Driver Seat	5	5

DATA SHEET NO. 2 (CONTINUED)

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

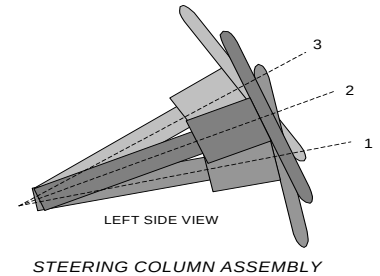
Test Vehicle: 2013 Buick Verano
Test Program: SPNCAP Side Impact

NHTSA No.: MD0106
Test Date: 10/05/12

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel geometric locus it describes when moved through its full range of motion.

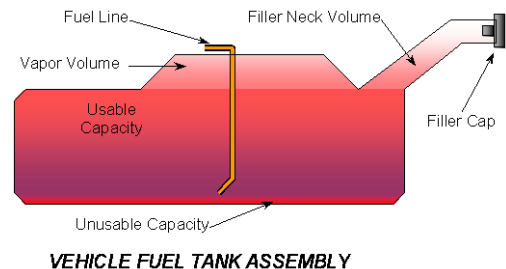
	Degrees	Fore/Aft Position, mm
Lowermost, Position No. 1	70.7	200
Geometric Center, Position No. 2	68.7	226
Uppermost, Position No. 3	66.8	252
Telescoping Steering Wheel Travel		226
Test Position	68.7	226



FUEL PUMP

Describe the fuel pump type, details about how it operates and the location of the fuel filler neck:

The fuel tank is located under the rear seat area in front of the rear axle. The fuel filler neck enters the right rear corner of the fuel tank. The fuel filler cap is located on the right rear quarter panel. The fuel lines run along the inside of the right sub frame.



FUEL TANK CAPACITY

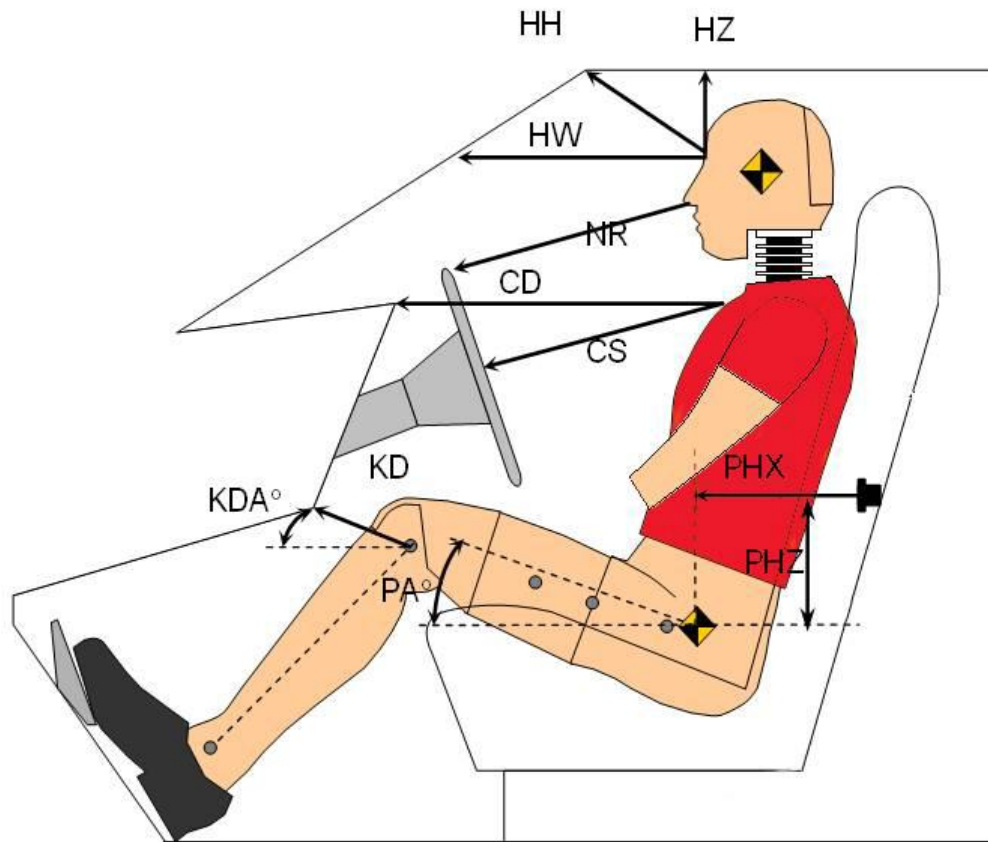
	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	59.1
Usable Capacity of "Optional" Tank (see Form No. 1)	NA
Usable Capacity of Standard Tank (see Owner's Manual)	59.1
Usable Capacity of Optional Tank (see Owner's Manual)	NA
93% of Usable Capacity	95
Actual Amount of Solvent Used in Test	54.9
1/3 of Usable Capacity	19.7

Is the Actual Amount of Solvent Used in the test equal to 95% +/- 1% of the Usable Capacity stated on Form No. 1? ☒ YES ☐ NO

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2013 Buick Verano
 Test Program: SPNCAP Side Impact

NHTSA No.: MD0106
 Test Date: 10/05/12

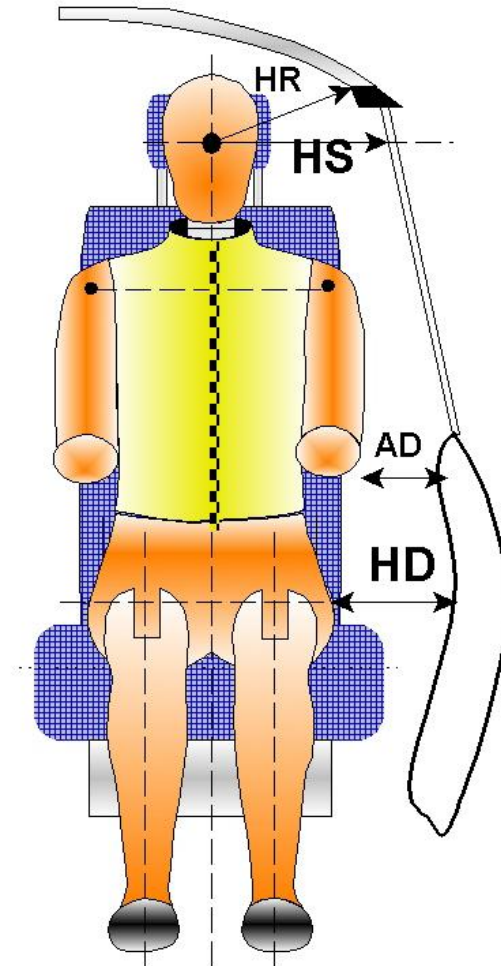


Code	Measurement Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	309	
HW	Head to Windshield	683	
HZ	Head to Roof Liner	192	
NR	Nose to Rim	233	
CD	Chest to Dashboard	421	
CS	Chest to Steering Wheel	174	
KDL/KDLA°	Left Knee to Dash	146	35.0
KDR/KDRA°	Right Knee to Dash	120	35.0
PAX°	Pelvic Tilt Angle (X-axis)		21.7
PAY°	Pelvic Tilt Angle (Y-axis)		NA
PHX	Hip Point to Striker (X-Axis)	305	
PHZ	Hip Point to Striker (Z-Axis)	160	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2013 Buick Verano
Test Program: SPNCAP Side Impact

NHTSA No.: MD0106
Test Date: 10/05/12

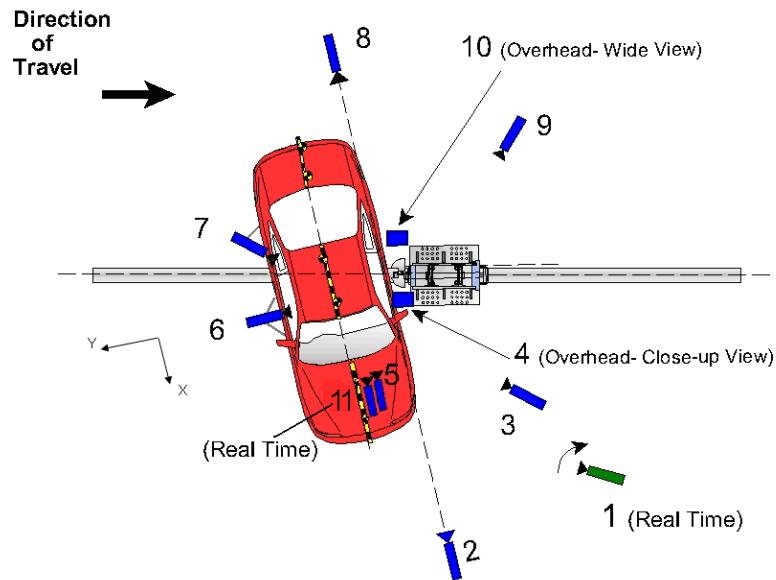


Code	Measurement Description	Length (mm)
HR	Head to Side Header	230
HS	Head to Side Window	360
AD	Arm to Door	163
HD	Hip Point to Door	169

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2013 Buick Verano
 Test Program: SPNCAP Side Impact

NHTSA No.: MD0106
 Test Date: 10/05/12



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

Camera No.	View	Coordinates (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X	Y	Z		
1	Real time (24-30 fps) pan view of impact				zoom	30
2	Front ground level – impact view	287	5450	-1313	12.5	1000
3	Impact side 45° – forward pole view	-737	3786	-1295	12.5	1000
4	Overhead Close-up view of impact	368	-200	-5268	50	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	-428	-5277	-1315	8.5	1000
9	Impact side 45° – rearward pole view	-2689	-4149	-1280	8.5	1000
10	Overhead wide view of impact	0	-75	-5268	25	1000
11	Real time dummy front view				8.5	30

All measurements accurate to +/- 6 mm.

NOTE: Vehicle was at a 75° angle to the rigid pole.

If applicable, explain why camera(s) did not run: _____

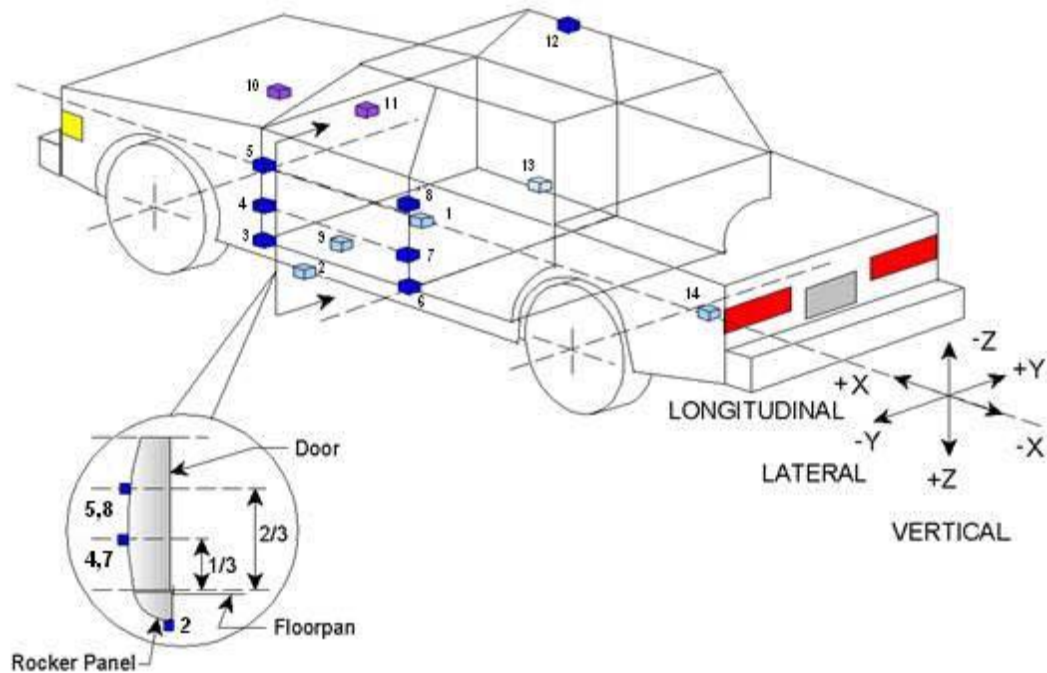
INSTRUMENTATION

	Number of Channels
Driver Dummy	19
Vehicle Structure	18
Pole Load Cells	8
TOTAL	45

DATA SHEET NO. 6
VEHICLE ACCELEROMETER DATA

Test Vehicle: 2013 Buick Verano
 Test Program: SPNCAP Side Impact

NHTSA No.: MD0106
 Test Date: 10/05/12



	Accelerometer/Sensor Location			
	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2695	10	-342
2	Left Floor Sill	3055	-685	-290
3	A-Pillar Sill	3325	-685	-290
4	A-Pillar Low	3460	-760	-494
5	A-Pillar Mid	3450	-740	-832
6	B-Pillar Sill	2455	-670	-295
7	B-Pillar Low	2472	-810	-574
8	B-Pillar Mid	2440	-800	-903
9	Driver Seat Track	2635	-560	-292
10	Engine Top	4196	20	-808
11	Firewall	3931	40	-888
12	Right Roof	2700	565	-1324
13	Right Floor Sill	2800	730	-354
14	Rear Floorpan	1325	0	-494

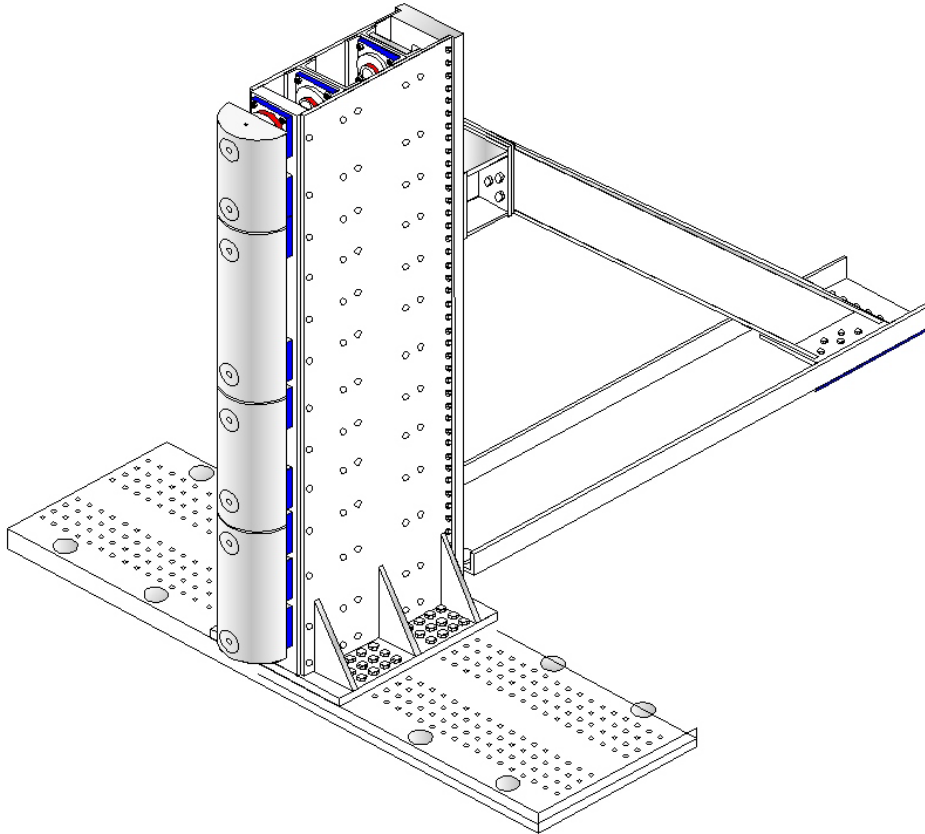
Reference: X - Test Vehicle Rear Bumper (+ forward)
 Y - Test Vehicle Centerline (+ to right)
 Z - Ground Plane (+ down)

DATA SHEET NO. 7
RIGID POLE LOAD CELL DATA

Test Vehicle: 2013 Buick Verano
Test Program: SPNCAP Side Impact

NHTSA No.: MD0106
Test Date: 10/05/12

FOIL 300K RIGID POLE



Load Cell Locations	
ID	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: 2013 Buick Verano
Test Program: SPNCAP Side Impact

NHTSA No.: MD0106
Test Date: 10/05/12

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Driver SID-IIs Dummy
Face	SCAB
Top of Head	SCAB
Left Side of Head	SCAB
Back of Head	Headrest, SCAB
Left Shoulder	Pelvis/Torso Airbag
Upper Torso	Pelvis/Torso Airbag
Lower Torso	Door panel
Left Hip	NA
Left Knee	Door panel

POST TEST DOOR PERFORMANCE

Description	Struck Side		Non-Struck Side		Rear Hatch/ Other Door
	Front	Rear	Front	Rear	
Remained Closed and Operational	No	No	Yes	Yes	Removed
Total Separation from Vehicle at Hinges or Latches	No	No	No	No	Removed
Latch or Hinge Systems Pulled Out of Their Anchorages	No	No	No	No	Removed
Disengaged from Latched Position	No	No	No	No	Removed
Latch Separated from Striker	No	No	No	No	Removed
Jammed Shut	Yes	Yes	No	No	Removed
If Door Opened at Striker, Record Width of Opening at Striker (mm)	N/A	N/A	N/A	N/A	N/A

* Indicate "Yes", "No", or "N/A".

POST-TEST SEAT PERFORMANCE

Description	Struck Side		Non-Struck Side	
	Front	Rear	Front	Rear
Seat Movement Along Seat Track	No	No	No	No
Seat Disengagement from Floor pan	No	No	No	No
Seat Back Movement from Initial Position	No	No	No	No
Seat Back Collapse	No	No	No	No

* Indicate "Yes", "No", or "N/A".

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	None
Sill Separation	None
Windshield Damage	Broken
Side Window Damage	Broken
Other Notable Effects	None

DATA SHEET NO. 8 (CONTINUED)
POST TEST OBSERVATIONS

Test Vehicle: 2013 Buick Verano
 Test Program: SPNCAP Side Impact

NHTSA No.: MD0106
 Test Date: 10/05/12

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side (Driver)		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Front Airbag	Yes	No		
Knee Airbag	Yes	No		
Side Curtain Airbag	Yes	Yes		
Side Torso/Pelvis Airbag	Yes	Yes		
Seat Belt Pretensioner	Yes	No		
Seat Belt Load Limiter	Yes	No		
Other	NA	NA		

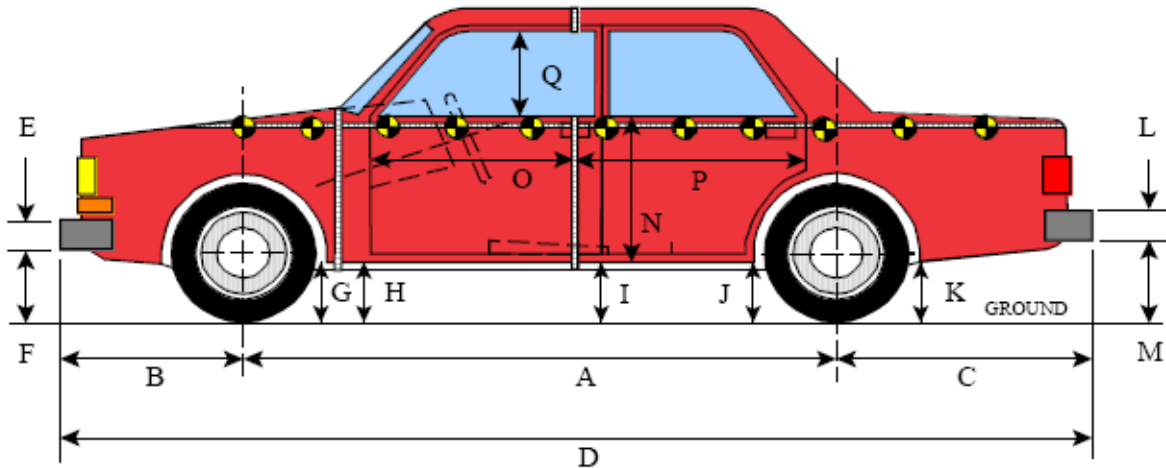
VEHICLE SPEED, VEHICLE ANGLE AT IMPACT AND IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		1061
Actual Impact Point (Aft of Front Axle)	mm		1058
Horizontal Offset (+ forward / - rearward)	mm	+/- 38 of Intended Impact point	-3
Angle Between Vehicle's Longitudinal Centerline and Line of Motion	degrees	75 +/- 3	76
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	32.1
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.0

DATA SHEET NO. 9
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2013 Buick Verano
 Test Program: SPNCAP Side Impact

NHTSA No.: MD0106
 Test Date: 10/05/12



LEFT SIDE VIEW

All MEASUREMENTS IN (mm) WITH TOLERANCE OF ± 3 mm

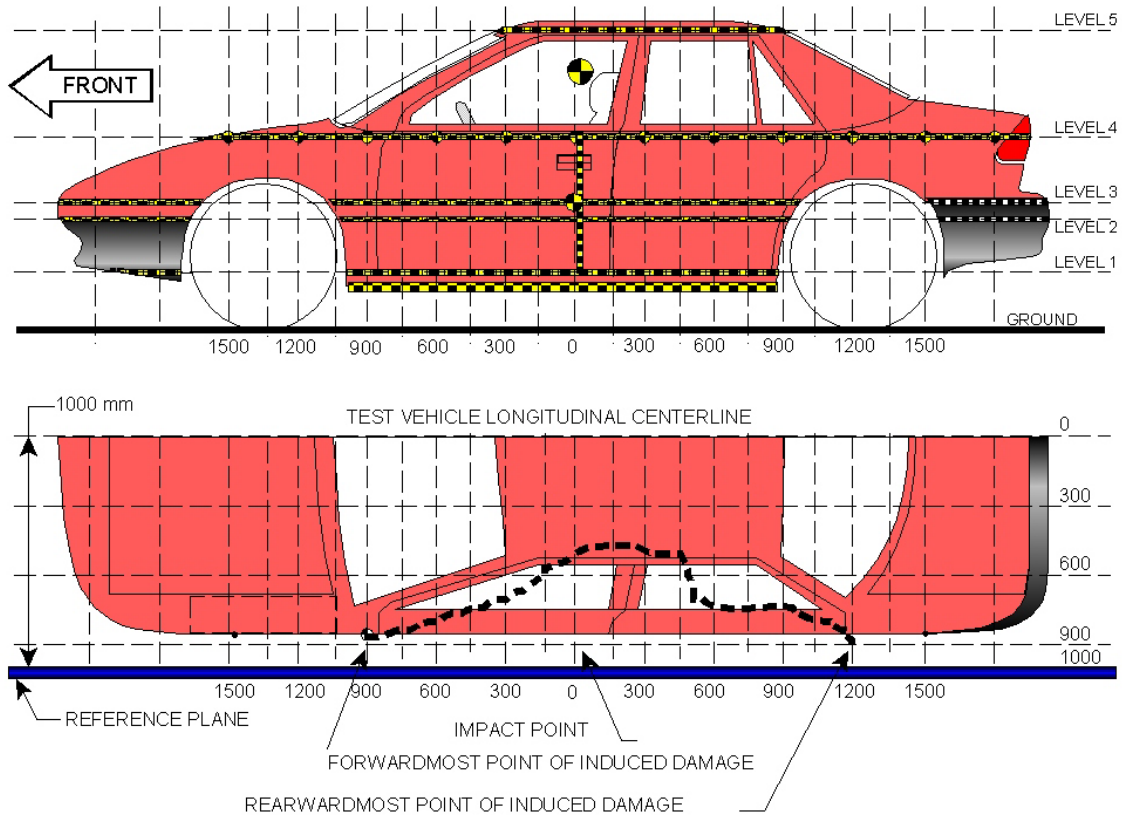
VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2690	2590	100
B	Front Axle to Front Surface of Vehicle	990	990	0
C	Rear Axle to Rear Surface of Vehicle	990	990	0
D	Total Length at Centerline	4670	4641	29
E	Front Bumper Thickness	170	170	0
F	Front Bumper Bottom to Ground	403	402	1
G	Sill Height at Front Wheel Well	226	235	-9
H	Sill Height at Front Door Leading Edge	248	246	2
I	Sill Height at B-Pillar	249	270	-21
J1	Sill Height at Rear Wheel Well	190	233	-43
J2	Pinch Weld Height at Rear Wheel Well	172	206	-34
K	Sill Height Aft of Rear Wheel Well	334	362	-28
L	Rear Bumper Thickness	250	250	0
M	Rear Bumper Bottom to Ground	401	428	-27
N	Sill Height to Bottom of Front Window Sill	768	758	10
O	Front Door Leading Edge to Impact CL	700	677	23
P	Rear Door Trailing Edge to Impact CL	1528	1238	290
Q	Front Window Opening	410	400	10
R	Right Side Length	4390	4383	7
S	Left Side Length	4390	4326	64
T	Vehicle Width at "B" Pillars	1270	1190	80

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2013 Buick Verano
 Test Program: SPNCAP Side Impact

NHTSA No.: MD0106
 Test Date: 10/05/12



NOTE: All measurements are in millimeters (mm)

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Measurement Description	Height Above Ground	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	354	288	0
2	Occupant H-Point	540	320	0
3	Mid-Door	636	337	0
4	Window Sill	920	305	0
5	Window Top	1422	66	150

NOTE: The above measurements should be taken along the vertical impact reference line. Vehicle measurements forward of the vertical impact reference line are negative.

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

Test Vehicle: 2013 Buick Verano
 Test Program: SPNCAP Side Impact

NHTSA No.: MD0106
 Test Date: 10/05/12

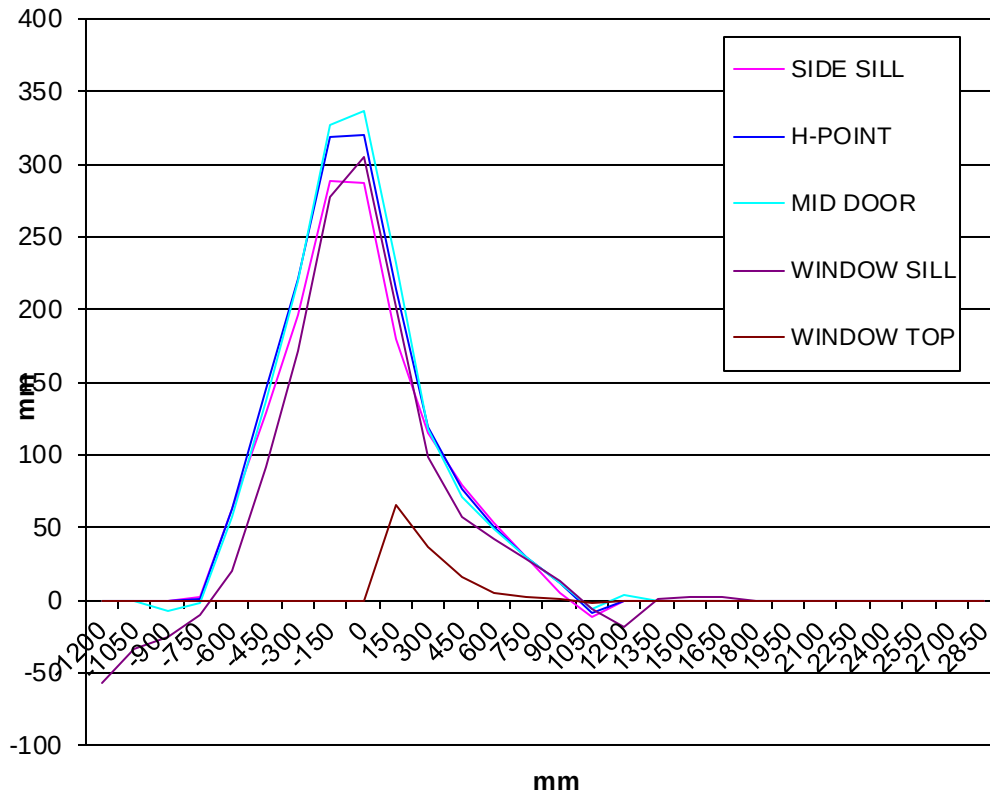
	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900	0	0	896	810	0	0	0	904	835	0	0	0	-8	-25	0
-750	872	891	889	817	0	869	890	891	828	0	3	1	-2	-11	0
-600	866	890	890	825	0	803	827	833	804	0	63	63	57	21	0
-450	866	891	893	830	0	738	746	756	738	0	128	145	137	92	0
-300	866	892	893	835	0	669	671	673	663	0	197	221	220	172	0
-150	866	892	896	840	0	578	573	569	563	0	288	319	327	277	0
0	873	891	898	846	0	585	571	561	541	0	288	320	337	305	0
150	873	889	897	848	569	694	675	665	646	503	179	214	232	202	66
300	873	888	895	853	572	758	769	778	754	535	115	119	117	99	37
450	873	883	891	856	572	794	807	820	798	557	79	76	71	58	15
600	872	880	887	859	571	820	829	838	816	565	52	51	49	43	6
750	871	877	883	860	565	842	847	853	832	563	29	30	30	28	2
900	869	875	881	857	555	864	863	869	845	554	5	12	12	12	1
1050	866	885	881	882	518	878	894	887	887	519	-12	-9	-6	-5	-1
1200	0	0	895	850	0	0	0	891	868	0	0	0	4	-18	0
1350	0	0	0	846	0	0	0	0	846	0	0	0	0	0	0
1500	0	0	0	841	0	0	0	0	839	0	0	0	0	2	0
1650	0	0	0	833	0	0	0	0	830	0	0	0	0	3	0

NOTE: Pre-test measurements are taken when the vehicle is in the "As Tested" weight condition. Vehicle measurements forward of the vertical impact reference line are negative. The crush profile grid is established prior to the test based on an estimated impact point. The final distance from impact is determined after the final dummy positioning and the pole is aligned with the center of gravity of the dummy's head.

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

Test Vehicle: 2013 Buick Verano
Test Program: SPNCAP Side Impact

NHTSA No.: MD0106
Test Date: 10/05/12



DATA SHEET NO. 11

FMVSS NO. 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

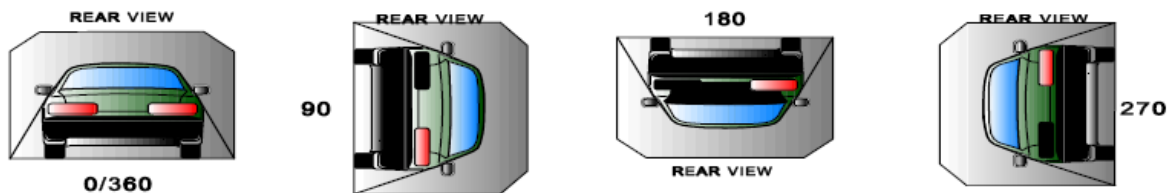
Test Vehicle: 2013 Buick Verano
 Test Program: SPNCAP Side Impact

NHTSA No.: MD0106
 Test Date: 10/05/12

Test Time: 14:07 Temperature: 21

- A. From impact until vehicle motion ceases: 0 oz.
 (Maximum allowable is 1 ounce)
- B. For the 5 minute period after motion ceases: 0
 (Maximum allowable is 5 ounces)
- C. For the following 25 minutes: 0
 (Maximum allowable is 1 ounce/minute)
- D. Spillage Details: None

FMVSS 301 STATIC ROLLOVER DATA



ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0 to 90	120	300	420
90 to 180	120	300	840
180 to 270	120	300	1260
270 to 360	120	300	1680

FMVSS NO. 301 ROLLOVER SPILLAGE TABLE

Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0 to 90	0	0	0	N/A
90 to 180	0	0	0	N/A
180 to 270	0	0	0	N/A
270 to 360	0	0	0	N/A

ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

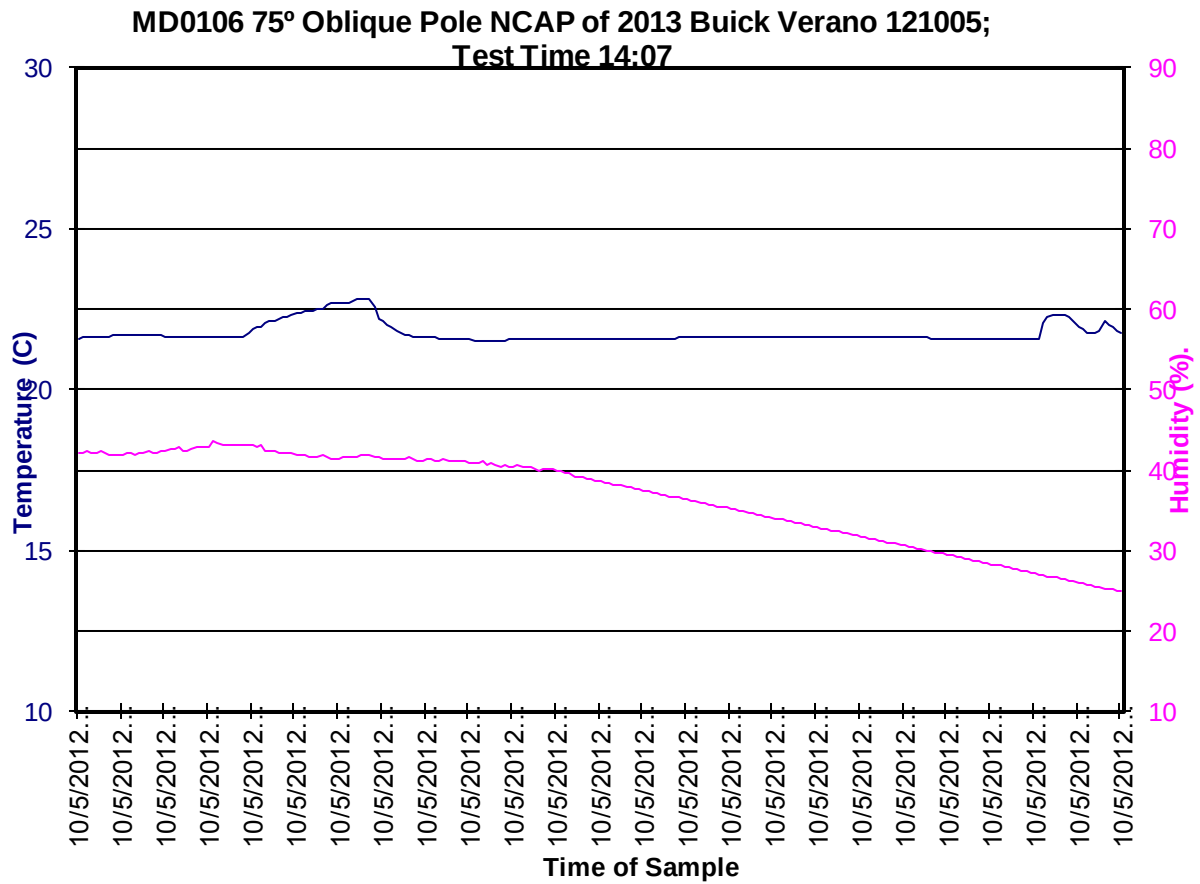
Test Phase	Spillage Location
0 to 90	None
90 to 180	None
180 to 270	None
270 to 360	None

DATA SHEET NO. 12

DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION DATA

Test Vehicle: 2013 Buick Verano
Test Program: SPNCAP Side Impact

NHTSA No.: MD0106
Test Date: 10/05/12



APPENDIX A
PHOTOGRAPHS

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5	Pre-Test Left Front 3/4 View of Test Vehicle	A-6
6	Post-Test Left Front 3/4 View of Test Vehicle	A-6
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9	Pre-Test Left Rear 3/4 View of Test Vehicle	A-8
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11	Pre-Test Rear View of Test Vehicle	A-9
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19	Pre-Test Close-Up View of Impact Point Target	A-13
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24	Pre-Test Left Side View of Dummy Shoulder and Door Top View	A-15
25	Post-Test Left Side View of Dummy Shoulder and Door Top View	A-16
26	Pre-Test Front View of Seat Back Prior to Dummy Positioning	A-16
27	Pre-Test Front View of Dummy Head and Shoulders in Relation to Head Restraint	A-17
28	Pre-Test Front View of Seat Pan Prior to Dummy Positioning	A-17
29	Pre-Test Overhead View of Dummy Thighs on Seat Pan	A-18
30	Pre-Test Left Side View of Dummy's Neck Showing Position of Adjustable Neck Bracket	A-18
31	Pre-Test Left Side View of Dummy's Head Showing Dummy's Head is Level	A-19
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33	Pre-Test View of Belt Anchorage for Dummy	A-20
34	Pre-Test Left Side View of Steering Wheel	A-20

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36	Pre-Test View of Parking Brake	A-21
37	Pre-Test Close-Up Left Side View of Driver Seat Track	A-22
38	Pre-Test Close-Up Left Side View of Driver Seat Back	A-22
39	Pre-Test Close-Up View of Driver Seat Back or Head Restraint	A-23
40	Pre-Test Dummy and Door Clearance View	A-23
41	Post-Test Dummy and Door Clearance View	A-24
42	Pre-Test Right Side View of Dummy and Front Seat of Occupant Compartment	A-24
43	Post-Test Right Side View of Dummy and Front Seat of Occupant Compartment	A-25
44	Pre-Test Inner Driver Door Panel View	A-25
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46	Post-Test Dummy Close-Up Head Contact with Vehicle View	A-26
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48	Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View	A-27
49	Post-Test Dummy Close-Up Torso Contact with Side Airbag View	A-28
50	Post-Test Dummy Close-Up Pelvis Contact View	A-28
51	Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View	A-29
52	Post-Test Dummy Close-Up Knee Contact with with Vehicle Interior View	A-29
53	Pre-Test View of Fuel Filler Cap or Fuel Filler Neck	A-30
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55	Close-Up View of Vehicle's Certification Label	A-31
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60	Pre-Test Pole Barrier Side View	A-33
61a	Pre-Test Ballast View	A-34
61b	Pre-Test Ballast View	A-34
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63	FMVSS No. 301 Static Rollover 0 Degrees	A-35
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65	FMVSS No. 301 Static Rollover 180 Degrees	A-36
66	FMVSS No. 301 Static Rollover 270 Degrees	A-37
67	FMVSS No. 301 Static Rollover 360 Degrees	A-37
68	Impact Event	A-38
69	Monroney Label	A-38
70	Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-39
71	Post-Test View of Shattered Vehicle Inner Door Panel	A-39



001 As Delivered Right Front 3/4 View of Test Vehicle



002 As Delivered Left Rear 3/4 View of Test Vehicle



003 Pre-Test Frontal View of Test Vehicle



004 Post-Test Frontal View of Test Vehicle



005 Pre-Test Left Front 3/4 View of Test Vehicle



006 Post-Test Left Front 3/4 View of Test Vehicle



007 Pre-Test Left Side View of Test Vehicle



008 Post-Test Left Side View of Test Vehicle



009 Pre-Test Left Rear 3/4 View of Test Vehicle



010 Post-Test Left Rear 3/4 View of Test Vehicle



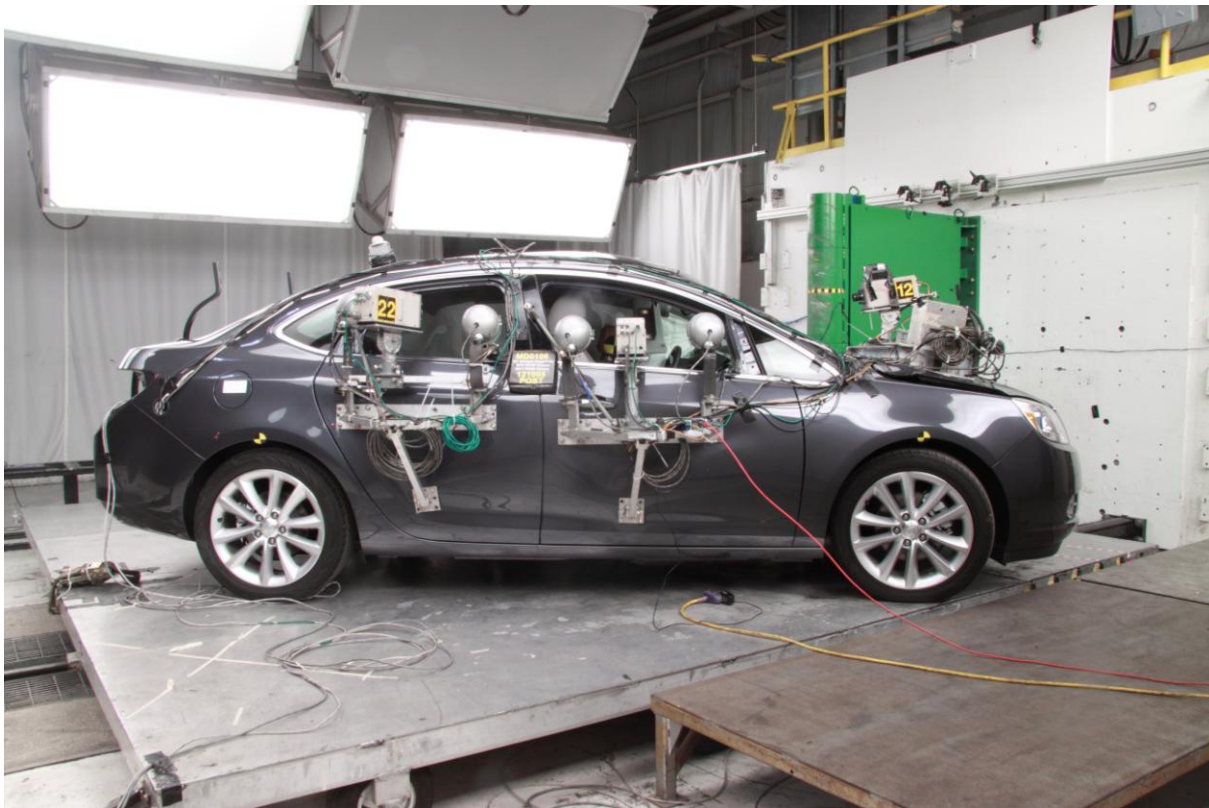
011 Pre-Test Rear View of Test Vehicle



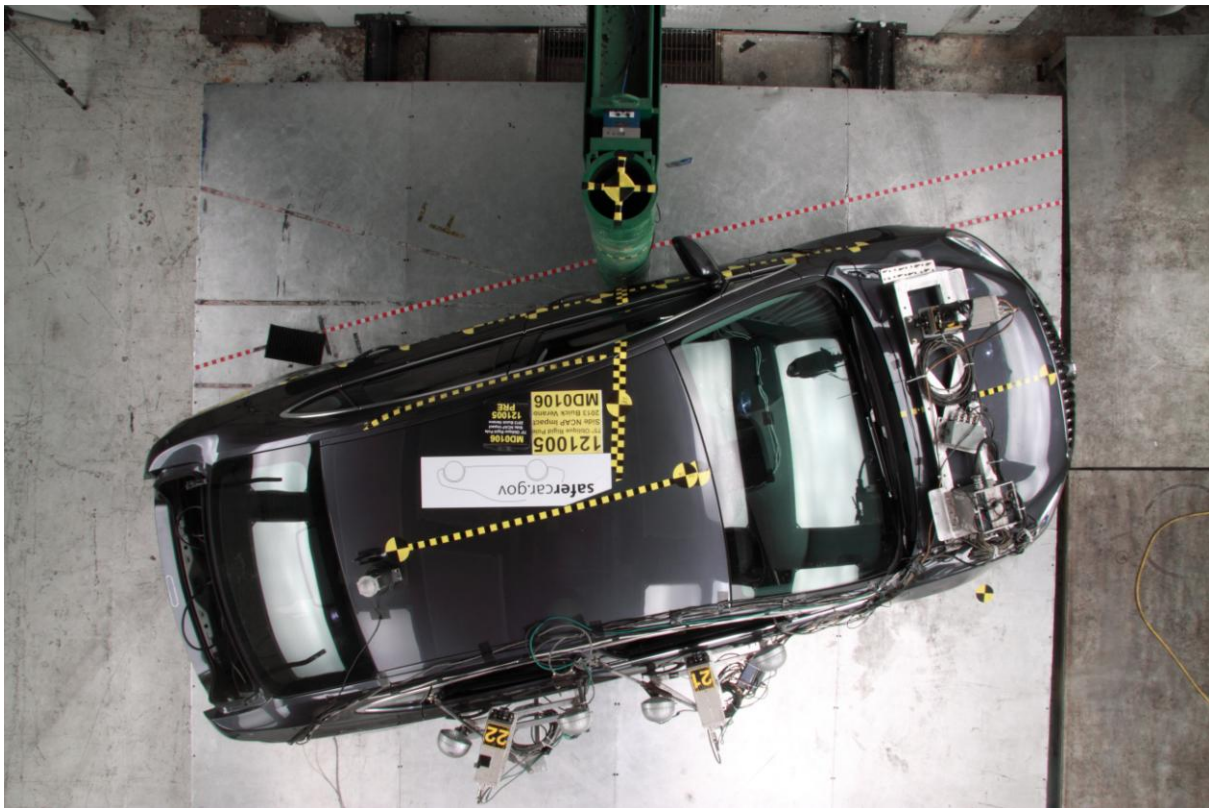
012 Post-Test Rear View of Test Vehicle



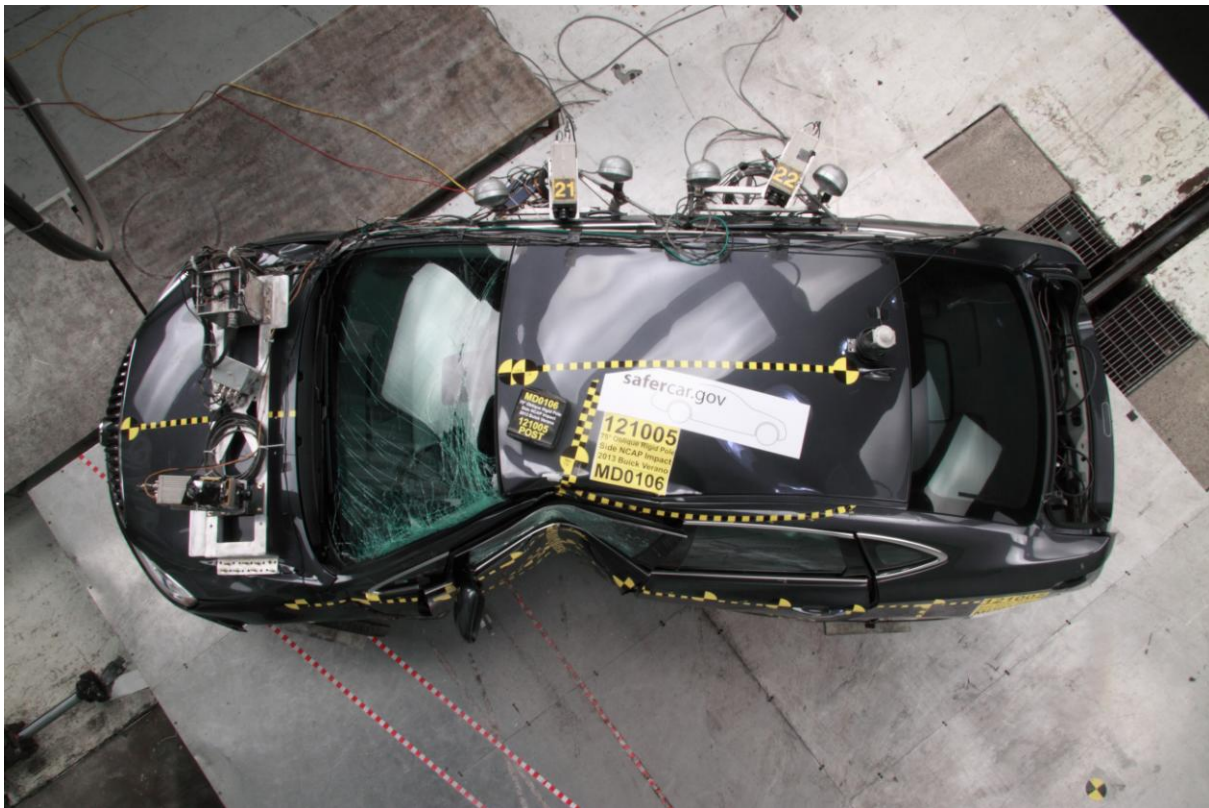
013 Pre-Test Right Side View of Test Vehicle



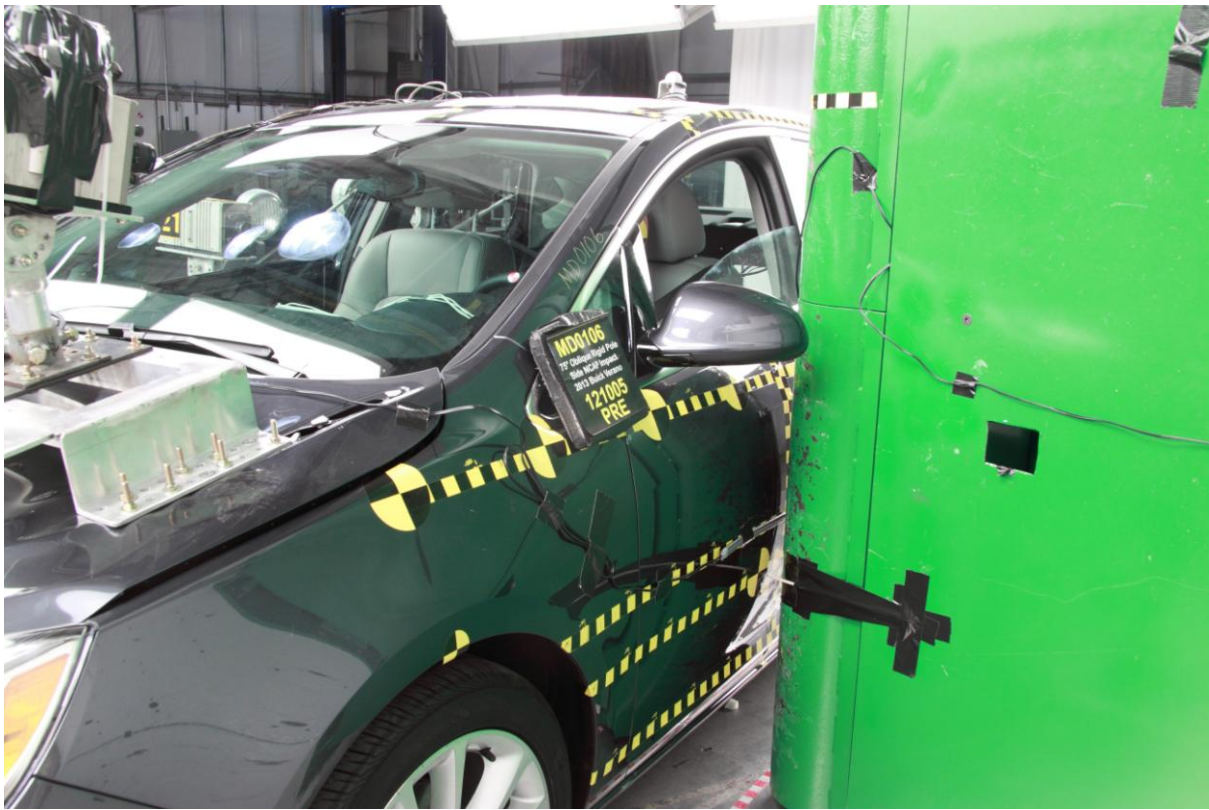
014 Post-Test Right Side View of Test Vehicle



015 Pre-Test Overhead View of Test Area



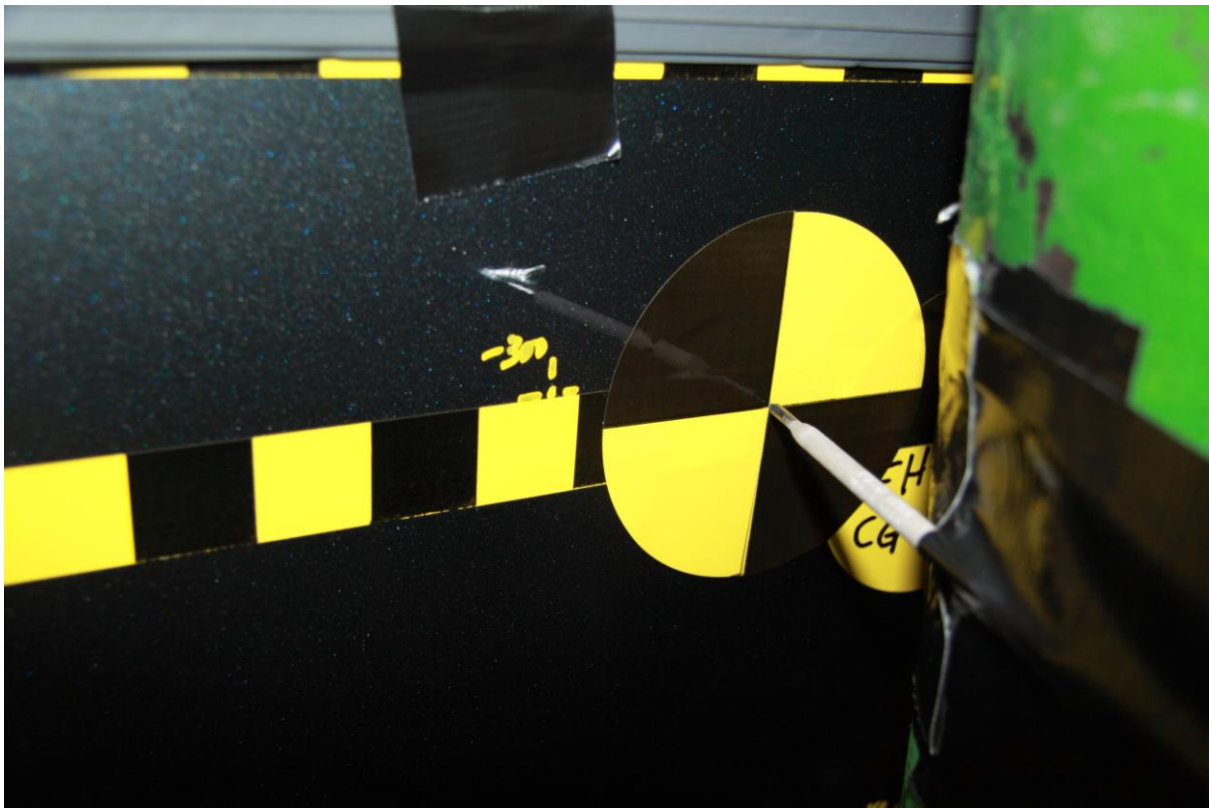
016 Post-Test Overhead View of Test Area



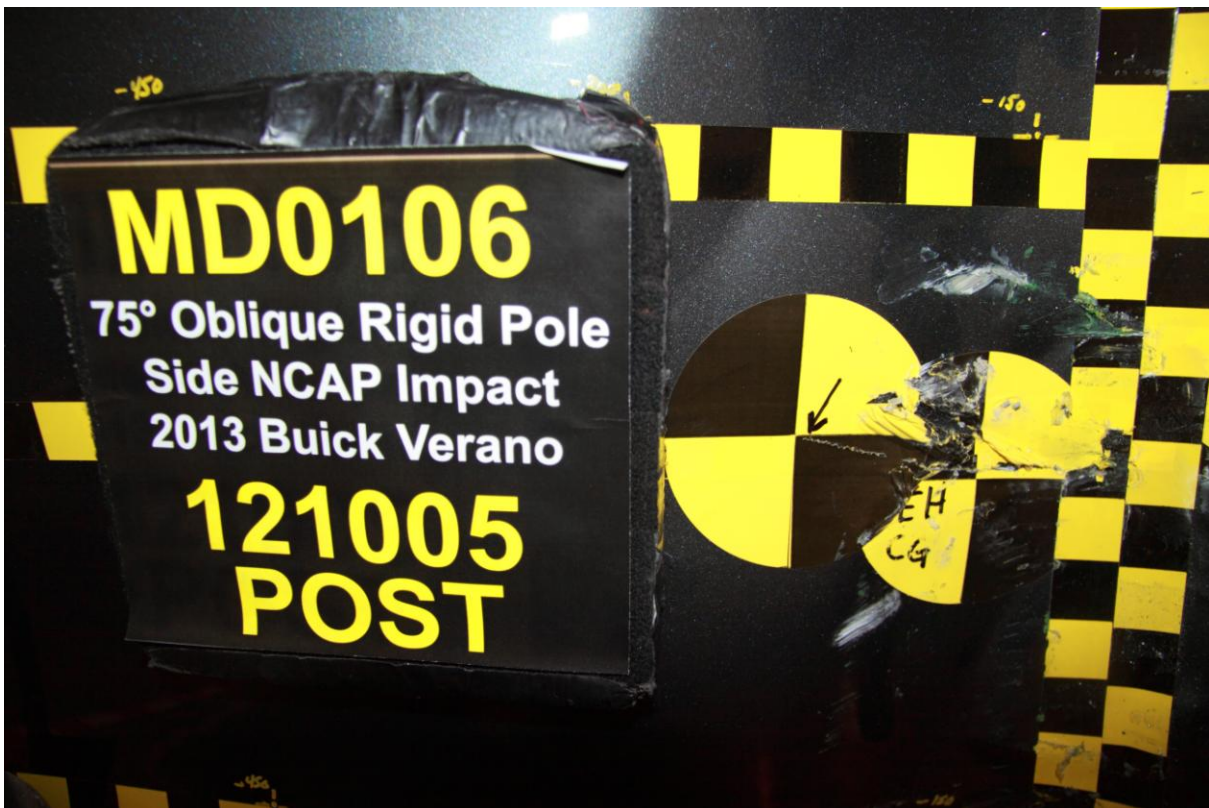
017 Pre-Test Left Side View of Pole Positioned Against Side of Vehicle



018 Pre-Test Right Side View of Pole Positioned Against Side of Vehicle



019 Pre-Test Close-Up View of Impact Point Target



020 Post-Test Close-Up View of Impact Point Target Showing Impact Location



021 Pre-Test Front Close-Up View of Dummy Head and Chest



022 Post-Test Front Close-Up View of Dummy



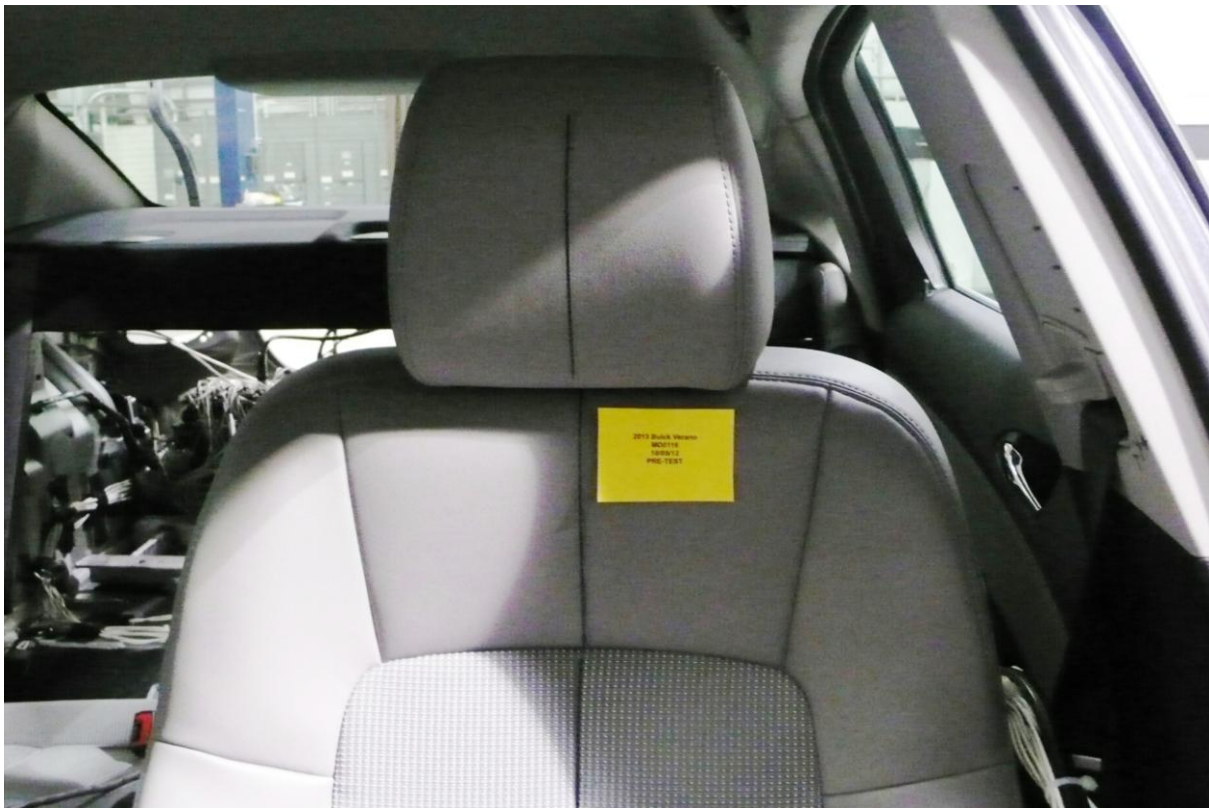
023 Pre-Test Left Side View of Dummy Showing Belt and Chalking



024 Pre-Test Left Side View of Dummy Shoulder and Door Top View



025 Post-Test Left Side View of Dummy Shoulder and Door Top View



026 Pre-Test Front View of Seat Back Prior to Dummy Positioning



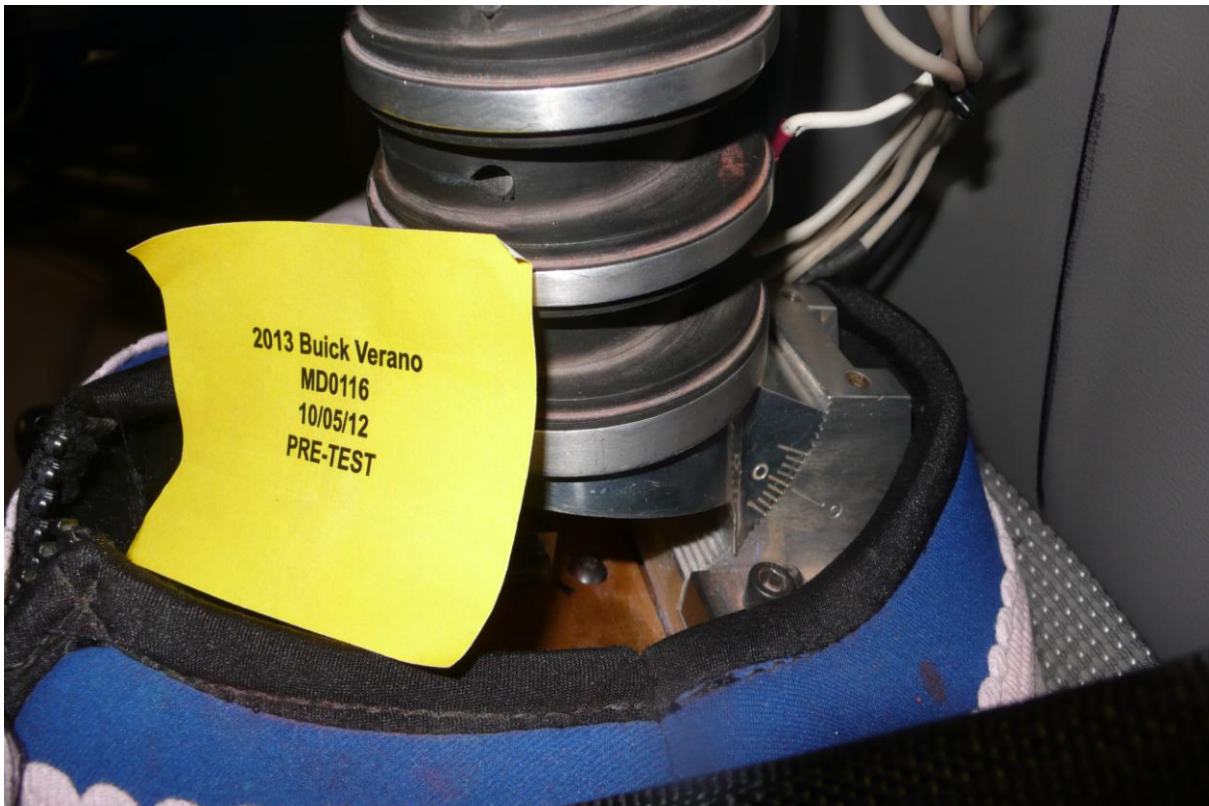
027 Pre-Test Front View of Dummy Head and Shoulders in Relation to Head Restraint



028 Pre-Test Front View of Seat Pan Prior to Dummy Positioning



029 Pre-Test Overhead View of Dummy Thighs on Seat Pan



030 Pre-Test Left Side View of Dummy Neck Showing Position of Adjustable Neck Bracket



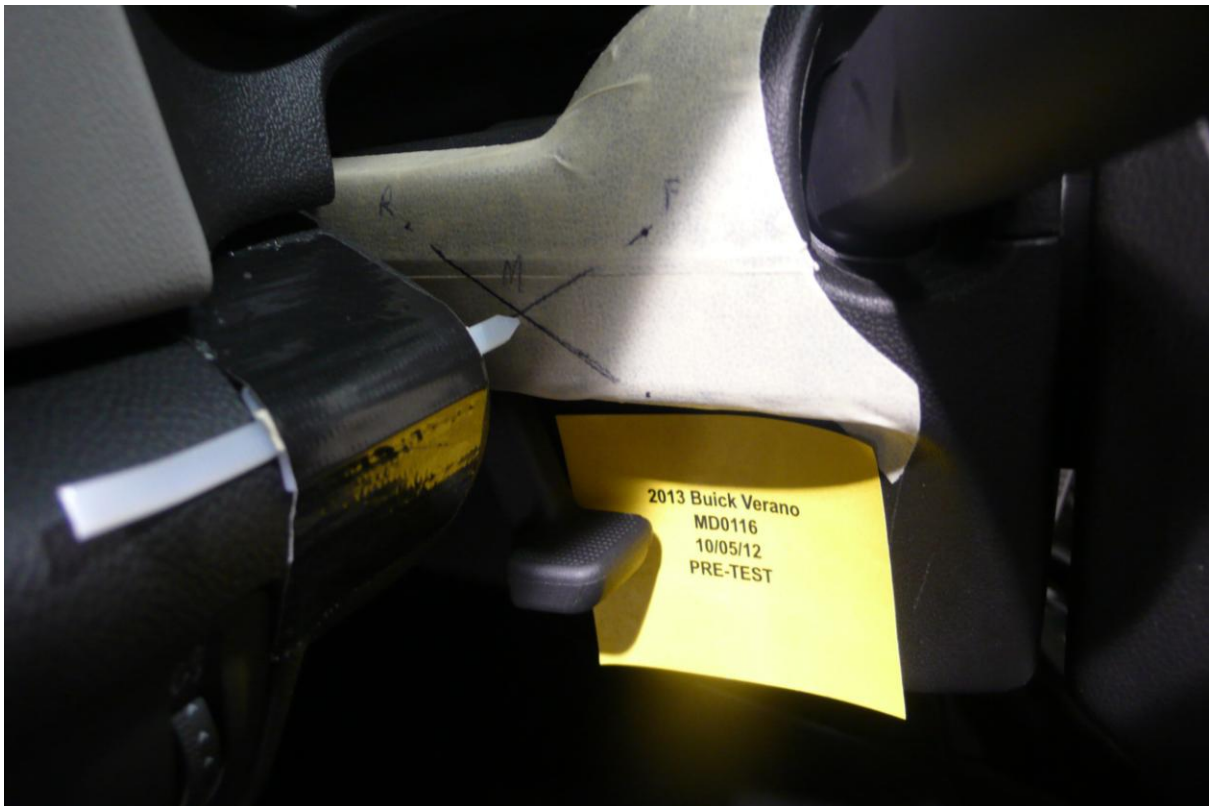
031 Pre-Test Left Side View of Dummy Head Showing Dummy Head is Level



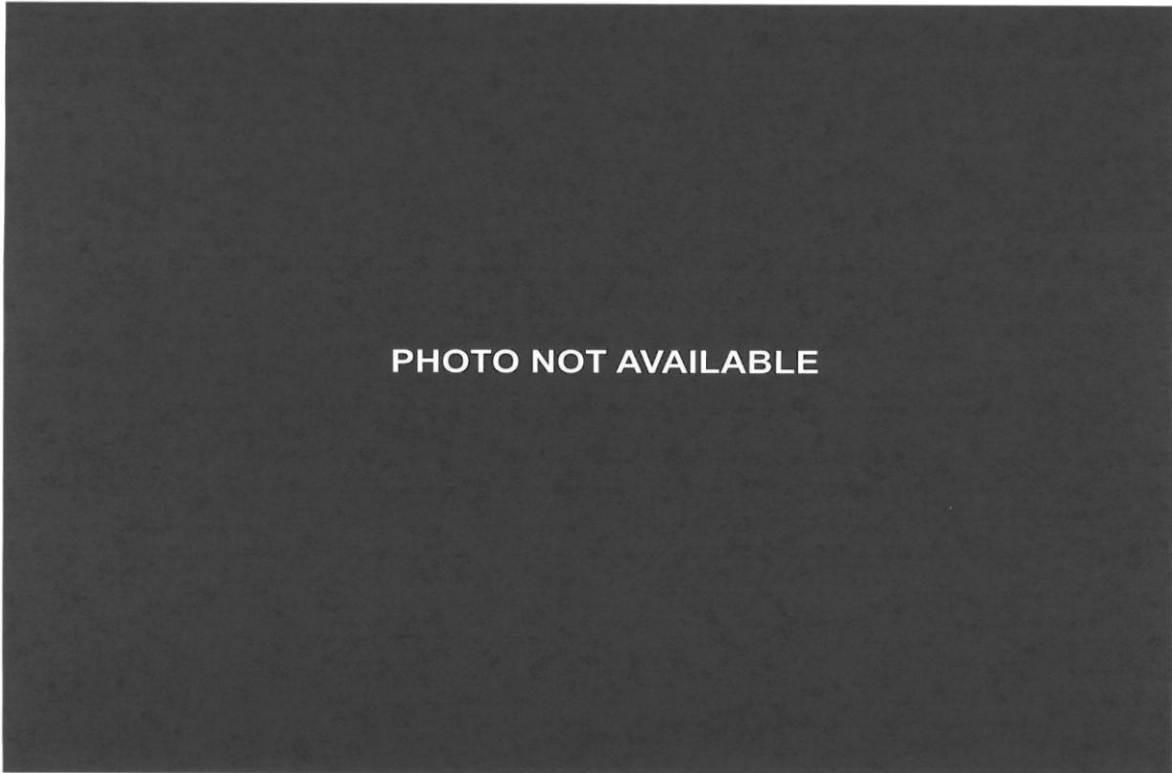
032 Pre-Test Placement of Dummy Feet



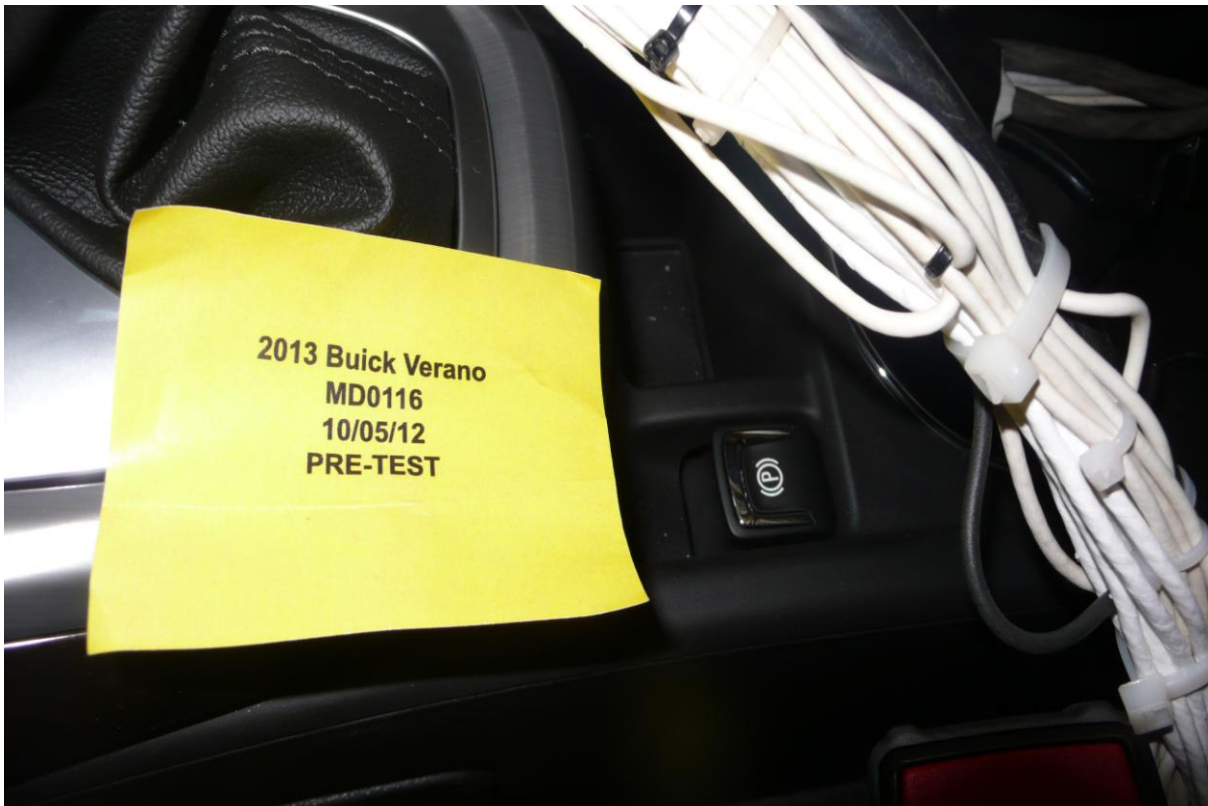
033 Pre-Test View of Belt Anchorage for Dummy



034 Pre-Test Left Side View of Steering Wheel



035 Pre-Test View of Disengaged Parking Brake



036 Pre-Test View of Parking Brake



037 Pre-Test Close-Up Left Side View of Driver Seat Track



038 Pre-Test Close-Up Left Side View of Driver Seat Back



039 Pre-Test Close-Up View of Driver Seat Back or Head Restraint



040 Pre-Test Dummy and Door Clearance View

PHOTO NOT AVAILABLE

041 Post-Test Dummy and Door Clearance View



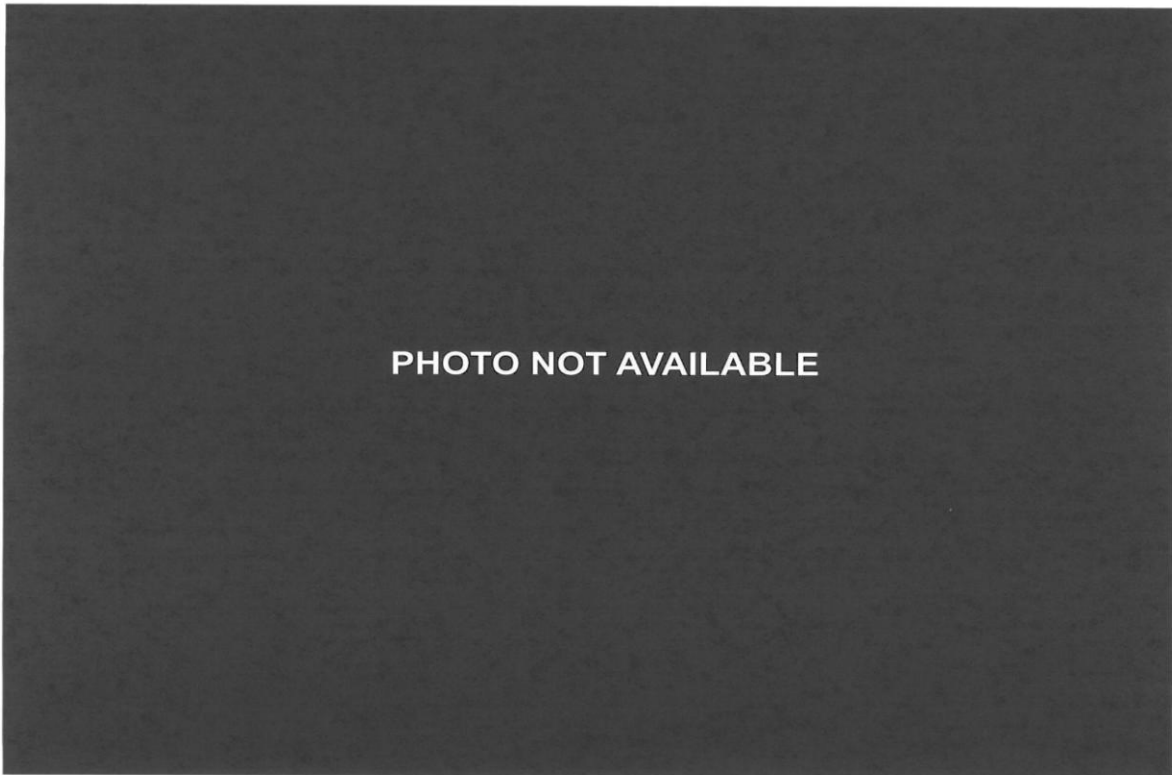
042 Pre-Test Right Side View of Dummy and Front Seat of Occupant Compartment



043 Post-Test Right Side View of Dummy and Front Seat of Occupant Compartment



044 Pre-Test Inner Driver Door Panel View



045 Post-Test Inner Driver Door Panel View Showing Dummy Contact Location



046 Post-Test Dummy Close-Up Head Contact with Vehicle View



047 Post-Test Dummy Close-Up Head Contact with Side Airbag View



048 Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View



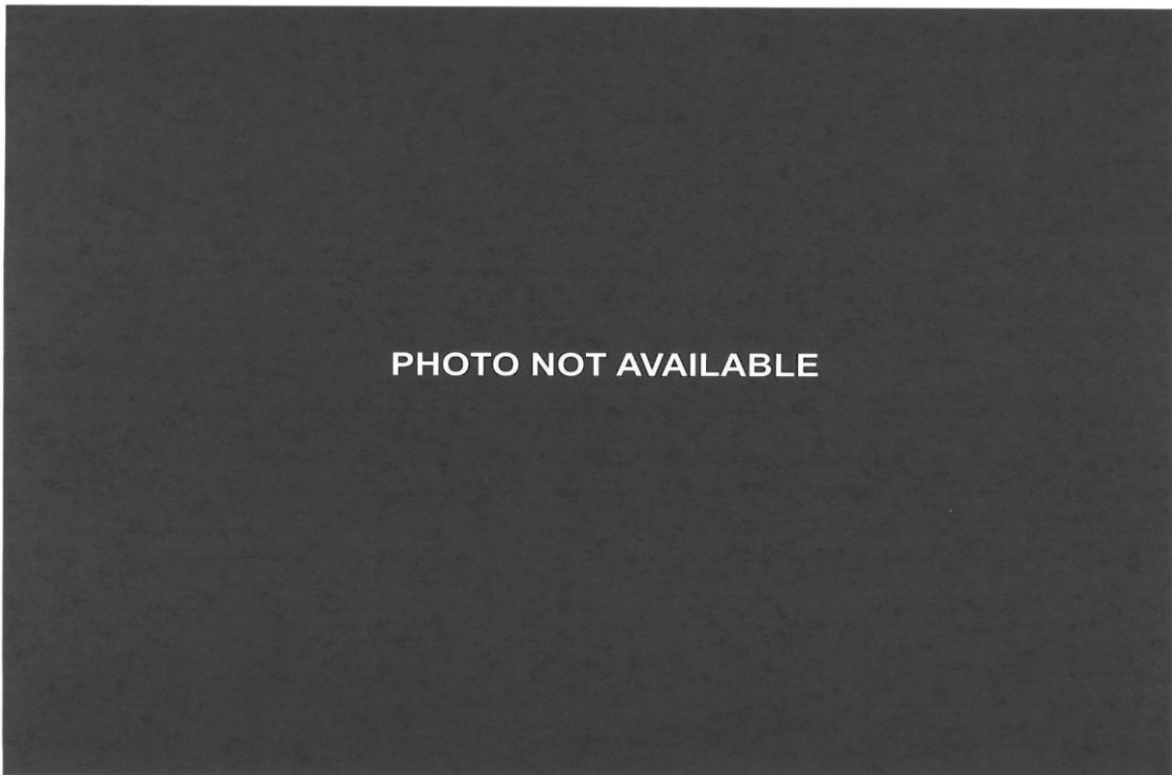
049 Post-Test Dummy Close-Up Torso Contact with Side Airbag View



050 Post-Test Dummy Close-Up Pelvis Contact View



051 Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View



052 Post-Test Dummy Close-Up Knee Contact with Vehicle Interior View



053 Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



054 Post-Test View of Fuel Filler Cap or Fuel Filler Neck



055 Close-Up View of Vehicle Certification Label



056 Close-Up View of Vehicle Tire Information Placard or Label



057 Pre-Test Pole Barrier Front View



058 Post-Test Pole Barrier Front View



059 Pre-Test Pole Barrier Side View



060 Post-Test Pole Barrier Side View

PHOTO NOT APPLICABLE

061 Pre-Test Ballast View



062 Post-Test Primary and Redundant Speed Trap Read-Out



063 FMVSS No. 301 Static Rollover 0 Degrees



064 FMVSS No. 301 Static Rollover 90 Degrees



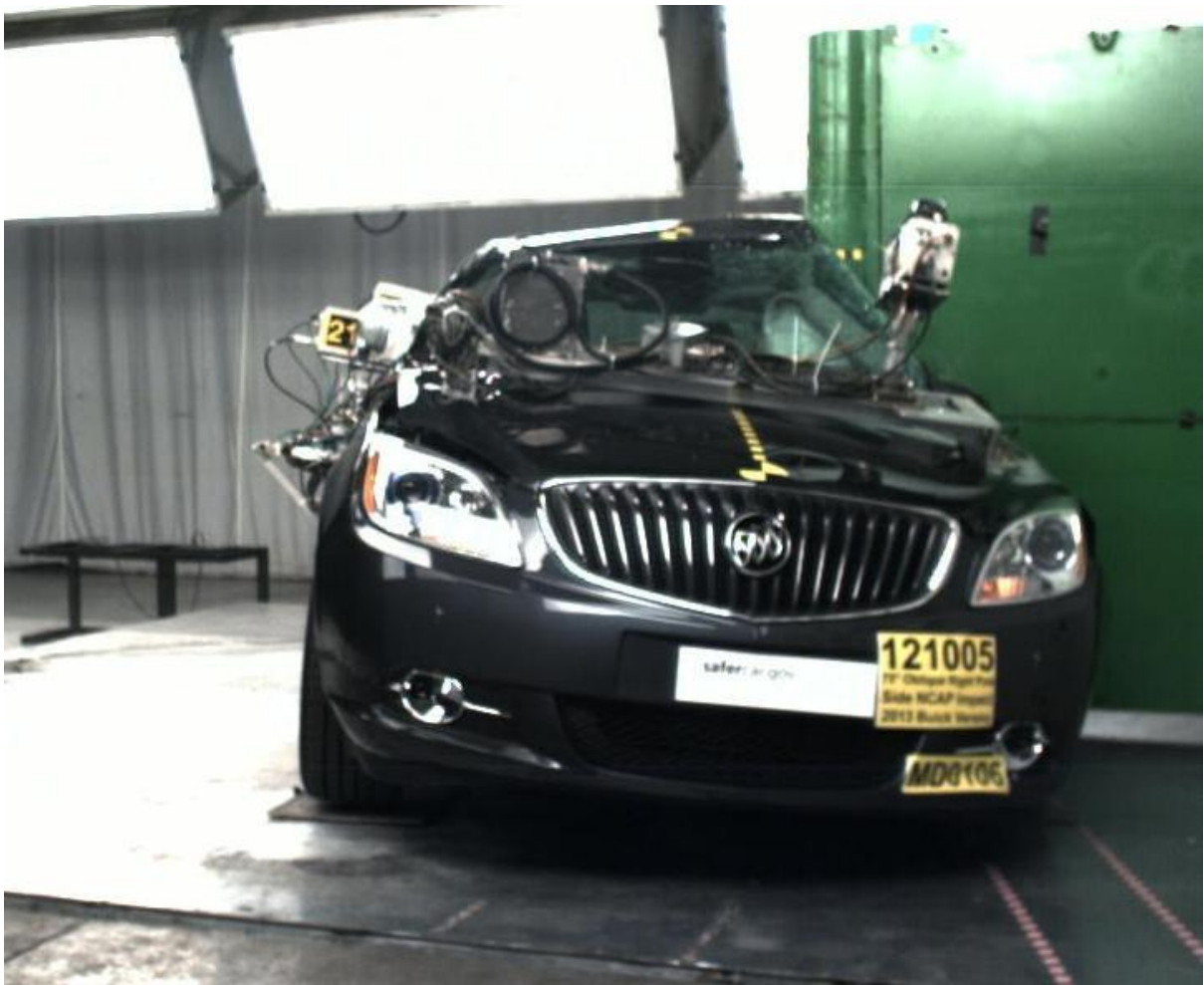
065 FMVSS No. 301 Static Rollover 180 Degrees



066 FMVSS No. 301 Static Rollover 270 Degrees



067 FMVSS No. 301 Static Rollover 360 Degrees



068 Impact Event



BUICK

2013 VERANO FWD 1SD

**EXTERIOR: CYBER GRAY METALLIC
INTERIOR: MEDIUM TITANIUM**

**ENGINE, 2.4L DOHC 4 CYL
TRANSMISSION, 6 SPD AUTOMATIC**

Visit us at www.buick.com

STANDARD EQUIPMENT

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

- 6 YEAR / 70,000 MILE POWERTRAIN LIMITED WARRANTY SEE DEALER FOR DETAILS
- 4 YEAR/50,000 MILE BUMPER-TO-BUMPER WARRANTY SEE DEALER FOR DETAILS

MECHANICAL

- ENGINE, 2.4L DOHC 4 CYL WITH VVT
- TRANSMISSION, 6 SPD AUTOMATIC

SAFETY & SECURITY

- REAR VISION CAMERA SYSTEM
- REMOTE KEYLESS ENTRY
- AIRBAGS, DRIVER & FRONT PASSENGER FRONTAL, KNEE, SIDE IMPACT & HEAD CURTAIN; REAR OUTBOARD PASSENGERS SIDE IMPACT & HEAD CURTAIN
- STABILITRAK-STABILITY CONTROL

SYSTEM W/ TRACTION CONTROL

- ANTI-LOCK BRAKE SYSTEM, 4 WHEEL DISC
- 6 MPH ONSTAR DIRECTIONS AND CONNECTIONS WITH AUTOMATIC CRASH RESPONSE & TURN-BY-TURN NAVIGATION (ASK DEALER ABOUT GEOGRAPHIC COVERAGE)
- TIRE PRESSURE MONITOR (EXCL. SPARE TIRE)
- CONTENT THEFT ALARM, THEFT DETERRENT SYSTEM

INTERIOR

- SEATS, FRONT SPORT BUCKET
- SEAT TRIM, RIBBON FABRIC, LEATHERETTE BOLSTERS
- SEAT ADJUSTER, DRIVER
- 8 WAY MANUAL
- SEAT ADJUSTER, FRNT PASSENGER
- 8 WAY MANUAL
- SEAT, REAR 60-40 SPLIT-FOLD
- WINDOW, POWER WITH EXPRESS

UPDOWN DRIVER DOOR

- WINDOW, POWER WITH EXPRESS DOWN ALL DOORS
- HEAD RESTRAINTS, 2 WAY ADJUSTABLE
- POWER DOOR LOCKS
- DOOR SILL PLATE
- REMOTE VEHICLE STARTER SYSTEM
- AIR CONDITIONING, AUTOMATIC DUAL ZONE CLIMATE CONTROL
- CRUISE CONTROL
- POWER OUTLET, FRONT AUXILIARY 12 V
- POWER OUTLET, REAR AUXILIARY
- LEATHER WRAP STEERING WHEEL
- LEATHER TRIMMED SHIFT LEVER
- STEERING COLUMN, TILT AND TELESCOPIC
- XM RADIO + SERVICE SUBSCRIPTION SOLD SEPARATELY BY SUBSCRIBER AFTER 3 MONTHS
- DRIVER INFORMATION CENTER
- 7" COLOR TOUCH RADIO WITH

- BLUE INTELLINK, CD/MP3 PLAYER, AUX INPUT AND USB PORT
- BLUE TOOTH FOR PHONE AND MUSIC
- AUDIO SYSTEM, 6 SPEAKER
- STEERING WHEEL CONTROLS

EXTERIOR

- GLASS, SOLAR TINTED
- DOOR HANDLES, BODY-COLOR CHROME STRIP
- OUTSIDE MIRRORS, POWER ADJUSTABLE
- EXHAUST TIP, CHROME
- TIRE, COMPACT SPARE & WHEEL
- WHEELS, 18" MACHINE FACED ALLOY
- FRONT FOG LAMPS
- HEADLAMP, PROJECTOR BEAM HALOGEN
- HEADLAMP CONTROL, AUTOMATIC ON & OFF

OPTIONS & PRICING

MANUFACTURER'S SUGGESTED RETAIL PRICE	
STANDARD VEHICLE PRICE	\$23,080.00
OPTIONES INSTALLED BY THE MANUFACTURER (MAY REPLACE STANDARD EQUIPMENT SHOWN)	
FLOOR MATS, ALL WEATHER FRONT AND REAR (DEALER INSTALLED)	140.00
TOTAL OPTIONS	\$140.00
TOTAL VEHICLE & OPTIONS	\$23,220.00
DESTINATION CHARGE	865.00
TOTAL VEHICLE PRICE*	\$24,105.00

EPA DOT Fuel Economy and Environment



GOVERNMENT 5-STAR SAFETY RATINGS

This vehicle has not been rated by the government for overall vehicle score, frontal crash, side crash or rollover risk.

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: 56%

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

FOR THIS VEHICLE:
FINAL ASSEMBLY POINT:
LAKE ORION, MI U.S.A.
COUNTRY OF ORIGIN:
ENGINE: UNITED STATES
TRANSMISSION: UNITED STATES

SALES CODE E
SALES MODEL CODE 4P09

DEALER TO WHOM DELIVERED

BUICK BUICK GMC

2145 E MORELAND RD

WALKER, GA 30188-4020

LAKE ORION, MI U.S.A.

VIN 104PP55K004112575

LAKE ORION, MI U.S.A.

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LAKE ORION, MI U.S.A.

069 Monroney Label

3-2 Seats and Restraints

Head Restraints

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.

Front Seats

The vehicle's front seats have adjustable "back" restraints in the outboard seating positions.



The height of the head restraint can be adjusted. Pull the head restraint up to raise it. Try to move the head restraint to make sure that it is locked in place.

To lower the head restraint, press the button, located on the top of the seatback, and push the head restraint down. Try to move the head restraint after the button is released to make sure that it is locked in place.

The front seat cushion's head restraints are not designed to be removed.

Rear Seats

The vehicle's rear seats have adjustable head restraints in the outboard seating positions. The height of the head restraint can be adjusted. Pull the head restraint up to raise it. Try to move the head restraint to make sure that it is locked in place.

To lower the head restraint, press the button, located on the top of the seatback, and push the head restraint down. Try to move the head restraint after the button is released to make sure that it is locked in place.

If you are installing a child restraint in the rear seat, use "Securing a Child Restraint Designed for the LATCH System" under Lower Anchors and Tethers for Children (LATCH System) on page 3-16.

Front Seats

Seat Adjustment

WARNING

You can lose control of the vehicle if you try to adjust a driver seat while the vehicle is moving. Adjust the driver seat only when the vehicle is not moving.



Seats and Restraints 3-3

To adjust a manual seat:

1. Lift the handle at the front of the seat.
2. Slide the seat to the desired position and release the handle.
3. Try to move the seat back and forth to be sure it is locked in place.

Seat Height Adjuster



If available, move the lever up or down to manually raise or lower the seat.

070 Head Restraint Use and Adjustment Information from Vehicle Owner Manual

PHOTO NOT AVAILABLE

071 Post-Test View of Shattered Vehicle Inner Door Panel

APPENDIX B
VEHICLE AND DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS

No.	Description	Page
1	Driver Head Acceleration (X) Primary vs. Time	B-4
2	Driver Head Acceleration (Y) Primary vs. Time	B-4
3	Driver Head Acceleration (Z) Primary vs. Time	B-4
4	Driver Head Acceleration Resultant Primary vs. Time	B-4
5	Driver Lower Spine T12 Acceleration (X) vs. Time	B-5
6	Driver Lower Spine T12 Acceleration (Y) vs. Time	B-5
7	Driver Lower Spine T12 Acceleration (Z) vs. Time	B-5
8	Driver Lower Spine T12 Resultant Acceleration vs. Time	B-5
9	Driver Iliac Wing Force on Impact Side (Y) vs. Time	B-6
10	Driver Acetabulum Force on Impact Side (Y) vs. Time	B-6
11	Driver Total Pelvis Force on Impact Side (Y) vs. Time	B-7

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

www.nhtsa.dot.gov.

Additional Driver Dummy Instrumentation Data

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

Vehicle Instrumentation Data

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

Pole Instrumentation Data

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

NHTSA

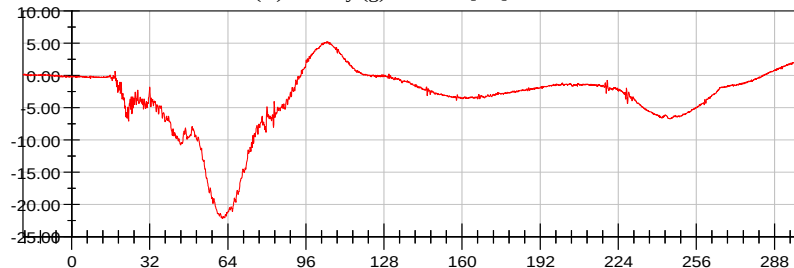
Test Lab: CTF

Test Number: 121005 (MD0106)

Position #1 SID II's Dummy (033)

Test Date: 10/05/2012

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



<Max>

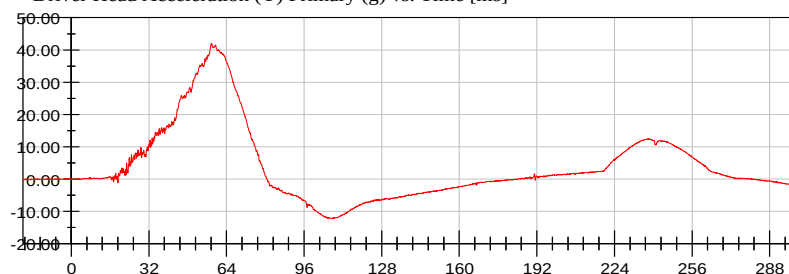
5.25 g at 104.56 ms

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-22.17 g at 61.84 ms

CFC_1000

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



<Max>

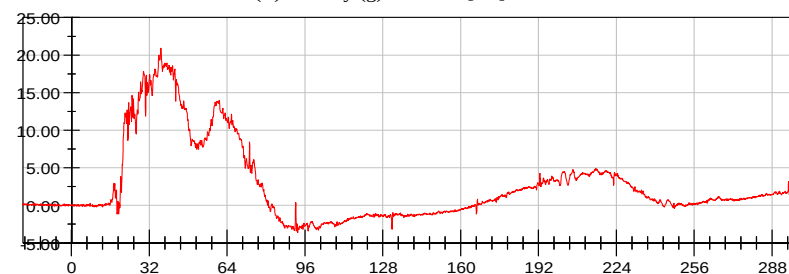
42.04 g at 57.84 ms

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-12.27 g at 106.96 ms

CFC_1000

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



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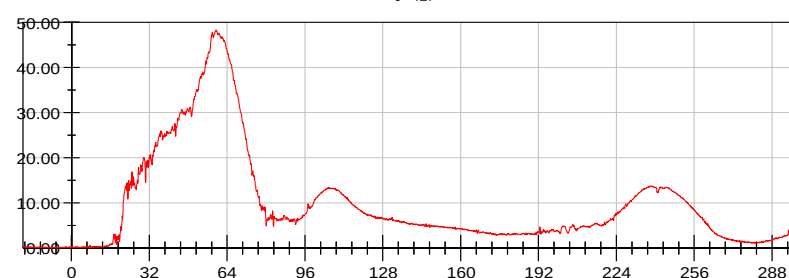
20.92 g at 36.72 ms

<Min>

-3.60 g at 92.96 ms

CFC_1000

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



<Max>

48.29 g at 59.44 ms

<Min>

0.03 g at -8.16 ms

CFC_1000



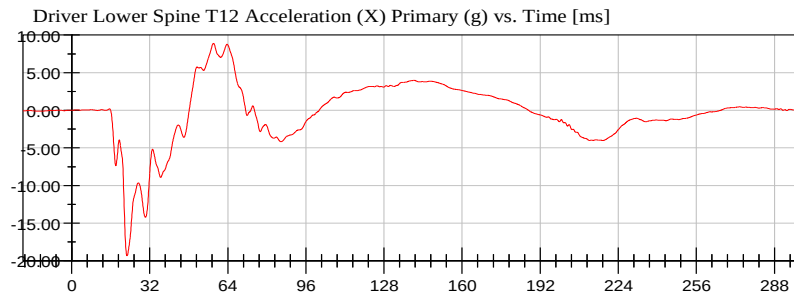
NHTSA

Test Lab: CTF

Test Number: 121005 (MD0106)

Position #1 SID II's Dummy (033)

Test Date: 10/05/2012



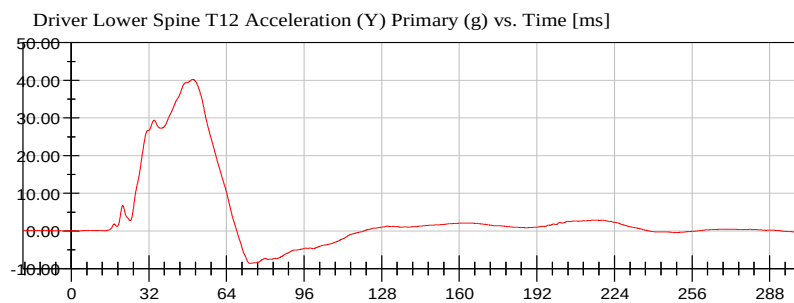
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8.90 g at 58.16 ms

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-19.32 g at 22.72 ms

CFC_180



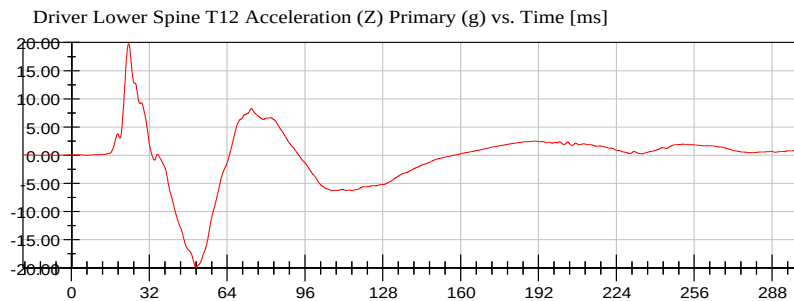
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40.25 g at 50.08 ms

<Min>

-8.66 g at 73.76 ms

CFC_180



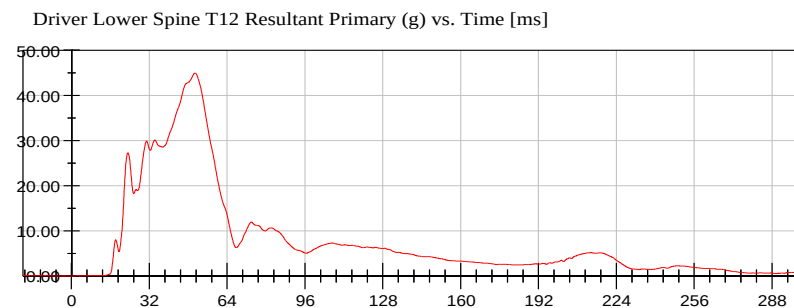
<Max>

19.79 g at 23.52 ms

<Min>

-19.87 g at 51.28 ms

CFC_180



<Max>

44.93 g at 50.80 ms

<Min>

0.01 g at -5.68 ms

CFC_180



NHTSA

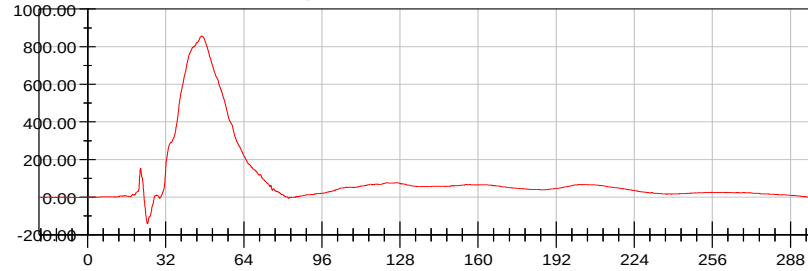
Test Lab: CTF

Test Number: 121005 (MD0106)

Position #1 SID II's Dummy (033)

Test Date: 10/05/2012

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



<Max>

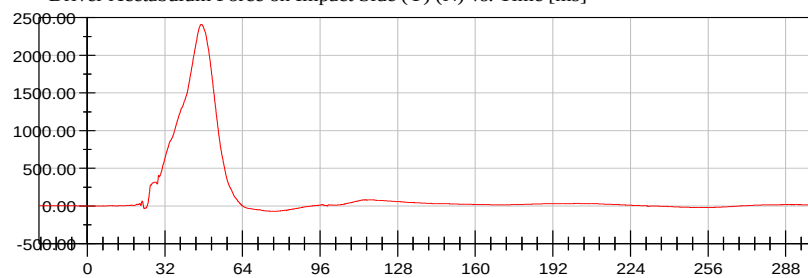
856.15 N at 46.72 ms

<Min>

-141.14 N at 24.56 ms

CFC_600

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



<Max>

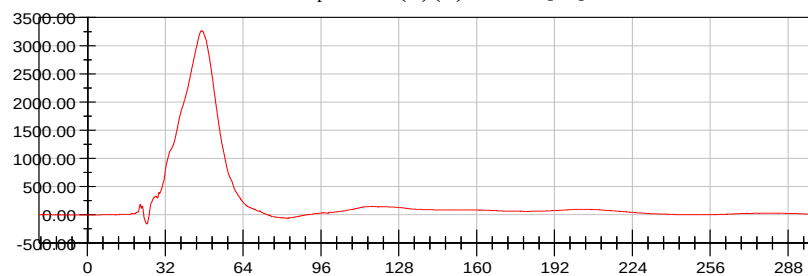
2,408.26 N at 47.04 ms

<Min>

-73.10 N at 75.76 ms

CFC_600

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



<Max>

3,262.52 N at 46.96 ms

<Min>

-162.35 N at 24.40 ms

CFC_600



APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

TABLE OF CALIBRATION MEASUREMENTS AND PLOTS
SID-IIs (Driver) Dummy
Description

Table 1. External Measurements

Table 2. Head Drop Test

Resultant Head Acceleration (G's) vs. Time (ms)
Head (X) Acceleration (G's) vs. Time (ms)
Head (Y) Acceleration (G's) vs. Time (ms)
Head (Z) Acceleration (G's) vs. Time (ms)

Table 3. Lateral Neck Pendulum Test

Pendulum Velocity (m/s) vs. Time (ms)
Flexion Angle (°) vs. Time (ms)
Moment About Occipital Condyle (Nm) vs. Time (ms)

Table 4. Shoulder Impact Test

Impactor Acceleration (G's) vs. Time (ms)
Shoulder Displacement (mm) vs. Time (ms)
Upper Spine Acceleration (G's) vs. Time (ms)

Table 5. Thorax (With Arm) Impact Test

Impactor Acceleration (G's) vs. Time (ms)
Shoulder Displacement (mm) vs. Time (ms)
Upper Rib Displacement (mm) vs. Time (ms)
Middle Rib Displacement (mm) vs. Time (ms)
Lower Rib Displacement (mm) vs. Time (ms)
Upper Spine Acceleration (G's) vs. Time (ms)
Lower Spine Acceleration (G's) vs. Time (ms)

Table 6. Thorax (Without Arm) Impact Test

Impactor Acceleration (G's) vs. Time (ms)
Upper Rib Displacement (mm) vs. Time (ms)
Middle Rib Displacement (mm) vs. Time (ms)
Lower Rib Displacement (mm) vs. Time (ms)
Upper Spine Acceleration (G's) vs. Time (ms)
Lower Spine Acceleration (G's) vs. Time (ms)

Table 7. Abdomen Impact Test

Impactor Acceleration (G's) vs. Time (ms)
Upper Abdominal Rib Displacement (mm) vs. Time (ms)
Lower Abdominal Rib Displacement (mm) vs. Time (ms)
Lower Spine Acceleration (G's) vs. Time (ms)

Table 8. Pelvis Plug Quasi-Static Test (Optional*)

Table 9. Pelvis Acetabulum Impact Test

Impactor Acceleration (G's) vs. Time (ms)
Pelvis (Y) Acceleration (G's) vs. Time (ms)
Acetabulum Force (N) vs. Time (ms)

Table 10. Pelvis Iliac Impact Test

Impactor Acceleration (G's) vs. Time (ms)
Pelvis (Y) Acceleration (G's) vs. Time (ms)
Iliac Force (N) vs. Time (ms)

Pre-Test Calibration Sheets
Driver S/N 033

Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 033 Calibration No.12
Date: 10/04/12

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	777	Yes
B	Shoulder Pivot Height	437.0 - 453.0	441	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	101	Yes
F	Thigh Clearance	119.0 - 135.0	127	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	533	Yes
L	Popliteal Height	343.0 - 369.0	353	Yes
M	Knee Pivot to Floor Height	393.0 - 409.0	399	Yes
N	Buttock Popliteal Length	416.0 - 442.0	431	Yes
O	Chest Depth without Jacket	195.0 - 211.0	205	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	314	Yes
R	Arm Length	249.0 - 259.0	253	Yes
S	Knee Joint to seat Back	478.0 - 493.0	483	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	350	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



Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs Serial No. 033 Certification No. 12-1

Test Date: 10/3/2012

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	57 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	117.5 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

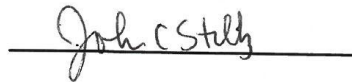
Test meets specifications.

Comments:

Technician



Approved



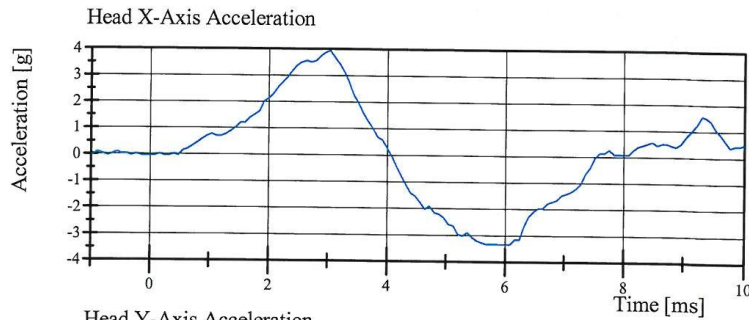
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

10.03.2012 13:39:10 234

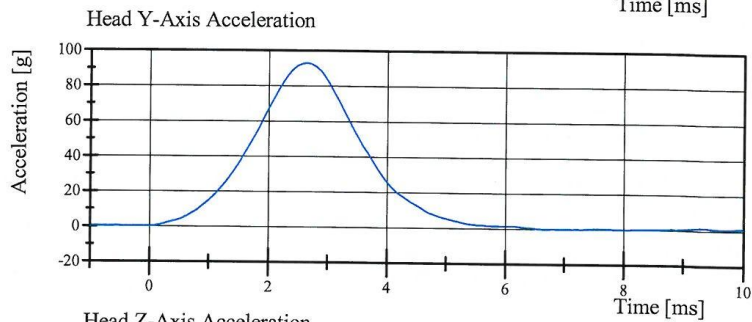


Transportation Research Center Inc.

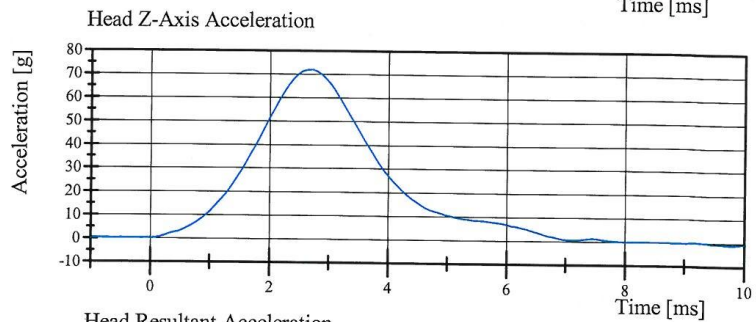
Left Lateral Head Drop
SID IIs Serial No. 033 Certification No. 12-1
Test Date: 10/3/2012



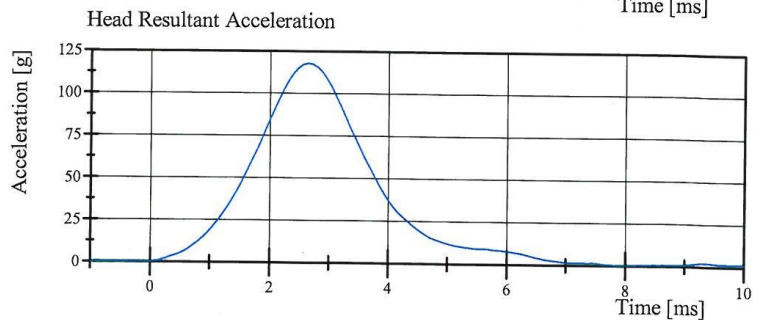
Filter Class: CFC_1000
Max: 3.9 gn at 3.0 ms
Min: -3.3 gn at 5.7 ms



Filter Class: CFC_1000
Max: 92.9 gn at 2.6 ms
Min: -0.2 gn at 7.0 ms



Filter Class: CFC_1000
Max: 72.0 gn at 2.7 ms
Min: -0.9 gn at 9.7 ms



Filter Class: CFC_1000
Max: 117.5 gn at 2.6 ms
Min: 0.0 gn at -0.8 ms

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

10.03.2012 13:39:22 234



Transportation Research Center Inc.

Left Lateral Neck

SID IIs Serial No. 033 Certification No. 12-2

Test Date: 10/3/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	55 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.581 m/s	Yes
Pendulum Integrated Velocity			
Change at 10 ms	2.20 - 2.80 m/s	2.345 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.377 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	4.564 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.542 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.750 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-73.8 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	114.5 ms	Yes

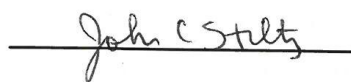
Test meets specifications.

Comments:

Technician



Approved



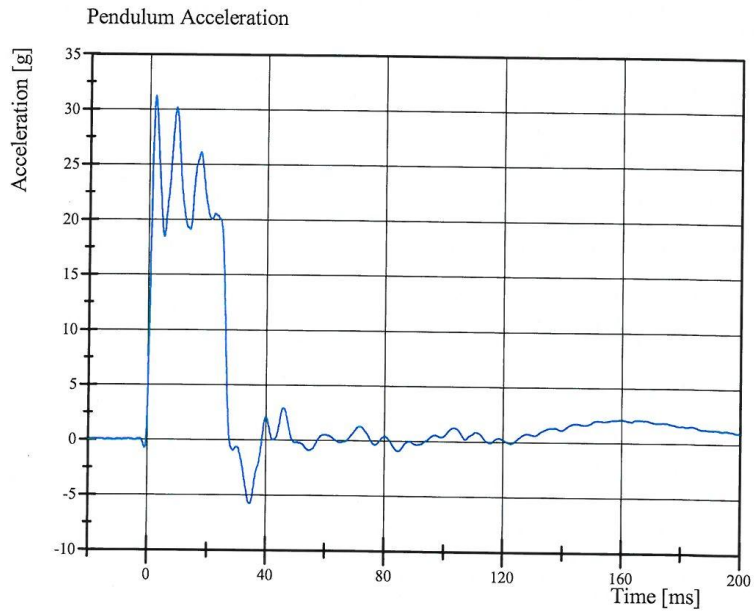
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Polarity in accordance with SAE J211.

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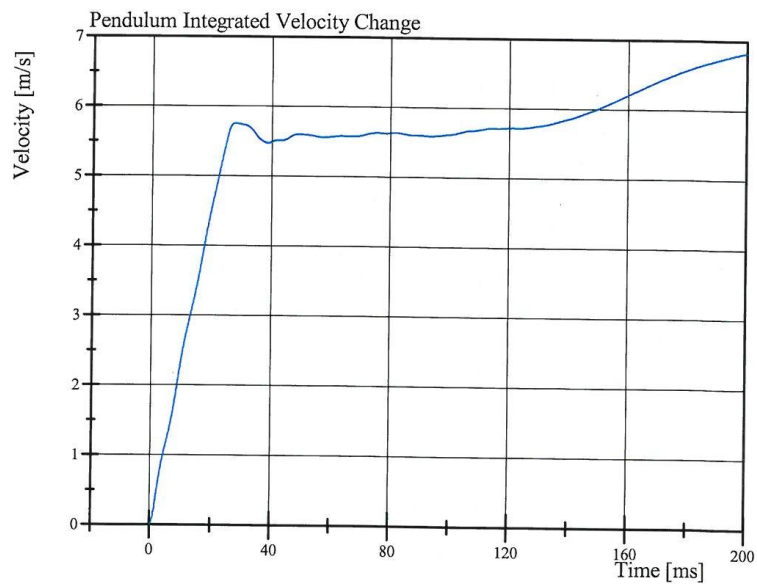


Transportation Research Center Inc.

Left Lateral Neck
SID IIs Serial No. 033 Certification No. 12-2
Test Date: 10/3/2012



Filter Class: CFC_180
Max: 31.2 gn at 2.0 ms
Min: -5.8 gn at 34.6 ms



Filter Class: CFC_180
Max: 6.8 m/s at 200.0 ms
Min: 0.0 m/s at 0.0 ms

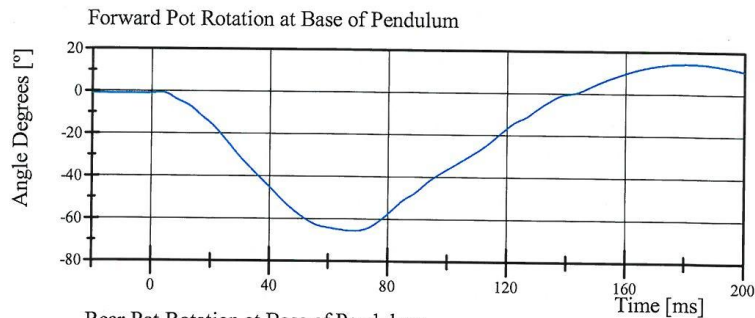
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Polarity in accordance with SAE J211.

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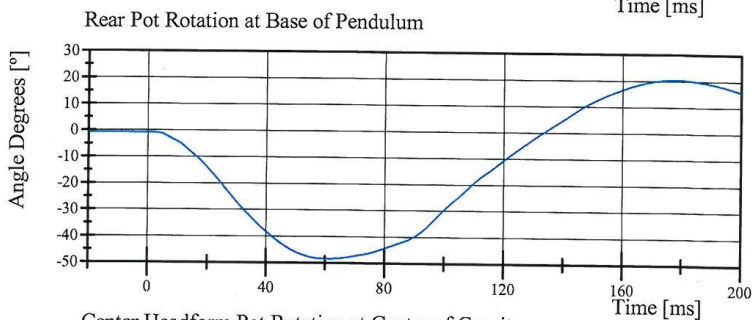


Transportation Research Center Inc.

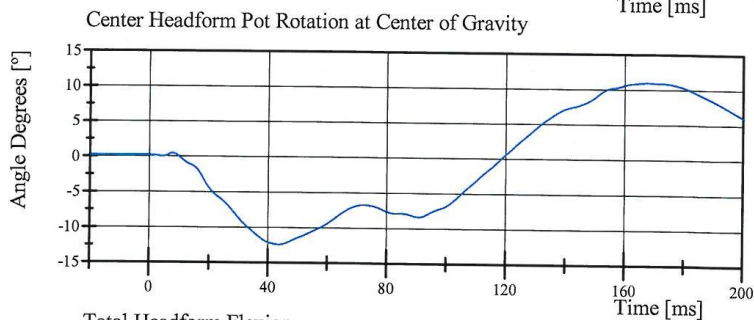
Left Lateral Neck
SID IIs Serial No. 033 Certification No. 12-2
Test Date: 10/3/2012



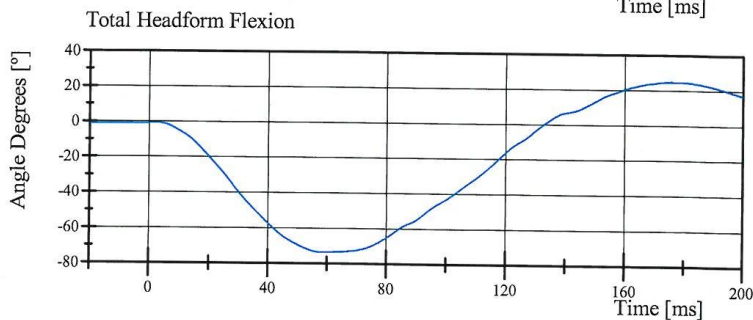
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Max: 14.4 ° at 182.3 ms
Min: -65.8 ° at 68.4 ms



Filter Class: CFC_60
Max: 20.2 ° at 177.1 ms
Min: -48.5 ° at 60.6 ms



Filter Class: CFC_60
Max: 10.9 ° at 167.7 ms
Min: -12.4 ° at 43.8 ms



Filter Class: CFC_60
Max: 24.7 ° at 175.6 ms
Min: -73.8 ° at 58.6 ms

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

10.03.2012 15:24:17 642

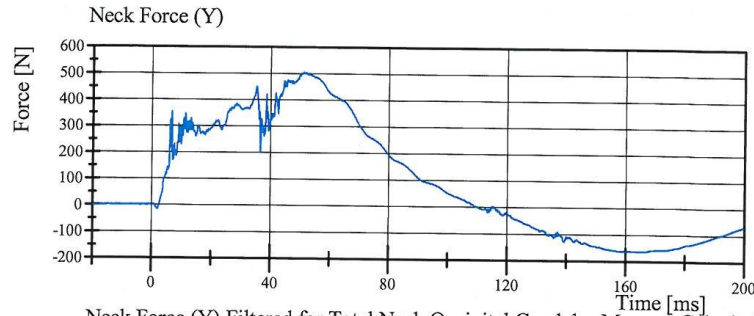


Transportation Research Center Inc.

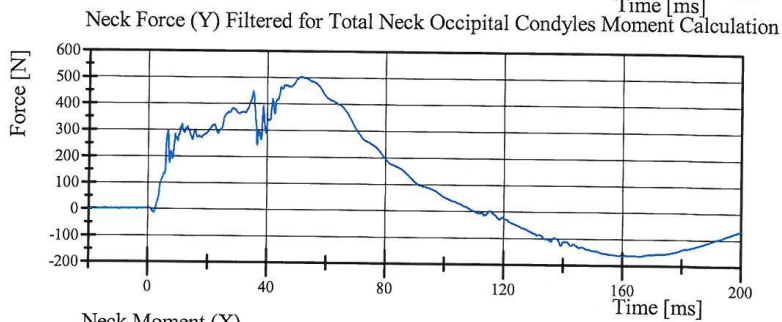
Left Lateral Neck

SID II_s Serial No. 033 Certification No. 12-2

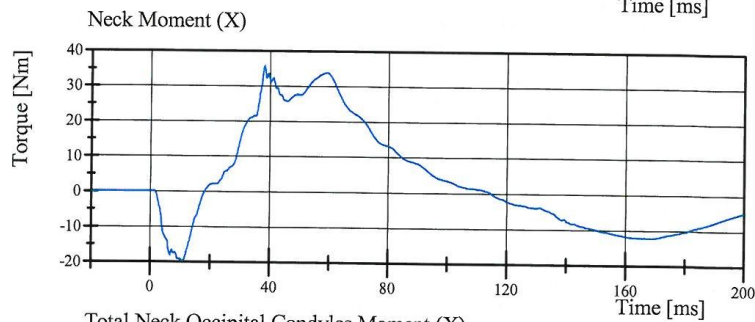
Test Date: 10/3/2012



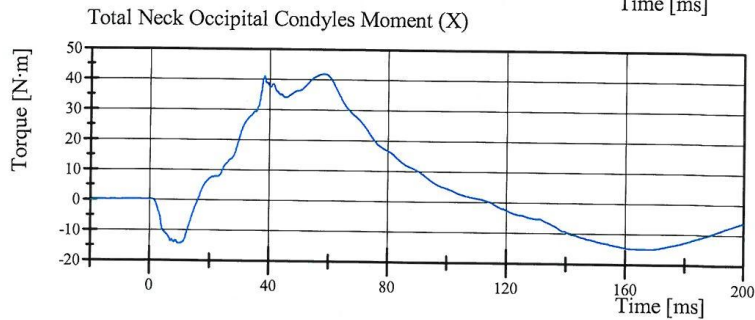
Filter Class: CFC_1000
Max: 502.9 N at 51.1 ms
Min: -164.4 N at 164.9 ms



Filter Class: CFC_600
Max: 501.7 N at 51.1 ms
Min: -164.0 N at 165.0 ms



Filter Class: CFC_600
Max: 35.8 Nm at 38.2 ms
Min: -19.8 Nm at 10.8 ms



Filter Class: Without_(Consta
Max: 41.8 N·m at 58.2 ms
Min: -15.1 N·m at 168.0 ms

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

10.03.2012 15:24:18 642



Transportation Research Center Inc.

Left Lateral Shoulder

SID IIs Serial No. 033 Certification No. 12-1

Test Date: 10/3/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	62 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.34 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-16.6 g	Yes
Shoulder Displacement	28 - 37 mm	31.9 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	21.1 g	Yes

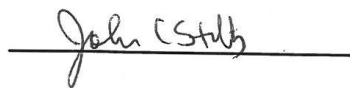
Test meets specifications.

Comments:

Technician



Approved



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

10.03.2012 09:35:22 867

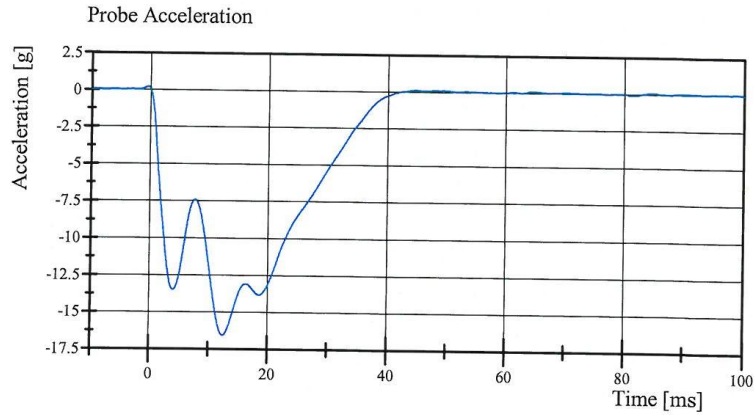


Transportation Research Center Inc.

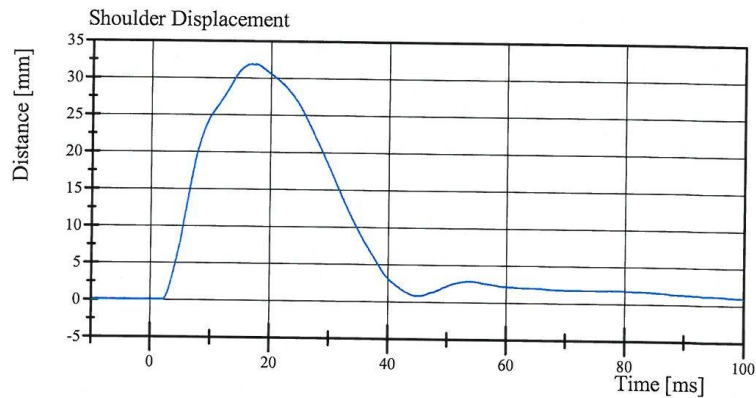
Left Lateral Shoulder

SID IIs Serial No. 033 Certification No. 12-1

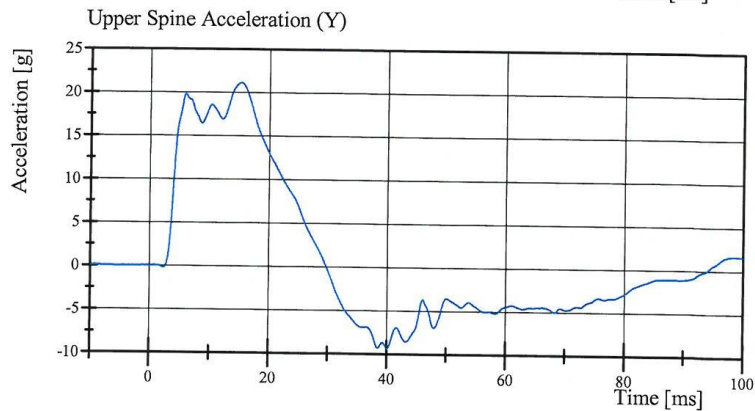
Test Date: 10/3/2012



Filter Class: CFC_180
Max: 0.2 gn at -0.4 ms
Min: -16.6 gn at 12.4 ms



Filter Class: CFC_600
Max: 31.9 mm at 16.8 ms
Min: -0.0 mm at 1.9 ms



Filter Class: CFC_180
Max: 21.1 gn at 15.2 ms
Min: -9.4 gn at 40.1 ms

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

10.03.2012 09:35:29 867



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 033 Certification No. 12-1
Test Date: 10/3/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.0 °C	Yes
Relative Humidity	10 - 70 %	61 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.707 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-33.6 g	Yes
Shoulder Displacement	31 - 40 mm	34.5 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	27.4 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	32.6 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	35.3 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	38.2 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	34.3 g	Yes

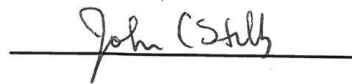
Test meets specifications.

Comments:

Technician



Approved



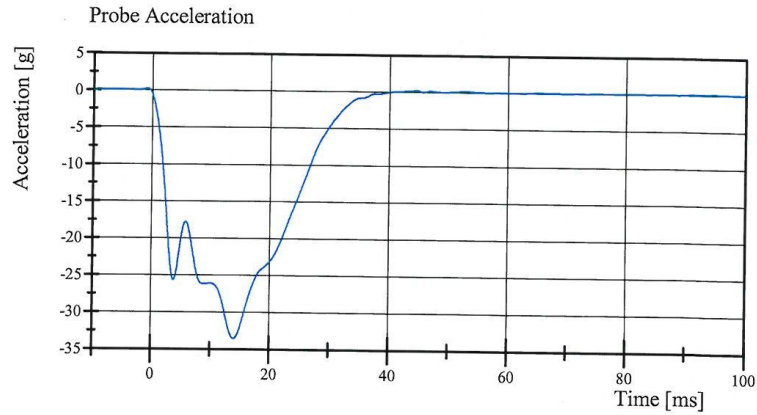
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

10.03.2012 10:43:56 666

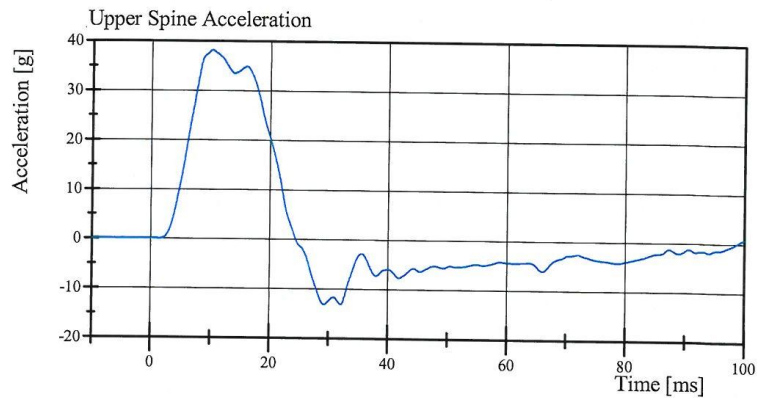


Transportation Research Center Inc.

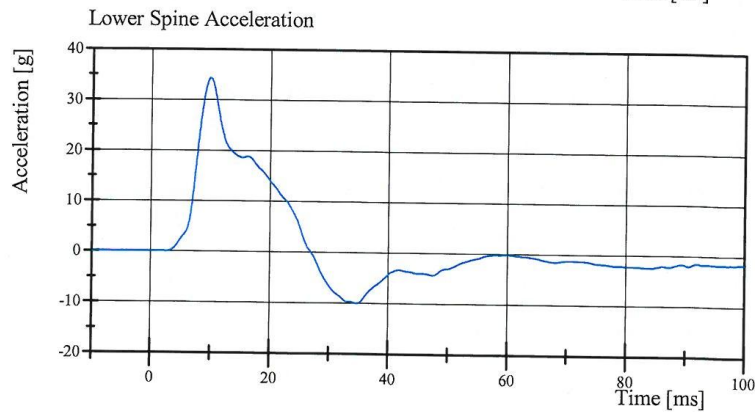
Left Lateral Thorax with Arm
SID IIs Serial No. 033 Certification No. 12-1
Test Date: 10/3/2012



Filter Class: CFC_180
Max: 0.2 gn at 44.6 ms
Min: -33.6 gn at 14.0 ms



Filter Class: CFC_180
Max: 38.2 gn at 10.2 ms
Min: -13.2 gn at 29.3 ms



Filter Class: CFC_180
Max: 34.3 gn at 9.8 ms
Min: -10.1 gn at 34.7 ms

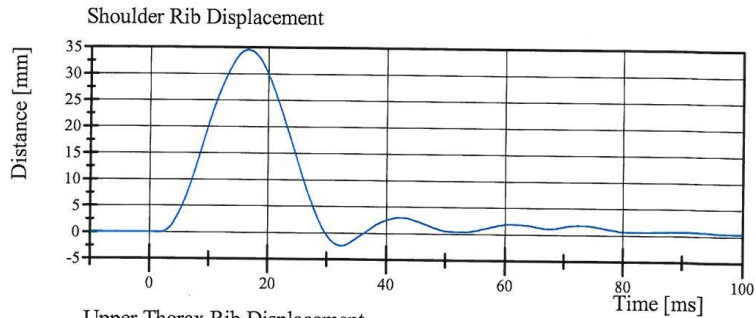
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

10.03.2012 10:44:05 666

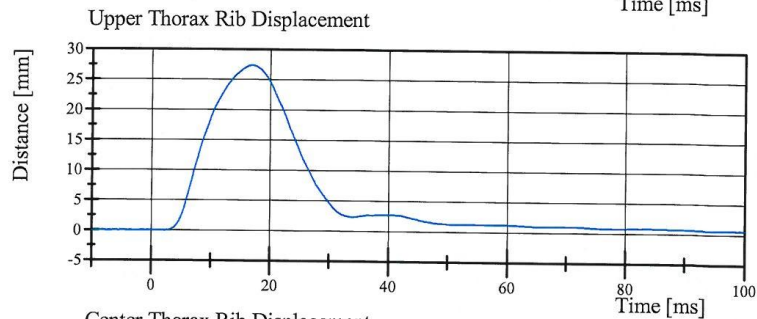


Transportation Research Center Inc.

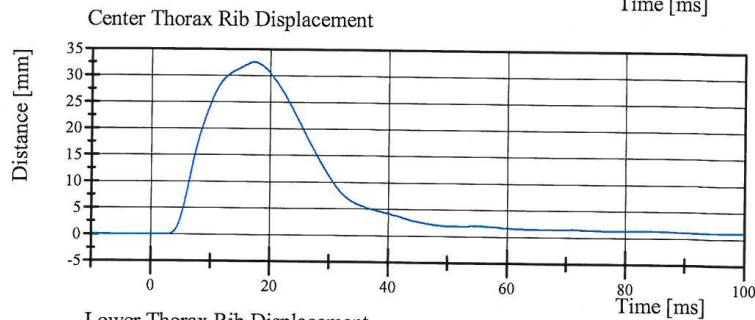
Left Lateral Thorax with Arm
SID IIs Serial No. 033 Certification No. 12-1
Test Date: 10/3/2012



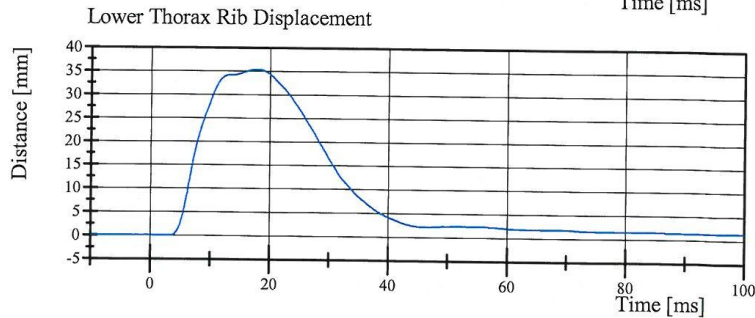
Filter Class: CFC_600
Max: 34.5 mm at 16.6 ms
Min: -2.4 mm at 32.5 ms



Filter Class: CFC_600
Max: 27.4 mm at 17.0 ms
Min: -0.0 mm at -9.8 ms



Filter Class: CFC_600
Max: 32.6 mm at 17.3 ms
Min: -0.0 mm at -10.0 ms



Filter Class: CFC_600
Max: 35.3 mm at 17.8 ms
Min: -0.0 mm at 3.4 ms

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

10.03.2012 10:44:06 666



Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. 033 Certification No. 12-1
Test Date: 10/3/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	60 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.336 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-15.6 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	36.9 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	41.1 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	37.5 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	15.0 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	9.8 g	Yes

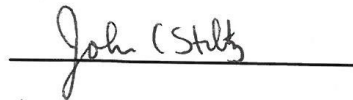
Test meets specifications.

Comments:

Technician



Approved



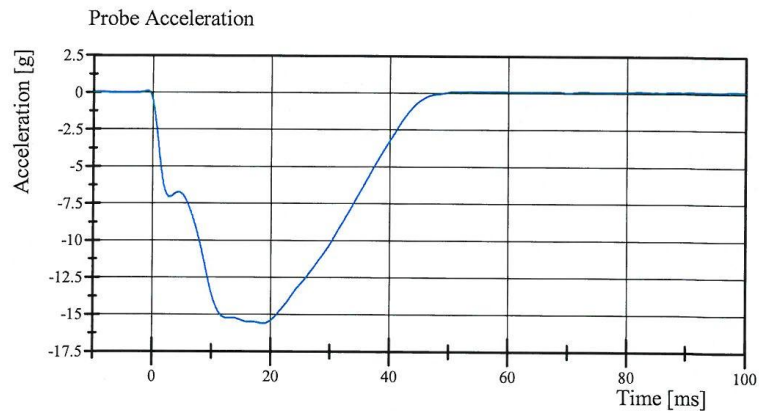
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

10.03.2012 11:15:38 839

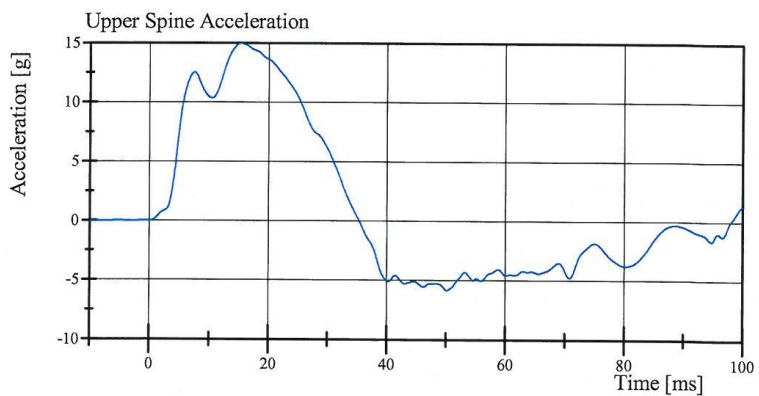


Transportation Research Center Inc.

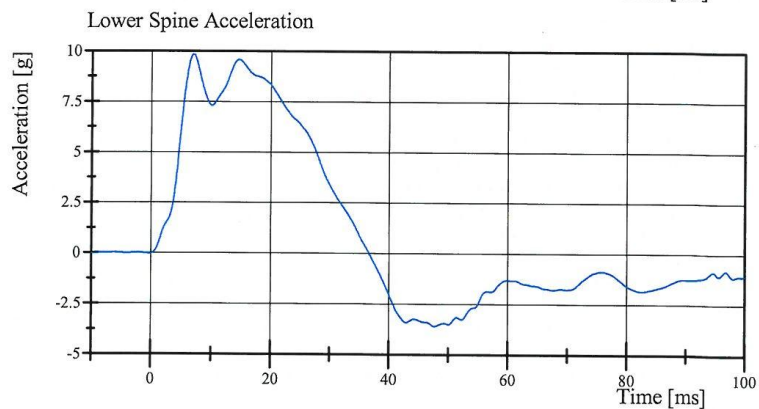
Left Lateral Thorax without Arm
SID IIs Serial No. 033 Certification No. 12-1
Test Date: 10/3/2012



Filter Class: CFC_180
Max: 0.1 gn at 97.7 ms
Min: -15.6 gn at 18.6 ms



Filter Class: CFC_180
Max: 15.0 gn at 15.2 ms
Min: -5.8 gn at 50.2 ms



Filter Class: CFC_180
Max: 9.8 gn at 7.0 ms
Min: -3.6 gn at 47.7 ms

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

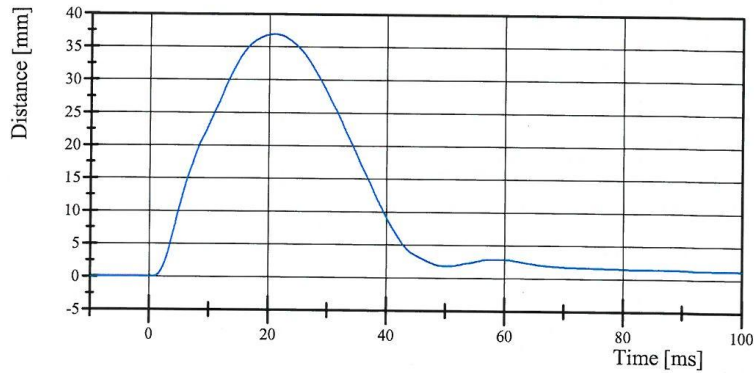
10.03.2012 11:15:55 839



Transportation Research Center Inc.

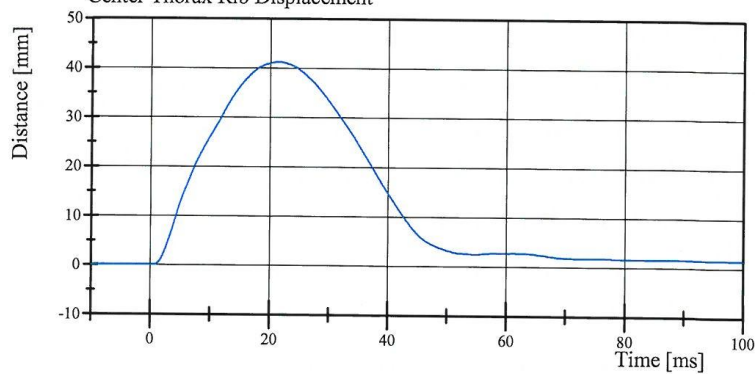
Left Lateral Thorax without Arm
SID II_s Serial No. 033 Certification No. 12-1
Test Date: 10/3/2012

Upper Thorax Rib Displacement



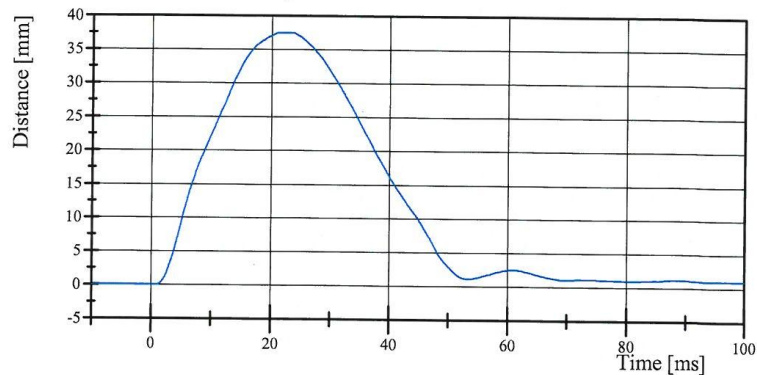
Filter Class: CFC_600
Max: 36.9 mm at 20.9 ms
Min: -0.0 mm at 0.8 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 41.1 mm at 21.4 ms
Min: -0.0 mm at 0.6 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 37.5 mm at 22.2 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.

10.03.2012 11:15:55 839



Transportation Research Center Inc.

Left Lateral Abdomen

SID IIs Serial No. 033 Certification No. 12-1

Test Date: 10/3/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	62 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.34 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-13.6 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	40.3 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	40.3 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	10.70 g	Yes

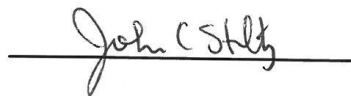
Test meets specifications.

Comments:

Technician



Approved



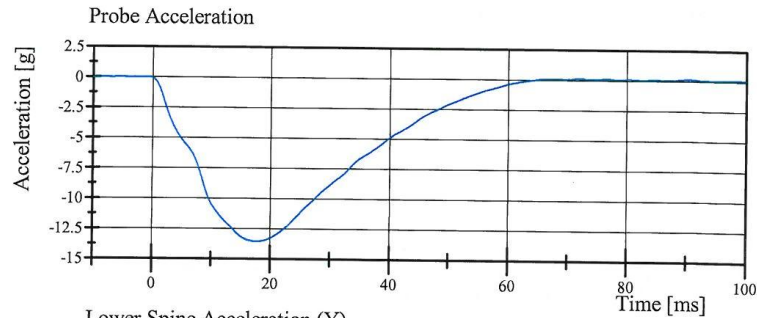
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

10.03.2012 11:25:06 659

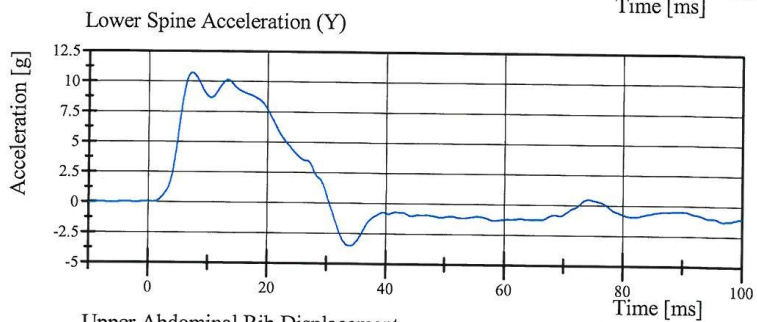


Transportation Research Center Inc.

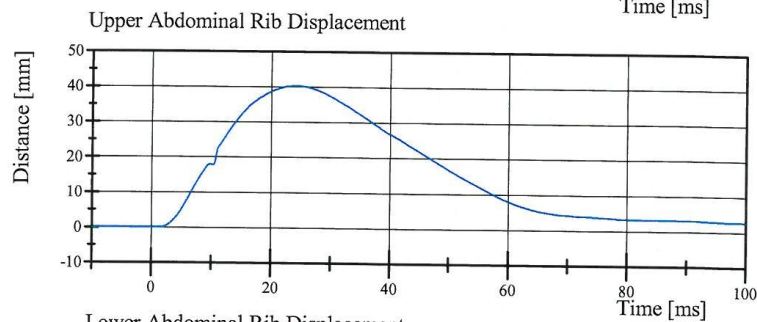
Left Lateral Abdomen
SID IIs Serial No. 033 Certification No. 12-1
Test Date: 10/3/2012



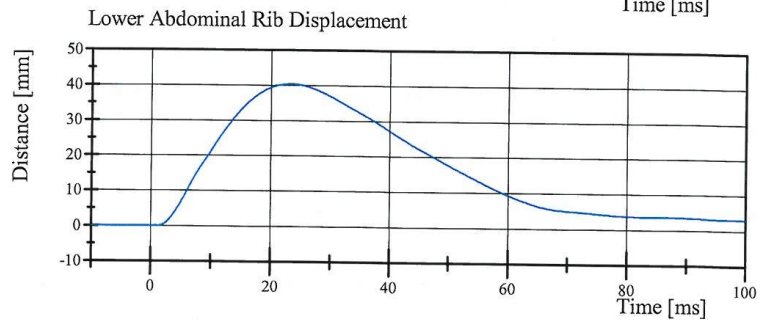
Filter Class: CFC_180
Max: 0.2 gn at 90.4 ms
Min: -13.6 gn at 17.8 ms



Filter Class: CFC_180
Max: 10.7 gn at 7.3 ms
Min: -3.5 gn at 34.0 ms



Filter Class: CFC_600
Max: 40.3 mm at 24.1 ms
Min: -0.0 mm at 1.5 ms



Filter Class: CFC_600
Max: 40.3 mm at 23.5 ms
Min: -0.0 mm at 1.3 ms

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

10.03.2012 11:25:15 659



Transportation Research Center Inc.

Left Lateral Pelvis

SID IIs Serial No. 033 Certification No. 12-1

Test Date: 10/3/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	61 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.66 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-44.53 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	41.3 g	Yes
Acetabulum Force	3,600 - 4,300 N	3,984.8 N	Yes

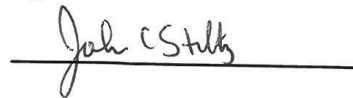
Test meets specifications.

Comments:

Technician



Approved



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

10.03.2012 12:35:20 445

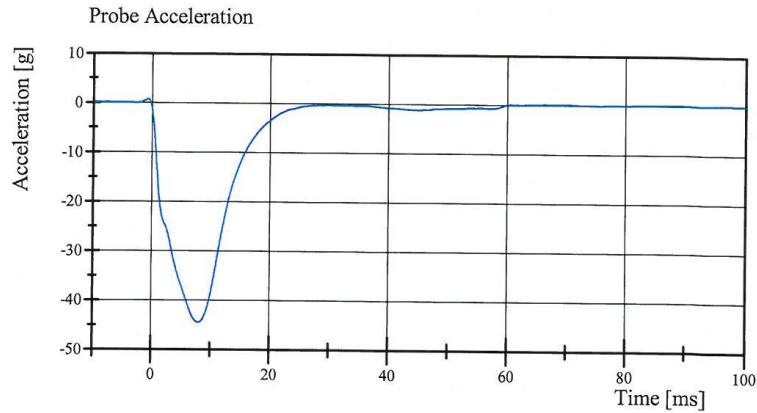


Transportation Research Center Inc.

Left Lateral Pelvis

SID IIs Serial No. 033 Certification No. 12-1

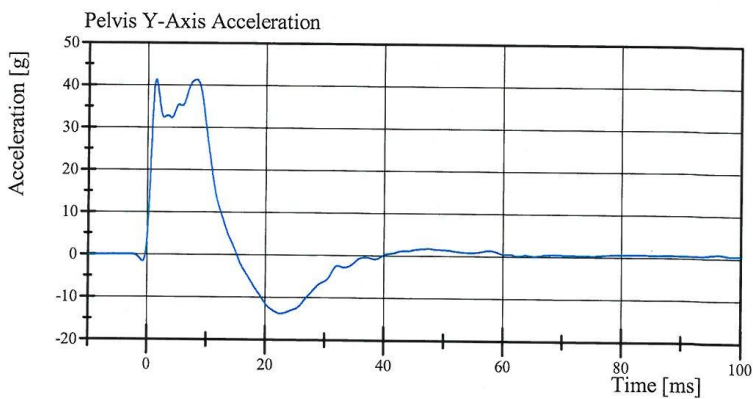
Test Date: 10/3/2012



Filter Class: CFC_180

Max: 0.7 gn at -0.7 ms

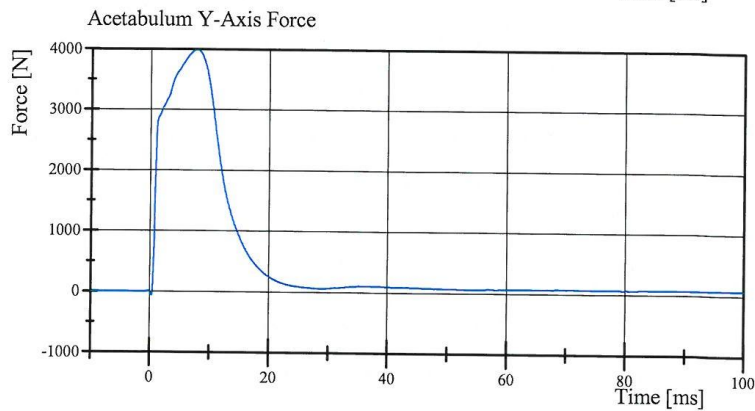
Min: -44.5 gn at 8.0 ms



Filter Class: CFC_180

Max: 41.3 gn at 1.4 ms

Min: -13.8 gn at 22.6 ms



Filter Class: CFC_600

Max: 3,984.8 N at 7.7 ms

Min: -63.7 N at 0.3 ms

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

10.03.2012 12:35:46 445



Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 033 Certification No. 12-2

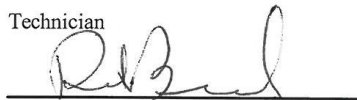
Test Date: 10/4/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	51 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.40 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-39.8 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	29.1 g	Yes
Iliac Force	4,100 - 5,100 N	4,457.6 N	Yes

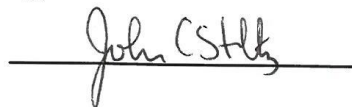
Test meets specifications.

Comments:

Technician



Approved



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

10.04.2012 07:32:40 637

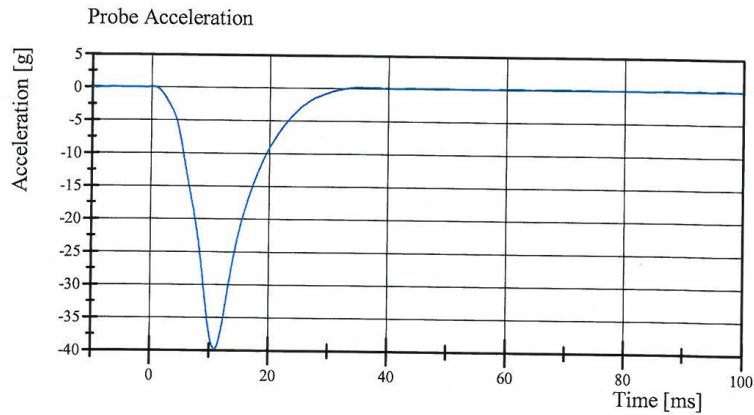


Transportation Research Center Inc.

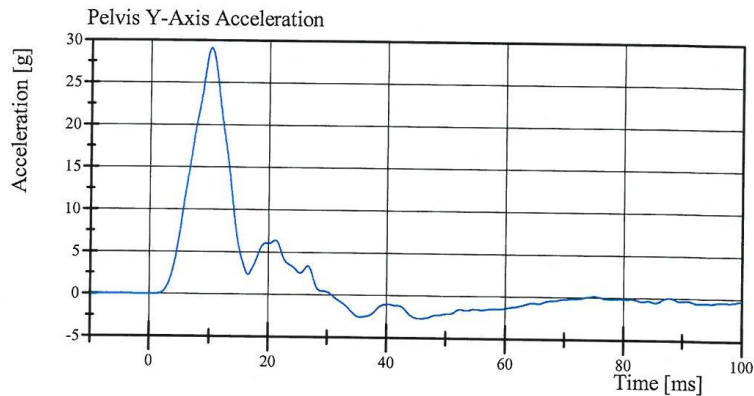
Left Lateral Iliac

SID IIs Serial No. 033 Certification No. 12-2

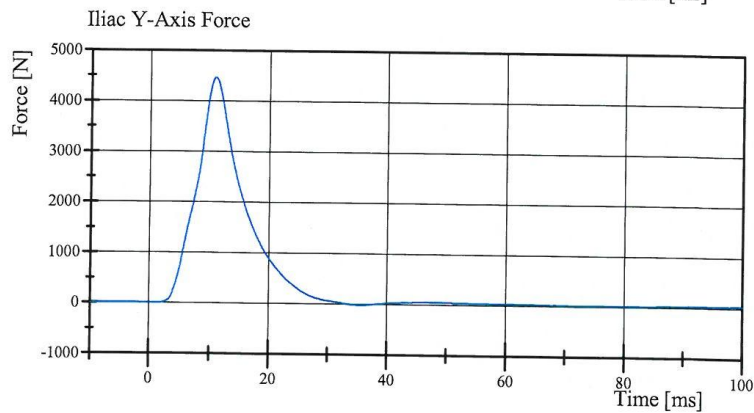
Test Date: 10/4/2012



Filter Class: CFC_180
Max: 0.2 gn at 35.6 ms
Min: -39.8 gn at 10.9 ms



Filter Class: CFC_180
Max: 29.1 gn at 10.2 ms
Min: -2.7 gn at 45.7 ms



Filter Class: CFC_600
Max: 4,457.6 N at 10.9 ms
Min: -16.7 N at 35.5 ms

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

10.04.2012 07:32:47 637



Driver S/N 033

Post-Test Calibration Sheets

Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 033 Calibration No.13
Date: 10/10/12

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	777	Yes
B	Shoulder Pivot Height	437.0 - 453.0	441	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	101	Yes
F	Thigh Clearance	119.0 - 135.0	127	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	533	Yes
L	Popliteal Height	343.0 - 369.0	353	Yes
M	Knee Pivot to Floor Height	393.0 - 409.0	399	Yes
N	Buttock Popliteal Length	416.0 - 442.0	431	Yes
O	Chest Depth without Jacket	195.0 - 211.0	205	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	314	Yes
R	Arm Length	249.0 - 259.0	253	Yes
S	Knee Joint to seat Back	478.0 - 493.0	483	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	350	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



Transportation Research Center Inc.

Left Lateral Head Drop

SID IIS Serial No. 033 Certification No. 13-1

Test Date: 10/11/2012

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	23 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	121.9 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	6.8 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.

10.11.2012 09:24:48 233

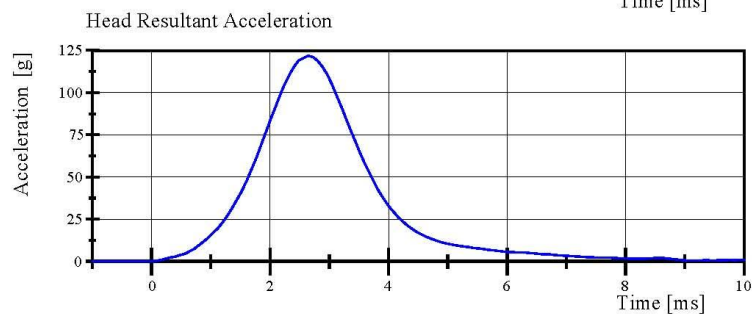
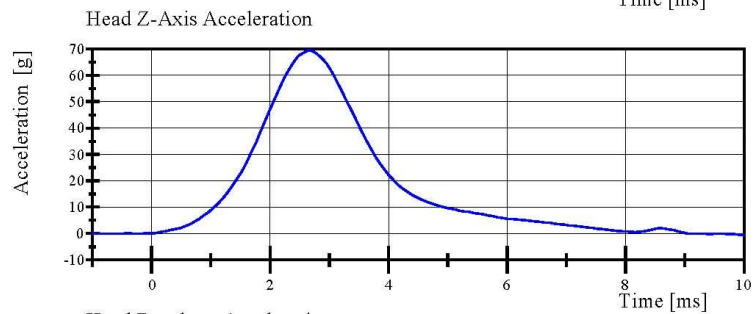
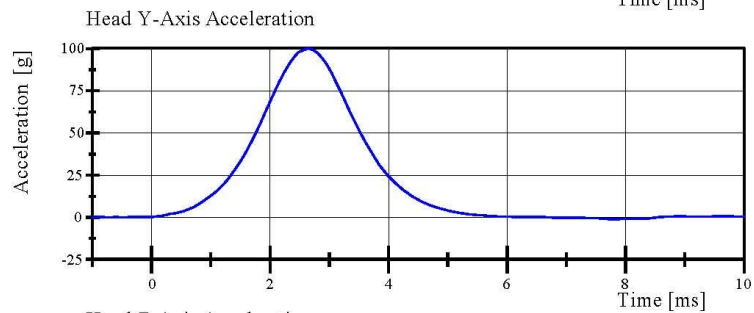
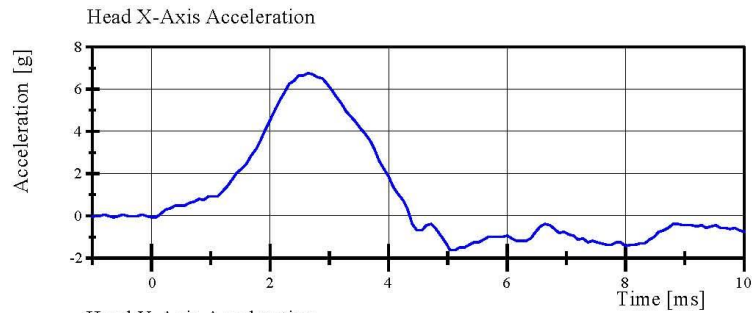


Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs Serial No. 033 Certification No. 13-1

Test Date: 10/11/2012



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

10.11.2012 09:24:55 233



Transportation Research Center Inc.

Left Lateral Neck

SID IIs Serial No. 033 Certification No. 13-2

Test Date: 10/11/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	24 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.581 m/s	Yes
Pendulum Integrated Velocity			
Change at 10 ms	2.20 - 2.80 m/s	2.492 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.705 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	5.079 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.710 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.711 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-68.8 deg	No
Time of Peak	50 - 70 ms	56.6 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	45.2 N·m	No
Total Neck Occipital Condyles Moment			
Decay Time to 0 N·m	102 - 126 ms	110.5 ms	Yes

Test does not meet specifications.

Comments:

Technician



Approved



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

10.11.2012 11:20:55 640

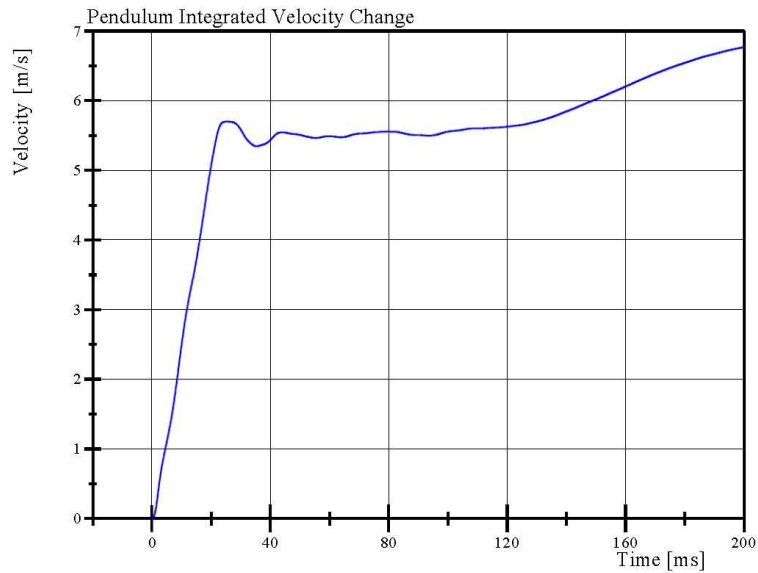
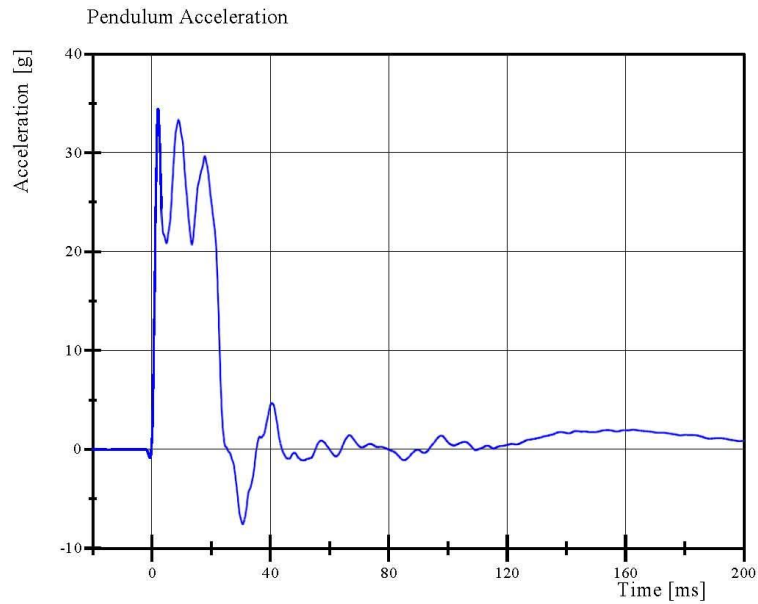


Transportation Research Center Inc.

Left Lateral Neck

SID IIs Serial No. 033 Certification No. 13-2

Test Date: 10/11/2012



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

10.11.2012 11:23:01 640



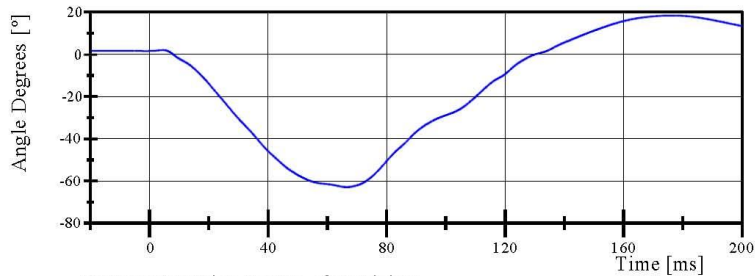
Transportation Research Center Inc.

Left Lateral Neck

SID IIS Serial No. 033 Certification No. 13-2

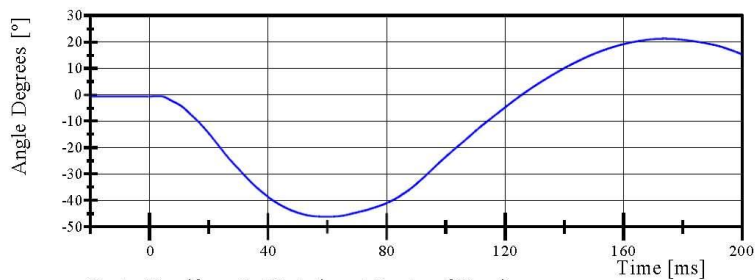
Test Date: 10/11/2012

Forward Pot Rotation at Base of Pendulum



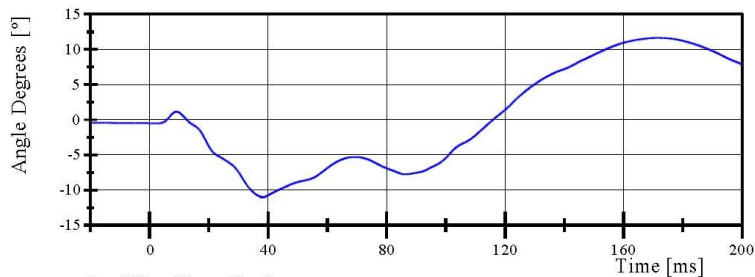
Filter Class: CFC_60
Max: 18.7 ° at 176.5 ms
Min: -62.8 ° at 66.6 ms

Rear Pot Rotation at Base of Pendulum



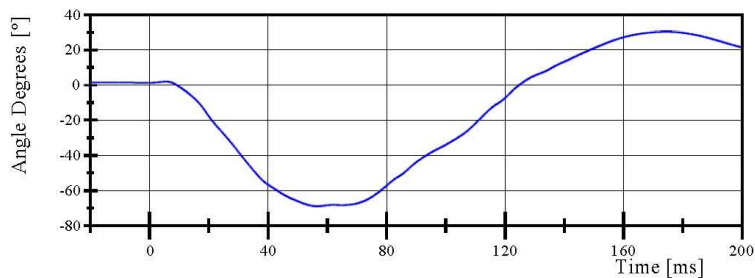
Filter Class: CFC_60
Max: 21.3 ° at 173.8 ms
Min: -46.2 ° at 59.6 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC_60
Max: 11.7 ° at 171.3 ms
Min: -11.0 ° at 38.2 ms

Total Headform Flexion



Filter Class: CFC_60
Max: 30.3 ° at 174.9 ms
Min: -68.8 ° at 56.6 ms

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

10.11.2012 11:23:01 640

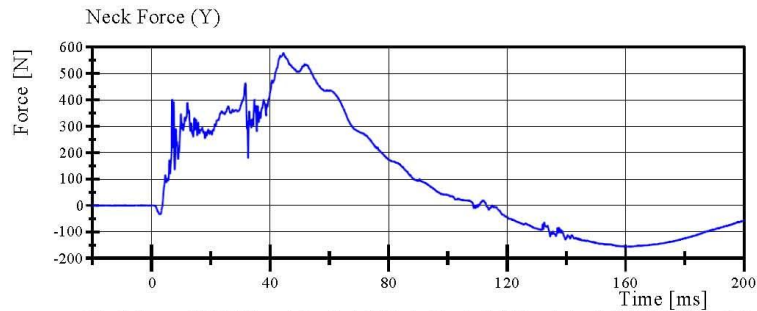


Transportation Research Center Inc.

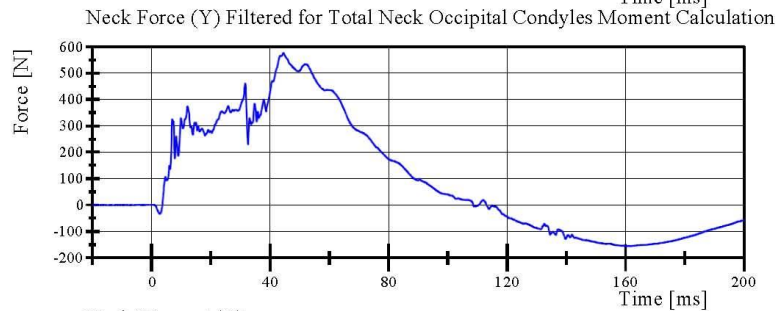
Left Lateral Neck

SID IIS Serial No. 033 Certification No. 13-2

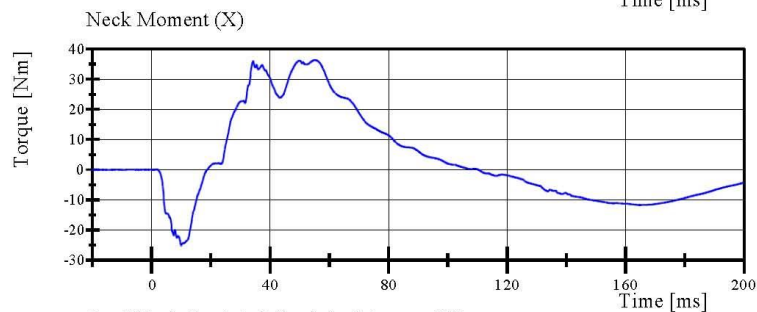
Test Date: 10/11/2012



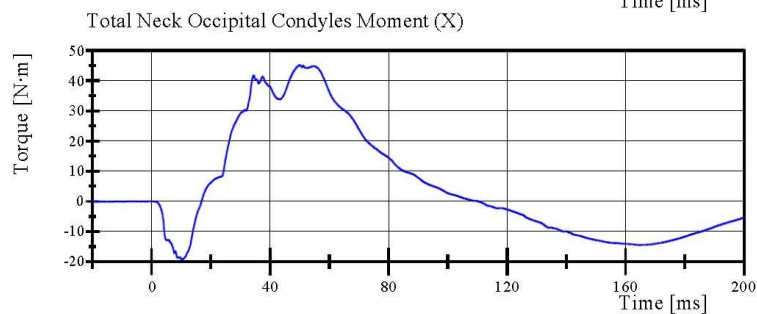
Filter Class: CFC_1000
Max: 578.1 N at 44.5 ms
Min: -156.5 N at 161.7 ms



Filter Class: CFC_600
Max: 577.0 N at 44.5 ms
Min: -156.2 N at 161.8 ms



Filter Class: CFC_600
Max: 36.4 Nm at 55.0 ms
Min: -24.9 Nm at 10.0 ms



Filter Class: Without_(Constant Ch
Max: 45.2 N·m at 50.1 ms
Min: -19.3 N·m at 10.2 ms

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

10.11.2012 11:23:02 640



Transportation Research Center Inc.

Left Lateral Shoulder

SID IIs Serial No. 033 Certification No. 13-1

Test Date: 10/9/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	31 %	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	32.2 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	19.6 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.

10.09.2012 15:24:48 853

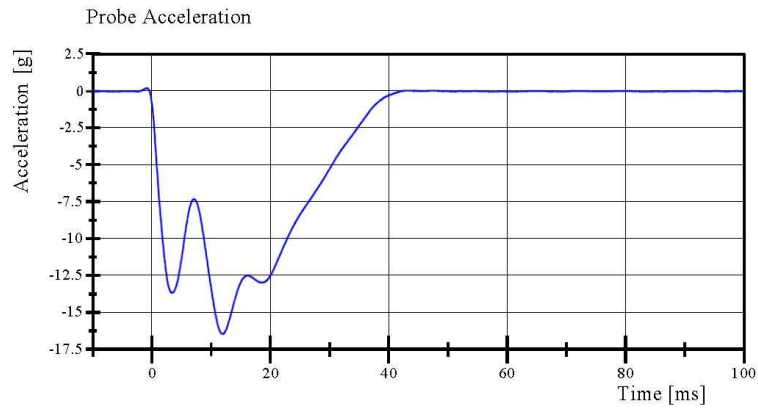


Transportation Research Center Inc.

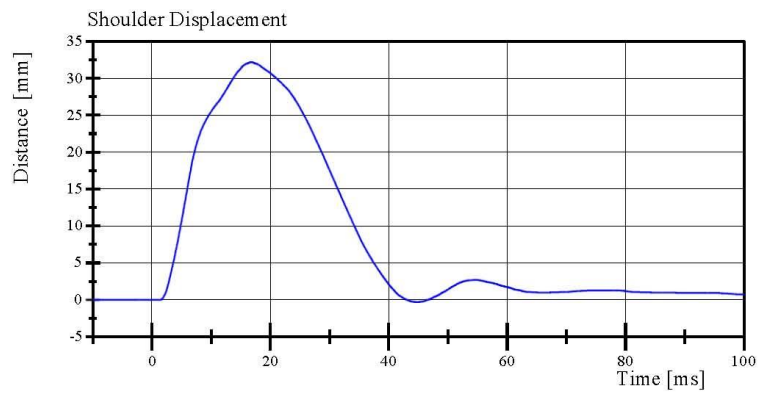
Left Lateral Shoulder

SID IIS Serial No. 033 Certification No. 13-1

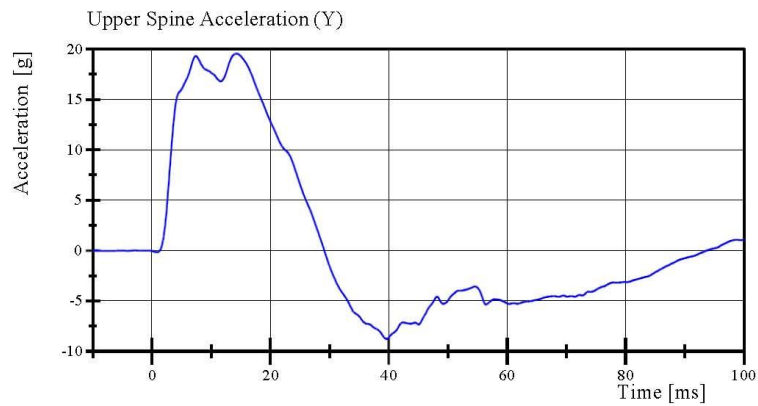
Test Date: 10/9/2012



Filter Class: CFC_180
Max: 0.2 gn at -0.9 ms
Min: -16.5 gn at 11.9 ms



Filter Class: CFC_600
Max: 32.2 mm at 16.8 ms
Min: -0.3 mm at 44.8 ms



Filter Class: CFC_180
Max: 19.6 gn at 14.3 ms
Min: -8.8 gn at 39.6 ms

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

10.09.2012 15:24:56 853



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 033 Certification No. 13-1
Test Date: 10/9/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.715 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-34.9 g	Yes
Shoulder Displacement	31 - 40 mm	34.3 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	27.8 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	32.5 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	34.8 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	39.0 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	35.3 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.

10.09.2012 16:02:32 620

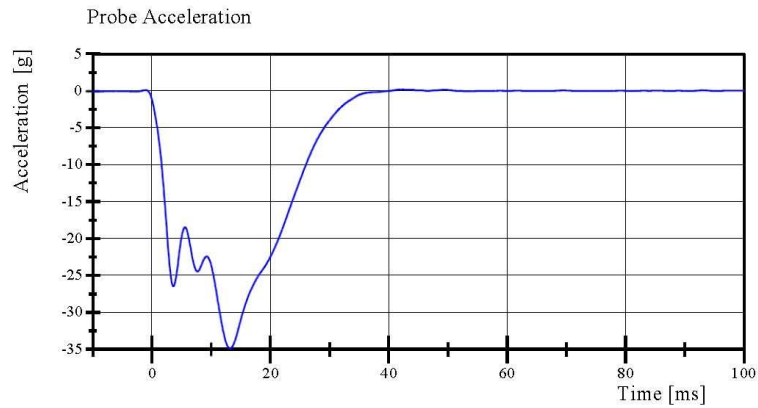


Transportation Research Center Inc.

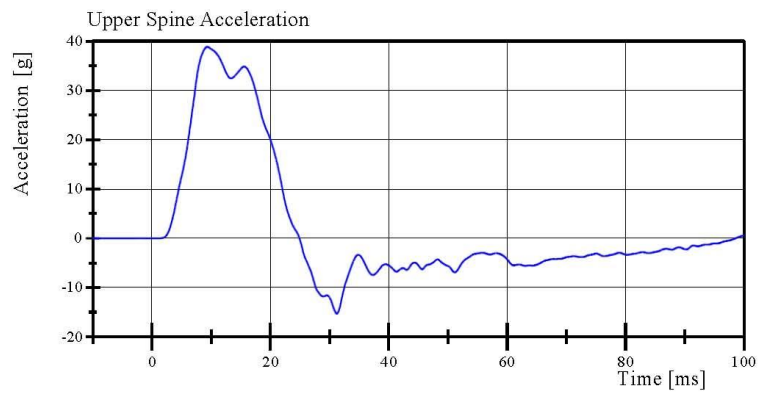
Left Lateral Thorax with Arm

SID IIs Serial No. 033 Certification No. 13-1

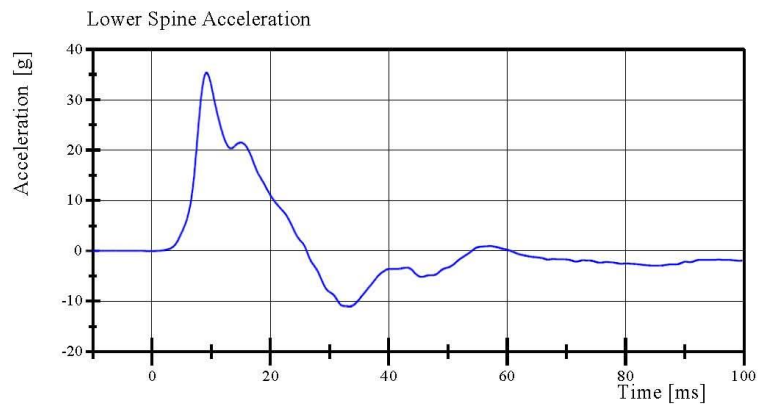
Test Date: 10/9/2012



Filter Class: CFC_180
Max: 0.2 gn at 42.1 ms
Min: -34.9 gn at 13.2 ms



Filter Class: CFC_180
Max: 39.0 gn at 9.4 ms
Min: -15.3 gn at 31.2 ms



Filter Class: CFC_180
Max: 35.3 gn at 9.3 ms
Min: -11.0 gn at 33.4 ms

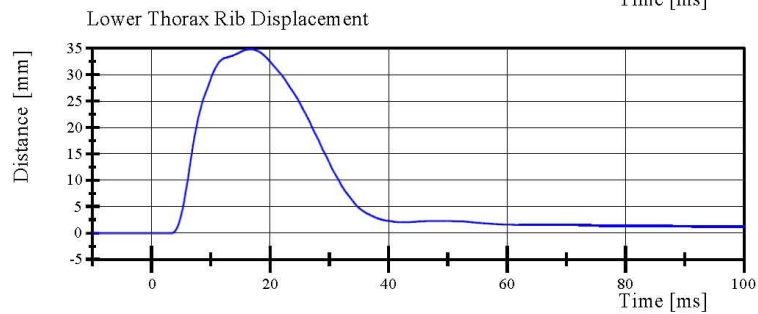
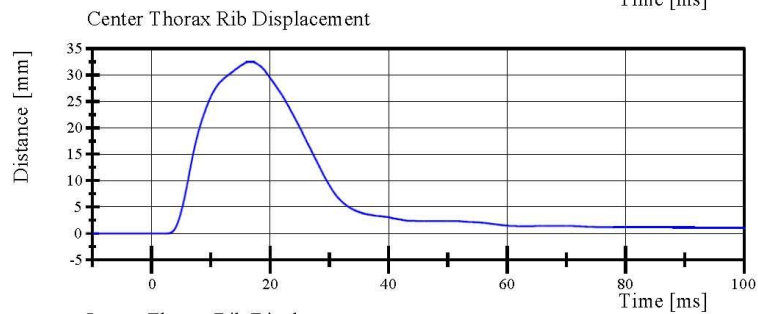
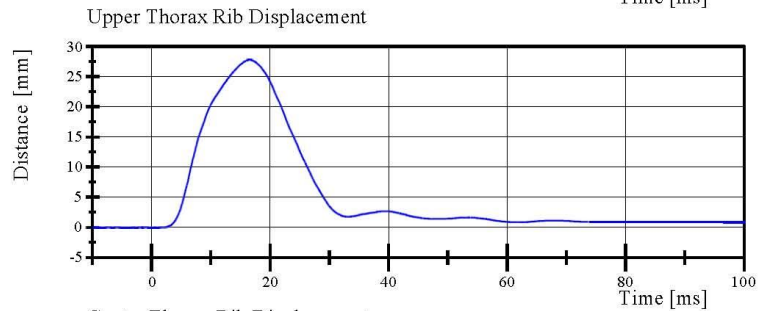
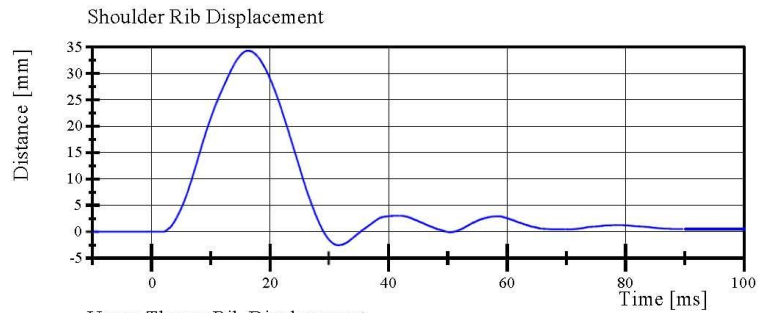
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

10.09.2012 16:02:50 620



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 033 Certification No. 13-1
Test Date: 10/9/2012



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

10.09.2012 16:02:50 620



Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. 033 Certification No. 13-1
Test Date: 10/9/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.326 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-16.3 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	33.5 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	41.1 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	39.2 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	15.4 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	11.4 g	No

Test does not meet specifications.

Comments:

Technician



Approved



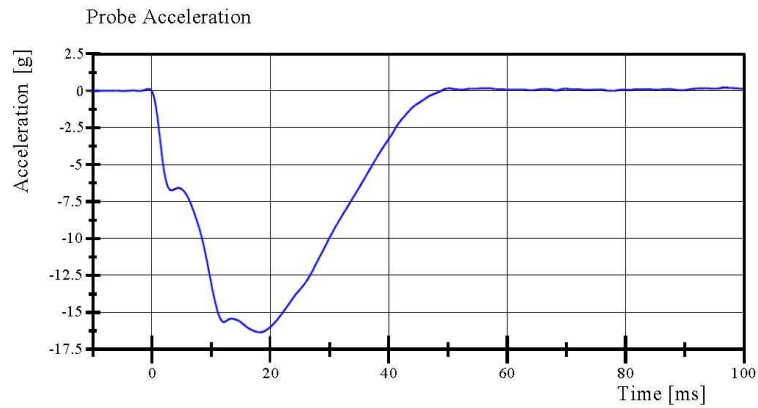
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

10.09.2012 16:48:47.835

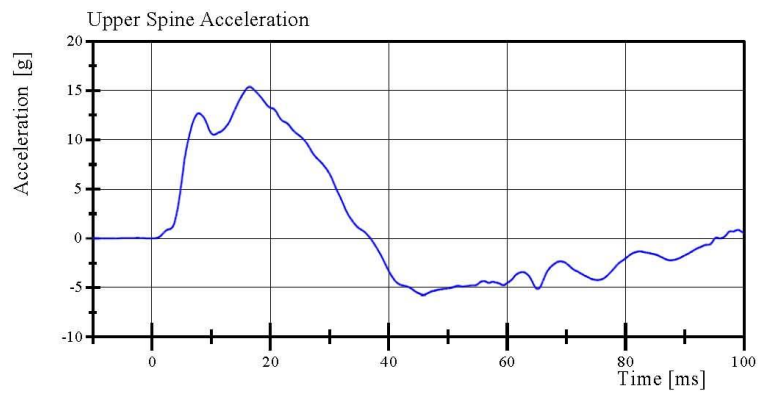


Transportation Research Center Inc.

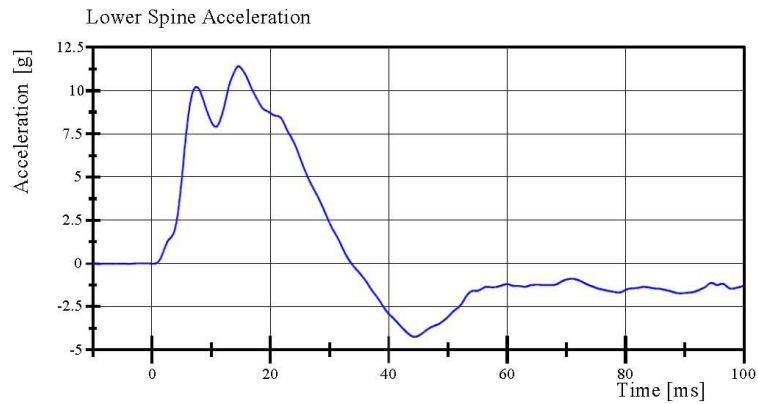
Left Lateral Thorax without Arm
SID IIs Serial No. 033 Certification No. 13-1
Test Date: 10/9/2012



Filter Class: CFC_180
Max: 0.2 gn at 97.0 ms
Min: -16.3 gn at 18.3 ms



Filter Class: CFC_180
Max: 15.4 gn at 16.5 ms
Min: -5.7 gn at 45.8 ms



Filter Class: CFC_180
Max: 11.4 gn at 14.6 ms
Min: -4.2 gn at 44.3 ms

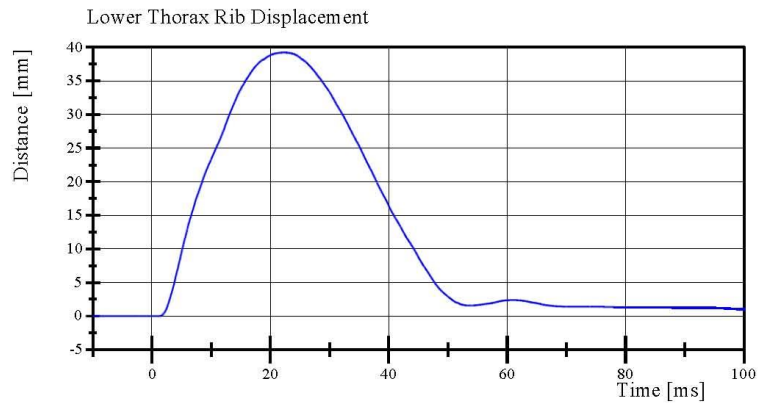
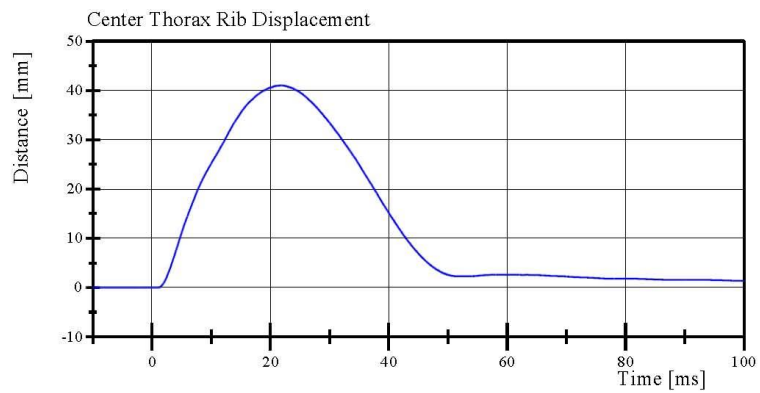
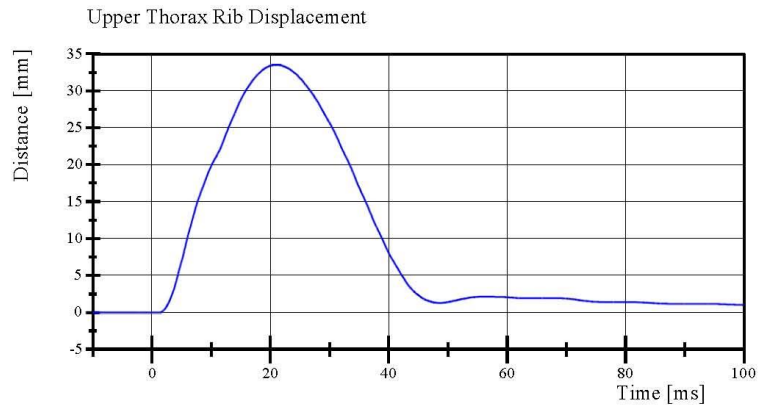
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

10.09.2012 16:51:35 835



Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. 033 Certification No. 13-1
Test Date: 10/9/2012



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

10.09.2012 16:51:36 835



Transportation Research Center Inc.

Left Lateral Abdomen

SID IIs Serial No. 033 Certification No. 13-1

Test Date: 10/10/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	34 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.34 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-13.3 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	40.0 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	41.5 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	10.94 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.

10.10.2012 06:58:46 623

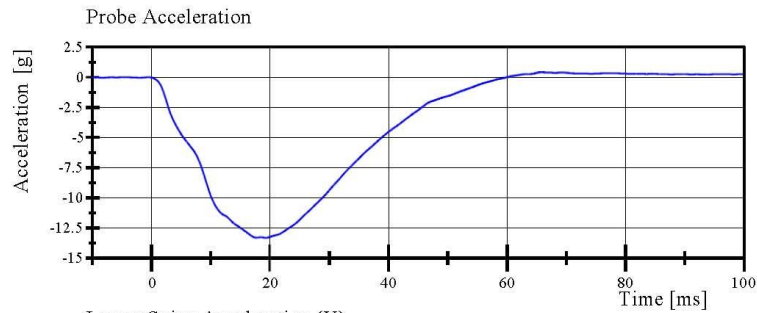


Transportation Research Center Inc.

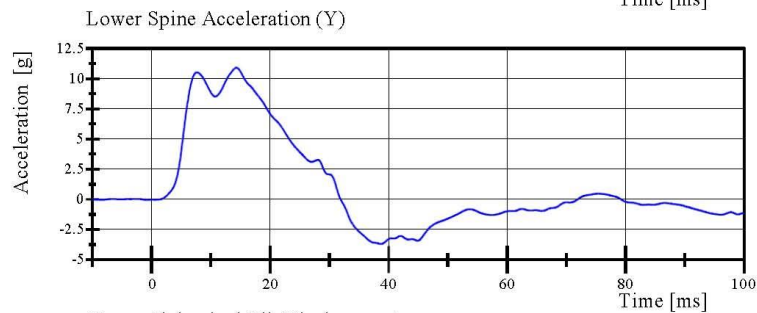
Left Lateral Abdomen

SID IIs Serial No. 033 Certification No. 13-1

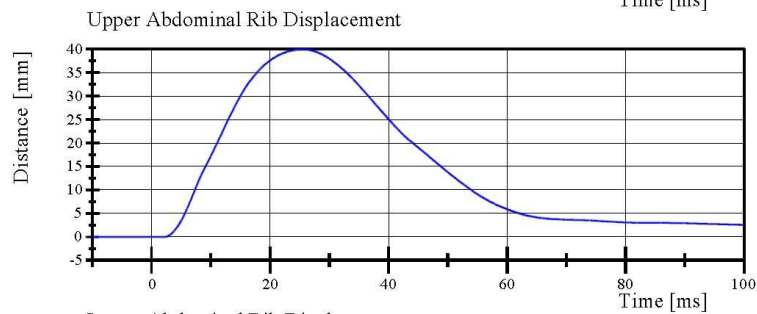
Test Date: 10/10/2012



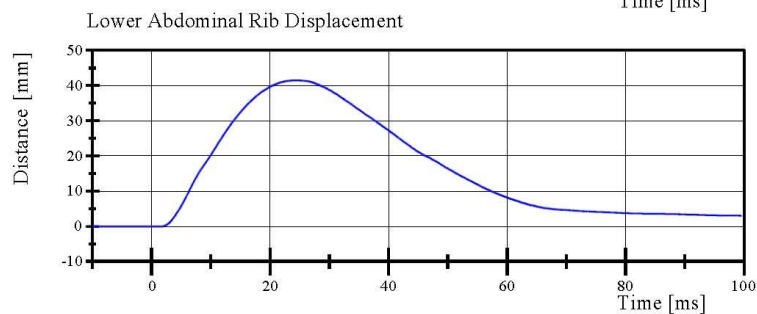
Filter Class: CFC_180
Max: 0.4 gn at 65.9 ms
Min: -13.3 gn at 19.4 ms



Filter Class: CFC_180
Max: 10.9 gn at 14.3 ms
Min: -3.7 gn at 38.7 ms



Filter Class: CFC_600
Max: 40.0 mm at 25.6 ms
Min: -0.0 mm at 0.8 ms



Filter Class: CFC_600
Max: 41.5 mm at 24.4 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.

10.10.2012 06:58:54 623



Transportation Research Center Inc.

Left Lateral Pelvis

SID IIs Serial No. 033 Certification No. 13-1

Test Date: 10/9/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.68 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-45.18 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	40.2 g	Yes
Acetabulum Force	3,600 - 4,300 N	3,805.6 N	Yes

Test meets specifications.

Comments:

Technician



Approved



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

10.09.2012 14:58:51.441

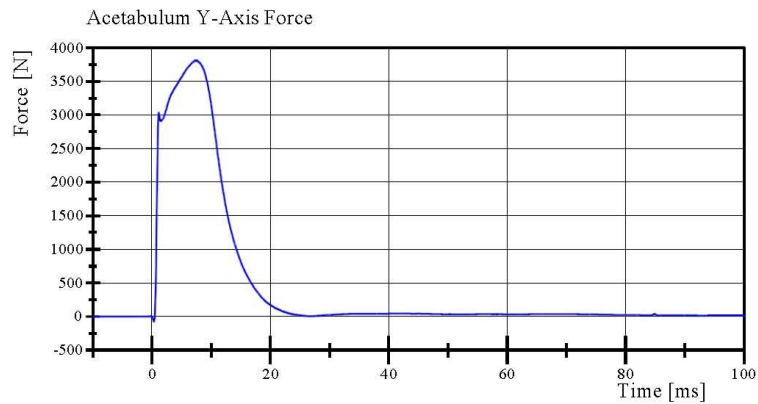
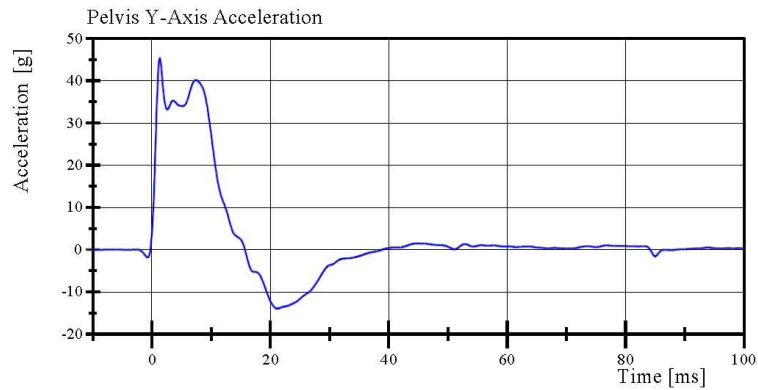
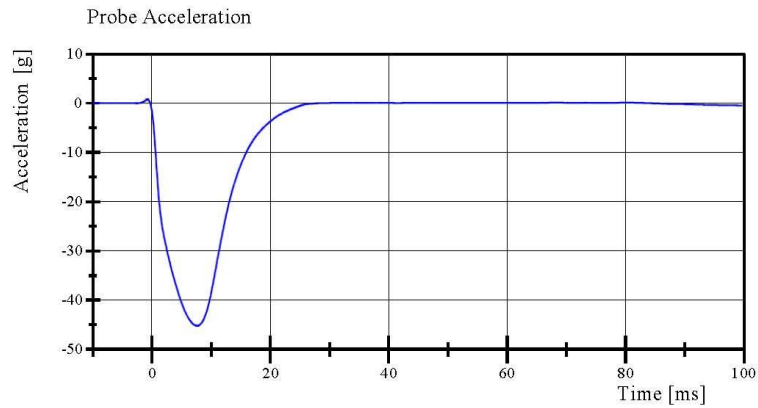


Transportation Research Center Inc.

Left Lateral Pelvis

SID IIS Serial No. 033 Certification No. 13-1

Test Date: 10/9/2012



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

10.09.2012 14:59:01.441



Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 033 Certification No. 13-1

Test Date: 10/10/2012

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.40 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-39.1 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	24.1 g	No
Iliac Force	4,100 - 5,100 N	4,239.6 N	Yes

Test does not meet specifications.

Comments:

Technician



Approved



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

10.10.2012 10:08:49 668

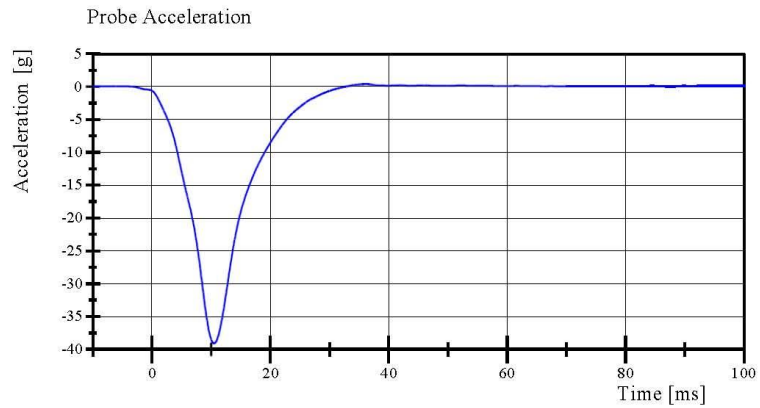


Transportation Research Center Inc.

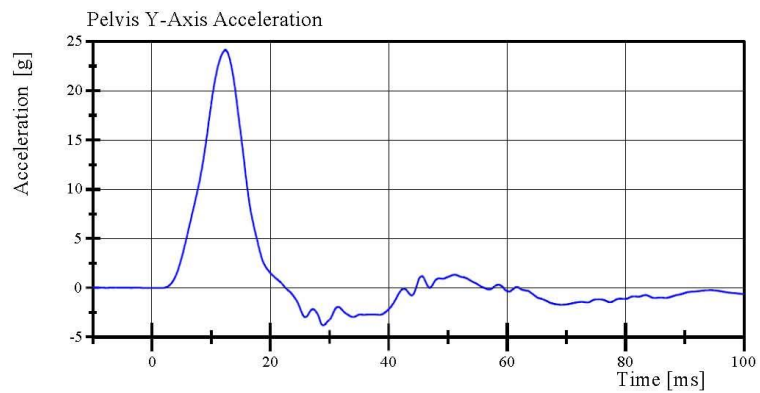
Left Lateral Iliac

SID IIs Serial No. 033 Certification No. 13-1

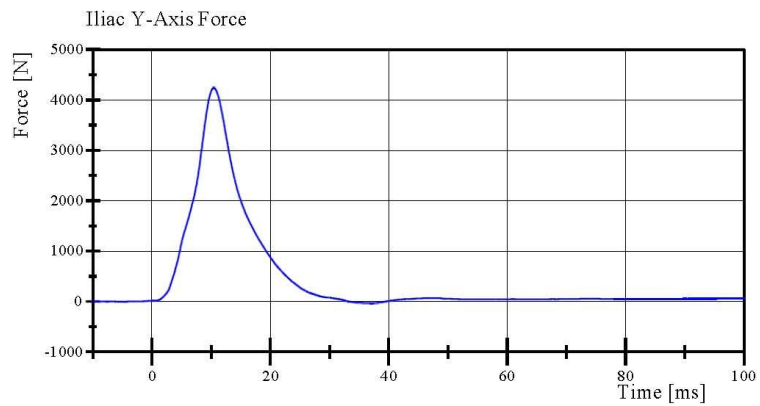
Test Date: 10/10/2012



Filter Class: CFC_180
Max: 0.4 gn at 36.2 ms
Min: -39.1 gn at 10.5 ms



Filter Class: CFC_180
Max: 24.1 gn at 12.4 ms
Min: -3.8 gn at 29.0 ms



Filter Class: CFC_600
Max: 4,239.6 N at 10.5 ms
Min: -31.1 N at 37.2 ms

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

10.10.2012 10:09:26 668



APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

TABLE 1 – Dummy Instrumentation (SID-IIs)

			SID-IIs S/N 033			
			Serial Number	Manufacturer	Calibration Date	
Head Accelerometers			X	J32214	Endevco	1-Oct-12
			Y	J27040	Endevco	1-Oct-12
			Z	AGAC4	Endevco	1-Oct-12
Displacement Potentiometers	Shoulder		Y	NA	NA	NA
	Thoracic Rib	Upper	Y	592	Servo	16-Nov-11
		Middle	Y	213	Servo	16-Nov-11
		Lower	Y	714	Servo	16-Nov-11
	Abdominal Rib	Upper	Y	918	Servo	16-Nov-11
		Lower	Y	904	Servo	16-Nov-11
Lower Spine Accelerometers (T12)			X	00L13-F05	Entran	1-Oct-12
			Y	P63998	Endevco	1-Oct-12
			Z	04J04I20-A17	Entran	1-Oct-12
Acetabulum Load Cell			Y	235-FY	FTSS	2-Oct-12
Iliac Wing Load Cell			Y	113-FY	FTSS	2-Oct-12
Pelvis Plug (struck side)				36740	FTSS	2-Oct-12
Pelvis Plug (non-struck side)				NA	NA	NA

TABLE 2 – Vehicle Instrumentation

Vehicle Instrumentation		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	P75996	Endevco	10-Sep-12
Vehicle Center of Gravity	Y	P76067	Endevco	24-Jul-12
Vehicle Center of Gravity	Z	P74493	Endevco	24-Jul-12
Left Floor Sill	Y	P75251	Endevco	23-Apr-12
A-Pillar Sill	Y	P74428	Endevco	24-Jul-12
A-Pillar Low	Y	P74480	Endevco	24-Jul-12
A-Pillar Mid	Y	P75240	Endevco	16-May-12
B-Pillar Sill	Y	P74084	Endevco	1-May-12
B-Pillar Low	Y	P75105	Endevco	26-Apr-12
B-Pillar Mid	Y	P74519	Endevco	17-Aug-12
Driver Seat	Y	P69381	Endevco	4-Jun-12
Engine Top	X	P74091	Endevco	18-Apr-12
Engine Top	Y	P75571	Endevco	4-Sep-12
Firewall	Y	P74233	Endevco	17-Aug-12
Right Roof	Y	P74452	Endevco	26-Jul-12
Right Floor Sill	Y	P73388	Endevco	19-Jul-12
Rear Floor Pan	X	P74479	Endevco	24-Jul-12
Rear Floor Pan	Y	P74478	Endevco	24-Jul-12

TABLE 3 – Pole Instrumentation

Pole Instrumentation	Serial Number	Manufacturer	Calibration Date
Load Cell 1	5764-77-FX	Denton	23-Jul-12
Load Cell 2	5764-89-FX	Denton	23-Jul-12
Load Cell 3	5763-77-FX	Denton	23-Jul-12
Load Cell 4	5763-89-FX	Denton	20-Jul-12
Load Cell 5	5763-88-FX	Denton	20-Jul-12
Load Cell 6	5763-92-FX	Denton	23-Jul-12
Load Cell 7	5763-90-FX	Denton	23-Jul-12
Load Cell 8	5763-78-FX	Denton	23-Jul-12