REPORT NUMBER: SPNCAP-MCW-12-08

NEW CAR ASSESSMENT PROGRAM (SPNCAP)
SIDE IMPACT POLE TEST

HONDA OF CANADA MFG.
2012 ACURA MDX 5-DOOR SUV

NHTSA NUMBER: MC 5309

PREPARED BY:
MEDICAL COLLEGE OF WISCONSIN
5000 WEST NATIONAL AVENUE
RESEARCH 151
MILWAUKEE, WISCONSIN 53295

TEST DATE: 13 JANUARY 2012

REPORT DATE: 26 JANUARY 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

Prepared by: _____

Date: 3/2/12

Reviewed by: _____

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FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

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

Date: _____

Technical Report Documentation Page

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4. Title and Subtitle Final report of New Car Assessment Program Side Impact Pole Testing of a 2012 Acura MDX 5-Door SUV NHTSA No. MC 5309		*5. Report Date* 26 January 2012 *6. Performing Organization Code* MCW
7. Author(s) Frank Pintar, Project Manager Mark Meyer, Project Engineer		*8. Performing Organization Report No.* MCW-12-08
9. Performing Organization Name and Address Medical College of Wisconsin 5000 W. National Ave. Milwaukee, WI 53295		*10. Work Unit No.* *11. Contract or Grant No.* DTNH22-09-D-00123
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards, NVS-111 1200 New Jersey Ave, SE, Room W43-410 Washington, D.C. 20590		*13. Type of Report and Period Covered:* January 13 to January 26 *14. Sponsoring Agency Code* NVS-111
15. Supplementary Notes		

16. Abstract

A 32.0 km/h (20 mph), 75° oblique Side NCAP Test was conducted on the subject 2012 Acura MDX 5-Door SUV in accordance with the specifications of the Office of Crashworthiness Standards Side NCAP Pole Laboratory Test Procedure for the generation of consumer information on vehicle side pole crash protection. The test was conducted at the Medical College of Wisconsin (MCW) in Milwaukee, Wisconsin on 13 January 2012.

The impact velocity was 32.0 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 20 °C. The test vehicle's post-test maximum static crush was 507 mm at level 3. The test vehicle's occupant performance is as follows:

		Driver ATD (SID-IIs)	
	Units	Threshold	Result
Head Injury Criteria (HIC_{36})	N/a	1000	557
Resultant Lower Spine Acceleration	G's	82	48
Total Pelvic Force (Acetabular & Pelvic)	NWT	5525	4153
Maximum Thoracic Rib Deflection	mm	38	21
Maximum Abdomen Rib Deflection	mm	45	20

The doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.

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 Reference Division 1200 New Jersey Ave, SE, Room W43-410 Washington, D.C. 20590	
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Form DOT F1700.7 (8-72)

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SECTION 1
TEST PURPOSE AND PROCEDURE

This side impact test is part of the MY'12 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-09-D-00123. The purpose of this test is to generate comparative side impact performance in a 2012 Acura MDX 5-Door SUV. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Side NCAP Pole Laboratory Test Procedure, dated August 2011.

SECTION 2
SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a 2012 Acura MDX 5-Door SUV. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.0 km/h. The test was conducted at the Medical College of Wisconsin, in Milwaukee, Wisconsin, on 13 January 2012. Pre-test and post-test photographs of the test vehicle and side impact dummy (SID-IIs) are included in Appendix A of this report.

One (1) 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 August 2011. Camera locations and other pertinent camera information are included in this report.

The Part 572V (SID-IIs) Dummy was instrumented accordingly:

- Head center of gravity tri-axial (X, Y, Z)accelerometers (primary and redundant)
- Upper neck tri-axial (X, Y, Z) force load cells and tri-axial (X, Y, Z) moment load cells
- Thorax upper, middle, and lower rib (Y) displacement potentiometers
- Abdomen upper and lower rib (Y) displacement potentiometers
- Lower spine tri-axial (X, Y, Z) accelerometers
- Illiac wing (Y) force load cell
- Acetabulum (Y) force load cell

The test vehicle was instrumented with eighteen (18) structural accelerometers. The rigid pole was instrumented with eight (8) loadcells. All data channels were recorded with a fully self contained on-board DTS TDAS Pro Data Acquisition System. The data were digitally sampled at 12.5 kHz and processed according to SAEJ211-1(March 1995).

Two (2) real-time video cameras and ten (10) high-speed video cameras were used to document the impact event. The pre test and post test conditions were recorded by one (1) real-time motion picture camera. Camera locations and pertinent camera information are documented in the data sheets. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

All of the above was conducted in accordance to the Report Laboratory Test Procedure for New Car Assessment Program Side Impact Rigid Pole Testing dated August 2011.

2.2 GENERAL COMMENTS

The test vehicle sustained a maximum static crush of 507 mm at level 3, 150 mm rearward of the vertical impact line.

Test summaries, post test observations, vehicle, pole, camera, and occupant measurements are presented in datasheets 1-16. Appendix A contains the still photograph prints. 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:

OCCUPANT SUMMARY			
Head Injury Criteria (HIC_{36})	**Driver ATD (SID-IIs)**		
	Units	**IARV**	**Result**
Head Injury Criteria (HIC_{36})	N/a	1000	557
Resultant Lower Spine Acceleration	G's	82	48
Total Pelvic Force (Sum of Acetabular and Iliac Forces)	NWT	5525	4153
Maximum Thoracic Rib Deflection	mm	38*	21
Maximum Abdominal Rib Deflection	mm	45*	20

Head Injury Criterion (HIC) is the standardized calculation using resultant head acceleration to assess head injury. Generally, a higher HIC represents an increase in the likelihood of a serious head injury. HIC_{36} specifies a time 'window' of 36 milliseconds over which the integral is calculated. T1 and T2 represent the time of the lower and upper bounds of the window in which the HIC is calculated.

The resultant lower spine acceleration is the single equivalent of the X, Y, and Z accelerations.

The sum of the pelvic forces is used to assess the likelihood of injury to the pelvis during a side impact crash. Higher pelvic forces correspond to an increase in the likelihood of sustaining a severe pelvis injury.

*Proposed IARV

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION		
Restraint Type	**Left Front (Driver) Occupant Location 01**	
	Mounted	Deployed
Frontal Airbag	Yes – Steering Wheel	Did Not Deploy
Knee Airbag	No	N/a
Side Curtain Airbag	Yes – Roof Rail	Deployed
Side Torso/Abdomen/Pelvis Side Airbag	Yes – Seat Back	Deployed
Seat Belt Pretensioner	Yes	Deployed
Seat Belt Load Limiter	Yes	N/a
Other	No	N/a

These test data and report can be found in detail on the NHTSA website at www.nhtsa.dot.gov.

A brief summary of the crash test can be located at www.safercar.gov

TEST NOTES

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

VEHICLE INFORMATION	
NHTSA No.	MC 5309
Model Year	2012
Make	Acura
Model	MDX
Body Style	5 – Door SUV
VIN	2HNYD2H2XCH501075
Body Color	Dark Cherry
Odometer Reading (km/mi)	179 mi.
Engine Displacement (L)	3.7
Type/No. of Cylinders	6
Engine Placement	Lateral
Transmission Type	5 Sp. Automatic
Transmission Speeds	5
Overdrive	Yes
Final Drive	AWD
Roof Rack	No
Sunroof/T-Top	Yes
Running Boards	No
Tilt Steering	Yes
Power Seats	Yes
Anti-Lock Brakes (ABS)	Yes
All-Wheel Drive (AWD)	Yes

VEHICLE OPTIONS	
Traction Control System (TCS)	Yes
Auto-Leveling System	No
Automatic Door Locks (ADL)	Yes
Power Window Auto-Reverse	No
Other Optional Features	Yes
Driver Front Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	No
Driver Torso/Pelvis Airbag	Yes
Driver Pelvis Airbag	No
Driver Knee Airbag	No
Rear Pass. Curtain Airbag	Yes
Rear Pass. Head/Torso Airbag	No
Rear Pass. Torso Airbag	No
Rear Pass. Torso/Pelvis Airbag	No
Rear Pass. Pelvis Airbag	No
Driver Seat Belt Pretensioner	Yes
Rear Pass. Seat Belt Pretensioner	Yes
Driver Load Limiter	Yes
Rear Pass. Load Limiter	No
Other Safety Restraint	Yes

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

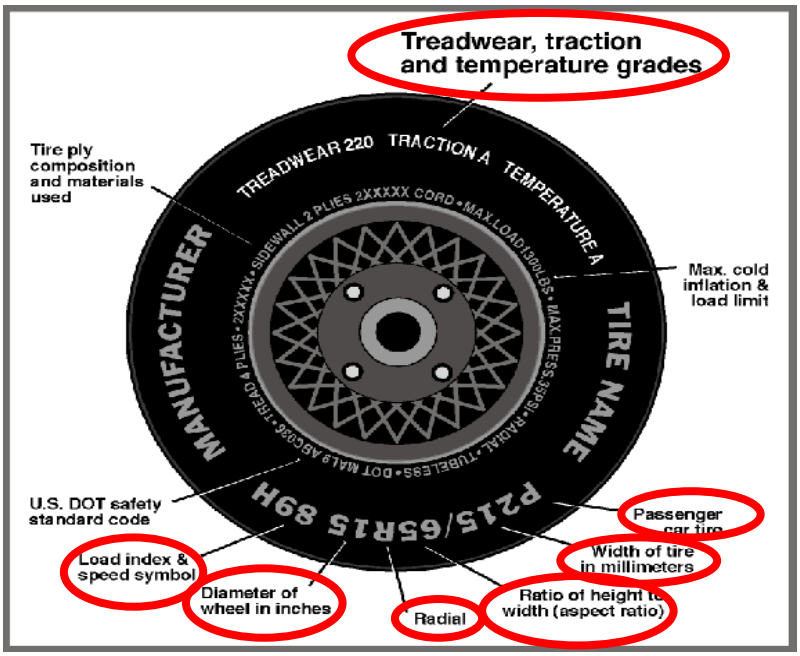
DATA FROM CERTIFICATION LABEL			
Manufacturer	Honda of Canada Mfg.	GVWR (kg)	2700
Date of Manufacture	October 2011	GAWR Front(kg)	1310
Vehicle Type	SUV	GAWR Rear (kg)	1440

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION					
	Front	**Rear**	**Third**	**Total**	
Designated Seating Capacity (DSC)	2	3	2	7	
Capacity Weight (VCW) kg				525	(A)
DSC X 68.04 kg				476.3	(B)
Rated Cargo Weight (RCLW)				48.7	(A-B)

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

VEHICLE SEAT TYPE							
Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						W/ Lever	W/ Knob
Front Seat	X					X	
Rear or Second Row Seat			X	X	X	N/a	
Third Row Seat			X	X	X	N/a	

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



TIRE PLACARD INFORMATION		
Measured Parameter	**Front**	**Rear**
Recommended Cold Tire Pressure (kPa)	220	220
Recommended Tire Size	255/55R18	255/55R18

TIRE SIDEWALL INFORMATION		
Measured Parameter	**Front**	**Rear**
Max. Tire Pressure (kPa)	300	300
Tire Size on Vehicle	255/55R18	255/55R18
Tire Manufacturer	Bridgestone	Bridgestone
Tire Name	Dueler	Dueler
Tire Type	Radial	Radial
Tire Width	255	255
Aspect Ratio	55	55
Radial	Yes	Yes
Wheel Diameter	18	18
Load Index/Speed Symbol	105H	105H
Treadware	Polyester, Steel, Nylon	Polyester, Steel, Nylon
Traction Grade	400	400
Temperature Grade	B	B
Tire Material	B	B

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

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	220	220	220	220

TEST VEHICLE AXLE WEIGHTS										
	Units	**As Delivered (UVW)**			**As Tested (ATW)**			**Fully Loaded**		
		Front	**Rear**	**Total**	**Front**	**Rear**	**Total**	**Front**	**Rear**	**Total**
Left	kg	591.3	464.7		626.0	480.8		614.6	499.9	
Right	kg	570.4	455.8		557.5	503.5		580.6	479.9	
Ratio	%	55.8	44.2		54.6	45.4		55.0	45.0	
Totals	kg	1161.7	920.5	2082.2	1183.5	984.3	2167.8	1195.2	979.8	2175.0

TARGET TEST WEIGHT CALCULATION			
	Units		
Total Delivered Weight (UVW)	kg	2082.2	(A)
Sum of Actual Weight of 1 P572 ATDs (SID-IIs) Used	kg	44.1	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	48.7	(C)
Calculated Target Vehicle Test Weight (TVTW)	kg	2175.0	(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

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW	
Ballast	**Weight (kg)**
Non-struck side door panels, glass & window motors, muffler & attached pipes, spare tire, jack, tail-light, plastic motor cover	68.0

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

TEST VEHICLE ATTITUDES AND CG					
	Units	**As Delivered**	**As Tested**	**Fully Loaded**	**Meets Requirement**
Driver Door Sill Angle (Front to Rear)*	Deg.	0.7	-0.6	-0.7	Yes
Front Pass. Door Sill Angle (Front to Rear)*	Deg.	-0.3	-0.4	-0.4	Yes
Front Bumper Angle (Left to Right)	Deg.	0.0	0.0	0.0	Yes
Rear Bumper Angle (Left to Right)	Deg.	0.2	0.0	0.0	Yes
Vehicle CG (Aft of Front Axle)	mm	1216	1249	1239	
Vehicle CG Left (+) / Right (-) from Long. Centerline)	mm	14	21	24	

DATA SHEET NO. 2
SEAT, SEAT BELT, STEERIING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

SCRL ANGLE RANGE			
	SCRL (°)		
	Max	**Min**	**Mid**
Driver Seat	11.2°	-1.5°	4.8°
Front Passenger Seat	13.0°	0.0°	6.5°
Front Center Seat			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat			

SCRL ANGLE RANGE						
Seat	**As Tested SCRL Angle (Mid) (°)**	**As Tested SCRP Height (mm)**	**SCRP Height Position**	**SCRP Height (mm)**		
				Rearmost	**Mid-Fore/Aft**	**Forward-Most**
Driver's Seat	4.8	N/a	Max	-127.2	-137.7	-150.1
	4.8	-124.9	Mid	-100.0	-111.8	-124.9
	4.8	N/a	Min	-74.0	-85.8	-98.9
Front Passenger Seat	6.5	Not measured	Max	Not measured	Not measured	Not measured
	6.5	Not measured	Mid	Not measured	Not measured	Not measured
	6.5	Not measured	Min	Not measured	Not measured	Not measured
Front Center Seat*			Max			
			Mid			
			Min			
Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
	Fixed	Fixed	Mid	Fixed	Fixed	Fixed
	Fixed	Fixed	Min	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
	Fixed	Fixed	Mid	Fixed	Fixed	Fixed
	Fixed	Fixed	Min	Fixed	Fixed	Fixed
Rear Center Seat*			Max			
			Mid			
			Min			

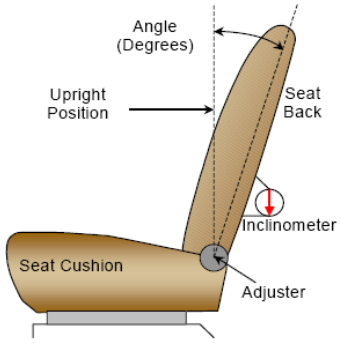
*If applicable

DATA SHEET NO. 2
SEAT, SEAT BELT, STEERIING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA (CONTINUED)

SEAT FORE/AFT TRAVEL				
Seat	**Total Fore/Aft Travel**		**Test Position from Forward-most Position**	
	mm	**Detents***	**mm**	**Detents***
Driver Seat	240	N/a	0	0 (w/ Full Forward = 0)
Front Passenger Seat	240	N/a	0	0 (w/ Full Forward = 0)
Front Center Seat*				
Struck Side Rear Seat	Fixed	N/a	N/a	N/a
Non-Struck Side Rear Seat	Fixed	N/a	N/a	N/a
Rear Center Seat*				

*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.



FRONT SEAT ASSEMBLY

SEAT BACK ANGLE ADJUSTMENT				
Seat	**Total Seat Back Angle Range**		**Test Position from Most Upright**	
	Degrees	**Detents***	**Degrees**	**Detents***
Driver Seat w/ Seated Dummy	51.2°	N/a	12.7°	N/a
Front Passenger Seat	51.0°	N/a	12.7°	N/a
Front Center Seat*				
Struck Side Rear Seat	Fixed	N/a	Fixed	N/a
Non-Struck Side Rear Seat	Fixed	N/a	Fixed	N/a
Rear Center Seat*				

*If applicable

DATA SHEET NO. 2
SEAT, SEAT BELT, STEERIING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA (CONTINUED)

Seat Belt Anchorage Adjustment
Seat belt anchorages are adjusted in accordance with the information provided by the manufacturer on Form No. 1.

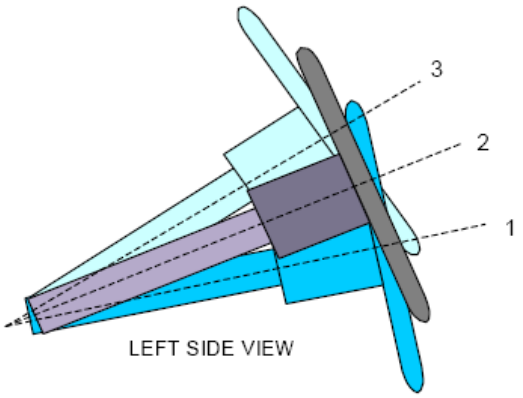
SEAT BELT ANCHORAGE ADJUSTMENT (D-RING)		
	Total No. of Positions	**Placement**
Driver Seat	4	H

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

HEAD RESTRAINT ADJUSTMENT		
	Total No. of Positions	**Placement**
Driver Seat	7	Lowest Position

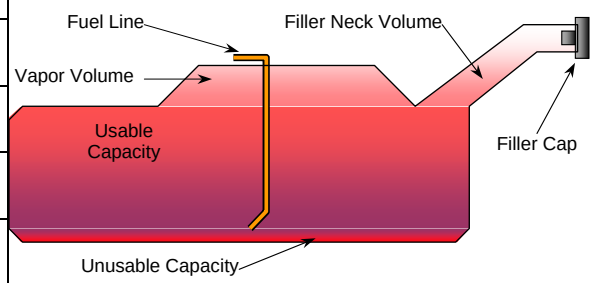
Steering Column Adjustment
Steering wheel and column adjustments are made so that the steering wheel hub is at the center of its geometric locus it describes when it moves through its full range of motion.

STEERING COLUMN ADJUSTMENT			
	Degrees	**Fore/Aft Position (mm)**	
Lowermost, Pos. No. 1	20.4°	22 mm	
Geometric Center, Pos. No. 2	23.2°	22 mm	
Uppermost, Pos. No. 3	26.0°	22 mm	
Telescoping Steering Wheel Travel	N/a	44 mm	
Test Position	23.2°	22 mm	



STEERING COLUMN ASSEMBLY

DATA SHEET NO. 2
SEAT, SEAT BELT, STEERIING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA (CONTINUED)

FUEL TANK CAPACITY DATA			
Description	**Units**	**Value**	
Usable Capacity of Standard Equipment Fuel Tank	L	79.5	
Usable Capacity of Optional Equipment Fuel Tank	L	0.0	
Usable Capacity of Standard Tank as Specified in Owner's Manual	L	79.5	
Usable Capacity of Optional Tank as Specified in Owner's Manual	L	0.0	
Amount of Stoddard Added for Test	L	73.9	
% Usable Capacity (92%-94%)	%	93.0	
1/3 of Usable Capacity	26.5		

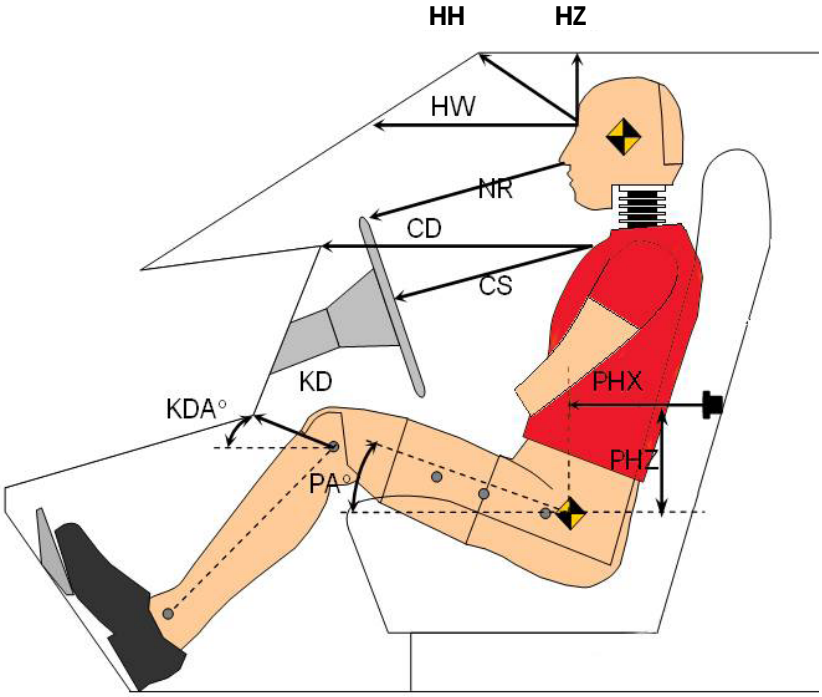
VEHICLE FUEL TANK ASSEMBLY

Fuel Pump
The vehicle is equipped with an electronic fuel pump. Key is "ON" position. The fuel pump is on the left side.

Is the Actual Amount of Solvent Used in the test equal to 93% +/- 1% of the Usable Capacity stated in on Form No. 1?

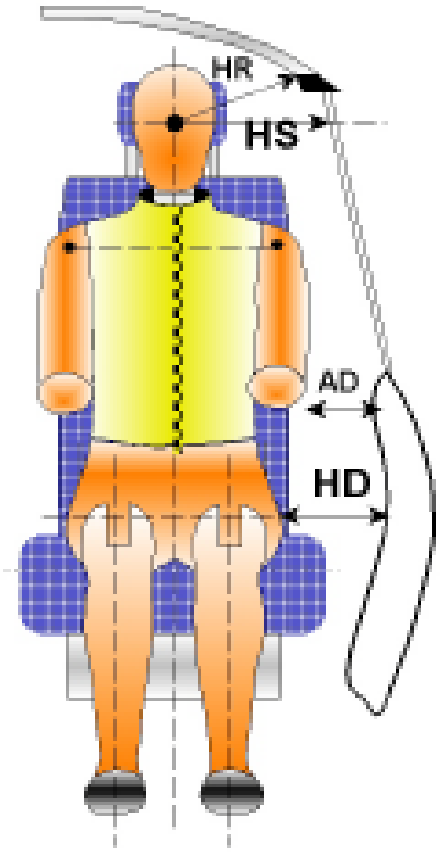
Yes

DATA SHEET NUMBER NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS



Code	Measurement Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	257	
HW	Head to Windshield	567	
HZ	Head to Roof	223	
NR	Nose to Rim	266	
CD	Chest to Dashboard	406	
CS	Chest to Steering Wheel	167	
KDL	Left Knee to Dash	110	
KDAL	Left Knee to Dash		11.3
KDR	Right Knee to Dash	98	
KDAR	Right Knee to Dash		11.5
PAX	Pelvic Tilt Angle (X-Axis)		0.0
PAY	Pelvic Tilt Angle (Y-Axis)		17.6
PHX	H-Point to Striker (X-Axis)	358.8	
PHZ	H-Point to Striker (Z-Axis)	109.6	

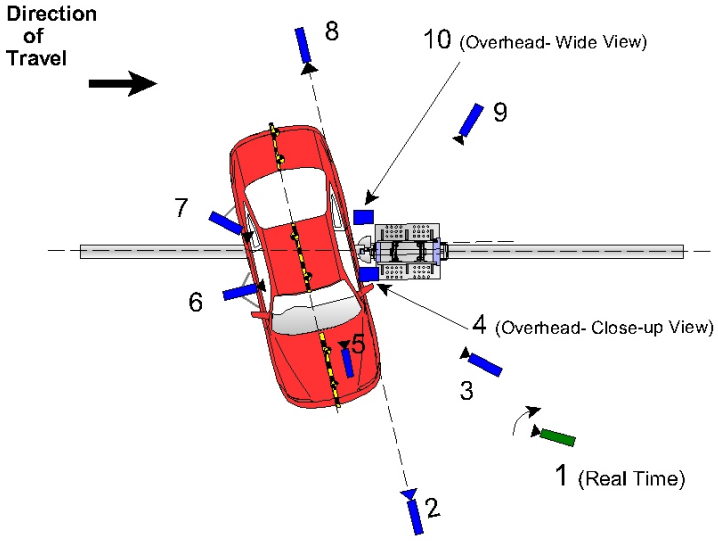
DATA SHEET NUMBER NO. 4
DUMMY LATERALL CLEARANCE DIMENSIONS



DUMMY LATERAL CLEARANCE DIMENSIONS		
Code	**Measurement Description**	**Length (mm)**
HR	Head to Side Header	252
HS	Head to Side Window	373
AD	Arm to Door	160
HD	Hip Point to Door	232

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Camera Locations



	View	Coordinates †			Lens Length	Operating Frame Rate
		X	Y	Z		
		mm	mm	mm	mm	fps
1	Rear Time (24 – 30 fps) Pan View of Impact				N/a	24
2	Front ground Level – Impact View	9325	-2978	-1356	35	1000
3	Impact Side 45° - Forward View of Pole	6398	-3944	-1536	25	1000
4	Overhead Close – Up View of Impact	108	382	-5909	75	1000
5	Onboard – Dummy Front View				16	1000
6	Onboard – Dummy Side View				12.5	1000
7	Onboard – Dummy Rear Oblique View				25	1000
8	Rear Ground Level – Impact View	-8321	-2216	-1295	25	1000
9	Impact Side 45° - Rearward Pole View	-9065	-3622	-1549	35	1000
10	Overhead Wide – View Impact	114	40	-5589	12.5	1000
11	Real – Time (24 – 30 fps)Dummy Front View				25	24

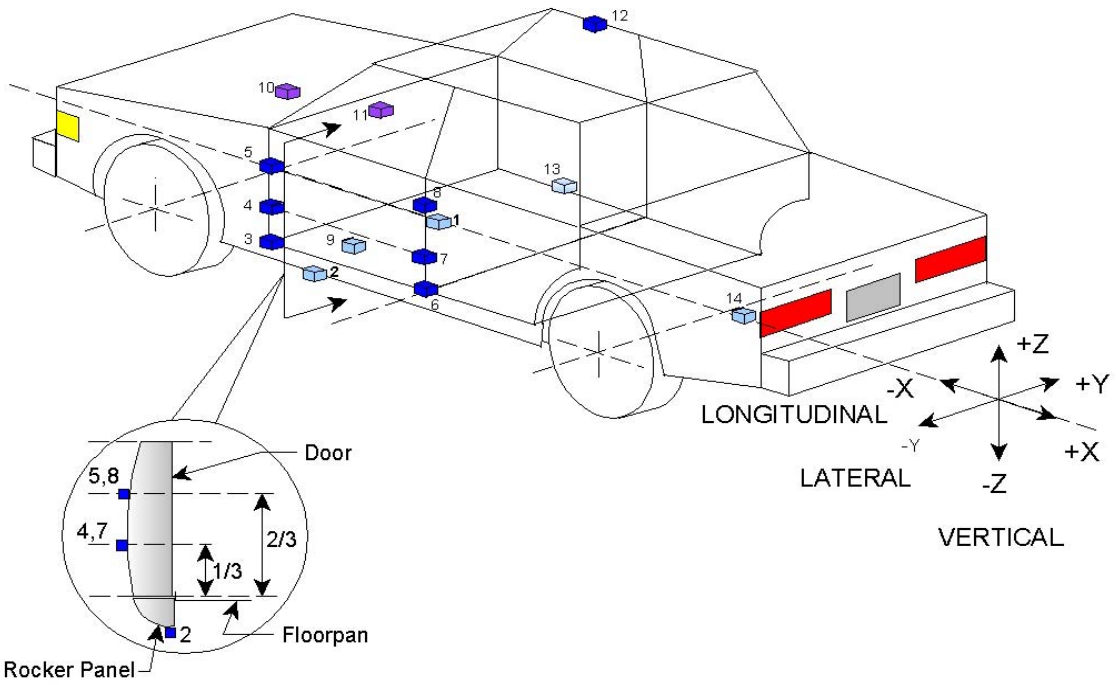
Origin		Orientation	
X	Impact Point	X	+(X) Forward
Y	Impact Point	Y	+(Y) Right
Z	Ground	Z	+(Z) Down

**All measurements accurate to +/- 6 mm*
Note: Vehicle was at a 15° angle to the rigid pole

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA (CONTINUED)

INSTRUMENTATION	
	Number of channels
Driver Dummy	16
Vehicle Structure	18
Pole Load Cells	8
Total No. of Data Channels	42

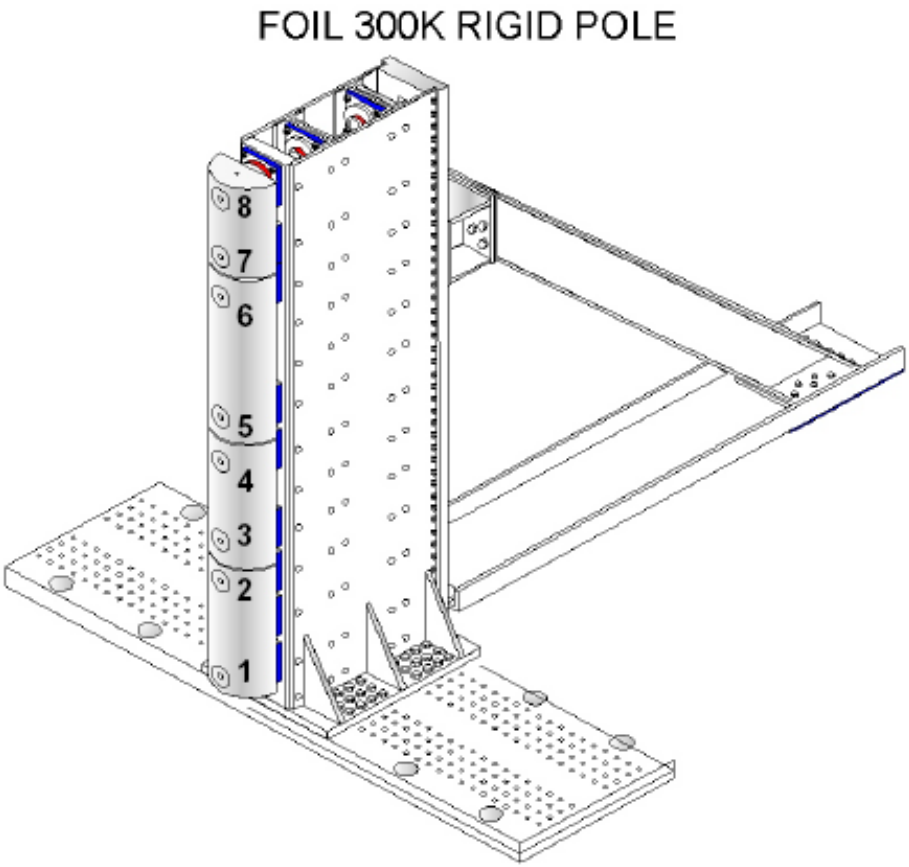
DATA SHEET NO. 6
VEHICLE ACCELEROMETER LOCATIONS



ACCELEROMETER/SENSOR LOCATION				
Loc. no.	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2922.5	39.7	140.8
2	Left Floor Sill	3063.9	-795.7	304.2
3	A-Pillar Sill	3336.3	-796.9	306.4
4	A-Pillar Low	3318.4	-836.6	-52.5
5	A-Pillar Mid	3322.8	-845.6	-256.0
6	B-Pillar Sill	2332.9	-791.9	295.5
7	B-Pillar Low	2336.6	-897.9	-24.5
8	B-Pillar Mid	2340.3	-891.2	-242.4
9	Driver Seat Track	2713.8	-639.4	163.9
10	Engine Top	4077.4	138.0	-291.2
11	Firewall	3808.0	123.6	-200.2
12	Right Roof	2361.1	533.3	-1047.5
13	Right Floor Sill	2296.7	795.4	295.9
14	Rear Floorpan	634.5	-23.2	2.40

Origin		Orientation	
X	Test Vehicle Rear Bumper	X	+ Forward
Y	Test Vehicle Centerline	Y	+ Right
Z	Ground Plane	Z	+ Down

DATA SHEET NO. 7
RIGID POLE LOAD CELL DATA



LOAD CELL LOCATIONS	
ID	**Height From Ground (mm)**
1	77
2	477
3	632
4	969
5	1167
6	1638
7	1808
8	2030

*Measured From Top of Platform

DATA SHEET NUMBER NO. 8
POST TEST OBSERVATIONS

TEST DUMMY INFORMATION AND CONTACT POINTS	
Dummy Body Part	**Driver SID-IIs Dummy**
Face	To Side Curtain Airbag
Top of Head	To Side Curtain Airbag
Left Side of Head	To Side Curtain Airbag
Back of Head	Along Head Rest and Into Side Curtain Airbag
Left Shoulder	To Bottom of Side Curtain Airbag and Top of TAP Bag
Upper Torso	To TAP Bag
Lower Torso	To TAP Bag
Left Hip	To TAP Bag
Left Knee	To Interior 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	Yes
Total Separation from Vehicle at Hinges or Latches	No	No	No	No	No
Latch or Hinge Systems Pulled Out of Their Anchorages	No	No	No	No	No
Disengaged from Latched Position	No	No	No	No	No
Latch Separated from Striker	No	No	No	No	No
Jammed Shut	Yes	Yes	No	No	No
If Door Opened at Striker, Record Width of Opening at Striker (mm)	N/a	N/a	N/a	N/a	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

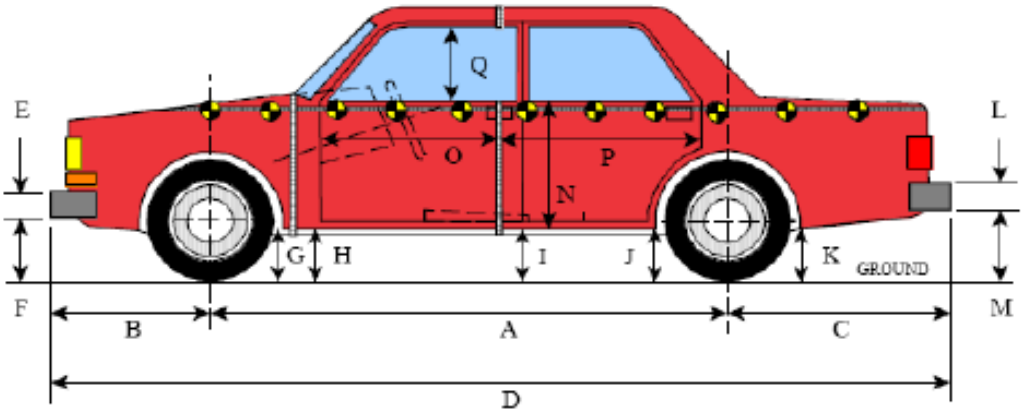
DATA SHEET NUMBER NO. 8
POST TEST OBSERVATIONS (CONTINUED)

POST TEST STRUCTURAL OBSERVATIONS	
Critical Areas of Performance	**Observations/Conclusions**
Pillar Performance	No Separation
Sill Separation	Max Sill Separation of 50 mm at Upper B-Pillar
Windshield Damage	Cracking Along Entire Windshield; Heaviest Concentration along Impacted Side and Top
Window Damage	Front Window Shattered at Impact
Other Notable Effects	None Noted

SUPPLEMENTAL RESTRAINT INFORMATION				
Restraint Type	**Struck Side Driver**		**Struck Side Rear Passenger**	
	Mounted	**Deployed**	**Mounted**	**Deployed**
Frontal Airbag	Yes – Steering Wheel	Did Not Deploy		
Knee Airbag	No	N/a		
Side Curtain Airbag	Yes – Side Header	Deployed Properly	Yes – Side Header	Deployed Properly
Side Torso/Abdomen/Pelvis Airbag	Yes – Seat Back	Deployed Properly	No	N/a
Seat Belt Pretensioner	Yes	Deployed Properly	Yes	Did Not Deploy
Seat Belt Load Limiter	Yes	N/a	No	N/a
Other	No	N/a	No	N/a

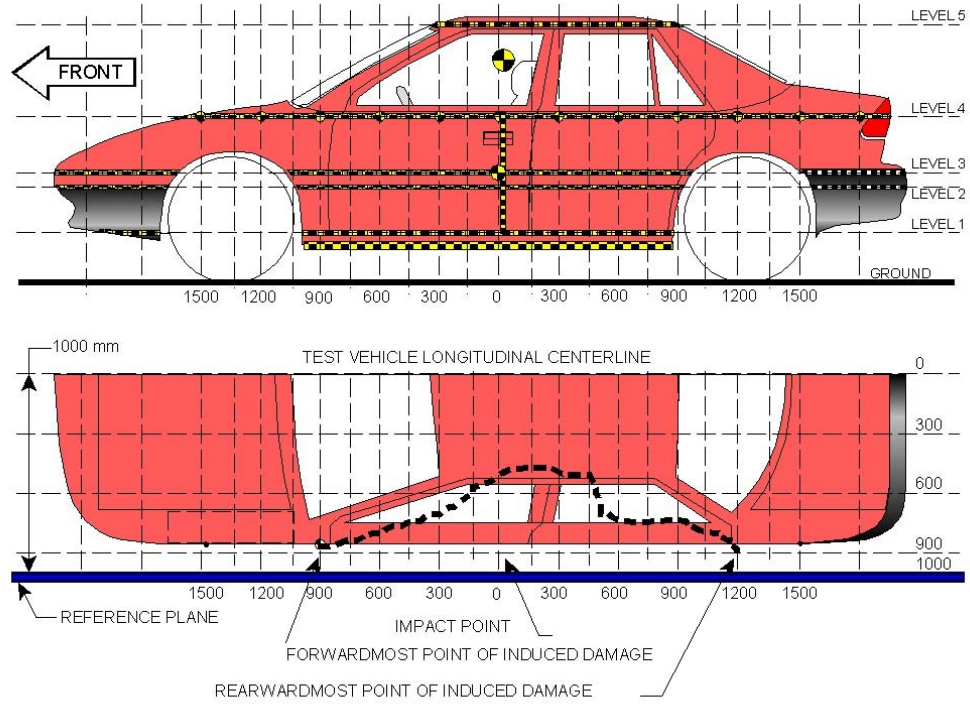
IMPACT SPEED			
Measured Parameter	**Units**	**Tolerance**	**Value**
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		1041
Actual Impact Point (Aft of Front Axle)	mm		1047
Horizontal Offset (+ forward / - rear)	mm	+/- 38 of Intended Impact Point	-6
Angle Between Vehicle's Longitudinal Centerline and Line of Forward Motion	degrees	75 +/- 3	75
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	32.0
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.0

DATA SHEET NUMBER NO. 9
VEHICLE PROFILE MEASURMENTS



VEHICLE PRE- AND POST- TEST MEASUREMENT INFORMATION				
Code	**Description**	**Pre Test**	**Post Test**	**Difference**
		mm	**mm**	**mm**
A	Wheelbase	2750	2611	-139
B	Front Axle to FSOV	645	683	38
C	Rear Axle to RSOV	795	793	-2
D	Total Length at Centerline	4863	4820	-43
E	Front Bumper Thickness	311	311	0
F	Front Bumper Bottom to Ground	353	417	64
G	Sill Height at Front Wheel Well	221	248	27
H	Sill Height at Front Door Leading Edge	322	332	10
I	Sill Height at B-Pillar	327	350	23
J1	Sill Height at Rear Wheel Well	326	366	40
J2	Pinch Weld Height at Rear Wheel Well	297	364	67
K	Sill Height Aft of Rear Wheel Well	317	354	37
L	Rear Bumper Thickness	148	148	0
M	Rear Bumper Bottom to Ground	487	514	27
N	Sill Height to Window Bottom Sill	809	808	-1
O	Front Door Leading Edge to Impact C/L	1045	755	-300
P	Rear Door Trailing Edge to Impact C/L	1072	1071	-1
Q	Front Window Opening	474	440	-34
R	Right Side Length	4190	4208	18
S	Left Side Length	4190	4087	-3
T	Vehicle Width at B-Pillar	1972	1829	-57

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH MEASUREMENTS



NOTE: All measurements are in millimeters (mm)

MAXIMUM EXTERIOR CRUSH MEASUREMENTS				
Level	**Measurement Description**	**Height Above Ground (mm)**	**Maximum Exterior Static Crush (mm)**	**Distance from Impact (mm)**
1	Sill Top	340	434	150
2	Occupant Hip Point	718	505	150
3	Mid-Door	760	507	150
4	Window Sill	1104	452	150
5	Window Top	1635	286	0

Note: All vehicle measurements taken at the vertical impact reference line.

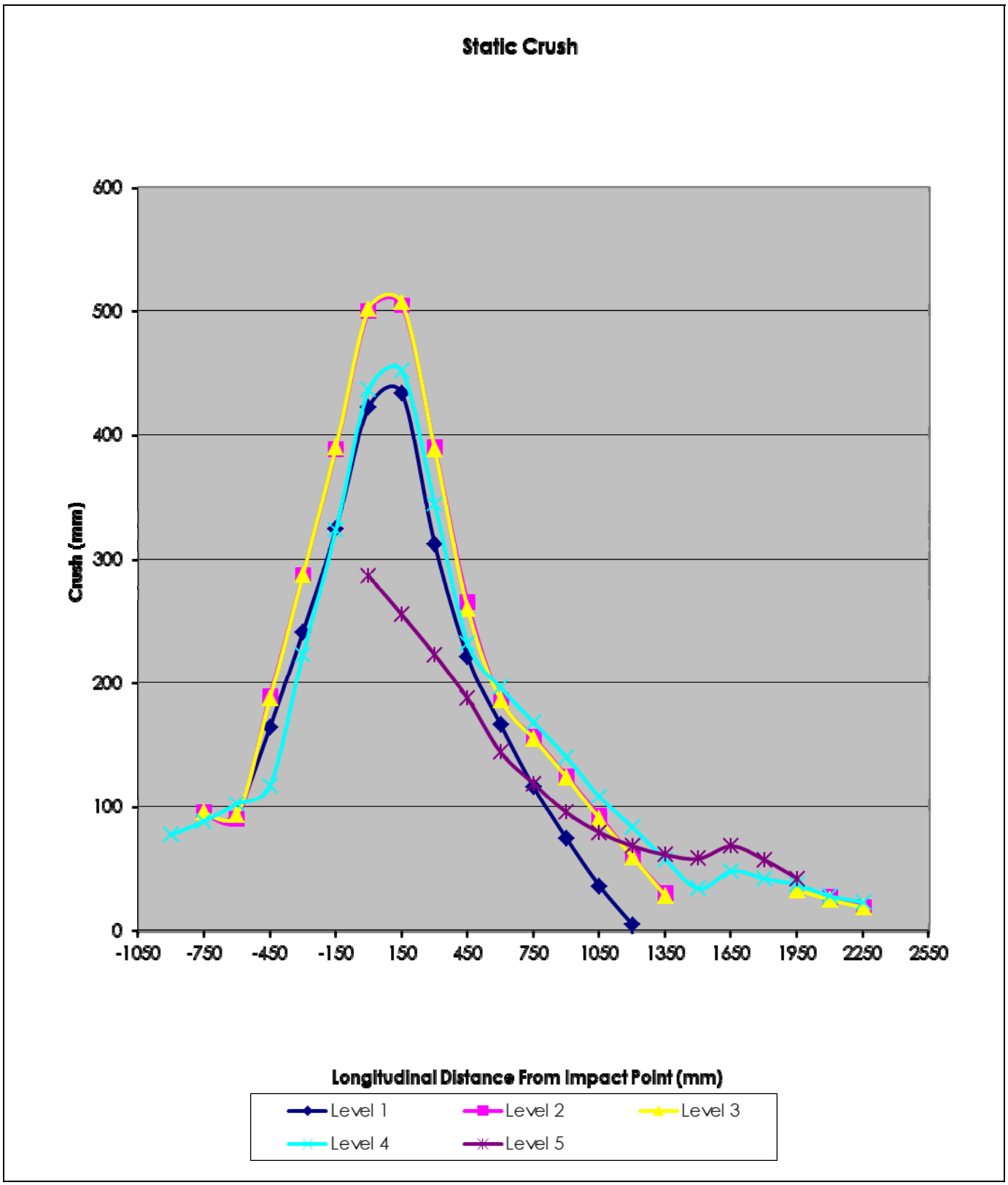
DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH MEASUREMENTS
(CONTINUED)

Note: All dimensions are in millimeters with a tolerance of ±3 mm

TEST VEHICLE STATIC CRUSH

Level		1			2			3			4			5		
		255			533			620			905			1427		
		Pre	Post	Crush	Pre	Post	Crush	Pre	Post	Crush	Pre	Post	Crush	Pre	Post	Crush
DISTANCE IN MILLIMETERS (mm) FROM IMPACT POINT	-1650															
	-1500															
	-1350				172	230	58	177	242	65	374	420	46			
	-1200										352	411	59			
	-1050										333	402	69			
	-900										318	395	77			
	-750				167	262	95	170	265	95	305	393	88			
	-600	196	286	90	182	272	90	185	278	93	295	397	102			
	-450	244	408	164	185	374	189	185	372	187	275	392	117			
	-300	247	488	241	182	469	287	182	469	287	270	493	223			
	-150	245	569	324	179	568	389	178	568	390	262	585	323			
	0	245	668	423	177	677	500	176	678	502	254	691	437	485	771	286
	150	243	677	434	176	681	505	176	683	507	250	702	452	480	735	255
	300	241	553	312	176	566	390	175	564	389	245	589	344	475	698	223
	450	240	461	221	175	440	265	175	435	260	242	474	232	477	664	187
	600	237	403	166	177	363	186	176	362	186	240	436	196	477	621	144
	750	236	352	116	178	334	156	177	332	155	240	408	168	479	598	119
	900	235	309	74	180	305	125	180	304	124	240	380	140	482	577	95
	1050	237	273	36	183	275	92	182	272	90	242	350	108	484	563	79
	1200	235	240	5	183	242	59	183	242	59	244	327	83	489	557	68
	1350				168	198	30	169	197	28	247	304	57	496	557	61
	1500										251	285	34	502	560	58
	1650										255	303	48	511	579	68
	1800										261	303	42	520	577	57
	1950							162	195	33	272	309	37	535	577	42
	2100				182	209	27	186	211	25	283	311	28			
	2250				225	244	19	228	247	19	300	323	23			
	2400															

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

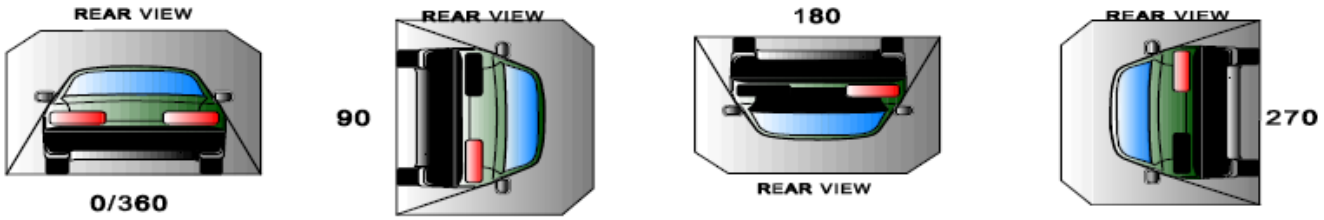


DATA SHEET NO. 11
FMVSS 301 STATIC ROLLOVER RESULTS

Temperature at Time of Impact: 20° C Test Time: 2:23 pm

STODDARD SOLVENT SPILLAGE MEASUREMENTS				
Period	**Description**	**Maximum Allowable Spillage**	**Spillage**	
			Amount	**Location**
A	From Impact Until Vehicle Motion Ceases	1 oz	0	N/a
B	5 Minutes After Vehicle Motion Ceases	5 oz	0	N/a
C	Next 25 Minutes	1 oz/minute	0	N/a
D				

FMVSS 301 STATIC ROLLOVER DATA



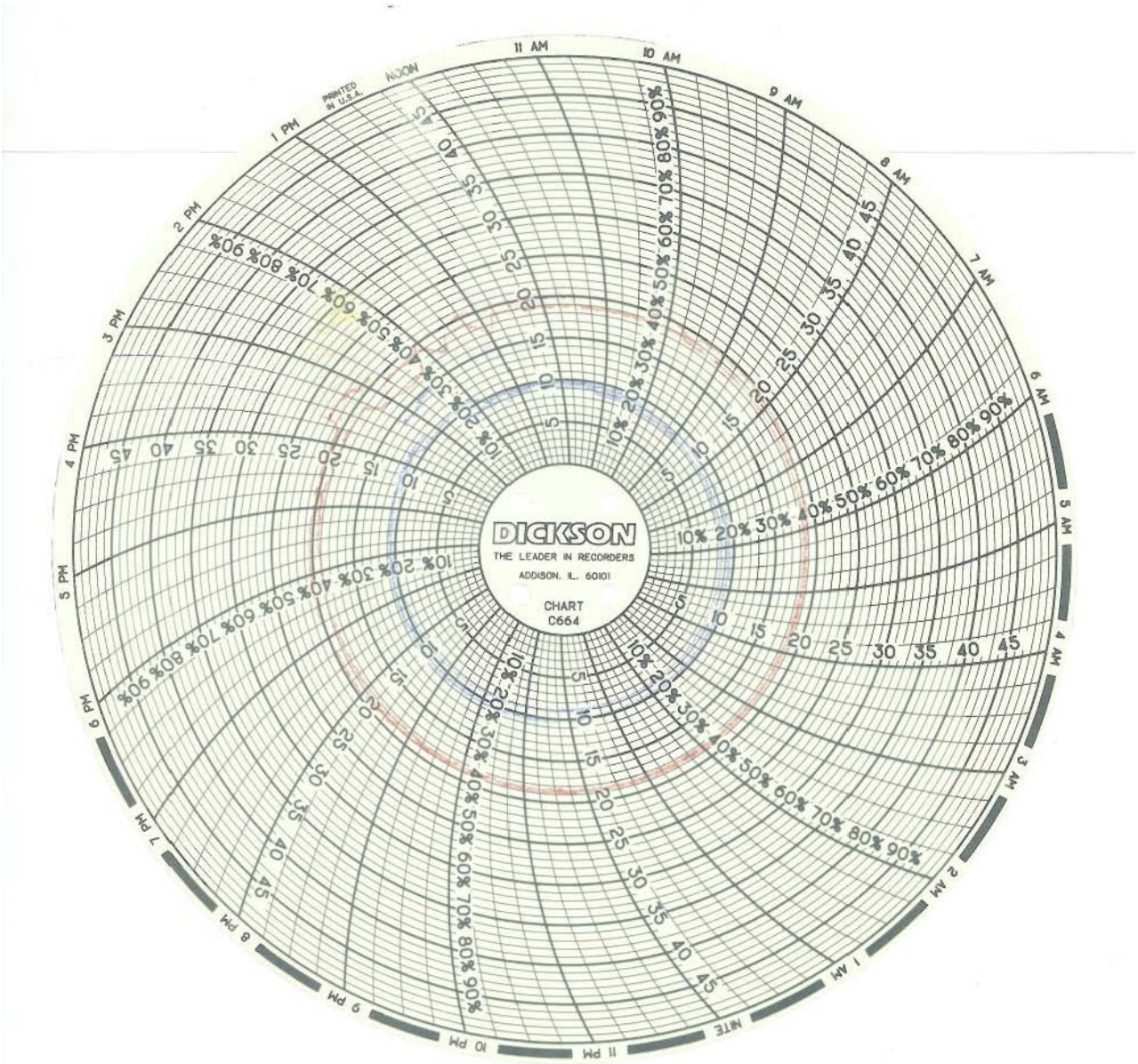
ROLLOVER SOLVENT COLLECTION TIME TABLE			
Test phase	**Rotation Time (sec.)**	**Hold Time (sec.)**	**Total Time (sec.)**
0° to 90°	64	300	364
90° to 180°	64	300	364
180° to 270°	66	300	366
270° to 360°	64	300	364

DATA SHEET NO. 11
FMVSS 301 STATIC ROLLOVER RESULTS (CONTINUED)

FMVSS NO. 301 ROLLOVER SPILLAGE TABLE				
	First Five Minutes (oz)	Sixth Minute (oz)	Seventh Minute (oz)	Eighth Minute (oz)
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

SPILLAGE LOCATION	
0° to 90°	N/a
90° to 180°	N/a
180° to 270°	N/a
270° to 360°	N/a

DATA SHEET NO. 12
DUMMY/VEHICLE TEMPERATURE STABILIZATION DATA



APPENDIX A
PHOTOGRAPHS

LIST OF PHOTOGRAPHS

LIST OF PHOTOGRAPHS (CONTINUED)

Figure 001: As Delivered Right Front 3-4 View of Test Vehicle

Figure 002: As Delivered Left Rear 3-4 View of Test Vehicle

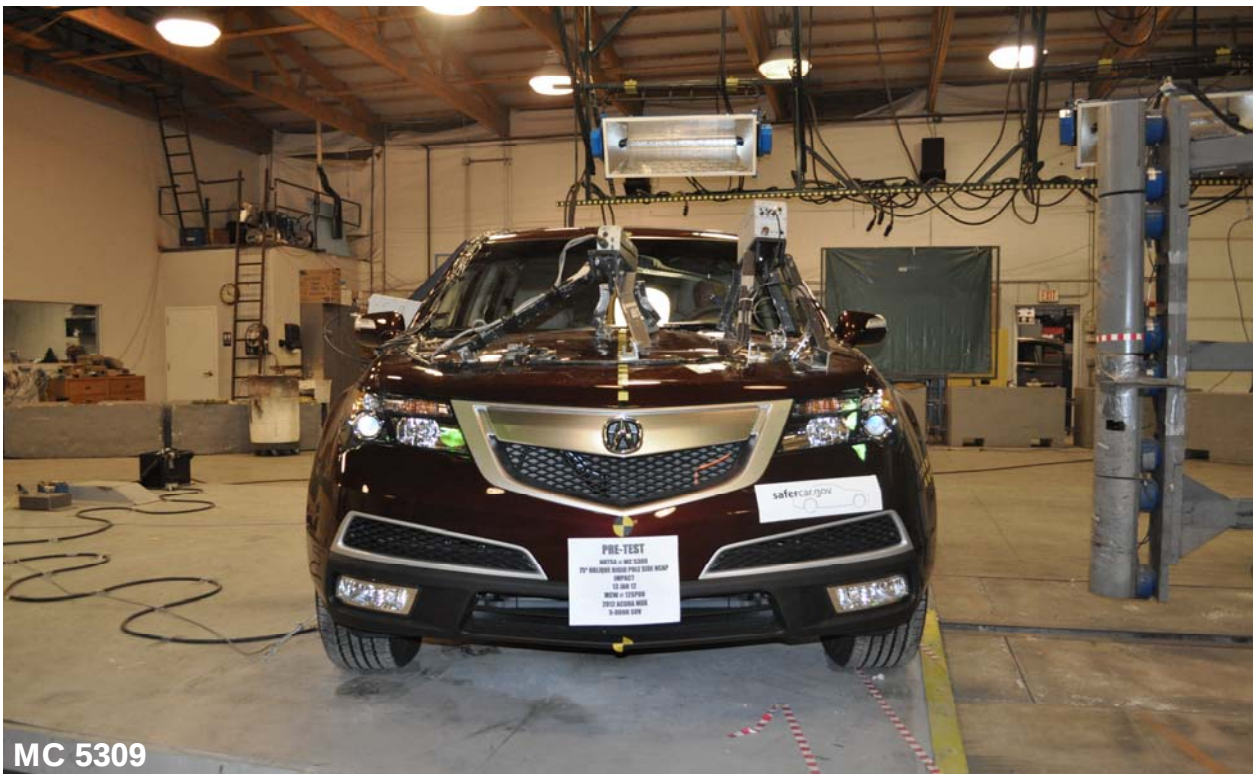


Figure 003: Pre-Test Frontal View of Test Vehicle

Figure 004: Post-Test Frontal View of Test Vehicle

Figure 005: Pre-Test Left Front 3-4 View of Test Vehicle

Figure 006: Post-Test Left Front 3-4 View of Test Vehicle

Figure 007: Pre-Test Left Side View of Test Vehicle

Figure 008: Post-Test Left Side View of Test Vehicle

Figure 009: Pre-Test Left Rear 3-4 View of Test Vehicle

Figure 010: Post-Test Left Rear 3-4 View of Test Vehicle

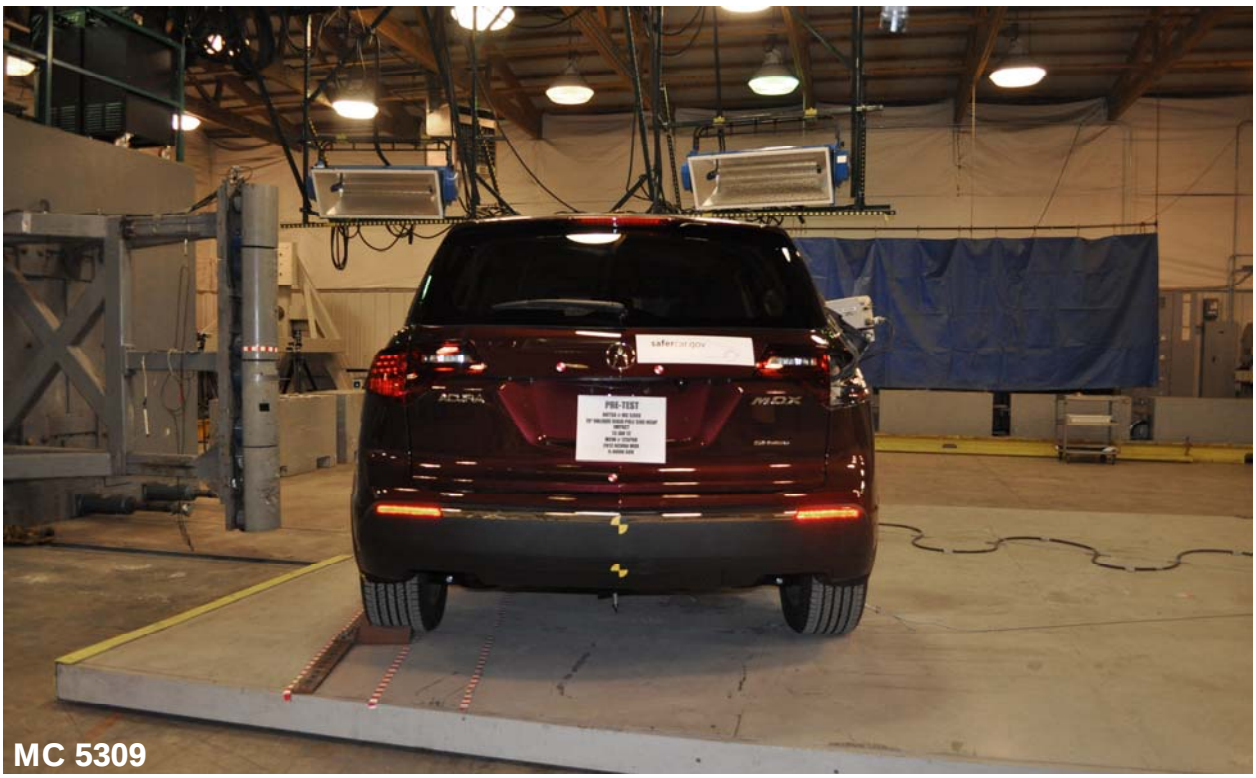


Figure 011: Pre-test rear view of test vehicle

Figure 012: Post-Test Rear View of Test Vehicle

Figure 013: Pre-Test Right Side View of Test Vehicle

Figure 014: Post-Test Right Side View of Test Vehicle

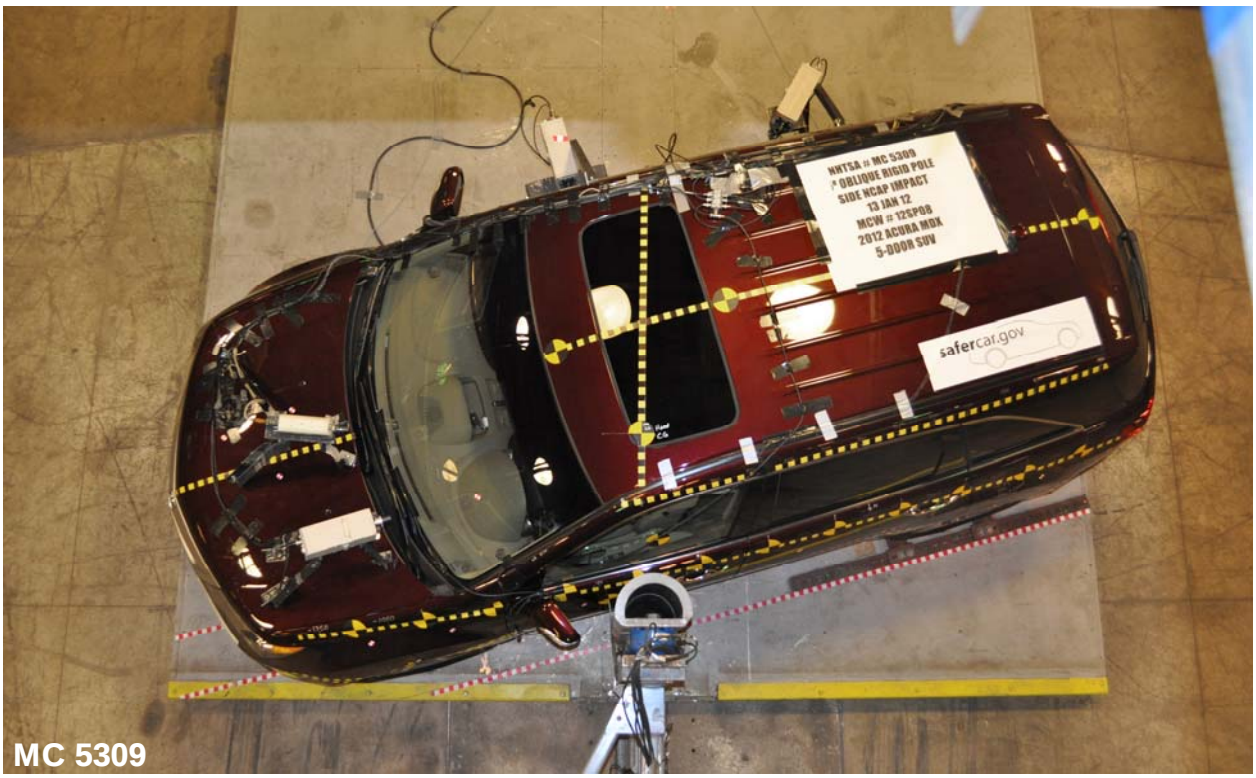


Figure 015: Pre-Test Overhead View of Test Area

Figure 016: Post-Test Overhead View of Test Area

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

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

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

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

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

Figure 022: Post-Test Front Close-Up View of Dummy

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

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

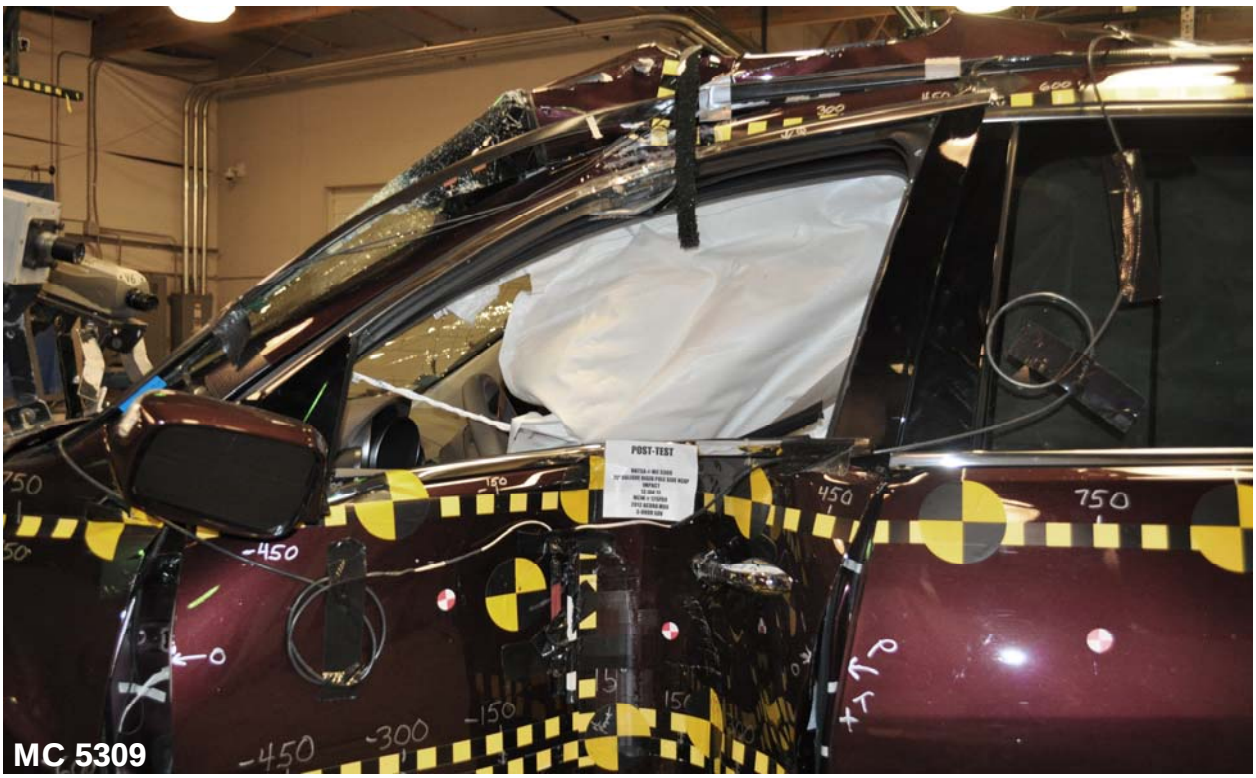


Figure 025: Post-Test Left Side View of Dummy Shoulder and Door Top View

Figure 026: Pre-Test Frontal View of Seat Back Prior to Dummy Positioning

Figure 027: Pre-Test Frontal Close-Up View of Dummy Head and Shoulders in Relation to Head Restraint

Figure 028: Pre-Test Frontal View of Seat Pan Prior to Dummy Positioning

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

Figure 030: Pre-Test Left Side View of Dummy's Neck Showing Position of Adjustable Neck Bracket

Figure 031: Pre-Test Left Side View of Dummy's Head Showing Dummy's Head is Level

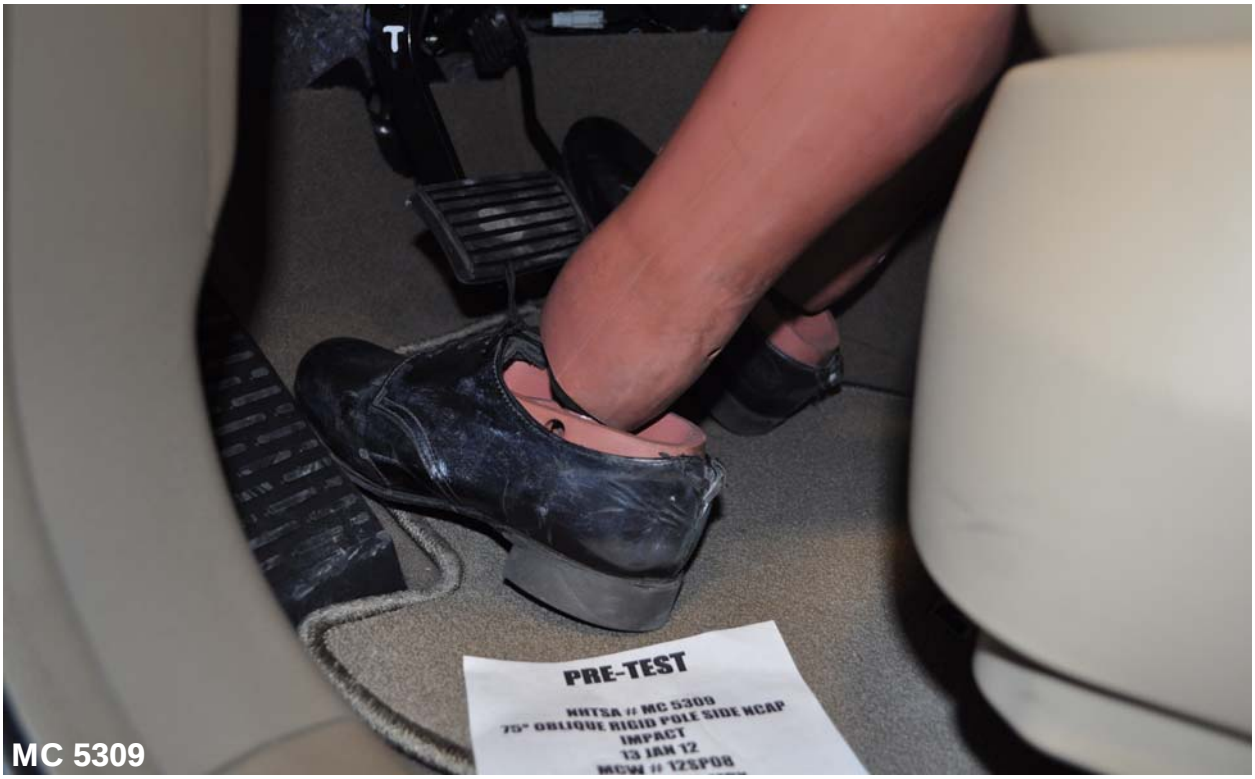


Figure 032: Pre-Test Placement of Dummy's Feet

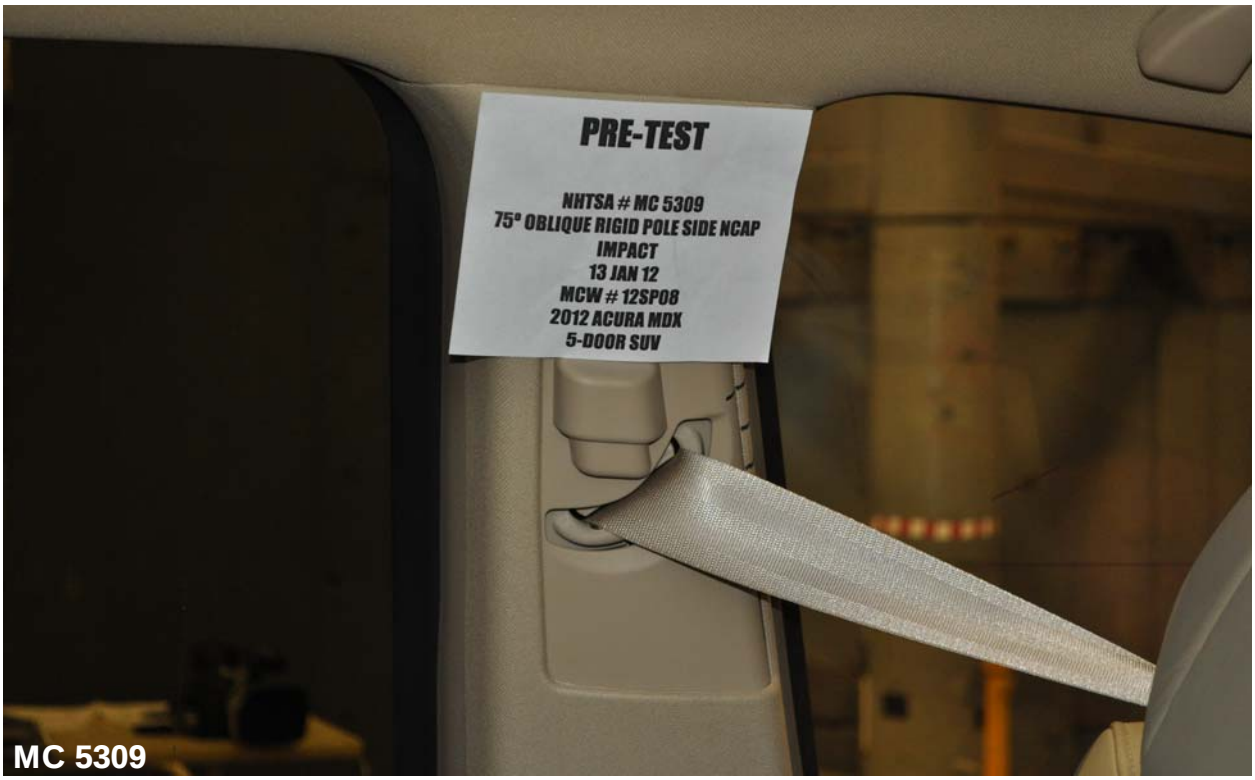


Figure 033: Pre-Test View of Belt Anchorage for Dummy

Figure 034: Pre-Test Left Side View of Steering Wheel

Figure 035: Pre-Test View of Disengaged Parking Brake

Figure 036: Pre-Test View of Parking Brake

Figure 037: Pre-Test Close-Up Left Side View of Drive Seat Track

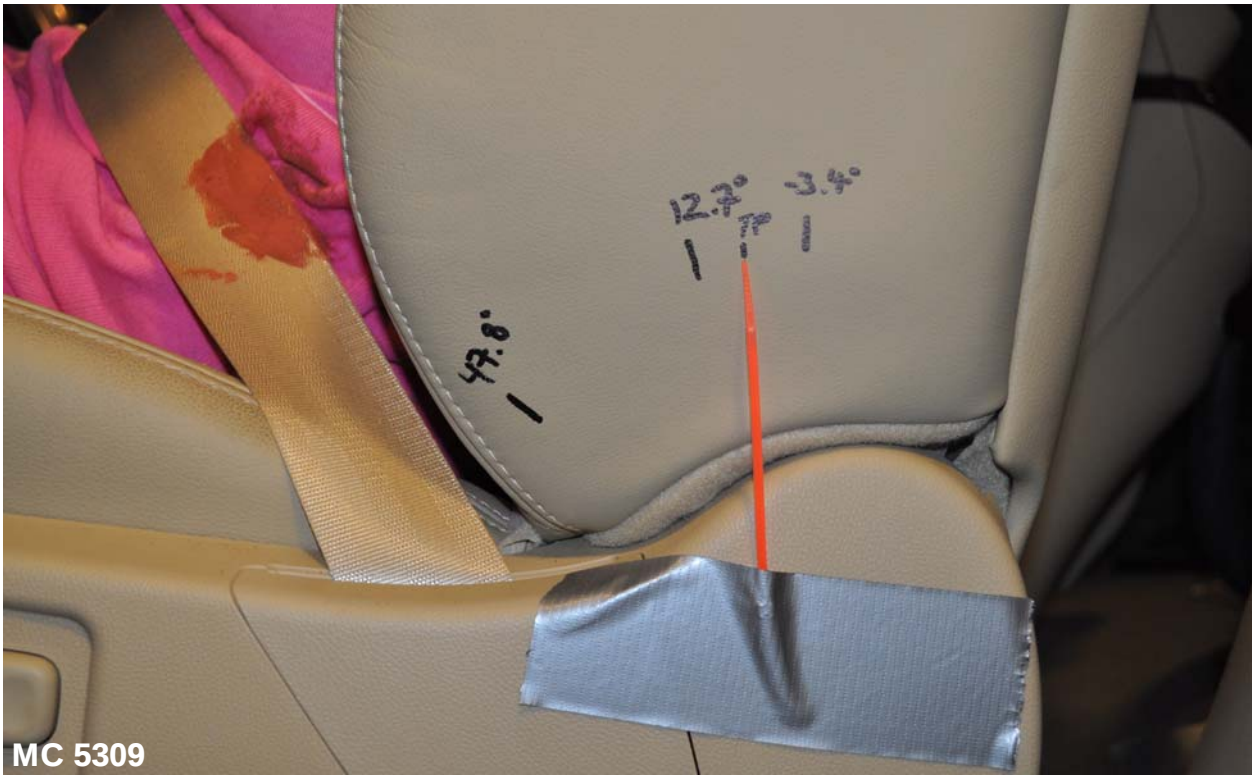


Figure 038: Pre-Test Close-Up Left Side View of Driver Seat Back

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

Figure 040: Pre-Test Dummy and Door Clearance View

Figure 041: Post-Test Dummy and Door Clearance View

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

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

Figure 044: Pre-Test Inner Door Panel View

Figure 045: Post-Test Inner Door Panel View Showing Dummy Contact Locations

Figure 046 Post-Test Dummy Close-Up Head Contact with Vehicle Interior View - N/a

Figure 047: Post-Test Dummy Close-Up Head Contact with Side Air bag View

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

Figure 049: Post-Test Dummy Close-Up Torso Contact with Side Air bag View

Figure 050: Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View - N/a

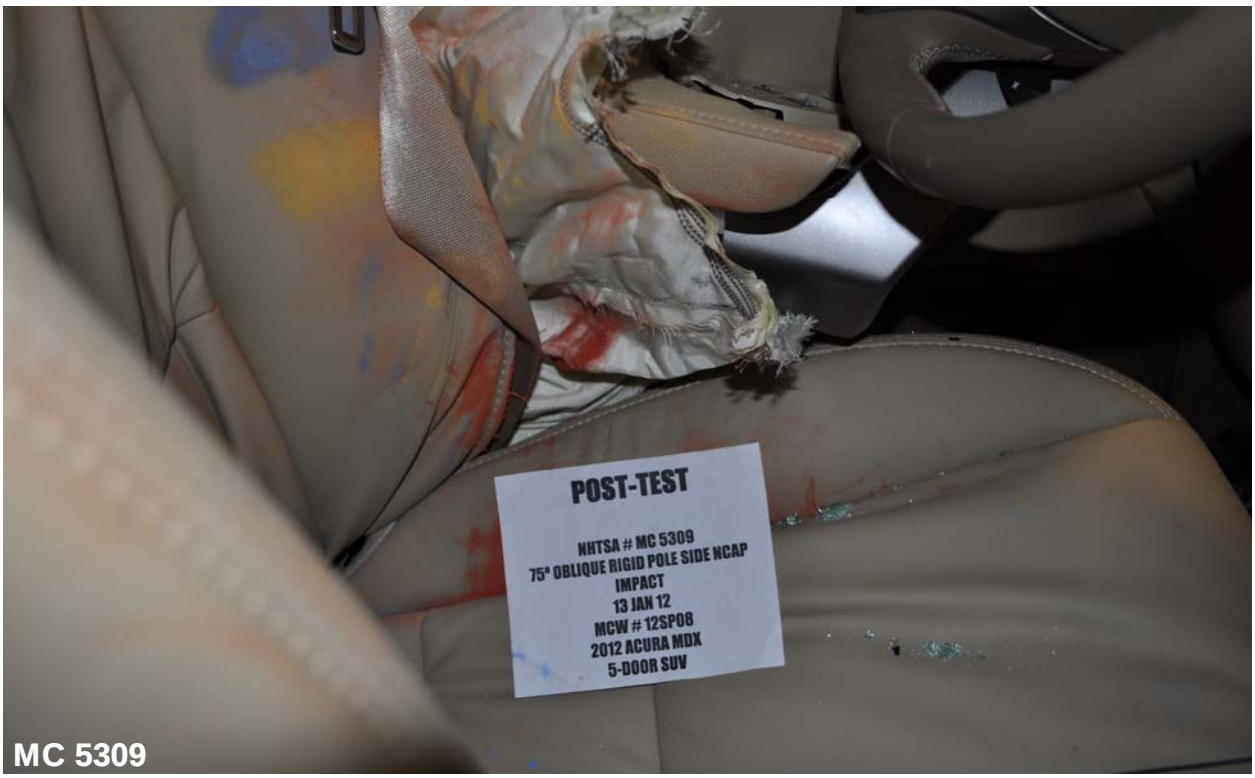


Figure 051: Post-Test Dummy Close-Up Pelvis Contact with Side Air bag View

Figure 052: Pre-Test View of Fuel Filler Cap or Fuel Filler Neck

Figure 053: Post-Test View of Fuel Filler Cap or Fuel Filler Neck

Figure 054: Close-Up View of Vehicle's Certification Label

Figure 055: Close-Up View of Vehicle's Tire Information Placard or Label

Figure 056: Pre-Test Pole Barrier Front View

Figure 057: Post-Test Pole Barrier Front View

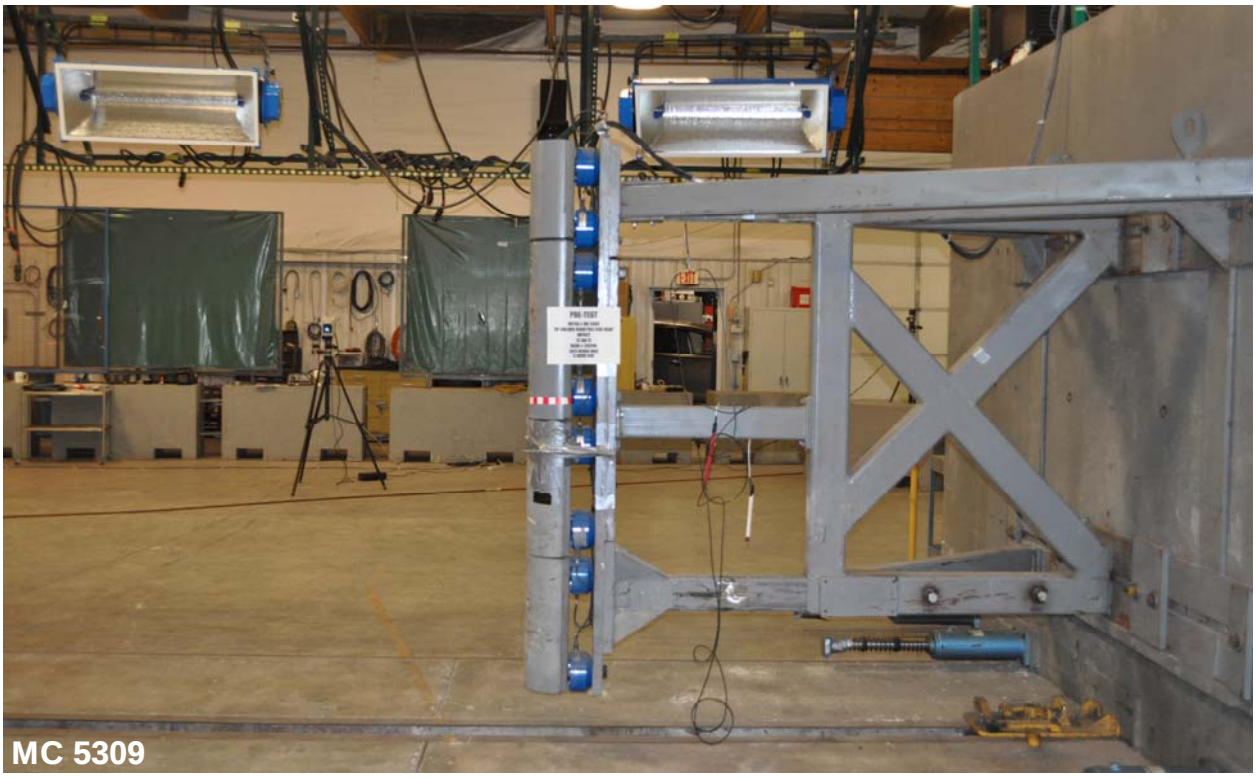


Figure 058: Pre-Test Pole Barrier Side View

Figure 059: Post-Test Pole Barrier Side View

Figure 060: Pre-Test Ballast View

Figure 061: Post-Test Primary and Redundant Speed Trap Read-Out

Figure 062: FMVSS No. 301 Static Rollover 0 Degrees

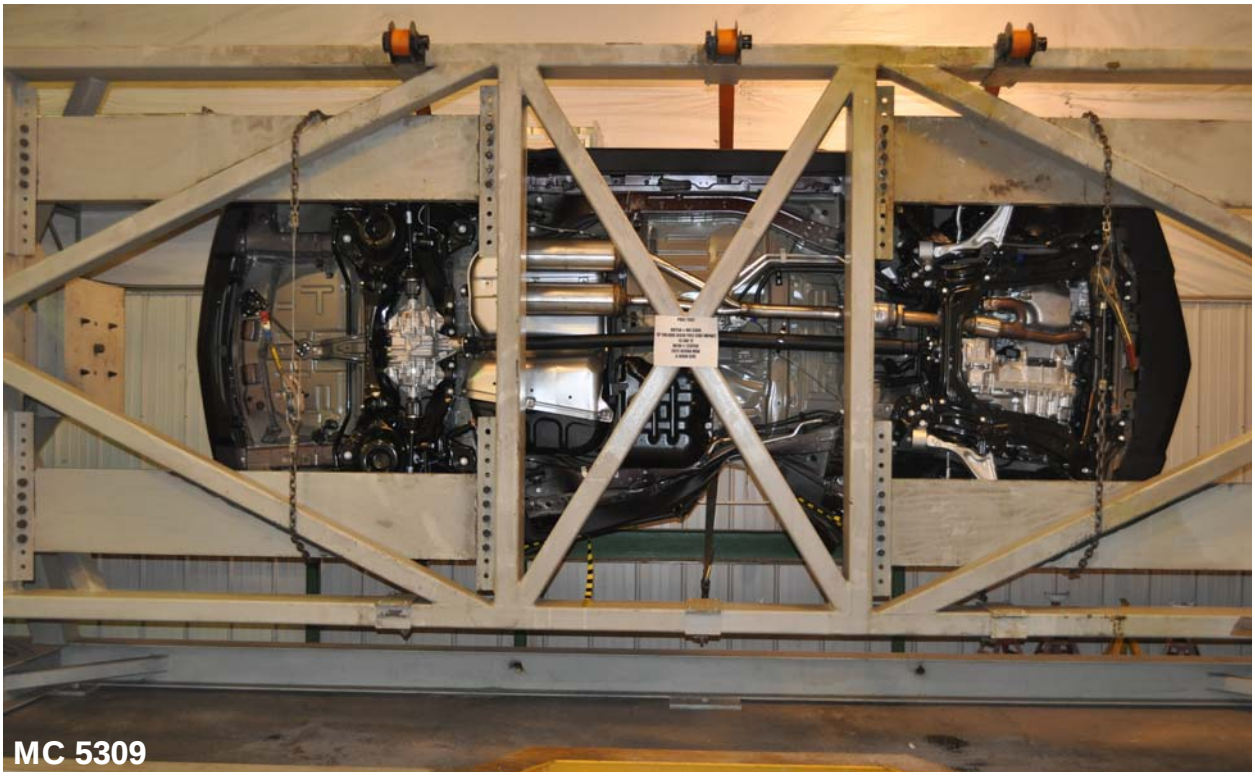


Figure 063: FMVSS No. 301 Static Rollover 90 Degrees

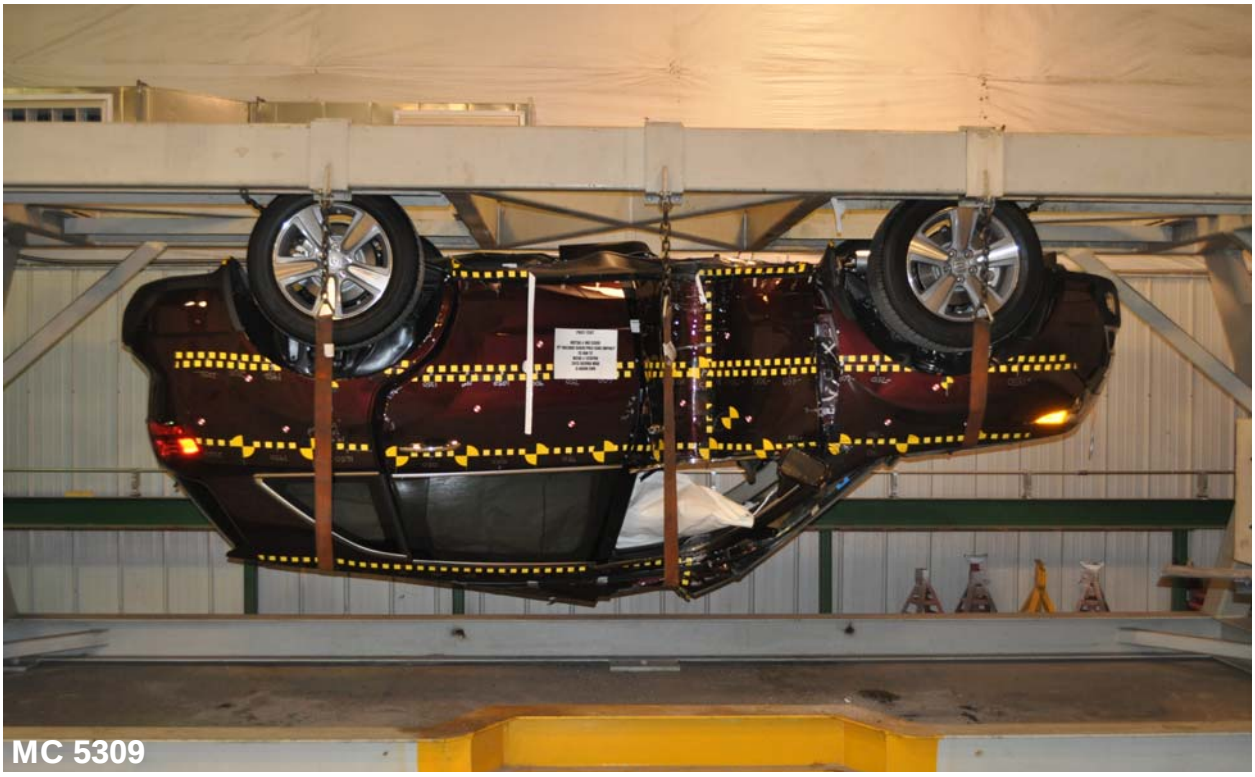


Figure 064: FMVSS No. 301 Static Rollover 180 Degrees

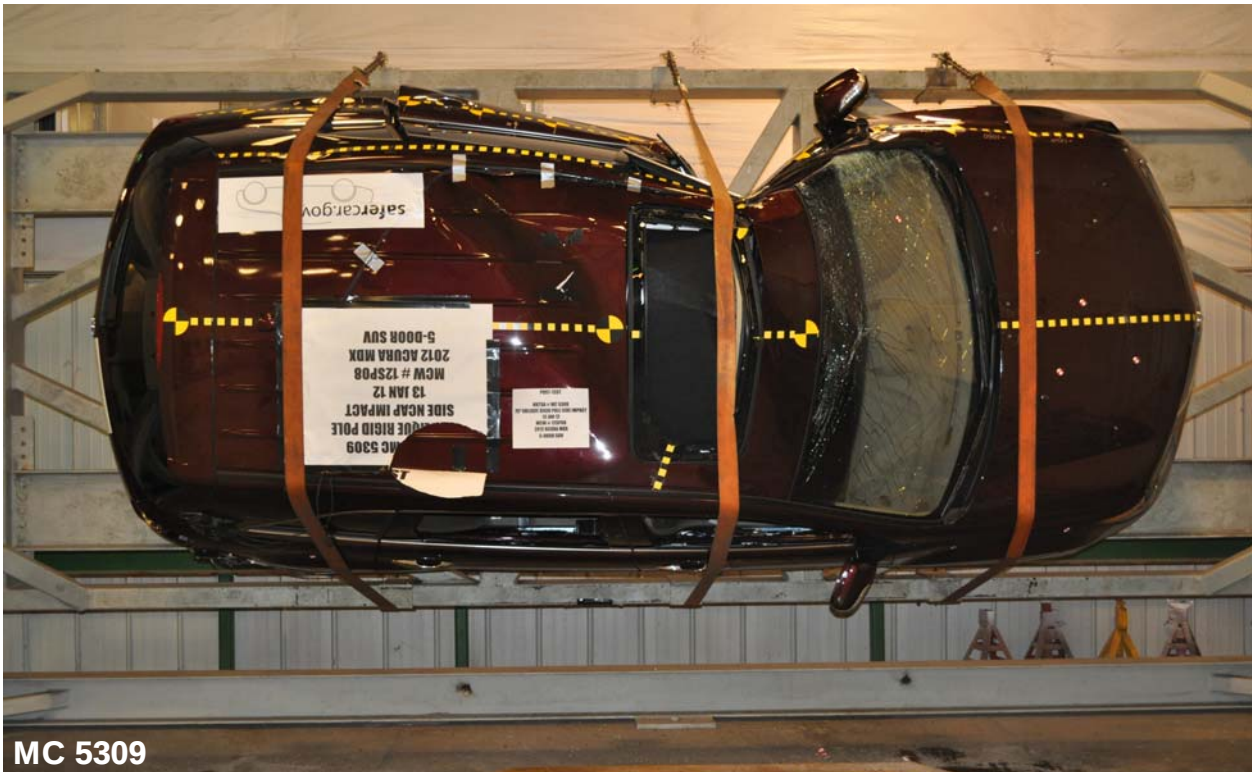
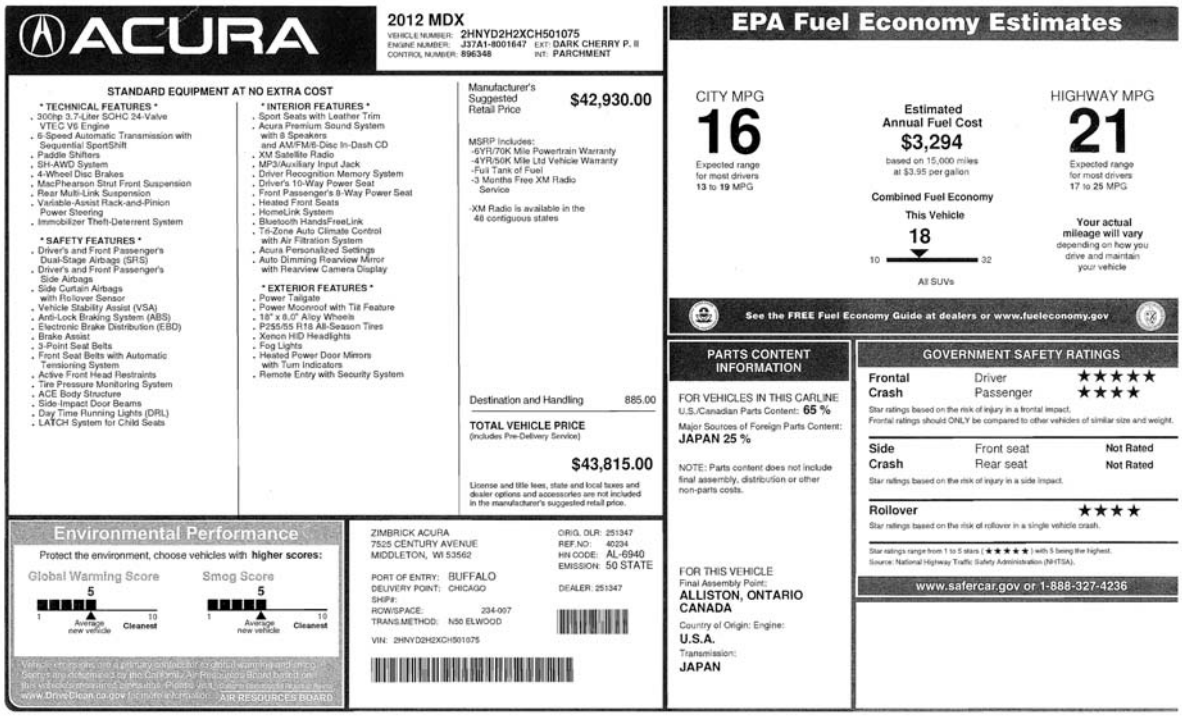


Figure 065: FMVSS No. 301 Static Rollover 270 Degrees

Figure 066: No. 066 FMVSS No. 301 Static Rollover 360 Degrees

Figure 067: Impact Event



MC 5309

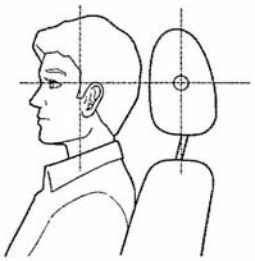
Figure 068: Monroney Label

Seats

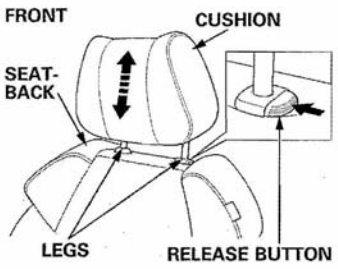
Head Restraints

See page 15 for important safety information and a warning about improperly positioning head restraints.

Your vehicle is equipped with head restraints in all seating positions to help protect you and your passengers from the likelihood of whiplash and other injuries.



They are most effective when you adjust them so the center of the back of the occupant's head rests against the center of the restraint.



Adjusting the Head Restraint

The head restraints adjust for height. You need both hands to adjust the restraint. Do not attempt to adjust it while driving. To raise it, pull upward. To lower the restraint, push the release button sideways, and push the restraint down.

MC 5309

Figure 069: Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

APPENDIX B
ATD AND VEHICLE RESPONSE DATA

The following plots are provided in the test report

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

Additional Driver Dummy Instrumentation Data

Driver Head Acceleration (X) Redundant
Driver Head Acceleration (Y) Redundant
Driver Head Acceleration (Z) Redundant
Driver Upper Thorax Rib Deflection (Y)
Driver Middle Thorax Rib Deflection (Y)
Driver Lower Thorax Rib Deflection (Y)
Driver Upper abdomen rib deflection (Y)
Driver Lower abdomen rib deflection (Y)
Driver Shoulder Contact Switch
Driver Pelvis Contact Switch

Vehicle Instrumentation Data

Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
Vehicle Center of Gravity Angular Rate About X (Roll)
Vehicle Center of Gravity Angular Rate About Y (Pitch)
Vehicle Center of Gravity Angular Rate About Z (Yaw)
Left Floor Sill Acceleration (Y)
Left A-Pillar Sill Acceleration (Y)
Left Lower A-Pillar Acceleration (Y)
Left Middle A-Pillar Acceleration (Y)
Left B-Pillar Sill Acceleration (Y)
Left Lower B-Pillar Acceleration (Y)
Left Middle B-Pillar Acceleration (Y)
Driver Seat Track at Dummy H-Point Acceleration (Y)
Engine Top Acceleration (X)
Engine Top Acceleration (Y)
Firewall Center Acceleration (Y)
Right Roof at Vertical Impact Reference Line Acceleration (Y)
Right Sill at Vertical Impact Reference Line Acceleration (Y)
Rear Floorpan Behind Rear Axle at Centerline Acceleration (X)
Rear Floorpan Behind Rear Axle at Centerline Acceleration (Y)

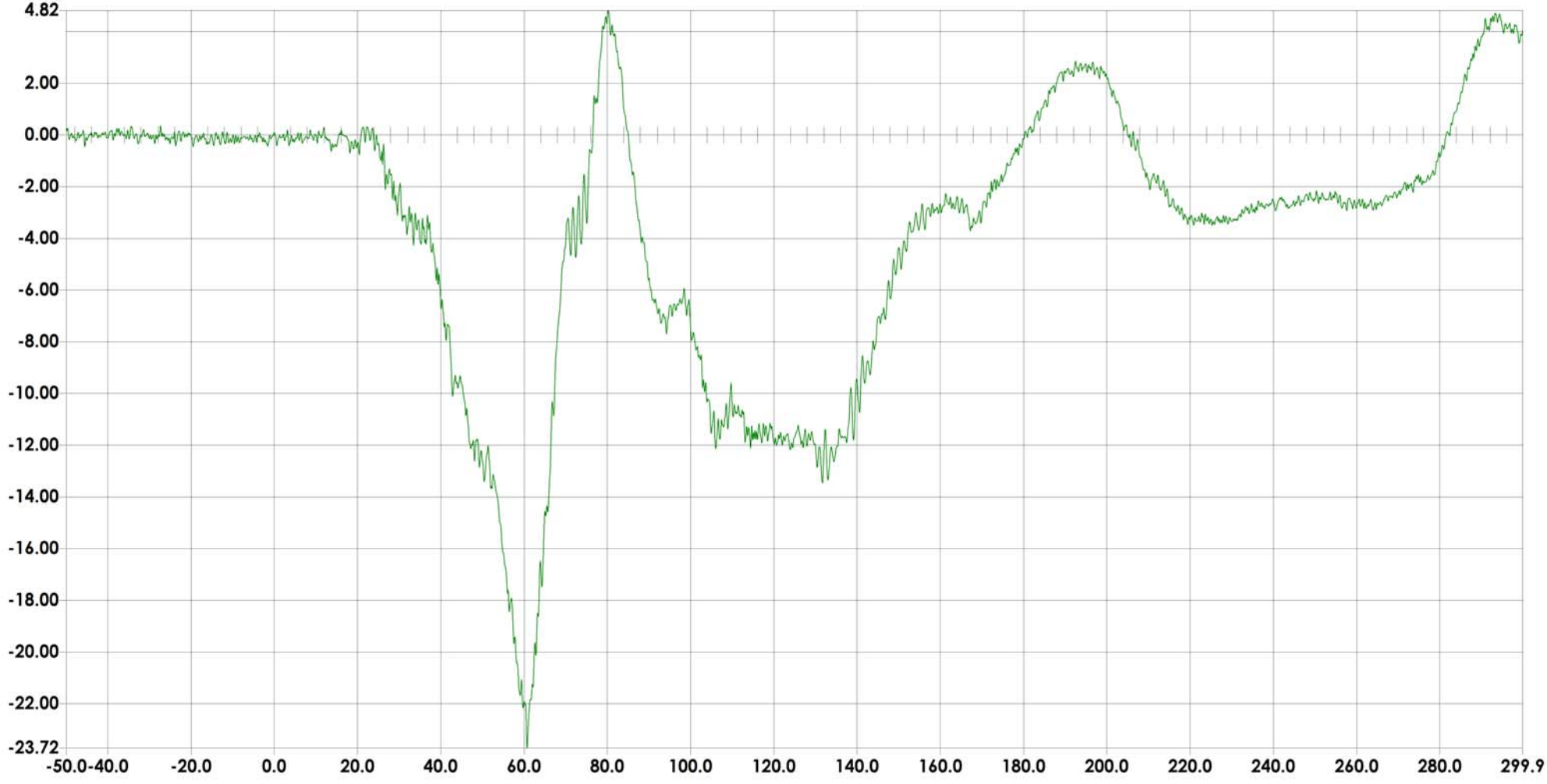
Pole Instrumentation Data

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

Test ID	**MC 5309**	**Filter**	**CFC1000**		
Date	01-13-2012	Sampling Rate (Hz)	12500	Sensor Location	HDCG
Description	MC 5309_2012 Acura MDX 5-Door SUV_SINCAP	Number of Points	4375	Sensor Info	ENDEVCO 7264-2000TZ
		Pretrigger Points	625	Serial Number	J43444

MEDICAL COLLEGE OF WISCONSIN

G'S Head Acceleration (X) Primary vs. Time



Max	4.82	G'S	at	80.24	msec
Min	-23.72	G'S	at	60.72	msec

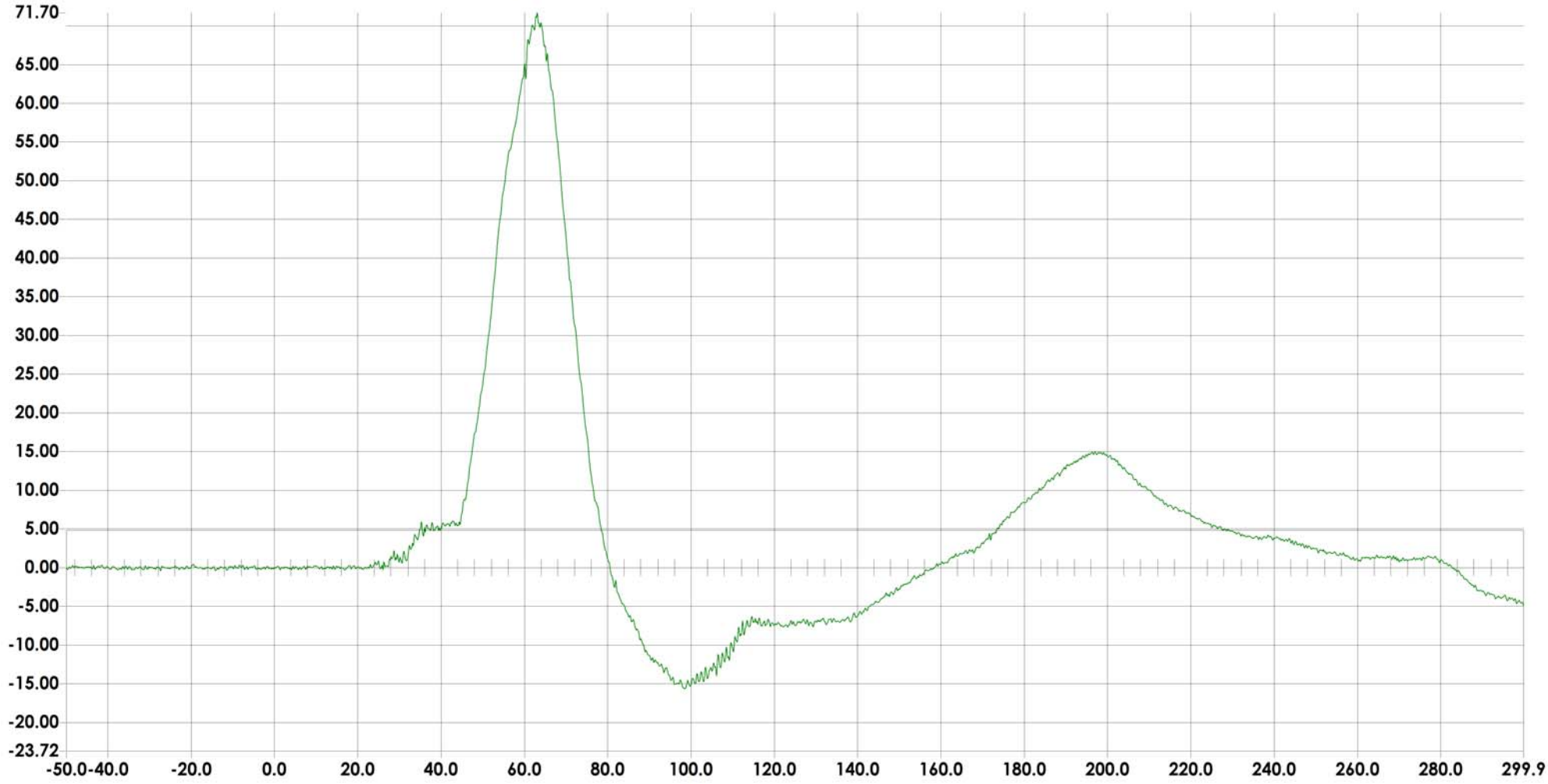
MC 5309 Plot 001

Neuroscience Research Labs
5000 West National Ave
Research 151
Milwaukee, WI 53295

Test ID	**MC 5309**	**Filter**	**CFC1000**		
Date	01-13-2012	Sampling Rate (Hz)	12500	Sensor Location	HDCG
Description	MC 5309_2012 Acura MDX 5-Door SUV_SINCAP	Number of Points	4375	Sensor Info	ENDEVCO 7264-2000
		Pretrigger Points	625	Serial Number	J43739

MEDICAL COLLEGE OF WISCONSIN

Head Acceleration (Y) Primary vs. Time



Max	71.70	G'S	at	63.04	msec
Min	-15.66	G'S	at	98.32	msec

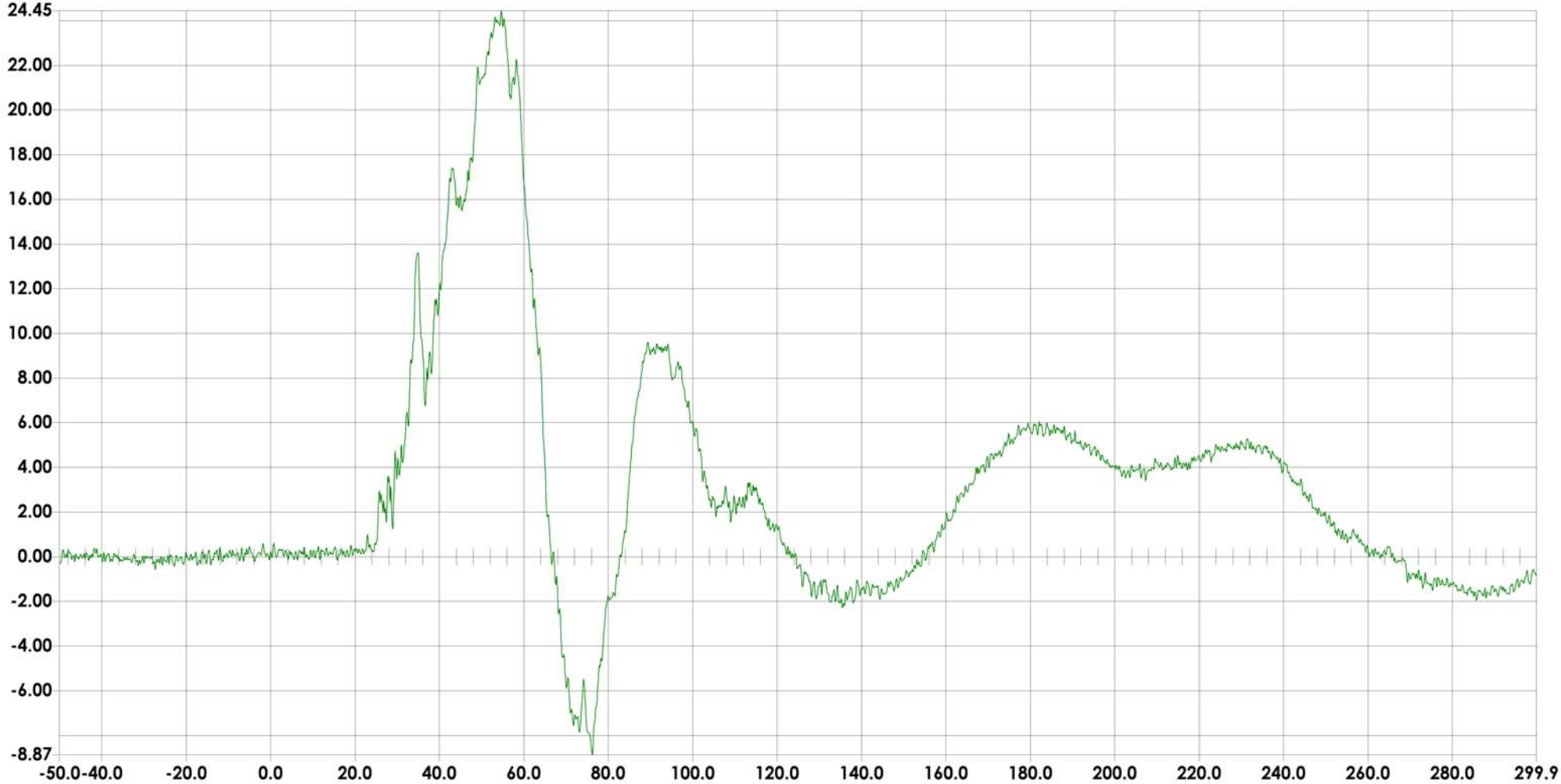
MC 5309 Plot 002

Neuroscience Research Labs
5000 West National Ave
Research 151
Milwaukee, WI 53295

Test ID	**MC 5309**	**Filter**	**CFC1000**		
Date	01-13-2012	Sampling Rate (Hz)	12500	Sensor Location	HDCG
Description	MC 5309_2012 Acura MDX 5-Door SUV_SINCAP	Number of Points	4375	Sensor Info	ENDEVCO 7264C-2KTZ-2-240
		Pretrigger Points	625	Serial Number	P21673

MEDICAL COLLEGE OF WISCONSIN

Head Acceleration (Z) Primary vs. Time



Max	24.45	G'S	at	54.64	msec
Min	-8.87	G'S	at	76.24	msec

MC 5309 Plot 003

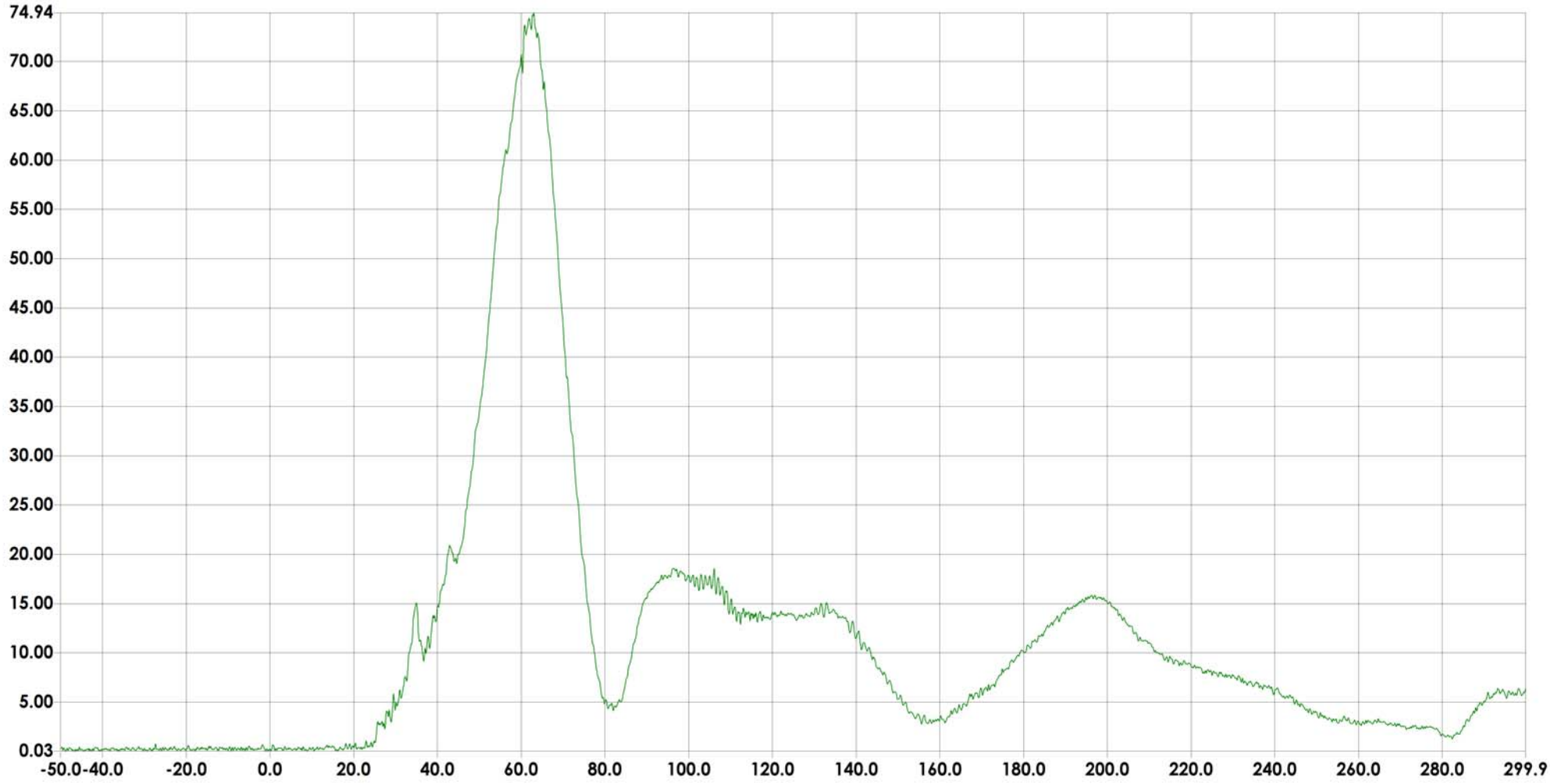
Neuroscience Research Labs
5000 West National Ave
Research 151
Milwaukee, WI 53295

Test ID	MC 5309
Date	01-13-2012
Description	MC 5309_2012 Acura MDX 5-Door SUV_SINCAP

Filter	CFC1000		
Sampling Rate (Hz)	12500	Sensor Location	HDCG
Number of Points	4375	Sensor Info	MCW Multiviewer
Pretrigger Points	625	Serial Number	3.5.2j

MEDICAL COLLEGE OF WISCONSIN

Driver Head Resultant Primary vs. Time



Max	74.94	G'S	at	63.04	msec
Min	0.03	G'S	at	-30.32	msec

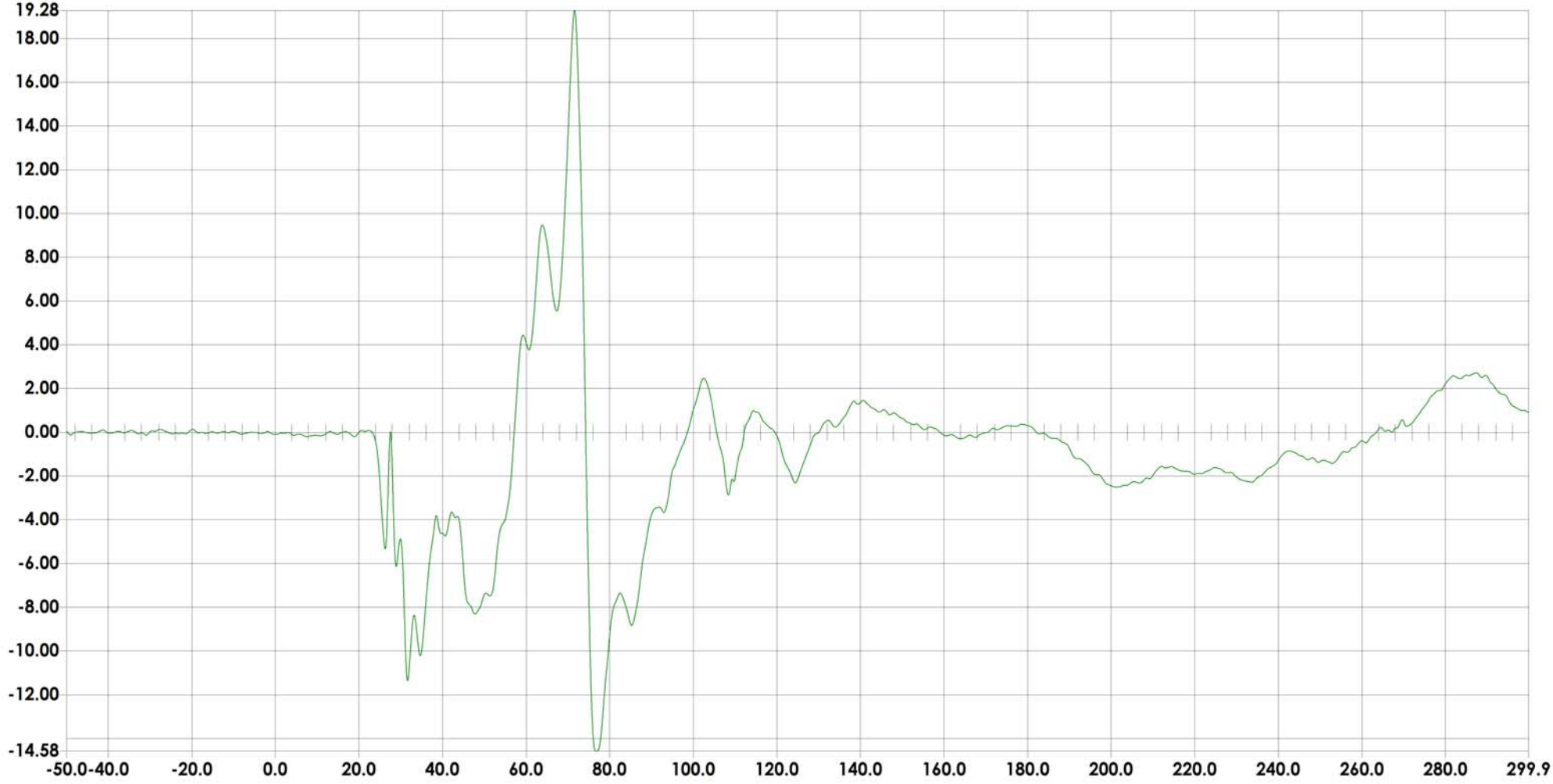
MC 5309 Plot 043

Neuroscience Research Labs
5000 West National Ave
Research 151
Milwaukee, WI 53295

Test ID	**MC 5309**	**Filter**	**CFC180**		
Date	01-13-2012	Sampling Rate (Hz)	12500	Sensor Location	SPNL
Description	MC 5309_2012 Acura MDX 5-Door SUV_SINCAP	Number of Points	4375	Sensor Info	ENDEVCO 7264B-2000T
		Pretrigger Points	625	Serial Number	B13098

MEDICAL COLLEGE OF WISCONSIN

G'S Lower Spine T12 Acceleration (X) vs. Time



Max	19.28	G'S	at	71.60	msec
Min	-14.58	G'S	at	76.64	msec

MC 5309 Plot 012

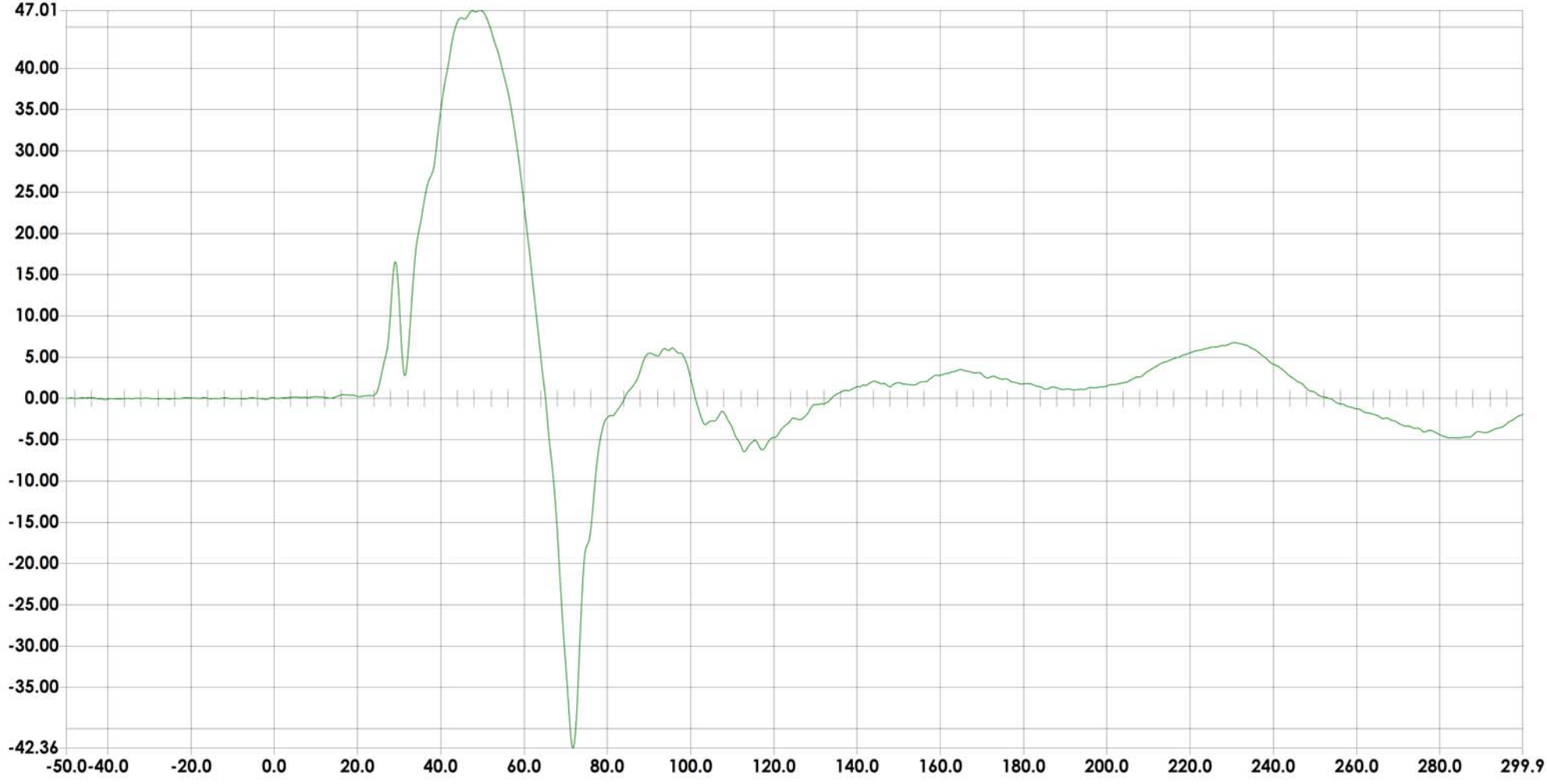
Neuroscience Research Labs
5000 West National Ave
Research 151
Milwaukee, WI 53295

Test ID	MC 5309
Date	01-13-2012
Description	MC 5309_2012 Acura MDX 5-Door SUV_SINCAP

Filter	CFC180		
Sampling Rate (Hz)	12500	Sensor Location	SPNL
Number of Points	4375	Sensor Info	ENDEVCO 7264-2000TZ
Pretrigger Points	625	Serial Number	J22318

MEDICAL COLLEGE OF WISCONSIN

Lower Spine T12 Acceleration (Y) vs. Time



Max	47.01	G'S	at	49.44	msec
Min	-42.36	G'S	at	71.76	msec

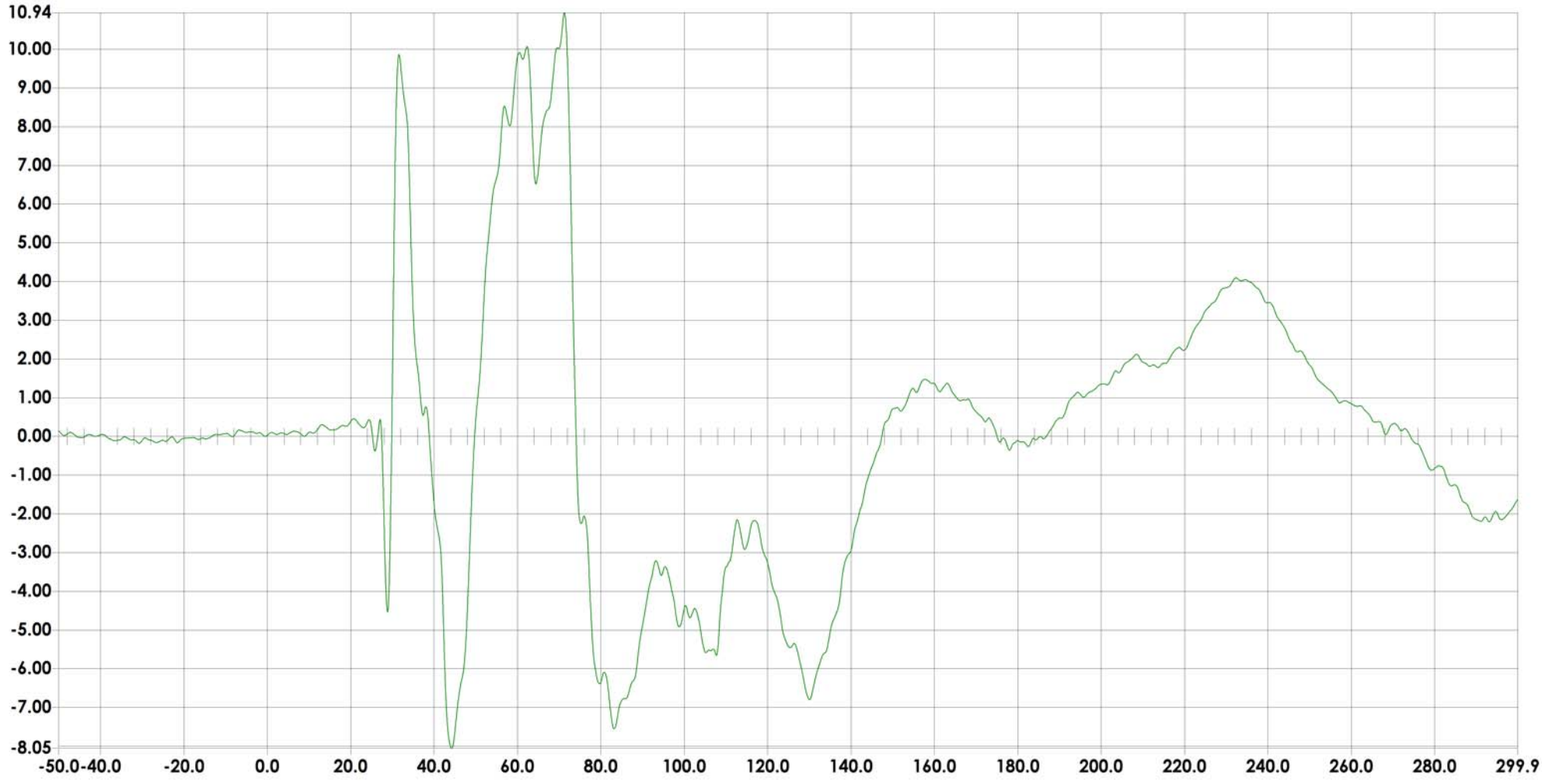
MC 5309 Plot 013

Neuroscience Research Labs
5000 West National Ave
Research 151
Milwaukee, WI 53295

Test ID	**MC 5309**	**Filter**	**CFC180**		
Date	01-13-2012	Sampling Rate (Hz)	12500	Sensor Location	SPNL
Description	MC 5309_2012 Acura MDX 5-Door SUV_SINCAP	Number of Points	4375	Sensor Info	ENDEVCO 7264-2000TZ
		Pretrigger Points	625	Serial Number	J22189

MEDICAL COLLEGE OF WISCONSIN

Lower Spine T12 Acceleration (Z) vs. Time



Max	10.94	G'S	at	71.28	msec
Min	-8.05	G'S	at	44.24	msec

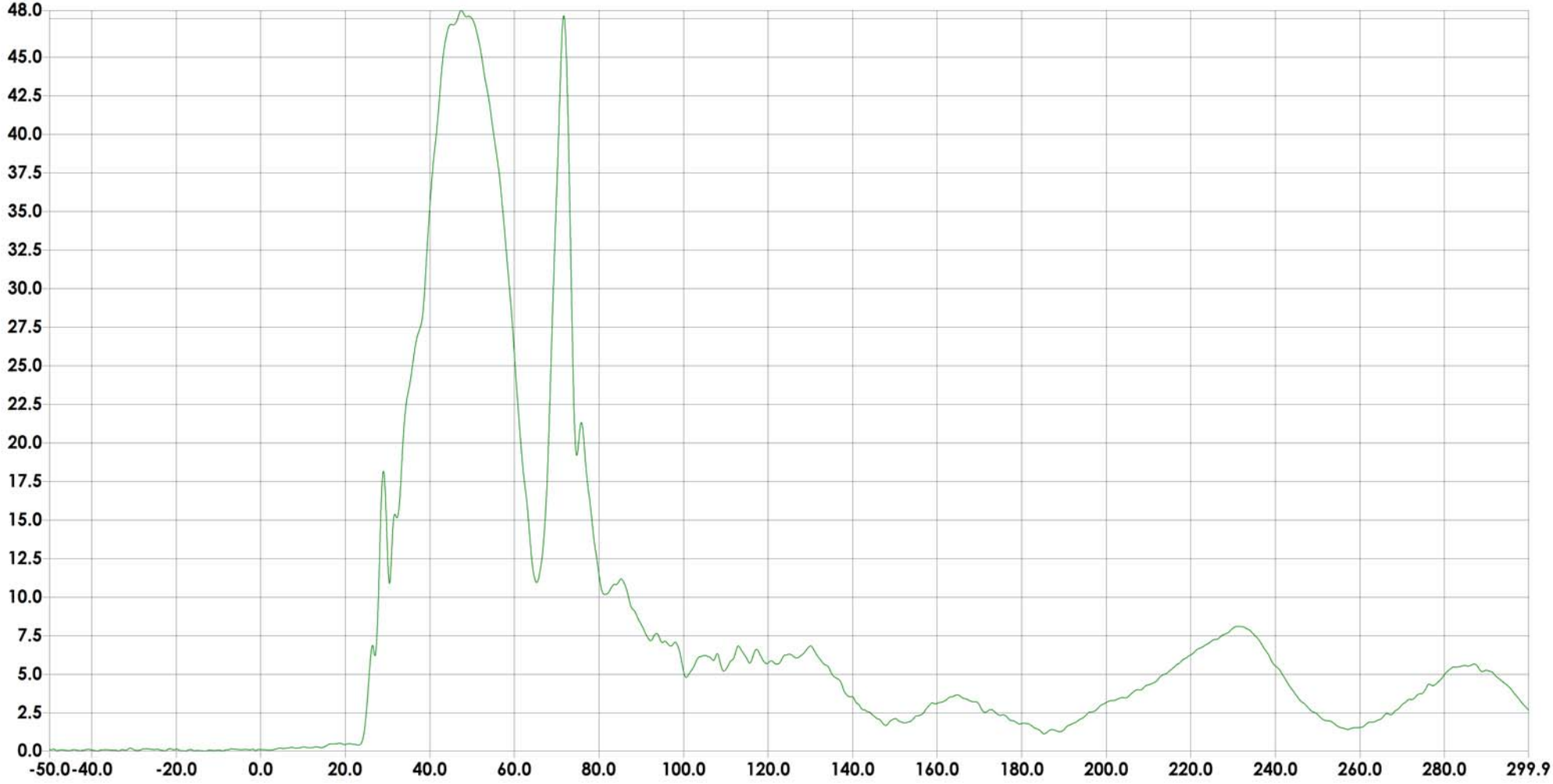
MC 5309 Plot 014

Neuroscience Research Labs
5000 West National Ave
Research 151
Milwaukee, WI 53295

Test ID	**MC 5309**	**Filter**	**CFC180**		
Date	01-13-2012	Sampling Rate (Hz)	12500	Sensor Location	SPNL
Description	MC 5309_2012 Acura MDX 5-Door SUV_SINCAP	Number of Points	4375	Sensor Info	MCW Multiviewer
		Pretrigger Points	625	Serial Number	3.5.2j

MEDICAL COLLEGE OF WISCONSIN

Driver Lower Spine T12 Resultant Acceleration vs. Time



Max	48.03	G'S	at	47.44	msec
Min	0.03	G'S	at	-13.12	msec

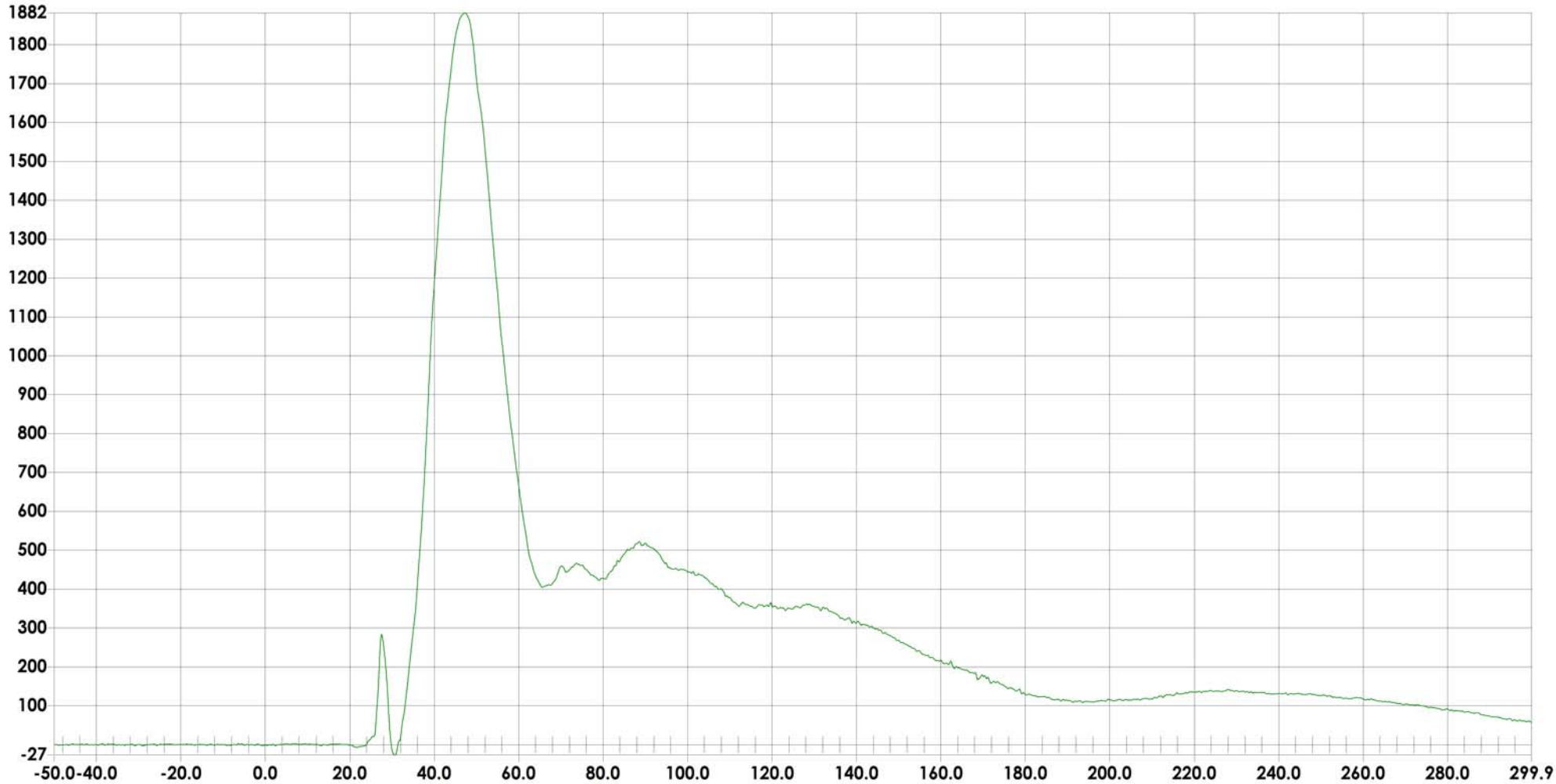
MC 5309 Plot 044

Neuroscience Research Labs
5000 West National Ave
Research 151
Milwaukee, WI 53295

Test ID	**MC 5309**	**Filter**	**CFC600**		
Date	01-13-2012	Sampling Rate (Hz)	12500	Sensor Location	PVIL
Description	MC 5309_2012 Acura MDX 5-Door SUV_SINCAP	Number of Points	4375	Sensor Info	FTSS IF-507
		Pretrigger Points	625	Serial Number	IF-507_115

MEDICAL COLLEGE OF WISCONSIN

Iliac wing Force on Impact Side (Y) vs. Time



Max	1882.18	NWT	at	47.28	msec
Min	-26.72	NWT	at	30.72	msec

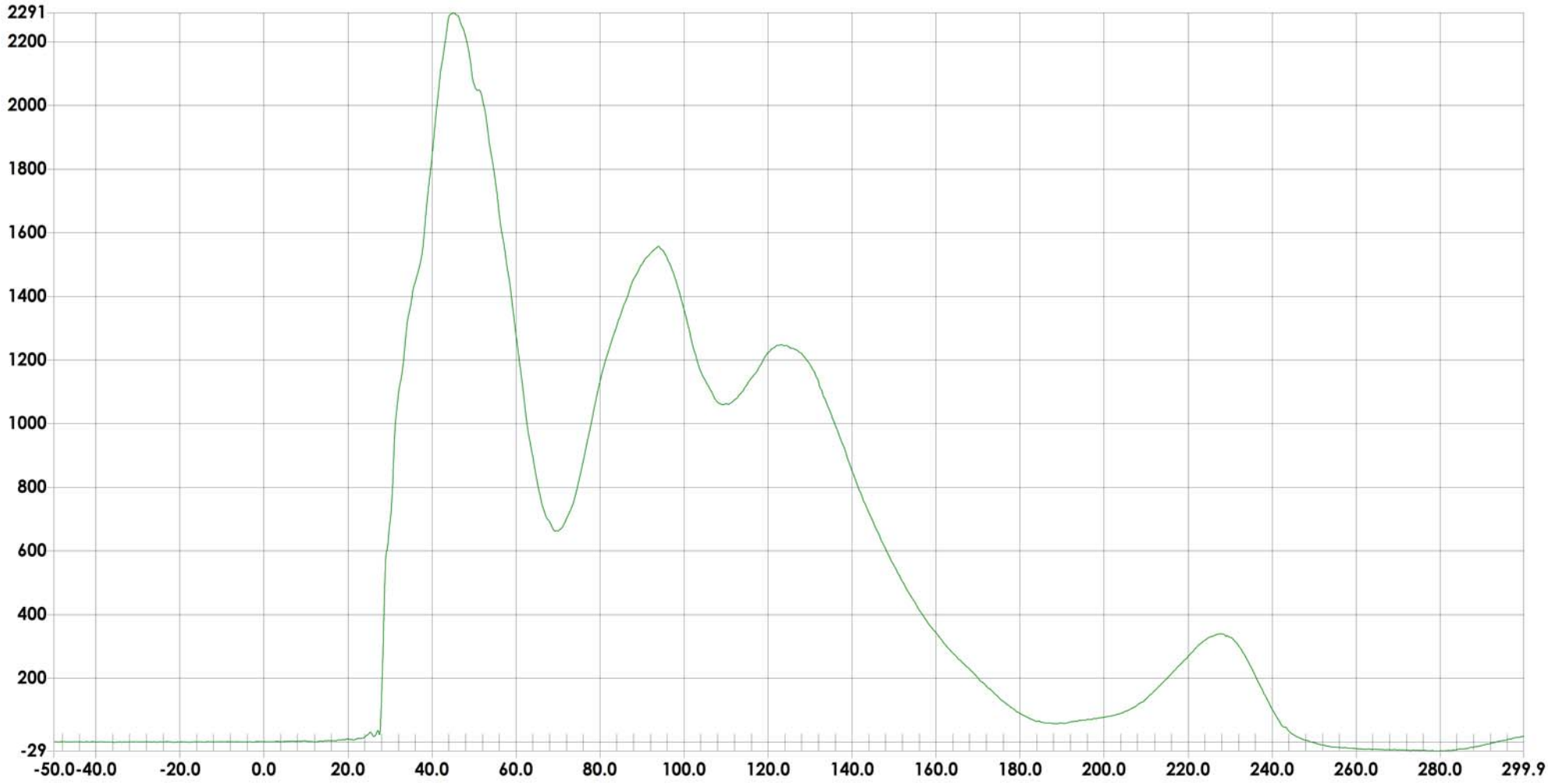
MC 5309 Plot 015

Neuroscience Research Labs
5000 West National Ave
Research 151
Milwaukee, WI 53295

Test ID	**MC 5309**	**Filter**	**CFC600**		
Date	01-13-2012	Sampling Rate (Hz)	12500	Sensor Location	PVHP
Description	MC 5309_2012 Acura MDX 5-Door SUV_SINCAP	Number of Points	4375	Sensor Info	FTSS IF-520
		Pretrigger Points	625	Serial Number	IF-520_114

MEDICAL COLLEGE OF WISCONSIN

Acetabulum Force on Impact Side (Y) vs. Time



Max	2291.23	NWT	at	45.20	msec
Min	-29.32	NWT	at	278.80	msec

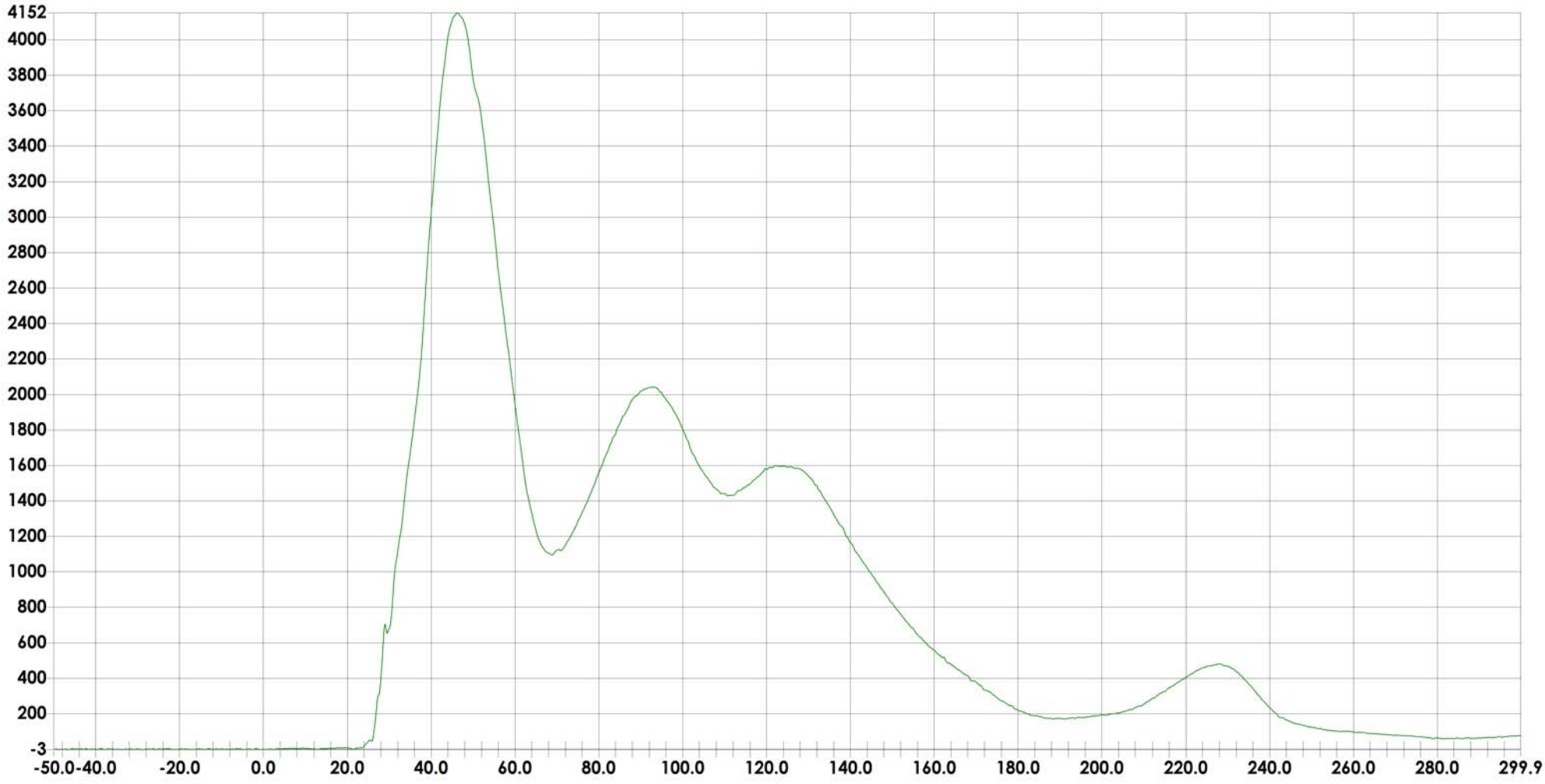
MC 5309 Plot 016

Neuroscience Research Labs
5000 West National Ave
Research 151
Milwaukee, WI 53295

Test ID	**MC 5309**	**Filter**	**CFC600**		
Date	01-13-2012	Sampling Rate (Hz)	12500	Sensor Location	
Description	MC 5309_2012 Acura MDX 5-Door SUV_SINCAP	Number of Points	4375	Sensor Info	MCW Multiviewer
		Pretrigger Points	625	Serial Number	3.5.2j

MEDICAL COLLEGE OF WISCONSIN

Driver Total Pelvis Force on Impact Side (Y) vs. Time



Max	4152.41	NWT	at	46.24	msec
Min	-3.40	NWT	at	-29.20	msec

MC 5309 Plot 045

Neuroscience Research Labs
5000 West National Ave
Research 151
Milwaukee, WI 53295

APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE DATA

TABLE 1
EXTERNAL MEASUREMENTS

SIDIIs Serial Number 301 Test Sequences 4 & 5

TEST PARAMETER	SPEC.	PRE		POST	
Date	-	12/12/11		1/19/12	
Sequential Test Number	-	4		5	
		Result	**Pass/Fail**	**Result**	**Pass/Fail**
Temperature (°C)	**20.6-22.2**	21.3	Pass	20.8	Pass
Relative Humidity (%)	**10-70**	35.9	Pass	21.1	Pass
Sitting Height	**772 – 788**	773	Pass	774	Pass
Shoulder Pivot Height	**437 – 453**	443	Pass	440	Pass
H-Point Height	**79 – 89**	82	Pass	84	Pass
H-Point from Seat Back	**141 – 151**	145	Pass	143	Pass
Shoulder Pivot from Backline	**97 – 107**	100	Pass	103	Pass
Thigh Clearance	**119 – 135**	125	Pass	124	Pass
Head Breadth	**140 – 148**	142	Pass	142	Pass
Head Back from Backline	**40 – 46**	42	Pass	43	Pass
Head Depth	**178 – 188**	183	Pass	183	Pass
Head Circumference	**541 – 551**	542	Pass	542	Pass
Buttock to Knee Length	**514 – 540**	515	Pass	520	Pass
Popliteal Height	**343 – 369**	348	Pass	355	Pass
Knee Pivot to Floor Height	**392 – 409**	398	Pass	401	Pass
Buttock Popliteal Length	**416 – 442**	423	Pass	435	Pass
Chest Depth w/o Jacket	**195 – 211**	200	Pass	209	Pass
Foot Length	**216 – 232**	220	Pass	222	Pass
Hip Breadth	**313 – 323**	319	Pass	320	Pass
Arm Length	**249 – 259**	254	Pass	255	Pass
Knee Joint to Seat Back	**477 – 493**	483	Pass	482	Pass
Shoulder Width	**341 – 357**	346	Pass	344	Pass
Foot Width	**78 – 94**	84	Pass	85	Pass
Chest Circumference w/Jacket	**851 – 881**	856	Pass	855	Pass
Waist Circumference	**761 – 791**	774	Pass	780	Pass

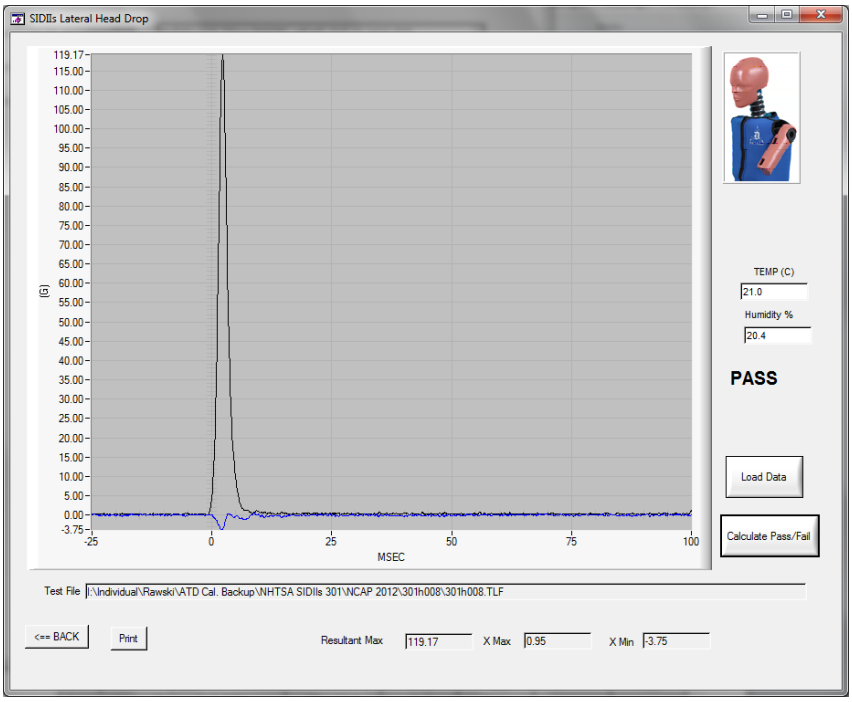
TABLE 2
HEAD DROP TEST

SIDIIs Serial Number 301 Test Sequences 4 & 5

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	12/12/11		1/18/12	
Sequential Test Number		-	4		5	
			Result	**Pass/Fail**	**Result**	**Pass/Fail**
Head Soak Time (min)		**≥ 240**	240	Pass	240	Pass
Temperature(°C) – During Soak	Max	**20.6-22.2**	21.0	Pass	21.6	Pass
	Min		20.8	Pass	21.1	Pass
Humidity(%) – During Soak	Max	**10.0-70.0**	20.4	Pass	25.2	Pass
	Min		15.2	Pass	20.4	Pass
Temperature – During Test (°C)		**20.6-22.2**	21.0	Pass	21.1	Pass
Humidity – During Test (%)		**10-70**	20.4	Pass	20.4	Pass
Peak Head Resultant Acceleration (G)		**115-137**	119.2	Pass	118.9	Pass
Peak Head X Acceleration (G)		**<15**	0.95	Pass	1.02	Pass
Unimodal (Oscillation) (Yes/No)		**<15%**	-	Yes	-	Yes

TABLE 2
HEAD DROP TEST (CONTINUED)

PRE-TEST



POST-TEST

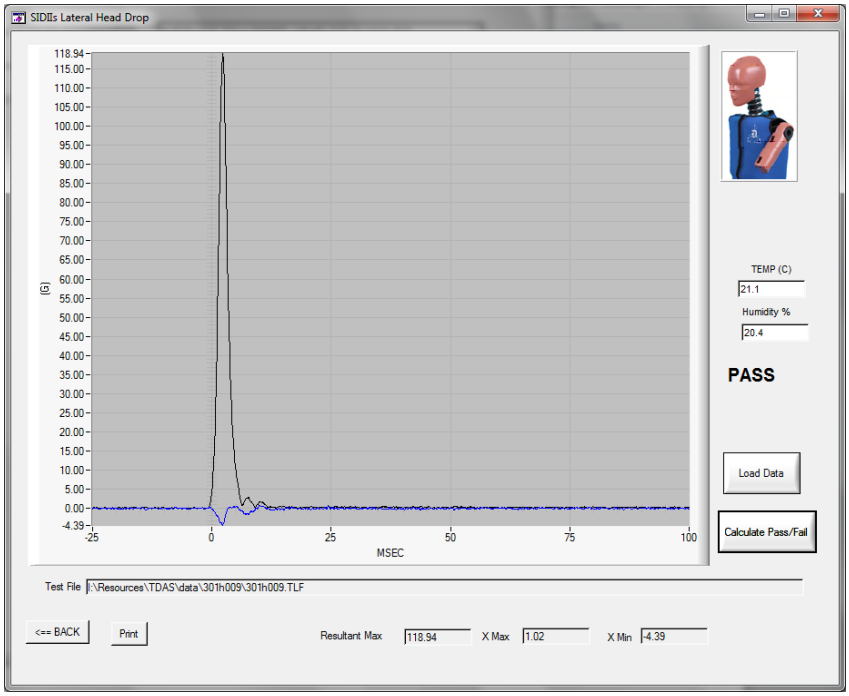


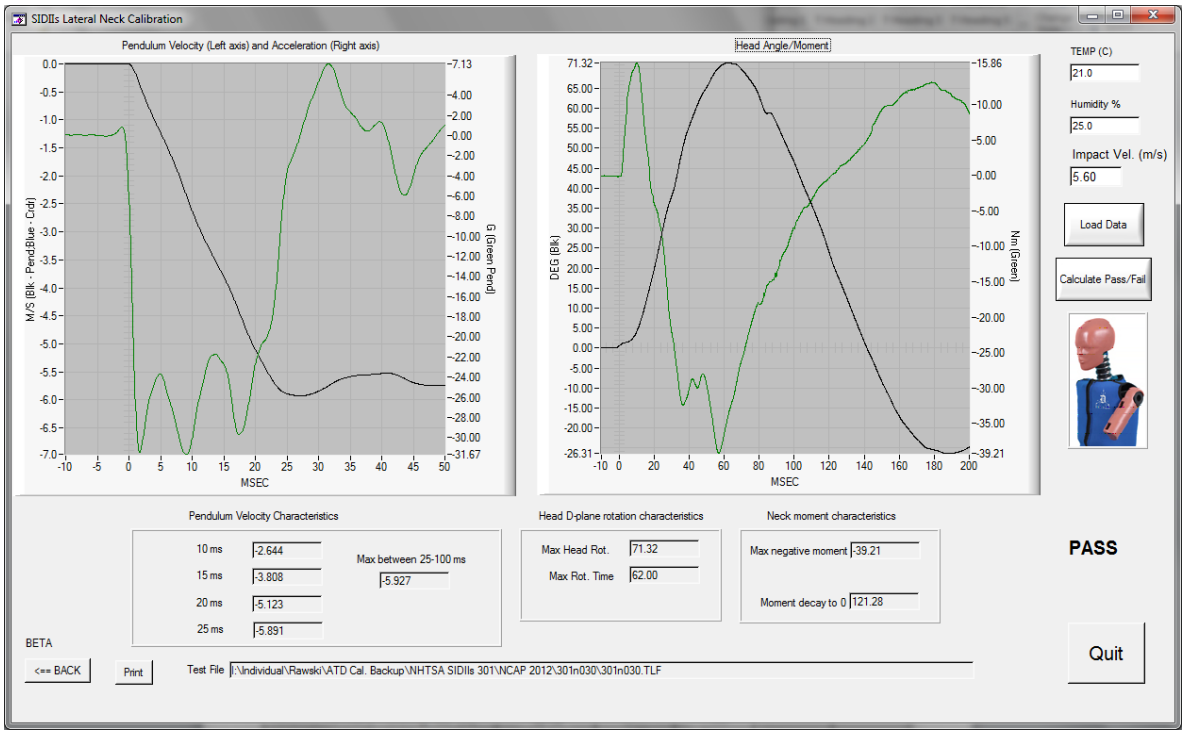
TABLE 3
LATERAL NECK PENDULUM TEST

SIDIIs Serial Number 301 Test Sequences 4 & 5

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	12/12/11		1/18/12	
Sequential Test Number		-	4		5	
			Result	**Pass/Fail**	**Result**	**Pass/Fail**
Neck Assembly Soak Time (min)		**≥ 240**	240	Pass	240	Pass
Temperature(°C) – During Soak	Max	**20.6-22.2**	21.0	Pass	21.6	Pass
	Min		20.8	Pass	21.1	Pass
Humidity(%) – During Soak	Max	**10.0-70.0**	20.4	Pass	25.2	Pass
	Min		15.2	Pass	20.4	Pass
Temperature – During Test (°C)		**20.6-22.2**	21.0	Pass	21.2	Pass
Humidity – During Test (%)		**10-70**	25.0	Pass	21.0	Pass
Pendulum Velocity (m/s)		**5.51-5.63**	5.60	Pass	5.61	Pass
Pendulum Deceleration (G)	10 ms	**2.20-2.80**	2.64	Pass	2.64	Pass
	15 ms	**3.30-4.10**	3.81	Pass	3.94	Pass
	20 ms	**4.40-5.40**	5.12	Pass	5.35	Pass
	25 ms	**5.40-6.10**	5.89	Pass	5.82	Pass
	25-100 ms	**5.50-6.20**	5.93	Pass	5.86	Pass
Maximum D-Plane rotation (deg)		**71-81**	71.3	Pass	71.4	Pass
Time of Maximum D-Plane Rotation (ms)		**50-70**	62.0	Pass	60.1	Pass
Peak Occ. Condyle Moment (Nm)		**36-44**	39.2	Pass	41.9	Pass
Time of Moment Decay (ms)		**102-126**	121.3	Pass	124.7	Pass

TABLE 3
LATERAL NECK PENDULUM TEST (CONTINUED)

PRE-TEST



POST-TEST

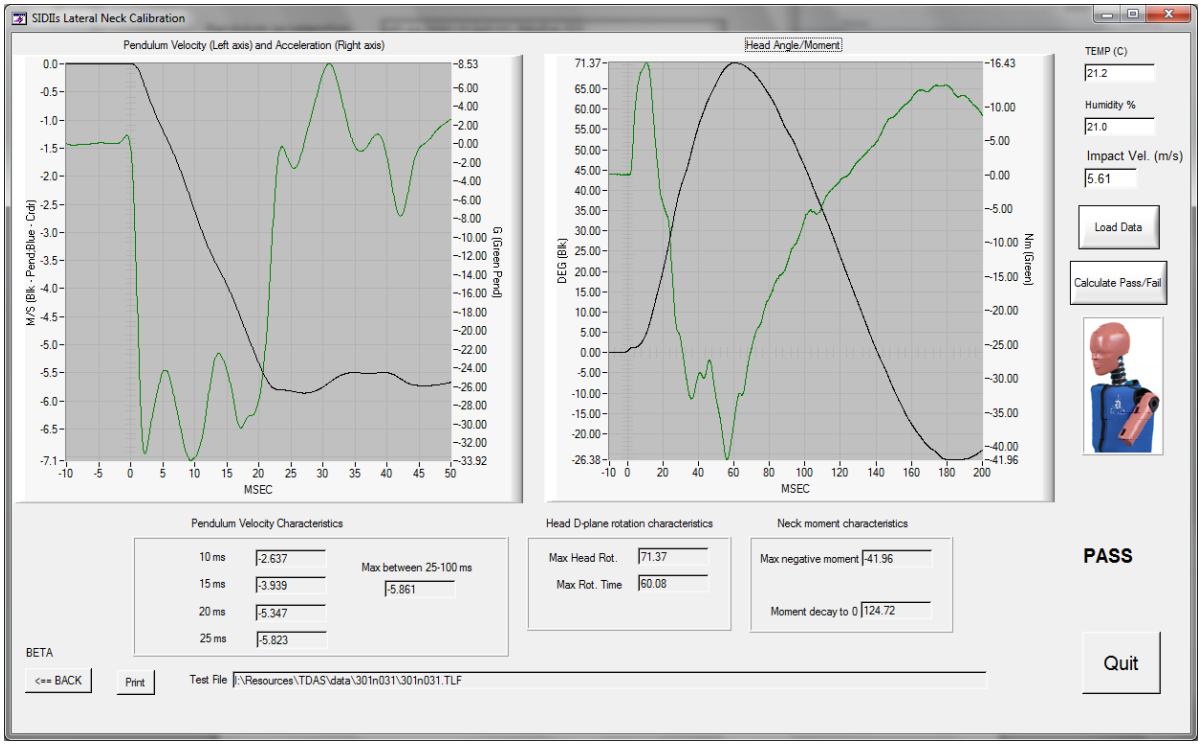


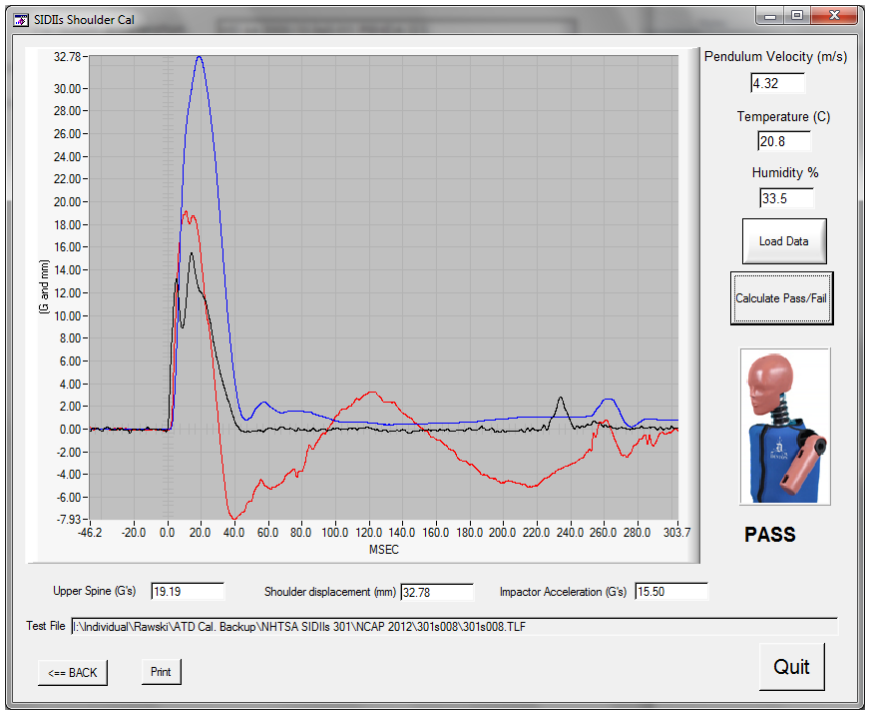
TABLE 4
SHOULDER IMPACT TEST

SIDIIs Serial Number 301 Test Sequences 4 & 5

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	12/12/11		1/18/12	
Sequential Test Number		-	4		5	
			Result	**Pass/Fail**	**Result**	**Pass/Fail**
Dummy Soak Time (min)		**≥ 180**	180	Pass	180	Pass
Temperature(°C) – During Soak	Max	**20.6-22.2**	21.0	Pass	21.6	Pass
	Min		20.8	Pass	21.1	Pass
Humidity(%) – During Soak	Max	**10.0-70.0**	20.4	Pass	25.2	Pass
	Min		15.2	Pass	20.4	Pass
Temperature – During Test (°C)		**20.6-22.2**	20.8	Pass	21.6	Pass
Relative Humidity – During Test (%)		**10-70**	33.5	Pass	24.5	Pass
Impactor Velocity (m/s)		**4.2-4.4**	4.32	Pass	4.32	Pass
Peak Shoulder Deflection (mm)		**28-37**	32.78	Pass	33.9	Pass
Peak Lateral Spine (T1) Acceleration Y (G)		**17-22**	19.19	Pass	18.2	Pass
Peak Impactor Acceleration (G)		**13-18**	15.50	Pass	15.5	Pass

TABLE 4
SHOULDER IMPACT TEST (CONTINUED)

PRE-TEST



POST-TEST

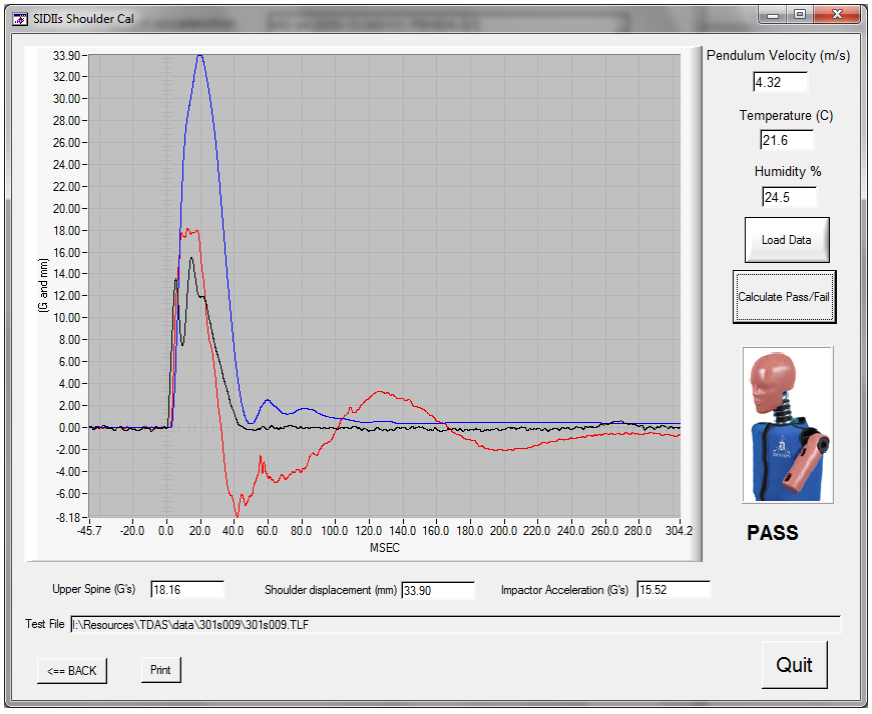


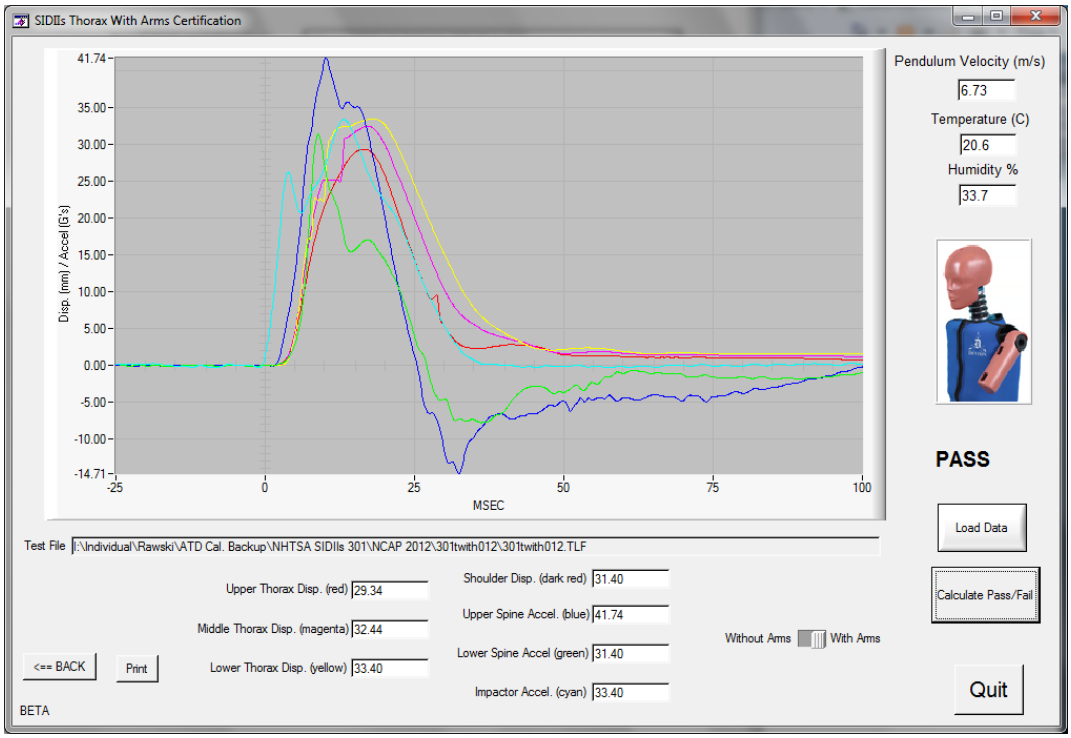
TABLE 5
THORAX (WITH ARM) IMPACT TEST

SIDIIs Serial Number 301 Test Sequences 4 & 5

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	12/12/11		1/18/12	
Sequential Test Number		-	4		5	
			Result	**Pass/Fail**	**Result**	**Pass/Fail**
Dummy Soak Time (min)		**≥ 180**	180	Pass	180	Pass
Temperature(°C) – During Soak	Max	**20.6-22.2**	21.0	Pass	21.6	Pass
	Min		20.8	Pass	21.1	Pass
Humidity(%) – During Soak	Max	**10.0-70.0**	20.4	Pass	25.2	Pass
	Min		15.2	Pass	20.4	Pass
Temperature – During Test (°C)		**20.6-22.2**	20.6	Pass	21.6	Pass
Relative Humidity – During Test (%)		**10-70**	33.7	Pass	24.4	Pass
Impactor Velocity (m/s)		**6.6-6.8**	6.73	Pass	6.73	Pass
Peak Shoulder Deflection (mm)		**31-40**	31.4	Pass	31.1	Pass
Peak Upper Rib Deflection (mm)		**25-32**	29.3	Pass	29.3	Pass
Peak Middle Rib Deflection (mm)		**30-36**	32.4	Pass	32.8	Pass
Peak Lower Rib Deflection (mm)		**32-38**	33.4	Pass	33.9	Pass
Peak Upper Spine (T1) Acceleration Y (G)		**34-43**	41.7	Pass	39.1	Pass
Peak Lower Spine (T12) Acceleration Y (G)		**29-37**	31.4	Pass	31.1	Pass
Peak Impactor Acceleration (G)		**30-36**	33.4	Pass	31.8	Pass

TABLE 5
THORAX (WITH ARM) IMPACT TEST (CONTINUED)

PRE-TEST



POST-TEST

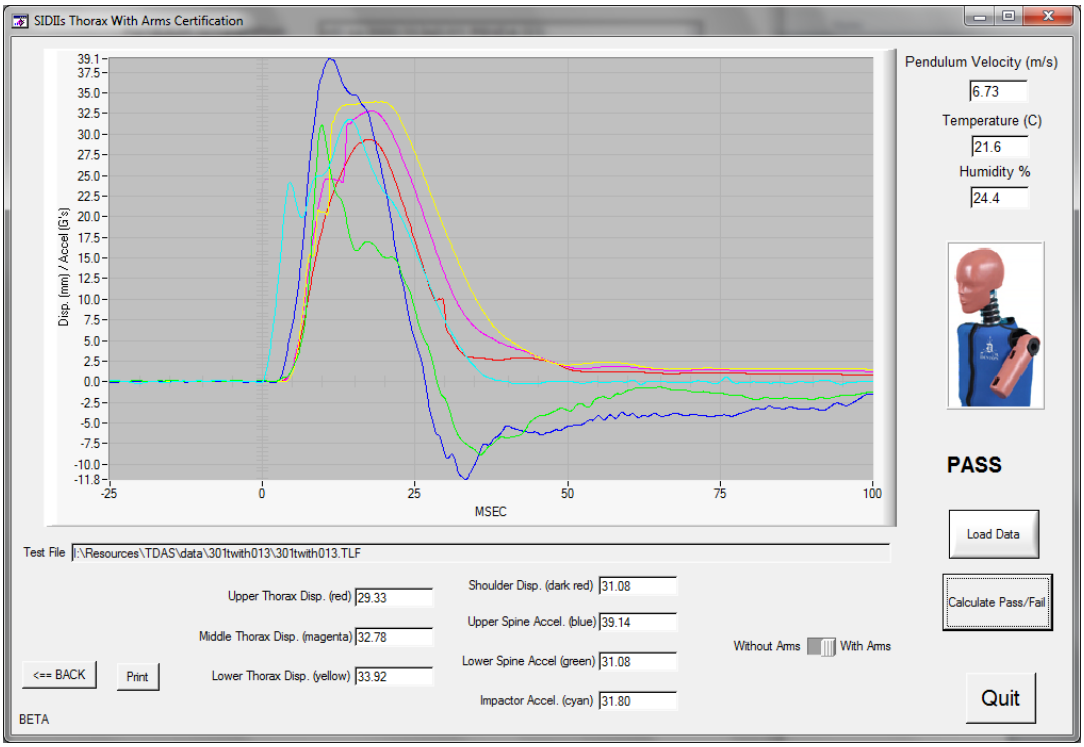


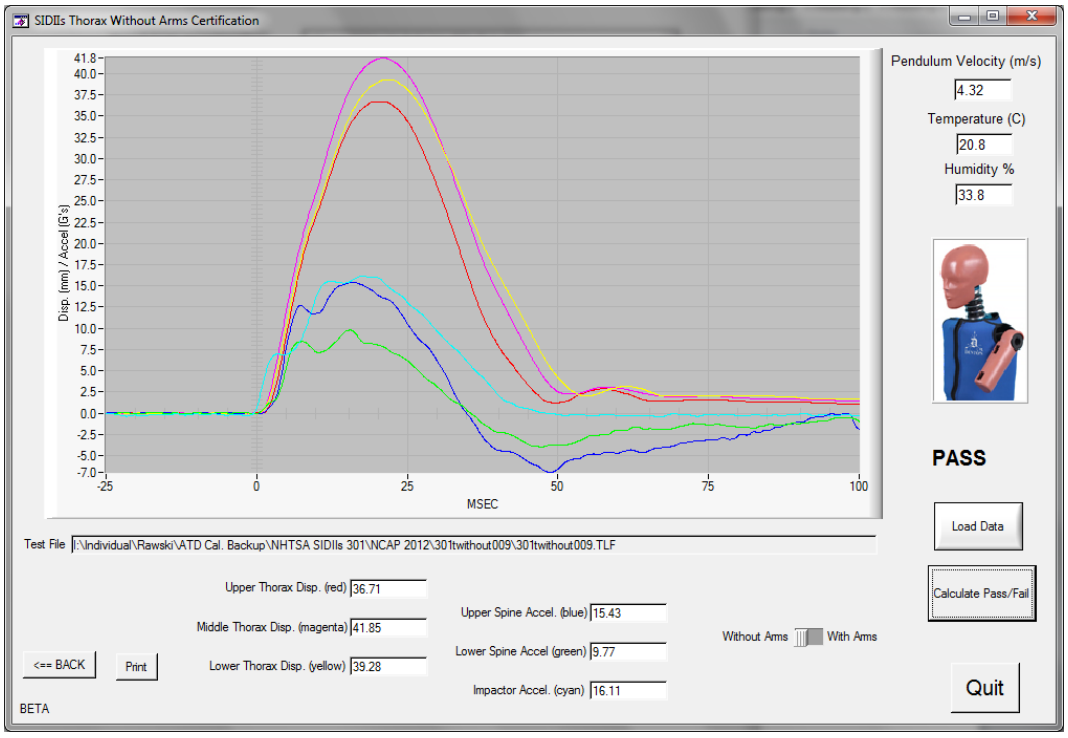
TABLE 6
THORAX (WITHOUT ARM) IMPACT TEST

SIDIIs Serial Number 301 Test Sequences 4 & 5

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	12/12/11		1/18/12	
Sequential Test Number		-	4		5	
			Result	**Pass/Fail**	**Result**	**Pass/Fail**
Dummy Soak Time (min)		**≥ 180**	180	Pass	180	Pass
Temperature(°C) – During Soak	Max	**20.6-22.2**	21.0	Pass	21.6	Pass
	Min		20.8	Pass	21.1	Pass
Humidity(%) – During Soak	Max	**10.0-70.0**	20.4	Pass	25.2	Pass
	Min		15.2	Pass	20.4	Pass
Temperature – During Test (°C)		**20.6-22.2**	20.8	Pass	21.6	Pass
Relative Humidity – During Test (%)		**10-70**	33.8	Pass	24.8	Pass
Impactor Velocity (m/s)		**4.2-4.4**	4.32	Pass	4.32	Pass
Peak Upper Rib Deflection (mm)		**32-40**	36.7	Pass	38.2	Pass
Peak Middle Rib Deflection (mm)		**39-45**	41.9	Pass	42.4	Pass
Peak Lower Rib Deflection (mm)		**35-43**	39.3	Pass	38.7	Pass
Peak Upper Spine (T1) Acceleration Y (G)		**13-17**	15.4	Pass	15.7	Pass
Peak Lower Spine (T12) Acceleration Y (G)		**7-11**	9.8	Pass	9.7	Pass
Peak Impactor Acceleration (G)		**14-18**	16.1	Pass	16.1	Pass

TABLE 6
THORAX (WITHOUT ARM) IMPACT TEST (CONTINUED)

PRE-TEST



POST-TEST

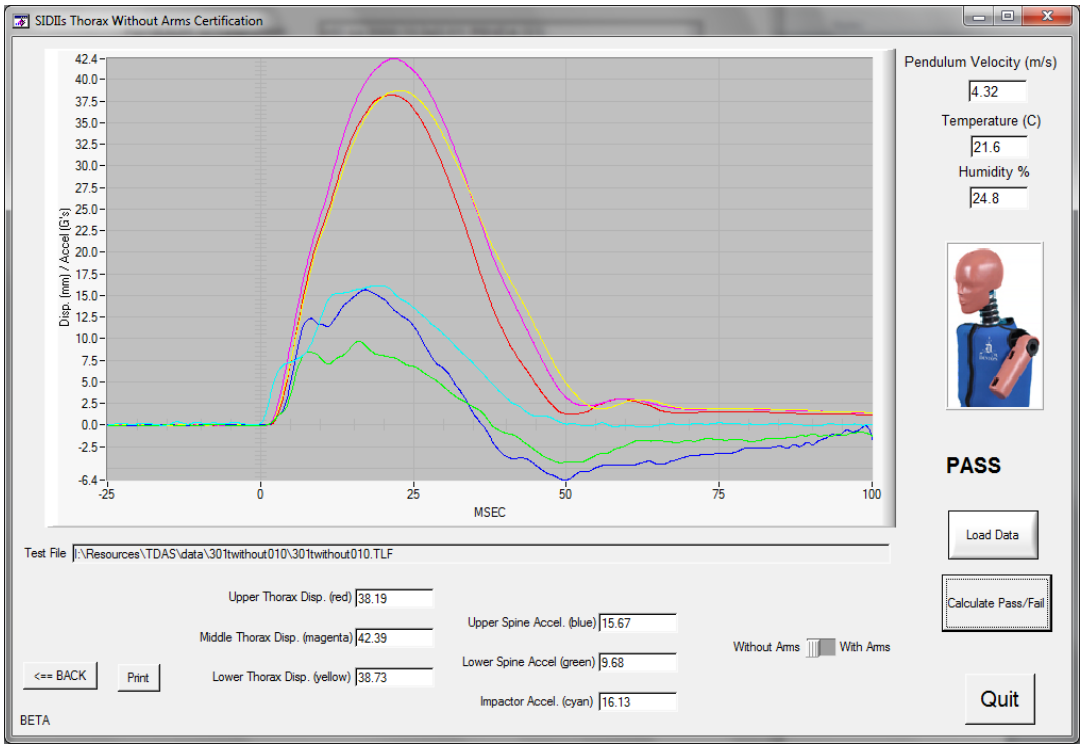


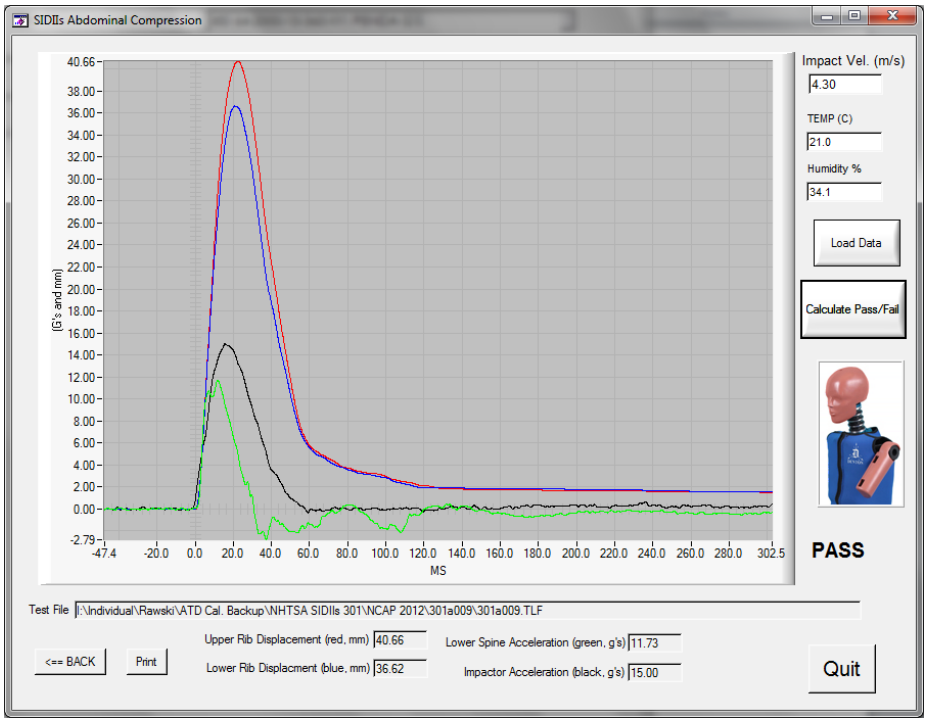
TABLE 7
ABDOMEN IMPACT TEST

SIDIIs Serial Number 301 Test Sequences 4 & 5

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	12/12/11		1/18/12	
Sequential Test Number		-	4		5	
			Result	**Pass/Fail**	**Result**	**Pass/Fail**
Dummy Soak Time (min)		**≥ 180**	180	Pass	180	Pass
Temperature(°C) – During Soak	Max	**20.6-22.2**	21.0	Pass	21.6	Pass
	Min		20.8	Pass	21.1	Pass
Humidity(%) – During Soak	Max	**10.0-70.0**	20.4	Pass	25.2	Pass
	Min		15.2	Pass	20.4	Pass
Temperature – During Test (°C)		**20.6-22.2**	21.0	Pass	21.4	Pass
Relative Humidity – During Test (%)		**10-70**	34.1	Pass	24.9	Pass
Impactor Velocity (m/s)		**4.2-4.4**	4.30	Pass	4.30	Pass
Peak Upper Abdominal Rib Deflection (mm)		**36-47**	40.7	Pass	40.9	Pass
Peak Lower Abdominal Rib Deflection (mm)		**33-44**	36.6	Pass	38.1	Pass
Peak Lower Spine (T12) Acceleration Y (G)		**9-14**	11.7	Pass	11.2	Pass
Peak Impactor Acceleration (G)		**12-16**	15.0	Pass	14.6	Pass

TABLE 7
ABDOMEN IMPACT TEST (CONTINUED)

PRE-TEST



POST-TEST

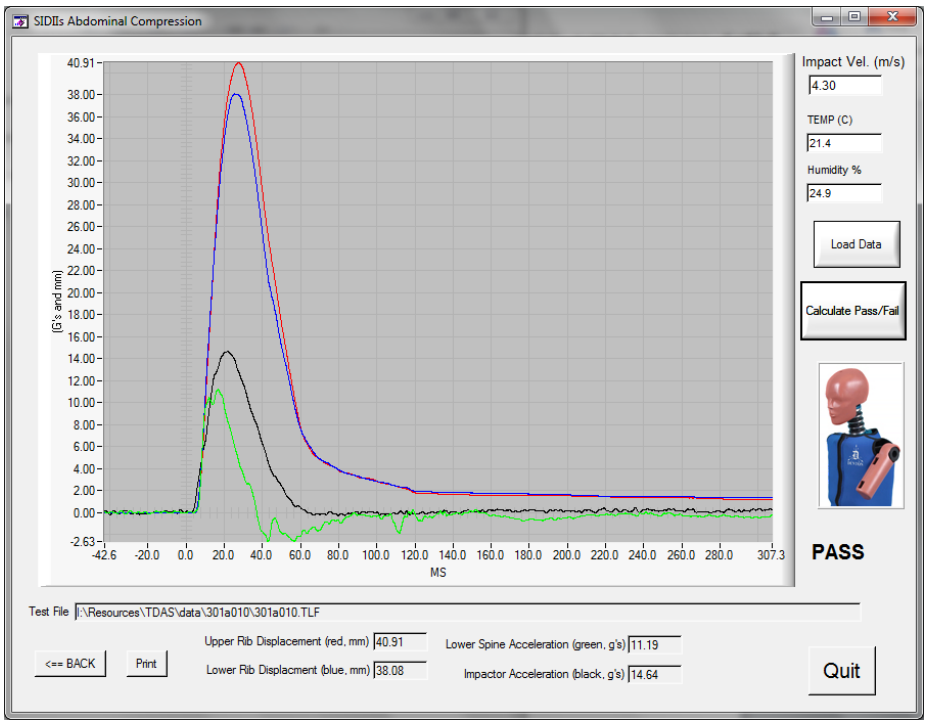
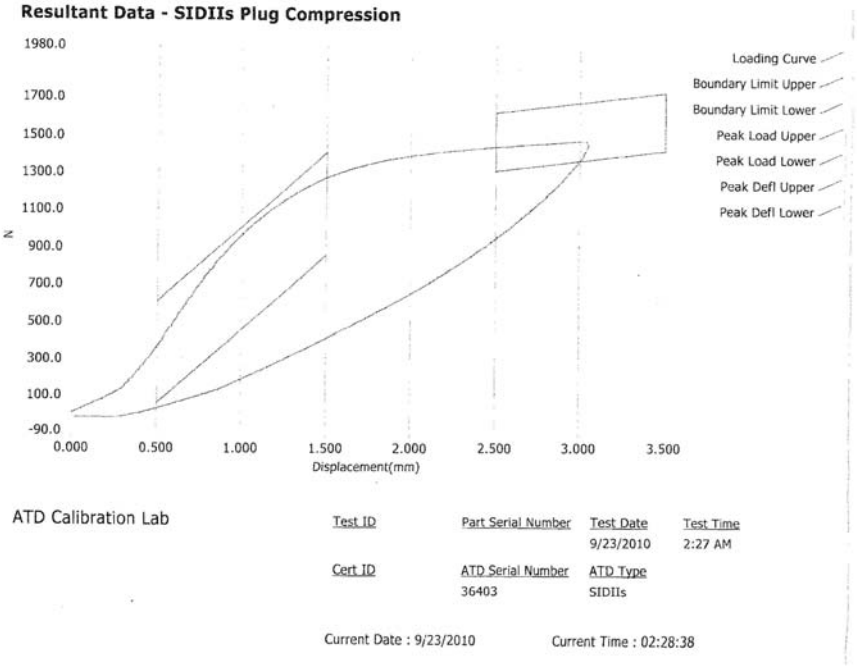


TABLE 8
PELVIS PLUG QUASI-STATIC TEST

PRE-Test



POST-TEST

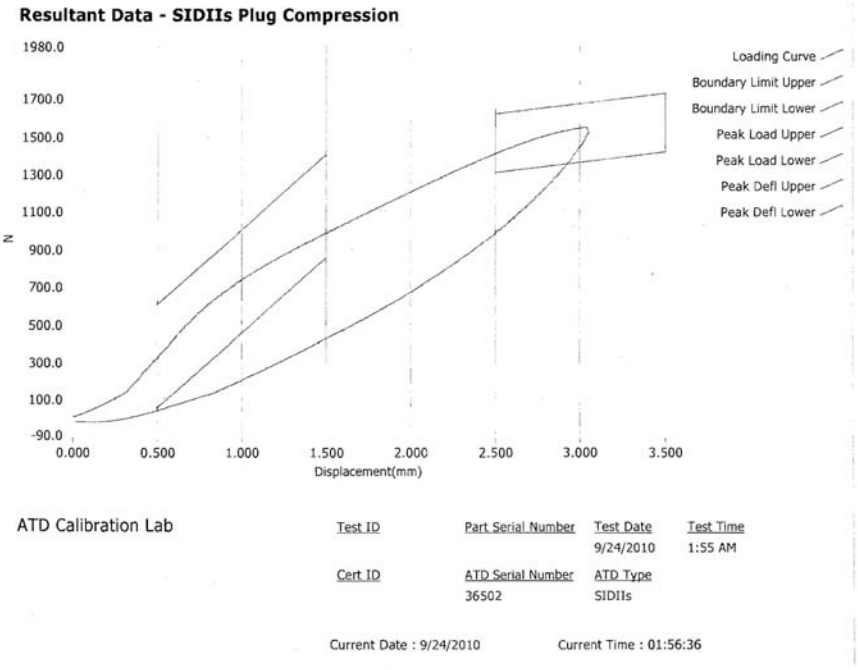


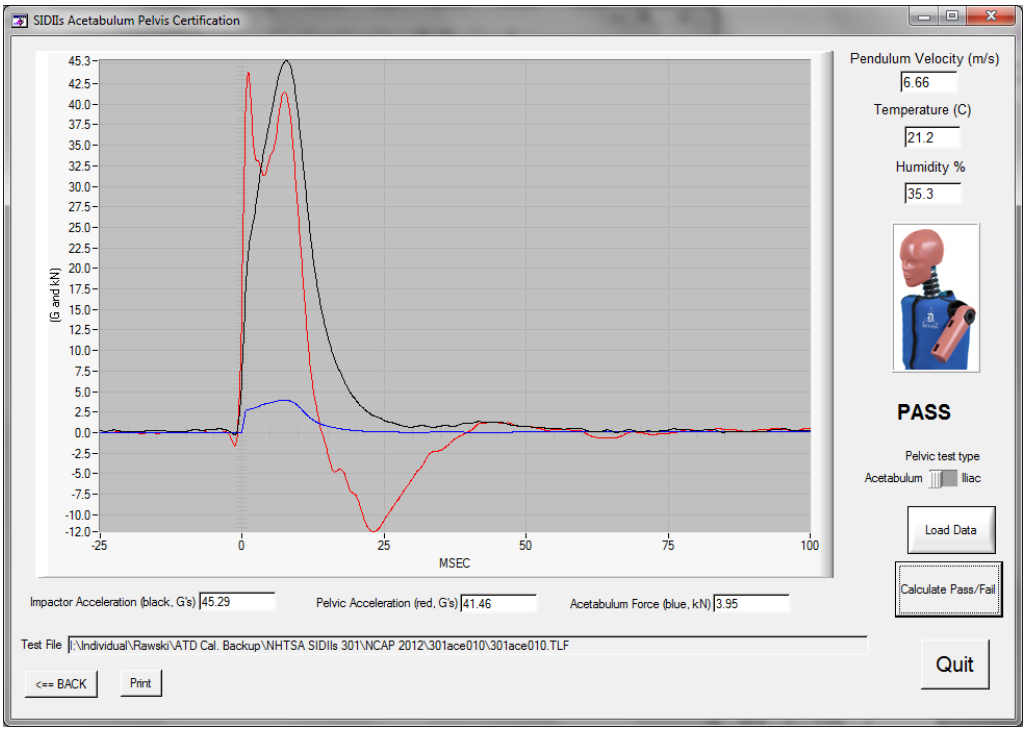
TABLE 9
PELVIS ACETABULUM IMPACT TEST

SIDIIs Serial Number 301 Test Sequences 4 & 5

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	12/12/11		1/18/12	
Sequential Test Number		-	4		5	
			Result	**Pass/Fail**	**Results**	**Pass/Fail**
Dummy Soak Time (min)		**≥ 180**	180	Pass	180	Pass
Temperature(°C) – During Soak	Max	**20.6-22.2**	21.0	Pass	21.6	Pass
	Min		20.8	Pass	21.1	Pass
Humidity(%) – During Soak	Max	**10.0-70.0**	20.4	Pass	25.2	Pass
	Min		15.2	Pass	20.4	Pass
Temperature – During Test (°C)		**20.6-22.2**	21.2	Pass	21.2	Pass
Humidity – During Test (%)		**10-70**	35.3	Pass	25.2	Pass
Impactor Velocity (m/s)		**6.6-6.8**	6.66	Pass	6.66	Pass
Peak Impactor Acceleration (G)		**38-47**	45.3	Pass	43.0	Pass
Pelvis Acceleration Y after 6ms (G)		**34-42**	41.5	Pass	38.4	Pass
Peak Acetabulum Force (kN)		**3.60-4.30**	3.95	Pass	3.81	Pass
Pelvis Plug Serial No. 36403 (Pre) 36502 (Post)						

TABLE 9
PELVIS ACETABULUM IMPACT TEST (CONTINUED)

PRE-TEST



POST-TEST

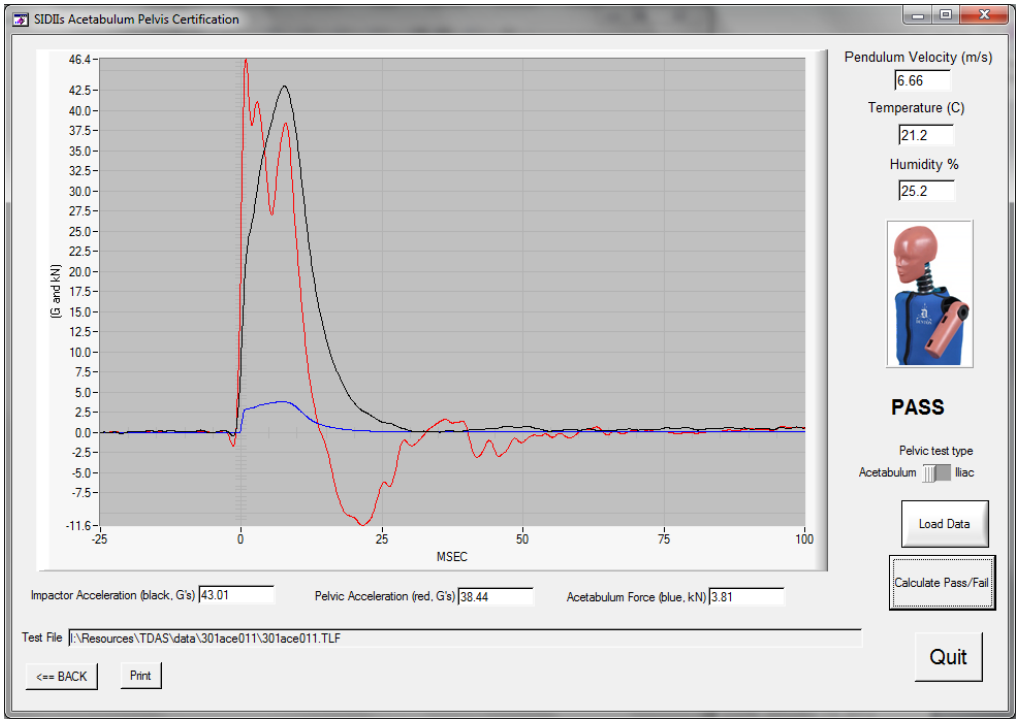


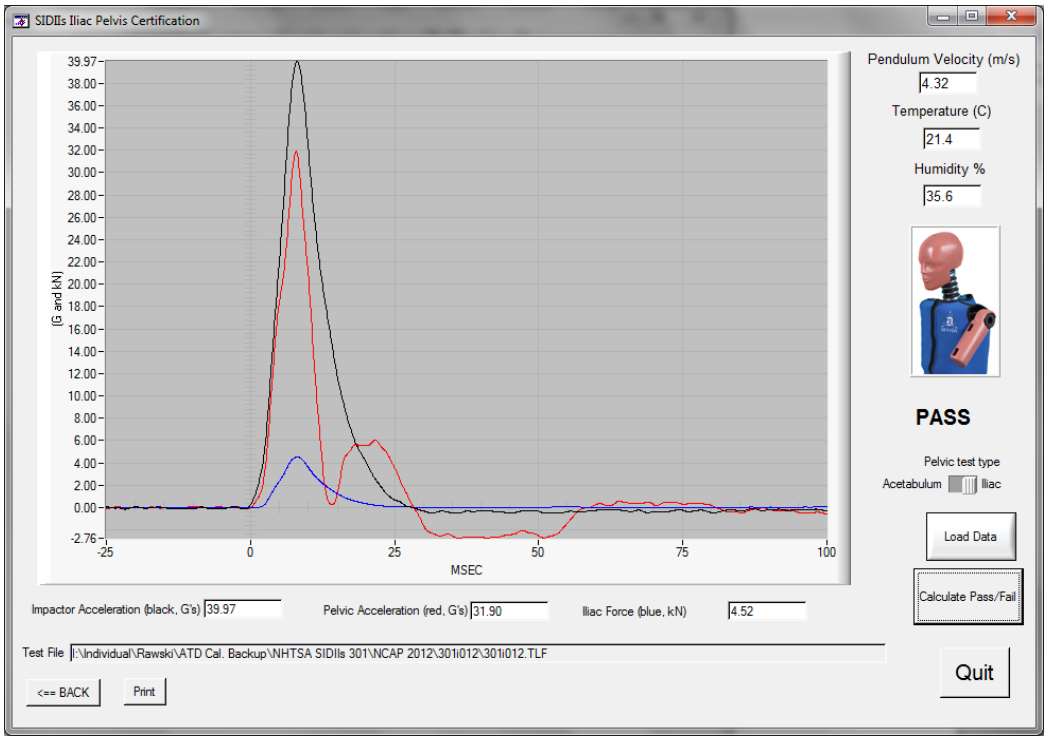
TABLE 10
PELVIS ILIAC IMPACT TEST

SIDIIs Serial Number 301 Test Sequences 4 & 5

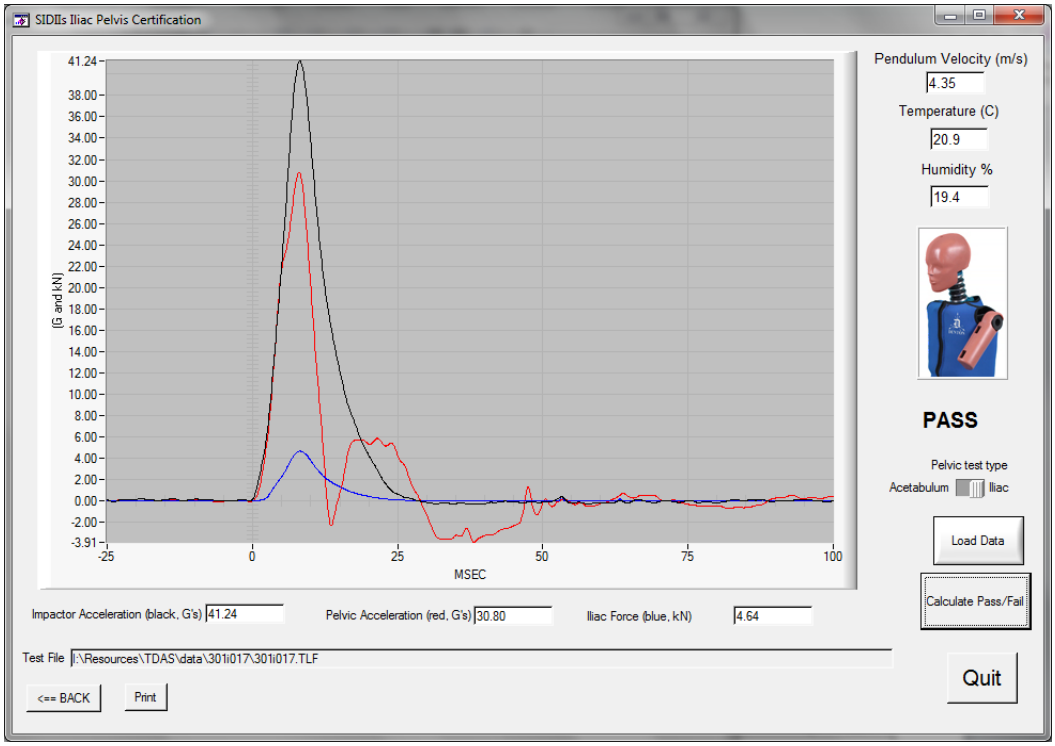
TEST PARAMETER		SPEC.	PRE		POST	
Date		-	12/12/11		1/19/12	
Sequential Test Number		-	4		5	
			Result	**Pass/Fail**	**Result**	**Pass/Fail**
Dummy Soak Time (min)		**≥ 180**	180	Pass	180	Pass
Temperature(°C) – During Soak	Max	**20.6-22.2**	21.0	Pass	20.9	Pass
	Min		20.8	Pass	20.6	Pass
Humidity(%) – During Soak	Max	**10.0-70.0**	20.4	Pass	19.4	Pass
	Min		15.2	Pass	18.8	Pass
Temperature – During Test (°C)		**20.6-22.2**	21.4	Pass	20.9	Pass
Humidity – During Test (%)		**10-70**	35.6	Pass	19.4	Pass
Pendulum Velocity (m/s)		**4.2-4.4**	4.32	Pass	4.35	Pass
Peak Impactor Acceleration (G)		**36-46**	39.9	Pass	41.2	Pass
Pelvis Acceleration Y (G)		**29-39**	31.9	Pass	30.8	Pass
Peak Iliac Force Y (N)		**4.00-5.20**	4.52	Pass	4.64	Pass
Pelvis Plug Serial No. 36403 (Pre) 36502 (Post)						

TABLE 10
PELVIS ILIAC IMPACT TEST (CONTINUED)

PRE-TEST



POST-TEST



APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

TABLE 1 - DUMMY INSTRUMENTATION

				SID-IIs S/N: 301		
				Serial Number	Manufacturer	Calibration Date
Head Accelerometers			X	J43444	Endevco	25/APR/2011
			Y	J43739	Endevco	25/APR/2011
			Z	P21673	Endevco	25/APR/2011
			X_R	J43808	Endevco	25/APR/2011
			Y_R	12136	Endevco	25/APR/2011
			Z_R	P59119	Endevco	25/APR/2011
Displacement Potentiometers	Thoracic Rib	Upper	Y	1152	Denton	07/APR/2011
		Middle	Y	1142	Denton	07/APR/2011
		Lower	Y	1155	Denton	07/APR/2011
	Abdominal Rib	Upper	Y	1237	Denton	07/APR/2011
		Lower	Y	1205	Denton	07/APR/2011
Lower Spine Accelerometers (T_{12})			X	B13098	Endevco	25/APR/2011
			Y	J22318	Endevco	25/APR/2011
			Z	J22189	Endevco	25/APR/2011
Acetabulum Load Cell			Y	IF-520_114	FTSS	07/APR/2011
Iliac Wing Load Cell			Y	IF-507_115	FTSS	07/APR/2011
Pelvis Plug (Struck-Side)				36309	FTSS	22/SEP/11
Pelvis Plug (Non-Struck-Side)				36403	FTSS	23/SEP/11

TABLE 2 - VEHICLE INSTRUMENTATION

		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	12110	Endevco	22/SEP/2011
Vehicle Center of Gravity	Y	A011334	MSI	22/SEP/2011
Vehicle Center of Gravity	Z	A011343	MSI	22/SEP/2011
Left Floor Sill	Y	A086989	MSI	22/SEP/2011
A-Pillar Sill	Y	A086979	MSI	22/SEP/2011
A-Pillar Low	Y	A086969	MSI	22/SEP/2011
A-Pillar Mid	Y	A011655	MSI	22/SEP/2011
B-Pillar Sill	Y	A086966	MSI	22/SEP/2011
B-Pillar Low	Y	A086986	MSI	22/SEP/2011
B-Pillar Mid	Y	A011625	MSI	22/SEP/2011
Driver Seat	Y	A086975	MSI	22/SEP/2011
Engine Top	X	P21820	Endevco	22/SEP/2011
Engine Top	Y	J43474	Endevco	22/SEP/2011
Firewall	Y	A007227	MSI	22/SEP/2011
Right Roof	Y	J43468	Endevco	22/SEP/2011
Right Floor Sill	Y	A002042	MSI	22/SEP/2011
Rear Floorpan	X	P25041	Endevco	22/SEP/2011
Rear Floorpan	Y	P21689	Endevco	22/SEP/2011

TABLE 3 - POLE INSTRUMENTATION

		Serial Number	Manufacturer	Calibration Date
Load Cell 1	Y	332403	Interface	12/JUL/11
Load Cell 2	Y	330834	Interface	12/JUL/11
Load Cell 3	Y	334238	Interface	12/JUL/11
Load Cell 4	Y	330824	Interface	12/JUL/11
Load Cell 5	Y	332400	Interface	12/JUL/11
Load Cell 6	Y	332420	Interface	12/JUL/11
Load Cell 7	Y	352865	Interface	12/JUL/11
Load Cell 8	Y	332407	Interface	12/JUL/11