

REPORT NUMBER: SPNCAP-CAL-12-012

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

**AUTO ALLIANCE INTERNATIONAL, INC
2012 Mazda Mazda6 Sport
Four Door Sedan**

NHTSA NUMBER: MC5402

**PREPARED BY:
CALSPAN CORPORATION
P.O. BOX 400
BUFFALO, NEW YORK 14225**



January 24, 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**

This final test report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, in response to Contract Number DTNH22-09-D-00126.

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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

1. Report No. SPNCAP-CAL-12-012	2. Government Accession No.	3. Recipient's Catalog No.																												
4. Title and Subtitle Final Report of New Car Assessment Program 2012 Mazda Mazda6 Sport Four Door Sedan NHTSA No.: MC5402		5. Report Date 1/24/2012																												
		6. Performing Organization Code CAL																												
7. Author(s) Vanessa Walsh, Project Engineer David Travale, Technical Director		8. Performing Organization Report No. 2551																												
9. Performing Organization Name and Address Calspan Corporation Transportation Research Group P.O. Box 400 Buffalo, New York 14225		10. Work Unit No.																												
		11. Contract or Grant No. DTNH22-09-D-00126																												
12. Sponsoring Agency Name and Address 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		13. Type of Report and Period Covered: Final Report, 1/24/2012																												
		14. Sponsoring Agency Code NVS-111																												
15. Supplementary Notes																														
16. Abstract A 32.2 km/h (20 mph), 75° oblique impact Side NCAP Test was conducted on the subject 2012 Mazda Mazda6 Sport four 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 at the Calspan Corporation Crash Test Facility in Buffalo, New York, on 11/28/2011. The impact velocity was 32.24 km/h, and the ambient temperature at the struck (driver's) side of the vehicle was 7°C. The test vehicle post-test maximum crush was 425 mm at level 3. The test vehicle's occupant performance is as follows:																														
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="text-align: center;">Measurement Description</th> <th colspan="3" style="text-align: center;">Driver ATD (SID-IIs)</th> </tr> <tr> <th style="text-align: center;">Units</th> <th style="text-align: center;">Threshold</th> <th style="text-align: center;">Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td style="text-align: center;">N/A</td> <td style="text-align: center;">1000</td> <td style="text-align: center;">374.52</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td style="text-align: center;">Gs</td> <td style="text-align: center;">82</td> <td style="text-align: center;">40.31</td> </tr> <tr> <td>Total Pelvis Force</td> <td style="text-align: center;">N</td> <td style="text-align: center;">5525</td> <td style="text-align: center;">4,937.78</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td style="text-align: center;">mm</td> <td style="text-align: center;">38</td> <td style="text-align: center;">24.34</td> </tr> <tr> <td>Maximum Abdomen Rib Deflection</td> <td style="text-align: center;">mm</td> <td style="text-align: center;">45</td> <td style="text-align: center;">22.11</td> </tr> </tbody> </table>				Measurement Description	Driver ATD (SID-IIs)			Units	Threshold	Result	Head Injury Criteria (HIC ₃₆)	N/A	1000	374.52	Resultant Lower Spine Acceleration	Gs	82	40.31	Total Pelvis Force	N	5525	4,937.78	Maximum Thoracic Rib Deflection	mm	38	24.34	Maximum Abdomen Rib Deflection	mm	45	22.11
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The two 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 Adm. Technical Ref. Division, 1200 New Jersey Ave. SE Washington, D.C. 20590																												
19. Security Class. (of this report) UNCLASSIFIED	20. Security Class. (of this page) UNCLASSIFIED	21. No. of Pages 159	22. Price																											

Form DOT F1700.7 (8-72)

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SECTION 1 PURPOSE AND TEST PROCEDURE

PURPOSE

This side impact test was conducted as part of the MY 2012 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-09-D-00126. The purpose of this test is to generate comparative side impact performance in a 2012 Mazda Mazda6 Sport four door sedan manufactured by Auto Alliance International, Inc. 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 NCAP SIDE IMPACT TEST

A rigid pole side test was conducted on a 2012 Mazda Mazda6 Sport four door sedan. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.24 km/h. The test was conducted by Calspan Corporation Transportation Research Group on 11/28/2011. 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 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 CG Triaxial Accelerometers
- Thorax Upper, Middle, and Lower Rib Displacement Potentiometers
- Abdomen Upper and Lower Rib Displacement Potentiometers
- Lower Spine Triaxial Accelerometers
- Illiatic Load Cell
- Acetabulum Load Cell

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

The following table summarizes the results of the test:

Measurement Description	Driver ATD (SID-IIs)		
	Units	Threshold	Result
Head Injury Criteria (HIC ₃₆)	N/A	1000	374.52
Resultant Lower Spine Acceleration	Gs	82	40.31
Total Pelvis Force	N	5525	4,937.78
Maximum Thoracic Rib Deflection	mm	38	24.34
Maximum Abdomen Rib Deflection	mm	45	22.11

SUPPLEMENTAL RESTRAINT INFORMATION

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

GENERAL COMMENTS:

1. The left rear passenger's floor pan separated longitudinally from the side sill from just in front of the B-Pillar rearward to the rear seat. Then laterally to the center tunnel of the vehicle. See Photo A-71 at the end of Appendix A.
2. The Torso/Pelvis airbag may have been obstructed by the door armrest during the impact. Please see photo A-70 at the end of Appendix A.
3. Camera No. 6 experienced a trigger failure causing less than the required video to be recorded.
4. Camera No.4 does not include a time stamp due to an internal malfunction and needs to be sent back to the manufacturer after NCAP testing in order to be fixed.

DATA ANOMALIES:

- Driver Lower Abdominal Rib DY is Questionable data from 52-54 ms
- Vehicle CG AX is Questionable after 49 ms
- Vehicle CG AY is Questionable after 49 ms
- Vehicle CG AZ is Questionable after 49 ms
- Left A-Post at Sill AY is Questionable from 59-60 ms
- Driver Seat Track AY is Questionable from 42-44 ms

**SECTION 3
OCCUPANT AND VEHICLE INFORMATION**

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**DATA SHEET NO.1
GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2012 Mazda Mazda6 Sport Four Door Sedan NHTSA No: MC5402
 Test Program: Side Pole NCAP Test Date 11/28/2011

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	MC5402	Traction Control System (TCS)	Yes
Model Year	2012	Auto-Leveling System	No
Make	Mazda	Automatic Door Locks (ADL)	Yes
Model	Mazda6 Sport	Power Window Auto-Reverse	Yes
Body Style	Four Door Sedan	Other Optional Feature	--
VIN	1YVHZ8BH4C5M00610	Driver Front Airbag	Yes
Body Color	Light gray/silver	Driver Curtain Airbag	Yes
Odometer Reading	24 / 15	Driver Head/Torso Airbag	No
Engine Displacement (L)	2.5	Driver Torso Airbag	No
Type/No. Cylinders	14	Driver Torso/Pelvis Airbag	Yes
Engine Placement	Lateral	Driver Pelvis Airbag	No
Transmission Type	Automatic	Driver Knee Airbag	No
Transmission Speeds	5-Speed	Rear Pass. Curtain Airbag	Yes
Overdrive	Yes	Rear Pass. Head/Torso Airbag	No
Final Drive	Front Wheel Drive	Rear Pass. Torso Airbag	No
Roof Rack	No	Rear Pass. Torso/Pelvis Airbag	No
Sunroof/T-Top	No	Rear Pass. Pelvis Airbag	No
Running Boards	No	Driver Seat Belt Pretensioners	Yes
Tilt Steering Wheel	Yes	Rear Pass. Seat Belt	No
Power Seats	No	Driver Load Limiters	Yes
Anti-Lock Brakes (ABS)	Yes	Rear Pass. Load Limiters	No
All-Wheel Drive (AWD)	No	Other Safety Restraint	No

Does owner's manual provide instructions to turn off automatic door locks? No

DATA FROM CERTIFICATION LABEL

Manufactured By	Auto Alliance International	GVWR (kg)	1,996
Date of Manufacture	6/11	GAWR Front (kg)	1,066
Vehicle Type	6 Sedan Sport	GAWR Rear (kg)	934

VEHICLE SEATING AND WEIGHT CAPACITY DATA

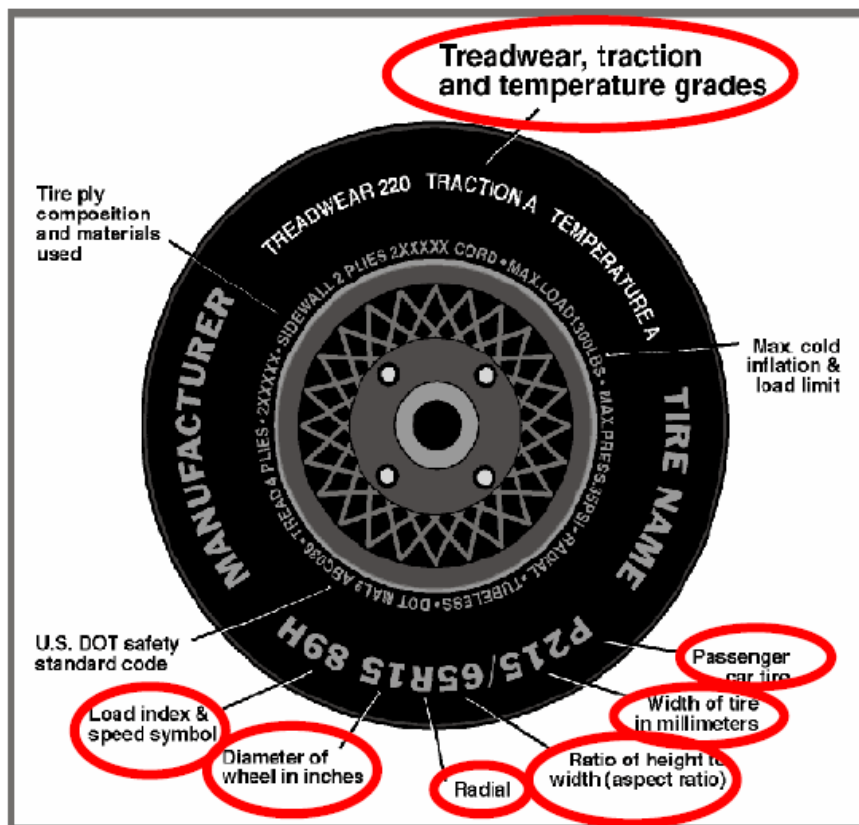
	Front	Rear	Third	Total	
Designated Seating Capacity (DSC)	2	3		5	
Vehicle Capacity Weight (VCW) (kg)				385.0	(A)
DSC X 68.04 kg				340.2	(B)
Rated Cargo and Luggage Weight (RCLW)				44.8*	(A-B)

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		X			X		
Third Row seat							

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

Test Vehicle: 2012 Mazda Mazda6 Sport Four Door Sedan NHTSA No: MC5402
 Test Program: Side Pole NCAP Test Date: 11/28/2011



TIRE PLACARD INFORMATION

Measured Parameter	Front	Rear
Recommended Cold Tire Pressure (kPa)	220	220
Recommended Tire Size	P205/65R16	P205/65R16

TIRE SIDEWALL INFORMATION

Measured Parameter	Front	Rear
Maximum Tire Pressure	300	300
Tire Size on Vehicle	P205/65R16	P205/65R16
Tire Manufacturer	Michelin	Michelin
Tire Name	Energy MXV4S8	Energy MXV4S8
Tire Type	Passenger	Passenger
Tire Width	205	205
Aspect Ratio	65	65
Radial	Yes	Yes
Wheel Diameter	655	655
Load Index/Speed Symbol	94H	94H
Treadwear	440	440
Traction Grade	A	A
Temperature Grade	A	A
Tire Material	RUBBER	RUBBER

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

Test Vehicle: 2012 Mazda Mazda6 Sport Four Door Sedan NHTSA No: MC5402
 Test Program: Side Pole NCAP Test Date: 11/28/2011

TEST 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 Axle	Rear Axle	Total	Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	463	291.5		463.5	340.5		478	333	
Right	kg	431	301		446	317.5		438	328	
Ratio	%	60	40		58	42		58	42	
Totals	kg	894	592.5	1,486.5	909.5	658	1,567.5	916	661	1,577

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total As Delivered Weight (UVW)	kg	1,486.5	(A)
Actual Weight of 1 P572V ATD (SID-IIs) Dummy Used	kg	44.1	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	44.8	(C)
Calculated Vehicle Target Weight (TVTW)	kg	1,575.4	(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 (if any)	None

TEST VEHICLE ATTITUDES AND CG

	Units	As Delivered	As Tested	Fully Loaded	Meets Requirement***
Driver Door Sill Angle (front-to-rear)*	Deg.	-0.4	-0.4	-0.3	Yes
Front Passenger Sill Angle (front-to-rear)*	Deg.	-0.4	-0.3	-0.2	Yes
Front Bumper Angle (left-to-right)**	Deg.	-0.1	-0.1	-0.1	Yes
Rear Bumper Angle (left-to-right)**	Deg.	-0.1	-0.1	-0.2	Yes
Vehicle CG (Aft of Front Axle)	mm	1,111	1,170	1,168	
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	13	21	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 Requirement"

DATA SHEET NO. 2
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEMS DATA

Test Vehicle: 2012 Mazda Mazda6 Sport Four Door Sedan NHTSA No: MC5402
 Test Program: Side Pole NCAP Test Date: 11/28/2011

SEAT POSITIONING

The driver's seat, front seat center (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	-	No Seat Angle Adjustment	-
Front Passenger Seat	-	No Seat Angle Adjustment	-
Front Center Seat*			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat*	Fixed	Fixed	Fixed

*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	7.8	53	Max	60	70	82
			Mid	30	43	53
			Min	0	15	25
Front Passenger Seat	No Height or Angle Adjustment		Max			
			Mid			
			Min			
Front Center Seat*			Max			
			Mid			
			Min			
Struck Side Rear Seat	Fixed	Fixed	Max			
			Mid			
			Min			
Non-Struck Side Rear Seat	Fixed	Fixed	Max			
			Mid			
			Min			
Rear Center Seat*	Fixed	Fixed	Max			
			Mid			
			Min			

*if applicable

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

Test Vehicle: 2012 Mazda Mazda6 Sport Four Door Sedan NHTSA No: MC5402
 Test Program: Side Pole NCAP Test Date: 11/28/2011

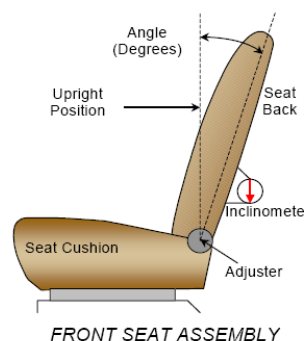
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position from Forwardmost Position	
	mm	Detents*	mm	Detents*
Driver Seat	240	25	0	0
Front Passenger Seat	240	25	0	0
Front Center Seat*				
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 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	Detents*
Driver Seat w/Seated	-7.5 to 37	-	-1.0	-
Front Passenger Seat	-7.5 to 37	-	-0.8	-
Front Center Seat*				
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 in accordance with the information provided by the manufacturer on Form No. 1. For this test zero is defined as the uppermost position.

	Total # of Positions	Placed in Position #
Driver Seat	4	0

HEAD RESTRAINT ADJUSTMENT

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

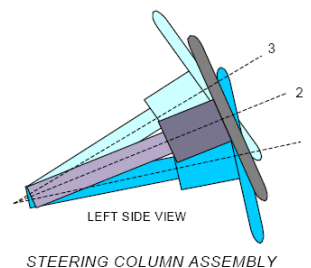
	Total # of Positions	Placed in Position #
Driver Seat	4	0

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

Test Vehicle: 2012 Mazda Mazda6 Sport Four Door Sedan NHTSA No: MC5402
 Test Program: Side Pole NCAP Test Date: 11/28/2011

STEERING COLUMN ADJUSTMENT

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

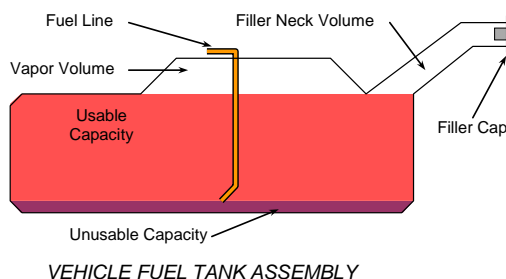


	Degrees	Fore/Aft Position (mm)
Lowermost, Position No. 1	69.6	
Geometric Center, Position No. 2	66.8	
Uppermost, Position No. 3	64.0	
Telescoping Steering Wheel Travel		50
Test Position	66.8	25

FUEL PUMP

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

The electric fuel pump operates with the ignition in the 'on' position and the engine running. The fuel filler neck is located above the left rear wheel well



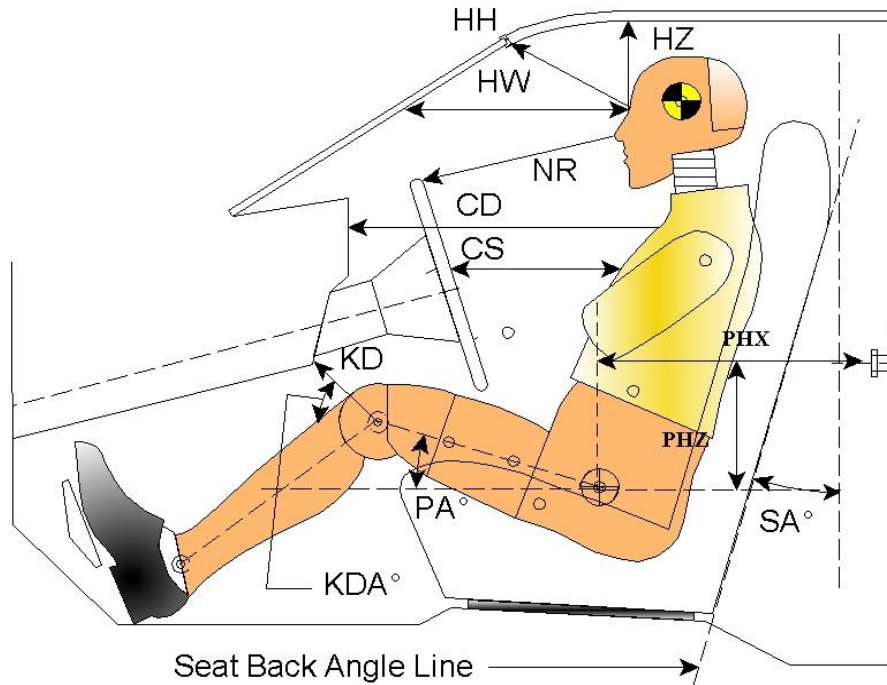
FUEL TANK CAPACITY DATA

	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	70.0
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of Standard Tank (see Owner's Manual)	70.0
Usable Capacity of Optional Tank (see Owner's Manual)	
93% of Usable Capacity	65.1
Actual Amount of Solvent Used in Test	65.1
1/3 of Usable Capacity	6.2

Is the Actual Amount of Solvent Used in the test equal to 93% ±1% of the Usable Capacity stated on Form No. 1? YES NO

**DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS**

Test Vehicle: 2012 Mazda Mazda6 Sport Four Door Sedan NHTSA No: MC5402
 Test Program: Side Pole NCAP Test Date: 11/28/2011

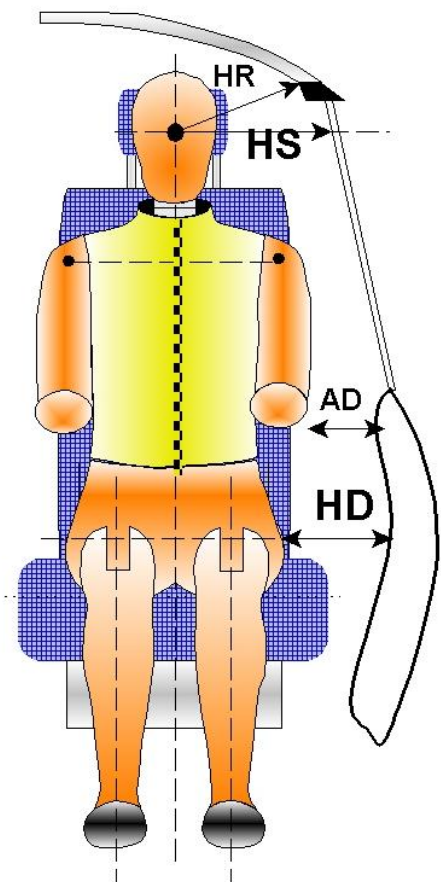


DUMMY ID# 8012

Code	Measurement Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	201	
HW	Head to Windshield	495	
HZ	Head to Roof Liner	168	
NR	Nose to Rim	204	
CD	Chest to Dashboard	362	
CS	Chest to Steering Wheel	141	
KDL/KDAL°	Left Knee to Dash	94	41.4
KDR/KDAR°	Right Knee to Dash	71	40.8
PAX°	Pelvic Tilt Angle (X-Axis)		18.9
PAY°	Pelvic Tilt Angle (Y-Axis)		0.4
PHX	Hip Point to Striker (X-Axis)	405	
PHZ	Hip Point to Striker (Z-Axis)	149	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2012 Mazda Mazda6 Sport Four Door Sedan NHTSA No: MC5402
 Test Program: Side Pole NCAP Test Date: 11/28/2011

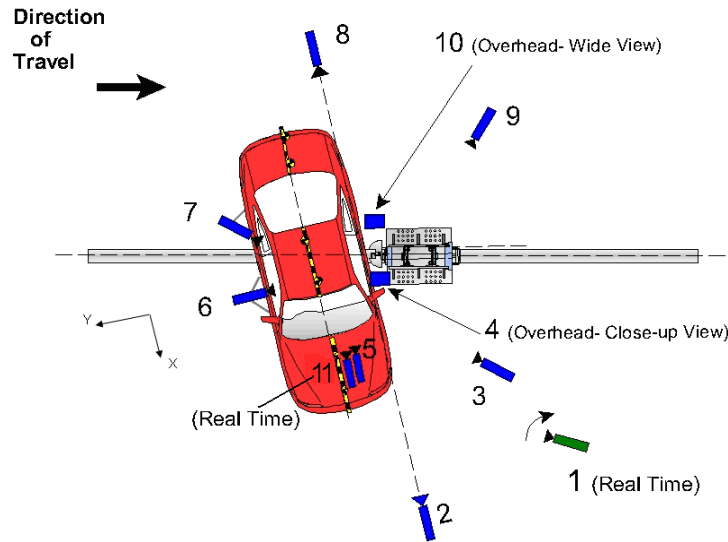


DUMMY ID# 8012

Code	Measurement Description	Length (mm)
HR	Head To Side Header	212
HS	Head to Side Window	373
AD	Arm to Door	142
HD	Hip Point to Door	182

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2012 Mazda Mazda6 Sport Four Door Sedan NHTSA No: MC5402
 Test Program: Side Pole NCAP Test Date: 11/28/2011



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	2000	7320	1073	50	1000
3	Impact side 45° - forward pole view	2530	2155	1563	28	1000
4	Overhead Close-up view of impact	0	0	5150	28	1000
5	Onboard – dummy front view				12.5	500
6	Onboard – dummy side view				12.5	500
7	Onboard – dummy rear oblique view				12.5	500
8	Rear ground level – impact view	2509	7956	1071	50	1000
9	Impact side 45° - rearward pole view	2738	3318	1368	24	1000
10	Overhead wide-view of impact	300	0	5150	14	1000
11	Real-time (24-30 fps) – dummy front view				Zoom	30

* All measurements accurate to ± 6 mm.

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

If applicable, explain why camera(s) did not operate as intended:

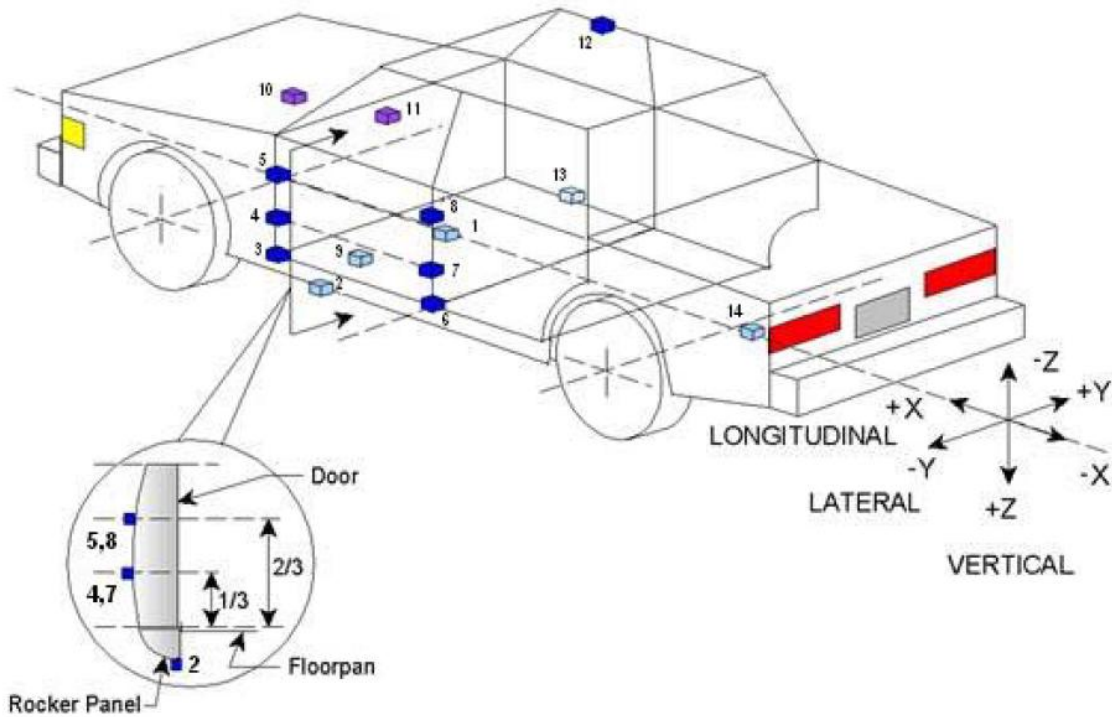
Camera No.6 experienced a trigger failure, causing less than the required 30ms of footage to be recorded. Camera No.4 does not include a time stamp due to an internal malfunction of the camera. It needs to be sent back to the manufacturer after NCAP testing to be fixed.

INSTRUMENTATION

	Number of Channels
Driver Dummy	16
Vehicle Structure	18
Pole Load Cells	6
TOTAL	40

**DATA SHEET NO. 6
VEHICLE ACCELEROMETER DATA**

Test Vehicle: 2012 Mazda Mazda6 Sport Four Door Sedan NHTSA No: MC5402
 Test Program: Side Pole NCAP Test Date: 11/28/2011



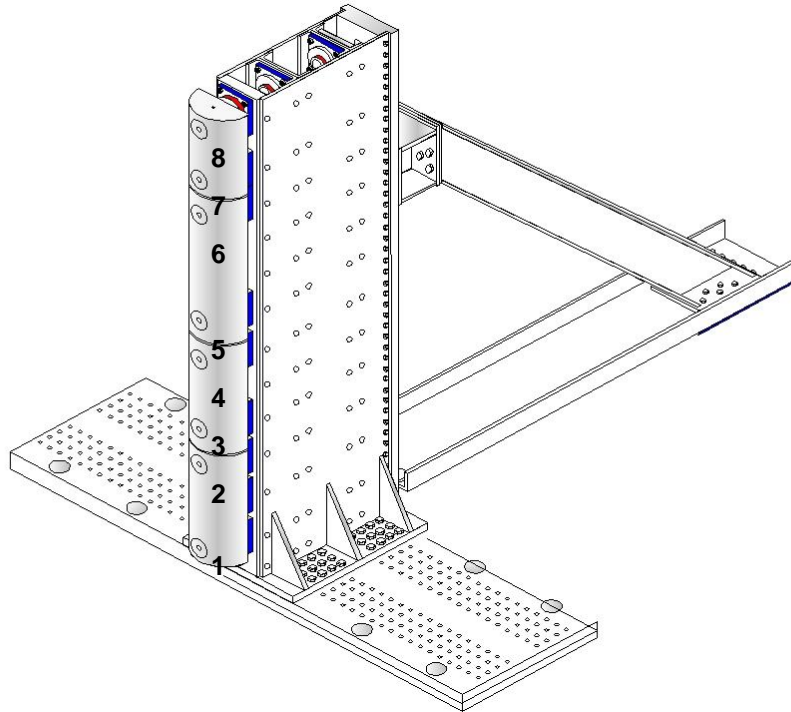
	Accelerometer/Sensor Location			
	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2,673	24	465
2	Left Floor Sill	3,052	-678	322
3	A Pillar Sill	3,352	-646	296
4	A Pillar Low	3,451	-615	567
5	A Pillar Mid	3,285	-654	998
6	B Pillar Sill	2,243	-676	292
7	B Pillar Low	2,307	-691	487
8	B Pillar Mid	2,247	-667	948
9	Driver Seat Track	2,542	-552	303
10	Engine Top	4,075	111	841
11	Firewall	3,678	264	676
12	Right Roof	2,411	497	1,444
13	Right Floor Sill	3,074	686	342
14	Rear Floorpan	879	155	555

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: 2012 Mazda Mazda6 Sport Four Door Sedan NHTSA No: MC5402
Test Program: Side Pole NCAP Test Date: 11/28/2011

FOIL 300K RIGID POLE



Load Cell Locations	
ID	Height From Ground (mm)
1	200
2	590
3	750
4	1075
5	1260
6	1740
7	1920
8	2300

**DATA SHEET NO. 8
POST-TEST OBSERVATIONS**

Test Vehicle: 2012 Mazda Mazda6 Sport Four Door Sedan NHTSA No: MC5402
 Test Program: Side Pole NCAP Test Date 11/28/2011

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Driver SID-IIs Dummy
Face	No contact
Top of Head	Curtain Airbag
Left Side of Head	Curtain Airbag
Back of Head	Headrest
Left Shoulder	Seatback and Driver's Side Door
Upper Torso	Seatback and Torso Airbag
Lower Torso	Seatback and Torso Airbag
Left Hip	Torso/Pelvis Airbag and Driver's Side Door
Left Knee	Driver's side door

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	N/A	N/A	N/A	N/A	
Latch or Hinge Systems Pulled Out of Their Anchorages	No	No	No	No	
Disengaged from Latched Position	No	No	No	No	
Latch Separated from Striker	No	No	No	No	
Jammed Shut	Yes	Yes	No	No	
If Door Opened at Striker, Record Width of Opening at Striker (mm)	N/A	N/A	N/A	N/A	

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

POST TEST SEAT PERFORMANCE

Description	Struck Side		Non-Struck Side		Rear Hatch/ Other Door
	Front	Rear	Front	Rear	
Seat Movement Along Seat Track	No	No	No	No	No
Seat Disengagement from Floor Pan	No	No	No	No	No
Seat Back Movement from Initial Position	No	No	No	No	No
Seat Back Collapse	No	No	No	No	No

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

POST TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	Slight deformation
Sill Separation	There was separation behind the B-Pillar (see notable effects)
Windshield Damage	Windshield separated along the driver's side A-Pillar
Side Window Damage	Driver's side window shattered on impact
Other Notable Effects	Left rear floor pan tore separated longitudinally from the side sill rearward to the rear seat. Then to the center tunnel of the vehicle. Also the Torso/Pelvis airbag may have been obstructed by the door armrest during impact.

**DATA SHEET NO. 8 (CONTINUED)
POST-TEST OBSERVATIONS**

Test Vehicle: 2012 Mazda Mazda6 Sport Four Door Sedan NHTSA No: MC5402
 Test Program: Side Pole NCAP Test Date: 11/28/2011

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

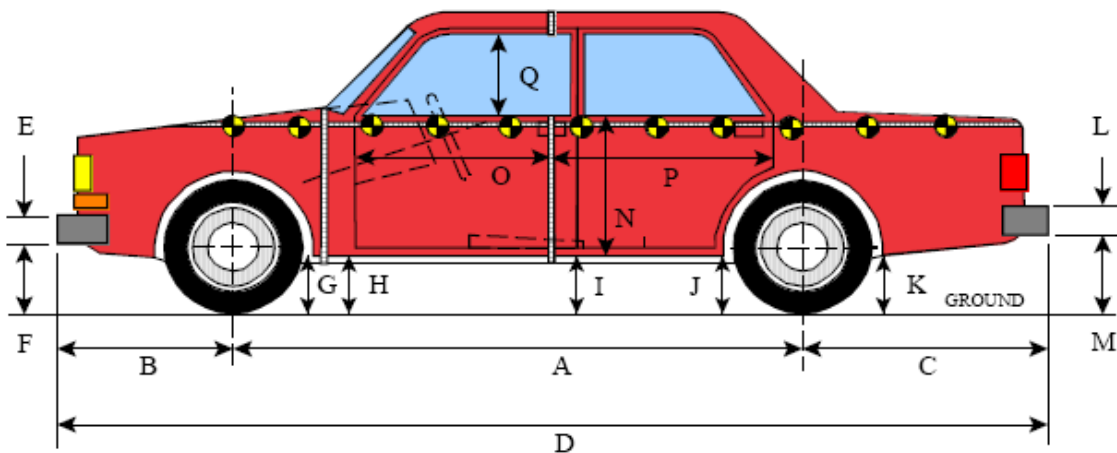
Restraint Type	Struck Side Driver		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No		
Knee Airbag	No	No		
Curtain Airbag	Yes	Yes	Yes	Yes
Torso/Pelvis Airbag	Yes	Yes	No	No
Seat Belt Pretensioner	Yes	Yes	No	No
Seat Belt Load Limiter	Yes	Yes	No	No
Other				

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		1080
Actual Impact Point (Aft of Front Axle)	mm		1070
Horizontal Offset (+ forward / - rearward)	mm	+/- 38 of Intended Impact Point	10
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	32.2
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.2

DATA SHEET NO. 9
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2012 Mazda Mazda6 Sport Four Door Sedan NHTSA No: MC5402
 Test Program: Side Pole NCAP Test Date: 11/28/2011



LEFT SIDE VIEW

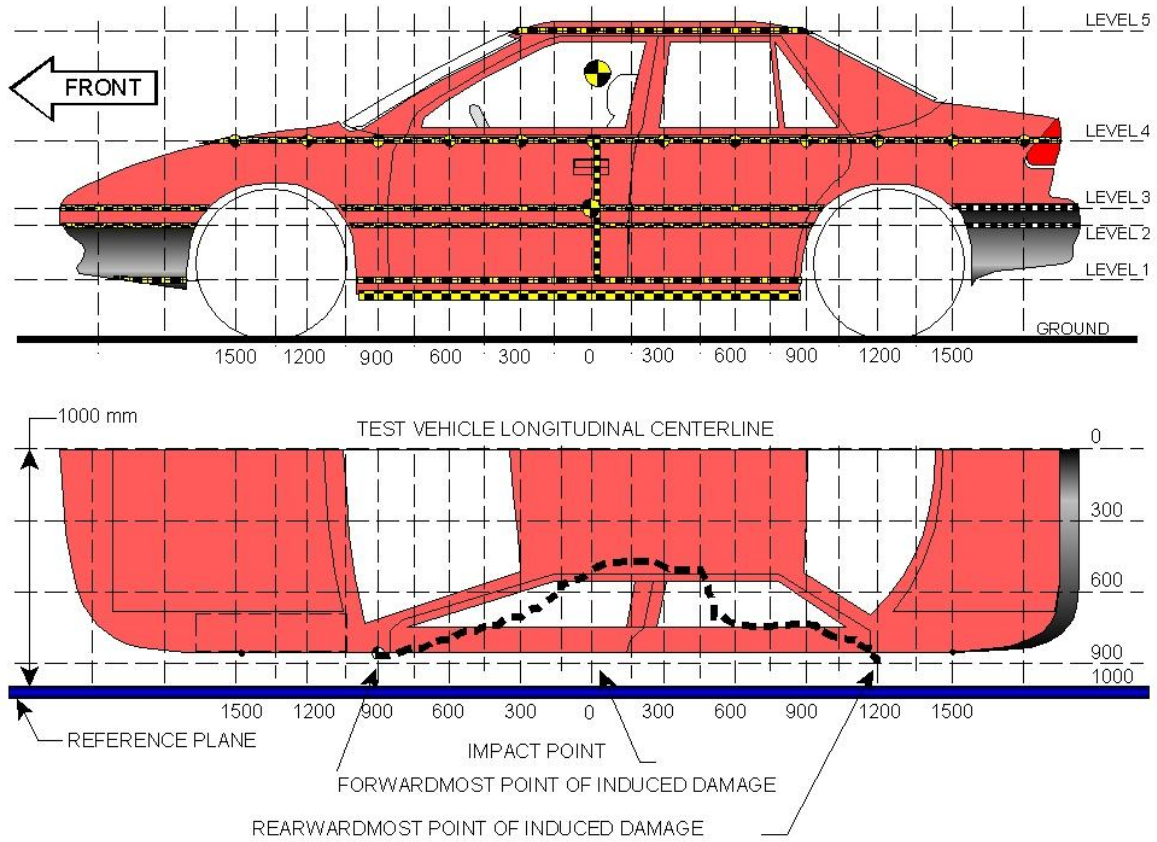
All MEASUREMENTS IN (mm) WITH TOLERANCE OF ± 3 mm

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Description	Pre-Test	Post-Test	Difference
A	Vehicle Wheelbase	2,787	2,760	-27
B	Front Axle to FSOV	992	975	-17
C	Rear Axle to RSOV	1,140	1,135	-5
D	Total Length at Centerline	4,918	4,869	-49
E	Front Bumper Thickness	80	80	0
F	Front Bumper Bottom to Ground	430	497	-67
G	Sill Height at Front Wheel Well	192	190	2
H	Sill Height at Front Door Leading	193	195	-2
I	Sill Height at B-Pillar	192	220	-28
J1	Sill Height at Rear Wheel Well	191	242	-51
J2	Pinch Weld Height at Rear Wheel	181	226	-45
K	Sill Height Aft of Rear Wheel Well	234	265	-31
L	Rear Bumper Thickness	260	260	0
M	Rear Bumper Bottom to Ground	383	378	5
N	Sill Height to Bottom of Front Window	690	700	10
O	Front Door Leading Edge to Impact	661	513	-148
P	Rear Door Trailing Edge to Impact CL	1,376	1,264	-112
Q	Front Window Opening	401	379	-22
R	Right Side Length	4,745	4,740	-5
S	Left Side Length	4,735	4,647	-88
T	Vehicle Width at B-Pillars	1,841	1,713	-128

**DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH MEASUREMENTS**

Test Vehicle: 2012 Mazda Mazda6 Sport Four Door Sedan NHTSA No: MC5402
 Test Program: Side Pole NCAP Test Date: 11/28/2011



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	271	362	0
2	Occupant Hip Point	522	423	0
3	Mid-Door	657	425	0
4	Window Sill	922	361	0
5	Window Top	1,423	90	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: 2012 Mazda Mazda6 Sport Four Door Sedan NHTSA No: MC5402
 Test Program: Side Pole NCAP Test Date: 11/28/2011

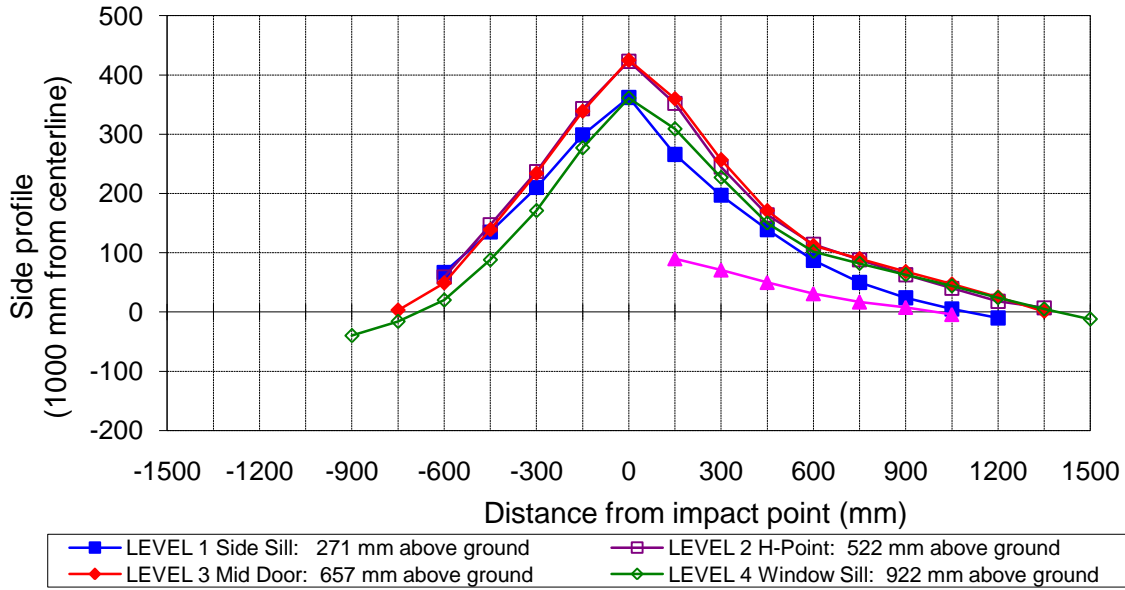
EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-1500															
-1350															
-1200															
-1050															
-900				-772					-812					-40	
-750			-912	-796				-909	-812				3	-16	
-600	-866	-902	-896	-817		-799	-843	-847	-797		67	59	49	20	
-450	-863	-900	-901	-827		-728	-753	-762	-739		135	147	139	88	
-300	-860	-904	-907	-837		-650	-667	-673	-666		210	237	234	171	
-150	-859	-907	-911	-846		-560	-564	-572	-569		299	343	339	277	
0	-858	-910	-914	-853		-496	-487	-489	-492		362	423	425	361	
150	-858	-911	-916	-861	-551	-592	-559	-556	-552	-461	266	352	360	309	90
300	-856	-911	-917	-867	-572	-659	-666	-660	-640	-501	197	245	257	227	71
450	-855	-912	-917	-876	-580	-716	-748	-746	-726	-530	139	164	171	150	50
600	-853	-910	-915	-881	-580	-766	-796	-803	-779	-549	87	114	112	102	31
750	-853	-909	-914	-886	-575	-803	-821	-824	-804	-558	50	88	90	82	17
900	-854	-907	-912	-888	-569	-830	-844	-844	-825	-561	24	63	68	63	8
1050	-857	-904	-910	-886	-553	-852	-864	-863	-842	-557	5	40	47	44	-4
1200	-866	-902	-907	-884		-876	-884	-882	-860		-10	18	25	24	
1350		-910	-910	-876			-903	-909	-871			7	1	5	
1500				-877					-889					-12	

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 test based on an estimated impact point. The final distance to 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: 2012 Mazda Mazda6 Sport Four Door Sedan NHTSA No: MC5402
 Test Program: Side Pole NCAP Test Date: 11/28/2011



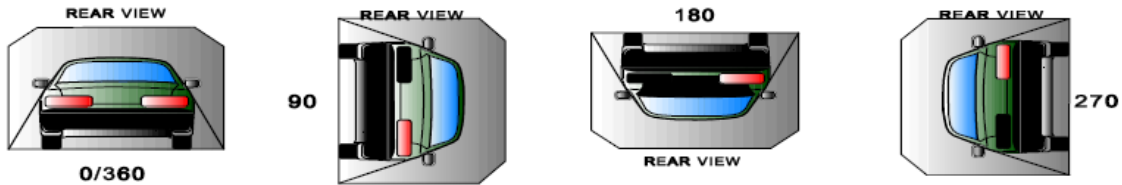
**DATA SHEET NO. 11
FMVSS NO. 301 STATIC ROLLOVER RESULTS**

Test Vehicle: 2012 Mazda Mazda6 Sport Four Door Sedan NHTSA No: MC5402
 Test Program: Side Pole NCAP Test Date 11/28/2011

Test Time: 3:45 PM Temperature: 7°C

- A. From impact until vehicle motion ceases:
(Maximum allowable is 1 oz.) 0 oz.
- B. For the 5-minute period after motion ceases:
(Maximum allowable is 5 oz.) 0 oz.
- C. For the following 25 minutes:
(Maximum allowable is 1 oz./minute) 0 oz.
- 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	71	300	371
90 to 180	68	300	368
180 to 270	66	300	366
270 to 360	67	300	367

FMVSS NO. 301 ROLLOVER SPILLAGE TABLE

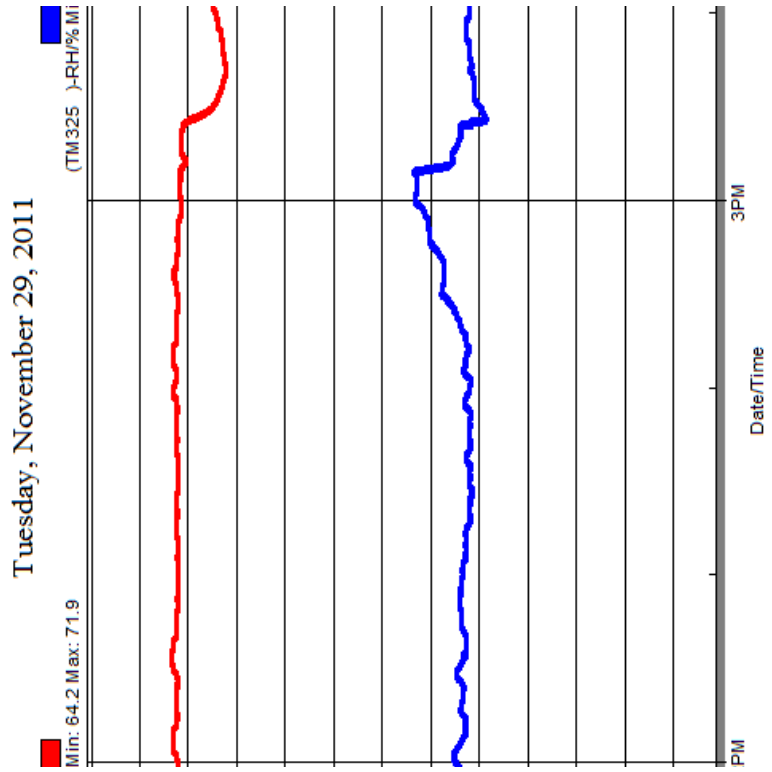
Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0 to 90	0	0		
90 to 180	0	0		
180 to 270	0	0		
270 to 360	0	0		

ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0 to 90	
90 to 180	
180 to 270	
270 to 360	

DATA SHEET NO. 12
DUMMY/VEHICLE TEMPERATURE STABILIZATION DATA

Test Vehicle:	2012 Mazda Mazda6 Sport Four Door Sedan	NHTSA No:	MC5402
Test Program:	Side Pole NCAP	Test Date	11/28/2011



**APPENDIX A
PHOTOGRAPHS**

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Figure A-1: As Delivered Right Front $\frac{3}{4}$ View of Test Vehicle



Figure A-2: As Delivered Left Rear $\frac{3}{4}$ View of Test Vehicle



Figure A-3: Pre-Test Frontal View of Test Vehicle



Figure A-4: Post-Test Frontal View of Test Vehicle



Figure A-5: Pre-Test Left Front ¾ View of Test Vehicle



Figure A-6: Post-Test Left Front ¾ View Test Vehicle



Figure A-7: Pre-Test Left Side View of Test Vehicle



Figure A-8: Post-Test Left Side View of Test Vehicle



Figure A-9: Pre-Test Left Rear ¾ View of Test Vehicle



Figure A-10: Post-Test Left Rear ¾ View of Test Vehicle



Figure A-11: Pre-Test Rear View of Test Vehicle



Figure A-12: Post-Test Rear View of Test Vehicle



Figure A-13: Pre-Test Right Side View of Test Vehicle

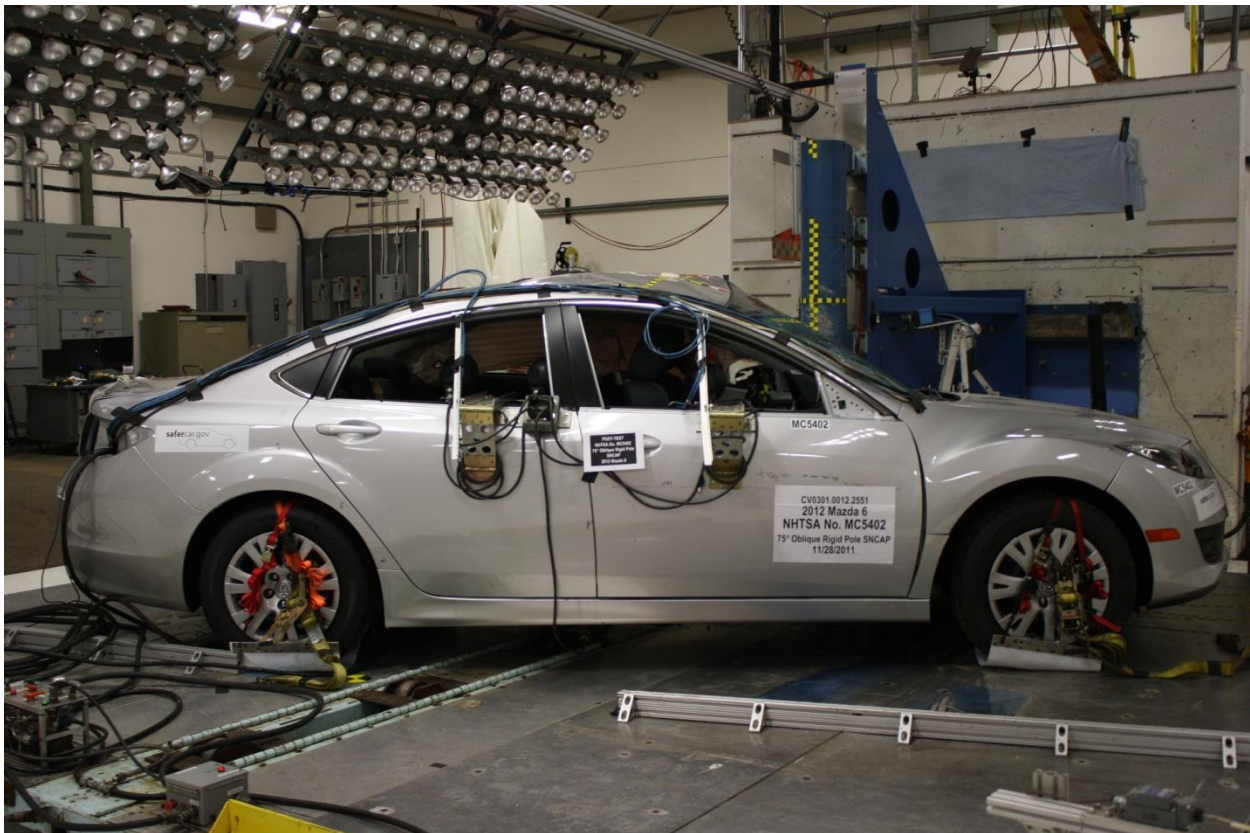


Figure A-14: Post-Test Right Side View of Test Vehicle



Figure A-15: Pre-Test Overhead View of Test Area



Figure A-16: Post-Test Overhead View of Test Area



Figure A-17: Pre-Test Left Side View of Pole Positioned Against Side of Vehicle

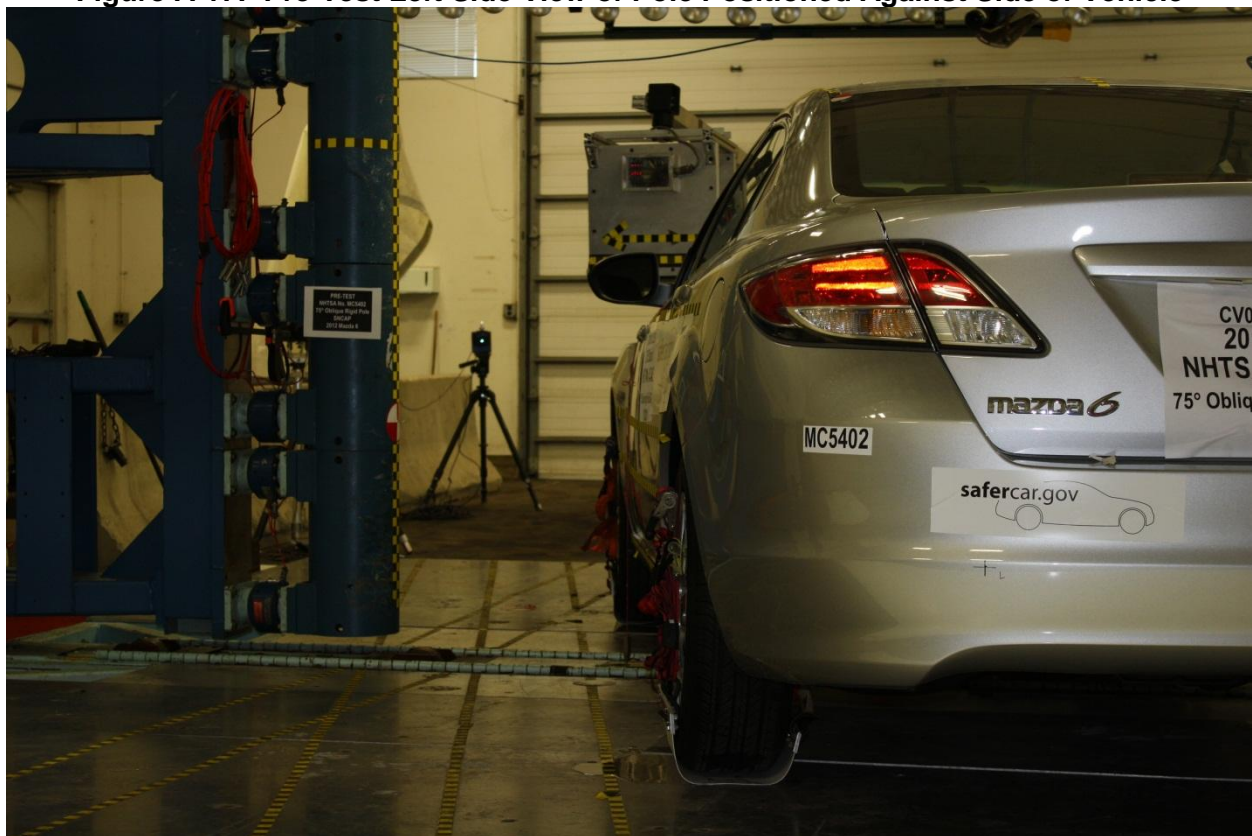


Figure A-18: Pre-Test Right Side View of Pole Positioned Against Side of Vehicle



Figure A-19: Pre-Test Close-Up View of Impact Point Target



Figure A-20: Post-Test Close-Up View of Impact Point Target Showing Impact Location



Figure A-21: Pre-Test Front Close-Up View of Dummy Head and Chest



Figure A-22: Post-Test Front Close-Up View of Dummy



Figure A-23. Pre-Test Left Side View of Dummy Showing Belt and Chalking



Figure A-24: Pre-Test Left Side View of Dummy Shoulder and Door Top View



Figure A-25: Post-Test Left Side View of Dummy Shoulder and Door Top View



Figure A-26: Pre-Test Front View of Seat Back Prior to Dummy Positioning



Figure A-27: Pre-Test Front Close-Up View of Dummy Head and Shoulders in Relation to Head Restraint



Figure A-28: Pre-Test Front View of Seat Pan Prior to Dummy Positioning



Figure A-29: Pre-Test Overhead View of Dummy Thighs on Seat Pan



Figure A-30: Pre-Test Left Side View of Dummy's Neck Showing Position of Adjustable Neck Bracket

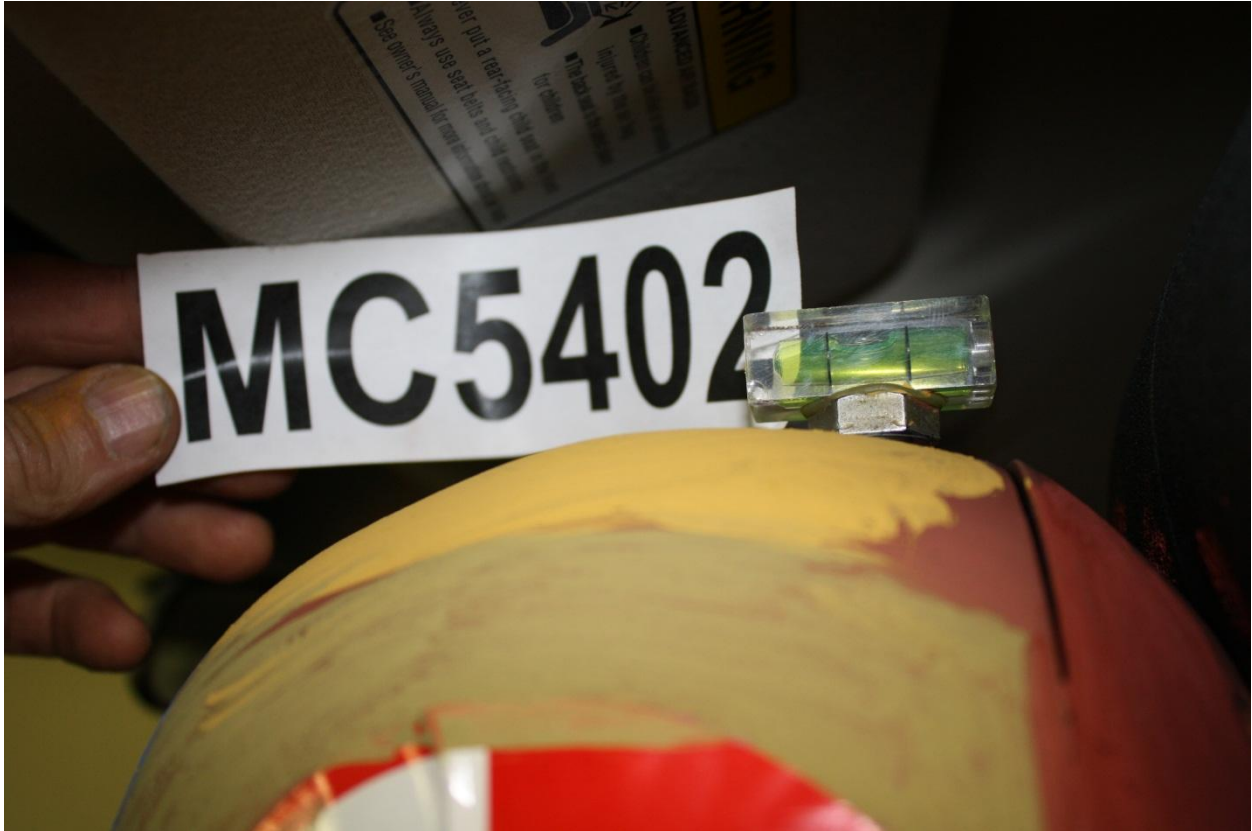


Figure A-31: Pre-Test Left Side View of Dummy's Head Showing Dummy's Head is Level



Figure A-32: Pre-Test Placement of Dummy's Feet



Figure A-33: Pre-Test View of Belt Anchorage for Dummy



Figure A-34: Pre-Test Left Side View of Steering Wheel



Figure A-35: Pre-Test View of Disengaged Parking Brake



Figure A-36: Pre-Test View of Parking Brake



Figure A-37: Pre-Test Close-Up Left Side View of Driver Seat Track



Figure A-38: Pre-Test Close-Up Left Side View of Driver Seat Back



Figure A-39: Pre-Test Close-Up View of Driver Seat Back or Head Restraint



Figure A-40: Pre-Test Dummy and Door Clearance View



Figure A-41: Post-Test Dummy and Door Clearance View



Figure A-42: Pre-Test Right Side View of Dummy and Front Seat of Occupant Compartment



Figure A-43: Post-Test Right Side View of Dummy and Front Seat of Occupant Compartment

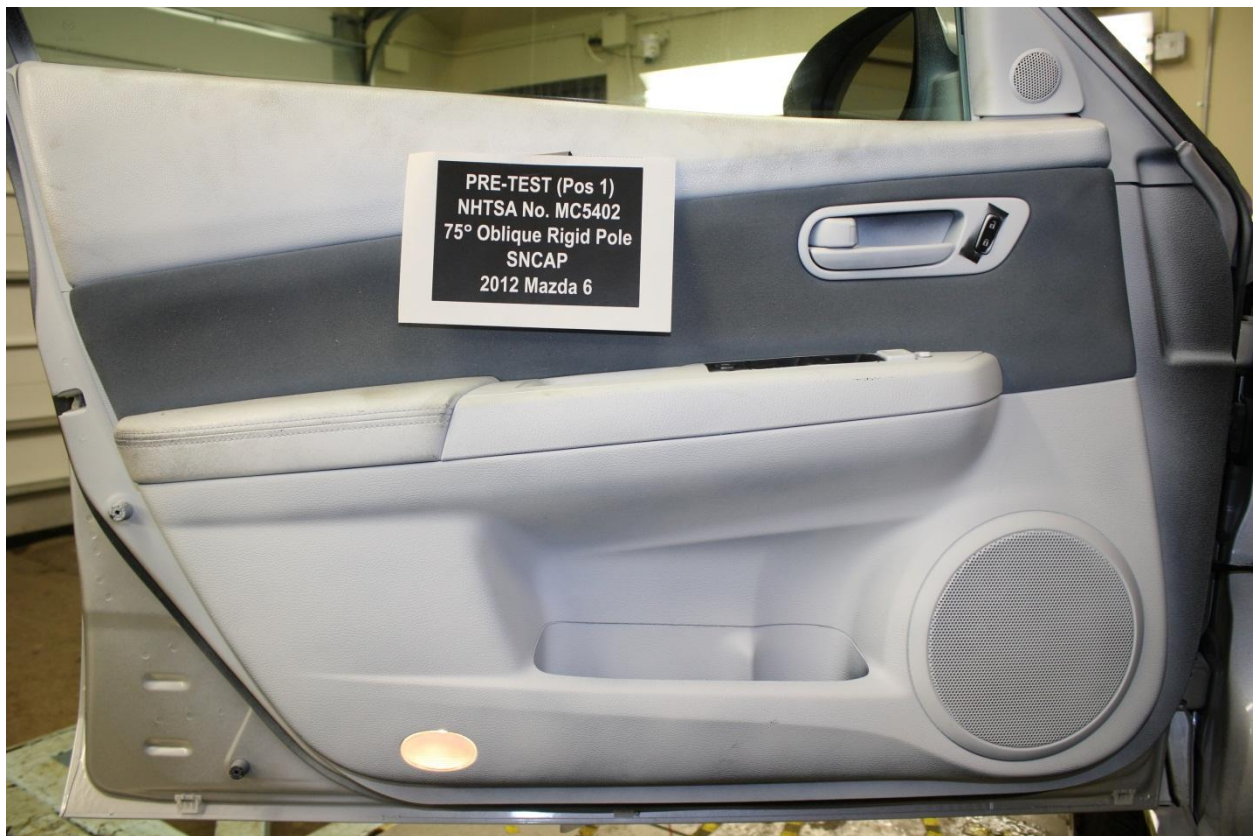


Figure A-44: Pre-Test Inner Door Panel View



Figure A-45: Post-Test Inner Door Panel View Showing Dummy Contact Location



Figure A-46: Post-Test Dummy Close-Up Head Contact with Vehicle Interior View



Figure A-47: Post-Test Dummy Close-Up Head Contact with Side Airbag View



Figure A-48: Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View



Figure A-49: Post-Test Dummy Close-Up Torso Contact with Side Airbag View



Figure A-50: Post-Test Dummy Close-Up Pelvis Contact With Vehicle Interior



Figure A-51: Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View



Figure A-52: Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



Figure A-53: Post-Test View of Fuel Filler Cap or Fuel Filler Neck



Figure A-54: Close-Up View of Vehicle's Certification Label

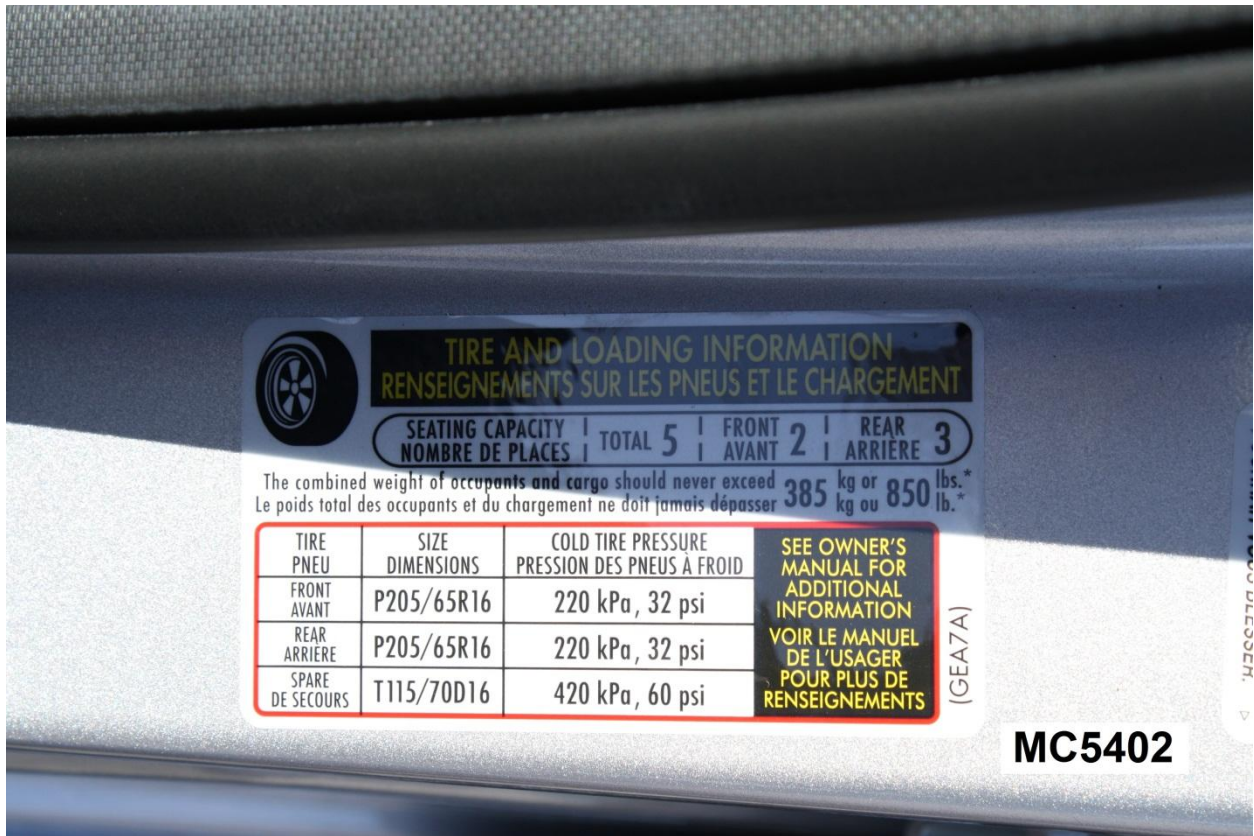


Figure A-55: Close-Up View of Vehicle's Tire Information Placard or Label



Figure A-56: Pre-Test Pole Barrier Front View

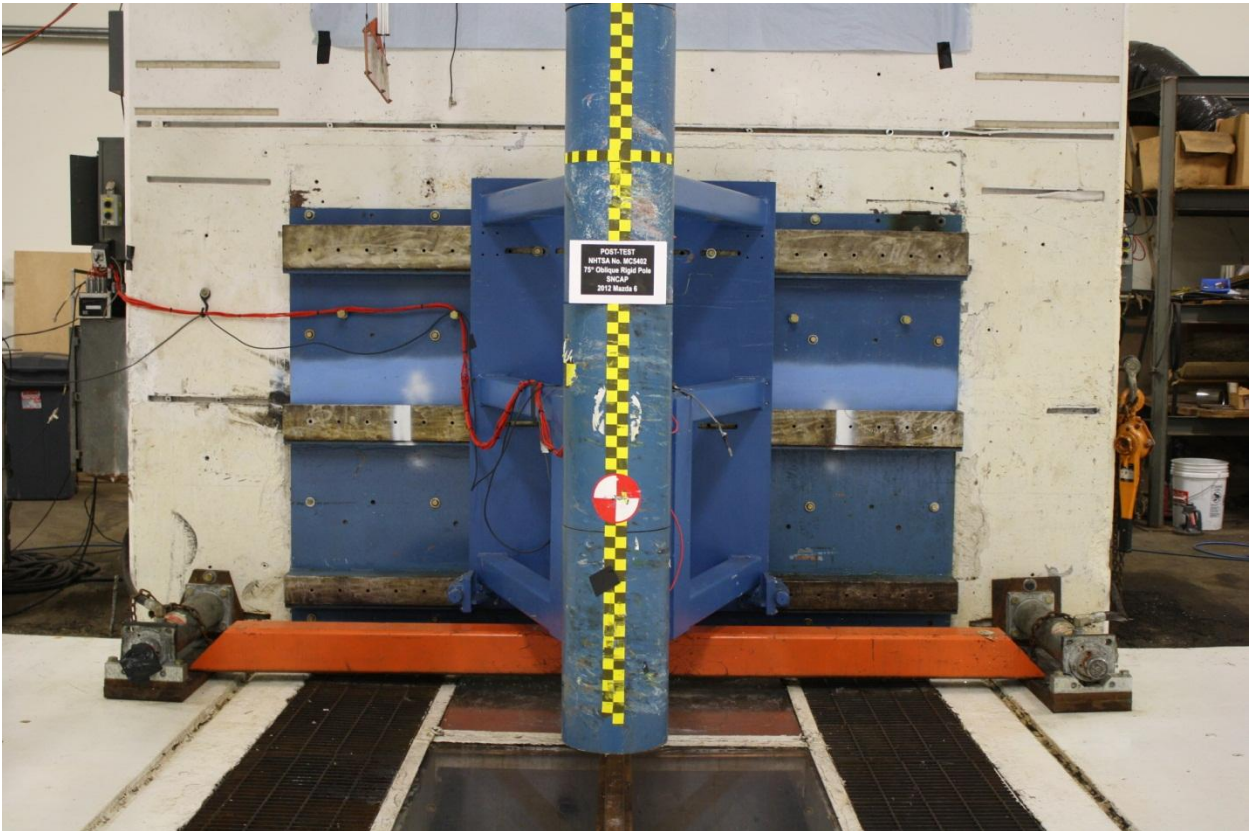


Figure A-57: Post-Test Pole Barrier Front View

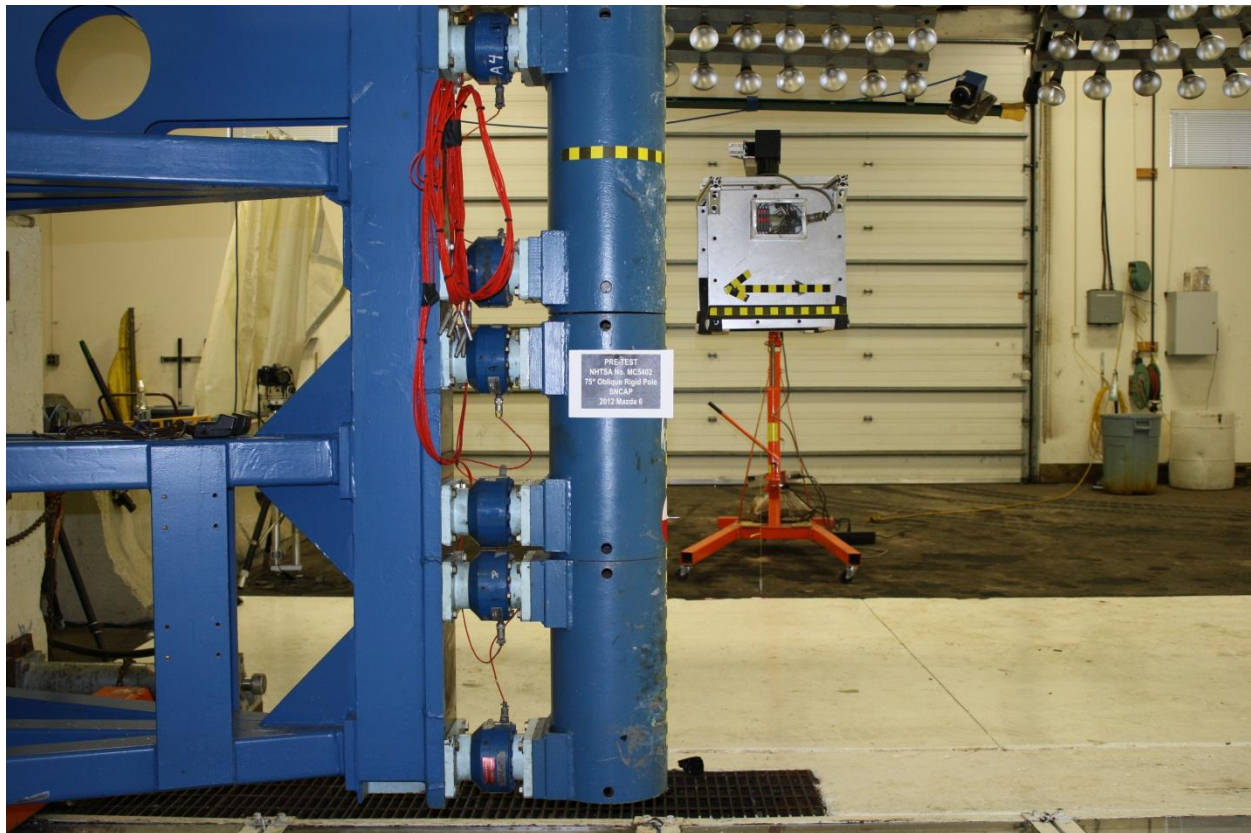


Figure A-58: Pre-Test Pole Barrier Side View

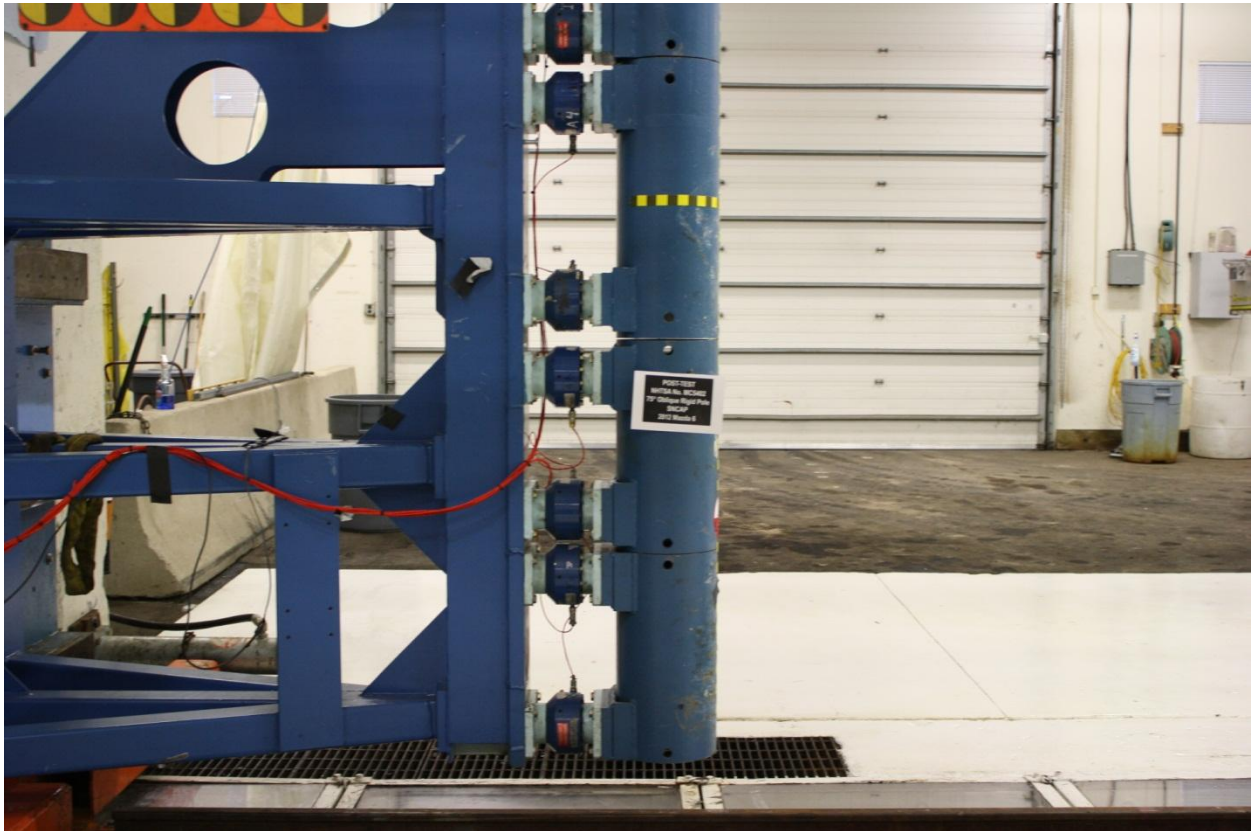


Figure A-59: Post-Test Pole Barrier Side View



Figure A-60: Pre-Test Ballast View



Figure A-61: Post-Test Primary and Redundant Speed Trap Read-Out

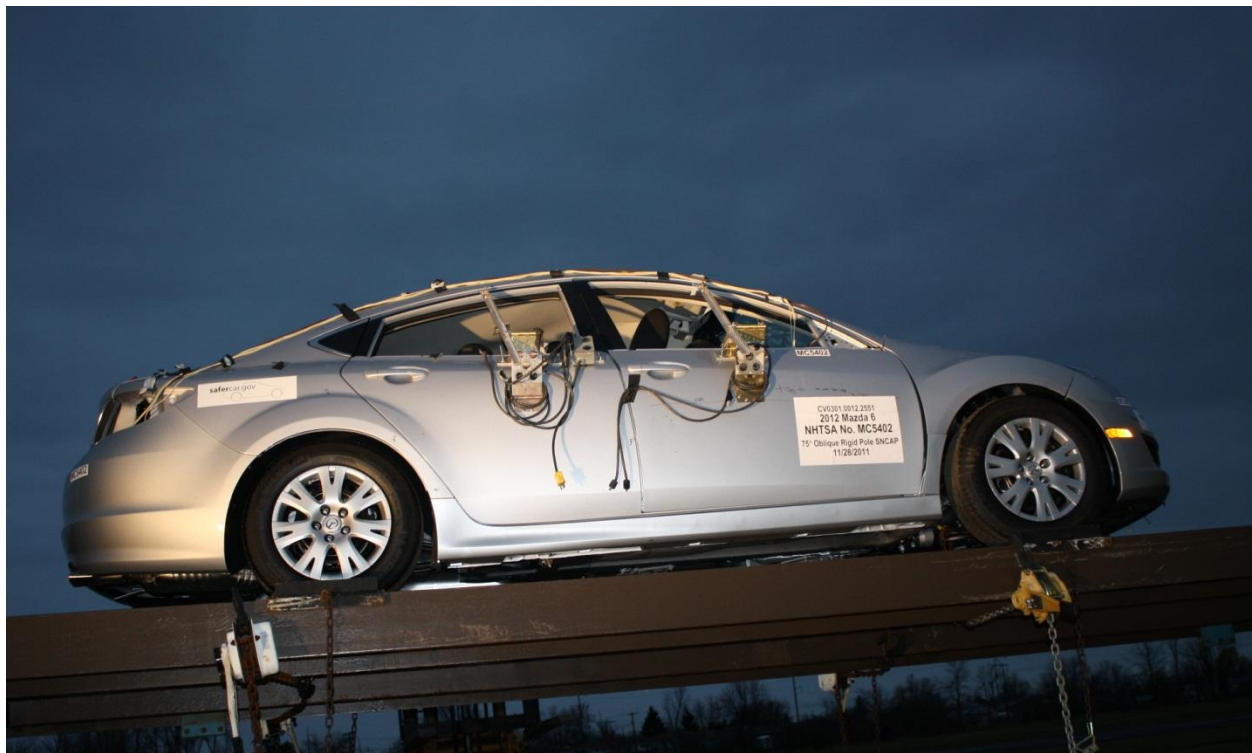


Figure A-62: FMVSS No. 301 Static Rollover 0 Degrees

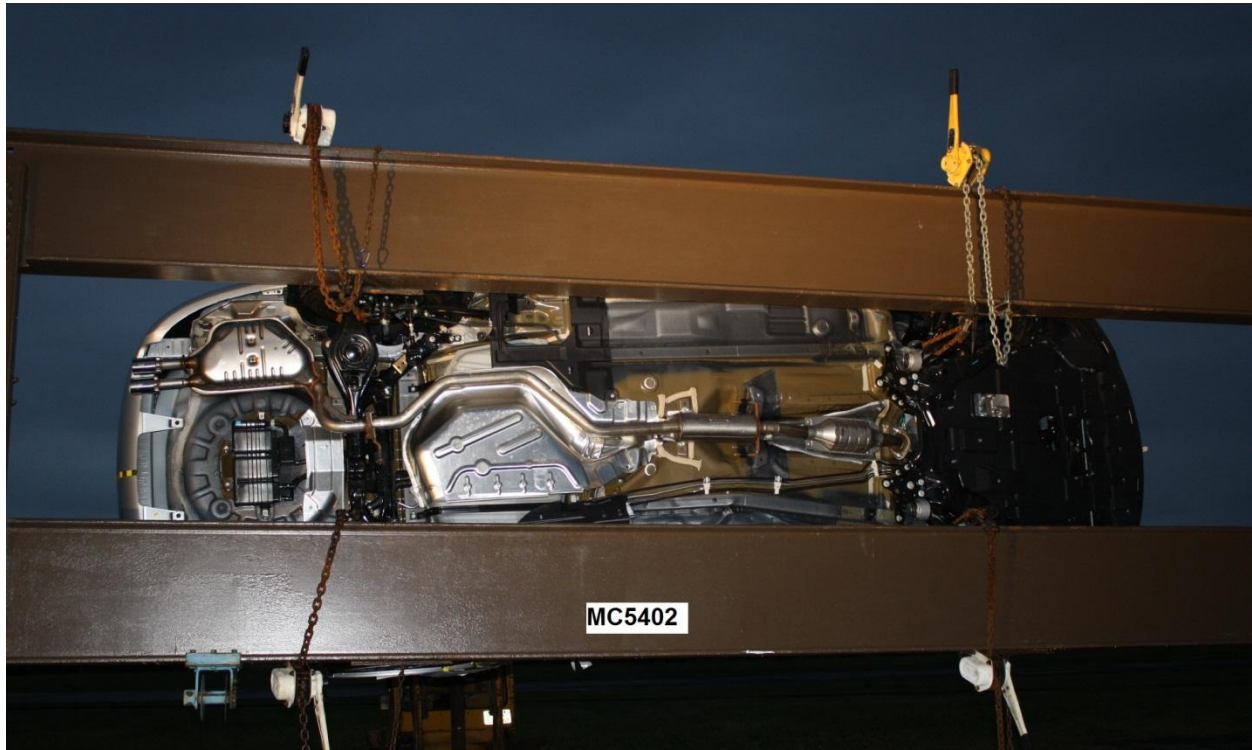


Figure A-63: FMVSS No. 301 Static Rollover 90 Degrees



Figure A-64: FMVSS No. 301 Static Rollover 180 Degrees



Figure A-65: FMVSS No. 301 Static Rollover 270 Degrees



Figure A-66: FMVSS No. 301 Static Rollover 360 Degrees



Figure A-67: Impact Event


 mazda		MIDSIZE CAR Model: 2012 MAZDA6 I SEDAN SPORT Exterior Color: INGOT SILVER Interior Color: BLACK	
EPA Fuel Economy Estimates		STANDARD EQUIPMENT	
<p>CITY MPG</p> <p style="font-size: 2em;">22</p> <p>Expected range for most drivers 18 to 26 MPG</p>	<p>Estimated Annual Fuel Cost</p> <p style="font-size: 1.5em;">\$1,800</p> <p>based on 15,000 miles at \$3.00 per gallon</p> <p>Combined Fuel Economy</p> <p style="font-size: 1.5em;">25</p> <p>All Midsize cars</p>	<p>HIGHWAY MPG</p> <p style="font-size: 2em;">31</p> <p>Expected range for most drivers 25 to 37 MPG</p> <p>Your actual mileage will vary depending on how you drive and maintain your vehicle.</p>	<p>PARTS CONTENT INFORMATION:</p> <p>FOR VEHICLES IN THIS CARLINE: U.S./CANADIAN PARTS CONTENT: 55%</p> <p>MAJOR SOURCES OF FOREIGN PARTS CONTENT: JAPAN 35%</p> <p>NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION, OR OTHER NON-PARTS COSTS.</p> <p>FOR THIS VEHICLE: FINAL ASSEMBLY POINT: FLAT ROCK, MI, USA COUNTRY OF ORIGIN: ENGINE: JAPAN TRANSMISSION: JAPAN</p> <p>This label is affixed pursuant to the Federal Automobile Disclosure Act, Gasoline, License and Title Fees, State and Local taxes, and Dealer installed options are not included.</p>
Environmental Performance Protect the environment, choose vehicles with higher scores:		GOVERNMENT SAFETY RATINGS	
<p>Global Warming Score 8</p> <p>Smog Score 9</p> <p>Vehicle emissions are a primary contributor to global warming and smog. Scores are determined by the California Air Resources Board based on this vehicle's measured emissions. Please visit www.DriveClean.ca.gov for more information. AIR RESOURCES BOARD</p>		<p>Frontal Crash Driver Passenger Not Rated Not Rated</p> <p>Star ratings based on the risk of injury in a frontal impact. Frontal rating should ONLY be compared to other vehicles of similar size and weight.</p> <p>Side Crash Front seat Rear seat Not Rated Not Rated</p> <p>Star ratings based on the risk of injury in a side impact.</p> <p>Rollover ★★★★★</p> <p>Star ratings based on the risk of rollover in a single vehicle crash. Star ratings range from 1 to 5 stars (★★★★★) with 5 being the highest. Source: National Highway Traffic Safety Administration (NHTSA). www.safercar.gov or 1-888-327-4236</p>	
<p>SOLD TO: 50153 NORTH TOWN MAZDA 3900 SHERIDAN DR AMHERST, NY 14226</p>		<p>SHIP TO: 50153 NORTH TOWN MAZDA 3900 SHERIDAN DR AMHERST, NY 14226</p>	
<p>1YVHZ8BH4C5M00610</p> <p>MAZDAUSA.COM</p>		<p>MSRP \$21,240</p> <p>CEZ PZEV EMISSIONS-168 HP/166 LB FT TORQUE</p> <p>NO CHARGE \$21,240 Delivery, Processing and Handling Fee \$795 Total MSRP \$22,035</p> <p>ALWAYS THE SOUL OF A SPORTS CAR. ZOOM-ZOOM</p>	

Figure A-68: Monroney Label

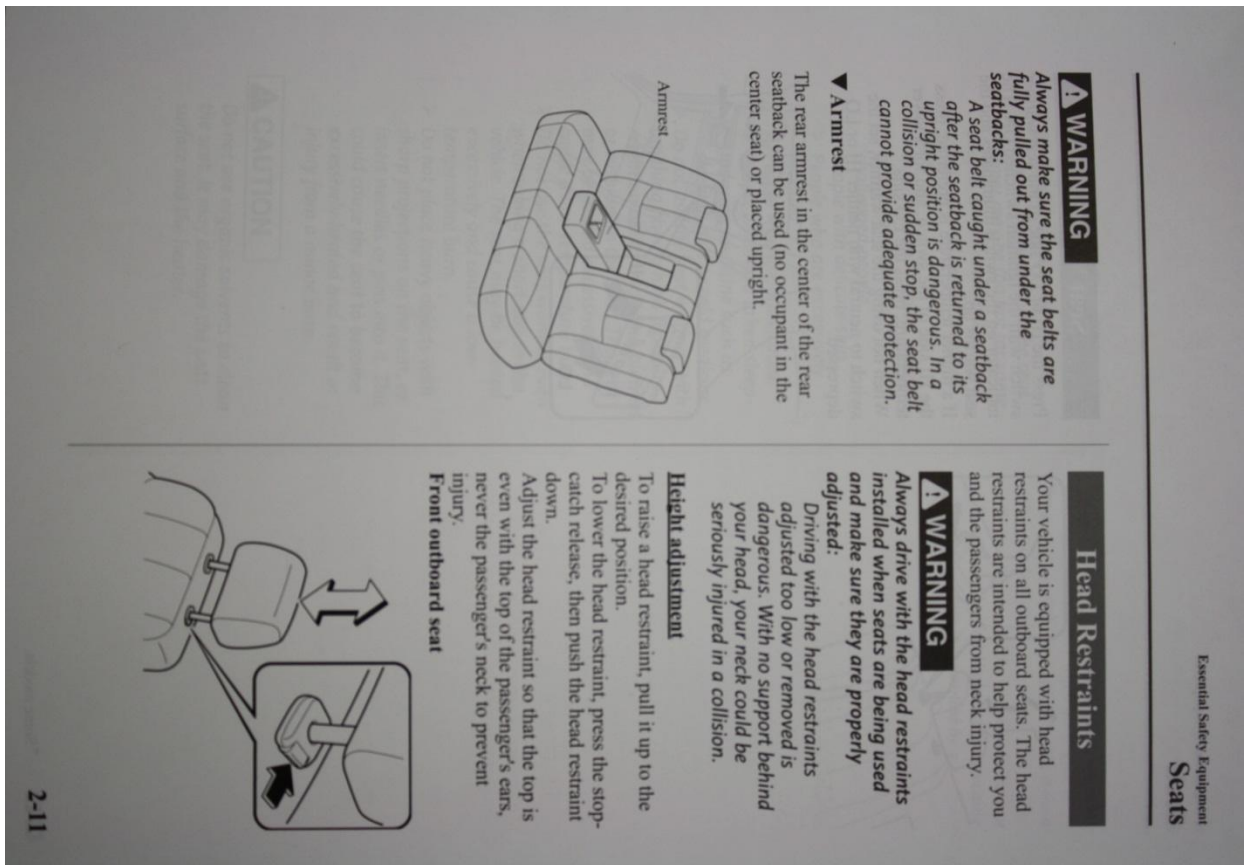


Figure A-69: Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

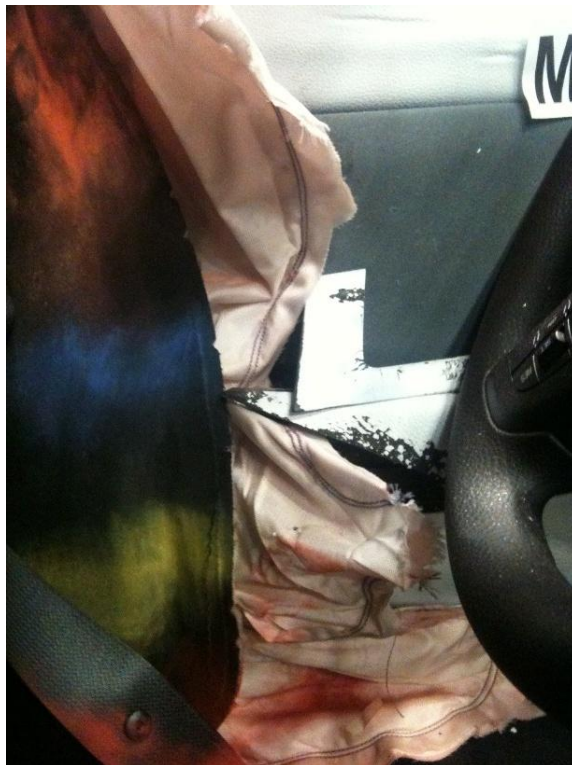


Figure A-70: Post-Test Driver Torso / Pelvis Airbag Obstruction



Figure A-71: Post-Test Left Rear Passengers Floor Pan Separation

APPENDIX B
VEHICLE AND DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS

No.		Page
	Driver Dummy Instrumentation Plots	
1	Driver Head Acceleration (X) Primary vs. Time	B-5
2	Driver Head Acceleration (Y) Primary vs. Time	B-5
3	Driver Head Acceleration(Z) Primary vs. Time	B-6
4	Driver Head Resultant Primary vs. Time	B-6
5	Driver Lower Spine T12 Acceleration (X) vs. Time	B-7
6	Driver Lower Spine T12 Acceleration (Y) vs. Time	B-7
7	Driver Lower Spine T12 Acceleration (Z) vs. Time	B-8
8	Driver Lower Spine Y12 Resultant Acceleration vs. Time	B-8
9	Driver Iliac Wing Force on Impact Side (Y) vs. Time	B-9
10	Driver Acetabulum Force on Impact Side (Y) vs. Time	B-9
11	Driver Total Pelvis Force on Impact Side (Y) vs. Time	B-10

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

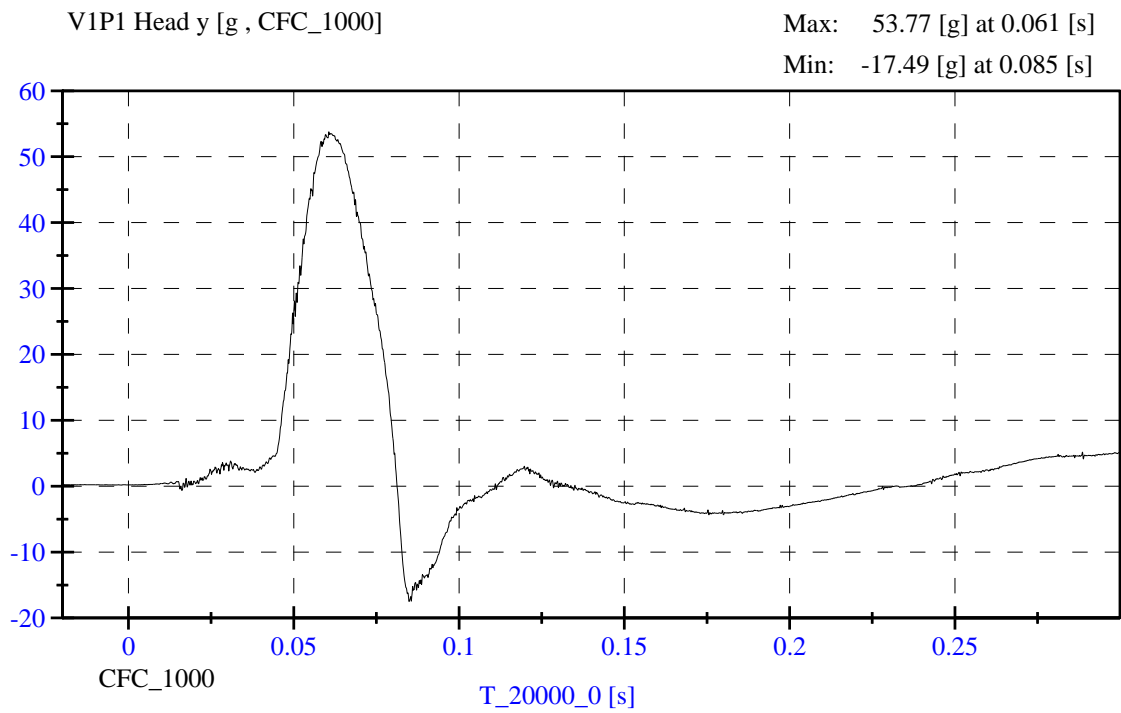
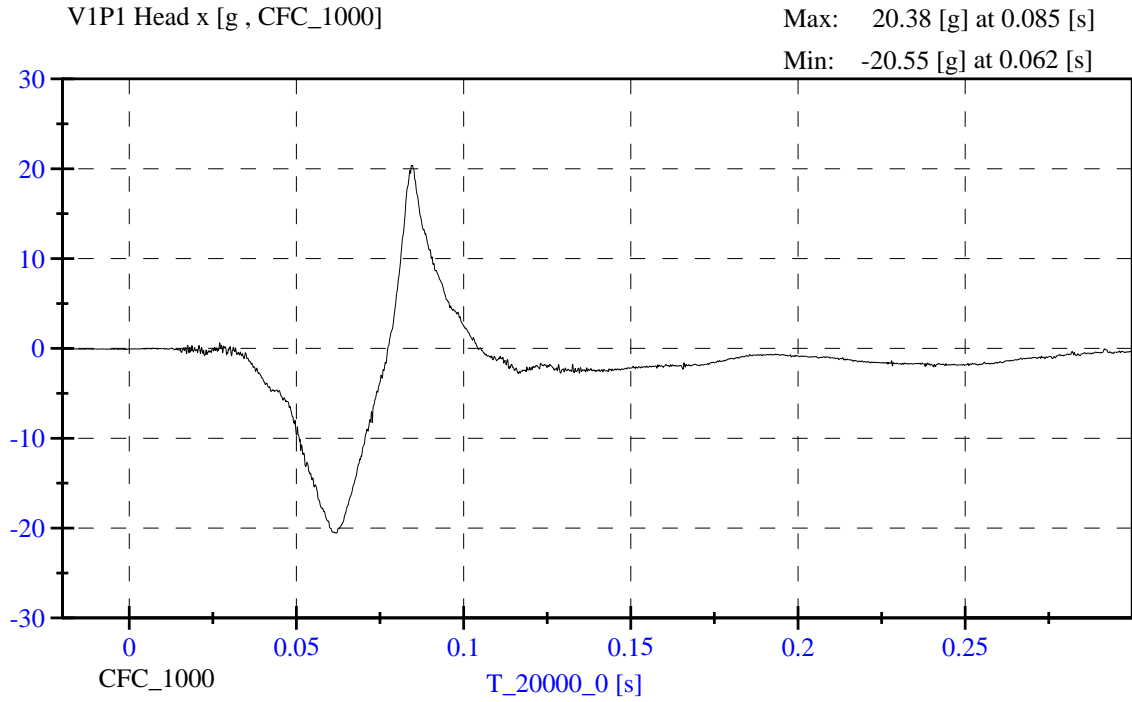
Driver Head Acceleration (X) Redundant
Driver Head Acceleration (Y) Redundant
Driver Head Acceleration (Z) Redundant
Driver Upper Thorax Rib Deflection (Y)
Driver Middle Thorax Rib Deflection (Y)
Driver Lower Thorax Rib Deflection (Y)
Driver Upper Abdomen Rib Deflection (Y)
Driver Lower Abdomen Rib Deflection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

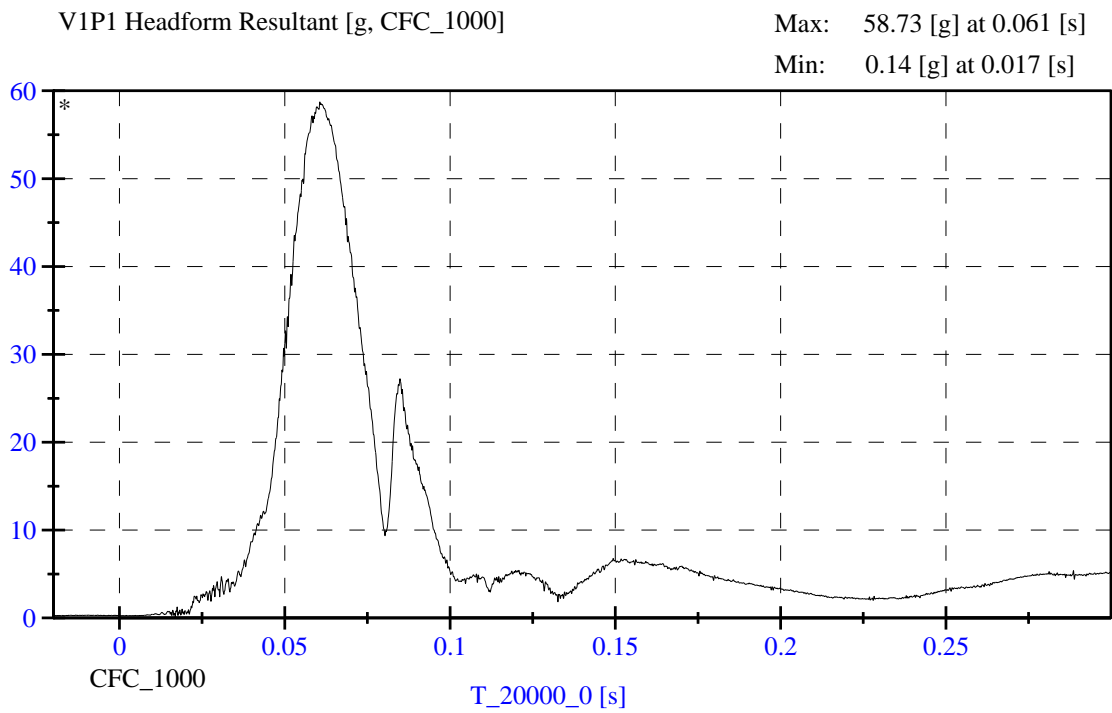
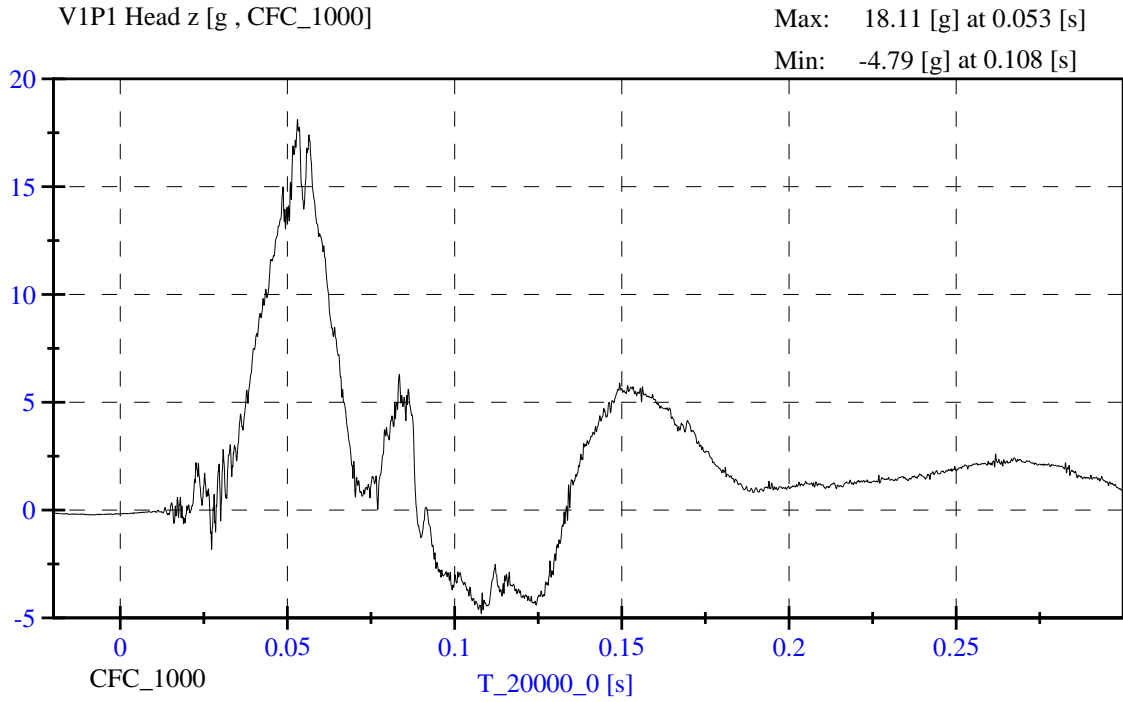
Vehicle Instrumentation Data

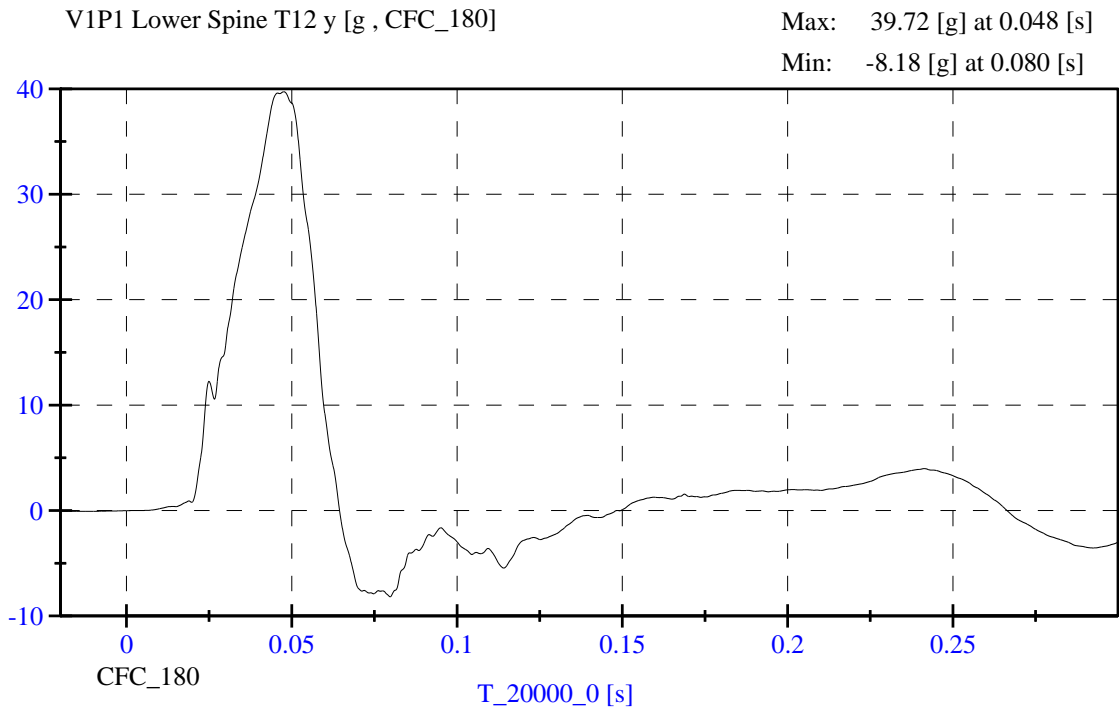
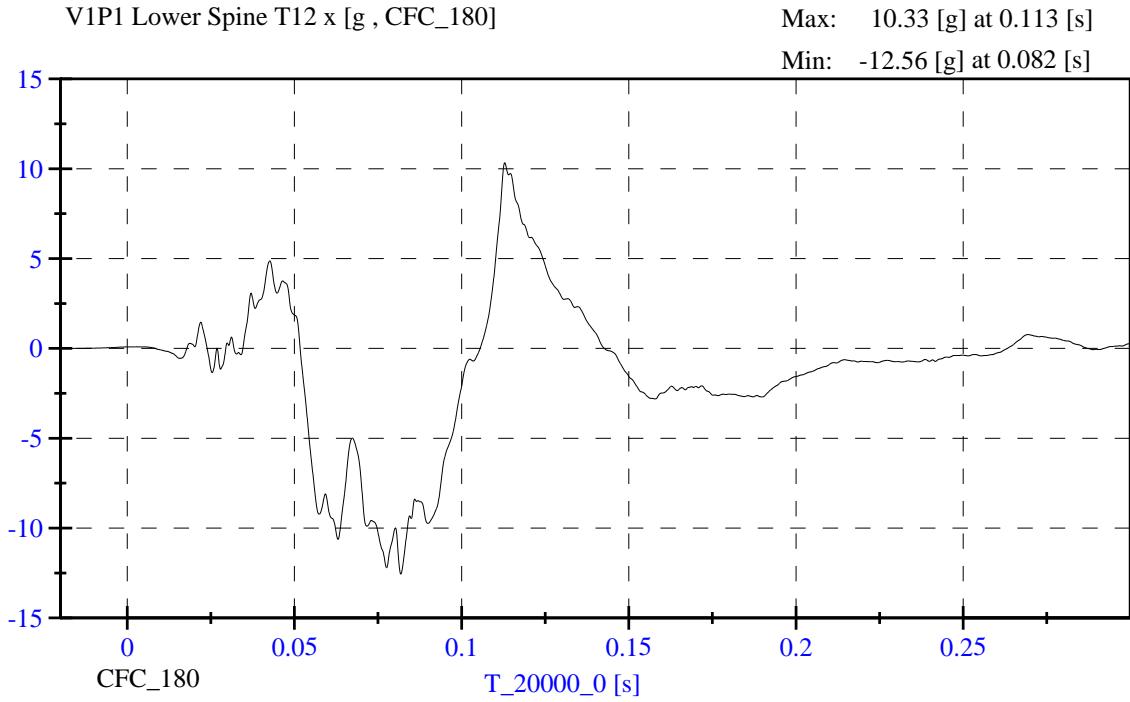
Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
Vehicle Center of Gravity Angular Rate About X (Roll)
Vehicle Center of Gravity Angular Rate About Y (Pitch)
Vehicle Center of Gravity Angular Rate About Z (Yaw)
Left Floor Sill Acceleration (Y)
Left A-Pillar Sill Acceleration (Y)
Left Lower A-Pillar Acceleration (Y)
Left 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 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)
Driver Side Airbag Timing
Driver Side Curtain Airbag Timing

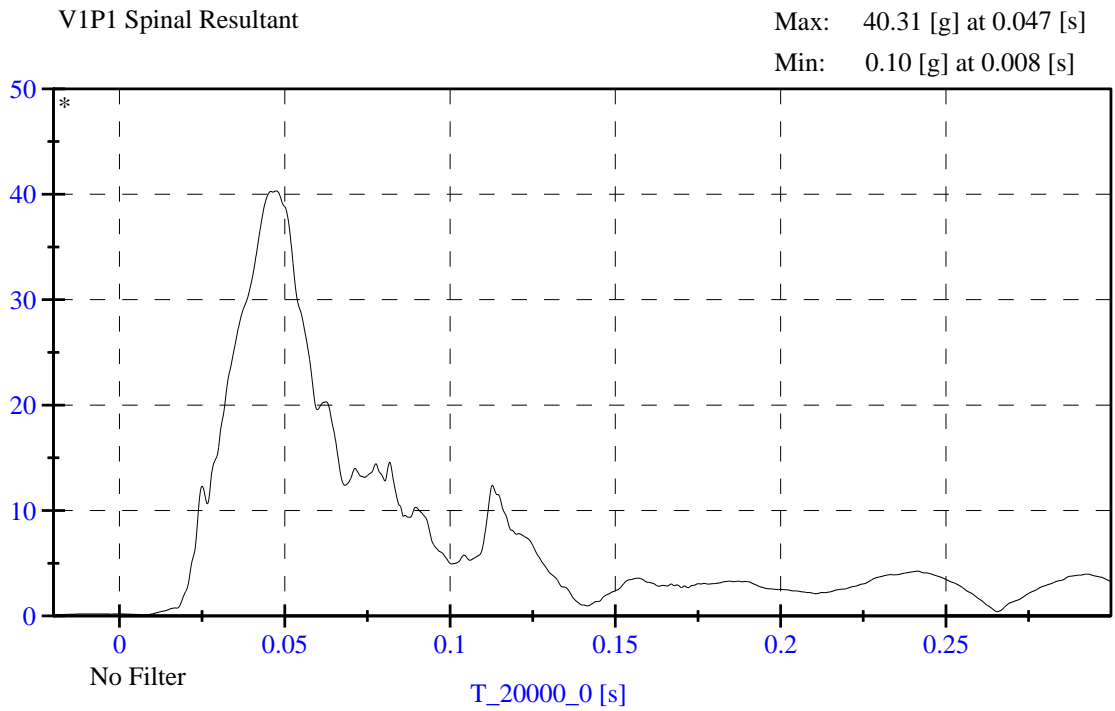
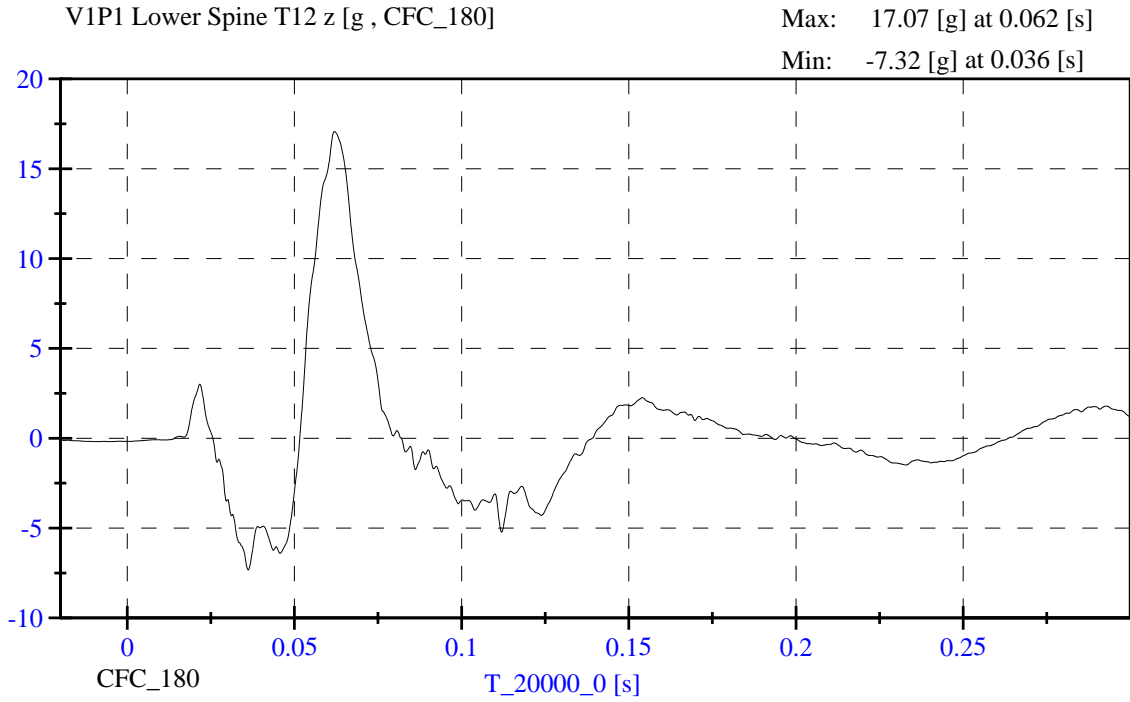
Pole Instrumentation Data

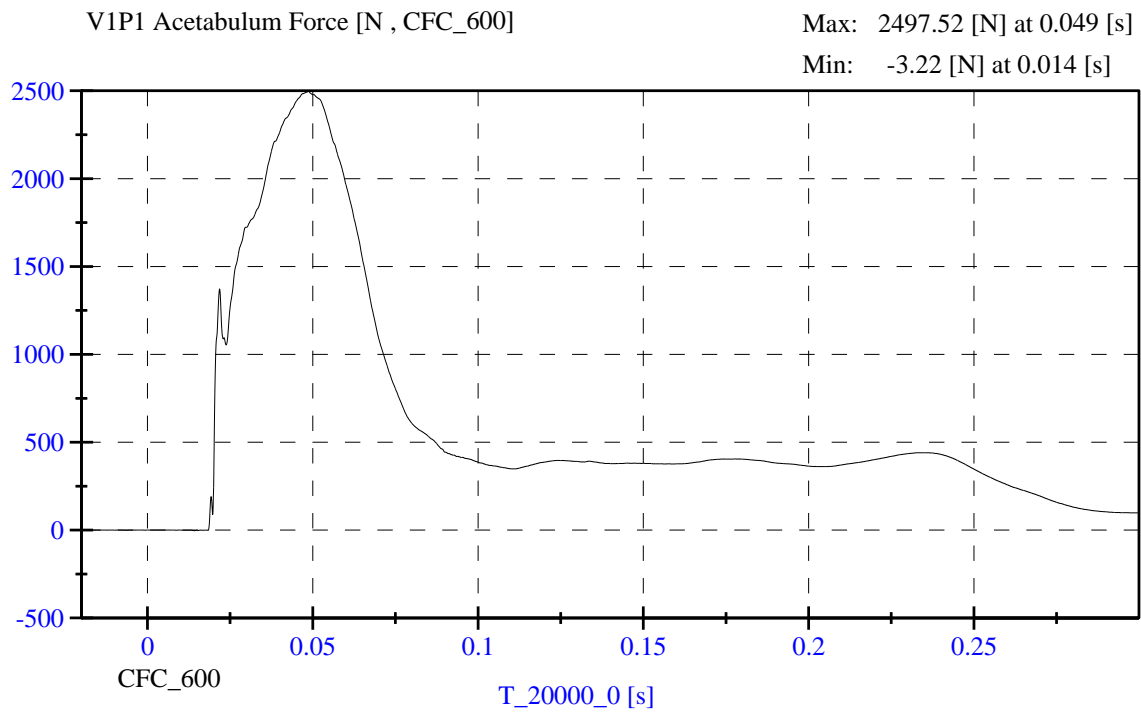
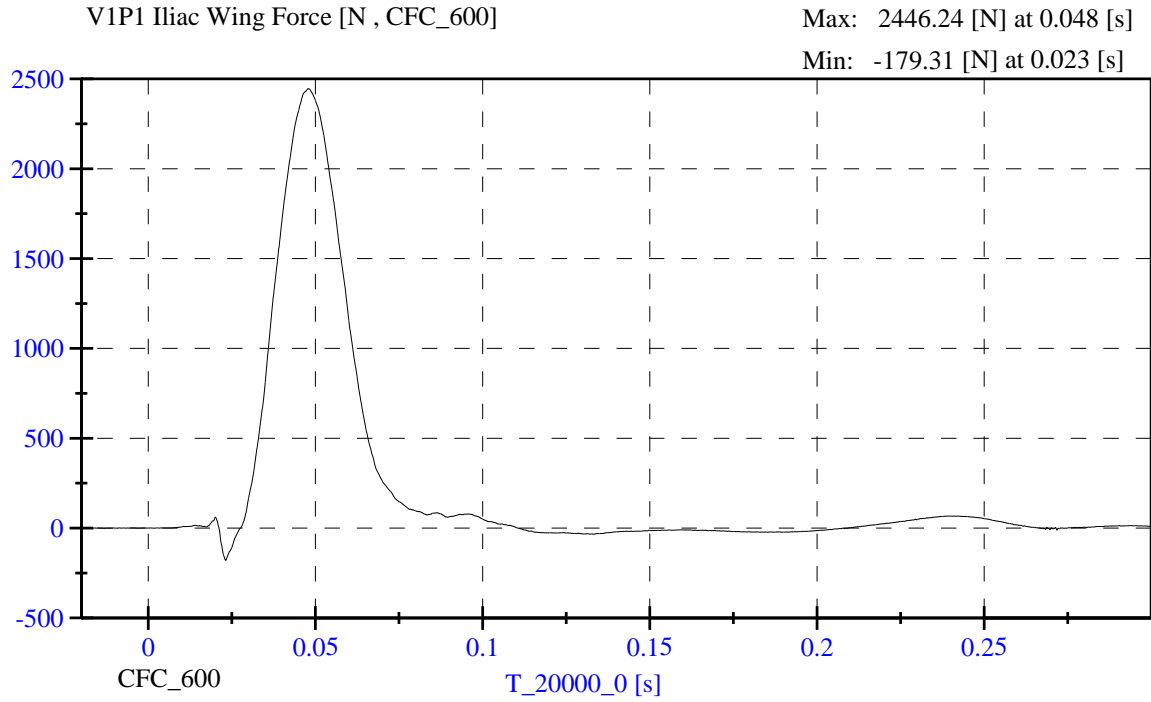
Load Cell Pole Barrier #1 Force (Y)
Load Cell Pole Barrier #2 Force (Y)
Load Cell Pole Barrier #3 Force (Y)
Load Cell Pole Barrier #4 Force (Y)
Load Cell Pole Barrier #5 Force (Y)
Load Cell Pole Barrier #6 Force (Y)
Load Cell Pole Barrier #7 Force (Y)
Load Cell Pole Barrier #8 Force (Y)

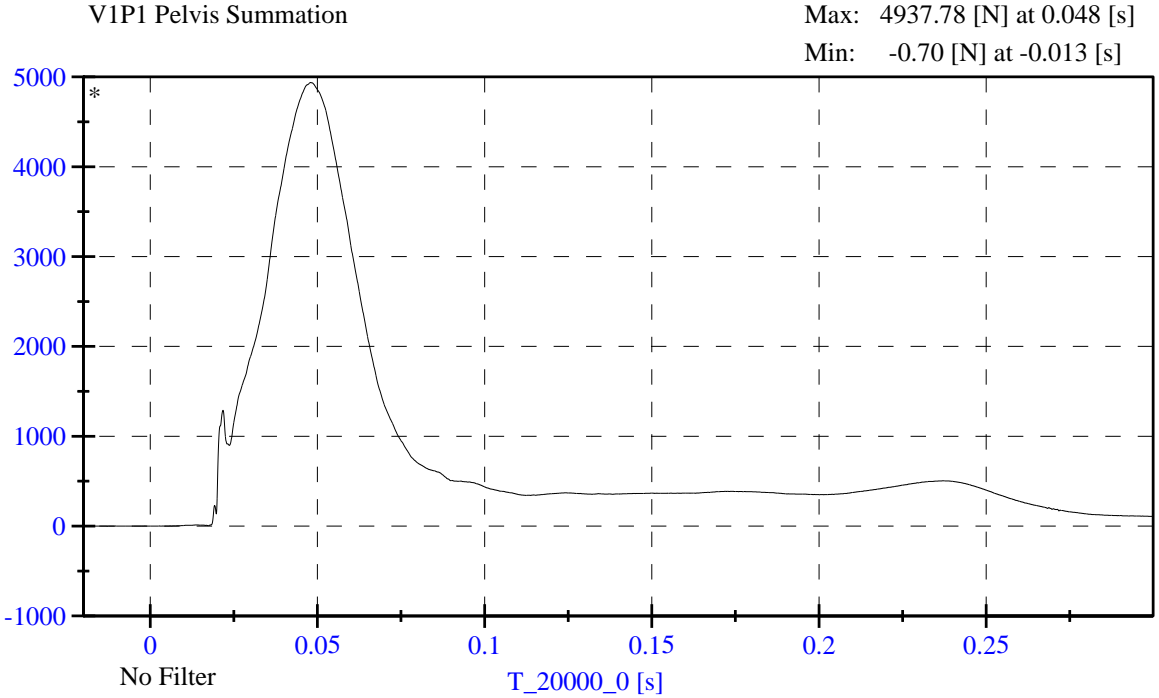












**APPENDIX C
DUMMY CALIBRATION DATA**

CALIBRATION TEST RESULTS

PRE-TEST

SID-IIs No: 304

CONFIGURED FOR LEFT SIDE IMPACT



SID-IIsD External Measurements

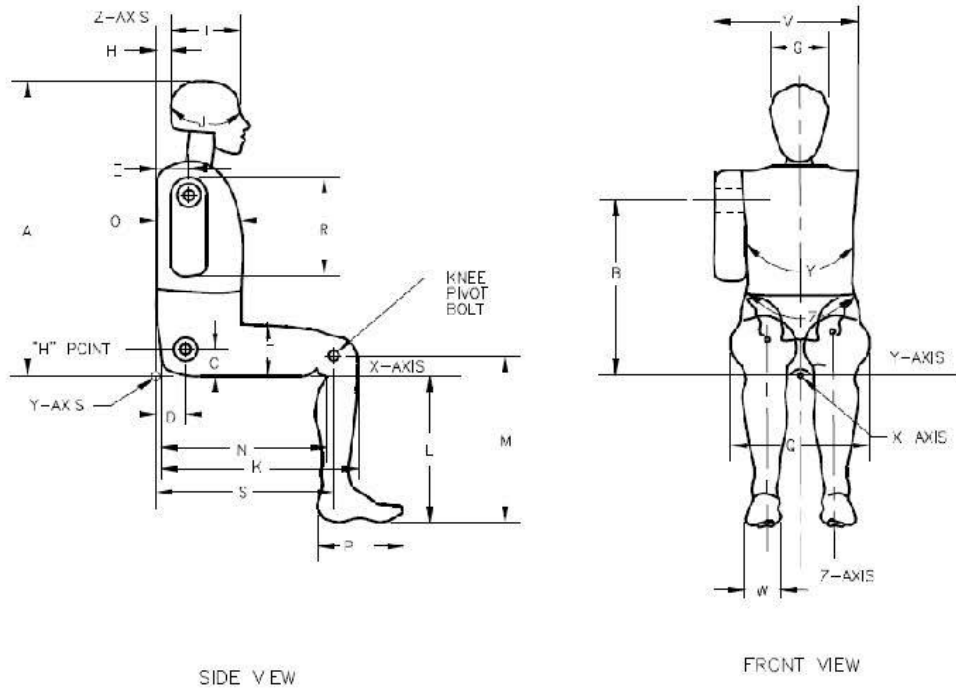
NHTSA ATD S/N DG8012

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	782	Yes
B	Shoulder Pivot Height	437.0 - 453.0	444	Yes
C	H-Point Height	79.0 - 89.0	85	Yes
D	H-Point from Seat Back	141.0 - 151.0	148	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	98	Yes
F	Thigh Clearance	119.0 - 135.0	132	Yes
G	Head Breadth	140.0 - 148.0	145	Yes
H	Head Back from Backline	40.0 - 46.0	43	Yes
I	Head Depth	178.0 - 188.0	187	Yes
J	Head Circumference	541.0 - 551.0	548	Yes
K	Buttock to Knee Length	514.0 - 540.0	530	Yes
L	Popliteal Height	343.0 - 369.0	359	Yes
M	Knee Pivot to Floor Height	393.0 - 409.0	402	Yes
N	Buttock Popliteal Length	416.0 - 442.0	434	Yes
O	Chest Depth without Jacket	195.0 - 211.0	204	Yes
P	Foot Length (right)	216.0 - 232.0	223	Yes
Q	Hip Breadth	313.0 - 323.0	315	Yes
R	Arm Length	249.0 - 259.0	257	Yes
S	Knee Joint to Seat back	478.0 - 493.0	490	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	351	Yes
W	Foot Width (right)	78.0 - 94.0	84	Yes
Y	Chest Circumference with Jacket	851.0 - 881.0	872	Yes
Z	Waist Circumference	761.0 - 791.0	782	Yes

Technician : AR

Date: 11/22/2011

SID-ILSD External Dimension Reference Diagram





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VERIFICATION REPORT

Test Name:	Head Drop	Revision:	12/14/2006
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-IIs		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	11/22/2011
Test Number:	1	Test Time:	3:03:54 PM

Component Part Number	Component Serial Number
Head Skin - 180-1002	1362

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	20.8 deg C P
Humidity	10 -- 70	25 %RH P
Resultant Acceleration	115.0 -- 137.0	125.5 g P
Oscillation	0.0 -- 15.0	8.0 % P
Fore-Aft Acceleration	-15.0 -- 15.0	-2.2 g P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test ID:

Test Time: **3:03:54 PM**

Test Date: **11/22/2011**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Endevco	7264-2000	P66931	6/13/2011
Endevco	7264-2000	P66926	6/13/2011
Endevco	7264-2000	P66943	6/13/2011

Test ID:

Test Time: **3:03:54 PM**

Test Date: **11/22/2011**

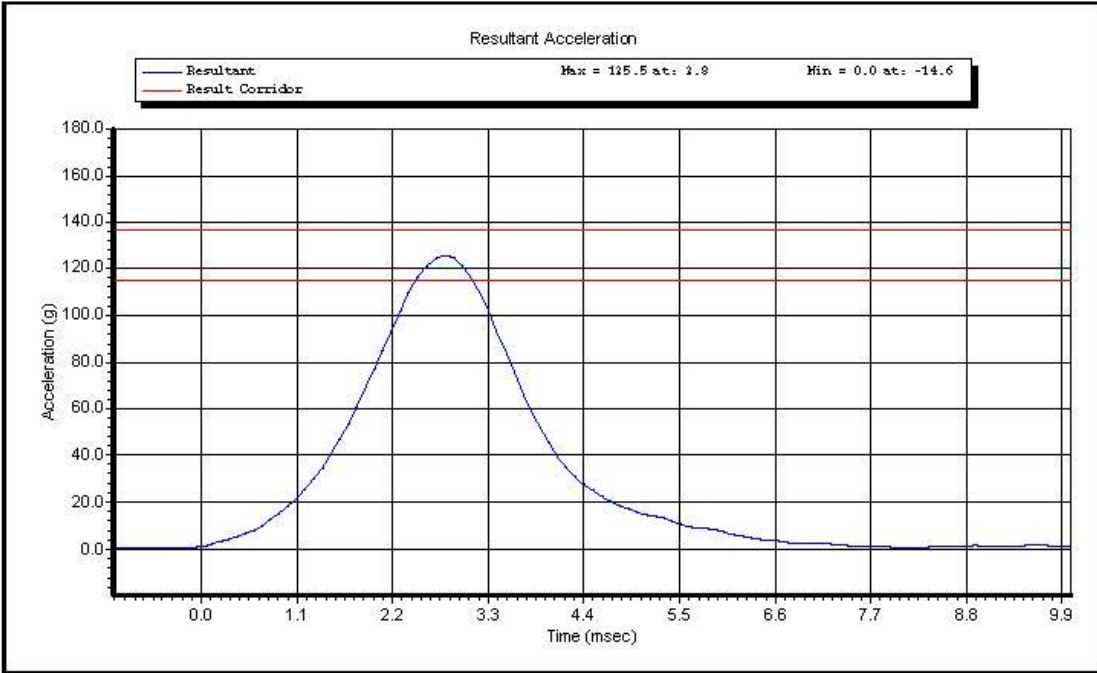


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Test Name:	Head Drop	Revision:	12/14/2006
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	11/22/2011
Test Number:	1	Test Time:	3:03:54 PM



Test ID:

Test Time: **3:03:54 PM**

Test Date: **11/22/2011**

Copyright 2003 Denton ATD, Inc. LabPaqII Version: 1.8.5.0

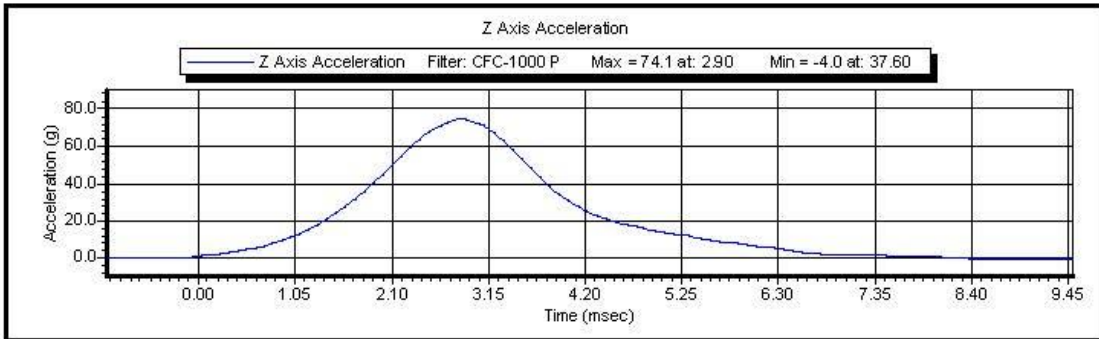
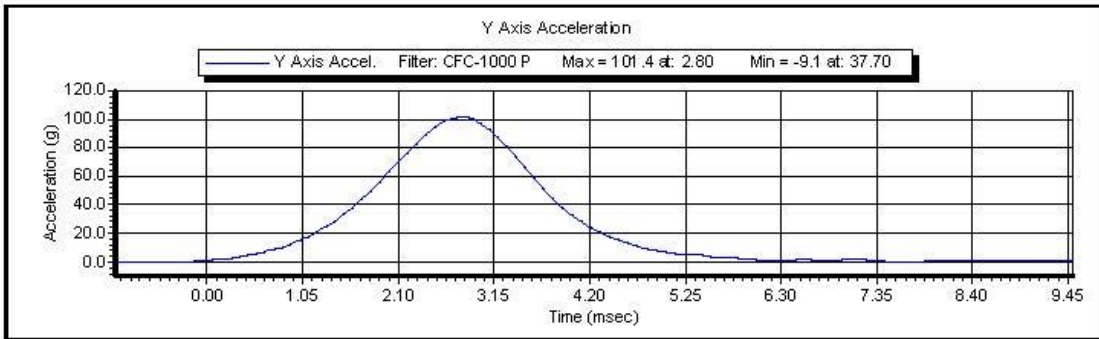
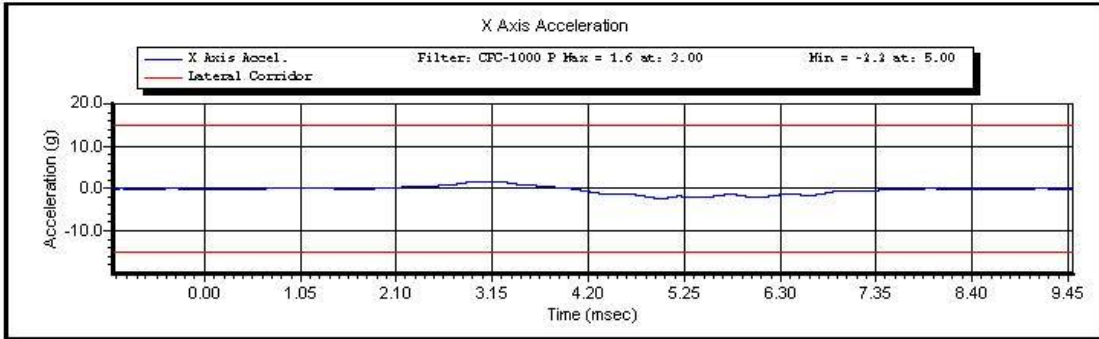
1 of 2



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Test ID:

Test Time: 3:03:54 PM

Test Date: 11/22/2011

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VERIFICATION REPORT

Test Name:	Neck Pendulum	Revision:	8/24/2009
Sub Test Name:	Left Side	Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	11/23/2011
Test Number:	1	Test Time:	10:00:51 AM

Component Part Number	Component Serial Number
Neck - 180-2000	DG7061

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.8 deg C P
Humidity	10 -- 70	33 %RH P
Velocity	5.51 -- 5.63	5.59 m/s P
Pendulum Impulse at 10 ms	2.20 -- 2.80	2.41 m/s P
Pendulum Impulse at 15 ms	3.30 -- 4.10	3.50 m/s P
Pendulum Impulse at 20 ms	4.40 -- 5.40	4.74 m/s P
Pendulum Impulse at 25 ms	5.40 -- 6.10	5.57 m/s P
Pendulum Impulse between 25 and 100 ms	5.50 -- 6.20	5.78 m/s P
Max D Plane Rotation	71.0 -- 81.0	75.1 degrees P
Time at Max Rotation	50.0 -- 70.0	62.2 ms P
Moment about OC	-44.0 -- -36.0	-39.2 Nm P
Moment Decay to Zero	102.0 -- 126.0	113.7 ms P

All test parameters are within specifications

Technician: **A. Rudniski**
Supervisor: **D. Travale**

Test ID:

Test Time: **10:00:51 AM**

Test Date: **11/23/2011**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2011
Endevco	7231CT	C16510	10/3/2011
Denton	1716A	LC-2192Fy	8/31/2011
Denton	1716A	LC-2192Mx	8/31/2011
DentonATD	78051-342	184	5/8/2011
DentonATD	78051-342	174	5/8/2011
DentonATD	78051-342	185	5/8/2011

Test ID:

Test Time: **10:00:51 AM**

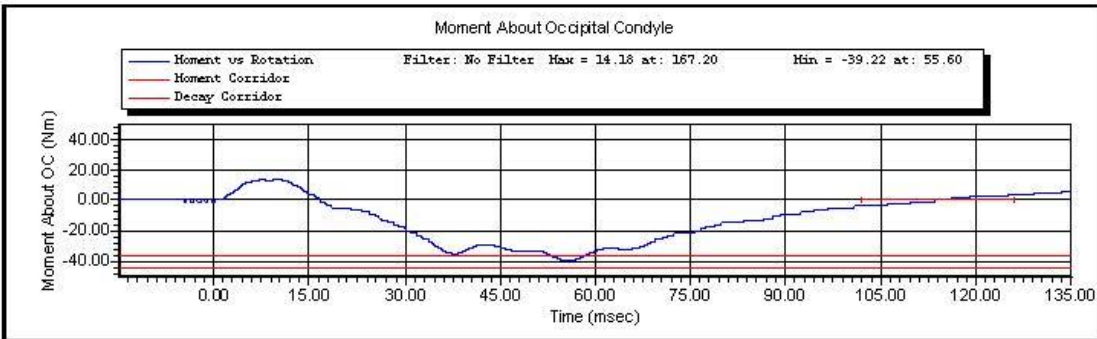
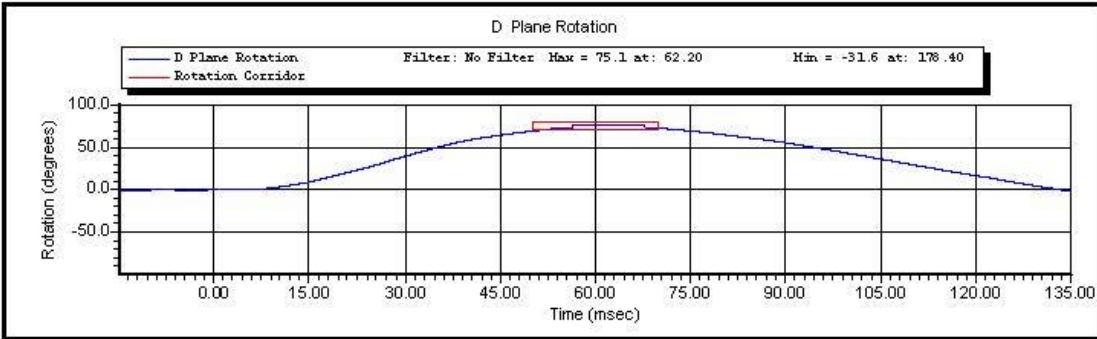
Test Date: **11/23/2011**

Copyright 2006 Denton ATD, Inc. LabPaq II Version: 1.8.5.0

2 of 2



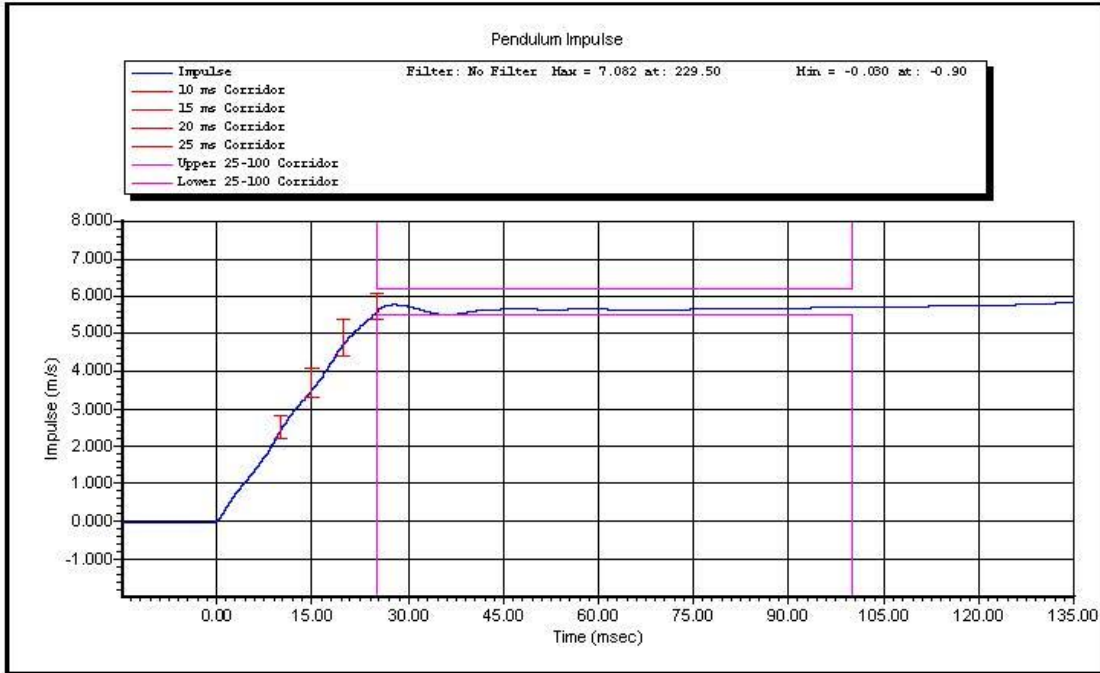
Test Name:	Neck Pendulum	Revision:	8/24/2009
Sub Test Name:	Left Side	Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	11/23/2011
Test Number:	1	Test Time:	10:00:51 AM



Test ID:

Test Time: **10:00:51 AM**

Test Date: **11/23/2011**



Test ID:

Test Time: 10:00:51 AM

Test Date: 11/23/2011

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VERIFICATION REPORT

Test Name:	Shoulder Impact	Revision:	8/24/2009
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	11/22/2011
Test Number:	1	Test Time:	1:59:37 PM

Component Part Number	Component Serial Number
Left Arm 180-6011-1	DG3210
Shoulder Rib 180-3355	DG6997

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.30 deg C P
Humidity	10.0 -- 70.0	25.7 %RH P
Velocity	4.20 -- 4.40	4.35 m/s P
Probe Acceleration	13.0 -- 18.0	15.3 g P
Shoulder Deflection	28.0 -- 37.0	28.8 mm P
T1 Acceleration	17.0 -- 22.0	18.7 g P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test ID:

Test Time: **1:59:37 PM**

Test Date: **11/22/2011**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2011
Endevco	7231CT	AF5B3	11/18/2011
FTSS	180-3881-1	DS-1845	9/1/2011
Endevco	7264-2000	P63561	10/3/2011

Test ID:

Test Time: **1:59:37 PM**

Test Date: **11/22/2011**

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2 of 2

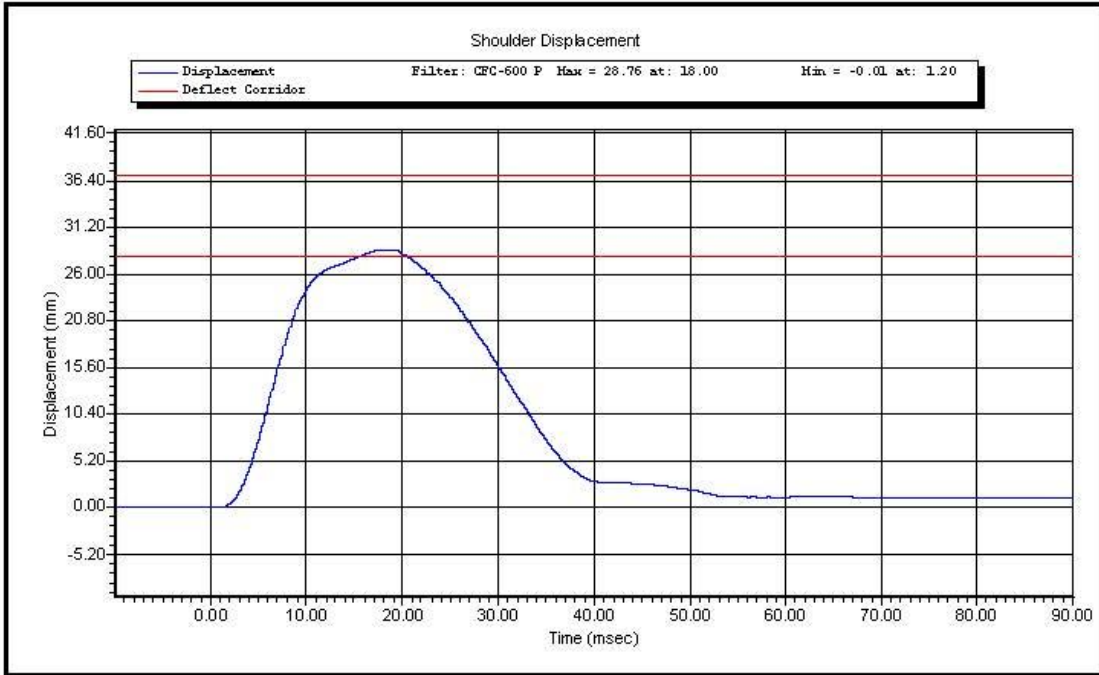


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Test Name:	Shoulder Impact	Revision:	8/24/2009
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	11/22/2011
Test Number:	1	Test Time:	1:59:37 PM



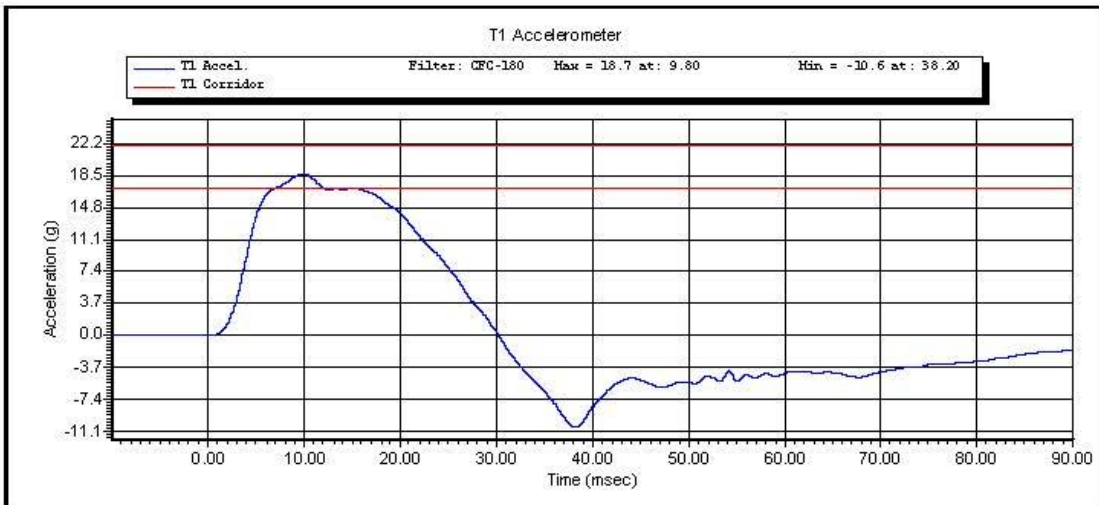
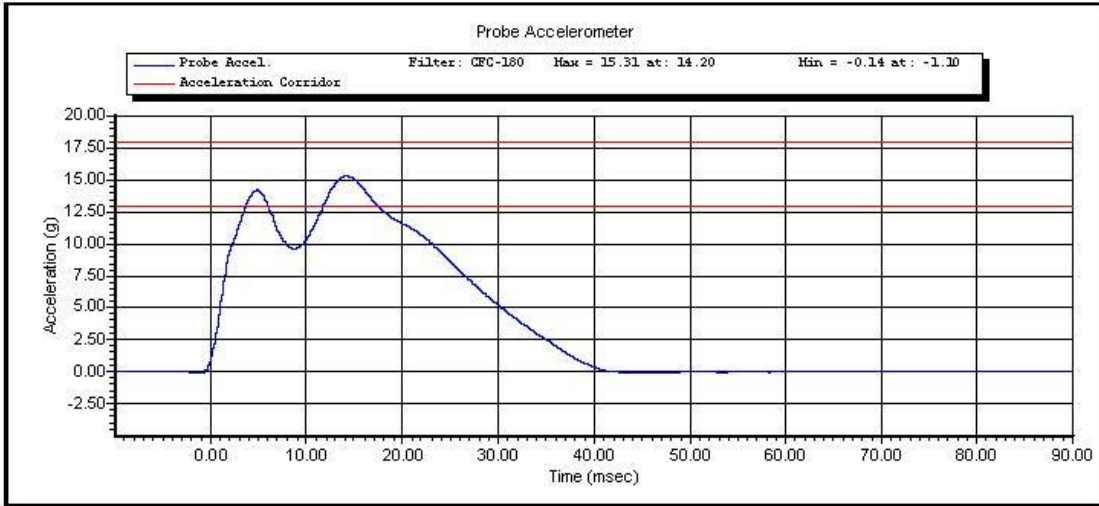
Test ID:

Test Time: **1:59:37 PM**

Test Date: **11/22/2011**

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1 of 2



Test ID:

Test Time: 1:59:37 PM

Test Date: 11/22/2011

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2 of 2



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VERIFICATION REPORT

Test Name:	Thorax Impact with Arm	Revision:	8/24/2009
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:			
Test ID:		Test Date:	11/22/2011
Test Number:	1	Test Time:	1:21:46 PM

Component Part Number	Component Serial Number
Thorax Ribs 1, 2, 3 180-3362	DG6080, DG6081, DG7543
Shoulder Rib 180-3355	DG6997
Left Arm 180-6011-1	DG3210

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.3 deg C P
Humidity	10 -- 70	25 %RH P
Velocity	6.60 -- 6.80	6.73 m/s P
Probe Acceleration after 5ms	30.0 -- 36.0	33.3 g P
Upper Thorax Rib Deflection	25.0 -- 32.0	28.2 mm P
Mid Thorax Rib Deflection	30.0 -- 36.0	32.7 mm P
Lower Thorax Rib Deflection	32.0 -- 38.0	35.1 mm P
Upper Spine Acceleration ("y")	34.0 -- 43.0	40.6 g P
Lower Spine Acceleration ("y")	29.0 -- 37.0	32.3 g P
Shoulder Deflection	31.0 -- 40.0	33.6 mm P

All test parameters are within specifications

Technician: _____

Supervisor: _____

Test ID:

Test Time: **1:21:46 PM**

Test Date: **11/22/2011**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2011
Endevco	7231CT	AF5B3	11/18/2011
FTSS	180-3881-1	DS-1849	9/1/2011
FTSS	180-3881-1	DS-1857	9/1/2011
FTSS	180-3881-1	DS-1859	9/1/2011
Endevco	7264-2000	P63561	10/3/2011
Endevco	7264-2000	P58796	10/5/2011
FTSS	180-3881-1	DS-1845	9/1/2011

Test ID:

Test Time: 1:21:46 PM

Test Date: 11/22/2011

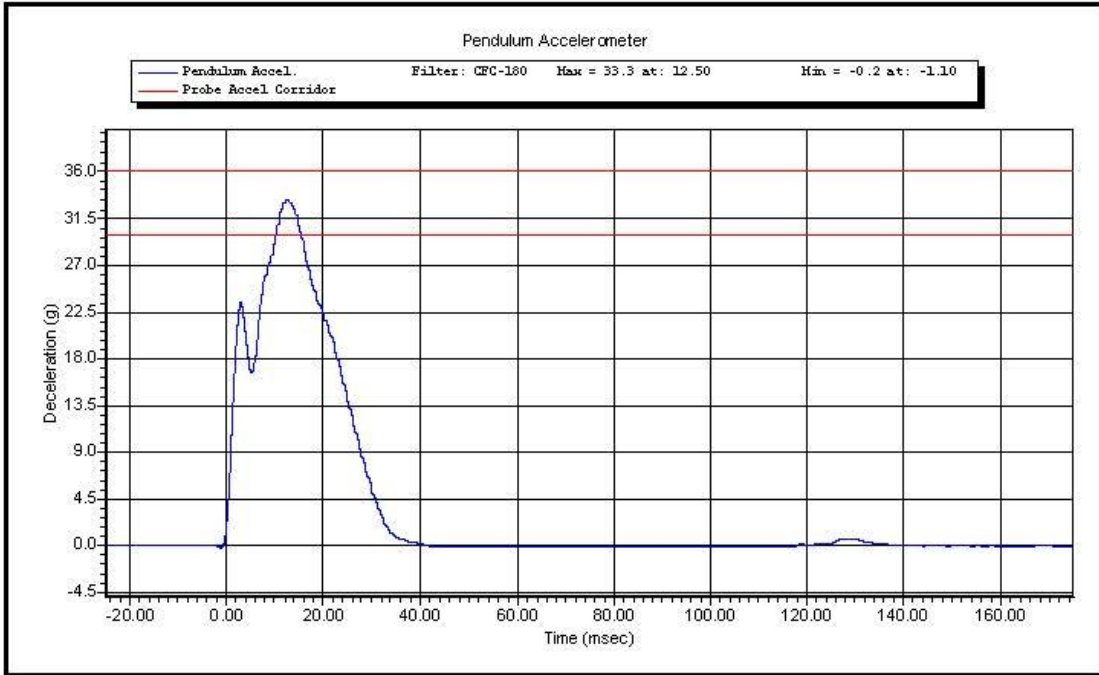


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Test Name:	Thorax Impact with Arm	Revision:	8/24/2009
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:			
Test ID:		Test Date:	11/22/2011
Test Number:	1	Test Time:	1:21:46 PM



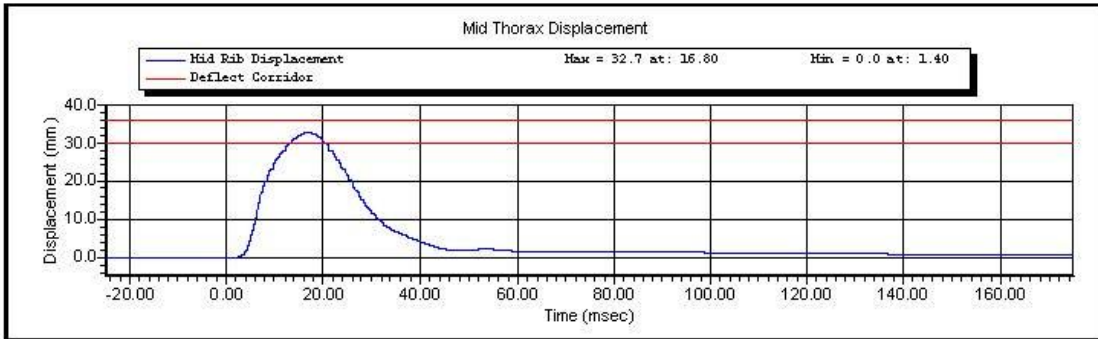
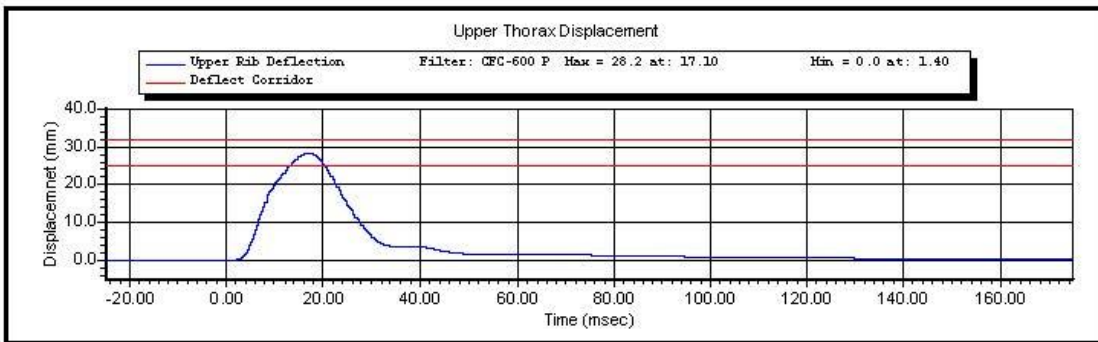
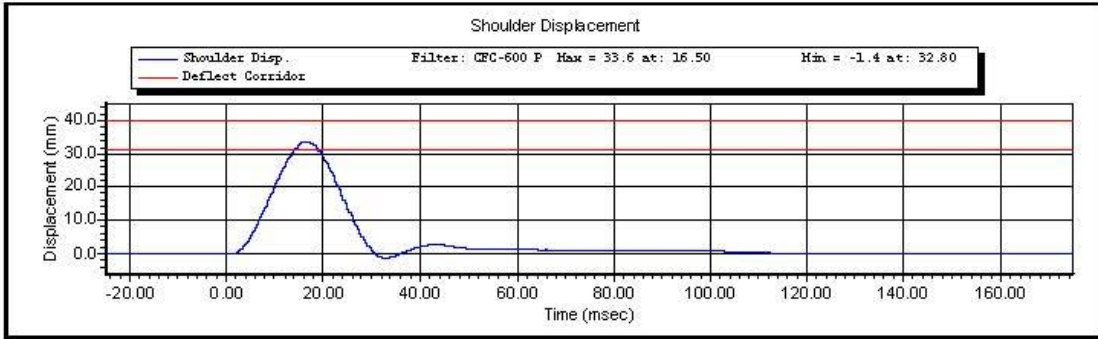
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Test Time: **1:21:46 PM**

Test Date: **11/22/2011**

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1 of 3



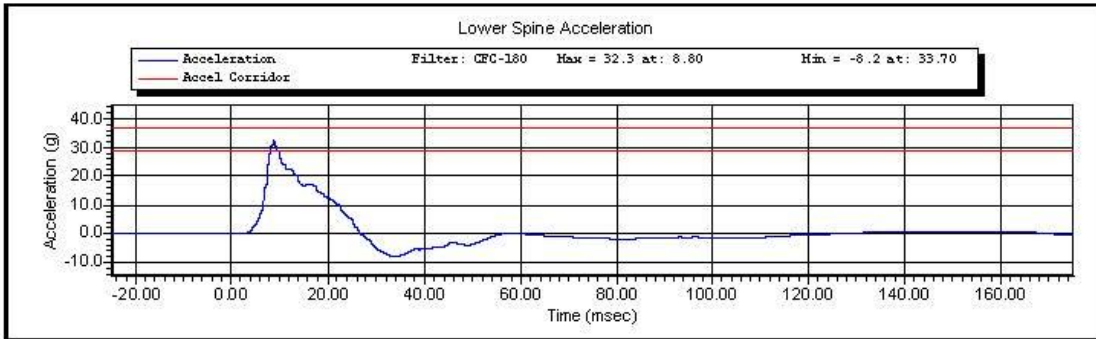
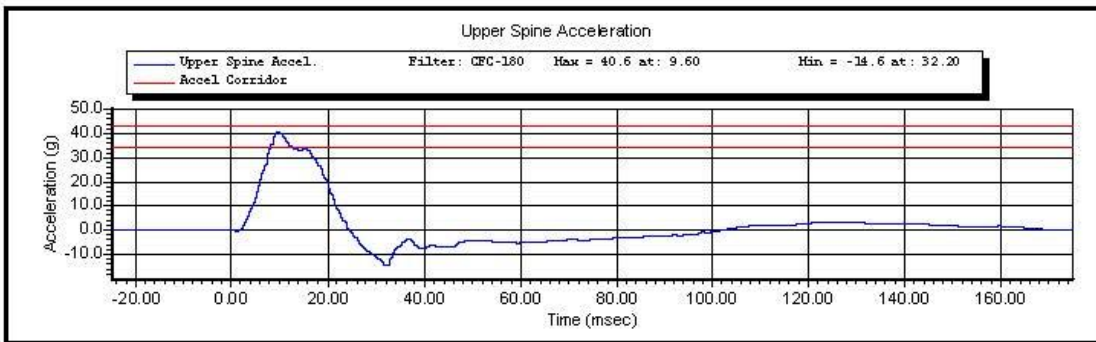
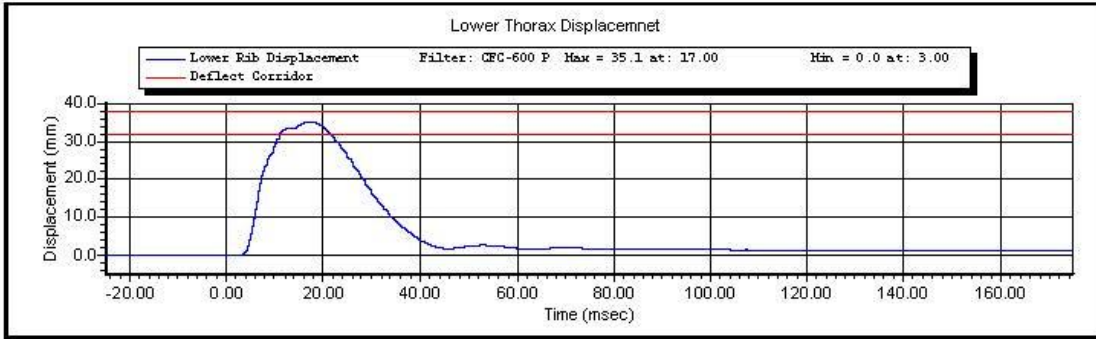
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Test Time: 1:21:46 PM

Test Date: 11/22/2011

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2 of 3



Test ID:

Test Time: 1:21:46 PM

Test Date: 11/22/2011

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VERIFICATION REPORT

Test Name:	Thorax Impact without Arm	Revision:	8/24/2009
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	11/22/2011
Test Number:	2	Test Time:	12:16:18 PM

Component Part Number	Component Serial Number
Left Arm 180-6011-1	DG3210
Shoulder Rib 180-3355	DG6997

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.3 deg C P
Humidity	10 -- 70	25 %RH P
Velocity	4.20 -- 4.40	4.36 m/s P
Probe Acceleration	14.0 -- 18.0	16.2 g P
Upper Thorax Rib Deflection	32.0 -- 40.0	38.3 mm P
Mid Thorax Rib Deflection	39.0 -- 45.0	43.2 mm P
Lower Thorax Rib Deflection	35.0 -- 43.0	40.0 mm P
Upper Spine Acceleration T1	13.0 -- 17.0	16.1 g P
Lower Spine Acceleration T12	7.0 -- 11.0	9.9 g P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test ID:

Test Time: **12:16:18 PM**

Test Date: **11/22/2011**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2011
Endevco	7231CT	AH5M8	11/8/2011
FTSS	180-3881-1	DS-1849	9/1/2011
FTSS	180-3881-1	DS-1857	9/1/2011
FTSS	180-3881-1	DS-1859	9/1/2011
Endevco	7264-2000	P63561	10/3/2011
Endevco	7264-2000	P58796	10/5/2011

Test ID:

Test Time: 12:16:18 PM

Test Date: 11/22/2011

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2 of 2

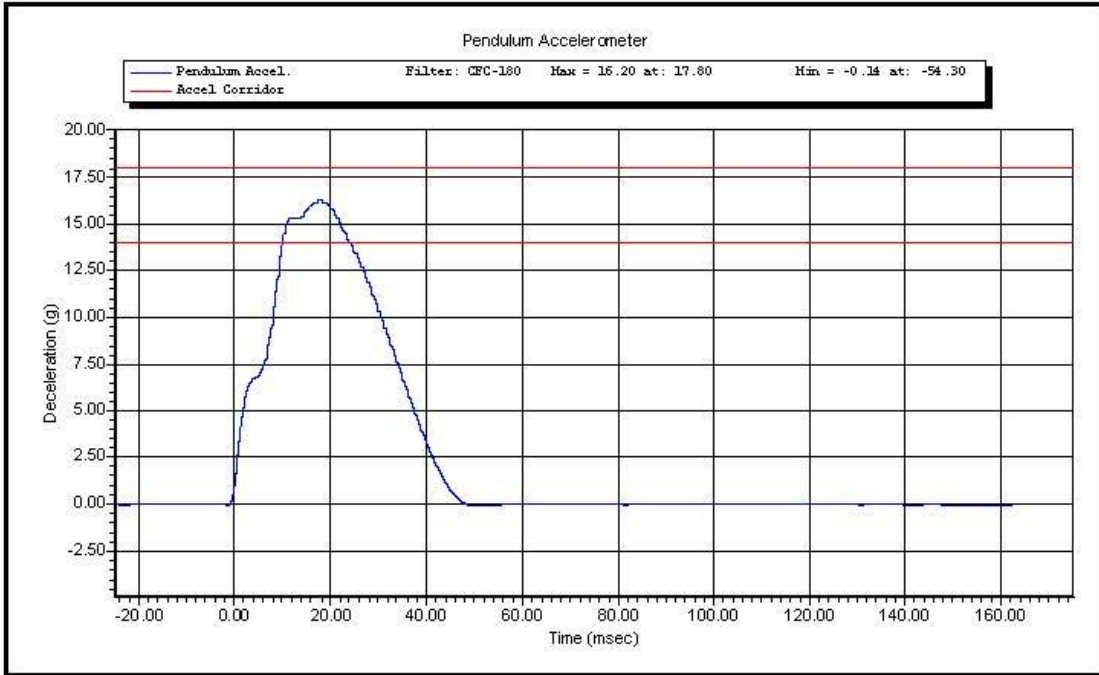


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Test Name:	Thorax Impact without Arm	Revision:	8/24/2009
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	11/22/2011
Test Number:	2	Test Time:	12:16:18 PM



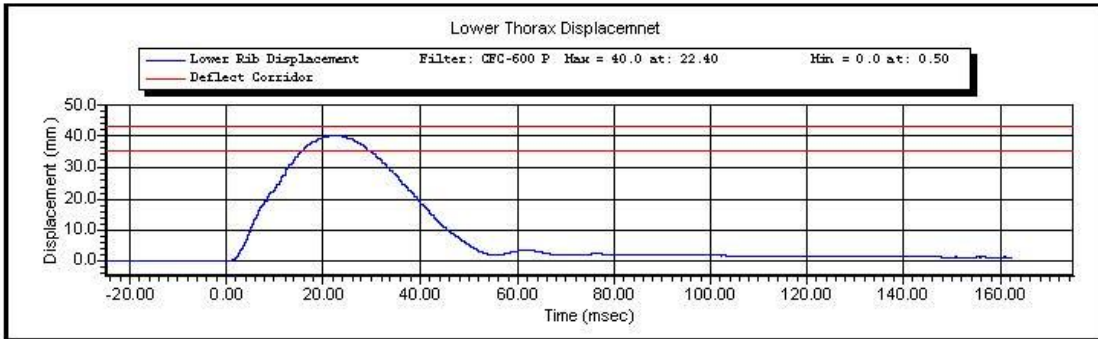
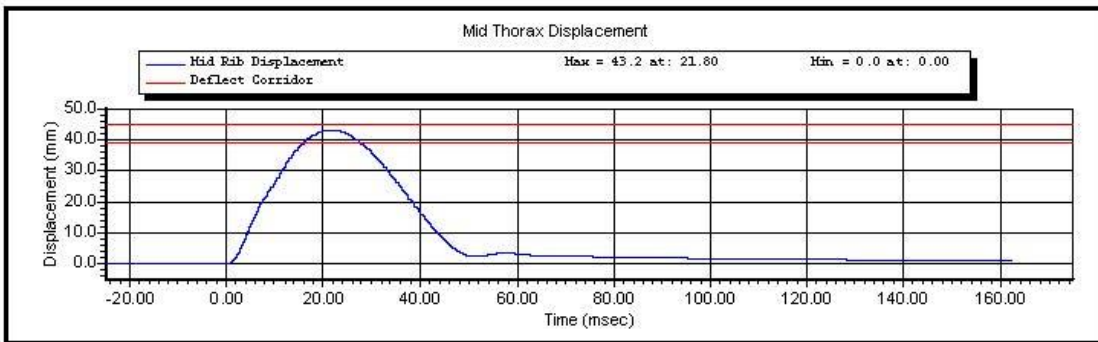
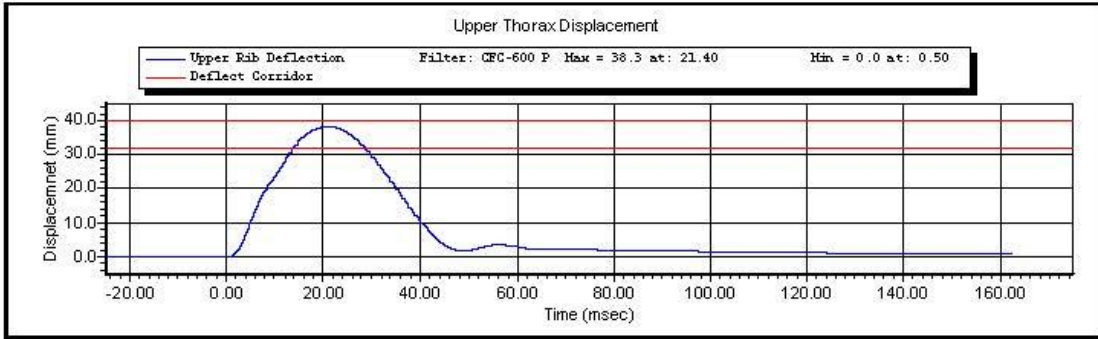
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Test Date: **11/22/2011**

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1 of 3



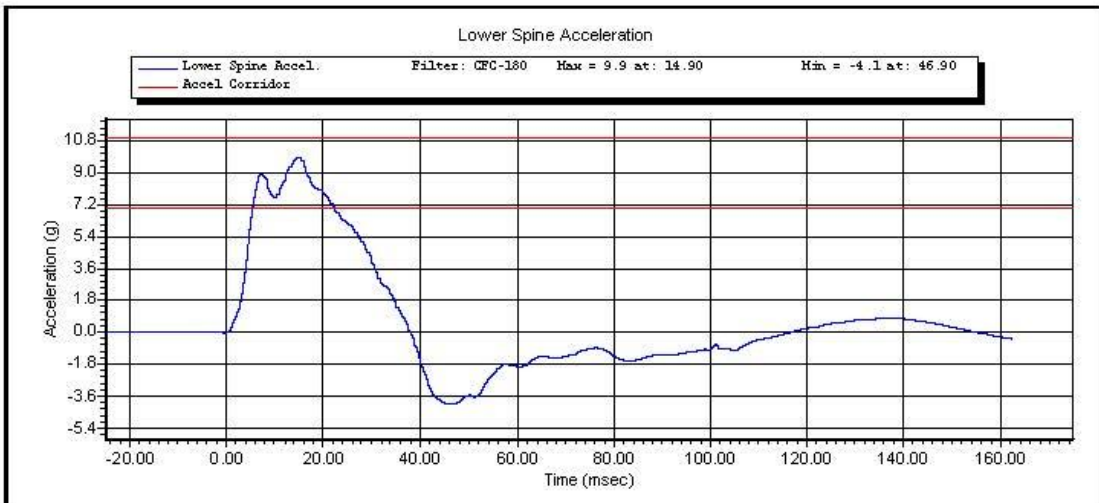
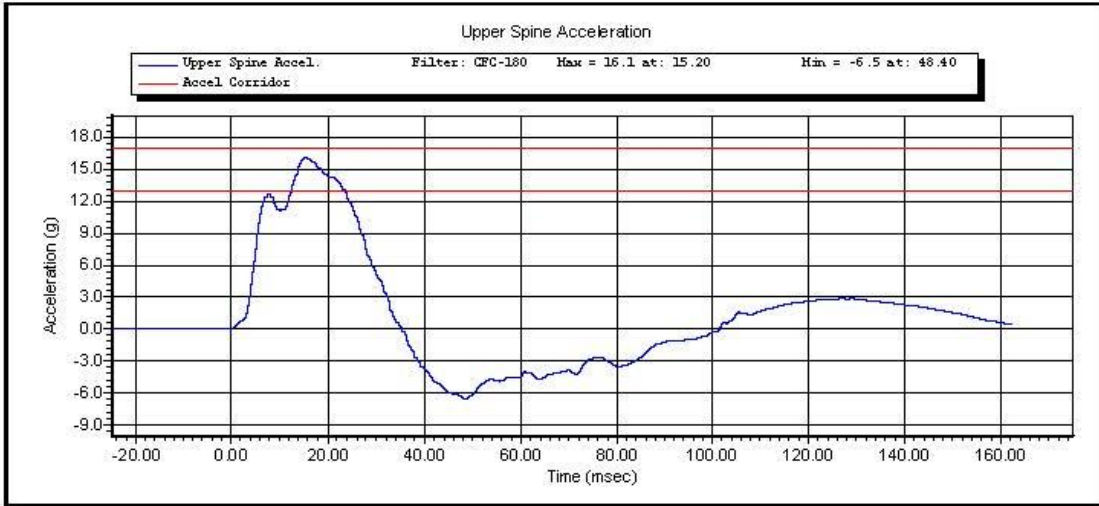
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Test Time: 12:16:18 PM

Test Date: 11/22/2011

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2 of 3



Test ID:

Test Time: 12:16:18 PM

Test Date: 11/22/2011

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VERIFICATION REPORT

Test Name:	Abdominal Impact	Revision:	8/24/2009
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	11/22/2011
Test Number:	1	Test Time:	11:00:00 AM

Component Part Number	Component Serial Number
Thorax Ribs 4, 5	1761, DG7012

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.2 deg C P
Humidity	10 -- 70	26 %RH P
Velocity	4.20 -- 4.40	4.36 m/s P
Probe Acceleration	12.0 -- 16.0	14.8 g P
Upper Abdominal Rib Deflection	36.0 -- 47.0	41.8 mm P
Lower Abdominal Rib Deflection	33.0 -- 44.0	39.1 mm P
Lower Spine Acceleration - T12	9.0 -- 14.0	11.4 g P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test ID:

Test Time: **11:00:00 AM**

Test Date: **11/22/2011**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2011
Endevco	7231CT	AF5B3	11/18/2011
FTSS	180-3881-1	DS-1860	9/1/2011
FTSS	180-3881-1	DS-1861	9/1/2011
Endevco	7264-2000	P58796	10/5/2011

Test ID:

Test Time: **11:00:00 AM**

Test Date: **11/22/2011**

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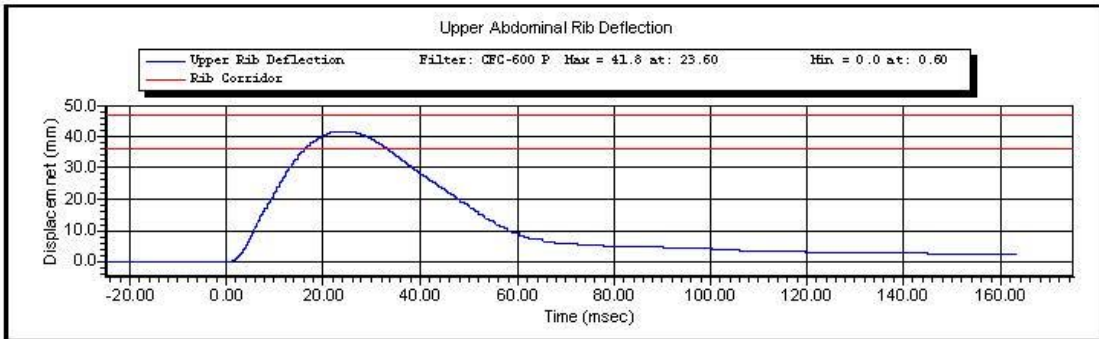
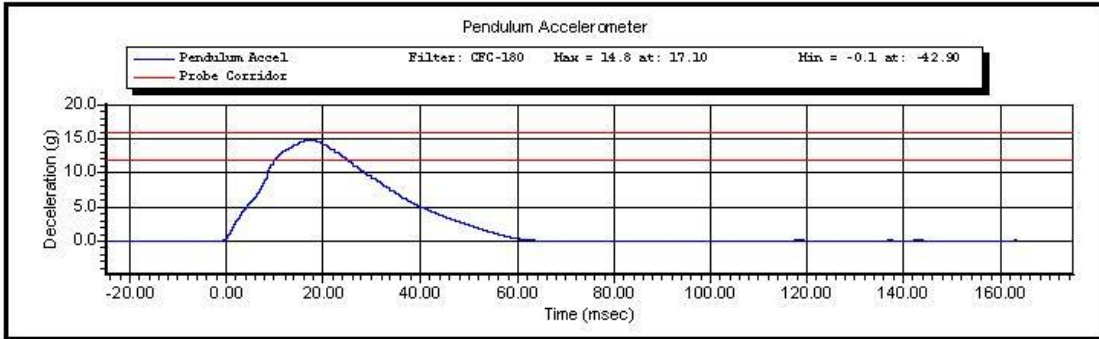


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Test Name:	Abdominal Impact	Revision:	8/24/2009
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	11/22/2011
Test Number:	1	Test Time:	11:00:00 AM



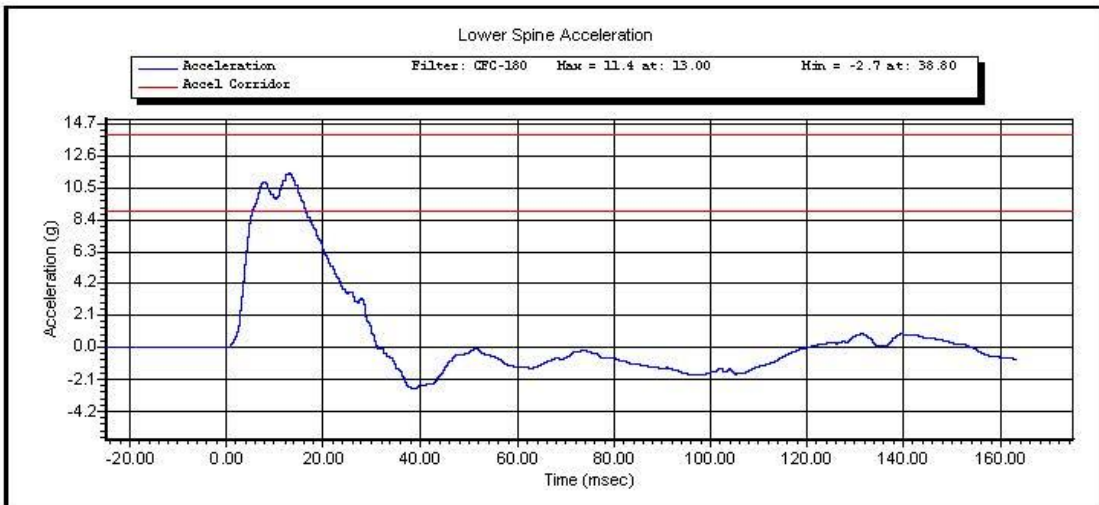
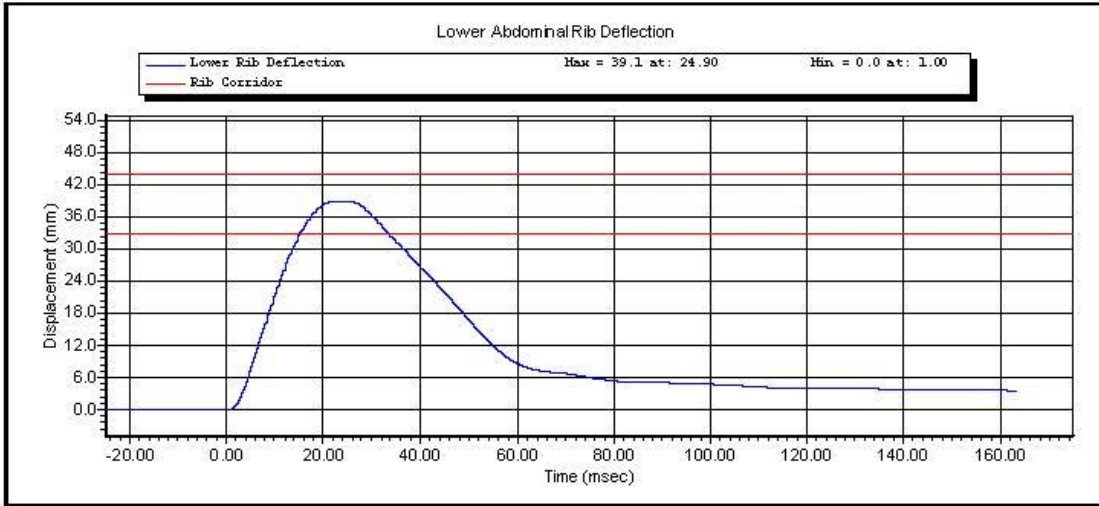
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Test Time: **11:00:00 AM**

Test Date: **11/22/2011**

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1 of 2



Test ID:

Test Time: 11:00:00 AM

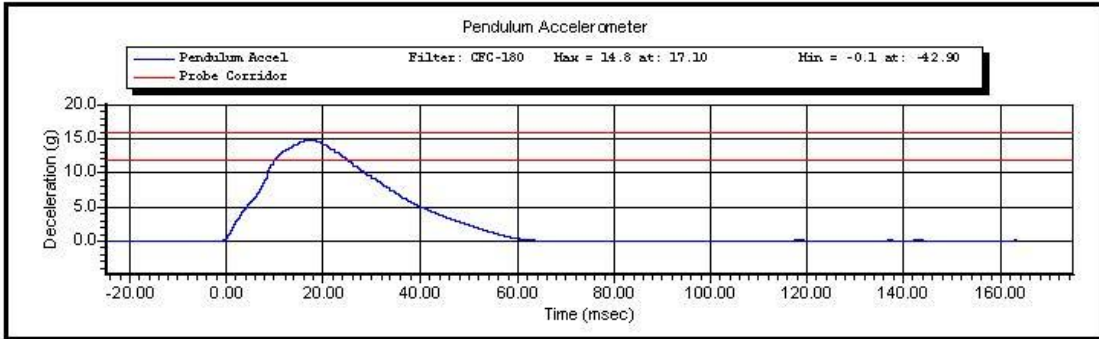
Test Date: 11/22/2011

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Test Name:	Abdominal Impact	Revision:	8/24/2009
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	11/22/2011
Test Number:	1	Test Time:	11:00:00 AM

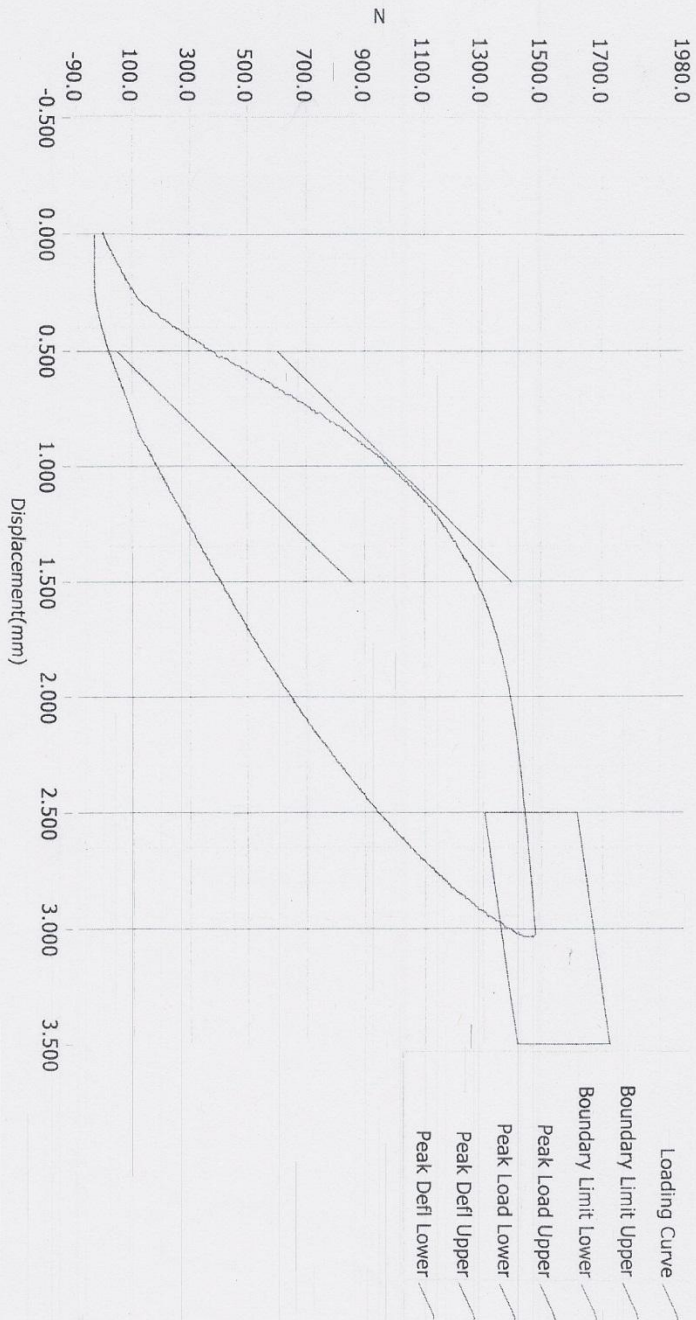


Test ID:

Test Time: **11:00:00 AM**

Test Date: **11/22/2011**

Resultant Data - SIDIIs Plug Compression



ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
Cert ID	ATD Serial Number	ATD Type	
	36385	SIDIIs	

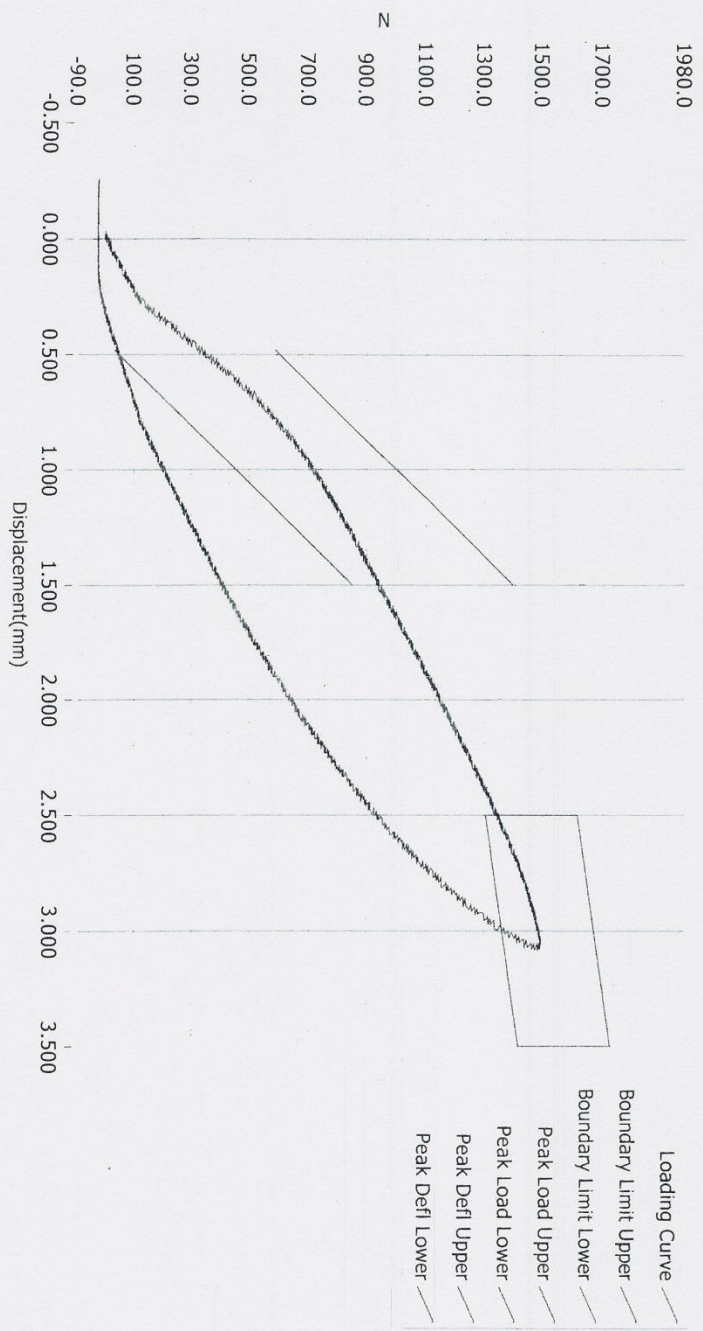
Current Date : 9/23/2010

Current Time : 01:41:11

F

Cert 11/22/2011

Resultant Data - SIDIIS Plug Compression



ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
Cert ID	ATD Serial Number	ATD Type	
36852	SIDIIS		

Current Date : 10/6/2010 Current Time : 16:58:46



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VERIFICATION REPORT

Test Name:	Pelvis	Revision:	8/24/2009
Sub Test Name:	Acetabulum Impact	Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	11/22/2011
Test Number:	1	Test Time:	9:52:21 AM

Component Part Number	Component Serial Number
180-4343 Pelvis Flesh	DG3207
FTSS Certification Plug - 1484N	36852
FTSS Full Scale Test Plug - 1477 N	36385

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.3 deg C P
Humidity	10 -- 70	26 %RH P
Velocity	6.60 -- 6.80	6.61 m/s P
Peak Probe Acceleration	38.0 -- 47.0	45.3 g P
Peak Pelvis Acceleration	34.0 -- 42.0	41.2 g P
Peak Acetabulum Force	3.60 -- 4.30	3.78 kN P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test ID:

Test Time: **9:52:21 AM**

Test Date: **11/22/2011**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2011
Endevco	7231CT	AF5B3	11/18/2011
Endevco	7264-2000	P51875	9/29/2011
FTSS	IF-520	LC-102Fy	3/25/2011

Test ID:

Test Time: 9:52:21 AM

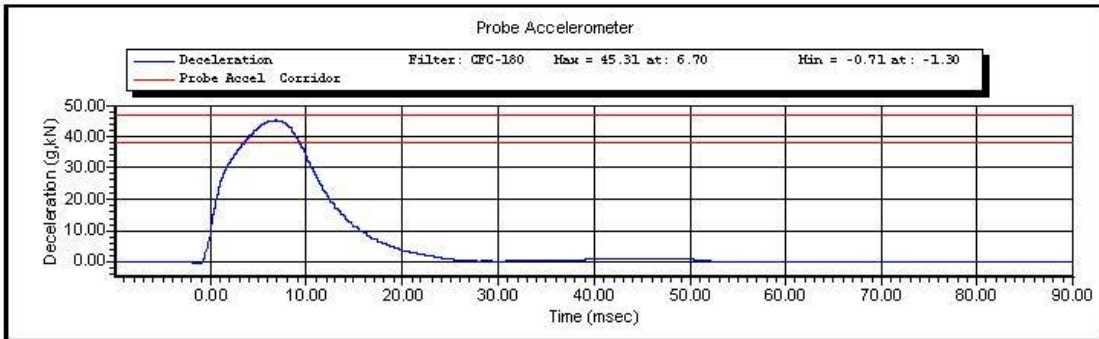
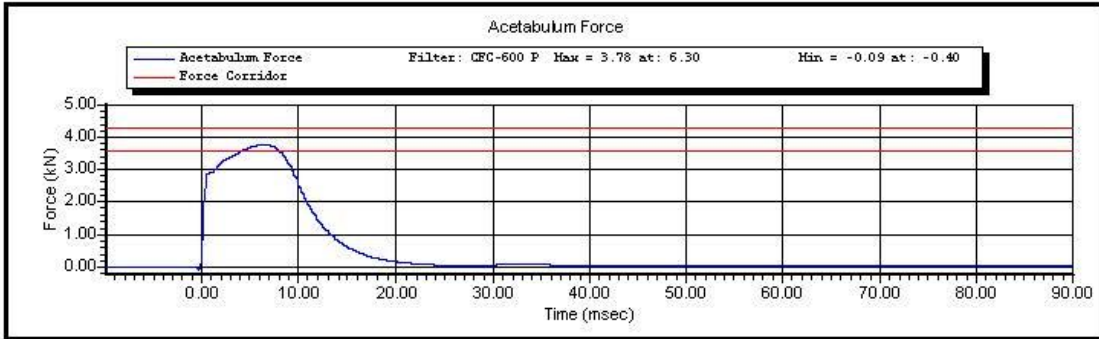
Test Date: 11/22/2011

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2 of 2



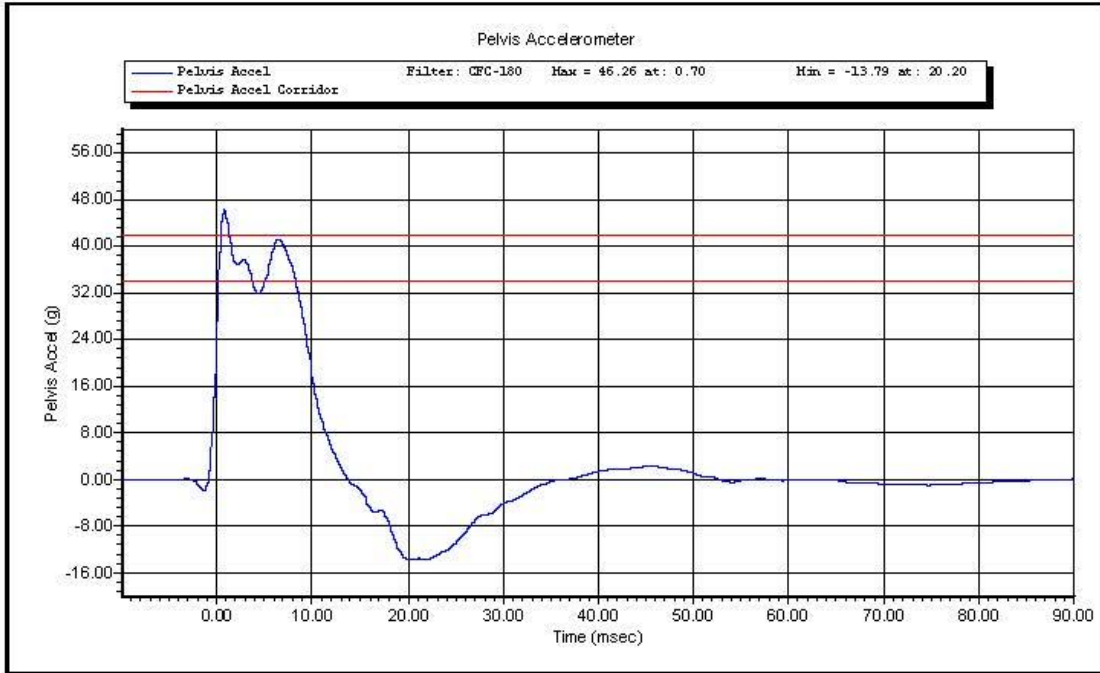
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Sub Test Name:	Acetabulum Impact	Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	11/22/2011
Test Number:	1	Test Time:	9:52:21 AM



Test ID:

Test Time: **9:52:21 AM**

Test Date: **11/22/2011**



Test ID:

Test Time: 9:52:21 AM

Test Date: 11/22/2011

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VERIFICATION REPORT

Test Name:	Pelvis	Revision:	8/24/2009
Sub Test Name:	Iliac Impact	Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	11/22/2011
Test Number:	1	Test Time:	8:41:37 AM

Component Part Number	Component Serial Number
180-4343 Pelvis Flesh	DG3207

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.2 deg C P
Humidity	10 -- 70	26 %RH P
Velocity	4.20 -- 4.40	4.31 m/s P
Peak Probe Acceleration	36.0 -- 45.0	43.4 g P
Peak Pelvis Acceleration	28.0 -- 39.0	33.5 g P
Peak Iliac Force	4.10 -- 5.10	4.82 kN P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test ID:

Test Time: **8:41:37 AM**

Test Date: **11/22/2011**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2011
Endevco	7231CT	AF5B3	11/18/2011
Endevco	7264-2000	P51875	9/29/2011
DentonATD	3228J	LC-281Fy	8/31/2011

Test ID:

Test Time: **8:41:37 AM**

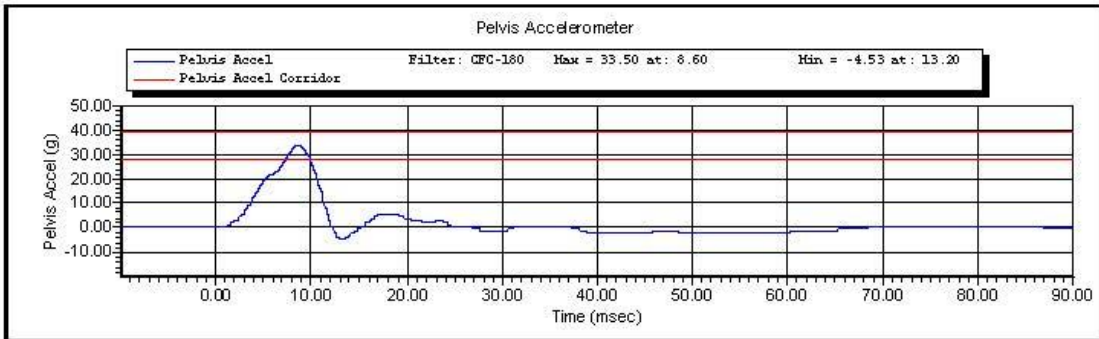
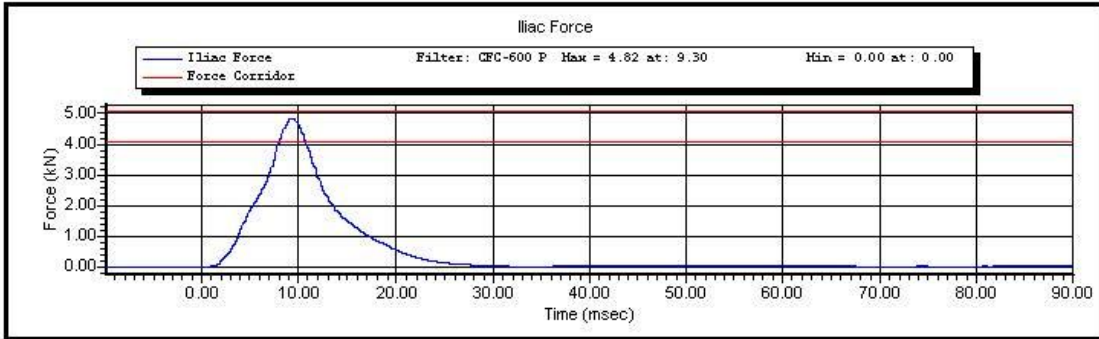
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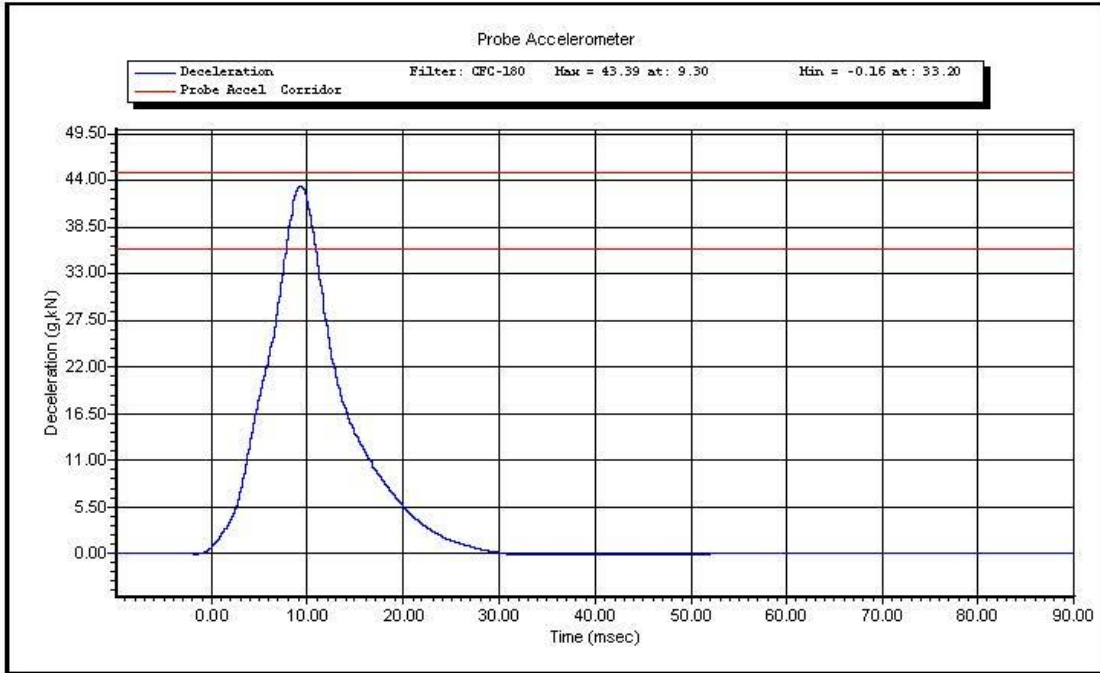
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Sub Test Name:	Iliac Impact	Spec Type:	NHTSA
ATD Type:	SID-Ils		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	11/22/2011
Test Number:	1	Test Time:	8:41:37 AM



Test ID:

Test Time: **8:41:37 AM**

Test Date: **11/22/2011**



Test ID:

Test Time: **8:41:37 AM**

Test Date: **11/22/2011**

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2 of 2

CALIBRATION TEST RESULTS

POST-TEST

SID-IIs No: 304

CONFIGURED FOR LEFT SIDE IMPACT



SID-IIsD External Measurements

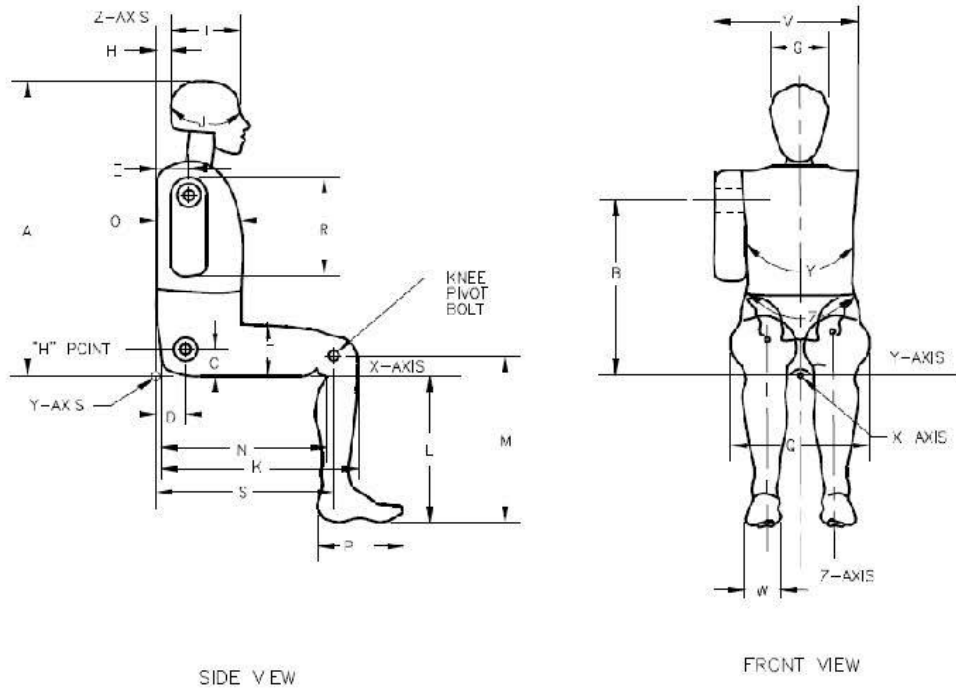
NHTSA ATD S/N DG8012

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	782	Yes
B	Shoulder Pivot Height	437.0 - 453.0	444	Yes
C	H-Point Height	79.0 - 89.0	85	Yes
D	H-Point from Seat Back	141.0 - 151.0	148	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	98	Yes
F	Thigh Clearance	119.0 - 135.0	132	Yes
G	Head Breadth	140.0 - 148.0	145	Yes
H	Head Back from Backline	40.0 - 46.0	43	Yes
I	Head Depth	178.0 - 188.0	187	Yes
J	Head Circumference	541.0 - 551.0	548	Yes
K	Buttock to Knee Length	514.0 - 540.0	530	Yes
L	Popliteal Height	343.0 - 369.0	359	Yes
M	Knee Pivot to Floor Height	393.0 - 409.0	402	Yes
N	Buttock Popliteal Length	416.0 - 442.0	434	Yes
O	Chest Depth without Jacket	195.0 - 211.0	204	Yes
P	Foot Length (right)	216.0 - 232.0	223	Yes
Q	Hip Breadth	313.0 - 323.0	315	Yes
R	Arm Length	249.0 - 259.0	257	Yes
S	Knee Joint to Seat back	478.0 - 493.0	490	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	351	Yes
W	Foot Width (right)	78.0 - 94.0	84	Yes
Y	Chest Circumference with Jacket	851.0 - 881.0	872	Yes
Z	Waist Circumference	761.0 - 791.0	782	Yes

Technician : AR

Date: 11/30/2011

SID-11sD External Dimension Reference Diagram





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VERIFICATION REPORT

Test Name:	Head Drop	Revision:	12/14/2006
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:	DG 8012		
Test ID:		Test Date:	11/30/2011
Test Number:	1	Test Time:	1:36:53 PM

Component Part Number	Component Serial Number
Head Skin - 180-1002	1362

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.4 deg C P
Humidity	10 -- 70	34 %RH P
Resultant Acceleration	115.0 -- 137.0	125.0 g P
Oscillation	0.0 -- 15.0	5.1 % P
Fore-Aft Acceleration	-15.0 -- 15.0	3.6 g P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test ID:

Test Time: **1:36:53 PM**

Test Date: **11/30/2011**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
Endevco	7264-2000	P66931	6/13/2011
Endevco	7264-2000	P66926	6/13/2011
Endevco	7264-2000	P66943	6/13/2011

Test ID:

Test Time: **1:36:53 PM**

Test Date: **11/30/2011**

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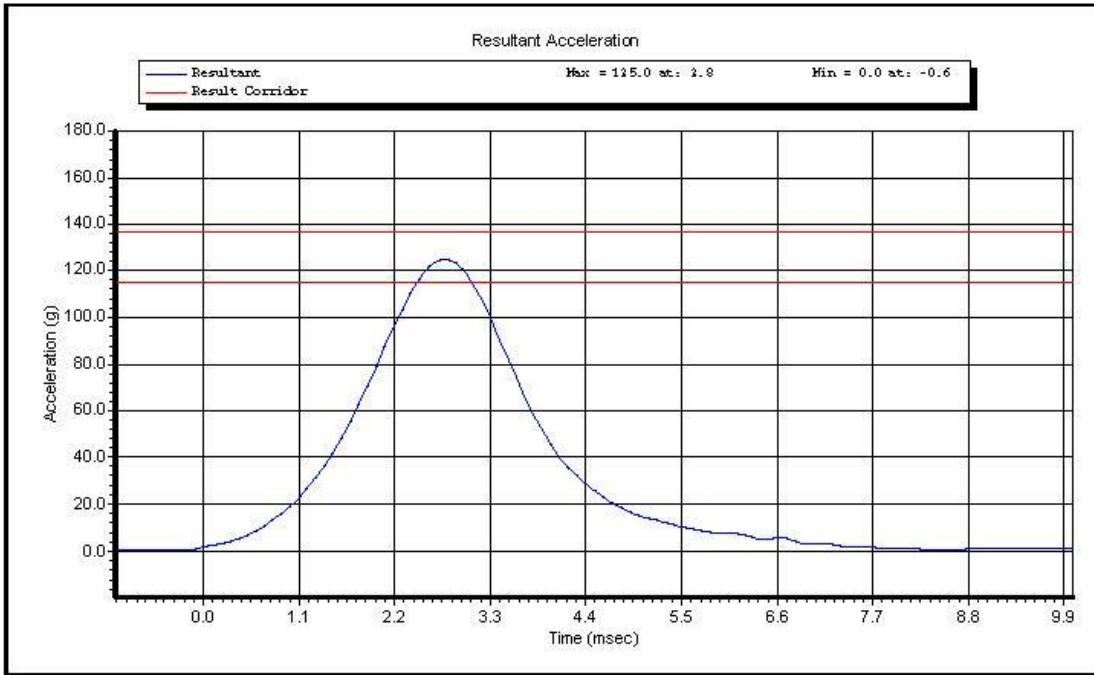


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Test Name:	Head Drop	Revision:	12/14/2006
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:	DG 8012		
Test ID:		Test Date:	11/30/2011
Test Number:	1	Test Time:	1:36:53 PM



Test ID:

Test Time: **1:36:53 PM**

Test Date: **11/30/2011**

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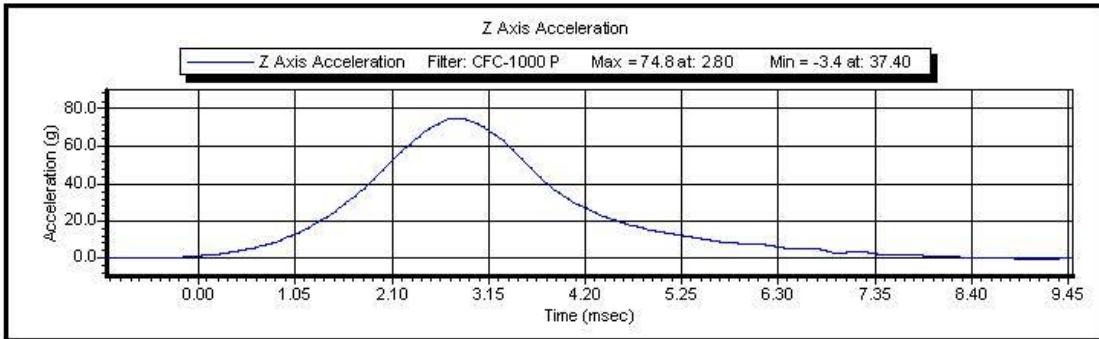
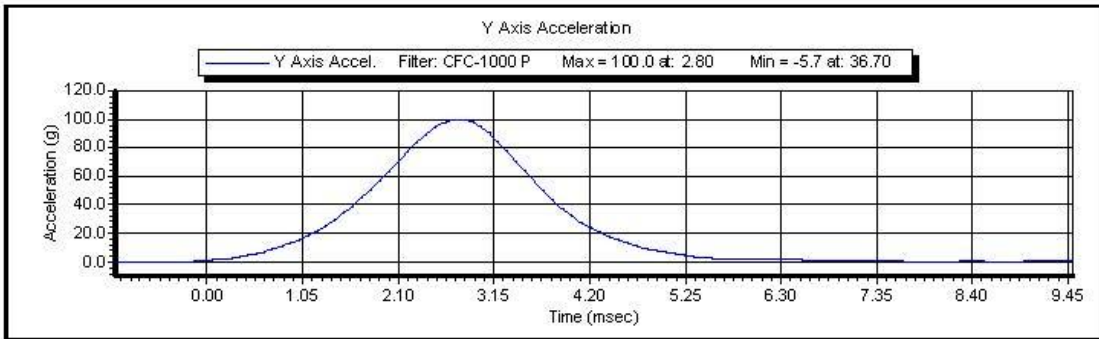
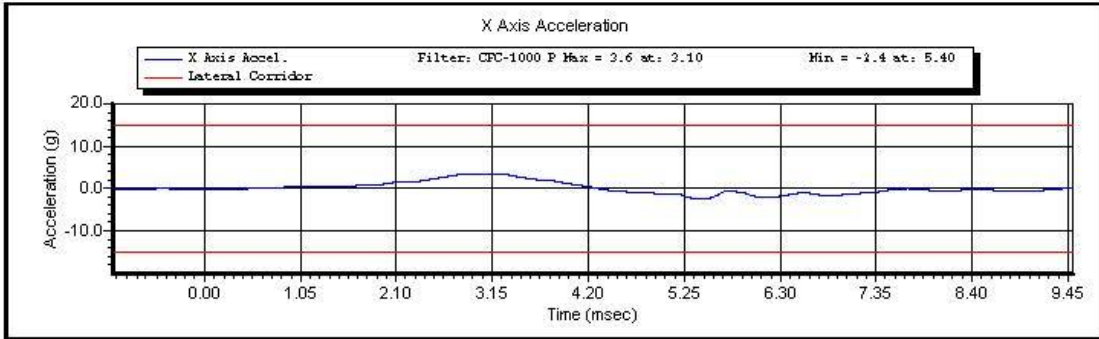
1 of 2



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Test ID:

Test Time: 1:36:53 PM

Test Date: 11/30/2011

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2 of 2



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VERIFICATION REPORT

Test Name:	Neck Pendulum	Revision:	8/24/2009
Sub Test Name:	Left Side	Spec Type:	NHTSA
ATD Type:	SID-IIs		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	11/30/2011
Test Number:	1	Test Time:	3:56:30 PM

Component Part Number	Component Serial Number
Neck - 180-2000	DG7061

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.4 deg C P
Humidity	10 -- 70	32 %RH P
Velocity	5.51 -- 5.63	5.59 m/s P
Pendulum Impulse at 10 ms	2.20 -- 2.80	2.42 m/s P
Pendulum Impulse at 15 ms	3.30 -- 4.10	3.49 m/s P
Pendulum Impulse at 20 ms	4.40 -- 5.40	4.73 m/s P
Pendulum Impulse at 25 ms	5.40 -- 6.10	5.69 m/s P
Pendulum Impulse between 25 and 100 ms	5.50 -- 6.20	5.78 m/s P
Max D Plane Rotation	71.0 -- 81.0	73.8 degrees P
Time at Max Rotation	50.0 -- 70.0	60.4 ms P
Moment about OC	-44.0 -- -36.0	-41.3 Nm P
Moment Decay to Zero	102.0 -- 126.0	112.5 ms P

All test parameters are within specifications

Technician: **SZito**
Supervisor: **D. Travale**

Test ID:

Test Time: **3:56:30 PM**

Test Date: **11/30/2011**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2011
Endevco	7231CT	C16510	10/3/2011
Denton	1716A	LC-2192Fy	8/31/2011
Denton	1716A	LC-2192Mx	8/31/2011
DentonATD	78051-342	184	5/8/2011
DentonATD	78051-342	174	5/8/2011
DentonATD	78051-342	185	5/8/2011

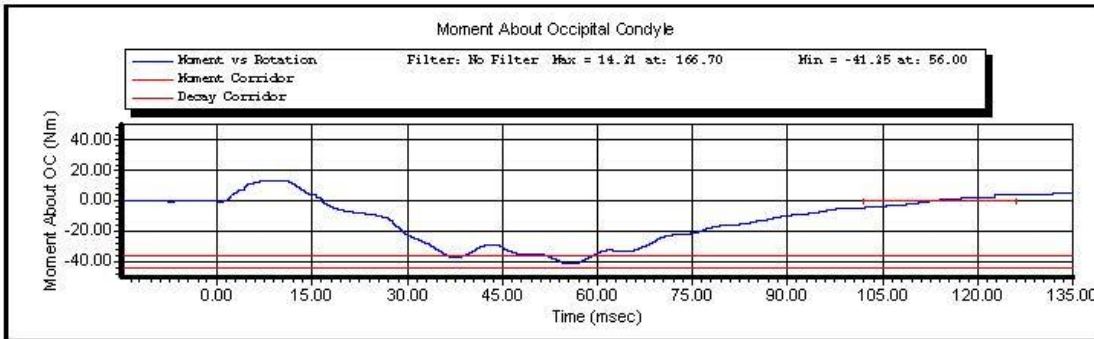
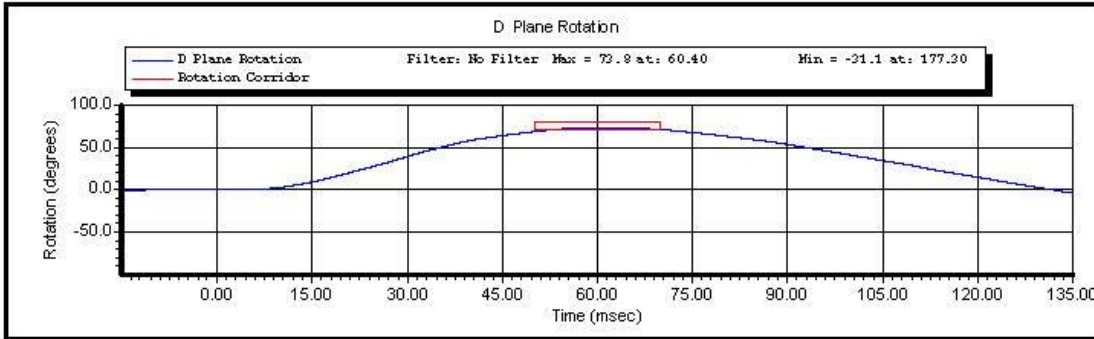
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Test Time: 3:56:30 PM

Test Date: 11/30/2011



Test Name:	Neck Pendulum	Revision:	8/24/2009
Sub Test Name:	Left Side	Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	11/30/2011
Test Number:	1	Test Time:	3:56:30 PM



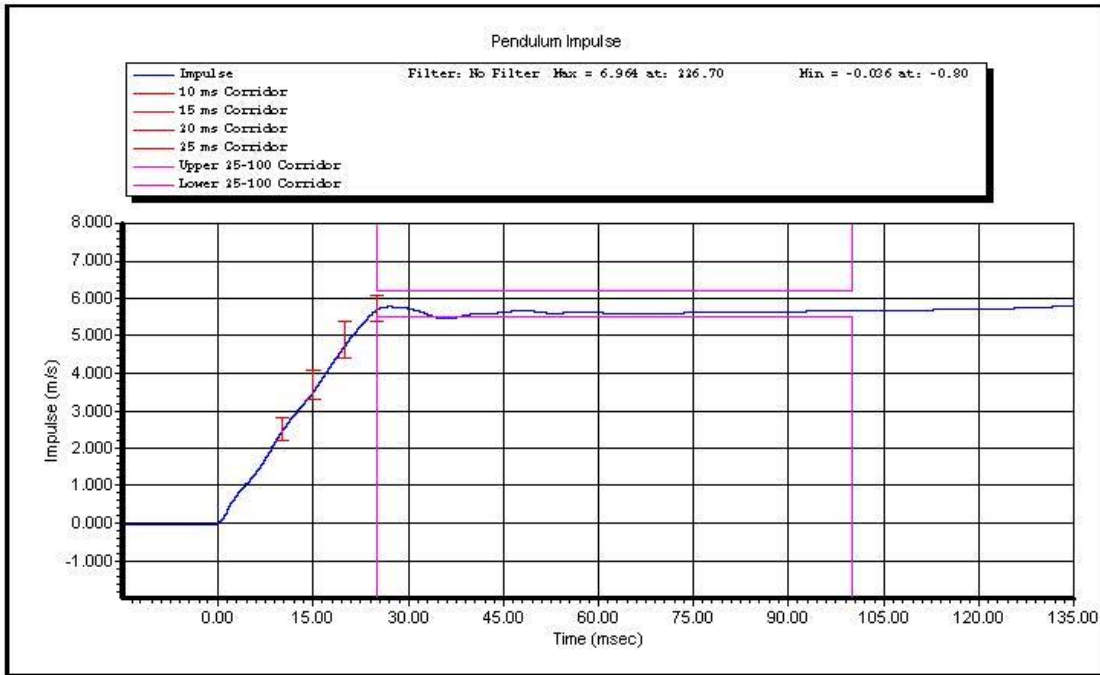
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Test Date: **11/30/2011**

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1 of 2



Test ID:

Test Time: 3:56:30 PM

Test Date: 11/30/2011

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VERIFICATION REPORT

Test Name:	Shoulder Impact	Revision:	8/24/2009
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:			
Test ID:		Test Date:	12/1/2011
Test Number:	1	Test Time:	12:35:19 PM

Component Part Number	Component Serial Number
Left Arm 180-6011-1	DG3210
Shoulder Rib 180-3355	DG6997

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.80 deg C P
Humidity	10.0 -- 70.0	30.0 %RH P
Velocity	4.20 -- 4.40	4.37 m/s P
Probe Acceleration	13.0 -- 18.0	15.7 g P
Shoulder Deflection	28.0 -- 37.0	29.4 mm P
T1 Acceleration	17.0 -- 22.0	19.2 g P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test ID:

Test Time: **12:35:19 PM**

Test Date: **12/1/2011**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2011
Endevco	7231CT	AF5B3	11/18/2011
FTSS	180-3881-1	DS-1845	9/1/2011
Endevco	7264-2000	P63561	10/3/2011

Test ID:

Test Time: **12:35:19 PM**

Test Date: **12/1/2011**

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Test Name:	Shoulder Impact	Revision:	8/24/2009
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:			
Test ID:		Test Date:	12/1/2011
Test Number:	1	Test Time:	12:35:19 PM



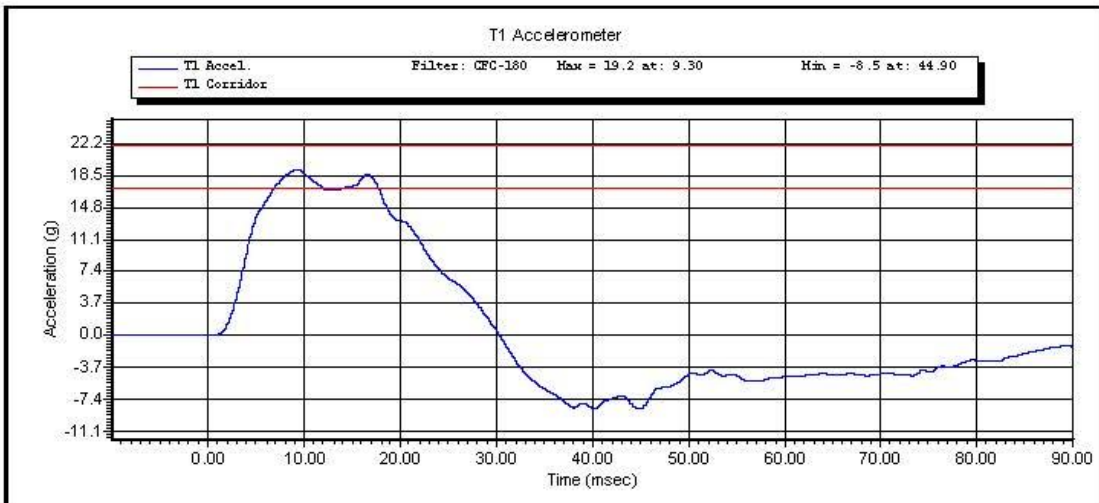
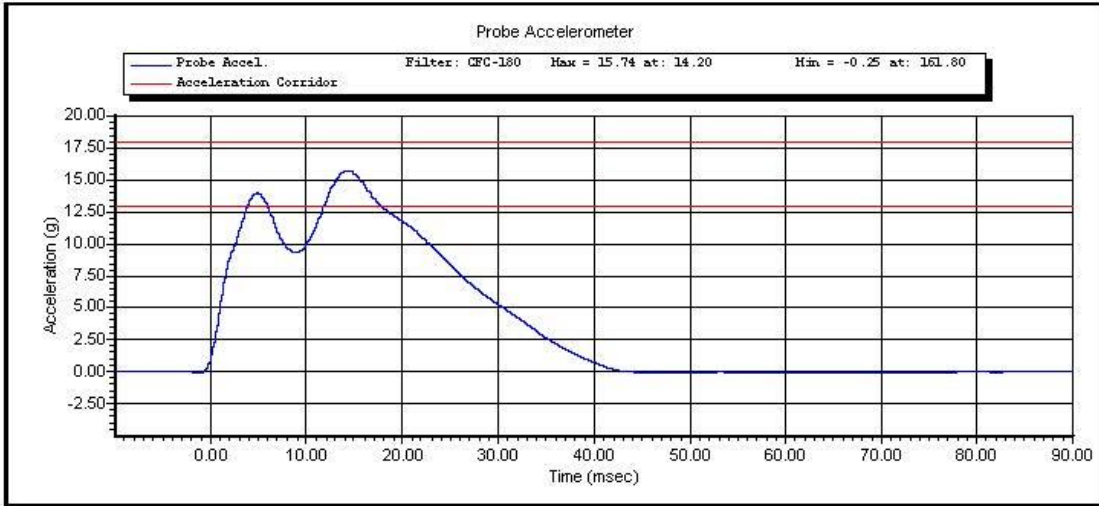
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Test Date: **12/1/2011**

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1 of 2



Test ID:

Test Time: 12:35:19 PM

Test Date: 12/1/2011

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VERIFICATION REPORT

Test Name:	Thorax Impact with Arm	Revision:	8/24/2009
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	12/1/2011
Test Number:	1	Test Time:	1:14:01 PM

Component Part Number	Component Serial Number
Thorax Ribs 1, 2, 3 180-3362	DG6080, DG6081, DG7543
Shoulder Rib 180-3355	DG6997
Left Arm 180-6011-1	DG3210

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.8 deg C P
Humidity	10 -- 70	30 %RH P
Velocity	6.60 -- 6.80	6.70 m/s P
Probe Acceleration after 5ms	30.0 -- 36.0	31.3 g P
Upper Thorax Rib Deflection	25.0 -- 32.0	28.4 mm P
Mid Thorax Rib Deflection	30.0 -- 36.0	32.8 mm P
Lower Thorax Rib Deflection	32.0 -- 38.0	35.3 mm P
Upper Spine Acceleration ("y")	34.0 -- 43.0	39.1 g P
Lower Spine Acceleration ("y")	29.0 -- 37.0	30.6 g P
Shoulder Deflection	31.0 -- 40.0	33.7 mm P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test ID:

Test Time: **1:14:01 PM**

Test Date: **12/1/2011**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2011
Endevco	7231CT	AH5M8	11/8/2011
FTSS	180-3881-1	DS-1849	9/1/2011
FTSS	180-3881-1	DS-1857	9/1/2011
FTSS	180-3881-1	DS-1859	9/1/2011
Endevco	7264-2000	P63561	10/3/2011
Endevco	7264-2000	P58796	10/5/2011
FTSS	180-3881-1	DS-1845	9/1/2011

Test ID:

Test Time: **1:14:01 PM**

Test Date: **12/1/2011**

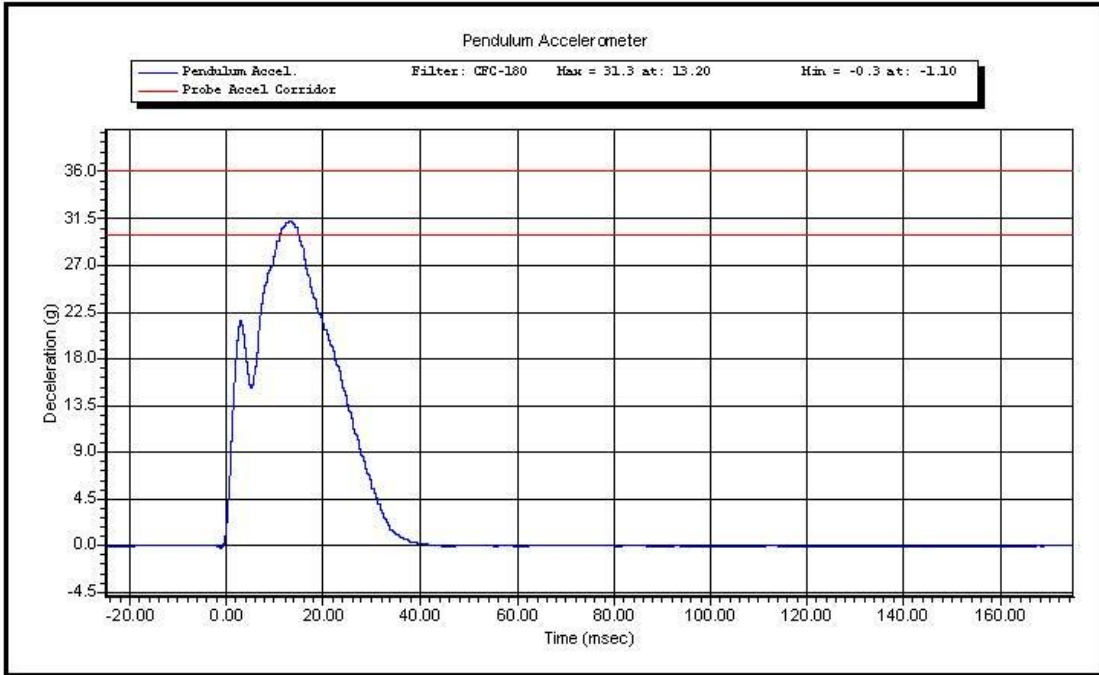


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Test Name:	Thorax Impact with Arm	Revision:	8/24/2009
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	12/1/2011
Test Number:	1	Test Time:	1:14:01 PM



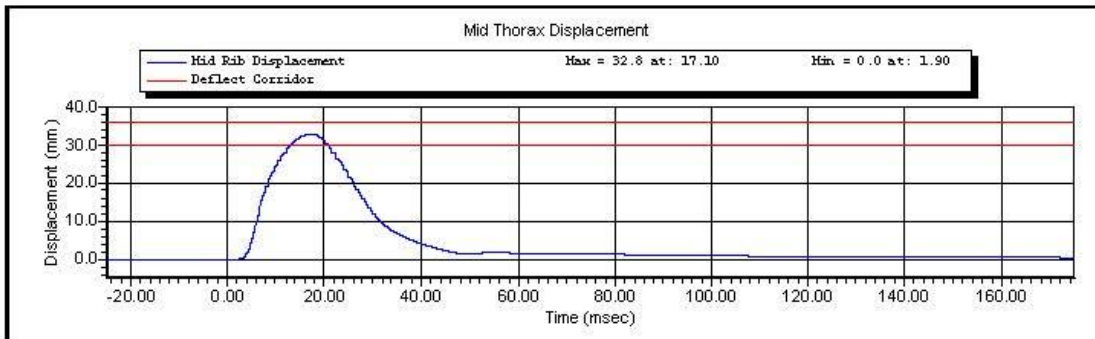
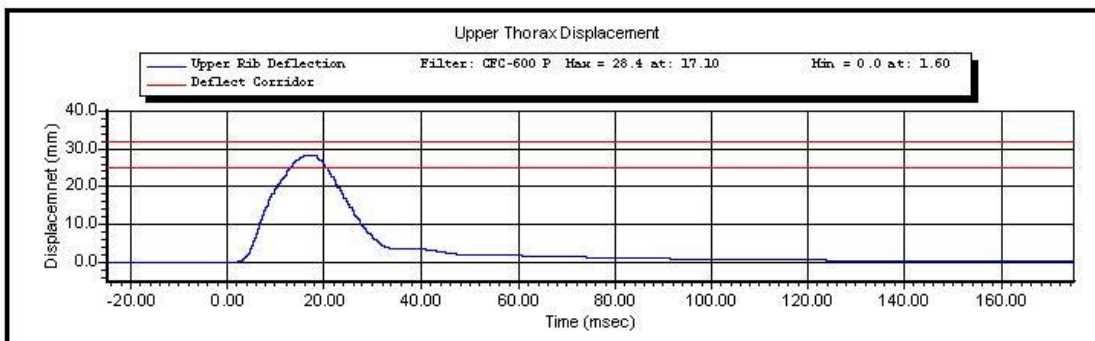
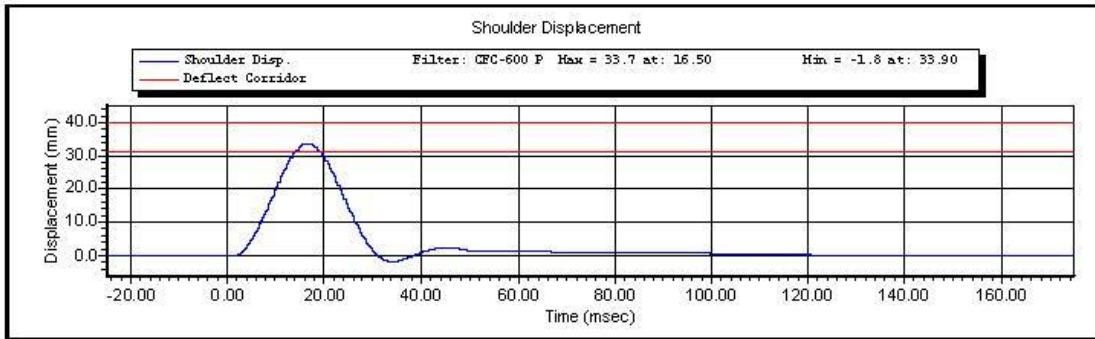
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Test Time: 1:14:01 PM

Test Date: 12/1/2011

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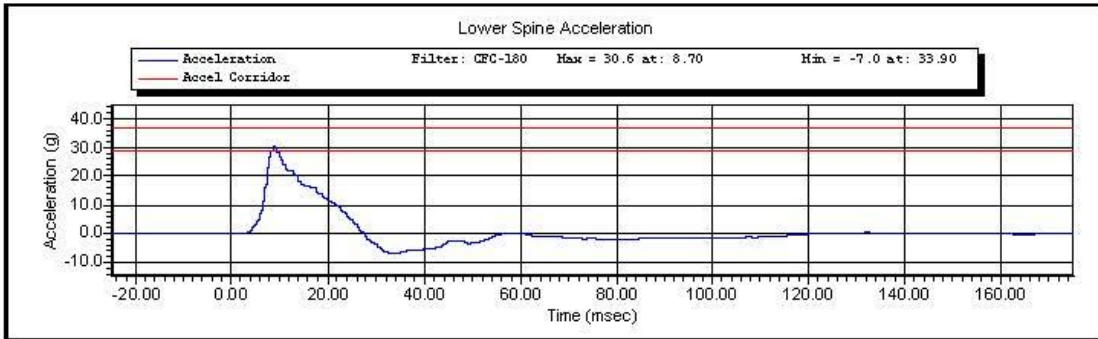
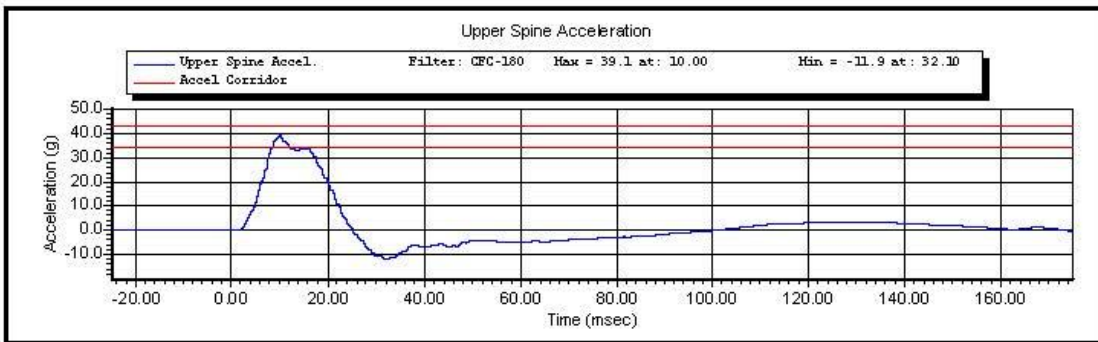
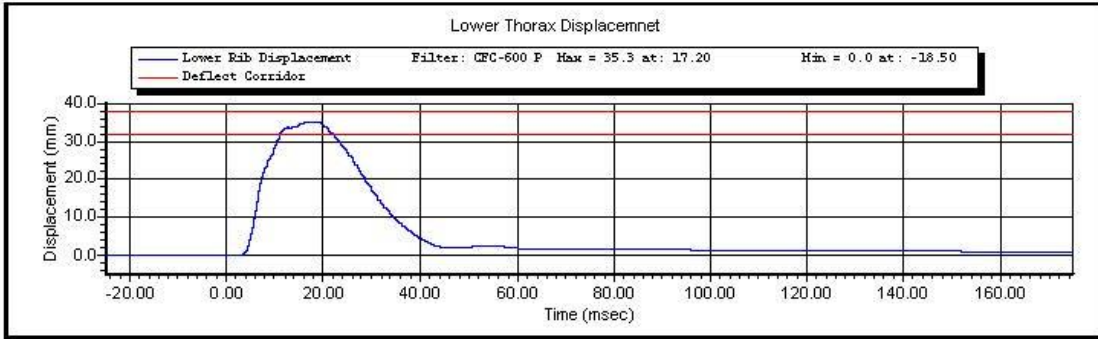
2 of 3



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Test ID:

Test Time: 1:14:01 PM

Test Date: 12/1/2011

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VERIFICATION REPORT

Test Name:	Thorax Impact without Arm	Revision:	8/24/2009
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	12/1/2011
Test Number:	1	Test Time:	1:45:06 PM

Component Part Number	Component Serial Number
Shoulder Rib 180-3355	DG6997

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.8 deg C P
Humidity	10 -- 70	30 %RH P
Velocity	4.20 -- 4.40	4.37 m/s P
Probe Acceleration	14.0 -- 18.0	16.1 g P
Upper Thorax Rib Deflection	32.0 -- 40.0	35.7 mm P
Mid Thorax Rib Deflection	39.0 -- 45.0	42.8 mm P
Lower Thorax Rib Deflection	35.0 -- 43.0	41.5 mm P
Upper Spine Acceleration T1	13.0 -- 17.0	15.6 g P
Lower Spine Acceleration T12	7.0 -- 11.0	10.0 g P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test ID:

Test Time: **1:45:06 PM**

Test Date: **12/1/2011**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2011
Endevco	7231CT	AH5M8	11/8/2011
FTSS	180-3881-1	DS-1849	9/1/2011
FTSS	180-3881-1	DS-1857	9/1/2011
FTSS	180-3881-1	DS-1859	9/1/2011
Endevco	7264-2000	P63561	10/3/2011
Endevco	7264-2000	P58796	10/5/2011

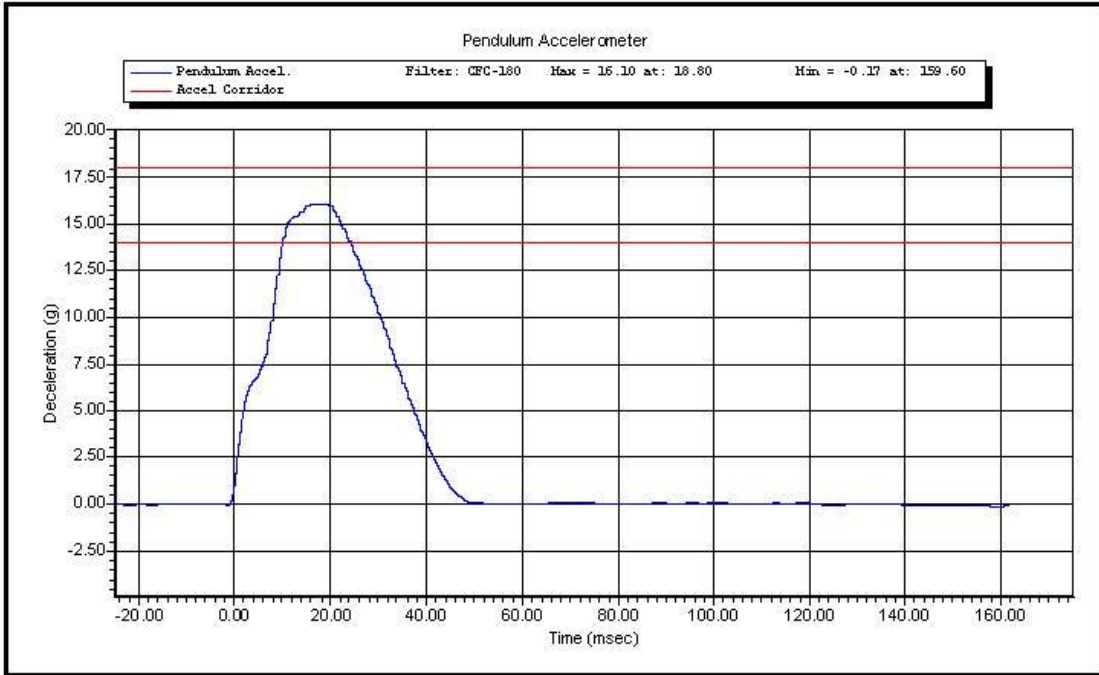
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Test Date: 12/1/2011



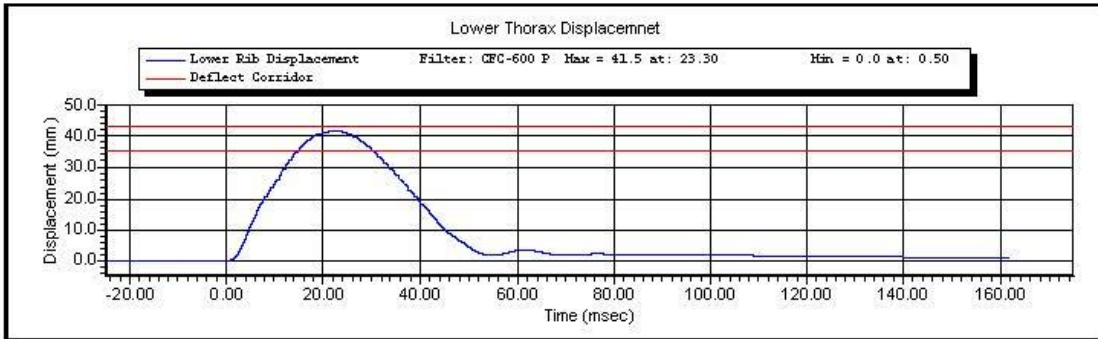
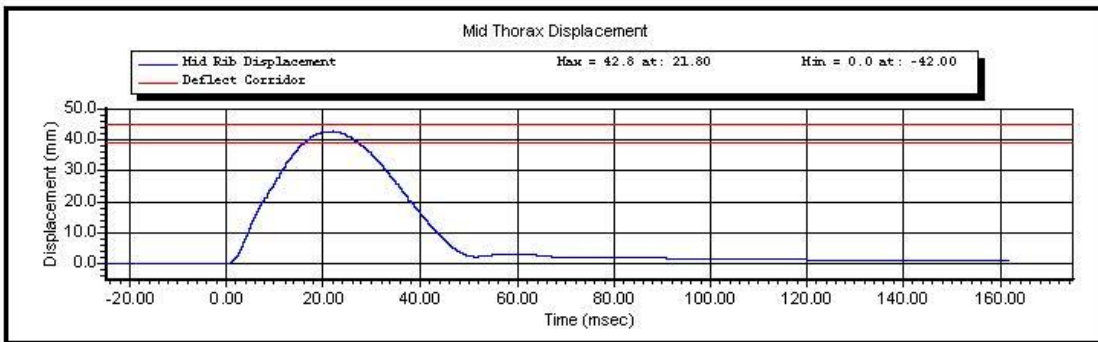
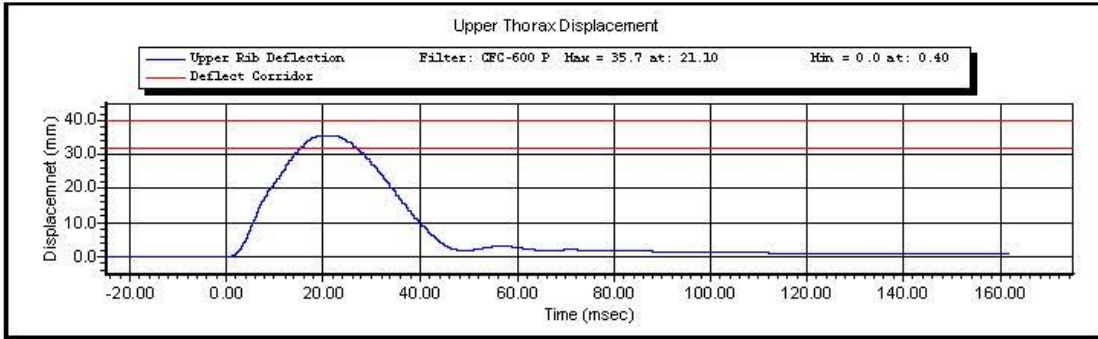
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Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	12/1/2011
Test Number:	1	Test Time:	1:45:06 PM



Test ID:

Test Time: **1:45:06 PM**

Test Date: **12/1/2011**



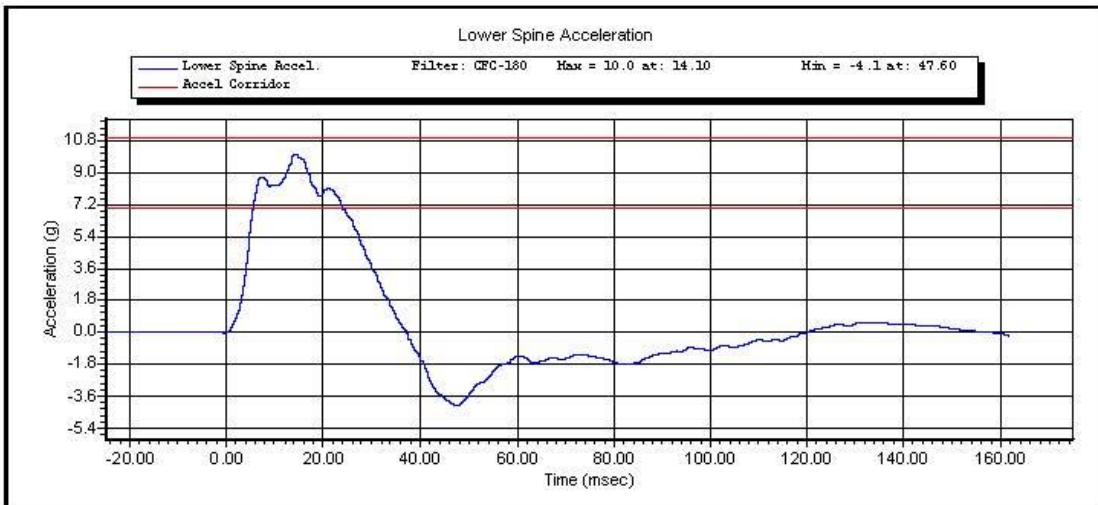
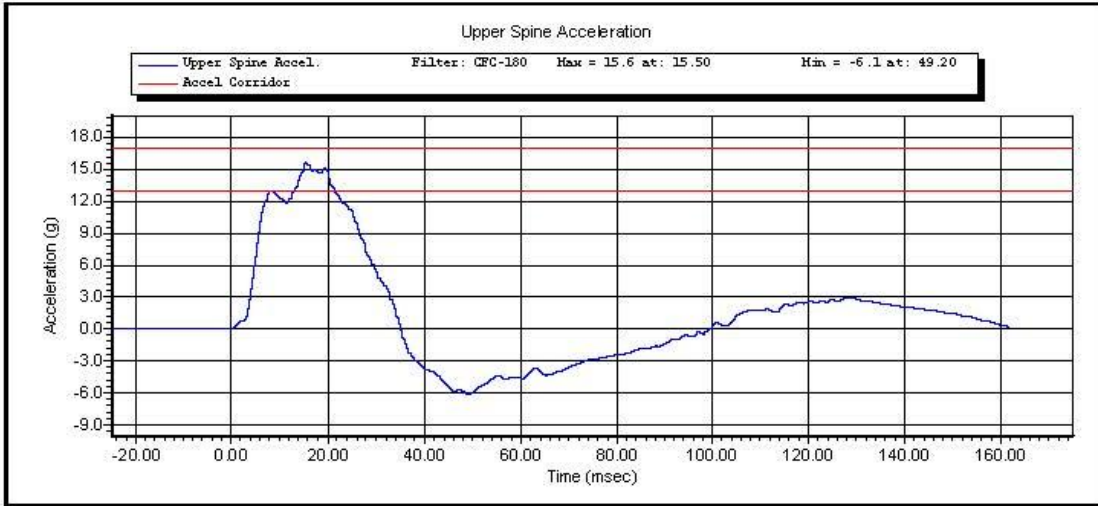
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Test Date: 12/1/2011

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2 of 3



Test ID:

Test Time: 1:45:06 PM

Test Date: 12/1/2011

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VERIFICATION REPORT

Test Name:	Abdominal Impact	Revision:	8/24/2009
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	12/1/2011
Test Number:	1	Test Time:	3:08:36 PM

Component Part Number	Component Serial Number
Thorax Ribs 4, 5	1761, DG7012

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.8 deg C P
Humidity	10 -- 70	31 %RH P
Velocity	4.20 -- 4.40	4.37 m/s P
Probe Acceleration	12.0 -- 16.0	14.6 g P
Upper Abdominal Rib Deflection	36.0 -- 47.0	44.2 mm P
Lower Abdominal Rib Deflection	33.0 -- 44.0	41.3 mm P
Lower Spine Acceleration - T12	9.0 -- 14.0	10.1 g P

All test parameters are within specifications

Technician: **S. Zito**

Supervisor: **D. Travale**

Test ID:

Test Time: **3:08:36 PM**

Test Date: **12/1/2011**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2011
Endevco	7231CT	AF5B3	11/18/2011
FTSS	180-3881-1	DS-1860	9/1/2011
FTSS	180-3881-1	DS-1861	9/1/2011
Endevco	7264-2000	P64147	11/1/2011

Test ID:

Test Time: 3:08:36 PM

Test Date: 12/1/2011

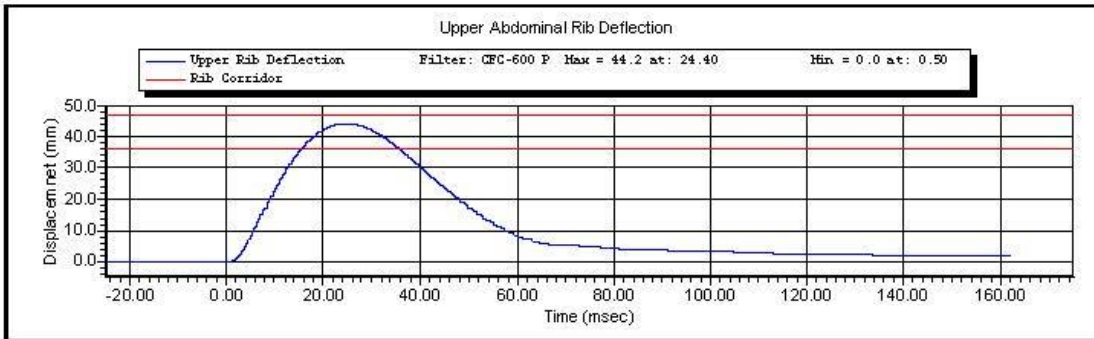
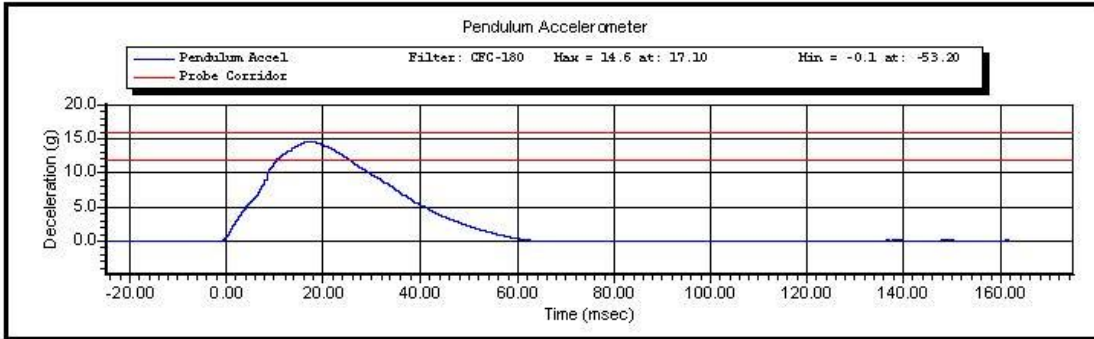


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Test Name:	Abdominal Impact	Revision:	8/24/2009
Sub Test Name:		Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	12/1/2011
Test Number:	1	Test Time:	3:08:36 PM



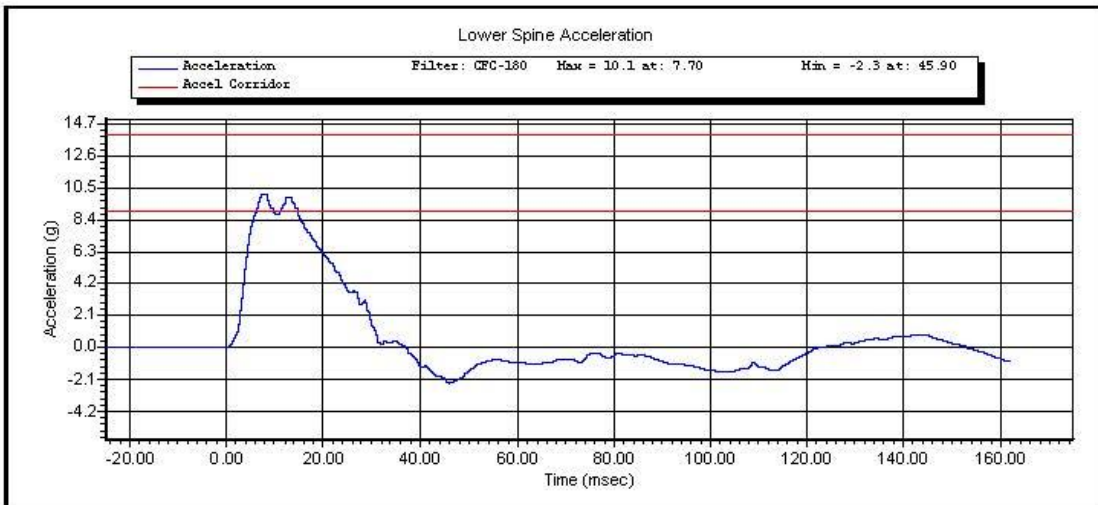
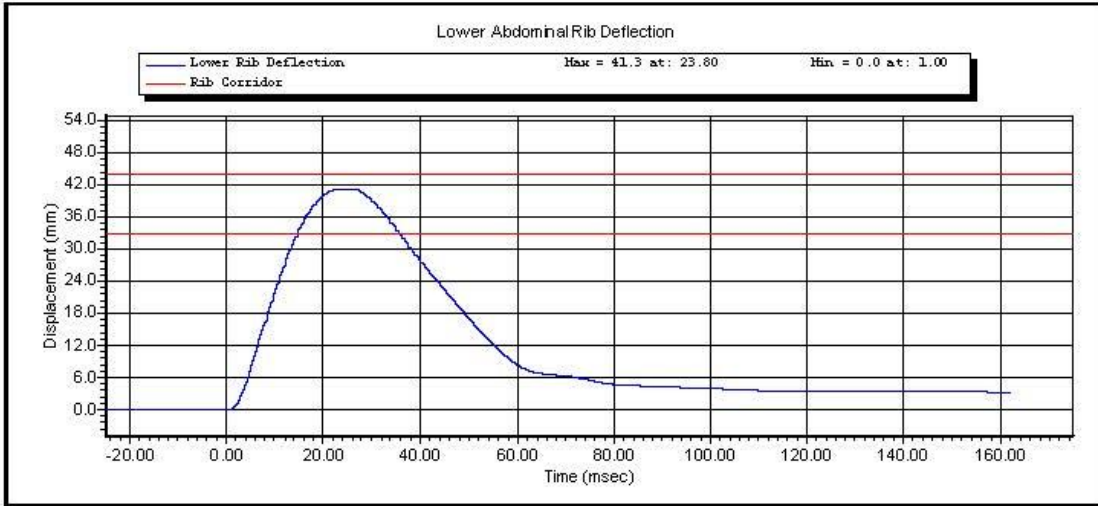
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Test Time: **3:08:36 PM**

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1 of 2



Test ID:

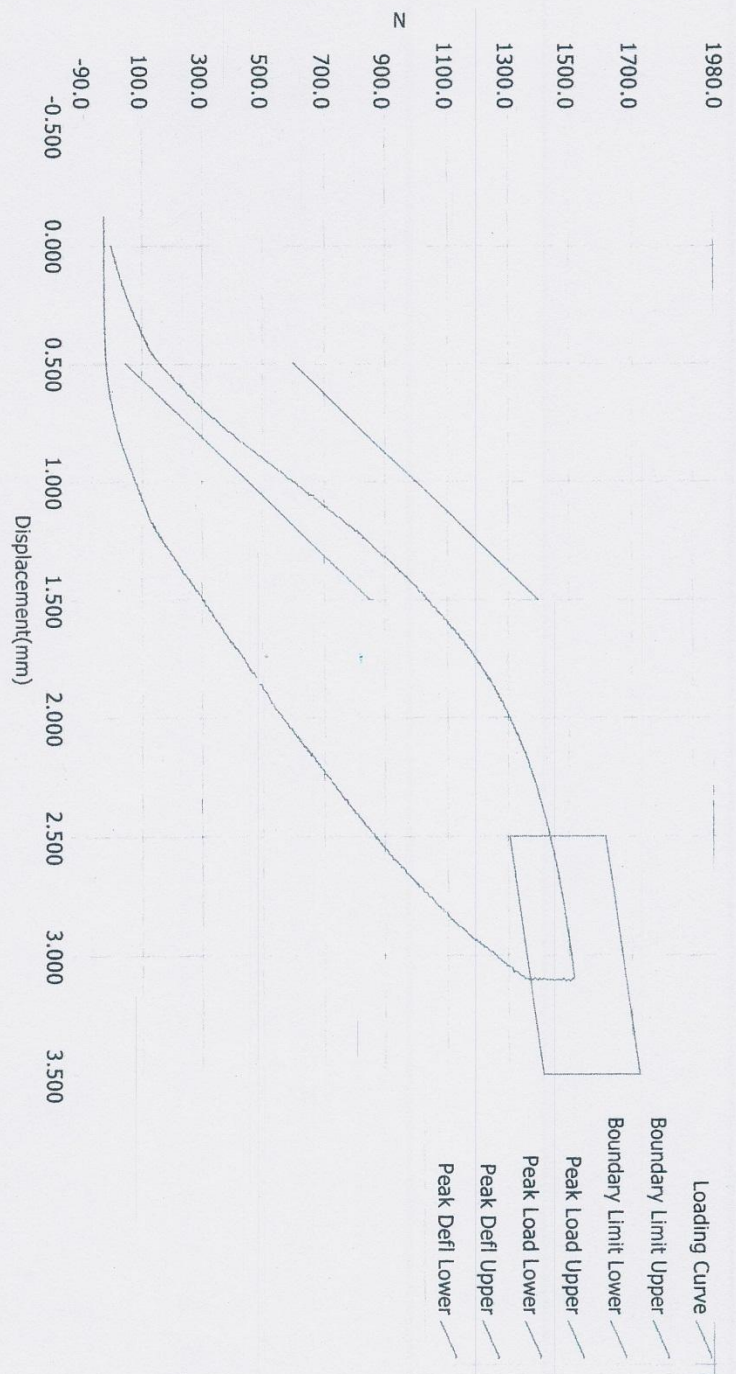
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Test Date: 12/1/2011

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Resultant Data - SIDIIs Plug Compression

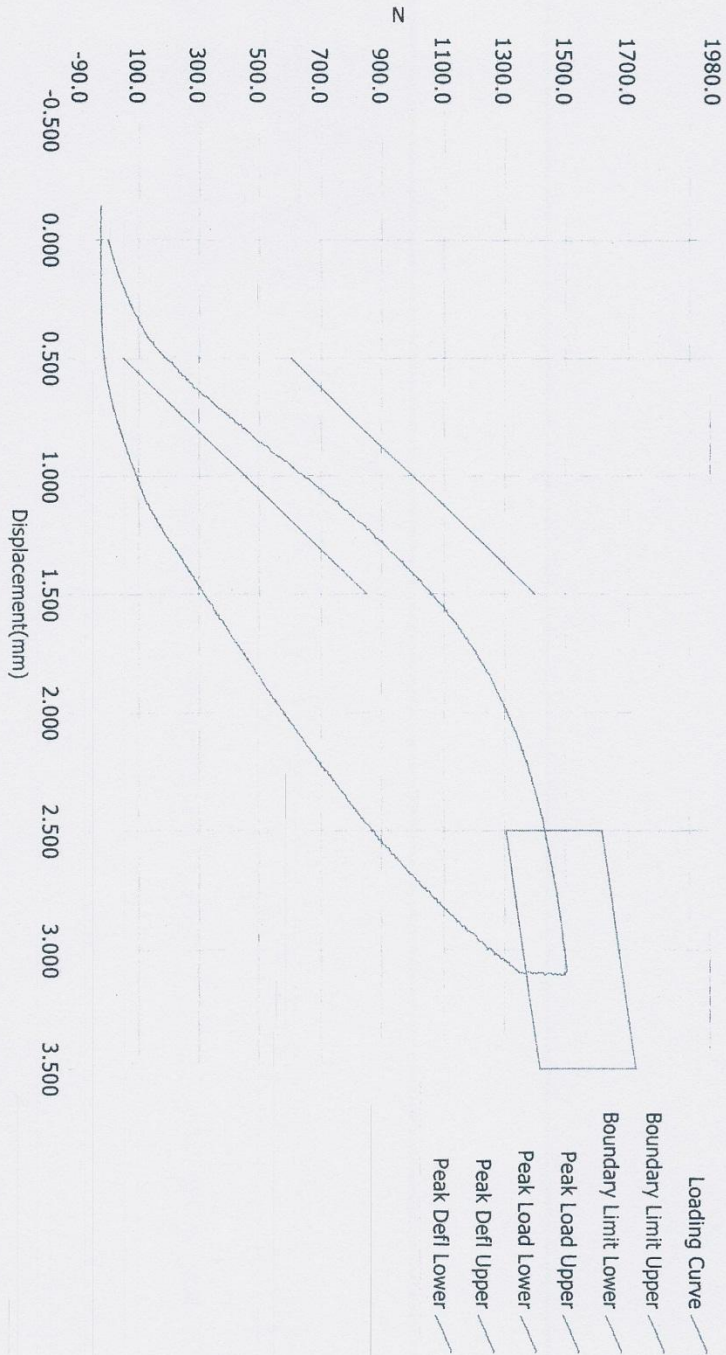


ATD Calibration Lab

<u>Test ID</u>	<u>Part Serial Number</u>	<u>Test Date</u>	<u>Test Time</u>
	46449	9/22/2011	8:17 PM
<u>Cert ID</u>	<u>ATD Serial Number</u>	<u>ATD Type</u>	
	N/A	SIDIIs	
Current Date : 9/22/2011		Current Time : 20:17:34	

C

Resultant Data - SIDIIs Plug Compression



ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
46447	46447	9/22/2011	8:14 PM
Cat ID	ATD Serial Number	ATD Type	
N/A	N/A	SIDIIs	

Current Date : 9/22/2011

Current Time : 20:14:46



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VERIFICATION REPORT

Test Name:	Pelvis	Revision:	8/24/2009
Sub Test Name:	Acetabulum Impact	Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	12/2/2011
Test Number:	1	Test Time:	3:52:42 PM

Component Part Number	Component Serial Number
180-4343 Pelvis Flesh	DG3207
Humanetics Cert Plug - 1505N	46449
Humanetics Test Plug - 1498N	46447

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	22.2 deg C P
Humidity	10 -- 70	29 %RH P
Velocity	6.60 -- 6.80	6.61 m/s P
Peak Probe Acceleration	38.0 -- 47.0	46.0 g P
Peak Pelvis Acceleration	34.0 -- 42.0	40.8 g P
Peak Acetabulum Force	3.60 -- 4.30	3.82 kN P

All test parameters are within specifications

Technician: **A. Rudniski**

Supervisor: **D. Travale**

Test ID:

Test Time: **3:52:42 PM**

Test Date: **12/2/2011**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2011
Endevco	7231CT	AF5B3	11/18/2011
Endevco	7264-2000	P51875	9/29/2011
DentonATD	3249J	LC-267Fy	10/30/2011

Test ID:

Test Time: 3:52:42 PM

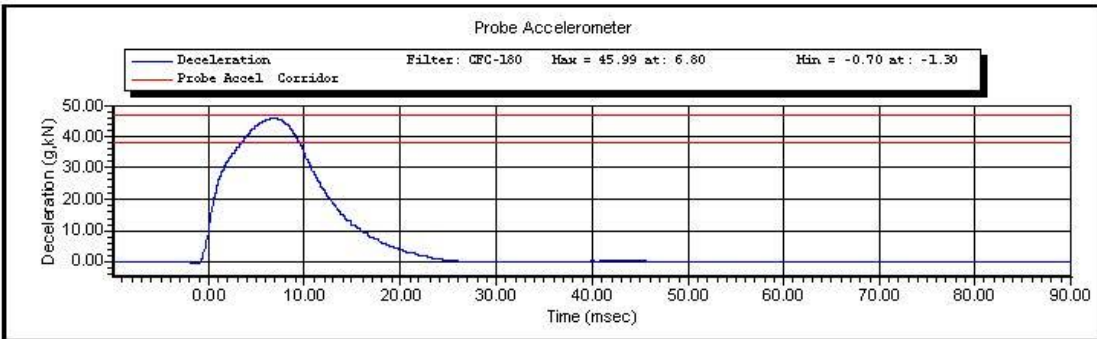
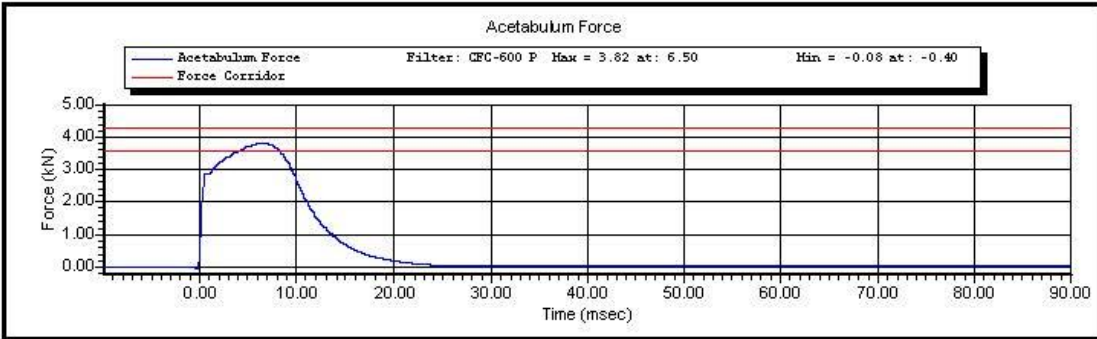
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2 of 2



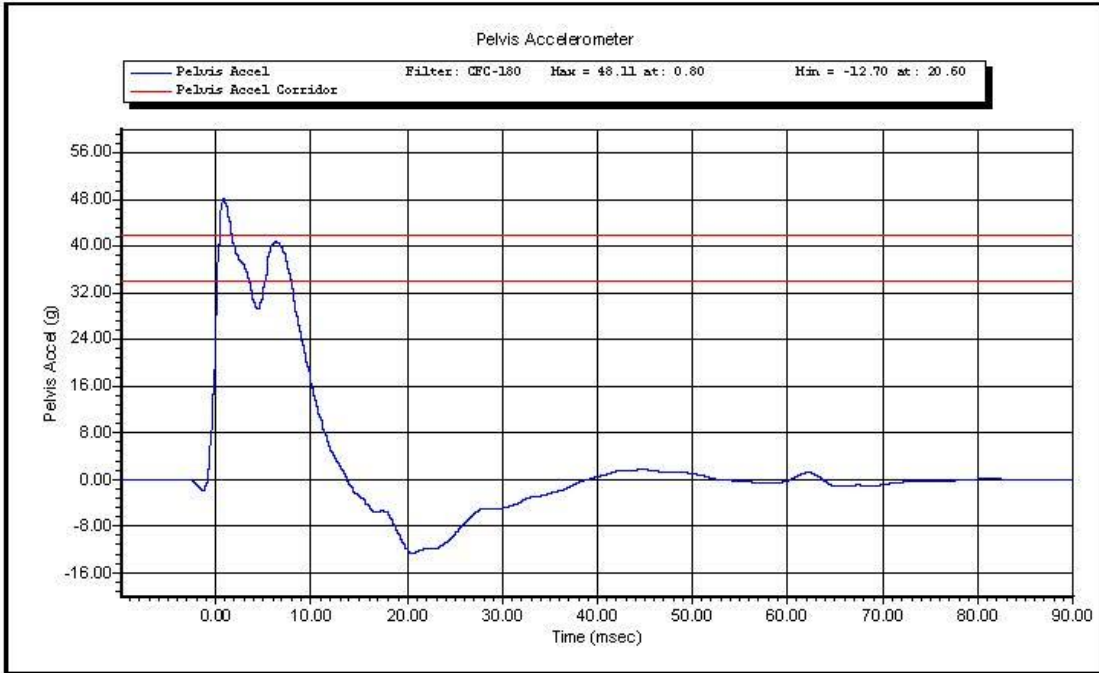
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Sub Test Name:	Acetabulum Impact	Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	12/2/2011
Test Number:	1	Test Time:	3:52:42 PM



Test ID:

Test Time: **3:52:42 PM**

Test Date: **12/2/2011**



Test ID:

Test Time: 3:52:42 PM

Test Date: 12/2/2011

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VERIFICATION REPORT

Test Name:	Pelvis	Revision:	8/24/2009
Sub Test Name:	Iliac Impact	Spec Type:	NHTSA
ATD Type:	SID-11s		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	12/1/2011
Test Number:	1	Test Time:	9:09:43 AM

Component Part Number	Component Serial Number
180-4343 Pelvis Flesh	DG3207

Test Parameters	Test Specifications	Test Results
Temperature	20.6 -- 22.2	21.1 deg C P
Humidity	10 -- 70	29 %RH P
Velocity	4.20 -- 4.40	4.37 m/s P
Peak Probe Acceleration	36.0 -- 45.0	44.4 g P
Peak Pelvis Acceleration	28.0 -- 39.0	36.6 g P
Peak Iliac Force	4.10 -- 5.10	5.02 kN P

All test parameters are within specifications

Technician: **S. Zito**
Supervisor: **D. Travale**

Test ID:

Test Time: **9:09:43 AM**

Test Date: **12/1/2011**



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VERIFICATION REPORT

REFERENCE EQUIPMENT

<u>Manufacturer</u>	<u>Model</u>	<u>Serial Number</u>	<u>Calibration Date</u>
DentonATD	Velocity Trap	1	1/11/2011
Endevco	7231CT	AF5B3	11/18/2011
Endevco	7264-2000	P51875	9/29/2011
DentonATD	3228J	LC-281Fy	8/31/2011

Test ID:

Test Time: 9:09:43 AM

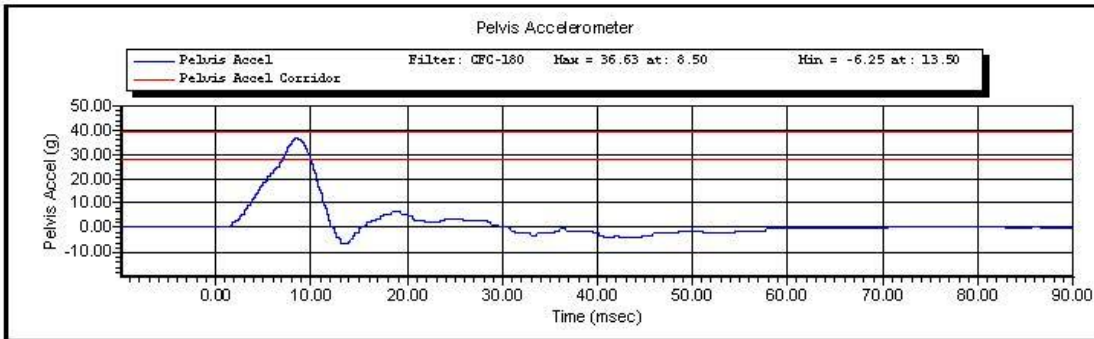
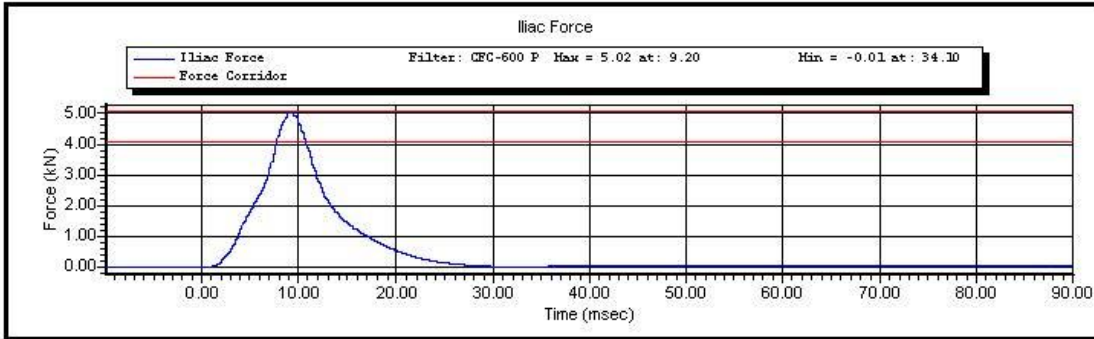
Test Date: 12/1/2011

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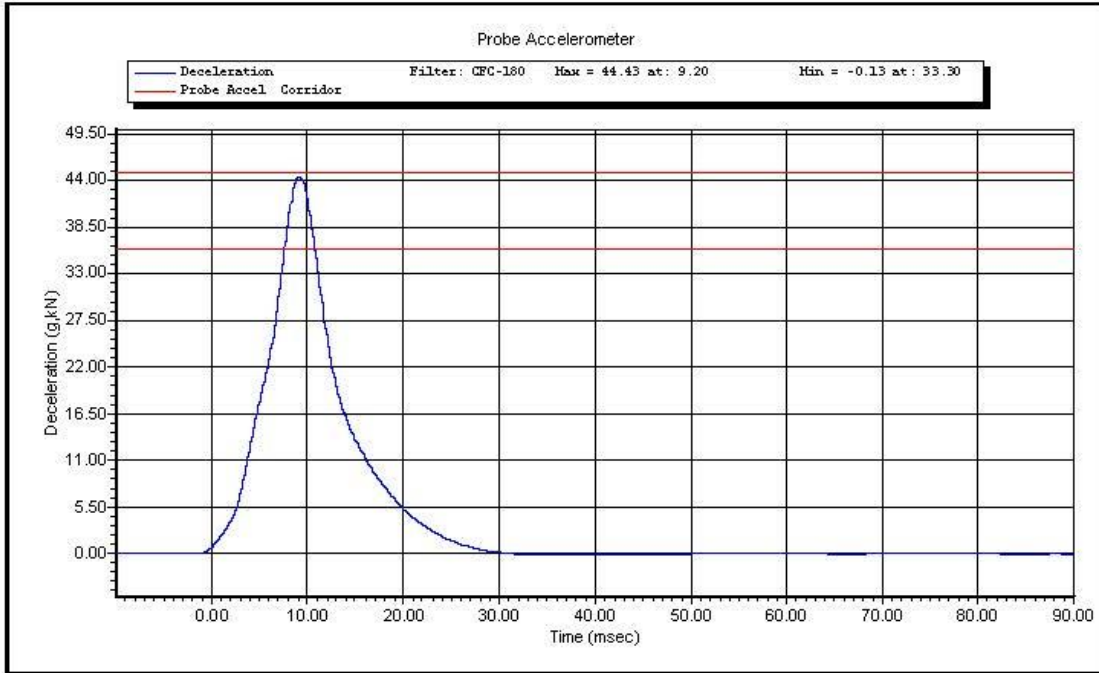
Test Name:	Pelvis	Revision:	8/24/2009
Sub Test Name:	Iliac Impact	Spec Type:	NHTSA
ATD Type:	SID-Ils		
ATD Serial Number:	DG8012		
Test ID:		Test Date:	12/1/2011
Test Number:	1	Test Time:	9:09:43 AM



Test ID:

Test Time: **9:09:43 AM**

Test Date: **12/1/2011**



Test ID:

Test Time: 9:09:43 AM

Test Date: 12/1/2011

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Appendix D
Test Equipment and Instrumentation Calibration Data

Table 1 – Dummy Instrumentation

				SID-IIs S/N 8012		
				Serial Number	Manufacturer	Calibration Date
Head Accelerometers		X		P49185	Endevco	11/3/2011
		Y		P58839	Endevco	10/17/2011
		Z		P51991	Endevco	10/17/2011
Head Accelerometers Redundant		RX		P68058	Endevco	10/17/2011
		RY		P51885	Endevco	10/17/2011
		RZ		P68059	Endevco	10/17/2011
Displacement Potentiometer	Shoulder		Y			
	Thoracic Rib	Upper	Y	1849	Denton	9/1/2011
		Middle	Y	1857	Denton	9/1/2011
		Lower	Y	1859	Denton	9/1/2011
	Abdominal Rib	Upper	Y	1860	Denton	9/1/2011
		Lower	Y	1861	Denton	9/1/2011
Lower Spine Accelerometers (T12)		X		P52100	Endevco	10/5/2011
		Y		P58796	Endevco	10/5/2011
		Z		P50098	Endevco	10/5/2011
Acetabulum Load Cell		Y		102	Denton	8/31/2011
Lilac Wing Load Cell		Y		281Fy	Denton	3/25/2011

Table 2 – Vehicle Instrumentation

Vehicle Instrumentation		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	A005869	MS	10/4/2011
Vehicle Center of Gravity	Y	A081433	MS	10/4/2011
Vehicle Center of Gravity	Z	A081445	MS	10/4/2011
Left Floor Sill	Y	A081464	MS	10/4/2011
A-Pillar Sill	Y	A079084	MS	10/4/2011
A-Pillar Low	Y	A081463	MS	10/4/2011
A-Pillar Mid	Y	A081444	MS	10/4/2011
B-Pillar Sill	Y	A081442	MS	10/4/2011
B-Pillar Low	Y	A081429	MS	10/4/2011
B-Pillar Mid	Y	A016518	MS	10/4/2011
Driver Seat	Y	A081452	MS	10/4/2011
Engine Top	X	A081461	MS	10/4/2011
Engine Top	Y	A081425	MS	10/4/2011
Firewall	Y	A081417	MS	10/4/2011
Right Roof	Y	A081460	MS	10/4/2011
Right Floor Sill	Y	A081420	MS	10/4/2011
Rear Floorpan	X	A032569	MS	10/4/2011
Rear Floorpan	Y	A035443	MS	10/4/2011

Tale 3 – Pole Instrumentation

Pole Instrumentation	Serial Number	Manufacturer	Calibration Date
Load Cell 1	18880	Interface	9/22/2011
Load Cell 2	18850	Interface	9/22/2011
Load Cell 3	46979	Interface	9/22/2011
Load Cell 4	18857	Interface	9/22/2011
Load Cell 5	18844	Interface	9/22/2011
Load Cell 6	46933	Interface	9/22/2011
Load Cell 7	18866	Interface	9/22/2011
Load Cell 8	46949	Interface	9/22/2011