

REPORT NUMBER: SPNCAP-MCW-14-015

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

**MITSUBISHI MOTORS NORTH AMERICA, INC.
2014 MITSUBISHI OUTLANDER SPORT 5-DOOR SUV
NHTSA NUMBER: O20145600**

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



TEST DATE: 11 JUNE 2014

REPORT DATE: 23 JUNE 2014

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
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OFFICE OF CRASHWORTHINESS STANDARDS
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Test Vehicle: 2014 Mitsubishi Outlander Sport 5-Door SUV
Test Program: SPNCAP

NHTSA Number: O20145600
Test Date: June 11, 2014

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Prepared by: Mark Mayan

Date: July 22, 2014

Reviewed by: Brand Stemper

Date: July 23, 2014

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

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

Date: _____

Technical Report Documentation Page

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16. Abstract A 32.20 km/h (20 mph), 75° oblique Side NCAP Test was conducted on the subject 2014 Mitsubishi Outlander Sport 5-Door SUV in accordance with the specifications of the Office of Crashworthiness Standards Side NCAP Pole Laboratory Test Procedure for the generation of consumer information on vehicle side pole crash protection. The test was conducted at the Medical College of Wisconsin (MCW) in Milwaukee, Wisconsin on 11 June 2014. The impact velocity was 32.00 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 21 °C. The test vehicle's post-test maximum static crush was 418 mm at level 3. The test vehicle's occupant performance is as follows: <table border="1"> <thead> <tr> <th></th> <th>Units</th> <th>Driver ATD (SID-IIs) Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td>N/a</td> <td>1000</td> <td>364.5</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td>G's</td> <td>82</td> <td>41.3</td> </tr> <tr> <td>Total Pelvic Force (Acetabular & Pelvic)</td> <td>NWT</td> <td>5525</td> <td>3591.7</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>38</td> <td>25.5</td> </tr> <tr> <td>Maximum Abdomen Rib Deflection</td> <td>mm</td> <td>45</td> <td>30.3</td> </tr> </tbody> </table> 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.							Units	Driver ATD (SID-IIs) Threshold	Result	Head Injury Criteria (HIC ₃₆)	N/a	1000	364.5	Resultant Lower Spine Acceleration	G's	82	41.3	Total Pelvic Force (Acetabular & Pelvic)	NWT	5525	3591.7	Maximum Thoracic Rib Deflection	mm	38	25.5	Maximum Abdomen Rib Deflection	mm	45	30.3
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17. Key Words New Car Assessment Program (NCAP) Side impact Pole Part 572V SID-IIs			18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division, NPO-411 1200 New Jersey Ave, SE Washington, DC 20590 e-mail: tis@nhtsa.dot.gov FAX: 202-493-2833																										
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Test Vehicle: 2014 Mitsubishi Outlander Sport 5-Door SUV
Test Program: SPNCAP

NHTSA Number: O20145600
Test Date: June 11, 2014

SECTION 1

TEST PURPOSE AND PROCEDURE

This side impact test is part of the MY 2014 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-09-D-00123. The purpose of this test is to generate comparative side impact performance in a 2014 Mitsubishi Outlander Sport 5-Door SUV. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Side NCAP Pole Laboratory Test Procedure, dated September 2013.

SECTION 2

SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a 2014 Mitsubishi Outlander Sport 5-Door SUV. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.00 km/h. The test was conducted at the Medical College of Wisconsin, in Milwaukee, Wisconsin, on 11 June 2014. Pre-test and post-test photographs of the test vehicle and side impact dummy (SID-IIs) are included in APPENDIX A of this report.

One (1) Part 572V (SID-IIs) dummy was placed in the driver designated seating position according to instructions specified in the OCWS Side NCAP Pole Laboratory Test Procedure, dated September 2013. Camera locations and other pertinent camera information are included in this report.

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

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

APPENDIX B contains the vehicle and dummy response data. Dummy configuration and performance verification data can be found in APPENDIX C of this report. APPENDIX D contains the test equipment and instrumentation calibration data.

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

OCCUPANT SUMMARY			
Head Injury Criteria (HIC ₃₆)	Driver ATD (SID-IIs)		
	Units	IARV	Result
Head Injury Criteria (HIC ₃₆)	N/a	1000	364.5
Lower Spine Acceleration	G	82	41.3
Total Pelvic Force (Sum of Acetabular and Iliac Forces)	N	5525	3591.7
Maximum Thoracic Rib Deflection	mm	38*	25.5
Maximum Abdominal Rib Deflection	mm	45*	30.3

Head Injury Criterion (HIC) is the standardized calculation using resultant head acceleration to assess head injury. Generally, a higher HIC represents an increase in the likelihood of a serious head injury. HIC₃₆ specifies a time 'window' of 36 milliseconds over which the integral is calculated. T1 and T2 represent the time of the lower and upper bounds of the window in which the HIC is calculated.

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

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

*Proposed IARV

Supplemental restraint information is given below:

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION		
Restraint Type	Left Front (Driver) Occupant Location 01	
	Mounted	Deployed
Frontal Airbag	Yes	No
Knee Airbag	Yes	No
Side Curtain Airbag	Yes	Yes
Side Torso/Abdomen/Pelvis Airbag	Yes	Yes
Seat Belt Pretensioner	Yes	Yes
Seat Belt Load Limiter	Yes	N/a
Other	No	N/a

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

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

TEST NOTES

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

VEHICLE INFORMATION	
NHTSA No.	O20145600
Model Year	2014
Make	Mitsubishi
Model	Outlander Sport
Body Style	5-Door SUV
VIN	4A4AP3AU9EE028711
Body Color	Mercury Grey
Odometer Reading (km/mi)	103 mi.
Engine Displacement (L)	2.0
Type/No. of Cylinders	CVT, 4 Cylinder
Engine Placement	Lateral
Transmission Type	Automatic
Transmission Speeds	5
Overdrive	Yes
Final Drive	FWD
Roof Rack	No
Sunroof/T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes

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

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

N/a

DATA FROM CERTIFICATION LABEL			
Manufactured By	Mitsubishi Motors North America, Inc.	GVWR (kg)	1970
Date of Manufacture	May 2014	GAWR Front(kg)	1030
Vehicle Type	SUV	GAWR Rear (kg)	1000

VEHICLE SEATING AND WEIGHT CAPACITY DATA				
	Front	Rear	Third	Total
Designated Seating Capacity (DSC)	2	3	0	5
Capacity Weight (VCW) kg				375.1
DSC X 68.04 kg				340.2
Rated Cargo Weight (RCLW)				34.9

(A)

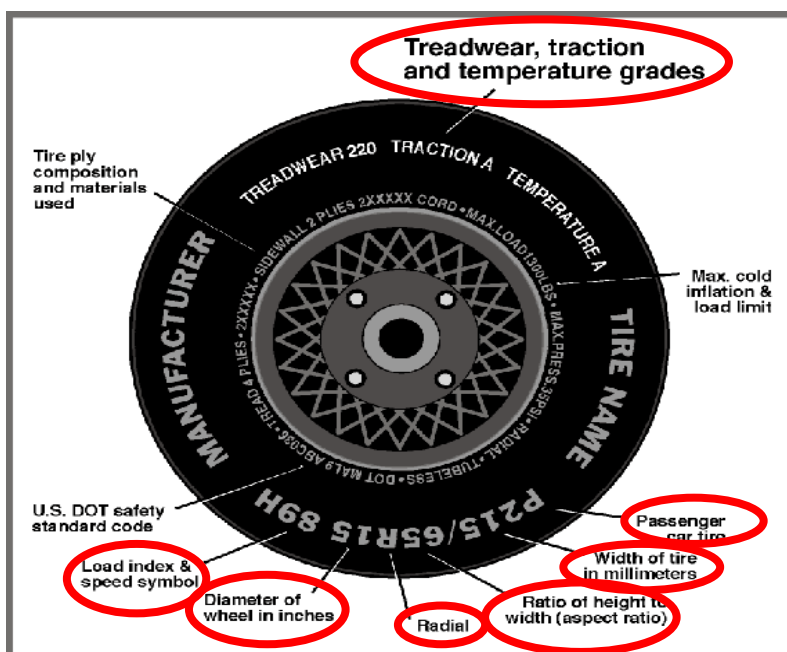
(B)

(A-B)

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

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

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



VEHICLE TIRE INFORMATION		
Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	230	230
Recommended Tire Size	P225/55R18	P225/55R18
Tire Size on Vehicle	P225/55R18	P225/55R18
Tire Manufacturer	Nexen	Nexen
Tire Model	NPriz RH7	NPriz RH7
Treadwear	440	440
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	2	2
Tire Plies Body	5	5
Load Index/Speed Symbol	97H	97H
Tire Material	Nylon, Polyester & Steel	Nylon, Polyester & Steel
DOT Safety Code Left	UAK8 BAFR 0914	UAK8 CACR 0914
DOT Safety Code Right	UAK8 BAFL 0914	UAK8 BAFL 0914

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

TIRE PRESSURES					
	Units	LF	RF	LR	RR
As Delivered	kpa	254.6	259.3	255.0	247.7
Tire Placard	kpa	227.5	227.5	227.5	227.5
Owner's Manual	kpa	227.5	227.5	227.5	227.5
As Tested	kpa	227.5	227.5	227.5	227.5

TEST VEHICLE AXLE WEIGHTS										
	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	439.5	285.8		438.2	337.9		456.7	320.1	
Right	kg	414.6	278.1		419.1	295.3		422.6	298.0	
Ratio	%	60.2	39.8		57.5	42.5		58.7	41.3	
Totals	kg	854.1	563.9	1418.0	857.3	633.2	1490.5	879.3	618.1	1497.4

TARGET TEST WEIGHT CALCULATION			
	Units		
Total Delivered Weight (UVW)	kg	1418.0	(A)
Actual Weight of 1 P572 ATDs (SID-IIs) Used	kg	44.5	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	34.9	(C)
Calculated Target Vehicle Test Weight (TVTW)	kg	1497.4	(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

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

TEST VEHICLE ATTITUDES AND CG					
	Units	As Delivered	As Tested	Fully Loaded	Meets Requirement
Driver Door Sill Angle (Front to Rear)	Deg.	-0.5	-0.4	-0.3	Yes
Front Pass. Door Sill Angle (Front to Rear)	Deg.	-0.5	-0.3	-0.3	Yes
Front Bumper Angle (Left to Right)	Deg.	0.0	-0.1	-0.1	Yes
Rear Bumper Angle (Left to Right)	Deg.	-0.3	-0.4	-0.4	Yes
Vehicle CG (Aft of Front Axle)	mm	1062	1134	1102	
Vehicle CG Left (+) / Right (-) from Long. Centerline)	mm	20	37	33	

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW	
Ballast	Weight (kg)
Exhaust, Spare Tire, Headlights, Air-Box, Wipers, Non-Struck Side Windows & Motors, Plastic Trim, and Floor Mats	80.3

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

SCRL ANGLE RANGE			
	SCRL (°)		
	Max	Min	Mid
Driver Seat**	2.8°	0°	1.4°
Front Passenger Seat**	0°	0°	0°
Front Center Seat			
Struck Side Rear Seat	0°	0°	0°
Non-Struck Side Rear Seat	0°	0°	0°
Rear Center Seat			

**Seat pan non-adjustable

SCRL ANGLE RANGE						
Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCR Height (mm)	SCR Height Position	SCR Height (mm)		
				Rearmost	Mid-Fore/Aft	Forward- Most
Driver's Seat	N/a	N/a	Max	N/a	N/a	N/a
	1.4	35.8	Mid	46.0	41.2	35.8
	N/a	N/a	Min	N/a	N/a	N/a
Front Passenger Seat	N/a	Fixed	Max	N/a	N/a	N/a
	0	13.6	Mid	23.2	18.2	13.6
	N/a	Fixed	Min	N/a	N/a	N/a
Front Center Seat*			Max			
			Mid			
			Min			
Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
	0	82.1	Mid	Fixed	82.1	Fixed
	Fixed	Fixed	Min	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
	0	64.1	Mid	Fixed	64.1	Fixed
	Fixed	Fixed	Min	Fixed	Fixed	Fixed
Rear Center Seat*			Max			
			Mid			
			Min			

*If applicable

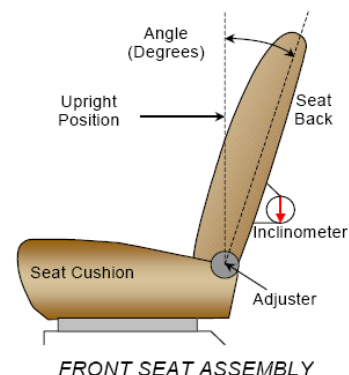
DATA SHEET NO. 2
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA (CONTINUED)

SEAT FORE/AFT TRAVEL				
Seat	Total Fore/Aft Travel		Test Position from Forward-most Position*	
	mm	Detents	mm	Detents
Driver Seat	220	23	0	22
Front Passenger Seat	220	23	0	22
Front Center Seat*				
Struck Side Rear Seat	Fixed	N/a	As Positioned	N/a
Non-Struck Side Rear Seat	Fixed	N/a	As Positioned	N/a
Rear Center Seat*				

*Zero being the full-forward position

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 BACK ANGLE ADJUSTMENT				
Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents	Degrees	Detents
Driver Seat w/ Seated Dummy	77.6°	40	10.0°	0
Front Passenger Seat	71.2°	36	9.8°	0
Front Center Seat*				
Struck Side Rear Seat	Fixed	N/a	Fixed	N/a
Non-Struck Side Rear Seat	Fixed	N/a	Fixed	N/a
Rear Center Seat*				

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

Seat Belt Anchorage Adjustment

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

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

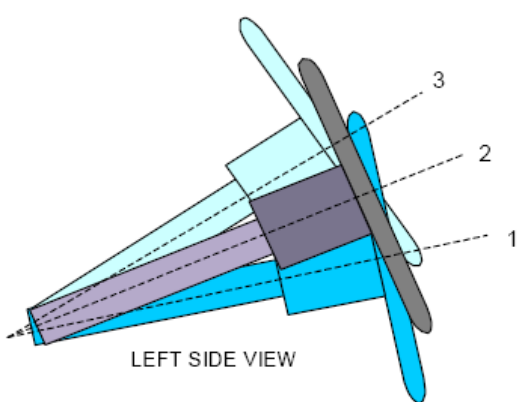
Head Restraint Adjustment

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

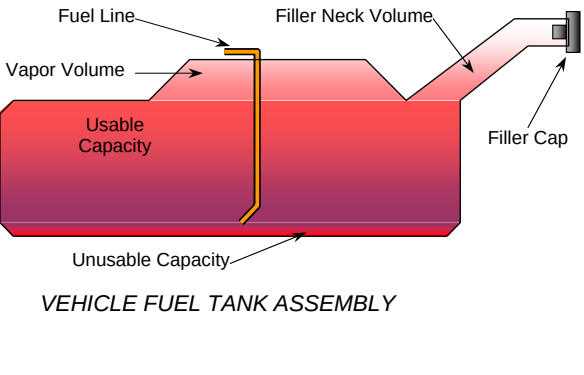
HEAD RESTRAINT ADJUSTMENT		
	Total No. of Positions	Placement
Driver Seat	4	Lowest Position

Steering Column Adjustment

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

STEERING COLUMN ADJUSTMENT			
	Degrees	Fore/Aft Position (mm)	 LEFT SIDE VIEW STEERING COLUMN ASSEMBLY
Lowermost, Pos. No. 1	60.3°	19	
Geometric Center, Pos. No. 2	62.4°	19	
Uppermost, Pos. No. 3	64.5°	19	
Telescoping Steering Wheel Travel	62.4	37	
Test Position	62.4°	19	

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

FUEL TANK CAPACITY DATA			
Description	Units	Value	
Usable Capacity of Standard Equipment Fuel Tank	L	57.9	
Usable Capacity of Optional Equipment Fuel Tank	L	N/a	
Usable Capacity of Standard Tank as Specified in Owner's Manual	L	57.9	
Usable Capacity of Optional Tank as Specified in Owner's Manual	L	N/a	
Amount of Stoddard Added for Test	L	53.9	
% Usable Capacity (92%-94%)	%	93.0	
1/3 of Usable Capacity			19.3

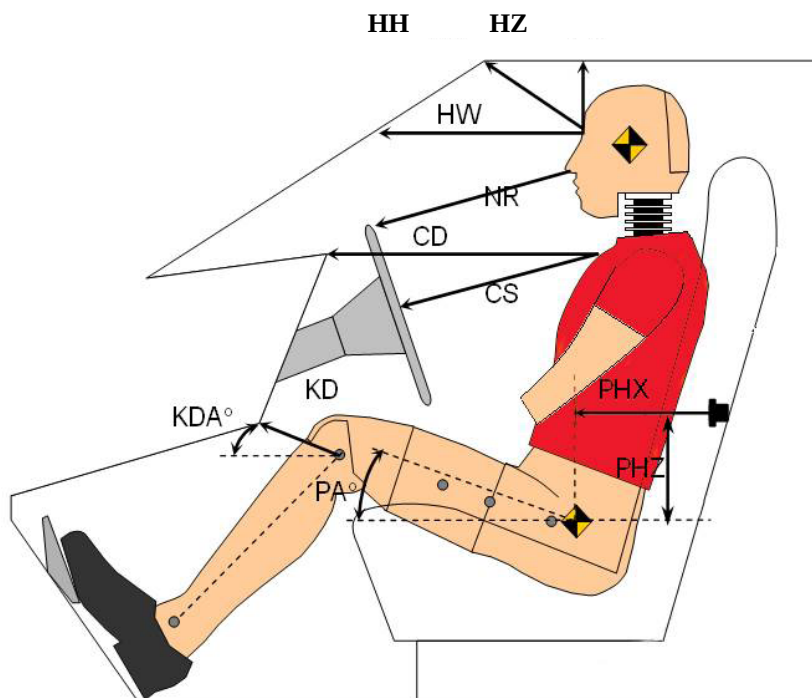
Fuel Pump

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

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

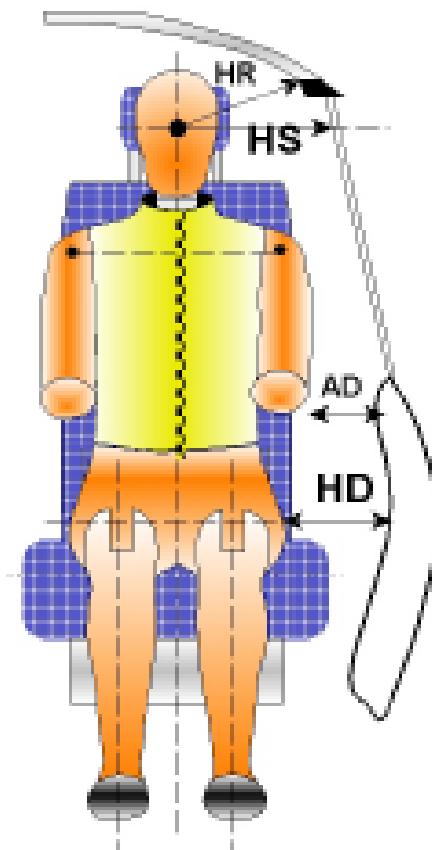
Yes

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS



Code	Measurement Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	290	
HW	Head to Windshield	659	
HZ	Head to Roof Liner	231	
NR	Nose to Rim	229	
CD	Chest to Dashboard	408	
CS	Chest to Steering Wheel	183	
KDL	Left Knee to Dash	149	
KDAL	Left Knee to Dash		22.5°
KDR	Right Knee to Dash	138	
KDAR	Right Knee to Dash		23.6°
PAX	Pelvic Tilt Angle (X-Axis)		0.0°
PAY	Pelvic Tilt Angle (Y-Axis)		18.6°
PHX	H-Point to Striker (X-Axis)	363.9	
PHZ	H-Point to Striker (Z-Axis)	127.2	

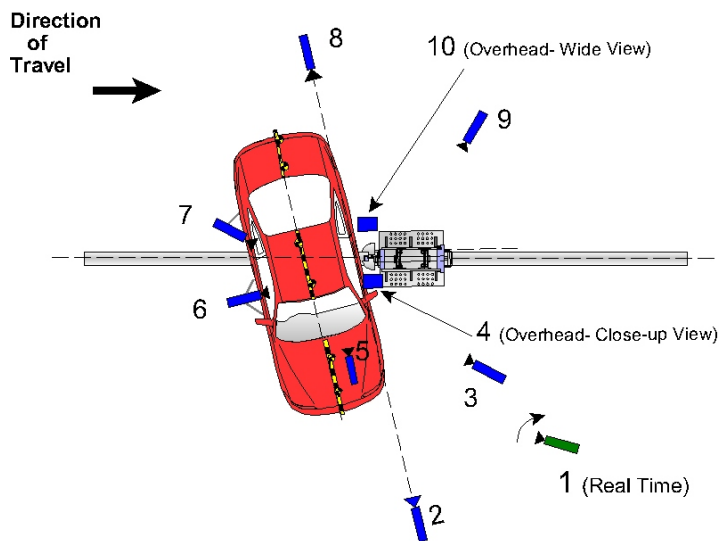
DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS



DUMMY LATERAL CLEARANCE DIMENSIONS		
Code	Measurement Description	Length (mm)
HR	Head to Side Header	268
HS	Head to Side Window	383
AD	Arm to Door	220
HD	Hip Point to Door	208

DATA SHEET NO. 5 **CAMERA AND INSTRUMENTATION DATA**

Camera Locations



	View	Coordinates †			Lens Length mm	Operating Frame Rate fps
		X	Y	Z		
		mm	mm	mm		
1	Rear Time (24 – 30 fps) Pan View of Impact				N/a	30
2	Front ground Level – Impact View	12556	-735	-1026	50	1000
3	Impact Side 45° - Forward View of Pole	9121	-3069	-1030	25	1000
4	Overhead Close – Up View of Impact	2742	-415	-5058	25	1000
5	Onboard – Dummy Front View				12.5	1000
6	Onboard – Dummy Side View				12.5	1000
7	Onboard – Dummy Rear Oblique View				12.5	1000
8	Rear Ground Level – Impact View	-6092	-996	-1015	25	1000
9	Impact Side 45° - Rearward Pole View	-4980	-6103	-1041	35	1000
10	Overhead Wide – View Impact	2415	44	-5364	12.5	1000
11	Real – Time (24 – 30 fps) Dummy Front View				N/a	30

Origin

X

Y

Z

Impact Point

Impact Point

Impact Point

Orientation

X

Y

Z

+(X) Forward

+(Y) Right

+(Z) Down

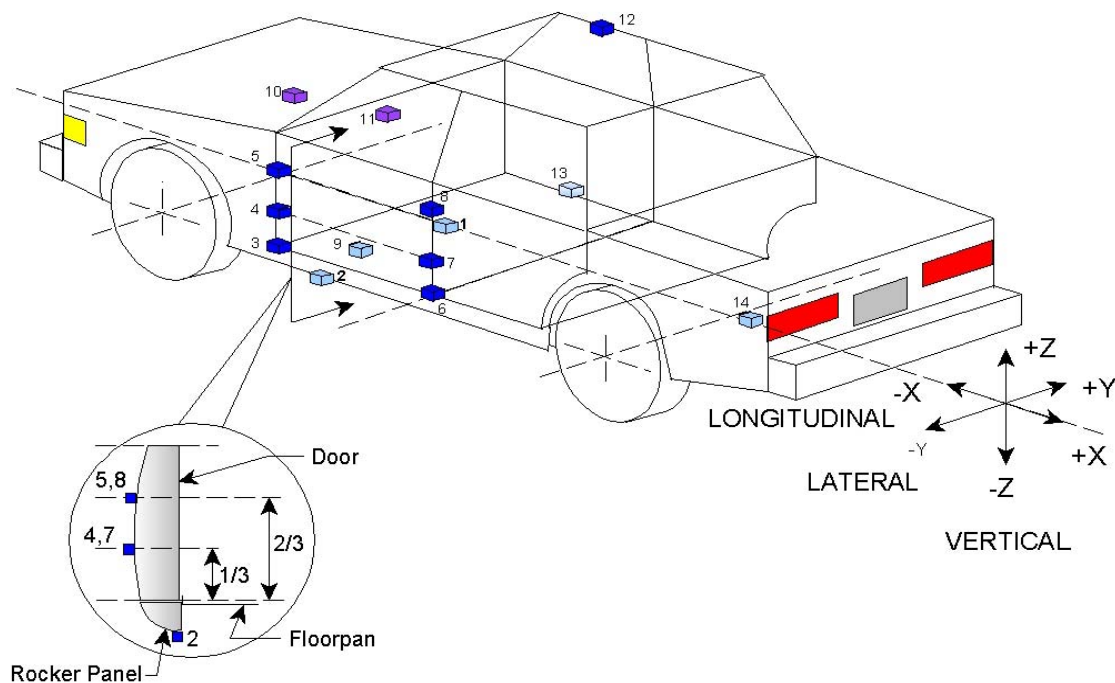
**All measurements accurate to +/- 6 mm*

Note: Vehicle was at a 15° angle to the rigid pole

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

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

DATA SHEET NO. 6 VEHICLE ACCELEROMETER LOCATIONS



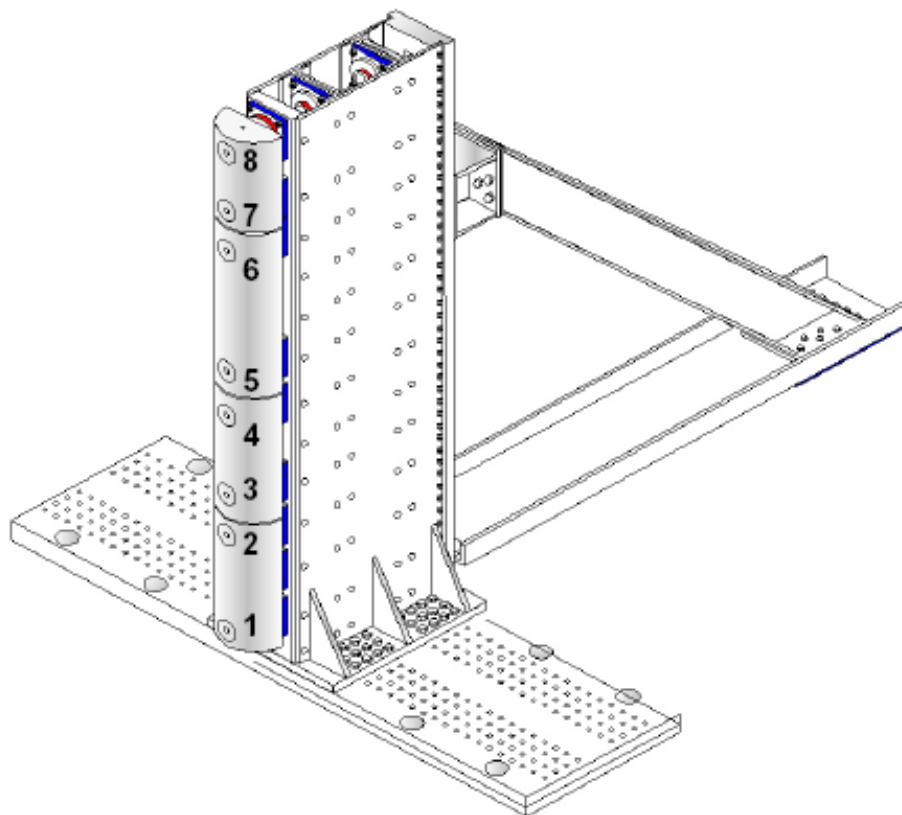
ACCELEROMETER/SENSOR LOCATION				
Loc. no.	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2607.3	67.9	228.7
2	Left Floor Sill	2706.3	-700.5	442.4
3	A-Pillar Sill	2930.2	-698.8	446.4
4	A-Pillar Low	2912.5	-785.8	102.7
5	A-Pillar Mid	2918.7	-794.0	-94.9
6	B-Pillar Sill	1875.5	-703.9	440.4
7	B-Pillar Low	1843.5	-806.0	1.96
8	B-Pillar Mid	1819.5	-807.5	-191.6
9	Driver Seat Track	2156.6	-574.9	245.5
10	Engine Top	3599.3	160.8	-172.7
11	Firewall	3183.2	149.5	-80.3
12	Right Roof	1843.2	528.7	-878.7
13	Right Floor Sill	1883.8	711.7	426.0
14	Rear Floorpan	848.0	10.6	130.4

Origin
X Test Vehicle Rear Bumper
Y Test Vehicle Centerline
Z Ground Plane

Orientation
X + Forward
Y + Right
Z + Down

DATA SHEET NO. 7
RIGID POLE LOAD CELL DATA

FOIL 300K RIGID POLE



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

*Measured From Top of Platform

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

TEST DUMMY INFORMATION AND CONTACT POINTS	
Dummy Body Part	Driver SID-II's Dummy
Face	To Side Curtain Airbag
Top of Head	To Side Curtain Airbag
Left Side of Head	To Side Curtain Airbag
Back of Head	To Side Curtain Airbag
Left Shoulder	Along Seat Back Wing Into Side Torso/Abdomen/Pelvis Airbag
Upper Torso	Along Seat Back Wing Into To Side Torso/Abdomen/Pelvis Airbag
Lower Torso	Along Seat Back Wing Into To Side Torso/Abdomen/Pelvis Airbag
Left Hip	Along Seat Back Wing Into To Side Torso/Abdomen/Pelvis Airbag
Left Knee	To Interior Door Panel

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

POST TEST SEAT PERFORMANCE				
Description	Struck Side		Non-Struck Side	
	Front	Rear	Front	Rear
Seat Movement Along Seat Track	No	No	No	No
Seat Disengagement from Floor Pan	No	No	No	No
Seat Back Movement from Initial Position	No	No	No	No
Seat Back Collapse	No	No	No	No

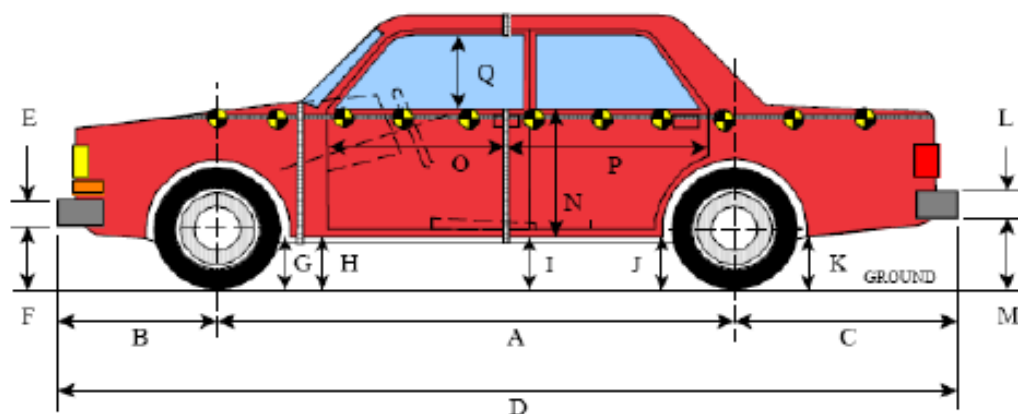
**DATA SHEET NO. 8
 POST TEST OBSERVATIONS (CONTINUED)**

POST TEST STRUCTURAL OBSERVATIONS	
Critical Areas of Performance	Observations/Conclusions
Pillar Performance	No Separation
Sill Separation	No Separation
Windshield Damage	Heavy Cracking Along Entire Windshield
Window Damage	Front Window Shattered at Impact
Other Notable Effects	None Noted

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

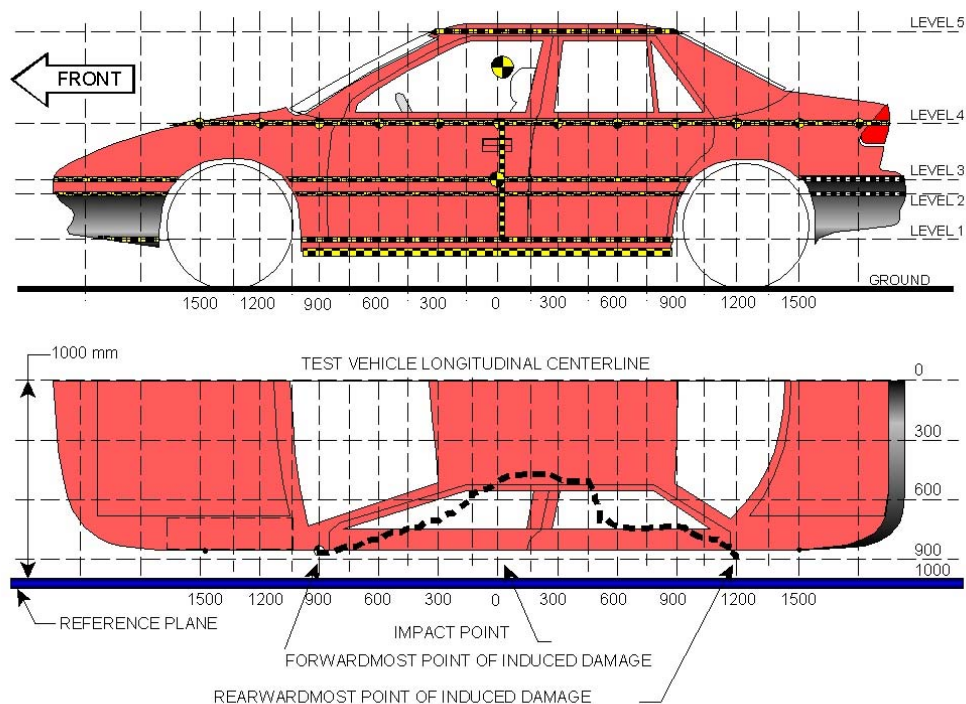
IMPACT SPEED			
Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		1009
Actual Impact Point (Aft of Front Axle)	mm		1011
Horizontal Offset (+ forward / - rear)	mm	+/- 38 of Intended Impact Point	-2
Angle Between Vehicle's Longitudinal Centerline and Line of Forward Motion	degrees	75 +/- 3	75.0
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	32.00
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	31.98

DATA SHEET NO. 9
VEHICLE PROFILE MEASUREMENTS



VEHICLE PRE- AND POST- TEST MEASUREMENT INFORMATION				
Code	Description	Pre Test	Post Test	Difference
		mm	mm	mm
A	Wheelbase	2670	2588	-82
B	Front Axle to FSOV	570	557	-13
C	Rear Axle to RSOV	598	593	-5
D	Total Length at Centerline	4301	4255	-46
E	Front Bumper Thickness	81	81	0
F	Front Bumper Bottom to Ground	358	381	23
G	Sill Height at Front Wheel Well	287	278	-9
H	Sill Height at Front Door Leading Edge	288	275	-13
I	Sill Height at B-Pillar	300	287	-13
J1	Sill Height at Rear Wheel Well	262	271	9
J2	Pinch Weld Height at Rear Wheel Well	305	347	42
K	Sill Height Aft of Rear Wheel Well	349	352	3
L	Rear Bumper Thickness	310	310	0
M	Rear Bumper Bottom to Ground	397	379	-18
N	Sill Height to Window Bottom Sill	775	775	0
O	Front Door Leading Edge to Impact C/L	1090	870	-220
P	Rear Door Trailing Edge to Impact C/L	871	874	3
Q	Front Window Opening	423	404	-19
R	Right Side Length	3838	3843	5
S	Left Side Length	3838	3738	-100
T	Vehicle Width at B-Pillar	1765	1622	-143

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH MEASUREMENTS



NOTE: All measurements are in millimeters (mm)

MAXIMUM EXTERIOR CRUSH MEASUREMENTS				
Level	Measurement Description	Height Above Ground (mm)	Maximum Exterior Static Crush (mm)	Distance from Impact (mm)
1	Sill Top	344	377	150
2	Occupant Hip Point	674	412	150
3	Mid-Door	764	418	150
4	Window Sill	1057	394	150
5	Window Top	1543	232	0

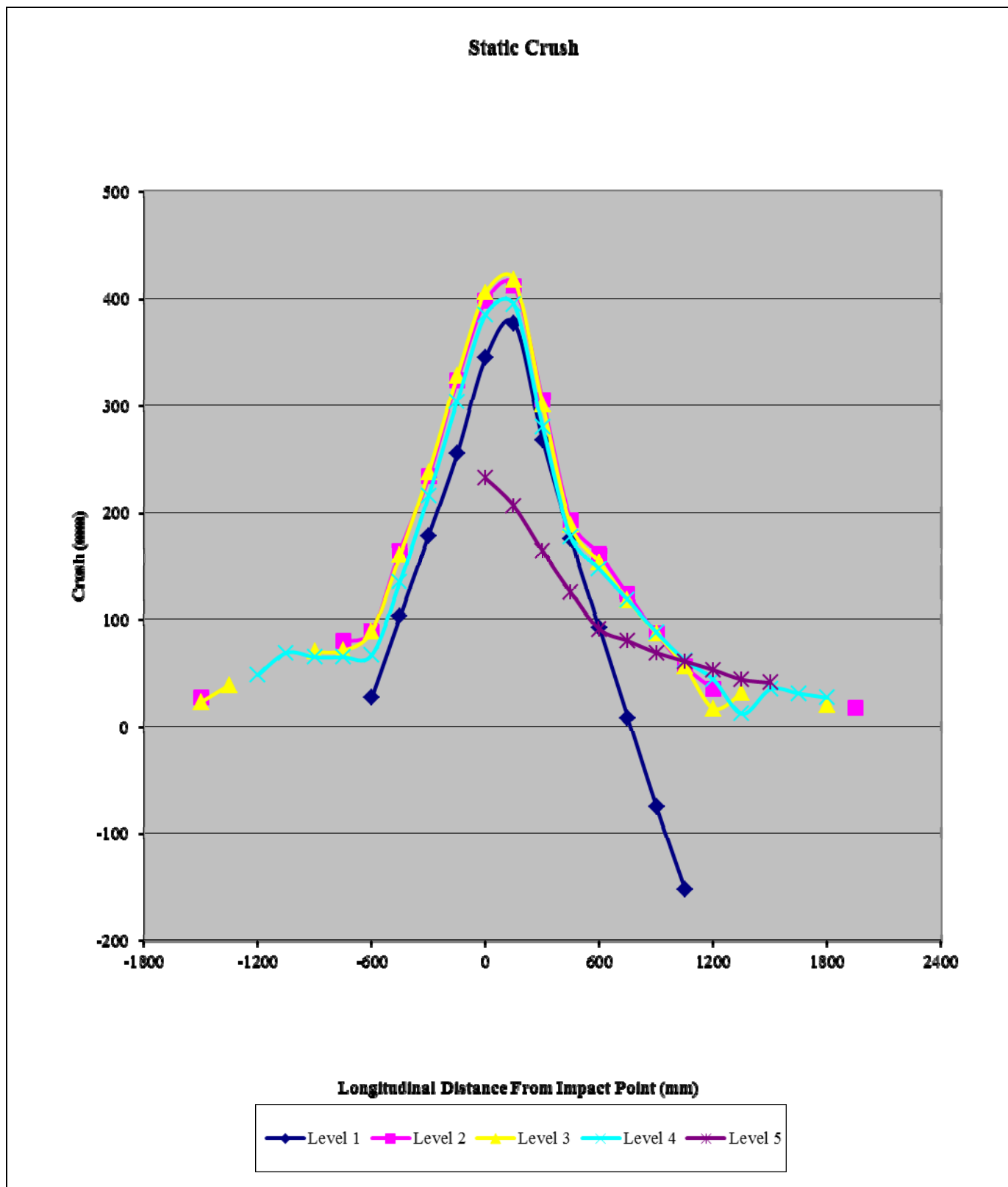
Note: All vehicle measurements taken at the vertical impact reference line.

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

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

TEST VEHICLE STATIC CRUSH																
Level		1			2			3			4			5		
		344			674			764			1057			1543		
		Pre	Post	Crush	Pre	Post	Crush	Pre	Post	Crush	Pre	Post	Crush	Pre	Post	Crush
DISTANCE IN MILLIMETERS (mm) FROM IMPACT POINT	-1800															
	-1650															
	-1500				281	308	27	292	315	23						
	-1350							273	312	39						
	-1200										387	435	48			
	-1050										371	440	69			
	-900							270	340	70	357	422	65			
	-750				272	352	80	280	351	71	347	412	65			
	-600	308	335	27	287	376	89	293	382	89	339	406	67			
	-450	309	412	103	283	447	164	287	447	160	332	467	135			
	-300	309	487	178	281	515	234	282	520	238	324	540	216			
	-150	309	564	255	279	603	324	279	607	328	319	623	304			
	0	307	652	345	277	675	398	276	682	406	314	699	385	535	767	232
	150	306	683	377	278	690	412	275	693	418	310	704	394	534	740	206
	300	308	576	268	278	583	305	275	576	301	307	587	280	535	699	164
	450	307	482	175	280	473	193	276	464	188	305	482	177	537	662	125
	600	308	400	92	284	445	161	279	432	153	305	452	147	539	630	91
	750	310	318	8	287	410	123	283	401	118	306	424	118	540	620	80
	900	311	236	-75	292	379	87	288	375	87	308	396	88	545	614	69
	1050	304	152	-152	280	336	56	287	343	56	311	373	62	550	611	61
	1200				272	307	35	275	292	17	322	366	44	557	610	53
	1350							273	305	32	321	333	12	567	611	44
	1500										329	364	35	577	618	41
	1650										341	372	31			
	1800							280	300	20	351	378	27			
	1950				293	311	18									
	2100															
	2250															
	2400															
	2550															
	2700															
	2850															
	3000															

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

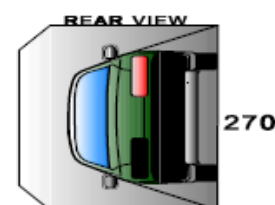
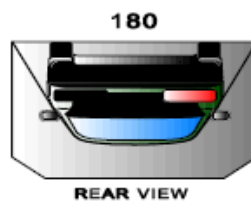
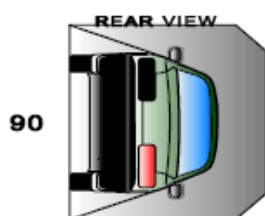


DATA SHEET NO. 11
FMVSS 301 STATIC ROLLOVER RESULTS

Temperature at Time of Impact: 21° C Test Time: 1:20 pm

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

FMVSS 301 STATIC ROLLOVER DATA



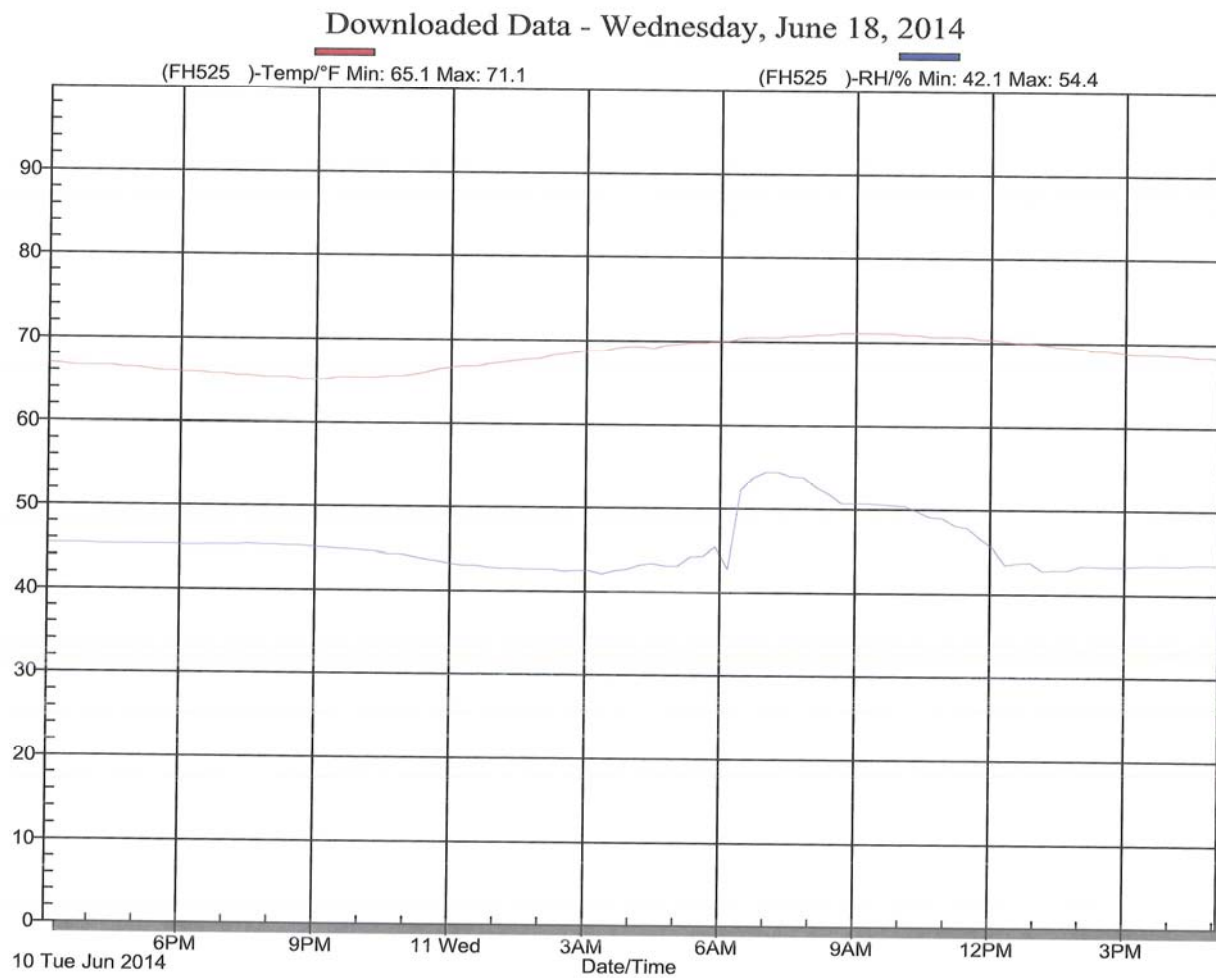
ROLLOVER SOLVENT COLLECTION TIME TABLE			
Test phase	Rotation Time (sec.)	Hold Time (sec.)	Total Time (sec.)
0° to 90°	65	300	365
90° to 180°	63	300	363
180° to 270°	66	300	366
270° to 360°	64	300	364

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

FMVSS No. 301 Rollover Spillage Table				
	First Five Minutes (oz)	Sixth Minute (oz)	Seventh Minute (oz)	Eighth Minute (oz)
0° to 90°	0	0	0	N/a
90° to 180°	0	0	0	N/a
180° to 270°	0	0	0	N/a
270° to 360°	0	0	0	N/a

Spillage Location	
0° to 90°	N/a
90° to 180°	N/a
180° to 270°	N/a
270° to 360°	N/a

DATA SHEET NO. 12
DUMMY/VEHICLE TEMPERATURE STABILIZATION DATA



Test Vehicle: 2014 Mitsubishi Outlander Sport 5-Door SUV
Test Program: SPNCAP

NHTSA Number: O20145600
Test Date: June 11, 2014

APPENDIX A PHOTOGRAPHS

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



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



Figure 003: Pre-Test Frontal View of Test Vehicle

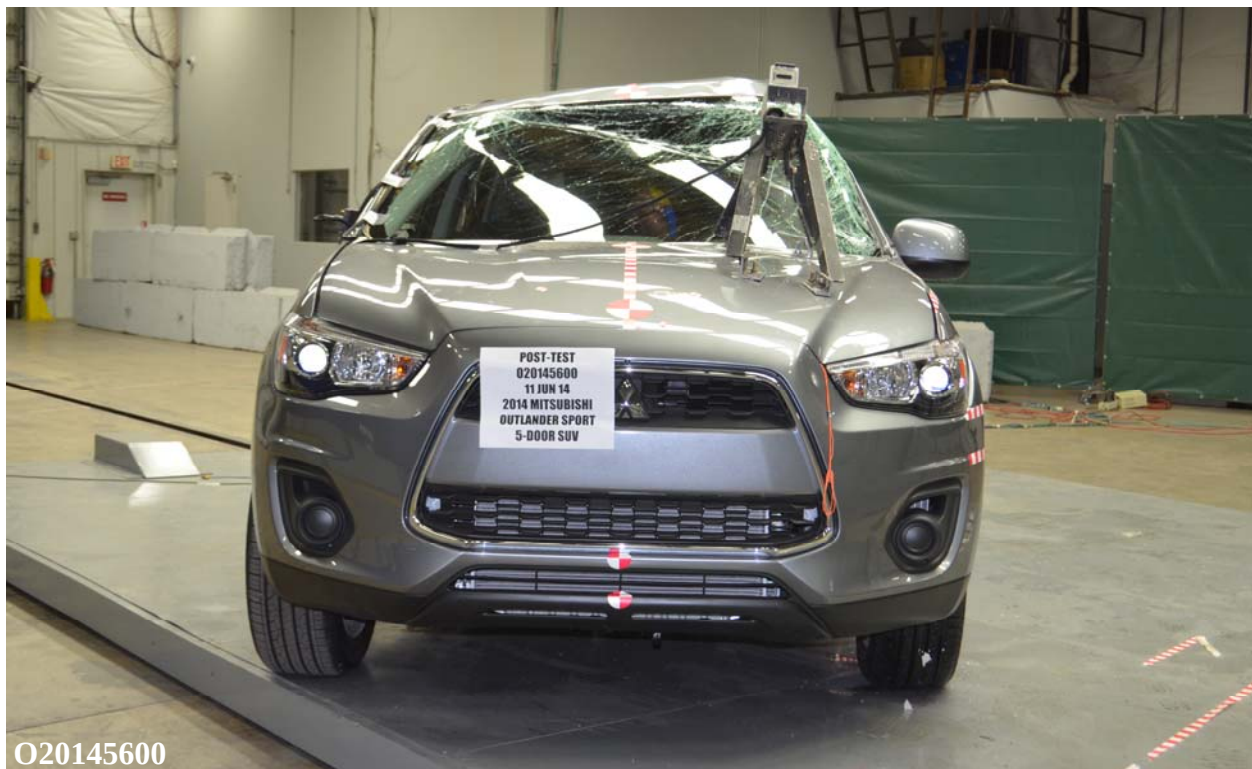


Figure 004: Post-Test Frontal View of Test Vehicle



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

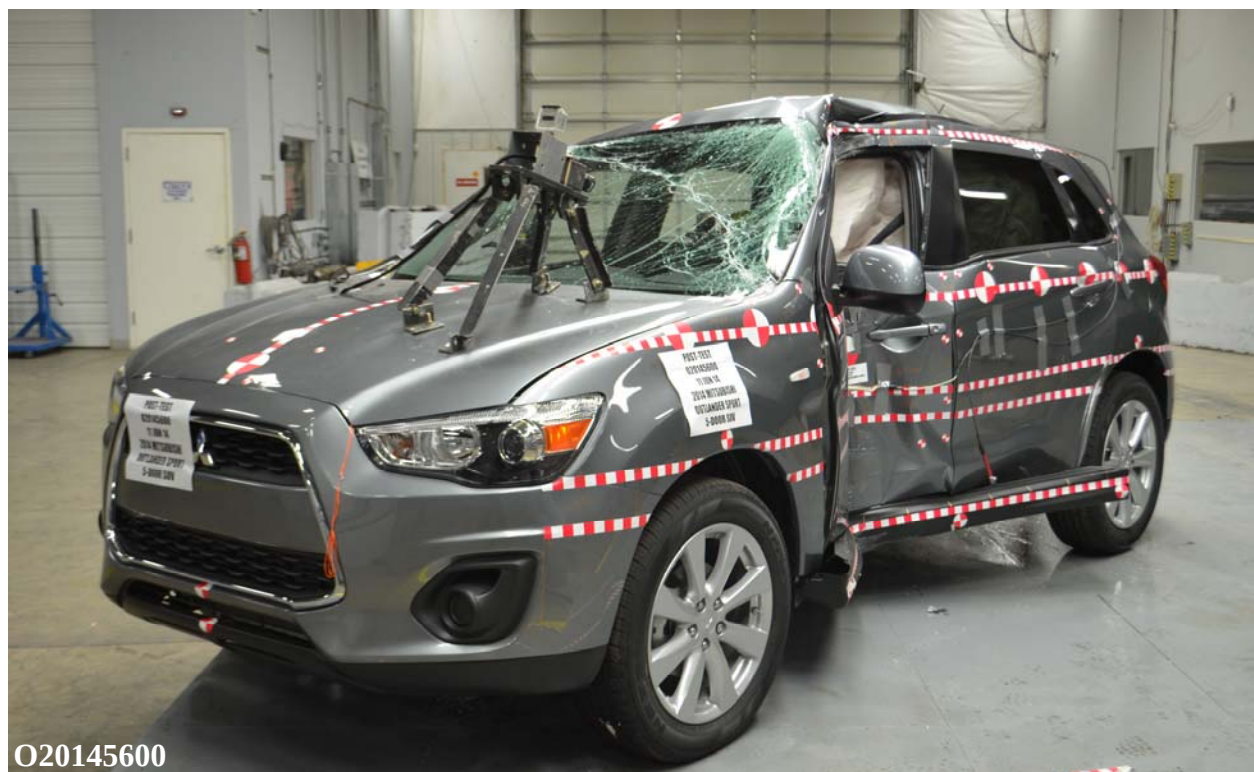


Figure 006: Post-Test Left Front 3-4 View of Test Vehicle



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



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



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



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



Figure 011: Pre-Test Rear View of Test Vehicle



Figure 012: Post-Test Rear View of Test Vehicle



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



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

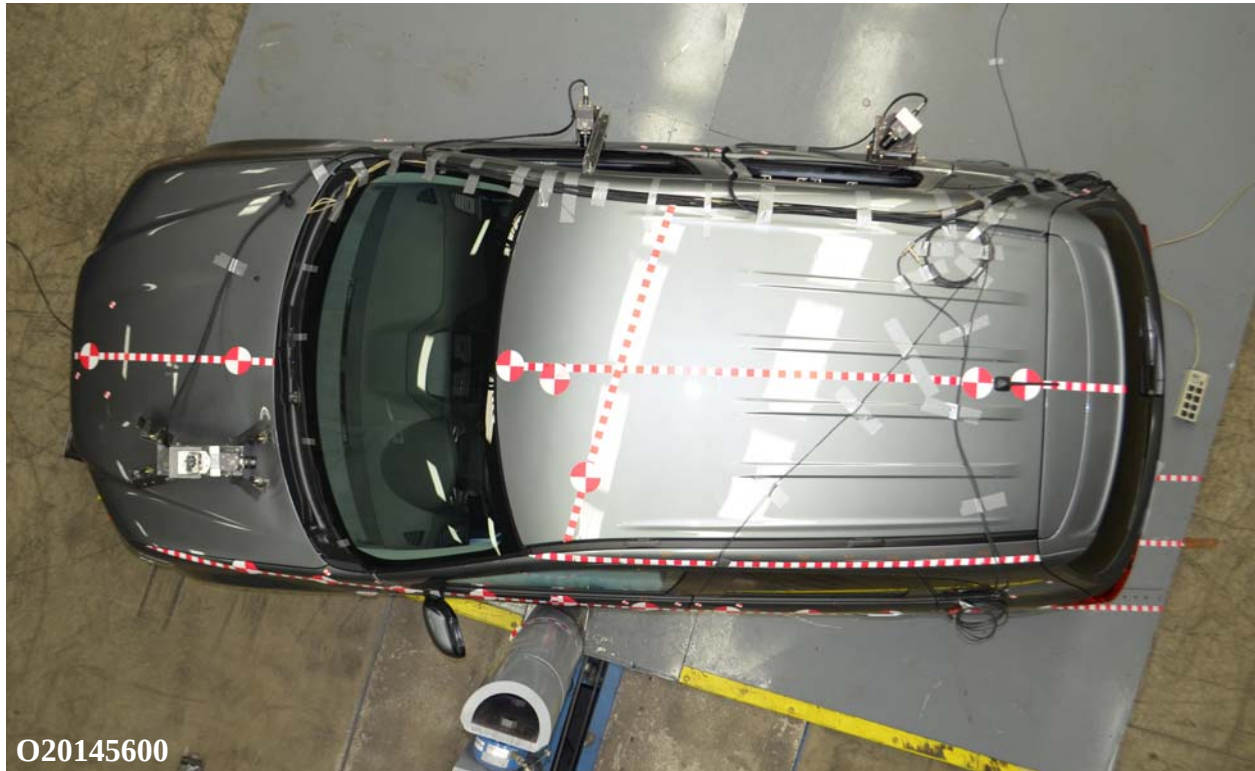


Figure 015: Pre-Test Overhead View of Test Area

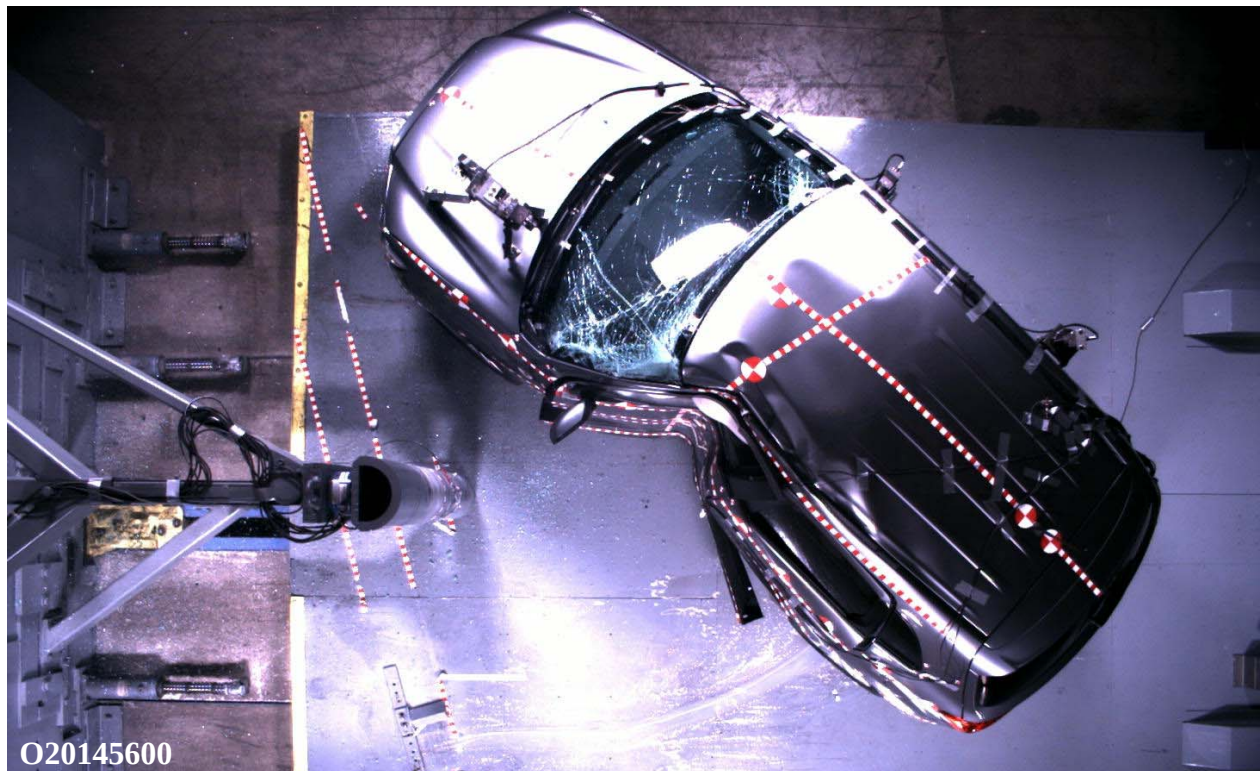


Figure 016: Post-Test Overhead View of Test Area



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



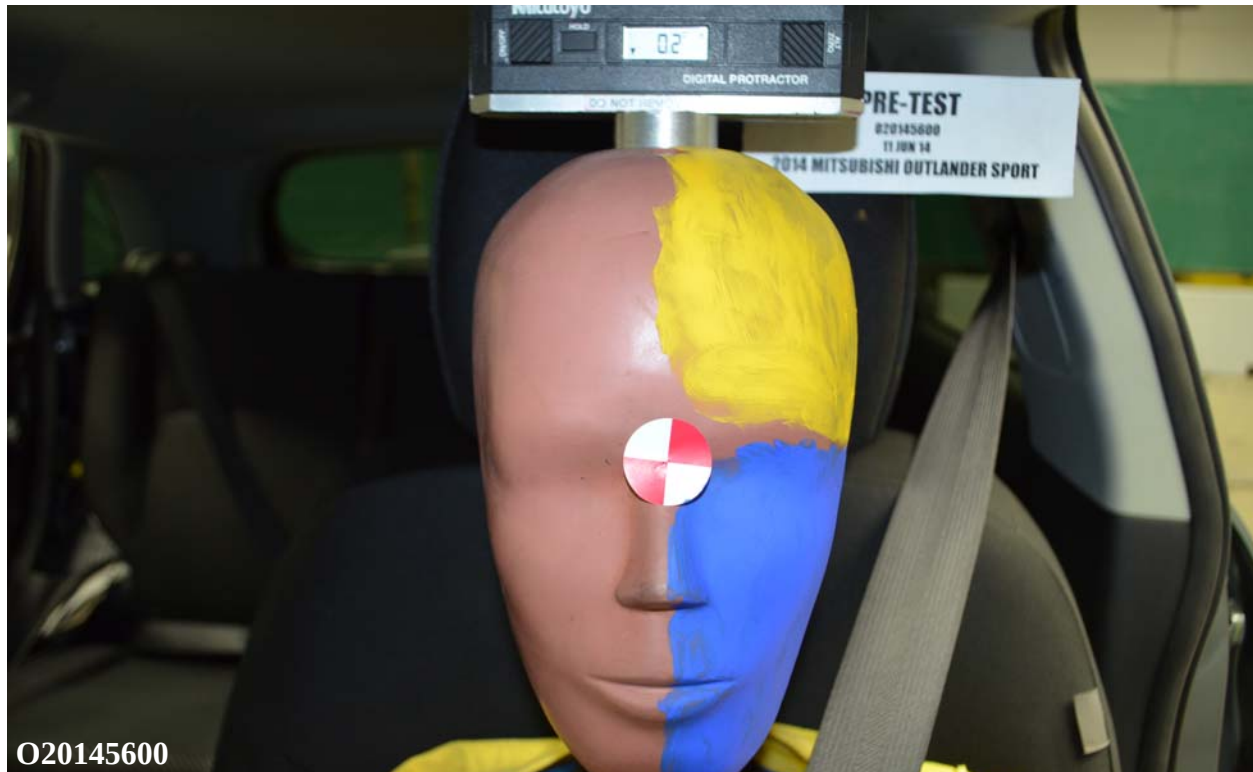
Figure 018: Pre-Test Right Side View of Pole Positioned Against Side of Vehicle



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



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



O20145600

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



O20145600

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



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



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



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



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



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



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



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



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



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



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



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



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



Figure 035: Pre-Test View of Disengaged Parking Brake



Figure 036: Pre-Test View of Parking Brake



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



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



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



Figure 040: Pre-Test Dummy and Door Clearance View



Figure 041: Post-Test Dummy and Door Clearance View



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



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



Figure 044: Pre-Test Inner Door Panel View



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

Not Applicable

O20145600

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



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

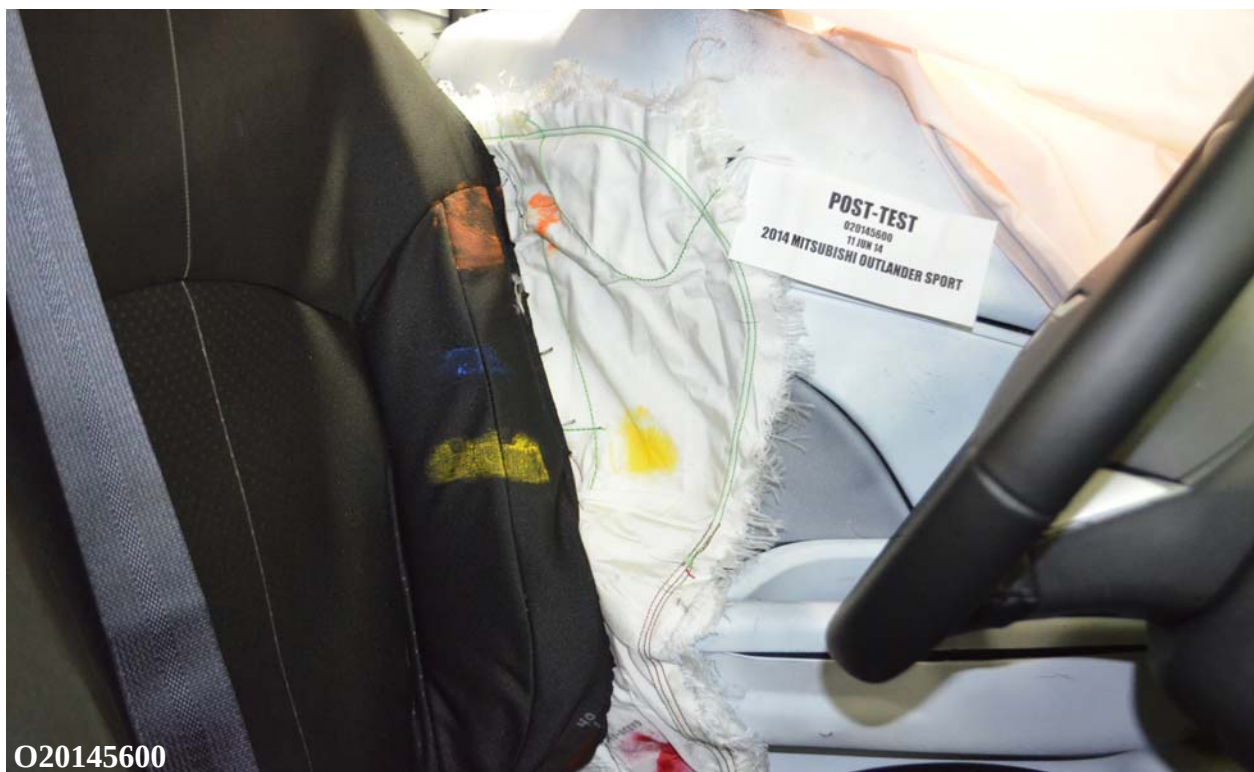


Figure 048: Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View



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

Not Applicable

O20145600

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



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

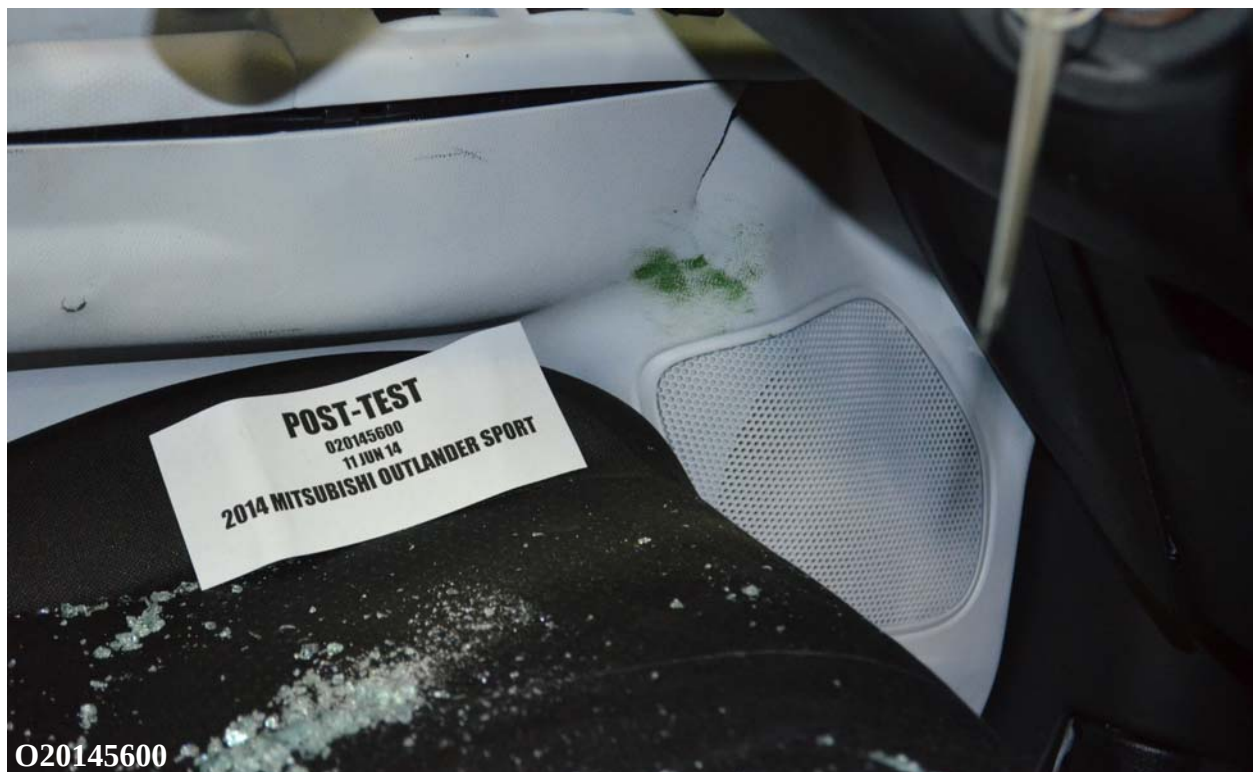


Figure 052: Post-Test Dummy Close-Up Contact with Vehicle Interior View

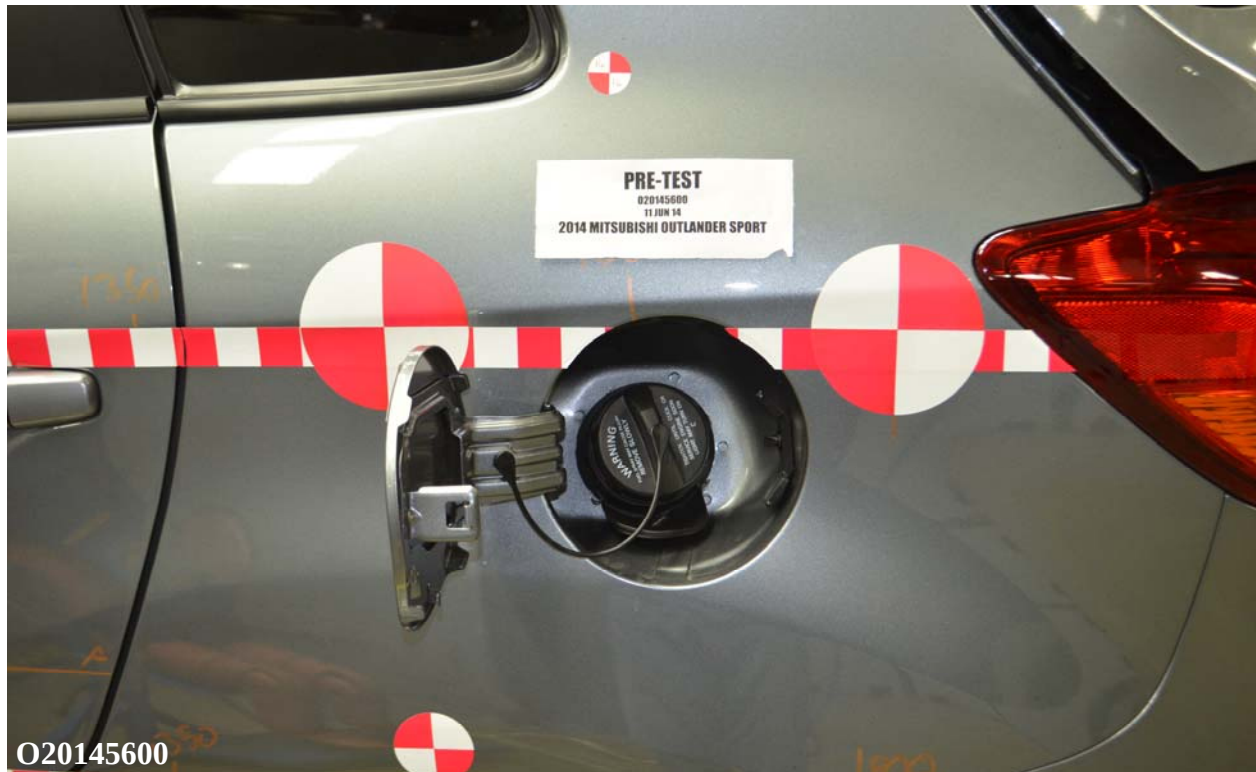


Figure 053: Pre-Test View of Fuel Filler Cap or Fuel Filler Neck

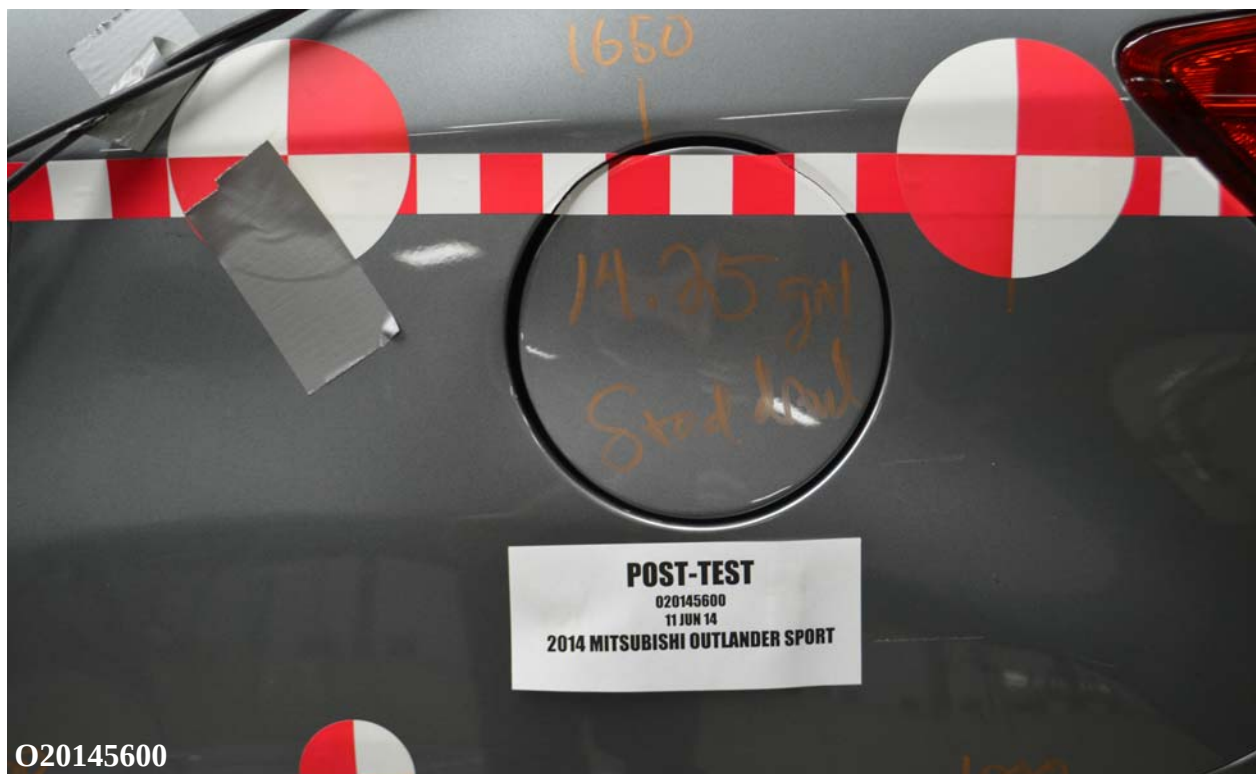
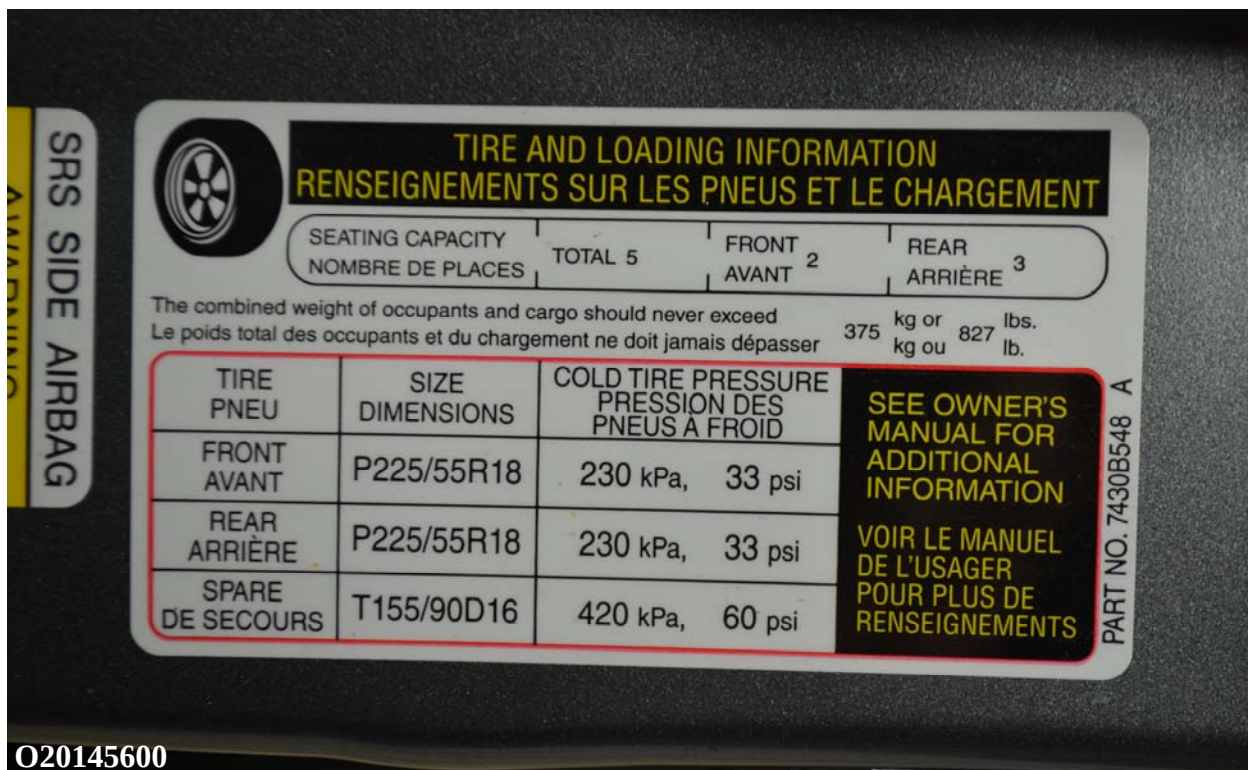


Figure 054: Post-Test View of Fuel Filler Cap or Fuel Filler Neck



O20145600

Figure 055: Close-Up View of Vehicle's Certification Label



O20145600

Figure 056: Close-Up View of Vehicle's Tire Information Placard or Label



Figure 057: Pre-Test Pole Barrier Front View



Figure 058: Post-Test Pole Barrier Front View

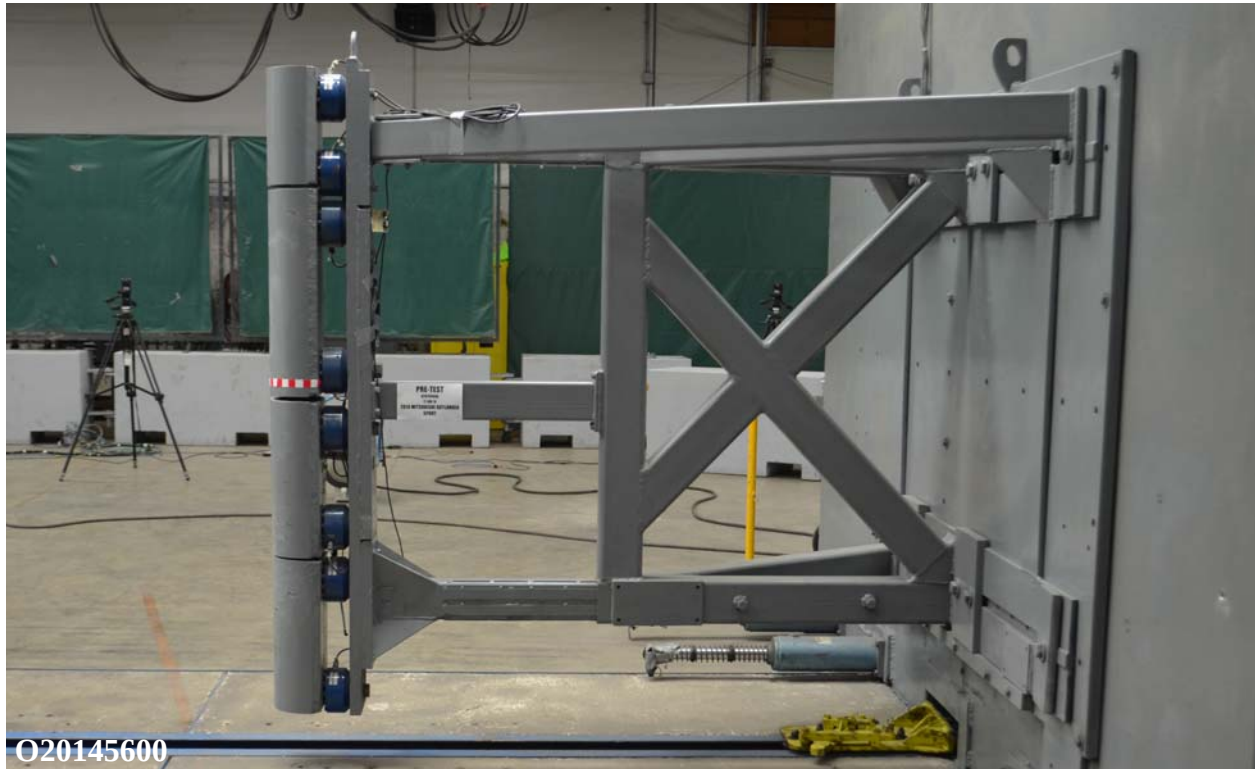


Figure 059: Pre-Test Pole Barrier Side View

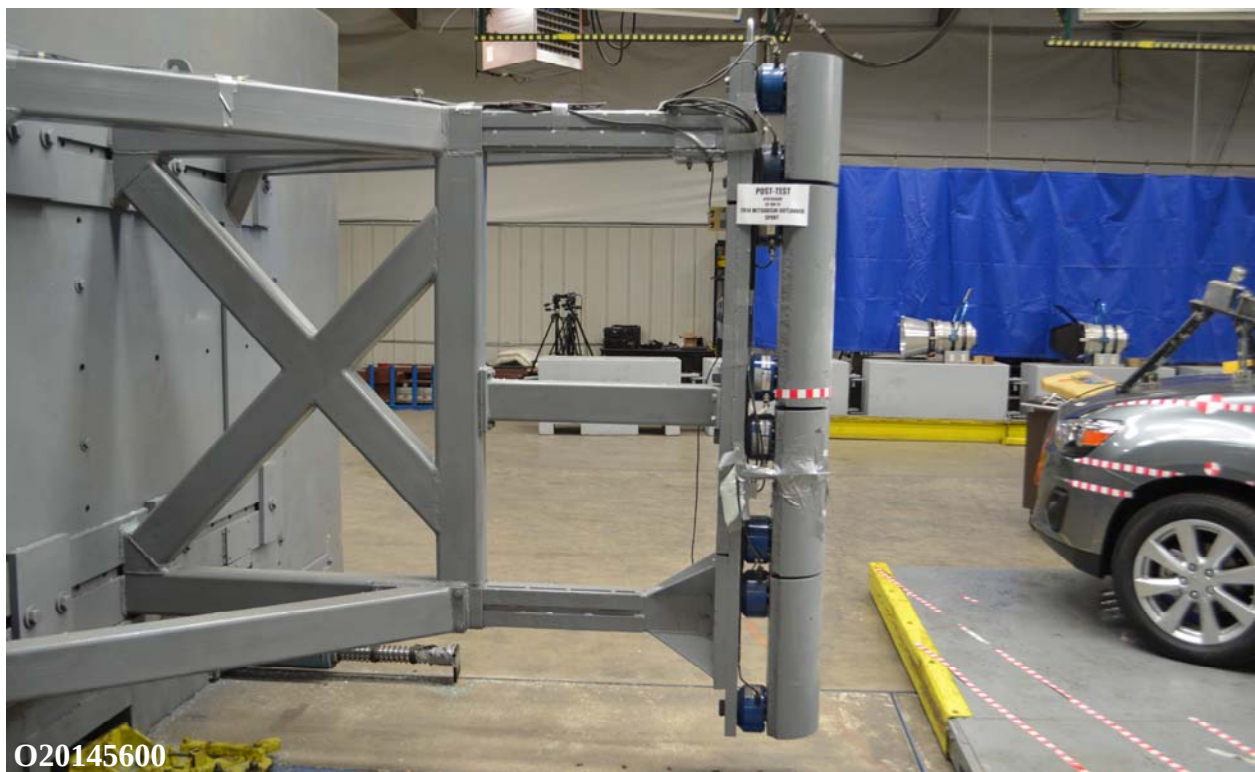


Figure 060: Post-Test Pole Barrier Side View

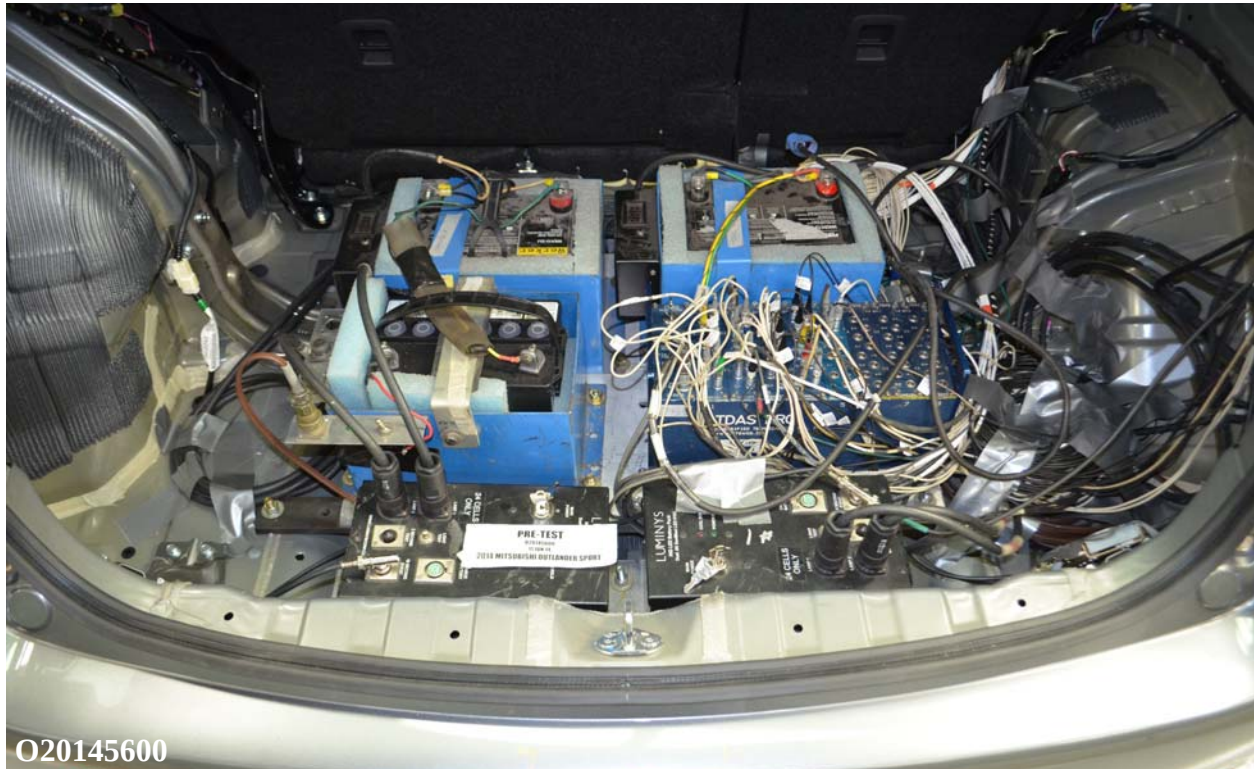


Figure 061: Pre-Test Ballast View



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



Figure 063: FMVSS No. 301 Static Rollover 0 Degrees

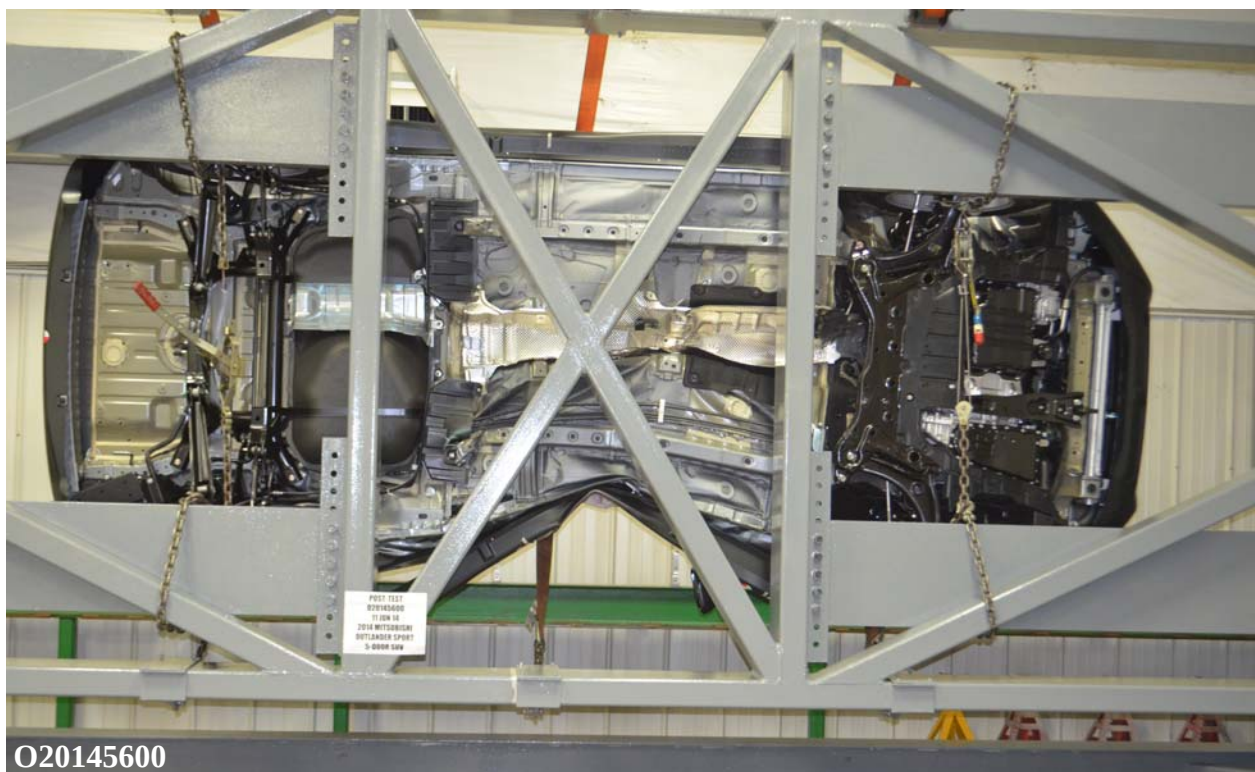


Figure 064: FMVSS No. 301 Static Rollover 90 Degrees



Figure 065: FMVSS No. 301 Static Rollover 180 Degrees



Figure 066: FMVSS No. 301 Static Rollover 270 Degrees



Figure 067: FMVSS No. 301 Static Rollover 360 Degrees



Figure 068: Impact Event

2014 OUTLANDER SPORT ES 2WD
4-DOOR SUV
MERCURY GRAY / BLACK

2.0L DOHC I4 MIVEC
CONTINUOUSLY VARIABLE TRANSMISSION
50-STATE EMISSIONS STANDARD

MECHANICAL FEATURES

- FOUR WHEEL DISC BRAKES W/ ABS
- ELECTRONIC BRAKEFORCE DISTRIBUTION
- 4-WHEEL INDEPENDENT SUSPENSION
- ASSISTED ELECTRIC POWER STEERING
- ECO DRIVER INDICATOR LIGHT
- BRAKE ENERGY REGENERATING SYSTEM

EXTERIOR FEATURES

- 18" ALLOY WHEELS
- CHROME FRONT GRILLE SURROUND
- HEATED SIDEVIEW MIRRORS
- SIDE TURN INDICATORS
- COLOR KEYED OUTER DOOR HANDLES
- REAR LED TAIL LIGHTS
- REAR SPOILER

INTERIOR FEATURES

- AIR CONDITIONING W/ MICROFIL FILTER
- LEATHER WRAPPED STEERING WHEEL
- LEATHER WRAPPED SHIFT KNOB
- HIGH CONTRAST METERS
- FULL COLOR MULTI-INFORMATION DISPLAY
- FRONT MAP LIGHTS
- 6-WAY ADJUSTABLE DRIVER SEAT
- 60/40 SPLIT FOLD DOWN REAR SEATS
- REAR FLOOR HEATER DUCTS
- FLOOR MATS

CONVENIENCE FEATURES

- STEERING WHEEL MOUNTED CRUISE CONTROL AND AUDIO SWITCHES
- 140-WATT AM/FM/CD/MP3 AUDIO SYSTEM W/ 4 SPEAKERS
- FUSE HANDSFREE LINK SYSTEMS W/ USB PORT
- RETRACTABLE ASSIST GRIPS
- DUAL FRONT CUP HOLDERS
- REAR SEAT CENTER ARMREST WITH 2 CUP HOLDERS
- CENTER CONSOLE W/ ARMREST STORAGE
- POWER DOOR & TAILGATE LOCKS
- POWER WINDOWS & SIDEVIEW MIRRORS
- AUTO-OFF HEADLIGHTS
- TELESCOPIC STEERING COLUMN
- SERVICE REMINDER SYSTEM
- KEYLESS ENTRY WITH PANIC ALARM
- VARIABLE INTERMITTENT WIPERS
- REAR WINDOW WIPER
- 12V ACCESSORY OUTLET (2)
- REAR PRIVACY GLASS
- ROOF CARRIER PLUG-IN ACCOMMODATION

SAFETY & SECURITY FEATURES

- ADVANCED DUAL FRONT AIRBAGS
- FRONT SEAT SIDE AIRBAGS
- SIDE CURTAIN AIRBAGS
- DRIVER KNEE AIRBAG
- ACTIVE STABILITY CONTROL (ASC)
- TIRE PRESSURE MONITORING SYSTEM
- LATCH SYSTEM FOR CHILD SEATS

SAFETY & SECURITY FEATURES (cont'd)

- ANTI-THEFT ALARM SYSTEM
- ENGINE IMMOBILIZER
- HILL START ASSIST

Optional Equipment
FULL TANK OF GAS
ACCY WHEEL LOCKS

INCLUDED \$55.00

MSRP: \$20,670.00
Total MSRP: \$21,575.00

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Annual fuel cost \$1,950

Fuel Economy & Greenhouse Gas Rating (tailpipe only) Smog Rating (tailpipe only)

1 7 10 Best

This vehicle emits 330 grams CO₂ per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also creates emissions (see more at fuelconomy.gov).

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 23 MPG and costs \$11,500 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$3.50 per gallon. MPGe is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fuelconomy.gov
Calculate personalized estimates and compare vehicles

10-year 100,000-mile LIMITED POWERTRAIN WARRANTY

10"/100,000" 7"/100,000"
5"/60,000" 5"/UNLIMITED"

GOVERNMENT 5-STAR SAFETY RATINGS

Overall Vehicle Score Not Rated
(Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight.)

Frontal Crash Driver Passenger
★★★★

Side Crash Front seat Rear seat
★★★★

Rollover
★★★★

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

Parts Content Information

For vehicles in this carline:
U.S./Canadian Major Sources of Parts Content: Foreign Parts Content: JAPAN 50%

For this vehicle:
Final Assembly Point: NORMAL, IL USA
Country of Origin: Engine: JAPAN Transmission: JAPAN

Note: Parts content does not include final assembly, distribution, or other non-parts costs.

Ship To: (DBA) SCHUMBURG MITSUBISHI 15085 960 E. GOLF ROAD SCHUMBURG, IL 60173

Sold To: (Name unless indicated)

Cumulative Accessory Weight is: 6.7 lbs. Method of Transport: XXXX Plant/Port of Entry: NORMAL, IL

VIN: 4A4AP3AU9E0208711
Route Code: 4

Gasoline, license and title fees, applicable federal, state and local taxes and dealer and distributor installed options and accessories are not included in the manufacturer's suggested retail price. This label has been applied to this vehicle pursuant to federal law and cannot be moved or altered prior to delivery to the ultimate purchaser.

Figure 069: Monroney Label

Head restraints

N00404300542

Padded head restraints for the seats can reduce the risk of a whiplash injury if your vehicle is hit from the rear.

The head restraints are equipped in the illustrated position.

To maximize the effectiveness of your head restraint, adjust the front seatback to the upright position, the rear seatback to the normal seating position, and the head restraint to the proper position. Sit back against the seatback with your head close to the head restraint.



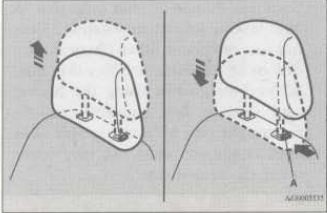
WARNING

- Driving without the head restraints in place can cause you and your passengers serious injury or death in an accident. To reduce the risk of injury in an accident, always make sure the head restraints are installed and properly positioned when the seat is occupied.
- In order to minimize the risk of a neck injury due to a rear impact, the front seatback must be adjusted to the upright position, the rear seatback to the normal seating position, and the head restraint to the proper position before vehicle operation. The driver should never adjust the seat while the vehicle is in motion.
- Never place a cushion or similar device on the seatback. This can adversely affect head restraint performance by increasing the distance between your head and the restraint.

Adjustment of the head restraint height

To reduce the risk of injury in an accident, adjust the head restraint height so that the center of the restraint is at your eye level when seated. Any person, tall for the restraint to reach their eye level when seated should raise the restraint to the highest locked position.

- To raise the restraint, pull it straight up.
- To lower the restraint, push down on it while pressing the lock knob (A) in the direction shown by the arrow.
- After adjusting the height, push down on the restraint to make sure it is locked in position.



O201456008

Seat and restraint systems

Figure 070: Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

Test Vehicle: 2014 Mitsubishi Outlander Sport 5-Door SUV
Test Program: SPNCAP

NHTSA Number: O20145600
Test Date: June 11, 2014

APPENDIX B
ATD AND VEHICLE RESPONSE DATA

The following plots are provided in the test report

Data Plot	Description	Page
1	Driver Head Acceleration (X) Redundant vs. Time	B-4
2	Driver Head Acceleration (Y) Primary vs. Time	B-5
3	Driver Head Acceleration (Z) Primary vs. Time	B-6
4	Driver Head Resultant Acceleration Primary vs. Time	B-7
5	Driver Lower Spine T ₁₂ Acceleration (X) vs. Time	B-8
6	Driver Lower Spine T ₁₂ Acceleration (Y) vs. Time	B-9
7	Driver Lower Spine T ₁₂ Acceleration (Z) vs. Time	B-10
8	Driver Lower Spine T ₁₂ Resultant Acceleration vs. Time	B-11
9	Driver Illiac Wing Force (Y) on Impact Side vs. Time	B-12
10	Driver Acetabulum Force (Y) on Impact Side vs. Time	B-13
11	Driver Total Pelvis Force (Y) on Impact Side vs. Time	B-14

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

Vehicle Instrumentation Data

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

Pole Instrumentation Data

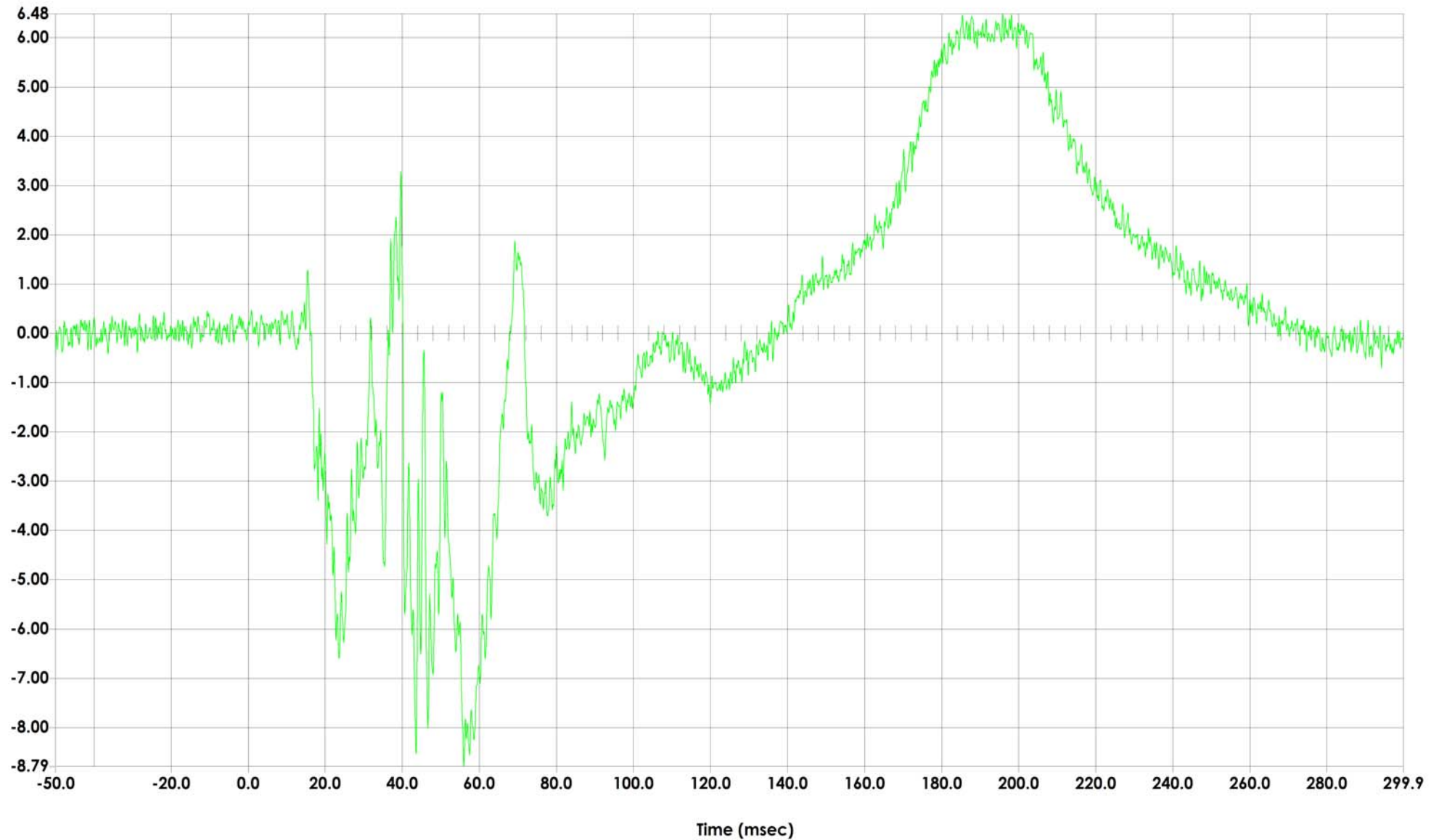
Load Cell Pole Barrier #1 Force (Y)
Load Cell Pole Barrier #2 Force (Y)
Load Cell Pole Barrier #3 Force (Y)
Load Cell Pole Barrier #4 Force (Y)
Load Cell Pole Barrier #5 Force (Y)
Load Cell Pole Barrier #6 Force (Y)
Load Cell Pole Barrier #7 Force (Y)
Load Cell Pole Barrier #8 Force (Y)

Test ID	O20145600
Sampling Rate (Hz)	12500
Filter	CFC1000
Plot number	001
Units	G'S

Max	6.48	G'S
	195.84	msec
Min	-8.79	G'S
	56.00	msec



Head Acceleration (X) Primary vs. Time

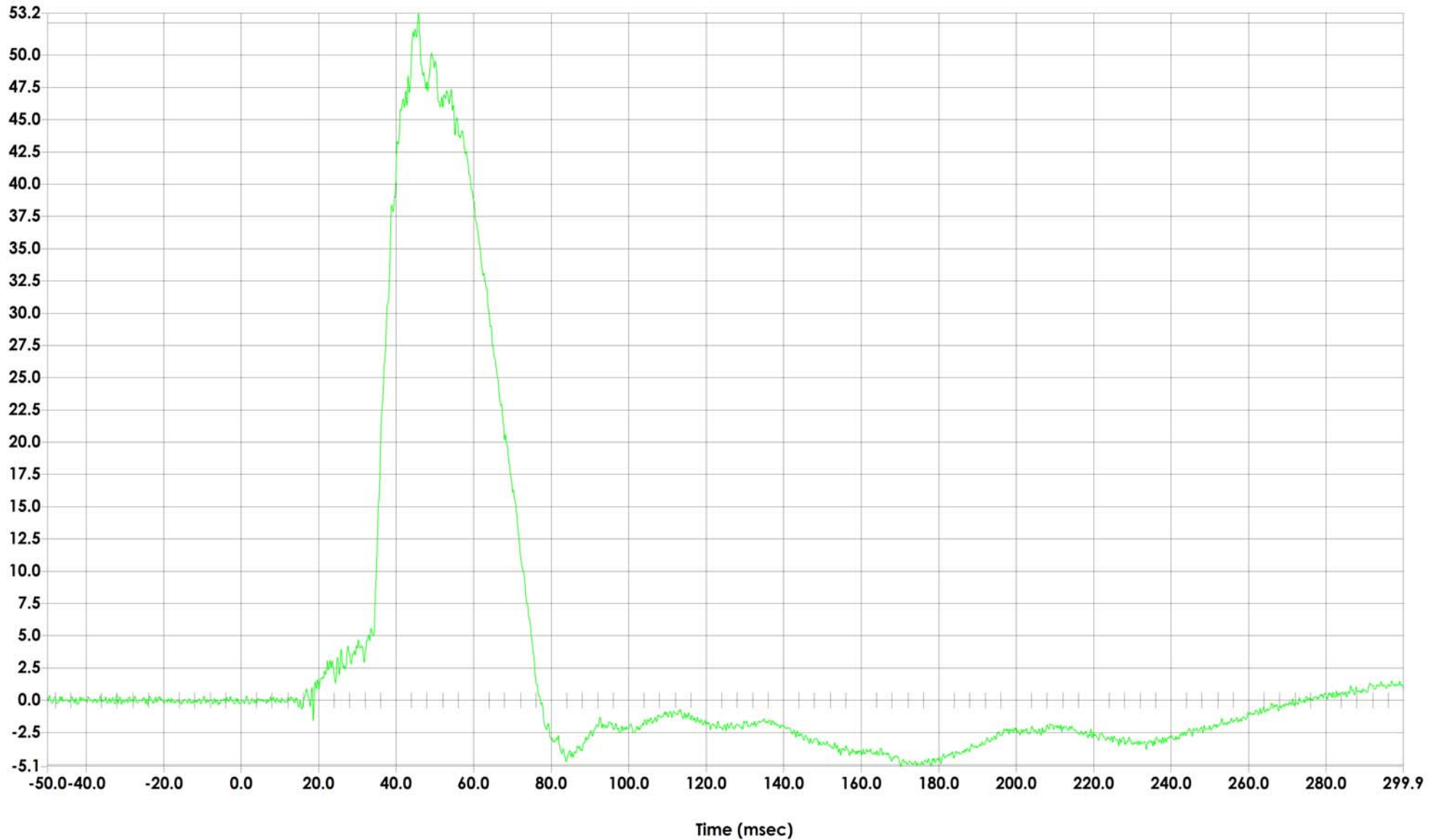


Test ID	O20145600
Sampling Rate (Hz)	12500
Filter	CFC1000
Plot number	002
Units	G'S

Max	53.25	G'S
	45.76	msec
Min	-5.14	G'S
	170.24	msec



Head Acceleration (Y) Primary vs. Time

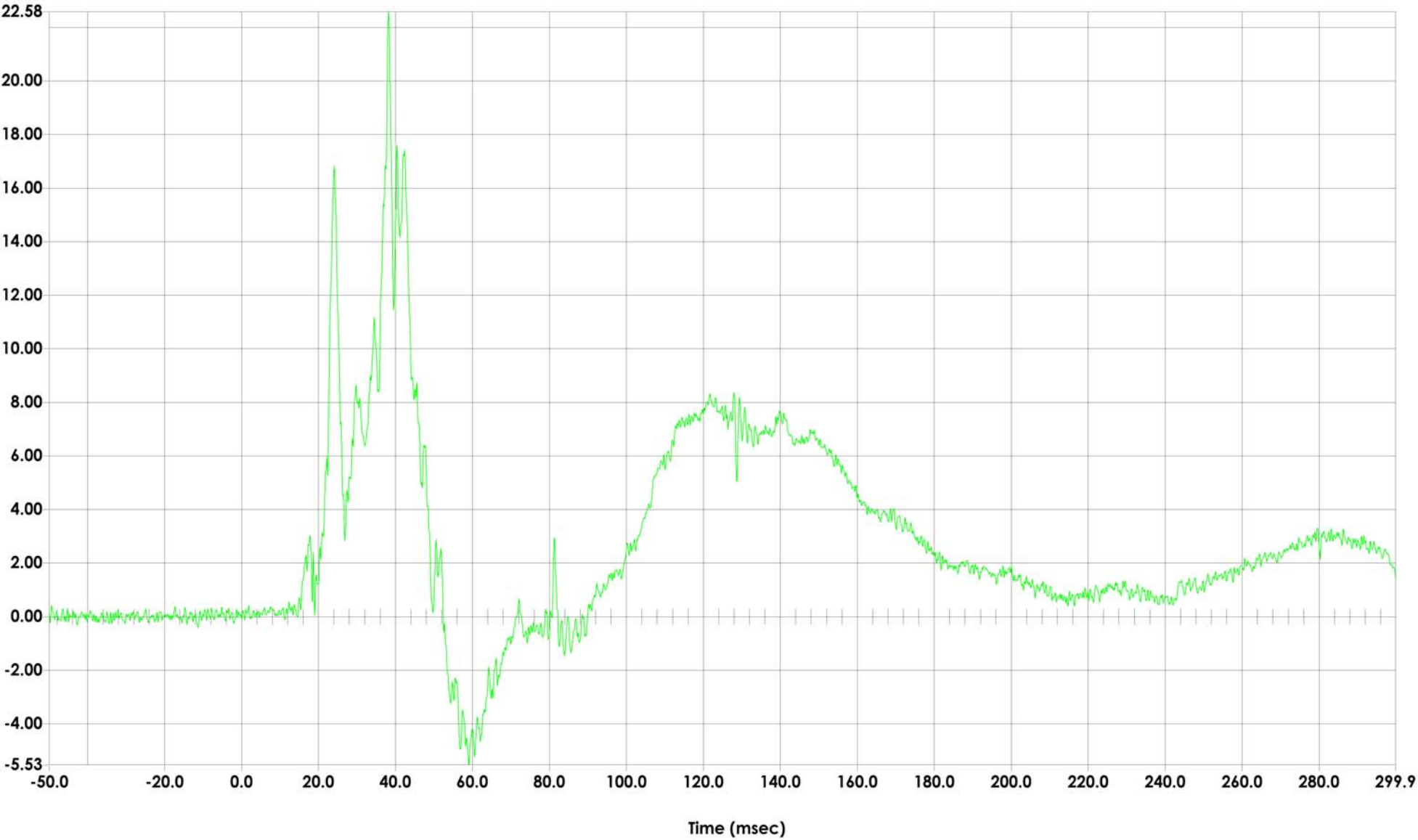


Test ID	O20145600
Sampling Rate (Hz)	12500
Filter	CFC1000
Plot number	003
Units	G'S

Max	22.58	G'S
	38.16	msec
Min	-5.53	G'S
	59.04	msec



Head Acceleration (Z) Primary vs. Time

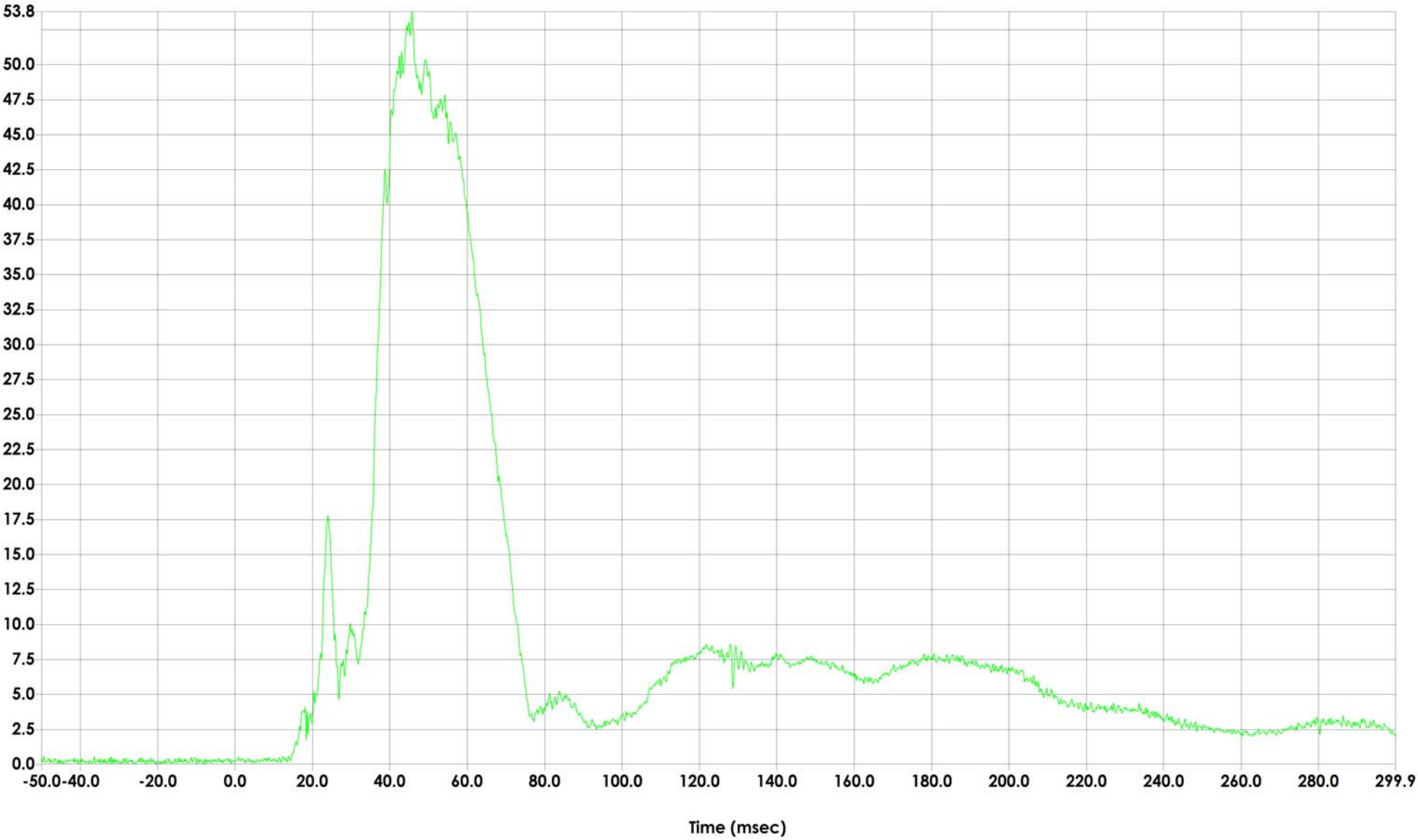


Test ID	O20145600
Sampling Rate (Hz)	12500
Filter	CFC1000
Plot number	044
Units	G'S

Max	53.79	G'S
	45.76	msec
Min	0.01	G'S
	-20.32	msec



Driver Head Resultant Acceleration Primary vs. Time

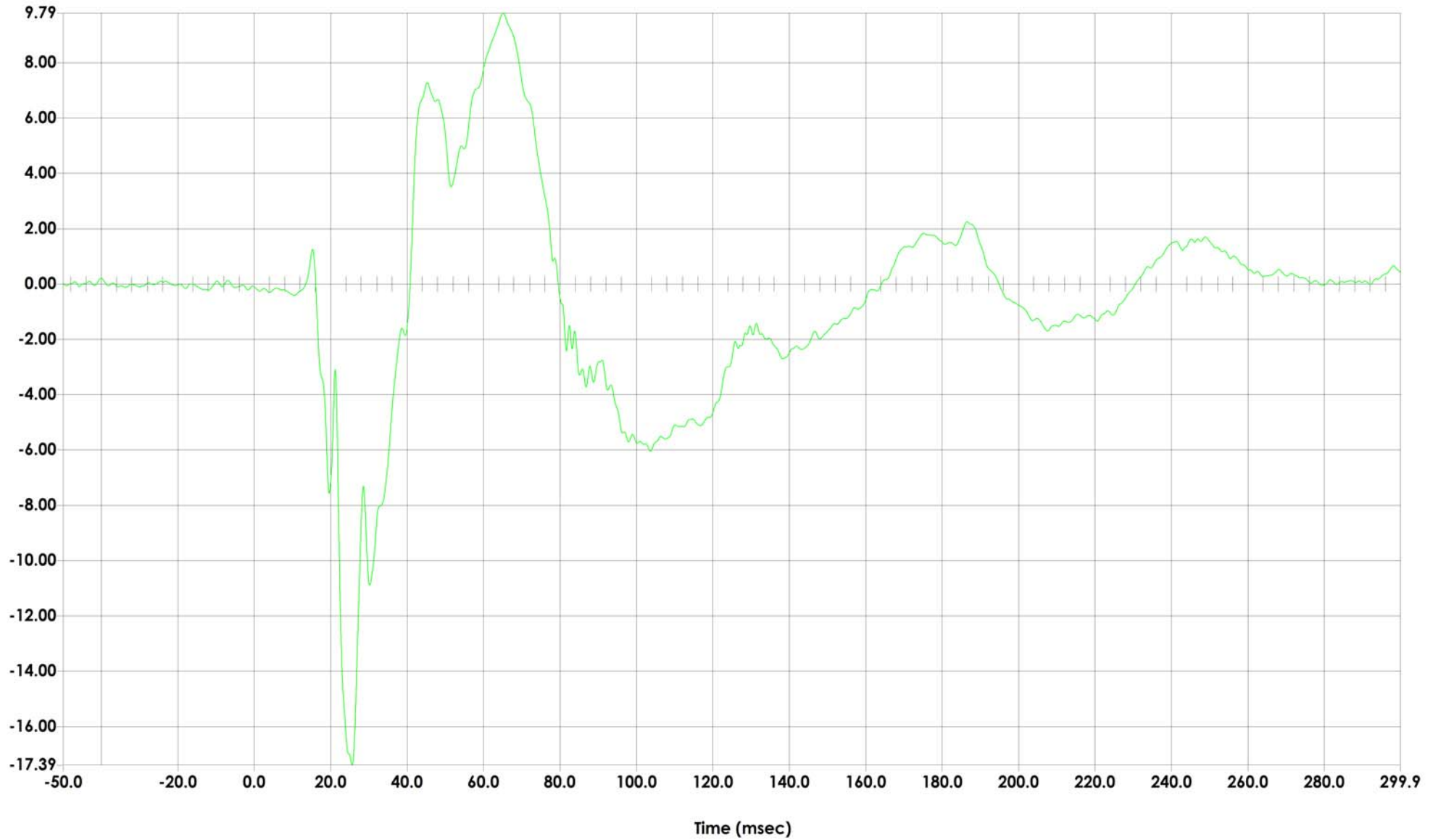


Test ID	O20145600
Sampling Rate (Hz)	12500
Filter	CFC180
Plot number	012
Units	G'S

Max	9.79	G'S
	65.12	msec
Min	-17.39	G'S
	25.60	msec



Lower Spine T12 Acceleration (X) vs. Time

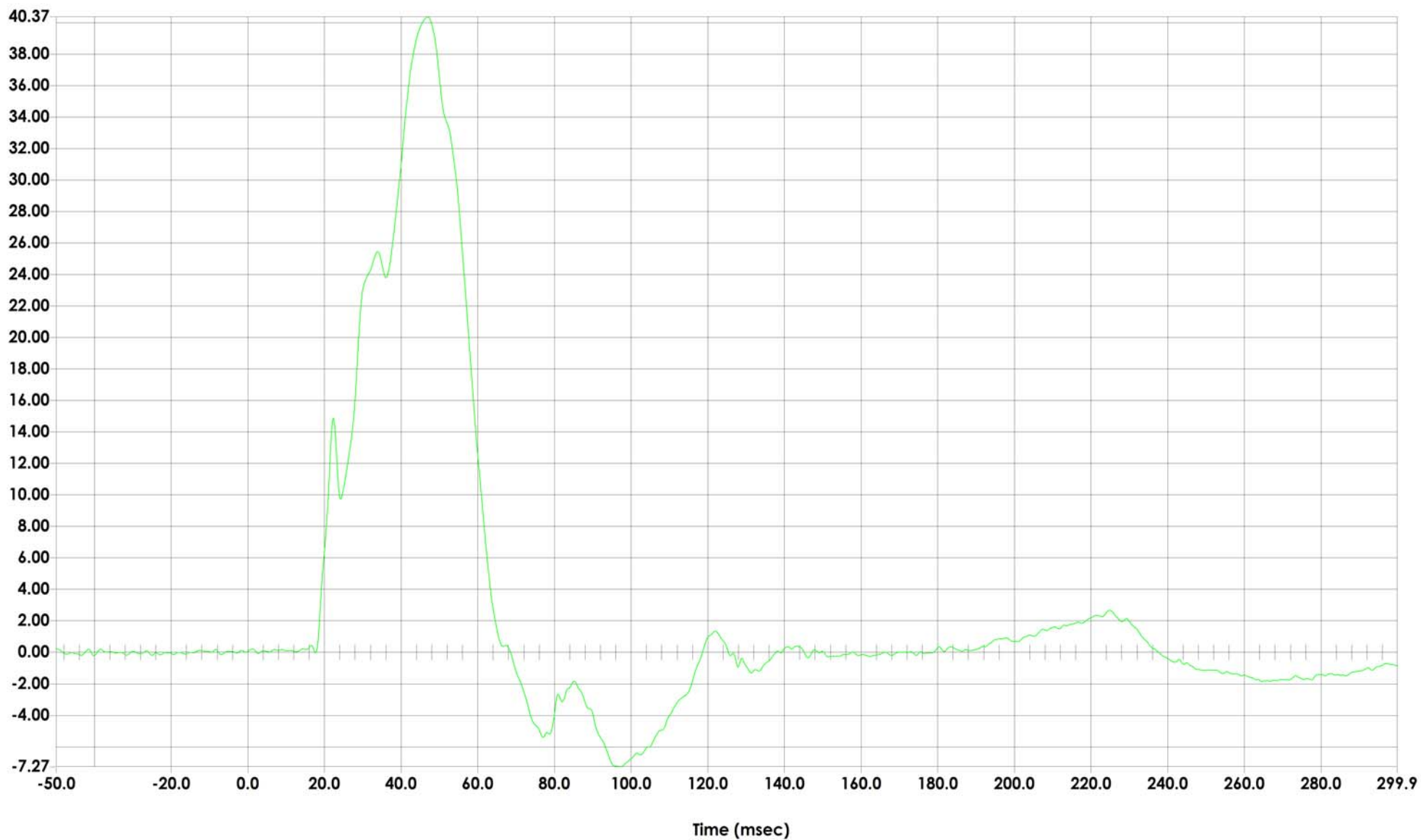


Test ID	O20145600
Sampling Rate (Hz)	12500
Filter	CFC180
Plot number	013
Units	G'S

Max	40.37	G'S
	46.96	msec
Min	-7.27	G'S
	97.20	msec



Lower Spine T12 Acceleration (Y) vs. Time

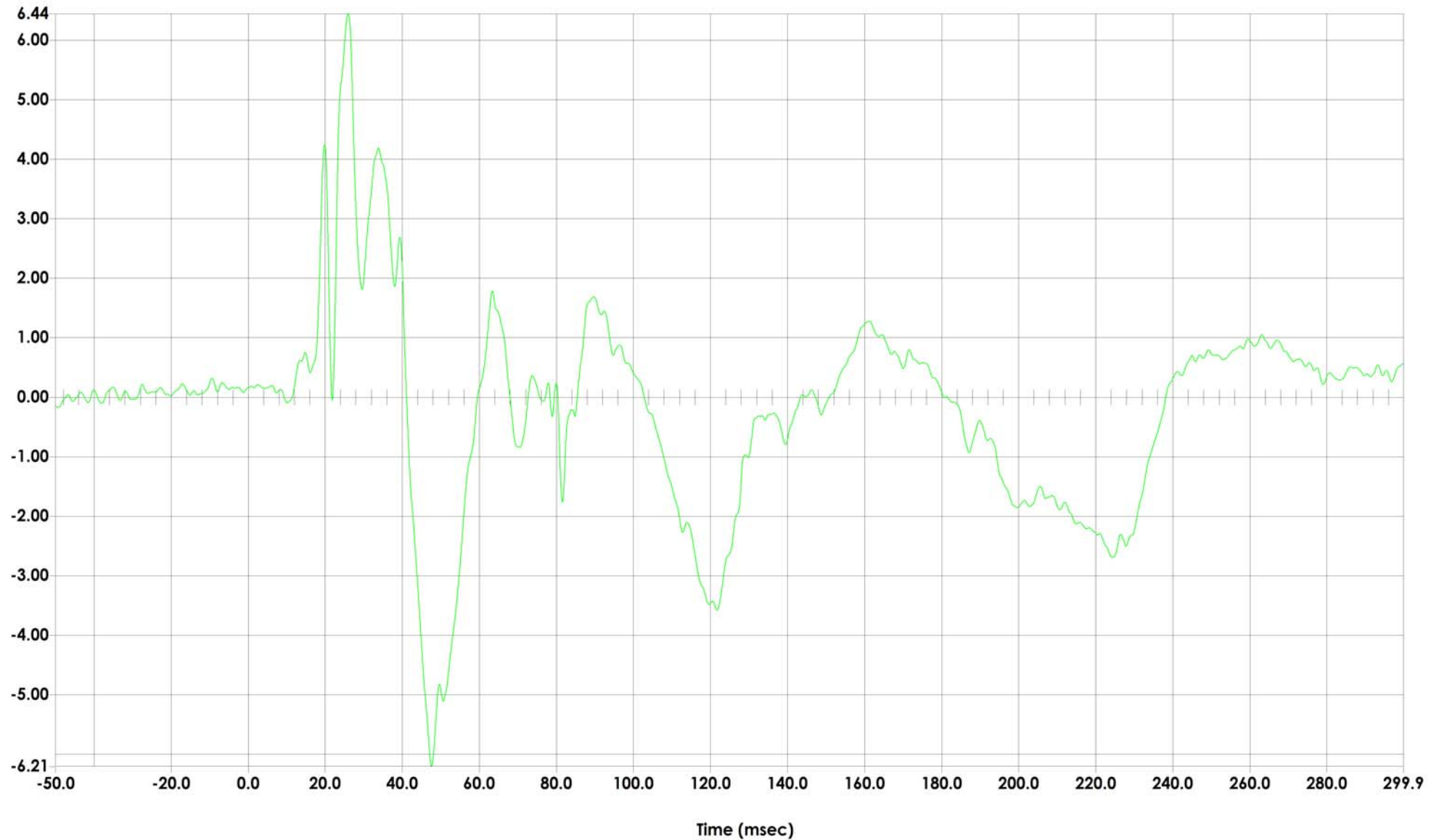


Test ID	O20145600
Sampling Rate (Hz)	12500
Filter	CFC180
Plot number	014
Units	G'S

Max	6.44	G'S
	25.92	msec
Min	-6.21	G'S
	47.60	msec



Lower Spine T12 Acceleration (Z) vs. Time

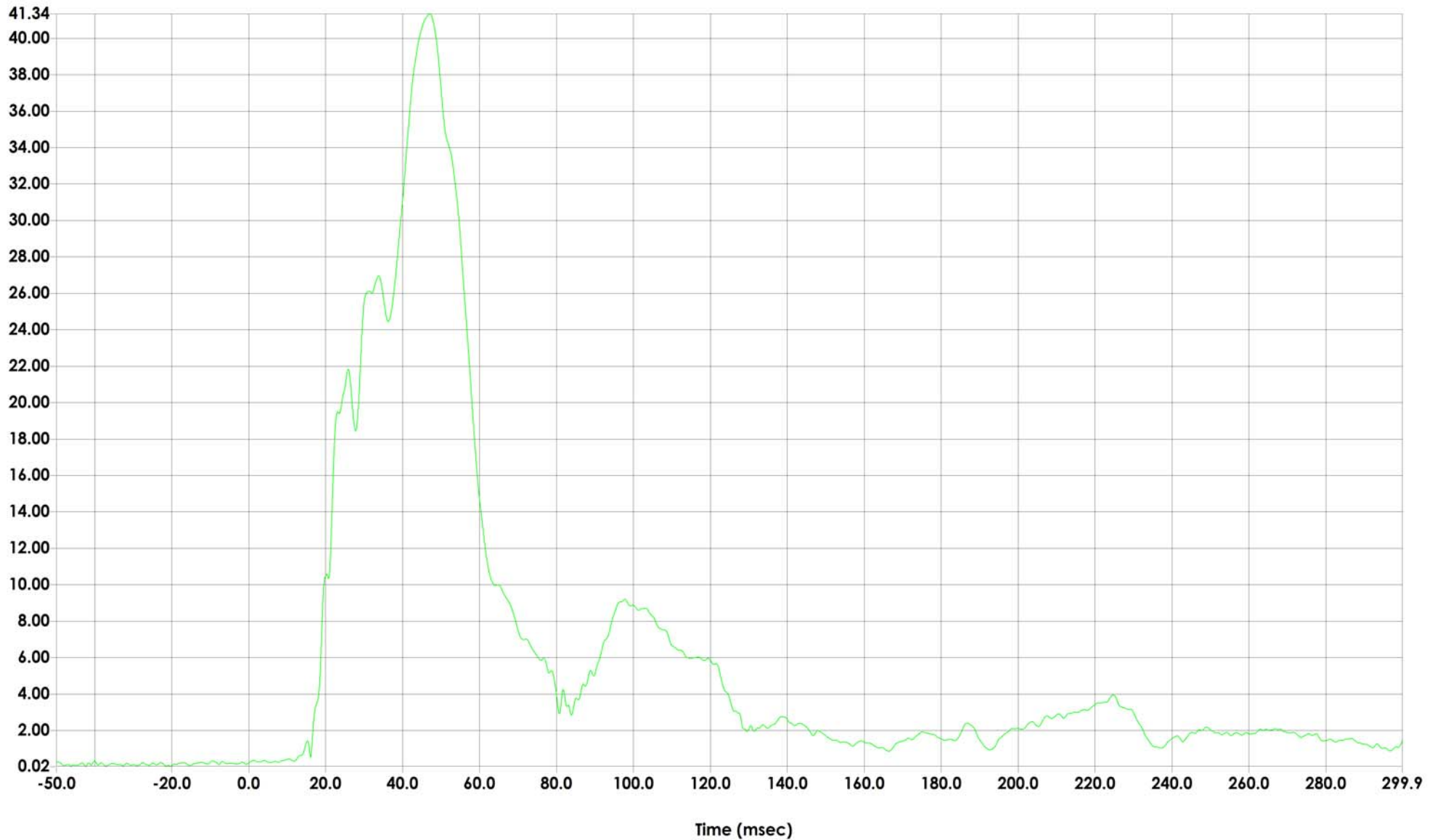


Test ID	O20145600
Sampling Rate (Hz)	12500
Filter	CFC180
Plot number	045
Units	G'S

Max	41.34	G'S
	47.04	msec
Min	0.02	G'S
	-42.48	msec



Driver Lower Spine T12 Resultant Acceleration vs. Time

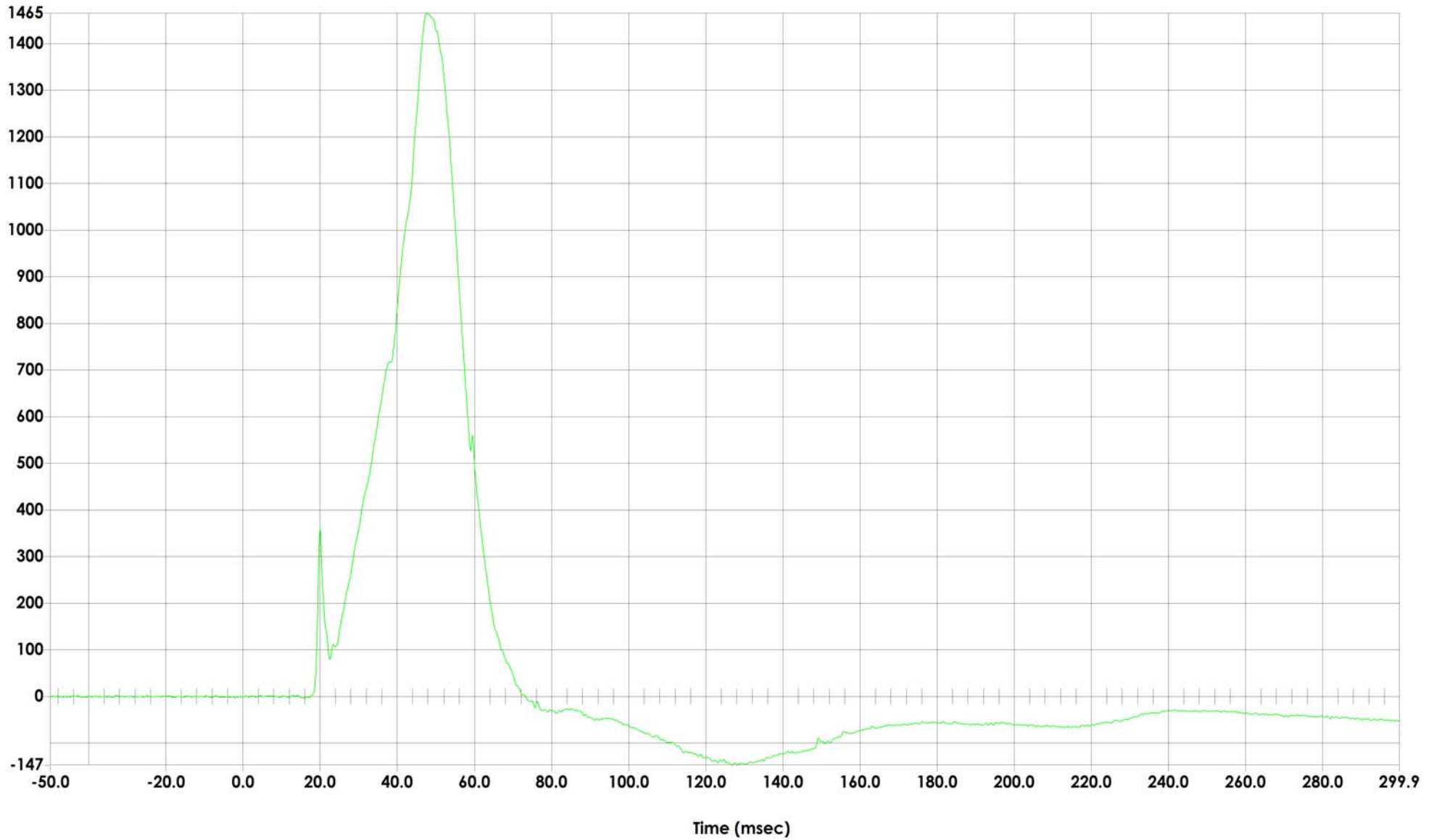


Test ID	O20145600
Sampling Rate (Hz)	12500
Filter	CFC600
Plot number	015
Units	NWT

Max	1465.18	NWT
	47.52	msec
Min	-147.02	NWT
	126.80	msec



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

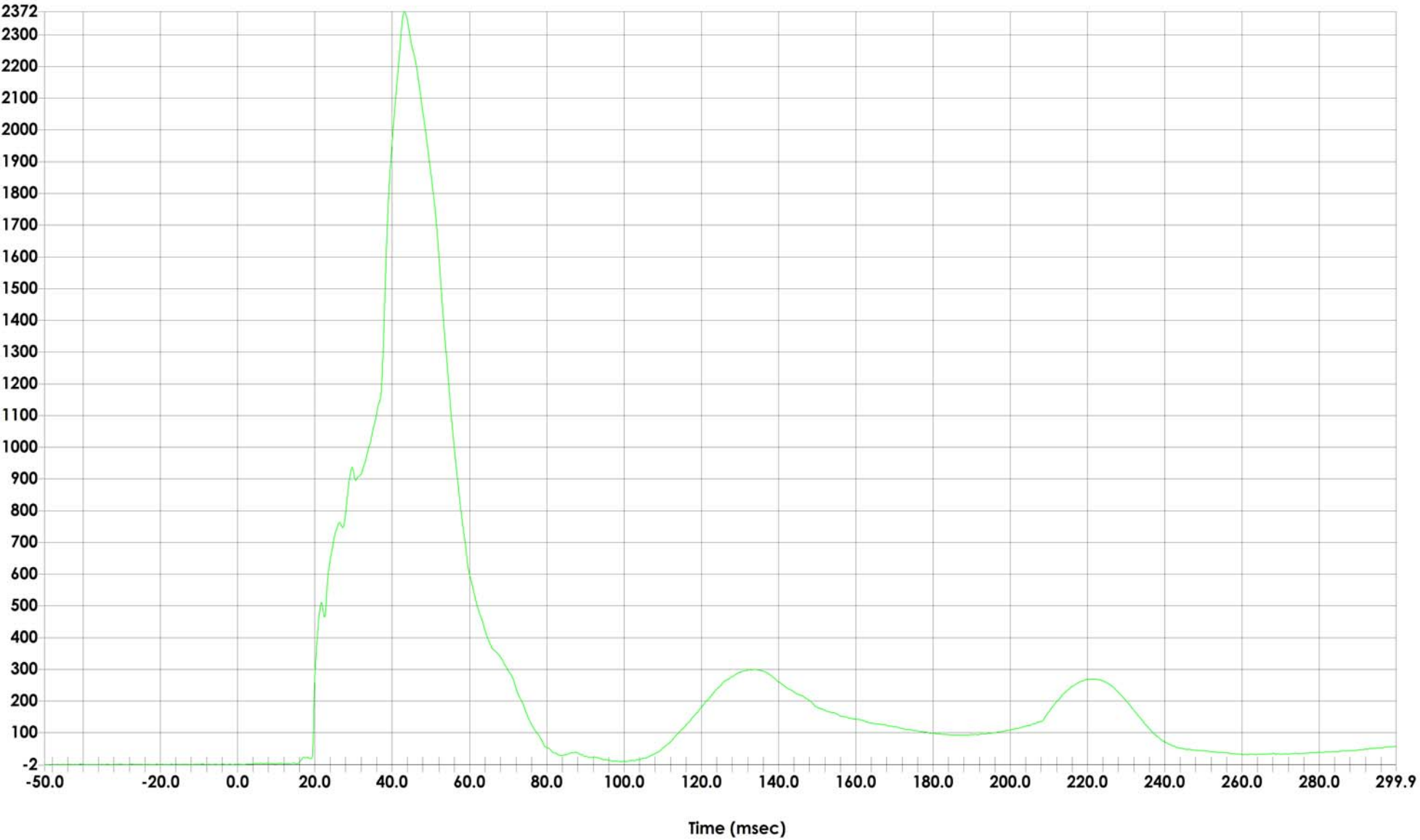


Test ID	O20145600
Sampling Rate (Hz)	12500
Filter	CFC600
Plot number	016
Units	NWT

Max	2372.43	NWT
	43.20	msec
Min	-1.58	NWT
	-48.56	msec



Acetabulum Force on Impact Side (Y) vs. Time

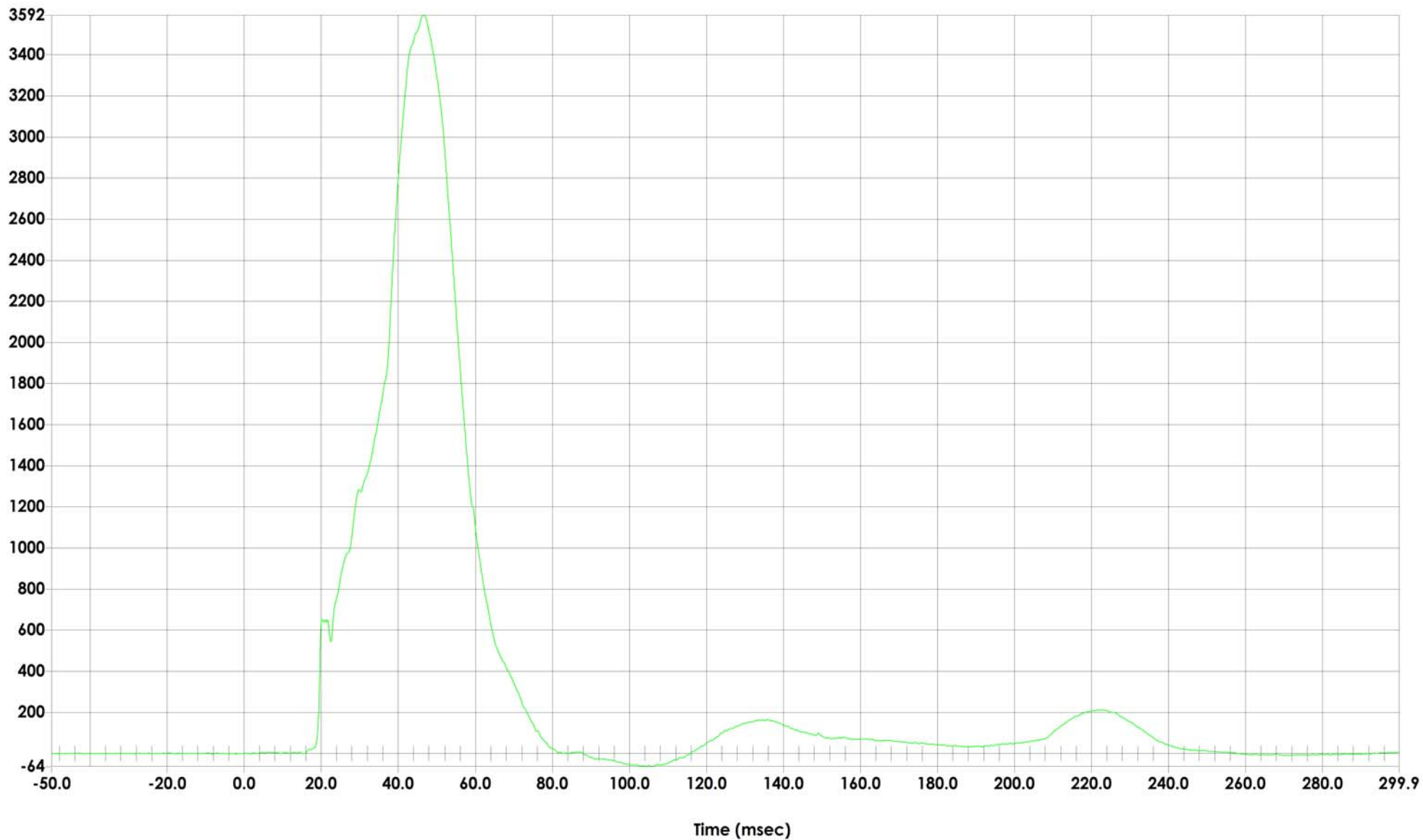


Test ID	O20145600
Sampling Rate (Hz)	12500
Filter	CFC600
Plot number	046
Units	NWT

Max	3591.70	NWT
	46.48	msec
Min	-63.94	NWT
	105.92	msec



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



APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE DATA

TABLE 1
EXTERNAL MEASUREMENTS

SIDIIs Serial Number 301

Test Sequences 7 & 8

TEST PARAMETER	SPEC.	PRE		POST	
Date	-	2-5-14		6-18-14	
Sequential Test Number	-	7		8	
		Result	Pass/Fail	Result	Pass/Fail
Temperature (°C)	20.6-22.2	21.9	Pass	21.1	Pass
Relative Humidity (%)	10-70	29.1	Pass	40.6	Pass
Sitting Height	772 – 788	782	Pass	775	Pass
Shoulder Pivot Height	437 – 453	450	Pass	445	Pass
H-Point Height	79 – 89	85	Pass	83	Pass
H-Point from Seat Back	141 – 151	148	Pass	145	Pass
Shoulder Pivot from Backline	97 – 107	100	Pass	101	Pass
Thigh Clearance	119 – 135	126	Pass	130	Pass
Head Breadth	140 – 148	141	Pass	142	Pass
Head Back from Backline	40 – 46	42	Pass	42	Pass
Head Depth	178 – 188	181	Pass	181	Pass
Head Circumference	541 – 551	545	Pass	543	Pass
Buttock to Knee Length	514 – 540	524	Pass	530	Pass
Popliteal Height	343 – 369	355	Pass	355	Pass
Knee Pivot to Floor Height	392 – 409	406	Pass	406	Pass
Buttock Popliteal Length	416 – 442	430	Pass	430	Pass
Chest Depth w/o Jacket	195 – 211	205	Pass	209	Pass
Foot Length	216 – 232	226	Pass	225	Pass
Hip Breadth	313 – 323	320	Pass	321	Pass
Arm Length	249 – 259	255	Pass	255	Pass
Knee Joint to Seat Back	477 – 493	490	Pass	490	Pass
Shoulder Width	341 – 357	345	Pass	347	Pass
Foot Width	78 – 94	88	Pass	88	Pass
Chest Circumference w/Jacket	851 – 881	855	Pass	861	Pass
Waist Circumference	761 – 791	775	Pass	780	Pass

TABLE 2
HEAD DROP TEST

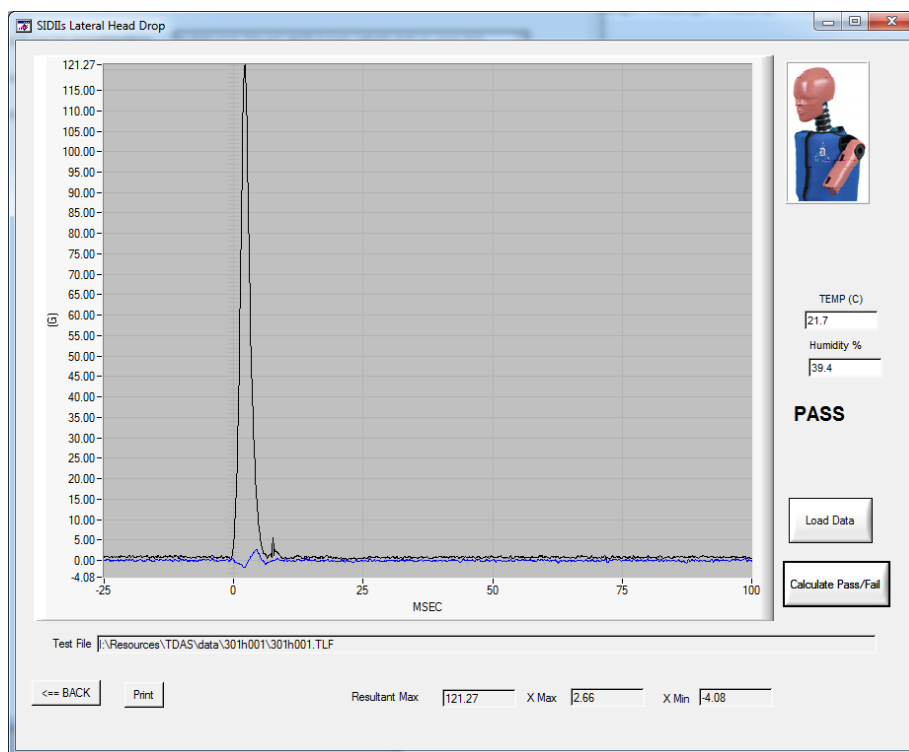
SIDIIs Serial Number 301

Test Sequences 7 & 8

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	6-3-14		6-16-14	
Sequential Test Number		-	7		8	
			Result	Pass/Fail	Result	Pass/Fail
Head Soak Time (min)		≥ 240	240	Pass	240	Pass
Temperature(°C) – During Soak	Max	20.6-22.2	21.7	Pass	21.6	Pass
	Min		20.7	Pass	20.9	Pass
Humidity(%) – During Soak	Max	10.0-70.0	40.9	Pass	48.1	Pass
	Min		39.4	Pass	43.3	Pass
Temperature – During Test (°C)		20.6-22.2	21.7	Pass	21.6	Pass
Humidity – During Test (%)		10-70	39.4	Pass	43.3	Pass
Peak Head Resultant Acceleration (G)		115-137	121.3	Pass	125.2	Pass
Peak Head X Acceleration (G)		<15	2.7	Pass	4.6	Pass
Unimodal (Oscillation) (Yes/No)		<15%	-	Yes	-	Yes

TABLE 2
HEAD DROP TEST (CONTINUED)

PRE-TEST



POST-TEST

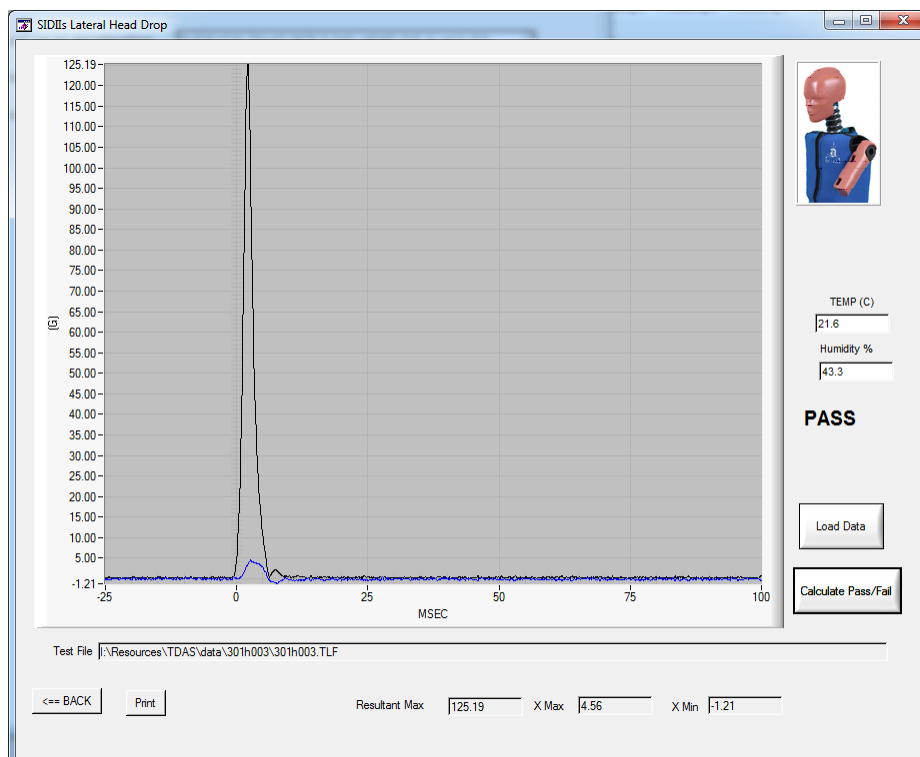
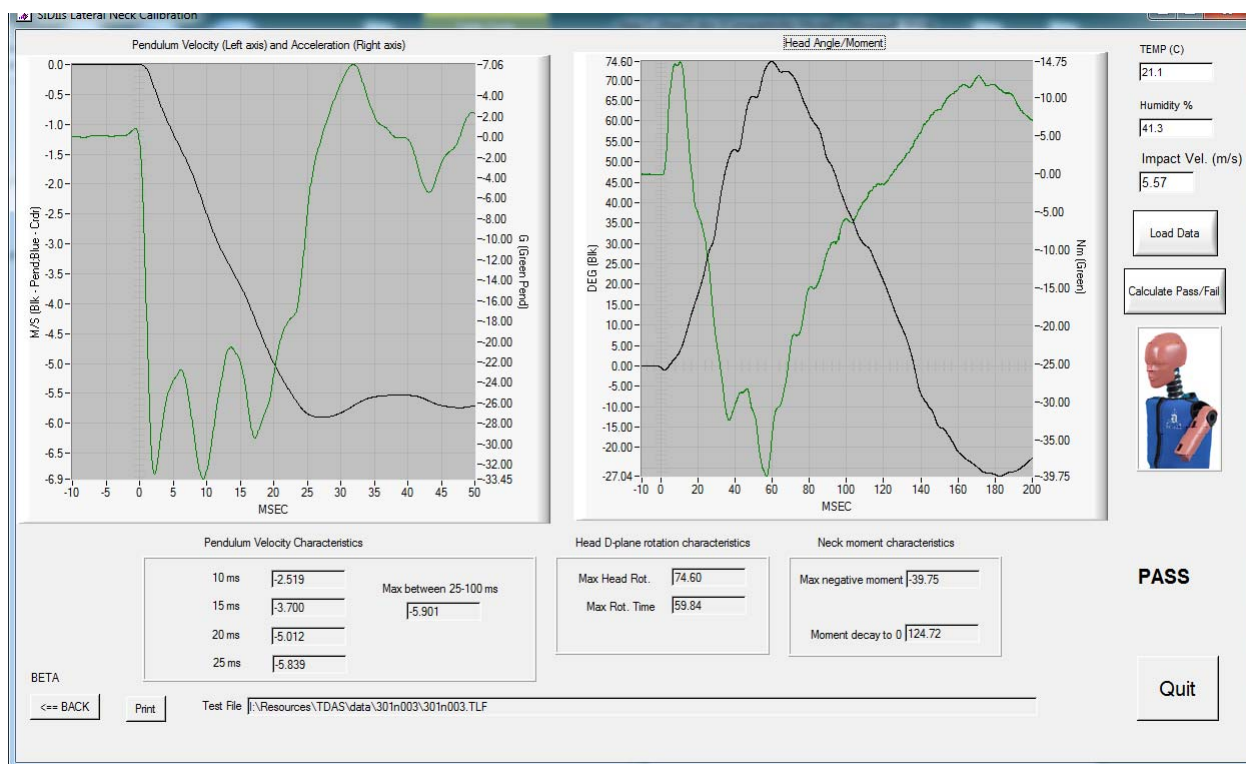


TABLE 3
LATERAL NECK PENDULUM TEST

SIDIIs Serial Number		301	Test Sequences		7 & 8	
TEST PARAMETER		SPEC.	PRE		POST	
Date		-	6-4-14		6-17-14	
Sequential Test Number		-	7		8	
			Result	Pass/Fail	Result	Pass/Fail
Neck Assembly Soak Time (min)		≥ 240	240	Pass	240	Pass
Temperature(°C) – During Soak	Max	20.6-22.2	21.1	Pass	20.7	Pass
	Min		20.7	Pass	20.6	Pass
Humidity(%) – During Soak	Max	10.0-70.0	48.3	Pass	44.1	Pass
	Min		41.3	Pass	41.2	Pass
Temperature – During Test (°C)		20.6-22.2	21.1	Pass	20.6	Pass
Humidity – During Test (%)		10-70	41.3	Pass	44.1	Pass
Pendulum Velocity (m/s)		5.51-5.63	5.6	Pass	5.6	Pass
Pendulum Deceleration (G)	10 ms	2.20-2.80	2.5	Pass	2.2	Pass
	15 ms	3.30-4.10	3.7	Pass	3.9	Pass
	20 ms	4.40-5.40	5.0	Pass	5.2	Pass
	25 ms	5.40-6.10	5.8	Pass	5.9	Pass
	25-100 ms	5.50-6.20	5.9	Pass	5.9	Pass
Maximum D-Plane rotation (deg)		71-81	74.6	Pass	72.6	Pass
Time of Maximum D-Plane Rotation (ms)		50-70	59.8	Pass	62.0	Pass
Peak Occ. Condyle Moment (Nm)		36-44	39.8	Pass	42.2	Pass
Time of Moment Decay (ms)		102-126	124.7	Pass	126.0	Pass

TABLE 3
LATERAL NECK PENDULUM TEST (CONTINUED)

PRE-TEST



POST-TEST

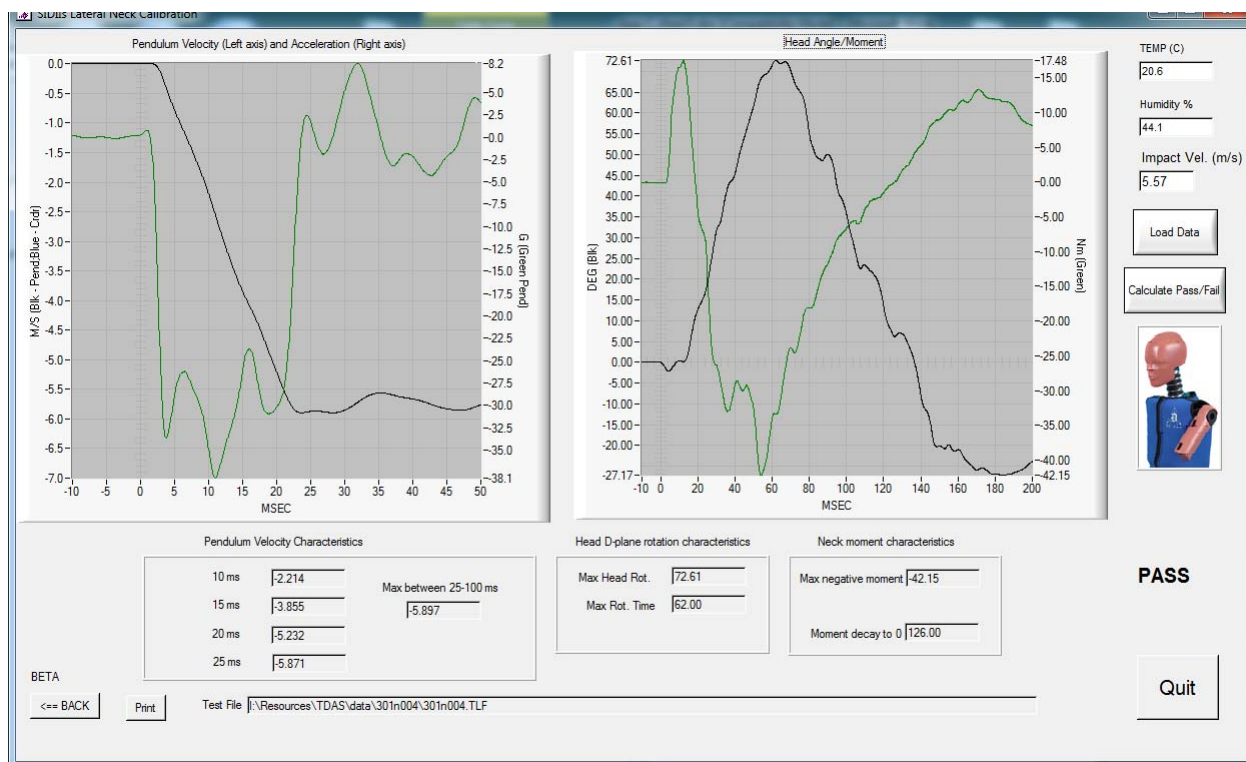


TABLE 4
SHOULDER IMPACT TEST

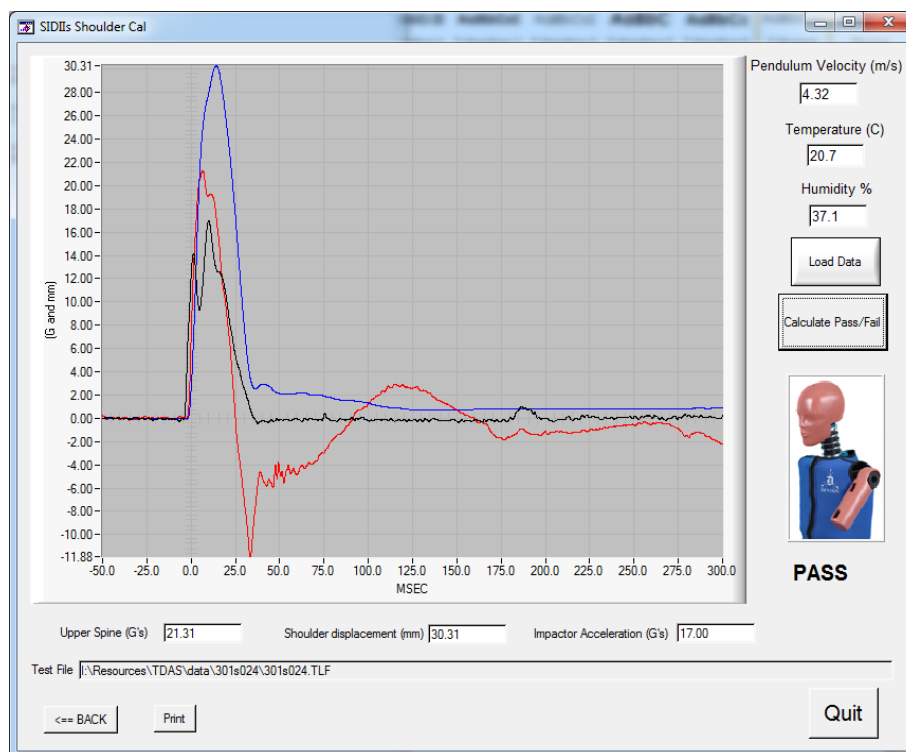
SIDIIs Serial Number 301

Test Sequences 7 & 8

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	6-7-14		6-18-14	
Sequential Test Number		-	7		8	
			Result	Pass/Fail	Result	Pass/Fail
Dummy Soak Time (min)		≥ 180	180	Pass	180	Pass
Temperature(°C) – During Soak	Max	20.6-22.2	20.7	Pass	20.9	Pass
	Min		20.6	Pass	20.7	Pass
Humidity(%) – During Soak	Max	10.0-70.0	40.1	Pass	45.6	Pass
	Min		37.1	Pass	42.1	Pass
Temperature – During Test (°C)		20.6-22.2	20.7	Pass	20.9	Pass
Relative Humidity – During Test (%)		10-70	37.1	Pass	42.1	Pass
Impactor Velocity (m/s)		4.2-4.4	4.3	Pass	4.3	Pass
Peak Shoulder Deflection (mm)		28-37	30.3	Pass	30.5	Pass
Peak Lateral Spine (T1) Acceleration Y (G)		17-22	21.3	Pass	20.6	Pass
Peak Impactor Acceleration (G)		13-18	17.0	Pass	16.8	Pass

TABLE 4
SHOULDER IMPACT TEST (CONTINUED)

PRE-TEST



POST-TEST

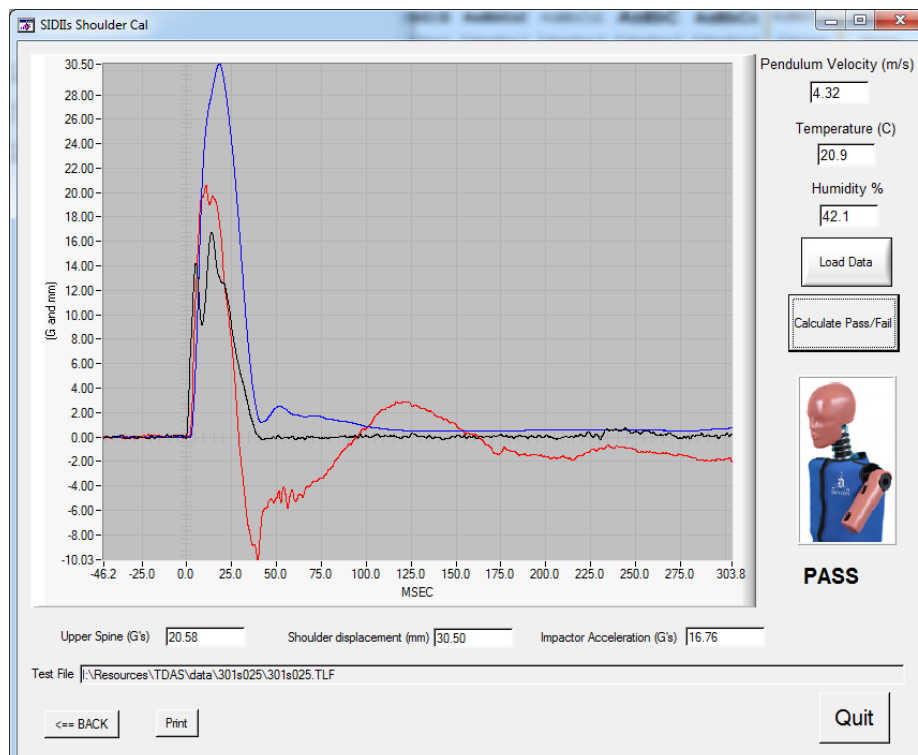
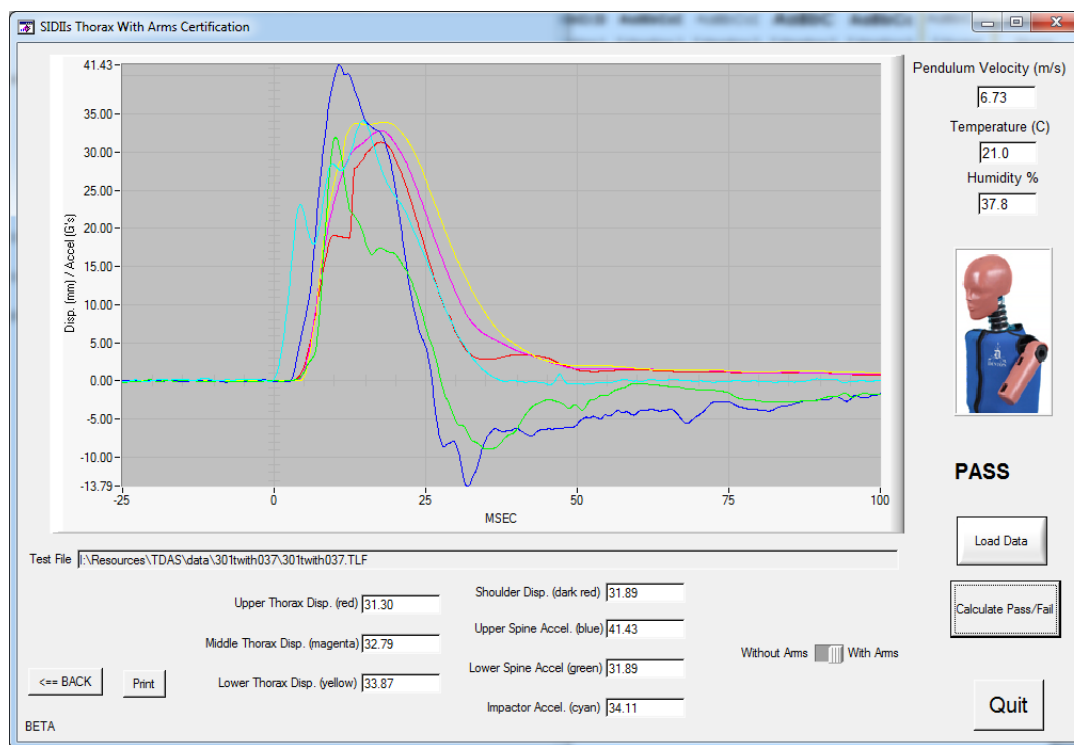


TABLE 5
THORAX (WITH ARM) IMPACT TEST

SIDIIs Serial Number 301 Test Sequences 7 & 8

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	6-7-14		6-18-14	
Sequential Test Number		-	7		8	
			Result	Pass/Fail	Result	Pass/Fail
Dummy Soak Time (min)		≥ 180	180	Pass	180	Pass
Temperature(°C) – During Soak	Max	20.6-22.2	21.0	Pass	21.0	Pass
	Min		20.6	Pass	20.7	Pass
Humidity(%) – During Soak	Max	10.0-70.0	40.1	Pass	45.6	Pass
	Min		37.8	Pass	40.5	Pass
Temperature – During Test (°C)		20.6-22.2	21.0	Pass	21.0	Pass
Relative Humidity – During Test (%)		10-70	37.8	Pass	40.5	Pass
Impactor Velocity (m/s)		6.6-6.8	6.7	Pass	6.7	Pass
Peak Shoulder Deflection (mm)		31-40	31.9	Pass	33.3	Pass
Peak Upper Rib Deflection (mm)		25-32	31.3	Pass	32.0	Pass
Peak Middle Rib Deflection (mm)		30-36	32.8	Pass	31.3	Pass
Peak Lower Rib Deflection (mm)		32-38	33.9	Pass	33.1	Pass
Peak Upper Spine (T1) Acceleration Y (G)		34-43	41.4	Pass	40.9	Pass
Peak Lower Spine (T12) Acceleration Y (G)		29-37	31.9	Pass	33.3	Pass
Peak Impactor Acceleration (G)		30-36	34.1	Pass	33.8	Pass

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



POST-TEST

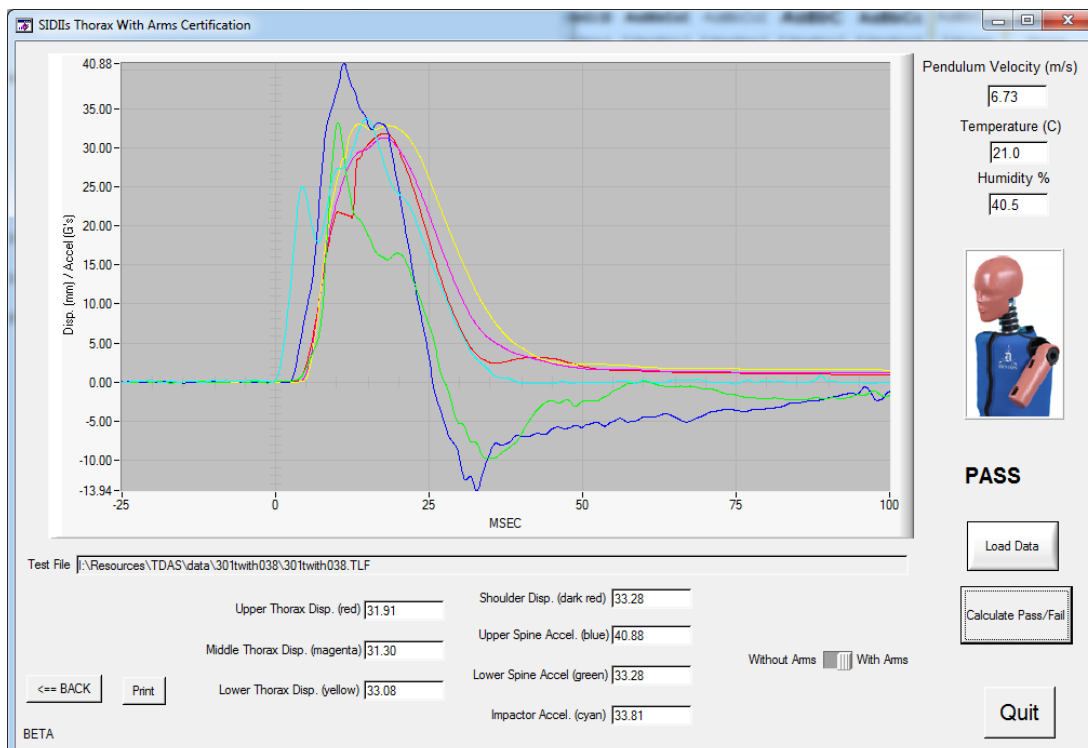


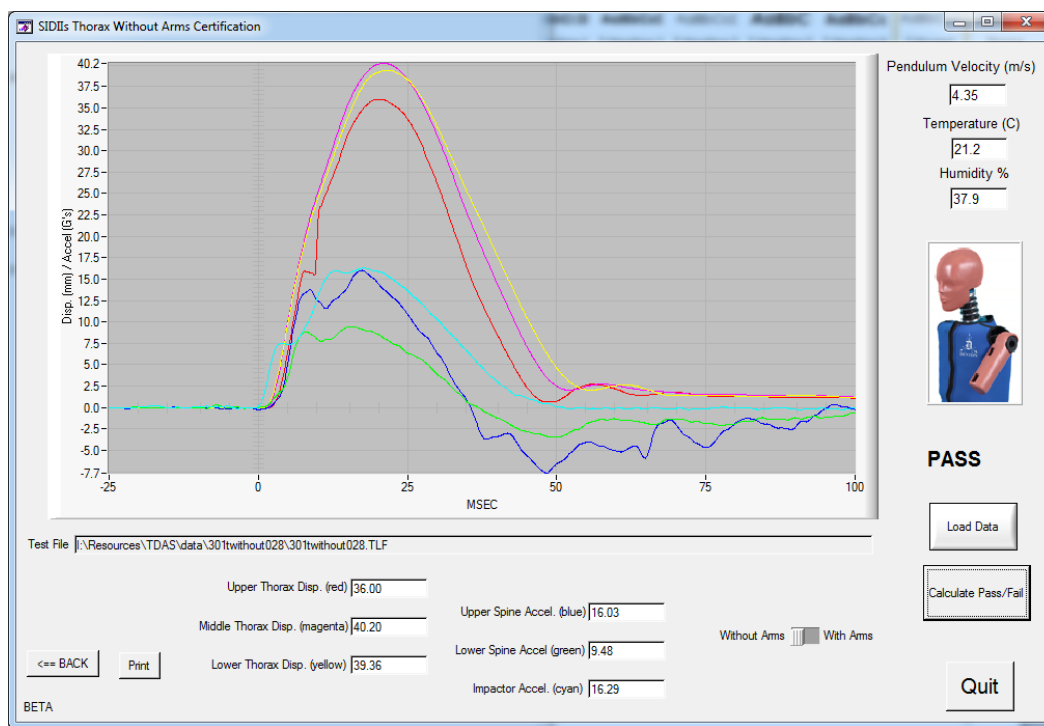
TABLE 6
THORAX (WITHOUT ARM) IMPACT TEST

SIDIIs Serial Number 301 Test Sequences 7 & 8

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	6-7-14		6-18-14	
Sequential Test Number		-	7		8	
			Result	Pass/Fail	Result	Pass/Fail
Dummy Soak Time (min)		≥ 180	180	Pass	180	Pass
Temperature(°C) – During Soak	Max	20.6-22.2	21.2	Pass	21.0	Pass
	Min		20.6	Pass	20.7	Pass
Humidity(%) – During Soak	Max	10.0-70.0	40.1	Pass	45.6	Pass
	Min		37.9	Pass	40.9	Pass
Temperature – During Test (°C)		20.6-22.2	21.2	Pass	21.0	Pass
Relative Humidity – During Test (%)		10-70	37.9	Pass	40.9	Pass
Impactor Velocity (m/s)		4.2-4.4	4.4	Pass	4.4	Pass
Peak Upper Rib Deflection (mm)		32-40	36.0	Pass	38.6	Pass
Peak Middle Rib Deflection (mm)		39-45	40.2	Pass	41.6	Pass
Peak Lower Rib Deflection (mm)		35-43	39.4	Pass	39.2	Pass
Peak Upper Spine (T1) Acceleration Y (G)		13-17	16.0	Pass	16.3	Pass
Peak Lower Spine (T12) Acceleration Y (G)		7-11	9.5	Pass	9.9	Pass
Peak Impactor Acceleration (G)		14-18	16.3	Pass	16.4	Pass

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

PRE-TEST



POST-TEST

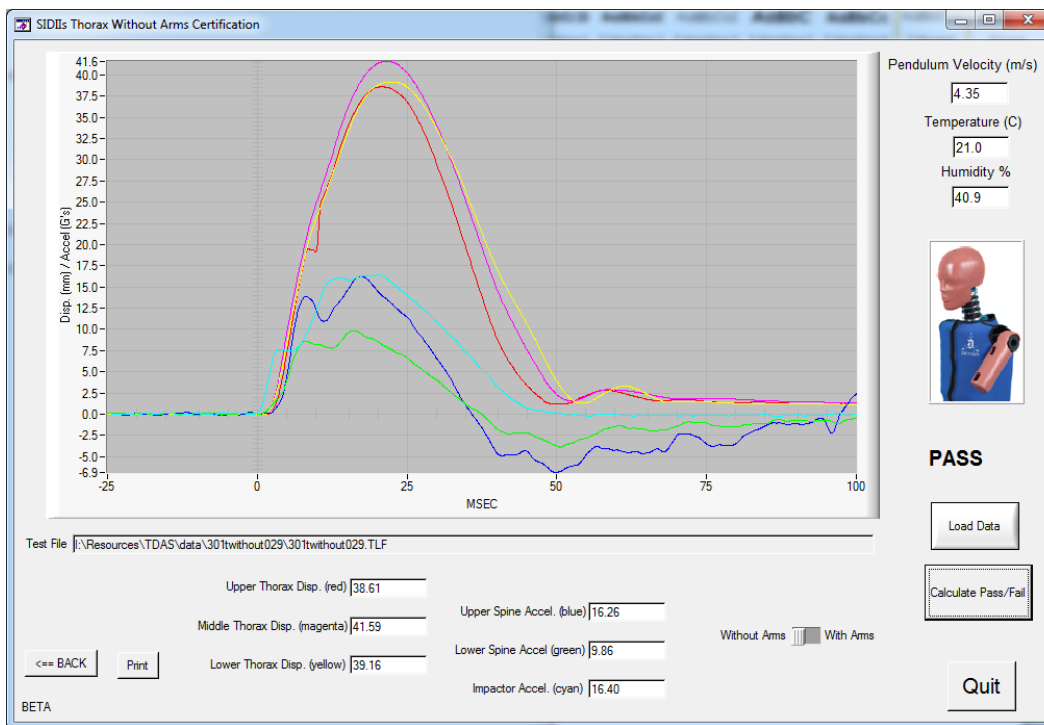


TABLE 7
ABDOMEN IMPACT TEST

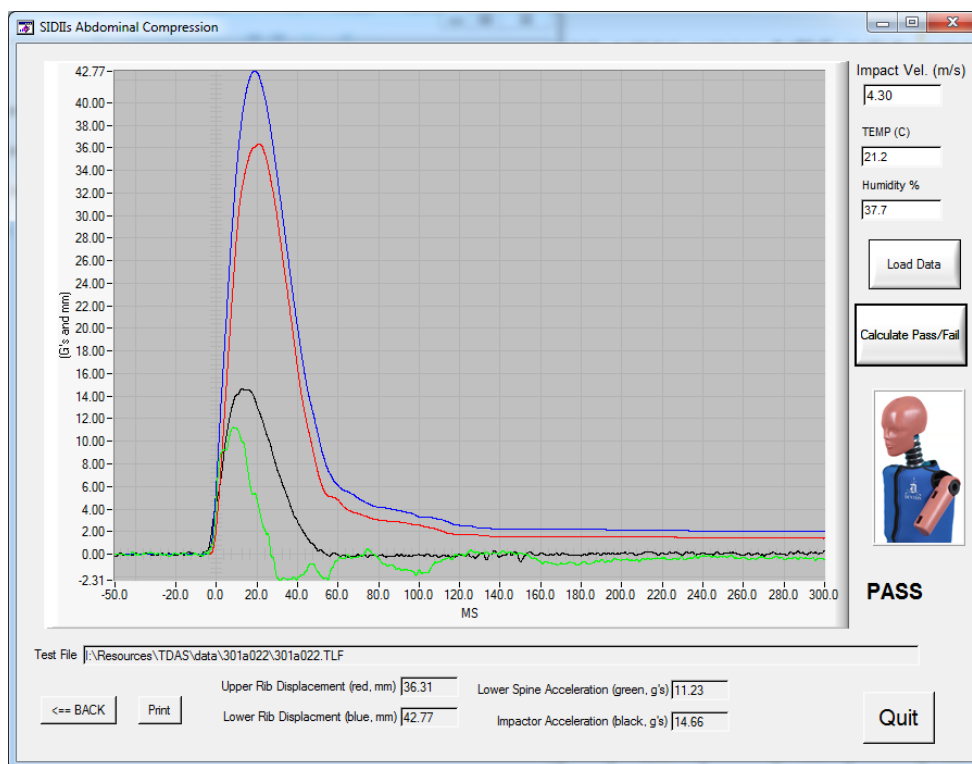
SIDIIs Serial Number 301

Test Sequences 7 & 8

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	6-7-14		6-18-14	
Sequential Test Number		-	7		8	
			Result	Pass/Fail	Result	Pass/Fail
Dummy Soak Time (min)		≥ 180	180	Pass	180	Pass
Temperature(°C) – During Soak	Max	20.6-22.2	21.2	Pass	21.0	Pass
	Min		20.6	Pass	20.9	Pass
Humidity(%) – During Soak	Max	10.0-70.0	40.1	Pass	45.6	Pass
	Min		37.7	Pass	40.5	Pass
Temperature – During Test (°C)		20.6-22.2	21.2	Pass	20.9	Pass
Relative Humidity – During Test (%)		10-70	37.7	Pass	40.5	Pass
Impactor Velocity (m/s)		4.2-4.4	4.3	Pass	4.3	Pass
Peak Upper Abdominal Rib Deflection (mm)		36-47	36.3	Pass	37.9	Pass
Peak Lower Abdominal Rib Deflection (mm)		33-44	42.8	Pass	39.5	Pass
Peak Lower Spine (T12) Acceleration Y (G)		9-14	11.2	Pass	11.9	Pass
Peak Impactor Acceleration (G)		12-16	14.7	Pass	15.2	Pass

TABLE 7
ABDOMEN IMPACT TEST (CONTINUED)

PRE-TEST



POST-TEST

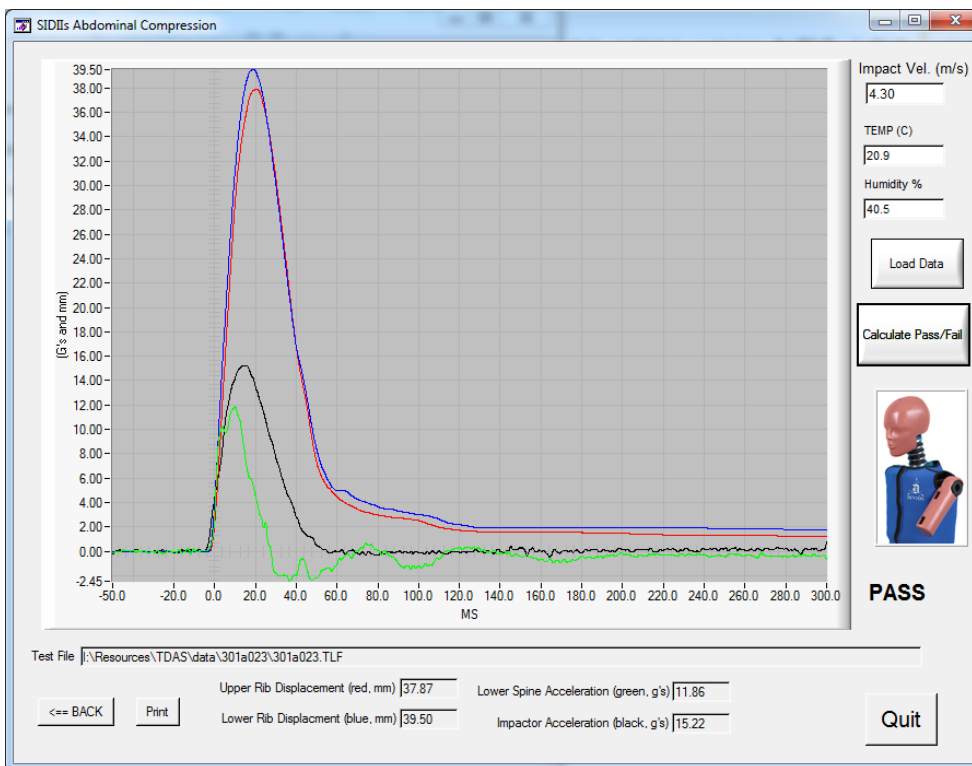
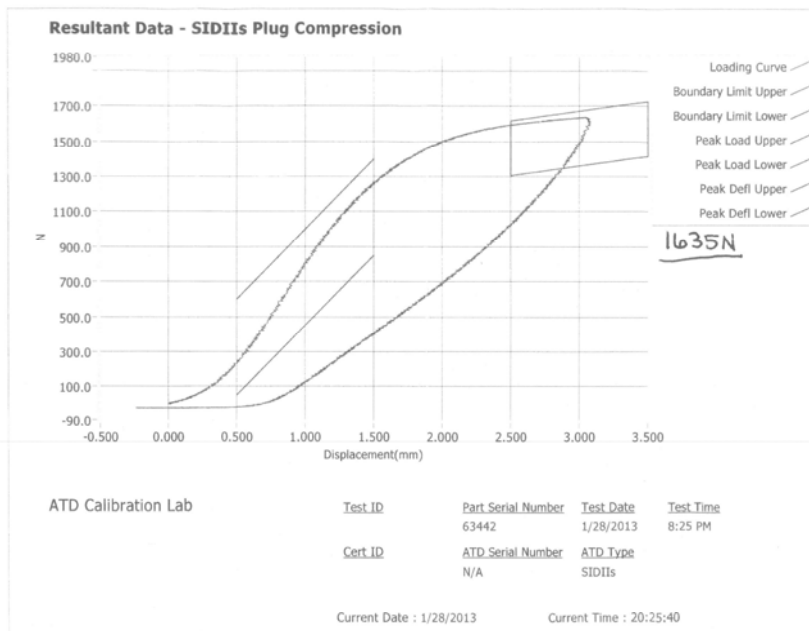


TABLE 8
PELVIS PLUG QUASI-STATIC TEST
PRE-TEST



POST-TEST

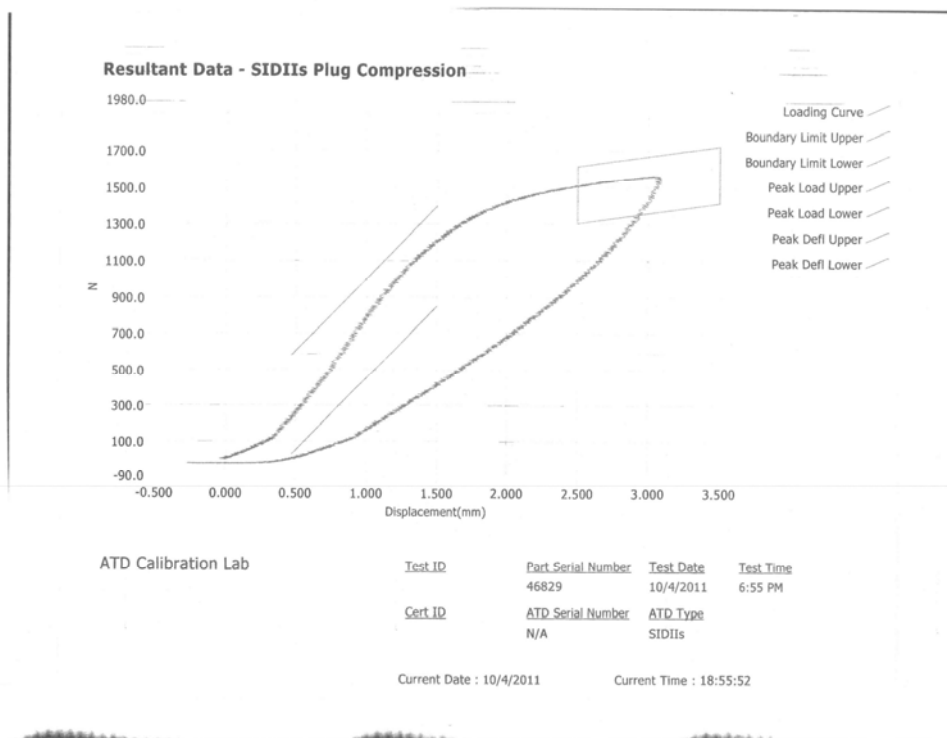


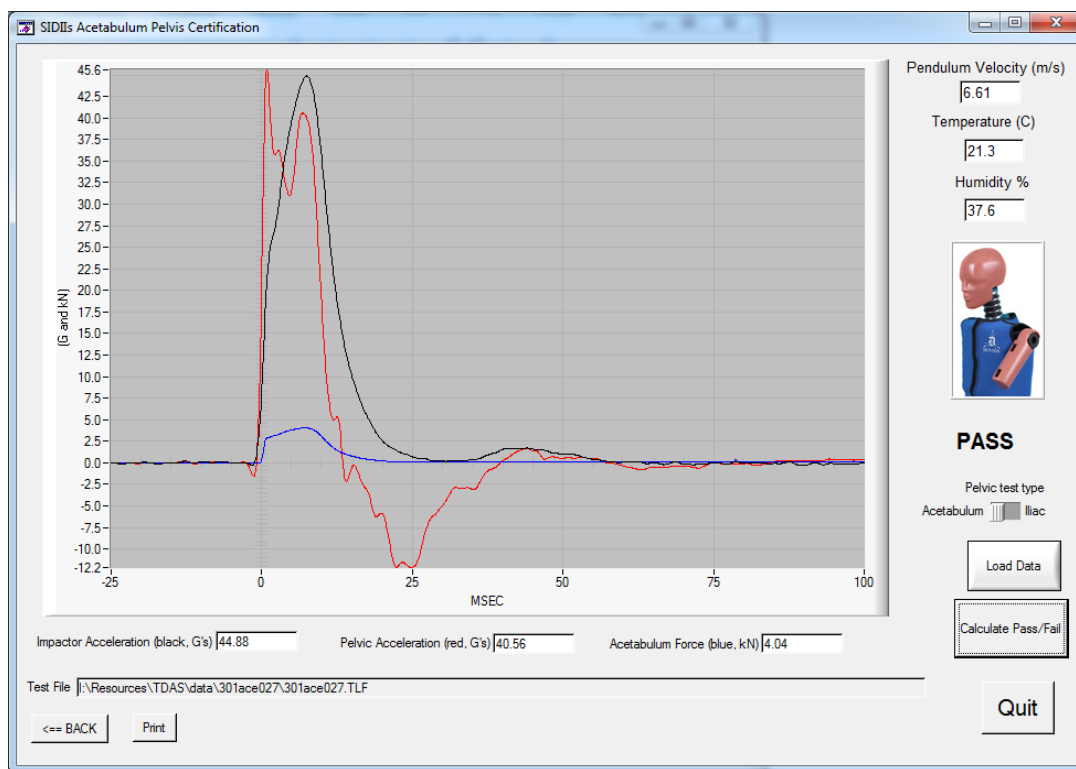
TABLE 9
PELVIS ACETABULUM IMPACT TEST

SIDIIs Serial Number 301 Test Sequences 7 & 8

TEST PARAMETER		SPEC.	PRE		POST	
Date		-	6-7-14		6-18-14	
Sequential Test Number		-	7		8	
			Result	Pass/Fail	Results	Pass/Fail
Dummy Soak Time (min)		≥ 180	180	Pass	180	Pass
Temperature(°C) – During Soak	Max	20.6-22.2	21.3	Pass	21.0	Pass
	Min		20.6	Pass	20.9	Pass
Humidity(%) – During Soak	Max	10.0-70.0	40.1	Pass	45.6	Pass
	Min		37.6	Pass	41.8	Pass
Temperature – During Test (°C)		20.6-22.2	21.3	Pass	21.0	Pass
Humidity – During Test (%)		10-70	37.6	Pass	41.8	Pass
Impactor Velocity (m/s)		6.6-6.8	6.6	Pass	6.6	Pass
Peak Impactor Acceleration (G)		38-47	44.9	Pass	45.0	Pass
Pelvis Acceleration Y after 6ms (G)		34-42	40.6	Pass	40.0	Pass
Peak Acetabulum Force (kN)		3.60-4.30	4.0	Pass	4.1	Pass
Pelvis Plug Serial No. 63442 (Pre) No. 46829 (Post)						

TABLE 9
PELVIS ACETABULUM IMPACT TEST (CONTINUED)

PRE-TEST



POST-TEST

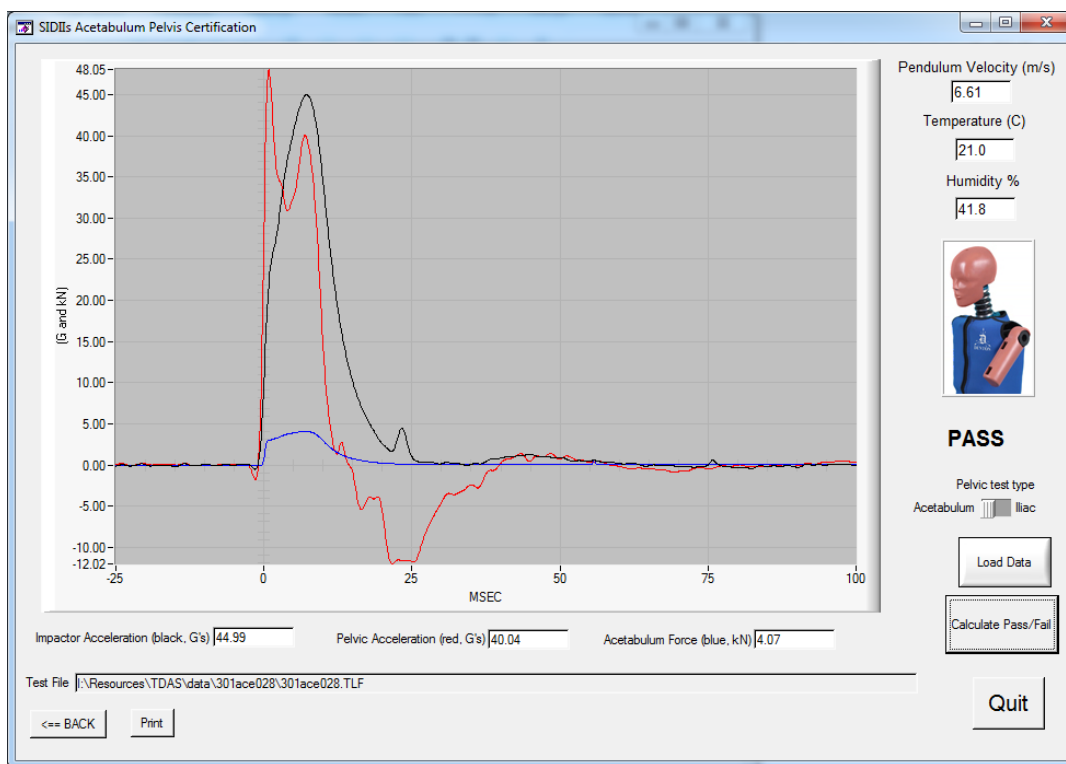


TABLE 10
PELVIS ILIAC IMPACT TEST

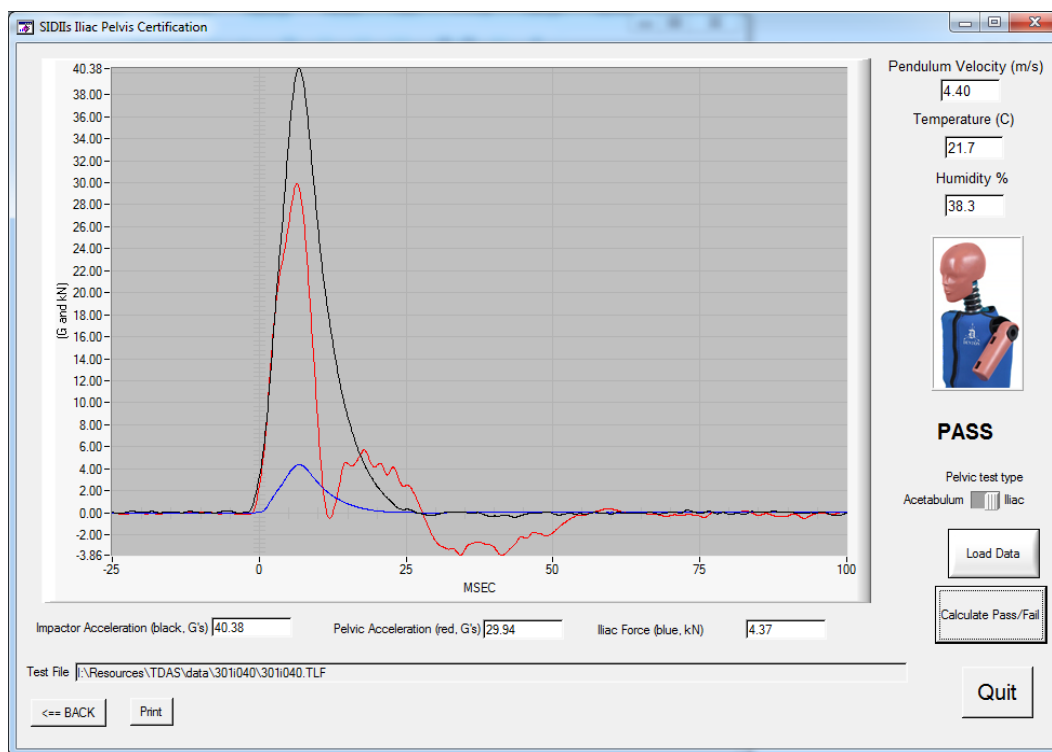
SIDIIs Serial Number 301

Test Sequences 7 & 8

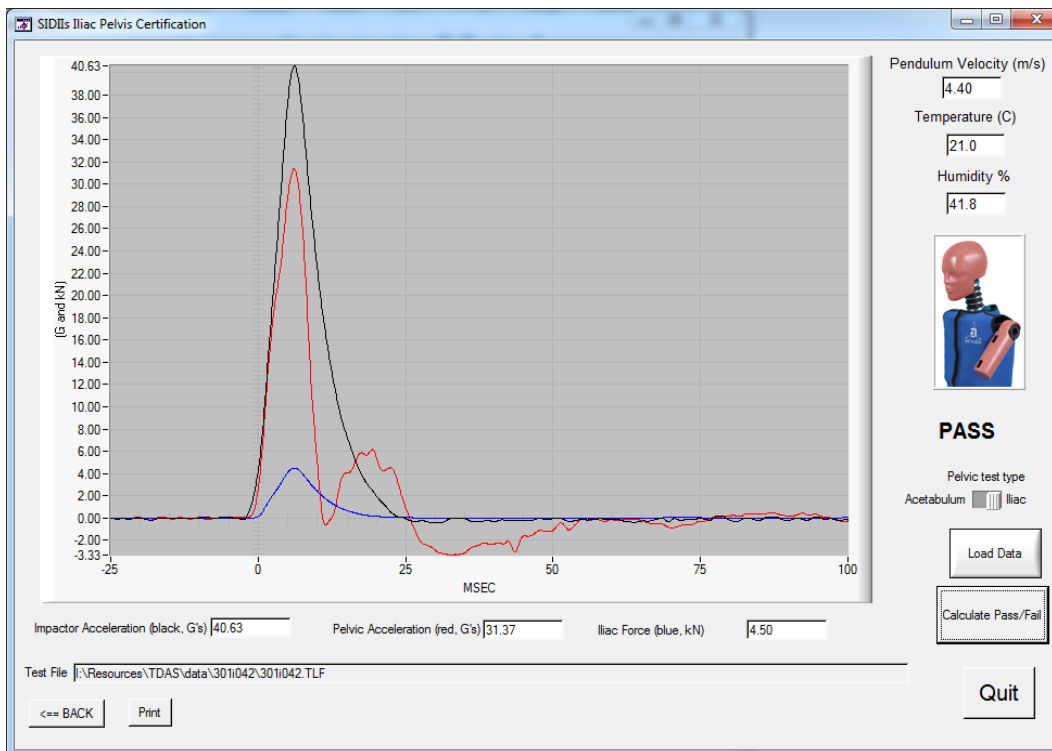
TEST PARAMETER		SPEC.	PRE		POST	
Date		-	6-7-14		6-18-14	
Sequential Test Number		-	7		8	
			Result	Pass/Fail	Result	Pass/Fail
Dummy Soak Time (min)		≥ 180	180	Pass	180	Pass
Temperature(°C) – During Soak	Max	20.6-22.2	21.7	Pass	21.0	Pass
	Min		20.6	Pass	20.9	Pass
Humidity(%) – During Soak	Max	10.0-70.0	40.1	Pass	45.6	Pass
	Min		38.3	Pass	41.8	Pass
Temperature – During Test (°C)		20.6-22.2	21.7	Pass	21.0	Pass
Humidity – During Test (%)		10-70	38.3	Pass	41.8	Pass
Pendulum Velocity (m/s)		4.2-4.4	4.4	Pass	4.4	Pass
Peak Impactor Acceleration (G)		36-46	40.4	Pass	40.6	Pass
Pelvis Acceleration Y (G)		29-39	29.9	Pass	31.4	Pass
Peak Iliac Force Y (N)		4.00-5.20	4.4	Pass	4.5	Pass
Pelvis Plug Serial No. 63442 (Pre) No. 46829 (Post)						

TABLE 10
PELVIS ILIAC IMPACT TEST (CONTINUED)

PRE-TEST



POST-TEST



Test Vehicle: 2014 Mitsubishi Outlander Sport 5-Door SUV
Test Program: SPNCAP

NHTSA Number: O20145600
Test Date: June 11, 2014

APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

TABLE 1 - DUMMY INSTRUMENTATION						
				SID-IIs S/N: 301		
				Serial Number	Manufacturer	Calibration Date
Head Accelerometers			X	P24562	Endevco	25/APR/2013
			Y	P59121	Endevco	25/APR/2013
			Z	P21151	Endevco	25/APR/2013
			X _R	12095	Endevco	15/JUNE/2013
			Y _R	12116	Endevco	15/JUNE/2013
			Z _R	12100	Endevco	06/AUG/2013
Displacement Potentiometers	Thoracic Rib	Upper	Y	1142	FTSS	24/MAY/2013
		Middle	Y	014	Servo	24/MAY/2013
		Lower	Y	1155	FTSS	24/MAY/2013
	Abdominal Rib	Upper	Y	1205	FTSS	24/MAY/2013
		Lower	Y	1237	FTSS	03/MAY/2013
Lower Spine Accelerometers (T ₁₂)			X	P22322	Endevco	15/OCT/2013
			Y	P21788	Endevco	15/ OCT /2013
			Z	P21580	Endevco	15/ OCT /2013
Acetabulum Load Cell			Y	IF-520_DI4284	FTSS	07/MAY/2013
Iliac Wing Load Cell			Y	IF-507_115	FTSS	07/MAY/2013
Pelvis Plug (Struck-Side)				63442	FTSS	23/SEP/2013
Pelvis Plug (Non-Struck-Side)				36403	FTSS	23/SEP/2013

TABLE 2 - VEHICLE INSTRUMENTATION

		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	12134	Endevco	05/NOV/2013
Vehicle Center of Gravity	Y	12127	Endevco	05/NOV/2013
Vehicle Center of Gravity	Z	12148	Endevco	05/NOV/2013
Left Floor Sill	Y	A134054	MSI	23/MAY/2014
A-Pillar Sill	Y	A134019	MSI	23/MAY/2014
A-Pillar Low	Y	A134032	MSI	23/MAY/2014
A-Pillar Mid	Y	A134045	MSI	23/MAY/2014
B-Pillar Sill	Y	A134013	MSI	23/MAY/2014
B-Pillar Low	Y	A134040	MSI	23/MAY/2014
B-Pillar Mid	Y	A134038	MSI	23/MAY/2014
Driver Seat	Y	A134011	MSI	23/MAY/2014
Engine Top	X	P12746	Endevco	05/NOV/2013
Engine Top	Y	P13835	Endevco	05/NOV/2013
Firewall	Y	A007267	MSI	05/NOV/2013
Right Roof	Y	A119062	MSI	23/MAY/2014
Right Floor Sill	Y	A134044	MSI	23/MAY/2014
Rear Floorpan	X	A119068	MSI	23/MAY/2014
Rear Floorpan	Y	A119076	MSI	23/MAY/2014

TABLE 3 - POLE INSTRUMENTATION

		Serial Number	Manufacturer	Calibration Date
Load Cell 1	Y	332420	Interface	03/SEPT/2013
Load Cell 2	Y	332407	Interface	03/SEPT/2013
Load Cell 3	Y	332400	Interface	03/SEPT/2013
Load Cell 4	Y	352865	Interface	03/SEPT/2013
Load Cell 5	Y	332403	Interface	03/SEPT/2013
Load Cell 6	Y	330824	Interface	03/SEPT/2013
Load Cell 7	Y	334238	Interface	03/SEPT/2013
Load Cell 8	Y	330834	Interface	03/SEPT/2013