

REPORT NUMBER: NCAP-MCW-11-002

**NEW CAR ASSESSMENT PROGRAM (NCAP)
MOVING DEFORMABLE BARRIER SIDE IMPACT TEST**

**GENERAL MOTORS CORPORATION
2011 CHEVROLET TAHOE SPORT UTILITY VEHICLE
NHTSA NUMBER: MB 0119**

**PREPARED BY:
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TEST DATE: SEPTEMBER 2, 2010

REPORT DATE: 13 SEPTEMBER 2010

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
1200 NEW JERSEY AVE, SE, ROOM W43-410
WASHINGTON, D.C. 20590**

Test Vehicle: 2011 Chevrolet Tahoe SUV
Test Program: SINCAP

NHTSA Number: MB 0119
Test Date: September 2, 2010

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-00123.

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Date: 11/18/10

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Date: 11/18/10

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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	15. Supplementary Notes																																					
16. Abstract A 55/28 km/h 90° Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2011 Chevrolet Tahoe Sport Utility Vehicle in accordance with the specifications of the Office of Crashworthiness Standards Test Procedure for the generation of consumer information on vehicle side crash protection. The test was conducted at the Medical College of Wisconsin (MCW) facilities in Milwaukee, Wisconsin on September 2, 2010. The impact velocity of the Moving Deformable Barrier (MDB) was 62.1 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 24 °C. The target vehicle's post test maximum static crush was 260 mm at level 1. The test vehicle's performance is as follows: <table border="1"> <thead> <tr> <th></th> <th><u>Units</u></th> <th><u>Threshold</u></th> <th><u>DRIVER ATD (ES-2re)</u></th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td>N/a</td> <td>1000</td> <td>29.0</td> </tr> <tr> <td>Maximum Thorax Rib Deflection</td> <td>mm</td> <td>44</td> <td>24.1</td> </tr> <tr> <td>Total Abdominal Force</td> <td>N</td> <td>2500</td> <td>320.5</td> </tr> <tr> <td>Public Symphysis Force</td> <td>N</td> <td>6000</td> <td>1483.7</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th></th> <th><u>Units</u></th> <th><u>Threshold</u></th> <th><u>Pass. ATD (SID-IIs)</u></th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td>N/a</td> <td>1000</td> <td>56.4</td> </tr> <tr> <td>Lower Spine Resultant Acceleration</td> <td>G's</td> <td>82</td> <td>17.5</td> </tr> <tr> <td>Total Pelvic Force (sum of Acetabular and Iliac forces)</td> <td>N</td> <td>5525</td> <td>422.9</td> </tr> </tbody> </table> The doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.				<u>Units</u>	<u>Threshold</u>	<u>DRIVER ATD (ES-2re)</u>	Head Injury Criteria (HIC ₃₆)	N/a	1000	29.0	Maximum Thorax Rib Deflection	mm	44	24.1	Total Abdominal Force	N	2500	320.5	Public Symphysis Force	N	6000	1483.7		<u>Units</u>	<u>Threshold</u>	<u>Pass. ATD (SID-IIs)</u>	Head Injury Criteria (HIC ₃₆)	N/a	1000	56.4	Lower Spine Resultant Acceleration	G's	82	17.5	Total Pelvic Force (sum of Acetabular and Iliac forces)	N	5525	422.9
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Test Vehicle: 2011 Chevrolet Tahoe SUV
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Technical Report Documentation Page (CONTINUED)

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SECTION 1

PURPOSE AND SUMMARY OF THE TEST

PURPOSE

This moving deformable barrier side impact test is part of the MY 2011 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract number DTNH22-09-D-00123. The purpose of this test is to generate comparative side impact performance in a 2011 Chevrolet Tahoe Sport Utility Vehicle. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated January 2010.

SUMMARY

A 2011 Chevrolet Tahoe Sport Utility Vehicle was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 62.1 km/h (38.6 mph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by The Medical College of Wisconsin in Milwaukee, Wisconsin, on September 2, 2010. Pre test and post test photographs of the test vehicle, the MDB, and the dummies (ES-Ilre and SID-IIs) are included in this report.

Dummies were placed in the driver and left rear designated seating positions according to instructions specified in the OCWS Side Impact Laboratory Test Procedure, dated January 2010. The side impact event was documented by 10 cameras. Camera locations are included in this report.

The dummies were instrumented in the following manner:

DRIVER ATD (ES-Ilre)

- Head Accelerometers
- Thorax Rib 1 to Rib 3 Potentiometers
- Abdomen Forward, Middle, and Rear Load Cells
- Lower Spine Accelerometers
- Pubic Load Cell

PASSENGER ATD (SID-IIs)

- Head Accelerometers
- Thorax Upper, Middle, and Lower Rib Potentiometers
- Abdomen Upper and Lower Rib Potentiometers
- Lower Spine Accelerometers
- Iliac Load Cell
- Acetabulum Load Cell

PURPOSE AND SUMMARY OF THE TEST (CONTINUED)

Dummy injury values were recorded as follows:

DRIVER DUMMY INJURY VALUES			
Measurement description	Driver ATD (ES-Ilre)		
	Units	Threshold	Result
Head Injury Criteria (HIC ₃₆)	N/a	1000	29.0
Maximum Thorax Rib Deflection	mm	44	24.1
Combined Abdominal Force	N	2500	320.5
Pubic Symphosis Force	N	6000	1483.7

PASSENGER DUMMY INJURY VALUES			
Measurement description	Passenger ATD (SID-IIs)		
	Units	Threshold	Result
Head Injury Criteria (HIC ₃₆)	N/a	1000	56.4
Lower Spine (T ₁₂) Resultant Acceleration	G's	82	17.5
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	422.9

PURPOSE AND SUMMARY OF THE TEST (CONTINUED)

Supplemental restraint information is given below:

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION				
Restraint type	Left front (driver)		Left rear (passenger)	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes – Steering wheel	Did not deploy	No	N/a
Knee Airbag	No	N/a	No	N/a
Side Airbag 1 (Curtain Side Airbag)	Yes – Side header	Deployed properly	Yes – Side header	Deployed properly
Side Airbag 2 (Pelvis/Torso Side Airbag)	Yes – Seat back	Deployed properly	No	N/a
Seat Belt Pretensioner	Yes	Deployed properly	No	N/a
Seat Belt Load Limiter	Yes	N/a	No	N/a
Other	No	N/a	No	N/a

GENERAL COMMENTS

The test vehicle sustained a maximum static crush of 260 mm at Level 1, 1350 mm rearward of the vertical impact line.

Test summaries, post test observations, vehicle, MDB, camera, and occupant measurements are presented in datasheets 1 – 16. Appendix A contains the still photograph prints, Appendix B contains driver and passenger response data traces. Appendix C contains the ES-Ilre and SID-IIs configuration and performance verification data.

SECTION 2 DATA SHEETS

PRE TEST

Data Sheet No. 1 – General Test and Vehicle Parameter Data
Data Sheet No. 2 – Seat Adjustment, Fuel Systems, and Steering Wheel Data
Data Sheet No. 3 – Dummy Longitudinal Clearance Dimensions
Data Sheet No. 4 – Dummy Lateral Clearance Dimensions
Data Sheet No. 5 – Camera Locations and Data
Data Sheet No. 6 – Vehicle Accelerometer Locations
Data Sheet No. 7 – MDB Accelerometer Locations

POST TEST

Data Sheet No. 8 – Test Vehicle Summary of Results
Data Sheet No. 9 – MDB Summary of Results
Data Sheet No. 10 – Post Test Observations
Data Sheet No. 11 – Vehicle Profile Measurements
Data Sheet No. 12 – Vehicle Exterior Crush Measurements
Data Sheet No. 13 – Vehicle Damage Profile Distances
Data Sheet No. 14 – Exterior Static Crush for Impactor Face
Data Sheet No. 15A – FMVSS No. 301 Fuel System Integrity Post-Impact Data
Data Sheet No. 15B – FMVSS no. 305 Propulsion Battery Integrity Post-Impact Data
Data Sheet No. 16 – Dummy/Vehicle Temperature Stabilization

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

TEST VEHICLE INFORMATION	
NHTSA No.	MB 0119
Model Year	2011
Make	Chevrolet
Model	Tahoe
Body Style	4 – Door SUV
VIN	1GNSCAE07BR106756
Color	Toupe gray
Delivery Date	August 5, 2010
Odometer Reading (mi)	144
Odometer Reading (km)	231.8
Dealer	George Matrick
Transmission	6 – speed auto
Final Drive	Rear
Type/No. Cylinders	8
Engine Disp. (L)	5.3
Engine Placement	Longitudinal
Roof Rack	Yes
Sunroof/T-Top	No
Tinted Glass	Yes
Traction Control	Yes
Power Brakes	Yes
Front Disc	Yes
Rear Disc	Yes

TEST VEHICLE OPTIONS	
Anti-Lock Brakes	Yes
All-Wheel Drive	No
Power Steering	Yes
Driver Front Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	No
Driver Torso/Pelvis Airbag	Yes
Driver Pelvis Airbag	No
Driver Knee Airbag	No
Pass. Front Airbag	No
Pass. Curtain Airbag	Yes
Pass. Head/Torso Airbag	No
Pass. Torso Airbag	No
Pass. Torso/Pelvis Airbag	No
Pass. Pelvis Airbag	No
Pass. Knee Airbag	No
Pretensioners	Yes – front only
Load Limiters	Yes – front only
Automatic Door Locks	Yes
Bucket Seats	Yes
Tilt Steering	Yes
Other	No

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

No – Disabled by Dealer

DATA FROM CERTIFICATION LABEL			
Manufacturer	General Motors Corp.	GVWR (kg)	3200.5
		GAWR Front(kg)	1451.5
Date of Manufacture	August 2010	GAWR Rear (kg)	1859.7

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION				
	Front	Rear	Third	Total
Designated Seating Capacity (DSC)	3	3	3	9
Capacity Weight (VCW) kg				727.1
DSC X 68.04 kg				612.4
Cargo Weight (RCLW) †				114.7

(A)

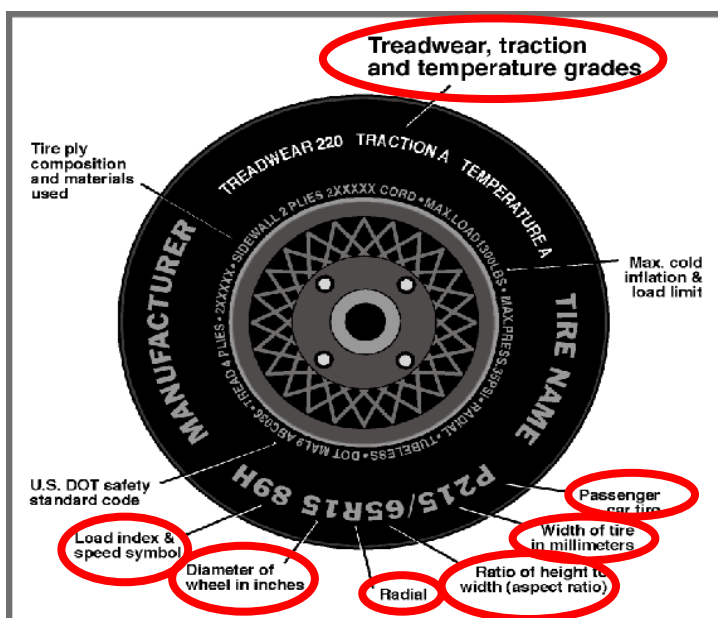
(B)

(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	
Third Row Seat	N/a	N/a	N/a	N/a	N/a	N/a	N/a

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 / Test Pressure (kPa)	220	220
Recommended Tire Size	P265/70R17	P265/70R17
Tire Size on Vehicle	P265/70R17	P265/70R17
Tire Manufacturer	Goodyear	Goodyear
Tire Model	Wrangler	Wrangler
Treadware	340	340
Traction	A	A
Temperature Grade	B	B
Tire Plies Sidewall	2	2
Tire Plies Body	5	5
Load Index & Speed Symbol	113S	113S
Tire Material	Polyester Cord, Steel Cord, and Nylon Cord	Polyester Cord, Steel Cord, and Nylon Cord
DOT safety code (right)	4BT6 F0CR 2410	4BT6 F0CR 2410
DOT safety code (right)	4BT6 F0CR 2410	4BT6 F0CR 2410

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

TEST VEHICLE AXLE WEIGHTS										
	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	618.7	631.4		648.2	720.3		662.7	744.8	
Right	kg	626.0	598.7		648.6	689.9		621.0	685.8	
Ratio	%	50.3	49.7		47.9	52.1		47.3	52.7	
Totals	kg	1244.7	1230.1	2474.8	1296.8	1410.2	2707.0	1283.7	1430.6	2714.3

TARGET TEST WEIGHT CALCULATION			
	Units		
Total Delivered Weight (UVW)	kg	2474.8	(A)
Sum of Actual Weight of 2 P572 ATD's Used	kg	124.8	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	114.7	(C)
Calculated Target Vehicle Test Weight (TVTW)	kg	2714.3	(A + B + C)

TEST VEHICLE ATTITUDE AND CG						
Measurement description	Units	LF	RF	LR	RR	CG (aft of front axle)
Fully Loaded	mm	910	937	945	967	1554.7
As Tested (Fully Loaded +/- 10 mm at each wheel well)	mm	917	937	947	967	1537.0

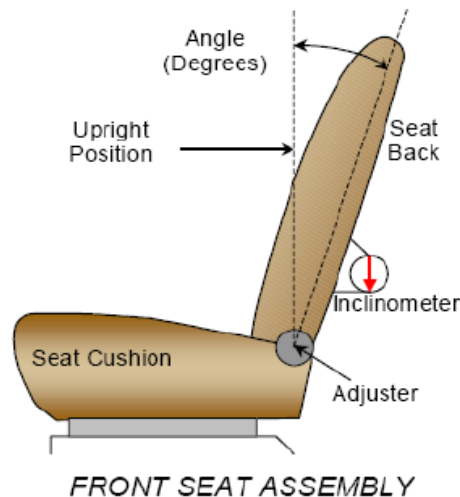
GENERAL TEST VEHICLE DATA		
Measurement description	Units	Value
Total Vehicle Wheel Base	mm	2950
Total Vehicle Length at Left Side	mm	4660
Total Vehicle Length at Centerline	mm	5120
Total Vehicle Length at Right Side	mm	4660
Weight of Ballast in Cargo Area	kg	44.5
Weight of Vehicle Components Removed	kg	20.4
Amt of Stoddard Solvent in Fuel Tank	L	90.9

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

BALLAST INFORMATION	
Mass of Ballast Added (kg)	44.5 kg
Location	Behind front passenger seat; glove box; cargo area
<u>Components removed from test vehicle</u> Non-struck front and rear door glasses Non-struck front and rear door interior panels	

TEST VEHICLE VERTICAL IMPACT LINE DATA		
Measured parameter	Units	Value
Target Impact Point Aft of Front Axle	mm	508 mm
Actual Impact Point Aft of Front Axle	mm	497 mm

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



Normal Design Riding Position

The driver and passenger seat back is positioned according to the manufacturers designated angle. The procedure is as follows: Each detent of the various seat back angles are recorded and numbered on the side of the seat back. A digital inclinometer is placed at the manufacturer's designated position to record the seat back angle. Full upright = notch 0

SEAT BACK ANGLES	
	Degrees
Driver w/ Seated Dummy	6.0°
Passenger w/ Seated Dummy	7.5°

‡Full upright = notch 0

Seat Fore/Aft Positions

The total seat travel was measured from forward most position to rearmost position, irrespective of vertical seat height in those positions. The seat was set at the longitudinal mid-position with the SCRL set at its mid-angle adjustment, w/ the SCRP at its lowest possible position.

SEAT FORE/AFT POSITIONING		
	Total Fore/Aft Travel	Placed in Position #
Driver Seat	240	Mid-seat track
Passenger Seat	Non - adjustable	N/a

‡Full forward = notch 0

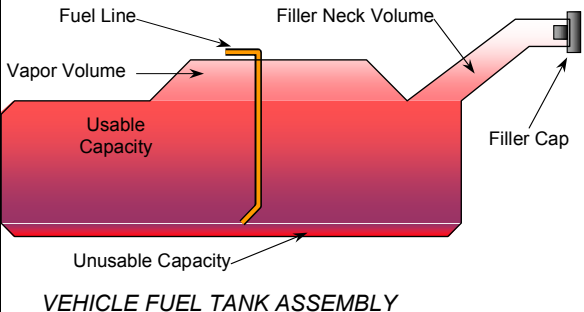
Seat Belt Upper Anchorages

The adjustable anchorage locations are positioned according to the manufacture's specifications.

SEAT BELT UPPER ANCHORAGES		
	Total # of Positions	Placed in Position #
Driver Seat	4	Highest position
Rear Seat	Non-adjustable	As positioned

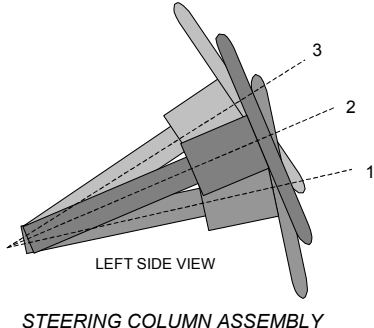
DATA SHEET NO. 2
SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA (CONTINUED)

Fuel Tank Capacity

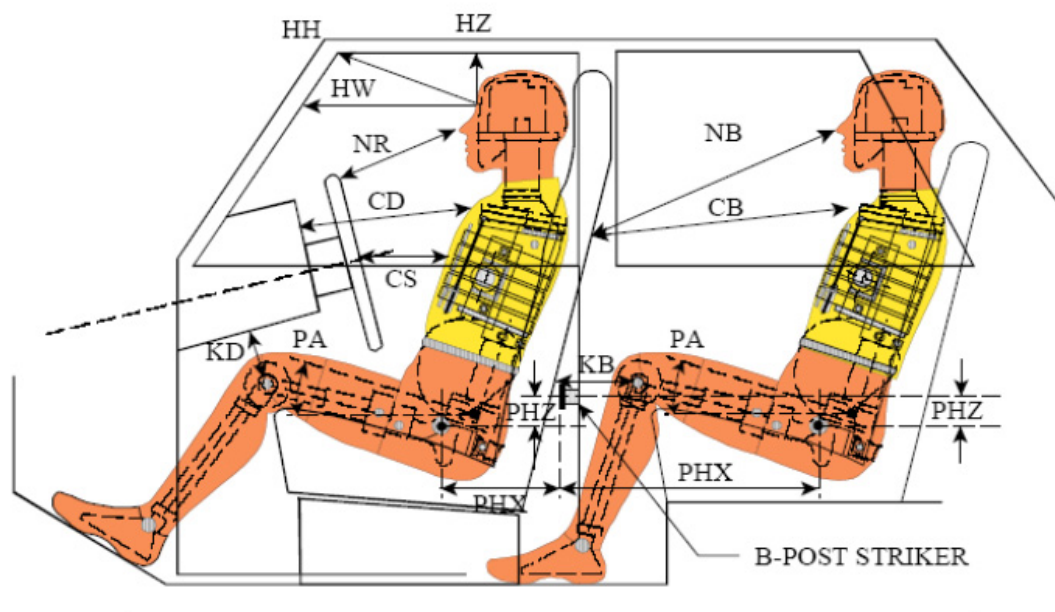
FUEL TANK CAPACITY			
Description	Units	Value	
Usable Capacity of Standard Equipment Fuel Tank	L	98.4	
Usable Capacity of Optional Equipment Fuel Tank	L	0	
Usable Capacity of Vehicle Used for Certification Testing to Requirements	L	98.4	
Amount of Stoddard Added for Test	L	90.9	
% Usable Capacity (92%-94%)	%	92.3	
Operational Instructions	None		
Electric Fuel Pump Present	Yes		
Operating Condition of Test Vehicle for fuel Pump Operation	The fuel pump is activated when the ignition is turned on.		

Steering Column Adjustment

Steering wheel and column adjustments are placed according to the manufacturer's specifications.

STEERING COLUMN POSITIONING			
	Degrees (°)	Fore/aft position (mm)	
Lowermost - Position 1	10.8	Non - telescoping	
Geometric Center - Position 2	20.9	Non – telescoping	
Uppermost - Position 3	30.9	Non – telescoping	
Telescopic Steering Wheel Travel	20.1	Non – telescoping	
Test position	21.1	As positioned	
Steering wheel positioned 21.1 relative to side sill panel. The steering column did not have a telescope adjustment.			

DATA SHEET NUMBER 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

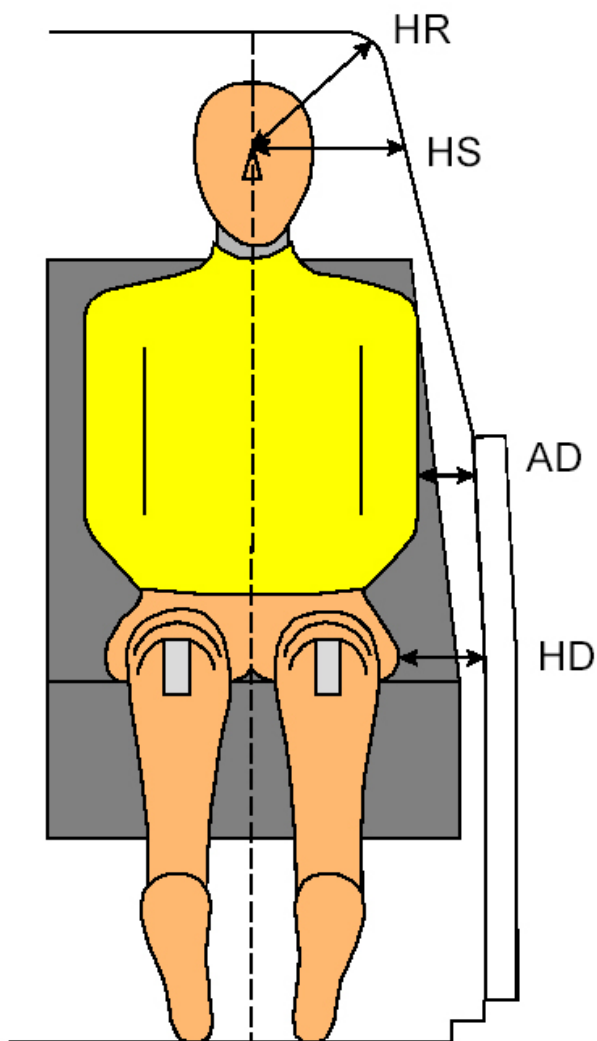


LEFT SIDE VIEW

NOTE: 2-DOOR VEHICLE SHOWN.
REAR DUMMY PHX & PHZ
MEASUREMENTS FOR A 4-DOOR
VEHICLE WOULD USE THE C-POST
STRIKER AS A REFERENCE POINT

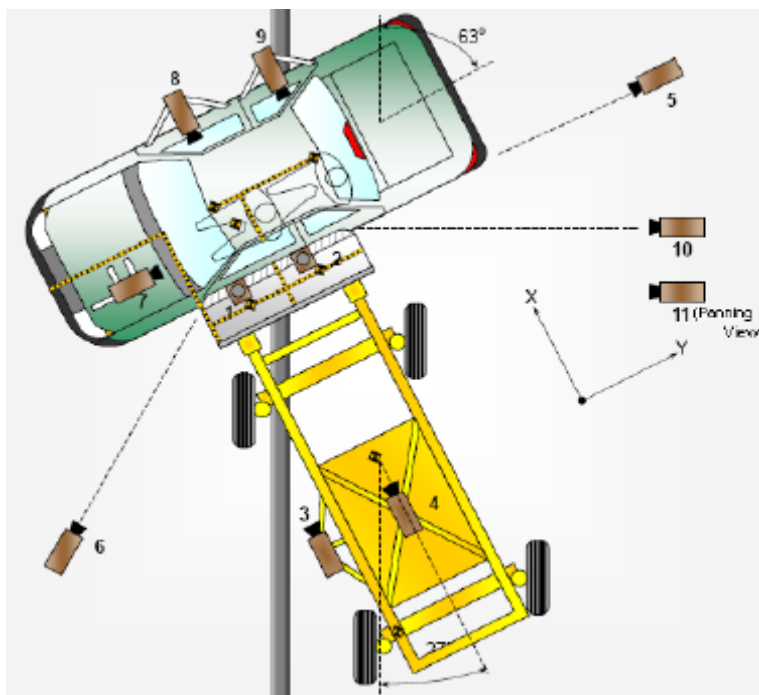
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION						
Driver code	Pass. code	Measurement description	Driver		Passenger	
			Length (mm)	Angle (°)	Length (mm)	Angle (°)
HH		Header to Header	453	20.2		
HW		Header to Windshield	706	0		
HZ	HZ	Head to Roof	256	90	296	90
NR	NB	Nose to Rim/Seat Back	414	-7.5	625	-11.1
CD	CB	Chest to Dash/ Seat Back	530	7.2	614	3.7
CS		Chest to Steering Wheel	348	14.0		
KDL	KBL	Left knee to Dash/ Seat Back	142	26.0	324	23.4
KDR	KBR	Right knee to Dash/ Seat Back	134	33.0	329	20.2
PA	PA	Pelvic Angle		22.7		18.6
PHX	PHX	H-point to Striker (X - axis)	330		318	
PHZ	PHZ	H-point to Striker (Z - axis)	23		191	
SA	SA	Seat Back Angle		7.5		As positioned

DATA SHEET NUMBER 4
DUMMY LATERAL CLEARANCE DIMENSIONS



DUMMY LATERAL CLEARANCE DIMENSION INFORMATION				
Code	Description	Units	Driver	Passenger
HR	Head to Side Header	mm	219	291
HS	Head to Side Window	mm	321	381
AD	Arm to Door (upper)	mm	171	223
AD	Arm to Door (lower)	mm	222	151
HD	H - Point to Door	mm	163 – w/ insert	275 – w/ insert removed

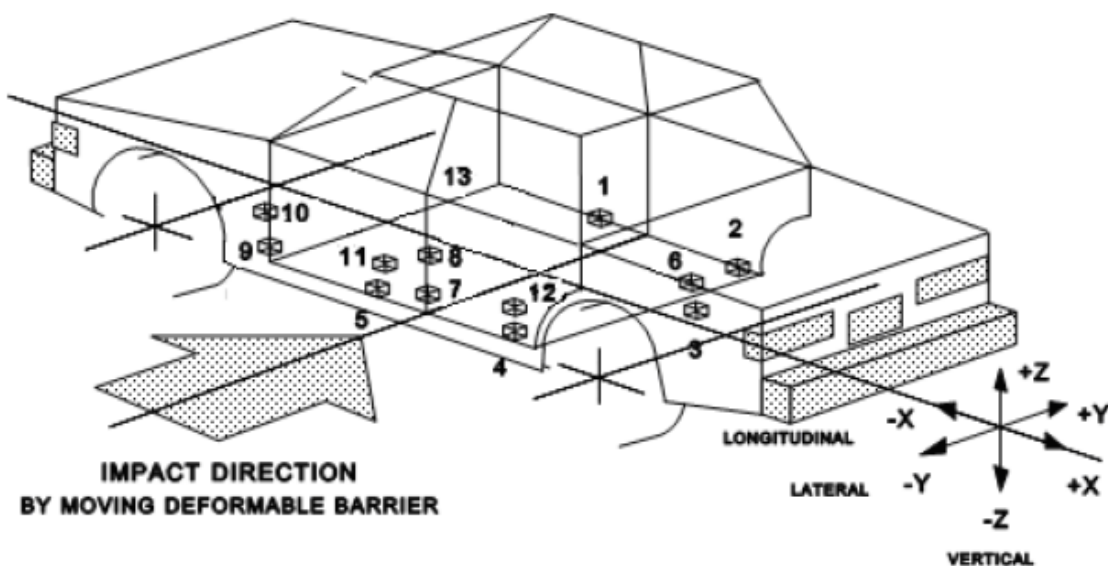
DATA SHEET 5 CAMERA LOCATIONS AND DATA



CAMERA LOCATIONS AND DATA							
No.	Camera view	Location			Angle °	Lens mm	Rate fps
		X	Y	Z			
		mm	mm	mm			
1	Overhead Overall	-302	-629	-4902	90	8	1000
2	Overhead Impact	-556	-152	-4356	90	12.5	1000
3	Left Impact Point (MDB)	-2114	-92	-56	1.3	35	1000
4	Side Overall (MDB)	-2322	836	-632	4.6	13	1000
5	Rear	-698	12653	-867	5.2	50	1000
6	Left Front	-1723	-3789	-885	11.6	25	1000
7	Driver Front (OB)	476	-267	-427	12.4	25	1000
8	Driver Side (OB)	1802	758	-367	14.3	12.5	1000
9	Passenger Side (OB)	1821	1423	-393	14.5	12.5	1000
10	Real - Time Left Rear	-	-	-	-	-	1000

Reference: Impact point projected to ground
+X = to front of MDB, +Y to right of MDB, +Z = down
*All measurements accurate to +/- 6 mm

DATA SHEET 6 **VEHICLE ACCELEROMETER LOCATIONS**

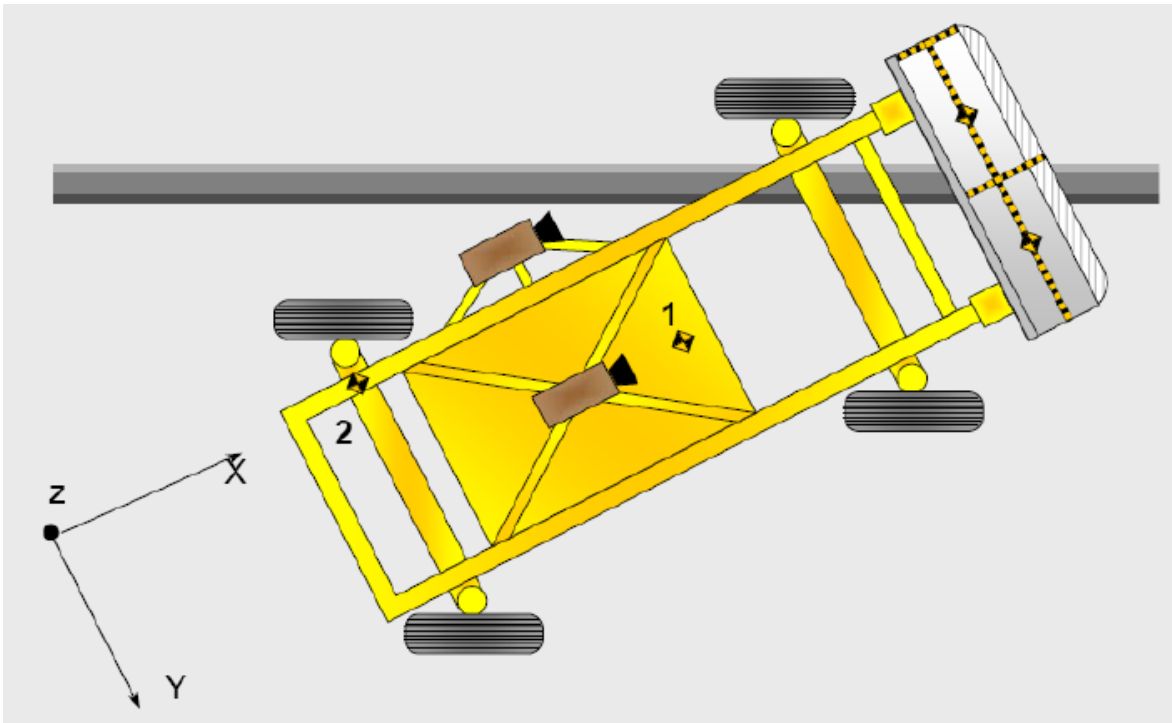


VEHICLE ACCELEROMETER PRE-TEST LOCATIONS				
Loc. no.	Accelerometer location	Measurements (mm)		
		X	Y	Z
1	Right Sill at Front Seat	3072.1	738.3	247.6
2	Right Sill at Rear Seat	2100.3	669.4	239.0
3	Rear Floor Pan Above Axle	677.8	-13.5	-196.2
4	Left Sill at Rear Door	2227.2	-930.5	267.1
5	Left Sill at Front Door	3304.4	-833.2	254.6
6	Right Rear Occupant Compartment	2051.7	570.0	-83.3
7	B - Post Lower	2357.8	-902.4	-152.0
8	B - Post Middle	2369.5	-898.2	-457.4
9	A - Post Lower	3554.4	-893.3	-98.3
10	A - Post Middle	3533.1	-894.0	-322.0
11	Front Seat Track	2786.7	-720.4	77.5
12	Rear Seat Structure	1904.8	-595.5	-1.0
13	Vehicle CG	3108.4	-5.6	-69.9

Reference:

X - Rear surface of vehicle (+ forward)
Y - Vehicle centerline (+ right)
Z - Ground plane (+ up)

DATA SHEET 7
MDB ACCELEROMETER LOCATIONS



MDB ACCELEROMETER LOCATIONS			
Location no.	Measurements (mm)		
	X	Y	Z
1	1113	-1	311
2	2812	-614	585

Reference

X - Face of MDB (+ rearward)

Y - MDB centerline (+ to right)

Z - Ground plane (+ up)

DATA SHEET NUMBER 8
TEST VEHICLE SUMMARY OF RESULTS

MAXIMUM EXTERIOR STATIC CRUSH				
Level	Measured parameter	Units	Maximum crush	Above ground
1	Sill Top Height	mm	260	430
2	Occupant H - Point	mm	234	853
3	Mid Door	mm	200	815
4	Window Sill	mm	101	1211
5	Window Top	mm	30	1777
	Maximum Penetration	mm	260	430

INSTRUMENTATION	
Driver Dummy Channels	16
Passenger Dummy Channels	19
Vehicle Structural Accelerometers	21
MDB Accelerometers	6
Total No. of Contact Switches	0
Total	62

CAMERA COVERAGE	
High - Speed Vehicle Onboard	3
High - Speed Offboard	4
High - Speed MDB Onboard	2
Real - Time Panning	1
Total	10

**DATA SHEET NUMBER 9
MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS**

MDB SPECIFICATIONS	
Measurement description	Length (mm)
Overall Width of Framework Carriage	1250
Overall Length Including Honeycomb Frame	4116
Wheel Base of Framework Carriage	2578
CG Location of Front Axle	1112

MDB WEIGHTS				
	Units	Front axle	Rear axle	Total
Left	kg	426.4	252.7	679.1
Right	kg	334.0	346.5	680.5
Ratio	%	55.9	44.1	100.0
Totals	kg	760.4	599.2	1359.6

SPEED AND IMPACT DATA			
Measured parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	62.1
Trap No. 2 Velocity (Secondary)	km/h	61.1 to 62.7	62.1
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	90

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE					
Vertical location			From centerline		Maximum crush
Row	Description	Height	Distance	Direction	
A	Center of Bumper	432	800	Left	198
B	Top of Bumper	560	800	Left	231
C	Mid – Level	685	800	Left	214
D	Top of Stack	810	800	Left	216

MDB INSTRUMENTATION	
Accelerometers	6
Contact Switches	2

**DATA SHEET NUMBER 10
 POST TEST OBSERVATIONS**

TEST DUMMY INFORMATION AND CONTACT POINTS		
Description	Left front seat	Left rear seat
Dummy Type / Serial No.	ES-IIre/F038	SID-IIs/298
Head Contact	Side of head to side curtain airbag; top of head to roof rail	To side curtain airbag
Upper Torso Contact	To torso airbag	To left interior door panel at window sill
Lower Torso Contact	To torso airbag	To left interior door panel at armrest, ~ 290 mm below window sill
Left Knee Contact	To armrest ~240 mm below window sill	To armrest
Right Knee Contact	To left knee	To left knee

POST TEST DOOR OPENING AND SEAT TRACK INFORMATION		
Description	Front	Rear
Left Side Doors	Closed/latched/inoperable	Closed/latched/inoperable
Right Side Doors	Closed/latched/operable	Closed/latched/operable
Hatch and Other Door Opening	Closed/latched/operable	Closed/latched/operable
Seat Movement	~ 40 mm of seat crush	~ 65 mm of seat crush
Seat Back Failure	None	None

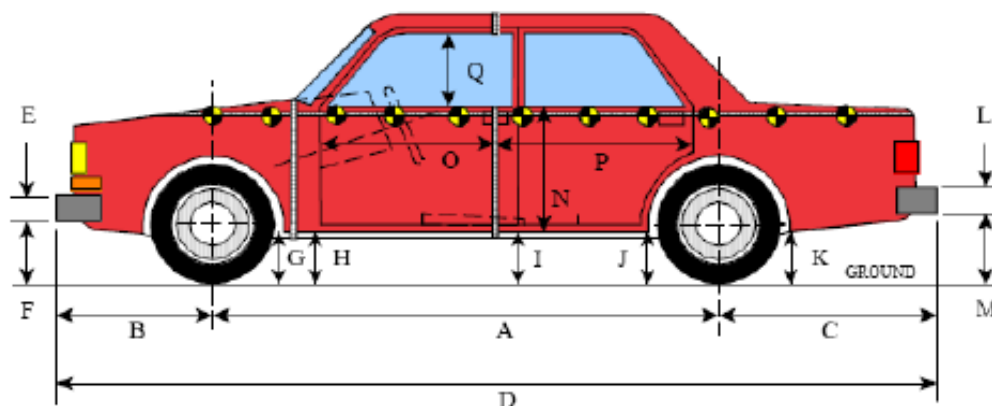
POST TEST STRUCTURAL OBSERVATIONS	
Critical areas of performance	Observations/conclusions
Pillar Performance	No damage
Sill Separation	Max. separation of 130 mm of front door at A-pillar
Windshield Damage	No damage
Window Damage	No damage
Other Notable Effects	None noted

DATA SHEET NUMBER 10
POST TEST OBSERVATIONS (CONTINUED)

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION				
Restraint type	Left front (driver)		Left rear (passenger)	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes – Steering wheel	Did not deploy		
Knee Airbag	No	N/a	No	N/a
Side Airbag 1 (Curtain Side Airbag)	Yes – Side header	Deployed properly	Yes – Side header	Deployed properly
Side Airbag 2 (Pelvis/Torso Side Airbag)	Yes – Seat back	Deployed properly	No	N/a
Seat Belt Pretensioner	Yes	Deployed properly	No	N/a
Seat Belt Load Limiter	Yes	N/a	No	N/a
Other	No	N/a	No	N/a

MDB LEFT EDGE IMPACT DATA			
Measured parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	11 mm forward
Vertical Offset	mm	+/- 50	7 mm below

DATA SHEET NUMBER 11
VEHICLE PROFILE MEASUREMENTS

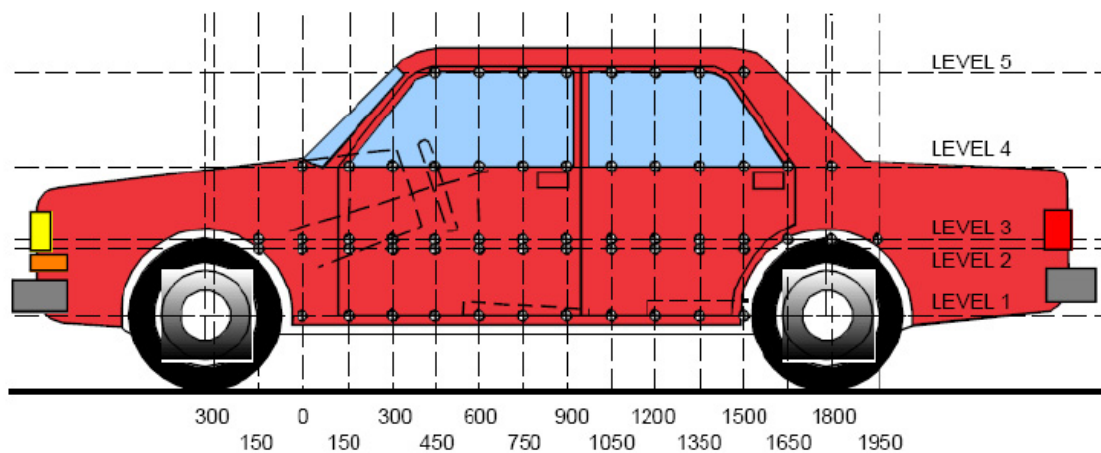


LEFT SIDE VIEW

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

VEHICLE PRE – AND POST – TEST MEASUREMENT INFORMATION				
Code	Description	Pre test	Post test	Difference
		mm	mm	mm
A	Wheelbase	2950	2897	-53
B	Front Axle to FSOV	670	683	13
C	Rear Axle to RSOV	1040	1043	3
D	Total Length at Centerline	5120	5118	-2
E	Front Bumper Thickness	339	339	0
F	Front Bumper Bottom to Ground	307	310	3
G	Sill Height at Front Wheel Well	398	379	-19
H	Sill Height at Front Door Leading Edge	388	390	2
I	Sill Height at B-Pillar	409	426	17
J1	Pinch Weld Height at Rear Wheel Well	369	309	-60
J2	Sill Height at Rear Wheel Well	425	435	10
K	Sill Height Aft of Rear Wheel Well	422	405	-17
L	Rear Bumper Thickness	145	145	0
M	Rear Bumper Bottom to Ground	505	488	-17
N	Sill Height to Window Bottom Sill	855	835	-20
O	Front Door Leading Edge to Impact C/L	1211	1196	-15
P	Rear Door Trailing Edge to Impact C/L	836	815	-21
Q	Front Window Opening	930	931	1
R	Right Side Length	4660	4667	7
S	Left Side Length	4660	4623	-37
T	Vehicle Width at B-Post	1988	1780	-208

DATA SHEET NUMBER 12
VEHICLE EXTERIOR CRUSH MEASUREMENTS



LEFT SIDE VIEW

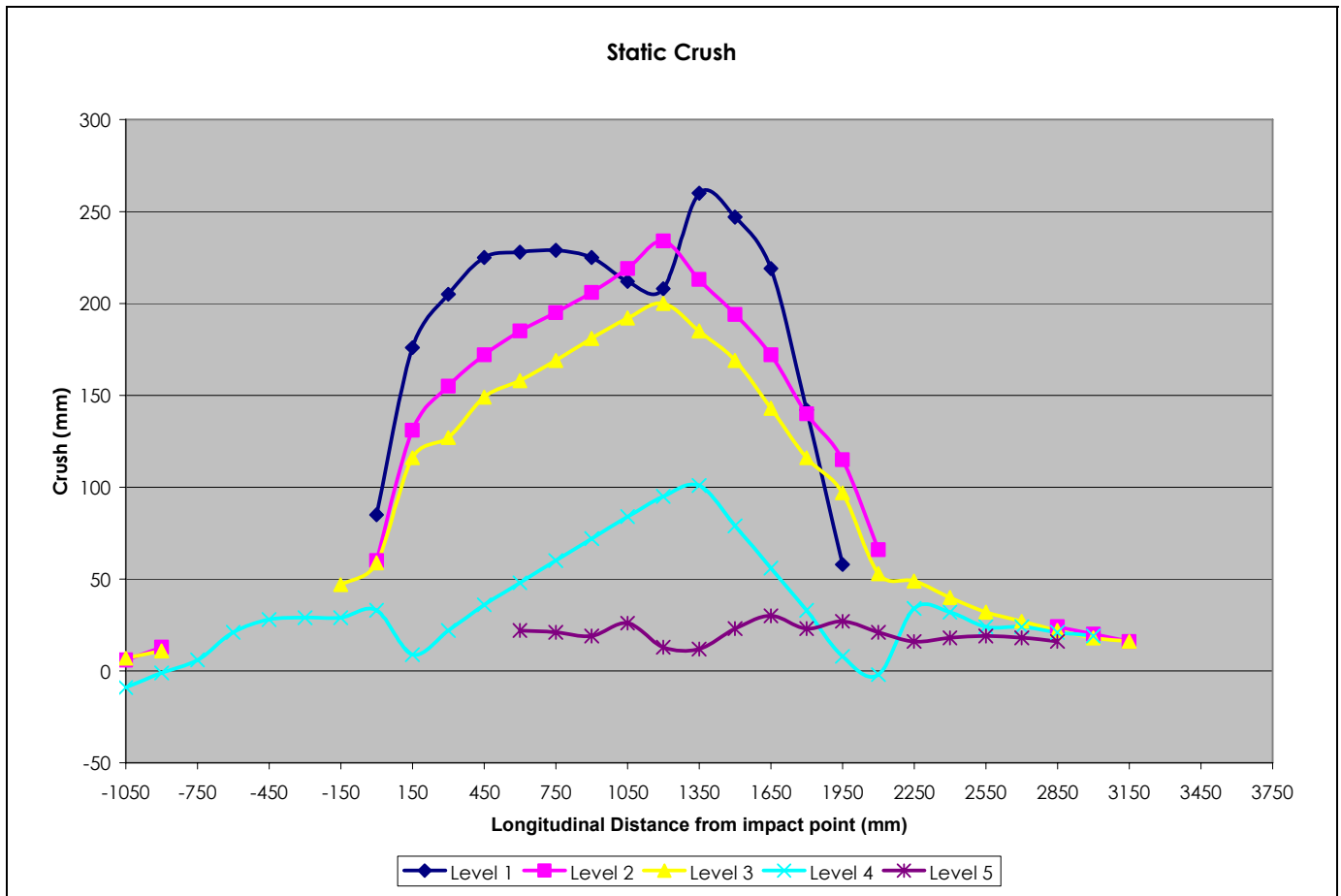
LEFT SIDE VIEW		
Level	Measurement description	Height above ground (mm)
1	Sill top	430
2	Occupant H - Point	853
3	Mid - Door	815
4	Window Sill	1211
5	Window Top	1777

MAXIMUM CRUSH DATA					
	Level 1	Level 2	Level 3	Level 4	Level 5
Maximum Crush (mm)	260	234	200	101	30
Distance From Impact (mm)	1350	1200	1200	1350	1650

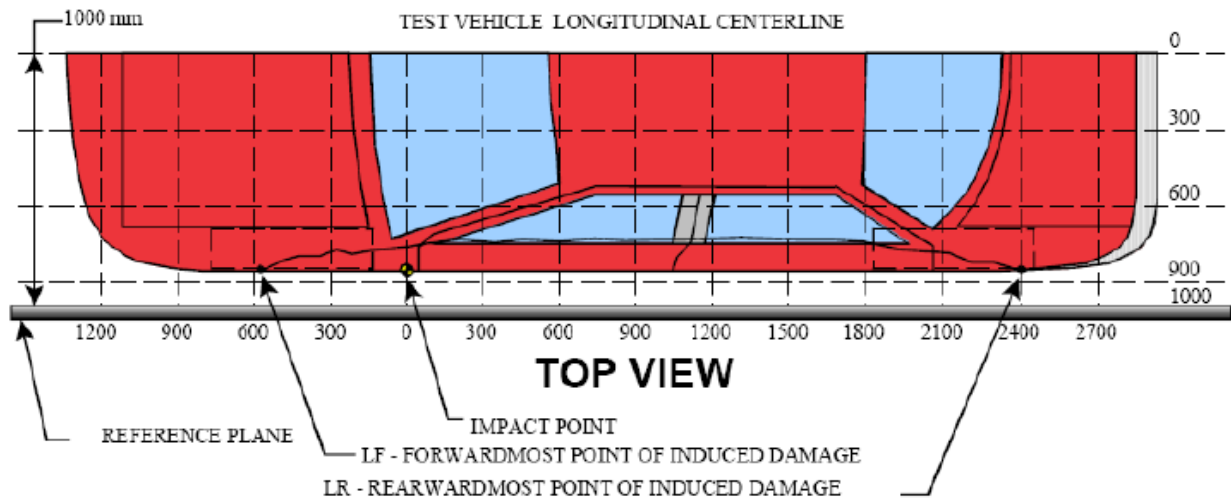
DATA SHEET NUMBER 12
VEHICLE EXTERIOR CRUSH MEASUREMENTS (CONTINUED)

TEST VEHICLE STATIC CRUSH																
Level		1			2			3			4			5		
		Pre	Post	Crush	Pre	Post	Crush	Pre	Post	Crush	Pre	Post	Crush	Pre	Post	Crush
DISTANCE IN MILLIMETERS (mm) FROM IMPACT POINT	-1050				209	215	6	212	219	7	309	300	-9			
	-900				167	180	13	168	179	11	285	284	-1			
	-750										275	281	6			
	-600										263	284	21			
	-450										256	284	28			
	-300										249	278	29			
	-150							157	204	47	245	274	29			
	0	232	317	85	169	229	60	171	230	59	240	273	33			
	150	244	420	176	173	304	131	174	290	116	238	247	9			
	300	245	450	205	170	325	155	172	299	127	232	254	22			
	450	238	463	225	168	340	172	170	319	149	250	286	36			
	600	237	4650	228	167	352	185	169	327	158	247	295	48	493	515	22
	750	233	462	229	165	360	195	167	336	169	246	306	60	509	530	21
	900	232	457	225	164	370	206	166	347	181	245	317	72	512	531	19
	1050	234	446	212	164	383	219	165	357	192	244	328	84	517	543	26
	1200	231	439	208	163	397	234	164	364	200	241	336	95	520	533	13
	1350	232	492	260	163	376	213	164	349	185	241	342	101	518	530	12
	1500	232	479	247	163	357	194	164	333	169	243	322	79	519	542	23
	1650	232	451	219	162	334	172	164	307	143	244	300	56	520	550	30
	1800	230	372	142	163	303	140	164	280	116	244	277	33	519	542	23
	1950	222	280	58	160	275	115	164	261	97	245	253	8	520	547	27
	2100				153	219	66	154	207	53	226	224	-2	520	541	21
	2250							155	204	49	226	260	34	524	540	16
	2400							155	195	40	228	260	32	522	540	18
	2550							156	188	32	234	258	24	523	542	19
	2700							157	184	27	235	259	24	524	542	18
	2850				159	183	24	170	192	22	238	259	21	526	542	16
	3000				190	210	20	194	212	18	244	263	19			
	3150				204	220	16	203	219	16						
	3330															

DATA SHEET NUMBER 12
VEHICLE EXTERIOR CRUSH MEASUREMENTS (CONTINUED)

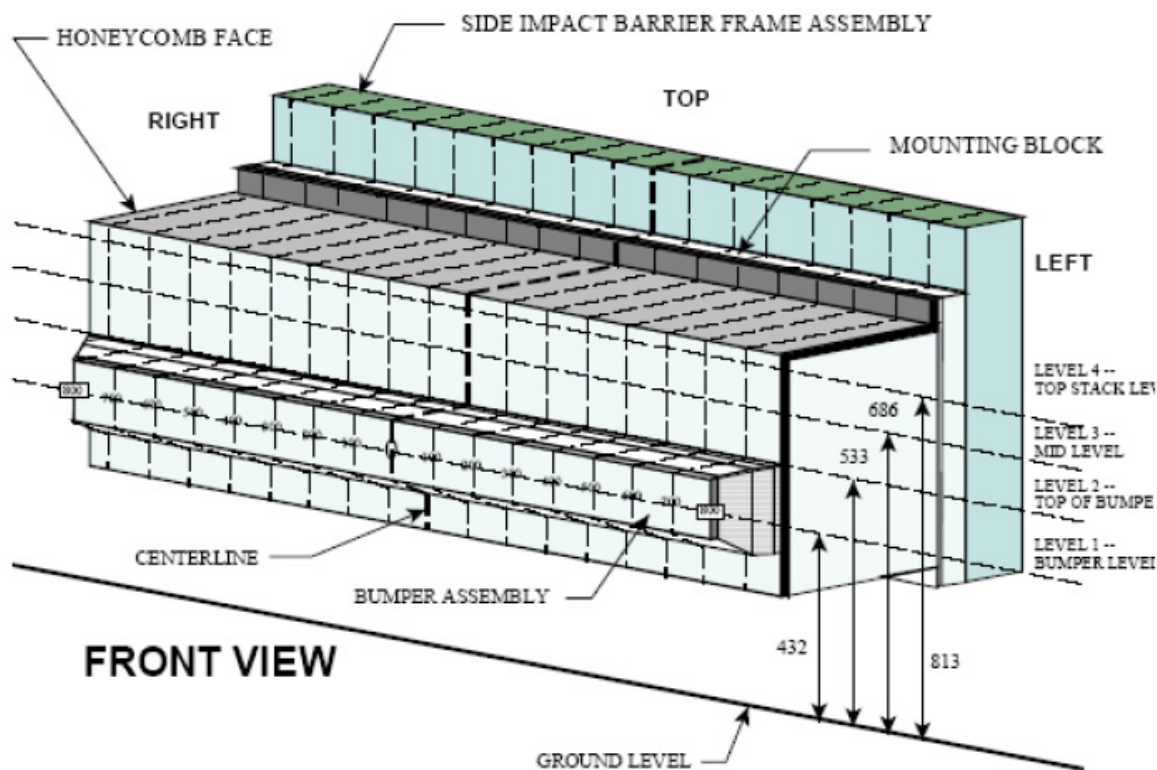


DATA SHEET NUMBER 13
VEHICLE DAMAGE PROFILE DISTANCES



DAMAGE PROFILE DISTANCES					
DPD	Distance From Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Maximum Static Crush (mm)
1	0	1	167	167	0
2	450	1	170	459	289
3	900	1	170	452	282
4	1350	1	170	484	314
5	180	1	172	371	199
6	2250	1	174	174	0

DATA SHEET NUMBER 14
EXTERIOR STATIC CRUSH FOR IMPACTOR FACE



NOTE: Dimensions are shown in millimeters, mm

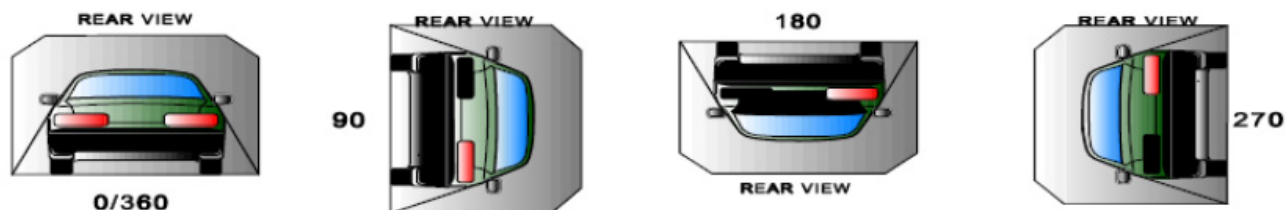
DEFORMABLE BARRIER STATIC CRUSH																	
	Distance Right of Center								C.L.	Distance Left of Center							
	800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800
1	198	179	147	130	126	123	119	118	113	108	104	100	98	98	105	111	116
2	231	180	149	137	123	102	80	70	70	70	69	73	76	86	92	116	116
3	214	149	119	83	74	76	71	55	54	53	52	53	53	60	67	84	123
4	216	170	142	118	115	133	107	69	54	53	59	66	88	98	109	130	165

DATA SHEET 15A
FMVSS 301 FUEL SYSTEM INTEGRITY POST - IMPACT DATA

Temperature at Time of Impact: 24° C Test Time: 3:15 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	Spillage details			

FMVSS 301 STATIC ROLLOVER



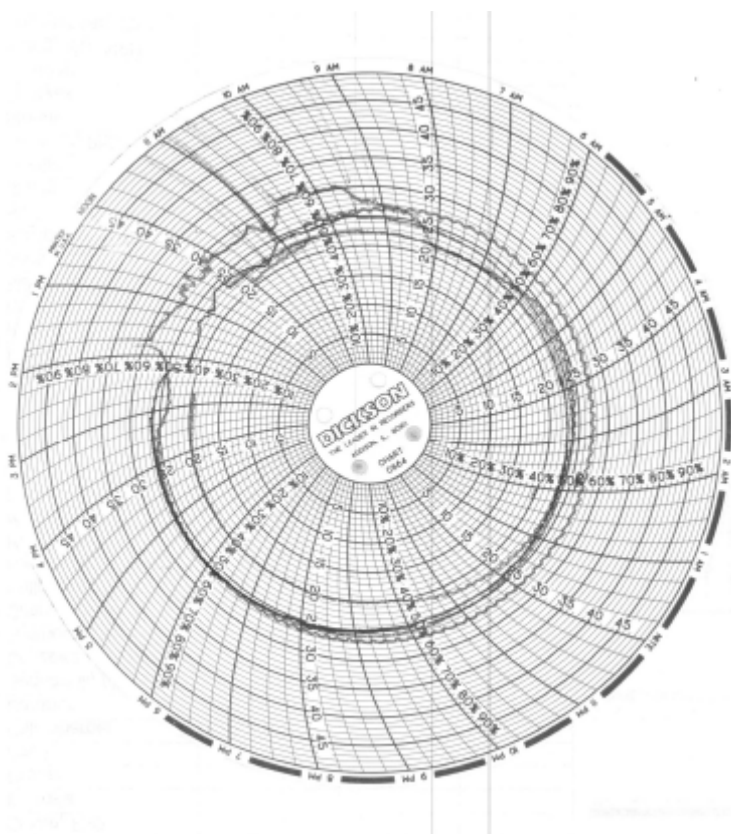
ROLLOVER SOLVENT COLLECTION TIME TABLE			
Test phase	Rotation Time (sec.)	Hold Time (sec.)	Total Time (sec.)
Tolerance	60-180	>= 300	-
0° to 90°	63	300	363
90° to 180°	66	300	366
180° to 270°	65	300	365
270° to 360°	66	300	366

DATA SHEET 15A
FMVSS 301 FUEL SYSTEM INTEGRITY POST - IMPACT DATA (CONTINUED)

FMVSS301 STATIC ROLLOVER - SPILLAGE				
	First Five Minutes (oz)	Sixth Minute (oz)	Seventh Minute (oz)	Eighth Minute (oz)
Max Allowable Leakage	5.0	1.0	1.0	1.0
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(s)	
0° to 90°	N/a
90° to 180°	N/a
180° to 270°	N/a
270° to 360°	N/a

DATA SHEET 16
DUMMY/VEHICLE TEMPERATURE STABILIZATION



Test Vehicle: 2011 Chevrolet Tahoe SUV
Test Program: SINCAP

NHTSA Number: MB 0119
Test Date: September 2, 2010

APPENDIX A
PHOTOGRAPHS

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Figure A-1: As-Delivered Right Front Three Quarter View of Test Vehicle



Figure A-2: As-Delivered Left Rear Three Quarter View of Test Vehicle



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



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



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



Figure A-6: Post-Test Left Front Three-Quarter View of 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 Three-Quarter View of Test Vehicle



Figure A-10: Post-test Left Rear Three-Quarter View of Impact Zone



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 Vehicle with MDB Positioned Against Side of Target Vehicle



Figure A-16: Post-Test Overhead View of Test Vehicle and MDB



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



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



Figure A-21: Pre-Test Left Front Door Latch Close-Up



Figure A-22: Post-Test Left Front Door Latch Close-Up



Figure A-23: Pre-Test Left Rear Door Latch Close-Up



Figure A-24: Post-Test Left Rear Door Latch Close-Up



Figure A-25: Pre-Test Front Close-Up View of Driver Dummy



Figure A-26: Post-Test Front Close-Up View of Driver Dummy



Figure A-27: Pre-Test Left Side View of Driver Dummy Showing Belt, Chalking, and Contact Switches



Figure A-28: Pre-Test Left Side View of Driver Dummy Shoulder and Door Top View



Figure A-29: Pos-Test Left Side View of Driver Dummy Shoulder and Door Top View



Figure A-30: Pre-Test Frontal View of Driver Seat Back Prior to Dummy Positioning



Figure A-31: Pre-Test Frontal View of Driver Dummy Head and Shoulders in Relation to Head Restraint



Figure A-32: Pre-Test Frontal View of Driver Seat Pan Prior to Dummy Positioning



Figure A-33: Pre-Test Overhead View of Driver Dummy Thighs on Seat Pan



Figure A-34: Pre-Test Placement of Driver Dummy's Feet



Figure A-35: Pre-Test View of Belt Anchorage for Driver Dummy



Figure A-36: Pre-Test Left Side View of Steering Wheel



Figure A-37: Pre-Test View of Parking Brake



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



Figure A-39: Pre-Test Close-Up Left Side View of Driver Seat Back



Figure A-40: Pre-Test Close-Up View of Head Restraint



Figure A-41: Pre-Test Driver Dummy and Door Clearance View



Figure A-42: Post-Test Driver Dummy and Door Clearance View



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



Figure A-44: Post-Test Right Side View of Driver Dummy and Front Seat of Occupant Compartment



Figure A-45: Pre-Test Driver Inner Door Panel View



Figure A-46: Post-Test Driver Inner Door Panel Showing Driver Dummy Contact Locations

Figure A-47: Post-Test Driver Dummy Close-Up Head Contact with Vehicle View - Not Applicable



Figure A-48: Post-Test Driver Dummy Close-Up Head Contact with Side Air Bag View



Figure A-49: Post-Test Driver Dummy Close-Up Torso Contact with Vehicle Interior View



Figure A-50: Post-Test Driver Dummy Close-Up Torso Contact with Side Airbag View



Figure A-51: Post-Test Driver Dummy Close-Up Pelvis Contact View



Figure A-52: Post-Test Driver Dummy Close-Up Pelvis Contact With Side Airbag View



Figure A-53: Pre-Test Left Side View of Rear Passenger Dummy Showing Belt, Chalking, and Contact Switches



Figure A-54: Pre-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View



Figure A-55: Post-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View



Figure A-56: Pre-Test Frontal View of Rear Passenger Seat Back Prior to Dummy Positioning



Figure A-57: Pre-Test Frontal View of Rear Passenger Dummy Head and Shoulders in Relation to Head Restraint



Figure A-58: Pre-Test Overhead View of Rear Passenger Seat Pan Prior to Dummy Positioning



Figure A-59: Pre-Test Overhead View of Rear Passenger Dummy Thighs on Seat Pan



Figure A-60: Pre-Test View of Rear Passenger Dummy's Neck Showing Position of Adjustable Neck Bracket

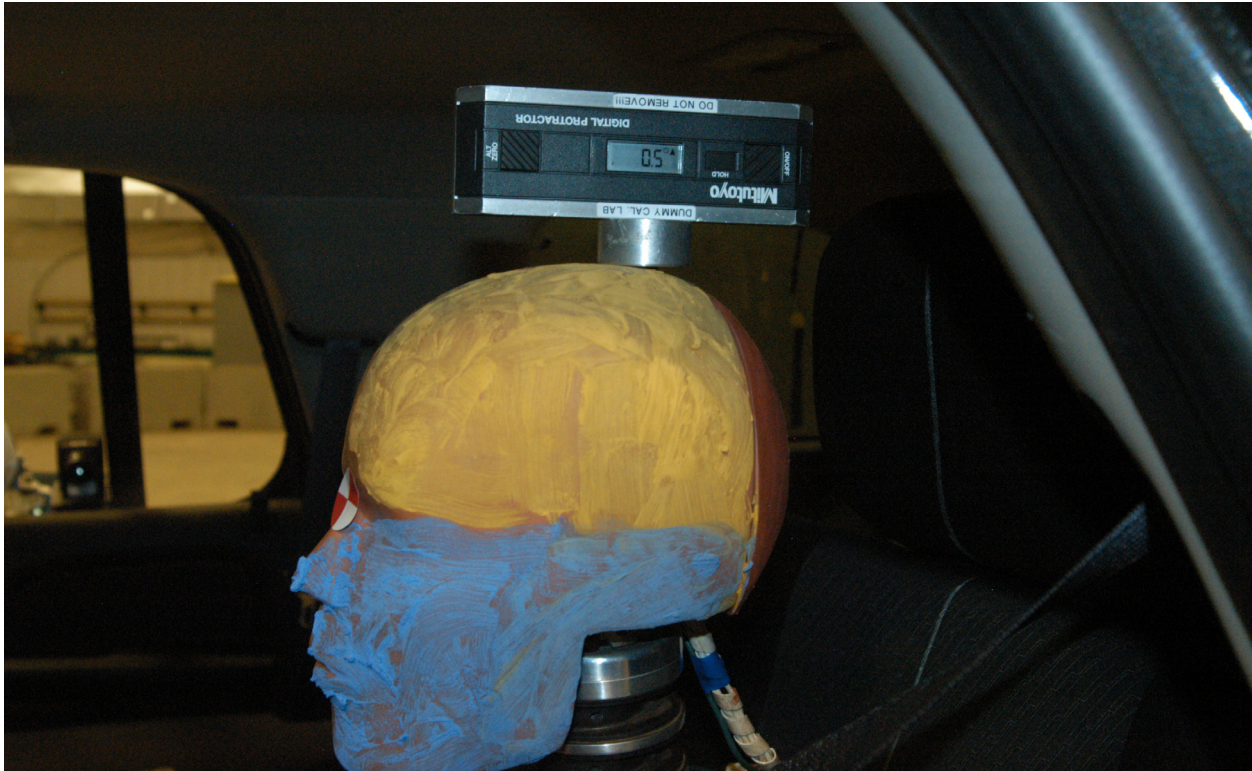


Figure A-61: Pre-Test View of Rear Passenger Dummy's Head Showing Dummy's Head is Level



Figure A-62: Pre-Test Placement of Rear Passenger Dummy's Feet

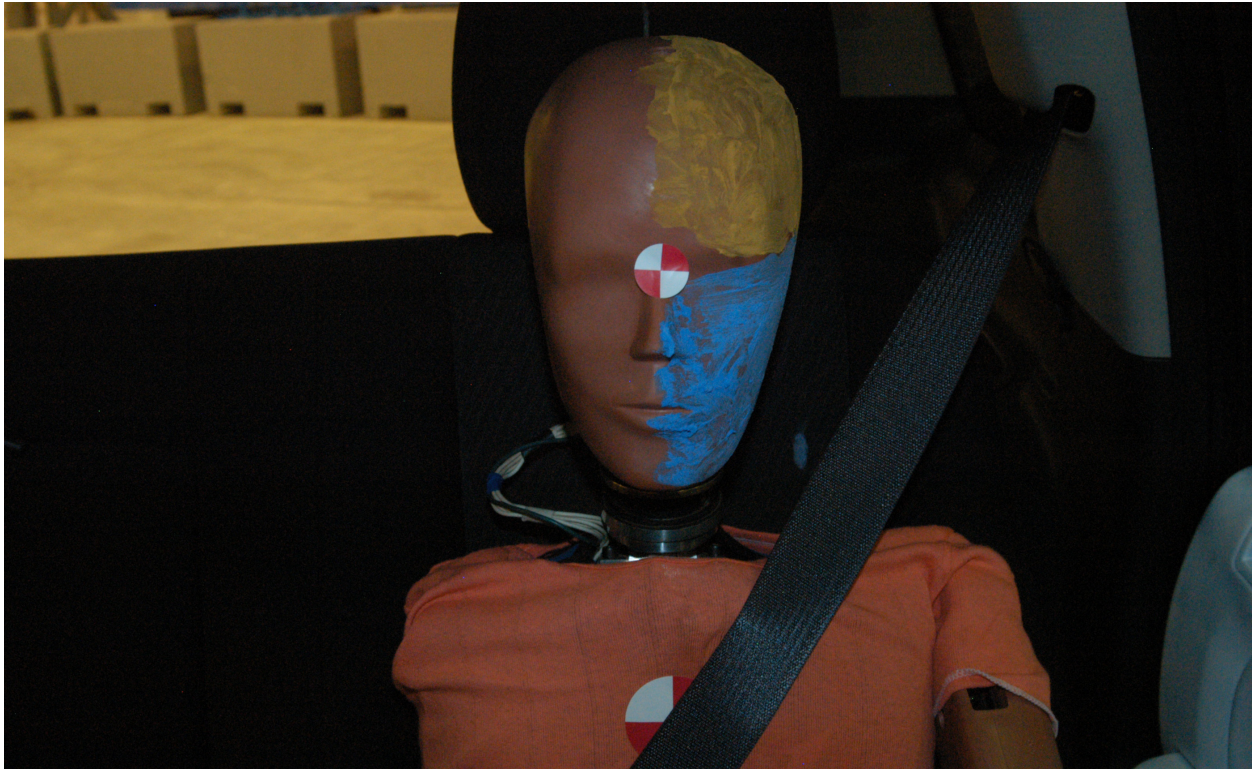


Figure A-63: Pre-Test View of Belt Anchorage for Rear Passenger Dummy



Figure A-64: Pre-Test Close-Up Left Side View of Rear Passenger Seat Track

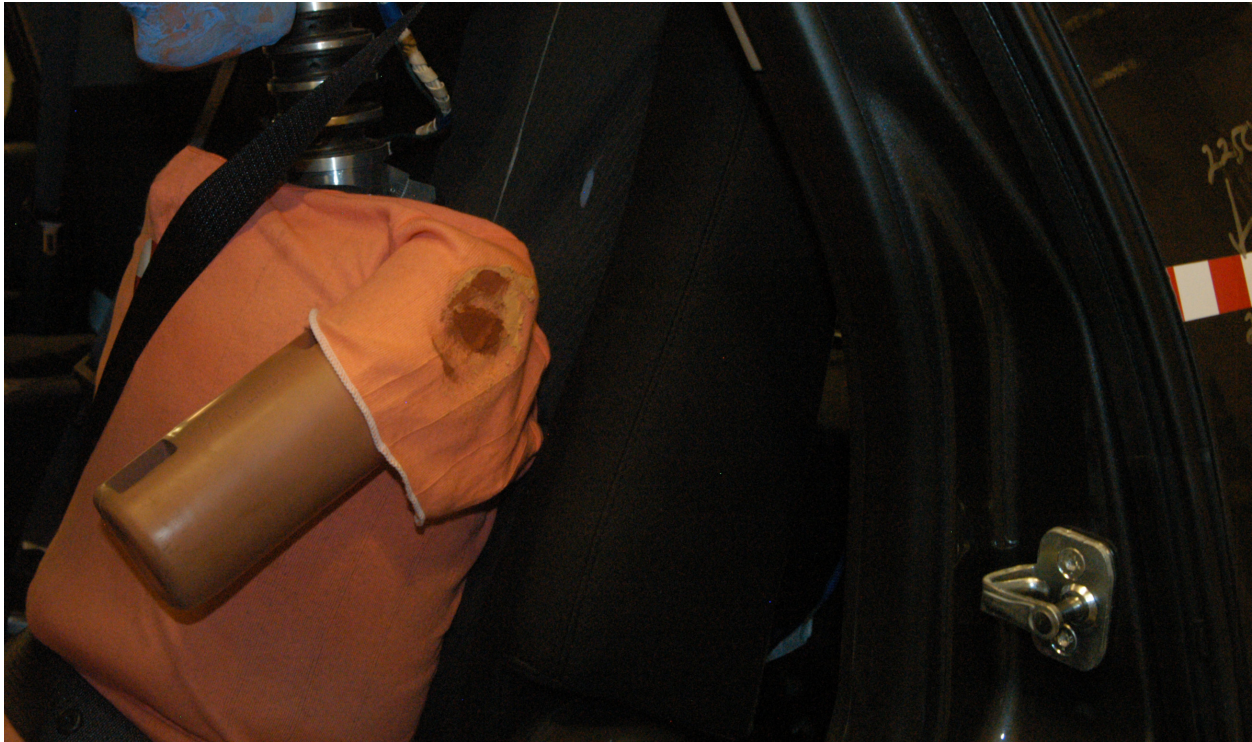


Figure A-65: Pre-Test Close-Up Left Side View of Rear Passenger Seat Back



Figure A-66: Pre-Test Close-Up View of Rear Passenger Seat Back or Head Restraint



Figure A-67: Pre-Test Rear Passenger Dummy and Door Clearance View



Figure A-68: Post-Test Rear Passenger Dummy and Door Clearance View



Figure A-69: Pre-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment



Figure A-70: Post-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant



Figure A-71: Pre-Test Rear Passenger Inner Door Panel View



Figure A-72: Post-Test Rear Passenger Inner Door Panel View Showing Rear Passenger Dummy Contact Locations

Figure A-73: Post-Test Rear Passenger Dummy Close-Up Head Contact with Vehicle View—Not applicable, no contact



Figure A-74: Post-Test Rear Passenger Dummy Close-Up Head Contact with Side Airbag View



Figure A-75: Post-Test Rear Passenger Dummy Close-Up Torso Contact with Vehicle View

Figure A-76: Post-Test Rear Passenger Dummy Close-Up Torso Contact with Side Airbag View–
Not applicable



Figure A-77: Post-Test Rear Passenger Dummy Close-Up Pelvis Contact View

Figure A-78: Post-Test Rear Passenger Dummy Close-Up Pelvis Contact with Side Airbag View—
Not applicable



Figure A-79: Pre-Test View of Fuel Filler Cap



Figure A-80: Post-Test View of Fuel Filler Cap

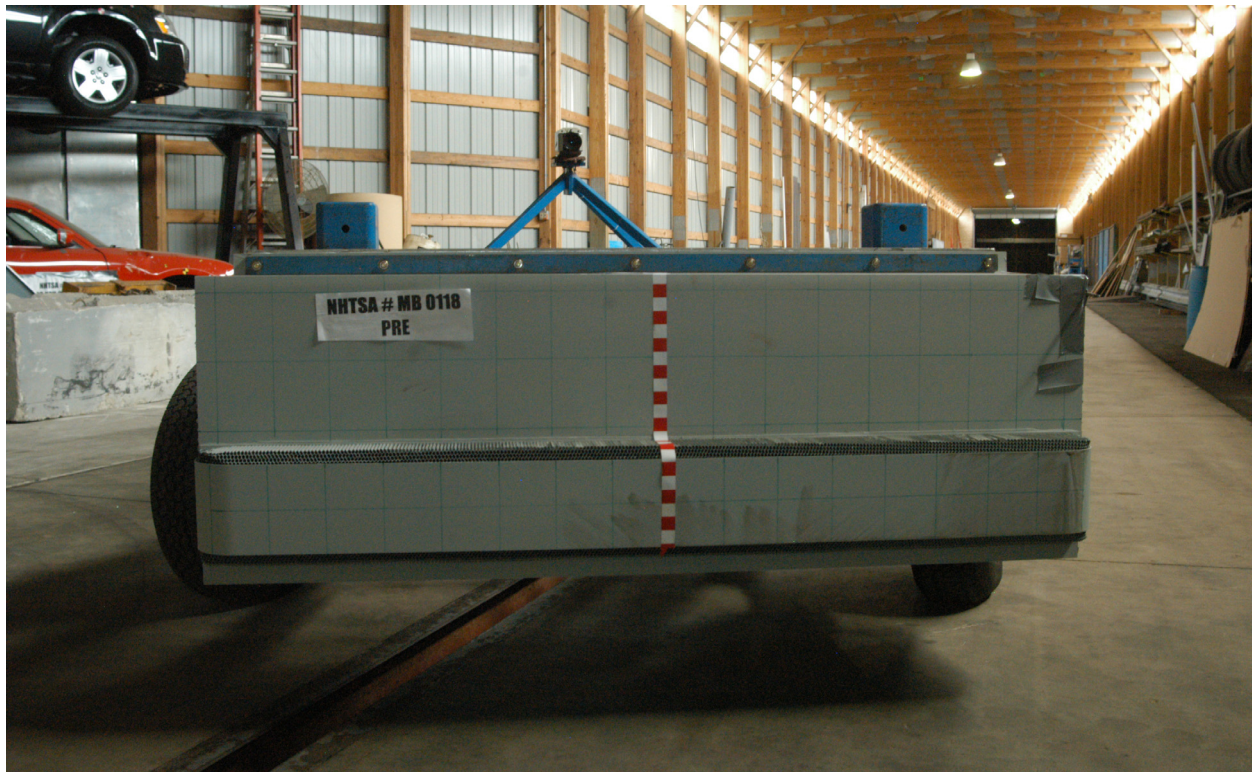


Figure A-81: Pre-Test Front View of MDB Impactor Face



Figure A-82: Post-Test Front View of MDB Impactor Face

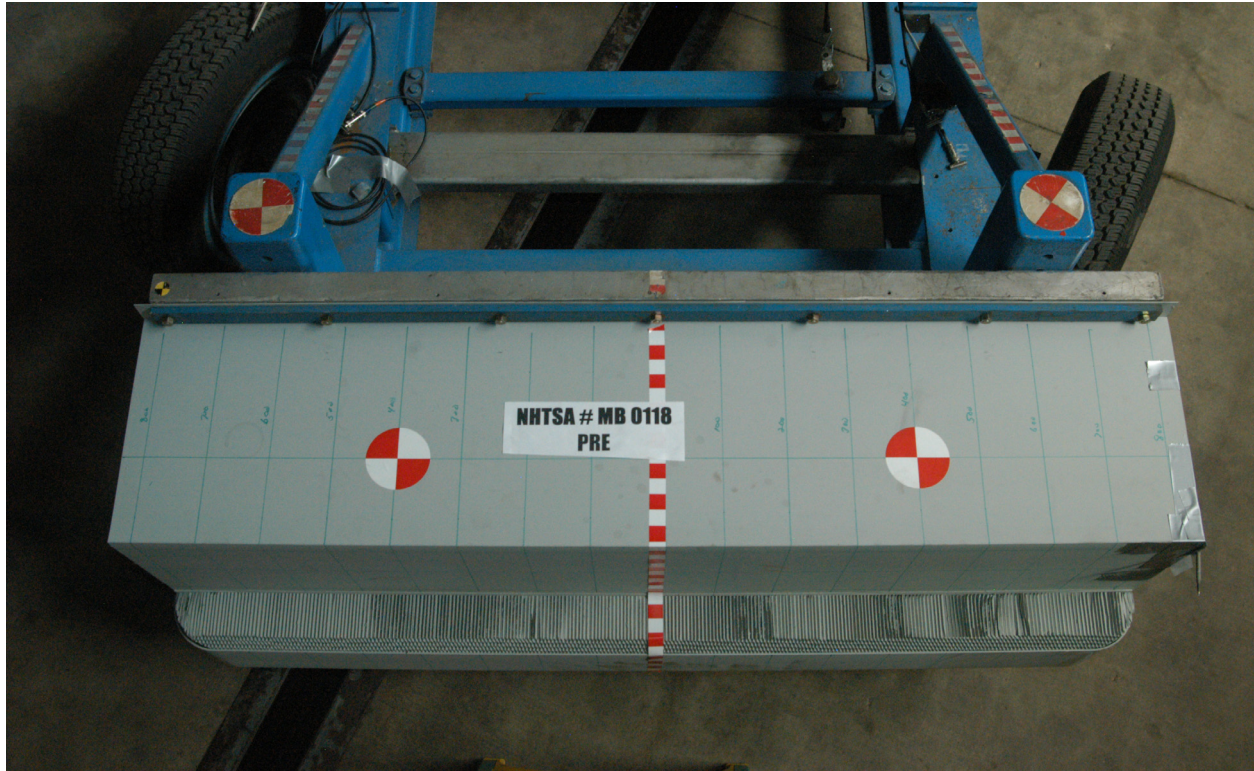


Figure A-83: Pre-Test Top View of MDB Impactor Face



Figure A-84: Post-Test Top View of MDB Impactor Face



Figure A-85: Pre-Test Left Side View of MDB Impactor Face



Figure A-86: Post-Test Left Side View of MDB Impactor Face



Figure A-87: Pre-Test Right Side View of MDB Impactor Face



Figure A-88: Post-Test Right Side View of MDB Impactor Face

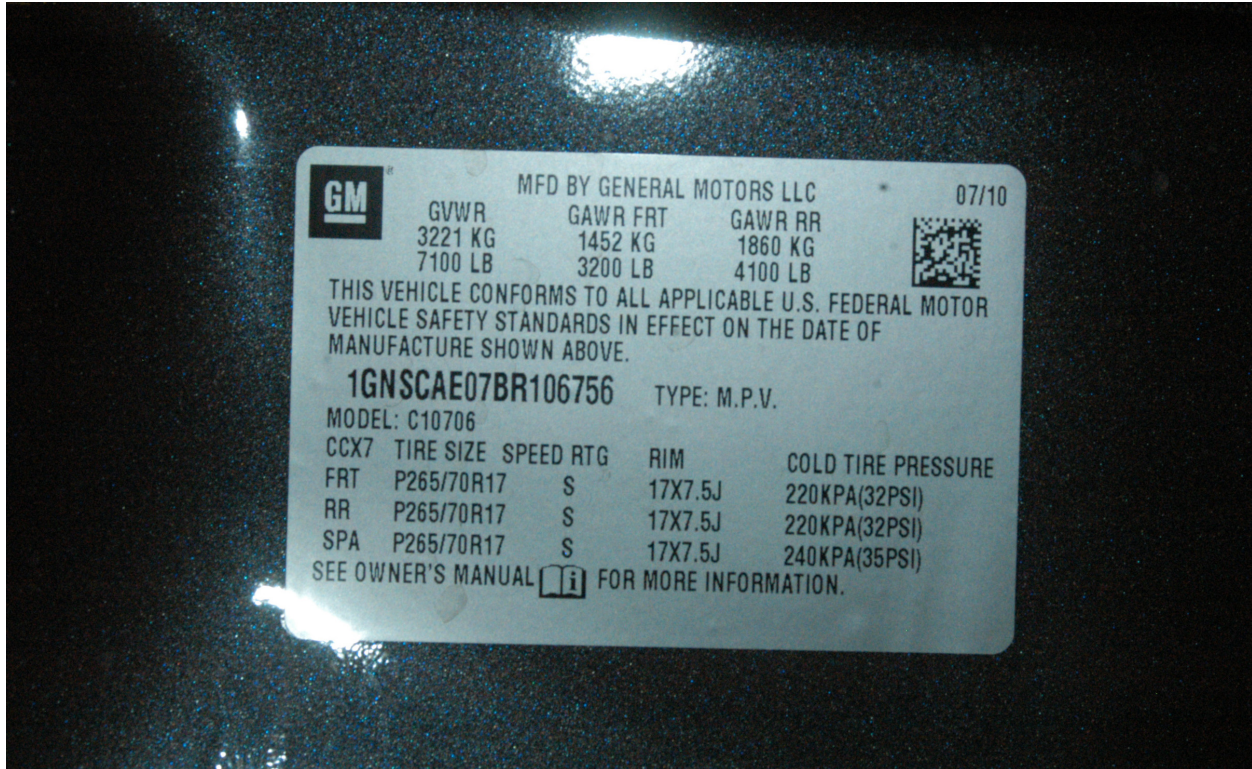


Figure A-89: Close-Up View of Vehicle's Certification Label

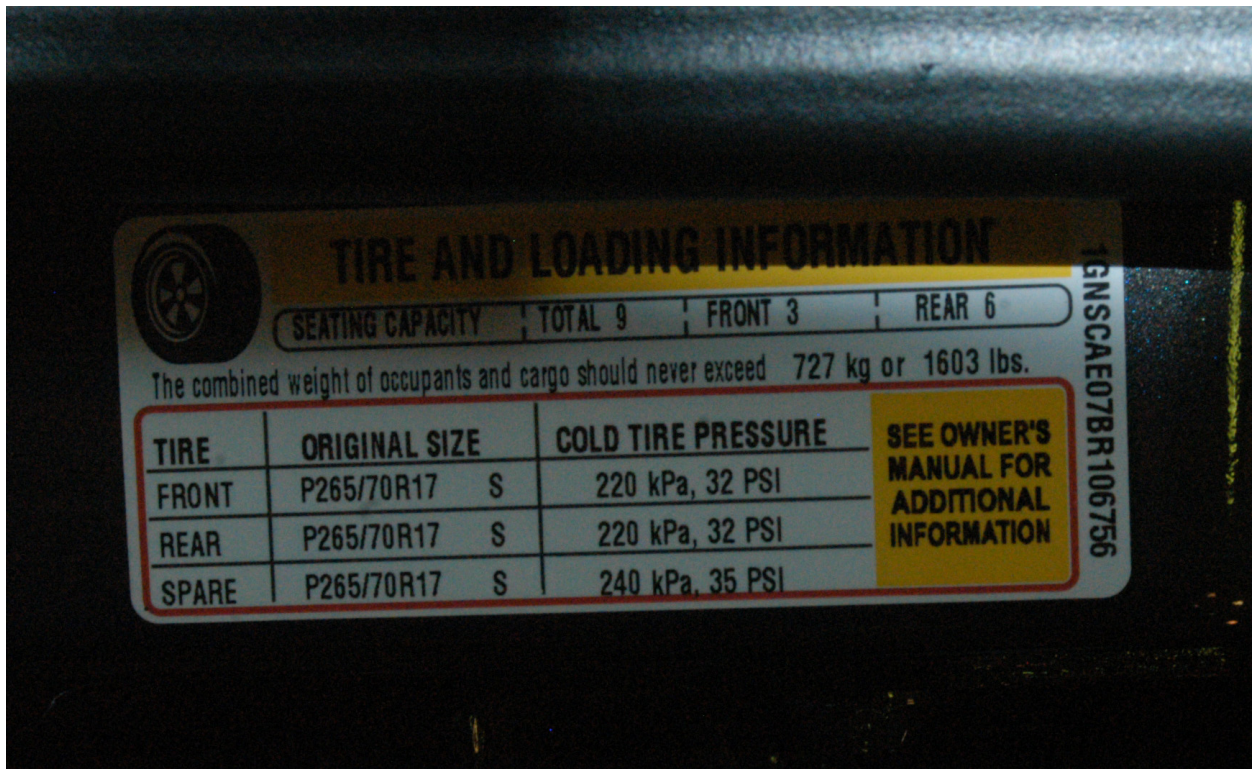


Figure A-90: Close-Up View of Vehicle's Tire Information Label



Figure A-91: Pre-Test Ballast View



Figure A-92: Post-Test Primary and Redundant Speed Trap Read-Out



Figure A-93: FMVSS No. 301/305 Rollover 0°

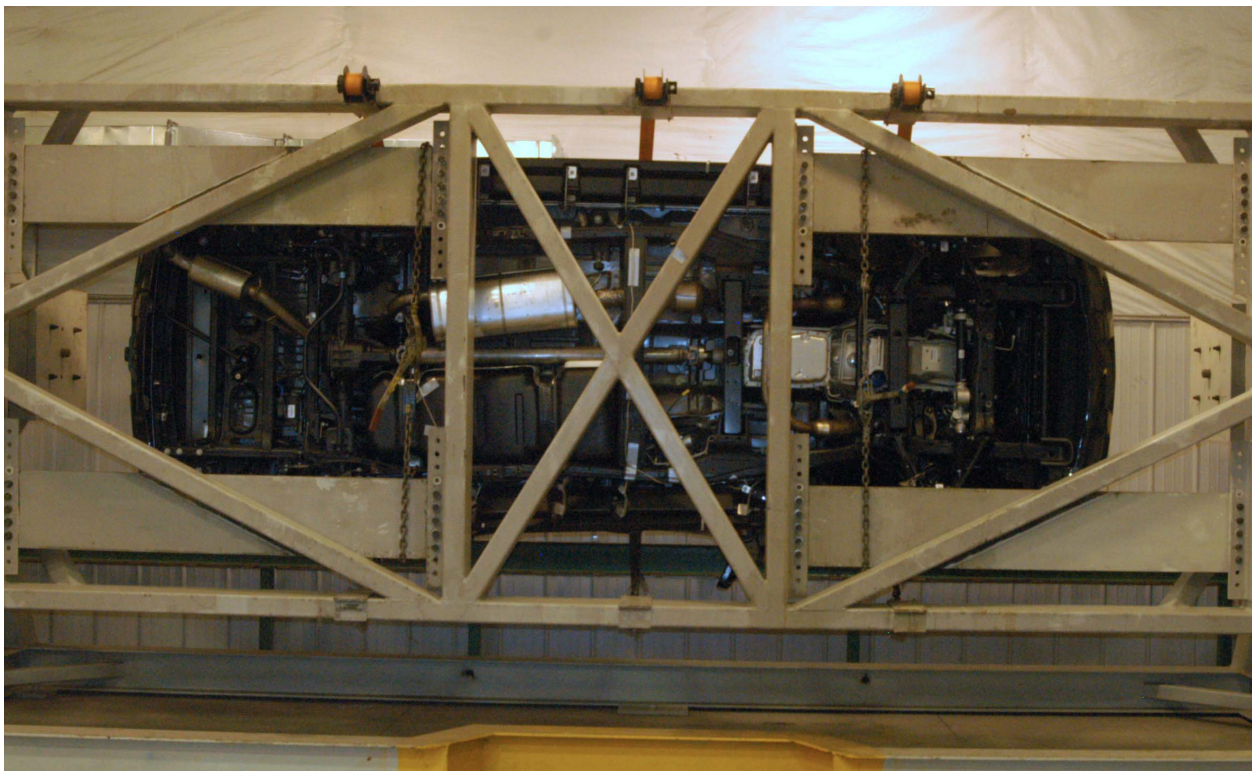


Figure A-94: FMVSS No. 301/305 Rollover 90°



Figure A-95: FMVSS No. 301/305 Rollover 180°

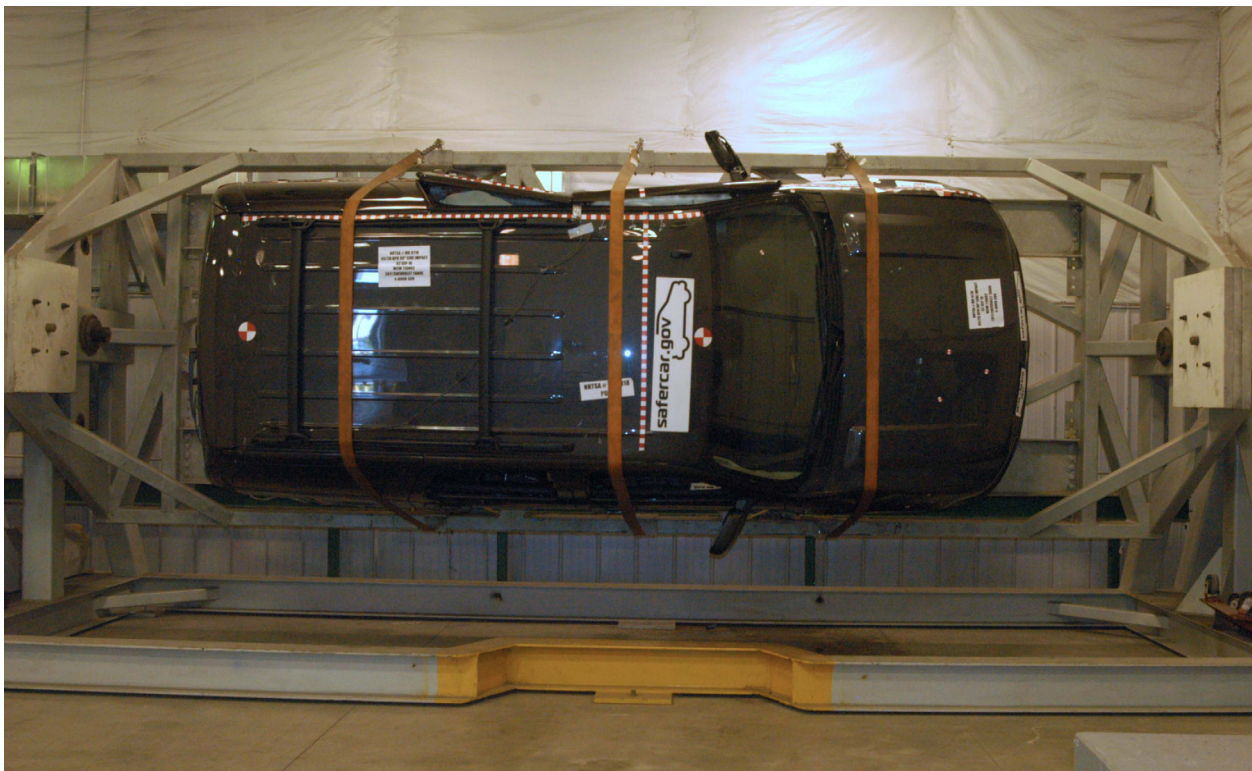


Figure A-96: FMVSS No. 301/305 Rollover 270°



Figure A-97: FMVSS No. 301/305 Rollover 360°

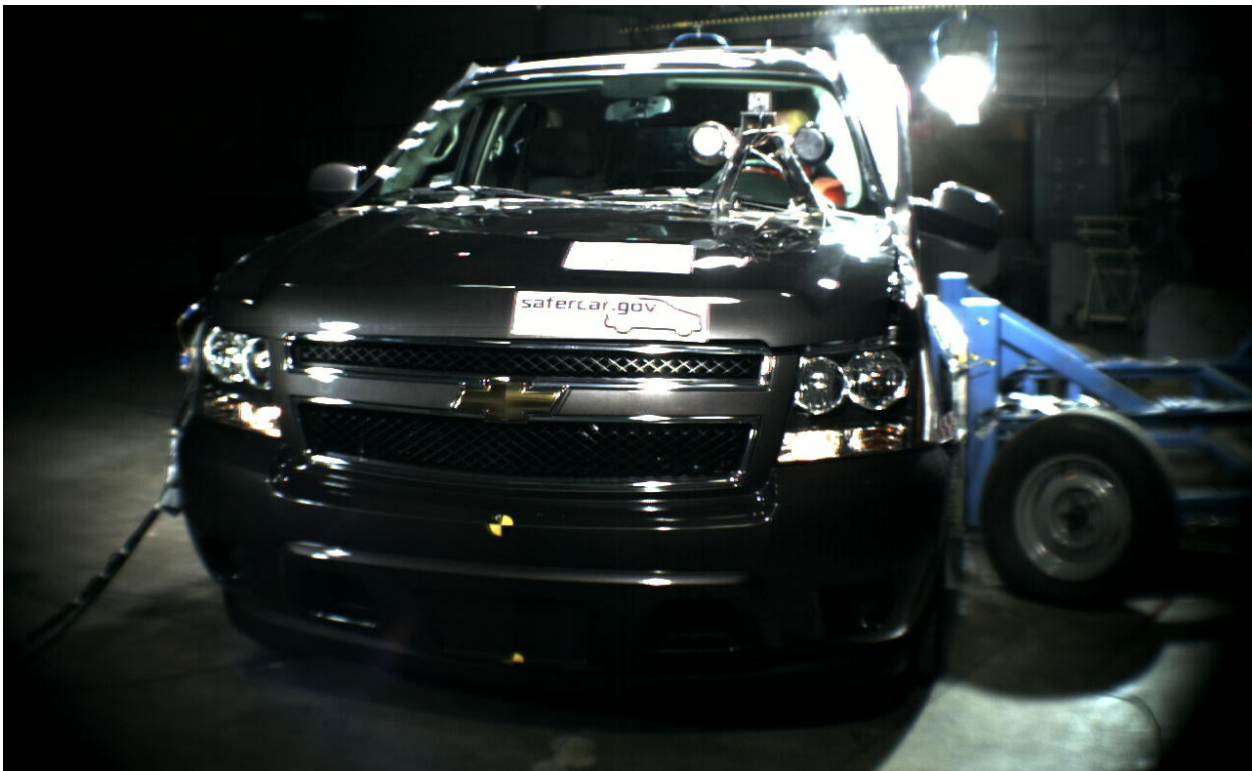


Figure A-98: Impact Event

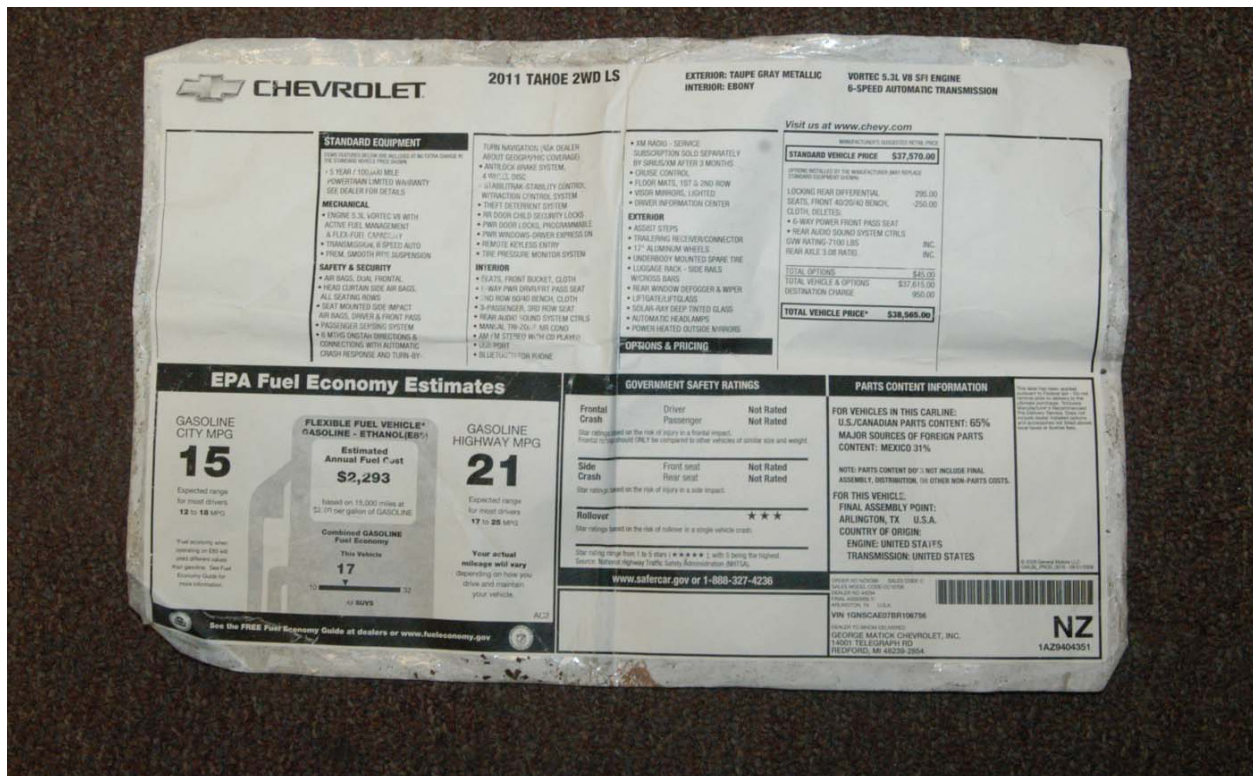


Figure A-99: Monroney Label

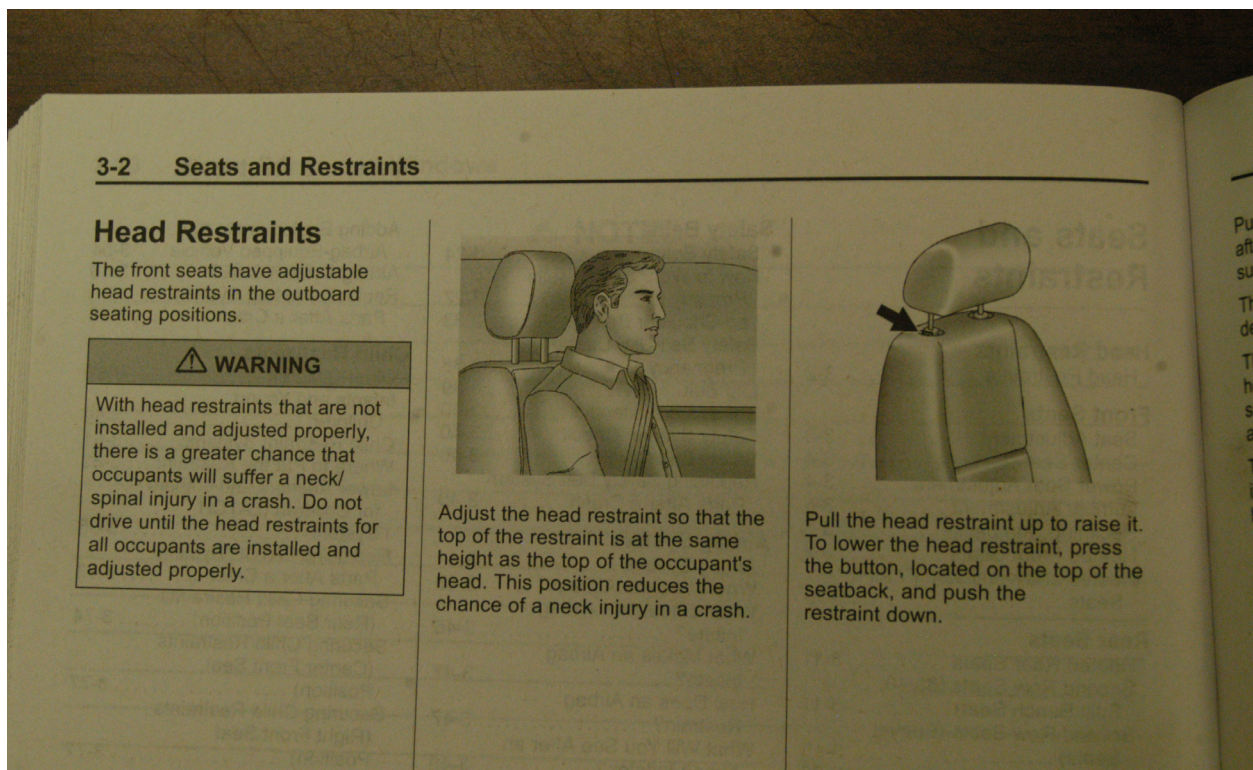


Figure A-100: Driver Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

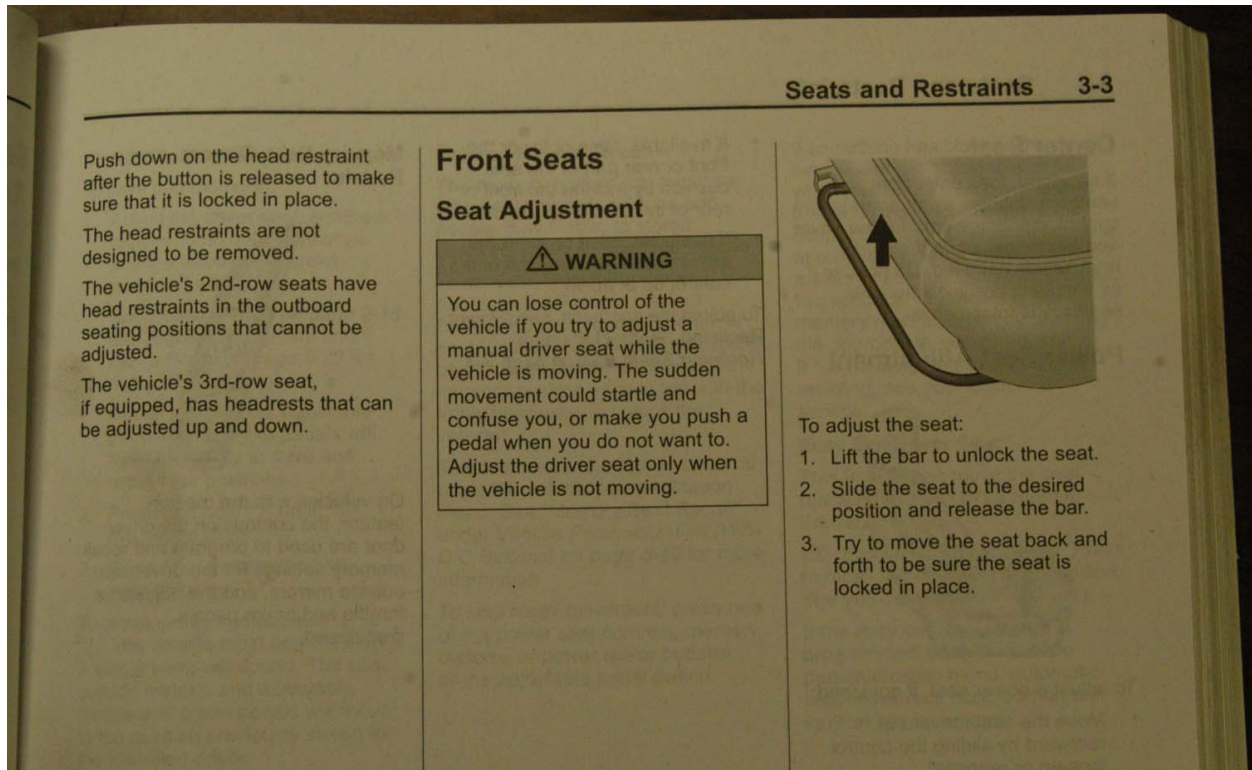


Figure A-101: Left Rear Passenger Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

Test Vehicle: 2011 Chevrolet Tahoe Utility Vehicle
Test Program: SINCAP

Test Vehicle: 2011 Chevrolet Tahoe SUV
Test Date: September 2, 2010

APPENDIX B

ATD, VEHICLE AND MDB RESPONSE DATA

The following plots are provided in the test report

Data Plot	Description	Page
1	Driver Head Acceleration (X) Primary 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 Upper Thorax Rib Deflection (Y) vs. Time	B-8
6	Driver Middle Thorax Rib Deflection (Y) vs. Time	B-9
7	Driver Lower Thorax Rib Deflection (Y) vs. Time	B-10
8	Driver Thorax Rib Deflection Maximum vs. Time	B-11
9	Driver Anterior Abdominal Force (Y) vs. Time	B-12
10	Driver Middle Abdominal Force (Y) vs. Time	B-13
11	Driver Posterior Abdominal Force (Y) vs. Time	B-14
12	Driver Total Abdominal Force (Y) vs. Time	B-15
13	Driver Pubic Symphysis Force (Y) vs. Time	B-16
14	Passenger Head Acceleration (X) Primary vs. Time	B-17
15	Passenger Head Acceleration (Y) Primary vs. Time	B-18
16	Passenger Head Acceleration (Z) Primary vs. Time	B-19
17	Passenger Head Resultant Acceleration Primary vs. Time	B-20
18	Passenger Lower Spine T ₁₂ Acceleration (X) vs. Time	B-21
19	Passenger Lower Spine T ₁₂ Acceleration (Y) vs. Time	B-22
20	Passenger Lower Spine T ₁₂ Acceleration (Z) vs. Time	B-23
21	Passenger Lower Spine T ₁₂ Resultant Acceleration vs. Time	B-24
22	Passenger Iliac Force on Impact Side (Y) vs. Time	B-25
23	Passenger Acetabulum Force on Impact Side (Y) vs. Time	B-26
24	Passenger Total Pelvic Force on Impact Side (Y) vs. Time	B-27

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.

Driver & Passenger Dummy Instrumentation Data

Driver Lower Spine T₁₂ Acceleration (X)
Driver Lower Spine T₁₂ Acceleration (Y)
Driver Lower Spine T₁₂ Acceleration (Z)
Passenger Upper Thorax Rib Deflection
Passenger Middle Thorax Rib Deflection
Passenger Lower Thorax Rib Deflection
Passenger Upper Abdomen Rib Deflection (Y)
Passenger Lower Abdomen Rib Deflection (Y)
Driver Head Acceleration Redundant (X)
Driver Head Acceleration Redundant (Y)
Driver Head Acceleration Redundant (Z)
Driver Shoulder Contact Switch
Driver Torso Contact Switch
Driver Pelvis Contact Switch
Passenger Head Acceleration Redundant (X)
Passenger Head Acceleration Redundant (Y)
Passenger Head Acceleration Redundant (Z)
Passenger Shoulder Contact Switch
Passenger Torso Contact Switch
Passenger Pelvis Contact Switch

Vehicle Instrumentation Data

Driver Side Airbag Timing
Driver Side Curtain Airbag Timing
Passenger Side Airbag Timing
Passenger Side Curtain Airbag Timing
Right Side Sill at Front Seat Acceleration (X)
Right Side Sill at Front Seat Acceleration (Y)
Right Side Sill at Front Seat Acceleration (Z)
Right Side Sill at Rear Seat Acceleration (X)
Right Side Sill at Rear Seat Acceleration (Y)
Right Side Sill at Rear Seat Acceleration (Z)
Rear Floorpan Above Axle Acceleration (X)
Rear Floorpan Above Axle Acceleration (Y)
Rear Floorpan Above Axle Acceleration (Z)
Left Side Sill at Front Seat Acceleration (Y)
Left Side Sill at Rear Seat Acceleration (Y)
Right Rear Occupant Compartment Acceleration (Y)
Lower A-post Acceleration (Y)
Upper A-post Acceleration (Y)
Lower B-post Acceleration (Y)
Upper B-post Acceleration (Y)
Front Seat Track Acceleration (Y)
Rear Seat Track Acceleration (Y)
Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)

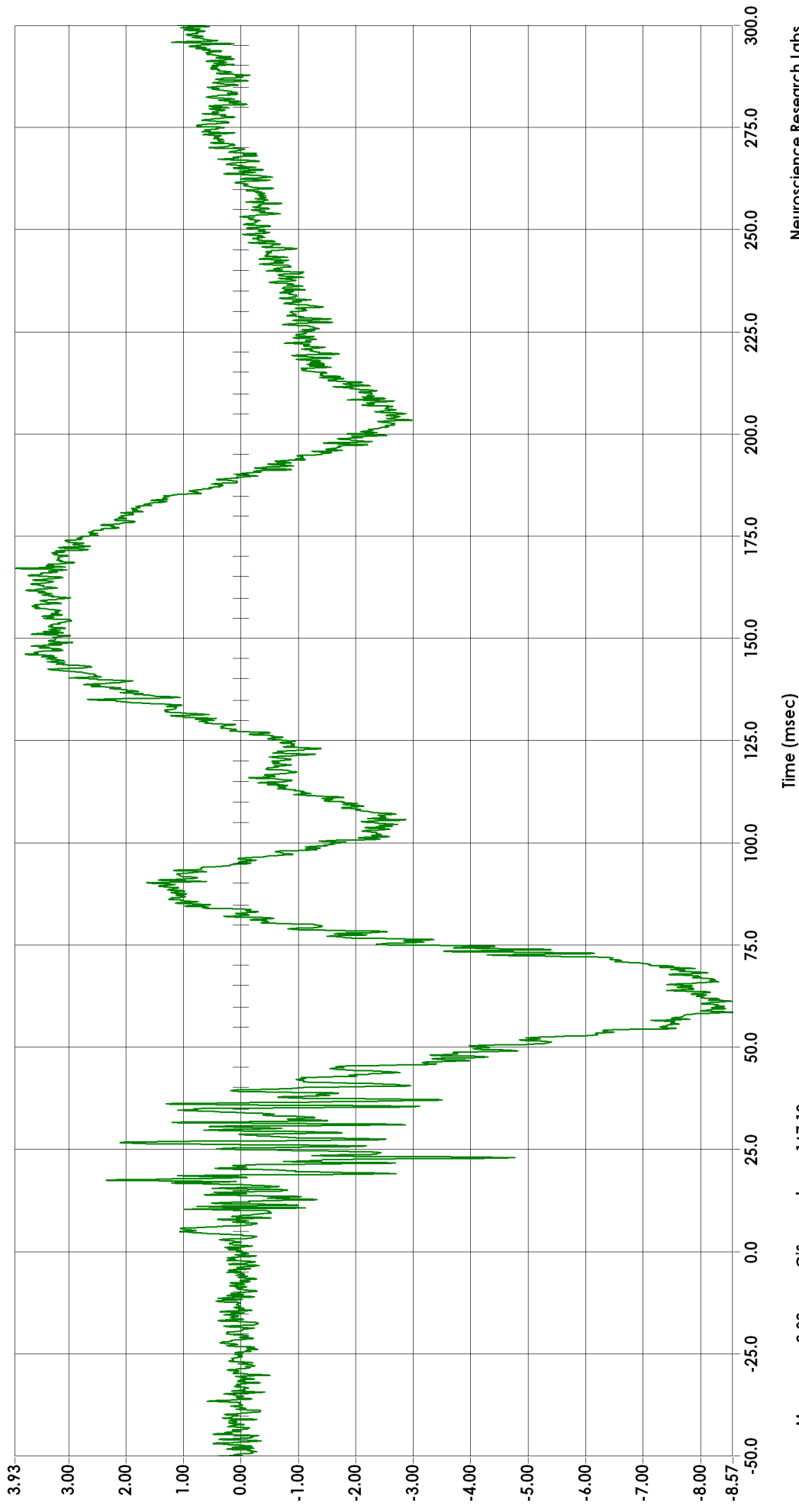
MDB Instrumentation Data

MDB Center of Gravity Acceleration (X)
MDB Center of Gravity Acceleration (Y)
MDB Center of Gravity Acceleration (Z)
MDB Rear Acceleration (X)
MDB Rear Acceleration (Y)
MDB Rear Acceleration (Z)
Left MDB Contact Switch
Right MDB Contact Switch



Test ID	11SN02	Filter	CFC1000
Date	09-02-2010	Sampling Rate (Hz)	12500
Description	2011 Chevrolet Tahoe SINCAP	Number of Points	10000
		Prefrigger Points	1250
		Sensor Location	HDCG
		Sensor Info	ENDEVCO 7264-2000TZ
		Serial Number	J43494

Driver Head CG (X) Acceleration (P)



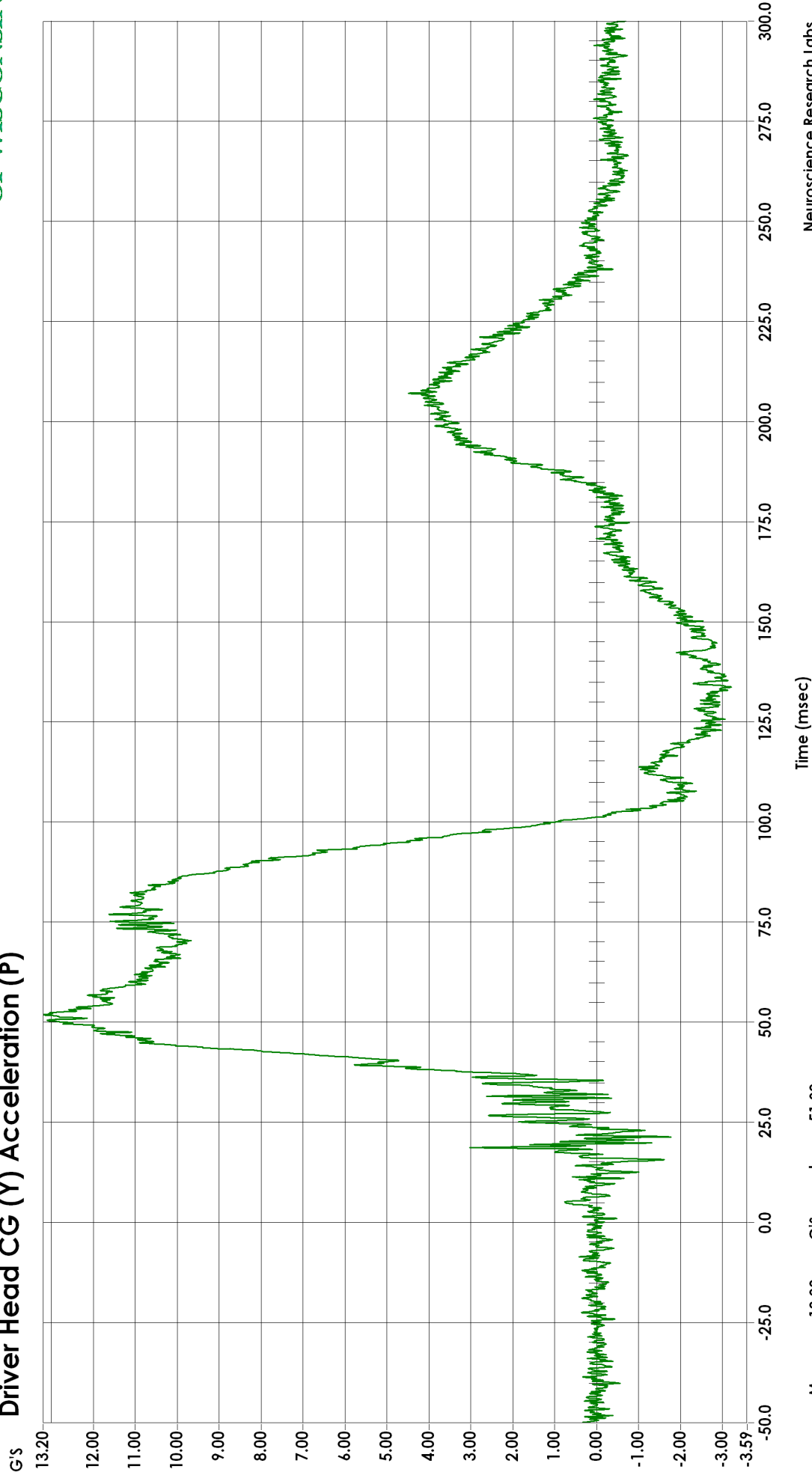
Max	3.93	G's	at	167.12	msec
Min	-8.57	G's	at	58.56	msec

11SN02 Plot 001

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Test ID	11SN02	Filter	CFC1000
Date	09-02-2010	Sampling Rate (Hz)	12500
Description	2011 Chevrolet Tahoe SINCAP	Number of Points	10000
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		Sensor Info	ENDEVCO 7264-2000TZ
		Serial Number	J43475

Driver Head CG (Y) Acceleration (P)

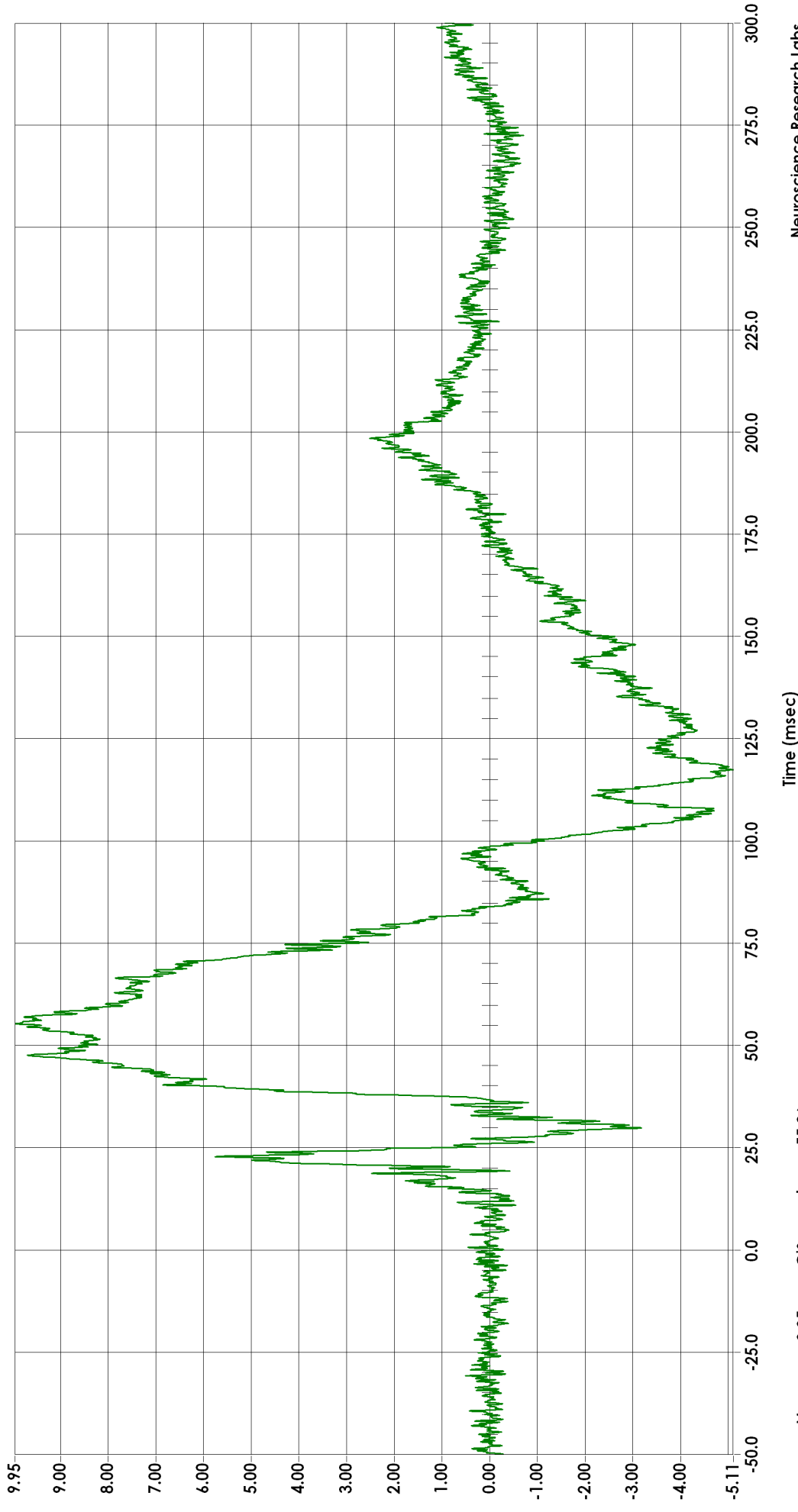


Max	13.20	G's	at	51.92	msec
Min	-3.22	G's	at	133.68	msec

11SN02 Plot 002

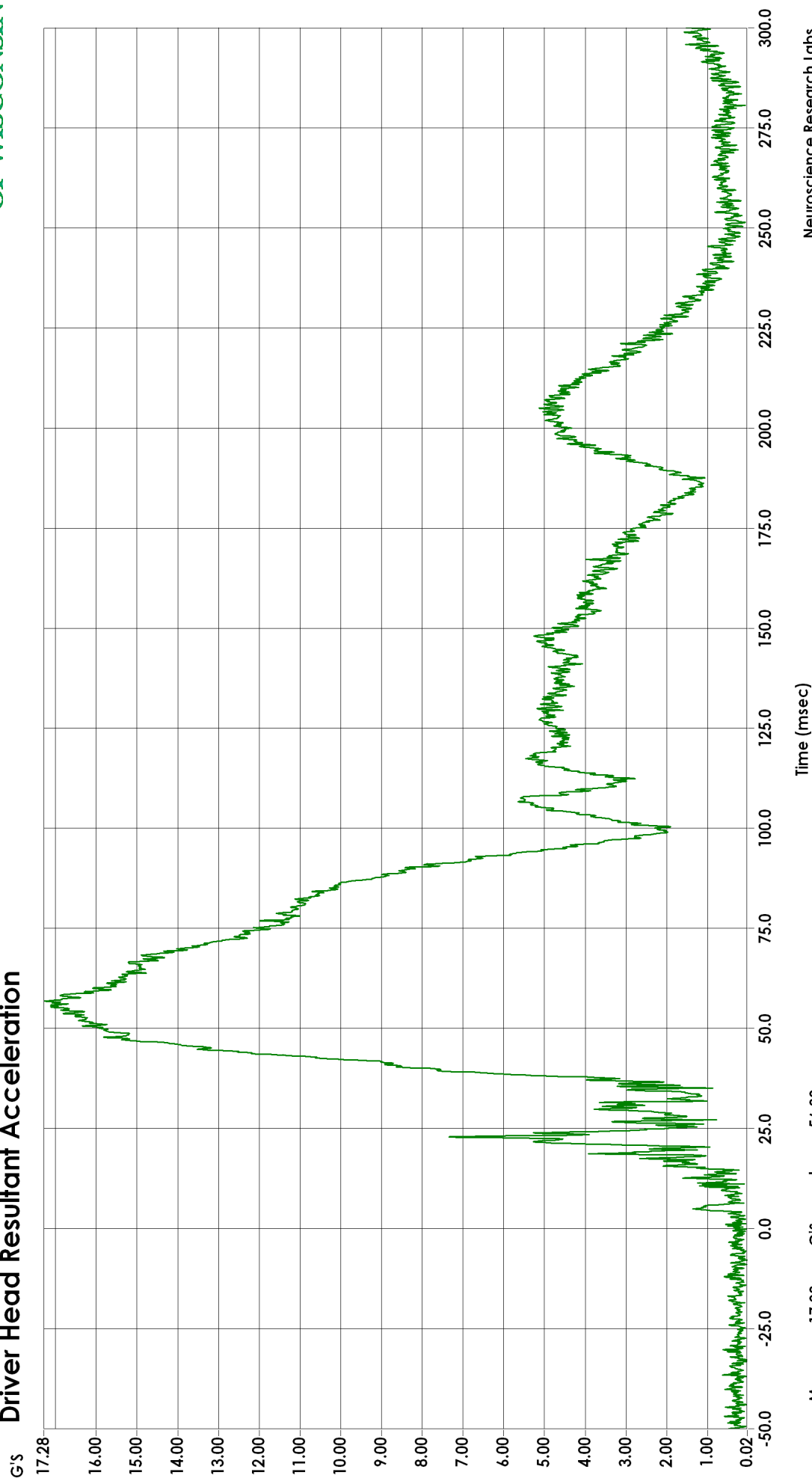
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Date	09-02-2010	Sampling Rate (Hz)	12500
Description	2011 Chevrolet Tahoe SINCAP	Number of Points	10000
		Pretrigger Points	1250
		Sensor Location	HDCG
		Sensor Info	ENDEVCO 7264-2000
		Serial Number	J43779

Driver Head CG (Z) Acceleration (P)



Test ID	11SN02	Filter	CFC1000	Sensor Location
Date	09-02-2010	Sampling Rate (Hz)	12500	Sensor Info
Description	2011 Chevrolet Tahoe SINCAP	Number of Points	10000	Serial Number
		Pretrigger Points	1250	

Driver Head Resultant Acceleration

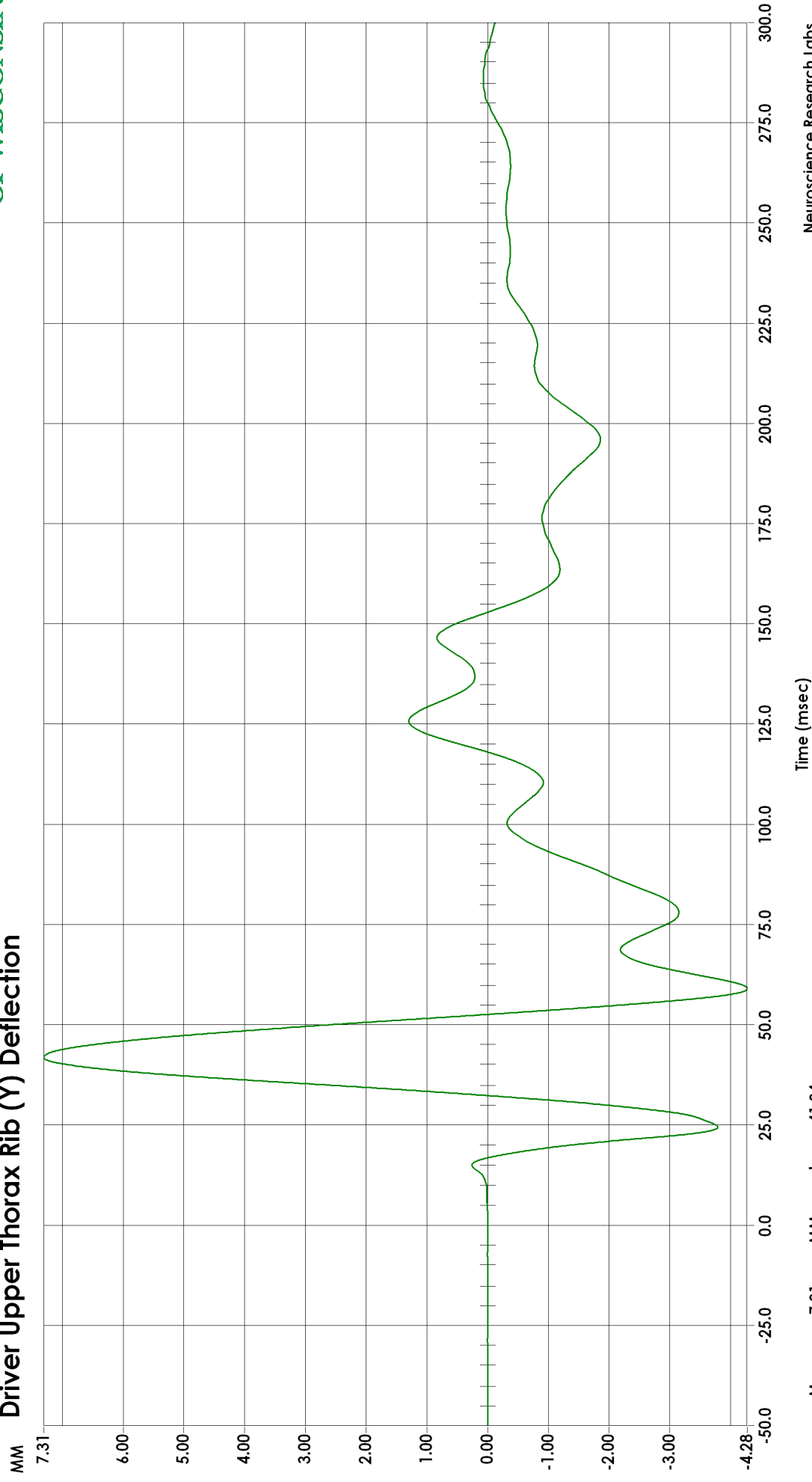


Max	17.28	G's	at	56.80	msec
Min	0.02	G's	at	-7.84	msec

11SN02 Plot 067

Test ID	11SN02	Filter	CFC180
Date	09-02-2010	Sampling Rate (Hz)	12500
Description	2011 Chevrolet Tahoe SINCAP	Number of Points	10000
		Pretrigger Points	1250
		Sensor Location	RBLU
		Sensor Info	Honeywell MLT-38000203
		Serial Number	MLT-38000203_433

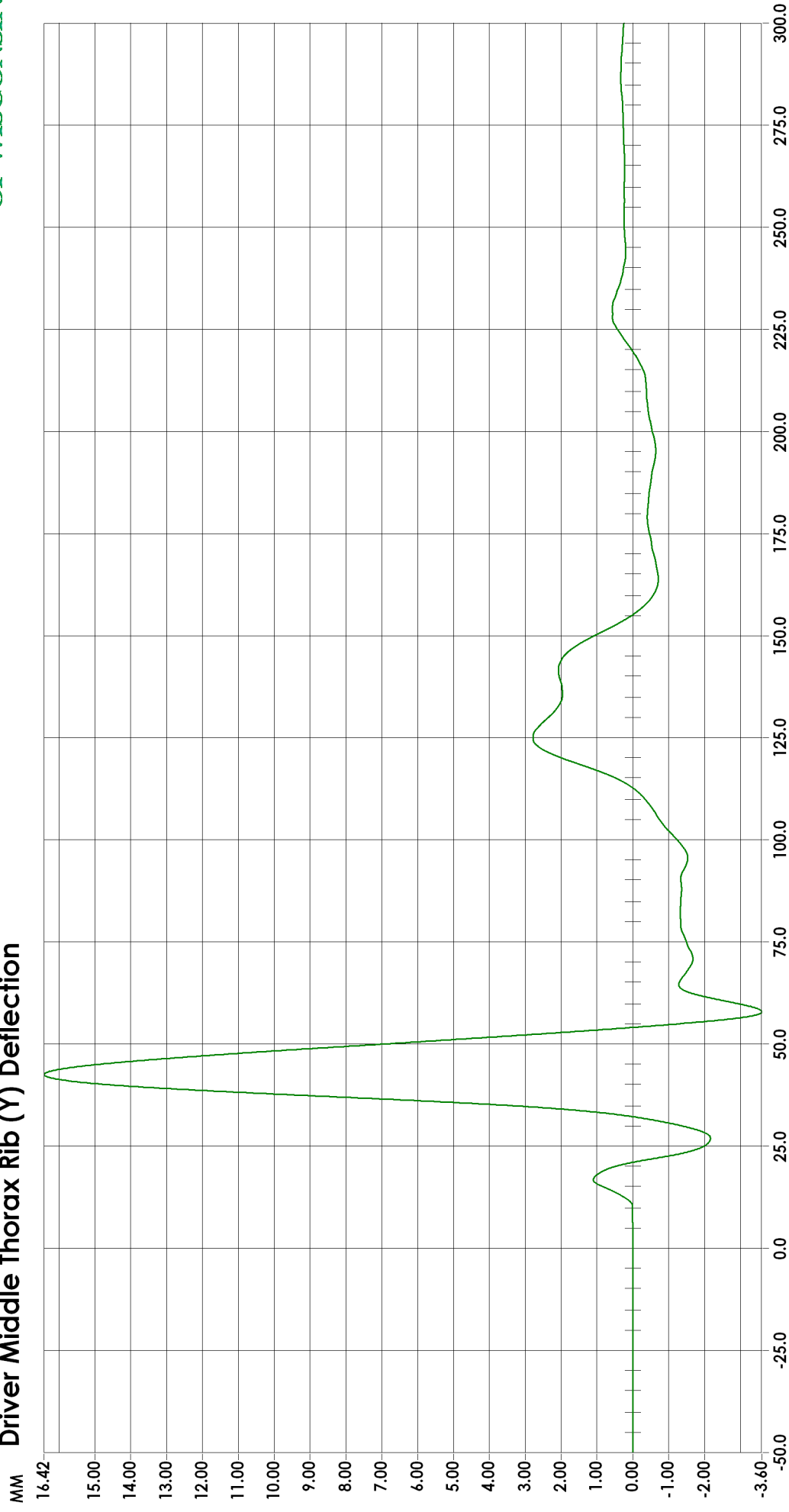
Driver Upper Thorax Rib (Y) Deflection



Max	7.31	MM	at	41.84	msec
Min	-4.28	MM	at	59.04	msec

Test ID	11SN02	Filter	CFC180
Date	09-02-2010	Sampling Rate (Hz)	12500
Description	2011 Chevrolet Tahoe SINCAP	Number of Points	10000
		Pretrigger Points	1250
		Sensor Location	RBLM
		Sensor Info	Honeywell MLT-38000203
		Serial Number	MLT-38000203_193

Driver Middle Thorax Rib (Y) Deflection



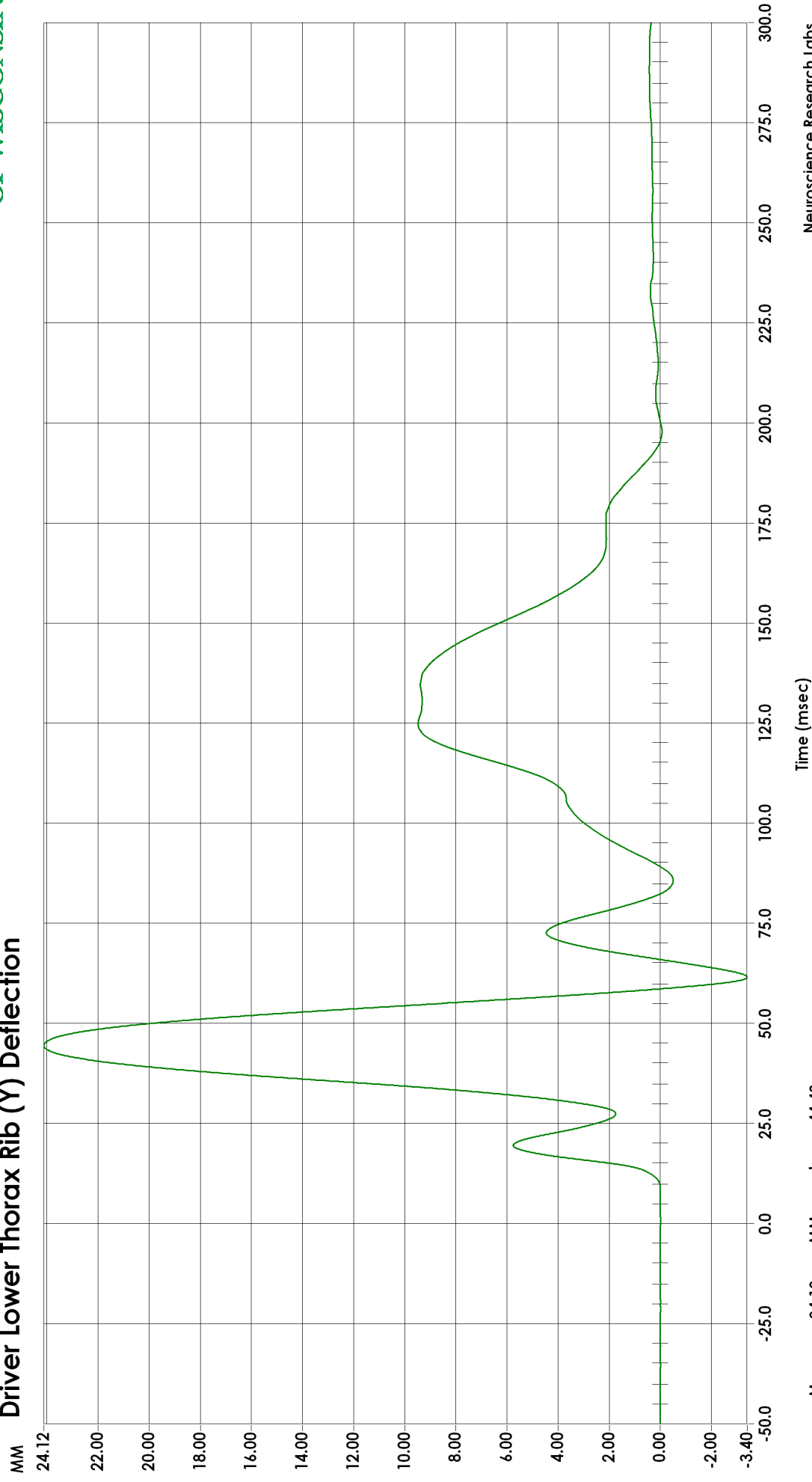
Time (msec)

Max	16.42	MM	at	42.56	msec
Min	-3.60	MM	at	57.92	msec

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Milwaukee, WI 53295

Test ID	11SN02	Filter	CFC180
Date	09-02-2010	Sampling Rate (Hz)	12500
Description	2011 Chevrolet Tahoe SINCAP	Number of Points	10000
		Pretrigger Points	1250
		Sensor Location	RBL
		Sensor Info	Honeywell MLT-38000203
		Serial Number	MLT-38000203_191

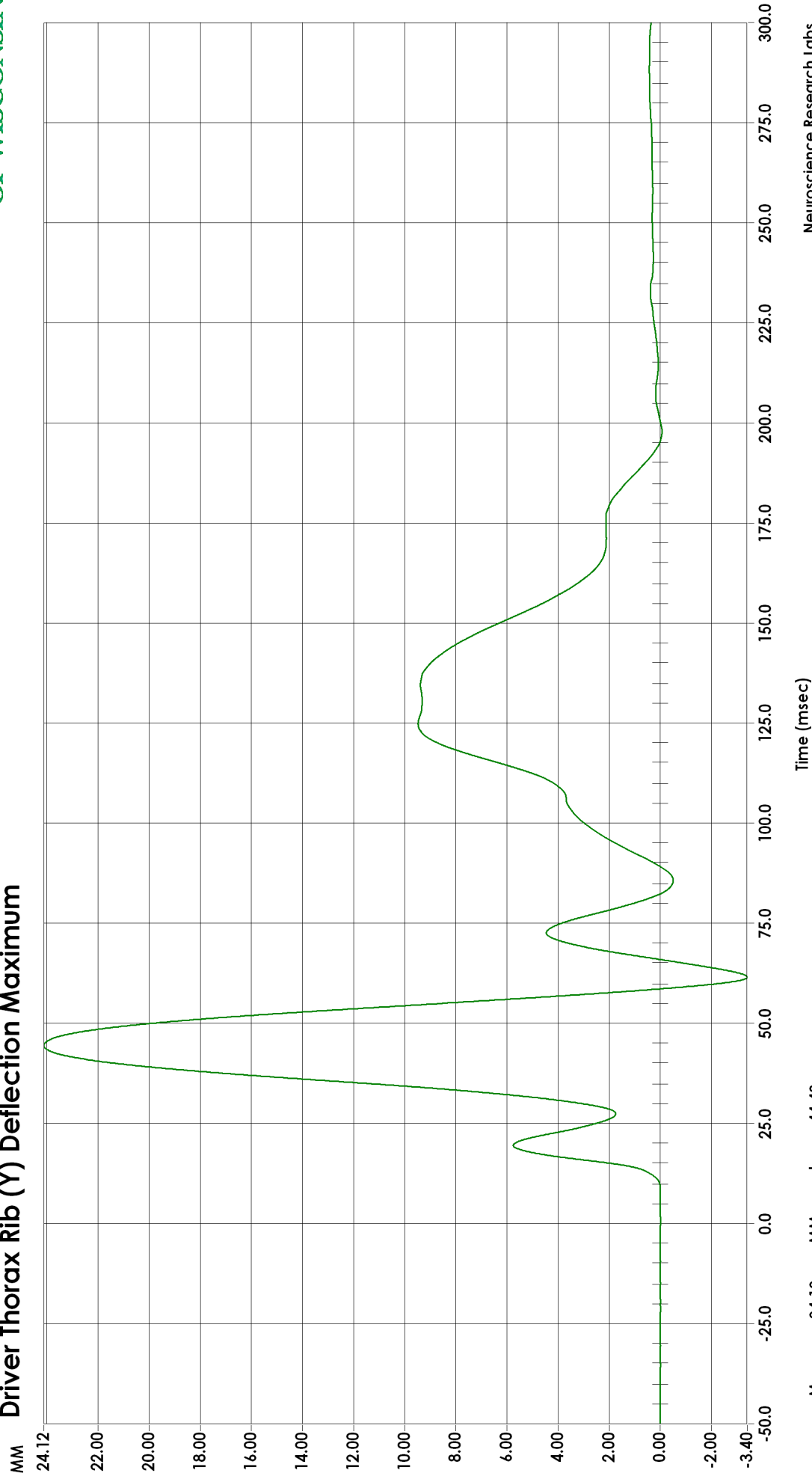
Driver Lower Thorax Rib (Y) Deflection



Max	24.12	MM	at	44.48	msec
Min	-3.40	MM	at	61.52	msec

Test ID	11SN02	Filter	CFC180
Date	09-02-2010	Sampling Rate (Hz)	12500
Description	2011 Chevrolet Tahoe SINCAP	Number of Points	10000
		Pretrigger Points	1250
		Sensor Location	RBL
		Sensor Info	Honeywell MLT-38000203
		Serial Number	MLT-38000203_191

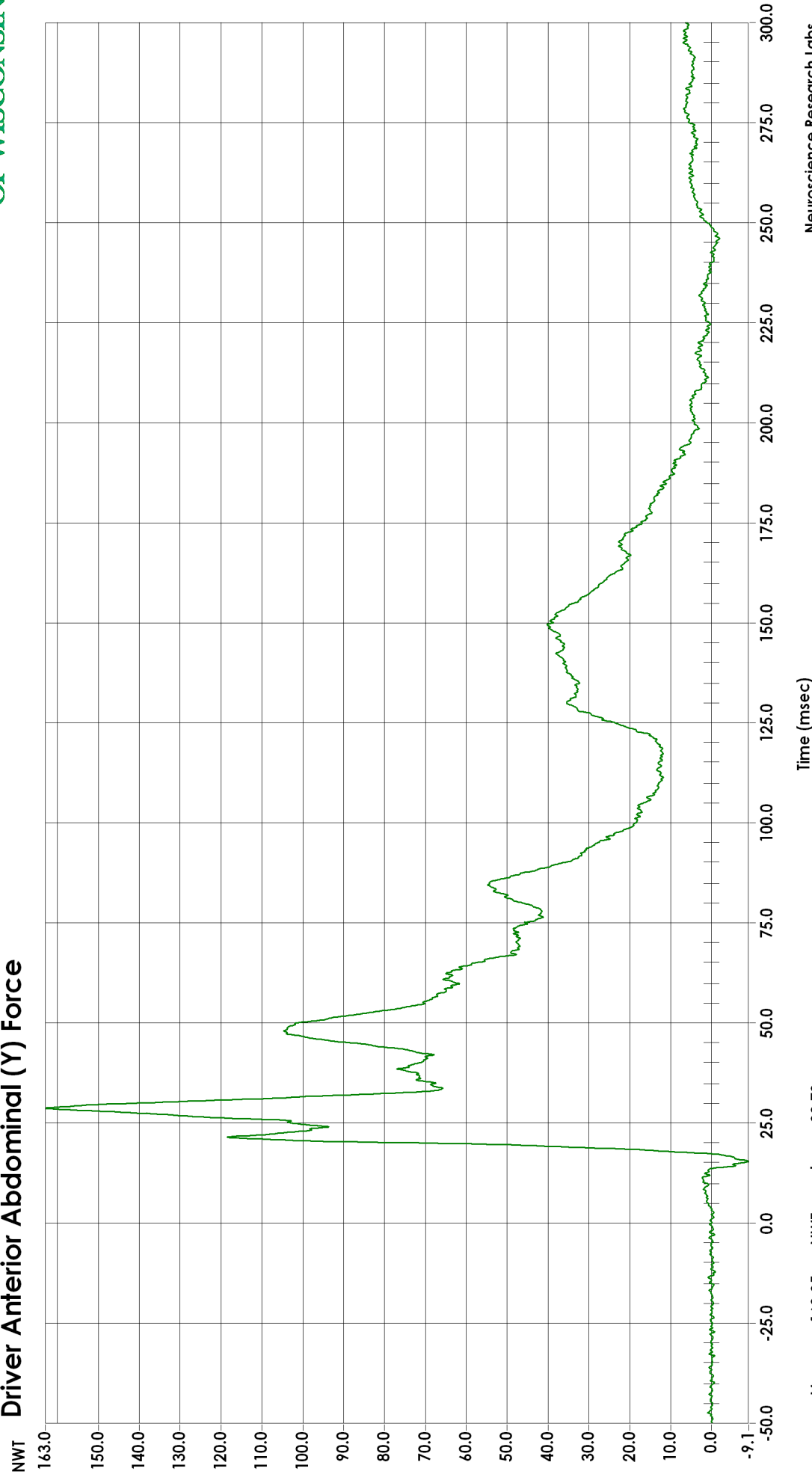
Driver Thorax Rib (Y) Deflection Maximum



Max	24.12	MM	at	44.48	msec
Min	-3.40	MM	at	61.52	msec

Test ID	11SN02	Filter	CFC600
Date	09-02-2010	Sampling Rate (Hz)	12500
Description	2011 Chevrolet Tahoe SINCAP	Number of Points	10000
		Pretrigger Points	1250
		Sensor Location	ESAF
		Sensor Info	Denton 2631
		Serial Number	2631_1502

Driver Anterior Abdominal (Y) Force

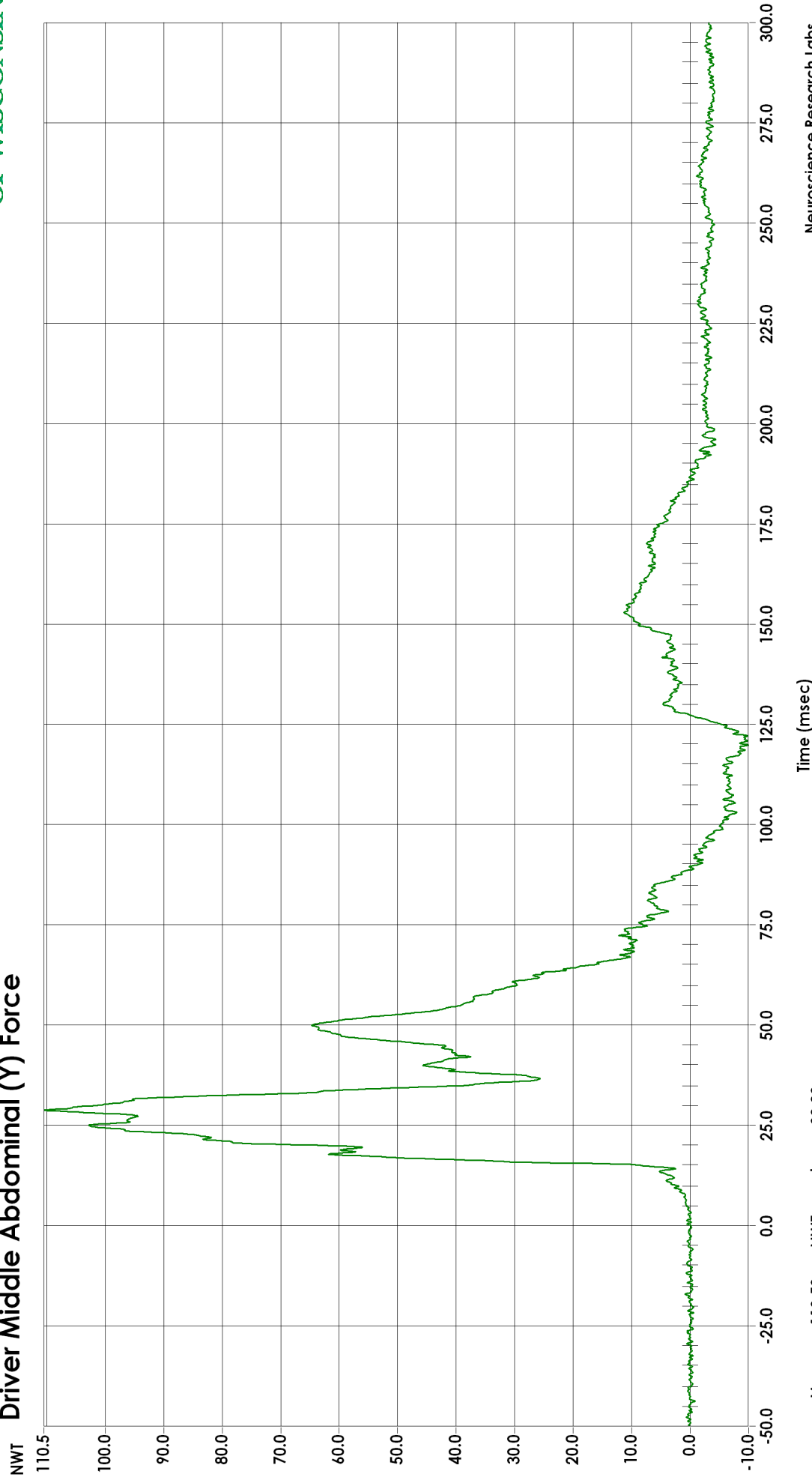


Max	162.95	NWT	at	28.72	msec
Min	-9.08	NWT	at	15.44	msec

11SN02 Plot 010

Test ID	11SN02	Filter	CFC600
Date	09-02-2010	Sampling Rate (Hz)	12500
Description	2011 Chevrolet Tahoe SINCAP	Number of Points	10000
		Pretrigger Points	1250
		Sensor Location	ESAM
		Sensor Info	Denton 2631
		Serial Number	2631_1511

Driver Middle Abdominal (Y) Force



Max	110.50	NWT	at	28.80	msec
Min	-10.03	NWT	at	119.84	msec

11SN02 Plot 011

Test ID	11SN02	Filter	CFC600
Date	09-02-2010	Sampling Rate (Hz)	12500
Description	2011 Chevrolet Tahoe SINCAP	Number of Points	10000
		Pretrigger Points	1250
		Sensor Location	ESAR
		Sensor Info	Denton 2631
		Serial Number	2631_1537

Driver Posterior Abdominal (Y) Force

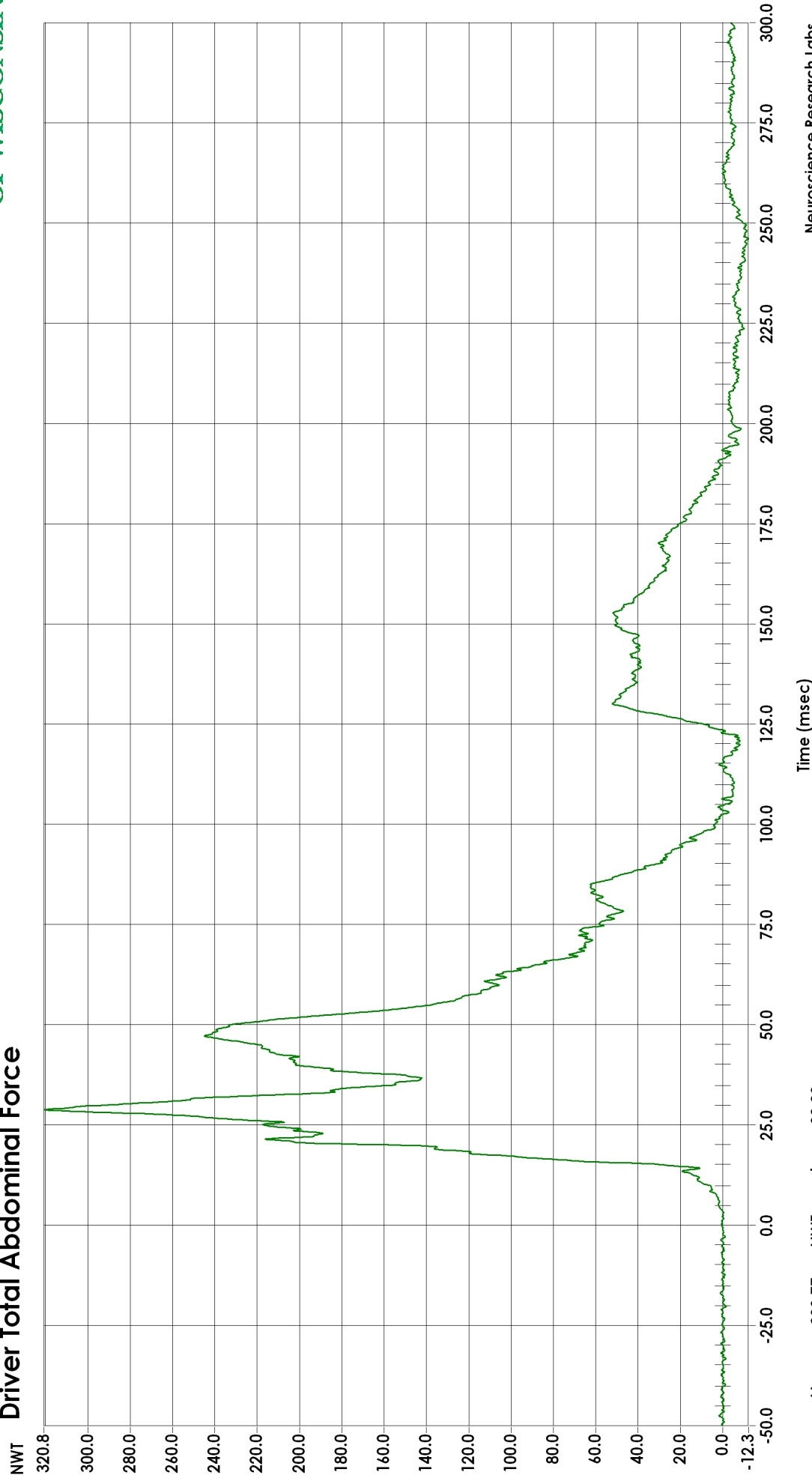


Max	99.17	NWT	at	43.12	msec
Min	-12.76	NWT	at	121.52	msec

11SN02 Plot 012

Test ID	11SN02	Filter	CFC600	Sensor Location
Date	09-02-2010	Sampling Rate (Hz)	12500	Sensor Info
Description	2011 Chevrolet Tahoe SINCAP	Number of Points	10000	Serial Number
		Prefrigger Points	1250	

Driver Total Abdominal Force

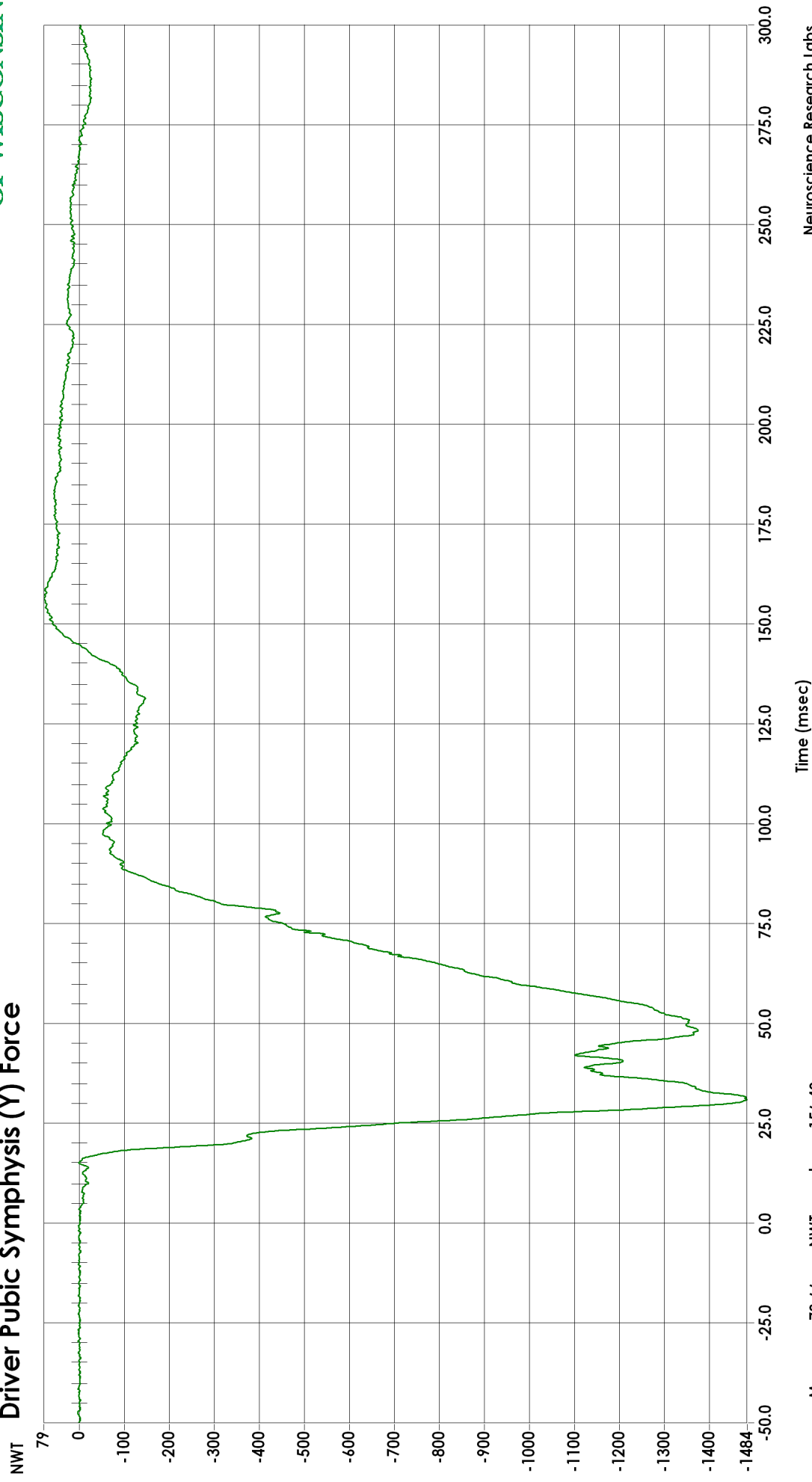


Max	320.77	NWT	at	28.80	msec
Min	-12.26	NWT	at	246.08	msec

11SN02 Plot 064

Test ID	11SN02	Filter	CFC600	Sensor Location	PVPS
Date	09-02-2010	Sampling Rate (Hz)	12500	Sensor Info	Denton 30%JFL
Description	2011 Chevrolet Tahoe SINCAP	Number of Points	10000	Serial Number	3096JFL_465
		Pretrigger Points	1250		

Driver Pubic Symphysis (Y) Force



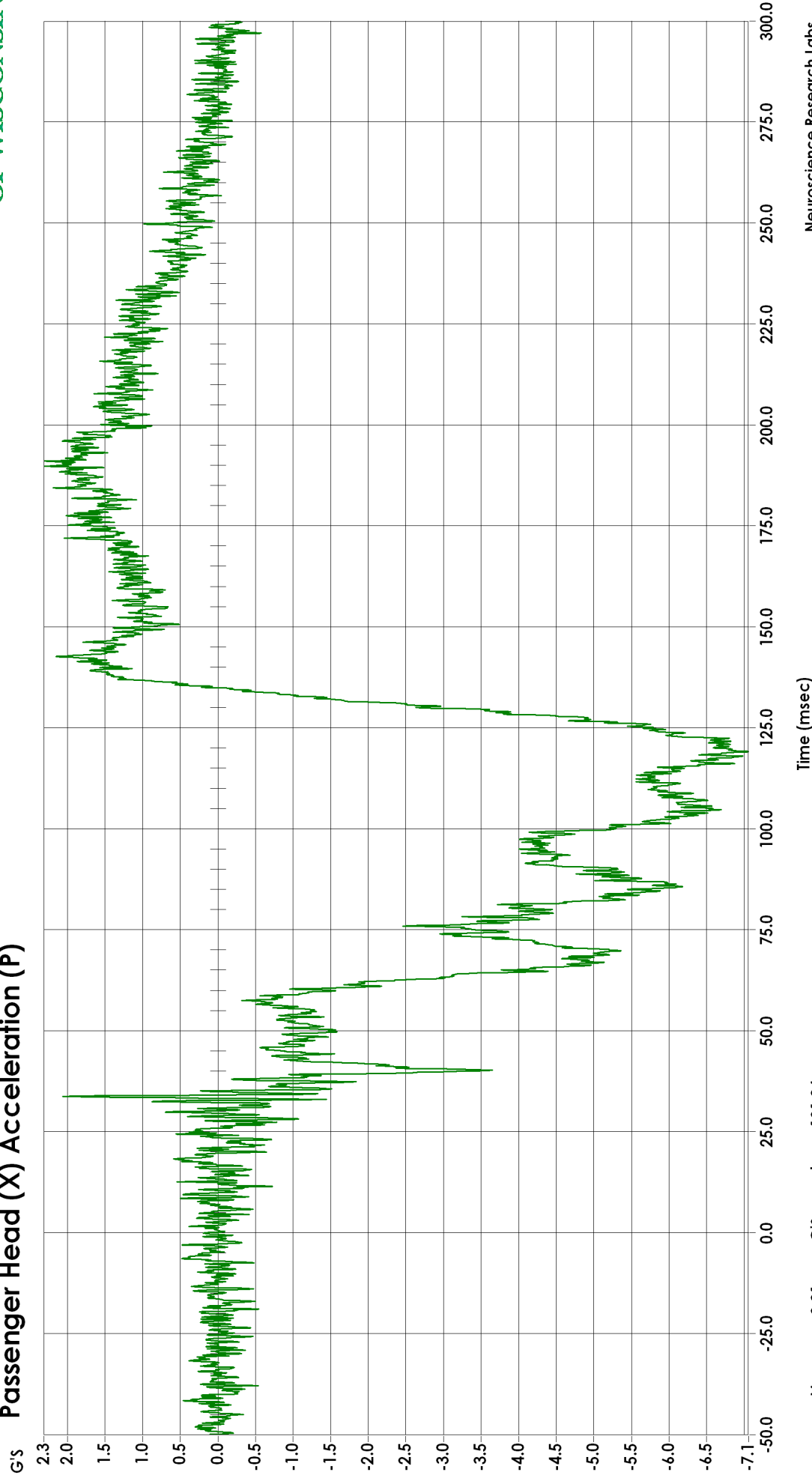
Max	78.66	NWT	at	156.40	msec
Min	-1484.19	NWT	at	30.96	msec

11SN02 Plot 016

Test ID	11SN02	Filter	CFC1000
Date	09-02-2010	Sampling Rate (Hz)	12500
Description	2011 Chevrolet Tahoe SINCAP	Number of Points	10000
		Pretrigger Points	1250
		Sensor Location	HDCG
		Sensor Info	ENDEVCO 7264C-2KTZ-2-240
		Serial Number	P22041



Passenger Head (X) Acceleration (P)



Max	2.31	G's	at	191.04	msec
Min	-7.06	G's	at	119.12	msec

11SN02 Plot 017

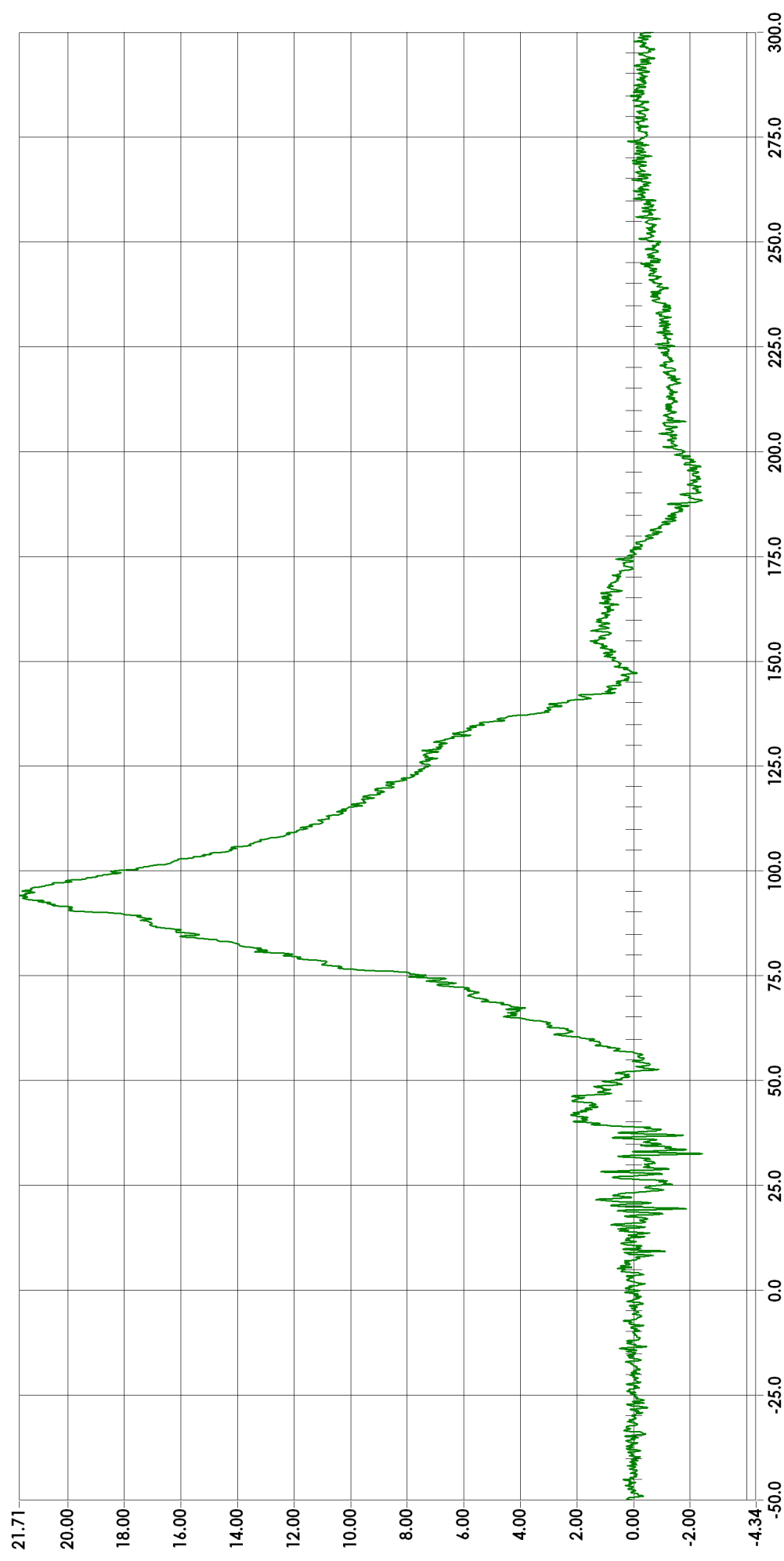
Neuroscience Research Labs
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Research 151
Milwaukee, WI 53295

Test ID	11SN02	Filter	CFC1000
Date	09-02-2010	Sampling Rate (Hz)	12500
Description	2011 Chevrolet Tahoe SINCAP	Number of Points	10000
		Pretrigger Points	1250



Sensor Location	HDCG
Sensor Info	ENDEVCO 7264C-2KTZ-2-240
Serial Number	P24562

Passenger Head (Y) Acceleration (P)



Max	21.71	G's	at	94.16	msec
Min	-2.44	G's	at	32.56	msec

11SN02 Plot 018

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Milwaukee, WI 53295

Test ID

11SN02

Date

09-02-2010

Description

2011 Chevrolet Tahoe SINCAP

Filter

CFC1000

Sampling Rate (Hz)

12500

Number of Points

10000

Prefrigger Points

1250

Sensor Location

HDCG

Sensor Info

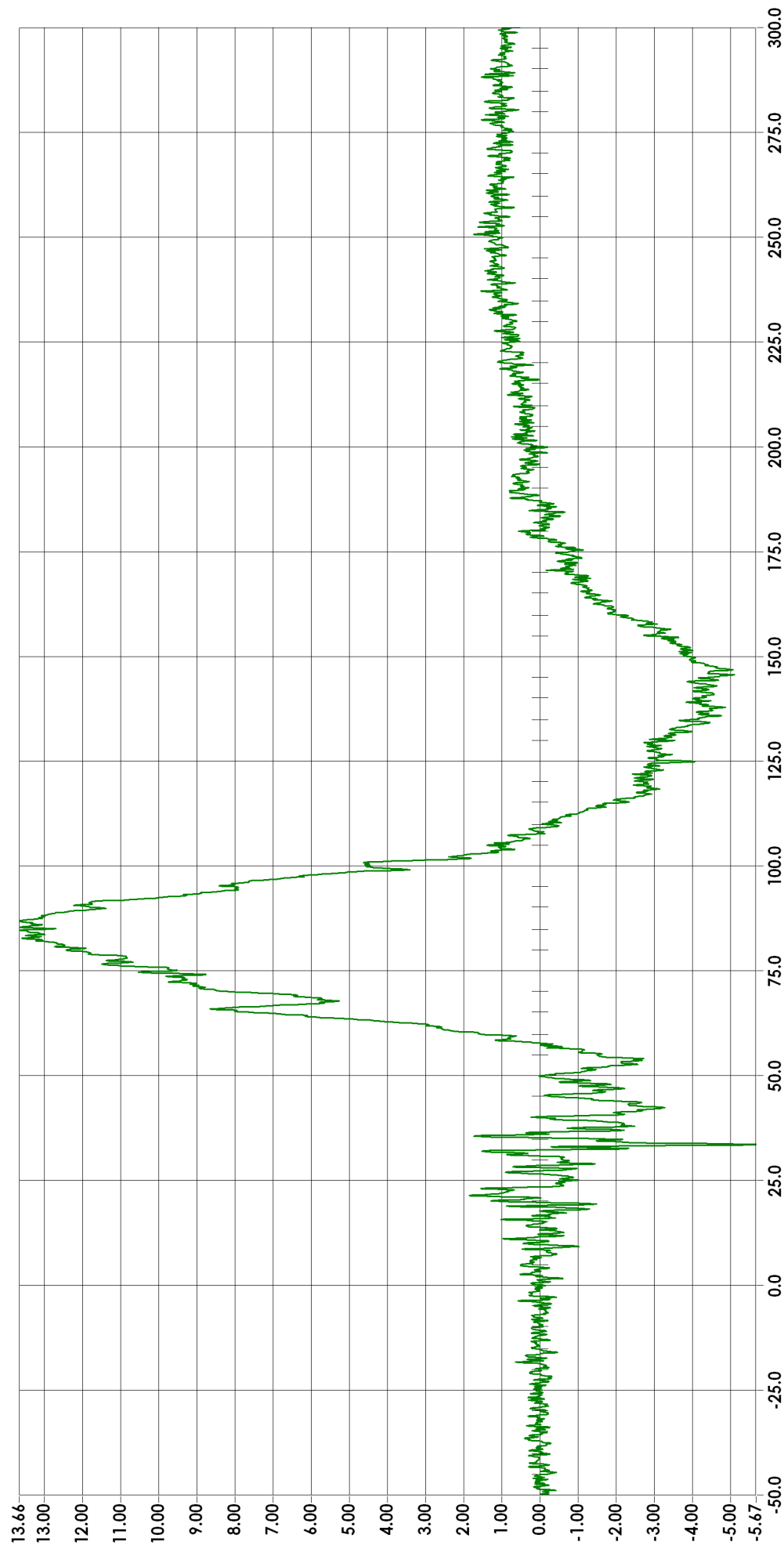
ENDEVCO 7264C-2KTZ-2-300

Serial Number

P22322



Passenger Head (Z) Acceleration (P)



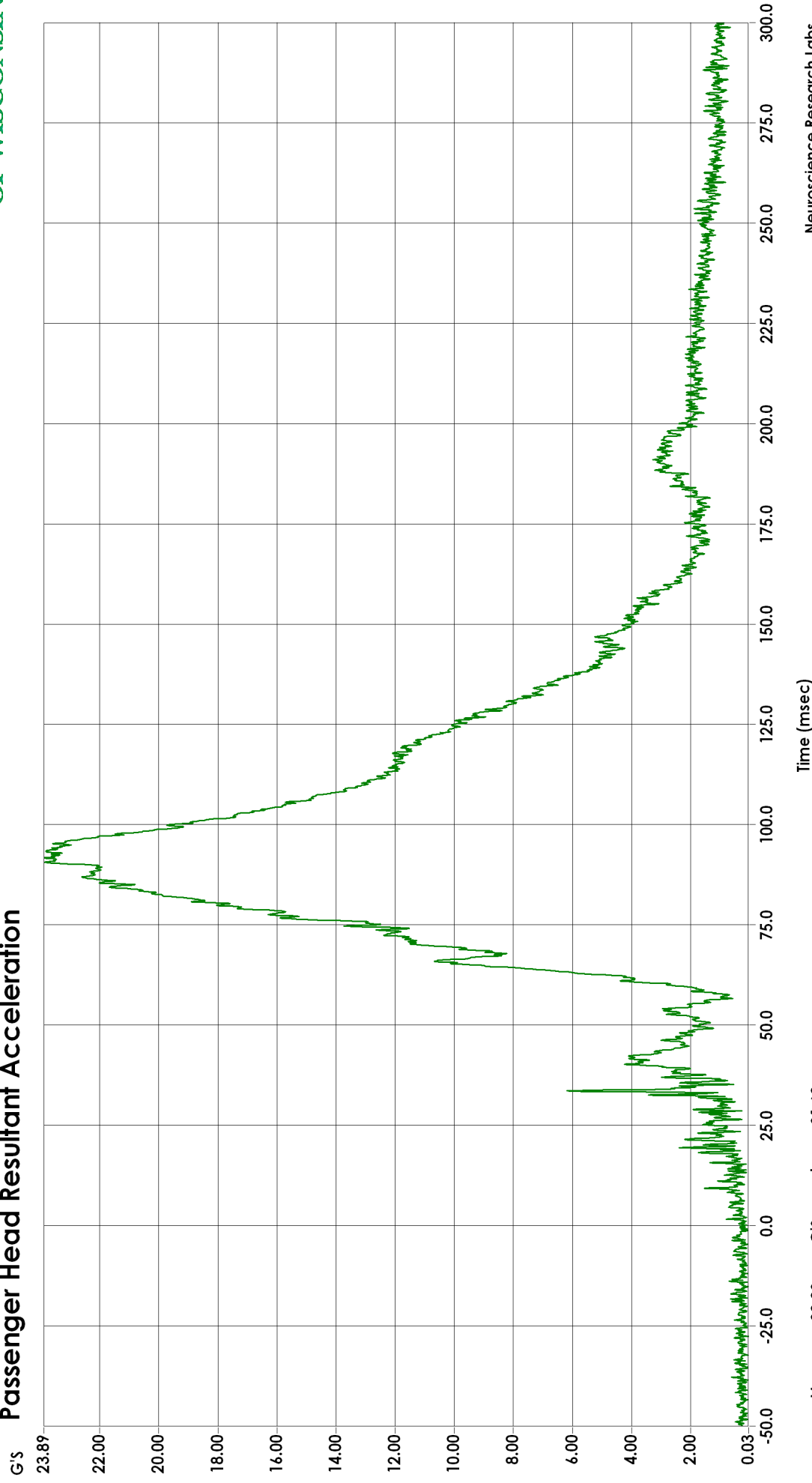
Time (msec)

Max	13.66	G's	at	86.96	msec
Min	-5.67	G's	at	33.60	msec

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Test ID	11SN02	Filter	CFC1000
Date	09-02-2010	Sampling Rate (Hz)	12500
Description	2011 Chevrolet Tahoe SINCAP	Number of Points	10000
		Pretrigger Points	1250
		Sensor Location	
		Sensor Info	
		Serial Number	

Passenger Head Resultant Acceleration



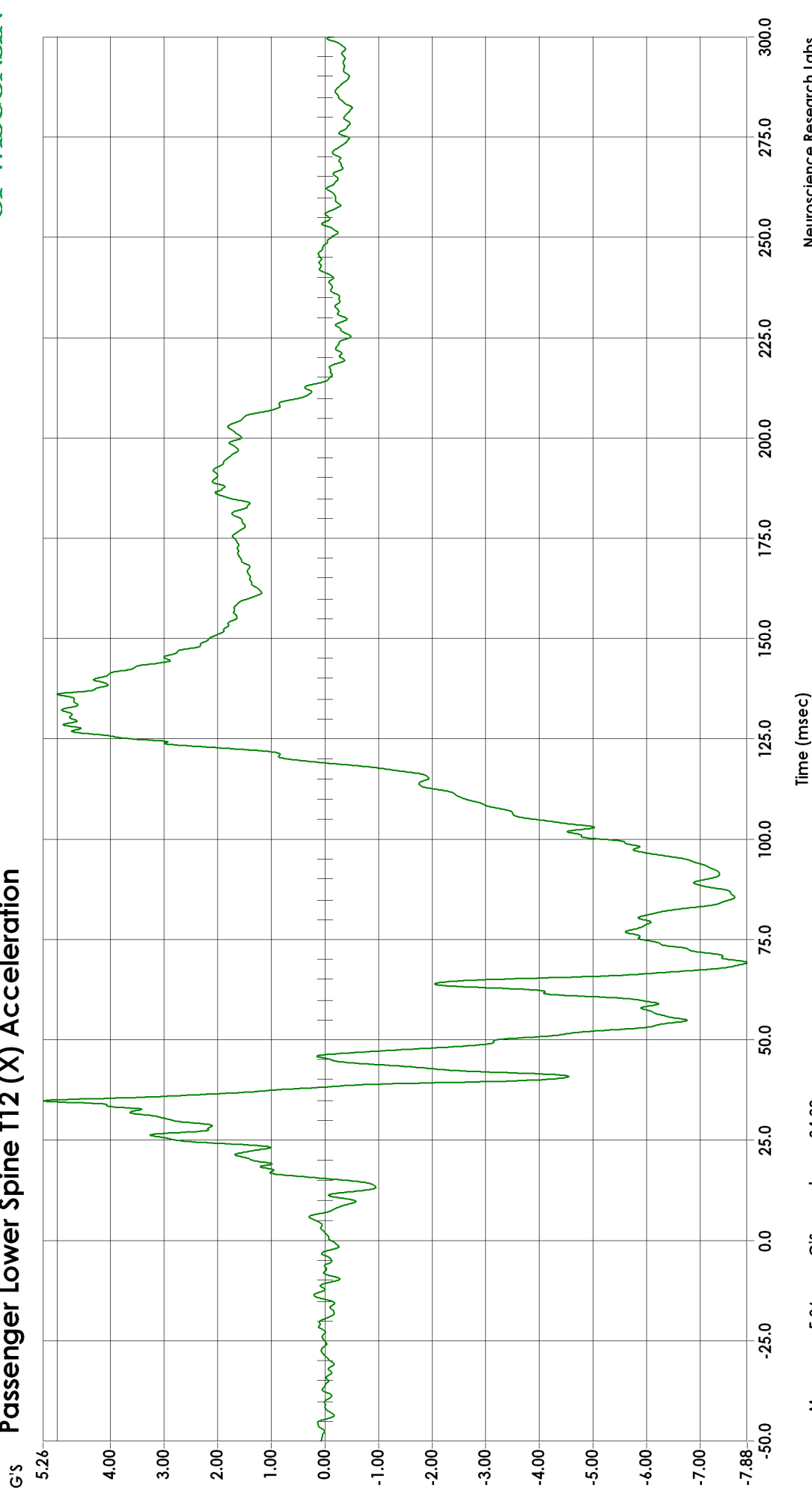
Time (msec)

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Research 151
Milwaukee, WI 53295

Test ID	11SN02	Filter	CFC180
Date	09-02-2010	Sampling Rate (Hz)	12500
Description	2011 Chevrolet Tahoe SINCAP	Number of Points	10000
		Pretrigger Points	1250



Passenger Lower Spine T12 (X) Acceleration

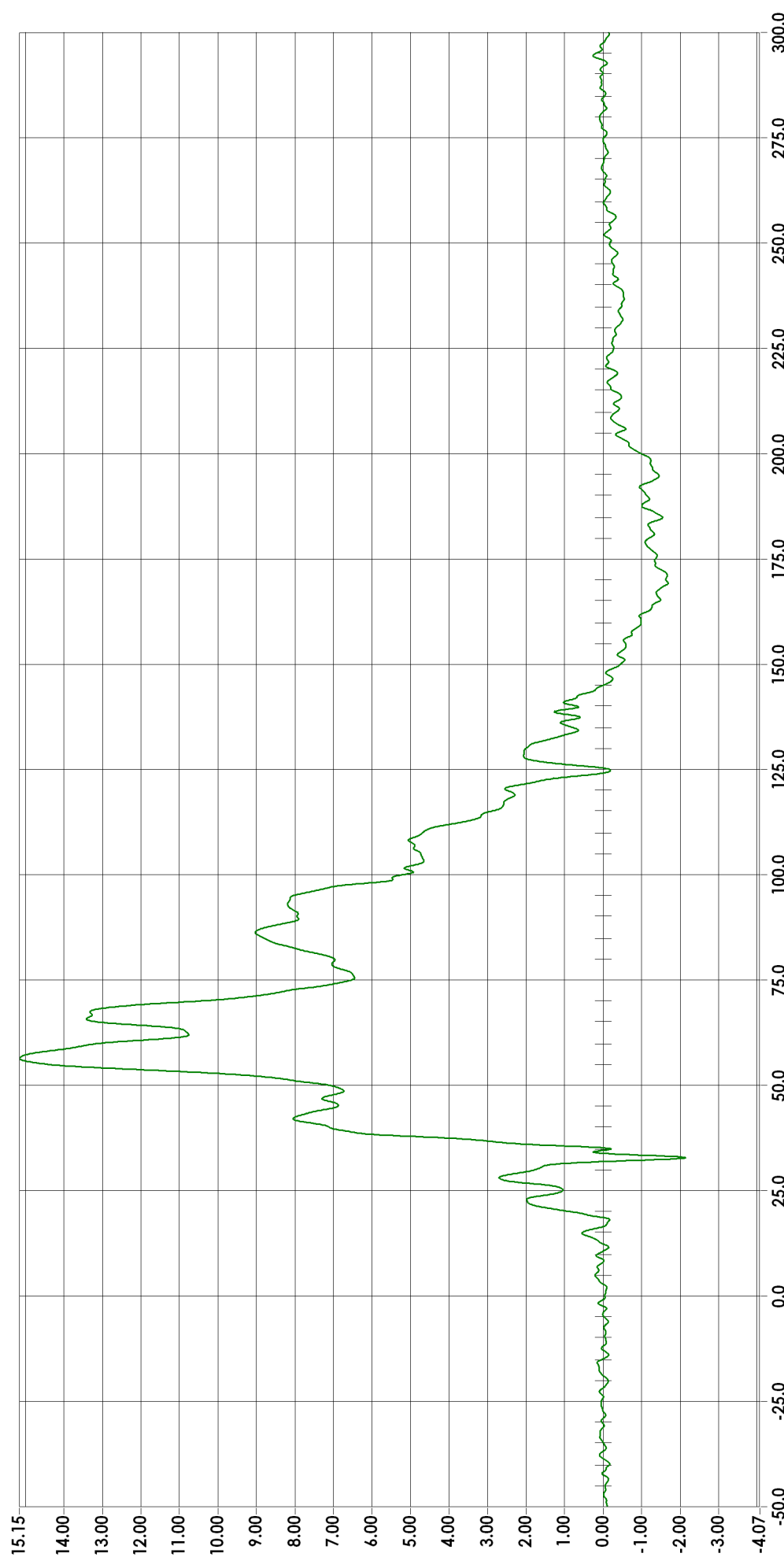


Neuroscience Research Labs
5000 West National Ave
Research 151
Milwaukee, WI 53295

Test ID	11SN02	Filter	CFC180
Date	09-02-2010	Sampling Rate (Hz)	12500
Description	2011 Chevrolet Tahoe SINCAP	Number of Points	10000
		Pretrigger Points	1250



Passenger Lower Spine T12 (Y) Acceleration



Time (msec)

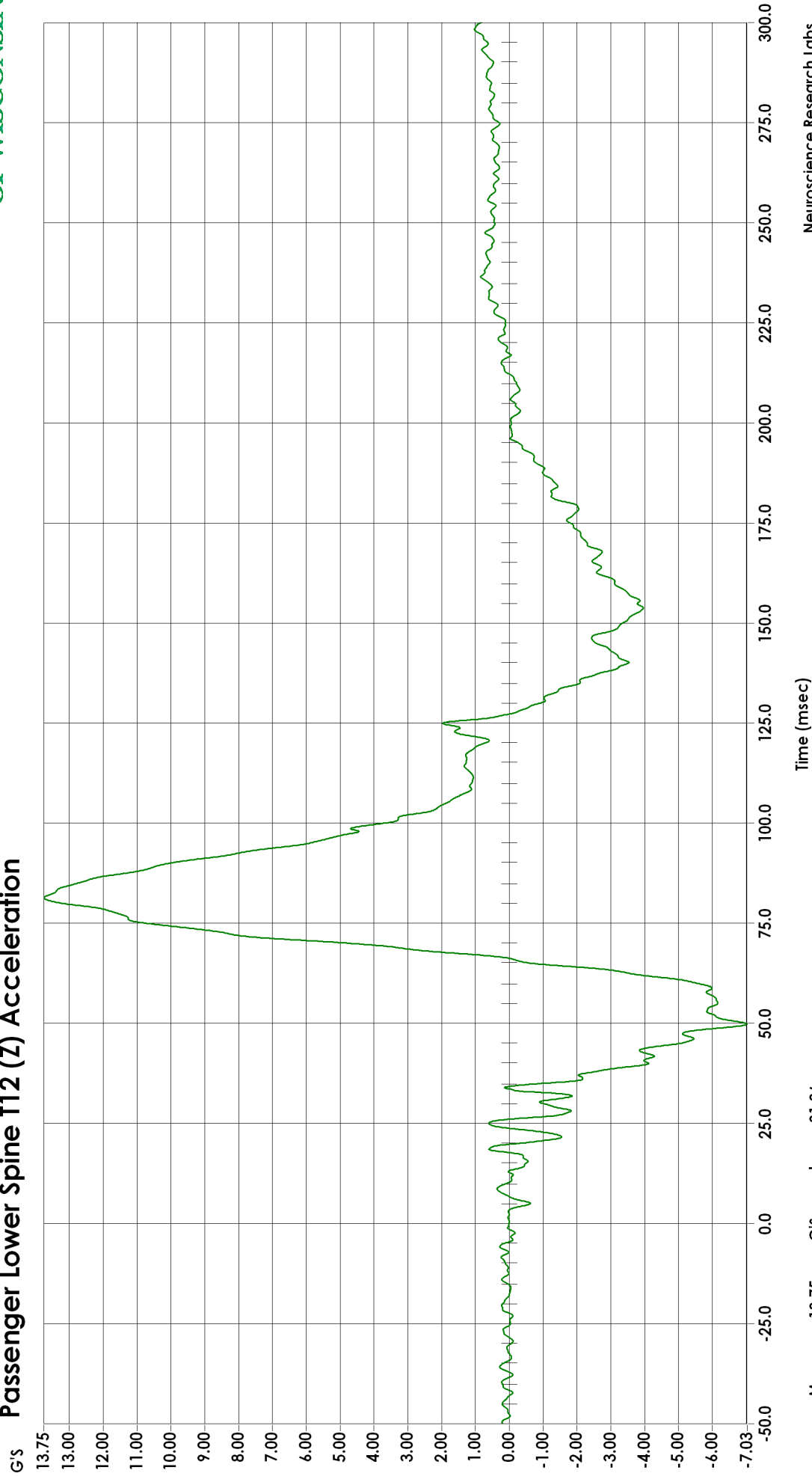
Max	15.15	G's	at	56.40	msec
Min	-2.14	G's	at	32.88	msec

11SN02 Plot 032

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

Test ID	11SN02	Filter	CFC180
Date	09-02-2010	Sampling Rate (Hz)	12500
Description	2011 Chevrolet Tahoe SINCAP	Number of Points	10000
		Pretrigger Points	1250
		Sensor Location	SPNL
		Sensor Info	ENDEVCO 7264C-2KTZ-2-240
		Serial Number	P21788

Passenger Lower Spine T12 (Z) Acceleration

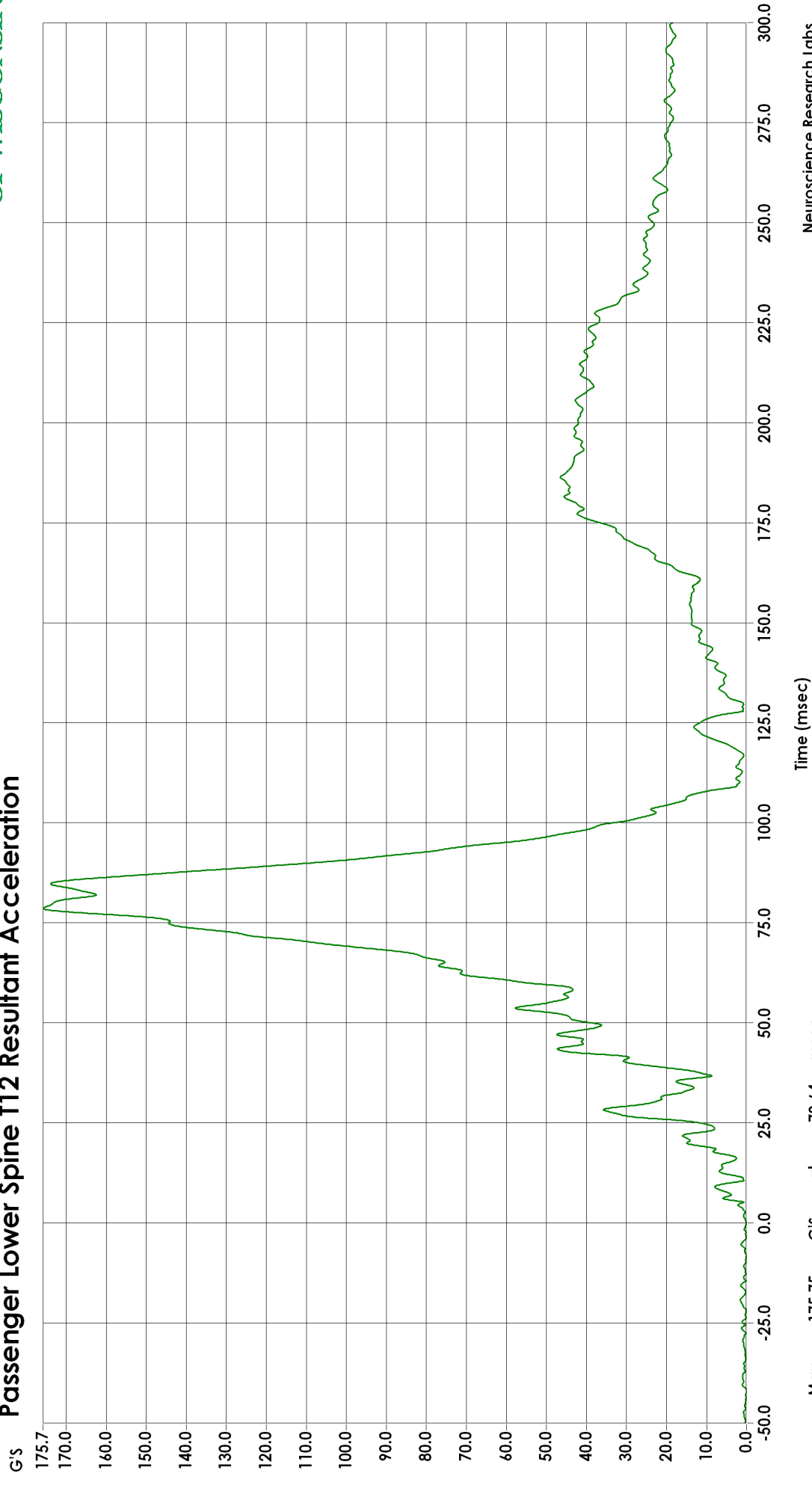


Max	13.75	G's	at	81.36	msec
Min	-7.03	G's	at	49.84	msec

11SN02 Plot 033

Test ID	11SN02	Filter	CFC180	Sensor Location
Date	09-02-2010	Sampling Rate (Hz)	12500	Sensor Info
Description	2011 Chevrolet Tahoe SINCAP	Number of Points	10000	Serial Number
		Pretrigger Points	1250	

Passenger Lower Spine T12 Resultant Acceleration

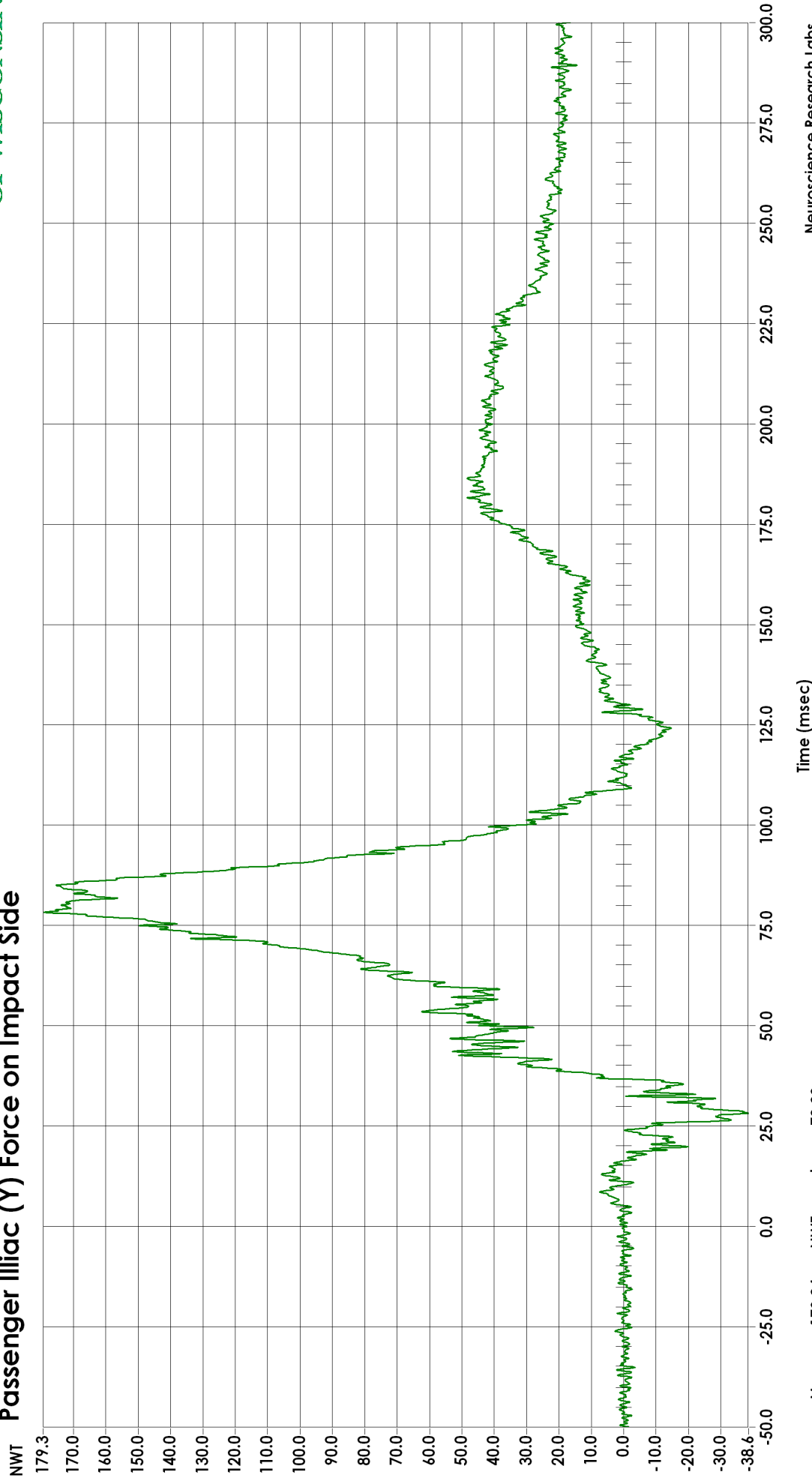


Max	175.75	G's	at	78.64	msec
Min	0.02	G's	at	-8.00	msec

11SN02 Plot 065

Test ID	11SN02	Filter	CFC600
Date	09-02-2010	Sampling Rate (Hz)	12500
Description	2011 Chevrolet Tahoe SINCAP	Number of Points	10000
		Pretrigger Points	1250
		Sensor Location	PVIL
		Sensor Info	Denton 3228J
		Serial Number	3228J_283

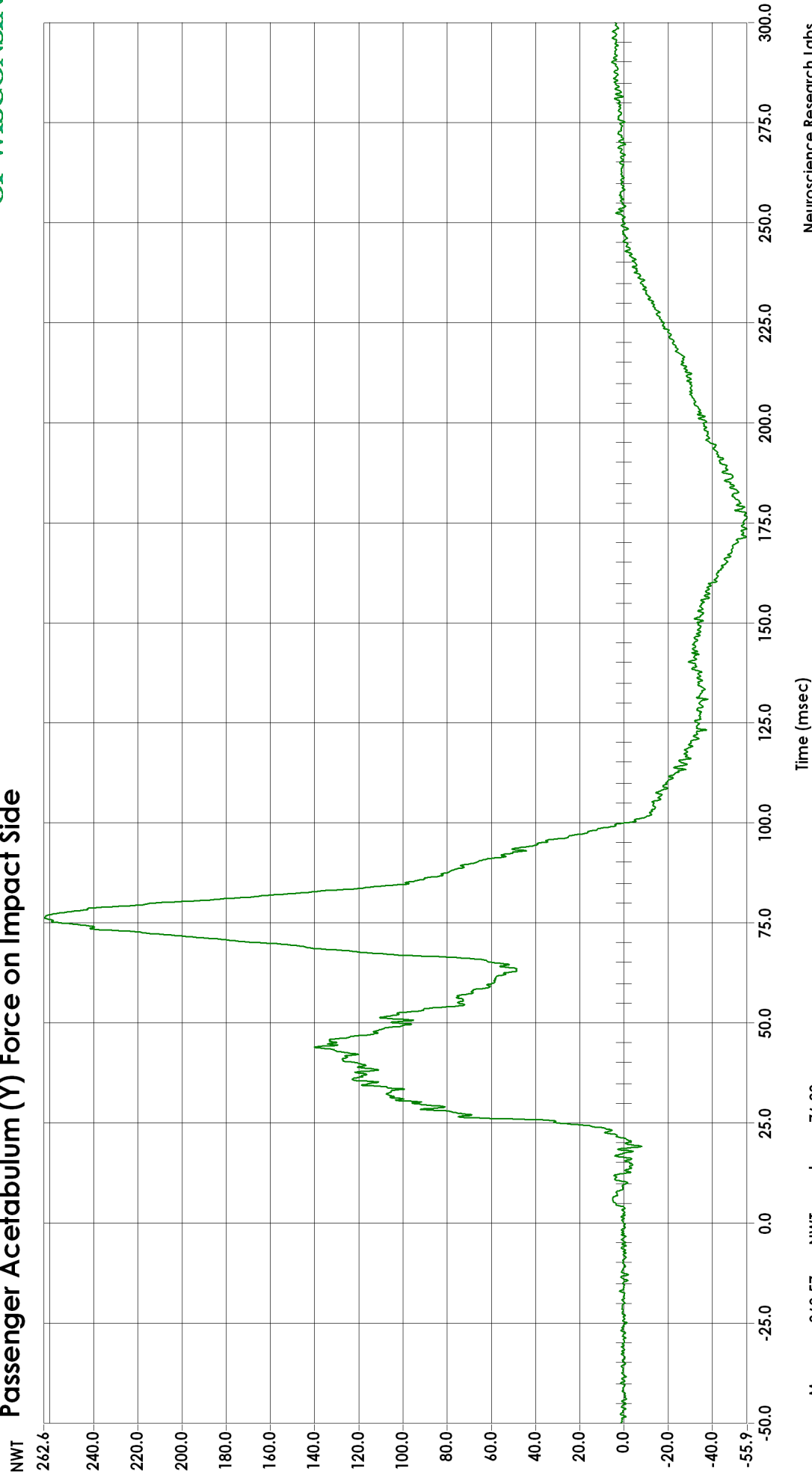
Passenger Iliac (Y) Force on Impact Side



Max	179.34	NWT	at	78.32	msec
Min	-38.56	NWT	at	28.24	msec

Test ID	11SN02	Filter	CFC600
Date	09-02-2010	Sampling Rate (Hz)	12500
Description	2011 Chevrolet Tahoe SINCAP	Number of Points	10000
		Pretigger Points	1250
		Sensor Location	PVHP
		Sensor Info	Denton 3249J
		Serial Number	3249J_270

Passenger Acetabulum (Y) Force on Impact Side

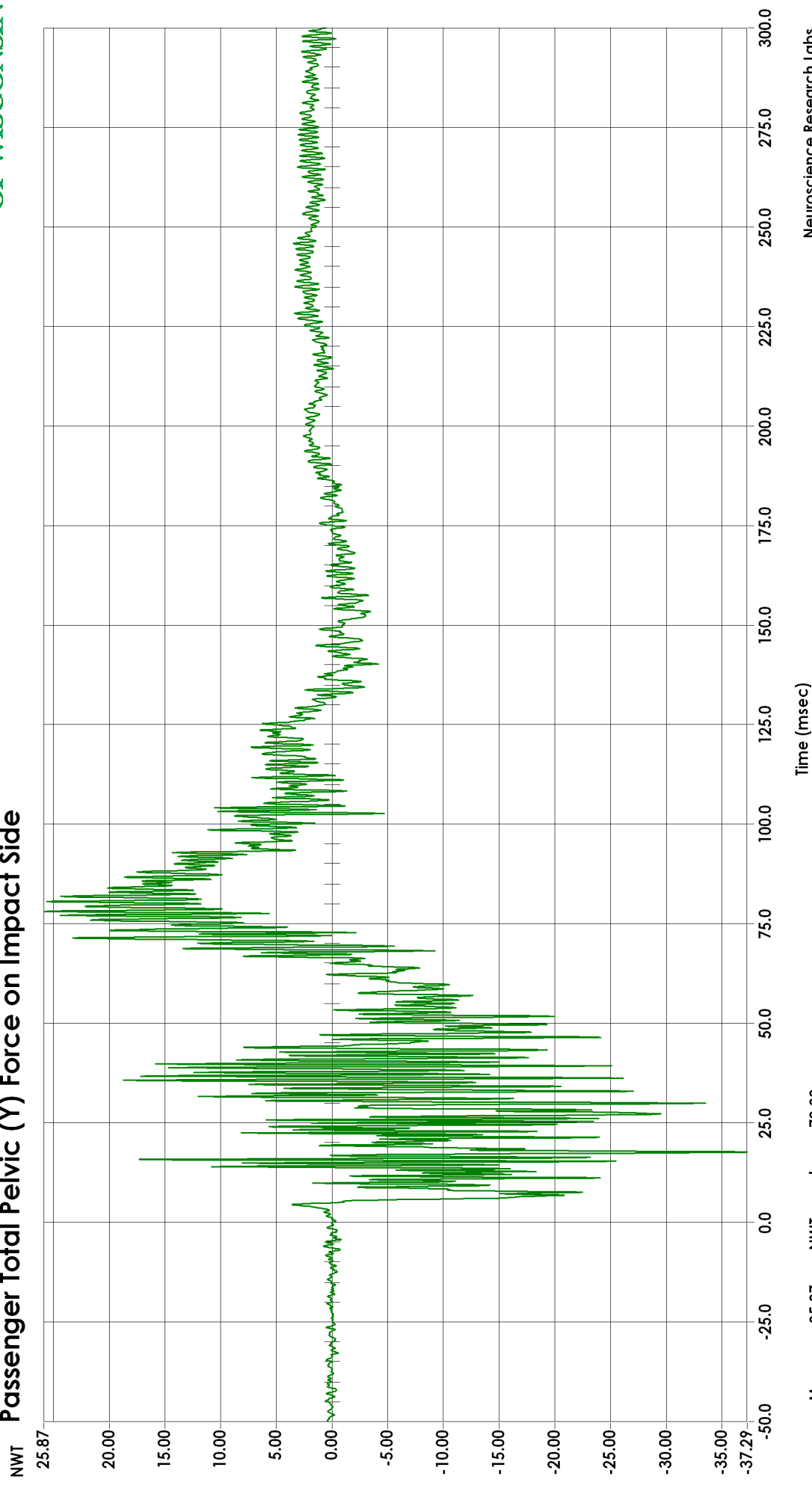


Max	262.57	NWT	at	76.32	msec
Min	-55.85	NWT	at	176.48	msec

11SN02 Plot 030

Test ID	11SN02	Filter	CFC600
Date	09-02-2010	Sampling Rate (Hz)	12500
Description	2011 Chevrolet Tahoe SINCAP	Number of Points	10000
		Pretrigger Points	1250
		Sensor Location	
		Sensor Info	
		Serial Number	

Passenger Total Pelvic (Y) Force on Impact Side



Max	25.87	NWT	at	78.08	msec
Min	-37.29	NWT	at	17.68	msec

11SN02 Plot 066

Test Vehicle: 2011 Chevrolet Tahoe SUV
Test Program: SINCAP

NHTSA Number: MB 0119
Test Date: September 2, 2010

APPENDIX C
ATD CALIBRATION DATA

**VERIFICATION TEST RESULTS SUMMARY
 PRE AND POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial Number 298

Test Sequences 2 & 3

TEST	PRE		POST	
SIDIIs ATD	COMMENTS	BY	COMMENTS	BY
EXTERNAL DIMENSIONS	Pass	Mike Rawski	Pass	Mike Rawski
LATERAL THORAX WITH ARM IMPACT	Pass	Mike Rawski	Pass	Mike Rawski
LATERAL THORAX WITHOUT ARM IMPACT TEST	Pass	Mike Rawski	Pass	Mike Rawski
LATERAL PELVIS ACETABULUM IMPACT TEST	Pass	Mike Rawski	Pass	Mike Rawski
LATERAL PELVIS ILIAC IMPACT TEST	Pass	Mike Rawski	Pass	Mike Rawski
LATERAL SHOULDER IMPACT TEST	Pass	Mike Rawski	Pass	Mike Rawski
LATERAL ABDOMEN IMPACT TEST	Pass	Mike Rawski	Pass	Mike Rawski
SIDIIs LATERAL NECK TEST	Pass	Mike Rawski	Pass	Mike Rawski
SIDIIs LATERAL HEAD DROP	Pass	Mike Rawski	Pass	Mike Rawski

**VERIFICATION TEST RESULTS SUMMARY
 PRE AND POST TEST (CONTINUED)**

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial Number F038 Test Sequences 2 & 3

TEST	PRE		POST	
ESIIre ATD	COMMENTS	BY	COMMENTS	BY
EXTERNAL DIMENSIONS	Pass	Mike Rawski	Pass	Mike Rawski
LATERAL FULL BODY THORAX IMPACT	Pass	Mike Rawski	Pass	Mike Rawski
INDIVIDUAL RIB DROP TEST	Pass	Mike Rawski	Pass	Mike Rawski
LATERAL SPINE TEST	Pass	Mike Rawski	Pass	Mike Rawski
LATERAL PELVIS IMPACT TEST	Pass	Mike Rawski	Pass	Mike Rawski
LATERAL SHOULDER IMPACT TEST	Pass	Mike Rawski	Pass	Mike Rawski
ABDOMEN IMPACT	Pass	Mike Rawski	Pass	Mike Rawski
ESIIre LATERAL NECK TEST	Pass	Mike Rawski	Pass	Mike Rawski
ESIIre LATERAL HEAD DROP	Pass	Mike Rawski	Pass	Mike Rawski

SUMMARY
SIDIIs AND ESIIre PRE AND POST VERIFICATION

CONFIGURED FOR LEFT SIDE IMPACT

SIDIIs LATERAL PELVIS ILIAC IMPACT TEST

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-19-10	9-10-10
Sequential Test Number	-	2	3
Temperature (°C)	20.6-22.2	22.1	21.9
Relative Humidity (%)	10-70	40.7	30.7
Pendulum Speed (m/s)	4.2-4.4	4.3	4.25
Peak Impactor Acceleration (G)	36-45	43.2	43.8
Max Lateral Pelvis Acceleration (G)	28-39	35.6	35.1
Max Iliac Force (N)	4.10-5.10	4.96	4.85

SIDIIs LATERAL PELVIS ACETABULUM IMPACT TEST

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-19-10	9-9-10
Sequential Test Number	-	2	3
Temperature (°C)	20.6-22.2	22.1	22.0
Relative Humidity (%)	10-70	40.5	31.1
Pendulum Speed (m/s)	6.6-6.8	6.73	6.73
Peak Impactor Acceleration (G)	38-47	45.4	45.3
Peak Lateral Pelvis Acceleration (G)	N/A	-	-
Peak Lateral Pelvis Acceleration after 6ms (G)	34-42	39.2	39.8
Peak Acetabulum Force (kN)	3.60-4.30	4.13	4.15

SIDIIs LATERAL THORAX WITHOUT ARM IMPACT TEST

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-18-10	9-9-10
Sequential Test Number	-	2	3
Temperature (°C)	20.6-22.2	22.1	22.1
Relative Humidity (%)	10-70	41.6	31.2
Pendulum Speed (m/s)	4.2-4.4	4.35	4.25
Peak Upper Rib Deflection (mm)	32-40	37.3	34.9
Peak Middle Rib Deflection (mm)	39-45	43.2	41.3
Peak Lower Rib Deflection (mm)	35-43	42.2	40.8
Peak Upper Spine Acceleration (G)	13-17	15.0	14.9
Peak Lower Spine Acceleration (G)	7-11	9.73	9.91
Peak Impactor Acceleration (G)	14-18	16.1	16.2

SUMMARY
SIDIIs PRE AND POST VERIFICATION (CONTINUED)

CONFIGURED FOR LEFT SIDE IMPACT

SIDIIs LATERAL THORAX WITH ARM IMPACT TEST

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-18-10	9-9-10
Sequential Test Number	-	2	3
Temperature (°C)	20.6-22.2	21.7	22.1
Relative Humidity (%)	10-70	39.9	31.4
Pendulum Speed (m/s)	6.6-6.8	6.7	6.70
Peak Shoulder Deflection (mm)	31-40	34.6	33.9
Peak Upper Rib Deflection (mm)	25-32	28.7	28.4
Peak Middle Rib Deflection (mm)	30-36	34.2	33.8
Peak Lower Rib Deflection (mm)	32-38	37.2	36.6
Peak Upper Spine Acceleration (G)	34-43	40.9	40.5
Peak Lower Spine Acceleration (G)	29-37	34.6	32.7
Peak Impactor Acceleration after 5 ms (G)	30-36	33.0	32.3

SIDIIs LATERAL ABDOMINAL IMPACT TEST

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-18-10	9-9-10
Sequential Test Number	-	2	3
Temperature (°C)	20.6-22.2	22.1	22.2
Relative Humidity (%)	10-70	40.4	31.1
Pendulum Speed (m/s)	4.2-4.4	4.3	4.30
Peak Upper Rib Deflection (mm)	36-47	45.0	43.8
Peak Lower Rib Deflection (mm)	33-44	42.9	39.7
Peak Lower Spine Acceleration (G)	9-14	11.5	11.7
Peak Impactor Acceleration (G)	12-16	14.4	14.5

SIDIIs LATERAL SHOULDER IMPACT TEST

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-18-10	9-9-10
Sequential Test Number	-	2	3
Temperature (°C)	20.6-22.2	21.8	22.1
Relative Humidity (%)	10-70	38.4	32.0
Pendulum Speed (m/s)	4.2-4.4	4.3	4.30
Peak Shoulder Deflection (mm)	28-37	33.2	32.4
Peak Upper Spine Lateral Acceleration (G)	17-22	19.7	19.9
Peak Impactor Acceleration (G)	13-18	16.8	16.2

SUMMARY
SIDIIs PRE AND POST VERIFICATION (CONTINUED)

CONFIGURED FOR LEFT SIDE IMPACT

SIDIIs LATERAL NECK

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-17-10	9-8-10
Sequential Test Number	-	2	3
Temperature (°C)	20.6-22.2	21.9	22.1
Relative Humidity (%)	10-70	40.8	33.4
Pendulum Speed (m/s)	5.51-5.63	5.56	5.58
Pendulum Pulse 10ms (m/s)	2.20-2.80	2.54	2.60
Pendulum Pulse 15ms (m/s)	3.30-4.10	3.96	3.93
Pendulum Pulse 20ms (m/s)	4.40-5.40	5.40	5.39
Pendulum Pulse 25ms (m/s)	5.40-6.10	5.76	5.64
Pendulum Pulse between 25ms and 100ms (m/s)	5.50-6.20	5.79	5.66
Max D-Plane rotation (deg)	71-81	73.0	72.5
Time of Max D-Plane Rotation (ms)	50-70	70.0	63.0
Max OC Moment during Rotation (Nm)	36-44	42.2	40.6
Time of Moment Decay from Peak to 0 Nm (ms)	102-126	126.0	126.0

SIDIIs LATERAL HEAD DROP

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-16-10	9-7-10
Sequential Test Number	-	2	3
Temperature (°C)	20.6-22.2	21.9	21.6
Relative Humidity (%)	10-70	39.7	43.7
Resultant Max (G)	115-137	122.4	123.1
Longitudinal Max (G)	<15	0.81	2.96

SUMMARY
SIDIIs PRE AND POST VERIFICATION (CONTINUED)

CONFIGURED FOR LEFT SIDE IMPACT

SIDIIs MEASUREMENTS

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-23-10	9-10-10
Sequential Test Number	-	2	3
Temperature (°C)	20.6-22.2	21.7	21.9
Relative Humidity (%)	10-70	51.5	31.0
Sitting Height	780 ±8.0	774	774
Shoulder Pivot Height	445 ±8.0	444	446
H-Point Height	84 ±5.0	83	87
H-Point from Seat Back	146 ±5.0	149	145
Shoulder Pivot from Backline	102 ±5.0	103	98
Thigh Clearance	127 ±8.0	124	122
Head Breadth	144 ±4.0	144	143
Head Back from Backline	43 ±3.0	45	45
Head Depth	183 ±5.0	182	180
Head Circumference	546 ±5.0	545	542
Buttock to Knee Length	527 ±13.0	520	521
Popliteal Height	356 ±13.0	360	355
Knee Pivot to Floor Height	401 ±8.0	400	398
Buttock Popliteal Length	429 ±13.0	428	430
Chest Depth w/o Jacket	203 ±8.0	202	201
Foot Length	224 ±8.0	220	226
Hip Breadth	318 ±5.0	319	318
Arm Length	254 ±5.0	254	254
Knee Joint to Seat Back	458 ±8.0	464	460
Shoulder Width	349 ±8.0	350	348
Foot Width	86 ±8.0	85	84
Chest Circumference w/Jacket	866 ±15.0	860	852
Waist Circumference	776 ±15.0	773	778

SUMMARY
ESIIre PRE AND POST VERIFICATION

CONFIGURED FOR LEFT SIDE IMPACT

ESIIre LATERAL HEAD DROP

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-16-10	9-7-10
Sequential Test Number	-	2	3
Temperature (°C)	20.6-22.2	21.9	20.6
Relative Humidity (%)	10-70	38.8	48.1
Resultant Max (G)	125-155	147.1	152.6
Longitudinal Max (G)	<15	4.28	5.14

ESIIre LATERAL NECK TEST

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-18-10	9-10-10
Sequential Test Number	-	2	3
Temperature (°C)	20.6-22.2	22.1	22.1
Relative Humidity (%)	10-70	45.2	32.5
Pendulum Speed (m/s)	3.3-3.5	3.47	3.46
Pendulum Pulse 0-1.0 ms (m/s)	(-0.05)-0.00	-0.001	-0.001
Pendulum Pulse 2.5-3.0 ms (m/s)	(-0.375) - (-0.25)	-0.25	-0.26
Pendulum Pulse 13.5-14.0 ms (m/s)	(-3.7) - (-3.20)	-3.20	-3.20
Pendulum Pulse 17 ms (m/s)	-3.7	-3.62	-3.62
Max D-Plane rotation (deg)	49-59	53.2	52.5
Time of Max D-Plane Rotation (ms)	54-66	61.0	62.0
Time of Moment Decay from Peak to 0 Nm (ms)	53-88	60.0	58.0

ESIIre INDIVIDUAL RIB DROP TEST

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-16-10	9-7-10
Sequential Test Number	-	2	3
Temperature (°C)	20.6-22.2	22.0	22.2
Relative Humidity (%)	10-70	40.0	40.8
Drop Height 459 mm	36-40	U-38.0 M-38.0 L-39.3	U-37.2 M-37.6 L-39.1
Drop Height 815 mm	46-51	U-49.8 M-49.9 L-50.4	U-49.6 M-49.6 L-50.2

ESIIre FULL BODY THORAX IMPACT TEST

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-23-10	9-20-10
Sequential Test Number	-	2	3
Temperature (°C)	20.6-22.2	22.1	20.8
Relative Humidity (%)	10-70	48.0	47.1
Pendulum Speed (m/s)	5.4-5.6	5.4	5.40
Upper Rib Deflection (mm)	34-41	37.5	37.8
Middle Rib Deflection (mm)	37-45	41.9	42.2
Lower Rib Deflection (mm)	37-44	41.5	41.3
Peak Impactor Force after 6ms (N)	5100-6200	5358.2	5316.2

SUMMARY
ESIlre PRE AND POST VERIFICATION (CONTINUED)

CONFIGURED FOR LEFT SIDE IMPACT

ESIlre LATERAL ABDOMEN IMPACT TEST

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-23-10	9-30-10
Sequential Test Number	-	2	3
Temperature (°C)	20.6-22.2	22.0	20.5
Relative Humidity (%)	10-70	47.8	38.6
Pendulum Speed (m/s)	3.9-4.1	4.05	4.04
Max Sum of 3 Abdominal Loadcells (N)	2200-2700	2626.9	2526.8
Time of Max Sum of 3 Abdominal Loadcells from T-Zero (ms)	10-12.3	10.2	11.8
Peak Lateral Impactor Force (N)	4000-48000	4698.2	4602.9
Time of Peak Lateral Impactor Force from T-Zero (ms)	10.6-13.0	10.8	11.8

ESIlre LATERAL SPINE TEST

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-19-10	9-28-10
Sequential Test Number	-	2	3
Temperature (°C)	20.6-22.2	21.9	21.9
Relative Humidity (%)	10-70	39.5	31.3
Pendulum Speed (m/s)	5.95-6.15	6.14	6.14
Pendulum Pulse 0-1.0 ms (m/s)	(-0.05)-0.00	-0.001	-0.04
Pendulum Pulse 2.7-3.7 ms (m/s)	(-0.425)-(-0.24)	-0.39	-0.49
Pendulum Pulse 24.5-27.0 ms (m/s)	(-6.5)-(-5.8)	-6.42	-6.44
Pendulum Pulse 30 ms (m/s)	-6.5	-6.36	-6.43
Max D-Plane rotation (deg)	45-55	46.8	46.2
Time of Max D-Plane Rotation (ms)	54-66	43.0	44.6
Time of Moment Decay from Peak to 0 Nm (ms)	37-57	45.0	38.6

ESIlre LATERAL PELVIS IMPACT TEST

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-23-10	9-20-10
Sequential Test Number	-	2	3
Temperature (°C)	20.6-22.2	22.1	22.1
Relative Humidity (%)	10-70	47.6	34.7
Pendulum Speed (m/s)	4.2-4.4	4.35	4.35
Peak Lateral Impactor Force (N)	4700 – 5400	5212.4	4975.6
Time of Peak Lateral Impactor Force from T-Zero (ms)	11.8-16.1	13.5	12.5
Peak Pubic Symphysis Force (N)	1230-1590	1521.0	1391.6
Time of Peak Pubic Symphysis Force (ms)	12.2-17.0	14.0	13.5

SUMMARY
ESilre PRE AND POST VERIFICATION (CONTINUED)

CONFIGURED FOR LEFT SIDE IMPACT

ESilre LATERAL SHOULDER IMPACT TEST

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-23-10	9-20-10
Sequential Test Number	-	2	3
Temperature (°C)	20.6-22.2	21.8	22.1
Relative Humidity (%)	10-70	48.0	47.2
Pendulum Speed (m/s)	4.2-4.4	4.35	4.30
Peak Lateral Acceleration of Impactor (G)	7.5-10.5	10.4	7.77

ESilre MEASUREMENTS

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-24-10	9-30-10
Sequential Test Number	-	2	3
Temperature (°C)	20.6-22.2	22.1	22.1
Relative Humidity (%)	10-70	49.7	38.6
Sitting Height	909 ±9	909	903
Seat to Shoulder Joint	565 ±7	567	566
Seat to Lower Face of Thoracic Spine Box	351 ±5	353	355
Seat to Hip Joint (center of bolt)	100 ±3	98	100
Sole to Seat, Sitting	442 ±9	442	443
Head Width	155 ±3	156	153
Shoulder/Arm Width	470 ±9	465	476
Thorax Width	327 ±5	324	324
Abdomen Width	280 ±7	284	283
Pelvis Lap Width	366 ±7	362	362
Head Depth	201 ±5	202	201
Thorax Depth	267 ±5	268	270
Abdomen Depth	199 ±5	203	200
Pelvis Depth	240 ±5	238	237
Back of Buttocks to Hip Joint (center of bolt)	155 ±5	155	152
Back of Buttocks to Front Knee	606 ±9	610	601

**ATD INSPECTION LIST
PRE AND POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

		SIDIs		ESIRE	
		PRE	POST	PRE	POST
	Date	9-2-10	9-3-10	9-2-10	9-3-10
	Performed By	Mike Rawski	Mike Rawski	Mike Rawski	Mike Rawski
PART	INSPECTION	RESULT	RESULT	RESULT	RESULT
Skin	Visual	Mike Rawski	Mike Rawski	Mike Rawski	Mike Rawski
Head	Visual, Ballast, Accelerometer Mount	Mike Rawski	Mike Rawski	Mike Rawski	Mike Rawski
Neck	Visual and Palpated, Cable Torque	Mike Rawski	Mike Rawski	Mike Rawski	Mike Rawski
Spine Box	Visual, Ballast, Weldment, Accelerometer Mount	Mike Rawski	Mike Rawski	Mike Rawski	Mike Rawski
Rib Cage	Visual, Palpated, Measured, Stiffness	Mike Rawski	Mike Rawski	Mike Rawski	Mike Rawski
Sternum	Visual	Mike Rawski	Mike Rawski	Mike Rawski	Mike Rawski
Lumbar Spine	Visual	Mike Rawski	Mike Rawski	Mike Rawski	Mike Rawski
Abdomen	Visual	Mike Rawski	Mike Rawski	Mike Rawski	Mike Rawski
Pelvis	Visual, Palpated, Accelerometer Mount	Mike Rawski	Mike Rawski	Mike Rawski	Mike Rawski
Upper Legs	Visual	Mike Rawski	Mike Rawski	Mike Rawski	Mike Rawski
Knees	Visual, Stops, Inserts	Mike Rawski	Mike Rawski	Mike Rawski	Mike Rawski
Lower Legs	Visual, Range of Motion	Mike Rawski	Mike Rawski	Mike Rawski	Mike Rawski
Ankles	Visual, Range of Motion	Mike Rawski	Mike Rawski	Mike Rawski	Mike Rawski
Feet	Visual, Range of Motion	Mike Rawski	Mike Rawski	Mike Rawski	Mike Rawski
Joints	1 to 2 G Range	Mike Rawski	Mike Rawski	Mike Rawski	Mike Rawski
Other	-	-	-	-	-