

REPORT NUMBER: NCAP-MCW-11-001

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

**FORD MOTOR COMPANY
2011 FORD FIESTA 4-DOOR SEDAN
NHTSA NUMBER: MB 0213**

**PREPARED BY:
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TEST DATE: 11 AUGUST 2010

REPORT DATE: 25 AUGUST 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**

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

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

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

Date: _____

Technical Report Documentation Page

1. Report No. NCAP-MCW-11-001	2. Government Accession No.	3. Recipient's Catalog No.																																				
4. Title and Subtitle Final report of New Car Assessment Program Side Impact Testing of a 2011 Ford Fiesta 4-door sedan NHTSA no. MB 0213	5. Report Date August 25, 2010	6. Performing Organization Code MCW																																				
	8. Performing Organization Report No. MCW-DOT-11SN01																																					
7. Author(s) Frank A. Pintar, Ph. D, Project Manager Mark Meyer, Project Engineer	10. Work Unit No.																																					
	11. Contract or Grant No. DTNH22-09-D-00123																																					
9. Performing Organization Name and Address Medical College of Wisconsin 5000 W. National Ave. Research 151 Milwaukee, WI 53295	13. Type of Report and Period Covered: Final Test Report Aug. 11 to Aug. 25, 2010																																					
	14. Sponsoring Agency Code NPS-10																																					
15. Supplementary Notes																																						
16. Abstract A 55/28 km/h 90° Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2011 Ford Fiesta 4-door sedan 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 11 August 2010. The impact velocity of the Moving Deformable Barrier (MDB) was 61.9 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 29 °C. The target vehicle's post test maximum static crush was 265mm at level 2. The test vehicle's performance is as follows: <table border="1" data-bbox="162 1365 1461 1785"> <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>141.934</td> </tr> <tr> <td>Maximum Thorax Rib Deflection</td> <td>mm</td> <td>44</td> <td>32.4</td> </tr> <tr> <td>Total Abdominal Force</td> <td>N</td> <td>2500</td> <td>793.2</td> </tr> <tr> <td>Public Symphysis Force</td> <td>N</td> <td>6000</td> <td>2503.648</td> </tr> </tbody> </table> <table border="1" data-bbox="162 1596 1461 1785"> <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>245.866</td> </tr> <tr> <td>Lower Spine Resultant Acceleration</td> <td>G's</td> <td>82</td> <td>87.99</td> </tr> <tr> <td>Total Pelvic Force (sum of Acetabular and Iliac forces)</td> <td>N</td> <td>5525</td> <td>2195.8</td> </tr> </tbody> </table>				<u>Units</u>	<u>Threshold</u>	<u>DRIVER ATD (ES-2re)</u>	Head Injury Criteria (HIC ₃₆)	N/a	1000	141.934	Maximum Thorax Rib Deflection	mm	44	32.4	Total Abdominal Force	N	2500	793.2	Public Symphysis Force	N	6000	2503.648		<u>Units</u>	<u>Threshold</u>	<u>Pass. ATD (SID-IIs)</u>	Head Injury Criteria (HIC ₃₆)	N/a	1000	245.866	Lower Spine Resultant Acceleration	G's	82	87.99	Total Pelvic Force (sum of Acetabular and Iliac forces)	N	5525	2195.8
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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.																																						

Test Vehicle: 2011 Ford Fiesta 4-Door Sedan
Test Program: SINCAP

NHTSA Number: MB 0213
Test Date: August 11, 2010

Technical Report Documentation Page (CONTINUED)

<i>17. Key Words</i> New Car Assessment Program (NCAP) Side impact MDB ES-2re SID-IIs		<i>18. Distribution Statement</i> Copies of this report are available from - National Highway Traffic Safety Administration Technical Reference Division 1200 New Jersey Ave, SE, Room W43-410 Washington, D.C. 20590	
<i>19. Security Classif. (of this report)</i> Unclassified	<i>20. Security Classif. (of this page)</i> Unclassified	<i>21. No. of Pages</i> 127	<i>22. Price</i>

Form DOT F1700.7 (8-72)

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SECTION 1

PURPOSE AND TEST PROCEDURE

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 Ford Fiesta. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated January 2010.

SUMMARY

A 2011 Ford Fiesta 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 61.9 km/h (38.5 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 August 11, 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	142.934
Maximum Thorax Rib Deflection	mm	44	32.4
Combined Abdominal Force	N	2500	793.2
Pubic Symphosis Force	N	6000	2503.648

PASSENGER DUMMY INJURY VALUES			
Measurement description	Passenger ATD (SID-IlIs)		
	Units	Threshold	Result
Head Injury Criteria (HIC ₃₆)	N/a	1000	245.866
Lower Spine (T ₁₂) Resultant Acceleration	G's	82	87.993
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2195.8

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		
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 (Torso/Pelvis Side Airbag)	Yes – Seat back	Deployed properly	No	N/a
Seat Belt Pretensioner	Yes	Deployed	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 265 mm at Level 2, 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-IIre 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. 16 – Dummy/Vehicle Temperature Stabilization

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

VEHICLE INFORMATION	
NHTSA No.	MB 0213
Model Year	2011
Make	Ford
Model	Fiesta
Body Style	4-Door Sedan
VIN	3FADP4AJXBM107221
Color	Ingot Silver Metallic
Delivery Date	July 29, 2010
Odometer Reading (mi)	53
Odometer Reading (km)	85.3
Dealer	Boucher Ford
Transmission	6 - speed automatic
Final Drive	FWD
Type/No. Cylinders	4
Engine Disp. (L)	1.6
Engine Placement	Lateral
Roof Rack	No
Sunroof/T-Top	No
Tinted Glass	No
Traction Control	Yes
Power Brakes	Yes
Front Disc	Yes
Rear Disc	No-drum

VEHICLE OPTIONS	
Anti-Lock Brakes	Yes
All-Wheel Drive	No
Power Steering	Yes
Driver Frontal 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 - driver
Load Limiters	Yes - driver
Automatic Door Locks	Yes
Bucket Seats	Yes
Tilt Steering	Yes
Other	

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

Yes

DATA FROM CERTIFICATION LABEL			
Manufacturer	Ford Motor Company	GVWR (kg)	1642
		GAWR Front(kg)	839
Date of Manufacture	June 2010	GAWR Rear (kg)	816

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION				
	Front	Rear	Third	Total
Designated Seating Capacity (DSC)	2	3	0	5
Capacity Weight (VCW) kg				375
DSC X 68.04 kg				340
Cargo Weight (RCLW) †				35

(A)

(B)

(A-B)†

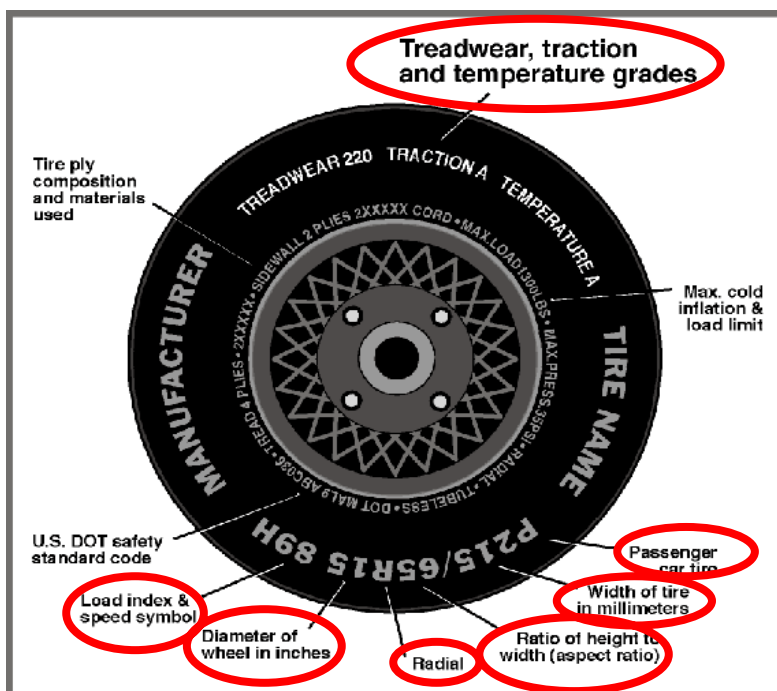
Test Vehicle: 2011 Ford Fiesta 4-Door Sedan
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**DATA SHEET NO. 1
 GENERAL TEST AND VEHICLE PARAMETER DATA (CONTINUED)**

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)	300	300
Cold / Test Pressure (kPa)	32	32
Recommended Tire Size	P18560R15	P18560R15
Tire Size on Vehicle	P18560R15	P18560R15
Tire Manufacturer	Kumho	Kumho
Tire Model	Solus KH25	Solus KH25
Treadware	Not stated	Not stated
Traction	Not stated	Not stated
Temperature Grade	Not stated	Not stated
Tire Plies Sidewall	Polyester - 1ply	Polyester - 1ply
Tire Plies Body	Polyester - 2 ply, Steel - 1 ply	Polyester - 2 ply, Steel - 1 ply
Load Index & Speed Symbol	84H	84H
Tire Material	Polyester and nylon	Polyester and nylon
DOT safety code (right)	C0R9 YPL8 (0710)	C0R9 YPL8 (0710)
DOT safety code (right)	C0R9 YPL8 (0710)	C0R9 YPL8 (0710)

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	360	247	607	389	319	708	401	314	715
Right	kg	340	238	578	351	279	630	351	278	629
Ratio	%	59	41	100	55	45	100	56	44	100
Totals	kg	700	485	1185	740	598	1338	752	592	1344

TARGET TEST WEIGHT CALCULATION			
	Units		
Total Delivered Weight (UVW)	kg	1185	(A)
Sum of Actual Weight of 2 P572 ATD's Used	kg	124	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	35	(C)
Calculated Target Vehicle Test Weight (TVTW)	kg	1344	(A + B + C)

TEST VEHICLE ATTITUDE AND CG						
Measurement description	Units	LF	RF	LR	RR	CG (aft of front axle)
Fully Loaded	mm	656	669	638	654	1229
As Tested (Fully Loaded +/- 10 mm at each wheel well)	mm	658	670	642	660	1233

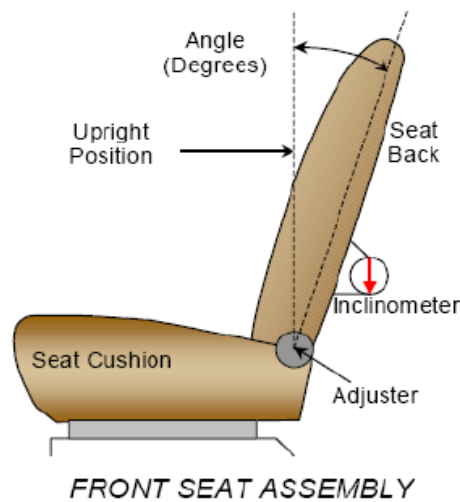
GENERAL TEST VEHICLE DATA		
Measurement description	Units	Value
Total Vehicle Wheel Base	mm	2490
Total Vehicle Length at Left Side	mm	4095
Total Vehicle Length at Centerline	mm	4425
Total Vehicle Length at Right Side	mm	4095
Weight of Ballast in Cargo Area	kg	10.4
Weight of Vehicle Components Removed	kg	15.2
Amt of Stoddard Solvent in Fuel Tank	L	43.5

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

BALLAST INFORMATION	
Mass of Ballast Added (kg)	10.4 kg
Location	trunk
<u>Components Removed from Test Vehicle</u> Non-struck front and rear door glasses Spare tire and jack	

TEST VEHICLE VERTICAL IMPACT LINE DATA		
Measured parameter	Units	Value
Target Impact Point Aft of Front Axle	mm	305
Actual Impact Point Aft of Front Axle	mm	299

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	10.3°
Passenger w/ Seated Dummy	18.4°

‡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	282	12 th notch from full forward
Passenger Seat	Non - adjustable	N/a

‡Full forward = notch 0

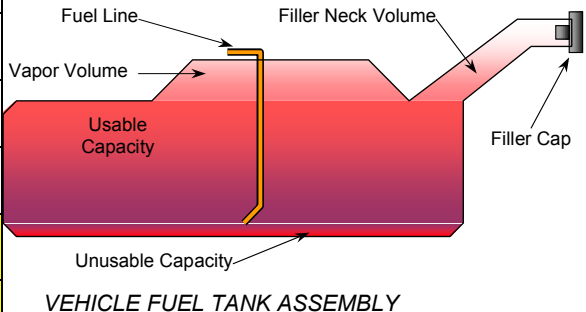
Seat Belt Upper Anchorages

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

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

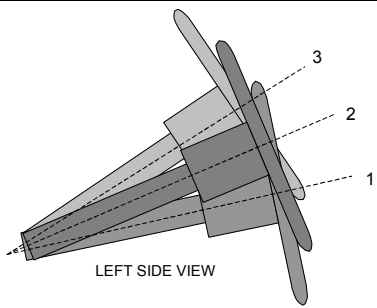
DATA SHEET NO. 2
SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA (CONTINUED)

Fuel Tank Capacity

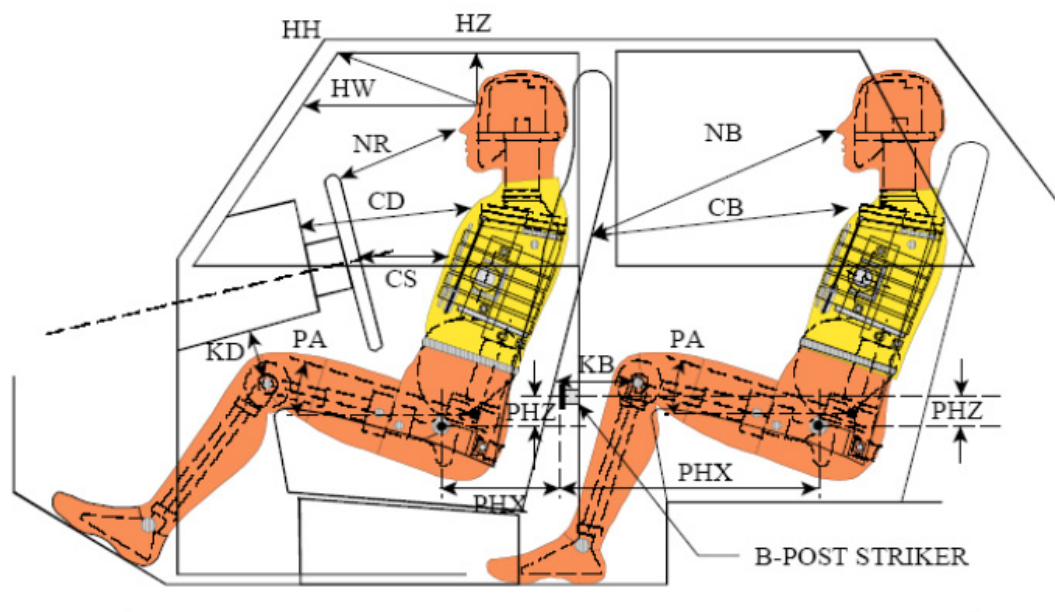
FUEL TANK CAPACITY			
Description	Units	Value	
Usable Capacity of Standard Equipment Fuel Tank	L	46.9	
Usable Capacity of Optional Equipment Fuel Tank	L	0	
Usable Capacity of Vehicle Used for Certification Testing to Requirements	L	46.9	
Amount of Stoddard Added for Test	L	43.5	
% Usable Capacity (92%-94%)	%	92.8	
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	16.1	n/a	
Geometric Center - Position 2	18.1	n/a	
Uppermost - Position 3	20.1	n/a	
Telescopic Steering Wheel Travel	None	n/a	
Test position	18.1	n/a	
Steering wheel positioned 18.1° relative to side sill panel. The steering column does not have a telescope adjustment and it was set in the mid position			LEFT SIDE VIEW STEERING COLUMN ASSEMBLY

DATA SHEET NUMBER 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

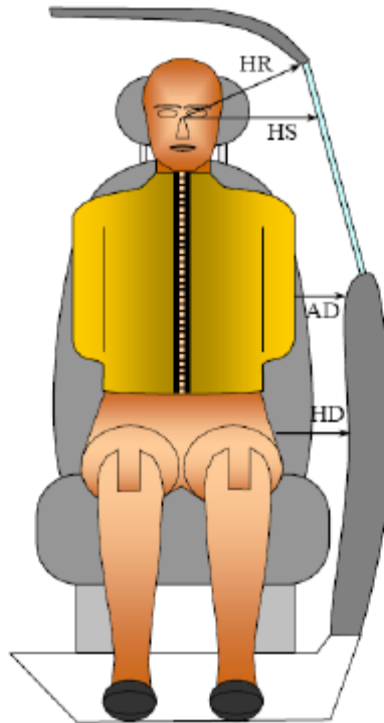


LEFT SIDE VIEW

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

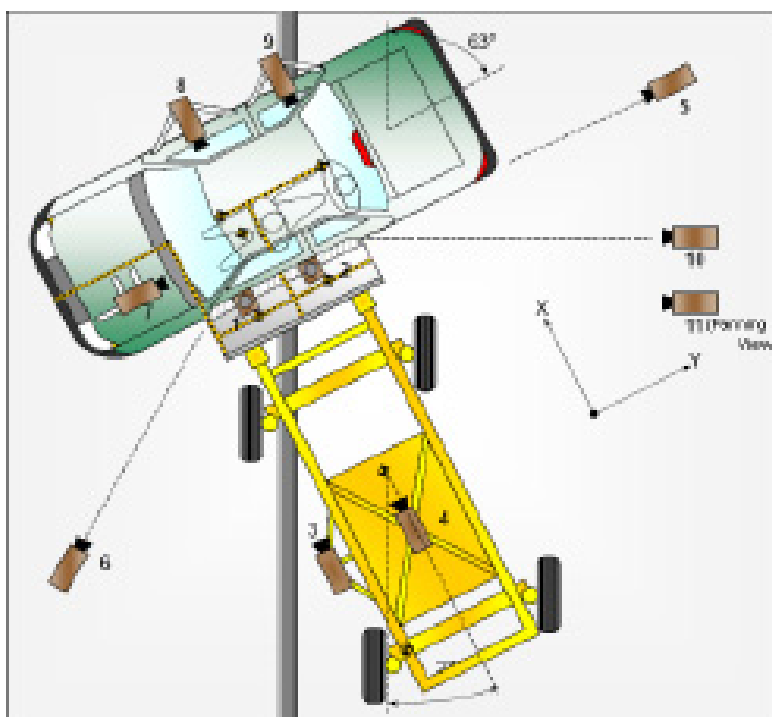
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION						
Driver code	Pass. code	Measurement description	Driver		Passenger	
			Length (mm)	Angle (°)	Length (mm)	Angle (°)
HH		Header to Header	347	16.2		
HW		Header to Windshield	653	0		
HZ	HZ	Head to Roof	163	90	264	90
NR	NB	Nose to Rim/Seat Back	484	-18.5	458	-15.7
CD	CB	Chest to Dash/ Seat Back	569	0	427	13.8
CS		Chest to Steering Wheel	394	11.8		
KDL	KBL	Left knee to Dash/ Seat Back	182	43.8	202	28.7
KDR	KBR	Right knee to Dash/ Seat Back	154	44.5	205	28.1
PA	PA	Pelvic Angle		N/a		20.2
PHX	PHX	H-point to Striker (X - axis)	152		269	
PHZ	PHZ	H-point to Striker (Z - axis)	119		349	
SA	SA	Seat Back Angle		12.5		25.6

DATA SHEET NUMBER 4
DUMMY LATERAL CLEARANCE DIMENSIONS



DUMMY LATERAL CLEARANCE DIMENSION INFORMATION				
Code	Description	Units	Driver	Passenger
HR	Head to Side Header	mm	178	228
HS	Head to Side Window	mm	292	279
AD	Arm to Door (upper)	mm	165	152
AD	Arm to Door (lower)	mm	165	159
HD	H - Point to Door	mm	145	158

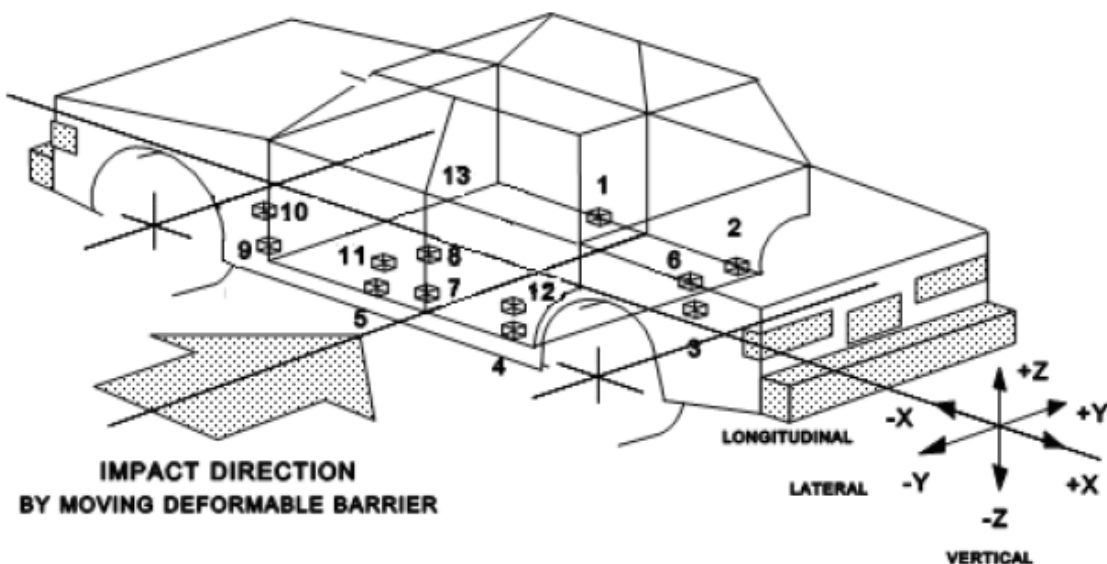
DATA SHEET 5 CAMERA LOCATIONS AND DATA



CAMERA LOCATIONS AND DATA							
No.	Camera view	Location			Angle °	Lens mm	Rate fps
		X	Y	Z			
		mm	mm	mm			
1	Overhead Overall	-381	1500	-4179	90	8	1000
2	Overhead Impact	-236	-464	-4608	90	12.5	1000
3	Left Impact Point (MDB)	-2058	1086	-221	0.4	35	1000
4	Side Overall (MDB)	-1476	1722	-669	3.6	13	1000
5	Rear	2527	8043	-475	5.0	50	1000
6	Left Front	-1680	-4102	-602	10.0	25	1000
7	Driver Front (OB)	3650	-388	-796	5.0	25	1000
8	Driver Side (OB)	2376	804	626	7.5	12.5	1000
9	Passenger Side (OB)	1514	236	-707	10.5	12.5	1000
10	Real - Time Left Rear	-	-	-	-	-	-
11	Overhead Overall	-	-	-	-	-	-

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**

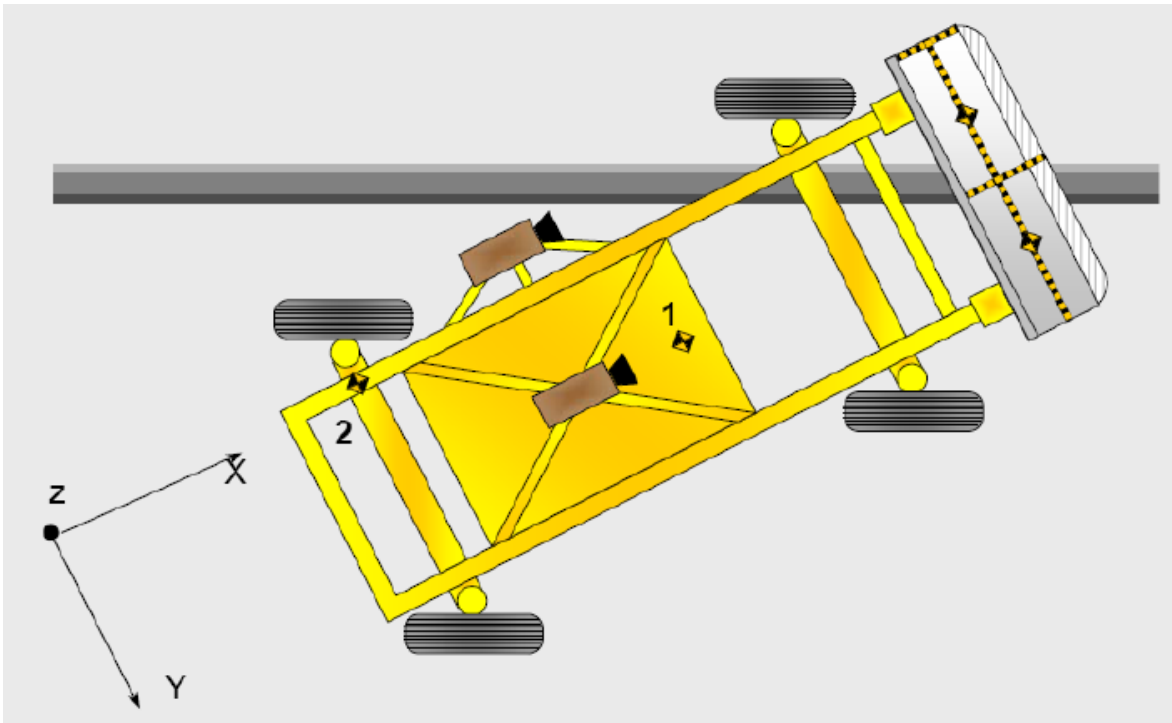


VEHICLE ACCELEROMETER PRE-TEST LOCATIONS				
Loc. no.	Accelerometer location	Measurements (mm)		
		X	Y	Z
1	Right Sill at Front Seat	3022.4	661.7	257.2
2	Right Sill at Rear Seat	1580.2	615.5	202.4
3	Rear Floor Pan Above Axle	1124.3	-39.5	-31.7
4	Left Sill at Rear Door	1692.0	-657.0	245.7
5	Left Sill at Front Door	2425.9	-661.3	245.9
6	Right Rear Occupant Compartment	1778.1	251.4	20.0
7	B - Post Lower	2042.4	-757.2	-261.9
8	B - Post Middle	2043.7	-756.9	-66.6
9	A - Post Lower	3075.6	-756.1	-98.7
10	A - Post Middle	3071.2	-739.0	-272.1
11	Front Seat Track	2394.8	-579.1	117.6
12	Rear Seat Structure	1783.5	-335.7	25.1
13	Vehicle CG	2491.8	-55.7	-102.0

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	1	-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	85	263
2	Occupant H - Point	mm	265	530
3	Mid Door	mm	263	610
4	Window Sill	mm	102	937
5	Window Top	mm	27	1351
	Maximum Penetration	mm	265	530

INSTRUMENTATION	
Driver Dummy Channels	16
Passenger Dummy Channels	19
Vehicle Structural Accelerometers	21
MDB Accelerometers	6
Total No. of Contact Switches	8
Total	70

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	434.1	247.7	681.8
Right	kg	327.0	348.4	675.4
Ratio	%	56.1	43.9	100
Totals	kg	761.1	596.1	1357.2

SPEED AND IMPACT DATA			
Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	61.9
Trap No. 2 Velocity (Secondary)	km/h	61.1 to 62.7	61.6
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	90.0

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE					
Vertical Location			From Centerline		Maximum Crush
Row	Description	Height	Distance	Direction	
A	Center of Bumper	432	700	Right	159
B	Top of Bumper	560	700	Right	75
C	Mid – Level	686	800	Right	111
D	Top of Stack	813	800	Right	152

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	Top of head to header; side of head to curtain airbag	Top of head to header; side of head to curtain airbag
Upper Torso Contact	To torso airbag	150mm below window sill
Lower Torso Contact	To seat and torso airbag	330mm below window sill
Left Knee Contact	To left front door panel	To left rear door panel
Right Knee Contact	To left knee	To left knee

POST TEST DOOR OPENING AND SEAT TRACK INFORMATION		
Description	Front	Rear
Left Side Doors	Jammed shut	Jammed shut
Right Side Doors	Closed/latched/operable	Closed/latched/operable
Hatch and Other Door Opening	N/a	N/a
Seat Movement	~20 mm of seat crush	~100 mm of seat crush
Seat Back Failure	None noted	None noted

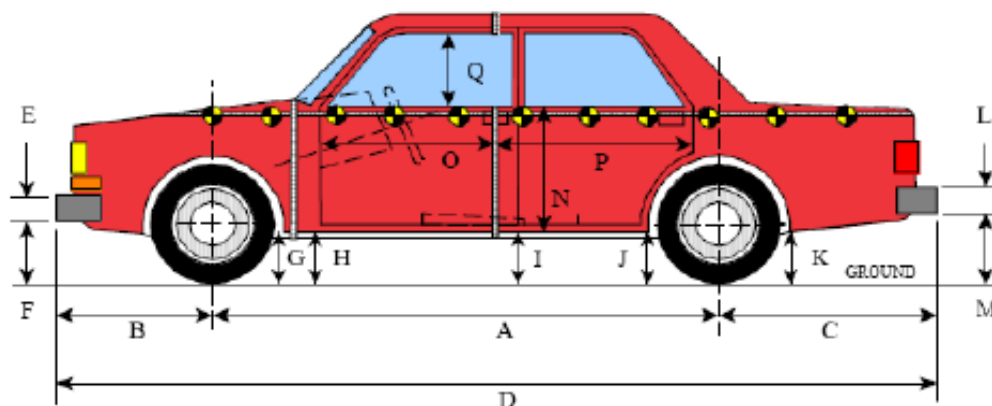
POST TEST STRUCTURAL OBSERVATIONS	
Critical Areas of Performance	Observations/Conclusions
Pillar Performance	No damage
Sill Separation	Max separation of 116 mm at b-pillar; door remained latched
Windshield Damage	No damage
Window Damage	Struck side windows shattered on impact
Other Notable Effects	None 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	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

MDB LEFT EDGE IMPACT POINT DATA			
Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	6 mm forward
Vertical Offset	mm	+/- 50	3 mm below

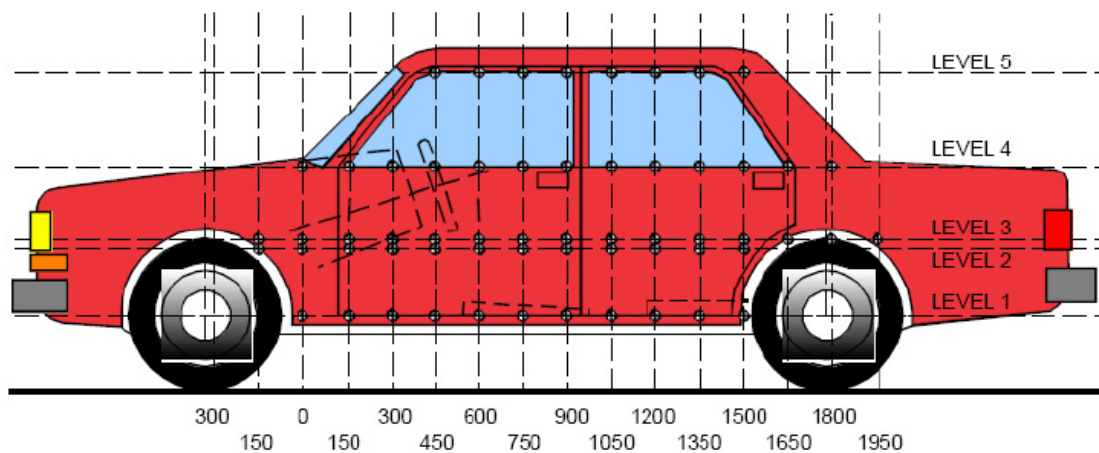
DATA SHEET NUMBER 11
VEHICLE PROFILE MEASUREMENTS



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	2490	2453	-37
B	Front Axle to FSOV	710	685	-25
C	Rear Axle to RSOV	895	942	47
D	Total Length at Centerline	4425	4411	-14
E	Front Bumper Thickness	340	340	0
F	Front Bumper Bottom to Ground	265	268	3
G	Sill Height at Front Wheel Well	273	267	-6
H	Sill Height at Front Door Leading Edge	251	250	-1
I	Sill Height at B-Pillar	268	294	26
J1	Pinch Weld Height at Rear Wheel Well	209	189	-20
J2	Sill Height at Rear Wheel Well	296	288	-8
K	Sill Height Aft of Rear Wheel Well	318	296	-22
L	Rear Bumper Thickness	199	199	0
M	Rear Bumper Bottom to Ground	455	424	-31
N	Sill Height to Window Bottom Sill	735	684	-51
O	Front Door Leading Edge to Impact C/L	1065	1052	-13
P	Rear Door Trailing Edge to Impact C/L	819	715	-104
Q	Front Window Opening	422	404	-18
R	Right Side Length	4095	4097	2
S	Left Side Length	4095	4080	-15
T	Vehicle Width at B-Post	1681	1494	-187

DATA SHEET NUMBER 12
VEHICLE EXTERIOR CRUSH MEASUREMENTS



LEFT SIDE VIEW

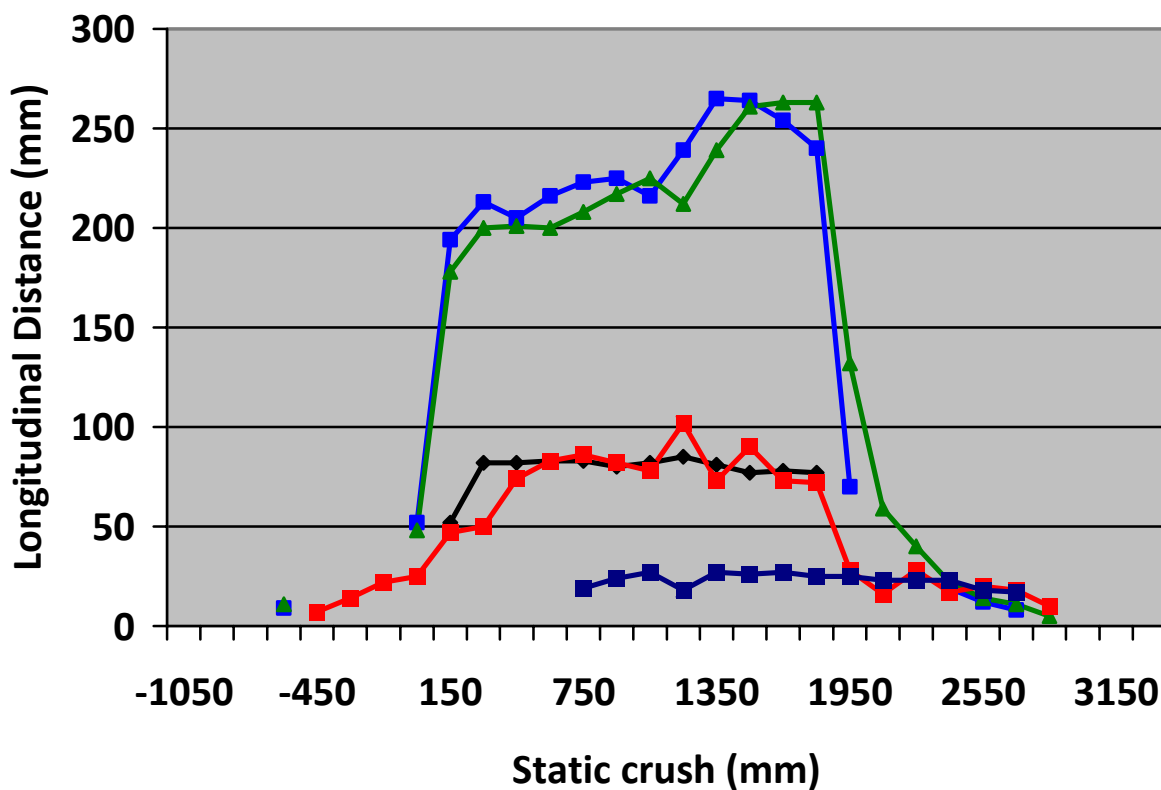
LEFT SIDE VIEW		
Level	Measurement description	Height above ground (mm)
1	Sill Top	263
2	Occupant H - Point	530
3	Mid - Door	610
4	Window Sill	937
5	Window Top	1351

MAXIMUM CRUSH DATA					
	Level 1	Level 2	Level 3	Level 4	Level 5
Maximum Crush (mm)	85	265	263	102	27
Distance From Impact (mm)	1200	1350	1650,1800	1200	1050,1650

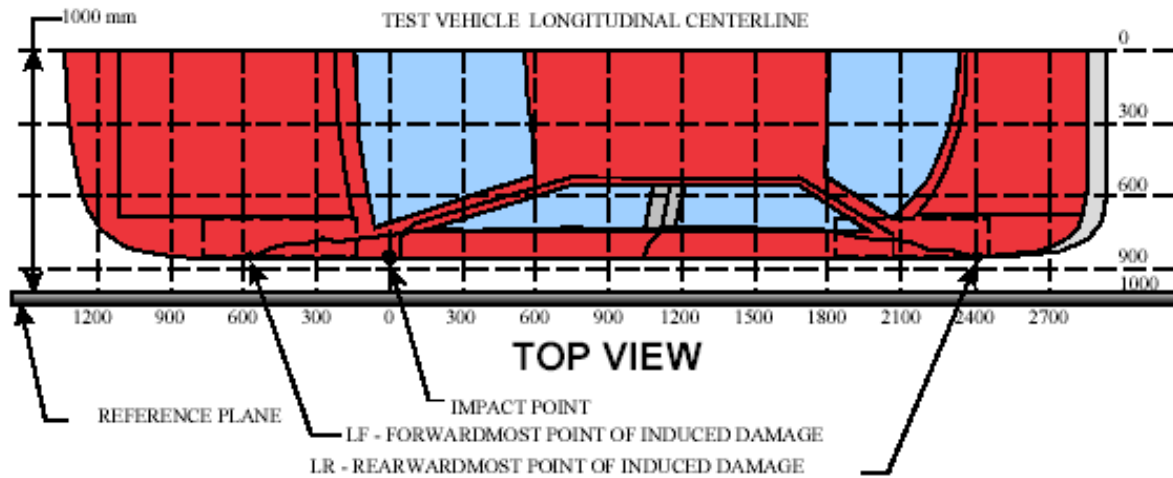
DATA SHEET NUMBER 12
VEHICLE EXTERIOR CRUSH MEASUREMENTS (CONTINUED)

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															
	-900															
	-750															
	-600				338	347	9	334	345	11						
	-450										414	421	7			
	-300										412	426	14			
	-150										402	424	22			
	0				314	366	52	313	361	48	405	430	25			
	150	349	401	52	325	519	194	326	504	178	400	447	47			
	300	353	435	82	324	537	231	322	522	200	396	446	50			
	450	352	434	82	320	525	205	319	520	201	393	467	74			
	600	352	435	83	318	534	216	317	517	200	393	476	83			
	750	353	436	83	317	540	223	316	524	208	393	479	86	576	595	19
	900	356	436	80	317	542	225	315	532	217	394	476	82	595	619	24
	1050	360	442	82	318	534	216	316	541	225	397	475	78	607	634	27
	1200	364	449	85	320	559	239	318	530	212	402	504	102	626	644	18
	1350	369	450	81	325	590	265	321	560	239	409	482	73	624	651	27
	1500	368	445	77	330	594	264	326	587	261	414	504	90	630	656	26
	1650	363	441	78	335	589	254	332	595	263	423	496	73	630	657	27
	1800	355	432	77	328	568	240	336	599	263	433	505	72	630	655	25
	1950				316	386	70	326	458	132	444	472	28	629	654	25
	2100							321	380	59	454	470	16	624	647	23
	2250							326	366	40	467	495	28	617	640	23
	2400				333	352	19	346	368	22	485	502	17	606	629	23
	2550				359	371	12	383	397	14	504	524	20	598	616	18
	2700				389	397	8	408	419	11	527	545	18	589	606	17
	2850							437	442	5	552	562	10			
	3000															
3150																
3330																

DATA SHEET NUMBER 12
VEHICLE EXTERIOR CRUSH MEASUREMENTS (CONTINUED)

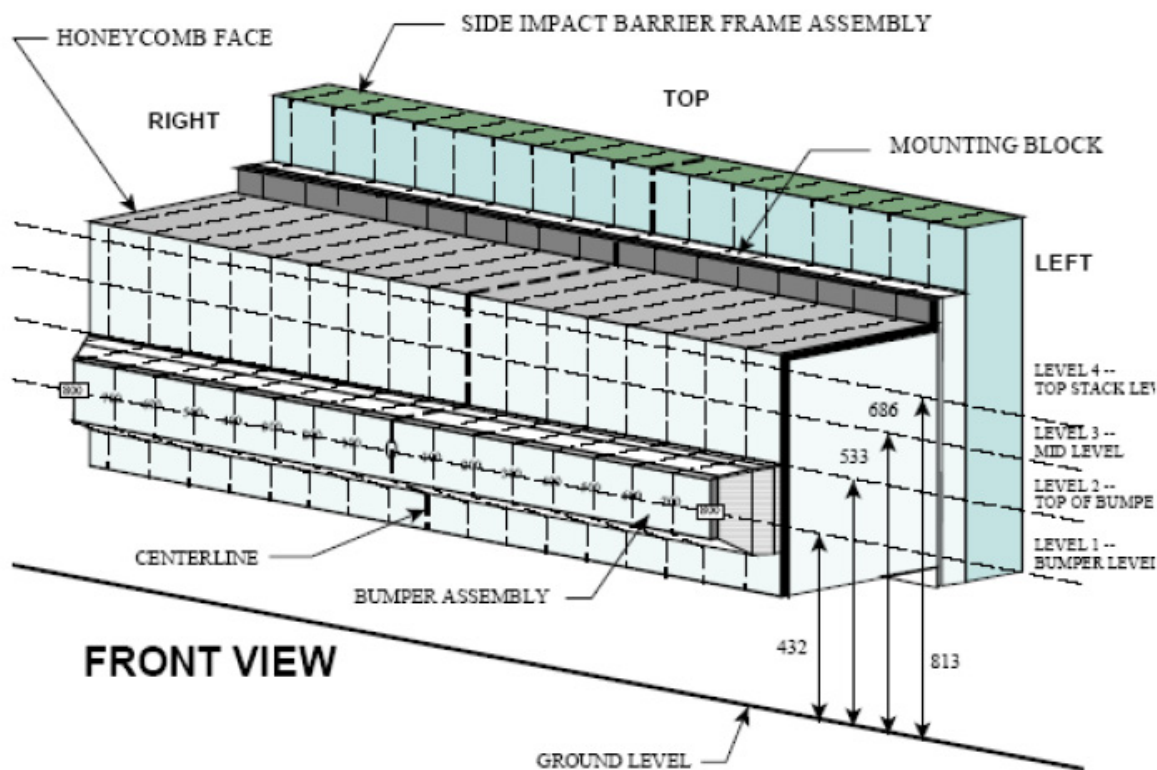


DATA SHEET NUMBER 13
VEHICLE DAMAGE PROFILE DISTANCES



DAMAGE PROFILE DISTANCES					
DPD	Distance From Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Maximum Static Crush (mm)
1	-150	2	342	342	0
2	360	2	537	344	193
3	870	2	547	346	201
4	1380	2	594	347	247
5	1890	2	426	348	78
6	2400	2	352	352	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	141	137	138	142	147	152	143	142	140	140	133	136	134	132	138	159	158
2	65	63	58	54	45	40	42	45	45	36	47	51	57	63	69	75	70
3	1	2	6	13	19	38	57	40	20	16	14	15	17	20	30	53	111
4	20	4	1	13	35	74	66	41	39	34	26	29	30	37	58	111	152

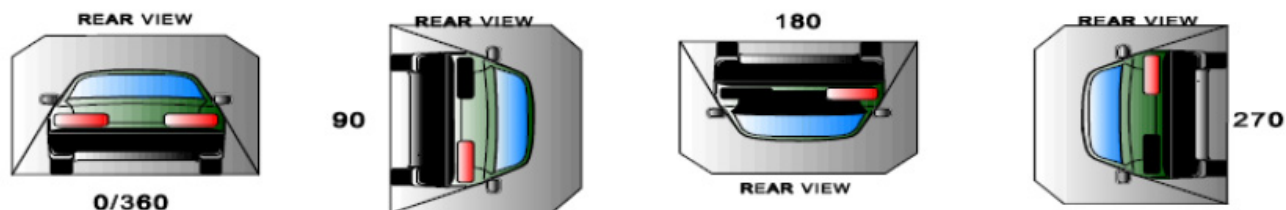
all values in mm

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

Temperature at Time of Impact: 24° C Test Time: 3:47 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



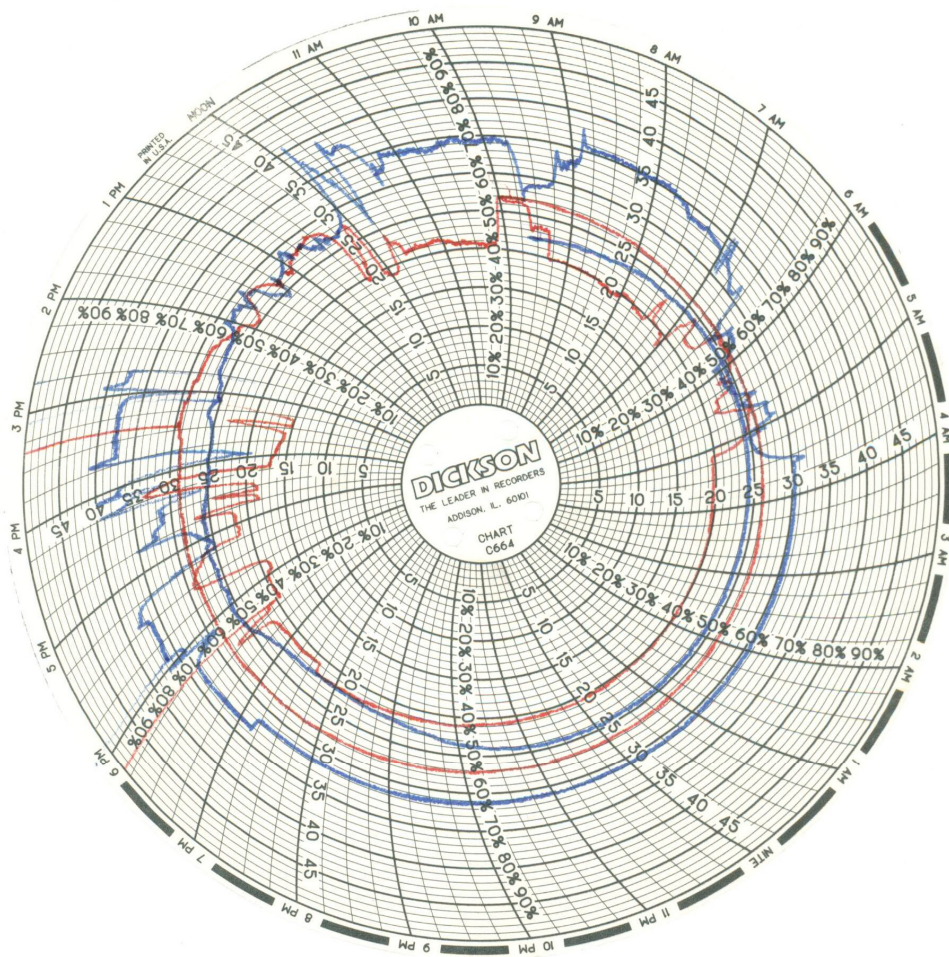
ROLLOVER SOLVENT COLLECTION TIME TABLE			
Test Phase	Rotation Time (sec.)	Hold Time (sec.)	Total Time (sec.)
Tolerance	60-180	>= 300	-
0° to 90°	65	301	366
90° to 180°	65	300	365
180° to 270°	65	302	367
270° to 360°	65	304	369

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 Ford Fiesta 4-Door Sedan
Test Program: SINCAP

NHTSA Number: MB 0213
Test Date: August 11, 2010

APPENDIX A
PHOTOGRAPHS

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

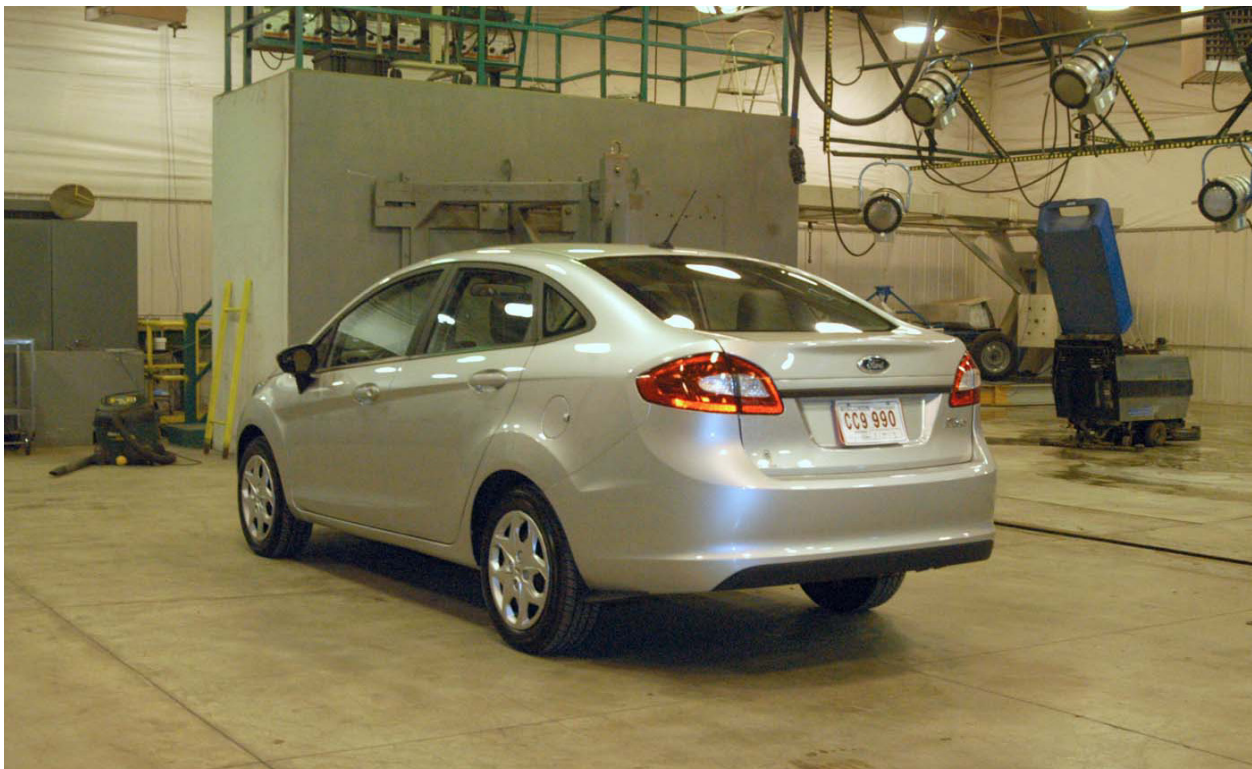


Figure A-2: As-Delivered Left Rear Three Quarter View of Test Vehicle

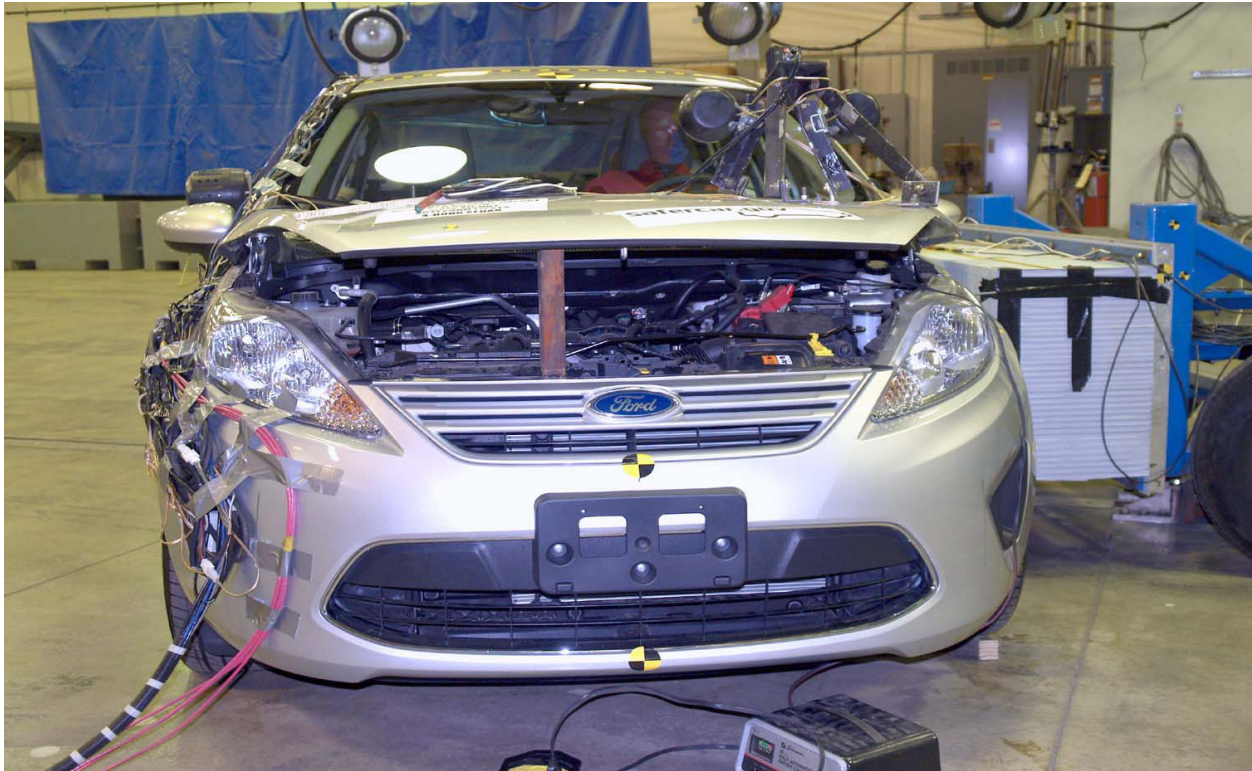


Figure A-3: Pre-Test Frontal View of Test Vehicle

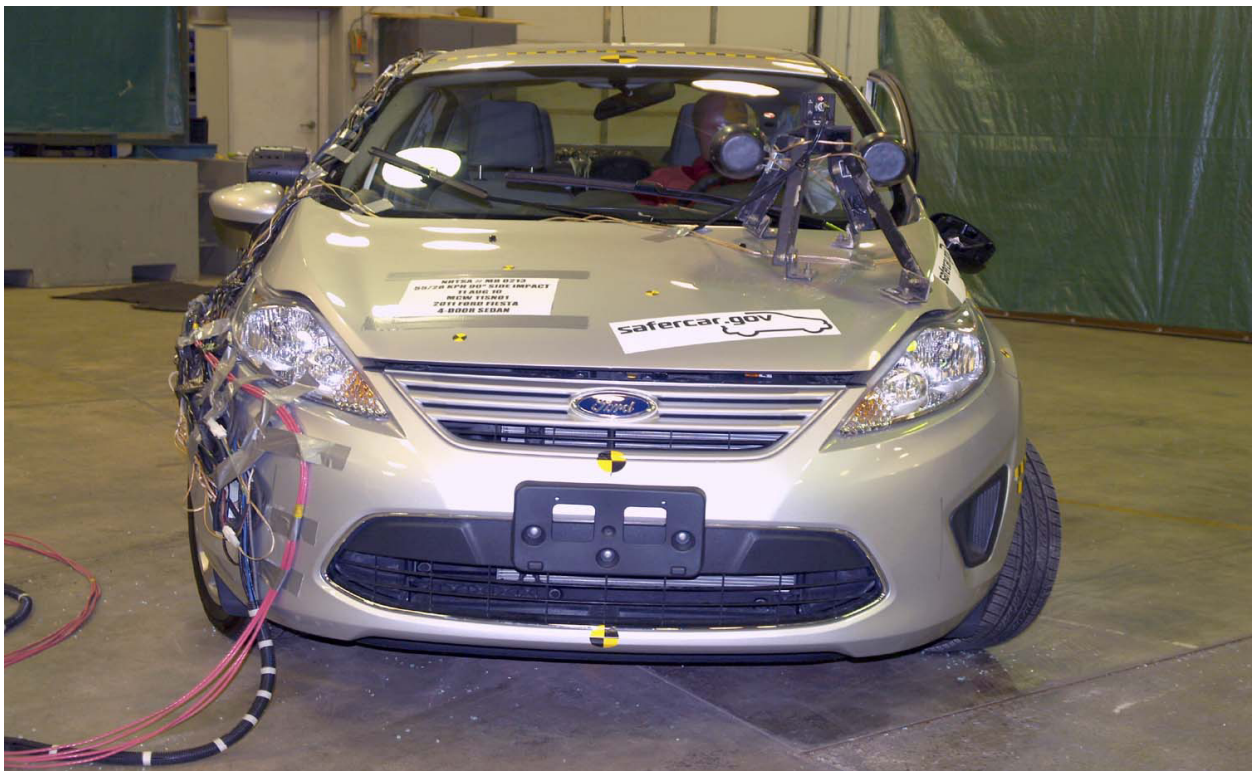


Figure A-4: Post-Test Frontal View of Test Vehicle



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

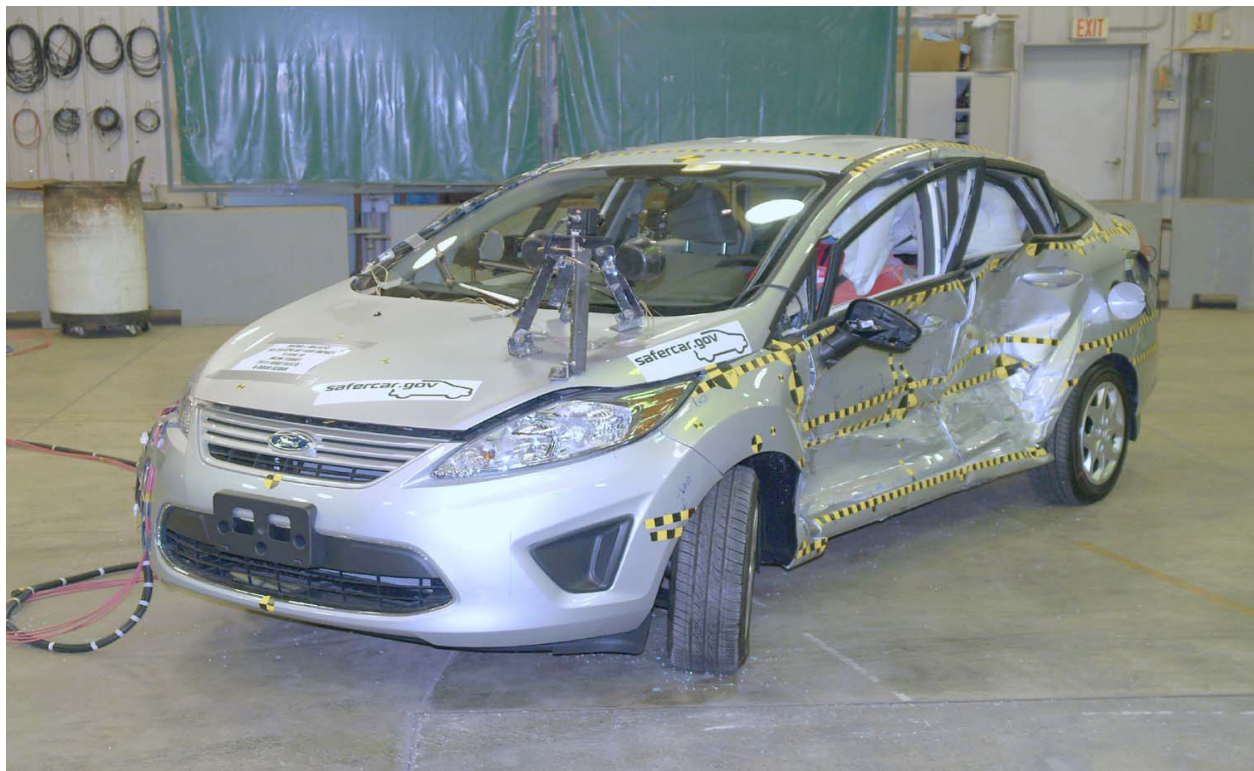


Figure A-6: Post-Test Left Front Three-Quarter View of Test Vehicle



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

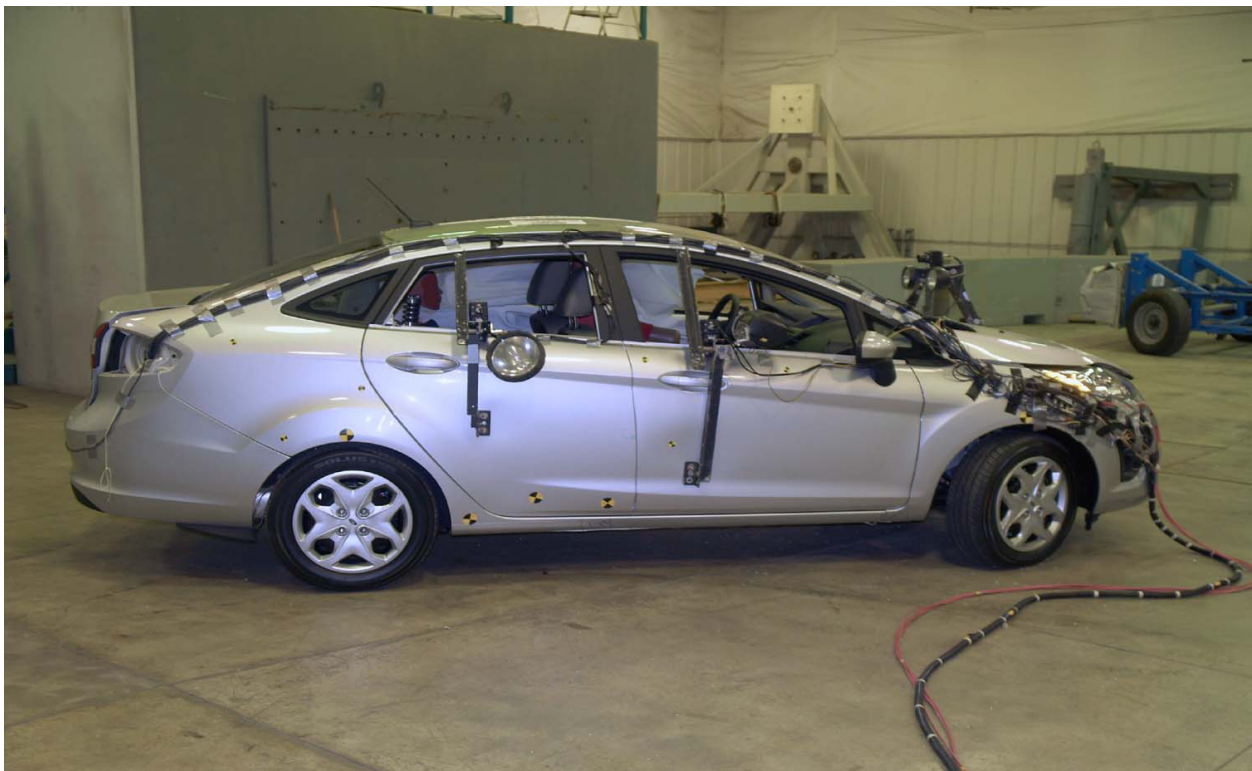


Figure A-14: Post-Test Right Side View of Test Vehicle

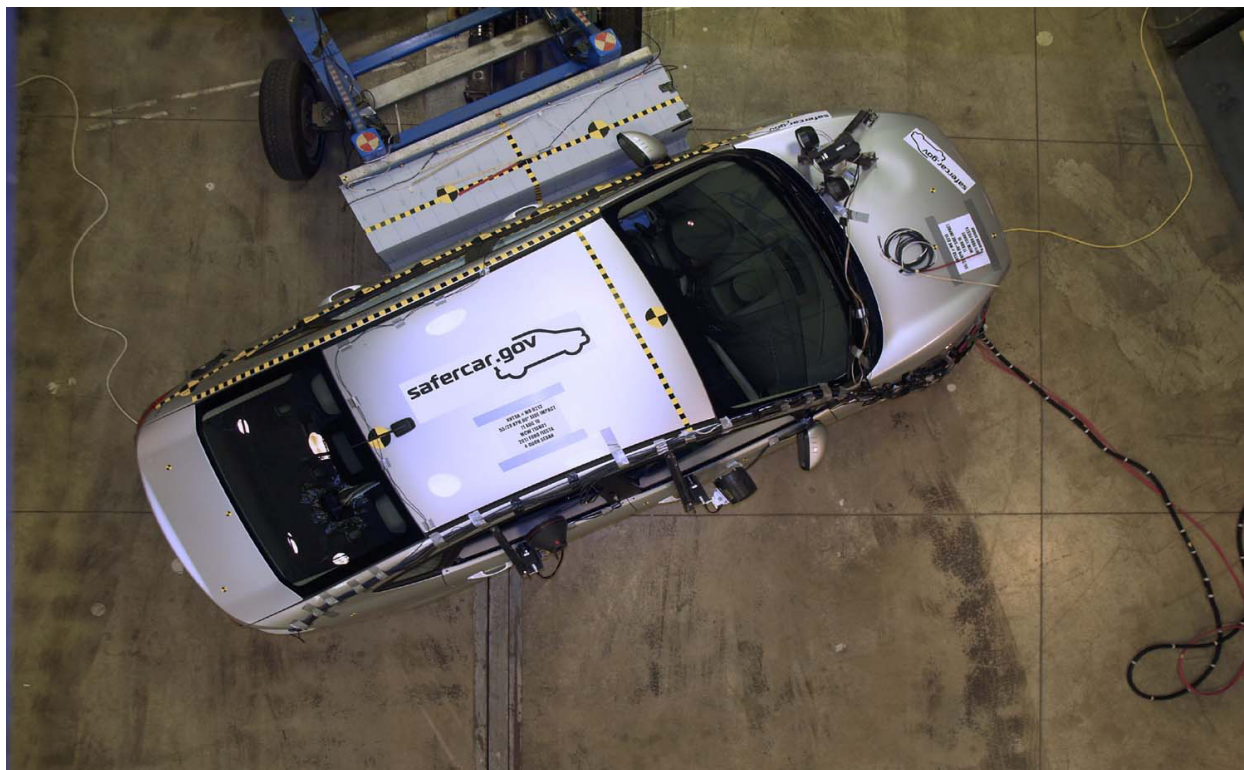


Figure A-15: Pre-Test Overhead View of Test Vehicle with MDB Positioned Against Side of Test Vehicle

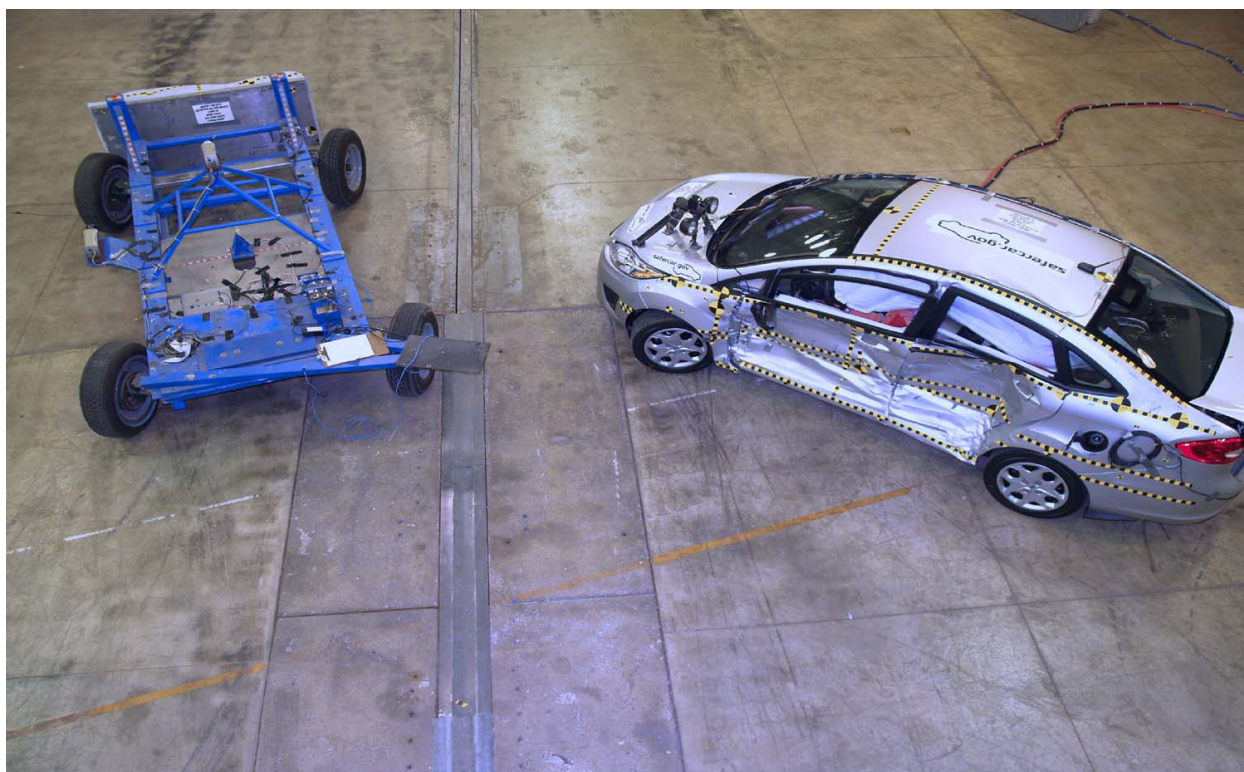


Figure A-16: Post-Test Overhead View of Test Vehicle and MDB



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: Pos-Test Close-Up View of Impact Point Target

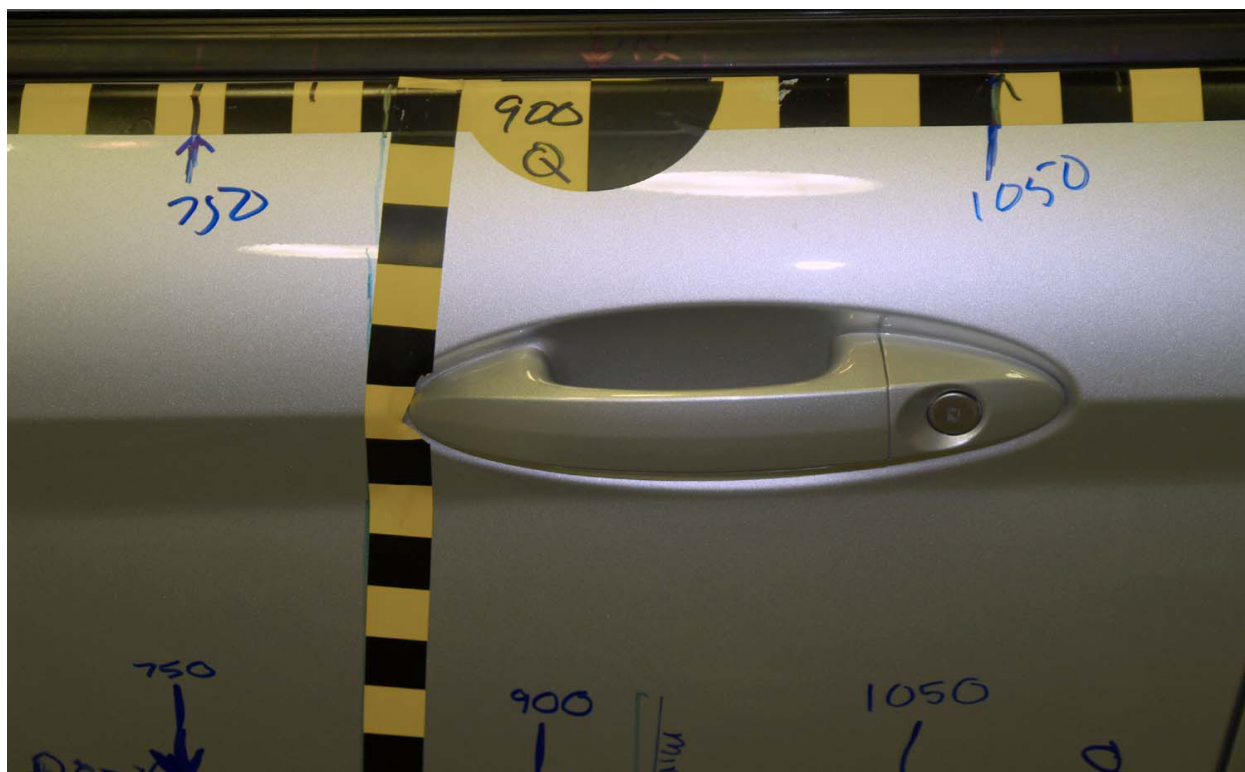


Figure A-21: Pre-Test Left Front Door Latch Close-Up



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

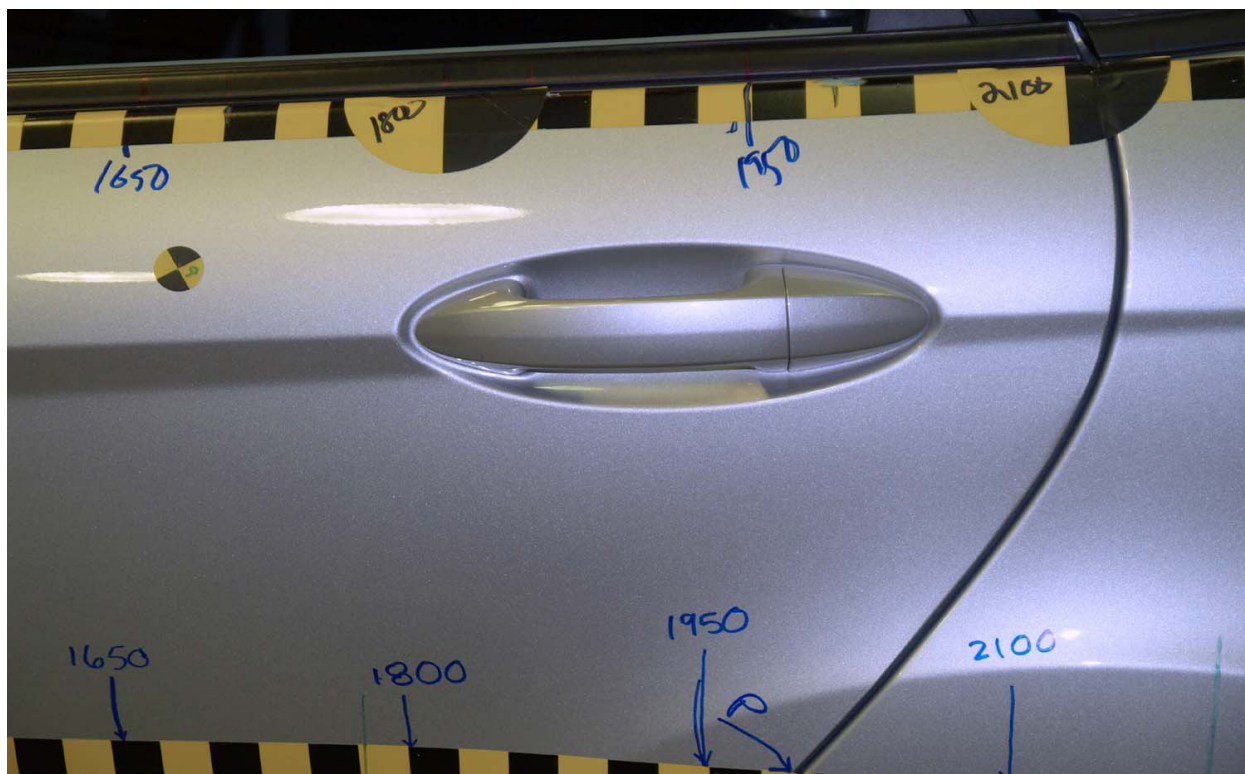


Figure A-23: Pre-Test Left Rear Door Latch Close-Up



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: Post-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

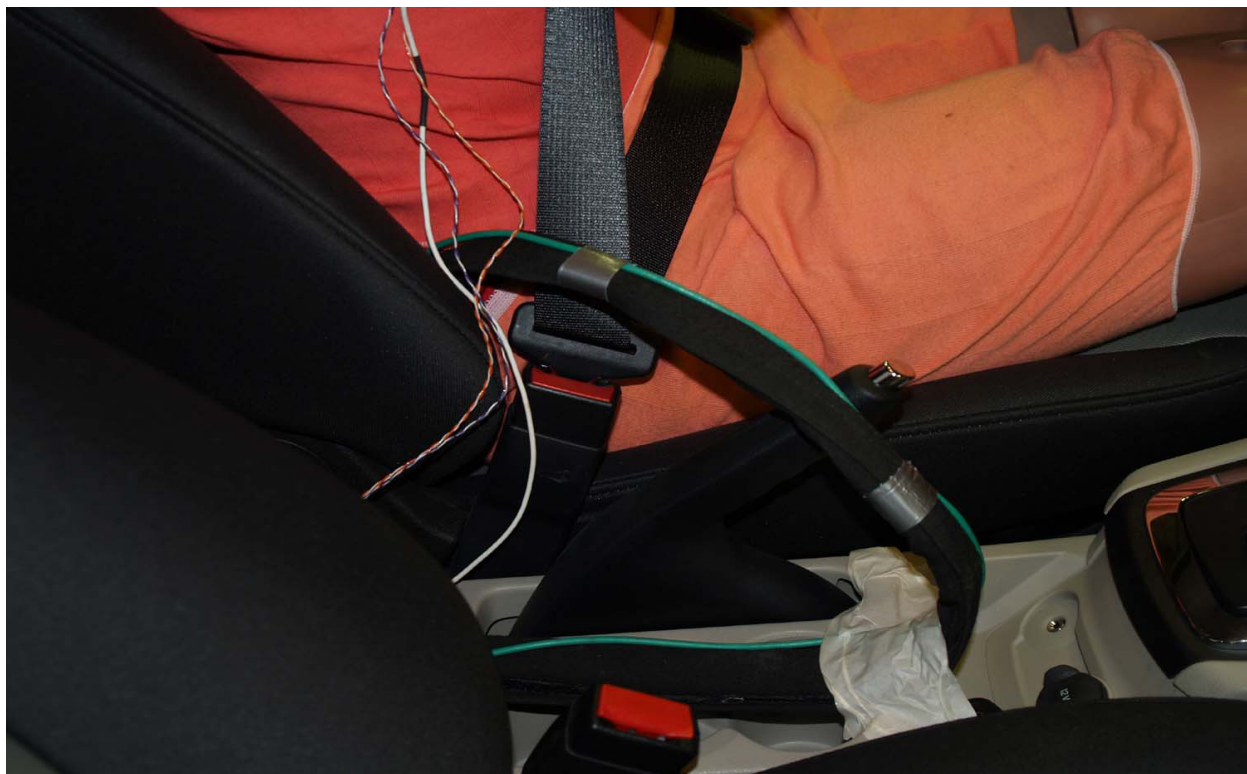


Figure A-37: Pre-Test View of Parking Brake



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 Showing Test Position



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

Figure A-48: Post-Test Driver Dummy Close-Up Head Contact with Side Air Bag View– Not Applicable



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

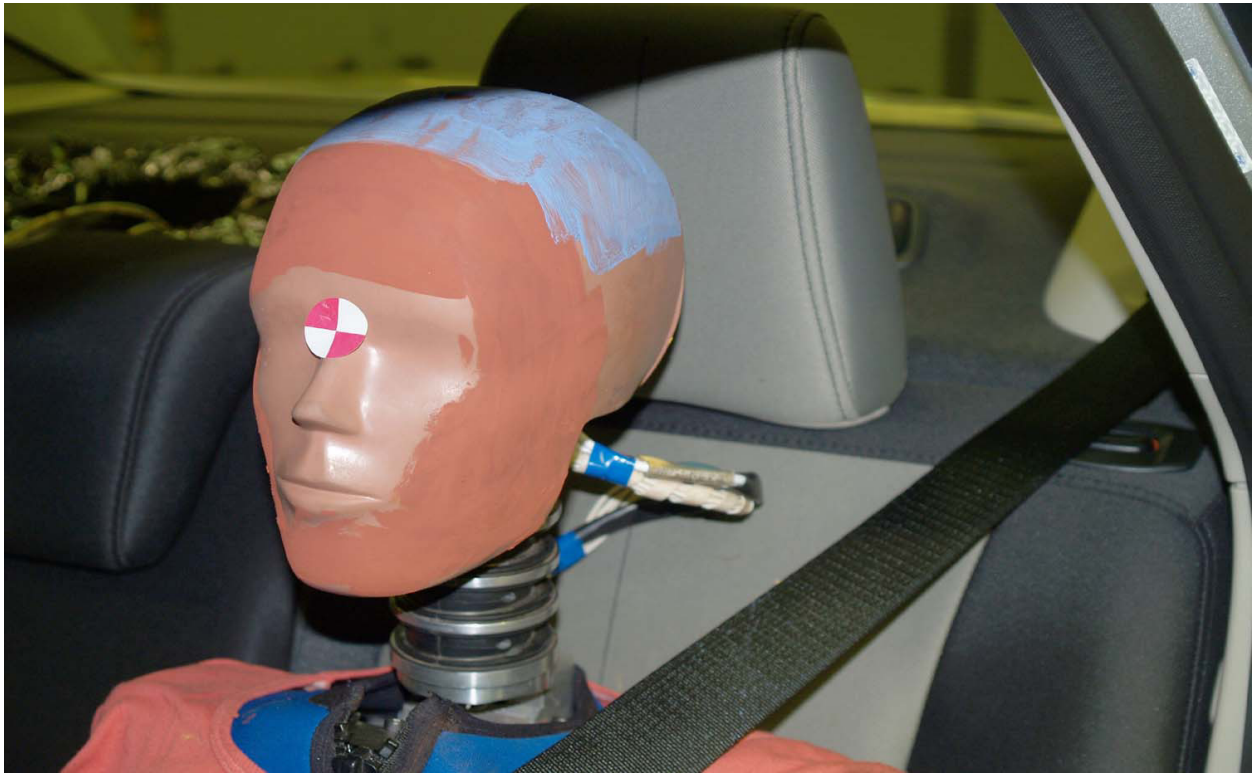


Figure A-57: Pre-Test Frontal View of Rear Passenger Dummy Head and Shoulders in Relation to Head Restraint



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

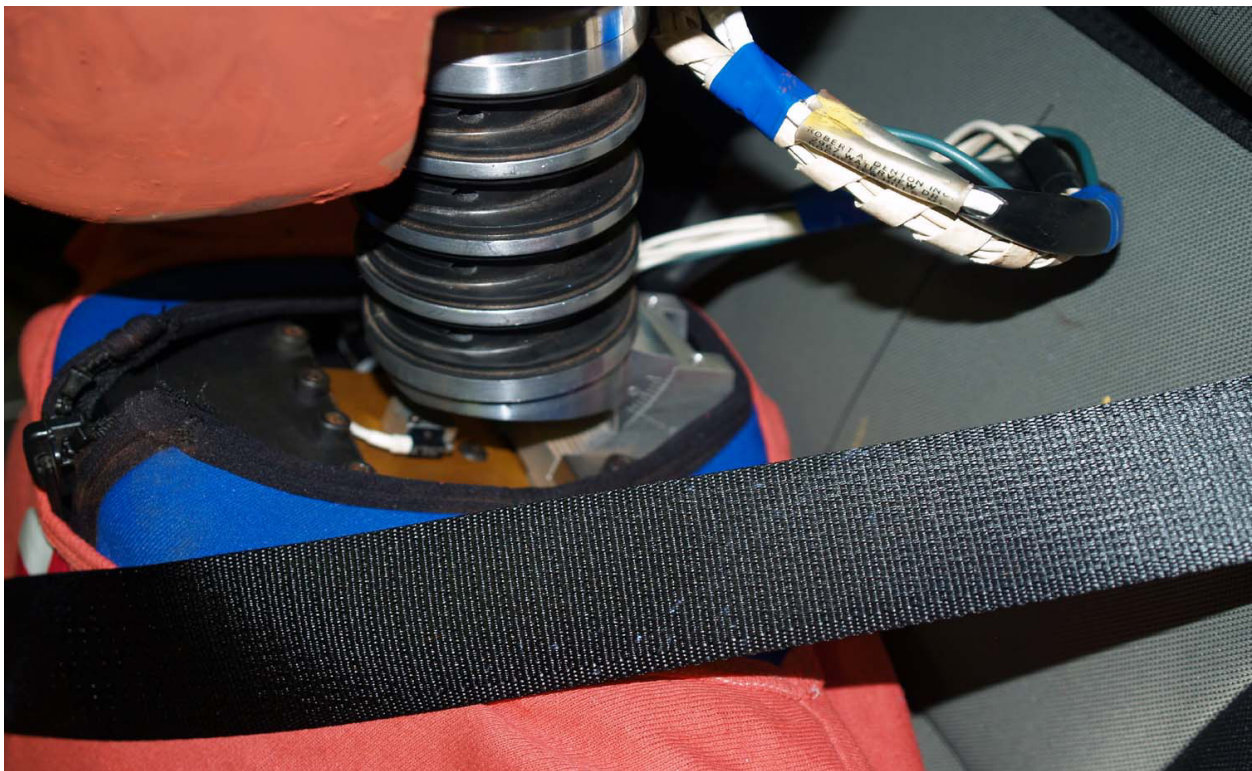


Figure A-60: Pre-Test View of Rear Passenger Dummy's Neck Showing Position of Adjustable Neck Bracket



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

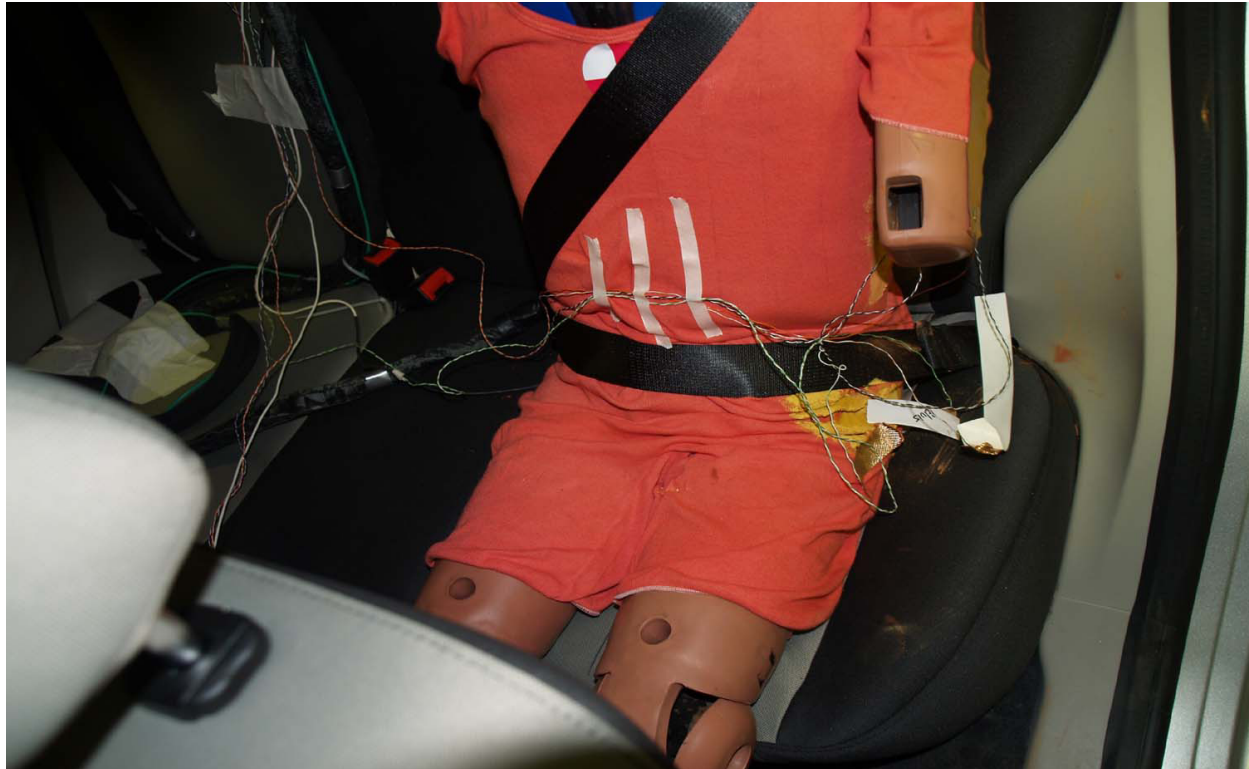


Figure A-63: Pre-Test View of Belt Anchorage for Rear Passenger Dummy



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

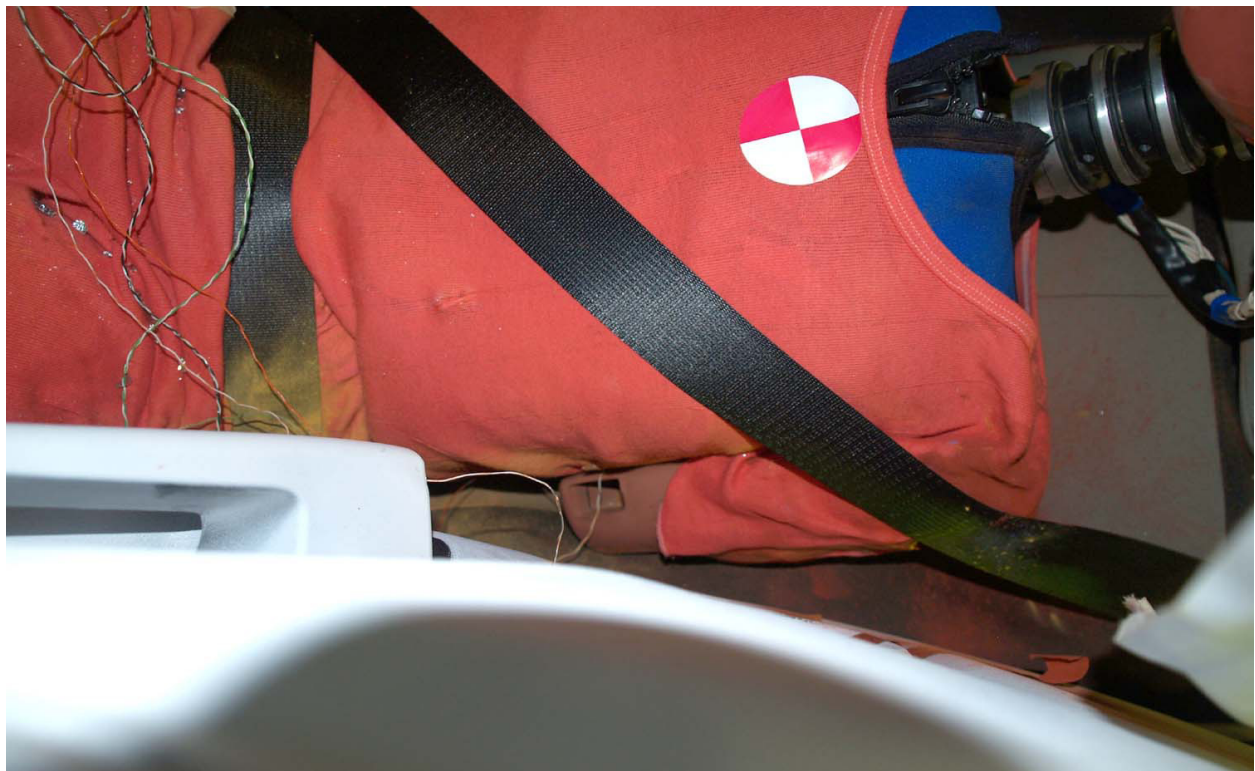


Figure A-68: Post-Test Rear Passenger Dummy and Door Clearance View



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 Compartment



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

Figure A-74: Post-Test Rear Passenger Dummy Close-Up Head Contact with Side Airbag View—
Not Applicable



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

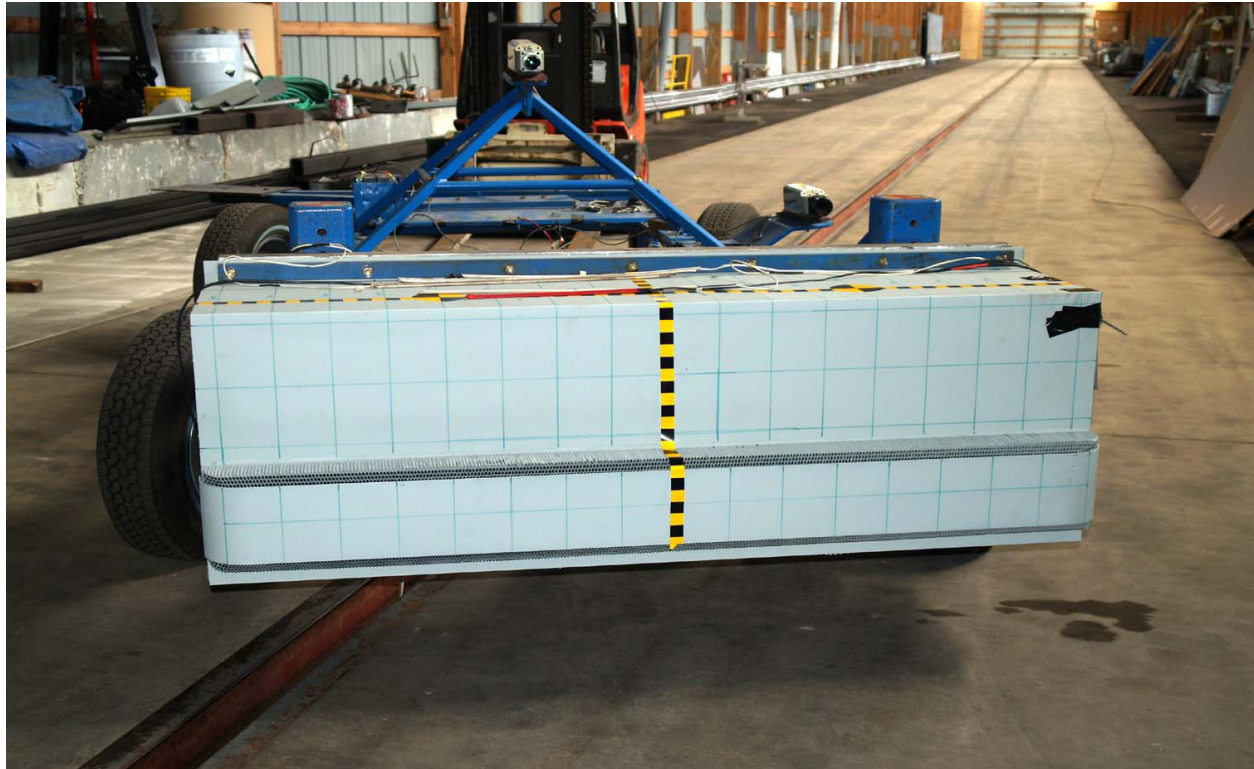


Figure A-81: Pre-Test Front View of MDB Impactor Face

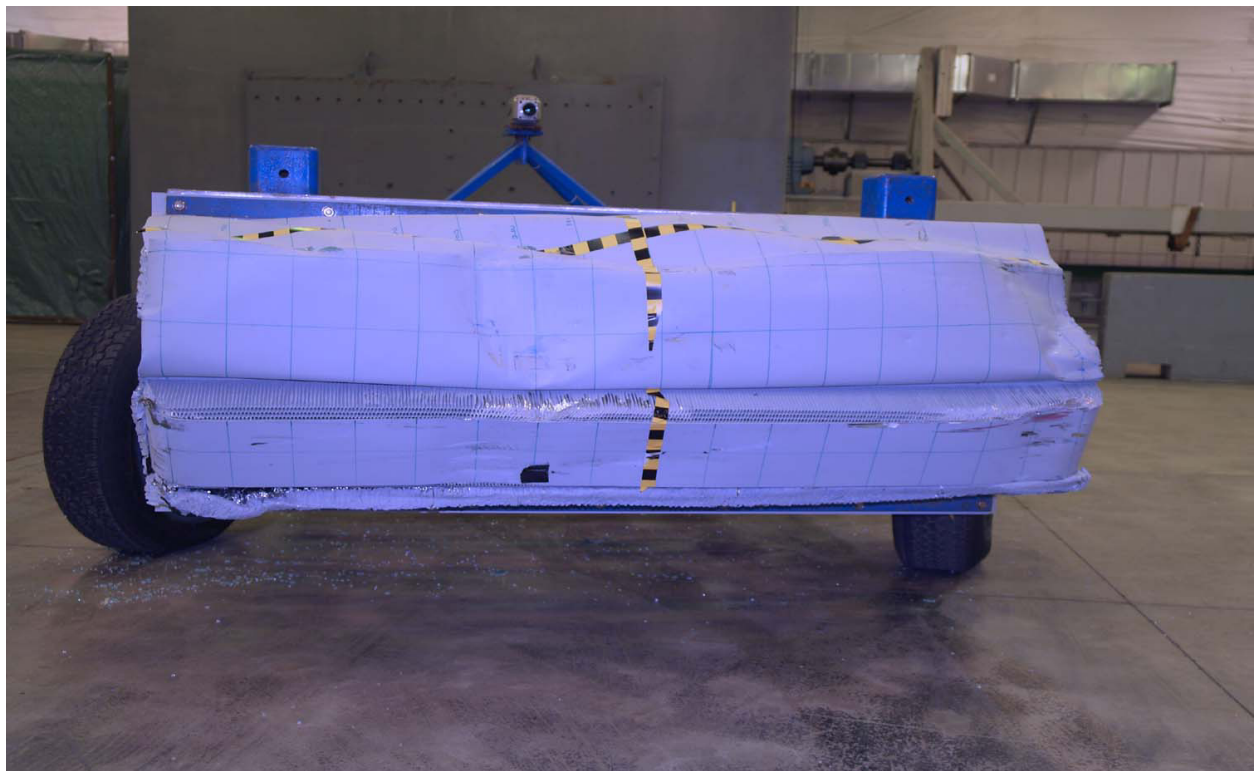


Figure A-82: Post-Test Front View of MDB Impactor Face

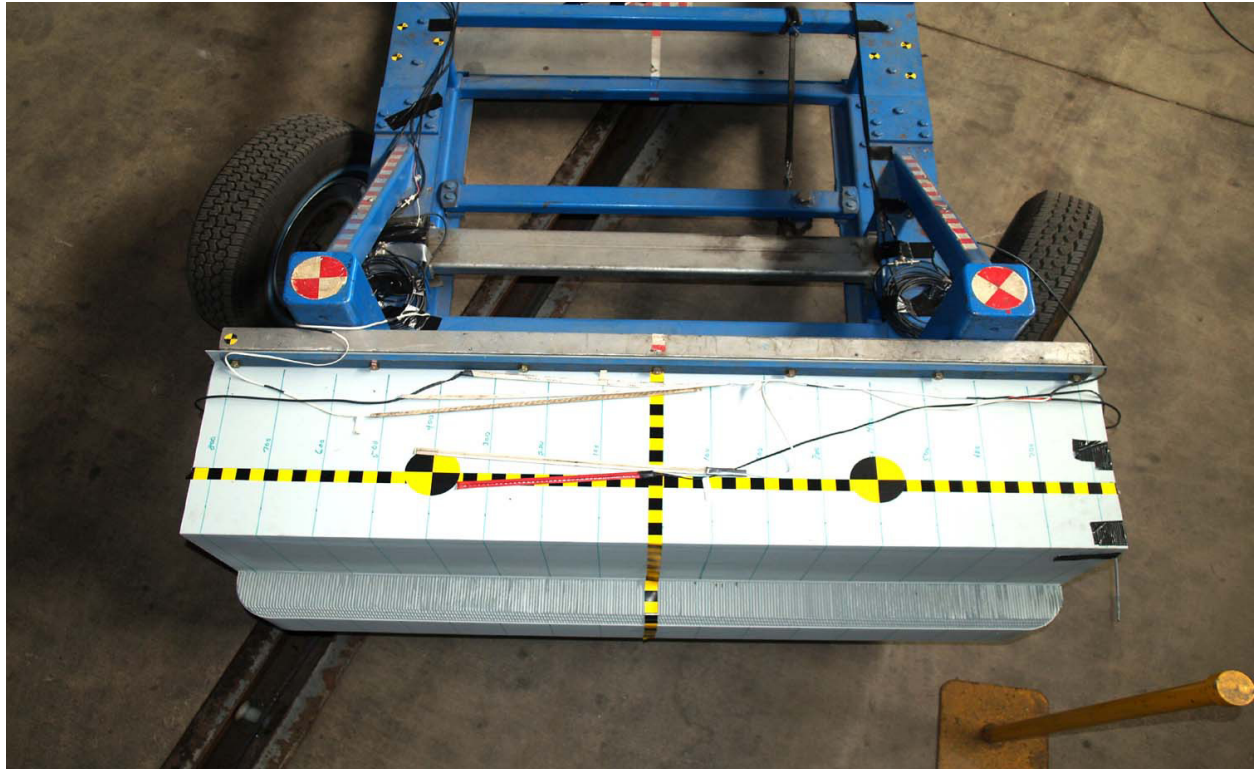


Figure A-83: Pre-Test Top View of MDB Impactor Face



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°

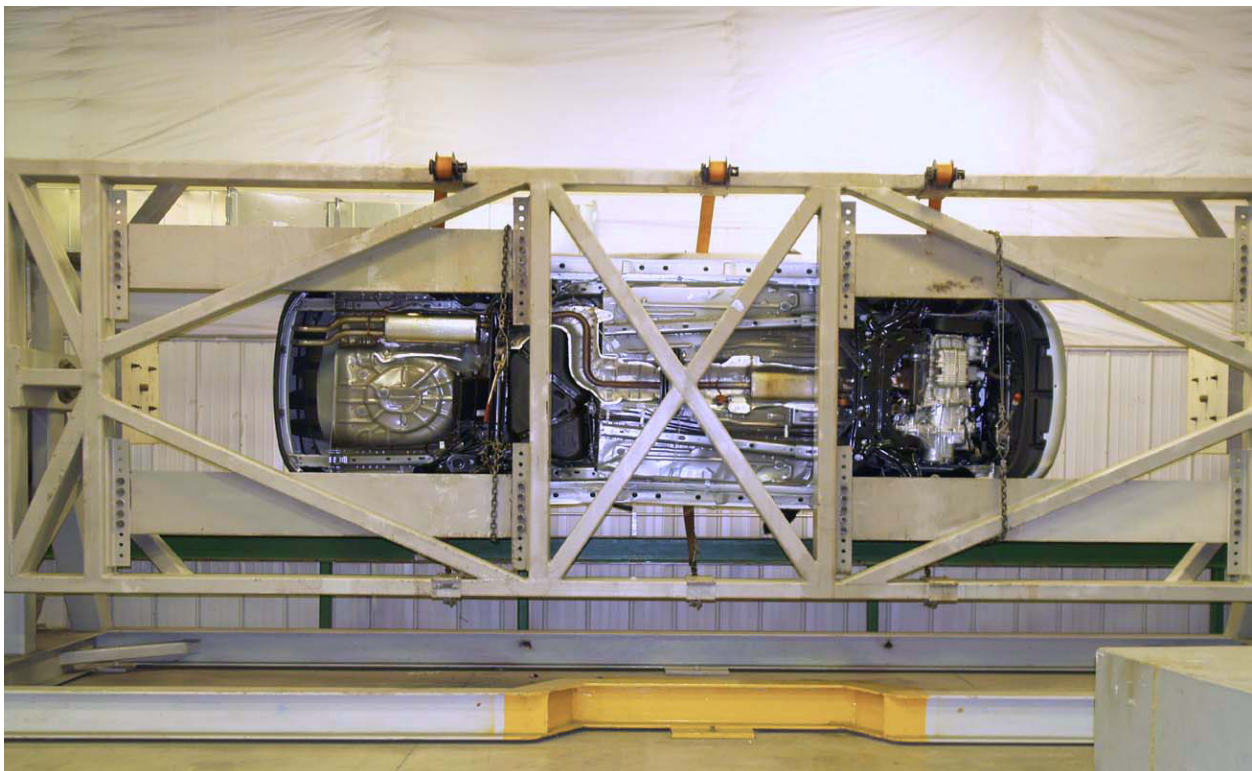


Figure A-94: FMVSS No. 301/305 Rollover 90°



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°

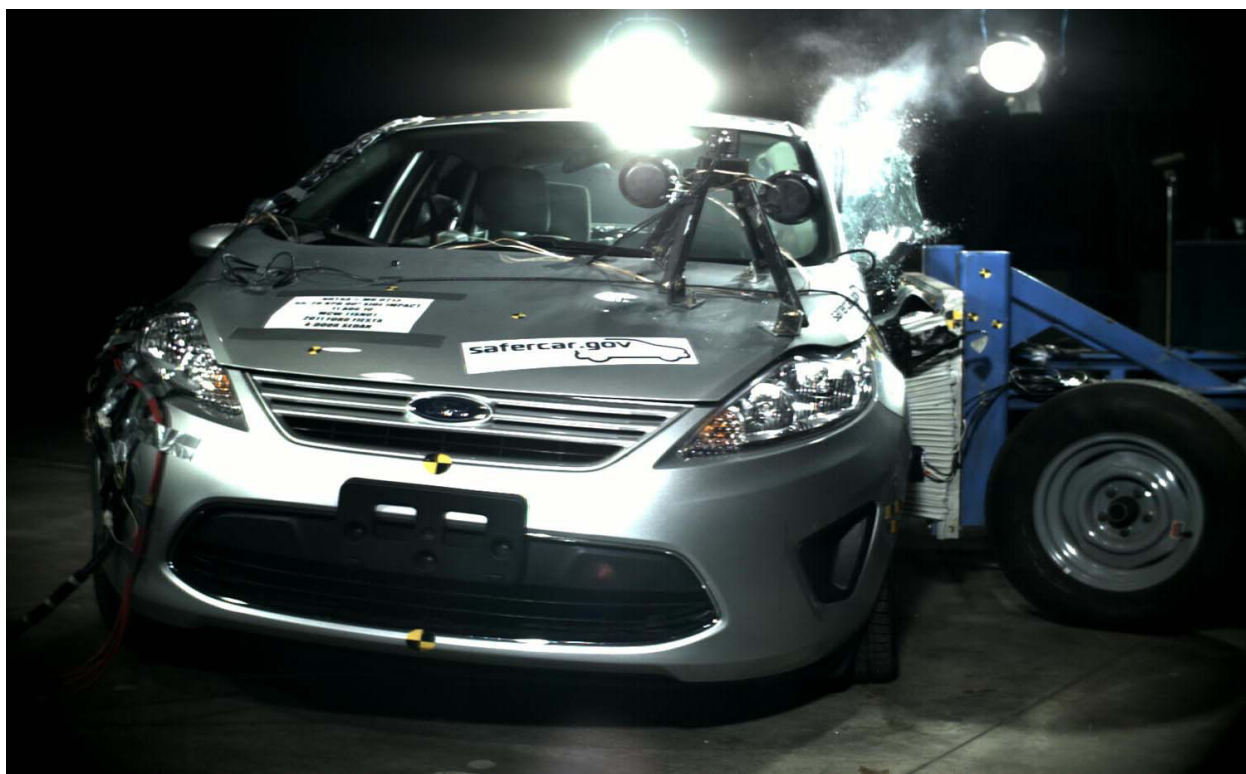


Figure A-98: Impact Event



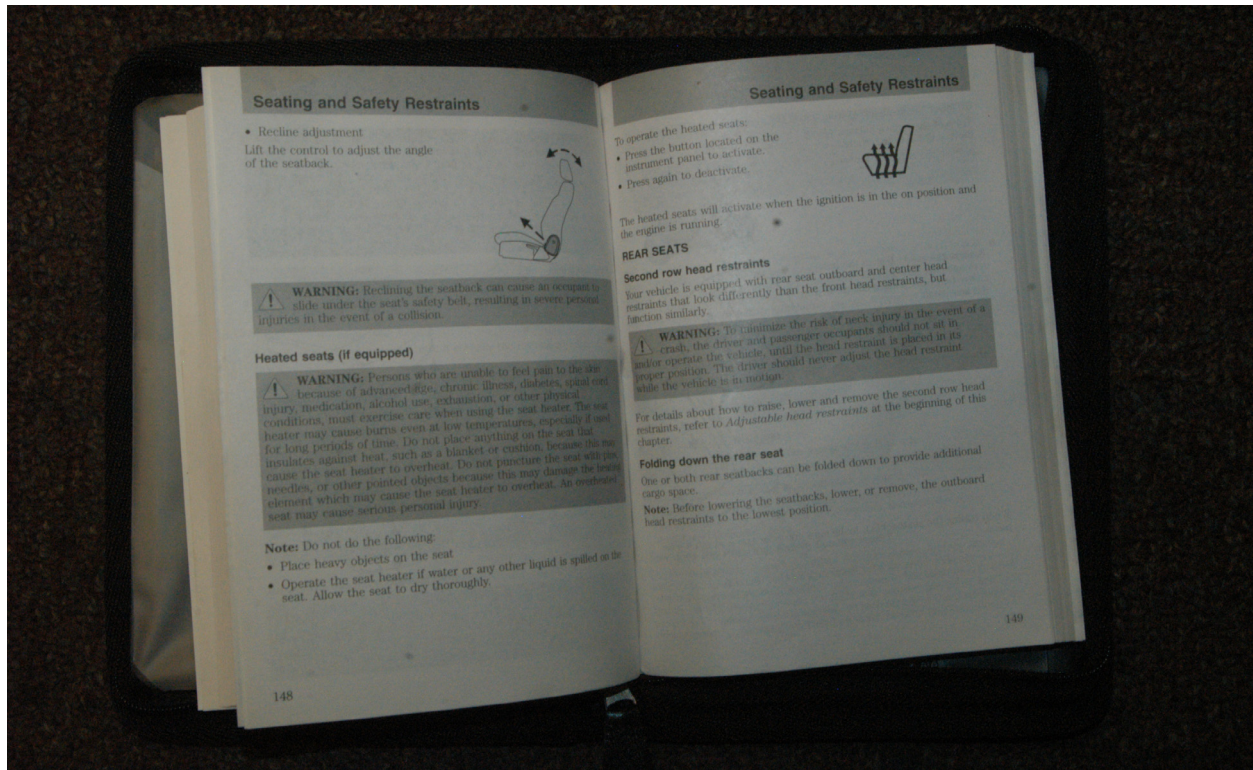


Figure A-101: Left Rear Passenger Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

Test Vehicle: 2011 Ford Fiesta 4-Door Sedan
Test Program: SINCAP

NHTSA Number: MB 0213
Test Date: August 11, 2010

APPENDIX B
DUMMY 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

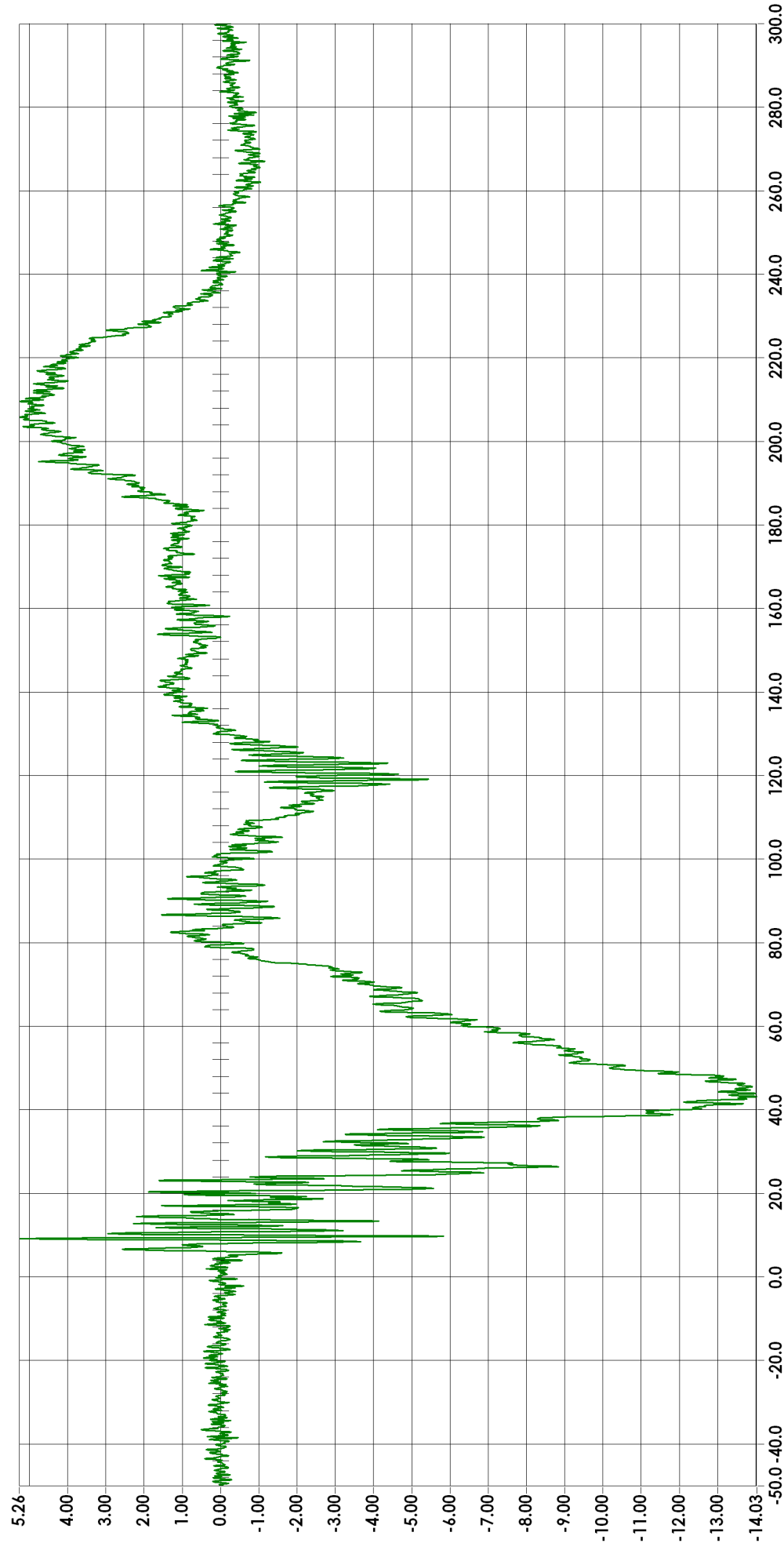
Driver Side Airbag Timing
Driver Side Curtain Airbag Timing
Passenger Side Airbag Timing
Passenger Side Curtain Airbag Timing
Right Side Sill at Front Seat Acceleration (X)
Right Side Sill at Front Seat Acceleration (Y)
Right Side Sill at Front Seat Acceleration (Z)
Right Side Sill at Rear Seat Acceleration (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	11SN01	Filter	CFC1000
Date	11/AUG/2010	Sampling Rate (Hz)	12500
Description	SIDE NCAP 2011 FORD FIESTA 4-DOOR SEDAN	Number of Points	4376
		Pretrigger Points	625
		Sensor Location	HDCG
		Sensor Info	ENDEVCO 7264-2000TZ
		Serial Number	J43494

G's Driver Head CG (X) Acceleration (P)



Time (msec)

Max	5.26	G's	at	205.76	msec
Min	-14.03	G's	at	43.20	msec

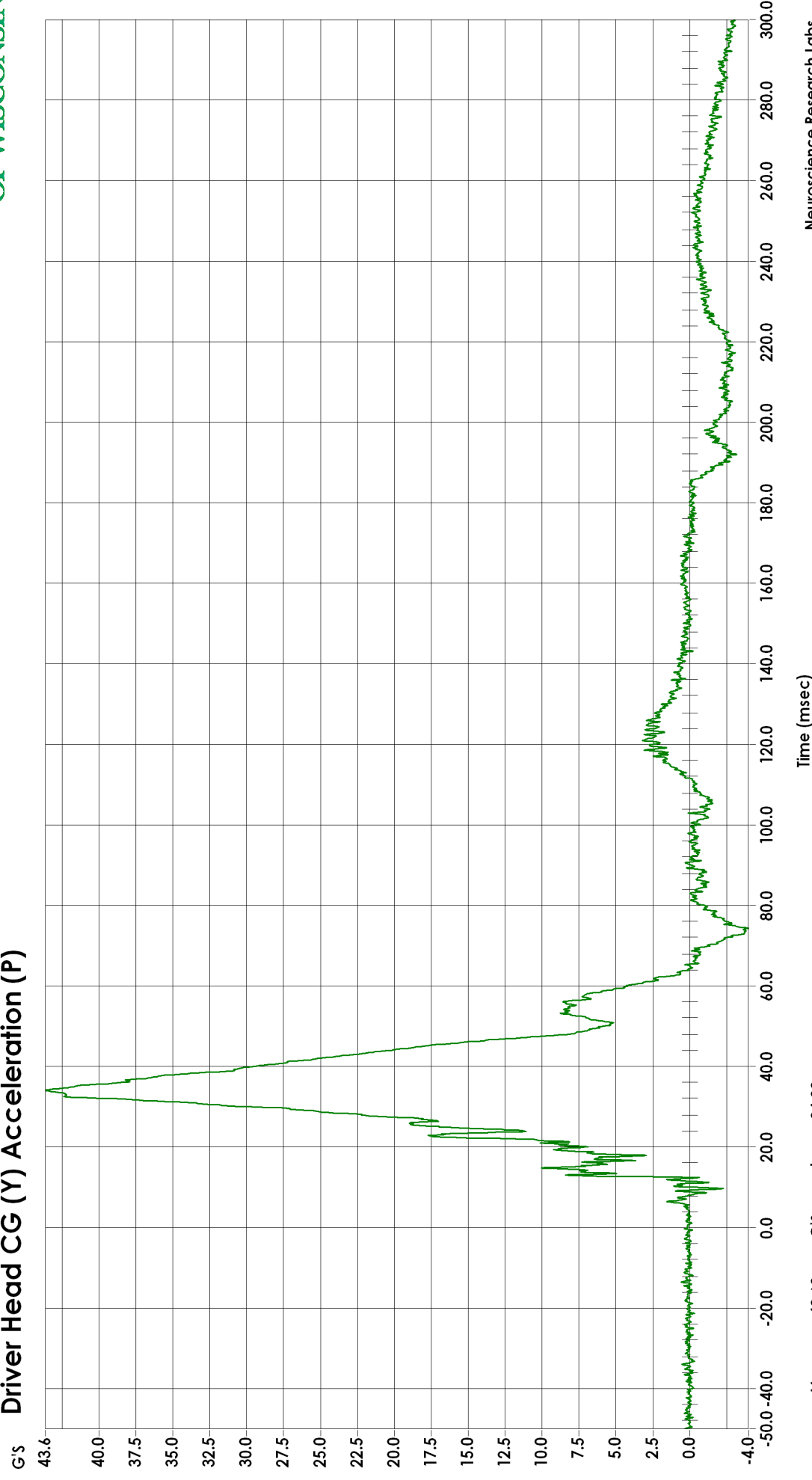
Neuroscience Research Labs
5000 West National Ave
Research 151
Milwaukee, WI 53295

11SN01 Plot 001



Test ID	11SN01	Filter	CFC1000	Sensor Location	HDCG
Date	11/AUG/2010	Sampling Rate (Hz)	12500	Sensor Info	ENDEVCO 7264-2000TZ
Description	SIDE NCAP 2011 FORD FIESTA 4-DOOR SEDAN	Number of Points	4376	Serial Number	J43475
		Prefrigger Points	625		

Driver Head CG (Y) Acceleration (P)



Max	43.63	G's	at	34.08	msec
Min	-4.00	G's	at	74.32	msec

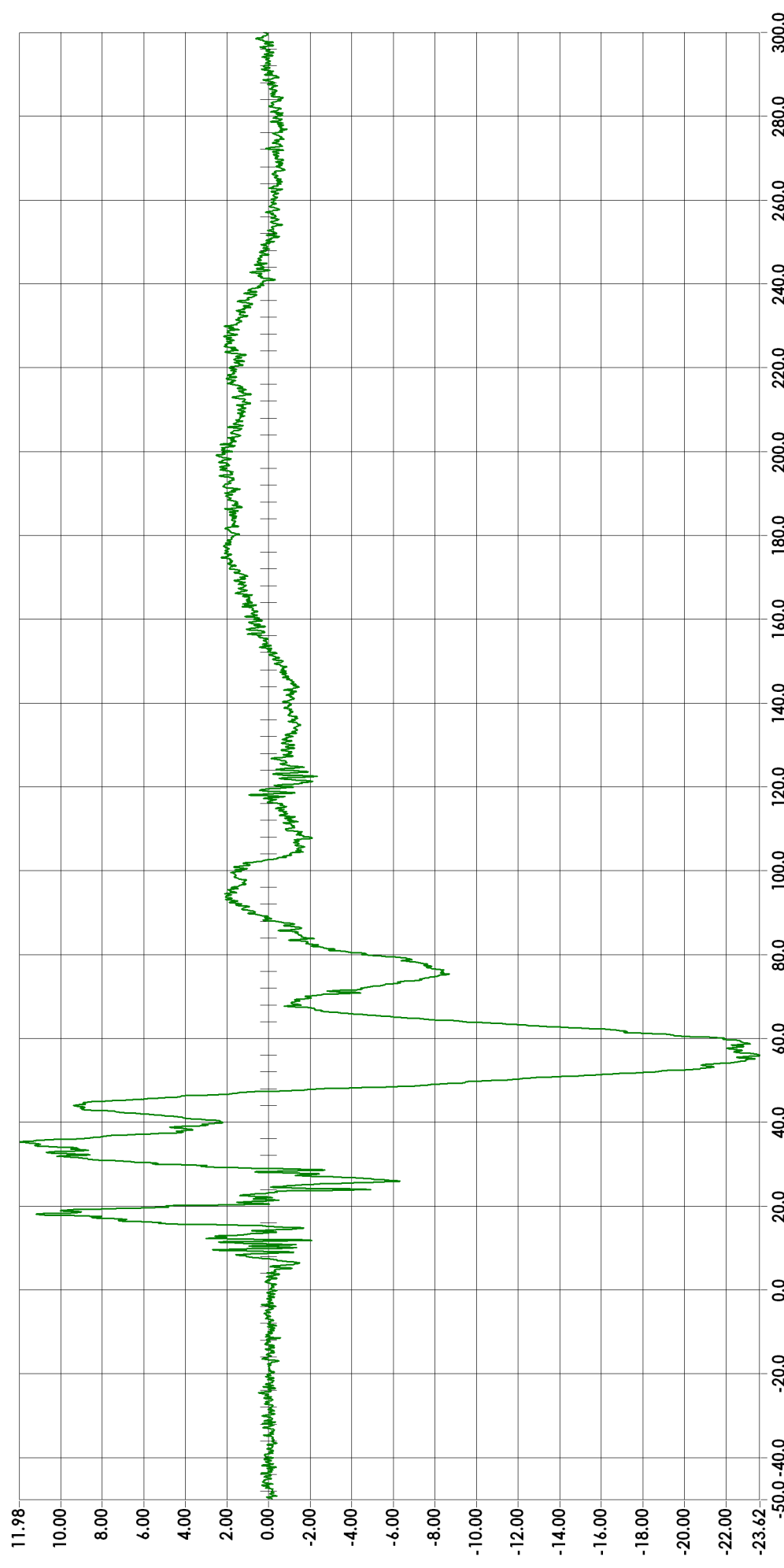
Time (msec)

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Milwaukee, WI 53295



Test ID	11SN01	Filter	CFC1000	Sensor Location	HDCG
Date	11/AUG/2010	Sampling Rate (Hz)	12500	Sensor Info	ENDEVCO 7264-2000
Description	SIDE NCAP 2011 FORD FIESTA 4-DOOR SEDAN	Number of Points	4376	Serial Number	J43779
		Prefrigger Points	625		

G's Driver Head CG (Z) Acceleration (P)



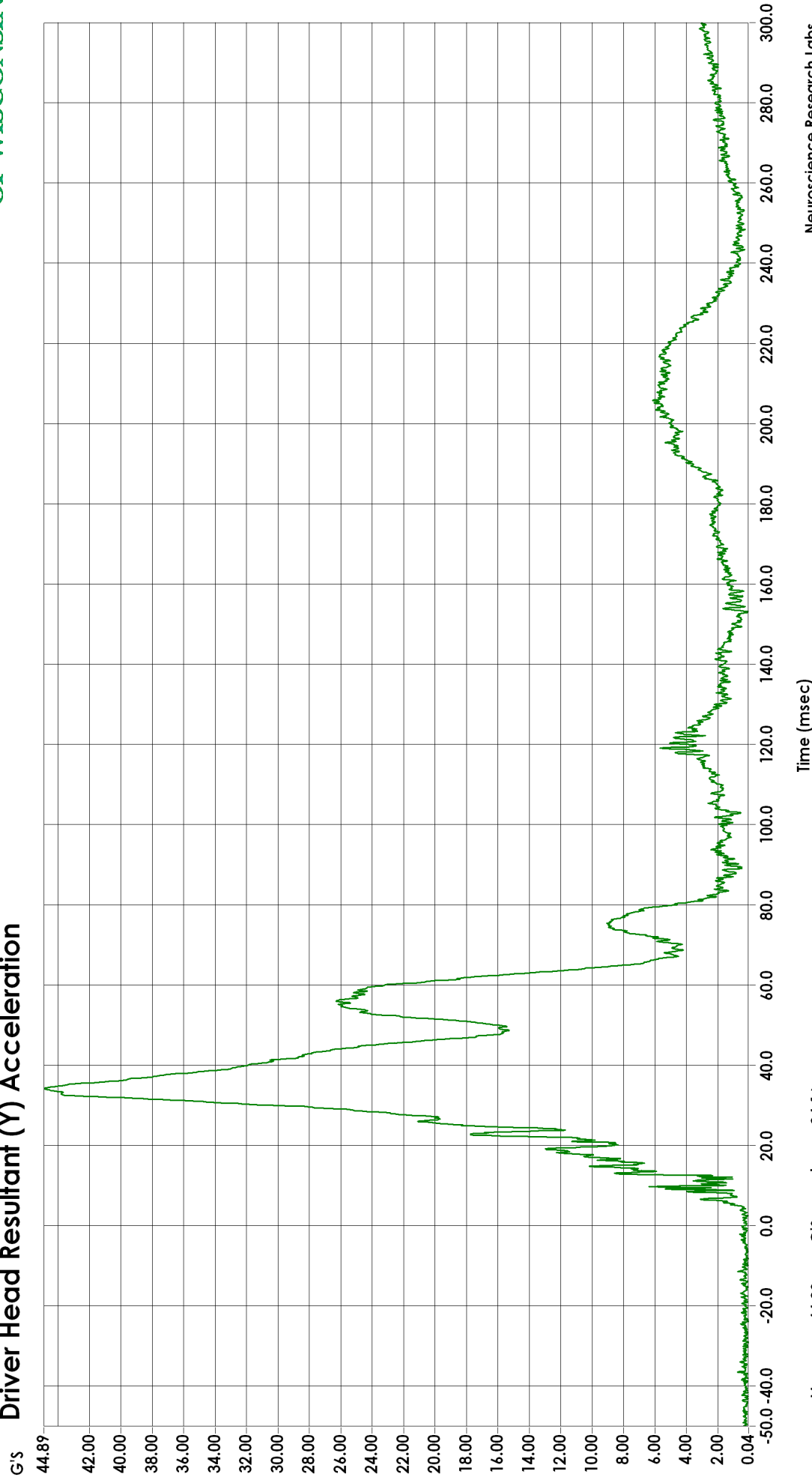
Time (msec)

Max	11.98	G's	at	35.28	msec
Min	-23.62	G's	at	56.00	msec

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Milwaukee, WI 53295

Test ID	11SN01	Filter	CFC1000	Sensor Location	AC
Date	11/AUG/2010	Sampling Rate (Hz)	12500	Sensor Info	NA
Description	SIDE NCAP 2011 FORD FIESTA 4-DOOR SEDAN	Number of Points	4376	Serial Number	NA
		Pretrigger Points	625		

Driver Head Resultant (Y) Acceleration

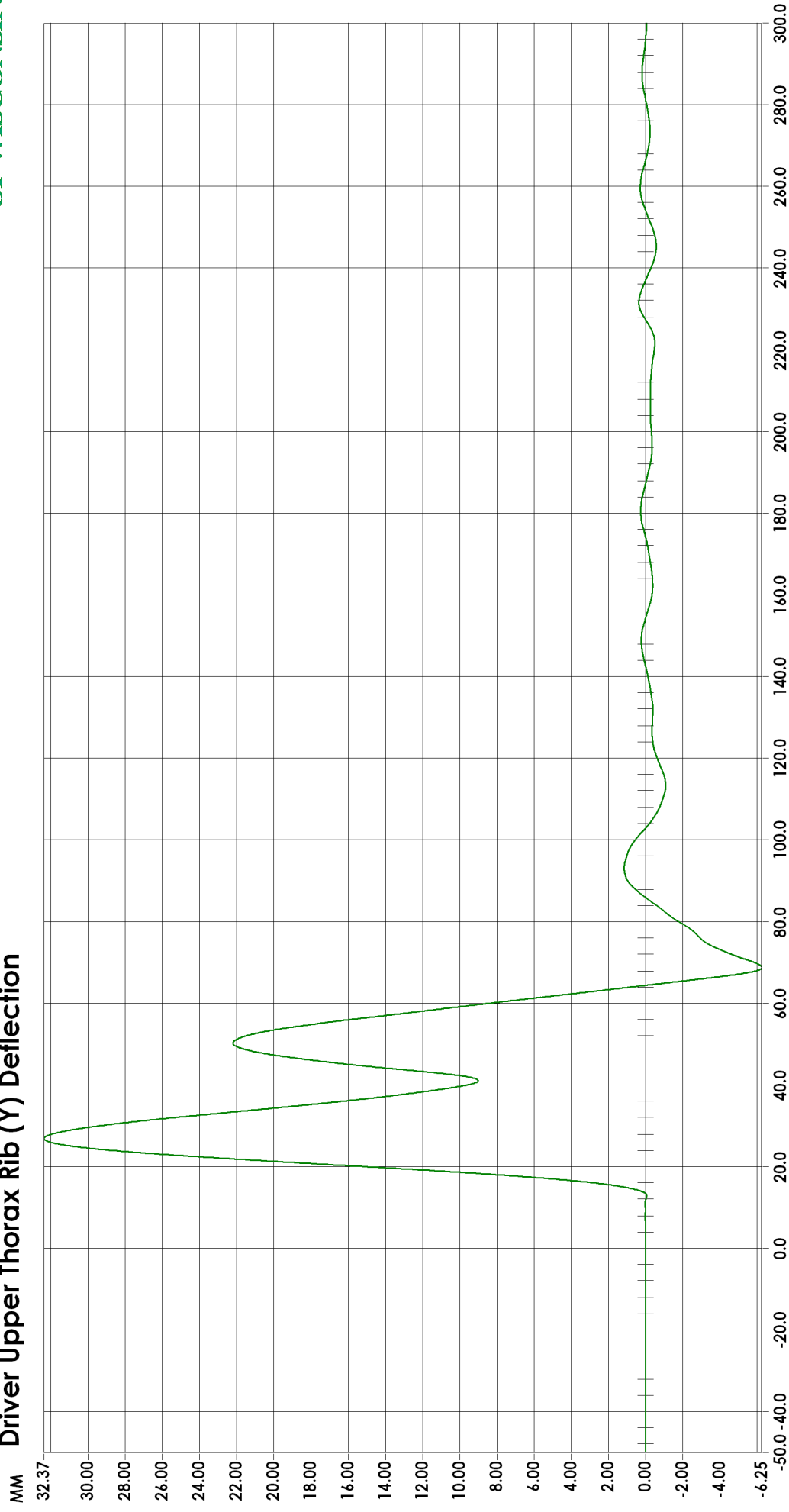


Max	44.89	G's	at	34.16	msec
Min	0.04	G's	at	-29.04	msec

11SN01 Plot 004

Test ID	11SN01	Filter	CFC180
Date	11/AUG/2010	Sampling Rate (Hz)	12500
Description	SIDE NCAP 2011 FORD FIESTA 4-DOOR SEDAN	Number of Points	4376
		Prefrigger Points	625
		Sensor Location	RBLU
		Sensor Info	Honeywell MLT-38000203
		Serial Number	MLT-38000203_433

Driver Upper Thorax Rib (Y) Deflection



Time (msec)

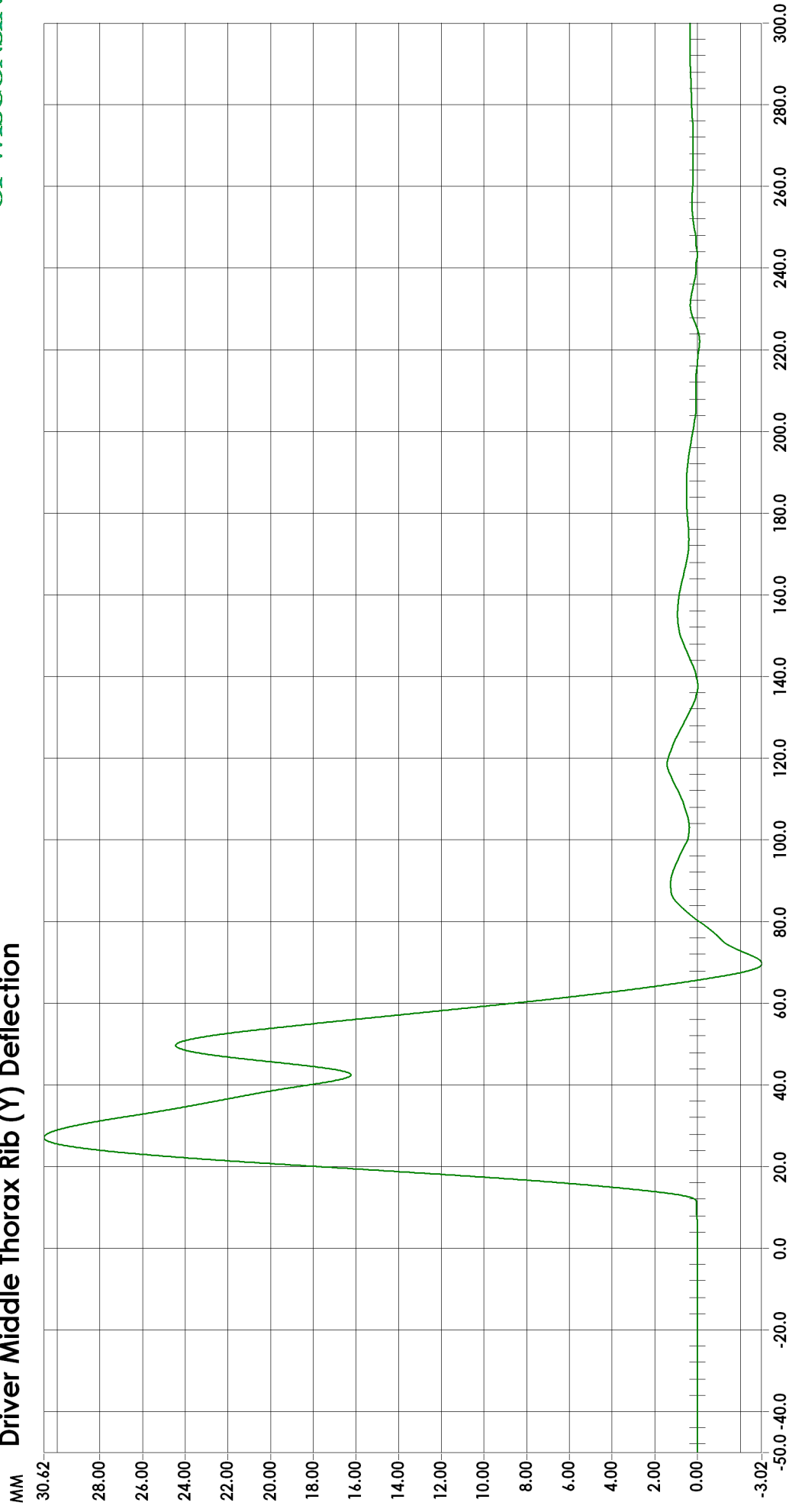
Max	32.37	MM	at	26.88	msec
Min	-6.25	MM	at	68.80	msec

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Test ID	11SN01	Filter	CFC180	Sensor Location	RBLM
Date	11/AUG/2010	Sampling Rate (Hz)	12500	Sensor Info	Honeywell MLT-38000203
Description	SIDE NCAP 2011 FORD FIESTA 4-DOOR SEDAN	Number of Points	4376	Serial Number	MLT-38000203_193

Driver Middle Thorax Rib (Y) Deflection



Time (msec)

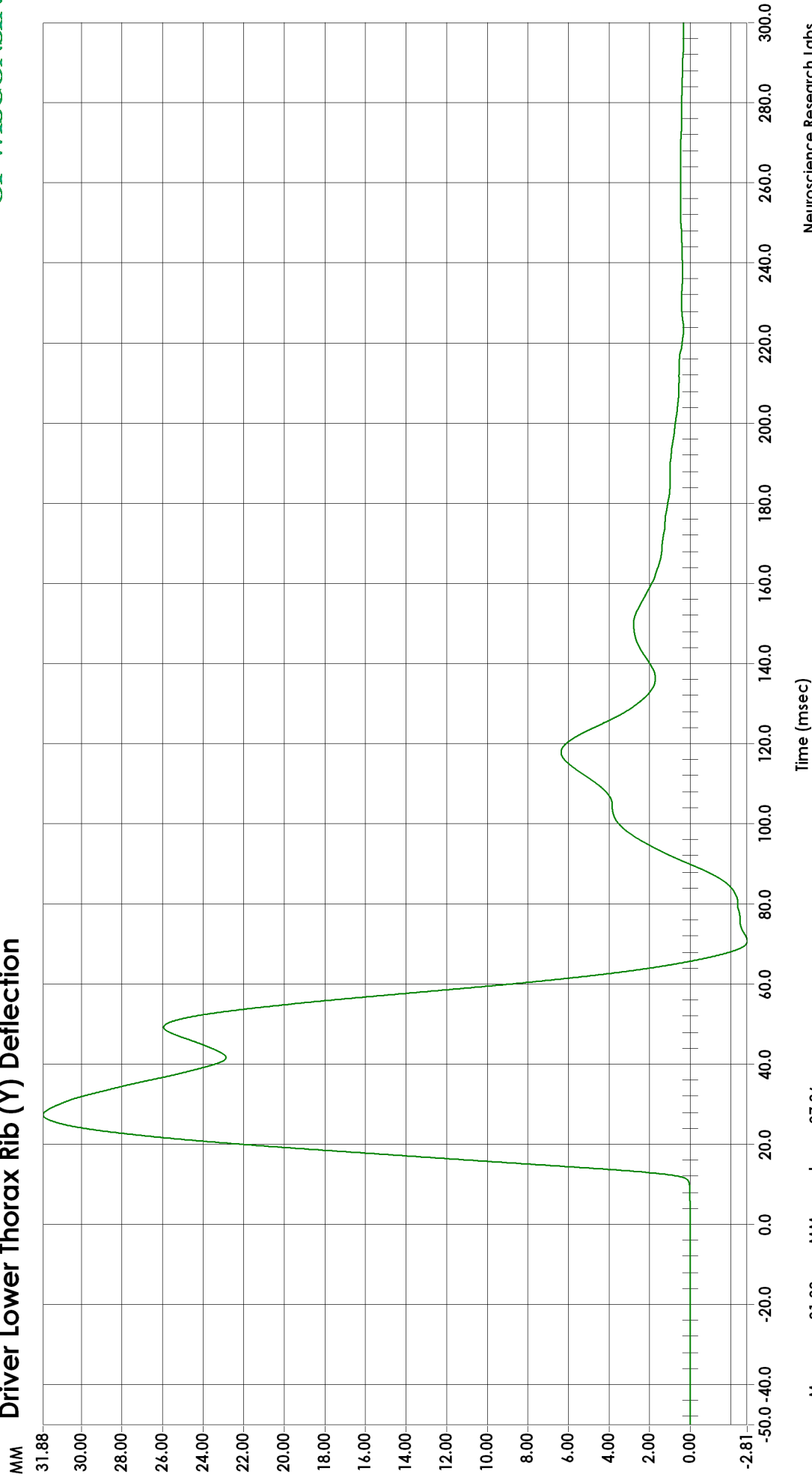
Max	30.62	MM	at	27.12	msec
Min	-3.02	MM	at	69.76	msec

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Test ID	11SN01	Filter	CFC180	
Date	11/AUG/2010	Sampling Rate (Hz)	12500	Sensor Location
Description	SIDE NCAP 2011 FORD FIESTA 4-DOOR SEDAN	Number of Points	4376	Sensor Info
		Prefrigger Points	625	Serial Number
				RBL
				Honeywell MLT-38000203
				MLT-38000203_191

Driver Lower Thorax Rib (Y) Deflection



Max	31.88	MM	at	27.36	msec
Min	-2.81	MM	at	70.80	msec

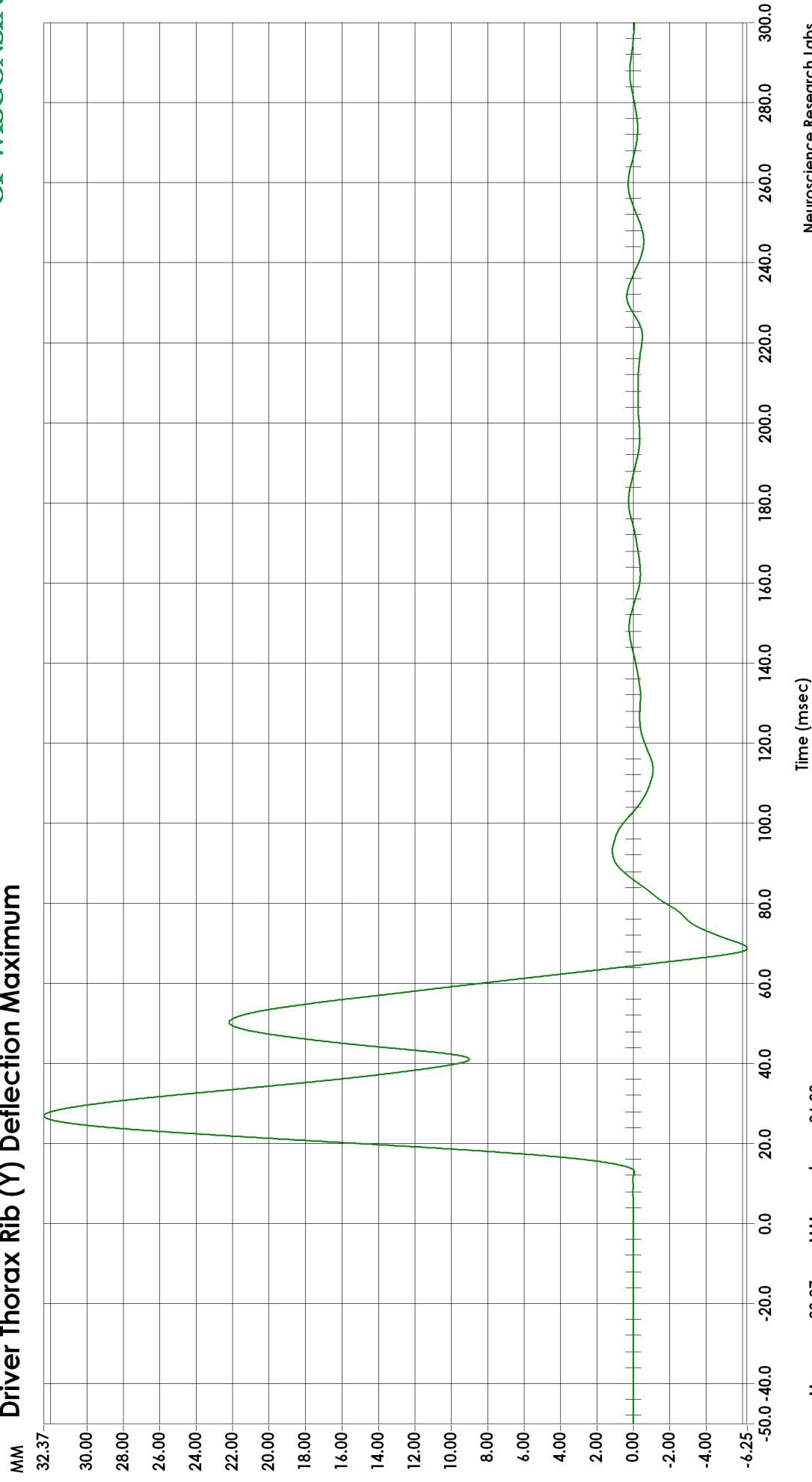
11SN01 Plot 007

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Test ID	11SN01	Filter	CFC180	Sensor Location	RBLU
Date	11/AUG/2010	Sampling Rate (Hz)	12500	Sensor Info	Honeywell MLI-38000203
Description	SIDE NCAP 2011 FORD FIESTA 4-DOOR SEDAN	Number of Points	4376	Serial Number	MLI-38000203_433

Driver Thorax Rib (Y) Deflection Maximum



Max	32.37	MM	at	26.88	msec
Min	-6.25	MM	at	68.80	msec

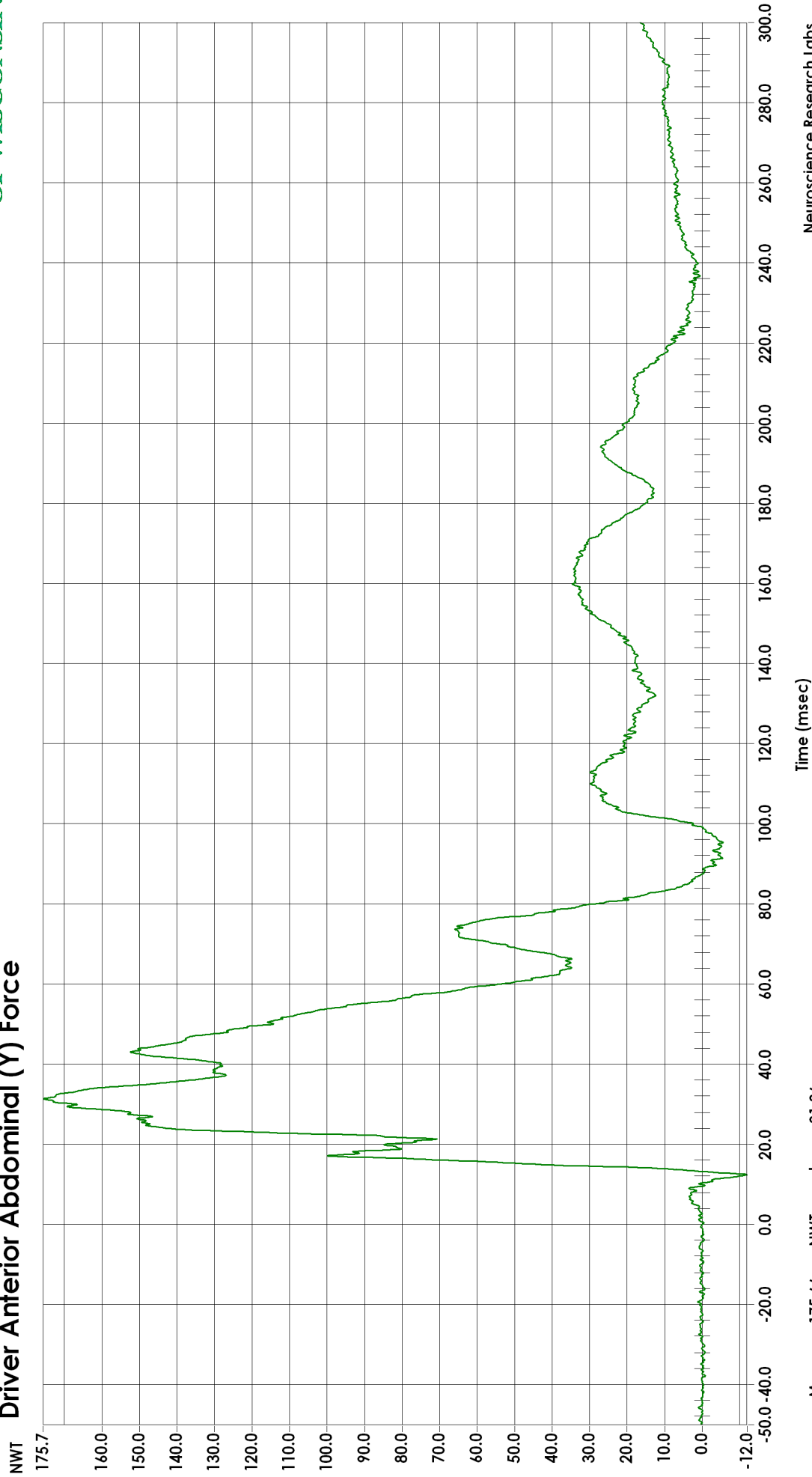
11SN01 Plot 008

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Test ID	11SN01	Filter	CFC600
Date	11/AUG/2010	Sampling Rate (Hz)	12500
Description	SIDE NCAP 2011 FORD FIESTA 4-DOOR SEDAN	Number of Points	4376
		Pretrigger Points	625
		Sensor Location	ESAF
		Sensor Info	Denton 2631
		Serial Number	2631_1502

Driver Anterior Abdominal (Y) Force



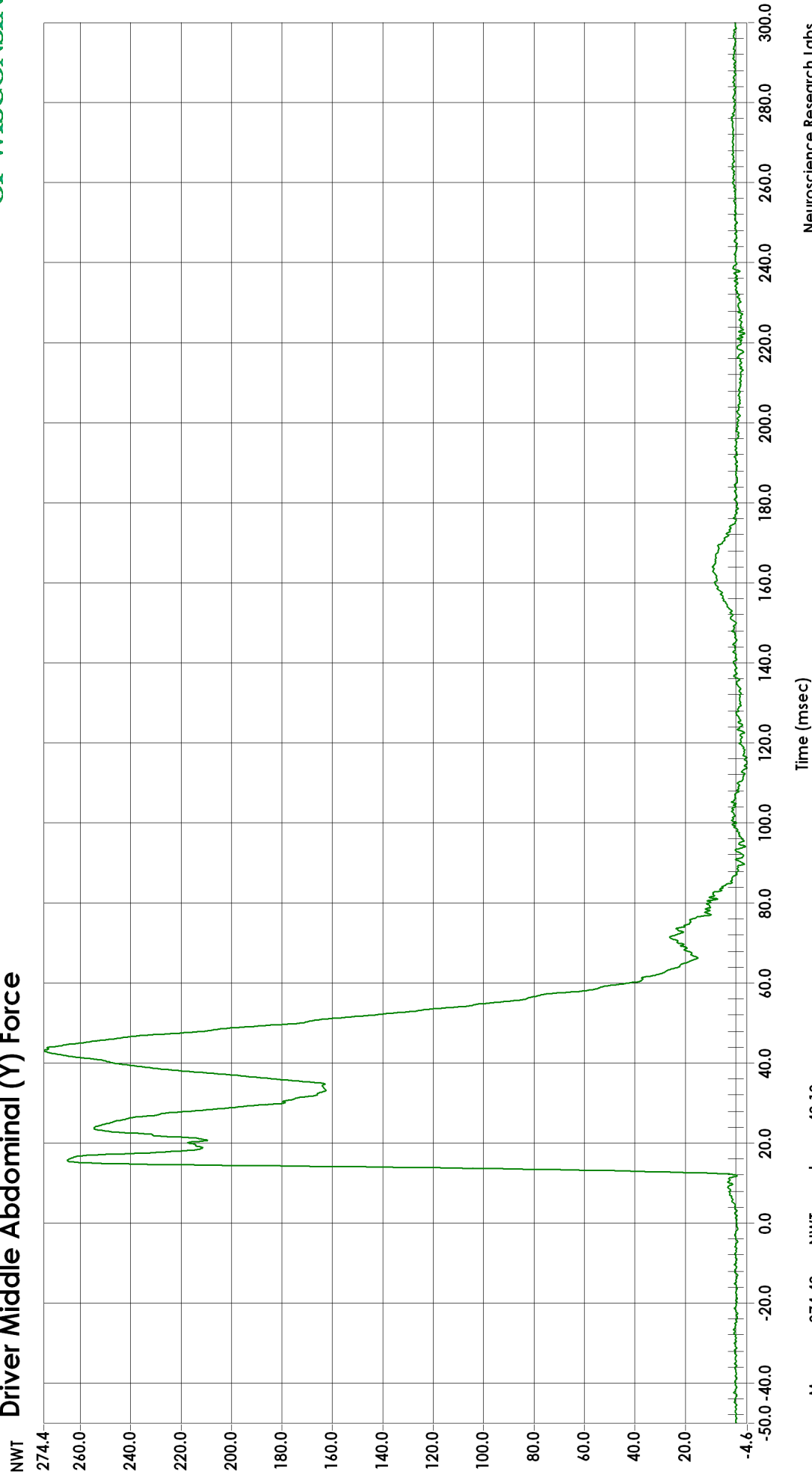
Max	175.66	NWT	at	31.36	msec
Min	-12.00	NWT	at	12.40	msec

11SN01 Plot 009

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Test ID	11SN01	Filter	CFC600
Date	11/AUG/2010	Sampling Rate (Hz)	12500
Description	SIDE NCAP 2011 FORD FIESTA 4-DOOR SEDAN	Number of Points	4376
		Pretrigger Points	625
		Sensor Location	ESAM
		Sensor Info	Denton 2631
		Serial Number	2631_1511

Driver Middle Abdominal (Y) Force



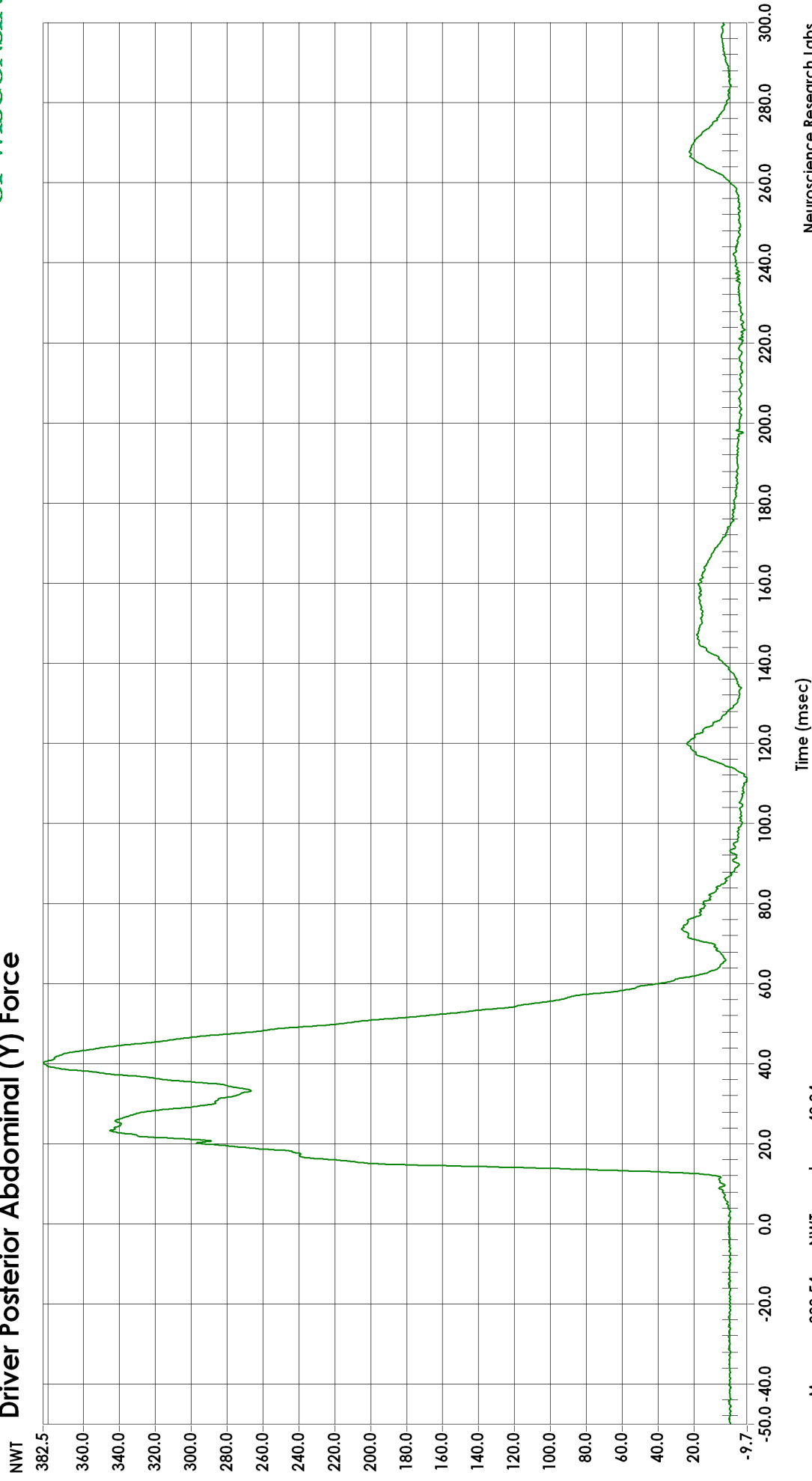
Max	274.43	NWT	at	43.12	msec
Min	-4.59	NWT	at	114.88	msec

11SN01 Plot 010



Test ID	11SN01	Filter	CFC600
Date	11/AUG/2010	Sampling Rate (Hz)	12500
Description	SIDE NCAP 2011 FORD FIESTA 4-DOOR SEDAN	Number of Points	4376
		Pretigger Points	625
		Sensor Location	ESAR
		Sensor Info	Denton 2631
		Serial Number	2631_1537

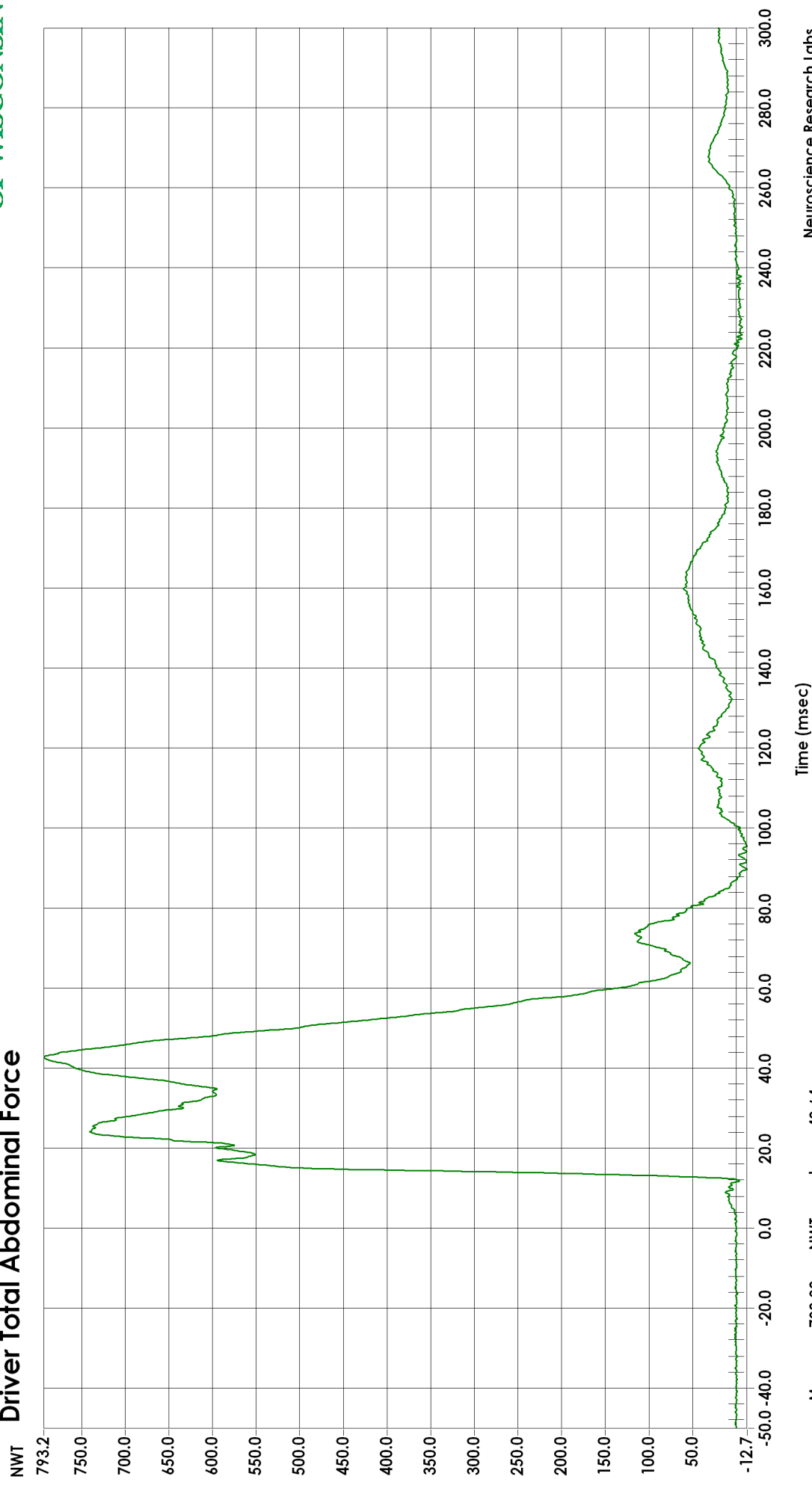
Driver Posterior Abdominal (Y) Force



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Test ID	11SN01	Filter	CFC600
Date	11/AUG/2010	Sampling Rate (Hz)	12500
Description	SIDE NCAP 2011 FORD FIESTA 4-DOOR SEDAN	Number of Points	4376
		Pretrigger Points	625
		Sensor Location	AC
		Sensor Info	NA
		Serial Number	NA

Driver Total Abdominal Force



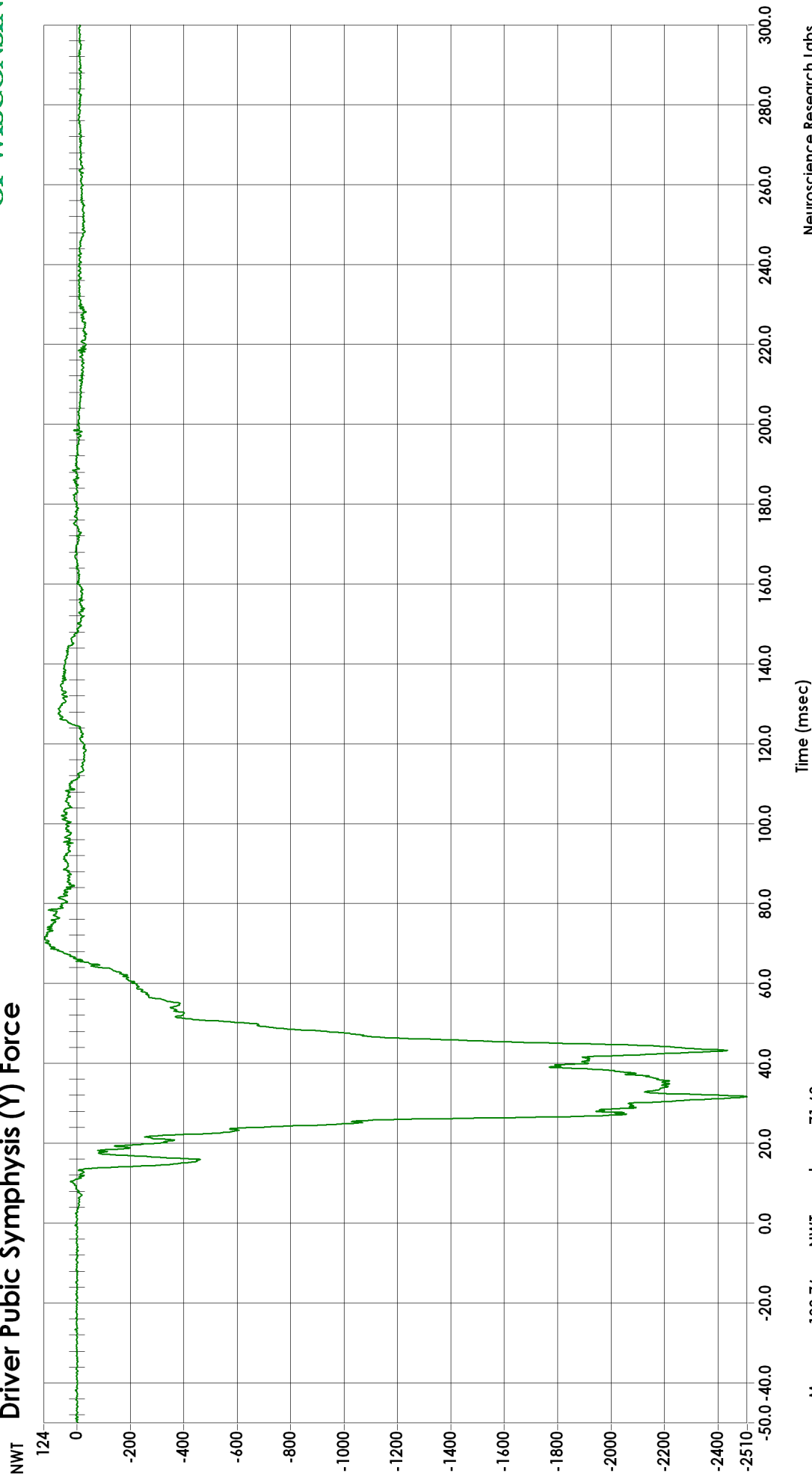
Max	793.23	NWT	at	42.64	msec
Min	-12.69	NWT	at	95.52	msec

11SN01 Plot 012

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Test ID	11SN01	Filter	CFC1000	Sensor Location	PVPS
Date	11/AUG/2010	Sampling Rate (Hz)	12500	Sensor Info	Denton 30%JFL
Description	SIDE NCAP 2011 FORD FIESTA 4-DOOR SEDAN	Number of Points	4376	Serial Number	3096JFL_465
		Pretrigger Points	625		

Driver Pubic Symphysis (Y) Force



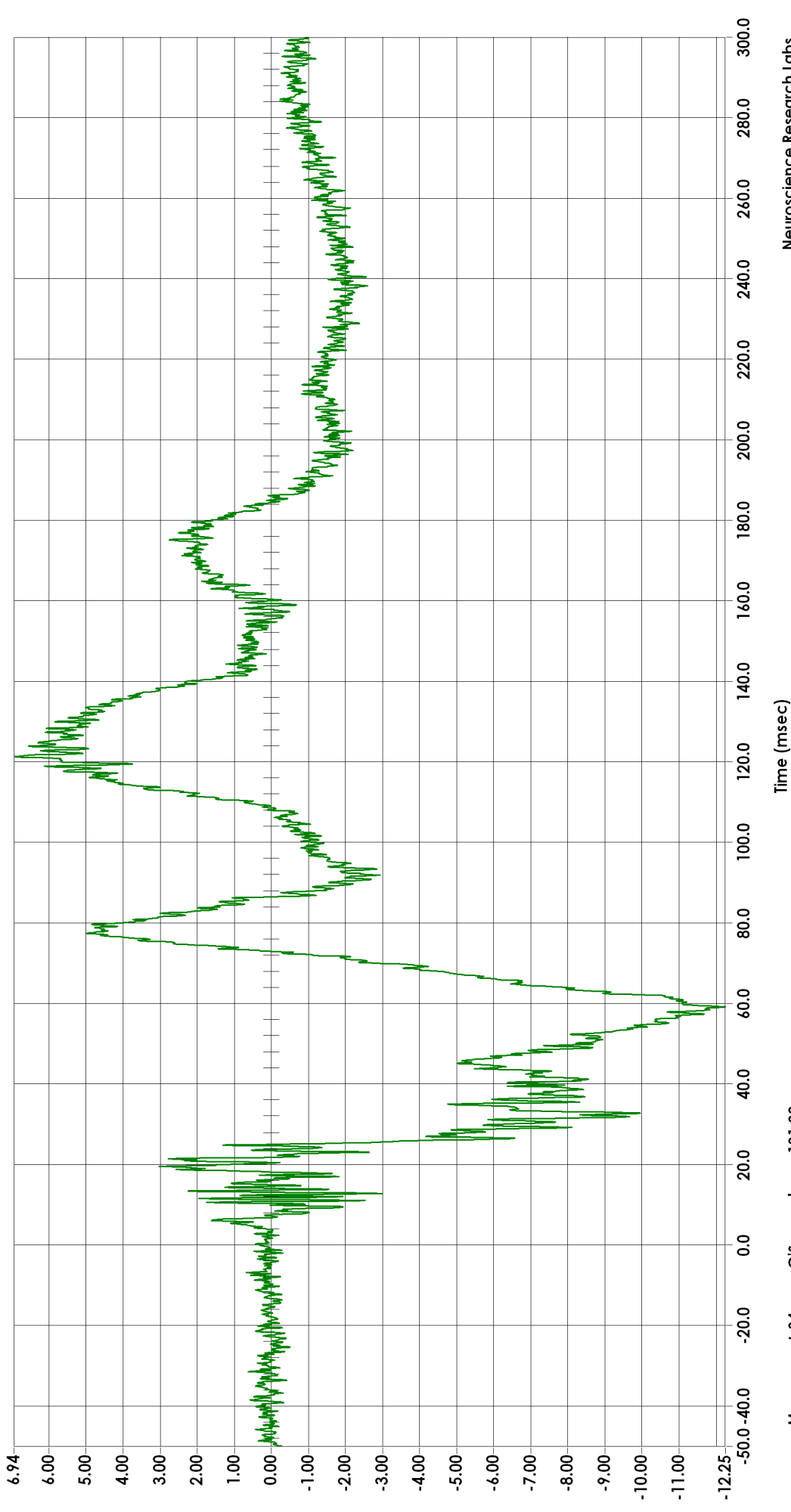
Max	123.76	NWT	at	71.60	msec
Min	-2509.99	NWT	at	31.68	msec

11SN01 Plot 013

Test ID	11SN01	Filter	CFC1000	Sensor Location	HDCG
Date	11/AUG/2010	Sampling Rate (Hz)	12500	Sensor Info	ENDEVCO 7264C-2KTZ-2-240
Description	SIDE NCAP 2011 FORD FIESTA 4-DOOR SEDAN	Number of Points	4376	Serial Number	P22041
		Pretrigger Points	625		



Passenger Head CG (X) Acceleration (P)



Max	6.94	G's	at	121.28	msec
Min	-12.25	G's	at	59.12	msec

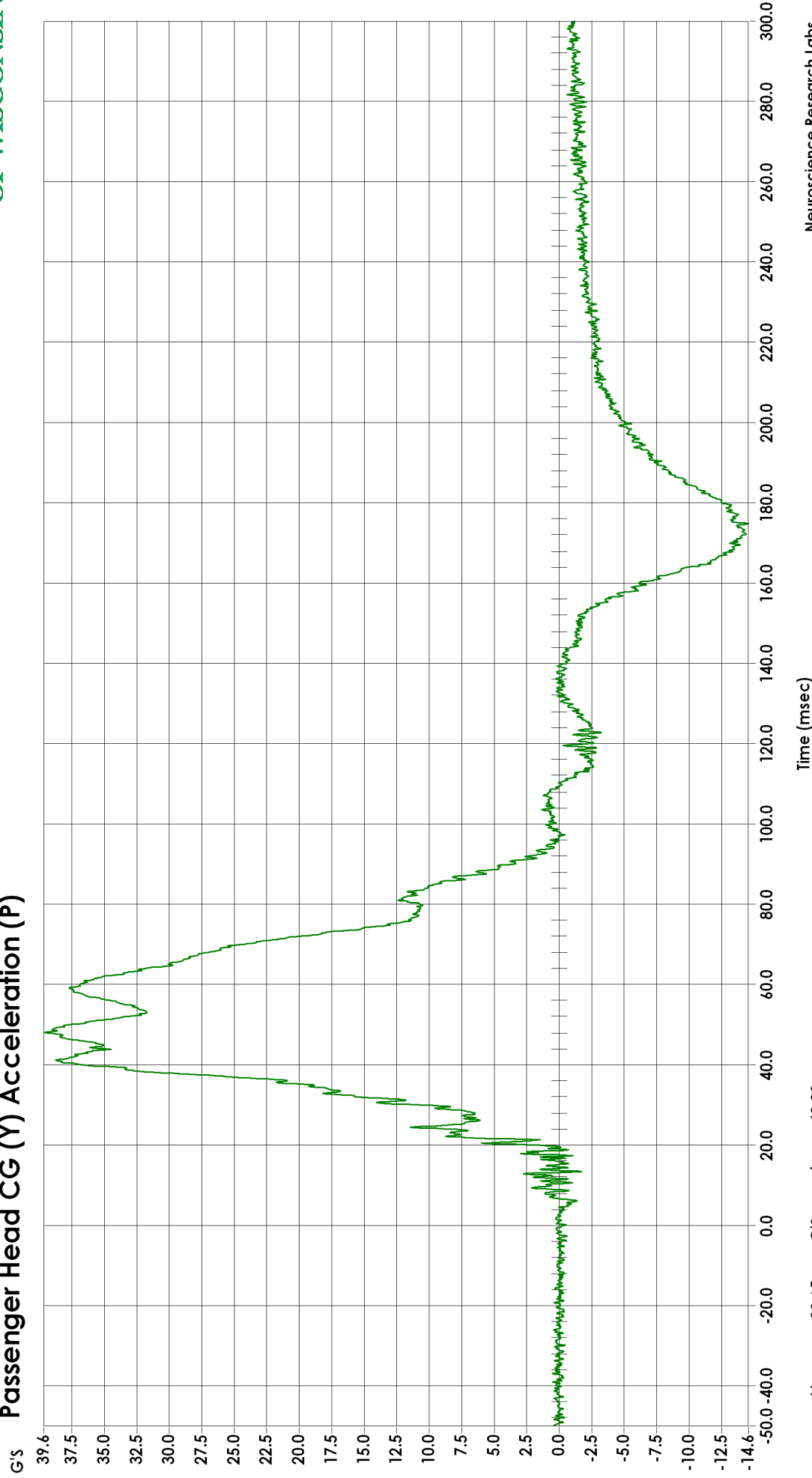
11SN01 Plot 014

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Test ID	11SN01	Filter	CFC1000
Date	11/AUG/2010	Sampling Rate (Hz)	12500
Description	SIDE NCAP 2011 FORD FIESTA 4-DOOR SEDAN	Number of Points	4376
		Pretrigger Points	625
		Sensor Location	HDCG
		Sensor Info	ENDEVCO 7264C-2KTZ-2-240
		Serial Number	P24562



Passenger Head CG (Y) Acceleration (P)

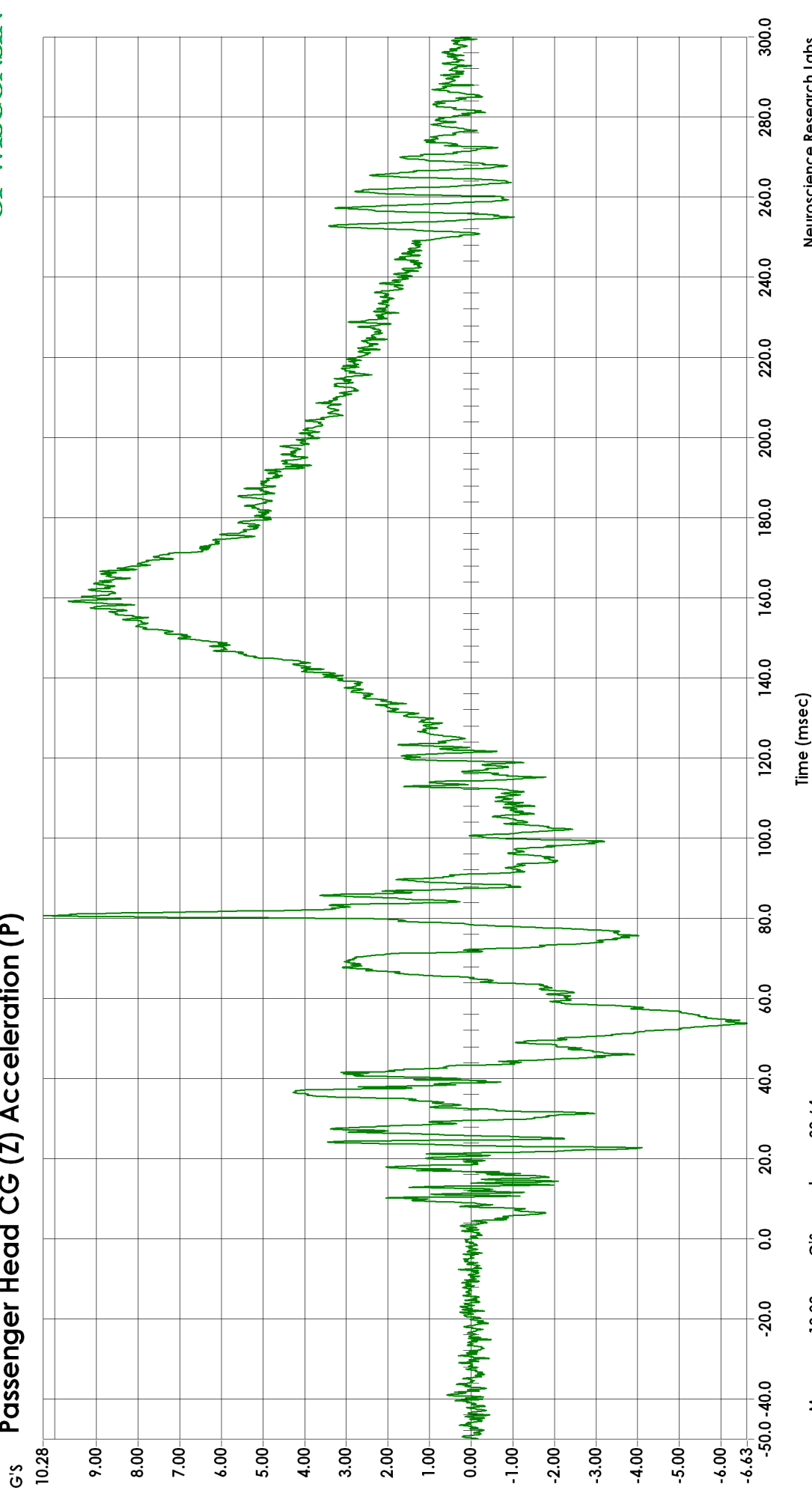


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Test ID	11SN01	Filter	CFC1000
Date	11/AUG/2010	Sampling Rate (Hz)	12500
Description	SIDE NCAP 2011 FORD FIESTA 4-DOOR SEDAN	Number of Points	4376
		Pretrigger Points	625
		Sensor Location	HDCG
		Sensor Info	ENDEVCO 7264C-2KTZ-2-300
		Serial Number	P22322



Passenger Head CG (Z) Acceleration (P)



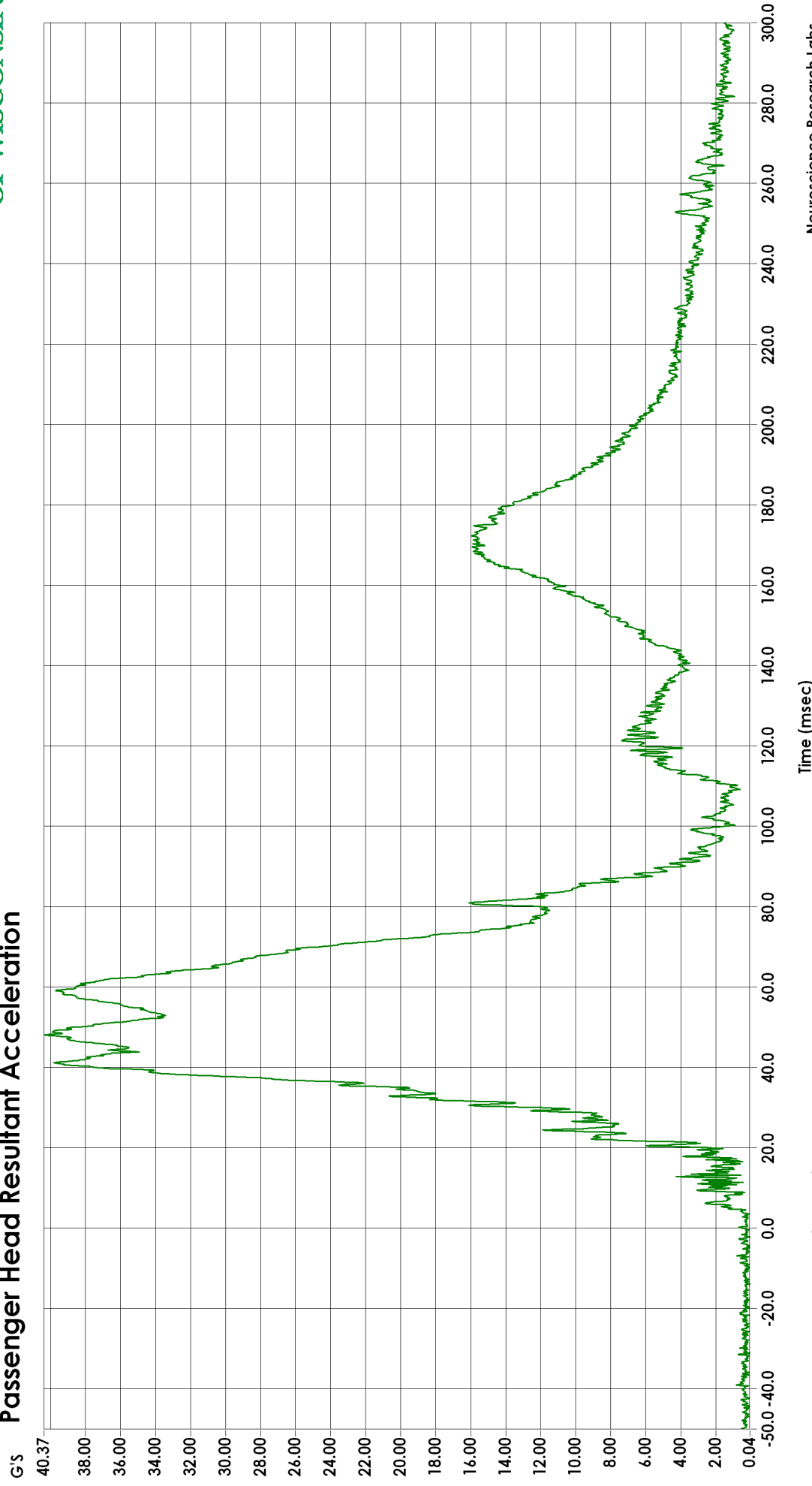
Max	10.28	G's	at	80.64	msec
Min	-6.63	G's	at	53.76	msec

11SN01 Plot 016

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Test ID	11SN01	Filter	CFC1000	Sensor Location	AC
Date	11/AUG/2010	Sampling Rate (Hz)	12500	Sensor Info	NA
Description	SIDE NCAP 2011 FORD FIESTA 4-DOOR SEDAN	Number of Points	4376	Serial Number	NA
		Pretrigger Points	625		

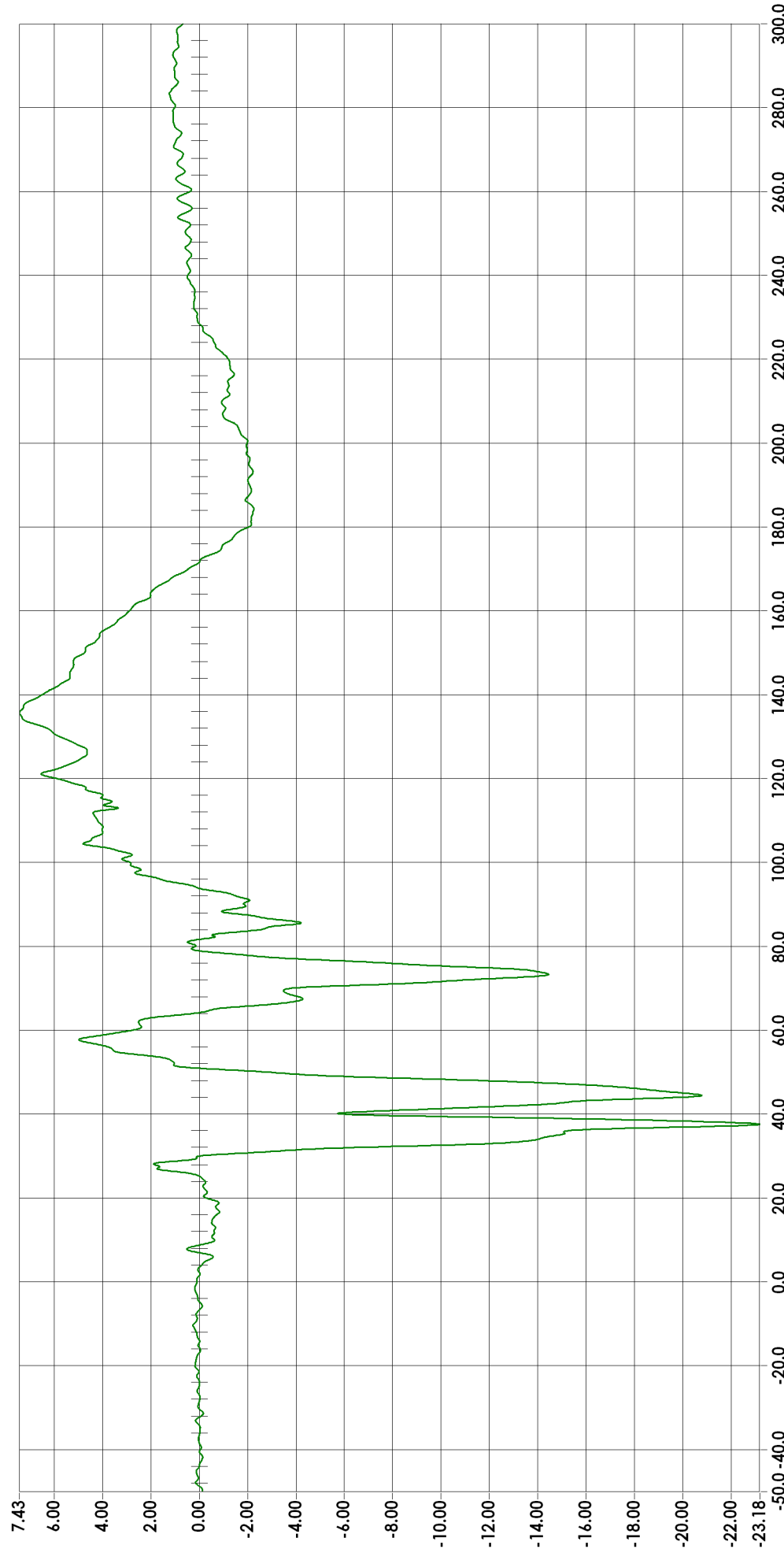
Passenger Head Resultant Acceleration



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Test ID	11SN01	Filter	CFC180
Date	11/AUG/2010	Sampling Rate (Hz)	12500
Description	SIDE NCAP 2011 FORD FIESTA 4-DOOR SEDAN	Number of Points	4376
		Prefrigger Points	625
		Sensor Location	SPNL
		Sensor Info	ENDEVCO 7264C-2KTZ-2-240
		Serial Number	P21661

Passenger Lower Spine T12 (X) Acceleration



Time (msec)

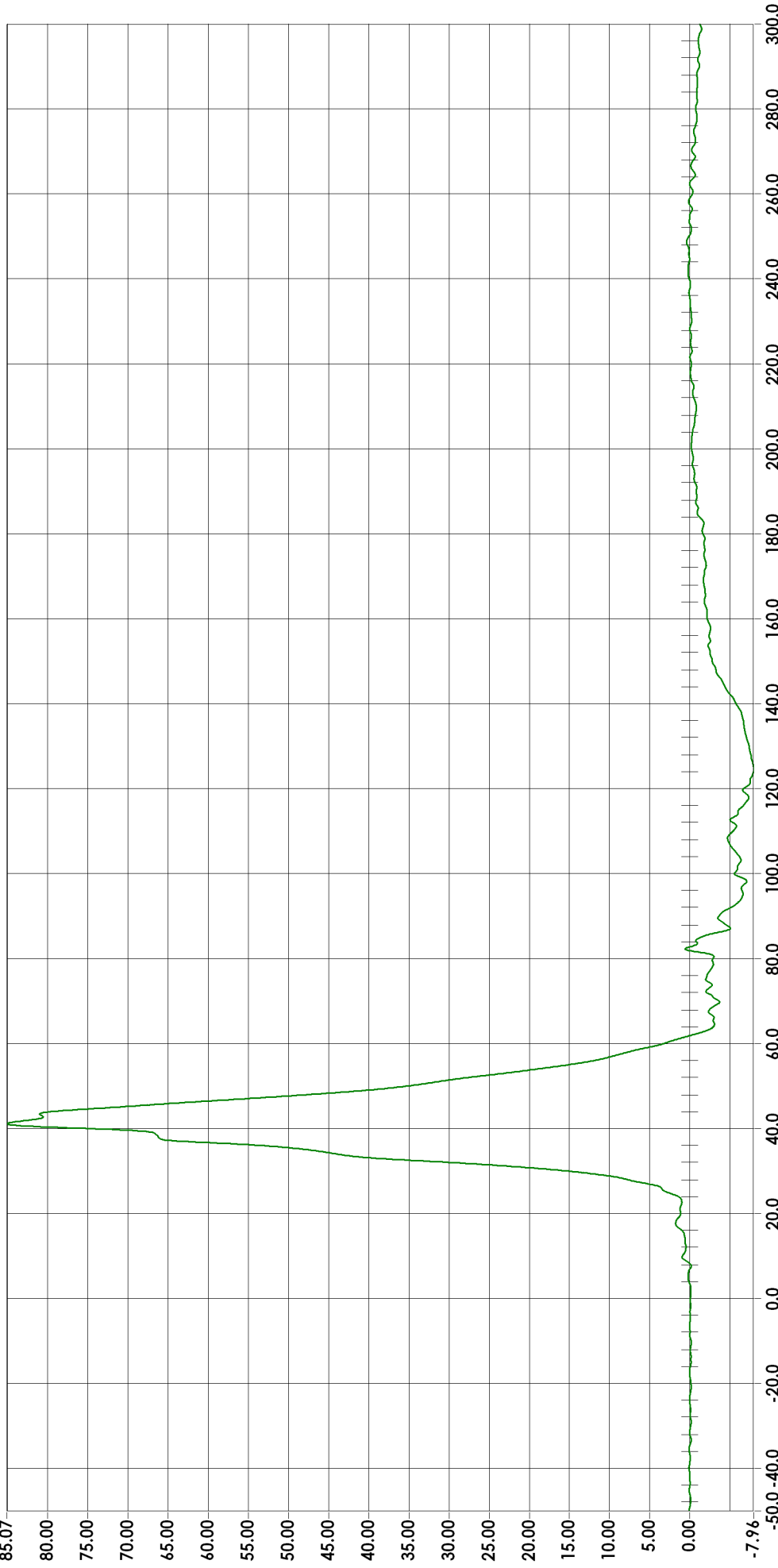
Max	7.43	G's	at	135.68	msec
Min	-23.18	G's	at	37.60	msec

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Test ID	11SN01	Filter	CFC180	Sensor Location	SPNL
Date	11/AUG/2010	Sampling Rate (Hz)	12500	Sensor Info	ENDEVCO 7264C-2KTZ-2-240
Description	SIDE NCAP 2011 FORD FIESTA 4-DOOR SEDAN	Number of Points	4376	Serial Number	P24682
		Prefrigger Points	625		

Passenger Lower Spine T12 (Y) Acceleration



Max	85.07	G's	at	41.12	msec
Min	-7.96	G's	at	124.48	msec

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Test ID

11SN01

Date

11/AUG/2010

Description

SIDE NCAP 2011 FORD FIESTA 4-DOOR SEDAN

Filter

CFC180

Sampling Rate (Hz)

12500

Number of Points

4376

Pretrigger Points

625

Sensor Location

SPNL

Sensor Info

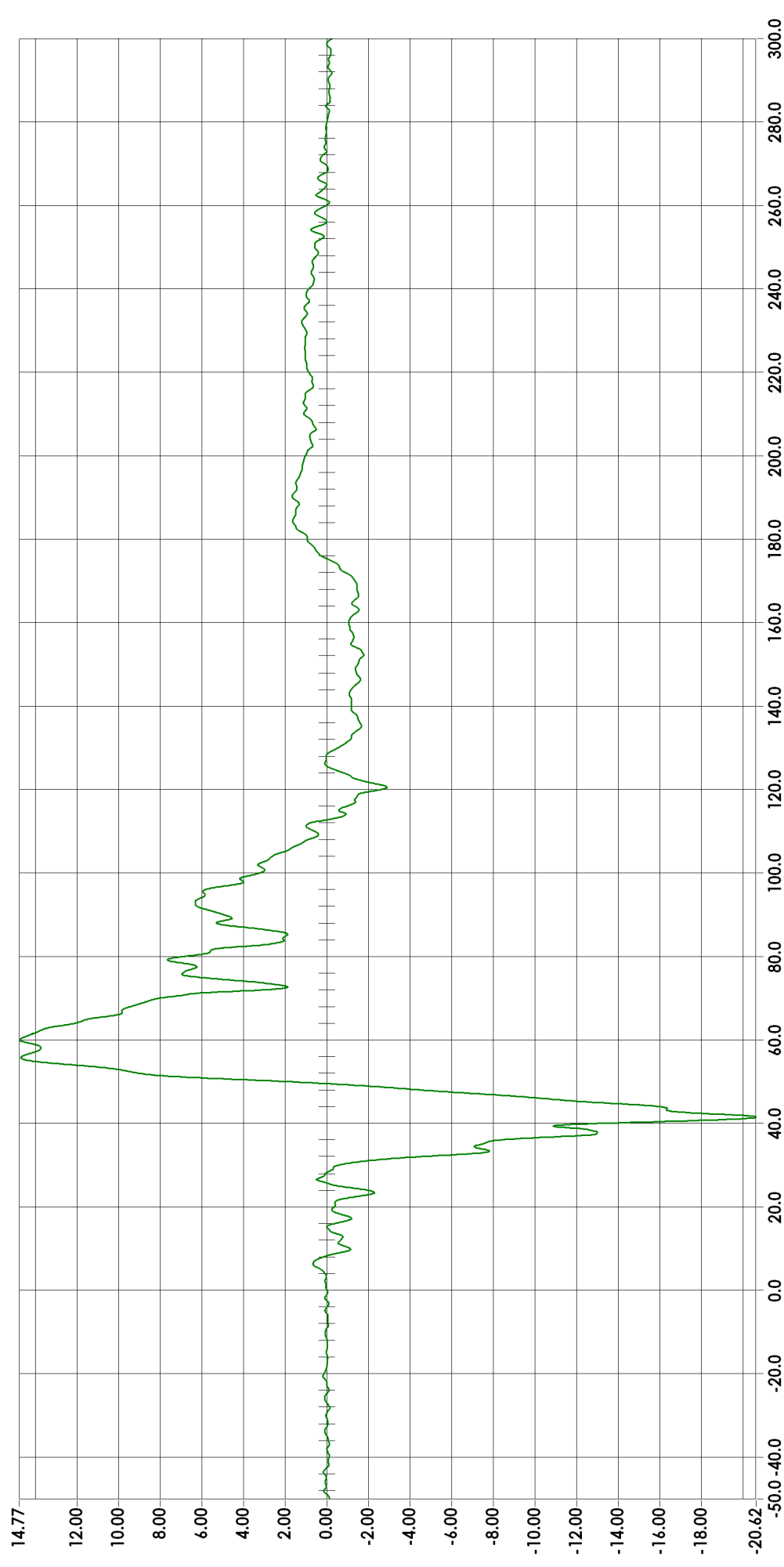
ENDEVCO 7264C-2KTZ-2-240

Serial Number

P21788



Passenger Lower Spine T12 (Z) Acceleration



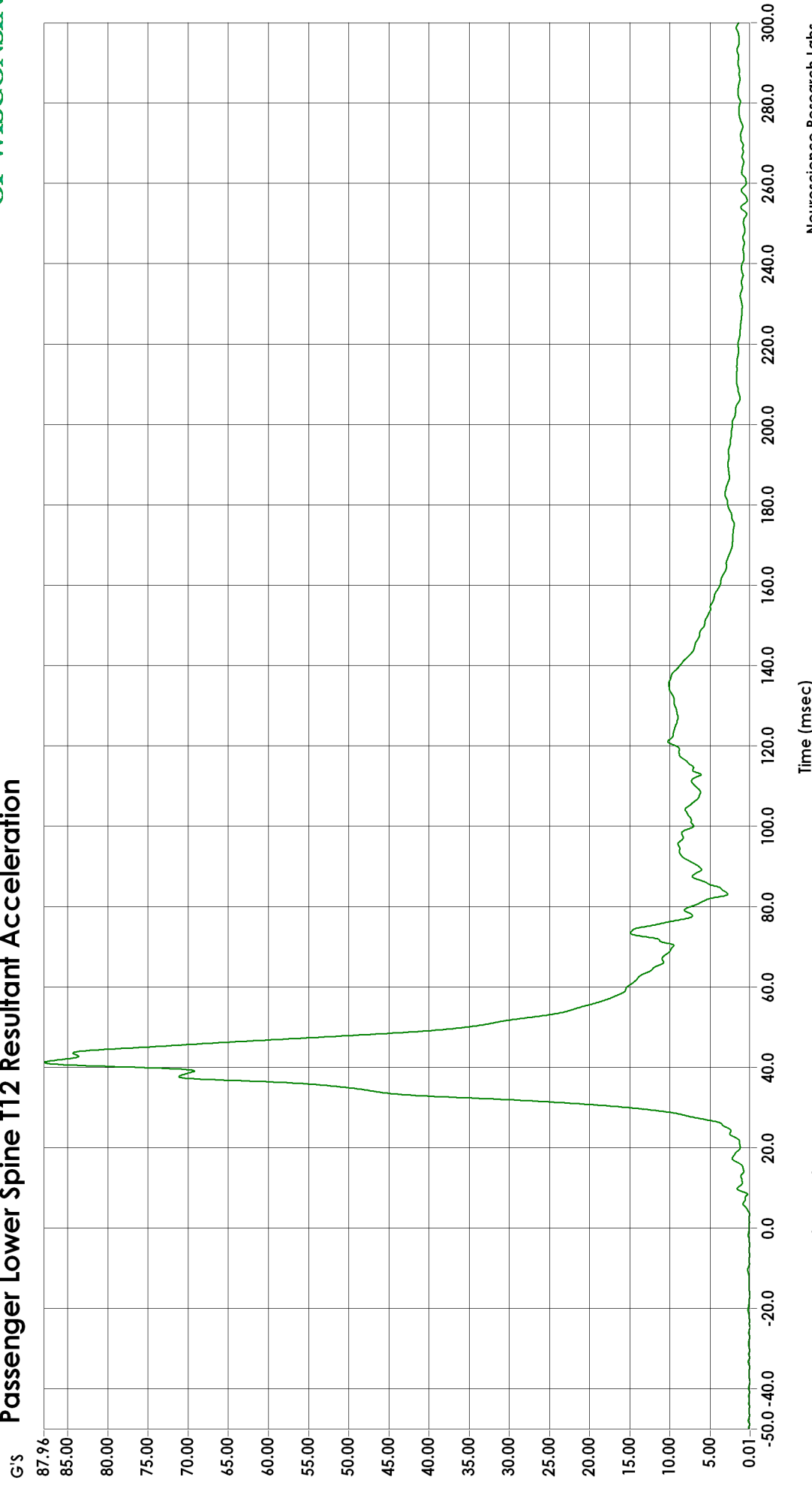
Max	14.77	G's	at	60.00	msec
Min	-20.62	G's	at	41.44	msec

11SN01 Plot 020

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Test ID	11SN01	Filter	CFC180	Sensor Location	AC
Date	11/AUG/2010	Sampling Rate (Hz)	12500	Sensor Info	NA
Description	SIDE NCAP 2011 FORD FIESTA 4-DOOR SEDAN	Number of Points	4376	Serial Number	NA
		Pretrigger Points	625		

Passenger Lower Spine T12 Resultant Acceleration



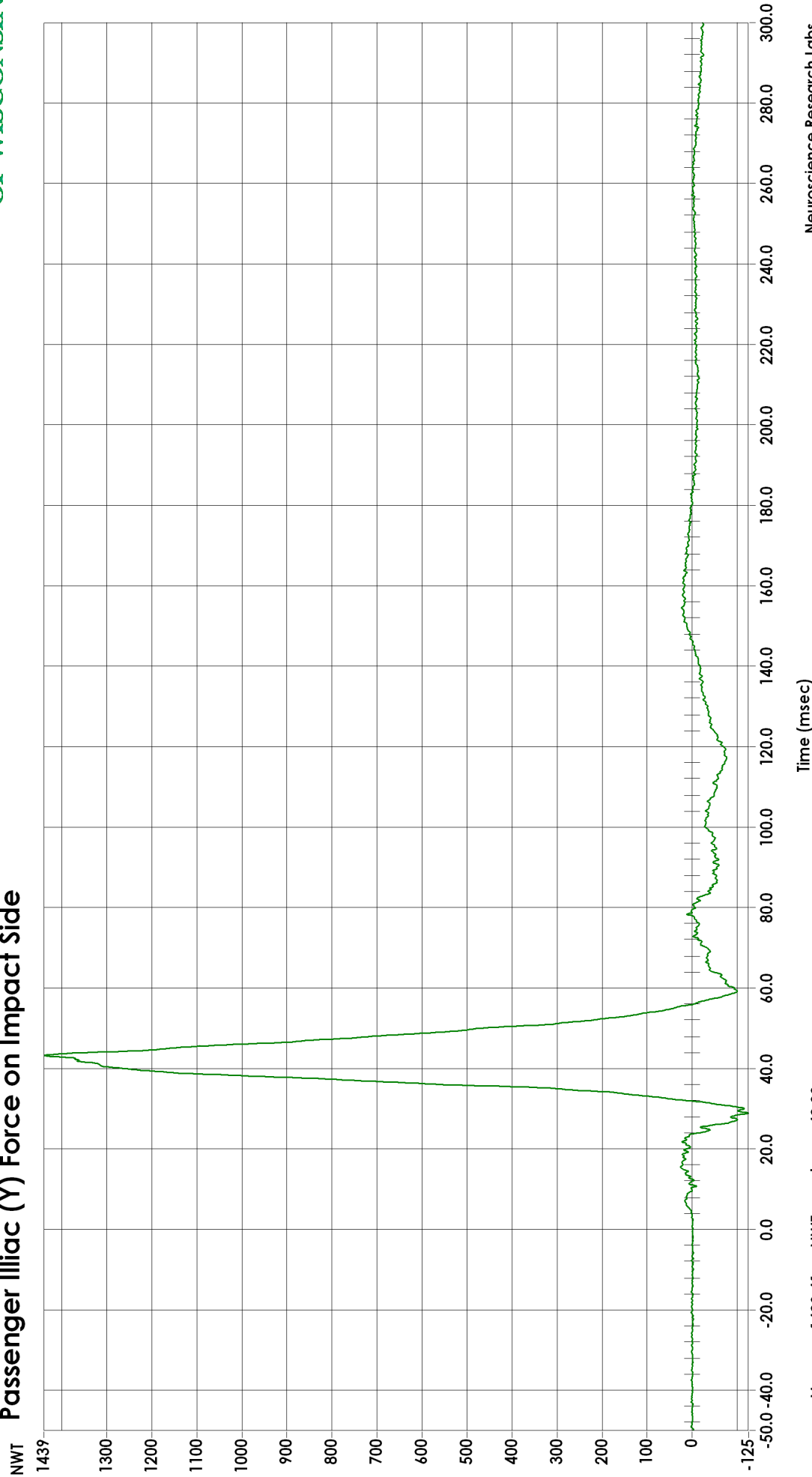
Max	87.96	G's	at	41.20	msec
Min	0.01	G's	at	-24.72	msec

11SN01 Plot 021



Test ID	11SN01	Filter	CFC600	
Date	11/AUG/2010	Sampling Rate (Hz)	12500	PVIL
Description	SIDE NCAP 2011 FORD FIESTA 4-DOOR SEDAN	Number of Points	4376	Denton 3228J
		Pretigger Points	625	3228J_283
		Sensor Location		
		Sensor Info		
		Serial Number		

Passenger Iliac (Y) Force on Impact Side



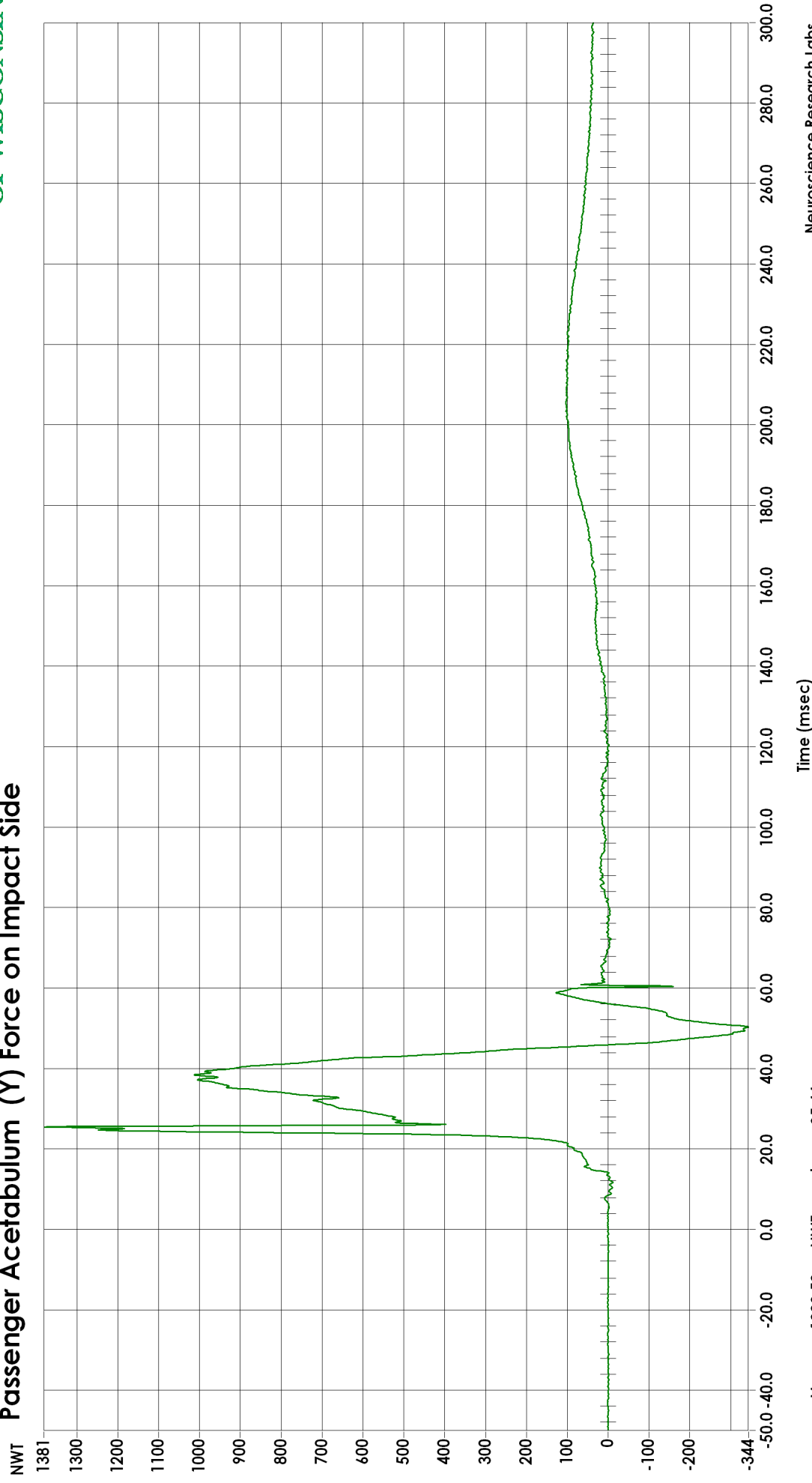
Max	1439.41	NWT	at	43.20	msec
Min	-125.33	NWT	at	28.88	msec

11SN01 Plot 022

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Test ID	11SN01	Filter	CFC600	Sensor Location	PVHP
Date	11/AUG/2010	Sampling Rate (Hz)	12500	Sensor Info	Denton 3249J
Description	SIDE NCAP 2011 FORD FIESTA 4-DOOR SEDAN	Number of Points	4376	Serial Number	3249J_270
		Prefrigger Points	625		

Passenger Acetabulum (Y) Force on Impact Side



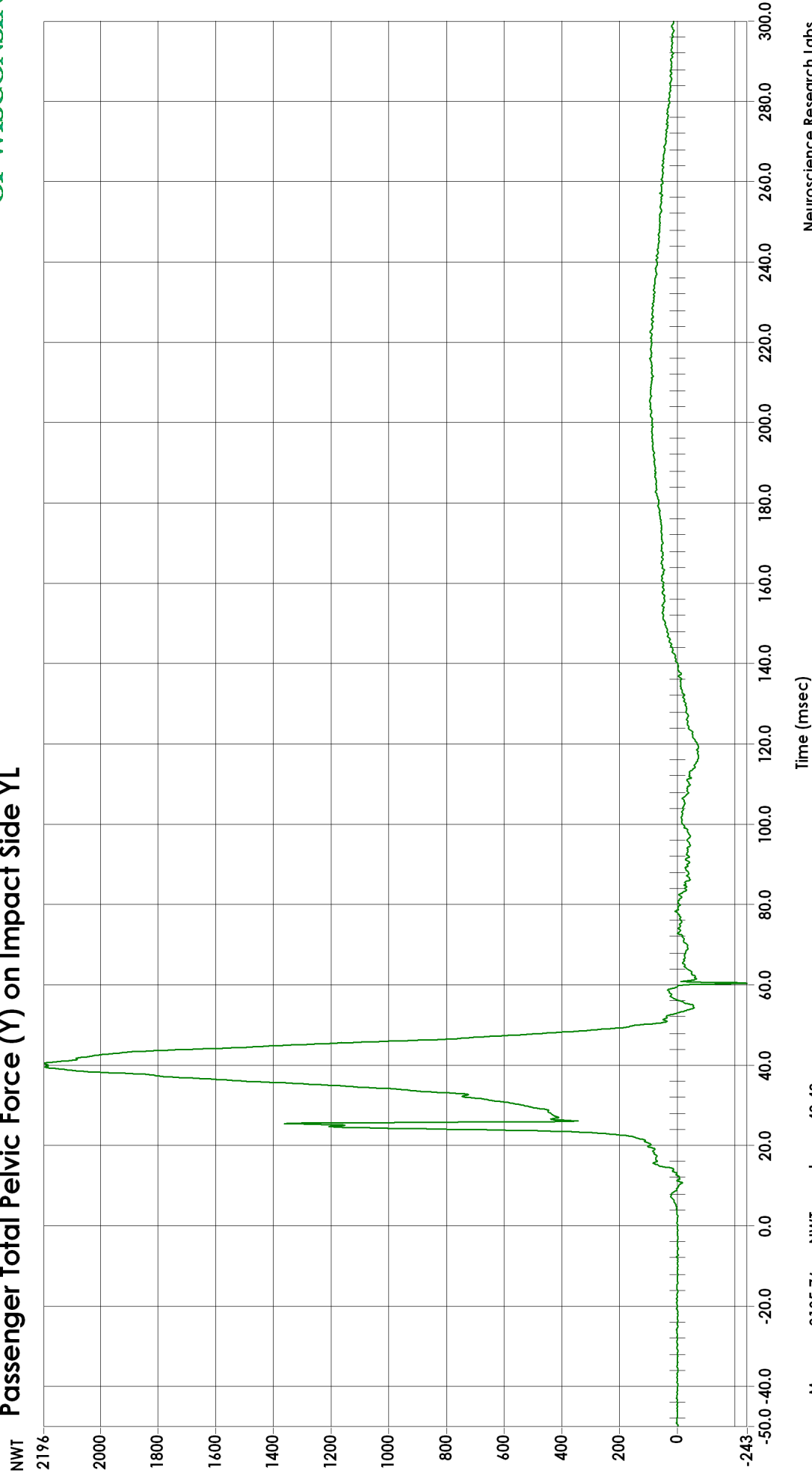
Max	1380.53	NWT	at	25.44	msec
Min	-343.81	NWT	at	50.32	msec

11SN01 Plot 023



Test ID	11SN01	Filter	CFC600	Sensor Location	AC
Date	11/AUG/2010	Sampling Rate (Hz)	12500	Sensor Info	NA
Description	SIDE NCAP 2011 FORD FIESTA 4-DOOR SEDAN	Number of Points	4376	Serial Number	NA
		Pretigger Points	625		

Passenger Total Pelvic Force (Y) on Impact Side YL



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Test Vehicle: 2011 Ford Fiesta 4-Door Sedan
Test Program: SINCAP

NHTSA Number: MB 0213
Test Date: August 11, 2010

APPENDIX C
DUMMY CALIBRATION DATA

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

CONFIGURED FOR LEFT SIDE IMPACT

ATD Serial Number 298

Test Sequences 1 & 2

TEST	PRE		POST	
SIDIIs	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 1 & 2

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	-	8-9-10	8-19-10
Sequential Test Number	-	1	2
Temperature (°C)	20.6-22.2	22.0	22.1
Relative Humidity (%)	10-70	40.5	40.7
Pendulum Speed (m/s)	4.2-4.4	4.3	4.3
Peak Impactor Acceleration (G)	36-45	44.3	43.2
Max Lateral Pelvis Acceleration (G)	28-39	37.2	35.6
Max Iliac Force (N)	4.10-5.10	4.86	4.96

SIDIIs LATERAL PELVIS ACETABULUM IMPACT TEST

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-9-10	8-19-10
Sequential Test Number	-	1	2
Temperature (°C)	20.6-22.2	22.0	22.1
Relative Humidity (%)	10-70	39.2	40.5
Pendulum Speed (m/s)	6.6-6.8	6.73	6.73
Peak Impactor Acceleration (G)	38-47	44.7	45.4
Peak Lateral Pelvis Acceleration (G)	N/A	-	-
Peak Lateral Pelvis Acceleration after 6ms (G)	34-42	38.2	39.2
Peak Acetabulum Force (kN)	3.60-4.30	3.71	4.13

SIDIIs LATERAL THORAX WITHOUT ARM IMPACT TEST

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-9-10	8-18-10
Sequential Test Number	-	1	2
Temperature (°C)	20.6-22.2	22.1	22.1
Relative Humidity (%)	10-70	39	41.6
Pendulum Speed (m/s)	4.2-4.4	4.3	4.35
Peak Upper Rib Deflection (mm)	32-40	37.7	37.3
Peak Middle Rib Deflection (mm)	39-45	43.2	43.2
Peak Lower Rib Deflection (mm)	35-43	41.8	42.18
Peak Upper Spine Acceleration (G)	13-17	14.9	15.0
Peak Lower Spine Acceleration (G)	7-11	9.66	9.73
Peak Impactor Acceleration (G)	14-18	16.5	16.1

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	-	8-9-10	8-18-10
Sequential Test Number	-	1	2
Temperature (°C)	20.6-22.2	21.9	21.7
Relative Humidity (%)	10-70	39.1	39.9
Pendulum Speed (m/s)	6.60-6.80	6.70	6.70
Peak Shoulder Deflection (mm)	31-40	35.3	34.6
Peak Upper Rib Deflection (mm)	25-32	28.4	28.7
Peak Middle Rib Deflection (mm)	30-36	33.0	34.2
Peak Lower Rib Deflection (mm)	32-38	35.3	37.2
Peak Upper Spine Acceleration (G)	34-43	38.0	40.9
Peak Lower Spine Acceleration (G)	29-37	34.6	34.6
Peak Impactor Acceleration after 5 ms (G)	30-36	33.4	33.0

SIDIIs LATERAL ABDOMINAL IMPACT TEST

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-9-10	8-18-10
Sequential Test Number	-	1	2
Temperature (°C)	20.6-22.2	21.9	22.1
Relative Humidity (%)	10-70	39.2	40.4
Pendulum Speed (m/s)	4.2-4.4	4.30	4.30
Peak Upper Rib Deflection (mm)	36-47	44.7	45.0
Peak Lower Rib Deflection (mm)	33-44	42.0	42.9
Peak Lower Spine Acceleration (G)	9-14	12.1	11.5
Peak Impactor Acceleration (G)	12-16	14.6	14.4

SIDIIs LATERAL SHOULDER IMPACT TEST

TEST PARAMETER	SPEC	PRE		POST	
Date	-	8-9-10	-	8-18-10	-
Sequential Test Number	-	1	-	2	-
Temperature (°C)	20.6-22.2	21.9	-	21.8	-
Relative Humidity (%)	10-70	39.1	-	38.4	-
Pendulum Speed (m/s)	4.2-4.4	4.30	-	4.30	-
Peak Shoulder Deflection (mm)	28-37	33.6	-	33.2	-
Peak Upper Spine Lateral Acceleration (G)	17-22	18.4	-	19.7	-
Peak Impactor Acceleration (G)	13-18	16.7	-	16.8	-

SUMMARY
SIDIIs PRE AND POST VERIFICATION (CONTINUED)

CONFIGURED FOR LEFT SIDE IMPACT

SIDIIs LATERAL NECK

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-5-10	8-17-10
Sequential Test Number	-	1	2
Temperature (°C)	20.6-22.2	21.9	21.9
Relative Humidity (%)	10-70	39.8	40.8
Pendulum Speed (m/s)	5.51-5.63	5.55	5.56
Pendulum Pulse 10ms (m/s)	2.20-2.80	2.34	2.54
Pendulum Pulse 15ms (m/s)	3.30-4.10	3.58	3.96
Pendulum Pulse 20ms (m/s)	4.40-5.40	4.88	5.40
Pendulum Pulse 25ms (m/s)	5.40-6.10	5.77	5.76
Pendulum Pulse between 25ms and 100ms (m/s)	5.50-6.20	5.84	5.79
Max D-Plane rotation (deg)	71-81	75.0	73.0
Time of Max D-Plane Rotation (ms)	50-70	68	70.0
Max OC Moment during Rotation (Nm)	36-44	40.7	42.2
Time of Moment Decay from Peak to 0 Nm (ms)	102-126	121.0	126.0

SIDIIs LATERAL HEAD DROP

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-3-10	8-16-10
Sequential Test Number	-	1	2
Temperature (°C)	20.6-22.2	21.9	21.9
Relative Humidity (%)	10-70	38.5	39.7
Resultant Max (G)	115-137	124.5	122.4
Longitudinal Max (G)	<15	2.38	0.81

SUMMARY
SIDIIs PRE AND POST VERIFICATION (CONTINUED)

CONFIGURED FOR LEFT SIDE IMPACT

SIDIIs MEASUREMENTS

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-9-10	8-23-10
Sequential Test Number	-	1	2
Temperature (°C)	20.6-22.2	21.9	21.7
Relative Humidity (%)	10-70	38.7	51.5
Sitting Height	780 ±8.0	778	774
Shoulder Pivot Height	445 ±8.0	445	444
H-Point Height	84 ±5.0	85	83
H-Point from Seat Back	146 ±5.0	145	149
Shoulder Pivot from Backline	102 ±5.0	102	103
Thigh Clearance	127 ±8.0	124	124
Head Breadth	144 ±4.0	143	144
Head Back from Backline	43 ±3.0	40	45
Head Depth	183 ±5.0	182	182
Head Circumference	546 ±5.0	546	545
Buttock to Knee Length	527 ±13.0	530	520
Popliteal Height	356 ±13.0	360	360
Knee Pivot to Floor Height	401 ±8.0	400	400
Buttock Popliteal Length	429 ±13.0	430	428
Chest Depth w/o Jacket	203 ±8.0	204	202
Foot Length	224 ±8.0	225	220
Hip Breadth	318 ±5.0	315	319
Arm Length	254 ±5.0	250	254
Knee Joint to Seat Back	458 ±8.0	460	464
Shoulder Width	349 ±8.0	348	350
Foot Width	86 ±8.0	88	85
Chest Circumference w/Jacket	866 ±15.0	863	860
Waist Circumference	776 ±15.0	770	773

SUMMARY
ESIIre PRE AND POST VERIFICATION
CONFIGURED FOR LEFT SIDE IMPACT

ESIIre LATERAL HEAD DROP

TEST PARAMETER	SPEC	PRE	POST
Date	-	7-6-10	8-16-10
Sequential Test Number	-	1	2
Temperature (°C)	20.6-22.2	21.8	21.9
Relative Humidity (%)	10-70	45.6	38.8
Resultant Max (G)	125-155	151.2	147.1
Longitudinal Max (G)	<15	4.23	4.28

ESIIre LATERAL NECK TEST

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-4-10	8-18-10
Sequential Test Number	-	1	2
Temperature (°C)	20.6-22.2	21.5	22.1
Relative Humidity (%)	10-70	39.8	45.2
Pendulum Speed (m/s)	3.3-3.5	3.49	3.47
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)	-0.273	-0.252
Pendulum Pulse 13.5-14.0 ms (m/s)	(-3.7)-(-3.20)	-3.69	-3.20
Max Pendulum Pulse 17 ms (m/s)	-3.7	-3.49	-3.62
Max D-Plane rotation (deg)	49-59	54.4	53.2
Time of Max D-Plane Rotation (ms)	54-66	59.0	61.0
Time of Moment Decay from Peak to 0 Nm (ms)	53-88	62.0	60.0

ESIIre INDIVIDUAL RIB DROP TEST

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-2-10	8-16-10
Sequential Test Number	-	1	2
Temperature (°C)	20.6-22.2	21.2	22.0
Relative Humidity (%)	10-70	39.7	40.0
Drop Height 459 mm	36-40	U-38.0 M-38.0 L-39.5	U-38.0 M-38.0 L-39.3
Drop Height 815 mm	46-51	U-50.2 M-49.8 L-50.6	U-49.8 M-49.9 L-50.4

ESIIre FULL BODY THORAX IMPACT TEST

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-6-10	8-23-10
Sequential Test Number	-	1	2
Temperature (°C)	20.6-22.2	22.1	22.1
Relative Humidity (%)	10-70	39.7	48.0
Pendulum Speed (m/s)	5.4-5.6	5.4	5.4
Upper Rib Deflection (mm)	34-41	37.0	37.5
Middle Rib Deflection (mm)	37-45	42.3	41.9
Lower Rib Deflection (mm)	37-44	41.9	41.5

Peak Impactor Force after 6ms (N)	5100-6200	5428.2	5358.2
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**SUMMARY
ESIIre PRE AND POST VERIFICATION (CONTINUED)**

CONFIGURED FOR LEFT SIDE IMPACT

ESIIre LATERAL ABDOMEN IMPACT TEST

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-6-10	8-23-10
Sequential Test Number	-	1	2
Temperature (°C)	20.6-22.2	21.9	22.0
Relative Humidity (%)	10-70	40.1	47.8
Pendulum Speed (m/s)	3.9-4.1	4.05	4.05
Max Sum of 3 Abdominal Loadcells (N)	2200-2700	2582.62	2626.91
Time of Max Sum of 3 Abdominal Loadcells from T-Zero (ms)	10-12.3	10.7	10.24
Peak Lateral Impactor Force (N)	4000-48000	4482	4698.23
Time of Peak Lateral Impactor Force from T-Zero (ms)	10.6-13.0	11	10.8

ESIIre LATERAL SPINE TEST

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-5-10	8-19-10
Sequential Test Number	-	1	2
Temperature (°C)	20.6-22.2	21.8	21.9
Relative Humidity (%)	10-70	40.2	39.5
Pendulum Speed (m/s)	5.95-6.15	6.15	6.14
Pendulum Pulse 0-1.0 ms (m/s)	(-0.05)-0.00	-0.001	-0.001
Pendulum Pulse 2.7-3.7 ms (m/s)	(-0.425)-(-0.24)	-0.417	-0.389
Pendulum Pulse 24.5-27.0 ms (m/s)	(-6.5)-(-5.8)	-6.393	-6.420
Max Pendulum Pulse 30 ms (m/s)	-6.5	-6.241	-6.361
Max D-Plane rotation (deg)	45-55	46.25	46.77
Time of Max D-Plane Rotation (ms)	39-53	42.00	43.00
Time of Moment Decay from Peak to 0 Nm (ms)	37-57	44.00	45.00

ESIIre LATERAL PELVIS IMPACT TEST

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-8-10	8-23-10
Sequential Test Number	-	1	2
Temperature (°C)	20.6-22.2	21.9	22.1
Relative Humidity (%)	10-70	41.3	47.6
Pendulum Speed (m/s)	4.2-4.4	4.35	4.35
Peak Lateral Impactor Force (N)	4700 – 5400	5165.6	5212.4
Time of Peak Lateral Impactor Force from T-Zero (ms)	11.8-16.1	12.4	13.5
Peak Pubic Symphysis Force (N)	1230-1590	1585.4	1521.0
Time of Peak Pubic Symphysis Force (ms)	12.2-17.0	12.9	14.0

SUMMARY
ESIlre PRE AND POST VERIFICATION (CONTINUED)

CONFIGURED FOR LEFT SIDE IMPACT

ESIlre LATERAL SHOULDER IMPACT TEST

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-6-10	8-23-10
Sequential Test Number	-	1	2
Temperature (°C)	20.6-22.2	21.5	21.8
Relative Humidity (%)	10-70	39.2	48.0
Pendulum Speed (m/s)	4.2-4.4	4.3	4.35
Peak Lateral Acceleration of Impactor (G)	7.5-10.5	10.4	10.4

ESIlre MEASUREMENTS

TEST PARAMETER	SPEC	PRE	POST
Date	-	8-9-10	8-24-10
Sequential Test Number	-	1	2
Temperature (°C)	20.6-22.2	22.0	22.1
Relative Humidity (%)	10-70	40.5	49.7
Sitting Height	909 ±9	908	909
Seat to Shoulder Joint	565 ±7	570	567
Seat to Lower Face of Thoracic Spine Box	351 ±5	356	353
Seat to Hip Joint (center of bolt)	100 ±3	98	98
Sole to Seat, Sitting	442 ±9	440	442
Head Width	155 ±3	153	156
Shoulder/Arm Width	470 ±9	478	465
Thorax Width	327 ±5	325	324
Abdomen Width	280 ±7	280	284
Pelvis Lap Width	366 ±7	364	362
Head Depth	201 ±5	199	202
Thorax Depth	267 ±5	262	268
Abdomen Depth	199 ±5	196	203
Pelvis Depth	240 ±5	236	238
Back of Buttocks to Hip Joint (center of bolt)	155 ±5	157	155
Back of Buttocks to Front Knee	606 ±9	602	610

**ATD INSPECTION LIST
PRE AND POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

		SIDIIIs		ESIire	
		PRE	POST	PRE	POST
	Date	8-9-10	8-12-10	8-9-10	8-12-10
	Performed By				
PART	INSPECTION	RESULT	RESULT	RESULT	RESULT
Skin	Visual	PASS	PASS	PASS	PASS
Head	Visual, Ballast, Accelerometer Mount	PASS	PASS	PASS	PASS
Neck	Visual and Palpated, Cable Torque	PASS	PASS	PASS	PASS
Spine Box	Visual, Ballast, Weldment, Accelerometer Mount	PASS	PASS	PASS	PASS
Rib Cage	Visual, Palpated, Measured, Stiffness	PASS	PASS	PASS	PASS
Sternum	Visual	PASS	PASS	PASS	PASS
Lumbar Spine	Visual	PASS	PASS	PASS	PASS
Abdomen	Visual	PASS	PASS	PASS	PASS
Pelvis	Visual, Palpated, Accelerometer Mount	PASS	PASS	PASS	PASS
Upper Legs	Visual	PASS	PASS	PASS	PASS
Knees	Visual, Stops, Inserts	PASS	PASS	PASS	PASS
Lower Legs	Visual, Range of Motion	PASS	PASS	PASS	PASS
Ankles	Visual, Range of Motion	PASS	PASS	PASS	PASS
Feet	Visual, Range of Motion	PASS	PASS	PASS	PASS
Joints	1 to 2 G Range	PASS	PASS	PASS	PASS
Other		PASS	PASS	PASS	PASS