

REPORT NUMBER TR-P28182-01-NC

**NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST**

**FORD MOTOR CO.
2009 FORD F-150 XL SUPERCREW
4-DOOR TRUCK**

NHTSA NUMBER: F90202

**Prepared By:
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DECEMBER 18, 2008


FINAL REPORT


**PREPARED FOR:
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NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
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Date of Acceptance

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15. Supplementary Notes																					
16. Abstract A 55/28 km/h 90 deg. Moving Deformable Barrier Side Impact NCAP Test was conducted on the subject 2009 Ford F-150 XL SuperCrew 4-Door Truck in accordance with the specifications of the Office of Crash Worthiness Standards Test Procedures for the generation of consumer information on vehicle side crash protection. The test was conducted at KARCO Engineering, LLC in Adelanto, CA, on December 18, 2008. The impact velocity of the Moving Deformable Barrier was 61.86 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 5.0 deg. C. The target vehicle's maximum post-test static crush was 325 mm located at level 1. The test vehicle's occupant performance data is as follows:																					
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">Measurement Description</th> <th style="width: 20%;">Driver SID/HIII</th> <th style="width: 20%;">Pass. SID/HIII</th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib (LUR) G's</td> <td style="text-align: center;">14.7</td> <td style="text-align: center;">16.2</td> </tr> <tr> <td>Left Lower Rib (LLR) G's</td> <td style="text-align: center;">19.6</td> <td style="text-align: center;">19.2</td> </tr> <tr> <td>Lower Spine (T₁₂) G's</td> <td style="text-align: center;">19.7</td> <td style="text-align: center;">21.7</td> </tr> <tr> <td>Thoracic Trauma Index (TTI) G's</td> <td style="text-align: center;">20.0</td> <td style="text-align: center;">20.0</td> </tr> <tr> <td>Pelvis (PEV) G's</td> <td style="text-align: center;">32.0</td> <td style="text-align: center;">19.0</td> </tr> </tbody> </table>		Measurement Description	Driver SID/HIII	Pass. SID/HIII	Left Upper Rib (LUR) G's	14.7	16.2	Left Lower Rib (LLR) G's	19.6	19.2	Lower Spine (T ₁₂) G's	19.7	21.7	Thoracic Trauma Index (TTI) G's	20.0	20.0	Pelvis (PEV) G's	32.0	19.0	18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Admin. NHTSA Technical Reference Division 1200 New Jersey Ave., SE, Room W43-410 Washington, DC 20590	
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17. Key Words New Car Assessment Program (NCAP) Side Impact Moving Deformable Barrier (MDB) Side Impact Dummy (SID/HIII)																					
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SECTION 1

PURPOSE AND TEST PROCEDURE

1.1 PURPOSE

This Side Impact NCAP test is conducted as part of the FY' 2008 test program sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract No. DTNH22-03-D-32005. The purpose of this test is to generate comparative side impact data on a 2009 Ford F-150 XL SuperCrew 4-Door Truck manufactured by Ford Motor Co.

1.2 TEST PROCEDURE

The side impact test was conducted in accordance with the current National Highway Traffic Safety Administration (NHTSA), Office of Crashworthiness Standards (OCS), laboratory test procedure NCAP Side Impact Testing, dated November 2002. The procedures for receiving, inspection, testing, and reporting of test results are described in the test procedures and are not repeated in this report.

SECTION 2
SUMMARY OF SIDE IMPACT TEST

2.1 SUMMARY OF SIDE IMPACT NCAP TEST

A model year 2009 Ford F-150 XL SuperCrew 4-Door Truck 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 61.86 km/h. The specified impact velocity range is from 61.1 to 62.7 km/h. The test (target) vehicle was stationary and positioned 63° to the line of forward motion. The weight of the vehicle as tested was 2637 kg and the test weight of the MDB was 1361 kg. The test was conducted at KARCO Engineering, LLC in Adelanto, California, on December 18, 2008.

Two (2) real-time cameras and ten (10) high-speed video cameras were used to document the impact event. Camera locations and pertinent camera information is documented in the data sheets. Pre- and post-test photographs of the vehicle and SID/HIIIs can be found in Appendix A. Two 50th percentile adult male Side Impact Dummies, Hybrid III (SID/HIIIs) were placed in the driver's and left rear passenger designated seating positions according to the test procedure. Each SID/HIII is instrumented with contact switches on the pelvis, thorax and six-axis neck load cells, and fourteen accelerometers in the following locations:

- Left Upper Rib (LUR) uni-axial accelerometer (Y-axis primary and redundant)
- Left Lower Rib (LLR) uni-axial accelerometer (Y-axis primary and redundant)
- Lower Thoracic Spine (T12) uni-axial accelerometer (Y-axis primary and redundant)
- Pelvic (PEV) section uni-axial accelerometer (Y-axis primary and redundant)
- Head Center of Gravity (CG) tri-axial accelerometers (X, Y, and Z axes primary and redundant)

SUPPLEMENTAL RESTRAINT INFORMATION

Restraint Type	Left Front Driver		Left Rear (Passenger)	
	Installed	Deployed	Installed	Deployed
Front Airbag	Yes	No	No	
Side Torso Airbag	Yes	Yes	No	
Head Airbag	No		No	
Curtain Airbag	Yes	Yes	Yes	Yes

SECTION 2...(CONTINUED)

The test vehicle was instrumented with twelve (12) structural accelerometers and the MDB was instrumented with five (5) accelerometers and one (1) contact switch on the right bumper to compare left side to right side bumper impact timing. All data channels were recorded with the fully self contained on-board Data Acquisition System (DAS). The data was digitally sampled at 10,000 samples per second and processed per Appendix V of the Test Procedure.

2.2 GENERAL COMMENTS

Both the driver and passenger doors remained closed during the impact. The test vehicle sustained a maximum static crush of 325 mm at level 1, 1650 mm rearward of the left vertical impact point. The driver SID/Hybrid III, Serial No. 275 and the passenger SID/Hybrid III, Serial No. 274 were calibrated prior to this test. The SID/Hybrid III injury criteria are summarized as follows:

Measurement	Units	Driver	Passenger
Thoracic Trauma Index (TTI)	G's	20	20
Peak Pelvic G's (PEV)	G's	32	19

Tests summaries and post-test observations are presented in Section 3. Appendix A contains the still photograph prints. Appendix B contains the driver and passenger SID/HIIs, vehicle, and MDB response data traces. Appendix C contains the SID Configuration and performance verification data.

SECTION 3

OCCUPANT AND VEHICLE INFORMATION SHEETS

Test Vehicle: 2009 Ford F-150 XL SuperCrew 4-Door Truck

NHTSA No.: F90202

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 12/18/08

CONVERSION FACTORS USED IN THIS REPORT*

Quantity	Typical Application	Std Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	mile/h	km/h	1.609344
Length or Distance	Measurements	in	mm	25.4
Volume	Fuel Systems	gal	liter	3.785
Volume	Small Fluids	oz	mL	29.573
Pressure	Tire Pressures	lbf/in ²	kPa	7.0
Volume	Liquid	gal	liter	3.785
Temperature	General Use	°F	°C	$=(t_f - 32)/1.8$
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf/ft	Nm	1.355

* Based on the Recommended Practice in SAE J916, May 85

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2009 Ford F-150 XL SuperCrew 4-Door Truck NHTSA No.: F90202
 Test Program: 55/28 km/h Side Impact NCAP Test Date: 12/18/08

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	F90202
Make	Ford
Model	F-150 XL SuperCrew
Body Style	4-Door Truck
Vin No.	1FTRW12889FA14365
Color	BLACK
Delivery Date	12/1/2008
Odometer (Miles)	82.7
Dealer	Hemborg Ford
Transmission	6-Speed Automatic
Final Drive	Rear
Type/No. Cyl.	V8
Engine Disp. (L)	4.6
Engine Placement	Longitudinal
Roof Rack	No
Sunroof/T-Top	No
Tinted Glass	Yes
Traction Control	Yes
Power Brakes	Yes
Front Disc	Yes
Rear Disc	Yes

Anti-Lock Brakes	Yes
All Wheel Drive	No
Power Steering	Yes
Driver Front Airbag	Yes
Driver Side Torso Airbag	Yes
Driver Side Head Airbag	No
Driver Curtain/Airbag	Yes
Rear Pass. Airbag	No
Rear Pass. Side Airbag	No
Rear Pass. Head Airbag	No
Rear Pass. Curtain/Airbag	Yes
Pre-Tensioners	Yes
Load Limiters	Yes
Bucket Seats	Yes
Air Cond.	Yes
AM/FM CD	Yes
Tilt Steering	Yes
Automatic Door Locks	Yes
Power Windows	Yes
Power Seats	No
Other	n/a

Does Owners Manual provide instructions to turn off automatic door locks. Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Ford Motor Co.
Date of Manufacture	Oct-08

GVWR (kg)	3130
GAWR Front (kg)	1497
GAWR Rear (kg)	1724

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench		
Number of Occupants	3	3		6
Capacity Weight (VCW) (kg)				770
Cargo Weight (RCLW) (kg)				136

DATA SHEET NO. 1...(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

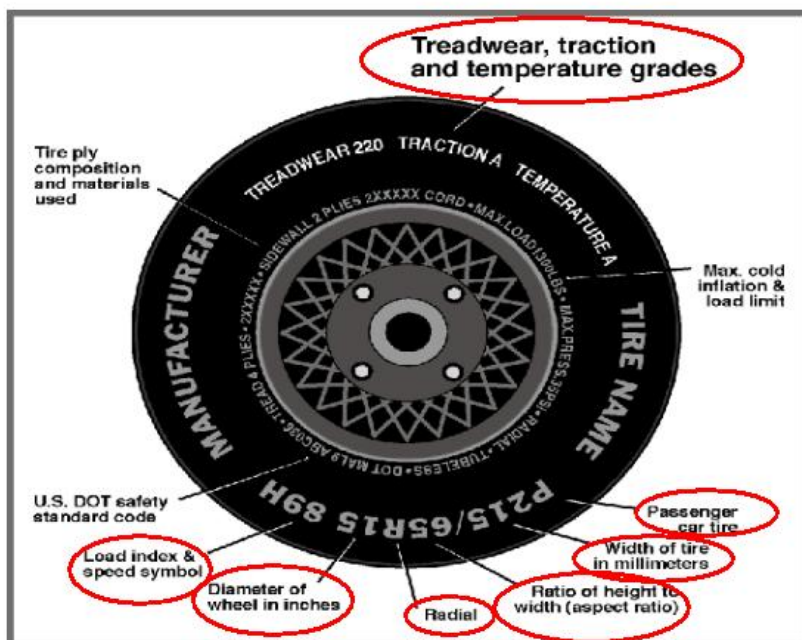
Test Vehicle: 2009 Ford F-150 XL SuperCrew 4-Door Truck

NHTSA No.: F90202

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 12/18/08

Collect year, make, model, VIN, items circled in red, and tire manufacturer and tire name.



TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	240	240
Cold Pressure (kpa)	240	240
Recommended Tire Size	P255/65R17	P255/65R17
Tire Size on Vehicle	P255/65R17	P255/65R17
Tire Manufacturer	Michelin	Michelin
Treadwear	420	420
Traction	A	A
Temperature Grades	B	B
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 2 Steel	2 Polyester, 2 Steel
Load Index/Speed Symbol	108S	108S
Tire Material	Polyester, Steel	Polyester, Steel
DOT Safety Code Right	M3LT H7WX 4008	M3LT H7WX 4008
DOT Safety Code Left	M3LT H7WX 4008	M3LT H7WX 4008

DATA SHEET NO. 1...(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2009 Ford F-150 XL SuperCrew 4-Door Truck NHTSA No.: F90202
 Test Program: 55/28 km/h Side Impact NCAP Test Date: 12/18/08

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	658	516	1173	719	616	1335
Right	kg	656	519	1175	664	638	1302
Ratio	%	56.0	44.0	100.0	52.4	47.6	100.0
Total	kg	1314	1035	2349	1383	1255	2637

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	2349
Weight of 2 P572 ATDs	kg	162
Rated Cargo/Luggage Wt (RCLW)	kg	136
Calculated Vehicle Target Wt (TVTW)	kg	2647

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG Aft of Front Axle
As Delivered	mm	907	907	974	966	1620
As Tested	mm	891	899	940	938	1750
Fully Loaded	mm	894	903	937	936	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	3678
Total Vehicle Length at Left Side	mm	4430
Total Vehicle Length at Centerline	mm	5890
Total Vehicle Length at Right Side	mm	4430
Weight of Ballast in Cargo Area	kg	68
Amount of Stoddard Solvent Added	L	91.5

TEST VEHICLE VERTICAL IMPACT LINE DATA

Measurement Description	Units	Value
Test Vehicle Wheel Base	mm	3678
Target Impact Point Aft of Front Axle	mm	508
Actual Impact Point Aft of Front Axle	mm	522

DATA SHEET NO. 1...(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2009 Ford F-150 XL SuperCrew 4-Door Truck

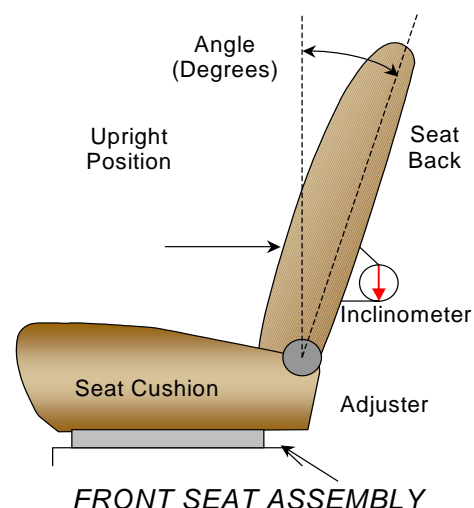
NHTSA No.: F90202

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 12/18/08

NOMINAL DESIGN RIDING POSITION

The driver seat back is positioned to the manufacturer's designated angle. The passenger seat back is fixed. The procedure is as follows: seat back angle was measured at the seat back using a digital inclinometer.



SEAT BACK ANGLES

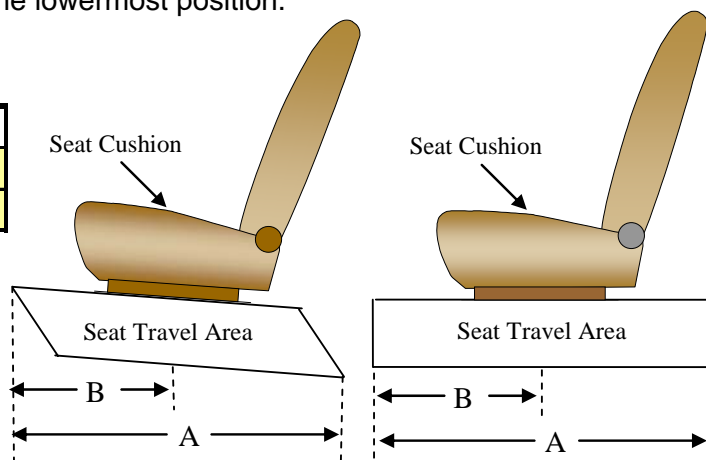
	Deg.
Driver w/seated Dummy	17.9 @ Seat Back
Passenger w/seated Dummy	Fixed

SEAT FORE/AFT POSITIONS

The total seat travel was measured from forward most position at the highest vertical seat height to rearmost position at the lowest vertical seat height. The seat was set at the longitudinal mid position. There were vertical adjustments on the driver seat that was equipped with the vehicle. There were no adjustments on the passenger seat. The driver seat was placed at the lowermost position.

SEAT FORE/AFT POSITIONING

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	54 Detents	28th Detent
Rear Seat	Fixed	Fixed



SEAT BELT UPPER ANCHORAGE

Position number one (1) is the uppermost position

SEAT BELT UPPER ANCHORAGE

	Total # of Positions	Placed in Position #
Driver Seat	4	2
Rear Seat	Fixed	Fixed

DATA SHEET NO. 1...(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2009 Ford F-150 XL SuperCrew 4-Door Truck

NHTSA No.: F90202

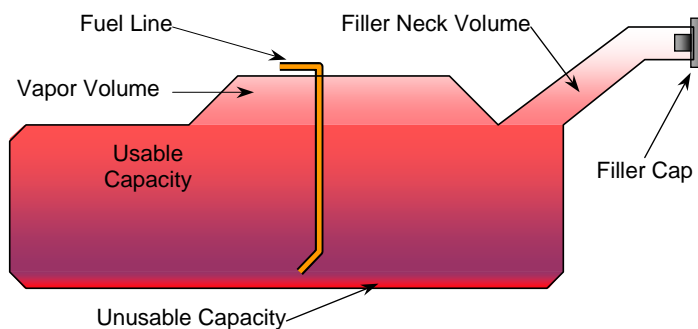
Test Program: 55/28 km/h Side Impact NCAP

Test Date: 12/18/08

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	98.41
Usable Capacity of "Optional" Tank	136.26
Usable Capacity used for FMVSS 301	90.54 to 92.51
Actual Amount of Solvent used	91.53

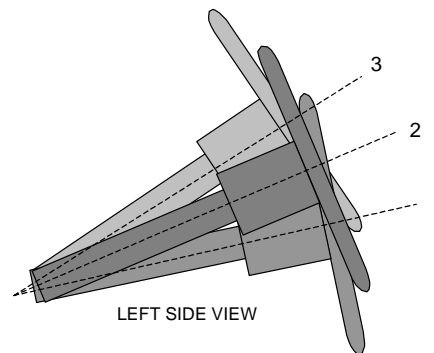
The test vehicle is equipped with an electric fuel pump. The fuel pump will operate for three (3) seconds to pressurize the fuel system following the actuation of the ignition. If no attempt has been made to start the engine within 3 seconds the fuel pump will shut off. The fuel pump operates continuously while the engine is running. The fuel filler door is located on the left rear fender. The standard fuel tank occupies the area under the cargo bed.



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. An aluminum plate is placed across the rim of the steering wheel, an inclinometer is placed on the plate and the angle is measured.



STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONS

	Degrees	Fore/Aft Position (mm)
Lowermost positon No. 1	10.8	
Geometric center position No. 2	21.1	
Uppermost position No. 3	31.4	

DATA SHEET NO. 2**TEST VEHICLE SUMMARY OF RESULTS**Test Vehicle: 2009 Ford F-150 XL SuperCrew 4-Door TruckNHTSA No.: F90202Test Program: 55/28 km/h Side Impact NCAPTest Date: 12/18/08**TEST VEHICLE WEIGHTS**

	Units	As Delivered Weights (UWW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	658	516	1173	719	616	1335
Right	kg	656	519	1175	664	638	1302
Ratio	%	56.0	44.0	100.0	52.4	47.6	100.0
Total	kg	1314	1035	2349	1383	1255	2637

MAXIMUM EXTERIOR STATIC CRUSH

Level	Measured Parameter	Units	Maximum Crush	Above Ground
Level 1	Sill Top Height	mm	325	444
Level 2	Occupant H-Point	mm	271	867
Level 3	Mid Door	mm	282	836
Level 4	Window Sill	mm	200	1169
Level 5	Window top	mm	60	1795
N/A	Maximum Penetration	mm	325	

INSTRUMENTATION

Driver SID/Hybrid III Accelerometers	20
Passenger SID/Hybrid III Accelerometers	20
Vehicle Structure Accelerometers	21
MDB Accelerometers	5
Total No. of Contact Switches	5
Total	71

CAMERA COVERAGE

High Speed, Vehicle On-Board	3
High Speed, Off-Board	4
High Speed, MDB On-Board	3
Real Time, Panning	2
Total	12

DATA SHEET NO. 3

MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

Test Vehicle: 2009 Ford F-150 XL SuperCrew 4-Door Truck NHTSA No.: F90202
 Test Program: 55/28 km/h Side Impact NCAP Test Date: 12/18/08

MDB SPECIFICATIONS (mm)

Measurement Description	Length
Overall Width of Framework Carriage	1252
Overall Length including Honeycomb Face	4115
Wheel Base of Framework Carriage	2590
C.G. location aft of Front Axle	1127

MDB WEIGHTS

	Units	Front Axle	Rear Axle	Total
Left	kg	384	308	
Right	kg	385	284	
Ratio	%	56.5	43.5	
Totals	kg	769	592	1361

SPEED AND IMPACT DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	61.86
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	61.85
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	89.5

MAXIMUM STATIC CRUSH OF HONEYCOMB FACE (mm)

Vertical Location			From Centerline		Max. Crush
Row	Description	Height	Distance	Direction	
A	Center of Bumper	432	800	Left	140
B	Top of Bumper	533	800	Left	119
C	Mid Level	686	800	Right	108
D	Top of Stack	813	400	Left	139

MDB INSTRUMENTATION AND CAMERAS

Accelerometers	5
Contact Switches	1
High Speed Cameras	2

DATA SHEET NO. 4

POST-TEST OBSERVATIONS

Test Vehicle: 2009 Ford F-150 XL SuperCrew 4-Door Truck

NHTSA No.: F90202

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 12/18/08

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Front Seat SID/Hybrid III	Rear Seat SID/Hybrid III
Dummy Type/Serial No.	P572F, SID/No. 274	P572F, SID/No. 275
Head Contact	Curtain Airbag, Headliner	Curtain Airbag, Headliner
Upper Torso Contact	Side Airbag	Curtain Airbag
Lower Torso Contact	Door Panel	Door Panel
Left Knee Contact	Door Panel, Right Knee	Door Panel, Right Knee
Right Knee Contact	Left Knee	Left Knee

POST-TEST DOOR OPENING AND SEAT TRACK INFORMATION

Description	Front	Rear
Left Side Door Opening	Remained closed and latched, jammed	Remained closed and latched, jammed
Right Side Door Opening	Remained closed and latched, operational.	Remained closed and latched, operational.
Seat Movement	None	None
Seatback Failure	None	None

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No separation occurred.
Sill Separation	No separation occurred.
Windshield Damage	None
Window Damage	Left Rear Window Broken
Other Notable Effects	None

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear (Passenger) Occupant Location 2	
	Installed	Deployed	Installed	Deployed
Front Airbag	Yes	No	No	
Side Airbag	Yes	Yes	No	
Head Airbag	No		No	
Curtain Airbag	Yes	Yes	Yes	Yes
Pre-Tensioners	Yes		No	
Load Limiters	Yes		Yes	

MDB LEFT EDGE IMPACT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	+/- 50	+14 (Right)
Vertical Offset	mm	+/-20	0

DATA SHEET NO. 5

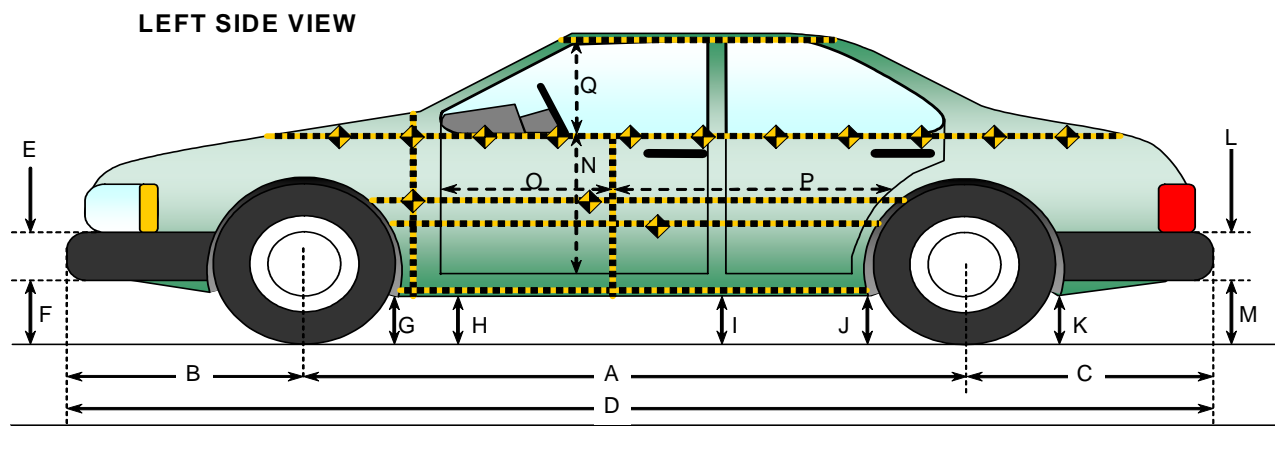
VEHICLE PRE-TEST AND POST-TEST MEASUREMENTS

Test Vehicle: 2009 Ford F-150 XLT SuperCrew 4-Door Truck

NHTSA No.: F90202

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 12/18/08



VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	3677	3656	-21
B	Front Axle to FSOV	975	981	6
C	Rear Axle to RSOV	1237	1240	3
D	Total Length at Centerline	5890	5877	-13
E	Front Bumper Thickness	257	257	0
F	Front Bumper Bottom to Ground	370	377	7
G	Sill Height at Front Wheel Well	367	350	-17
H	Sill Height at Front Door Leading Edge	388	371	-17
I	Sill Height at B-Pillar	408	379	-29
J1	Sill Height at Rear Wheel Well	418	421	3
J2	Pinch Weld Height at Rear Wheel Well	390	371	-19
K	Sill Height Aft of Rear Wheel Well	446	500	54
L	Rear Bumper Thickness	208	229	21
M	Rear Bumper Bottom to Ground	549	514	-35
N	Sill Height to Window Sill Bottom	850	870	20
O	Front Door Leading Edge to Impact CL	744	724	-20
P	Rear Door Trailing Edge to Impact CL	1471	1392	-79
Q	Front Window Opening	485	556	71
R	Right Side Length	4430	4450	20
S	Left Side Length	4430	4360	-70
T	Vehicle Width at B-Pillar	1984	1869	-115

DATA SHEET NO. 6

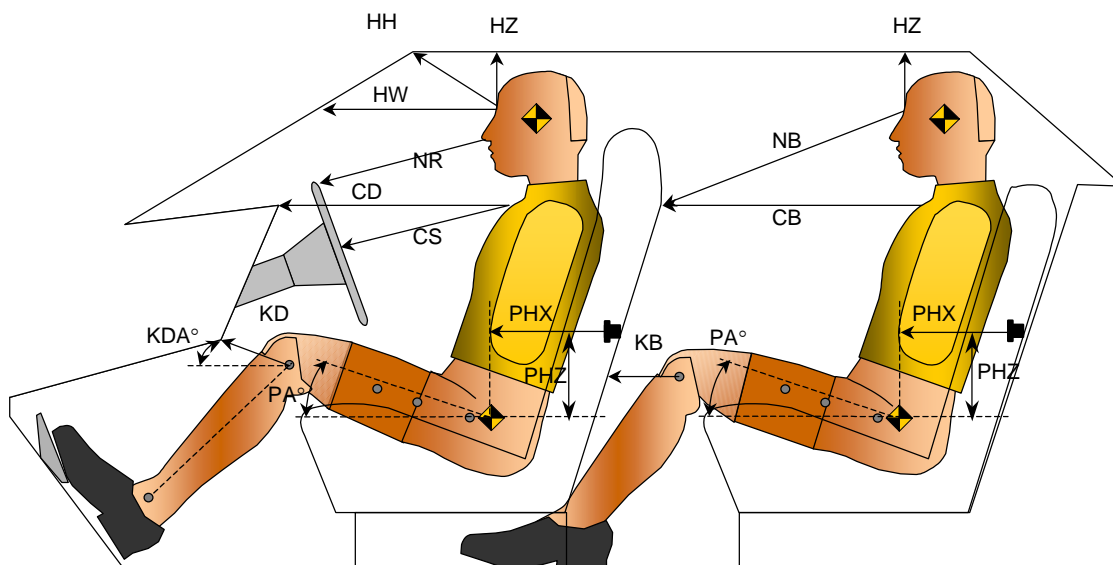
SID/HIII LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2009 Ford F-150 XL SuperCrew 4-Door Truck

NHTSA No.: F90202

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 12/18/08



LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Measurement Description	Driver		Passenger	
			Length(mm)	Angle	Length(mm)	Angle
HH		Head to Header	500	16.2		
HW		Head to Windshield	722	0.0		
HZ	HZ	Head to Roof	243	90.0	235	90.0
NR	NB	Nose to Rim/Nose to Seat Back	475	11.7	739	17.6
CD	CB	Chest to Dash or Seat Back	621	3.3	671	4.6
CS		Chest to Steering Wheel	414	15.0		
KDL	KBL	Left Knee to Dash or Seat Back	191	15.8	382	16.4
KDR	KBR	Right Knee to Dash or Seat Back	199		385	
PA	PA	Pelvic Angle		23.4		24.5
PHX	PHX	H-Point to Striker (X-Axis)	368		205	
PHZ	PHZ	H-Point to Striker (Z-Axis)	40		50	

DATA SHEET NO. 7

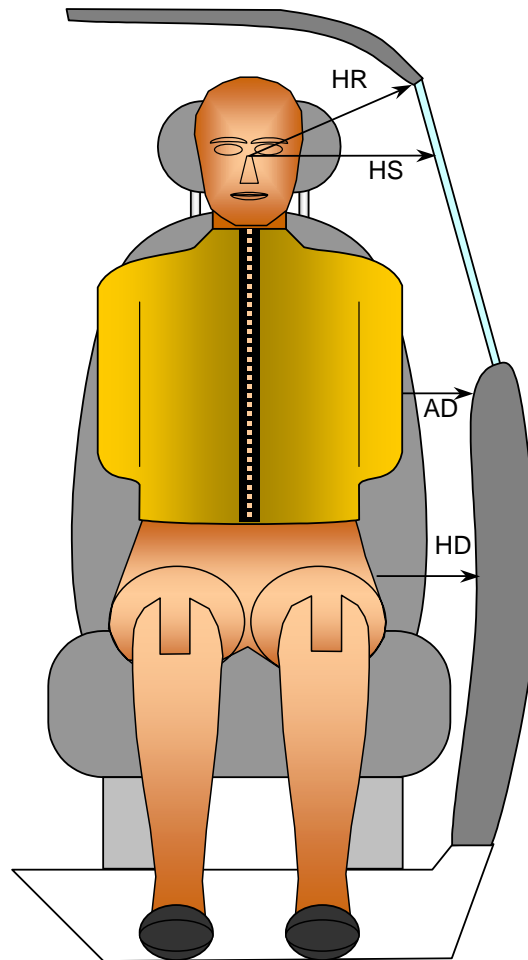
SID/HIII LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2009 Ford F-150 XLT SuperCab 2-Door Truck

NHTSA No.: F90201

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 12/16/08



FRONT VIEW OF DUMMY

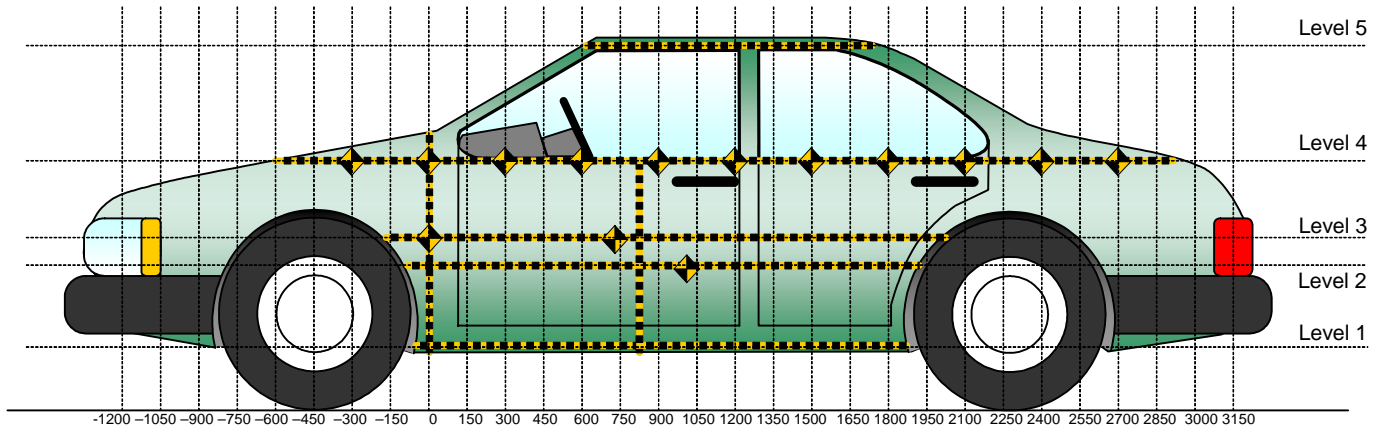
LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	271	243
HS	Head to Side Window	mm	325	335
AD	Arm to Door	mm	144	116
HD	H-Point to Door	mm	151	165

DATA SHEET NO. 8
VEHICLE SIDE MEASUREMENTS

Test Vehicle: 2009 Ford F-150 XL SuperCrew 4-Door Truck
Test Program: 55/28 km/h Side Impact NCAP

NHTSA No.: F90202
Test Date: 12/18/08



All Measurements Shown in mm

LEFT SIDE VIEW

Measurements are taken with vehicle in the as tested condition.
Measurements taken 900 mm right of impact reference.
All measurements below in mm.

Level	Measurement Description	Height Above Ground
1	Sill Top	444
2	Occupant H-Point	867
3	Mid Door	836
4	Window Sill	1169
5	Window Top	1795

All Dimensions shown in millimeters

DATA SHEET NO. 9

VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2009 Ford F-150 XLT SuperCrew 4-Door Truck

NHTSA No.: F90202

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 12/18/08

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900															
-750															
-600															
-450															
-300															
-150															
0	567	555	556	574		714	623	631	619		147	68	75	45	
150	564	551	553	569		782	678	697	599		218	127	144	30	
300	559	545	547	563		806	702	718	608		247	157	171	45	
450	556	540	541	557		811	720	741	615		255	180	200	58	
600	552	536	542	1500		812	733	753	615		260	197	211	-885	
750	550	532	530	547		815	746	765	618		265	214	235	71	
900	547	529	528	544		816	757	775	624		269	228	247	80	
1050	545	527	526	540	827	822	767	785	635	866	277	240	259	95	39
1200	543	525	525	537	821	829	756	776	651	864	286	231	251	114	43
1350	542	524	525	536	817	838	740	767	670	863	296	216	242	134	46
1500	543	524	525	534	813	860	772	783	734	862	317	248	258	200	49
1650	543	523	524	533	810	868	794	806	686	862	325	271	282	153	52
1800	542	523	524	532	810	842	769	782	663	862	300	246	258	131	52
1950	543	523	524	531	806	764	743	748	639	861	221	220	224	108	55
2100	545	524	524	529	804	716	675	671	612	861	171	151	147	83	57
2250	546	525	526	528	801	681	611	615	574	861	135	86	89	46	60
2400	548	530	531	537		566	559	559	556		18	29	28	19	
2550	547	529	529	535		565	556	556	570		18	27	27	35	
2700		516	512	533			541	536	566			25	24	33	
2850		501	503	531			523	525	562			22	22	31	
3000															

All Dimensions shown in millimeters.

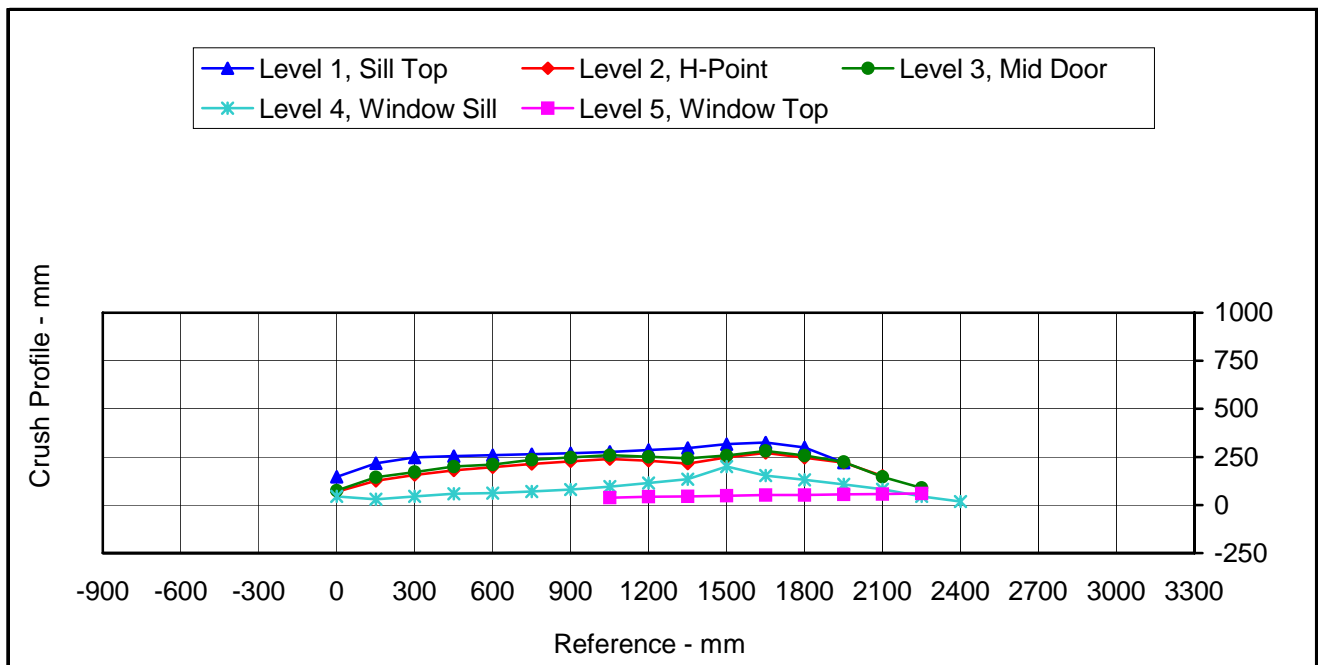
DATA SHEET NO. 9...(CONTINUED)
VEHICLE EXTERIOR CRUSH PROFILES

Test Vehicle: 2009 Ford F-150 XL SuperCrew 4-Door Truck

NHTSA No.: F90202

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 12/16/08



	Units	Level 1	Level 2	Level 3	Level 4	Level 5
Maximum Crush	mm	282	237	246	128	82
Distance from Impact	mm	1650	1650	1650	1500	1950

DATA SHEET NO. 10

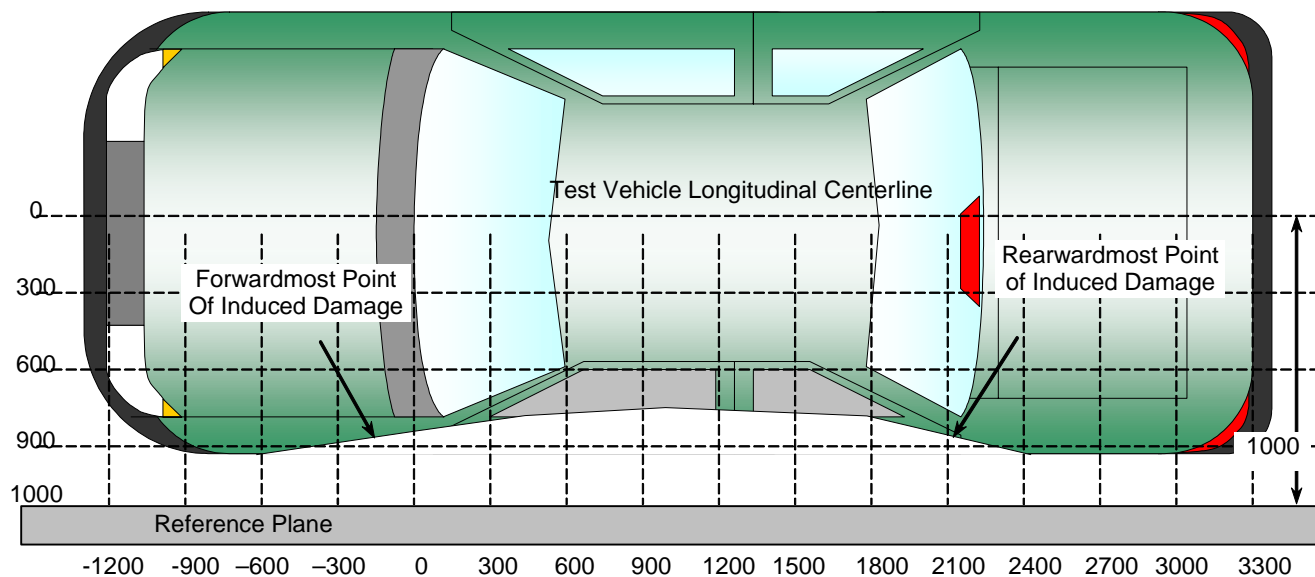
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2009 Ford F-150 XL SuperCrew 4-Door Truck

NHTSA No.: F90202

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 12/18/08



All Dimensions Shown in millimeters

TOP VIEW

DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point in mm	Level	Pre-Test (mm)	Post-Test (mm)	Max. Static Crush (mm)
1	2550	1	535	570	35
2	2100	1	545	716	171
3	1650	1	543	868	325
4	1200	1	543	829	286
5	750	1	550	815	265
6	300	4	559	806	247

DATA SHEET NO. 11

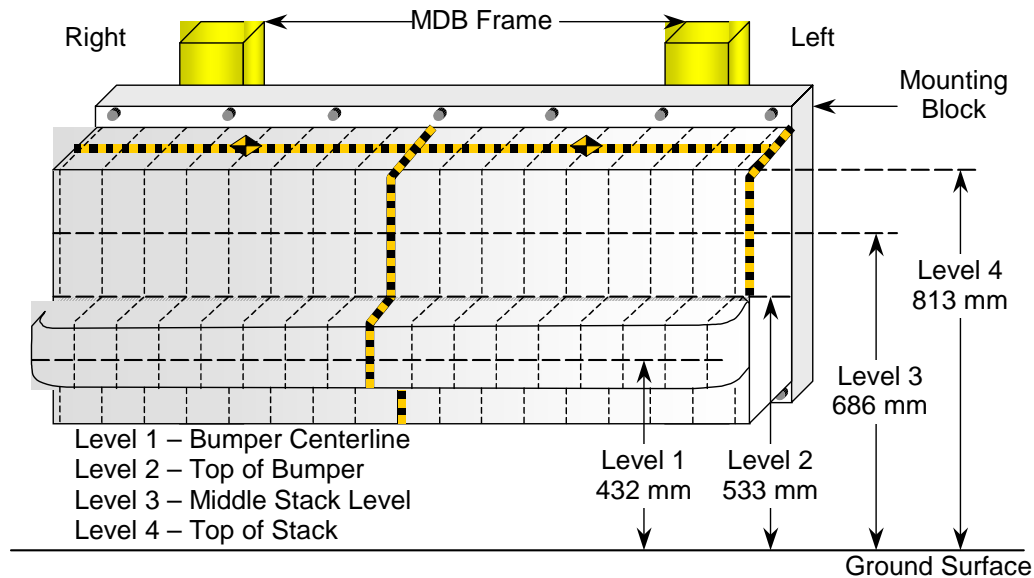
DEFORMABLE BARRIER HONEYCOMB FACE STATIC CRUSH

Test Vehicle: 2009 Ford F-150 XL SuperCrew 4-Door Truck

NHTSA No.: F90202

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 12/18/08



DEFORMABLE BARRIER STATIC CRUSH

Stack Level	Distance Right of Center								C/L	Distance Left of Center							
	800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
1	658	634	634	632	630	629	629	628	628	627	626	625	625	625	624	625	637
2	739	739	723	705	695	698	708	711	715	725	718	725	721	723	724	723	723
3	723	689	683	698	727	713	694	685	678	674	671	671	670	674	670	688	728
4	758	723	708	733	759	745	713	694	686	686	686	689	698	705	714	728	750

All Dimensions in mm

DATA SHEET NO. 12

VEHICLE ACCELEROMETER LOCATIONS

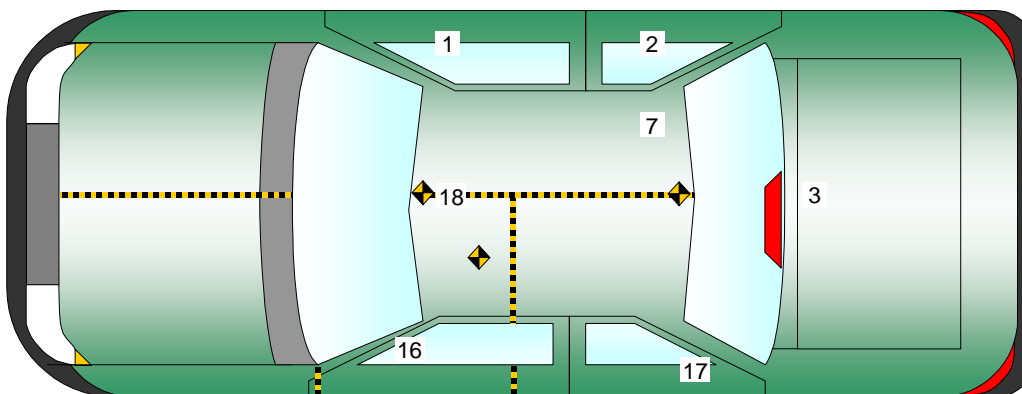
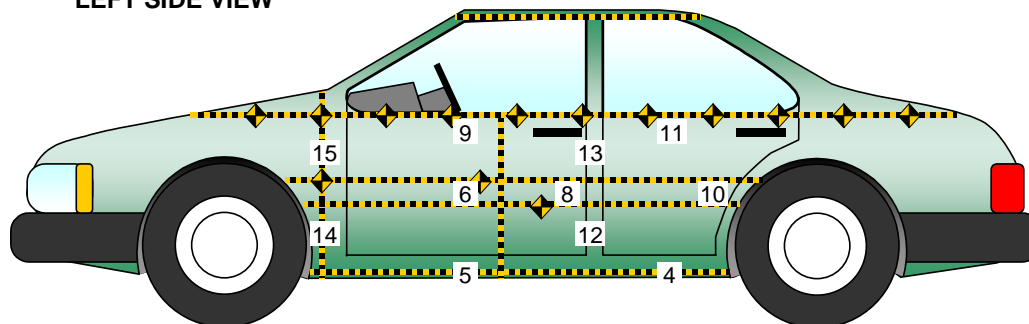
Test Vehicle: 2009 Ford F-150 XL SuperCrew 4-Door Truck

NHTSA No.: F90202

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 12/18/08

LEFT SIDE VIEW



No.	Location
1	Right Sill at Front Seat
2	Right Sill at Rear Seat
3	Rear Floorpan Above Axle
4	Left Sill at Rear Door
5	Left Sill at Front Door
6	Left Front Door Centerline
7	Right Rear Occupant Compartment
8	Left Front Door Mid-Rear
9	Left Front Door Upper Centerline

No.	Location
10	Left Rear Door Mid-Rear
11	Left Rear Door Upper Centerline
12	Left Lower B-Post
13	Left Middle B-Post
14	Left Lower A-Post
15	Left Middle A-Post
16	Front Seat Track
17	Rear Seat Track or Structure
18	Vehicle CG

DATA SHEET NO. 12...(CONTINUED)

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

Test Vehicle: 2009 Ford F-150 XL SuperCrew 4-Door Truck

NHTSA No.: F90202

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 12/18/08

VEHICLE ACCELEROMETER LOCATIONS

Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Right Sill at Front Seat	3810	-800	510
2	Right Sill at Rear Seat	2590	-750	530
3	Rear Floorpan Above Axle	1240	0	850
4	Left Sill at Rear Door	2600	810	240
5	Left Sill at Front Door	3570	810	240
6	Front Door Centerline			
7	Rt. Rear Occ. Compartment	3090	-410	590
8	Front Door Mid-Rear			
9	Front Door Upper Centerline			
10	Rear Door Mid-Rear			
11	Rear Door Upper Centerline			
12	B-Post Lower	2960	830	560
13	B-Post Middle	2960	830	980
14	A-Post Lower	420	900	440
15	A-Post Middle	420	900	900
16	Front Seat Track	3430	700	710
17	Rear Seat Structure	2240	690	700
18	Vehicle CG	3840	0	640

Reference Planes: X=From Rear Surface of Vehicle, Y=Vehicle Centerline, Z=Ground Plane

1.) Not installed

DATA SHEET NO. 13

MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2009 Ford F-150 XL SuperCrew 4-Door Truck

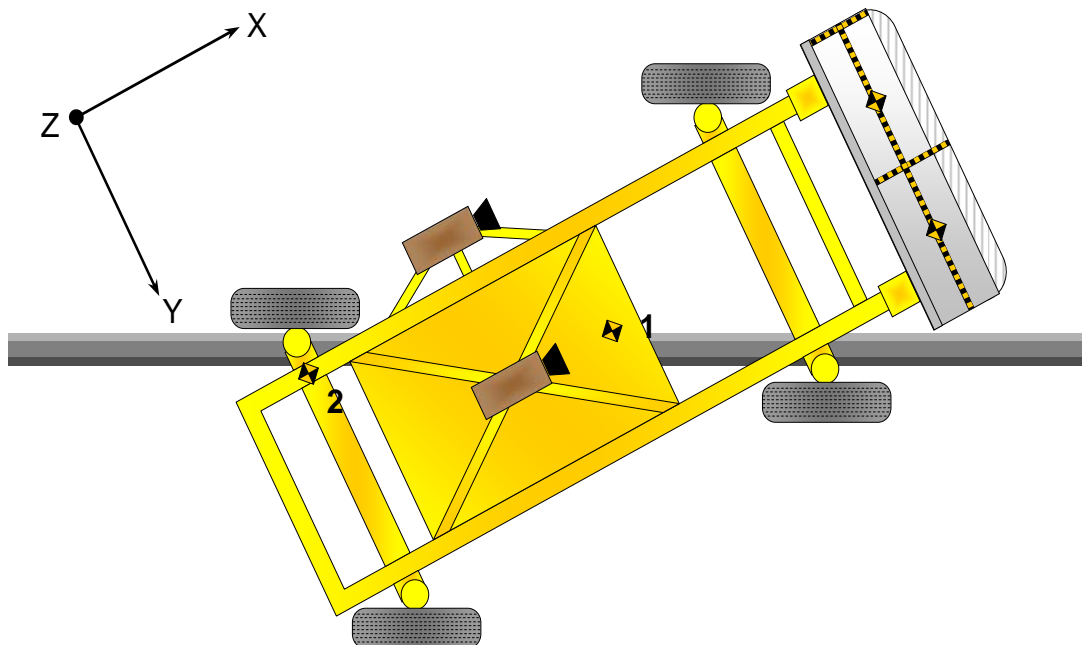
NHTSA No.: F90202

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 12/18/08

Loc. No.	Accelerometer Locations	Measurements (mm)		
		X	Y	Z
1	MDB CG	-1195	0	430
2	MDB Rear	-2642	-593	608

Reference Points:
 X - MDB Front Axle
 Y - MDB Centerline
 Z - Ground Plane



DATA SHEET NO. 14

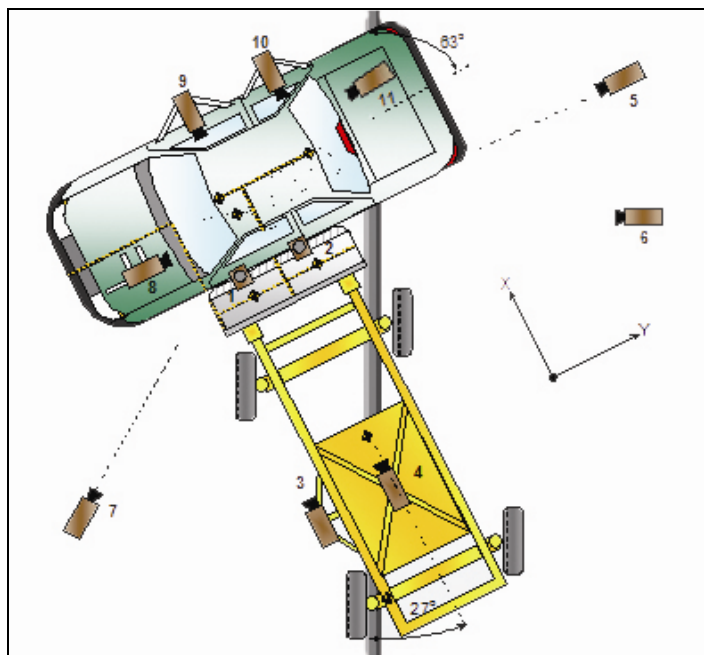
HIGH SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2009 Ford F-150 XL SuperCab 4-Door Truck

NHTSA No.: F90202

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 12/18/08



No.	Camera View	Location (mm)			Angle (deg.)	Lens (mm)	Film Speed (fps)
		X	Y	Z			
Doc	Real Time Inrun	-2484	-3958	-1506	0		30
Doc	Real Time Left Front	-2266	3549	-1475	-2		30
1	Overhead Overall	1220	2287	-5486	-90	14mm	1000
2	Overhead Close Up	609	2287	-5102	-90	Zoom	1000
3	Left Impact Point (MDB)	-2134	0	-1143	-2	12mm	1000
4	Side Overall (MDB)	-3912	838	-1829	-4	12mm	1000
5	Rear	-64	2048	-1348	0	105mm	1000
6	Left Rear (MDB)	-2137	-1302	-339	-4	85mm	1000
7	Left Front	-2266	-3564	-1475	-2	24mm	1000
8	Driver Front (O.B.)	457	965	-1575	-7	35mm	1000
9	Driver Side (O.B.)	1981	-914	-1346	-9	20mm	1000
10	Passenger Side (O.B.)	2032	-1879	-1397			1000

All measurements are made relative to the point of impact.

DATA SHEET NO. 15

FMVSS 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2009 Ford F-150 XL SuperCrew 4-Door Truck NHTSA No.: F90202

Test Program: 55/28 km/h Side Impact NCAP Test Date: 12/18/08

Test Time: 1:16 PM Temperature: 5.0 Deg. C.

Stoddard Solvent Spillage Measurements

- A. From impact until vehicle motion ceases: 0.0 oz.
(Maximum Allowable = 1 ounce)
- B. For the 5 minute period after motion ceases: 0.0 oz.
(Maximum Allowable = 5 ounces)
- C. For the following 25 minutes: 0.0 oz.
(Maximum Allowable = 1 oz./minute)
- D. Spillage Details: No leakage occurred

DATA SHEET NO. 16

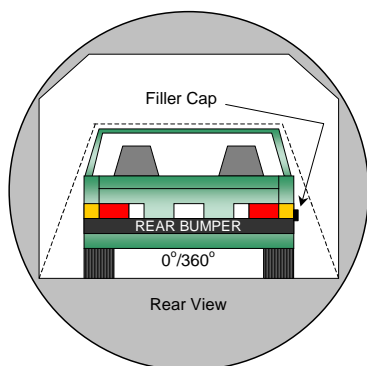
FMVSS 301 STATIC ROLLOVER DATA

Test Vehicle: 2009 Ford F-150 XL SuperCrew 4-Door Truck

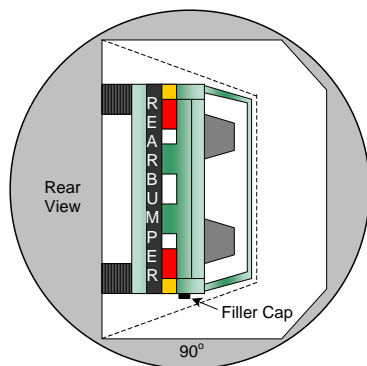
NHTSA No.: F90202

Test Program: 55/28 km/h Side Impact NCAP

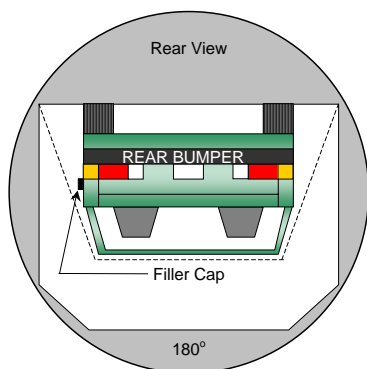
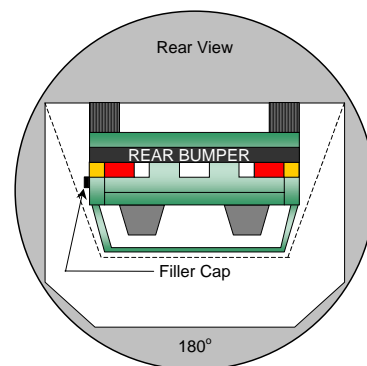
Test Date: 12/18/08



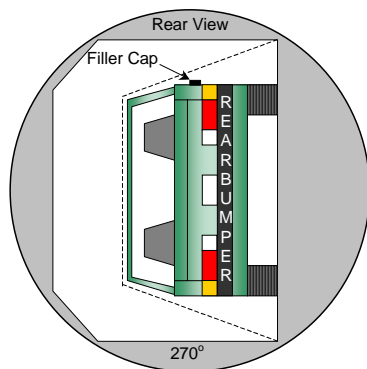
0° to 90°



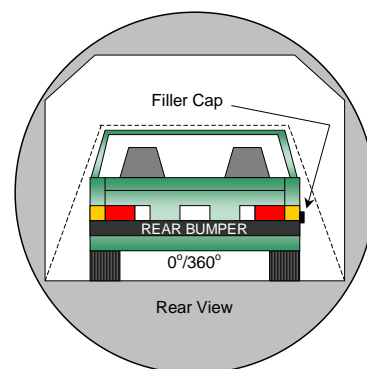
90° to 180°



180° to 270°



270° to 360°



1. The specified fixture rollover rate for each 90° of rotation is 60 to 120 seconds.
 2. The position hold time at each position is 300 seconds (minimum).
 3. Details of Stoddard Solvent spillage locations.
- No solvent leakage occurred during static rollover testing.

DATA SHEET NO. 16...(CONTINUED)

FMVSS 301 STATIC ROLLOVER DATA SHEET

Test Vehicle: 2009 Ford F-150 XL SuperCrew 4-Door Truck

NHTSA No.: F90202

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 12/18/08

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	85	305	390
90° to 180°	81	311	392
180° to 270°	82	310	392
270° to 360°	86	305	391

FMVSS 301 SPILLAGE TABLE REQUIREMENT (oz.)

First 5 Minutes	5.0
Sixth Minute	1.0
Seventh Minute	1.0
Eighth Minute	1.0

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

SOLVENT SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0° to 90°	None
90° to 180°	None
180° to 270°	None
270° to 360°	None

DATA SHEET NO. 17

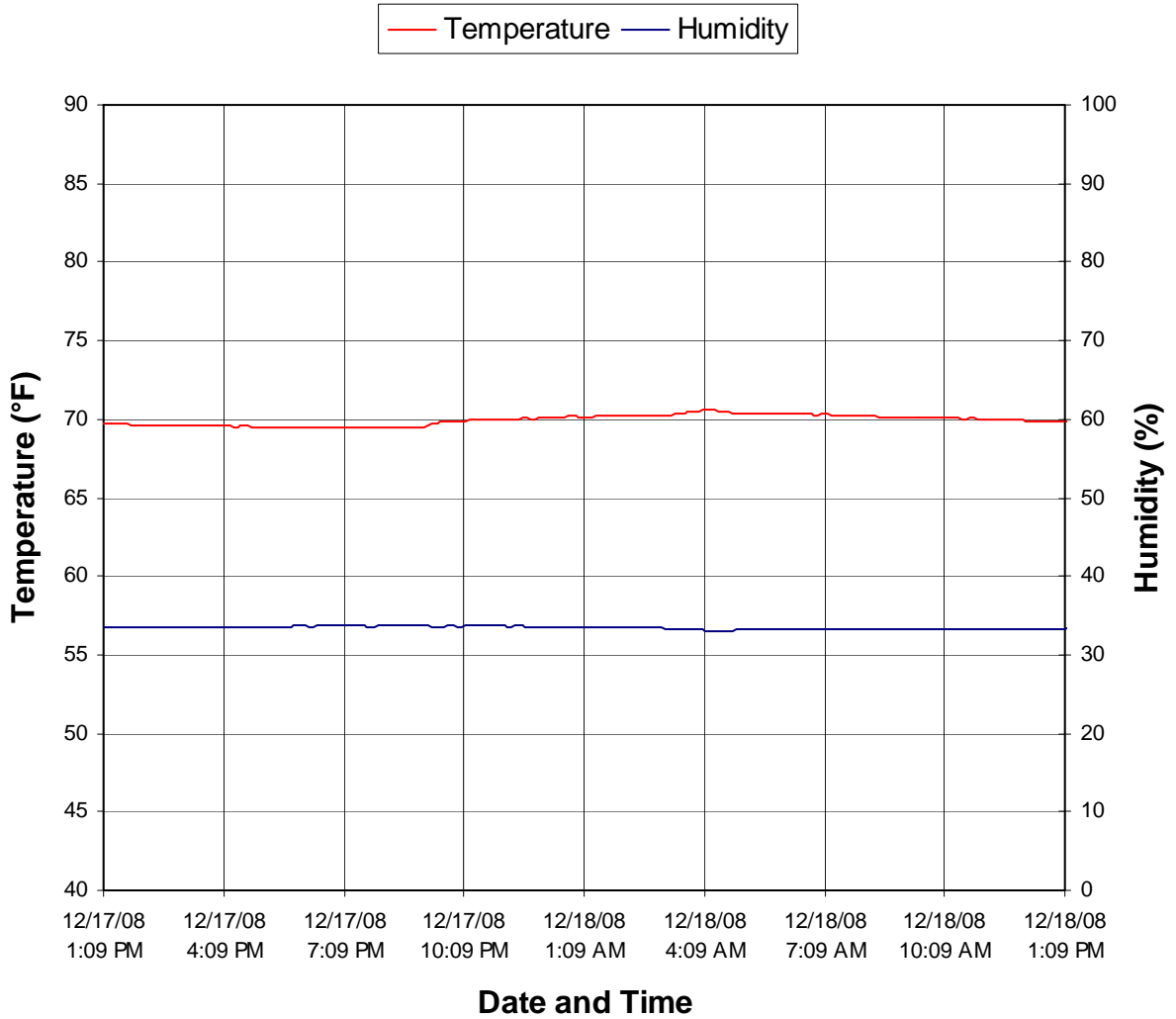
DUMMY / VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2009 Ford F-150 XL SuperCrew 4-Door Truck

NHTSA No.: F90202

Test Program: 55/28 km/h Side Impact NCAP

Test Date: 12/18/08



**APPENDIX A
PHOTOGRAPHS**

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Figure A-1: Right Front $\frac{3}{4}$ View, as Received



A-2

TR-P28182-01-NC

Figure A-2: Left Rear $\frac{3}{4}$ View, as Received

MFD. BY FORD MOTOR CO.

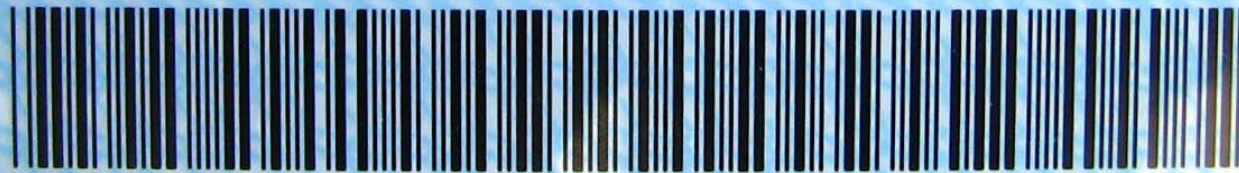
DATE: 10/08
FRONT GAWR: 3300LB
1497KG
P255/65R17
17x7.5J
AT 240 kPa/ 35 PSI COLD

GVWR: 6900LB/ 3130KG
REAR GAWR: 3800LB
WITH TIRES RIMS
1724KG
P255/65R17
17x7.5J
AT 240 kPa/ 35 PSI COLD

THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

VIN: 1FTRW12889FA14365
TYPE: Truck

F0010
T0830



EXT PNT:	UA				RC: 71		DSO:
WB	INT TR	TP/PS	R	AXLE	TR	SPR	
145	CE		5	27	6	RRAA	
2200810281483				UTC		▽5U5A-1520472-BA	

Figure A-3: Manufacturer's Label

2200810281483

UTC KRAA
▽5U5A-1520472-BA



TIRE AND LOADING INFORMATION

SEATING CAPACITY TOTAL : 6 FRONT: 3 REAR: 3

The combined weight of occupants and cargo should never exceed : **770 kg or 1698 lbs.**

▽5U5A-1532-AA (TLU)

TIRE	SIZE	COLD TIRE PRESSURE
FRONT	P255/65R17	240 KPA, 35 PSI
REAR	P255/65R17	240 KPA, 35 PSI
SPARE	P255/65R17	240 KPA, 35 PSI

**SEE OWNERS
MANUAL FOR
ADDITIONAL
INFORMATION**

1FTRW12889FA14365



Figure A-4: Tire Placard



Figure A-5: Pre-Test Front View



Figure A-6: Post-Test Front View



Figure A-7: Pre-Test Left Front ¾ View



Figure A-8: Post-Test Left Front $\frac{3}{4}$ View



Figure A-9: Pre-Test Left Side View



Figure A-10: Post-Test Left Side View



A-11

TR-P28182-01-NC

Figure A-11: Pre-Test Left Rear $\frac{3}{4}$ View



Figure A-12: Post-Test Left Rear 3/4 View



A-13

TR-P28182-01-NC

Figure A-13: Pre-Test Rear View



Figure A-14: Post-Test Rear View



A-15

TR-P28182-01-NC

Figure A-15: Pre-Test Right Rear ¾ View



Figure A-16: Post-Test Right Rear $\frac{3}{4}$ View



Figure A-17: Pre-Test Right Side View



Figure A-18: Post-Test Right Side View



A-19

TR-P28182-01-NC

Figure A-19: Pre-Test Right Front ¾ View



A-20

TR-P28182-01-NC

Figure A-20: Post-Test Right Front $\frac{3}{4}$ View



Figure A-21: Pre-Test Overhead View



Figure A-22: Post-Test Overhead View



F90202
55/28 km/h 90
SIDE IMPACT
12 / 17 / 08
2009 Ford F-150
XL SuperCrew
(4-Dr Truck)

KARGO
Engineering
The Experts

A-23

TR-P28182-01-NC

Figure A-23: Pre-Test Overhead Close-up View



Figure A-24: Post-Test Overhead Close-up View

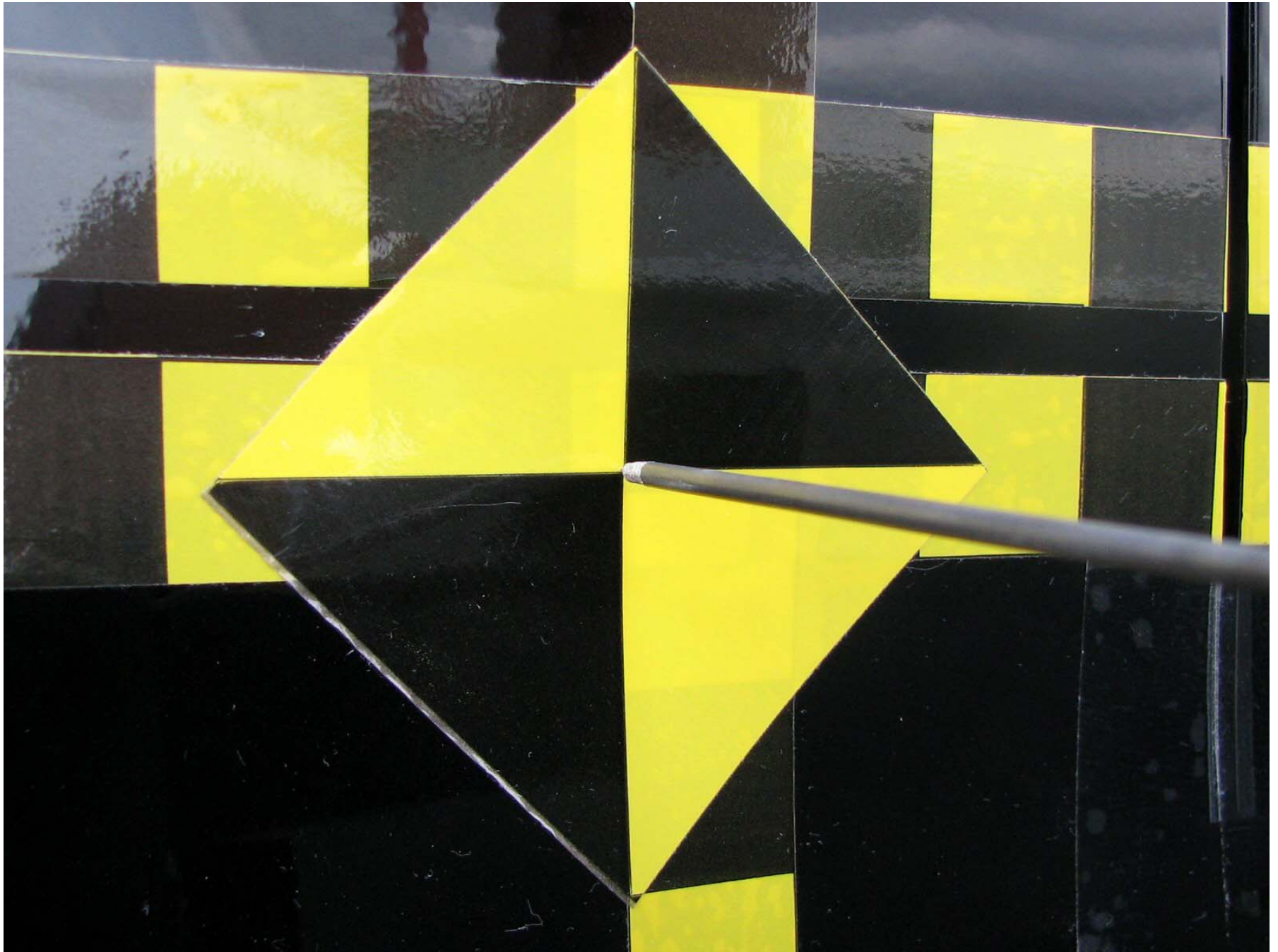


Figure A-25: Pre-Test Left Impact Point



Post-Test Impact Point

Figure A-26: Post-Test Left Impact Point



Figure A-27: Pre-Test Front $\frac{3}{4}$ View of Left Side Door



A-28

TR-P28182-01-NC

Figure A-28: Post-Test Front ¾ View of Left Side Door



Figure A-29: Pre-Test Rear $\frac{3}{4}$ View of Left Side Door



Figure A-30: Post-Test Rear 3/4 View of Left Side Door



Figure A-31: Pre-Test Left Front Door



Figure A-32: Post-Test Left Front Door



Figure A-33: Pre-Test Left Rear Door



Figure A-34: Post-Test Left Rear Door



Figure A-35: Pre-Test Driver Dummy (Door Open)



Figure A-36: Pre-Test Driver Dummy (Through Window)



12 / 18 / 08
1000 Ford F 150

WARNING:
This vehicle contains chemicals known to the State of California to cause cancer and fetal defects or other reproductive harm. These chemicals are contained in many vehicle components and replacement parts. Vehicle fluids, any gases and materials used to maintain vehicle, including, but not limited to, fuel, oil, battery, coolant, and other lubricating products. In addition, motor vehicle and engine exhaust and fumes, and when absorbed, cleaned or maintained, generate used oil, waste fluids, fumes, gases, particulates and particulates from combustion which contain chemicals and fumes known to the State of California to cause cancer and fetal defects or other reproductive harm. For more information see Proposition 65 at the State of California Department of Pesticide Regulation at <http://www.cdpr.ca.gov> or call 1-800-438-6865 for further information.

Figure A-37: Post-Test Driver Dummy (Through Window)



Figure A-38: Pre-Test Driver Dummy Clearance From Door



Figure A-39: Post-Test Driver Dummy Clearance From Door



Figure A-40: Pre-Test Driver Dummy Right Side View



Figure A-41: Post-Test Driver Dummy Right Side View



Figure A-42: Pre-Test Front Door Panel (Interior)



Figure A-43: Post-Test Front Door Panel (Interior)



Figure A-44: Pre-Test Passenger Dummy Left Side (Door Open)



Figure A-45: Pre-Test Passenger Dummy Left Side (Through Window)



Figure A-46: Post-Test Passenger Dummy Left Side (Through Window)



Figure A-47: Pre-Test Passenger Dummy Clearance From Door

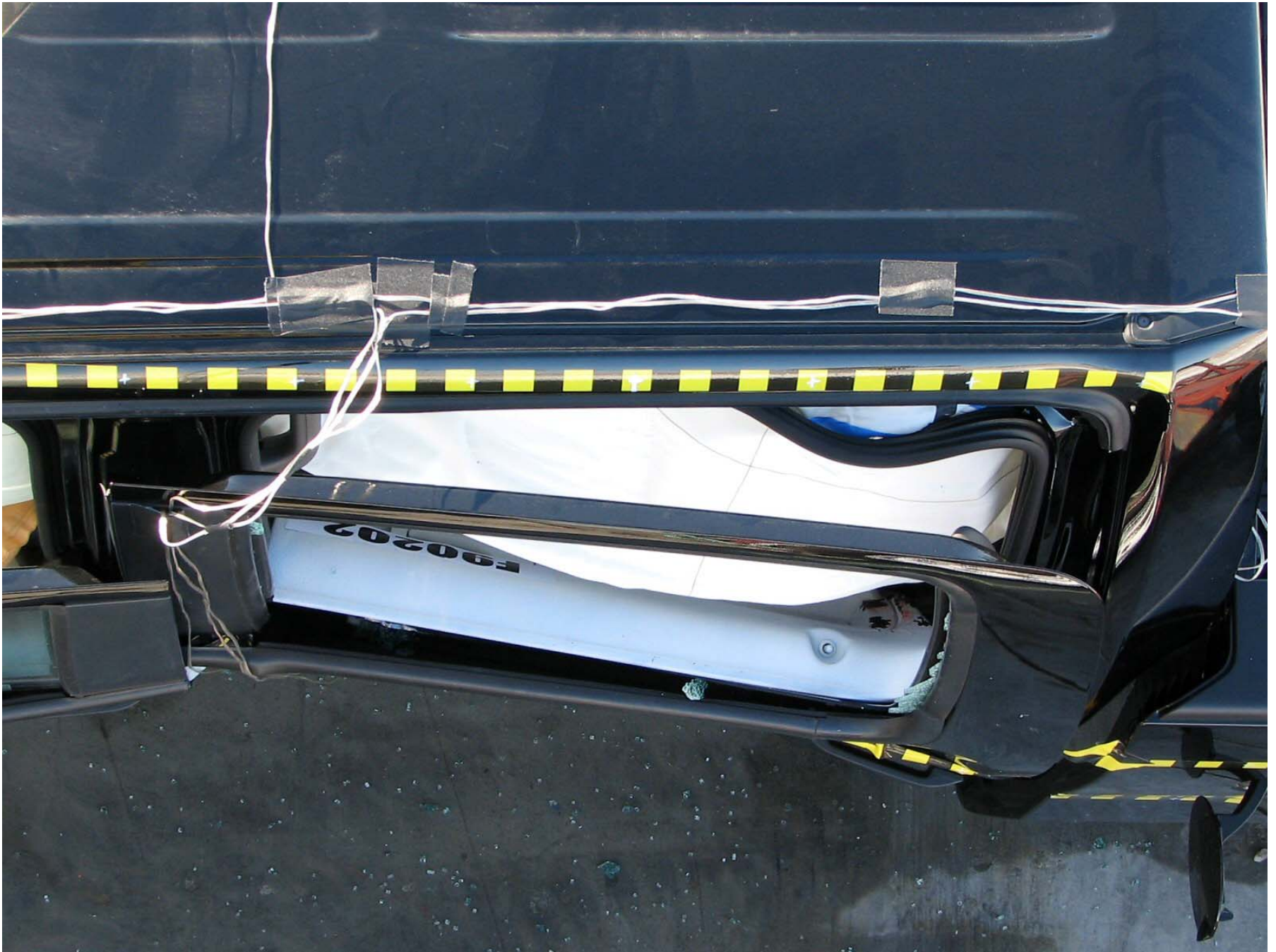


Figure A-48: Post-Test Passenger Dummy Clearance From Door



Figure A-49: Pre-Test Passenger Dummy Right Side View



Figure A-50: Post-Test Passenger Dummy Right Side View



Figure A-51: Pre-Test Rear Door Panel (Interior)



Figure A-52: Post-Test Rear Door Panel (Interior)



Figure A-53: Pre-Test Front View of Deformable Barrier



Figure A-54: Post-Test Front View of Deformable Barrier



A-55

TR-P28182-01-NC

Figure A-55: Pre-Test Top View of Deformable Barrier



Figure A-56: Post-Test Top View of Deformable Barrier



Figure A-57: Pre-Test Right Side View of Deformable Barrier



Figure A-58: Post-Test Right Side View of Deformable Barrier

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TR-P28182-01-NC



Figure A-59: Pre-Test Left Side View of Deformable Barrier



Figure A-60: Post-Test Left Side View of Deformable Barrier



Figure A-61: Vehicle on Rollover Device (0°)



Figure A-62: Vehicle on Rollover Device (90°)

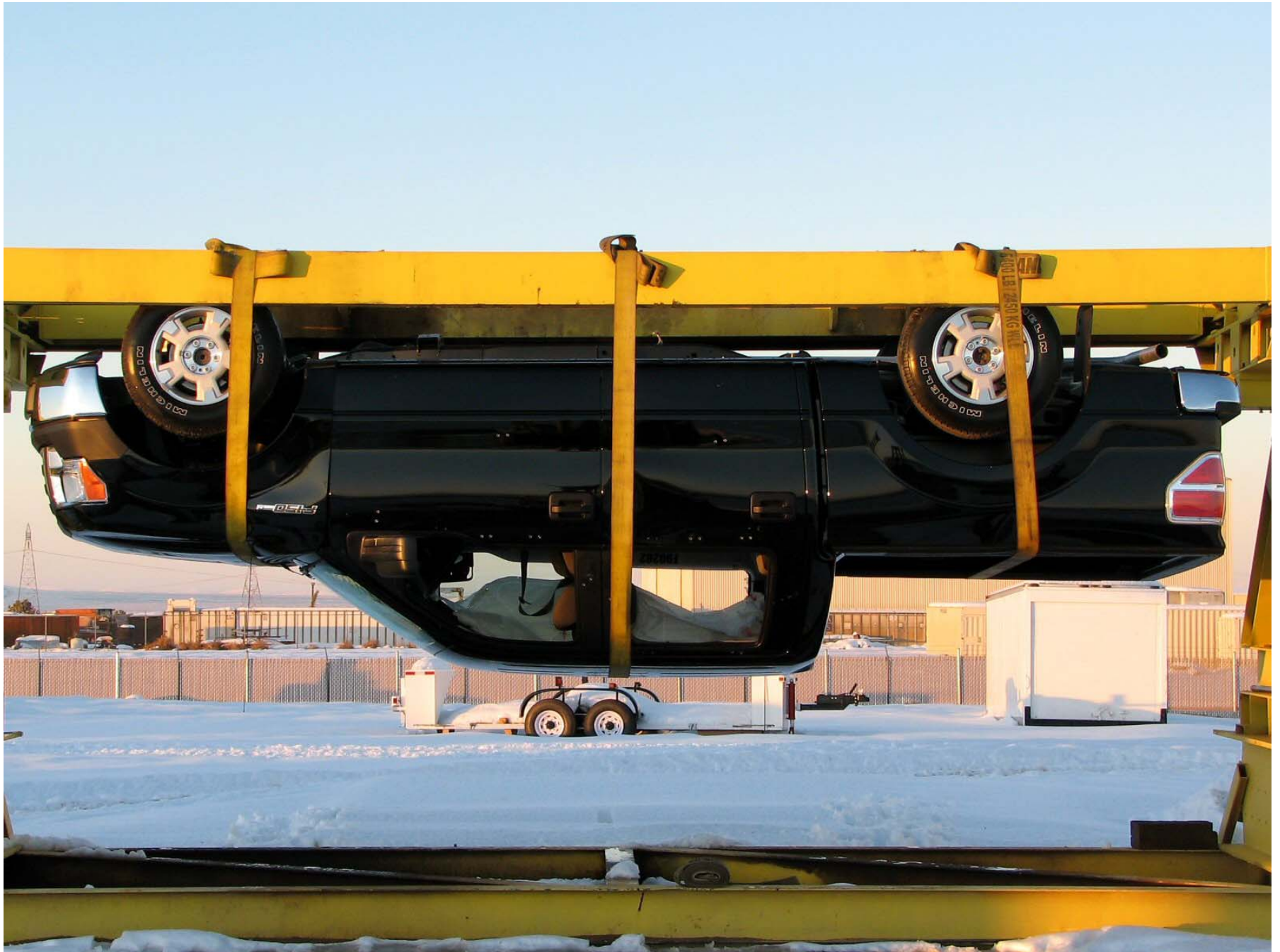


Figure A-63: Vehicle on Rollover Device (180°)

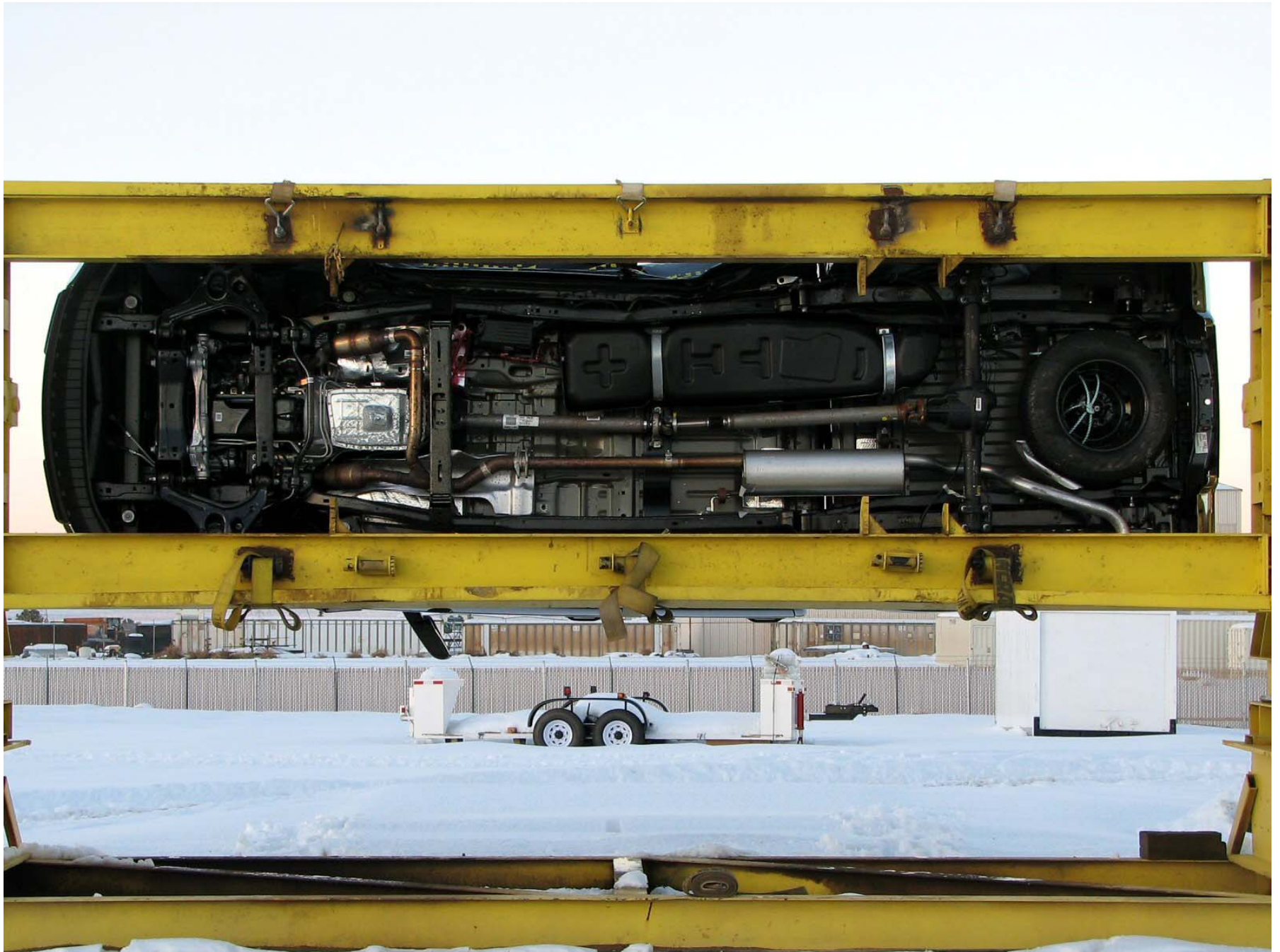


Figure A-64: Vehicle on Rollover Device (270°)

A-64

TR-P28182-01-NC



A-65

TR-P28182-01-NC

Figure A-65: Vehicle on Rollover Device (360°)



Figure A-66: Timers



Figure A-67: Vehicle Impact

APPENDIX B
SID/HIII, VEHICLE AND MDB RESPONSE DATA

LIST OF DATA PLOTS

<u>Data Plot</u>		<u>Page</u>
B-1	Driver Upper Rib Primary Y	B-1
	Driver Lower Rib Primary Y	B-1
	Driver Lower Spine Primary Y	B-1
	Driver Pelvis Primary Y	B-1
B-2	Passenger Upper Rib Primary Y	B-2
	Passenger Lower Rib Primary Y	B-2
	Passenger Lower Spine Primary Y	B-2
	Passenger Pelvis Primary Y	B-2

The following additional data plots 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

LIST OF DATA PLOTS...(CONTINUED)

Driver Head X Primary
Driver Head Y Primary
Driver Head Z Primary
Driver Head Resultant Primary
Driver Head Primary X Velocity
Driver Head Primary Y Velocity
Driver Head Primary Z Velocity
Driver Head X Redundant
Driver Head Y Redundant
Driver Head Z Redundant
Driver Head Resultant Redundant
Driver Head Redundant X Velocity
Driver Head Redundant Y Velocity
Driver Head Redundant Z Velocity
Driver Upper Neck Force X
Driver Upper Neck Force Y
Driver Upper Neck Force Z
Driver Upper Neck Force Resultant
Driver Upper Neck Moment X
Driver Upper Neck Moment Y
Driver Upper Neck Moment Z
Driver Upper Neck Moment Resultant
Driver Upper Rib Primary Y Velocity
Driver Lower Rib Primary Y Velocity
Driver Lower Spine Primary Y Velocity
Driver Pelvis Primary Y Velocity
Driver Upper Rib Redundant Y
Driver Lower Rib Redundant Y
Driver Lower Spine Redundant Y
Driver Pelvis Redundant Y

LIST OF DATA PLOTS...(CONTINUED)

Driver Upper Rib Redundant Y Velocity
Driver Lower Rib Redundant Y Velocity
Driver Lower Spine Redundant Y Velocity
Driver Pelvis Redundant Y Velocity
Driver Thorax Contact
Driver Pelvis Contact
Passenger Head X Primary
Passenger Head Y Primary
Passenger Head Z Primary
Passenger Head Resultant Primary
Passenger Head Primary X Velocity
Passenger Head Primary Y Velocity
Passenger Head Primary Z Velocity
Passenger Head X Redundant
Passenger Head Y Redundant
Passenger Head Z Redundant
Passenger Head Resultant Redundant
Passenger Head Redundant X Velocity
Passenger Head Redundant Y Velocity
Passenger Head Redundant Z Velocity
Passenger Upper Neck Force X
Passenger Upper Neck Force Y
Passenger Upper Neck Force Z
Passenger Upper Neck Force Resultant
Passenger Upper Neck Moment X
Passenger Upper Neck Moment Y
Passenger Upper Neck Moment Z
Passenger Upper Neck Moment Resultant

LIST OF DATA PLOTS...(CONTINUED)

Passenger Upper Rib Primary Y Velocity
Passenger Lower Rib Primary Y Velocity
Passenger Lower Spine Primary Y Velocity
Passenger Pelvis Primary Y Velocity
Passenger Upper Rib Redundant Y
Passenger Lower Rib Redundant Y
Passenger Lower Spine Redundant Y
Passenger Pelvis Redundant Y
Passenger Upper Rib Redundant Y Velocity
Passenger Lower Rib Redundant Y Velocity
Passenger Lower Spine Redundant Y Velocity
Passenger Pelvis Redundant Y Velocity
Passenger Thorax Contact
Passenger Pelvis Contact
Vehicle Right Sill at Front Seat X
Vehicle Right Sill at Front Seat Y
Vehicle Right Sill at Front Seat Z
Vehicle Right Sill Front Seat Resultant
Vehicle Right Sill at Front Seat X Velocity
Vehicle Right Sill at Front Seat Y Velocity
Vehicle Right Sill at Front Seat Z Velocity
Vehicle Right Sill at Rear Seat X
Vehicle Right Sill at Rear Seat Y
Vehicle Right Sill at Rear Seat Z
Vehicle Right Sill Rear Seat Resultant
Vehicle Right Sill at Rear Seat X Velocity
Vehicle Right Sill at Rear Seat Y Velocity
Vehicle Right Sill at Rear Seat Z Velocity
Vehicle Rear Floor Above Axle X
Vehicle Rear Floor Above Axle Y
Vehicle Rear Floor Above Axle Z
Vehicle Rear Floor Above Axle Resultant
Vehicle Rear Floor Above Axle X Velocity
Vehicle Rear Floor Above Axle Y Velocity
Vehicle Rear Floor Above Axle Z Velocity

LIST OF DATA PLOTS...(CONTINUED)

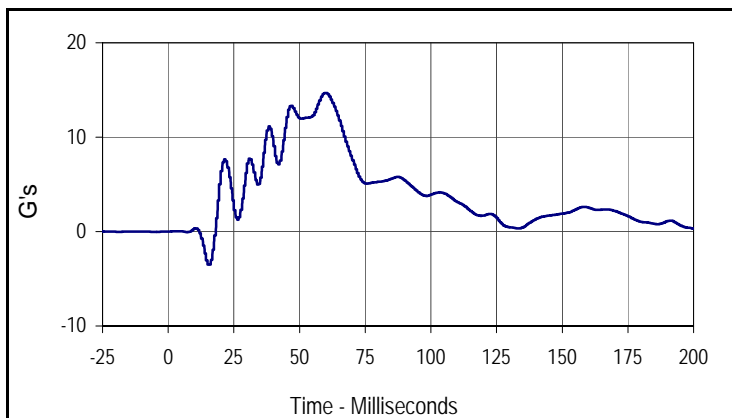
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Vehicle Left Sill at Front Door Y
Vehicle Left Sill at Rear Door Y Velocity
Vehicle Left Sill at Front Door Y Velocity
Vehicle Left Front Door C/L Y
Vehicle Right Rear Occupant Compartment
Vehicle Left Front Door Mid Rear Y
Vehicle Left Front Door Upper CL Y
Vehicle Left Front Door CL Y Velocity
Vehicle Right Rear Occupant Compartment Y Velocity
Vehicle Left Front Door Mid Rear Y Velocity
Vehicle Left Rear Door Upper CL Y Velocity
Vehicle Left Rear Door Mid Rear Y
Vehicle Left Rear Door Upper C/L Y
Vehicle Left Rear Door Mid Rear Y Velocity
Vehicle Left Rear Door Upper CL Y Velocity
Vehicle B-Post Lower Y
Vehicle B-Post Middle Y
Vehicle B-Post Lower Y Velocity
Vehicle B-Post Middle Y Velocity
Vehicle A-Post Lower Y
Vehicle A-Post Middle Y
Vehicle A-Post Lower Y Velocity
Vehicle A-Post Middle Y Velocity
Vehicle Left Front Seat Track
Vehicle Rear Seat Structure
Vehicle Left Front Seat Track Y Velocity
Vehicle Rear Seat Structure Y Velocity
Vehicle CG X
Vehicle CG Y
Vehicle CG Z
Vehicle CG Resultant
Vehicle CG X Velocity
Vehicle CG Y Velocity
Vehicle CG Z Velocity

LIST OF DATA PLOTS...(CONTINUED)

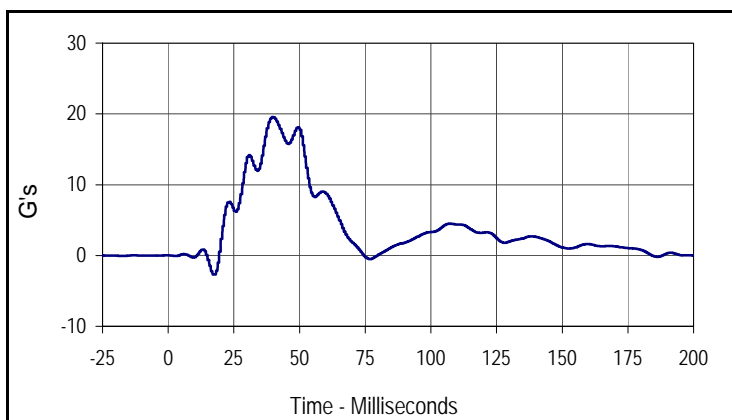
Driver Upper Rib Primary Y
Driver Lower Rib Primary Y
Driver Lower Spine Primary Y
Driver Pelvis Primary Y
Driver Upper Rib Redundant Y
Driver Lower Rib Redundant Y
Driver Lower Spine Redundant Y
Driver Pelvis Redundant Y
Passenger Upper Rib Primary Y
Passenger Lower Rib Primary Y
Passenger Lower Spine Primary Y
Passenger Pelvis Primary Y
Passenger Upper Rib Redundant Y
Passenger Lower Rib Redundant Y
Passenger Lower Spine Redundant Y
Passenger Pelvis Redundant Y
MDB CG X
MDB CG Y
MDB CG Z
MDB CG Resultant
MDB CG X Velocity
MDB CG Y Velocity
MDB CG Z Velocity
MDB Rear X
MDB Rear Y
MDB Rear X Velocity
MDB Rear Y Velocity
MDB Right Bumper Contact

Test Vehicle: 2009 Ford F-150 XL SuperCrew 4-Door Truck
 Test Program: 55/28 km/h Side Impact NCAP

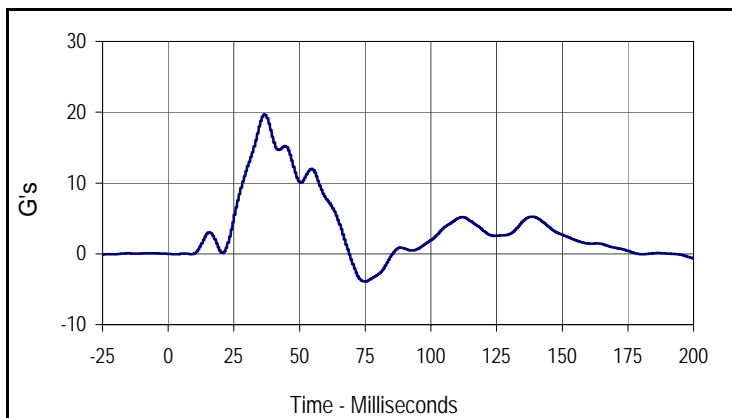
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 NHTSA No.: F90202



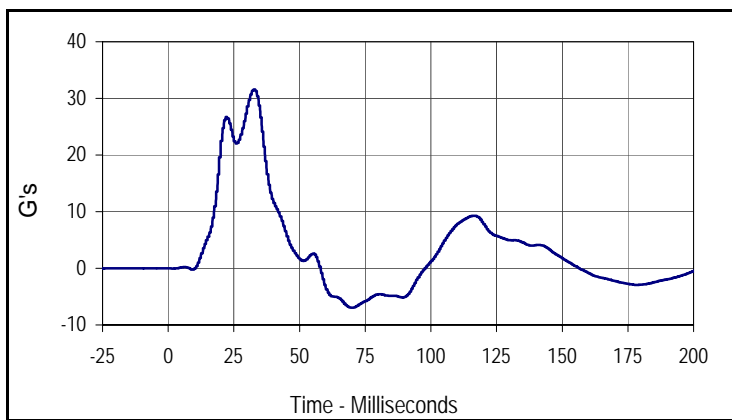
Curve Description			
Driver Upper Rib Y Primary			
CURNO	Type	SAE Class	Units
001	FIR	FIR100	G's
Max	Time	Min	Time
14.7	59.4	-3.5	15.7



Curve Description			
Driver Lower Rib Y Primary			
CURNO	Type	SAE Class	Units
002	FIR	FIR100	G's
Max	Time	Min	Time
19.6	39.4	-2.7	17.5



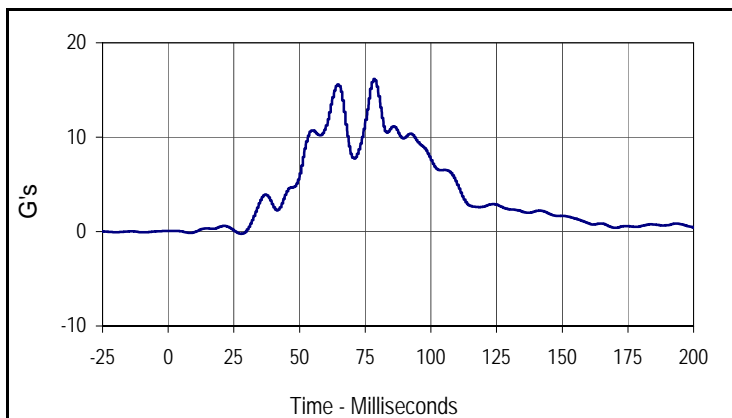
Curve Description			
Driver Lower Spine Y Primary			
CURNO	Type	SAE Class	Units
003	FIR	FIR100	G's
Max	Time	Min	Time
19.7	36.3	-3.9	74.4



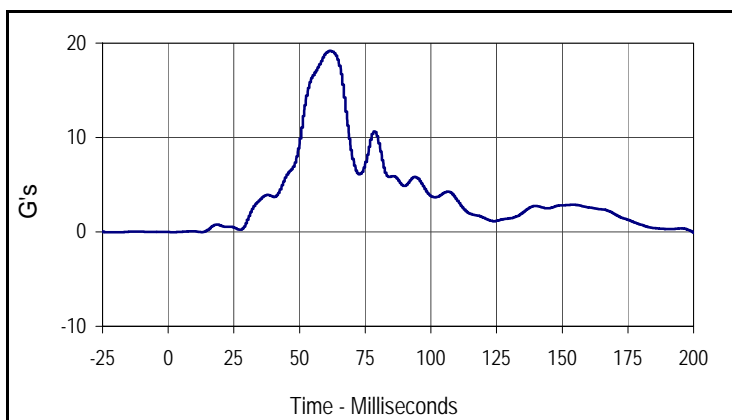
Curve Description			
Driver Pelvis Y Primary			
CURNO	Type	SAE Class	Units
004	FIR	FIR100	G's
Max	Time	Min	Time
31.6	32.5	-7.0	69.4

Test Vehicle: 2009 Ford F-150 XL SuperCrew 4-Door Truck
 Test Program: 55/28 km/h Side Impact NCAP

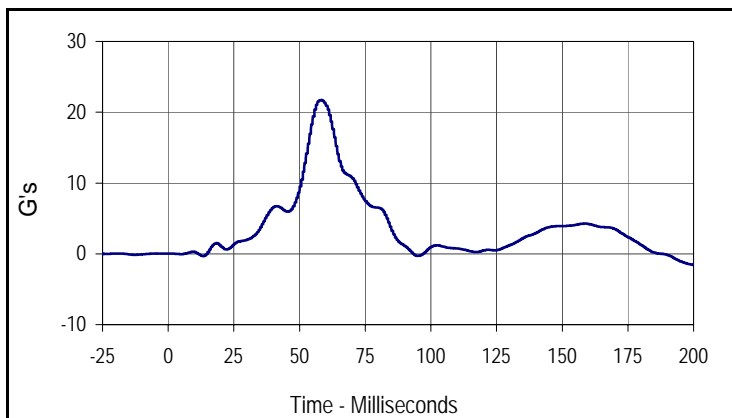
Test Date: 12/18/08
 NHTSA No.: F90202



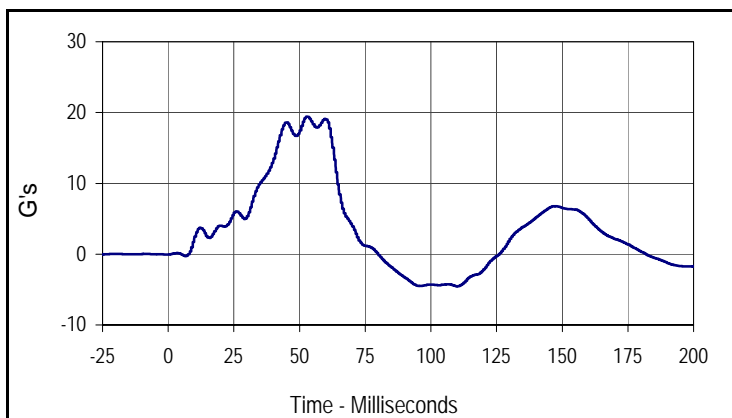
Curve Description			
Passenger Upper Rib Y Primary			
CURNO	Type	SAE Class	Units
005	FIR	FIR100	G's
Max	Time	Min	Time
16.2	78.2	-0.3	286.9



Curve Description			
Passenger Lower Rib Y Primary			
CURNO	Type	SAE Class	Units
006	FIR	FIR100	G's
Max	Time	Min	Time
19.2	61.3	-1.0	212.5



Curve Description			
Passenger Lower Spine Y Primary			
CURNO	Type	SAE Class	Units
007	FIR	FIR100	G's
Max	Time	Min	Time
21.7	58.2	-2.5	206.9



Curve Description			
Passenger Pelvis Primary Y			
CURNO	Type	SAE Class	Units
008	FIR	FIR100	G's
Max	Time	Min	Time
19.4	52.5	-4.5	110.0

APPENDIX C
SID/HIII CONFIGURATION AND PERFORMANCE VERIFICATION DATA

APPENDIX C
PRE-TEST SID / HIII CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program: SID / HIII External Measurements

Test Date: 12/17/08

ATD Serial No.: 274

Test I.D.: N/A



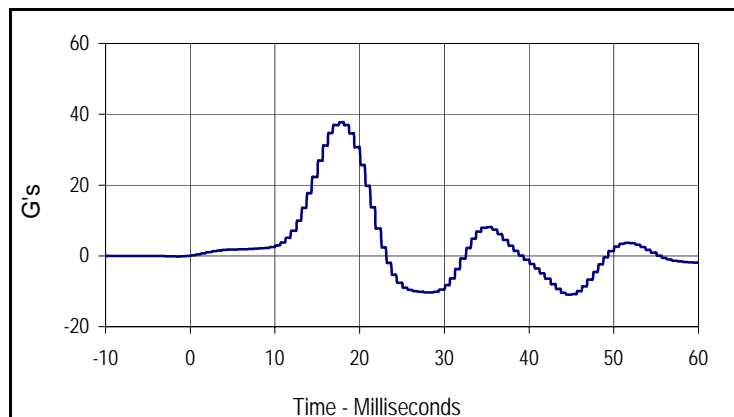
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	900	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	513	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	512	Pass
KV- Knee Pivot From Floor	mm	490 to 505	502	Pass
HW- Hip Width	mm	356 to 391	373	Pass
Overall Test Results				Pass

Test Program: SID / HIII Thorax Lateral Impact
 ATD Serial No.: 274

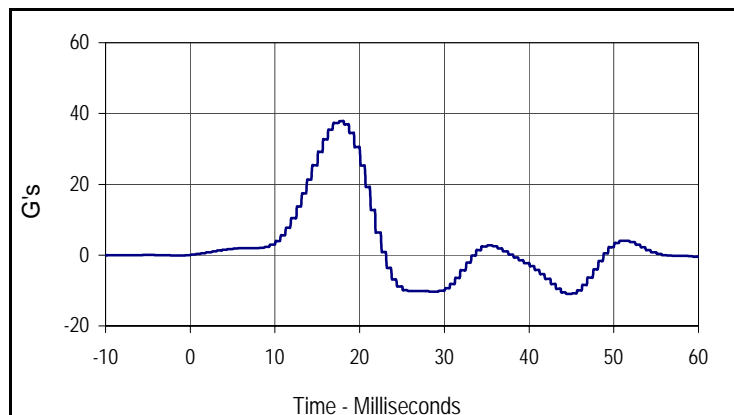
Test Date: 12/17/08
 Test I.D.: TH12D



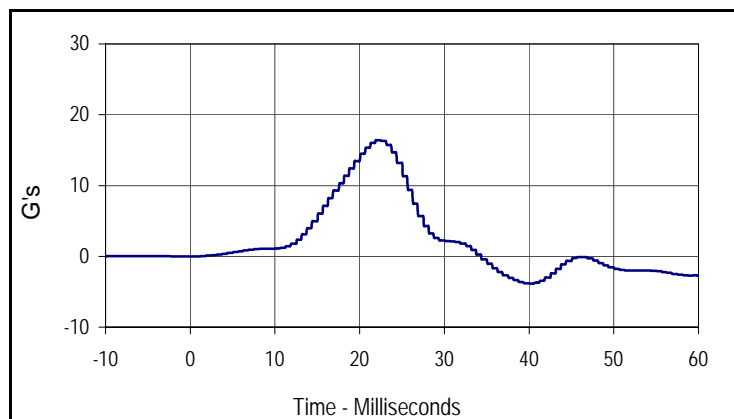
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.32	Pass
Upper Rib Acceleration	G's	37.0 to 46.0	37.8	Pass
Lower Rib Acceleration	G's	37.0 to 46.0	37.8	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	16.4	Pass
Overall Test Results				Pass



Curve Description			
Upper Rib Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
37.8	17.6	-10.9	44.4



Curve Description			
Lower Rib Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	FIR100	G's
Max	Time	Min	Time
37.8	17.6	-11.0	44.4



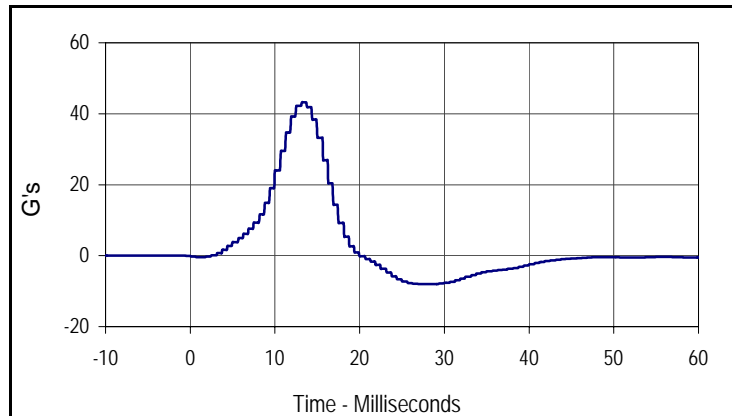
Curve Description			
Lower Spine Y Primary			
CURNO	Type	SAE Class	Units
003	FIL	FIR100	G's
Max	Time	Min	Time
16.4	21.9	-3.8	40.1

Test Program: SID / HIII Pelvis Lateral Impact
 ATD Serial No.: 274

Test Date: 12/17/08
 Test I.D.: PL12A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.32	Pass
Peak Pelvis Acceleration	G's	40.0 to 60.0	43.2	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0	4.90	Pass
Overall Test Results				Pass



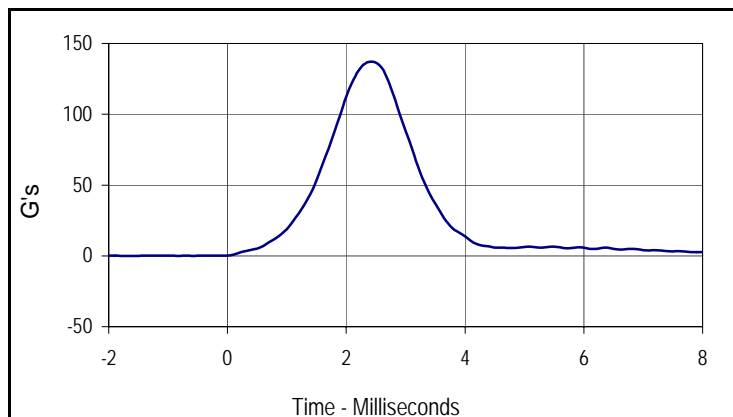
Curve Description			
Pelvis Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
43.2	13.2	-8.0	27.5

Test Program: SID / HIII Head Drop Lateral Impact Test
 ATD Serial No.: 274

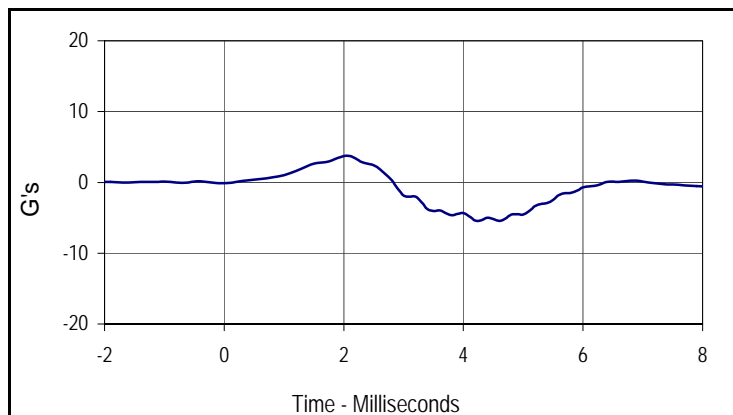
Test Date: 12/17/08
 Test I.D.: HD12E



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	120.0 to 150.0	137.2	Pass
Peak Longitudinal Acceleration	G's	≤15.0	5.5	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	4.7	Pass
Overall Test Results				Pass



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
137.2	2.4	0.0	-1.7



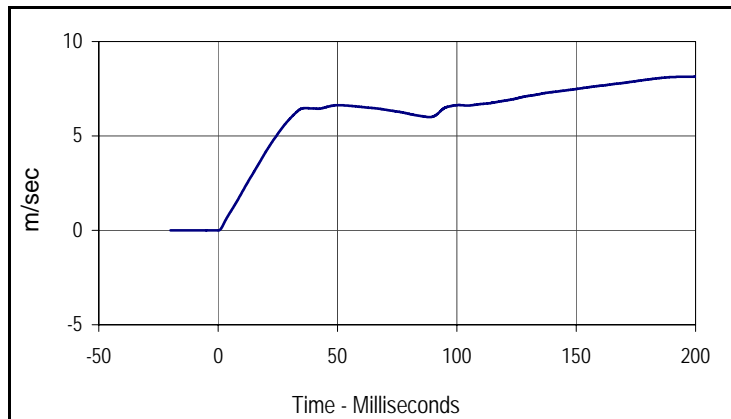
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
3.7	2.1	-5.5	4.6

Test Program: SID / HIII Neck Pendulum Lateral Test
 ATD Serial No.: 274

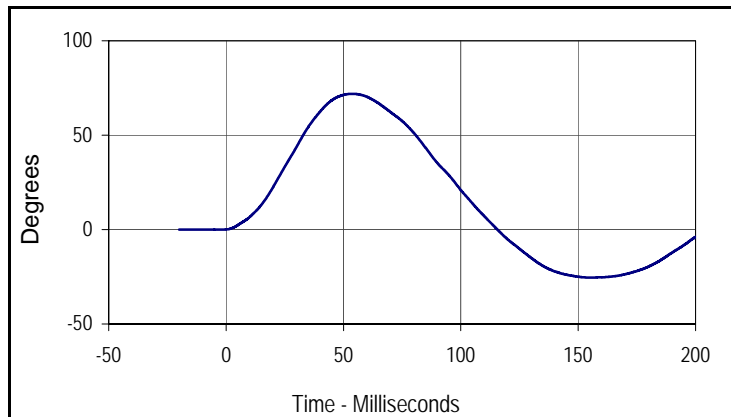
Test Date: 12/17/08
 Test I.D.: NB12C



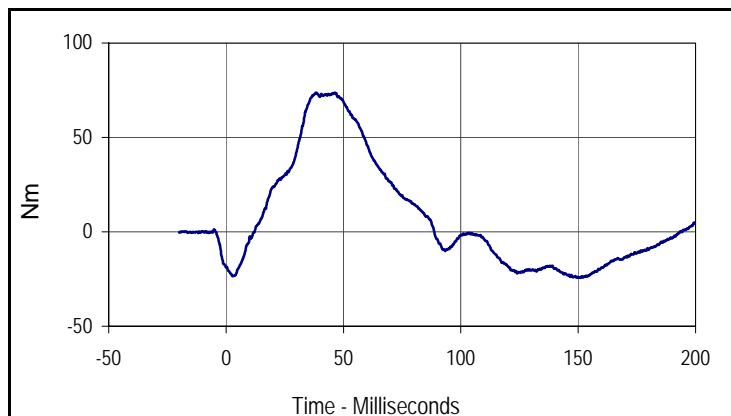
Tested Parameter	Units	Specification	Result	Pass/Fail	
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass	
Laboratory Relative Humidity	%	10 to 70	30	Pass	
Pendulum Velocity	m/sec	6.89 to 7.13	7.07	Pass	
Pendulum Deceleration	10 Msec.	m/sec	1.96 to 2.55	2.02	Pass
	20 Msec.	m/sec	4.12 to 5.10	4.17	Pass
	30 Msec.	m/sec	5.73 to 7.01	5.91	Pass
	40 to 70	m/sec	6.27 to 7.64	6.63	Pass
"D" Plane Rotation	Max	Degrees	66.0 to 82.0	71.9	Pass
Max Rotation Time After Peak Moment	Msec.	2.0 to 16.0	15.4	Pass	
Rotation Time From Peak to Zero Angle	Msec.	58.0 to 67.0	61.9	Pass	
Moment About Occipital Condyle	Nm	73.0 to 88.0	73.8	Pass	
Positive Moment Decay, Time To 0 Nm	Msec.	49.0 to 64.0	50.4	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/sec
Max	Time	Min	Time
8.1	196.6	0.0	-0.1



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
71.9	53.7	-25.4	155.3



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
73.8	38.3	-24.4	151.1

Test Program: SID / HIII External Measurements

Test Date: 12/17/08

ATD Serial No.: 275

Test I.D.: N/A



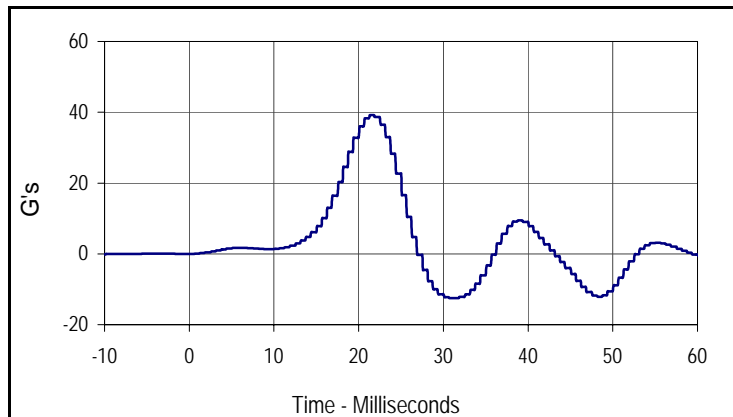
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	890	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	514	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	519	Pass
KV- Knee Pivot From Floor	mm	490 to 505	502	Pass
HW- Hip Width	mm	356 to 391	376	Pass
Overall Test Results				Pass

Test Program: SID / HIII Thorax Lateral Impact
 ATD Serial No.: 275

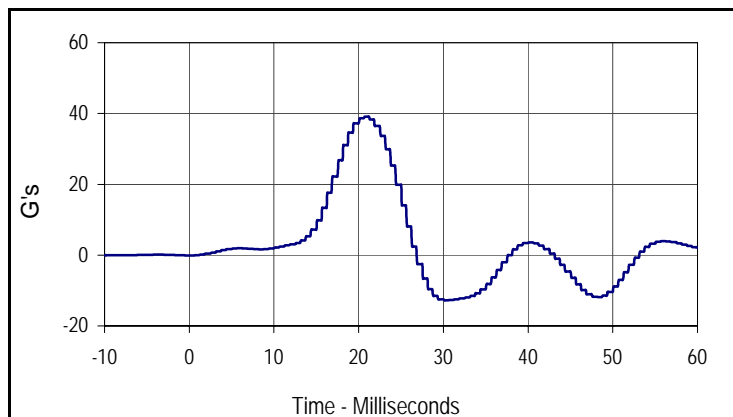
Test Date: 12/17/08
 Test I.D.: TH12B



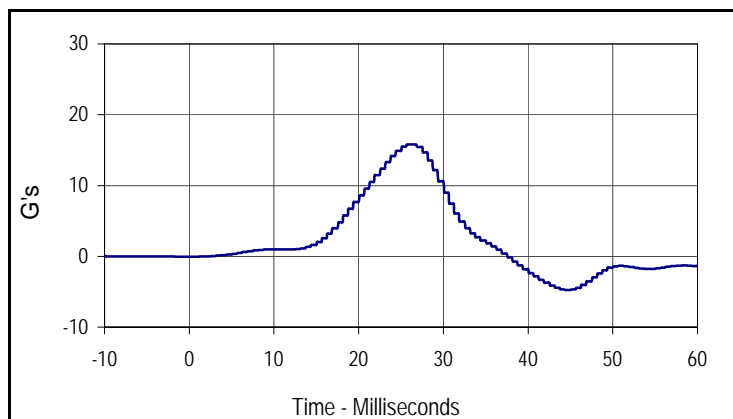
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.30	Pass
Upper Rib Acceleration	G's	37.0 to 46.0	39.2	Pass
Lower Rib Acceleration	G's	37.0 to 46.0	39.1	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	15.8	Pass
Overall Test Results			Pass	



Curve Description			
Upper Rib Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
39.2	21.3	-12.5	30.7



Curve Description			
Lower Rib Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	FIR100	G's
Max	Time	Min	Time
39.1	20.7	-12.8	30.1



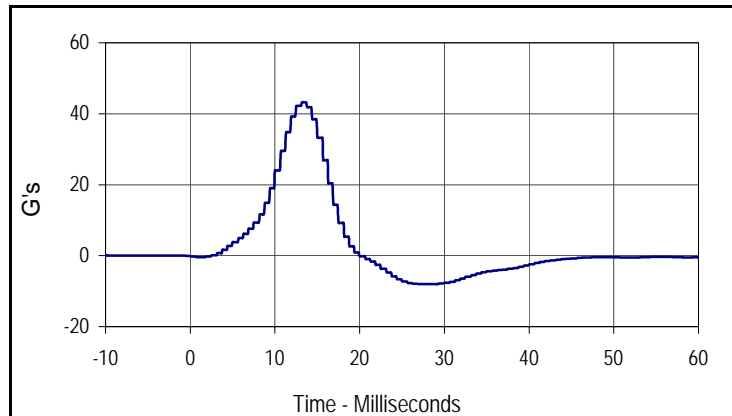
Curve Description			
Lower Spine Y Primary			
CURNO	Type	SAE Class	Units
003	FIL	FIR100	G's
Max	Time	Min	Time
15.8	25.7	-4.8	44.4

Test Program: SID / HIII Pelvis Lateral Impact
 ATD Serial No.: 275

Test Date: 12/17/08
 Test I.D.: PL12B



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.31	Pass
Peak Pelvis Acceleration	G's	40.0 to 60.0	43.2	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0	4.90	Pass
Overall Test Results				Pass



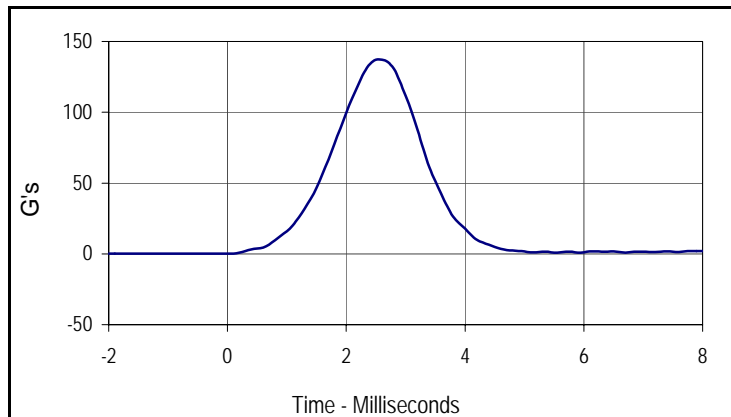
Curve Description			
Pelvis Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
43.2	13.2	-8.0	27.5

Test Program: SID / HIII Head Drop Lateral Impact Test
 ATD Serial No.: 275

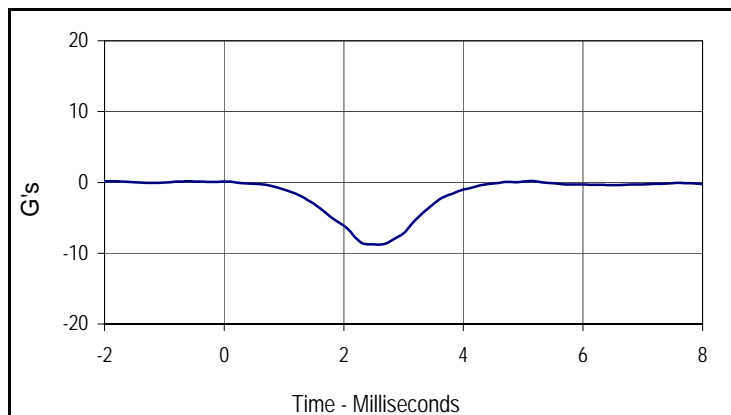
Test Date: 12/17/08
 Test I.D.: HD12D



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	120.0 to 150.0	137.2	Pass
Peak Longitudinal Acceleration	G's	≤15.0	8.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	1.3	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
137.2	2.6	0.2	-1.5



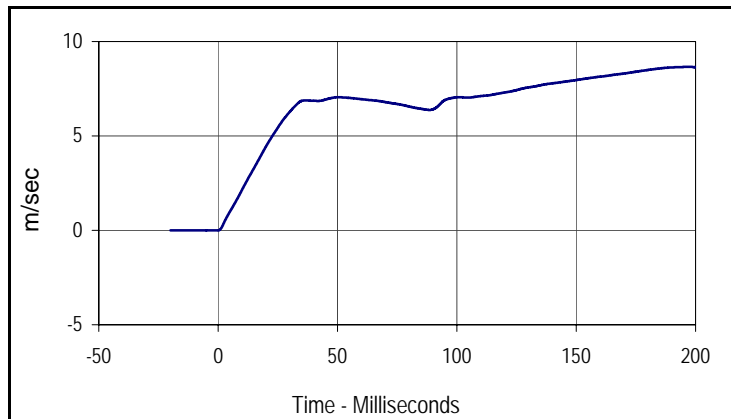
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.2	5.1	-8.8	2.6

Test Program: SID / HIII Neck Pendulum Lateral Test
 ATD Serial No.: 275

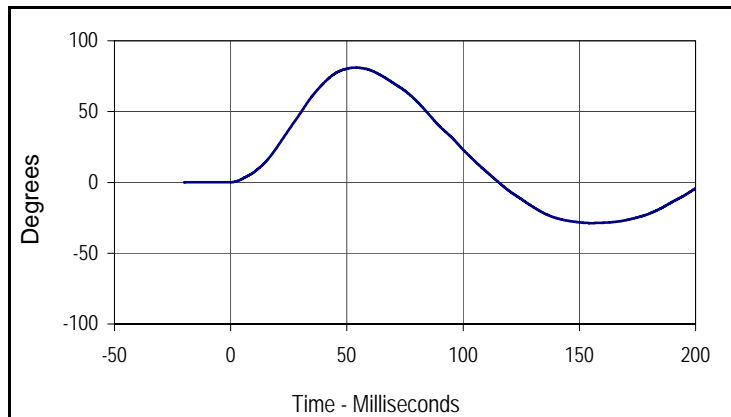
Test Date: 12/17/08
 Test I.D.: NB12C



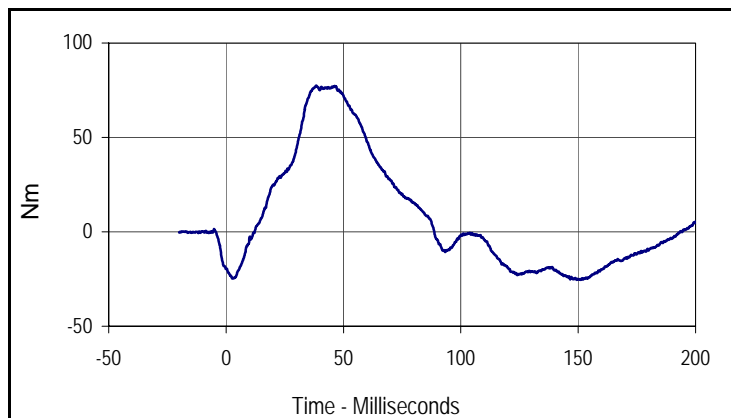
Tested Parameter	Units	Specification	Result	Pass/Fail	
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass	
Laboratory Relative Humidity	%	10 to 70	30	Pass	
Pendulum Velocity	m/sec	6.89 to 7.13	7.07	Pass	
Pendulum Deceleration	10 Msec.	m/sec	1.96 to 2.55	2.15	Pass
	20 Msec.	m/sec	4.12 to 5.10	4.43	Pass
	30 Msec.	m/sec	5.73 to 7.01	6.28	Pass
	40 to 70	m/sec	6.27 to 7.64	7.05	Pass
"D" Plane Rotation	Max	Degrees	66.0 to 82.0	81.0	Pass
Max Rotation Time After Peak Moment	Msec.	2.0 to 16.0	15.5	Pass	
Rotation Time From Peak to Zero Angle	Msec.	58.0 to 67.0	61.5	Pass	
Moment About Occipital Condyle	Nm	73.0 to 88.0	77.4	Pass	
Positive Moment Decay, Time To 0 Nm	Msec.	49.0 to 64.0	50.4	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/sec
Max	Time	Min	Time
8.7	196.6	0.0	-0.1



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
81.0	53.8	-28.7	155.3



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
77.4	38.3	-25.5	151.0

APPENDIX C
POST-TEST SID / HIII CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program: SID / HIII External Measurements

Test Date: 12/19/08

ATD Serial No.: 274

Test I.D.: N/A



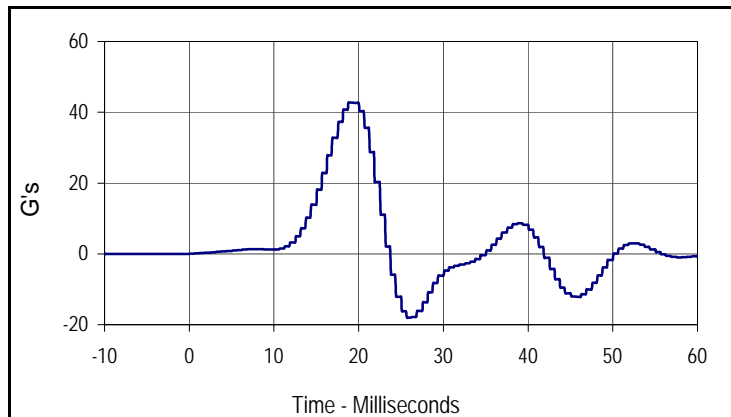
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	900	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	505	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	516	Pass
KV- Knee Pivot From Floor	mm	490 to 505	495	Pass
HW- Hip Width	mm	356 to 391	362	Pass
Overall Test Results				Pass

Test Program: SID / HIII Thorax Lateral Impact
 ATD Serial No.: 274

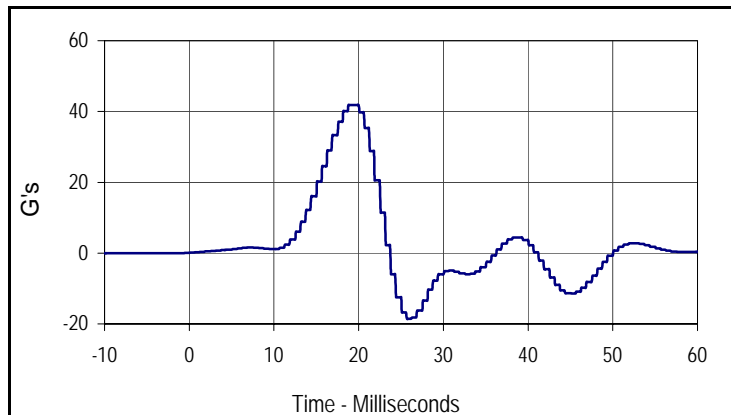
Test Date: 12/19/08
 Test I.D.: TH12H



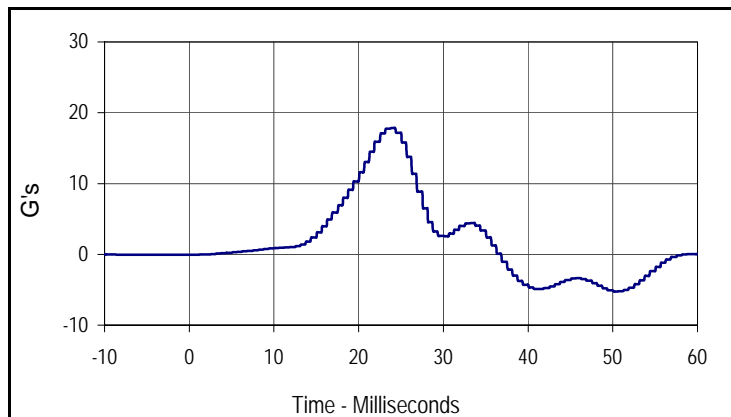
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.24	Pass
Upper Rib Acceleration	G's	37.0 to 46.0	42.7	Pass
Lower Rib Acceleration	G's	37.0 to 46.0	41.8	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	17.8	Pass
Overall Test Results				Pass



Curve Description			
Upper Rib Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
42.7	18.8	-18.0	25.7



Curve Description			
Lower Rib Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	FIR100	G's
Max	Time	Min	Time
41.8	18.8	-18.5	25.7



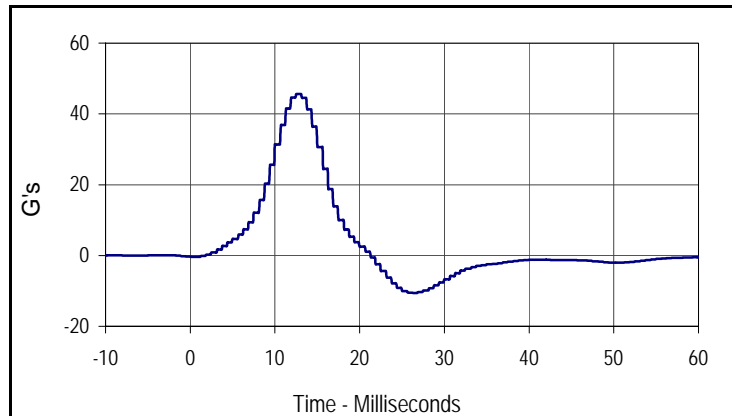
Curve Description			
Lower Spine Y Primary			
CURNO	Type	SAE Class	Units
003	FIL	FIR100	G's
Max	Time	Min	Time
17.8	23.8	-5.2	50.1

Test Program: SID / HIII Pelvis Lateral Impact
 ATD Serial No.: 274

Test Date: 12/19/08
 Test I.D.: PL12H



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.28	Pass
Peak Pelvis Acceleration	G's	40.0 to 60.0	45.7	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0	6.10	Pass
Overall Test Results				Pass



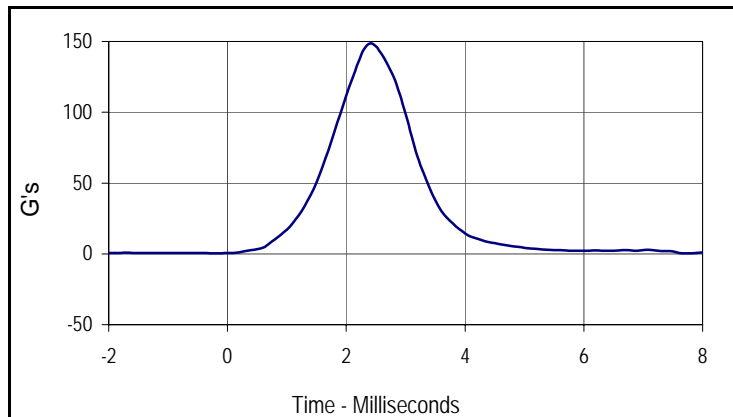
Curve Description			
Pelvis Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
45.7	12.5	-10.6	26.3

Test Program: SID / HIII Head Drop Lateral Impact Test
 ATD Serial No.: 274

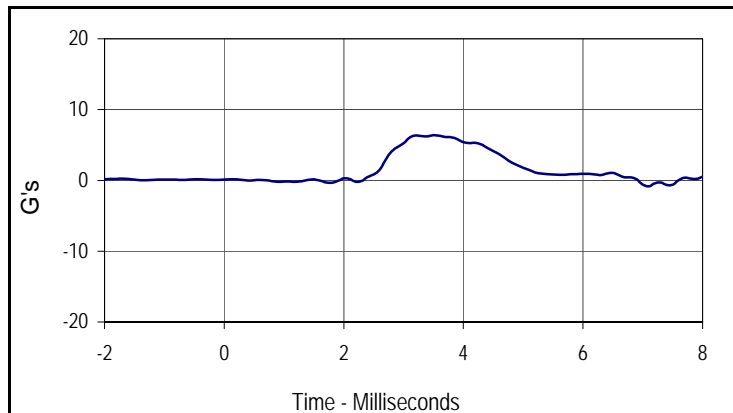
Test Date: 12/19/08
 Test I.D.: HD12H



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	120.0 to 150.0	148.6	Pass
Peak Longitudinal Acceleration	G's	≤15.0	6.4	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	2.9	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
148.6	2.4	0.5	-0.2



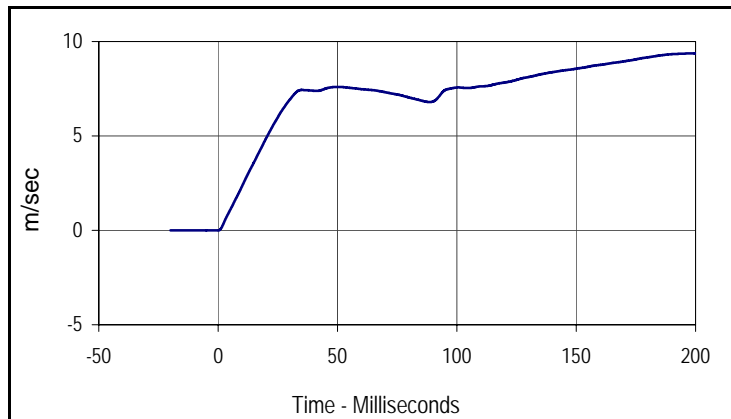
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
6.4	3.5	-0.3	1.8

Test Program: SID / HIII Neck Pendulum Lateral Test
 ATD Serial No.: 274

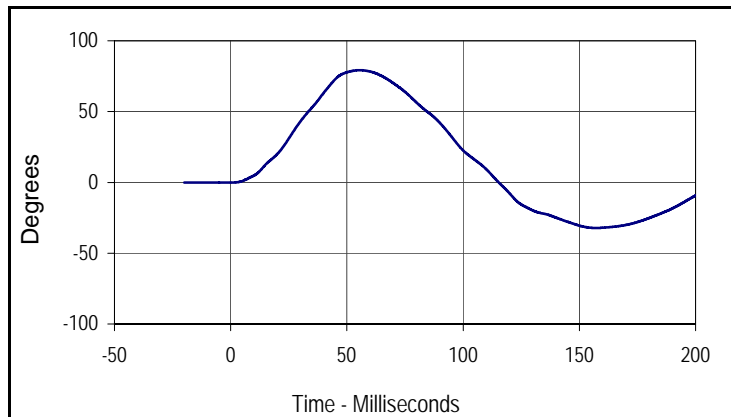
Test Date: 12/19/08
 Test I.D.: NB12H



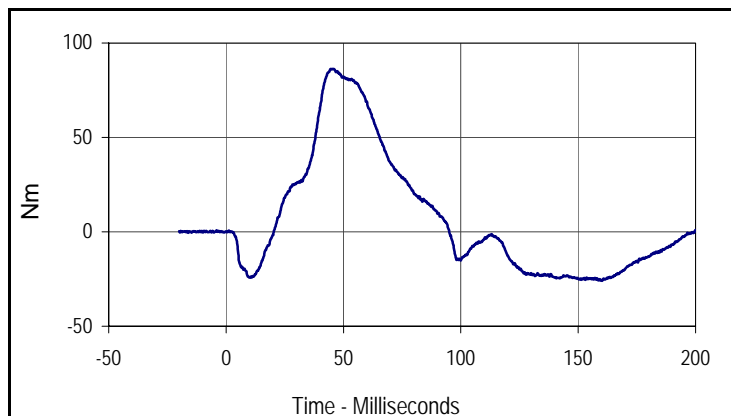
Tested Parameter	Units	Specification	Result	Pass/Fail	
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass	
Laboratory Relative Humidity	%	10 to 70	30	Pass	
Pendulum Velocity	m/sec	6.89 to 7.13	7.09	Pass	
Pendulum Deceleration	10 Msec.	m/sec	1.96 to 2.55	2.34	Pass
	20 Msec.	m/sec	4.12 to 5.10	4.85	Pass
	30 Msec.	m/sec	5.73 to 7.01	6.92	Pass
	40 to 70	m/sec	6.27 to 7.64	7.60	Pass
"D" Plane Rotation	Max	Degrees	66.0 to 82.0	79.2	Pass
Max Rotation Time After Peak Moment	Msec.	2.0 to 16.0	10.0	Pass	
Rotation Time From Peak to Zero Angle	Msec.	58.0 to 67.0	59.9	Pass	
Moment About Occipital Condyle	Nm	73.0 to 88.0	86.3	Pass	
Positive Moment Decay, Time To 0 Nm	Msec.	49.0 to 64.0	49.7	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/sec
Max	Time	Min	Time
9.4	198.6	0.0	-0.1



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
79.2	55.4	-32.2	157.2



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
86.3	45.4	-25.9	160.2

Test Program: SID / HIII External Measurements

Test Date: 12/19/08

ATD Serial No.: 275

Test I.D.: N/A



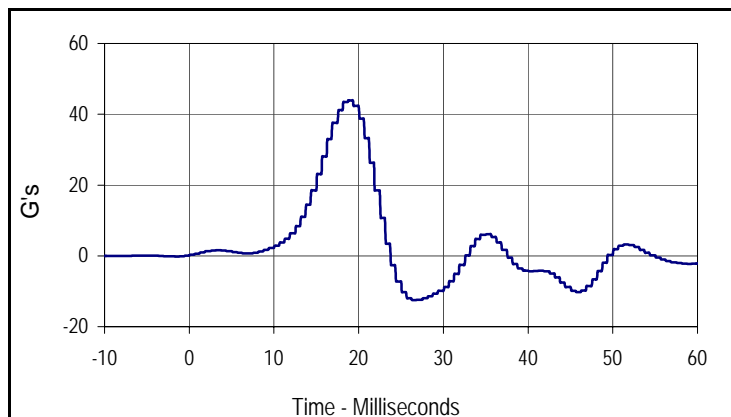
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
SH- Seated Height	mm	889 to 909	903	Pass
HP- Hip Point Height	mm	99 (reference)	99	Pass
RH- Rib Height	mm	502 to 520	512	Pass
KH- Knee Pivot From Back Line	mm	511 to 526	519	Pass
KV- Knee Pivot From Floor	mm	490 to 505	499	Pass
HW- Hip Width	mm	356 to 391	360	Pass
Overall Test Results				Pass

Test Program: SID / HIII Thorax Lateral Impact
 ATD Serial No.: 275

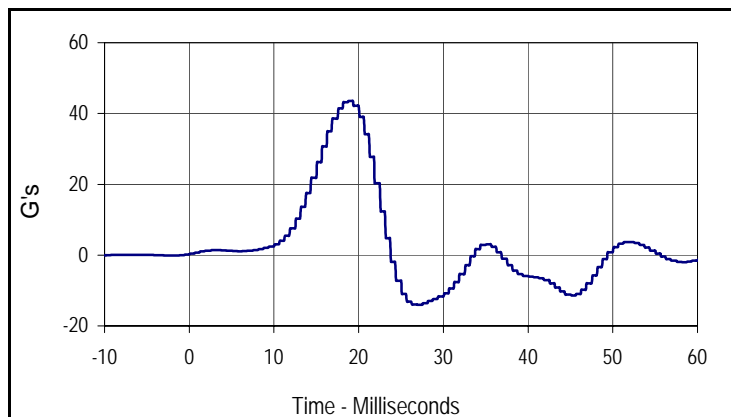
Test Date: 12/19/08
 Test I.D.: TH12I



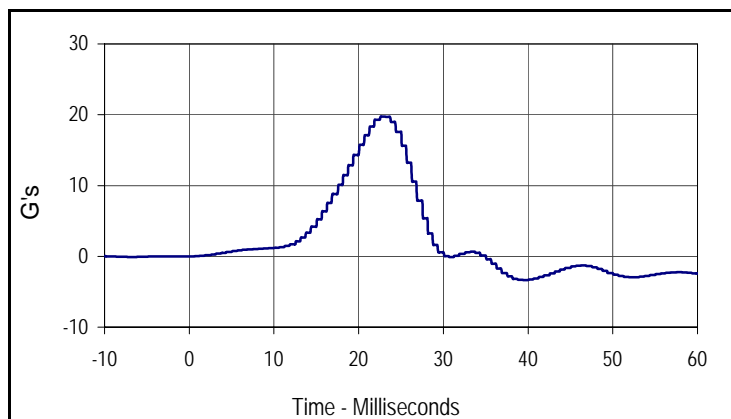
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.24	Pass
Upper Rib Acceleration	G's	37.0 to 46.0	43.9	Pass
Lower Rib Acceleration	G's	37.0 to 46.0	43.5	Pass
Thoracic Spine Acceleration	G's	15.0 to 22.0	19.8	Pass
Overall Test Results			Pass	



Curve Description			
Upper Rib Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
43.9	18.8	-12.5	26.3



Curve Description			
Lower Rib Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	FIR100	G's
Max	Time	Min	Time
43.5	18.8	-14.0	26.9



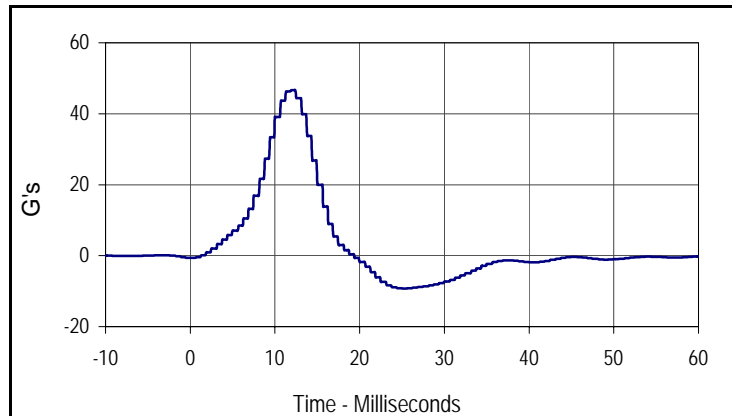
Curve Description			
Lower Spine Y Primary			
CURNO	Type	SAE Class	Units
003	FIL	FIR100	G's
Max	Time	Min	Time
19.8	22.6	-3.4	39.4

Test Program: SID / HIII Pelvis Lateral Impact
 ATD Serial No.: 275

Test Date: 12/19/08
 Test I.D.: PL12I



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	4.21 to 4.33	4.30	Pass
Peak Pelvis Acceleration	G's	40.0 to 60.0	46.6	Pass
Acceleration Time Above 20 G's	Msec.	3.0 to 7.0	6.70	Pass
Overall Test Results				Pass



Curve Description			
Pelvis Y Primary			
CURNO	Type	SAE Class	Units
001	FIL	FIR100	G's
Max	Time	Min	Time
46.6	11.9	-9.3	25.0

Test Program: SID / HIII Head Drop Lateral Impact Test

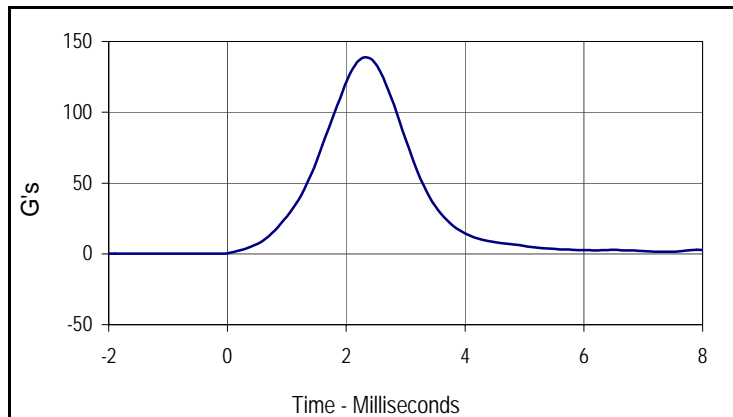
Test Date: 12/19/08

ATD Serial No.: 275

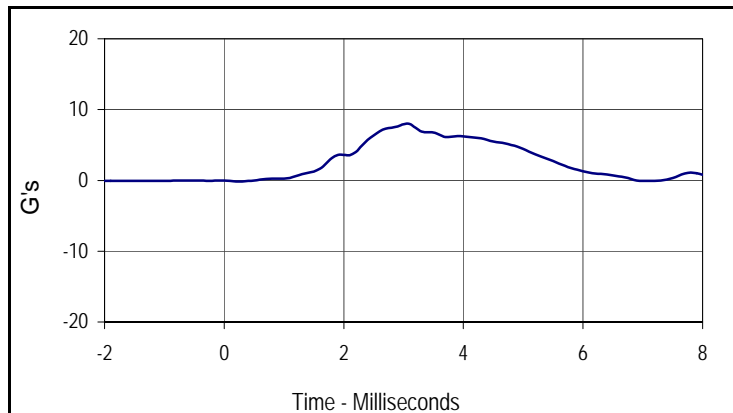
Test I.D.: HD12I



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.7	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	120.0 to 150.0	138.8	Pass
Peak Longitudinal Acceleration	G's	≤15.0	8.0	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	4.0	Pass
Overall Test Results				Pass



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
138.8	2.3	0.1	-0.9



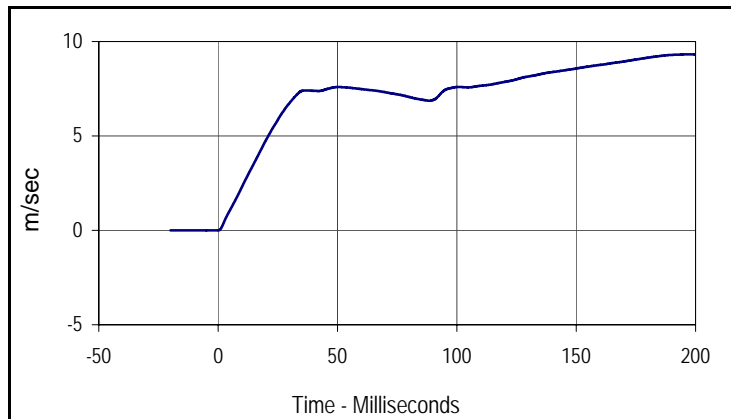
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
8.0	3.1	-0.1	0.2

Test Program: SID / HIII Neck Pendulum Lateral Test
 ATD Serial No.: 275

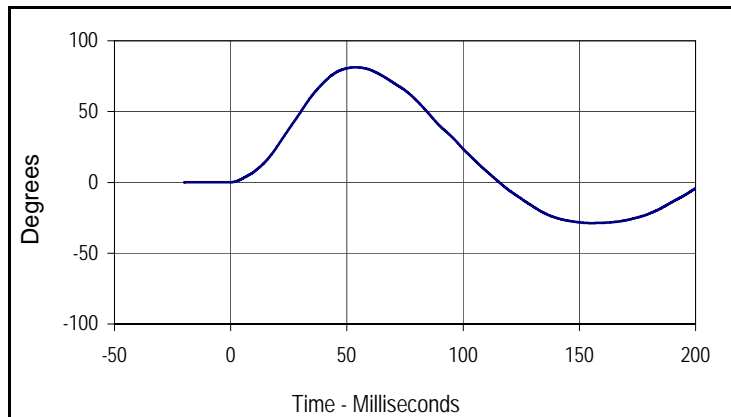
Test Date: 12/19/08
 Test I.D: NB121



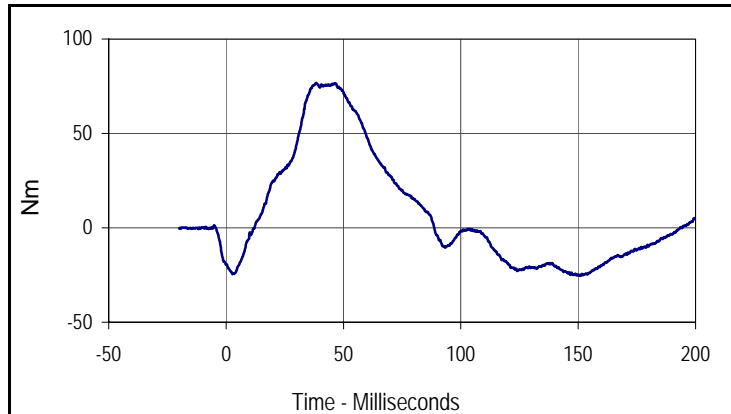
Tested Parameter	Units	Specification	Result	Pass/Fail	
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass	
Laboratory Relative Humidity	%	10 to 70	30	Pass	
Pendulum Velocity	m/sec	6.89 to 7.13	7.09	Pass	
Pendulum Deceleration	10 Msec.	m/sec	1.96 to 2.55	2.31	Pass
	20 Msec.	m/sec	4.12 to 5.10	4.77	Pass
	30 Msec.	m/sec	5.73 to 7.01	6.76	Pass
	40 to 70	m/sec	6.27 to 7.64	7.59	Pass
"D" Plane Rotation	Max	Degrees	66.0 to 82.0	81.3	Pass
Max Rotation Time After Peak Moment	Msec.	2.0 to 16.0	15.4	Pass	
Rotation Time From Peak to Zero Angle	Msec.	58.0 to 67.0	61.9	Pass	
Moment About Occipital Condyle	Nm	73.0 to 88.0	76.8	Pass	
Positive Moment Decay, Time To 0 Nm	Msec.	49.0 to 64.0	50.4	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/sec
Max	Time	Min	Time
9.3	196.6	0.0	-0.1



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
81.3	53.7	-28.8	155.3



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
76.8	38.3	-25.3	151.1