

REPORT NUMBER: SPNCAP-KAR-11-056

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

**FORD MOTOR CO.
2011 FORD F-150 XLT SUPERCAB 2-DOOR TRUCK**

NHTSA No: MB0209

**PREPARED BY:
KARCO ENGINEERING, LLC.
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FEBRUARY 10, 2011

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
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		15. Supplementary Notes																				
16. Abstract <p>A 32.2 km/h (20 mph) 75° oblique impact Side NCAP test was conducted on the subject 2011 Ford F-150 XLT SuperCab 2-Door Truck in accordance with the specifications of the Office of Crashworthiness Standards Side NCAP Pole Laboratory Test Procedure for the generation of consumer information on vehicle side pole crash protection. The test was conducted at the KARCO Engineering, LLC. facility in Adelanto, California on February 10, 2011.</p> <p>The impact velocity was 32.67 km/h and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 10.6° C. The test vehicle's post-test maximum crush was 572 mm at level 2. The test vehicle's performance was as follows:</p> <table border="1" style="width: 100%; border-collapse: collapse; margin: 10px 0;"> <thead> <tr> <th rowspan="2" style="text-align: center;">Measurement Description</th> <th colspan="3" style="text-align: center;">Passenger ATD</th> </tr> <tr> <th style="text-align: center;">Units</th> <th style="text-align: center;">Threshold</th> <th style="text-align: center;">Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td></td> <td style="text-align: center;">1000</td> <td style="text-align: center;">669.2</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td style="text-align: center;">G</td> <td style="text-align: center;">82</td> <td style="text-align: center;">56</td> </tr> <tr> <td>Combined Acetabular and Iliac Pelvic Force</td> <td style="text-align: center;">N</td> <td style="text-align: center;">5525</td> <td style="text-align: center;">3399</td> </tr> </tbody> </table> <p>The two doors on the struck side of the vehicle did not separate from the vehicle at the hinges or latches. The opposite side doors did not open during the impact event.</p>				Measurement Description	Passenger ATD			Units	Threshold	Result	Head Injury Criteria (HIC ₃₆)		1000	669.2	Resultant Lower Spine Acceleration	G	82	56	Combined Acetabular and Iliac Pelvic Force	N	5525	3399
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17. Key Words New Car Assessment Program (NCAP) Side Impact Pole Part 572V SID-IIs		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Admin. Technical Reference Division 1200 New Jersey Ave., SE Washington, DC 20590																				
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SECTION 1
TEST PURPOSE AND PROCEDURE

This 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 No. DTNH22-09-D-00122. The purpose of this test is to generate comparative side impact performance in a 2011 Ford F-150 XLT SuperCab 2-Door Truck. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Side NCAP Pole Laboratory Test Procedure, dated January 25, 2010.

SECTION 2

SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a 2011 Ford F-150 XLT SuperCab 2-Door Truck. The subject vehicle was towed into the rigid pole at an angle of 76.2° and a velocity of 32.67 km/h. The test was conducted by KARCO Engineering, LLC. in Adelanto, California, on February 10, 2011. Pre-test and post-test photographs of the test vehicle and side impact dummy (SID-IIs) are included in Appendix A of this report.

One Part 572V (SID-IIs) dummy was placed in the driver designated seating position according to instructions specified in the OCWS Side NCAP Pole Laboratory Test Procedure, dated January 25, 2010. Camera location and other pertinent camera information are included in this report.

The Part 572V (SID-IIs) dummy was instrumented as follows:

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

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

The following table summarizes the results of the test:

Dummy	HIC (36ms)	Resultant Lower Spine Acceleration	Pelvic Force (N)	
SID-IIs 5th Percentile Adult Female	669	56	Iliac Wing	1702
			Acetabular	1891
			Sum	3399

SUPPLEMENTAL RESTRAINT INFORMATION

Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear (Passenger) Occupant Location 4	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No	No	
Knee Airbag	No		No	
Side Airbag 1 (Torso/Pelvis)	Yes	Yes	No	
Side Airbag 2 (Curtain)	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes	Yes	No	

GENERAL COMMENTS

Both of the struck side doors of the test vehicle remained closed and latched and were jammed shut after the impact. There was no separation at the hinges or the latches. The non-struck side doors remained closed and latched. There were no driver injury values that exceeded their limits. There was no FMVSS 301 Stoddard solvent spillage as a result of the impact.

SECTION 3

OCCUPANT AND VEHICLE INFORMATION

Test Vehicle: 2011 Ford F-150 XLT SuperCab 2-Door Truck NHTSA No. MB0209

Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole Test Date: 02/10/11

CONVERSION FACTORS

Quantity	Typical Application	Std Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	miles/hr	km/hr	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	$=(tf - 32)/1.8$
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf/ft	Nm	1.355

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMATER DATA

Test Vehicle: 2011 Ford F-150 XLT SuperCab 2-Door Truck NHTSA No. MB0209
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole Test Date: 02/10/11

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	MB0209
Model Year	2011
Make	Ford
Model	F-150 XLT SuperCab
Body Style	2-Door Truck
VIN	1FTEX1CMXBFA43718
Body Color	Sterling Grey Metallic
Delivery Date	1/26/2011
Odometer Reading (km / mi)	220 / 137
Dealer	Galpin Ford
Transmission	6-Speed Automatic
Final Drive	Rear
Type / No. of Cylinders	V6
Engine Displacement (L)	3.7
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 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
Rear Pass. Curtain Airbag	Yes
Rear Pass. Head/Torso Airbag	No
Rear Pass. Torso Airbag	No
Rear Pass. Toso/Pelvis Airbag	No
Rear Pass. Pelvis Airbag	No
Pretensioners	Yes
Load Limiters	Yes
Automatic Door Locks	Yes
Bucket Seats	Yes
Tilt Steering	Yes
Other	
Other	

Does Owner's Manual provide instructions to turn off automatic door locks? Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Ford Motor Co.
Date of Manufacture	Nov-10

GVWR (kg)	3039
GAWR Front (kg)	1565
GAWR Rear (kg)	1724

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Designated Seating Capacity	3	3		6
Capacity Weight (VCW) (kg)				648.0
DSC x 68.04 (kg)				408.2
Cargo Weight (RCLW) (kg)				136.0

A
B
A-B

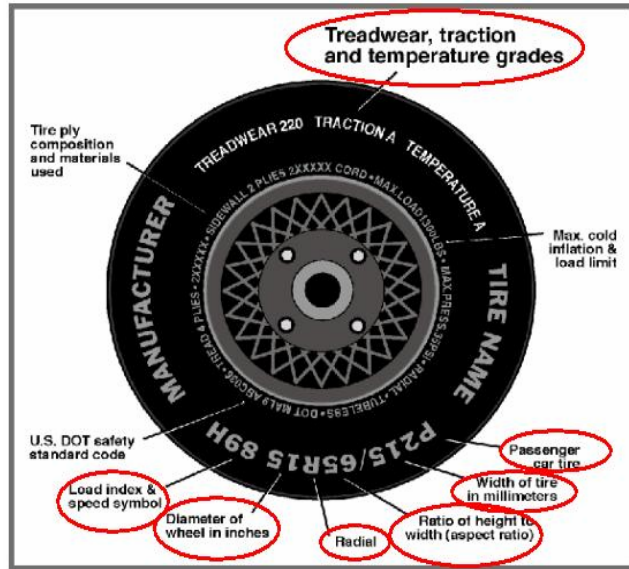
VEHICLE SEAT TYPE

Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						w/ Lever	w/ Knob
Front Seat	Yes					Yes	
Rear or Second Row Seat		Yes			Yes		
Third Row Seat							

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMATER DATA

Test Vehicle: 2011 Ford F-150 XLT SuperCab 2-Door Truck NHTSA No. MB0209
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole Test Date: 02/10/11



VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	300	300
Cold Pressure (kpa)	240	240
Recommended Tire Size	P265/60R18	P265/60R18
Tire Size on Vehicle	P265/60R18	P265/60R18
Tire Model	LTX A/S	LTX A/S
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, 1 Polyamide, 2 Steel	2 Polyester, 1 Polyamide, 2 Steel
Load Index/Speed Symbol	109T	109T
Tire Material	Polyester, Polyamide, Steel	Polyester, Polyamide, Steel
DOT Safety Code Right	APC4 WV1X 4610	APC4 WV1X 4610
DOT Safety Code Left	APC4 WV1X 4610	APC4 WV1X 4610

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMATER DATA

Test Vehicle: 2011 Ford F-150 XLT SuperCab 2-Door Truck NHTSA No. MB0209
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole Test Date: 02/10/11

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	687.5	519.5		699.0	595.5		712.5	601.0	
Right	kg	629.5	511.5		650.5	581.0		633.5	585.5	
Ratio	%	56.1%	43.9%	100.0%	53.4%	46.6%	100.0%	53.1%	46.9%	100.0%
Total	kg	1317.0	1031.0	2348.0	1349.5	1176.5	2526.0	1346.0	1186.5	2532.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	2348.0	A
Actual Weight of 1 P572V ATD Used	kg	49.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	136.0	C
Calculated Vehicle Target Wt (TVTWT)	kg	2533.0	A+B+C

TEST VEHICLE ATTITUDES

Condition	Units	As Delivered	As Tested	Fully Loaded
Driver Door Sill Angle (front-to-rear)	Deg	-1.0	-0.5	-0.3
Front Passenger Sill Angle (front-to-rear)	Deg	-1.8	-1.3	-1.2
Front Bumper Angle (left-to-right)	Deg	-0.2	-0.2	-0.3
Rear Bumper Angle (left-to-right)	Deg	0.0	0.0	-0.2
Vehicle CG (Aft of Front Axle)	mm	1613	1711	1721
Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline)	mm	24	21	31

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Weight of Ballast in Cargo Area	kg	150.0
Weight of Vehicle Components Removed	kg	14.0

Vehicle components removed to make Target Vehicle Test Weight:

Spare tire tools (5.0 kg), Non-struck side door panels (9.0 kg)

TEST VEHICLE IMPACT POINT DATA

Measurement Description	Units	Value
Vertical Impact Reference Line (Aft of Front Axle)	mm	1258
Actual Impact Point (Aft of Front Axle)	mm	1277
Impact Point Difference (- forward/+ rearward)	mm	19

DATA SHEET NO. 2

SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEMS DATA

Test Vehicle: 2011 Ford F-150 XLT SuperCab 2-Door Truck

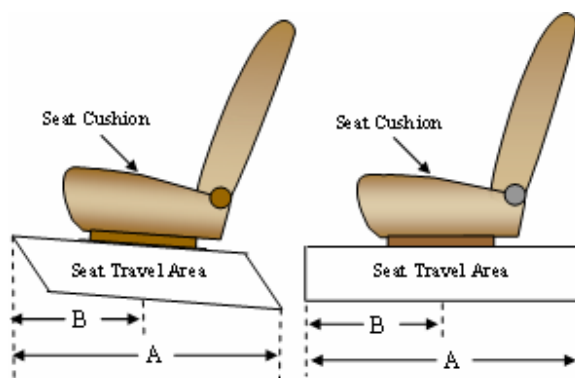
NHTSA No. MB0209

Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole

Test Date: 02/10/11

SEAT FORE / AFT POSITIONING

The total seat travel is measured from the forward most possible position to the rearmost possible position with the seat set at mid angle and lowest height. The driver's seat is set to the forward most position where the ATD will not contact any interior panels at the mid angle and mid height positions.

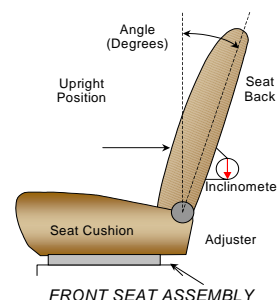


SEAT FORE/AFT POSITIONS

Seating Position	Total Fore-Aft Travel	Placed in Position	Cushion Range	Placed in Position
Driver Seat	246 mm	0 mm	11.6 - 22.2	16.9
Front Passenger Seat	238 mm	0 mm	Fixed	Fixed
Rear Seat - Struck Side	Fixed	Fixed	Fixed	Fixed
Rear Seat - Non-Struck Side	Fixed	Fixed	Fixed	Fixed

SEAT BACK ANGLE POSITIONING

The procedure for the driver is as follows: the seat back is set to level the driver ATD's (SID-IIs) head transverse instrumentation platform; seat back angle is measured at the seat back using a digital inclinometer. Detent zero (0) is the full forward position.



SEAT BACK ANGLE POSITIONS

Seating Position	Degrees	Detent
Driver Seat Back Angle w/Seated Dummy	12.8	1
Front Passenger Seat Back Angle	12.8	1
Struck Side Rear Seat Back Angle	2.6	Fixed
Non-Struck Side Rear Seat Back Angle	2.6	Fixed

SEAT BELT UPPER ANCHORAGE POSITIONING

The seat belt upper anchorage is positioned to the manufacturer's design position for a 5th percentile adult female ATD. Position zero (0) is the uppermost position.

SEAT BELT UPPER ANCHORAGES

Seating Position	Total No. of Positions	Placed in Position
Driver Seat	4	0

DATA SHEET NO. 2 ... (CONTINUED)

SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEMS DATA

Test Vehicle: 2011 Ford F-150 XLT SuperCab 2-Door Truck

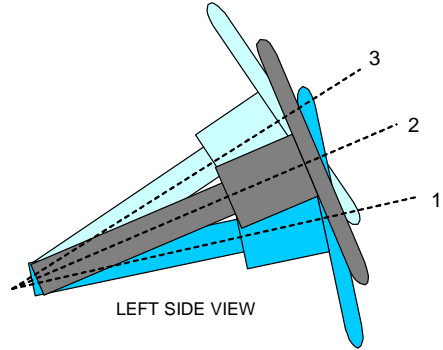
NHTSA No. MB0209

Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole

Test Date: 02/10/11

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. A digital inclinometer is used to measure a plate placed across the rim of the steering wheel for angle. The telescoping steering wheel travel is fixed.



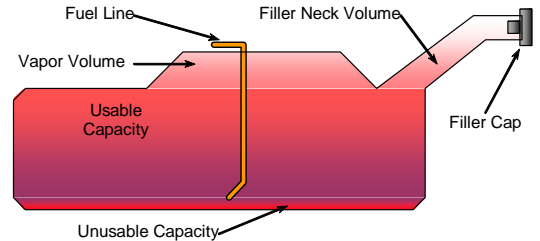
STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONS

	Angle (°)	Fore-Aft Position (mm)
Lowermost Position, No. 1	18.7	
Geometric Center Position, No. 2	20.5	
Uppermost Position, No. 3	22.3	
Steering Wheel Travel	3.6	0
Test Position	20.5	

FUEL PUMP

The test vehicle is equipped with an electric fuel pump. The fuel pump is activated when the ignition is turned to the "ON" position and 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 rear seat and the bed on the left side of the vehicle.



VEHICLE FUEL TANK ASSEMBLY

FUEL CAPACITY DATA

Description	Liters
Usable Capacity of "Standard Tank"	98.41
Usable Capacity of "Optional Tank"	136.26
Usable Capacity of Standard Tank as Specified In Owner's Manual	
Usable Capacity of Optional Tank as Specified in Owner's Manual	
92 - 94% of Usable Capacity	90.54 to 92.51
Actual Amount of Stoddard Solvent Used	91.52
1/3 of Usable Capacity	32.80

DATA SHEET NO. 3

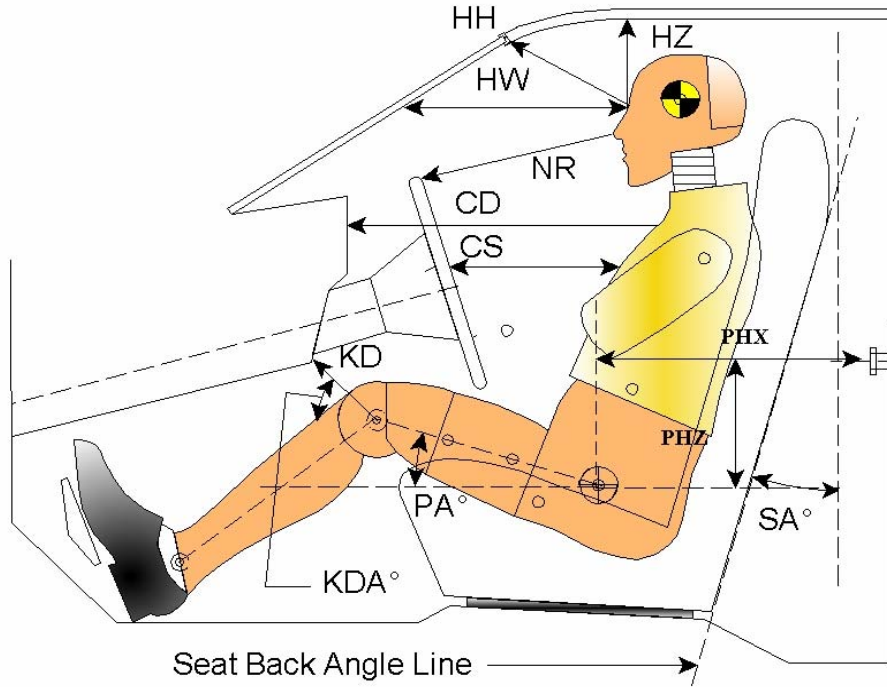
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Ford F-150 XLT SuperCab 2-Door Truck

NHTSA No. MB0209

Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole

Test Date: 02/10/11



DUMMY LONGITUDINAL CLEARANCE DIMENSIONS (S/N: 299)

Driver Code	Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	374	38.2
HW	Head to Windshield	669	
HZ	Head to Roof	263	
NR	Nose to Rim	275	5.3
CD	Chest to Dash	478	12.3
CS	Chest to Steering Wheel	258	8.0
KDL / KDAL°	Left Knee to Dash	136	27.1
KDR / KDAR°	Right Knee to Dash	127	35.1
PA°	Pelvic Angle		20.5
PHX	H-Point to Striker (x-direction)	510	
PHZ	H-Point to Striker (z-direction)	32	
SA°	Seat Back Angle		12.8

DATA SHEET NO. 4

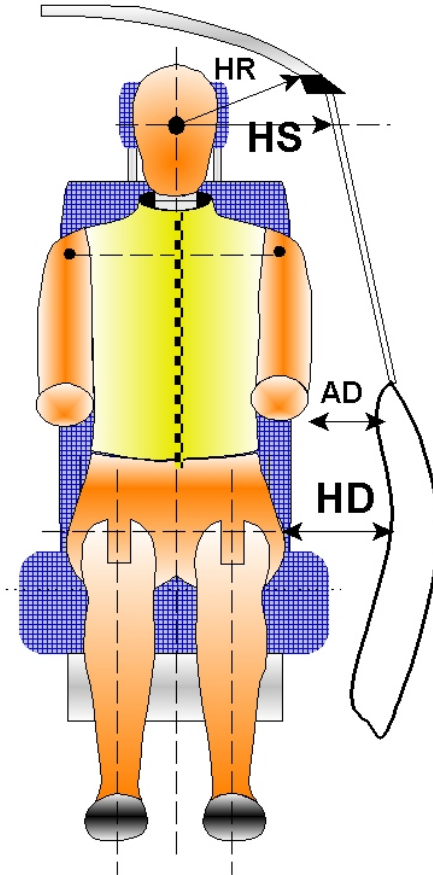
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Ford F-150 XLT SuperCab 2-Door Truck

NHTSA No. MB0209

Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole

Test Date: 02/10/11



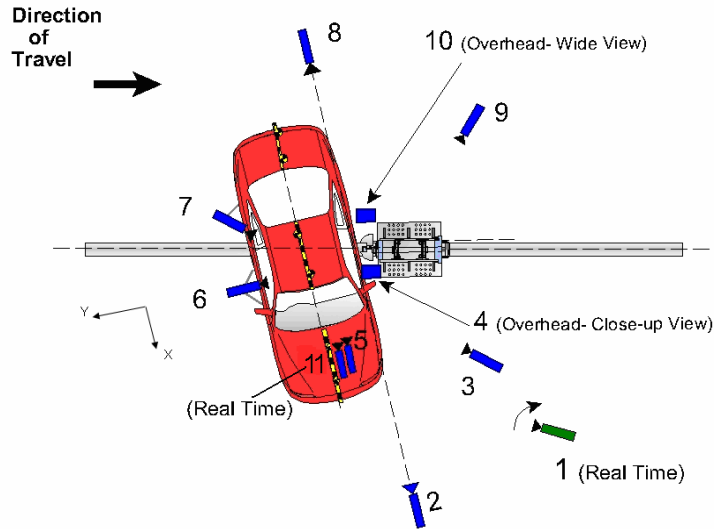
DUMMY LATERAL CLEARANCE DIMENSIONS (S/N: 299)

Code	Measurement Description	Units	Driver
HR	Head to Side Header	mm	329
HS	Head to Side Window	mm	383
AD	Arm to Door	mm	174
HD	H-Point to Door	mm	168

DATA SHEET NO. 5

CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2011 Ford F-150 XLT SuperCab 2-Door Truck NHTSA No. MB0209
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole Test Date: 02/10/11



Reference: +X = Forward of Vehicle (from Point of Impact)
 +Y = Right of Vehicle (from Point of Impact)
 +Z = Down (from Ground)

CAMERA LOCATIONS

Camera No.	View	Coordinates (m)			Lens (mm)	Film Speed (fps)
		X*	Y*	Z*		
1	Real Time Pan View of Impact	8.89	46.57	-3.04		30
2	Front Ground Level - Impact View	8.34	-0.05	-0.93	24	1000
3	Impact Side 45° - Forward Pole View	4.10	-2.15	-1.15	8.5	1000
4	Overhead Close-Up View of Impact	0.00	0.00	-5.79	12.5	1000
5	On-Board - Dummy Front View	1.73	0.54	-1.67	35	400
6	On-Board - Dummy Side View	-0.12	1.70	-1.35	14	1000
7	On-Board - Dummy Rear Oblique View	-0.91	1.75	-1.43	20	1000
8	Rear Ground Level - Impact View	-6.12	-6.23	-0.96	24	1000
9	Impact Side 45° - Rearward Pole View	-8.02	0.04	-1.01	35	1000
10	Overhead Wide View of Impact	-0.06	0.22	-5.79	14	1000
11	Real Time Dummy Front View	1.76	0.59	-1.69		30

* All measurements accurate to ± 3 mm

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

INSTRUMENTATION

	Number of Channels
Driver Dummy	16
Vehicle Structure	21
Pole Load Cells	8
Contact Switches	3
Airbag Timing Sensor	2
Total No. of Data Channels	50

DATA SHEET NO. 6

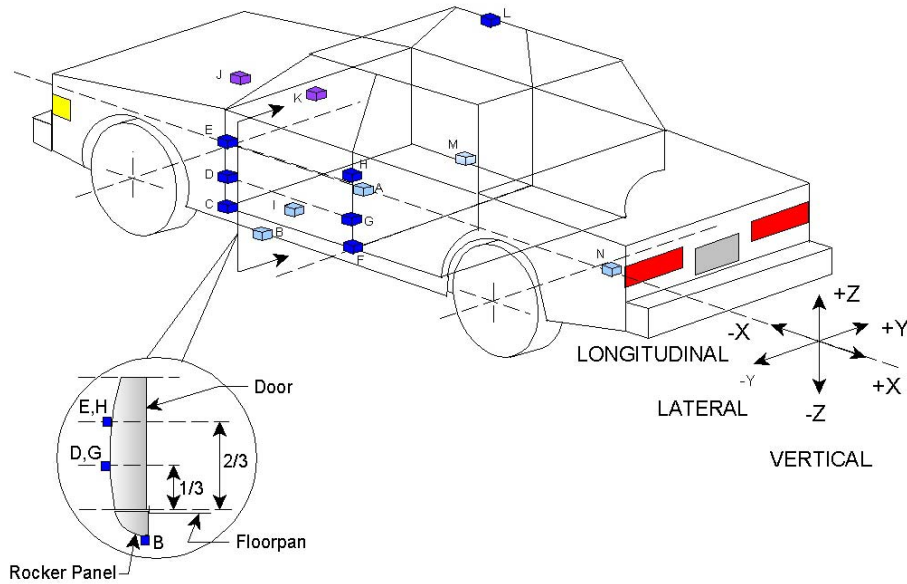
VEHICLE ACCELEROMETER DATA

Test Vehicle: 2011 Ford F-150 XLT SuperCab 2-Door Truck

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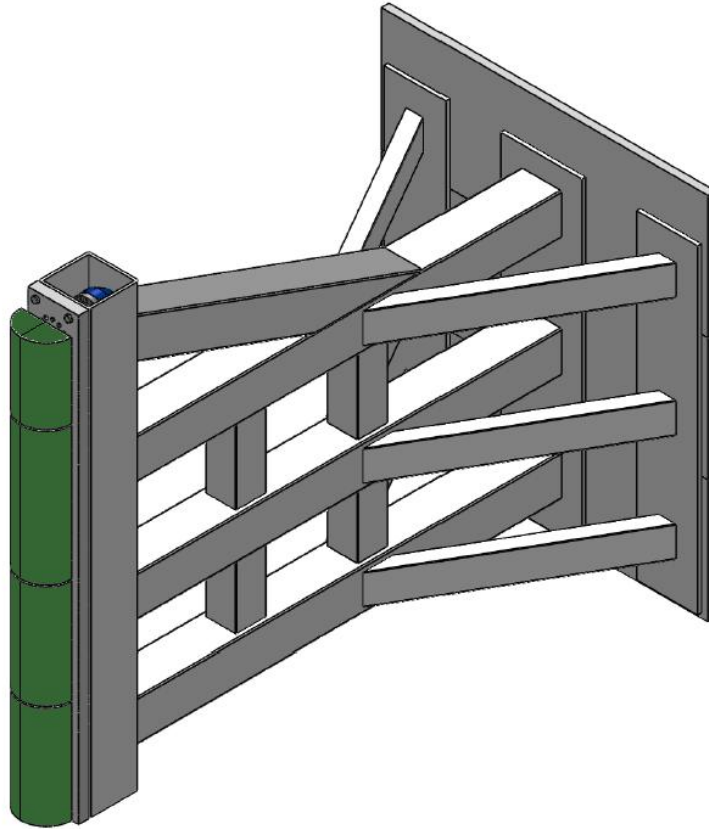
VEHICLE ACCELEROMETER LOCATIONS

	Sensor Description	Coordinates (mm)		
		X	Y	Z
A	Vehicle CG Accelerometer	3008	0	-599
	Vehicle CG ARS	3008	0	-599
B	Left Floor Sill	3439	-618	-291
C	A-Pillar Sill	4287	-922	-574
D	A-Pillar Lower	4287	-922	-736
E	A-Pillar Mid	4287	-922	-1040
F	B-Pillar Sill			
G	B-Pillar Lower			
H	B-Pillar Mid			
I	Driver Seat	3470	-635	-618
J	Engine Top	4741	88	-1060
K	Firewall	4635	295	-1105
L	Right Roof Sill	3195	626	-1814
M	Right Floor Sill	3269	869	-550
N	Rear Floorpan	1065	495	-775

Reference: X = + Forward
 Y = + To Right
 Z = + Down

DATA SHEET NO. 7
RIGID POLE LOAD CELL DATA

Test Vehicle: 2011 Ford F-150 XLT SuperCab 2-Door Truck NHTSA No. MB0209
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole Test Date: 02/10/11



RIGID POLE LOAD CELL LOCATIONS

ID	Units	Height From Ground
1	mm	87
2	mm	468
3	mm	648
4	mm	978
5	mm	1168
6	mm	1651
7	mm	1816
8	mm	2057

DATA SHEET NO. 8

POST-TEST OBSERVATIONS

Test Vehicle: 2011 Ford F-150 XLT SuperCab 2-Door Truck NHTSA No. MB0209

Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole Test Date: 02/10/11

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Driver Dummy
Dummy Type/Serial No.	P572V (SID-IIs) / Serial No. 299
Head Contact	Curtain Airbag, Head Restraint
Upper Torso Contact	Torso/Pelvis Airbag
Lower Torso Contact	Torso/Pelvis Airbag, Door Panel
Left Knee Contact	Door Panel, Right Knee
Right Knee Contact	Left Knee

POST-TEST DOOR OPENING AND SEAT TRACK INFORMATION

Description	Front	Rear
Left Side Door Opening	Jammed shut	Jammed shut
Right Side Door Opening	Remained closed and operational	Remained closed and operational
Seat Movement	None	None
Seatback Failure	No	No

POST-TEST STRUCTURAL OBSERVATIONS

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

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear (Passenger) Occupant Location 4	
	Installed	Deployed	Installed	Deployed
Frontal Airbag	Yes	No	No	
Knee Airbag	No		No	
Side Airbag 1 (Torso/Pelvis)	Yes	Yes	No	
Side Airbag 2 (Curtain)	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes	Yes	No	
Other				

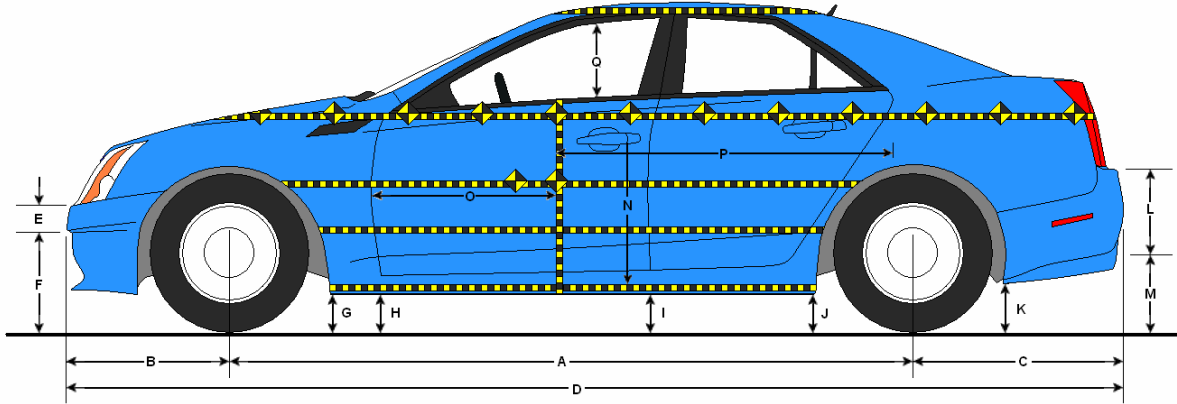
VEHICLE SPEED AND IMPACT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset From Vertical Reference Line	mm	+/- 38	19 (Right)
Trap No. 1 Velocity (Primary)	km/h	30.4 to 33.0	32.7
Trap No. 2 Velocity (Redundant)	km/h	30.4 to 33.0	32.7

DATA SHEET NO. 9

VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2011 Ford F-150 XLT SuperCab 2-Door Truck NHTSA No. MB0209
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole Test Date: 02/10/11



LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Description	Pre-Test	Post-Test	Difference
A	Vehicle Wheelbase	3673	3597	-76
B	Front Axle to FSOV	976	1007	31
C	Rear Axle to RSOV	1237	1247	10
D1	Total Vehicle Length at Left Side	5055	4964	-91
D2	Total Vehicle Length at Centerline	5871	5850	-21
D3	Total Vehicle Length at Right Side	5061	5060	-1
E	Front Bumper Thickness	241	242	1
F	Front Bumper Bottom to Ground	385	423	38
G	Sill Height at Front Wheel Well	408	415	7
H	Sill Height at Front Door Leading Edge	410	426	16
I	Sill Height at B-Pillar	432	447	15
J1	Sill Height at Rear Wheel Well	437	466	29
J2	Pinch Weld Height at Rear Wheel Well	419	431	12
K	Sill Aft of Rear Wheel Well	481	538	57
L	Rear Bumper Thickness	213	210	-3
M	Rear Bumper Bottom to Ground	491	518	27
N	Sill Height to Window Bottom Sill	706	700	-6
O	Front Door Leading Edge to Impact CL	650	525	-125
P	Rear Door Trailing Edge to Impact CL	1300	1178	-122
Q	Front Window Opening	533	558	25
R	Right Side Length	5061	5060	-1
S	Left Side Length	5055	4964	-91
T	Vehicle Width at B-Pillar	1989	1922	-67

* All measurements accurate to ± 3 mm

DATA SHEET NO. 10

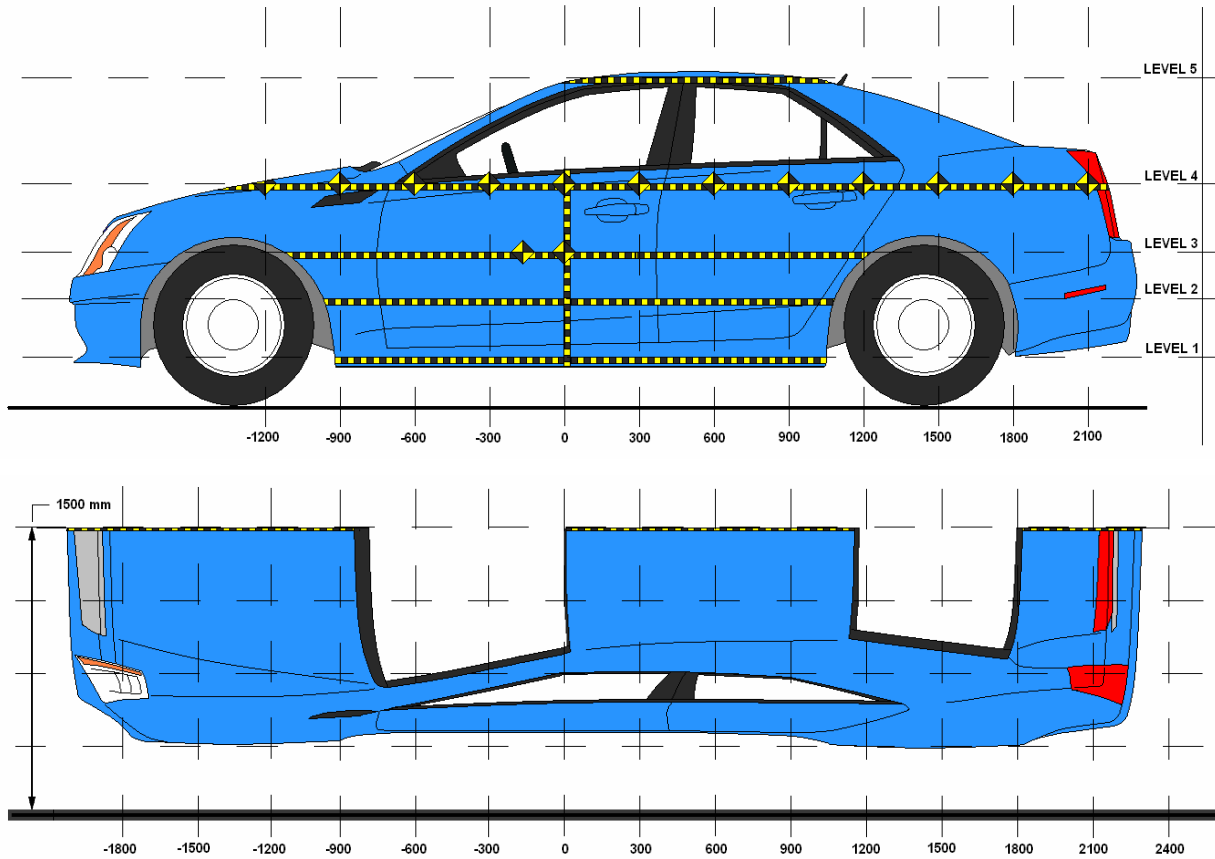
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Ford F-150 XLT SuperCab 2-Door Truck

NHTSA No. MB0209

Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole

Test Date: 02/10/11



NOTE: All measurements are in millimeters (mm)

Level	Description	Height Above Ground (mm)
1	Sill Top Height	499
2	Occupant H-Point Height	901
3	Mid-Door Height	865
4	Window Sill Height	1194
5	Window Top Height	1804

DATA SHEET NO. 10 ... (CONTINUED)

VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Ford F-150 XLT SuperCab 2-Door Truck

NHTSA No. MB0209

Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole

Test Date: 02/10/11

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900		531	526	574			672	661	735			141	135	161	
-750	554	542	543	564		714	684	687	715		160	142	144	151	
-600	552	538	539	559		773	741	745	725		221	203	206	166	
-450	548	532	534	552		832	818	822	797		284	286	288	245	
-300	546	527	529	549		915	895	897	878		369	368	368	329	
-150	543	524	525	543		996	990	992	980		453	466	467	437	
0	541	520	522	539	788	1092	1092	1092	1086	1131	551	572	570	547	343
150	538	518	520	535	796	1074	1079	1077	1076	1158	536	561	557	541	362
300	536	517	518	532	794	956	951	951	956	1099	420	434	433	424	305
450	534	516	518	529	796	837	825	824	840	1046	303	309	306	311	250
600	532	516	518	529	797	748	749	757	738	1011	216	233	239	209	214
750	533	516	518	529	798	730	720	723	737	997	197	204	205	208	199
900	534	516	518	528	800	717	705	709	721	989	183	189	191	193	189
1050	535	517	519	529	798	711	690	695	706	980	176	173	176	177	182
1200	537	519	520	528	796	675	673	677	687	971	138	154	157	159	175
1350	543	527	528	536		624	622	623	643		81	95	95	107	
1500	541	525	527	533		617	617	617	637		76	92	90	104	
1650	540	524	526	532		611	612	612	633		71	88	86	101	
1800	539	525	526	532		605	608	607	628		66	83	81	96	
1950		513	510	532			592	587	624			79	77	92	
2100		497	498	531			570	570	619			73	72	88	
2250				531					615					84	
2400				532					611					79	
2550				535											
2700															
2850															

MAXIMUM CRUSH DATA

	Units	Level 1	Level 2	Level 3	Level 4	Level 5
Maximum Crush	mm	551	572	570	547	362
Distance From Impact	mm	0	0	0	0	150

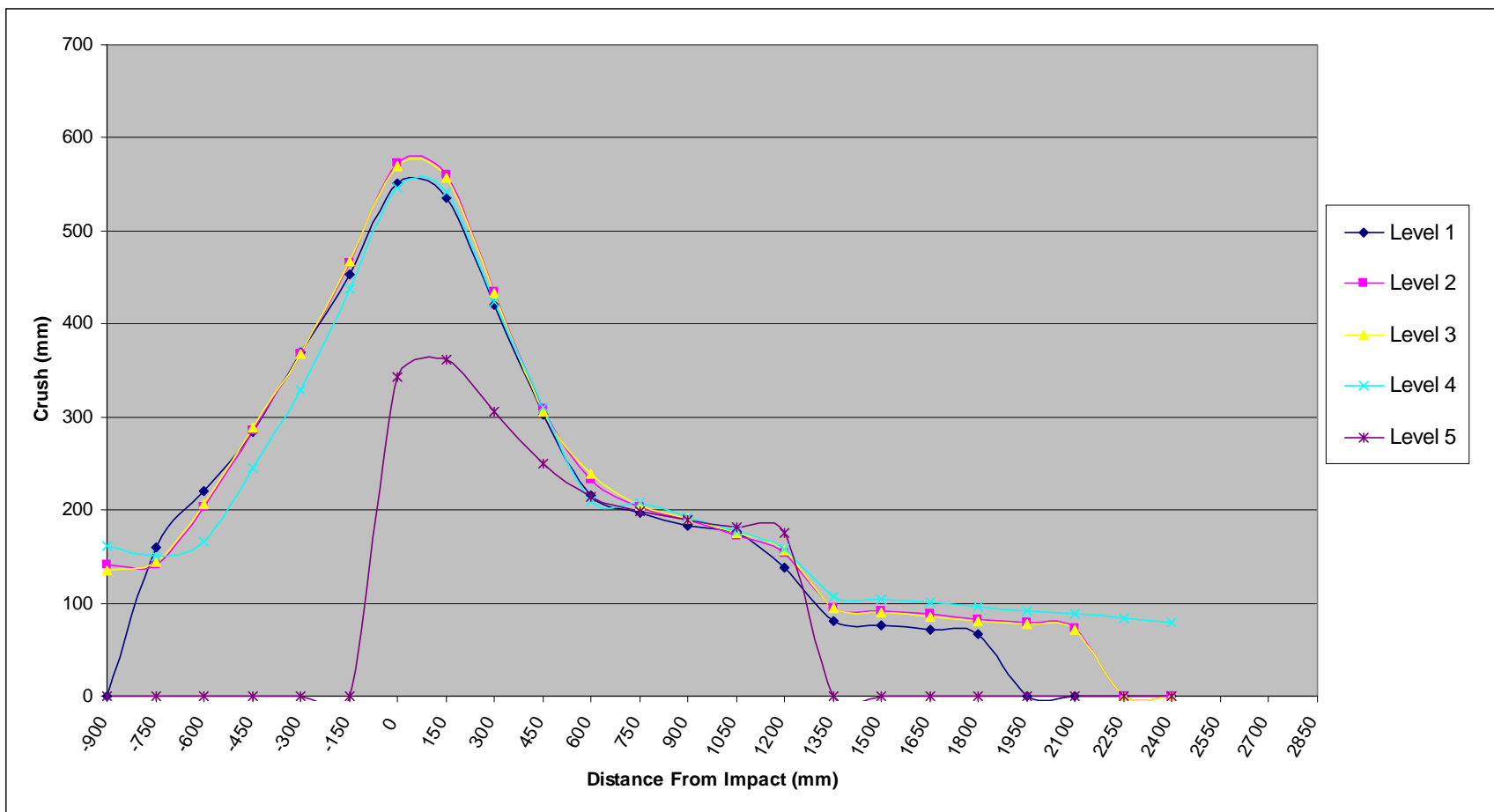
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VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2011 Ford F-150 XLT SuperCab 2-Door Truck

NHTSA No. MB0209

Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole

Test Date: 02/10/11



DATA SHEET NO. 11

FMVSS NO. 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

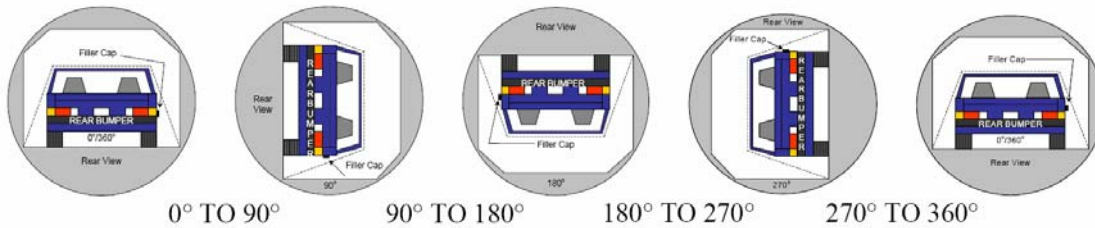
Test Vehicle: 2011 Ford F-150 XLT SuperCab 2-Door Truck NHTSA No. MB0209

Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole Test Date: 02/10/11

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 10.6° C Test Time: 11:33 AM

- A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable = 1 oz.)
- B. For the 5 minute period after motion ceases: 0 oz.
(Maximum allowable = 5 oz.)
- C. For the following 25 minutes: 0 oz.
(Maximum allowable = 1 oz./minute)
- D. Spillage Details: No spillage occurred



SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	84	300	384
90° To 180°	81	314	395
180° To 270°	77	302	379
270° To 360°	82	300	382

FMVSS 301 SPILLAGE TABLE

Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0° To 90°	0			
90° To 180°	0	0		
180° To 270°	0	0		
270° To 360°	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. 12

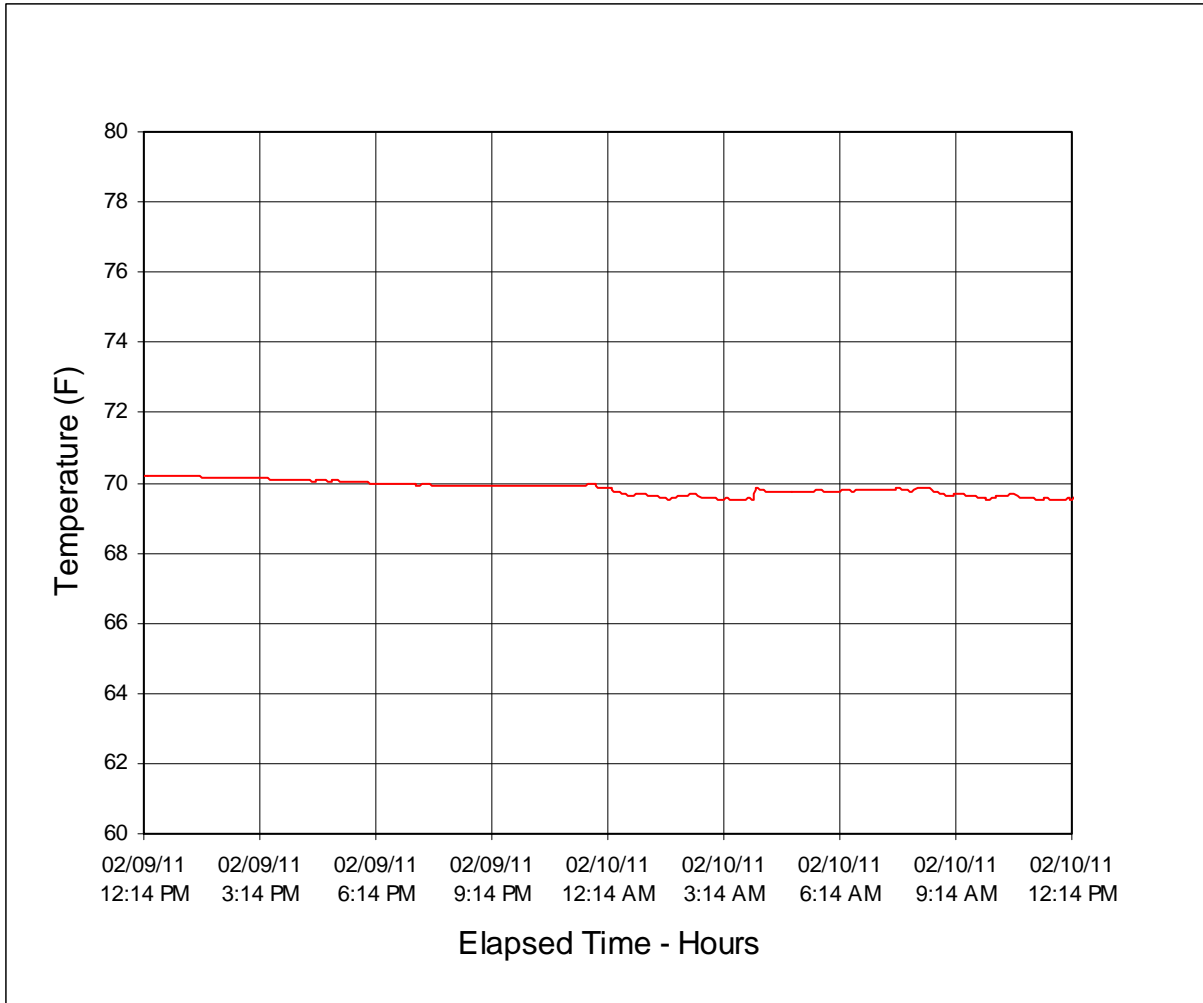
DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2011 Ford F-150 XLT SuperCab 2-Door Truck

NHTSA No. MB0209

Test Program: 32 km/h (20 mph) Side Impact NCAP 75°Rigid Pole

Test Date: 02/10/11



**APPENDIX A
PHOTOGRAPHS**

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FIGURE 1. As-Delivered Right Front Three-Quarter View of Test Vehicle



FIGURE 2. As-Delivered Left Rear Three-Quarter View of Test Vehicle



FIGURE 3. Pre-Test Frontal View of Test Vehicle



FIGURE 4. Post-Test Frontal View of Test Vehicle



FIGURE 5. Pre-Test Left Front Three-Quarter View of Test Vehicle



FIGURE 6. Post-Test Left Front Three-Quarter View of Test Vehicle



FIGURE 7. Pre-Test Left Side View of Test Vehicle



FIGURE 8. Post-Test Left Side View of Test Vehicle



FIGURE 9. Pre-Test Left Rear Three-Quarter View of Test Vehicle



FIGURE 10. Post-Test Left Rear Three-Quarter View of Test Vehicle



FIGURE 11. Pre-Test Rear View of Test Vehicle



FIGURE 12. Post-Test Rear View of Test Vehicle



FIGURE 13. Pre-Test Right Side View of Test Vehicle



FIGURE 14. Post-Test Right Side View of Test Vehicle



FIGURE 15. Pre-Test Overhead View of Test Vehicle and Pole



FIGURE 16. Post-Test Overhead View of Test Vehicle and Pole



FIGURE 17. Pre-Test Left Side View of Pole
Positioned Against Side of Vehicle at Impact Point



FIGURE 18. Pre-Test Right Side View of Pole
Positioned Against Side of Vehicle at Ideal Impact Point



FIGURE 19. Pre-Test Close-Up View of Impact Point Target



FIGURE 20. Post-Test Close-Up View of Impact Point Target Showing Impact Location



FIGURE 21. Pre-Test Front Close-Up View of Dummy



FIGURE 22. Post-Test Front Close-Up View of Dummy



FIGURE 23. Pre-Test Left Side View of Dummy Showing Belt, Chalking, and Contact Switches



FIGURE 24. Pre-Test Left Side View of Dummy Shoulder and Driver Door Top View



FIGURE 25. Post-Test Left Side View of Dummy Shoulder and Door Top View



FIGURE 26. Pre-Test Frontal View of Seat Back Prior to Dummy



FIGURE 27. Pre-Test Frontal View of Dummy Head and Shoulders in Relation to Head Restraint



FIGURE 28. Pre-Test Frontal View of Seat Pan Prior to Dummy Positioning



FIGURE 29. Pre-Test Overhead View of Dummy Thighs on Seat Pan



FIGURE 30. Pre-Test View of Dummy's Neck Showing Position of Adjustable Neck Bracket

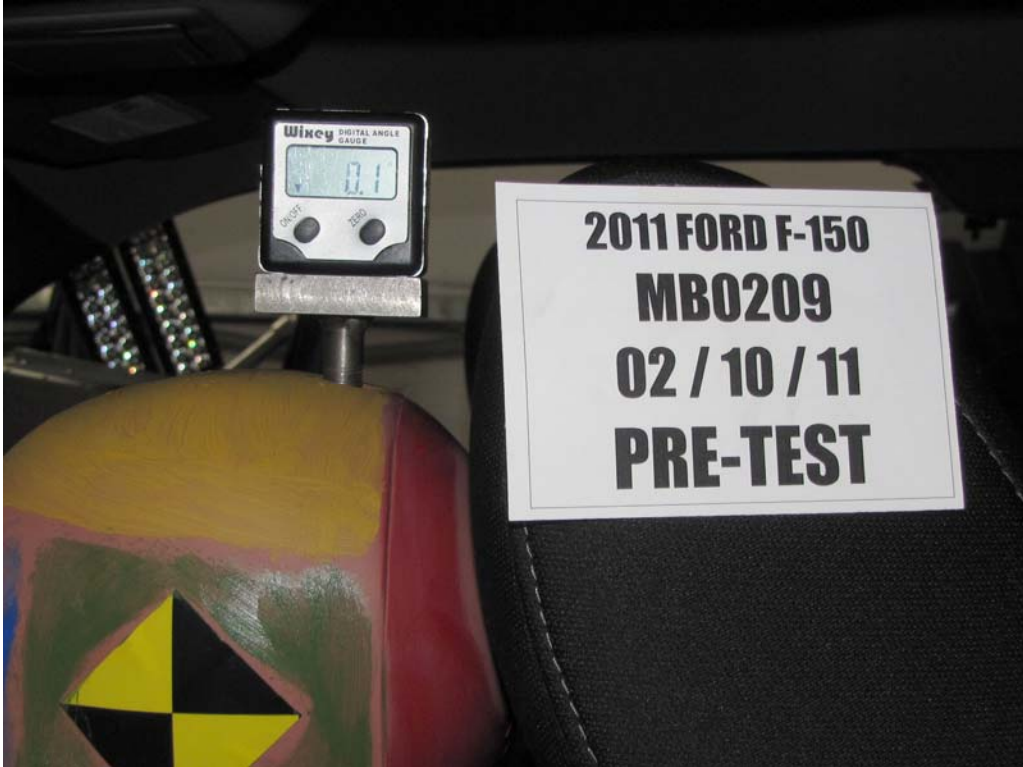


FIGURE 31. Pre-Test View of Dummy's Head Showing Dummy's Head Is Level



FIGURE 32. Pre-Test Placement of Dummy's Feet



FIGURE 33. Pre-Test View of Belt Anchorage for Dummy



FIGURE 34. Pre-Test Left Side View of Steering Wheel



FIGURE 35. Pre-Test View of Parking Brake



FIGURE 36. Pre-Test Close-Up Left Side View of Driver Seat Track



FIGURE 37. Pre-Test Close-Up Left Side View of Driver Seat Back



FIGURE 38. Pre-Test Close-Up View of Driver Seat Back or Head Restraint



FIGURE 39. Pre-Test Driver Dummy and Door Clearance

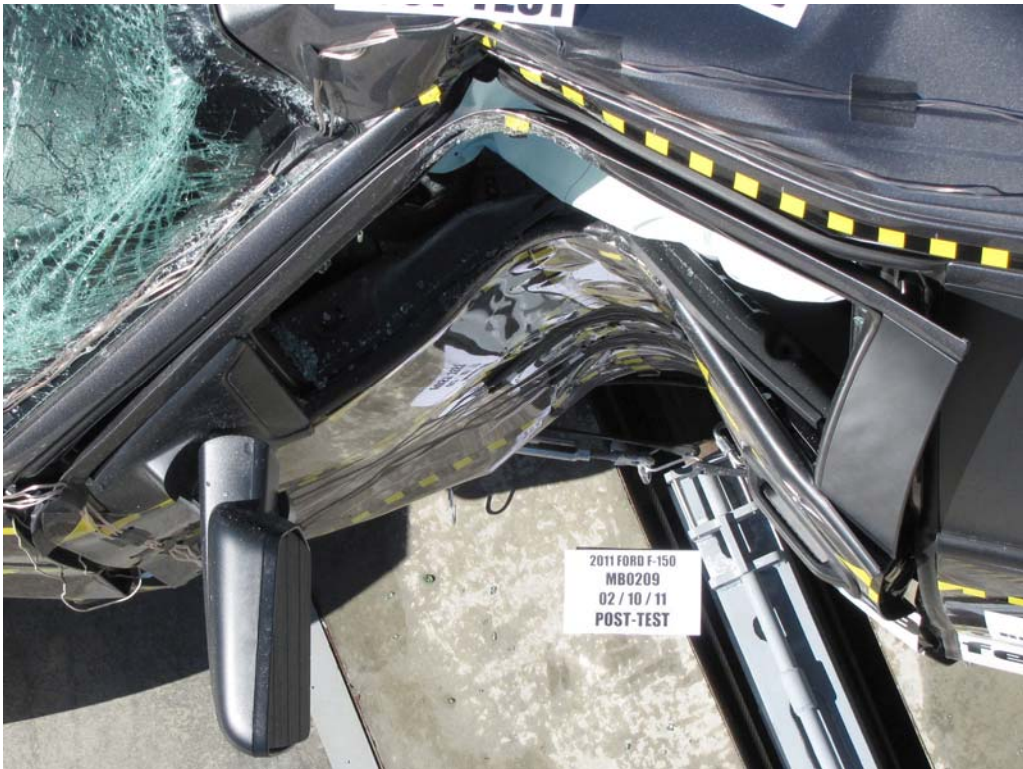


FIGURE 40. Post-Test Driver Dummy and Door Clearance



FIGURE 41. Pre-Test Right Side View of Dummy and Front Seat Occupant Compartment



FIGURE 42. Post-Test Right Side View of Dummy and Front Seat Occupant Compartment



FIGURE 43. Pre-Test Inner Driver Door Panel View



FIGURE 44. Post-Test Inner Driver Door Panel View
Showing Dummy Contact Locations



FIGURE 45. Post-Test Dummy Close-Up Head Contact with Vehicle Interior View



FIGURE 46. Post-Test Dummy Close-Up Head Contact with Side Airbag View

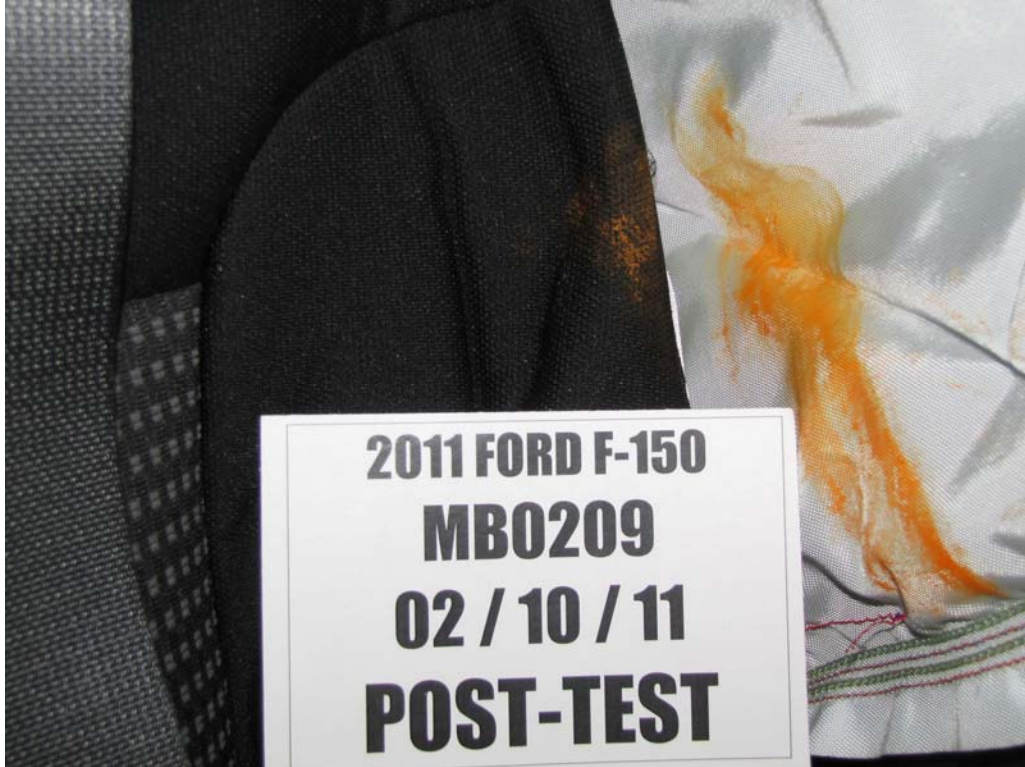


FIGURE 47. Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View



FIGURE 48. Post-Test Dummy Close-Up Torso Contact with Side Airbag View



FIGURE 49. Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View



FIGURE 50. Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View



FIGURE 51. Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



FIGURE 52. Post-Test View of Fuel Filler Cap or Fuel Filler Neck



FIGURE 53. Close-Up View of Vehicle's Certification Label



FIGURE 54. Close-Up View of Vehicle's Tire Information Placard



FIGURE 55. Pre-Test Pole Barrier Front View



FIGURE 56. Post-Test Pole Barrier Front View



FIGURE 57. Pre-Test Pole Barrier Side View



FIGURE 58. Post-Test Pole Barrier Side View

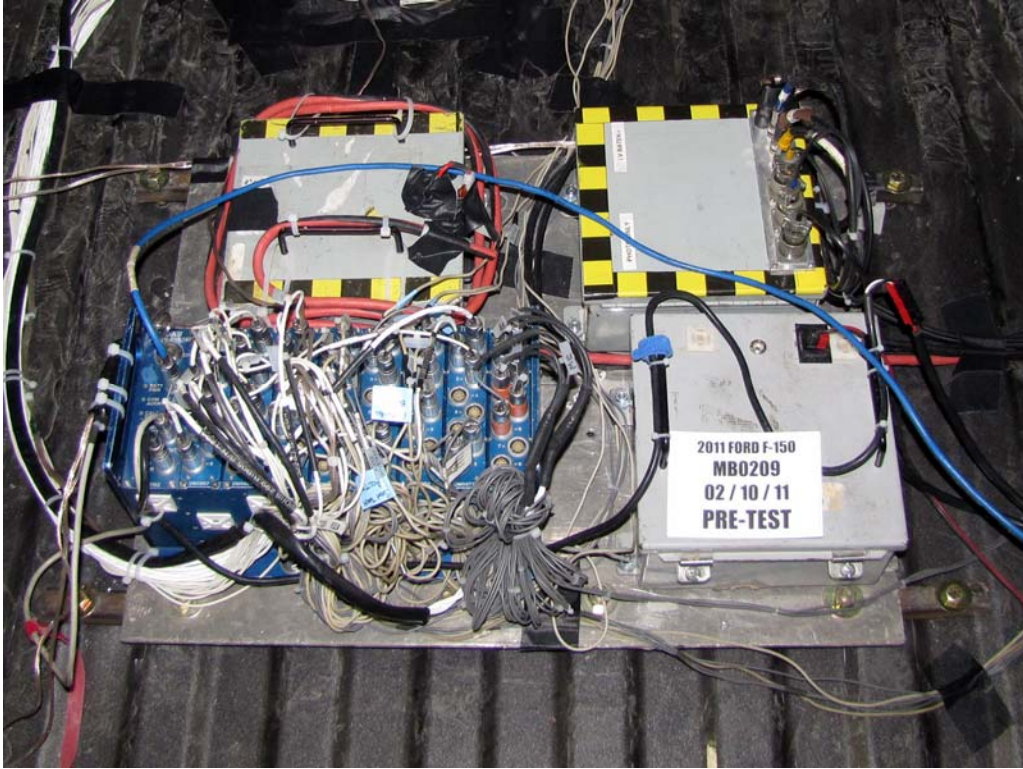


FIGURE 59. Pre-Test Ballast View



FIGURE 60. Post-Test Primary and Redundant Speed Trap Read-Out



FIGURE 61. FMVSS No. 301-305 Rollover 0 Degrees



FIGURE 62. FMVSS No. 301-305 Rollover 90 Degrees



FIGURE 63. FMVSS No. 301-305 Rollover 180 Degrees

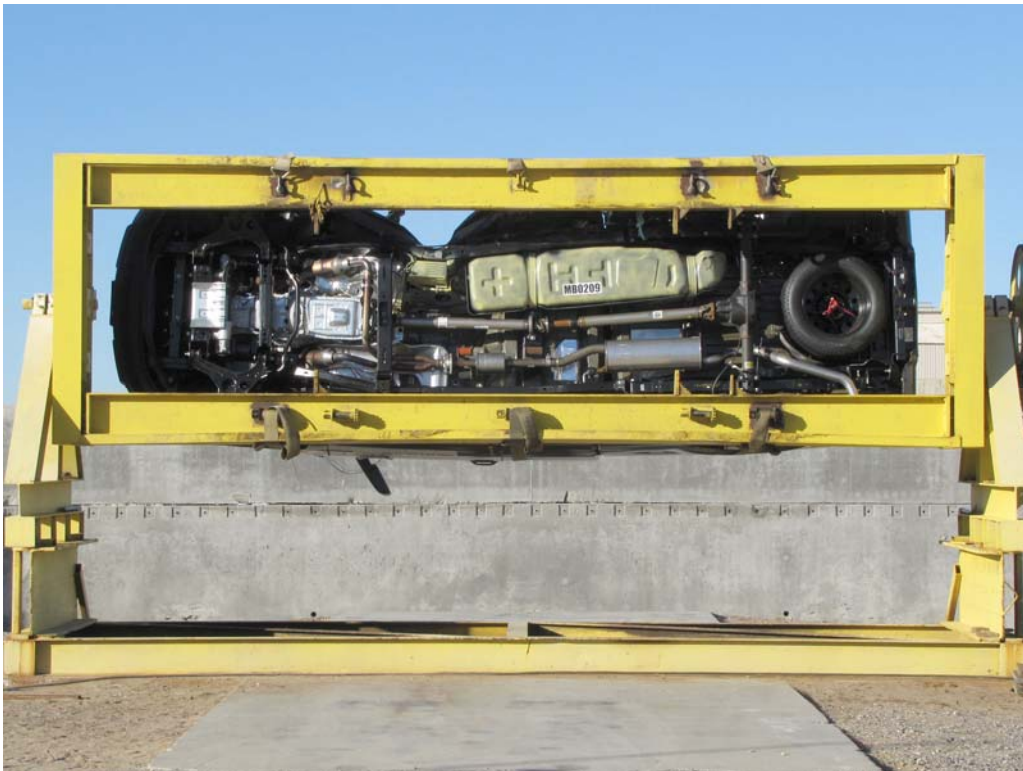


FIGURE 64. FMVSS No. 301-305 Rollover 270 Degrees



FIGURE 65. FMVSS No. 301-305 Rollover 360 Degrees



FIGURE 66. Impact Event

APPENDIX B
VEHICLE AND DUMMY RESPONSE DATA PLOTS

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The following additional data for this test can be obtained from the Research and Development section of the NHTSA website. The website can be found at www.NHTSA.dot.gov.

Additional Driver Dummy Instrumentation Data

Driver Head Acceleration (X) Redundant
Driver Head Acceleration (Y) Redundant
Driver Head Acceleration (Z) Redundant
Driver Upper Thorax Rib Deflection (Y)
Driver Middle Thorax Rib Deflection (Y)
Driver Lower Thorax Rib Deflection (Y)
Driver Upper Abdomen Rib Deflection (Y)
Driver Lower Abdomen Rib Deflection (Y)
Driver Shoulder Contact Switch
Driver Torso Contact Switch
Driver Pelvis Contact Switch
Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
Vehicle Center of Gravity Angular Rate About X (Roll)
Vehicle Center of Gravity Angular Rate About Y (Pitch)
Vehicle Center of Gravity Angular Rate About Z (Yaw)

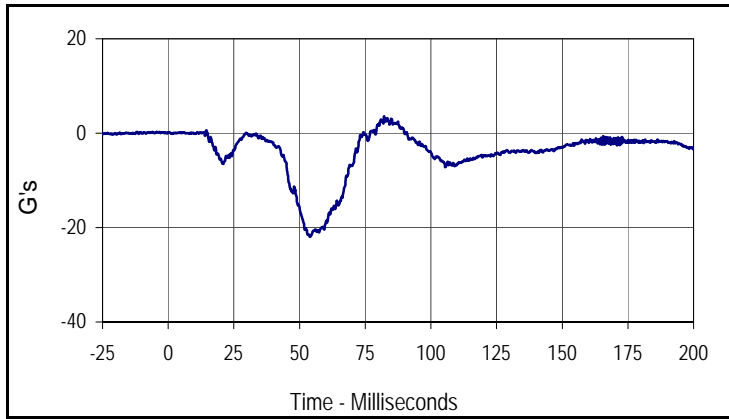
Left Floor Sill Acceleration (Y)
Left A-Pillar Sill Acceleration (Y)
Left Lower A-Pillar Acceleration (Y)
Left Mid A-Pillar Acceleration (Y)
Left B-Pillar Sill Acceleration (Y)
Left Lower B-Pillar Acceleration (Y)
Left Mid B-Pillar Acceleration (Y)
Driver Seat Track at Dummy H-Point Acceleration (Y)
Engine Top Acceleration (X)
Engine Top Acceleration (Y)
Firewall Center Acceleration (Y)
Right Roof at Vertical Impact Reference Line Acceleration (Y)
Right Sill at Vertical Impact Reference Line Acceleration (Y)
Rear Floorpan Behind Rear Axle at Centerline Acceleration (X)
Rear Floorpan Behind Rear Axle at Centerline Acceleration (Y)
Driver Side Airbag Timing
Driver Side Curtain Airbag Timing

Pole Instrumentation Data

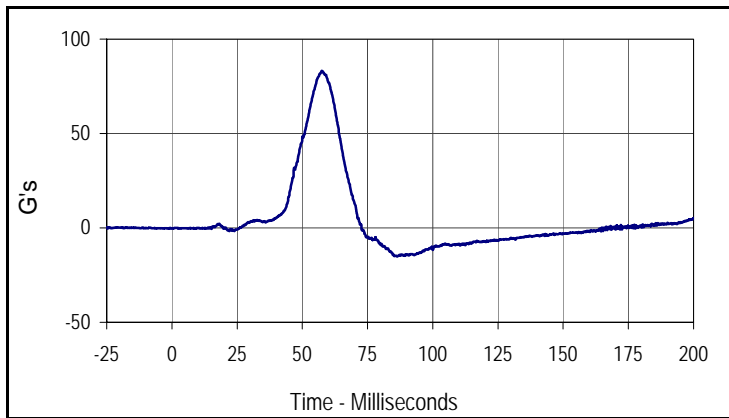
Load Cell Pole Barrier #1 Force (Y)
Load Cell Pole Barrier #2 Force (Y)
Load Cell Pole Barrier #3 Force (Y)
Load Cell Pole Barrier #4 Force (Y)
Load Cell Pole Barrier #5 Force (Y)
Load Cell Pole Barrier #6 Force (Y)
Load Cell Pole Barrier #7 Force (Y)
Load Cell Pole Barrier #8 Force (Y)

Test Vehicle: 2011 Ford F-150 XLT SuperCab 2-Door Truck
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test

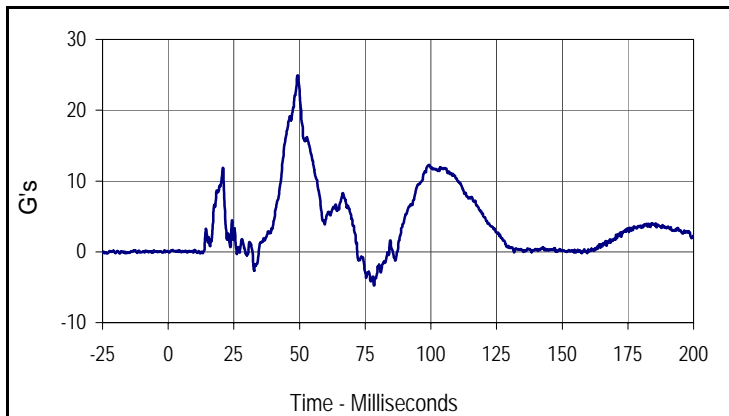
Test Date: 2/10/11
 NHTSA No.: MB0209



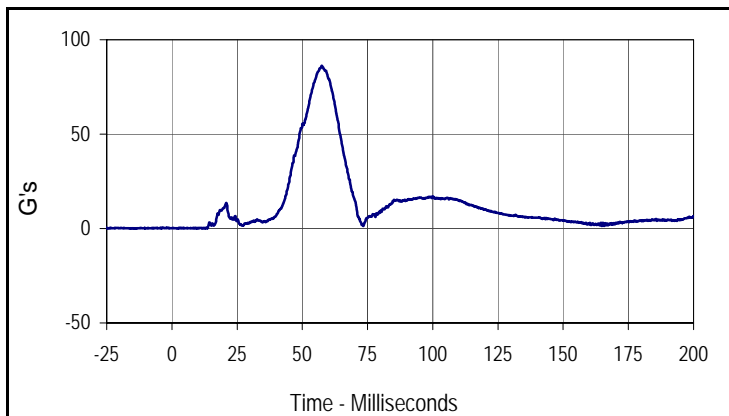
Curve Description			
Driver Head Acceleration X Primary			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
3.6	82.2	-22.0	53.9



Curve Description			
Driver Head Acceleration Y Primary			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
83.2	57.5	-15.0	86.3



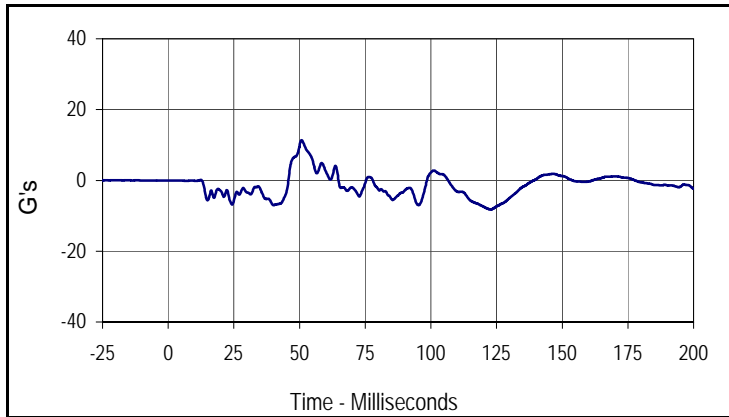
Curve Description			
Driver Head Acceleration Z Primary			
CURNO	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
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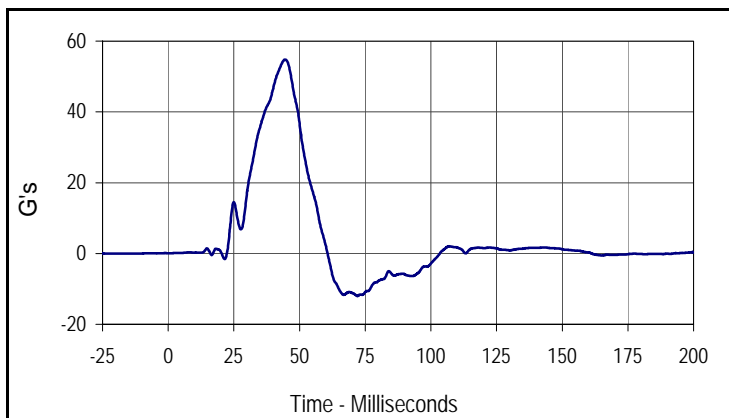
Curve Description			
Driver Head Acceleration Primary Res.			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
86.2	57.4	0.0	12.8

Test Vehicle: 2011 Ford F-150 XLT SuperCab 2-Door Truck
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test

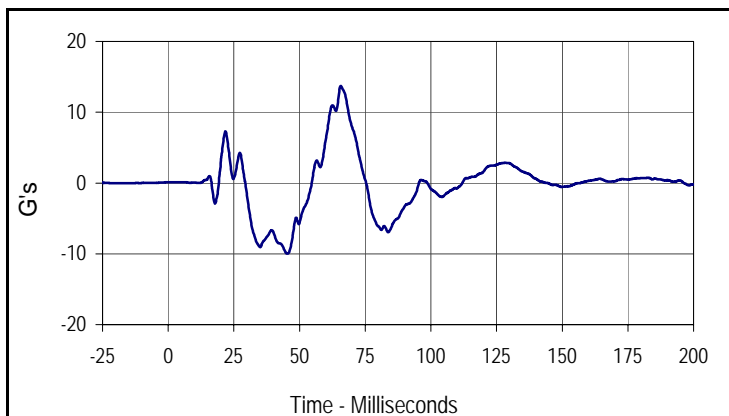
Test Date: 2/10/11
 NHTSA No.: MB0209



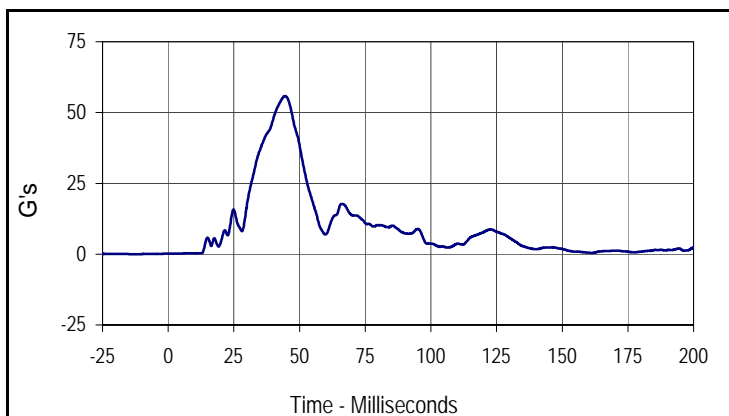
Curve Description			
Driver Lower Spine T12 Acceleration X			
CURNO	Type	SAE Class	Units
012	FIL	180	G's
Max	Time	Min	Time
11.4	50.7	-8.2	122.7



Curve Description			
Driver Lower Spine T12 Acceleration Y			
CURNO	Type	SAE Class	Units
013	FIL	180	G's
Max	Time	Min	Time
54.8	44.5	-12.0	72.0



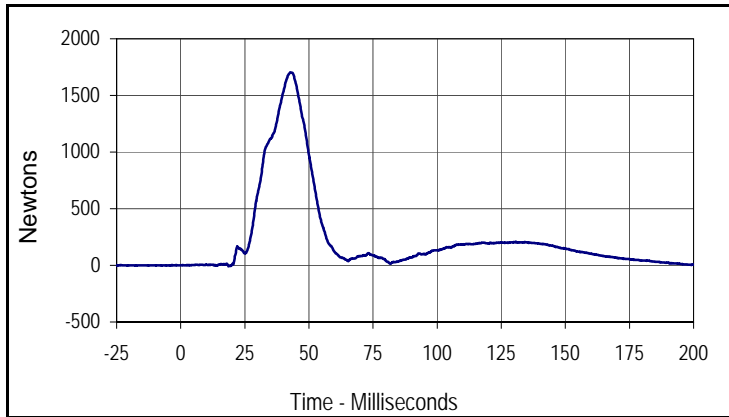
Curve Description			
Driver Lower Spine T12 Acceleration Z			
CURNO	Type	SAE Class	Units
014	FIL	180	G's
Max	Time	Min	Time
13.7	65.7	-10.0	45.3



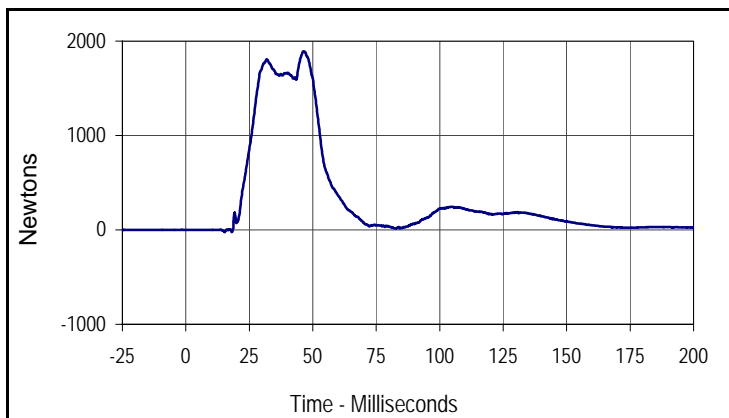
Curve Description			
Driver Lower Spine T12 Acceleration Res.			
CURNO	Type	SAE Class	Units
012	RES	180	G's
Max	Time	Min	Time
55.8	44.5	0.2	0.0

Test Vehicle: 2011 Ford F-150 XLT SuperCab 2-Door Truck
 Test Program: 32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test

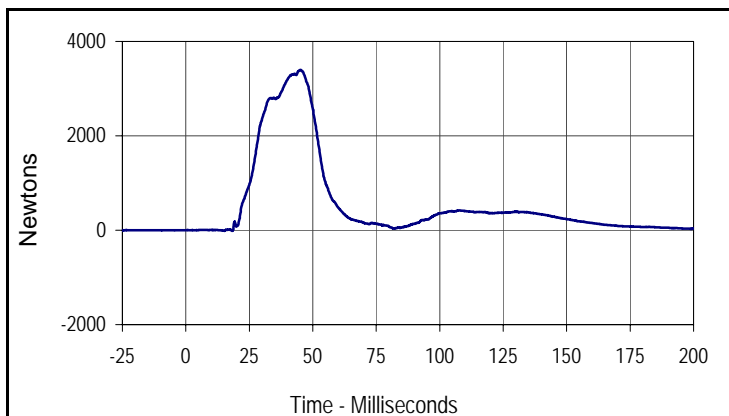
Test Date: 2/10/11
 NHTSA No.: MB0209



Curve Description			
Driver Iliac Wing Force on Impact Side Y			
CURNO	Type	SAE Class	Units
015	FIL	600	Newtons
Max	Time	Min	Time
1702.0	42.8	-7.6	18.7



Curve Description			
Driver Acetabulum Force on Impact Side Y			
CURNO	Type	SAE Class	Units
016	FIL	600	Newtons
Max	Time	Min	Time
1891.2	46.3	-22.7	15.3



Curve Description			
Driver Total Pelvic Force on Impact Side Y			
CURNO	Type	SAE Class	Units
015	SUM	600	Newtons
Max	Time	Min	Time
3399.5	45.2	-16.4	15.2

APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

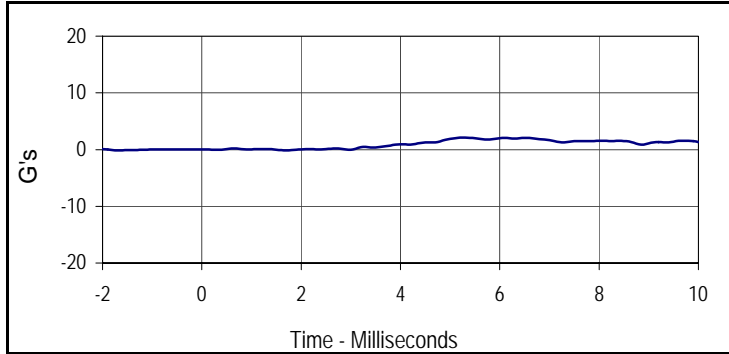
APPENDIX C
PRE-TEST / SID-IIs CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program: SID IIs Lateral Head Drop Calibration
 ATD Serial No.: 299

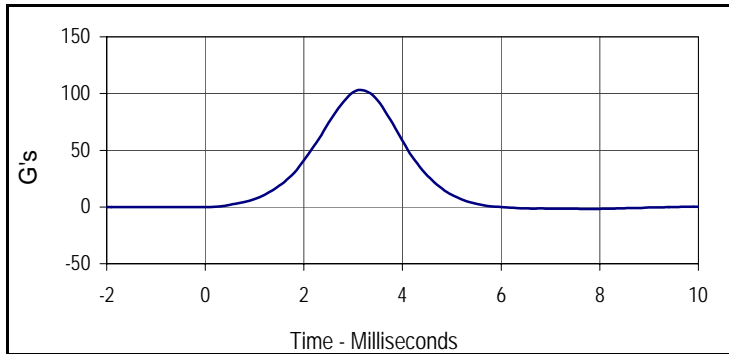
Test Date: 2/9/11
 Test I.D.: HDP02C



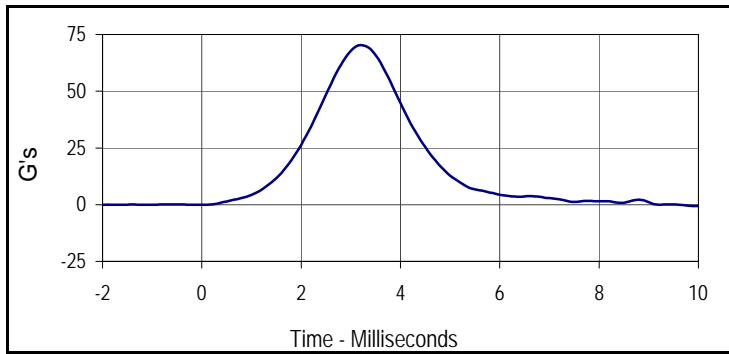
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.41	Pass
Laboratory Relative Humidity	%	10 to 70	24.79	Pass
Peak Resultant Acceleration	G's	115 to 137	124.6	Pass
Peak Longitudinal Acceleration	G's	≤15	2.1	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	13.5	Pass
Overall Test Results			Pass	



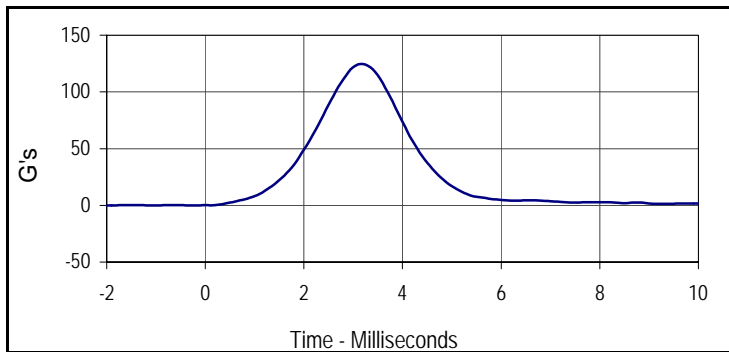
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
2.1	5.3	-0.1	1.7



Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
103.0	3.1	-1.7	7.7



Curve Description			
Head Z			
CURNO	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
70.3	3.2	-0.7	10.0



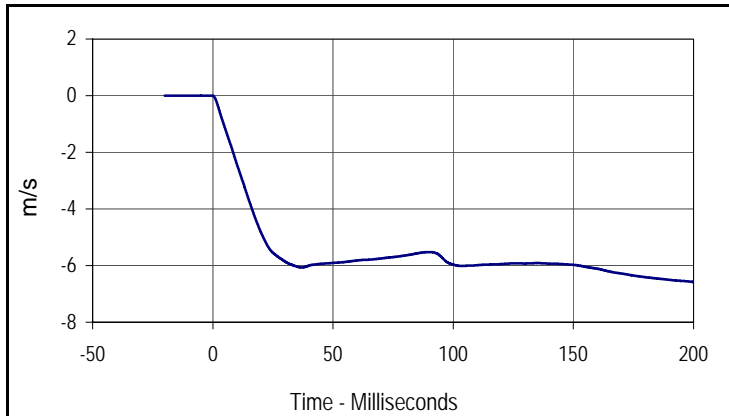
Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
124.6	3.2	0.0	-1.9

Test Program: SID IIs Neck Calibration
 ATD Serial No.: 299

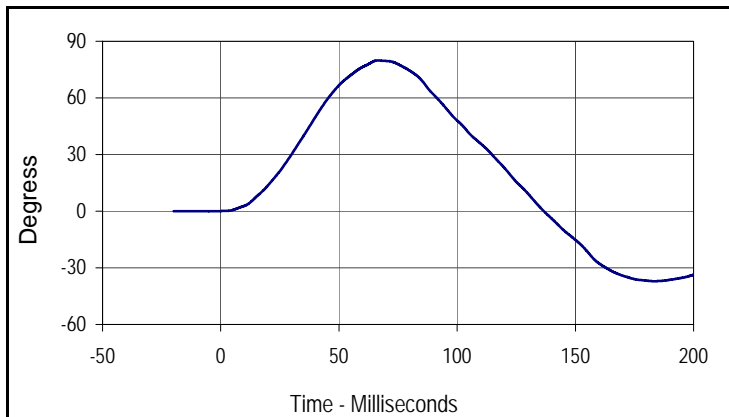
Test Date: 2/9/11
 Test I.D.: NBP02C



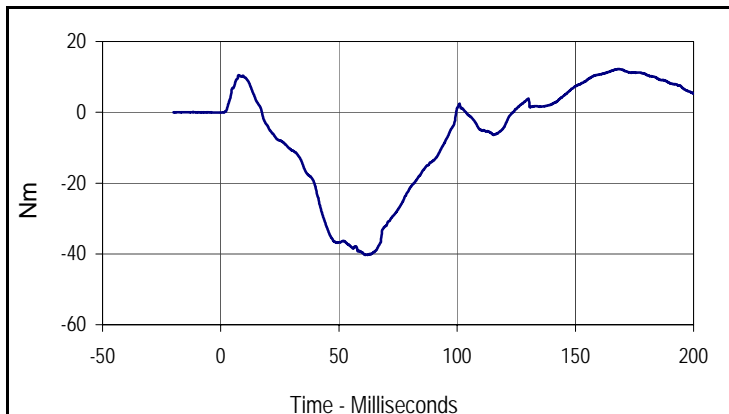
Tested Parameter	Units	Specification	Result	Pass/Fail	
Laboratory Temperature	°C	20.6 to 22.2	21.35	Pass	
Laboratory Relative Humidity	%	10 to 70	24.66	Pass	
Pendulum Velocity	m/s	5.51 to 5.63	5.6	Pass	
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.4	Pass
	15 msec	m/s	-3.30 to -4.10	-3.7	Pass
	20 msec	m/s	-4.40 to -5.40	-4.8	Pass
	25 msec	m/s	-5.40 to -6.10	-5.5	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.1	Pass
Translation-Rotation	Max	Degrees	71.0 to 81.0	79.8	Pass
	Time	msec	50.0 to 70.0	66.4	Pass
Peak Occipital Condyle Moment	Nm	-36.0 to -44.0	-40.3	Pass	
Decaying Moment Time to Cross 0 Nm	msec	102.0 to 126.0	123.6	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.6	-6.6	200.0



Curve Description			
Maximum Translation Rotation			
CURNO	Type	SAE Class	Units
002	FIL	60	Degree
Max	Time	Min	Time
79.8	66.4	-37.1	183.4



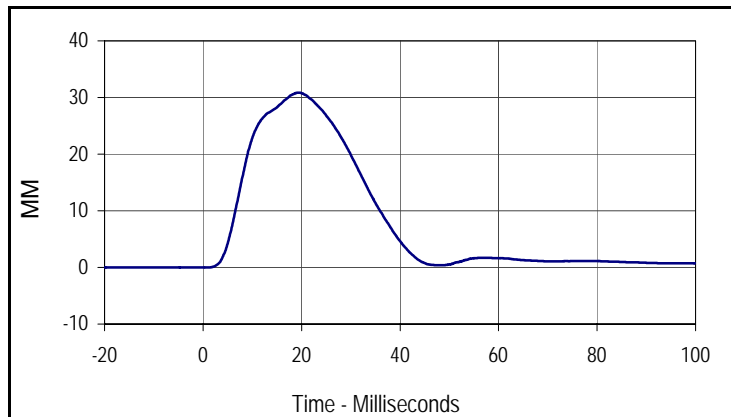
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
12.2	168.5	-40.3	62.0

Test Program: SID IIs Shoulder Calibration
 ATD Serial No.: 299

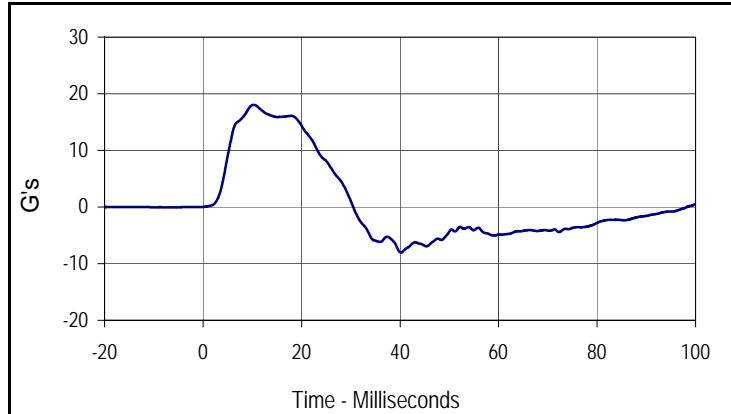
Test Date: 2/9/11
 Test I.D.: SHP02C



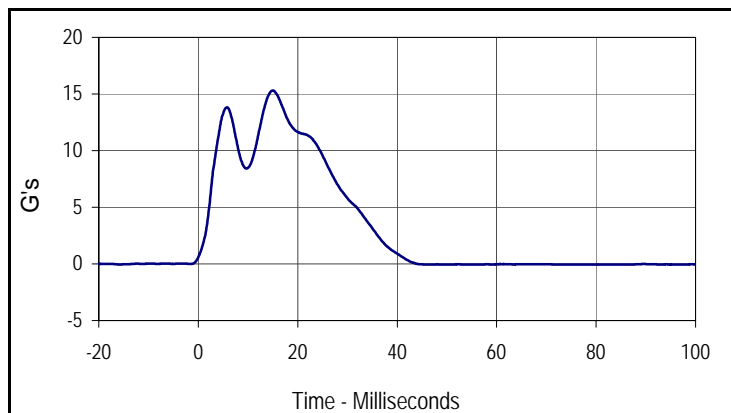
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.35	Pass
Laboratory Relative Humidity	%	10 to 70	24.66	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.36	Pass
Shoulder Deflection	MM	28 to 37	30.8	Pass
Peak Upper Spine Y Acceleration	G's	17 to 22	18.0	Pass
Peak Impactor Acceleration	G's	13 to 18	15.3	Pass
Overall Test Results			Pass	



Curve Description			
Shoulder Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
30.8	19.4	0.0	-19.6



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
18.0	10.2	-8.0	40.2



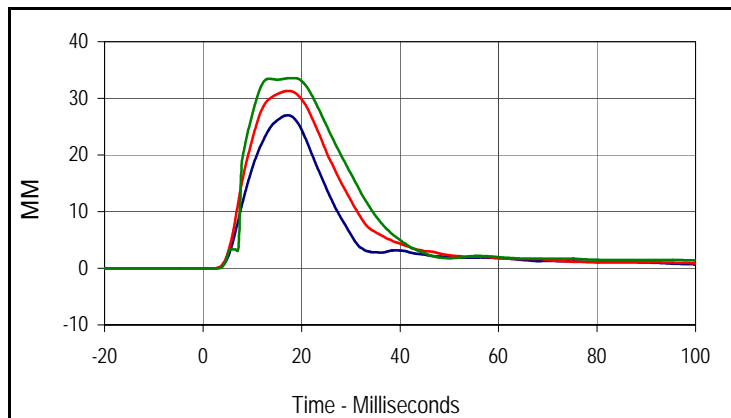
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
15.3	15.0	-0.1	50.8

Test Program: SID IIs Thorax with Arm Calibration
 ATD Serial No.: 299

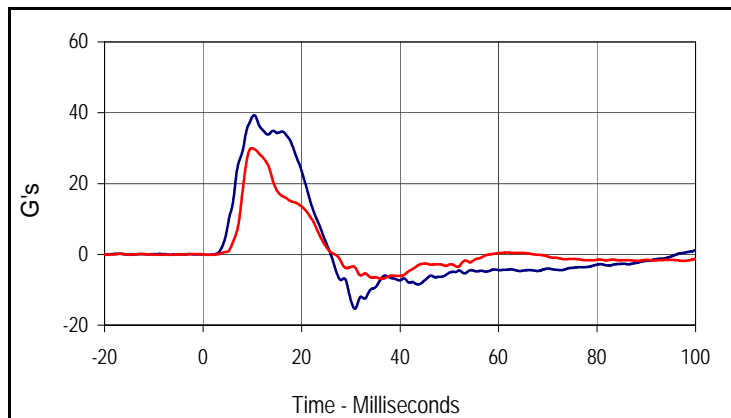
Test Date: 2/9/11
 Test I.D.: TWAP02C



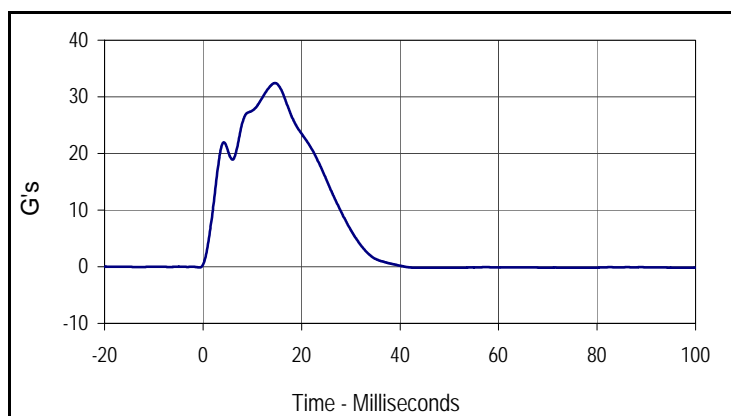
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	25	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.69	Pass
Shoulder Deflection	MM	31 to 40	34.0	Pass
Upper Thorax Rib Deflection	MM	25 to 32	27.0	Pass
Middle Thorax Rib Deflection	MM	30 to 36	31.3	Pass
Lower Thorax Rib Deflection	MM	32 to 38	33.6	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	39.3	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	30.0	Pass
Peak Impactor Acceleration After 5 msec.	G's	30 to 36	32.4	Pass
Overall Test Results				Pass



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
27.0	17.2	0.0	-12.8
Middle Thorax Deflection			
Max	Time	Min	Time
31.3	17.4	0.0	-3.0
Lower Thorax Deflection			
Max	Time	Min	Time
33.6	18.4	0.0	-17.7



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
39.3	10.4	-15.4	30.8
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
30.0	9.9	-6.9	36.2



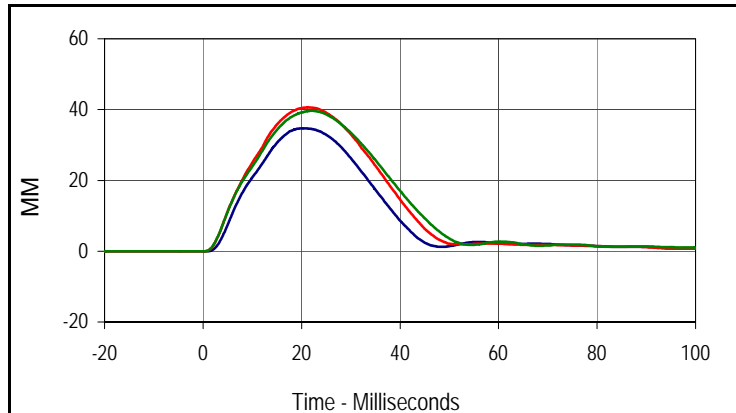
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
32.4	14.6	-0.2	50.4

Test Program: SID IIs Thorax w/o Arm Calibration
 ATD Serial No.: 299

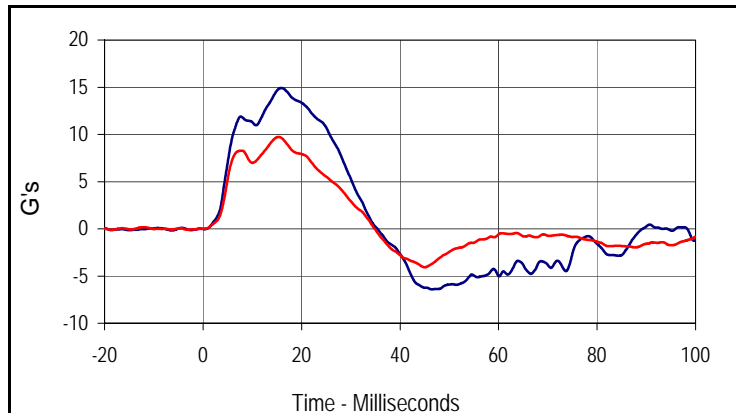
Test Date: 2/9/11
 Test I.D.: TOAP02C



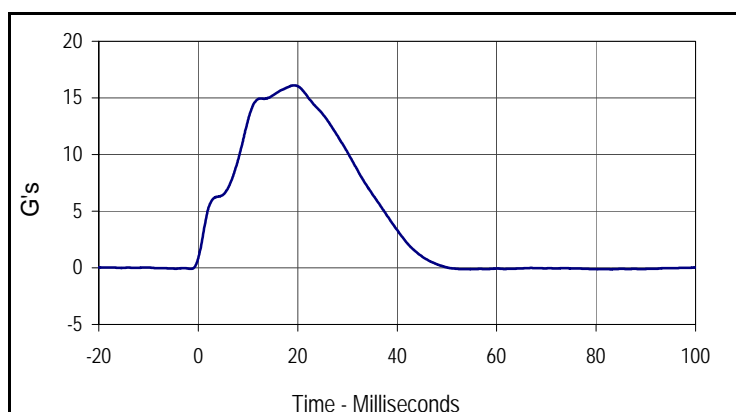
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.19	Pass
Laboratory Relative Humidity	%	10 to 70	24.66	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.35	Pass
Upper Thorax Rib Deflection	MM	32 to 40	34.7	Pass
Middle Thorax Rib Deflection	MM	39 to 45	40.6	Pass
Lower Thorax Rib Deflection	MM	35 to 43	39.6	Pass
Peak Upper Spine Y Acceleration	G's	13 to 17	14.9	Pass
Peak Lower Spine Y Acceleration	G's	7 to 11	9.7	Pass
Peak Impactor Acceleration	G's	14 to 18	16.1	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
34.7	20.5	0.0	-0.1
Middle Thorax Deflection			
Max	Time	Min	Time
40.6	21.4	0.0	-4.1
Lower Thorax Deflection			
Max	Time	Min	Time
39.6	22.0	0.0	0.2



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.9	15.9	-6.4	46.5
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
9.7	15.3	-4.1	45.0



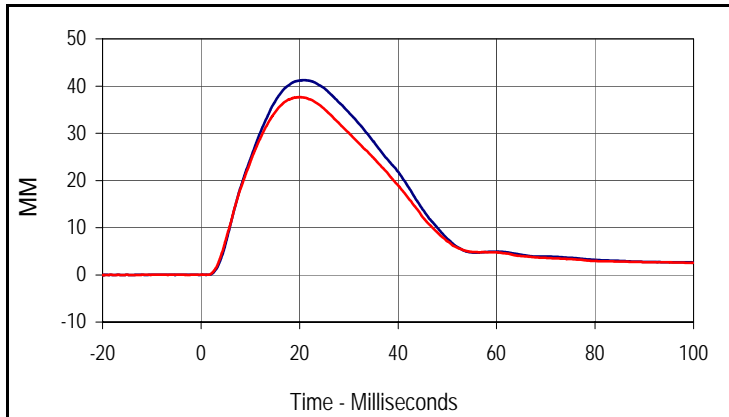
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
16.1	19.2	-0.1	83.0

Test Program: SID IIs Abdomen Calibration
 ATD Serial No.: 299

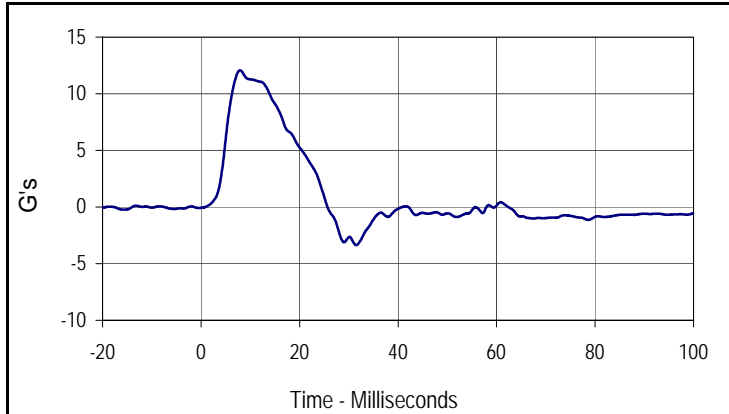
Test Date: 2/9/11
 Test I.D.: ABDP02C



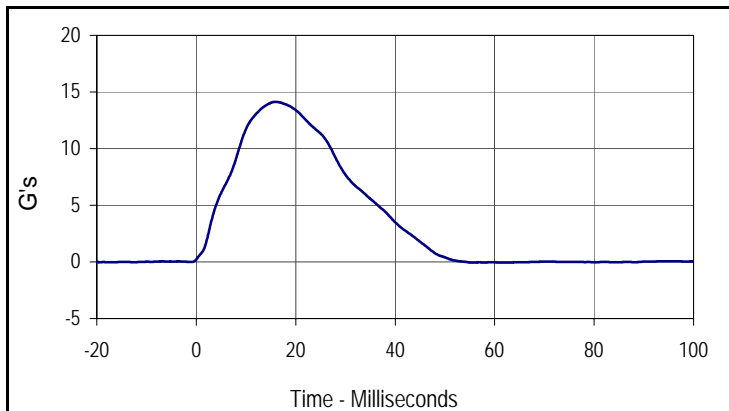
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.19	Pass
Laboratory Relative Humidity	%	10 to 70	24.62	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.36	Pass
Upper Abdominal Rib Deflection	MM	36 to 47	41.3	Pass
Lower Abdominal Rib Deflection	MM	33 to 44	37.7	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	12.1	Pass
Peak Impactor Acceleration	G's	12 to 16	14.1	Pass
Overall Test Results			Pass	



Curve Description			
Upper Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
41.3	20.9	0.0	-16.3
Curve Description			
Lower Abdominal Rib Deflection			
CURNO	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
37.7	20.0	0.0	-2.5



Curve Description			
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
12.1	7.9	-3.4	31.5



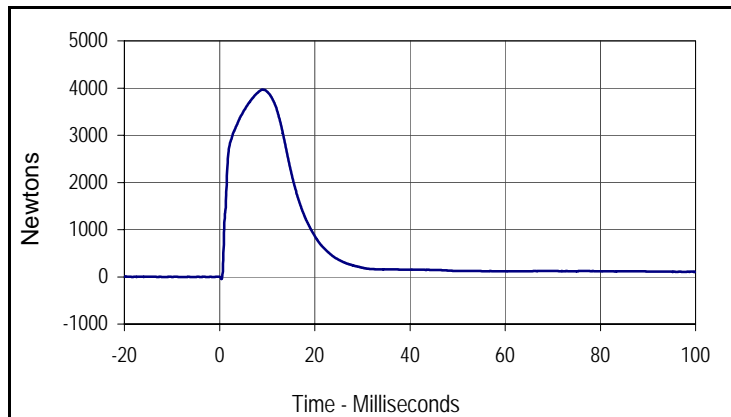
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.1	15.9	-0.1	55.4

Test Program: SID IIs Pelvis Acetabulum Calibration
 ATD Serial No.: 299

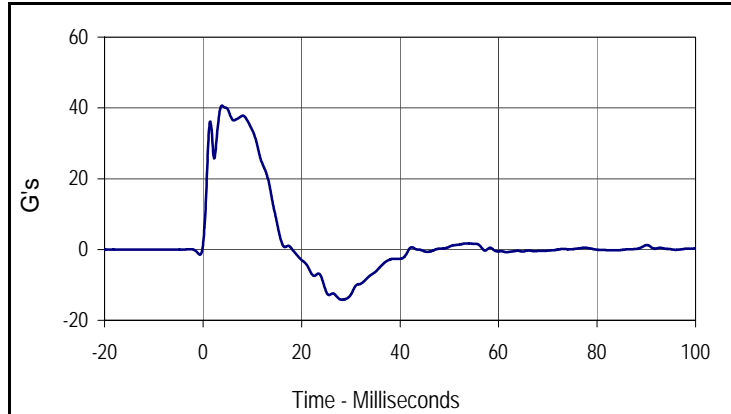
Test Date: 2/9/11
 Test I.D.: PAP02C



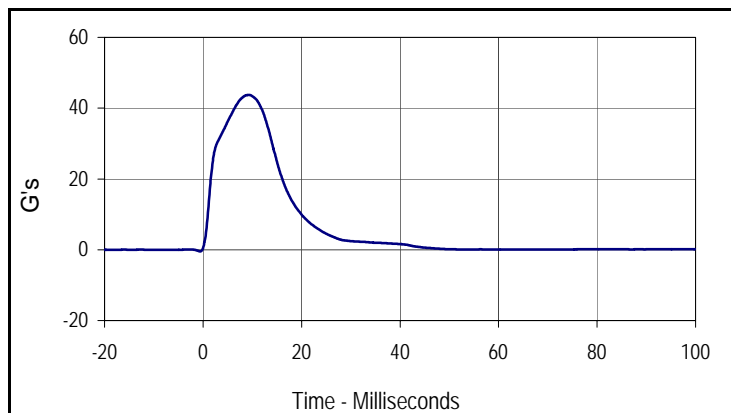
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.13	Pass
Laboratory Relative Humidity	%	10 to 70	24.57	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.65	Pass
Peak Acetabulum Force	Newtons	3600 to 4300	3969.1	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	37.8	Pass
Peak Impactor Acceleration	G's	38 to 47	43.7	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3969.1	9.0	-42.8	0.4



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
40.7	3.8	-14.2	28.2



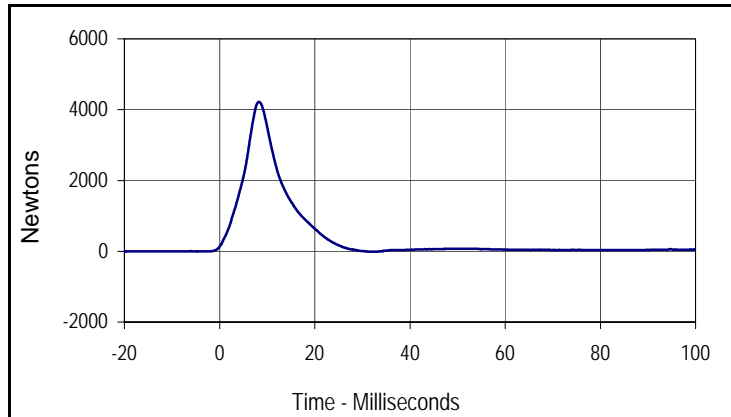
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
43.7	9.3	-0.5	-0.6

Test Program: SID IIs Pelvis Iliac Calibration
 ATD Serial No.: 299

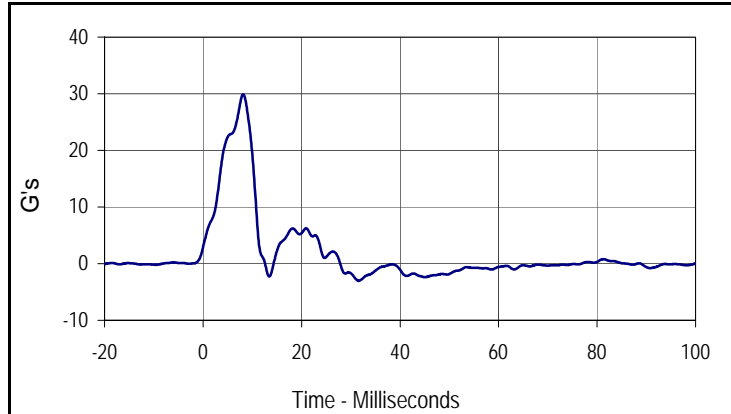
Test Date: 2/9/11
 Test I.D.: PLP02C



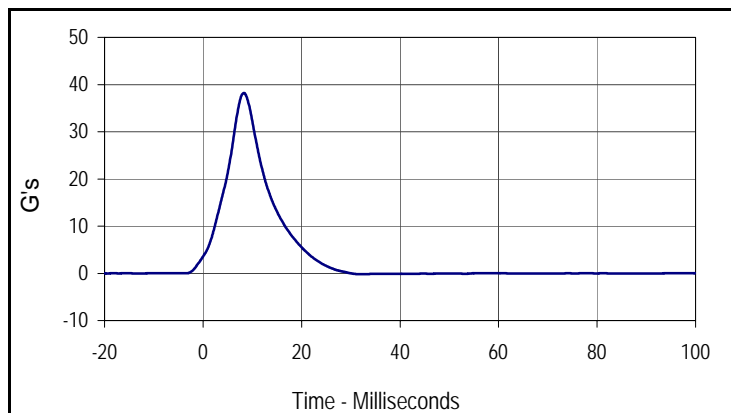
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.19	Pass
Laboratory Relative Humidity	%	10 to 70	24.78	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.34	Pass
Peak Iliac Force	Newtons	4100 to 5100	4219.5	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	29.9	Pass
Peak Impactor Acceleration	G's	36 to 45	38.2	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Iliac Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4219.5	8.3	-15.7	32.0



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
29.9	8.1	-3.0	31.6



Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
38.2	8.3	-0.2	31.9

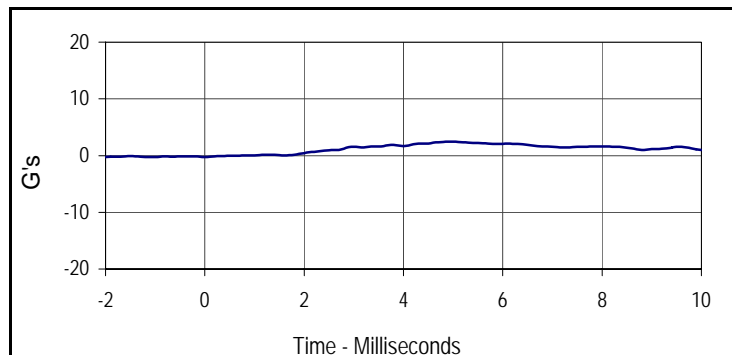
APPENDIX C
POST-TEST / SID-IIs CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program: SID IIs Lateral Head Drop Calibration
 ATD Serial No.: 299

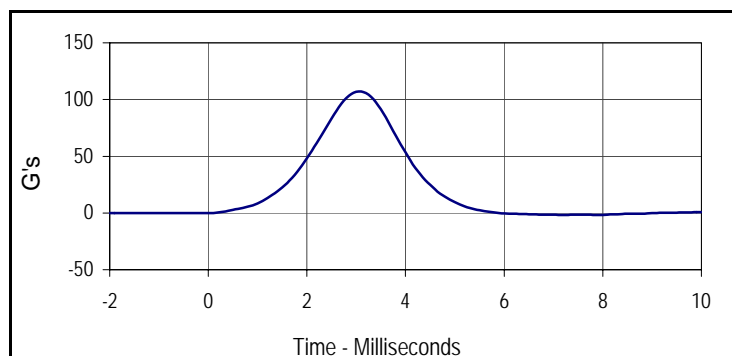
Test Date: 2/12/11
 Test I.D.: HDP02D



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.37	Pass
Laboratory Relative Humidity	%	10 to 70	18.14	Pass
Peak Resultant Acceleration	G's	115 to 137	128.7	Pass
Peak Longitudinal Acceleration	G's	≤15	2.5	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse	%	<15	11.8	Pass
Overall Test Results			Pass	



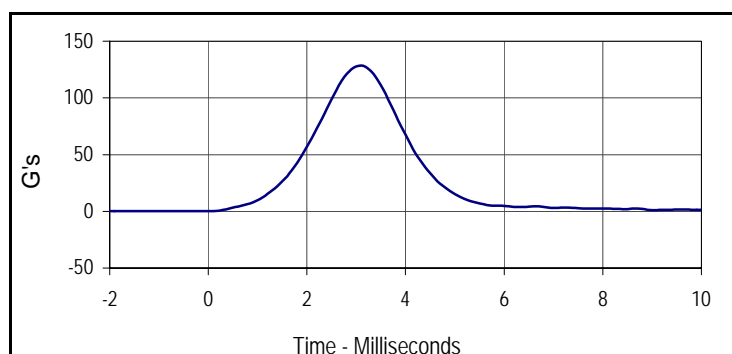
Curve Description			
Head X			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
2.5	5.0	-0.3	-1.1



Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
107.2	3.1	-1.9	7.2



Curve Description			
Head Z			
CURNO	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
71.1	3.1	-0.2	9.5



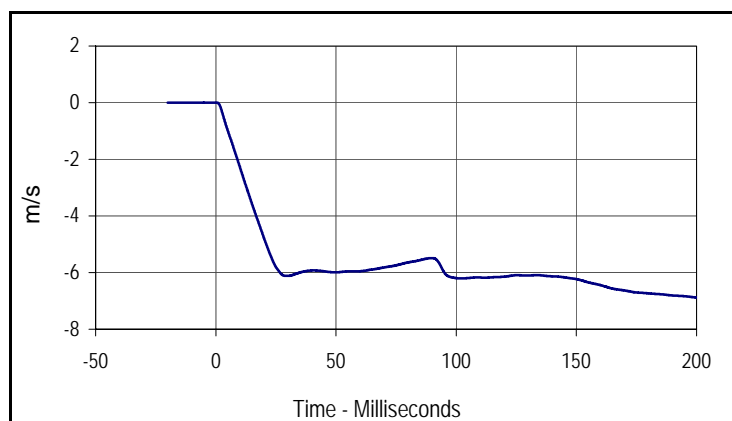
Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
128.7	3.1	0.1	-1.5

Test Program: SID IIs Neck Calibration
 ATD Serial No.: 299

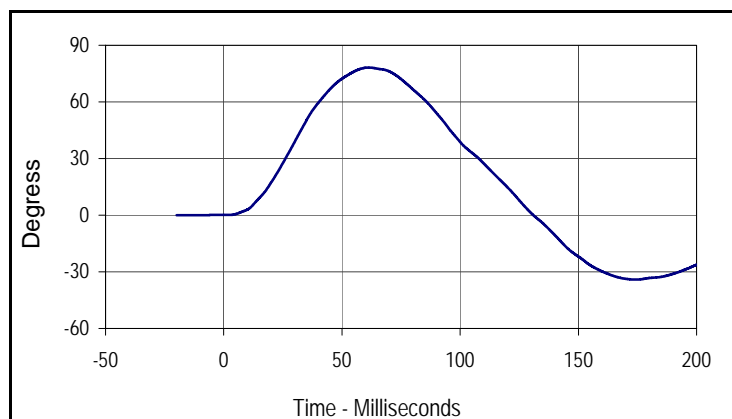
Test Date: 2/12/11
 Test I.D.: NBP02D



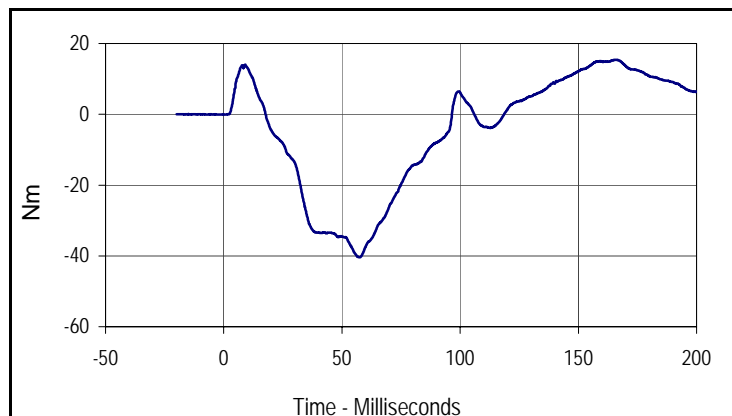
Tested Parameter	Units	Specification	Result	Pass/Fail	
Laboratory Temperature	°C	20.6 to 22.2	21.14	Pass	
Laboratory Relative Humidity	%	10 to 70	18.04	Pass	
Pendulum Velocity	m/s	5.51 to 5.63	5.5	Pass	
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.3	Pass
	15 msec	m/s	-3.30 to -4.10	-3.6	Pass
	20 msec	m/s	-4.40 to -5.40	-4.8	Pass
	25 msec	m/s	-5.40 to -6.10	-5.8	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.2	Pass
Translation-Rotation	Max	Degrees	71.0 to 81.0	78.2	Pass
	Time	msec	50.0 to 70.0	61.3	Pass
Peak Occipital Condyle Moment	Nm	-36.0 to -44.0	-40.4	Pass	
Decaying Moment Time to Cross 0 Nm	msec	102.0 to 126.0	118.6	Pass	
Overall Test Results				Pass	



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
0.0	0.1	-6.9	200.0



Curve Description			
Maximum Translation Rotation			
CURNO	Type	SAE Class	Units
002	FIL	60	Degree
Max	Time	Min	Time
78.2	61.3	-34.1	174.1



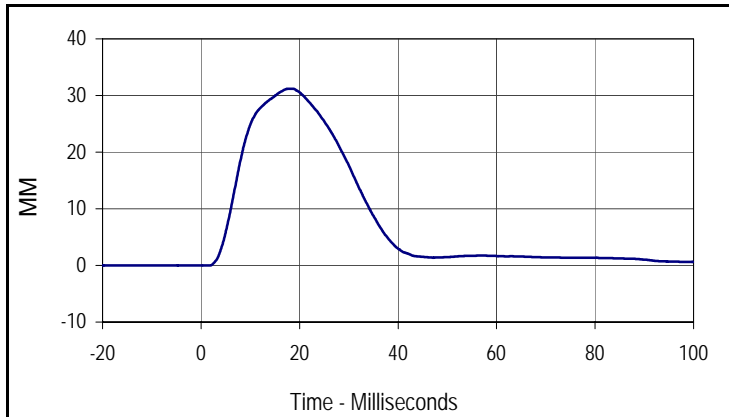
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
15.4	166.3	-40.4	57.4

Test Program: SID IIs Shoulder Calibration
 ATD Serial No.: 299

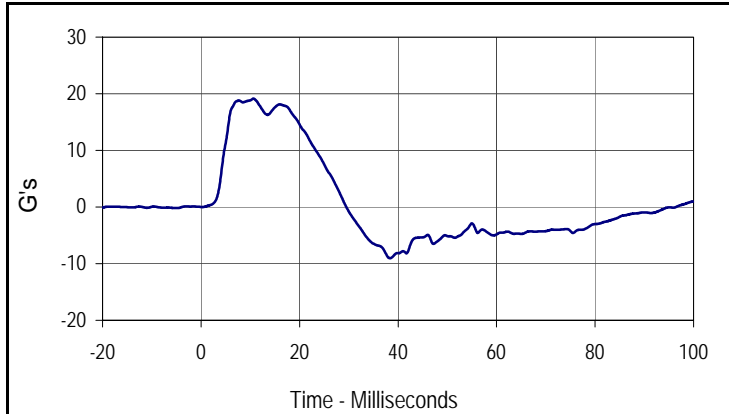
Test Date: 2/12/11
 Test I.D.: SHP02D



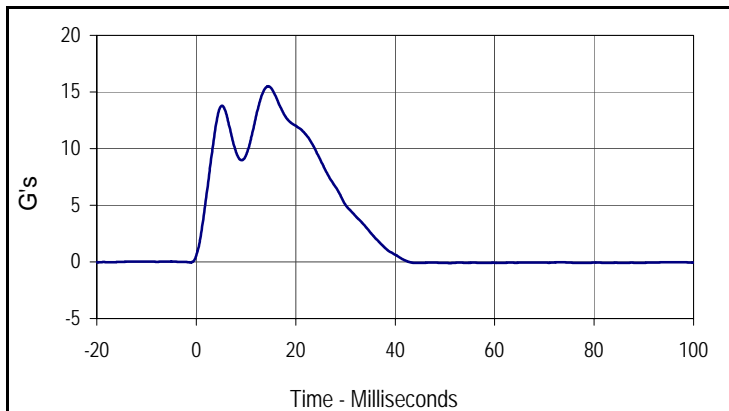
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.14	Pass
Laboratory Relative Humidity	%	10 to 70	18.09	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.39	Pass
Shoulder Deflection	MM	28 to 37	31.2	Pass
Peak Upper Spine Y Acceleration	G's	17 to 22	19.1	Pass
Peak Impactor Acceleration	G's	13 to 18	15.5	Pass
Overall Test Results			Pass	



Curve Description			
Shoulder Acceleration			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
31.2	18.3	0.0	1.8



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
19.1	10.6	-9.0	38.4



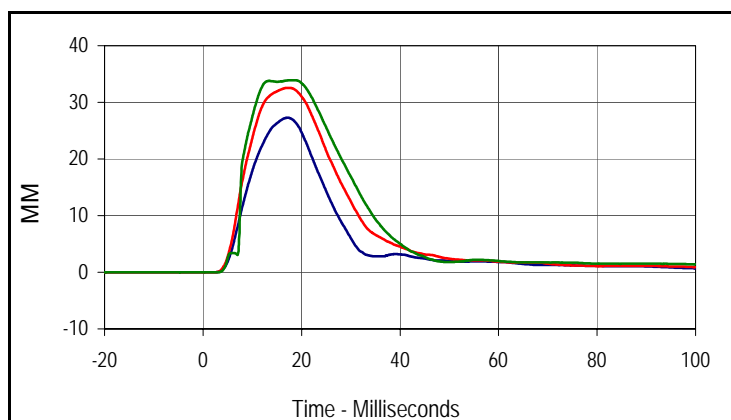
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
15.5	14.5	-0.1	51.1

Test Program: SID IIs Thorax with Arm Calibration
 ATD Serial No.: 299

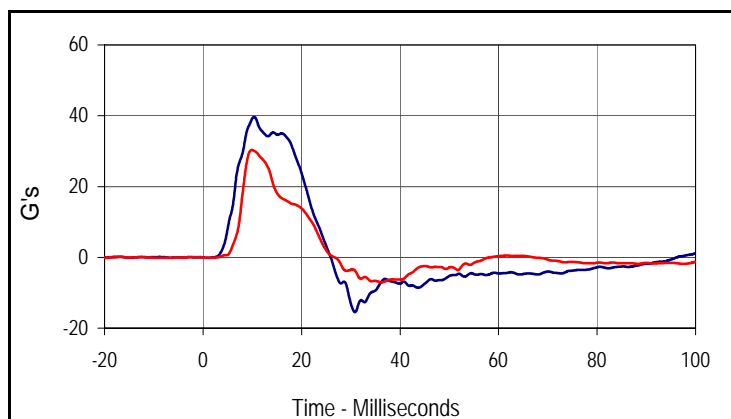
Test Date: 2/12/11
 Test I.D.: TWAP02D



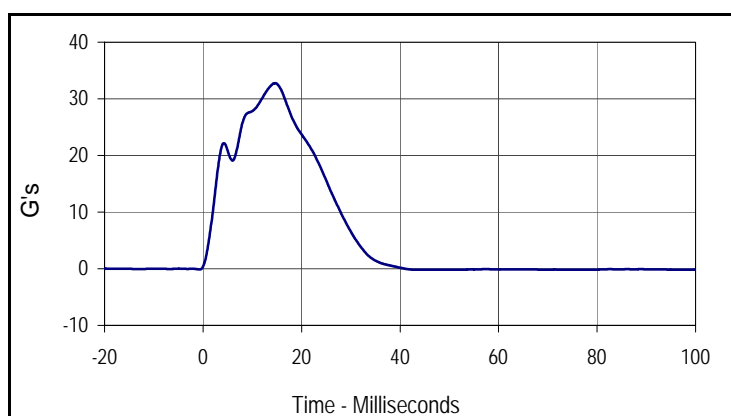
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	18	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.71	Pass
Shoulder Deflection	MM	31 to 40	33.3	Pass
Upper Thorax Rib Deflection	MM	25 to 32	27.3	Pass
Middle Thorax Rib Deflection	MM	30 to 36	32.6	Pass
Lower Thorax Rib Deflection	MM	32 to 38	33.9	Pass
Peak Upper Spine Y Acceleration	G's	34 to 43	39.7	Pass
Peak Lower Spine Y Acceleration	G's	29 to 37	30.4	Pass
Peak Impactor Acceleration After 5 msec.	G's	30 to 36	32.7	Pass
Overall Test Results				Pass



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
27.3	17.2	0.0	-12.8
Middle Thorax Deflection			
Max	Time	Min	Time
32.6	17.4	0.0	-3.0
Lower Thorax Deflection			
Max	Time	Min	Time
33.9	18.4	0.0	-17.7



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
39.7	10.4	-15.5	30.8
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
30.4	9.8	-7.0	36.2



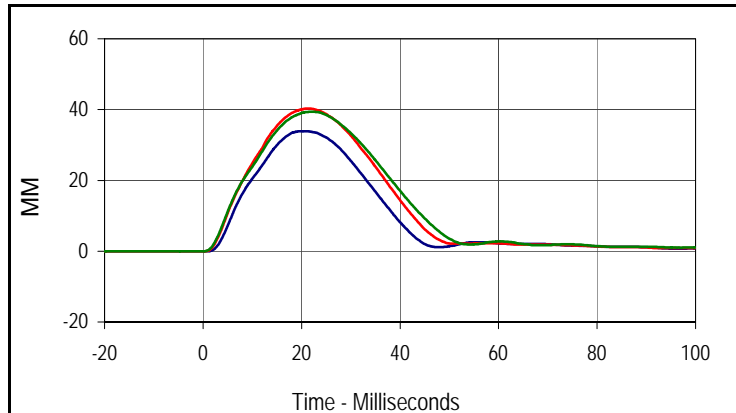
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
32.7	14.6	-0.2	50.4

Test Program: SID IIs Thorax w/o Arm Calibration
 ATD Serial No.: 299

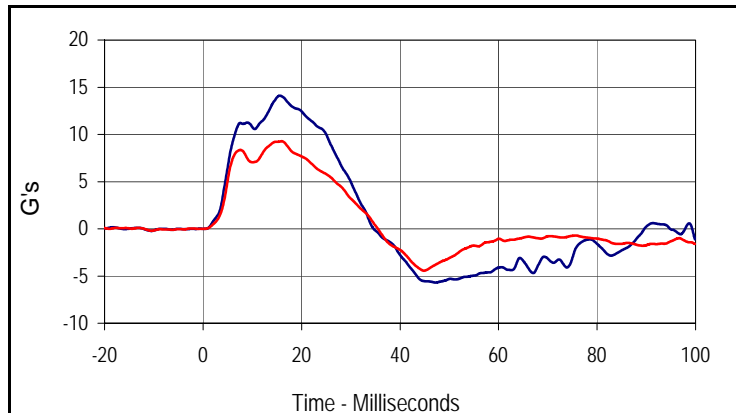
Test Date: 2/12/11
 Test I.D.: TOAP02D



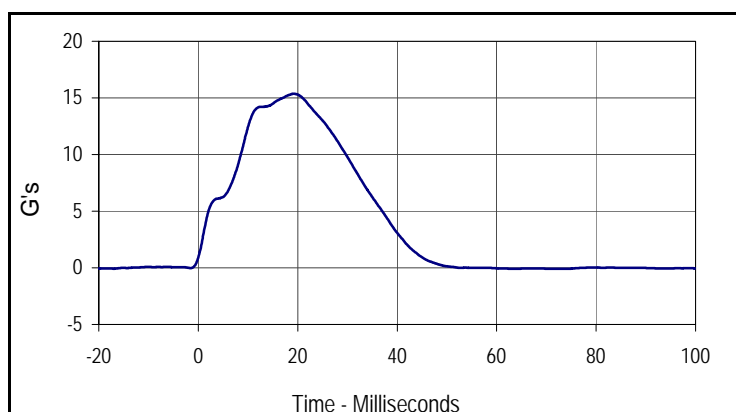
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.20	Pass
Laboratory Relative Humidity	%	10 to 70	18.14	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.31	Pass
Upper Thorax Rib Deflection	MM	32 to 40	33.9	Pass
Middle Thorax Rib Deflection	MM	39 to 45	40.3	Pass
Lower Thorax Rib Deflection	MM	35 to 43	39.4	Pass
Peak Upper Spine Y Acceleration	G's	13 to 17	14.1	Pass
Peak Lower Spine Y Acceleration	G's	7 to 11	9.3	Pass
Peak Impactor Acceleration	G's	14 to 18	15.4	Pass
Overall Test Results			Pass	



Curve Description			
Upper Thorax Deflection			
CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
33.9	20.2	0.0	-16.8
Middle Thorax Deflection			
Max	Time	Min	Time
40.3	21.3	0.0	-17.6
Lower Thorax Deflection			
Max	Time	Min	Time
39.4	22.1	0.0	0.1



Curve Description			
Upper Spine Y Acceleration			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.1	15.6	-5.7	47.2
Lower Spine Y Acceleration			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
9.3	15.9	-4.4	44.9



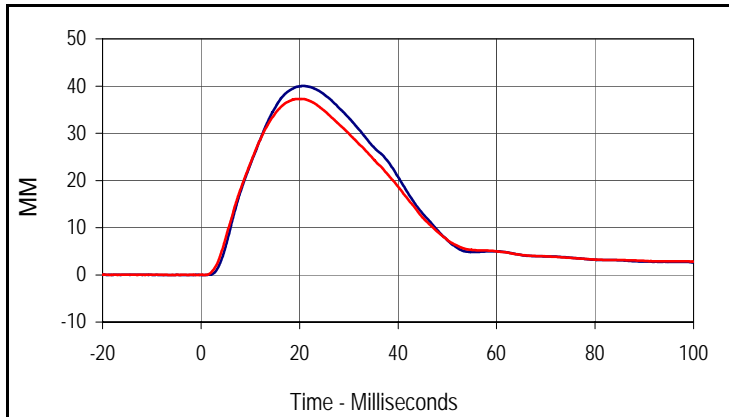
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
15.4	19.2	-0.1	74.1

Test Program: SID IIs Abdomen Calibration
 ATD Serial No.: 299

Test Date: 2/12/11
 Test I.D.: ABDP02D



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.14	Pass
Laboratory Relative Humidity	%	10 to 70	18.33	Pass
Pendulum Velocity	m/s	4.20 to 4.40	4.34	Pass
Upper Abdominal Rib Deflection	MM	36 to 47	40.0	Pass
Lower Abdominal Rib Deflection	MM	33 to 44	37.3	Pass
Peak Lower Spine Y Acceleration	G's	9 to 14	12.0	Pass
Peak Impactor Acceleration	G's	12 to 16	13.9	Pass
Overall Test Results			Pass	



Curve Description

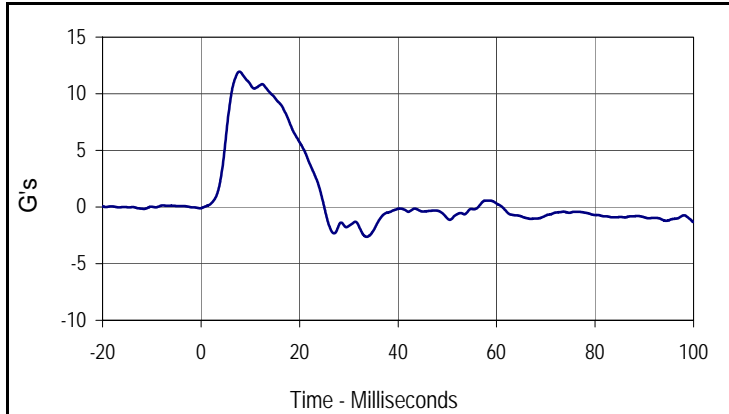
Upper Abdominal Rib Deflection

CURNO	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
40.0	20.6	0.0	-5.6

Curve Description

Lower Abdominal Rib Deflection

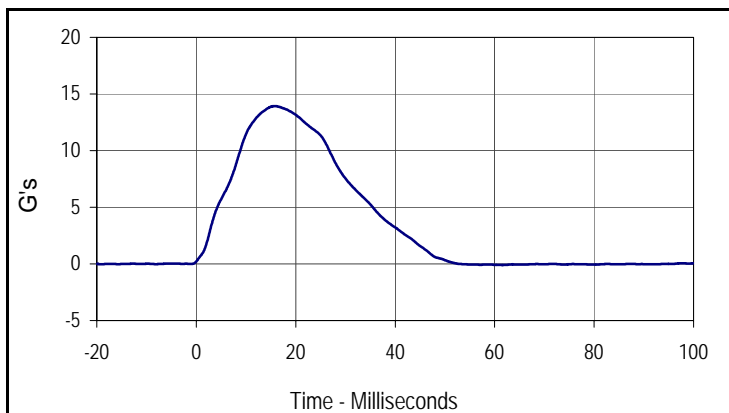
CURNO	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
37.3	20.0	0.0	0.7



Curve Description

Lower Spine Y Acceleration

CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
12.0	7.8	-2.6	33.6



Curve Description

Impactor Acceleration

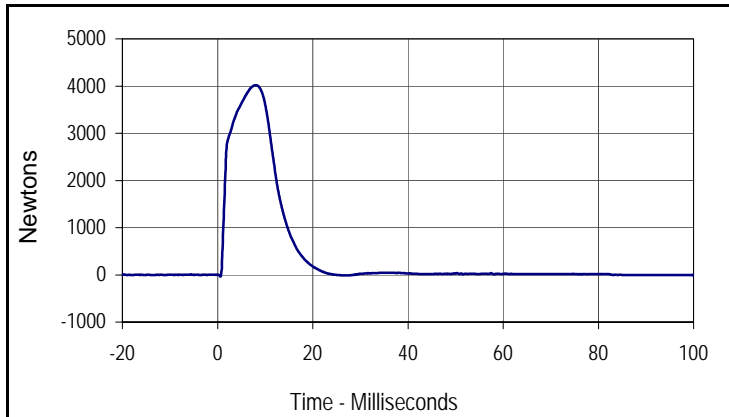
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
13.9	15.8	-0.1	61.6

Test Program: SID IIs Pelvis Acetabulum Calibration
 ATD Serial No.: 299

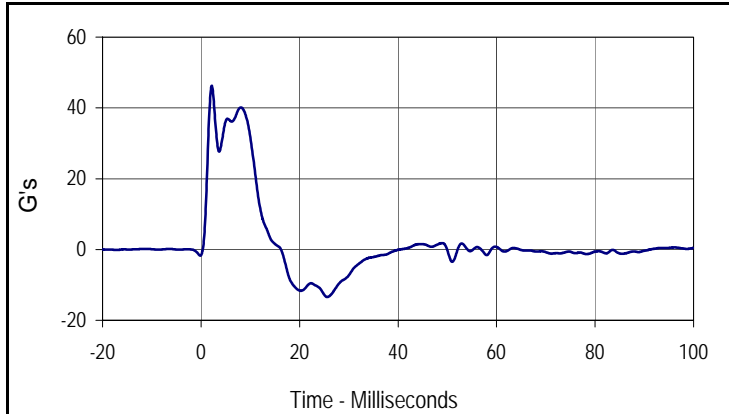
Test Date: 2/12/11
 Test I.D.: PAP02D



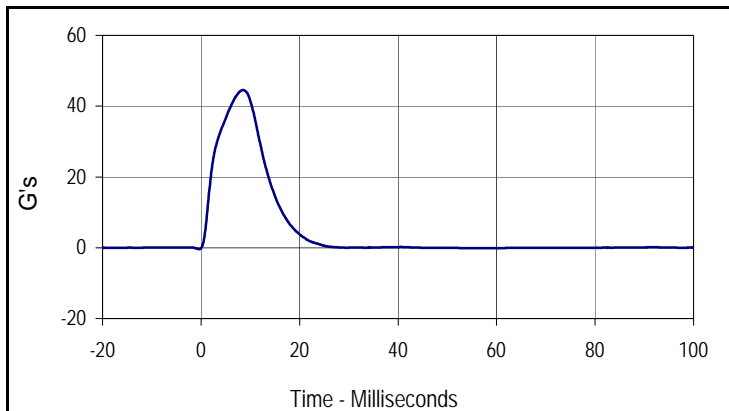
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.14	Pass
Laboratory Relative Humidity	%	10 to 70	18.19	Pass
Pendulum Velocity	m/s	6.60 to 6.80	6.66	Pass
Peak Acetabulum Force	Newtons	3600 to 4300	4020.2	Pass
Peak Pelvis Y Acceleration After 6 msec.	G's	34 to 42	40.1	Pass
Peak Impactor Acceleration	G's	38 to 47	44.6	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Acetabulum Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4020.2	8.0	-34.4	0.6



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
46.2	2.2	-13.4	25.6



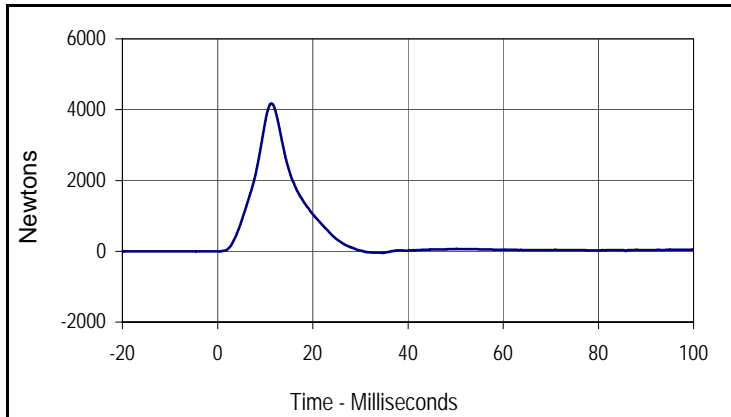
Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
44.6	8.5	-0.4	-0.4

Test Program: SID IIs Pelvis Iliac Calibration
 ATD Serial No.: 299

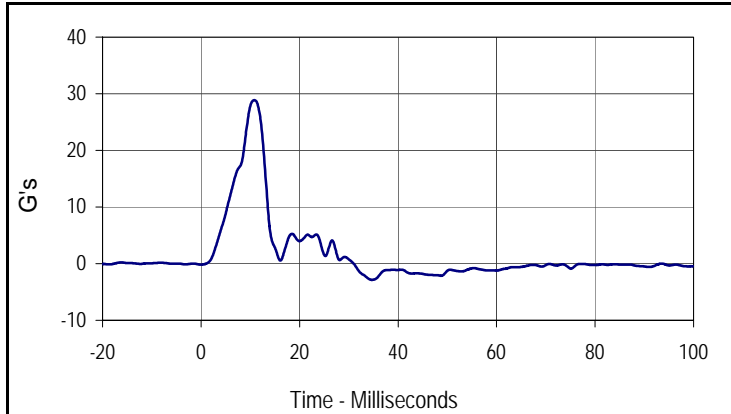
Test Date: 2/12/11
 Test I.D.: PLP02D



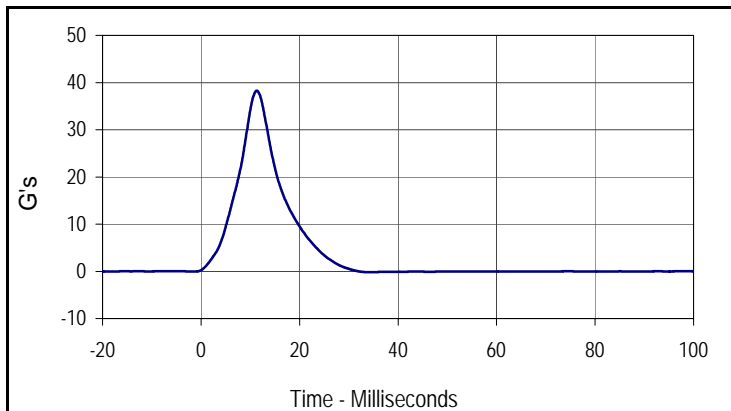
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.42	Pass
Laboratory Relative Humidity	%	10 to 70	17.23	Pass
Pendulum Velocity	m/s	4.2 to 4.4	4.33	Pass
Peak Iliac Force	Newtons	4100 to 5100	4173.4	Pass
Peak Pelvis Y Acceleration	G's	28 to 39	28.9	Pass
Peak Impactor Acceleration	G's	36 to 45	38.3	Pass
Overall Test Results			Pass	



Curve Description			
Pelvis Iliac Force			
CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4173.4	11.3	-45.7	34.7



Curve Description			
Pelvis Y Acceleration			
CURNO	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
28.9	10.8	-2.9	34.7



Curve Description			
Impactor Acceleration			
CURNO	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
38.3	11.3	-0.2	34.4